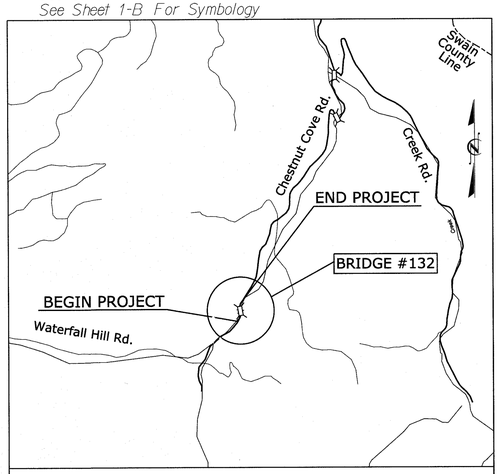
09/08/99

PROJECT: 17BP.14.R.78

CONTRACT: DN00197

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Symbology



VICINITY MAP N.T.S.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SWAIN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.78	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.14.R.78		PE, R / W, UTIL.
17BP.14.R.78		CONST.

LOCATION: ***BRIDGE NO. 132 ON SR 1122 (CHESTNUT COVE ROAD) OVER CHESTNUT COVE CREEK***

TYPE OF WORK: ***GRADING, PAVING, DRAINAGE, STRUCTURE AND TRAFFIC CONTROL***

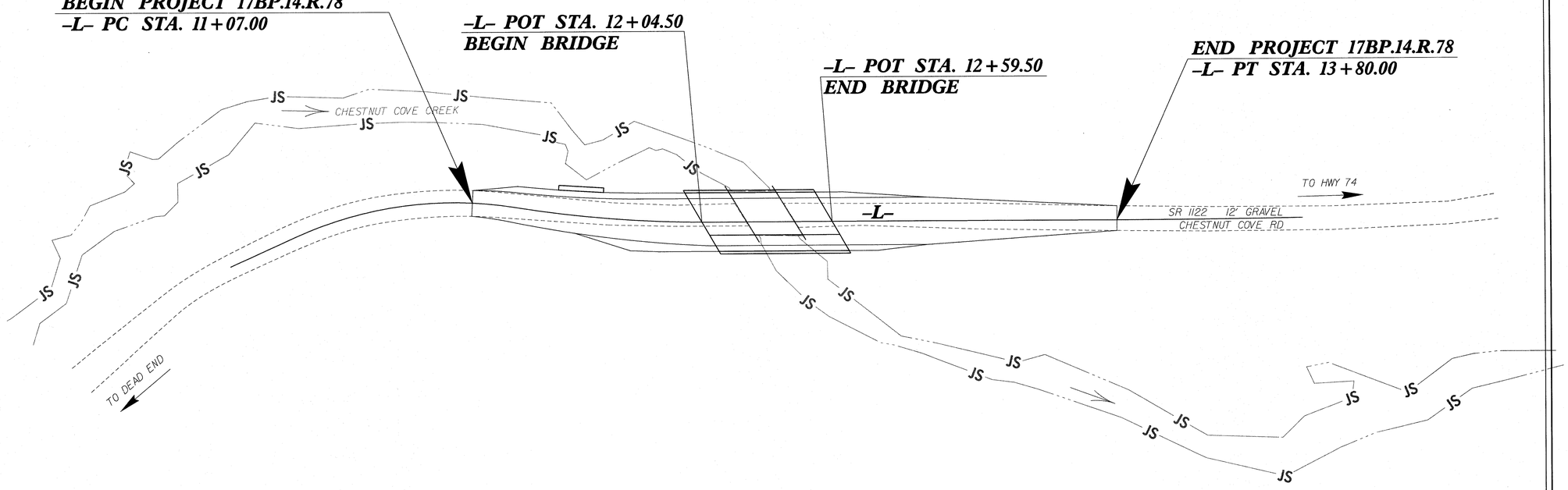
NC GRID — NAD 83 (NSRS2007)

BEGIN PROJECT 17BP.14.R.78
–L– PC STA. 11+07.00

–L– POT STA. 12+04.50
BEGIN BRIDGE

–L– POT STA. 12+59.50
END BRIDGE

END PROJECT 17BP.14.R.78
–L– PT STA. 13+80.00



GRAPHIC SCALES

20 10 0 20 40
PLANS

20 10 0 20 40
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 1995 = 50

V = N/A

FUNC CLASS = LOCAL

SUB–REGIONAL TIER

PROJECT LENGTH

Length Roadway Project 17BP.14.R.78 = 0.041 Miles
Length Structure Project 17BP.14.R.78 = 0.011 Miles
Total Length Project 17BP.14.R.78 = 0.052 Miles

NCDOT CONTACT: ***Joshua B. Deyton, PE***
NCDOT DIVISION 14 BRIDGE MANAGER

Prepared By:

Stantec

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: *August 23, 2013*

LETTING DATE: *April 22, 2014*

Michael D. Lindgren, PE
PROJECT ENGINEER

Robert Williams, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18462 ENGINEER JAMES C. DAVIS

SIGNATURE: James C Davis P.E. 3/25/2014

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25513 ENGINEER MICHAEL D. LINDGREN

SIGNATURE: Michael D Lindgren P.E. 3-25-2014

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

3/25/2014
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.78	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25513 ENGINEER MICHAEL D. LINDGREN

3-25-2014

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE & TYPICAL SECTIONS
2A THRU 2C	TEMPORARY FABRIC WALL DETAILS AND TEMPORARY SHORING DETAIL
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF EARTHWORK, GUARDRAIL, AND DRAINAGE
4	PLAN/PROFILE SHEET
5	DETOUR PLAN SHEET
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS
PM-1	PAVEMENT MARKING PLAN
EC-1 THRU EC-5	EROSION CONTROL PLANS
UO-1	UTILITY BY OTHERS
X-1 THRU X-18	CROSS-SECTIONS
S-1 THRU S-15	STRUCTURE PLANS
W-1 THRU W-2	RETAINING WALL PLANS

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 11/01/11

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 III.

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 AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

SUBSURFACE PLANS:
SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT.

END BENTS:
THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE

UTILITIES:
UTILITY OWNER ON THIS PROJECT IS DUKE ENERGY AND FRONTIER COMMUNICATIONS (TELEPHONE).

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.

ROADWAY STANDARD DRAWINGS

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	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
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
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units

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04/16/11

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.78	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 Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line

- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.78	1C
Location and Surveys	

SURVEY CONTROL SHEET 86–0132
–FINAL–

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	620306.7167	701611.7326	2721.49	OUTSIDE PROJECT LIMITS	
2	BL-2	620535.4730	701723.9450	2684.21	12+44.60	12.09 LT
3	BL-3	620765.5977	701882.6748	2670.49	OUTSIDE PROJECT LIMITS	

****

BM1 ELEVATION = 2715.03
N 620352 E 701618
L STATION 10+36.00 14 LEFT
RR SPIKE IN UTILITY POLE

****

FINAL -L-

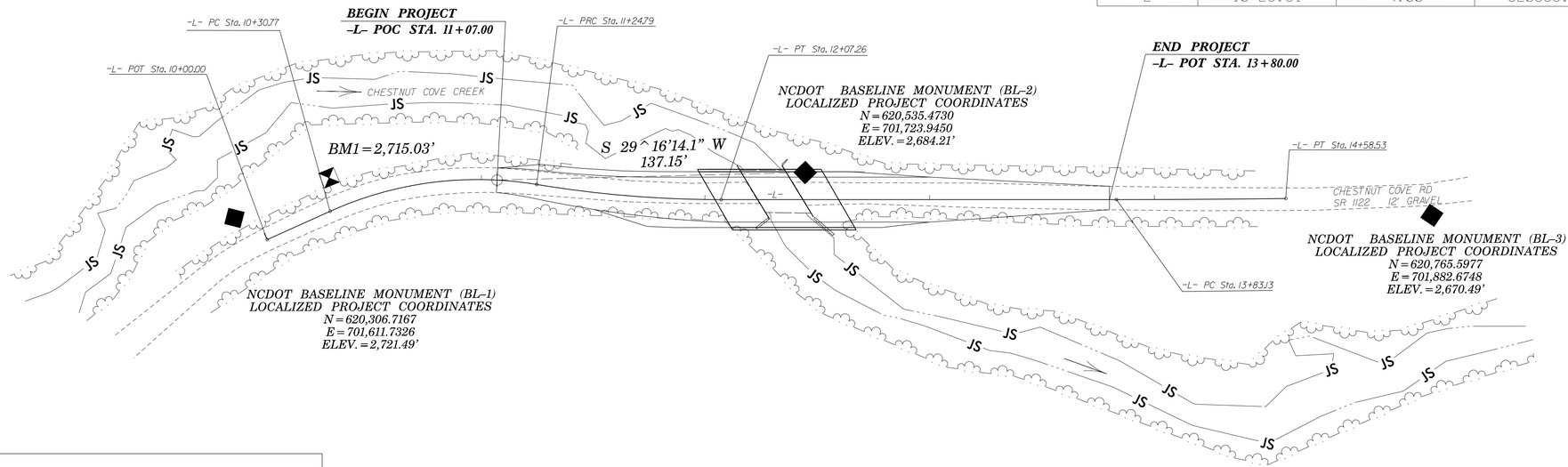
TYPE	STATION	NORTH	EAST
POT	10+00.00	620314.3477	701627.4621
PC	10+30.77	620344.9223	701630.9241
PRC	11+24.79	620430.0392	701667.5704
PT	12+07.26	620497.1887	701715.2949
PC	13+83.13	620648.4446	701805.0210
PT	14+58.53	620713.5381	701843.0839

-FINAL- ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	10+80.00	-8.93	620395.8710	701635.6902
L	10+80.00	-20.00	620400.3893	701625.5843
L	11+24.79	-20.00	620442.9291	701652.2782
L	12+07.26	-20.00	620507.3926	701698.0937
L	14+00.00	-20.00	620673.1223	701796.3782
L	14+00.00	-9.36	620667.7196	701805.5445
L	13+60.00	7.94	620624.5015	701800.0496
L	13+60.00	20.00	620618.3485	701810.4219
L	12+07.26	20.00	620486.9849	701732.4961
L	11+24.79	20.00	620417.1494	701682.8627
L	11+07.00	20.00	620404.7165	701673.5132
L	11+07.00	9.18	620410.7290	701664.5176

-FINAL- ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+24.79	-20.00	620442.9291	701652.2782
L	13+17.23	-70.59	620627.7822	701710.6882
L	OUTSIDE CHAIN -L-		620824.2659	701836.5149
L	OUTSIDE CHAIN -L-		620808.7448	701862.5738
L	13+20.21	-33.81	620611.5803	701743.8415
L	12+07.26	-20.00	620507.3926	701698.0937
L	10+34.54	9.00	620347.4400	701640.3089
L	10+29.22	24.46	620340.6302	701655.0544
L	10+19.73	21.31	620331.5548	701650.8567
L	10+23.81	9.00	620336.9928	701639.0837



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "860132 (BL-2)" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 620535.4730(ft) EASTING: 701723.9450(ft) ELEVATION: 2684.21(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .999750144
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "860132 (BL-2)" TO -L- STATION 11+07.00 IS S 29°16'14.1" W 137.15'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

GEOIDAL MODEL: G09NC
NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/*

   THE FILES TO BE FOUND ARE AS FOLLOWS: 860132_LS_CONTROL.TXT

   SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.78	2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

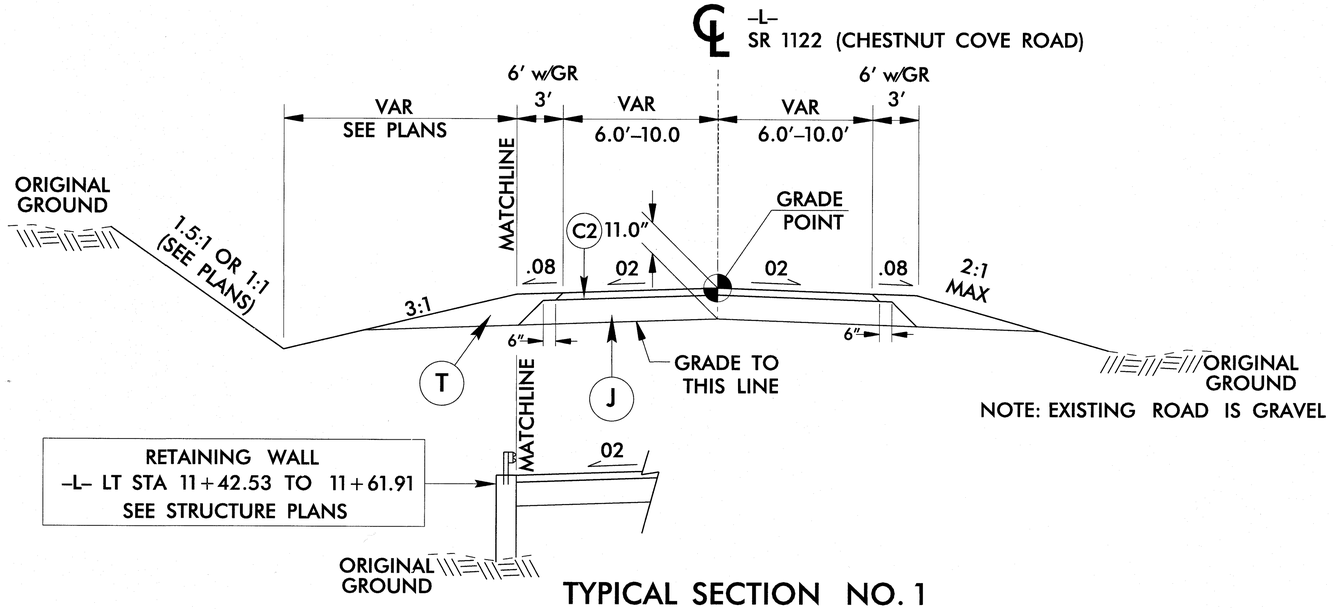
NORTH CAROLINA PROFESSIONAL SEAL 25513 ENGINEER MICHAEL D. LINDGREN

5-25-2014

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
J	PROP. 8" AGGREGATE BASE COURSE.
T	EARTH MATERIAL

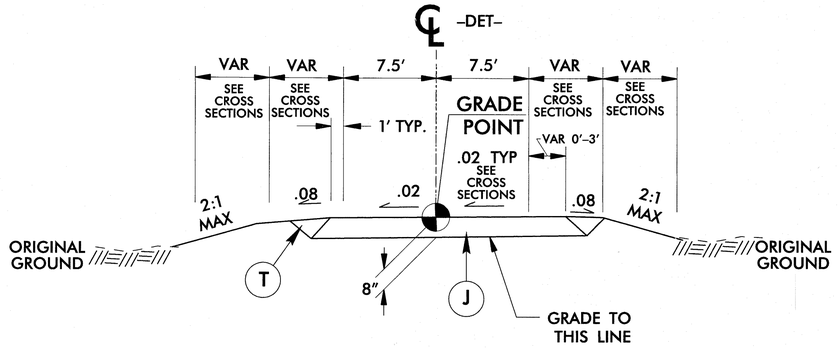
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



NOTE: EXISTING ROAD IS GRAVEL

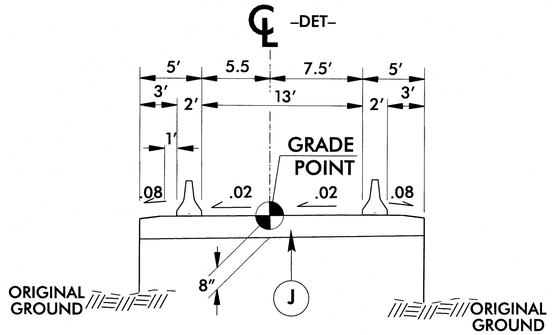
TYPICAL SECTION NO. 1

–L– STA. 11+07.00 TO STA. 12+04.50 (BEGIN BRIDGE)
–L– STA. 12+59.50 (END BRIDGE) TO 13+80.00



TYPICAL SECTION NO. 2

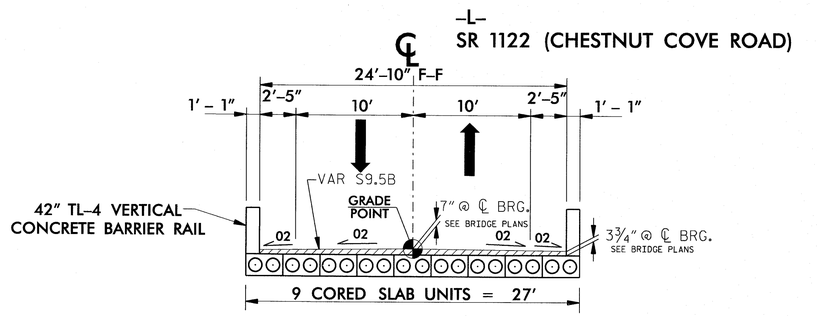
–DET– STA. 10+00.00 TO STA. 10+87.95 LT
–DET– STA. 11+59.59 TO STA. 12+70.55 LT
–DET– STA. 10+00.00 TO STA. 11+11.44 RT
–DET– STA. 11+75.24 TO STA. 12+70.55 RT



SEE GEOTECHNICAL FABRIC WALL DETAIL SHEET 2A THRU 2C

TYPICAL SECTION NO. 2A

–DET– STA. 10+87.95 TO STA. 11+59.59 LT
–DET– STA. 11+11.44 TO STA. 11+75.24 RT



TYPICAL SECTION NO. 3

–L– STA. 12+04.50 TO STA. 12+59.50 (BRIDGE)

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mitchellfield

PROJECT REFERENCE NO.	SHEET
17BP.14.R.78	2A

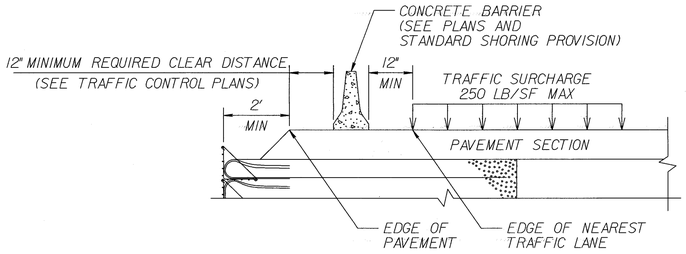
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18580 ENGINEER GARY R. TAYLOR

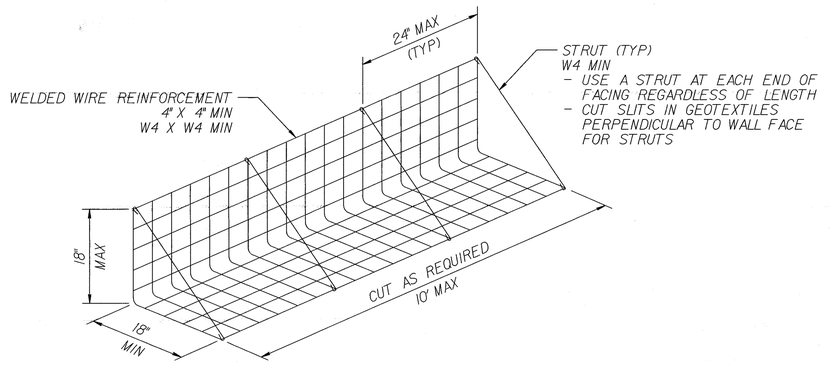
SIGNATURE DATE

ENGINEER

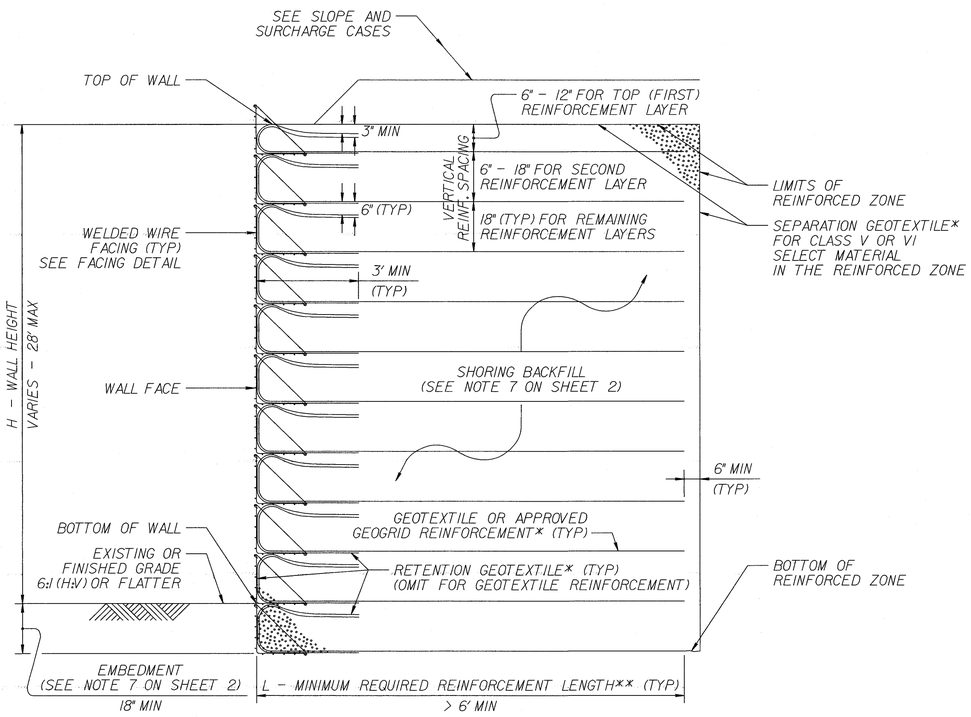
SIGNATURE DATE



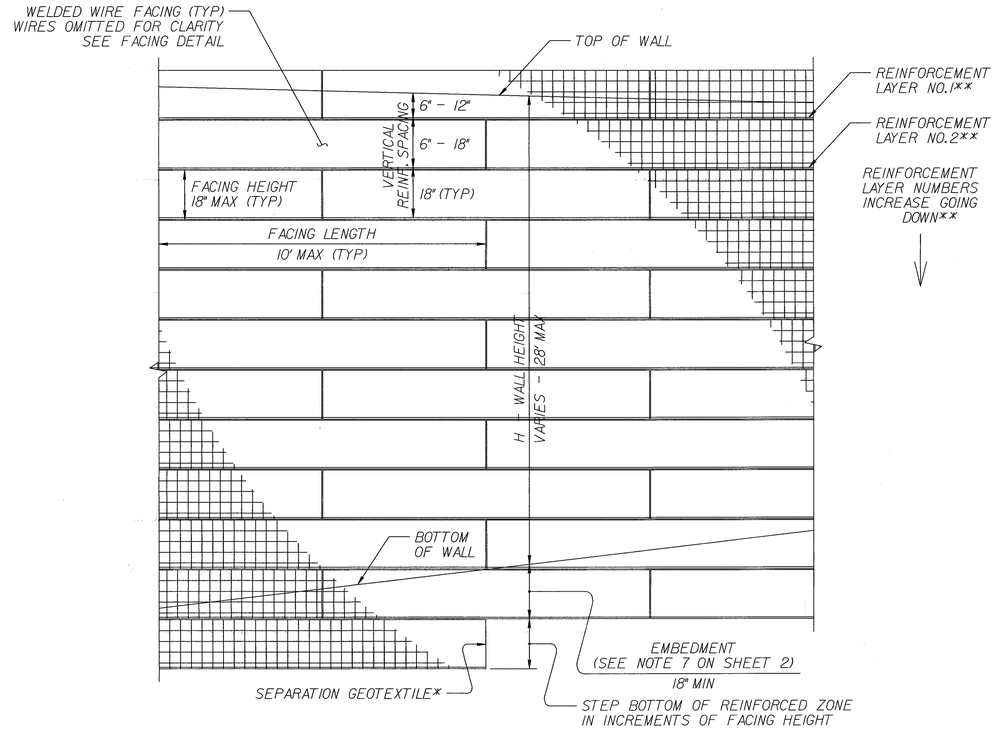
SURCHARGE CASE



FACING DETAIL



STANDARD TEMPORARY WALL



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

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

amec

AMEC Environment & Infrastructure
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA
NC Engineering F-0653 NC Geology C-247

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY
FABRIC WALL
Sheet 1 of 3

DATE:

PROJECT REFERENCE NO.	SHEET
17BP.14.R.78	2B

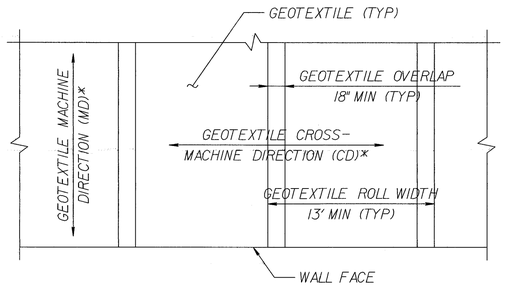
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18580 ENGINEER GARY R. TAYLOR

SIGNATURE DATE

ENGINEER

SIGNATURE DATE



GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

GEOSYNTHETIC PLACEMENT DETAIL
(PLAN VIEW)

NOTES:

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

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

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

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DURHAM, NORTH CAROLINA
NC Engineering F-0653 NC Geology C-247

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY
FABRIC WALL
Sheet 2 of 3

DATE:

PROJECT REFERENCE NO.	SHEET
17BP.14.R.78	2C

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18580 ENGINEER GARY R. TAYLOR

SIGNATURE 10/13/17 DATE

ENGINEER

SIGNATURE DATE

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

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 6 ON SHEET 2)		
	SURCHARGE CASE		
	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400
2	2400	2400	2400
3	2400	2400	2400
4	2500	2400	2400
5	3000	2400	2400
6	3500	2800	2400
7	4000	3200	2600
8	4500	3600	2900
9	5000	4000	3200
10	5500	4400	3500
11	6000	4800	3800

GEOTEXTILE REINFORCEMENT ULTIMATE TENSILE STRENGTH (LB/FT)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 8 ON SHEET 2.)
***SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.**

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11

***BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.**

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

TEMPORARY FABRIC WALL
Sheet 3 of 3

DATE:

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.78	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

Line Item	Des	Sec No.	Description	Quantity	Unit
0000100000-N		800	MOBILIZATION	1	LS
0000400000-N		801	CONSTRUCTION SURVEYING	1	LS
0043000000-N		226	GRADING	1	LS
			CLEARING AND GRUBBING	1	ACRES
			UNCLASSIFIED EXCAVATION	970	CY
			FINE GRADING	970	SY
			BORROW EXCAVATION	570	CY
0050000000-E		226	SUPP CLEARING & GRUBBING	0.25	ACRES
0057000000-E		225	UNDERCUT EXCAVATION	50	CY
0195000000-E		265	SELECT GRANULAR MATERIAL	50	CY
0196000000-E		270	GEOTEXTILE FOR SOIL STABILIZATION	50	SY
0199000000-E		SP	TEMPORARY SHORING	1912	SF
0318000000-E		300	FND CONDIT MATL MINOR STRS	10	TONS
0320000000-E		300	FND CONDIT GEOTEXTILE	20	SY
0335400000-E		305	24" DRAINAGE PIPE	40	LF
1121000000-E		520	AGGREGATE BASE COURSE	525	TONS
1220000000-E		545	INCIDENTAL STONE BASE	50	TONS
1519000000-E		610	ASP CONC SURF CRS S9.5B	110	TONS
1575000000-E		620	ASP FOR PLANT MIX	10	TONS
3030000000-E		862	STEEL BEAM GUARDRAIL	100	LF
3165000000-N		SP	GUARDRAIL ANCHOR UNITS, TYPE TL-2	3	EA
3215000000-N		862	GUARDRAIL ANCHOR UNITS, TYPE III	4	EA
3649000000-E		876	RIP RAP, CLASS B	6	TONS
3656000000-E		876	GEOTEXTILE FOR DRAINAGE	25	SY
4400000000-E		1110	WORK ZONE SIGNS (STAT)	240	SF
4405000000-E		1110	WORK ZONE SIGNS (PORTABLE)	96	SF
4410000000-E		1110	WORK ZONE SIGNS (BARR)	36	SF
4430000000-N		1130	DRUMS	25	EA
4445000000-E		1145	BARRICADES (TYPE III)	32	LF
4450000000-N		1150	FLAGGER	224	HR
4465000000-N		1160	TEMPORARY CRASH CUSHIONS	4	EA
4470000000-N		1160	RESET CRASH CUSHION	2	EA
4490000000-E		1170	PORT CONC BARRIER(ANCHRD)	200	LF
4505000000-E		1170	RESET PORT CONC BARR,ANCH	320	LF

4810000000-E		1205	PAINT PVMT MARKINGS 4"	2683	LF
6000000000-E		1605	TEMPORARY SILT FENCE	505	LF
6012000000-E		1610	SEDIMENT CONTROL STONE	15	TONS
6006000000-E		1610	EROS CONTRL STONE CL A	95	TONS
6009000000-E		1610	EROS CONTRL STONE CL B	25	TONS
6015000000-E		1615	TEMPORARY MULCHING	0.5	ACR
6018000000-E		1620	SEED FOR TEMP SEEDING	50	LB
6021000000-E		1620	FERT FOR TEMP SEEDING	0.25	TONS
6024000000-E		1622	TEMPORARY SLOPE DRAINS	100	LF
6030000000-E		1630	SILT EXCAVATION	50	CY
6036000000-E		1631	MATTING FOR EROS CONTROL	555	SY
6038000000-E		SP	PERMANENT SOIL REINFORCEMENT MAT	125	SY
6042000000-E		1632	1/4" HARDWARE CLOTH	5	LF
6045000000-E		SP	TEMPORARY PIPE - 2 @ 95" x 67" CMPA	108	LF
6071012000-E		SP	COIR FIBER WATTLE	125	LF
6071020000-E		SP	POLYACRYLAMIDE (PAM)	10	LB
6071030000-E		1640	COIR FIBER BAFFLE	35	LF
6084000000-E		1660	SEEDING AND MULCHING	0.3	ACRES
6090000000-E		1661	SEED FOR REPAIR SEEDING	50	LB
6093000000-E		1661	FERT FOR REPAIR SEEDING	0.25	TONS
6096000000-E		1662	SEED FOR SUPP SEEDING	50	LB
6108000000-E		1665	FERTILIZER TOPDRESSING	0.25	TONS
6117000000-N		SP	RESPONSE FOR EROS CONTROL	13	EA
8035000000-E		402	REMOVAL OF EXISTING STRUCTURE, STA. 12+32.00 -L-	1	LS
8096000000-E		450	PILE EXCAVATION IN SOIL	30	LF
8097000000-E		450	PILE EXCAVATION NOT IN SOIL	110	LF
8121000000-N		412	UNCLASSIFIED STRUCTURE EXCAVATION	1	LS
8182000000-E		420	CLASS A CONCRETE (BRIDGE)	49.2	CY
8217000000-E		425	REINFORCING STEEL (BRIDGE)	6062	LB
8364000000-E		450	HP 12X53 STEEL PILES	190	LF
8505000000-E		460	VERTICAL CONCRETE BARRIER RAIL	110	LF
8608000000-E		876	RIP RAP CLASS II (2'-0") THICK	95.2	TON
8622000000-E		876	GEOTEXTILE FOR DRAINAGE	60.9	SY
8657000000-N		430	ELASTOMERIC BEARINGS	1	LS
8762000000-E		430	3'-0" X 1'-9" PRESTRESSED CONC CORED SLABS	495	LF
8802018000-E		SP	CANTILEVER CONC RETAINING WALLS	1	LS

6/21/00

COMPUTED BY: BAW DATE: DEC. 2013
CHECKED BY: MDL DATE: DEC. 2013

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.78	3A

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".

EARTHWORK SUMMARY (CY)

STATION	STATION	UNCLASSIFIED EXCAVATION	EMBT+15%	BORROW	WASTE
DETOUR					
–DET– STA. 13+30 TO –DET– STA. 13+80		95	665	570	
SUBTOTAL SUMMARY		95	665	570	
–L– FINAL/DETOUR REMOVAL					
–L– STA. 11+10 TO –L– STA. 13+80		1,102	64		1,038
SUBTOTAL SUMMARY		1,102	64		1,038
WASTE IN LIEU OF BORROW				–570	–570
PROJECT TOTAL					468
ESTIMATE 5% FOR TOPSOIL ON BORROW PITS					
GRAND TOTAL		1,197	729		468
SAY		1,200			

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

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 contract lump sum price for "Grading".

CONTINGENCY ITEMS:
UNDERCUT EXCAVATION – 50 CY
INCIDENTAL STONE BASE – 50 TONS
GEOTEXTILE FOR SOIL STABILIZATION – 50 SY
SELECT GRANULAR MATERIAL – 50 CY

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

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)								C.S. PIPE (UNLESS NOTED OTHRWISE)													CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED)								15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE)		QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03				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
SIZE								12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"		30"		36"		42"		48"		12"	15"	18"	24"	30"	36"	42"	48"				CU. YDS.			LIN. *FT. A	B		TYPE OF GRATE																									
THICKNESS OR GAUGE		FROM	TO													.064	.064	.064	.064		.079		.079		.109		.109													R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	5.0' THRU 10.0'	10.0' AND ABOVE		E	F	G																							
13+70	CL	0401			2674.80	2670.28													40																																																					
PROJECT TOTALS:																			40																																																				
SAY																			40																																																					

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

"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			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350 (TL-2)	M-350	III	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
L	10+85	11+97	LT	75													1		1											
L	12+52	13+00	LT														1		1											
L	11+65	12+11	RT	25															1											
L	12+66	13+14	RT														1		1											
			TOTAL:	100																										
			TOTAL ANCHOR LENGTH:	150																										
			TOTAL GUARDRAIL LENGTH:	100																										
			SAY:	100																										

3/24/2014
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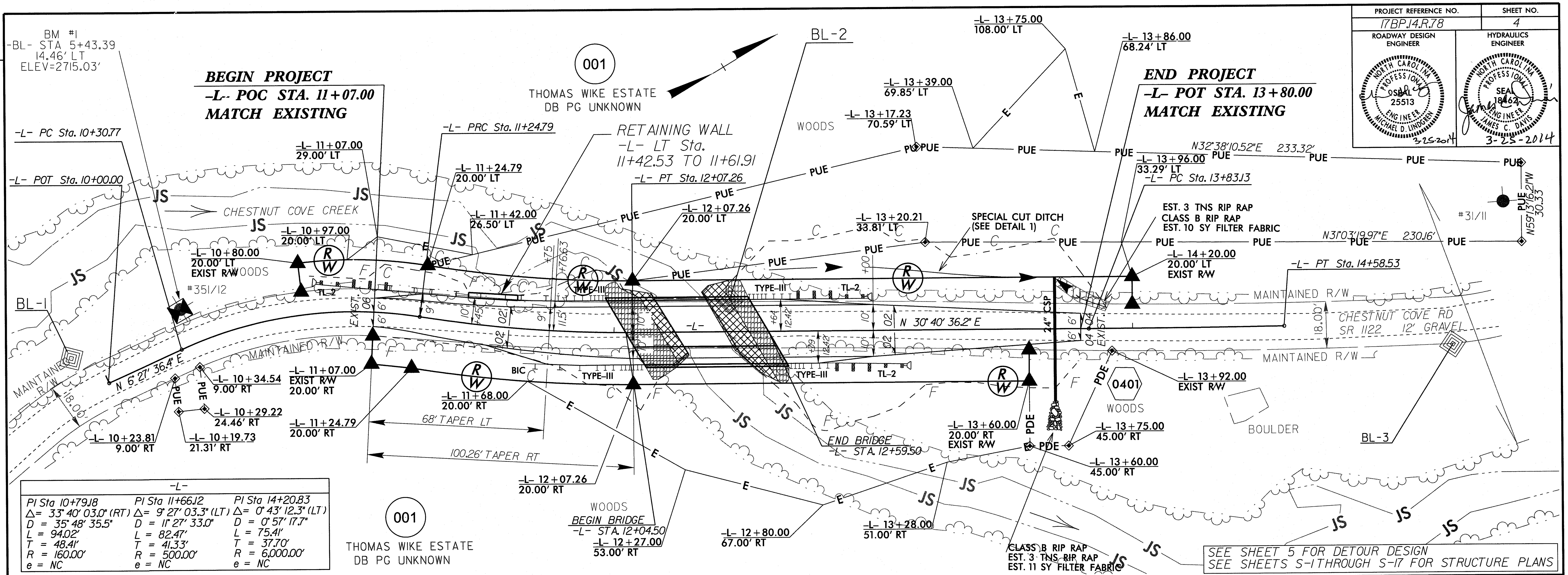
mlittlefield

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.78	4

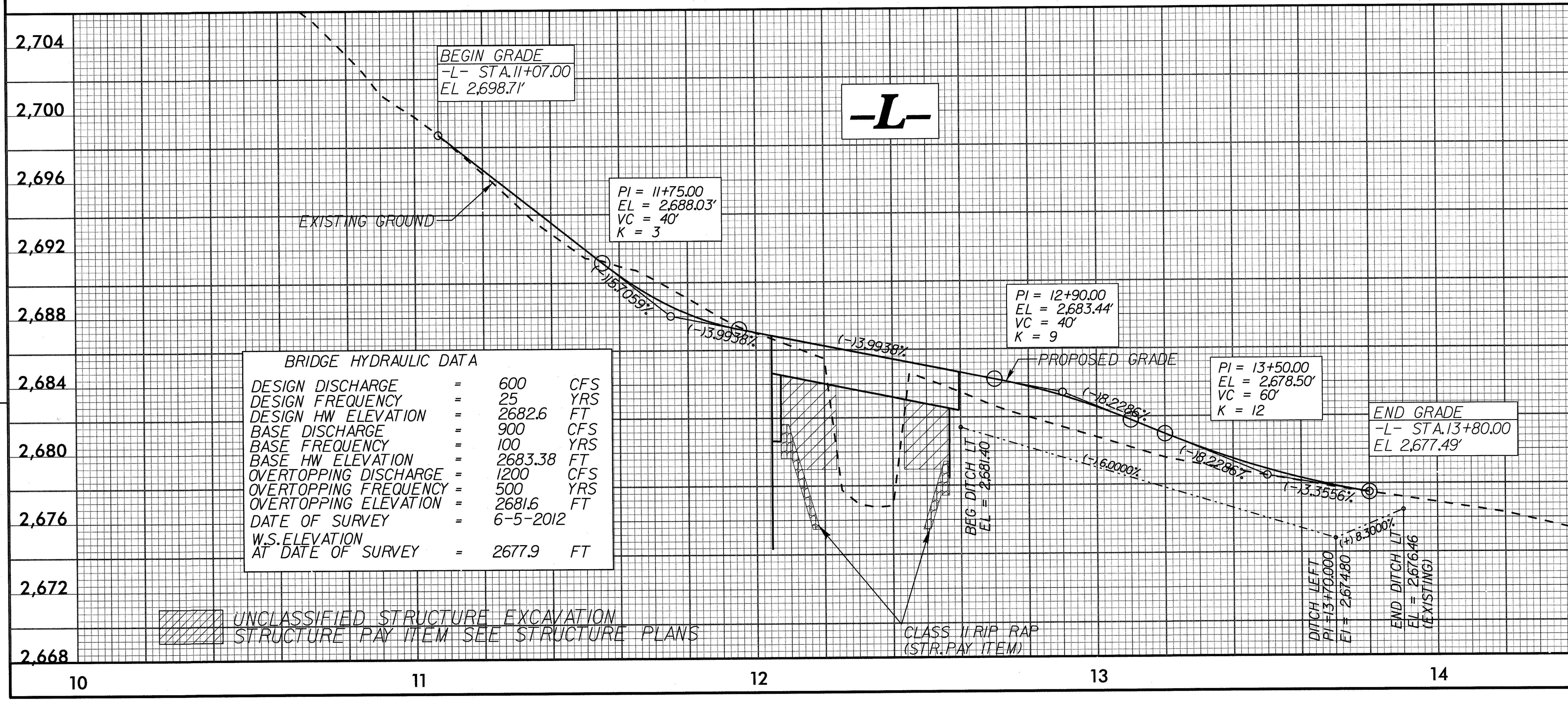
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025513 MICHAEL D. LINDGREN — 3-25-2014

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18462 JAMES C. DAVIS — 3-25-2014



BM #1
-BL- STA 5+43.39
14.46' LT
ELEV=2715.03'
BEGIN PROJECT
-L- POC STA. 11+07.00
MATCH EXISTING
001
THOMAS WIKE ESTATE
DB PG UNKNOWN
BL-2
RETAINING WALL
-L- LT Sta.
11+42.53 TO 11+61.91
END PROJECT
-L- POT STA. 13+80.00
MATCH EXISTING
-L- PC Sta. 10+30.77
-L- POT Sta. 10+00.00
-L- PRC Sta. 11+24.79
-L- PT Sta. 12+07.26
-L- PC Sta. 13+83.13
-L- PT Sta. 14+58.53
CHESTNUT COVE CREEK
WOODS
SPECIAL CUT DITCH
(SEE DETAIL 1)
EST. 3 TNS RIP RAP
CLASS B RIP RAP
EST. 10 SY FILTER FABRIC
N32°38'10.52"E 233.32'
N31°03'19.97"E 230.16'
N30°40'36.2"E
N 6°27'36.4"E
MAINTAINED R/W
CHESTNUT COVE RD
SR 1122 12' GRAVEL
24" CSP
TYPE-III
TL-2
BIC
0401
BOULDER
BL-1
BL-3
#351/12
#31/11
END BRIDGE
-L- STA. 12+59.50
BEGIN BRIDGE
-L- STA. 12+04.50
68' TAPER LT
100.26' TAPER RT
CLASS B RIP RAP
EST. 3 TNS RIP RAP
EST. 11 SY FILTER FABRIC
SEE SHEET 5 FOR DETOUR DESIGN
SEE SHEETS S-1 THROUGH S-17 FOR STRUCTURE PLANS
REVISIONS

PI Sta 10+79.18	PI Sta 11+66.12	PI Sta 14+20.83
Δ = 33° 40' 03.0" (RT)	Δ = 9° 27' 03.3" (LT)	Δ = 0° 43' 12.3" (LT)
D = 35° 48' 35.5"	D = 11° 27' 33.0"	D = 0° 57' 17.7"
L = 94.02'	L = 82.47'	L = 75.41'
T = 48.41'	T = 41.33'	T = 37.70'
R = 160.00'	R = 500.00'	R = 6,000.00'
e = NC	e = NC	e = NC



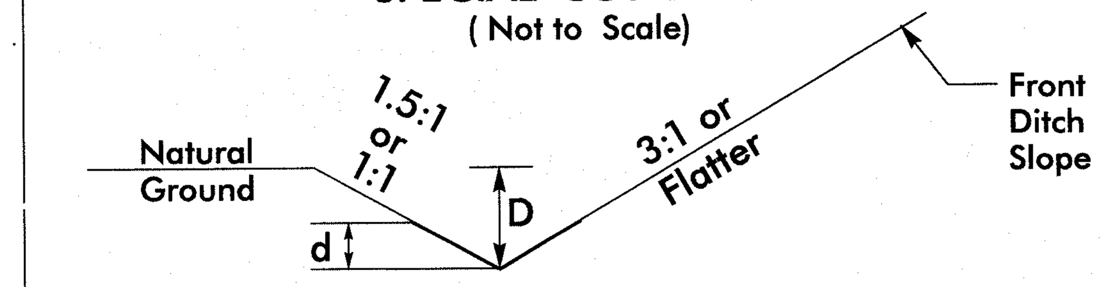
-L-
BEGIN GRADE
-L- STA.11+07.00
EL 2,698.71'
EXISTING GROUND
PI = 11+75.00
EL = 2,688.03'
VC = 40'
K = 3
(-)16.7059%
(-)13.9938%
PI = 12+90.00
EL = 2,683.44'
VC = 40'
K = 9
PROPOSED GRADE
(-)8.2286%
(-)6.0000%
PI = 13+50.00
EL = 2,678.50'
VC = 60'
K = 12
END GRADE
-L- STA.13+80.00
EL 2,677.49'
(-)3.3556%
(+)8.3000%
BEG DITCH LT EL = 2,681.40
DITCH LEFT PI = 13+70.000 El = 2,674.80
END DITCH LT EL = 2,676.46 (EXISTING)
CLASS II RIP RAP (STR. PAY ITEM)
UNCLASSIFIED STRUCTURE EXCAVATION STRUCTURE PAY ITEM SEE STRUCTURE PLANS
2,704
2,700
2,696
2,692
2,688
2,684
2,680
2,676
2,672
2,668
10
11
12
13
14

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	600	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	2682.6	FT
BASE DISCHARGE	=	900	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2683.38	FT
OVERTOPPING DISCHARGE	=	1200	CFS
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING ELEVATION	=	2681.6	FT
DATE OF SURVEY	=	6-5-2012	
W.S. ELEVATION AT DATE OF SURVEY	=	2677.9	FT

DETAIL 1

SPECIAL CUT DITCH
(Not to Scale)



Min. D=2.0 Ft.
Max d=1.5 Ft.

Type of Liner= PSRM

FROM STA. 12+60 TO STA. 13+80 -L- LT
REFER TO CROSS SECTIONS FOR BACK SLOPE TRANSITION

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.78	5

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 25513 ENGINEER MICHAEL D. LINDGREN — 3-25-2014

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18462 ENGINEER JAMES C. DAVIS — 3-25-2014

REVISIONS

BM #1
-BL- STA 5+43.39
14.46' LT
ELEV=2715.03'

BEGIN CONSTRUCTION
-DET- POC STA. 10+00.00 =
-L- PRC STA. 11+24.79

END CONSTRUCTION
-DET- PRC STA. 12+70.55 =
-L- PC STA. 13+87.35

001
THOMAS WIKE ESTATE
DB PG UNKNOWN

BL-1 — BL-2 — BL-3

CHESTNUT COVE CREEK

BEGIN FABRIC WALL
-L- STA.12+18.00

END FABRIC WALL
-L- STA.13+00.00

END FABRIC WALL
-L- STA.13+20.00

BEGIN FABRIC WALL
-L- STA.12+38.00

-L- 11+07.00, 29.00' LT
-L- 11+24.79, 20.00' LT
-L- 11+42.00, 26.50' LT
-L- 10+97.00, 20.00' LT
-L- 10+80.00, 20.00' LT, EXIST R/W
-L- 12+07.26, 20.00' LT
-L- 13+20.21, 33.81' LT
-L- 13+75.00, 108.00' LT
-L- 13+86.00, 68.24' LT
-L- 13+39.00, 69.85' LT
-L- 13+17.23, 70.59' LT
-L- 13+96.00, 33.29' LT
-L- 14+20.00, 20.00' LT, EXIST R/W
-L- 13+92.00, EXIST R/W
-L- 13+60.00, 20.00' RT, EXIST R/W
-L- 13+75.00, 45.00' RT
-L- 13+60.00, 45.00' RT
-L- 13+28.00, 51.00' RT
-L- 12+80.00, 67.00' RT
-L- 12+27.00, 53.00' RT
-L- 12+07.26, 20.00' RT
-L- 11+68.00, 20.00' RT
-L- 11+07.00, EXIST R/W, 20.00' RT
-L- 10+34.54, 9.00' RT
-L- 10+29.22, 24.46' RT
-L- 10+19.73, 21.31' RT
-L- 10+23.81, 9.00' RT
-L- 11+24.79, 20.00' RT

#351/12
#351/11
N 40°07'39.4" E
N 6°27'36.4" E
N 30°40'36.2" E
N32°38'10.52"E 233.32'
N3°03'09.97"E 230.16'
N59°13'16.2"W 30.33'

-DET- PC Sta. 10+25.34
-DET- PRC Sta. 10+69.79
-DET- PRC Sta. 12+05.64

MAINTAINED R/W
CHESTNUT COVE RD
SR 1122 12' GRAVEL
18.00'

WOODS
BOULDER
2 @ 95" X 67" CMPA

-DET-		
PI Sta 10+47.71	PI Sta 11+42.11	PI Sta 12+38.55
Δ = 15° 55' 00.0" (RT)	Δ = 48° 39' 01.1" (LT)	Δ = 23° 14' 32.6" (RT)
D = 35° 48' 35.5"	D = 35° 48' 35.5"	D = 35° 48' 35.5"
L = 44.45'	L = 135.86'	L = 64.91'
T = 22.37'	T = 72.33'	T = 32.90'
R = 160.00'	R = 160.00'	R = 160.00'
e = SEE PLANS	e = SEE PLANS	e = SEE PLANS

-DET-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 320	CFS
DESIGN FREQUENCY	= 5	YRS
DESIGN HW ELEVATION	= 2679.5	FT
BASE DISCHARGE	= N/A	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= N/A	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= N/A	YRS
OVERTOPPING ELEVATION	= N/A	FT
DATE OF SURVEY	= 6-5-2012	
W.S.ELEVATION AT DATE OF SURVEY	= N/A	FT

BEGIN GRADE
-DET- STA.10+00.00
EL 2,695.70'

PI = 10+50.00
EL = 2,688.00'
VC = 40'
K = 4

PI = 11+00.00
EL = 2,685.68'
VC = 60'
K = 39

PI = 12+00.00
EL = 2,679.51'
VC = 120'
K = 40

END GRADE
-DET- STA.12+70.55
EL 2,677.30'

(-)15.4000%
(-)14.5400%
(-)14.5400%
(-)16.1692%
(-)16.1692%
(-)13.3404%

PROPOSED GRADE
EXISTING GROUND
2 @ 95" X 67" CMPA

2,696
2,692
2,688
2,684
2,680
2,676
2,672
2,668

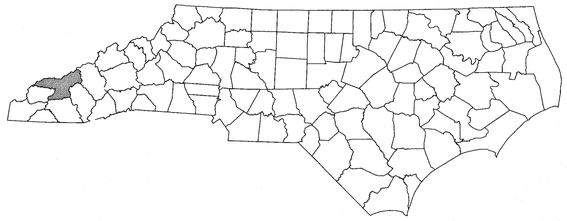
10 11 12

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

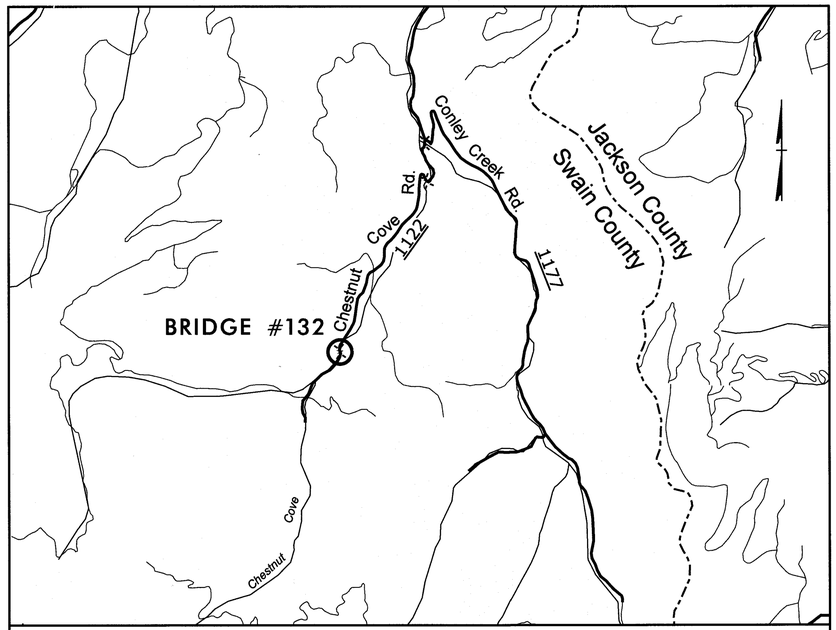
TRANSPORTATION MANAGEMENT PLAN

SWAIN COUNTY

DIVISION 14

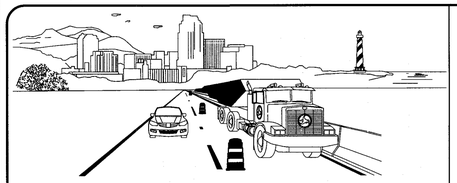


BRIDGE #132 – Chestnut Cove Rd. (SR 2024) over Tom's Creek



VICINITY MAP

INDEX OF SHEETS



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

PLAN PREPARED FOR NCDOT DIVISION 14

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

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GEORGE KARAGEORGE — WORK ZONE TRANSPORTATION DESIGN MANAGER
BRIAN LATON, E.I. — TRANSPORTATION DESIGNER

APPROVED: Betsy L Watson
DATE: March 27, 2014

NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON

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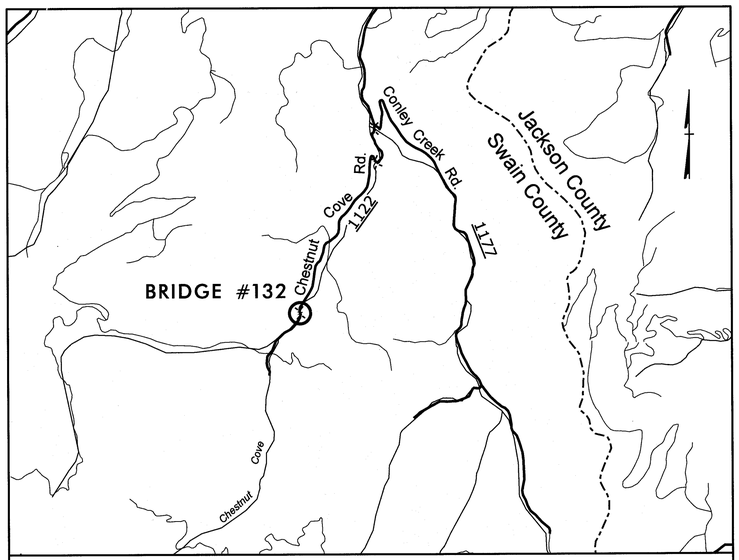
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

SWAIN COUNTY

DIVISION 14

BRIDGE #132 – Chestnut Cove Rd. (SR 2024) over Tom's Creek



VICINITY MAP

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

PLAN PREPARED FOR NCDOT DIVISION 14

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

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LEGEND AND LIST OF ROADWAY STANDARD DRAWINGS
TMP-2	GENERAL NOTES & PHASING
TMP-2A	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TMP-2B	TEMPORARY SHORING NOTES
TMP-3	PHASE I
TMP-4	PHASE II
TMP-5	PHASE III

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APPROVED: Betsy L. Watson
DATE: March 24, 2014

NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON

SHEET NO.
TMP-1

WBS 17BP.14.R.78

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PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.78	TMP-1A

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	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
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

LEGEND

EXIST. PVMT.

PROPOSED PVMT.

NORTH ARROW

DIRECTION OF TRAFFIC FLOW

DIRECTION OF PEDESTRIAN TRAFFIC FLOW

WORK AREA

PAVEMENT REMOVAL

TYPE III BARRICADE

CONE

DRUM

SKINNY DRUM

TUBULAR MARKER

CHANGEABLE MESSAGE SIGN (CMS)

FLAGGER

AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD)

FLASHING ARROW BOARD(TYPE C)

LAW ENFORCEMENT

TRUCK MOUNTED ATTENUATOR (TMA)

WORK ZONE SIGN-PORTABLE

WORK ZONE SIGN-STATIONARY

WORK ZONE SIGN-STATIONARY OR PORTABLE

TEMPORARY SHORING (XX)

TEMPORARY CRASH CUSHION

PORTABLE CONCRETE BARRIER (PCB)

SIGNALS

EXISTING

PROPOSED

TEMP TEMPORARY

PAVEMENT MARKINGS

DOUBLE YELLOW CENTER LINE

SKIP LINES

MINI-SKIP LINES

SOLID LINES

EXISTING PAVEMENT MARKING (GRAY)

PAVEMENT MARKERS

CRYSTAL/CRYSTAL

CRYSTAL/RED

YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

EXISTING PAVEMENT MARKING SYMBOLS (HOLLOW)

ONLY PAVEMENT MARKING ALPHANUMERIC CHARACTERS

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APPROVED: [signature] DATE: 3/24/14

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

ROADWAY STANDARD DRAWINGS & LEGEND

3/24/2014
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GENERAL NOTES

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

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.

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) LANE CLOSURES ARE REQUIRED WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN ANY PORTION OF A TRAVEL LANE. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

B) INSTALL ALL LANE CLOSURES ACCORDING TO THE PLANS, ROADWAY STANDARD DRAWINGS (1101.02), OR AS DIRECTED BY THE ENGINEER.

C) 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.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

E) 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 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

TEMPORARY TRAFFIC BARRIER

F) INSTALL TEMPORARY BARRIER ACCORDING TO THE PLANS A MAXIMUM OF ONE(1) WEEK PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED, PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION, UNLESS OTHERWISE STATED IN THE PLANS OR DIRECTED BY THE ENGINEER.

G) PROTECT THE APPROACH END OF 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.

TEMPORARY SHORING

H) FOR TEMPORARY SHORING, SEE TEMPORARY SHORING SPECIAL PROVISION.

I) FOR CONTRACTOR DESIGNED SHORING, SURVEY THE SHORING LOCATION TO DETERMINE EXISTING ELEVATIONS AND ACTUAL DESIGN HEIGHTS BEFORE BEGINNING DESIGN.

J) WHEN USING CONTRACTOR DESIGNED SHORING USE THE SOIL PARAMETERS SPECIFIED IN THE TEMPORARY SHORING SPECIAL PROVISION AND DETAILS.

K) NO SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

PHASING

PHASE I

STEP 1:

PRIOR TO ANY CONSTRUCTION OPERATIONS INSTALL WORK ZONE ADVANCE WARNING SIGNS PER SHEET TMP-3 AND ROADWAY STANDARD DRAWING 1101.01, SHEET 1.

STEP 2:

WHILE TRAFFIC IS MAINTAINED ON THE EXISTING ROADWAY CONSTRUCT TEMPORARY PIPE, TEMPORARY DETOUR AND PROPOSED CROSS DRAINAGE. (TMP-3)

STEP 3:

PLACE TEMPORARY BARRIER AND CRASH CUSHIONS ON DETOUR. (TMP-3)

PHASE II

STEP 1:

INSTALL TEMPORARY SIGNS AND CREATE THE STOP PATTERN AS SHOWN ON SHEET TMP-4.

STEP 2:

USE A CONTINUOUS FLAGGING OPERATION PER ROADWAY STANDARD 1101.02 SHEET 1 TO CONSTRUCT DETOUR TIE-INS TO EXISTING ROADWAY AND SWITCH TRAFFIC ONTO TEMPORARY DETOUR. (TMP-4)

STEP 3:

WITH TRAFFIC ON THE TEMPORARY DETOUR, REMOVE EXISTING BRIDGE AND CONSTRUCT PORTION OF PROPOSED BRIDGE (STAGE II). CONSTRUCT PROPOSED PAVEMENT UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE. (TMP-4)

PHASE III

STEP 1:

USING A CONTINUOUS FLAGGING OPERATION PER ROADWAY STANDARD DRAWING 1101.02 SHEET 1, SWITCH TRAFFIC ONTO PROPOSED BRIDGE (STAGE II). CLOSE DETOUR, AND INSTALL ANCHORED TEMPORARY BARRIER ON PROPOSED BRIDGE. (TMP-5)

STEP 2:

REMOVE DETOUR ABC AND CONSTRUCT REMAINDER OF PROPOSED BRIDGE STAGE III. (TMP-5)

STEP 3:

REMOVE TEMPORARY BARRIER.

STEP 4:

USING FLAGGING OPERATIONS, PER ROADWAY STANDARD DRAWING 1101.02 SHEET 1, PAVE THE FINAL LAYER OF SURFACE COURSE, PLACE FINAL MARKINGS AND OPEN THE BRIDGE TO THE PROPOSED TRAFFIC PATTERN.

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APPROVED: [signature] DATE: 3/24/14

NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON

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

GENERAL NOTES & PHASING

3/24/2014
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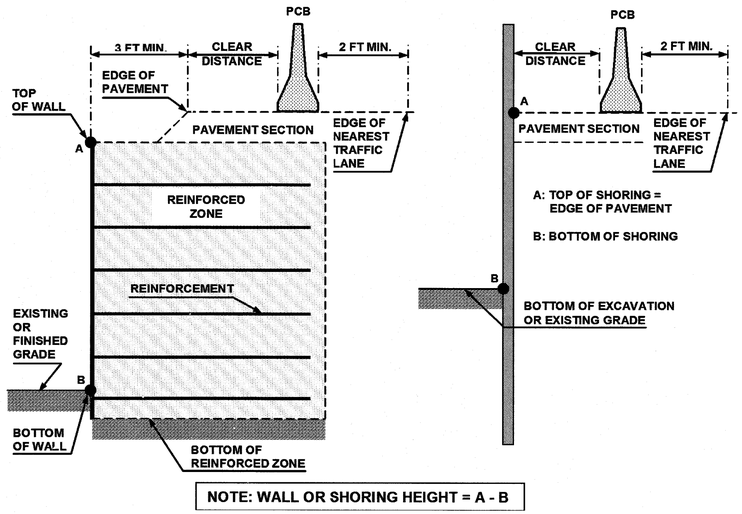
PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.78	TMP-2A



NOTE: WALL OR SHORING HEIGHT = A - B

FIGURE A

NOTES

1- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.

2- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).

3- PCB IS REQUIRED IF TEMPORARY SHORING IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT UNIT FOR APPLICABLE PAVEMENT DESIGN).

4- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.

5- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.

6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.

7- PCB REQUIREMENTS FOR TEMPORARY WALLS APPLY TO TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS AND TEMPORARY SOIL NAIL WALLS.

8- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS AND OR AS APPROVED BY THE ENGINEER.

9- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THESE MINIMUM REQUIRED DISTANCES ARE NOT AVAILABLE, CONTACT THE ENGINEER.

10- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS. BARRIER DEFLECTIONS AND RESULTING MINIMUM REQUIRED CLEAR DISTANCES MIGHT VARY SIGNIFICANTLY FOR LARGER HEAVIER VEHICLES, RUNS OF BARRIER LESS THAN 200 FT IN LENGTH AND WET OR DRY PAVEMENT.

MINIMUM REQUIRED CLEAR DISTANCE, inches

Barrier Type	Pavement Type	Offset * ft	Design Speed, mph					
			<30	31-40	41-50	51-60	61-70	71-80
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40
		8-14	26	28	31	35	38	42
		14-20	27	29	34	36	39	43
		20-26	28	31	35	38	40	44
		26-32	29	32	36	39	42	45
		32-38	30	34	38	41	43	46
		38-44	31	34	41	43	45	48
		44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
		>56	32	36	42	45	47	51
	Concrete	<8	17	18	21	22	25	26
		8-14	19	20	23	25	26	29
		14-20	22	22	24	26	28	31
		20-26	23	24	26	27	30	34
		26-32	24	25	27	28	32	35
		32-38	24	26	27	30	33	36
		38-44	25	26	28	30	34	37
		44-50	26	26	28	32	35	37
		50-56	26	26	28	32	35	38
		>56	26	27	29	32	36	38
Anchored PCB	Asphalt	All Offsets	24 for All Design Speeds					
Anchored PCB	Concrete (including bridge approach slabs)	All Offsets	12 for All Design Speeds					

* See Figure Below

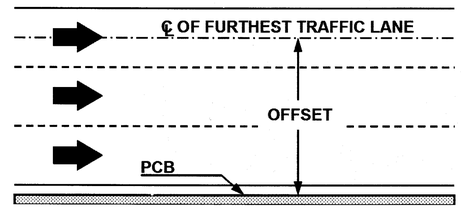


FIGURE B

DETAIL PROVIDED BY NCDOT

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

PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS

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PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.78	TMP-2B

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISIONS.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

TEMPORARY SHORING LOCATION NO. (1)
-L- 12+18± (9′ RT) TO -L- 13+00± (9′ RT)

ESTIMATED QUANTITY = 656 SF

DESIGN TEMPORARY SHORING FROM STATION -L- 12+18±, 9 FT RIGHT TO 13+00±, 9 FT RIGHT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT = 120 LB/CF
FRICTION ANGLE = 30 DEGREES
COHESION = 0 LB/SF
GROUNDWATER ELEVATION = +2678 FT

DO NOT USE CANTILEVER, BRACE OR ANCHORED SHORING FOR TEMPORARY SHORING FROM STATION -L- 12+18±, 9 FT RIGHT TO 13+00±, 9 FT RIGHT.

AT THE CONTRACTOR'S OPTION, USE TEMPORARY FABRIC WALL FOR TEMPORARY SHORING FROM STATION -L- 12+18±, 9 FT RIGHT TO 13+00±, 9 FT RIGHT. SEE ROADWAY PLAN SHEETS 2A, 2B AND 2C FOR TEMPORARY FABRIC WALLS.

WHEN BACKFILL FOR RETAINING WALLS OR BRIDGE APPROACH FILLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR RETAINING WALLS OR BRIDGE APPROACH FILLS, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

TEMPORARY SHORING LOCATION NO. (2)
-L- 12+38± (37′ RT) TO -L- 13+20± (28′ RT)

ESTIMATED QUANTITY = 656 SF

DESIGN TEMPORARY SHORING FROM STATION -L- 12+38±, 37 FT RIGHT TO 13+20±, 28 FT RIGHT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT = 120 LB/CF
FRICTION ANGLE = 30 DEGREES
COHESION = 0 LB/SF
GROUNDWATER ELEVATION = +2678 FT

DO NOT USE CANTILEVER, BRACE OR ANCHORED SHORING FOR TEMPORARY SHORING FROM STATION -L- 12+38±, 37 FT RIGHT TO 13+20±, 28 FT RIGHT.

AT THE CONTRACTOR'S OPTION, USE TEMPORARY FABRIC WALL FOR TEMPORARY SHORING FROM STATION -L- 12+38±, 37 FT RIGHT TO 13+20±, 28 FT RIGHT. SEE ROADWAY PLAN SHEETS 2A, 2B AND 2C FOR TEMPORARY FABRIC WALLS.

WHEN BACKFILL FOR RETAINING WALLS OR BRIDGE APPROACH FILLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR RETAINING WALLS OR BRIDGE APPROACH FILLS, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

TEMPORARY SHORING LOCATION NO. (3)
-L- 11+99± (2′ RT) TO -L- 12+24± (11′ RT)

ESTIMATED QUANTITY = 200 SF

DESIGN TEMPORARY SHORING FROM STATION -L- 11+99±, 2 FT RIGHT TO 12+24±, 11 FT RIGHT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS, WEATHERED ROCK ELEVATIONS, AND GROUNDWATER ELEVATION:

UNIT WEIGHT = 120 LB/CF
FRICTION ANGLE = 30 DEGREES
FRICTION ANGLE = 42 DEGREES (ROCK)
WEATHERED ROCK ELEVATION = +2678±
COHESION = 0 LB/SF
GROUNDWATER ELEVATION = +2678 FT

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION -L- 11+99±, 2 FT RIGHT TO 12+24±, 11 FT RIGHT, MAY NOT PENETRATE BELOW ELEVATION +2681± FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION -L- 11+99±, 2 FT RIGHT TO 12+24±, 11 FT RIGHT. SEE STANDARD DRAWING NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 11+99±, 2 FT RIGHT TO 12+24±, 11 FT RIGHT.

TEMPORARY SHORING LOCATION NO. (4)
-L- 11+81± (5′ RT) TO -L- 12+06± (5′ RT)

ESTIMATED QUANTITY = 200 SF

DESIGN TEMPORARY SHORING FROM STATION -L- 11+81±, 5 FT RIGHT TO 12+06±, 5 FT RIGHT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS, WEATHERED ROCK ELEVATIONS, AND GROUNDWATER ELEVATION:

UNIT WEIGHT = 120 LB/CF
FRICTION ANGLE = 30 DEGREES
FRICTION ANGLE = 42 DEGREES (ROCK)
WEATHERED ROCK ELEVATION = +2678±
COHESION = 0 LB/SF
GROUNDWATER ELEVATION = +2678 FT

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION -L- 11+81±, 5 FT RIGHT TO 12+06±, 5 FT RIGHT, MAY NOT PENETRATE BELOW ELEVATION +2681± FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION -L- 11+81±, 5 FT RIGHT TO 12+06±, 5 FT RIGHT. SEE STANDARD DRAWING NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 11+81±, 5 FT RIGHT TO 12+06±, 5 FT RIGHT.

TEMPORARY SHORING LOCATION NO. (5)
-L- 12+62± (5′ RT) TO -L- 12+87± (5′ RT)

ESTIMATED QUANTITY = 200 SF

DESIGN TEMPORARY SHORING FROM STATION -L- 12+62±, 5 FT RIGHT TO 12+87±, 5 FT RIGHT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS, WEATHERED ROCK ELEVATIONS, AND GROUNDWATER ELEVATION:

UNIT WEIGHT = 120 LB/CF
FRICTION ANGLE = 30 DEGREES
FRICTION ANGLE = 42 DEGREES (ROCK)
WEATHERED ROCK ELEVATION = +2667±
COHESION = 0 LB/SF
GROUNDWATER ELEVATION = +2675 FT

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION -L- 12+62±, 5 FT RIGHT TO 12+87±, 5 FT RIGHT, MAY NOT PENETRATE BELOW ELEVATION +2677± FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION -L- 12+62±, 5 FT RIGHT TO 12+87±, 5 FT RIGHT. SEE STANDARD DRAWING NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 12+62±, 5 FT RIGHT TO 12+87±, 5 FT RIGHT.

THE TEMPORARY SHORING NOTES SHOWN ON THIS SHEET WERE PROVIDED THROUGH A SEALED DOCUMENT FROM THE GEOTECHNICAL ENGINEER. THE DOCUMENT WAS SUBMITTED TO STANTEC CONSULTING ON 2/27/2014 AND SEALED BY A PROFESSIONAL ENGINEER, SHARAT C. GOLLAMUDI, LICENSE # 038977

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

TEMPORARY SHORING NOTES

3/24/2014
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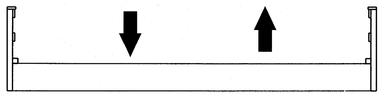
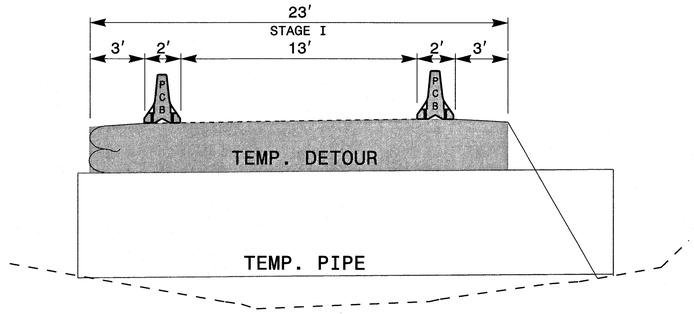
plotDate

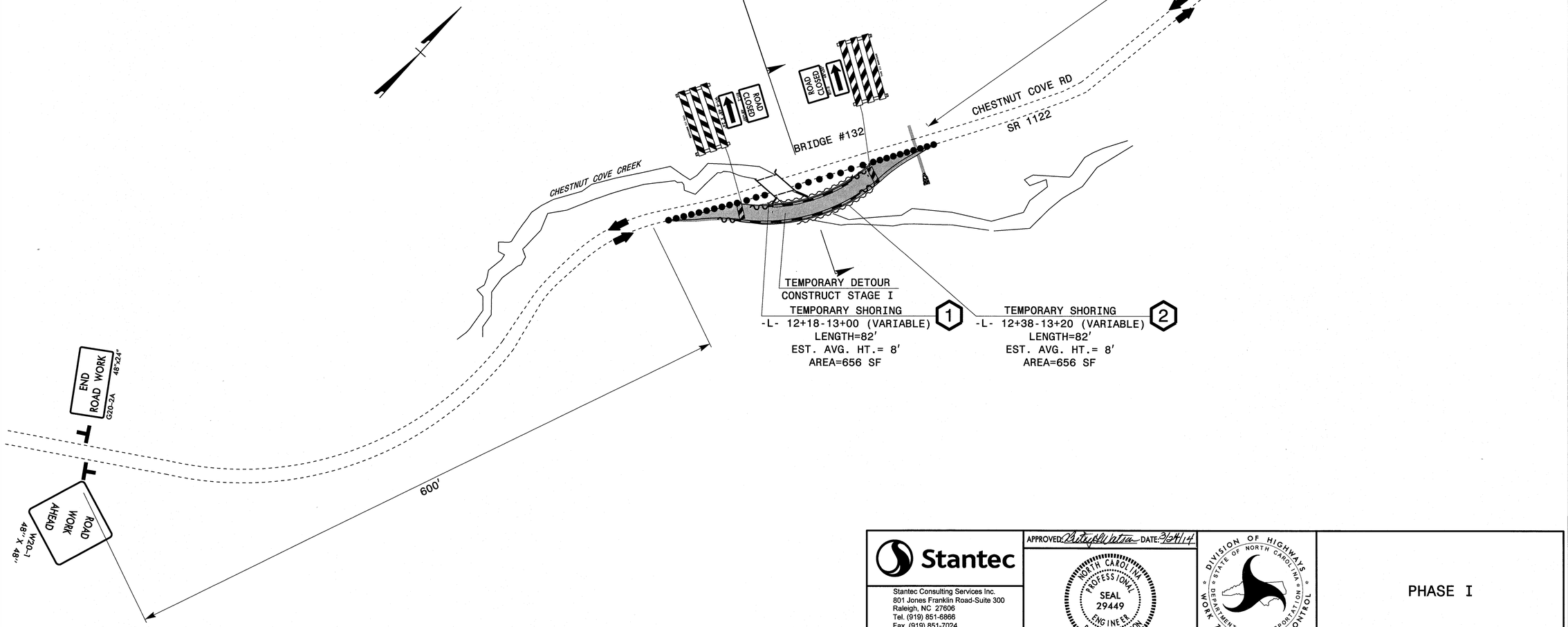
PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.78	TMP-3

STAGE I TYPICAL SECTION

SEE STRUCTURE PLANS







Stantec

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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

APPROVED: Betsy Watson DATE: 3/24/14

NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY I WATSON

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

PHASE I

3/24/2014
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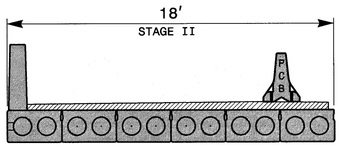
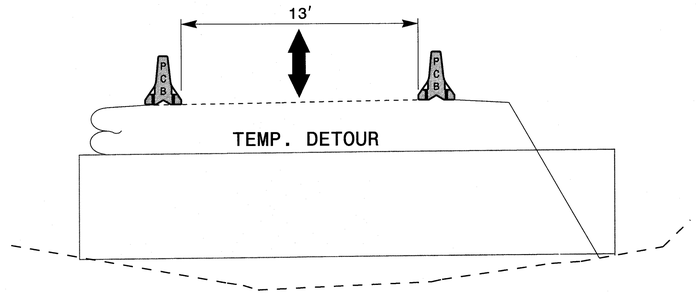
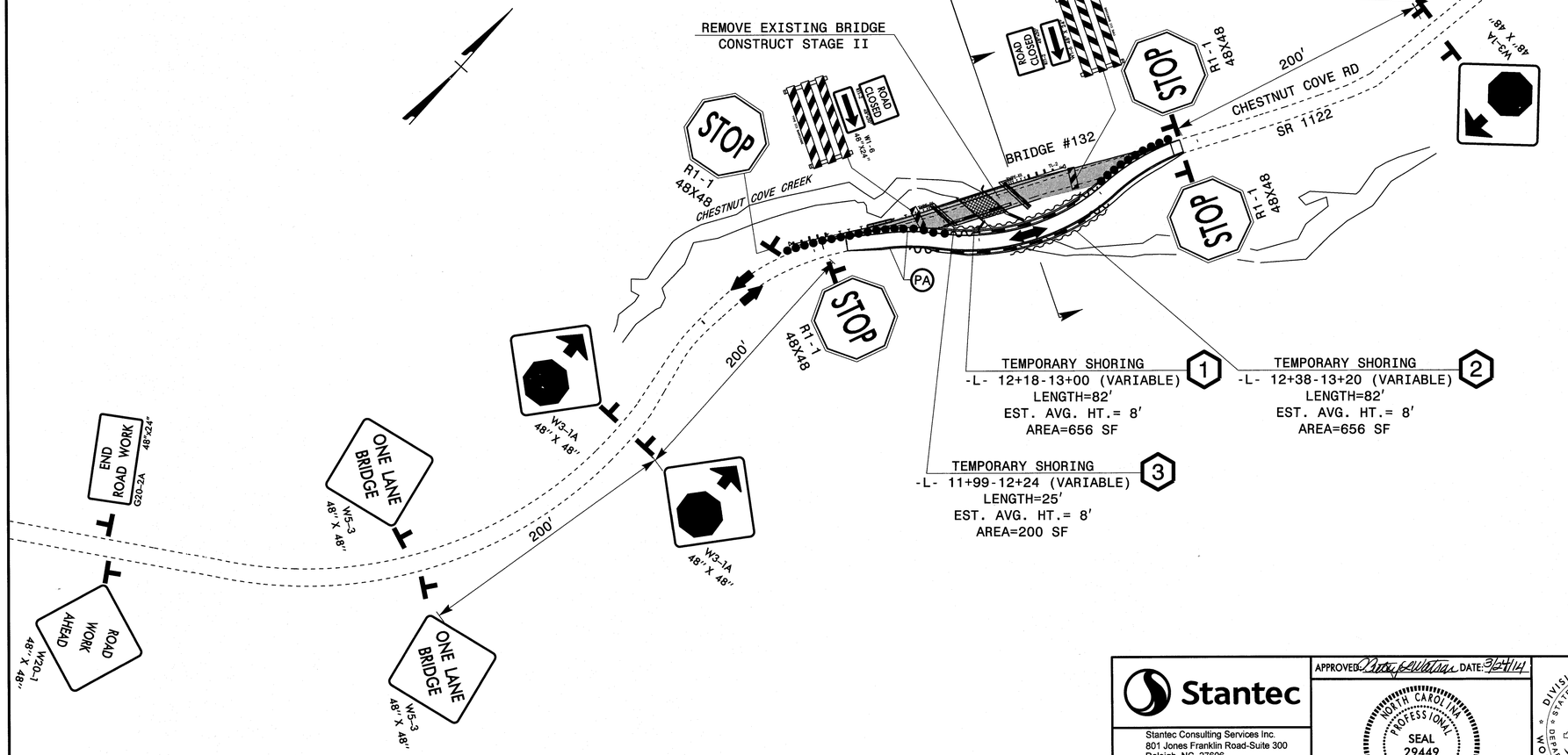
PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.78	TMP-4

STAGE II TYPICAL SECTION

SEE STRUCTURE PLANS







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APPROVED Betsy L. Watson DATE: 3/24/14

NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON

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

PHASE II

3/24/2014
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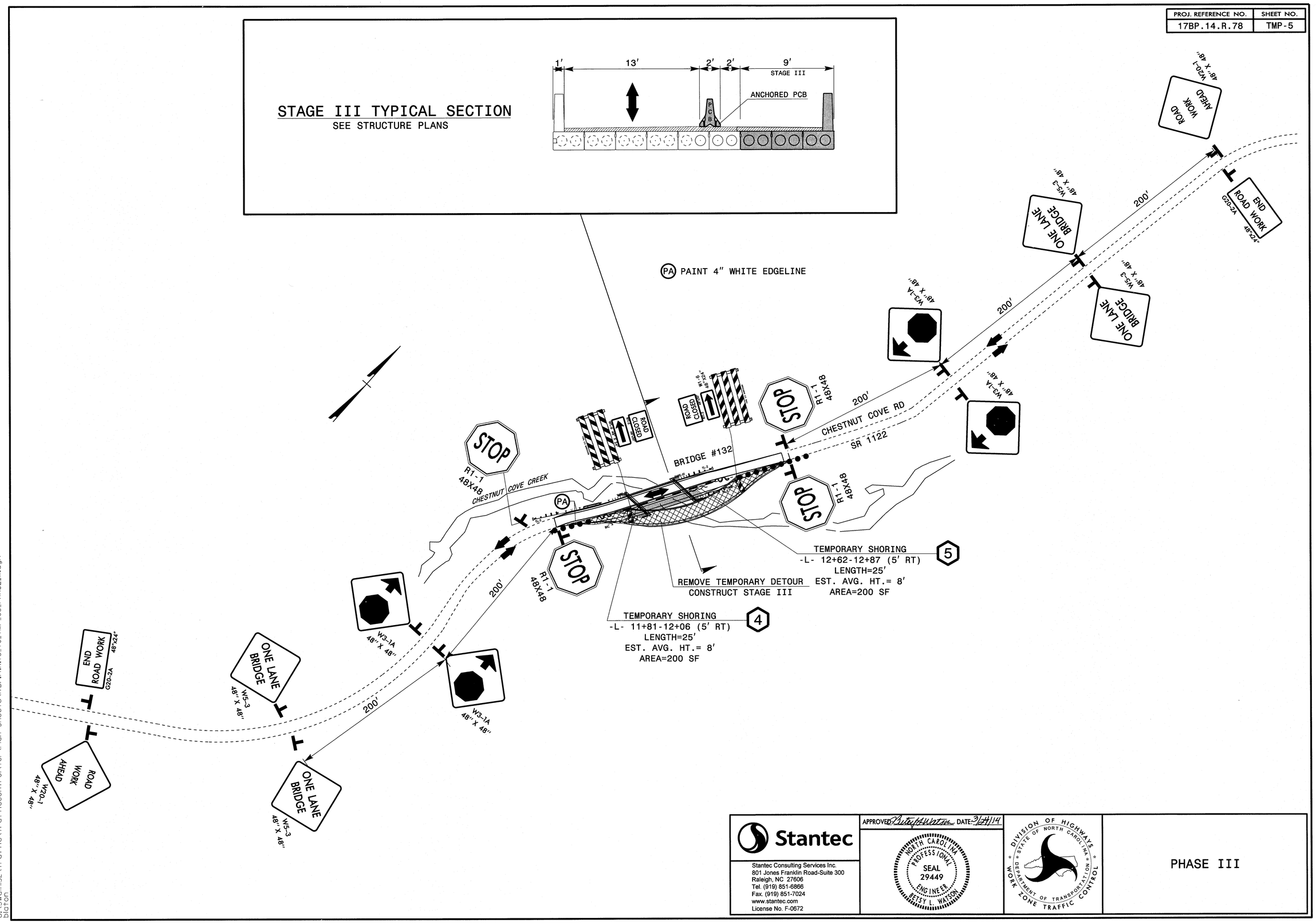
PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.78	TMP-5

STAGE III TYPICAL SECTION

SEE STRUCTURE PLANS



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APPROVED Betsy L Watson DATE: 3/24/14

NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON

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

PHASE III

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CONTRACT NO.: DN00197 PROJECT: 17BP.14.R.78

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PROJECT NO.	SHEET NO.
17BP.14.R.78	PMP-1

APPROVED: Betsy L. Watson

DATE: March 24, 2014

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON

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PAVEMENT MARKING PLAN
SWAIN COUNTY
LOCATION: BRIDGE NO. 132 ON SR 1122 (CHESTNUT COVE ROAD) OVER CHESTNUT COVE CREEK

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL & BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL & BARRIER DELINEATORS - TYPES & MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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.

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
CHESTNUT COVE RD	PAINT	NONE

B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.

C) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

D) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

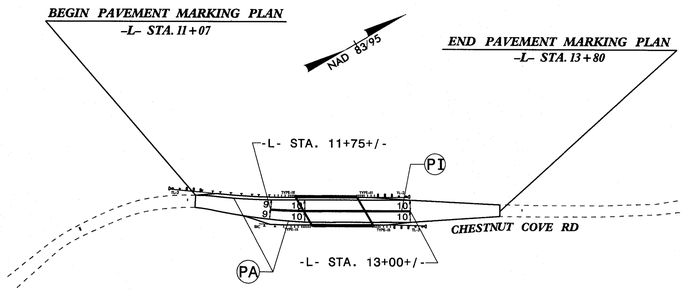
E) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

F) REMOVE ALL RESIDUE AND SURFACE LAITANCE BY ACCEPTABLE METHODS OF THE BRIDGE DECK(s) PRIOR TO PLACING (PAINT) PAVEMENT MARKING.

FINAL PAVEMENT MARKING SCHEDULE

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

PAVEMENT MARKING DETAIL



PLAN PREPARED BY:

BETSY L. WATSON, P.E. TRAFFIC ENGINEER

ROSI R. HENNEIN TRANSPORTATION TECHNICIAN

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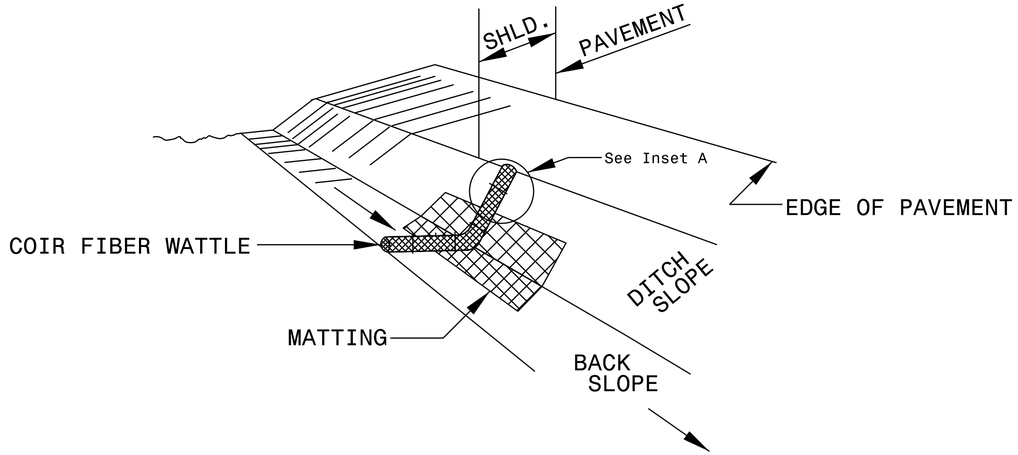
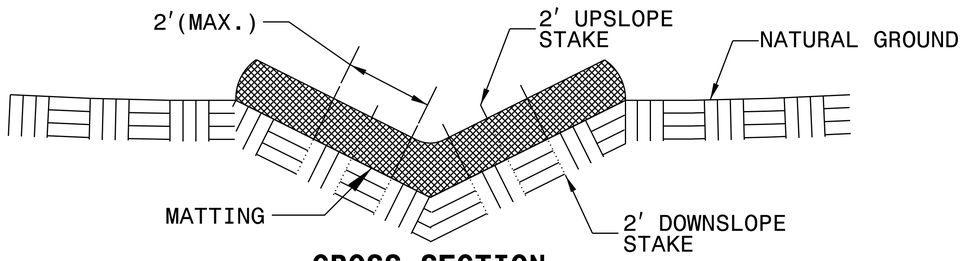
INDEX

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.78	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

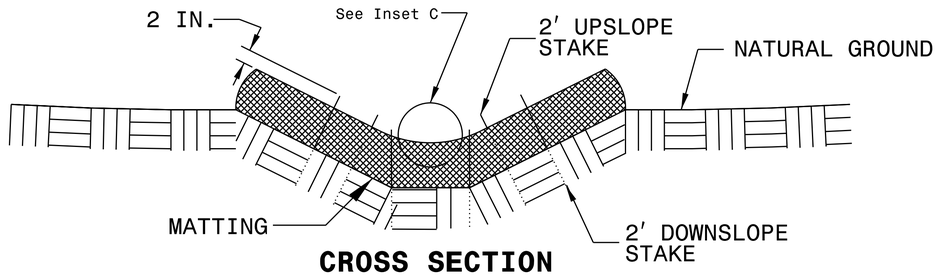
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

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

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

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

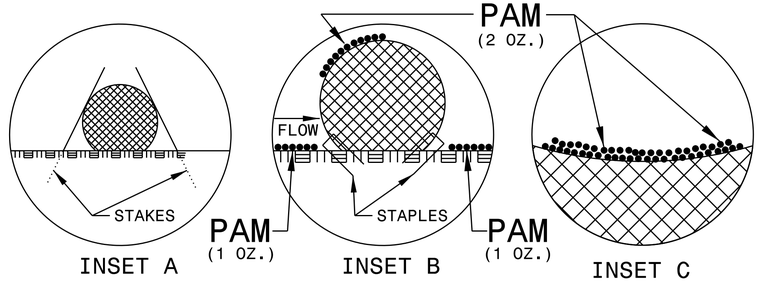
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

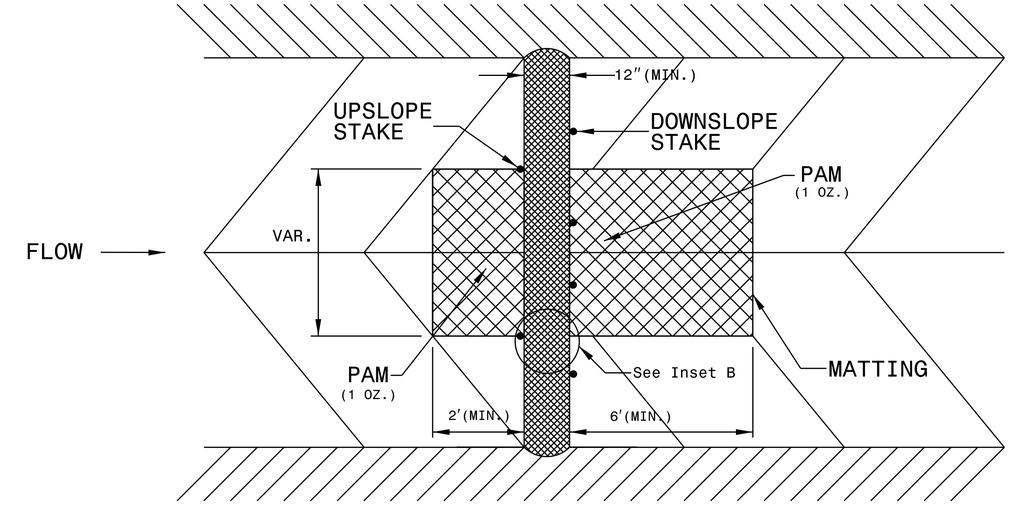
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

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

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

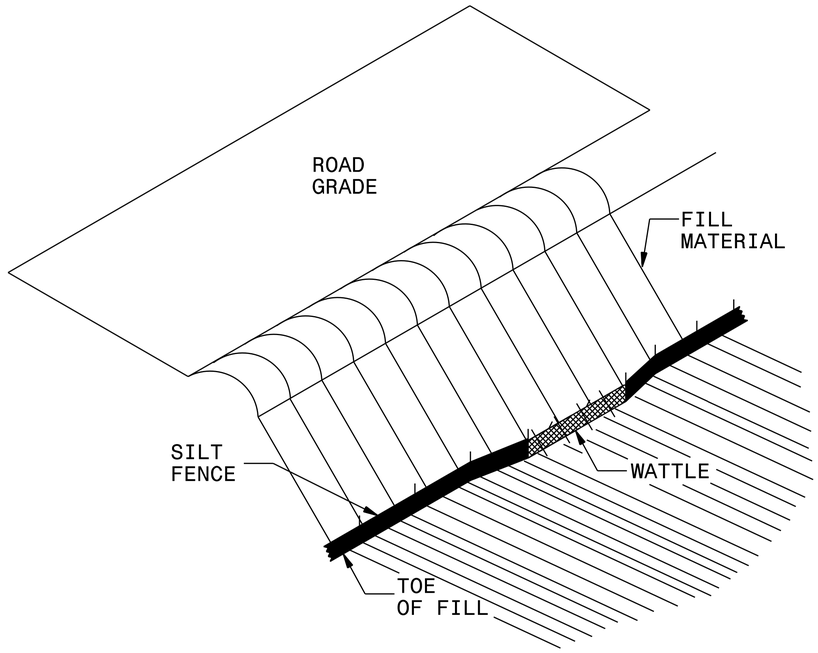




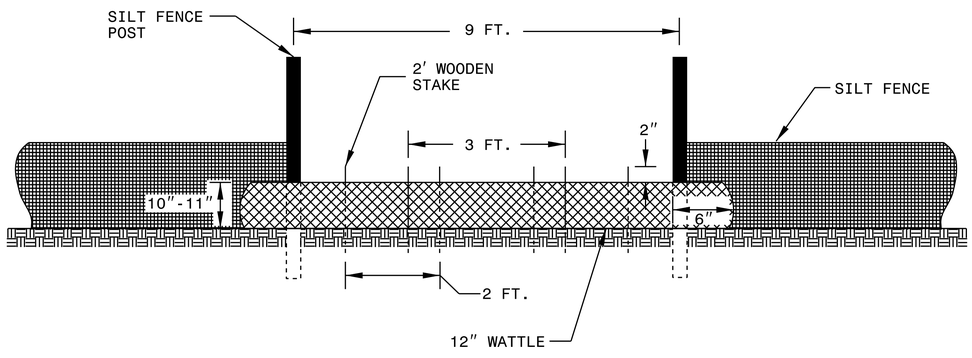
TOP VIEW

SILT FENCE COIR FIBER WATTLE BREAK DETAIL

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.78	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

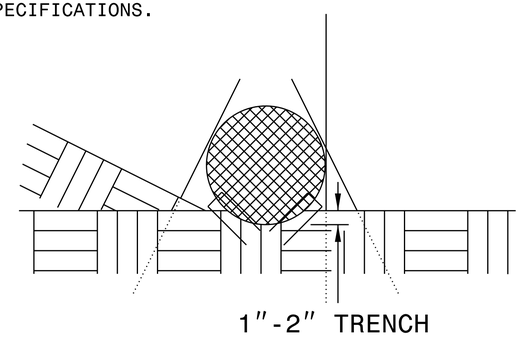
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

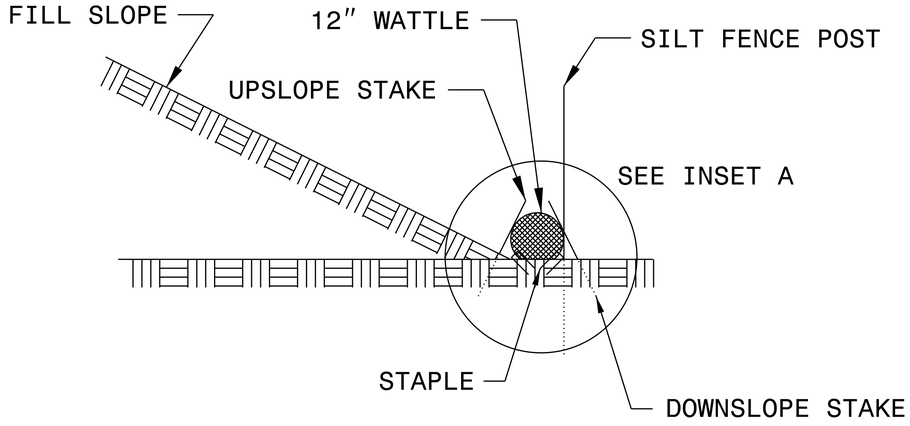
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4R.78	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

PERMANENT SOIL REINFORCEMNT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	12+60	1370	LT.	125
				SUBTOTAL	125
	ADDITIONAL PSRM TO BE INSTALLED				
				TOTAL	125
				SAY	125

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.78	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.

EROSION CONTROL PLAN

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.78	EC-4/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

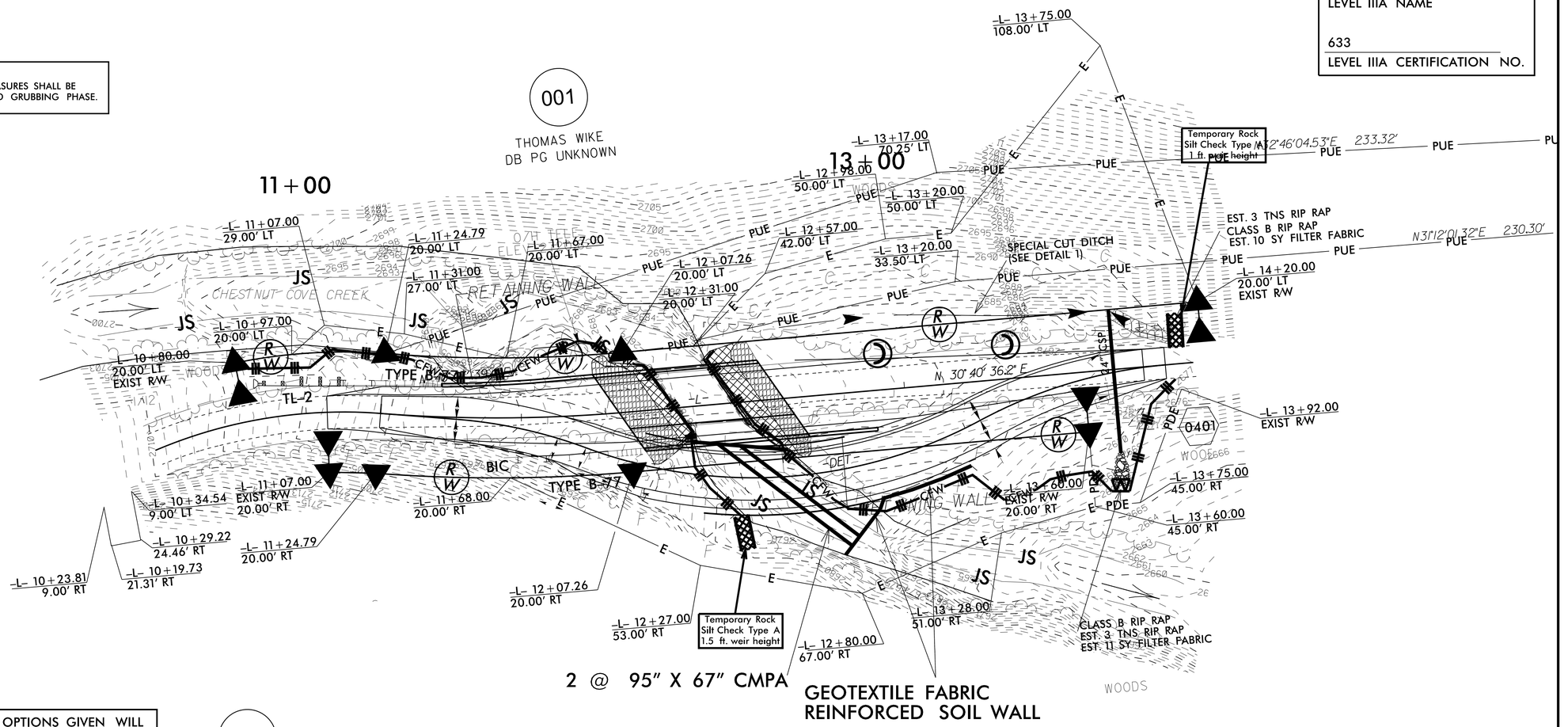
JAMES C. DAVIS
LEVEL IIIA NAME

633
LEVEL IIIA CERTIFICATION NO.

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.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.



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.

001

2012 STANDARD DRAWINGS

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		

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2012 STANDARD SPECIFICATIONS

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1633.01	Temporary Rock Silt Check Type-A	
1633.02	Wattle with Polyacrylamide (PAM)	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	

EROSION CONTROL PLAN

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.78	EC-5/CONST.4
R/W SHEET NO.	____
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

JAMES C. DAVIS
LEVEL IIIA NAME

633
LEVEL IIIA CERTIFICATION NO.

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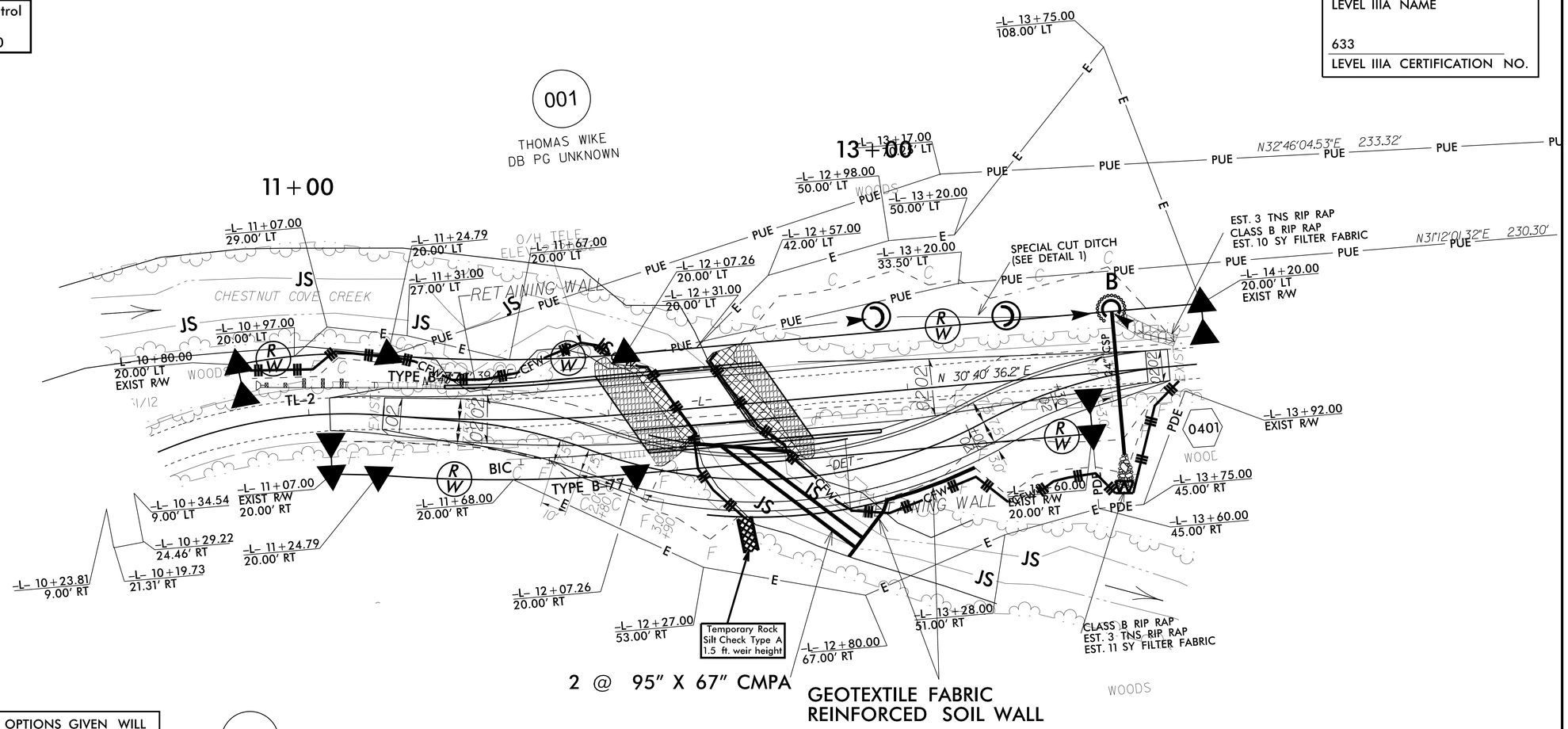
Place Matting for Erosion Control on Slope as Work Allows. Sta. 12+60 to Sta. 13+80



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.

001

2012 STANDARD DRAWINGS

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
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DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2012 STANDARD SPECIFICATIONS

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1633.01	Temporary Rock Silt Check Type-A	
1633.02	Wattle with Polyacrylamide (PAM)	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	

5/14/99

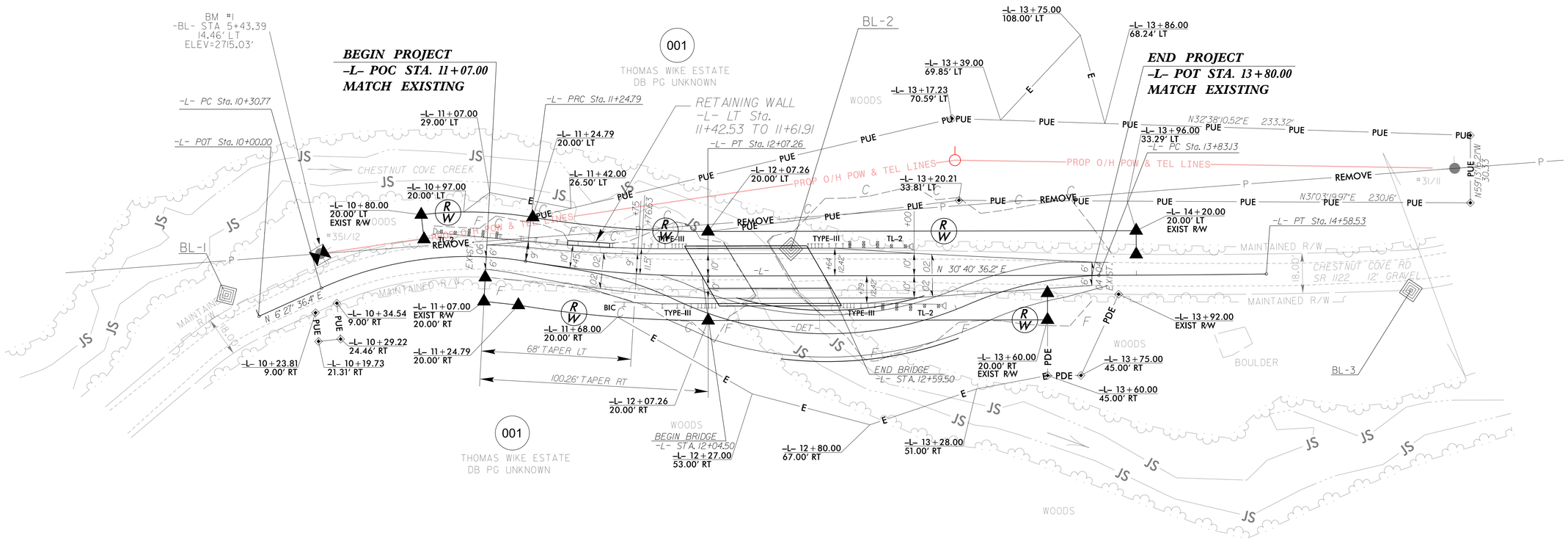
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.78	U0-1

UTILITIES BY OTHERS

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

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION



3/24/2014
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mitchell

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.78	X-1

CROSS SECTION INDEX

ROADWAY	STATION	TO	STATION	SHEET NO.
CROSS SECTION INDEX				X–1
CROSS SECTION SUMMARY				X–1A
–CHESTNUT COVE ROAD–	10 + 60.00		13 + 90.00	X–2 – X–18

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.78	X-1A

STATE OF NORTH CAROLINA
DIVISON OF HIGHWAYS

CROSS-SECTION SUMMARY

STATION -L- FINAL	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	STATION -L- DETOUR	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
11+10.00			11+30.00	0	0
11+20.00	8		11+40.00	3	0
11+30.00	7	0	11+50.00	3	0
11+40.00	7	0	11+60.00	7	0
11+50.00	6	0	11+70.00	12	0
11+60.00	6	0	11+80.00	14	0
11+70.00	7	0	11+90.00	13	0
11+80.00	8	0	12+00.00	10	0
11+90.00	9	0	12+10.00	6	0
12+00.00	7	0	12+20.00	3	8
12+10.00	7	0	12+30.00	0	31
12+20.00	15	0	12+40.00	0	57
12+30.00	33	0	12+50.00	0	77
12+40.00	56	0	12+60.00	0	83
12+50.00	79	0	12+70.00	0	75
12+60.00	90	0	12+80.00	0	65
12+70.00	74	2	12+90.00	0	56
12+80.00	53	7	13+00.00	0	45
12+90.00	45	12	13+10.00	0	33
13+00.00	45	13	13+20.00	1	23
13+10.00	40	11	13+30.00	2	23
13+20.00	35	8	13+40.00	3	23
13+30.00	38	5	13+50.00	4	17
13+40.00	35	2	13+60.00	4	16
13+50.00	29	0	13+70.00	5	21
13+60.00	36	0	13+80.00	5	12
13+70.00	57	0			
13+80.00	41	0			

Note: Earthwork Quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Shoulder Borrow, Fine Grading, Clearing and Grubbing, Breaking of Existing Asphalt Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading"

Embankment quantity does not include backfill for undercut

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-2

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

2770
2760
2750
2740
2730
2720
2710
2700
2690

2705.47

10+70.00

2707.23

10+60.00

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

2770
2760
2750
2740
2730
2720
2710
2700
2690

2/28/2014
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mitchfield

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-3

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

2770
2760
2750
2740
2730
2720
2710
2700
2690

2701.11

10+90.00

2703.46

10+80.00

2/28/2014
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mlittlefield

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-4

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

2760
2750
2740
2730
2720
2710
2700
2690

2698.24
0.020 0.020
2698.19
2697.85
11+10.00

2770
2760
2750
2740
2730
2720
2710
2700
2690

2699.80
11+00.00

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

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-5

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

2760
2750
2740
2730
2720
2710
2700
2690

-DET-
ID=1005.21
GP=2694.90
2695.10
.02 .02
0.020 0.020
2694.57
2694.79

11+30.00

2760
2750
2740
2730
2720
2710
2700
2690

2696.67
0.020 0.020
2696.45
2696.30

11+20.00

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

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mlittlefield

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.78	X-6

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-7

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

2760 2750 2740 2730 2720 2710 2700 2690 2680

-DET-
10+45.50
GP=2689.02
0.000 0.001
2689.94
0.020 0.020
2690.21

11+70.00

2760 2750 2740 2730 2720 2710 2700 2690 2680

-DET-
10+35.30
GP=2690.30
0.005 0.004
2690.42
RETAINING WALL
0.020 0.020
2690.96

11+60.00

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

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-8

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

2740
2730
2720
2710
2700
2690
2680

-DET -
10+56.74
GP=2687.24
0.004 0.006
2687.41
0.020 0.020
2687.88
1:1
11+90.00

2750
2740
2730
2720
2710
2700
2690
2680

-DET -
10+55.95
GP=2687.99
0.002 0.002
2688.16
0.020 0.020
2689.07
11+80.00

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

2/28/2014
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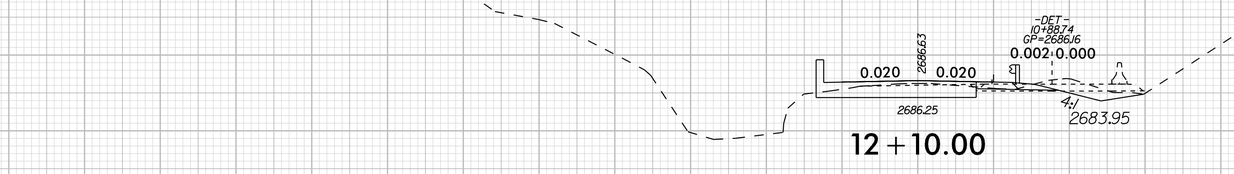
mittlefield

8/23/99

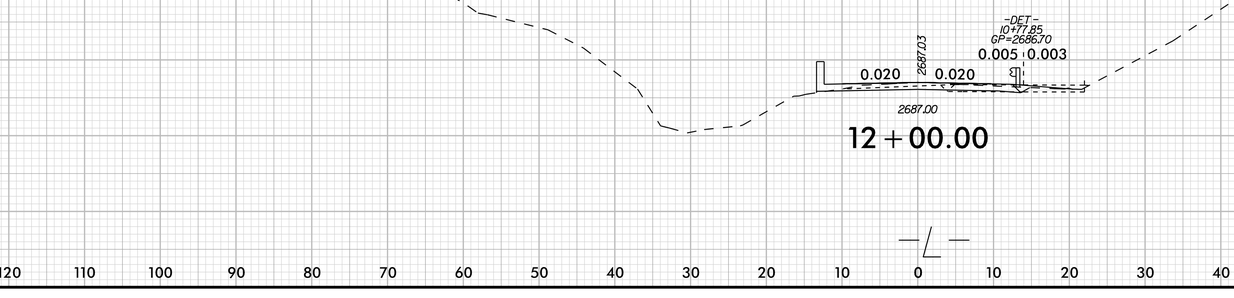
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-9

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

2740
2730
2720
2710
2700
2690
2680
2670



12+10.00



12+00.00

2740
2730
2720
2710
2700
2690
2680
2670

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

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mlittlefield

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-10

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

2740
2730
2720
2710
2700
2690
2680
2670

-DET-
11+09.45
GP=2685.04
0.007 0.008
2685.83
0.020 0.020
2%
RETAINING WALL
2676.93

12+30.00

-DET-
10+99.19
GP=2685.61
0.003 0.004
2686.23
0.020 0.020
2%
2685.48 RETAINING WALL

12+20.00

2/28/2014
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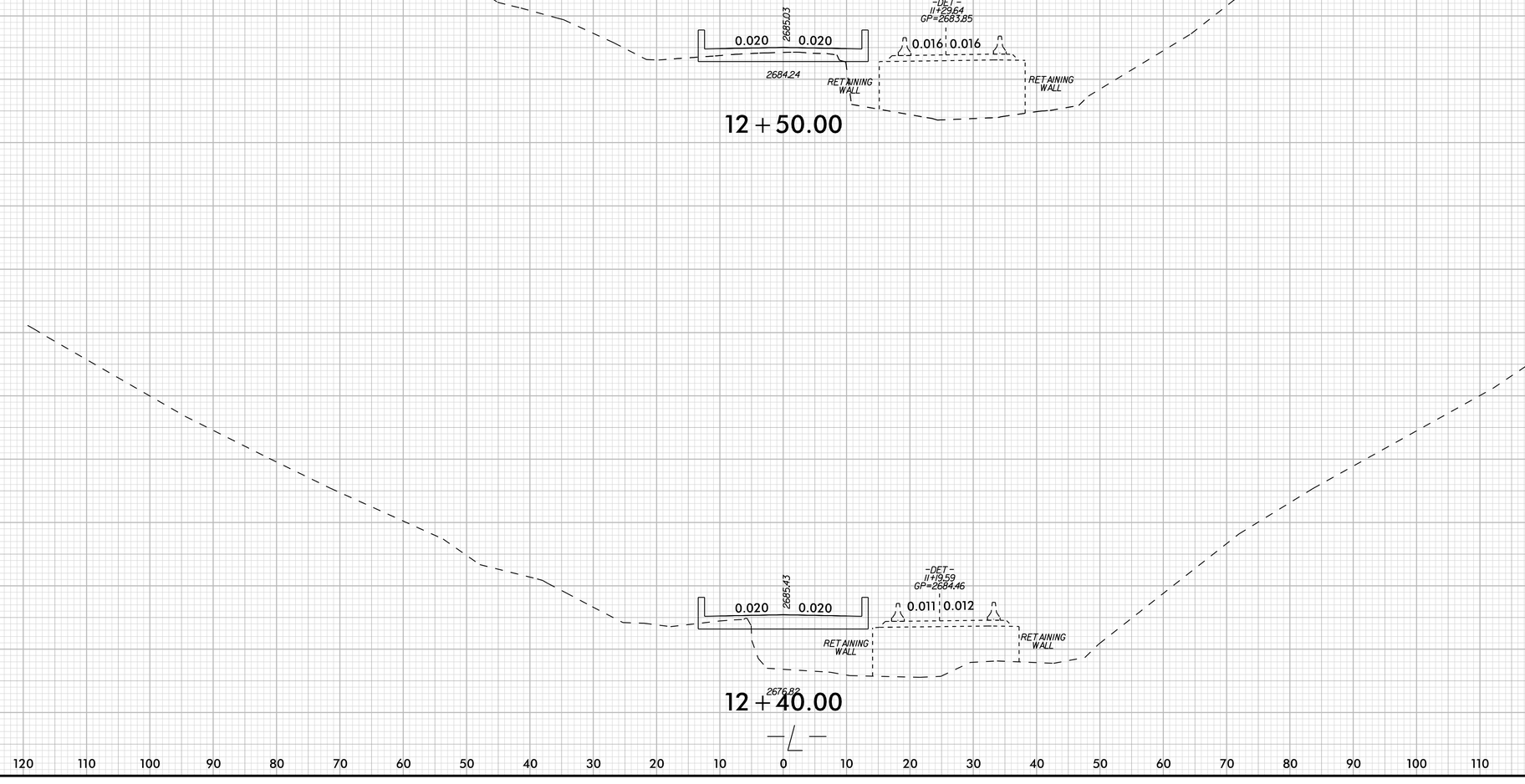
mittlefield

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-11

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

2740 2730 2720 2710 2700 2690 2680 2670



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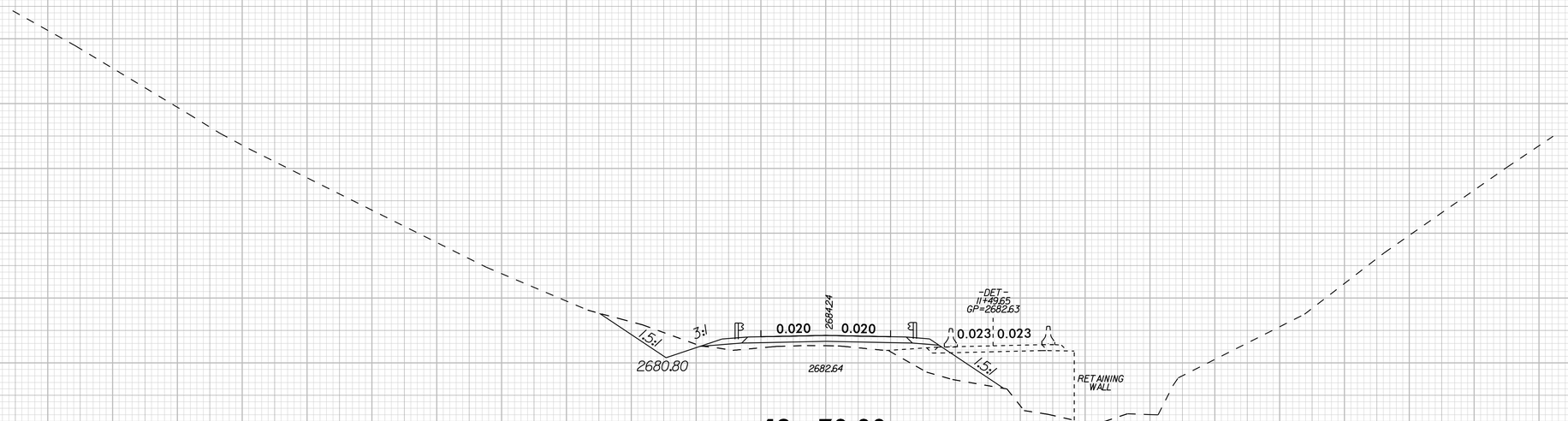
8/23/99

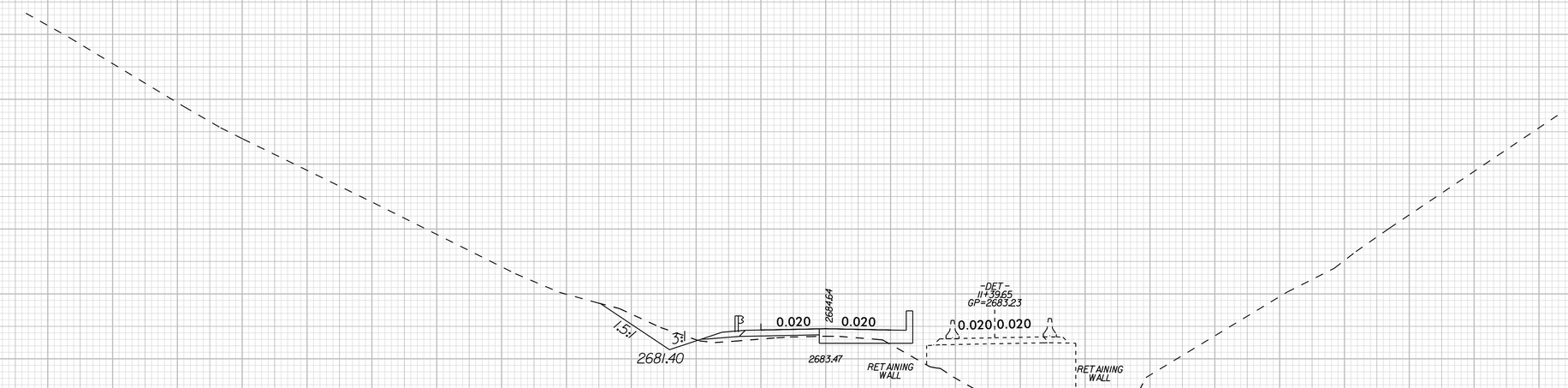
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-12

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

2740 2730 2720 2710 2700 2690 2680 2670



12+70.00



12+60.00

2740 2730 2720 2710 2700 2690 2680 2670

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

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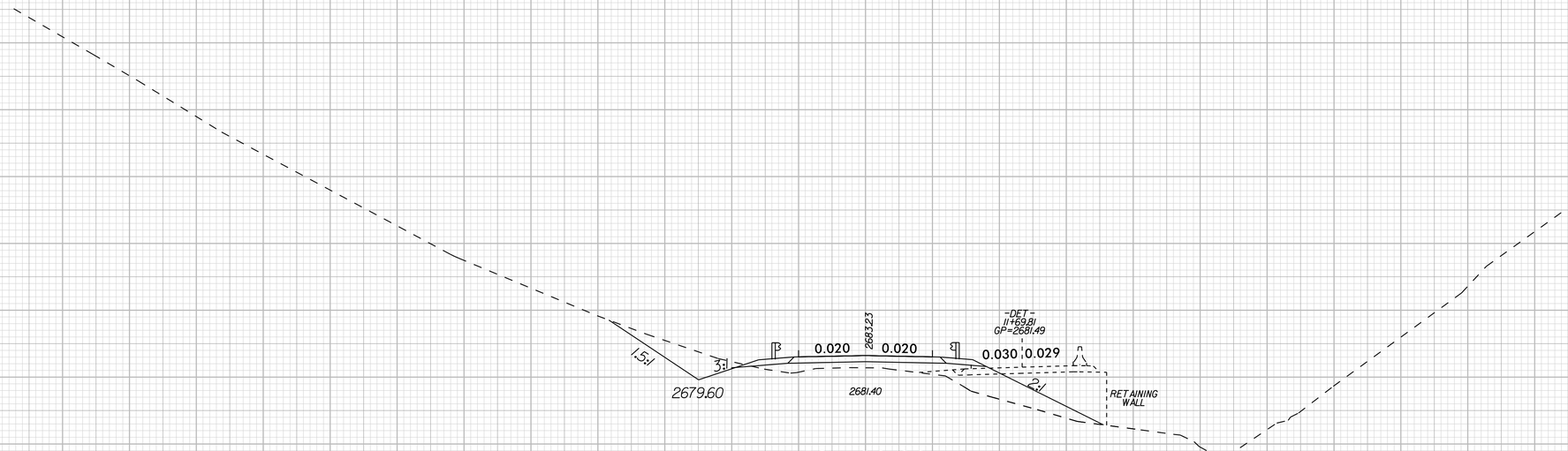
8/23/99

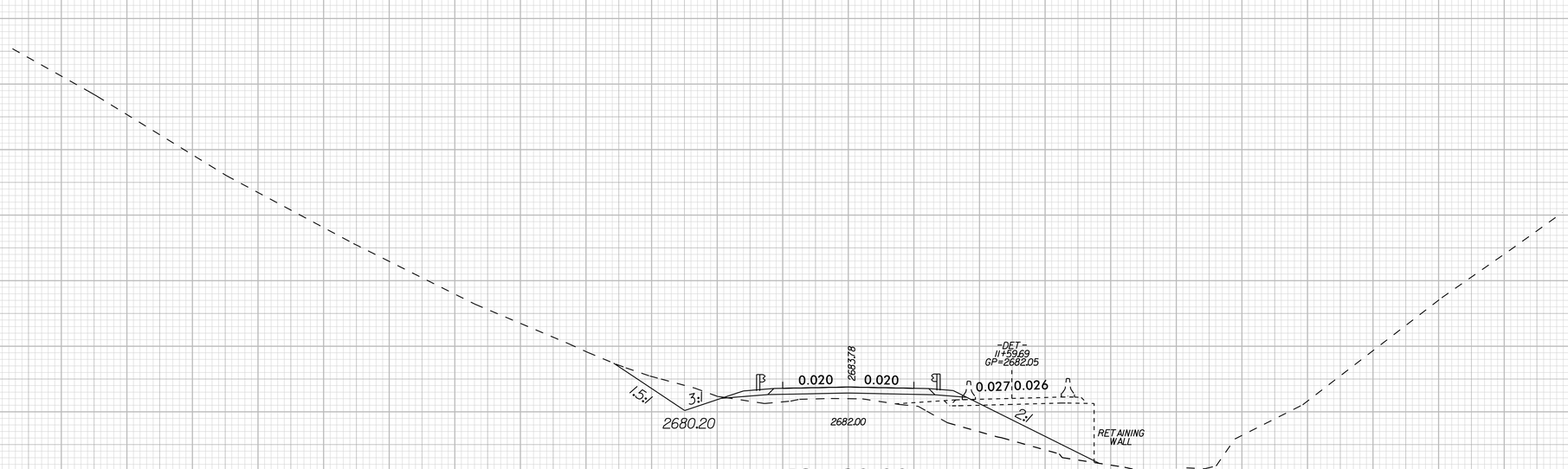
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-13

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

2740 2730 2720 2710 2700 2690 2680 2670 2660



12+90.00



12+80.00

2740 2730 2720 2710 2700 2690 2680 2670

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

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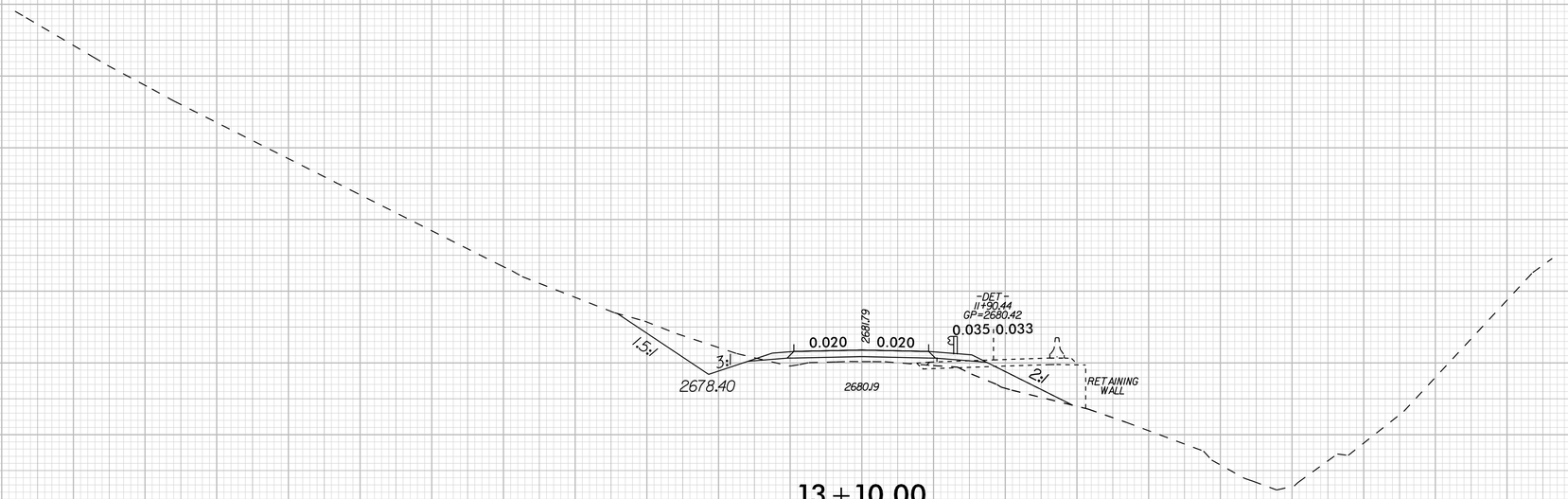
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-14

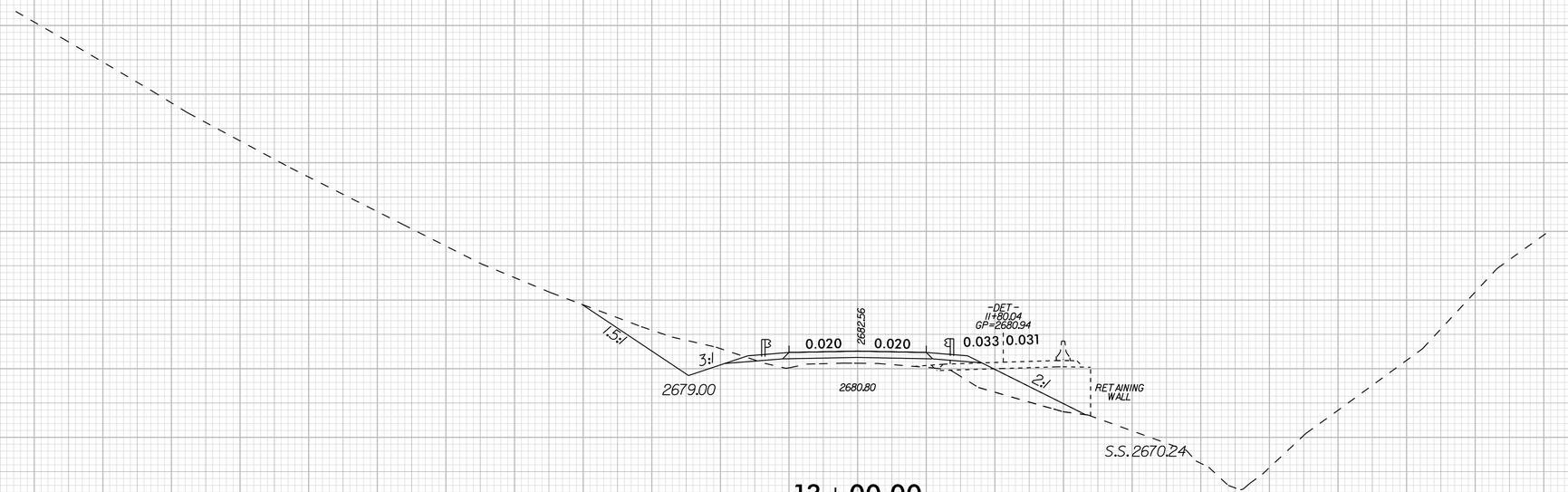
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2730 2720 2710 2700 2690 2680 2670 2660



13+10.00

2740 2730 2720 2710 2700 2690 2680 2670 2660



13+00.00

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

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-15

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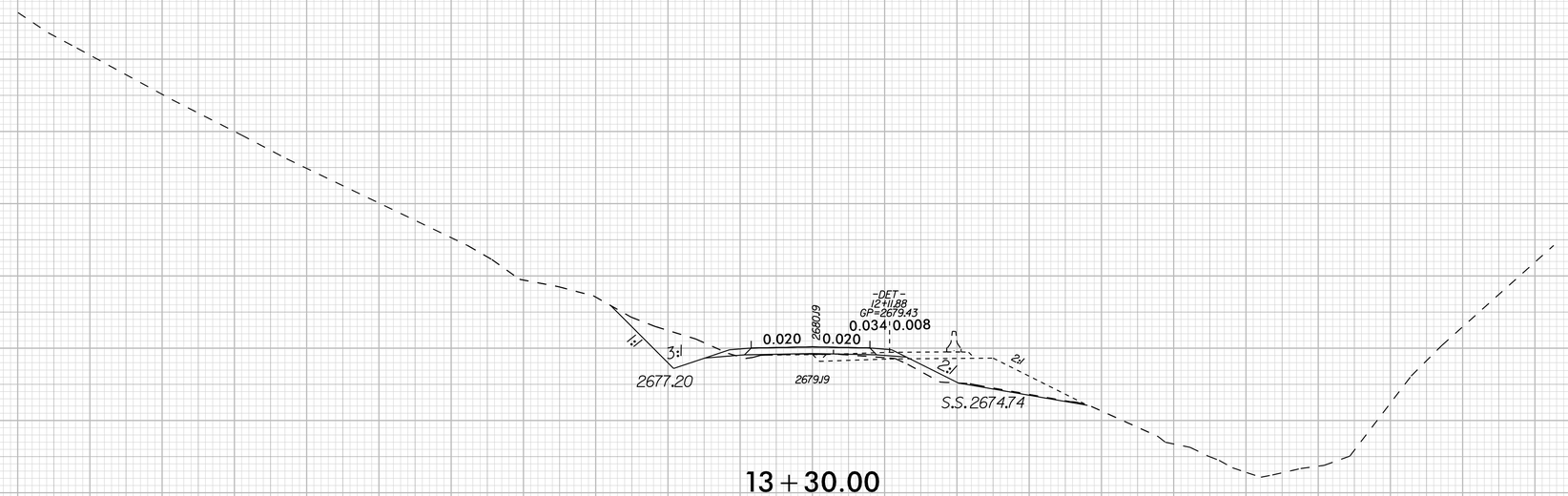
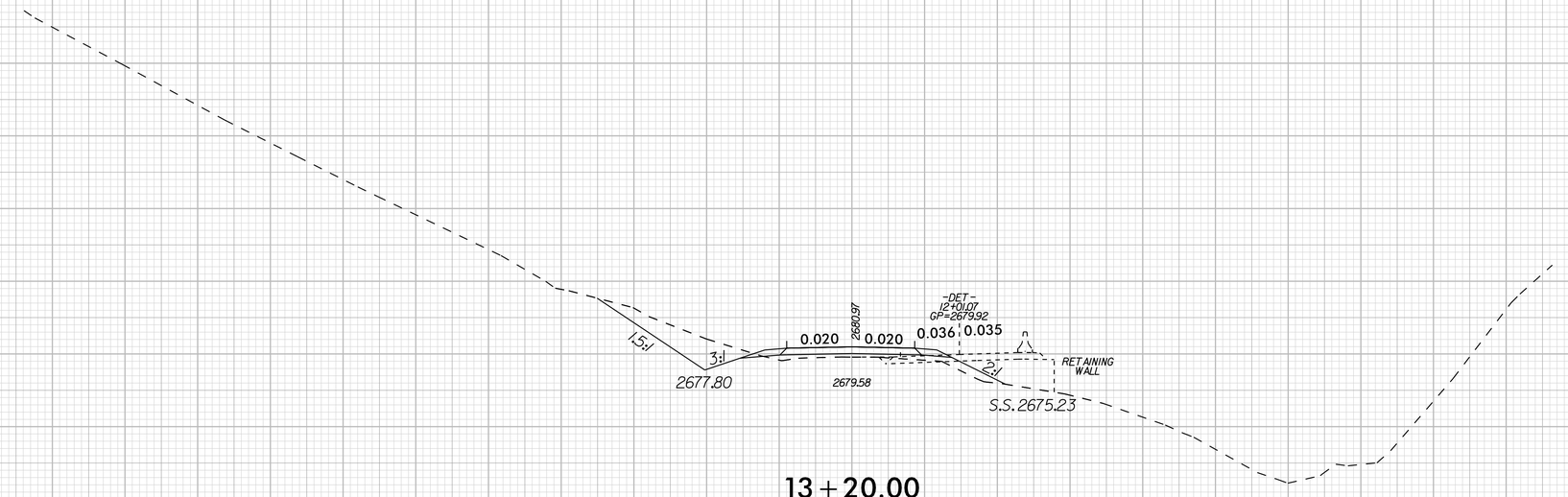
2730 2720 2710 2700 2690 2680 2670 2660



13+30.00



13+20.00

2730 2720 2710 2700 2690 2680 2670 2660

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

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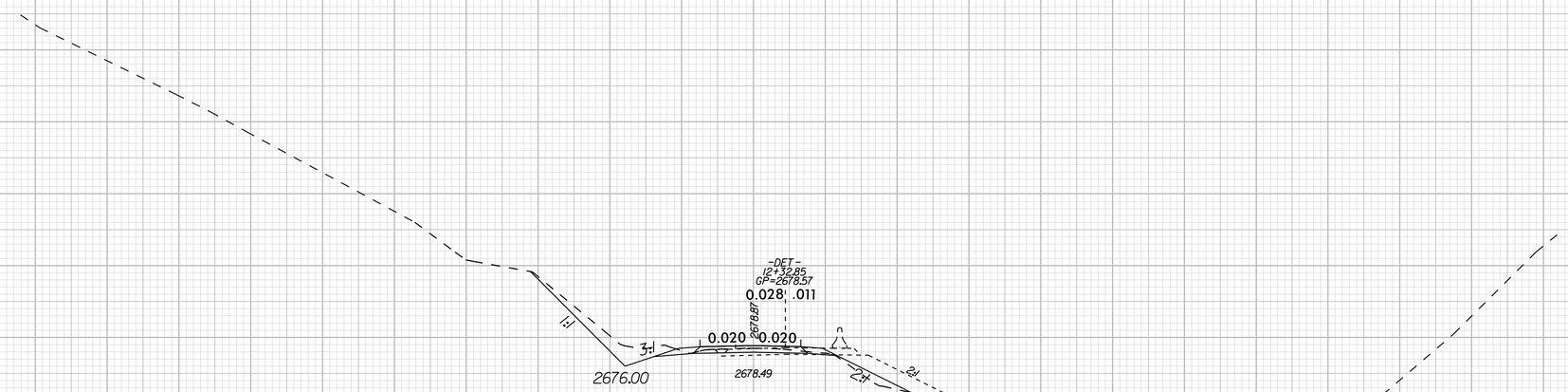
8/23/99

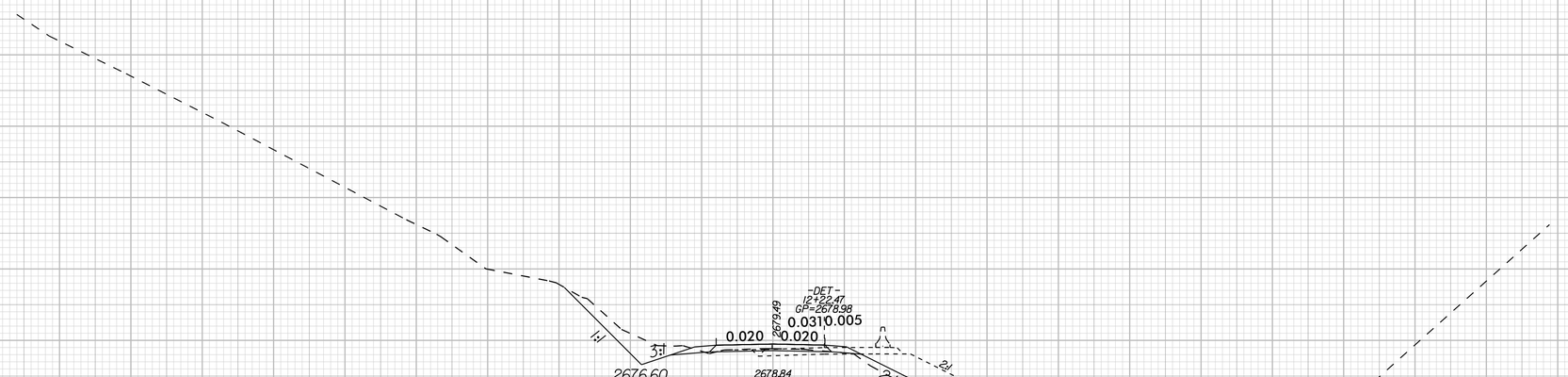
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-16

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

2730 2720 2710 2700 2690 2680 2670 2660 2650



13+50.00



13+40.00

2730 2720 2710 2700 2690 2680 2670 2660

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

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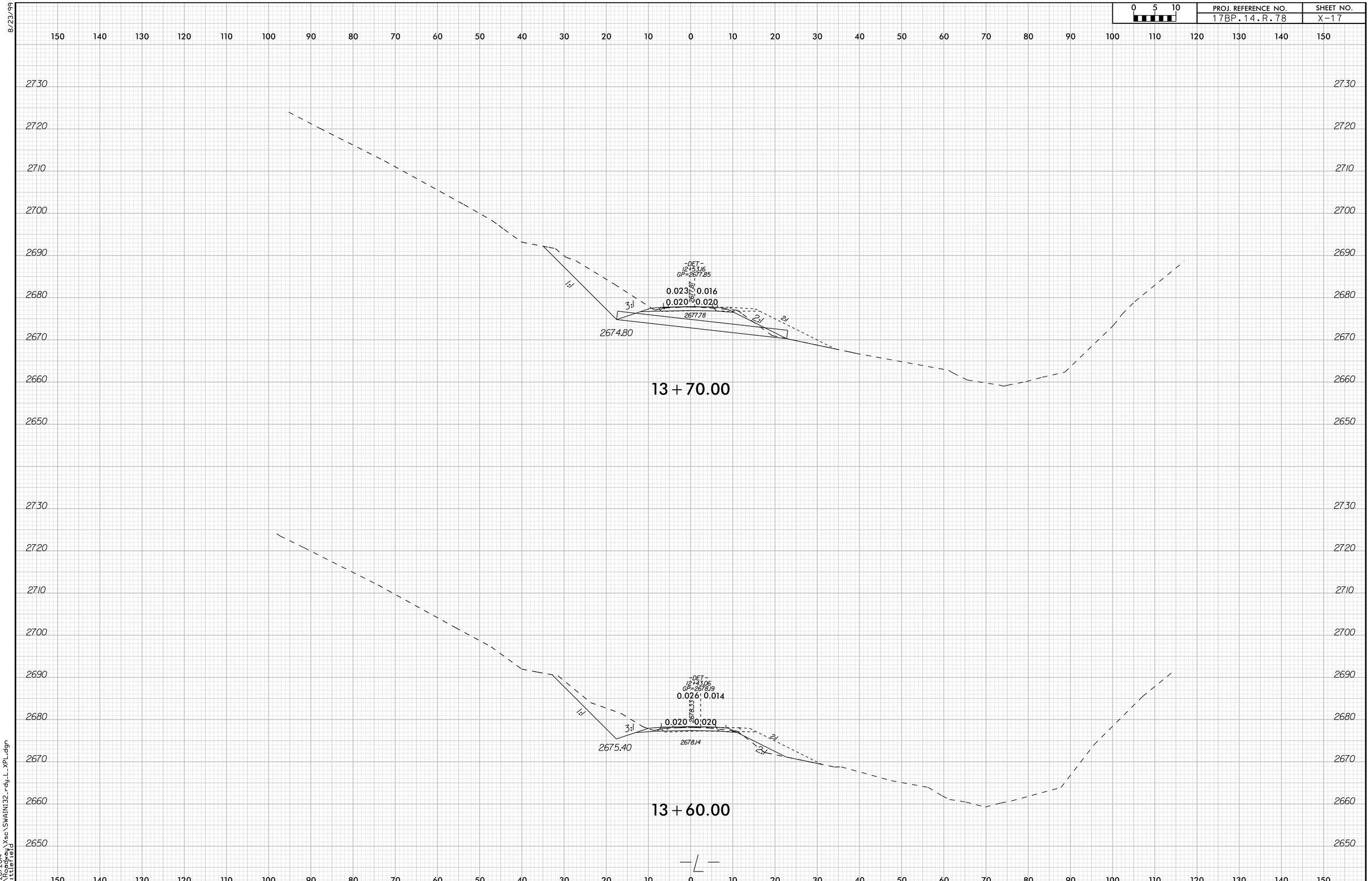
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-17



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mitchfield

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.78	X-18

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

2730 2720 2710 2700 2690 2680 2670 2660 2650

2677.19

13+90.00

2730 2720 2710 2700 2690 2680 2670 2660 2650

-DET-
12+63.19
GP=2677.53

2677.49

0.020 0.019
0.021 0.021

1:1

3:1

2675.63

2677.49

13+80.00

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

2/28/2014
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mitchfield

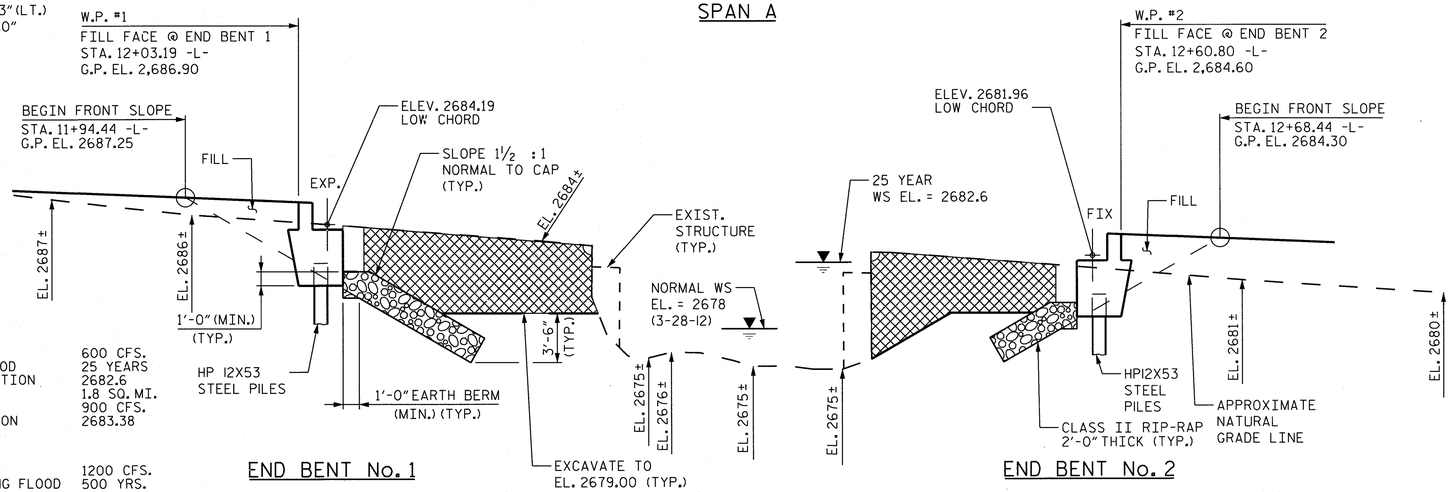
HORIZONTAL CURVE DATA -L-

P.I. STA. = 11+66.12 -L-
Δ = 9°27'03.3" (LT.)
D = 11°27'33.0"
L = 82.47'
T = 41.33'
R = 500.00'

W.P. #1
FILL FACE @ END BENT 1
STA. 12+03.19 -L-
G.P. EL. 2,686.90

W.P. #2
FILL FACE @ END BENT 2
STA. 12+60.80 -L-
G.P. EL. 2,684.60

SPAN A



END BENT No. 1 — END BENT No. 2

HYDRAULIC DESIGN DATA

DESIGN DISCHARGE	600 CFS.
FREQUENCY OF DESIGN FLOOD	25 YEARS
DESIGN HIGH WATER ELEVATION	2682.6
DRAINAGE AREA	1.8 SQ. MI.
BASE DISCHARGE(Q100)	900 CFS.
BASE HIGH WATER ELEVATION	2683.38

OVERTOPPING FLOOD DATA

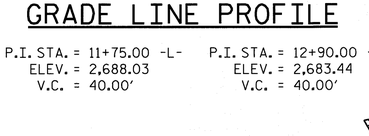
OVERTOPPING DISCHARGE	1200 CFS.
FREQUENCY OF OVERTOPPING FLOOD	500 YRS.
OVERTOPPING FLOOD ELEVATION	2681.6

SECTION ALONG ℄ -L-

BENTS ON SECTION AT RIGHT ANGLES TO BENT

▨ DENOTES UNCLASSIFIED STRUCTURE EXCAVATION

GRADE LINE PROFILE

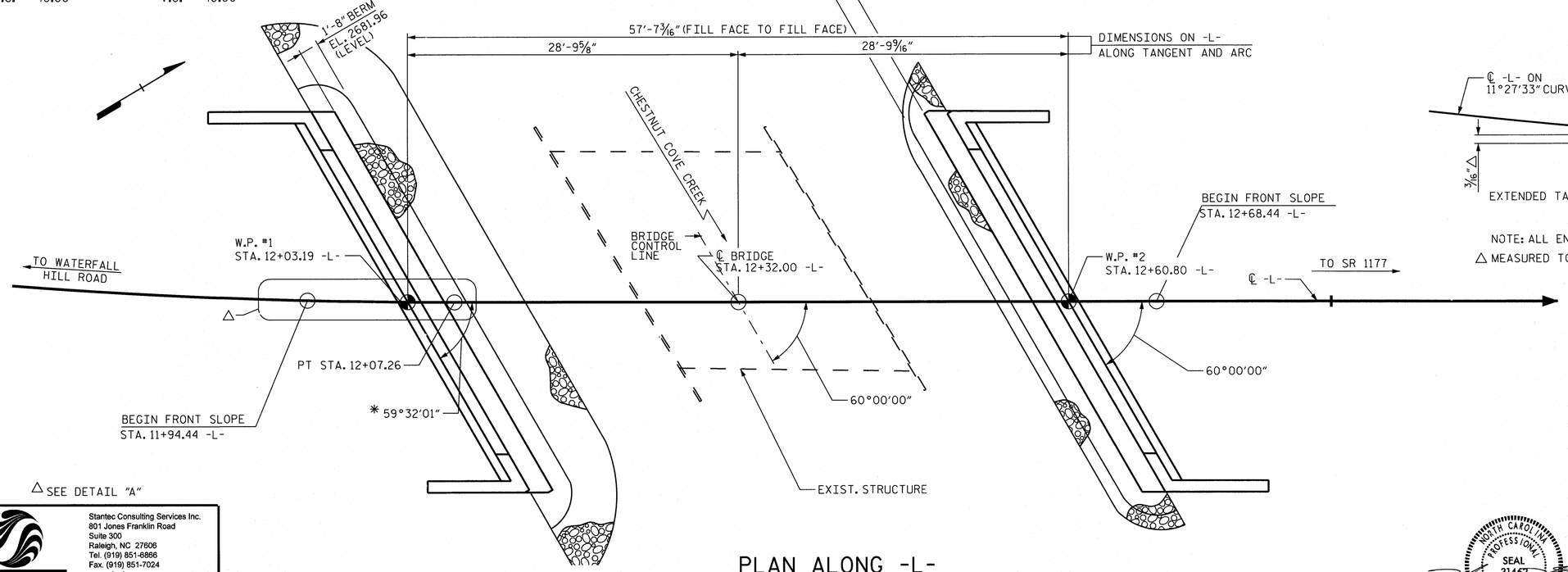


P.I. STA. = 11+75.00 -L-
ELEV. = 2,688.03
V.C. = 40.00'

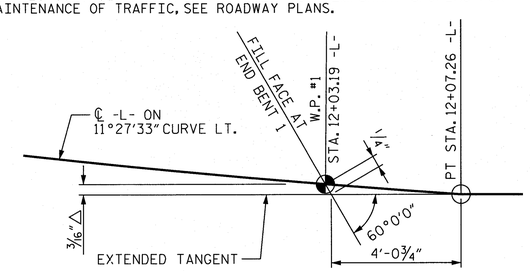
P.I. STA. = 12+90.00 -L-
ELEV. = 2,683.44
V.C. = 40.00'

PLAN ALONG -L-

PILES NOT SHOWN IN PLAN VIEW



* SKEW ANGLE MEASURED TO TANGENT TO CURVE ON -L-



DETAIL "A"

NOTE: ALL END BENTS ARE PARALLEL TO BRIDGE CONTROL LINE
△ MEASURED TO EXTENDED TANGENT @ STATION SHOWN

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 20 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE (CONSISTING OF 1-20' TIMBER SPAN, 20' CLEAR ROADWAY, AND LOCATED 3' UPSTREAM OF PROPOSED STRUCTURE) SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS 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 SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

PROJECT NO. 17BP.14.R.78
SWAIN COUNTY
STATION: 12+32.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE No. 132

Stantec
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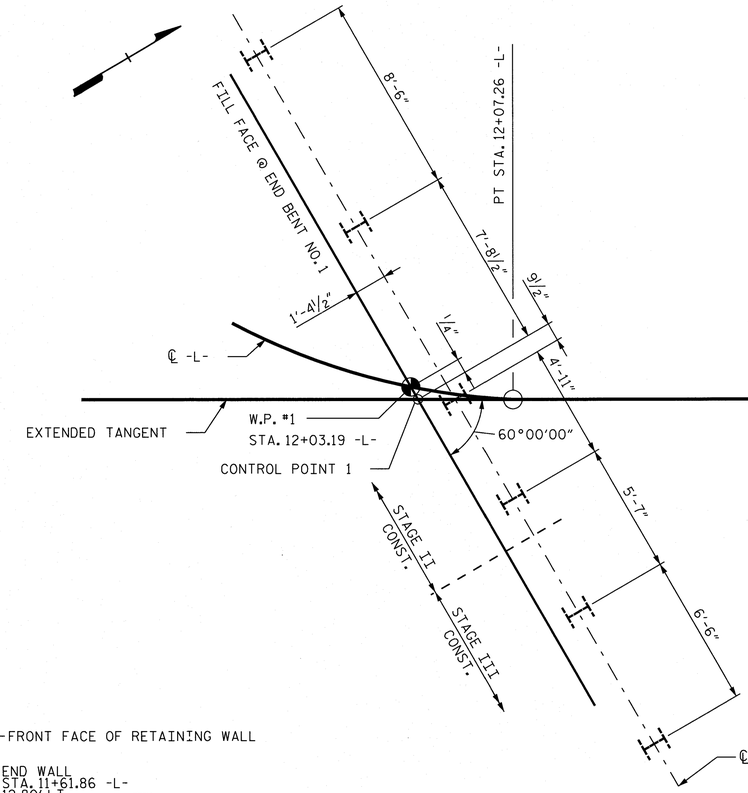
ASSEMBLED BY : C. B. BAKER DATE : 08-03-12
CHECKED BY : T. R. DUDECK DATE : 08-03-12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

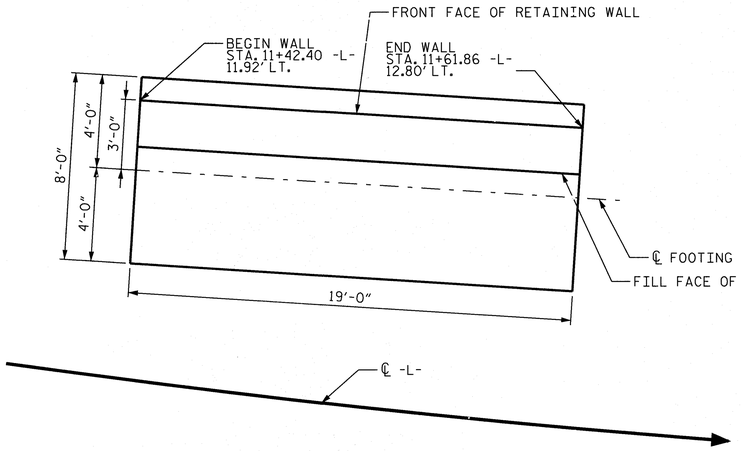
GENERAL DRAWING
FOR BRIDGE ON SR 1122
OVER CHESTNUT COVE CREEK
BETWEEN WATERFALL HILL ROAD
AND SR 1177

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK 2/28/14

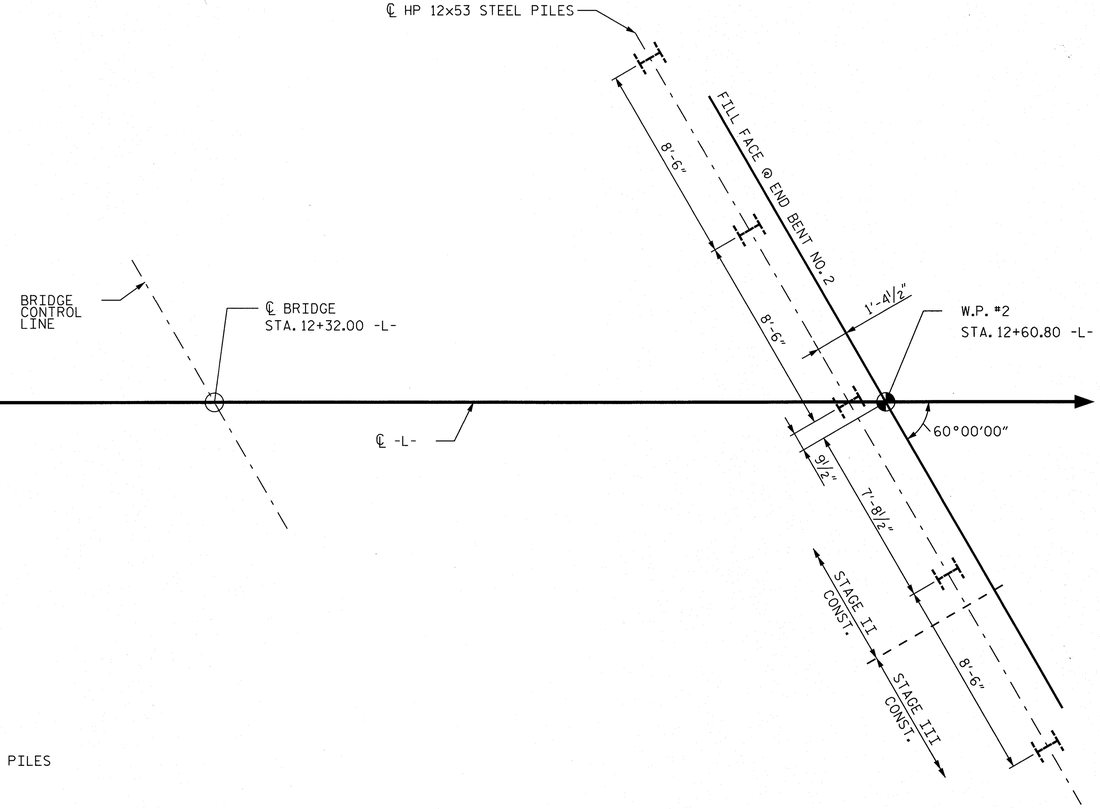
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			15



END BENT NO. 1



RETAINING WALL



END BENT NO. 2

FOUNDATION LAYOUT PLAN

NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 145 TONS PER PILE.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT NO. 1. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION +2671 FEET. FOR PILE EXCAVATION SEE SECTION 450 OF THE STANDARD SPECIFICATION.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT NO. 2. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION +2663 FEET. FOR PILE EXCAVATION SEE SECTION 450 OF THE STANDARD SPECIFICATION.

CONCRETE IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1 AND END BENT NO. 2.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 20,000 TO 30,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3 (D) (2) OF THE STANDARD SPECIFICATIONS.

COBBLES AND BOULDERS OF GNEISS WERE ENCOUNTERED FROM BOTTOM OF CAP TO AN AVERAGE DEPTH OF 4 FEET AT END BENT NO. 1 AND 10 FEET AT END BENT NO. 2. PILE EXCAVATION SHALL EXTEND THROUGH THE BOULDERS AND EXTEND A MINIMUM OF 3 FEET INTO BEDROCK.

THE SPREAD FOOTING AT THE RETAINING WALL IS DESIGNED FOR A FACTORED RESISTANCE OF 1.5 TSF.

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DRAWN BY : C. B. BAKER DATE : 08-03-12
CHECKED BY : T. R. DUDECK DATE : 08-03-12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21462 THOMAS R. DUDECK 2/28/14

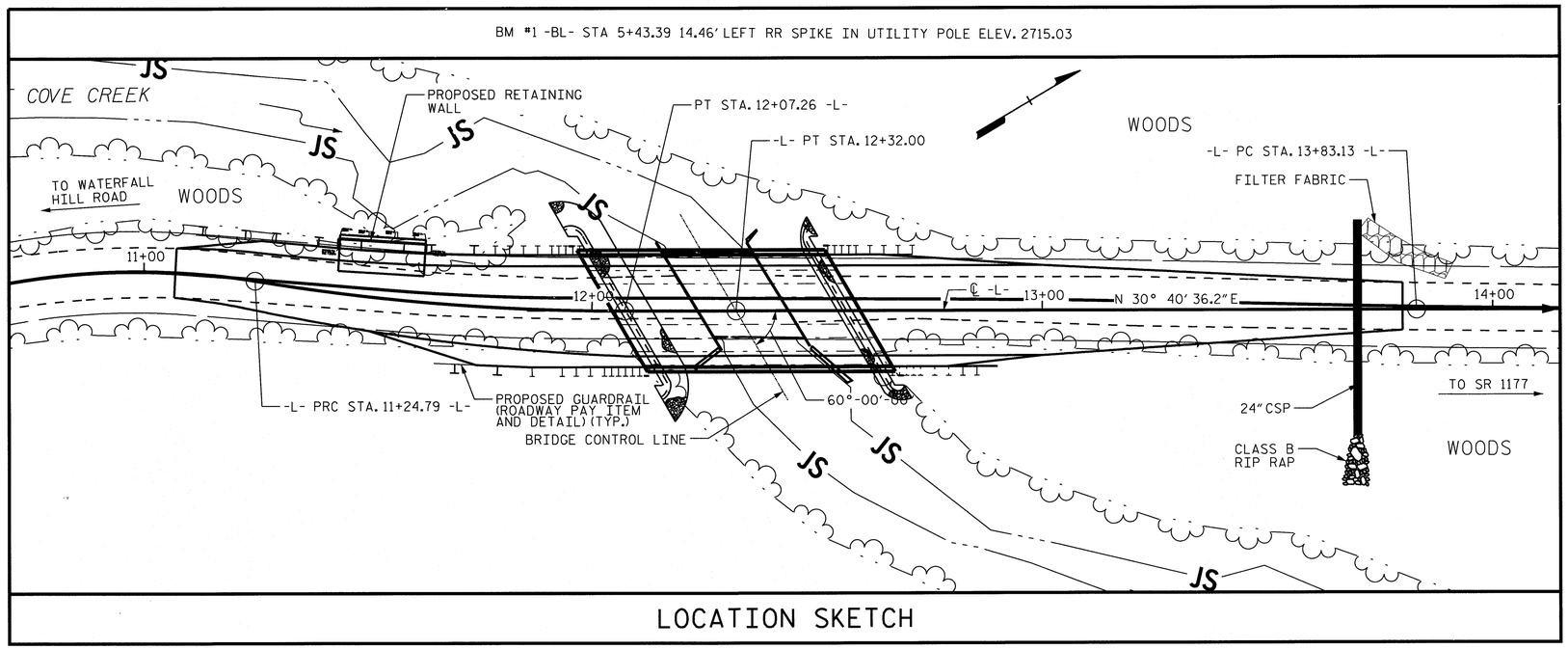
PROJECT NO. 17BP.14.R.78
SWAIN COUNTY
STATION: 12+32.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1122
OVER CHESTNUT COVE CREEK
BETWEEN WATERFALL HILL ROAD
AND SR 1177

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			15



LOCATION SKETCH

NO KNOWN UTILITY CONFLICTS

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STATION 12+32.00 -L-	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	REINFORCING STEEL	HP 12X53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLABS		CANTILEVER CONCRETE RETAINING WALLS
	LUMP SUM	L.F.	L.F.	LUMP SUM	C.Y.	LBS.	NO.	L.F.	L.F.	TONS	SQ. YDS.	LUMP SUM	NO.	L.F.	LUMP SUM
SUPERSTRUCTURE									110.0			LUMP SUM	9	495.0	
END BENT 1		0	60		24.6	3044	6	90		61.8	44.0				
END BENT 2		30	50		24.6	3018	5	100		33.4	16.9				
TOTAL	LUMP SUM	30	110	LUMP SUM	49.2	6062	11	190	110.0	95.2	60.9	LUMP SUM	9	495.0	LUMP SUM

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DRAWN BY : J. L. HENNEKES DATE : 08-03-12
CHECKED BY : T. R. DUDECK DATE : 08-03-12

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK 3/24/14

PROJECT NO. 17BP.14.R.78
SWAIN COUNTY
STATION: 12+32.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1122
OVER CHESTNUT COVE CREEK
BETWEEN WATERFALL HILL ROAD
AND SR 1177

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			15

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	**1**	1.163	--	1.75	0.249	1.36	55′	EL	26.923	0.659	1.21	55′	EL	10.769	0.80	0.249	**1.16**	55′	EL	**26.923**	
		HL-93(Opr)	N/A	--	1.564	--	1.35	0.249	1.76	55′	EL	26.923	0.659	1.56	55′	EL	10.769	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	**2**	1.424	51.265	1.75	0.249	1.7	55′	EL	26.923	0.659	**1.42**	55′	EL	**10.769**	0.80	0.249	1.46	55′	EL	26.923	
		HS-20(Opr)	36.000	--	1.846	66.455	1.35	0.249	2.2	55′	EL	26.923	0.659	1.85	55′	EL	10.769	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.057	41.264	1.4	0.249	4.46	55′	EL	26.923	0.659	3.96	55′	EL	10.769	0.80	0.249	3.06	55′	EL	26.923	
		SNGARBS2	20.000	--	2.374	47.473	1.4	0.249	3.46	55′	EL	26.923	0.659	2.9	55′	EL	10.769	0.80	0.249	2.37	55′	EL	26.923	
		SNAGRIS2	22.000	--	2.291	50.392	1.4	0.249	3.34	55′	EL	26.923	0.659	2.72	55′	EL	10.769	0.80	0.249	2.29	55′	EL	26.923	
		SNCOTTS3	27.250	--	1.524	41.521	1.4	0.249	2.22	55′	EL	26.923	0.659	1.98	55′	EL	10.769	0.80	0.249	1.52	55′	EL	26.923	
		SNAGGRS4	34.925	--	1.31	45.74	1.4	0.249	1.91	55′	EL	26.923	0.659	1.71	55′	EL	10.769	0.80	0.249	1.31	55′	EL	26.923	
		SNS5A	35.550	--	1.278	45.439	1.4	0.249	1.86	55′	EL	26.923	0.659	1.76	55′	EL	10.769	0.80	0.249	1.28	55′	EL	26.923	
		SNS6A	39.950	--	1.189	47.481	1.4	0.249	1.73	55′	EL	26.923	0.659	1.63	55′	EL	10.769	0.80	0.249	1.19	55′	EL	26.923	
		SNS7B	42.000	--	1.132	47.562	1.4	0.249	1.65	55′	EL	26.923	0.659	1.64	55′	EL	10.769	0.80	0.249	1.13	55′	EL	26.923	
	TTST	TNAGRIT3	33.000	--	1.454	47.984	1.4	0.249	2.12	55′	EL	26.923	0.659	1.92	55′	EL	10.769	0.80	0.249	1.45	55′	EL	26.923	
		TNT4A	33.075	--	1.465	48.451	1.4	0.249	2.14	55′	EL	26.923	0.659	1.85	55′	EL	10.769	0.80	0.249	1.46	55′	EL	26.923	
		TNT6A	41.600	--	1.213	50.478	1.4	0.249	1.77	55′	EL	26.923	0.659	1.81	55′	EL	10.769	0.80	0.249	1.21	55′	EL	26.923	
		TNT7A	42.000	--	1.228	51.576	1.4	0.249	1.79	55′	EL	26.923	0.659	1.67	55′	EL	10.769	0.80	0.249	1.23	55′	EL	26.923	
		TNT7B	42.000	--	1.282	53.827	1.4	0.249	1.87	55′	EL	26.923	0.659	1.58	55′	EL	10.769	0.80	0.249	1.28	55′	EL	26.923	
		TNAGRIT4	43.000	--	1.213	52.158	1.4	0.249	1.77	55′	EL	26.923	0.659	1.52	55′	EL	10.769	0.80	0.249	1.21	55′	EL	26.923	
		TNAGT5A	45.000	--	1.136	51.134	1.4	0.249	1.66	55′	EL	26.923	0.659	1.55	55′	EL	10.769	0.80	0.249	1.14	55′	EL	26.923	
		TNAGT5B	45.000	**3**	1.116	50.224	1.4	0.249	1.63	55′	EL	26.923	0.659	1.44	55′	EL	10.769	0.80	0.249	**1.12**	55′	EL	**26.923**	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

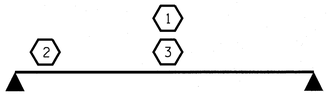
⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN 'A'

PROJECT NO. 17BP.14.R.78

SWAIN **COUNTY**

STATION: 12+32.00 -L-

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ASSEMBLED BY : C.B. BAKER DATE : 08-03-12
CHECKED BY : T.R. DUDECK DATE : 08-03-12

DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

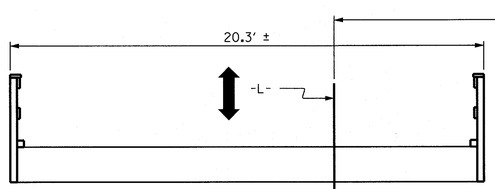
STANDARD

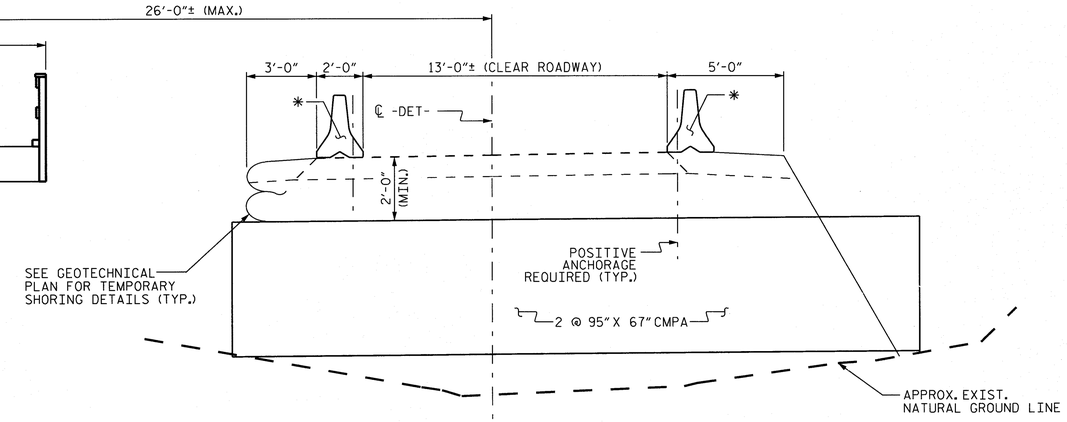
LRFR SUMMARY FOR 55′ CORED SLAB UNIT 60° SKEW & 120° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			15

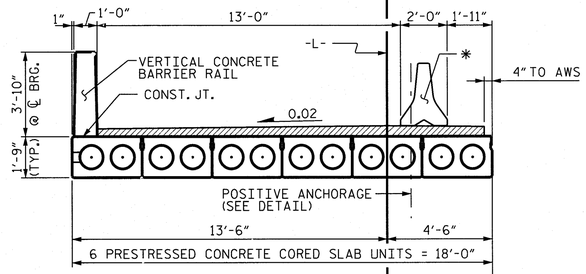
STD. NO. 21LRFR1_60&120S_55L

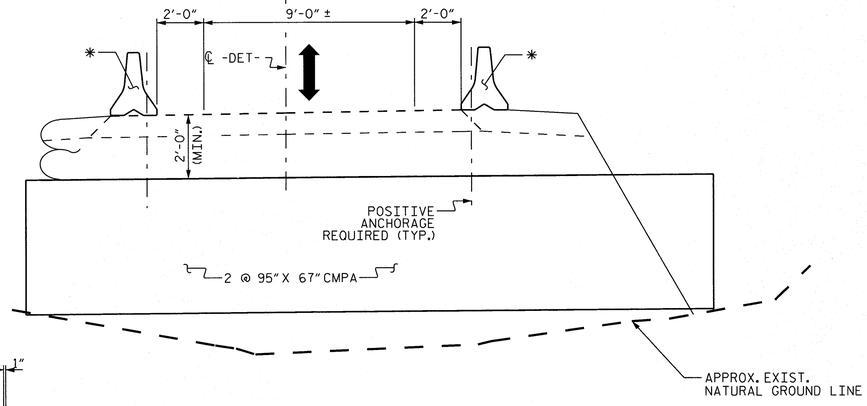
PHASE I TRAFFIC/ STAGE II CONSTRUCTION



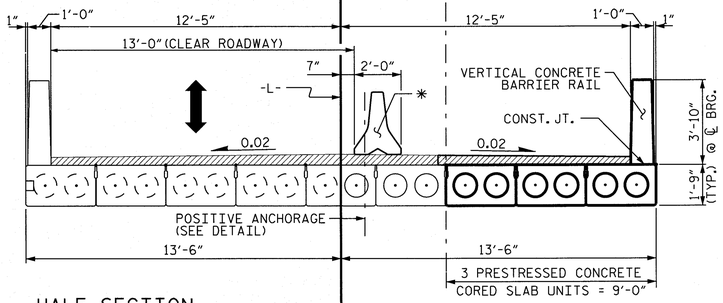


PHASE II TRAFFIC/ STAGE II CONSTRUCTION





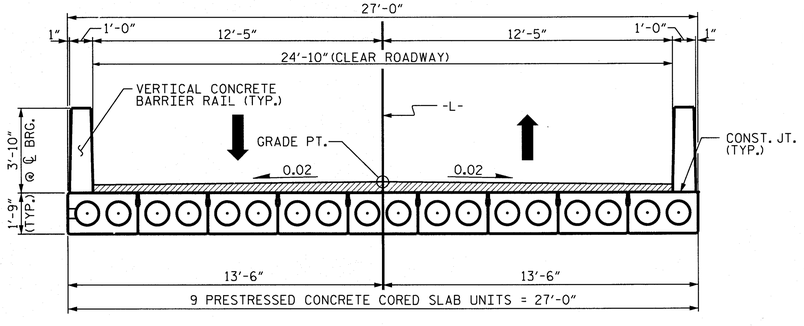
PHASE III TRAFFIC/ STAGE III CONSTRUCTION



HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

FINAL CONSTRUCTION



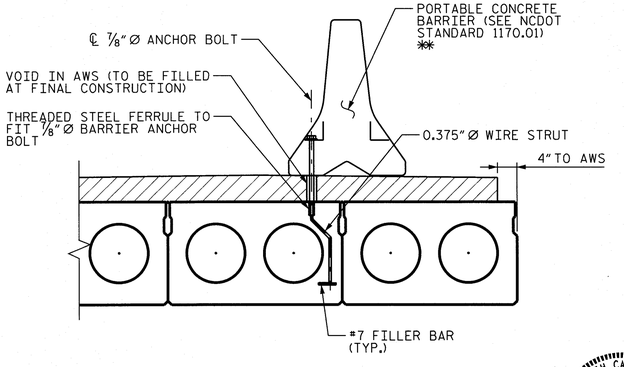
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

NOTES:

* DENOTES PORTABLE CONCRETE BARRIER PER NCDOT STANDARD 1170.01. SEE TRAFFIC MANAGEMENT PLANS.

** TRAFFIC MANAGEMENT DETAIL AND PAY ITEM.



POSITIVE ANCHORAGE DETAIL

PROJECT NO. 17BP.14.R.78

SWAIN COUNTY

STATION: 12+32.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION STAGING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			15

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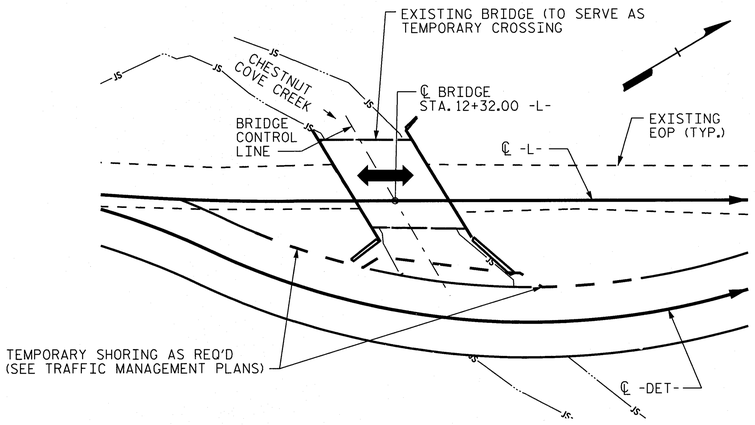
DRAWN BY : V. T. DOAN DATE : 05-03-12
CHECKED BY : T. R. DUDECK DATE : 08-03-12

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK 2/28/14

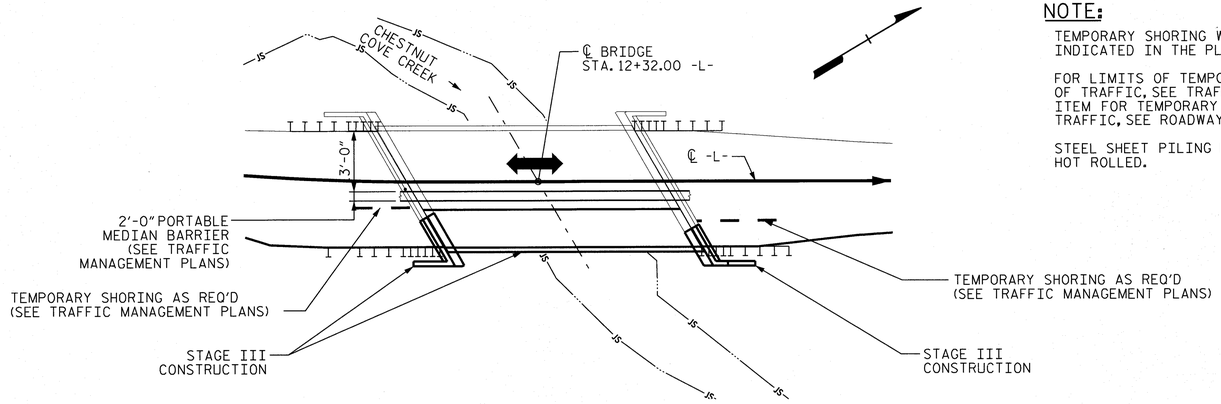


PLAN

NOTE:
SEE TRAFFIC MANAGEMENT PLANS FOR TRAFFIC CONTROL

PHASE I TRAFFIC /STAGE I CONSTRUCTION

CONSTRUCT TEMPORARY DETOUR ALIGNMENT -DET-.



PLAN

NOTE:

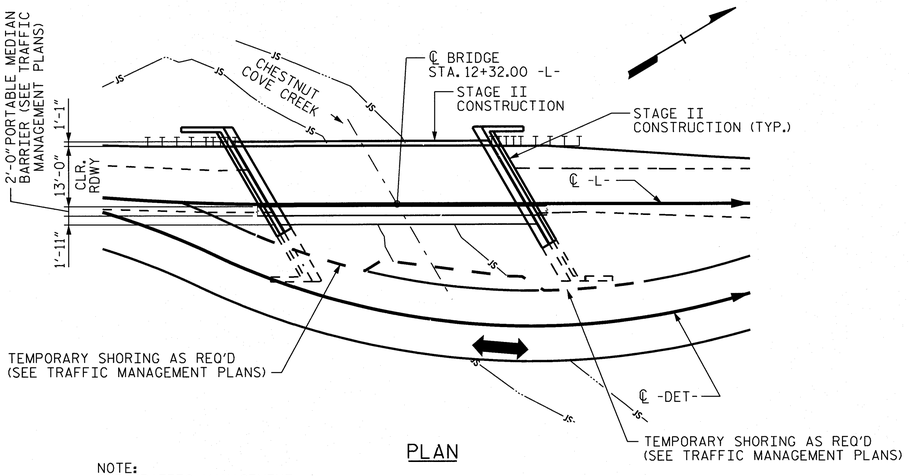
TEMPORARY SHORING WILL BE REQUIRED IN THE AREA INDICATED IN THE PLAN VIEW.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC MANAGEMENT PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.

PHASE III TRAFFIC /STAGE III CONSTRUCTION

SHIFT TRAFFIC TO NEW BRIDGE. REMOVE DETOUR. BUILD PHASE 3 CONSTRUCTION.

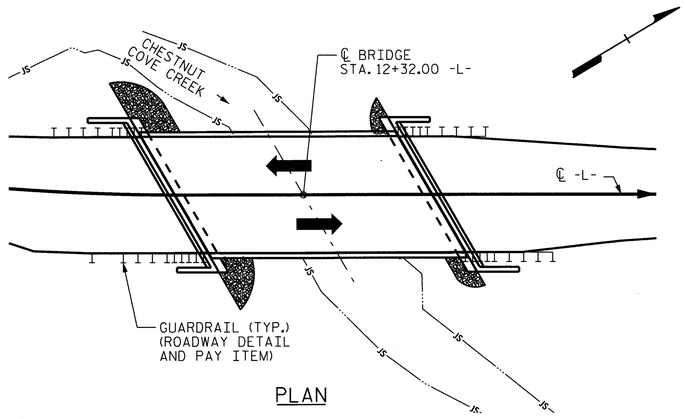


PLAN

NOTE:
SEE TRAFFIC MANAGEMENT PLANS FOR TRAFFIC CONTROL

PHASE II TRAFFIC /STAGE II CONSTRUCTION

SHIFT TRAFFIC TO -DET- ALIGNMENT.
DECONSTRUCT EXISTING BRIDGE.
BUILD PHASE 2 CONSTRUCTION.



PLAN

FINAL CONSTRUCTION

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CHECKED BY : T. R. DUDECK DATE : 08-03-12

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK 8/28/14

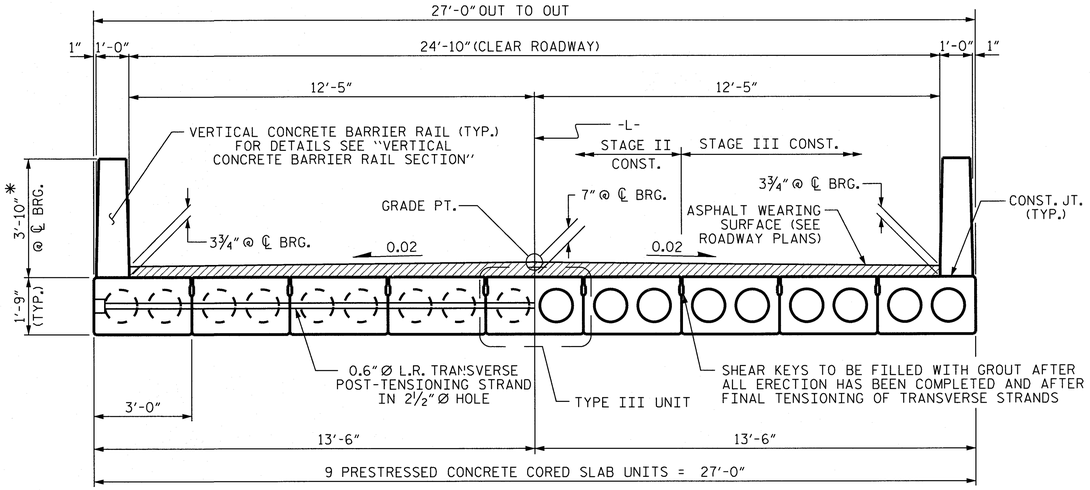
PROJECT NO. 17BP.14.R.78
SWAIN COUNTY
STATION: 12+32.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION STAGING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			15

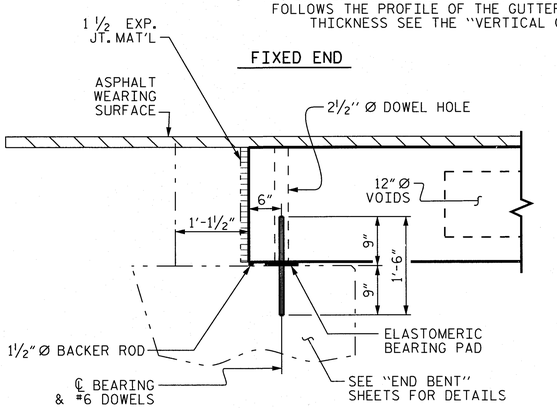


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

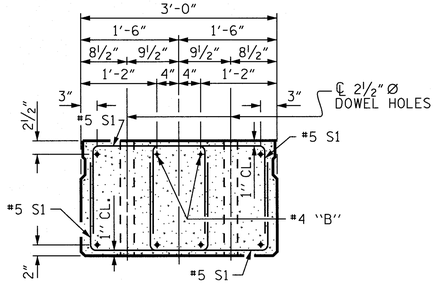
HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

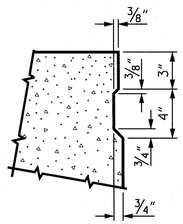


SECTION AT END BENT



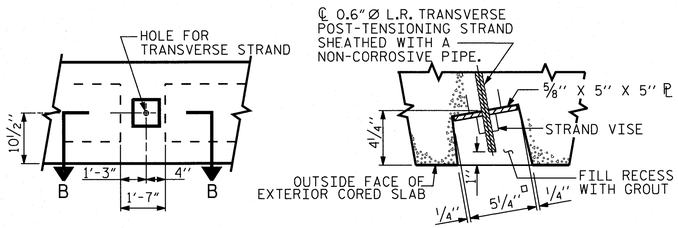
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES.
(STRAND LAYOUT NOT SHOWN.)
INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



SHEAR KEY DETAIL

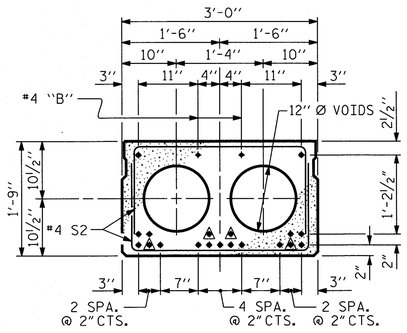
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



ELEVATION VIEW

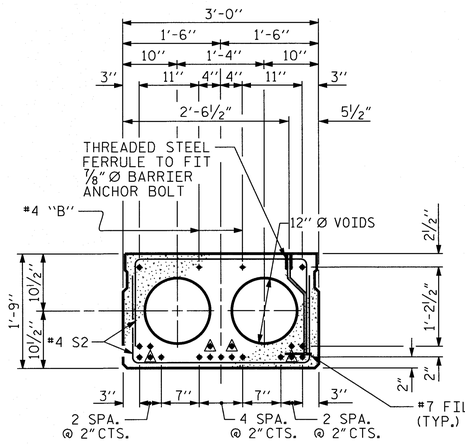
SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



INTERIOR SLAB SECTION (55' UNIT)

(19 STRANDS REQUIRED)



INTERIOR SLAB SECTION (55' UNIT)

(19 STRANDS REQUIRED)
TYPE III UNIT

0.6" Ø LOW RELAXATION STRAND LAYOUT

ANCHOR ASSEMBLY NOTES:

FOR ANCHOR ASSEMBLY DETAIL, SEE PLAN OF 55' UNIT.

FERRULES SHALL BE MADE OF STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF 2 ½" THREADS.

WIRE STRUTS SHOWN IN THE ANCHOR ASSEMBLY DETAIL ARE MINIMUM SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.

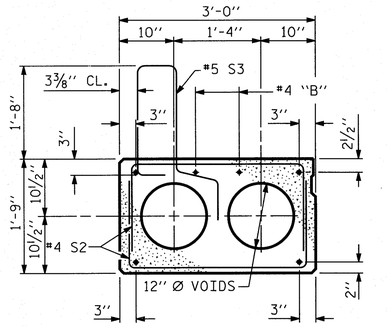
ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP, BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF ANCHOR ASSEMBLY COMPLETE IN PLACE SHALL BE CONSIDERED INCIDENTAL TO THE COST OF CORED SLAB UNIT.

FERRULES SHALL BE PLUGGED DURING CASTING OF CORED SLAB UNIT AS RECOMMENDED BY MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED END MAY BE USED

FOR TEMPORARY BARRIER DETAILS, SEE TRAFFIC MANAGEMENT PLANS.



EXT. SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

◉ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

◉ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

PROJECT NO. 17BP.14.R.78
SWAIN COUNTY
STATION: 12+32.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
60° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			15

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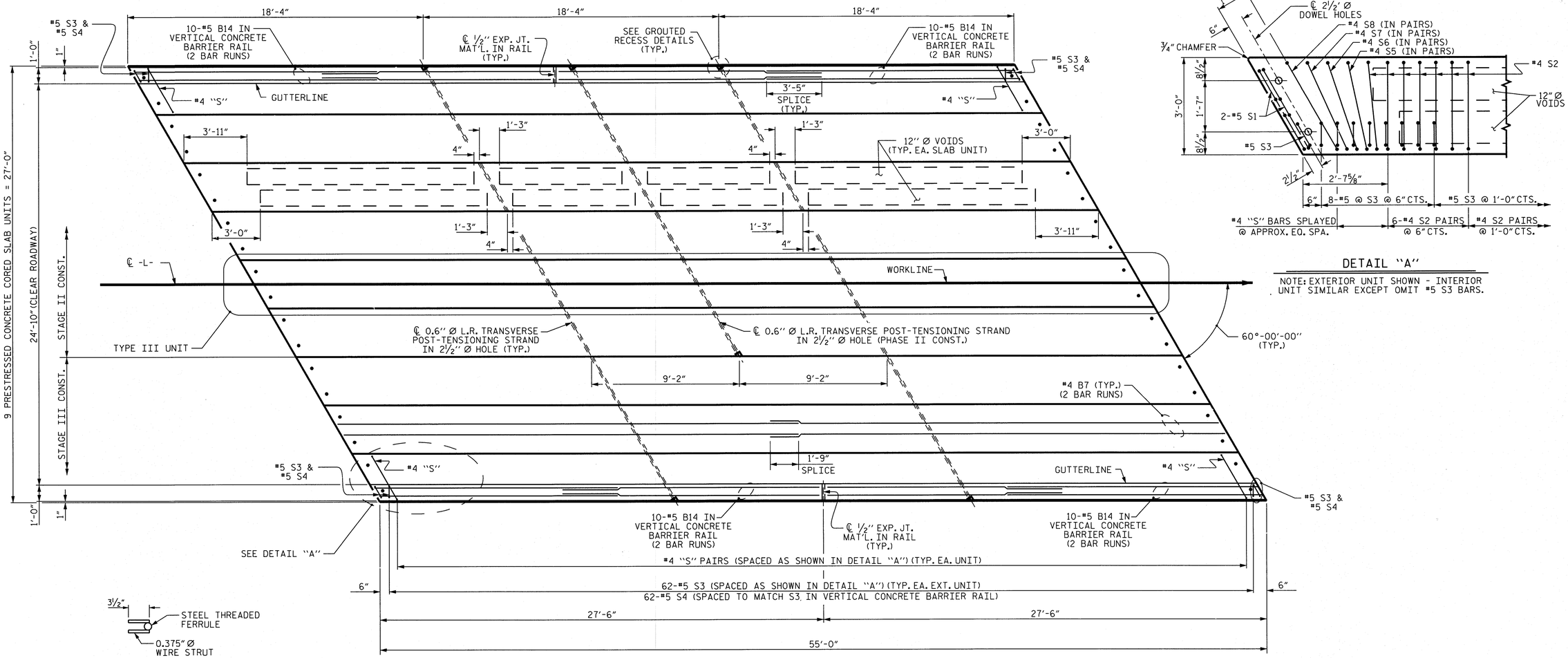
ASSEMBLED BY : C. B. BAKER	DATE : 08-03-12	DRAWN BY : DGE 5/09	REV. 12/11 MAA/AAC
CHECKED BY : T. R. DUDECK	DATE : 08-03-12	CHECKED BY : BCH 6/09	

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK 2/28/14

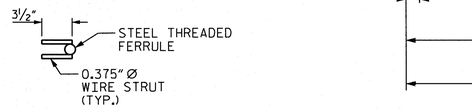
STD. NO. 21" PCS2_27_60S



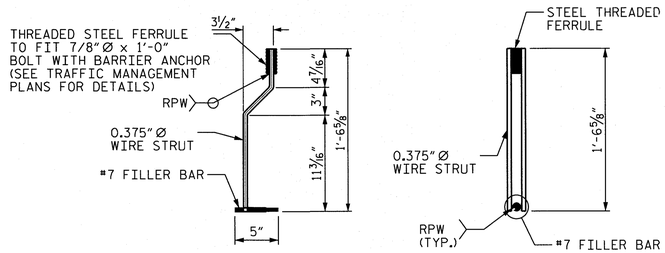
PLAN OF UNIT

DETAIL "A"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

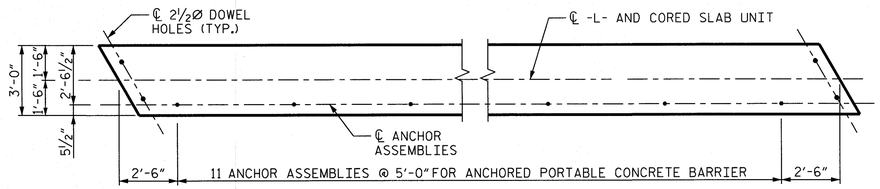


PLAN



ELEVATION END

ANCHOR ASSEMBLY DETAIL FOR PORTABLE CONCRETE BARRIER



PLAN OF TYPE III UNIT

PROJECT NO. 17BP.14.R.78

SWAIN COUNTY

STATION: 12+32.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PLAN OF 55' UNIT
24'-10" CLEAR ROADWAY
60° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			15

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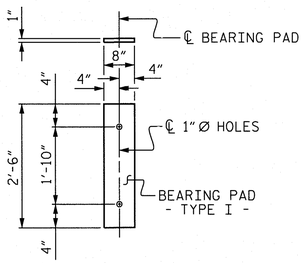
ASSEMBLED BY: C. B. BAKER	DATE: 08-03-12	DRAWN BY: DGE 5/09	REV. 12/5/11 MAA/AAC
CHECKED BY: T. R. DUDECK	DATE: 08-03-12	CHECKED BY: BCH 6/09	

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK 2/28/14

STD. NO. 21" PCS_27_60S_55L



FIXED END
(TYPE I - 18 REQ'D)

ELASTOMERIC BEARING DETAILS

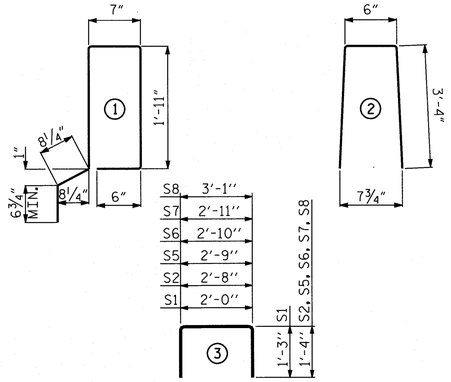
ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-9"
55' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2½" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	¼" ↓
FINAL CAMBER	2¼" ↑

** INCLUDES FUTURE WEARING SURFACE

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

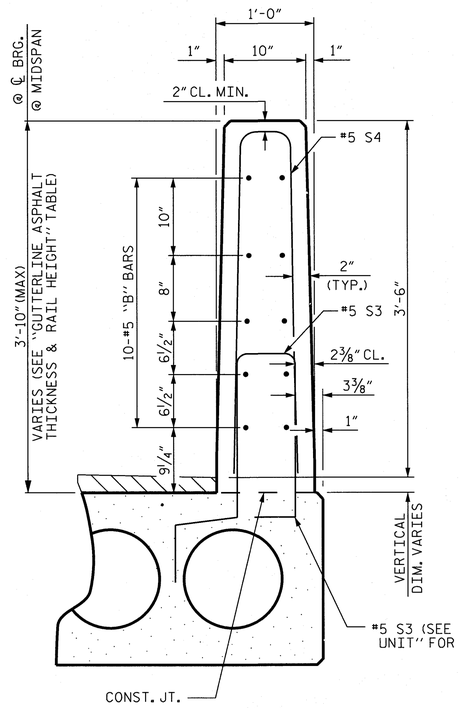
GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

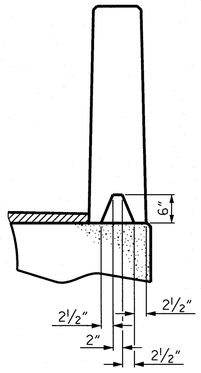
TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

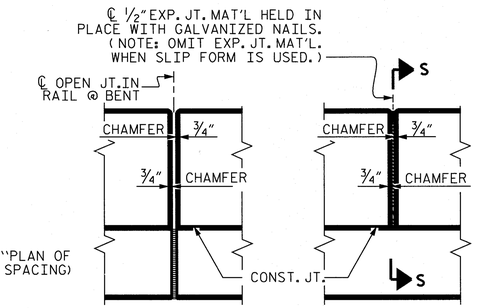
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
55' UNIT			
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	7	55'-0"	385'-0"
TOTAL	9	55'-0"	495'-0"





SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL SECTION

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS 55' UNIT	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
*B14	64	64	#5	STR	15'-6"	1293
* S4	128	128	#5	2	7'-2"	957
*EPOXY COATED REINFORCING STEEL				LBS.		2250
CLASS AA CONCRETE				CU.YDS.		14.4
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		110.00

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28'-2"	75	28'-2"	75
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	112	#4	3	5'-4"	399	5'-4"	399
* S3	64	#5	1	6'-2"	412		
S5	4	#4	3	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15
REINFORCING STEEL		LBS.			571		571
*EPOXY COATED REINFORCING STEEL		LBS.			412		
6500 P.S.I. CONCRETE		CU. YDS.			8.0		8.0
0.6" Ø L.R. STRANDS		No.			19		19

CONCRETE RELEASE STRENGTH	
UNIT	PSI
55' UNITS	4900

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
24'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS @ MID-SPAN NORMAL CROWN SECTION	RAIL HEIGHT @ MID-SPAN
55' UNITS	1½"	3'-7¾"

PROJECT NO. 17BP.14.R.78

SWAIN COUNTY

STATION: 12+32.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
60° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			15

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ASSEMBLED BY : C. B. BAKER DATE : 08-03-12
CHECKED BY : T. R. DUDECK DATE : 08-03-12

DRAWN BY : DGE 5/09
CHECKED BY : BCH 6/09

REV. 12/11 MAA/AAC

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK 2/28/14

STD. NO. 21"PCS3_27_60S

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS 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.)

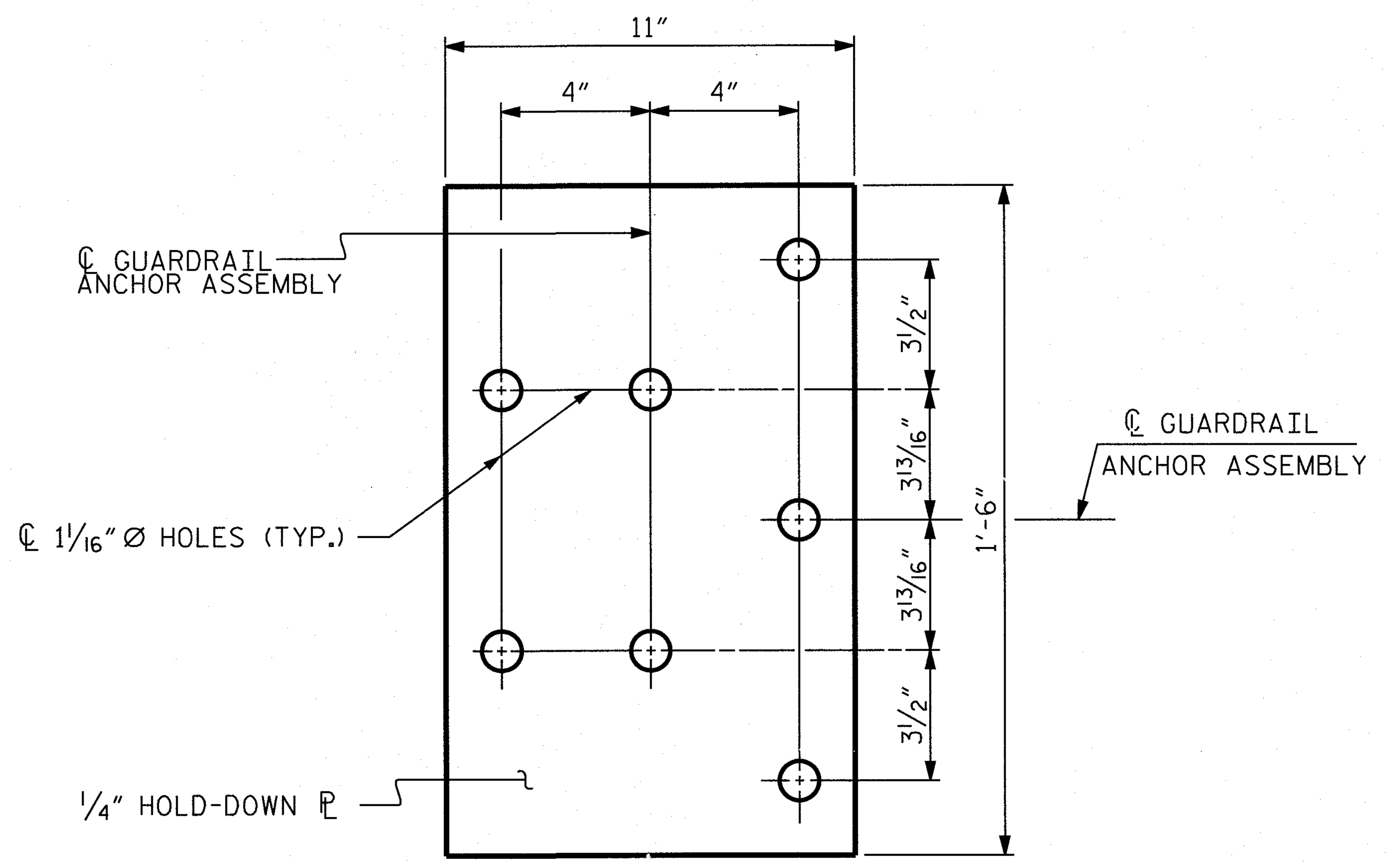
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

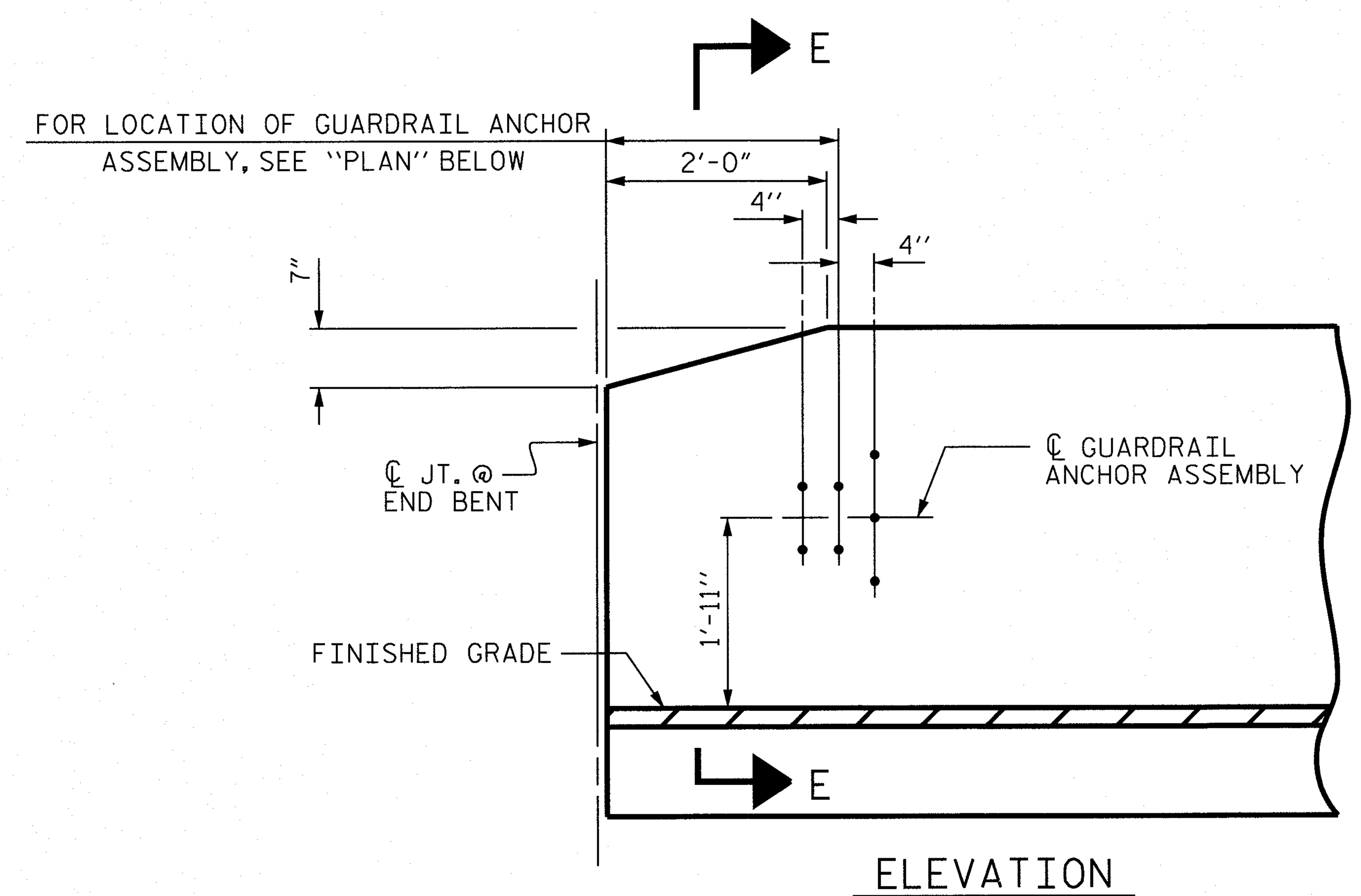
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

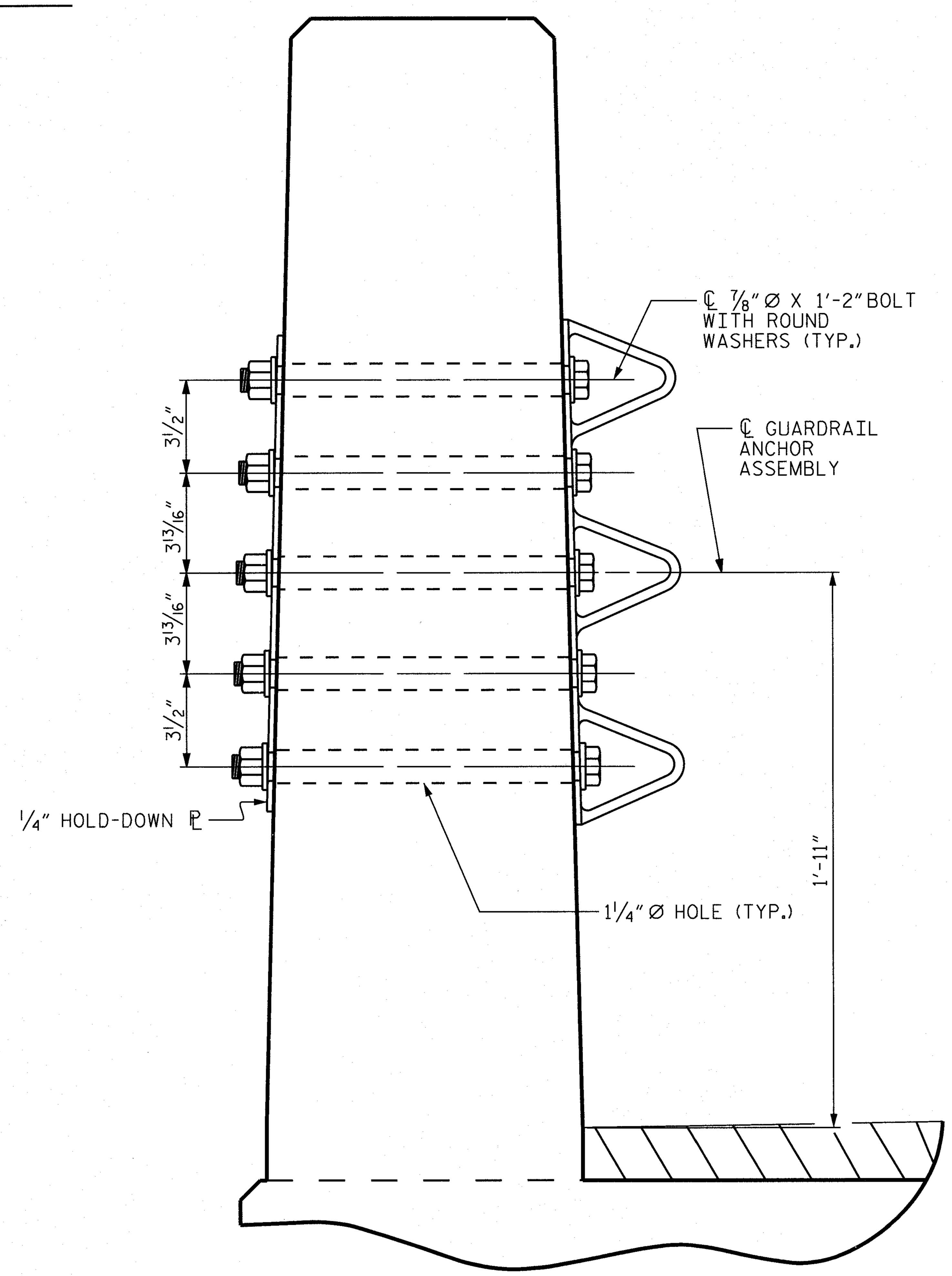
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

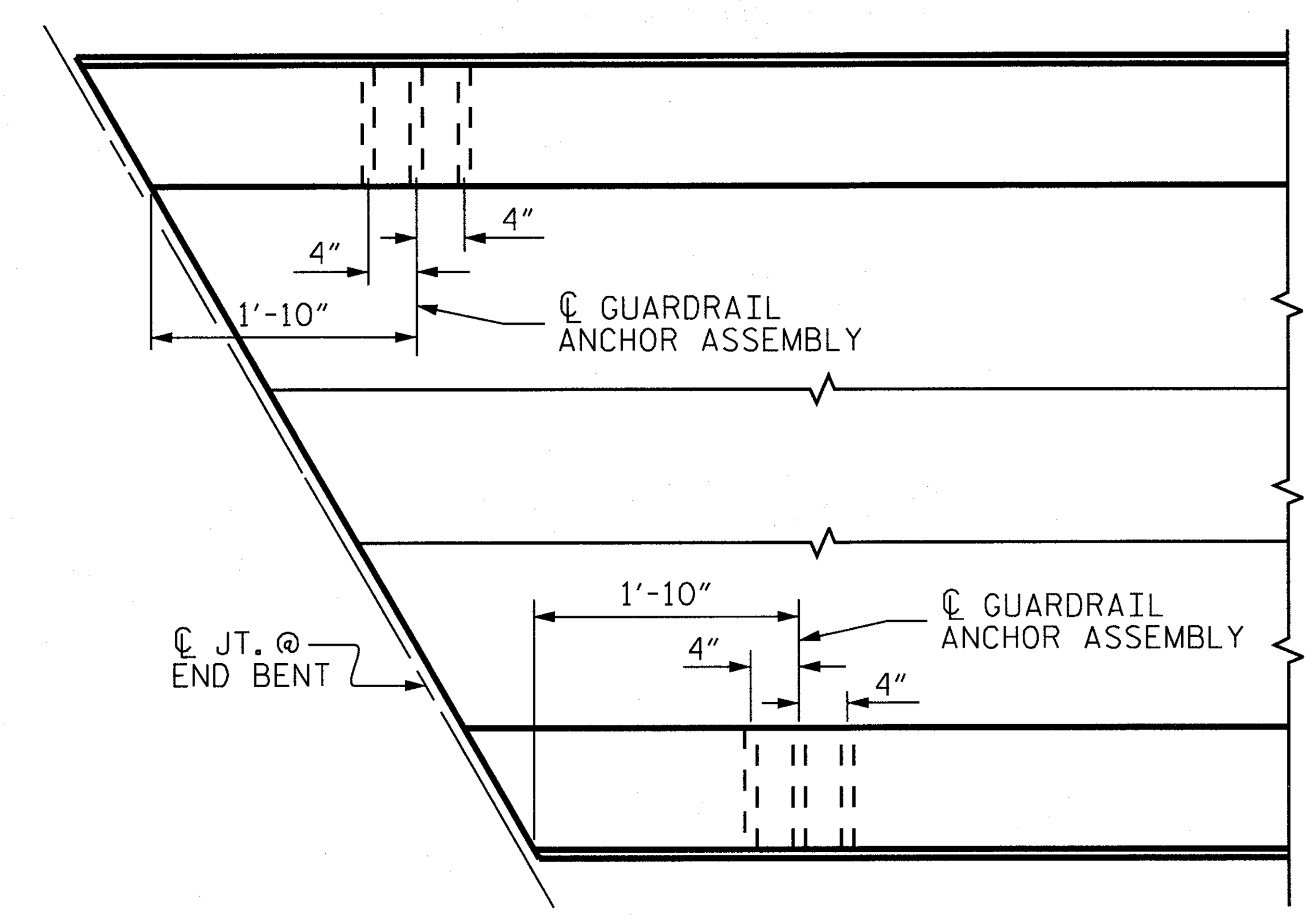


ELEVATION



SECTION E-E

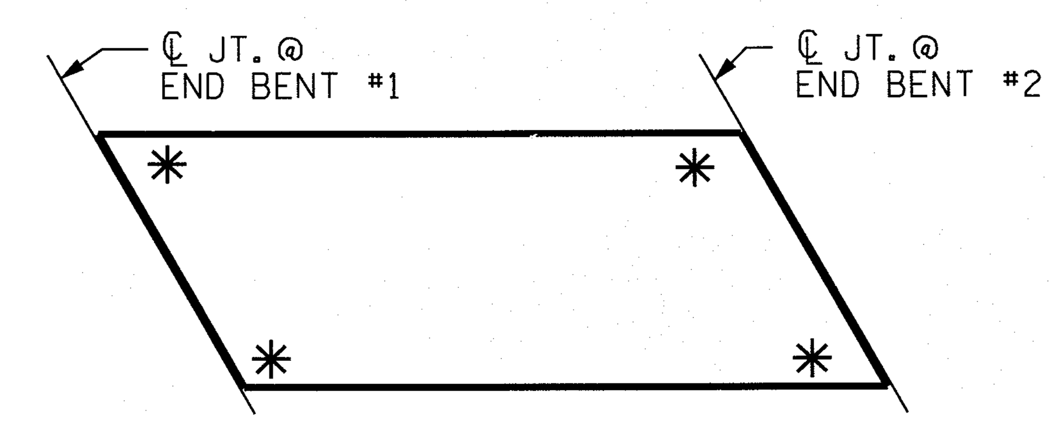
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.14.R.78

SWAIN COUNTY

STATION: 12+32.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK 2/28/14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS 15
2			4			

STD. NO. GRA3

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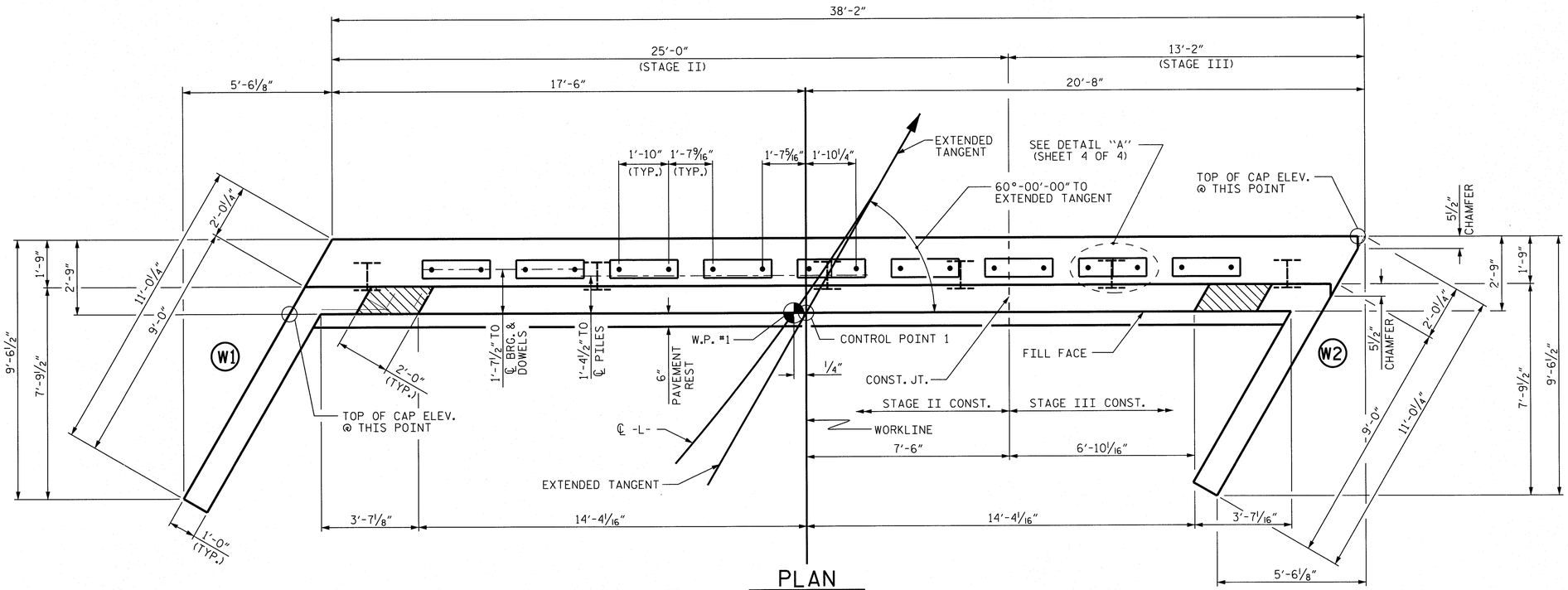
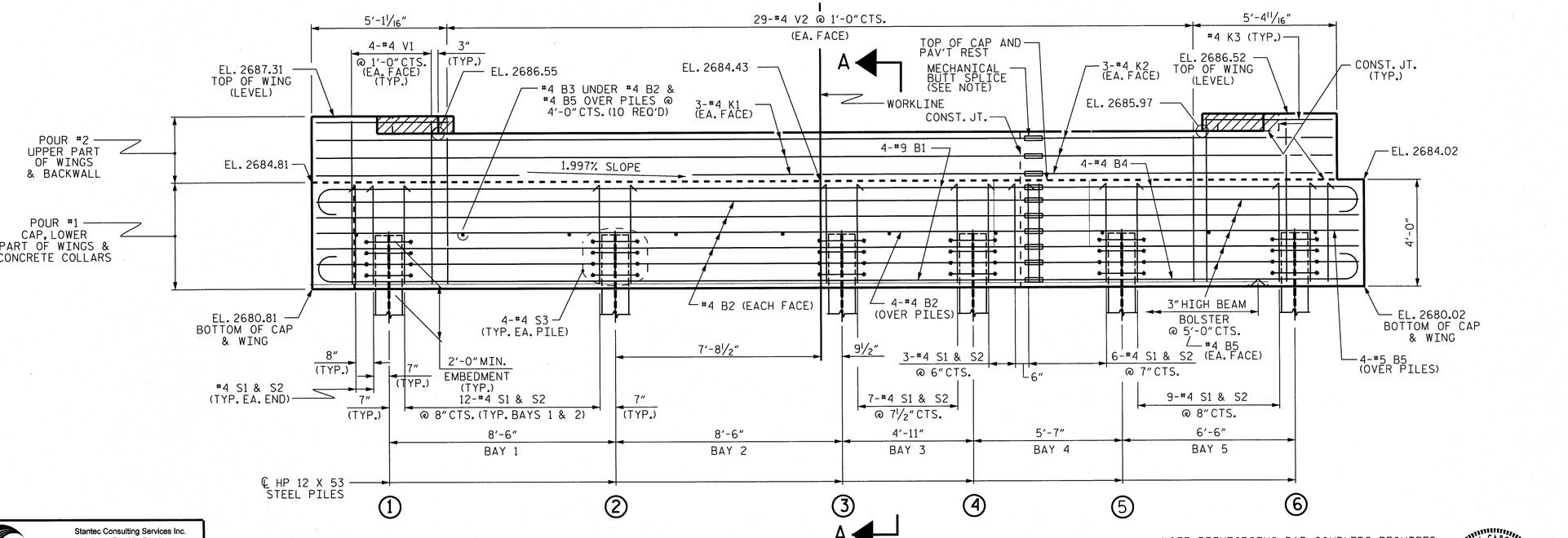
ASSEMBLED BY : T.R. DUDECK DATE : 9/26/12
CHECKED BY : J.T. KELVINGTON DATE : 10/25/12

DRAWN BY : MAA 5/10
CHECKED BY : GM 5/10
ADDED 5/6/10
REV. 10/1/11 MAA/GM
REV. 12/5/11 MAA/GM



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 5.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 5.

NOTES

STIRRUPS AND REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS AND CONSTRUCTION JOINTS.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR PILE SPLICE DETAILS, SEE END BENT 1 & 2.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL (PARAPET AND END POST) ARE CAST IF SLIP FORMING IS USED.

THE COST OF THE FILTER FABRIC SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR RIP RAP CLASS II.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 5.

FOR WING DETAILS, SEE SHEET 3 OF 5.

TOP OF PILE ELEVATIONS	
①	2682.11
②	2682.58
③	2682.42
④	2682.32
⑤	2682.21
⑥	2682.08

NOTE: REINFORCING BAR COUPLERS REQUIRED FOR MECHANICAL BUTT SPLICES SHALL BE INCIDENTAL TO PROCUREMENT AND PLACEMENT OF REINFORCING STEEL

NORTH CAROLINA PROFESSIONAL SEAL 31482 ENGINEER THOMAS R. DUDECK 2/28/14

PROJECT NO. 17BP.14.R.78
SWAIN COUNTY
STATION: 12+32.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

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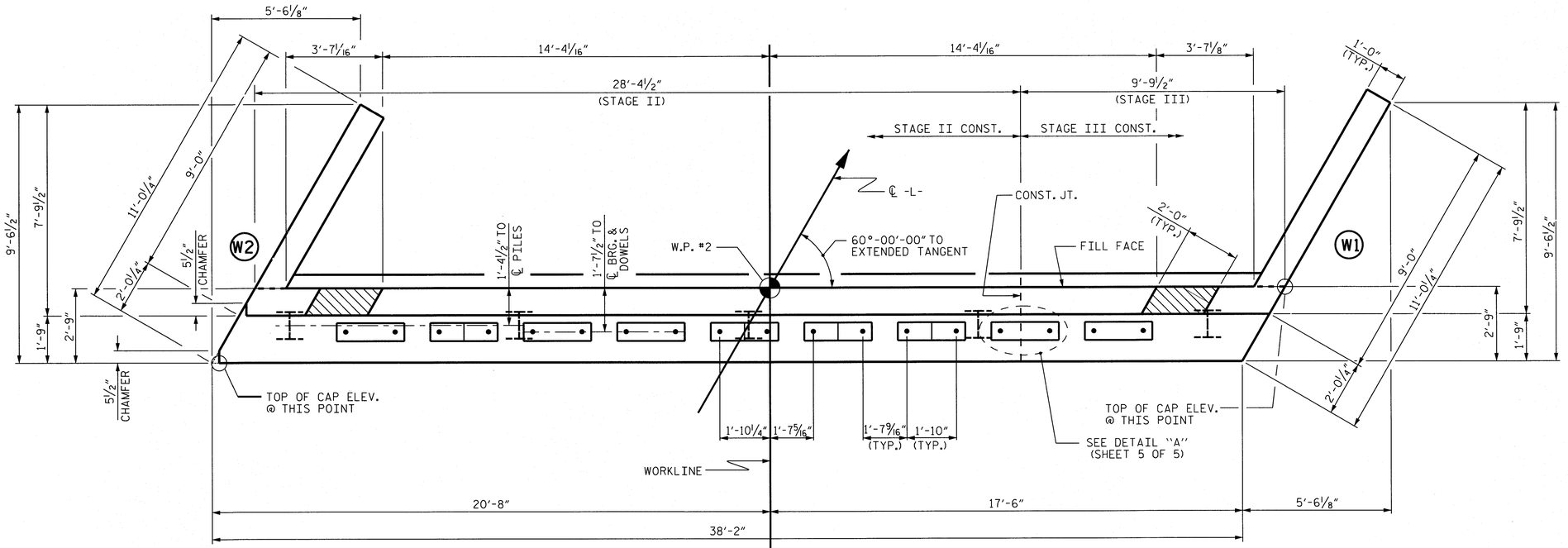
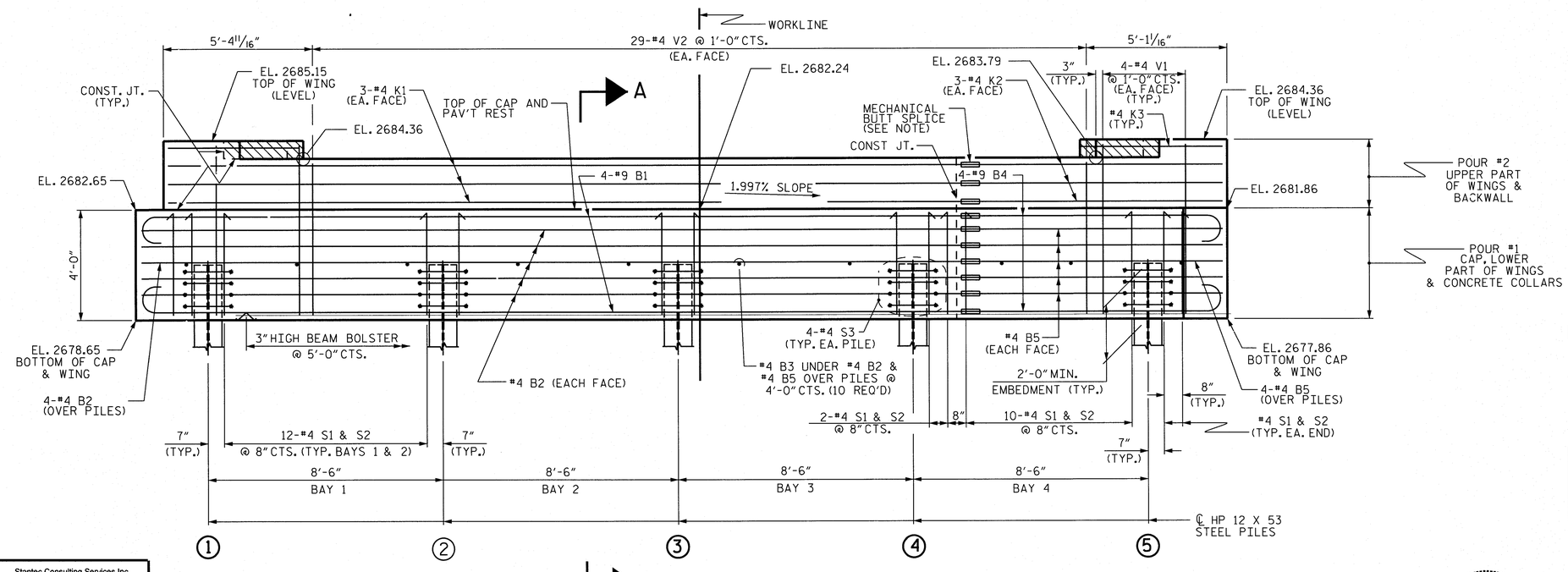
License No. F-0672

ASSEMBLED BY : V. T. DOAN DATE : 08-03-12
CHECKED BY : T. R. DUDECK DATE : 08-03-12
DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			15



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 5 OF 5.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 5 OF 5.

NOTES

STIRRUPS AND REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS AND CONSTRUCTION JOINTS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 5.

FOR WING DETAILS, SEE SHEET 3 OF 5.

TOP OF PILE ELEVATIONS	
①	2679.89
②	2680.43
③	2680.26
④	2680.09
⑤	2679.92

NOTE: REINFORCING BAR COUPLERS REQUIRED FOR MECHANICAL BUTT SPLICES SHALL BE INCIDENTAL TO PROCUREMENT AND PLACEMENT OF REINFORCING STEEL

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS T. DUDECK 2/28/14

PROJECT NO. 17BP.14.R.78
SWAIN COUNTY
STATION: 12+32.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

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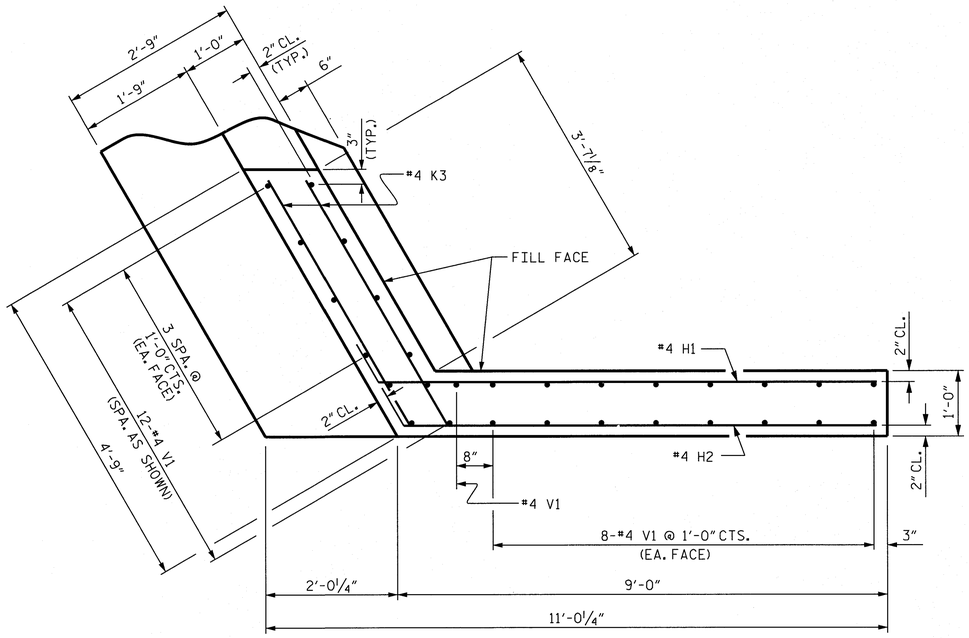
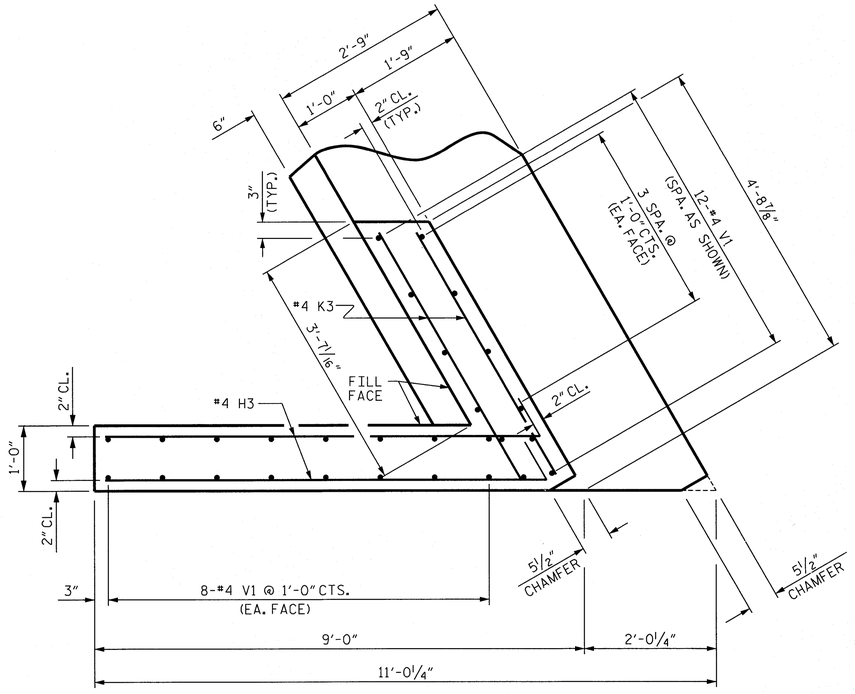
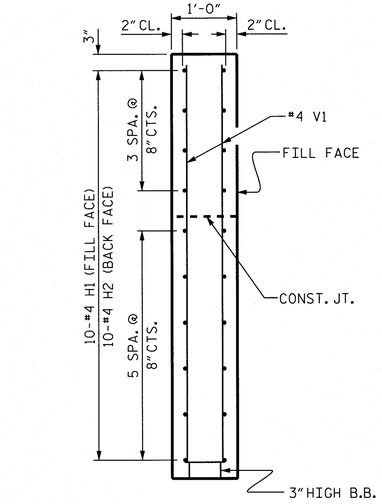


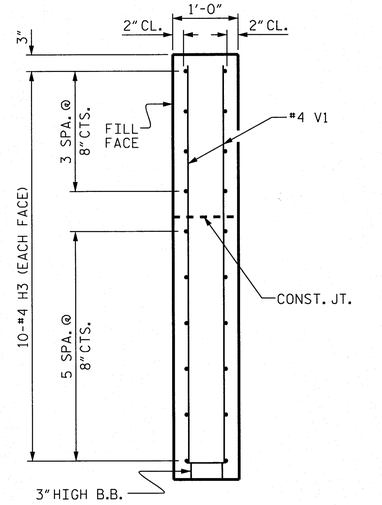
PLAN OF WING (W1)



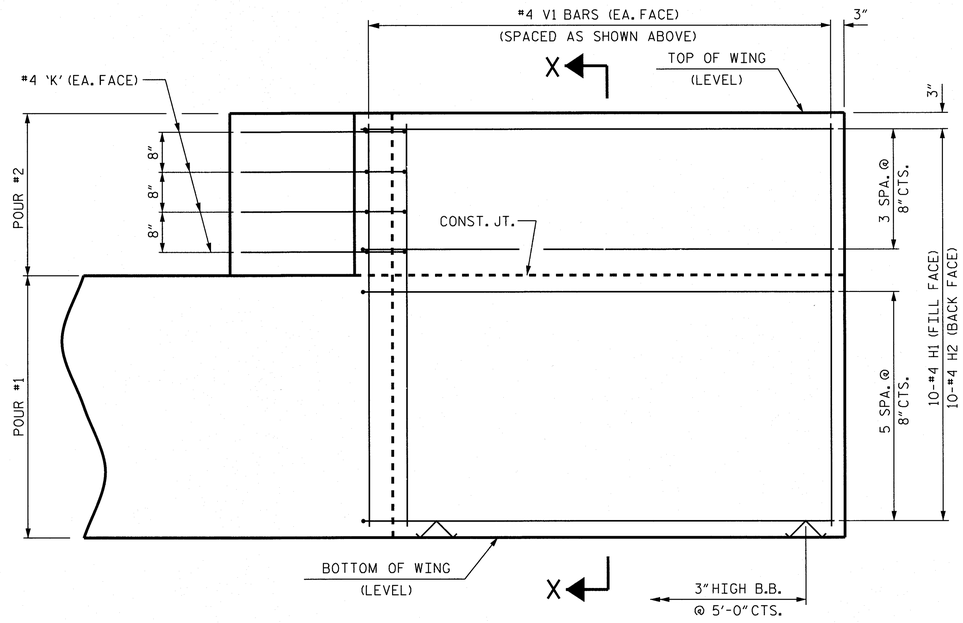
PLAN OF WING (W2)



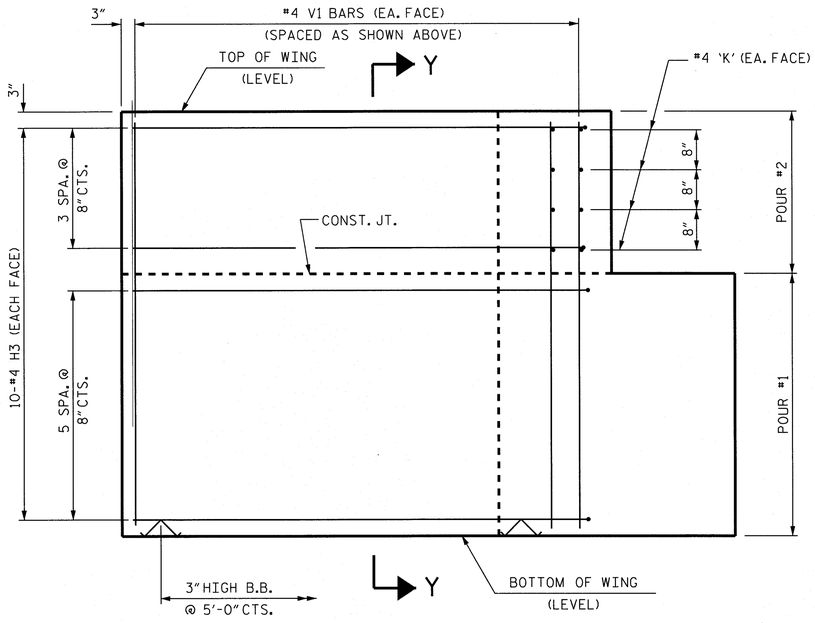
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. 17BP.14.R.78

SWAIN COUNTY

STATION: 12+32.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT
WING DETAILS

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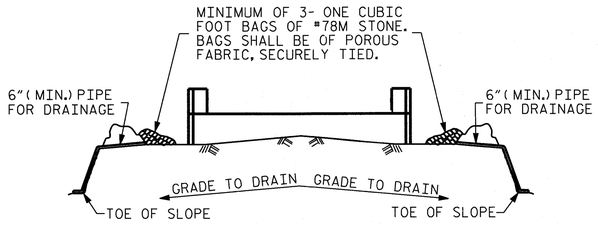
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 31462 THOMAS R. DUDECK 2/28/14

STD. NO. EB_27_60S4

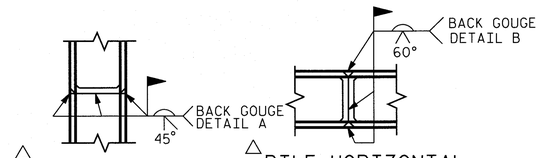


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

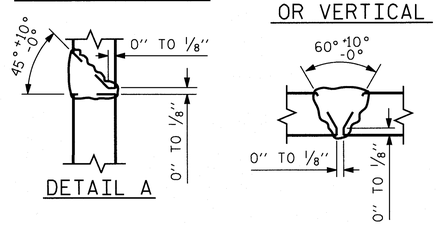
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



△ PILE VERTICAL

△ PILE HORIZONTAL OR VERTICAL

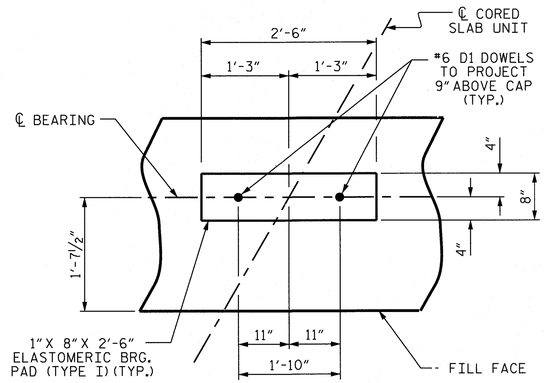


DETAIL A

DETAIL B

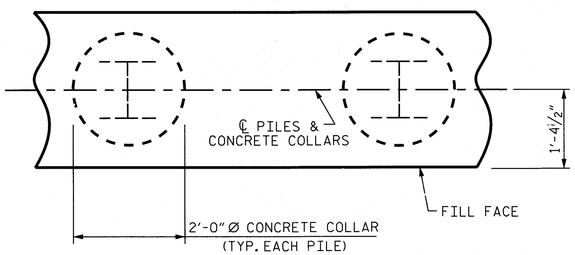
△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

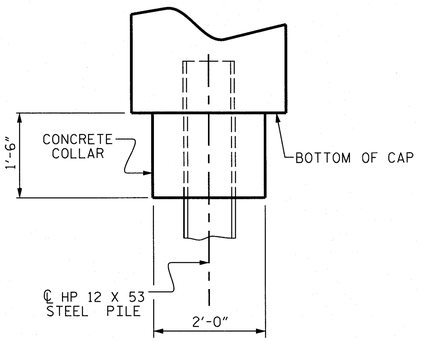


DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



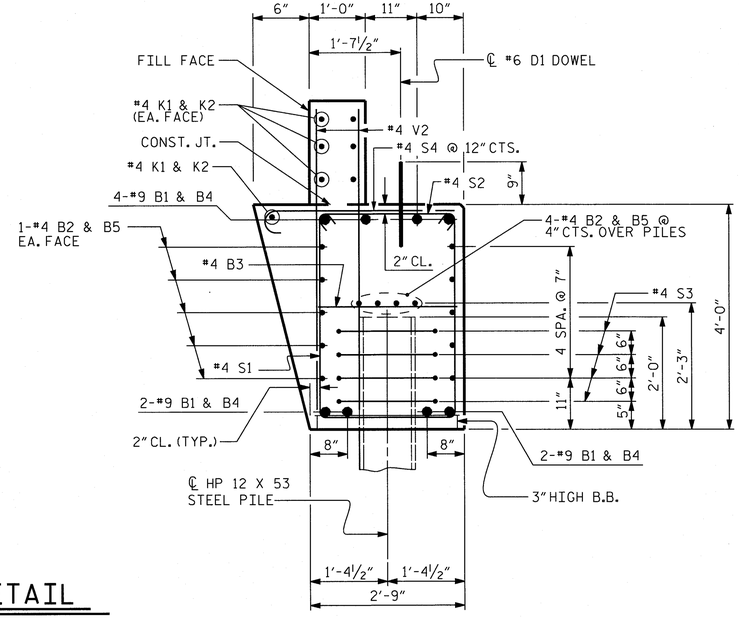
PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

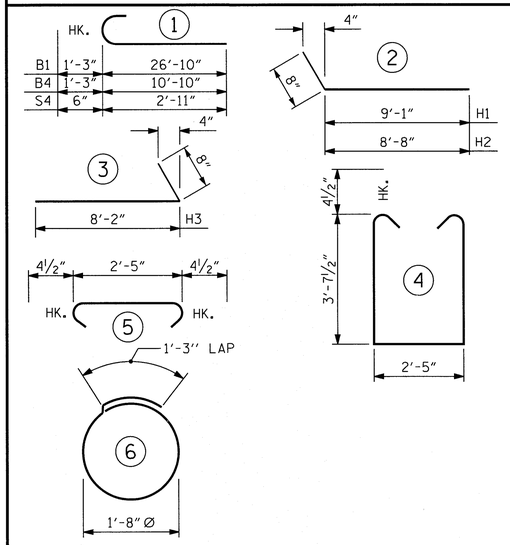
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1
HP 12 X 53 STEEL PILES
NO: 6 LIN. FT.= 90.0
PILE EXCAVATION IN SOIL = 0'
PILE EXCAVATION NOT IN SOIL = 60'

BILL OF MATERIAL FOR END BENT #1

PHASE 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	28'-1"	764
B2	14	#4	STR	26'-10"	251
B3	7	#4	STR	2'-5"	11
D1	13	#6	STR	1'-6"	29
H3	20	#4	3	8'-10"	118
K1	7	#4	STR	26'-10"	125
K3	2	#4	STR	4'-1"	5
S1	36	#4	4	10'-5"	250
S2	36	#4	5	3'-2"	76
S3	16	#4	6	6'-6"	69
S4	25	#4	1	3'-5"	57
V1	29	#4	STR	6'-2"	119
V2	44	#4	STR	5'-4"	157

REINFORCING STEEL (FOR PHASE 2) 2031 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WING & COLLARS 13.0 C.Y.

POUR #2 UPPER PART OF WING & BACKWALL 2.5 C.Y.

CLASS A CONCRETE 15.5 C.Y.

PHASE 3

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B3	3	#4	STR	2'-5"	5
B4	8	#9	1	12'-1"	329
B5	14	#4	STR	10'-10"	101
D1	5	#6	STR	1'-6"	11
H1	10	#4	2	9'-9"	65
H2	10	#4	2	9'-4"	62
K2	7	#4	STR	10'-10"	51
K3	2	#4	STR	4'-1"	5
S1	17	#4	4	10'-5"	118
S2	17	#4	5	3'-2"	36
S3	8	#4	6	6'-6"	35
S4	13	#4	1	3'-5"	30
V1	28	#4	STR	6'-2"	115
V2	14	#4	STR	5'-4"	50

REINFORCING STEEL (FOR PHASE 3) 1013 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WING & COLLARS 7.4 C.Y.

POUR #2 UPPER PART OF WING & BACKWALL 1.8 C.Y.

CLASS A CONCRETE 9.1 C.Y.

TOTAL CLASS A CONCRETE 24.6 C.Y.

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SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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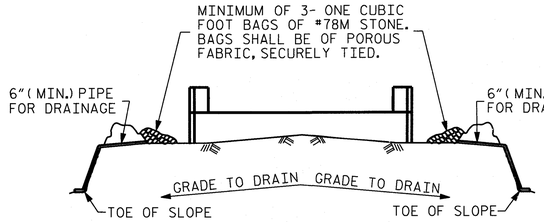
NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK 2/28/14



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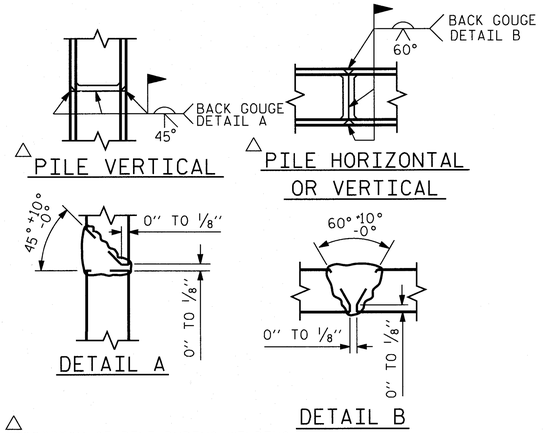
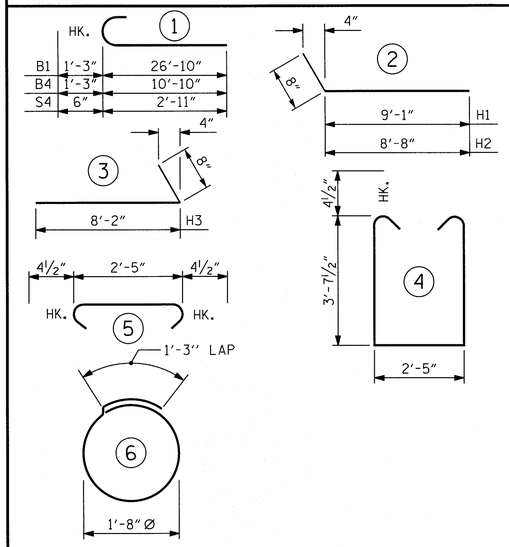
TEMPORARY DRAINAGE AT END BENT



△POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 2
HP 12 X 53 STEEL PILES
NO: 5 LIN. FT. = 100.0
PILE EXCAVATION IN SOIL = 30'
PILE EXCAVATION NOT IN SOIL = 50'

BAR TYPES

BILL OF MATERIAL FOR END BENT #2

PHASE 2						PHASE 3					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	31'-4"	852	B3	3	#4	STR	2'-5"	5
B2	14	#4	STR	30'-1"	281	B4	8	#9	1	8'-9"	238
B3	7	#4	STR	2'-5"	11	B5	14	#4	STR	7'-6"	70
D1	15	#6	STR	1'-6"	34	D1	3	#6	STR	1'-6"	7
H3	20	#4	3	8'-10"	118	H1	10	#4	2	9'-9"	65
						H2	10	#4	2	9'-4"	62
K1	7	#4	STR	30'-1"	141						
K3	2	#4	STR	4'-1"	5	K2	7	#4	STR	7'-6"	35
						K3	2	#4	STR	4'-1"	5
S1	40	#4	4	10'-5"	278						
S2	40	#4	5	3'-2"	85	S1	12	#4	4	10'-5"	84
S3	16	#4	6	6'-6"	69	S2	12	#4	5	3'-2"	25
S4	27	#4	1	3'-5"	62	S3	4	#4	6	6'-6"	17
						S4	11	#4	1	3'-5"	25
V1	28	#4	STR	6'-2"	115						
V2	48	#4	STR	5'-5"	174	V1	29	#4	STR	6'-2"	119
						V2	10	#4	STR	5'-5"	36

REINFORCING STEEL (FOR PHASE 2) 2225 LBS.

REINFORCING STEEL (FOR PHASE 3) 793 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WING & COLLARS 13.6 C.Y.

POUR #2 UPPER PART OF WING 3.4 C.Y.

TOTAL CLASS A CONCRETE 17.0 C.Y.

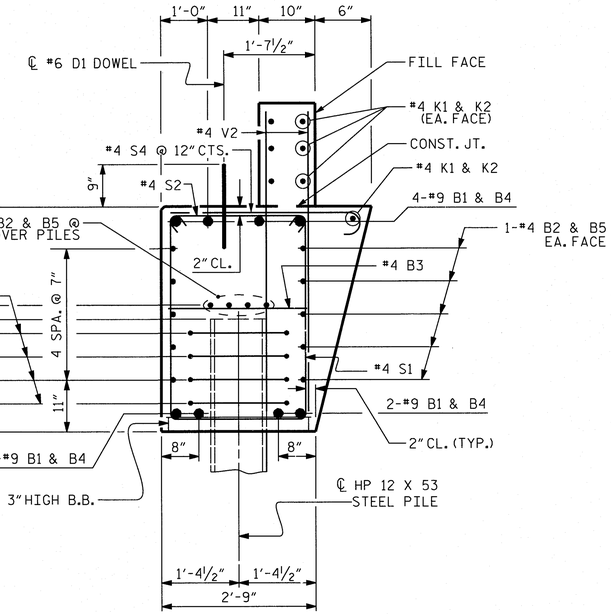
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WING & COLLARS 5.4 C.Y.

POUR #2 UPPER PART OF WING 1.6 C.Y.

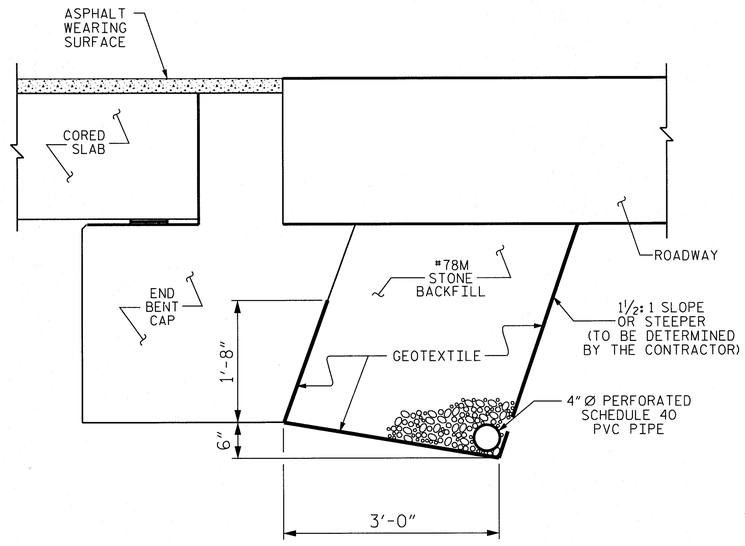
TOTAL CLASS A CONCRETE 7.0 C.Y.

TOTAL CLASS A CONCRETE 24.0 C.Y.



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")



APPROACH FILL @ END BENT

(END BENT No. 2 SHOWN, END BENT No. 1 SIMILAR)

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

PROJECT NO. 17BP.14.R.78

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SHEET 5 OF 5

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SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

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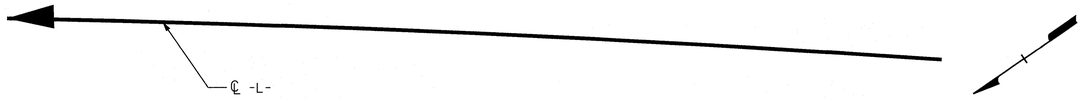
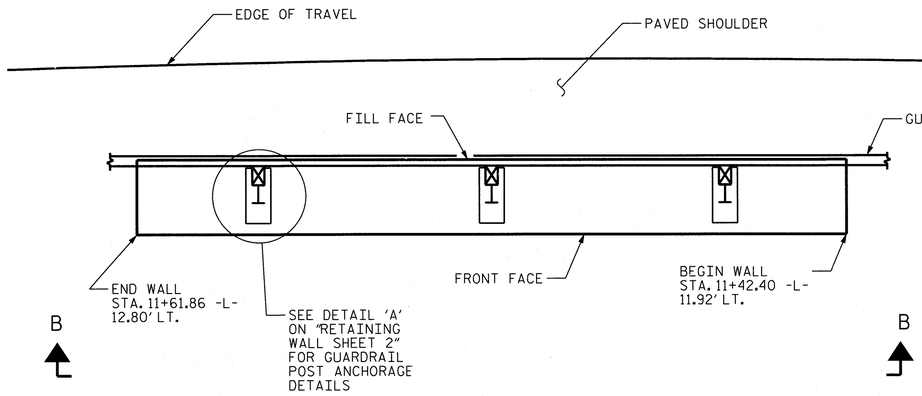
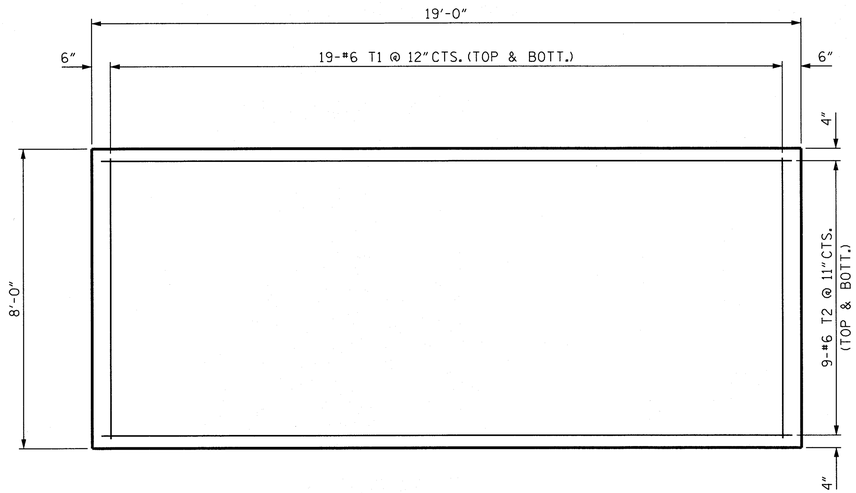




PLAN VIEW

NOTE: FOOTING NOT SHOWN FOR CLARITY



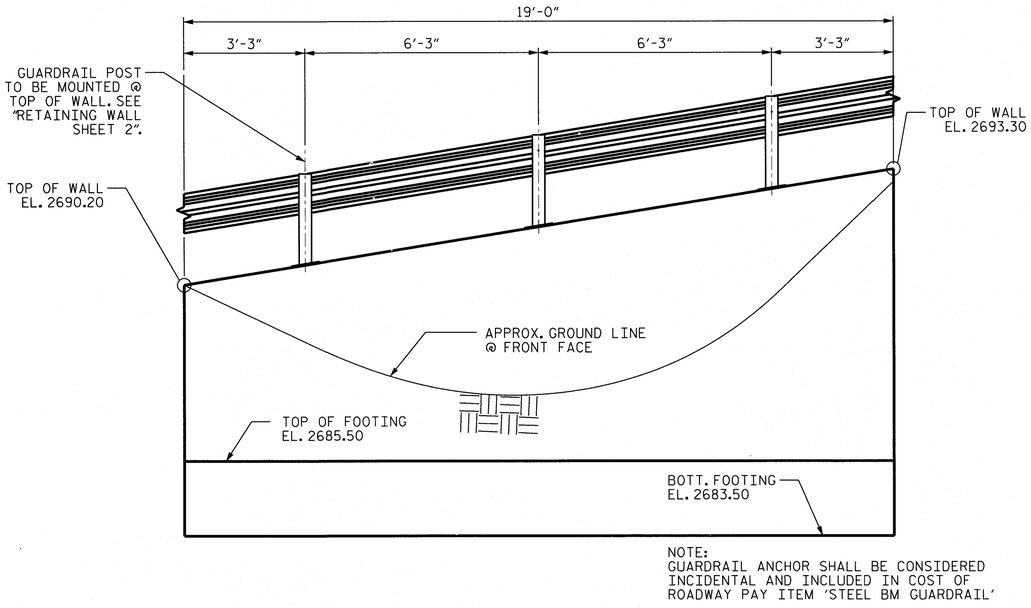
PLAN OF FOOTING

NOTES: GUARDRAIL

1. GUARDRAIL SHALL CONFORM TO THE NCDOT STANDARD SPECIFICATIONS EXCEPT AS NOTED AND AS SHOWN ON PLANS.
2. POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-36. SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A-570 GRADE 33 OR A-611 GRADE C.
3. POSTS, BASE PLATES, AND SHIMS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-123.
4. POSTS ARE TO BE PLUMB. SHIMS MAY BE USED BENEATH THE ROADWAY EDGE OF THE BASE ANGLES AND/OR BASE PLATES AS NECESSARY FOR POST ALIGNMENT.
5. PROPOSED RAIL POSTS MAY BE SHIFTED SLIGHTLY TO CLEAR REINFORCING STEEL. STANDARD SLOTS MAY BE USED IN THE RAIL TO ALLOW ADJUSTMENT.
6. POST SPACINGS AS SHOWN ON THE PLANS SHALL BE CHECKED BEFORE HOLES ARE DRILLED IN THE GUARDRAIL. STANDARD SLOTS WILL BE ALLOWED. FIELD PUNCHING OF THE HOLES OR SLOTS WILL NOT BE PERMITTED.
7. BOLTS, NUTS, AND WASHERS ARE TO BE GALVANIZED TO CONFORM TO THE REQUIREMENTS OF AASHTO M232.
8. FOR WALL FOUNDATION LAYOUT, SEE SHEET S-2.

NOTES: GENERAL

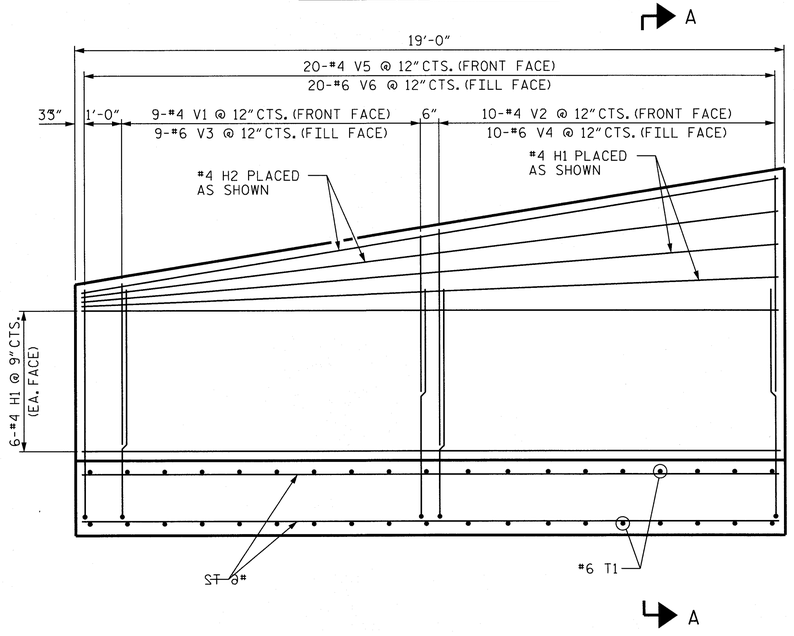
FOR RETAINING WALL, SEE SPECIAL PROVISIONS.



NOTE:
GUARDRAIL ANCHOR SHALL BE CONSIDERED INCIDENTAL AND INCLUDED IN COST OF ROADWAY PAY ITEM 'STEEL BM GUARDRAIL'

ELEVATION B-B

(FRONT FACE)



ELEVATION B-B - REINFORCEMENT DETAILS

(FRONT FACE)

BILL OF MATERIALS
RETAINING WALL @ STA. 11+42.40 -L-
LUMP SUM

PROJECT NO. 17BP.14.R.78

SWAIN COUNTY

STATION: 12+32.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

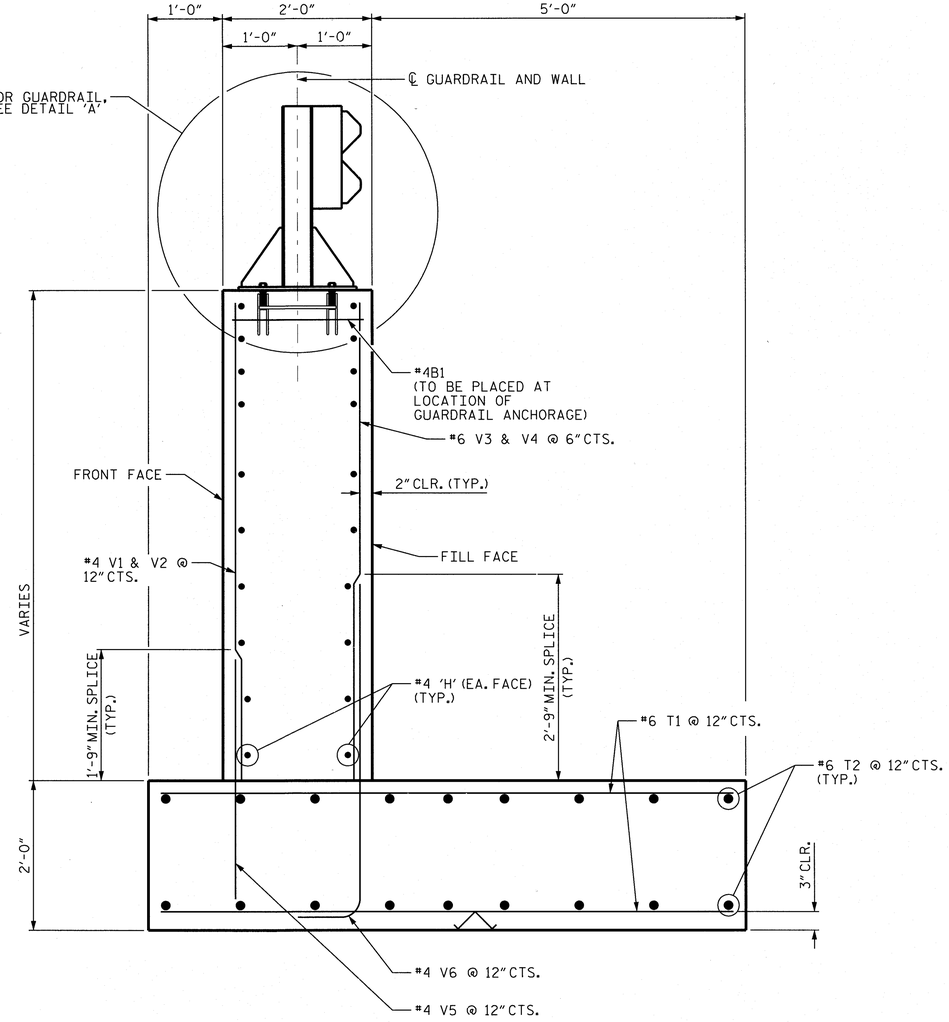
RETAINING WALL

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

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

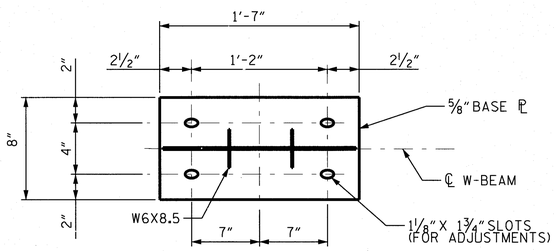
DESIGNED BY : J. L. HENNEKES DATE : 08-03-12
CHECKED BY : J. T. KELVINGTON DATE : 08-03-12

NORTH CAROLINA PROFESSIONAL SEAL 21462 ENGINEER THOMAS R. DUDECK 2/28/14



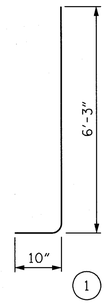
NOTE:
GUARDRAIL ANCHOR SHALL BE CONSIDERED INCIDENTAL AND INCLUDED IN COST OF ROADWAY PAY ITEM 'STEEL BM GUARDRAIL'

SECTION A-A



GUARDRAIL BASE ℙ

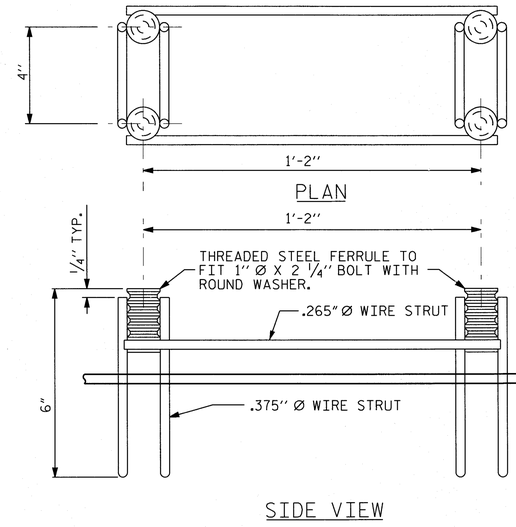
BAR TYPES



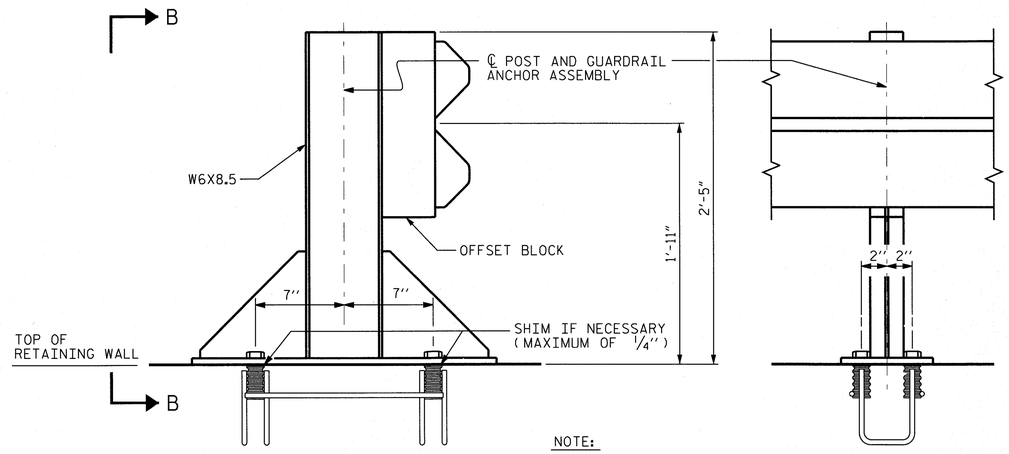
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#4	STR	1'-8"	7
H1	16	#4	STR	18'-8"	200
H2	4	#4	STR	18'-9"	50
T1	38	#6	STR	7'-8"	438
T2	18	#6	STR	18'-8"	505
V1	9	#4	STR	3'-4"	20
V2	10	#4	STR	4'-11"	33
V3	9	#6	STR	4'-4"	59
V4	10	#6	STR	5'-11"	89
V5	20	#4	STR	6'-3"	84
V6	20	#6	1	7'-1"	213
REINFORCING STEEL					1698 LBS.
CLASS A CONCRETE					20.1 CU. YDS.
GUARDRAIL					19 LIN. FT.



GUARDRAIL ANCHOR ASSEMBLY



NOTE:
FOR GUARDRAIL & POST DETAILS, SEE NCDOT STD. 862.03

DETAIL 'A'

SECTION B-B

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK
2/28/14

PROJECT NO. 17BP.14.R.78
SWAIN COUNTY
STATION: 12+32.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RETAINING WALL

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

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DRAWN BY : J. L. HENNEKES DATE : 08-03-12
CHECKED BY : J. T. KELVINGTON DATE : 08-03-12

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

REV. 6-16-95 EEM (W) RGW REV. 5-7-03 RWW (W) JTE REV. 10-1-11 MAA (W) GM
REV. 8-16-99 RWW (W) LES REV. 5-1-06 TLA (W) GM

$$$$$$SYSTIME$$$$$
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$$$$USERNAME$$$$

STD. NO. SN