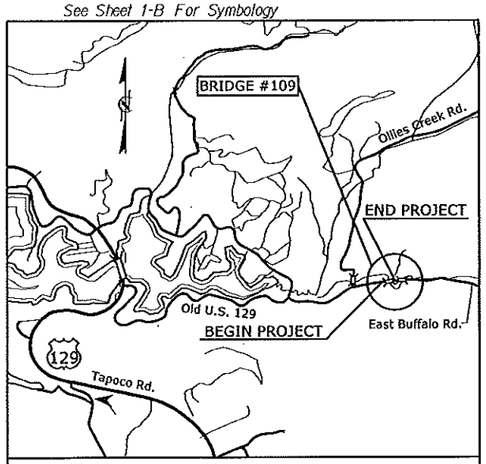
09/08/99

PROJECT: WBS 17BP.14.R.34

CONTRACT: DN00164

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

GRAHAM COUNTY

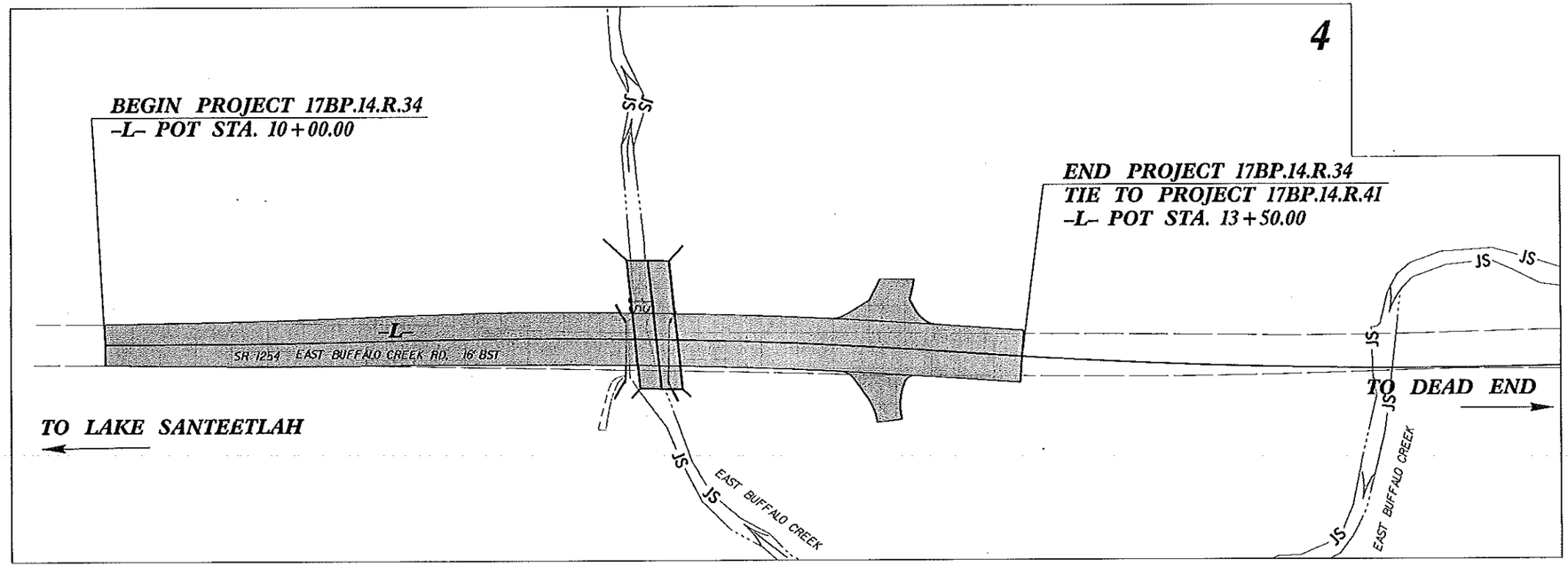
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.34	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.14.R.34		PE, R / W, UTIL.
17BP.14.R.34		CONST.

LOCATION: *BRIDGE NO. 109 ON SR 1254 (EAST BUFFALO ROAD) OVER EAST BUFFALO CREEK*

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

NC GRID NAD 83/NSRS 2007



GRAPHIC SCALES

PLANS 20 10 0 20 40

PROFILE (HORIZONTAL) 20 10 0 20 40

PROFILE (VERTICAL) 10 5 0 10 20

DESIGN DATA

ADT 2001 = 210

V = N/A

FUNC CLASS = LOCAL

SUB-REGIONAL TIER

PROJECT LENGTH

Length Roadway Project 17BP.14.R.34 = 0.066 Miles

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

Prepared By:

Stantec

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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 22, 2013

LETTING DATE:

Michael D. Lindgren, PE
PROJECT ENGINEER

Robert Williams, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E. 11-25-13

NORTH CAROLINA PROFESSIONAL SEAL 028441 ENGINEER AMY J. WATENPAUGH 11-25-13

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E. 11-25-2013

NORTH CAROLINA PROFESSIONAL SEAL 25513 ENGINEER MICHAEL D. LINDGREN

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

11/22/2013
U:\Roadway\Proj\GRAHAM109_rdy_TSH.dgn
mlittlefield

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4R.34	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25513 ENGINEER MICHAEL D. LINDGREN

11-25-2013

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 (PENDING)
2	PAVEMENT SCHEDULE & TYPICAL SECTIONS
2A	TEMPORARY SHORING DETAIL
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF EARTHWORK, PAVEMENT REMOVAL AND DRAINAGE
4	PLAN/PROFILE SHEET
5	TEMPORARY DETOUR PLAN
TMP-1 THRU TMP-4	TRAFFIC MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLAN
EC-1 THRU EC-3	EROSION CONTROL PLANS
SIGN-1	SIGNING PLAN
X-1 THRU X-3	CROSS-SECTIONS
C-1 THRU C-5	CULVERT 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 II.

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.

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

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.

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	
200.02	METHOD OF CLEARING - METHOD II
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	
806.02	GRANITE RIGHT-OF-WAY MARKER

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.34	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.

SURVEY CONTROL SHEET 37-0109
-FINAL-

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	622383.0190	564191.8077	1954.18	10+13.17	12.20 LT
2	BL-2	622391.0749	564527.2871	1956.53	13+48.41	11.60 RT
3	BL-3	622419.7515	564872.1119	1959.99	OUTSIDE PROJECT LIMITS	

BM1 ELEVATION = 1959.67
N 622315 E 564204
L STATION 10+17.00 57 RIGHT
8" SPIKE SET IN THE ROOT OF A 24" PINE TREE

BM2 ELEVATION = 1955.66
N 622471 E 564521
L STATION 13+46.00 68 LEFT
8" SPIKE SET IN THE ROOT OF A 24" OAK TREE

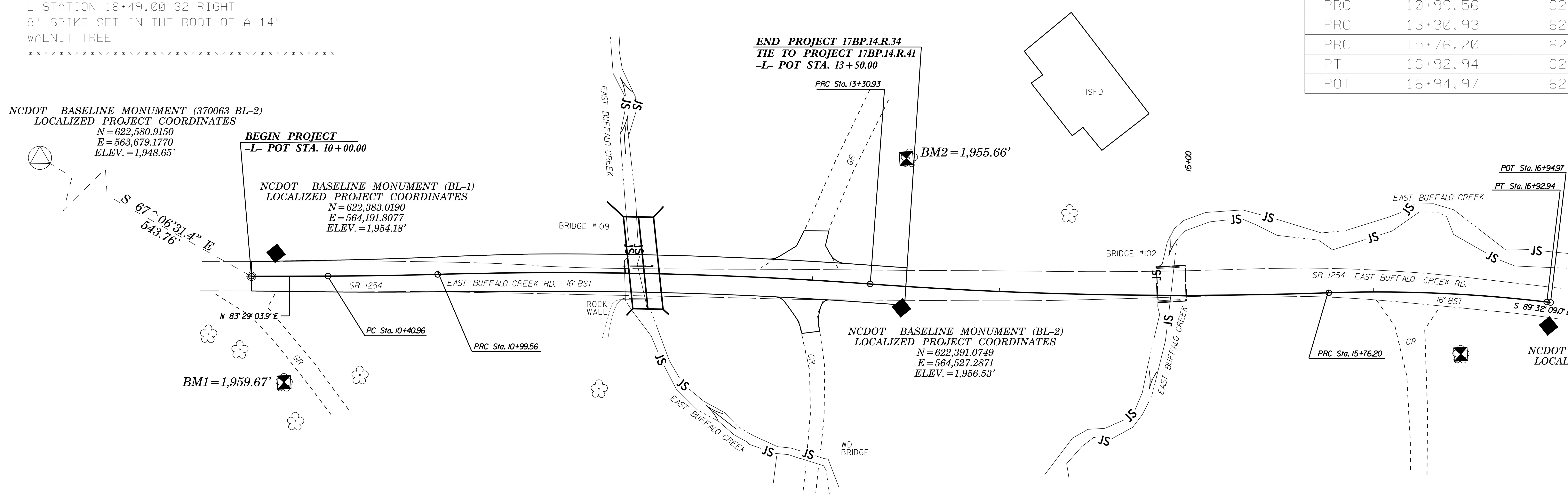
BM3 ELEVATION = 1959.29
N 622400 E 564827
L STATION 16+49.00 32 RIGHT
8" SPIKE SET IN THE ROOT OF A 14" WALNUT TREE

-FINAL- ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	10+70.00	-29.68	622406.9723	564245.8926
L	11+80.00	-39.00	622430.0070	564354.7210
L	11+85.00	-66.00	622457.3899	564357.0318
L	12+17.00	-66.00	622460.5108	564389.8096
L	12+25.00	-36.00	622431.3258	564400.5396
L	12+54.00	-33.00	622430.6301	564430.1225
L	13+03.49	-27.76	622428.4486	564480.4968
L	12+38.00	34.40	622362.2194	564419.2356
L	12+38.00	58.00	622338.6924	564421.0909
L	12+13.00	58.00	622336.6439	564396.8133
L	11+96.55	34.76	622358.2819	564378.6036

FINAL -L-

TYPE	STATION	NORTH	EAST
POT	10+00.00	622369.4025	564180.1097
PC	10+40.96	622374.0503	564220.8051
PRC	10+99.56	622381.4468	564278.9308
PRC	13+30.93	622401.9291	564509.3013
PRC	15+76.20	622424.3825	564753.4132
PT	16+92.94	622432.3889	564869.7655
POT	16+94.97	622432.3724	564871.7995



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "370063 (BL-2)"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 622580.9150(ft) EASTING: 563679.1770(ft) ELEVATION: 1948.65(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999785801
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "370063 (BL-2)" TO -L- STATION 10+00.000 IS S 67°06'31.4" E 543.76'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

GEOID 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:
   370109_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.

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.34	2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

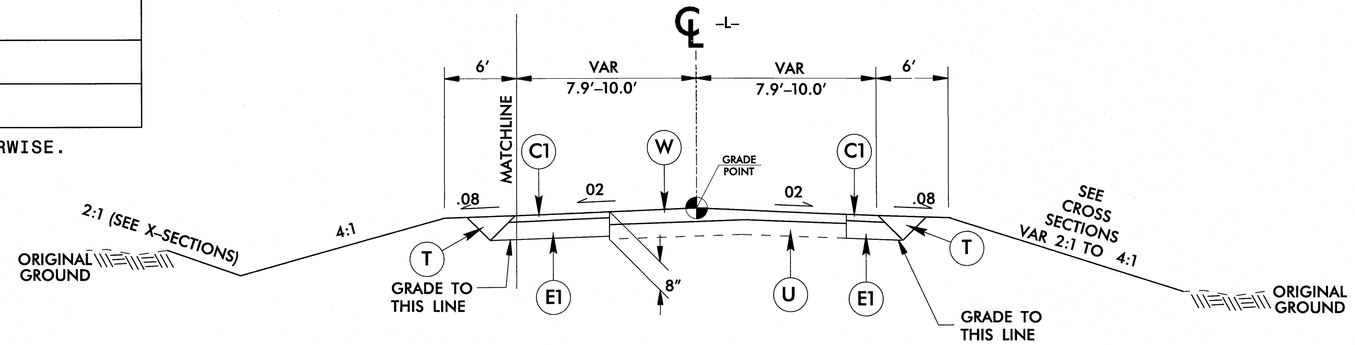
NORTH CAROLINA PROFESSIONAL SEAL 25513 ENGINEER MICHAEL D. LINDGREN

11-25-2013

PAVEMENT SCHEDULE

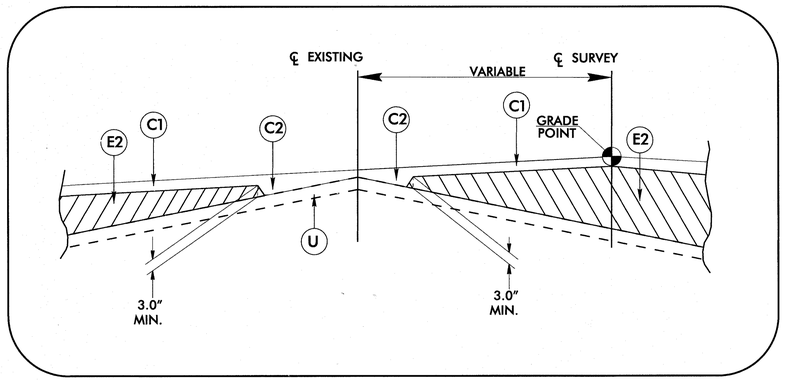
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

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

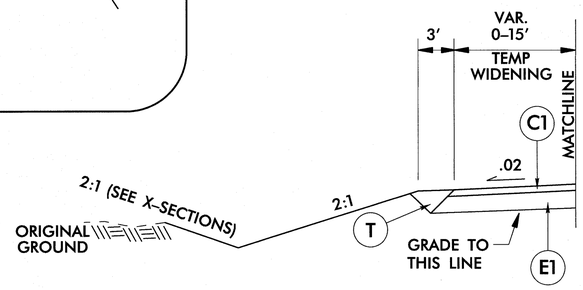


TYPICAL SECTION NO. 1

–L– STA. 10+00.00 TO STA. 13+50.00



WEDGING DETAIL



PARTIAL TYPICAL SECTION NO. 1A

USE PARTIAL TYPICAL SECTION No. 1A IN CONJUNCTION WITH TYPICAL SECTION No. 1:

–L– STA. 10+56.15 TO STA. 13+47.44
(TEMPORARY WIDENING FOR TRAFFIC CONTROL)

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mlittlejoh

PROJECT REFERENCE NO.	SHEET
17BP.14.R.34	2A

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037422 ENGINEER J. SHANE JOHNSON

SIGNATURE 11/15/17 DATE

ENGINEER

SIGNATURE DATE

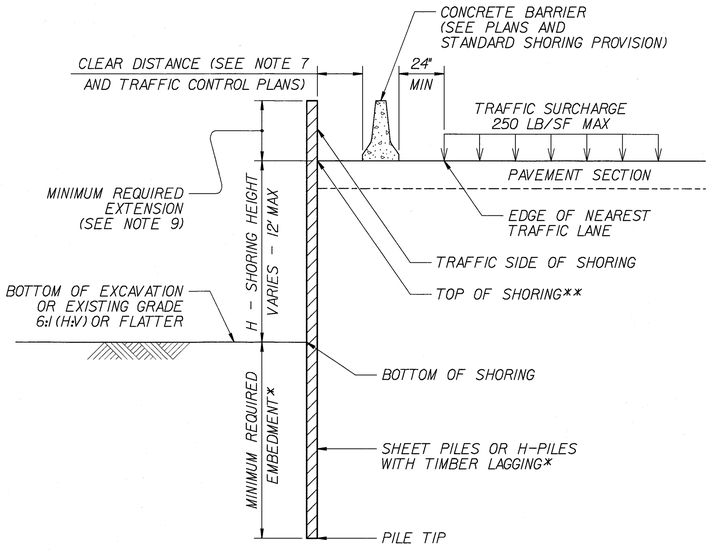
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS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

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

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

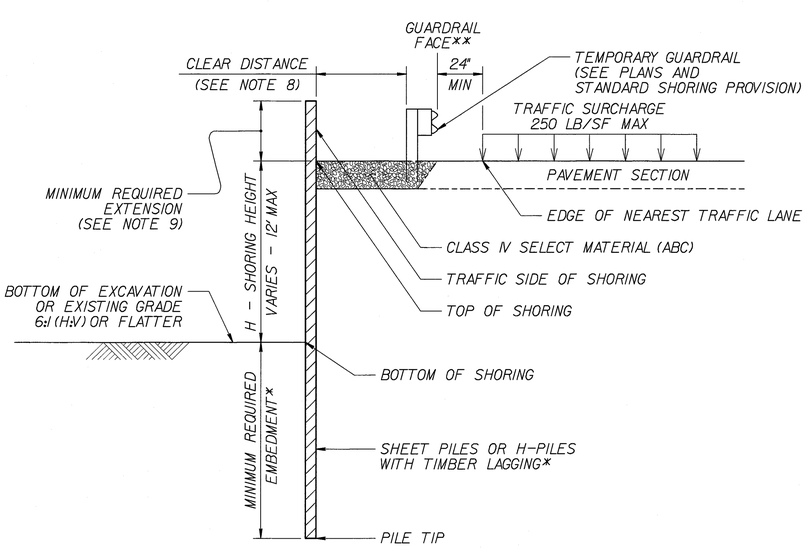
NOTES:

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



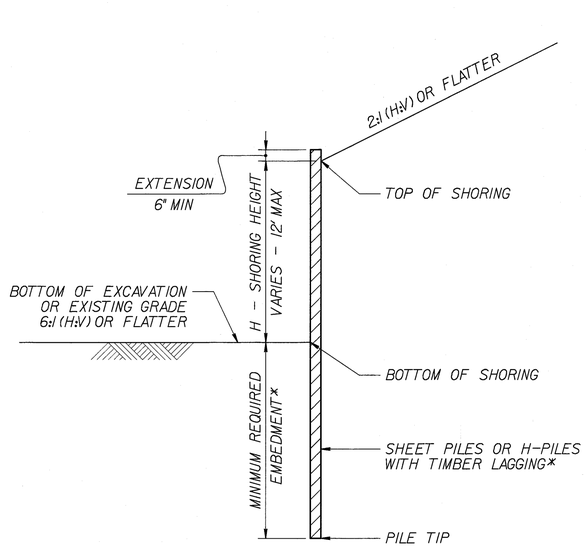
CONCRETE BARRIER

****TOP OF SHORING = EDGE OF PAVEMENT**



TEMPORARY GUARDRAIL

****GUARDRAIL FACE = EDGE OF PAVEMENT**



STANDARD TEMPORARY SHORING

(SLOPE CASE)
***SEE TABLE ABOVE.**

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
***SEE TABLE ABOVE.**

amec

AMEC Environment & Infrastructure, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
NC Engineering F-1253 NC Geology C-247

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 1-17-12

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.34	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	0.80	ACRES
			UNCLASSIFIED EXCAVATION	170	CY
			BORROW EXCAVATION	220	CY
			FINE GRADING	250	SY
			REMOVAL OF EXISTING ASPHALT PAVEMENT	230	SY
0050000000-E		226	SUPP CLEARING & GRUBBING	1	ACRES
0057000000-E		226	UNDERCUT EXCAVATION	100	CY
0195000000-E		265	SELECT GRANULAR MATERIAL	100	CY
0196000000-E		270	GEOTEXTILE SOIL STABILIZATION	50	SY
0199000000-E		SP	TEMPORARY SHORING	800	SF
0318000000-E		300	FND CONDIT MATL MINOR STRS	10	TONS
0320000000-E		300	FND CONDIT GEOTEXTILE	20	SY
0335200000-E		305	15" DRAINAGE PIPE	48	LF
0995000000-E		340	PIPE REMOVAL	130	LF
1220000000-E		545	INCIDENTAL STONE BASE	100	TONS
1489000000-E		610	ASP CONC BASE CRS B25.0B	140	TONS
1519000000-E		610	ASP CONC SURF CRS S9.5B	180	TONS
1575000000-E		620	ASP FOR PLANT MIX	20	TONS
4155000000-N		907	DISPOSE SIGN SYST U-CHAN	3	EA
4400000000-E		1110	WORK ZONE SIGNS (STAT)	164	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)	10	LF
4450000000-N		1150	FLAGGER	48	HR
4465000000-N		1160	TEMPORARY CRASH CUSHIONS	4	EA
4470000000-N		1160	RESET CRASH CUSHION	2	EA
4485000000-N		1170	PORT CONC BARRIER	20	LF
4490000000-E		1170	PORT CONC BARRIER(ANCHRD)	145	LF
4505000000-E		1170	RESET PORT CONC BARR,ANCH	60	LF
4600000000-N		SP	GENERIC TRAFFIC CONTROL ITEM (TEMP SIGNAL SYSTEM)	1	EA
4650000000-N		1251	TEMP RAISED PVMT MRKS	53	EA
4770000000-E		1205	COLD APPLIED PLASTIC (4") TYPE 4 - REMOVEABLE TAPE	20	LF
4810000000-E		1205	PAINT PVMT MARKINGS 4"	4080	LF
4915000000-E		1264	7' U-CHANNEL POSTS	4	EA
4957000000-N		1264	OBJECT MARKERS (TYPE 3)	4	EA
6000000000-E		1605	TEMPORARY SILT FENCE	610	LF
6012000000-E		1610	SEDIMENT CONTROL STONE	65	TONS
6009000000-E		1610	EROS CONTRL STONE CL B	50	TONS
6015000000-E		1615	TEMPORARY MULCHING	0.8	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	200	LF
6029000000-E		SP	SAFETY FENCE	100	LF
6030000000-E		1630	SILT EXCAVATION	50	CY
6036000000-E		1631	MATTING FOR EROS CONTROL	3850	SY
6042000000-E		1632	1/4" HARDWARE CLOTH	70	LF
6045000000-E		SP	24" TEMPORARY PIPE	120	LF
6070000000-N		1639	SPECIAL STILLING BASINS	2	EA
6071020000-E		SP	POLYACRYLAMIDE (PAM)	10	LB
6084000000-E		1660	SEEDING AND MULCHING	0.82	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	0.5	TONS
6111000000-E		SP	IMPERVIOUS DIKE	118	LF
6117000000-N		SP	RESPONSE FOR EROS CONTROL	13	EA
8035000000-N		402	REMOVAL OF EXISTING STRUCTURE	1	LS
8126000000-N		414	CULVERT EXCAVATION	1	LS
8133000000-E		414	FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	57	TONS
8196000000-E		420	CLASS A CONCRETE (CULVERT)	96.7	CY
8245000000-E		425	REINFORCING STEEL (CULVERT)	10608	LBS
8590000000-E		876	RIP RAP, CLASS I	40	TONS
8622000000-E		876	GEOTEXTILE FOR DRAINAGE	52	SY

6/21/00

COMPUTED BY: BAW	DATE: NOV. 2012
CHECKED BY: MDL	DATE: NOV. 2012

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.34	3A

EARTHWORK SUMMARY (CY)

STATION	STATION	UNCLASSIFIED EXCAVATION	EMBT+15%	BORROW	WASTE
TEMPORARY WIDENING (PHASE I)					
-L- STA. 10+00 TO -L- STA. 13+50		93	298	205	
SUBTOTAL SUMMARY		93	298	205	
-L- FINAL/TEMPORARY WIDENING REMOVAL					
(PHASE II)					
-L- STA. 11+00 TO -L- STA. 12+50		76			76
SUBTOTAL SUMMARY		76			76
WASTE IN LIEU OF BORROW					
PROJECT TOTAL				205	
ESTIMATE 5% FOR TOPSOIL ON BORROW PITS				10	
GRAND TOTAL		169	298	215	
SAY		170		220	

CONTINGENCY ITEMS:
UNDERCUT EXCAVATION – 100 CY
SELECT GRANULAR MATERIAL – 100 TONS

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".

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	STATION	STATION	LOCATION	SY
-L- (TEMPORARY PAVEMENT)	10+56.00	13+47.00	LT	223.89
			SAY	230

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 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.			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')	A 5.0' THRU 10.0'	B 10.0' AND ABOVE		E	F	G																						
12+88	LT	0401																																			24																																	105	
12+82	RT	0402																																			24																																	25	
PROJECT TOTALS:																																					48																																	130	
SAY																																					48																																	130	

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

11/22/2013
U:\Roadway\Proj\GRAHAM109_rdy_psh3A.dgn
mlittlefield

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.34	4
R/W SHEET NO.	

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

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 028441 ENGINEER AMY J. WAZENEGGER 3-3-14

REVISIONS

BEGIN PROJECT
-L- POT STA. 10+00.00

END PROJECT 17BP.14.R.34
TIE TO PROJECT 17BP.14.R.41
-L- POT STA. 13+50.00

001 ROCKY WALDROUP

002 MARVIN BROOKS

003 CLARENE ADAMS

004 GRANT BURKE

GRANT BURKE

-L- 10+70.00
29.68' LT

PC Sta. 10+40.96

PRC Sta. 10+99.56

-BL-1

EXISTING R/W

-L- 11+85.00
66.00' LT

CLASS I RIP RAP (TYP.)

-L- 11+80.00
39.00' LT

-L- 12+17.00
66.00' LT

-L- 12+52.00
66.00' LT

-L- 12+25.00
36.00' LT

-L- 12+54.00
33.00' LT

-L- 13+03.49
27.76' LT

PRC Sta. 13+30.93

BM #2
-BL- STA 8+31.00
80' LEFT
ELEV. =1955.66'

ACTIVE DRAIN FIELD

ISFD

BEGIN CULVERT
-L- STA.12+01.94

MAINTAIN FIELD ACCESS

REMOVE 6' HDPE

15" CMP

0401

GRADE TO DRAIN

BRIDGE #109

BRIDGE #102

SR 1254 EAST BUFFALO CREEK RD.

16' BST

EXIST. 01

02

10'

60'

N 83° 29' 03.9" E

ROCK WALL

END CULVERT
-L- STA.12+18.06

REMOVE 15" CMP

0402

EXISTING R/W

CLASS I RIP RAP: ESTIMATED 40 TONS

-L- 11+96.55
34.76' RT

-L- 12+13.00
58.00' RT

-L- 12+38.00
34.40' RT

-L- 12+38.00
58.00' RT

-BL-2

EAST BUFFALO CREEK

DRAIN FIELD

SEPTIC TANK

SPECIAL CUT DITCH
SEE DETAIL A (THIS SHEET)

BM #1
-BL- STA 5+10.00
68' RIGHT
ELEV. =1959.67'

NOTE: SEE SHEET 5 FOR TEMPORARY WIDENING DETAIL
NOTE: SEE SHEETS C-1 THROUGH C-5 FOR CULVERT PLANS

-L-

PI Sta 10+70.26	PI Sta 12+15.34	PI Sta 14+53.68	PI Sta 16+34.68
Δ = 1° 28' 21.0" (LT)	Δ = 5° 48' 52.1" (RT)	Δ = 6° 09' 48.0" (LT)	Δ = 8° 48' 03.9" (RT)
D = 2° 30' 46.7"	D = 2° 30' 46.7"	D = 2° 30' 46.7"	D = 7° 32' 20.1"
L = 58.60'	L = 231.38'	L = 245.26'	L = 116.74'
T = 29.30'	T = 115.79'	T = 122.75'	T = 58.49'
R = 2,280.00'	R = 2,280.00'	R = 2,280.00'	R = 760.00'
e = NC	e = NC	e = NC	e = NC

BEGIN GRADE
-L- STA.10+25.00
EL 1955.18

PI = 10+75.00
EL = 1,955.65'
VC = 100'
K = 185

PROPOSED GRADE

PI = 13+00.00
EL = 1,956.55'
VC = 100'
K = 109

END GRADE
-L- STA.13+50.00
EL 1,957.21'

25' FEATHER TO EXIST.

(+)0.9400%

(+)0.4000%

(-) 0.3600%

(-) 0.3000%

(-) 5.1555%

(+)0.4000%

(+)1.3182%

10+50
1954.55

11+00
1954.47

11+50
1954.32

11+95
1952.00

EXISTING GROUND

SPECIAL CUT DITCH

2@8'X6' RCBC
PROPOSED INV.=1947.75

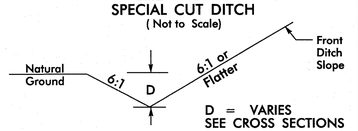
1,962
1,958
1,954
1,950
1,946
1,942
1,938

10 11 12 13 14 15

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	700	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	1955.5	FT
BASE DISCHARGE	=	1230	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	1956.71	FT
OVERTOPPING DISCHARGE	=	700	CFS
OVERTOPPING FREQUENCY	=	25	YRS
OVERTOPPING ELEVATION	=	1955.5	FT

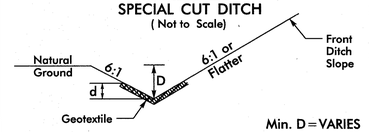
DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



D = VARIES
SEE CROSS SECTIONS

FROM STA. 10+50 TO STA. 11+50 RT -L-

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= CL B Rip-Rap

Min. D=VARIES
Max. d=D

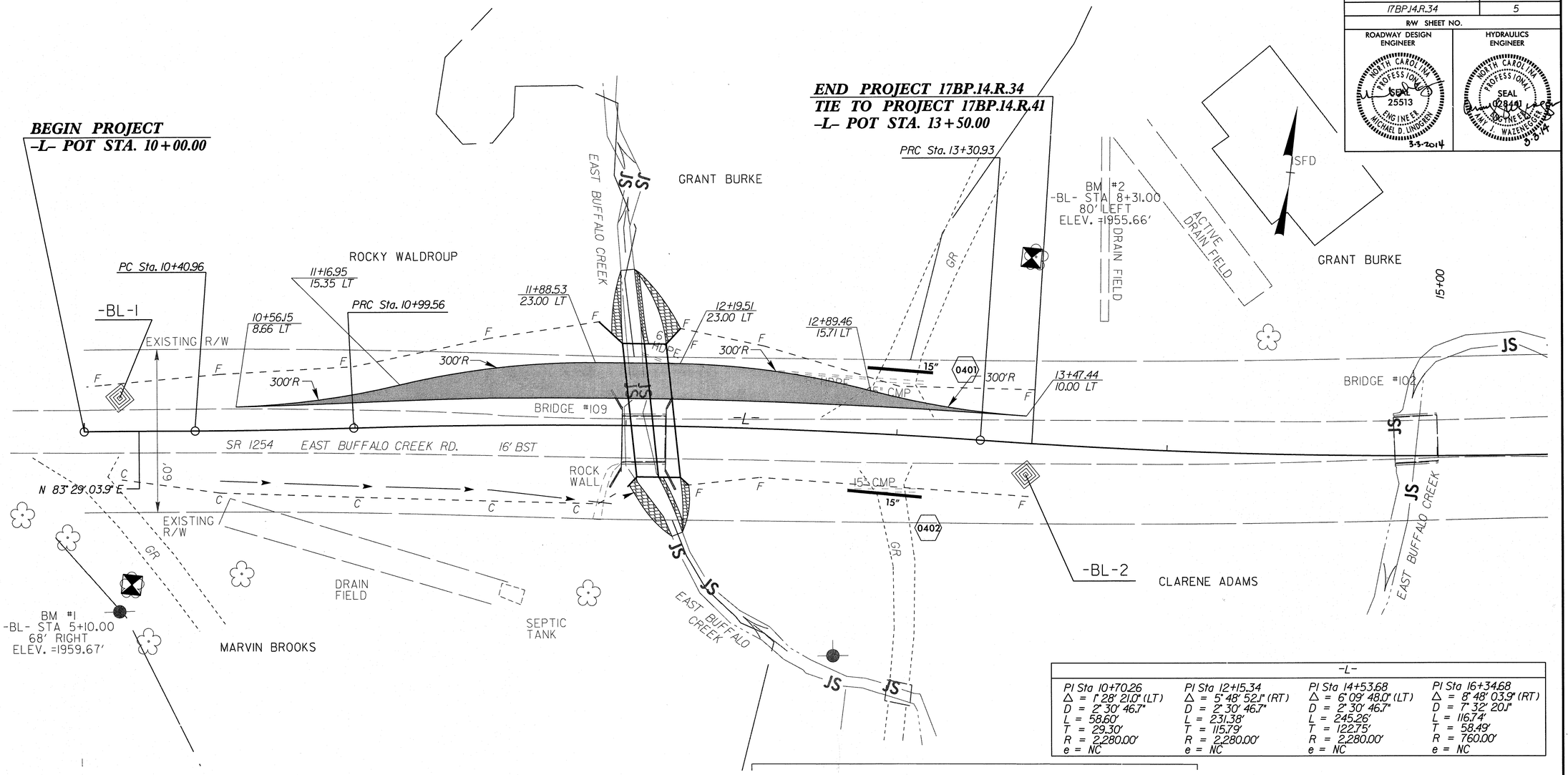
FROM STA. 11+50 TO STA. 11+95 RT

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.34	5
RW SHEET NO.	

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

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 028411 ENGINEER JAMES L. WAZENEGGER 3.3.14



-L-			
PI Sta 10+70.26	PI Sta 12+15.34	PI Sta 14+53.68	PI Sta 16+34.68
Δ = 1° 28' 21.0" (LT)	Δ = 5° 48' 52.1" (RT)	Δ = 6° 09' 48.0" (LT)	Δ = 8° 48' 03.9" (RT)
D = 2° 30' 46.7"	D = 2° 30' 46.7"	D = 2° 30' 46.7"	D = 7° 32' 20.1"
L = 58.60'	L = 231.38'	L = 245.26'	L = 116.74'
T = 29.30'	T = 115.79'	T = 122.75'	T = 58.49'
R = 2,280.00'	R = 2,280.00'	R = 2,280.00'	R = 760.00'
e = NC	e = NC	e = NC	e = NC

TEMPORARY WIDENING DETAIL

NOTE: SEE TRAFFIC MANAGEMENT PLANS FOR PROPOSED LANE GEOMETRY FOR THE PHASED CULVERT CONSTRUCTION

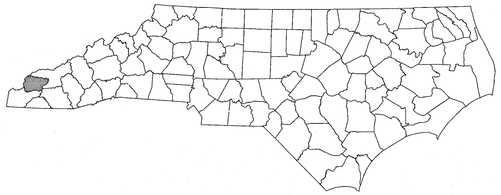
3/3/2014
...109\Roadway\Proj\GRAHAM109_rdy_psh_5_detour.dgn
hawhite

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

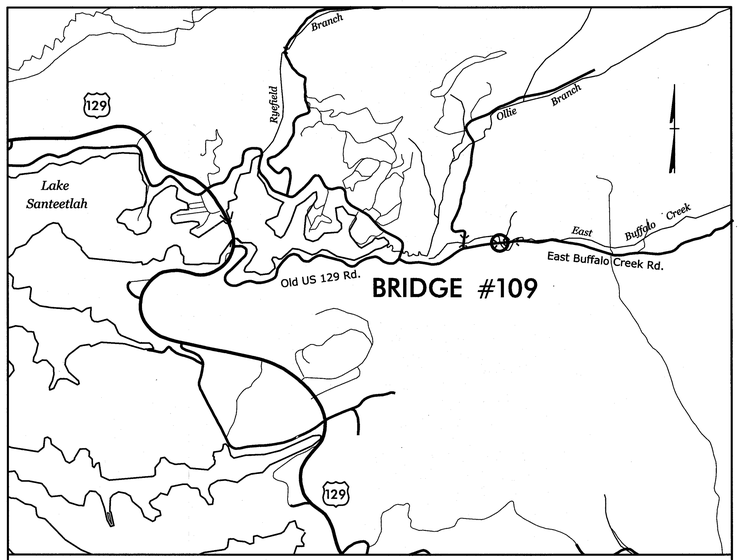
TRANSPORTATION MANAGEMENT PLAN

GRAHAM COUNTY

DIVISION 14



BRIDGE #109 – E. Buffalo Road (SR 1254) over E. Buffalo Creek



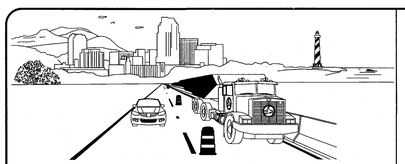
VICINITY MAP

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
TMP-2A	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TMP-3	PHASING
TMP-4	PHASE I
TMP-5	PHASE II

SHEET NO.
TMP-1

WBS 17BP.14.R.34



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

PLAN PREPARED BY:
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606

Tel. 919.851.6866
Fax. 919.851.7024
www.stantec.com

BETSY L. WATSON, P.E. — *TRAFFIC ENGINEER*
GEORGE KARAGEORGE — *WORK ZONE TRANSPORTATION DESIGN MANAGER*
BRIAN LATON, E.I. — *TRANSPORTATION DESIGNER*

APPROVED: Betsy L. Watson
DATE: 11/20/13

NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON

11/20/2013
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barton

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.34	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
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
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

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

TEMPORARY CRASH CUSHION

ANCHORED PORTABLE CONCRETE BARRIER

SIGNALS

EXISTING

PROPOSED

TEMP

TEMPORARY

PORTABLE TEMPORARY

PAVEMENT MARKERS

CRYSTAL/CRYSTAL

CRYSTAL/RED

YELLOW/YELLOW

PAVEMENT MARKINGS

DOUBLE YELLOW CENTER LINE

SKIP LINES

MINI-SKIP LINES

SOLID LINES

EXISTING PAVEMENT MARKING (GRAY)

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

EXISTING PAVEMENT MARKING SYMBOLS (HOLLOW)

ONLY

PAVEMENT MARKING ALPHANUMERIC CHARACTERS

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

APPROVED: Betsy Watson DATE: 11/20/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON

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

LEGEND
&
ROADWAY STANDARD DRAWINGS

11/20/2013
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bgraham

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) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING 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.

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

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

PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

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

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

H) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

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

J) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 500 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TEMPORARY SHORING

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

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

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

N) 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.

TRAFFIC BARRIER

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

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

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

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

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

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

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

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

PAVEMENT MARKINGS AND MARKERS

Q) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1254 (EAST BUFFALO CREEK RD)	PAINT	NONE

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

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

T) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MISCELLANEOUS

U) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) (250 FT) AND (500 FT) RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

V) MAINTAIN VEHICULAR ACCESS TO ALL DRIVEWAYS DURING THE LIFE OF THE CONTRACT, UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER. USE INCIDENTAL STONE WHEN NECESSARY.

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APPROVED: [signature] DATE: 11/20/13

SEAL

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

11/20/2013
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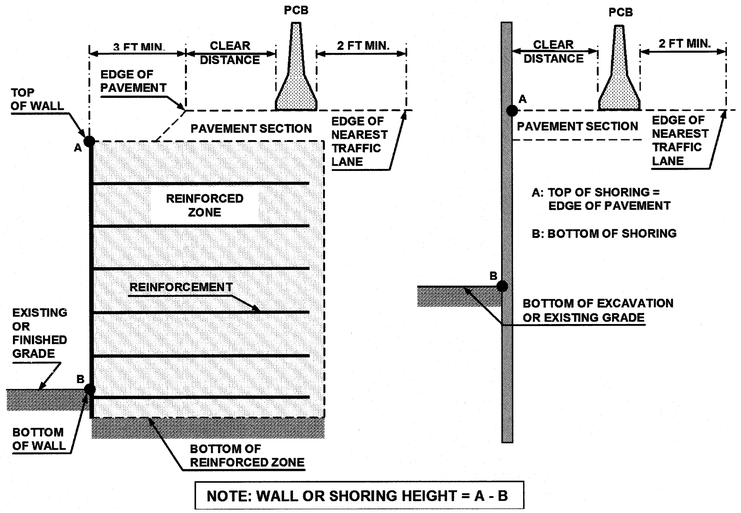

NOTE: WALL OR SHORING HEIGHT = A - B

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

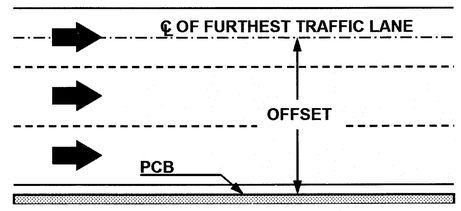

FIGURE B

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

PHASING

PHASE I

STEP 1:

INSTALL WORK ZONE ADVANCE WARNING SIGNS PER SHEET TMP-4 AND ROADWAY STANDARD DRAWING 1101.01 SHEET 3.

STEP 2:

USING A FLAGGING OPERATION PER ROADWAY STANDARD DRAWING 1101.02 SHEET 1, INSTALL ANCHORED TEMPORARY BARRIER AND CRASH CUSIONS.

STEP 3:

CONSTRUCT CULVERT STAGE I AND APPROACHES UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE. SEE SHEET TMP-4.

PER GENERAL NOTE E ON SHEET TMP-2, DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PHASE II

STEP 1:

USING A FLAGGING OPERATION PER ROADWAY STANDARD DRAWING 1101.02 SHEET 1, REMOVE AND RESET PREVIOUSLY PLACED PORTABLE CONCRETE BARRIER AND CRASH CUSIONS. PLACE MARKINGS, IMPLEMENT TEMPORARY SIGNAL, AND SHIFT SR 1254 TRAFFIC ONTO THE PORTION OF THE COMPLETED CULVERT (STAGE I).

STEP 2:

REMOVE EXISTING BRIDGE AND CONSTRUCT REMAINING CULVERT AND APPROACHES UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE (STAGE II). SEE SHEET TMP-5.

STEP 3:

USING A FLAGGING OPERATION PER ROADWAY STANDARD DRAWING 1101.02 SHEET 1, REMOVE TEMPORARY BARRIER AND PAVE THE FINAL LAYER OF SURFACE COURSE AND PLACE FINAL MARKINGS.

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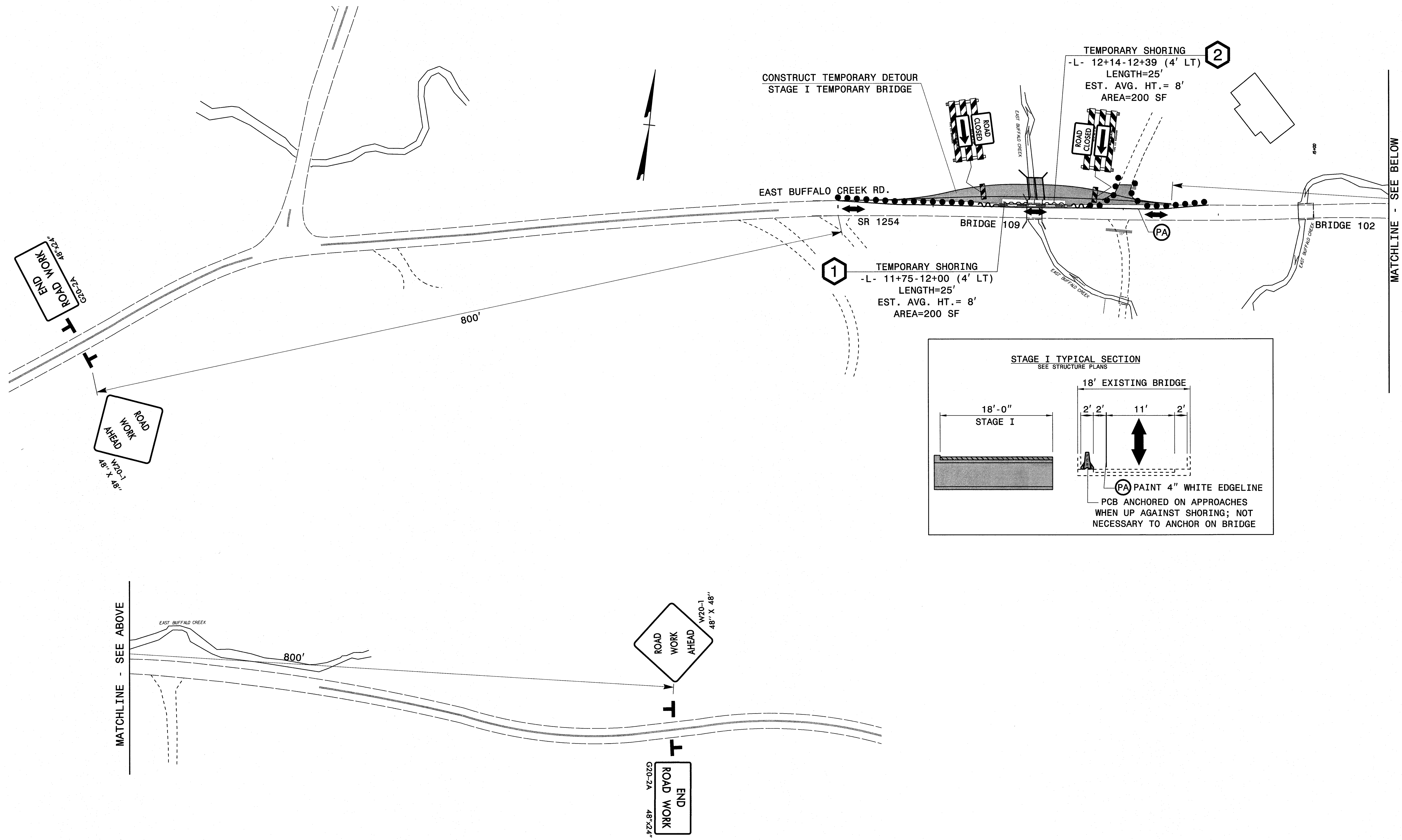
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON

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

PHASING

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.34	TMP-4



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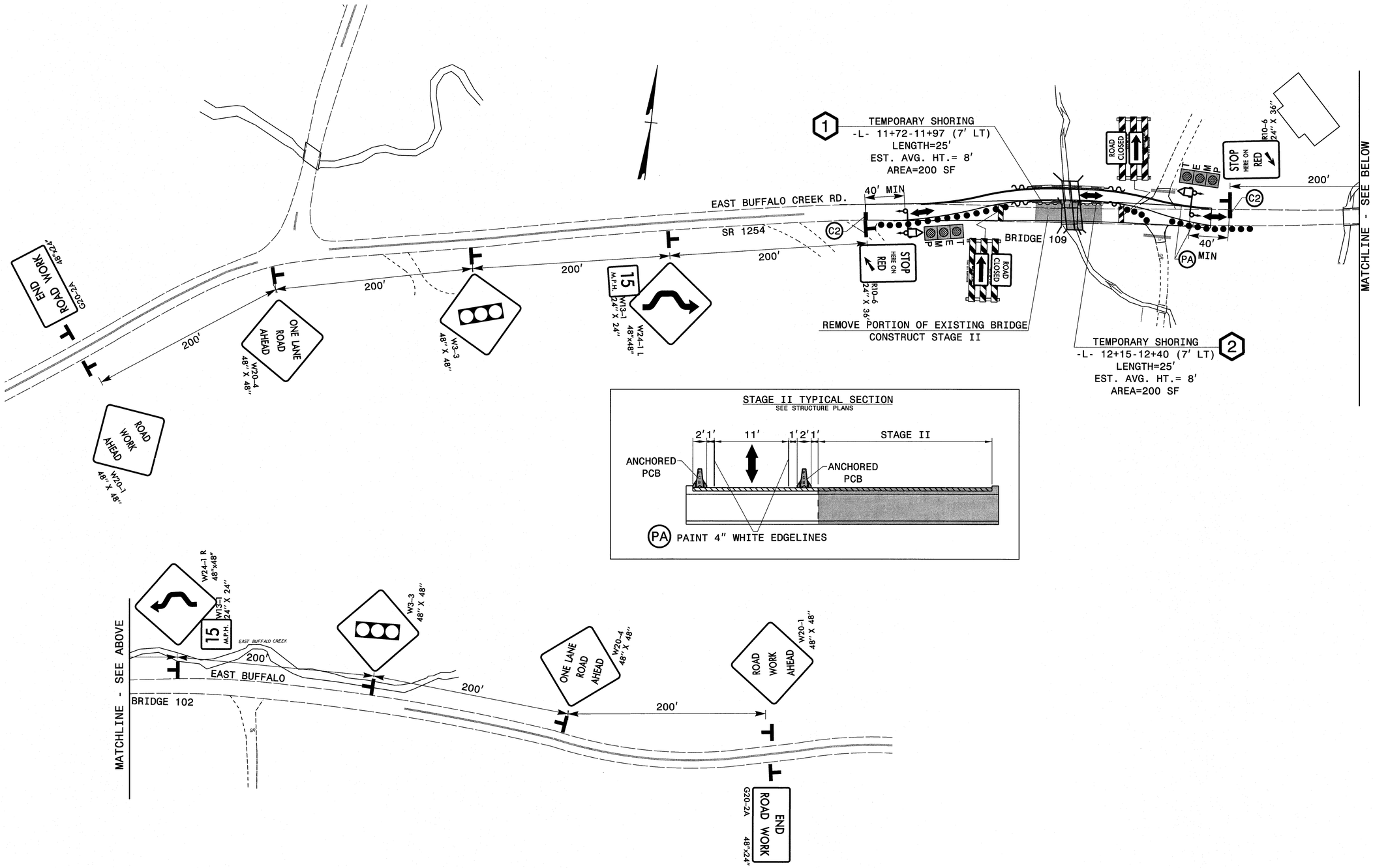
DIVISION OF HIGHWAYS — STATE OF NORTH CAROLINA — DEPARTMENT OF TRANSPORTATION — WORK ZONE TRAFFIC CONTROL

PHASE I

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.34	TMP-5



STAGE II TYPICAL SECTION
SEE STRUCTURE PLANS

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

PHASE II

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CONTRACT NO.: DN00164 PROJECT: 17BP.14.R.34

PROJECT NO.	SHEET NO.
17BP.14.R.34	PMP-1

APPROVED: Betsy L Watson

DATE: 11/5/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
GRAHAM COUNTY

LOCATION: BRIDGE NO. 109 ON SR 1254 (EAST BUFFALO ROAD) OVER EAST BUFFALO 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

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
EAST BUFFALO CREEK 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.

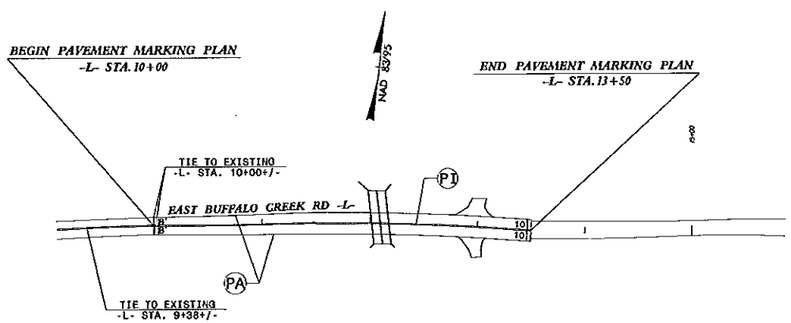
E) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

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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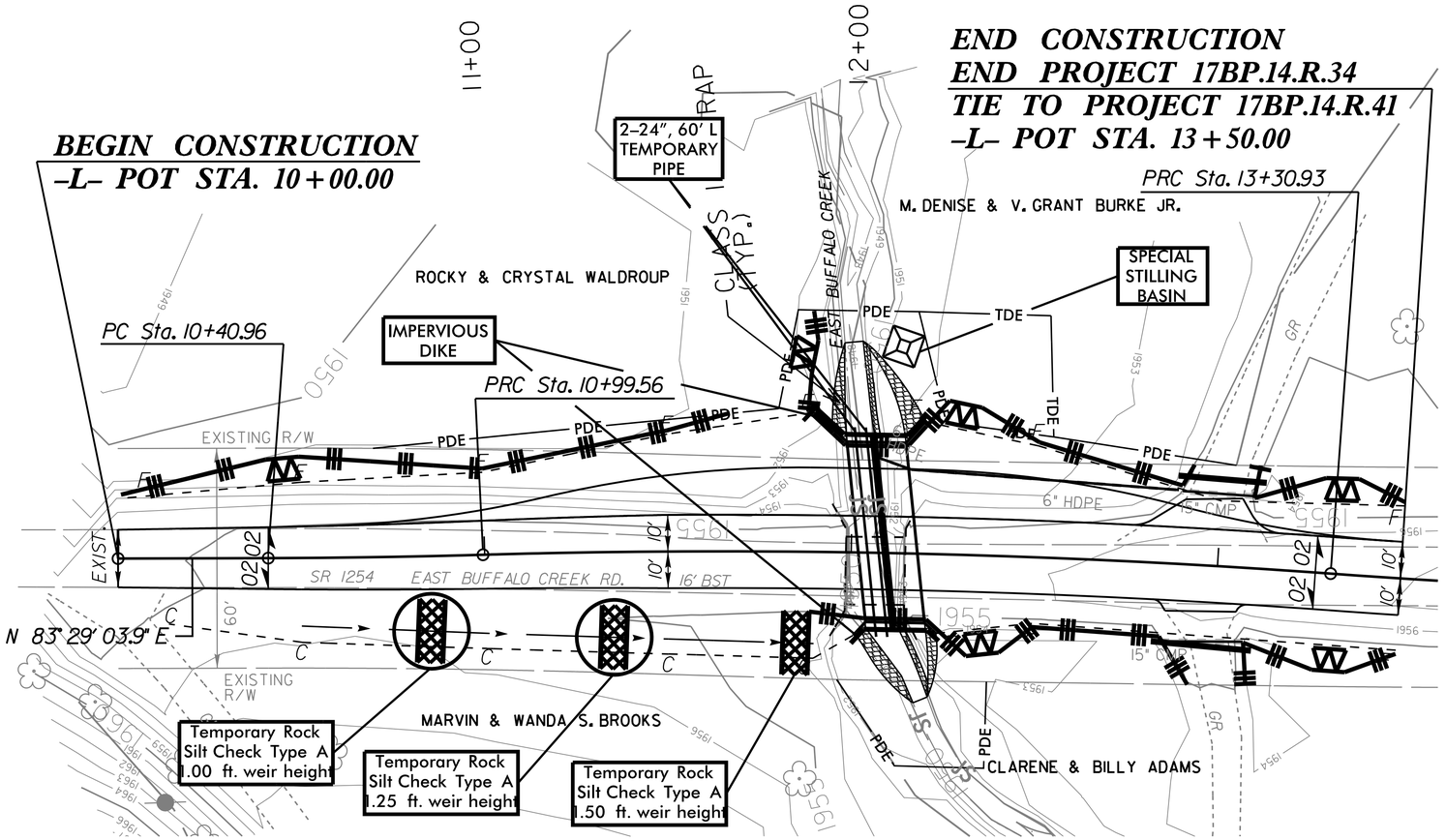
INDEX

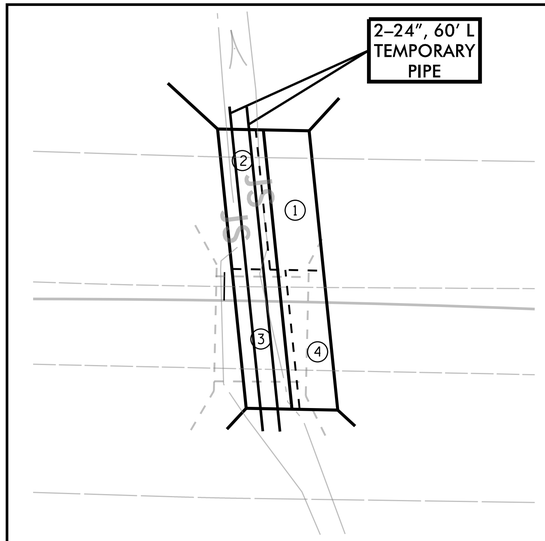
EROSION CONTROL PLAN

NAD 83



PLAN ALONG -L-

SCALE : 1" = 20'



CONSTRUCTION SEQUENCE

2 @ 8'X6' RCBC

STAGE I TRAFFIC / PHASE 1 CONSTRUCTION

1. PLACE TEMP. IMPERVIOUS DIKE TO DEWATER THE AREA FOR PHASE 1 CONSTRUCTION.
2. CONSTRUCT RIGHT FLOOD PLAIN CULVERT BARREL, SILL WALL AND DOWN-STREAM WING WALL UNDER WEST BOUND LANE.
3. DO NOT REMOVE TEMP. IMPERVIOUS DIKE.

STAGE I TRAFFIC / PHASE 2 CONSTRUCTION

1. PLACE TEMPORARY PIPES THE ENTIRE LENGTH OF LOW FLOW BARREL (THROUGH PHASE 2 & 3 CONST.).
2. ANCHOR BOTH ENDS BY TEMPORARY DIKES ACROSS EXISTING EAST BUFFALO CREEK.
3. DEWATER AREA FOR PHASE 2.
4. CONSTRUCT LEFT LOW FLOW CULVERT BARREL, SILL WALL AND UPSTREAM WING WALL UNDER WEST BOUND LANE AROUND THE TEMPORARY PIPES.
5. SHIFT TRAFFIC OVER PHASE 1 & 2 BARREL SECTIONS.

STAGE II TRAFFIC / PHASE 3 CONSTRUCTION

1. DECONSTRUCT EXISTING BRIDGE.
2. DEWATER THE AREA FOR PHASE 3 CONSTRUCTION.
3. CONSTRUCT LEFT LOW FLOW CULVERT BARREL, SILL WALL AND UPSTREAM WING WALL UNDER EAST BOUND LANE.

STAGE II TRAFFIC / PHASE 4 CONSTRUCTION

1. PLACE TEMPORARY IMPERVIOUS DIKES TO DEWATER AREA FOR PHASE 4 CONSTRUCTION.
2. ROUTE FLOW THROUGH LOW FLOW BARREL IN AREA OF PHASE 2 & 3.
3. CONSTRUCT THE RIGHT FLOOD PLAIN CULVERT BARREL, SILL WALL AND UPSTREAM WING WALL UNDER THE EAST BOUND LANE. REMOVE TEMPORARY IMPERVIOUS DIKES AND DIVERSION PIPES.

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.

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		

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1630.06	Special Stilling Basin	

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

2012 STANDARD SPECIFICATIONS

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.

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RANA STANSELL
LEVEL IIIA NAME

635
LEVEL IIIA CERTIFICATION NO.

PROJECT NO. 17BP.14R.34

GRAHAM COUNTY

STATION: 12+10.00 -L-

REPLACES BRIDGE No. 109

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE ON SR 1254 OVER EAST BUFFALO CREEK

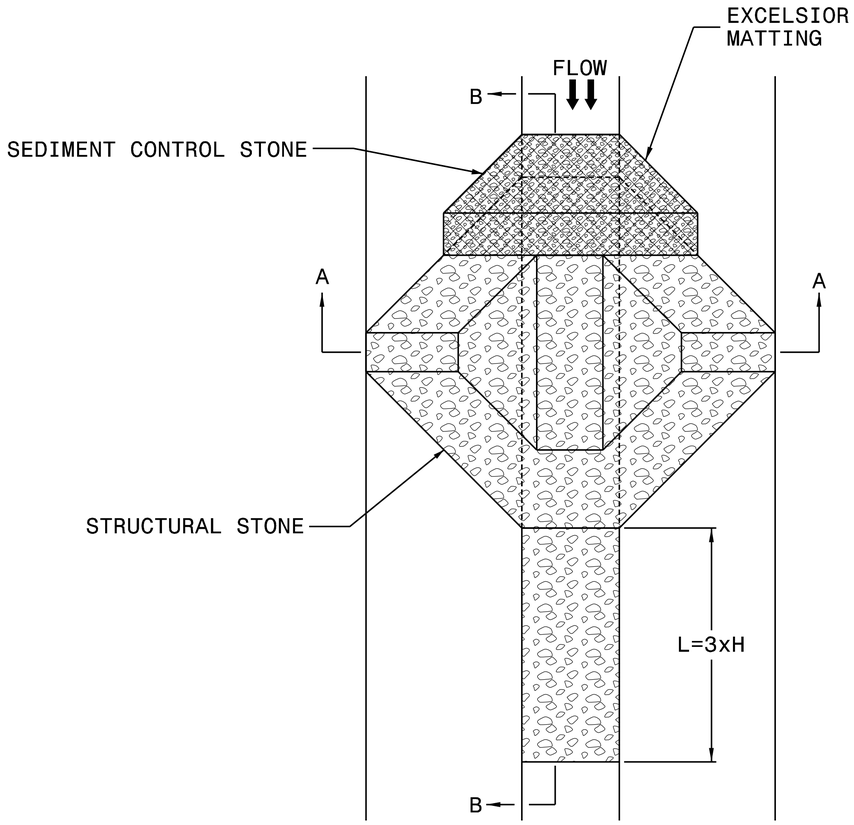
32' SHLD. POINT TO SHLD. POINT 97° SKEW

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

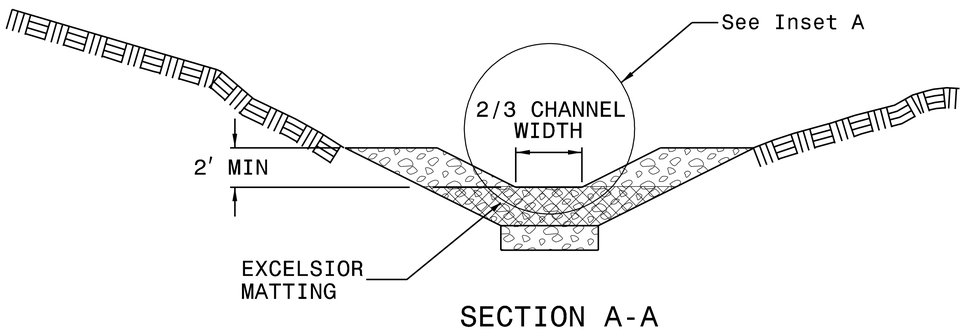
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.34	EC-2
R/W SHEET NO.	

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



PLAN



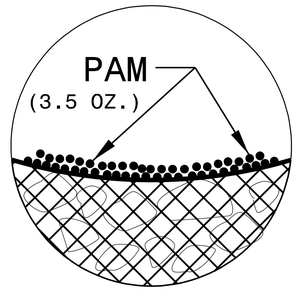
SECTION A-A

NOTES

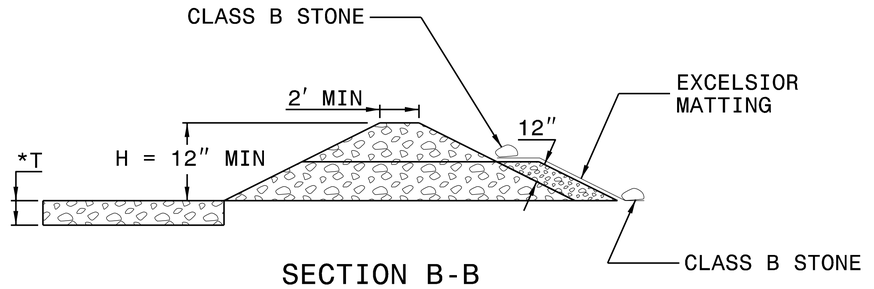
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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

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



INSET A



SECTION B-B

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

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.34	EC-3

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

PROJECT NO.	SHEET NO.
17BP.14.R.34	SIGN-1

APPROVED Betsy L. Watson

DATE: 11/5/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 29449 ENGINEER BETSY L. WATSON

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLANS
GRAHAM COUNTY

LOCATION: BRIDGE NO. 109 ON SR 1254 (EAST BUFFALO ROAD) OVER EAST BUFFALO CREEK

GENERAL NOTES

- SIGNS FURNISHED BY CONTRACTOR
- IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
- SIGNING PLANS DO NOT INCLUDE TEMPORARY CONSTRUCTION SIGNING. SEE TRANSPORTATION MANAGEMENT PLANS.
- WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
- ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- THE BACKGROUND FOR TYPE E SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

ROADWAY STANDARD DRAWINGS

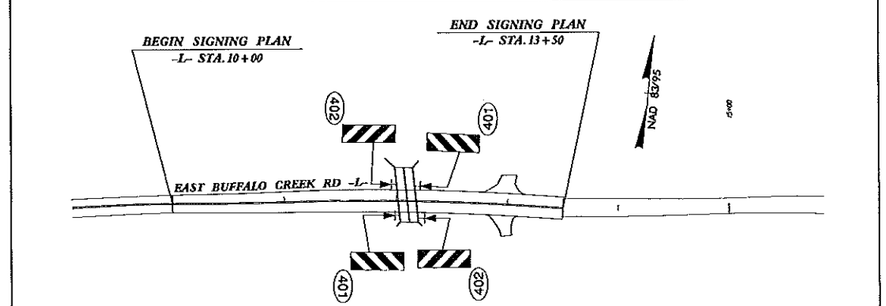
THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL.....	3	EA.
4915000000	1264	7' U-CHANNEL POSTS.....	4	EA.
4957000000	1264	OBJECT MARKERS (TYPE 3).....	4	EA.

SIGNING DETAIL



(401) QUANTITY REQ'D 2

12 x 36
OM-3R

ONE "U" POST PER SIGN

(402) QUANTITY REQ'D 2

12 x 36
OM-3L

ONE "U" POST PER SIGN

PLAN PREPARED BY:

BETSY L. WATSON, P.E. TRAFFIC ENGINEER

ROSI R. HENNEBIN TRANSPORTATION TECHNICIAN

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

INDEX

CONTRACT NO.: DN00164

PROJECT: 17BP.14.R.34

11/4/2013
U:\Graham\09\Traffic\Signing\CADD\Signing_Layout_Plans\17BP.14.R.34_sign_01.dgn
rhennebin

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.34	X-1

CROSS SECTION INDEX

ROADWAY	STATION	TO	STATION	SHEET NO.
CROSS SECTION INDEX				X–1
CROSS SECTION SUMMARY				X–1A
–EAST BUFFALO ROAD–	10 + 00.00		13 + 50.00	X–2 – X–3

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.34	X-1A

STATE OF NORTH CAROLINA
DIVISON OF HIGHWAYS

CROSS-SECTION SUMMARY

STATION -L- FINAL	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	STATION -L- TEMP. WIDENING	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+00.00	0	0	10+00.00	0	0
10+50.00	0	0	10+50.00	15	5
11+00.00	0	0	11+00.00	27	18
11+50.00	19	0	11+50.00	23	69
12+00.00	30	0	12+00.00	10	83
12+50.00	27	0	12+50.00	0	69
13+00.00	0	0	13+00.00	8	42
13+50.00	0	0	13+50.00	10	14

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"

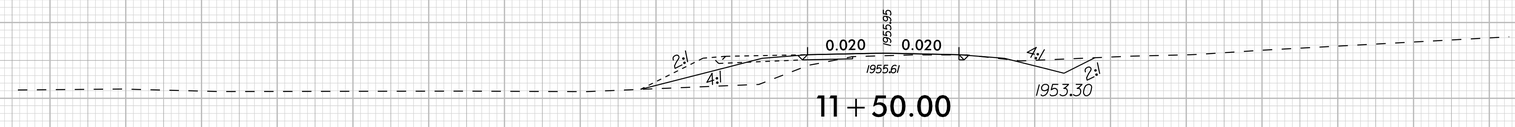
Embankment quantity does not include backfill for undercut

8/23/99

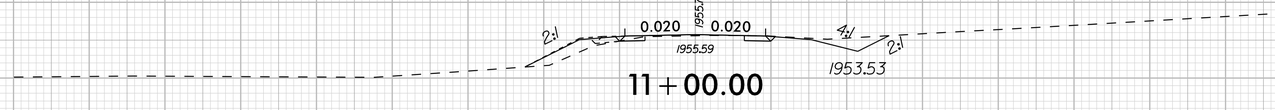
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.34	X-2

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

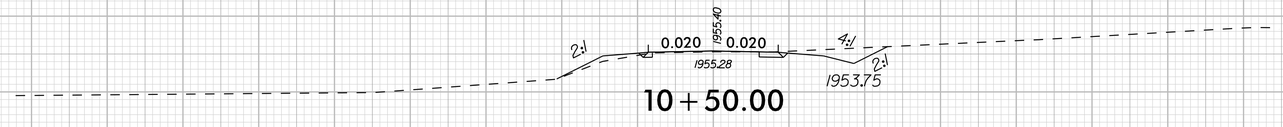
1970 1960 1950 1940



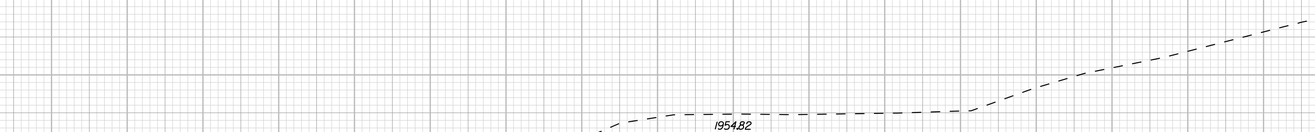
11+50.00



11+00.00



10+50.00



10+00.00

11/22/2013
U:\Roadway\Xsc\GRAHAM109_rdy_L_XPL.dgn
multerfield

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.34	X-3

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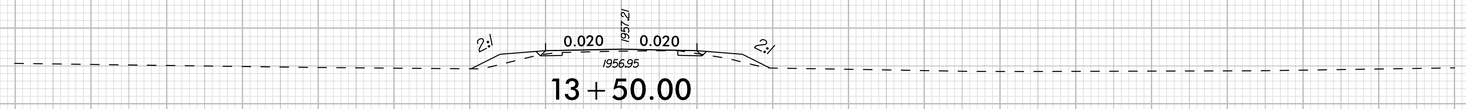
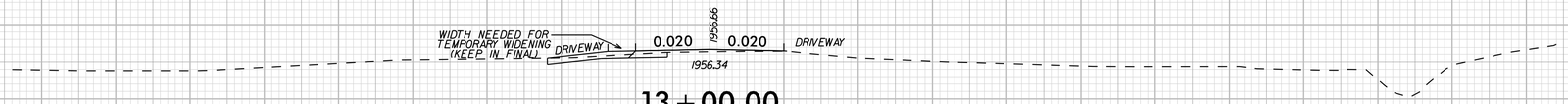
1970
1960
1950



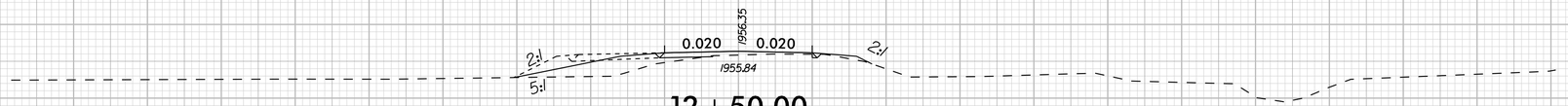
13+50.00

1970
1960
1950



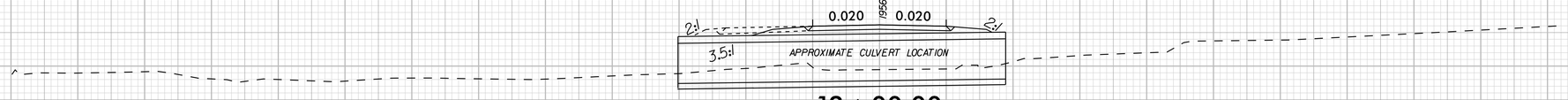
13+00.00

1970
1960
1950
1940



12+50.00

1970
1960
1950
1940

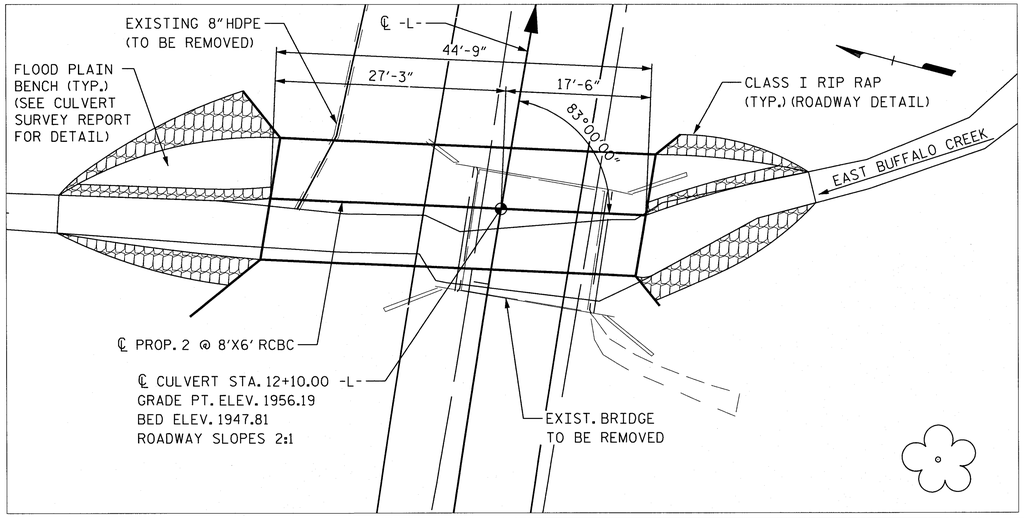


12+00.00

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

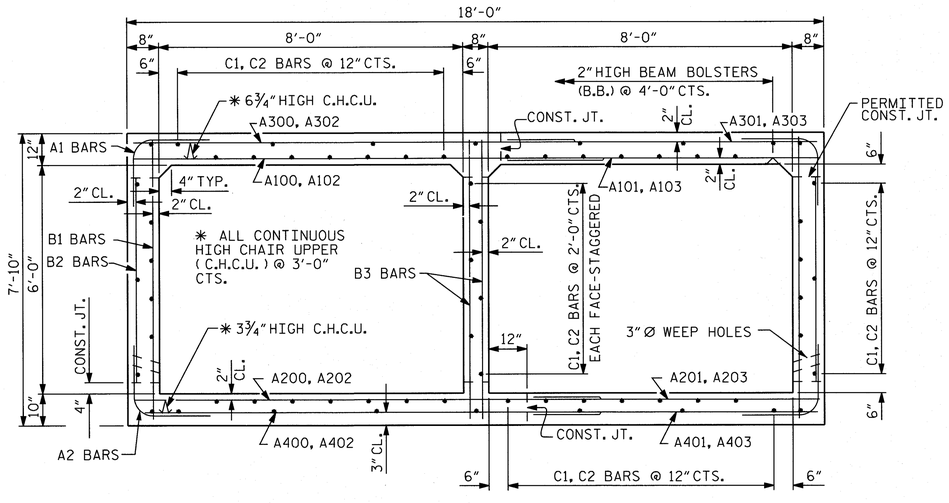
11/22/2013
U:\Roadway\Xsc\GRAHAM109_rdy_L_XPL.dgn
mitterfield

BENCH MARK-BM #2: -BL- STATION 8+31.00 80' LEFT WITH 8 INCH SPIKE IN ROOT OF 24 INCH OAK TREE ELEV. 1955.66



LOCATION SKETCH

NO KNOWN UTILITY CONFLICTS.



RIGHT ANGLE SECTION OF BARREL

THERE ARE 66 "C" BARS IN SECTION OF BARREL.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE ----------= 800 CFS ±
FREQUENCY OF OVERTOPPING --------- = 50 YR. ±
OVERTOPPING FLOOD ELEVATION -------- = 1955.7

HYDRAULIC DATA

DESIGN DISCHARGE ---------- = 650 CFS
FREQUENCY OF DESIGN FLOOD ---------- = 25 YR.
DESIGN HIGH WATER ELEVATION --------- = 1955.2
BASIC DRAINAGE (Q100) ---------- = 950 CFS
BASIC HIGH WATER ELEVATION --------- = 1956.54
DRAINAGE AREA ---------- = 2.05 SQ. MI.

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE			
BARREL @ 1.675 CY/FT	75.0	C.Y.	
SILL WALLS	1.8	C.Y.	
WING ETC.	19.9	C.Y.	
TOTAL	96.7	C.Y.	
REINFORCING STEEL			
BARREL	9,489	LBS.	
SILL WALLS	185	LBS.	
WINGS ETC.	934	LBS.	
TOTAL	10,608	LBS.	
FOUNDATION CONDITIONING MATERIAL=	57 TONS		
CULVERT EXCAVATION = LUMP SUM			
REMOVAL OF EXISTING STRUCTURE AT STATION 12+10.00 -L- = LUMP SUM			
RIP RAP, CLASS I =	40 TONS		
GEOTEXTILE FOR DRAINAGE =	52 S.Y.		

NOTES

ASSUMED LIVE LOAD ----------HS20-44 OR ALTERNATE LOADING.

DESIGN FILL----------2.40'

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

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

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

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

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

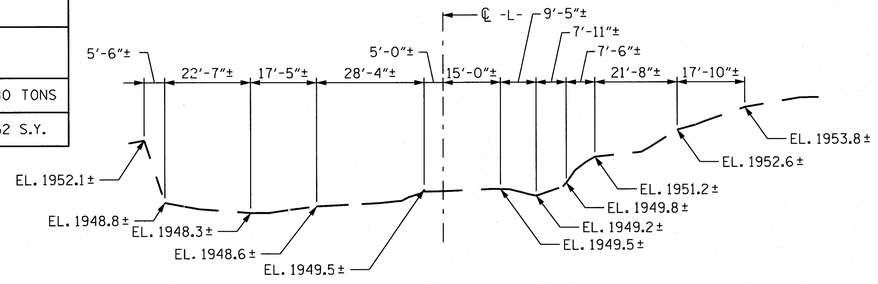
DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

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

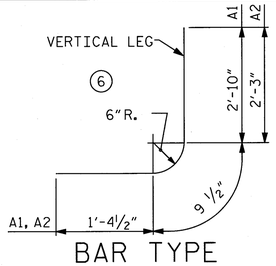
AT THE CONTRACTOR'S OPTION HE MAY SUBMIT, TO THE ENGINEER FOR APPROVAL, DESIGN AND DETAIL DRAWINGS FOR A PRECAST REINFORCED CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE CULVERT SHOWN ON THE PLANS. THE DESIGN SHALL PROVIDE THE SAME SIZE AND NUMBER OF BARRELS AS USED ON THE CAST-IN-PLACE DESIGN. FOR OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT, SEE SPECIAL PROVISIONS.

AFTER SERVING AS A TEMPORARY CROSSING, THE EXISTING STRUCTURE CONSISTING OF ONE 16'-6" SPAN WITH 17.2' OF CLEAR ROADWAY AND TIMBER FLOOR ON TIMBER JOISTS SUPPORTED BY TIMBER CAPS OVER TIMBER POSTS AND SILLS AT VARIABLE CENTERS AND LOCATED 4' UPSTREAM FROM THE PROPOSED CULVERT SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

FOR CULVERT DIVERSION DETAILS AND PAY ITEMS, SEE EROSION CONTROL PLANS.



PROFILE ALONG ℄ CULVERT



BAR TYPE

BAR DIMENSIONS ARE OUT TO OUT

SPLICE LENGTHS CHART

BAR	SIZE	SPLICE LENGTH
B1	4	1'-9"
B3	4	1'-9"
C1	4	*
A100	5	2'-6"
A200	4	1'-9"
A300	4	1'-9"
A400	4	1'-9"
G1	5	2'-6"
S2	8	2'-6"

BILL OF MATERIAL STAGE I CONST.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	66	#4	6	5'-0"	220
A2	44	#4	6	4'-5"	130
A100	33	#5	STR.	12'-11"	445
A101	33	#5	STR.	8'-1"	278
A200	30	#4	STR.	12'-1"	242
A201	30	#4	STR.	7'-4"	147
A300	38	#4	STR.	12'-1"	307
A301	38	#4	STR.	8'-1"	205
A400	44	#4	STR.	12'-1"	355
A401	44	#4	STR.	7'-4"	216
B1	46	#4	STR.	6'-6"	200
B2	46	#4	STR.	5'-8"	174
B3	46	#4	STR.	7'-5"	228
C1	66	#4	STR.	21'-11"	966
G1	10	#5	STR.	12'-2"	127
G2	10	#5	STR.	7'-4"	76
S2	6	#8	STR.	12'-11"	207
S3	6	#8	STR.	7'-4"	117
REINFORCING STEEL = 4,640 LBS.					

BILL OF MATERIAL STAGE II CONST.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A3	70	#4	6	5'-0"	234
A4	46	#4	6	4'-5"	136
A102	35	#5	STR.	12'-11"	472
A103	35	#5	STR.	8'-1"	295
A202	32	#4	STR.	12'-1"	258
A203	32	#4	STR.	7'-4"	157
A302	40	#4	STR.	12'-1"	323
A303	40	#4	STR.	8'-1"	216
A402	47	#4	STR.	12'-1"	379
A403	47	#4	STR.	7'-4"	230
B4	48	#4	STR.	6'-6"	208
B5	48	#4	STR.	5'-8"	182
B6	48	#4	STR.	7'-5"	238
C2	66	#4	STR.	22'-4"	985
G3	10	#5	STR.	12'-2"	127
G4	10	#5	STR.	7'-4"	76
S4	6	#8	STR.	12'-11"	207
S5	6	#8	STR.	7'-4"	117
REINFORCING STEEL = 4,849 LBS.					

* MECHANICAL BUTT SPLICES REQUIRED FOR THESE BARS

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK
11/22/13

PROJECT NO. 17BP.14.R.34

GRAHAM COUNTY

STATION: 12+10.00 -L-

SHEET 1 OF 5 REPLACES BRIDGE NO. 109

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

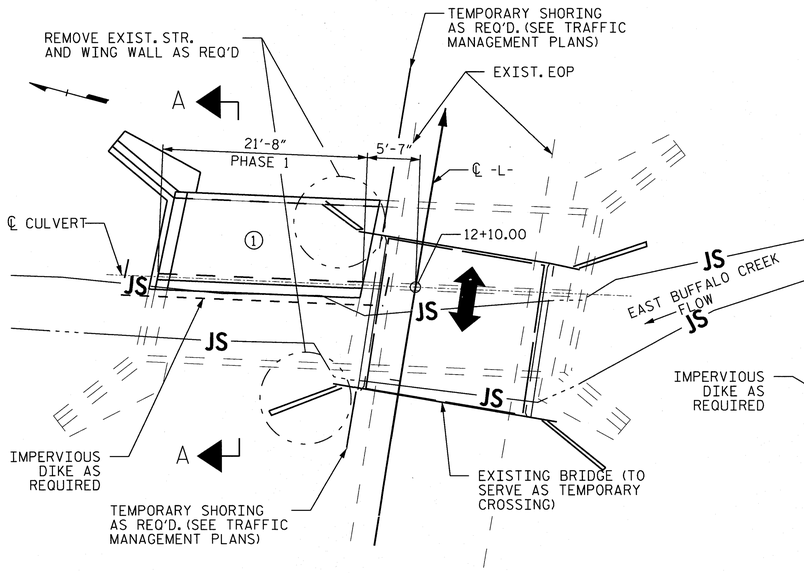
BARREL STANDARD

DOUBLE 8 FT. X 6 FT. CONCRETE BOX CULVERT 83°00'00" SKEW

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

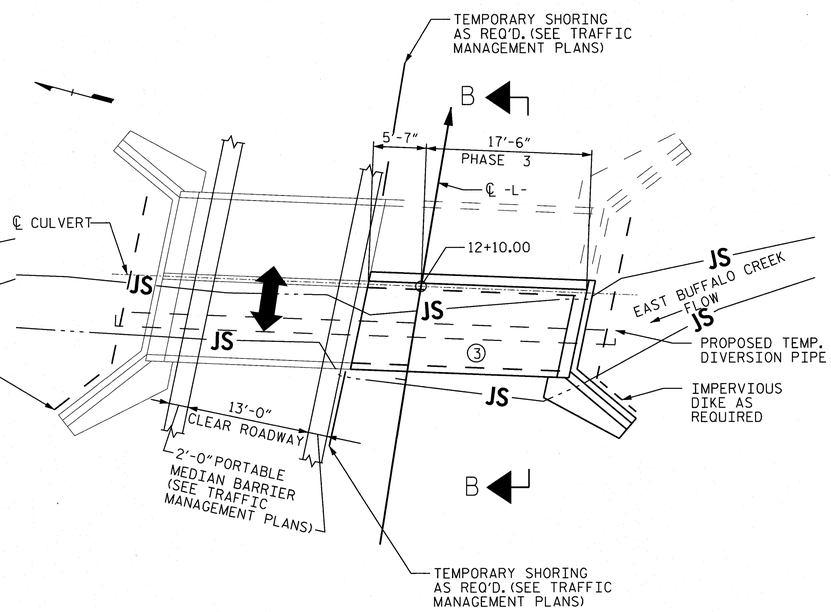
Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

ASSEMBLED BY : C. B. BAKER	DATE : 05/2012	SPECIAL
CHECKED BY : T. R. DUDECK	DATE : 05/2012	
DRAWN BY : R.W. WRIGHT	DATE : OCT. 1989	STANDARD
CHECKED BY : C.R.K.	DATE : OCT. 1989	



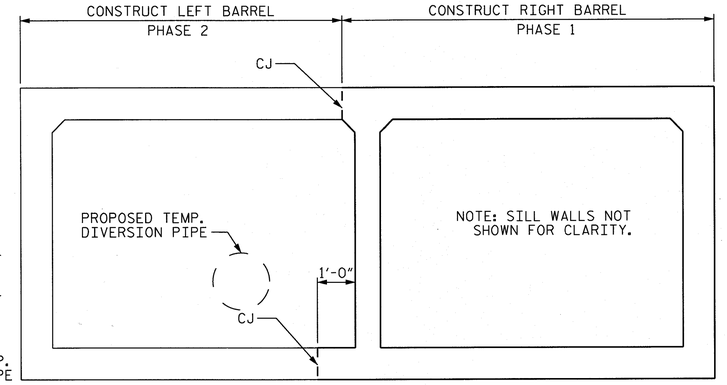
STAGE I TRAFFIC/ PHASE 1 CONSTRUCTION

PLACE TEMP. IMPERVIOUS DIKE TO DEWATER THE AREA FOR PHASE 1 CONSTRUCTION. CONSTRUCT RIGHT FLOOD PLAIN CULVERT BARREL, SILL WALL AND DOWN-STREAM WING WALL UNDER WEST BOUND LANE. DO NOT REMOVE TEMP. IMPERVIOUS DIKE.



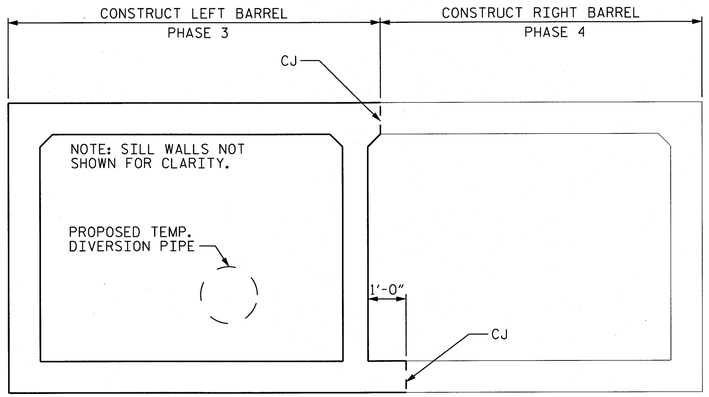
STAGE II TRAFFIC/ PHASE 3 CONSTRUCTION

DECONSTRUCT EXISTING BRIDGE. DEWATER THE AREA FOR PHASE 3 CONSTRUCTION. CONSTRUCT LEFT LOW FLOW CULVERT BARREL, SILL WALL AND UPSTREAM WING WALL UNDER EAST BOUND LANE.



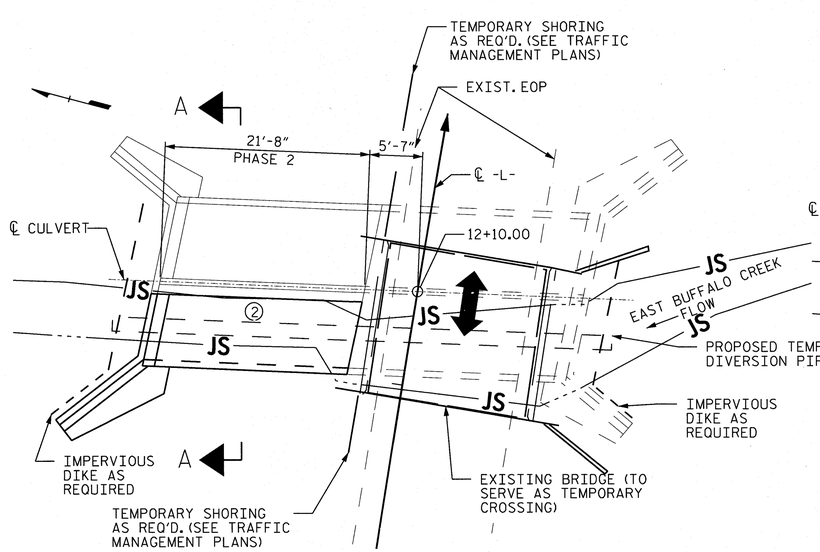
SECTION A-A

STAGE I TRAFFIC/ PHASE 1 & 2 CONSTRUCTION



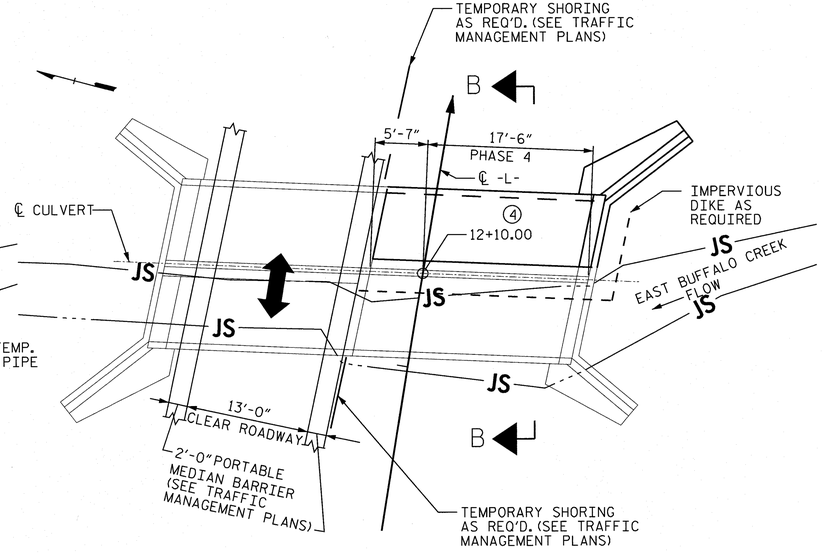
SECTION B-B

STAGE II TRAFFIC/ PHASE 3 & 4 CONSTRUCTION



STAGE I TRAFFIC/ PHASE 2 CONSTRUCTION

PLACE TEMPORARY PIPE THE ENTIRE LENGTH OF LOW FLOW BARREL (THROUGH PHASE 2 & 3 CONST.). ANCHOR BOTH ENDS BY TEMPORARY DIKES ACROSS EXISTING EAST BUFFALO CREEK. DEWATER AREA FOR PHASE 2. CONSTRUCT LEFT LOW FLOW CULVERT BARREL, SILL WALL AND UPSTREAM WING WALL UNDER WEST BOUND LANE AROUND THE TEMPORARY PIPE. SHIFT TRAFFIC OVER PHASE 1 & 2 BARREL SECTIONS.



STAGE II TRAFFIC/ PHASE 4 CONSTRUCTION

PLACE TEMPORARY IMPERVIOUS DIKES TO DEWATER AREA FOR PHASE 4 CONSTRUCTION. ROUTE FLOW THROUGH LOW FLOW BARREL IN AREA OF PHASE 2 & 3. CONSTRUCT THE RIGHT FLOOD PLAIN CULVERT BARREL, SILL WALL AND UPSTREAM WING WALL UNDER THE EAST BOUND LANE. REMOVE TEMPORARY IMPERVIOUS DIKES AND DIVERSION PIPE.

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DRAWN BY : J. B. GEILE DATE : 05-03-12
CHECKED BY : J. T. KELVINGTON DATE : 05-03-12

PROJECT NO. 17BP.14.R.34
GRAHAM COUNTY
STATION: 12+10.00

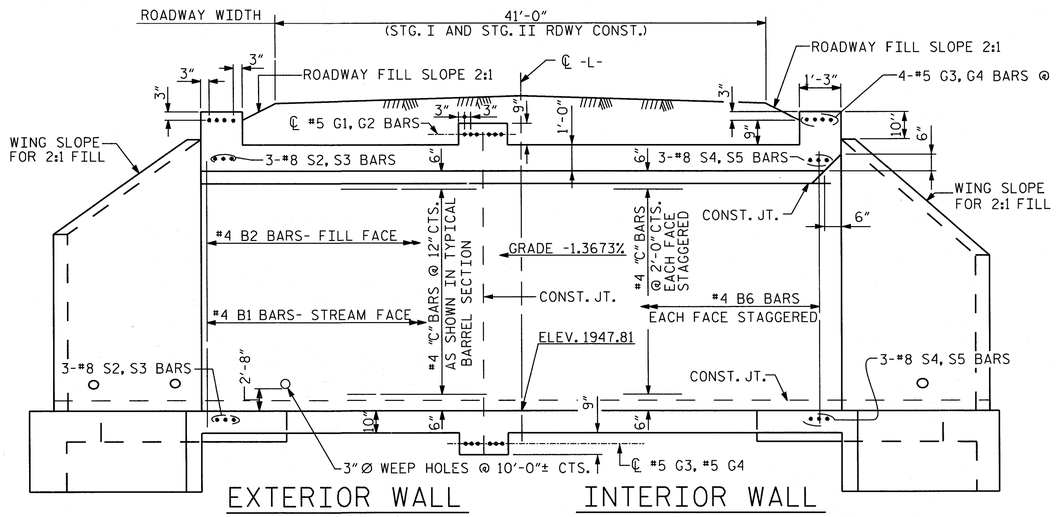
SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

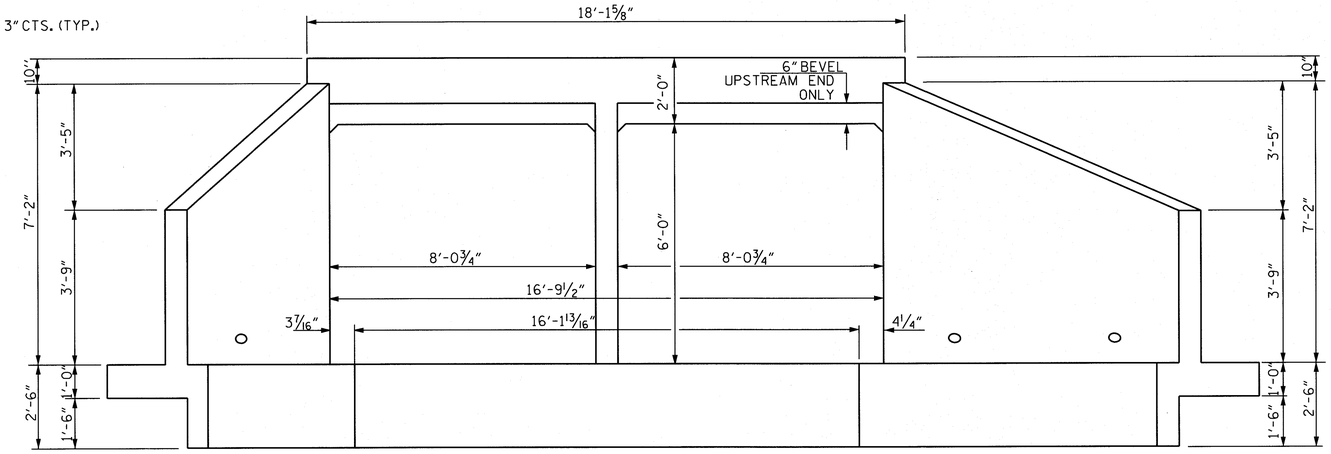
STAGING DETAILS

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

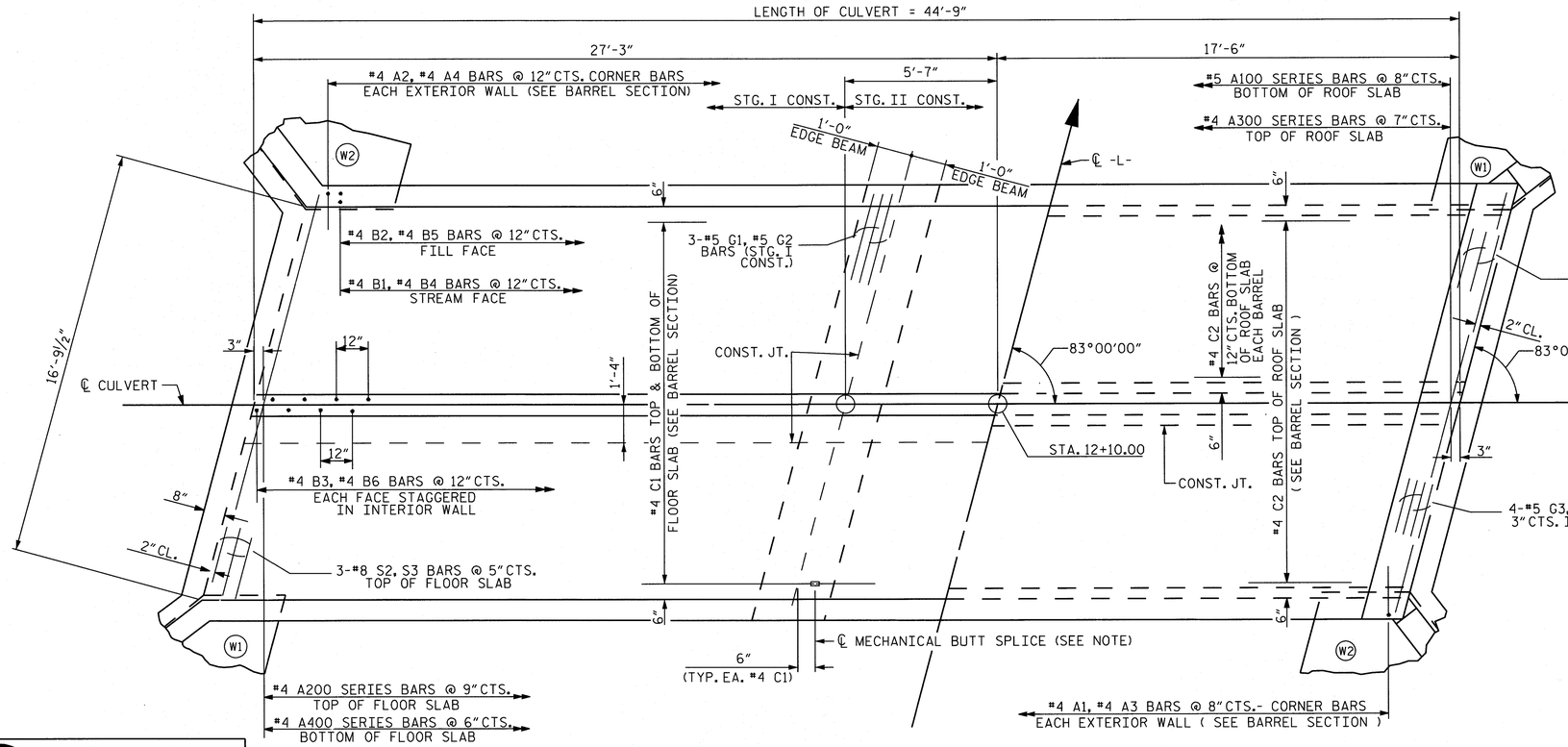
NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R DUDECK 11/22/13



CULVERT SECTION NORMAL TO ROADWAY

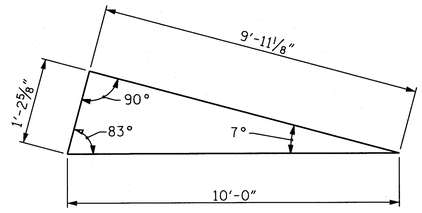


END ELEVATION NORMAL TO SKEW



PART PLAN - FLOOR SLAB

PART PLAN - ROOF SLAB



SKEW TRIANGLE

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

PROJECT NO. 17BP.14.R.34

GRAHAM COUNTY

STATION: 12+10.00

SHEET 3 OF 5

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ASSEMBLED BY : C. B. BAKER	DATE : 05/2012	SPECIAL	
CHECKED BY : T. R. DUDECK	DATE : 05/2012		
DRAWN BY : W. BRYAN STANLEY II	DATE : NOV.1971	STANDARD	
CHECKED BY : JOEL A. JOHNSON	DATE : DEC.1971		

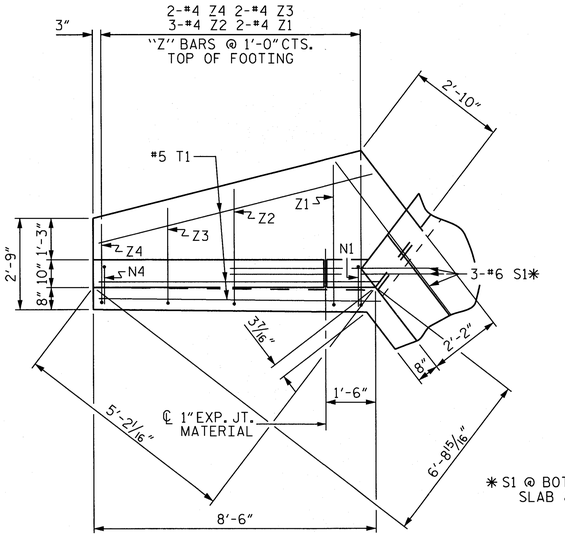
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

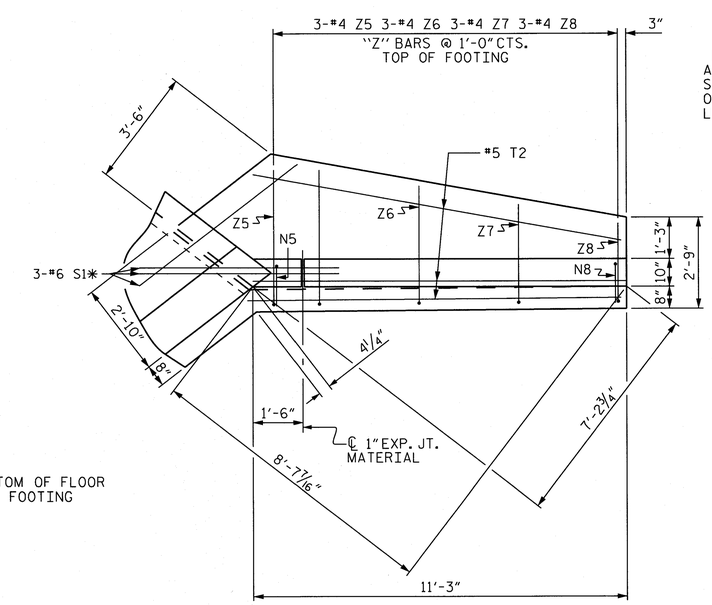
BARREL STANDARD

DOUBLE 8 FT. X 6 FT. CONCRETE BOX CULVERT 83°00'00" SKEW

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

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK 11/22/13



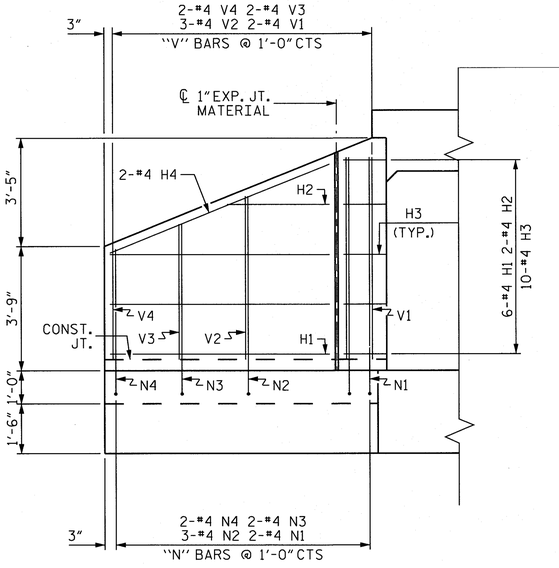


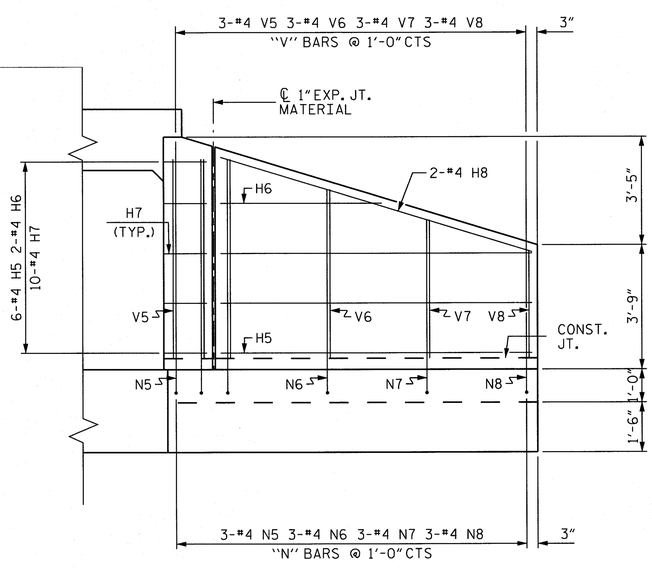
* S1 @ BOTTOM OF FLOOR SLAB & FOOTING

NOTE:
A 3'-0" WIDE STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT

PLAN W2

PLAN W1



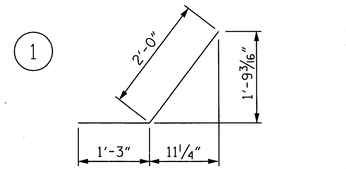


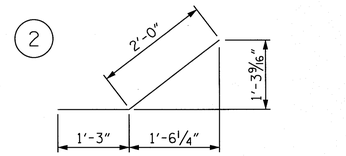
ELEVATION W2

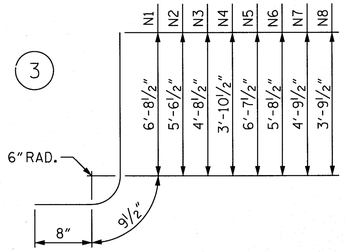
ELEVATION W1

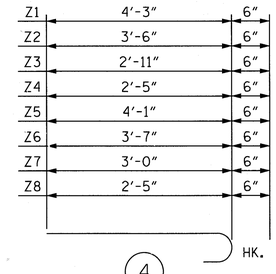
BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.





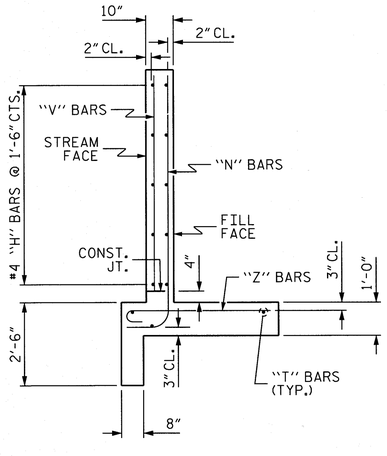




BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	12	#4	STR	6'-7"	53
H2	4	#4	STR	3'-1"	8
H3	20	#4	1	3'-3"	43
H4	4	#4	STR	7'-1"	19
H5	12	#4	STR	9'-4"	75
H6	4	#4	STR	4'-10"	13
H7	20	#4	2	3'-3"	43
H8	4	#4	STR	9'-9"	26
N1	4	#4	3	8'-2"	22
N2	6	#4	3	7'-1"	28
N3	4	#4	3	6'-2"	16
N4	4	#4	3	5'-4"	14
N5	6	#4	3	8'-1"	32
N6	6	#4	3	7'-2"	29
N7	6	#4	3	6'-3"	25
N8	6	#4	3	5'-3"	21
S1	12	#6	STR	6'-0"	108
T1	6	#5	STR	8'-6"	53
T2	6	#5	STR	11'-3"	70
V1	4	#4	STR	6'-1"	16
V2	6	#4	STR	4'-11"	20
V3	4	#4	STR	4'-1"	11
V4	4	#4	STR	3'-4"	9
V5	6	#4	STR	6'-0"	24
V6	6	#4	STR	5'-1"	20
V7	6	#4	STR	4'-2"	17
V8	6	#4	STR	3'-3"	13
Z1	4	#4	4	4'-9"	13
Z2	6	#4	4	4'-0"	16
Z3	4	#4	4	3'-5"	9
Z4	4	#4	4	2'-11"	8
Z5	6	#4	4	4'-7"	18
Z6	6	#4	4	4'-1"	16
Z7	6	#4	4	3'-6"	14
Z8	6	#4	4	2'-11"	12

REINFORCING STEEL FOR 4 WINGS	934 LBS
CLASS A CONCRETE	
4 WINGS	14.2 CY
2 HEADWALLS	1.7 CY
2 EDGE BEAMS (TOP AND BOTTOM)	2.0 CY
2 END CURTAIN WALLS	2.0 CY
TOTAL	19.9 CY



TYPICAL WING SECTION

PROJECT NO. 17BP.14.R.34

GRAHAM COUNTY

STATION: 12+10.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS 1 & 2

REVISIONS						SHEET NO.
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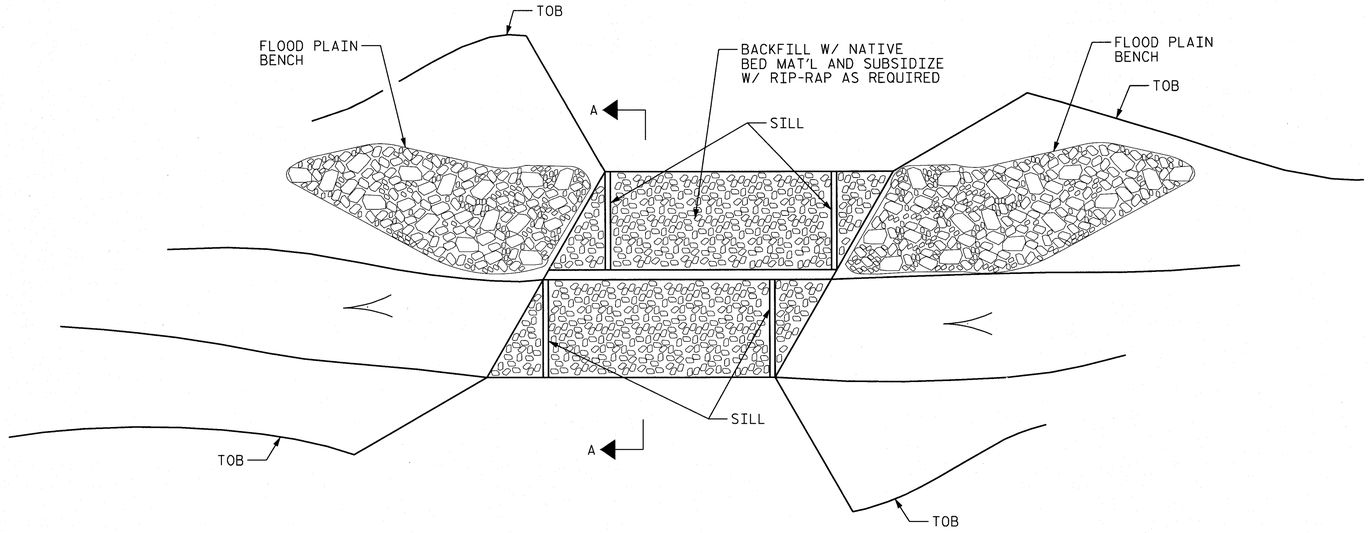
ASSEMBLED BY :	C. B. BAKER	DATE : 05/2012
CHECKED BY :	T. R. DUDECK	DATE : 05/2012
DRAWN BY :	CCJ	12/99
CHECKED BY :	RWW	03/00

NORTH CAROLINA PROFESSIONAL SEAL 31465 ENGINEER THOMAS R. DUDECK 11/22/13



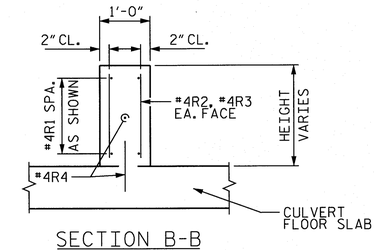
PLAN VIEW

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
R1	20	#4	STR	8'-8"	116
R2	36	#4	STR	1'-8"	40
R3	36	#4	STR	0'-8"	16
R4	20	#4	STR	1'-0"	13
TOTAL REINFORCING STEEL					185 LBS
CLASS A CONCRETE					1.8 CY

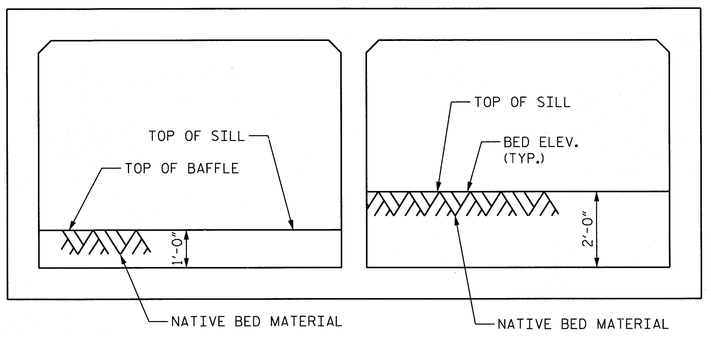
NOTES:

BED MATERIAL PLACED BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL BETWEEN THE LOWER SILLS. THE MATERIAL SHALL BE AS SHOWN IN THE PLAN VIEW. STONES GREATER THAN 10" SHALL NOT BE PLACED WITHIN THE LOW FLOW CHANNEL. BED MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER.

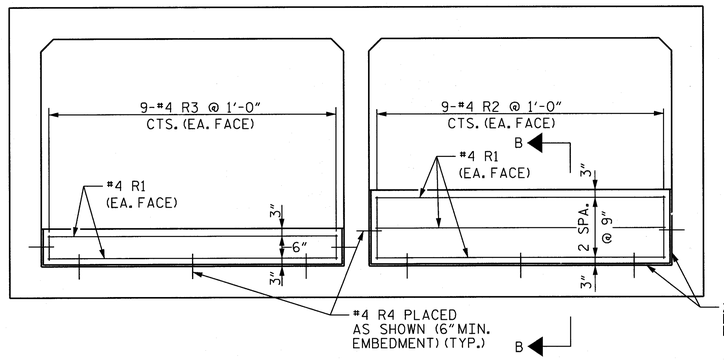
FOR ADDITIONAL DETAILS, SEE CULVERT SURVEY REPORT.



SECTION B-B



SILL GEOMETRY



SILL REINFORCEMENT

SECTION A-A

PROJECT NO. 17BP.14.R.34

GRAHAM COUNTY

STATION: 12+10.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
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SILL DETAILS

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DRAWN BY : T. R. DUDECK DATE : 05-03-12
CHECKED BY : J. T. KELVINGTON DATE : 05-03-12

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK 11/22/13

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

STD. NO. SN

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