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This file or an individual page shall not be considered a certified document.

PROJECT: 17BP.12.R.89

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.89	1	

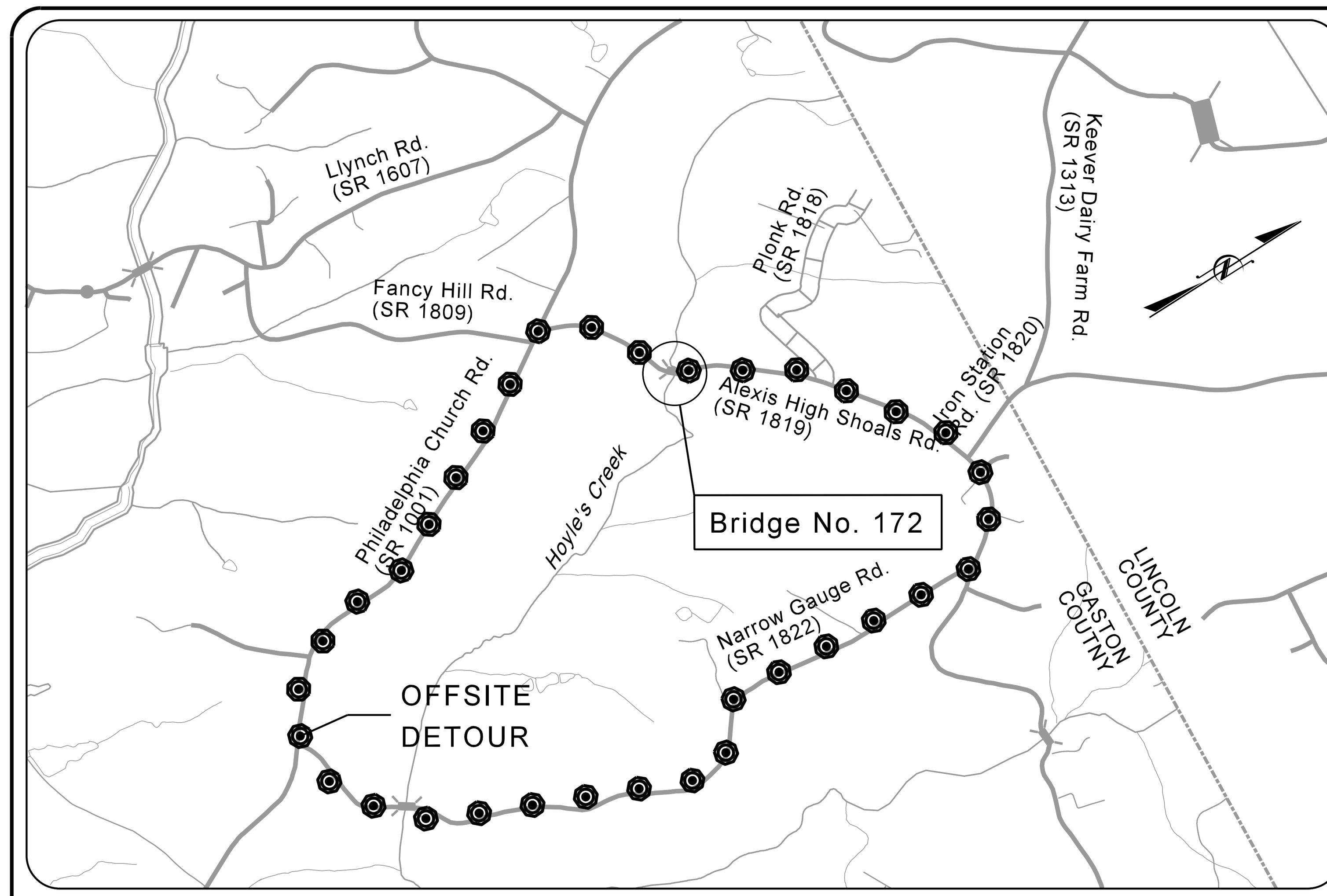
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17 BP.12.R.89		P.E.
17 BP.12.R.89		ROW & UTIL.
17 BP.12.R.89		CONST.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

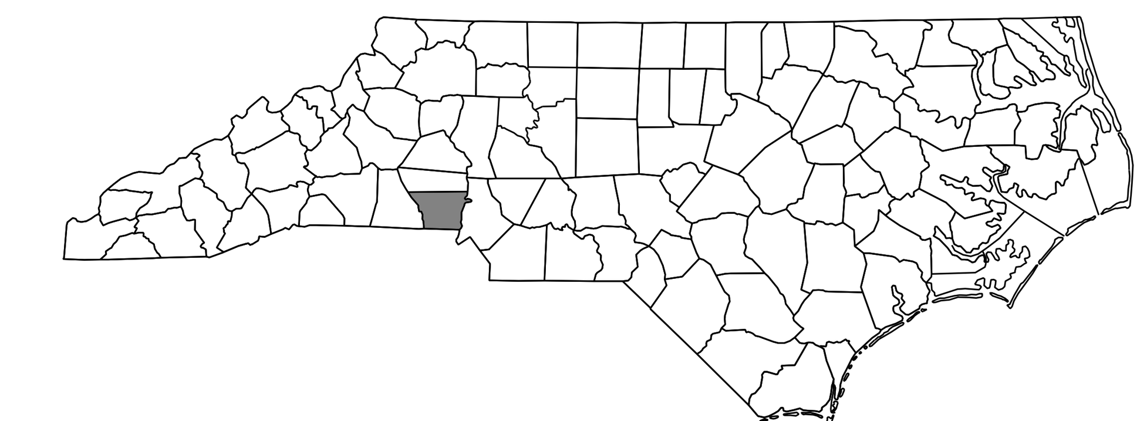
GASTON COUNTY

LOCATION: BRIDGE NO. 172 OVER HOYLE'S CREEK ON SR 1819 (ALEXIS HIGH SHOALS ROAD)

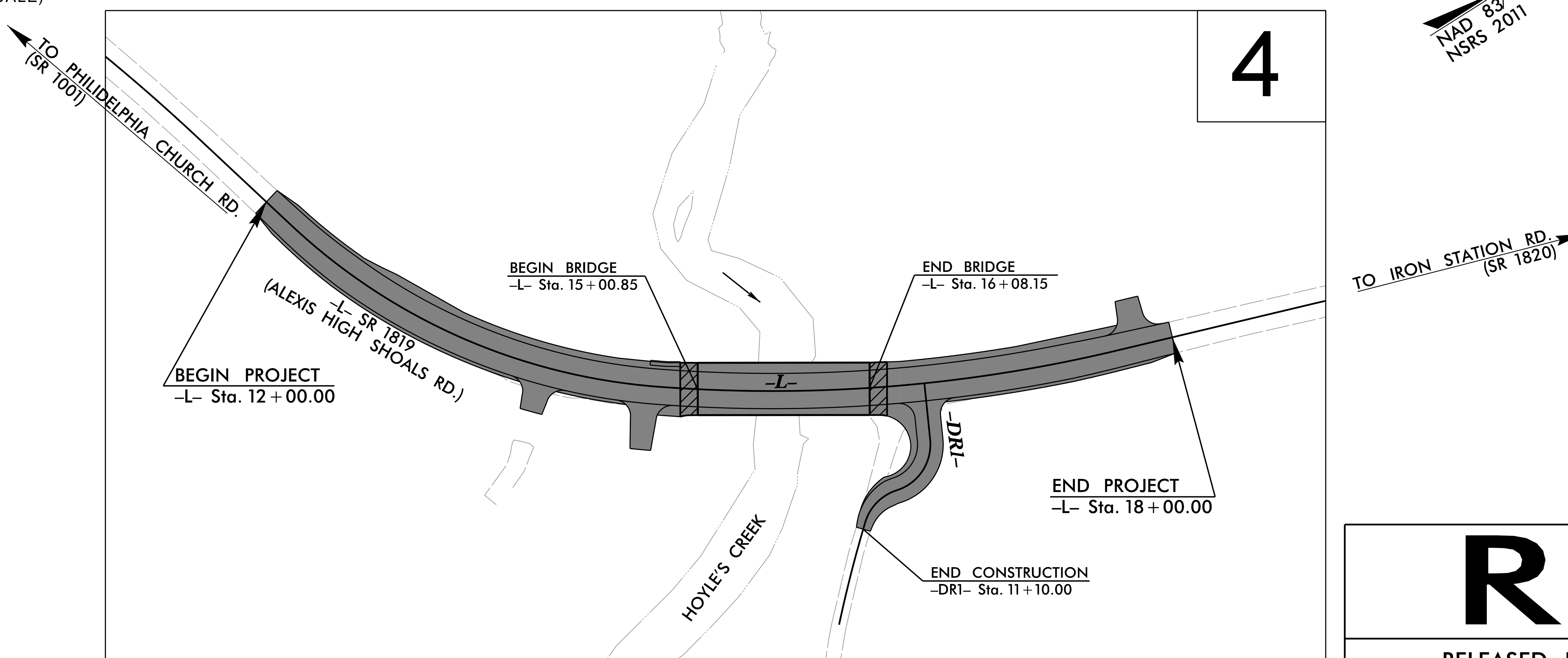
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, AND RESURFACING



VICINITY MAP
(NOT TO SCALE)



NAD 83/NSRS 2011



RFC
RELEASED FOR CONSTRUCTION

RFC ROADWAY PLANS
DATE: 01/29/2018

NOTES:
1) DESIGN EXCEPTION REQUIRED FOR MIN. HORIZONTAL CURVE RADIUS AND SAG VERTICAL CURVE K.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT: DL00173

GRAPHIC SCALES

25 0 25 50
PLANS

25 0 25 50
PROFILE (HORIZONTAL)

10 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT = 1,200
T = 6 %*
V = 50 MPH
* TTST = 3% DUAL 3%

FUNC CLASS = RURAL LOCAL

SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 17BP.12.R.89	= 0.094 mi
LENGTH STRUCTURE TIP PROJECT 17BP.12.R.89	= 0.020 mi
TOTAL LENGTH TIP PROJECT 17BP.12.R.89	= 0.114 mi

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO. F-0112
1-888-521-4455 OR 919-878-9560

FOR
DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 11, 2017

LETTING DATE:
FEBRUARY 27, 2017

Scott D. Blevins, P.E.
PROJECT ENGINEER

Matthew A. Lamy, P.E.
PROJECT DESIGN ENGINEER

Steven Rackley, P.E.
Division Bridge Manager

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039850
1/30/2018
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 38649
1/29/2018
P.E.
SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.89	1A
R\W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL SEAL 38649 ENGINEER MATTHEW A. LAMY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

INDEX of SHEETS, GENERAL NOTES, and LIST of STANDARDS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
1D-1	PROPOSED ALIGNMENT CONTROL SHEET
1E-1	FINAL ROW / EASEMENT POINTS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	TYPE III - SHOP CURVED STRUCTURE ACHOR UNIT DETAIL
2D-1	DRAINAGE DETAILS
3B-1	GUARDRAIL, EARTHWORK, & PAVEMENT REMOVAL SUMMARIES
3D-1	DRAINAGE SUMMARY
4	PLAN/PROFILE SHEET
TMP-1 THRU TMP-3	TRANSPORTATION MANAGEMENT PLANS
SD-1	SIGNING PLANS
PM-1 THRU PM-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1 THRU X-14	CROSS-SECTIONS
S-1 THRU S-21	STRUCTURE PLANS

2018 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, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.02	Driveway Turnout - Radius Type
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

GENERAL NOTES

EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

DRIVEWAYS:

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

GUARDRAIL:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

AT&T (Telephone), Rutherford (EMC), & SPECTRUM (CABLEVISION).

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

1/29/2018
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mlamy

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.89	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

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
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

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
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (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
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

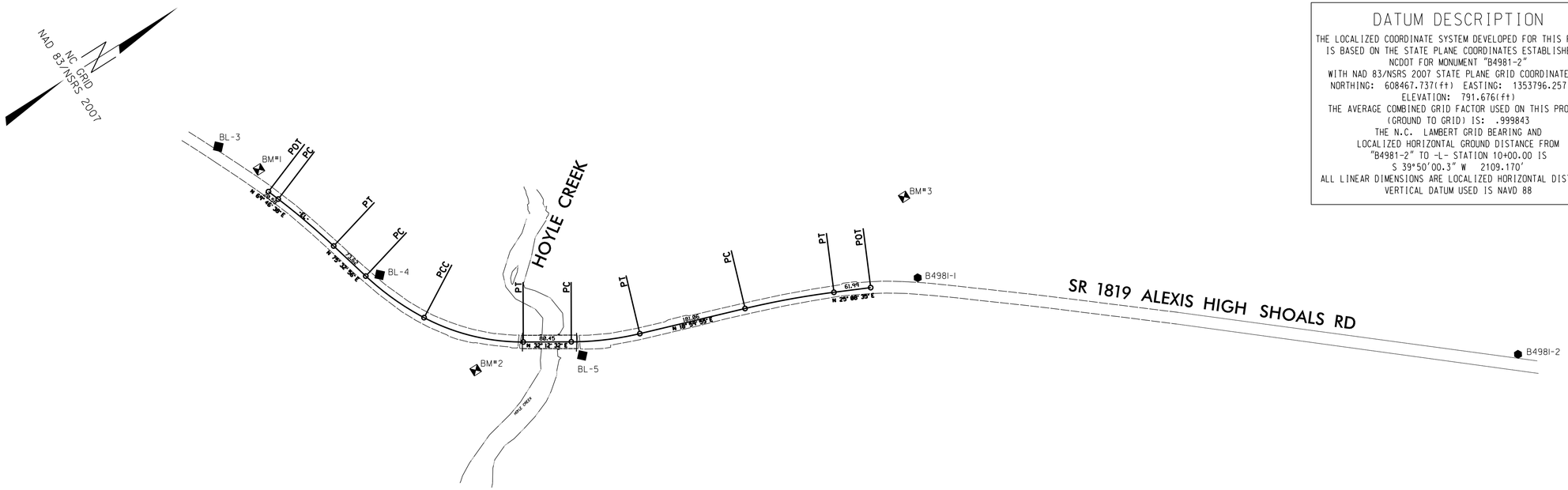
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)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

12/22/17

PROJECT REFERENCE NO.	SHEET NO.
I7BPJ2.R.89	IC-1
Location and Surveys	

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4981-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 608467.737(ft) EASTING: 1353796.257(ft)
ELEVATION: 791.676(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .999843
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4981-2" TO -L- STATION 10+00.00 IS
S 39°50'00.3" W 2109.170'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BL

POINT	DESC.	NORTH	EAST	ELEVATION
LS3	BL-3	606817.4740	1352336.7220	766.84
LS4	BL-4	606930.5350	1352662.5350	750.61
LS5	BL-5	607144.4980	1352958.2410	742.08
LS1	B4981-1	607688.1910	1353149.4500	757.06
LS2	B4981-2	608467.7370	1353796.2570	791.68

BM1 ELEVATION = 764.54
N 606855 E 1352405
BENCH TIE SPIKE IN 15" OAK

BM2 ELEVATION = 743.37
N 606981 E 1352883
BENCH TIE SPIKE IN 24" MAPLE

BM3 ELEVATION = 745.91
N 607742 E 1353023
BENCH TIE SPIKE IN 36" OAK

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	606848.084	1352445.212							
LINE			N 69°46'37.9" E	20.58					
PC	606855.198	1352464.522							
CURVE			N 72°39'46.5" E	121.57	05°46'18.1"(RT)	04°44'43.6"	121.63	60.86	1207.39
PT	606891.426	1352580.573							
LINE			N 75°32'55.6" E	73.62					
PC	606909.799	1352651.866							
CURVE			N 67°52'58.0" E	119.82	15°19'55.1"(LT)	12°45'27.2"	120.18	60.45	449.11
PCC	606954.912	1352762.870							
CURVE			N 46°12'46.3" E	170.95	28°00'28.3"(LT)	16°13'15.6"	172.66	88.09	353.22
PT	607073.206	1352886.282							
LINE			N 32°12'32.0" E	80.45					
PC	607141.279	1352929.164							
CURVE			N 25°36'13.5" E	115.52	13°12'37.4"(LT)	11°24'37.0"	115.78	58.15	502.14
PT	607245.455	1352979.086							
LINE			N 18°59'54.7" E	181.06					
PC	607416.648	1353038.027							
CURVE			N 22°04'14.8" E	151.19	06°08'40.3"(RT)	04°03'44.2"	151.26	75.70	1410.43
PT	607556.755	1353094.835							
LINE			N 25°08'35.0" E	61.99					
POT	607612.872	1353121.174							

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

1/29/2018
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12/22/17

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.89	ID-1
Location and Surveys	

PROPOSED ALIGNMENT CONTROL SHEET

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	606848.0840	1352445.2120
PC	10+20.58	606855.1975	1352464.5222
PT	11+42.21	606891.4259	1352580.5735
PC	12+21.99	606911.3369	1352657.8348
PCC	14+75.36	607049.6427	1352864.3793
PT	17+64.91	607304.4641	1352999.4024
PC	18+83.56	607416.6484	1353038.0273
PT	20+34.81	607556.7549	1353094.8354

DRI

TYPE	STATION	NORTH	EAST
POT	10+00.00	607191.6765	1352952.0622
PC	10+35.32	607175.8937	1352983.6626
PRC	10+76.33	607141.3590	1352999.2540
PCC	11+05.54	607114.0178	1353005.5771
PT	11+71.52	607065.9862	1353050.7934

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

1/29/208
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RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.89	1E-1

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4870 LAND SURVEYOR Kyle A. Wolff

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROW MARKER IRON PIN & CAP

ALIGN	STATION	OFFSET	NORTH	EAST	
L	12+00.00	30.00	606876.7980	1352644.0261	
L	12+30.00	35.00	606879.7198	1352675.0245	
L	13+50.00	35.00	606934.6048	1352793.5770	
L	13+50.00	31.77	606937.2856	1352791.7682	
L	13+75.00	-27.47	606999.9788	1352777.3947	
L	14+40.00	34.06	606999.4876	1352867.0973	
L	14+84.00	56.00	607023.4273	1352914.6581	
L	14+92.00	34.46	607042.8872	1352902.1836	
L	15+25.00	-46.00	607115.7247	1352854.8335	
L	15+90.00	-56.00	607173.2037	1352878.6835	
L	15+95.00	33.97	607133.0333	1352959.3344	NOT SET
L	15+95.00	52.00	607124.1621	1352975.0356	
L	16+60.00	-52.00	607229.7596	1352912.7841	
L	16+89.00	32.96	607220.5418	1353001.9785	
L	17+13.00	-28.60	607266.6830	1352954.6660	

ROW MARKER IRON PIN & CAP

ALIGN	STATION	OFFSET	NORTH	EAST
DR1	10+37.00	-20.00	607192.4677	1352995.0640
DR1	10+65.00	-20.00	607154.9581	1353019.9083

PERMANENT EASEMENT MARKER IRON PIN & CAP

ALIGN	STATION	OFFSET	NORTH	EAST	
L	12+88.00	-50.00	606978.8208	1352699.2158	
L	13+00.00	-29.78	606965.1725	1352717.5879	
L	13+04.00	-66.00	606999.1051	1352704.4444	
L	13+13.00	-59.00	606996.3886	1352714.3368	
L	13+28.00	35.00	606921.7434	1352773.2551	
L	13+31.00	45.00	606914.8646	1352781.2365	
L	13+40.00	42.00	606922.7060	1352788.1927	
L	13+43.00	-28.51	606983.6853	1352752.6579	
L	13+48.00	72.00	606902.6056	1352812.2925	
L	13+64.00	-42.00	607005.5778	1352760.6818	
L	13+87.00	60.00	606939.6024	1352841.8975	
L	13+92.00	67.00	606938.0054	1352850.8770	
L	14+03.00	50.00	606959.1687	1352849.2231	
L	14+06.00	56.50	606956.6713	1352856.1332	
L	14+74.00	50.64	607018.0526	1352903.9801	
L	14+85.50	51.88	607027.1420	1352912.2768	
L	15+09.00	-68.00	607115.7014	1352828.1963	NOT SET
L	15+18.00	-139.00	607162.4956	1352774.2041	
L	15+25.00	-145.00	607170.7677	1352772.5458	
L	15+40.00	-103.00	607158.5625	1352814.7822	
L	15+45.00	-49.56	607133.5540	1352862.2315	NOT SET
L	15+55.00	-115.00	607176.1722	1352811.7436	

PERMANENT EASEMENT MARKER IRON PIN & CAP

ALIGN	STATION	OFFSET	NORTH	EAST
DR1	10+80.00	3.09	607138.1886	1352995.4735
DR1	10+94.00	-3.00	607124.9276	1353002.7023

I, Kyle A. Wolff, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 1st day of February, 2018.

DocuSigned by:
DA1891434877 4ED...

---------- L-4870
Professional Land Surveyor PLS # Seal

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2/01/18

REVISIONS

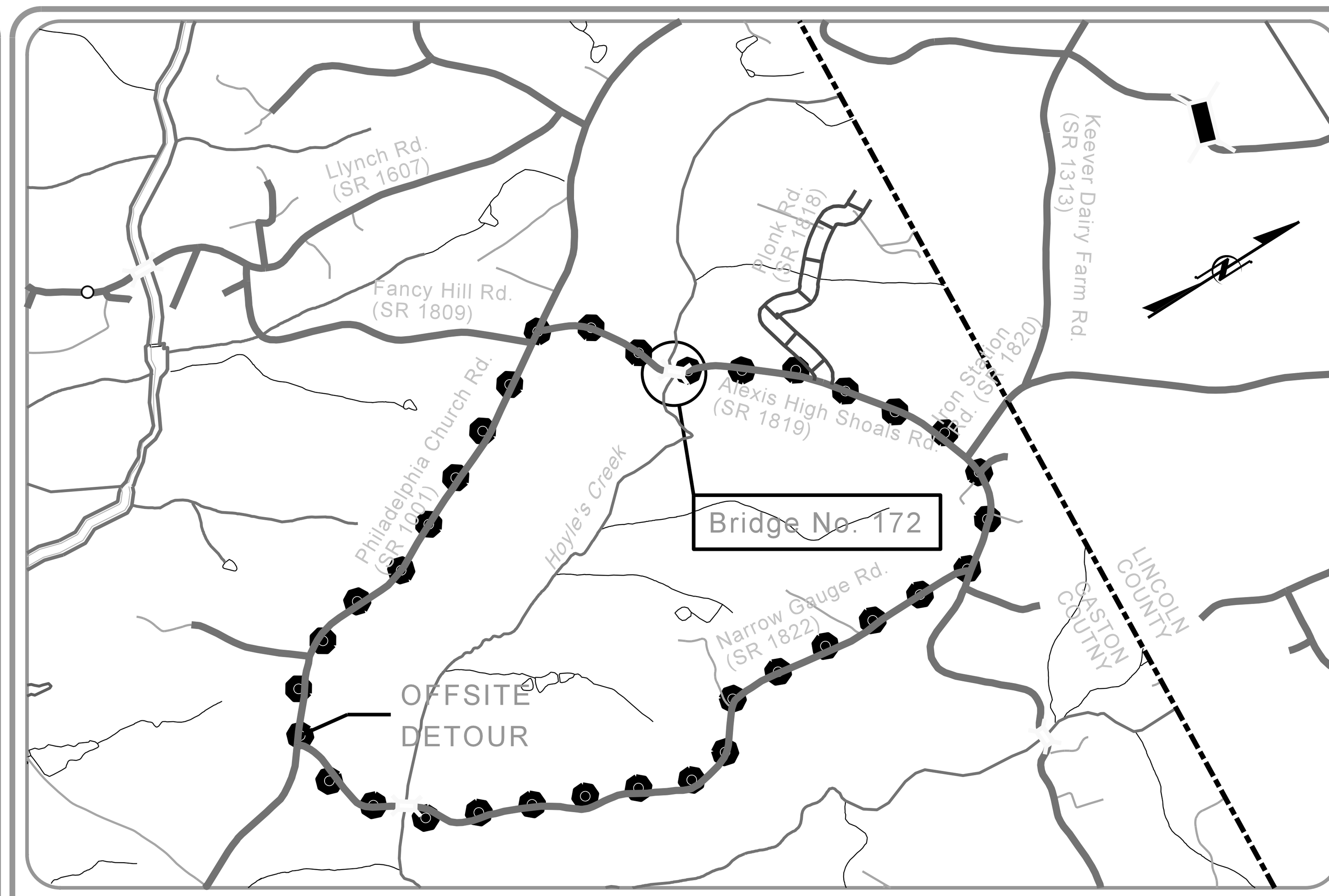
$$$$SYSTIME$$$$
$$$$USERNAME$$$$ $$$$JOB$$$$

02/01/18

TIP PROJECT: 17BP.12.R.89

CONTRACT: DL00173

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.89	RW-1	



VICINITY MAP

(NOT TO SCALE)

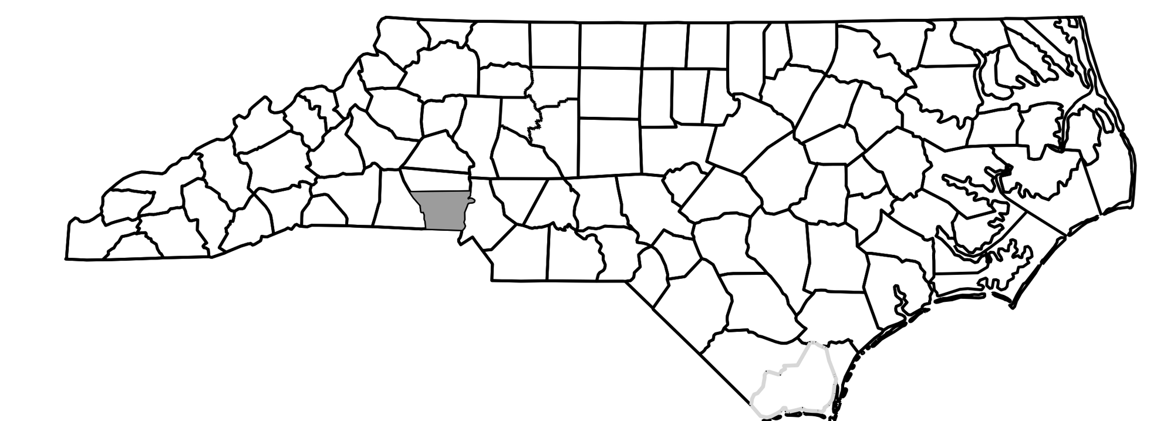
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

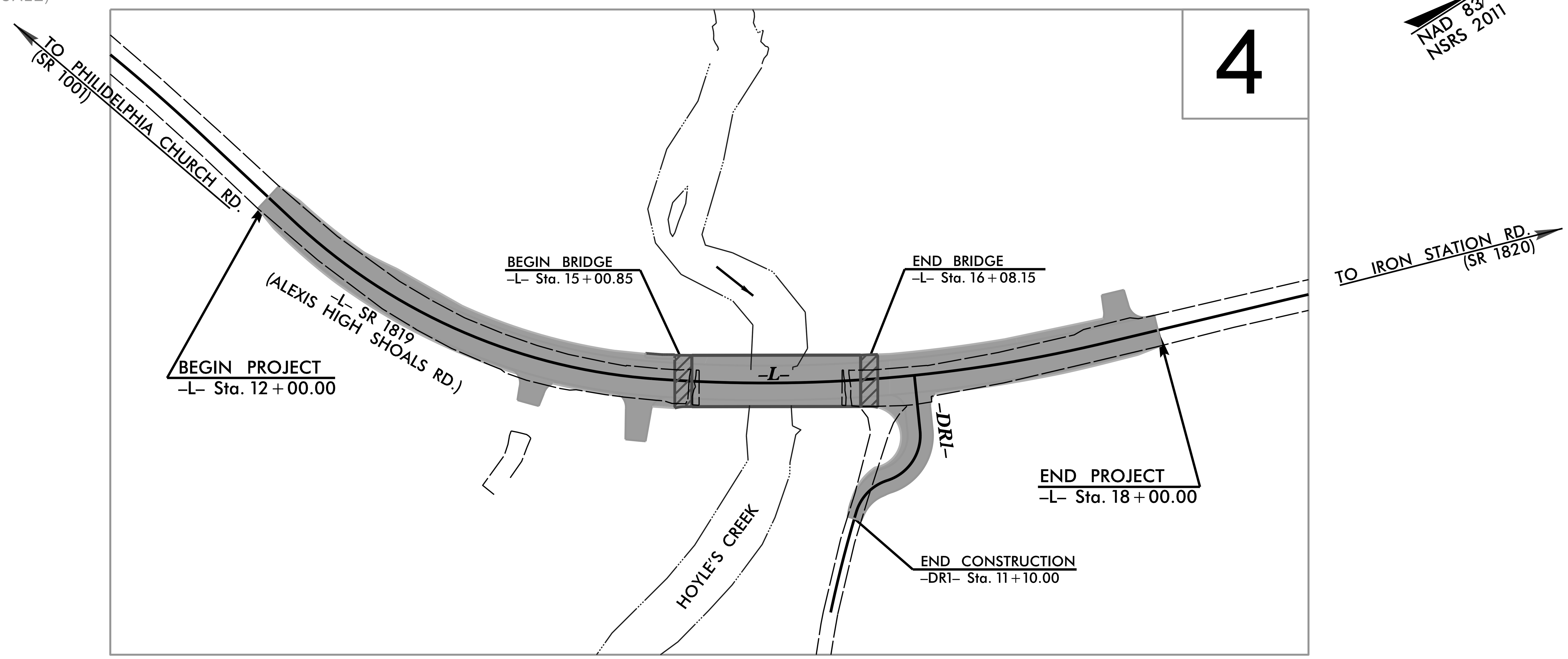
GASTON COUNTY

LOCATION: *BRIDGE NO. 172 OVER HOYLE'S CREEK ON SR 1819 (ALEXIS HIGH SHOALS ROAD)*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, STRUCTURES, AND RESURFACING*



NAD 83/
NSRS 2011



FINAL (90%) ROADWAY PLANS
DATE: 01/12/2018

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

25 0 25 50
PLANS

25 0 25 50
PROFILE (HORIZONTAL)

10 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT = 1,200
T = 6 %*
V = 50 MPH
* TTST = 3% DUAL 3%

FUNC CLASS = RURAL LOCAL

SUBREGIONAL TIER

LENGTH ROADWAY TIP PROJECT 17BP.12.R.89	= 0.094 mi
LENGTH STRUCTURE TIP PROJECT 17BP.12.R.89	= 0.020 mi
TOTAL LENGTH TIP PROJECT 17BP.12.R.89	= 0.114 mi

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 11, 2017

LETTING DATE:
FEBRUARY 27, 2017

PPROFESSIONAL LAND SURVEYOR

DocuSigned by:
DA1891434B774ED...

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR
SEAL
L-4870
Kyle A. Wolf

SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.89	RW-4

Location and Surveys

PROJECT SURVEYOR

SEAL L-4870 Kyle A. Wolff

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

2/1/18

REVISIONS

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

I, KYLE A. WOLFF, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 1st day of February, 2018.

DocuSigned by:
DA18914348774ED...

Professional Land Surveyor

L-4870
PLS #

Seal

SEE SHT. 2D-1 FOR DITCH DETAILS
SEE SHT. 5 FOR -L- PROFILE
SEE SHT. 5 FOR -DRI- PROFILE

-L-

PI Sta 10+81.44
Δ = 5° 48' 26.1" (RT)
D = 4° 46' 28.7"
L = 121.63'
T = 60.87'
R = 1200.00'

PI Sta 13+53.72
Δ = 38° 42' 41.3" (LT)
D = 15° 16' 43.9"
L = 253.37'
T = 131.73'
R = 375.00' *
SE = 0.04
V = 35 mph

PI Sta 16+21.31
Δ = 38° 42' 41.3" (LT)
D = 17° 50' 19.7"
L = 289.55'
T = 145.96'
R = 930.00'
SE = 0.04
V = 50 mph

PI Sta 19+59.26
Δ = 6° 08' 47.1" (RT)
D = 4° 03' 48.7"
L = 151.26'
T = 75.70'
R = 1410.00'

-DRI-

PI Sta 11+38.55
Δ = 4° 43' 33.0" (LT)
D = 7° 09' 43.1"
L = 65.98'
T = 33.01'
R = 800.00'
SE = 0.02
V = 15 mph

PI Sta 10+92.21
Δ = 55° 46' 19.6" (LT)
D = 190° 59' 09.4"
L = 29.20'
T = 15.87'
R = 30.00'
SE = 0.02
V = 15 mph

PI Sta 10+59.76
Δ = 78° 19' 28.3" (RT)
D = 190° 59' 09.4"
L = 41.01'
T = 24.43'
R = 30.00'
SE = 0.02
V = 15 mph

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

6/2/99

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5B AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E1	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	T	EARTH MATERIAL.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1″ OR GREATER THAN 1.5″ IN DEPTH.	E2	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, 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 5.5″ IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.				

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

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.89	2A-1

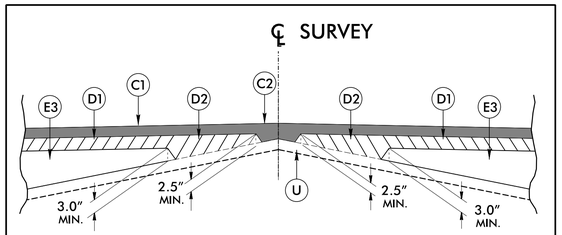
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 38649 ENGINEER MATTHEW A. LAMY

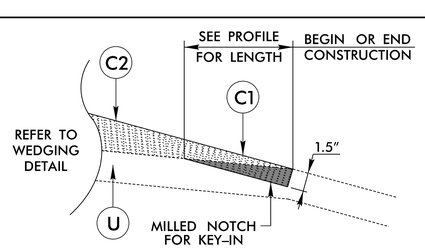
1/29/2018

PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

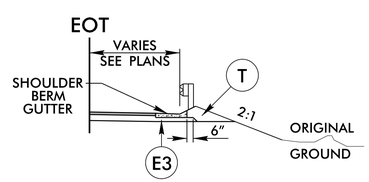


DETAIL SHOWING METHOD OF WEDGING

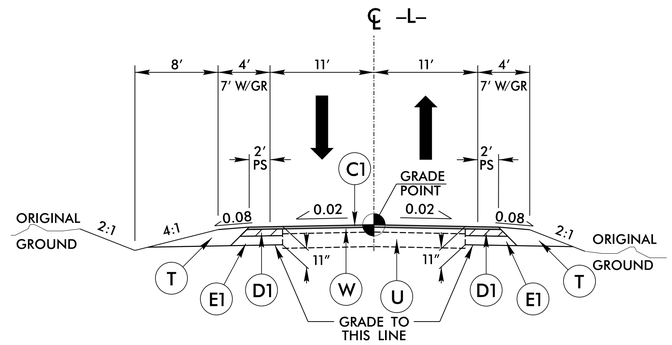


DETAIL SHOWING TIE–INS (MILLING)

USE –L– STA. 14+70.00 TO 14+89.21 LT

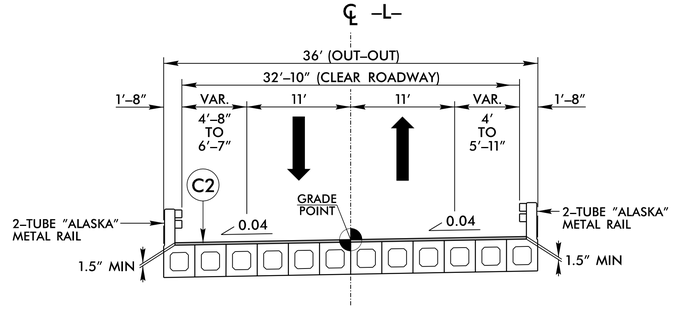


DETAIL SHOWING SHOULDER BERM GUTTER



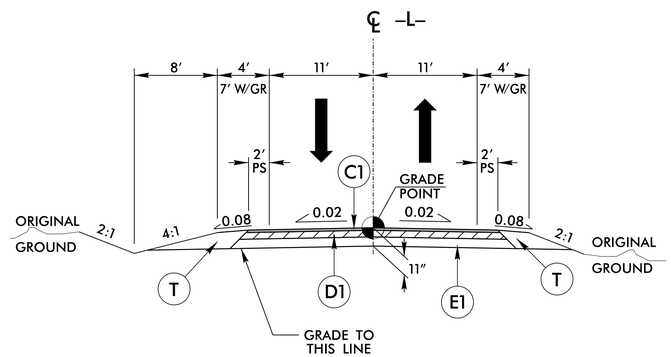
TYPICAL SECTION NO. 1

–L– STA. 12+00.00 TO 14+40.00
–L– STA. 16+65.00 TO 18+00.00



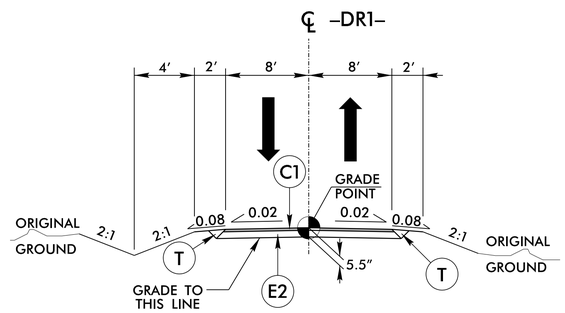
TYPICAL SECTION NO. 3

–L– STA. 15+00.85 (BEGIN BRIDGE) TO 16+08.15 (END BRIDGE)



TYPICAL SECTION NO. 2

–L– STA. 14+40.00 TO 15+00.85 (BEGIN BRIDGE)
–L– STA. 16+08.15 (END BRIDGE) TO 16+65.00



TYPICAL SECTION NO. 4

–DR1– STA. 10+11.00 TO 11+10.00

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609–3960
NC LICENSE NO. F–0112 • (919) 878–9560

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.89	2B-1

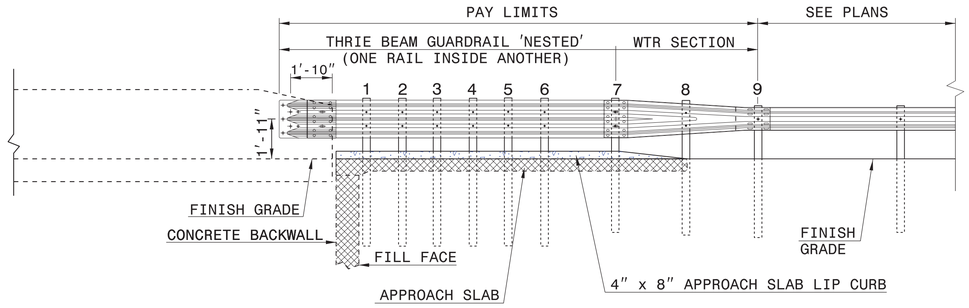
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT

SHEET 1 OF 1

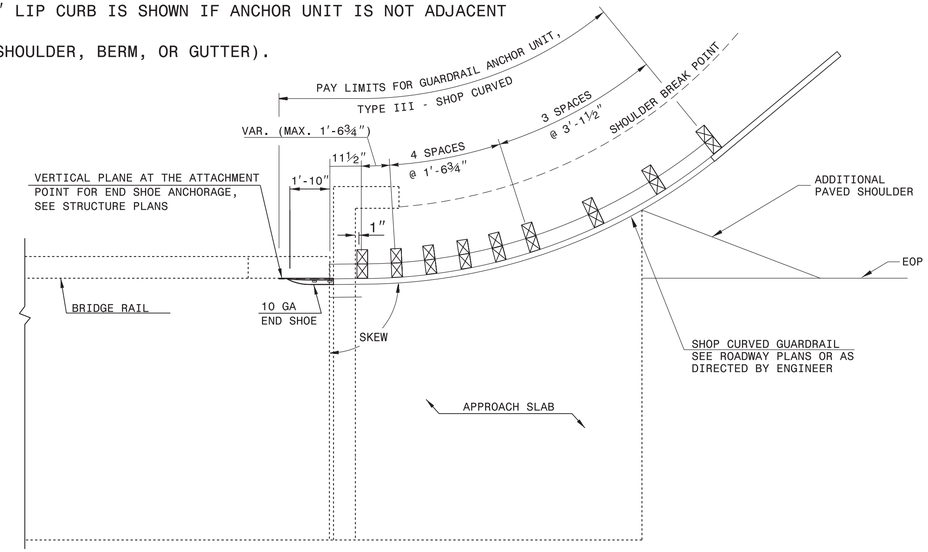
TYPE III SC



ELEVATION

SEE ROADWAY PLANS FOR END TREATMENT

NOTE:
 **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
  *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
  -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
  -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
  -USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
  -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
  -SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED FOR ATTACHMENT TO RAIL ON BRIDGE

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT

SHEET 1 OF 1

TYPE III SC

CONTRACT STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: E.E.Ward DATE: 4-4-02
MODIFIED BY: T.S.Spell DATE: 5-29-09
CHECKED BY: DATE:
FILE SPEC.: ward:\usr\details\stand\862stds\typeiiisc.dgn

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

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.89	2D-1

HYDRAULIC DESIGN ENGINEER

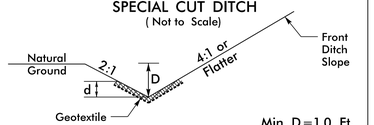
NORTH CAROLINA PROFESSIONAL SEAL 039950 ENGINEER JONATHAN M. WHITTINGTON

1/30/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAINAGE DETAILS

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

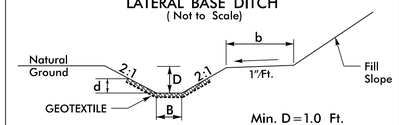


Type of Liner = CL B Rip–Rap

Min. D = 1.0 Ft.
Max. d = 1.0 Ft.

FROM –L– STA. 11+75 TO STA. 13+25 RT

DETAIL B
LATERAL BASE DITCH
(Not to Scale)



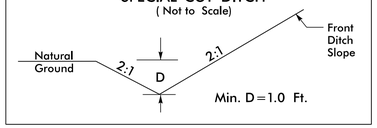
*When B is < 6.0'

Type of Liner = CL B Rip–Rap

Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 4.0 Ft.
b = 5.0 Ft.

FROM –L– STA. 14+25 TO STA. 15+13 LT

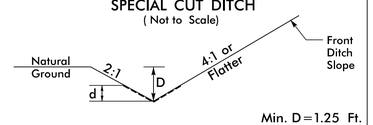
DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 1.0 Ft.

FROM –DR1– STA. 10+31.5 TO STA. 11+10 LT

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)

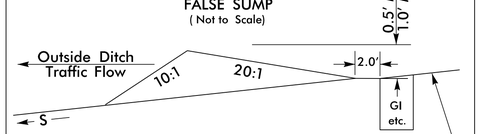


Type of Liner = PSRM

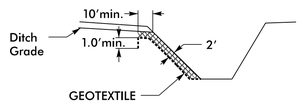
Min. D = 1.25 Ft.
Max d = 1.25 Ft.

FROM –L– STA. 17+00 TO STA. 18+00 RT

DETAIL E
FALSE SUMP
(Not to Scale)



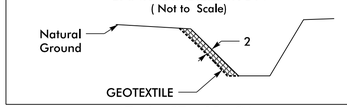
DETAIL F
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = CL II Rip–Rap w/Geotextile

FROM –L– STA. 15+05 TO STA. 15+15 LT
20 TONS CL. II RIPRAP W/25 SY GEOTEXTILE
FROM –L– STA. 15+69 TO STA. 15+89 RT
25 TONS CL. II RIPRAP W/30 SY GEOTEXTILE

DETAIL G
BANK STABILIZATION
(Not to Scale)



AT –L– STA. 15+24,
35 TONS CL II RIP RAP, 45 SY GEOTEXTILE
AT –L– STA. 15+63
20 TONS CL II RIP RAP, 30 SY GEOTEXTILE

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609–3960
NC LICENSE NO. F–0112 • (919) 878–9560

5/9/06

COMPUTED BY: ESP DATE: 08/10/17
CHECKED BY: MAL DATE: 08/11/17

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.89	3B-1

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	EXCAVATION		EMBANK.	BORROW	TOTAL
		TOTAL UNCLASS.	UNDERCUT			
-L- 12+00.00	-L- 15+00.85 (Begin Bridge)	720		582		138
	SUBTOTAL	720		581		138
-L- 16+08.15 (End Bridge)	-L- 18+00.00	16		468	452	
-DR1- 10+11.00	-DR1- 11+10.00	425		69		
	SUBTOTAL	441		537	452	
TOTAL		1,161		1,118	452	138
LOSS DUE TO CLEARING & GRUBBING		-58			58	
WASTE IN LIEU OF BORROW					-138	-138
ESTIMATED SHOULDER MATERIAL				167	167	
PROJECT TOTAL		1,102		1,284	538	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					27	
GRAND TOTAL		1,102		1,284	564	
SAY		**1,110**			**570**	

GUARDRAIL SUMMARY

ALN.	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		REMOVE EXISTING GR	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPROACH END	TRAILING END	APPR. END	TRAIL. END	TYPE-III	TYPE-III SC	GREU 350 TL 3	AT-1	G	NG		
-L-	12+91.76	15+00.10	LT	208.34					4 ft	7 ft	1 ft		50 ft		1		1					
-L-	14+78.27	15+01.76	RT		49.27				Var.	Var.						1		1				
-L-	16+09.29	17+53.81	LT	144.52					4 ft	7 ft	1 ft		50 ft		1		1					
-DR1-	12+56.62	13+59.12	RT		70.82				Var.	Var.						1		1				
			SUBTOTAL:	352.86	120.09										2	2	2	2				
ANCHOR UNIT DEDUCTIONS:																						
Type-III @ 18.75' Each				-37.50																		
Type-III SC @ 18.75' Each					-37.50																	
TL-3 @ 50' Each				-100.00																		
AT-1 @ 6.25' Each					-12.50																	
LESS GUARDRAIL DEDUCTIONS:				215.36	70.09																	
			PROJECT TOTAL:	215.36	70.09																	
			SAY:	**225.0**	**75.0**										**2**	**2**	**2**	**2**				

PAVEMENT REMOVAL SUMMARY

LINE	STATION	STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
-L-	14+40	EXIST BRIDGE	CL	1,288.98		143.22
-L-	EXIST BRIDGE	16+65	CL	1,497.76		166.42
-DR1-	10+11	10+80	RT	536.48		59.61
					TOTAL	369.25
					SAY	**370**

1/23/2018
K:\Roadway\Proj\3501172_rdy_psh03.dgn
mlpaw

COMPUTED BY: Eric Price DATE: 10 /09 /17
CHECKED BY: Matthew Lamy DATE: 10 /11 /17

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

RIGHT OF WAY AREA DATA SHEET

PARCEL NO.	PROPERTY OWNERS NAME	TOTAL AREA	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONSTR. EASEMENT	PERMANENT DRAINAGE EASEMENT	PERMANENT UTILITY EASEMENT	DRAINAGE UTILITY EASEMENT
1	CHARLES E. DODD & WIFE APRIL L. DODD	11.70 Ac.	1,221.62 SF	---	11.67 Ac.	206 SF	2,208SF	0.15 Ac.	322 SF
2	CHRISTOPHER A. RODDEY	7.41 Ac.	0.11 Ac.	---	7.30 Ac.	398 SF	891 SF	1,770 SF	---
3	MICHAEL DAVID MCSWAIN & WIFE MARY DEANNA MCSWAIN	---	687.75 SF	---	---	4,056 SF	---	1,138 SF	---
4	JOHN A. LASTELLA, JR. & WIFE STEPHANIE MARIE LASTRELLA	---	574.22 SF	---	---	---	---	3,557 SF	---
5	GINA A. ABERNATHY	---	---	---	---	2,091 SF	---	1,363 SF	---
6	CHRISTOPHER A. RODDEY	18,797 SF	2,163 SF	16,634 SF	---	2,175 SF	---	578 SF	---

PLANS PREPARED BY :

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

5/9/06
1/29/2018
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mlamy

5/9/06

COMPUTED BY: Eleni Riggs DATE: 10 /25 /2017
CHECKED BY: Jonathan Whittington DATE: 10 /25 /2017

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.89	3D-1

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	C.S.P.								R.C. PIPE CLASS III								R.C. PIPE CLASS IV							
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"
THICKNESS OR GAUGE		FROM	TO					.064	.064	.064	.064	.079	.079	.109	.109																
SHEET 4																															
-L- 14+74	LT	0401		743.07																											
-L- 14+74	LT	0401	0402		739.90	729.04			40																						
-L- 13+37	CL	0403	0404		745.00	739.10																					64				
-L- 13+35	LT	0406	0404		745.05	739.85			24																						
-L- 13+50	LT	0404		743.50																											
-L- 14+25	LT	0404	0405		739.10	731.40					72																				
-DR1- 10+31	CL	0407			742.10	736.80																					76				

STATION	PIPE AS NOTED					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS		QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')	LIN. FT.		C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE			CONCRETE TRANSITIONAL SECTION	
						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	DROP INLET	CATCH BASIN
SHEET 4																
-L- 14+74								1								
-L- 14+74																
-L- 13+37																
-L- 13+35																
-L- 13+50								1								
-L- 14+25																
-DR1- 10+31																

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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 TWO FLAT GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FR. WITH TWO FLAT GRATES. STD. 840.29	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	3GI	ADJUST DI	CONV DI TO JBMH	BERM DRAINAGE OUTLET	CLASS B RIPRAP TONS	GEOTEXTILE FABRIC SY	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 4																									
-L- 14+74									1			1													
-L- 14+74																					2 @ 15"				
-L- 13+37																								32	
-L- 13+35																					2 @ 15"				
-L- 13+50										1				1											
-L- 14+25																					2 @ 24"				
-DR1- 10+31																								33	

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.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

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PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.89	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 38639 ENGINEER MATTHEW A. LAMY 1/29/2018	NORTH CAROLINA PROFESSIONAL SEAL 029850 ENGINEER JONATHAN M. WHITTINGTON 1/30/2018

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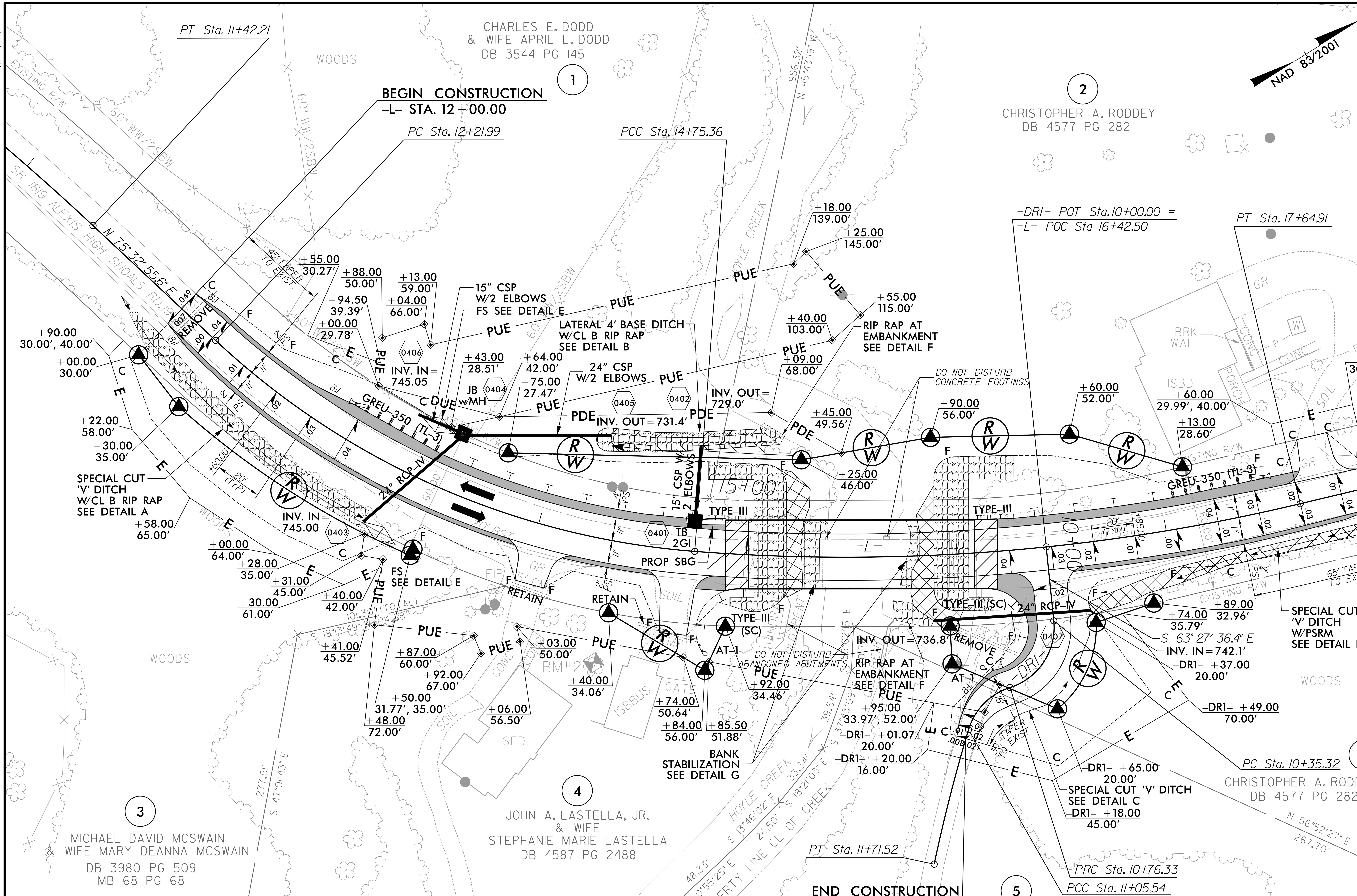
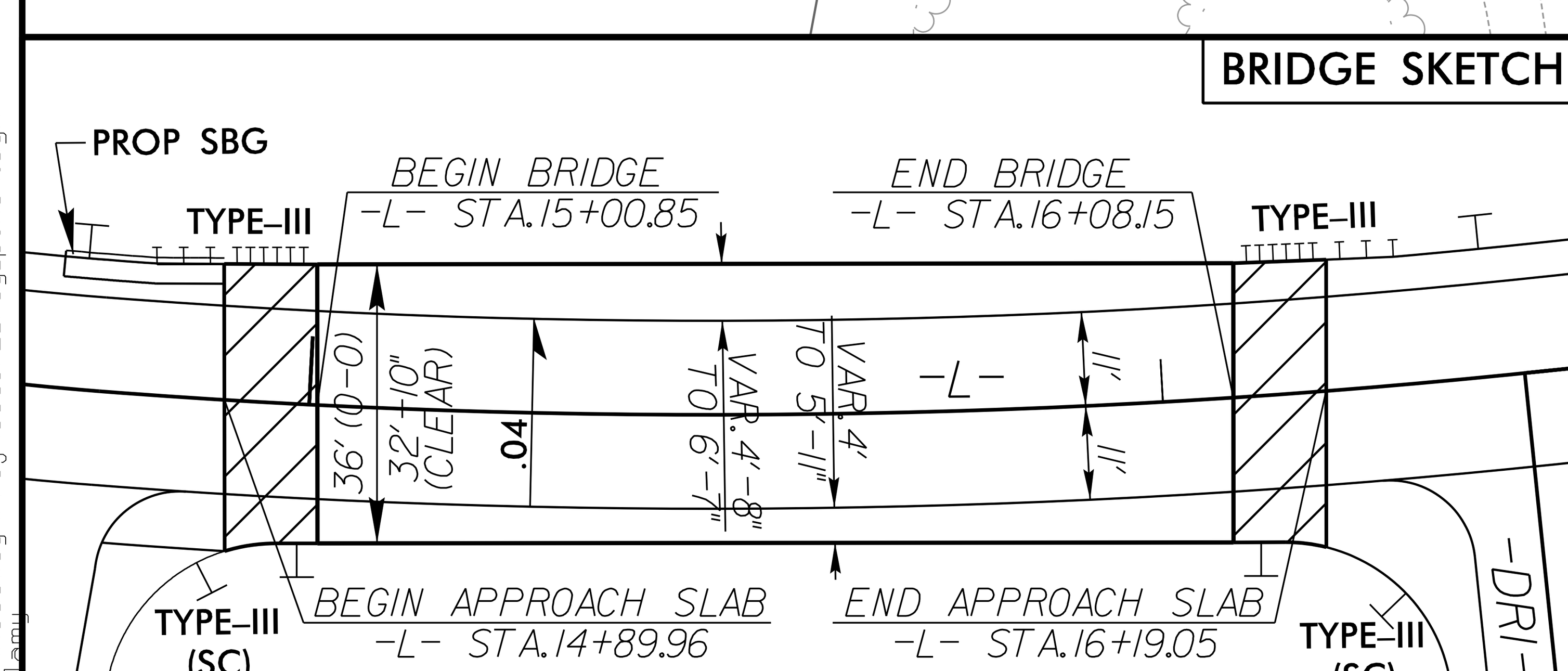


NAD 83/2001
CHARLES E. DODD & WIFE APRIL L. DODD DB 3544 PG 145
CHRISTOPHER A. RODDEY DB 4577 PG 282
MICHAEL DAVID MCSWAIN & WIFE MARY DEANNA MCSWAIN DB 3980 PG 509 MB 68 PG 68
JOHN A. LASTELLA, JR. & WIFE STEPHANIE MARIE LASTELLA DB 4587 PG 2488
GINA A. ABERNATHY DB 3419 PG 79
CHRISTOPHER A. RODDEY DB 4577 PG 282
MARK O'NEAL SPEIGHT DB 4341 PG 2025
BEGIN CONSTRUCTION -L- STA. 12+00.00
END CONSTRUCTION -L- STA. 18+00.00
END CONSTRUCTION -DR1- STA. 11+10.00
PT Sta. 11+42.21
PC Sta. 12+21.99
PCC Sta. 14+75.36
PT Sta. 17+64.91
-DR1- POT Sta. 10+00.00 = -L- POC Sta 16+42.50
PC Sta. 10+35.32
PRC Sta. 10+76.33
PCC Sta. 11+05.54
PT Sta. 11+71.52
SR 1819 ALEXIS HIGH SHOALS RD.
N 75° 32' 55.6" E
N 18° 59' 54.6" E
HOYLE CREEK
PROPERTY LINE CL OF CREEK
SPECIAL CUT 'V' DITCH W/CL B RIP RAP SEE DETAIL A
LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL B
SPECIAL CUT 'V' DITCH SEE DETAIL C
SPECIAL CUT 'V' DITCH W/PSRM SEE DETAIL D
RIP RAP AT EMBANKMENT SEE DETAIL F
BANK STABILIZATION SEE DETAIL G
LINE EXISTING AND PROPOSED DITCH WITH PSRM FROM -L- STA. 16+60 TO 18+00 RT
15" CSP W/2 ELBOWS FS SEE DETAIL E
24" CSP W/2 ELBOWS
24" RCP-IV
DO NOT DISTURB CONCRETE FOOTINGS
DO NOT DISTURB ABANDONED ABUTMENTS



* DESIGN EXCEPTION REQUIRED

NOTE: ALL DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
ALL DRIVEWAY WIDTHS 16' UNLESS OTHERWISE NOTED.

-L-

PI Sta 10+81.44	PI Sta 13+53.72	PI Sta 16+21.31	PI Sta 19+59.26
Δ = 5° 48' 26.1" (RT)	Δ = 38° 42' 41.3" (LT)	Δ = 38° 42' 41.3" (LT)	Δ = 6° 08' 47.1" (RT)
D = 4° 46' 28.7"	D = 15° 16' 43.9"	D = 17° 50' 19.7"	D = 4° 03' 48.7"
L = 121.63'	L = 253.37'	L = 289.55'	L = 151.26'
T = 60.87'	T = 131.73'	T = 145.96'	T = 75.70'
R = 1200.00'	R = 375.00' *	R = 930.00'	R = 1410.00'
	SE = 0.04	SE = 0.04	
	V = 35 mph	V = 50 mph	

-DR1-

PI Sta 11+38.55	PI Sta 10+92.21	PI Sta 10+59.76
Δ = 4° 43' 33.0" (LT)	Δ = 55° 46' 19.6" (LT)	Δ = 78° 19' 28.3" (RT)
D = 7° 09' 43.1"	D = 190° 59' 09.4"	D = 190° 59' 09.4"
L = 65.98'	L = 29.20'	L = 41.01'
T = 33.01'	T = 15.87'	T = 24.43'
R = 800.00'	R = 30.00'	R = 30.00'
SE = 0.02	SE = 0.02	SE = 0.02
V = 15 mph	V = 15 mph	V = 15 mph

SEE SHT. 2D-1 FOR DITCH DETAILS
SEE SHT. 5 FOR -L- PROFILE
SEE SHT. 5 FOR -DR1- PROFILE

PLANS PREPARED BY:

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PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.89	5

ROADWAY DESIGN ENGINEER — SEAL 038649 — MATTHEW A. LAMY — 1/29/2018

HYDRAULICS ENGINEER — SEAL 032859 — JONATHAN M. WHITTINGTON — 1/30/2018

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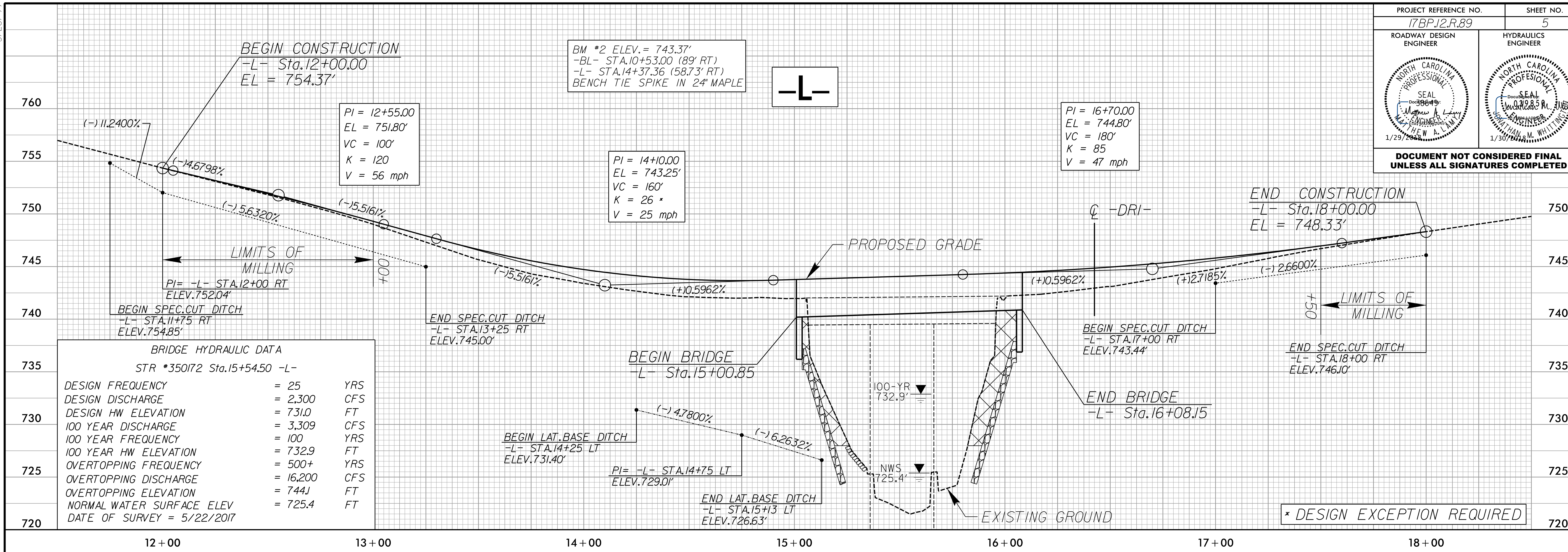
-L-

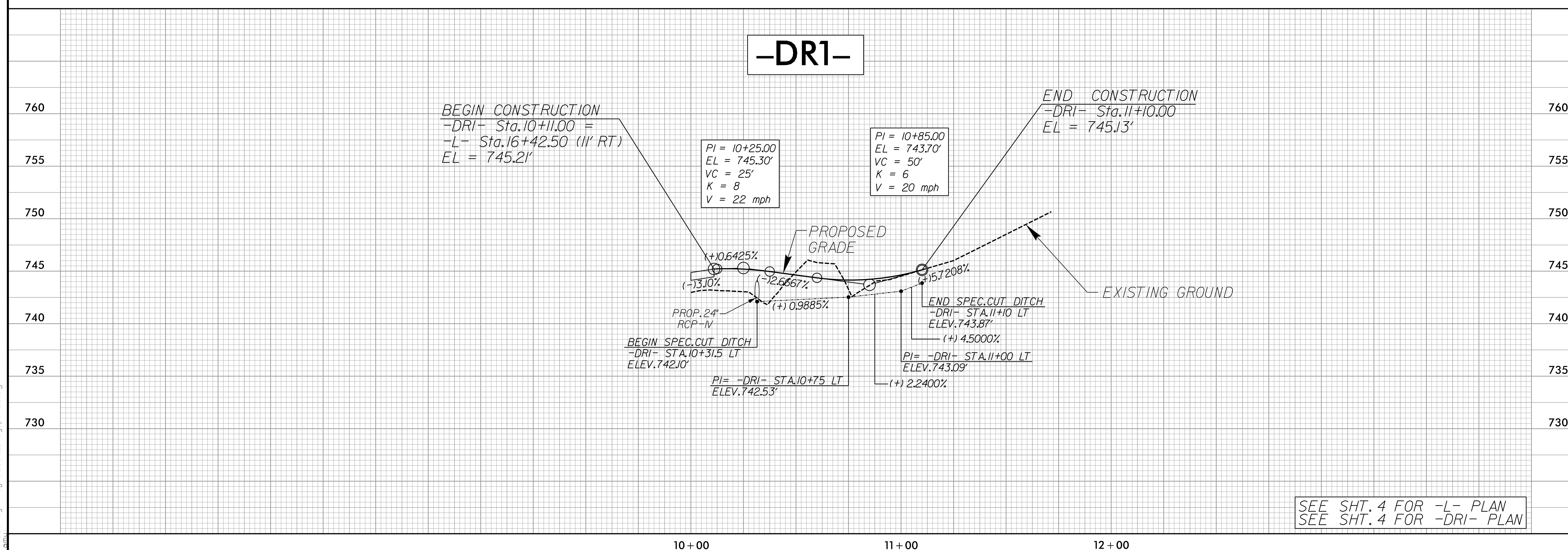

BEGIN CONSTRUCTION
-L- Sta.12+00.00
EL = 754.37'
BM #2 ELEV.= 743.37'
-BL- STA.10+53.00 (89' RT)
-L- STA.14+37.36 (58.73' RT)
BENCH TIE SPIKE IN 24" MAPLE
PI = 12+55.00
EL = 751.80'
VC = 100'
K = 120
V = 56 mph
PI = 14+10.00
EL = 743.25'
VC = 160'
K = 26 *
V = 25 mph
PI = 16+70.00
EL = 744.80'
VC = 180'
K = 85
V = 47 mph
END CONSTRUCTION
-L- Sta.18+00.00
EL = 748.33'
(-) 11.2400%
(-)4.6798%
(-) 5.6320%
(-)5.5161%
(-)5.5161%
(+)0.5962%
(+)0.5962%
(+)2.7185%
(-) 2.6600%
LIMITS OF MILLING
+00
+50
PI= -L- STA.12+00 RT
ELEV.752.04'
BEGIN SPEC.CUT DITCH
-L- STA.11+75 RT
ELEV.754.85'
END SPEC.CUT DITCH
-L- STA.13+25 RT
ELEV.745.00'
PROPOSED GRADE
℄ -DR1-
BEGIN SPEC.CUT DITCH
-L- STA.17+00 RT
ELEV.743.44'
END SPEC.CUT DITCH
-L- STA.18+00 RT
ELEV.746.10'
BEGIN BRIDGE
-L- Sta.15+00.85
END BRIDGE
-L- Sta.16+08.15
100-YR
732.9'
NWS
725.4'
(-) 4.7800%
(-) 6.2632%
BEGIN LAT.BASE DITCH
-L- STA.14+25 LT
ELEV.731.40'
PI= -L- STA.14+75 LT
ELEV.729.01'
END LAT.BASE DITCH
-L- STA.15+13 LT
ELEV.726.63'
EXISTING GROUND
* DESIGN EXCEPTION REQUIRED
760
755
750
745
740
735
730
725
720
12+00
13+00
14+00
15+00
16+00
17+00
18+00

BRIDGE HYDRAULIC DATA

STR #350172 Sta.15+54.50 -L-

DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 2,300	CFS
DESIGN HW ELEVATION	= 731.0	FT
100 YEAR DISCHARGE	= 3,309	CFS
100 YEAR FREQUENCY	= 100	YRS
100 YEAR HW ELEVATION	= 732.9	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 16,200	CFS
OVERTOPPING ELEVATION	= 744.1	FT
NORMAL WATER SURFACE ELEV	= 725.4	FT
DATE OF SURVEY = 5/22/2017		

-DR1-


BEGIN CONSTRUCTION
-DR1- Sta.10+11.00 =
-L- Sta.16+42.50 (11' RT)
EL = 745.21'
PI = 10+25.00
EL = 745.30'
VC = 25'
K = 8
V = 22 mph
PI = 10+85.00
EL = 743.70'
VC = 50'
K = 6
V = 20 mph
END CONSTRUCTION
-DR1- Sta.11+10.00
EL = 745.13'
PROPOSED GRADE
EXISTING GROUND
(+)0.6425%
(-)3.10%
(-)2.6667%
(+) 0.9885%
(+)5.7208%
PROP. 24" RCP-IV
BEGIN SPEC.CUT DITCH
-DR1- STA.10+31.5 LT
ELEV.742.10'
PI= -DR1- STA.10+75 LT
ELEV.742.53'
(+) 2.2400%
END SPEC.CUT DITCH
-DR1- STA.11+10 LT
ELEV.743.87'
(+) 4.5000%
PI= -DR1- STA.11+00 LT
ELEV.743.09'
760
755
750
745
740
735
730
10+00
11+00
12+00

SEE SHT. 4 FOR -L- PLAN
SEE SHT. 4 FOR -DR1- PLAN

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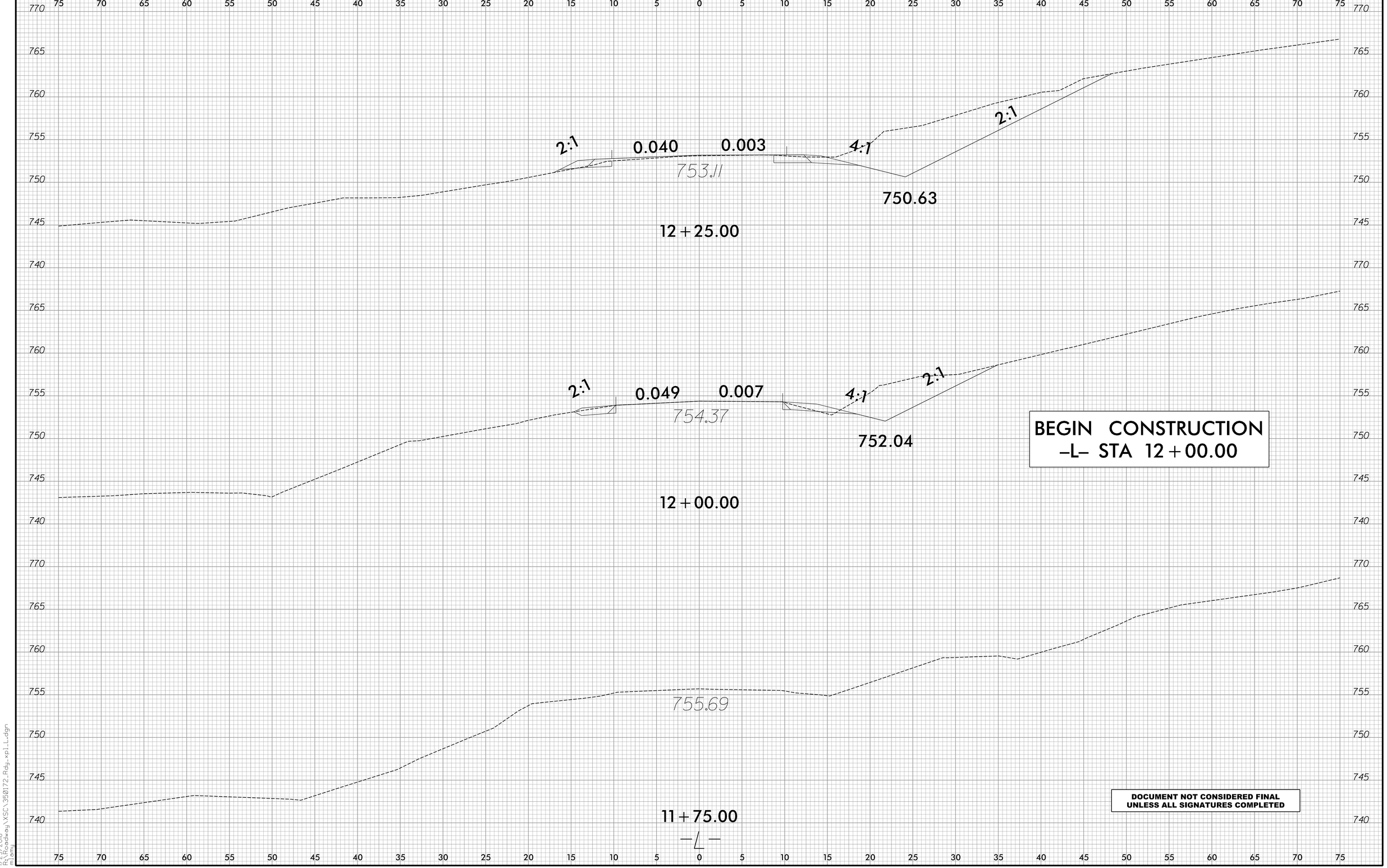
6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.12.R.89	X-1



BEGIN CONSTRUCTION
–L– STA 12+00.00

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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.12.R.89	X-2

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

765 760 755 750 745 740

2:1 4:1 0.040 0.040 4:1 2:1

749.04

746.43 746.41

13+00.00

765 760 755 750 745 740

2:1 4:1 0.040 0.028 4:1 2:1

750.49

747.95 747.82

12+75.00

765 760 755 750 745 740

2:1 0.040 0.015 4:1 2:1

751.84

749.22

12+50.00

—L—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

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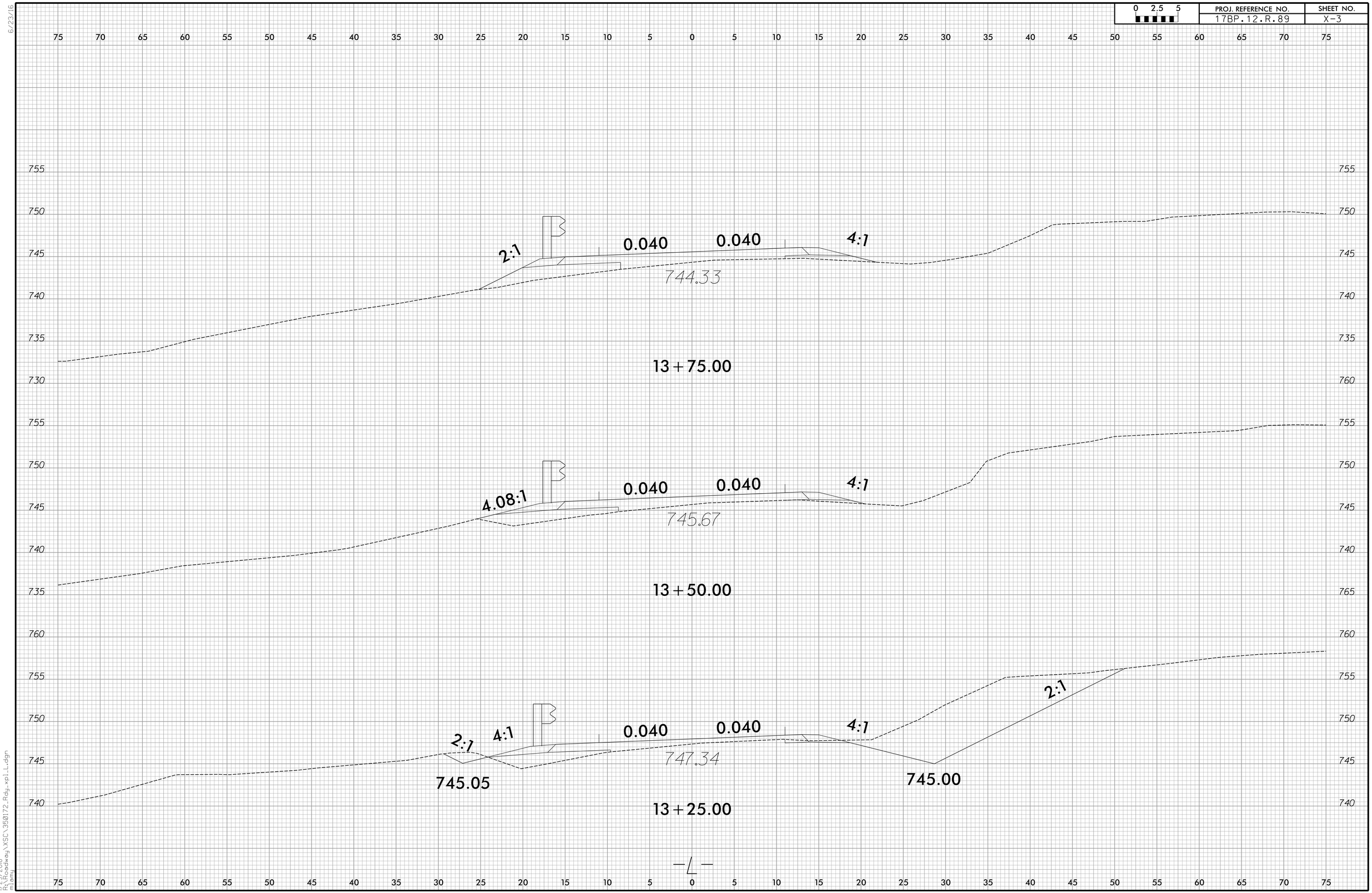
6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.12.R.89	X-3



6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.12.R.89	X-4

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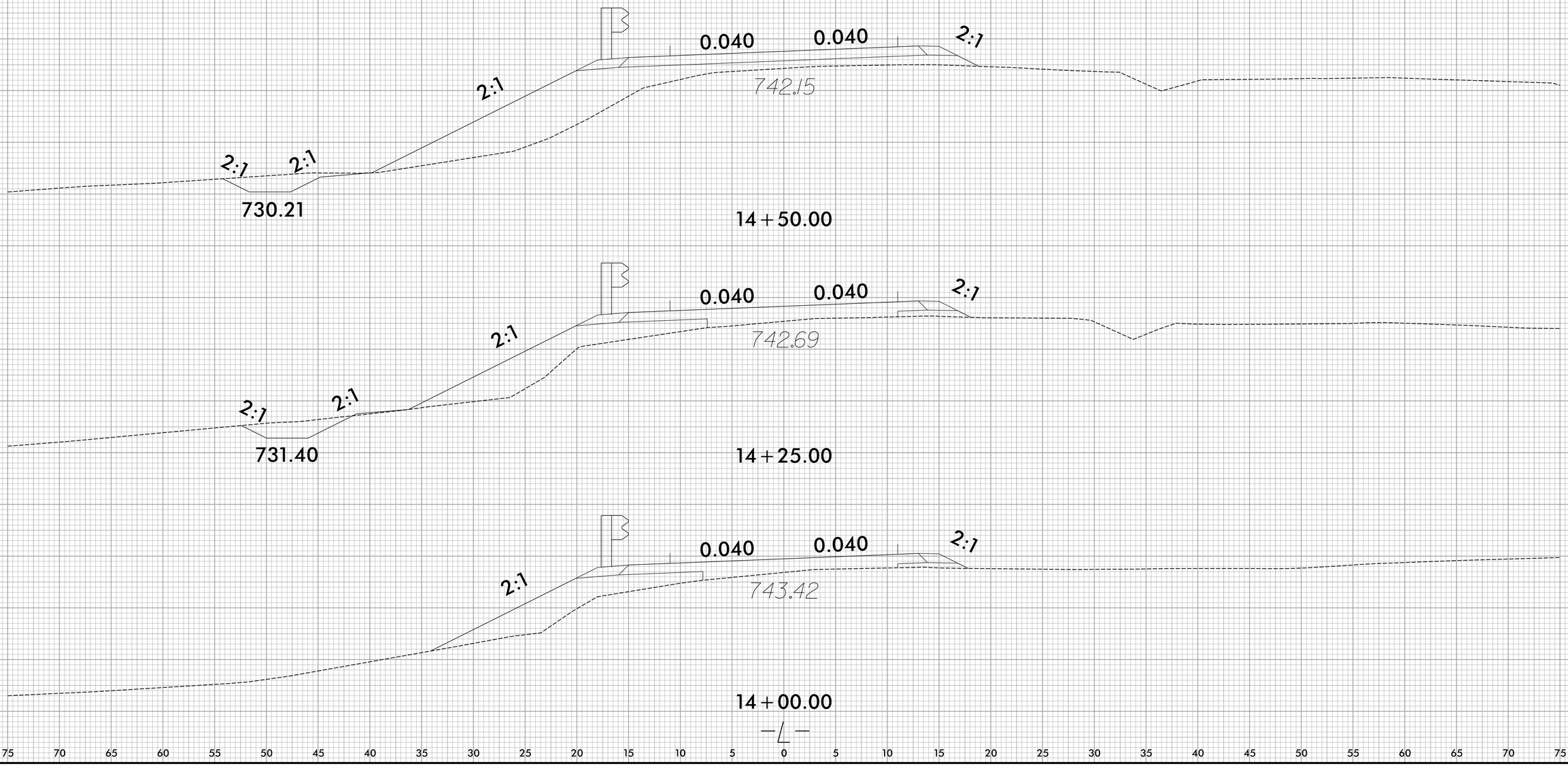
750 745 740 735 730 725



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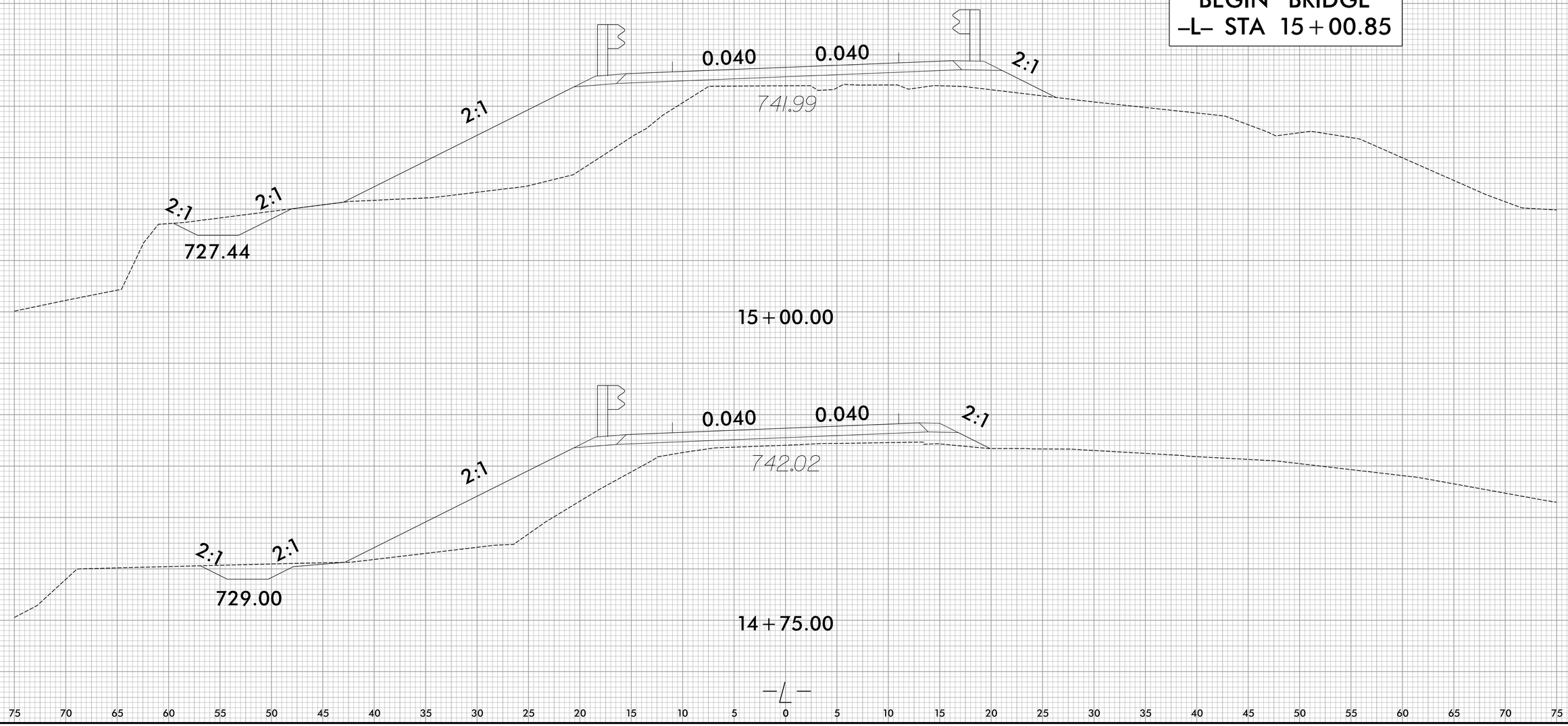
6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.12.R.89	X-5

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

750 745 740 735 730 725 720

BEGIN BRIDGE
–L– STA 15+00.85



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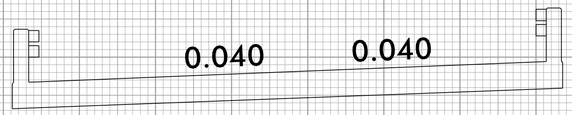
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.12.R.89	X-6

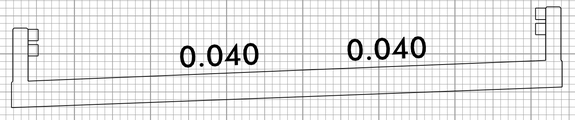
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

750
745
740
735
730
725
720
715



722.01

15+50.00



728.52

15+25.00

—L—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.12.R.89	X-7

END BRIDGE
–L– STA 16+08.15

0.040 0.040 2:1 2:1 742.56

16+25.00

0.040 0.040 741.97

16+00.00

0.040 0.040

724.11

15+75.00

–L–

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.12.R.89	X-8

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

765 760 755 750 745 740 735 730

0.040 0.015 2:1 2:1 743.96

16+75.00

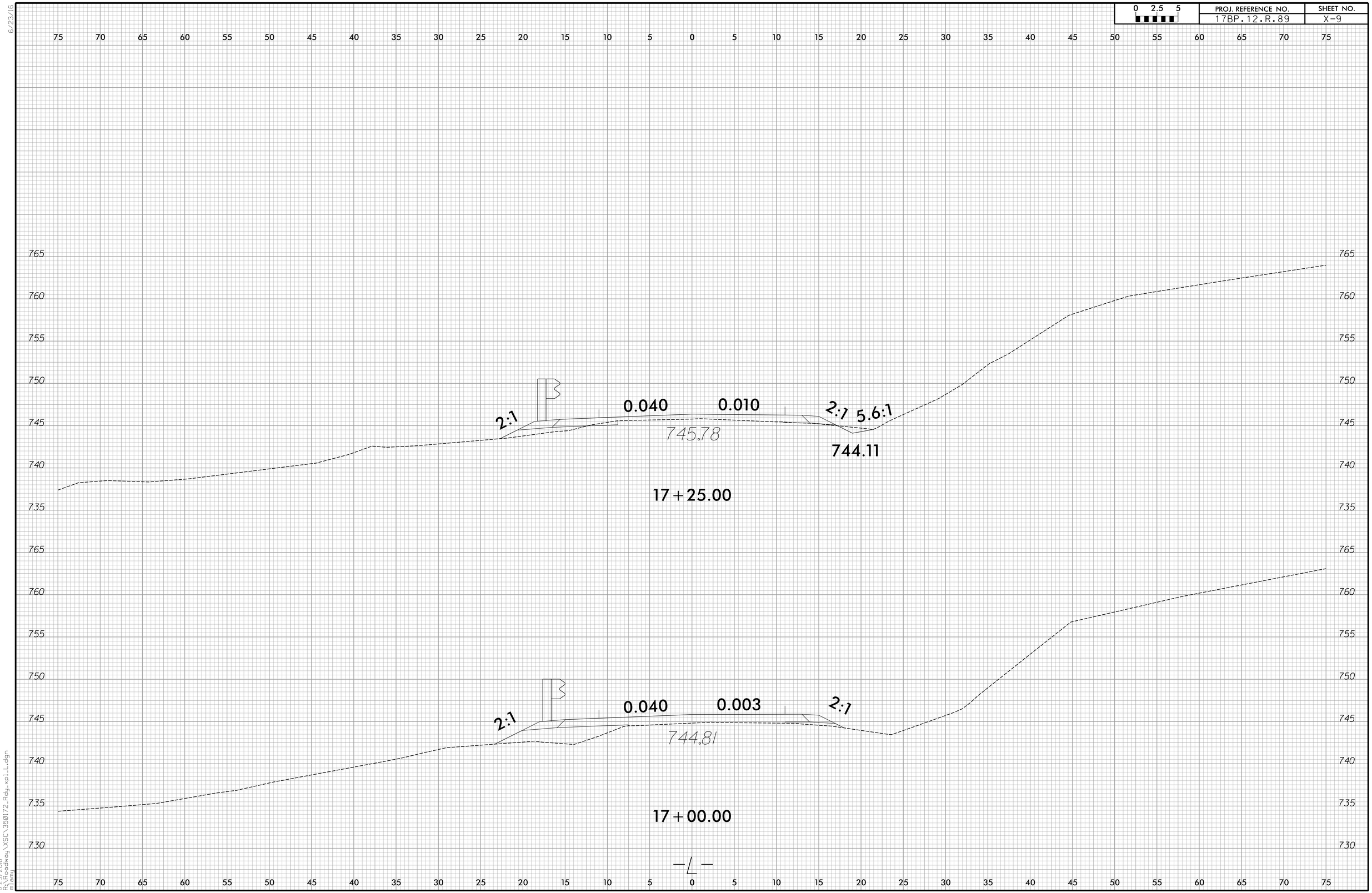
0.040 0.027 2:1 2:1 743.12

16+50.00

—L—

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.12.R.89	X-9



6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.12.R.89	X-10

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

765
760
755
750
745
740
735

2:1 0.015 0.035 2.4:1 2:1

747.54

745.44

17+75.00

2:1 0.028 0.022 2:1 2:1

746.72

744.77

17+50.00

—L—

765 760 755 750 745 740 735

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

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6/23/16

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
17BP.12.R.89	X-11

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

770
765
760
755
750
745
740
735

749.06

END CONSTRUCTION
–L– STA 18+00.00

18+25.00

2:1 0.009 0.047 2.8:1 2:1

748.33

746.10

18+00.00
–L–

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

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mlong

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
17BP.12.R.89	X-12

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

770 765 760 755 750 745 740 735 730 725 720

2:1

2:1 0.020 0.020 4:1

742.28

744.93

10+50.00

2:1 0.020 0.020 2:1

743.04

BEGIN CONSTRUCTION
–DR1– STA. 10+11.00

10+25.00

–DR1–

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.12.R.89	X-13

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

770 765 760 755 750 745 740 735 730 725 720

2:1

2:1 0.020 0.020 4:1

743.09

744.52

11+00.00

765 760 755 750 745 740 735

2:1

2:1 0.020 0.020 15:1

742.53

743.28

10+75.00

—DRI—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

1/29/2018
R:\Roadway\XSC\350172_Rdy_xpl_DR1.dgn
mjamy

6/23/16

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
17BP.12.R.89	X-14

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770 765 760 755 750 745 740 735 730 725 720

2:1 2:1 0.008 0.021 2:1

743.54

745.13

11+10.00

–DR1–

END CONSTRUCTION
–DR1– STA. 11+10.00

BRIDGE: 172 GASTON COUNTY 17BP.12.R.89

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.89	PM-1

NORTH CAROLINA PROFESSIONAL SEAL 033753 ENGINEER C. BYRON HOLDEN

DocuSigned by: C. Byron Holden 1/31/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
GASTON COUNTY

LOCATION: BRIDGE No. 172 OVER HOYLE CREEK ON SR 1819 (ALEXIS HIGH SHOALS RD.)

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 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 AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

INDEX

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
-L- LINE	PAINT	NONE

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

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

D) 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.

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

PAVEMENT MARKING SCHEDULE

PAINT

(PA) - 4" WHITE EDGELINE (2X)

(PI) - 4" YELLOW DOUBLE CENTERLINE (2X)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

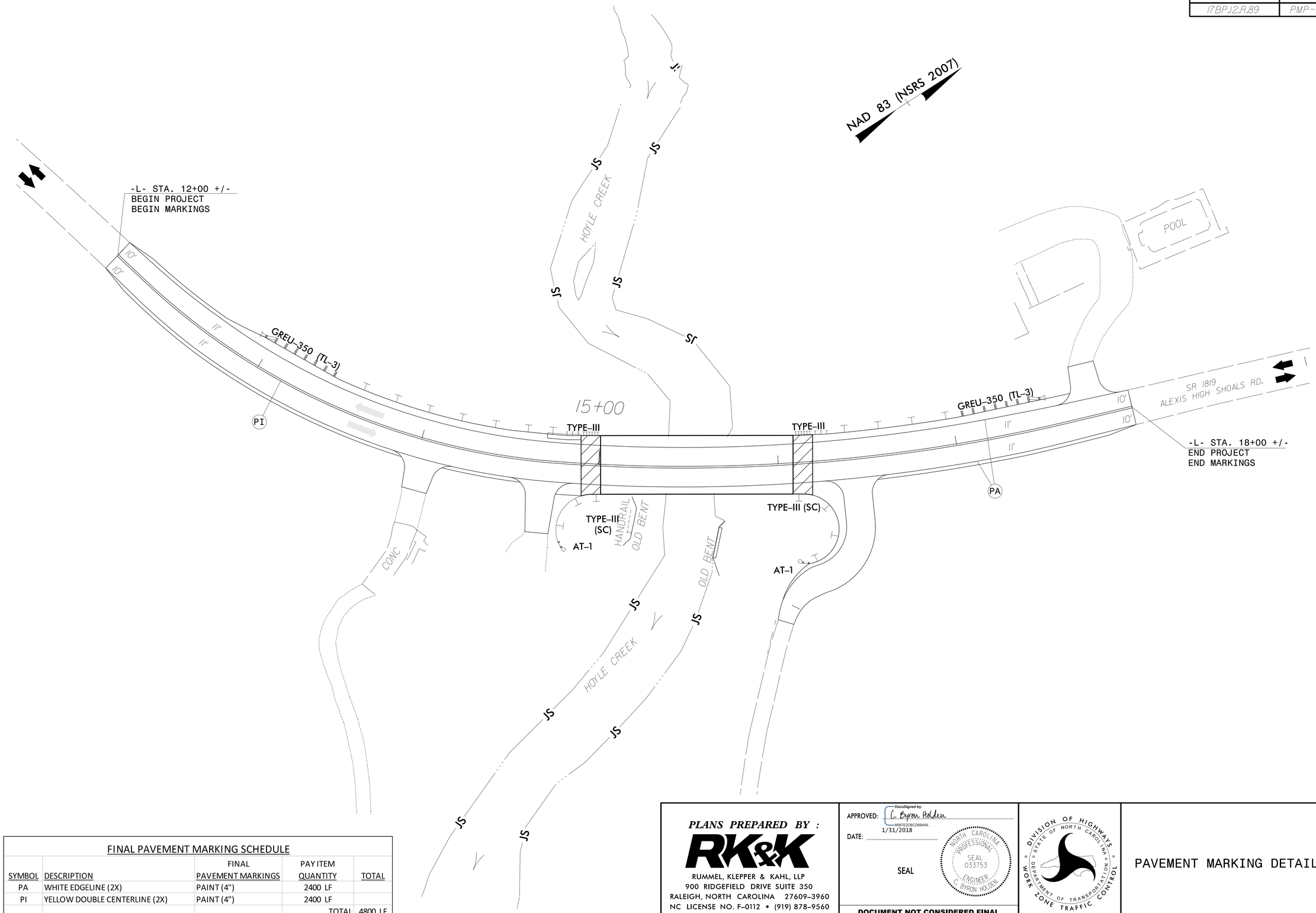
PAVEMENT MARKING PLAN
PLANS PREPARED BY :

C. B. HOLDEN, P.E. — PROJECT MANAGER
A. TUTT — PROJECT DESIGNER

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

1/31/2018
R:\Traffic\TrafficControl\TCP\172_PMP_PSH01.dgn
userbholden

PROJ. REFERENCE NO.	SHEET NO.
17BPJ2.R.89	PMP-2



FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	FINAL PAVEMENT MARKINGS	PAY ITEM QUANTITY	TOTAL
PA	WHITE EDGELINE (2X)	PAINT (4")	2400 LF	
PI	YELLOW DOUBLE CENTERLINE (2X)	PAINT (4")	2400 LF	
			TOTAL	4800 LF

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

APPROVED: DocuSigned by: C. Byron Holden 668TE2D8CD6B449...
DATE: 1/31/2018
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 033753 ENGINEER C. BYRON HOLDEN

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

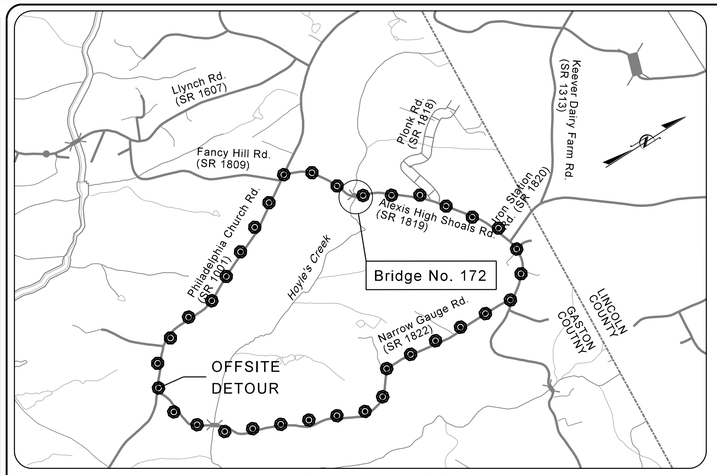
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

PAVEMENT MARKING DETAIL

1/31/2018
R:\TrafficControl\TCP\172_PMP_PSH02.dgn
User:bholden

09/08/99

TIP PROJECT: 17BP.12.R.89



VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
GASTON COUNTY

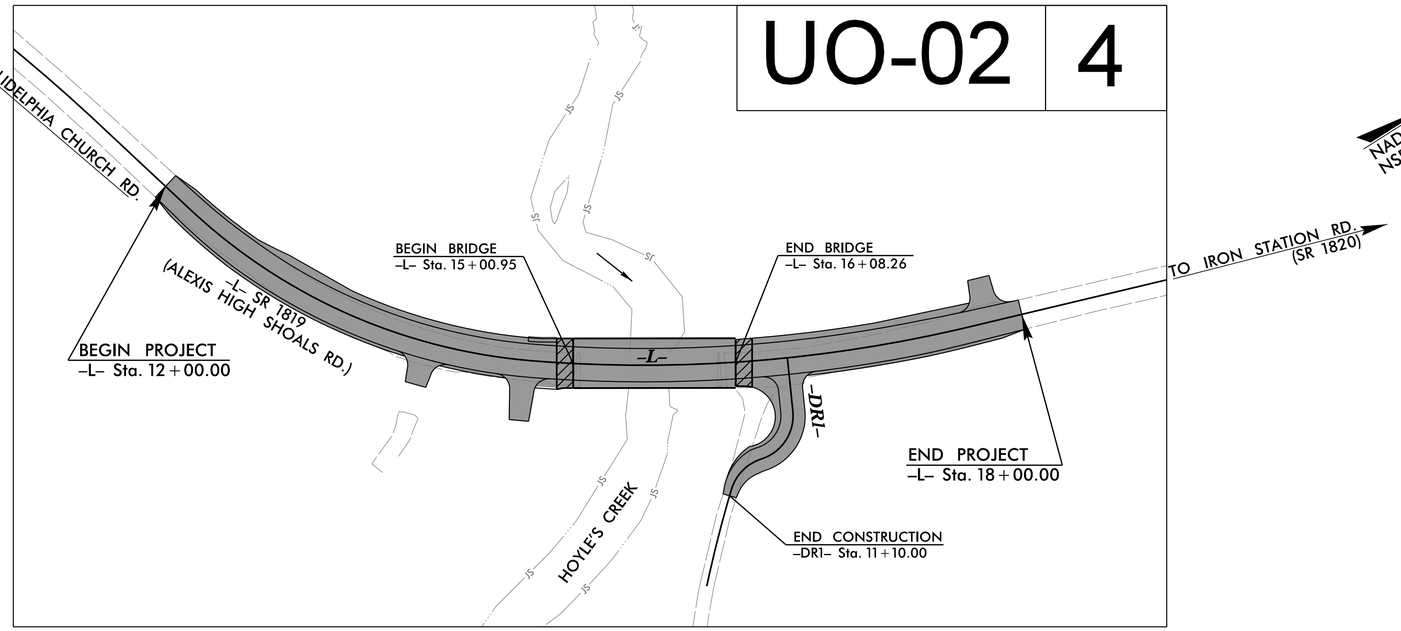
T.I.P. NO.	SHEET NO.
17BP.12.R.89	UO–1

NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET IS DONE BY OTHERS.
NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

LOCATION: BRIDGE NO. 172 OVER HOYLE'S CREEK ON SR 1819 (ALEXIS HIGH SHOALS ROAD)

TYPE OF WORK: AERIAL POWER AND CATV, UNDERGROUND COMMUNICATIONS

UO-02 | 4



NAD 83/ NSRS 2011

BRIDGE B-350172

GRAPHIC SCALES

50 25 0 50 100
PLANS

INDEX OF SHEETS

SHEET NO.:	*DESCRIPTION:*
UO–1	*TITLE SHEET*
UO–02	*UBO PLAN SHEETS*

UTILITY OWNERS WITH CONFLICTS

(A) RUTHERFORD EMC – POWER (DIST)
(B) AT&T TELECOMMUNICATIONS – TELEPHONE
(C) CHARTER/SPECTRUM – CATV

PREPARED IN THE OFFICE OF:

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO. F-0112
1–888–521–4455 OR 919–878–9560

HOWARD WOODALL, PE	*UTILITY PROJECT MANAGER*
ASHLEY REID	*PROJECT UTILITY COORDINATOR*
MARK LAWSON	*PROJECT UTILITY CADD*

DIVISION OF HIGHWAYS
DIVISION 12

District 1 Office
421 Neisler St.
Shelby, NC 28151

WARREN ANDERSON	*DIVISION CONTACT #1*
LARRY CARPENTER	*DIVISION CONTACT #2*
STEVEN RACKLEY, P.E.	*DIVISION CONTACT #3*
XXXX	*DIVISION CONTACT #4*

RDY PSH 04 = U0 PSH 02	PROJECT REFERENCE NO.	SHEET NO.
BRIDGE B-350172	17BPJ2.R.89	2

UTILITIES BY OTHERS

NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

NEW AT&T TELECOMMUNICATIONS SPICE AND NEW AT&T TELEPHONE PEDESTAL

NEW CHARTER/SPECTRUM CATV JOINT USE WITH EXISTING RUTHERFORD EMC

NEW

REPLACE

NEW RUTHERFORD EMC AND CHARTER/SPECTRUM CATV

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL B

24" CSP W/2 ELBOWS

FS SEE DETAIL E

PROP O/H POW & COMMUN LINES

EXISTING POLE TO REMAIN

CHRISTOPHER A. RODDEY DB 4577 PG 282

NEW CHARTER/SPECTRUM CATV JOINT USE WITH EXISTING RUTHERFORD EMC

AT&T TELECOMMUNICATIONS TO ADJUST TO AVOID CONFLICT

NAD 83/2001

RIP RAP AT EMBANKMENT SEE DETAIL F

REM

INV. OUT = 731.4'

INV. OUT = 729.0'

INV. IN = 745.00

SPECIAL CUT 'V' DITCH W/CL B RIP RAP SEE DETAIL A

24" RCP-IV

15" CSP 2 ELBOWS

TB 2GI

PROP SBG

TYPE-III

TYPE-III(SC) 24" RCP-IV

INV. OUT = 730.8

INV. IN = 742.1'

SPECIAL CUT 'V' DITCH W/PSRM SEE DETAIL D

LINE EXISTING AND PROPOSED DITCH WITH PSRM FROM -L- STA. 16+60 TO 18+00 RT

MARK O'NEAL SPEIGHT DB 4341 PG 2025

AT&T TELECOMMUNICATIONS ABANDONED IN-PLACE

AT&T TELECOMMUNICATIONS REMOVE EXISTING TELEPHONE PEDESTAL

EXISTING POLE TO REMAIN

JOHN A. LASTELLA, JR. & WIFE STEPHANIE MARIE LASTELLA DB 4587 PG 2488

NEW RUTHERFORD EMC AND CHARTER/SPECTRUM CATV

SPECIAL CUT 'V' DITCH SEE DETAIL C

AT&T TELECOMMUNICATIONS INACTIVE COMMUNICATION CABLES

GINA A. ABERNATHY DB 3419 PG 79

EXISTING POLE TO REMAIN

NOTE:

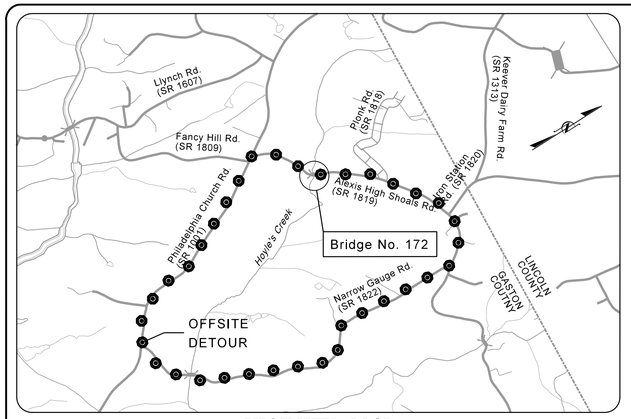
1)ALL EXISTING POWER LOCATIONS AND CONNECTIVITY ARE PROVIDSED BY: NCDOT, RUTHERFORD EMC AND GOOGLE EARTH

UTILITY OWNERS ON THIS SHEET

RUTHERFORD EMC – POWER (DIST)
AT&T TELECOMMUNICATIONS – TELEPHONE
CHARTER /SPECTRUM – CATV

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

PROJECT: 17BP.12.R.89



VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

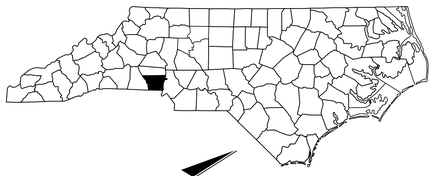
GASTON COUNTY

LOCATION: BRIDGE NO. 172 OVER HOYLE'S CREEK ON SR 1819 (ALEXIS HIGH SHOALS ROAD)

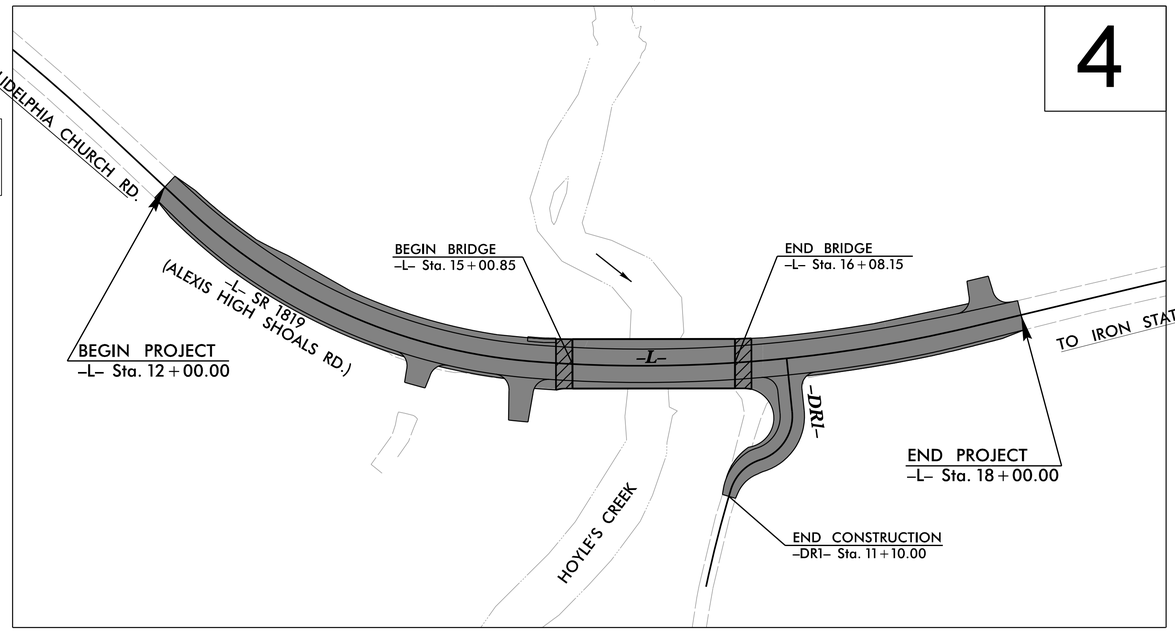
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, AND RESURFACING

RFC EROSION & SEDIMENTATION CONTROL PLANS
DATE: 1-30-2018

RFC
RELEASED FOR CONSTRUCTION



NAD 83/ NSRS 2011



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.89	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17 BP.12.R.89		P.E.
17 BP.12.R.89		ROW & UTIL.
17 BP.12.R.89		CONST.

EROSION AND SEDIMENT CONTROL MEASURES

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

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

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.

GRAPHIC SCALE

25 0 25 50
PLANS

25 0 25 50
PROFILE (HORIZONTAL)

10 0 10 20
PROFILE (VERTICAL)

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

Prepared in the Office of:

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO. F-0112
1-888-521-4455 OR 919-878-9560

Designed by:

Jonathan M. Whittington, P.E. *3245*
NAME *LEVEL III CERTIFICATION NO.*

Reviewed in the Office of:

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

2012 STANDARD SPECIFICATIONS

Reviewed by:

Jeremy Goodwin, P.E.

Roadway Standard Drawings

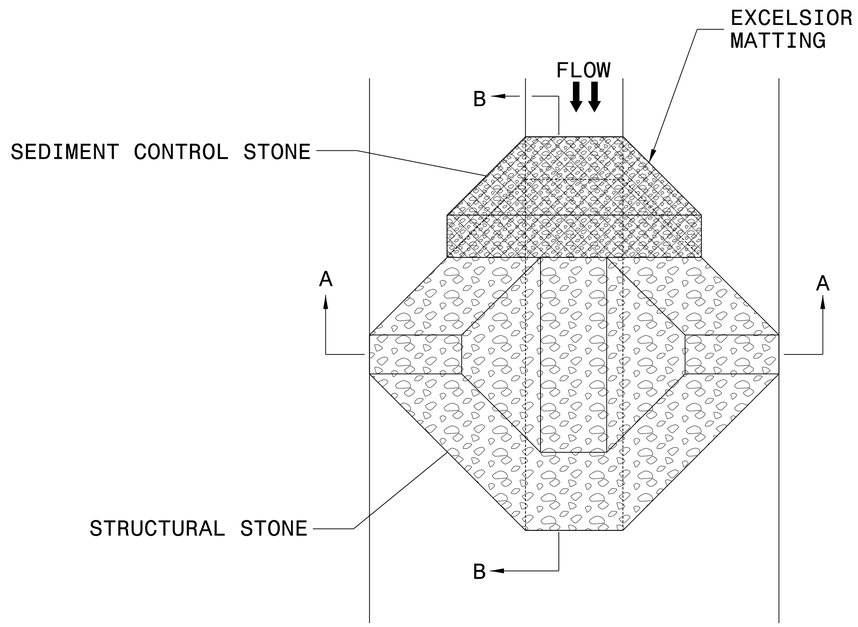
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

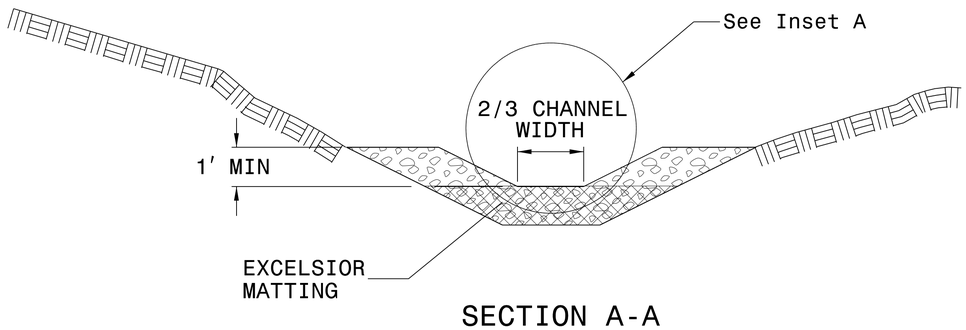
1/3/2018
R:\Hydraulics\CADD\EC Plans\350172_Hyd_EC_tsh.dgn
tshuttington

PROJECT REFERENCE NO.	SHEET NO.
SF-350172	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



PLAN



SECTION A-A

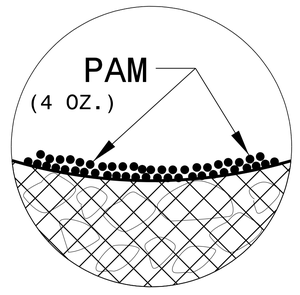
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

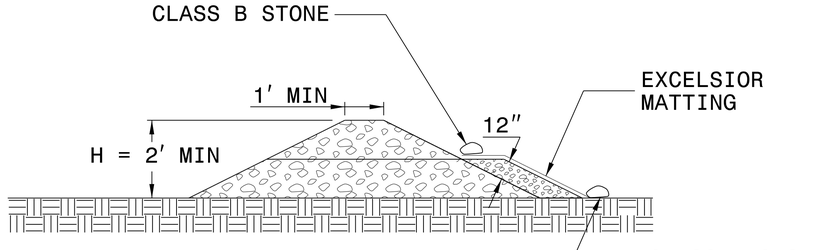
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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 4 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

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
SF-350172	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

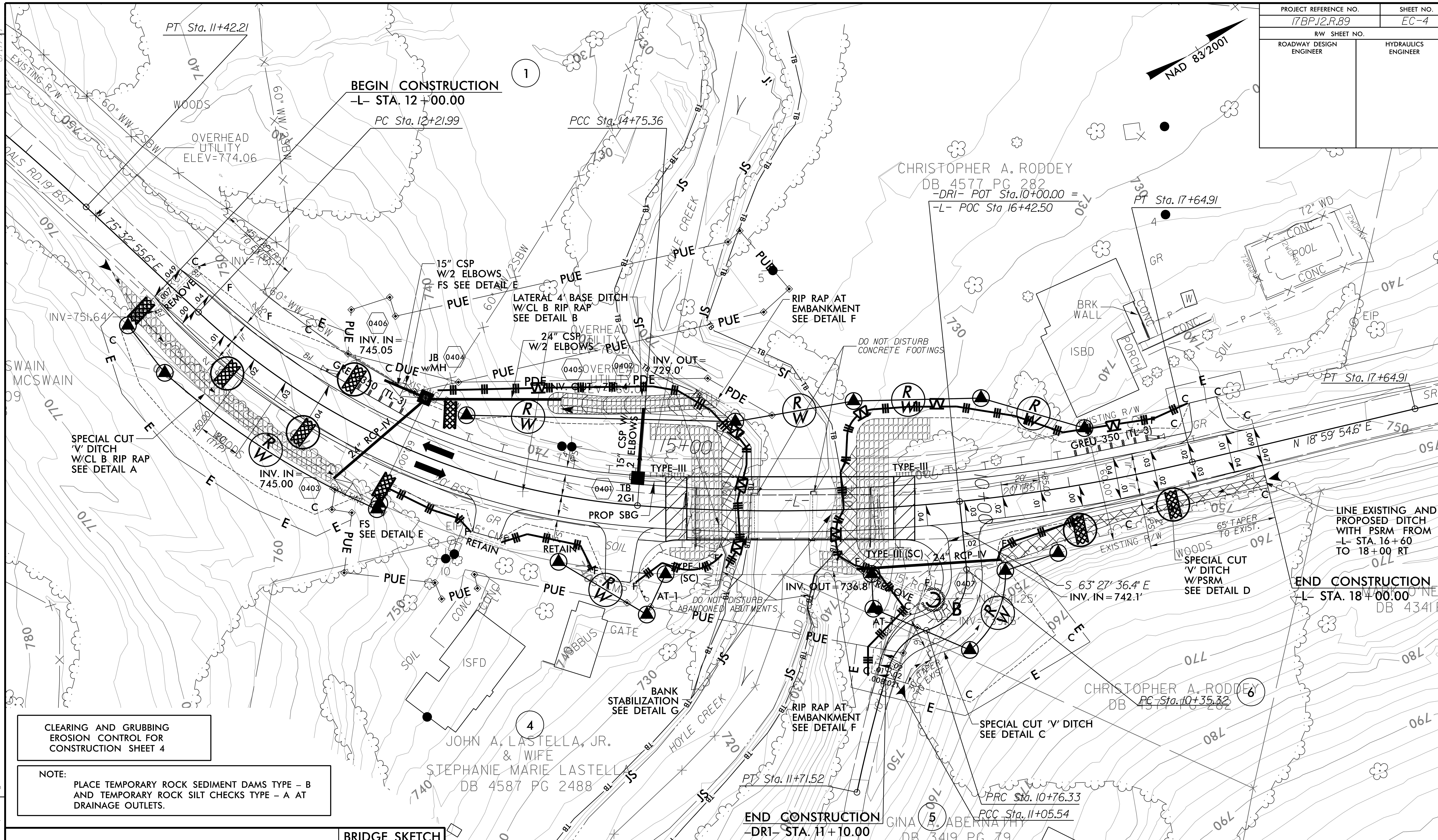
PROJECT REFERENCE NO.	SHEET NO.
I7BPJ2.R.89	EC-4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

REVISIONS

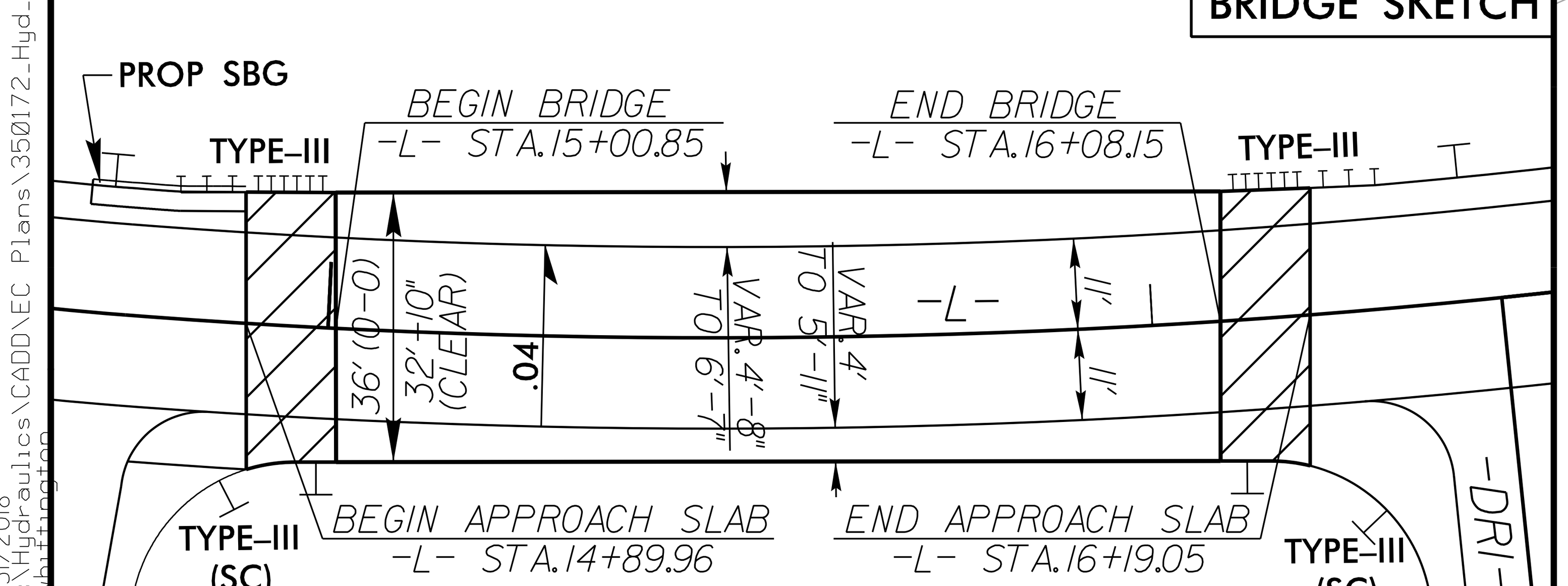


NAD 83/2001
BEGIN CONSTRUCTION
-L- STA. 12+00.00
PT Sta. 11+42.21
PC Sta. 12+21.99
PCC Sta. 14+75.36
OVERHEAD UTILITY ELEV=774.06
WOODS
CHRISTOPHER A. RODDEY
DB 4577 PG 282
-DRI- POT Sta. 10+00.00 =
-L- POC Sta 16+42.50
PT Sta. 17+64.91
15" CSP
W/2 ELBOWS
FS SEE DETAIL E
LATERAL 4' BASE DITCH
W/CL B RIP RAP
SEE DETAIL B
24" CSP
W/2 ELBOWS
RIP RAP AT
EMBANKMENT
SEE DETAIL F
DO NOT DISTURB
CONCRETE FOOTINGS
INV. IN=745.05
INV. OUT=729.0'
SPECIAL CUT
'V' DITCH
W/CL B RIP RAP
SEE DETAIL A
INV. IN=745.00
INV=751.64'
24" RCP-IV
TYPE-III
PROP SBG
TB
2GI
FS
SEE DETAIL E
HOYLE CREEK
TYPE-III (SC)
INV. OUT=736.8'
DO NOT DISTURB
ABANDONED ABUTMENTS
S 63° 27' 36.4" E
INV. IN=742.1'
N 18° 59' 54.6" E
N 75° 32' 55.6" E
LINE EXISTING AND
PROPOSED DITCH
WITH PSRM FROM
-L- STA. 16+60
TO 18+00 RT
SPECIAL CUT
'V' DITCH
W/PSRM
SEE DETAIL D
END CONSTRUCTION
-L- STA. 18+00.00
BANK
STABILIZATION
SEE DETAIL G
RIP RAP AT
EMBANKMENT
SEE DETAIL F
SPECIAL CUT 'V' DITCH
SEE DETAIL C
JOHN A. LASTELLA, JR.
& WIFE
STEPHANIE MARIE LASTELLA
DB 4587 PG 2488
PT Sta. 11+71.52
END CONSTRUCTION
-DRI- STA. 11+10.00
GINA A. ABERNATHY
DB 3419 PG 79
PRC Sta. 10+76.33
PCC Sta. 11+05.54
PC Sta. 10+35.32
CHRISTOPHER A. RODDEY
ISFD
ISBD
BRK WALL
POOL

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

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

BRIDGE SKETCH



SEE SHT. 2D-I FOR DITCH DETAILS
SEE SHT. 5 FOR -L- PROFILE
SEE SHT. 5 FOR -DRI- PROFILE

PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

8/17/99

1/3/2018
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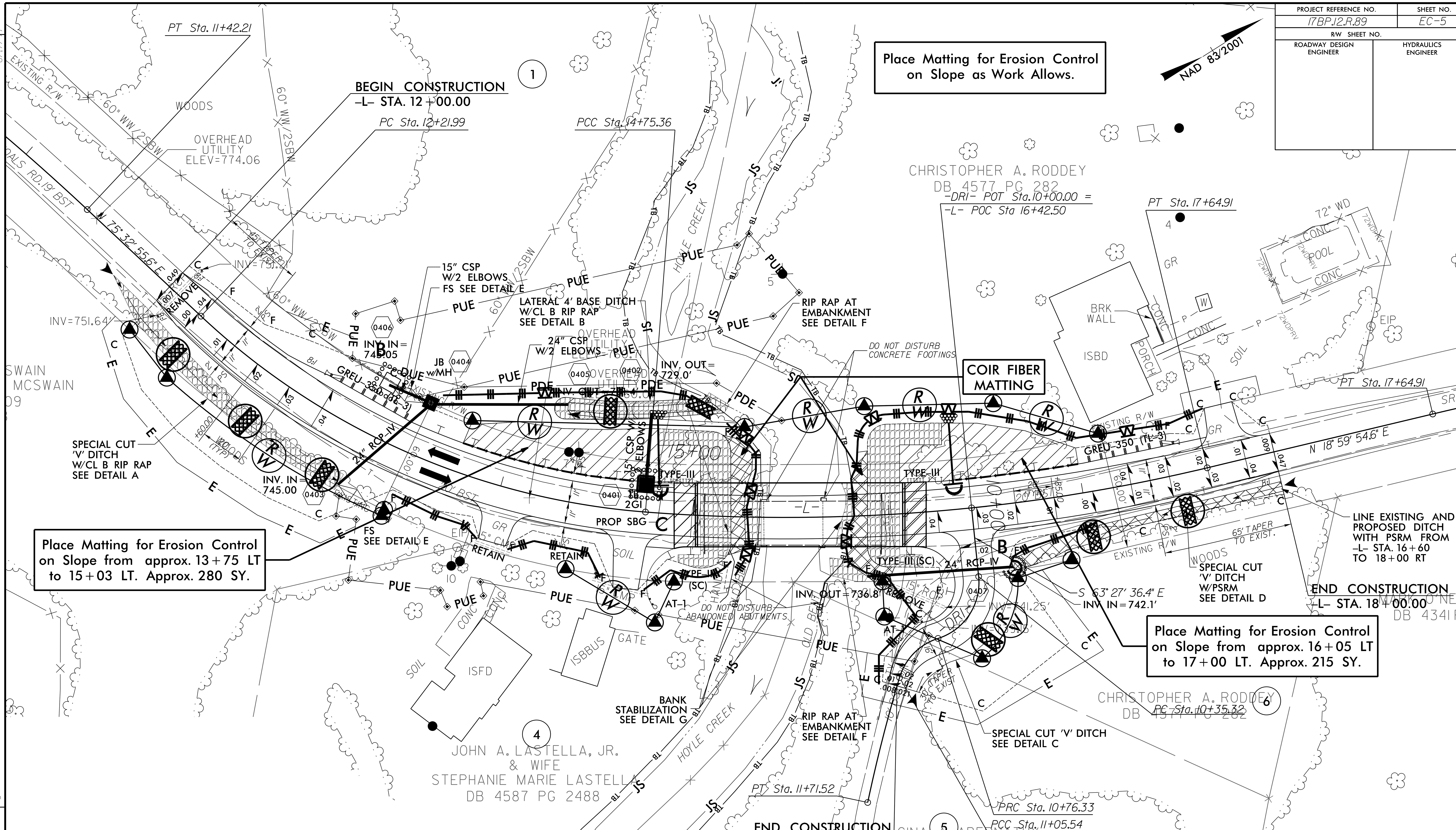
PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.89	EC-5

R/W SHEET NO.

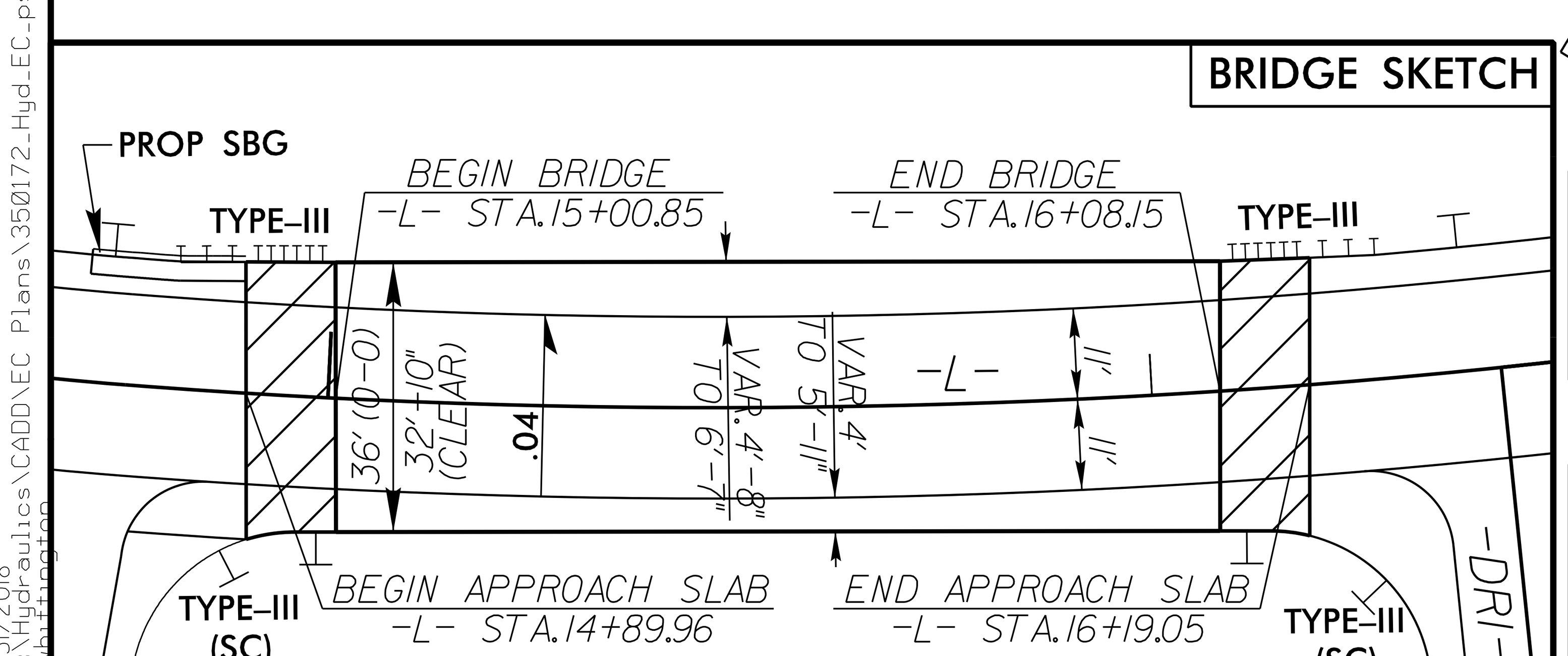
ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

REVISIONS



Place Matting for Erosion Control on Slope as Work Allows.
NAD 83/2001
BEGIN CONSTRUCTION
-L- STA. 12+00.00
PT Sta. 11+42.21
PC Sta. 12+21.99
PCC Sta. 14+75.36
CHRISTOPHER A. RODDEY
DB 4577 PG 282
-DRI- POT Sta.10+00.00 =
-L- POC Sta 16+42.50
PT Sta. 17+64.91
OVERHEAD UTILITY ELEV=774.06
WOODS
15" CSP W/2 ELBOWS FS SEE DETAIL E
LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL B
24" CSP W/2 ELBOWS
INV. OUT= 729.0'
RIP RAP AT EMBANKMENT SEE DETAIL F
DO NOT DISTURB CONCRETE FOOTINGS
COIR FIBER MATTING
SPECIAL CUT 'V' DITCH W/CL B RIP RAP SEE DETAIL A
INV. IN= 745.00
PROP SBG
Place Matting for Erosion Control on Slope from approx. 13+75 LT to 15+03 LT. Approx. 280 SY.
FS SEE DETAIL E
INV. OUT=736.8'
DO NOT DISTURB ABANDONED ABUTMENTS
LINE EXISTING AND PROPOSED DITCH WITH PSRM FROM -L- STA. 16+60 TO 18+00 RT
SPECIAL CUT 'V' DITCH W/PSRM SEE DETAIL D
END CONSTRUCTION
-L- STA. 18+00.00
S 63° 27' 36.4" E
INV IN=742.1'
Place Matting for Erosion Control on Slope from approx. 16+05 LT to 17+00 LT. Approx. 215 SY.
BANK STABILIZATION SEE DETAIL G
RIP RAP AT EMBANKMENT SEE DETAIL F
SPECIAL CUT 'V' DITCH SEE DETAIL C
JOHN A. LASTELLA, JR. & WIFE STEPHANIE MARIE LASTELLA DB 4587 PG 2488
PT Sta. 11+71.52
PRC Sta. 10+76.33
PCC Sta. 11+05.54
END CONSTRUCTION
-DRI- STA. 11+10.00
GINA A. ABERNATHY DB 3419 PG 79
HOYLE CREEK
N 75° 32' 55.6" E
N 18° 59' 54.6" E

BRIDGE SKETCH



MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-DR1-	10+32	10+75	LT	25
4	-DR1-	10+75	11+00	LT	15

PSRM FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-DR1-	11+00	11+10	RT	10
4	-L-	17+00	18+00	RT	90

SEE SHT. 2D-1 FOR DITCH DETAILS
SEE SHT. 5 FOR -L- PROFILE
SEE SHT. 5 FOR -DRI- PROFILE

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

1/31/2018
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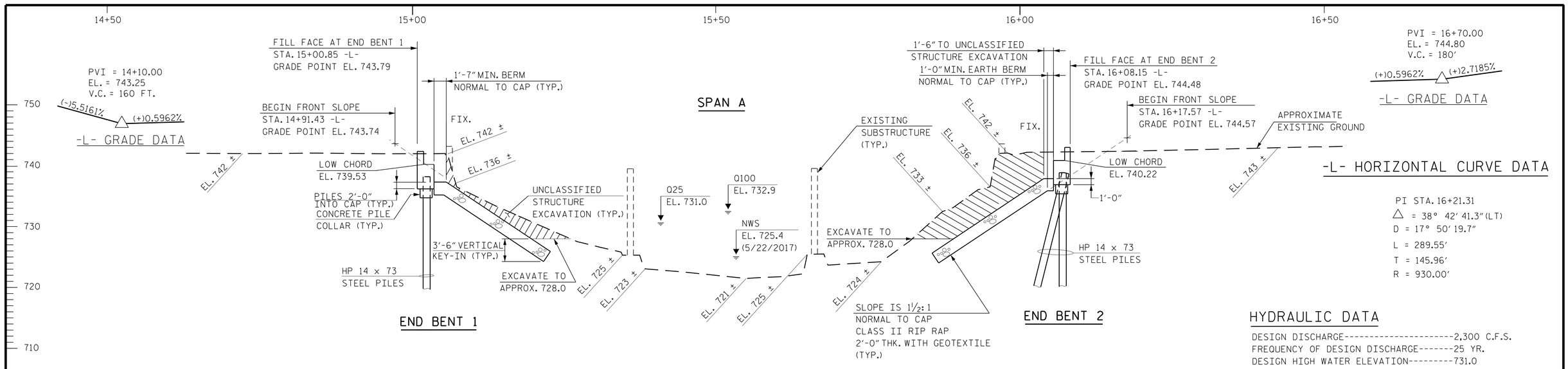
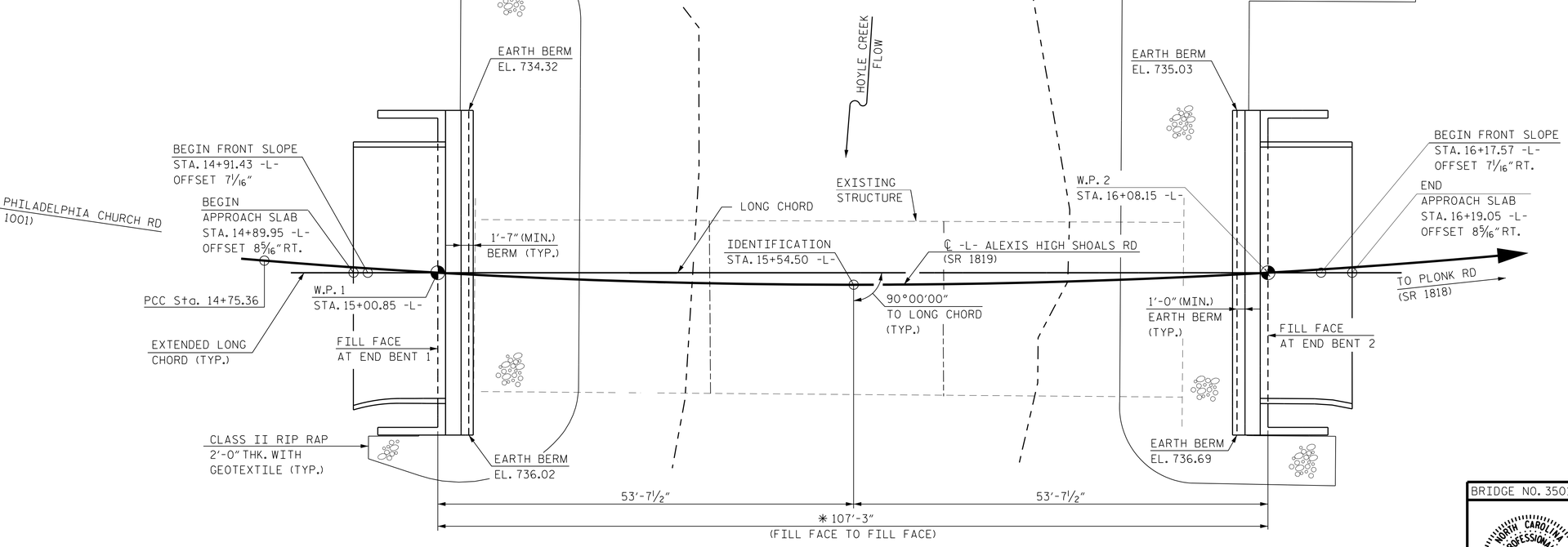


-L- HORIZONTAL CURVE DATA

PI STA. 16+21.31
△ = 38° 42' 41.3" (LT)
D = 17° 50' 19.7"
L = 289.55'
T = 145.96'
R = 930.00'

SECTION ALONG ℄ SURVEY -L-



PLAN

PILES NOT SHOWN IN PLAN VIEW FOR CLARITY

* MEASURED ALONG LONG CHORD. BRIDGE LAYED OUT ALONG LONG CHORD AND EXTENDED LONG CHORD BEYOND FILL FACE AT END BENTS.

HYDRAULIC DATA

DESIGN DISCHARGE----------2,300 C.F.S.
FREQUENCY OF DESIGN DISCHARGE-------25 YR.
DESIGN HIGH WATER ELEVATION---------731.0
DRAINAGE AREA----------10.9 SQ. MI.
BASE DISCHARGE (Q100)----------3,309 C.F.S.
BASE HIGH WATER ELEVATION----------732.9

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE----------16,200 C.F.S.
FREQUENCY OF OVERTOPPING----------500+ YR.
OVERTOPPING ELEVATION----------744.1
OVERTOPPING LOW POINT ---------- -L- STA. 14+74.4
EL. 743.7

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 350172

BRIDGE NO. 350172

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
HOYLE CREEK ON SR 1819
(ALEXIS HIGH SHOALS RD)
BETWEEN SR 1001 (PHILADELPHIA
CHURCH RD) AND SR 1818 (PLONK RD)

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NC 27609-3960 (919) 878-9560
NC LICENSE NUMBER: F-0112

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			21

DRAWN BY : D.L. SCHOFIELD DATE : DEC. 2017
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DESIGN ENGINEER OF RECORD : T.L. COGGINS DATE : DEC. 2017

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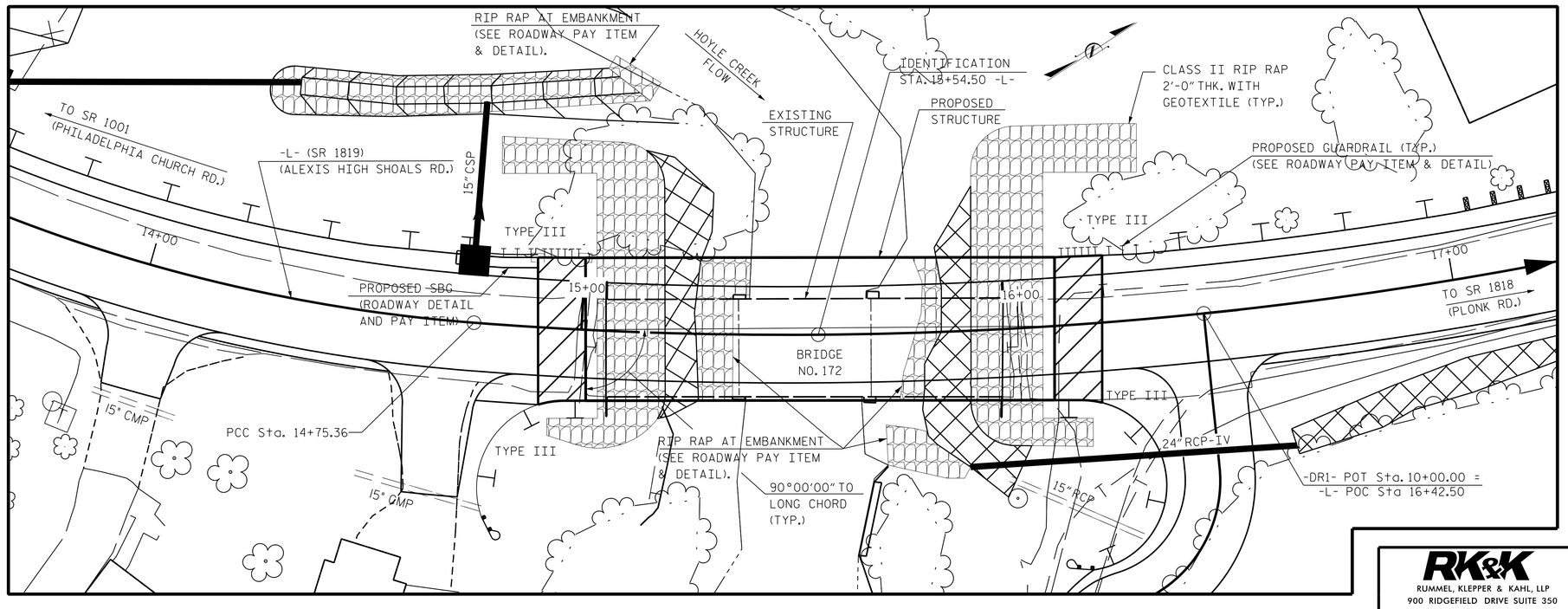
TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 15+54.50 -L-	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 15+54.50 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLAB AT STA. 15+54.50 -L-	REINFORCING STEEL	PILE DRIVING EQUIPMENT SET UP FOR HP 14 X 73 STEEL PILES	HP 14 X 73 STEEL PILES		STEEL PILE POINTS	32" ALASKA RAIL	RIP RAP CLASS II (2'-0") THICK	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS	
	LUMP SUM	LUMP SUM	LIN.FT.	LIN.FT.	EA.	LUMP SUM	CU.YDS.	LUMP SUM	LBS.	EACH	NO.	LIN.FT.	EACH	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE								LUMP SUM						205.50				12	1260
END BENT NO.1			43	36			32.2		4871	7	7	105			200	225			
END BENT NO.2							32.2		4871	7	7	125	7		175	195			
TOTAL	LUMP SUM	LUMP SUM	43	36	1	LUMP SUM	64.4	LUMP SUM	9742	14	14	230	7	205.50	375	420	LUMP SUM	12	1260

BENCH MARK : BM #2 STA. 14+37.36 -L-, 58.73' RT. BENCH TIE SPIKE SET IN 24" MAPLE TREE, N 606981 E 1352883 ELEV. 743.37, NAVD 88



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

SHEET 2 OF 3

BRIDGE NO. 350172

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER HOYLE CREEK ON HIGHWAY SR 1819 (ALEXIS HIGH SHOALS RD) BETWEEN SR 1001 (PHILADELPHIA CHURCH RD) AND SR 1818 (PLONK RD)

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NC 27609-3960 (919) 878-9560
NC LICENSE NUMBER: F-0112

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			21

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DESIGN ENGINEER OF RECORD : T.L. COGGINS DATE : DEC. 2017

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NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET S-21.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS 1 @ 30'-2", 1 @ 30'-3", AND 1 @ 30'-1" WITH AN ASPHALT WEARING SURFACE OVER A TIMBER DECK SUPERSTRUCTURE COMPOSED OF STEEL GIRDERS, STRINGERS, AND FLOOR BEAM SYSTEM AND A CLEAR ROADWAY WIDTH OF 22.5' ON A SUBSTRUCTURE CONSISTING OF END BENTS AND INTERIOR BENTS WITH TIMBER CAPS ON TIMBER POST AND LOCATED AT THE PROPOSED STRUCTURE LOCATION SHALL BE REMOVED.

THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, PRESTRESSED CONCRETE END BENT CAPS MAY BE SUBSTITUED IN PLACE OF THE CAST-IN-PLACE CAPS. THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER TO RECEIVE REVISED PLANS AND DETAILS FROM THE STRUCTURES MANAGEMENT UNIT. THE REDESIGN AND ANY ADDITIONAL MATERIALS NEEDED WILL BE AT NO ADDITIONAL COST TO THE CONTRACTOR.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 FEET LEFT SIDE AND 35 FEET RIGHT 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.

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.

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

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

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSTMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 126 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 TO REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 126 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.

PILE EXCAVATION IS REQUIRED FOR END BENT NO.1. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 725.0 FEET. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

CONCRETE OR GROUT IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1.

STEEL H-PILE POINTS ARE REQUIRED FOR DRIVEN STEEL H-PILES AT END BENT NO. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST PRODUCTION PILE AT END BENT NO. 2. (LEFT SIDE) WITH PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTIONS 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
HOYLE CREEK ON SR 1819
(ALEXIS HIGH SHOALS RD)
BETWEEN SR 1001 (PHILADELPHIA CHURCH RD) AND SR 1818 (PLONK RD)

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NC 27609-3960 (919) 878-9560
NC LICENSE NUMBER: F-0112

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			21

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DESIGN ENGINEER OF RECORD : T.L. COGGINS DATE : DEC. 2017

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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	1.89	-	1.75	0.207	1.92	105′	EL	52	0.480	1.96	105′	EL	9.8	0.8	0.207	**1.89**	105′	EL	52	
		HL-93 (Opr)	N/A	--	2.48	-	1.35	0.207	2.48	105′	EL	52	0.480	2.60	105′	EL	9.8	N/A	-	**-**	-	-	-	
		HS-20 (Inv)	36.000	2	2.66	95.760	1.75	0.207	2.69	105′	EL	52	0.480	2.72	105′	EL	9.8	0.80	0.207	**2.66**	105′	EL	52	
		HS-20 (Opr)	36.000	--	3.49	125.640	1.35	0.207	3.49	105′	EL	52	0.480	3.59	105′	EL	9.8	N/A	-	**-**	-	-	-	
LEGAL LOAD RATING	SV	SNSH	13.500	--	6.33	85.455	1.4	0.207	8.03	105′	EL	52	0.480	8.86	105′	EL	9.8	0.80	0.207	**6.33**	105′	EL	52	
		SNGARBS2	20.000	--	4.57	91.400	1.4	0.207	5.80	105′	EL	52	0.480	6.12	105′	EL	9.8	0.80	0.207	**4.57**	105′	EL	52	
		SNAGRIS2	22.000	--	4.27	93.940	1.4	0.207	5.42	105′	EL	52	0.480	5.63	105′	EL	9.8	0.80	0.207	**4.27**	105′	EL	52	
		SNCOTTS3	27.250	--	3.15	85.838	1.4	0.207	3.99	105′	EL	52	0.480	4.29	105′	EL	9.8	0.80	0.207	**3.15**	105′	EL	52	
		SNAGGRS4	34.925	--	2.57	89.757	1.4	0.207	3.26	105′	EL	52	0.480	3.45	105′	EL	9.8	0.80	0.207	**2.57**	105′	EL	52	
		SNS5A	35.550	--	2.52	89.586	1.4	0.207	3.20	105′	EL	52	0.480	3.45	105′	EL	9.8	0.80	0.207	**2.52**	105′	EL	52	
		SNS6A	39.950	--	2.29	91.486	1.4	0.207	2.90	105′	EL	52	0.480	3.11	105′	EL	9.8	0.80	0.207	**2.29**	105′	EL	52	
		SNS7B	42.000	--	2.18	91.560	1.4	0.207	2.76	105′	EL	52	0.480	3.02	105′	EL	9.8	0.80	0.207	**2.18**	105′	EL	52	
	TTST	TNAGRIT3	33.000	--	2.78	91.740	1.4	0.207	3.53	105′	EL	52	0.480	3.77	105′	EL	9.8	0.80	0.207	**2.78**	105′	EL	52	
		TNT4A	33.075	--	2.79	92.279	1.4	0.207	3.54	105′	EL	52	0.480	3.70	105′	EL	9.8	0.80	0.207	**2.79**	105′	EL	52	
		TNT6A	41.600	--	2.26	94.016	1.4	0.207	2.87	105′	EL	52	0.480	3.15	105′	EL	9.8	0.80	0.207	**2.26**	105′	EL	52	
		TNT7A	42.000	--	2.26	94.920	1.4	0.207	2.87	105′	EL	52	0.480	3.10	105′	EL	9.8	0.80	0.207	**2.26**	105′	EL	52	
		TNT7B	42.000	--	2.31	97.020	1.4	0.207	2.93	105′	EL	52	0.480	2.96	105′	EL	9.8	0.80	0.207	**2.31**	105′	EL	52	
		TNAGRIT4	43.000	--	2.22	95.460	1.4	0.207	2.81	105′	EL	52	0.480	2.88	105′	EL	9.8	0.80	0.207	**2.22**	105′	EL	52	
		TNAGT5A	45.000	--	2.10	94.500	1.4	0.207	2.66	105′	EL	52	0.480	2.82	105′	EL	9.8	0.80	0.207	**2.10**	105′	EL	52	
		TNAGT5B	45.000	3	2.08	93.600	1.4	0.207	2.64	105′	EL	52	0.480	2.73	105′	EL	9.8	0.80	0.207	**2.08**	105′	EL	52	

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.

COMMENTS:

1.
2.
3.
4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

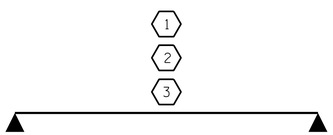
(2) DESIGN LOAD RATING (HS-20)

(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.12.R.89

GASTON **COUNTY**

STATION: 15+54.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
105′ BOX BEAM UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NC 27609-3960 (919) 878-9560
NC LICENSE NUMBER: F-0112

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			21

DRAWN BY : D.L. SCHOFIELD DATE : DEC. 2017
CHECKED BY : O.J. PAITEL DATE : DEC. 2017
DESIGN ENGINEER OF RECORD : T.L. COGGINS DATE : DEC. 2017

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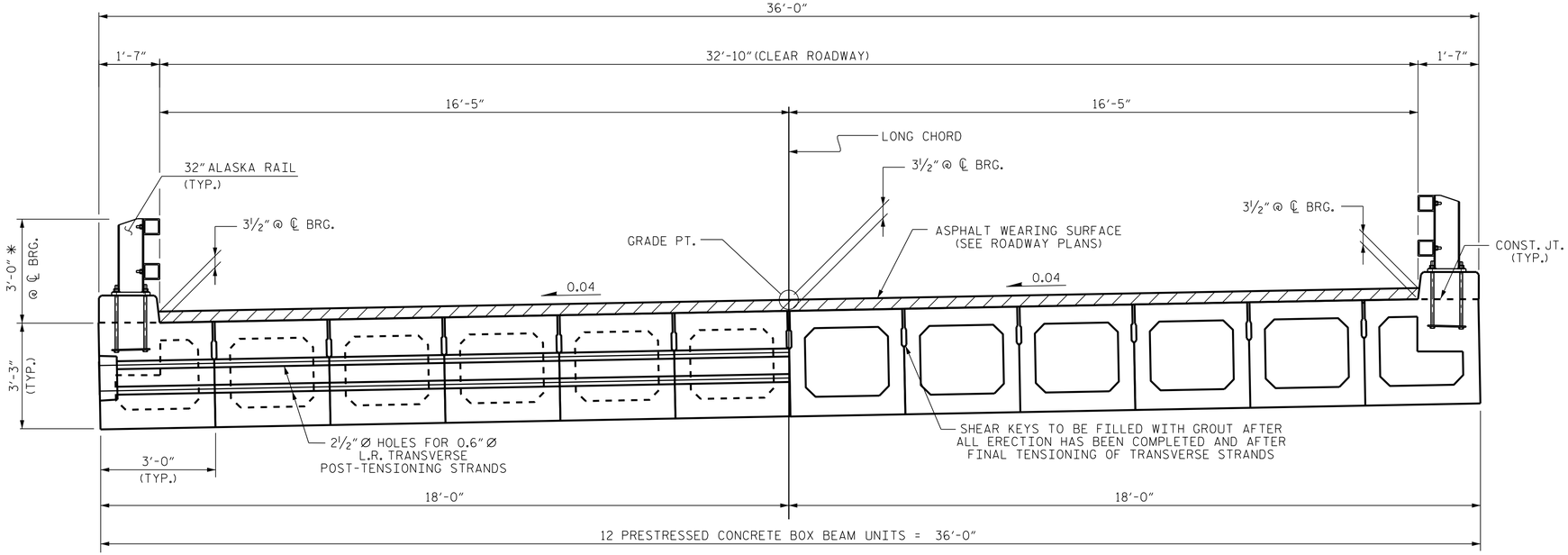


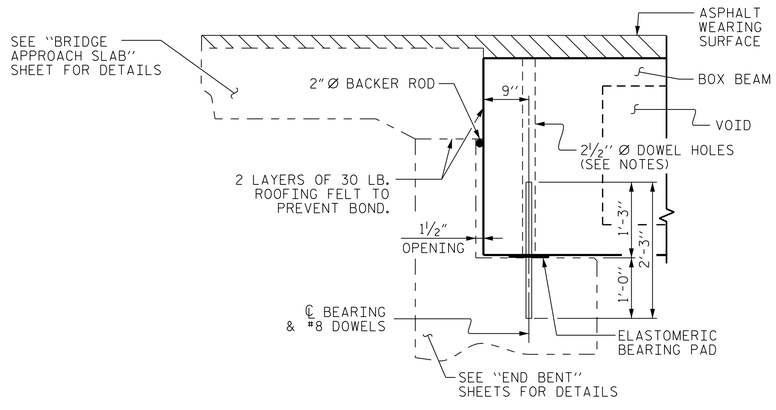
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

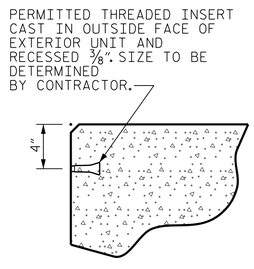
TYPICAL SECTION

* THE MAXIMUM ALASKA RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE CURB AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE CURB FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "SECTION THROUGH RAIL" DETAIL.

FIXED END



SECTION AT END BENT



THREADED INSERT DETAIL

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 BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

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

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM 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.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5500 PSI.

ALL REINFORCING STEEL IN CURB SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL 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 VERTICAL 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.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

3'-0" x 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

RK&K
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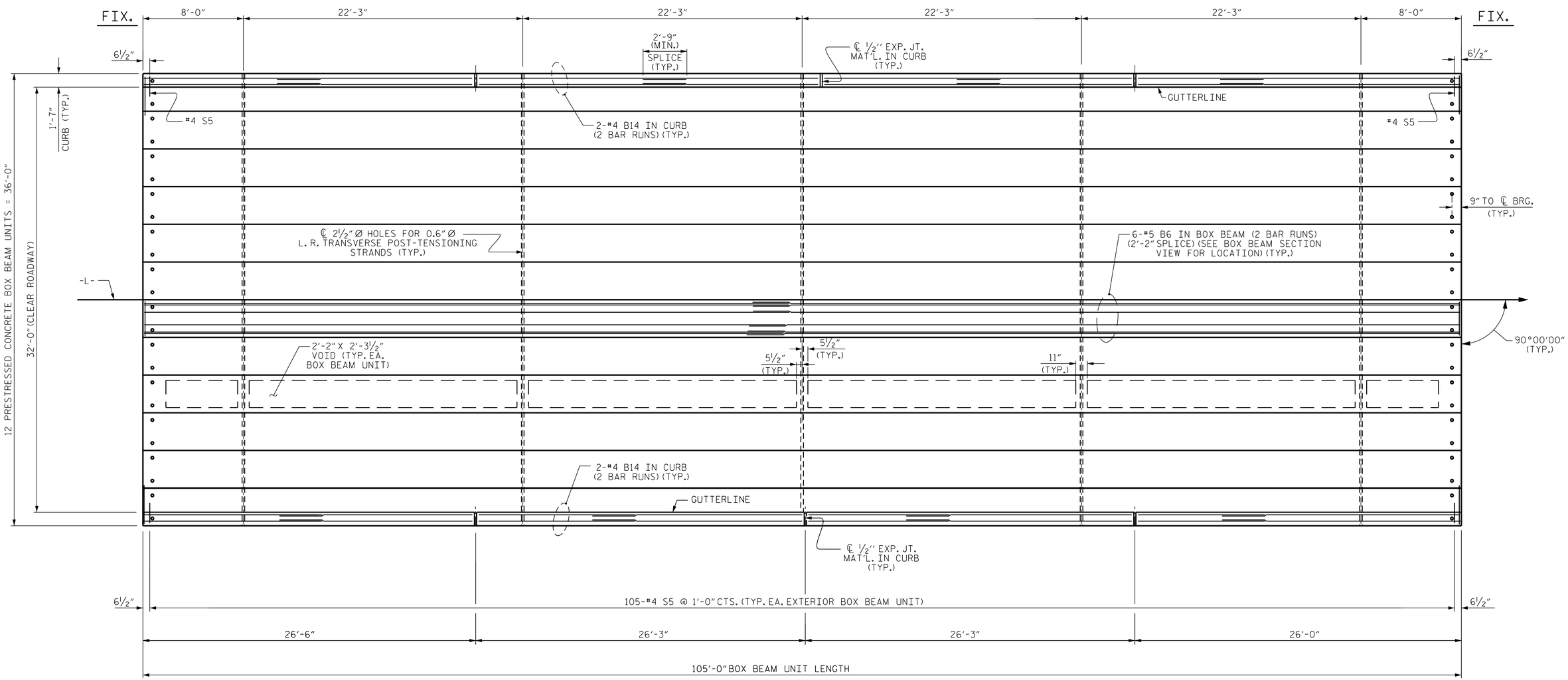
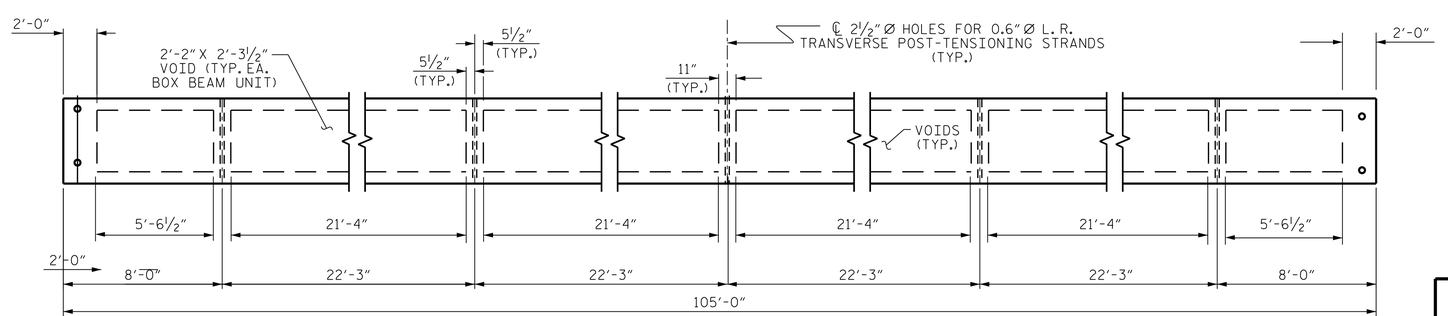


PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF 105' UNIT
32'-10" CLEAR ROADWAY
90° SKEW

BRIDGE NO. 350172

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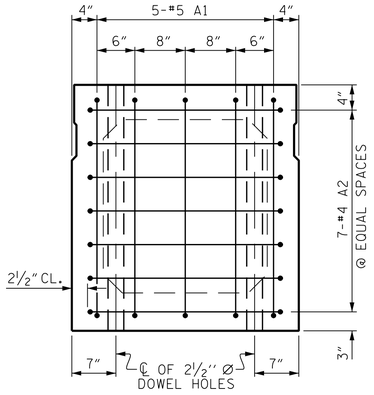
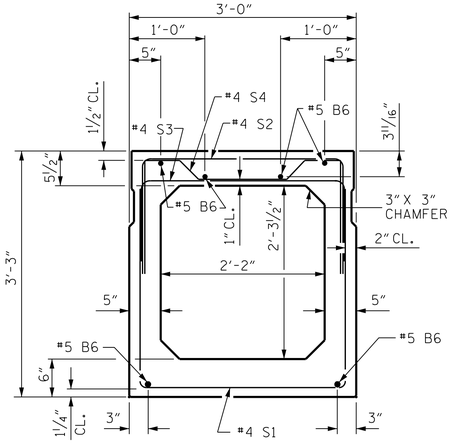


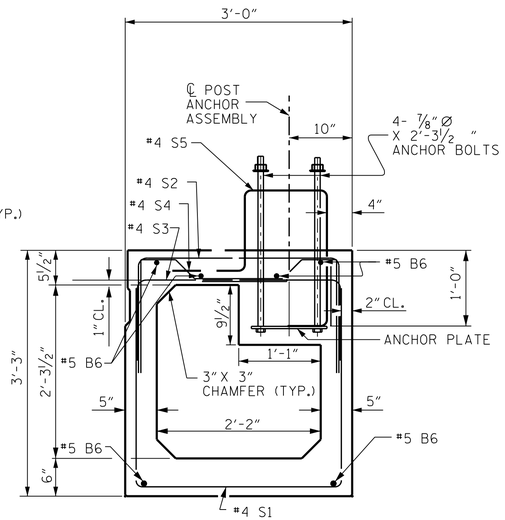
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION

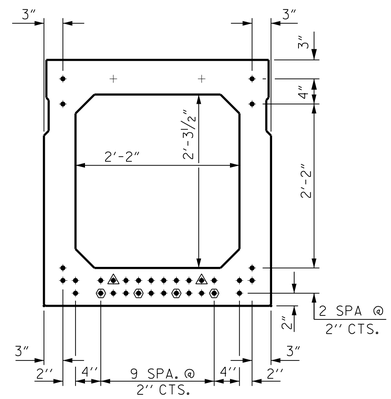
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

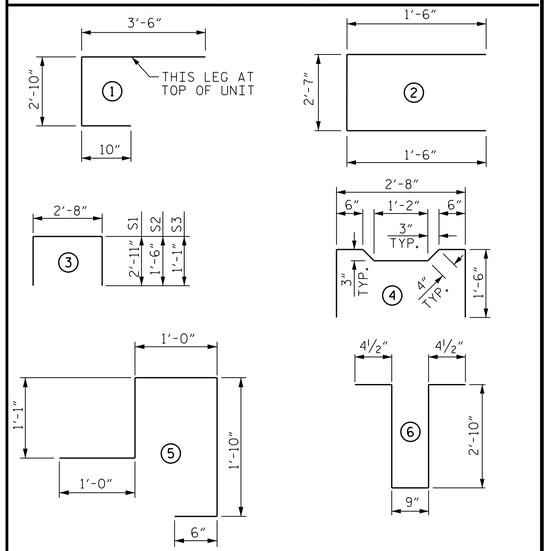
(32 STRANDS REQUIRED)

DEBONDING LEGEND

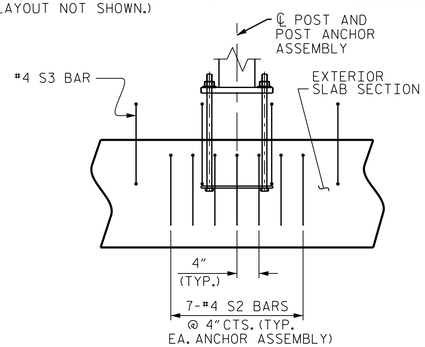
- ● FULLY BONDED STRANDS
- ◬● STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ⬡● STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

BAR TYPES

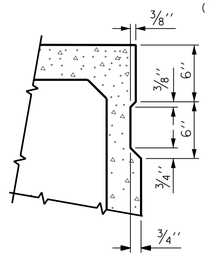


ALL BAR DIMENSIONS ARE OUT TO OUT



SIDE VIEW AT POST LOCATION

(SHOWING ADDITIONAL S2 BARS AT EACH POST ASSEMBLY)



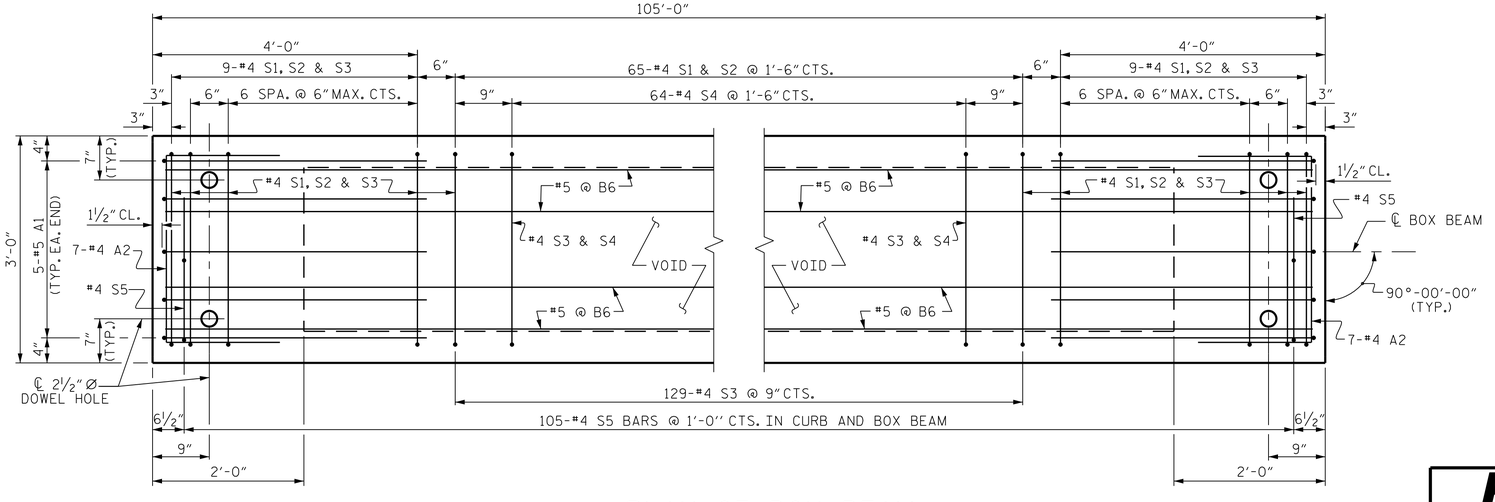
SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

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

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	44	#4	2	5'-7"	164	5'-7"	164
B6	12	#5	STR	53'-5"	669	53'-5"	669
K1	15	#4	6	7'-2"	72	7'-2"	72
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	83	#4	3	8'-6"	471	8'-6"	471
S2	83	#4	3	5'-8"	314	5'-8"	314
S2	98	#4	3	5'-8"	370		
S3	147	#4	3	4'-10"	475	4'-10"	475
S4	64	#4	4	5'-10"	249	5'-10"	249
✳ S5	105	#5	5	5'-5"	593	--	--
REINFORCING STEEL					2876 LBS.		2506 LBS.
✳EPOXY COATED REINF. STEEL					593 LBS.		
7500 P.S.I. CONCRETE					20.6 CU. YDS.		20.4 CU. YDS.
0.6" Ø L.R. STRANDS					No. 32		No. 32



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT".
FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL".
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

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GASTON COUNTY
STATION: 15+54.50 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L COGGINS

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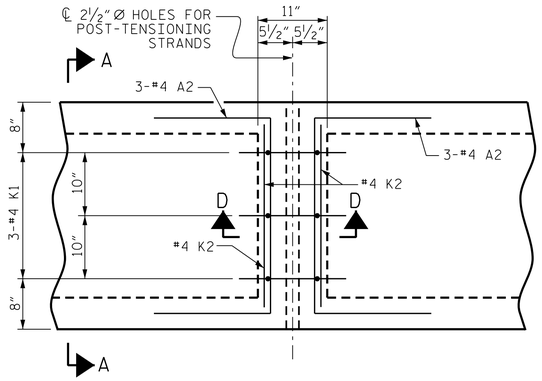
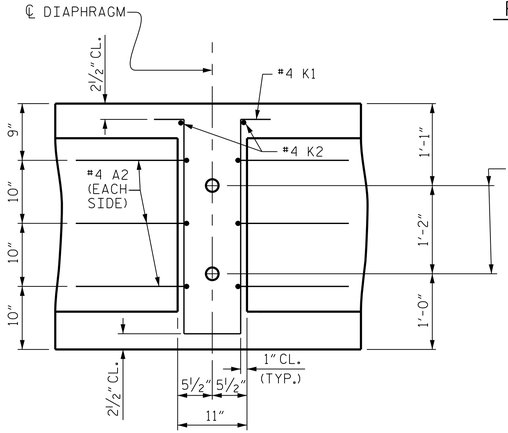
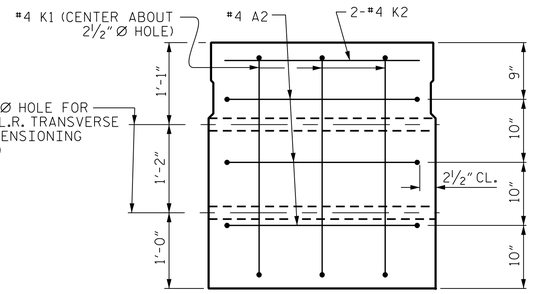


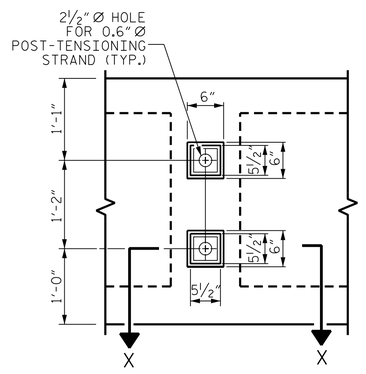
PLAN



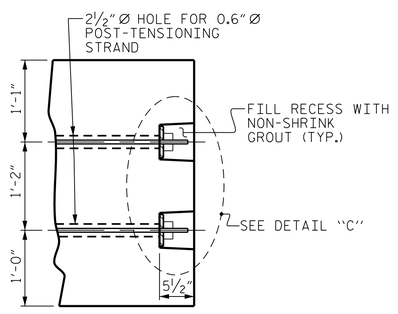
SECTION D-D



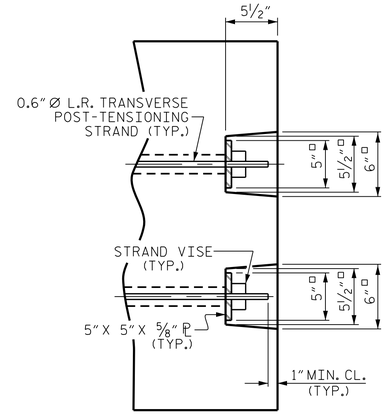
SECTION A-A
VOIDS NOT SHOWN



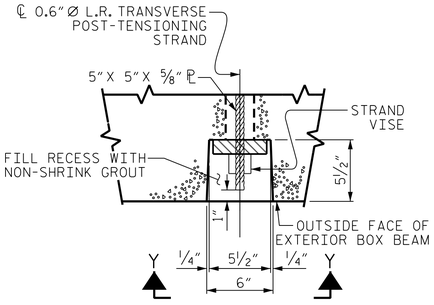
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUTED RECESS



PART SECTION AT RECESS



DETAIL "C"

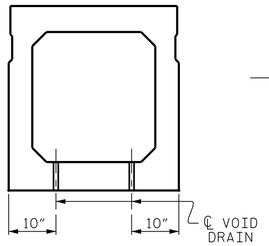


SECTION X-X
SHOWING PLAN VIEW OF GROUTED RECESS

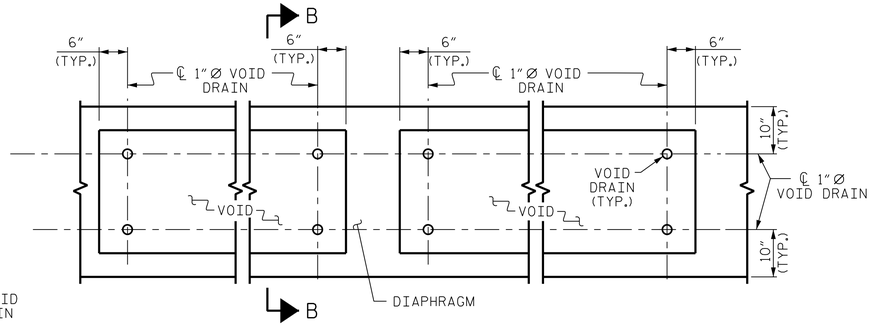
GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2½" Ø HOLE.



SECTION B-B



PART PLAN

VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 3'-3"
105' BOX BEAM UNIT (SE)	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1½" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	0 15/16" ↓
FINAL CAMBER	0⅝" ↑

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. 17BP.12.R.89
GASTON COUNTY
STATION: 15+54.50 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

3'-0" x 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

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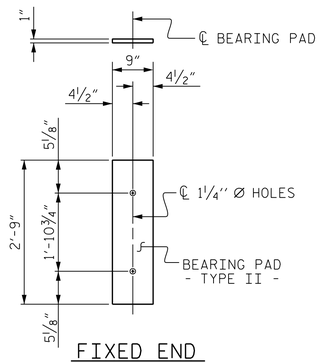


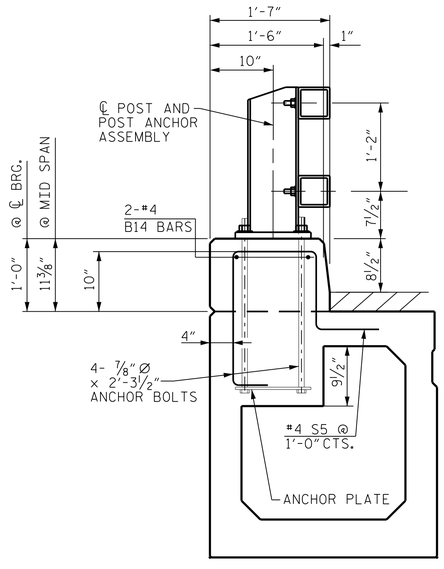
FIXED END

(TYPE II - 24 REQ'D)

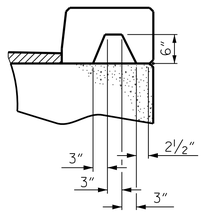
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

GUTTERLINE ASPHALT THICKNESS	
	ASPHALT OVERLAY THICKNESS @ MID-SPAN
105' UNITS	2⅞"



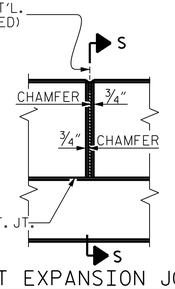
SECTION THRU RAIL



SECTION S-S

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

℄ ½" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS

EXTERIOR BOX BEAM SECTION

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	105'-0"	210'-0"
INTERIOR B.B.	10	105'-0"	1050'-0"
TOTAL	12	———	1260'-0"

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

BRIDGE NO. 350172

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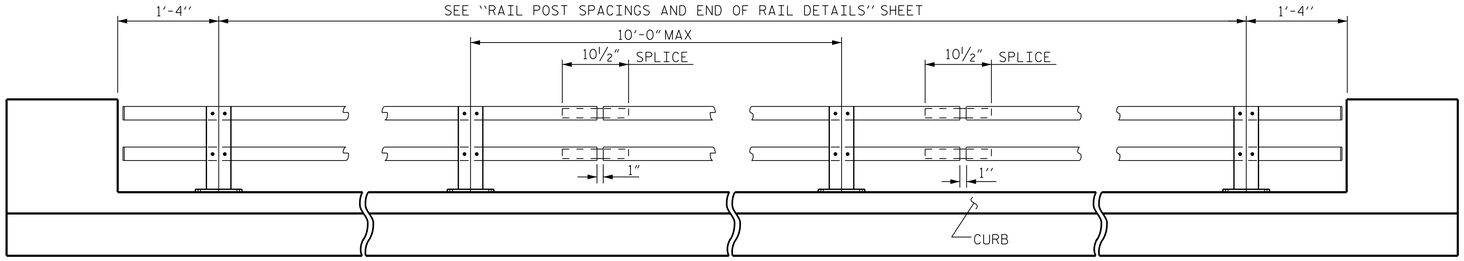
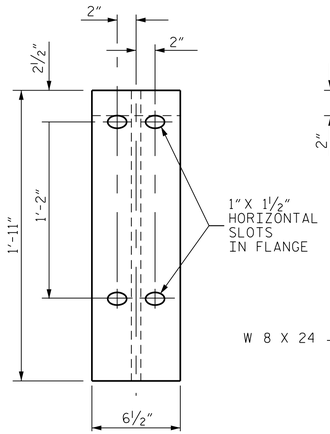
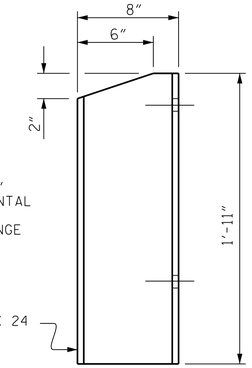


ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET S-13.

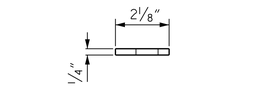




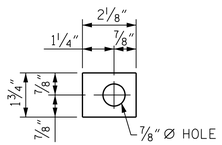
FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST

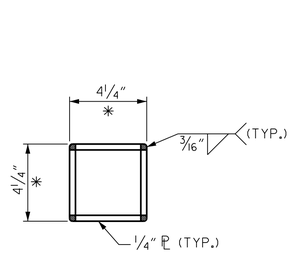


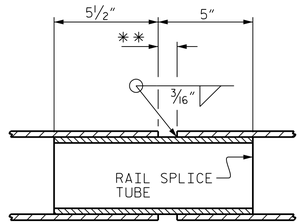
ELEVATION



PLAN

PLATE WASHER

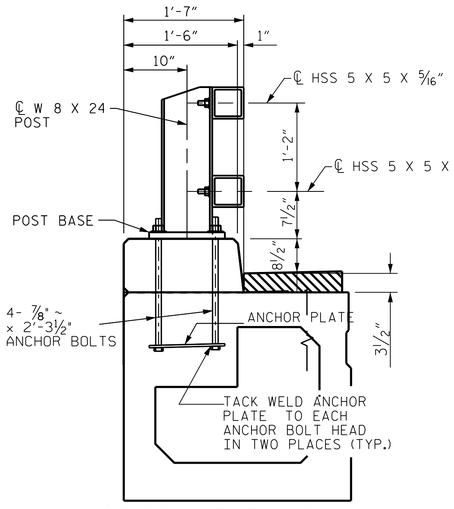




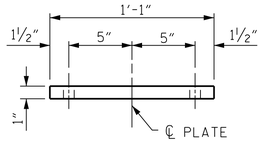
RAIL SPLICE DETAILS

* - DIMENSION AFTER GRINDING RADIUS ON CORNERS TO MATCH INSIDE OF METAL RAIL. GRIND ALL EDGES PRIOR TO GALVANIZING TO ASSURE FIT.

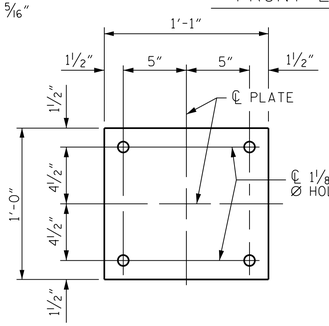
** -1" FOR SPLICE NOT AT EXPANSION JOINT; SEE TABLE I FOR OPENING FOR SPLICES AT EXPANSION JOINTS.



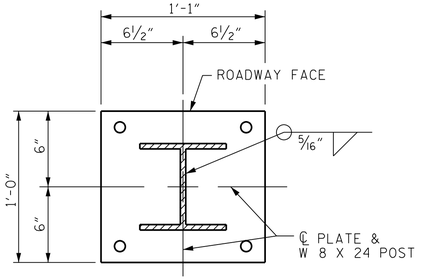
SECTION THRU RAIL



FRONT ELEVATION

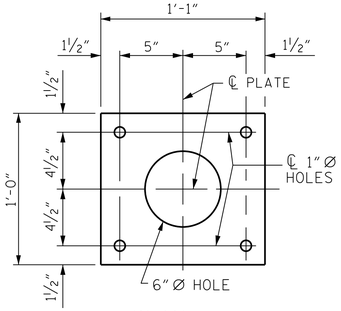


PLAN

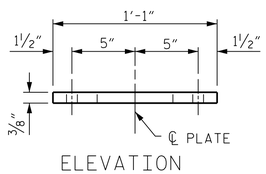


POST ATTACHMENT DETAIL

POST BASE DETAILS



PLAN



ELEVATION

ANCHOR PLATE DETAILS

NOTES

METAL RAIL SHALL BE GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS. ALUMINUM RAIL WILL NOT BE AN OPTION.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, ANCHOR PLATES AND RAIL SPLICE TUBES: AASHTO M270 GRADE 36 STRUCTURAL STEEL-GALVANIZED TO AASHTO M111.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

RAILS: ASTM A500 GRADE B - GALVANIZED TO AASHTO M111.

WELDED RAIL STUDS: ASTM A108-GALVANIZED TO AASHTO M111.

HIGH STRENGTH ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 105. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563 DH, AND WASHERS TO ASTM F436,TYPE 1. ANCHOR BOLTS NUTS AND WASHERS SHALL BE GALVANIZED TO AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE SHEET S-11.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

THE RAIL SECTIONS SHALL BE ATTACHED TO THE POSTS BY TWO THREADED ¾" Ø WELDED STUDS, PLATE WASHERS, LOCKWASHERS, AND NUTS.

PAY LENGTH 195 LIN. FT.

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

32" ALASKA RAIL

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NC 27609-3960 (919) 878-9560
NC LICENSE NUMBER: F-0112

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1/24/2018
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NOTES

STRUCTURAL CONCRETE INSERT

EACH STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULE SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½''.

B. 1 - ¾'' Ø X 1⅝'' BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾'' Ø X 1⅝'' GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE STRUCTURAL CONCRETE INSERT DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16'' Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

EACH METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

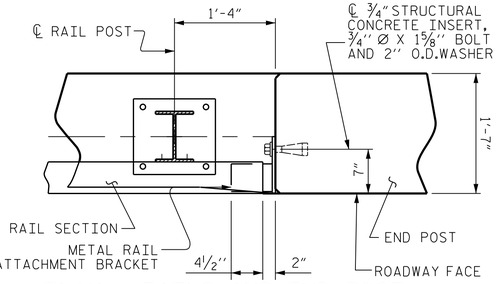
A. ½'' METAL BRACKET PLATE AND ¼" METAL RAIL INSERT TUBE SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION TO AASHTO M111.

B. ¾'' STRUCTURAL CONCRETE INSERTS SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾''Ø X 1⅝'' BOLT WITH 2'' O.D. WASHER IN PLACE. THE ¾''Ø X 1⅝'' BOLT SHALL HAVE N. C. THREADS.

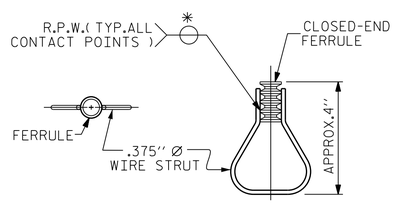
THE ¾'' STRUCTURAL CONCRETE INSERTS WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾'' STRUCTURAL CONCRETE INSERT, THE ½'' BRACKET PLATES, AND THE RAIL INSERT TUBES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾'' Ø X 1⅝'' BOLTS WITH WASHERS SHALL BE REPLACED WITH ¾'' Ø X 6½'' BOLTS AND 2'' O.D. WASHERS. ALL SPECIFICATIONS THAT APPLY TO THE ¾'' Ø X 1⅝'' BOLTS SHALL APPLY TO THE ¾'' Ø X 6½'' BOLTS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

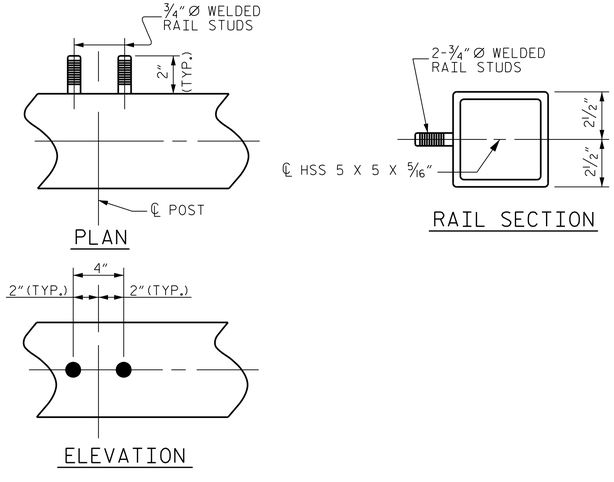


PLAN - RAILS AND END POST

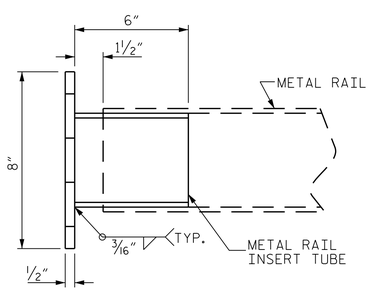


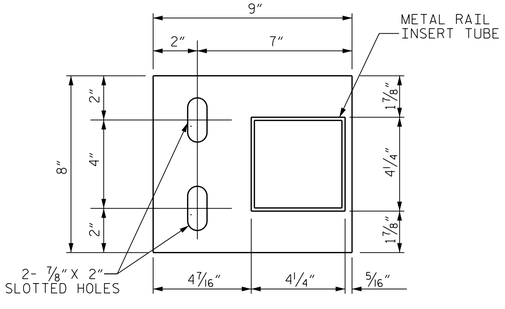
STRUCTURAL CONCRETE INSERT

*EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



RAIL STUD DETAILS





METAL RAIL ATTACHMENT BRACKET

THE METAL RAIL INSERT TUBE SHALL BE FABRICATED FROM ¼" PLATES.

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

END OF RAIL DETAILS

FOR 32" ALASKA RAIL

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

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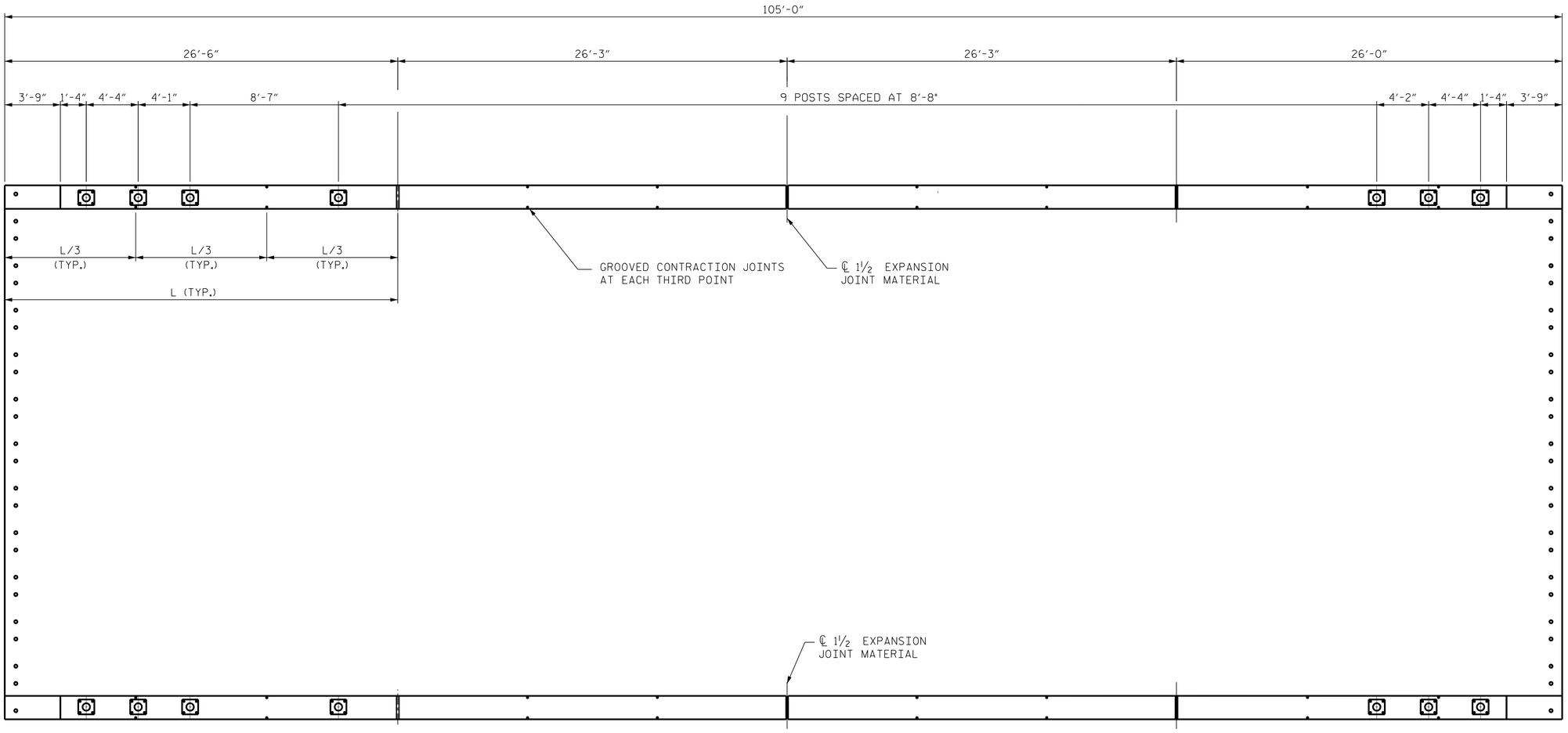

PLAN OF RAIL POST SPACINGS

28 ASSEMBLIES
POST SPACING FOR RIGHT SIDE SIMILAR

PROJECT NO. 17BP.12.R.89
GASTON COUNTY
STATION: 15+54.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

RAIL POST SPACINGS
FOR ALASKA RAIL

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

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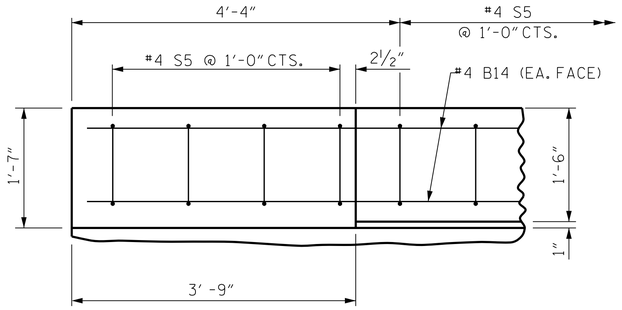
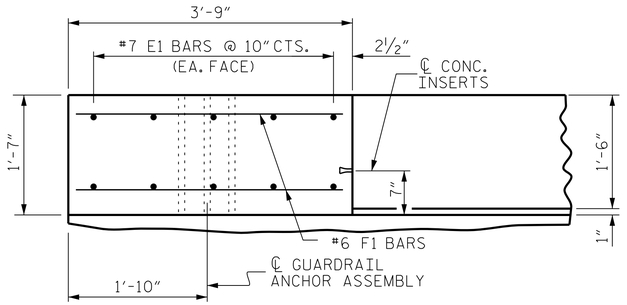
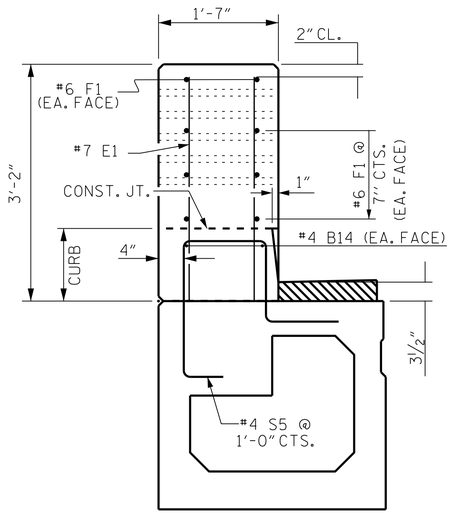


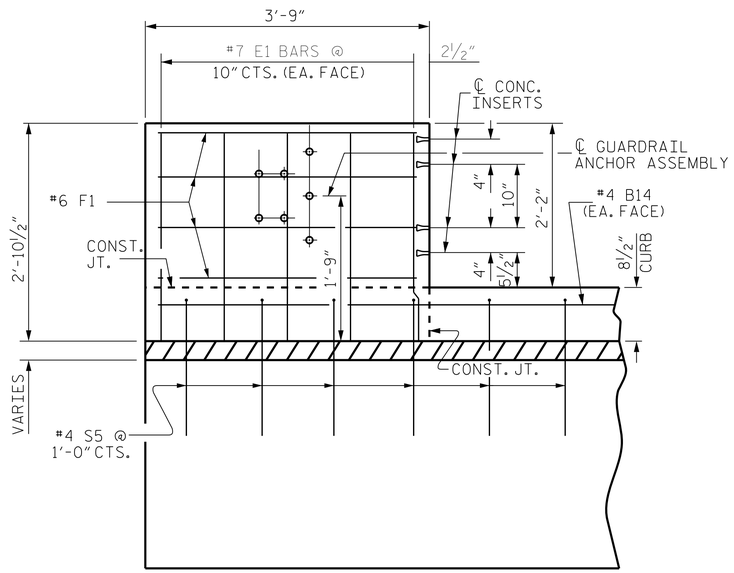
PLAN OF CURB



PLAN OF END POST



END VIEW



ELEVATION

NOTES:

ALL REINFORCING STEEL IN CURB AND END POST SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

#4 S5 BARS ARE INCLUDED IN THE BILL OF MATERIAL FOR BOX BEAM UNITS.

TOTAL BILL OF MATERIAL FOR CURB & END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳E1	40	# 7	STR	2'-7"	211
✳B14	16	# 4	STR	14'-8"	157
✳F1	32	# 6	STR	3'-5"	164
✳EPOXY COATED REINFORCING STEEL				LBS.	532
CLASS AA CONCRETE				CU.YDS.	13.4
TOTAL LIN. FT. OF CONCRETE PARAPET					205.50

CURB AND END POST FOR 32" ALASKA RAIL

PROJECT NO. 17BP.12.R.89

GASTON **COUNTY**

STATION: 15+54.50 -L-

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BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

END POST &
CURB DETAILS

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2			4		

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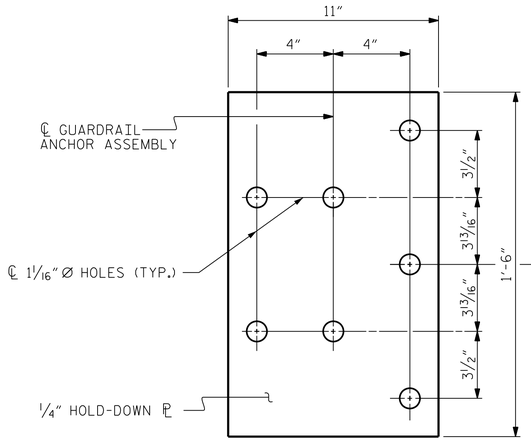
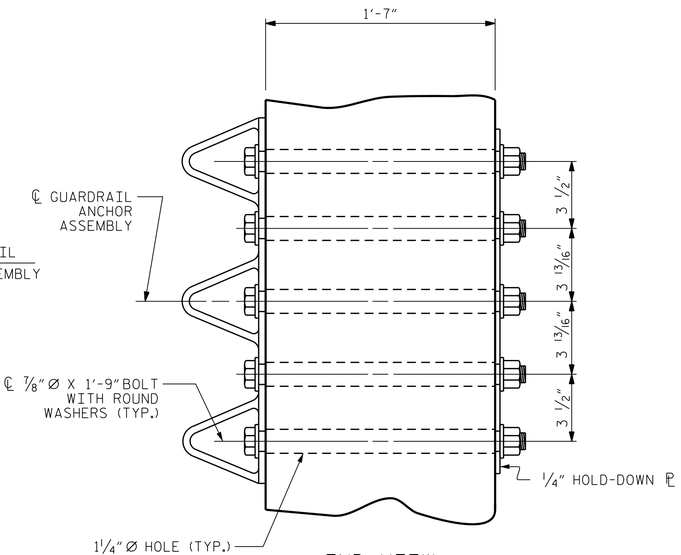


PLAN



END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

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 THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

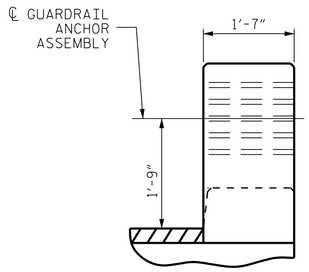
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

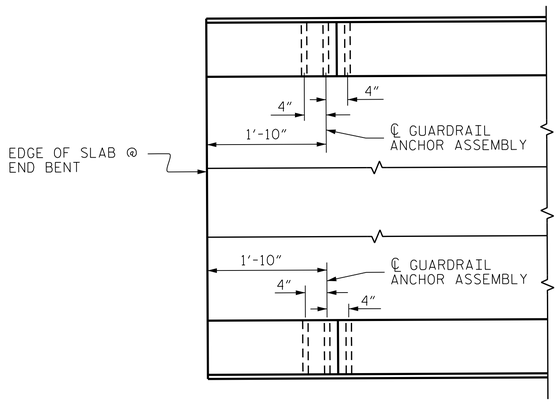
THE 1 1/4'' Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(32" ALASKA RAIL)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. 17BP.12.R.89
GASTON COUNTY
STATION: 15+54.50 -L-

BRIDGE NO. 350172

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE DETAILS FOR 32" ALASKA RAILS

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

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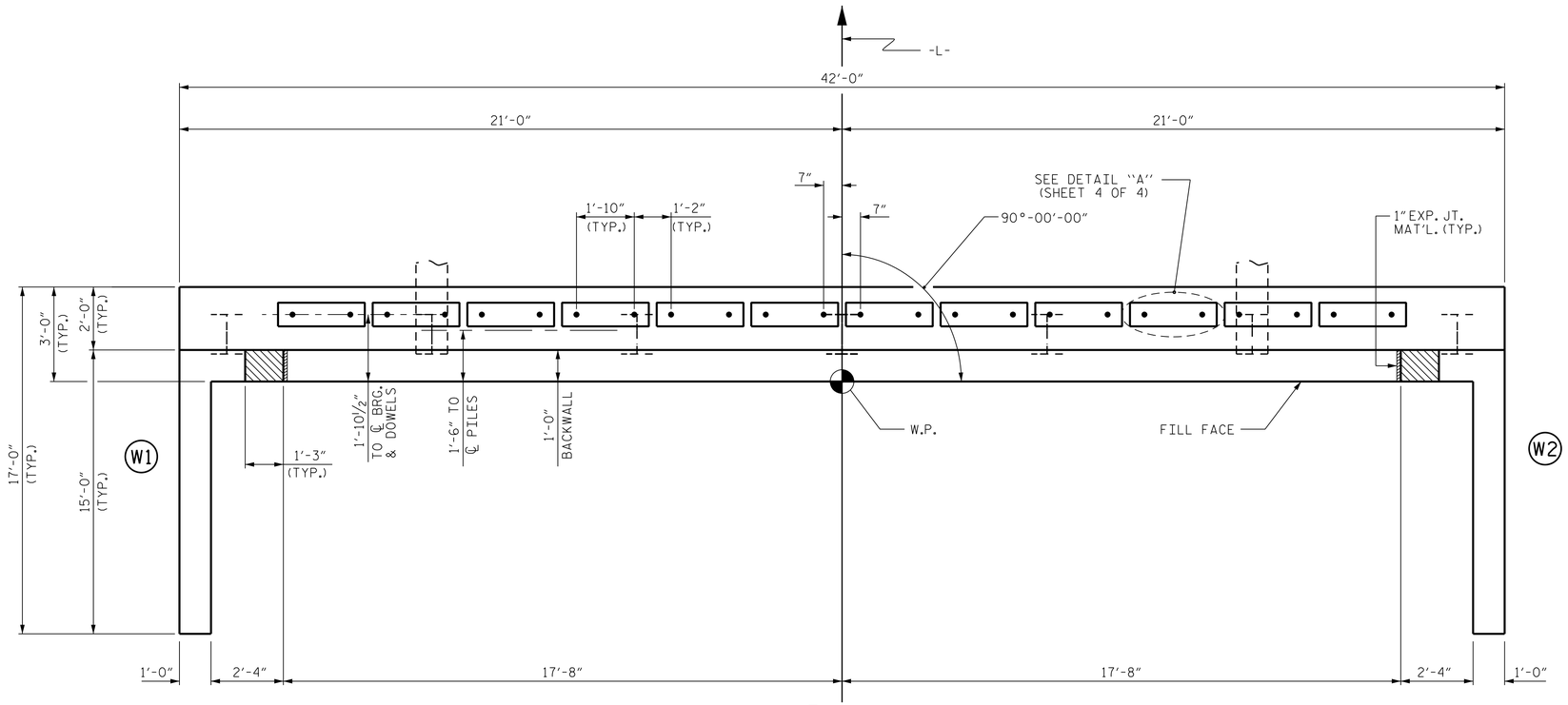
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

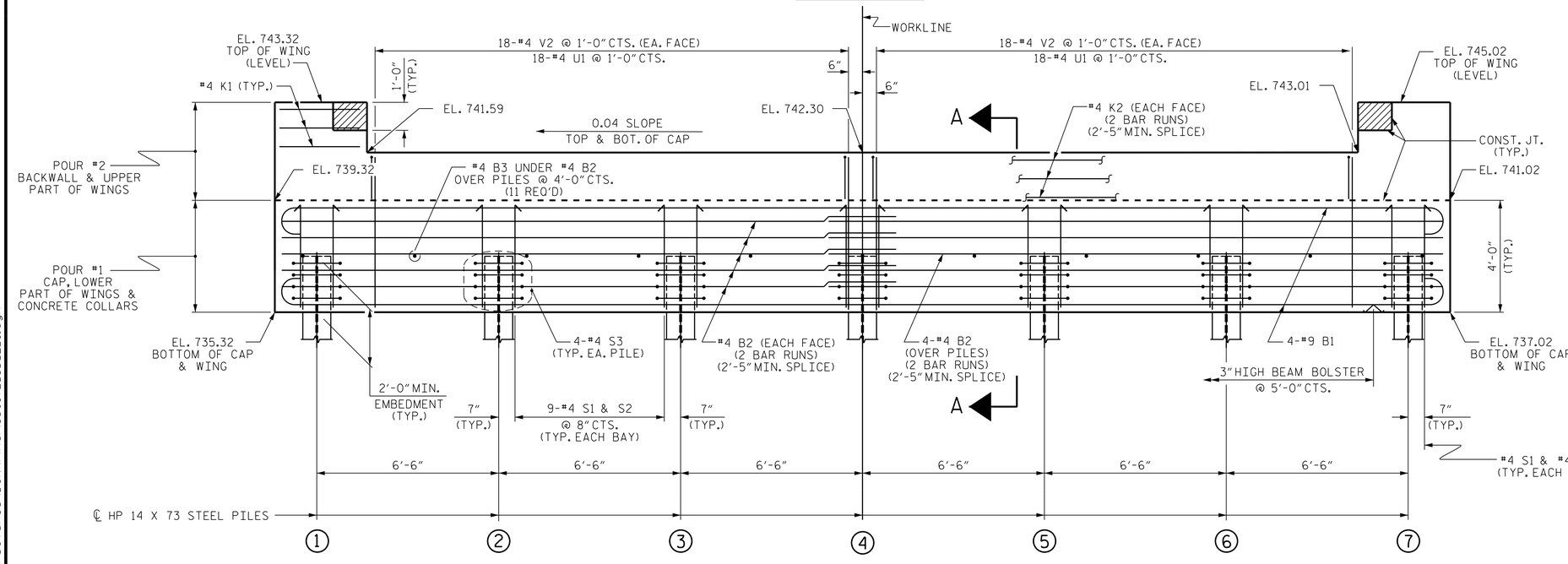
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

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

TOP OF PILE ELEVATIONS	
1	737.39
2	737.65
3	737.91
4	738.17
5	738.43
6	738.69
7	738.95

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT NO. 1

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

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2			4			21

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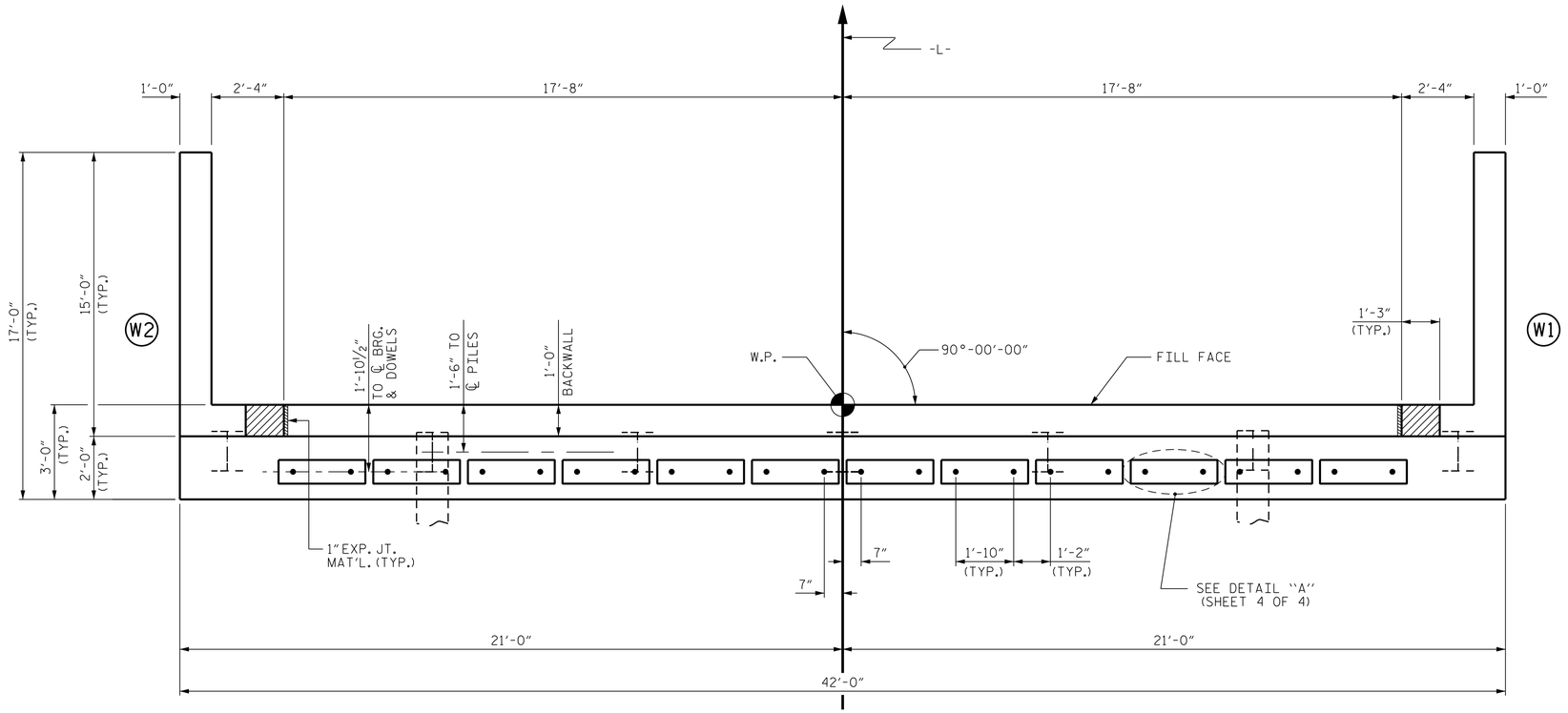
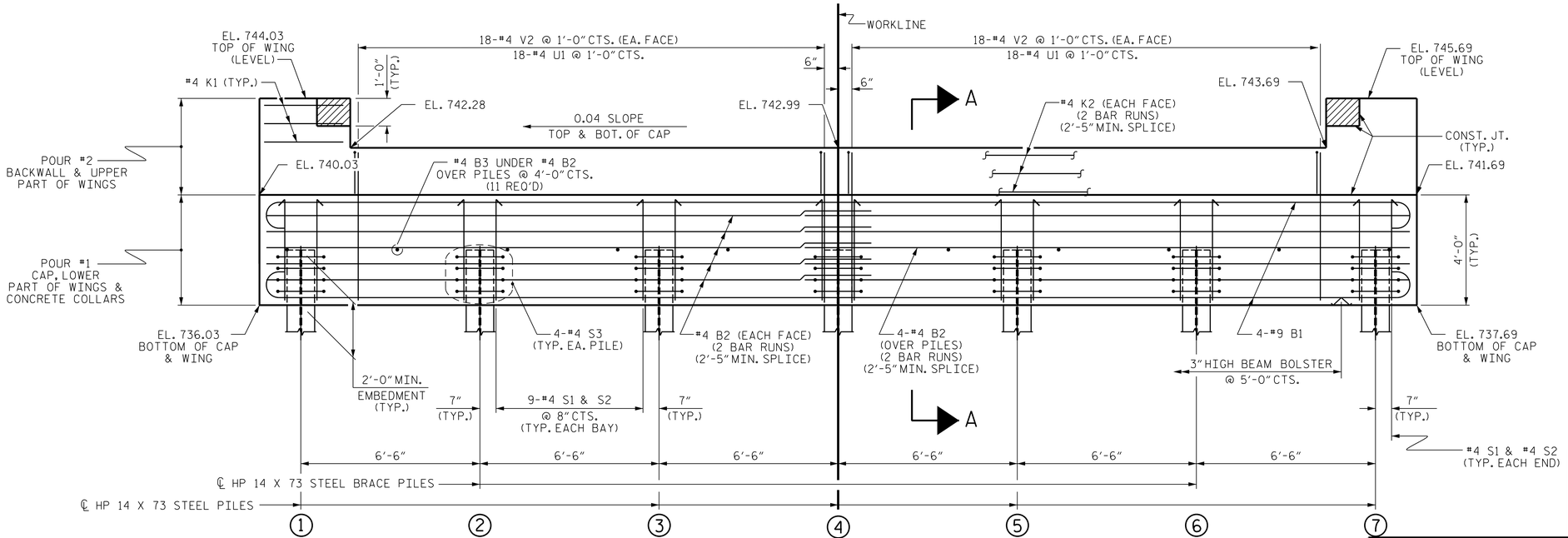


PLAN



ELEVATION

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

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
1	738.08
2	738.34
3	738.60
4	738.86
5	739.12
6	739.38
7	739.64

PROJECT NO. 17BP.12.R.89
GASTON COUNTY
STATION: 15+54.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT NO. 2

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

RK&K
RUMMEL, KLEPPER & KAHL, LLP
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RALEIGH, NC 27609-3960 (919) 878-9560
NC LICENSE NUMBER: F-0112

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2			4			21

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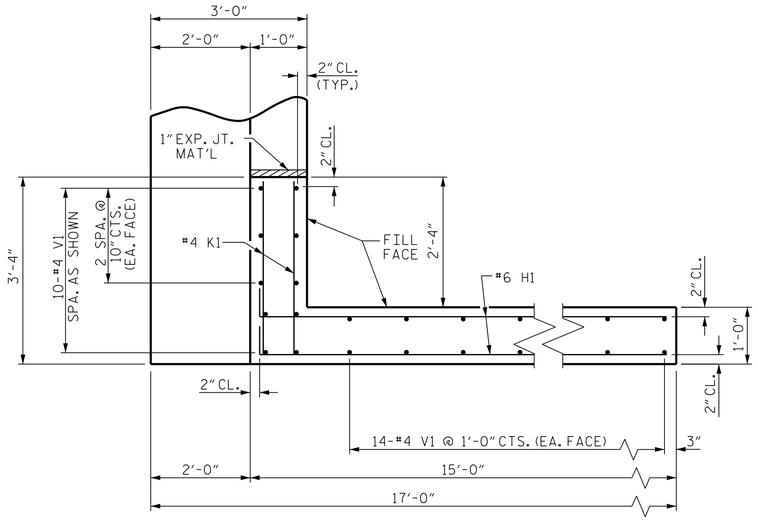
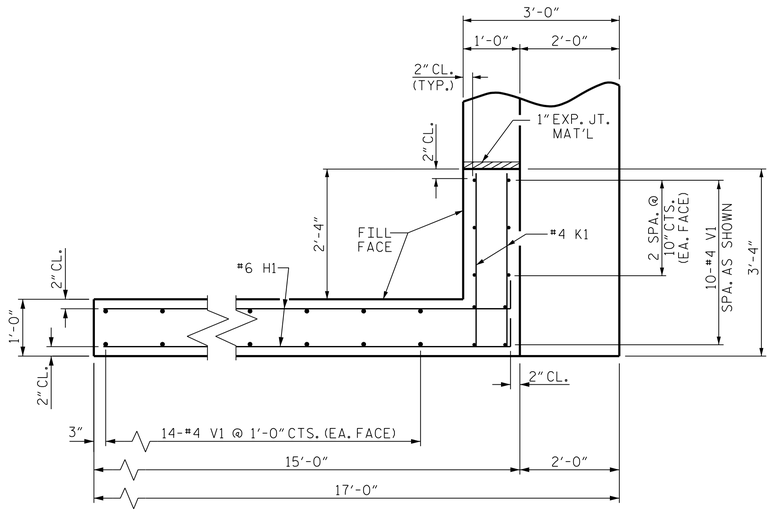
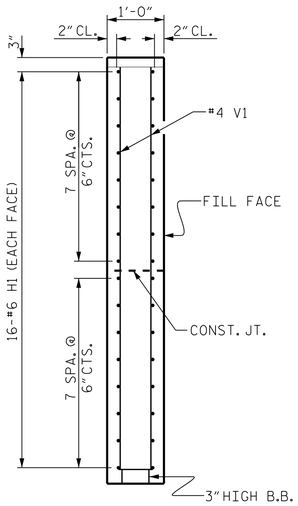


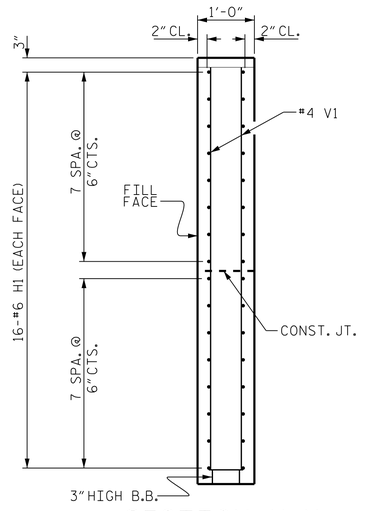
PLAN OF WING (W1)



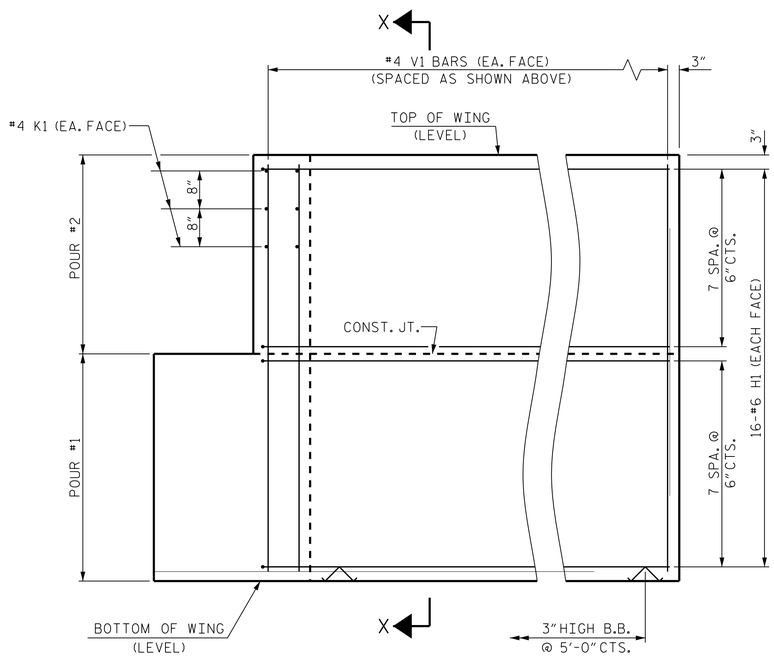
PLAN OF WING (W2)



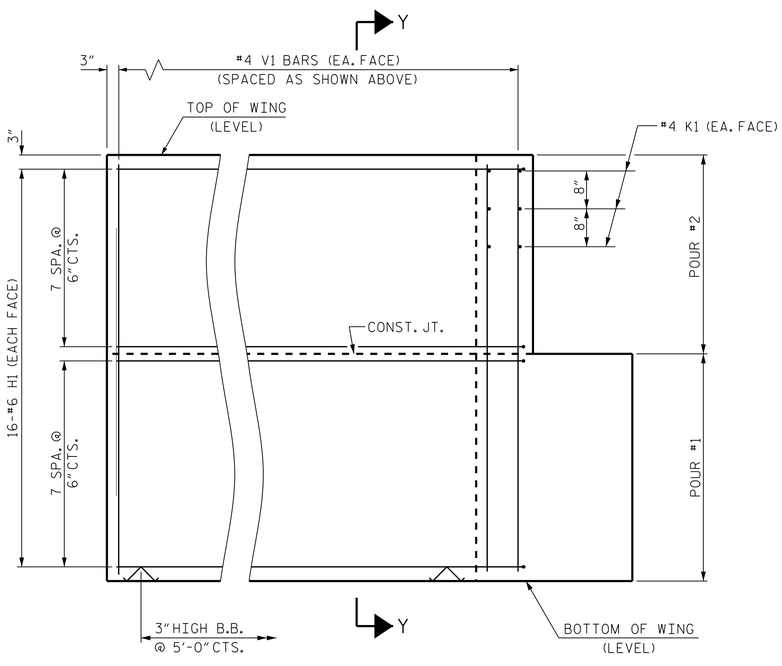
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
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RALEIGH

SUBSTRUCTURE

END BENT
WING DETAILS

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

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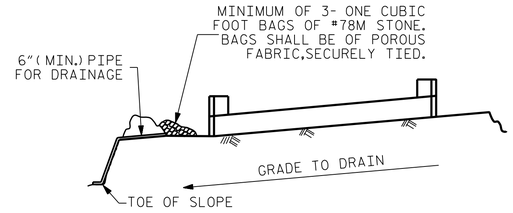
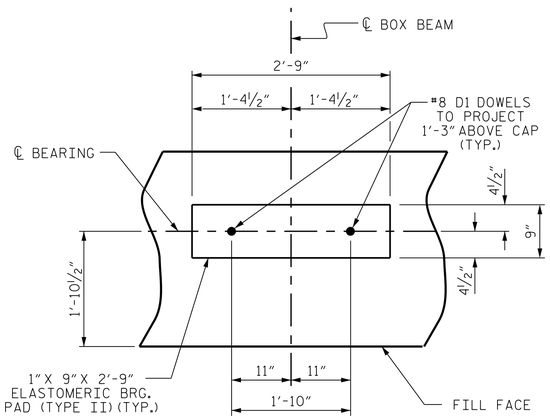


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

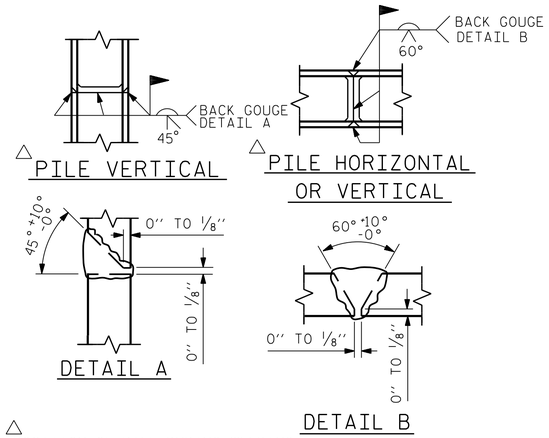
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

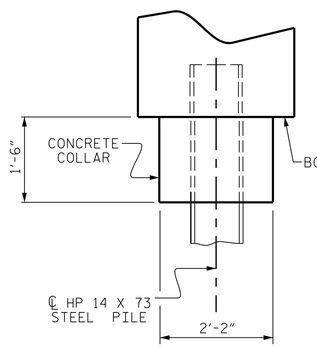
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

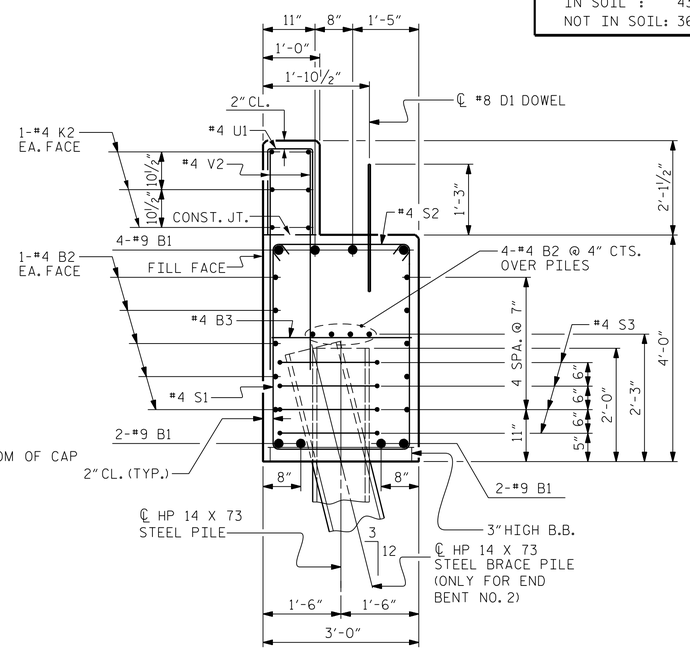
PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

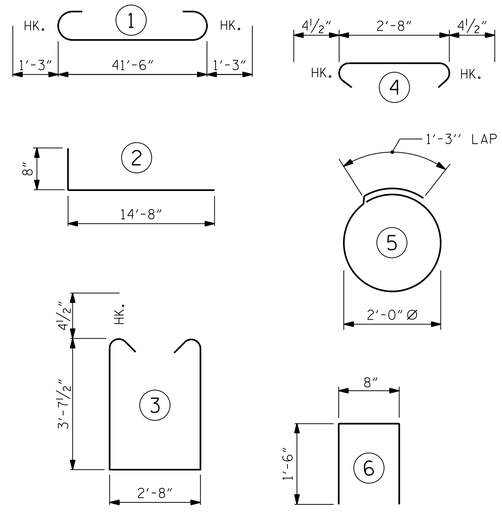
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



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	END BENT No. 2
HP 14 X 73 STEEL PILES	HP 14 X 73 STEEL PILES
NO: 7 LIN. FT.= 105	NO: 7 LIN. FT.= 125
PILE DRIVING EQUIPMENT SETUP FOR HP 14x73 STEEL PILES NO. 7	PILE DRIVING EQUIPMENT SETUP FOR HP 14x73 STEEL PILES NO. 7
PILE EXCAVATION IN SOIL : 43 LIN. FT. NOT IN SOIL: 36 LIN FT.	STEEL PILE POINTS: NO. 7

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	44'-0"	1197
B2	28	#4	STR	22'-1"	413
B3	11	#4	STR	2'-8"	20
D1	24	#8	STR	2'-3"	144
H1	64	#6	2	15'-4"	1474
K1	12	#4	STR	2'-11"	23
K2	12	#4	STR	22'-1"	177
S1	56	#4	3	10'-8"	399
S2	56	#4	4	3'-5"	128
S3	28	#4	5	7'-7"	142
U1	36	#4	6	3'-8"	88
V1	76	#4	STR	7'-8"	389
V2	72	#4	STR	5'-9"	277

REINFORCING STEEL (FOR ONE END BENT) 4871 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 24.3 C.Y.

POUR #2 BACKWALL & UPPER PART OF WINGS 7.9 C.Y.

TOTAL CLASS A CONCRETE 32.2 C.Y.

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SUBSTRUCTURE

END BENT NO. 1 & 2 DETAILS

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

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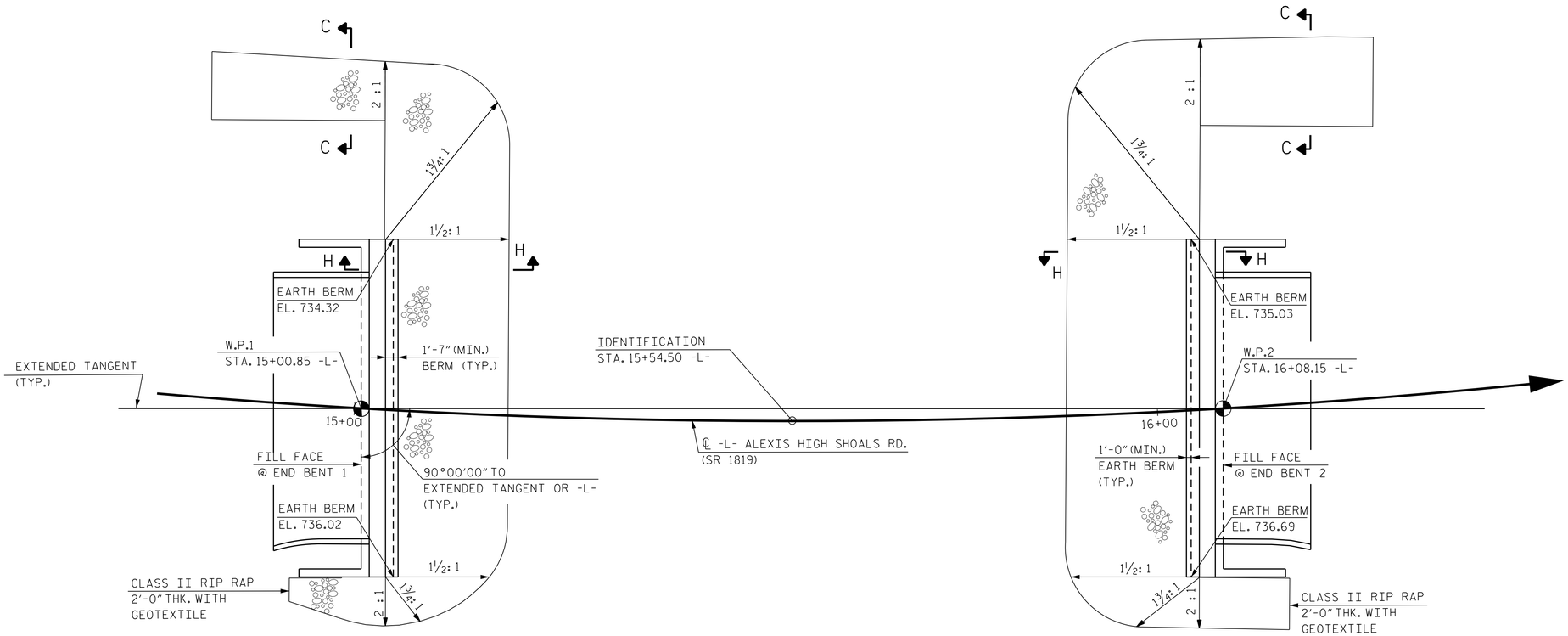
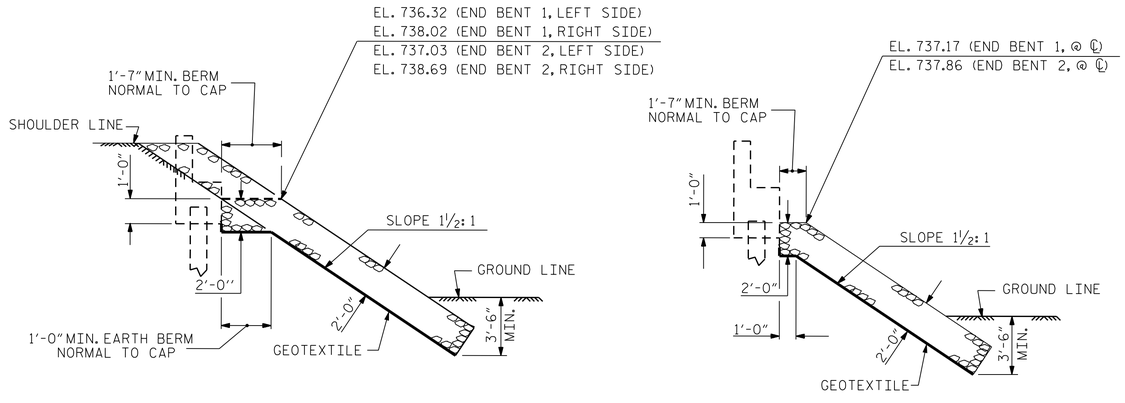


END BENT 1

PLAN

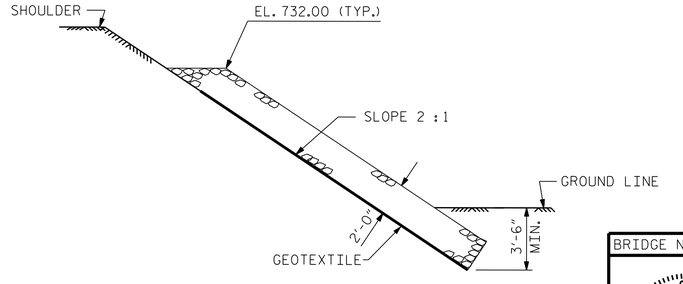


SECTION H-H

℄ SECTION

BERM RIP RAPPED

END BENT 2



C-C SECTION

ESTIMATED QUANTITIES		
BRIDGE AT STA. 15+54.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	200	225
END BENT 2	175	195

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 350172

RIP RAP DETAILS

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NC LICENSE NUMBER: F-0112

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

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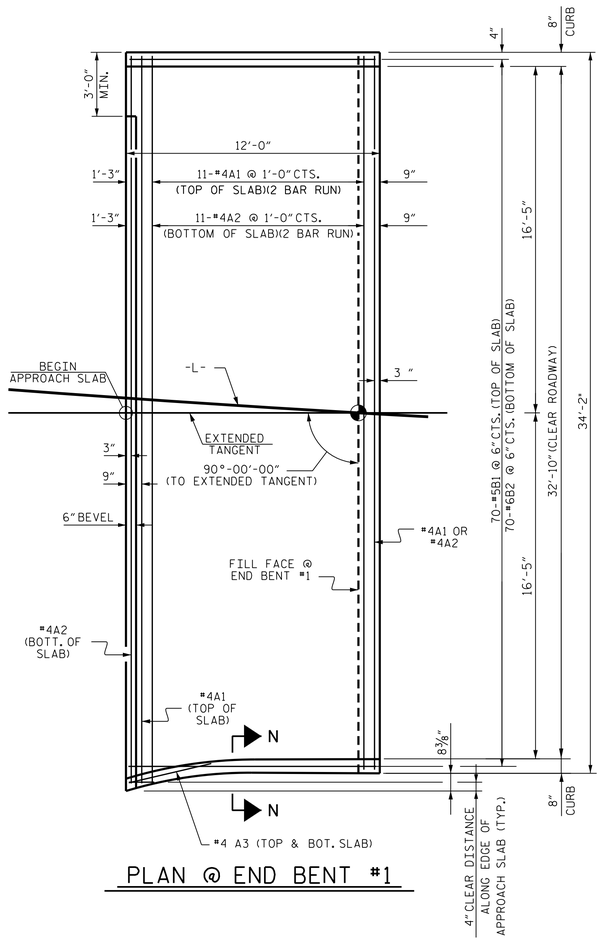
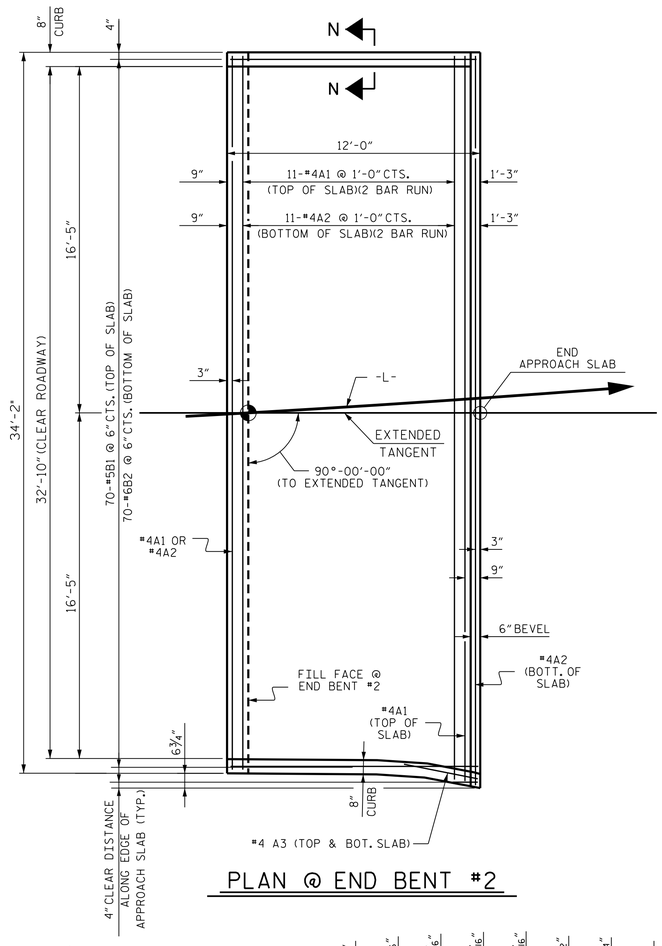
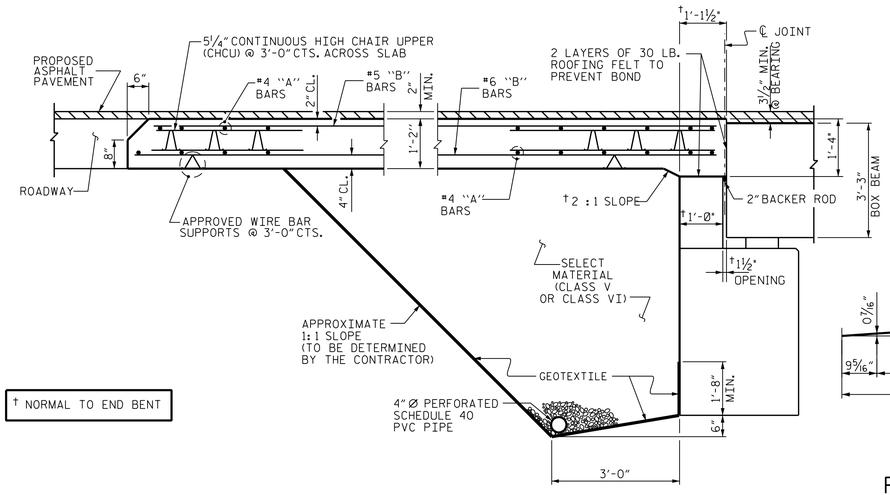


PLAN @ END BENT #1

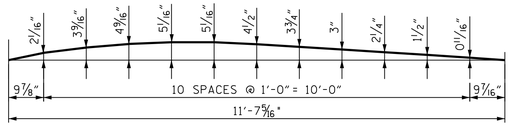


PLAN @ END BENT #2



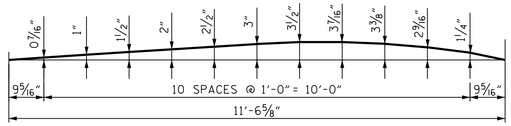
SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH FILL)



ARC OFFSETS ALONG RIGHT SIDE OF APPROACH SLAB

PLAN @ END BENT #1



ARC OFFSETS ALONG RIGHT SIDE OF APPROACH SLAB

PLAN @ END BENT #2

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.

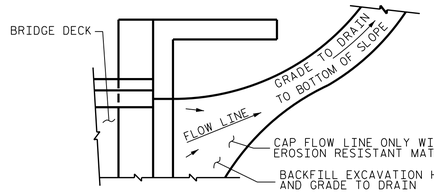
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL 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.

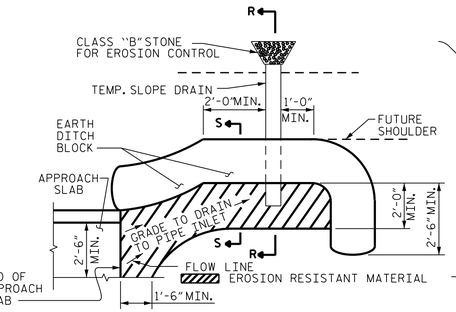
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



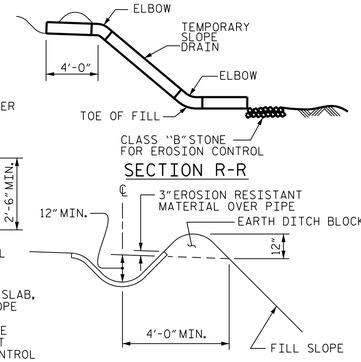
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL



NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

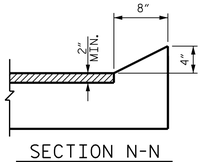
PLAN VIEW



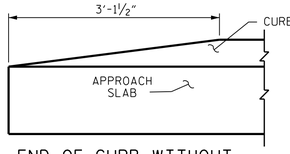
SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

BILL OF MATERIAL					
APPROACH SLAB AT EB 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	26	#4	STR	18'-11"	329
A2	26	#4	STR	18'-9"	326
A3	2	#4	STR	4'-0"	5
✳ B1	68	#5	STR	11'-2"	792
B2	68	#6	STR	11'-8"	1192
REINFORCING STEEL				LBS.	1523
✳ EPOXY COATED REINFORCING STEEL				LBS.	1121
CLASS AA CONCRETE				C. Y.	18.8
APPROACH SLAB AT EB 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	26	#4	STR	18'-11"	329
A2	26	#4	STR	18'-9"	326
A3	2	#4	STR	4'-0"	5
✳ B1	68	#5	STR	11'-2"	792
B2	68	#6	STR	11'-8"	1192
REINFORCING STEEL				LBS.	1523
✳ EPOXY COATED REINFORCING STEEL				LBS.	1121
CLASS AA CONCRETE				C. Y.	18.8

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD 90° SKEW

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM UNIT (SUB REGIONAL TIER)

BRIDGE NO. 350172

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NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

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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 2018 "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.

PROJECT NO. 17BP.12.R.89

GASTON COUNTY

STATION: 15+54.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD NOTES

BRIDGE NO. 350172

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

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

SHEET NO. S-21
TOTAL SHEETS 21

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