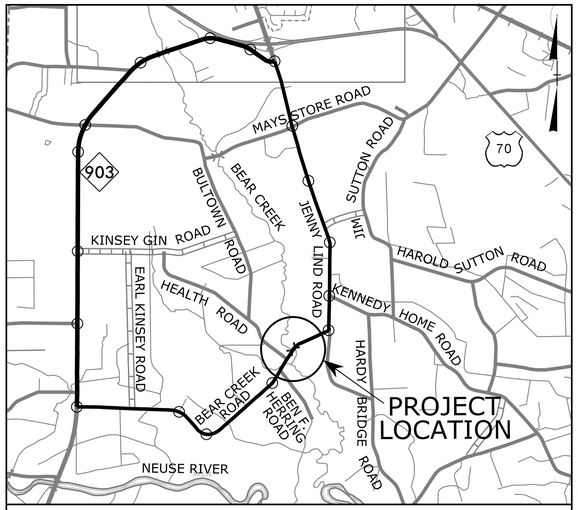
PROJECT: SF-530049

CONTRACT: DB00412

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet 1C-1 for Survey Control Sheet



VICINITY MAP

FINAL PLANS

OFF SITE DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LENOIR COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-530049	1	54

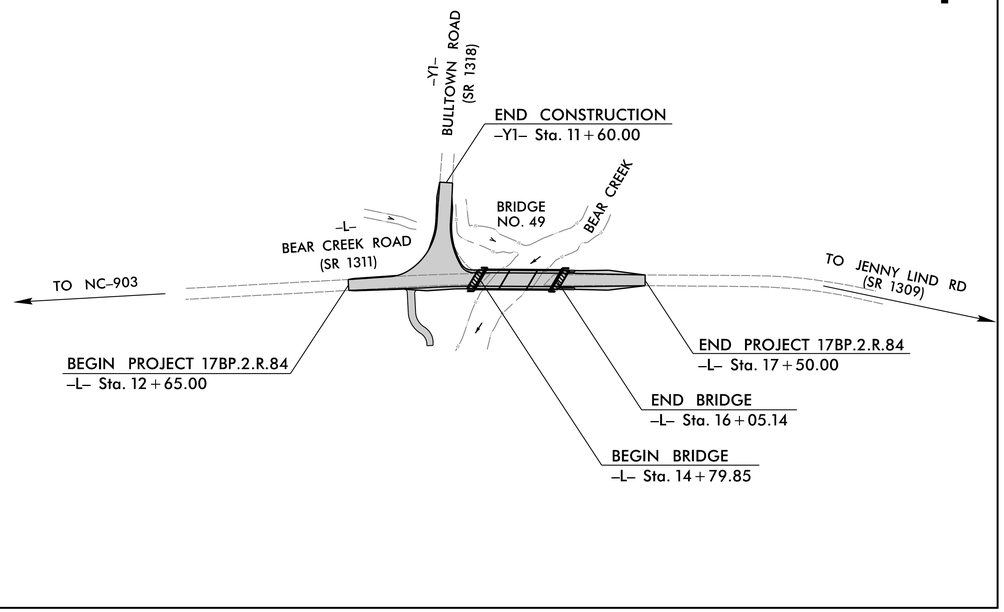
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.2.R.84		PE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: *BRIDGE NO. 49 OVER BEAR CREEK ON SR 1311 (BEAR CREEK ROAD)*

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

4



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

*DESIGN EXCEPTION REQUIRED FOR HORIZONTAL INTERSECTION STOPPING SIGHT DISTANCE AT INTERSECTION OF –L– AND –Y1–

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 230 vpd
ADT 2040 = 550 vpd

D = 6%
T = 6%
V = 60 MPH

FUNC CLASS = LOCAL SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.2.R.84 = 0.068 MILES
LENGTH STRUCTURE PROJECT 17BP.2.R.84 = 0.024 MILES
TOTAL LENGTH PROJECT 17BP.2.R.84 = 0.092 MILES

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn ©2017
NC LICENSE #P-0102
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NORTH CAROLINA 27601
PHONE: (919) 677-2000

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 31, 2018

LETTING DATE:
APRIL 25, 2018

DAN ROBINSON, P.E.
PROJECT ENGINEER

ERIN THOMPSON, P.E.
PROJECT DESIGN ENGINEER

HEATHER C. LANE, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

DocuSigned by: Larry D. Robinson
CE17B2971D5843E...
3/13/2018
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

DocuSigned by: Erin K. Thompson
31E6486C94E44F2...
3/13/2018
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON
P.E.
SIGNATURE:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

3/13/2018 K:\RAL_Roadway\OII\036378 - Bridge49\Roadway\Pro\OII036378_rdy_tshdgn

REVISIONS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	IA
R/W SHEET NO.	

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER Emily K. Thompson
DocuSigned by: 31E6488C9464412...
3/13/2018

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: CE1782971D5B43E...
3/13/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SF-530049
LENOIR COUNTY

INDEX OF SHEETS

GENERAL NOTES

2018 SPECIFICATIONS

EFFECTIVE: 01-16-18
REVISED:

GRADE LINE:
GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

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:

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

SUBSURFACE PLANS:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
POWER: TRI-COUNTY EMC: TONY GRANTHAM 919-587-9600 TONY.GRANTHAM@TCEMC.COM
WATER/SEWER: NORTH LENOIR WATER CORPORATION: JEFF HARDISON 252-560-1492 JEFFNLWATER@EMAROMAIL.COM
TELEPONE: CENTURY LINK: ALONZA MITCHELL 252-256-9633 ALONZA.MITCHELL@CENTURYLINK.COM

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

PAVEMENT MARKING, SIGNING, AND DETOUR:

STATE FORCES WILL INSTALL AND MAINTAIN THE PROJECT DETOUR AND TYPE III BARICADES AT THE PROJECT LIMITS. STATE FORCES WILL REMOVE AND INSTALL PAVEMENT MARKINGS, RAISED PAVEMENT MARKERS, AND SIGNING ON THE FINAL FINISHED PROJECT ACCORDINGLY. CALL JEFF DUNNING (252-830-3493) WITH FOUR (4) WEEKS' ADVANCED NOTICE FOR COORDINATION.

EFFECTIVE: 01-16-18
REVISED:

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
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type II Modified Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
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
876.02	Guide for Rip Rap at Pipe Outlets

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PROJECT REFERENCE NO.	SHEET NO.
SF-530049	1B

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 — TH
- 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.*)
- U/G Water Line LOS C (S.U.E.*)
- 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 — TH
- 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.

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3/13/2018

PROJECT REFERENCE NO.	SHEET NO.
53-0049	1C-1

Location and Surveys

PROJECT SURVEYOR

SURVEY CONTROL SHEET 53-0049

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	547055.682	2362513.425							
LINE			N 30°50'10.7" E	608.89					
PC	547578.498	2362825.535							
CURVE			N 32°31'22.7" E	19.01	03°22'24.0"(RT)	17°44'19.1"	19.02	9.51	323.00
PT	547594.530	2362835.758							
LINE			N 34°12'34.7" E	460.83					
PC	547975.627	2363094.845							
CURVE			N 49°37'58.6" E	499.05	30°50'47.9"(RT)	06°06'24.0"	505.13	258.85	938.25
PT	548298.854	2363475.078							
LINE			N 65°03'22.6" E	1107.46					
POT	548765.902	2364479.239							

BASELINE

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	BL-1	547219.9390	2362627.6850	47.76
2	BL-2	547587.6010	2362847.6710	48.42
3	NCDOT GPS BL-3	548121.1180	2363190.5550	49.65

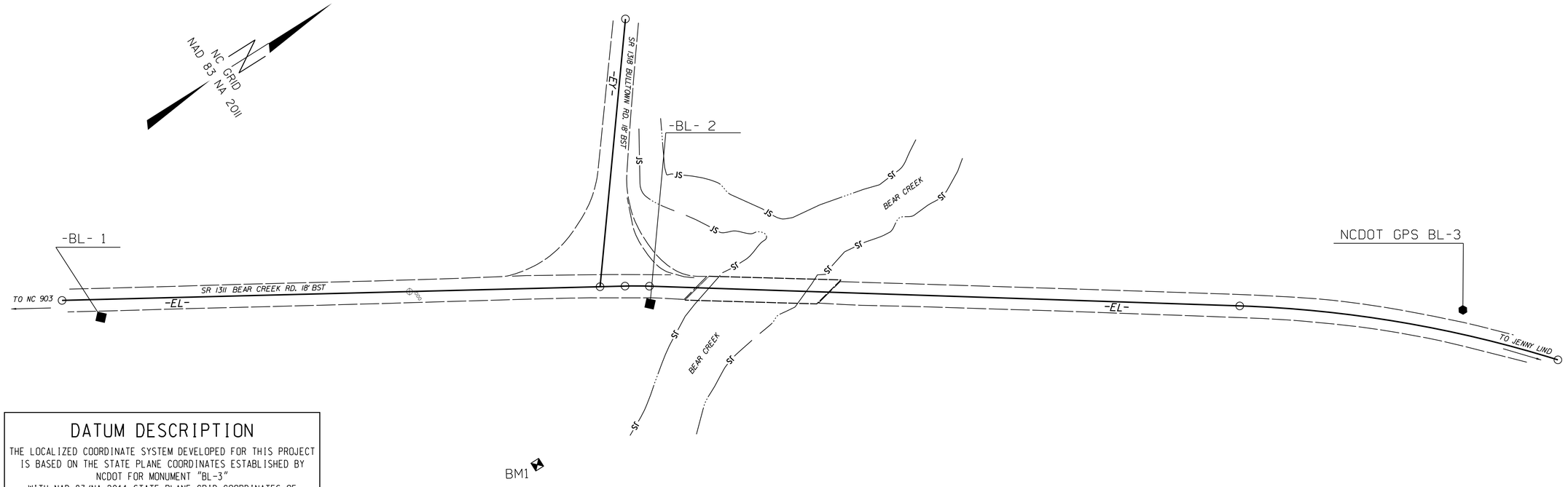
EY

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	549398.152	2361062.324							
LINE			S 51°26'32.3" E	314.88					
PC	549201.884	2361308.557							
CURVE			S 33°00'31.4" E	358.16	36°52'01.8"(RT)	10°07'00.7"	364.41	188.77	566.34
PT	548901.536	2361503.671							
LINE			S 14°34'30.5" E	143.34					
PC	548762.812	2361539.741							
CURVE			S 33°26'01.3" E	525.58	37°43'01.7"(LT)	07°02'50.8"	535.19	277.70	813.00
PT	548324.205	2361829.319							
LINE			S 52°17'32.2" E	1246.58					
POT	547561.755	2362815.540							

* *

BM1 ELEVATION = 45.24
N 547446 E 2362907
RR SPIKE SET IN 24" HARDWOOD

* *



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT "BL-3"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 548121.118(ft) EASTING: 2363190.555(ft)
ELEVATION: 49.65(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.99987582
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"BL-3" TO -L- STATION IS
S 33° 17' 46.5" W 821.95'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

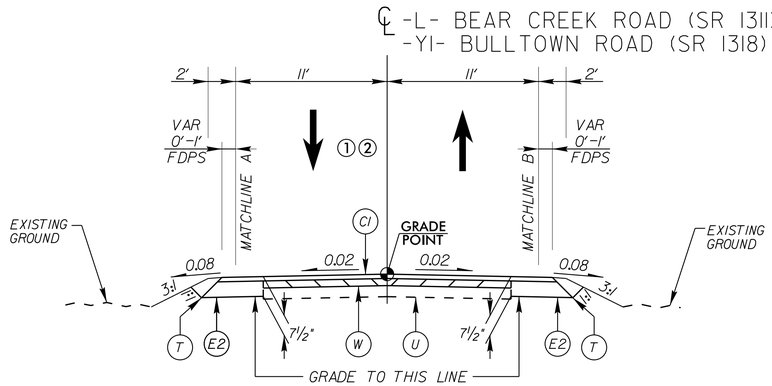
NOTE: DRAWING NOT TO SCALE

NOTES:

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

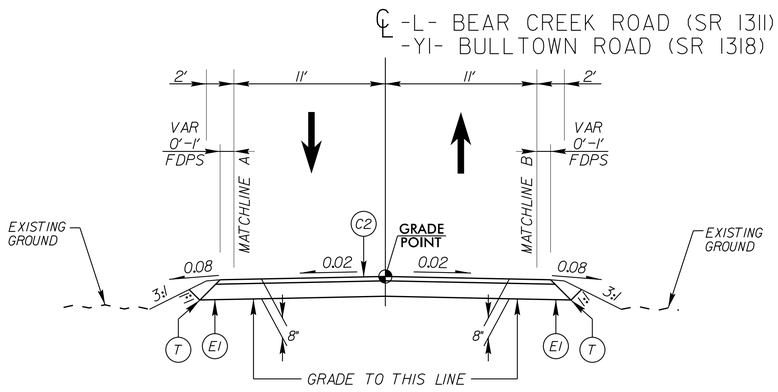
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

REVISIONS



TYPICAL SECTION NO. 1

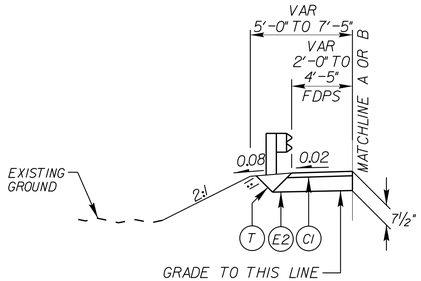
-L- STA 12+65.00 TO STA 13+60.00 ④
-L- STA 16+05.14 (END BRIDGE) TO STA 17+50.00 ④
-Y1- STA 10+30.00 TO STA 11+60.00



TYPICAL SECTION NO. 2

-L- STA 13+60.00 TO STA 14+79.85 (BEGIN BRIDGE) ④
-Y1- STA 10+11.06 TO STA 10+30.00 ④

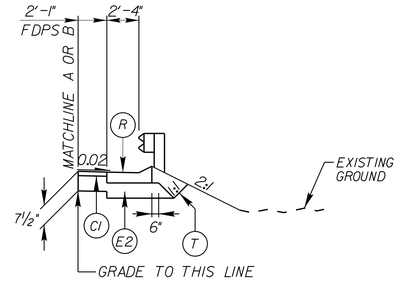
NOTES:
1) OVERLAY FROM -L- STA 13+15.00 TO STA 13+60.00, FROM -L- STA 16+05.14 TO STA 17+00.00, AND FROM -Y1- STA 10+30.00 TO STA 11+37.00 (1.5" S9.5B)
2) MILL NOTCH TO KEY-IN S9.5B FROM -L- STA 12+65.00 TO STA 13+15.00, FROM -L- STA 17+00.00 TO STA 17+50.00, AND FROM -Y1- STA 11+37.00 TO STA 11+60.00
3) PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE
4) SEE INSETS FOR EXCEPTIONS TO TYPICAL SECTIONS
5) TRANSITION FULL DEPTH PAVED SHOULDER IN AREAS OF 8:1 TAPERS.



TYPICAL SECTION NO. 1A

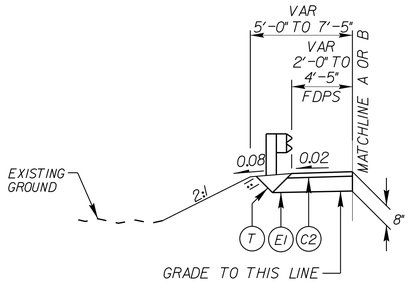
USE IN CONJUNCTION WITH GUARDRAIL LOCATIONS AS FOLLOWS:

-L- STA 16+14.05 TO STA 16+24.70 (LT)
-L- STA 15+96.24 TO STA 16+09.59 (RT)
-L- STA 16+35.00 TO STA 16+95.29 (LT)
-L- STA 16+35.00 TO STA 16+89.84 (RT)
-Y1- STA 10+30.00 TO STA 11+18.71 (RT)
-Y1- STA 10+60.27 TO STA 11+29.92 (LT)



TYPICAL SECTION NO. 1B

-L- STA 16+24.70 TO STA 16+35.00 (LT)
-L- STA 16+09.59 TO STA 16+35.00 (RT)



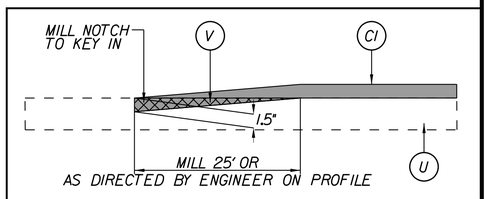
TYPICAL SECTION NO. 2A

USE IN CONJUNCTION WITH GUARDRAIL LOCATIONS AS FOLLOWS:

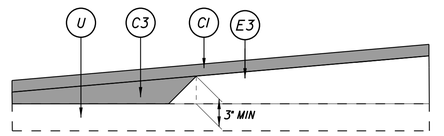
-L- STA 13+88.81 TO STA 14+70.82 (RT)
-L- STA 14+70.15 TO STA 14+88.76 (LT)
-Y1- STA 10+20.19 TO STA 10+30.00 (RT)

FINAL PAVEMENT DESIGN

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD. IN EACH OF TWO LAYERS
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ.YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ.YD.
E2	PROP. APPROX. 6" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ.YD. IN EACH OF TWO LAYERS
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
R	PROP. SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING EXISTING PAVEMENT 0" TO 1.5" (SEE DETAIL BELOW)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL BELOW)



PROFILE KEY-IN DETAIL



WEDGING DETAIL FOR RESURFACING

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421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601
RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-5300049	2A-1

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN M. THOMPSON
Docusigned by: Erin M. Thompson
31E6486C94E44F2...
3/13/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
Docusigned by: Larry D. Robinson, Jr.
CE17B2971D5B43E...
3/13/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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3/13/2018

REVISIONS

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421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.

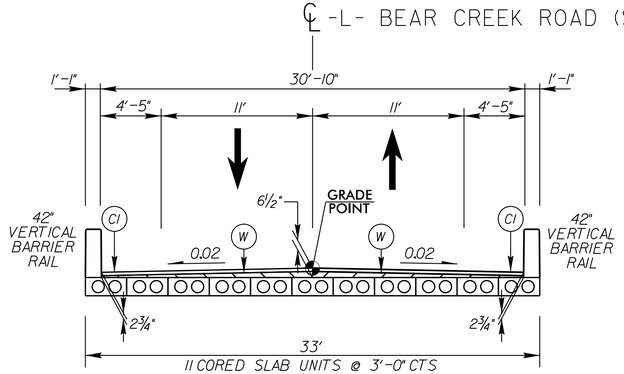
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-5300049	2A-2

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIC M. THOMPSON
Eric M. Thompson
31E6486C94E44F2...
3/13/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY G. ROBINSON, JR.
Larry G. Robinson
CE1TB297105644E...
3/13/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BRIDGE TYPICAL SECTION NO. 3

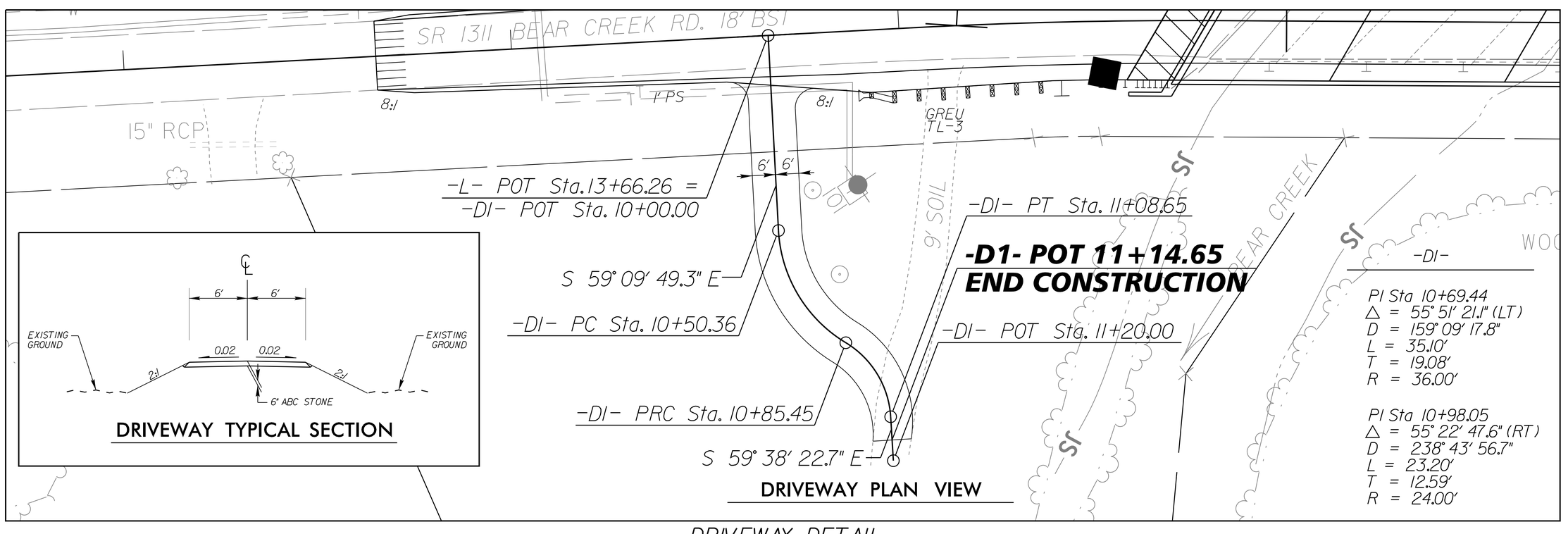
-L- STA 14+79.85 TO STA 16+05.14

NOTE: SHOULDER WIDTHS ARE TO SATISFY HYDRAULIC SPREAD

NOTES:
1) OVERLAY FROM -L- STA 13+15.00 TO STA 13+60.00, FROM -L- STA 16+05.14 TO STA 17+00.00, AND FROM -Y1- STA 10+30.00 TO STA 11+37.00 (1.5" S9.5B)
2) MILL NOTCH TO KEY-IN S9.5B FROM -L- STA 12+65.00 TO STA 13+15.00, FROM -L- STA 17+00.00 TO STA 17+50.00, AND FROM -Y1- STA 11+37.00 TO STA 11+60.00
3) PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE
4) SEE INSETS FOR EXCEPTIONS TO TYPICAL SECTIONS
5) TRANSITION FULL DEPTH PAVED SHOULDER IN AREAS OF 8:1 TAPERS.

FINAL PAVEMENT DESIGN

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD. IN EACH OF TWO LAYERS
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ.YD. PER 1' DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. APPROX. 6" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ.YD. IN EACH OF TWO LAYERS
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
R	PROP. SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING EXISTING PAVEMENT 0" TO 1.5" (SEE DETAIL, SHEET 2A-1)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL, SHEET 2A-1)



DRIVEWAY DETAIL

COMPUTED BY: TGS DATE: 12/18/17
CHECKED BY: EKT DATE: 12/18/17

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	3B-1

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421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	EXCAVATION		EMBANKMENT	BORROW	WASTE
		TOTAL UNCLASSIFIED	UNDERCUT	EMBANKMENT +25%		TOTAL
–L– 12+65.00	–L– 14+79.85	6.5		144.9	138.4	
–L– 16+05.14	–L– 17+50.00	11.3		89.1	77.8	
–Y1– 10+00.00	–Y1– 11+60.00	1.4		14.5	13.1	
–D1– 10+13.18	–D1– 11+14.65	3.1		31.9	28.8	
SUMMARY TOTAL		22.3		280.4	258.1	
SHOULDER MATERIAL				22.8	22.8	
PROJECT TOTALS		22.3		303.1	280.8	
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT					14.0	
GRAND TOTAL		22.3			294.9	
SAY		30			300	

NOTE: APPROXIMATE QUANTITIES ONLY. CLEARING AND GRUBBING, UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, AND REMOVAL OF EXISTING ASPHALT PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

3/13/2018 K:\RAL_Roadway\011036378 - Bridge#9\Roadway\Proj\011036378_rdy_sumdgn

COMPUTED BY: TGS DATE: 10/18/17
CHECKED BY: EKT DATE: 10/18/17

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	3B-2

Kimley»Horn ©2017
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS				IMPACT ATTENUATOR TYPE 350			TERMINAL SECTIONS	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU TL-3	GRAU TL-2	TYPE III	TEMP TYPE III	EA	G	NG				
-L-	14+70.15	14+88.76	LT	18.75				14+88.76	4'-5"	7'-5"							1								
-L-	13+88.81	14+70.82	RT	81.25			14+70.82		4'-5"	7'-5"	50		1		1		1								
-L-	16+14.05	16+95.29	LT	81.25			16+14.05		4'-5"	7'-5"	50		1		1		1								
-L-	15+96.24	16+89.84	RT	93.75				15+96.24	4'-5"	7'-5"		50		1	1		1								
-Y1-	10+60.27	11+39.95	LT	43.75	37.50		10+93.24	10+77.97	2'-0"	5'-0"	37.5		0.75			1									
-Y1-	10+20.20	11+18.71	RT	18.75	100.00		10+74.23	10+89.53	2'-0"	5'-0"															
			SUBTOTAL	337.50	137.50																				
	LESS ANCHOR DEDUCTIONS																								
	GREU TL-2	1 @ 37.50'	=	37.50																					
	GREU TL-3	3 @ 50.00'	=	150.00																					
	TYPE III	4 @ 18.75'	=	75.00																					
	CAT-1	2 @ 6.25'	=	12.50																					
			TOTAL	62.50	137.50																				
			SAY	62.50	137.50																				

ADDITIONAL GUARDRAIL POSTS = 5 EA

SUMMARY OF SHOULDER BERM GUTTER

LINE	STATION TO STATION	LOCATION	LENGTH (LF)
-L-	16+24.70 TO 16+35.00	LT	11
-L-	16+09.59 TO 16+35.00	RT	26
TOTAL			37
SAY			40

REMOVAL OF EXISTING ASPHALT PAVEMENT

LINE	STATION TO STATION	LOCATION	SQ. YDS.
-L-	13+60.00 TO 14+88.27	LT/RT	281
-L-	15+92.72 TO 16+17.14	LT/RT	50
-Y1-	10+11.06 TO 10+30.00	LT/RT	200
TOTAL			531
SAY			540

ROW AREA DATA SUMMARY

PARCEL NO.	PROPERTY OWNER NAMES	PROP. ROW (SF)	PERM. UTILITY EASE. (SF)	PERM. DRAINAGE EASE. (SF)	PERM. DRAINAGE UTILITY EASE. (SF)	CONST. EASE. (SF)
1	HENRY T. HEATY	–	5,663	–	–	–
2	HENRY T. HEATY	–	–	189	–	2,913
3	BOBBY G. HERRING	–	935	538	244	–
4	KELLY M. KINCAID	–	–	1,222	–	–
5	KEVIN P. HATCH	–	1,801	–	266	–
6	WOODS HOG FARM INC.	–	418	–	–	–

NOTE: APPROXIMATE QUANTITIES ONLY. CLEARING AND GRUBBING, UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, AND REMOVAL OF EXISTING ASPHALT PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

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3/22/2018

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D08535

COMPUTED BY:	HCB	**DATE:**	9/21/2017
CHECKED BY:	BTV	**DATE:**	9/21/2017

PROJECT NO.	SHEET NO.
11036378	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %
L 16+12	13 RT	0403		49.2			
		0403	0402		46.5	45.5	
L 16+30	14 RT	0402		49.3			
		0402	0401		45.5	44.0	
L 16+30	15 LT	0404		49.2			
		0404	0402		46.4	45.5	
Y1 10+85	23 LT						
SHEET TOTALS							
PROJECT TOTALS							

LINE & STATION	FROM	TO	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	30	36	42	48		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
L 16+12	0403															
	0403	0402														
L 16+30	0402															
	0402	0401														
L 16+30	0404															
	0404	0402														
Y1 10+85																
SHEET TOTALS																
PROJECT TOTALS																

LINE & STATION	FROM	TO	C. S. PIPE 12 .064	15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48
L 16+12	0403																	
	0403	0402																
L 16+30	0402																	
	0402	0401																
L 16+30	0404																	
	0404	0402																
Y1 10+85																		
SHEET TOTALS																		
PROJECT TOTALS																		

LINE & STATION	FROM	TO	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48
L 16+12	0403									
	0403	0402		16						
L 16+30	0402									
	0402	0401		20						
L 16+30	0404									
	0404	0402		28						
Y1 10+85										
SHEET TOTALS				64						
PROJECT TOTALS				64						

LINE & STATION	FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G
L 16+12	0403					1						
	0403	0402										
L 16+30	0402					1						
	0402	0401										
L 16+30	0404					1						
	0404	0402										
Y1 10+85												
SHEET TOTALS						3						
PROJECT TOTALS						3						

LINE & STATION	FROM	TO	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29
L 16+12	0403							1					1
	0403	0402											
L 16+30	0402							1					1
	0402	0401											
L 16+30	0404							1					1
	0404	0402											
Y1 10+85													
SHEET TOTALS								3					3
PROJECT TOTALS								3					3

LINE & STATION	FROM	TO	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST C.B.	ADJUST D.I.	ADJUST M.H.	PREFORMED SCOUR HOLE (PER EACH)	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 16+12	0403																			
	0403	0402																		
L 16+30	0402																			
	0402	0401																		
L 16+30	0404																			
	0404	0402																		
Y1 10+85																			57	
SHEET TOTALS																			57	
PROJECT TOTALS																			57	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

DD85535

COMPUTED BY:	HCB	**DATE:**	9/21/2017
CHECKED BY:	BTV	**DATE:**	9/21/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
11036378	3D-2

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

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

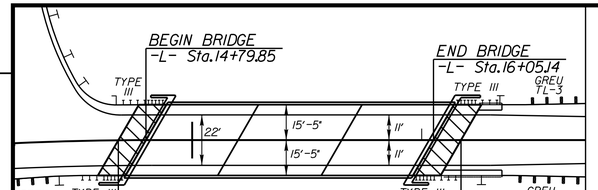
LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)												C. A. A. PIPE						
		FROM	TO	FT.	FT.	FT.	%	54	60	66	72	78	84		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	54	60	66	72	78	84	
Y1 10+85	23 LT	0405	0406		38.3	37.8																	46			
SHEET TOTALS																							46			
PROJECT TOTALS																							46			

LINE & STATION	R. C. PIPE CLASS III							R. C. PIPE CLASS IV							R. C. PIPE CLASS V						ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)	A	B	C.B. STD. 840.01 OR STD. 840.02
	54	60	66	72	78	84		54	60	66	72	78	84		54	60	66	72	78	84	CY	CY	MASONRY CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.	
Y1 10+85																											
SHEET TOTALS																											
PROJECT TOTALS																											

LINE & STATION	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE				CONCRETE TRANSITIONAL SECTION		OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	MODIFIED CONC. FLUME	PREFORMED SCOUR HOLE (PER EACH)	ALUMINUM ALLOW HEADWALL	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
	E	F	G		D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																						EA	CY	CY	CY	LIN. FT.	
Y1 10+85																												2					ALUMINUM ALLOY HEADWALL PER SPECIAL PROVISION
SHEET TOTALS																												2					
PROJECT TOTALS																												2					

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT



DETAIL SHOWING BRIDGE /PAVEMENT RELATIONSHIP

-L-

PI Sta 14+42.69
△ = 3° 22' 24.0" (RT)
D = 4° 14' 38.9"
L = 79.48'
T = 39.75'
R = 1,350.00'

PI Sta 20+14.27
△ = 12° 21' 22.6" (RT)
D = 6° 05' 43.1"
L = 202.72'
T = 101.75'
R = 940.00'

-Y1- POT Sta. 13+25.00

-L- POT Sta. 10+00.00

-L- POT 12+65.00
BEGIN PROJECT 17BP.2.R.84
BEGIN CONSTRUCTION

-Y1- POT 11+60.00
END CONSTRUCTION

-L- POT 17+50.00
END PROJECT 17BP.2.R.84
END CONSTRUCTION

-L- PT Sta. 14+82.42

-L- PC Sta. 19+12.52

-L- PT Sta. 21+15.24

NCDOT GPS BL-3
-L- STA 20+84.69
OFF 18.68' LT

-L- PC Sta. 14+02.93

-L- POC Sta.14+14.88 =
-Y1- POT Sta. 10+00.00

-L- POT Sta.13+66.26 =
-DI- POT Sta. 10+00.00
SEE DRIVEWAY DETAIL, SHEET 2A-2

-BL- 1
-L- STA 10+23.89
OFF 13.91' RT

-BL- 2
-L- STA 14+52.85
OFF 13.43' RT

BM #1
ELEV = 45.24'
N 547446 E 2362907
-L- STATION 13+61.17
137.71' RIGHT
RR SPIKE SET IN
24" HARDWOOD

(1) HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32

(2) HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32

(3) BOBBY G. HERRING, et ux
DB 1284 PG 606
PC 7 PG 35

(4) KELLEY M. KINCAID
DB 1093 PG 540
PC 4 PG 345

(5) KEVIN P. HATCH
DB 490 PG 367
PC 10 PG 376

(6) WOODS HOG FARM INC.
DB 303 PG 98
MB 4 PG 141
PC 13 PG 101

DEWEY L. PELLETIER, et ux
DB 1519 PG 780
PC 11 PG 63

DEWEY L. PELLETIER, et ux
DB 938 PG 619

-Y1- BULLTOWN RD (SR 1318)

-L- BEAR CREEK RD (SR 1311)
N 30° 50' 10.7" E

PROPERTY LINE ALONG BEAR CREEK

HIGH WATER LEVEL DURING HURRICANE MATTHEW PER PROPERTY OWNER ELEVATION=55.37'

GRADE TO DRAIN
72" CAAP (BURIED 1')
CLASS I RIP RAP (BANKS ONLY) (0406)
EST 25 TONS
EST 30 SY GFD

INSTALL ALUMINUM HEADWALL (US & DS) (0405)

120' LANE TAPER

INSTALL SHOULDER BERM GUTTER FROM STA.16+24.70 TO STA.16+35.00 -L- LT

INSTALL SHOULDER BERM GUTTER FROM STA.16+09.59 TO STA.16+35.00 -L- RT

END APPROACH SLAB
-L- POT 16+17.14

END BRIDGE
-L- POT 16+05.14

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GFD (0401)

REMOVE EXISTING BRIDGE (STRUCTURE ITEM)

BEGIN APPROACH SLAB
-L- POC 14+67.81

BEGIN BRIDGE
-L- POC 14+79.85

15" RCP-IV

RETAIN

NOTE: BRIDGE NO. 49 HAS WOODEN DECK, SEAT, HEADWALLS, WING WALLS, GUARDRAILS AND PILES.

WOODED

EXISTING R/W

NC GRID
NAD 83/NSRS 2011

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 548121.118(ft) EASTING: 2363190.555(ft) ELEVATION: 49.65(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987582 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

SEE SHEET 5 FOR PROFILES
SEE SHEETS S-1 THRU S-X FOR STRUCTURE PLANS

*DESIGN EXCEPTION REQUIRED FOR HORIZONTAL INTERSECTION STOPPING SIGHT DISTANCE AT INTERSECTION OF -L- AND -Y1-

REVISIONS

3/22/2018 K:\RAL_Roadway\011036378 - Bridge#49\Roadway\Pro\011036378_rdy_psh_4.dgn

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RALEIGH, NC 27601
RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	4
R/W SHEET NO.	

ROADWAY ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON
DocuSigned by: Erin K. Thompson 3/22/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson 3/22/2018

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REVISIONS

BM #1
-L- STA 13+61.17 (137.71' RT)
ELEV 45.24'
R/R SPIKE IN 24" HARDWOOD

BEGIN BRIDGE
-L- STA 14+79.85
ELEV = 49.97'

BEGIN APPROACH SLAB
-L- STA 14+67.81
ELEV = 50.00'

-L- STA 14+14.88 =
-Y1- STA 10+00.00
ELEV = 49.95'

-L- Sta.13+66.26 =
-D1- Sta.10+00.00
ELEV = 49.41'

END MILL TO KEY-IN
-L- Sta.13+15.00
ELEV = 48.63'

BEGIN CONSTRUCTION
BEGIN GRADE
BEGIN MILL TO KEY-IN
-L- Sta.12+65.00
ELEV = 48.22'
TIE TO EXIST PAVEMENT

(+)0.8274%

PI = 13+15.00
EL = 48.63'

(+)1.5300%

(-)0.3000%

PI = 14+15.00
EL = 50.16'
VC = 90'
K = 49
DS = 40 MPH

CLASS II RIP RAP (TYP)

APPROX. EXCAVATION EL= 42.5' (TYP)

EXIST LOW TIMBER
ELEV = 47.79'
STA 14+80.05

CL -L- 15+42.50
@ 40°-45'-40'
21" CORED SLAB
CL ELEV = 49.78'
SKEW = 46°

(-)0.3000%

PROP LOW STEEL
ELEV = 47.28'
STA 16+05.00

END BRIDGE
-L- STA 16+05.14
ELEV = 49.59'

END APPROACH SLAB
-L- STA 16+17.14
ELEV = 49.55'

PI = 17+00.00
EL = 48.88'

(-)0.9538%

PI = 16+35.00
EL = 49.50'
VC = 30'
K = 46
DS = 40 MPH

APPROX. NORMAL W.S.EL.= 40.1'

END GRADE
BEGIN MILL TO KEY-IN
-L- Sta.17+00.00
ELEV = 48.88'

(-)0.3261%

END CONSTRUCTION
END MILL TO KEY-IN
-L- Sta.17+50.00
ELEV = 48.72'
TIE TO EXIST PAVEMENT

—L—

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	3000 CFS
DESIGN FREQUENCY	=	25 YR
DESIGN HW ELEVATION	=	48.2 FT
BASE DISCHARGE	=	4400 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	49.5 FT
OVERTOPPING DISCHARGE	=	2500 CFS
OVERTOPPING FREQUENCY	=	>10 YR
OVERTOPPING ELEVATION	=	48.0 FT
DATE OF SURVEY	=	05/10/2017
W.S.ELEVATION AT DATE OF SURVEY	=	40.1 FT

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RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER
Docusigned by: Emily K. Thompson
31E6486C9454473...
3/13/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER
Docusigned by: Evan D. Robinson, Jr.
CE17B2971D6647E...
3/13/2018

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BEGIN CONSTRUCTION
BEGIN GRADE
-Y1- Sta.10+11.00 =
-L- Sta.14+16.05 (10.94' LT)
ELEV = 49.73'

PI = 10+75.00
EL = 47.17'
VC = 12.4'
K = 37
DS = 30 MPH

BEGIN MILL TO KEY-IN
-Y1- Sta.11+37.00
ELEV = 46.76'

(-)4.0000%

(-)0.6606%

PROP. 72" CAP
STA 10+84
ELEV = 38.1'

-Y1- Sta.10+00.00 =
-L- Sta.14+14.88
ELEV = 49.95'

END CONSTRUCTION
END GRADE
END MILL TO KEY-IN
-Y1- Sta.11+60.00
ELEV = 46.67'
TIE TO EXIST PAVEMENT

—Y1—

PIPE HYDRAULIC DATA
72" CAP W/ HEADWALL (BURIED 1')

DESIGN DISCHARGE	=	200 CFS
DESIGN FREQUENCY	=	25 YRS
DESIGN HW ELEVATION	=	46.02 FT
BASE DISCHARGE	=	300 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	47.11 FT
OVERTOPPING DISCHARGE	=	223 CFS
OVERTOPPING FREQUENCY	=	>25 YRS
OVERTOPPING ELEVATION	=	46.6 FT

BEGIN GRADE
TIE TO EDGE OF LANE
-Y1- Sta.10+13.18 =
-L- Sta.13+66.26 (13.18' RT)
ELEV = 49.15'

PI = 10+19.00
EL = 48.68'

PI = 10+40.00
EL = 45.95'

PI = 10+50.00
EL = 45.15'

END GRADE
-D1- Sta.11+19.00
ELEV = 43.63'

(-)8.0000%

(+)13.0000%

(-)8.0000%

(-)12.2088%

-D1- Sta.10+00.00 =
-L- Sta.13+66.26
ELEV = 49.41'

—D1—

NOTES:
1. SEE DRIVEWAY DETAIL, SHEET 2A-2

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3/13/2018

PROJ. REFERENCE NO.	SHEET NO.
SF-530049	TMP-1

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

MANAGEMENT STRATEGIES

CONSTRUCTION SUMMARY:
PROPOSED BRIDGE REPLACEMENT WILL BE CONSTRUCTED AWAY FROM TRAFFIC USING A ROAD CLOSURE AND DETOUR ROUTE.

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS, OR RESULT IN DUPLICATE, OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING OR REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

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

TRAFFIC PATTERN ALTERATIONS

A) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

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

C) PROVIDE PERMANENT SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

D) PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTES AS SHOWN IN THE TRAFFIC CONTROL PLANS.

E) COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

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

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

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

PHASING

STEP 1: USING ROADWAY STANDARD DRAWING NUMBER 1101.03, SHEET 1 OF 9, AND SHEET TMP-2, PERFORM THE FOLLOWING:

- INSTALL ALL ROAD CLOSURES AND DETOUR SIGNING, INCLUDING BARRICADES.
- IMPLEMENT TEMPORARY ROAD CLOSURES OF SR 1311 (BEAR CREEK RD) AND SR 1318 (BULLTOWN RD) USING A DETOUR ALONG NC-903 AND SR 1309 (JENNY LIND RD). ALLOW LOCAL TRAFFIC ACCESS ALONG SR 1311 (BEAR CREEK RD) TO APPROXIMATELY 0.09 MILES SOUTHWEST OF BRIDGE #49 (JUST AFTER SR 1310 (BEN F HERRING RD)), APPROXIMATELY 0.09 MILES NORTHEAST OF BRIDGE #49 (AFTER FINAL DRIVEWAY PRIOR TO BRIDGE), AND APPROXIMATELY 0.08 MILES NORTHEAST OF THE INTERSECTION OF SR 1311 AND SR 1318 (AFTER THE FINAL DRIVEWAY PRIOR TO INTERSECTION).

STEP 2: REMOVE EXISTING BRIDGE #49 AND 48" CMP CULVERT. CONSTRUCT PROPOSED BRIDGE, APPROACHES, AND CULVERT AS SHOWN IN THE CONSTRUCTION PLANS.

STEP 3: INSTALL ALL FINAL PAVEMENT MARKINGS.

STEP 4: REMOVE ALL TRAFFIC CONTROL SIGNING AND DEVICES AND RE-OPEN SR 1311 (BEAR CREEK RD) AND SR 1318 (BULLTOWN RD) TO THE FINAL TRAFFIC PATTERN.

NOTE:
STATE FORCES WILL INSTALL AND MAINTAIN THE PROJECT DETOUR AND TYPE III BARRICADES AT THE PROJECT LIMITS. STATE FORCES WILL REMOVE AND INSTALL PAVEMENT MARKINGS, PERMANENT RAISED PAVEMENT MARKERS, AND SIGNING ON THE FINAL FINISHED PROJECT. CALL JEFF DUNNING (252-830-3493) WITH FOUR (4) WEEKS' ADVANCED NOTICE FOR COORDINATION.

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, North Carolina 27601

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APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K THOMPSON

DocuSigned by: Erin K Thompson 3/13/2018

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

TRANSPORTATION OPERATIONS PLAN

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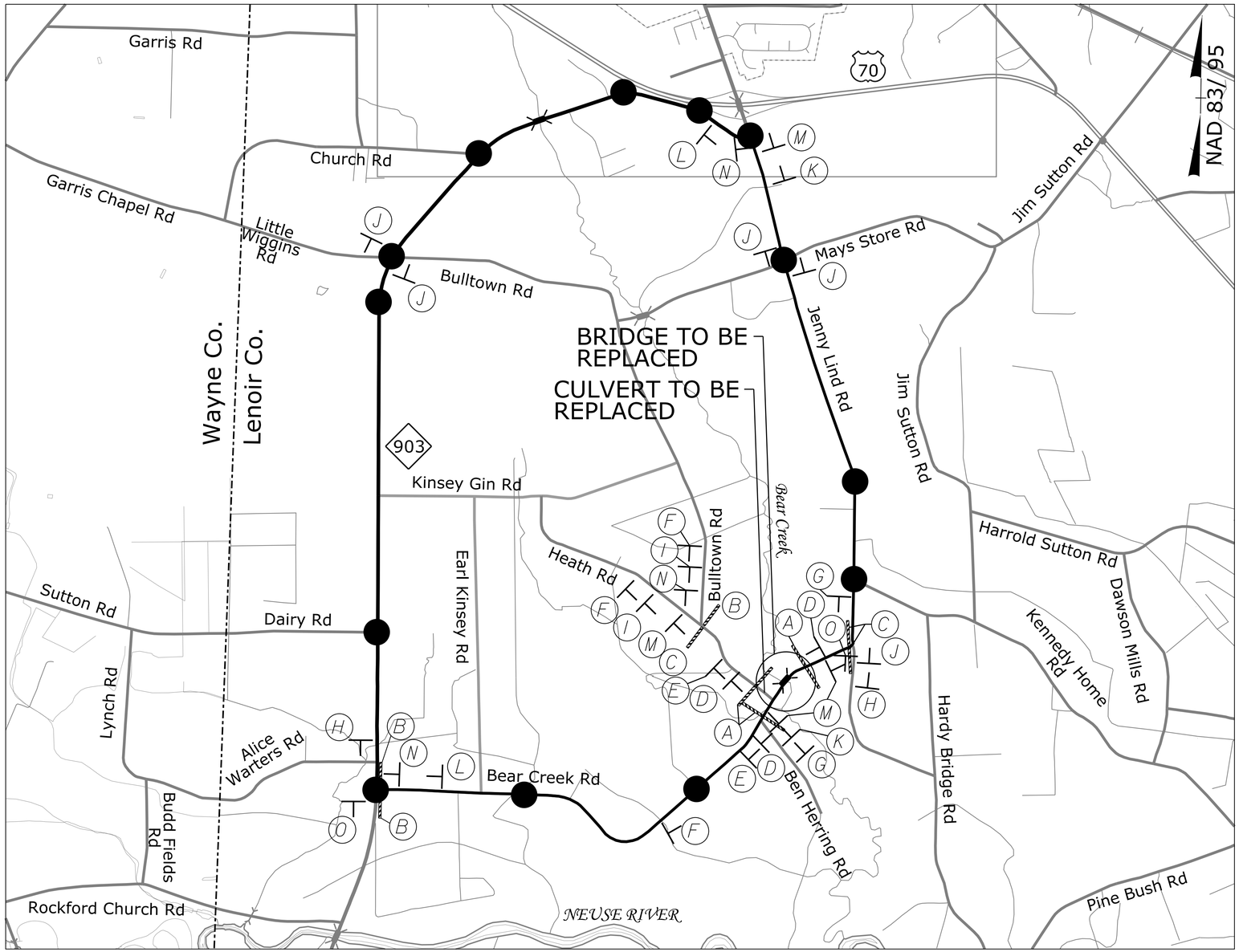
3/13/2018

PROJ. REFERENCE NO.	SHEET NO.
SF-530049	TMP-2



SCALE: 1" = 1500'

(A) R11–2, 48" X 30", ROAD CLOSED — TYPE III BARRICADE(S)

(B) R11-4, 60" x 30", ROAD CLOSED TO THRU TRAFFIC, DETOUR, M4-10L, 48" x 18" — TYPE III BARRICADE

(C) R11-4, 60" x 30", ROAD CLOSED TO THRU TRAFFIC, DETOUR, M4-10R, 48" x 18" — TYPE III BARRICADE

(D) ROAD CLOSED 500 FT — W20–3B, 48" X 48"

(E) ROAD CLOSED 1000 FT — W20–3C, 48" X 48"

(F) ROAD CLOSED AHEAD — W20–3A, 48" X 48"

(G) ROAD CLOSED AHEAD — W20–3A, 48" X 48"; NEXT RIGHT — SP–4R, 42" X 12"

(H) ROAD CLOSED AHEAD — W20–3A, 48" X 48"; NEXT LEFT — SP–4L, 42" X 12"

(I) DETOUR AHEAD — W20–2, 48" X 48"

(J) DETOUR — M4–8, 24" X 12"; M6–3, 21" X 15"

(K) DETOUR — M4–8, 24" X 12"; M5–1 M, 21" X 15"

(L) DETOUR — M4–8, 24" X 12"; M5–1 R, 21" X 15"

(M) DETOUR — M4–8, 24" X 12"; M6–1 L, 21" X 15"

(N) DETOUR — M4–8, 24" X 12"; M6–1, 21" X 15"

(O) END DETOUR — M4–8 A, 24" X 18"

NOTE:
REFER TO RSD 1101.03 SHEET 1 OF 9 FOR ADVANCE WARNING SIGNAGE AND BARRICADE PLACEMENT

LEGEND
DETOUR ROUTE
STATIONARY SIGN

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, North Carolina 27601

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED:_____ DATE:_____

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 037827 ENGINEER ERIN K. THOMPSON
DocuSigned by: Erin K. Thompson 3/13/2018

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

TRANSPORTATION OPERATIONS PLAN

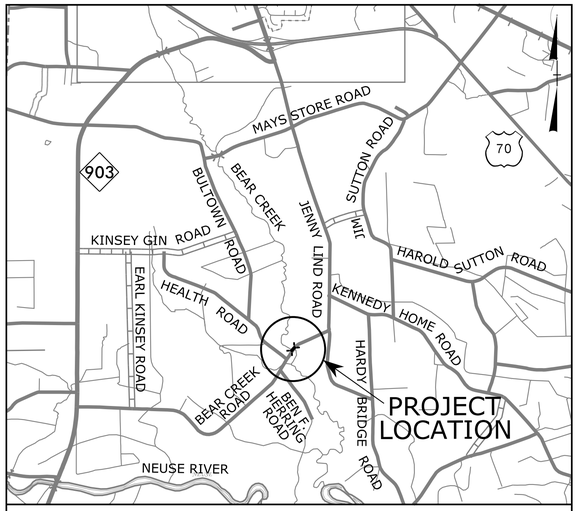
K:\RAL_Roadway\OII036378 - Bridge49\Traffic\TrafficControl\TCP\OII036378_TMP-2.dgn
3/13/2018

PROJECT: SF-530049

CONTRACT:

K:\RAL_Roadway\0II0363 78 – Bridge49\Roadway\Pro\0II0363 78_rdy_ero_psh_1shdgn

3/13/2018



VICINITY MAP

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	
	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	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED HIGHWAY EROSION CONTROL LENOIR COUNTY

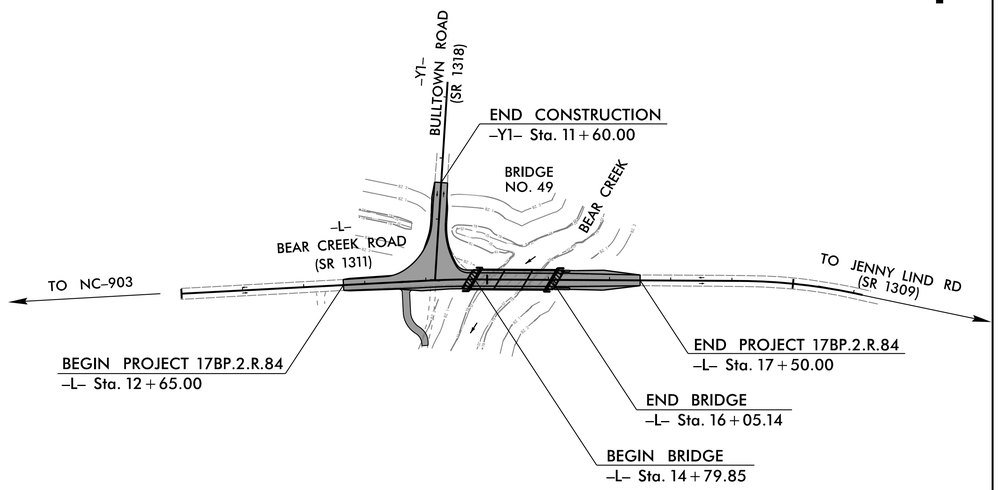
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-530049	EC-1	

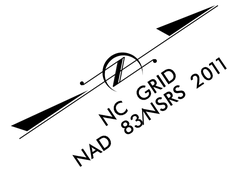
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.2.R.84		PE

LOCATION: BRIDGE NO. 49 OVER BEAR CREEK ON SR 1311 (BEAR CREEK ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

4





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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

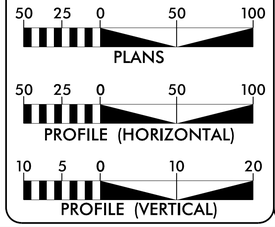
ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2018 STANDARD SPECIFICATIONS

Erin Thompson
LEVEL IIIA NAME

4031
LEVEL IIIA CERTIFICATION NO.

GRAPHIC SCALES



ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn ©2017
NC LICENSE #C-0102
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NORTH CAROLINA 27601
PHONE: (919) 677-2000

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 31, 2018

LETTING DATE:
APRIL 25, 2018

DAN ROBINSON, P.E.
PROJECT ENGINEER

ERIN THOMPSON, P.E.
PROJECT DESIGN ENGINEER

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 for Pumped Effluent	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		

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	EC-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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.

3/13/2018 K:\RAL_Roadway\DII036378 - Bridge49\Roadway\Proj\DII036378_rdy_ero_jsh_2.dgn

EROSION CONTROL PLAN

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421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	EC-3
R/W SHEET NO.	

RIGHT-OF-WAY REV.

CONST. REV.

REVISIONS

-Y1- POT Sta. 13+25.00

-Y1- POT 11+60.00
END CONSTRUCTION
N 52° 29' 29.3" W

-L- POT Sta. 10+00.00

-L- POT 12+65.00
BEGIN PROJECT 17BP.2.R.84
BEGIN CONSTRUCTION

-L- PT Sta. 14+82.42

CONCRETE WASHOUT STRUCTURE
-L- POT 17+50.00
END PROJECT 17BP.2.R.84
END CONSTRUCTION

NCDOT GPS BL-3
-L- STA 20+84.69
OFF 18.68' LT

-L- PC Sta. 19+12.52

-L- PT Sta. 21+15.24

N 30° 50' 10.7" E

-BL- 1
-L- STA 10+23.89
OFF 13.91' RT

CONCRETE WASHOUT STRUCTURE
-L- POT Sta.13+66.26 =
-DI- POT Sta. 10+00.00
SEE DRIVEWAY DETAIL, SHEET 2A-2

-L- PC Sta. 14+02.93

-L- POC Sta.14+14.88 =
-Y1- POT Sta. 10+00.00

-BL- 2
-L- STA 14+52.85
OFF 13.43' RT

INSTALL TURBIDITY CURTAIN (ANCHOR AS NEEDED)
SEE DETAIL, SHEET EC-7

N 34° 12' 34.7" E

NOTE: BRIDGE NO. 49 HAS WOODEN DECK,SEAT, HEADWALLS, WING WALLS, GUARDRAILS AND PILES.

NC GRID
NAD 83/NSRS 2011

1 WOODS HOG FARM INC.
DB 303 PG 98
MB 4 PG 141
PC 13 PG 101

2 HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32

3 HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32

4 BOBBY G. HERRING,et ux
DB 1284 PG 606
PC 7 PG 35

5 KELLEY M. KINCAID
DB 1093 PG 540
PC 4 PG 345

6 KEVIN P. HATCH
DB 490 PG 367
PC 10 PG 376

DEWEY L. PELLETIER, et ux
DB 938 PG 619

DEWEY L. PELLETIER, et ux
DB 1519 PG 780
PC II PG 63

WETLANDS

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

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

NOTE: UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE

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.

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

3/13/2018 K:\RAL_Roadway\011036378 - Bridge#49\Roadway\Pro\011036378_rdy_ero_psh_3.dgn

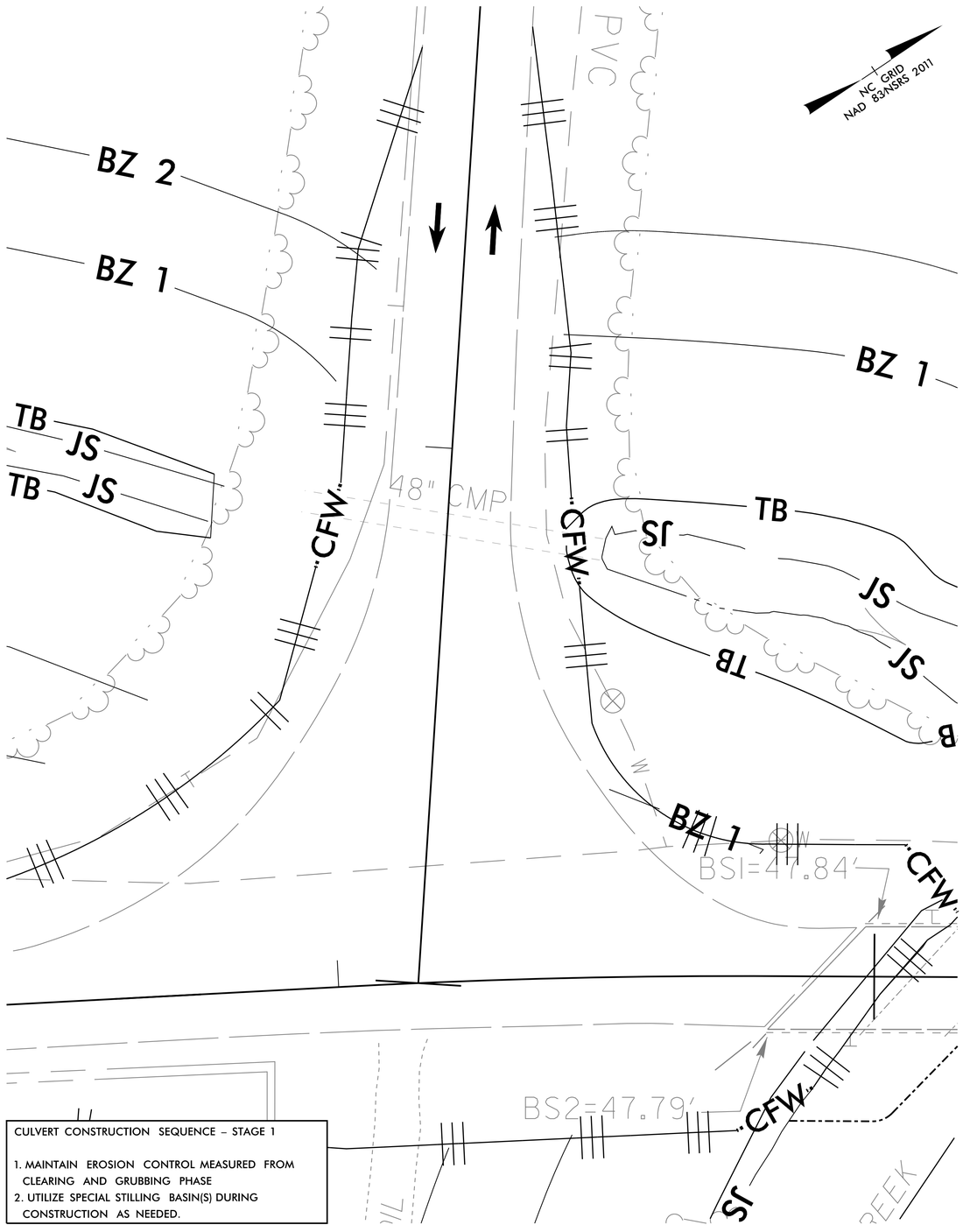
CULVERT CONSTRUCTION SEQUENCE

Kimley»Horn ©2017
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

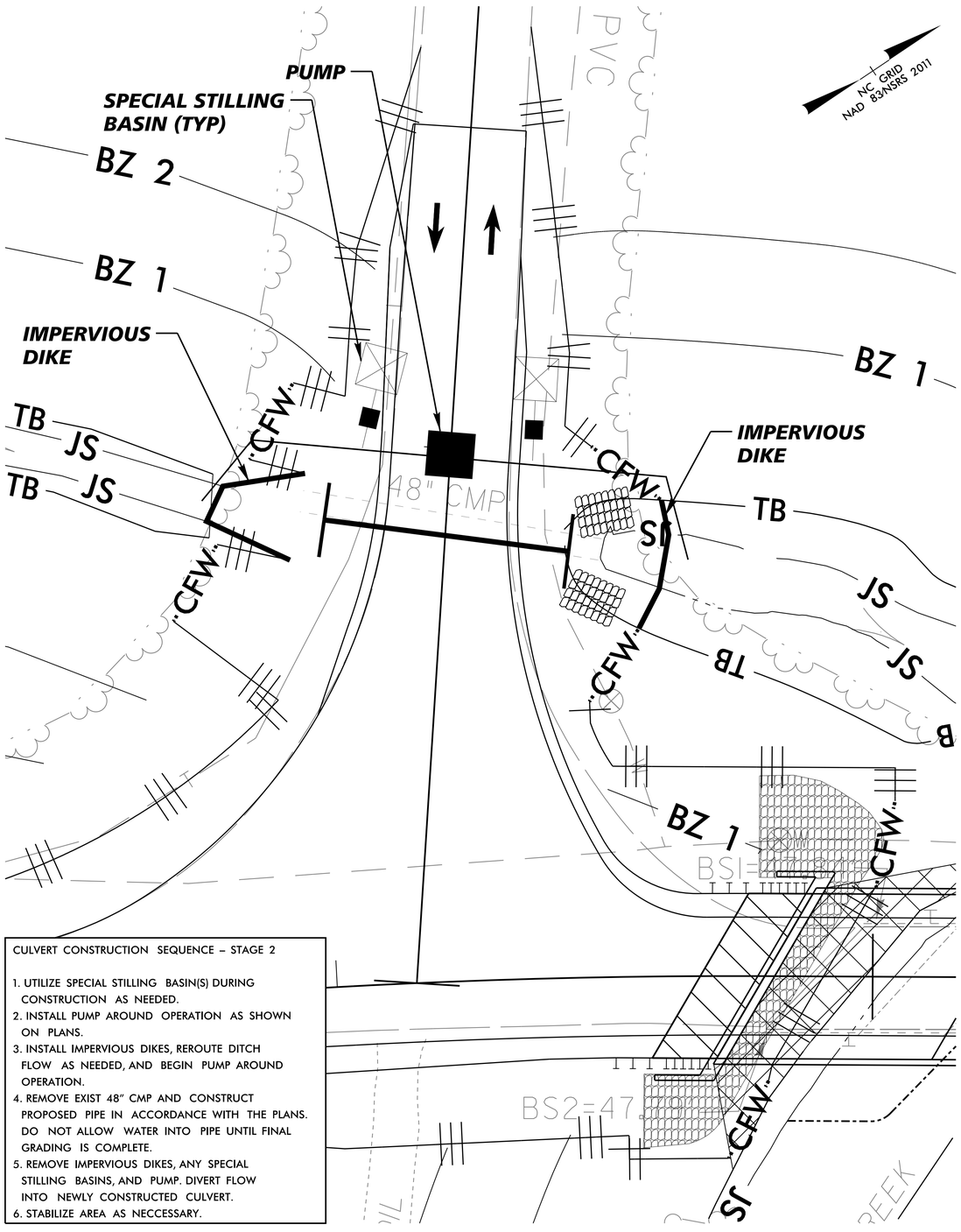
PROJECT REFERENCE NO.	SHEET NO.
SF-530049	EC-4
RW SHEET NO.	

REVISIONS



CULVERT CONSTRUCTION SEQUENCE – STAGE 1

1. MAINTAIN EROSION CONTROL MEASURED FROM CLEARING AND GRUBBING PHASE
2. UTILIZE SPECIAL STILLING BASIN(S) DURING CONSTRUCTION AS NEEDED.



CULVERT CONSTRUCTION SEQUENCE – STAGE 2

1. UTILIZE SPECIAL STILLING BASIN(S) DURING CONSTRUCTION AS NEEDED.
2. INSTALL PUMP AROUND OPERATION AS SHOWN ON PLANS.
3. INSTALL IMPERVIOUS DIKES, REROUTE DITCH FLOW AS NEEDED, AND BEGIN PUMP AROUND OPERATION.
4. REMOVE EXIST 48" CMP AND CONSTRUCT PROPOSED PIPE IN ACCORDANCE WITH THE PLANS. DO NOT ALLOW WATER INTO PIPE UNTIL FINAL GRADING IS COMPLETE.
5. REMOVE IMPERVIOUS DIKES, ANY SPECIAL STILLING BASINS, AND PUMP. DIVERT FLOW INTO NEWLY CONSTRUCTED CULVERT.
6. STABILIZE AREA AS NECCESSARY.

3/13/2018 K:\RAL_Roadway\011036378 - Bridge49\Roadway\Proj\011036378_rdy_ero_psh_4.dgn

EROSION CONTROL PLAN

Kimley»Horn ©2017
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	EC-5
R/W SHEET NO.	

REVISIONS

-Y1- POT Sta. 13+25.00

-Y1- BULLTOWN RD (SR 1318)

SR 1318 BULLTOWN RD, 18' BST

EXIST R/W

60.00'

(1) WOODS HOG FARM INC.
DB 303 PG 98
MB 4 PG 141
PC 13 PG 101

(2) HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32

(4) BOBBY G. HERRING, et ux
DB 1284 PG 606
PC 7 PG 35

(6) KEVIN P. HATCH
DB 490 PG 367
PC 10 PG 376

10 15 20

N 63°10'26" W 464.40'

S 18°29'12" E 150.01'

N 29°56'05" E 69.04'

N 52°29'29" W 83.52'

N 75°16'11" E 176.36'

N 34°17'21" W 103.42'

N 34°17'21" W 51.29'

N 05°51'47" W 108.78'

N 12.85

S 38°21'16" W 99.52'

N 30°18'03" W 96.27'

N 04°37'56" W 104.46'

N 34°12'34.7" E

-Y1- POT 11+60.00
END CONSTRUCTION
N 52° 29' 29.3" W

GRADE TO DRAIN
72" CAAP (BURIED 1')
CLASS I RIP RAP (BANKS ONLY)
EST 25 TONS
EST 30 SY GFD

INSTALL ALUMINUM HEADWALL (US & DS)

-L- PT Sta. 14+82.42

CONCRETE WASHOUT STRUCTURE

-L- POT 17+50.00
END PROJECT 17BP.2.R.84
END CONSTRUCTION

-L- POT 12+65.00
BEGIN PROJECT 17BP.2.R.84
BEGIN CONSTRUCTION

-L- PC Sta. 19+12.52

NCDOT GPS BL-3
-L- STA 20+84.69
OFF 18.68' LT

-L- PT Sta. 21+15.24

-L- POT Sta. 10+00.00

-L- BEAR CREEK RD (SR 1311)
N 30° 50' 10.7" E

SR 1311 BEAR CREEK RD, 18' BST

4" PVC

15" RCP

15" RCP-IV

EL=+83.08
39' LT

INV=39.32

INV=39.00

CONCRETE WASHOUT STRUCTURE

RETAIN

-L- POT Sta.13+66.26 =
-DI- POT Sta. 10+00.00
SEE DRIVEWAY DETAIL, SHEET 2A-2

S 79°44'43" E 298.58'

-L- PC Sta. 14+02.93

-L- POC Sta.14+14.88 =
-Y1- POT Sta. 10+00.00

-BL- 1
-L- STA 10+23.89
OFF 13.91' RT

-BL- 2
-L- STA 14+52.85
OFF 13.43' RT

PROPERTY LINE ALONG BEAR CREEK

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GFD

INSTALL TURBIDITY CURTAIN (ANCHOR AS NEEDED)
SEE DETAIL, SHEET EC-7

NOTE: BRIDGE NO. 49 HAS WOODEN DECK, SEAT, HEADWALLS, WING WALLS, GUARDRAILS AND PILES.

(3) HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32

S 79°44'43" E 22.75'

DEWEY L. PELLETIER, et ux
DB 1519 PG 780
PC 11 PG 63

DEWEY L. PELLETIER, et ux
DB 938 PG 619

N 64°03'49" W 330.45'

N 29°57'18" E 216.67'

(5) KELLEY M. KINCAID
DB 1093 PG 540
PC 4 PG 345

WOODED

EXISTING R/W

EIP

PK

PUE

NC GRID
NAD 83/NSRS 2011

WETLANDS

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

NOTE: UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE

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.

BRIDGE APPROACH SLAB

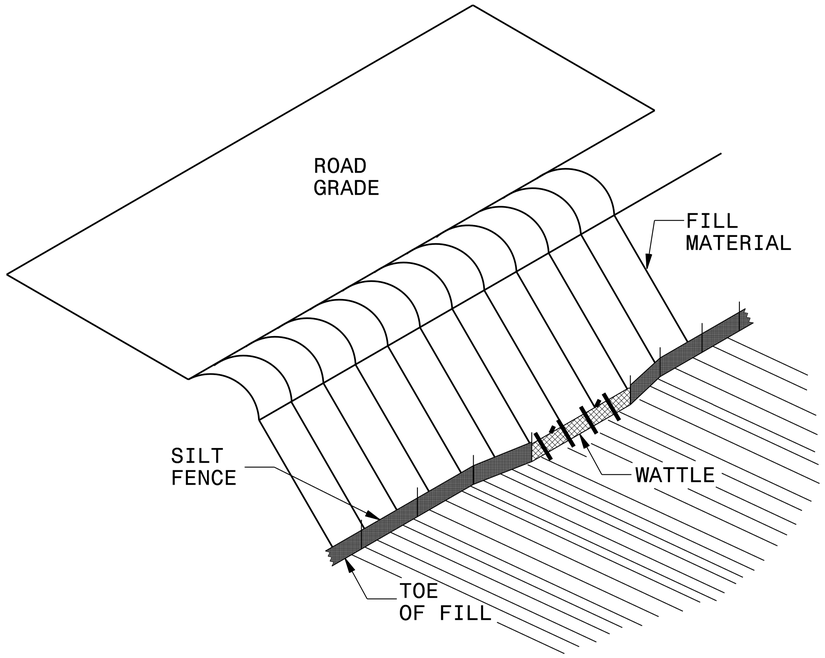
EXIST RDWY. FILL EXCAVATION

CLASS II RIP RAP

3/13/2018 K:\RAL_Roadway\011036378 - Bridge#49\Roadway\Pro\011036378_rdy_ero_psh_5.dgn

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	EC-6
R/W SHEET NO.	

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW

NOTES:

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

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

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

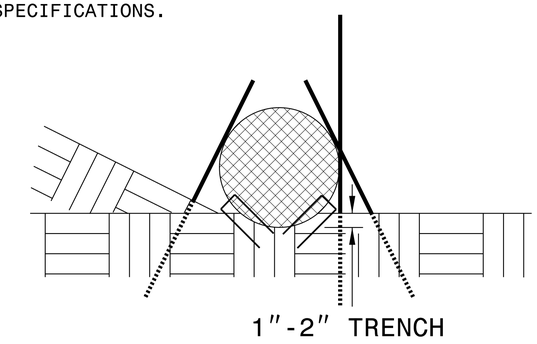
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

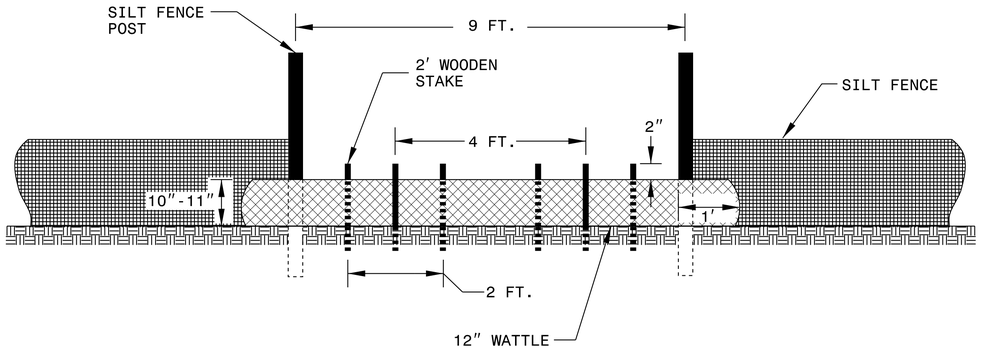
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

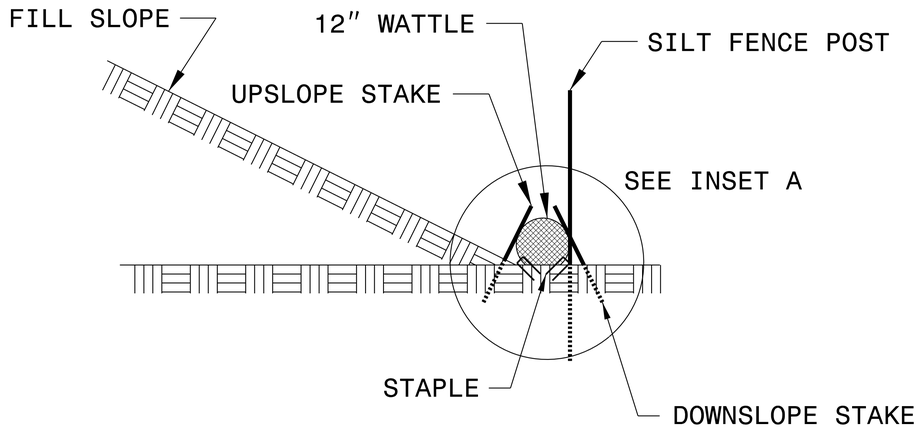
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





VIEW FROM SLOPE



SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	EC-7

FLOATING TURBIDITY CURTAIN

USE THIS DEVICE FOR CONSTRUCTION OF THE PROPOSED BULKHEADS WITHIN THE EXISTING WATERWAY.

MATERIAL AND INSTALLATION REFERENCES:

NCDOT - "BMP'S FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES"
(AUGUST 2003, PAGES 74 AND 75)
SECTION 5.2.5 "TURBIDITY CURTAIN"
(http://www.ncdot.org/doh/operations/BMP_manual/download/BMP_Manual.pdf)

NCDOT SPECIAL PROVISION -
"FLOATING TURBIDITY CURTAIN"
(http://www.ncdot.org/doh/operations/dp_chief_eng/roadside/soil_water/pdf/FloatingTurbidityCurtain.pdf)

FLOATING TURBIDITY CURTAIN:

Description
This work consists of furnishing a Floating Turbidity Curtain to deter silt suspension and movement of silt particles during construction. The floating turbidity curtain shall be constructed at locations as directed.

Materials
The curtain material shall be made of a tightly woven nylon, plastic or other nondeteriorating material meeting the following specifications:

Property	Value
Grab tensile strength	*md-370 lbs *cd-250 lbs
Mullen burst stength	480 psi
Trapezoid tear strength	*md-100 lbs *cd-60 lbs
Apparent opening size	70 US standard sieve
Percent open area	4% permittivity 0.28 sec-1

*md - machine direction
*cd - cross machine direction

In the event that more than one width of fabric is required, a 6" overlap of the material shall also be required.
The curtain material shall be supported by a flotation material having over 29 lbs/ft buoyancy. The floating curtain shall have a 5/16" galvanized chain as ballast and dual 5/16" galvanized wire ropes with a heavy vinyl coating as load lines.

Construction Methods
The Contractor shall maintain the Floating Turbidity Curtain in a satisfactory condition until its removal is requested by the Engineer. The curtain shall extend to the bottom of the jurisdictional resource. Anchor the curtain according to manufacturer recommendations.

Measurement and Payment
Floating Turbidity Curtain will be measured and paid for as the actual number of square yards of curtain furnished as specified and accepted. Such price and payment will be full compensation for the work as described in this section including but not limited to furnishing all materials, tools, equipment, and all incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Floating Turbidity Curtain	Square Yard

5.2.5 Turbidity Curtain

Purpose

Used as instream erosion control filtration device to isolate the streambank work from the normal flow of the stream. This device is normally used in open waters for containment in work zones. May also be used across channels with very low flow for short-term work when anchored properly.

Figure 33. Turbidity Curtain

Conditions Where Practice Applies

- ✓ When performing work on a stream bank in a small localized area.
- ✓ When the repair or construction activities will not require an extended period of time to complete.

Conditions Where Practice Does Not Apply

- ✓ Across flowing streams. Turbidity curtains are not designed as prefabricated dams.

Construction

The curtain should be made of a tightly woven nylon, plastic or other non-deteriorating material. The material shall meet the following specifications:

Property	Value
Grab tensile strength	*md-370 lbs. (1.65 Kn) *cd-250 lbs. (1.11 Kn)
Mullen burst strength	480 psi (3307 kpa)
Trapezoid tear strength	*md-100 lbs. (0.45 Kn) *cd-60 lbs. (0.27 Kn)
Apparent opening size	70 us standard sieve (0.210 mm)
Percent open area	4% permittivity 0.28 sec-1

*md – machine direction
*cd – cross machine direction

- A flotation material with over 29 lbs./ft. (43 kg/m) buoyancy shall support the curtain material. A 5/16 inch (7.8 mm) galvanized chain shall act as ballast for the floating curtain. Dual 5/16 inch (7.8 mm) galvanized wire ropes with a heavy vinyl coating shall be used as the load lines.

Maintenance

- Inspect the curtain, flotation and ballast to ensure the work area is securely partitioned from the stream flow.
- Remove accumulated sediment and debris.

Typical Problems

- Does not permanently remove sediment.
- Improper anchoring of curtain on channel bottom.
- Tidal flows requiring frequent repositioning

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	RF-1

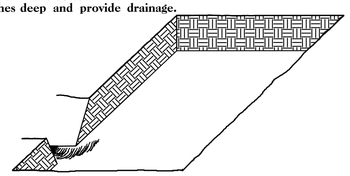
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-530049	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

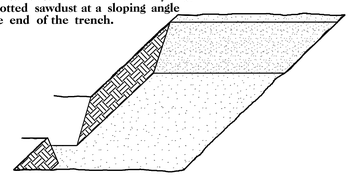
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

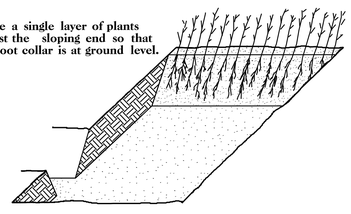
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



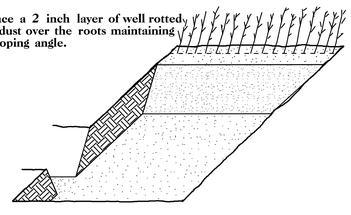
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

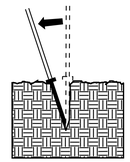


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

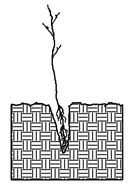


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

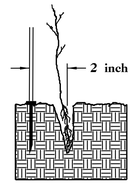
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



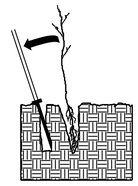
1. Insert planting bar as shown and pull handle toward planter.



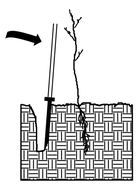
2. Remove planting bar and place seedling at correct depth.



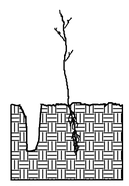
3. Insert planting bar 2 inches toward planter from seedling.



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



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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

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

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

REFORESTATION

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

REFORESTATION

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

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

REFORESTATION DETAIL SHEET

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

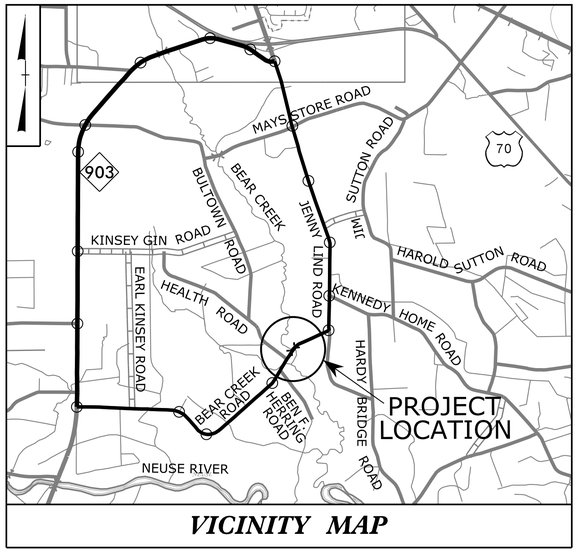
K:\RAL_Roadway\0II036378 - Bridge#9\Roadway\Pro\0II036378_rdy_ero_psh_details.dgn

3/13/2018

PROJECT: SF-530049

CONTRACT: DB00412

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



VICINITY MAP

75% PLANS

OFF SITE DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LENOIR COUNTY

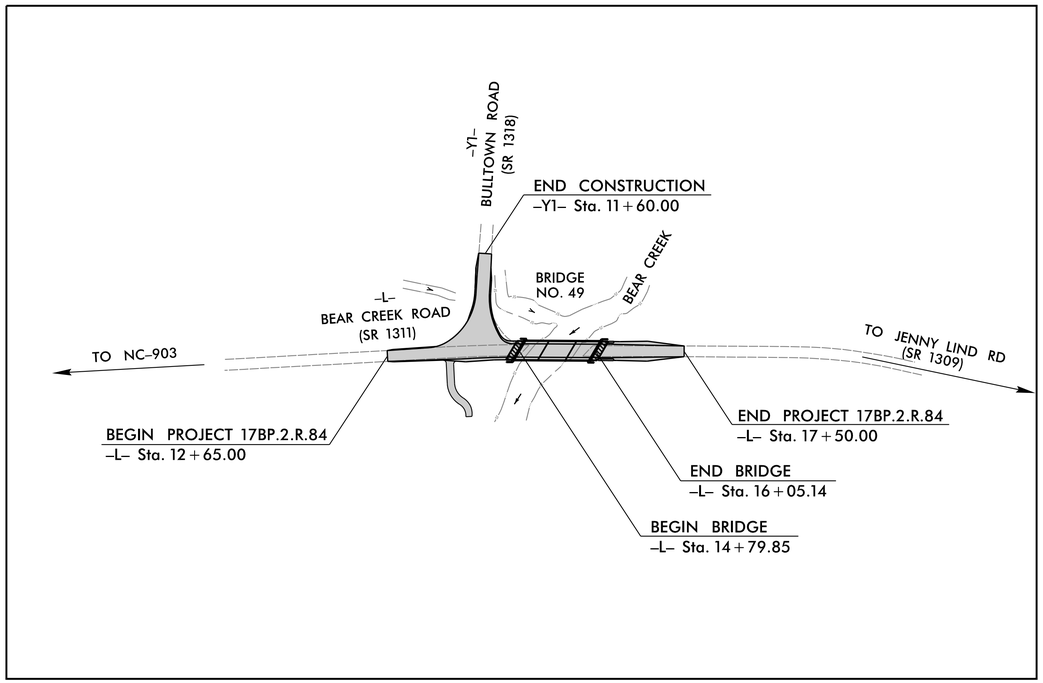
STATE	STATE PROJECT REFERENCE NO.	SHEET	TOTAL SHEETS
N.C.	SF-530049	UO-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.2.R.84		PE

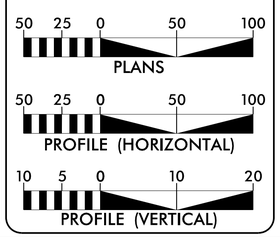
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

LOCATION: ***BRIDGE NO. 49 OVER BEAR CREEK ON SR 1311 (BEAR CREEK ROAD)***

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



GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.	*DESRIPTION*
UO–1	*TITLE SHEET*
UO–2	*UTILITY BY OTHER PLAN SHEETS*

UTILITY OWNERS ON PROJECT

(1) TRI–COUNTY EMC (POWER)
(2) NORTH LENOIR WATER CORPORATION (WATER)
(3) CENTURY LINK (PHONE)

UTILITY PLANS BY:

NCDOT PROJECT ENGINEER:
HEATHER C. LANE, P.E.
PREPARED FOR:
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION BRIDGE PROGRAM
DIVISION 2

K:\RAL_Roadway\UII036378 - Bridge#49\Roadway\Pro\UII036378_rdy_uo-1.dgn
3/13/2018

CONTACT INFORMATION FOR UTILITIES

POWER: TRI– COUNTY EMC: TONY GRANTHAM 919–587–9600 TONY.GRANTHAM@TCEMC.COM
PHONE: CENTURY LINK: ALONZA MITCHELL 252–256–9633 ALONZA.MITCHELL@CENTURYLINK.COM
WATER: NORTH LENOIR WATER CORPORATION: JEFF HARDISON 252–560–1492 JEFFNLWATER@EMBARQMAIL.COM

Kimley»Horn ©2017
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
SF-530049	U0-2

REVISIONS

HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32

BOBBY G. HERRING, et ux
DB 1284 PG 606
PC 7 PG 35

KEVIN P. HATCH
DB 490 PG 367
PC 10 PG 376

WOODS HOG FARM INC.
DB 303 PG 98
MB 4 PG 141
PC 13 PG 101

-Y1- BULLTOWN RD (SR 1318)

NC GRID
NAD 83/NSRS 2011

CENTURY LINK TO INSTALL SLACK IN LINE. COORDINATE WITH CONTRACTOR TO RELOCATE LINE ON TOP OF PROPOSED 72" CAP DRAINAGE STRUCTURE

TCEMC TO INSTALL NEW POLE

NLWC TO RELOCATE 4" PVC WATERLINE

NLWC TO RELOCATE 4" PVC WATERLINE

4" PVC

EXISTING R/W MONUMENT EL 14+83.08 39' LT

-BL- 1
-L- STA 10+23.89
OFF 13.91' RT

-BL- 2
-L- STA 14+52.85
OFF 13.43' RT

BM #1
ELEV = 45.24'
N 547446 E 2362907
-L- STATION 13+61.17
137.71' RIGHT
RR SPIKE SET IN
24" HARDWOOD

NCDOT GPS BL-3
-L- STA 20+84.69
OFF 18.68' LT

HIGH WATER LEVEL DURING HURRICANE MATTHEW PER PROPERTY OWNER ELEVATION=55.37'

BEAR CREEK

PROPERTY LINE ALONG BEAR CREEK

CENTURY LINK TO RELOCATE UNDERGROUND TELEPHONE LINE

TCEMC TO RELOCATE POLE
CENTURY LINK TO REMAIN ON RELOCATED POLE AND MAINTAIN AERIAL CROSSING OF BEAR CREEK, INSTALL NEW PEDESTAL

NOTE: BRIDGE NO. 49 HAS WOODEN DECK, SEAT, HEADWALLS, WING WALLS, GUARDRAILS AND PILES.

DEWEY L. PELLETIER, et ux
DB 1519 PG 780
PC 11 PG 63

DEWEY L. PELLETIER, et ux
DB 938 PG 619

HENRY T. HEATY, et ux
DB 572 PG 303
MB 12 PG 32

KELLEY M. KINCAID
DB 1093 PG 540
PC 4 PG 345

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 548121.118(ft) EASTING: 2363190.555(ft) ELEVATION: 49.65(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987582
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

LEGEND

- EXISTING JOINT POWER AND TELEPHONE POLE
- EXISTING POWER POLE
- PROPOSED POWER POLE
- PROPOSED TELEPHONE PEDESTAL
- PROPOSED O/H POWER LINE
- EXISTING U/G TELEPHONE LINE
- PROPOSED U/G TELEPHONE LINE
- EXISTING U/G WATERLINE
- PROPOSED U/G WATERLINE

NOTES:

– ACCESS AND/OR CONSTRUCTION EASEMENTS FOR TRI-COUNTY EMC FACILITIES HAVE BEEN OBTAINED BY TRI-COUNTY EMC

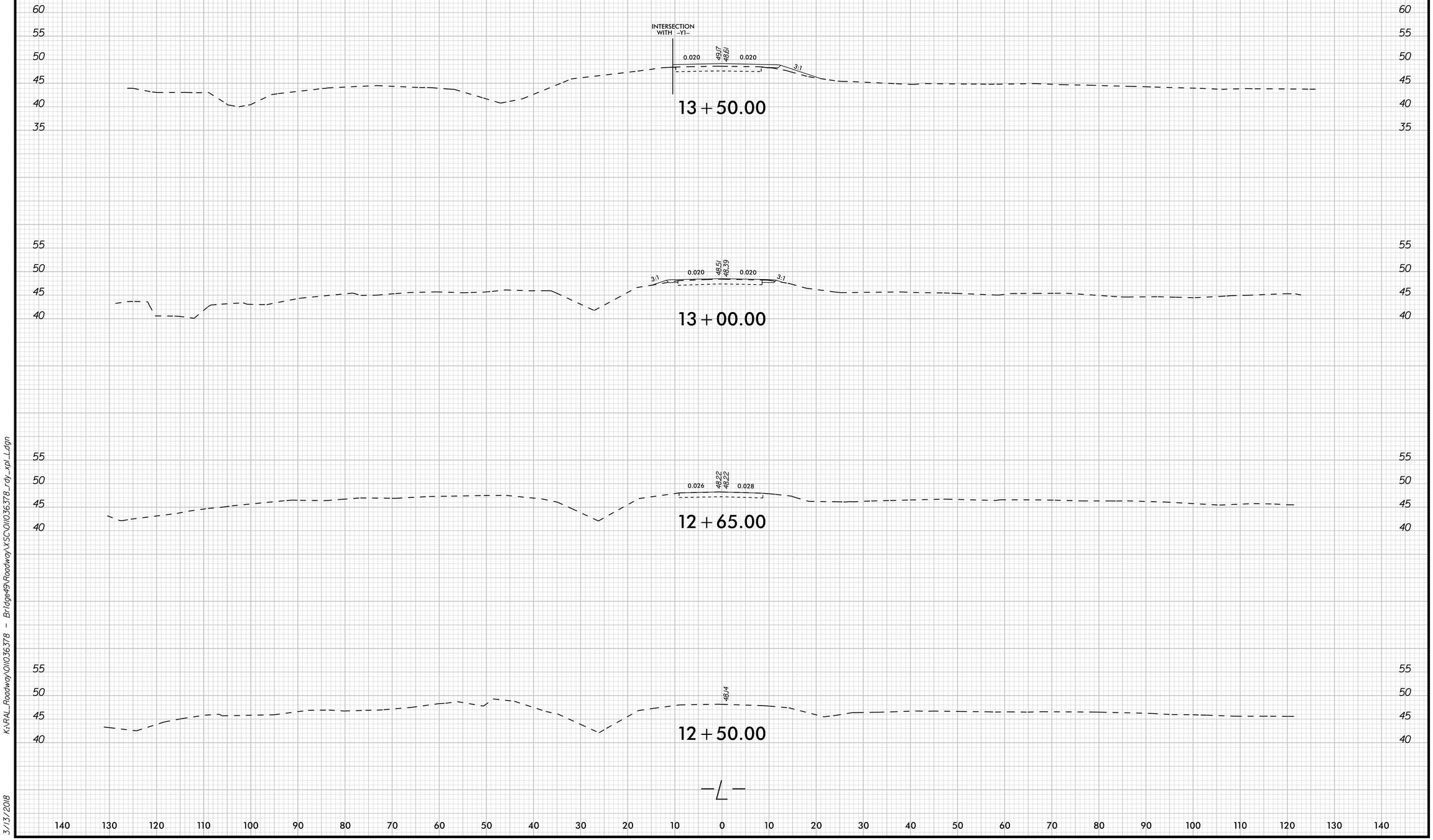
3/13/2018 K:\RAL_Roadway\0110363?8 - Bridge#49\Roadway\Pro\0110363?8_rdy_u0-2.dgn

PROJ. REFERENCE NO.	SHEET NO.
SF-530049	X-1

SF-530049 - BRIDGE 49 REPLACEMENT
CROSS SECTION INDEX

3/13/2018 K:\RAL_Roadway\DII\0036378 - Bridge#49\Roadway\XSC\DII0036378_rdy_xpl_Index.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	SF-530049	X-2



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3/13/2018

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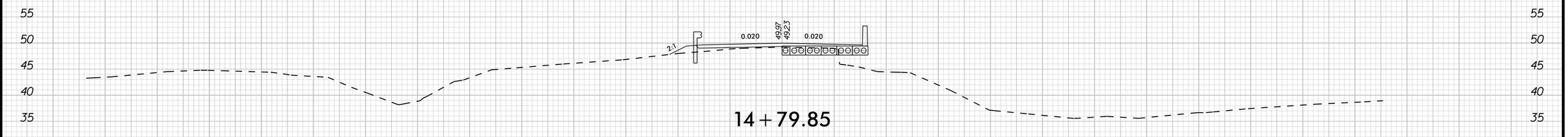
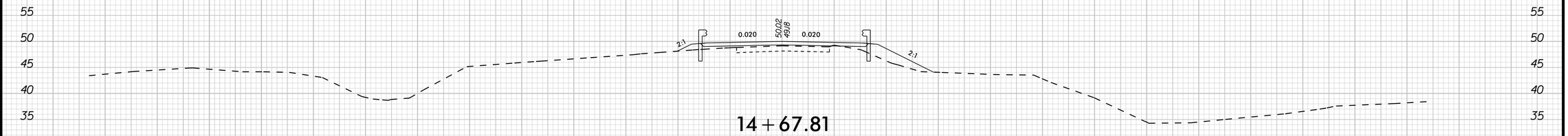
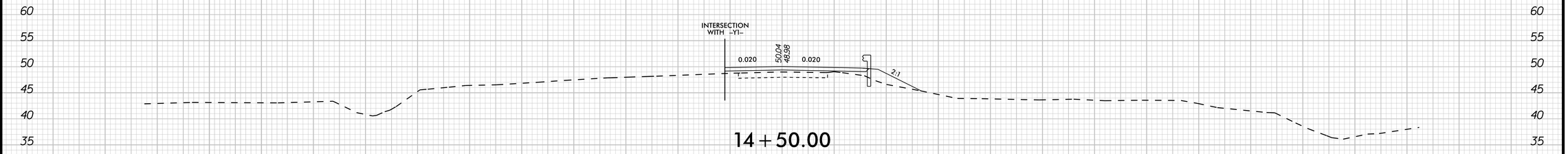
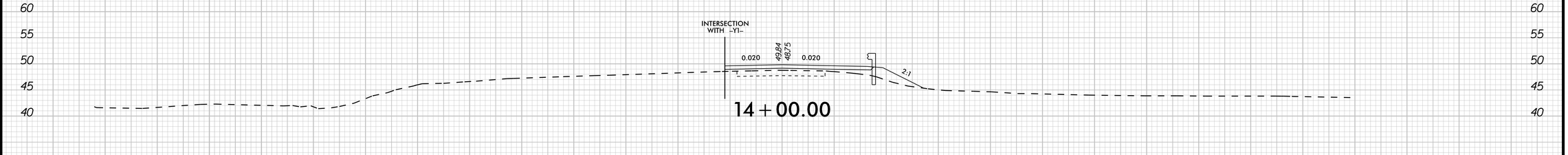
	SF-530049	X-3









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3/13/2018

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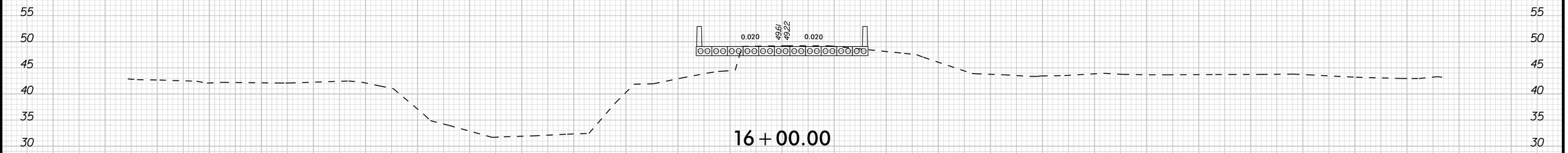
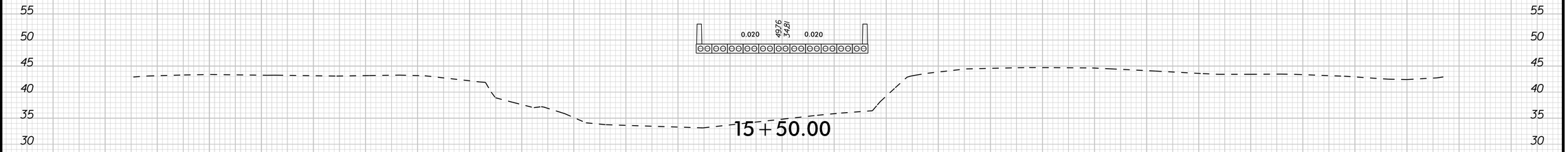
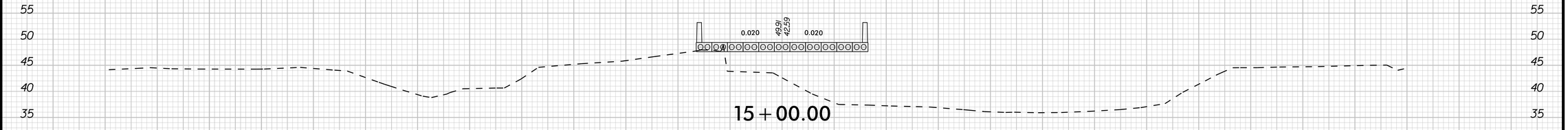
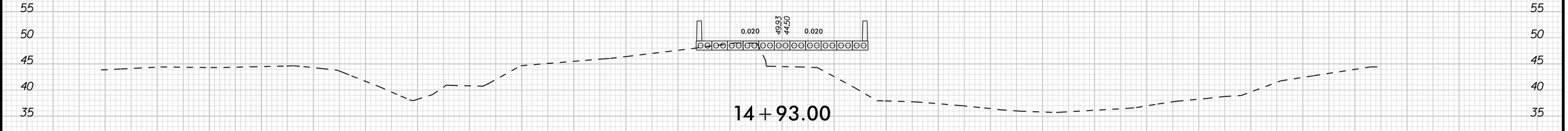
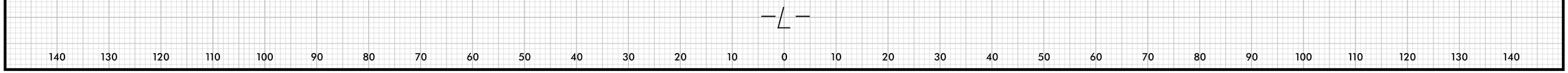
	SF-530049	X-4











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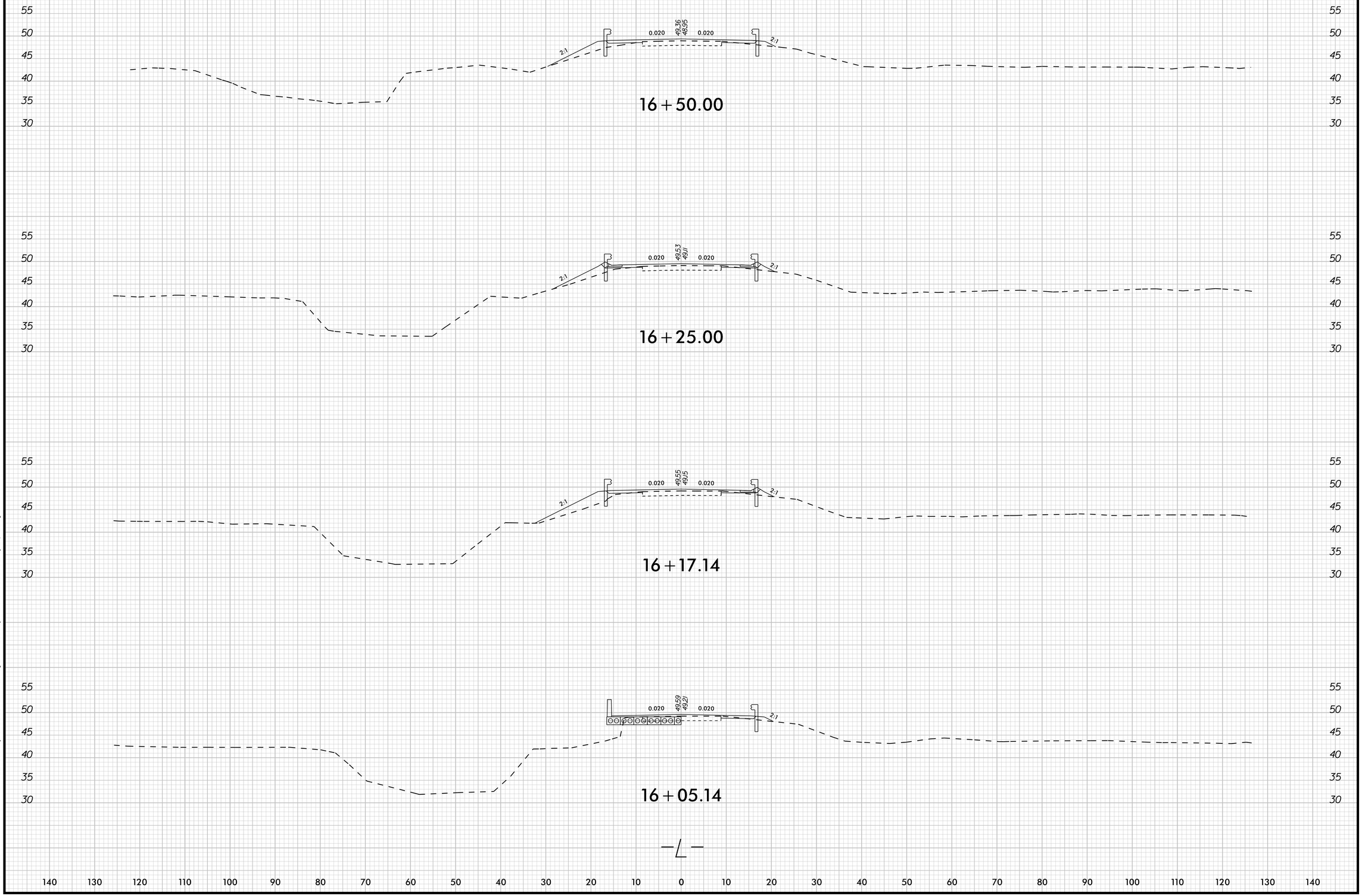
3/13/2018

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	SF-530049	X-5



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3/13/2018

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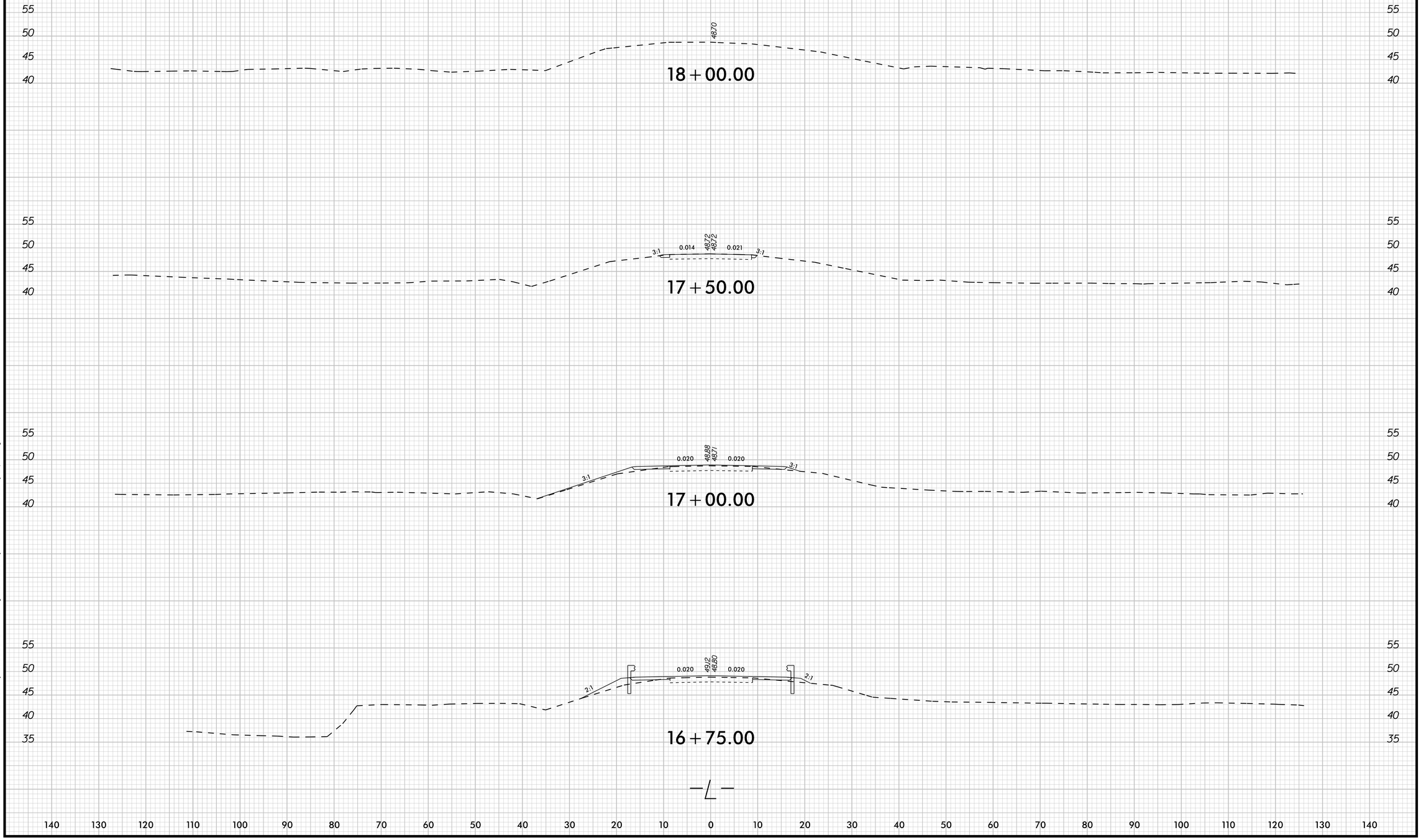
	SF-530049	X-6



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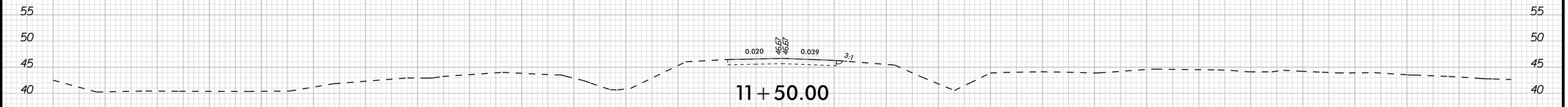
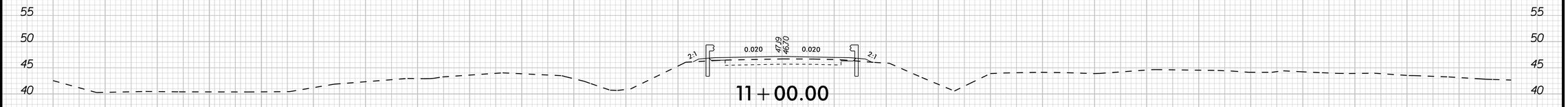
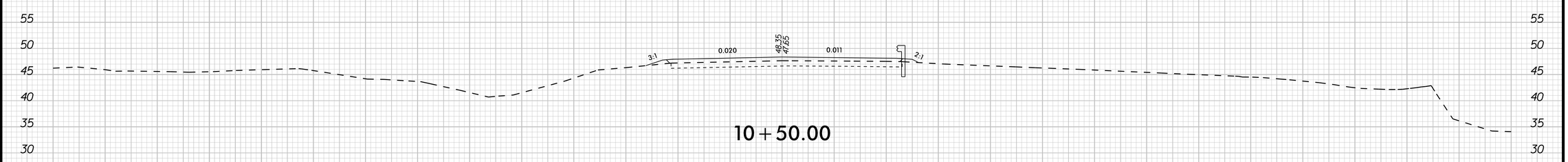
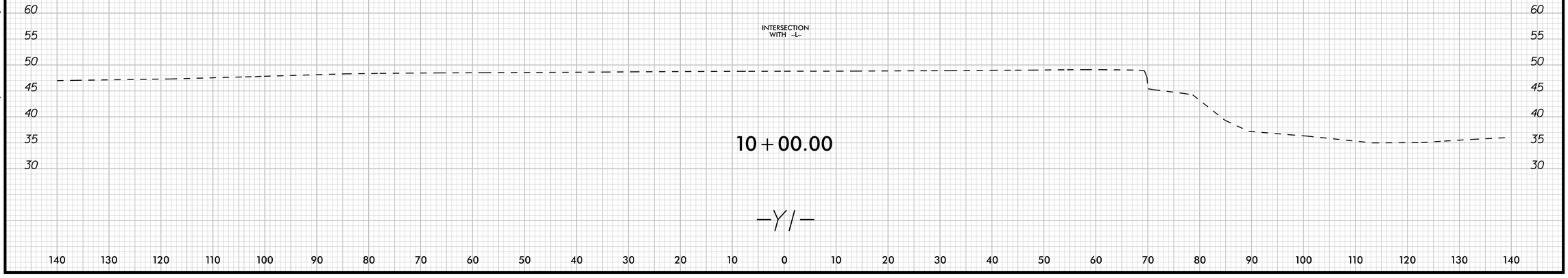
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	SF-530049	X-7









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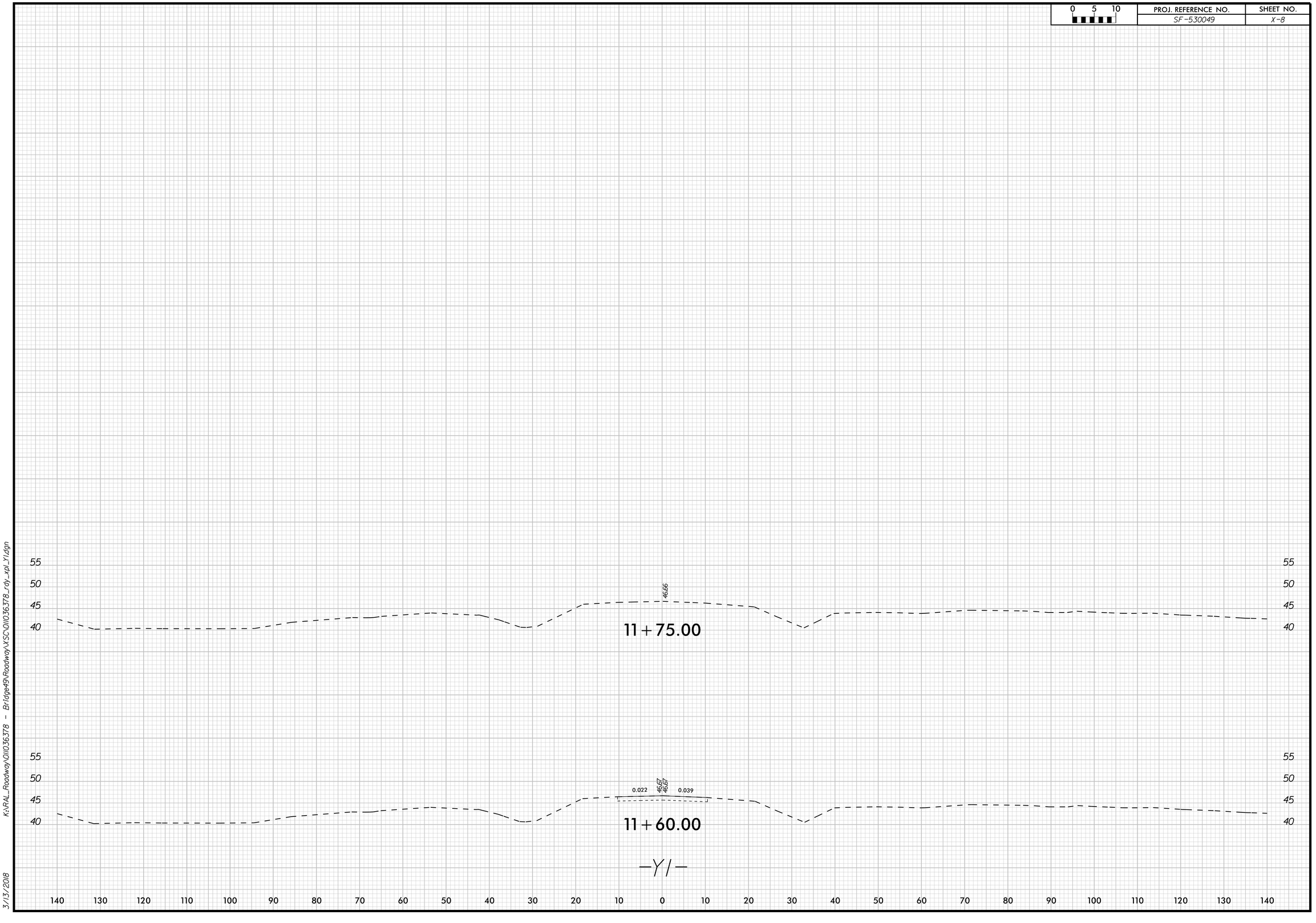
3/13/2018

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	SF-530049	X-8



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3/13/2018

15+00 16+00

(+)1.53000% (-)0.3000%

P.I. STA. = 14+15.00 -L-
EL. = 50.16'
V.C. = 90'

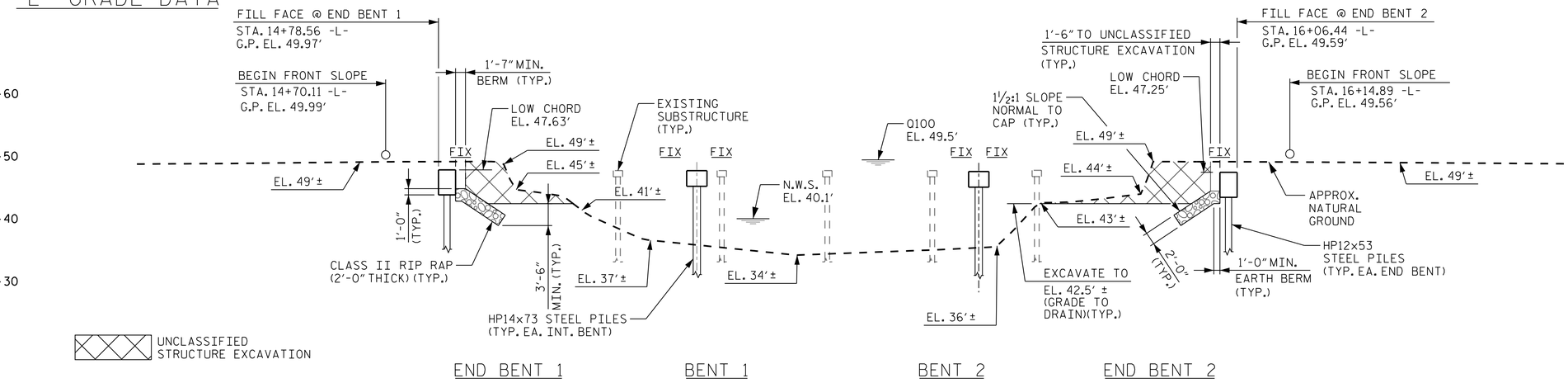
-L- GRADE DATA

(-)0.3000% (-)0.9538%

P.I. STA. = 16+35.00 -L-
EL. = 49.50'
V.C. = 30'

-L- GRADE DATA

SPAN A SPAN B SPAN C



SECTION ALONG -L-

SECTION AT END BENTS ARE AT RIGHT ANGLES

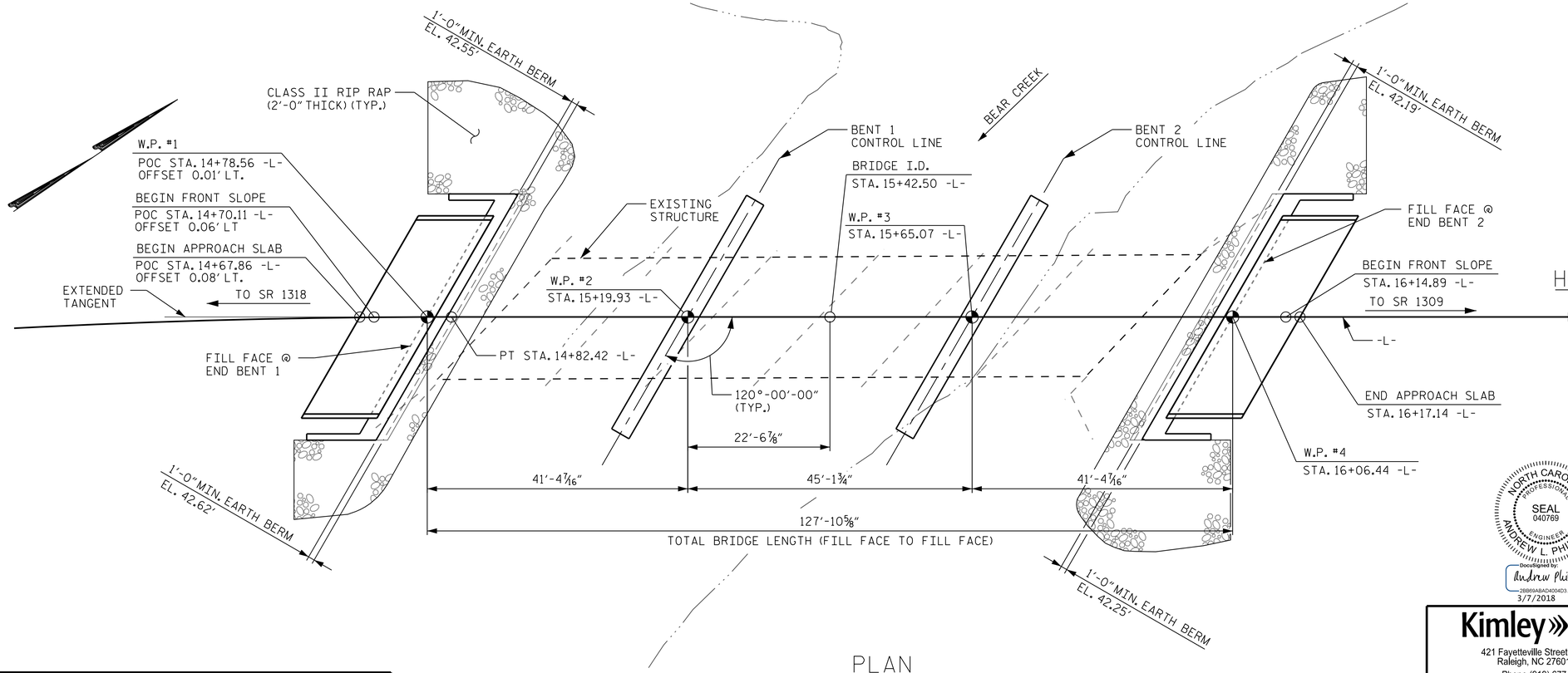
I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.

HYDRAULIC DATA

DESIGN DISCHARGE ----------2200 CFS
FREQUENCY OF DESIGN FLOOD -------10-YR.
DESIGN HIGH WATER ELEVATION-----47.3 FT.
DRAINAGE AREA ----------62.4 SQ. MI.
BASE DISCHARGE (Q100) ----------4400 CFS
BASE HIGH WATER ELEVATION ------49.5 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE ----------2500 CFS
FREQUENCY OF OVERTOPPING FLOOD --->10-YR.
OVERTOPPING FLOOD ELEVATION ------48.0 FT.
@ APPROX. STA. 11+35 @ ROAD CENTERLINE



PLAN

PIECES NOT SHOWN IN PLAN VIEW FOR CLARITY.

P.I. STA. 14+42.69 -L-
△ =3°22'24.0 " (RT)
D = 4°14'38.9"
L = 79.48'
T = 39.75'
R = 1,350.00'

HORIZONTAL CURVE DATA -L-

PROJECT NO. 17BP.2.R.84
LENOIR COUNTY
STATION: 15+42.50 -L-

SHEET 1 OF 2 REPLACES BRIDGE #049

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS
DocuSigned by: Andrew Phillips 2BB69ABAD4004D3...
3/7/2018

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421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

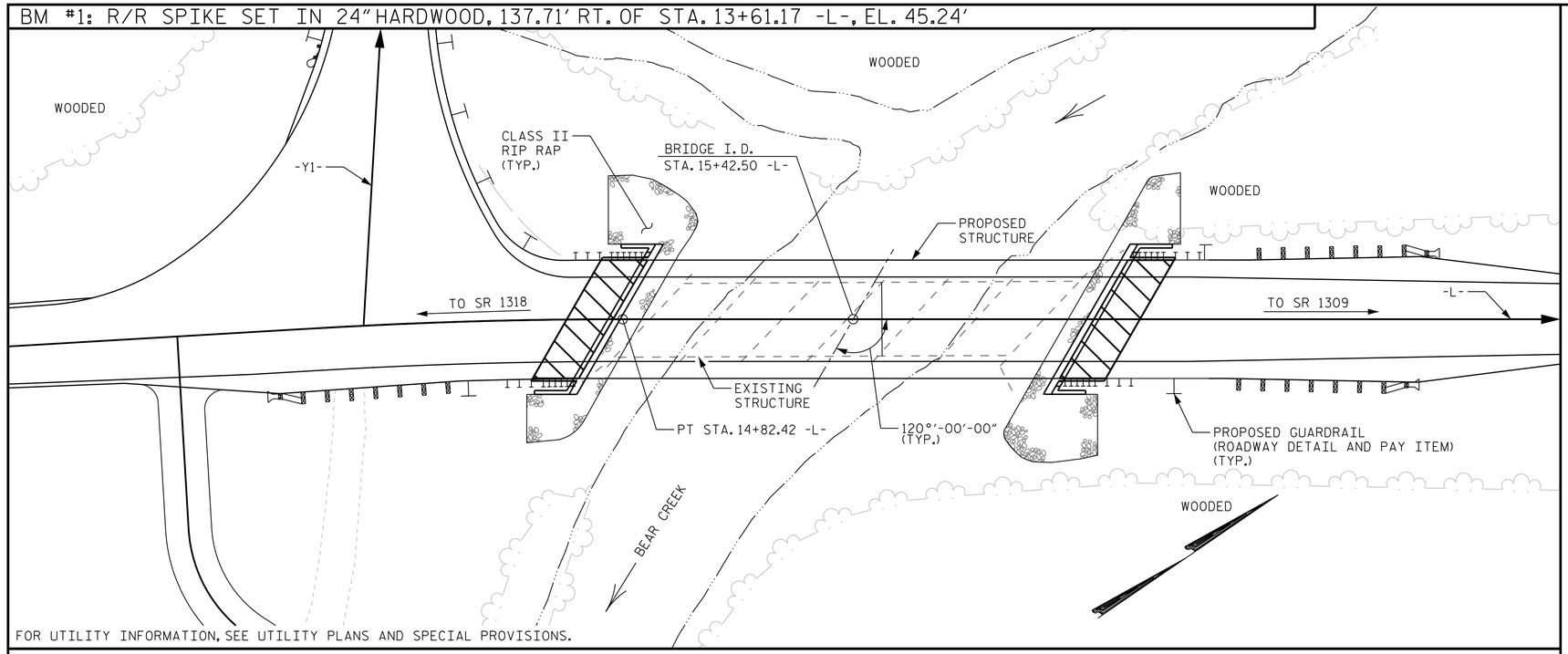
FOR BRIDGE OVER
BEAR CREEK
ON SR 1311 BETWEEN
SR 1318 AND SR 1309

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

DRAWN BY: J. I. KIMBLE DATE: 1/18
CHECKED BY: D.T. OVERBY DATE: 1/18
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 1/18

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

3/7/2018 K:\RDT_Structures_Bridge\NC\01103678 - Div 2 Bridge 49\Cad\Dgn\01-17BP.2.R.84_DIV02_G001_530049.dgn



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 GALVANIZED STEEL PILES
	LUMP SUM	LUMP SUM	EACH	LUMP SUM	CU.YDS.	LUMP SUM	LBS.	EACH	EACH
SUPERSTRUCTURE						LUMP SUM			
END BENT 1				LUMP SUM	24.1		2923	7	
BENT 1					12.9		2500		8
BENT 2					12.9		2500		8
END BENT 2				LUMP SUM	24.1		2923	7	
TOTAL	LUMP SUM	LUMP SUM	1	LUMP SUM	74.0	LUMP SUM	10846	14	16

TOTAL BILL OF MATERIAL

	HP 12 X 53 STEEL PILES		HP 14 X 73 GALVANIZED STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	NO.	LIN.FT.	NO.	LIN.FT.	EACH	LIN.FT.	TON	SQ.YD.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE						250.87			LUMP SUM	33	1375
END BENT 1	7	350			4		125	139			
BENT 1			8	400	4						
BENT 2			8	400	4						
END BENT 2	7	385			4		133	148			
TOTAL	14	735	16	800	16	250.87	258	287	LUMP SUM	33	1375

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE 65 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 110 TONS PER PILE.

PILES AT BENT NO. 1 AND BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE 100 TONS PER PILE.

DRIVE PILES AT BENT NO. 1 AND BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE. THIS DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG AND SCOUR.

INSTALL PILES AT BENT NO. 1 AND BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 9.0 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 AND BENT NO. 2 IS ELEVATION 29.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THE EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 17'-4", 1 SPAN @ 16'-4", 1 SPAN @ 17'-0", 2 SPANS @ 17'-1" AND 1 SPAN @ 17'-5" WITH A CLEAR ROADWAY WIDTH OF 19.17' ON TIMBER FLOOR ON TIMBER JOISTS WITH TIMBER CAPS ON TIMBER PILES AT END BENTS AND INTERIOR BENTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.

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.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. 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 SHOW ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THE MATERIAL SHOWN ON SHEET 1 OF 2 IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF APPROXIMATELY 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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.

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

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

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew Phillips 2BB69ABAD4004D3...

3/7/2018

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Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
BEAR CREEK
ON SR 1311 BETWEEN
SR 1318 AND SR 1309

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: J. I. KIMBLE DATE: 1/18
CHECKED BY: D.T. OVERBY DATE: 1/18
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 1/18

3/7/2018 K:\RDT_Structures_Bridge\NC\01I036378 - Div 2 Bridge 49\Cad\Dgn\02-17BP.2.R.84_DIV02.1.S03.530049.dgn

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	1.352	--	1.75	0.252	1.95	40'	EL	19.423	0.653	**1.35**	40'	EL	**7.769**	0.80	0.252	1.72	40'	EL	19.423	
		HL-93(Opr)	N/A	--	1.753	--	1.35	0.252	2.52	40'	EL	19.423	0.653	1.75	40'	EL	7.769	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.544	55.583	1.75	0.252	2.45	40'	EL	19.423	0.653	**1.54**	40'	EL	**7.769**	0.80	0.252	2.14	40'	EL	19.423	
		HS-20(Opr)	36.000	--	2.001	72.053	1.35	0.252	3.17	40'	EL	19.423	0.653	2	40'	EL	7.769	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.929	53.037	1.4	0.252	5.64	40'	EL	19.423	0.653	3.93	40'	EL	7.769	0.80	0.252	3.99	40'	EL	19.423	
		SNGARBS2	20.000	--	2.985	59.708	1.4	0.252	4.63	40'	EL	15.538	0.653	2.99	40'	EL	7.769	0.80	0.252	3.28	40'	EL	19.423	
		SNAGRIS2	22.000	--	2.852	62.746	1.4	0.252	4.53	40'	EL	15.538	0.653	2.85	40'	EL	7.769	0.80	0.252	3.23	40'	EL	15.538	
		SNCOTTS3	27.250	--	1.98	53.947	1.4	0.252	2.82	40'	EL	19.423	0.653	1.98	40'	EL	7.769	0.80	0.252	1.99	40'	EL	19.423	
		SNAGGRS4	34.925	--	1.782	62.222	1.4	0.252	2.54	40'	EL	19.423	0.653	1.78	40'	EL	7.769	0.80	0.252	1.79	40'	EL	19.423	
		SNS5A	35.550	--	1.746	62.059	1.4	0.252	2.47	40'	EL	19.423	0.653	1.89	40'	EL	7.769	0.80	0.252	1.75	40'	EL	19.423	
		SNS6A	39.950	--	1.662	66.381	1.4	0.252	2.35	40'	EL	19.423	0.653	1.79	40'	EL	7.769	0.80	0.252	1.66	40'	EL	19.423	
		SNS7B	42.000	--	1.585	66.556	1.4	0.252	2.24	40'	EL	19.423	0.653	1.86	40'	EL	7.769	0.80	0.252	1.58	40'	EL	19.423	
	TTST	TNAGRIT3	33.000	--	2.045	67.476	1.4	0.252	2.89	40'	EL	19.423	0.653	2.07	40'	EL	7.769	0.80	0.252	2.04	40'	EL	19.423	
		TNT4A	33.075	--	1.951	64.52	1.4	0.252	2.93	40'	EL	19.423	0.653	1.95	40'	EL	7.769	0.80	0.252	2.07	40'	EL	19.423	
		TNT6A	41.600	--	1.757	73.106	1.4	0.252	2.49	40'	EL	19.423	0.653	1.91	40'	EL	7.769	0.80	0.252	1.76	40'	EL	19.423	
		TNT7A	42.000	--	1.795	75.386	1.4	0.252	2.55	40'	EL	19.423	0.653	1.79	40'	EL	7.769	0.80	0.252	1.80	40'	EL	19.423	
		TNT7B	42.000	--	1.729	72.638	1.4	0.252	2.61	40'	EL	19.423	0.653	1.73	40'	EL	7.769	0.80	0.252	1.84	40'	EL	19.423	
		TNAGRIT4	43.000	--	1.661	71.441	1.4	0.252	2.53	40'	EL	15.538	0.653	1.66	40'	EL	7.769	0.80	0.252	1.79	40'	EL	19.423	
		TNAGT5A	45.000	--	1.659	74.644	1.4	0.252	2.35	40'	EL	19.423	0.653	1.77	40'	EL	7.769	0.80	0.252	1.66	40'	EL	19.423	
		TNAGT5B	45.000	3	1.568	70.561	1.4	0.252	2.28	40'	EL	19.423	0.653	**1.57**	40'	EL	**7.769**	0.80	0.252	1.61	40'	EL	19.423	

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' OR 'C'

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

Documents signed by: Andrew Phillips 2BB69ABAD4004D3... 3/7/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 40' CORED SLAB UNIT 120° SKEW (NON-INTERSTATE TRAFFIC)

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

ASSEMBLED BY :	J.J. KIMBLE	DATE :	1/18
CHECKED BY :	A.L. PHILLIPS	DATE :	1/18
DRAWN BY :	CVC	6/10	
CHECKED BY :	DNS	6/10	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STD. NO. 21LRFR1_60&120S_40L

3/7/2018

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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	1.179	--	1.75	0.251	1.48	45'	EL	21.923	0.654	**1.18**	45'	EL	**8.769**	0.80	0.251	1.20	45'	EL	21.923	
		HL-93(Opr)	N/A	--	1.529	--	1.35	0.251	1.92	45'	EL	21.923	0.654	1.53	45'	EL	8.769	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.36	48.973	1.75	0.251	1.82	45'	EL	21.923	0.654	**1.36**	45'	EL	**8.769**	0.80	0.251	1.47	45'	EL	21.923	
		HS-20(Opr)	36.000	--	1.763	63.484	1.35	0.251	2.36	45'	EL	21.923	0.654	1.76	45'	EL	8.769	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.873	38.783	1.4	0.251	4.44	45'	EL	21.923	0.654	3.59	45'	EL	8.769	0.80	0.251	2.87	45'	EL	21.923	
		SNGARBS2	20.000	--	2.321	46.427	1.4	0.251	3.59	45'	EL	21.923	0.654	2.69	45'	EL	8.769	0.80	0.251	2.32	45'	EL	21.923	
		SNAGRIS2	22.000	--	2.277	50.09	1.4	0.251	3.48	45'	EL	17.538	0.654	2.55	45'	EL	8.769	0.80	0.251	2.28	45'	EL	21.923	
		SNCOTTS3	27.250	--	1.434	39.088	1.4	0.251	2.22	45'	EL	21.923	0.654	1.81	45'	EL	8.769	0.80	0.251	1.43	45'	EL	21.923	
		SNAGGRS4	34.925	--	1.266	44.231	1.4	0.251	1.96	45'	EL	21.923	0.654	1.6	45'	EL	8.769	0.80	0.251	1.27	45'	EL	21.923	
		SNS5A	35.550	--	1.234	43.856	1.4	0.251	1.91	45'	EL	21.923	0.654	1.67	45'	EL	8.769	0.80	0.251	1.23	45'	EL	21.923	
		SNS6A	39.950	--	1.162	46.437	1.4	0.251	1.8	45'	EL	21.923	0.654	1.57	45'	EL	8.769	0.80	0.251	1.16	45'	EL	21.923	
		SNS7B	42.000	3	1.108	46.54	1.4	0.251	1.71	45'	EL	21.923	0.654	1.61	45'	EL	8.769	0.80	0.251	**1.11**	45'	EL	**21.923**	
	TTST	TNAGRIT3	33.000	--	1.427	47.083	1.4	0.251	2.21	45'	EL	21.923	0.654	1.83	45'	EL	8.769	0.80	0.251	1.43	45'	EL	21.923	
		TNT4A	33.075	--	1.442	47.687	1.4	0.251	2.23	45'	EL	21.923	0.654	1.74	45'	EL	8.769	0.80	0.251	1.44	45'	EL	21.923	
		TNT6A	41.600	--	1.21	50.352	1.4	0.251	1.87	45'	EL	21.923	0.654	1.71	45'	EL	8.769	0.80	0.251	1.21	45'	EL	21.923	
		TNT7A	42.000	--	1.234	51.826	1.4	0.251	1.91	45'	EL	21.923	0.654	1.59	45'	EL	8.769	0.80	0.251	1.23	45'	EL	21.923	
		TNT7B	42.000	--	1.285	53.952	1.4	0.251	1.99	45'	EL	21.923	0.654	1.52	45'	EL	8.769	0.80	0.251	1.28	45'	EL	21.923	
		TNAGRIT4	43.000	--	1.224	52.616	1.4	0.251	1.89	45'	EL	21.923	0.654	1.46	45'	EL	8.769	0.80	0.251	1.22	45'	EL	21.923	
		TNAGT5A	45.000	--	1.138	51.23	1.4	0.251	1.76	45'	EL	21.923	0.654	1.52	45'	EL	8.769	0.80	0.251	1.14	45'	EL	21.923	
		TNAGT5B	45.000	--	1.111	50.015	1.4	0.251	1.72	45'	EL	21.923	0.654	1.38	45'	EL	8.769	0.80	0.251	1.11	45'	EL	21.923	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

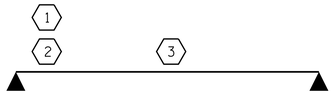
(2) DESIGN LOAD RATING (HS-20)

(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 'B'

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

Documents signed by: Andrew Phillips 2BB69ABAD4004D3... 3/7/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 45' CORED SLAB UNIT 120° SKEW

(NON-INTERSTATE TRAFFIC)

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

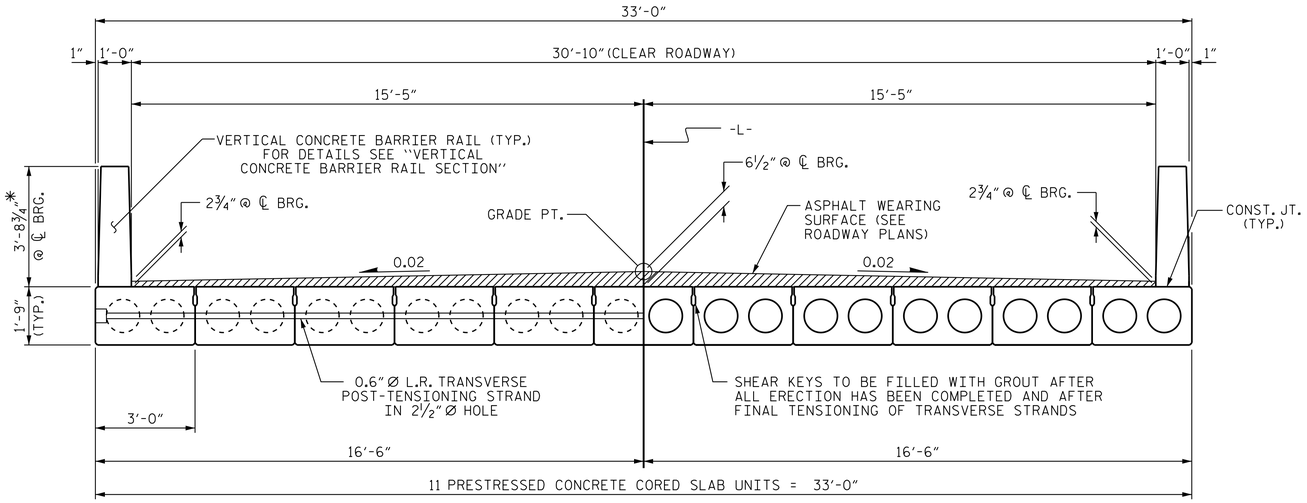
ASSEMBLED BY :	J.J. KIMBLE	DATE :	1/18
CHECKED BY :	A.L. PHILLIPS	DATE :	1/18
DRAWN BY :	CVC	6/10	
CHECKED BY :	DNS	6/10	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

K:\R01_Structures_Bridge\NC\011036378 - Div 2 Bridge 49\Cad\Dgn\04-17BP.2.R.84_DIV02_LRFR02_530049.dgn

3/7/2018

STD. NO. 21LRFR1_60&120S_45L



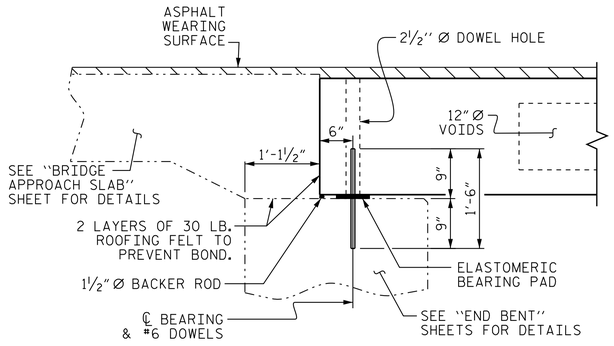
HALF SECTION AT INTERMEDIATE DIAPHRAGMS

HALF SECTION THROUGH VOIDS

TYPICAL SECTION

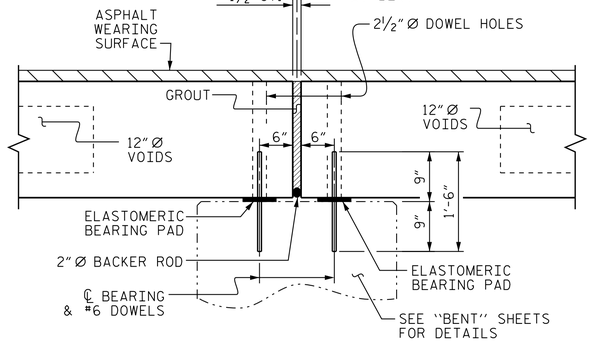
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE ''VERTICAL CONCRETE BARRIER RAIL SECTION'' DETAIL.

FIXED END

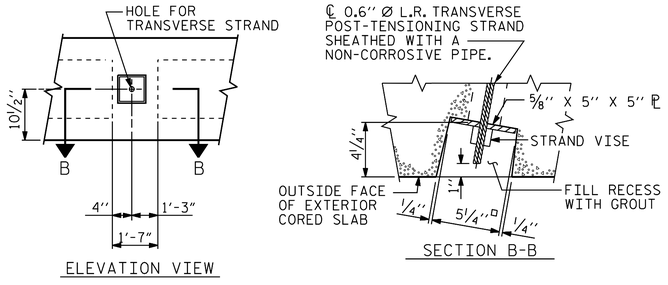


SECTION AT END BENT

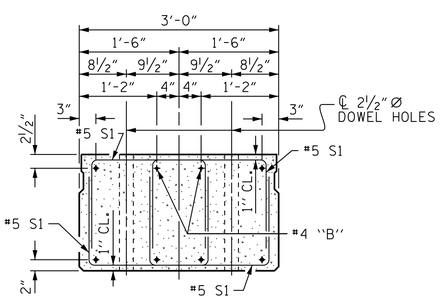
FIXED END FIXED END



SECTION AT BENT

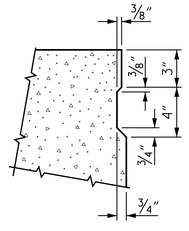


GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



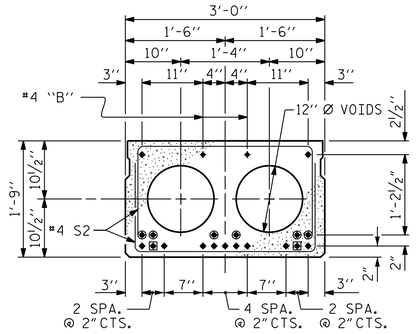
END ELEVATION

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



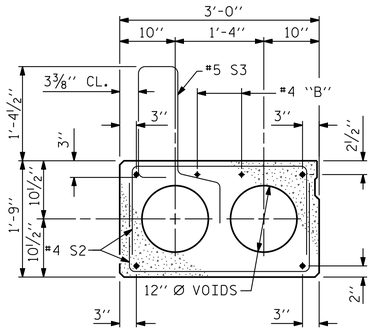
SHEAR KEY DETAIL

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



INTERIOR SLAB SECTION (40′ & 45′ UNIT)
(13 STRANDS REQUIRED)

0.6″ Ø LOW RELAXATION STRAND LAYOUT



EXT. SLAB SECTION

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

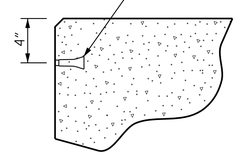
▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6′-0″FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

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

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

DEBONDING LEGEND

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED ⅜″, SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3′-0″ X 1′-9″
PRESTRESSED CONCRETE
CORED SLAB UNIT
120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			21

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

Docusigned by: Andrew Phillips 2BB69ABAD4004D3...
3/7/2018

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Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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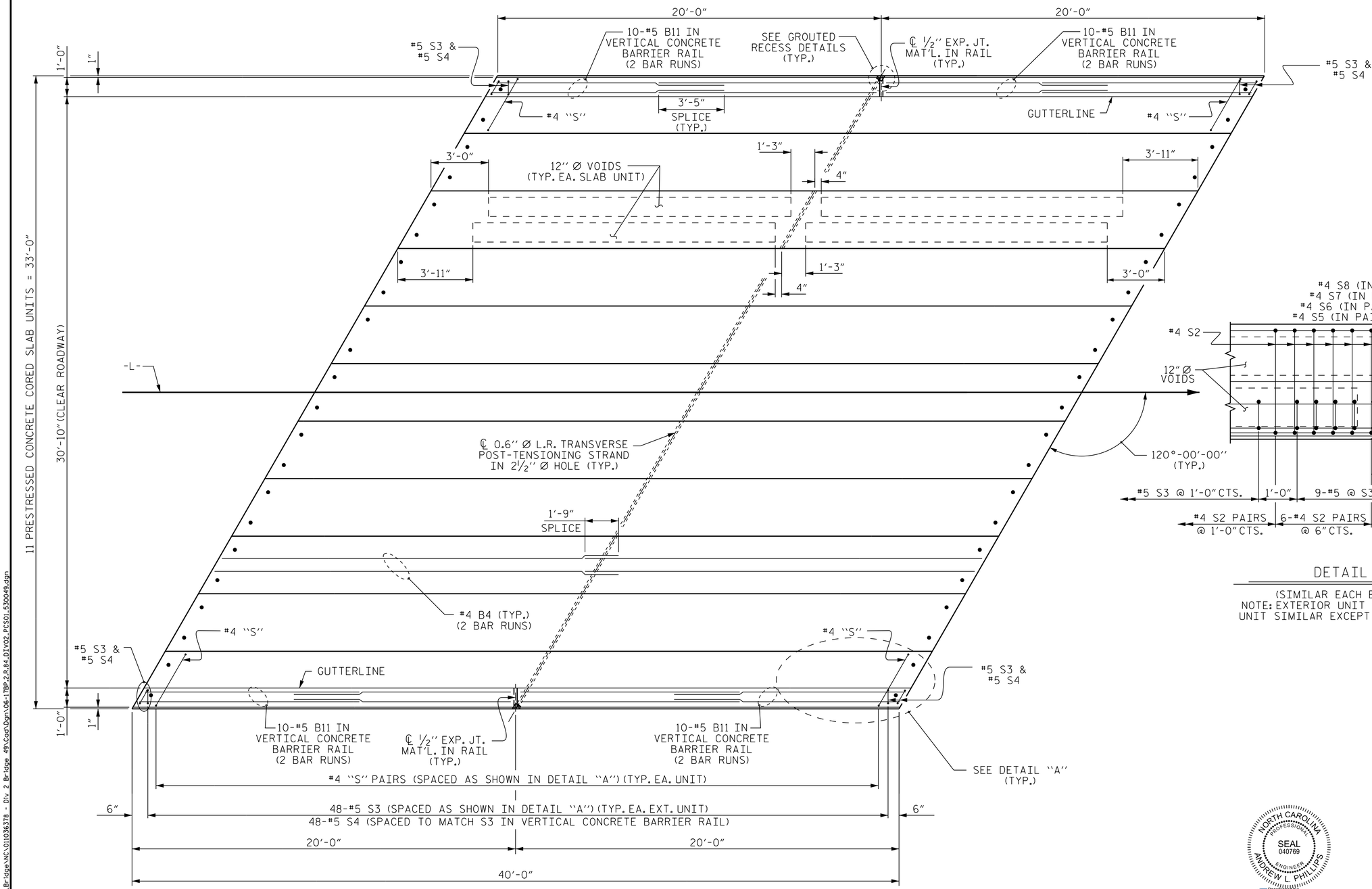
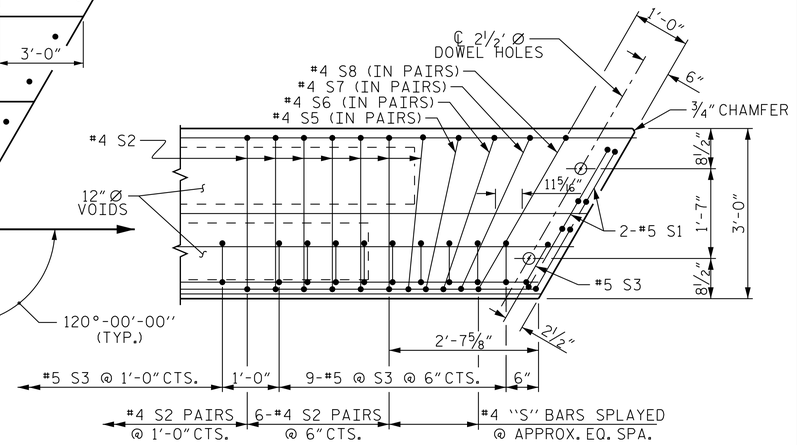
ASSEMBLED BY : JJ. KIMBLE		DATE :	1/18
CHECKED BY : A.L. PHILLIPS		DATE :	1/18
DRAWN BY : DGE	5/09	REV. 9/14	MAA/TMC
CHECKED BY : BCH	6/09		

3/7/2018

K:\RDT_Structures_Bridge\NC\01103637B - Div 2 Bridge 49\Cad\Dgn\05-17BP.2.R.84_DIV02_PCS01.530049.dgn

STD. NO. 21"PCS2_33_120S





DETAIL "A"

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF UNIT SPAN A

PROJECT NO. 17BP.2.R.84
LENOIR COUNTY
STATION: 15+42.50 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 40' UNIT
30'-10" CLEAR ROADWAY
120° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L PHILLIPS
Digitally signed by: Andrew Phillips
3/7/2018

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NC LICENSE # F-0102

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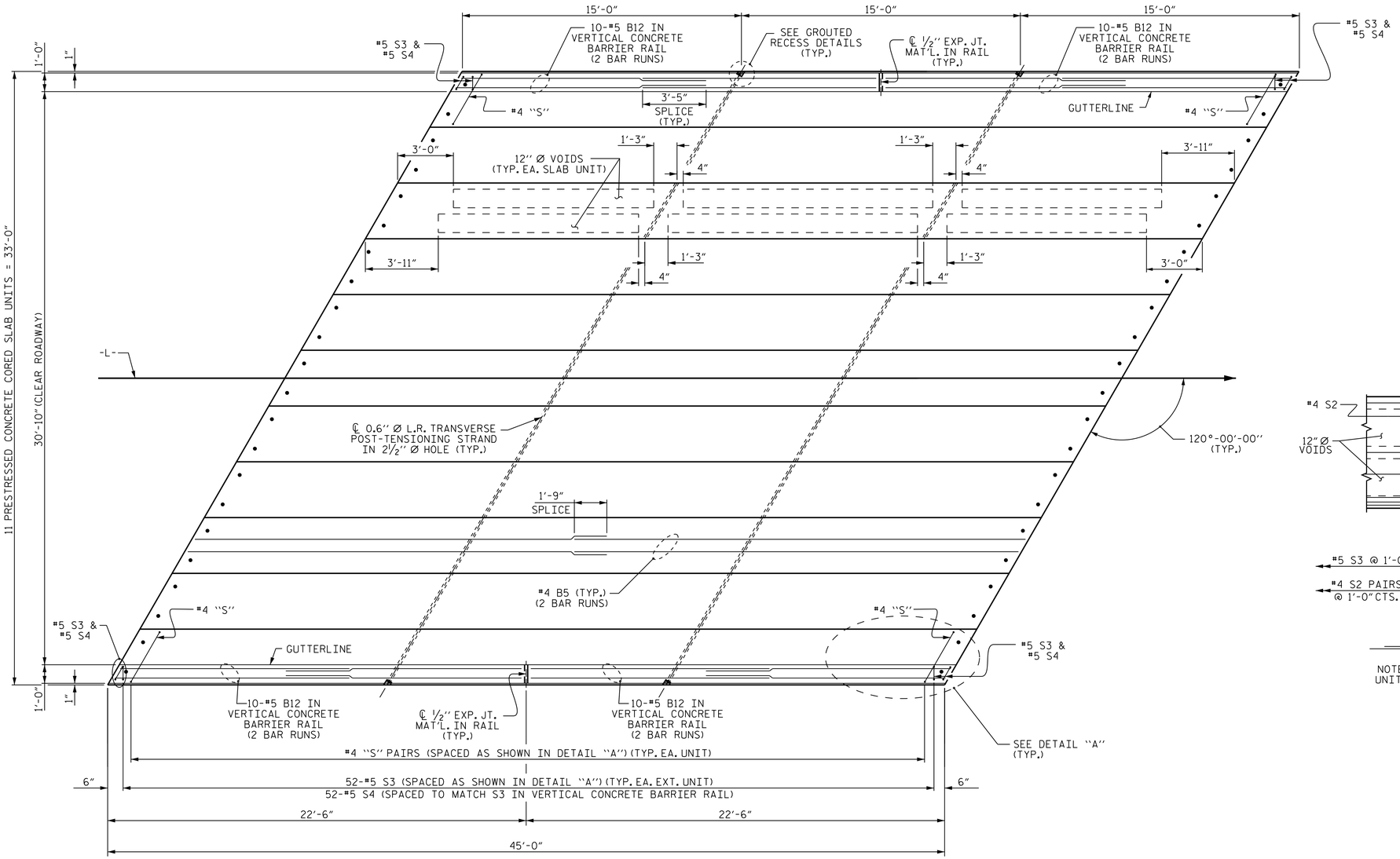
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			21

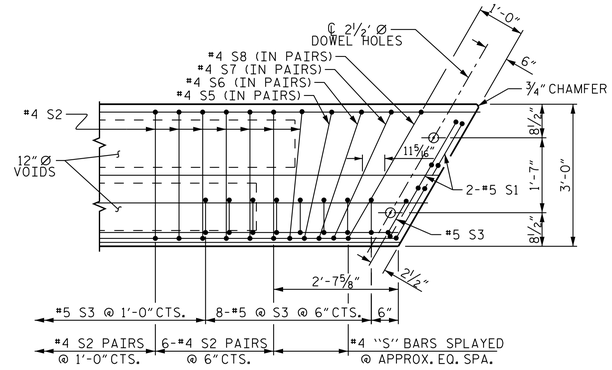
ASSEMBLED BY : JJ. KIMBLE	DATE : 1/18		
CHECKED BY : A.L. PHILLIPS	DATE : 1/18		
DRAWN BY : DGE 3/09	REV. 12/5/11 MAA/AAC		
CHECKED BY : BCH 3/09	REV. 8/14 MAA/TMG		

3/7/2018
K:\RDT_Structures_Bridge\NC\D11036378 - Div 2 Bridge 49\Cad\Dgn\06-17BP.2.R.84.D1V02.PCS01.530049.dgn

STD. NO. 21"PCS_33_120S_40L



PLAN OF UNIT SPAN B



DETAIL ″A″

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. 17BP.2.R.84
LENOIR COUNTY
STATION: 15+42.50 -L-

SHEET 3 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L PHILLIPS
Docusigned by: Andrew Phillips 2B868ABADA0404D3...
3/7/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 45′ UNIT 30′-10′ CLEAR ROADWAY 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : JJ. KIMBLE	DATE : 1/18		
CHECKED BY : A.L. PHILLIPS	DATE : 1/18		
DRAWN BY : DGE 3/09	REV. 12/5/11	MAA/AAC	
CHECKED BY : BCH 3/09	REV. 8/14	MAA/TMG	

3/7/2018
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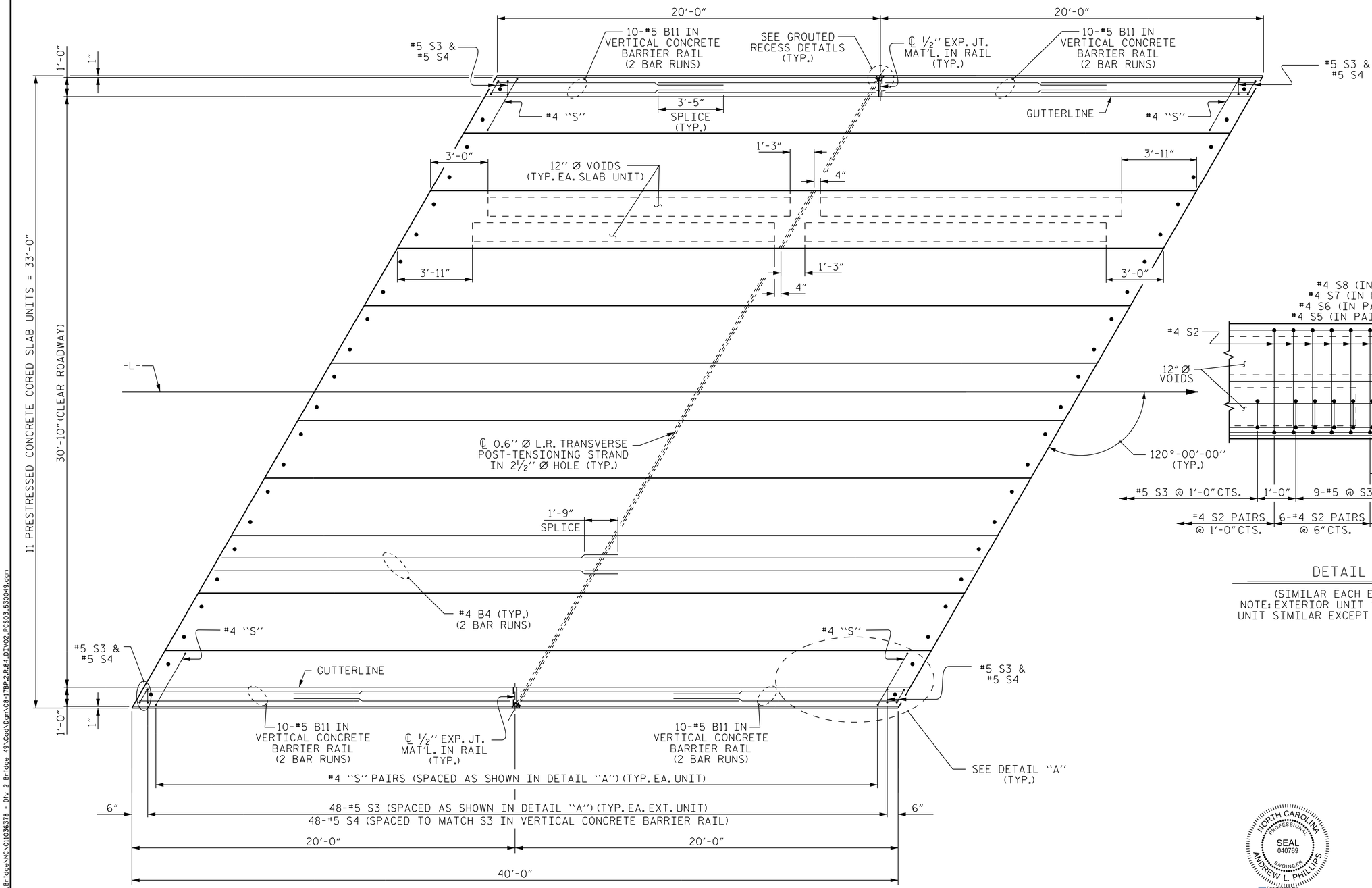
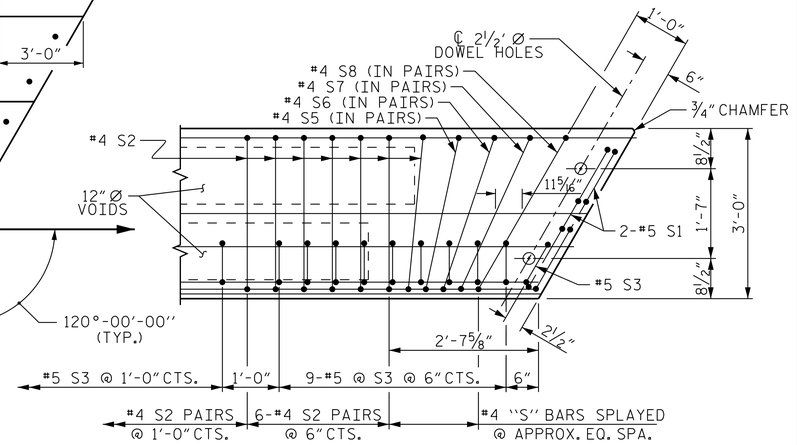
STD. NO. 21″PCS_33_120S_45L



PLAN OF UNIT SPAN C



DETAIL "A"

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 40' UNIT
30'-10" CLEAR ROADWAY
120° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L PHILLIPS

DocuSigned by: Andrew Phillips 2B869A8AC4804D3... 3/7/2018

Kimley»Horn
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NC LICENSE # F-0102

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : JJ. KIMBLE	DATE : 1/18		
CHECKED BY : A.L. PHILLIPS	DATE : 1/18		
DRAWN BY : DGE 3/09	REV. 12/5/11 MAA/AAC		
CHECKED BY : BCH 3/09	REV. 8/14 MAA/TMG		

3/7/2018

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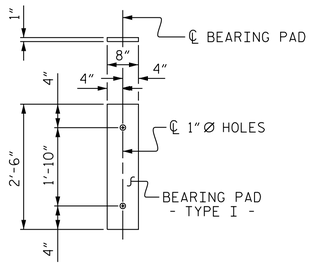
STD. NO. 21"PCS_33_120S_40L



FIXED END
(TYPE I - 66 REQ'D)

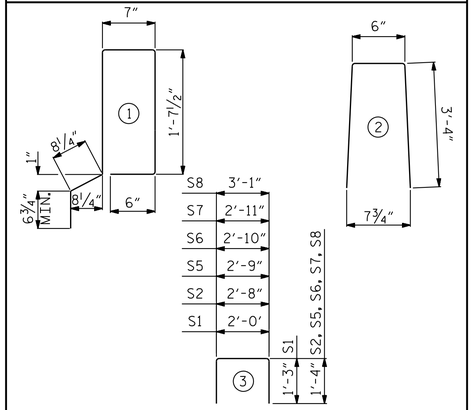
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

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

CONCRETE RELEASE STRENGTH	
UNIT	PSI
40' & 45' UNITS	4000

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	40' UNIT					
✱B11	80	160	#5	STR	11'-9"	1961
✱S4	100	200	#5	2	7'-2"	1495
✱EPOXY COATED REINFORCING STEEL				LBS.		3456
CLASS AA CONCRETE				CU.YDS.		20.4
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		160.58

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	45' UNIT					
✱B12	80	80	#5	STR	13'-0"	1085
✱S4	108	108	#5	2	7'-2"	807
✱EPOXY COATED REINFORCING STEEL				LBS.		1892
CLASS AA CONCRETE				CU.YDS.		11.5
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		90.29'

NOTES

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

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

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

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

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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

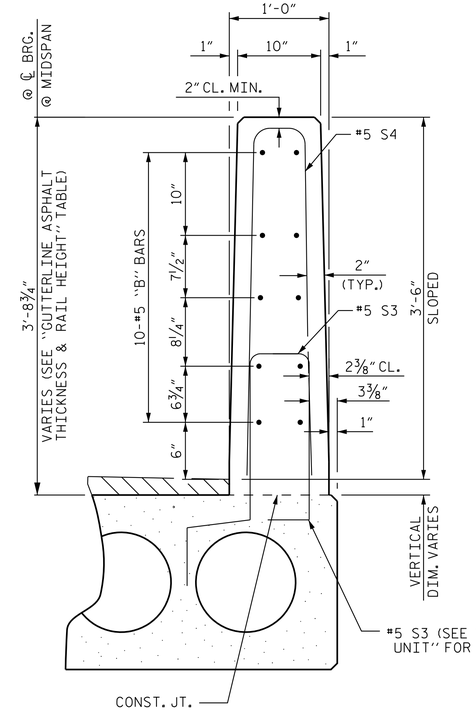
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

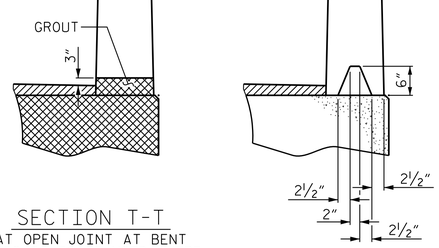
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

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.

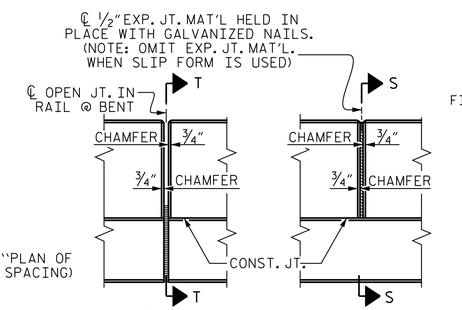


VERTICAL CONCRETE BARRIER RAIL SECTION

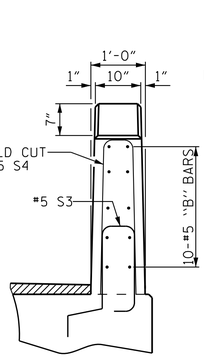


SECTION T-T
AT OPEN JOINT AT BENT
(THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)

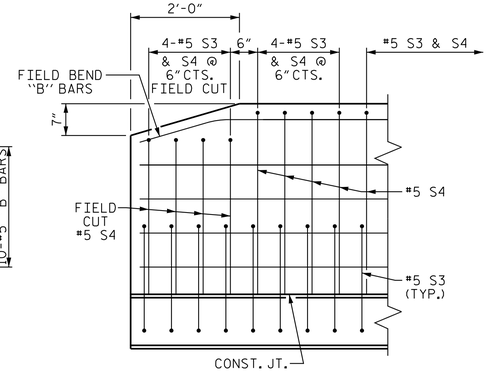
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS



END VIEW



SIDE VIEW

END OF RAIL DETAILS

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
120° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

Docusigned by: Andrew Phillips 2BB69ABAD4004D3...
3/7/2018

Kimley»Horn
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Phone (919) 677-2000 NC LICENSE # F-0102

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

SHEET NO. S-9
TOTAL SHEETS 21

ASSEMBLED BY : JJ. KIMBLE	DATE : 1/18	
CHECKED BY : A.L. PHILLIPS	DATE : 1/18	
DRAWN BY : DGE 5/09	REV. 11/14	MAA/TMG
CHECKED BY : BCH 6/09		

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STD. NO. 21" PCS3_33_120S

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
40' UNIT			
EXTERIOR C.S.	4	40'-0"	160'-0"
INTERIOR C.S.	18	40'-0"	720'-0"
TOTAL	22		880'-0"

BILL OF MATERIAL FOR ONE 40' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B4	4	#4	STR	20'-9"	55	20'-9"	55
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	82	#4	3	5'-4"	292	5'-4"	292
✳ S3	50	#5	1	5'-7"	291		
S5	4	#4	3	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15
REINFORCING STEEL LBS.					444		444
✳ EPOXY COATED REINFORCING STEEL LBS.					291		
5000 P.S.I. CONCRETE CU. YDS.					5.9		5.9
0.6" Ø L.R. STRANDS No.					13		13

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
40' & 45' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	⅞" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	⅛" ↓
FINAL CAMBER	¾" ↑

** INCLUDES FUTURE WEARING SURFACE

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
40 & 45' UNITS	2"	3'-8"

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
45' UNIT			
EXTERIOR C.S.	2	45'-0"	90'-0"
INTERIOR C.S.	9	45'-0"	405'-0"
TOTAL	11		495'-0"

BILL OF MATERIAL FOR ONE 45' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B5	4	#4	STR	23'-3"	62	23'-3"	62
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	92	#4	3	5'-4"	328	5'-4"	328
✳ S3	54	#5	1	5'-7"	214		
S5	4	#4	3	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15
REINFORCING STEEL LBS.					414		487
✳ EPOXY COATED REINFORCING STEEL LBS.					314		
5000 P.S.I. CONCRETE CU. YDS.					6.6		6.6
0.6" Ø L.R. STRANDS No.					13		13

ASSEMBLED BY :	J.I. KIMBLE	DATE :	1/18
CHECKED BY :	A.L. PHILLIPS	DATE :	1/18
DRAWN BY :	DGE 5/09	REV. 11/14	MAA/TMG
CHECKED BY :	BCH 6/09		

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3/7/2018

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew Phillips 2B069A8AD4004D3...

3/7/2018

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PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

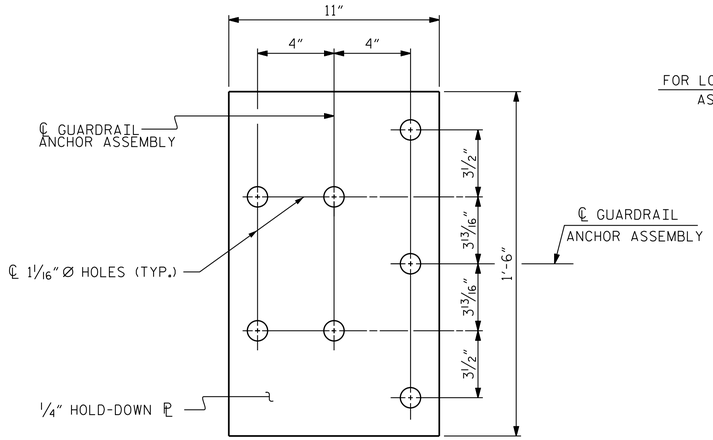
SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

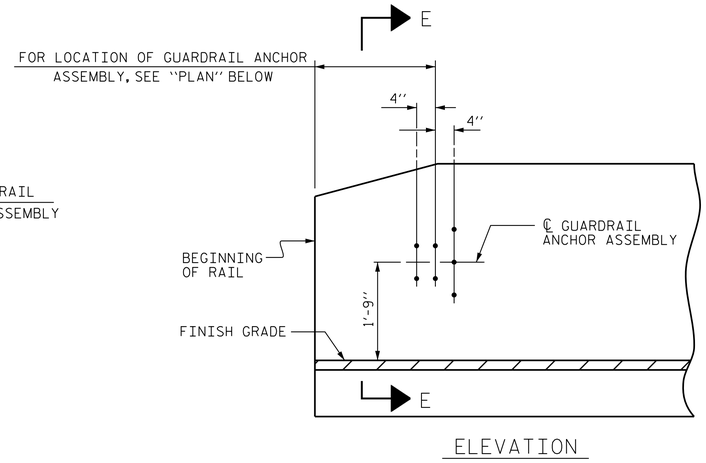
STANDARD 3'-0'' X 1'-9'' PRESTRESSED CONCRETE CORED SLAB UNIT 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			21

STD. NO. 21"PCS3_33_120S



PLAN



ELEVATION

NOTES

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

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

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

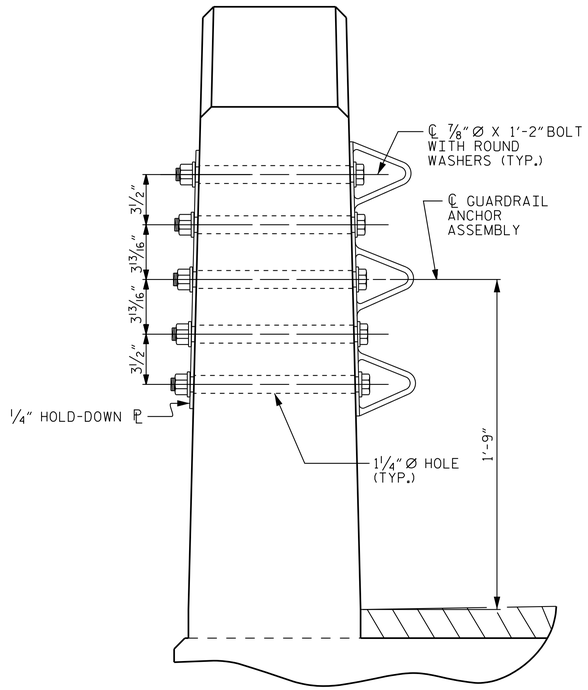
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

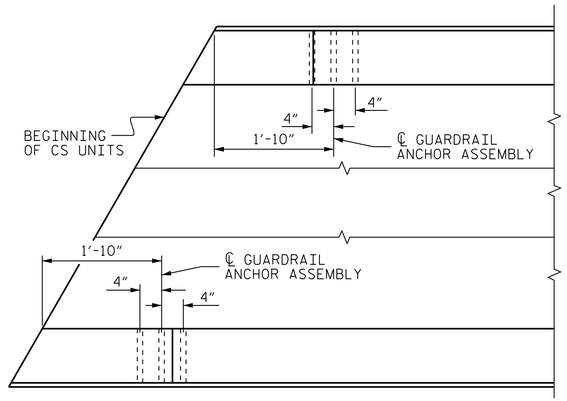
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

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

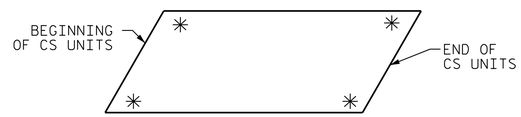
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SECTION E-E



PLAN



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

GUARDRAIL ANCHOR ASSEMBLY DETAILS

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew Phillips 2BB69ABAD4004D3...

3/7/2018

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NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : JJ. KIMBLE		DATE :	1/18
CHECKED BY : A.L. PHILLIPS		DATE :	1/18
DRAWN BY : MAA	5/10	REV. 6/13	MAA/GM
CHECKED BY : GM	5/10	REV. 1/15	MAA/TMG
		REV. 12/17	MAA/THC

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STD. NO. GRA3

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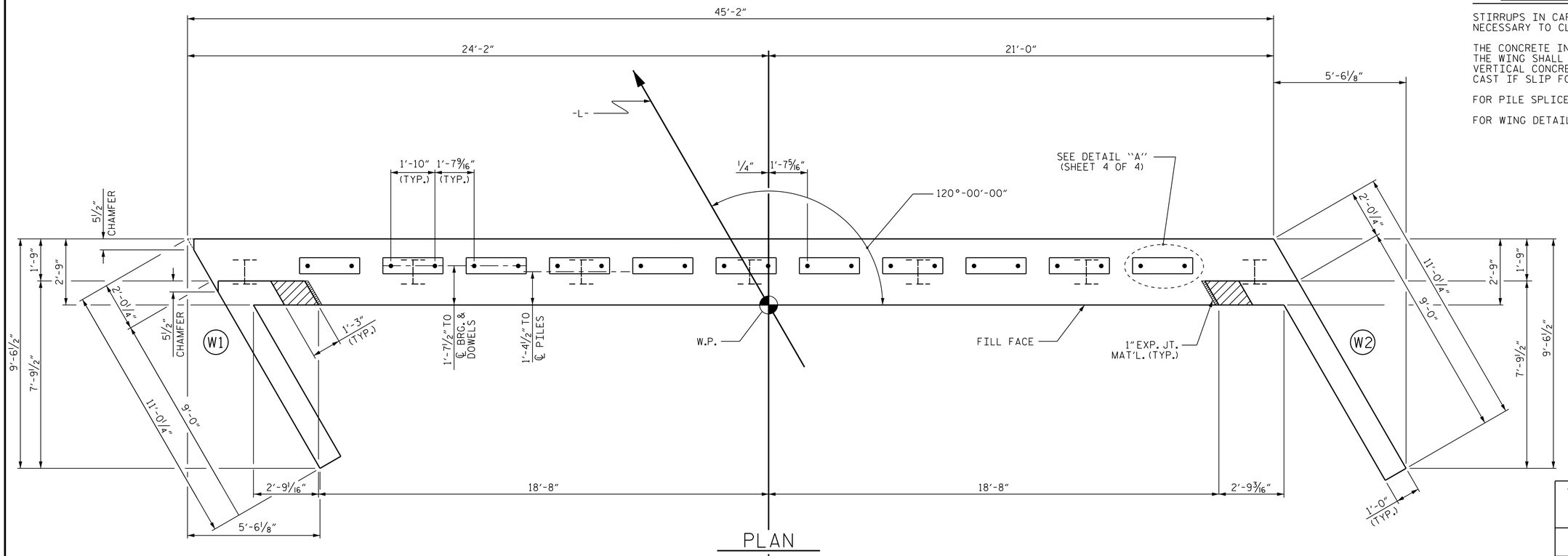
NOTES

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

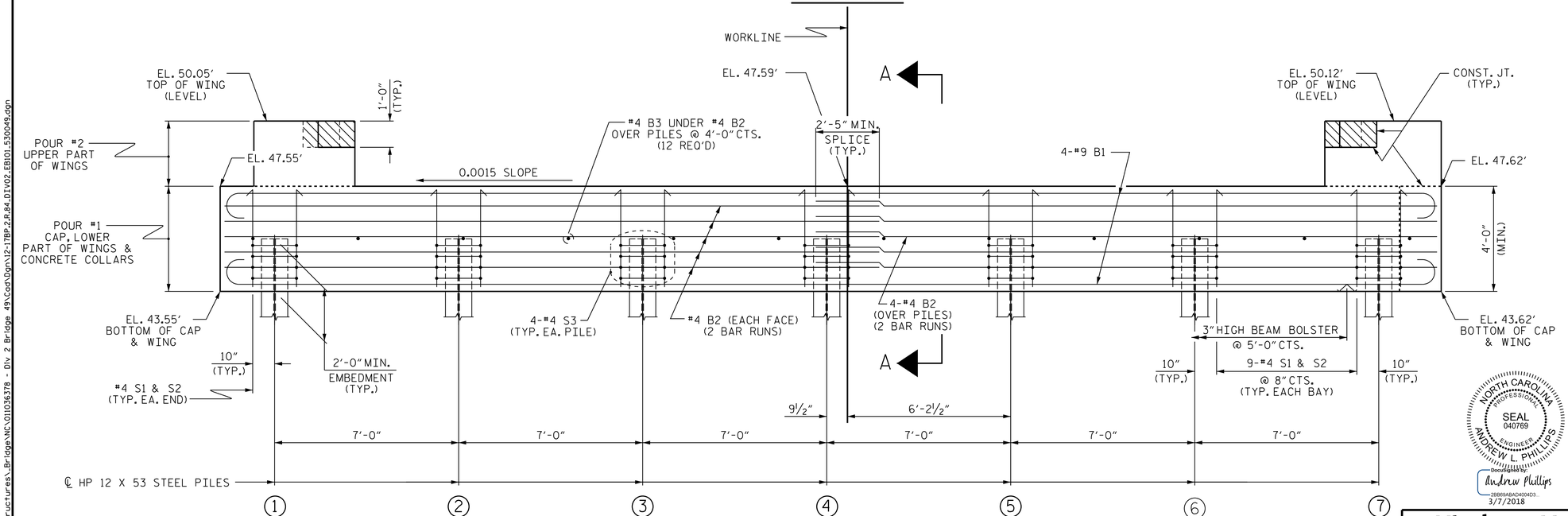
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

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	45.56'
2	45.57'
3	45.58'
4	45.59'
5	45.60'
6	45.61'
7	45.63'

PROJECT NO. 17BP.2.R.84
LENOIR COUNTY
STATION: 15+42.50 -L-

SHEET 1 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L PHILLIPS
Docusigned by: Andrew Phillips 2B9B9ABADA004D3...
3/7/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : JJ. KIMBLE		DATE : 1/18	
CHECKED BY : A.L. PHILLIPS		DATE : 1/18	
DRAWN BY : WJH 12/11	REV. 4/15	MAA/TMG	
CHECKED BY : AAC 12/11			

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STD. NO. EB_33_120S4

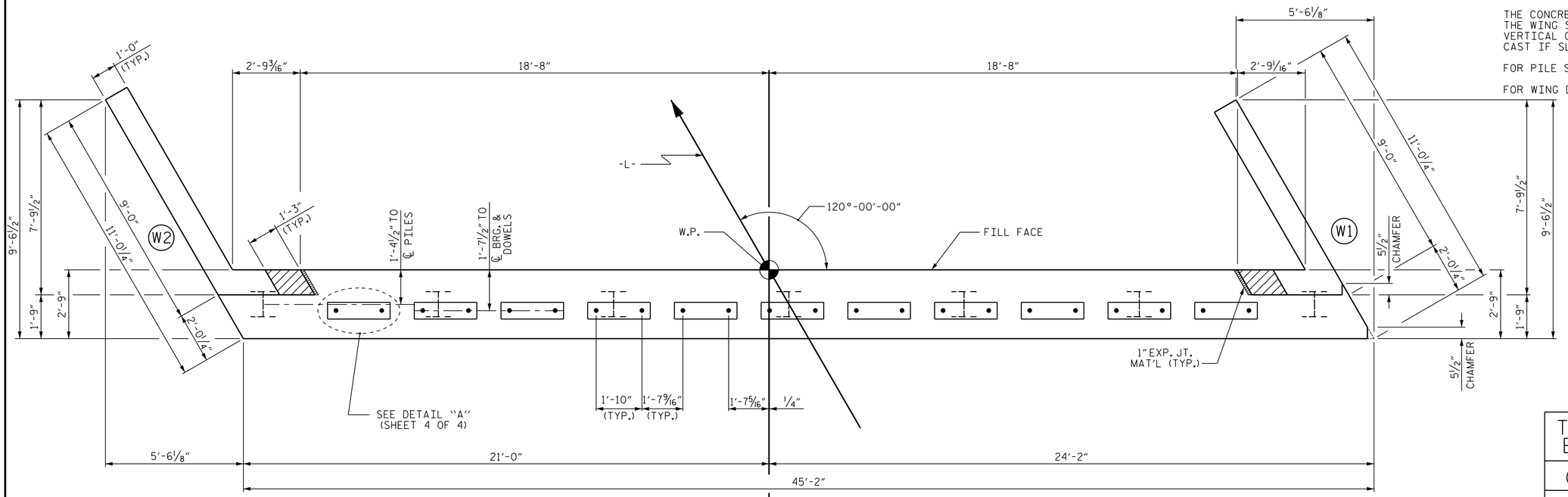
NOTES

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

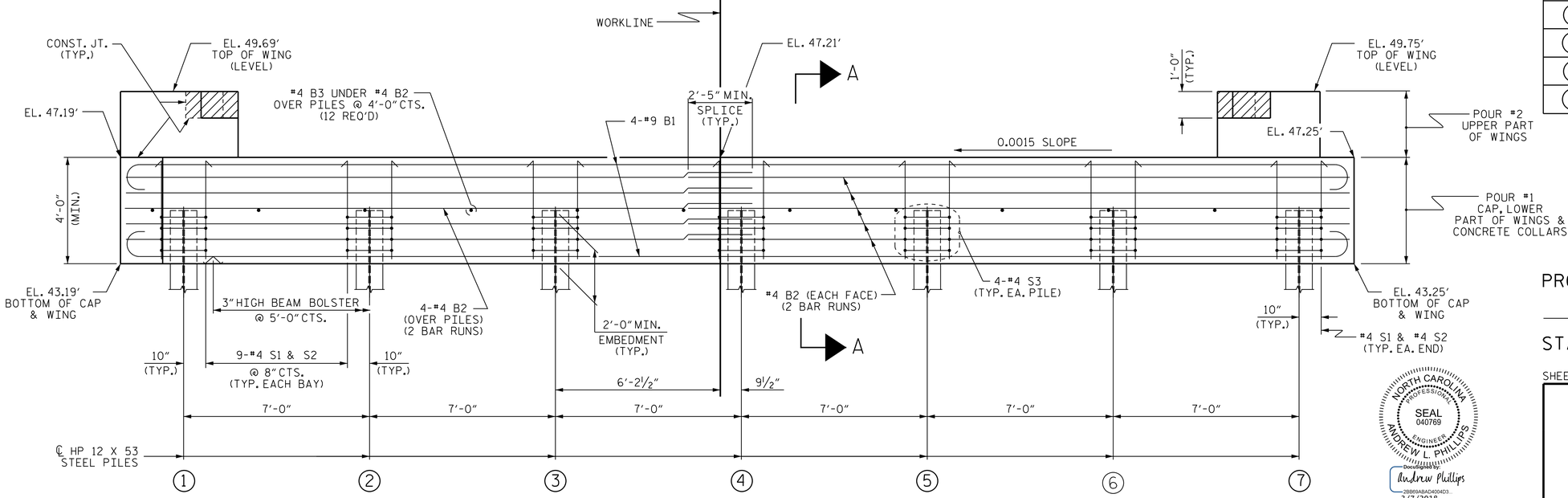
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

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	45.18'
2	45.19'
3	45.20'
4	45.21'
5	45.22'
6	45.23'
7	45.24'

PROJECT NO. 17BP.2.R.84
LENOIR COUNTY
STATION: 15+42.50 -L-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS
DocuSigned by: Andrew Phillips 28B69ABAD4004D3...
3/7/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

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Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : JJ. KIMBLE		DATE :	1/18
CHECKED BY : A.L. PHILLIPS		DATE :	1/18
DRAWN BY : WJH	12/11	REV. 4/15	MAA/TMG
CHECKED BY : AAC	12/11		

3/7/2018

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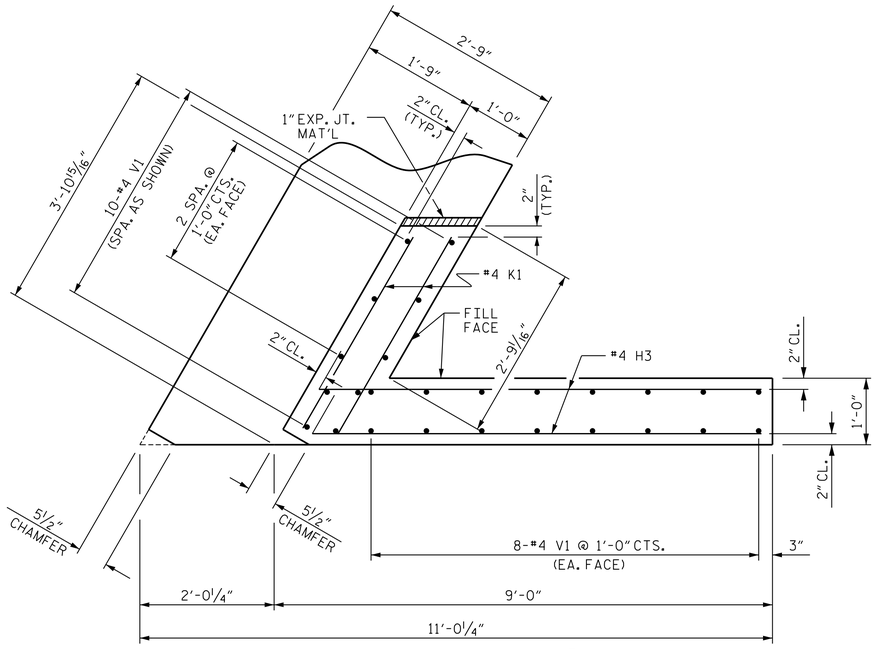
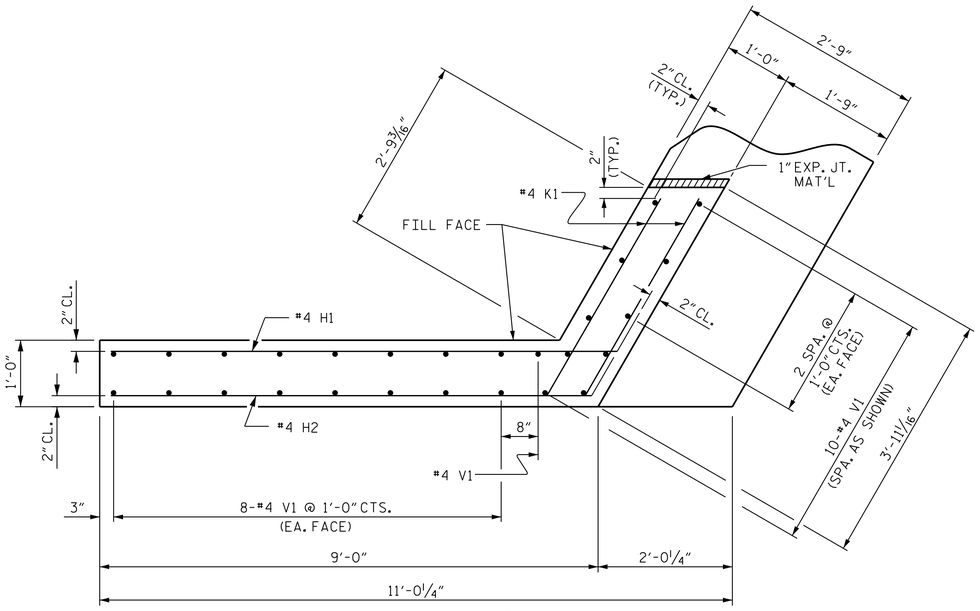
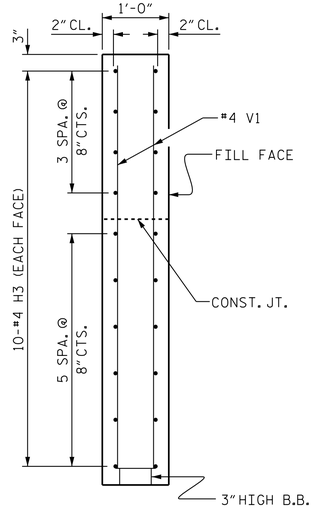
STD. NO. EB_33_120S4



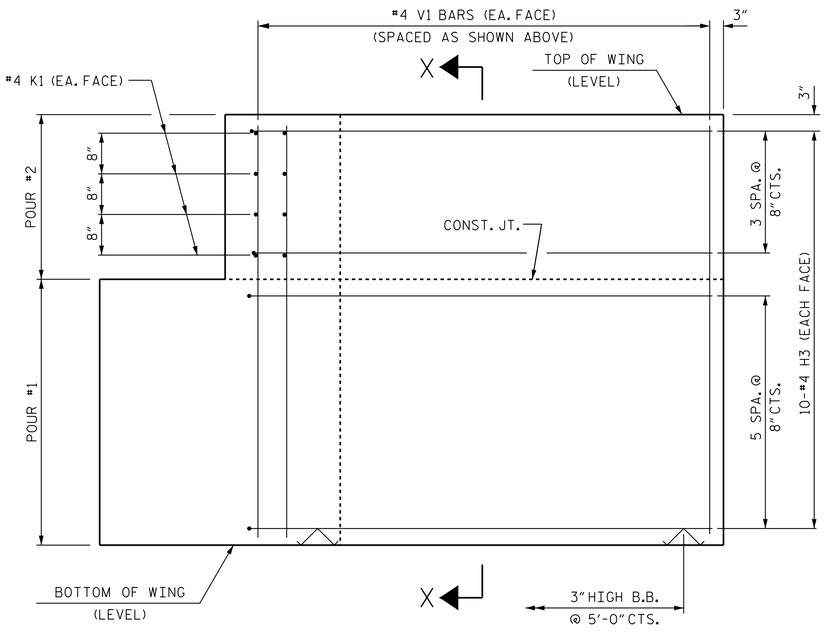
PLAN OF WING (W1)



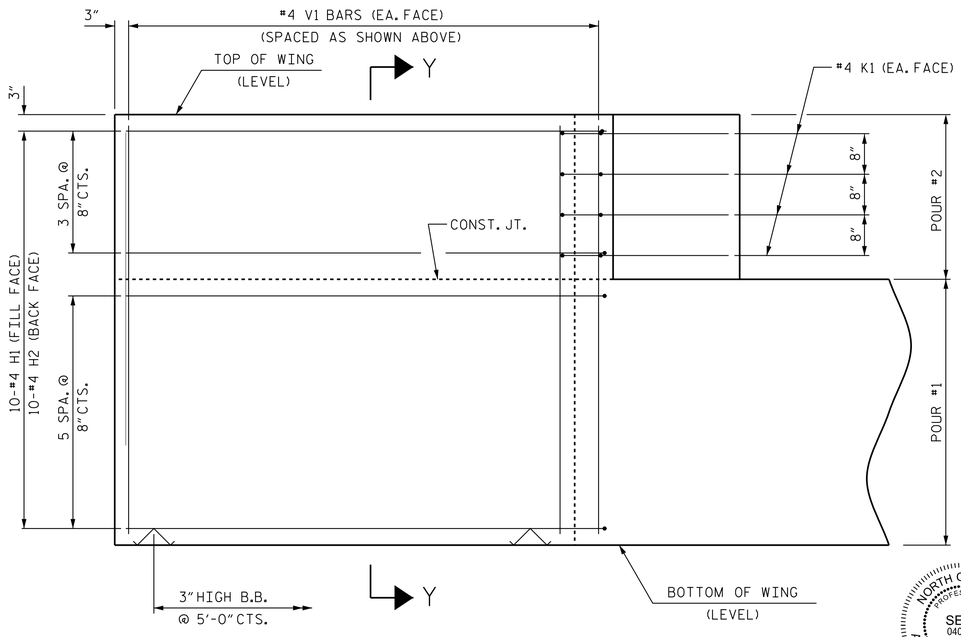
PLAN OF WING (W2)



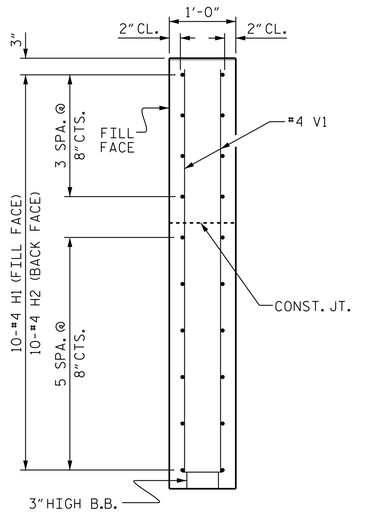
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

WING DETAILS

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

SHEET 3 OF 4

ASSEMBLED BY : JJ. KIMBLE	DATE : 1/18		
CHECKED BY : A.L. PHILLIPS	DATE : 1/18		
DRAWN BY : WJH	12/11	REV. 4/15	MAA/TMG
CHECKED BY : AAC	12/11		

3/7/2018

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NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

Docusigned by: Andrew Phillips 2BB69ABAD4004D3...

3/7/2018

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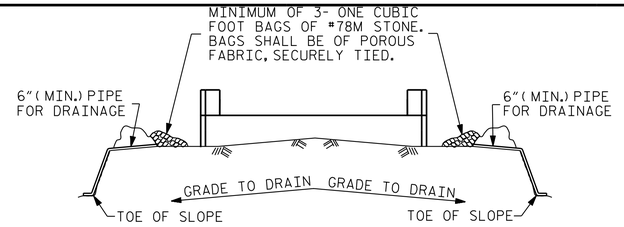
Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			21

STD. NO. EB_33_120S4

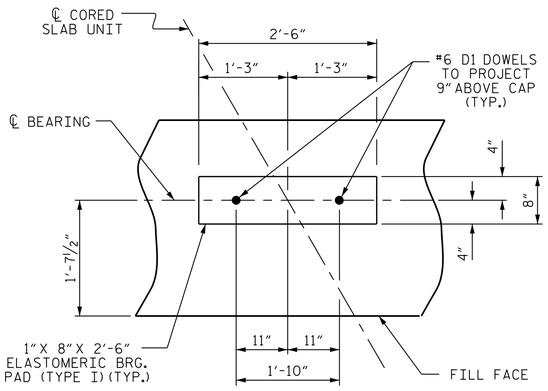


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

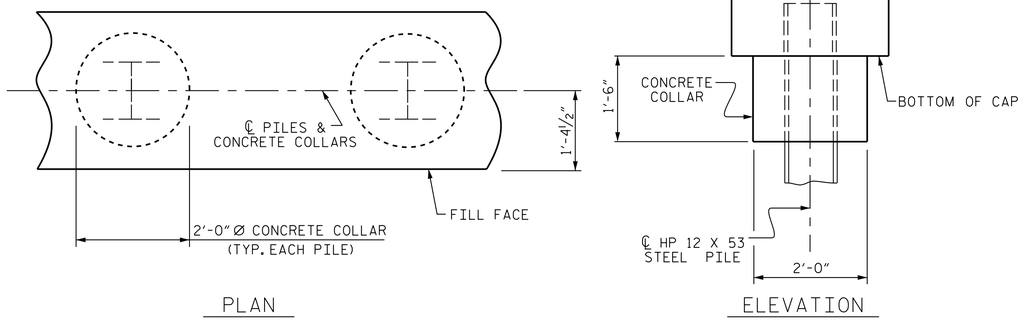
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

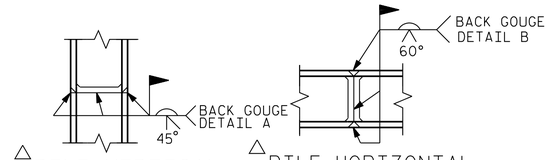
(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



PLAN ELEVATION

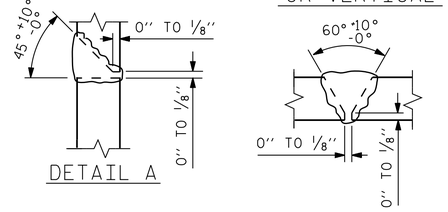
CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



△ PILE VERTICAL

△ PILE HORIZONTAL OR VERTICAL



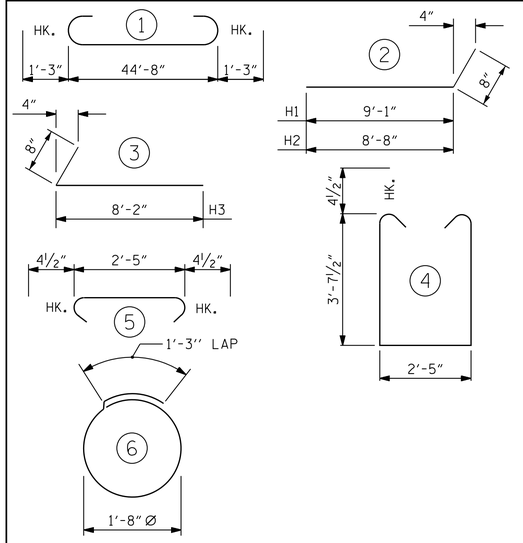
DETAIL A DETAIL B

△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

SCALE- 7/16" = 1'-0"

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT 1	END BENT 2
HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 350	HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 385
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7
PILE REDRIVES NO: 4	PILE REDRIVES NO: 4

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	47'-2"	1283
B2	28	#4	STR	23'-8"	443
B3	12	#4	STR	2'-5"	19
D1	22	#6	STR	1'-6"	50
H1	10	#4	2	9'-9"	65
H2	10	#4	2	9'-4"	62
H3	20	#4	3	8'-10"	118
K1	16	#4	STR	3'-3"	35
S1	56	#4	4	10'-5"	390
S2	56	#4	5	3'-2"	118
S3	28	#4	6	6'-6"	122
V1	53	#4	STR	6'-2"	218

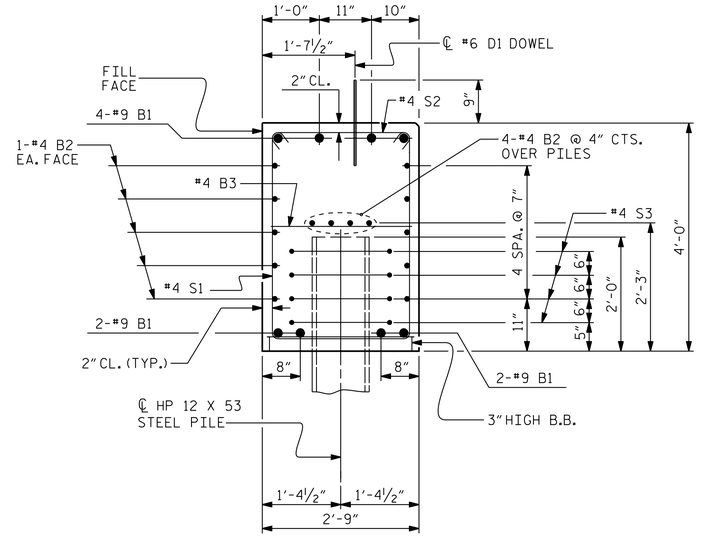
REINFORCING STEEL (FOR ONE END BENT) 2923 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 21.9 C.Y.

POUR #2 UPPER PART OF WINGS 2.2 C.Y.

TOTAL CLASS A CONCRETE 24.1 C.Y.



SECTION A-A

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

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew Phillips 2BB69ABAD4004D3... 3/7/2018

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 & 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY :	J.J. KIMBLE	DATE :	1/18
CHECKED BY :	A.L. PHILLIPS	DATE :	1/18
DRAWN BY :	WJH 12/11	REV. 4/17	MAA/TMG
CHECKED BY :	AAC 12/11		

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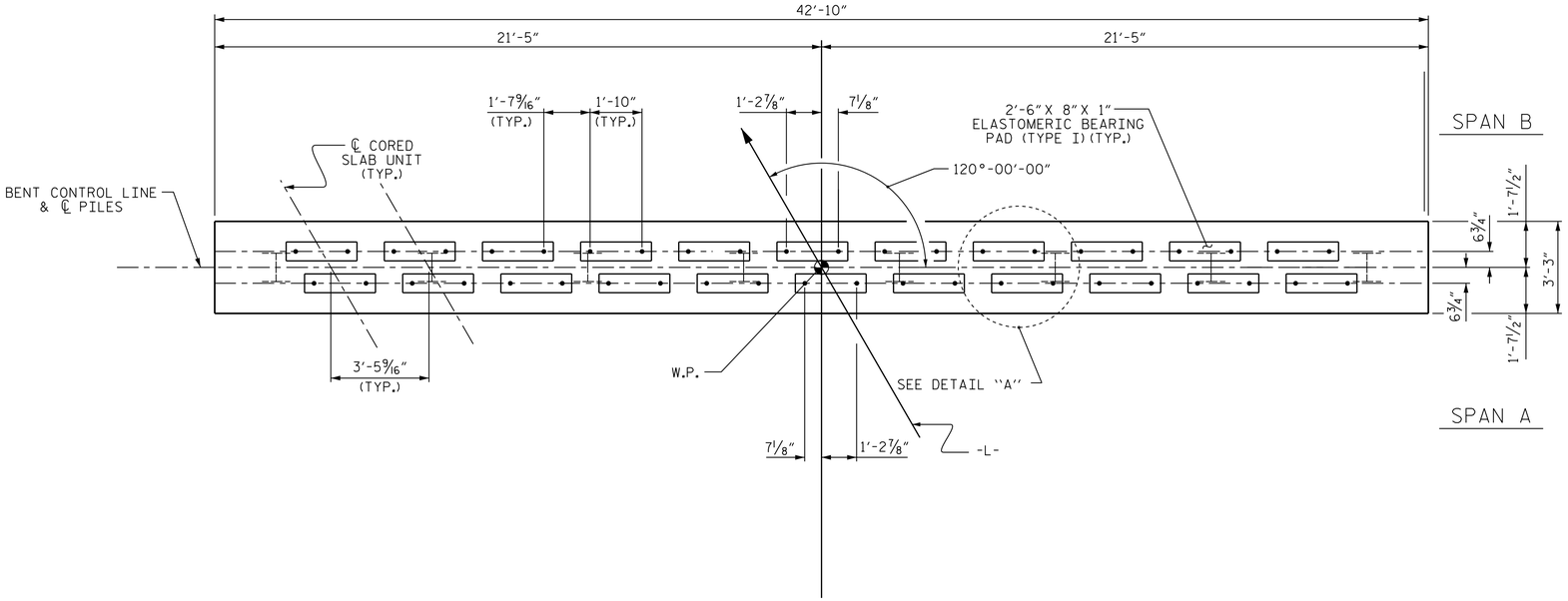
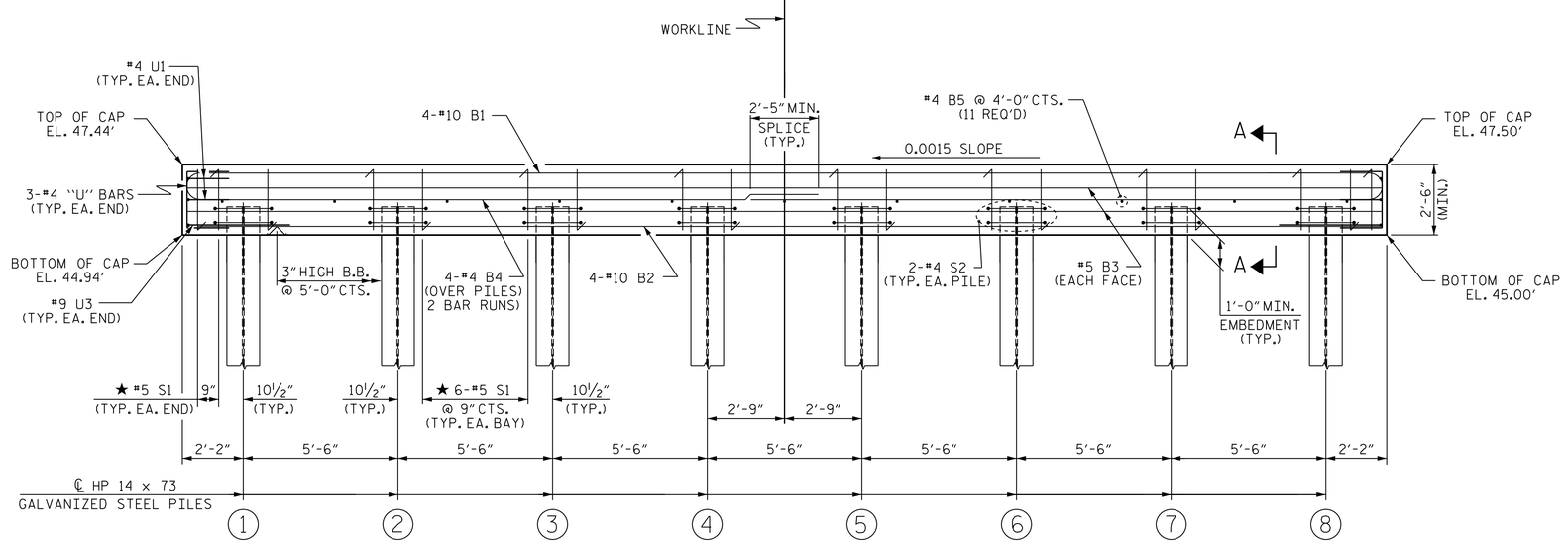


PLAN



ELEVATION

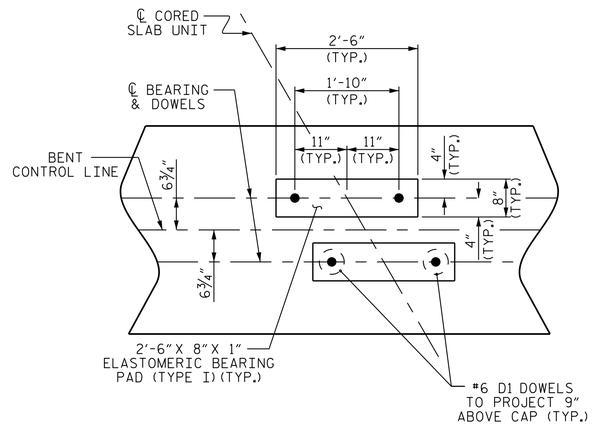
FOR SECTION A-A, SEE SHEET 2 OF 2

NOTES

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

★ INVERT ALTERNATE STIRRUPS.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 37 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

TOP OF PILE ELEVATIONS	
1	45.94'
2	45.95'
3	45.96'
4	45.97'
5	45.97'
6	45.98'
7	45.99'
8	46.00'

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

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STATE OF NORTH CAROLINA
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RALEIGH

SUBSTRUCTURE

BENT 1

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : JJ. KIMBLE	DATE : 1/18		
CHECKED BY : A.L. PHILLIPS	DATE : 1/18		
DRAWN BY : DGE 05/10	REV. 6/17	MAA/THC	
CHECKED BY : MKT 05/10			

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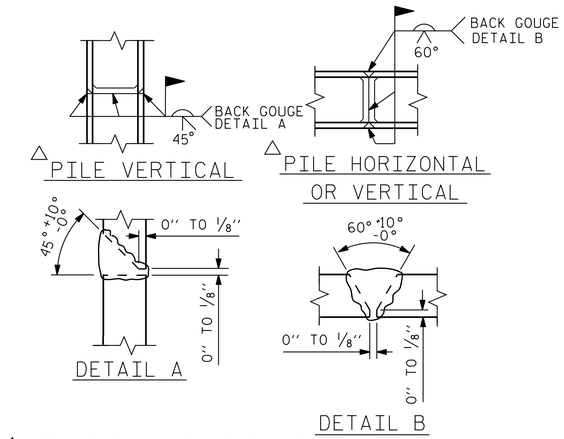
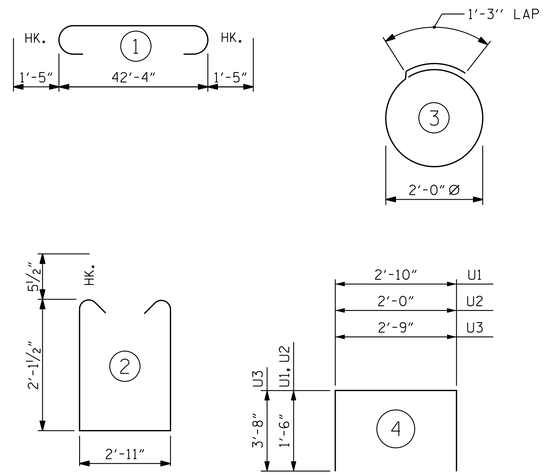
STD. NO. 14"HP_BT_33_120S_<60'



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	45'-2"	777
B2	4	#10	STR	42'-6"	732
B3	4	#5	STR	42'-6"	177
B4	8	#4	STR	22'-6"	120
B5	11	#4	STR	2'-11"	21
D1	44	#6	STR	1'-6"	99
S1	46	#5	2	8'-1"	388
S2	16	#4	3	7'-7"	81
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69

REINFORCING STEEL (FOR ONE BENT) 2500 LBS

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

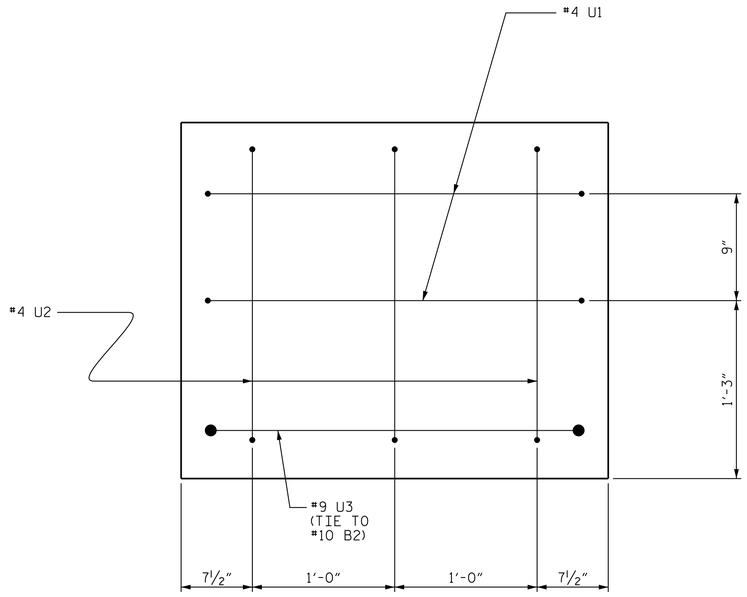
TOTAL CLASS A CONCRETE 12.9 C.Y.

HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)

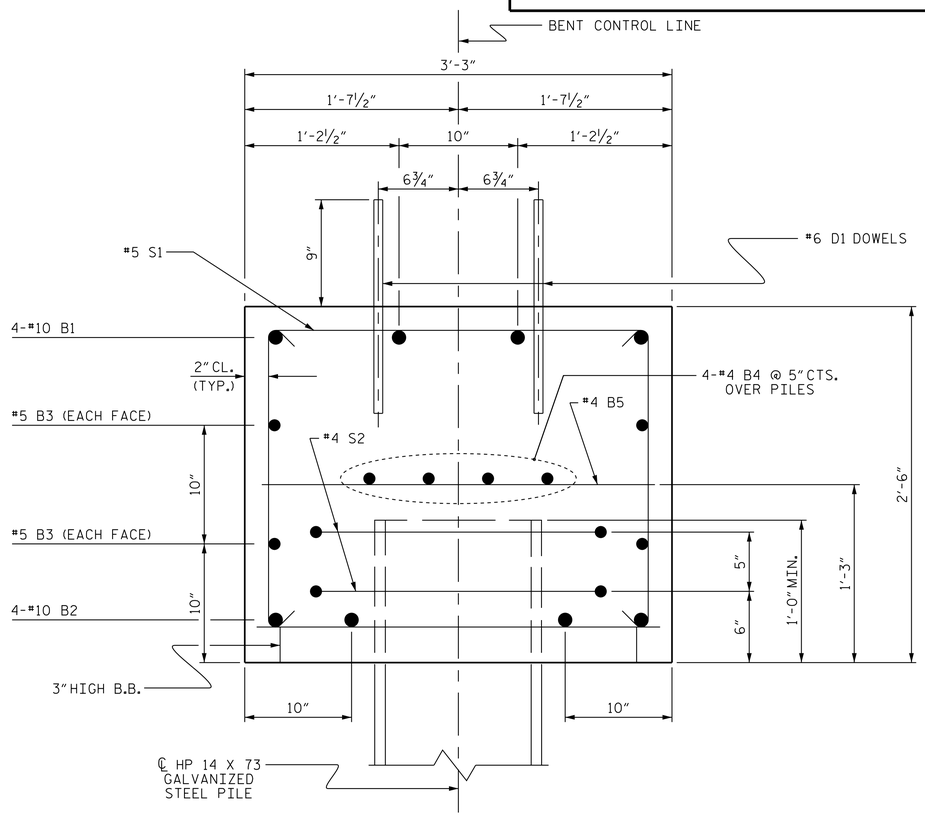
No. 8 LIN. FT. 400

PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT) NO: 8

PILE REDRIVES NO: 4



END OF CAP VIEW
(TYPICAL BOTH ENDS)



SECTION A-A

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

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1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : JJ. KIMBLE	DATE : 1/18	
CHECKED BY : A.L. PHILLIPS	DATE : 1/18	
DRAWN BY : DGE 05/10	REV. 6/17	MAA/THC
CHECKED BY : MKT 05/10		

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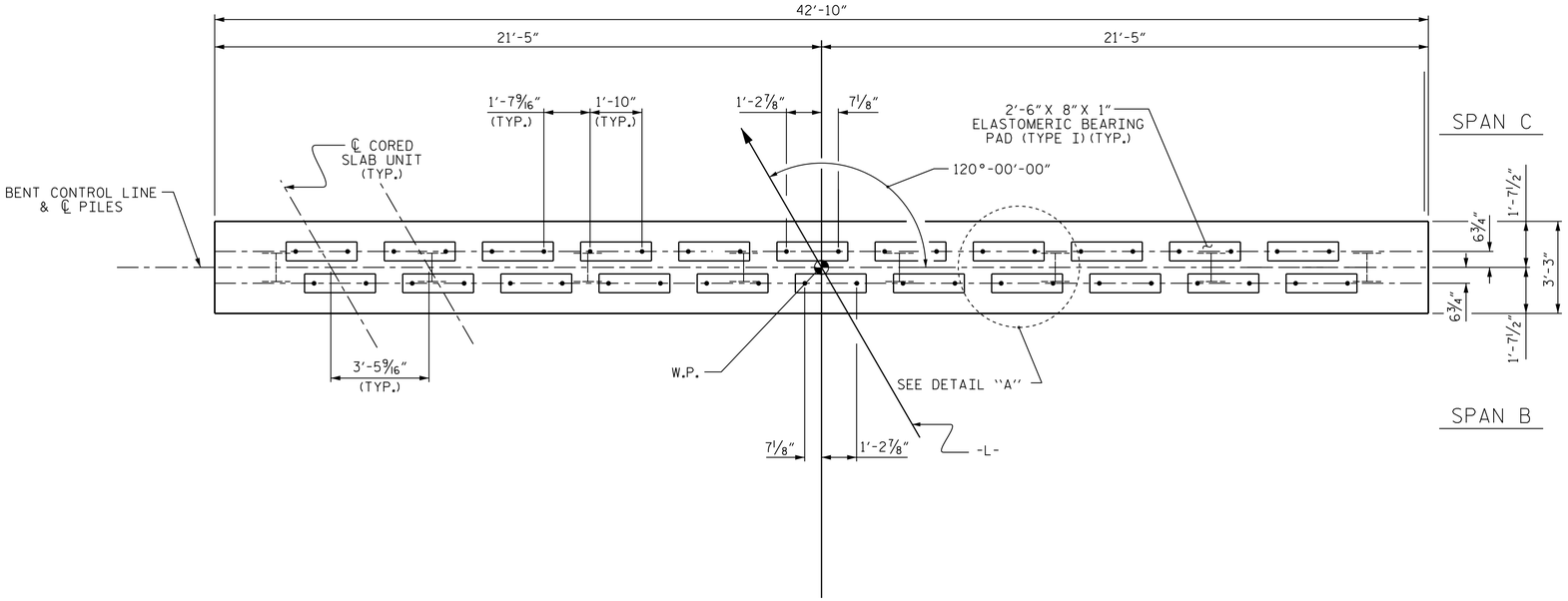
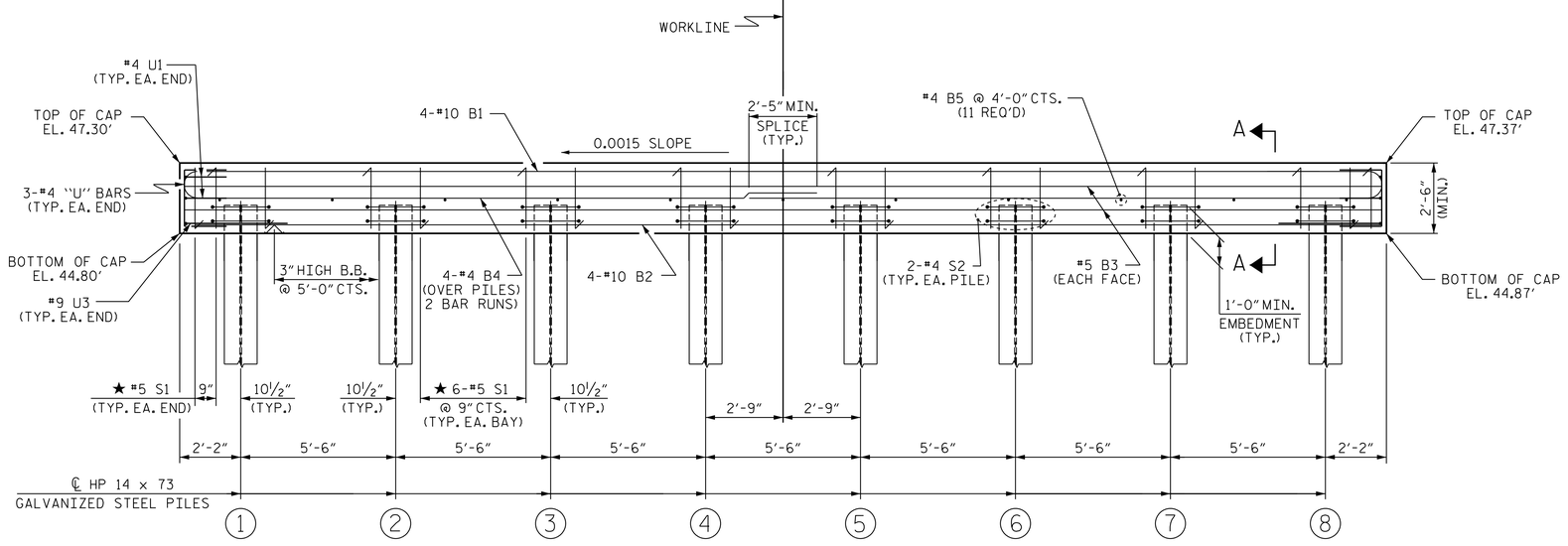
STD. NO. 14"HP_BT_33_60&120S_<60'



PLAN



ELEVATION

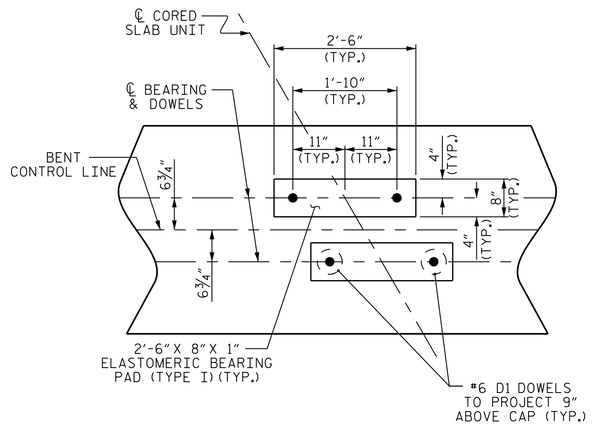
FOR SECTION A-A, SEE SHEET 2 OF 2

NOTES

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

★ INVERT ALTERNATE STIRRUPS.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 37 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

TOP OF PILE ELEVATIONS	
1	45.81'
2	45.81'
3	45.82'
4	45.83'
5	45.84'
6	45.85'
7	45.86'
8	45.86'

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew Phillips 2B869ABAD4004D3...

3/7/2018

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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : JJ. KIMBLE		DATE : 1/18	
CHECKED BY : A.L. PHILLIPS		DATE : 1/18	
DRAWN BY : DGE 05/10	REV. 6/17	MAA/THC	
CHECKED BY : MKT 05/10			

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STD. NO. 14"HP_BT_33_120S_<60'

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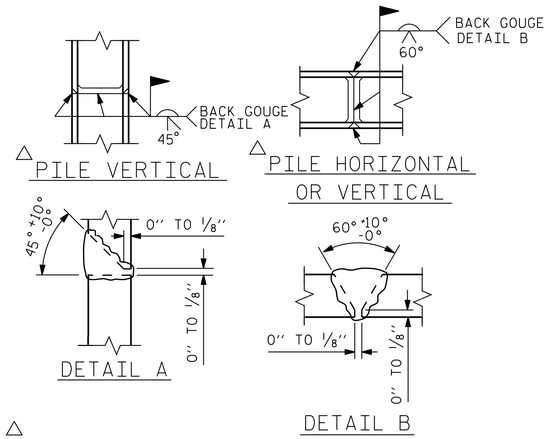
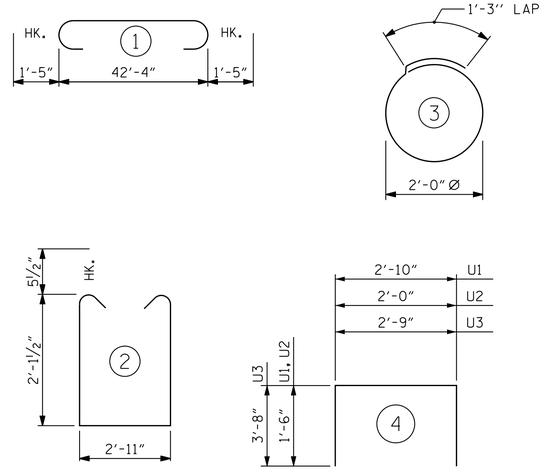


△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	45'-2"	777
B2	4	#10	STR	42'-6"	732
B3	4	#5	STR	42'-6"	177
B4	8	#4	STR	22'-6"	120
B5	11	#4	STR	2'-11"	21
D1	44	#6	STR	1'-6"	99
S1	46	#5	2	8'-1"	388
S2	16	#4	3	7'-7"	81
U1	4	#4	4	5'-10"	16
U2	6	#4	4	5'-0"	20
U3	2	#9	4	10'-1"	69

REINFORCING STEEL (FOR ONE BENT) 2500 LBS

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

TOTAL CLASS A CONCRETE 12.9 C.Y.

HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT)

No. 8 LIN. FT. 400

PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 GALVANIZED STEEL PILES (FOR ONE BENT) NO: 8

PILE REDRIVES NO: 4

END OF CAP VIEW

SECTION A-A

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

Documents signed by: Andrew Phillips 2BB69ABAD4004D3... 3/7/2018

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # P-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : JJ. KIMBLE	DATE : 1/18	
CHECKED BY : A.L. PHILLIPS	DATE : 1/18	
DRAWN BY : DGE 05/10	REV. 6/17	MAA/THC
CHECKED BY : MKT 05/10		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

3/7/2018

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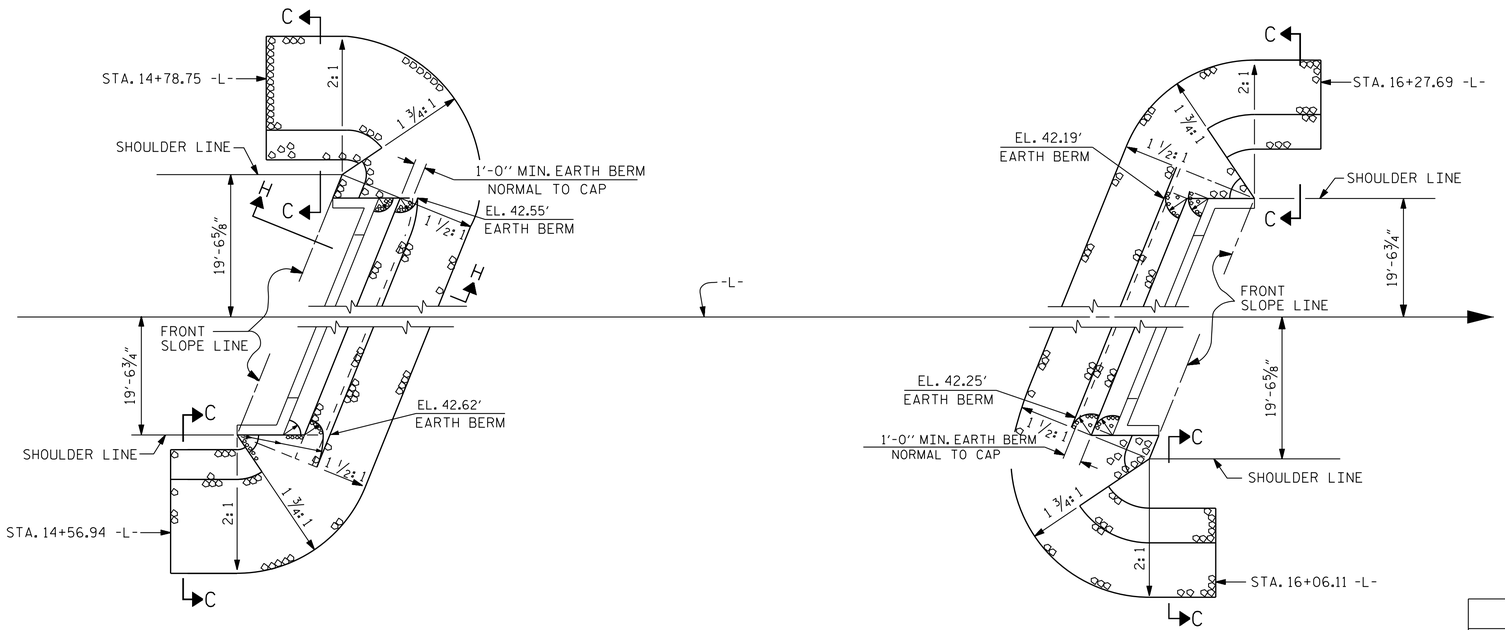
STD. NO. 14"HP_BT_33_60&120S_<60'

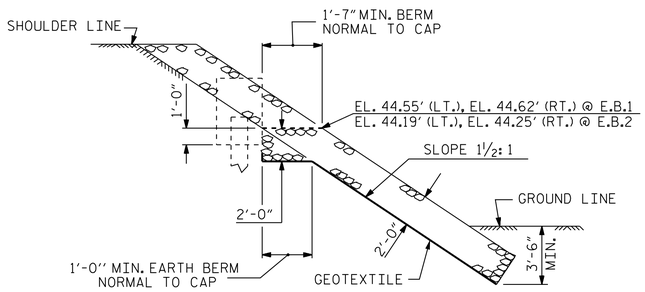


END BENT 1

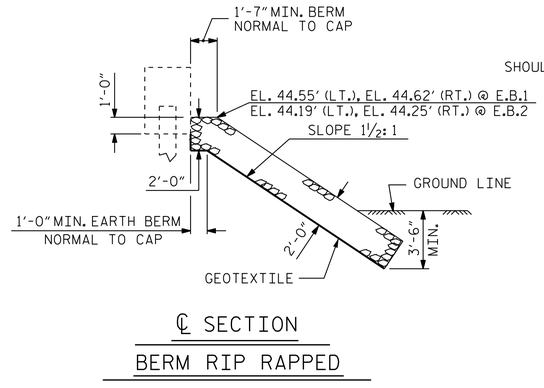
END BENT 2

PLAN OF RIP RAP

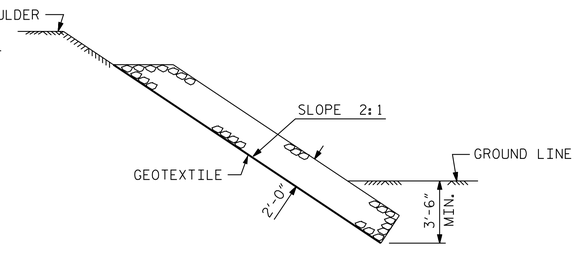
ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+42.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	125	139
END BENT 2	133	148



SECTION H-H



℄ SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17BP.2.R.84
LENOIR COUNTY
STATION: 15+42.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS
DocuSigned by: Andrew Phillips 28B69ABAD4004D3...
3/7/2018

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Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY : JJ. KIMBLE	DATE : 1/18		
CHECKED BY : A.L. PHILLIPS	DATE : 1/18		
DRAWN BY : REK 1/84	REV. 5/1/06R	TLA/GM	
CHECKED BY : RDU 1/84	REV. 10/1/11	MAA/GM	
	REV. 12/21/11	MAA/GM	

3/7/2018
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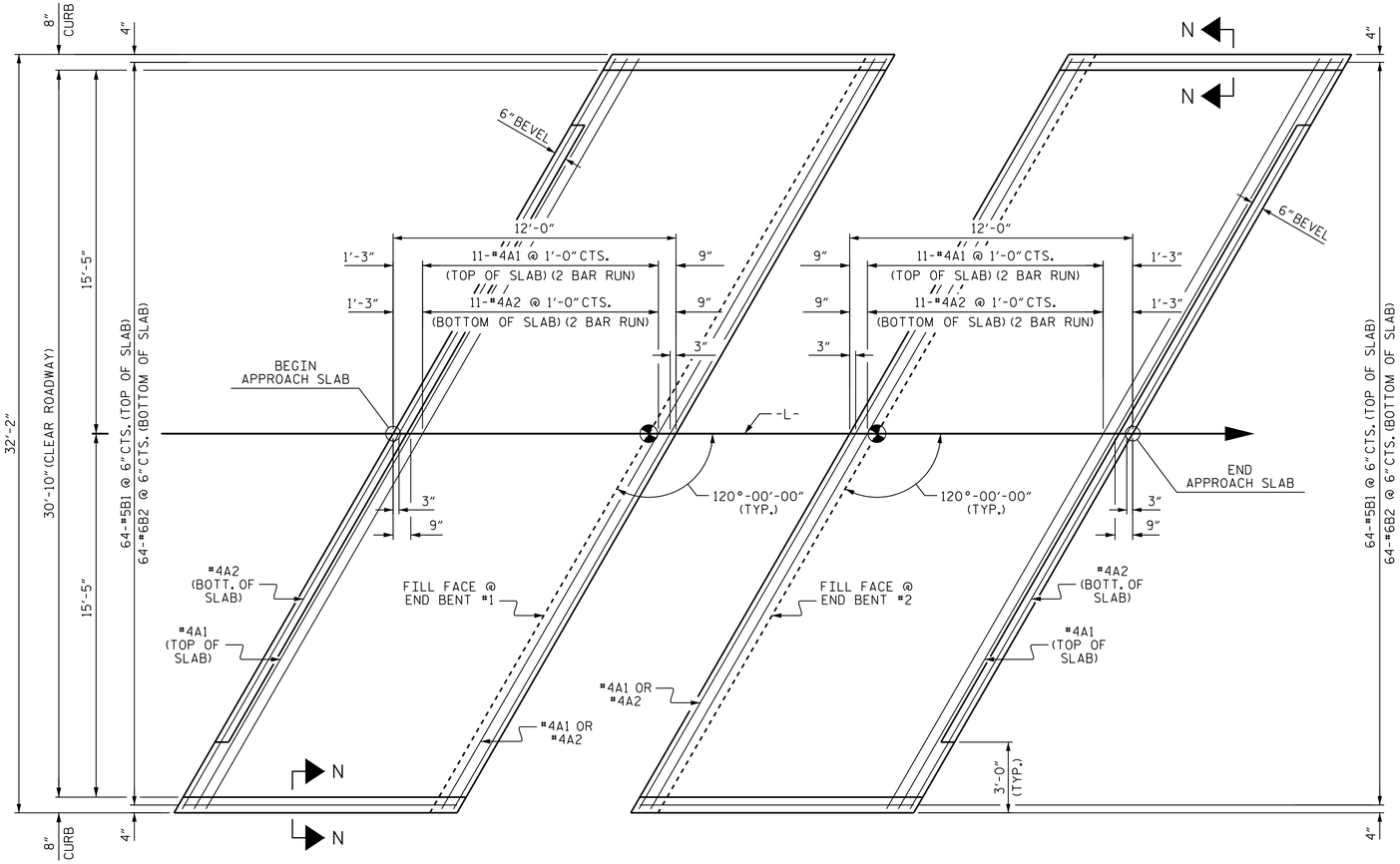
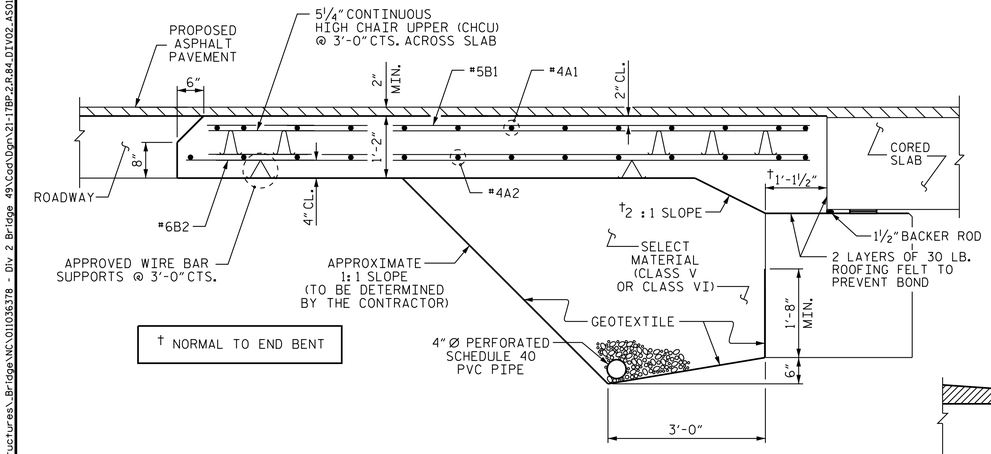
STD. NO. RR1



PLAN @ END BENT #1

PLAN @ END BENT #2

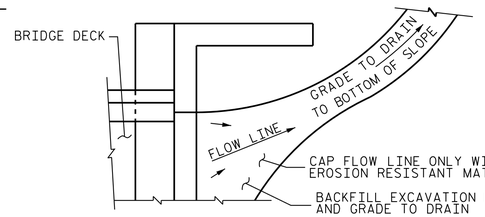
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

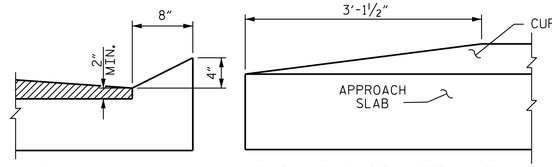
SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH FILL)



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



SECTION N-N

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

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

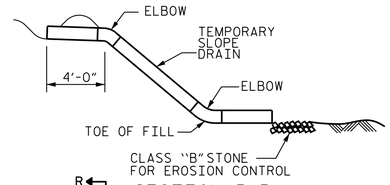
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

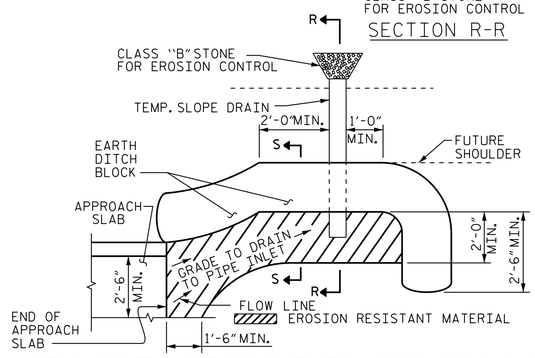
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

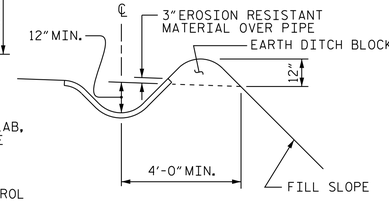


SECTION R-R



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)

BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	19'-5"	337
A2	26	#4	STR	19'-4"	336
* B1	64	#5	STR	11'-1"	740
B2	64	#6	STR	11'-7"	1113
REINFORCING STEEL				LBS.	1449
* EPOXY COATED REINFORCING STEEL				LBS.	1077
CLASS AA CONCRETE				C.Y.	18.6

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	19'-5"	337
A2	26	#4	STR	19'-4"	336
* B1	64	#5	STR	11'-1"	740
B2	64	#6	STR	11'-7"	1113
REINFORCING STEEL				LBS.	1449
* EPOXY COATED REINFORCING STEEL				LBS.	1077
CLASS AA CONCRETE				C.Y.	18.6

SPLICE LENGTHS

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

PROJECT NO. 17BP.2.R.84

LENOIR COUNTY

STATION: 15+42.50 -L-

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

Docusigned by: Andrew Phillips 28B99ABADA694D3...

3/7/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER)

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

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ASSEMBLED BY : JJ. KIMBLE	DATE : 1/18
CHECKED BY : A.L. PHILLIPS	DATE : 1/18
DRAWN BY : SHS/MAA 5-09	REV. 12-17
CHECKED BY : BCH 5-09	

3/7/2018

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STD. NO. BAS_33_120S

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 ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞"Ø SHEAR STUDS FOR THE ¾"Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞"Ø STUDS FOR 4 - ¾"Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞"Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾"Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾"Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95	EEM	(/) RGW	REV. 5-7-03	RWW	(/) JTE	REV. 10-1-11	MAA	(/) GM
REV. 8-16-99	RWW	(/) LES	REV. 5-1-06	TLA	(/) GM	REV. 12-17	MAA	(/) THC