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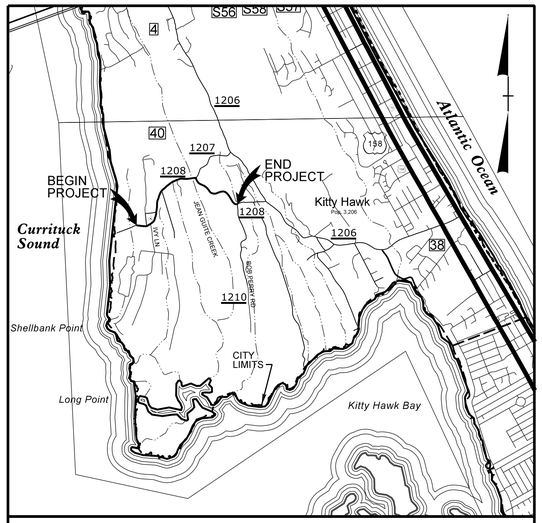
TIP PROJECT: R-5738

CONTRACT: DA00333

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



VICINITY MAP NTS

FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

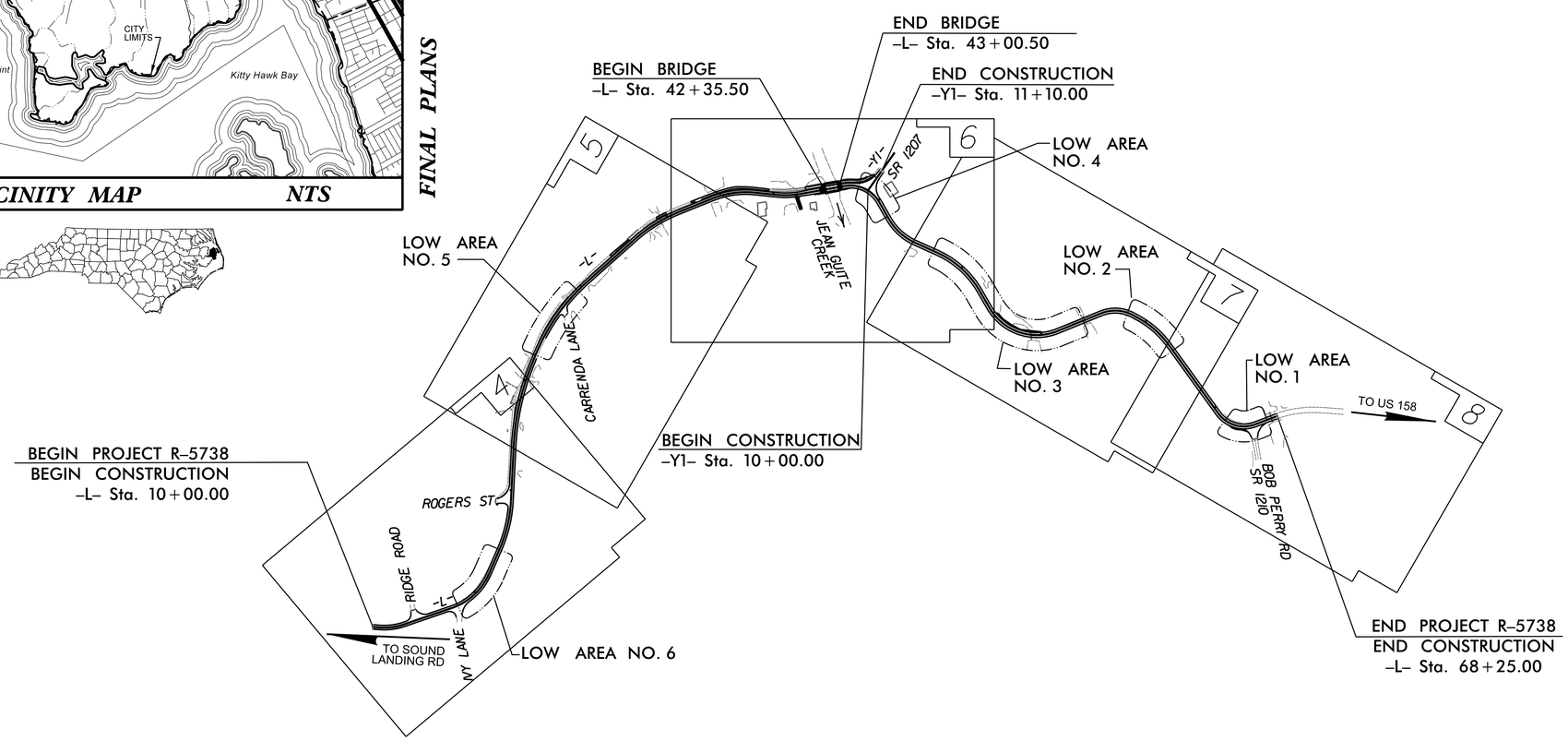
DARE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5738	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
50196.1.1		PE
50196.2.1		R/W & UTIL.
50196.3.1		CONST.

LOCATION: SR 1208 (WEST KITTY HAWK ROAD) FROM WEST OF IVY LANE TO EAST OF SR 1210 AND REPLACEMENT OF BRIDGE #40

TYPE OF WORK: GRADING, PAVING, DRAINAGE, EROSION CONTROL & STRUCTURES



THIS IS NOT A CONTROL OF ACCESS PROJECT.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 2012 = 930
ADT 2036 =
K = %
D = %
T = 7% *
V = MPH
*(TTST = % + DUAL = %)
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT	=	1.091 MILES
LENGTH STRUCTURES PROJECT	=	0.012 MILES
TOTAL LENGTH PROJECT	=	1.103 MILES

NCDOT CONTACT:
BARRY HOBBS, PE

Prepared In the Office of:
LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, North Carolina 27605
License No.: F-0840

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 15, 2017

LETTING DATE:
JULY 18, 2018

DEAN D. HATFIELD, PE
PROJECT ENGINEER

RD ODELL, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16003 ENGINEER DEAN D. HATFIELD
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER RD ODELL
SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

09/08/99
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-5738	1A

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER PAUL A. ODELL
DocuSigned by: RD Odell
7814DC7FA0A4A0...
6/11/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16003 ENGINEER DERON D. HAYNFIELD
DocuSigned by: D. Haynfield
820D3B...
6/11/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-3	SURVEY CONTROL SHEETS
2A-1 THRU 2A-2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2C-1 THRU 2C-3	SPECIAL DETAILS
3B	ROADWAY SUMMARY SHEET
3D	DRAINAGE SUMMARY SHEET
4 THRU 8	PLAN SHEET
9 THRU 11	PROFILE SHEET
TMP1 THRU TMP13	TRAFFIC MANAGEMENT PLAN SHEETS
EC1 THRU EC13	EROSION CONTROL SHEETS
UO-1 THRU UO-3	UTILITIES BY OTHERS
X-1 THRU X-24	CROSS-SECTIONS
S-1 THRU S-26	STRUCTURE PLANS
W-1 THRU W-2	RETAINING WALL

GENERAL NOTES

GENERAL NOTES: 2018 SPECIFICATIONS
EFFECTIVE: 01/01/18
REVISED: 09/01/17

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

CENTURY LINK, DOMINION NC POWER AND DARE COUNTY.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT IN ACCORDANCE WITH SECTION 801 OF THE 2018 NORTH CAROLINA STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

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

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

ROADWAY ENGLISH STANDARD DRAWINGS

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	
442.02	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 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
838.01	Concrete Endwall for Single and Double Pipe Culverts 15" thru 48" Pipe - 90°Skew
838.11	Bridk Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe - 90° Skew
838.80	Precast Endwalls - 12" thru 72" Pipe - 90° Skew
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
862.01	Guardrail Placement
862.03	Structure Anchor Units (Special Detail for Type III Anchor Units Sheets 1 of 7 and 2 of 7)
876.02	Guide for Rip Rap at Pipe Outlets

LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
License No.: F-0840

ROADWAY PLANS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DATE$$$$
$$$$TIME$$$$
$$$$DGN$$$$

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-5738	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Computed 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 — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- 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 & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

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

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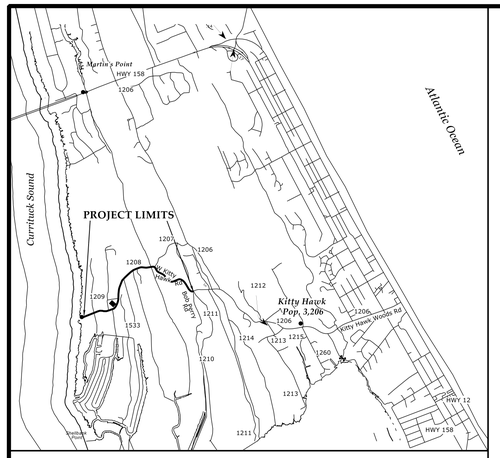
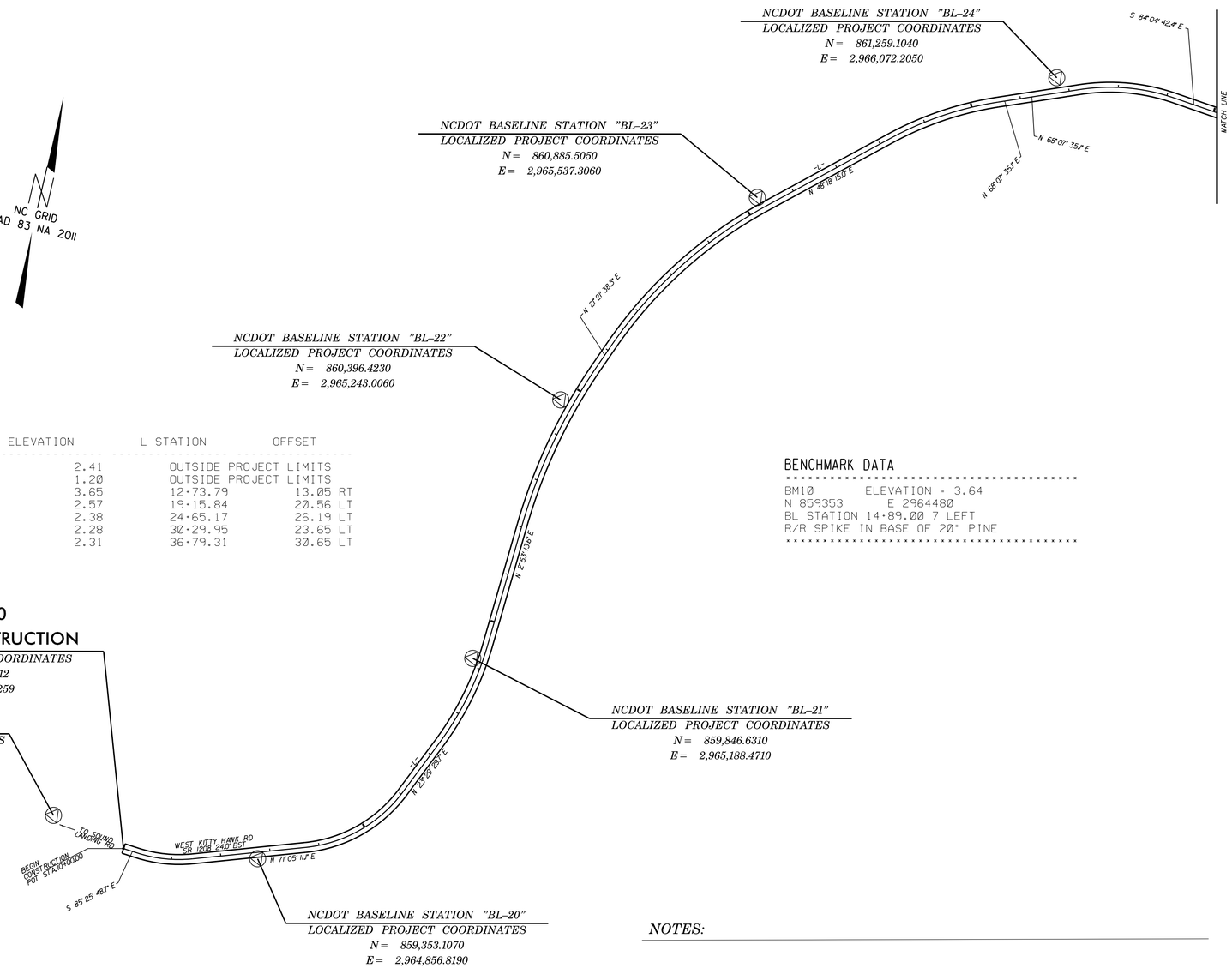
PROJECT REFERENCE NO.	SHEET NO.
R-5738	1C-1
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET R-5738



VICINITY MAP



CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
R57381	R5738-1 (GPS MON)	859013.5380	2963550.9050	2.41	OUTSIDE PROJECT LIMITS	
R57382	R5738-2 (GPS MON)	859344.6980	2964434.5840	1.20	OUTSIDE PROJECT LIMITS	
BL20	BL-20	859353.1070	2964856.8190	3.65	12+73.79	13.05 RT
BL21	BL-21	859846.6310	2965188.4710	2.57	19+15.84	20.56 LT
BL22	BL-22	860396.4230	2965243.0060	2.38	24+65.17	26.19 LT
BL23	BL-23	860885.5050	2965537.3060	2.28	30+29.95	23.65 LT
BL24	BL-24	861259.1040	2966072.2050	2.31	36+79.31	30.65 LT

BENCHMARK DATA

BM10 ELEVATION = 3.64
N 859353 E 2964480
BL STATION 14+89.00 7 LEFT
R/R SPIKE IN BASE OF 20" PINE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "5738-2"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 859,344.698(ft) EASTING: 2,964,434.584(ft)
ELEVATION: 1.20(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999979893
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"R5738-2" TO -L- STATION 10+00 IS
S 77° 45' 2.42" E 156.61'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.NCDOT.GOV/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
TIP R5738_LS_CONTROL.TXT

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

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

NOTE: DRAWING NOT TO SCALE

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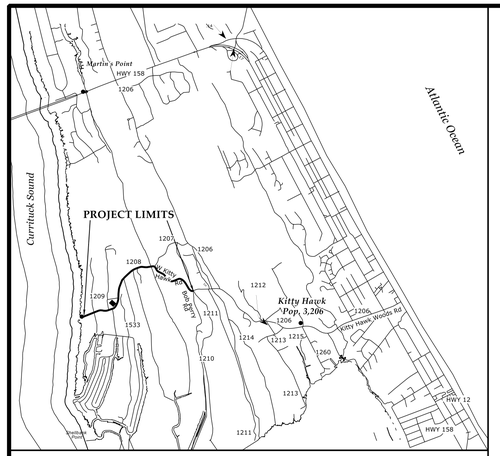
PROJECT REFERENCE NO.	SHEET NO.
R-5738	IC-2
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET R-5738



VICINITY MAP

CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL25	BL-25	861289.6870	2966754.8890	1.70	43+62.57	14.99 RT
BL26	BL-26	860999.7020	2967171.2360	1.79	48+99.90	12.77 LT
BL27	BL-27	860625.5950	2967504.4270	1.69	53+99.25	17.52 RT
BL28	BL-28	860731.8420	2968028.2820	2.23	59+35.56	13.27 LT
BL29	BL-29	860196.0350	2968489.5690	2.23	66+35.96	24.27 RT
R57383	R5738-3 (GPS MON)	860301.2220	2968962.1780	1.68	OUTSIDE PROJECT LIMITS	
R57384	R5738-4 (GPS MON)	860314.1360	2969813.1950	4.18	OUTSIDE PROJECT LIMITS	

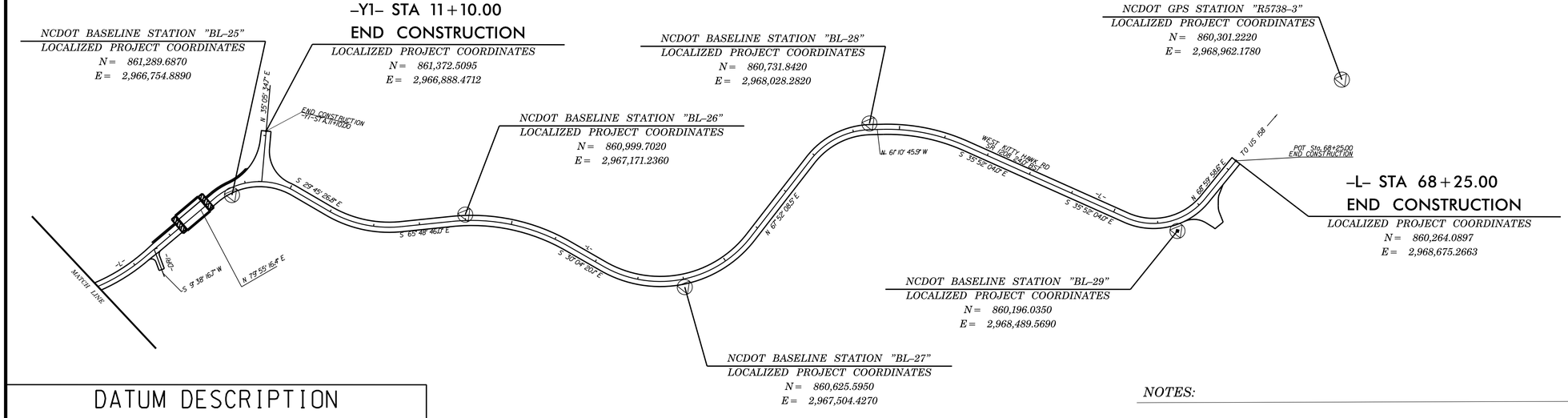
BENCHMARK DATA

BM11 ELEVATION = 3.56
N 861382 E 2966916
BL STATION 49+99.00 167 LEFT
R/R SPIKE IN BASE OF 20" PINE

BM12 ELEVATION = 3.99
N 860069 E 2968629
BL STATION 72+78.00 154 RIGHT
R/R SPIKE IN BASE OF 20" PINE

NC GRID
NAD 83 NA 2011

NCDOT GPS STATION "R5738-4"
LOCALIZED PROJECT COORDINATES
N = 860,314.1360
E = 2,969,813.1950



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

NOTE: DRAWING NOT TO SCALE

NOTES:

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HTTP://WWW.NCDOT.GOV/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

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PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

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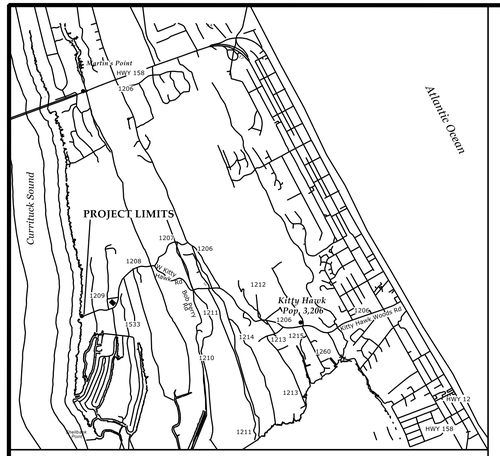
PROJECT REFERENCE NO.	SHEET NO.
R-5738	1C-3
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET R-5738



VICINITY MAP

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	43+76.00	-31.79	861334.6121	2966774.0414

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	10+68.74	-30.00	861355.9969	2966840.2040

PUE MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	41+73.00	30.21	861246.0059	2966574.0739
L	44+46.00	23.89	861257.5997	2966819.5615

DATUM DESCRIPTION

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WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 859,344.698(ft) EASTING: 2,964,434.584(ft)
ELEVATION: 1.20(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999979893
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R5738-2" TO -L- STATION 10+00 IS
S 77 ° 45' 2.42" E 156.61'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.NCDOT.GOV/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
TIP R5738_LS_CONTROL.TXT

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

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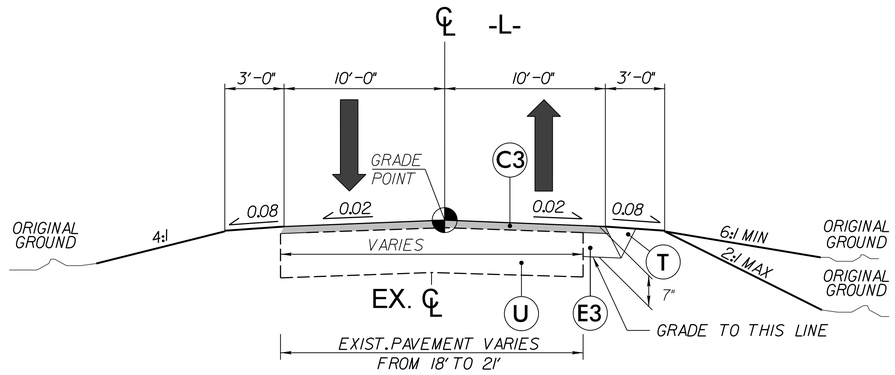
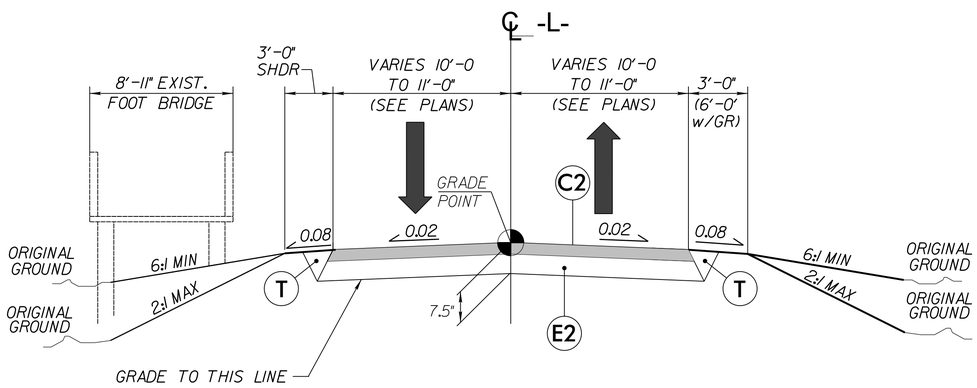


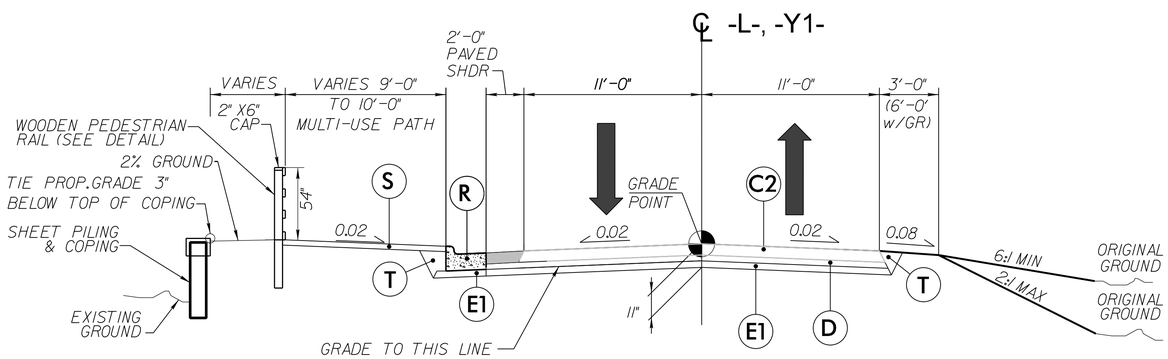
TYPICAL SECTION 1

–L– STA 10+00.00 TO –L– STA 40+25.67



TYPICAL SECTION 2

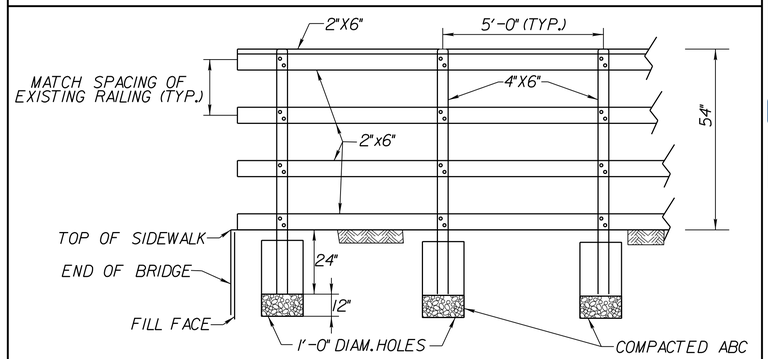
–L– STA 40+25.67 TO –L– STA 41+50.00



TYPICAL SECTION 3

–L– STA 41+50.00 TO –L– STA 42+35.50 (BEGIN BRIDGE)
–L– STA 43+00.50 (END BRIDGE) TO –L– STA 44+11.84
–Y1– STA. 10+00.00 TO –Y1– STA. 10+73.26

WOODEN PEDESTRIAN RAIL ELEVATION



PROJECT REFERENCE NO.	SHEET NO.
R-5738	2A-1
R/W SHEET NO.	

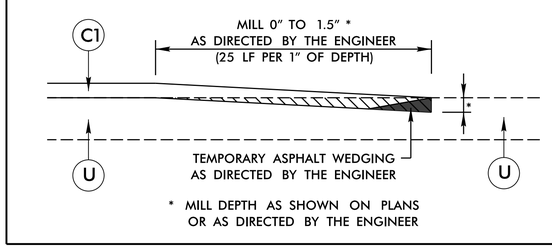
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER — RD. OdeLL — 9/17/2018

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER — S. MORRISON — 9/16/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

N.T.S.

MILLED BUTT JOINT TIE-IN DETAIL (PROFILE)



Note: Pavement edge slopes are 1:1 unless shown otherwise.

PAVEMENT SCHEDULE

ITEM	DESCRIPTION
C1	Prop. Approx 1.5" Asphalt Concrete Surface Course, Type S9.5B, at an Average Rate of 168 lbs. Per sq. yard in one layer.
C2	Prop. Approx 3.0" Asphalt Concrete Surface Course, Type S9.5B, at an Average Rate of 168 lbs. Per sq. yard in two layers.
C3	Prop. Var. Depth Asphalt Concrete Surface Course, Type S9.5B, at an Average Rate of 112 lbs. Per sq. yard Per 1" Depth, to be placed in layers not less than 1.5" or greater than 2" in depth.
D	Prop. Approx 4" Asphalt Concrete Imtermediate Course, Type I19.0C, at an Average Rate of 456 lbs. Per sq. yard.
E1	Prop. Approx 4" Asphalt Concrete Base Course, Type B25.0C, at an Average Rate of 456 lbs. Per sq. yard.
E2	Prop. Approx 4.5" Asphalt Concrete Base Course, Type B25.0C, at an Average Rate of 513 lbs. Per sq. yard.
E3	Prop. Approx 5.5" Asphalt Concrete Base Course, Type B25.0C, at an Average Rate of 627 lbs. Per sq. yard.
E4	Prop. Var. Depth Asphalt Concrete Base Course, Type B25.0C, at an Average Rate of 114 lbs. Per sq. yard Per 1" Depth, to be placed in layers not less than 4" or greater than 5.5" in depth.
J	6" Aggregate Base Course
R	2'-6" Curb and Gutter
S	4" Concrete Sidewalk
T	Earth Material
U	Existing Pavement
W	Var. Depth Asphalt Pavement

REVISIONS

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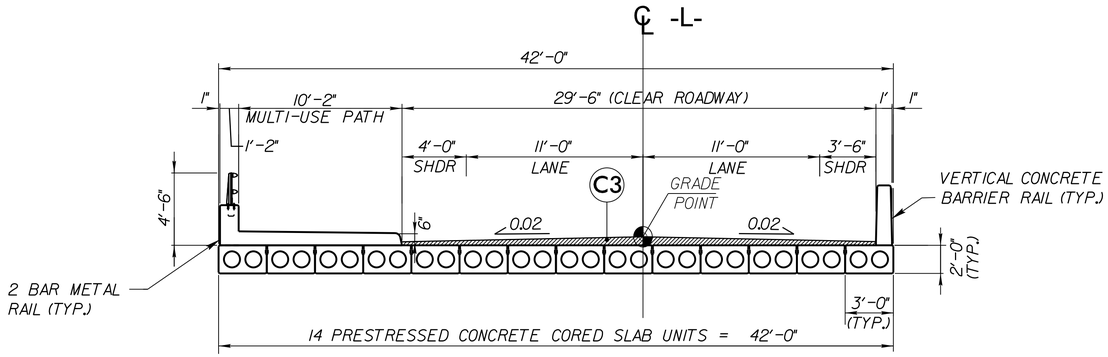
PROJECT REFERENCE NO.	SHEET NO.
R-5738	2A-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER R. D. ODELL — 5/11/2018

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER C. W. MORRISON — 5/10/2018

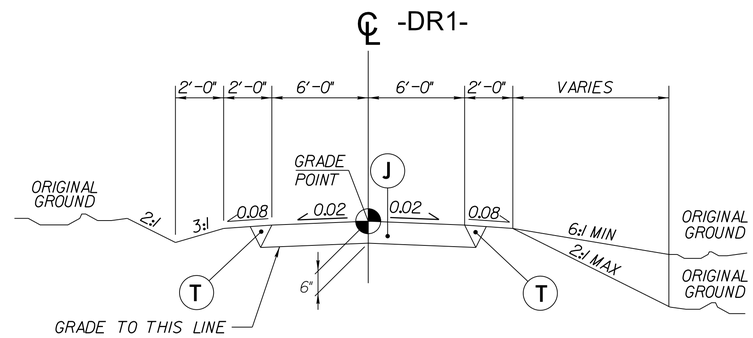
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

N.T.S.



BRIDGE TYPICAL SECTION

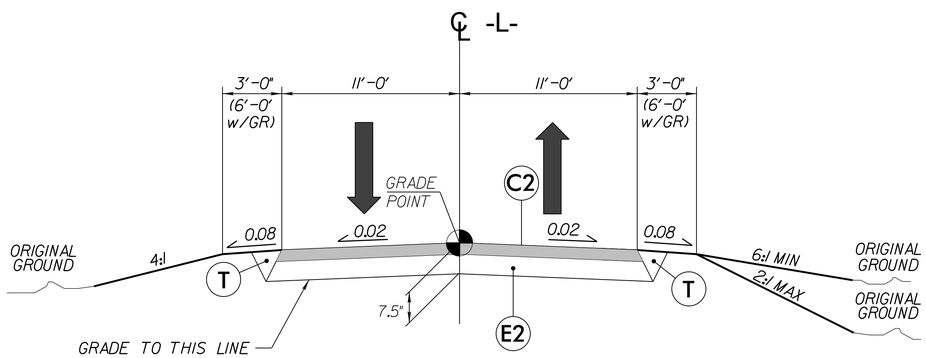
–L– STA 42+35.50 (BEGIN BRIDGE) TO –L– STA 43+00.50 (END BRIDGE)



DRIVEWAY DETAIL

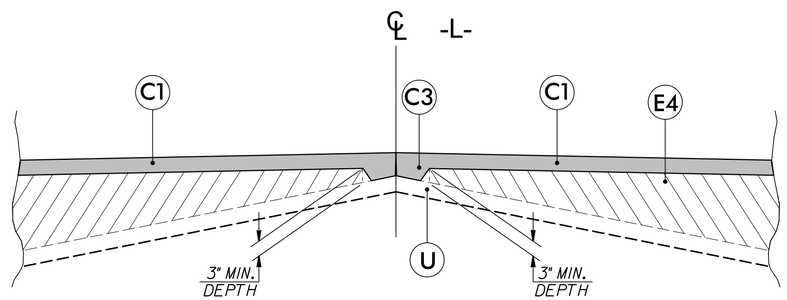
(SEE PLANS FOR DWY LOCATION)

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR. S9.5B
D	4.0" I19.0C
E1	4.0" B25.0C
E2	4.5" B25.0C
E3	5.5" B25.0C
E4	VAR. B25.0C
J	6" Aggregate Base
R	2'-6" C&G
S	4" Sidewalk
T	Earth Material
U	Exist. Pavement
W	Wedging

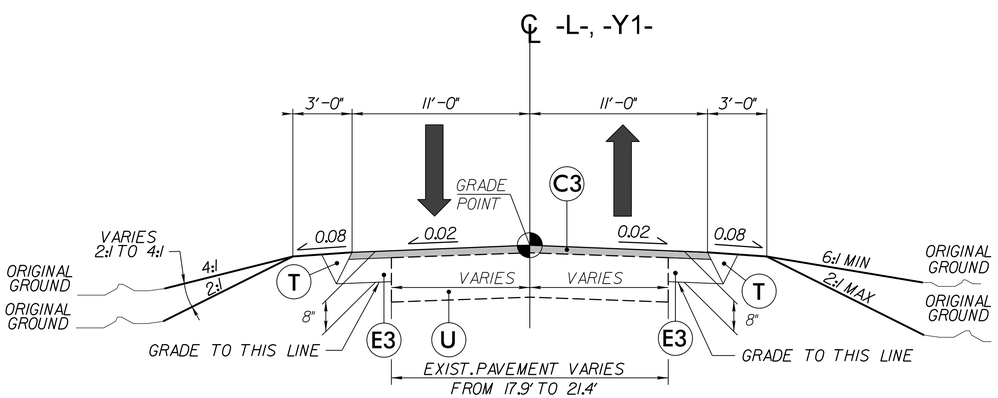


TYPICAL SECTION 4

–L– STA 44+11.84 TO –L– STA 46+80.55



DETAIL SHOWING METHOD OF WEDGING



TYPICAL SECTION 5

–L– STA 46+80.55 TO –L– STA 68+25.00
–Y1– STA 10+73.26 TO –Y1– STA. 11+10.00

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	2C-1

PROJECT REFERENCE NO.	SHEET NO.

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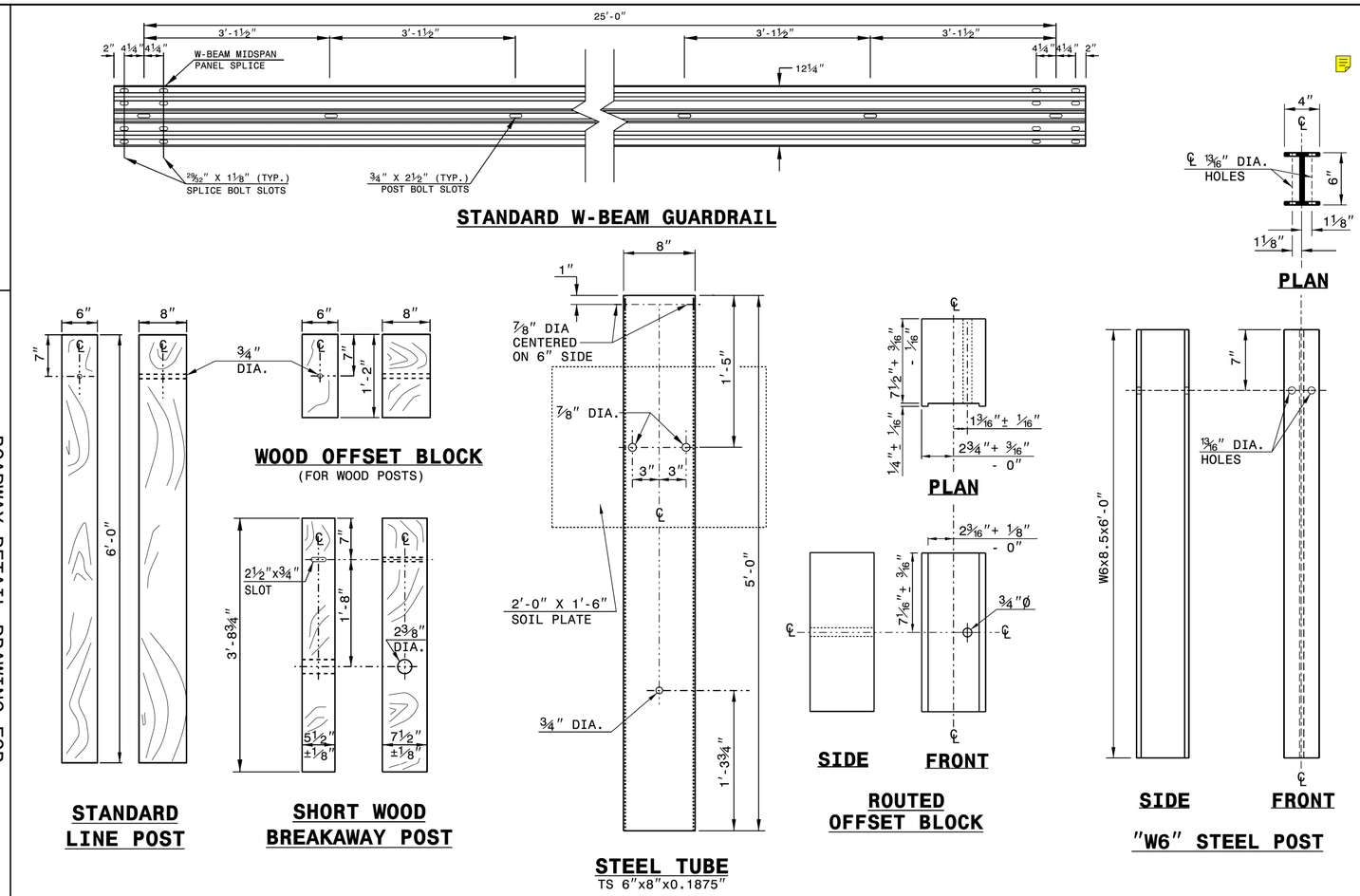
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON

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

SEE TITLE BLOCK

ORIGINAL BY: J.HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

04/06/15

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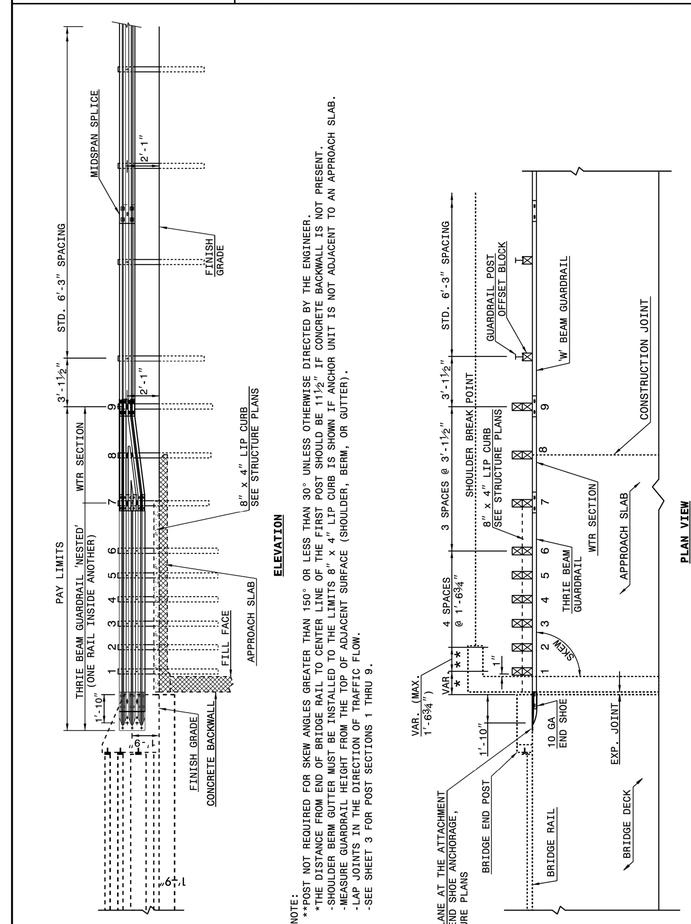
04/06/15

PROJECT REFERENCE NO.	SHEET NO.
R-5738	2C-2



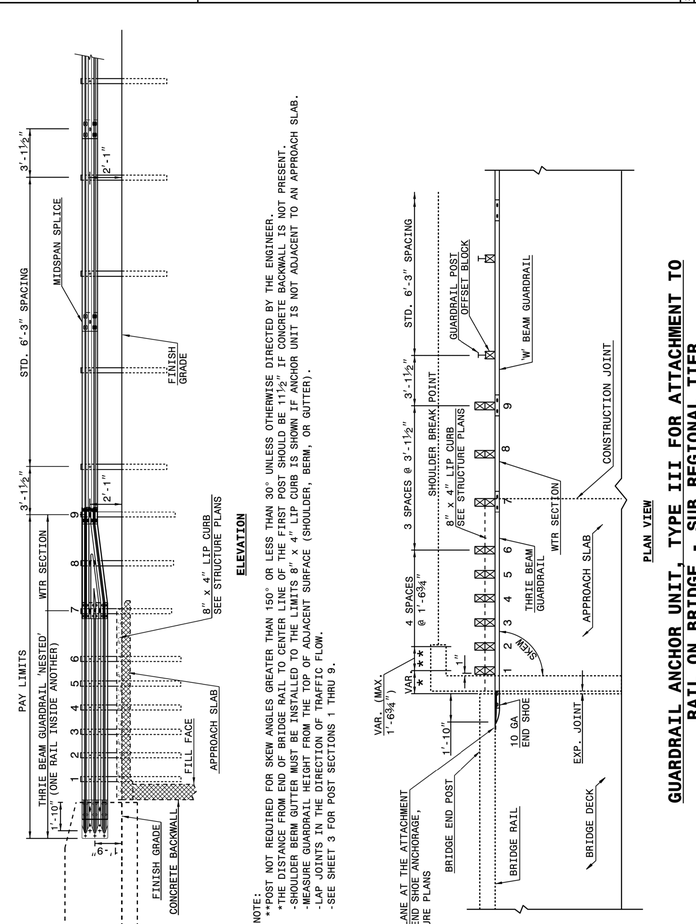
NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

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

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

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03



NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

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

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03

PROJECT REFERENCE NO.	SHEET NO.

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

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

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

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

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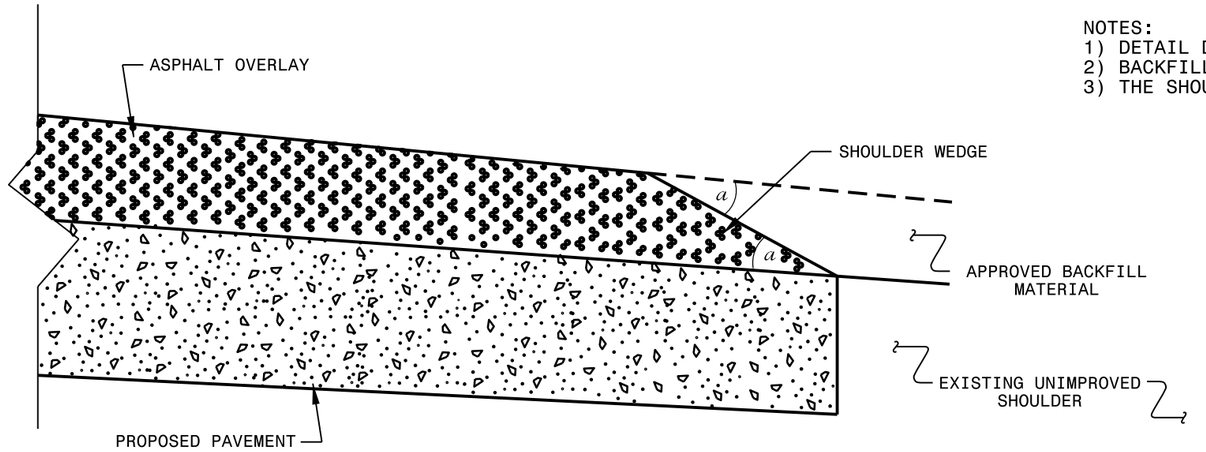
Structures\Contracts\Special Details\jhowerton\Standard Drawings\2018 Standard Drawings\Details in Lieu of Standards\Division 8\0862d03d1.dgn
jhowerton AT CSD-2425195

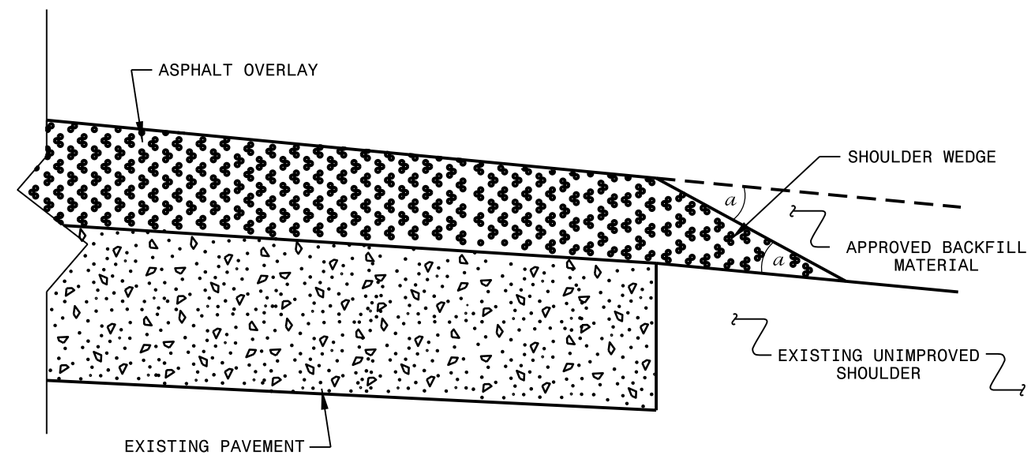
PROJECT REFERENCE NO.	SHEET NO.
R-5738	2C-3

NOTES:
1) DETAIL DOES NOT APPLY TO OGAFC AND ULTRA-THIN BONDED WEARING COURSE.
2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



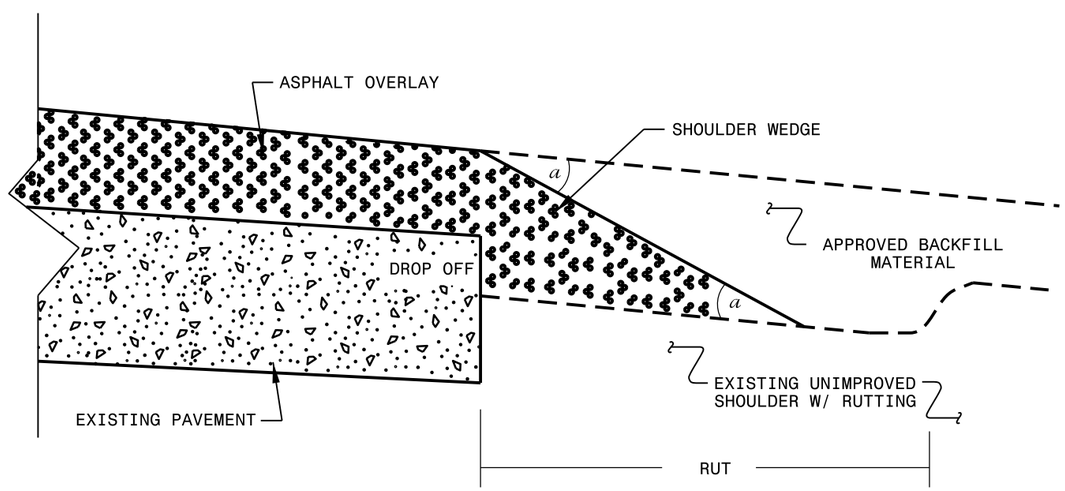
SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ Widening or with Existing Paved Shoulder having no dropoffs)



SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ NO Widening)



SHOULDER WEDGE DETAIL

(Resurfacing Adjacent to Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

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

SHOULDER WEDGE DETAILS

ORIGINAL BY:	T.SPELL	DATE:	7-19-11
MODIFIED BY:		DATE:	10/16/12
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PROJECT REFERENCE NO.	SHEET NO.
R-5738	3B
R/W SHEET NO.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHOR UNITS /END UNITS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GREU TL-2	GREU MEDIAN	TYPE-III	CAT-1	VI MOD	B-77	AT-1	EA	G	NG				
-L-	41+85.43	42+35.43	RT	50.00'	–	–	–	–	3'	4.45'	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–
-L-	43+00.43	43+50.43	RT	50.00'	–	–	–	–	3'	4.45'	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–
					–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
			SUB-TOTAL	100.00'											DEDUCTIONS FOR GUARDRAIL ANCHOR UNITS /END UNITS															
	DEDUCTIONS FOR GUARDRAIL ANCHOR UNITS /END UNITS			87.5'											GREU TL-2			2 @ 25.00' =		50'										
			TOTAL	12.5'											TYPE III			2 @ 18.75' =		37.5'										
			SAY	25.00'															TOTAL =	87.5'										

SUMMARY OF EARTHWORK (IN CUBIC YARDS)

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 10+00.00	66+73.11	286	1391	1105	–
-Y1- 10+00.00	11+10.00	0	5	5	–
SUBTOTAL:		286	1396	1110	–
MATERIAL FOR SHOULDER CONSTRUCTION		–	–	–	–
LOSS DUE TO CLEARING & GRUBBING		–	–	–	–
ADDITIONAL UNDERCUT		–	–	–	–
ROCK WASTE TO REPLACE BORROW		–	–	–	–
ADJUST FOR ROCK WASTE		–	–	–	–
WASTE IN LIEU OF BORROW		–	–	–	–
PROJECT TOTAL:		286	1396	1110	–
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT		–	–	55	–
GRAND TOTALS:		286	1396	1165	–
SAY:		290	–	1170	–

CONTINGENCY ITEMS
UNDERCUT EXCAVATION XX CY
SELECT GRANULAR MATERIAL XX CY
GEOTEXTILE FOR SOIL STABILIZATION XX CY
CLASS IV SUBGRADE STABILIZATION XX TON
INCIDENTAL STONE BASE XX TON

Note: Approximate quantities only. Unclassified Excavation, Fine Grading, and Clearing and Grubbing will be paid for at the contract lump sum price for "Grading."

REVISIONS

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LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
License No.: F-0840

ROADWAY PLANS

DocuSign Envelope ID: 02821D2B-CB1F-424B-82BD-82A3448D7EB9

04/06/15

COMPUTED BY:	AMP	DATE:	6/1/2017
CHECKED BY:		DATE:	

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE No.	SHEET
R-5738	3D

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
41+ 64.0	LT	0601		6.18			
		0601	0602		2.93	2.75	x
42+10.5	LT	0602		7.37			
		0602	0603		2.75	2.60	x
42+10.5	RT	0603		7.48			
		0603	out		2.60	2.40	x
34+67.5	CL	0501	out				
54+49	CL	0701	out				
54+54	CL	0702	out				
SHEET TOTALS							

DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)

STATION	FROM	TO	12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
41+ 64.0	0601													
	0601	0602												
42+10.5	0602													
	0602	0603												
42+10.5	0603													
	0603	out												
34+67.5	0501	out												
54+49	0701	out												
54+54	0702	out												
SHEET TOTALS														

C.S. PIPE (THICKNESS OR GAUGE)

STATION	FROM	TO	12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
41+ 64.0	0601									
	0601	0602								
42+10.5	0602									
	0602	0603								
42+10.5	0603									
	0603	out								
34+67.5	0501	out								
54+49	0701	out								
54+54	0702	out								
SHEET TOTALS										

R.C. PIPE CLASS III

STATION	FROM	TO	12"	15"	18"	24"	30"	36"	42"	48"
41+ 64.0	0601									
	0601	0602								
42+10.5	0602									
	0602	0603								
42+10.5	0603									
	0603	out			16					
34+67.5	0501	out								
54+49	0701	out								
54+54	0702	out								
SHEET TOTALS					16					

R.C. PIPE CLASS IV

STATION	FROM	TO	12"	15"	18"	24"	30"	36"	42"	48"
41+ 64.0	0601									
	0601	0602			44					
42+10.5	0602									
	0602	0603			28					
42+10.5	0603									
	0603	out								
34+67.5	0501	out						44		
54+49	0701	out						48		
54+54	0702	out						48		
SHEET TOTALS					72			140		

STATION	FROM	TO	15" C.S. SLOTTED DRAIN, 0.064" THICK (LF)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G
41+ 64.0	0601												1		1	
	0601	0602														
42+10.5	0602												1		1	
	0602	0603														
42+10.5	0603									1						
	0603	out														
34+67.5	0501	out						3.4								
54+49	0701	out														
54+54	0702	out						4.5								
SHEET TOTALS								7.9		1			2		2	

STATION	FROM	TO	CONCRETE TRANSITIONAL SECTION DROP INLET	CONCRETE TRANSITIONAL SECTION CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	T.B.D.I. STD. 840.35	FRAMES AND WIDE SLOT FLAT GRATES STD. 840.20	G.D.I. TYPE "B" STD. 840.18 OR 840.27	D.I. STD. FRAME WITH GRATE STD. 840.16	G.D.I. FRAME WITH GRATE STD. 840.22	15" & 18" BDO STD. 850.10	24" & 30" BDO STD. 850.11	T.B.J.B. W/ SLAB LID STD. 840.34	CONC. J.B. STD. 840.31 OR BRICK J.B. STD. 840.32	MANHOLE FRAME AND COVER STD. 840.54				C.S. PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71		PIPE REMOVAL LIN. FT.	REMARKS
41+ 64.0	0601																						
	0601	0602																					
42+10.5	0602																						Extra Depth
	0602	0603																					
42+10.5	0603							1															Extra depth
	0603	out																					
34+67.5	0501	out																				41	Remove existing 24" CMP
54+49	0701	out																				40	Remove existing 24" CMP
54+54	0702	out																				40	Remove existing 24" CMP
SHEET TOTALS								1														121	

ABBREVIATIONS

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

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER D. ODELL
4/25/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16003 ENGINEER DAVID HAIFIELD
4/25/2018

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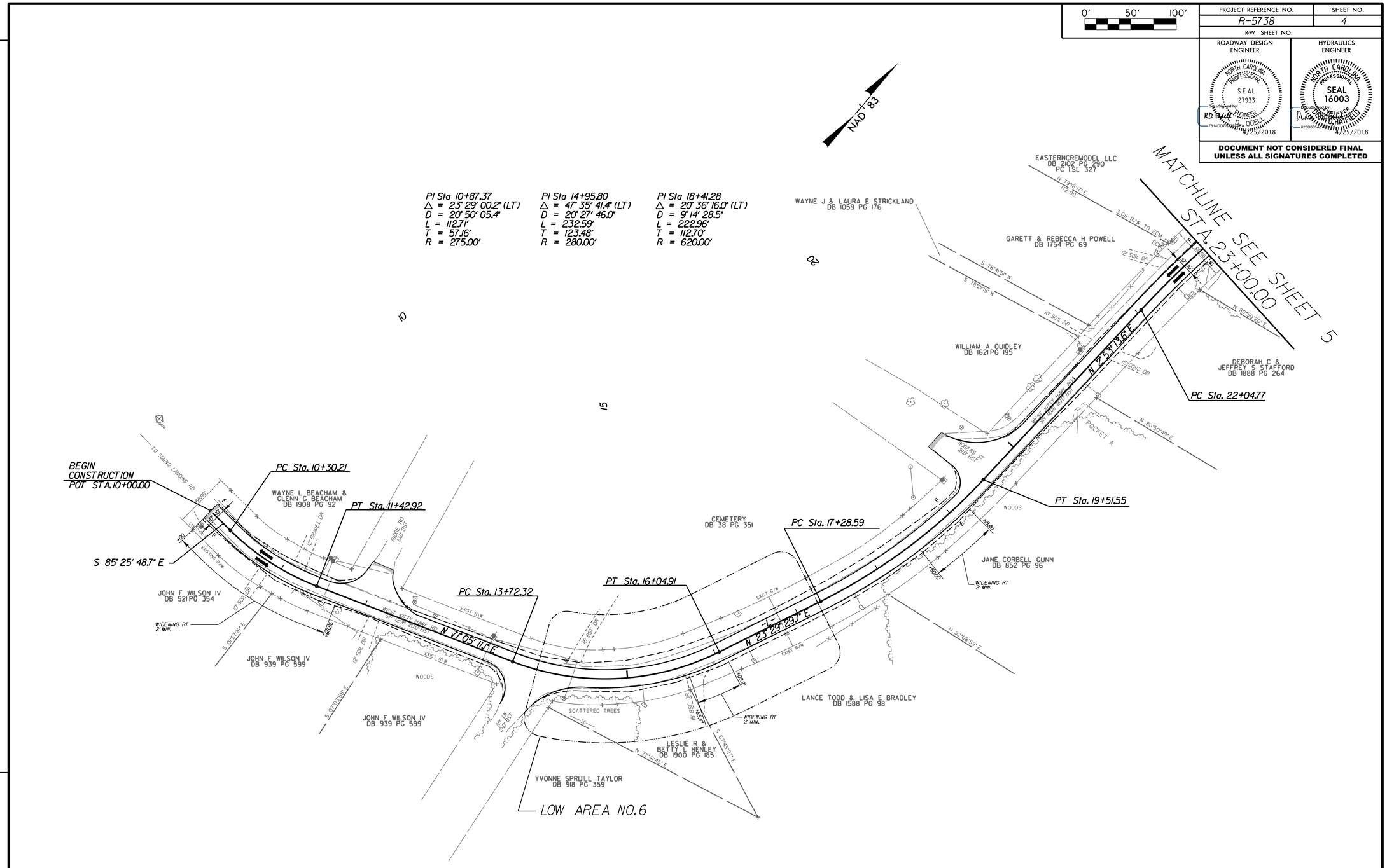

SEE SHEET 9 FOR -L- PROFILE

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Raleigh, NC 27605-3322
License No.: F-0840

ROADWAY PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER
DocuSigned by: RD-DULL
DULL, RICHARD
7814D0F0...
4/25/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16003 ENGINEER
DocuSigned by: DAVID D. HATFIELD
HATFIELD, DAVID D.
820D3B8...
4/25/2018

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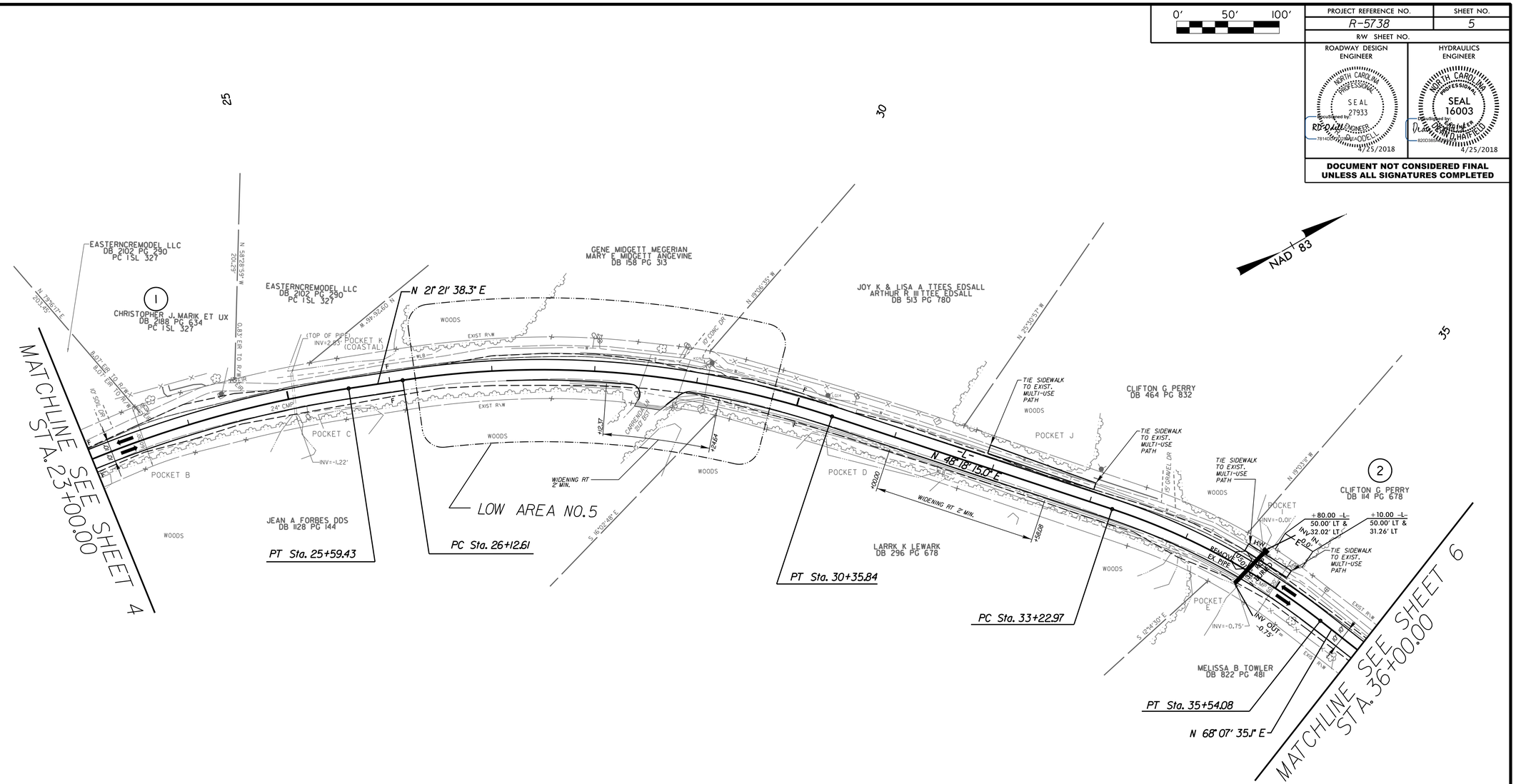

PI Sta 23+83.65
Δ = 18° 28' 24.6" (RT)
D = 5° 12' 31.3"
L = 354.67'
T = 178.89'
R = 1,100.00'

PI Sta 28+28.21
Δ = 26° 56' 36.7" (RT)
D = 6° 21' 58.3"
L = 423.23'
T = 215.60'
R = 900.00'

PI Sta 34+39.69
Δ = 19° 49' 20.1" (RT)
D = 8° 34' 38.0"
L = 231.10'
T = 116.72'
R = 668.00'

SEE SHEET 9 FOR -L- PROFILE

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ROADWAY PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 27933 — DocuSigned by: RD-DIV 1 ENGINEER — 7814D0F0-7A4A-CDE1-L... — 4/25/2018

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 16003 — DocuSigned by: HYDRAULICS ENGINEER — 820D3B6... — 4/25/2018

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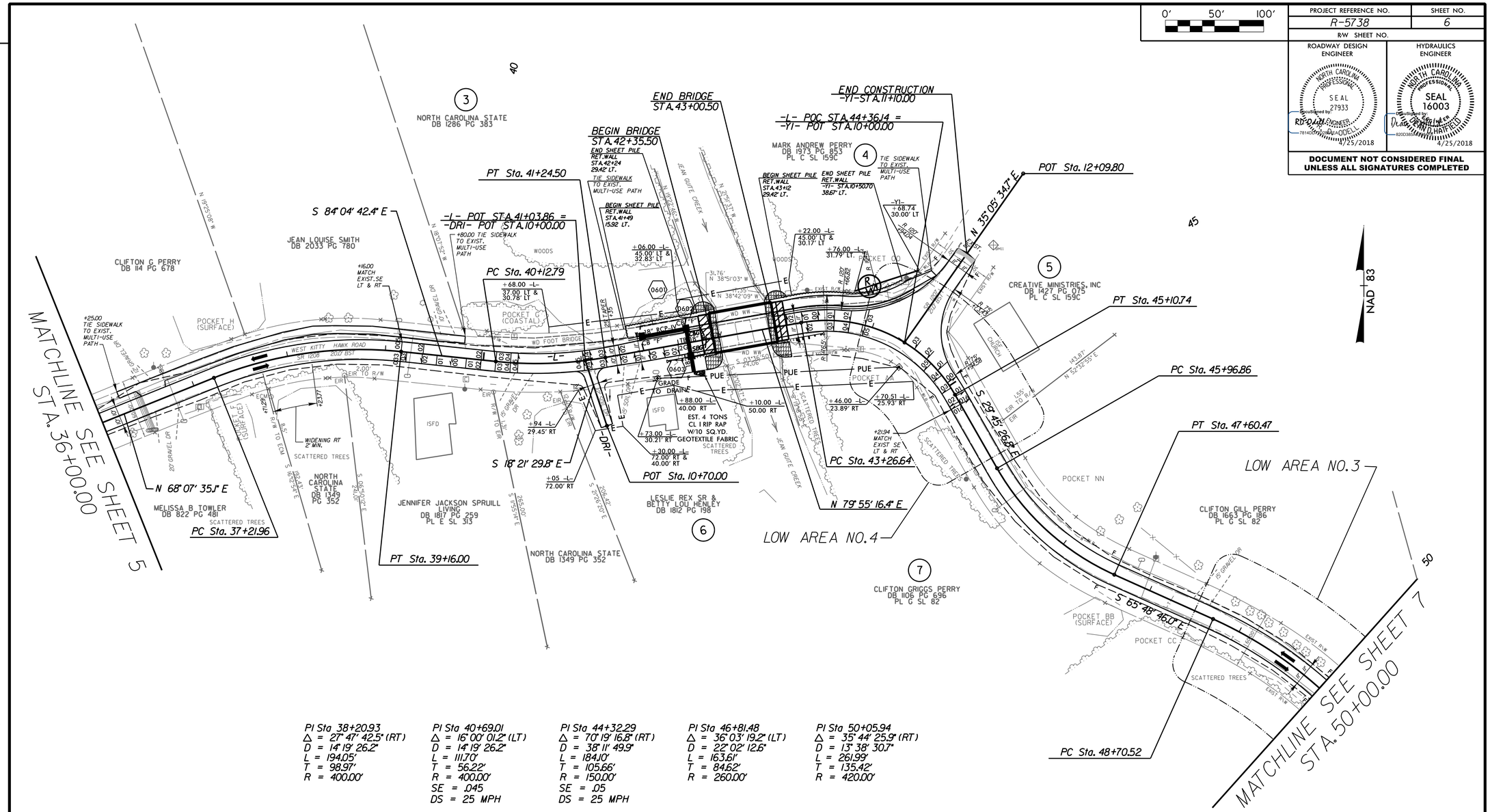


PI Sta 38+20.93
Δ = 27° 47' 42.5" (RT)
D = 14° 19' 26.2"
L = 194.05'
T = 98.97'
R = 400.00'

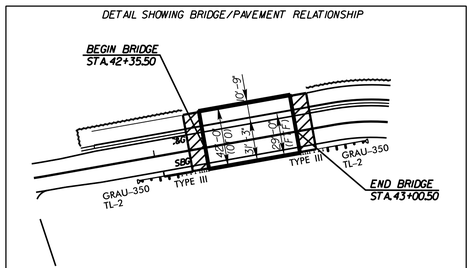
PI Sta 40+69.01
Δ = 16° 00' 01.2" (LT)
D = 14° 19' 26.2"
L = 111.70'
T = 56.22'
R = 400.00'
SE = .045
DS = 25 MPH

PI Sta 44+32.29
Δ = 70° 19' 16.8" (RT)
D = 38° 11' 49.9"
L = 184.10'
T = 105.66'
R = 150.00'
SE = .05
DS = 25 MPH

PI Sta 46+81.48
Δ = 36° 03' 19.2" (LT)
D = 22° 02' 12.6"
L = 163.61'
T = 84.62'
R = 260.00'

PI Sta 50+05.94
Δ = 35° 44' 25.9" (RT)
D = 13° 38' 30.7"
L = 261.99'
T = 135.42'
R = 420.00'

DETAIL SHOWING BRIDGE/PAVEMENT RELATIONSHIP



SEE SHEETS S-1 THRU S-26 FOR STRUCTURE PLANS

SEE SHEET 10 FOR -L- PROFILE
SEE SHEET 11 FOR -Y1- AND -DR1- PROFILES

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ROADWAY PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER
4/25/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16003 ENGINEER
4/25/2018

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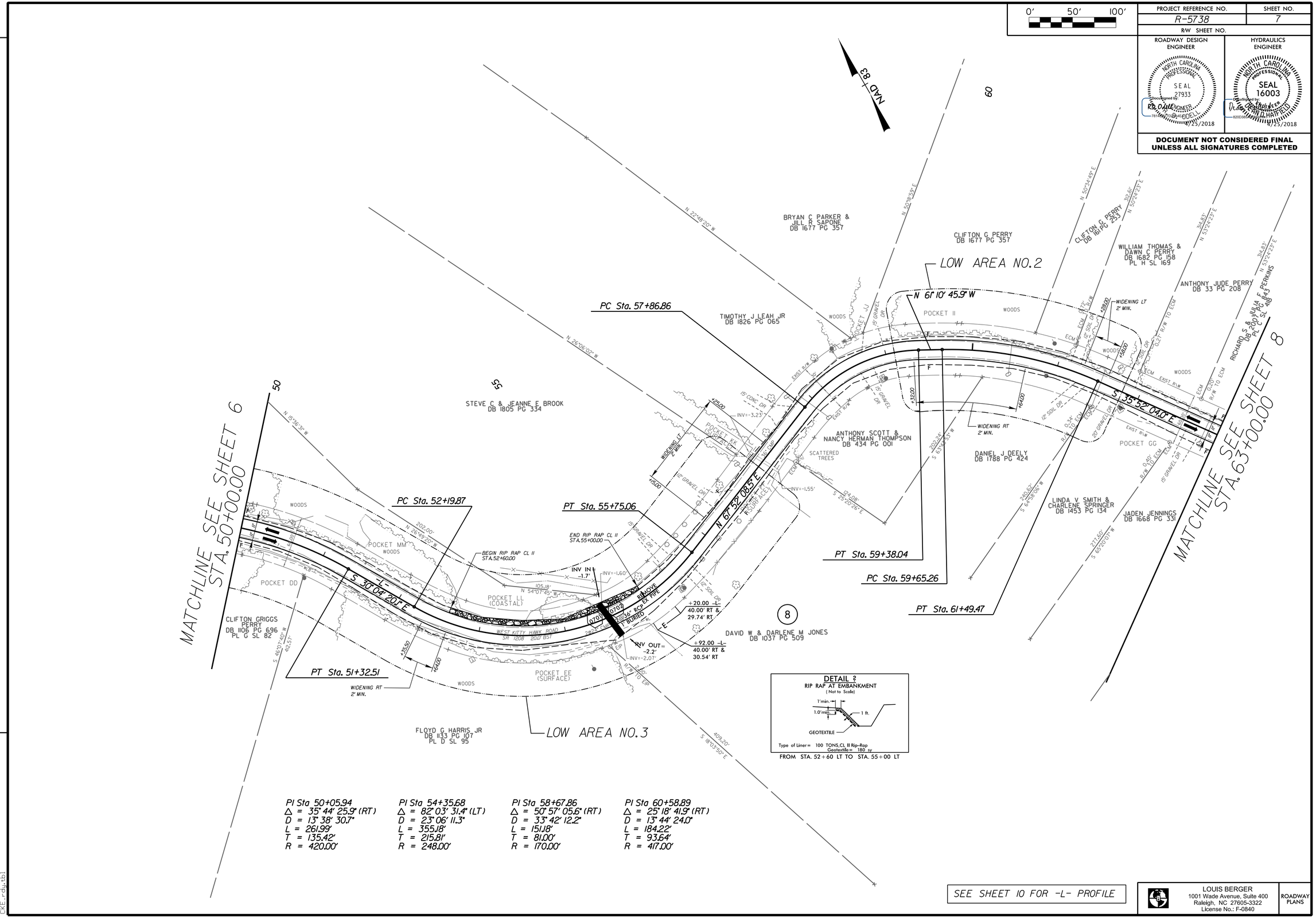

PI Sta 50+05.94
Δ = 35° 44' 25.9" (RT)
D = 13° 38' 30.7"
L = 261.99'
T = 135.42'
R = 420.00'

PI Sta 54+35.68
Δ = 82° 03' 31.4" (LT)
D = 23° 06' 11.3"
L = 355.18'
T = 215.81'
R = 248.00'

PI Sta 58+67.86
Δ = 50° 57' 05.6" (RT)
D = 33° 42' 12.2"
L = 151.18'
T = 81.00'
R = 170.00'

PI Sta 60+58.89
Δ = 25° 18' 41.9" (RT)
D = 13° 44' 24.0"
L = 184.22'
T = 93.64'
R = 417.00'

SEE SHEET 10 FOR -L- PROFILE

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Raleigh, NC 27605-3322
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ROADWAY PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	8
R/W SHEET NO.	

0' 50' 100'

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER
DocuSigned by: RODNEY A. ODELL
4/25/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16003 ENGINEER
DocuSigned by: DEVAN D. HATFIELD
4/25/2018

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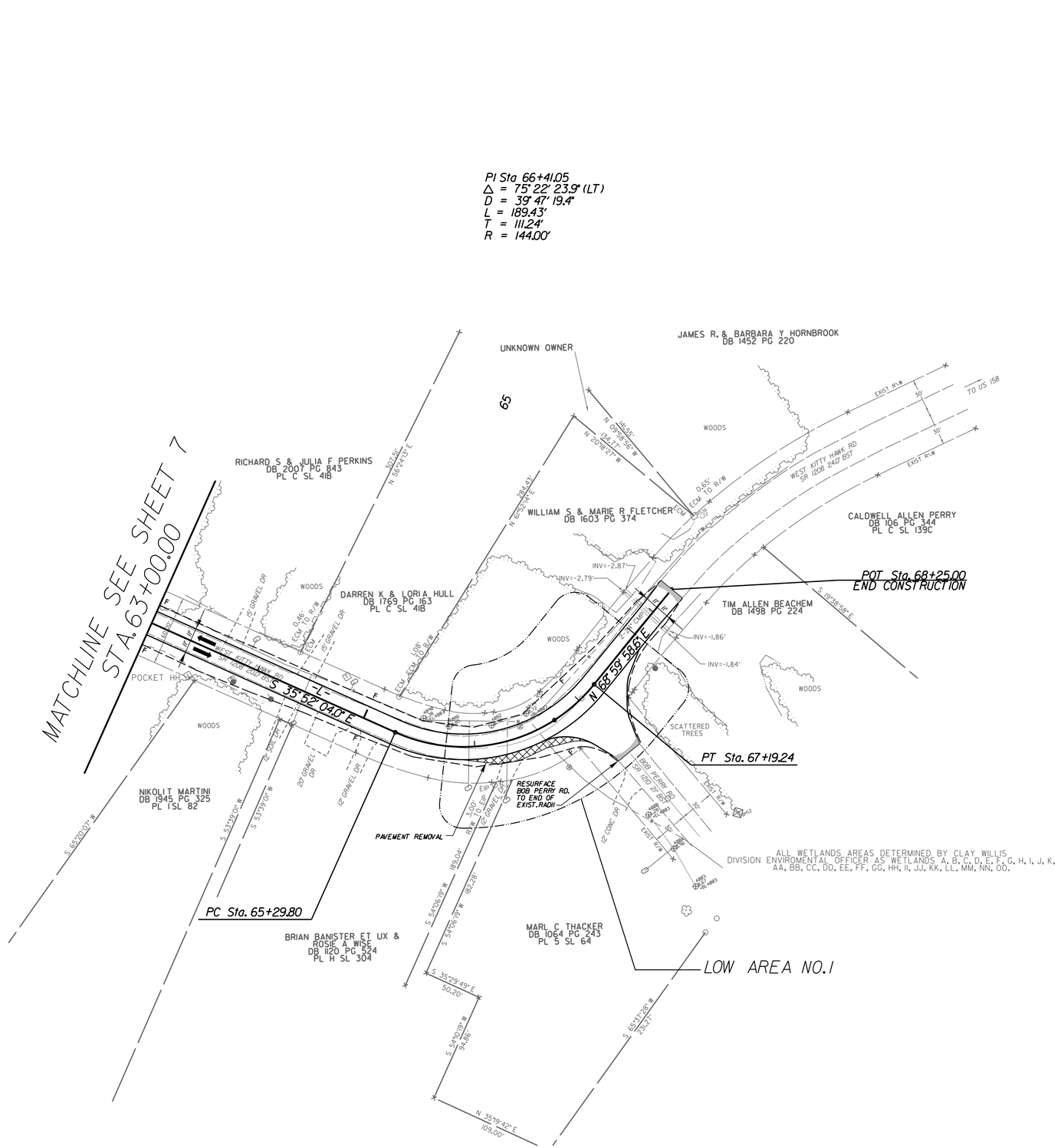

SEE SHEET 11 FOR -L- PROFILE

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Raleigh, NC 27605-3322
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ROADWAY PLANS

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ROADWAY PLANS

LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
License No.: F-0840

0' 50' 100'
HORIZONTAL

0' 10' 20'
VERTICAL

PROJECT REFERENCE NO.	SHEET NO.
R-5738	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER
DocuSigned by: RODNEY A. ODELL
4/25/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16003 ENGINEER
DocuSigned by: DARREN D. HATFIELD
4/25/2018

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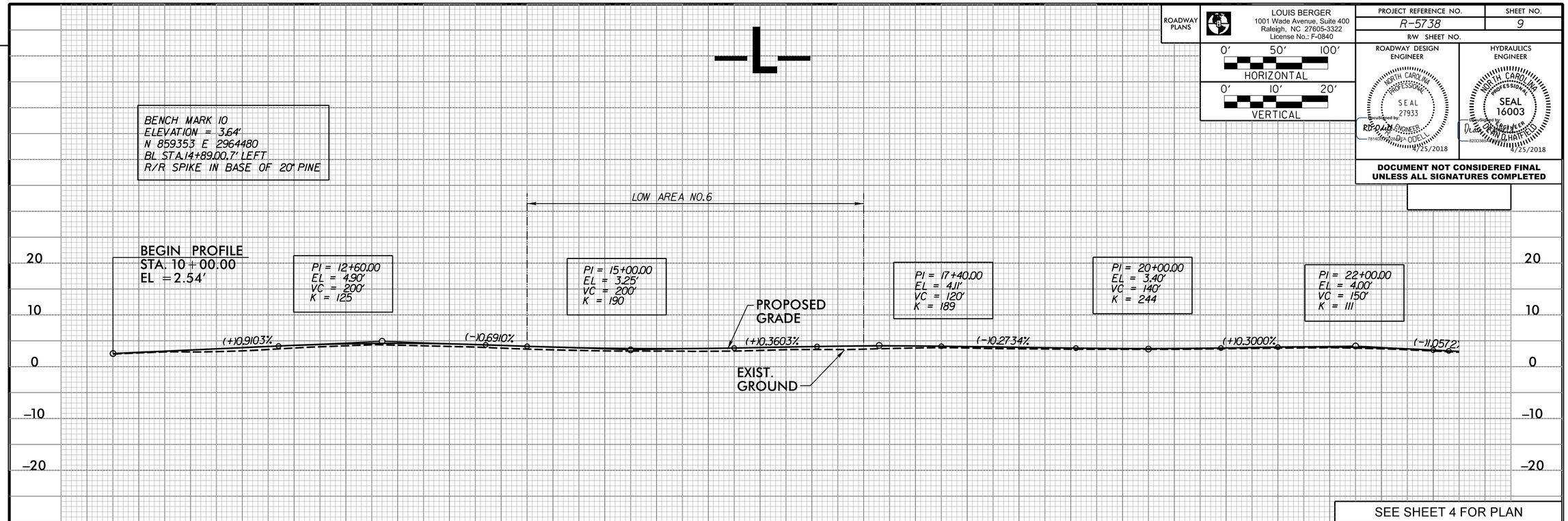
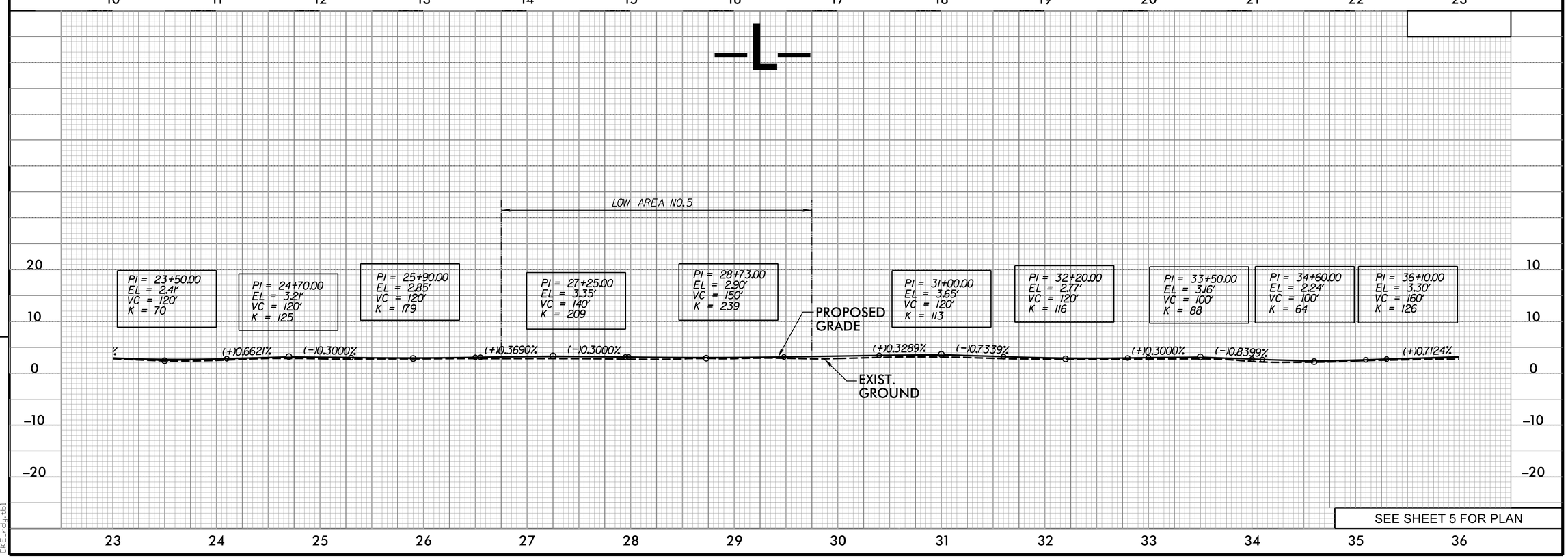


SEE SHEET 4 FOR PLAN



SEE SHEET 5 FOR PLAN

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ROADWAY PLANS	LOUIS BERGER 1001 Wade Avenue, Suite 400 Raleigh, NC 27605-3322 License No.: F-0840	PROJECT REFERENCE NO. R-5738	SHEET NO. 10
		R/W SHEET NO.	

0' 50' 100'
HORIZONTAL
0' 10' 20'
VERTICAL

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER
DocuSigned by: RICHARD A. ODELL
4/25/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16003 ENGINEER
DocuSigned by: DEAN D. HATFIELD
4/25/2018

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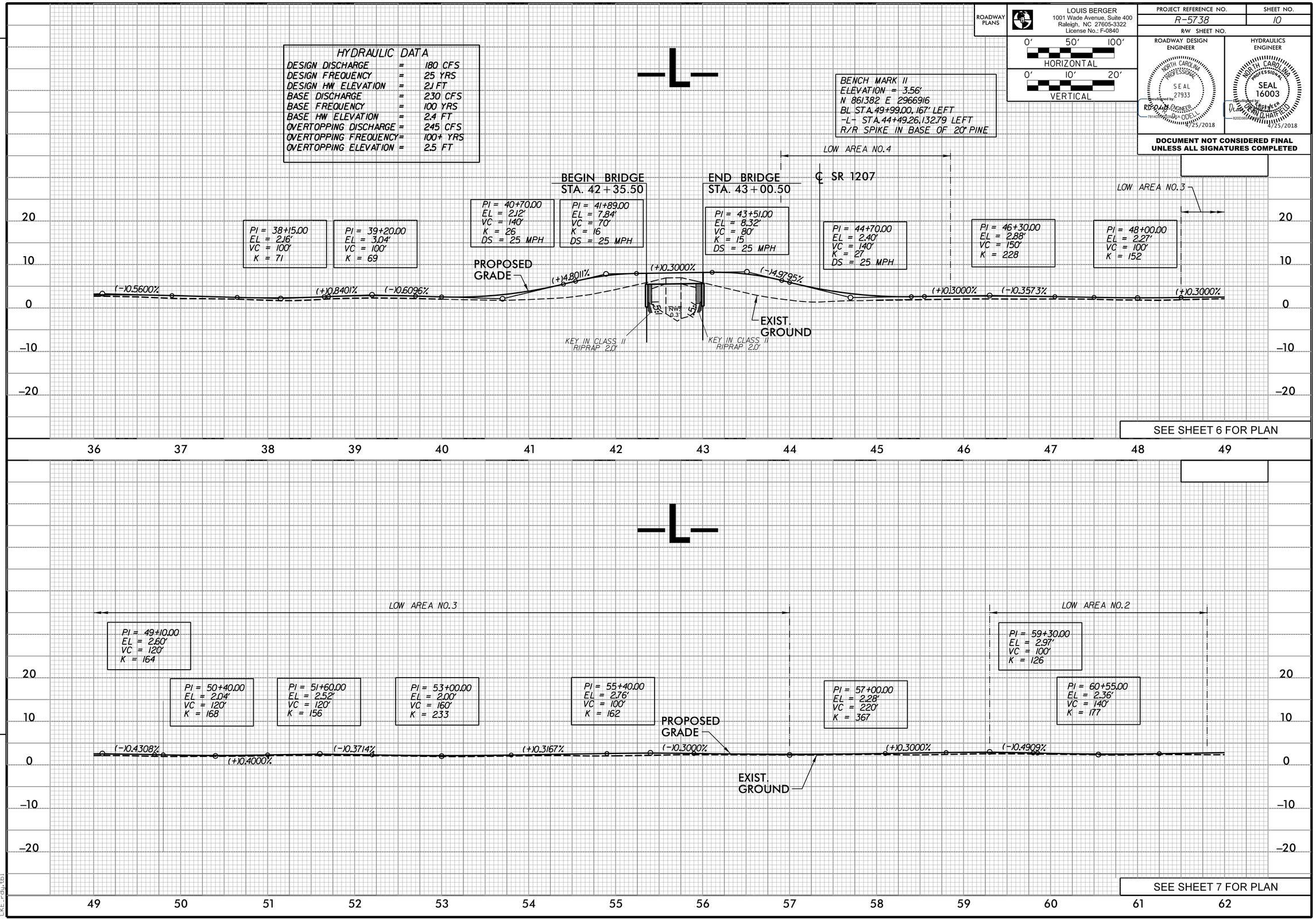
REVISIONS



SEE SHEET 6 FOR PLAN

SEE SHEET 7 FOR PLAN

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ROADWAY PLANS	LOUIS BERGER 1001 Wade Avenue, Suite 400 Raleigh, NC 27605-3322 License No.: F-0840	PROJECT REFERENCE NO. R-5738	SHEET NO. 11
		R/W SHEET NO.	

0' 50' 100'
HORIZONTAL

0' 10' 20'
VERTICAL

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER
DocuSigned by: RD Dodell
4/25/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16003 ENGINEER
DocuSigned by: Dean D. Hatfield
4/25/2018

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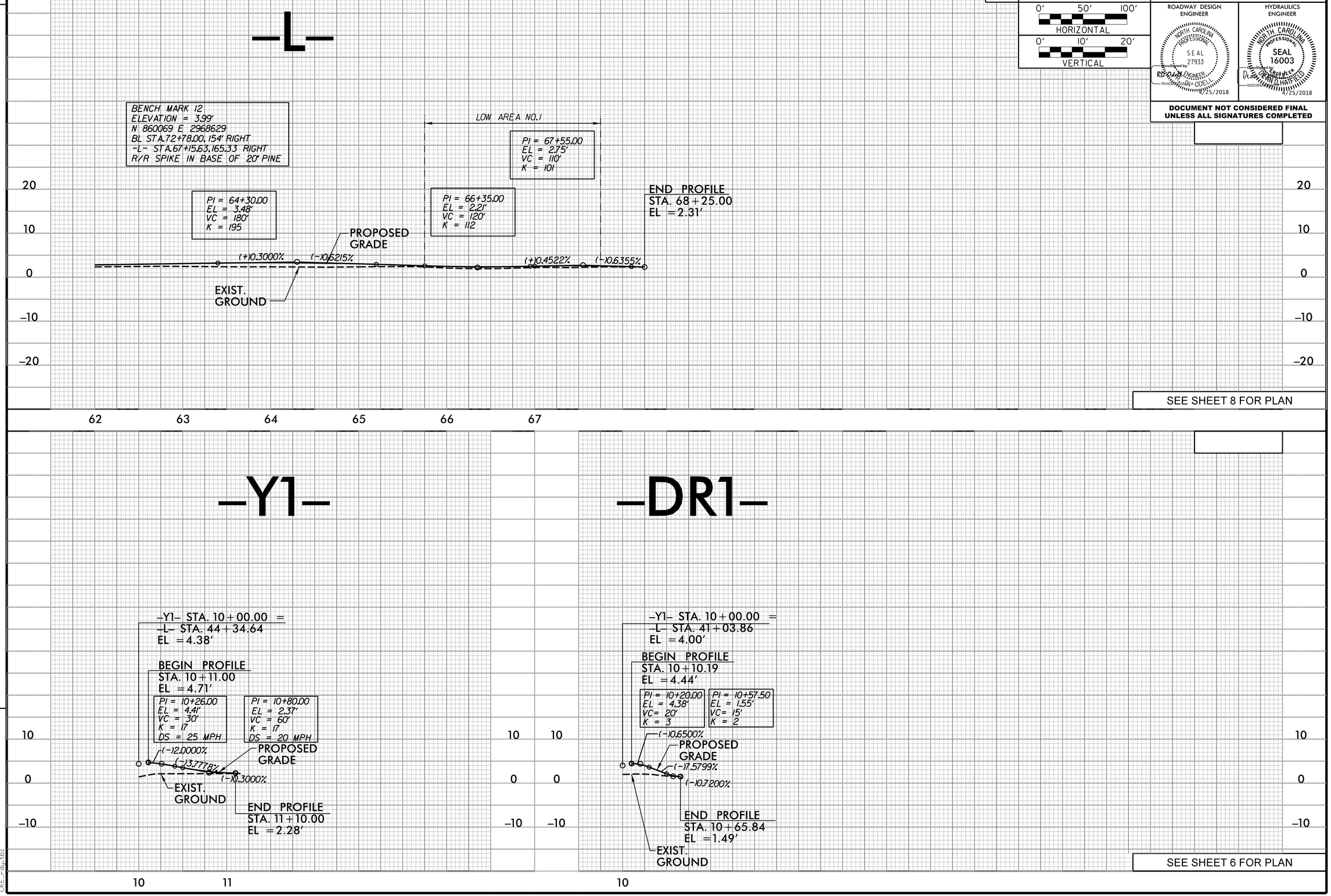
REVISIONS



SEE SHEET 8 FOR PLAN

SEE SHEET 6 FOR PLAN

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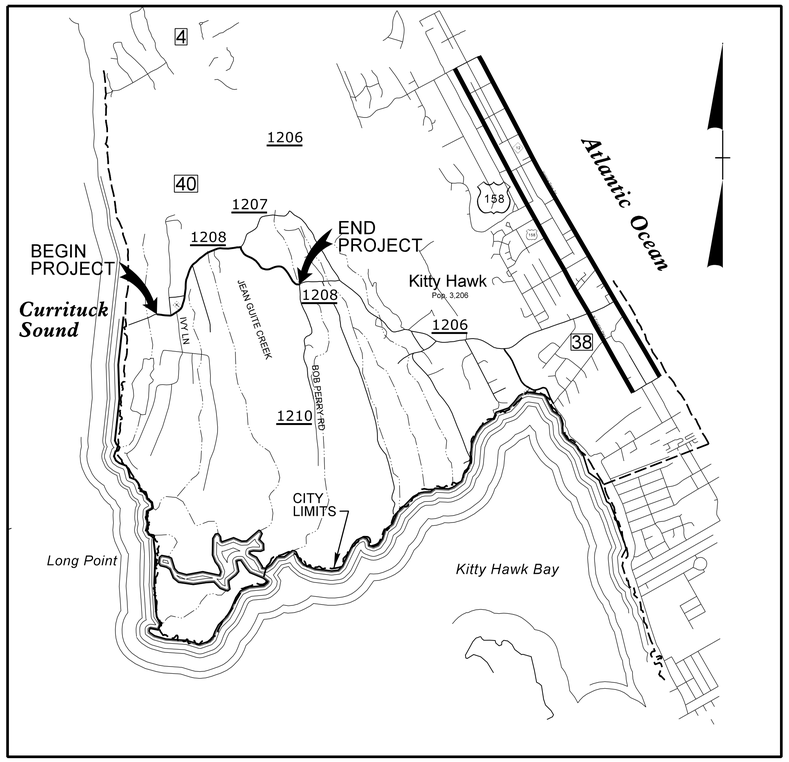
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

DARE COUNTY



VICINITY MAP NTS
SR 1208 (WEST KITTY HAWK ROAD) FROM WEST IVY LANE TO EAST OF SR 1210 AND REPLACEMENT OF BRIDGE #40

INDEX OF SHEETS

SHEET NO.	TITLE
TMP–1	COVER SHEET
TMP–1A	ROADWAY STANDARD DRAWINGS AND LEGEND
TMP–1B	TRAFFIC OPERATIONS PLAN
TMP–1C	TEMPORARY TRAFFIC CONTROL PHASING
TMP–2 THRU TMP–6	TEMPORARY TRAFFIC PHASE I THRU VI ROADWAY CONSTRUCTION
TMP–7	TEMPORARY TRAFFIC CONTROL PHASE I
TMP–7A	DETOUR SIGNING SR1207
TMP–8	TEMPORARY TRAFFIC CONTROL PHASE II STEPS 1–3
TMP–9	TEMPORARY TRAFFIC CONTROL PHASE III
TMP–10	TEMPORARY TRAFFIC CONTROL PHASE IV
TMP–11	TEMPORARY TRAFFIC CONTROL PHASE V STEP 1
TMP–12	TEMPORARY TRAFFIC CONTROL PHASE V STEPS 2–4
TMP–13	TEMPORARY TRAFFIC CONTROL PHASE V STEPS 5 & 6

SHEET NO.
TMP–1

TIP NO: R–5738

PROJECT: DA0033

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

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699–1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773–2800 FAX: (919) 771–2745

JOSEPH E. HUMMER, PE — *STATE TRAFFIC MANAGEMENT ENGINEER*
R. D. ODELL, PE — *TRAFFIC CONTROL PROJECT ENGINEER*
GEORGE L. GETTIER, PE — *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*

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

Prepared in the Office of:
LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, North Carolina 27605
License No.: F-0840

R. D. ODELL, PE
PROJECT ENGINEER

GEORGE L. GETTIER, PE
PROJECT DESIGN ENGINEER

APPROVED:
DATE:

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER GEORGE L. GETTIER
DocuSigned by: G.L. Gettier E1D5CB6355B4... 4/25/2018

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License No.: F-0840

PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-1A

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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 JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	POSITIVE PROTECTION
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL & BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA
- REMOVAL

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

SIGNALS

- TEMPORARY

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN
- PORTABLE CONCRETE BARRIER
- BARRIER (PORTABLE, MOVEABLE, WATER-FILLED)

TEMPORARY PAVEMENT MARKINGS (PAINT)

PA - PAINT - WHITE EDGELINE (4")
PI - PAINT - YELLOW DOUBLE CENTER (4")
P2 - PAINT - WHITE STOPBAR (24")
P8 - 2FT-6FT/SP WHITE MINI-SKIP

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER JOSHUA L. GETTER

Digitally signed by: Joshua L. Getter
E1D0C0B0-0000-0000-0000-0000
4/25/2018

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

ROADWAY STANDARD DRAWINGS & LEGEND

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-1B

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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 DUPLICATES OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE; MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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

TIME RESTRICTIONS

(NONE)

LANE AND SHOULDER CLOSURE REQUIREMENTS

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

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

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

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

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

PAVEMENT EDGE DROP-OFF REQUIREMENTS

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

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

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

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

G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (WB-11) 350 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

J) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 350 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

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

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE/RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

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

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

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

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

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

TRAFFIC CONTROL DEVICES

M) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
ALL ROADS	PAINT	NONE

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

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

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

MISCELLANEOUS

R) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) 350 FT IN ADVANCE OF THE UNEVEN AREA. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

S) THE CONTRACTOR IS RESPONSIBLE FOR DESIGN, DETAIL, AND DEMOLITION OF THE TEMPORARY SHORING. THE SEALED AND SIGNED DESIGN AND DETAIL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO COMMENCING THE WORK.

MANAGEMENT STRATEGIES

SR 1208 (WEST KITTY HAWK ROAD) WILL BE CONSTRUCTED USING LANE CLOSURES WITH FLAGGERS DURING ROADWAY WIDENING AND PAVING, AND STAGED BRIDGE CONSTRUCTION, WITH TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER. THE STAGED BRIDGE CONSTRUCTION WILL REQUIRE TRAFFIC TO BE PLACED IN A ONE-LANE, TWO-WAY PATTERN, CONTROLLED BY CONSTRUCTION SIGNING AND PORTABLE TRAFFIC SIGNALS.

REVISIONS

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER JORGE L. GETTER

Docusigned by: E1D0A... 4/25/2018

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

TRAFFIC OPERATIONS PLAN

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-1C

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PHASING

NOTE: CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS FOR ALL PHASES WITHIN THE PROJECT LIMITS AND COORDINATE AS NECESSARY WITH PROPERTY OWNERS.
CONTRACTOR MAY CLOSE SR 1207, AS SHOWN IN TMP-07 THROUGH TMP-12, AT ANY TIME HE ELECTS, TO USE FOR STAGING OF MATERIALS AND EQUIPMENT. SR 1207 SHALL REMAIN CLOSED UNTIL THE PORTABLE SIGNALS ARE REMOVED IN PHASE V, STEP 6.

PHASE I

STEP 1:
INSTALL WORK ZONE ADVANCE WARNING SIGNS ON ALL ROADWAYS WITHIN THE PROJECT LIMITS IN ACCORDANCE WITH ROADWAY STANDARD DRAWING 1101.01, SHEET 3 OF 3.
CONTRACTOR MAY BEGIN ANY WORK REQUIRED WITHIN THE PROJECT LIMITS THAT DOES NOT CONFLICT WITH THE STRUCTURE STAGING, (INCLUDING DRAINAGE, EROSION CONTROL, AND ROADWAY WIDENING, EXCEPT THAT FINAL ROADWAY SURFACE LAYER MAY NOT BE PLACED UNTIL THE STRUCTURE CONSTRUCTION IS COMPLETE, AND READY FOR FINAL PAVEMENT SURFACE LAYER), UTILIZING TEMPORARY LANE CLOSURES WITH FLAGGERS IF NECESSARY. (SEE R.S.D. 1101.02 SHEET 1 AND 2 OF 15 AND TMP-3 THRU TMP-6).
REPLACE ANY DAMAGED PAVEMENT MARKINGS AT THE END OF EACH DAY.

STEP 2:
USE A TEMPORARY LANE CLOSURE TO SHIFT TRAFFIC INTO A 9.5 FT., ONE-LANE, TWO-WAY PATTERN, ON THE SOUTH SIDE OF THE EXISTING BRIDGE (SEE R.S.D. 1101.02, SHEET 1 AND 2 OF 15). INSTALL ANCHORED PORTABLE BARRIER (2 FT. SHY DISTANCE), PORTABLE TRAFFIC SIGNALS AND RELATED CONSTRUCTION SIGNING, AS SHOWN ON TMP-7. ACTIVATE PORTABLE TRAFFIC SIGNAL.

STEP 3:
INSTALL CONSTRUCTION SIGNING TO CLOSE THE EXISTING MULTI-USE PATH DURING CONSTRUCTION IN THE VICINITY OF THE BRIDGE AS SHOWN ON TMP-8. SAW-CUT THE EXISTING BRIDGE, AND DEMOLISH THE NORTH SIDE OF THE EXISTING STRUCTURE AND EXISTING MULTI-PURPOSE PATH, AS SHOWN IN THE STRUCTURE PLANS (STAGE 1 CONSTRUCTION). TRAFFIC IS STILL IN THE SIGNAL-CONTROLLED, ONE-LANE, TWO-WAY PATTERN, PROTECTED BY ANCHORED PORTABLE CONCRETE BARRIER, DESCRIBED ABOVE IN PHASE 1, STEP 2. (SEE TMP-7.)

PHASE II
STEP 1:
CONSTRUCT SHEET PILE RETAINING WALL (SEE ROADWAY PLANS) AND CONSTRUCT 21 FEET OF THE NORTH SIDE OF THE NEW CORED-SLAB BRIDGE AND APPROACH SLABS AS SHOWN IN THE STRUCTURE PLANS (STAGE 2 CONSTRUCTION). TRAFFIC IS STILL IN THE SAME SIGNAL-CONTROLLED, ONE-LANE, TWO-WAY PATTERN, PROTECTED BY ANCHORED PORTABLE CONCRETE BARRIER, DESCRIBED ABOVE IN PHASE 1, STEP 2. (SEE TMP-8). TEMPORARY SHORING IS REQUIRED FOR BRIDGE ABUTMENT CONSTRUCTION.

STEP 2:
PLACE 17'-3" OF 1-INCH LAYER OF ASPHALT WEARING SURFACE ON THE NEWLY-CONSTRUCTED PORTION OF THE PROPOSED BRIDGE, AS SHOWN IN THE STRUCTURE PLANS (STAGE 2 CONSTRUCTION) AND ON TMP-8. INSTALL PORTABLE CONCRETE BARRIER (ANCHORED) ON NEWLY-CONSTRUCTED PORTION OF THE PROPOSED BRIDGE.

STEP 3:
USING FLAGGERS AND TEMPORARY LANE CLOSURE (SEE R.S.D. 1101.02, SHEET 1 AND 2 OF 15), CONSTRUCT TEMPORARY PAVEMENT TIE-INS, TO ENABLE TRAFFIC TO BE SHIFTED TO AND FROM 17'-3" OF THE NEWLY-CONSTRUCTED PORTION OF THE PROPOSED BRIDGE. WEDGING AND TEMPORARY SHORING MAY BE REQUIRED. (SEE TMP-9.)

PHASE III
STEP 1:
USING FLAGGERS TO STOP TRAFFIC OR TEMPORARY SIGNALS, AND TEMPORARY LANE CLOSURE (SEE R.S.D. 1101.02, SHEET 1 AND 2 OF 15), SHIFT TRAFFIC ONTO THE NORTH SIDE OF THE NEWLY CONSTRUCTED PORTION OF THE CORED-SLAB BRIDGE, IN A SIGNAL-CONTROLLED, 11 FT., ONE-LANE, TWO-WAY PATTERN, ON THE OTHER SIDE OF THE PREVIOUSLY PLACED ANCHORED PORTABLE CONCRETE BARRIER, AS SHOWN ON TMP-9.

STEP 2:
DEMOLISH THE REMAINING SOUTH-SIDE PORTION OF THE EXISTING BRIDGE AS SHOWN IN THE STRUCTURE PLANS (STAGE 3 CONSTRUCTION). TRAFFIC IS STILL IN THE SAME SIGNAL-CONTROLLED, ONE-LANE, TWO-WAY PATTERN, PROTECTED BY ANCHORED PORTABLE CONCRETE BARRIER, DESCRIBED ABOVE, IN PHASE III, STEP 1. (SEE TMP-9).

PHASE IV
STEP 1:
CONSTRUCT THE REMAINING SOUTH-SIDE PORTION OF THE NEW CORED-SLAB BRIDGE AND APPROACH SLABS, AS SHOWN IN THE STRUCTURE PLANS (STAGE 4 CONSTRUCTION). TRAFFIC IS STILL IN THE SAME SIGNAL-CONTROLLED, ONE-LANE, TWO-WAY PATTERN, PROTECTED BY ANCHORED PORTABLE CONCRETE BARRIER, DESCRIBED ABOVE, IN PHASE III, STEP 2. (SEE TMP-10).

USING FLAGGERS, CONSTRUCT ANY REMAINDER OF PAVEMENT TIE-INS, TO ENABLE TRAFFIC TO BE SHIFTED LATER (STEP 5) TO AND FROM THE REMAINING NEWLY-CONSTRUCTED PORTION OF THE PROPOSED BRIDGE (STAGE 4 CONSTRUCTION) IN THE FINAL TWO-WAY PATTERN. WEDGING AND TEMPORARY SHORING MAY BE REQUIRED. SEE TMP-10.

PHASE V
STEP 1:
PLACE 1" OF ASPHALT WEARING SURFACE ON 15' OF THE NEWLY-CONSTRUCTED SOUTH PORTION OF THE PROPOSED BRIDGE TO ENABLE TRAFFIC TO BE PLACED IN A TEMPORARY ONE-LANE PATTERN NEXT TO THE SOUTH-SIDE BRIDGE RAIL. SEE TMP-11.

STEP 2:
USING FLAGGERS, WITH CONES OR DRUMS SHIFT TRAFFIC TO THE OTHER SIDE OF THE PORTABLE CONCRETE BARRIER, ONTO THE SOUTH SIDE OF THE NEWLY CONSTRUCTED BRIDGE, IN A ONE-LANE, TWO-WAY TRAFFIC PATTERN AS SHOWN ON TMP-12.

STEP 3:
RELOCATE THE PORTABLE CONCRETE BARRIER INTO A NEW POSITION ON THE NEW STRUCTURE, 26.5 FEET FROM THE SOUTH-SIDE BRIDGE RAIL, AS SHOWN ON TMP-12.

STEP 4:
WITH TRAFFIC STILL IN THE TEMPORARY ONE-LANE, TWO-WAY PATTERN DESCRIBED ABOVE IN PHASE V, STEP 2, PLACE A 1-INCH LAYER OF ASPHALT WEARING SURFACE ON THE REMAINDER OF THE BRIDGE. SEE STRUCTURE PLANS (STAGE 5 CONSTRUCTION).AND TMP-12

STEP 5:
PLACE TEMPORARY PAVEMENT MARKINGS (IN THE FINAL PATTERN) TO PLACE TRAFFIC INTO FINAL TWO-LANE, TWO-WAY PATTERN ON THE BRIDGE. SEE TMP-13, AND STRUCTURE PLANS (STAGE 5 CONSTRUCTION).
REMOVE THE PORTABLE SIGNAL AND RELATED SIGNING; AND OPEN THE STRUCTURE TO TWO-WAY TRAFFIC.

STEP 6:
BEHIND THE PORTABLE CONCRETE BARRIER, MILL 10'-2" OF THE ASPHALT WEARING SURFACE, AND CONSTRUCT 10'-2" SIDEWALK ON THE NORTH SIDE OF THE BRIDGE, AS SHOWN IN THE STRUCTURE PLANS (STAGE 5 CONSTRUCTION, AND FINAL CONSTRUCTION), AND ON TMP-13. REMOVE THE PORTABLE CONCRETE BARRIER, AFTER SIDEWALK HAS CURED. MULTI-USE PATH MAY BE CONSTRUCTED AND OPENED TO PEDESTRIAN TRAFFIC. OPEN SR 1207 TO TRAFFIC.

PHASE VI
STEP 1:
COMPLETE ALL WORK PREVIOUSLY STARTED, AS WELL AS ANY OTHER REMAINING WORK (EXCEPT FOR THE FINAL LAYER OF ASPHALT PAVEMENT SURFACE, FINAL PAVEMENT MARKINGS, AND RAISED PAVEMENT MARKERS).

STEP 2:
USING FLAGGERS AND TEMPORARY LANE CLOSURES (SEE R.S.D. 1101.02, SHEET 1 OF 15), PLACE FINAL SURFACE LAYER OF ASPHALT ON ENTIRE PROJECT, INCLUDING THE NEW BRIDGE. SEE ROADWAY PLANS AND STRUCTURE PLANS (FINAL CONSTRUCTION).

STEP 3:
USING R.S.D. 1101.02, SHEET 11 OF 15, PLACE FINAL PAVEMENT MARKINGS (PAINT) ON ENTIRE PROJECT (SEE ROADWAY PLANS FOR LANE WIDTHS). SEE ALSO R.S.D. 1205.01, SHEETS 1 & 2 OF 2, 1205.02 SHEET 1 OF 2, AND 1205.04 SHEET 2 OF 2.
USING R.S.D. 1101.02, SHEET 1 OF 2, PLACE RAISED PAVEMENT MARKERS ON ENTIRE PROJECT. SEE ALSO R.S.D. 1250.01, SHEETS 1 & 2 OF 3. REMOVE ALL CONSTRUCTION TRAFFIC CONTROL DEVICES, AND OPEN PROJECT TO FINAL TRAFFIC PATTERN.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER JEFFREY L. GETTICS

Docusigned by:
E1D5C...
4/25/2018

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

TEMPORARY TRAFFIC CONTROL PHASING

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-2

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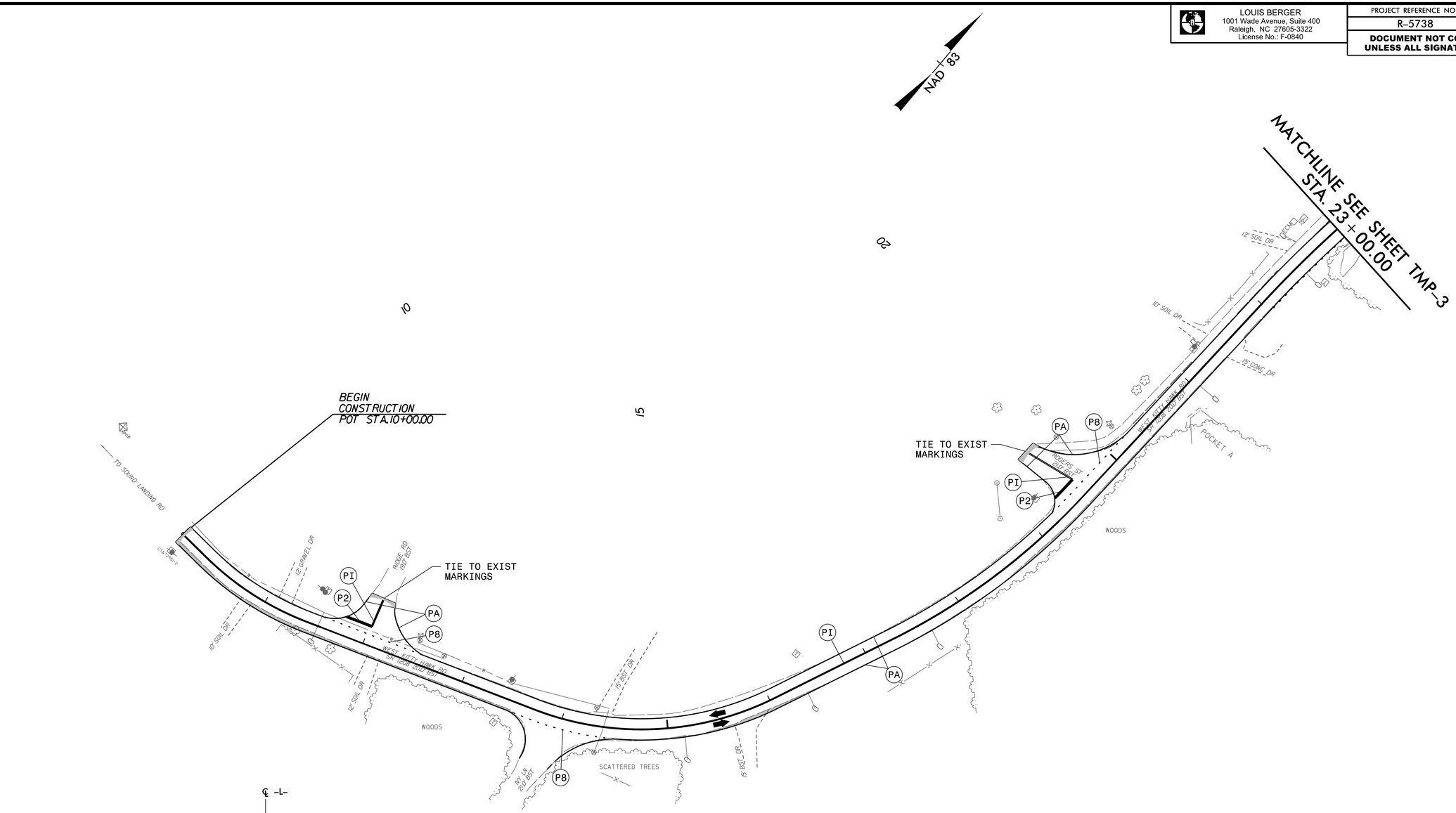

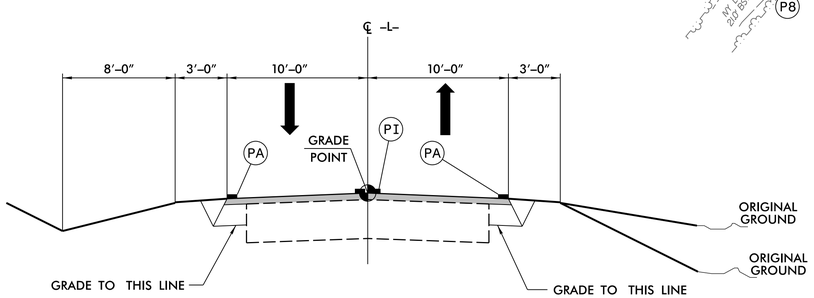

TYPICAL SECTION 1

-L- STA 10+00.00 TO -L- STA 39+16.00

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER JOSHUA L. GETTIER

Digitally signed by: Joshua L. Gettier
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4/25/2018

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

TEMPORARY TRAFFIC CONTROL PHASE I THRU VI ROADWAY CONSTRUCTION

REVISIONS

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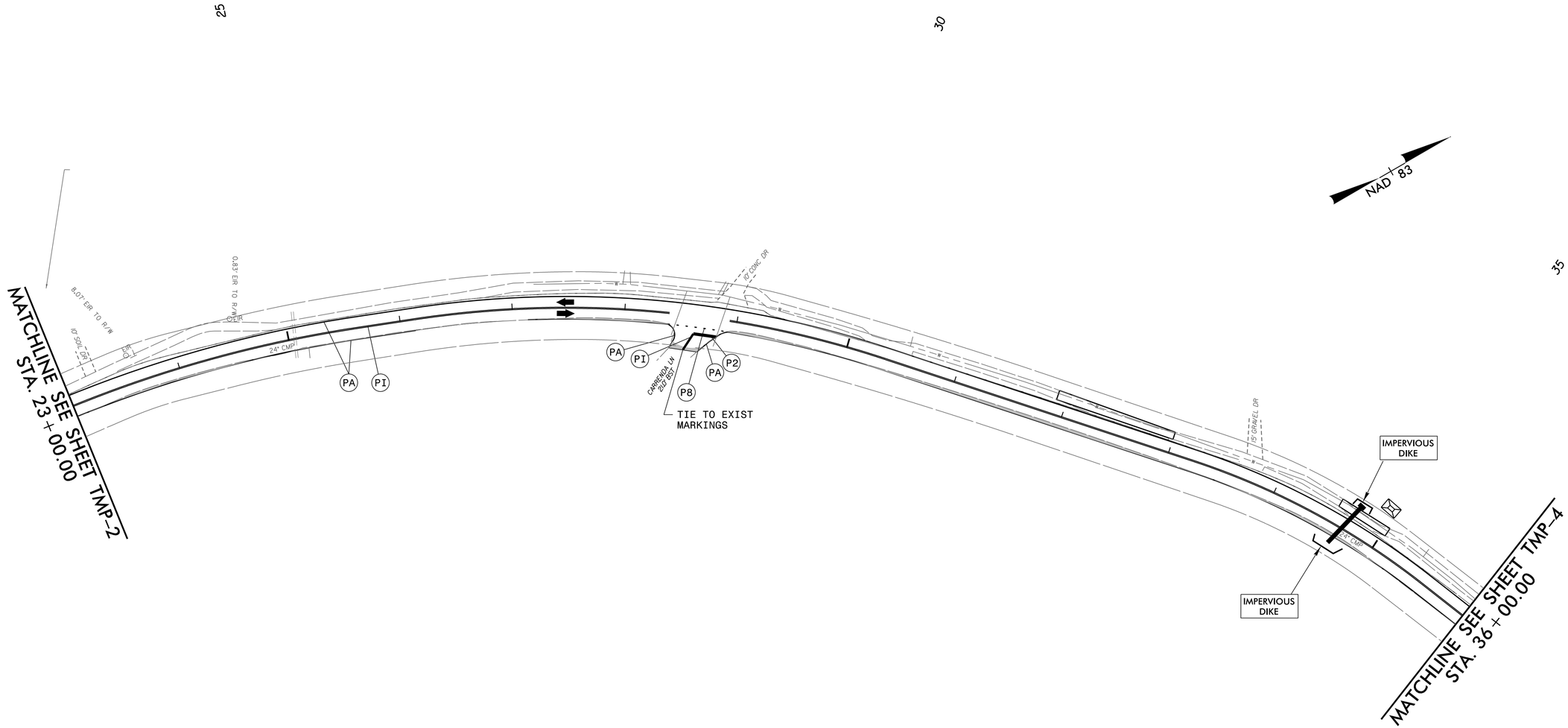

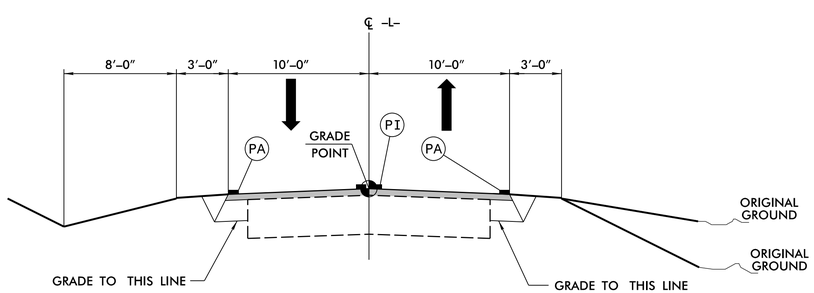

TYPICAL SECTION 1

-L- STA 10+00.00 TO -L- STA 39+16.00

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER JEFFREY L. GETTICE

Documents by: E1D5C

4/25/2018

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

TEMPORARY TRAFFIC CONTROL PHASE I THRU VI ROADWAY CONSTRUCTION

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-4

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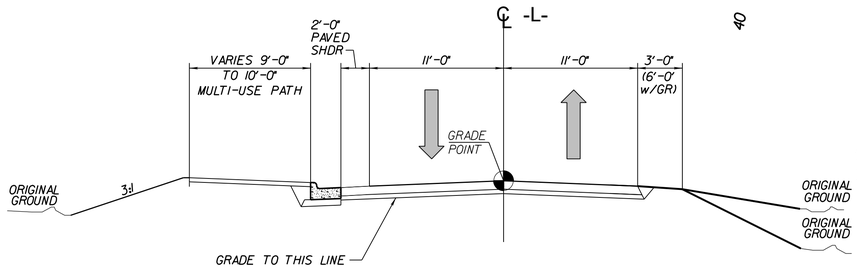

TYPICAL SECTION 5

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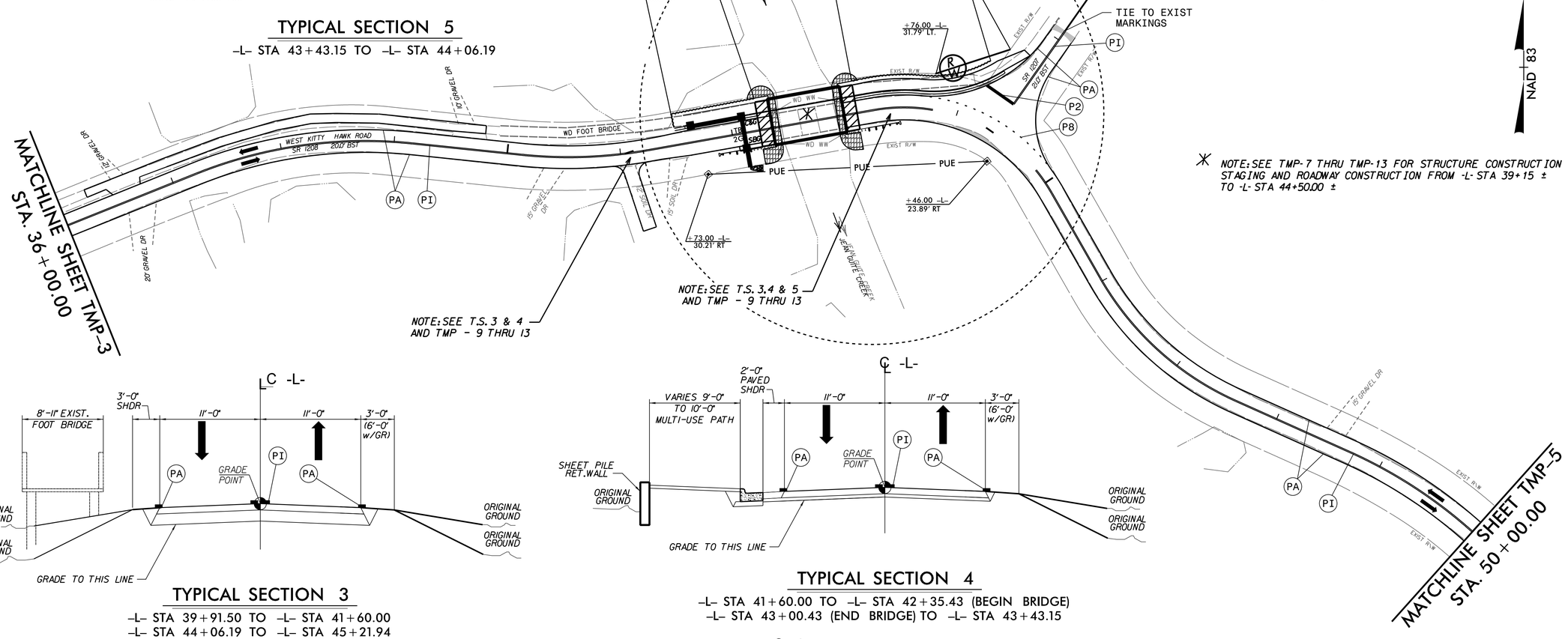
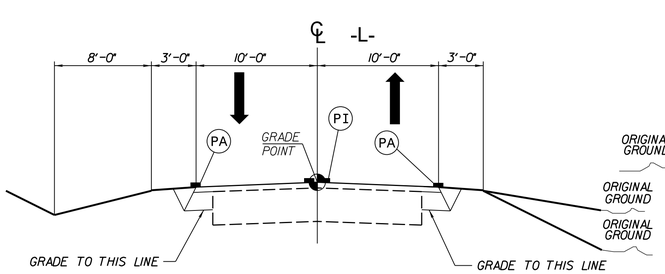


TYPICAL SECTION 3

-L- STA 39+91.50 TO -L- STA 41+60.00
-L- STA 44+06.19 TO -L- STA 45+21.94

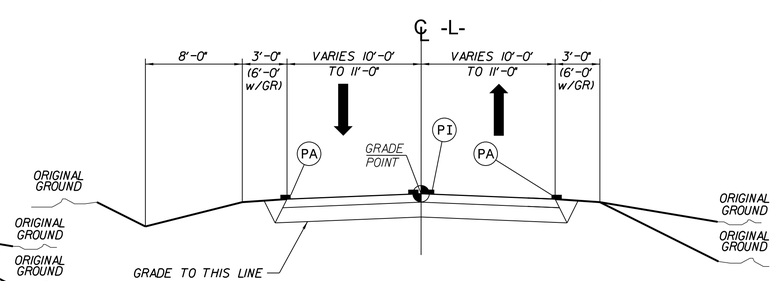
TYPICAL SECTION 4

-L- STA 41+60.00 TO -L- STA 42+35.43 (BEGIN BRIDGE)
-L- STA 43+00.43 (END BRIDGE) TO -L- STA 43+43.15



TYPICAL SECTION 1

-L- STA 10+00.00 TO -L- STA 39+16.00



TYPICAL SECTION 2

-L- STA 39+16.00 TO -L- STA 39+91.50

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8973 LOUIS L. GETTIER 4/25/2018

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

TEMPORARY TRAFFIC CONTROL PHASE I THRU VI ROADWAY CONSTRUCTION

REVISIONS

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DocuSign Envelope ID: 02821D2B-CB1F-424B-82BD-82A3448D7EB9

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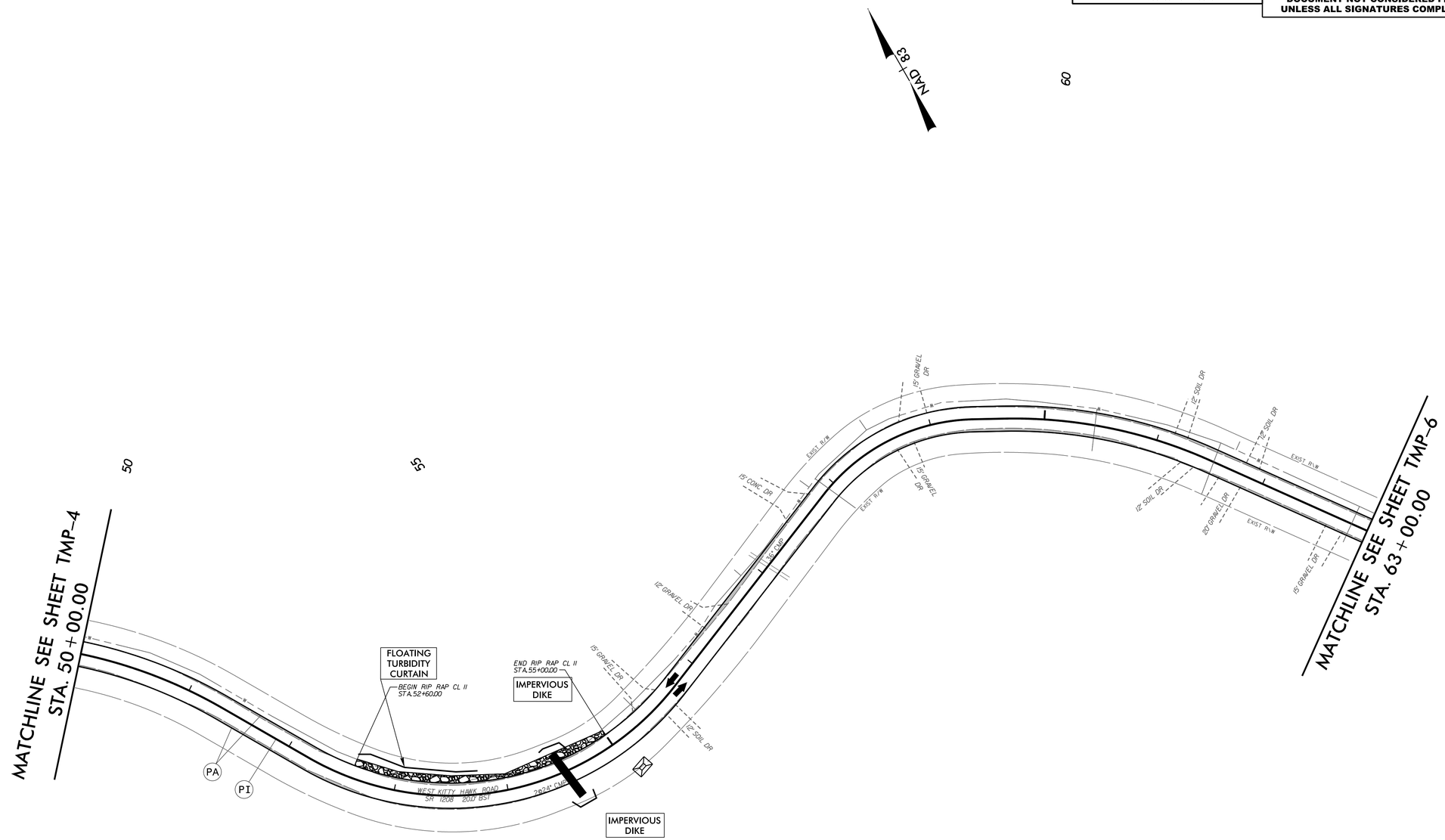
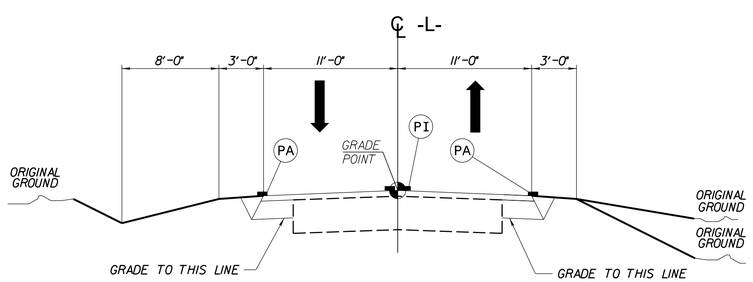
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
License No.: F-0840

PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





TYPICAL SECTION 6

-L- STA 45+21.94 TO -L- STA 68+25.00

APPROVED:_____ DATE:_____

SEAL

Digitally signed by: [illegible]
E1D0[illegible]

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER GEORGE E. GETTER

4/25/2018

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

TEMPORARY TRAFFIC CONTROL PHASE I THRU VI ROADWAY CONSTRUCTION

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-6

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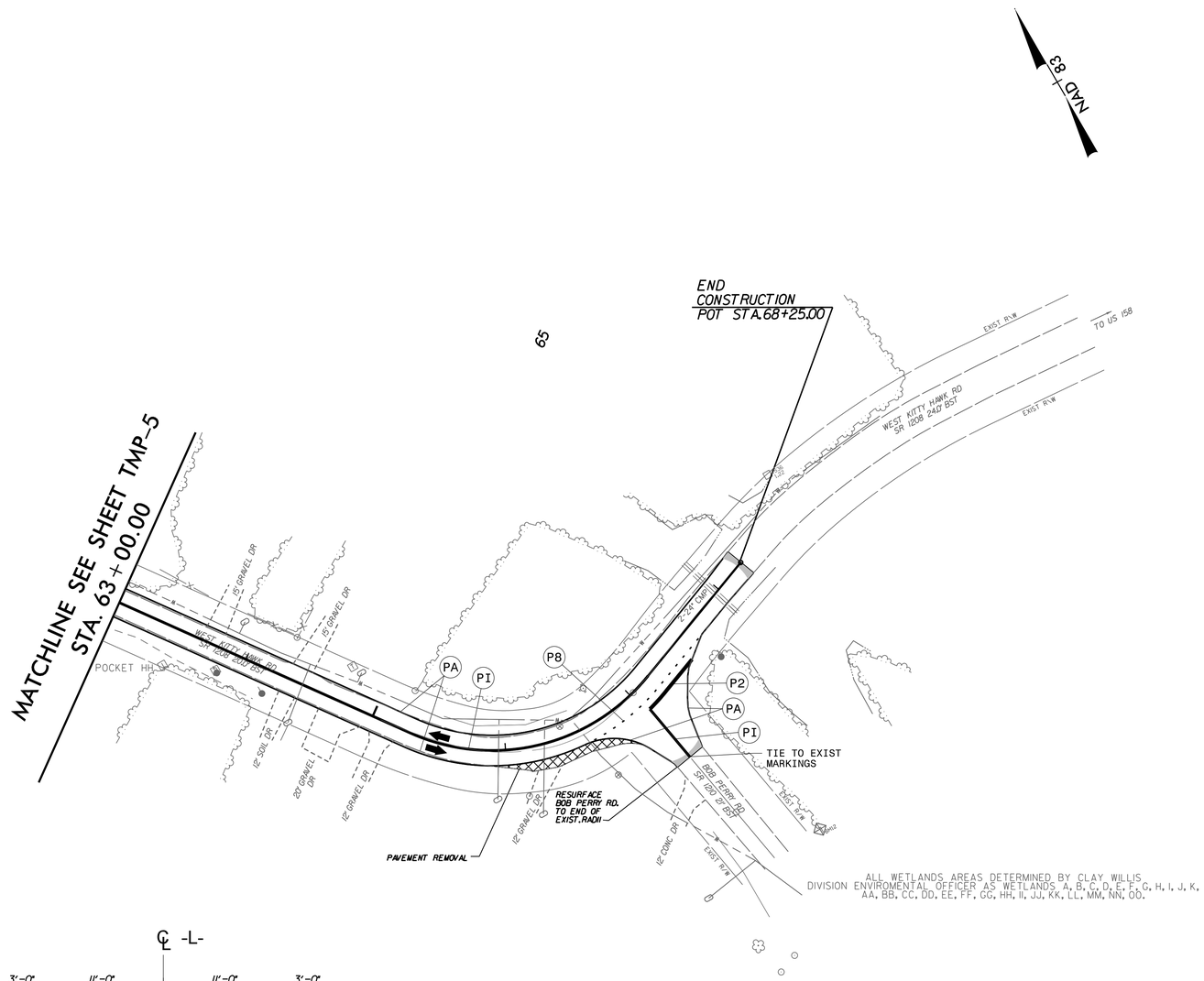

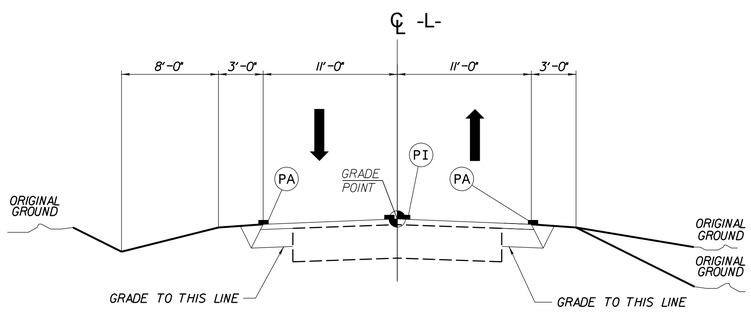

TYPICAL SECTION 6

-L- STA 45+21.94 TO -L- STA 68+25.00

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER GEORGE L. GETTICH

Documents by: E1DOCUSIGN 4/25/2018

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

TEMPORARY TRAFFIC CONTROL PHASE I THRU VI ROADWAY CONSTRUCTION

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-7

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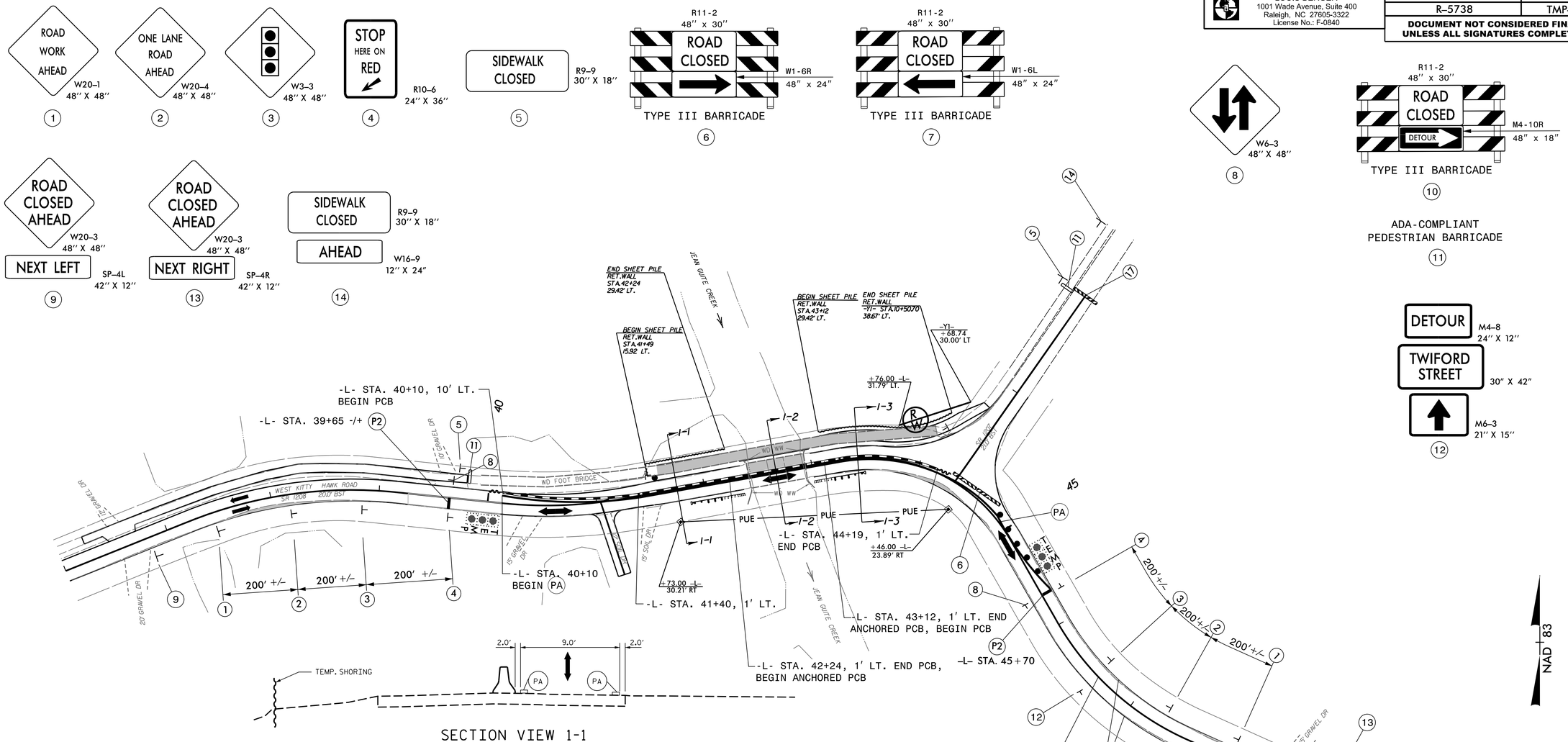
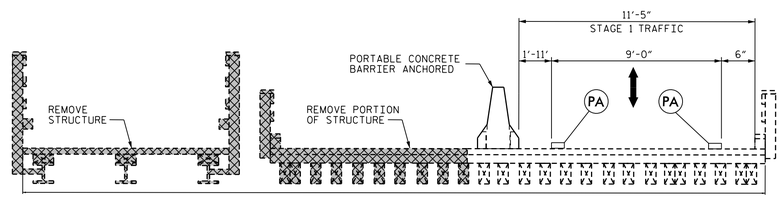
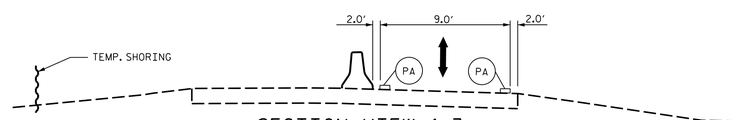


SECTION VIEW 1-1



STAGE 1 CONSTRUCTION
SECTION VIEW 1-2

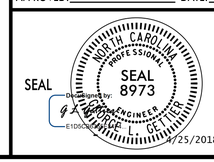


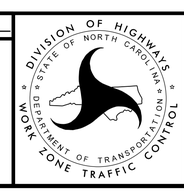
SECTION VIEW 1-3

NOTE: SEE TMP-7A FOR ADDITIONAL OFF-PROJECT SIGNING FOR TWIFORD ST. CLOSURE.

APPROVED:_____ DATE:_____

SEAL





TEMPORARY TRAFFIC CONTROL PHASE I

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-7A

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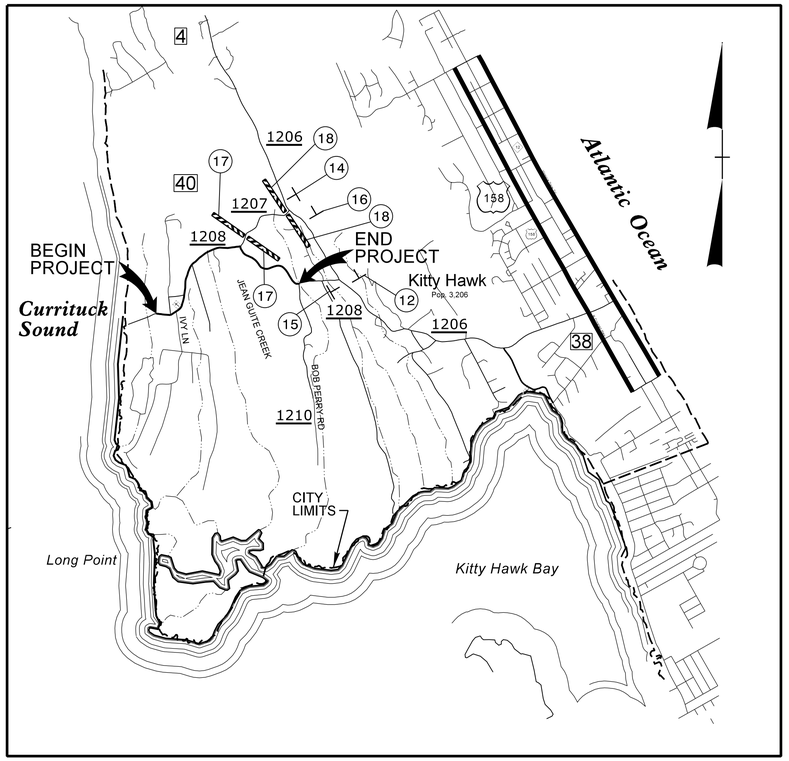

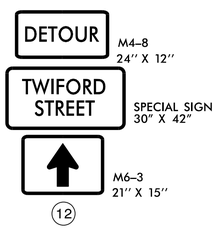

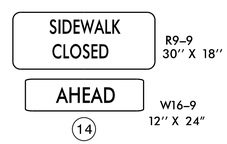

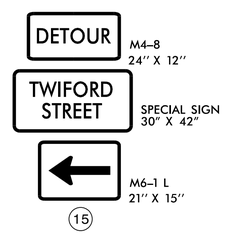

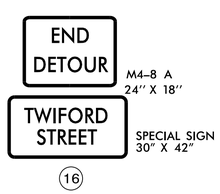

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QUANTITY: 1	
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RECESS: 0.55"	
WIDTH: 0.875"	
RADII: 3"	
NO. Z BARS: -	
LENGTH: -	

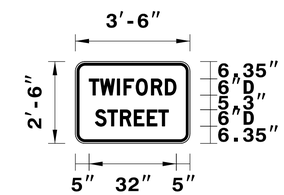
SYMBOL	X	Y	WID	HT

MAT'L: 0.125 (3.2 mm) ALUMINUM

DESIGN BY: NLG CHECKED BY: GLG DATE: OCT 6, 2017
PROJECT ID: - DIV: -

NOTES

1. Background shall be NC Grade B reflective sheeting.
2. Legend and border shall be direct applied NC Grade B sheeting.
3. Arrow shall be NC Grade B Sheeting.



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

																			Series/Size Text Length
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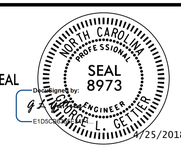
		S	T	R	E	E	T												D 2000
	7.5	4.6	4.6	5.1	4.7	4.2	3.7	7.5											26.9

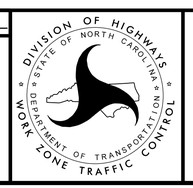
FILENAME:

NORTH CAROLINA D.O.T. SIGN DETAIL

APPROVED:_____ DATE:_____

SEAL





DETOUR SIGNING SR1207

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-8

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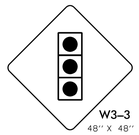
W20-1
48" X 48"
1

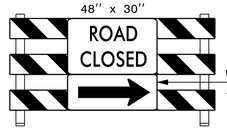
W20-4
48" X 48"
2



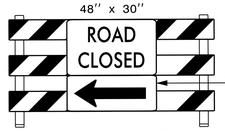
W3-3
48" X 48"
3

R10-6
24" X 36"
4

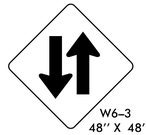
SIDEWALK CLOSED
R9-9
30" X 18"
5



TYPE III BARRICADE
6



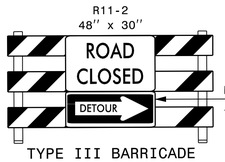
TYPE III BARRICADE
7



W6-3
48" X 48"
8

W20-3
48" X 48"

NEXT LEFT
SP-4L
42" X 12"
9



M4-10R
48" x 18"

TYPE III BARRICADE
10

ADA-COMPLIANT
PEDESTRIAN BARRICADE
11

M4-8
24" X 12"
30" X 42"

M6-3
21" X 15"
12

W20-3
48" X 48"

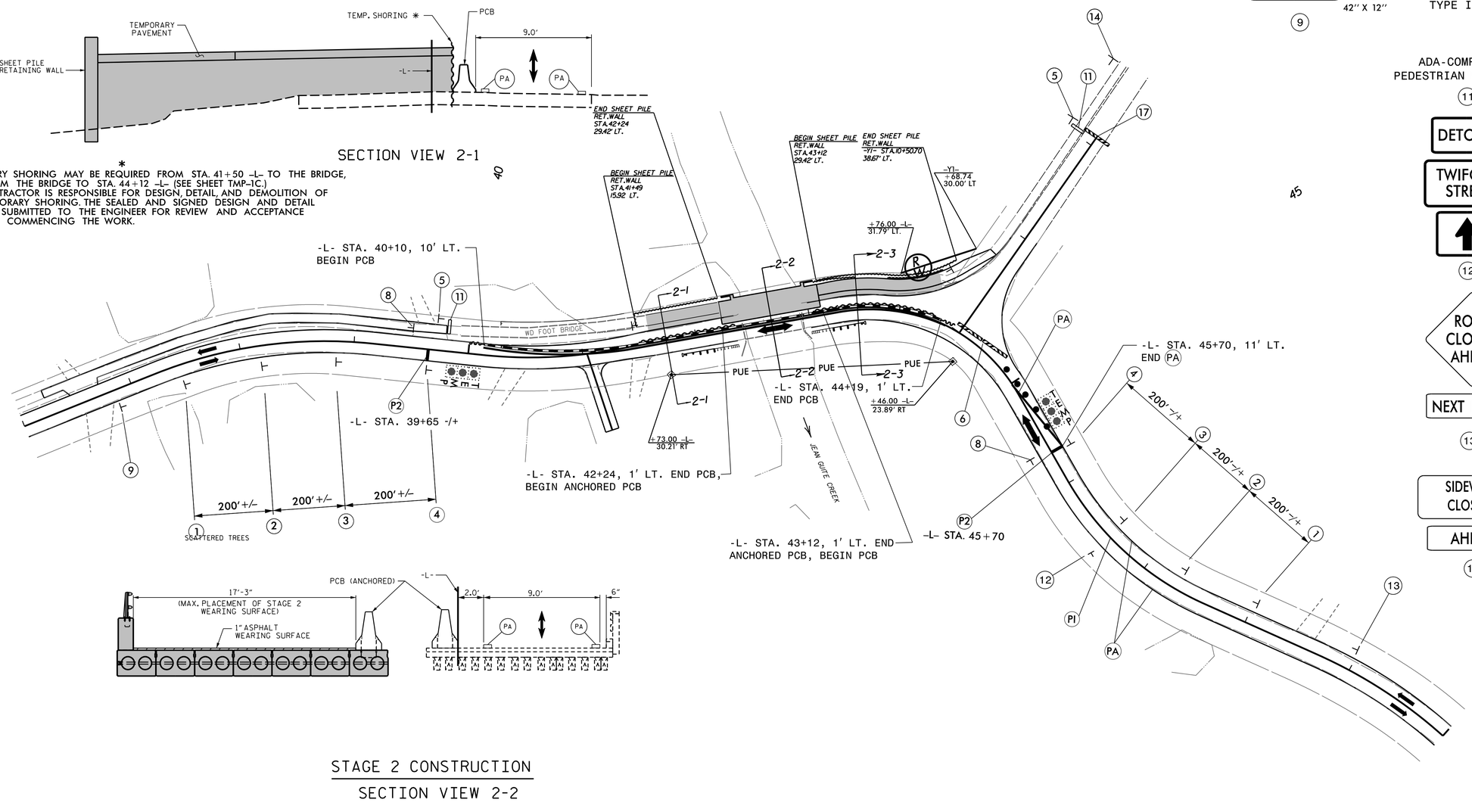
NEXT RIGHT
SP-4R
42" X 12"
13

SIDEWALK CLOSED
R9-9
30" X 18"

AHEAD
W16-9
12" X 24"
14

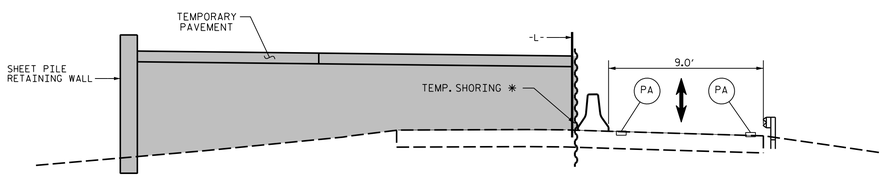
SECTION VIEW 2-1

* TEMPORARY SHORING MAY BE REQUIRED FROM STA. 41+50 -L- TO THE BRIDGE, AND FROM THE BRIDGE TO STA. 44+12 -L- (SEE SHEET TMP-1C.) THE CONTRACTOR IS RESPONSIBLE FOR DESIGN, DETAIL, AND DEMOLITION OF THE TEMPORARY SHORING. THE SEALED AND SIGNED DESIGN AND DETAIL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO COMMENCING THE WORK.



STAGE 2 CONSTRUCTION

SECTION VIEW 2-2



* TEMPORARY SHORING MAY BE REQUIRED FROM STA. 41+50 -L- TO THE BRIDGE, AND FROM THE BRIDGE TO STA. 44+12 -L- (SEE SHEET TMP-1C.) THE CONTRACTOR IS RESPONSIBLE FOR DESIGN, DETAIL, AND DEMOLITION OF THE TEMPORARY SHORING. THE SEALED AND SIGNED DESIGN AND DETAIL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO COMMENCING THE WORK.

SECTION VIEW 2-3

NOTE: SEE TMP-7a FOR ADDITIONAL OFF-PROJECT SIGNING FOR TWIFORD ST. CLOSURE.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER GEORGE L. GETTIER

Docu Sign Envelope
E1D5CB63

4/25/2018

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

TEMPORARY TRAFFIC CONTROL PHASE II STEPS 1-3

REVISIONS

4/25/2008 12:22:50 PM
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PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-9

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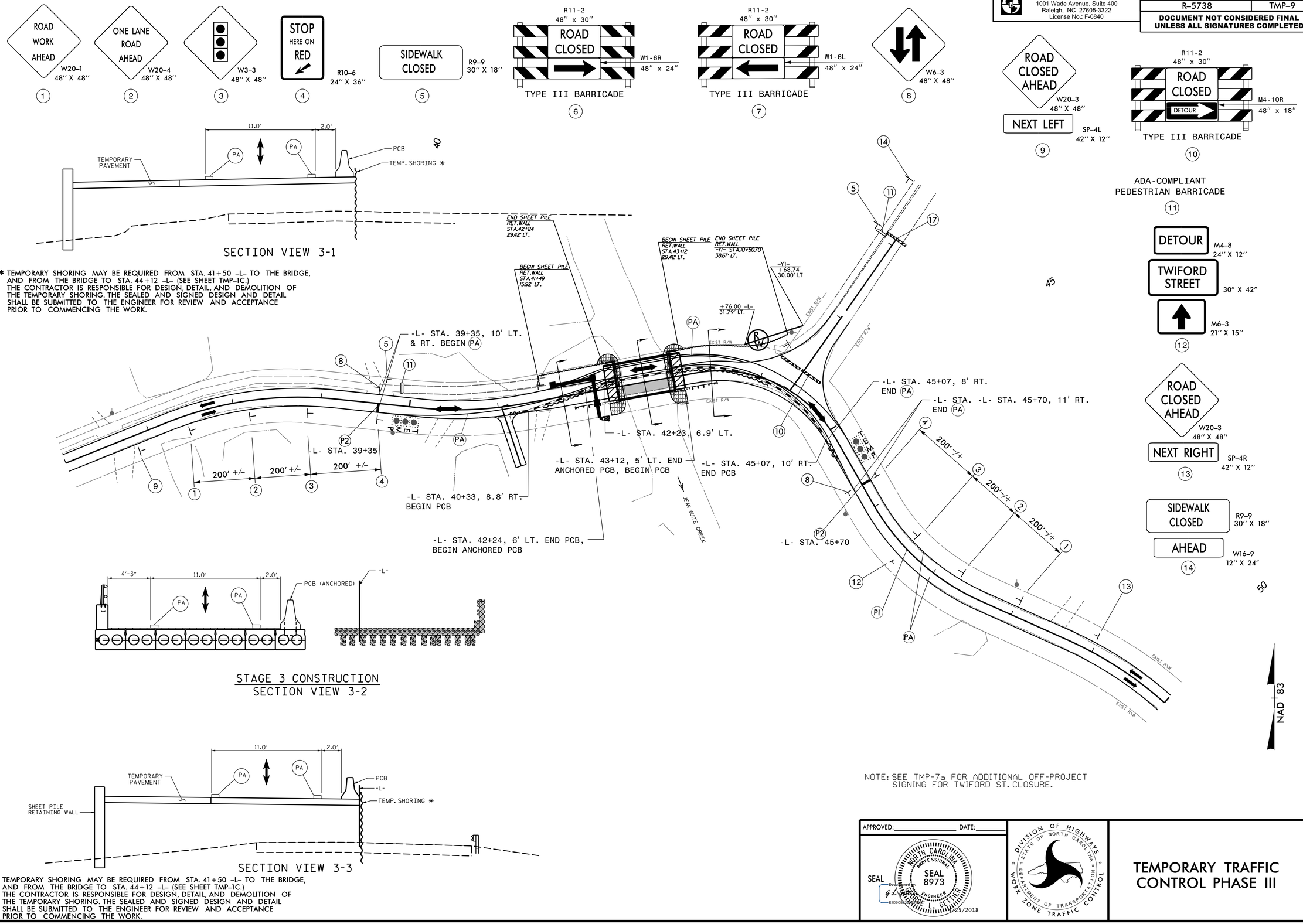

NOTE: SEE TMP-7a FOR ADDITIONAL OFF-PROJECT SIGNING FOR TWIFORD ST. CLOSURE.

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER GREGORY L. GETTIER

DocuSigned by: E1D5CB8

9/25/2018

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

TEMPORARY TRAFFIC CONTROL PHASE III

REVISIONS

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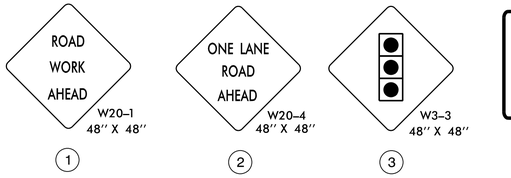
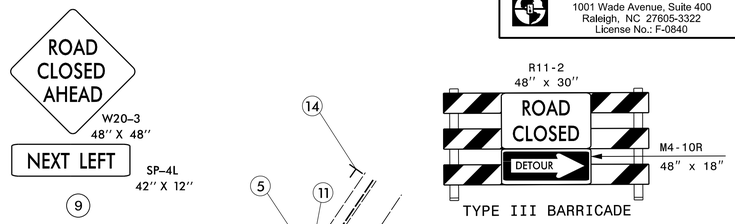
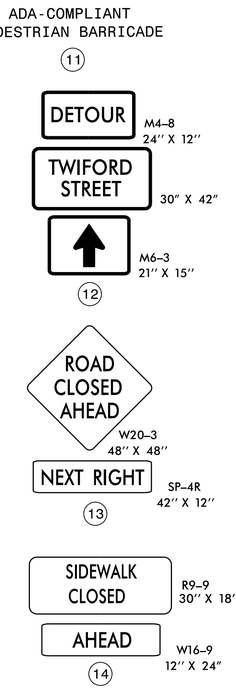
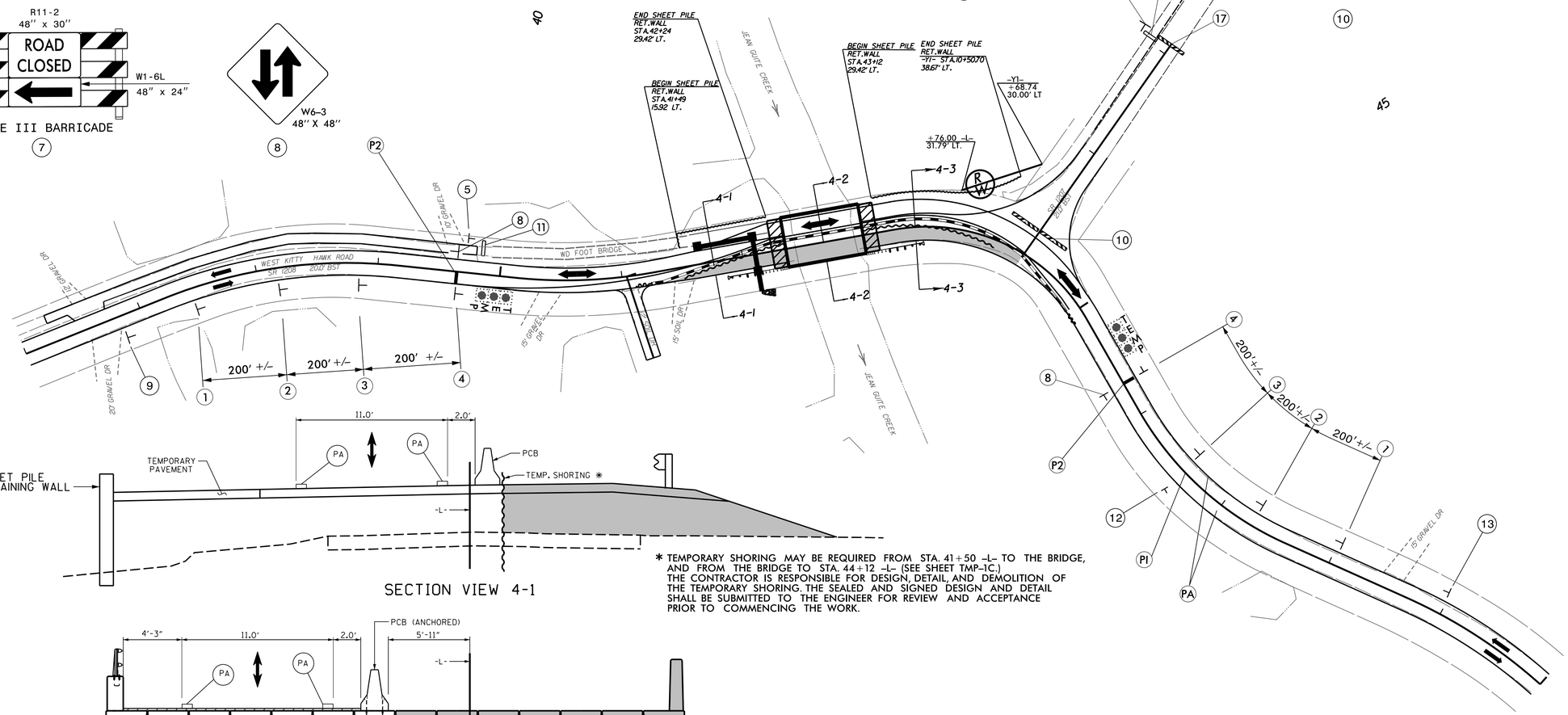
PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-10

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



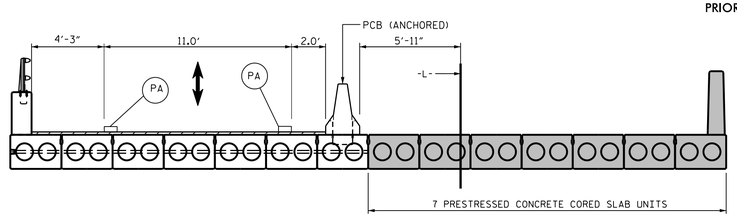






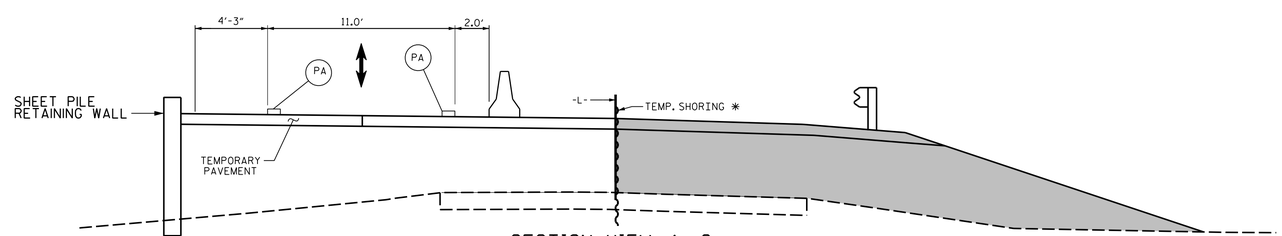
SECTION VIEW 4-1

* TEMPORARY SHORING MAY BE REQUIRED FROM STA. 41+50 –L– TO THE BRIDGE, AND FROM THE BRIDGE TO STA. 44+12 –L– (SEE SHEET TMP-1C.) THE CONTRACTOR IS RESPONSIBLE FOR DESIGN, DETAIL, AND DEMOLITION OF THE TEMPORARY SHORING. THE SEALED AND SIGNED DESIGN AND DETAIL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO COMMENCING THE WORK.



STAGE 4 CONSTRUCTION

SECTION VIEW 4-2



SECTION VIEW 4- 3

* TEMPORARY SHORING MAY BE REQUIRED FROM STA. 41+50 –L– TO THE BRIDGE, AND FROM THE BRIDGE TO STA. 44+12 –L– (SEE SHEET TMP-1C.) THE CONTRACTOR IS RESPONSIBLE FOR DESIGN, DETAIL, AND DEMOLITION OF THE TEMPORARY SHORING. THE SEALED AND SIGNED DESIGN AND DETAIL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO COMMENCING THE WORK.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER GEORGE L. GETTER

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

TEMPORARY TRAFFIC CONTROL PHASE IV

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-11

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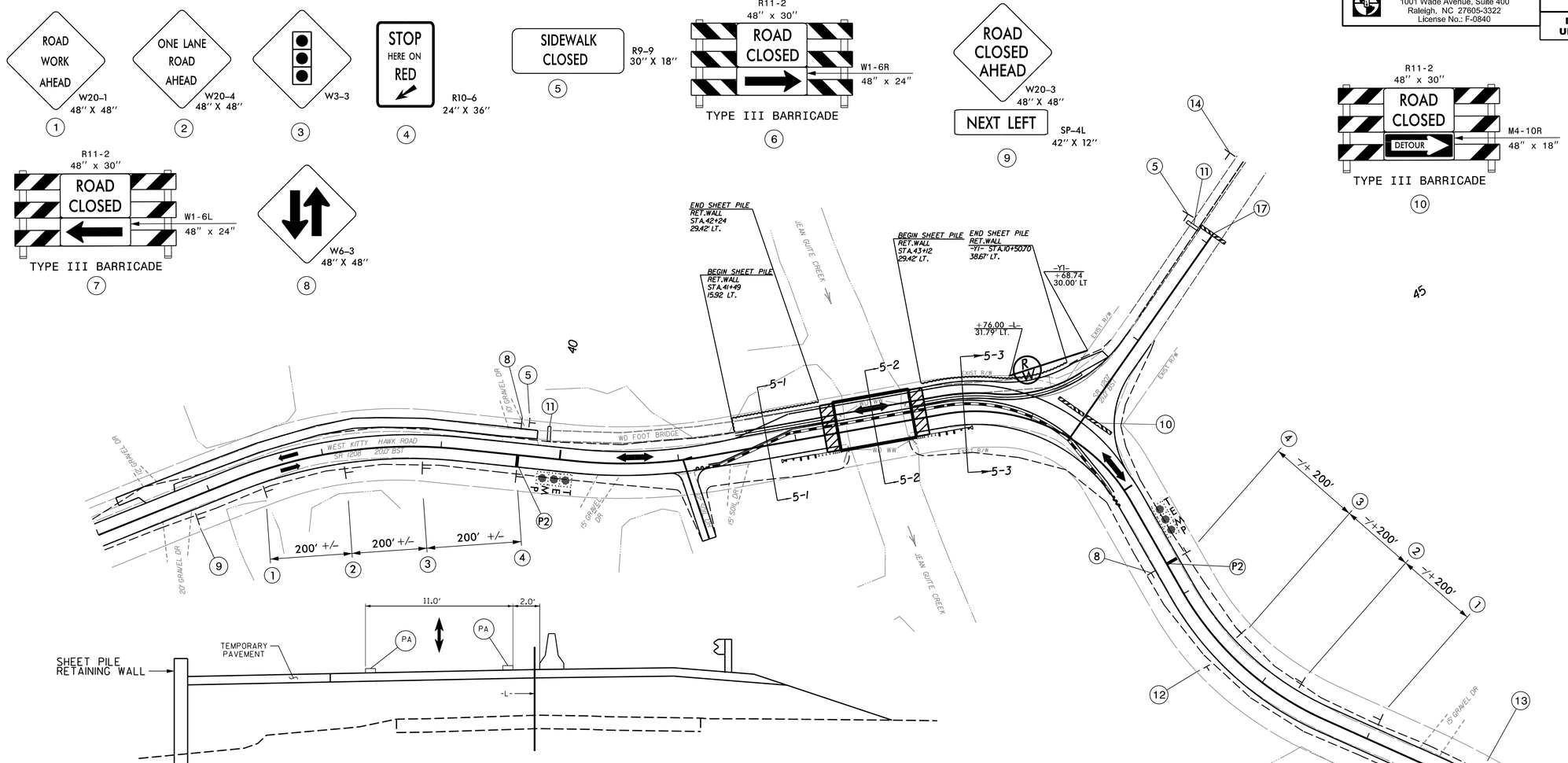
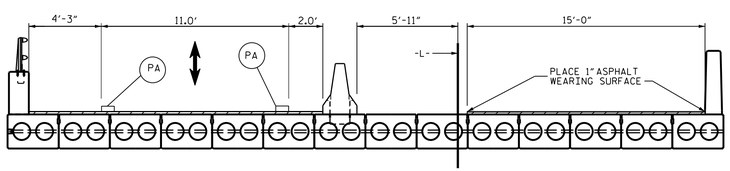
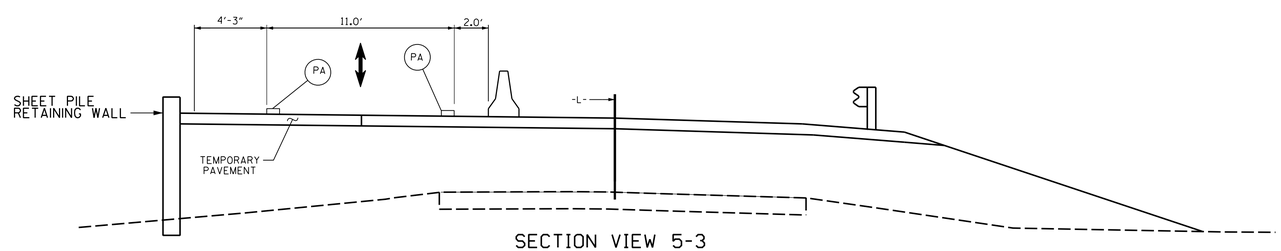


SECTION VIEW 5-1



STAGE 4 CONSTRUCTION
SECTION VIEW 5-2



SECTION VIEW 5-3

NAD 83

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER GEORGE L. GETTIER

DocuSigned by: E1D9C8

10/25/2018

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

TEMPORARY TRAFFIC CONTROL PHASE V STEP 1

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-12

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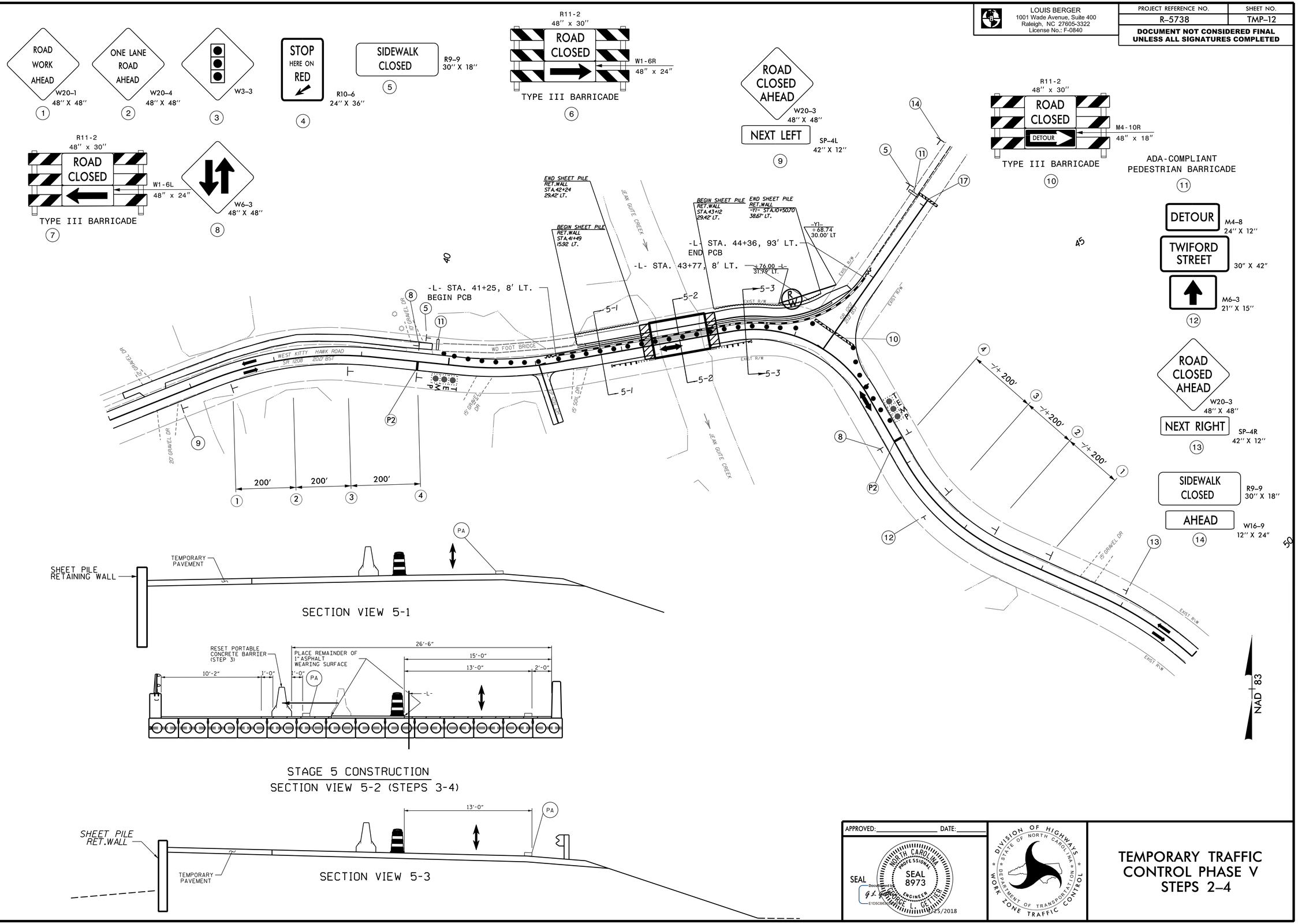

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER GEORGE L. GETTIER

Documented by: E1D5CB6C... 4/25/2018

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

TEMPORARY TRAFFIC CONTROL PHASE V STEPS 2-4

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	TMP-13

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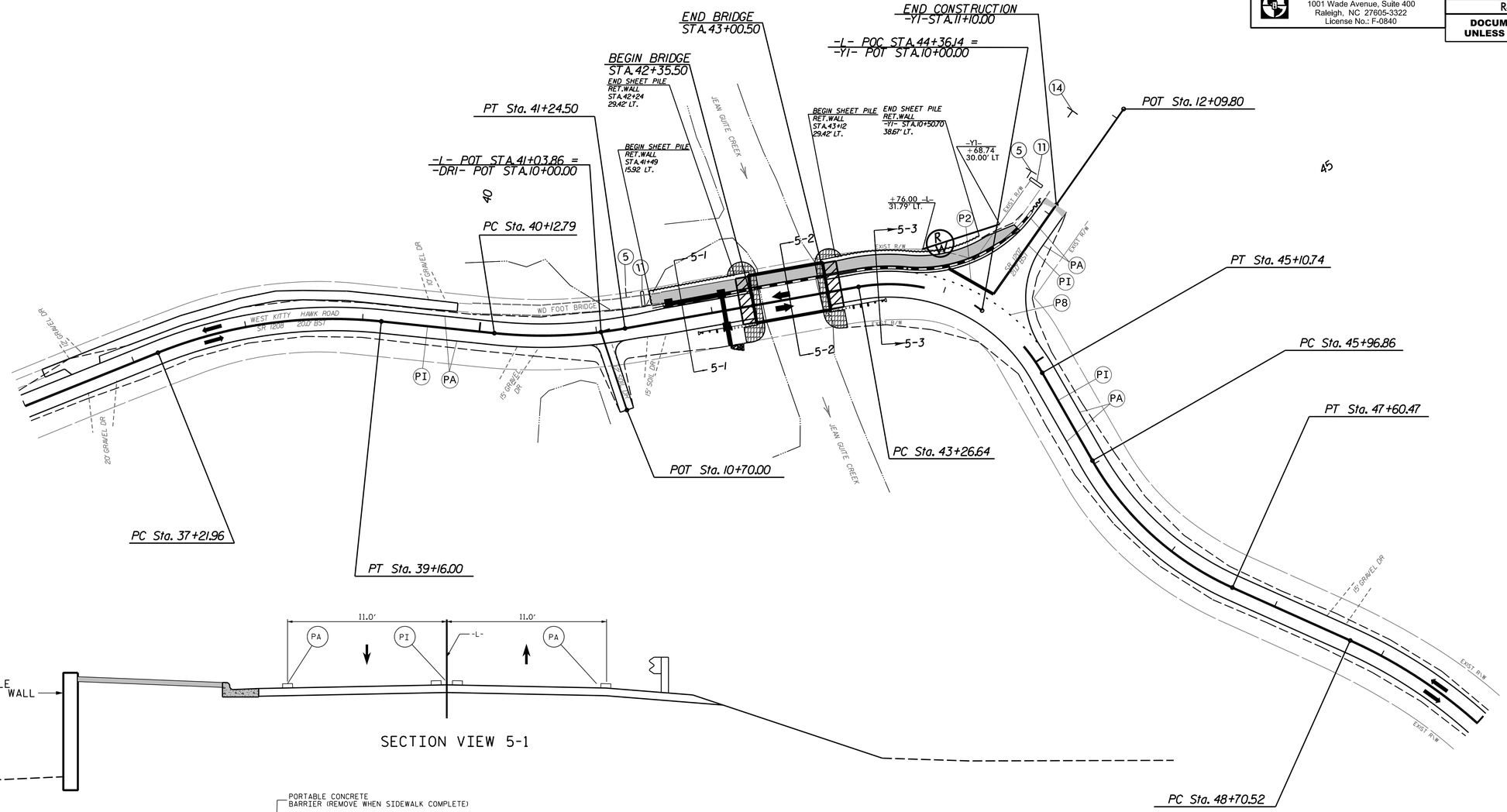
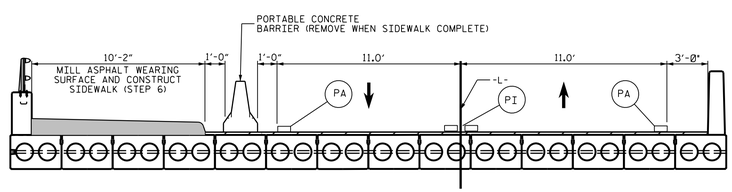
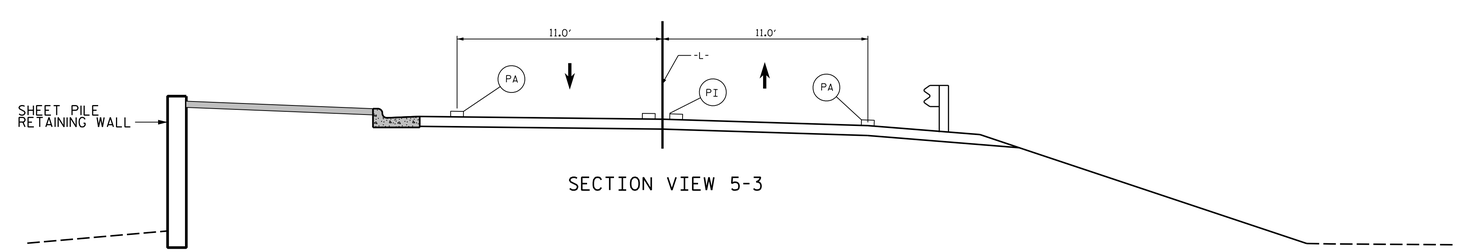


SECTION VIEW 5-1



STAGE 5 CONSTRUCTION

SECTION VIEW 5-2 STEPS (5-6)



SECTION VIEW 5-3

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 8973 ENGINEER GEORGE GETTIER

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

TEMPORARY TRAFFIC CONTROL PHASE V STEPS 5&6

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5738	1	

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

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.

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

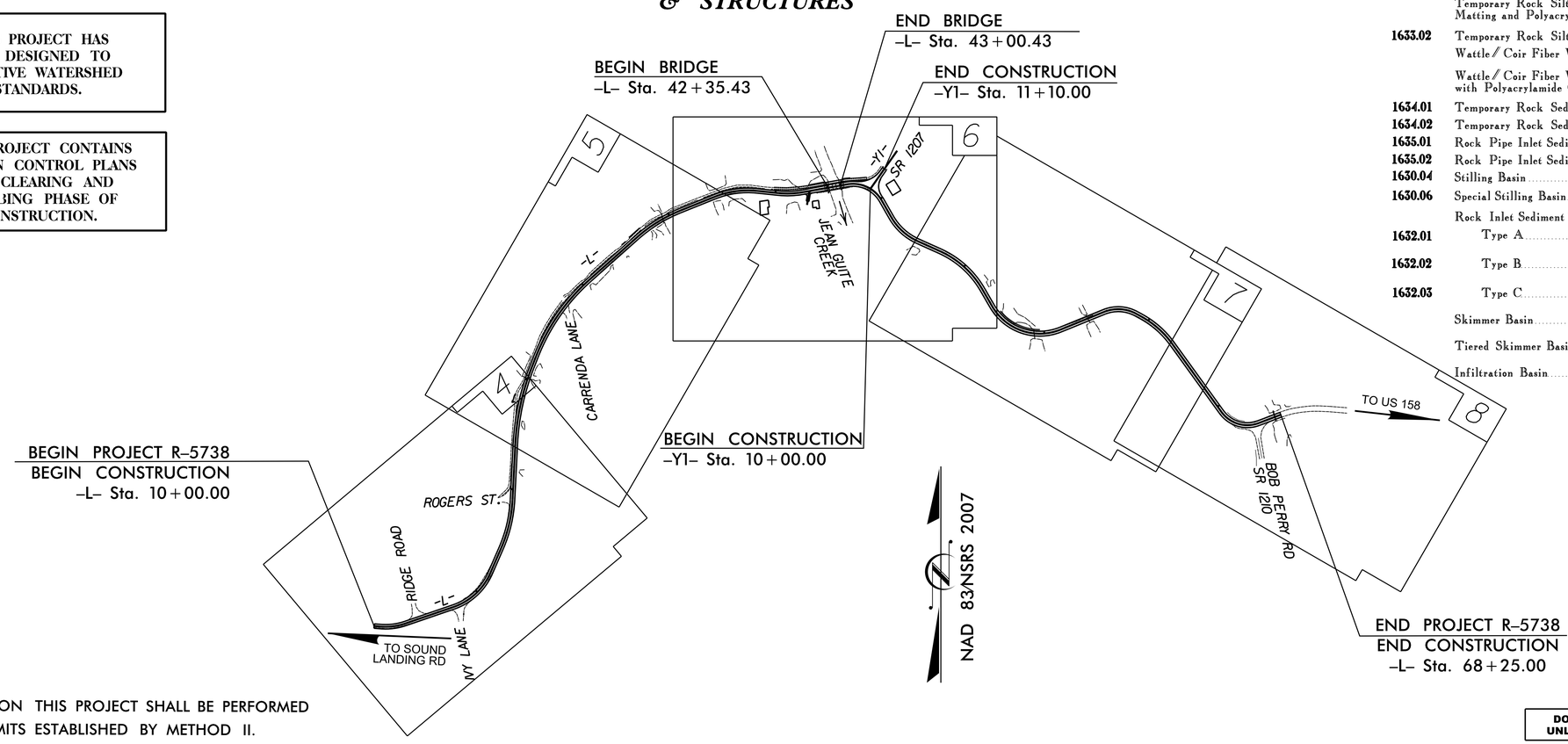
THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
DARE COUNTY

LOCATION: SR 1208 (WEST KITTY HAWK ROAD) FROM WEST OF IVY LANE TO EAST OF SR 1210 AND REPLACEMENT OF BRIDGE #40

TYPE OF WORK: GRADING, PAVING, DRAINAGE, EROSION CONTROL & STRUCTURES



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

EROSION AND SEDIMENT CONTROL MEASURES

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

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GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Prepared In the Office of:

LOUIS BERGER

1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
License No.: F-0840

2018 STANDARD SPECIFICATIONS

Designed By:

ANA PASSMAN, PE, CFM **3581**

NAME *LEVEL III CERTIFICATION NO.*

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT

113 Airport Rd., Suite 100
Edenton, NC 27932

2018 STANDARD SPECIFICATIONS

Reviewed By:

ANDY BLANKENSHIP, PE, CPESC

Roadway Standard Drawings

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

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

WBS NO.: 50196.3.1

CONTRACT: DA00333

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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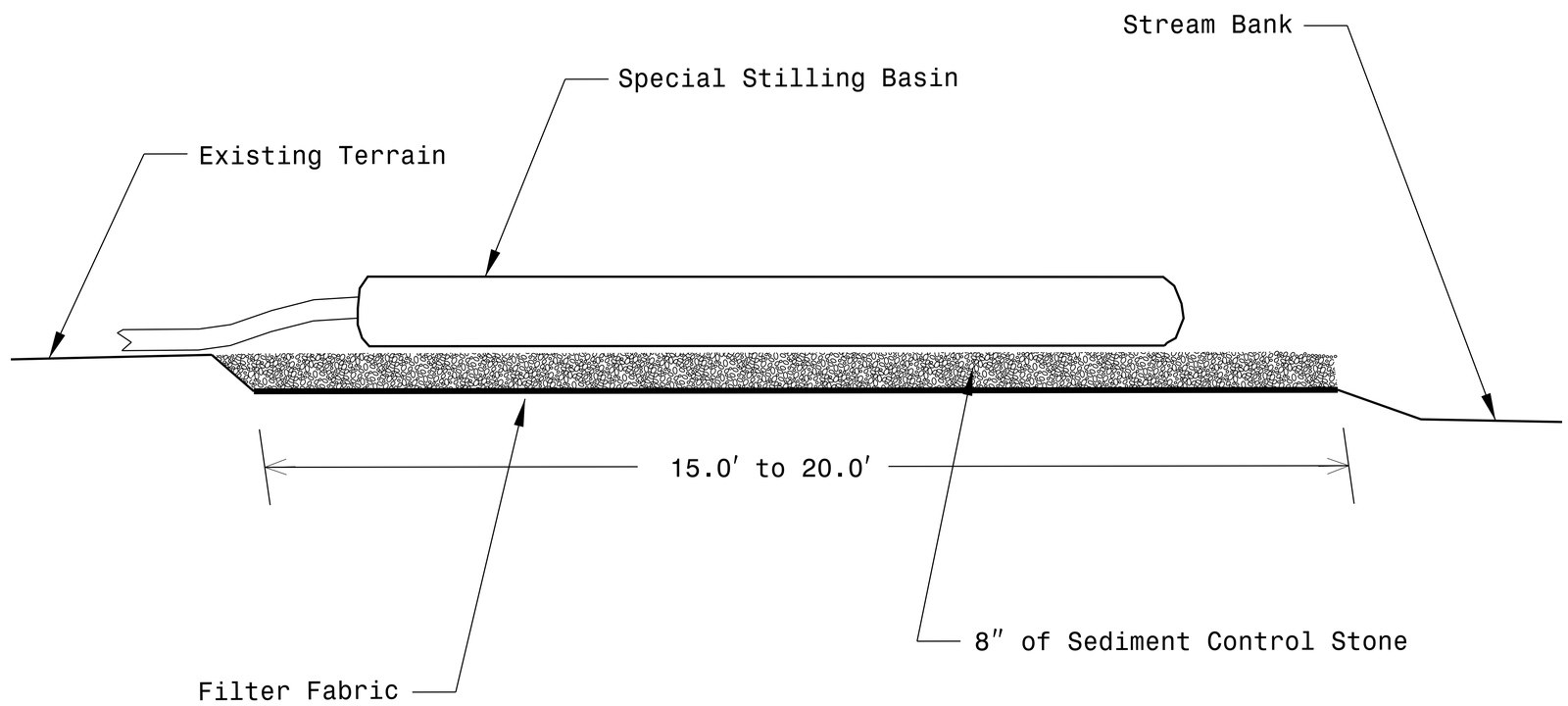
SPECIAL STILLING BASIN DETAIL



Note: Provide Stabilized Outlet to Streambank

Not To Scale

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ROADWAY PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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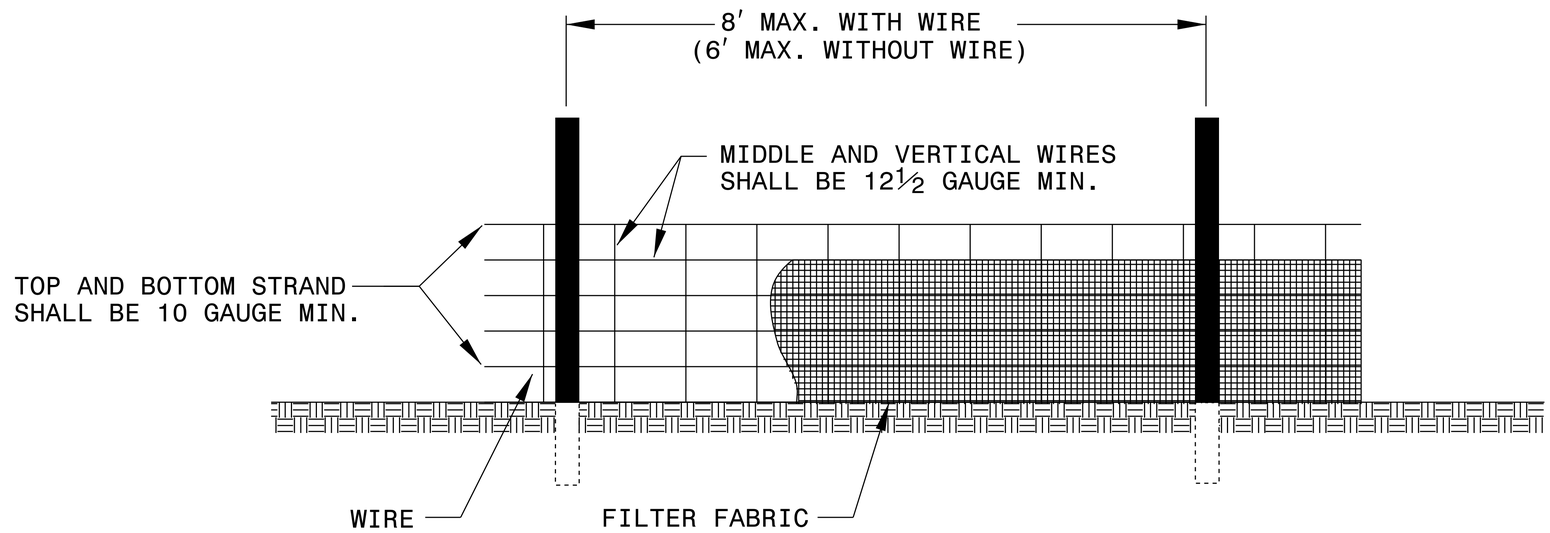
TEMPORARY SILT FENCE DETAIL

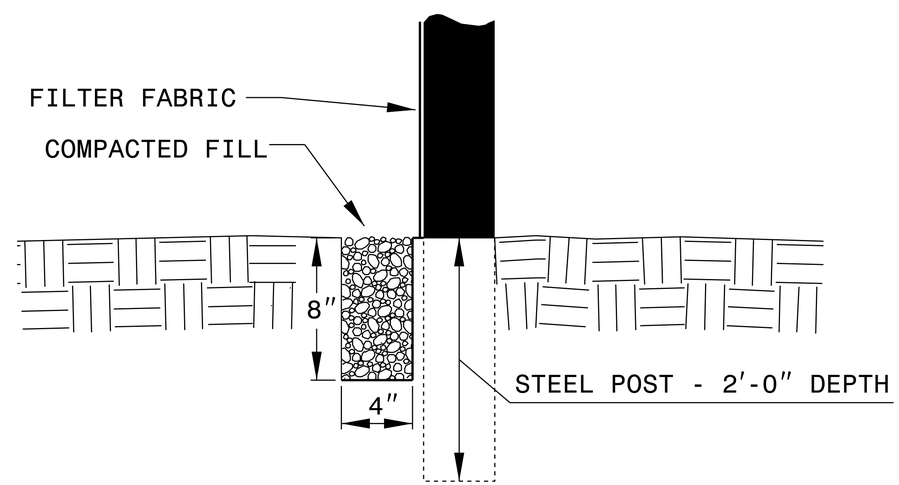


NOTES

USE WIRE A MINIMUM OF 32″ IN WIDTH AND WITH A MINIMUM OF 6 LINE WIRES WITH 12″ STAY SPACING.

USE FILTER FABRIC A MINIMUM OF 36″ IN WIDTH AND FASTEN ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.

PROVIDE 5′-0″ STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.



EXTENSION OF FABRIC AND WIRE INTO TRENCH

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-2C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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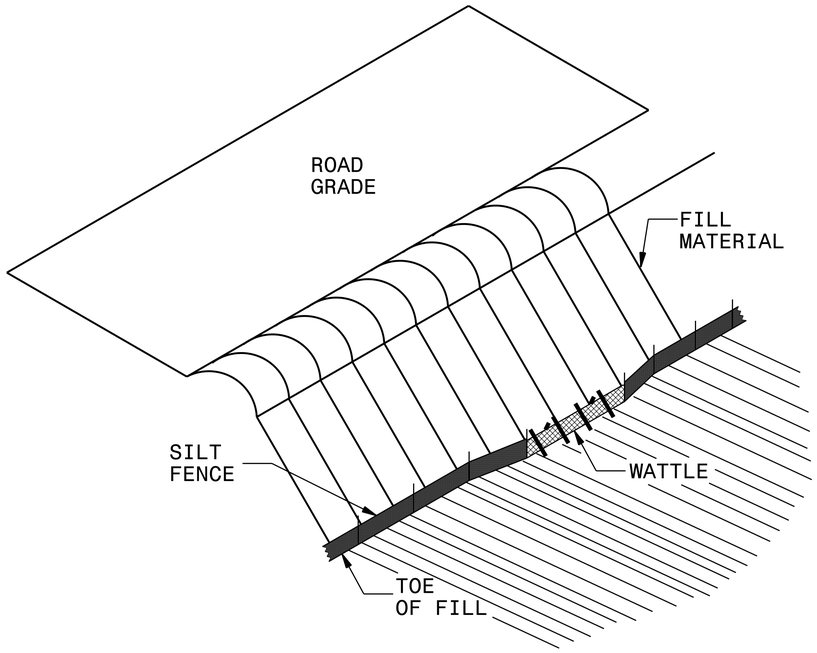
SILT FENCE COIR FIBER WATTLE BREAK DETAIL



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.

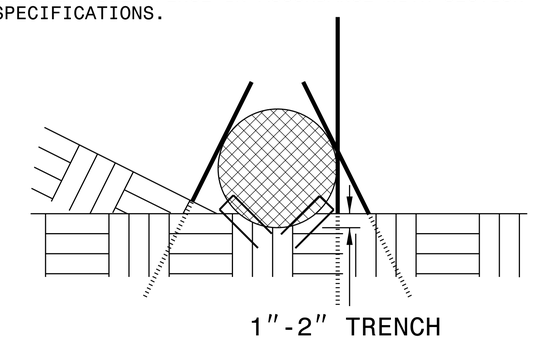
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

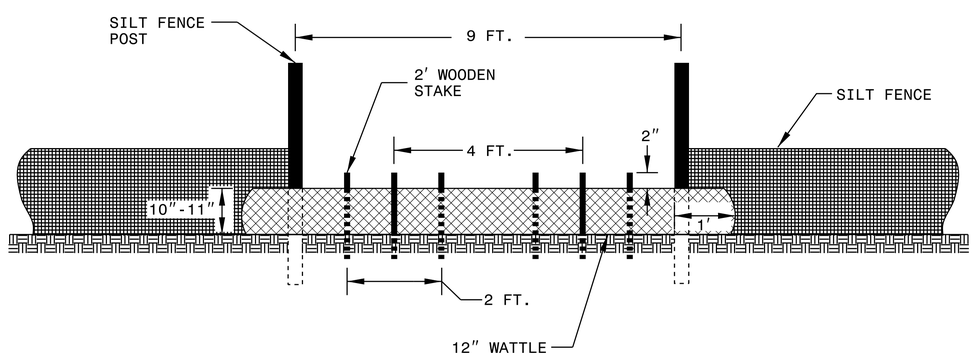
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

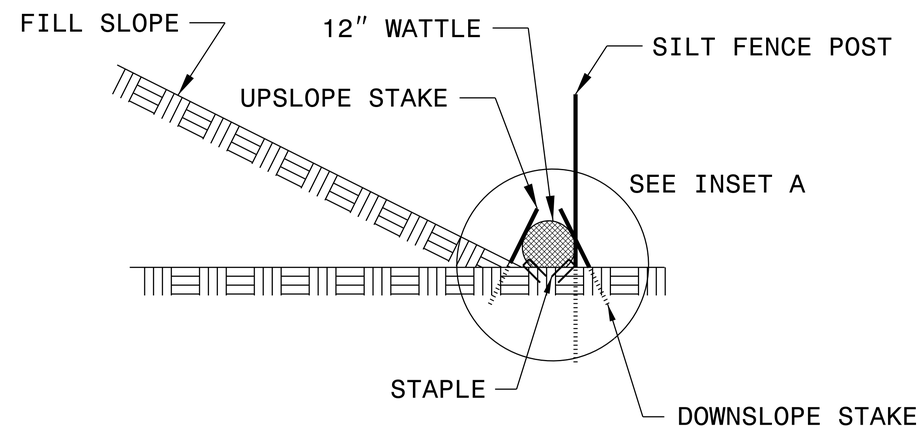
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





VIEW FROM SLOPE



SIDE VIEW

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0′ 50′ 100′

PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-4/CONST 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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0' 50' 100'

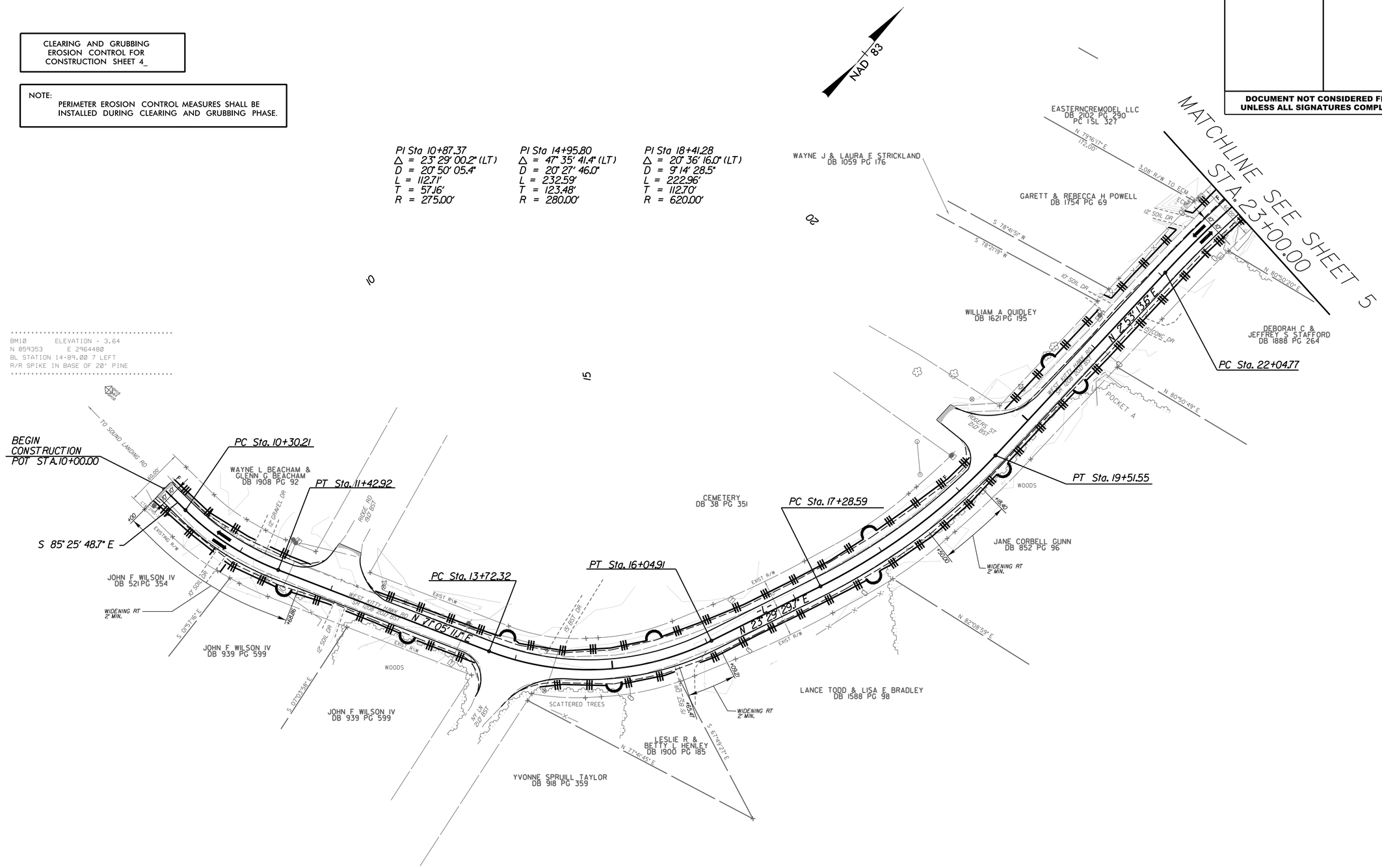
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4_

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

PI Sta 10+87.37
Δ = 23° 29' 00.2" (LT)
D = 20° 50' 05.4"
L = 112.71'
T = 57.16'
R = 275.00'

PI Sta 14+95.80
Δ = 47° 35' 41.4" (LT)
D = 20° 27' 46.0"
L = 232.59'
T = 123.48'
R = 280.00'

PI Sta 18+41.28
Δ = 20° 36' 16.0" (LT)
D = 9° 14' 28.5"
L = 222.96'
T = 112.70'
R = 620.00'



SEE SHEET 9 FOR -L- PROFILE

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ROADWAY PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-5/CONST 5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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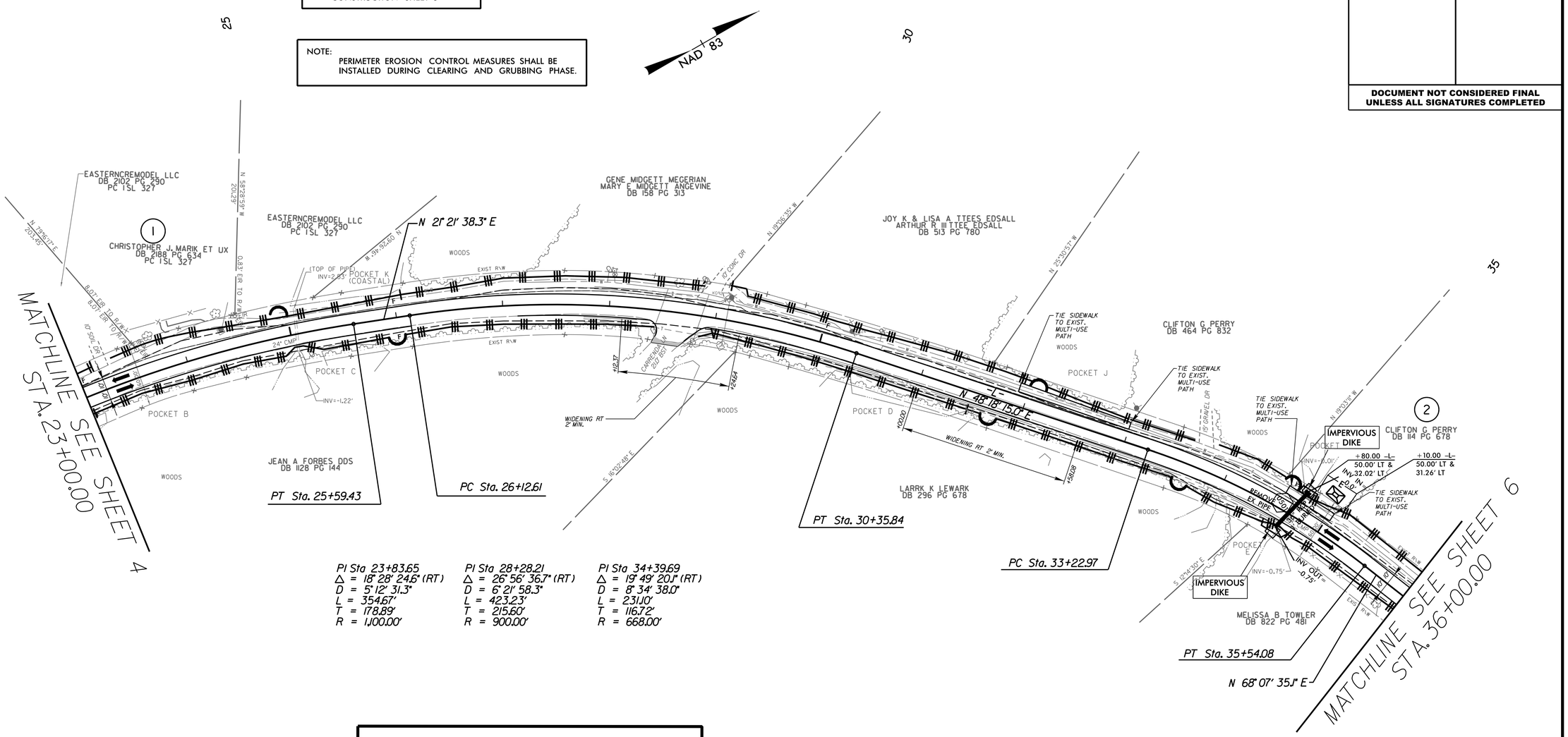
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 5

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



PI Sta 23+83.65
Δ = 18° 28' 24.6" (RT)
D = 5° 12' 31.3"
L = 354.67'
T = 178.89'
R = 1,100.00'

PI Sta 28+28.21
Δ = 26° 56' 36.7" (RT)
D = 6° 21' 58.3"
L = 423.23'
T = 215.60'
R = 900.00'

PI Sta 34+39.69
Δ = 19° 49' 20.1" (RT)
D = 8° 34' 38.0"
L = 231.10'
T = 116.72'
R = 668.00'

Impervious Dike:

The work covered by this section consists of furnishing, installing, maintaining, and removing an impervious dike for the purpose of diverting normal stream flow around the construction site. The Contractor shall construct an impervious dike in such a manner approved by the Engineer. The impervious dike shall not permit seepage of water into the construction site or contribute to siltation of the stream. The impervious dike shall be constructed of an acceptable material in the locations noted on the plans or as directed by the Engineer.

Acceptable materials shall include but not be limited to sheet piles, sandbags, and/or the placement of an acceptable size stone lined with polypropylene or other impervious fabric.

Earth material shall not be used to construct an impervious dike when it is in direct contact with the stream unless vegetation can be established before contact with the stream takes place.

No direct payment shall be made for the work of installation, maintenance, and removal of impervious dike(s) as described in this provision. Payment for such work shall be included in the contract bid price for "Lump Sum for Erosion Control".

SEE SHEET 9 FOR -L- PROFILE

LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
License No.: F-0840

ROADWAY PLANS

REVISIONS

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CKE_rdu.tbl

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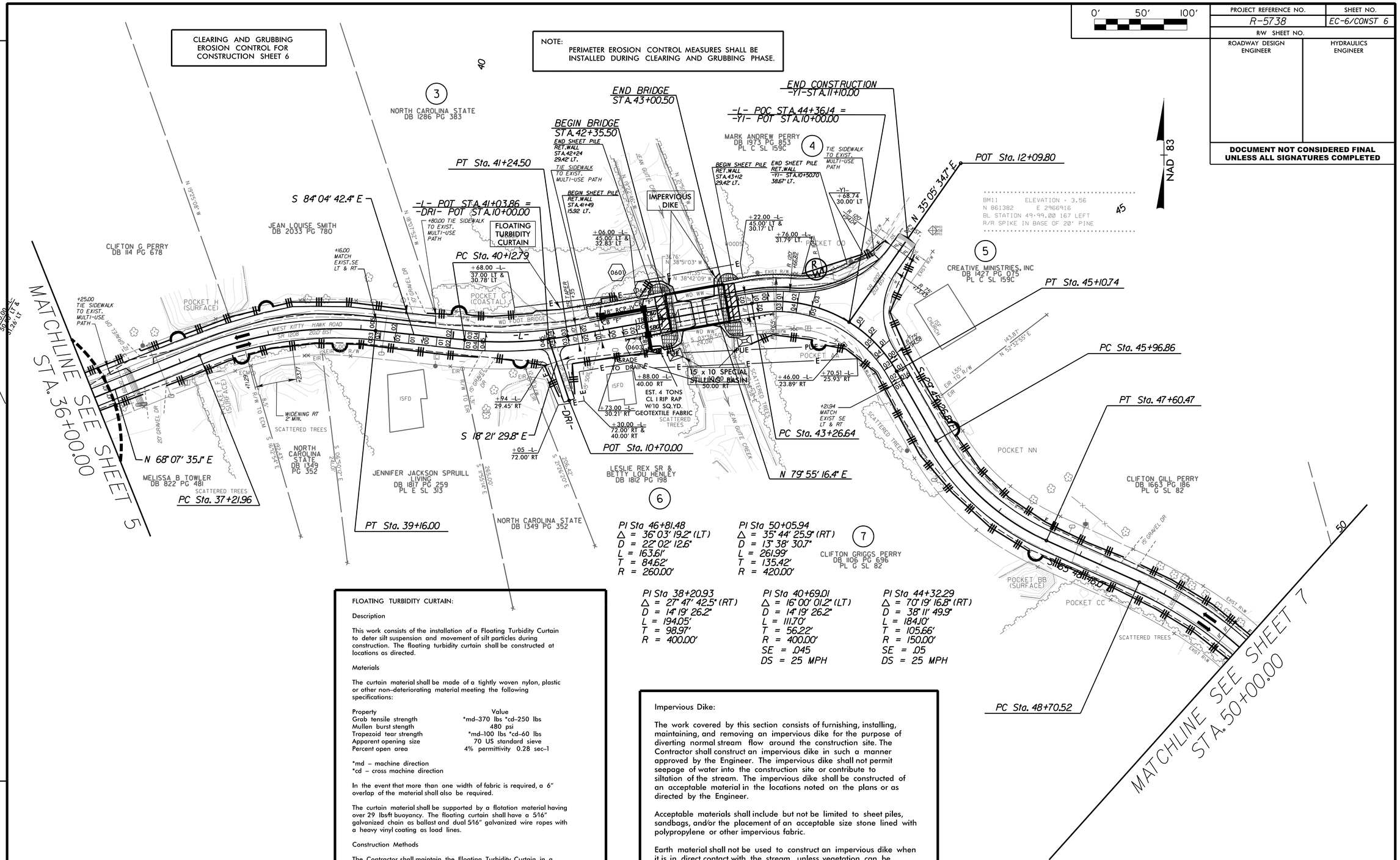
PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-6/CONST 6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 6

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



FLOATING TURBIDITY CURTAIN:

Description

This work consists of the installation of 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 non-deteriorating material meeting the following specifications:

Property	Value
Grab tensile strength	*md-370 lbs *cd-250 lbs
Mullen burst strength	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.

Measurement and Payment

Floating Turbidity Curtain will be paid for at the contract price for "Lump Sum for Erosion Control". Such payment will be full compensation including but not limited to installation, maintenance, removal and incidentals necessary to complete this work.

Impervious Dike:

The work covered by this section consists of furnishing, installing, maintaining, and removing an impervious dike for the purpose of diverting normal stream flow around the construction site. The Contractor shall construct an impervious dike in such a manner approved by the Engineer. The impervious dike shall not permit seepage of water into the construction site or contribute to siltation of the stream. The impervious dike shall be constructed of an acceptable material in the locations noted on the plans or as directed by the Engineer.

Acceptable materials shall include but not be limited to sheet piles, sandbags, and/or the placement of an acceptable size stone lined with polypropylene or other impervious fabric.

Earth material shall not be used to construct an impervious dike when it is in direct contact with the stream unless vegetation can be established before contact with the stream takes place.

No direct payment shall be made for the work of installation, maintenance, and removal of impervious dike(s) as described in this provision. Payment for such work shall be included in the contract bid price for "Lump Sum for Erosion Control".

SEE SHEET 10 FOR -L- PROFILE
SEE SHEET 11 FOR -Y1- AND -DR1- PROFILES

LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
License No.: F-0840

ROADWAY PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-7/CONST 7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

Impervious Dike:

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FLOATING TURBIDITY CURTAIN:

Description

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Materials

The curtain material shall be made of a tightly woven nylon, plastic or other non-deteriorating 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

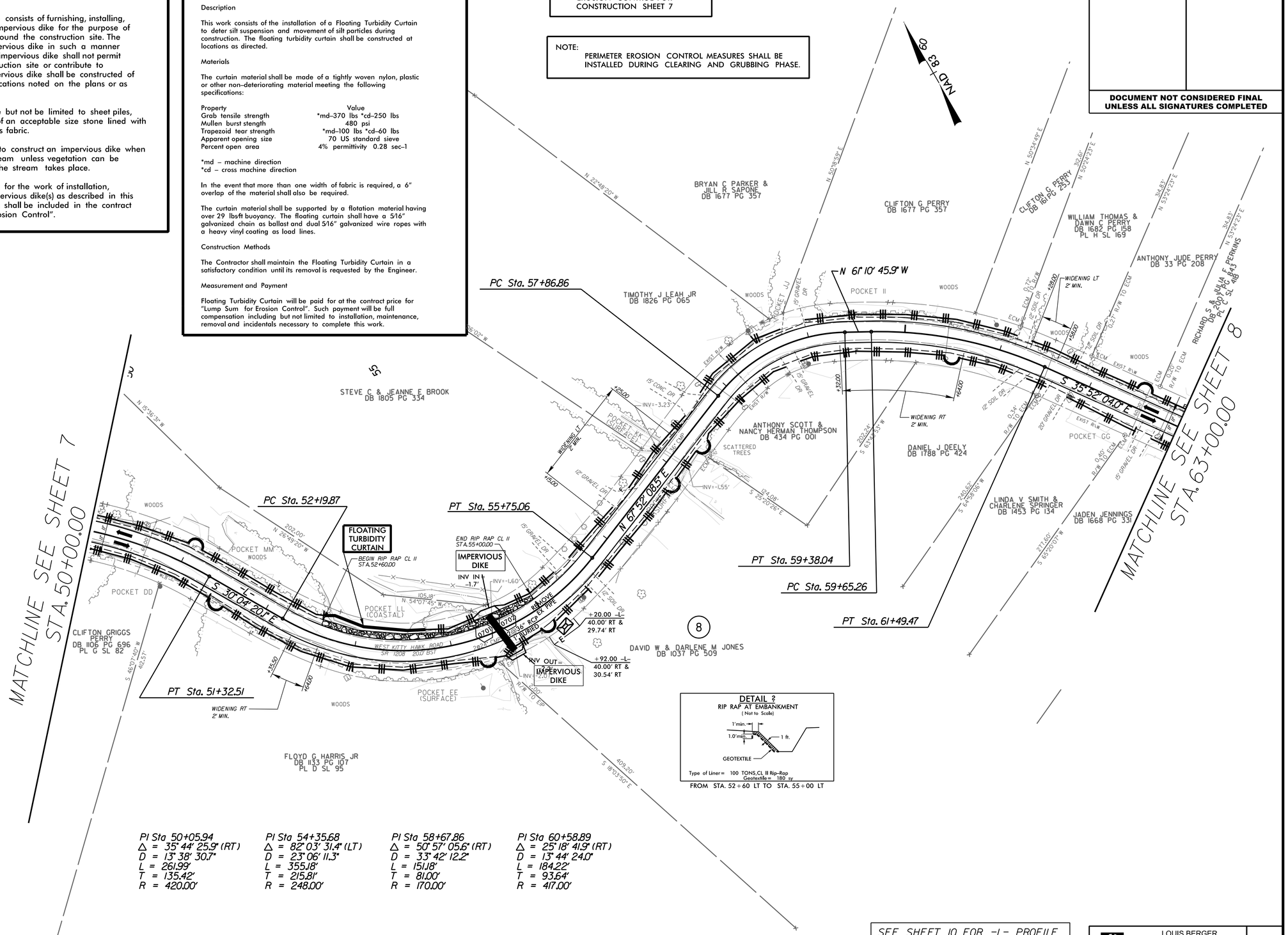
The Contractor shall maintain the Floating Turbidity Curtain in a satisfactory condition until its removal is requested by the Engineer.

Measurement and Payment

Floating Turbidity Curtain will be paid for at the contract price for "Lump Sum for Erosion Control". Such payment will be full compensation including but not limited to installation, maintenance, removal and incidentals necessary to complete this work.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 7

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



PI Sta 50+05.94
Δ = 35° 44' 25.9" (RT)
D = 13° 38' 30.7"
L = 261.99'
T = 135.42'
R = 420.00'

PI Sta 54+35.68
Δ = 82° 03' 31.4" (LT)
D = 23° 06' 11.3"
L = 355.18'
T = 215.81'
R = 248.00'

PI Sta 58+67.86
Δ = 50° 57' 05.6" (RT)
D = 33° 42' 12.2"
L = 151.18'
T = 81.00'
R = 170.00'

PI Sta 60+58.89
Δ = 25° 18' 41.9" (RT)
D = 13° 44' 24.0"
L = 184.22'
T = 93.64'
R = 417.00'

SEE SHEET 10 FOR -L- PROFILE

LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
License No.: F-0840

ROADWAY PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-8/CONST 8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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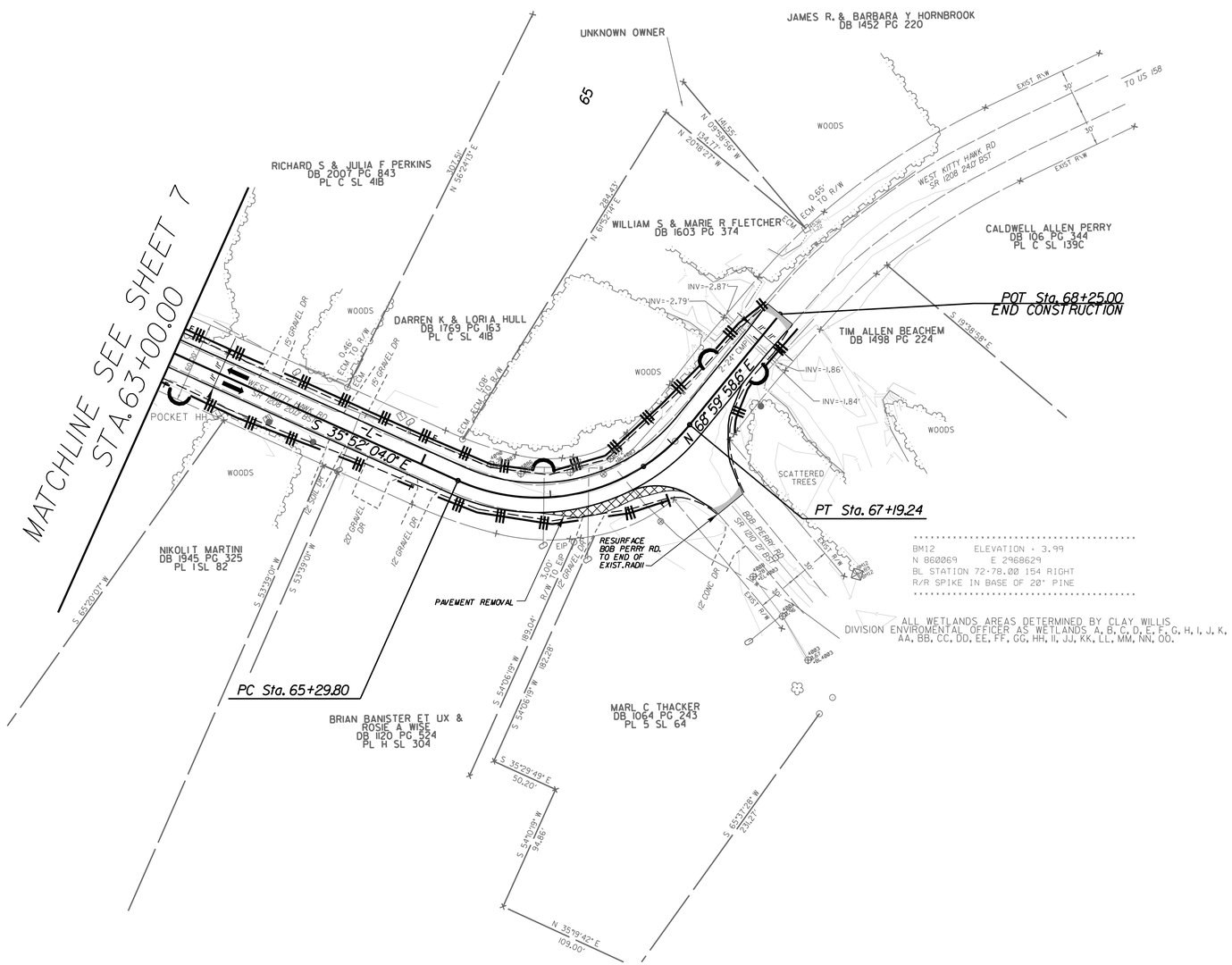
0' 50' 100'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 8

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

NAD 83



SEE SHEET 11 FOR -L- PROFILE

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ROADWAY PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-9/CONST 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0' 50' 100'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4_

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

NAD 83

PI Sta 10+87.37
△ = 23° 29' 00.2" (LT)
D = 20° 50' 05.4"
L = 112.71'
T = 57.16'
R = 275.00'

PI Sta 14+95.80
△ = 47° 35' 41.4" (LT)
D = 20° 27' 46.0"
L = 232.59'
T = 123.48'
R = 280.00'

PI Sta 18+41.28
△ = 20° 36' 16.0" (LT)
D = 9° 14' 28.5"
L = 222.96'
T = 112.70'
R = 620.00'

MATCHLINE SEE SHEET 5
STA. 23+00.00

BM10 ELEVATION - 3.64
N 859353 E 2964480
BL STATION 14+89.00 7 LEFT
R/R SPIKE IN BASE OF 20" PINE

BEGIN CONSTRUCTION
POT STA.10+00.00

S 85° 25' 48.7" E

PC Sta. 10+30.21

PT Sta. 11+42.92

PC Sta. 13+72.32

PT Sta. 16+04.91

PC Sta. 17+28.59

PT Sta. 19+51.55

PC Sta. 22+04.77

N 27° 05' 11.7" E

N 23° 29' 29.7" E

N 2° 53' 13.6" E

EASTERNCREMODEL LLC
DB 2102 PG 250
PC 1SL 327

WAYNE J & LAURA E STRICKLAND
DB 1059 PG 176

GARETT & REBECCA H POWELL
DB 1754 PG 69

WILLIAM A QUIDLEY
DB 1621PG 195

DEBORAH C & JEFFREY S STAFFORD
DB 1888 PG 264

WAYNE L BEACHAM & GLENN G BEACHAM
DB 1908 PG 92

CEMETERY
DB 38 PG 351

JANE CORBELL GUNN
DB 852 PG 96

JOHN F WILSON IV
DB 521PG 354

JOHN F WILSON IV
DB 939 PG 599

LANCE TODD & LISA E BRADLEY
DB 1588 PG 98

LESLIE R & BETTY L HENLEY
DB 1900 PG 185

YVONNE SPRUILL TAYLOR
DB 918 PG 359

TO SOUND LANDING RD

WEST KITTY HAWK RD
2042' BST

ROGERS ST
242' BST

RIDGE RD
192' BST

MY LN
217' BST

POCKET A

WIDENING RT
2' MIN.

EXIST R/W

WOODS

SCATTERED TREES

SEE SHEET 9 FOR -L- PROFILE

REVISIONS

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ROADWAY PLANS

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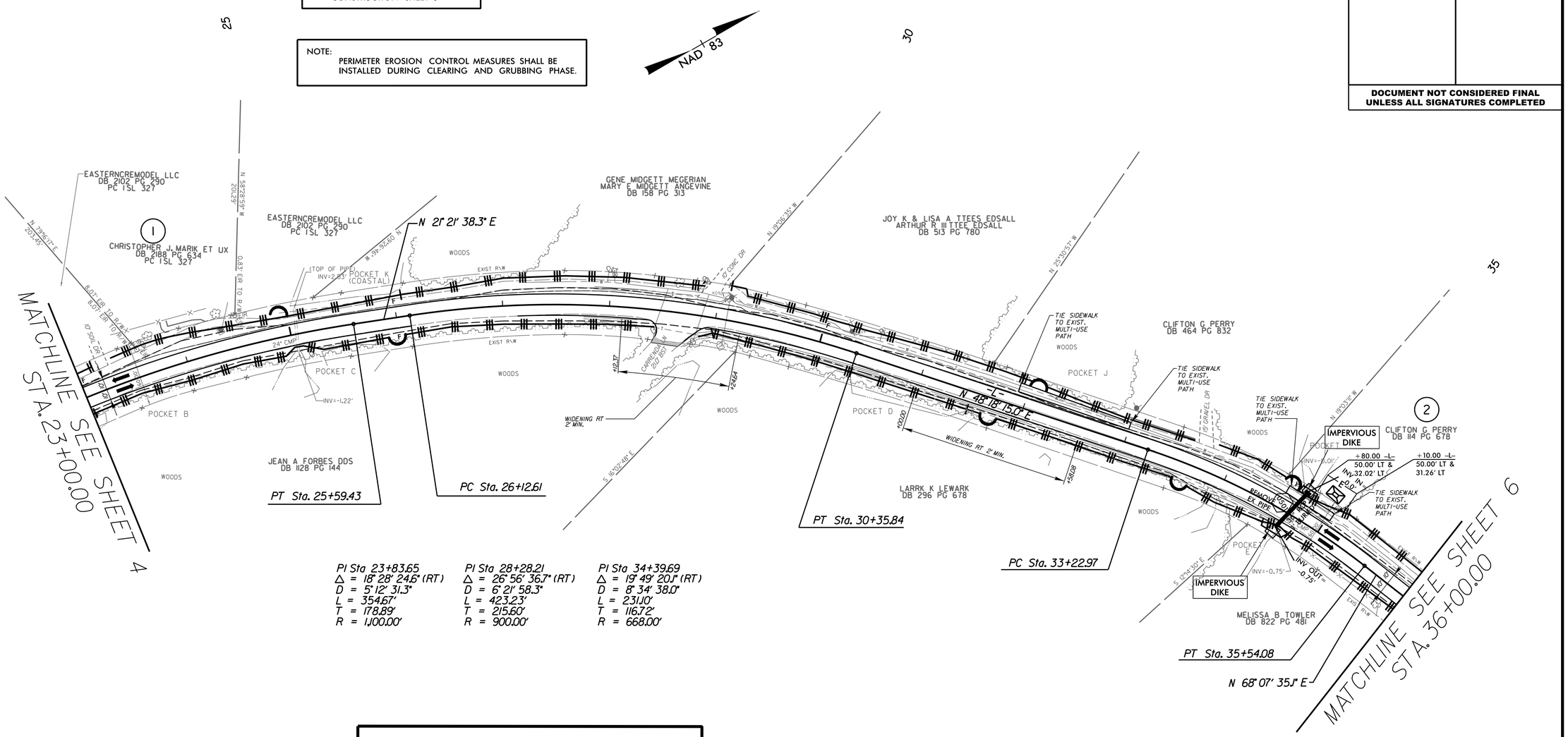
PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-10/CONST 5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0' 50' 100'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 5

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



PI Sta 23+83.65
Δ = 18° 28' 24.6" (RT)
D = 5° 12' 31.3"
L = 354.67'
T = 178.89'
R = 1,100.00'

PI Sta 28+28.21
Δ = 26° 56' 36.7" (RT)
D = 6° 21' 58.3"
L = 423.23'
T = 215.60'
R = 900.00'

PI Sta 34+39.69
Δ = 19° 49' 20.1" (RT)
D = 8° 34' 38.0"
L = 231.10'
T = 116.72'
R = 668.00'

Impervious Dike:

The work covered by this section consists of furnishing, installing, maintaining, and removing an impervious dike for the purpose of diverting normal stream flow around the construction site. The Contractor shall construct an impervious dike in such a manner approved by the Engineer. The impervious dike shall not permit seepage of water into the construction site or contribute to siltation of the stream. The impervious dike shall be constructed of an acceptable material in the locations noted on the plans or as directed by the Engineer.

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SEE SHEET 9 FOR -L- PROFILE

LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
License No.: F-0840

ROADWAY PLANS

REVISIONS

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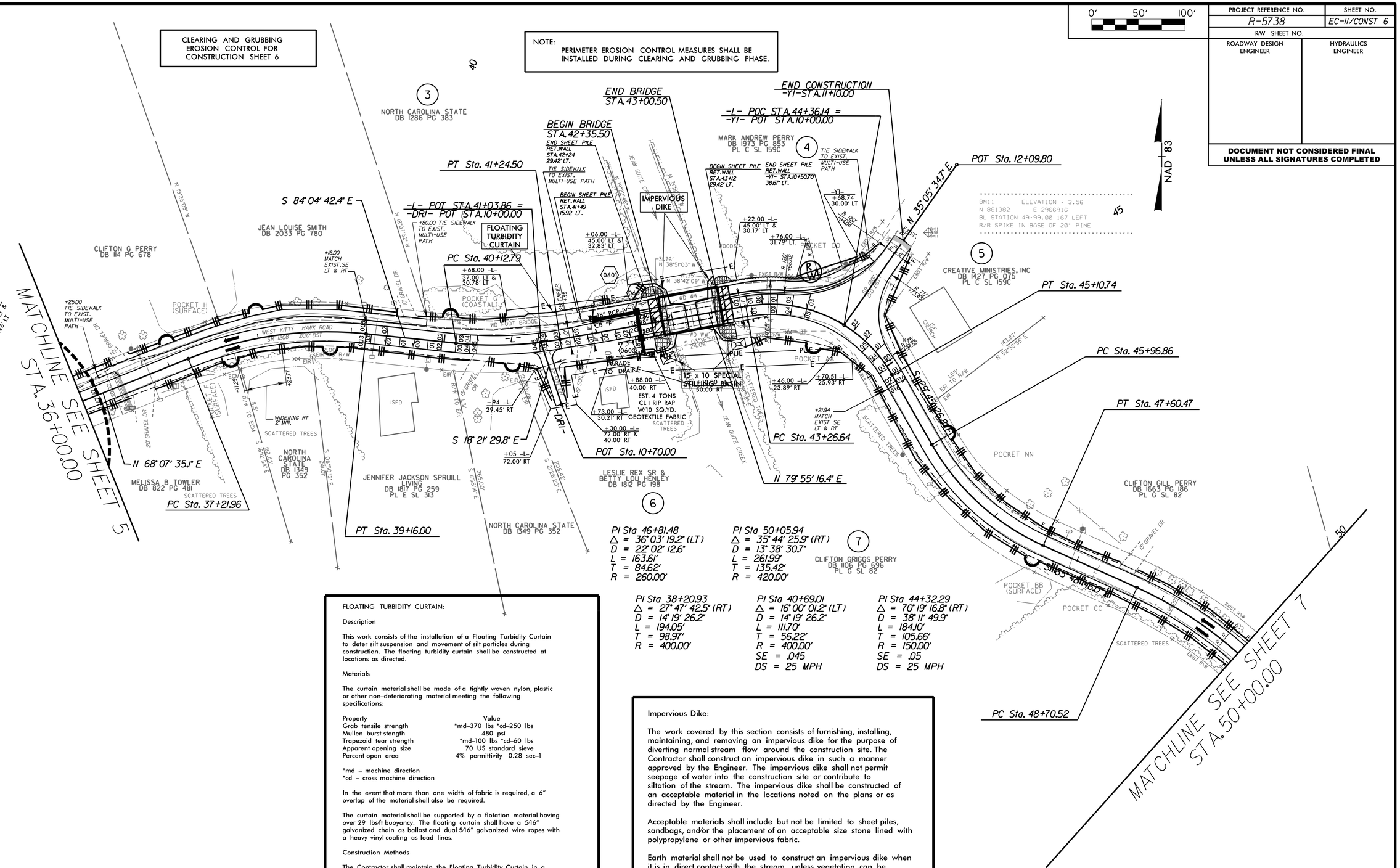
PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-11/CONST 6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 6

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



FLOATING TURBIDITY CURTAIN:

Description

This work consists of the installation of 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 non-deteriorating material meeting the following specifications:

Property	Value
Grab tensile strength	*md-370 lbs *cd-250 lbs
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Apparent opening size	70 US standard sieve
Percent open area	4% permittivity 0.28 sec-1

*md – machine direction
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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.

Measurement and Payment

Floating Turbidity Curtain will be paid for at the contract price for "Lump Sum for Erosion Control". Such payment will be full compensation including but not limited to installation, maintenance, removal and incidentals necessary to complete this work.

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SEE SHEET 10 FOR -L- PROFILE
SEE SHEET 11 FOR -Y1- AND -DRI- PROFILES

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Raleigh, NC 27605-3322
License No.: F-0840

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REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-12/CONST 7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

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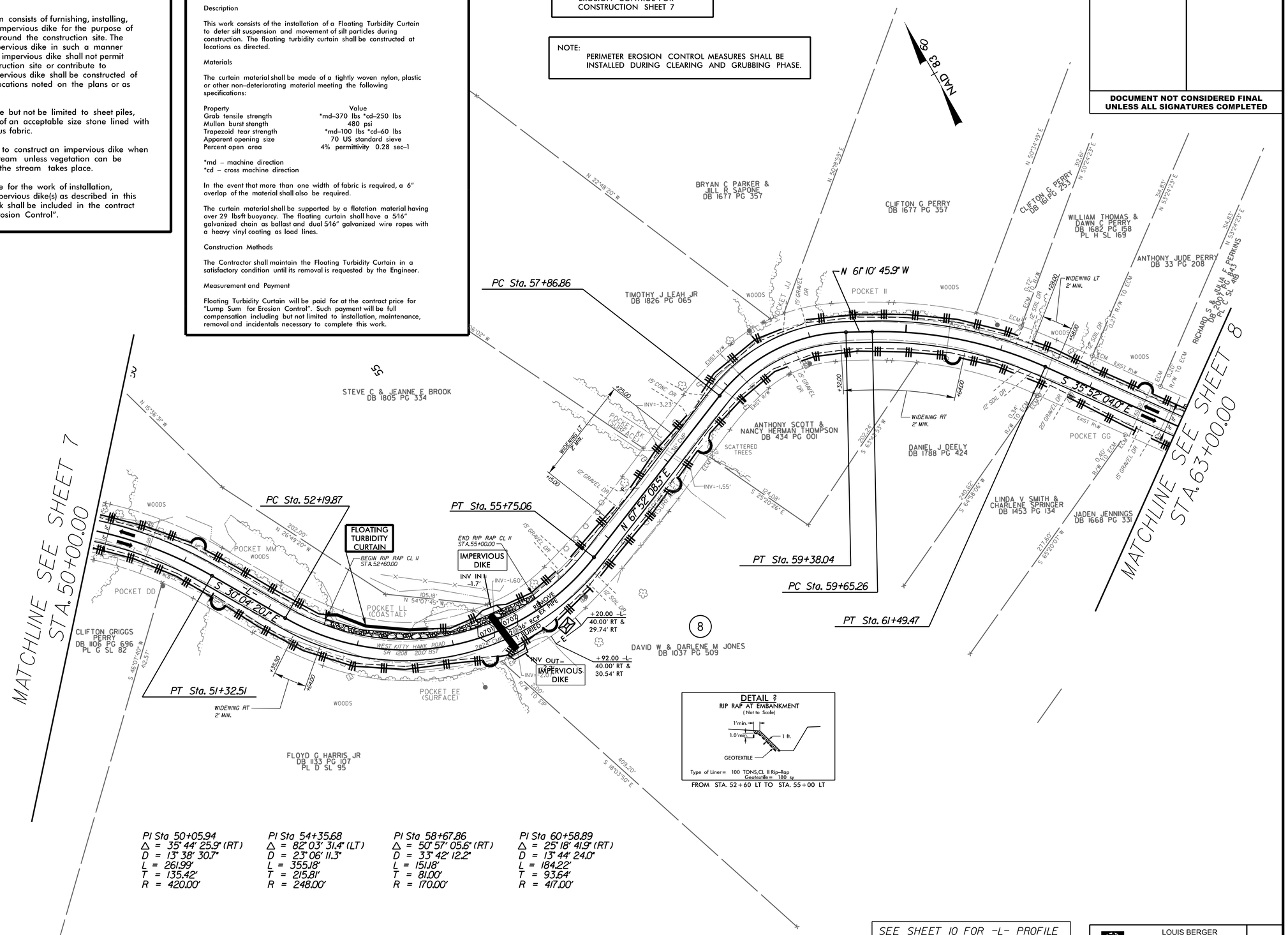
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 7

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



PI Sta 50+05.94
Δ = 35° 44' 25.9" (RT)
D = 13° 38' 30.7"
L = 261.99'
T = 135.42'
R = 420.00'

PI Sta 54+35.68
Δ = 82° 03' 31.4" (LT)
D = 23° 06' 11.3"
L = 355.18'
T = 215.81'
R = 248.00'

PI Sta 58+67.86
Δ = 50° 57' 05.6" (RT)
D = 33° 42' 12.2"
L = 151.18'
T = 81.00'
R = 170.00'

PI Sta 60+58.89
Δ = 25° 18' 41.9" (RT)
D = 13° 44' 24.0"
L = 184.22'
T = 93.64'
R = 417.00'

DETAIL ?
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner = 100 TONS,CL II Rip-Rap
Geotextile = 180 sy
FROM STA. 52+60 LT TO STA. 55+00 LT

SEE SHEET 10 FOR -L- PROFILE

LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
License No.: F-0840

ROADWAY PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	EC-13/CONST 8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

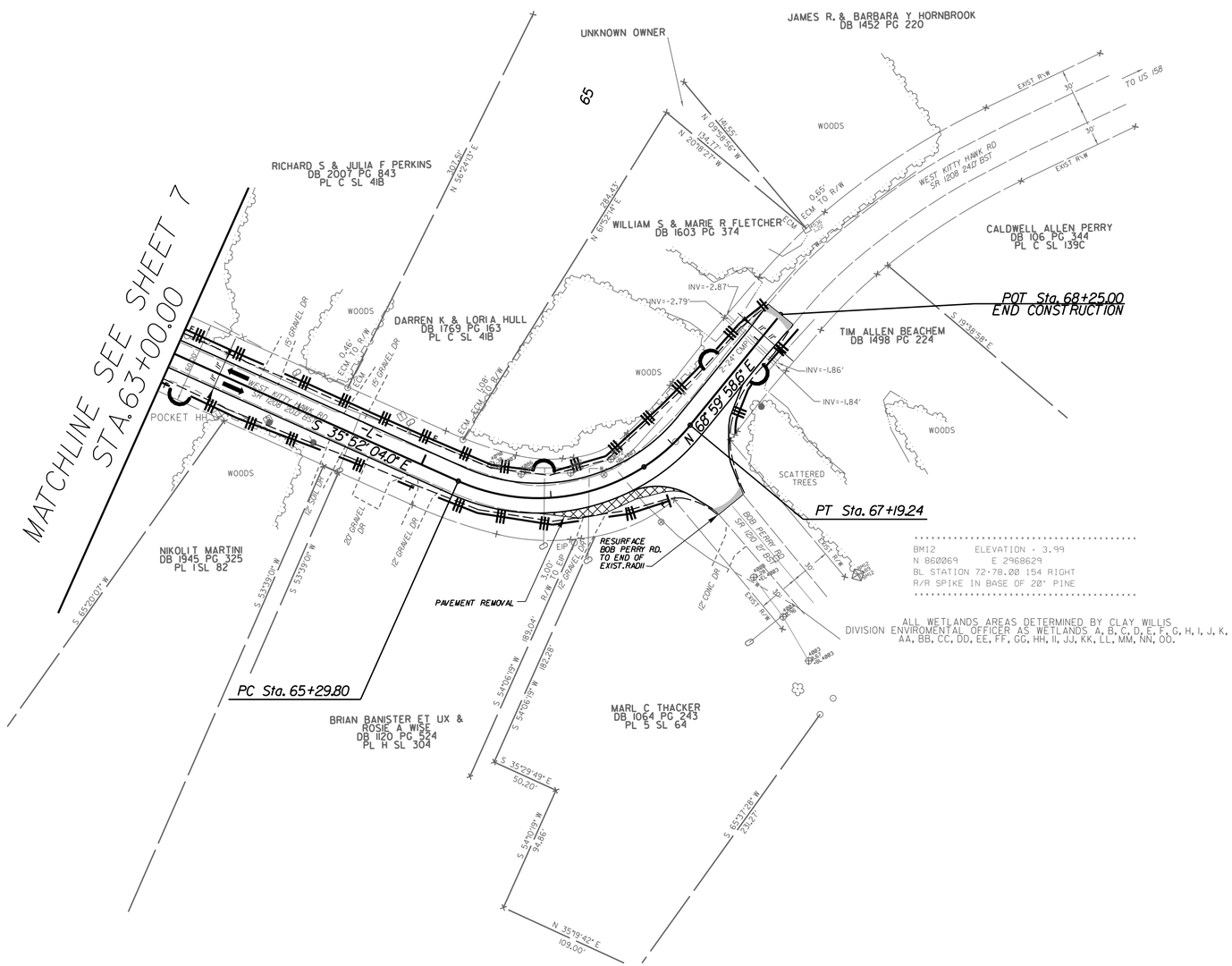
0' 50' 100'

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 8

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

NAD 83

PI Sta 66+41.05
Δ = 75° 22' 23.9" (LT)
D = 39° 47' 19.4"
L = 189.43'
T = 111.24'
R = 144.00'



SEE SHEET 11 FOR -L- PROFILE

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ROADWAY PLANS

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09/08/99

TIP PROJECT: R-5738

CONTRACT: DA00333

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

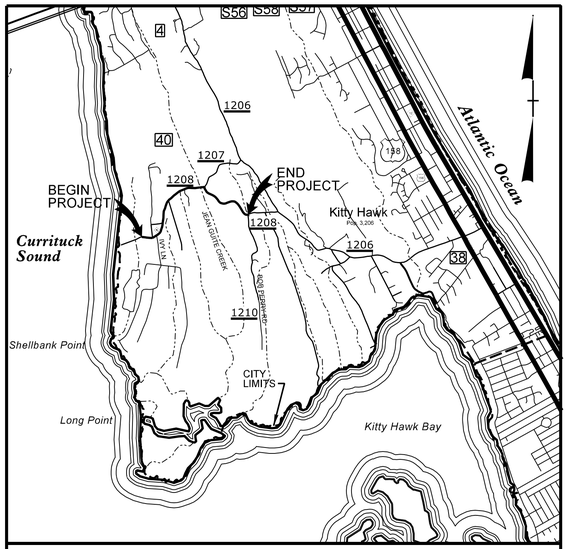
T.I.P. NO.	SHEET NO.
R-5738	UO-1

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

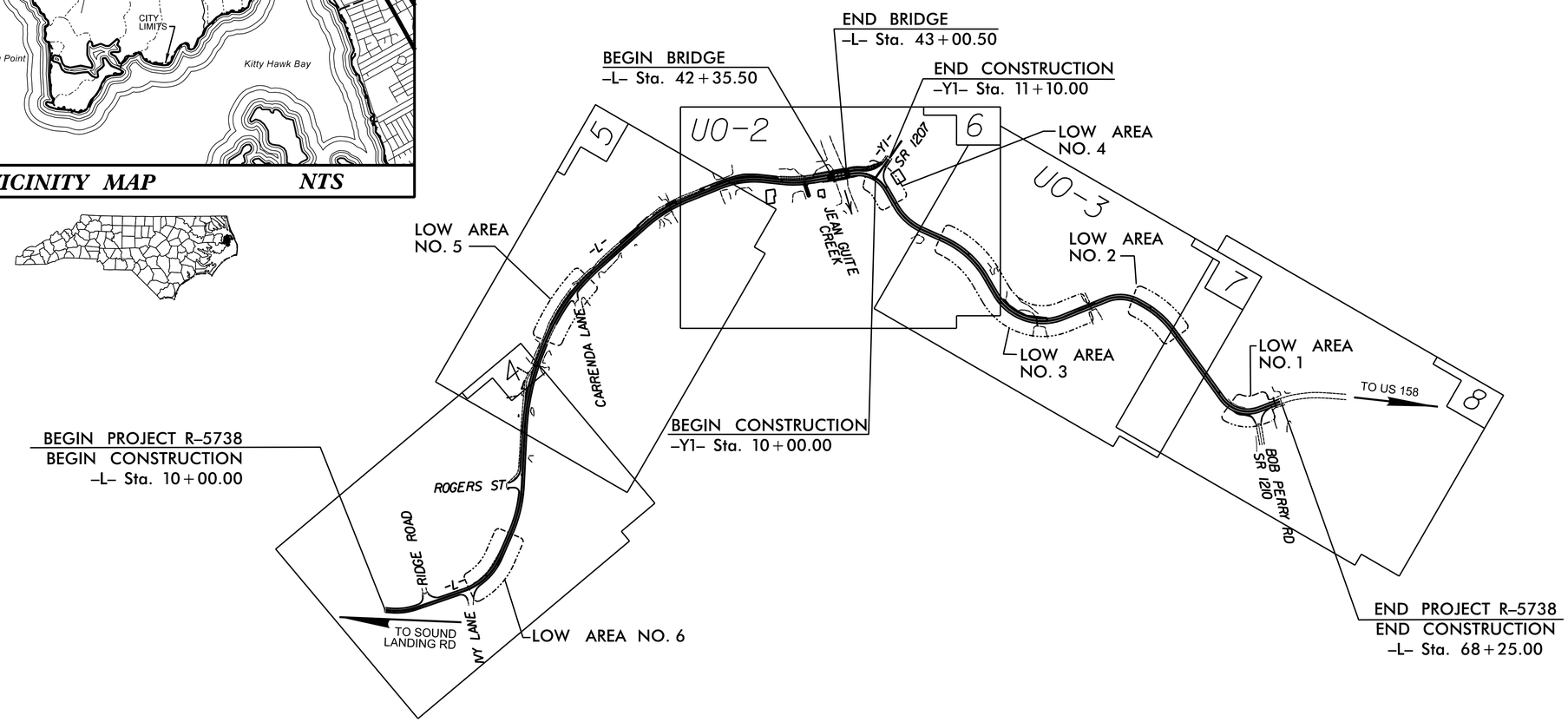
UTILITIES BY OTHERS PLANS
DARE COUNTY

LOCATION: SR 1208 (WEST KITTY HAWK ROAD) FROM WEST OF IVY LANE TO EAST OF SR 1210 AND REPLACEMENT OF BRIDGE #40

TYPE OF WORK: POWER (DISTRIBUTION), WATER AND COMMUNICATIONS



VICINITY MAP ***NTS***



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.:	*DESCRIPTION:*
UO-1	*TITLE SHEET*
UO-2 THRU UO-3	*UBO PLAN SHEETS*

UTILITY OWNERS WITH CONFLICTS

(A) POWER (DISTRIBUTION) - DOMINION POWER
(B) WATER - DARE COUNTY WATER
(C) COMMUNICATIONS - CENTURYLINK

PREPARED IN THE OFFICE OF:

SO-DEEP | SAM NC™
SO-DEEP I SAM NC, Inc.
A SAM COMPANY
2800-154 Sumner Boulevard, Raleigh, NC 27616 Tel 919-878-7466

Keith Garry — *UTILITY PROJECT MANAGER*
Freddie Bunn — *PROJECT UTILITY COORDINATOR*

DIVISION OF HIGHWAYS
DIVISION 1
DIV ADDRESS
113 Airport Drive
Suite 100
Edenton, NC 27932

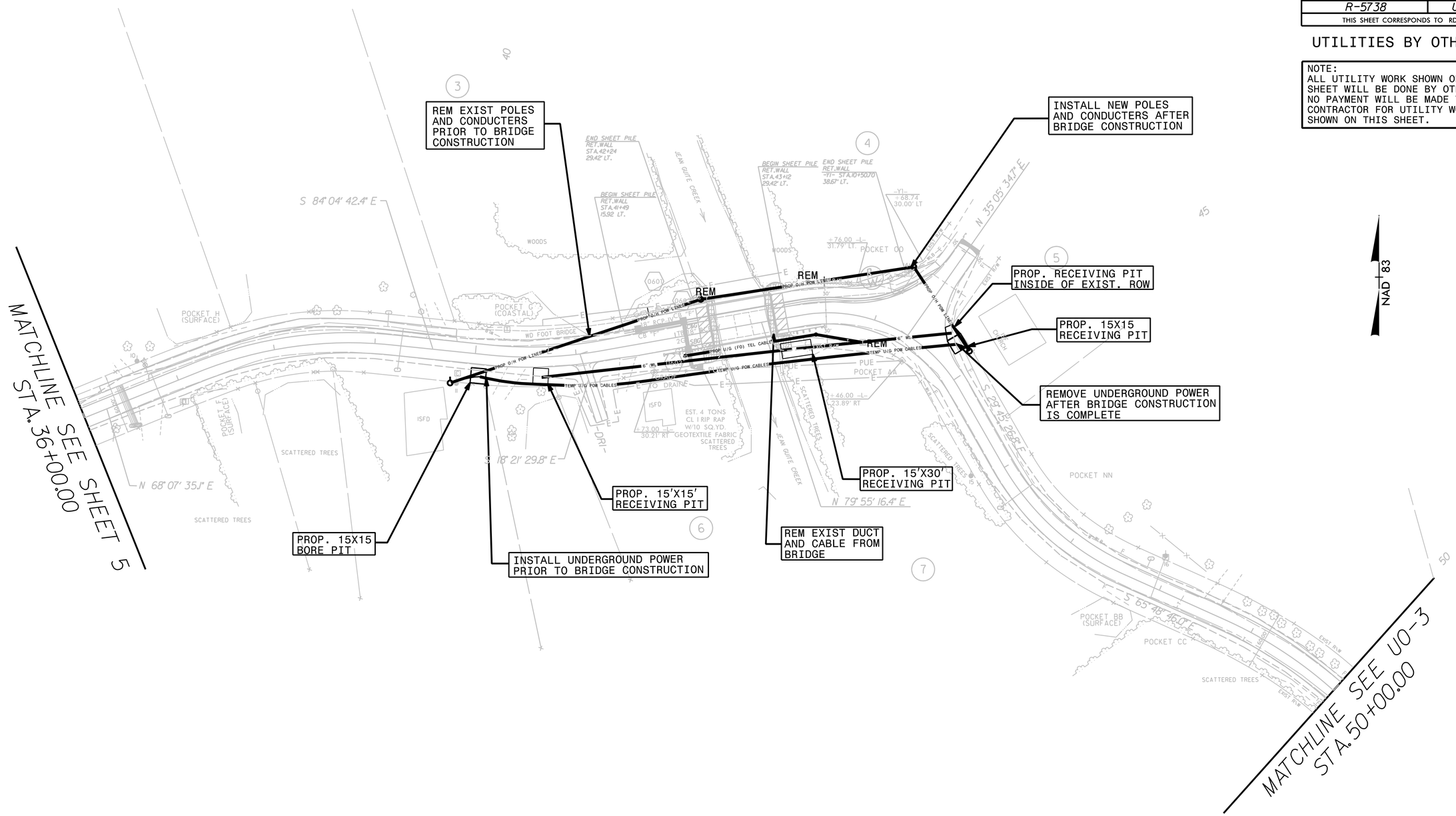
Barry Hobbs, PE — *DIVISION CONTACT #1*

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

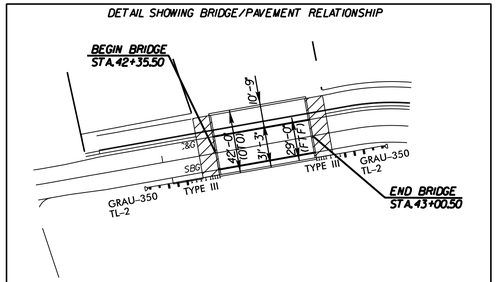
PROJECT REFERENCE NO.	SHEET NO.
R-5738	U0-2
THIS SHEET CORRESPONDS TO RDY-6	

UTILITIES BY OTHERS

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



DETAIL SHOWING BRIDGE/PAVEMENT RELATIONSHIP



REVISIONS

$TIME$
$DATE$
$FILEL$
$PENTBL$

PROJECT REFERENCE NO.	SHEET NO.
R-5738	U0-3
THIS SHEET CORRESPONDS TO RDY-7	

UTILITIES BY OTHERS

NOTE:
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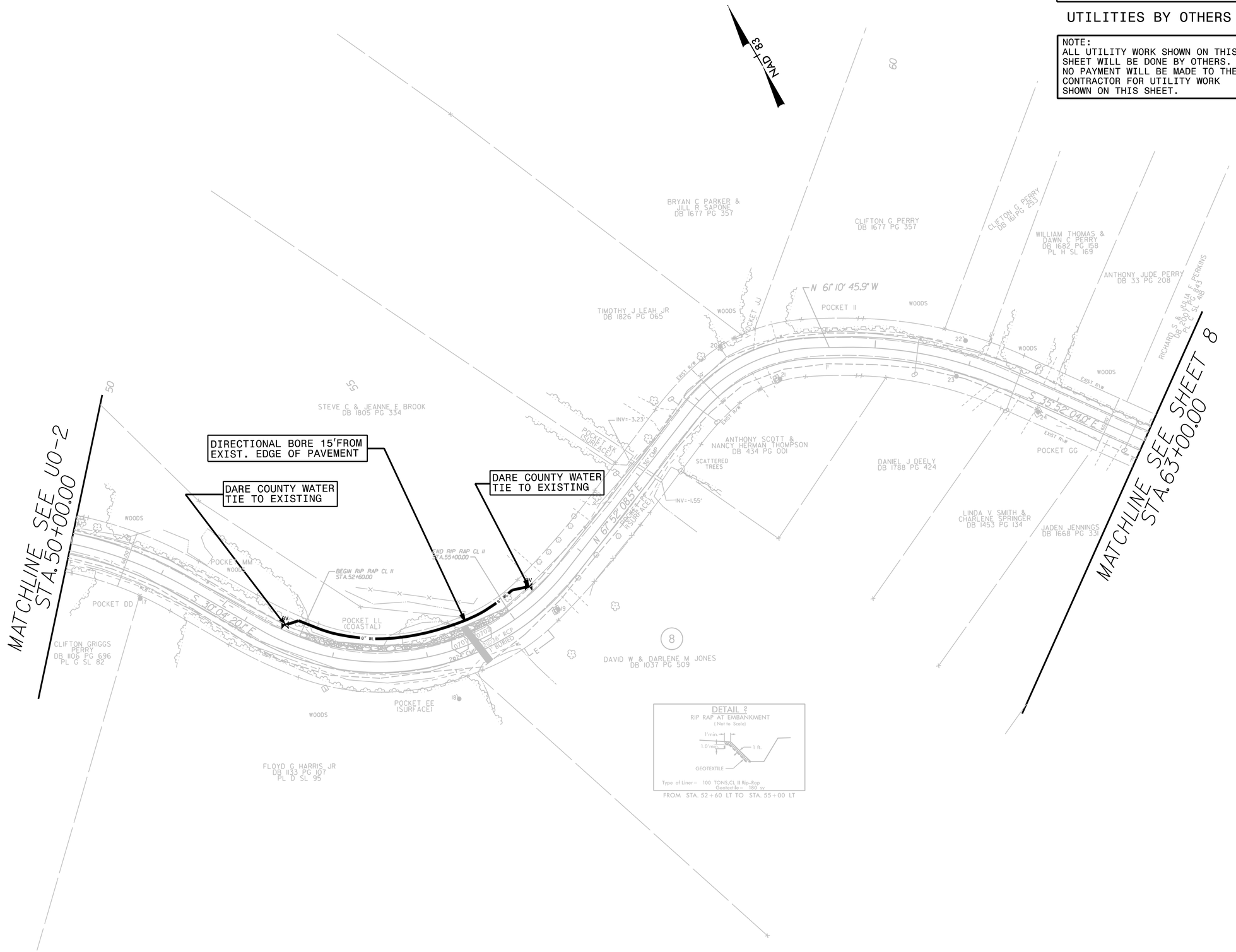

REVISIONS

$TIME$

$DATE$
$FILEL$
$PENTBLS$

R-5738
CROSS SECTIONS

INDEX OF SHEETS

TITLE	STATION	SHEET NO.
CROSS-SECTION INDEX		X-1
CROSS-SECTION SUMMARY		X-1A
-L- CROSS-SECTIONS	10+00 - 68+25	X-2 THROUGH X-23
-Y1- CROSS-SECTIONS	10+50 - 11+10	X-24

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

8/23/99
$DATE$
$TIME$
$FILE$

PROJ. REFERENCE NO.	SHEET NO.
R-5738	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+50.00	2.49	0	37+00.00	1.56	3	63+50.00	0.14	0
11+00.00	1.44	4	37+50.00	1.87	3	64+00.00	0.04	0
11+50.00	1.4	3	38+00.00	2.5	4	64+50.00	0.56	1
12+00.00	1.71	3	38+50.00	2	4	65+00.00	2.28	3
12+50.00	1.87	3	39+00.00	1.66	3	65+50.00	3.31	5
13+00.00	3.26	5	39+50.00	1.65	3	66+00.00	3.01	6
13+50.00	2.21	5	40+00.00	1.48	3	66+50.00	3.23	6
14+00.00	1.63	4	40+50.00	1.03	2	**Y1**		
14+50.00	1.68	3	41+00.00	2.88	4	10+50.00	0	2
15+00.00	2.95	4	41+50.00	0	3	11+00.00	0	1
15+50.00	2.69	5	42+00.00	0	0	11+10.00	0	1
16+00.00	3.22	5	42+50.00	0	0			
16+50.00	2.45	5	43+00.00	0	0			
17+00.00	1.54	4	43+50.00	0	0			
17+50.00	1.83	3	44+00.00	0	0			
18+00.00	2.45	4	44+50.00	0	0			
18+50.00	1.84	4	45+00.00	1.66	2			
19+00.00	2.16	4	45+50.00	2.18	4			
19+50.00	1.76	4	46+00.00	2.54	4			
20+00.00	1.88	3	46+50.00	1.96	4			
20+50.00	1.59	3	47+00.00	2.11	4			
21+00.00	1.48	3	47+50.00	2.59	4			
21+50.00	1.32	3	48+00.00	2.18	4			
22+00.00	1.41	3	48+50.00	1.74	4			
22+50.00	1.39	3	49+00.00	2.79	4			
23+00.00	1.62	3	49+50.00	1.91	4			
23+50.00	1.17	3	50+00.00	2.22	4			
24+00.00	1.92	3	50+50.00	2.75	5			
24+50.00	2.39	4	51+00.00	2.21	5			
25+00.00	1.53	4	51+50.00	3.17	5			
25+50.00	1.51	3	52+00.00	2.75	5			
26+00.00	1.86	3	52+50.00	2.35	5			
26+50.00	0.87	3	53+00.00	1.68	4			
27+00.00	1.67	2	53+50.00	1.8	3			
27+50.00	1.58	3	54+00.00	2.86	4			
28+00.00	1.59	3	54+50.00	2.66	5			
28+50.00	1.96	3	55+00.00	2.79	5			
29+00.00	1.62	3	55+50.00	1.95	4			
29+50.00	2.31	4	56+00.00	3.17	5			
30+00.00	2	4	56+50.00	2.61	5			
30+50.00	1.7	3	57+00.00	0.1	3			
31+00.00	2.98	4	57+50.00	1.03	1			
31+50.00	2.59	5	58+00.00	0.1	1			
32+00.00	2.93	5	58+50.00	0	0			
32+50.00	2.26	5	59+00.00	1.79	2			
33+00.00	1.35	3	59+50.00	3	4			
33+50.00	2.02	3	60+00.00	3.16	6			
34+00.00	1.22	3	60+50.00	3.98	7			
34+50.00	2.18	3	61+00.00	2.9	6			
35+00.00	2.75	5	61+50.00	2.23	5			
35+50.00	1.56	4	62+00.00	0.74	3			
36+00.00	1.05	2	62+50.00	0.27	1			
36+50.00	1.41	2	63+00.00	0	0			

Quantities are approximate only. The Resident Engineer will re-cross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

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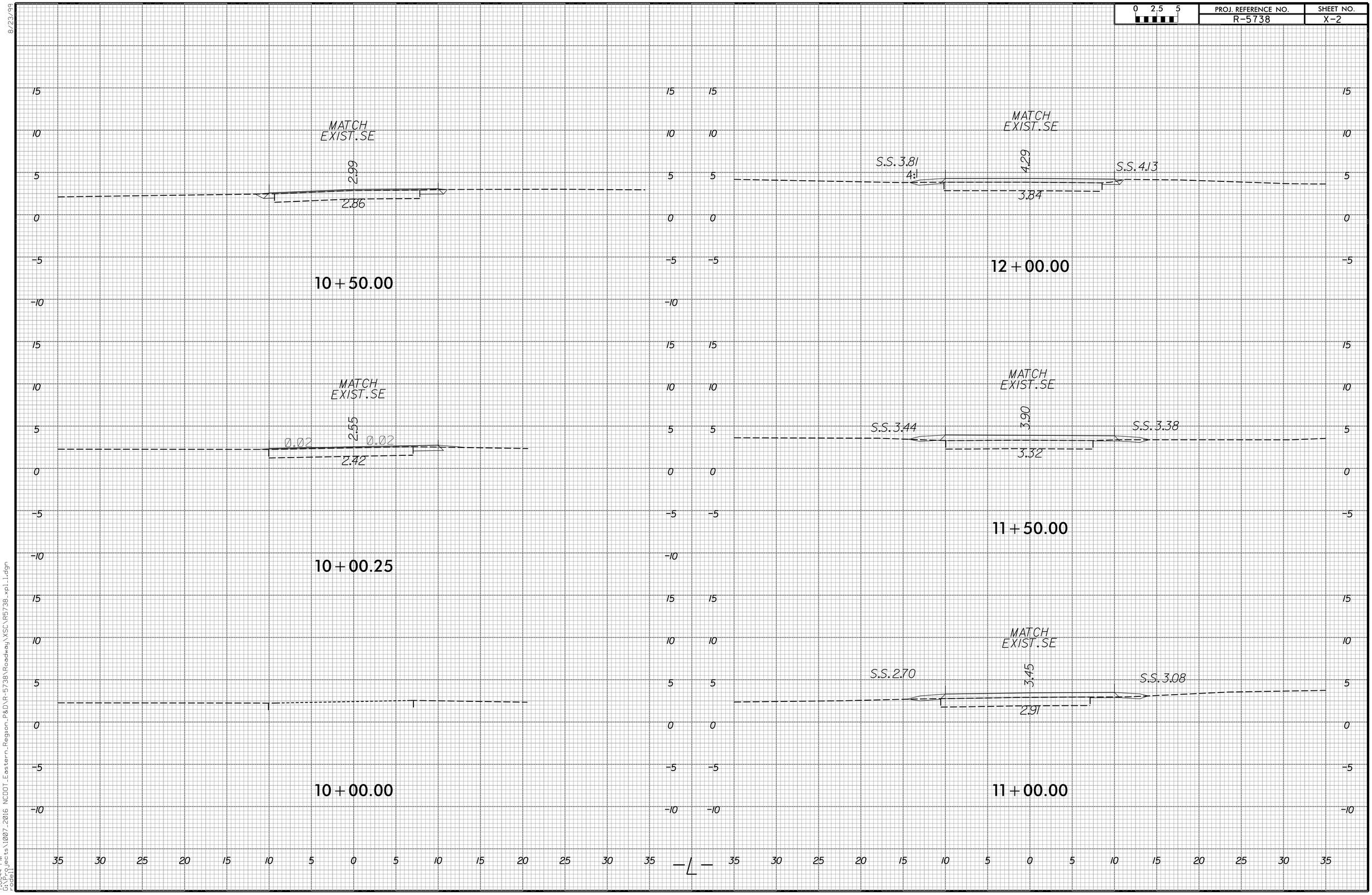

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rodell

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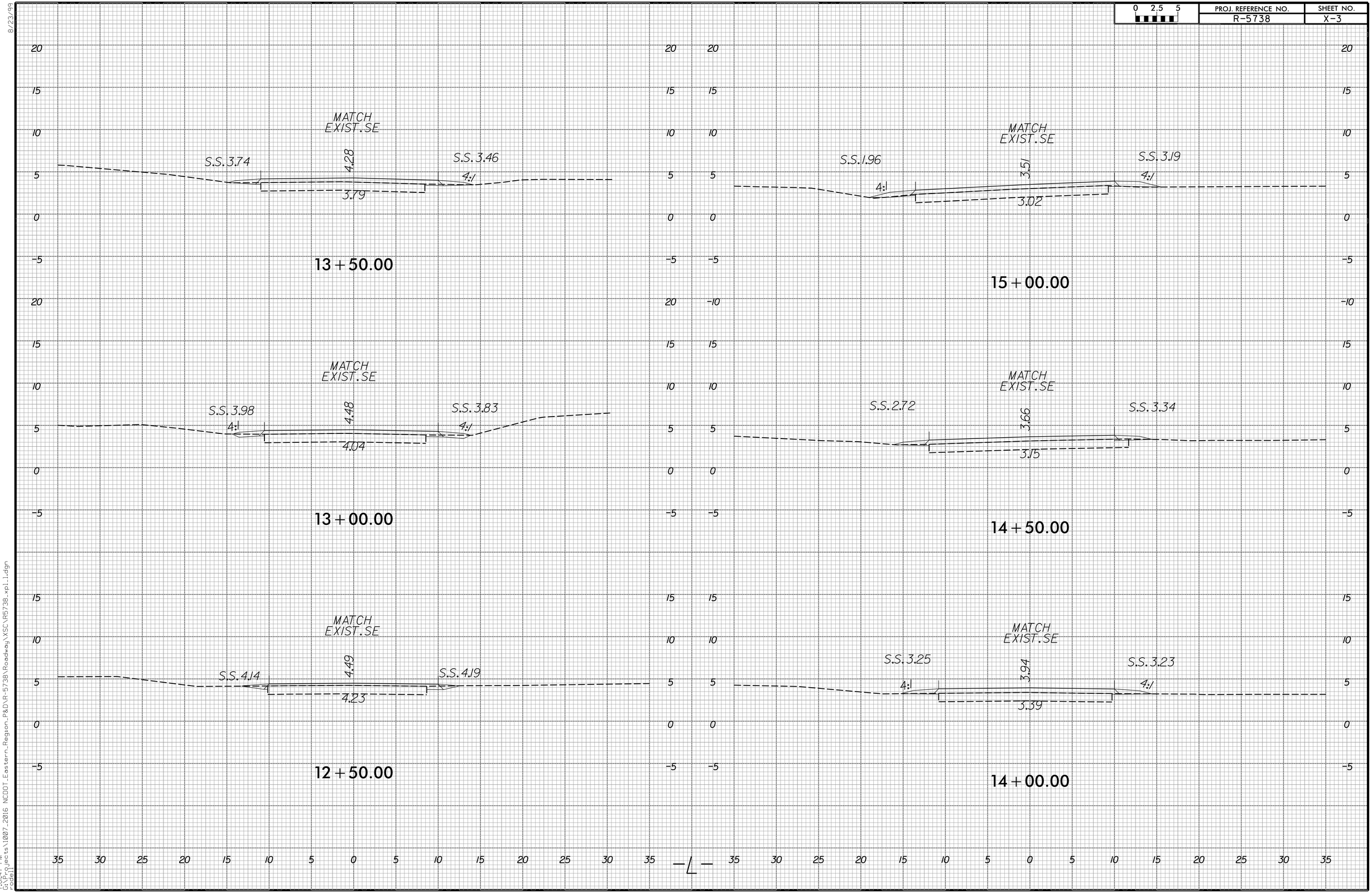

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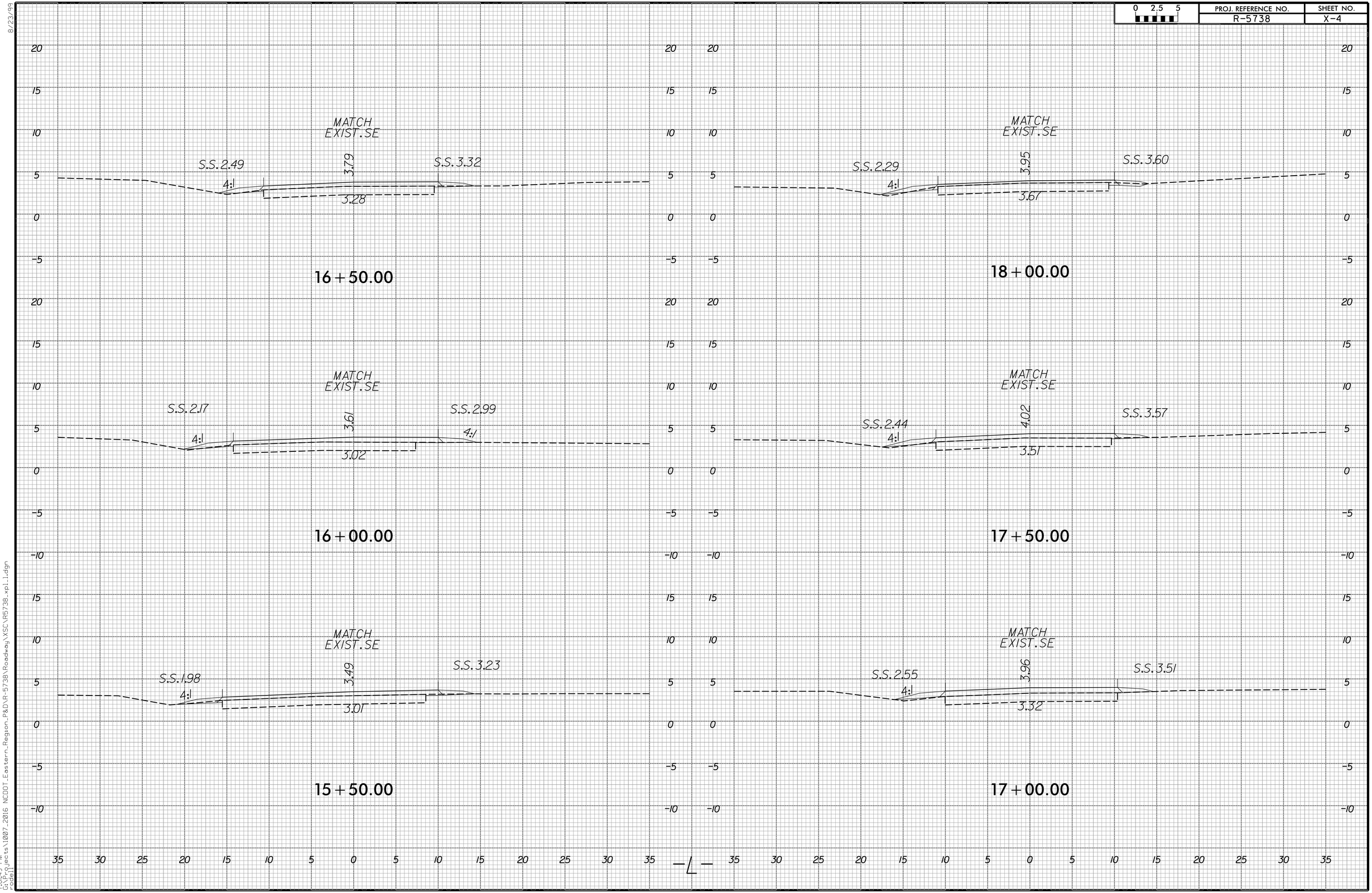

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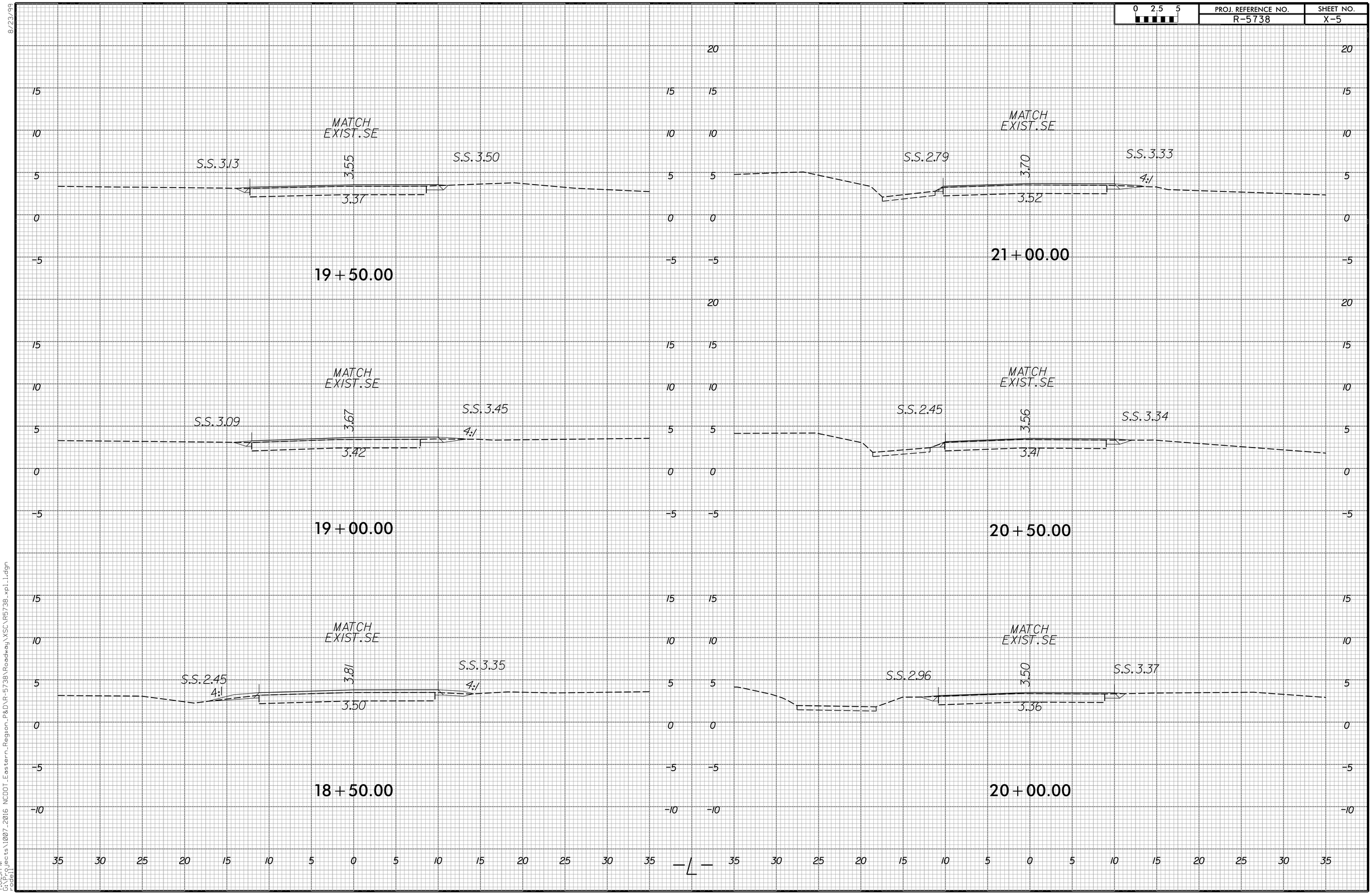

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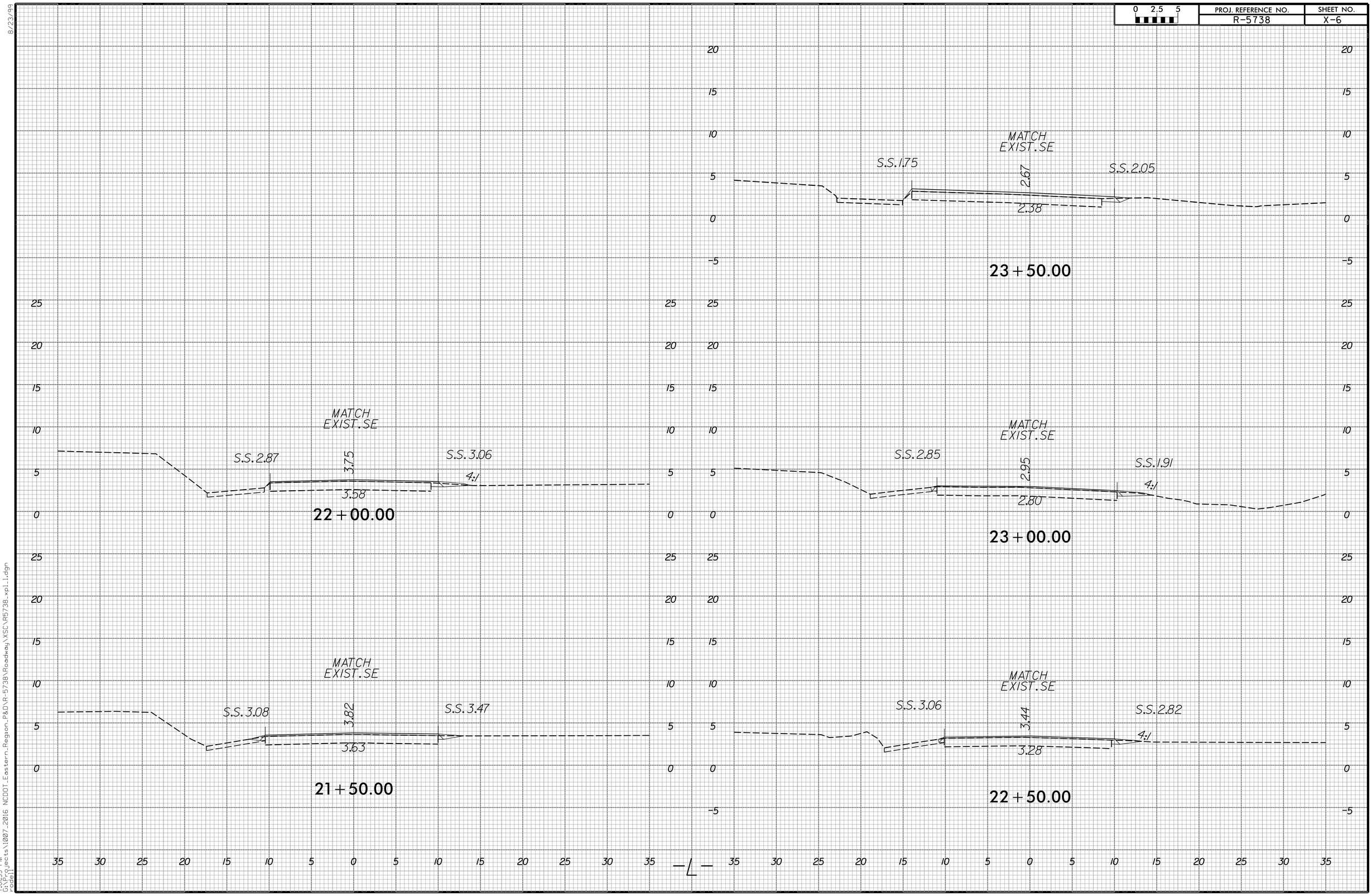

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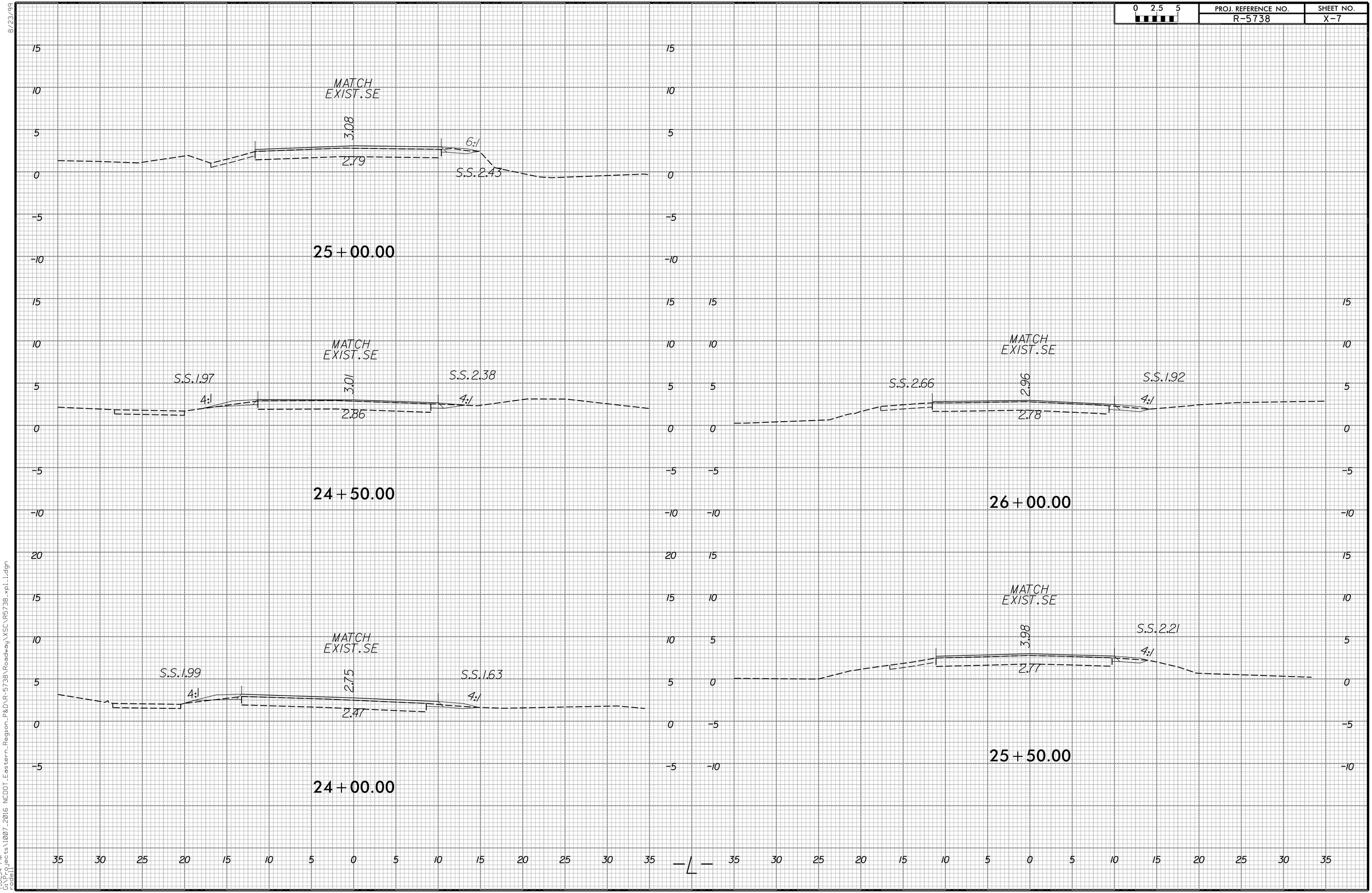

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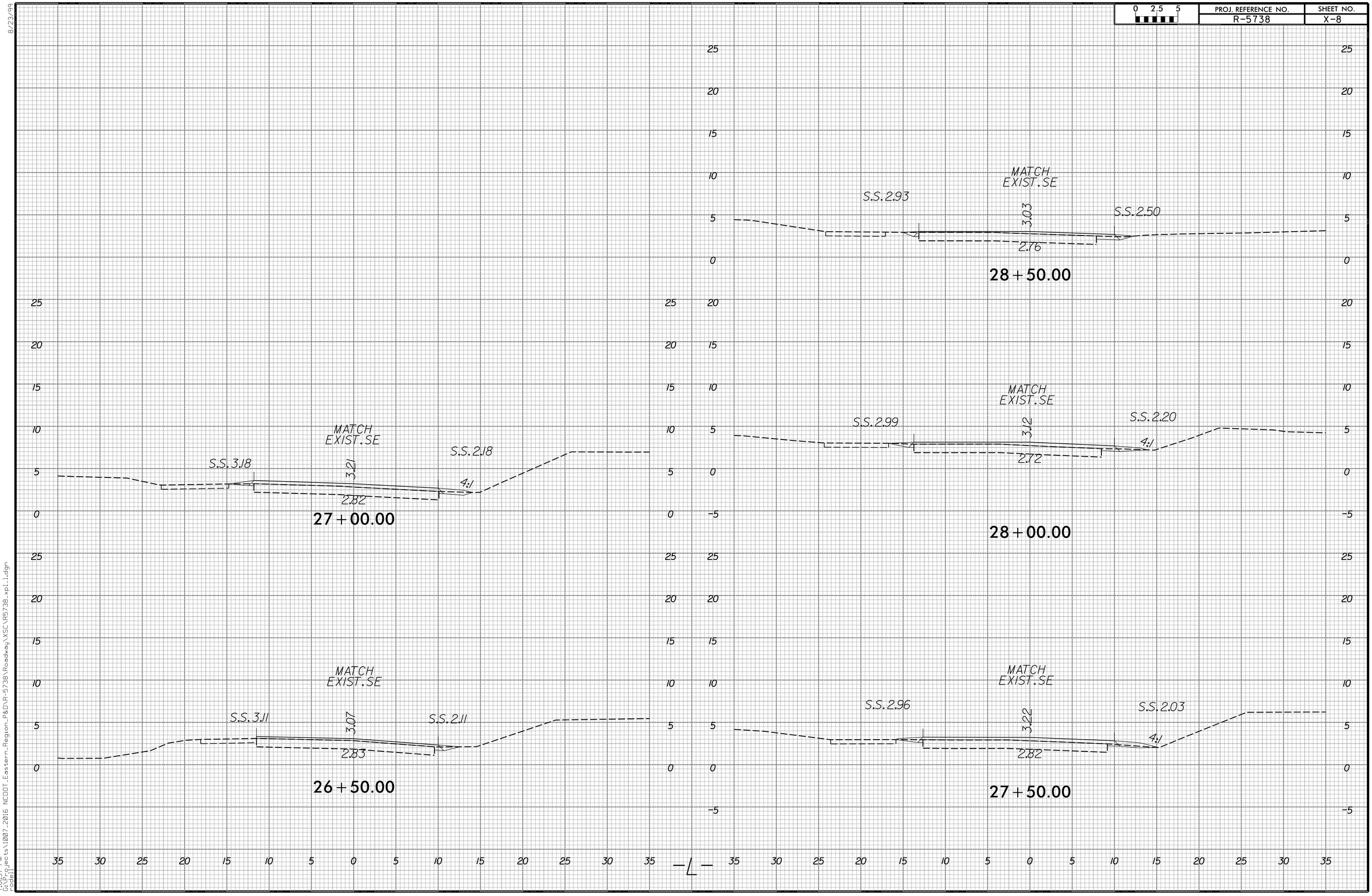

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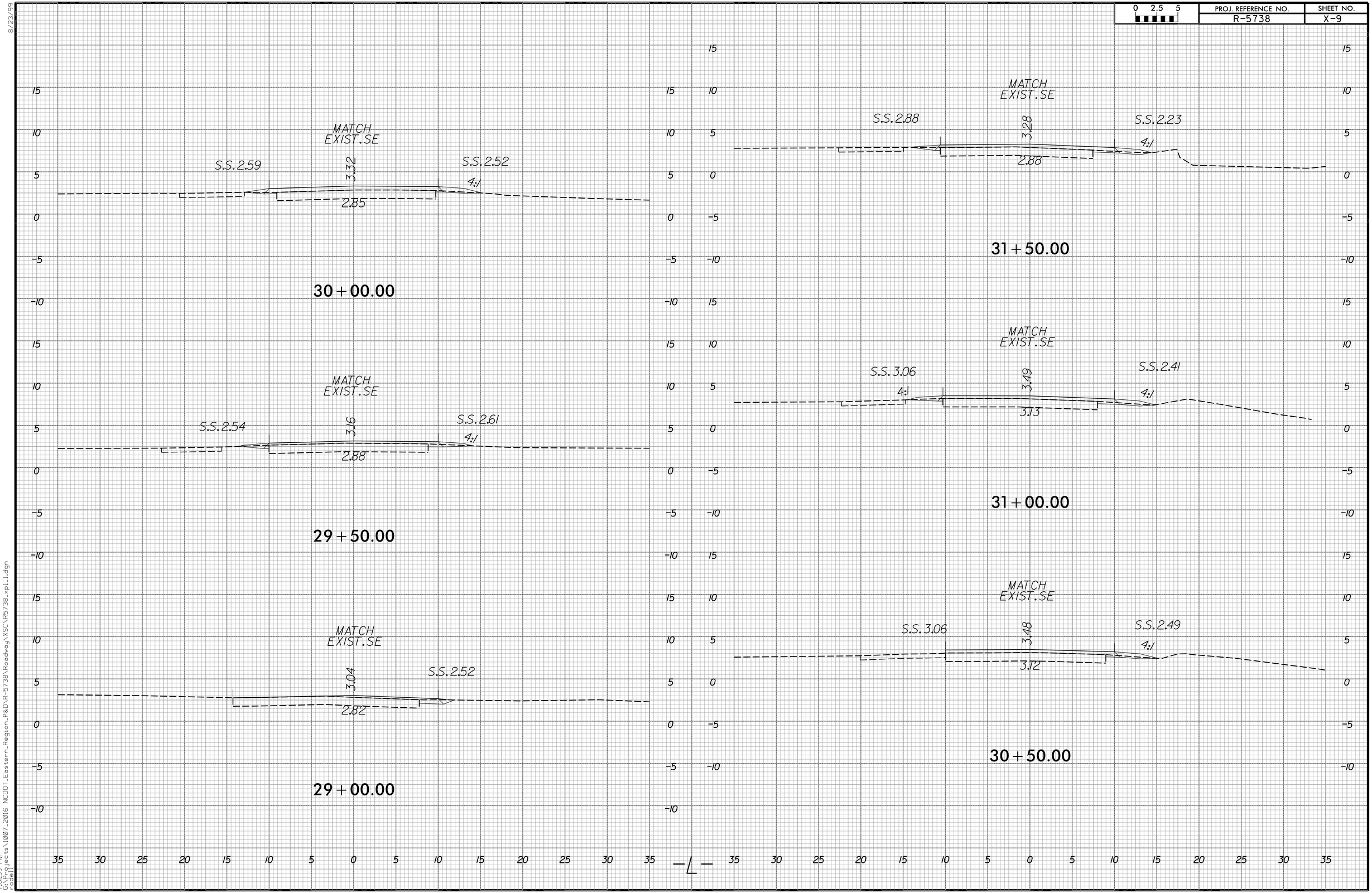

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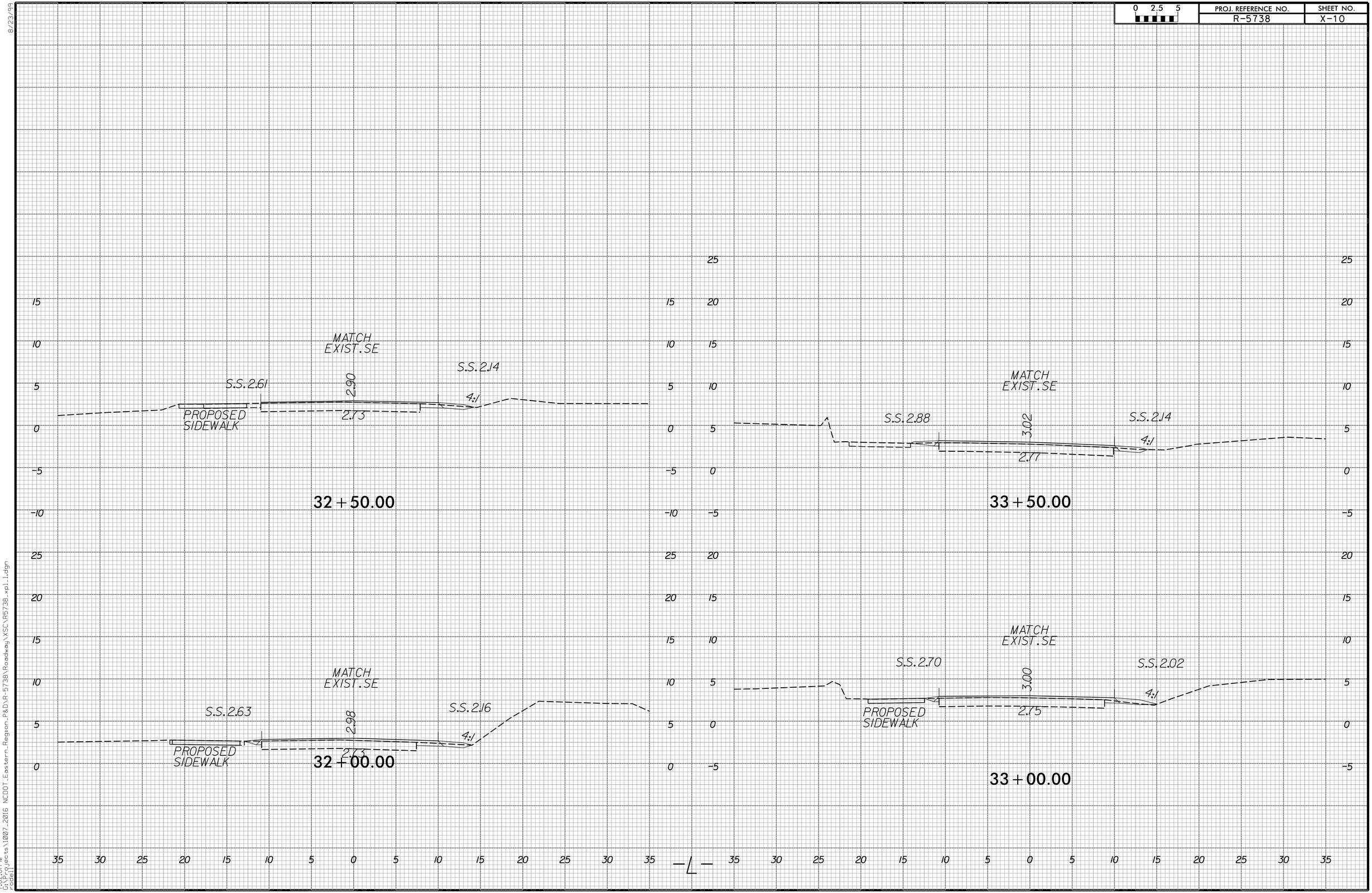

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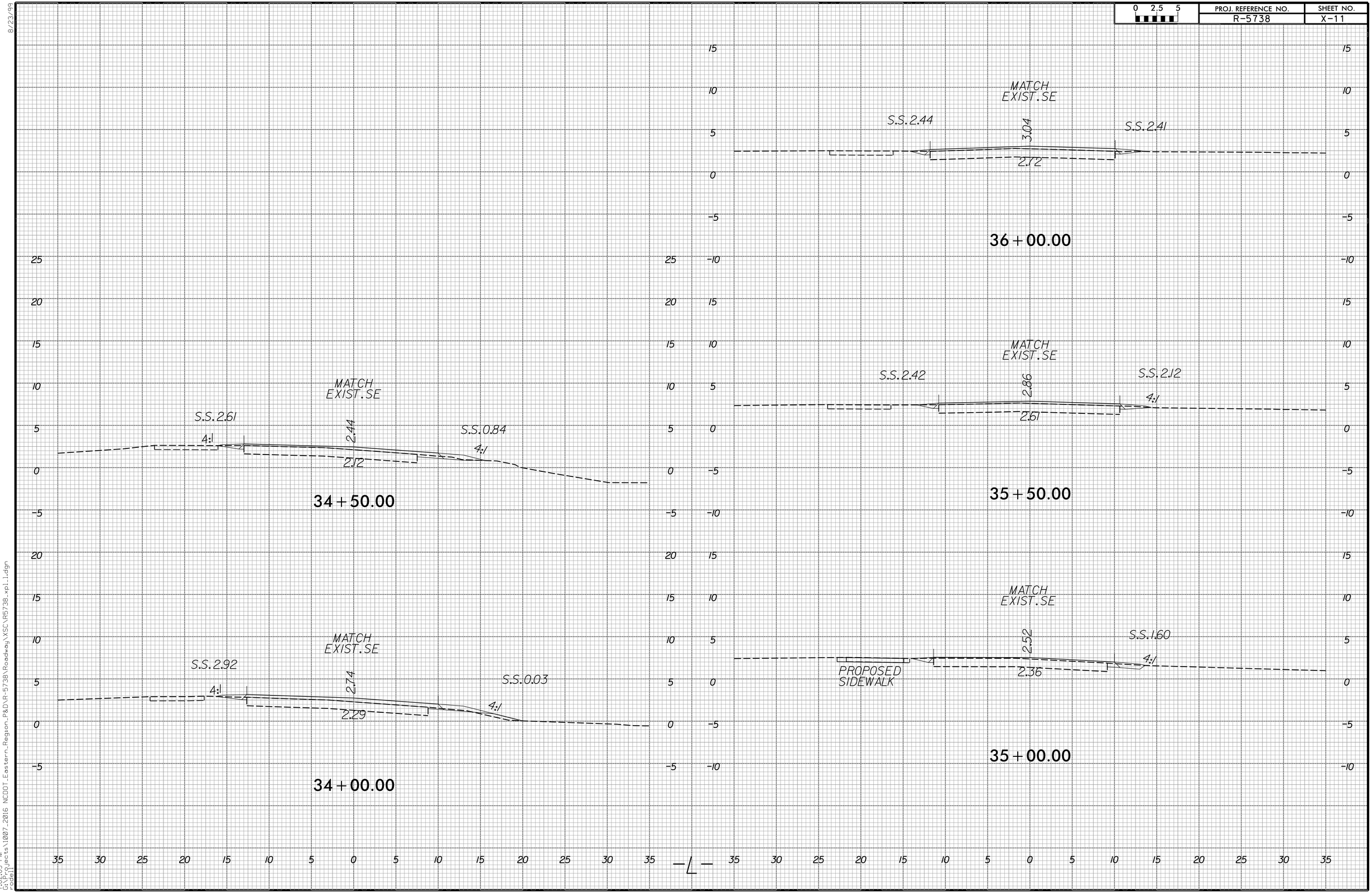

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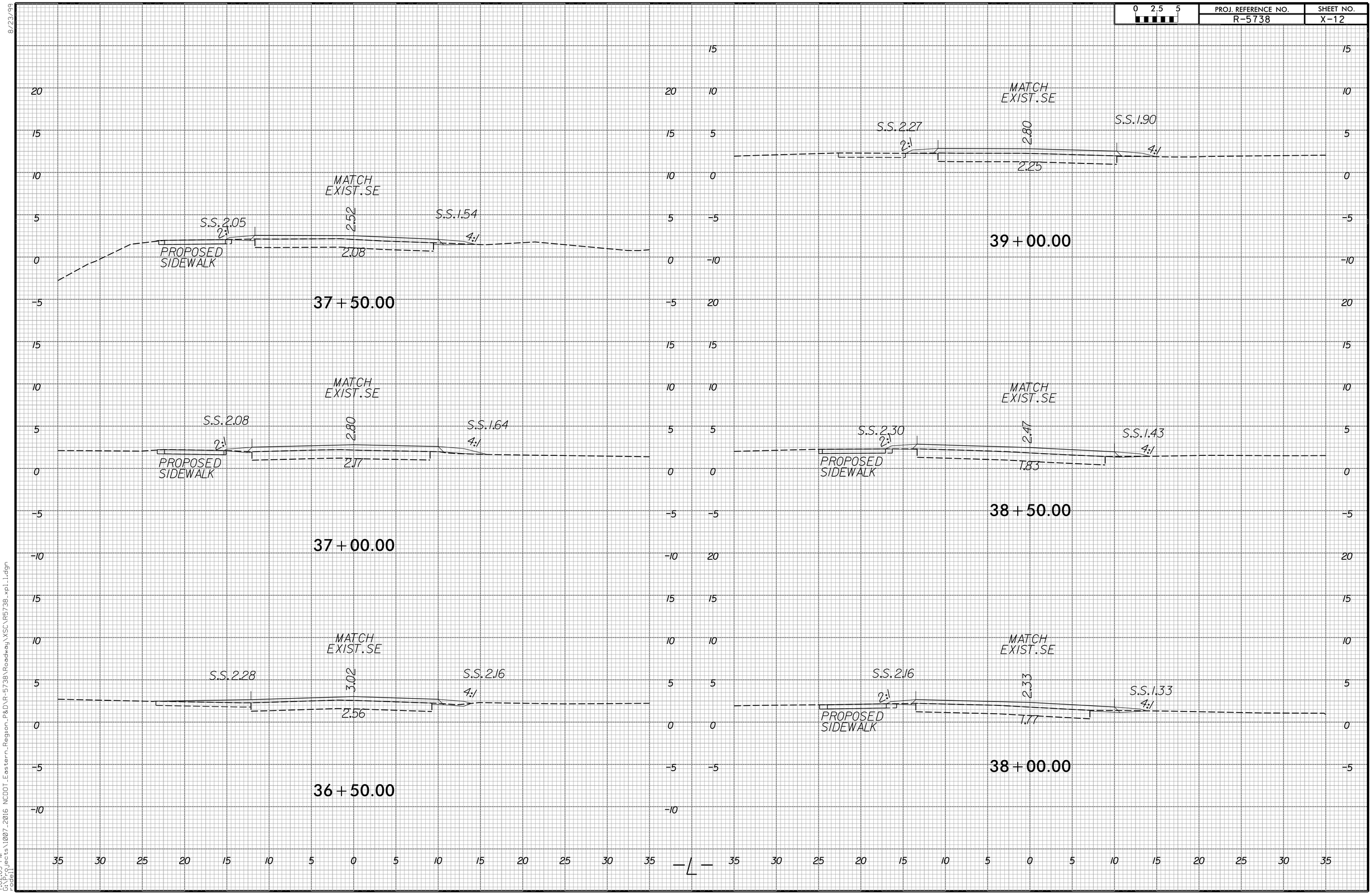

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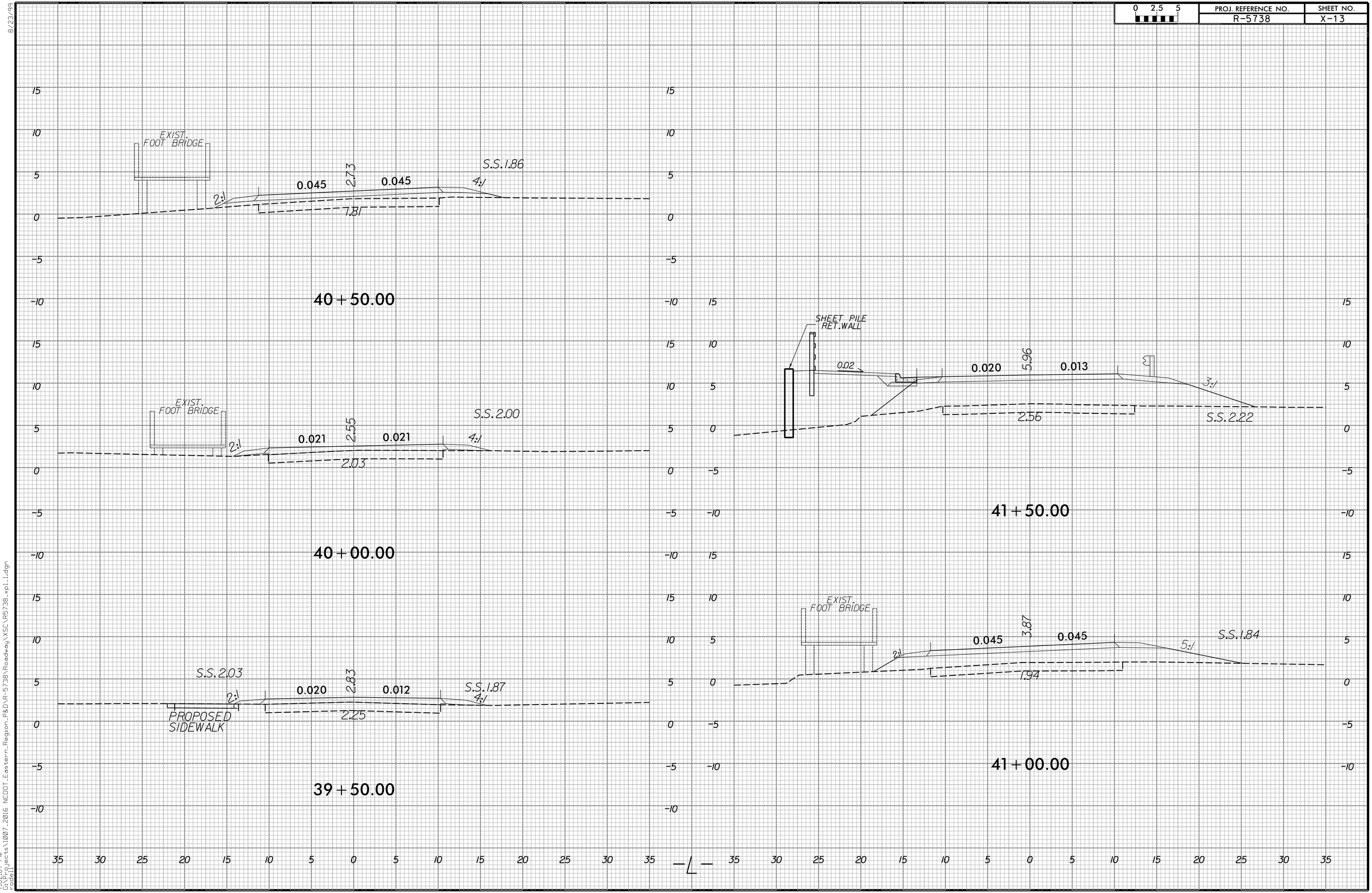

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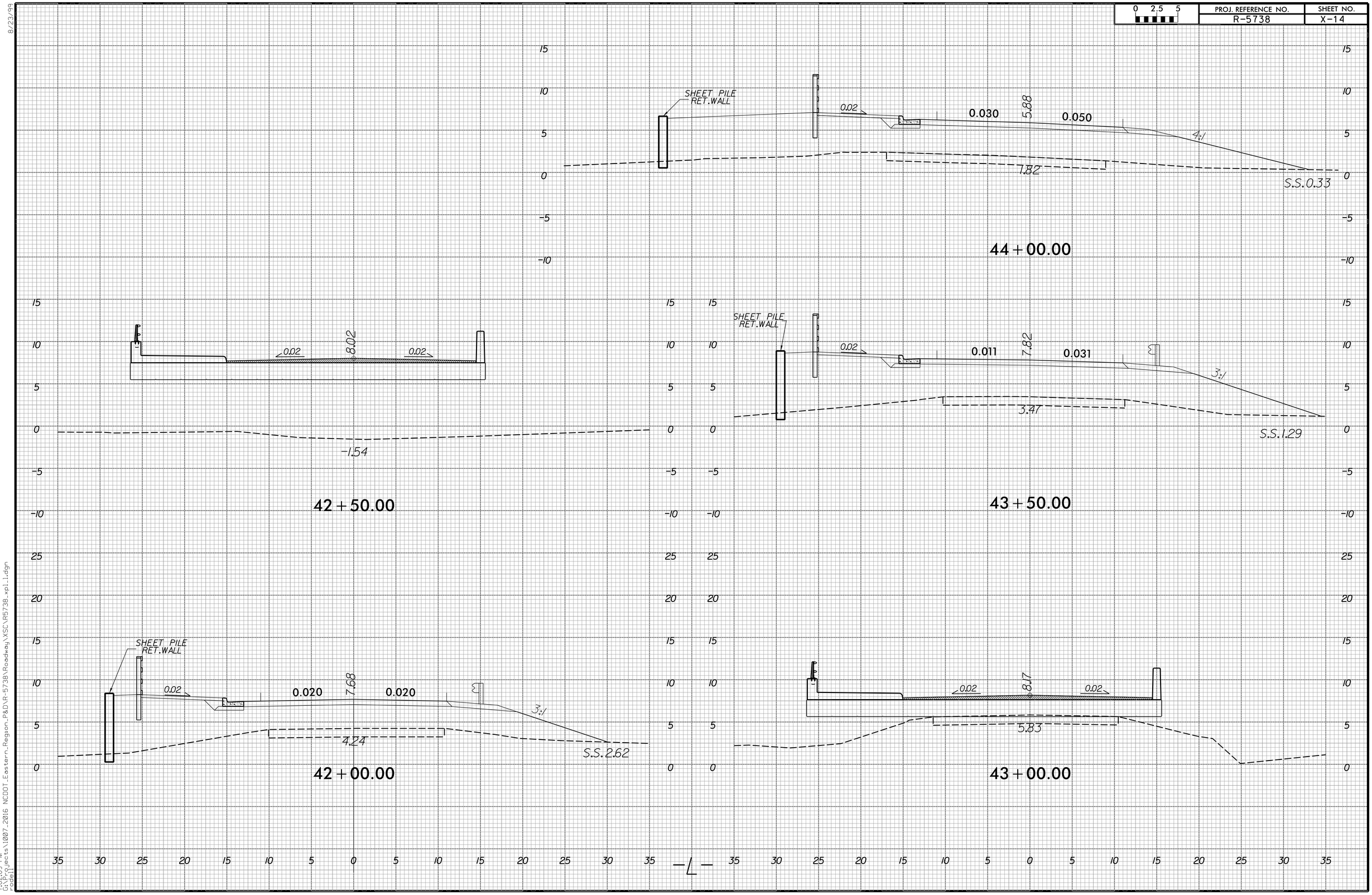

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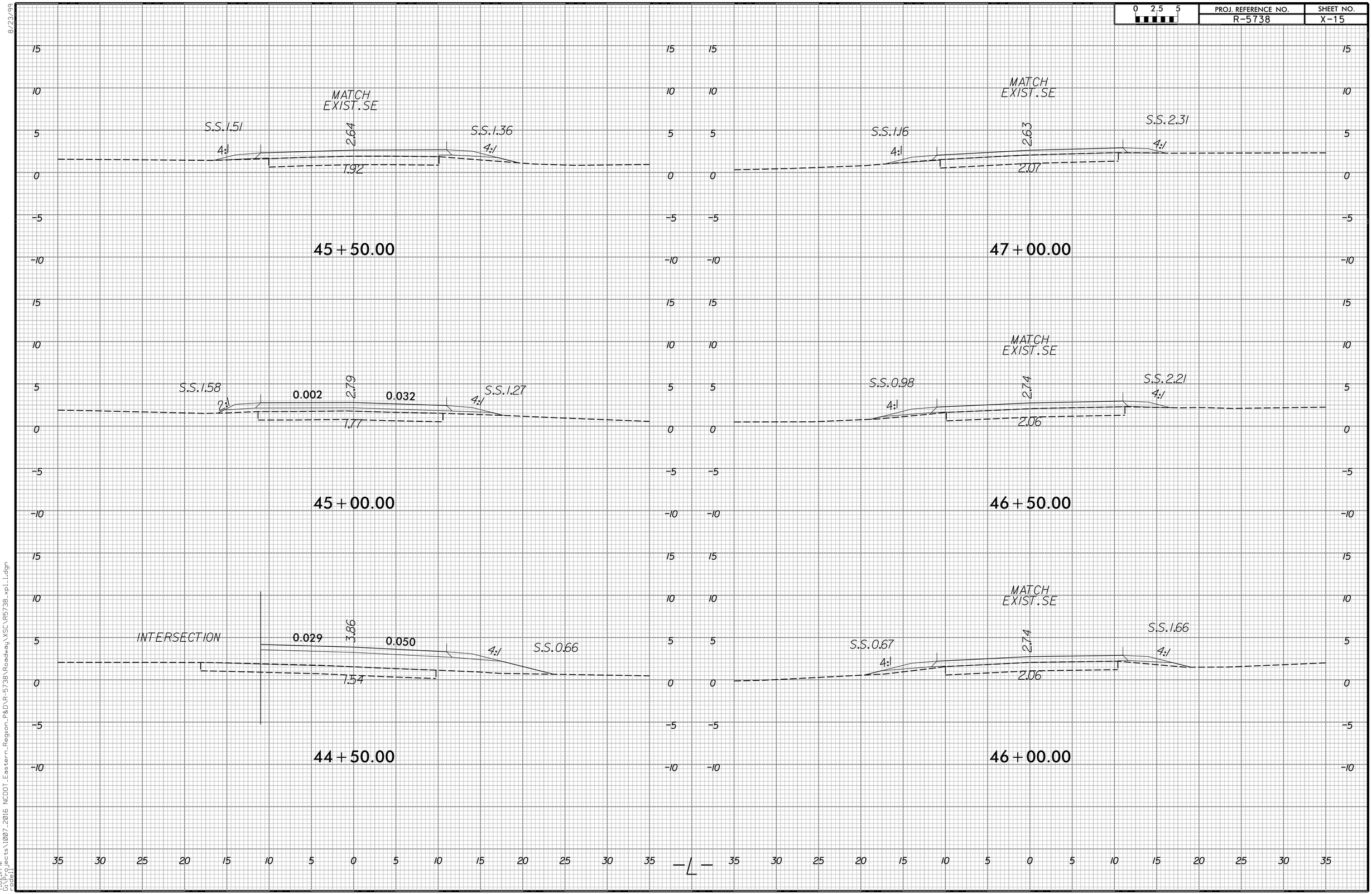

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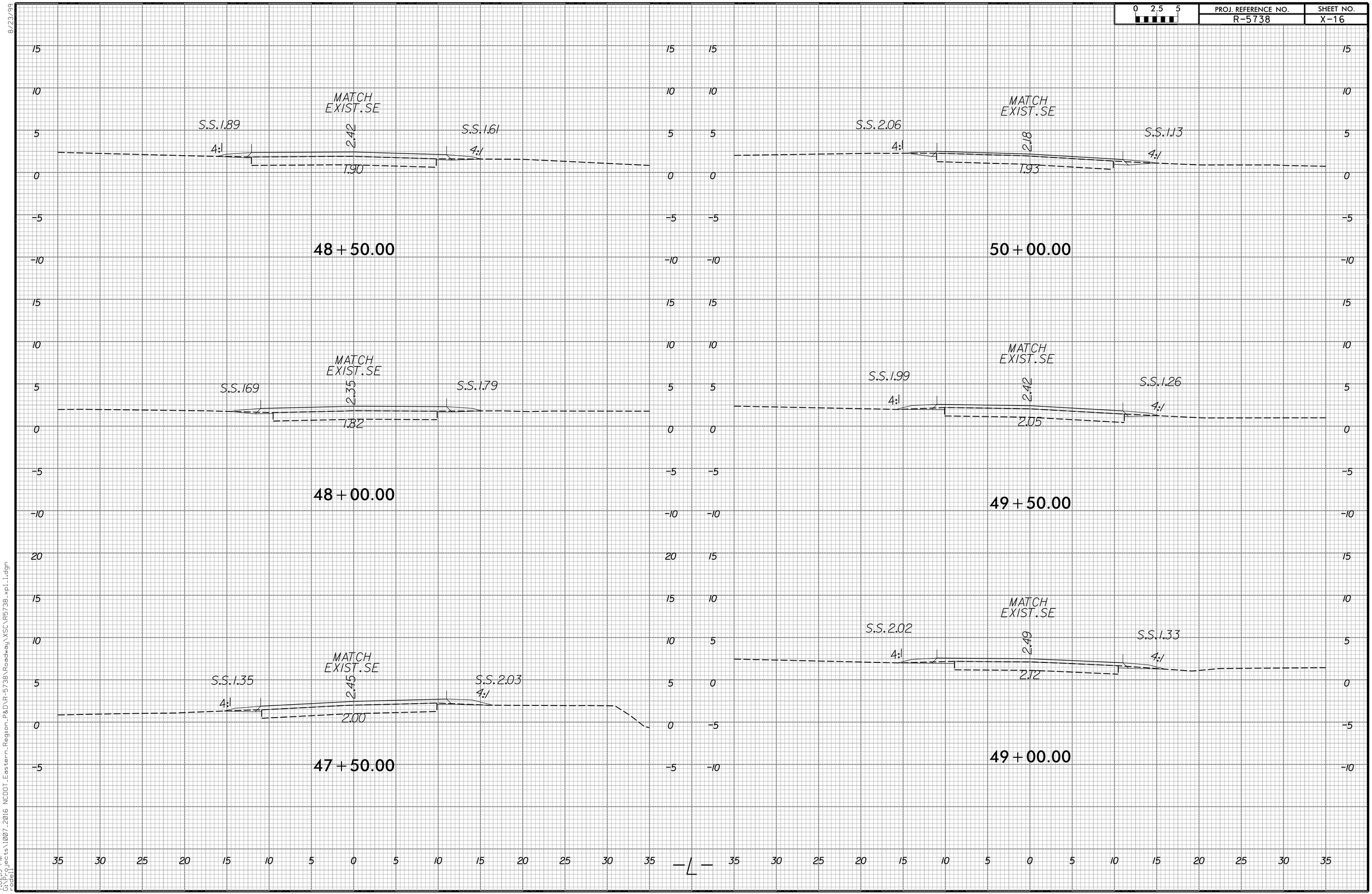

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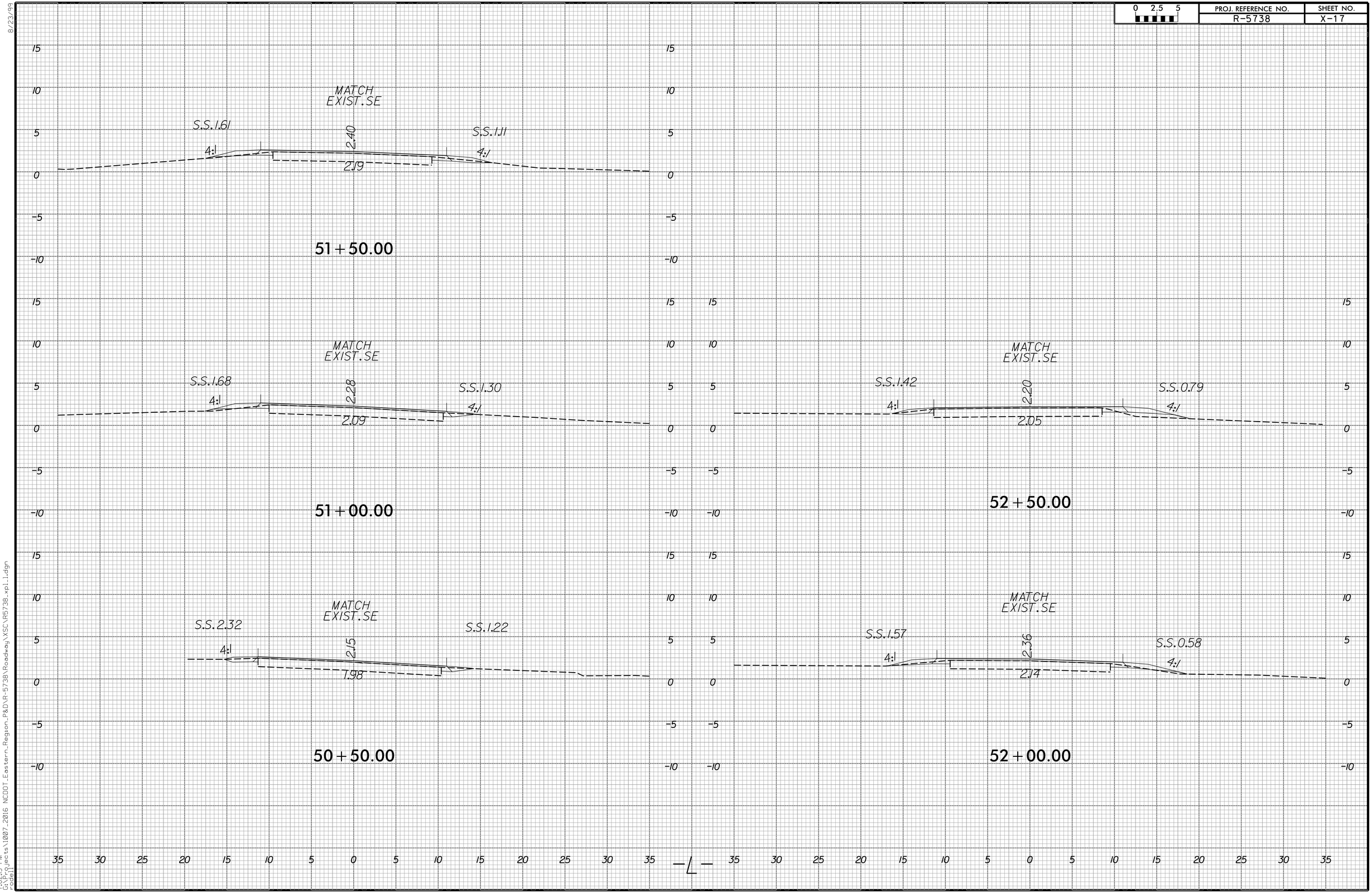

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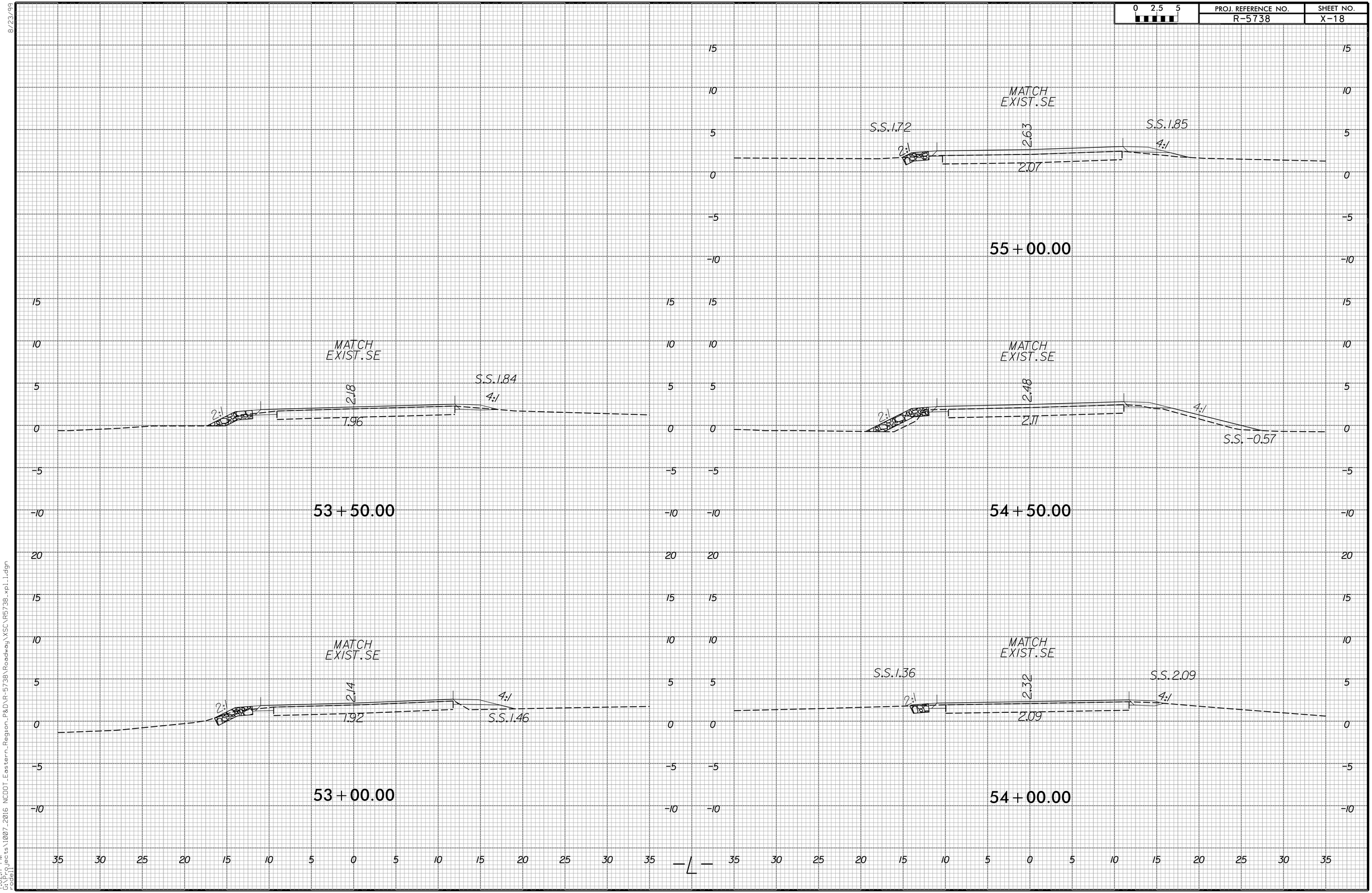

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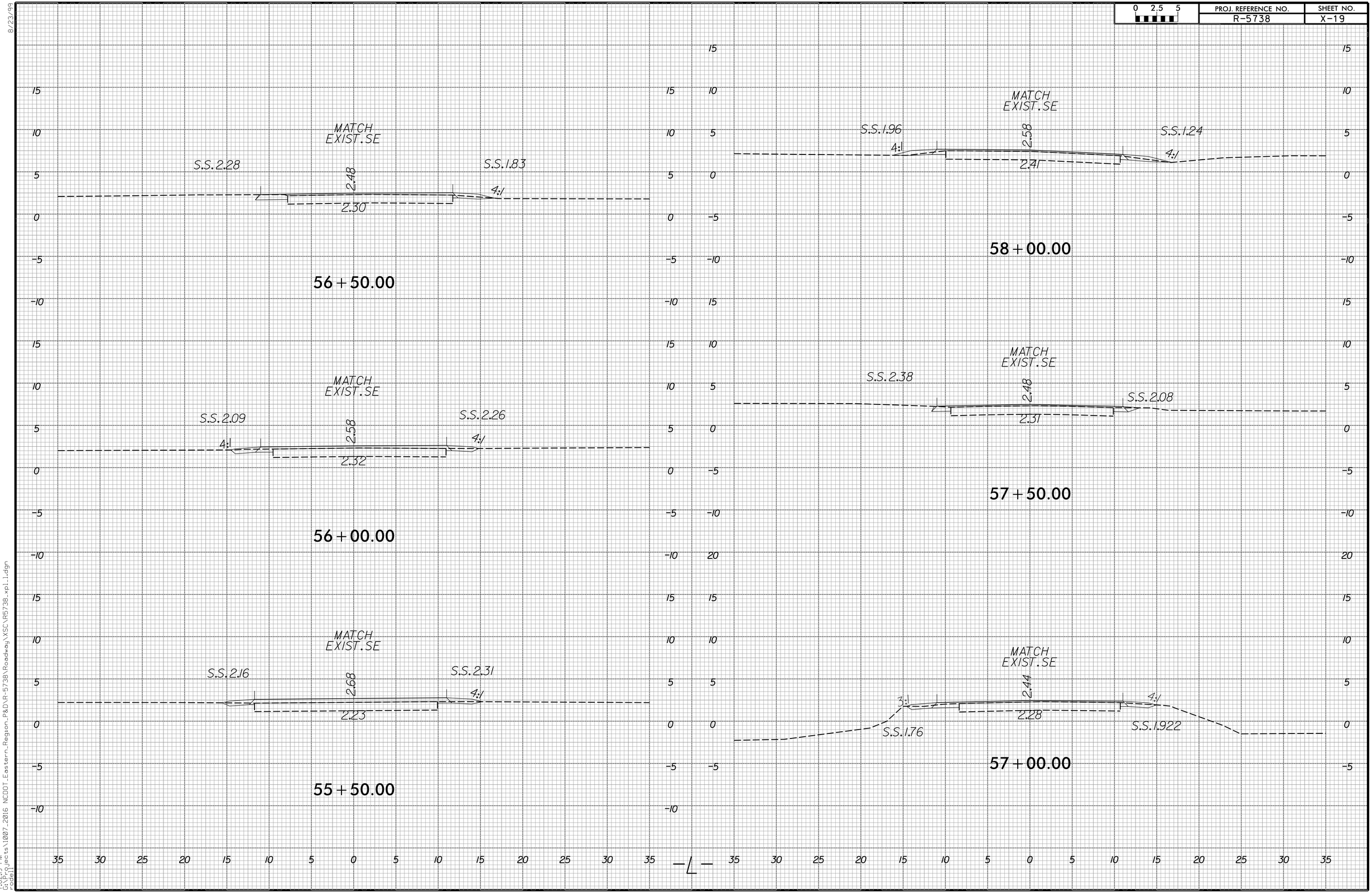

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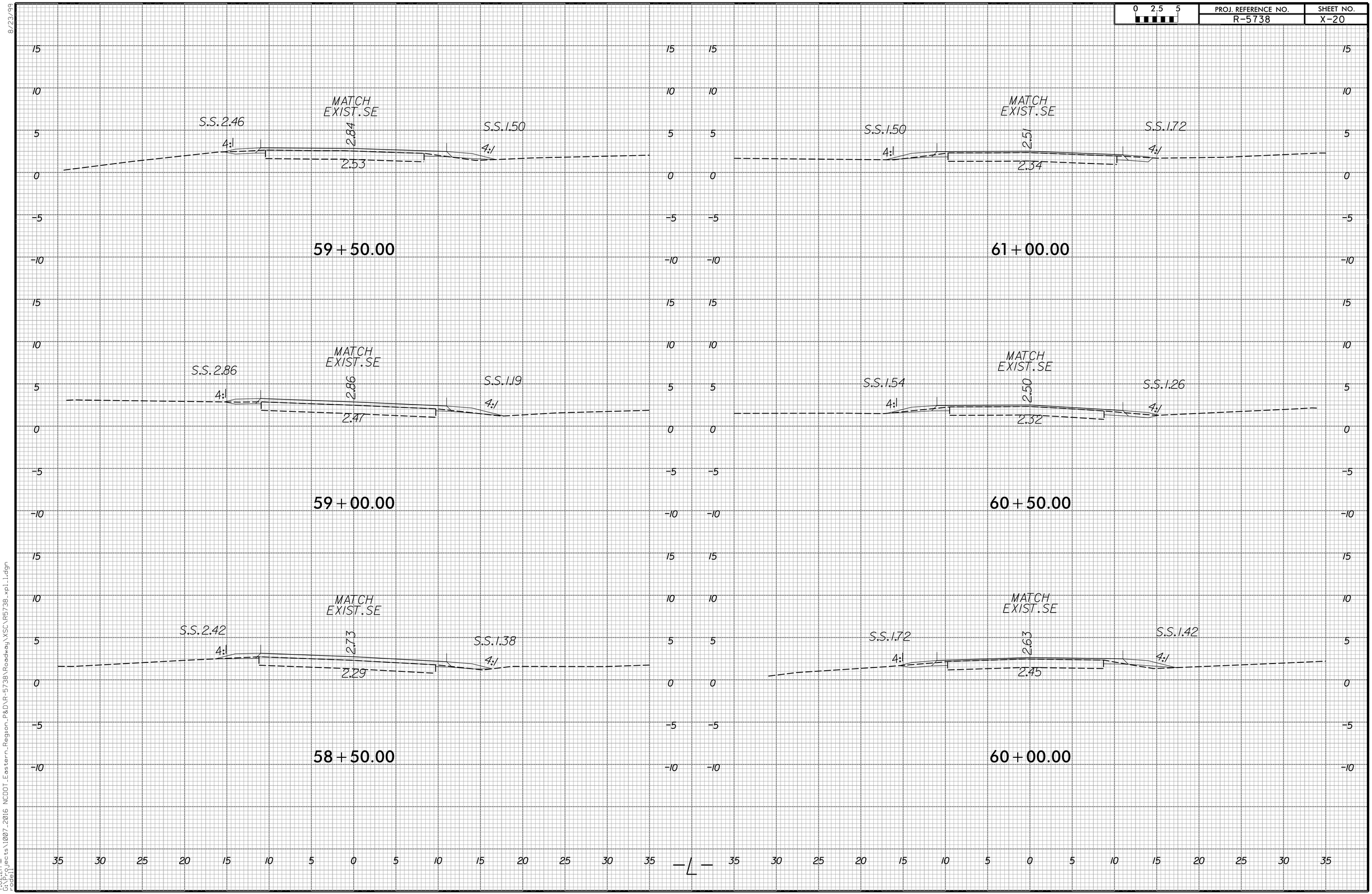

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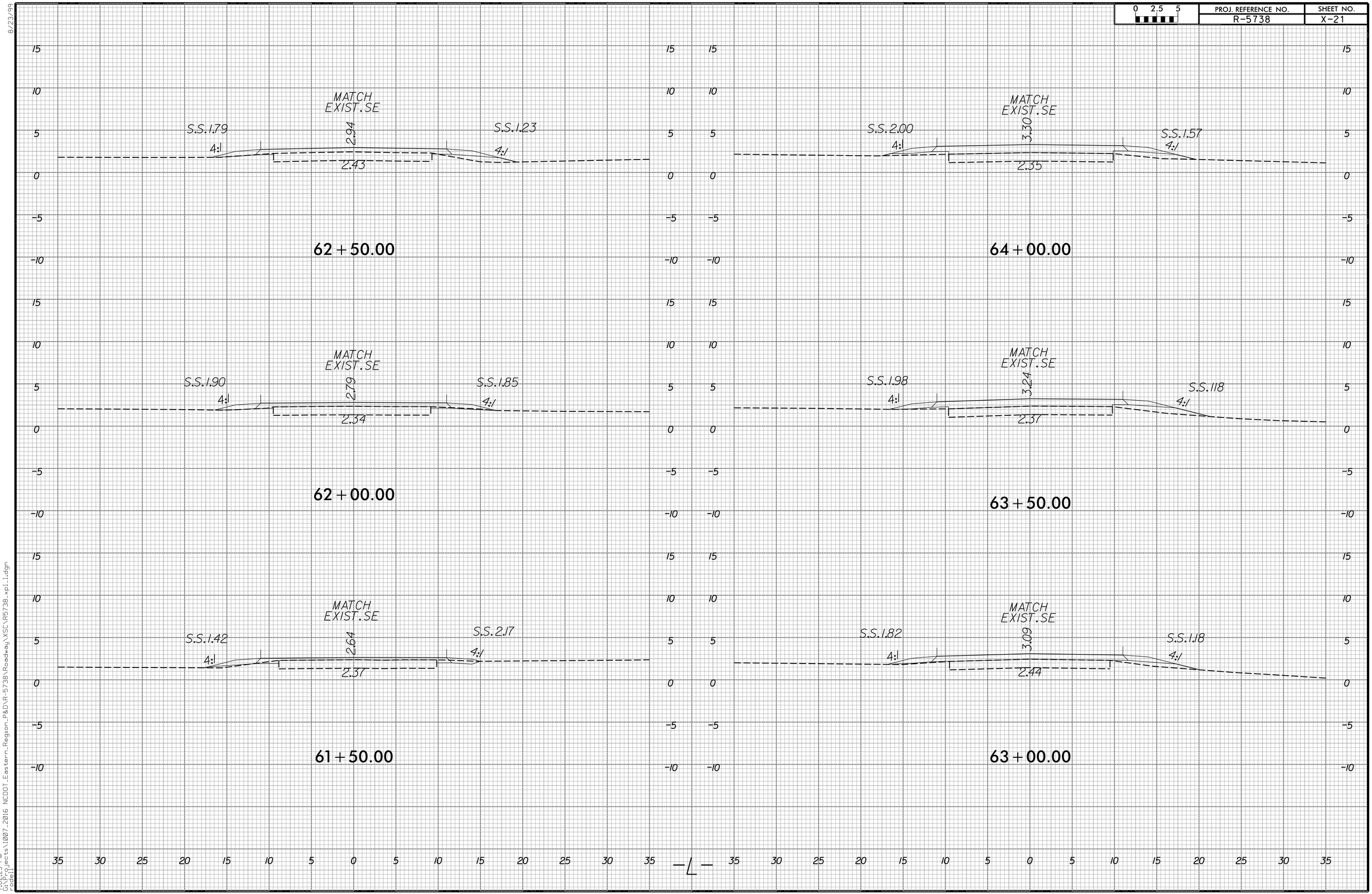

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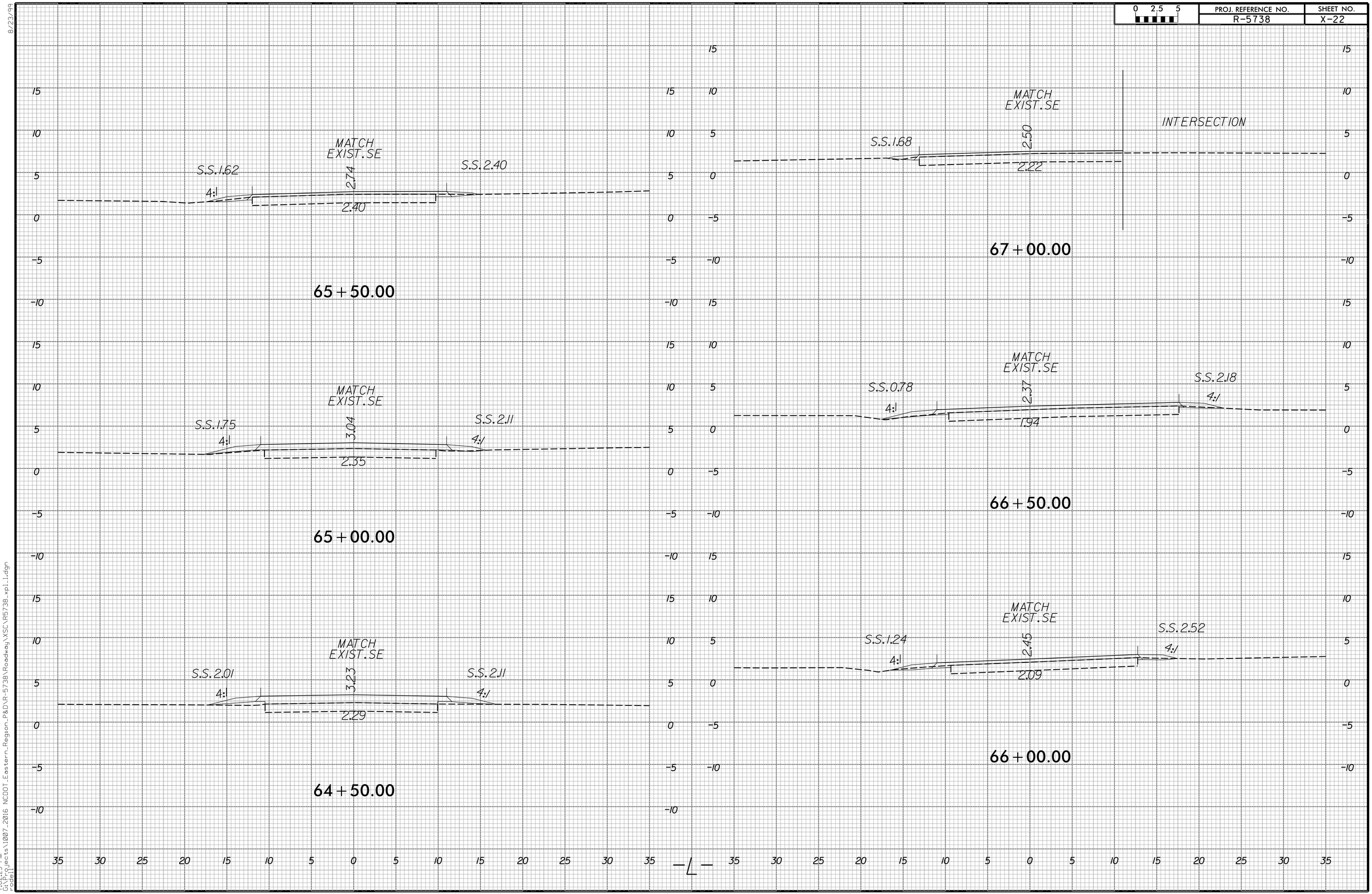

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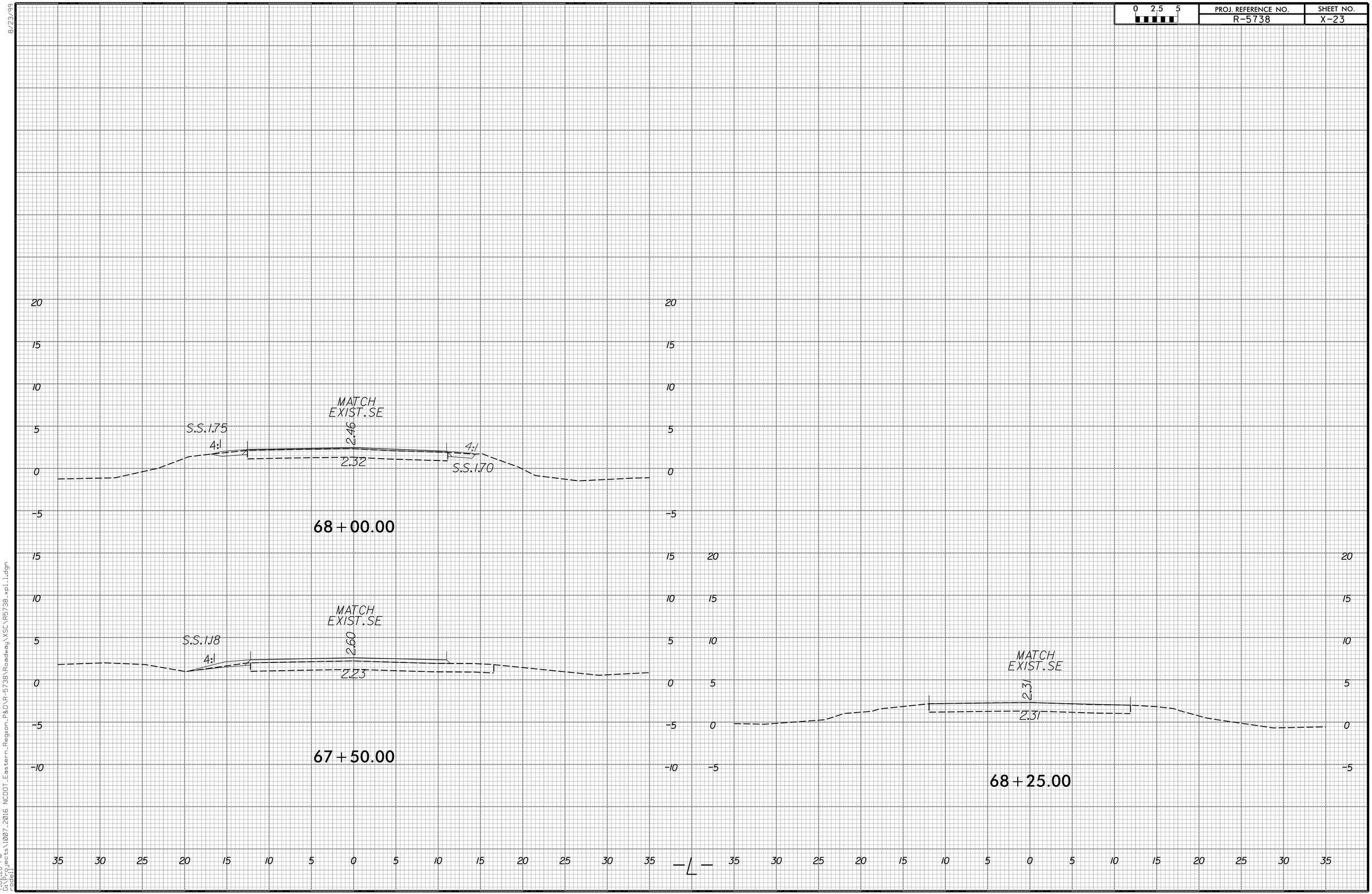

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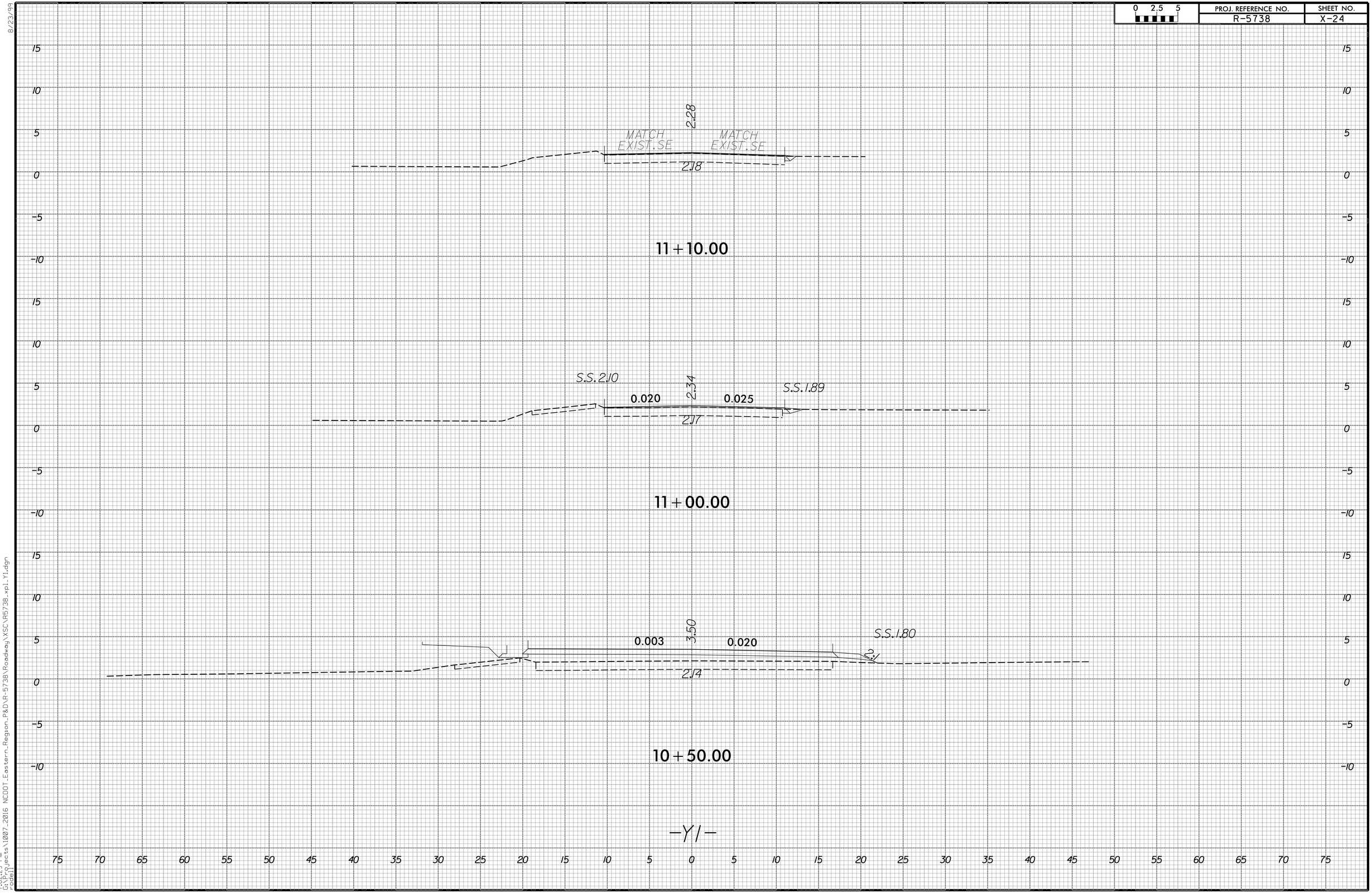

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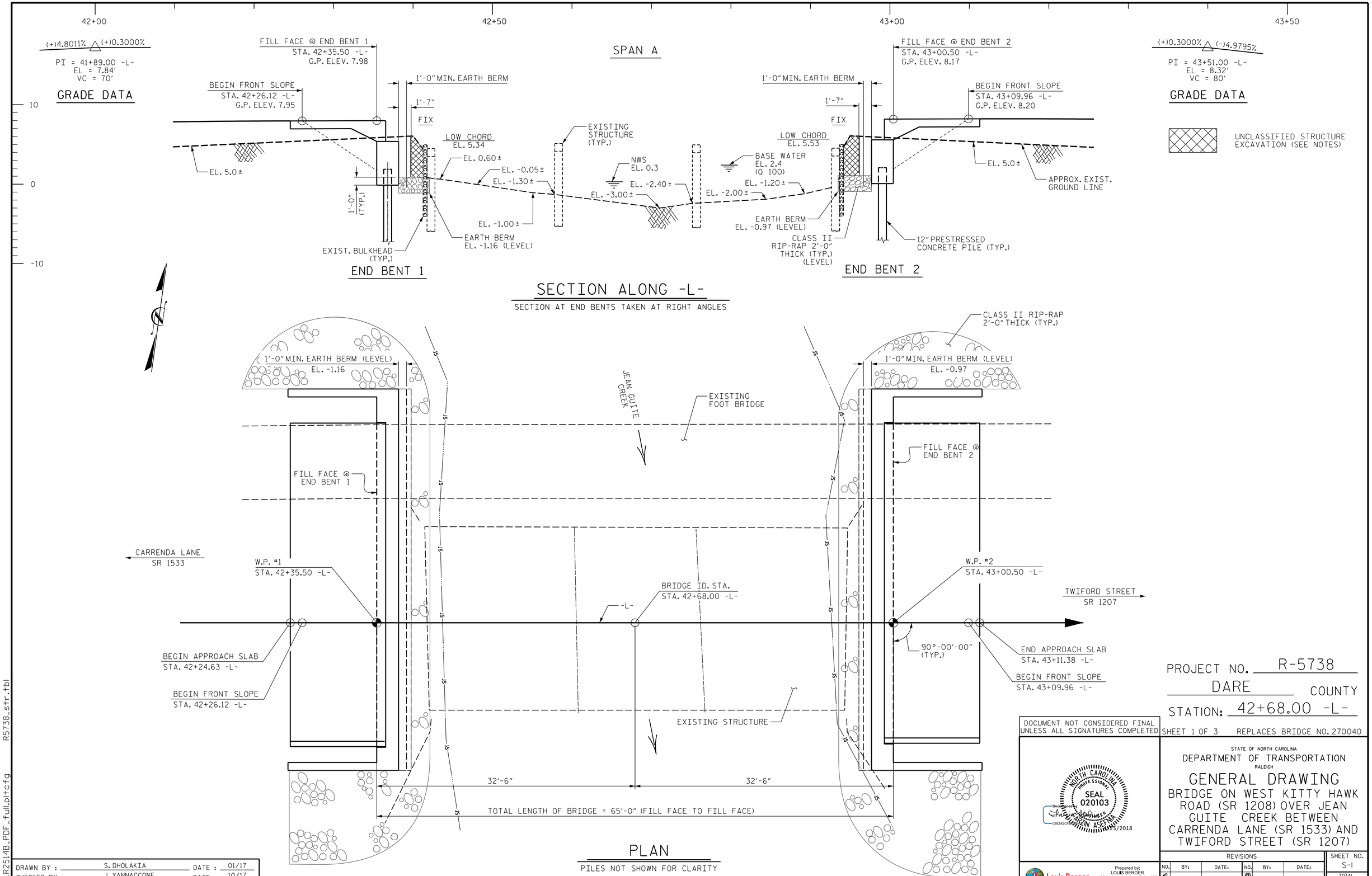

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

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SHEET 1 OF 3 REPLACES BRIDGE NO. 270040

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER ARZIN ASEFNIA

Documented by: 0382A2CF

5/25/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON WEST KITTY HAWK ROAD (SR 1208) OVER JEAN GUITE CREEK BETWEEN CARRENDA LANE (SR 1533) AND TWIFORD STREET (SR 1207)

Louis Berger

Prepared by: LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
NC COA No. F-0840

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			25

DRAWN BY :	S. DHOLAKIA	DATE :	01/17
CHECKED BY :	J. YANNACCONE	DATE :	10/17
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	12/17

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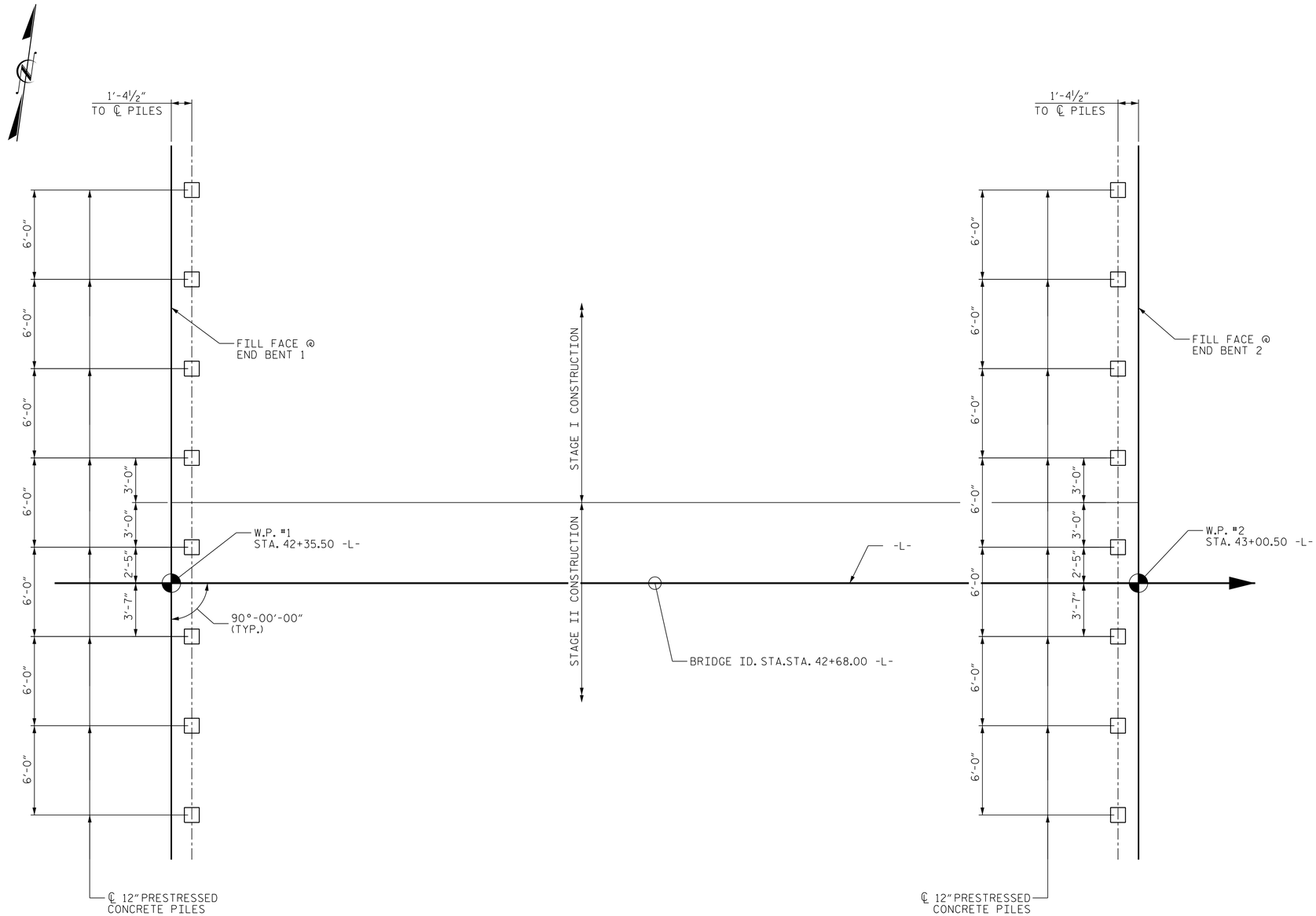

FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE)

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 OF 110 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 66198 FT-LBS TO 107080 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR END BENT NO. 1 IS ELEVATION -4.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION -3.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

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SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER JARZIN ASEFNIA

Documented by: 0382A2CF... 12/25/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON WEST KITTY HAWK ROAD (SR 1208) OVER JEAN GUITE CREEK BETWEEN CARRENDA LANE (SR 1533) AND TWIFORD STREET (SR 1207)

Louis Berger

Prepared by:
LOUIS BERGER
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NC COA No. F-0840

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : S. DHOLAKIA DATE : 06/17
CHECKED BY : J. YANNACCONE DATE : 10/17
DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 12/17

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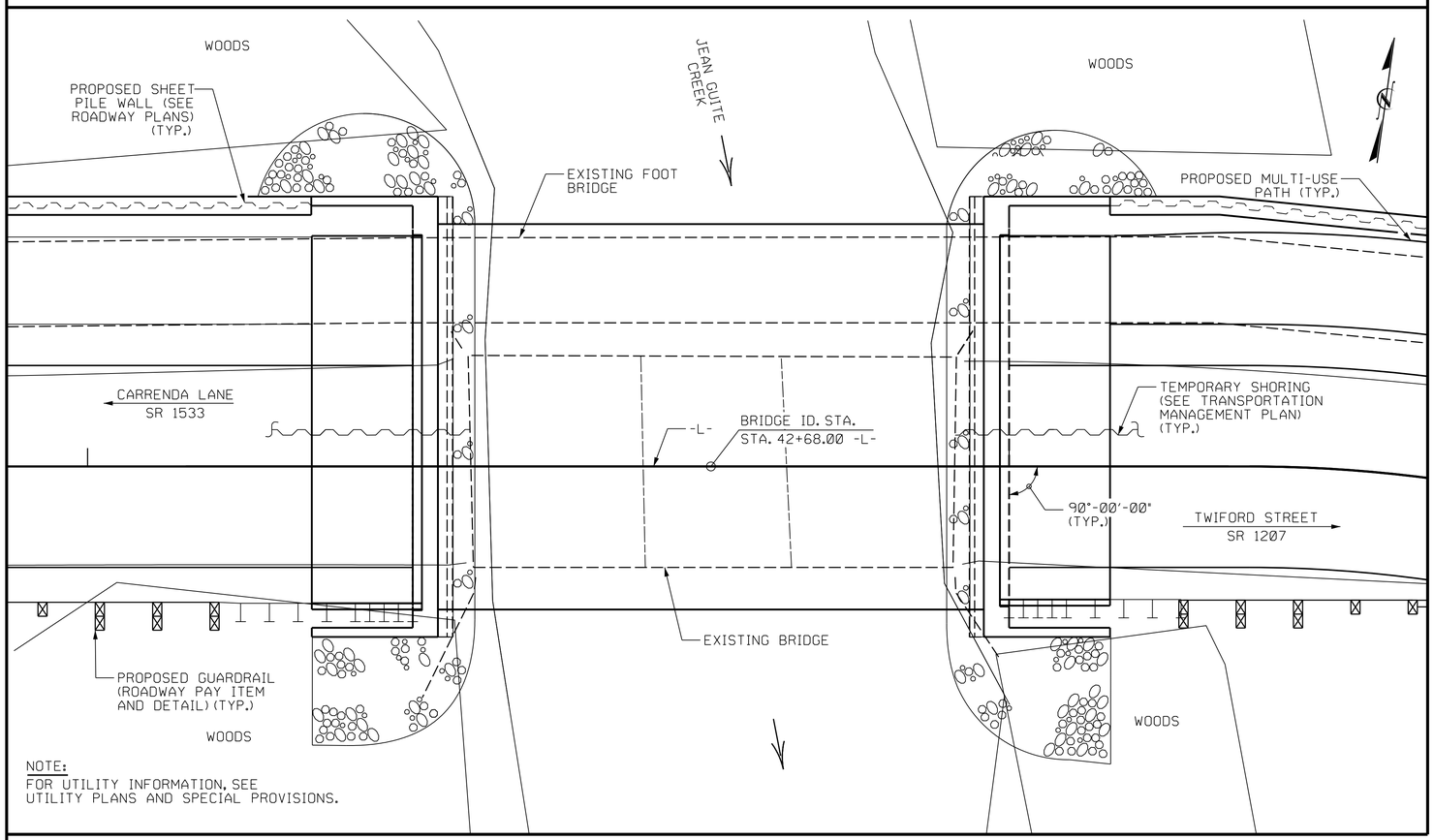
B.M. #11: RR SPIKE IN BASE OF 20" PINE, STA. 44+49.26 -L-, 132.8' LEFT, ELEV. 3.56



NOTE:
FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS AA CONCRETE	BRIDGE APPROACH SLABS	EPOXY COATED REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR 12" PRESTRESSED CONCRETE PILES	12" PRESTRESSED CONCRETE PILES		PILE REDRIVES	TWO BAR METAL RAIL	VERTICAL CONCRETE BARRIER RAIL	1'-2" X 3'-6" CONCRETE PARAPET
	LUMP SUM	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.		NO.	LIN. FT.	EA.	LIN. FT.	LIN. FT.	LIN. FT.
SUPERSTRUCTURE					27.2	LUMP SUM	1235					55.25	62.75	62.75
END BENT 1				LUMP SUM	34.9		4115	8	8	320	4			
END BENT 2				LUMP SUM	34.9		4115	8	8	320	4			
TOTAL	LUMP SUM	LUMP SUM	2	LUMP SUM	97	LUMP SUM	9465	16	16	640	8	55.25	62.75	62.75

	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	
	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE			LUMP SUM	14	878.50
END BENT 1	60	50			
END BENT 2	57	49			
TOTAL	117	99	LUMP SUM	14	878.50

HYDRAULIC DATA

DESIGN DISCHARGE	= 150 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YEARS
DESIGN HIGH WATER ELEVATION	= 1.8
DRAINAGE AREA	= 275 ACRES
BASIC DISCHARGE (Q100)	= 230 CFS
BASIC HIGH WATER ELEVATION	= 2.4

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 245 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 100+YEARS
OVERTOPPING FLOOD ELEVATION	= @ -L- 40+16.00 EL. 2.5'

NOTES:
TEMPORARY SHORING WILL BE REQUIRED IN THE AREAS INDICATED IN THE PLAN VIEW. FOR TEMPORARY SHORING, SEE SPECIAL PROVISIONS.

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

NOTES:
ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

THIS STRUCTURE CONTAINS NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE END BENT CAPS AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR. FOR CALCIUM NITRITE CORROSION INHIBITOR, SEE SPECIAL PROVISIONS.

PRESTRESSED CONCRETE CORED SLAB UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

FOR CALCIUM NITRITE CORROSION INHIBITOR, SEE SPECIAL PROVISIONS.

PRESTRESSED CONCRETE CORED SLAB UNITS ARE DESIGNED FOR 0 PSI TENSION IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.

THE CONCRETE IN THE END BENT CAPS SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

ALL BAR SUPPORTS USED IN THE PARAPET, SIDEWALK, END BENT CAPS AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 29'-5" ON LT. SIDE AND 18'-7" ON RT. SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

AFTER SERVING AS TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 3-17'-0" SPANS; 23'-0" CLEAR ROADWAY; SUPERSTRUCTURE CONSISTING OF TIMBER DECK ON TIMBER JOISTS; BENTS AND END BENTS CONSISTING OF TIMBER CAPS ON TIMBER PILES, AND LOCATED AT THE PROPOSED STRUCTURE SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

SEE TRANSPORTATION MANAGEMENT PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER.

FOR PAY ITEM FOR MILLING OF THE ASPHALT WEARING SURFACE ON THE CORED SLAB UNITS AND APPROACH SLABS, SEE ROADWAY PLANS.

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

PROJECT NO. R-5738
DARE COUNTY
STATION: 42+68.00 -L-

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SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER F. ASEFNIA
Docu Signed by: 03B2A2CF4B0B4A0... 12/5/2018

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NC COA No. F-0840

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON WEST KITTY HAWK ROAD (SR 1208) OVER JEAN GUITE CREEK BETWEEN CARRENDA LANE (SR 1533) AND TWIFORD STREET (SR 1207)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : S. DHOLAKIA DATE : 02/17
CHECKED BY : J. YANNACCONE DATE : 10/17
DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 12/17

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LOAD AND RESISTANCE FACTOR RATING (LRFR) 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	1.35	- -	1.75	0.230	**1.35**	A	ER	**30.880**	0.240	3.03	A	ER	60.130	0.80	0.230	1.89	A	I	30.880	
		HL-93(Opr)	N/A		1.75	- -	1.35	0.230	1.75	A	ER	30.880	0.240	4.00	A	ER	60.130	0.80	0.230	2.41	A	I	30.880	
		HS-20(Inv)	36.000	2	1.72	61.920	1.75	0.230	**1.72**	A	ER	**30.880**	0.240	3.77	A	ER	60.130	0.80	0.230	1.89	A	I	30.880	
		HS-20(Opr)	36.000		2.23	80.280	1.35	0.230	2.23	A	ER	30.880	0.240	4.96	A	ER	60.130	0.80	0.230	2.41	A	I	30.880	
LEGAL LOAD RATING	SV	SNSH	13.500		4.69	63.315	1.4	0.230	4.69	A	ER	30.880	0.240	11.45	A	ER	60.130	0.80	0.230	5.25	A	I	30.880	1
		SNGARBS2	20.000		3.57	71.400	1.4	0.230	3.57	A	ER	30.880	0.240	8.15	A	ER	60.130	0.80	0.230	3.99	A	I	30.880	1
		SNAGRIS2	22.000		3.41	75.020	1.4	0.230	3.41	A	ER	30.880	0.240	7.58	A	ER	60.130	0.80	0.230	3.81	A	I	30.880	1
		SNCOTTS3	27.250		2.34	63.765	1.4	0.230	2.34	A	ER	30.880	0.240	5.60	A	ER	60.130	0.80	0.230	2.61	A	I	30.880	1
		SNAGGRS4	34.925		1.98	69.152	1.4	0.230	1.98	A	ER	30.880	0.240	4.66	A	ER	60.130	0.80	0.230	2.21	A	I	30.880	1
		SNS5A	35.550		1.93	68.612	1.4	0.230	1.93	A	ER	30.880	0.240	4.75	A	ER	60.130	0.80	0.230	2.16	A	I	30.880	1
		SNS6A	39.950		1.79	71.511	1.4	0.230	1.79	A	ER	30.880	0.240	4.31	A	ER	60.130	0.80	0.230	2.00	A	I	30.880	1
		SNS7B	42.000		1.7	71.400	1.4	0.230	1.70	A	ER	30.880	0.240	4.29	A	ER	60.130	0.80	0.230	1.90	A	I	30.880	1
	TTST	TNAGRIT3	33.000		2.18	71.940	1.4	0.230	2.18	A	ER	30.880	0.240	5.19	A	ER	60.130	0.80	0.230	2.44	A	I	30.880	1
		TNT4A	33.075		2.19	72.434	1.4	0.230	2.19	A	ER	30.880	0.240	5.03	A	ER	60.130	0.80	0.230	2.46	A	I	30.880	1
		TNT6A	41.600		1.81	75.296	1.4	0.230	1.81	A	ER	30.880	0.240	4.65	A	ER	60.130	0.80	0.230	2.02	A	I	30.880	1
		TNT7A	42.000		1.82	76.440	1.4	0.230	1.82	A	ER	30.880	0.240	4.45	A	ER	60.130	0.80	0.230	2.04	A	I	30.880	1
		TNT7B	42.000		1.9	79.800	1.4	0.230	1.90	A	ER	30.880	0.240	4.13	A	ER	60.130	0.80	0.230	2.12	A	I	30.880	1
		TNAGRIT4	43.000		1.79	76.970	1.4	0.230	1.79	A	ER	30.880	0.240	4.01	A	ER	60.130	0.80	0.230	2.01	A	I	30.880	1
		TNAGT5A	45.000		1.69	76.050	1.4	0.230	1.69	A	ER	30.880	0.240	4.02	A	ER	60.130	0.80	0.230	1.89	A	I	30.880	1
		TNAGT5B	45.000	3	1.66	74.700	1.4	0.230	**1.66**	A	ER	**30.880**	0.240	3.80	A	ER	60.130	0.80	0.230	1.86	A	I	30.880	1

LOAD FACTORS:

	LIMIT STATE	γ_{DC}	γ_{DW}
DESIGN LOAD RATING FACTORS	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. FOR GIRDER LOCATION " I " INTERIOR CORED SLAB WITH 10" VOID CONTROLS.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

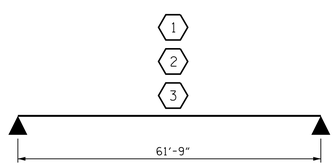
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

FOR SPAN 'A'

PROJECT NO. R-5738
DARE COUNTY
STATION: 42+68.00 -L-

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NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARHAD ASEFNIA
DocuSigned by: 03B2A2CF... 4/9/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 62'-9" CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

Louis Berger

Prepared by:
LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
NC COA No. F-0840

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

SHEET NO. S-4
TOTAL SHEETS 25

DRAWN BY : J. MYA DATE : 12/17
CHECKED BY : T. KIRSCHBAUM DATE : 12/17
DESIGN ENGINEER OF RECORD : F. ASEFNIA DATE : 12/17

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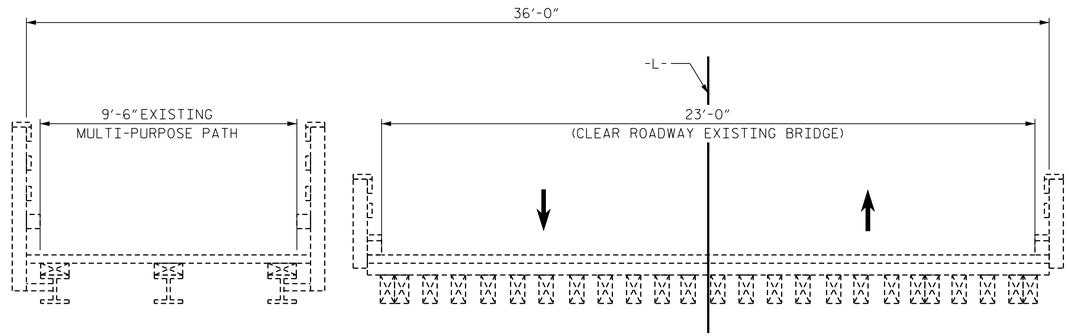
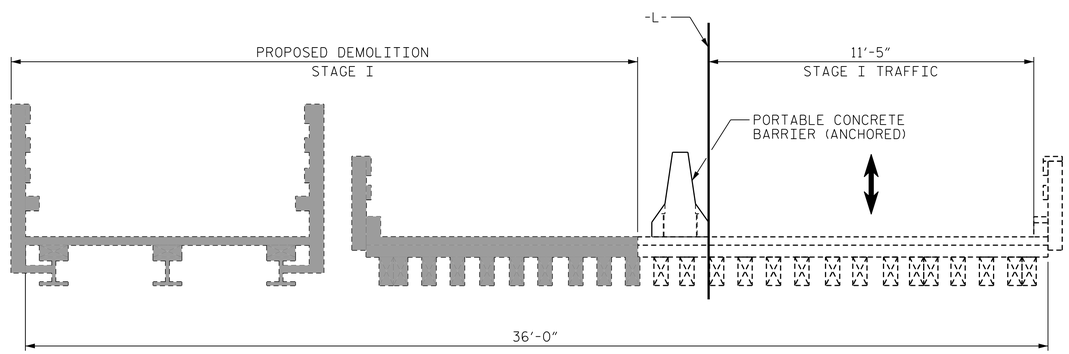
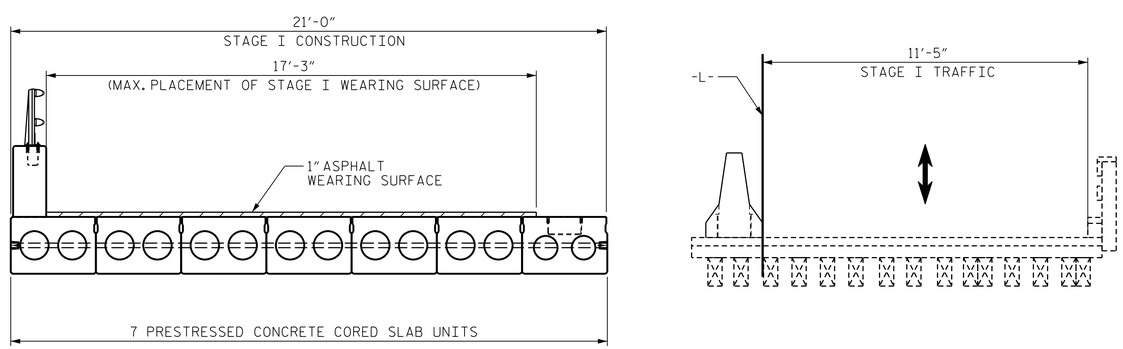


EXISTING BRIDGE



STAGE I DEMOLITION



STAGE I CONSTRUCTION

NOTES:

SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER.

PORTION OF EXISTING BRIDGE TO BE DEMOLISHED

CONSTRUCTION SEQUENCE:

THIS IS A PROPOSED CONSTRUCTION SEQUENCE. THE CONTRACTOR MAY SUBMIT AN ALTERNATE SEQUENCE TO THE ENGINEER FOR REVIEW AND APPROVAL.

STAGE I:

1. INSTALL ANCHORED PORTABLE CONCRETE BARRIER ON EXISTING BRIDGE AND SHIFT TRAFFIC AS SHOWN AND IN ACCORDANCE WITH THE TRANSPORTATION MANAGEMENT PLANS.
2. REMOVE EXISTING FOOTBRIDGE FOR MULTI-PURPOSE PATH AND THOSE PORTIONS OF THE EXISTING TIMBER BRIDGE SUPERSTRUCTURE AS SHOWN.
3. INSTALL SHEET PILES FOR TEMPORARY SHORING AT THE LOCATIONS SHOWN ON THE "END BENT" SHEETS AND ROADWAY PLANS. CUT THE TOP OF THE SHEET PILES TO MATCH THE BOTTOM ELEVATION OF THE APPROACH SLABS.
4. INSTALL PRESTRESSED CONCRETE PILES AND CONSTRUCT THE CONCRETE END BENTS.
5. PLACE CORED SLAB UNITS AND POST-TENSION THE STAGE I UNITS. FILL THE POST-TENSIONING GROUT RECESSES ON THE SOUTH SIDE OF THE UNITS.
6. CONSTRUCT CONCRETE PARAPET, 2 BAR METAL RAIL AND APPROACH SLABS. INSTALL ANCHORED PORTABLE CONCRETE BARRIER ON CORED SLAB UNIT AND APPROACH SLABS. OVERLAY THE CORED SLABS AND APPROACH SLABS WITH 1" ASPHALT WEARING SURFACE.

STAGE II:

1. SHIFT TRAFFIC ONTO THE STAGE I CORED SLAB BRIDGE AS SHOWN AND IN ACCORDANCE WITH THE TRANSPORTATION MANAGEMENT PLANS.
2. REMOVE REMAINDER OF EXISTING BRIDGE SUPERSTRUCTURE AND THE PORTION OF THE EXISTING TIMBER BULKHEADS AND PILES UNDER THE STAGE I BRIDGE.
3. REMOVE PORTIONS OF SHEET PILING AS INDICATED ON THE "END BENT" SHEETS. THE CONTRACTOR SHALL TAKE NECESSARY MEASURES TO PREVENT THE LOSS OF ANY BACKFILL UNDER THE STAGE I APPROACH SLAB.
4. INSTALL PRESTRESSED CONCRETE PILES AND CONSTRUCT THE CONCRETE END BENTS.
5. PLACE CORED SLAB UNITS AND POST-TENSION THE ENTIRE SUPERSTRUCTURE. FILL ALL OF THE POST-TENSIONING GROUT RECESSES.
6. CONSTRUCT VERTICAL BARRIER RAIL AND APPROACH SLABS. CUT A HOLE THROUGH THE SHEET PILING TO PERMIT CONTINUATION OF THE BACKFILL DRAIN PIPE.
7. INSTALL PORTABLE CONCRETE BARRIER AS SHOWN. OVERLAY THE CORED SLABS AND APPROACH SLABS WITH 1" ASPHALT WEARING SURFACE.
8. REMOVE THE REMAINDER OF THE TIMBER BULKHEADS AND PILES.

STAGE III:

1. SHIFT TRAFFIC AS SHOWN AND IN ACCORDANCE WITH THE TRANSPORTATION MANAGEMENT PLANS.
2. MILL THE PORTION OF THE ASPHALT WEARING SURFACE AS SHOWN. ALL ASPHALT RESIDUE AT THE SIDEWALK LOCATION SHALL BE REMOVED FOR COMPLETE CONCRETE BOND.
3. CONSTRUCT THE CONCRETE SIDEWALK ON THE BRIDGE AND APPROACH SLABS.
4. REMOVE THE PORTABLE CONCRETE BARRIER AND OVERLAY THE BRIDGE CLEAR ROADWAY WITH AN ASPHALT WEARING SURFACE TO THE FINAL PROFILE GRADE AND CROSS SLOPE.

PROJECT NO. R-5738
DARE COUNTY
STATION: 42+68.00 -L-

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SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARHAN ASEFNIA
Docu Signed by: 0382A2CF...
4/9/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION SEQUENCE

Louis Berger

Prepared by:
LOUIS BERGER
1001 Wade Avenue, Suite 400
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NC COA No. F-0840

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S-5
1			3					TOTAL SHEETS
2			4					25

DRAWN BY :	S. DHOLAKIA	DATE :	02/17
CHECKED BY :	J. YANNACCONE	DATE :	10/17
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	12/17

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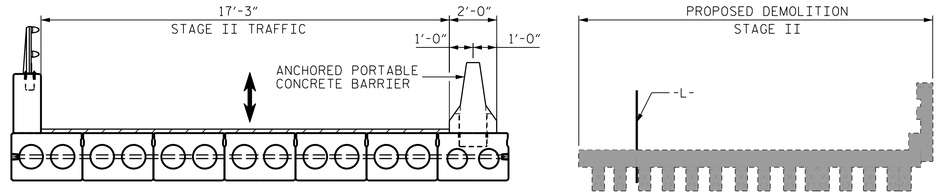
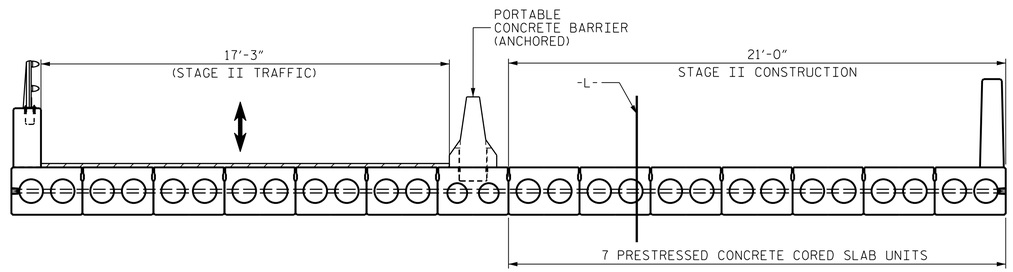
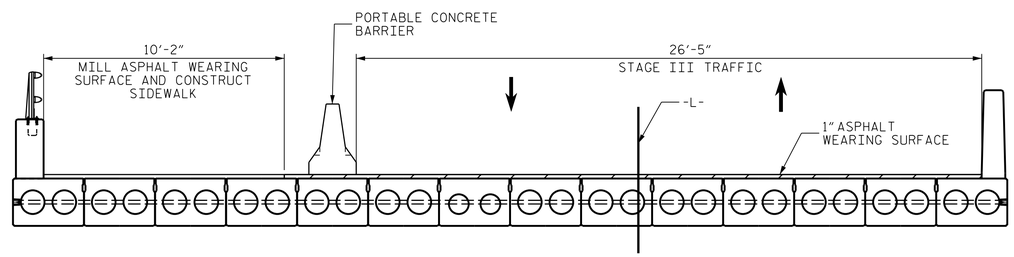


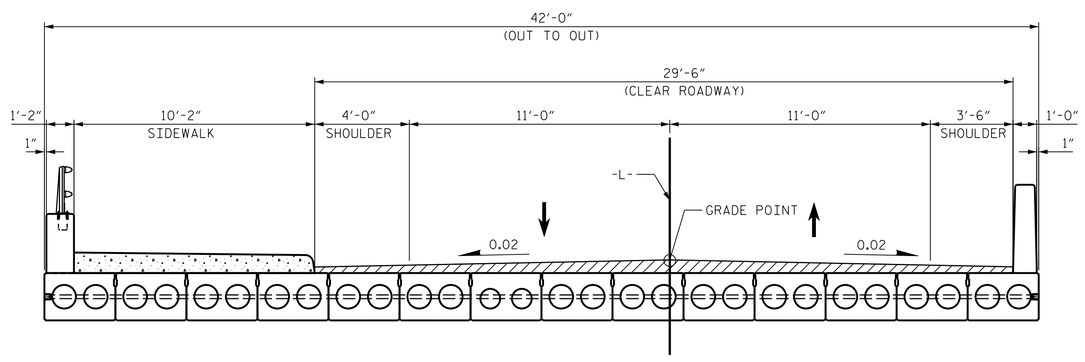
STAGE II DEMOLITION



STAGE II CONSTRUCTION



STAGE III CONSTRUCTION



FINAL CONSTRUCTION

NOTES:

SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER.

PORTION OF EXISTING BRIDGE TO BE DEMOLISHED

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

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SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARZIN ASEFNIA

Documented by: Farzin Asefnia 0382A2CF... 5/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION SEQUENCE

Louis Berger

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LOUIS BERGER
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NC COA No. F-0840

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			25

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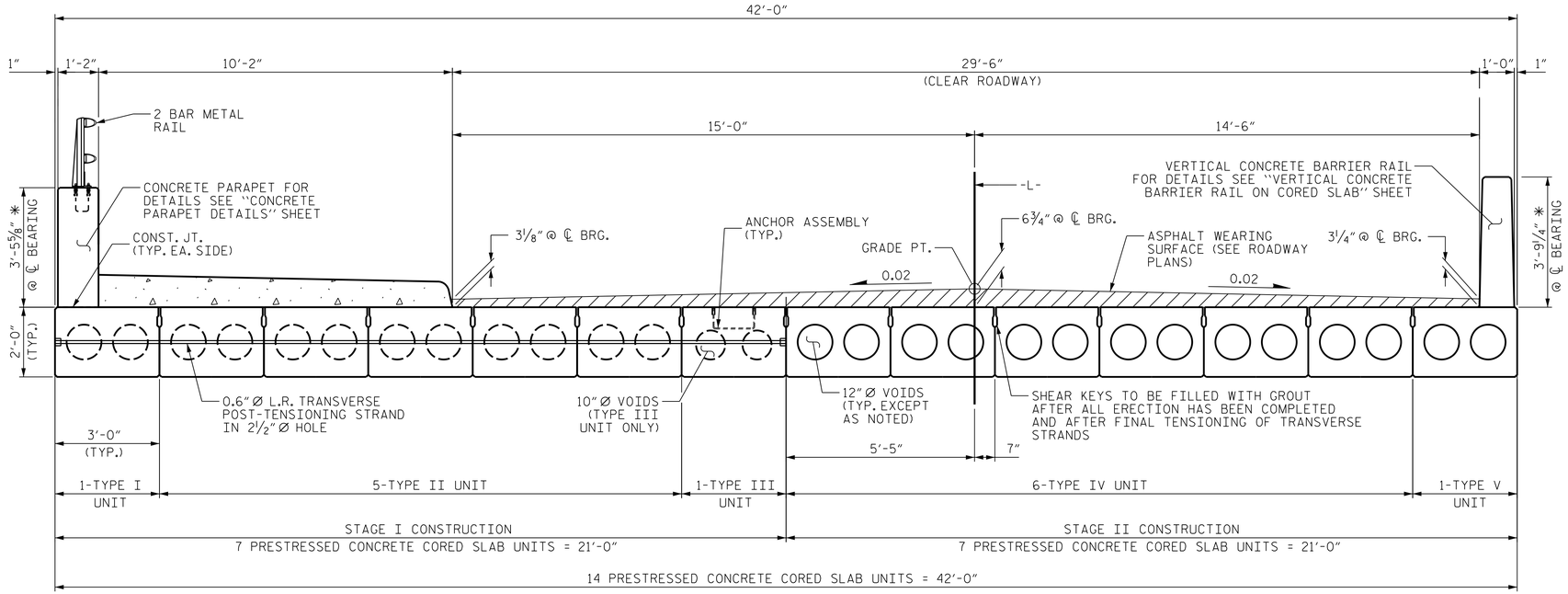


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

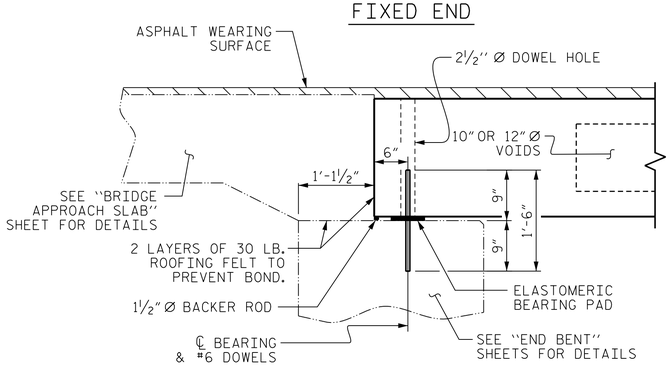
HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

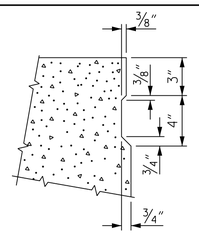
FINAL BRIDGE (STAGE I AND II COMPLETED)
(ALL DIMENSIONS ARE NORMAL TO WORKLINE)

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

FIXED END

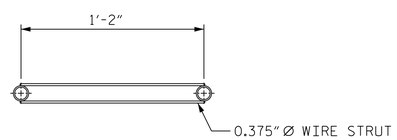


SECTION AT END BENT

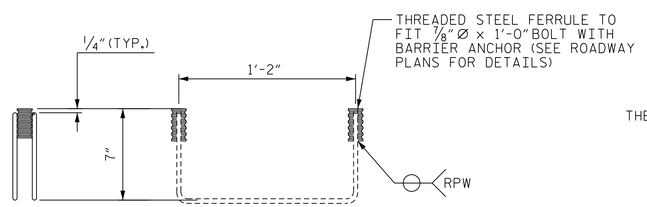


SHEAR KEY DETAIL

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

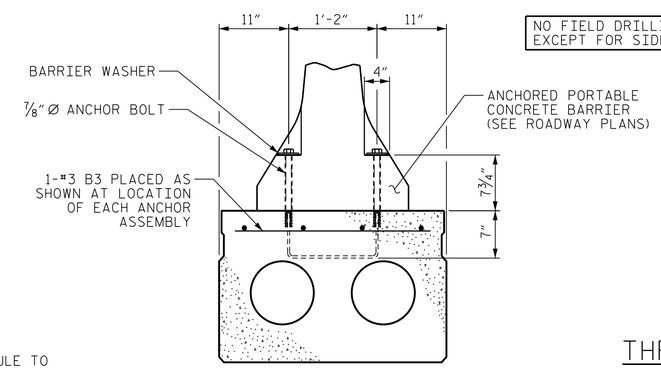


PLAN



ANCHOR ASSEMBLY FOR ANCHORED PORTABLE CONCRETE BARRIER

(12 ASSEMBLIES REQUIRED IN TYPE III CORED SLAB UNIT)
(6 ASSEMBLIES ON APPROACH SLAB)

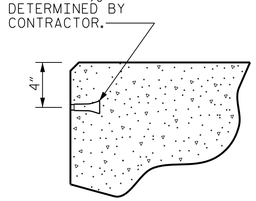


TYPE III CORED SLAB SECTION

(SHOWING PLACEMENT OF ANCHOR ASSEMBLY)

THE #3 B3 BARS ARE INCIDENTAL AND THEIR COST SHALL BE INCLUDED IN THE PRICE BID FOR THE PRESTRESSED CONCRETE CORED SLAB

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



THREADED INSERT DETAIL

ON EXTERIOR UNITS ONLY

ANCHOR ASSEMBLY NOTES:

THE ANCHOR ASSEMBLY FOR PORTABLE CONCRETE BARRIER SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2½".

B. 2-⅞" Ø x 1'-0" ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTSOF ASTM A307. ANCHOR BOLTS SHALL BE GALVANIZED. (AT THE OPTION OF THE CONTRACTOR'S OPTION STAINLESS STEEL BOLTS MAY BE USED AS AN ALTERNATE FOR THE ⅞" Ø x 1'-0" GALVANIZED BOLTS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BYTHE ENGINEER.

C. WIRE STRUTS SHOWN IN THE ANCHOR ASSEMBLY DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.

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

THE COST OF THE ANCHOR ASSEMBLY COMPLETE IN PLACE, SHALL BE INCLUDED, AS APPLICABLE, IN THE UNIT CONTRACT PRICE BID FOR 3'-0" x 2'-0" PRESTRESSED CONCRETE CORED SLAB OR LUMP SUM FOR THE APPROACH SLABS.

FERRULES TO BE PLUGGED DURING CASTING OF THE CORED SLAB UNITS OR POURING OF THE APPROACH SLABS AS RECOMMENDED BY THE MANUFACTURER.

PRIOR TO THE PLACEMENT OF FINAL WEARING SURFACE ALL FERRULE INSERTS MUST BE PERMANENTLY SEALED OR PLUGGED.

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

FOR 4" x 3½" x ½" BARRIER WASHER TO BE USED WITH THE ANCHOR ASSEMBLY, SEE ROADWAY PLANS.

PAYMENT FOR THE ANCHORED PORTABLE CONCRETE BARRIER AND BARRIER WASHER ARE INCLUDED IN THE TRAFFIC CONTROL PLANS.

ALTERNATING SPACING OF 5'-0" AND 5'-1" SHOULD BE PROVIDED FOR FERRULE INSERTS FOR TEMPORARY BARRIER RAIL ON CORED SLABS.

NO FIELD DRILLING OF CORED SLAB ALLOWED EXCEPT FOR SIDEWALK ATTACHMENT PURPOSE.

PROJECT NO. R-5738
DARE COUNTY
STATION: 42+68.00 -L-

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SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARZIN ASEFNIA
DocuSigned by: 0362A2CF... 12/5/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

Louis Berger
Prepared by:
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NC COA No. F-0840

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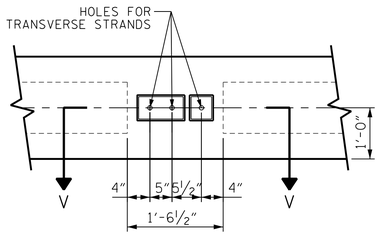
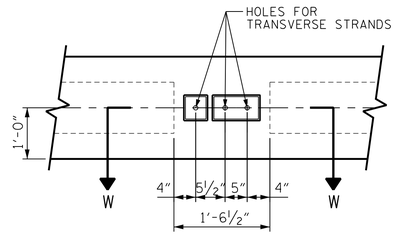
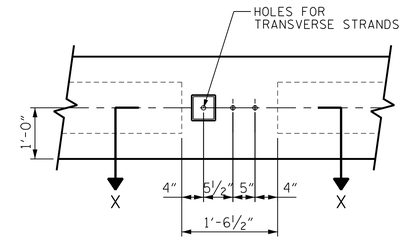


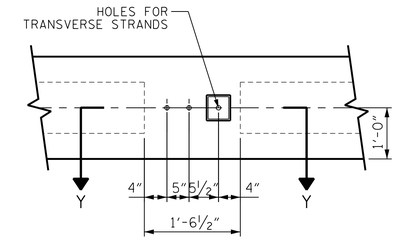
VIEW A-A



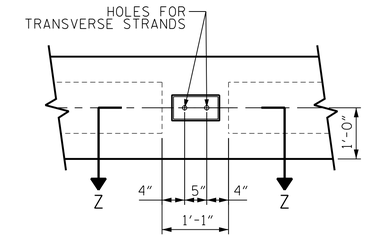
VIEW B-B



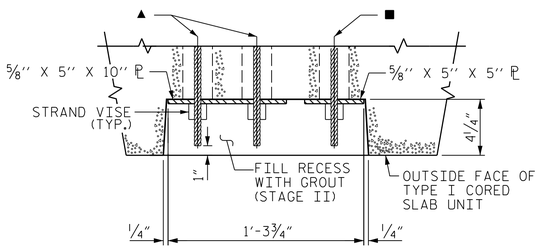
VIEW C-C



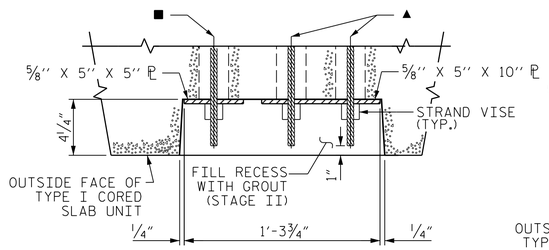
VIEW D-D



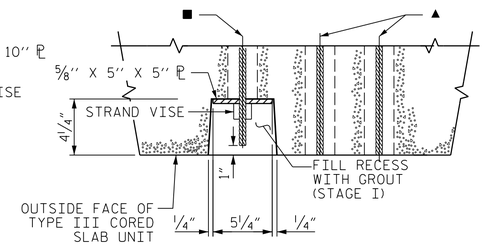
VIEW E-E



SECTION V-V



SECTION W-W



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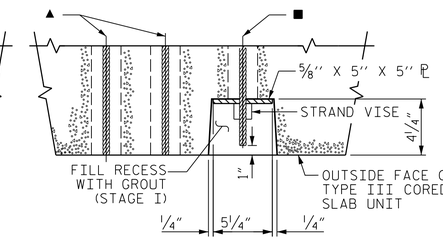
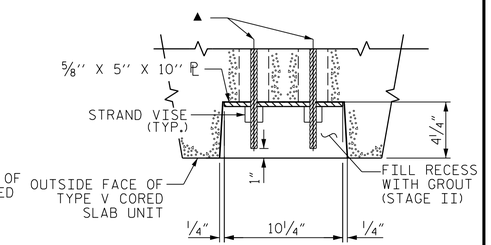


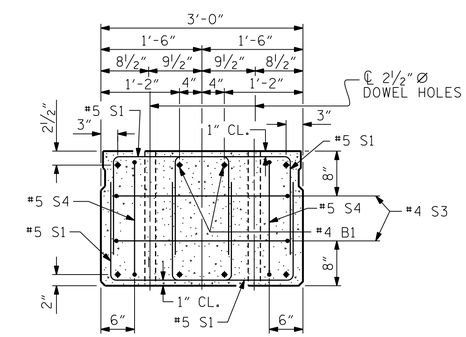
SECTION Y-Y



SECTION Z-Z

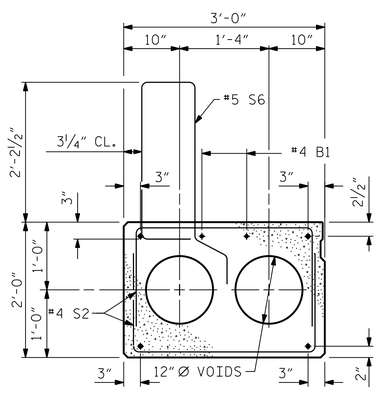
■ ℄ 0.6" Ø H.S. TRANSVERSE POST-TENSIONING STRAND SHEATHED WITH A NON-CORROSIVE PIPE (TO BE TENSIONED DURING STAGE I CONST.)

▲ ℄ 0.6" Ø H.S. TRANSVERSE POST-TENSIONING STRAND SHEATHED WITH A NON-CORROSIVE PIPE (TO BE TENSIONED DURING STAGE II CONST.)



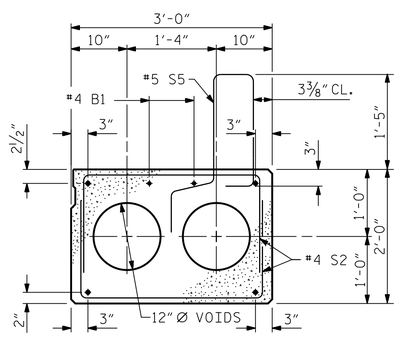
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. INTERIOR SLAB SECTION SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



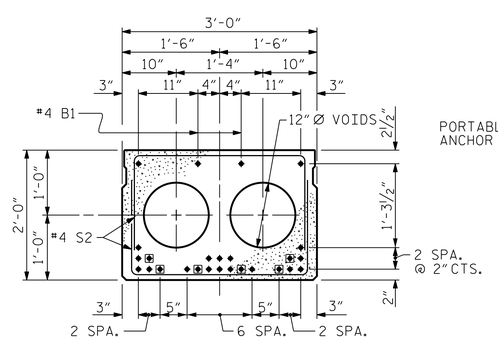
EXTERIOR SLAB SECTION

(TYPE I UNIT)
(FOR TWO BAR METAL RAIL)
(FOR TOTAL PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



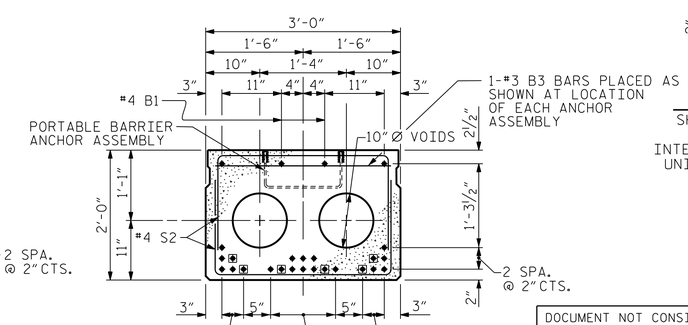
EXTERIOR SLAB SECTION

(TYPE V UNIT)
(FOR VERTICAL CONCRETE BARRIER RAIL)
(FOR TOTAL PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION

(TYPE II & IV UNIT)
(24 STRANDS REQUIRED)



INTERIOR SLAB SECTION

(TYPE III UNIT)
(24 STRANDS REQUIRED)

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

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SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER

DocuSigned by: Fariborz Asefnia
03B2A2CF... 12/13/2018

Prepared by:
LOUIS BERGER
1001 Wade Avenue, Suite 400
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NC COA No. F-0840

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SHEET NO. S-8

TOTAL SHEETS 25

■ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT SEE STRAND SPECIFICATIONS, ARTICLE 1078-7

DEBONDING LEGEND

NO FIELD DRILLING OF CORED SLAB ALLOWED EXCEPT FOR SIDEWALK ATTACHMENT PURPOSE.

DRAWN BY :	S. DHOLAKIA	DATE :	06/17
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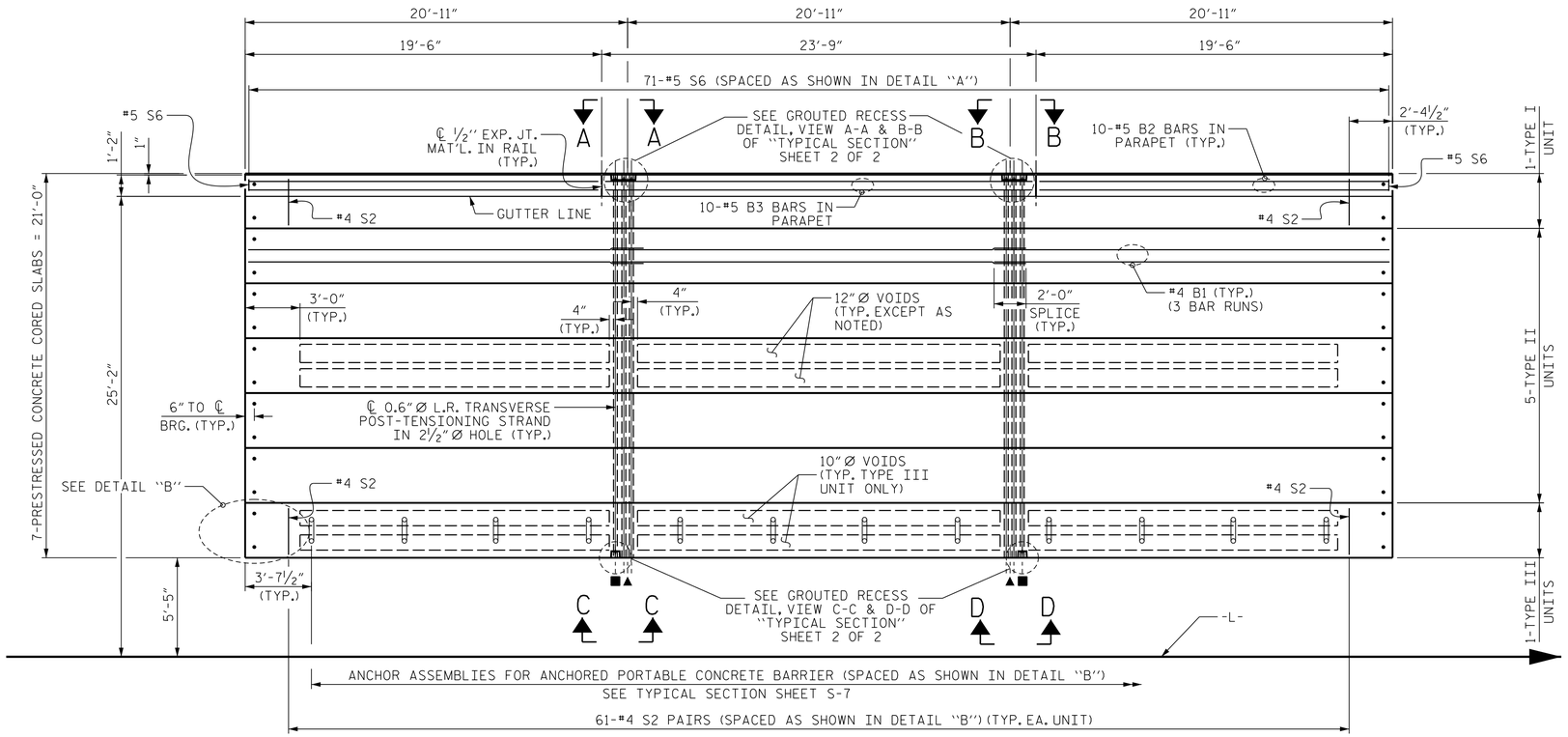
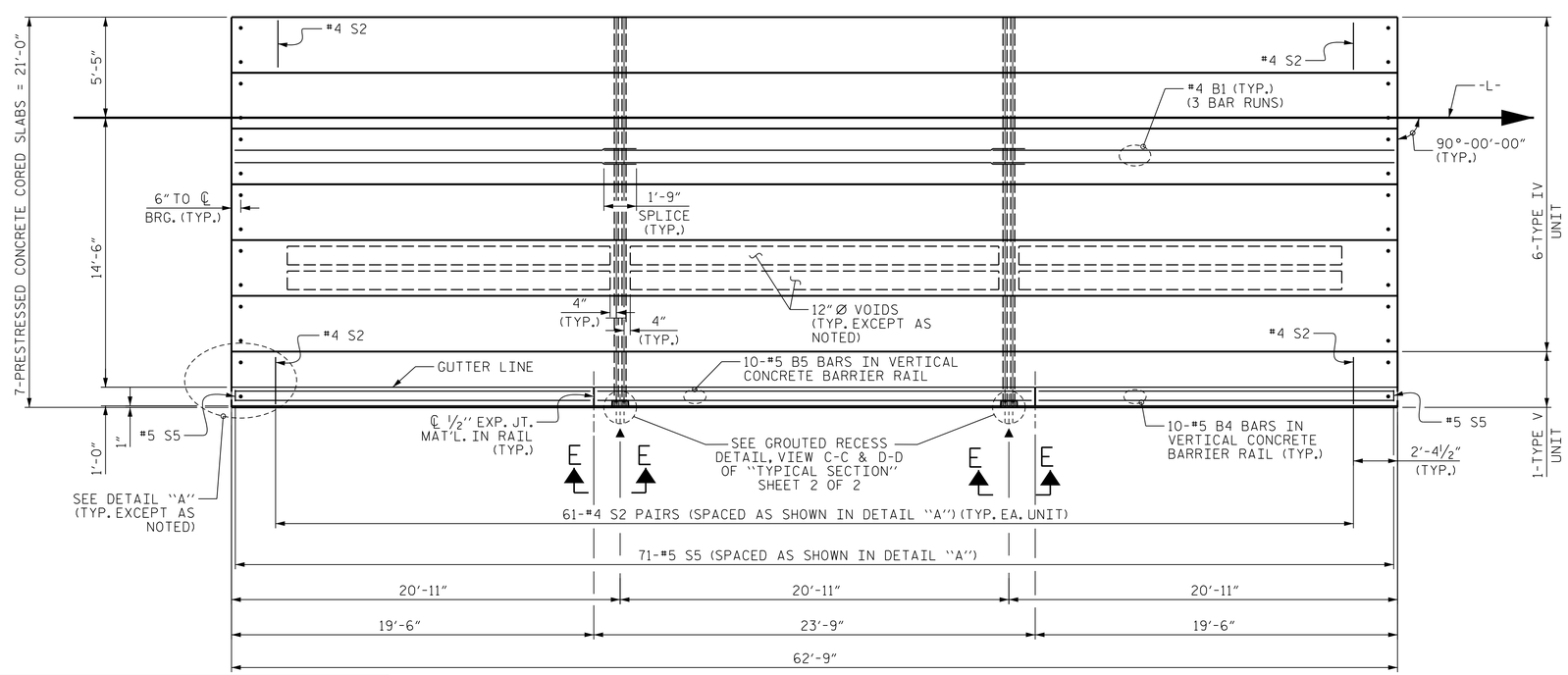
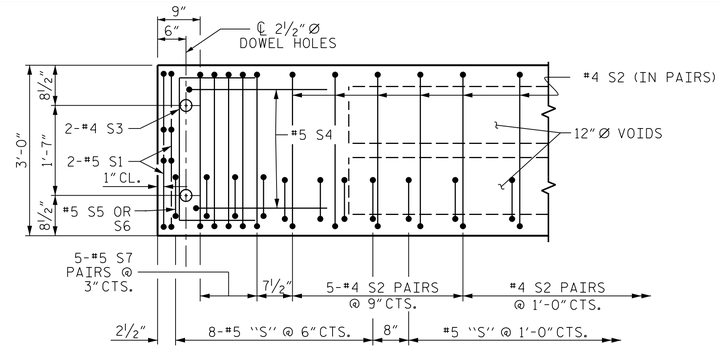


PLAN OF UNIT - STAGE I

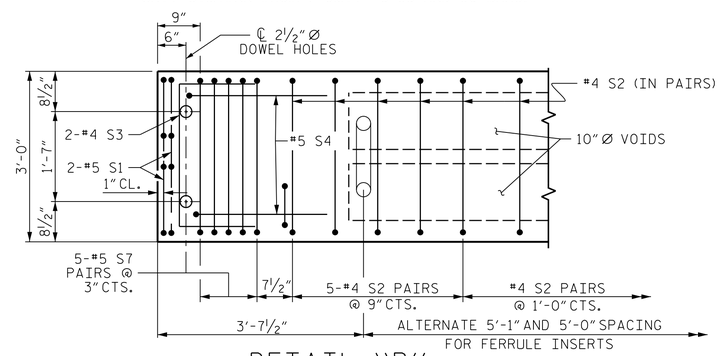


PLAN OF UNIT - STAGE II



DETAIL "A"

(TYPICAL EACH END OF UNIT EXCEPT AS NOTED)
NOTE: EXTERIOR UNIT SHOWN - TYPE II AND TYPE IV UNIT SIMILAR EXCEPT OMIT #5 S5 AND S6 BARS.



DETAIL "B"

(TYPICAL EACH END OF TYPE III UNIT)

NOTES:

■ STRAND #1 GOES THRU 7 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE I CONSTRUCTION)
(FILL RECESS HOLE OF SINGLE STRAND #1 ON SOUTH SIDE OF THE BRIDGE PRIOR TO BEGINNING OF STAGE II CONSTRUCTION)

▲ STRANDS #2 & #3 GO THRU ALL 14 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE II CONSTRUCTION)

STRANDS #1, #2 & #3 ARE 0.6 "Ø H.S. TRANSVERSE POST-TENSIONED STRANDS.

THE #4 S2, #5 S5, #5 S6 & #5 S7 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 2 1/2" HOLES.

THE #4 S2 & #5 S7 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO PROVIDE FERRULE INSERTS FOR TEMPORARY BARRIER RAIL ON CORED SLABS.

FOR VIEW A-A, B-B, C-C, D-D & E-E SEE SHEET S-8

NO FIELD DRILLING OF CORED SLAB ALLOWED EXCEPT FOR SIDEWALK ATTACHMENT PURPOSE.

PROJECT NO. R-5738
DARE COUNTY
STATION: 42+68.00 -L-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARZIN ASEFNIA
DocuSigned by: 0382A2CF...
4/3/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

Louis Berger
Prepared by: LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
NC COA No. F-0840

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			25

DRAWN BY :	S. DHOLAKIA	DATE :	06/17
CHECKED BY :	T. KIRSCHBAUM	DATE :	12/17
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	12/17

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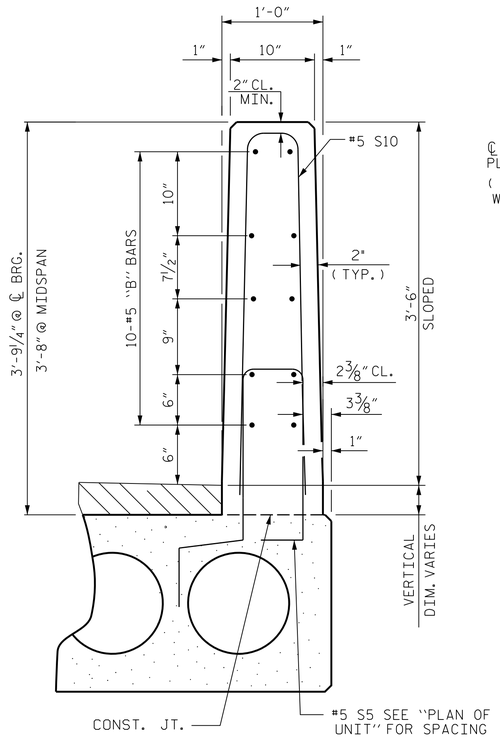
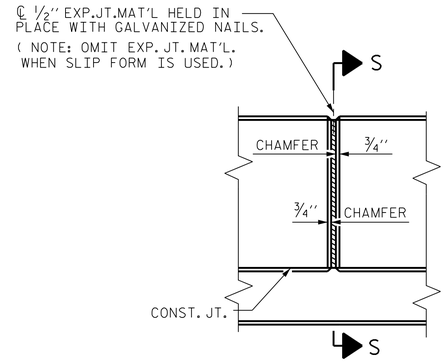
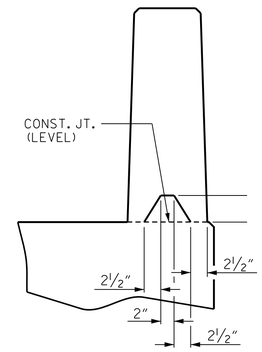


SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS

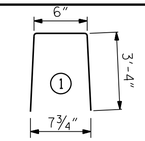
BARRIER RAIL DETAILS



SECTION S-S

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS FOR ONE EXTERIOR UNIT	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	62'-9" UNIT					
* B4	20		#5	STR	19'-2"	400
* B5	10		#5	STR	23'-5"	244
* S10	71		#5	1	7'-2"	531
* EPOXY COATED REINFORCING STEEL				LBS.		1175
CLASS AA CONCRETE				CU.YDS.		8.0
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		62.75

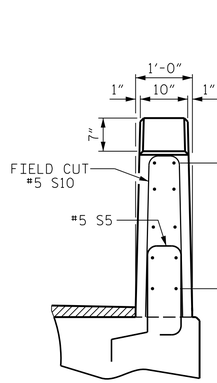
GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

29'-6" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS	
62'-9" UNITS		
	RIGHT GUTTERLINE	RAIL HEIGHT
EB1 @ ℄ BRG.	3¼"	3'-9¼"
EB2 @ ℄ BRG.	3¼"	3'-9¼"

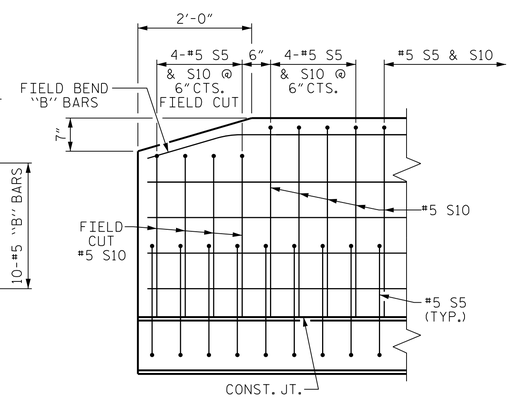
NOTES

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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. THE 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.



END VIEW



SIDE VIEW

END OF RAIL DETAILS

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

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NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER JOSHUA BRYAN ASEFMAN

DocuSigned by: 0382A2CF... 4/9/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

VERTICAL CONCRETE BARRIER RAIL ON CORED SLAB

Louis Berger

Prepared by:
LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
NC COA No. F-0840

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

SHEET NO. S-10

TOTAL SHEETS 25

ASSEMBLED BY : S. DHOLAKIA		DATE : 06/17	
CHECKED BY : T. KIRSCHBAUM		DATE : 12/17	
DRAWN BY : MAA 5/10	REV. 12/5/11		MAA/GM
CHECKED BY : GM 5/10	REV. 6/13		MAA/GM
	REV. 12/17		MAA/THC

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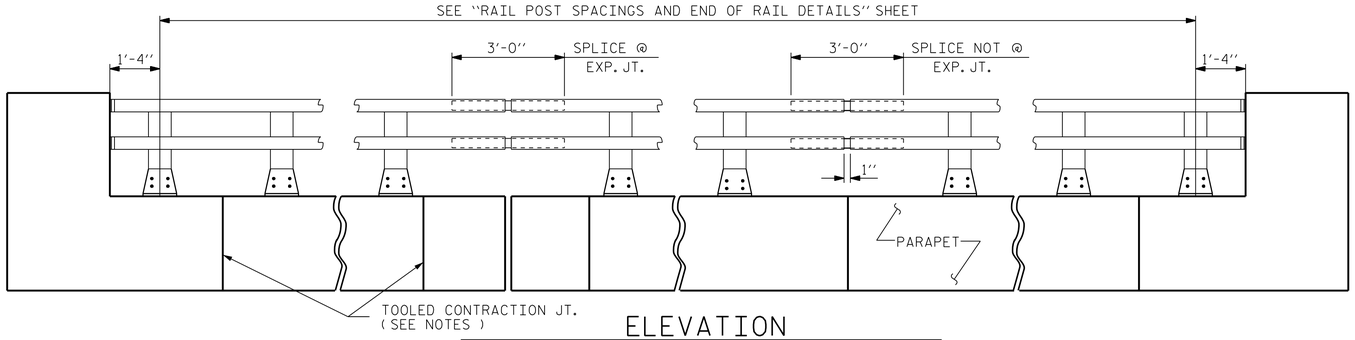
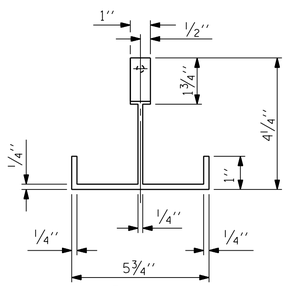
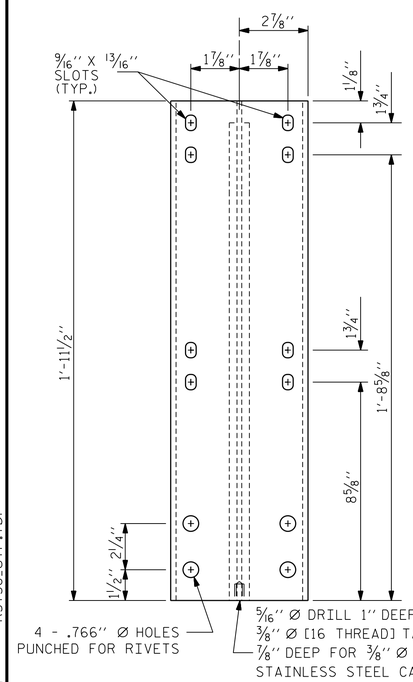


ELEVATION

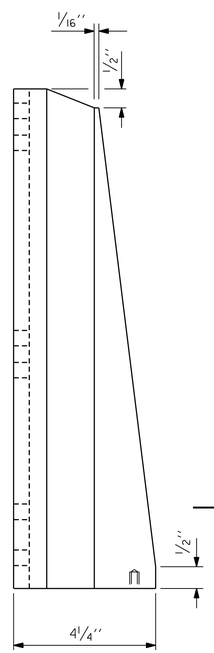
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 3 OF 4



PLAN

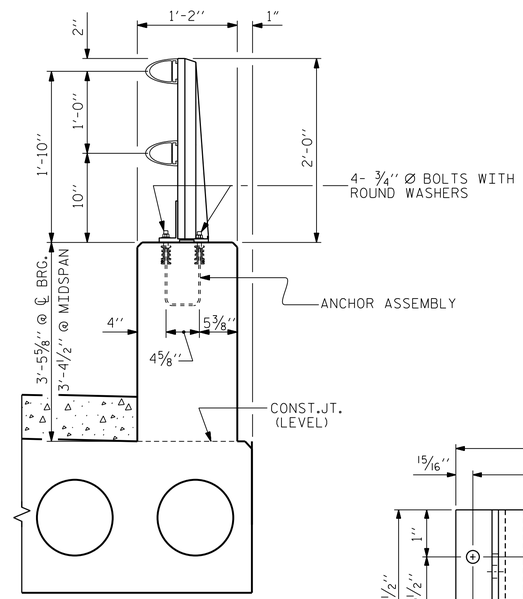


FRONT ELEVATION

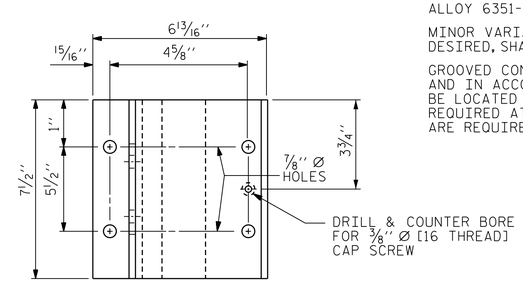


SIDE ELEVATION

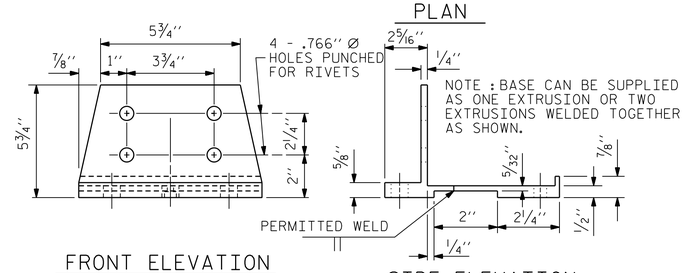
DETAILS OF POST



SECTION THRU PARAPET AND RAIL



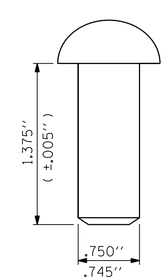
PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFDBRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

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

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

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

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 55.25 LIN. FT.

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

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SHEET 1 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER

Documents not considered final unless all signatures completed

0382A2CF-B4A0-4A0A-A3B0-A0A0A0A0A0A0

Signature: Shawn M. Kirschbaum

Date: 12/5/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

Louis Berger

Prepared by:
LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
NC COA No. F-0840

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			25

STD. NO. BMR3

ASSEMBLED BY : S. DHOLAKIA	DATE : 06/17
CHECKED BY : T. KIRSCHBAUM	DATE : 12/17

DRAWN BY : EEM 6/94	REV. 10/1/11	MAA/GM
CHECKED BY : RGW 6/94	REV. 6/13	MAA/GM
	REV. 12/17	MAA/THC

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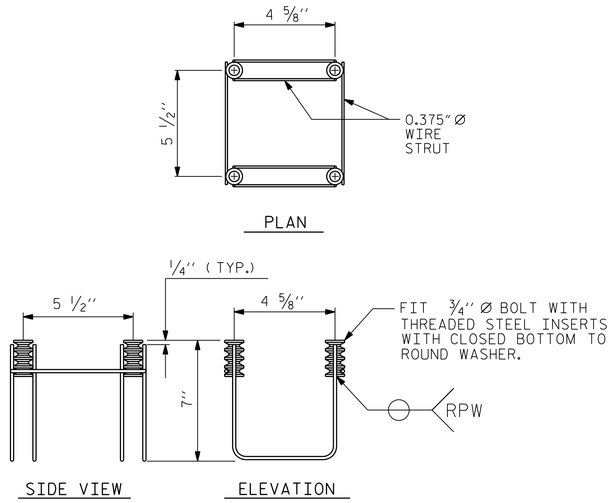


4-BOLT METAL RAIL ANCHOR ASSEMBLY

(12 ASSEMBLIES REQUIRED)

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2'' FOR 3/4'' FERRULES.

B. 4 - 3/4'' Ø X 2 1/2'' BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4'' Ø X 2 1/2'' GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

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

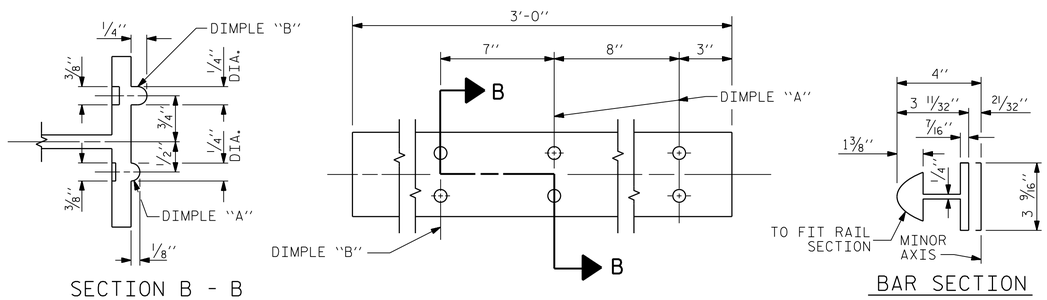
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

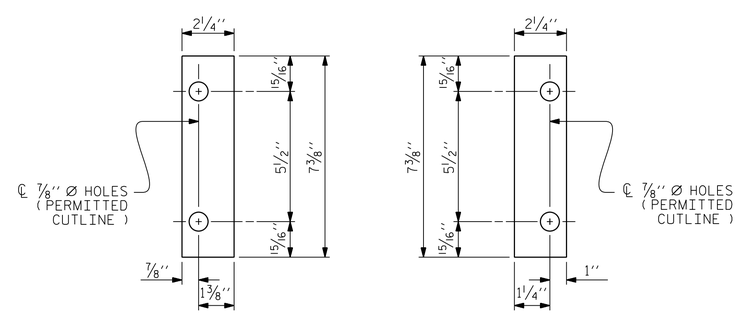
E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.

F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

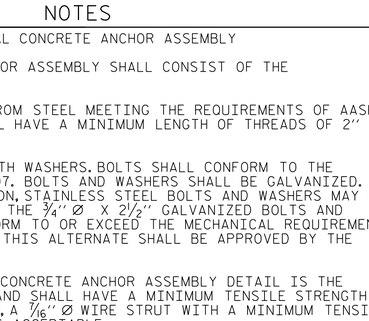
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



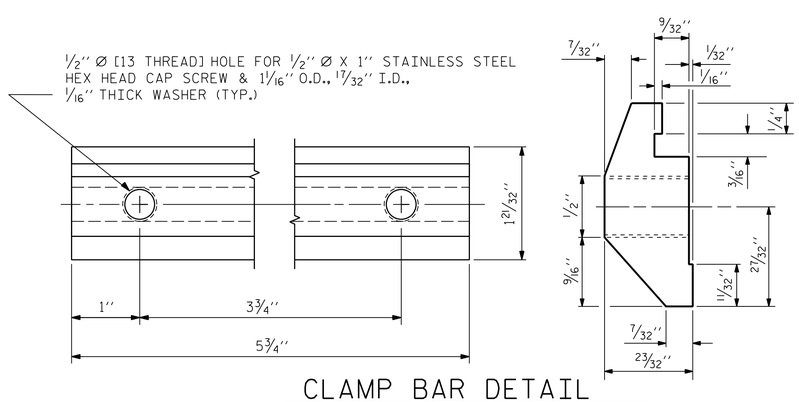


SHIM DETAILS

NOTE :
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

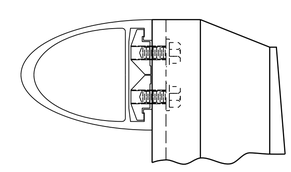


RAIL SECTION

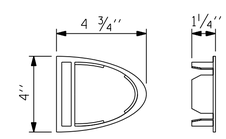


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

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SHEET 2 OF 4

SEAL 020103 NORTH CAROLINA PROFESSIONAL ENGINEER

Docu Signed by: 0382A2CF... 5/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S-12
1			3					TOTAL SHEETS
2			4					25

Louis Berger

Prepared by:
LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
NC COA No. F-0840

ASSEMBLED BY : S. DHOLAKIA		DATE : 06/17	
CHECKED BY : T. KIRSCHBAUM		DATE : 12/17	
DRAWN BY : EEM 6/94	REV. 5/1/06R	KMM/GM	
CHECKED BY : RGW 6/94	REV. 10/1/11	MAA/GM	
	REV. 12/17	MAA/THC	

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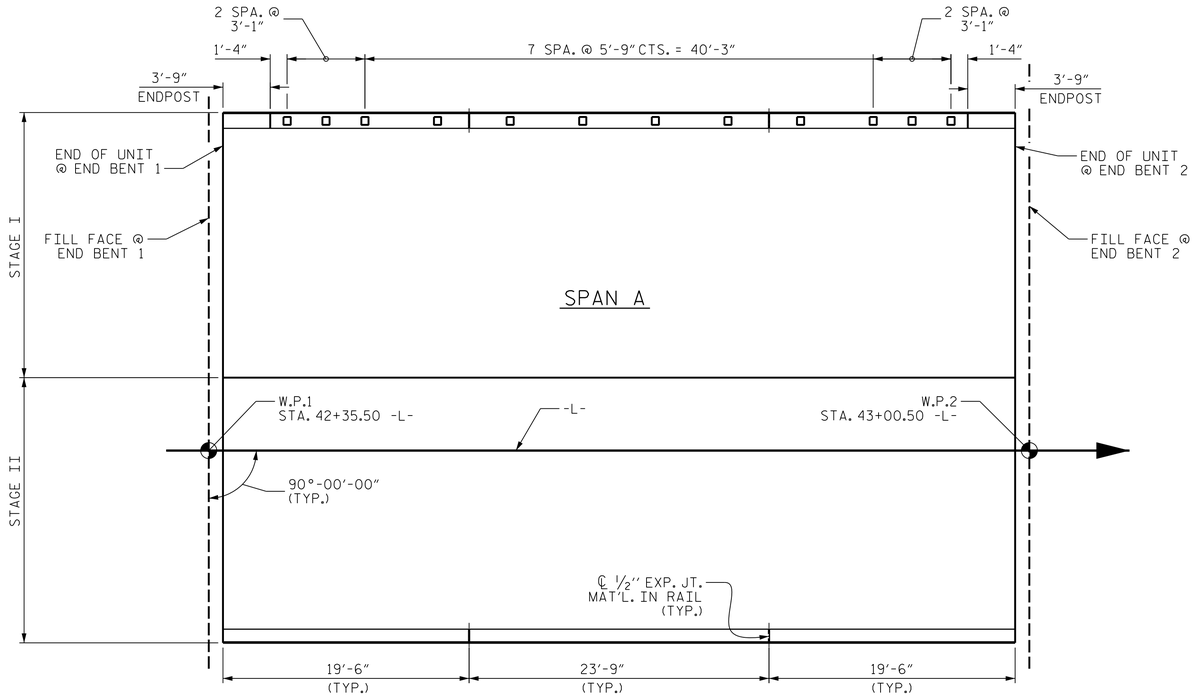
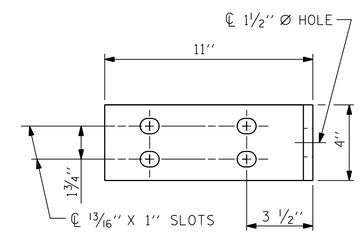
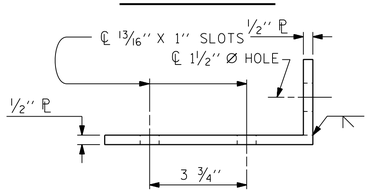


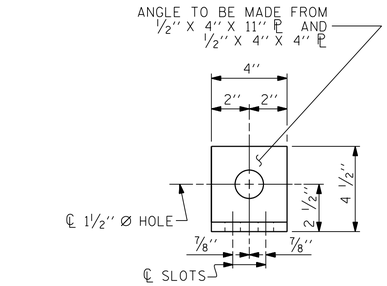
PLAN OF RAIL POST SPACINGS



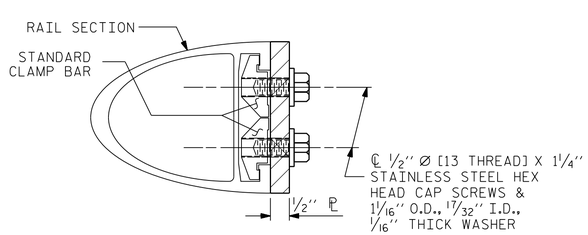
ELEVATION



TOP VIEW

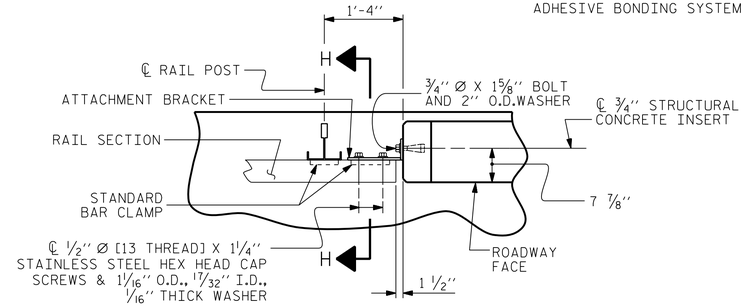


END VIEW (FIX AND EXP.)

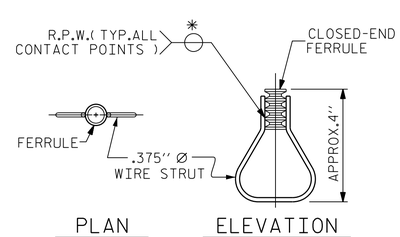


SECTION H-H (FIX)

FIXED



PLAN - RAIL AND END POST



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

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

DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES

STRUCTURAL CONCRETE INSERT

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

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".

B. 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

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

NOTES

METAL RAIL TO END POST CONNECTION

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

A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4"Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4"Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.

C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).

E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4"Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4"Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PROJECT NO. R-5738
DARE COUNTY
STATION: 42+68.00 -L-

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SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER
DocuSigned by: 0362A2CF... 4/25/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
RAIL POST SPACINGS AND END OF RAIL DETAILS
FOR ONE OR TWO BAR METAL RAILS

Prepared by: LOUIS BERGER 1001 Wade Avenue, Suite 400 Raleigh, NC 27605-3322 NC COA No. F-0840

REVISIONS						
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1			3			
2			4			

SHEET NO. S-13
TOTAL SHEETS 25

ASSEMBLED BY : S. DHOLAKIA DATE : 06/17
CHECKED BY : T. KIRSCHBAUM DATE : 12/17

DRAWN BY : FCJ 1/88
CHECKED BY : CRK 3/89

REV. 5/1/06 TLA/GM
REV. 10/1/11 MAA/GM
REV. 12/17 MAA/THC

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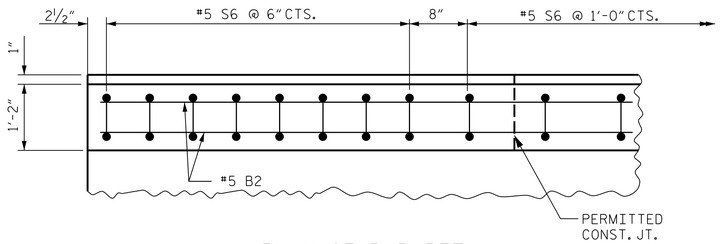
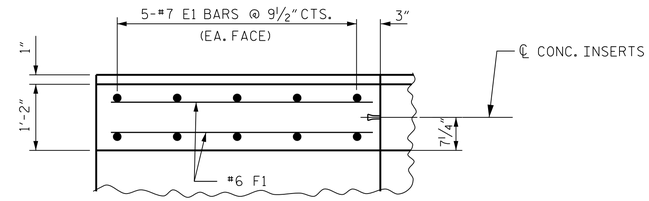
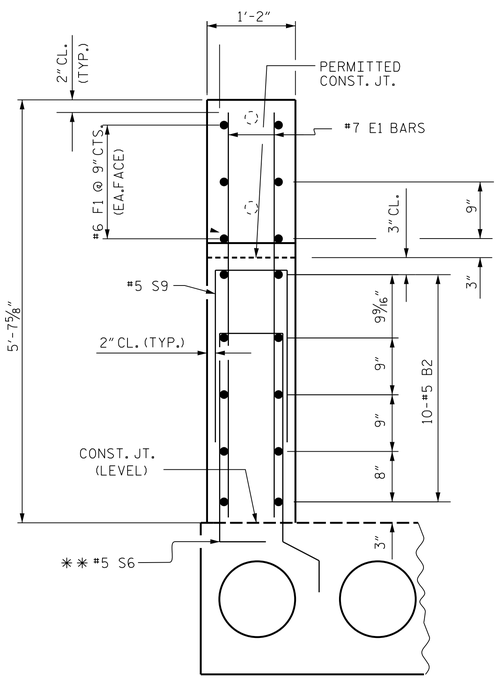


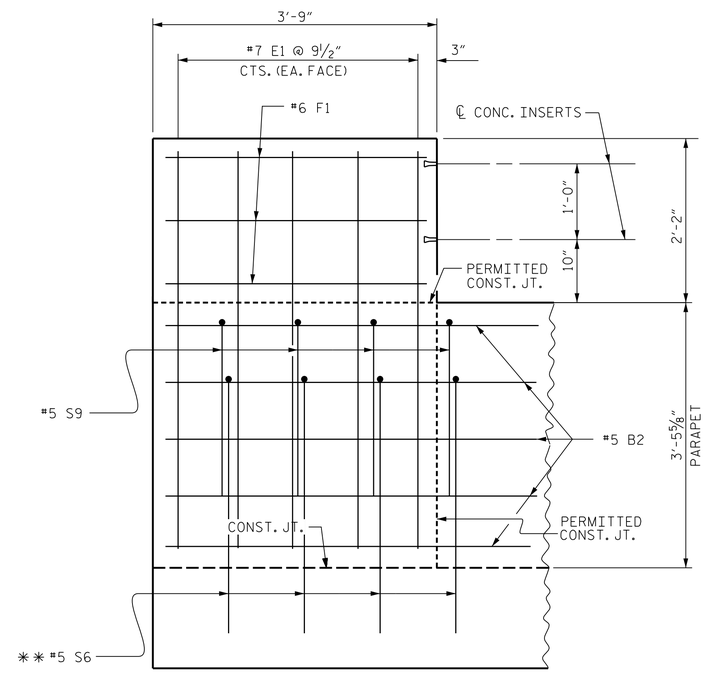
PLAN OF PARAPET



PLAN OF END POST



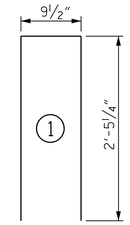
END VIEW



ELEVATION

PARAPET AND END POST FOR TWO BAR METAL RAIL

** SEE "PLAN OF SPAN" DETAIL FOR #5 S6 BAR SPACING



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
PARAPET AND END POST

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B2	20	#5	STR	19'-2"	400
* B3	10	#5	STR	23'-5"	244
* E1	20	#7	STR	5'-4"	218
* F1	12	#6	STR	3'-5'	62
* S9	71	#5	1	5'-8"	420
* EPOXY COATED REINFORCING STEEL				LBS.	1344
CLASS AA CONCRETE				C.Y.	10.00
CONCRETE PARAPET				LIN. FT.	62.75

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

SHEET 4 OF 4

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NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARZIN ASEFNIA

DocuSigned by: 0382A2C5...

4/9/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE PARAPET AND PARAPET ENDPOST DETAILS FOR TWO BAR METAL RAIL

Louis Berger

Prepared by:
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Raleigh, NC 27605-3322
NC COA No. F-0840

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

SHEET NO. S-14

TOTAL SHEETS 25

DRAWN BY :	S. DHOLAKIA	DATE :	06/17
CHECKED BY :	T. KIRSCHBAUM	DATE :	12/17
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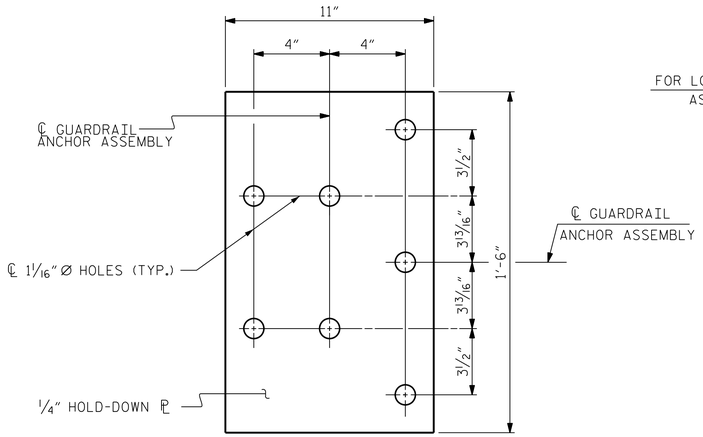
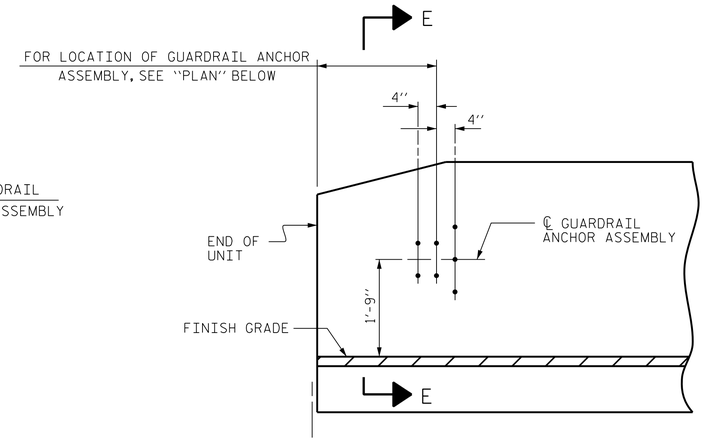


PLAN



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.)

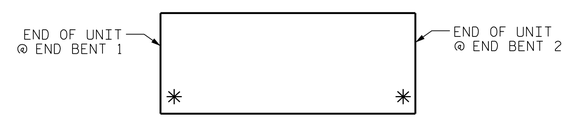
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

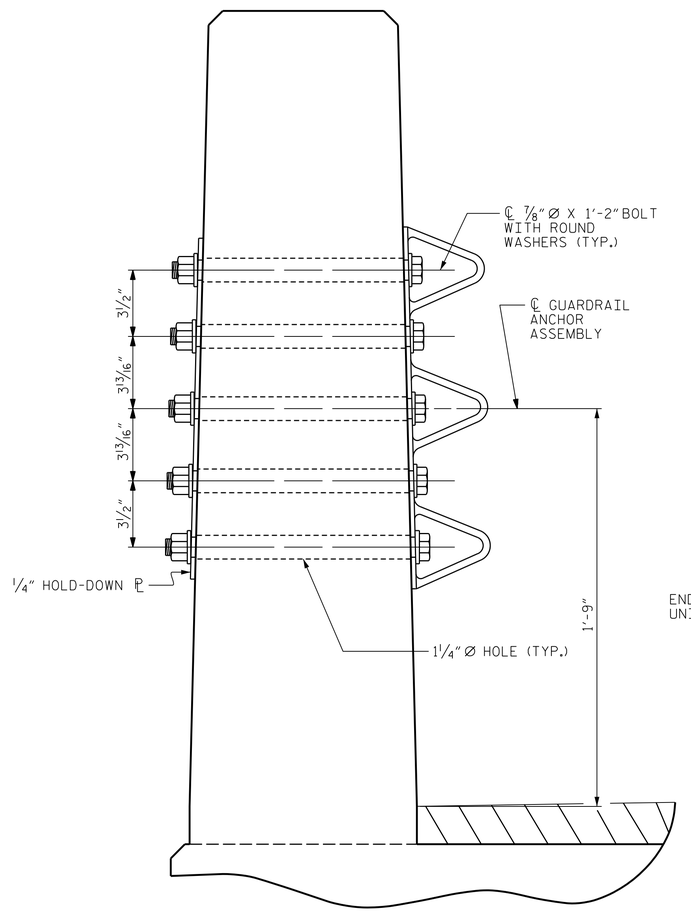
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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.



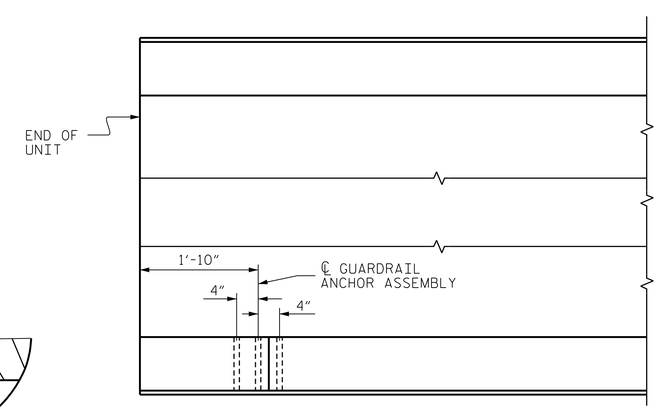
SKETCH SHOWING POINTS OF ATTACHMENT

✳ LOCATION OF GUARDRAIL ATTACHMENT



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

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NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARHAD ASEFNIA

DocuSigned by: Farhad Asefnia 0382A2CF... 12/5/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

Louis Berger

Prepared by:
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NC COA No. F-0840

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DRAWN BY :	S. DHOLAKIA	DATE :	06/17
CHECKED BY :	T. KIRSCHBAUM	DATE :	12/17
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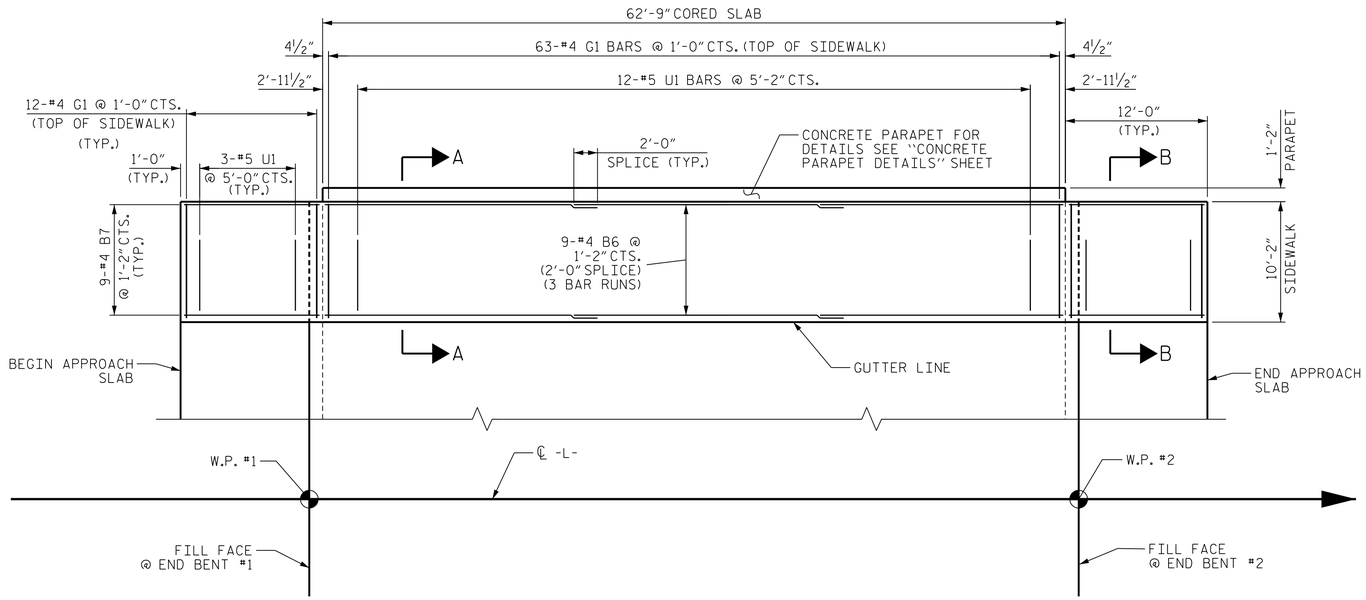
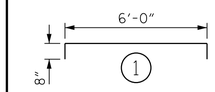


PLAN OF SIDEWALK

FOR APPROACH SLAB, SEE "BRIDGE APPROACH SLAB" SHEETS

BAR TYPES



BILL OF MATERIAL

SIDEWALK STAGE I

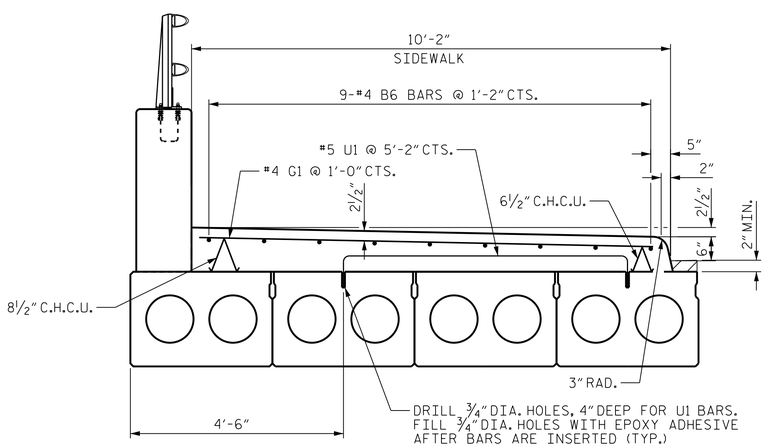
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳U1	18	#5	1	7'-4"	138
✳G1	87	#4	STR	9'-7"	557
✳B6	27	#4	STR	22'-2"	400
✳B7	18	#4	STR	11'-8"	140
REINFORCING STEEL				LBS.	000
✳EPOXY COATED REINFORCING STEEL				LBS.	1235
CLASS AA CONCRETE				C.Y.	27.2

NOTES:

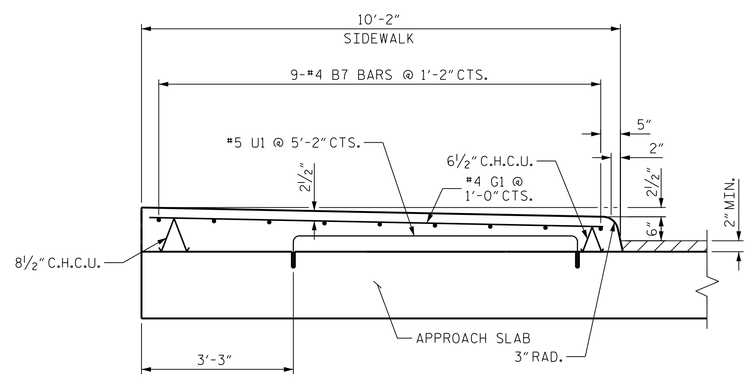
ALL REINFORCING STEEL IN THE SIDEWALKS SHALL BE EPOXY COATED.

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

SIDEWALKS ON THE BRIDGE EXTENDING TO THE END OF THE APPROACH SLABS ARE PAID FOR AS PART OF THE CLASS AA CONCRETE AND EPOXY COATED REINFORCING STEEL PAY ITEMS.



SECTION A-A



SECTION B-B

PROJECT NO. R-5738

DARE COUNTY

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NORTH CAROLINA PROFESSIONAL SEAL 020103 FARHAN ASEFNIA

Docu Signed by: Farhan Asefnia 0382A2CF... 4/25/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

SIDEWALK CONSTRUCTION DETAILS

Louis Berger

Prepared by:
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Raleigh, NC 27605-3322
NC COA No. F-0840

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SHEET NO. S-16

TOTAL SHEETS 25

DRAWN BY :	S. DHOLAKIA	DATE :	09/17
CHECKED BY :	J. YANNACCONE	DATE :	12/17
DESIGN ENGINEER OF RECORD :	F. ASEFNIA	DATE :	12/17

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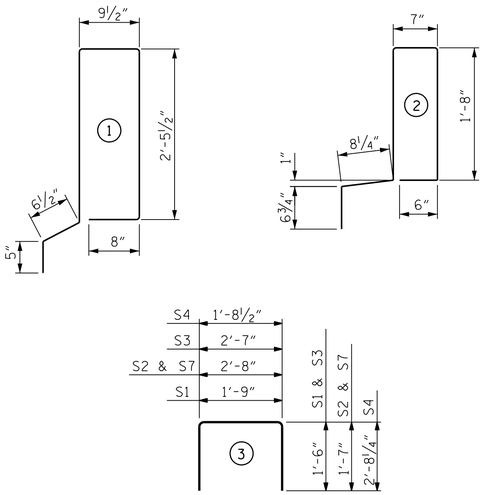
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE 62'-9" CORED SLAB UNIT

				STAGE I						STAGE II			
				TYPE I UNIT		TYPE II UNIT		TYPE III UNIT		TYPE IV UNIT		TYPE V UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
✳ B1	6	#4	STR	22'-2"	89	22'-2"	89	22'-2"	89	22'-2"	89	22'-2"	89
✳ B3	12	#3	STR	-	-	-	-	2'-8"	12	-	-	-	-
✳ S1	8	#5	3	4'-9"	40	4'-9"	40	4'-9"	40	4'-9"	40	4'-9"	40
✳ S2	122	#4	3	5'-10"	475	5'-10"	475	5'-10"	475	5'-10"	475	5'-10"	475
✳ S3	4	#4	3	5'-7"	15	5'-7"	15	5'-7"	15	5'-7"	15	5'-7"	15
✳ S4	4	#5	3	7'-1"	30	7'-1"	30	7'-1"	30	7'-1"	30	7'-1"	30
✳ S5	71	#5	2	-	-	-	-	-	-	-	-	5'-8"	420
✳ S6	71	#5	1	7'-4"	543	-	-	-	-	-	-	-	-
✳ S7	20	#5	3	5'-10"	122	5'-10"	122	5'-10"	122	5'-10"	122	5'-10"	122
✳ EPOXY COATED REINFORCING STEEL			LBS.	1314		771		783		771		1,191	
6,000 P.S.I. CONCRETE			CU. YDS.	10.8		10.7		11.7		10.6		10.7	
0.6" Ø L.R. STRANDS			NO.	24		24		24		24		24	

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 2" Ø BACKER ROD 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.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

PRESTRESSED CONCRETE CORED SLAB UNIT SHALL CALCIUM NITRITE CORROSION INHIBITORS. SEE SPECIAL PROVISIONS FOR CALCIUM NITRITE CORROSION INHIBITORS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S2 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

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.

CONCRETE RELEASE STRENGTH

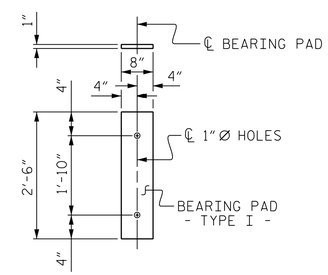
UNIT	PSI
62'-9" UNIT	5,000

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

CORED SLABS REQUIRED

SPAN "A"		NUMBER	LENGTH	TOTAL LENGTH
STAGE I	TYPE I UNIT	1	62'-9"	62'-9"
	TYPE II UNIT	5	62'-9"	313'-9"
	TYPE III UNIT	1	62'-9"	62'-9"
STAGE II	TYPE IV UNIT	6	62'-9"	376'-6"
	TYPE V UNIT	1	62'-9"	62'-9"
TOTAL	-	14	-	878'-6"



FIXED END
(TYPE I - 28 REQ'D)

DEAD LOAD DEFLECTION AND CAMBER

	STAGE I			STAGE II	
	0.6" Ø L.R. STRANDS				
	TYPE I UNIT	TYPE II UNIT	TYPE III UNIT	TYPE IV UNIT	TYPE V UNIT
CAMBRER (SLAB ALONE IN PLACE)	1⅞" ↑	1⅞" ↑	1 13/16" ↑	1⅞" ↑	1⅞" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ✳✳	¾" ↓	¾" ↓	¾" ↓	¾" ↓	¾" ↓
FINAL CAMBER	1⅛" ↑	1⅛" ↑	1 1/16" ↑	1⅛" ↑	1⅛" ↑

✳✳ INCLUDES FUTURE WEARING SURFACE

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

PROJECT NO. R-5738
DARE COUNTY
STATION: 42+68.00 -L-

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NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARSHIN ASEFNIA
DocuSigned by: Farshin Asefnia 0382A2CF... 6/25/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE COMPONENT
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

Louis Berger
Prepared by:
LOUIS BERGER
1001 Wade Avenue, Suite 400
Raleigh, NC 27605-3322
NC COA No. F-0840

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-17
1			3				TOTAL SHEETS
2			4				25

DRAWN BY :	S. DHOLAKIA	DATE :	06/17
CHECKED BY :	T. KIRSCHBAUM	DATE :	12/17
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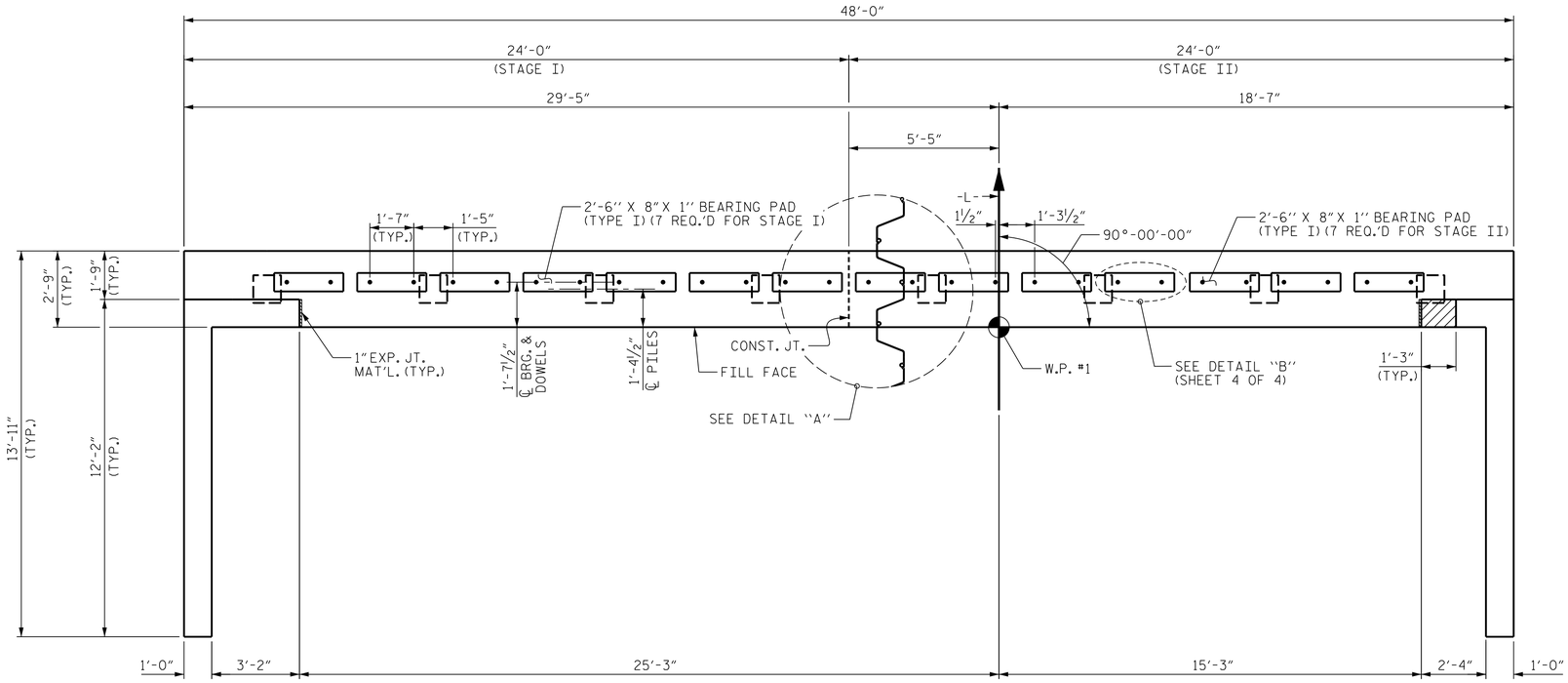
NOTES

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

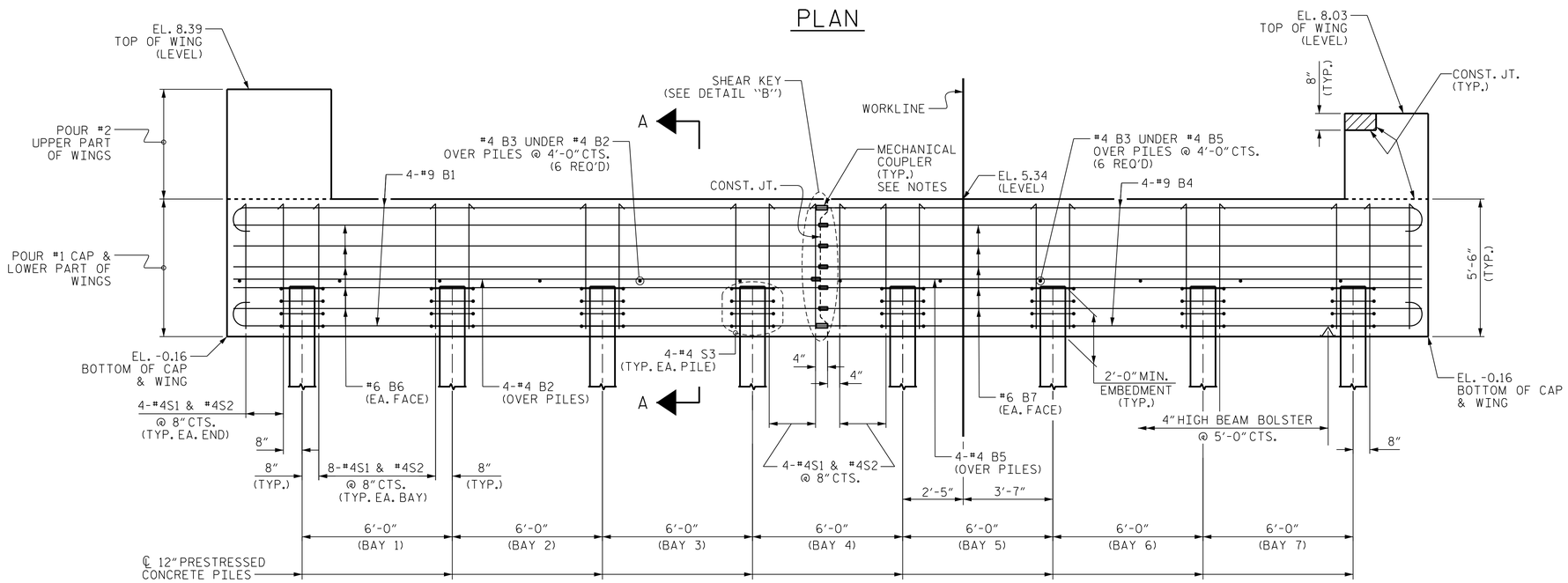
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAILIS CAST IF SLIP FORMING IS USED.

FOR WING DETAILS, SEE SHEET 3 OF 4.

FOR MECHANICAL COUPLERS FOR REINFORCING STEEL. SEE ARTICLE 425-5 OF THE STANDARD SPECIFICATION.

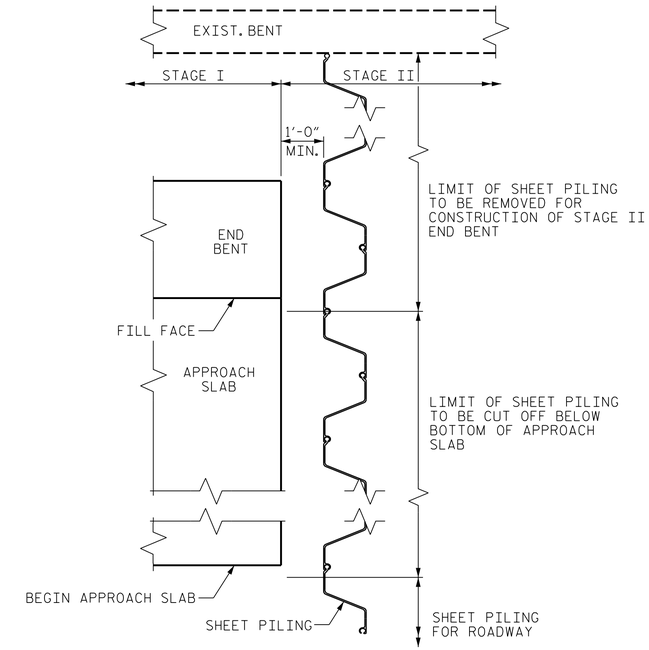


PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4



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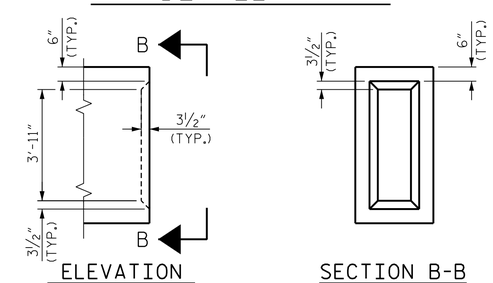

ELEVATION

SECTION B-B

DETAIL "B"

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

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SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT NO. 1

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARHAD ASEFNIA

Docu...
0382A2CF...
5/23/2018

Louis Berger

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NC COA No. F-0840

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1			3				S-18	
2			4				TOTAL SHEETS	
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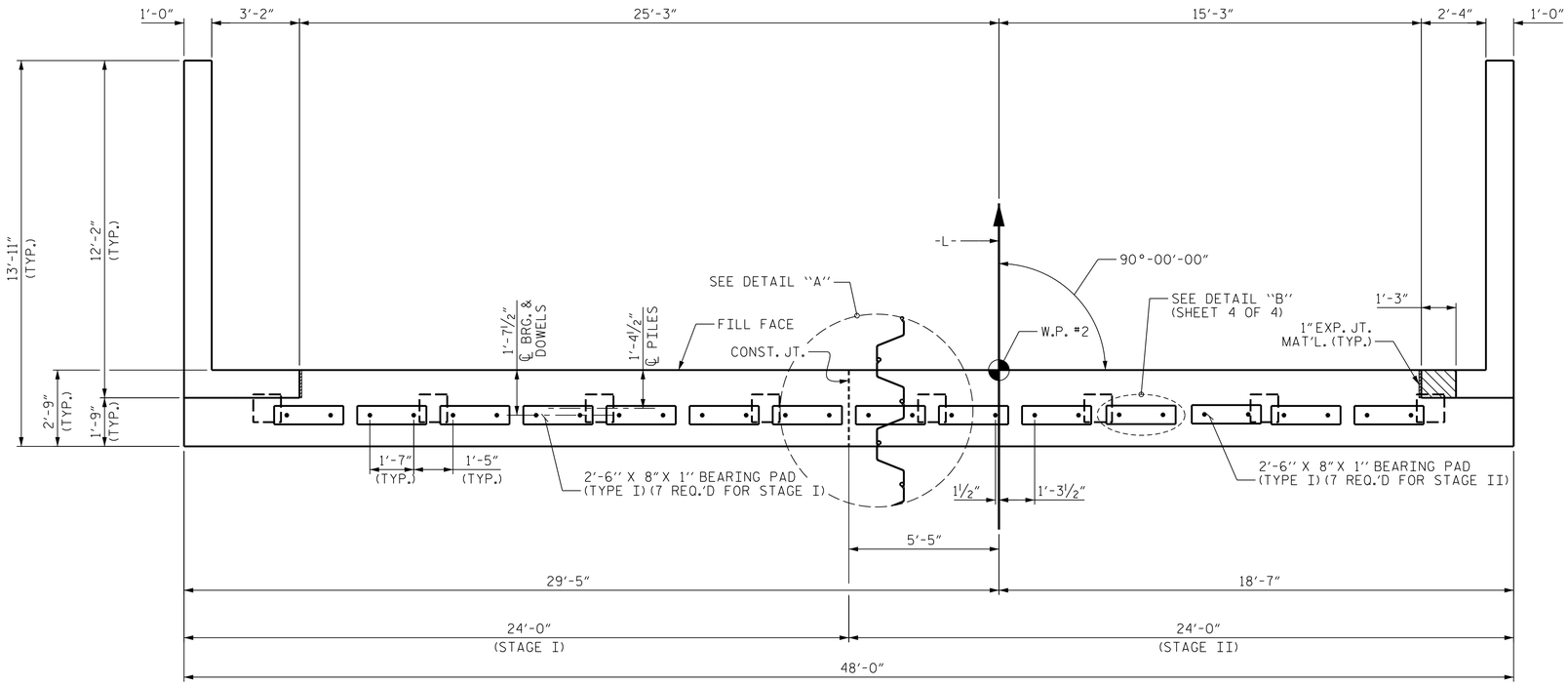
NOTES

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 RAILIS CAST IF SLIP FORMING IS USED.

FOR WING DETAILS, SEE SHEET 3 OF 4.

FOR MECHANICAL COUPLERS FOR REINFORCING STEEL. SEE ARTICLE 425-5 OF THE STANDARD SPECIFICATION.



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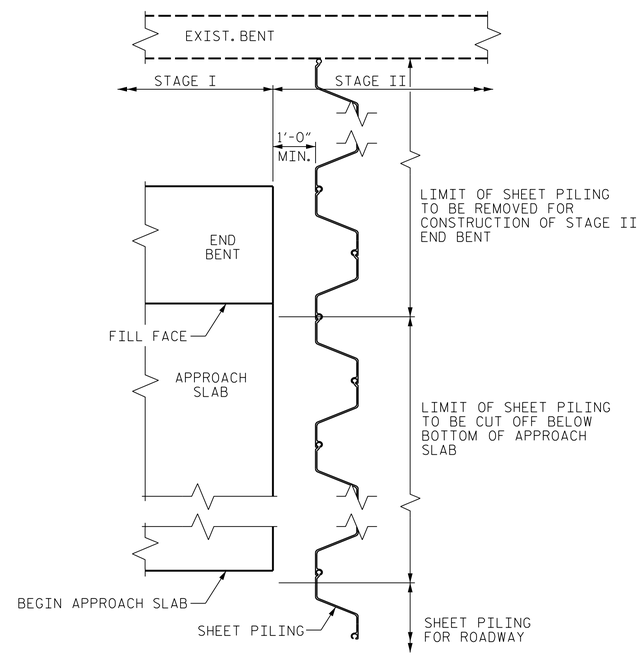

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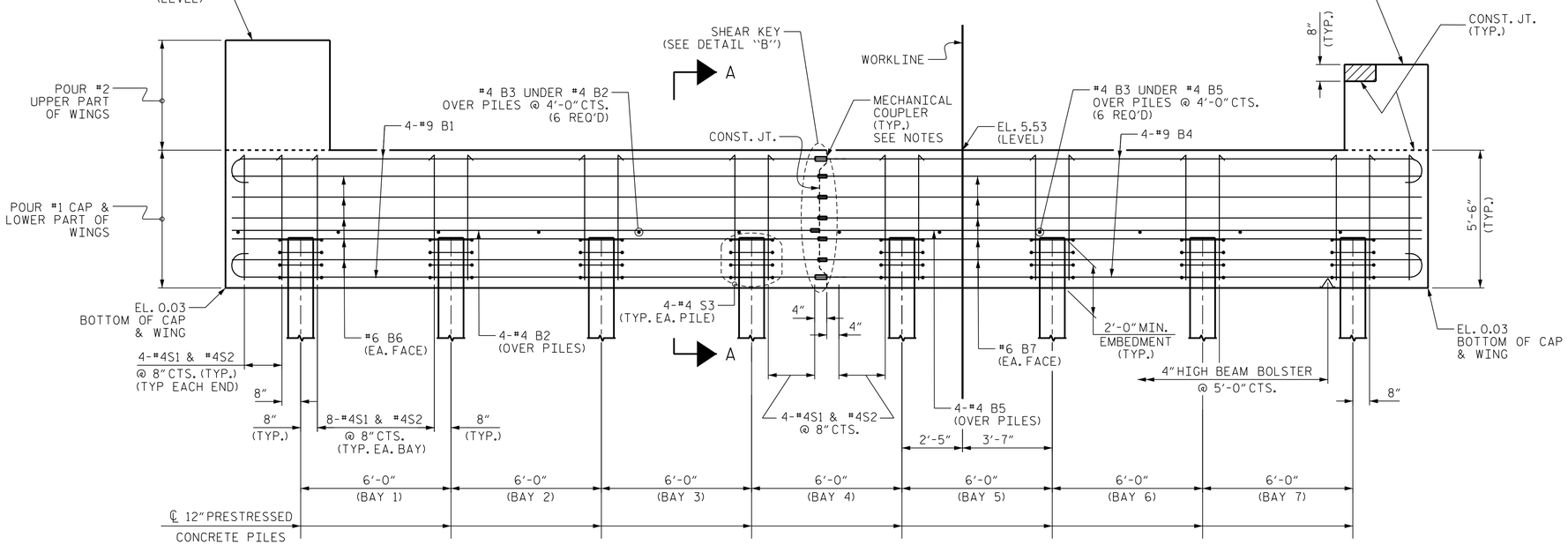
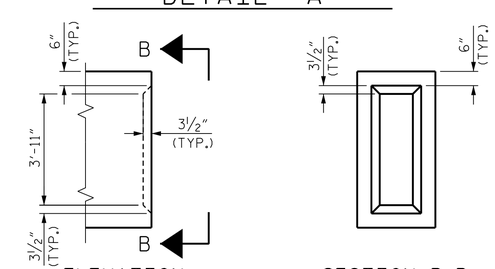


ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4



ELEVATION

SECTION B-B

DETAIL "B"

PROJECT NO. R-5738B

DARE COUNTY

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SHEET 2 OF 4

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NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARIBORZ ASEFNIA

DocuSigned by: 0382A2CF... 12/3/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT NO. 2

Louis Berger

Prepared by:
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Raleigh, NC 27605-3322
NC COA No. F-0840

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2			4			

SHEET NO. S-19

TOTAL SHEETS 25

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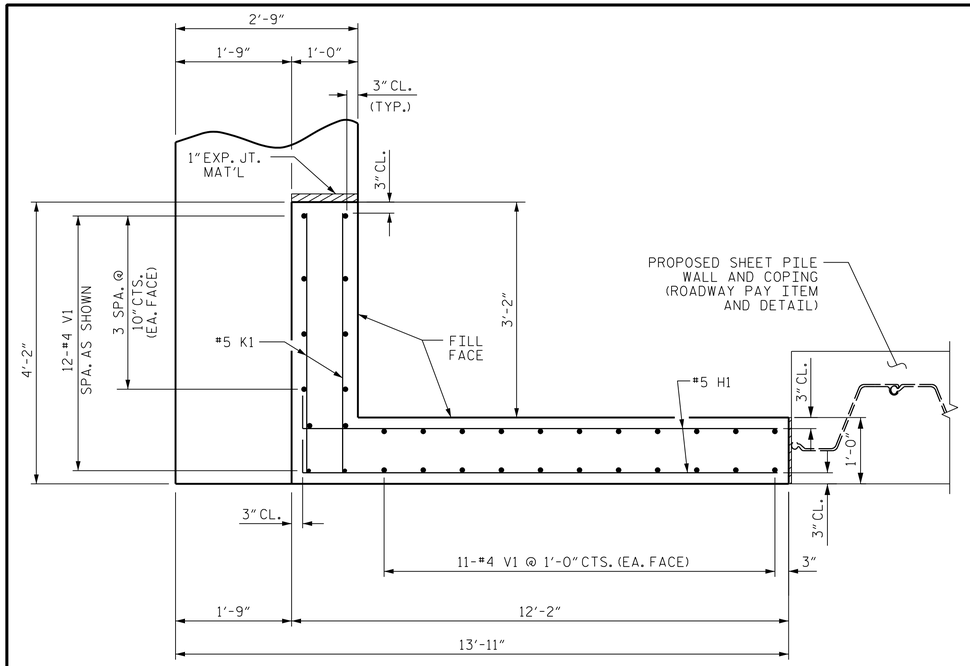
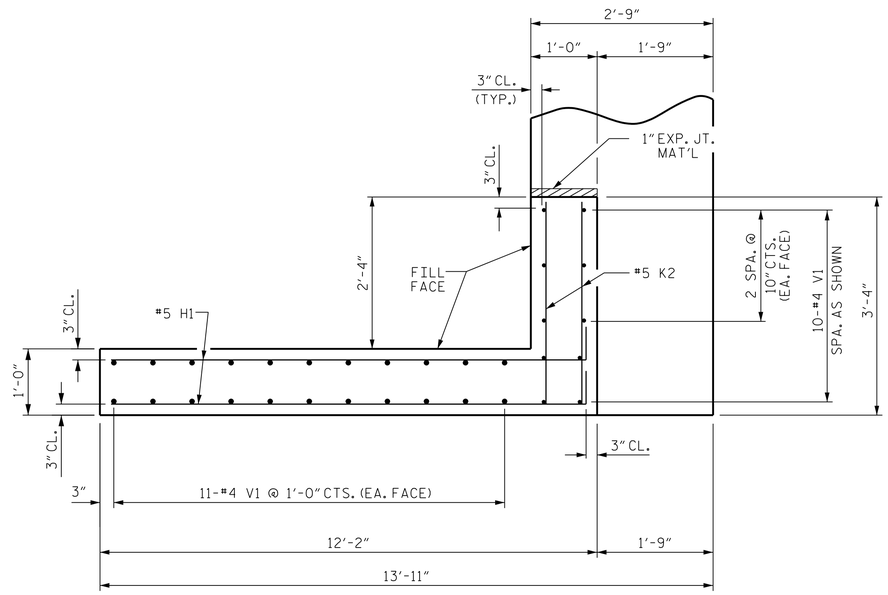


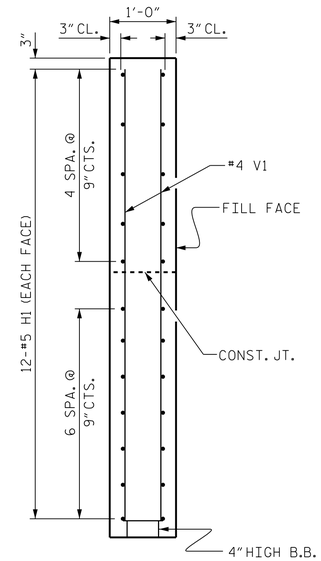
PLAN OF WING

(STAGE I- END BENT 1 SHOWN, END BENT 2 SIMILAR)



PLAN OF WING

(STAGE II- END BENT 1 SHOWN, END BENT 2 SIMILAR)



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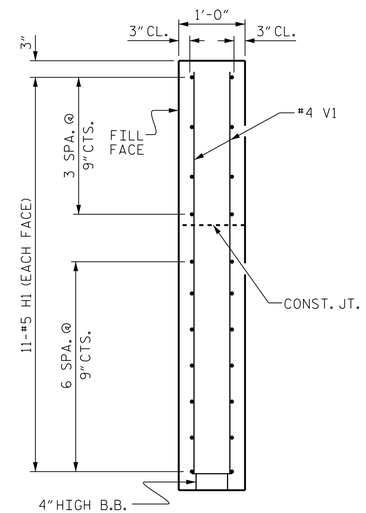
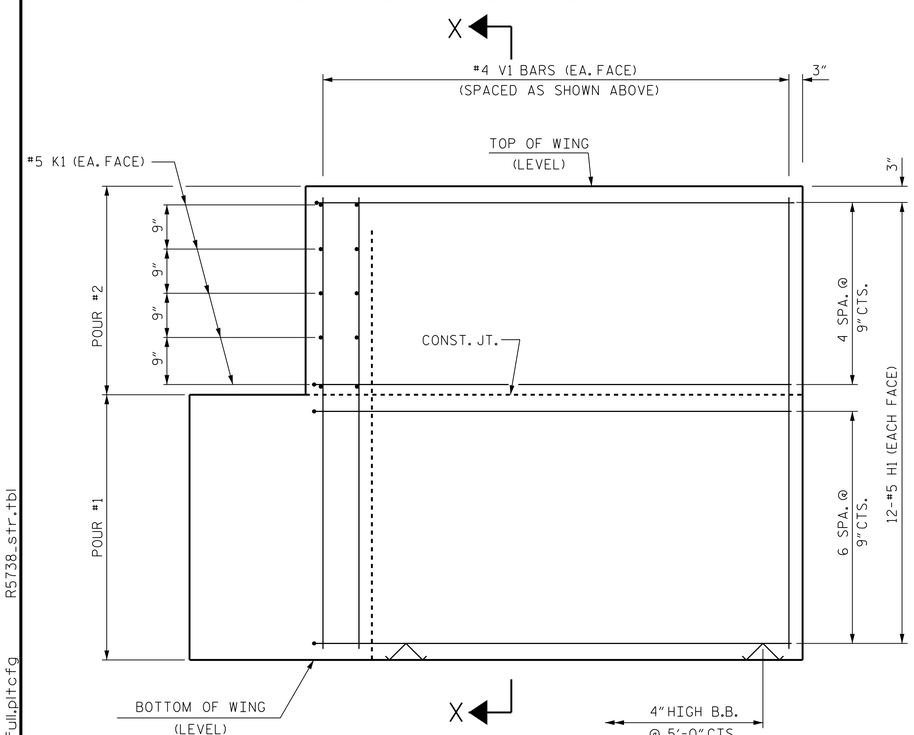
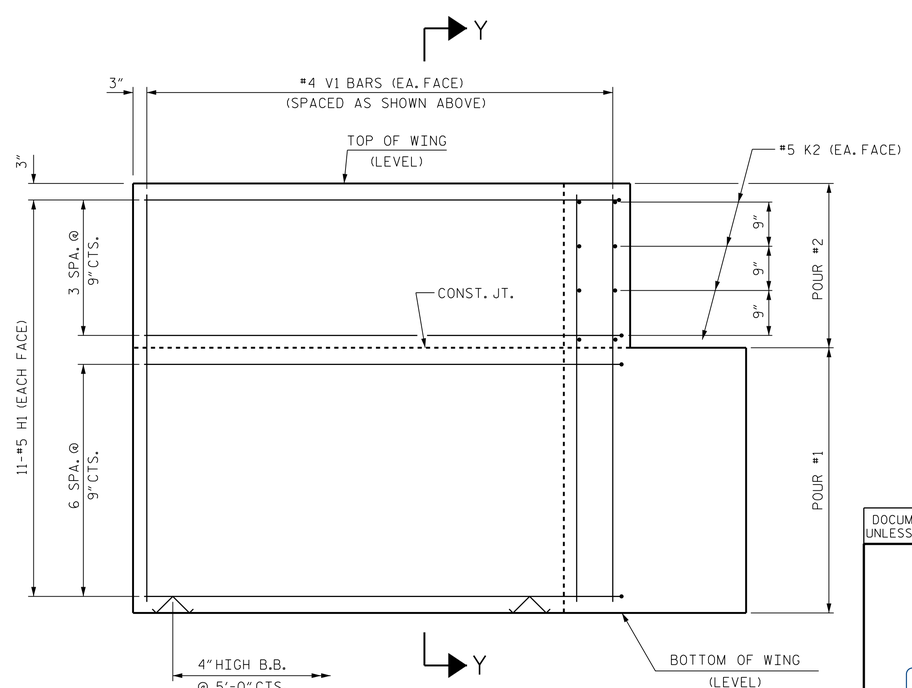


SECTION Y-Y



ELEVATION OF WING

(STAGE I- END BENT 1 SHOWN, END BENT 2 SIMILAR)



ELEVATION OF WING

(STAGE II- END BENT 1 SHOWN, END BENT 2 SIMILAR)

WING DETAILS

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

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SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARHAD ASEFNIA

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4/25/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT
WING DETAILS

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

SHEET NO. S-20

TOTAL SHEETS 25

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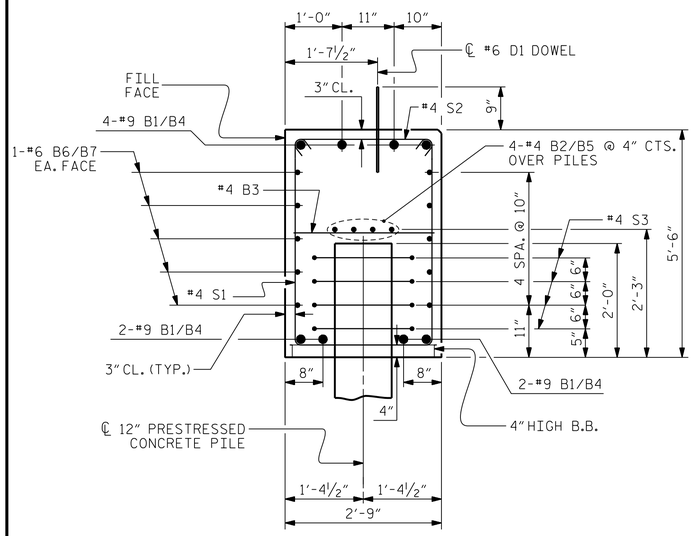
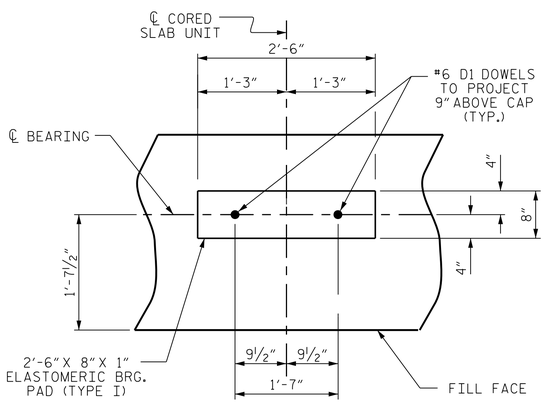


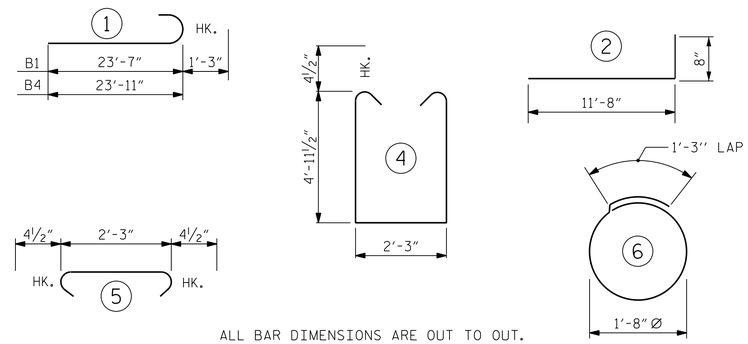
SECTION A-A



DETAIL "B"

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PILE DRIVING EQUIPMENT SETUP FOR 12"PC PILES @ END BENT 1 NO: 8	PILE DRIVING EQUIPMENT SETUP FOR 12"PC PILES @ END BENT 2 NO: 8	END BENT No. 1 12"PC PILES NO: 08 LIN. FT.= 320.0 END BENT No. 2 12"PC PILES NO: 08 LIN. FT.= 320.0

BILL OF MATERIAL-END BENT 1

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	8	#9	1	24'-10"	675
✳ B2	4	#4	STR	23'-4"	62
✳ B3	6	#4	STR	2'-3"	9
✳ B6	10	#6	STR	23'-7"	354
✳ D1	14	#6	STR	1'-6"	32
✳ H1	24	#5	2	12'-4"	309
✳ K1	10	#5	STR	3'-8"	38
✳ S1	32	#4	4	12'-11"	276
✳ S2	32	#4	5	3'-0"	64
✳ S3	16	#4	6	6'-6"	70
✳ V1	34	#4	STR	8'-7"	195
✳ EPOXY COATED REINFORCING STEEL					2084 LBS.

CLASS AA CONCRETE BREAKDOWN
POUR #1 CAP & LOWER PART OF WING 15.7 C.Y.
POUR #2 UPPER PART OF WING 2.0 C.Y.
TOTAL CLASS AA CONCRETE 17.7 C.Y.

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B4	8	#9	1	25'-2"	685
✳ B5	4	#4	STR	24'-3"	65
✳ B3	6	#4	STR	2'-3"	9
✳ B7	10	#6	STR	23'-11"	359
✳ D1	14	#6	STR	1'-6"	32
✳ H1	22	#5	2	12'-4"	283
✳ K2	8	#5	STR	2'-10"	24
✳ S1	32	#4	4	12'-11"	276
✳ S2	32	#4	5	3'-0"	64
✳ S3	16	#4	6	6'-6"	70
✳ V1	32	#4	STR	7'-8"	164
✳ EPOXY COATED REINFORCING STEEL					2031 LBS.

CLASS AA CONCRETE BREAKDOWN
POUR #1 CAP & LOWER PART OF WING 15.7 C.Y.
POUR #2 UPPER PART OF WING 1.5 C.Y.
TOTAL CLASS AA CONCRETE 17.2 C.Y.

BILL OF MATERIAL-END BENT 2

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	8	#9	1	24'-10"	675
✳ B2	4	#4	STR	23'-4"	62
✳ B3	6	#4	STR	2'-3"	9
✳ B6	6	#6	STR	23'-7"	354
✳ D1	14	#6	STR	1'-6"	32
✳ H1	24	#5	2	12'-4"	309
✳ K1	10	#5	STR	3'-8"	38
✳ S1	32	#4	4	12'-11"	276
✳ S2	32	#4	5	3'-0"	64
✳ S3	16	#4	6	6'-6"	70
✳ V1	34	#4	STR	8'-7"	195
✳ EPOXY COATED REINFORCING STEEL					2084 LBS.

CLASS AA CONCRETE BREAKDOWN
POUR #1 CAP & LOWER PART OF WING 15.7 C.Y.
POUR #2 UPPER PART OF WING 2.0 C.Y.
TOTAL CLASS AA CONCRETE 17.7 C.Y.

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B4	8	#9	1	25'-2"	685
✳ B5	4	#4	STR	24'-3"	65
✳ B3	6	#4	STR	2'-3"	9
✳ B7	10	#6	STR	23'-11"	359
✳ D1	14	#6	STR	1'-6"	32
✳ H1	22	#5	2	12'-4"	283
✳ K2	8	#5	STR	2'-10"	24
✳ S1	32	#4	4	12'-11"	276
✳ S2	32	#4	5	3'-0"	64
✳ S3	16	#4	6	6'-6"	70
✳ V1	32	#4	STR	7'-8"	164
✳ EPOXY COATED REINFORCING STEEL					2031 LBS.

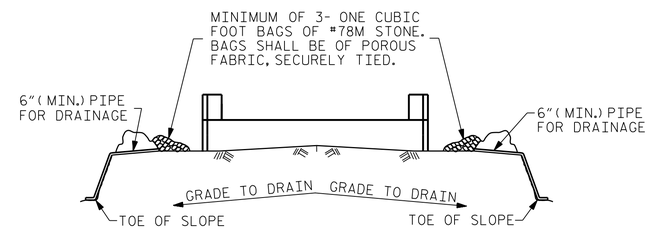
CLASS AA CONCRETE BREAKDOWN
POUR #1 CAP & LOWER PART OF WING 15.7 C.Y.
POUR #2 UPPER PART OF WING 1.5 C.Y.
TOTAL CLASS AA CONCRETE 17.2 C.Y.

TOTAL BILL OF MATERIAL END BENT 1

REINFORCING STEEL	
STAGE I	2084 LBS.
STAGE II	2031 LBS.
TOTAL REINFORCING STEEL	4115 LBS.
CLASS AA CONCRETE	
STAGE I	17.7 C.Y.
STAGE II	17.2 C.Y.
TOTAL CLASS AA CONCRETE	34.9 C.Y.

TOTAL BILL OF MATERIAL END BENT 2

REINFORCING STEEL	
STAGE I	2084 LBS.
STAGE II	2031 LBS.
TOTAL REINFORCING STEEL	4115 LBS.
CLASS AA CONCRETE	
STAGE I	17.7 C.Y.
STAGE II	17.2 C.Y.
TOTAL CLASS AA CONCRETE	34.9 C.Y.



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

THE BAR LENGTHS IN THE BILL OF MATERIAL ASSUME A 4" MECHANICAL COUPLER LENGTH. FOR ALTERNATE COUPLER LENGTHS, THE CONTRACTOR SHALL ADJUST THE BAR LENGTHS ACCORDINGLY. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE SPECIFIED CONCRETE COVERS AND CLEARANCES.

PROJECT NO. R-5738
DARE COUNTY
STATION: 42+68.00 -L-

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SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARIBORZ ASEFNIA
DocuSigned by: 0382A2C
4/9/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BILL OF MATERIAL

Louis Berger

Prepared by:
LOUIS BERGER
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Raleigh, NC 27605-3322
NC COA No. F-0840

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
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2			4			25

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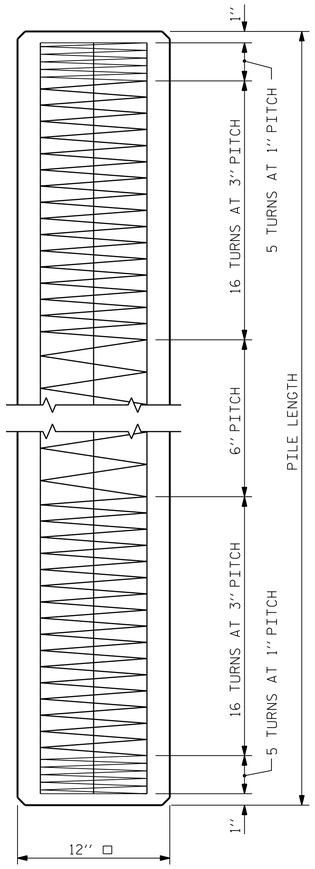

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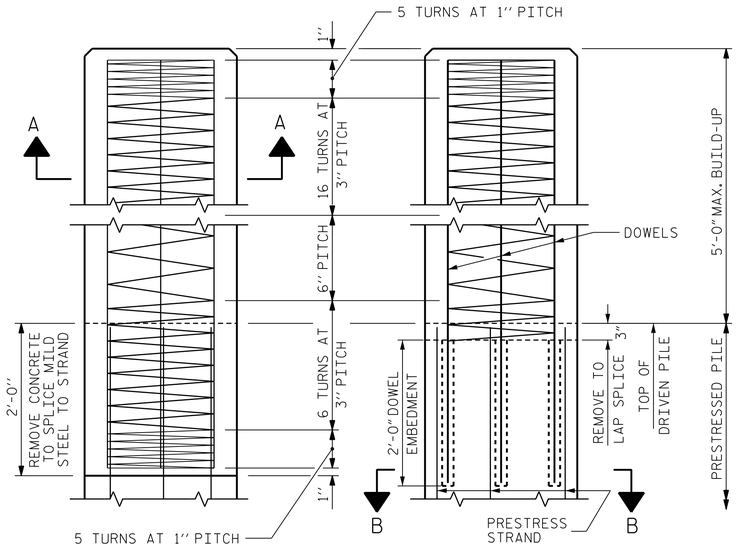
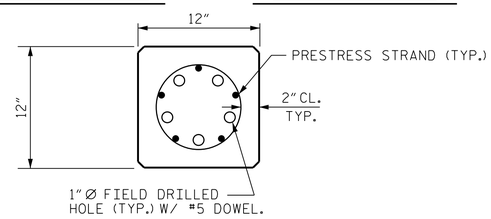


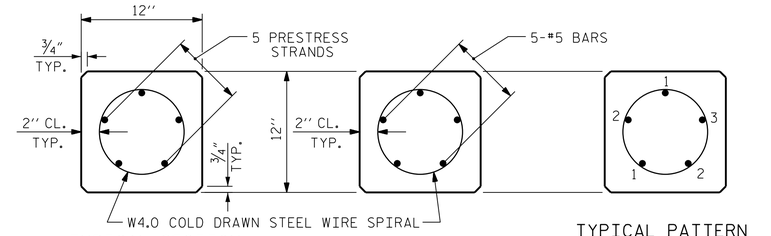
BUILD-UP AND SPIRAL REINFORCING

OPTIONAL BUILD-UP WITH DOWELS



SECTION ''B-B''

(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



TYPICAL SECTION

SECTION ''A-A''

TYPICAL PATTERN FOR BURNING STRANDS

1/2'' OR 0.6'' Ø GRADE 270 L.R. PRESTRESS STRANDS

NOTES

PRESTRESSED CONCRETE STRENGTH : f'c= 7,500 PSI

BUILD-UP CONCRETE STRENGTH : f'c= 7,500 PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2''	270 L.R.	0.153	41,300# PER STRAND	30,980# PER STRAND
0.6''	270 L.R.	0.217	58,600# PER STRAND	43,940# PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, 1/2'' OR 0.6'' STRANDS MAY BE WITH 5 STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

TH WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

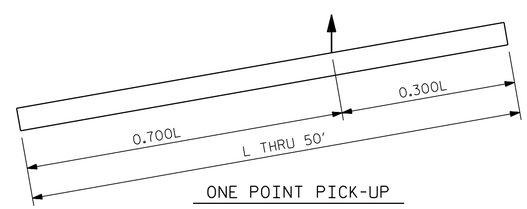
IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED, THE LAST STRAND MAY BE BURNED SINGLY ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

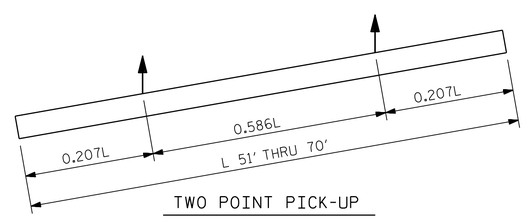
WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2'' WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.



ONE POINT PICK-UP



TWO POINT PICK-UP

PICK-UP POINTS

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: f'c= 5,000 PSI

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3'' OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

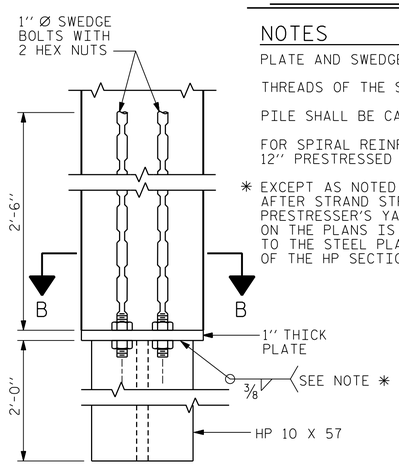
DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN 1/2'' CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

STEEL PILE TIP DETAILS



ELEVATION

NOTES

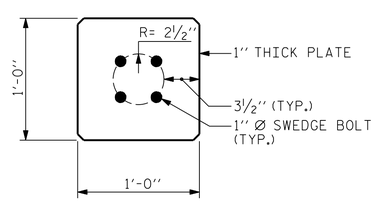
PLATE AND SWEDGE BOLTS SHALL MEET THE REQUIREMENTS OF AASHTO M270 GRADE 36.

THREADS OF THE SWEDGE BOLTS SHALL BE BURRED AT THE FACE OF THE NUT.

PILE SHALL BE CAST WITH SWEDGE BOLTS AND PLATE IN PLACE.

FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE STANDARD 12'' PRESTRESSED CONCRETE PILE ELEVATION AND TYPICAL SECTION.

* EXCEPT AS NOTED BELOW, THE HP 10 X 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 X 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD. WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLANS IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 X 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.



SECTION B-B

(HOLES FOR STRANDS NOT SHOWN)

QUANTITIES FOR ONE 12'' PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP 0.300L	ONE POINT PICK-UP 0.700L	TWO POINT PICK-UP 0.207L	TWO POINT PICK-UP 0.586L
25'-0''	0.91	1.85	7'-6''	17'-6''		
30'-0''	1.10	2.22	9'-0''	21'-0''		
35'-0''	1.28	2.59	10'-6''	24'-6''		
40'-0''	1.46	2.96	12'-0''	28'-0''		
45'-0''	1.64	3.33	13'-6''	31'-6''		
50'-0''	1.83	3.72	15'-0''	35'-0''		
55'-0''	2.01	4.09			11'-4 1/2''	32'-3''
60'-0''	2.19	4.46			12'-5''	35'-2''
65'-0''	2.38	4.81			13'-5 1/2''	38'-1''
70'-0''	2.57	5.18			14'-6''	41'-0''

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

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NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARZIN ASEFNIA

DocuSigned by: Farzin Asefnia 0382A2CF... 4/23/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

12'' PRESTRESSED CONCRETE PILE

Louis Berger

Prepared by:
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NC COA No. F-0840

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SHEET NO. S-22

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CHECKED BY : F. ASEFNIA DATE : 07/17

DRAWN BY : FCJ 7/88
CHECKED BY : CRK 3/89

REV. 11/30/10 WMC/GM
REV. 10/1/11 MAA/GM
REV. 12/14 MAA/TMG

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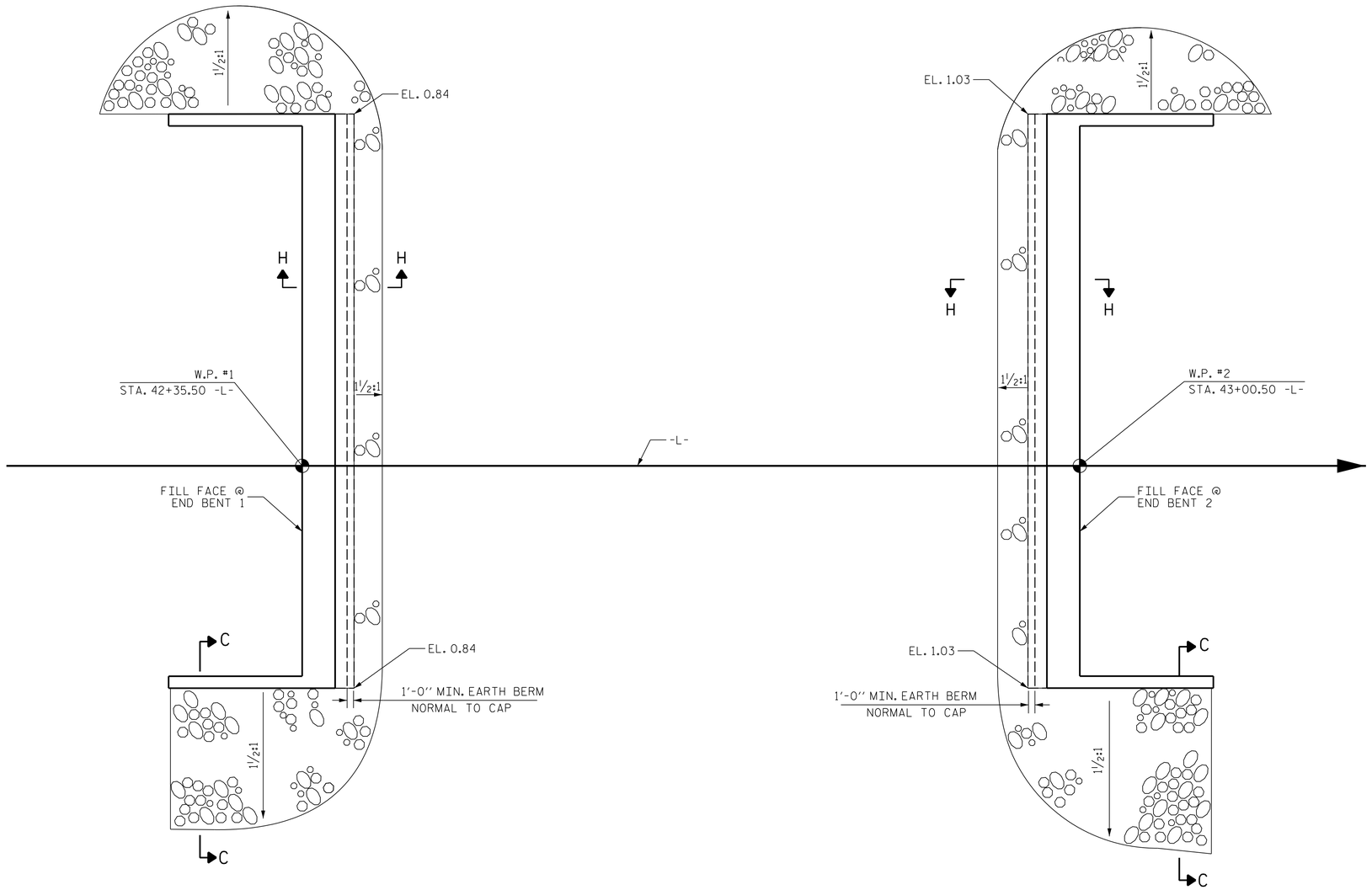
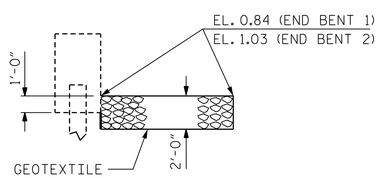


END BENT 1

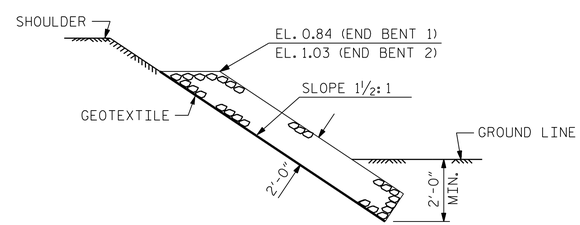
PLAN

END BENT 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 42+68.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	60	50
END BENT 2	57	49



SECTION H-H



SECTION C-C

PROJECT NO. R-5738

DARE COUNTY

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NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARZIN ASEFNIA

Documented by: 0382A2CF0A0A4A0 05/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

Louis Berger

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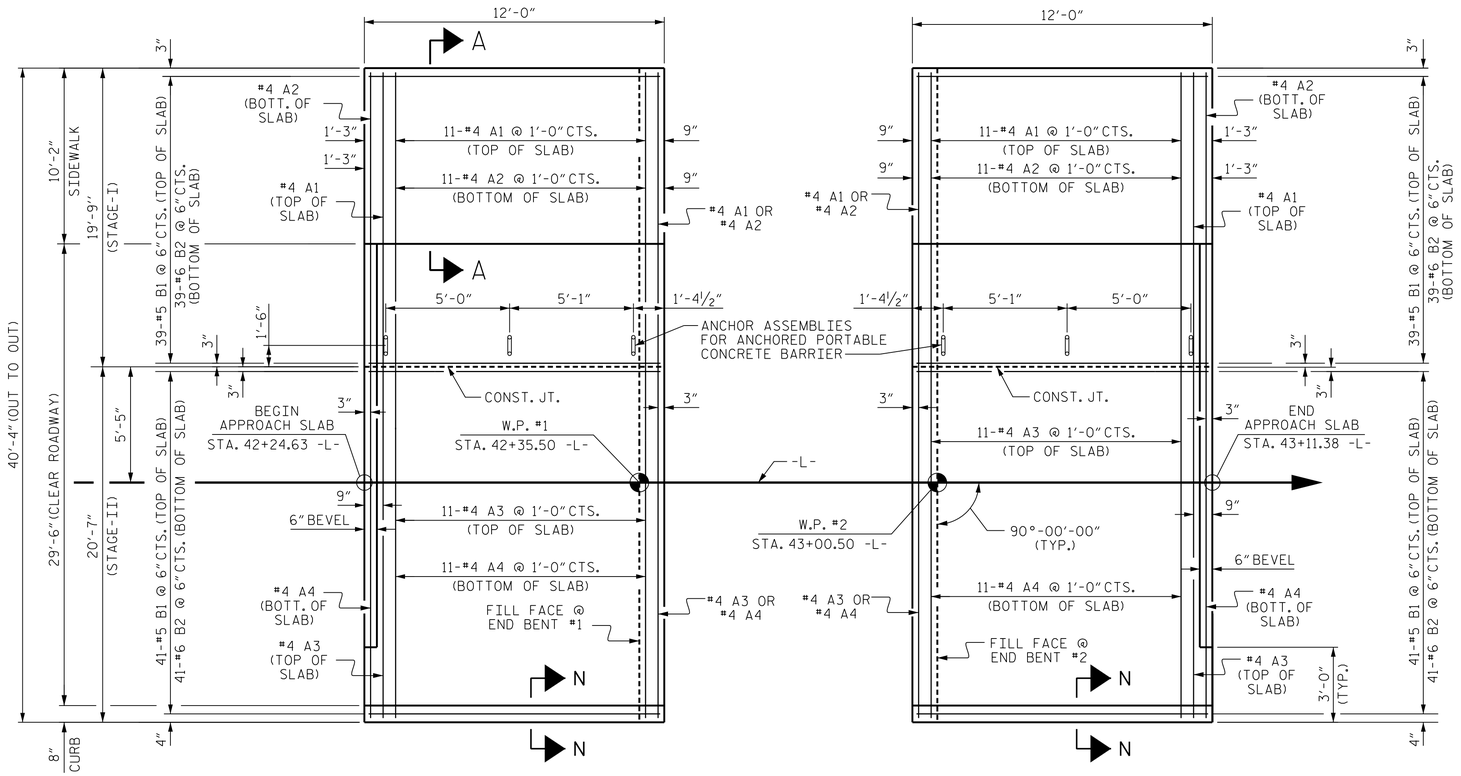


PLAN

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.
REINFORCING STEEL IN SIDEWALK NOT SHOWN FOR CLARITY

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

BILL OF MATERIAL
FOR ONE APPROACH SLAB (2 REQ'D)

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	21'-7"	187
* A2	13	#4	STR	21'-7"	187
* B1	39	#5	STR	11'-2"	454
* B2	39	#6	STR	11'-8"	683
* EPOXY COATED REINFORCING STEEL				LBS.	1511
CLASS AA CONCRETE				C. Y.	11.4

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A3	13	#4	STR	20'-5"	177
* A4	13	#4	STR	20'-5"	177
* B1	41	#5	STR	11'-2"	478
* B2	41	#6	STR	11'-8"	718
REINFORCING STEEL				LBS.	0
* EPOXY COATED REINFORCING STEEL				LBS.	1550
CLASS AA CONCRETE				C. Y.	11.9

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.

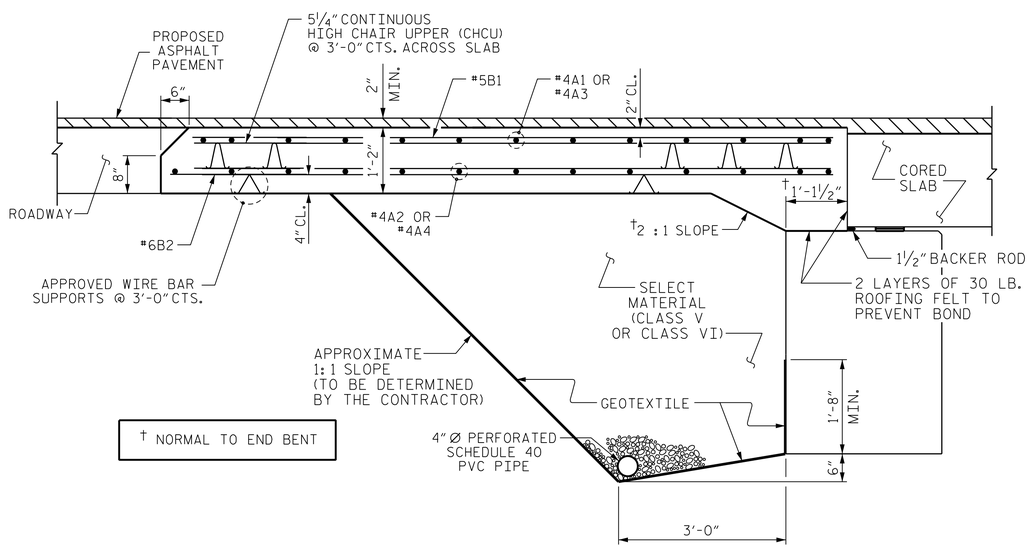
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

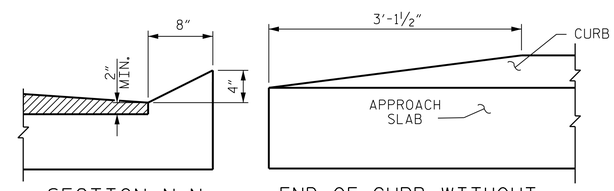
QUANTITIES FOR SIDEWALK ARE NOT INCLUDED.

FOR SIDEWALK DETAILS, SEE "SIDEWALK CONSTRUCTION DETAILS" SHEET.



† NORMAL TO END BENT

SECTION THRU SLAB
(TYPE II - MODIFIED APPROACH FILL)



SECTION N-N

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. R-5738
DARE COUNTY
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SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 020103 ENGINEER FARZIN ASEFNIA
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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) 90° SKEW

Louis Berger

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NC COA No. F-0840

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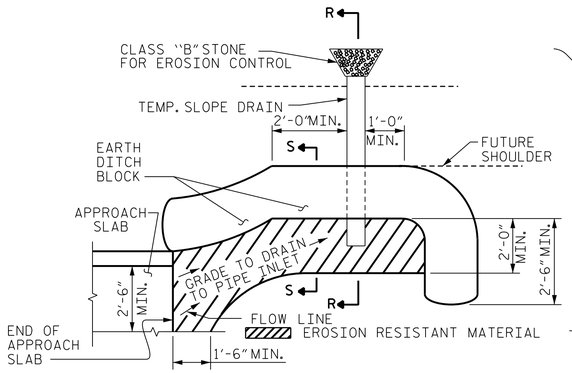
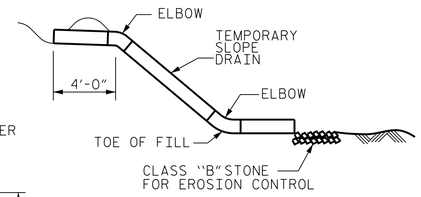
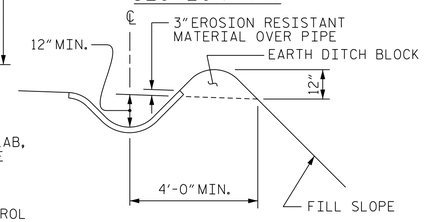


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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



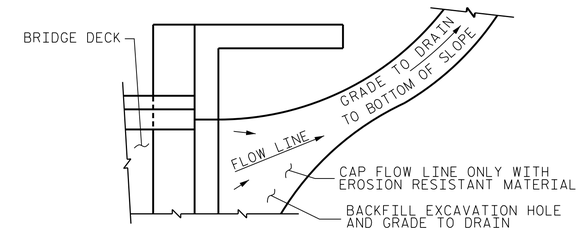
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. R-5738

DARE COUNTY

STATION: 42+68.00 -L-

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SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
90° SKEW

Louis Berger

Prepared by:
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NC COA No. F-0840

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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 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

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REV. 8-16-99 RWW (✓) LES REV. 5-1-06 TLA (✓) GM

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License No.: F-0840

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	W-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER R.D. ODELL

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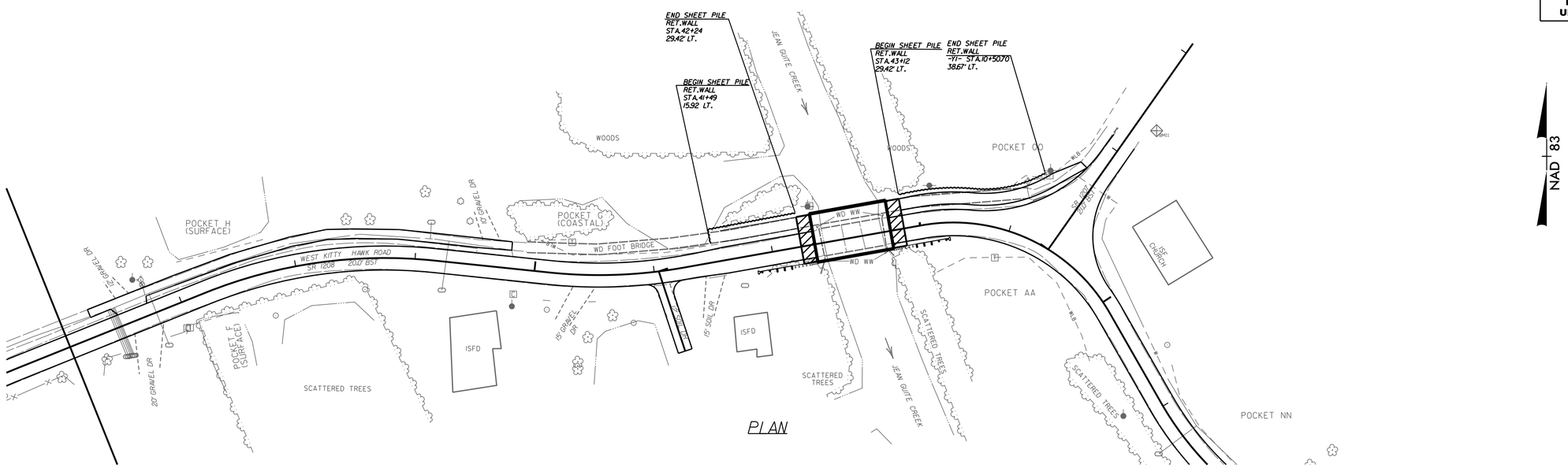
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

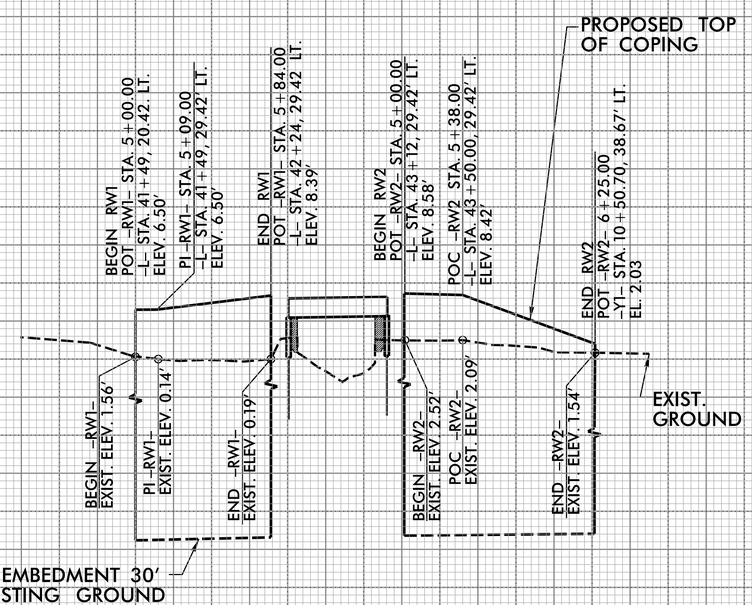
REVISIONS

8/17/99

GALVANIZED STEEL SHEET PILE



PLAN



ELEVATION

SHEET PILE WALL ENVELOPE DATA				
-L- STA.	OFFSET FROM ℄	TOP ELEV.	BOTTOM ELEV.	WALL HEIGHT
41+49	20.42′ LT	6.50′	1.56′	4.94′
41+49	29.42′ LT	6.50′	0.14′	6.36′
42+24	29.42′ LT	8.39′	0.19′	8.20′
43+12	29.42′ LT	8.58′	2.52′	6.06′
43+50	29.42′ LT	8.42′	2.09′	6.33′
-Y1- STA.				
10+50	38.67′ LT	2.03′	1.54′	0.49′

NOTES:
1. APPROXIMATE TOTAL WALL LENGTH: 209.00′
2. BOTTOM OF WALL ELEVATION IS TO EXISTING GROUND.

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PROJECT REFERENCE NO.	SHEET NO.
R-5738	W-2
R/W SHEET NO.	

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ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 27933 ENGINEER

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NOTES

FOR STEEL SHEET PILE RETAINING WALL, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

THE RETAINING WALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 452 OF THE STANDARD SPECIFICATIONS.

THE RETAINING WALL SHALL BE MEASURED AND PAID AS THE ACTUAL NUMBER OF SQUARE FEET OF EXPOSED FACE AREA INCORPORATED INTO THE COMPLETED RETAINING WALL. THE RETAINING WALL HEIGHT IS MEASURED AS THE DIFFERENCE BETWEEN THE TOP AND BOTTOM OF THE RETAINING WALL. THE TOP OF THE RETAINING WALL IS DEFINED AS THE TOP OF THE CONCRETE CAP. THE BOTTOM OF THE RETAINING WALL IS DEFINED AS THE EXISTING GROUND LINE.

CLASS AA CONCRETE SHALL BE USED IN THE CAST-IN-PLACE CAP AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CONCRETE CAP AND SPACED A MAXIMUM OF 10 FEET.

INSTALL THE SHEETING TO THE REQUIRED EMBEDMENT AS SHOWN ON THE PLANS.

STEEL SHEET PILING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A690 AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

STEEL SHEET PILING SHALL BE HOT ROLLED.

THE SCOUR CRITICAL ELEVATION FOR THE RETAINING WALL AT END BENT NO. 1 IS ELEVATION -4 FT. THE SCOUR CRITICAL ELEVATION FOR THE RETAINING WALL AT END BENT NO. 2 IS ELEVATION -3.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED BY MAINTENANCE FORCES TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

USE SELECT MATERIAL CLASS III, ACCORDING TO SECTION 1016 OF THE NCDOT STANDARD SPECIFICATIONS, AS BACKFILL BEHIND THE RETAINING WALL. NO SEPERATE PAYMENT WILL BE MADE FOR THIS ITEM. ALL MATERIALS, EQUIPMENT OR LABOR FOR PLACING AND COMPACTING THIS MATERIAL SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR SQUARE FOOT OF 18" STEEL SHEET PILE RETAINING WALLS.

THE FINISH GRADE OF THE BACK FILL SHALL BE GRADED TO PROVIDE ADEQUATE DRAINAGE AS DIRECTED BY THE ENGINEER.

REVISIONS

ROADWAY PAY ITEM

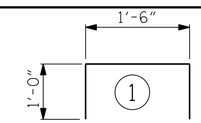
BILL OF MATERIAL- COPING — END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	12	#4	STR	29'-8"	238
✳ B2	4	#6	STR	44'-0"	264
✳ S1	114	#4	1	3'-6"	267
✳ EPOXY COATED REINFORCING STEEL					769 LBS.
CLASS AA CONCRETE COPING					9.5 C.Y.
TOTAL CLASS AA CONCRETE					9.5 C.Y.

BILL OF MATERIAL- COPING — END BENT 2

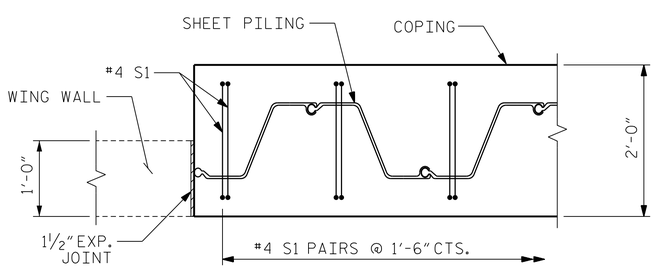
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	20	#4	STR	27'-8"	370
✳ B2	6	#6	STR	45'-8"	412
✳ S1	198	#4	1	3'-6"	463
✳ EPOXY COATED REINFORCING STEEL					1245 LBS.
CLASS AA CONCRETE COPING					14.6 C.Y.
TOTAL CLASS AA CONCRETE					14.6 C.Y.

BILL OF MATERIAL - 18" STEEL GALVANIZED SHEET PILE (PZ-27) RETAINING WALLS .....930 SQ. FT.



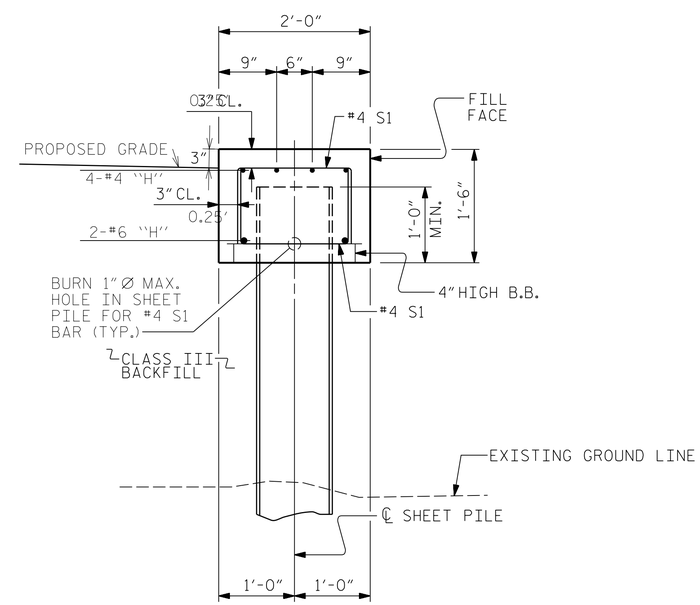
ALL BAR DIMENSIONS ARE OUT TO OUT.

SPLICE LENGTH CHART	
BAR	SPLICE LENGTH
✳ B1	2'-0"
✳ B2	3'-0"



DETAIL "C"

(ROADWAY PAY ITEM)



SECTION THRU SHEET PILING AND COPING

(ROADWAY PAY ITEM)

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ROADWAY PLANS

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