09/08/99

TIP PROJECT: I-5786

CONTRACT: C204041

6/5/2017
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USER:Fkeys

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5786	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
53026.1.FS1	HSIP-0095(031)	PE
53026.3.1	NHPIM-0095(031)	CONST.

JOHNSTON COUNTY

LOCATION: I-95 FROM JUST SOUTH OF SR 1001 (LIZZIE MILL RD.) TO THE JOHNSTON/WILSON COUNTY LINE JUST NORTH OF NC 222

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURES

VICINITY MAP

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

GRAPHIC SCALES

DESIGN DATA

ADT 2017 = 35,590
ADT 2037 = 41,900
K = 12 %
D = 55 %
T = 29 % *
V = 70 MPH
* TTST = 23% DUAL = 6%
FUNC CLASS = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5786 = 7.284 MILES

TOTAL LENGTH OF TIP PROJECT I-5786 = 7.284 MILES

WETHERILL ENGINEERING

Prepared for the North Carolina Department of Transportation in the Office of:

1223 JONES FRANKLIN ROAD
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NA

LETTING DATE:
JULY 18, 2017

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: COREY McLAMB, PE
DIVISION 4: PROJECT MANAGER

HYDRAULICS ENGINEER

6/6/2017
SEAL 31977
KEVIN B. ALFORD
DocuSigned by:
2BE802BEB76D44D...
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

6/6/2017
SEAL 21116
BOB A. MAY
DocuSigned by:
Bob A. May
513D84424429493...
SIGNATURE: P.E.

8/17/99

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	1A

ROADWAY DESIGN ENGINEER
6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A MAY
DocuSigned by: Bob A. May

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 01-24-2017

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 III.

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 AND 560.02

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

SUBSURFACE PLANS:

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

END BENTS:

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

EFF. 01-17-2012
REV. 02-29-2016

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.11	Bridge Approach Fills - Sub Regional Tier
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II (Sheet 2 of 3 is no longer applicable)
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS	
700.01	Concrete Pavement Joints - Construction and Contraction Joints
700.02	Expansion Joint Layout - for Rigid Doweled Pavement at Bridges
700.03	Dowel Assembly
700.05	Tying Proposed Pavement to Existing
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
850.01	Concrete Paved Ditches
854.02	Double Faced Concrete Barrier - Types 'T', 'T1' and 'T2'
854.04	Concrete Median Barrier - Precast Permanent
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

6/6/2017
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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
I-5786	I-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*) — W
- Above Ground Water Line — A/G Water

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5786	1C-1
Location and Surveys	

SURVEY CONTROL I-5786

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
9	BL-9	652107.8736	2224462.4970	176.40	9+26.43	52.26 RT
10	BL-10	652282.6240	2224820.2580	175.93	13+24.59	51.55 RT
1	I5786-1	652567.4010	2225025.3500	174.58	16+33.57	114.86 LT
2	I5786-2	652942.6010	2225801.1020	173.20	24+95.29	113.04 LT
11	BL-11	653089.0170	2226485.4310	172.11	31+74.74	54.55 RT
12	BL-12	653423.9549	2227168.0860	171.36	39+35.13	51.86 RT
13	BL-13	653706.7771	2227755.6500	174.11	45+87.22	54.46 RT
14	BL-14	654015.4803	2228391.2620	177.35	52+93.83	54.80 RT
15	BL-15	654321.1642	2229021.1450	180.53	59+93.97	55.35 RT
16	BL-16	654627.0655	2229652.2480	183.86	66+95.30	56.23 RT
17	BL-17	654934.9189	2230282.8930	187.19	73+97.07	55.16 RT
18	BL-18	655245.7966	2230917.3710	188.34	81+03.61	53.05 RT
19	BL-19	655546.4917	2231545.8600	184.78	88+00.32	57.47 RT
20	BL-20	655855.3301	2232176.3580	181.19	95+02.39	55.45 RT
21	BL-21	656185.5218	2232851.6560	177.12	102+54.09	53.81 RT
22	BL-22	656451.5593	2233404.1550	176.82	108+67.30	56.18 RT
3	I5786-3	656724.2990	2233955.7850	181.01	114+82.66	52.13 RT
23	BL-23	656983.6592	2234497.0010	185.51	120+82.80	55.56 RT
24	BL-24	657288.5835	2235125.9630	188.10	127+82.49	55.44 RT
25	BL-25	657590.6871	2235816.6530	189.36	135+38.87	53.94 RT
26	BL-26	657858.1229	2236464.5890	189.92	142+39.82	56.86 RT
27	BL-27	658090.6332	2237020.0810	191.16	148+42.01	56.38 RT
28	BL-28	658381.4819	2237715.2720	190.53	155+95.59	55.90 RT
29	BL-29	658632.7589	2238315.5990	188.96	162+46.38	55.38 RT
30	BL-30	658896.0043	2238961.7140	186.46	169+44.04	61.46 RT
31	BL-31	659172.1676	2239611.3250	184.25	176+49.90	56.97 RT
32	BL-32	659443.2622	2240259.7350	183.77	183+52.70	56.69 RT
33	BL-33	659714.2214	2240907.8100	182.99	190+55.14	56.41 RT
34	BL-34	659999.0244	2241585.9130	181.87	197+90.62	54.92 RT
35	BL-35	660251.8242	2242196.0590	179.30	204+51.07	56.78 RT
36	BL-36	660525.9561	2242838.0270	177.08	211+48.04	55.55 RT
37	BL-37	660815.6756	2243479.1810	177.22	218+50.97	55.60 RT
38	BL-38	661043.8111	2243980.9020	179.91	224+02.12	55.57 RT
6	I5786-6	660338.3130	2244711.7770	182.95	227+75.47	1000.30 RT
5	I5786-5	661128.7410	2244804.8020	175.96	231+87.30	319.25 RT
39	BL-39	661515.7003	2244747.3170	171.47	232+95.12	56.80 LT
40	BL-40	661643.7993	2245295.1340	161.57	238+46.83	53.32 RT
41	BL-41	661877.6882	2245810.0190	151.86	244+12.35	53.50 RT
42	BL-42	662154.6664	2246424.2370	153.63	250+86.13	55.57 RT
43	BL-43	662403.5454	2246976.9210	156.61	256+92.26	57.75 RT
44	BL-44	662694.9886	2247607.1380	157.44	263+86.59	53.28 RT
45	BL-45	662969.5662	2248213.8150	154.81	270+52.51	54.41 RT
46	BL-46	663273.0276	2248864.6320	150.74	277+70.56	47.52 RT
47	BL-47	663554.3791	2249494.5970	150.18	284+60.49	52.13 RT
48	BL-48	663851.2805	2250121.9840	151.92	291+51.54	52.22 RT
49	BL-49	664215.4029	2250721.5490	157.18	298+46.99	53.98 RT
50	BL-50	664641.7780	2251279.8820	169.61	305+46.38	55.39 RT
7	I5786-7	665165.2880	2251661.1490	181.51	311+70.15	118.78 LT
8	I5786-8	665698.5260	2252324.8130	195.37	320+21.47	125.44 LT
51	BL-51	665968.5051	2252958.6620	206.74	326+86.12	55.92 RT
52	BL-52	666406.4514	2253510.2650	204.53	333+90.44	54.51 RT
53	BL-53	666840.2554	2254060.4430	199.14	340+91.07	55.46 RT
54	BL-54	667238.4931	2254564.2300	198.42	347+33.24	55.54 RT
55	BL-55	667667.8472	2255123.7030	198.71	354+38.40	65.75 RT
56	BL-56	668113.2342	2255659.7650	196.74	361+31.76	57.73 RT
201	B4937-1	668626.3940	2256079.6440	189.48	367+88.77	2.93 RT
202	B4937-2	669265.0533	2256525.7440	184.65	375+68.36	1.49 RT
57	BL-57	669796.1232	2256846.1140	200.51	381+83.22	53.24 RT
58	BL-58	670385.3040	2257081.6500	216.79	388+17.65	46.22 RT

BENCHMARK DATA

1310 ELEVATION = 175.83
N 652056 E 2224441
L STATION 9+20.00 0 RIGHT
TBM-1 60D NAIL IN 16IN PINE

1313 ELEVATION = 173.11
N 652928 E 2226667
L STATION 32+68.00 279 RIGHT
TBM-2 60D NAIL IN 30IN PINE

1316 ELEVATION = 175.95
N 653724 E 2228207
L STATION 50+00.00 236 RIGHT
TBM-3 60D NAIL IN 34IN PINE

1319 ELEVATION = 185.39
N 654541 E 2229845
L STATION 68+31.00 218 RIGHT
TBM-4 60D NAIL SET IN 12IN SWEET GUM

1323 ELEVATION = 195.09
N 655432 E 2231716
L STATION 89+03.00 235 RIGHT
TBM-5 60D NAIL SET IN 8IN PINE

1326 ELEVATION = 166.66
N 656281 E 2233392
L STATION 107+82.00 204 RIGHT
TBM-6 60D NAIL SET IN 22IN OAK

1333 ELEVATION = 193.16
N 657192 E 2235442
L STATION 130+34.00 275 RIGHT
TBM-7 60D NAIL SET IN PP

1336 ELEVATION = 190.79
N 658063 E 2237412
L STATION 151+93.00 233 RIGHT
TBM-8 60D NAIL SET IN PP

1998 ELEVATION = 186.63
N 658867 E 2239278
L STATION 172+25.00 210 RIGHT
TBM-9 60D NAIL SET IN 20IN OAK

10096 ELEVATION = 186.45
N 659871 E 2241422
L STATION 195+90.00 110 RIGHT
TBM-10 60D NAIL IN 17IN PINE

10099 ELEVATION = 172.86
N 660508 E 2242930
L STATION 212+25.00 109 RIGHT
TBM-11 60D NAIL IN 35IN PINE

10120 ELEVATION = 170.45
N 661579 E 2244769
L STATION 233+41.00 105 LEFT
TBM-12 YELLOW BENCH TIE W TAG IN 16IN OAK

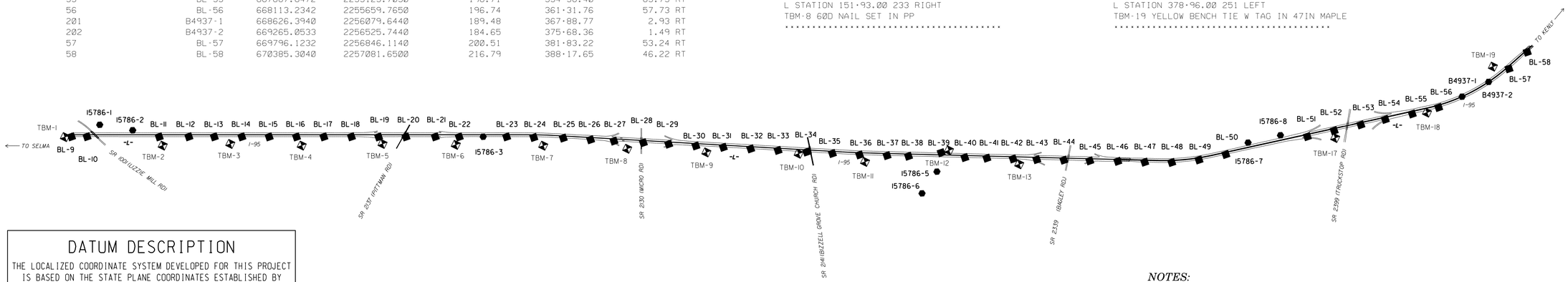
10117 ELEVATION = 161.78
N 662140 E 2246559
L STATION 252+03.00 124 RIGHT
TBM-13 YELLOW BENCH TIE W TAG IN 27IN PINE

10102 ELEVATION = 209.61
N 666309 E 2253557
L STATION 333+66.00 160 RIGHT
TBM-17 YELLOW BENCH TIE W TAG IN 17IN PINE

10108 ELEVATION = 199.14
N 667866 E 2255450
L STATION 358+17.00 112 RIGHT
TBM-18 YELLOW BENCH TIE W TAG IN 36IN OAK

10114 ELEVATION = 178.48
N 669665 E 2256453
L STATION 378+96.00 251 LEFT
TBM-19 YELLOW BENCH TIE W TAG IN 47IN MAPLE

NC GRID
NAD 83 NA 2011



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "I5786-5"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 661128.741(ft) EASTING: 2244804.802(ft)
ELEVATION: 175.960(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998843704
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "I5786-5" TO -L- STATION 09+20.00 IS S66°13'07.59"W 22261.089
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

- *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL AND VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT. PROJECT CONTROL ESTABLISHED USING GNSS (GLOBAL NAVIGATION SATELLITE SYSTEM).*

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

THE FILES TO BE FOUND ARE AS FOLLOWS:
I5786_LS_CONTROL.TXT

5/31/2017
USER:kmay
C:\Projects\Proj\I5786_ls_1c-1.dgn

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I–5786	1C–2
Location and Surveys	

SURVEY CONTROL SHEET I–5786

BASELINE DATA

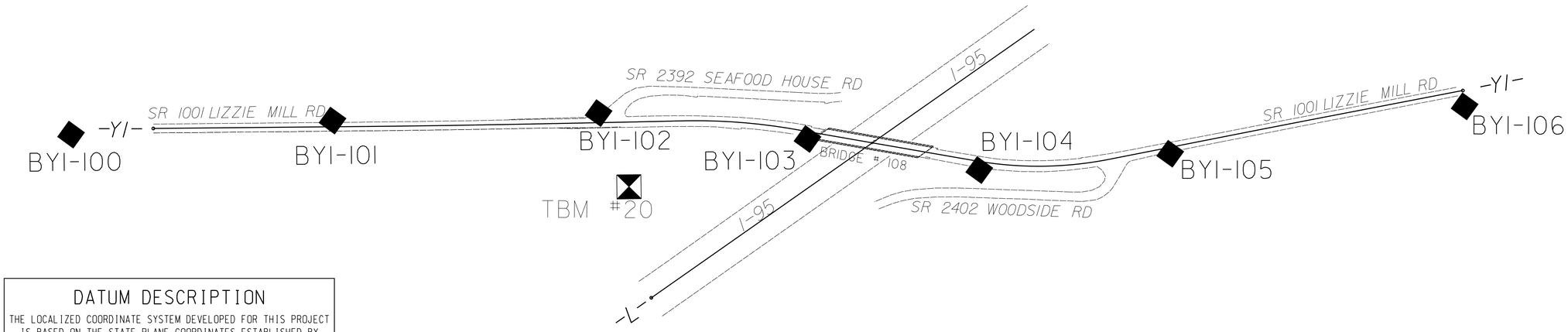
BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
100	BY1-100	652703.2900	2223296.8660	176.89	OUTSIDE PROJECT LIMITS	
101	BY1-101	652655.6350	2223793.0130	174.76	5+67.05	13.75 LT
102	BY1-102	652578.1780	2224382.6770	179.22	11+61.92	21.36 LT
103	BY1-103	652447.1470	2224834.4890	195.94	16+32.81	16.54 RT
104	BY1-104	652317.9200	2225202.4630	193.83	20+22.53	19.12 RT
105	BY1-105	652286.4300	2225629.5400	176.74	24+47.56	14.22 RT
106	BY1-106	652299.3900	2226295.8510	174.18	31+14.01	23.13 RT

NC GRID
NAD 83 NA 2011

BENCHMARK DATA

TBM #20 ELEVATION = 177.93
N 652405 E 2224424
Y1 STATION 12+26.00 145 RIGHT
RR SPIKE SET IN 12IN PINE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "I5786-5"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 661128.741(ft) EASTING: 2244804.802(ft)
ELEVATION: 175.960(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998843704
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "I5786-5" TO -L- STATION 09+20.00 IS S66°13'07.59"W 22261.089
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

⬢ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL AND VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT. PROJECT CONTROL ESTABLISHED USING GNSS (GLOBAL NAVIGATION SATELLITE SYSTEM).*

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

THE FILES TO BE FOUND ARE AS FOLLOWS: I5786_LS_CONTROL.TXT

5/9/2017
...\Roadway\Proj\I5786_ls_1c-2.dgn
jsellers

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5786	1C-3
Location and Surveys	

SURVEY CONTROL SHEET I-5786

BASELINE DATA

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
200	BY2-200	661274.3820	2240888.1740	185.99	6+09.65	18.12 RT
201	BY2-201	660766.4610	2241131.0250	179.97	11+70.95	14.76 RT
202	BY2-202	660173.5060	2241559.6940	200.32	19+01.64	13.85 RT
203	BY2-203	659772.3530	2241904.9180	189.61	24+30.14	14.30 LT
204	BY2-204	659082.4370	2242439.3190	185.26	33+02.77	17.27 LT

NC GRID NAD 83 NA 2011

BENCHMARK DATA

****

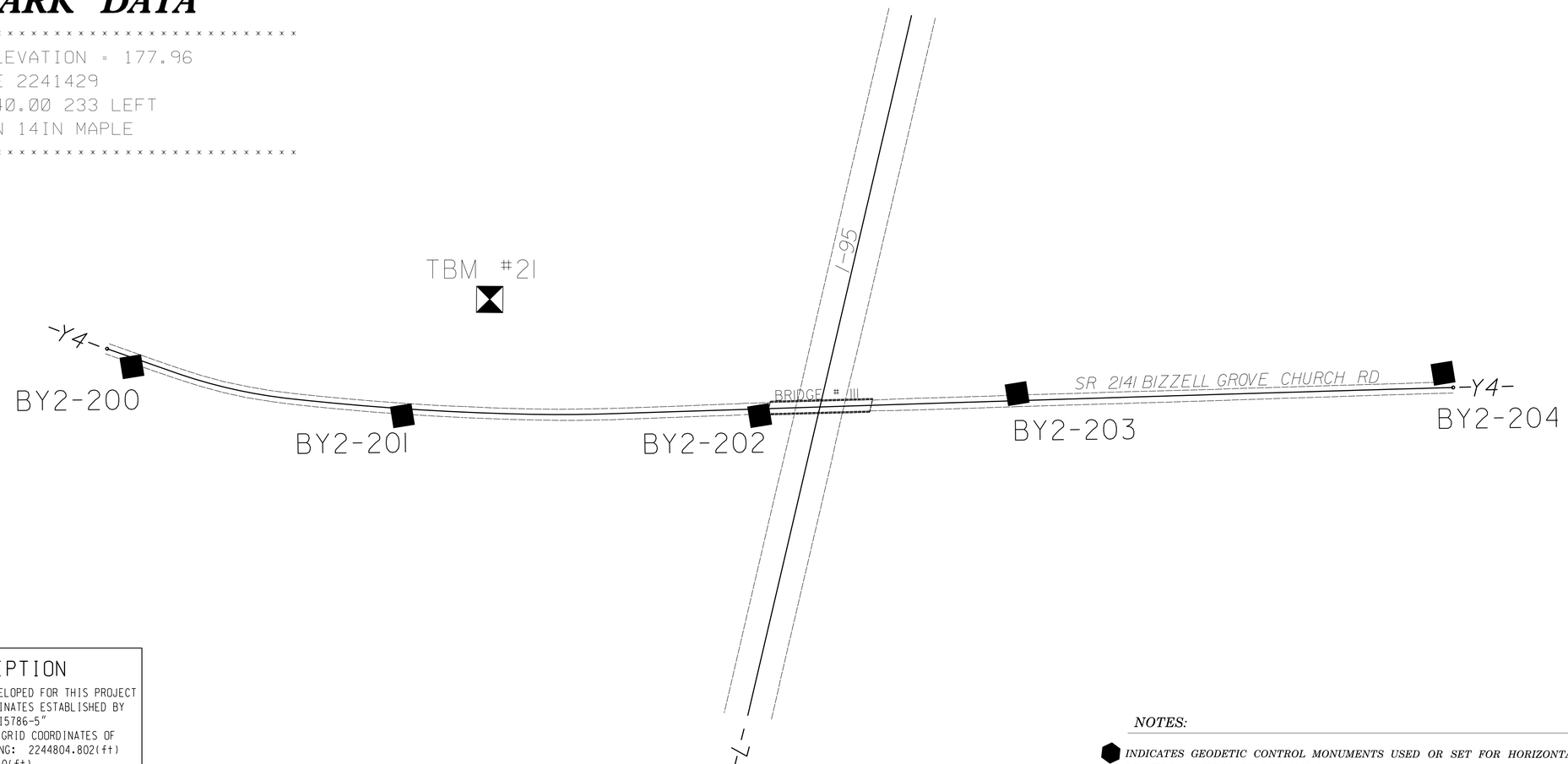
TBM#21 ELEVATION = 177.96

N 660761 E 2241429

Y4 STATION 13+40.00 233 LEFT

RR SPIKE SET IN 14IN MAPLE

****



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "I5786-5"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 661128.741(ft) EASTING: 2244804.802(ft)
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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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HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

THE FILES TO BE FOUND ARE AS FOLLOWS:
I5786_LS_CONTROL.TXT

5/9/2017
...\Roadway\Proj\I5786_ls_1c-3.dgn
USER:kaug

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
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License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2A-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 32142 ENGINEER COREY D. MCLAMB
Bob A. May	Corey D. McLamb

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

A1	REPAIR OF JOINTED CONCRETE PAVEMENT SLABS (9"+/-).	R1	CONCRETE MEDIAN BARRIER TYPE T. (SEE SHT. 2C-15 FOR SPECIAL DETAIL)
C1	PROP. APPROX. 3½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 196 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	PRECAST CONCRETE MEDIAN BARRIER STD. 854.04 (ANCHORED)
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	R3	PRECAST REINFORCED CONCRETE BARRIER (SINGLE FACED)
C3	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	T	EARTH MATERIAL
C4	PROP. APPROX. 1¾" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 196 LBS. PER SQ. YD.	T1	AGGREGATE SHOULDER BORROW
D1	PROP. APPROX. 4½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	U	EXISTING PAVEMENT
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 5¼" IN DEPTH.	V	MILL ¾" OF EXISTING ASPHALT PAVEMENT
D3	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V1	VARIABLE DEPTH MILLING OF EXISTING ASPHALT PAVEMENT, VAR. 0" TO 1¾".
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	V2	MILL 2" OF EXISTING ASPHALT PAVEMENT
E2	PROP. APPROX. 9" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	Y	MILLED RUMBLE STRIPS
E3	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	Z1	12" SELECT GRANULAR MATERIAL, CLASS III, TYPE 2

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

5/14/99

6/5/2017
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5/14/99

PAVEMENT SCHEDULE	
A1	REPAIR OF JTD. CONC. PAVEMENT
C1	3½″ S9.5D
C2	VAR. S9.5D
C3	2″ S9.5D
D1	4½″ I19.0D
D2	VAR. I19.0D
D3	4″ I19.0D
E1	5″ B25.0C
E2	9″ B25.0C
E3	5½″ B25.0C
R1	CMB TYPE T
R2	CMB ANCHORED
R3	SF CONC. BAR.
T	EARTH MAT'L
T1	AGG. SHLD. BORROW
U	EX. PAVEMENT
V	MILL ¾″
V1	VARIABLE DEPTH MILLING
V2	MILL 2″
Y	MILLED RUMBLE STRIPS
Z1	SELECT GRANULAR MATERIAL

WETHERILL ENGINEERING
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Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

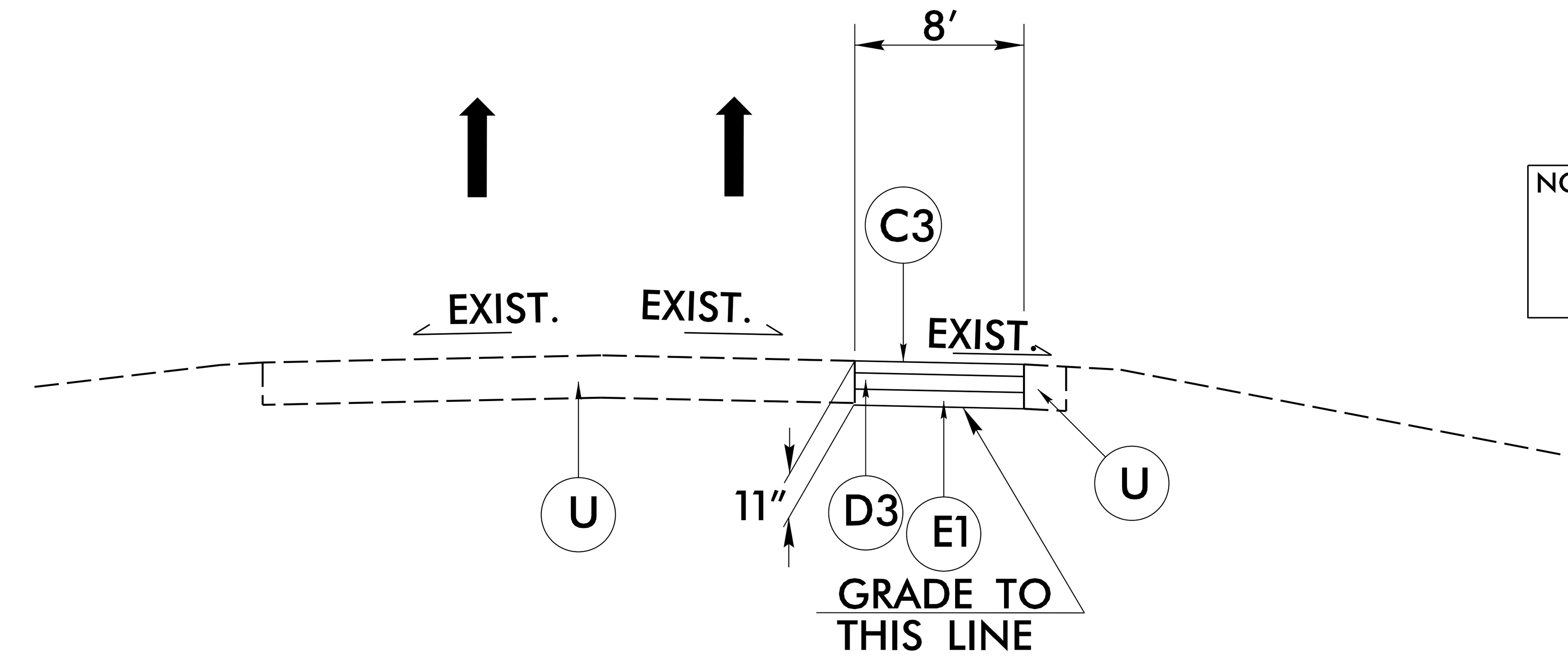
PROJECT REFERENCE NO.	SHEET NO.
I-5786	2A-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 21116, BOB A. MAY, 7/6/2017

PAVEMENT DESIGN ENGINEER — SEAL 32142, COREY D. MCLAMB, 7/7/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTE: FINAL ELEVATION FOR TEMPORARY PAVEMENT SHOULD BE SET SUCH THAT IT IS BELOW THE ELEVATION OF EXISTING PAVEMENT TO FACILITATE DRAINAGE OF ROADWAY.

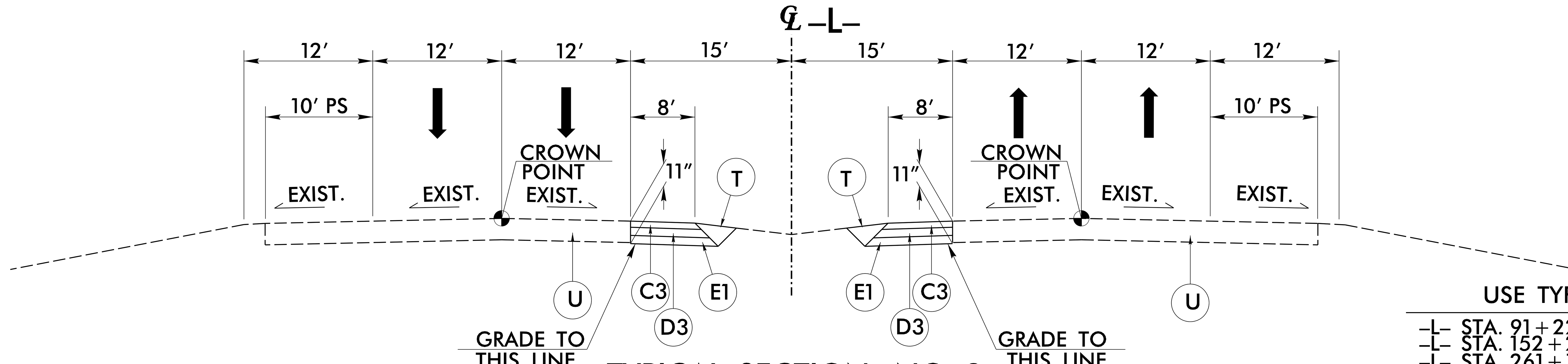


TYPICAL SECTION NO. 1

TEMPORARY PAVEMENT
REVERSE FOR SOUTHBOUND LANES

USE TYPICAL SECTION NO. 1

–L– STA. 9+90.00 TO 267+54.00 NBL
–L– STA. 288+94.00 TO 368+10.00 NBL
–L– STA. 9+90.00 TO 269+44.00 SBL
–L– STA. 290+34.00 TO 370+00.00 SBL

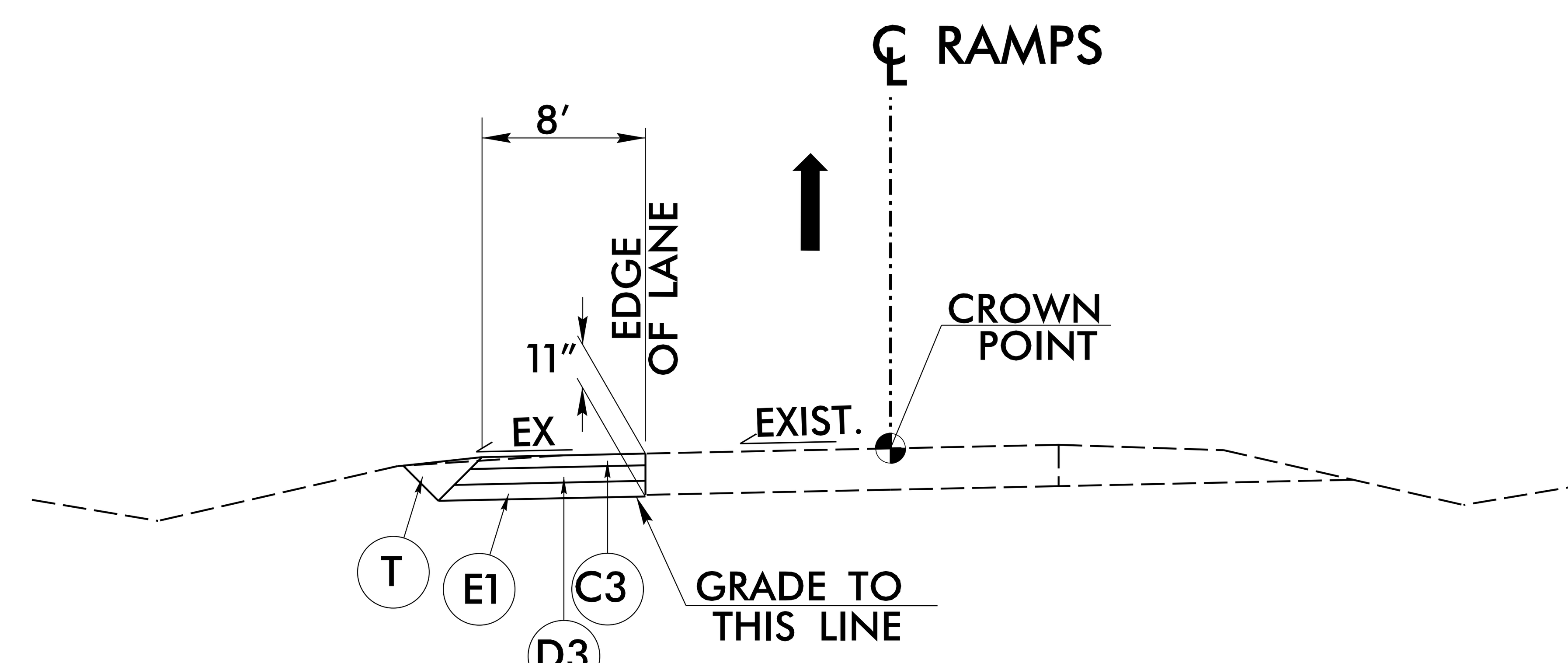


TYPICAL SECTION NO. 2

NOTE: UTILIZE TS. NO. 2 IN CONJUNCTION WITH FINAL OUTSIDE SHOULDER CONSTRUCTION.

USE TYPICAL SECTION NO. 2

–L– STA. 91+22.52 TO 97+90.31
–L– STA. 152+25.26 TO 158+59.02
–L– STA. 261+77.31 TO 267+54.00 NBL
–L– STA. 261+71.04 TO 269+44.00 SBL
–L– STA. 288+94.00 TO 298+01.25 NBL
–L– STA. 290+34.00 TO 298+01.25 SBL
–L– STA. 363+98.36 TO 368+10.00 NBL
–L– STA. 364+00.04 TO 370+00.00 SBL



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

–Y2RPB– STA. 10+00.00 TO 14+16.00
–Y2RPD– STA. 10+00.00 TO 14+16.00
–Y3RPB– STA. 10+00.00 TO 13+60.00
–Y3RPD– STA. 10+00.00 TO 13+76.00
–Y5RPB– STA. 10+00.00 TO 13+16.00

7/6/2017
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USER:bmay

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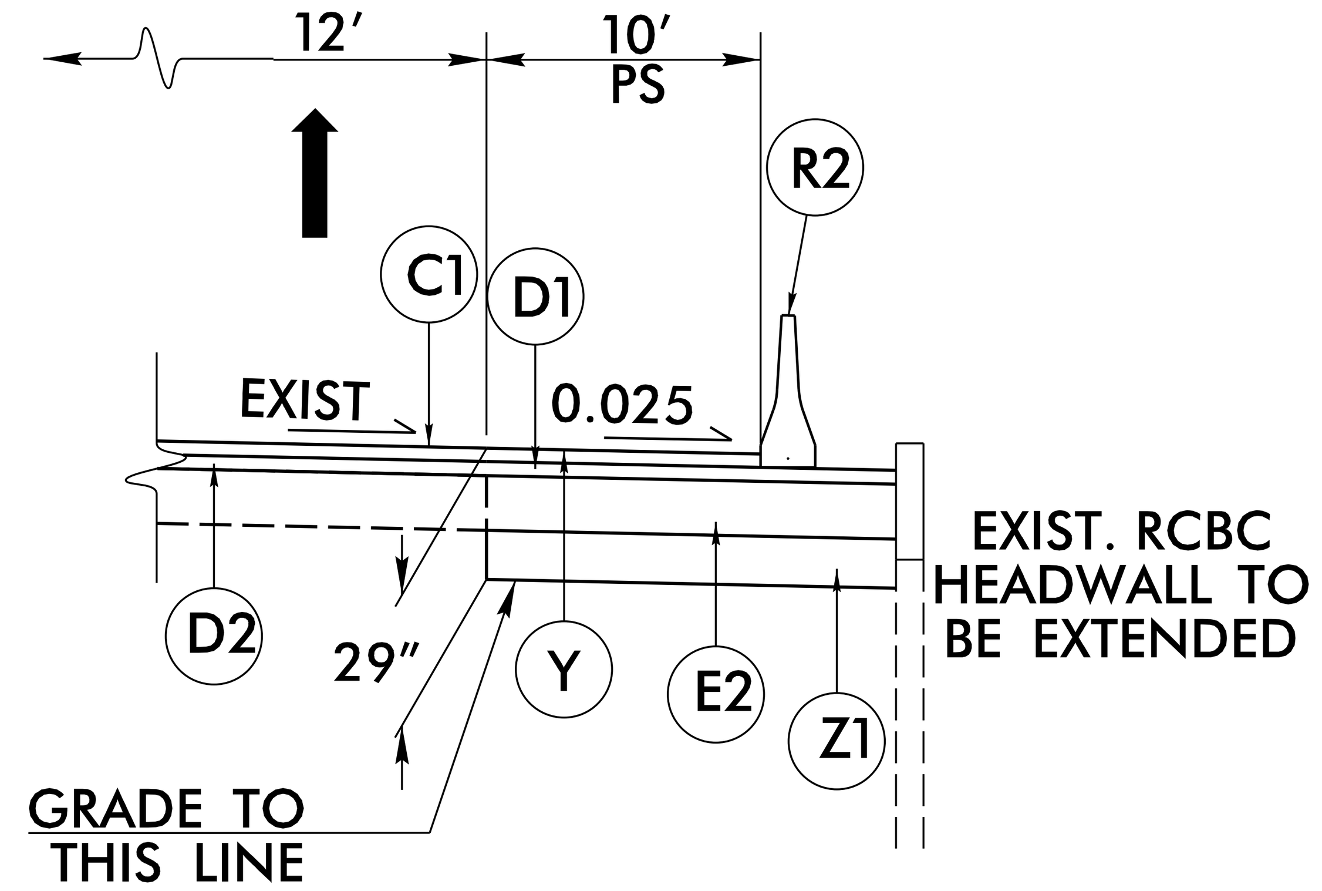
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2A-3
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21116 BOB A. MAY	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 32142 COREY D. McLAMB
Bob A. May	Corey D. McLamb

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE	
A1	REPAIR OF JTD. CONC. PAVEMENT
C1	3½″ S9.5D
C2	VAR. S9.5D
C3	2″ S9.5D
D1	4½″ I19.0D
D2	VAR. I19.0D
D3	4″ I19.0D
E1	5″ B25.0C
E2	9″ B25.0C
E3	5½″ B25.0C
R1	CMB TYPE T
R2	CMB ANCHORED
R3	SF CONC. BAR.
T	EARTH MAT'L
T1	AGG. SHLD. BORROW
U	EX. PAVEMENT
V	MILL ¾″
V1	VARIABLE DEPTH MILLING
V2	MILL 2″
Y	MILLED RUMBLE STRIPS
Z1	SELECT GRANULAR MATERIAL



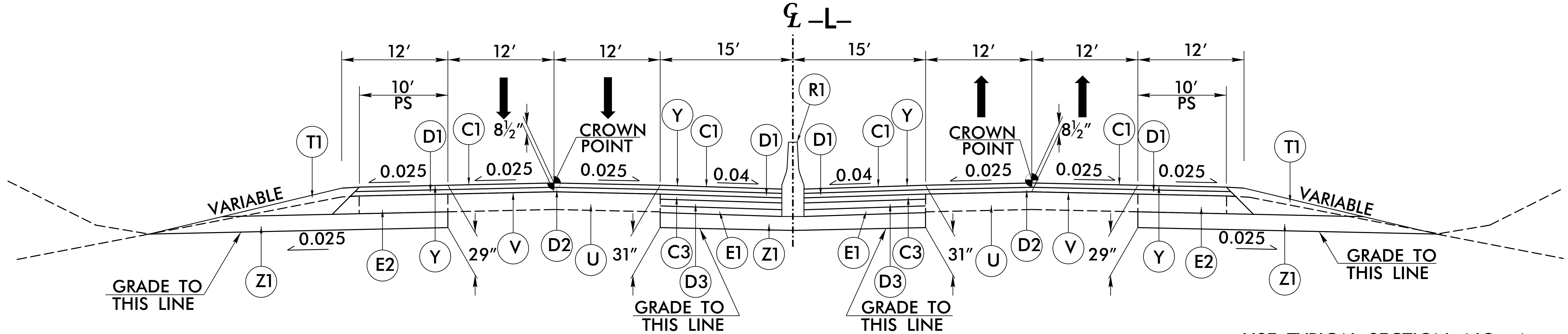
USE PARTIAL TYPICAL SECTION NO. 4A
IN CONJUNCTION WITH TYPICAL SECTION NO. 4
–L– STA. 39+25.00 TO 39+55.00 RT.

TRANSITION FROM TYPICAL NO. 2 TO TYPICAL SECTION NO. 4
–L– STA. 95+89.06 TO 99+89.06
–L– STA. 156+57.77 TO 160+57.77
–L– STA. 295+30.00 TO 299+30.00

TRANSITION FROM TYPICAL NO. 4 TO TYPICAL SECTION NO. 2
–L– STA. 89+23.77 TO 93+23.77
–L– STA. 150+26.51 TO 154+26.51
–L– STA. 259+79.17 TO 263+79.17

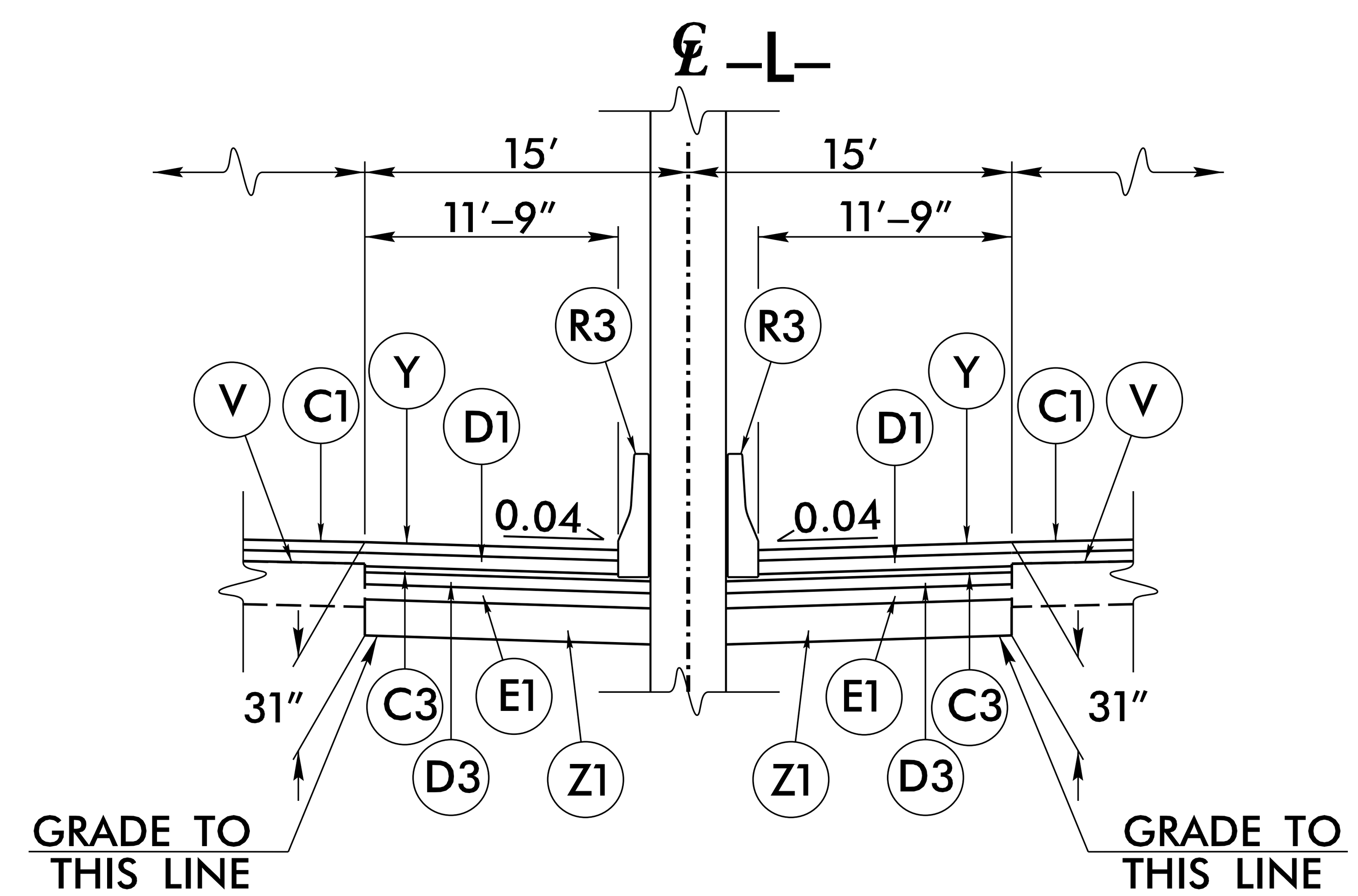
TRANSITION FROM EXISTING PAVEMENT TO TYPICAL SECTION NO. 4
–L– STA. 9+90.00 TO 13+90.00

TRANSITION FROM TYPICAL SECTION NO. 4 TO EXISTING PAVEMENT
–L– STA. 362+00.00 TO 366+00.00



USE TYPICAL SECTION NO. 4
–L– STA. 13+90.00 TO 89+23.77
–L– STA. 99+89.06 TO 150+26.51
–L– STA. 160+57.77 TO 259+79.17
–L– STA. 299+30.00 TO 362+00.00

TYPICAL SECTION NO. 4



USE PARTIAL TYPICAL SECTION NO. 4B
IN CONJUNCTION WITH TYPICAL SECTION NO. 4
–L– STA. 14+90.23 TO 15+56.17
–L– STA. 198+55.10 TO 199+03.20
–L– STA. 337+28.58 TO 337+69.13

NOTE: R3 (SINGLE FACED CONC. BARRIER) TO BE KEYED-IN 1" IN INITIAL INSTALLATION

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

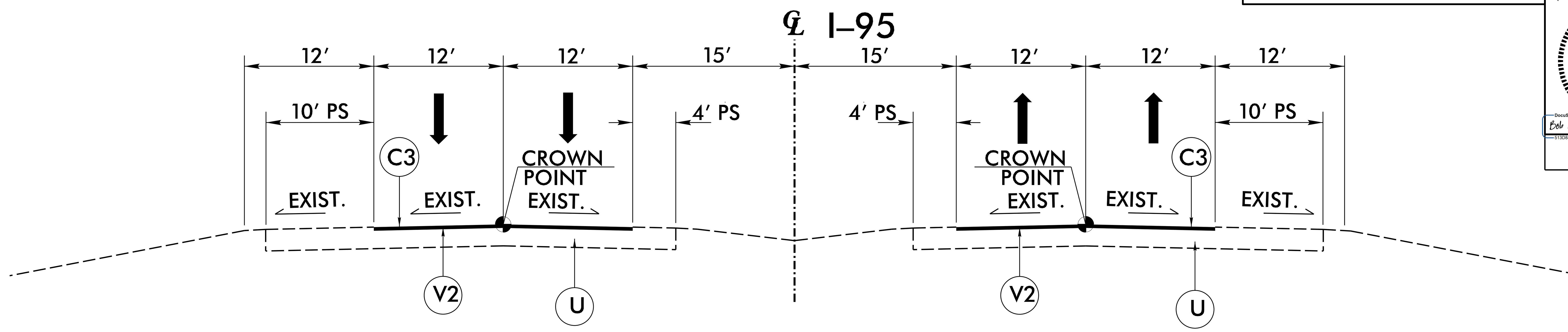
PROJECT REFERENCE NO.	SHEET NO.
I-5786	2A-4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 32142 ENGINEER COREY D. McLAMB

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

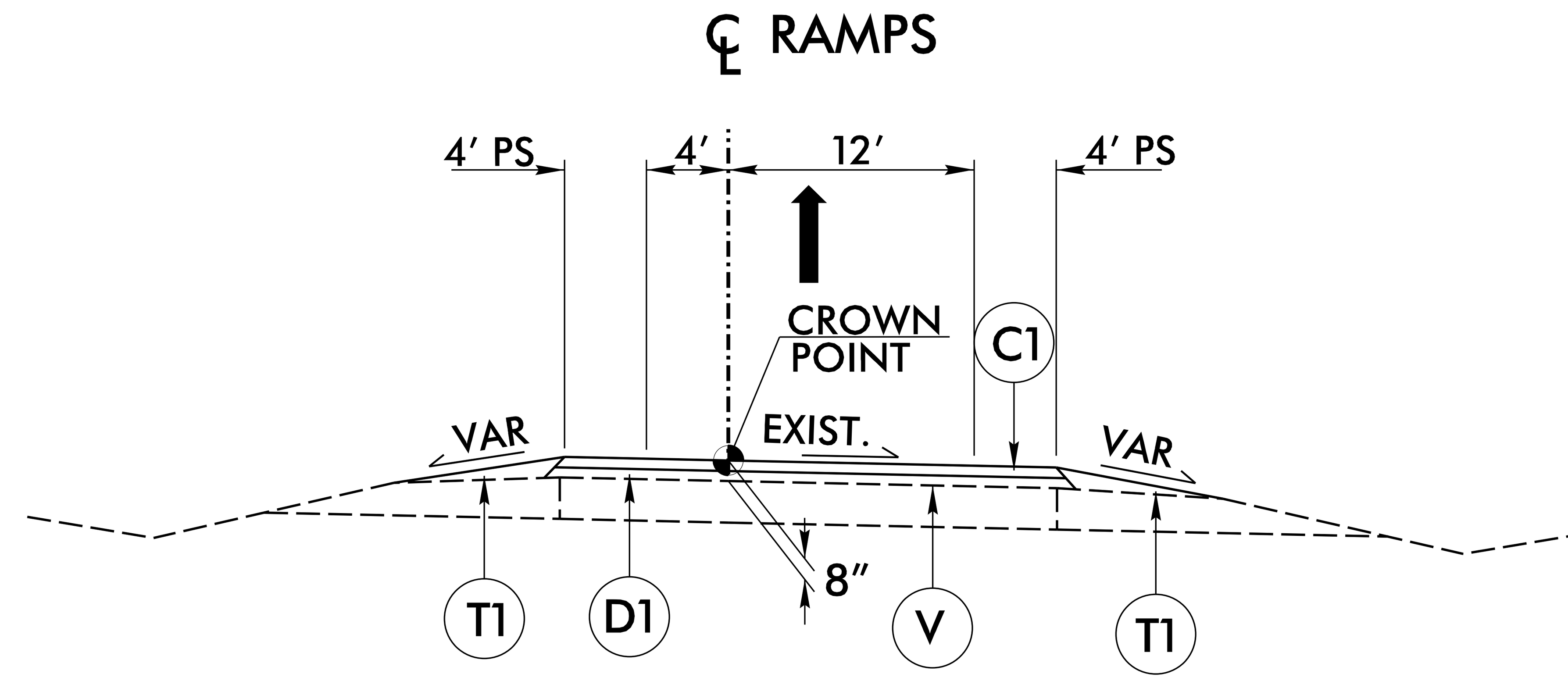
PAVEMENT SCHEDULE

A1	REPAIR OF JTD. CONC. PAVEMENT
C1	3½" S9.5D
C2	VAR. S9.5D
C3	2" S9.5D
D1	4½" I19.0D
D2	VAR. I19.0D
D3	4" I19.0D
E1	5" B25.0C
E2	9" B25.0C
E3	5½" B25.0C
R1	CMB TYPE T
R2	CMB ANCHORED
R3	SF CONC. BAR.
T	EARTH MAT'L
T1	AGG. SHLD. BORROW
U	EX. PAVEMENT
V	MILL ¾"
V1	VARIABLE DEPTH MILLING
V2	MILL 2"
Y	MILLED RUMBLE STRIPS
Z1	SELECT GRANULAR MATERIAL



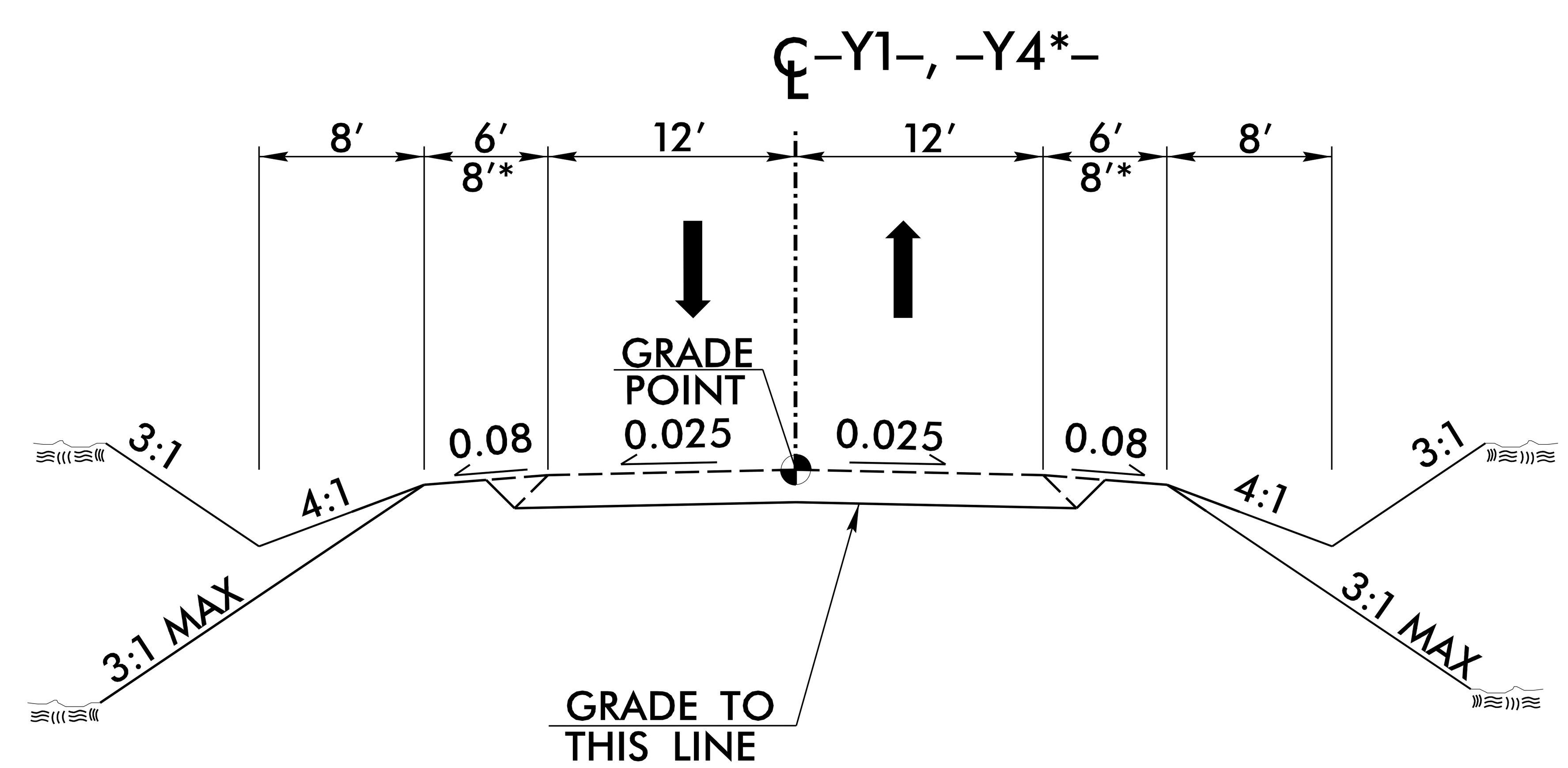
TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5
END APPROACH SLAB BRIDGE NO. 122
TO JOHNSTON COUNTY LINE (APPROX. 5597')



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6
-Y2RPA- STA. 10+00.00 TO 13+05.00
-Y2RPB- STA. 10+00.00 TO 13+95.00 (INVERT TYP.)
-Y2RPC- STA. 10+00.00 TO 13+35.00
-Y2RPD- STA. 10+00.00 TO 14+30.00 (INVERT TYP.)
-Y3RPA- STA. 10+00.00 TO 14+10.00
-Y3RPB- STA. 10+00.00 TO 14+05.00 (INVERT TYP.)
-Y3RPC- STA. 10+00.00 TO 13+70.00
-Y3RPD- STA. 10+00.00 TO 13+05.00 (INVERT TYP.)
-Y5RPB- STA. 10+00.00 TO 13+85.00 (INVERT TYP.)
-Y5RPC- STA. 10+00.00 TO 13+20.00
-Y6RPA- STA. 10+00.00 TO 12+70.00
-Y6RPB- STA. 10+00.00 TO 13+26.00 (INVERT TYP.)
-Y6RPC- STA. 10+00.00 TO 12+70.00
-Y6RPD- STA. 10+00.00 TO 12+85.00 (INVERT TYP.)



NOTE: -Y1- & -Y4- ARE TO BE CONSTRUCTED ONLY UP TO PROPOSED SUBGRADE AT THIS TIME.

TYPICAL SECTION NO. 7

NOTE: ADD 3' TO PROPOSED SHOULDER FOR GUARDRAIL LOCATIONS

USE TYPICAL SECTION NO. 7
-Y1- STA. 15+61.55 TO 16+29.86 (BEGIN BR.)
-Y1- STA. 19+26.11 (END BR.) TO 21+84.59
* -Y4- STA. 13+65.94 TO 19+16.39 (BEGIN BR.)
* -Y4- STA. 21+34.89 (END BR.) TO 25+29.26

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2A-5
R/W SHEET NO.	

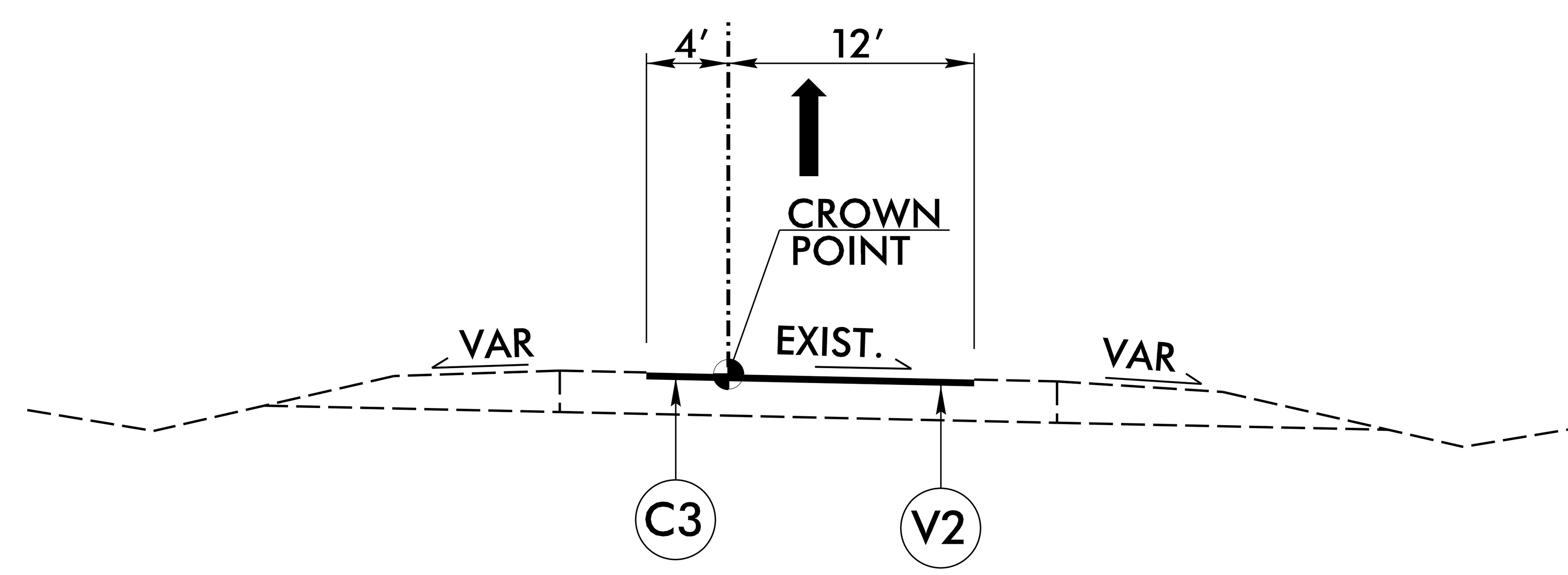
ROADWAY DESIGN ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21116 BOB A. MAY

PAVEMENT DESIGN ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 32142 COREY D. McLAMB

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

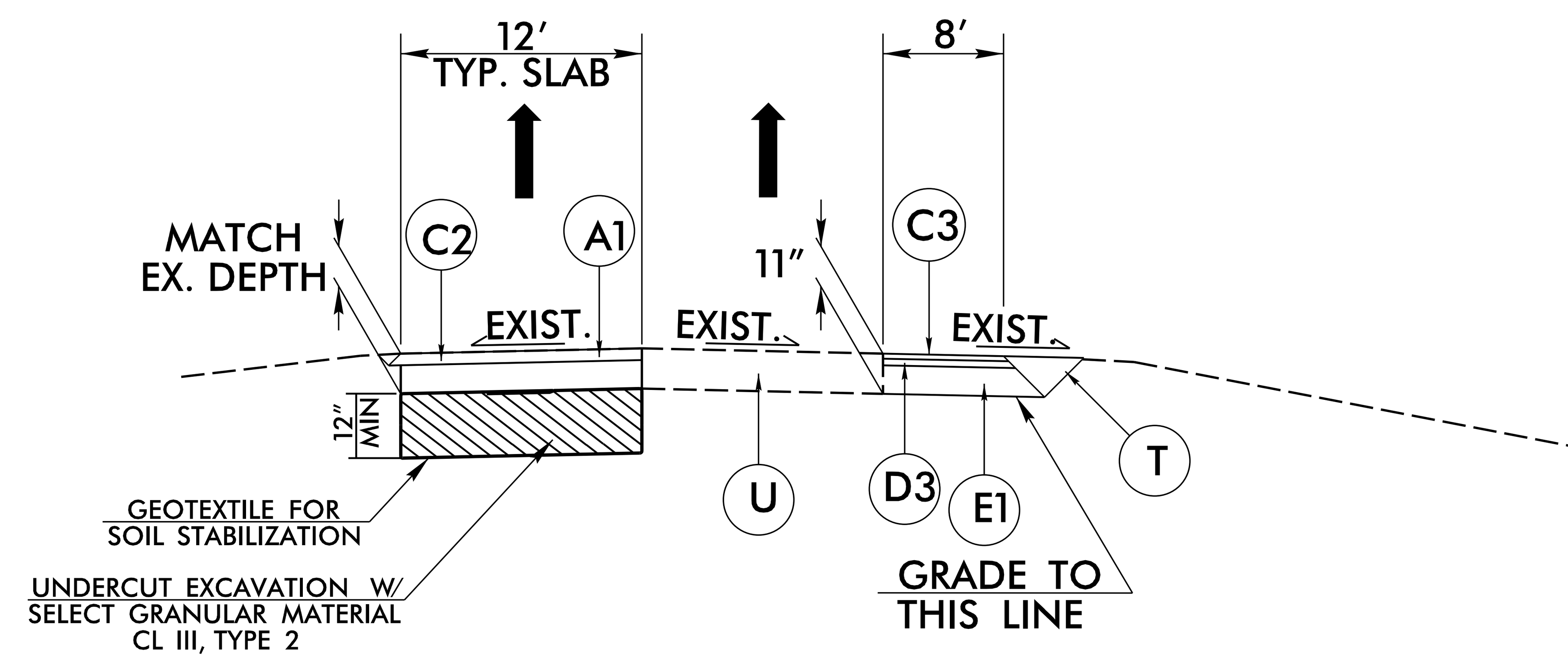
PAVEMENT SCHEDULE	
A1	REPAIR OF JTD. CONC. PAVEMENT
C1	3½" S9.5D
C2	VAR. S9.5D
C3	2" S9.5D
D1	4½" I19.0D
D2	VAR. I19.0D
D3	4" I19.0D
E1	5" B25.0C
E2	9" B25.0C
E3	5½" B25.0C
R1	CMB TYPE T
R2	CMB ANCHORED
R3	SF CONC. BAR.
T	EARTH MAT'L
T1	AGG. SHLD. BORROW
U	EX. PAVEMENT
V	MILL ¾"
V1	VARIABLE DEPTH MILLING
V2	MILL 2"
Y	MILLED RUMBLE STRIPS
Z1	SELECT GRANULAR MATERIAL

℄ I-95 RAMPS/LOOPS



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8
I-95 SOUTHBOUND OFF-RAMP TO US 301 (APPROX. 405')
I-95 SOUTHBOUND ON-LOOP FROM US 301 (APPROX. 785')
I-95 NORTHBOUND ON-RAMP FROM US 301 (APPROX. 310')



CONCRETE INSIDE LANE SLAB REPLACEMENT DETAIL

REVERSE FOR SOUTHBOUND LANES

NOTE: EXISTING SLAB THICKNESS IS 9½" +/-

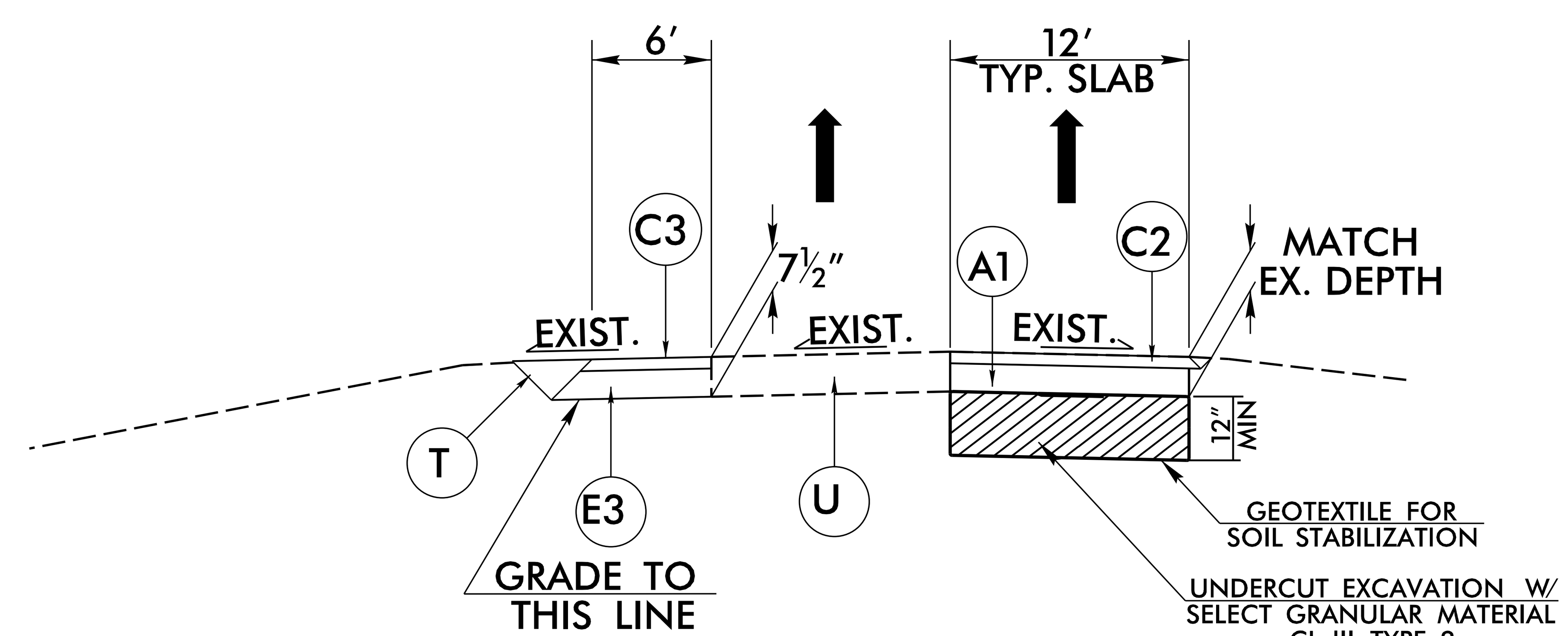
NOTE: PLACE PROPOSED CONCRETE TO SAME THICKNESS AS EXISTING

NOTE: LOCATION OF SLAB REPAIR AREAS TO BE DETERMINED BY DIVISION PERSONNEL

NOTE: GEOTEXTILE FOR SOIL STABILIZATION SHALL COMPLETELY ENCAPSULATE SELECT GRANULAR MATERIAL CL III, TYPE 2, & HAVE A MININMUM OVERLAP OF 18".

NOTE: UNDERCUT AND BACKFILL WITH SELECT GRANULAR MATERIAL CLASS III, TYPE 2 AS DIRECTED BY THE ENGINEER

NOTE: UTILIZE FOR OUTSIDE SLAB REPLACEMENT IF LOCALIZED CONSTRUCTION DURATION IS EXPECTED TO EXCEED 2 MONTHS



NOTE: USE WHEN TRAFFIC SHIFT LOCATION IS EXPECTED TO BE LESS THAN 2 MONTHS

NOTE: LOCATION OF SLAB REPAIR AREAS TO BE DETERMINED BY DIVISION PERSONNEL

NOTE: GEOTEXTILE FOR SOIL STABILIZATION SHALL COMPLETELY ENCAPSULATE SELECT GRANULAR MATERIAL CL III, TYPE 2, & HAVE A MININMUM OVERLAP OF 18".

NOTE: UNDERCUT AND BACKFILL WITH SELECT GRANULAR MATERIAL CLASS III, TYPE 2 AS DIRECTED BY THE ENGINEER

CONCRETE OUTSIDE LANE SLAB REPLACEMENT DETAIL-SHORT TERM

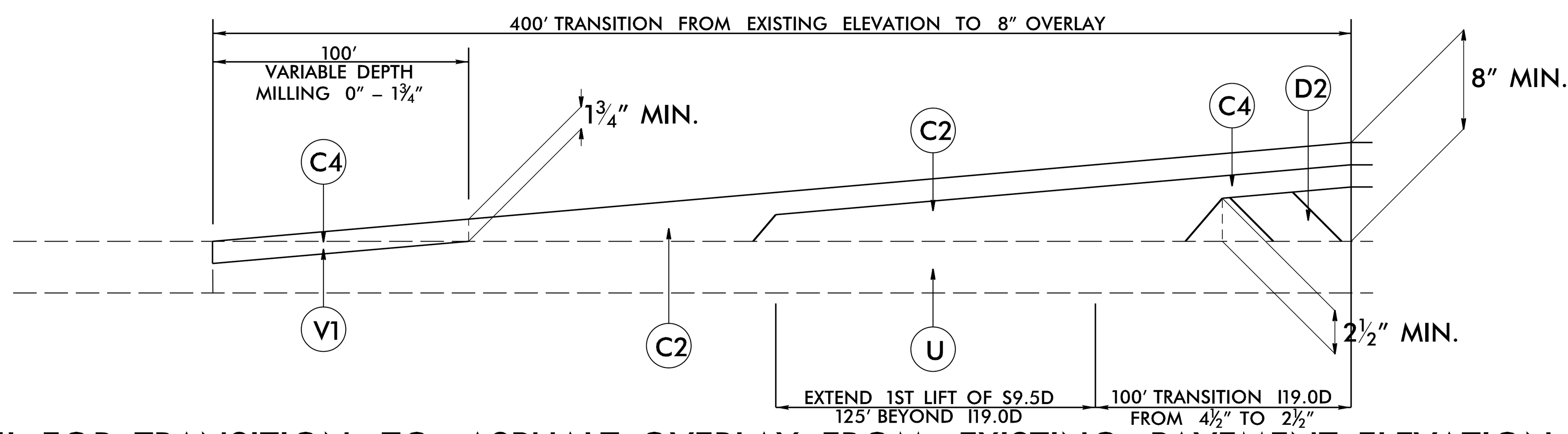
REVERSE FOR SOUTHBOUND LANES

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2B-1
R/W SHEET NO.	____

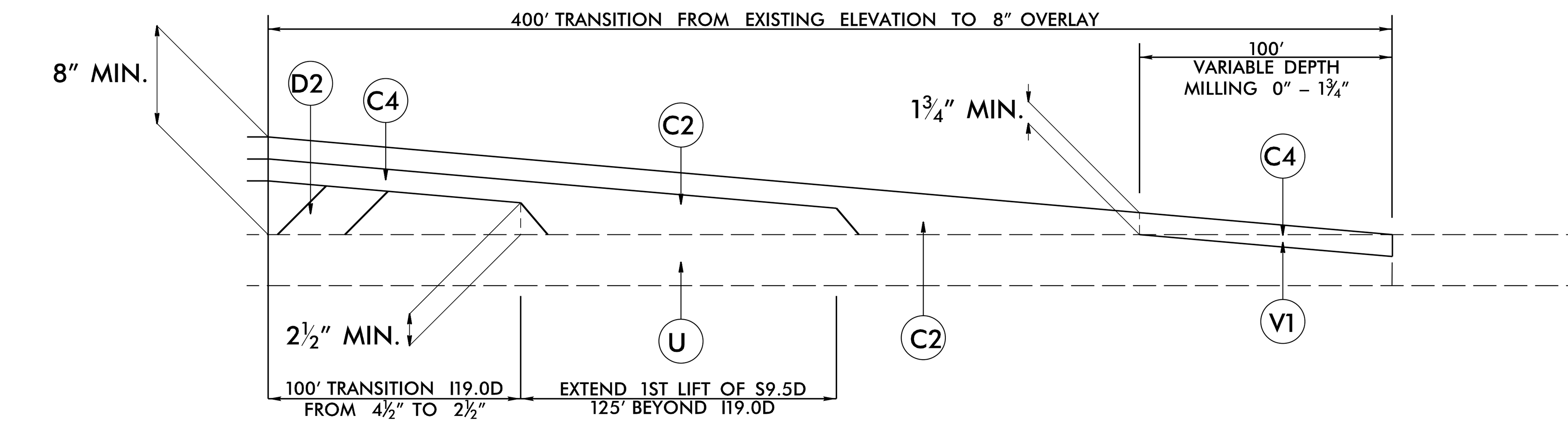
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
7/6/2017	7/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 32142 ENGINEER COREY D. McLAMB
DocuSigned by: Bob A. May 513D84424429493...	DocuSigned by: Corey D. McLamb 3544353D0DF2484...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DETAIL FOR TRANSITION TO ASPHALT OVERLAY FROM EXISTING PAVEMENT ELEVATION

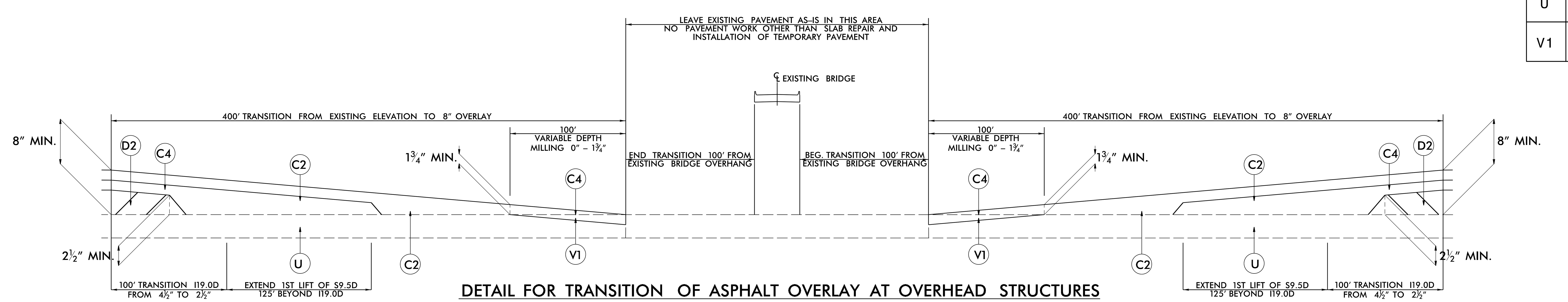
–L– STA. 9+90.00 TO –L– STA. 13+90.00
–L– STA. 295+30.00 TO –L– STA. 299+30.00



DETAIL FOR TRANSITION FROM ASPHALT OVERLAY TO EXISTING PAVEMENT ELEVATION

–L– STA. 259+79.17 TO –L– STA. 263+79.17
–L– STA. 362+00.00 TO –L– STA. 366+00.00
–Y2RPA– STA. 13+05.00 TO –Y2RPA– STA. 17+05.00
–Y2RPB– STA. 13+95.00 TO –Y2RPB– STA. 17+95.00
–Y2RPC– STA. 13+35.00 TO –Y2RPC– STA. 17+35.00
–Y2RPD– STA. 14+30.00 TO –Y2RPD– STA. 18+30.00
–Y3RPA– STA. 14+10.00 TO –Y3RPA– STA. 18+10.00
–Y3RPB– STA. 14+05.00 TO –Y3RPB– STA. 17+05.00
–Y3RPC– STA. 13+70.00 TO –Y3RPC– STA. 17+70.00
–Y3RPD– STA. 13+05.00 TO –Y3RPD– STA. 17+05.00
–Y5RPB– STA. 13+85.00 TO –Y5RPB– STA. 17+85.00
–Y5RPC– STA. 13+20.00 TO –Y5RPC– STA. 17+20.00
–Y6RPA– STA. 12+70.00 TO –Y6RPA– STA. 16+70.00
–Y6RPB– STA. 13+26.00 TO –Y6RPB– STA. 17+26.00
–Y6RPC– STA. 12+70.00 TO –Y6RPC– STA. 16+70.00
–Y6RPD– STA. 12+85.00 TO –Y6RPD– STA. 16+85.00

PAVEMENT SCHEDULE	
C1	3½″ S9.5D
C2	VAR. S9.5D
C4	1¾″ S9.5D
D2	VAR. I19.0D
U	EX. PAVEMENT
V1	VAR. DEPTH MILLING



DETAIL FOR TRANSITION OF ASPHALT OVERLAY AT OVERHEAD STRUCTURES

–L– STA. 89+23.77 TO –L– STA. 99+89.06
–L– STA. 150+26.51 TO –L– STA. 160+57.77

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2C-1

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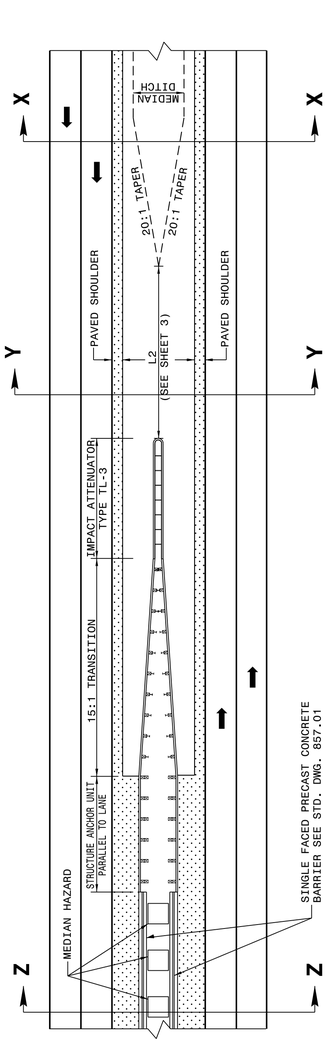
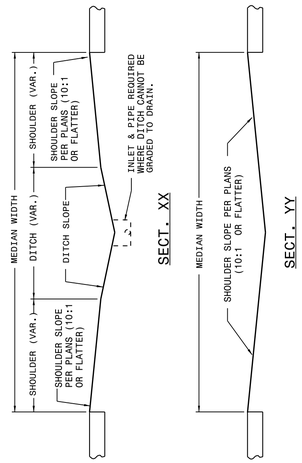
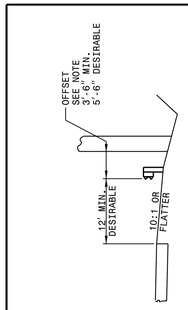
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 1 OF 11
862D01







NOTE: WHEN OFFSET DISTANCE FROM FACE OF OBSTRUCTION TO FACE OF GUARDRAIL IS BETWEEN 3'-6" AND 5'-6", BEGIN 6'-3" POST SPACING AT A POINT 12'-6" BEFORE REACHING THE OBSTRUCTION AND CARRY THROUGHOUT ITS LENGTH. IF THE OFFSET IS LESS THAN 3'-6" USE CONCRETE BARRIER.

DETAIL OF RIGHT SIDE GUARDRAIL AT UNDERPASS

DETAIL OF MEDIAN TREATMENT AT UNDERPASS

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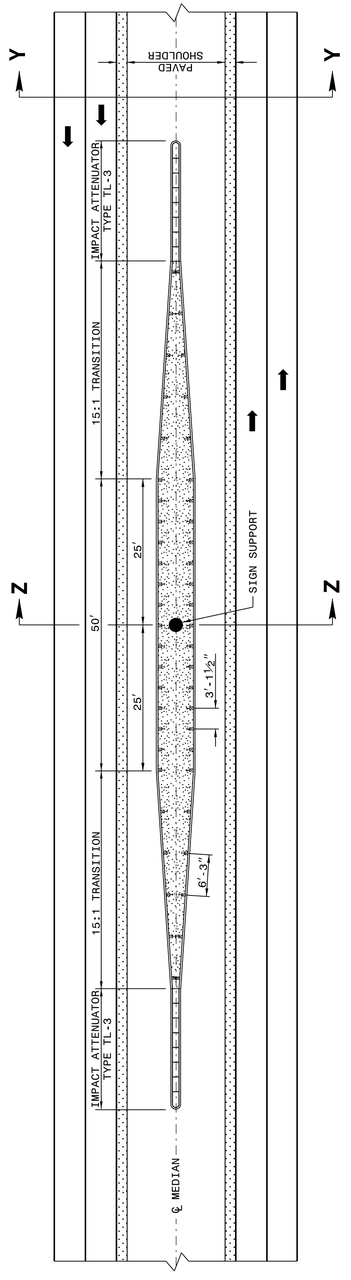
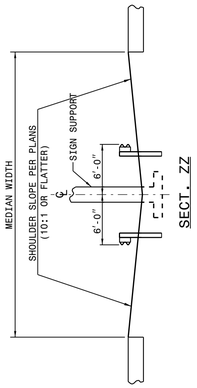
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

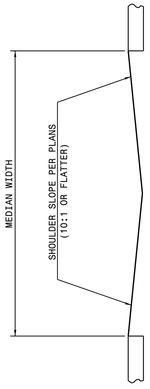
SHEET 2 OF 11
862D01



NOTE SPECIAL LAYER OF PAVEMENT .....

USE 3'-11½" POST SPACING ON THE 50' OF GUARDRAIL PARALLEL TO LANES AND 6'-3" POST SPACING ON 15:1 TRANSITION SECTIONS.
GRADE MEDIAN IN THE VICINITY OF THE SIGN SUPPORT AS ILLUSTRATED IN THE ROADWAY STANDARD DRAWINGS (STARDARD 862D01 SHEET 1 OF 12).





DETAIL OF GUARDRAIL AT MEDIAN SIGN SUPPORT

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ROADWAY DETAIL DRAWING FOR
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SHEET 2 OF 11
862D01

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FILE SPEC.: _____

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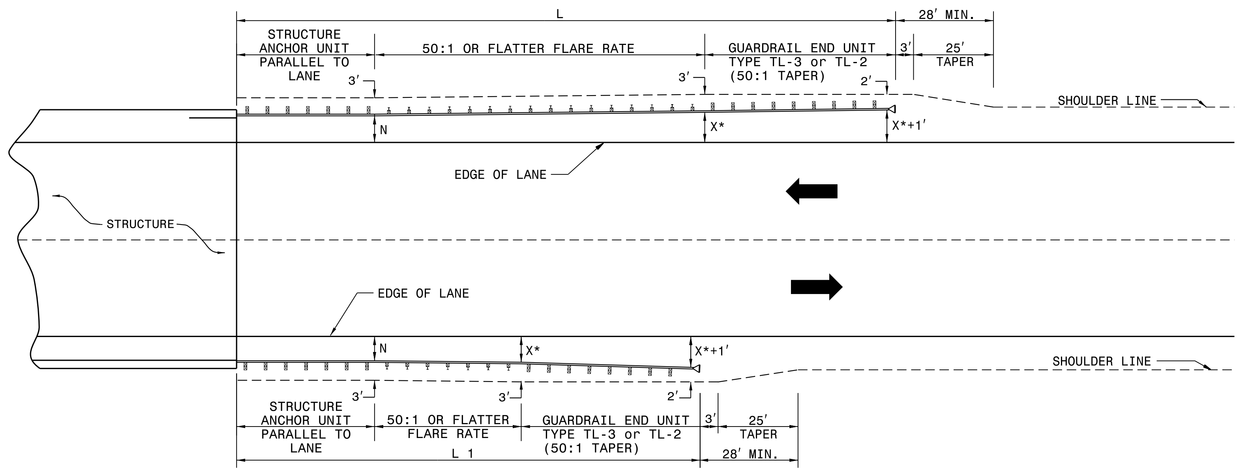
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



* USE FLARE RATE AS THE CONTROL IF THE "X" DISTANCE IS NOT OBTAINED. ("X" IS BASED ON SHOULDER WIDTHS IN THE HIGHWAY DESIGN BRANCH MANUAL, PART 1, 1-4B, F1).

"N"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

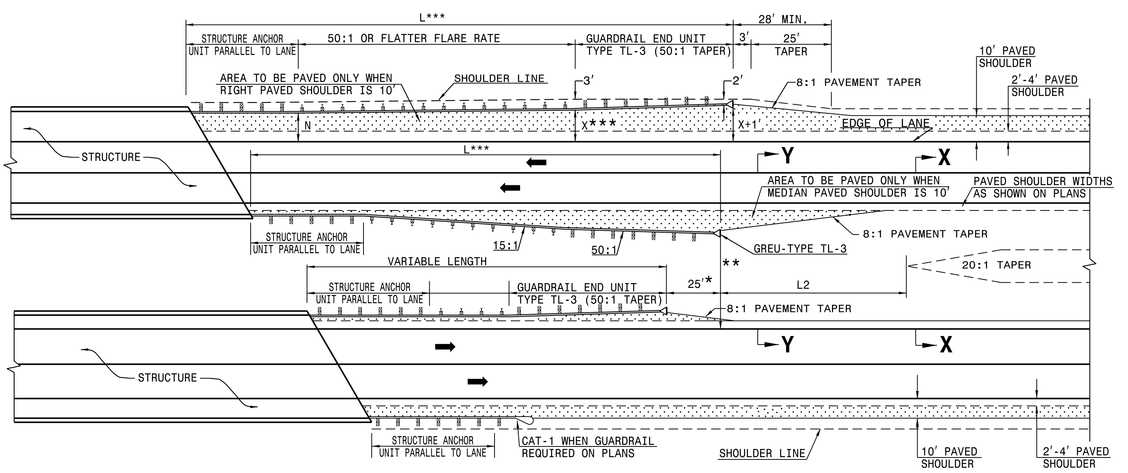
FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

GUARDRAIL INSTALLATION AT BRIDGE APPROACHES FOR TWO-LANE, TWO-WAY TRAFFIC

DESIGN SPEED (MPH)	"L" APPROACH LENGTH (FT.)				"L1" TRAILING LENGTH (FT.)			
	DESIGN YEAR ADT		CURRENT YEAR ADT		DESIGN YEAR ADT		CURRENT YEAR ADT	
	OVER 2000	1001-2000	400-1000	UNDER 400	OVER 2000	1001-2000	400-1000	UNDER 400
70	362.5'	362.5'	350.0'	287.5'	187.5'	187.5'	175.0'	75.0'
60	300.0'	287.5	275.0'	225.0'	137.5'	137.5'	100.0'	75.0'
50	212.5'	212.5'	200.0'	162.5'	87.5'	75.0'	75.0'	75.0'
40	175.0'	150.0'	137.5'	112.5'	75.0'	75.0'	75.0'	75.0'
X *	8'	6'	4'	4'	8'	6'	4'	4'

LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS

SHEET 4 OF 11
862D01



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DIMENSIONS FOR LENGTH OF GUARDRAIL APPROACHING DUAL LANE BRIDGES

MEDIAN WIDTH	-L-***						-L2- DIM.
	70 MPH	60 MPH	50 MPH				
30'	300.0'	250.0'	150.0'				80.0'
36'	300.0'	250.0'	150.0'				60.0'
40' & ABOVE	300.0'	250.0'	150.0'				40.0'

NOTES: * MINOR VARIATION TO THE 25'-0" DIMENSION IS PERMISSIBLE TO ACCOMODATE THE 12'-6" IN GUARDRAIL LENGTHS.

** NO GUARDRAIL IS REQUIRED ON THE TRAILING END WHEN THIS DISTANCE EXCEEDS CLEAR ROADSIDE RECOVERY AREA FOR THE APPROPRIATE DESIGN SPEED.

*** BASED ON "X" OF 12'
USE FLARE RATE AS THE CONTROL IF THE "X" DISTANCE IS NOT OBTAINED. ("X" IS BASED ON SHOULDER WIDTHS IN THE HIGHWAY DESIGN BRANCH MANUAL, PART 1, 1-4B, F1A).

"N"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

THE DESIGN LAYOUT FOR LENGTHS SHOWN ON THIS STANDARD ARE MINIMUM DESIGN LENGTHS.

SEE SHEET 1 OF 12 FOR SECTIONS XX, YY

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

DETAIL OF GUARDRAIL APPROACHING DUAL LANE BRIDGES

SHEET 3 OF 11
862D01

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FILE SPEC.: _____ DATE: _____

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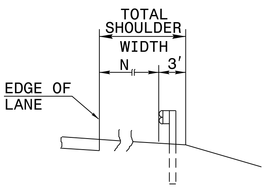
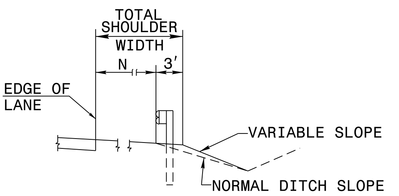
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

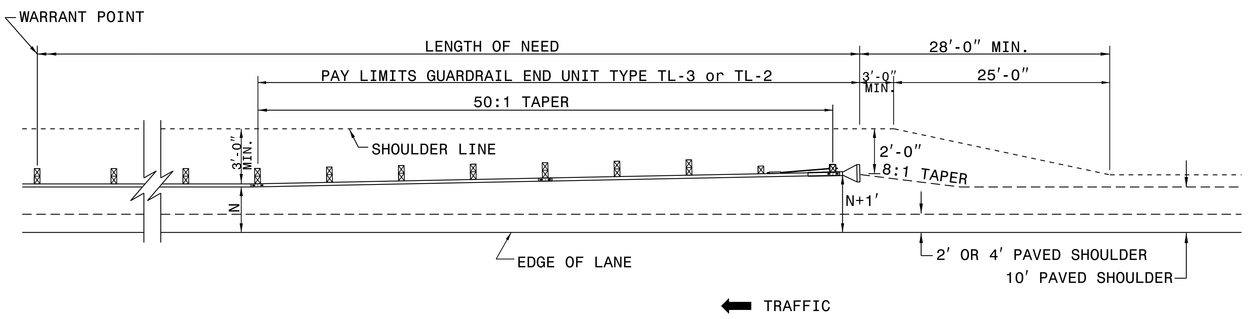


FILL SECTION



CUT SECTION

"N"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

SHEET 6 OF 11
862D01

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 11
862D01

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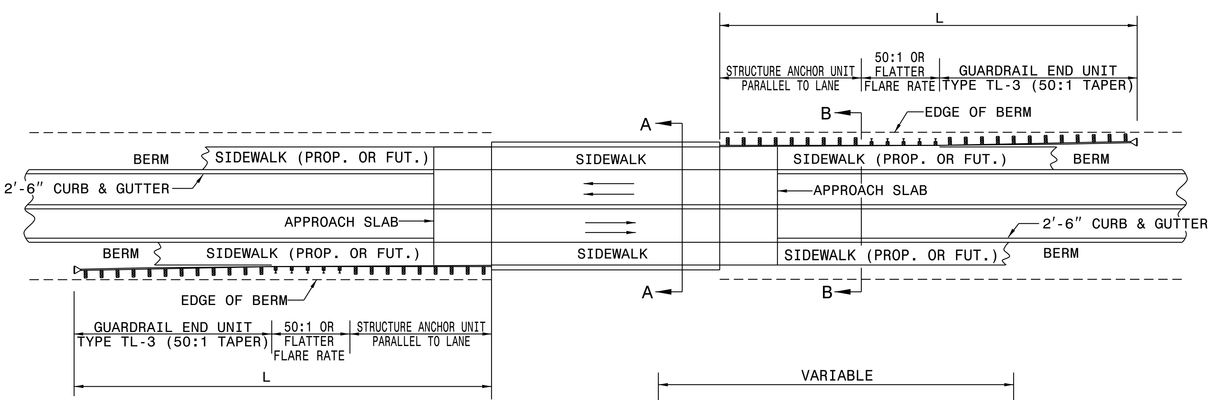
DIVISION OF HIGHWAYS
RALEIGH, N.C.

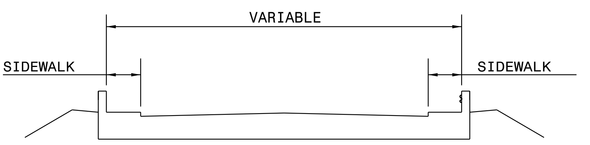
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



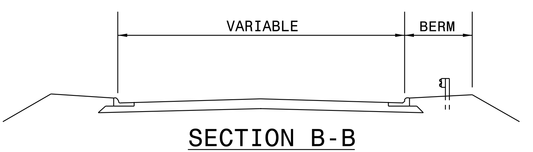
MINIMUM GUARDRAIL LENGTHS "L" REQUIRED AT BRIDGE APPROACHES ON 2'-6" CONCRETE CURB AND GUTTER ROADWAYS	
DESIGN SPEED (MPH)	"L"
40	150'
50	225'

NOTE: "L" VALUES ARE BASED ON NO HAZARDS OTHER THAN END OF BRIDGE BEING PRESENT WITHIN THE CLEAR ZONE.

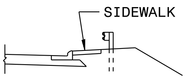
SEE STD. 862D03 FOR STRUCTURE ANCHOR UNITS.



SECTION A-A



SECTION B-B



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

STANDARD GUARDRAIL PLACEMENT AT BRIDGES WITH 2'-6" CONCRETE CURB AND GUTTER

SHEET 5 OF 11
862D01

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 5 OF 11
862D01

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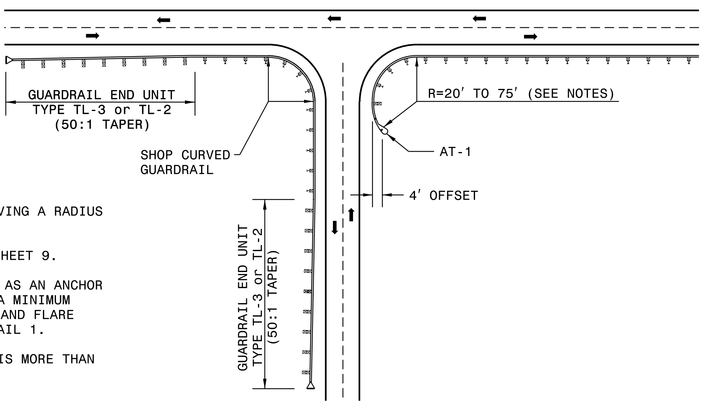
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 8 OF 11
862D01



NOTES:

SHOP CURVED GUARDRAIL IS DEFINED AS HAVING A RADIUS OF 150' OR LESS.

WHEN RADIUS IS LESS THAN 20' REFER TO SHEET 9.

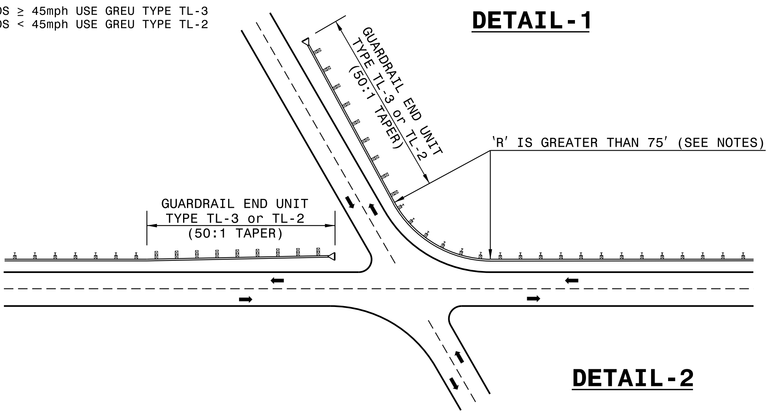
WHENEVER SHOP CURVED GUARDRAIL IS USED AS AN ANCHOR AND THE RADIUS IS FROM 20' TO 75', USE A MINIMUM LENGTH OF 50' OF SHOP CURVED GUARDRAIL AND FLARE WITH AN AT-1 ANCHOR UNIT. REFER TO DETAIL 1.

WHENEVER SHOP CURVED GUARDRAIL RADIUS IS MORE THAN 75', REFER TO DETAIL 2.

MAINTAIN CLEAR SIGHT DISTANCE.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL-1



DETAIL-2

GUARDRAIL TREATMENT AT INTERSECTIONS

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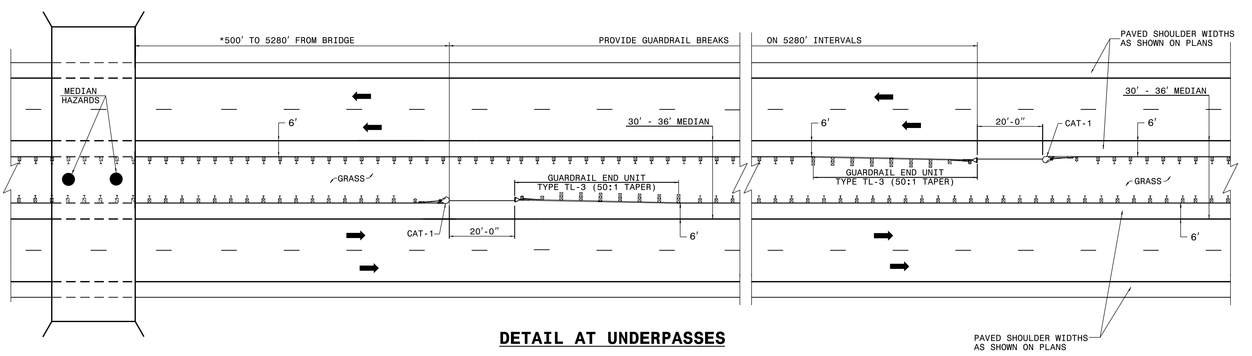
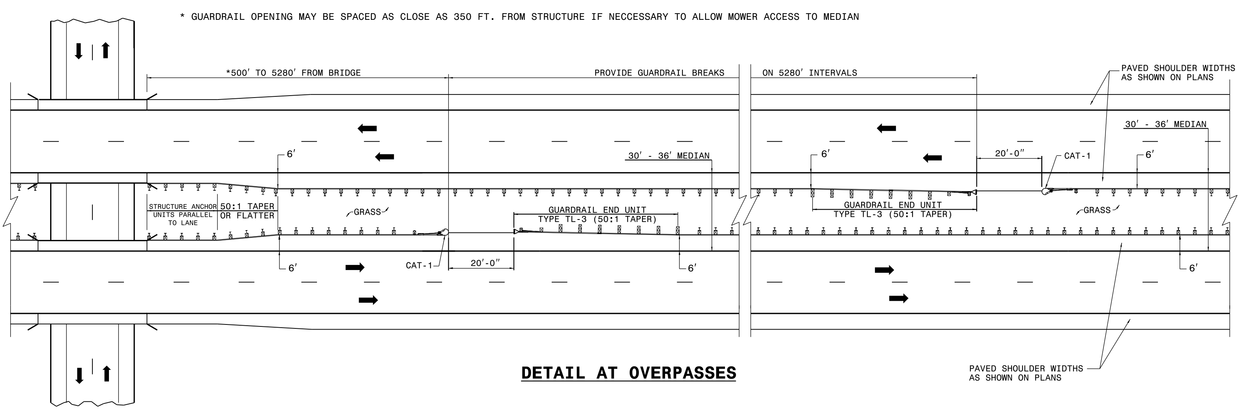
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 8 OF 11
862D01



DETAIL AT UNDERPASSES

* GUARDRAIL OPENING MAY BE SPACED AS CLOSE AS 350 FT. FROM STRUCTURE IF NECCESSARY TO ALLOW MOWER ACCESS TO MEDIAN



DETAIL AT OVERPASSES

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

GUARDRAIL BREAK INTERVALS WITH 30' - 36' MEDIANS

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 7 OF 11
862D01

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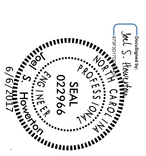

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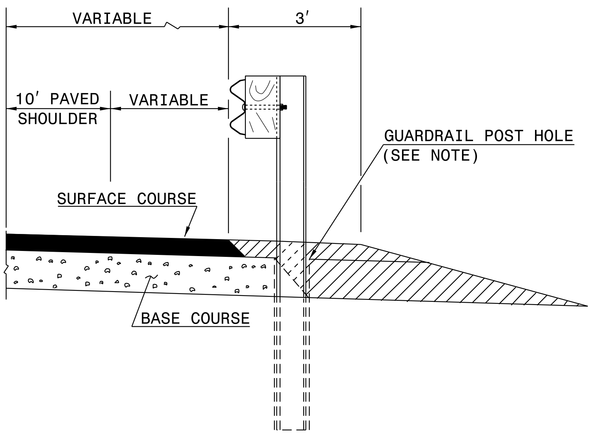
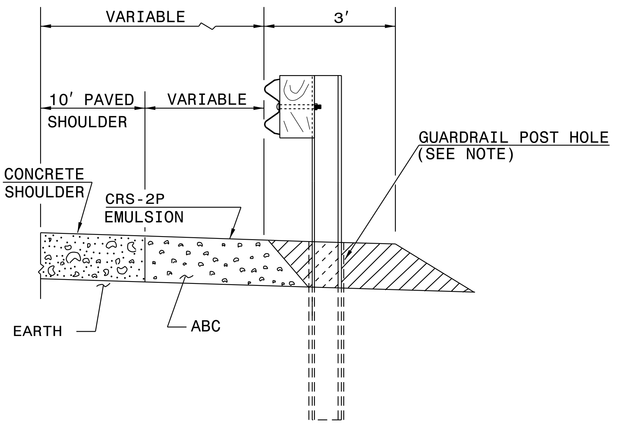
ENGLISH DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



FLEXIBLE PAVED SHOULDER



CONCRETE PAVED SHOULDER

EARTH MATERIAL

NOTE:
WHEN WOODEN GUARDRAIL POSTS ARE USED, DRILL HOLES THROUGH EARTH MATERIAL AND BASE COURSE.THE POST MAY THEN BE DRIVEN TO THE PROPER DEPTH. DRILL THE HOLE OF SUFFICIENT SIZE TO ACCOMMODATE THE PARTICULAR POST BEING USED. BACKFILL AND TAMP HOLES USING THE EXCAVATED MATERIAL.

SHEET 10 OF 11
862D01

STATE OF NORTH CAROLINA
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ENGLISH DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 10 OF 11
862D01

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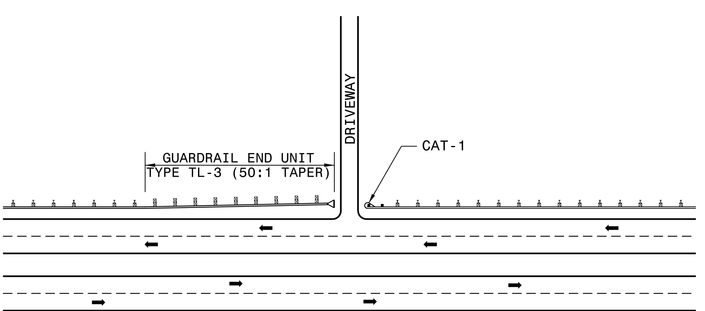
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

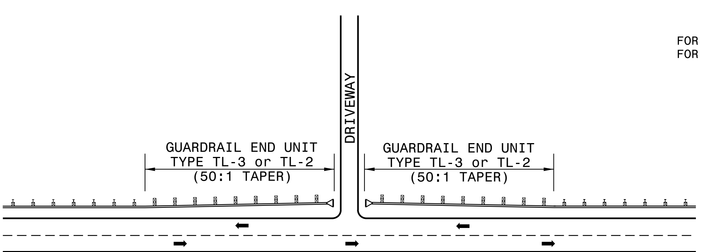


DETAIL-3
DIVIDED HIGHWAY

NOTE: USE DETAIL 3 & 4 WHENEVER 20′ OR LARGER RADIUS CANNOT BE UTILIZED.

MAINTAIN CLEAR SIGHT DISTANCE.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2



DETAIL-4
UNDIVIDED HIGHWAY

GUARDRAIL TREATMENT AT DRIVEWAYS

SHEET 9 OF 11
862D01

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 9 OF 11
862D01

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 JAMES S. HOWERTON III

PROJECT REFERENCE NO. I-5786
SHEET NO. 2C-5

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2C-6

STATE OF
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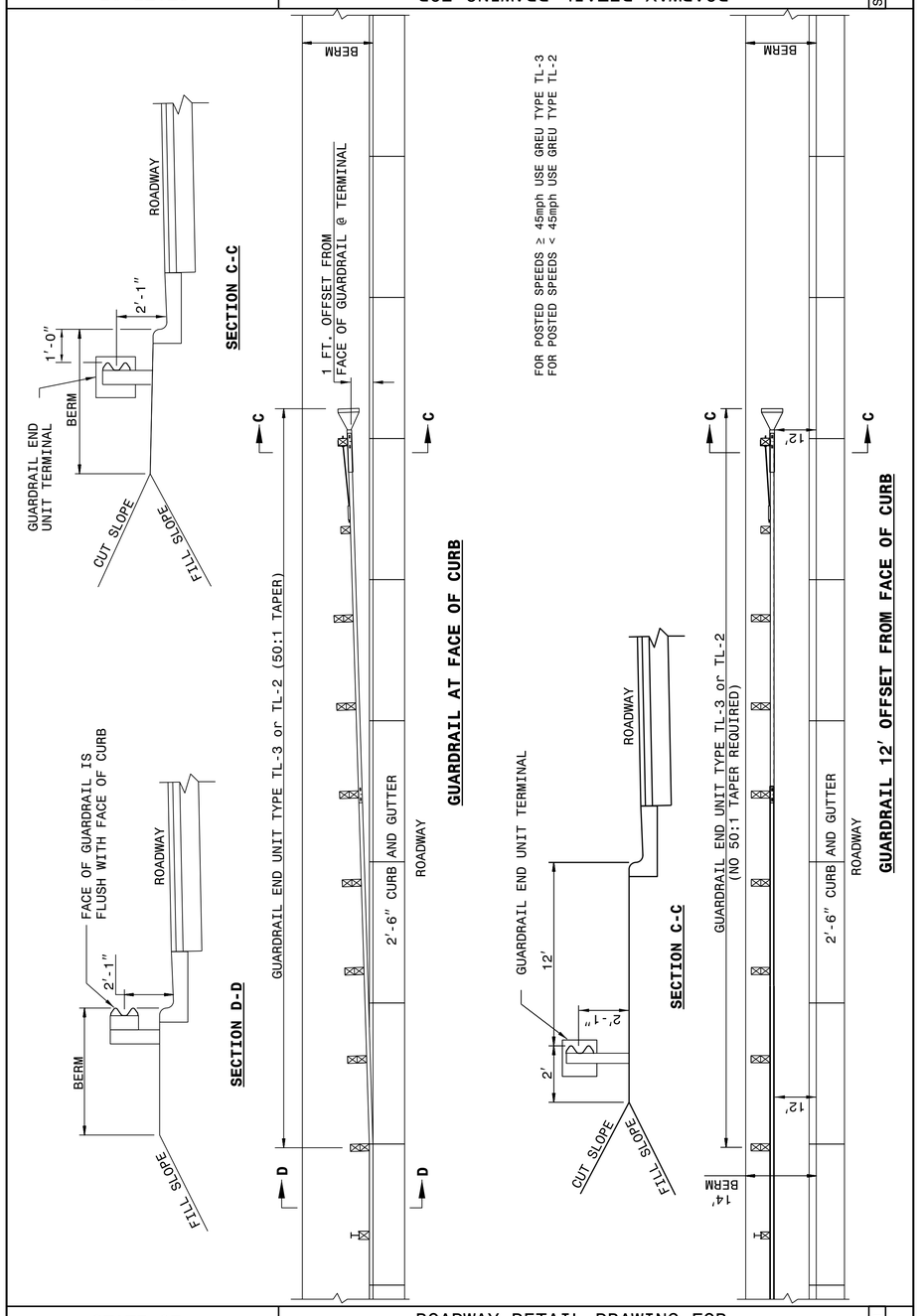
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT
GUARDRAIL TREATMENT AT CURB AND GUTTER

SHEET 11 OF 11
862D01



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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT
GUARDRAIL TREATMENT AT CURB AND GUTTER

SHEET 11 OF 11
862D01

DocuSigned by: Joel S. Howerton
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6/6/2017

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04-MAY-2017 15:11
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jhowerton AT CSD-212995

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2C-7

STATE OF
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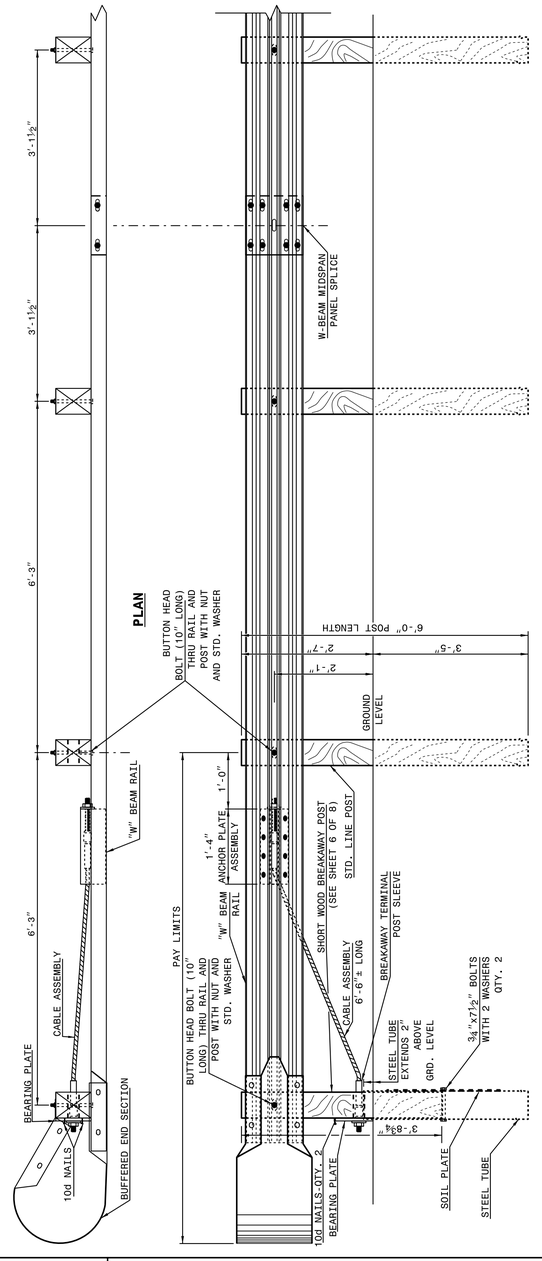
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 8
862D02



TRAILING END UNIT ASSEMBLY
C.A.T.-1 SYSTEM

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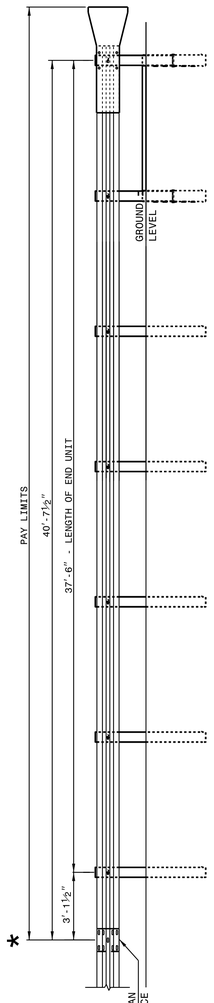
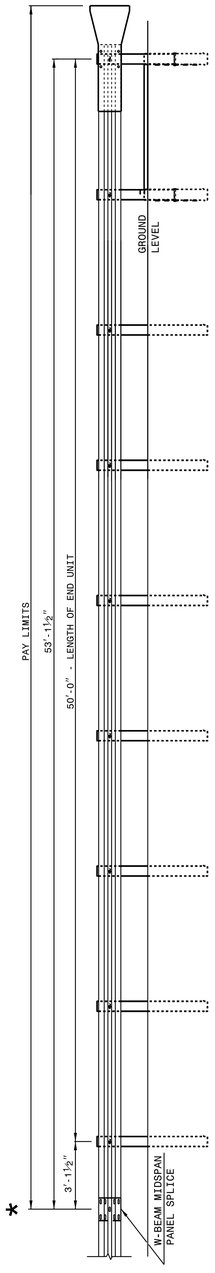
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 8
862D02



FLARED AND TANGENT
ELEVATION VIEW

* WHEN INSTALLING GUARDRAIL END UNITS THAT ARE 2'-1" MOUNTING HEIGHT TO EXISTING GUARDRAIL, REMOVE THE EXISTING GUARDRAIL TO TRANSITION FROM THE EXISTING HEIGHT TO THE PROPOSED 2'-1" HEIGHT. SEE 862.02, SHEET 4 OF 8 FOR TRANSITION DETAILS.



FLARED AND TANGENT
ELEVATION VIEW

APPROACH END UNITS

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 8
862D02

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2C-8

STATE OF
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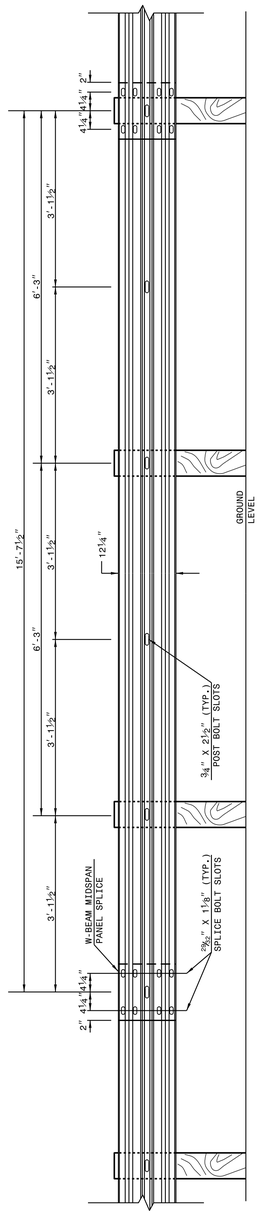
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 3 OF 8
862D02



15'-7½" W-BEAM GUARDRAIL PANEL

NOTE: USE 5-SPACE 15'-7½" W-BEAM GUARDRAIL PANEL AT THE DOWNSTREAM END OF AN END UNIT THAT DOES NOT OFFSET THE W-BEAM PANEL SPLICE TO MIDSPAN

Docusigned by:
Joel S. Howerton
NORTH CAROLINA
PROFESSIONAL
SEAL
022966
ENGINEER
Joel S. Howerton
6/6/2017

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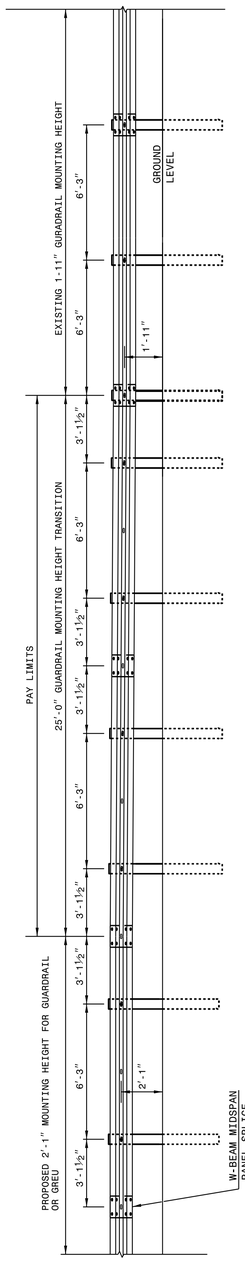
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 4 OF 8
862D02

NOTE: IF EXISTING GUARDRAIL IS LOWER THAN 1'-11", USE AN ADDITIONAL 12'-6" LONG SECTION OF GUARDRAIL, FOR EVERY 1" OF HEIGHT DIFFERENCE, TO TRANSITION FROM EXISTING GUARDRAIL TO PROPOSED 2'-1" GUARDRAIL.



ELEVATION VIEW

TRANSITION FROM OR 1'-11" TO 2'-1" W-BEAM GUARDRAIL MOUNTING HEIGHT

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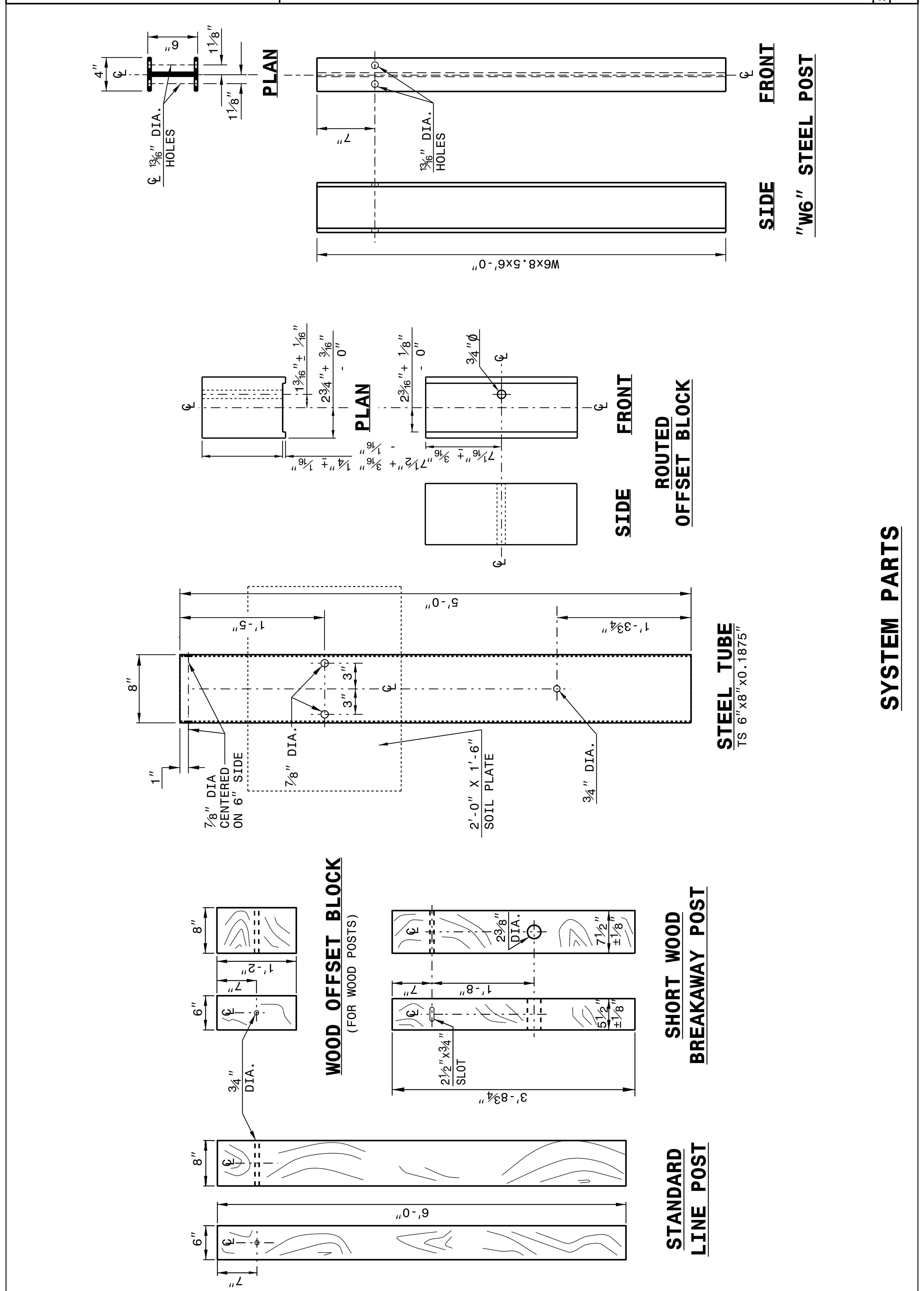
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 4 OF 8
862D02

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2C-9

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION
SHEET 6 OF 8 862D02



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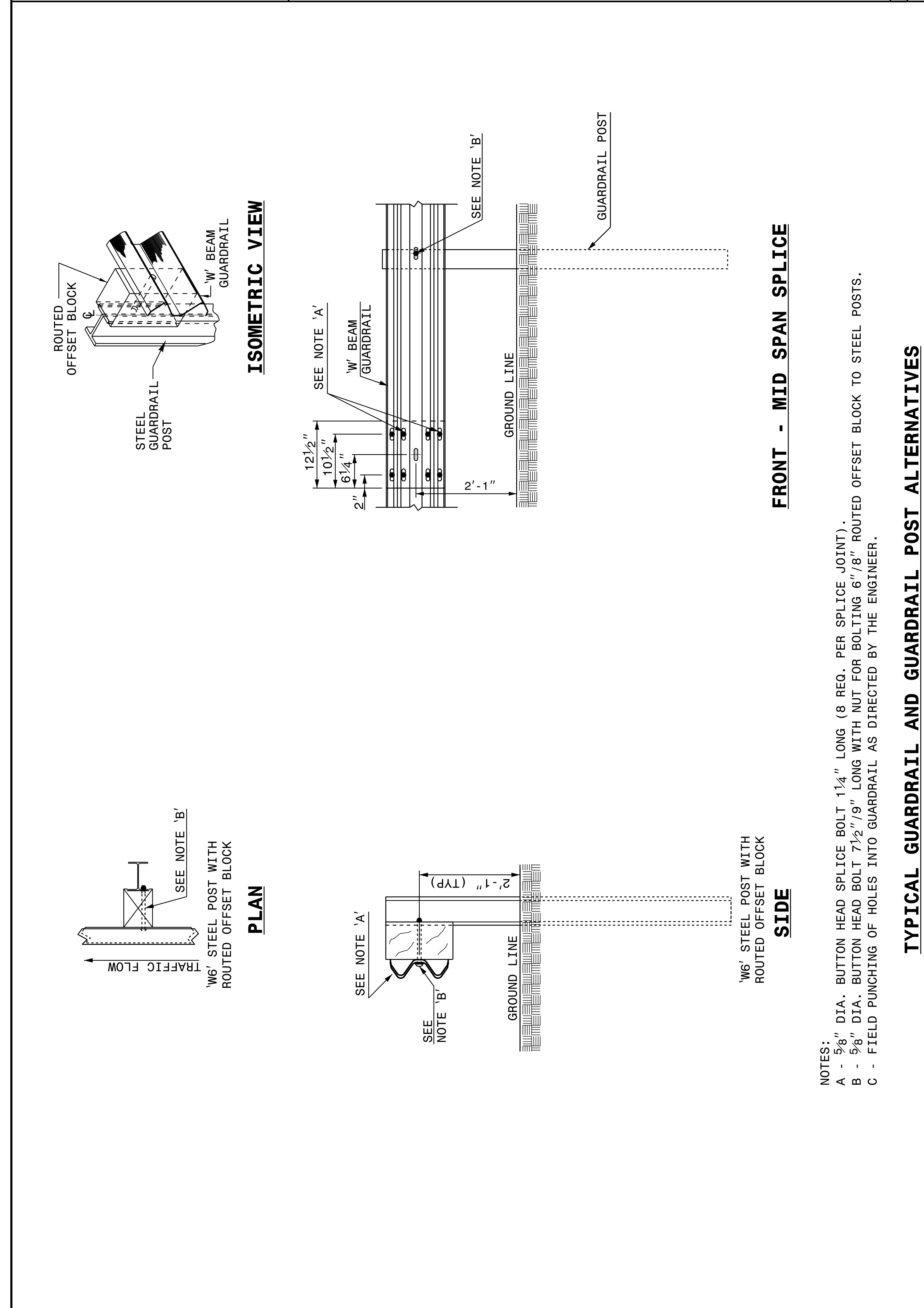
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION
SHEET 5 OF 8 862D02



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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 5 OF 8
862D02

SEAL 022966 — Joel S. Howerton — 6/6/2017

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I-5786	2C-10

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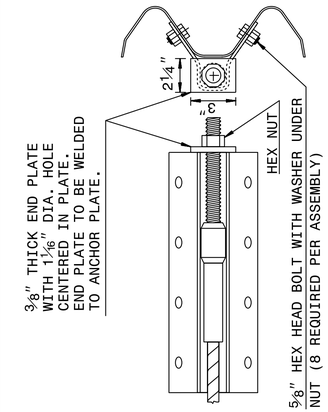
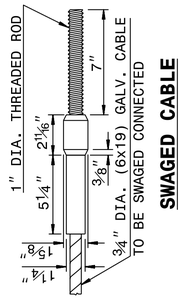
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 8
862D02

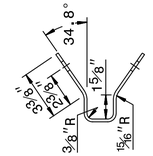
SYSTEM PARTS



ANCHOR PLATE ASSEMBLY

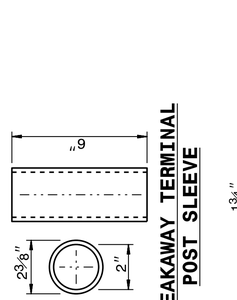


SWAGED CABLE

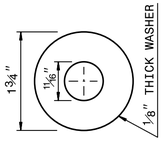


ANCHOR PLATE

CABLE ASSEMBLY

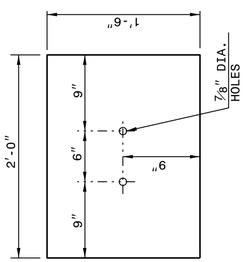


BREAKAWAY TERMINAL POST SLEEVE



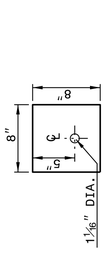
DETAIL OF STANDARD WASHER

STANDARD WASHER: TYPICAL USE UNDER NUT WITH WOOD POST



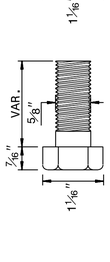
SOIL PLATE

¼" THICK PLATE

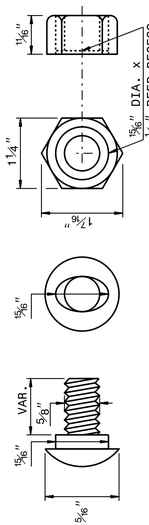


BEARING PLATE

⅝" THICK PLATE



DETAIL OF STANDARD HEX BOLT AND NUT



DETAIL OF BUTTON HEAD BOLT AND NUT

SYSTEM PARTS

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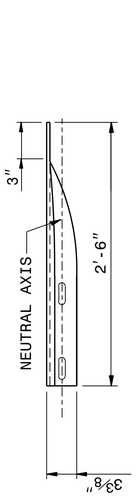
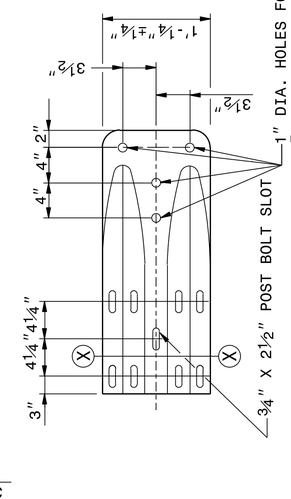
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

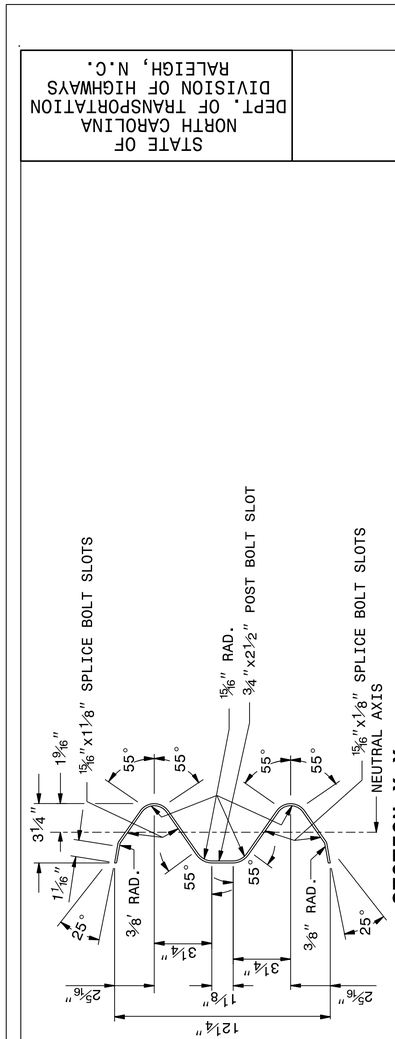
SHEET 8 OF 8
862D02

SYSTEM PARTS - GENERAL USE

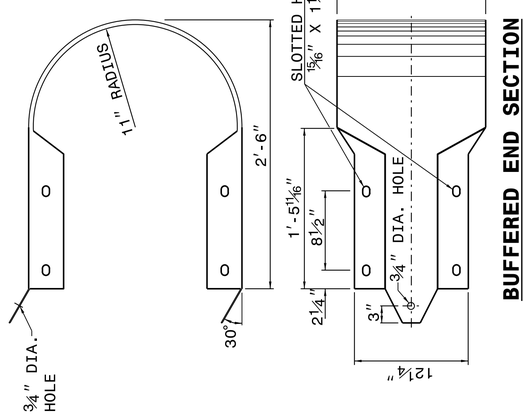




TYPICAL END SHOE



SECTION X-X



BUFFERED END SECTION

STATE OF
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 8 OF 8
862D02

Designed by Joel S. Howerton
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton
6/6/2017

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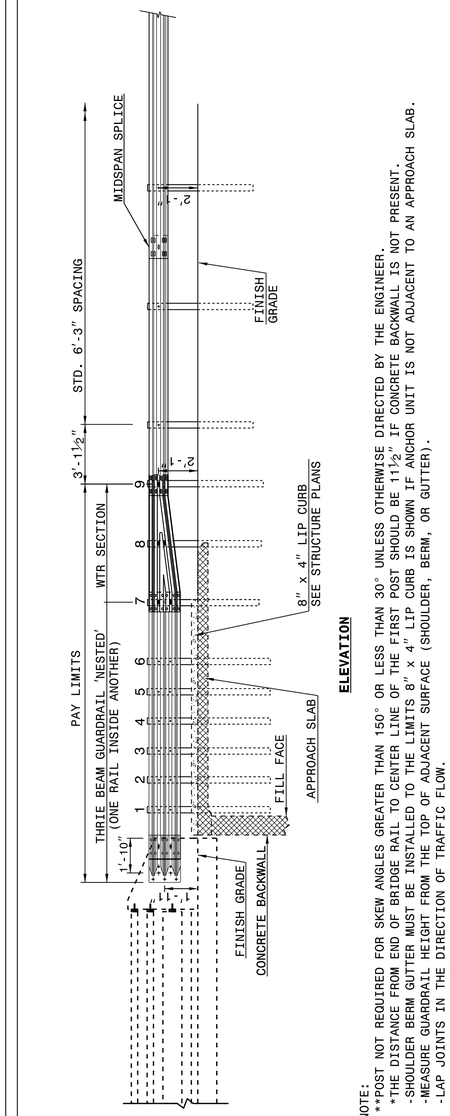
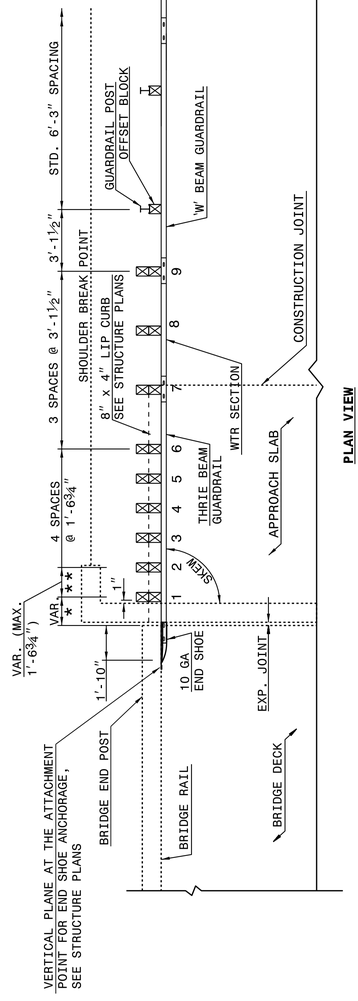


ELEVATION

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 1½" 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 5 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

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

ELEVATION

NOTE:
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-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 5 FOR POST SECTIONS 1 THRU 9.

PLAN VIEW

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

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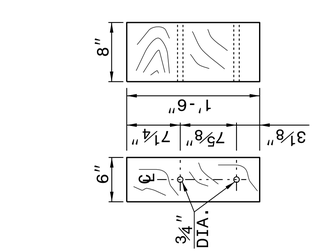
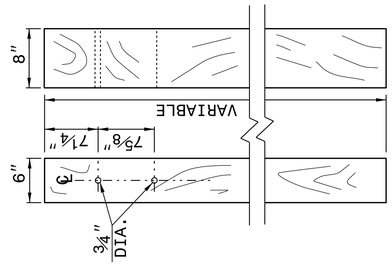
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III

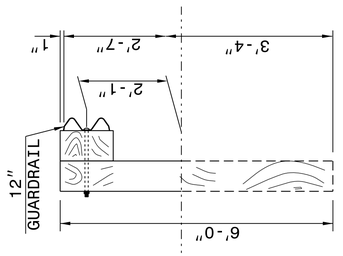
SHEET 3 OF 7
862D03



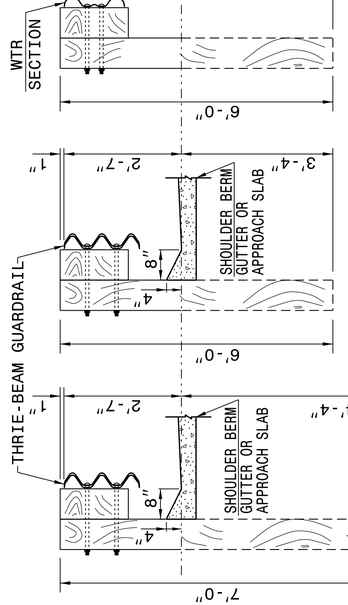
THRIE BEAM OFFSET BLOCK



THRIE BEAM LINE POST

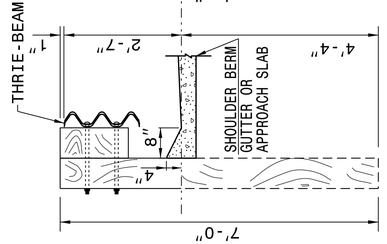


SECTION OF 'W' BEAM POST 9



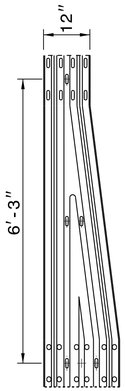
SECTION OF WTR BEAM POST 8

SECTION OF THRIE BEAM POST 7

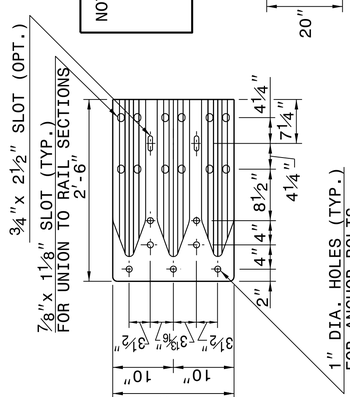


SECTION OF THRIE BEAM POSTS 1 THRU 6

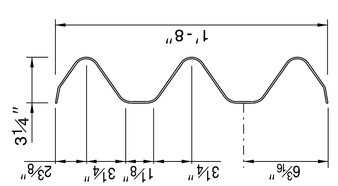
NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



WTR SECTION
ELEVATION VIEW



END SHOE



THRIE-BEAM SECTION

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: _____
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FILE SPEC.: _____

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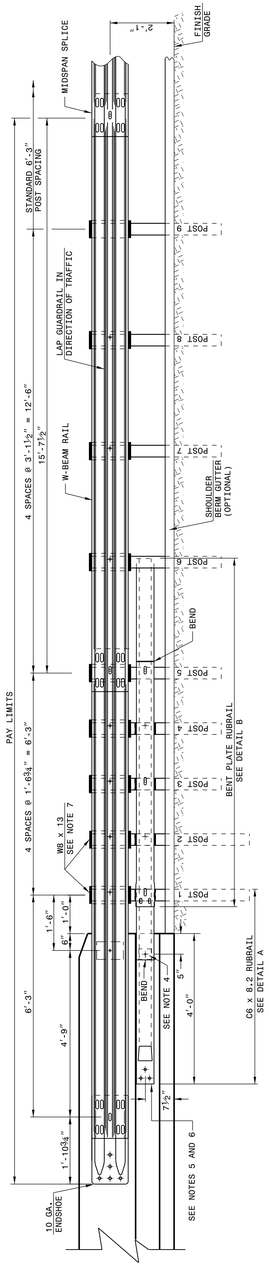
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

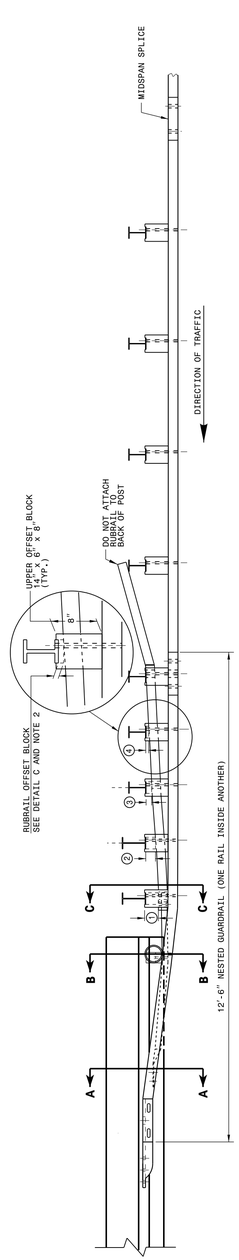
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

SHEET 4 OF 7
862D03



ELEVATION

GENERAL NOTES:
1) POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL.
2) RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH ⅝" BUTTONHEAD BOLTS (SEE CHART FOR BOLT LENGTHS). SECURE BLOCKS ONLY TO POSTS 2 AND 4. SECURE RUBRAIL AND BLOCKOUTS TO POSTS 1 AND 3. RUBRAIL IS SECURED TO POST 5 WITH A ⅝" x 4½" BUTTONHEAD BOLT. RUBRAIL IS FLARED TO BACK OF POST 6 AND NOT SECURED.
3) STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 8 ⅛" INSIDE DIAMETER x 9" LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH ⅝" x 3" LAG BOLT WITH FLAT WASHER.
4) SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE ⅜" x 3" LONG GALVANIZED BOLT AND NUT AND ATTACH FLUSH WITH THE SLOPED RUBRAIL.
5) SHOP FABRICATE THE C6 x 8.2 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE F SHAPE AND ATTACH TO RAIL ELEMENT WITH ⅝" x 6" CHEMICALLY ANCHORED TOE OF THE BARRIER OR BRIDGE RAIL.
6) ANCHORAGE:
   (a) AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR RUBRAIL USING THREE ⅝" x 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS IS ½".
   (b) AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE (SEE STD. DWG. 862.04). A BOLT INSERT ASSEMBLY IS ALLOWED ON PRECAST REINFORCED CONCRETE BARRIER (SEE STD. DWG. 857.01). INSTALL THE BOLTS AS SHOWN ON THE STRUCTURE PLANS.
   (c) AT NEW BRIDGE RAIL, ANCHOR THE W-BEAM END SHOE AND RUBRAIL AS DETAILED ON THE STRUCTURE PLANS.
7) POSTS 1 AND 2 ARE W6 x 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W6 x 8.5.



PLAN

GUARDRAIL ANCHOR UNIT TYPE B-77

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

SHEET 4 OF 7
862D03

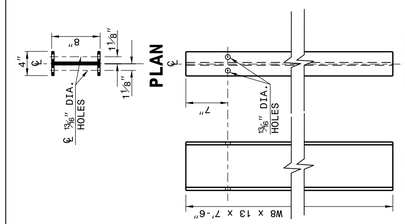
PROJECT REFERENCE NO.	SHEET NO.
I-5786	2C-13

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

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

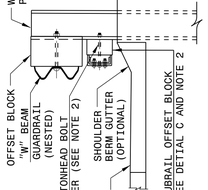
SHEET 5 OF 7
862D03

DETAIL F STEEL POST "W8 X 13 X 7'-6"

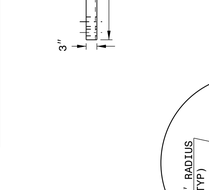


DETAIL E LAG BOLT

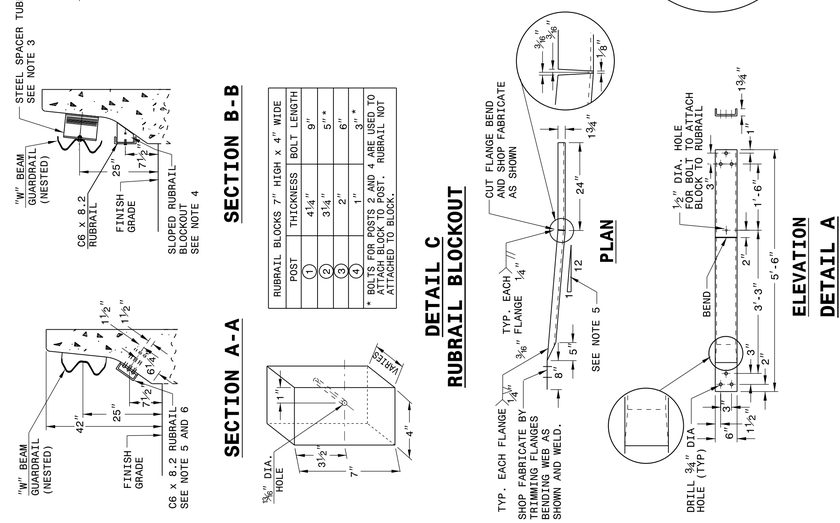
SLOPED RUBRAIL BLOCKOUT



DETAIL D



GUARDRAIL ANCHOR UNIT TYPE B-77



GUARDRAIL ANCHOR UNIT TYPE B-77

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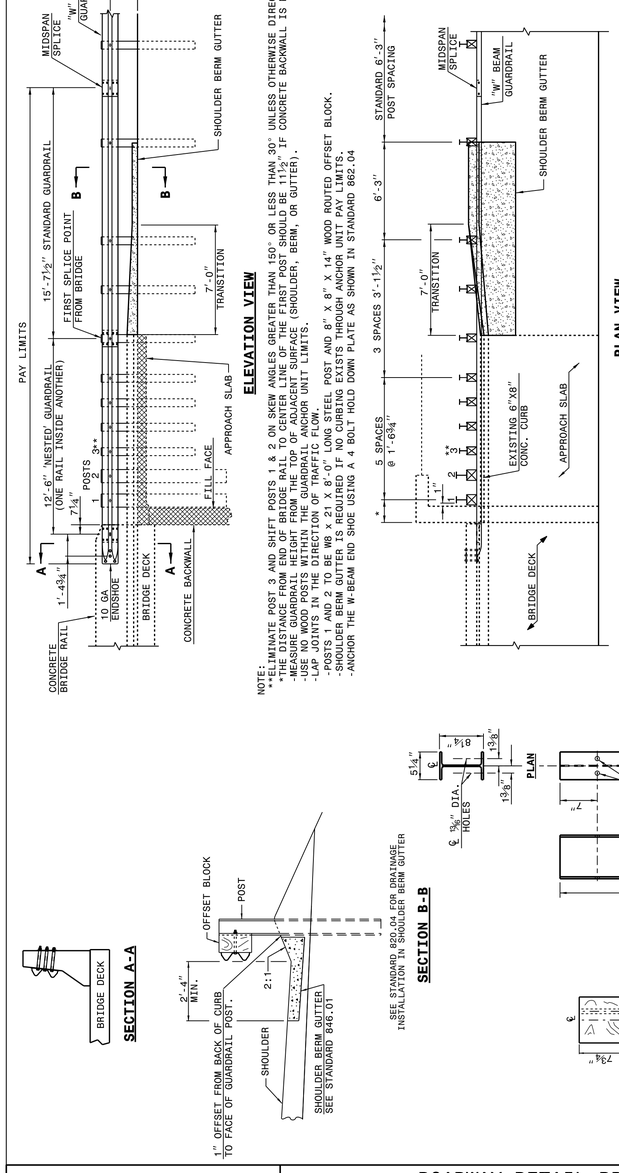
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT TYPE B-83

SHEET 6 OF 7
862D03



GUARDRAIL ANCHOR UNIT TYPE B-83

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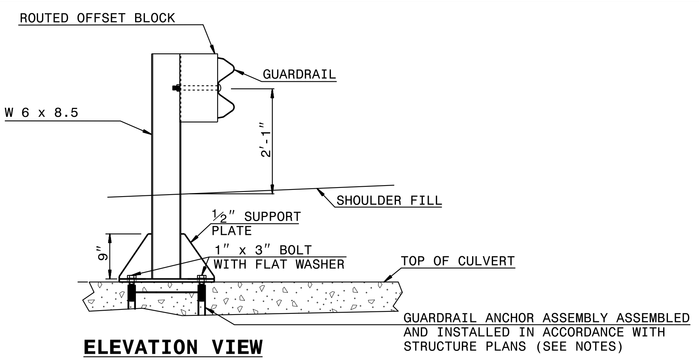
jhowerton AT CSD-242595

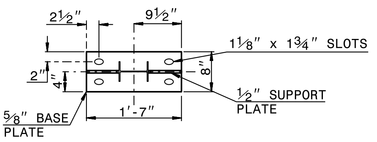
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

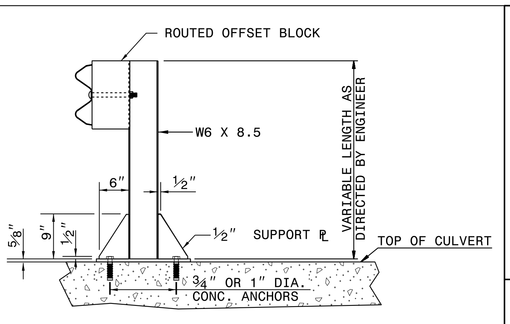
SHEET 7 OF 7
862D03



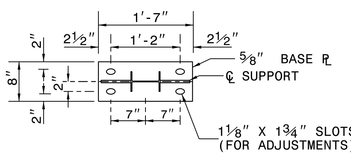
ELEVATION VIEW



PLAN VIEW



ELEVATION VIEW



PLAN VIEW

NOTES FOR:
GUARDRAIL POST ANCHORED TO STRUCTURE:
-USE FULL LENGTH ¼" BUTT WELDS AT ALL LOCATIONS OF CONTACT BETWEEN THE BASE PLATE, SUPPORT PLATES AND STEEL POST.
-USE POST AND POST BASE PLATES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION TO CONFORM TO A.S.T.M. A-123.

NEW STRUCTURES:
-ATTACH POST TO INSERT ASSEMBLY UNITS (USING ANCHOR BOLTS SUPPLIED WITH INSERTS) WHICH HAVE BEEN CAST INTO THE STRUCTURE DURING CONSTRUCTION.

EXISTING STRUCTURES:
-USE CONCRETE ANCHORS CONSISTING OF A STUD BOLT WITH NUT AND WASHER. USE STUDS THREADED ON ONE END AND HAVING AN EXPANDED WEDGE ASSEMBLY POSITIONED AROUND A TAPERED AREA AT THE OTHER END. USE ANCHORS WHICH PROVIDE A MINIMUM SAFE HOLDING POWER OF 2875 LBS. FOR A ¾" OR 1" DIAMETER BOLT. CALCULATE HOLDING POWER BASED ON ¼ THE ACTUAL HOLDING POWER OF THE ANCHOR IN 3500 PSI CONCRETE AS DETERMINED BY AN APPROVED COMMERCIAL TESTING LABORATORY.

-USE ANCHORS GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-153. SIZE HOLES FOR THE CONCRETE ANCHORS IN ACCORDANCE WITH THE ANCHOR MANUFACTURER'S RECOMMENDATIONS. DRILL HOLES WITH A CARBIDE OR DIAMOND TIPPED MASONRY BIT POWERED BY A ROTARY OR ROTARY IMPACT DRILL. NO OTHER IMPACT TOOLS WILL BE PERMITTED. DRILL HOLES VERTICALLY. FURNISH DOCUMENTATION OF HOLE SIZE RECOMMENDED FOR THE SPECIFIED ANCHOR TO THE ENGINEER BEFORE DRILLING HOLES. THOROUGHLY CLEAN HOLES FOR ANCHORS OF ALL CONCRETE CHIPS, DUST, GREASE, OIL, ETC. BEFORE ANCHORS ARE INSTALLED. REPAIR ALL DAMAGE CAUSED BY THIS WORK TO THE SATISFACTION OF THE ENGINEER.

ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

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

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

SHEET 7 OF 7
862D03

CONTRACT STANDARDS AND DEVELOPMENT UNIT
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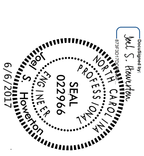
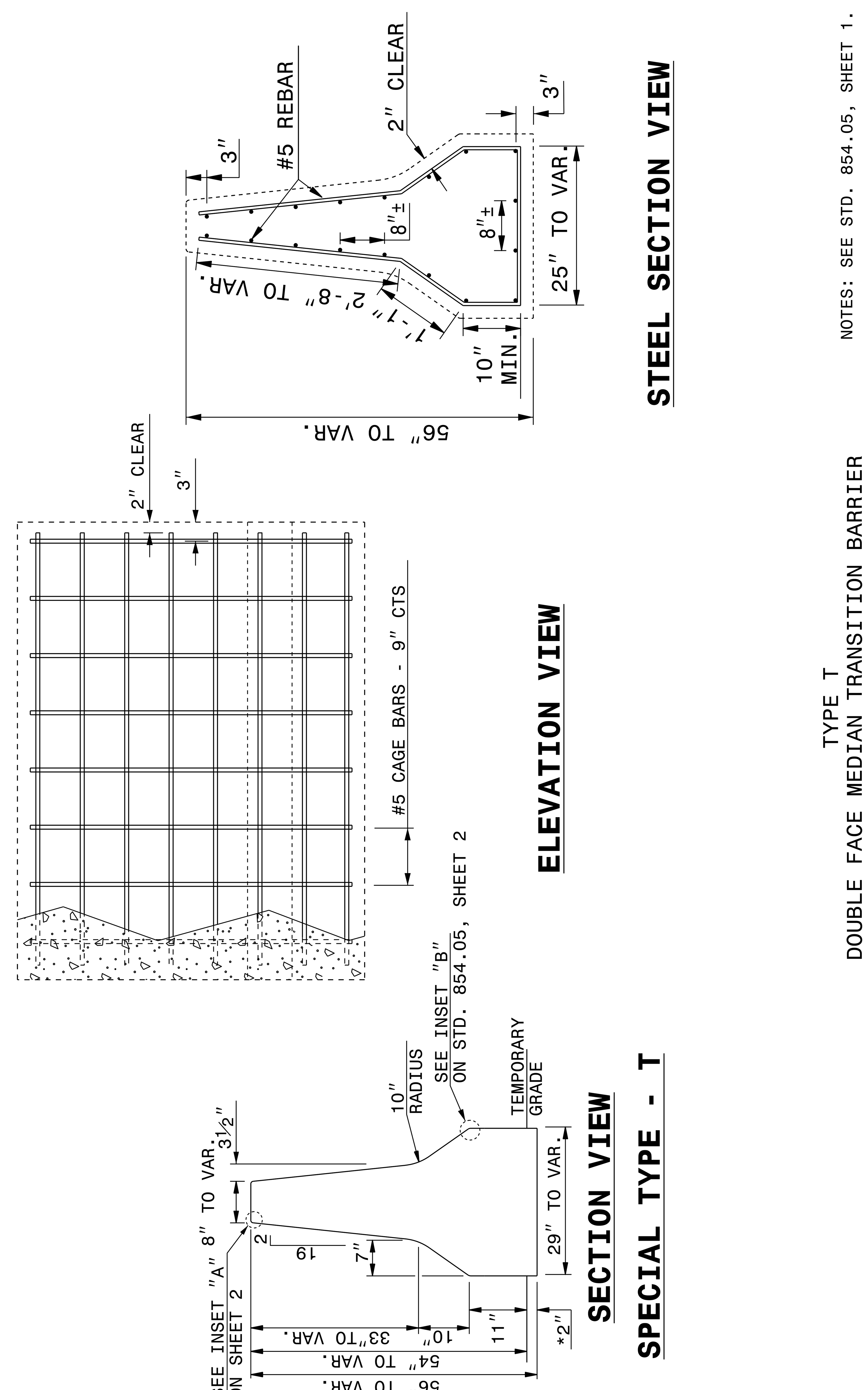


PROJECT REFERENCE NO. I-5786
SHEET NO. 2C-14

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2C-15

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY DETAIL DRAWING FOR CONCRETE MEDIAN TRANSITION BARRIER SPECIAL TYPE T
SHEET 4 OF 4 854D05



NOTES: SEE STD. 854.05, SHEET 1.

TYPE T
DOUBLE FACE MEDIAN TRANSITION BARRIER

STATE OF
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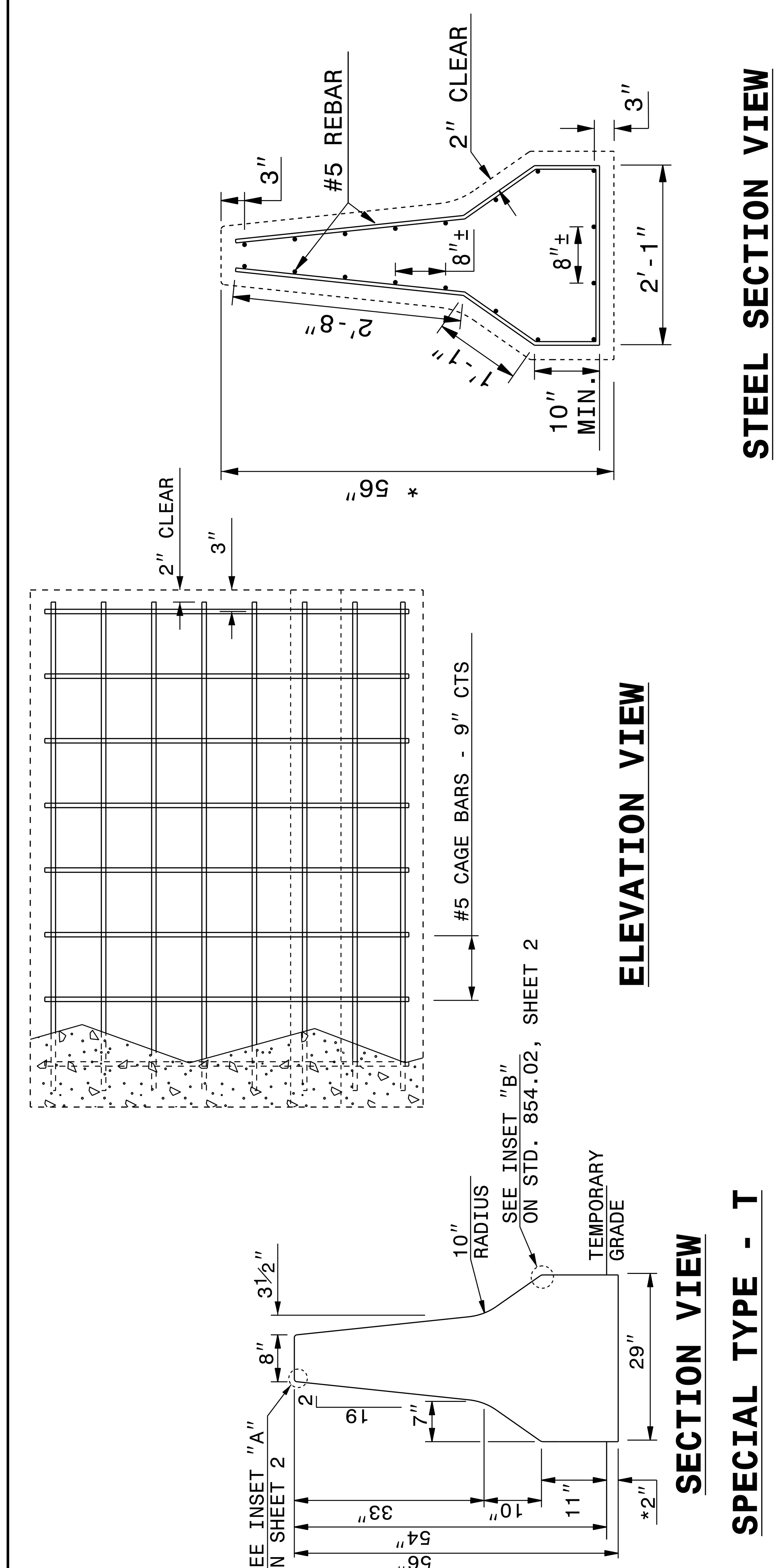
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWWAY DETAIL DRAWING FOR
CONCRETE MEDIAN TRANSITION BARRIER
SPECIAL TYPE T

SHEET 4 OF 4
854D05

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY DETAIL DRAWING FOR DOUBLE FACED CONCRETE BARRIER SPECIAL TYPE T
SHEET 1 OF 4 854D02



STEEL PLACEMENT FOR CAST-IN-PLACE OR SLIP-FORM CONCRETE BARRIER

NOTE:
REFER TO PLAN SHEET AND/OR TYPICAL SECTIONS FOR PROPER BARRIER ORIENTATION.

*THE 2" DIMENSION FROM TEMPORARY GRADE TO THE BASE IS A MINIMUM DIMENSION. REFER TO PLAN TYPICAL SECTIONS AND PAVEMENT SCHEDULE TO DETERMINE KEY-IN DEPTH.

GENERAL NOTES :
CONSTRUCT CONCRETE BARRIER OF CLASS 'AA' CONCRETE. (SEE SECTION 854 OF SPECIFICATIONS).
CONSTRUCT EXPANSION AND CONTRACTION JOINTS AS SHOWN ON STD. 854.02, SHEET 2.

SEAL ALL EXPANSION JOINTS WITH JOINT FILLER. (SEE SECTION 1028 OF THE SPECIFICATIONS).
SUBMIT ALTERNATIVE METHODS FOR STEEL FABRICATION TO THE ENGINEER.

STATE OF
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
DOUBLE FACED CONCRETE BARRIER
SPECIAL TYPE T

SHEET 1 OF 4
854D02

Joel S. Howerton
SEAL 022966 NORTH CAROLINA PROFESSIONAL ENGINEER Joel S. Howerton
6/6/2017

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ORIGINAL BY: K. KEMPF DATE: 03-03-2015
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jhowerton AT CSD-242595

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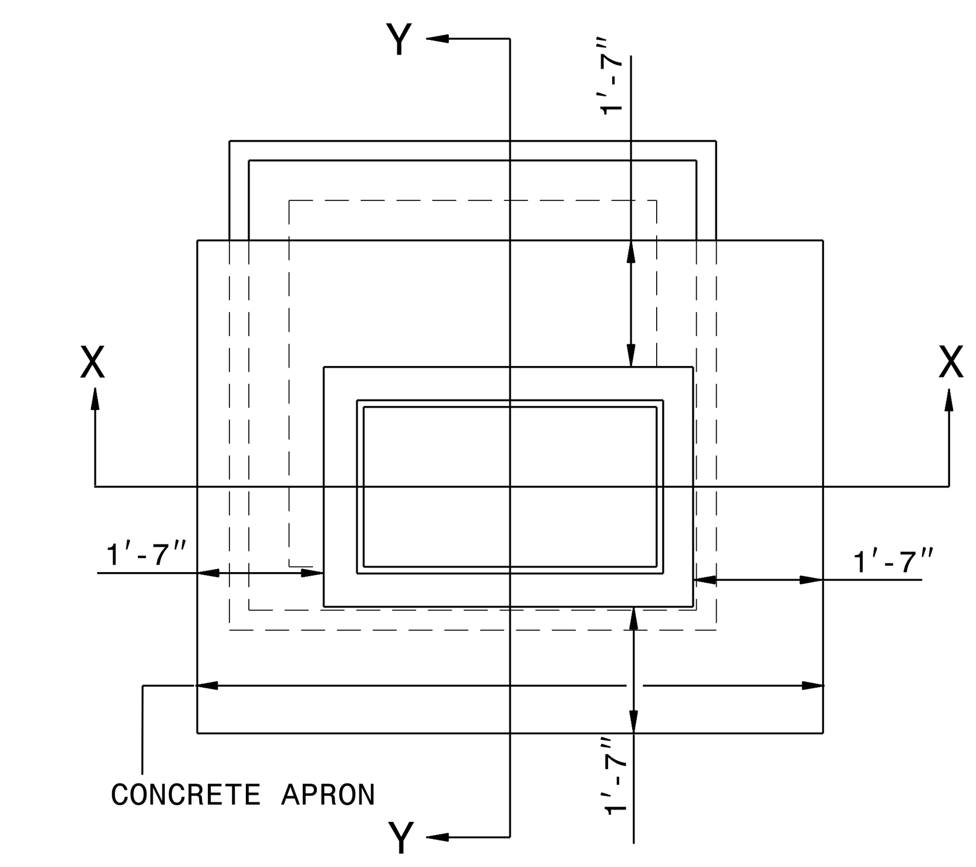
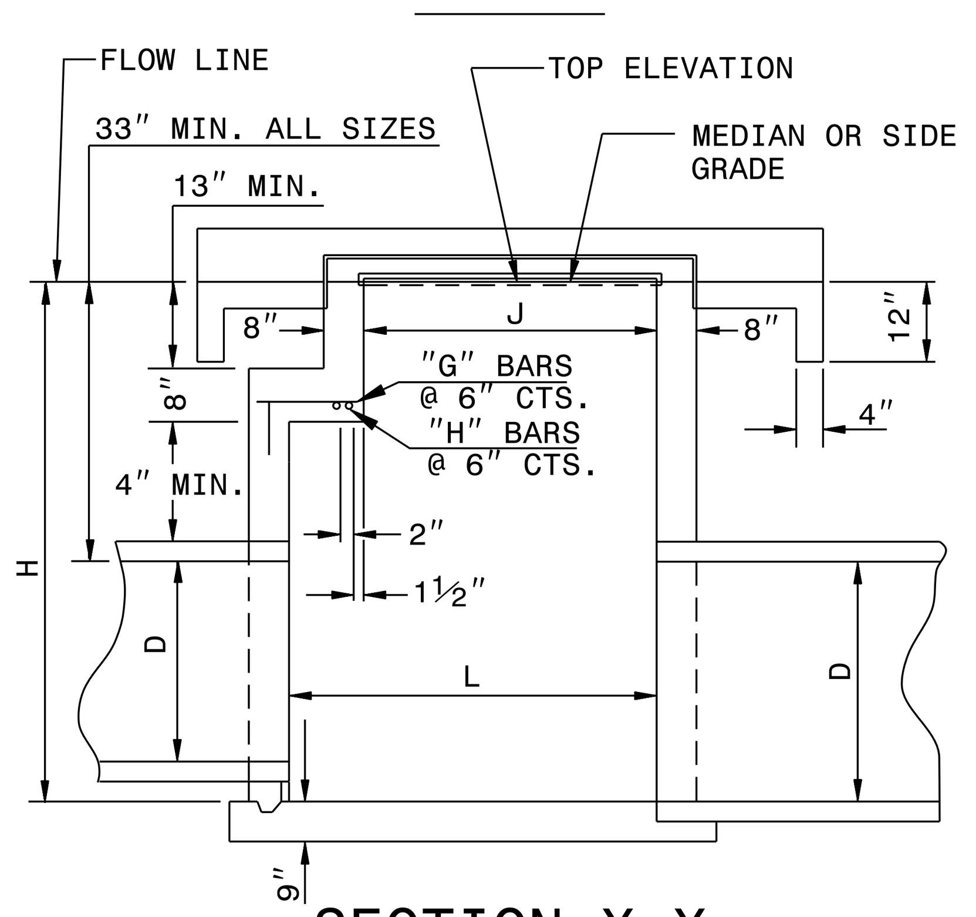
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
CONCRETE MEDIAN DROP INLET TYPE 'A' EXTRA DEPTH OVER 12' TO 25'
12" THRU 72" PIPE

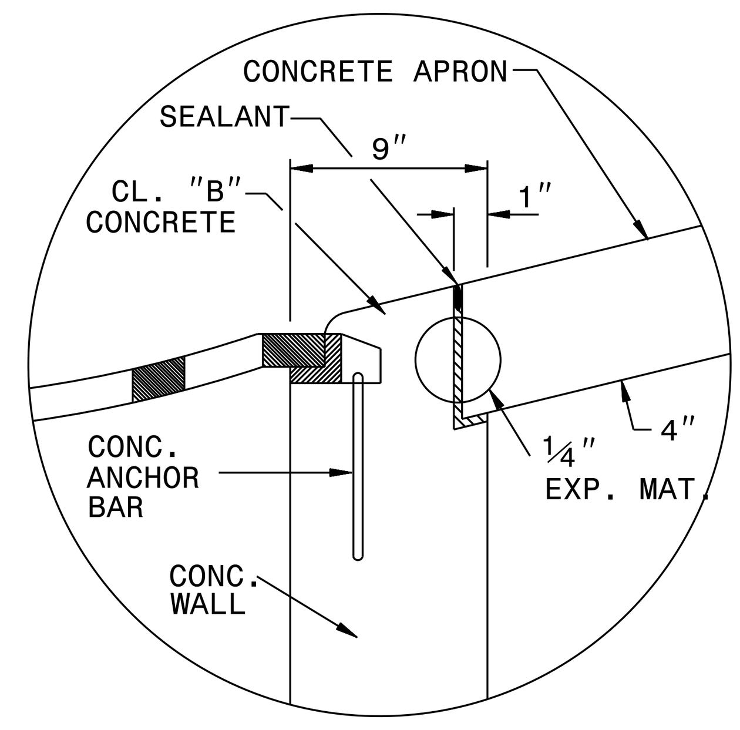
SHEET 1 OF 2
840D17



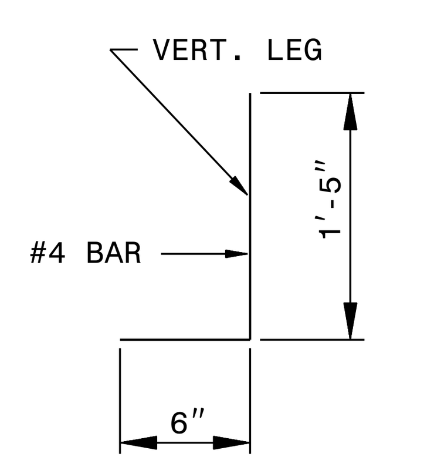
PLAN



SECTION X-X



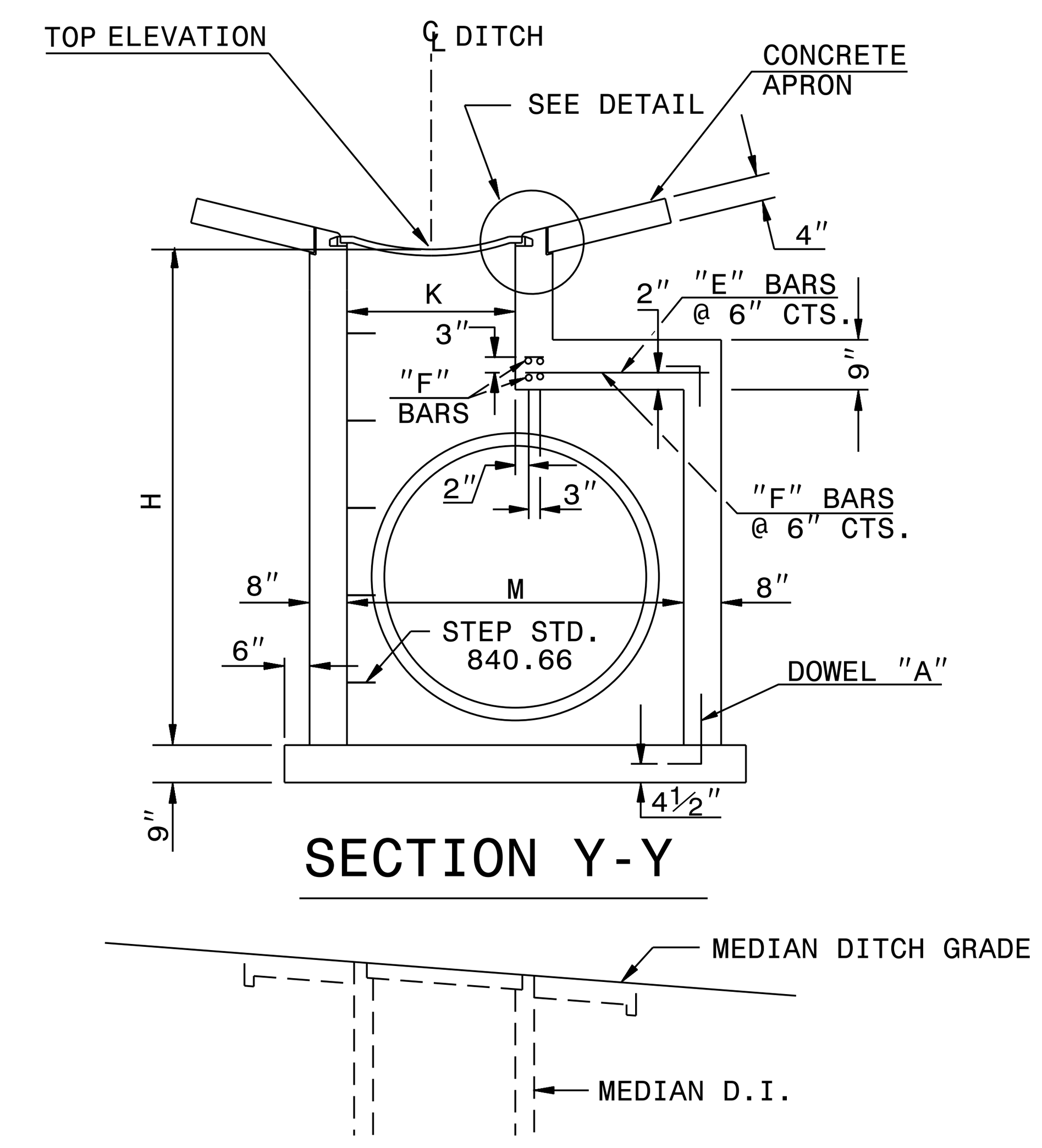
DETAIL
(APRON SUPPORT NOTCH)



DOWEL-A

GENERAL NOTES:

- USE CLASS "B" CONCRETE THROUGHOUT.
- PROVIDE DROP INLETS WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
- OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
- USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
- IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
- WHEN PAYMENT FOR THE DROP INLET IS MADE ON A PER EACH BASIS, THE CONCRETE APRON WILL BE CONSIDERED PART OF THE DROP INLET.
- CONSTRUCT WITH PIPE CROWNS MATCHING.
- USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20, 840.29, AND 840.33.
- SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.
- CHAMFER ALL EXPOSED CORNERS 1".
- DRAWING NOT TO SCALE.
- MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 25 FEET.



SECTION Y-Y

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

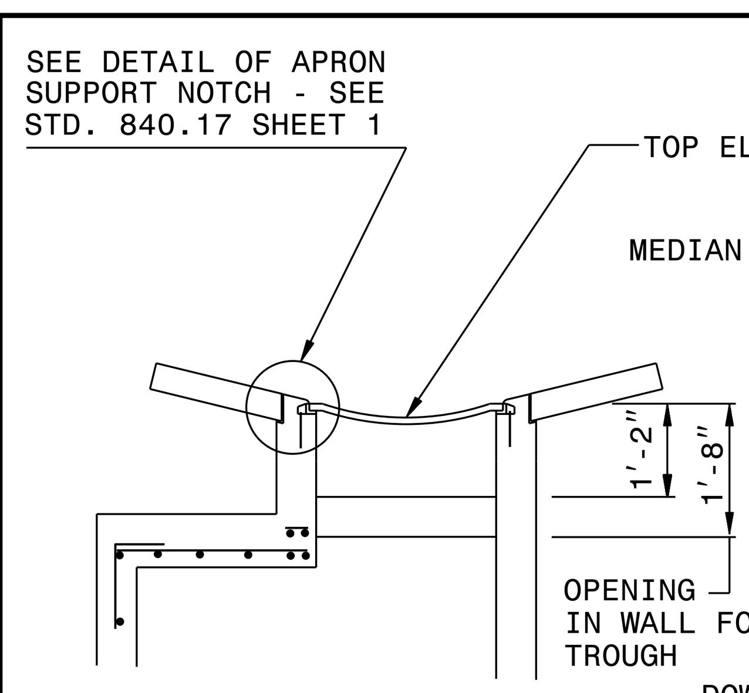
ENGLISH DETAIL DRAWING FOR
CONCRETE MEDIAN DROP INLET TYPE 'A' EXTRA DEPTH OVER 12' TO 25'
12" THRU 72" PIPE

SHEET 1 OF 2
840D17

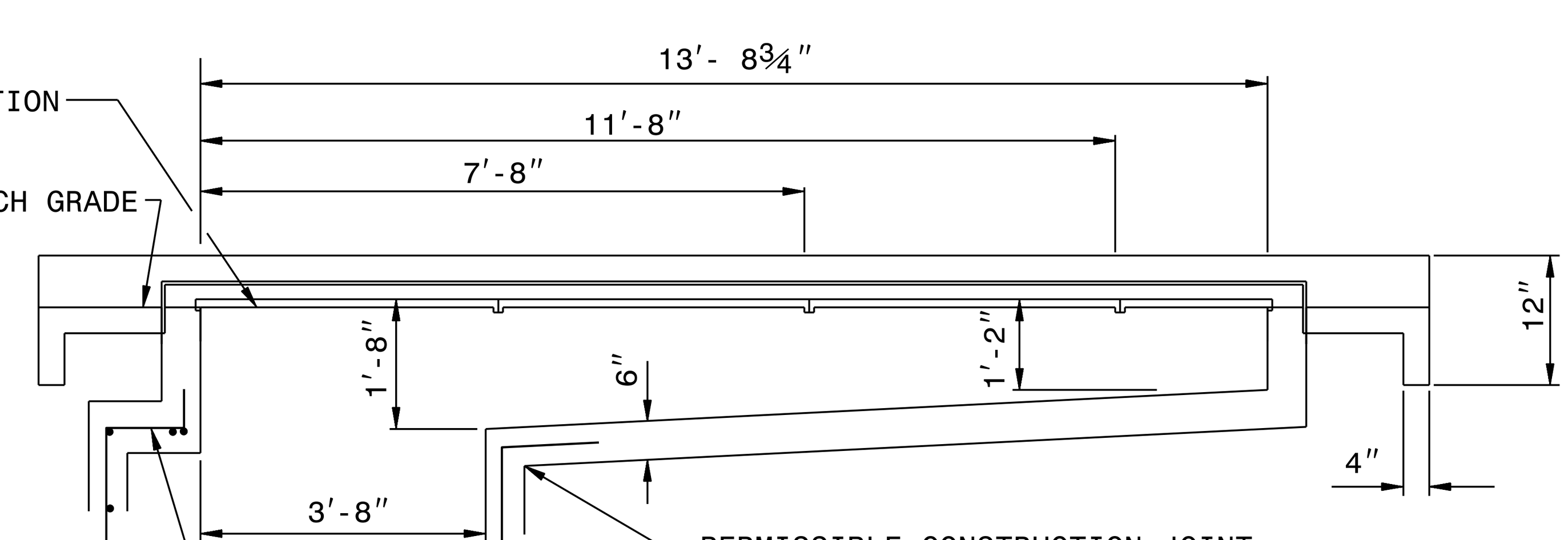
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
CONCRETE MEDIAN DROP INLET TYPE 'A' EXTRA DEPTH OVER 12' TO 25'
12" THRU 72" PIPE

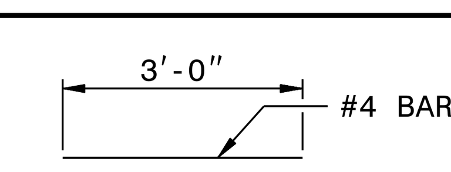
SHEET 2 OF 2
840D17



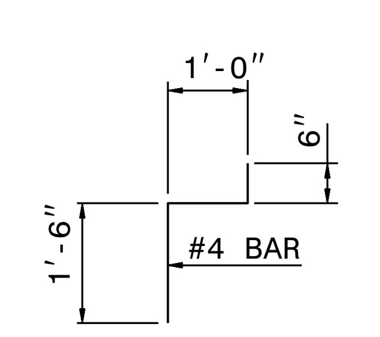
PART SECTION V-V



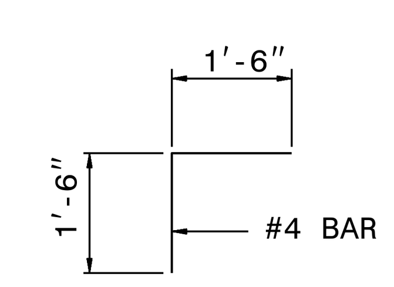
PART SECTION U-U



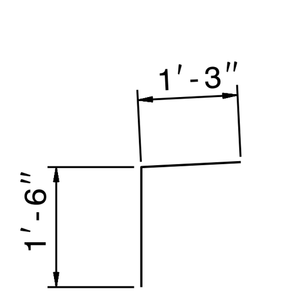
DOWEL-B^1
FOR 15" THRU 36" INLET



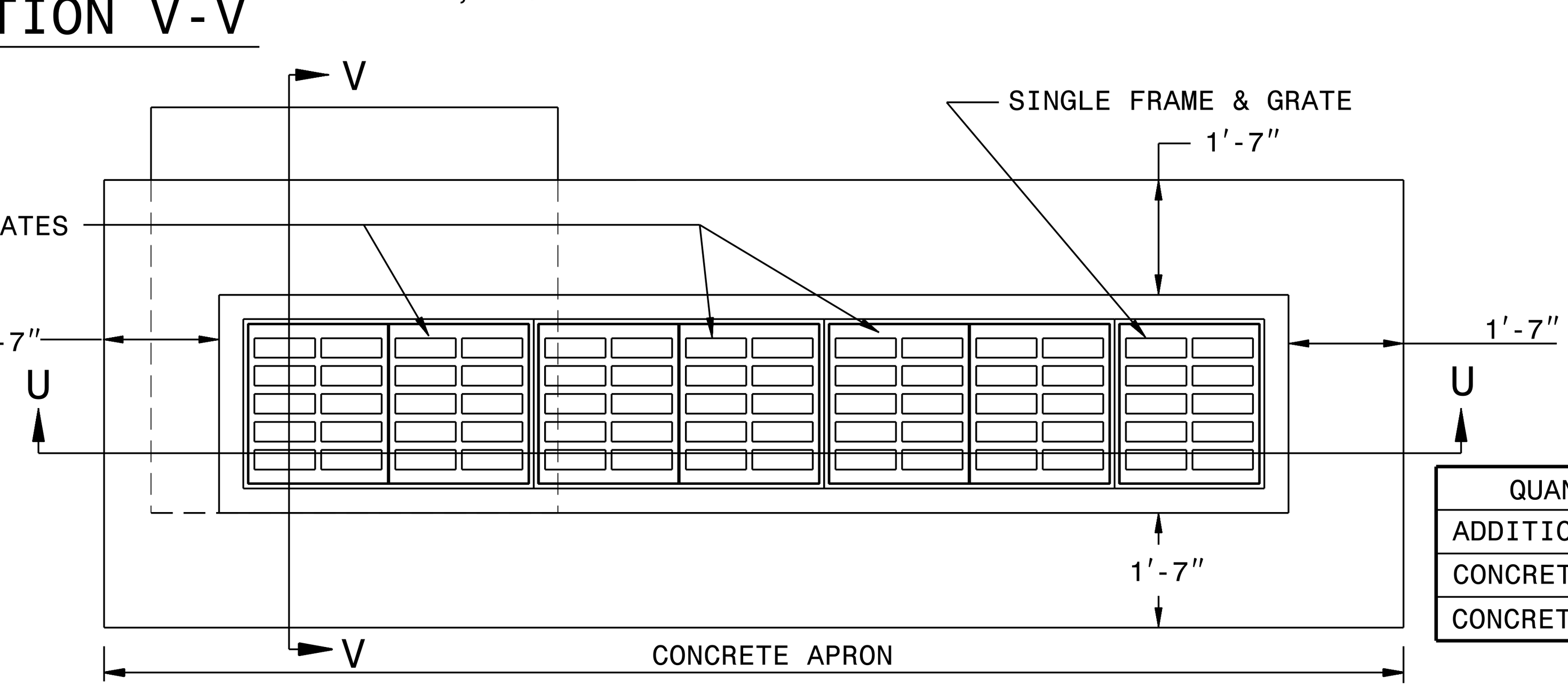
DOWEL-B^2
FOR 42" INLET



DOWEL-B^3



DOWEL-C



QUANTITY TO BE ADDED FOR EACH 2' INCREMENT INLET OPENING						
ADDITIONAL INLETS	2'-0"	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"
CONCRETE CU. YDS.	0.191	0.417	0.665	0.897	1.145	1.380
CONCRETE APRON CU. YDS.	0.074	0.148	0.222	0.296	0.370	0.444

MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE GRATED DROP INLET(BASED ON MIN. HEIGHT, H)

DIMENSIONS OF BOX AND PIPE						REINFORCING STEEL - NO. 4 BARS									CU YDS CONC. IN BOX					DEDUCTIONS FOR ONE PIPE	
PIPE	SPAN	WIDTH	SPAN	WIDTH	HEIGHT	BARS E		BARS F		BARS G		BARS H		TOTAL	BOTTOM SLAB	H	H PER	APRON	TOTAL		
D	J	K	L	M	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	LBS.		TOTAL	FT HT			C.S.	R.C.
12"	3'-8"	2'-0"	3'-8"	2'-0"	3'-9"	—	—	—	—	—	—	—	—	—	0.362	0.926	0.247	0.395	1.683	0.015	0.024
15"	3'-8"	2'-0"	3'-8"	2'-0"	4'-0"	—	—	—	—	—	—	—	—	—	0.362	0.988	0.247	0.395	1.745	0.023	0.036
18"				2'-0"	4'-3"	—	—	—	—	—	—	—	—	—	0.362	1.050	0.247		1.807	0.033	0.049
24"				2'-10"	4'-9"	8	1'-5"	6	4'-9"	—	—	—	—	27	0.444	1.362	0.278		2.201	0.059	0.085
30"			3'-8"	3'-5"	5'-3"	8	2'-0"	7	4'-9"	—	—	—	—	33	0.502	1.644	0.288		2.541	0.092	0.127
36"			4'-0"	4'-0"	5'-9"	8	2'-5"	8	4'-11"	4	0'-9"	2	4'-11"	47	0.560	1.931	0.321		2.920	0.132	0.178
42"			4'-10"	4'-10"	6'-3"	10	3'-1"	9	5'-7"		1'-5"	3	5'-7"	67	0.704	2.500	0.370		3.677	0.180	0.243
48"			5'-4"	5'-4"	6'-9"	11	3'-7"	10	6'-1"		1'-11"	4	6'-1"	87	0.823	3.013	0.407		4.315	0.235	0.317
54"			6'-0"	6'-0"	7'-3"	12	4'-1"	11	6'-7"		2'-5"	5	6'-7"	107	0.951	3.589	0.444		5.072	0.297	0.401
60"			6'-6"	6'-6"	7'-9"	13	4'-9"	12	7'-3"		3'-1"	6	7'-3"	135	1.311	4.539	0.494		6.170	0.367	0.495
66"			7'-2"	7'-2"	8'-3"	14	5'-4"	14	7'-10"		3'-7"	7	7'-10"	168	1.136	5.061	0.537		6.901	0.444	0.599
72"	3'-8"	2'-0"	7'-8"	7'-8"	8'-9"	15	5'-11"	15	8'-5"	4	4'-3"	8	8'-5"	199	1.500	5.860	0.580	0.395	7.868	0.528	0.713

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

ENGLISH DETAIL DRAWING FOR
CONCRETE MEDIAN DROP INLET TYPE 'A' EXTRA DEPTH OVER 12' TO 25'
12" THRU 72" PIPE

SHEET 2 OF 2
840D17

DocuSigned by: Joel S. Howerton
SEAL 022966 NORTH CAROLINA PROFESSIONAL ENGINEER Joel S. Howerton 6/6/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.840.17 DATE:
MODIFIED BY: K.A. KEMPF DATE: 07-06-09
CHECKED BY: DATE:
FILE SPEC.: /stand/840d17 Extra Depth 2GI.dgn

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2C-17

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

ENGLISH DETAIL DRAWING FOR

GUIDE FOR PAVING SHOULDERS UNDER BRIDGES

METHOD III

SHEET 1 OF 1

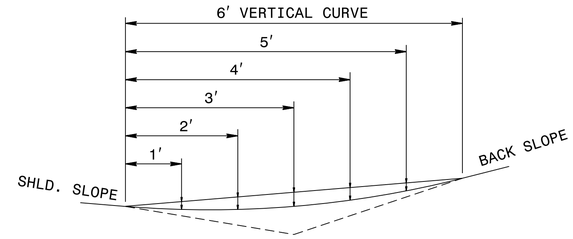
610D03

HORZ. DIM.	1½:1 BACK SLOPE									
	SHOULDER SLOPE									
	.04	.03	.02	.01	.00	-.01	-.02	-.03	-.04	-.05
1′	0.26′	0.27′	0.27′	0.27′	0.28′	0.28′	0.28′	0.29′	0.30′	0.31′
2′	0.42′	0.42′	0.43′	0.44′	0.44′	0.45′	0.46′	0.46′	0.47′	0.48′
3′	0.47′	0.48′	0.49′	0.49′	0.50′	0.51′	0.52′	0.52′	0.53′	0.54′
4′	0.42′	0.42′	0.43′	0.44′	0.44′	0.45′	0.46′	0.46′	0.47′	0.48′
5′	0.26′	0.27′	0.27′	0.27′	0.28′	0.28′	0.28′	0.29′	0.30′	0.31′

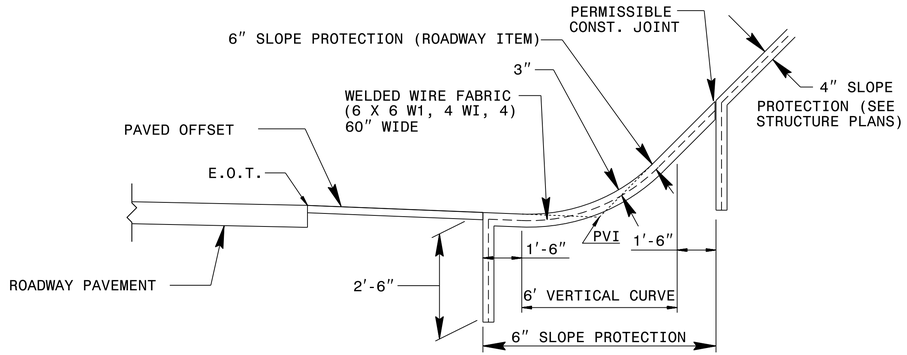
HORZ. DIM.	2:1 BACK SLOPE									
	SHOULDER SLOPE									
	.04	.03	.02	.01	.00	-.01	-.02	-.03	-.04	-.05
1′	0.19′	0.20′	0.20′	0.20′	0.21′	0.21′	0.22′	0.22′	0.23′	0.23′
2′	0.31′	0.31′	0.32′	0.33′	0.33′	0.34′	0.35′	0.35′	0.36′	0.37′
3′	0.35′	0.35′	0.36′	0.37′	0.38′	0.38′	0.39′	0.40′	0.41′	0.41′
4′	0.31′	0.31′	0.32′	0.33′	0.33′	0.34′	0.35′	0.35′	0.36′	0.37′
5′	0.19′	0.20′	0.20′	0.20′	0.21′	0.21′	0.22′	0.22′	0.23′	0.23′

VERTICAL CURVE OFFSET

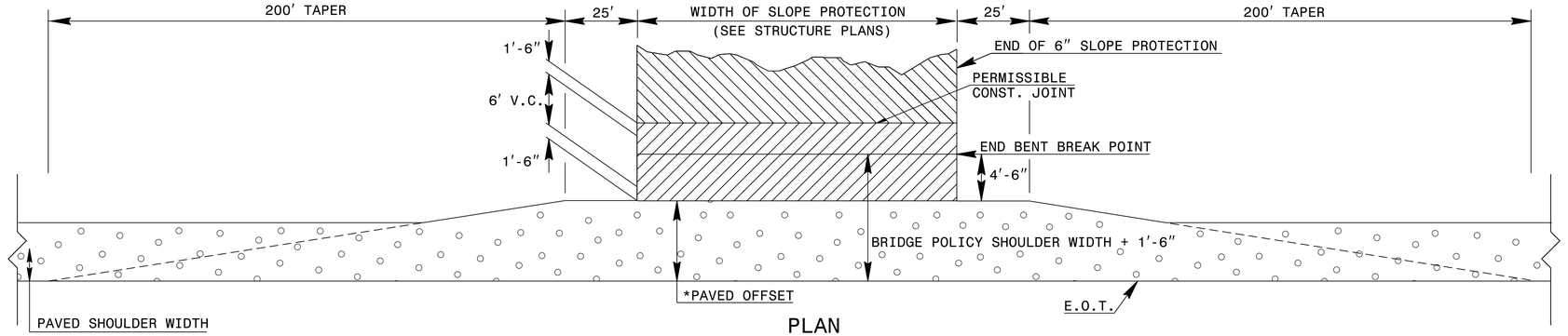
(FOR 6′ V.C. AT BRIDGES)



TYPICAL SECTION



ELEVATION



PLAN

NOTES:
PAVE THE FULL WIDTH OF THE SHOULDER AS SHOWN WITH SHOULDER PAVEMENT MATERIAL AS SHOWN ON PLANS.
* PAVED OFFSET BASED ON BRIDGE POLICY (SEE STRUCTURE PLANS).
PROTECT SLOPE WITH REINFORCED CONCRETE PAVING. CONCRETE BLOCK PAVING WILL NOT BE PERMITTED.
OFFSETS FOR 6′ V.C. DENOTES FINISHED GRADE OF SLOPE PROTECTION.

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

ENGLISH DETAIL DRAWING FOR

GUIDE FOR PAVING SHOULDERS UNDER BRIDGES

METHOD III

SHEET 1 OF 1

610D03

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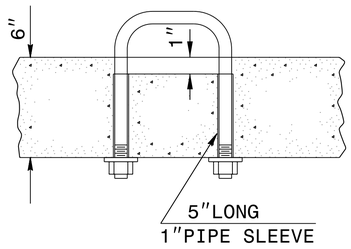
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

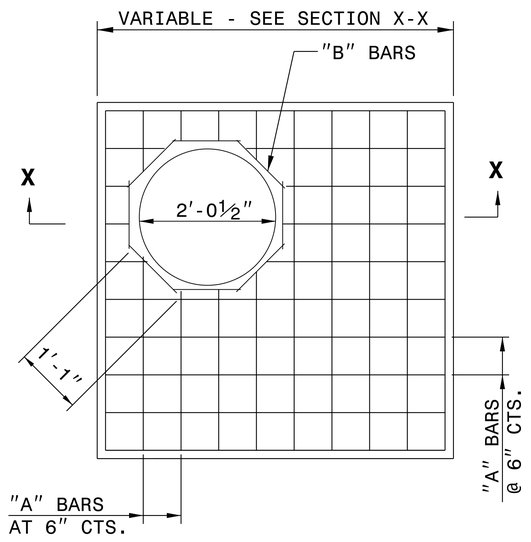
ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

18-MAY-2017 12:41
S:\Contracts\Contracts\Special Details\jhowerton\Standard Drawings\2012 Standard Drawings\Details in Lieu of Standards\610d03.dgn
jhowerton ATT CSD-292595

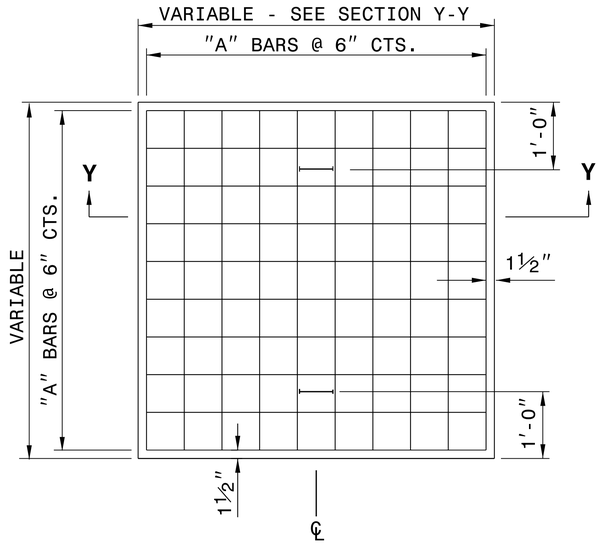
PROJECT REFERENCE NO.	SHEET NO.
I-5786	2C-18



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

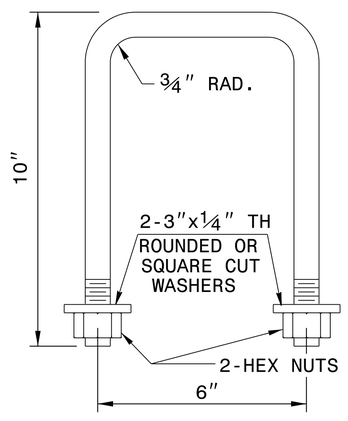
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

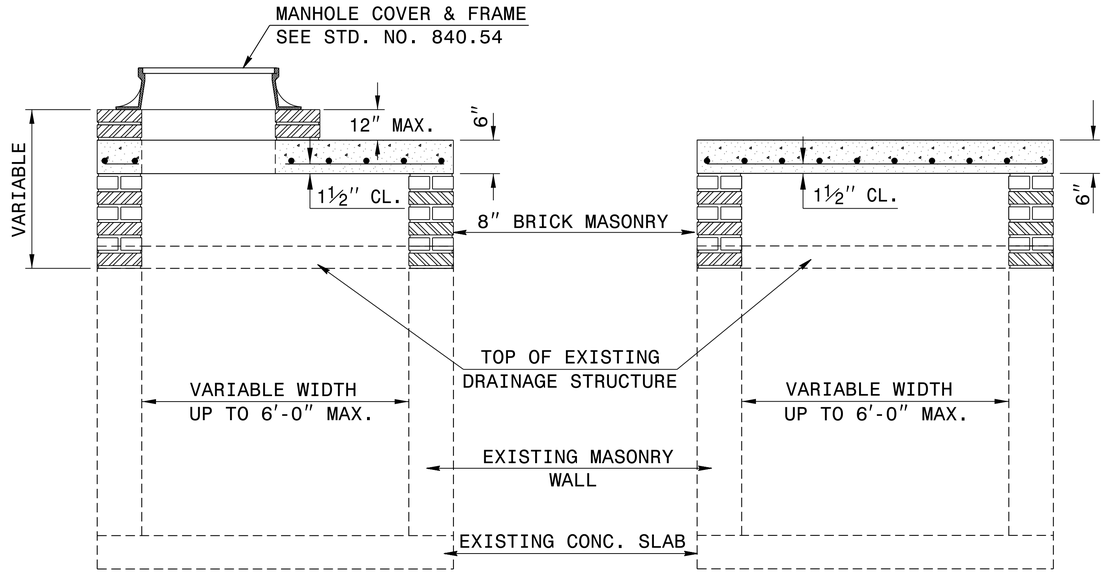
REINFORCING STEEL

CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *
MASONRY				CU YDS
TOP SLAB CONCRETE CLASS "B"				.4326 *
BRICK MASONRY PER FT HT (MIN)				.4111

* NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.



DETAIL OF HANDLE



SECTION X-X **SECTION Y-Y**

Digitally signed by Joel S. Howerton
SEAL 022966 NORTH CAROLINA PROFESSIONAL ENGINEER Joel S. Howerton
6/6/2017

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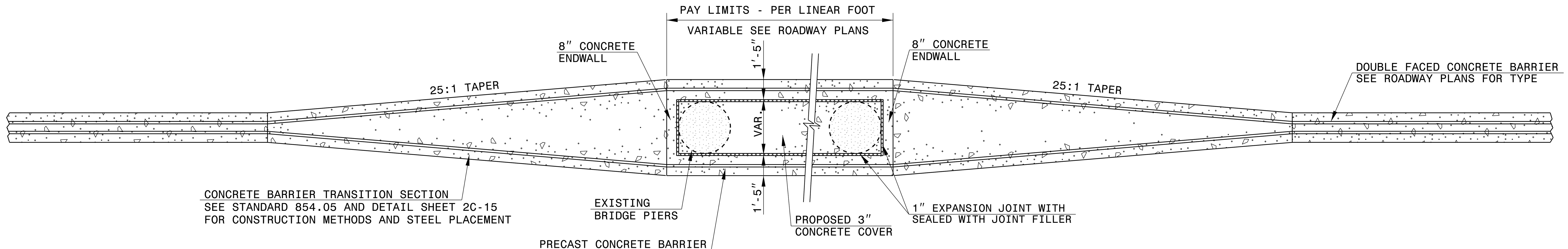
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

DETAIL TO CONVERT EXISTING DI, CB, OTCB or GI TO JUNCTION BOX (MANHOLE OPTIONAL)

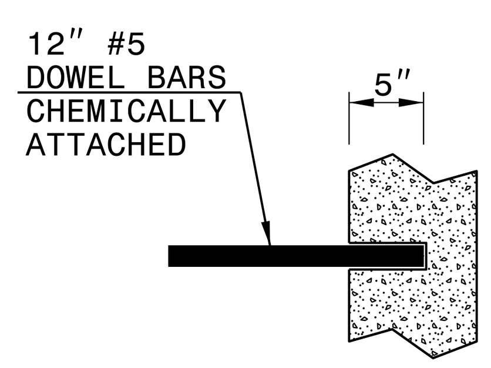
ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

01-JUN-2017 08:17
S:\Contracts\Contracts\Special Details\erieward\usr\details\stand\boxtojbe.dgn
jhowerton AT CSD-292595

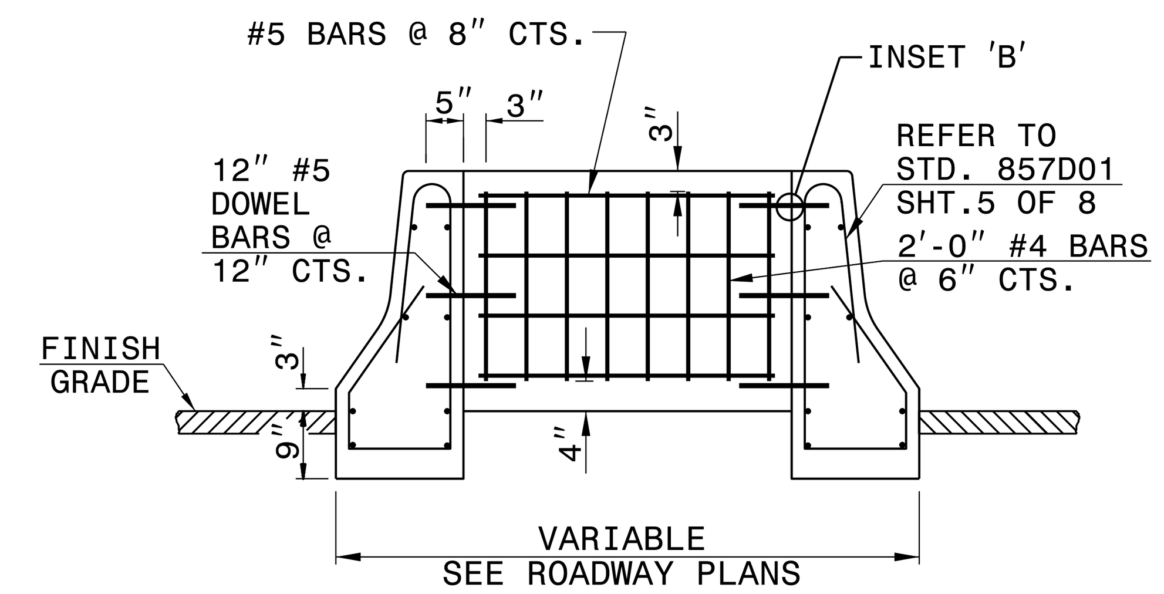
PROJECT REFERENCE NO.	SHEET NO.
I-5786	2C-19



PLAN



INSET 'B'



8" CONCRETE ENDWALL

GENERAL NOTES:

CONSTRUCT CONCRETE BARRIER WITH CLASS 'AA' CONCRETE. (SEE SPECIFICATIONS SECTION 854).

CONSTRUCT EXPANSION AND CONTRACTION JOINTS AS SHOWN IN STANDARD DRAWING 854.01.

SEAL EXPANSION JOINTS WITH JOINT FILLER. (SEE SECTION 1028 OF THE SPECIFICATIONS).

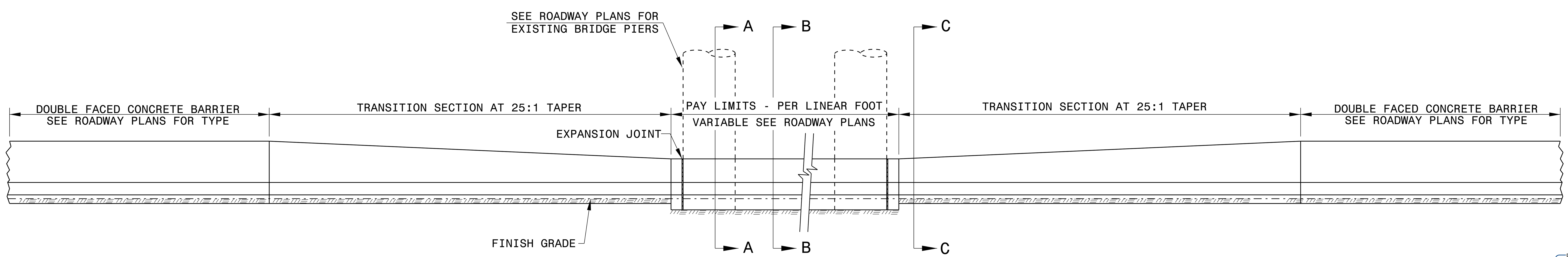
SUBMIT ALTERNATIVE METHODS FOR STEEL FABRICATION PLACEMENT FOR REVIEW AND APPROVAL.

SEE STANDARD DRAWING 854.05 FOR STEEL LAYOUT OF TRANSITION BARRIER.

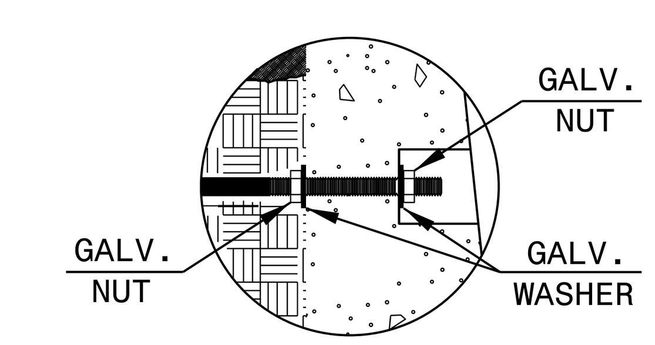
*THE 2" DIMENSION FROM FINSIH GRADE TO THE BASE IS A MINIMUM DIMENSION.

INSET FIRST 1" DIA. GALVANIZED BAR 12'-6" AND SPACE THE REMAINING 1' BARS AT 25'-0".

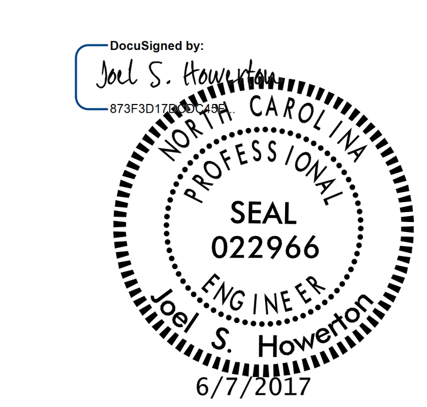
USE AN APPROVED BONDING SYSTEM IN ACCORDANCE WITH SECTION 1081 OF THE STANDARD SPECIFICATIONS.

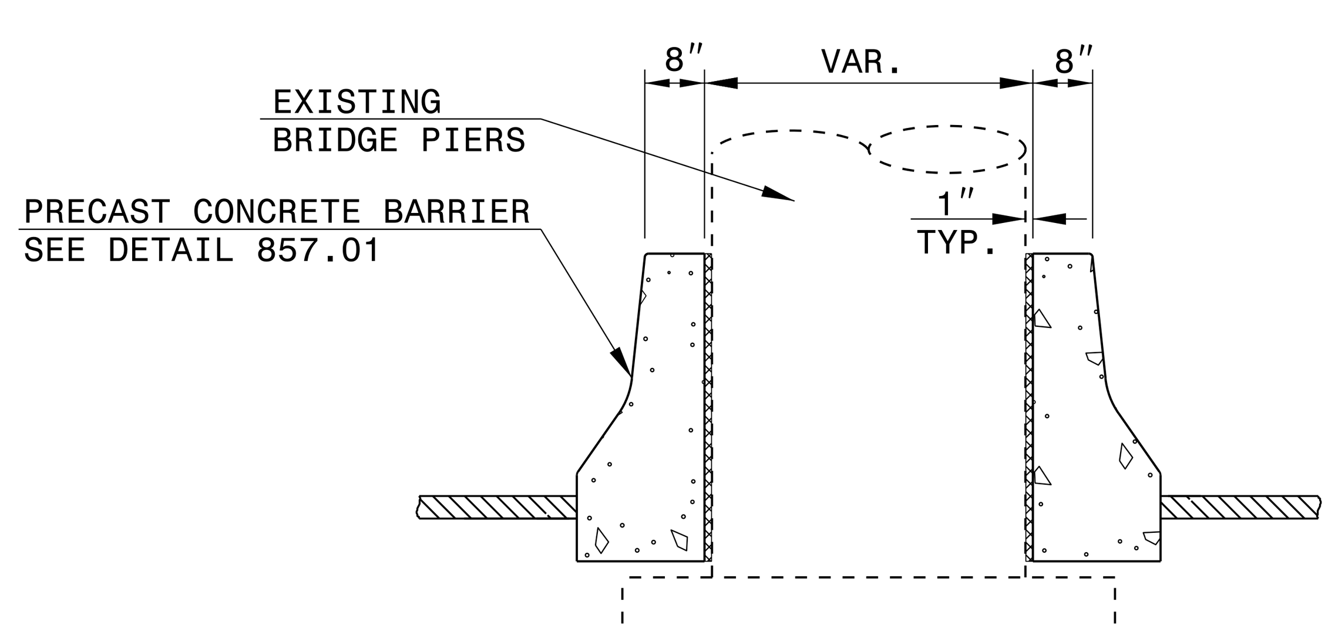


ELEVATION

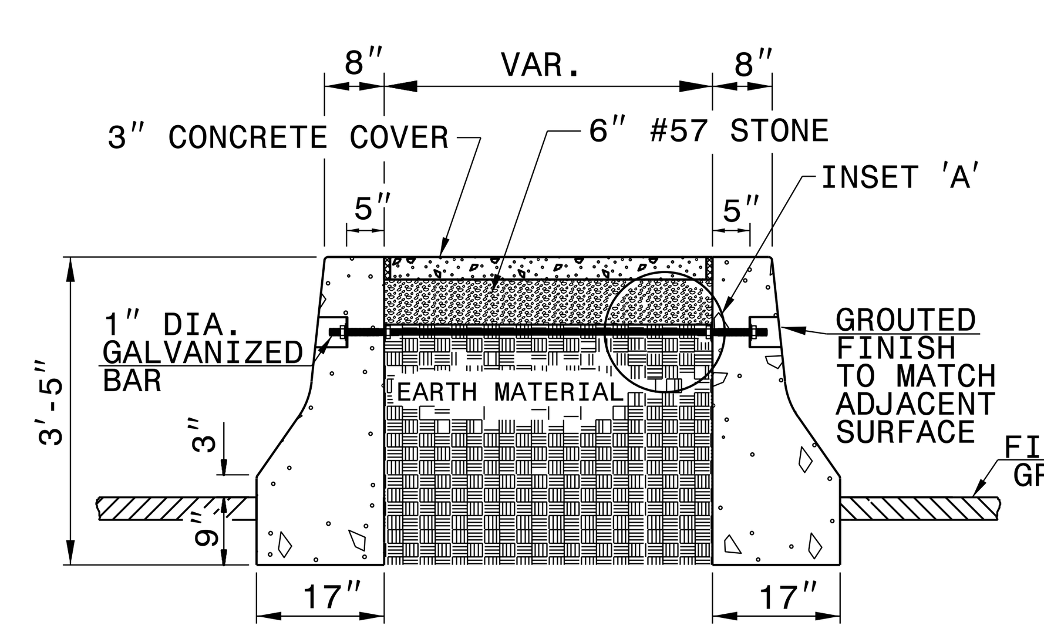


INSET 'A'

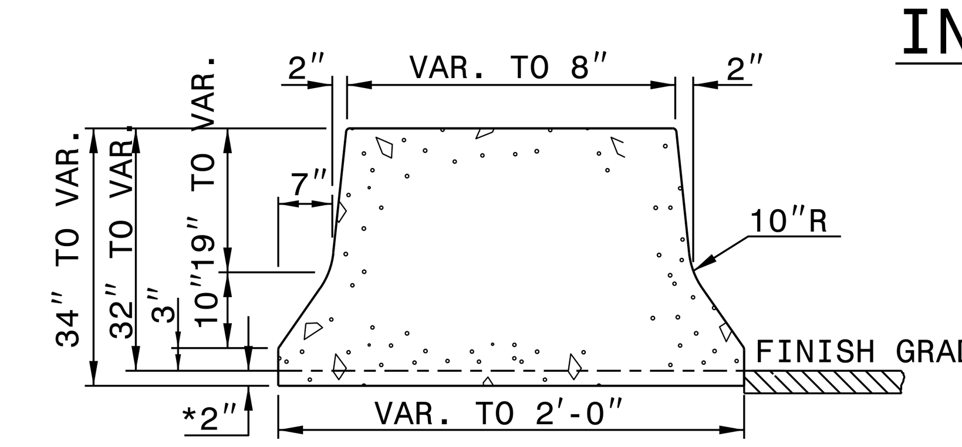




SECTION A-A



SECTION B-B



SECTION C-C

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

MEDIAN HAZARD PIER PROTECTION

ORIGINAL BY: E.E. WARD DATE: 7-28-03
MODIFIED BY: E.E. WARD DATE: 8-26-04
CHECKED BY: DATE:
FILE SPEC.: \usr\details\stand\transition barrier.dgn

07-JUN-2017 08:44
S:\Contracts\Contracts\Special Details\ericward\usr\details\stand\Median Pier transition barrier.dgn
jhowerton AT CSD-292595

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2G-1

GEOTECHNICAL ENGINEER

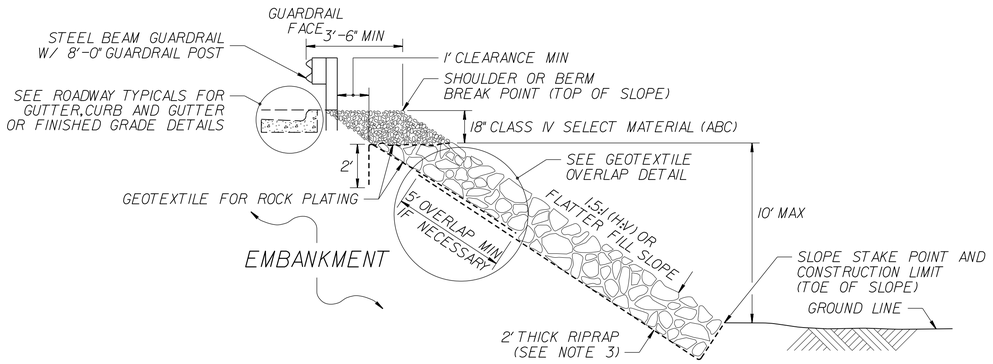
DocuSigned by: W. Patrick Allton A270877BA...

NORTH CAROLINA PROFESSIONAL SEAL 33758 ENGINEER W. PATRICK ALLTON

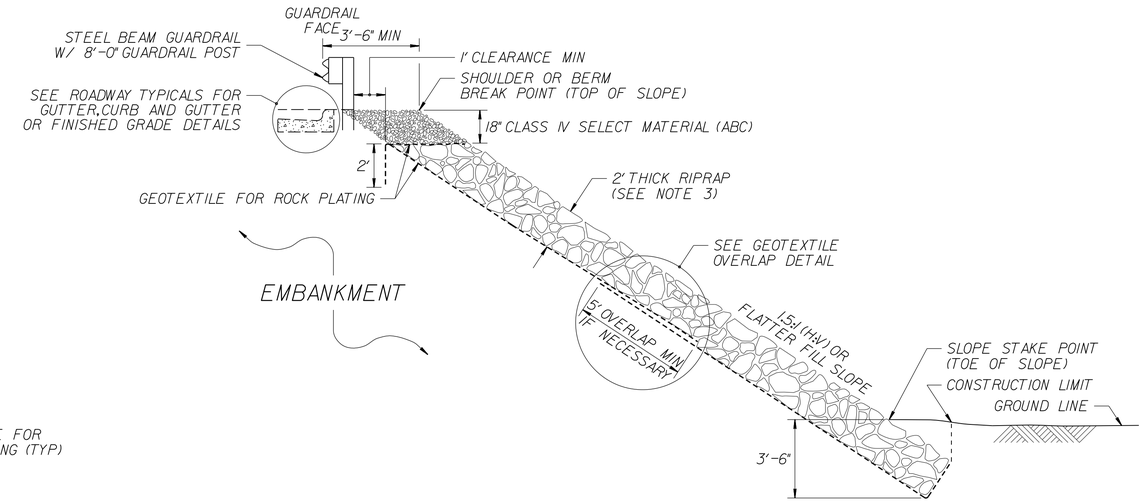
6/6/2017

SIGNATURE DATE

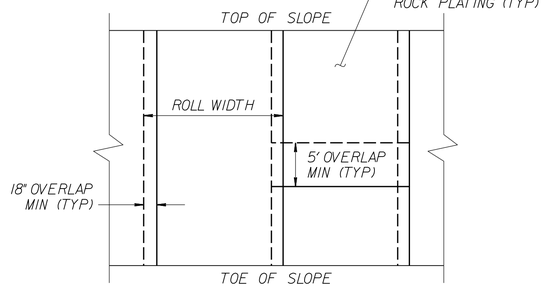
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



ROCK PLATING DETAIL NO. 1 – TYPICAL SECTION



ROCK PLATING DETAIL NO. 2 – TYPICAL SECTION



GEOTEXTILE OVERLAP DETAIL

(PLAN VIEW)

NOTES:

1. SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATING LOCATIONS.
2. FOR STANDARD ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
3. USE CLASS I, 2 OR B RIPRAP UNLESS REQUIRED OTHERWISE IN THE ROADWAY SUMMARY SHEETS.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1802.01

STANDARD ROCK PLATING

DATE: 2-19-13

PROJECT REFERENCE NO.	SHEET NO.
I-5786	2G-2

GEOTECHNICAL ENGINEER

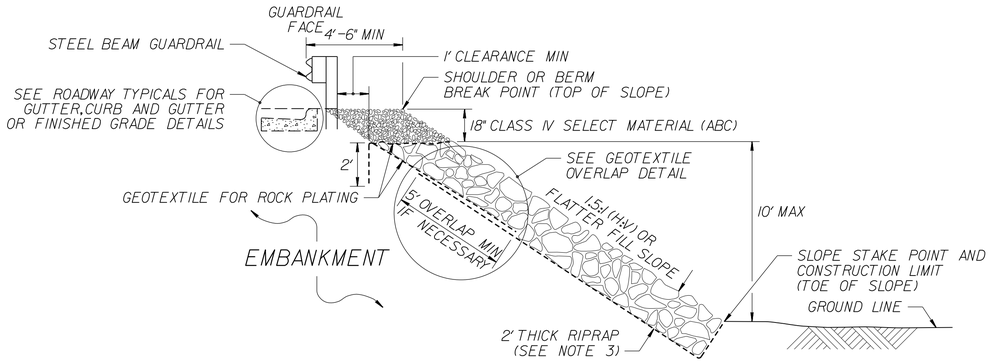
DocuSigned by: W. Patrick Alton A27087

NORTH CAROLINA PROFESSIONAL SEAL 33758 ENGINEER W. PATRICK ALTON

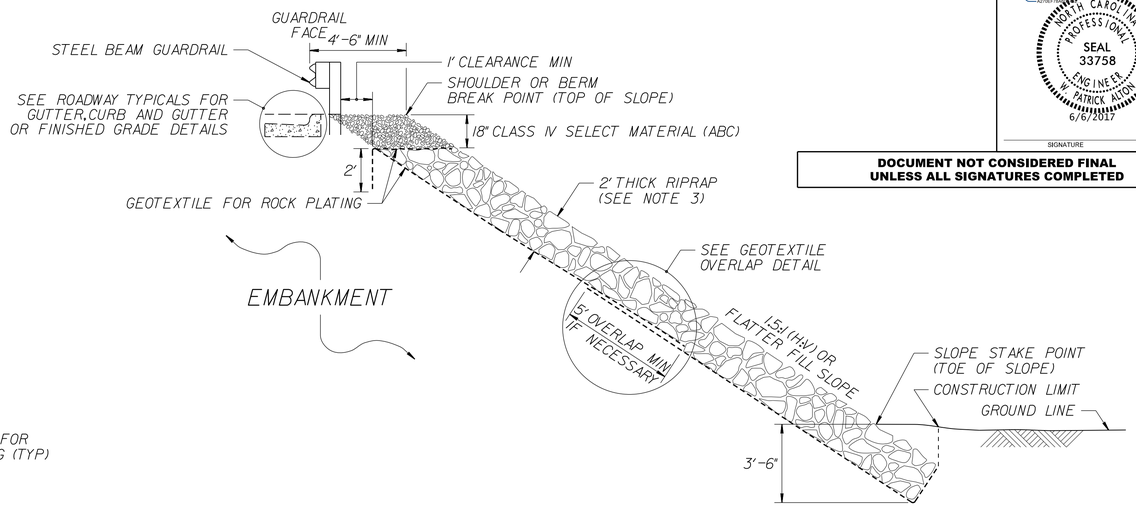
6/6/2017

SIGNATURE DATE

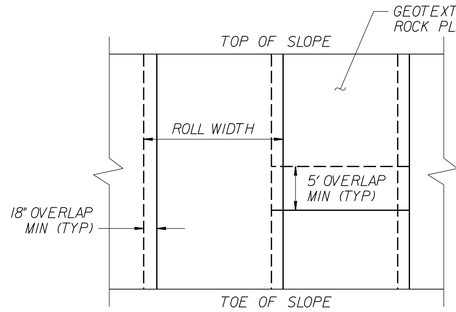
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



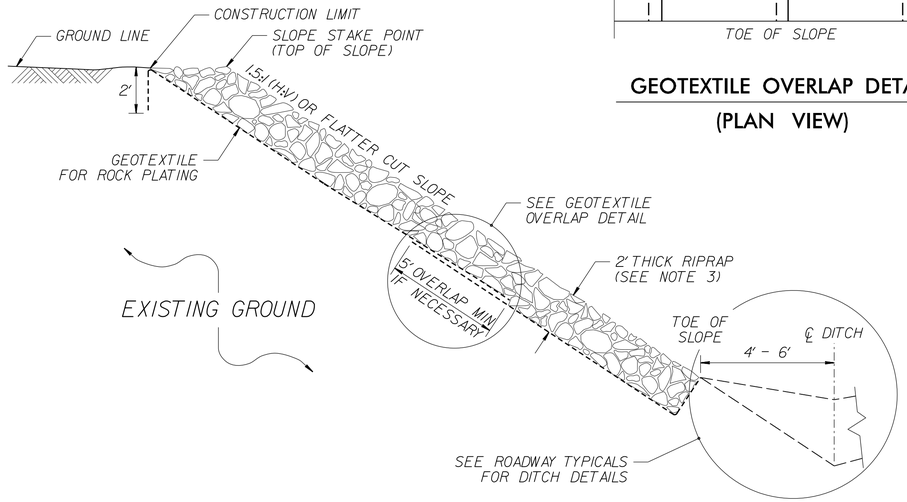
ROCK PLATING DETAIL NO. 3 – TYPICAL SECTION



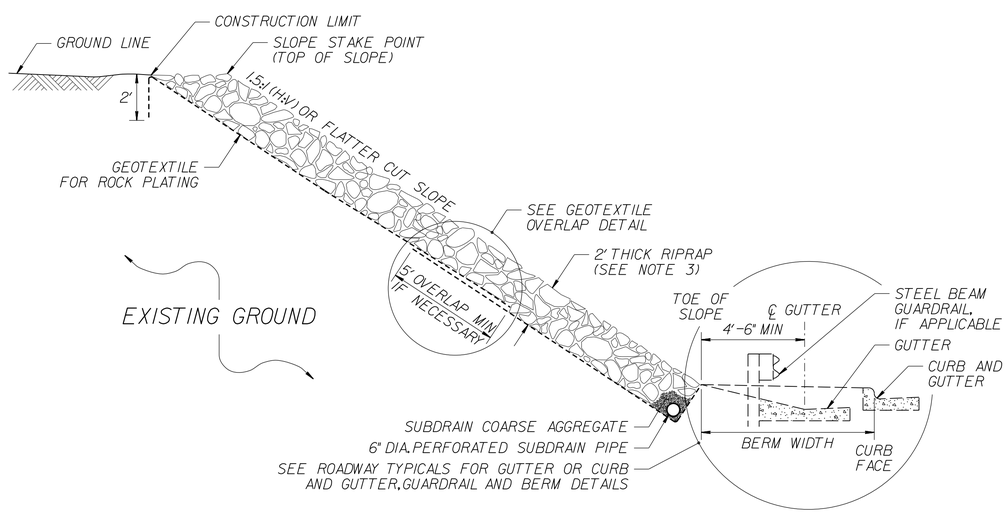
ROCK PLATING DETAIL NO. 4 – TYPICAL SECTION



GEOTEXTILE OVERLAP DETAIL (PLAN VIEW)



ROCK PLATING DETAIL NO. 5 – TYPICAL SECTION



ROCK PLATING DETAIL NO. 6 – TYPICAL SECTION

NOTES:

1. SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATING LOCATIONS.
2. FOR STANDARD ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
3. USE CLASS I, 2 OR B RIPRAP UNLESS REQUIRED OTHERWISE IN THE ROADWAY SUMMARY SHEETS.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1802.01

STANDARD ROCK PLATING

DATE: 2-19-13

12/06/07

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	3B-1

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +25%	BORROW	WASTE
-L- MEDIAN					
9+90.00	40+00.00	6,493			6,493
40+00.00	70+00.00	5,621			5,621
70+00.00	100+00.00	6,397			6,397
100+00.00	130+00.00	5,781			5,781
130+00.00	160+00.00	6,260			6,260
160+00.00	190+00.00	5,635			5,635
190+00.00	220+00.00	5,979			5,979
220+00.00	250+00.00	5,962			5,962
250+00.00	265+00.00	3,121			3,121
293+00.00	323+00.00	5,851			5,851
323+00.00	353+00.00	5,988			5,988
353+00.00	366+00.00	2,662			2,662
	SUBTOTAL	65,750			65,750
-L- LEFT					
9+90.00	40+00.00	4,827	83		4,745
40+00.00	70+00.00	2,761			2,761
70+00.00	100+00.00	3,104	220		2,884
100+00.00	130+00.00	2,350	424		1,926
130+00.00	160+00.00	2,873	241		2,632
160+00.00	190+00.00	2,641	159		2,482
190+00.00	220+00.00	4,279	18		4,262
220+00.00	250+00.00	3,636	571		3,065
250+00.00	265+00.00	1,371	103		1,269
293+00.00	323+00.00	3,851	559		3,292
323+00.00	353+00.00	2,596	131		2,465
353+00.00	366+00.00	1,924	26		1,898
	SUBTOTAL	36,213	2,533		33,679
-L- RIGHT					
9+90.00	40+00.00	4,734	369		4,365
40+00.00	70+00.00	2,810	8		2,803
70+00.00	100+00.00	2,935	254		2,681
100+00.00	130+00.00	2,370	1,791		579
130+00.00	160+00.00	2,788	95		2,693
160+00.00	190+00.00	2,663	226		2,437
190+00.00	220+00.00	3,418	266		3,152
220+00.00	250+00.00	2,734	161		2,573
250+00.00	265+00.00	1,280	93		1,188
293+00.00	323+00.00	3,278	826		2,452
323+00.00	353+00.00	2,636	161		2,475
353+00.00	366+00.00	1,871	499		1,372
	SUBTOTAL	33,517	4,748		28,768
Y1					
15+50.00	16+29.86		1,923	1,923	
19+26.11	22+00.00		8,623	8,623	
	SUBTOTAL		10,546	10,546	
Y4					
13+50.00	19+16.39		22,288	22,288	
21+34.89	25+50.00		22,260	22,260	
	SUBTOTAL		44,548	44,548	
TOTAL		135,480	62,375	55,094	128,197
WASTE IN LIEU OF BORROW					
PROJECT TOTAL		135,480	62,375	55,094	128,197
SAY		140,000		56,000	75,000

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

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
PAVEMENT REMOVAL FOR INSTALLATION OF TEMPORARY PAVEMENT				
–L–	9+90.00	82+33.37	RT	6439.17
–L–	87+72.57	103+20.48	RT	1375.91
–L–	103+40.93	142+60.34	RT	3483.51
–L–	148+07.11	162+89.54	RT	1317.70
–L–	162+36.33	250+91.54	RT	7878.57
–L–	256+07.80	267+54.00	RT	1027.12
–L–	288+94.00	315+64.55	RT	2382.54
–L–	325+62.49	347+26.71	RT	1936.06
–L–	352+00.00	368+10.00	RT	1800.17
–L–	9+90.00	87+12.54	LT	6866.84
–L–	87+15.02	103+70.83	LT	1471.84
–L–	109+19.76	148+20.39	LT	3474.68
–L–	147+84.73	163+24.76	LT	1368.92
–L–	167+86.36	256+48.73	LT	7879.03
–L–	256+21.51	269+44.00	LT	1175.56
–L–	290+34.00	321+50.00	LT	2762.21
–L–	327+55.09	349+12.57	LT	1917.74
–L–	360+71.12	370+00.00	LT	809.17
–L–	23+41.72	269+44.00	MED. LT	8514.51
–L–	290+34.00	370+00.00	MED. LT	2934.93
–L–	23+40.56	267+54.00	MED. RT	7093.11
–L–	288+94.00	368+10.00	MED. RT	2239.20
PAVEMENT REMOVAL FOR TEMPORARY PAVEMENT & OUTSIDE PAVED SHOULDER				
–L–	9+90.00	82+38.37	RT	7519.41
–L–	87+72.57	103+20.48	RT	1567.85
–L–	103+40.22	142+60.34	RT	3915.27
–L–	148+07.11	162+89.54	RT	1579.75
–L–	162+35.09	250+91.54	RT	9328.51
–L–	255+98.48	267+54.00	RT	1228.46
–L–	288+94.00	315+64.51	RT	2851.50
–L–	325+62.49	347+40.57	RT	2376.48
–L–	352+00.00	368+10.00	RT	1546.53
–L–	9+90.00	87+13.32	LT	7899.32
–L–	87+15.02	103+70.83	LT	1737.90
–L–	109+19.76	148+21.81	LT	3893.48
–L–	147+84.74	163+24.77	LT	1645.32
–L–	167+86.36	256+49.49	LT	9157.68
–L–	256+21.51	269+44.00	LT	1429.56
–L–	290+34.00	321+50.00	LT	3115.92
–L–	327+55.09	349+12.55	LT	2301.71
–L–	360+81.12	370+00.00	LT	958.26
			TOTAL:	140201.40
			SAY:	142000.00

PRE–CAST CONCRETE BARRIER DOUBLE FACED (ANCHORED)

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	EACH
–L–	39+25.00	39+55.00	RT.	30.00
			TOTAL:	30.00
			SAY:	30.00

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
–Y1–	15+50.00	16+57.12	CL	247.79
–Y1–	18+97.73	22+00.00	CL	821.75
–Y4–	13+50.00	19+20.84	CL	1447.85
–Y4–	21+30.56	25+50.00	CL	1095.83
			TOTAL:	3613.22
			SAY:	3800.00

DOUBLE FACED CONCRETE MEDIAN BARRIER

(SEE SHT. 2C–15, SPECIAL TYPE 'T' DOUBLE FACED CONCRETE BARRIER)

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LF
–L–	9+90.00	14+15.23	CL	425.23
–L–	16+31.17	8923.77	CL	7292.60
–L–	99+89.06	150+26.51	CL	5037.45
–L–	160+57.77	197+80.10	CL	3722.33
–L–	199+78.20	259+79.17	CL	6000.97
–L–	300+00.00	336+70.25	CL	3670.25
–L–	338+27.47	362+00.00	CL	2372.53
			TOTAL:	28521.36
			SAY:	28700.00

DOUBLE FACED CONCRETE MEDIAN BARRIER TRANSITIONS

(SEE SHT. 2C–15, SPECIAL TYPE 'T' CONCRETE MEDIAN TRANSITION BARRIER)

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	EACH
–L–	14+15.23	14+90.23	CL	1.0
–L–	15+56.17	16+31.17	CL	1.0
–L–	197+80.10	198+55.10	CL	1.0
–L–	199+03.20	199+78.20	CL	1.0
–L–	336+70.25	337+28.58	CL	1.0
–L–	337+69.13	338+27.47	CL	1.0
			TOTAL:	6.0
			SAY:	6.0

MEDIAN HAZARD PIER PROTECTION

(SEE SHEET 2C–19)

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LINEAR FOOT
–L–	14+90.23	15+56.17	MED	65.94
–L–	198+55.10	199+03.20	MED	48.10
–L–	337+28.58	337+69.13	MED	40.55
			TOTAL:	154.59
			SAY:	170.00

6/7/2007
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USER: kevis

12/06/07

COMPUTED BY:	DATE:	
CHECKED BY:	DATE:	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	3B-2

PRE-CAST CONCRETE BARRIER - SINGLE FACED

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LINEAR FOOT
-L-	337+53.93	337.88.93	LT	35.00
-L-	337+08.87	337+43.87	RT	35.00
			TOTAL:	70.00
			SAY:	80.00

SUMMARY OF MILLED RUMBLE STRIPS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LF
-L-	9+90.00	267+54.00	MED RT	25764.00
-L-	9+90.00	269+44.00	MED LT	25954.00
-L-	288+94.00	368+10.00	MED RT	7916.00
-L-	290+34.00	370+00.00	MED LT	7966.00
-L-	9+90.00	-Y2RPC- 13+84.39	RT	7824.39
-L-	9+90.00	-Y2RPB- 13+94.13	LT	7706.05
-L-	87+65.23	103+23.82	RT	1558.59
-L-	86+95.73	103+81.08	LT	1685.35
-Y2RPD-	14+29.24	-Y3RPC- 13+68.35	RT	4461.85
-Y2RPA-	13+53.32	-Y3RPB- 13+05.23	LT	4443.67
-L-	147+85.67	162+95.80	RT	1510.13
-L-	147+74.96	163+36.15	LT	1561.19
-Y3RPD-	13+05.23	-Y5RPC- 13+20.49	RT	9305.08
-Y3RPA-	14+58.05	-Y5RPB- 14+35.16	LT	9387.82
-L-	256+00.71	267+54.00	RT	1153.29
-L-	256+23.89	269+44.00	LT	1320.11
-L-	288+94.00	-Y6RPC- 13+19.07	RT	3720.07
-L-	290+34.00	-Y6RPB- 13+25.96	LT	3737.58
-L-	325+64.07	347+31.92	RT	2167.85
-L-	327+71.93	349+29.27	LT	2157.34
-Y6RPD-	12+82.13	368+10.00	RT	2077.63
-Y6RPA-	13+17.68	370+00.00	LT	2120.68
			TOTAL:	135498.67
			SAY:	137000.00

"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

TEMPORARY GUARDRAIL SUMMARY

(NOTE: SEE TRAFFIC MANAGEMENT PLANS FOR LOCATIONS)

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE B-77	TYPE III	GREU 350	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
PHASE I																														
-L-	15+35+/-	18+90+/-	RT	355.00							54		1				1			1										
-L-	11+55+/-	15+10+/-	LT	355.00							54		1				1			1										
-L-	198+70+/-	202+05+/-	RT	335.00							54		1				1			1										
-L-	195+55+/-	198+85+/-	LT	330.00							54		1				1			1										
-L-	89+23.79	97+19.81	MED RT	796.02													1			1										
-L-	91+93.03	99+89.06	MED LT	796.03													1			1										
-L-	150+26.51	157+88.52	MED RT	762.01													1			1										
-L-	152+95.77	160+57.77	MED LT	762.60													1			1										
-L-	259+79.20	265+15.00	MED RT	535.80													1			1										
-L-	262+48.42	264+80.23	MED LT	231.81																1										TIE TO EXIST. GUARDRAIL
-L-	288+94.00	300+00.00	MED			1106.00														1										TIE TO EXIST. GUARDRAIL
-L-	362+00.00	370+00.00	MED			800.00														1										TIE TO EXIST. GUARDRAIL
PHASE II																														
-L-	89+23.79	97+19.81	MED RT	796.02													1			1										
-L-	91+93.03	99+89.06	MED LT	796.03													1			1										
-L-	150+26.51	157+88.52	MED RT	762.01													1			1										
-L-	152+95.77	160+57.77	MED LT	762.60													1			1										
-L-	259+79.20	265+15.00	MED RT	535.80													1			1										
-L-	262+48.42	264+80.23	MED LT	231.81																1										
-L-	288+94.00	300+00.00	MED			1106.00														1										
-L-	362+00.00	370+00.00	MED			800.00														1										
PROJECT	TOTAL			9143.54		3812.00											14			20										
		LESS ANCHOR	DEDUCTIONS	(-)856		(-)25																								
GRAND	TOTAL			8287.54		3787.00																								
SAY				8400.00		3900.00																								

GUARDAIL ANCHOR DEDUCTIONS
GREU 350, TL-3 = 14 @ 54′ = 756′
CAT-1 = 20 @ 6.25′ = 125′
TOTAL DEDUCTIONS = 881′

6/7/2017
I-5786_Rdy_psh03b-2.dgn

COMPUTED BY: *BAM* DATE: *5-5-17*
CHECKED BY: _____ DATE: _____

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
I-5786	*3B-3*

GUARDRAIL SUMMARY

"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE B-77	TYPE III	GREU 350	M-350	XIII	CAT-1	VI MOD	BIC		G	NG				
L	35+62.50	39+25.00	RT	362.50			39+25.00		10.00	13.00	54		1		1		1										2414.19		
L	89+23.77	94+76.25	MED	56.25		496.36									2					1							7884.31		
L	92+45.42	94+01.66	RT	156.24			94+01.66		8.37	11.37	54		1		1		1												
L	95+01.18	97+07.41	LT	206.23			95+01.18		8.77	11.77	54		1		1		1												
L	94+35.00	99+89.06	MED	56.25		497.81									2					1									
Y2RPD	13+50.00	119+90.25	RT	1579.02			12+00.00		10.00	13.00	54		1				1			1									USE EXTRA LENGTH GUARDRAIL POSTS
Y2RPA	11+90.00	120+00.00	LT	1495.55			118+50.00		10.00	13.00	54		1				1			1									USE EXTRA LENGTH GUARDRAIL POSTS
L	134+50.00	143+00.00	LT	850.00			141+50.00		10.00	13.00	54		1				1			1									USE EXTRA LENGTH GUARDRAIL POSTS
L	150+26.51	155+61.00	MED	56.25		489.87									2					1							8811.55		
L	153+69.00	155+25.29	RT	156.29			155+25.29		8.48	11.37	54		1		1		1										201.42		
L	155+54.92	157+61.15	LT	206.23			155+54.92		8.82	11.82	54		1		1		1										202.57		
L	155+26.16	160+57.77	MED	56.25		494.25									2					1									
L	240+75.00	246+64.50	LT	589.50			245+00.00		10.00	13.00	54		1				1			1							633.06		
L	241+85.00	245+25.00	RT	340.00			243+35.00		10.00	13.00	54		1				1			1							597.49		
L	259+79.17	265+15.00	MED	56.25		492.21									2					1							11372.74		
L	262+62.25	264+68.49	RT	206.25			264+68.49		9.52	12.52	54		1		1		1										201.58		
L	292+93.81	299+30.00	MED			636.19									2														
L	335+15.00	337+08.87	RT	193.87			337+08.87		9.96	12.96	54		1		1		1										201.74		
L	337+88.93	339+70.17	LT	181.24			337+88.93		10.18	13.18	54		1		1		1										212.89		
L	362+00.00	366+00.00	MED			400.00									2												7342.46		
PROJECT TOTAL				6804.17		3506.69									22		13			10							40076		
DEDUCTION FOR ANCHOR UNITS			B-77 = 22 @ 18.75			-412.50																							
		GREU 350, TL-3 = 13 @ 54.00' =		-702.00																									
		CAT-1 = 10 @ 6.25 =		-62.50																									
GRAND TOTAL				6039.67		3094.19																							
SAY				**6125.00**		**3125.00**																					**40500.00**		
ADDITIONAL GUARDRAIL POSTS = 50 EACH																													

COMPUTED BY: KA/MH DATE: 5/4/2017
CHECKED BY: BM DATE: 5/4/2017

PROJECT NO.	SHEET NO.
I-5786	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)												WELDED STEEL PIPE								R.C. PIPE CLASS III								R.C. PIPE CLASS IV								** " R.C. PIPE (CLASS V)	***" 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)		QUANTITIES FOR DRAINAGE STRUCTURES	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')		C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03			CONCRETE TRANSITIONAL SECTION		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	FRAME w/ COVER, STD. 840.54	ADJUST D.I.	CONV. EXIST DI TO J.B.	T.B.D.I. STD. 840.35	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29	T.B.J.B. STD. 840.34	FLOWABLE FILL (C.Y.)	G.D.I. TYPE "A" EXTRA DEPTH (SEE DETAIL SHEET 2C-16)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	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
SIZE								12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"						CU. YARDS		PER EACH (0' THRU 5.0')	LIN. FT. A	LIN. FT. B		TYPE OF GRATE			DROP INLET	CATCH BASIN																								
THICKNESS OR GAUGE		FROM	TO																		0.28" THICK, GRADE B IN SOIL	0.31" THICK, GRADE B IN SOIL	0.31" THICK, GRADE B IN SOIL																										R.C.P.	C.S.P.		5.0' THRU 10.0'	10.0' AND ABOVE		E	F	G																										REMARKS
14+86 -L-	LT	0401		176.2																																																																				1											
14+87 -L-	RT	0402		176.3																																																																				1											
13+35 -L-	LT	0403			171.9																																																																																
		0403	0404		171.9	171.7																																76																																															145	
14+10 -L-	LT	0404		176.3	171.7																																														1																										1	1								
		0404	0405		171.7	171.5																																72																																																
14+85 -L-	LT	0405		176	171.5																																														1																										1	1								
		0405	0406		171.5	171.1																																32																																														48	
15+22 -L-	LT	0418			171.0	170.7																																	48																																													
15+90 -Y1-	LT	0409		199.7	196.9																																														1																										1	1								
		0409	0410		196.9	196.8																															32																																															54	
15+90 -Y1-	RT	0410		199.7	196.8																																														1																										1	1								
		0410	0411		196.8	174.5			48							X																																																																2 @ 15"			44	
19+66 -Y1-	LT	0412		199.9	197.2																																														1																										1	1								
		0412	0413		197.2	172.4			48							X																																																																2 @ 15"			70	
19+66 -Y1-	RT	0414		199.9	197																																														1																										1	1								
		0414	0415		197.0	177.6			48							X																																																																2 @ 15"			70	
15+40 -L-	RT	0416		176.2	170.7																																														1	0.3																					1					1							
		0416	0417		170.7	171.4																																40																																														28	
19+16 -L-	LT	0407		174.9	171.2																																														1													1			1						1											ADJUST DI FOR TRAFFIC PHASING
		0407	0408		171.2	171.2																															4																																																	
19+16 -L-	RT	0408		174.9	171.2																																														1													1			1						1											ADJUST DI FOR TRAFFIC PHASING
		0408	0419		171.2	170																															280																																																		
22+00 -L-	LT	0418		174.8																																															1													1			1						1											ADJUST DI FOR TRAFFIC PHASING
		0418	0419		170	170																															4																																																		
22+00 -L-	RT	0419		174.8																																															1													1			1						1											ADJUST DI FOR TRAFFIC PHASING
		0419	0502		169.7	168.9																																272																																																
24+76 -L-	LT	0501		174.3	168.9																																														1	0.4												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		0501	0502		168.9	168.9																																4																																															
24+76 -L-	RT	0502		174.3	168.9																																														1	0.7												1			1						1											ADJUST DI FOR TRAFFIC PHASING
24+77 -L-	RT	0503																																																																																		0.4465		
		0503	0504		167.8	167.7																																8																																															
33+76 -L-	LT	0505		173.3	168.3																																														1	0.1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		0505	0506		168.3	168.2																																4																																														
33+76 -L-	RT	0506		173.3	168.2																																														1	0.1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
37+50 -L-	LT	0601		172.4	170.4																																														1														1		1						1											ADJUST DI FOR TRAFFIC PHASING
		0601	0602		170.4	170.4																															4																																																	
37+50 -L-	RT	0602		172.4	170.4																																														1														1		1						1											ADJUST DI FOR TRAFFIC PHASING
		0602	0604		170.4	170.1																															96																																																	
38+50 -L-	LT	0603		172.4	170.1																																														1														1		1						1											ADJUST DI FOR TRAFFIC PHASING
		0603	0604		170.1	170.1																															4																																																		
SHEET TOTALS									144																												424	508	48												18	1.6												8	3		11					1	13		6	6	1			6 @ 15"		0.4465	459	

COMPUTED BY: KA/MH DATE: 5/4/2017

CHECKED BY: BM DATE: 5/4/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-5786	3D-2

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 / Size / Thickness or Gauge	Location (LT, RT, or CL)	Structure No. From	Structure No. To	Top Elevation	Invert Elevation	Invert Elevation	Slope Critical	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	Do Not Use RCP	Do Not Use CSP	Do Not Use CAAP	Do Not Use HDPE	Welded Steel Pipe 12"	15" (0.28" Thick, Grade B in Soil)	18" (0.31" Thick, Grade B in Soil)	24" (0.31" Thick, Grade B in Soil)	30"	36"	42"	48"	R.C. Pipe Class III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. Pipe Class IV 12"	15"	18"	24"	30"	36"	42"	48"
38+50 -L-	RT	0604		172.4	170.1																																						
		0604	0606		170.1	169.9																																68					
39+50 -L-	LT	0607		172.3	170.0																																						
		0607	0608		170.0	170.0																															4						
39+50 -L-	RT	0608		172.5	170.0																																						
		0608	0606		170.0	169.9																																28					
39+21 -L-	LT	0606		172.4	169.9																																						
		0605	0606		169.9	169.9																																4					
39+21 -L-	RT	0605		172.4	169.9																																						
45+74 -L-	LT	0609		174.8	169.4																																						
		0609	0610		169.4	169.4																																4					
45+74 -L-	RT	0610		174.8	169.4																																						
54+72 -L-	RT	0701		179.2	173.9																																						
		0701	0702		173.9	173.9																															4						
54+72 -L-	LT	0702		179.1	173.9																																						
62+55 -L-	RT	0801		182.7	175.8																																						
		0801	0802		175.8	175.8																																4					
62+55 -L-	LT	0802		182.7	175.8																																						
70+14 -L-	LT	0803		186.3	180.8																																						
		0803	0804		180.8	180.7																																			8		
70+10 -L-	RT	0804		186.3	180.7																																						
82+97 -L-	RT	0901		188.2	181.5																																						
		0901	0902		181.5	181.5																																			4		
82+97 -L-	LT	0902		188.2	181.5																																						
83+00 -L-	LT	0903		183.7																																							
		0903	0904		180.7	180.6																																			4		
83+00 -L-	LT	0904		184.4	180.6																																						
94+29 L-	CL	1001		181.5																																							
102+51 -L-	RT	1101		176.7	174.2																																						
98+50 -L-	RT	1002		179.8	177.1																																						
		1002	1003		177.1	176.7																															140						
99+91 -L-	LT	1003		179.4	176.7																																						
		1003	1004		176.7	176.6																															4						
99+91 -L-	RT	1104		179.3	176.6																																						
		1104	1106		176.6	175.1																															256						
102+50 -L-	LT	1105		177.9	175.1																																						
		1105	1106		175.1	175.1																															4						
102+50 -L-	RT	1106		177.9	175.1																																						
		1106	1108		175.1	172.6																																296					
96+68 -L-	LT	1005		178.0																																							
		1005	1006		174.1	174.1																																4					
96+68 -L-		1006			174.1																																						
SHEET TOTALS																																					412	408			16		

Station	Structure No. From	Structure No. To	** " R.C. Pipe (Class V)	***" 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.	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'	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	Concrete Transitional Section Drop Inlet	Catch Basin	D.I. Std. 840.14 or Std. 840.15	D.I. Frame with Two Grates Std. 840.16	G.D.I. Type "A" Std. 840.17 or 840.26	G.D.I. Type "B" Std. 840.18 or 840.27	G.D.I. Type "D" Std. 840.19 or 840.28	G.D.I. Frame with Grate Std. 840.20	G.D.I. Frame with Two Grates Std. 840.20	G.D.I. Frame with Two Grates Std. 840.22	G.D.I. (N.S.) Frame with Grate Std. 840.24	G.D.I. (N.S.) Frame with Two Grates Std. 840.24	J.B. Std. 840.31 or 840.32	Frame w/ Cover, Std. 840.54	Adjust D.I.	Conv. Exist DI to J.B.	T.B.D.I. Std. 840.35	G.D.I. (N.S.) Frame with Grate Std. 840.29	T.B.J.B. Std. 840.34	Flowable Fill (C.Y.)	G.D.I. Type "A" Extra Depth (See Detail Sheet 2C-16)	Drainage Pipe Elbows No. & Size	Conc. & Brick Pipe Plug, C.Y. Std. 840.71	Conc. Collars Cl. "B" C.Y. Std. 840.72	Pipe Removal Lin. Ft.	Remarks
38+50 -L-	0604									1													1		1						1											ADJUST DI FOR TRAFFIC PHASING
	0604	0606																																								
39+50 -L-	0607									1													1		1						1											ADJUST DI FOR TRAFFIC PHASING
	0607	0608																																								
39+50 -L-	0608									1													1		1						1											ADJUST DI FOR TRAFFIC PHASING
	0608	0606																																								
39+21 -L-	0606									1													1		1						1											ADJUST DI FOR TRAFFIC PHASING
	0605	0606																																								
39+21 -L-	0605									1													1		1						1											ADJUST DI FOR TRAFFIC PHASING
45+74 -L-	0609									1	0.4											1			1						1											ADJUST DI FOR TRAFFIC PHASING
	0609	0610																																								
45+74 -L-	0610									1	0.7											1			1						1											ADJUST DI FOR TRAFFIC PHASING
54+72 -L-	0701									1	0.2											1			1						1											ADJUST DI FOR TRAFFIC PHASING
	0701	0702																																								
54+72 -L-	0702									1	0.2											1			1						1											ADJUST DI FOR TRAFFIC PHASING
62+55 -L-	0801									1	1.9											1			1						1											ADJUST DI FOR TRAFFIC PHASING
	0801	0802																																								
62+55 -L-	0802									1	1.9											1			1						1											ADJUST DI FOR TRAFFIC PHASING
70+14 -L-	0803									1	0.5										1				1						1											ADJUST DI FOR TRAFFIC PHASING
	0803	0804																																								
70+10 -L-	0804									1	0.6										1				1						1											ADJUST DI FOR TRAFFIC PHASING
82+97 -L-	0901									1	1.7											1			1						1											ADJUST DI FOR TRAFFIC PHASING
	0901	0902																																								
82+97 -L-	0902									1	1.7											1			1						1											ADJUST DI FOR TRAFFIC PHASING
83+00 -L-	0903																																							0.764		
	0903	0904																																								
83+00 -L-	0904									1													1			1																
94+29 L-	1001																																									
102+51 -L-	1101									1													1			1																
98+50 -L-	1002									1												1				1																
	1002	1003																																								
99+91 -L-	1003									1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
	1003	1004																																								
99+91 -L-	1104									1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
	1104	1106																																								
102+50 -L-	1105									1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
	1105	1106																																								
102+50 -L-	1106									1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
	1106	1108																																								
96+68 -L-	1005									1												1				1																
	1005	1006																																								
96+68 -L-	1006																															1										
SHEET TOTALS										23	9.8										2	14	7		19	4					19	1								0.764		

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

COMPUTED BY: KA/MH DATE: 5/4/2017

CHECKED BY: BM DATE: 5/4/2017

PROJECT NO.	SHEET NO.
I-5786	3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE / THICKNESS OR GAUGE: 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
105+50 -L-	LT	1107		176.8	171.9														
		1107	1108		171.9	171.9													
105+50 -L-	LT	1108		176.6	171.9														
		1108	1110		171.9	171.7													
106+00 -L-	RT	1109		176.7	171.8														
		1109	1110		171.8	171.7													
106+00 -L-		1110		176.7	171.7														
		1110	1112		171.7	171.5													
107+00 -L-	LT	1111		176.8	172.1														
		1111	1112		172.1	172.1													
107+00 -L-	RT	1112		176.8	163.3														
112+87 -L-		1113		180.8	166.4														
		1113	1114		166.4	166.4													
112+87 -L-		1114		180.9	166.4														
116+16 -L-	LT	1201		183.3	167.7														
		1201	1202		167.7	167.7													
116+23 -L-	RT	1202		183.2	167.7														
125+86 -L-	LT	1203		189.9	187.1														
		1203	1204		187.1	187.1													
125+86 -L-	RT	1204		190.4	187.1														
		1204	1205		187.1	185.1													
125+87 -L-	RT	1205		189.8	185.1														
		1205	1206		185.1	185.1													
125+87 -L-	RT	1206		189.3	185.1														
125+87 -L-	RT	1207		186.1															
		1207	1208		184.9	184.9													
135+00 -L-	LT	1301		190.6	187.9														
		1301	1302		187.9	187.6													
136+00 -L-		1302		190.6															
		1302	1303		187.6	183.5													
136+88 -L-	LT	1303		190.7	182.8														
		1303	1304		182.8	182.6													
136+88 -L-	RT	1304		190.7	182.6														
144+68 -L-	LT	1401		191.5	186.8														
		1401	1402		186.8	186.8													
144+68 -L-	RT	1402		191.6	186.8														
SHEET TOTALS																			

STATION	WELDED STEEL PIPE SIZE / THICKNESS OR GAUGE: 12"	15" 0.25" THICK, GRADE B IN SOIL	18" 0.31" THICK, GRADE B IN SOIL	24" 0.31" THICK, GRADE B IN SOIL	30"	36"	42"	48"	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
105+50 -L-																								
																				4				
105+50 -L-																								
																				48				
106+00 -L-																								
																				4				
106+00 -L-																								
																				96				
107+00 -L-																								
																				4				
107+00 -L-																								
112+87 -L-																								
																			4					
112+87 -L-																								
116+16 -L-																								
																					8			
116+23 -L-																								
125+86 -L-																								
																			4					
125+86 -L-																								
																			312					
125+87 -L-																								
																			8					
125+87 -L-																								
125+87 -L-																								
																			8					
135+00 -L-																								
																			96					
136+00 -L-																								
																			84					
136+88 -L-																								
																				4				
136+88 -L-																								
144+68 -L-																								
																			4					
144+68 -L-																								
SHEET TOTALS																			516	4	160	8		

STATION	** R.C. PIPE (CLASS V)	*** RC PIPE CULVERTS, CONTRACTOR DESIGN	**** PC 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.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	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 m	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	FRAME w/ COVER, STD. 840.54	ADJUST D.I.	CONV. EXIST DI TO. J.B.	T.B.D.I. STD. 840.35	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29	T.B.J.B. STD. 840.34	FLOWABLE FILL (C.Y.)	G.D.I. TYPE "A" EXTRA DEPTH (SEE DETAIL SHEET 2C-16)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
105+50 -L-								1																			1										ADJUST DI FOR TRAFFIC PHASING
105+50 -L-								1																			1										ADJUST DI FOR TRAFFIC PHASING
106+00 -L-								1																			1										ADJUST DI FOR TRAFFIC PHASING
106+00 -L-								1																			1										ADJUST DI FOR TRAFFIC PHASING
107+00 -L-								1																			1										ADJUST DI FOR TRAFFIC PHASING
107+00 -L-								1	5	3.5																	1								1		ADJUST DI FOR TRAFFIC PHASING
112+87 -L-								1	5	4.4																	1								1		ADJUST DI FOR TRAFFIC PHASING
112+87 -L-								1	5	4.5																	1								1		ADJUST DI FOR TRAFFIC PHASING
116+16 -L-								1	5	5.6																	1								1		ADJUST DI FOR TRAFFIC PHASING
116+23 -L-								1	5	5.5																	1								1		ADJUST DI FOR TRAFFIC PHASING
125+86 -L-								1																			1										ADJUST DI FOR TRAFFIC PHASING
125+86 -L-								1																			1										ADJUST DI FOR TRAFFIC PHASING
125+87 -L-								1																			1									0.399	ADJUST DI FOR TRAFFIC PHASING
125+87 -L-								1																			1										ADJUST DI FOR TRAFFIC PHASING
																																			0.399		
135+00 -L-								1																			1										ADJUST DI FOR TRAFFIC PHASING
136+00 -L-								1																			1										ADJUST DI FOR TRAFFIC PHASING
136+88 -L-								1	2.9																		1										ADJUST DI FOR TRAFFIC PHASING
136+88 -L-								1	3.1																		1										ADJUST DI FOR TRAFFIC PHASING
144+68 -L-								1																			1										ADJUST DI FOR TRAFFIC PHASING
144+68 -L-								1																			1										ADJUST DI FOR TRAFFIC PHASING
SHEET TOTALS								20	31	23.5										2	13		20				20				5			0.798		

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

COMPUTED BY:	KA/MH	DATE:	5/4/2017
CHECKED BY:	BM	DATE:	5/4/2017

PROJECT NO.	SHEET NO.
I-5786	3D-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)												WELDED STEEL PIPE								R.C. PIPE CLASS III								R.C. PIPE CLASS IV								** " R.C. PIPE (CLASS V)	***" 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)		QUANTITIES FOR DRAINAGE STRUCTURES	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')		C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03			CONCRETE TRANSITIONAL SECTION		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	FRAME w/ COVER, STD. 840.54	ADJUST D.I.	CONV. EXIST DI TO J.B.	T.B.D.I. STD. 840.35	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29	T.B.J.B. STD. 840.34	FLOWABLE FILL (C.Y.)	G.D.I. TYPE "A" EXTRA DEPTH (SEE DETAIL SHEET 2C-16)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SIZE								12"	15"	18"	24"	30"	36"	42"	48"					12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"						CU. YARDS			LIN. FT. A	B		TYPE OF GRATE																												
THICKNESS OR GAUGE		FROM	TO													DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE		0.28" THICK, GRADE B IN SOIL	0.31" THICK, GRADE B IN SOIL	0.31" THICK, GRADE B IN SOIL																										R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	5.0' THRU 10.0'	10.0' AND ABOVE		E	F	G	DROP INLET	CATCH BASIN																								
152+75 -L-	LT	1403		191.5																																																																							1												
159+00 -L-	LT	1501		190.5	187.7																																														1												1				1																
		1501	1503		187.7	187.2																														156																																														
160+60 -L-	LT	1502		190.4	187.0																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		1502	1503		187.0	187.0																															4																																													
160+60 -L-	RT	1503		190.4	190.4																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		1503	1505		187.0	186.4																															212																																													
164+91 -L-	LT	1504		189.8	186.4																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		1504	1505		186.4	186.4																															4																																													
164+91 -L-	RT	1505		189.7	186.4																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		1505	1506		186.4	183.6																															212																																													
164+91 -L-		1506		189.1	183.6																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		1506	1507		183.6	183.6																															4																																													
		1507		189.1	183.6																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
171+87 -L-	RT	1601		187.0	183.0																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		1601	1602		183.0	183.0																															4																																													
171+87 -L-	LT	1602		187.0	183.0																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
171+92 -L-	LT	1603		184.3																																																																																0.4465		
		1603	1604		182.8	182.7																															16																																													
171+94 -L-	LT	1604			182.7																																																																												
177+84 -L-	RT	1605		186.0	181.7																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		1605	1606		181.7	181.5																																8																																												
177+87 -L-	LT	1606		186.0	181.5																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
187+83 -L-	RT	1701		184.8	180.2																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		1701	1702		180.2	180.2																																4																																												
187+85 -L-	LT	1702		185.0	180.2																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
198+32 -L-	RT	1801	1802		179.4	179.3																															24																																											0.4465		
197+89 -L-	RT	1803		183.1	179.0																																														1												1						1			1											ADJUST DI FOR TRAFFIC PHASING
		1803	1804		179.0	179.0																															4																																													
197+86 -L-	LT	1804		183.1	179.0																																														1												1						1			1											ADJUST DI FOR TRAFFIC PHASING
18+90 -Y4-	RT	1805		205.9	203.2																																														1																							1	1								
		1805	1806		203.2	182.9		44							X																																																															2 @ 15"			14	
18+90 -Y4-	LT	1807		205.9	203.2																																														1																							1	1								
		1807	1808		203.2	184.4		68							X																																																															2 @ 15"			14	
21+64 -Y4-	RT	1809		205.9	203.2																																														1																							1	1								
		1809	1810		203.2	185.0		44							X																																																															2 @ 15"			21	
21+64 -Y4-	LT	1811		205.9	203.2																																														1																							1	1								
		1811	1812		203.2	184.1		48							X																																																															2 @ 15"			16	
207+50 -L-	RT	1901		179.8	176.5																																														1												1						1			1											ADJUST DI FOR TRAFFIC PHASING
		1901	1902		176.5	176.5																														8																																														
SHEET TOTALS										204																												164	484	12												20												16			12	1		3			16		4	4				8 @ 15"		0.893	65	

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

COMPUTED BY: KA/MH DATE: 5/4//2017

CHECKED BY: BM DATE: 5/4/2017

PROJECT NO.	SHEET NO.
I-5786	3D-5

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE												WELDED STEEL PIPE SIZE								R.C. PIPE CLASS III SIZE								R.C. PIPE CLASS IV SIZE							
								12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE																					0.28" THICK (GRADE B,W) SOIL	0.31" THICK (GRADE B,W) SOIL	0.31" THICK (GRADE B,W) SOIL																	
207+50 -L-	LT	1902		179.5																																					
		1902	1904		176.5	174.8																														84						
208+37 -L-	RT	1903		179.5	174.8																																				
		1903	1904		174.8	174.8																														4						
208+37 -L-	LT	1904		179.1	174.8																																				
214+00 -L-	LT	1905		177.8	174.5																																				
		1905	1906		174.5	174.5																														4						
214+00 -L-	RT	1906		177.5	174.5																																				
		1906	1908		174.5	173.5	X																													96						
213+00 -L-	RT	1907		177.8	173.5																																				
		1907	1908		173.5	173.5																														4						
213+00 -L-	LT	1908		177.4	173.5																																				
		1908	1910		173.5	166.5	X																													140						
211+51 -L-	RT	1909		178.1	166.5																																				
		1909	1910		166.5	166.5																																				
211+56 -L-	LT	1910		177.7	166.5																																				
219+60 -L-	RT	2001		179.2	171.0																																				
		2001	2002		171.0	171.0																														8						
219+55 -L-	LT	2002		179.2	171.0																																				
234+00-L-	RT	2101		170.9	168.1																																				
		2101	2102		168.1	168.1																														4						
234+00 -L-	LT	2102		170.9	168.1																																				
		2102	2104		168.1	167.0																														96						
233+02 -L-	RT	2103		172.8	167.0																																				
		2103	2104		167.0	167.0																																8					
232+97 -L-	LT	2104		172.8	167.0																																				
245+00 -L-	LT	2201		152.5	149.5																																				
		2201	2202		149.5	149.5																														4						
245+00 -L-	RT	2202		152.6	149.5																																				
		2202	2204		149.5	149.0	X																													64						
245+65 -L-	LT	2203		152.3	149.0																																				
		2203	2204		149.0	149.0																														4						
245+65 -L-	RT	2204		152.4	149.0																																				
		2204	2206		149.0	148.4	X																													32						
246+00 -L-	LT	2205		152.3	148.4																																				
		2205	2206		148.4	148.4																														4						
246+00 -L-	RT	2206		152.4	148.4																																				
		2206	2208		148.4	147.8	X																													28						
246+30 -L-	LT	2207		152.3	147.8																																				
		2207	2208		147.8	147.8																														4						
246+30 -L-	RT	2208		152.4	147.8																																				
		2208	2209		147.8	145.7																																				
263+96 -L-	CL	2301																																								
296+61 -L-	CL	2601																																								
302+22 -L-	RT	2602		164.8	UNK																																				
SHEET TOTALS																																		428	152	8		8				

STATION	** R.C. PIPE (CLASS V)	**** 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 STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	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	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	D.I. FRAME WITH TWO GRATES STD. 840.17 OR 840.26	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	FRAME w/ COVER, STD. 840.54	ADJUST D.I.	CONV. EXIST DI TO J.B.	T.B.D.I. STD. 840.35	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29	T.B.J.B. STD. 840.34	FLOWABLE FILL (C.Y.)	G.D.I. TYPE "A" EXTRA DEPTH (SEE DETAIL SHEET 2C-16)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
207+50 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
208+37 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
208+37 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
214+00 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
214+00 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
213+00 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
213+00 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
211+51 -L-								1	5	1.6																															ADJUST DI FOR TRAFFIC PHASING
211+56 -L-								1	5	1.2																															ADJUST DI FOR TRAFFIC PHASING
219+60 -L-								1	3.2																																ADJUST DI FOR TRAFFIC PHASING
219+55 -L-								1	3.2																																ADJUST DI FOR TRAFFIC PHASING
234+00-L-								1																																	ADJUST DI FOR TRAFFIC PHASING
234+00 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
233+02 -L-								1	0.8																																ADJUST DI FOR TRAFFIC PHASING
232+97 -L-								1	0.8																																ADJUST DI FOR TRAFFIC PHASING
245+00 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
245+00 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
245+65 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
245+65 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
246+00 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
246+00 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
246+30 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
246+30 -L-								1																															0.065		ADJUST DI FOR TRAFFIC PHASING
																																						0.065		
263+96 -L-																																									
296+61 -L-																																									
302+22 -L-								1																																	ADJUST DI FOR TRAFFIC PHASING
SHEET TOTALS								24	18	2.8																													0.130		

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(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

COMPUTED BY: KA/MH DATE: 5/4/2017
CHECKED BY: BM DATE: 5/4/2017

PROJECT NO.	SHEET NO.
I-5786	3D-6

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)								DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	WELDED STEEL PIPE								R.C. PIPE CLASS III								R.C. PIPE CLASS IV								** " R.C. PIPE (CLASS V)	***" 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		QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE			CONCRETE TRANSITIONAL SECTION		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	FRAME w/ COVER, STD. 840.54	ADJUST D.I.	CONV. EXIST DI TO J.B.	T.B.D.I. STD. 840.35	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29	T.B.J.B. STD. 840.34	FLOWABLE FILL (C.Y.)	G.D.I. TYPE "A" EXTRA DEPTH (SEE DETAIL SHEET 2C-16)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SIZE								12"	15"	18"	24"	30"	36"	42"	48"					12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"						R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE		E	F	G	DROP INLET	CATCH BASIN																								
THICKNESS OR GAUGE		FROM	TO																		0.28" THICK, GRADE B IN SOIL	0.31" THICK, GRADE B IN SOIL	0.31" THICK, GRADE B IN SOIL																																																																
		2602	2603		UNK	UNK																																8																																														
302+16 -L-	LT	2603		164.4	UNK																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
308+49 -L-	RT	2604		177.0	UNK																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		2604	2605		UNK	UNK																																4																																													
308+49 -L-	LT	2605		177.0	UNK																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
317+28 -L-	RT	2701		192.0	188.4																																														1												1				1																
		2701	2702		188.4	188.4	X																																4																																											0.5526		
317+10 -L-	RT	2703		194.0	187.1																																														1	1.9											1			1						1											ADJUST DI FOR TRAFFIC PHASING
		2703	2704		187.1	187.1																																	4																																													
317+07 -L-	LT	2704		194.1	187.1																																														1	2											1			1						1											ADJUST DI FOR TRAFFIC PHASING
		2705	2706		186.2	186.2																																	4																																											0.5526		
311+87 -L-	LT	2706		189.2	186.2																																														1													1			1																
320+17 -L-	LT	2707		194.5	190.0																																														1												1				1														5	
336+94 -L-	LT	2901		203.2	200.4																																														1													1		1						1											ADJUST DI FOR TRAFFIC PHASING
		2901	2902		200.4	200.4																																8																																														
336+94 -L-	RT	2902		203.2	200.4																																														1													1		1						1											ADJUST DI FOR TRAFFIC PHASING
342+76 -L-	RT	2903		199.5	196.7																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		2903	2904		196.7	196.7																																4																																															
342+76 -L-	LT	2904		199.4	196.7																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		2904	2906		196.7	195.3	X																														320																																															
346+00 -L-	RT	2905		198.6	195.3																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		2905	2906		195.3	195.3																																4																																															
346+00 -L-	LT	2906		198.6	195.3																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		2906	2908		195.3	194.5	X																														96																																															
347+00 -L-	RT	2907		198.5	194.5																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		2907	2908		194.5	194.5																																4																																															
347+00 -L-	LT	2908		198.5	194.5																																														1												1			1						1											ADJUST DI FOR TRAFFIC PHASING
		2908	2910		194.5	192.7	X																														48																																															
347+50 -L-	RT	2909		198.6	192.7																																														1	0.9											1			1						1											ADJUST DI FOR TRAFFIC PHASING
		2909	2910		192.7	192.7																																4																																															
347+50 -L-	LT	2910		198.5	192.7																																														1	0.8											1			1						1											ADJUST DI FOR TRAFFIC PHASING
		2910	2912		192.7	191.7	X																														20																																															
347+74 -L-	RT	2911		198.6	191.7																																														1	1.9											1			1						1											ADJUST DI FOR TRAFFIC PHASING
		2911	2912		191.7	191.7																																4																																															
347+74 -L-	LT	2912		198.5	191.7																																														1	1.8											1			1						1											ADJUST DI FOR TRAFFIC PHASING
360+81 -L-	RT	3001	3002		191.2	191.2																																	20																																												0.4465		
360+80 -L-	RT	3003		196.9	190.5																																														1	1.4											1			1						1											ADJUST DI FOR TRAFFIC PHASING
		3003	3004		190.5	190.5																																	4																																															
360+80 -L-	LT	3004		196.0	190.5																																														1	0.5											1			1						1											ADJUST DI FOR TRAFFIC PHASING
CONTINGENCY																					160	72																400			60																																					17						
ITEMS FOR																																																																																							
POTENTIAL REPAIRS																																																																																							
SHEET TOTALS																					160	72															504	444	12		60										22	11.20											19	3		19	3					19					17				1.5517	5	
PROJECT TOTALS									348												160	72	76														2448	2000	232	16	76		8								127	105.79										6	92	13		105	8		3		1	113	1	10	10	1	22	5	14 @ 15"	0.13	4.4532	529	
SAY																																																				106.00																														5.00		

COMPUTED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

(2-16-16)

PROJECT NO.	SHEET NO.
I-5786	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4/5/6	Riprap Class* 1/2/B	Rock Plating SY
Y1	1.5	15+50.00	1.5	16+50.00	LT	3/4		395
Y1	1.5	19+00.00	1.5	22+00.00	RT	3/4		1010
L	1.5	104+50.00	1.5	116+50.00	RT	1/2		2360
L	1.5	105+00.00	1.5	118+50.00	LT	1/2		1900
L	1.5	134+50.00	1.5	141+50.00	LT	1/2		715
Y4	1.5.	16+50.00	1.5	19+00.00	RT	3/4		980
							TOTAL SY:	7360

***Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.**

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
Bridge No. 108 on Y1 over I-95	End Bents 1 & 2	1
Bridge No. 111 on Y4 over I-95	End Bents 1 & 2	1

APPROACH WORK FOR –Y1– & SERVICE ROADS TO BE PERFORMED UNDER FUTURE CONSTRUCTION REVISION

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
6/7/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
DocuSigned by: Bob A. May

HYDRAULICS ENGINEER
6/7/2017
NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD
DocuSigned by: K. B. Alford

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5/14/99

MATCHLINE –Y1– STA. 11+00.00 SEE SHT. 33

–Y1– PT Sta. 13+30.07
–Y1– PC Sta. 13+50.96
–Y1– PT Sta. 15+99.16

NAD 83/2011

–Y1–
PI Sta 11+07.92 △ = 0° 17' 44.2" (LT) D = 0° 03' 59.5" L = 444.29' T = 222.15' R = 86,111.28'
PI Sta 14+75.45 △ = 11° 10' 07.8" (RT) D = 4° 30' 00.0" L = 248.20' T = 124.49' R = 1,273.24'
PI Sta 21+62.45 △ = 20° 59' 58.1" (LT) D = 7° 00' 00.0" L = 299.99' T = 151.70' R = 818.51'

PEEDIN FARMS, INC.
DB 4224 PG 632
PB 13 PG 79

BEGIN CONST. –Y1– STA. 15+50.00

ROCK PLATING –Y1– STA. 15+50 TO 16+50 LT. SEE DETAIL SHT. 2G–2

END WW FENCE –L– 16+00.00

BEG. WW FENCE –L– 14+49.23 LT

CL B RIP RAP EST 5 TON EST 12 SY GF

CL B RIP RAP EST 5 TON EST 14 SY GF

ROBERT A. WIGGS, AND SARAH W. BOYCE
DB 3093 PG 720
DB 539 PG 283

N 78°38'46" W 225.40'

S 82°11'06.6" E

–L– POT Sta. 9+20.00

TBM #20
N - 652405
E - 2224424
ELEV 177.93'
BY1 STATION 16+80.98 155' RIGHT
RR SPIKE IN 12" PINE

Front Ditch Slope

END WW FENCE –L– 13+88.60
TIE TO EX FENCE
BEG. WW FENCE –L– 12+92.15 LT

REMOVE PAVED DITCH

15" w/ 2 ELBOWS

CL B RIP RAP EST 2 TON EST 7 SY GF

SPECIAL DITCH SEE DETAIL A

REMOVE

TB 2GI

18" RCP–IV

590' F

SEAFOOD HOUSE RD. 18' BST

I–95 SB 45' BST

I–95 NB 45' BST

I–95 SB 50' BST

I–95 NB 42.5' BST

N 64°04'04.2" E

PROP. MEDIAN CONC. BARRIER

BARRIER TRANSITION

TIE TO EXIST. CONC. MEDIAN BARRIER –L– STA. 9+90.00

MEDIAN HAZARD PIER PROTECTION

REMOVE EXIST. GUARDRAIL

–L– STA 15+23.20
–Y1– 11+47.01
△ = 44°54'56.8"

Adj. DI

RETAIN

15" RCP–IV

18" RCP–IV

2GI

REMOVE EXIST. GUARDRAIL

DITCH CLEANOUT

TB JB w/MH

TIE EX FENCE END WW FENCE –L– 17+95.00

–Y1– PC Sta. 20+10.75

BEG. WW FENCE –L– 16+56.80

END CONST. –Y1– STA. 22+00.00

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 4:1 or Flatter, D, Front Ditch Slope, Min. D=1.0 Ft.

FROM STA. 12+50 TO STA. 13+50 Lt
FROM STA. 16+50 TO STA. 18+00 Rt

–Y1– PT Sta. 23+10.74

N 81°59'03.0" E

MATCHLINE –Y1– STA. 25+00.00 SEE SHT. 34

MATCHLINE –L– STA. 23+00.00 SEE SHT. 5

TBM #1
N - 652056
E - 2224441
ELEV 175.83'
9 TO 1310
S 22°11' 42.23" W DISTANCE 55.14
60d NAIL IN 16IN PINE

BOBBY RAY ROGERS AND WIFE, WANDA D. ROGERS
DB 993 PG 490
PB 13 PG 79

WATER METER

250' TAPER

TIE TO EX FENCE BEG. WW FENCE –L– 14+94.00

END WW FENCE –L– 15+95.64

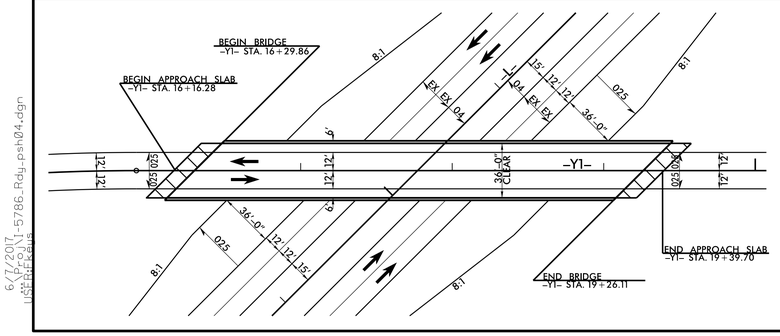
GERALD F. PEEDIN AND BRENDA POWELL PEEDIN
DB 4164 PG 300

ROCK PLATING –Y1– STA. 19+00 TO 22+00 RT. SEE DETAIL SHT. 2G–2

ROBERT A. WIGGS, AND SARAH W. BOYCE
DB 3093 PG 720
DB 539 PG 283

BEGIN NCDOT TIP PROJECT I–5786
–L– STA. 9+90.00

SKETCH SHOWING STRUCTURE/PAVEMENT RELATIONSHIP



SEE SHT. 37 FOR –Y1– PROFILE
SEE SHTS. S01–1 THRU S01–32 FOR STRUCTURE PLANS

6/7/2017
I-5786_Rdy_pst-04.dgn
USER: RFKing

5/14/99

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 6/7/2017	HYDRAULICS ENGINEER 6/7/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

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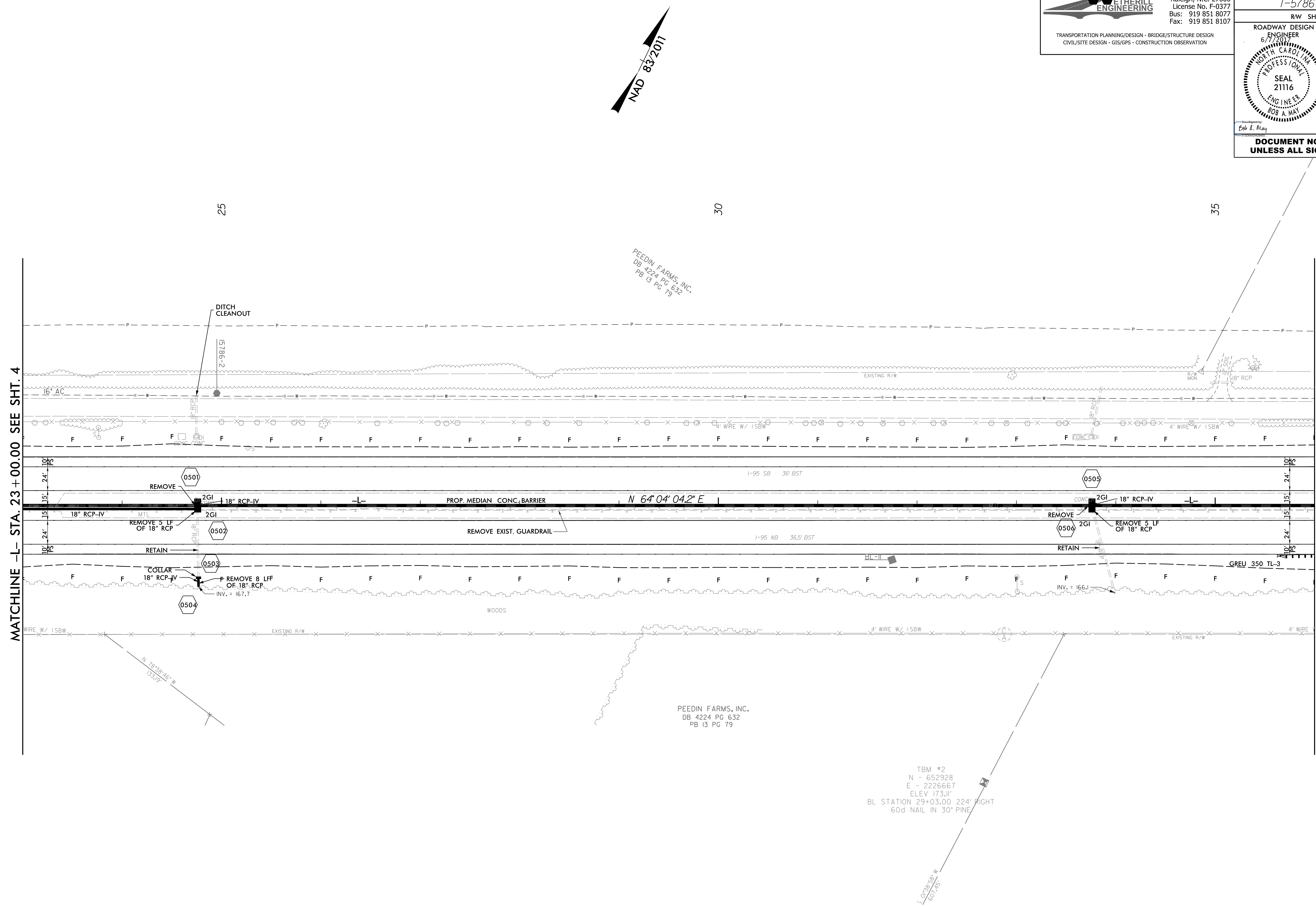
NAD 83/2011
25
30
35
PEEDIN FARMS, INC.
DB 4224 PG 632
PB 13 PG 79
DITCH CLEANOUT
I5786-2
16" AC
EXISTING R/W
R/W MON
18" RCP
4' WIRE W/ ISBW
0501
0502
0503
0504
0505
0506
REMOVE
2GI
18" RCP-IV
-L-
PROP. MEDIAN CONC. BARRIER
N 64° 04' 04.2" E
REMOVE 5 LF OF 18" RCP
REMOVE EXIST. GUARDRAIL
I-95 SB 36' BST
I-95 NB 36.5' BST
RETAIN
COLLAR
REMOVE 8 LFF OF 18" RCP
INV. = 167.7
INV. = 166.1
GREU 350 TL-3
WOODS
N 78°38'46" W 133.19'
MATCHLINE -L- STA. 23+00.00 SEE SHT. 4
MATCHLINE -L- STA. 36+00.00 SEE SHT. 6
PEEDIN FARMS, INC.
DB 4224 PG 632
PB 13 PG 79
TBM #2
N - 652928
E - 2226667
ELEV 173.11'
BL STATION 29+03.00 224' RIGHT
60d NAIL IN 30' PINE

6/7/2017
...\Proj\I-5786_Rdy_psh05.dgn

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PROJECT REFERENCE NO.	SHEET NO.
I-5786	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

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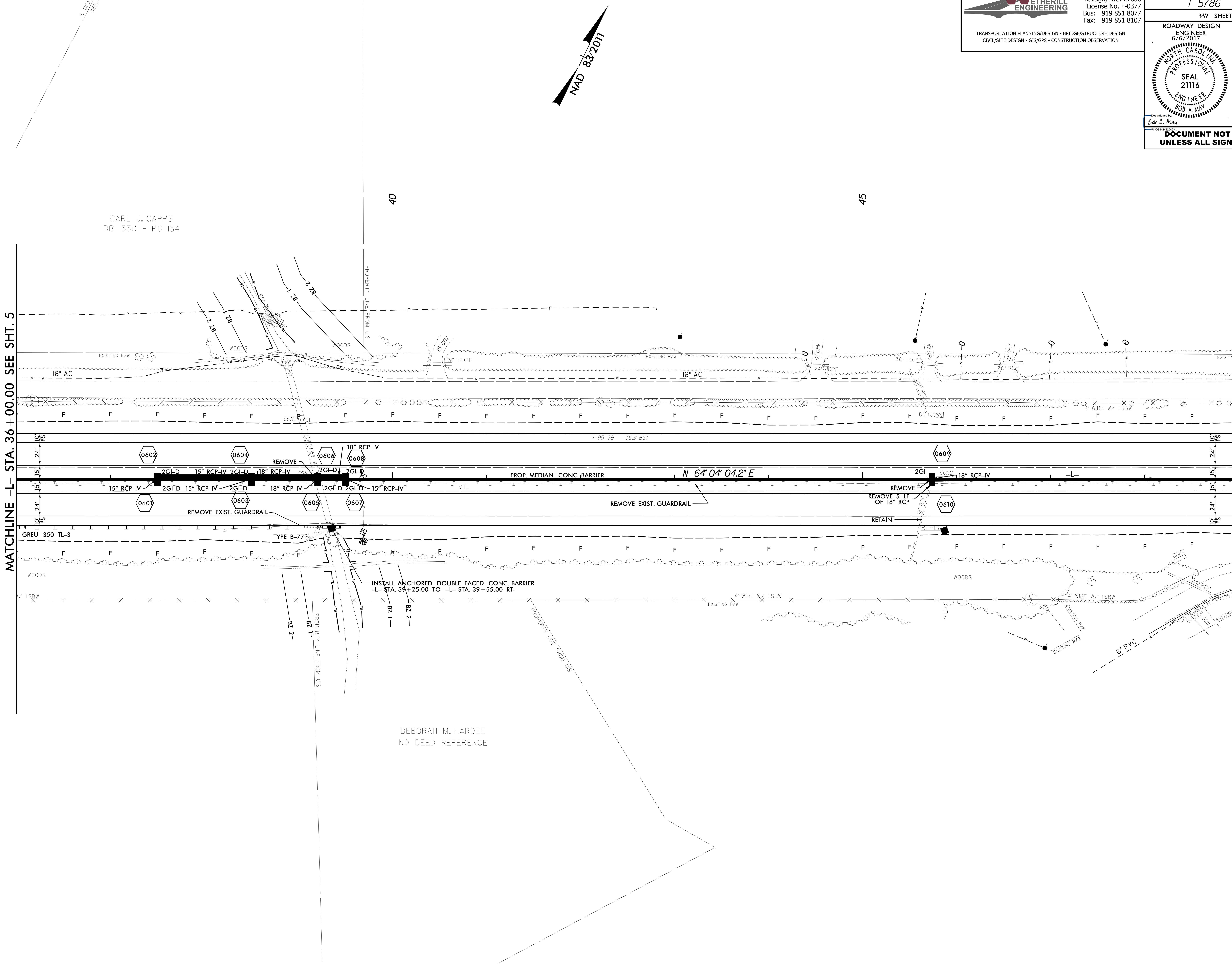
NAD 83/2011
CARL J. CAPPS
DB 1330 - PG 134
40
45
PROPERTY LINE FROM GS
MATCHLINE -L- STA. 36+00.00 SEE SHT. 5
MATCHLINE -L- STA. 49+00.00 SEE SHT. 7
16" AC
WOODS
EXISTING R/W
36" HDPE
24" HDPE
30" HDPE
4' WIRE W/ 1SBW
I-95 SB 35.8' BST
0602
0604
0606
0608
0609
0601
0603
0605
0607
0610
18" RCP-IV
REMOVE
2GI-D
15" RCP-IV
PROP. MEDIAN CONC. BARRIER
N 64° 04' 04.2" E
-L-
2GI
REMOVE 5 LF OF 18" RCP
REMOVE EXIST. GUARDRAIL
RETAIN
GREU 350 TL-3
TYPE B-77
INSTALL ANCHORED DOUBLE FACED CONC. BARRIER
-L- STA. 39+25.00 TO -L- STA. 39+55.00 RT.
BZ 1
BZ 2
6" PVC
DEBORAH M. HARDEE
NO DEED REFERENCE

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

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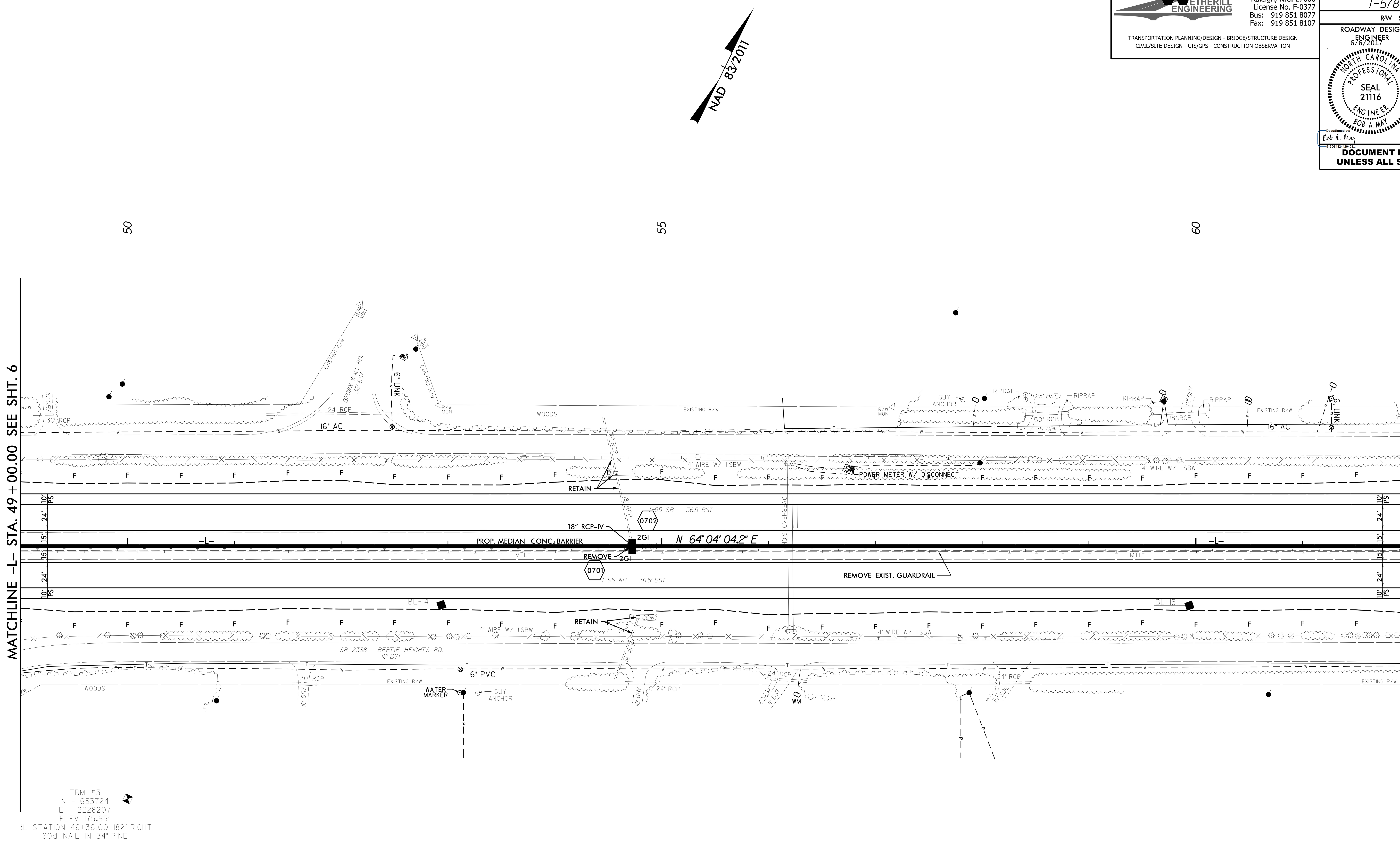

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PROJECT REFERENCE NO.	SHEET NO.
I-5786	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

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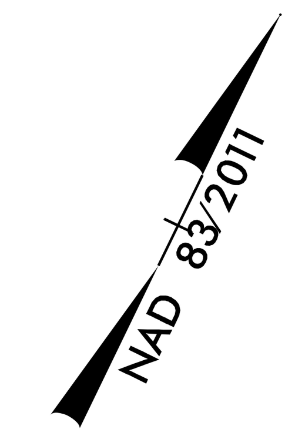

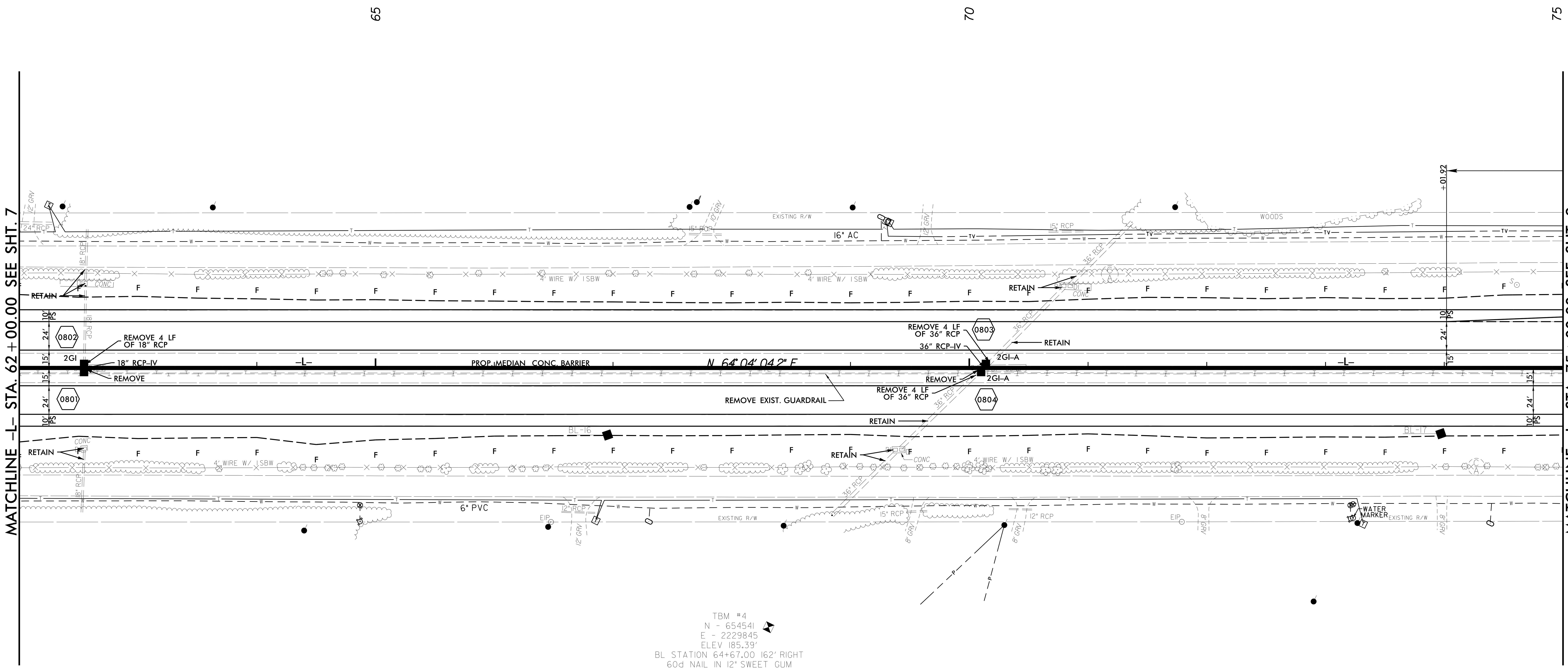

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY

HYDRAULICS ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

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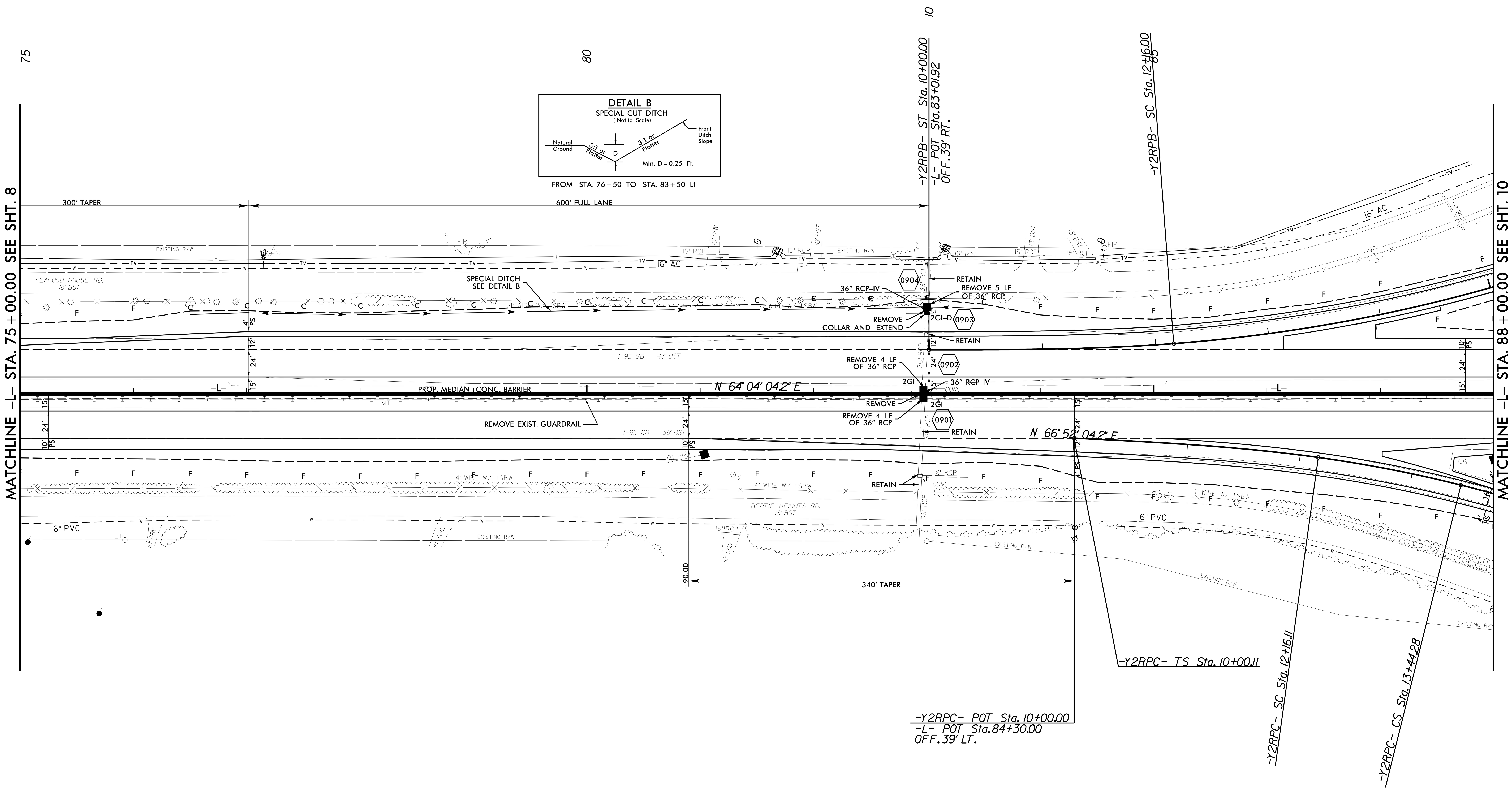
-Y2RPB-

PIs Sta 11+44.04	PI Sta 13+73.04
Θs = 4° 19' 12.0"	Δ = 12° 30' 46.5" (LT)
Ls = 216.00'	D = 4° 00' 00.0"
LT = 144.04'	L = 312.82'
ST = 72.04'	T = 157.04'
	R = 1,432.39'

NAD 83/2011



-Y2RPC-

PIs Sta 11+44.17	PI Sta 12+80.25	PIs Sta 14+16.33
Θs = 5° 07' 48.0"	Δ = 6° 05' 16.2" (RT)	Θs = 5° 07' 48.0"
Ls = 216.00'	D = 4° 45' 00.0"	Ls = 216.00'
LT = 144.06'	L = 128.17'	LT = 144.06'
ST = 72.06'	T = 64.14'	ST = 72.06'
	R = 1,206.23'	

6/5/2017
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PROJECT REFERENCE NO.	SHEET NO.
I-5786	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
DocuSigned by: Bob A. May

HYDRAULICS ENGINEER
6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. AFFOLD
DocuSigned by: K. B. Affold

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-Y2RPB-
PI Sta 13+73.04
△ = 12° 30' 46.5" (LT)
D = 4° 00' 00.0"
L = 312.82'
T = 157.04'
R = 1,432.39'

PIs Sta 16+00.86
Θs = 4° 19' 12.0"
Ls = 216.00'
LT = 144.04'
ST = 72.04'

NAD 83/2011

-Y2RPB- POT Sta. 21+47.35

-Y2- POT Sta. 10+00.00

-Y2RPA- POT Sta. 20+87.41

-Y2RPB- ST Sta. 17+44.82

-Y2RPB- CS Sta. 15+28.82

N 42° 54' 53.7" E

S 83° 09' 40.7" W

N 64° 04' 04.2" E

S 25° 56' 7" W

N 83° 12' 56.4" E

S 53° 17' 48.6" W

B

A

C

D

END CONST.
-Y2RPB- STA. 17+95.00

END CONST.
-Y2RPA- STA. 17+05.00

END CONST.
-Y2RPC- STA. 17+35.00

END CONST.
-Y2RPD- STA. 18+30.00

-Y2RPC- POT Sta. 19+13.43

-Y2RPC- ST Sta. 15+60.28

-Y2RPD- POT Sta. 24+61.87

-Y2- POT Sta. 19+26.25

MATCHLINE -L- STA. 88+00.00 SEE SHT. 9

MATCHLINE -L- STA. 101+00.00 SEE SHT. 11

RETAIN EXIST. SINGLE FACED CONC. BARRIER

RETAIN EXIST. SINGLE FACED CONC. BARRIER

TYPE B-77

RETAIN

REMOVE EXIST. GUARDRAIL

FS
SEE DETAIL L

RIPRAP

GREU 350 TL-3

15" RCP-III

Conv. DI To JB

2GI

15" RCP-IV

30:1 TAPER

END MEDIAN CONC. BARRIER
-L- STA. 89+23.77

BEG MEDIAN CONC. BARRIER
-L- STA. 99+89.06

RETAIN & ADJUST
IF NECESSARY

1001 1002 1003 1004 1005 1006

I-95 SB 36.4' BST

I-95 NB 36.4' BST

18" RCP

24" RCP

18" CMP

24" CMP

PIPE

8:1

BL-19

BL-20

TBM #5
N - 655432
E - 2231716
ELEV 195.09'
BL STATION 85+39.00 178' RIGHT
60d NAIL IN 8" PINE

SEAFOOD HOUSE RD.
18' BST

BATTEN RD.
20' BST

PROPERTY LINE 1

PROPERTY LINE FROM GIS

EXISTING R/W

R/W MON.

4 WIRE W/ 1 SBW

BURIED PIPE

PVC

WOODS

CONC

EXIST

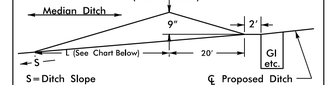
EX GS

EX RCP

EX CMP

EX PIPE

DETAIL L
FALSE SLUMP
(Not to Scale)



S = Ditch Slope
℄ Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 94+30 TO STA. 94+70 MED.; L=20'

6/6/2017
I-5786_Rdy_psht10.dgn
USER:kevin

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
I-5786	11
R/W SHEET NO.	

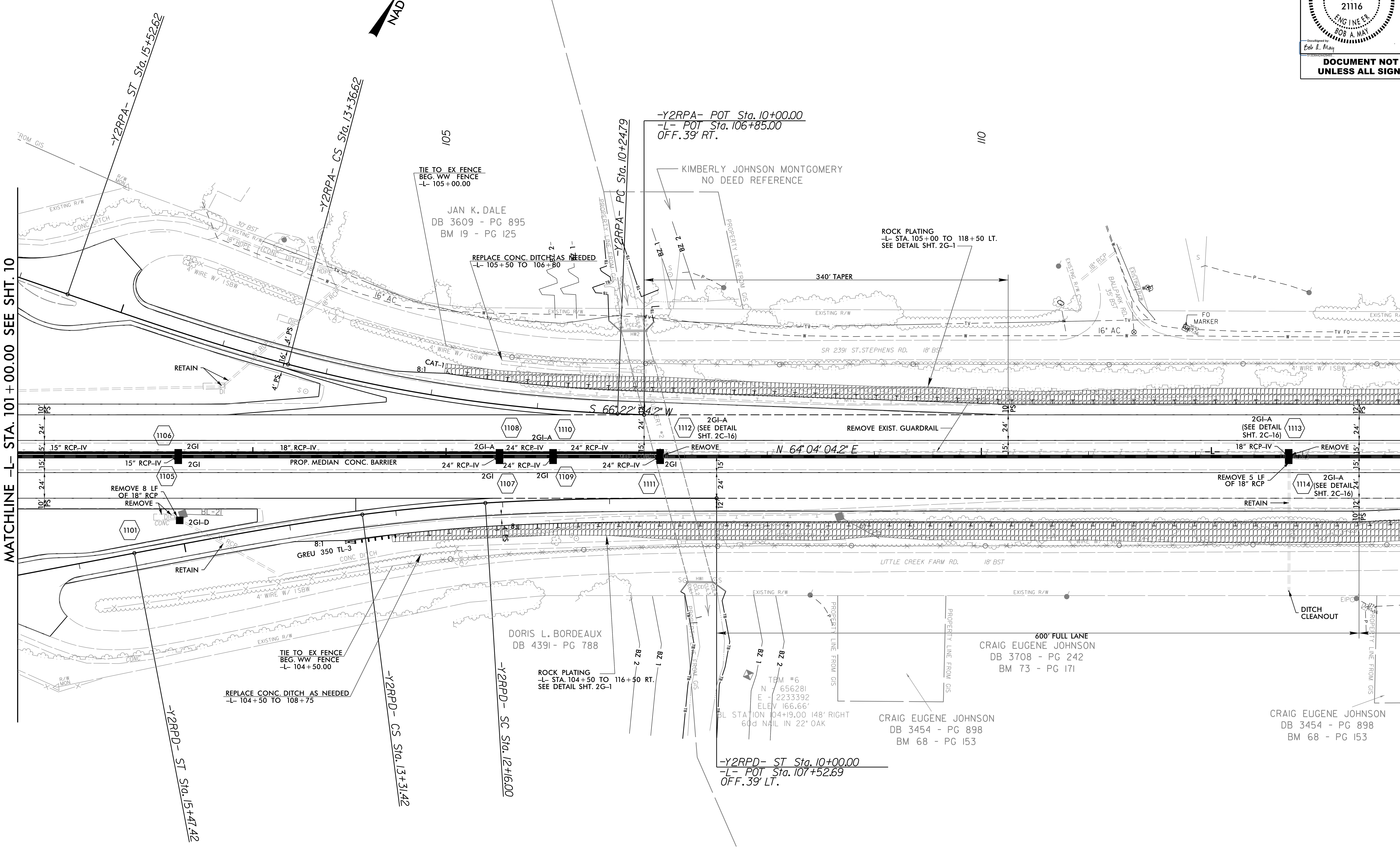
ROADWAY DESIGN ENGINEER 6/7/2017 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21116 BOB A. MAY

HYDRAULICS ENGINEER 6/7/2017 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 31977 KEVIN B. ALFORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y2RPA-

PIs Sta 14+08.66	PI Sta 11+81.32
Θs = 4° 19' 12.0"	Δ = 12° 28' 24.5" (RT)
Ls = 216.00'	D = 4° 00' 00.0"
LT = 144.04'	L = 311.84'
ST = 72.04'	T = 156.54'
	R = 1,432.39'


NAD 83/2011
-Y2RPA- ST Sta. 15+52.62
-Y2RPA- CS Sta. 13+36.62
-Y2RPA- PC Sta. 10+24.79
-Y2RPA- POT Sta. 10+00.00
-L- POT Sta. 106+85.00
OFF. 39' RT.
KIMBERLY JOHNSON MONTGOMERY
NO DEED REFERENCE
TIE TO EX FENCE
BEG. WW FENCE
-L- 105+00.00
JAN K. DALE
DB 3609 - PG 895
BM 19 - PG 125
REPLACE CONC. DITCH AS NEEDED
-L- 105+50 TO 106+80
ROCK PLATING
-L- STA. 105+00 TO 118+50 LT.
SEE DETAIL SHT. 2G-1
340' TAPER
SR 2391 ST.STEPHENS RD. 18' BST
BALLPARK RD. 35' BST
FO MARKER
16" AC
RETAIN
CAT-1
S 66°22' 04.2" W
N 64° 04' 04.2" E
PROP. MEDIAN CONC. BARRIER
REMOVE EXIST. GUARDRAIL
2GI-A (SEE DETAIL SHT. 2C-16)
15" RCP-IV
18" RCP-IV
24" RCP-IV
2GI
2GI-A
2GI-D
1101
1105
1106
1107
1108
1109
1110
1111
1112
1113
1114
REMOVE
REMOVE 8 LF OF 18" RCP
REMOVE 5 LF OF 18" RCP
GREU 350 TL-3
LITTLE CREEK FARM RD. 18' BST
DITCH CLEANOUT
600' FULL LANE
CRAIG EUGENE JOHNSON
DB 3708 - PG 242
BM 73 - PG 171
DORIS L. BORDEAUX
DB 4391 - PG 788
TIE TO EX FENCE
BEG. WW FENCE
-L- 104+50.00
REPLACE CONC. DITCH AS NEEDED
-L- 104+50 TO 108+75
ROCK PLATING
-L- STA. 104+50 TO 116+50 RT.
SEE DETAIL SHT. 2G-1
TBM #6
N - 656281
E - 2233392
ELEV 166.66'
BL STATION 104+19.00 148' RIGHT
60d NAIL IN 22" OAK
CRAIG EUGENE JOHNSON
DB 3454 - PG 898
BM 68 - PG 153
CRAIG EUGENE JOHNSON
DB 3454 - PG 898
BM 68 - PG 153
-Y2RPD- ST Sta. 15+47.42
-Y2RPD- CS Sta. 13+31.42
-Y2RPD- SC Sta. 12+16.00
-Y2RPD- ST Sta. 10+00.00
-L- POT Sta. 107+52.69
OFF. 39' LT.
MATCHLINE -L- STA. 101+00.00 SEE SHT. 10
MATCHLINE -L- STA. 114+00.00 SEE SHT. 12
105
110

-Y2RPD-

PIs Sta 14+03.44	PI Sta 12+73.73	PIs Sta 11+44.03
Θs = 3° 30' 36.0"	Δ = 3° 45' 03.6" (LT)	Θs = 3° 30' 36.0"
Ls = 216.00'	D = 3° 15' 00.0"	Ls = 216.00'
LT = 144.03'	L = 115.42'	LT = 144.03'
ST = 72.03'	T = 57.73'	ST = 72.03'
	R = 1,762.95'	

6/7/2017 ...\Proj\I-5786_Rdy_psh11.dgn

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD
Bob A. May	K. B. Alford

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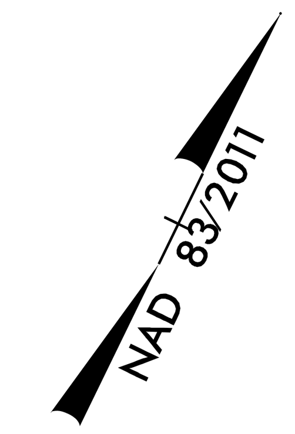

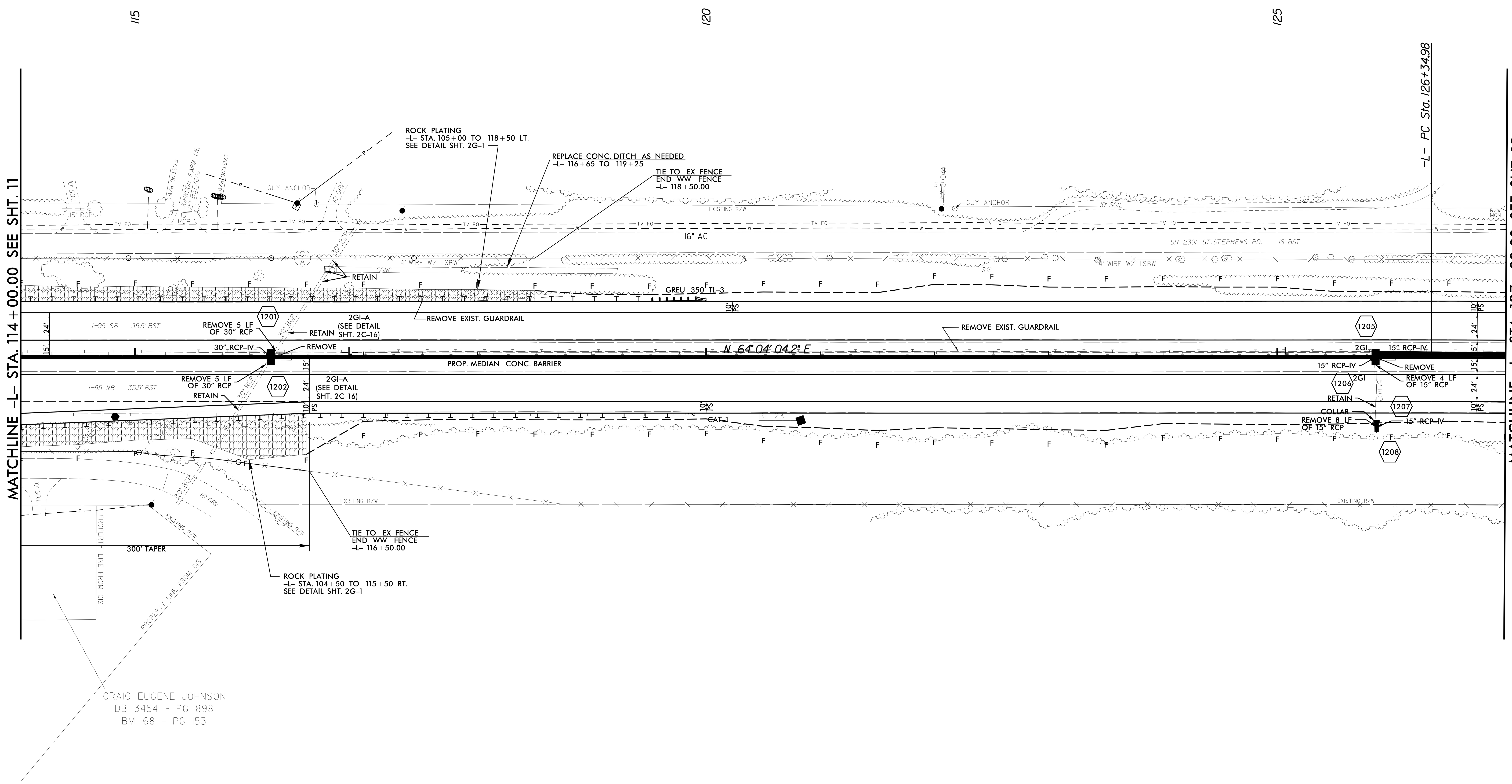
115
120
125
MATCHLINE -L- STA. 114+00.00 SEE SHT. 11
MATCHLINE -L- STA. 127+00.00 SEE SHT. 13
-L- PC Sta. 126+34.98
ROCK PLATING
-L- STA. 105+00 TO 118+50 LT.
SEE DETAIL SHT. 2G-1
REPLACE CONC. DITCH AS NEEDED
-L- 116+65 TO 119+25
TIE TO EX FENCE
END WW FENCE
-L- 118+50.00
GUY ANCHOR
EXISTING R/W
16" AC
SR 2391 ST. STEPHENS RD. 18' BST
4' WIRE W/ 1SBW
RETAIN
GREU 350 TL-3
REMOVE EXIST. GUARDRAIL
1201
2GI-A
(SEE DETAIL
SHT. 2C-16)
REMOVE 5 LF
OF 30" RCP
RETAIN
30" RCP-IV
REMOVE
I-95 SB 35.5' BST
N 64° 04' 04.2" E
PROP. MEDIAN CONC. BARRIER
1205
2GI
15" RCP-IV
REMOVE
REMOVE 4 LF
OF 15" RCP
1206
RETAIN
1207
COLLAR
REMOVE 8 LF
OF 15" RCP
1208
I-95 NB 35.5' BST
REMOVE 5 LF
OF 30" RCP
RETAIN
1202
2GI-A
(SEE DETAIL
SHT. 2C-16)
CAT-1
300' TAPER
TIE TO EX FENCE
END WW FENCE
-L- 116+50.00
ROCK PLATING
-L- STA. 104+50 TO 115+50 RT.
SEE DETAIL SHT. 2G-1
PROPERTY LINE FROM GIS
CRAIG EUGENE JOHNSON
DB 3454 - PG 898
BM 68 - PG 153

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 6/6/2017	HYDRAULICS ENGINEER 6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

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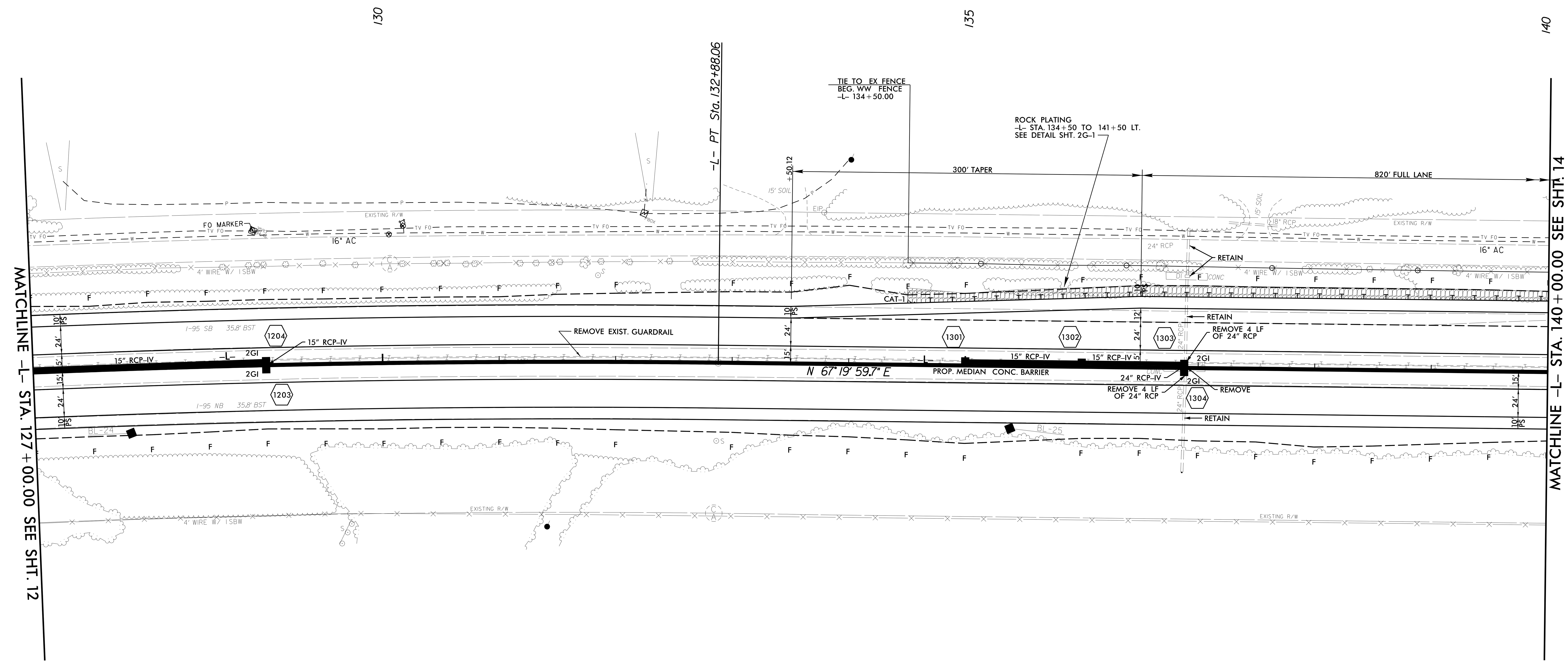
-L-
PI Sta 129+61.61
Δ = 3° 15' 55.5" (RT)
D = 0° 30' 00.0"
L = 653.08'
T = 326.63'
R = 11,459.16'

NAD 83/2011



TBM #7
N - 657192
E - 2235442
ELEV 193.16'
BL STATION 126+69.00 215' RIGHT
60d NAIL IN POWER POLE

PROJECT REFERENCE NO.	SHEET NO.
I-5786	14

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

ROADWAY DESIGN ENGINEER — SEAL 21116 — BOB A. MAY — 6/7/2017
HYDRAULICS ENGINEER — SEAL 31977 — KEVIN B. ALFORD — 6/7/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

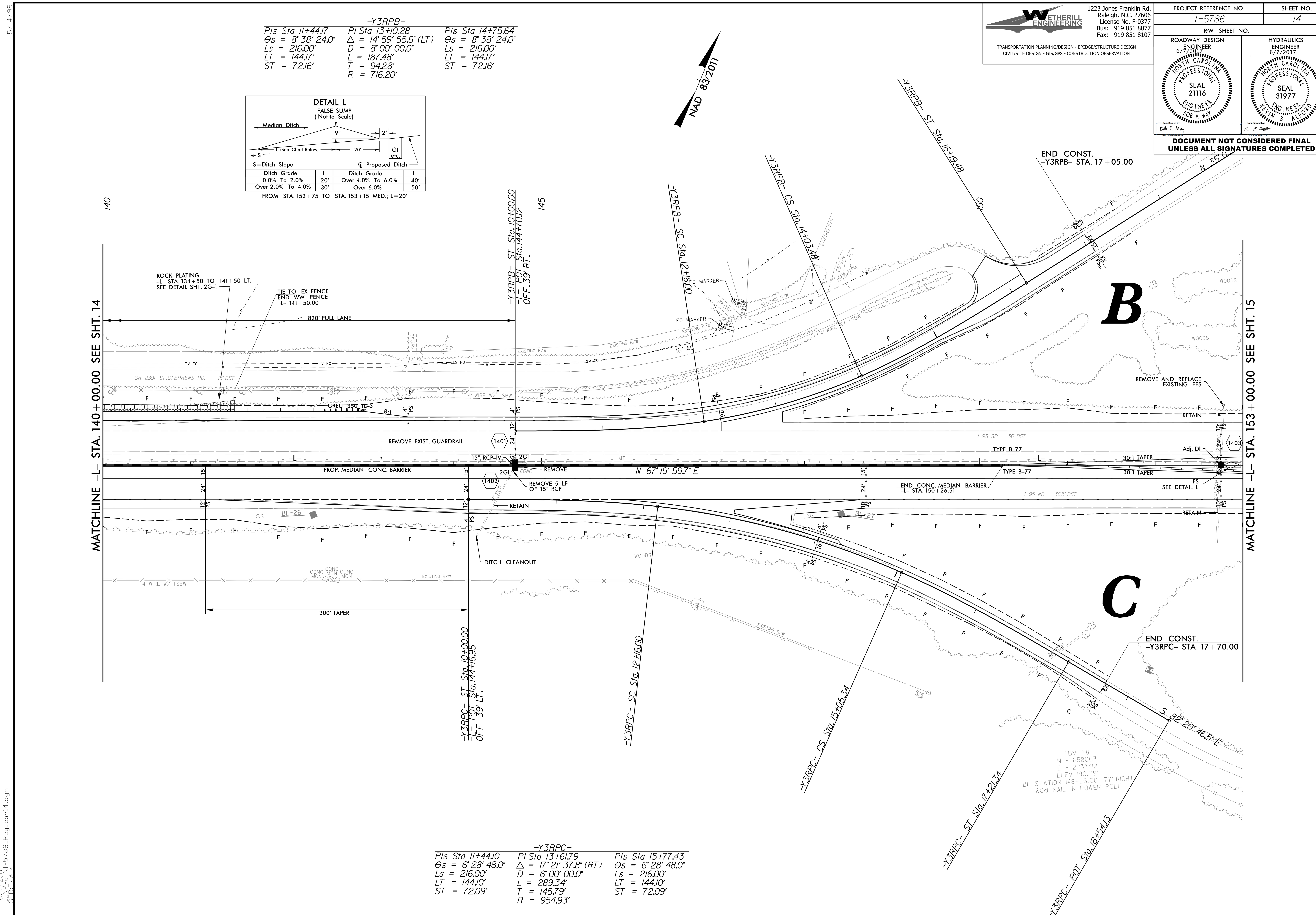
-Y3RPB-

PIs Sta 11+44.17	PI Sta 13+10.28	PIs Sta 14+75.64
Θs = 8° 38' 24.0"	Δ = 14° 59' 55.6" (LT)	Θs = 8° 38' 24.0"
Ls = 216.00'	D = 8° 00' 00.0"	Ls = 216.00'
LT = 144.17'	L = 187.48'	LT = 144.17'
ST = 72.16'	T = 94.28'	ST = 72.16'
	R = 716.20'	

DETAIL L
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 152+75 TO STA. 153+15 MED.; L=20'



Median Ditch
S=Ditch Slope
Proposed Ditch
NAD 83/2011
ROCK PLATING -L- STA. 134+50 TO 141+50 LT. SEE DETAIL SHT. 2G-1
TIE TO EX FENCE END WW FENCE -L- 141+50.00
820' FULL LANE
MATCHLINE -L- STA. 140+00.00 SEE SHT. 14
MATCHLINE -L- STA. 153+00.00 SEE SHT. 15
-Y3RPB- ST Sta. 10+00.00 -L- POT Sta. 144+10.12 OFF. 39' RT.
-Y3RPB- SC Sta. 12+16.00
-Y3RPB- CS Sta. 14+03.48
-Y3RPB- ST Sta. 16+19.48
END CONST. -Y3RPB- STA. 17+05.00
REMOVE AND REPLACE EXISTING FES
REMOVE EXIST. GUARDRAIL
PROP. MEDIAN CONC. BARRIER
REMOVE 5 LF OF 15" RCP
N 67° 19' 59.7" E
END CONC MEDIAN BARRIER -L- STA. 150+26.51
TYPE B-77
30:1 TAPER
SEE DETAIL L
DITCH CLEANOUT
300' TAPER
B
C
-Y3RPC- ST Sta. 10+00.00 -L- POT Sta. 144+16.95 OFF 39' LT.
-Y3RPC- SC Sta. 12+16.00
-Y3RPC- CS Sta. 15+05.34
-Y3RPC- ST Sta. 17+21.34
-Y3RPC- POT Sta. 18+54.13
END CONST. -Y3RPC- STA. 17+70.00
S 82° 20' 46.5" E
TBM #8 N - 658063 E - 2237412 ELEV 190.79' BL STATION 148+26.00 177' RIGHT 60d NAIL IN POWER POLE

-Y3RPC-

PIs Sta 11+44.10	PI Sta 13+61.79	PIs Sta 15+77.43
Θs = 6° 28' 48.0"	Δ = 17° 21' 37.8" (RT)	Θs = 6° 28' 48.0"
Ls = 216.00'	D = 6° 00' 00.0"	Ls = 216.00'
LT = 144.10'	L = 289.34'	LT = 144.10'
ST = 72.09'	T = 145.79'	ST = 72.09'
	R = 954.93'	

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
I-5786	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
DocuSigned by: Bob A. May

HYDRAULICS ENGINEER
6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD
DocuSigned by: K. B. Alford

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y3RPA- POT Sta. 23+38.63

-Y3RPB- POT Sta. 21+65.09

NAD 83/2011

-Y3RPA-
PIs Sta 17+56.08
Θs = 4° 51' 36.0"
Ls = 216.00'
LT = 144.05'
ST = 72.05'

-Y3RPA-
PI Sta 14+52.69
Δ = 21° 03' 40.5" (RT)
D = 4° 30' 00.0"
L = 468.03'
T = 236.69'
R = 1,273.24'

-Y3RPA-
PIs Sta 11+44.05
Θs = 4° 51' 36.0"
Ls = 216.00'
LT = 144.05'
ST = 72.05'

-Y3RPA- ST Sta. 19+00.03

-Y3RPA- CS Sta. 16+84.03

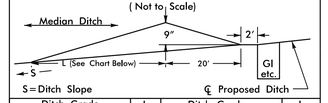
-Y3RPA- SC Sta. 12+16.00

N 82° 53' 07.8" W

S 25° 44' 14.4" E

END CONST.
-Y3RPA- STA. 18+10.00

DETAIL L
FALSE SUMP
(Not to Scale)

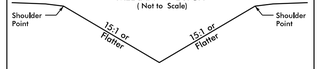


S = Ditch Slope

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 159+00 TO STA. 159+40 MED.; L=20'

DETAIL K
MEDIAN V DITCH
(Not to Scale)



FROM STA. 157+00 TO STA. 159+00 MED.

MATCHLINE -L- STA. 153+00.00 SEE SHT. 14

MATCHLINE -L- STA. 166+00.00 SEE SHT. 16

A

B

C

D

WOODS

EXISTING R/W

R/W MON

4" WIRE W/ ISBW

12" DIP

TYPE B-77

GREU 350 TL-3

REMOVE EXIST. GUARDRAIL

RETAIN EXIST. SINGLE FACED BARRIER

MEDIAN V DITCH SEE DETAIL K

CAT-1

30:1 TAPER

15" RCP-IV

18" RCP-IV

2GI

FS SEE DETAIL L

PROP. MEDIAN CONC. BARRIER

BEG. CONC. MEDIAN BARRIER -L- STA. 160+57.77

REMOVE 4 LF OF 18" RCP

REMOVE

RETAIN

INV. = 184.61

-Y3RPD- PC Sta. 16+83.07

-Y3RPD- ST Sta. 16+18.37

-Y3RPD- CS Sta. 14+02.37

-Y3RPD- SC Sta. 12+16.00

END CONST.
-Y3RPD- STA. 17+05.00

-Y3RPD- PT Sta. 18+42.63

-Y3- POT Sta. 21+64.40

-Y3RPD-
PIs Sta 11+44.17
Θs = 8° 38' 24.0"
Ls = 216.00'
LT = 144.17'
ST = 72.16'

-Y3RPD-
PI Sta 13+09.71
Δ = 14° 54' 34.0" (LT)
D = 8° 00' 00.0"
L = 186.37'
T = 93.71'
R = 716.20'

-Y3RPD-
PIs Sta 14+74.52
Θs = 8° 38' 24.0"
Ls = 216.00'
LT = 144.17'
ST = 72.16'

-Y3RPD-
PI Sta 17+63.21
Δ = 13° 09' 50.5" (RT)
D = 8° 15' 00.0"
L = 159.56'
T = 80.13'
R = 694.49'

6/5/2017
I-5786_Rdy_pst15.dgn
USER: kgs

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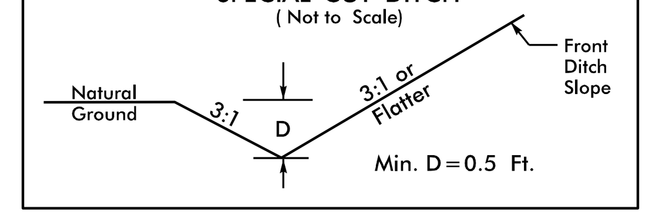
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

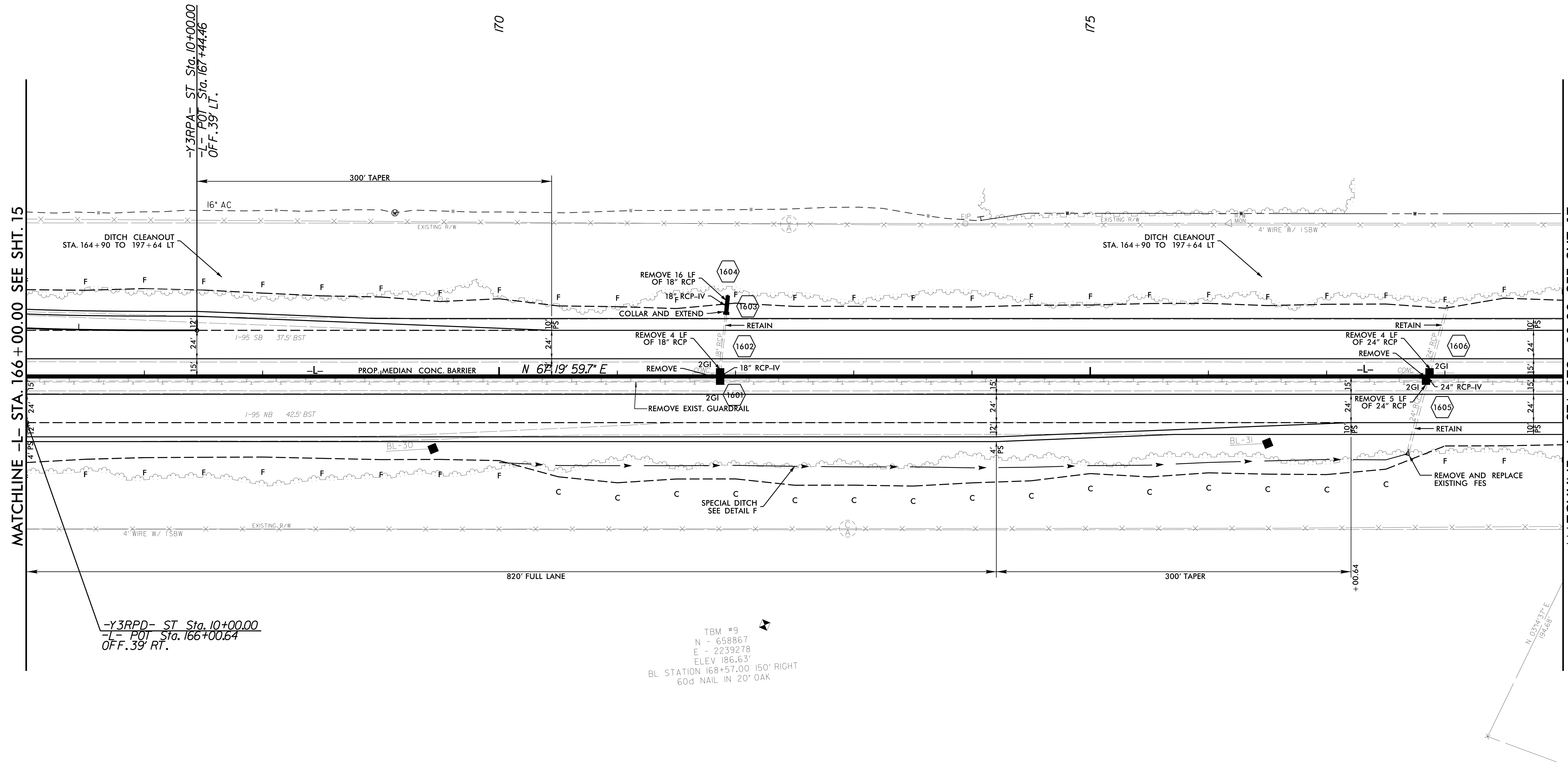
PROJECT REFERENCE NO.	SHEET NO.
I-5786	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 6/6/2017 SEAL 21116 BOB A. MAY	HYDRAULICS ENGINEER 6/6/2017 SEAL 31977 KEVIN B. ALFORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 170+00 TO STA. 177+69 RT


NAD 83/2011
170
175
-Y3RPA- ST Sta. 10+00.00
-L- POT Sta. 167+44.46
OFF. 39' LT.
300' TAPER
16" AC
EXISTING R/W
DITCH CLEANOUT
STA. 164+90 TO 197+64 LT
REMOVE 16 LF OF 18" RCP
1604
18" RCP-IV
1603
COLLAR AND EXTEND
RETAIN
REMOVE 4 LF OF 18" RCP
1602
I-95 SB 37.5' BST
-L-
PROP. MEDIAN CONC. BARRIER
N 67°19' 59.7" E
REMOVE
2GI
18" RCP-IV
1601
REMOVE EXIST. GUARDRAIL
I-95 NB 42.5' BST
BL-30
BL-31
4' WIRE W/ ISBW
REMOVE 4 LF OF 24" RCP
REMOVE
1606
24" RCP-IV
REMOVE 5 LF OF 24" RCP
1605
REMOVE AND REPLACE EXISTING FES
SPECIAL DITCH SEE DETAIL F
820' FULL LANE
300' TAPER
+00.64
MATCHLINE -L- STA. 166+00.00 SEE SHT. 15
MATCHLINE -L- STA. 179+00.00 SEE SHT. 17
-Y3RPD- ST Sta. 10+00.00
-L- POT Sta. 166+00.64
OFF. 39' RT.
TBM #9
N - 658867
E - 2239278
ELEV 186.63'
BL STATION 168+57.00 150' RIGHT
60d NAIL IN 20" OAK

DocuSign Envelope ID: 63FF4D1D-2E41-400B-B009-2E7051E46347

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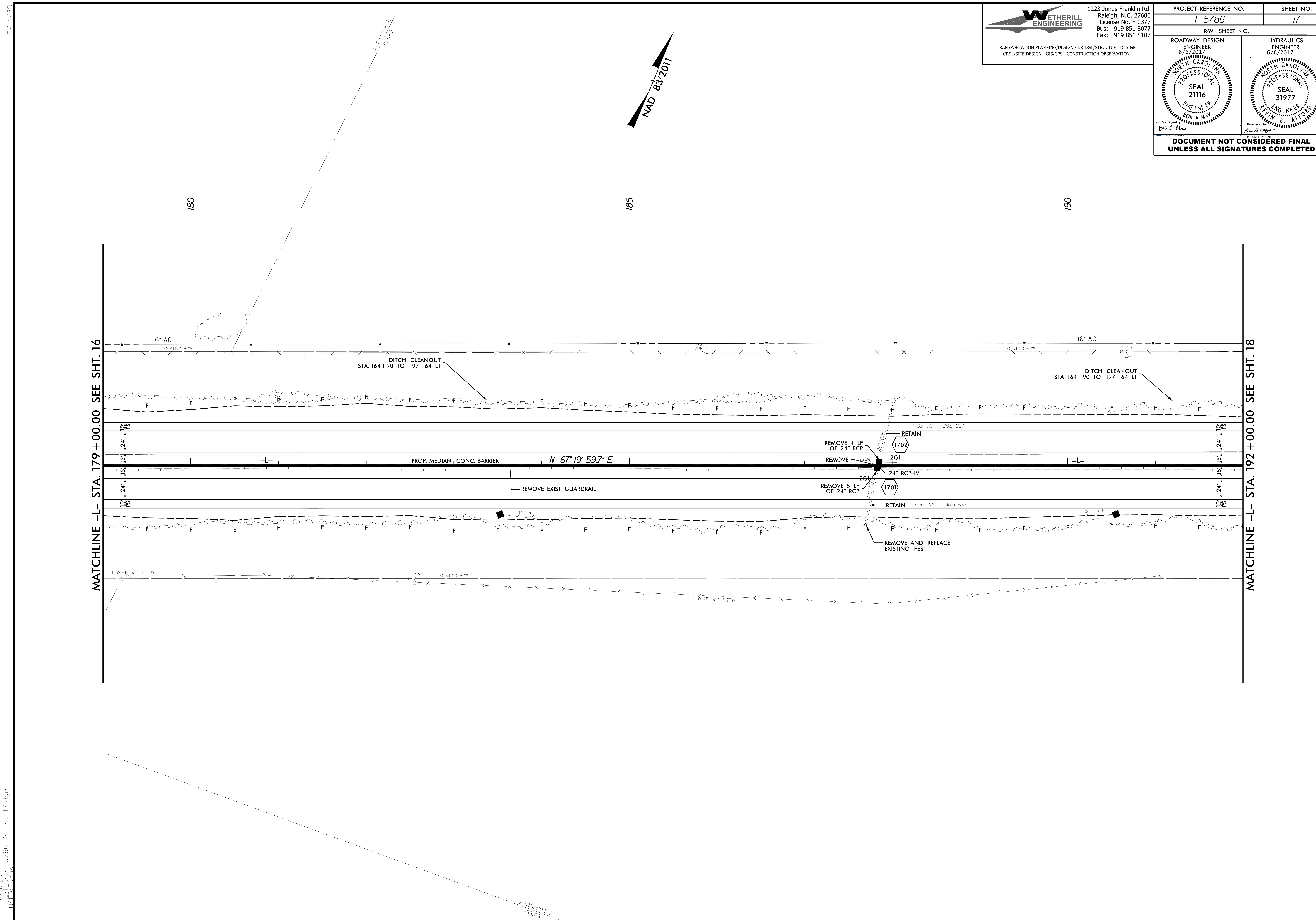
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	17
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD
Bob A. May	K. B. Alford

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



5/14/99
6/5/2017
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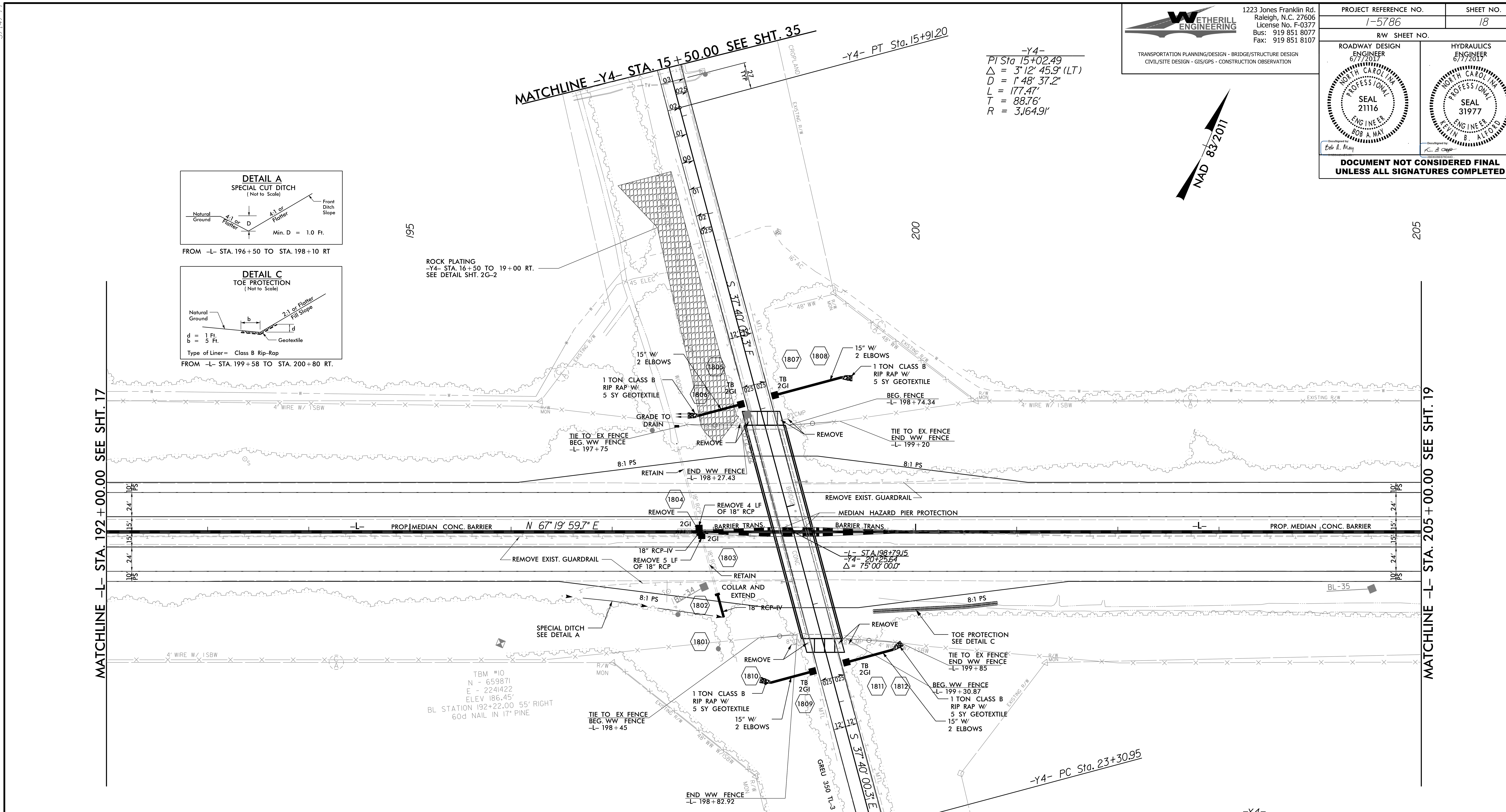
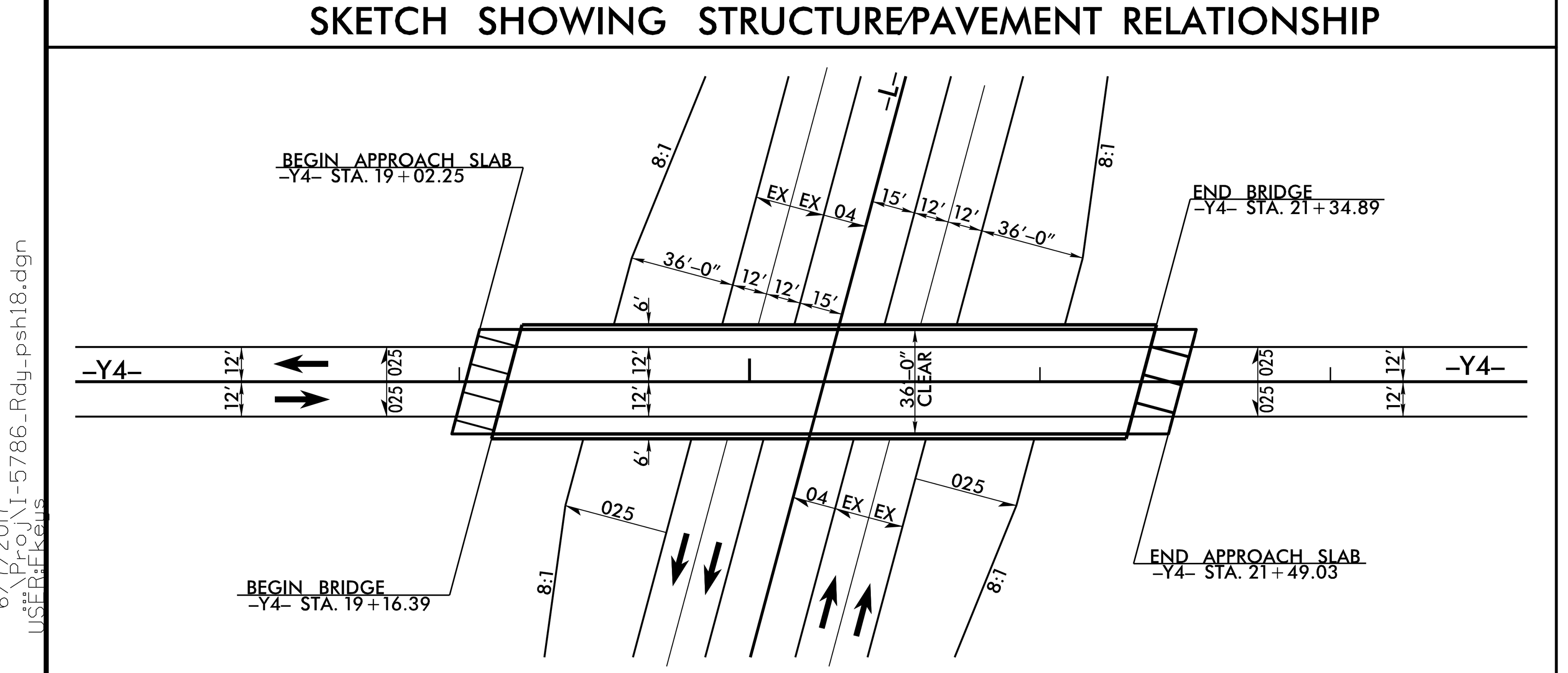
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 6/7/2017	HYDRAULICS ENGINEER 6/7/2017
SEAL 21116 BOB A. MAY	SEAL 31977 KEVIN B. ALFORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED


MATCHLINE -Y4- STA. 15+50.00 SEE SHT. 35
-Y4- PT Sta. 15+91.20
-Y4-
PI Sta 15+02.49
Δ = 3° 12' 45.9" (LT)
D = 1° 48' 37.2"
L = 177.47'
T = 88.76'
R = 3,164.91'
NAD 83/2011
DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
4:1 or Flatter
Front Ditch Slope
Min. D = 1.0 Ft.
FROM -L- STA. 196+50 TO STA. 198+10 RT.
DETAIL C
TOE PROTECTION
(Not to Scale)
2:1 or Flatter Fill Slope
Geotextile
d = 1 Ft.
b = 5 Ft.
Type of Liner= Class B Rip-Rap
FROM -L- STA. 199+58 TO STA. 200+80 RT.
195
200
205
ROCK PLATING
-Y4- STA. 16+50 TO 19+00 RT.
SEE DETAIL SHT. 2G-2
S 37° 40' 00.3" E
15" W/ 2 ELBOWS
1 TON CLASS B RIP RAP W/ 5 SY GEOTEXTILE
GRADE TO DRAIN
TIE TO EX FENCE
BEG. WW FENCE
-L- 197+75
REMOVE
RETAIN
END WW FENCE
-L- 198+27.43
BEG. FENCE
-L- 198+74.34
TIE TO EX. FENCE
END WW FENCE
-L- 199+20
8:1 PS
REMOVE EXIST. GUARDRAIL
REMOVE 4 LF OF 18" RCP
MEDIAN HAZARD PIER PROTECTION
PROP. MEDIAN CONC. BARRIER
N 67° 19' 59.7" E
BARRIER TRANS.
-L- STA. 198+79.15
-Y4- 20+25.64
Δ = 75° 00' 00.0"
18" RCP-IV
REMOVE 5 LF OF 18" RCP
COLLAR AND EXTEND
SPECIAL DITCH SEE DETAIL A
TOE PROTECTION SEE DETAIL C
TIE TO EX FENCE
END WW FENCE
-L- 199+85
BEG. WW FENCE
-L- 199+30.87
TIE TO EX FENCE
BEG. WW FENCE
-L- 198+45
END WW FENCE
-L- 198+82.92
TBM #10
N - 659871
E - 2241422
ELEV 186.45'
BL STATION 192+22.00 55' RIGHT
60d NAIL IN 17" PINE
MATCHLINE -L- STA. 192+00.00 SEE SHT. 17
MATCHLINE -L- STA. 205+00.00 SEE SHT. 19
-Y4- PC Sta. 23+30.95
-Y4-
PI Sta 28+27.05
Δ = 0° 11' 11.4" (RT)
D = 0° 01' 07.7"
L = 992.20'
T = 496.10'
R = 304,830.85'
GREU 350 TL-3
SEBASTIAN VINCENT DEVLIN PAGE AND WIFE, EMILY LAUREL PAGE
DB 1545 PG 765
WILLIAM O. DAVIS SR. AND WIFE, HILDEGARD S. DAVIS AND ROBERT A. DAVIS
DB 1165 PG 800
MATCHLINE -Y4- STA. 25+00.00 SEE SHT. 36

SKETCH SHOWING STRUCTURE/PAVEMENT RELATIONSHIP



SEE SHT. 38 FOR -Y4- PROFILE
SEE SHTS. S02-01 THRU S02-31 FOR STRUCTURE PLANS

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

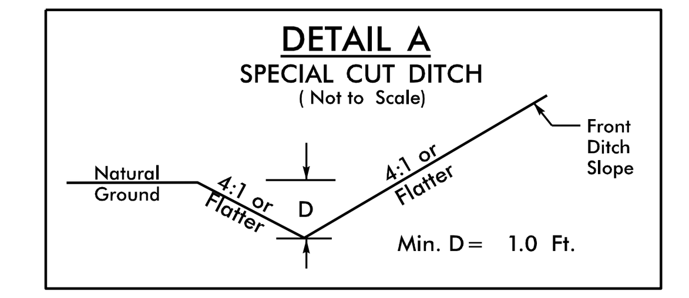
PROJECT REFERENCE NO.	SHEET NO.
I-5786	19
R/W SHEET NO.	

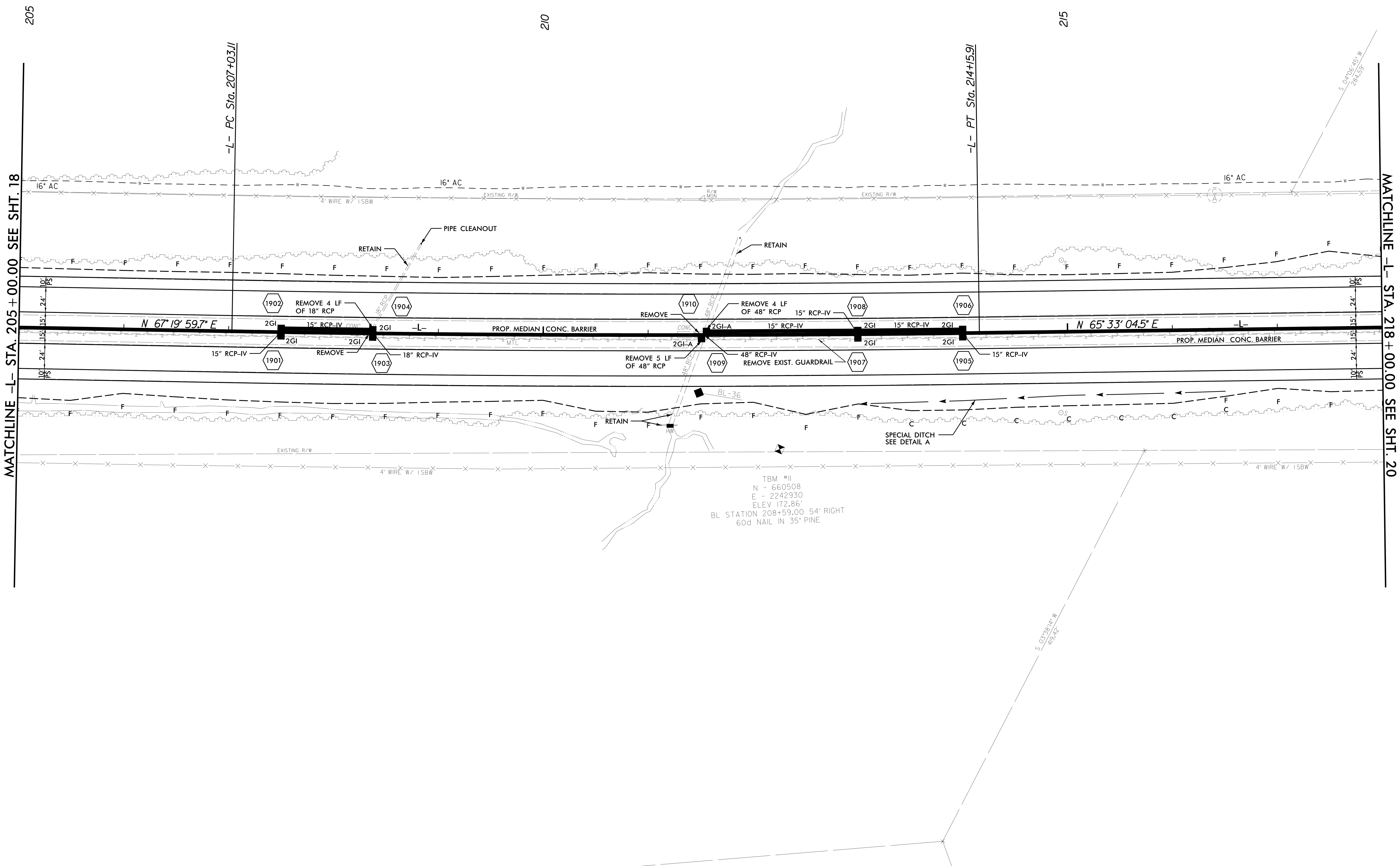
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-
PI Sta 210+59.54
Δ = 1° 46' 55.2" (LT)
D = 0° 15' 00.0"
L = 712.80'
T = 356.43'
R = 22,918.31'

NAD 83/2011




205
210
215
-L- PC Sta. 207+03.11
-L- PT Sta. 214+15.91
MATCHLINE -L- STA. 205+00.00 SEE SHT. 18
MATCHLINE -L- STA. 218+00.00 SEE SHT. 20
16" AC
16" AC
16" AC
EXISTING R/W
4' WIRE W/ 1SBW
PIPE CLEANOUT
RETAIN
RETAIN
1902
REMOVE 4 LF OF 18" RCP
1904
1910
REMOVE
REMOVE 4 LF OF 48" RCP
15" RCP-IV
1908
1906
N 67° 19' 59.7" E
2GI
15" RCP-IV
2GI
-L-
PROP. MEDIAN CONC. BARRIER
2GI-A
15" RCP-IV
2GI
15" RCP-IV
2GI
N 65° 33' 04.5" E
-L-
15" RCP-IV
2GI
REMOVE
2GI
18" RCP-IV
2GI-A
48" RCP-IV
REMOVE EXIST. GUARDRAIL
2GI
2GI
15" RCP-IV
PROP. MEDIAN CONC. BARRIER
1901
1903
REMOVE 5 LF OF 48" RCP
1909
1907
1905
BL-36
RETAIN
SPECIAL DITCH SEE DETAIL A
EXISTING R/W
4' WIRE W/ 1SBW
TBM #11
N - 660508
E - 2242930
ELEV 172.86'
BL STATION 208+59.00 54' RIGHT
60d NAIL IN 35" PINE

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	20
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

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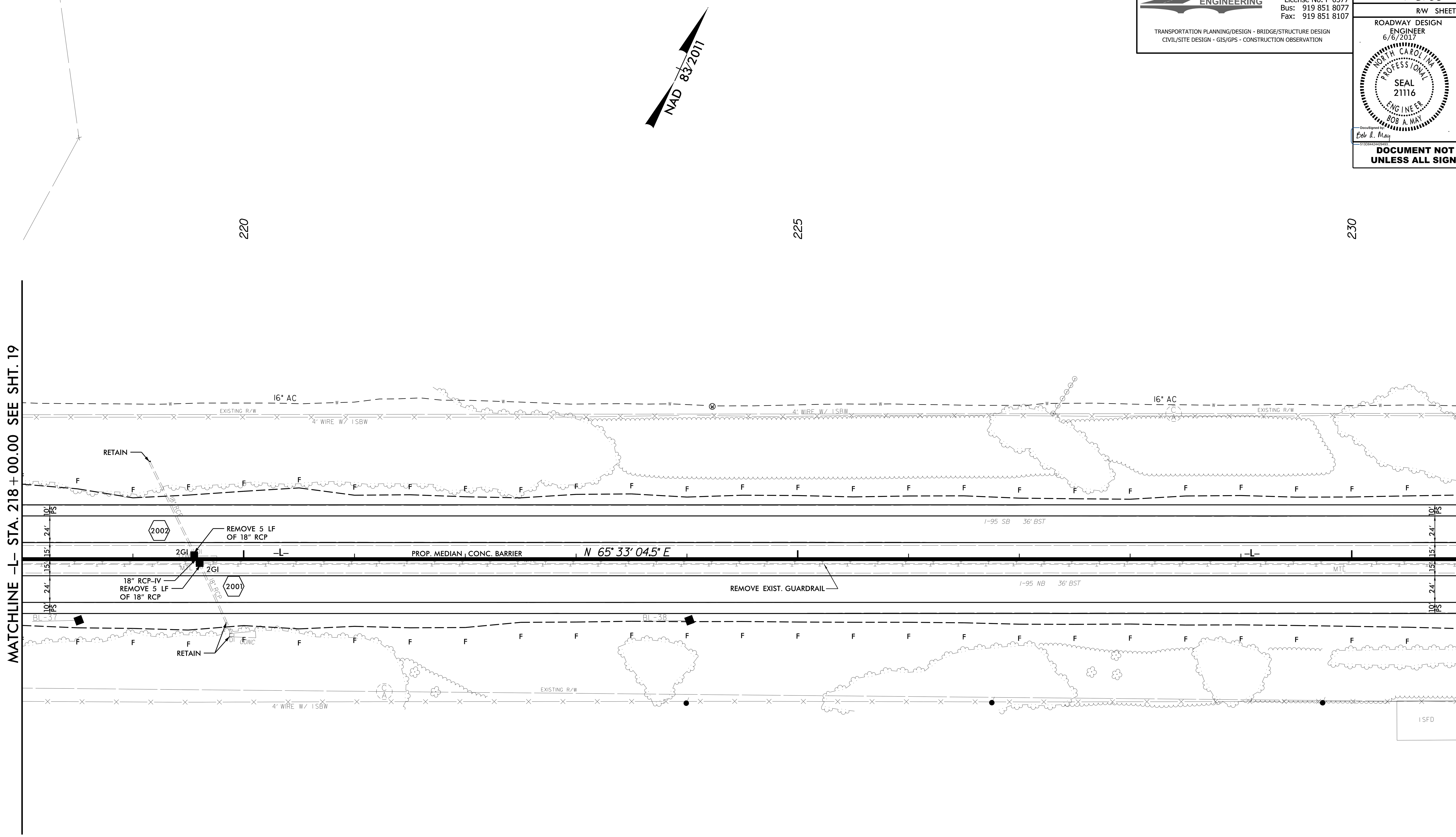

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PROJECT REFERENCE NO.	SHEET NO.
I-5786	21
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21116 BOB A. MAY

HYDRAULICS ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 31977 KEVIN B. ALFORD

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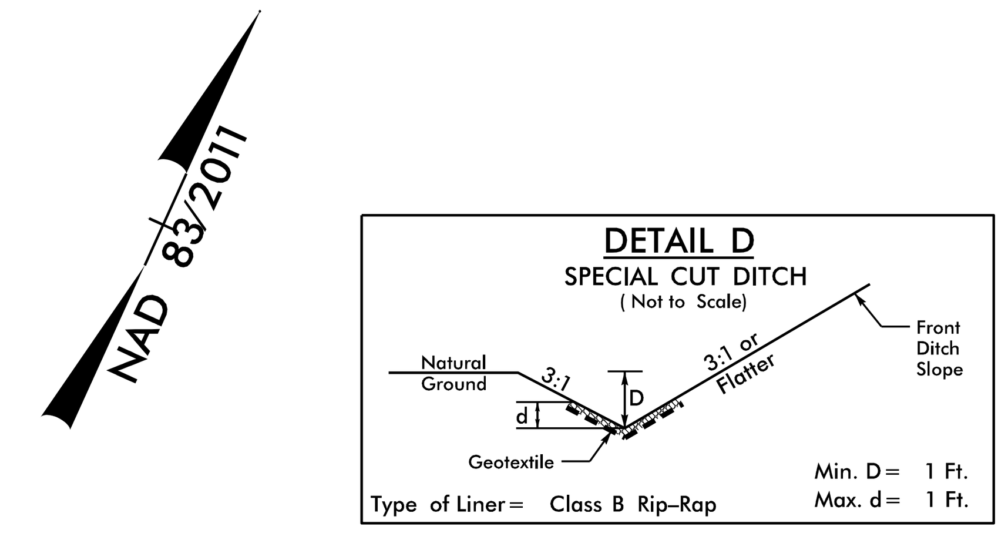
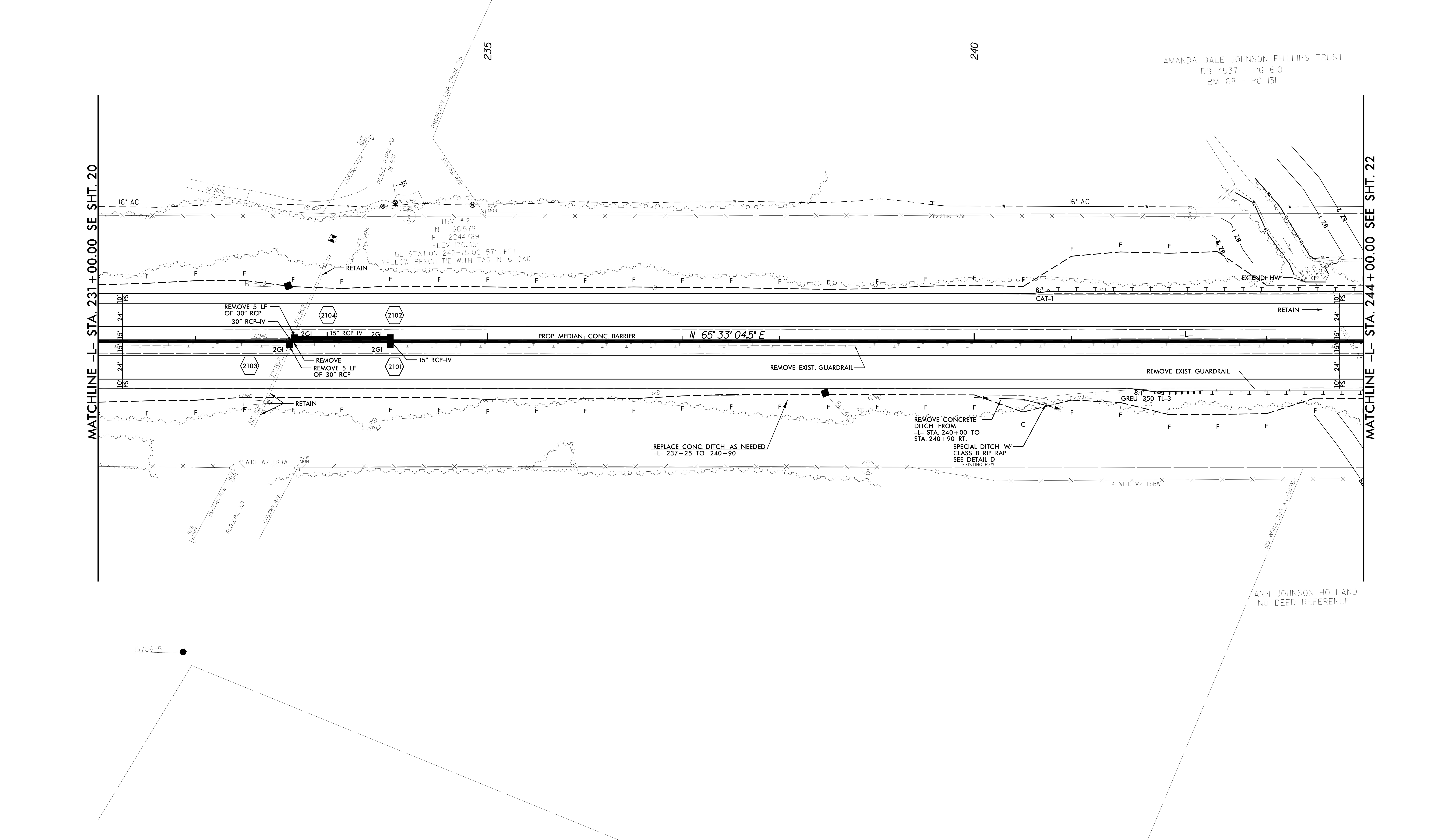


FROM -L- STA. 240+00 TO STA. 240+90 RT



235
240
AMANDA DALE JOHNSON PHILLIPS TRUST
DB 4537 - PG 610
BM 68 - PG 131
MATCHLINE -L- STA. 231+00.00 SEE SHT. 20
MATCHLINE -L- STA. 244+00.00 SEE SHT. 22
16" AC
PROPERTY LINE FROM GIS
PEELE FARM RD.
TBM #12
N - 661579
E - 2244769
ELEV 170.45'
BL STATION 242+75.00 57' LEFT
YELLOW BENCH TIE WITH TAG IN 16" OAK
RETAIN
REMOVE 5 LF OF 30" RCP
30" RCP-IV
2GI
15" RCP-IV
2104
2102
2103
2101
REMOVE
REMOVE 5 LF OF 30" RCP
15" RCP-IV
PROP. MEDIAN CONC. BARRIER
N 65° 33' 04.5" E
-L-
CAT-1
EXTEND HW
REMOVE EXIST. GUARDRAIL
GREU 350 TL-3
REMOVE CONCRETE DITCH FROM -L- STA. 240+00 TO STA. 240+90 RT.
SPECIAL DITCH W/ CLASS B RIP RAP SEE DETAIL D
REPLACE CONC. DITCH AS NEEDED -L- 237+25 TO 240+90
4' WIRE W/ 1SBW
EXISTING R/W
GOODLING RD.
ANN JOHNSON HOLLAND
NO DEED REFERENCE
I5786-5

5/14/99

6/5/2017 I-5786_Rdy_psh21.dgn

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 6/6/2017	HYDRAULICS ENGINEER 6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

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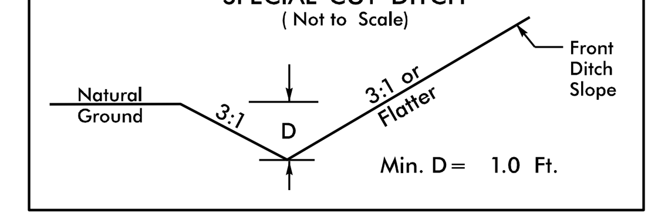
-Y5RPB-

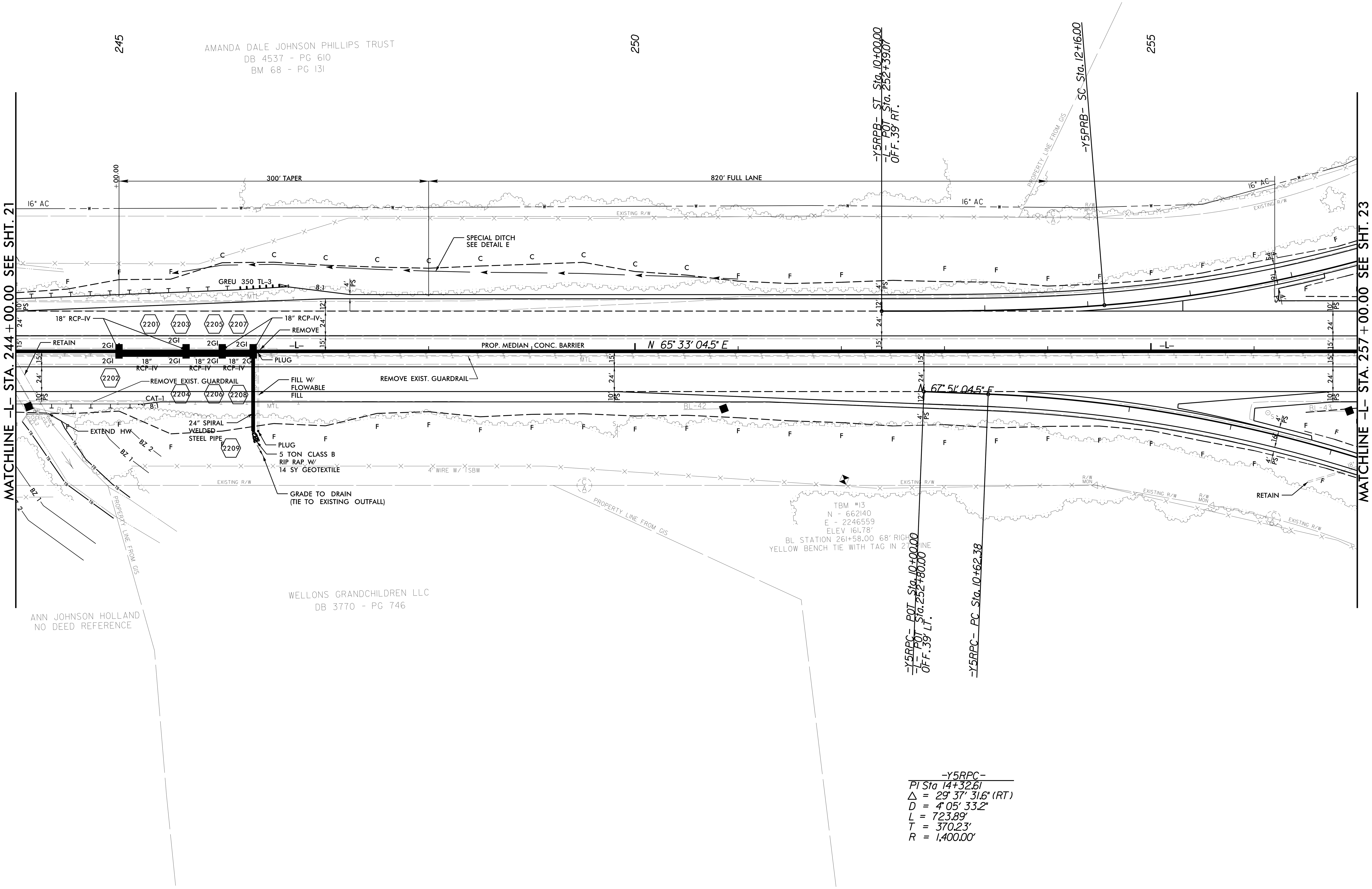
PIs Sta 11+44.05	PI Sta 14+20.40	PIs Sta 16+93.76
Θs = 4° 35' 24.0"	Δ = 17° 14' 34.0" (LT)	Θs = 4° 35' 24.0"
Ls = 216.00'	D = 4° 15' 00.0"	Ls = 216.00'
LT = 144.05'	L = 405.71'	LT = 144.05'
ST = 72.04'	T = 204.40'	ST = 72.04'
	R = 1,348.14'	

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 245+50 TO STA. 251+00 LT

NAD 83/2011



245
250
255
AMANDA DALE JOHNSON PHILLIPS TRUST
DB 4537 - PG 610
BM 68 - PG 131
MATCHLINE -L- STA. 244+00.00 SEE SHT. 21
MATCHLINE -L- STA. 257+00.00 SEE SHT. 23
300' TAPER
820' FULL LANE
16" AC
EXISTING R/W
SPECIAL DITCH SEE DETAIL E
GREU 350 TL-3
-Y5RPB- ST Sta. 10+00.00
-L- POT Sta. 252+39.07
OFF. 39' RT.
-Y5PRB- SC Sta. 12+16.00
PROPERTY LINE FROM GIS
18" RCP-IV
RETAIN
REMOVE
PLUG
PROP. MEDIAN CONC. BARRIER
N 65° 33' 04.5" E
-L-
REMOVE EXIST. GUARDRAIL
CAT-1
FILL W/ FLOWABLE FILL
N 67° 51' 04.5" E
EXTEND HW
24" SPIRAL WELDED STEEL PIPE
5 TON CLASS B RIP RAP W/ 14 SY GEOTEXTILE
GRADE TO DRAIN (TIE TO EXISTING OUTFALL)
4' WIRE W/ 1SBW
TBM #13
N - 662140
E - 2246559
ELEV 161.78'
BL STATION 261+58.00 68' RIGHT
YELLOW BENCH TIE WITH TAG IN 2" PINE
WELLONS GRANDCHILDREN LLC
DB 3770 - PG 746
ANN JOHNSON HOLLAND
NO DEED REFERENCE
-Y5RPC- POT Sta. 10+00.00
-L- POT Sta. 252+80.00
OFF. 39' LT.
-Y5RPC- PC Sta. 10+62.38

-Y5RPC-
PI Sta 14+32.61
Δ = 29° 37' 31.6" (RT)
D = 4° 05' 33.2"
L = 723.89'
T = 370.23'
R = 1,400.00'

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	23
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
6/7/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
DocuSigned by: Bob A. May

HYDRAULICS ENGINEER
6/7/2017
NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD
DocuSigned by:

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5/14/99

-Y5RPB- POT Sta. 21+49.70

-Y5RPB- ST Sta.18+37.71

NAD 83/2011

-Y5RPB- CS Sta.16+21.71

END CONST.
-Y5RPB- STA. 17+85.00

N 39°07'42.4" E

260

265

270

B

A

WOODS

WOODS

RETAIN

RETAIN

RETAIN

141.25' TAPER

+97.92

DITCH CLEANOUT

RETAIN AND ADJUST IF NECESSARY

REMOVE EXIST. GUARDRAIL

TYPE B-77

30:1 TAPER

TYPE B-77

30:1 TAPER

N 65°53'04.5" E

230

END CONC MEDIAN BARRIER
-L- STA. 259+79.17

I-95 SB 36.7' BST

I-95 NB 36.3' BST

REMOVE EXIST. GUARDRAIL

GREU 350 TL-3

TYPE B-77

CAT-1

END CONST.
-L- STA. 269+44.00 SBL

END CONST.
-L- STA. 267+54.00 NBL

END OVERLAY
-L- STA. 263+79.17

S 14°41'33.7" E

INV=173.80'
18" CMP
INV=161.06'

INV=173.40'
18" CMP
INV=160.54'

INV=160.42'
18" CMP

INV=174.15'
TOP OF DEBRIS

INV=164.25'
18" CMP

INV=174.17'
TOP OF DEBRIS

22" RCP

END NCDOT TIP PROJECT I-5786
-L- STA. 265+43.93
BEGIN NCDOT TIP PROJECT I-3318BB
-L- STA. 10+50.00

C

D

S 82°31'23.9" E

END CONST.
-Y5RPC- STA. 17+20.00

-Y5RPC- PT Sta.17+86.27

-Y5RPC- POT Sta. 19+92.78

-Y5- POT Sta. 23+18.64

MATCHLINE -L- STA. 257+00.00 SEE SHT. 22

MATCHLINE -L- STA. 270+00.00 SEE SHT. 24

EXISTING R/W

R/W MON

4-WIRE W/ 1 SBW

6/7/2017
I-5786_Rdy_psh23.dgn
USER:Kevin

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PROJECT REFERENCE NO.	SHEET NO.
I-5786	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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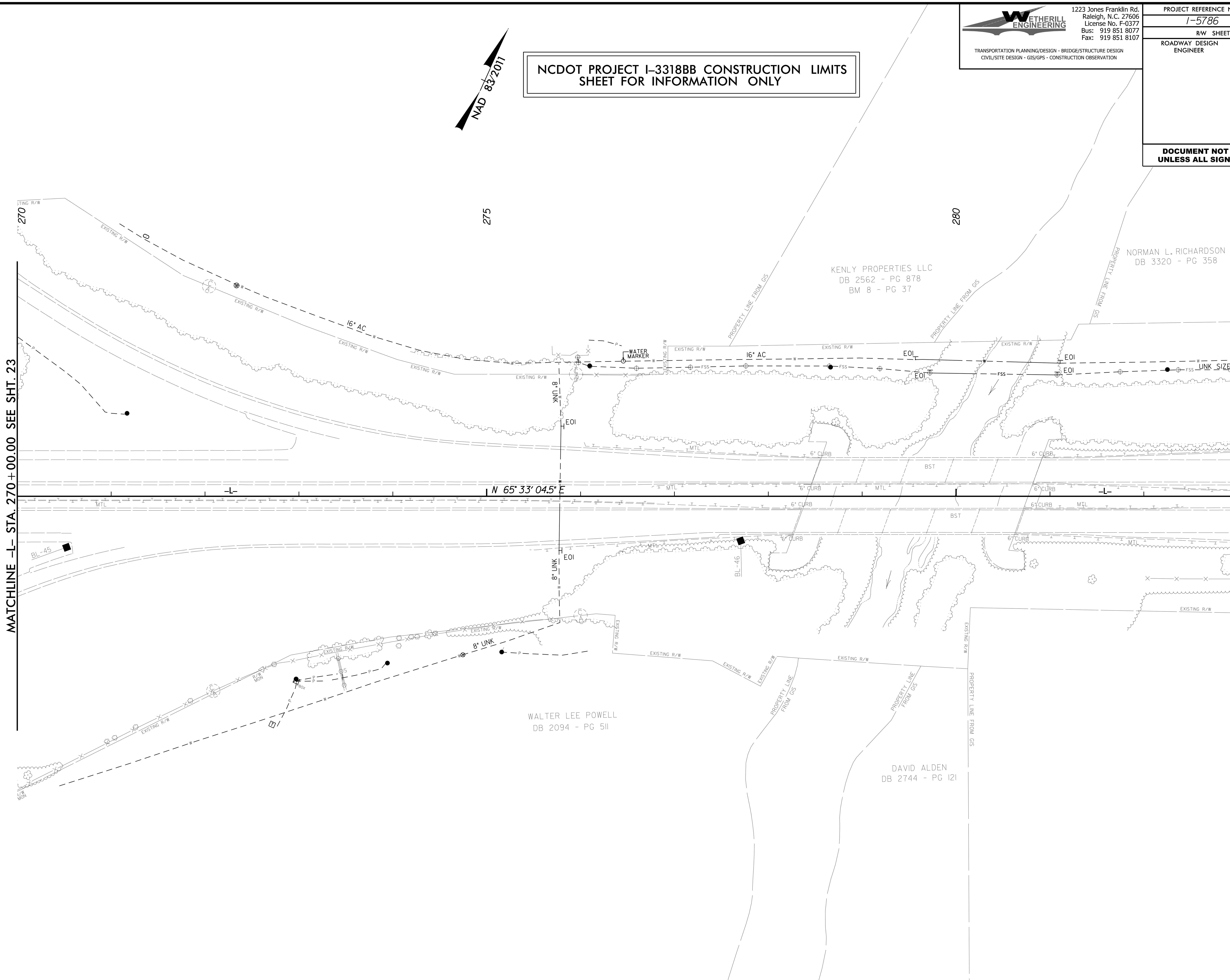
NCDOT PROJECT I-3318BB CONSTRUCTION LIMITS
SHEET FOR INFORMATION ONLY



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6/5/2017
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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD
Bob A. May	K. B. Alford

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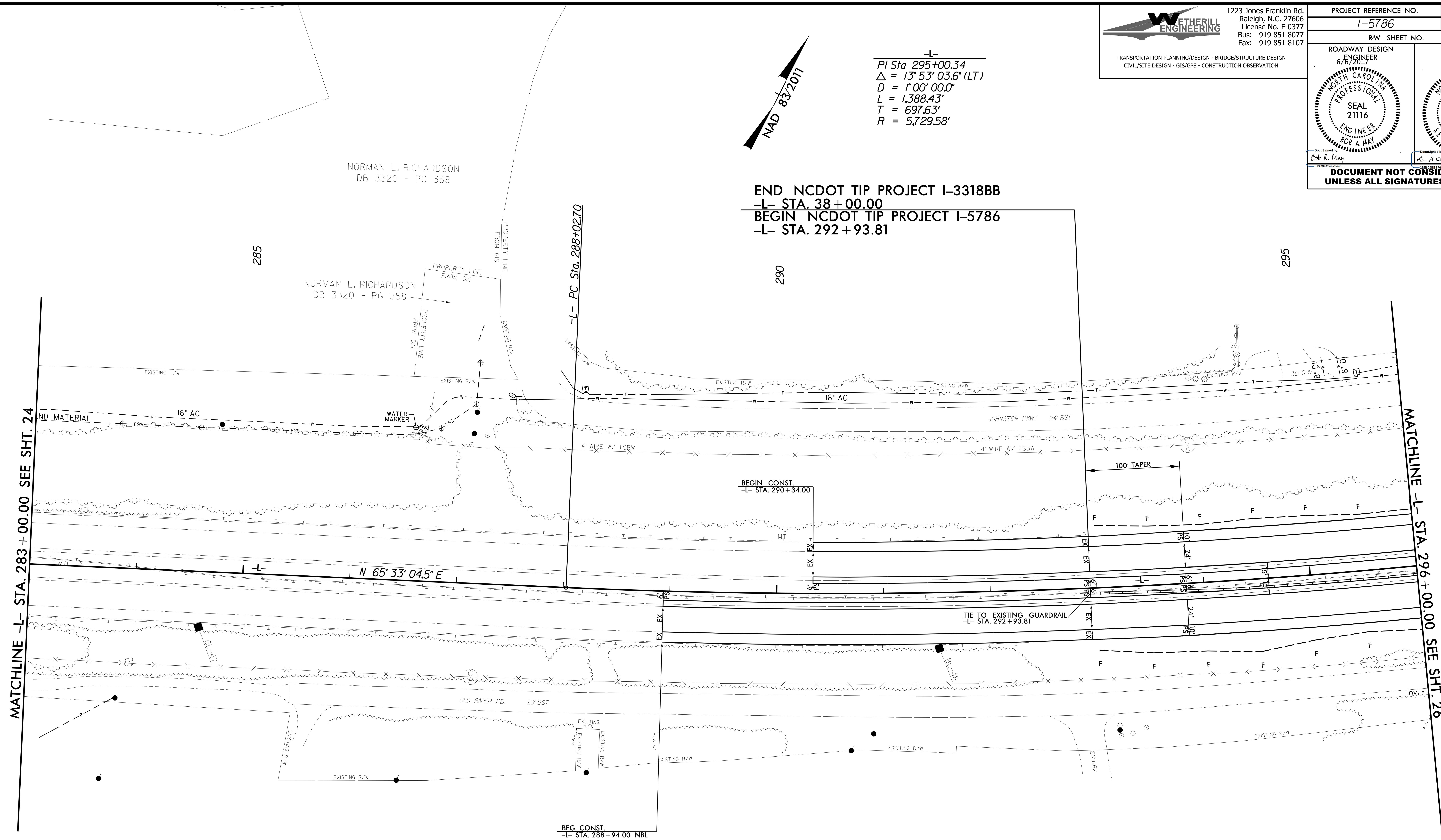

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PROJECT REFERENCE NO.	SHEET NO.
I-5786	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 6/6/2017 SEAL 21116 BOB A. MAY	HYDRAULICS ENGINEER 6/6/2017 SEAL 31977 KEVIN B. ALFORD

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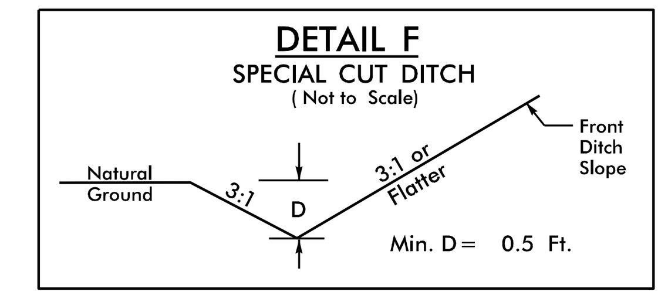
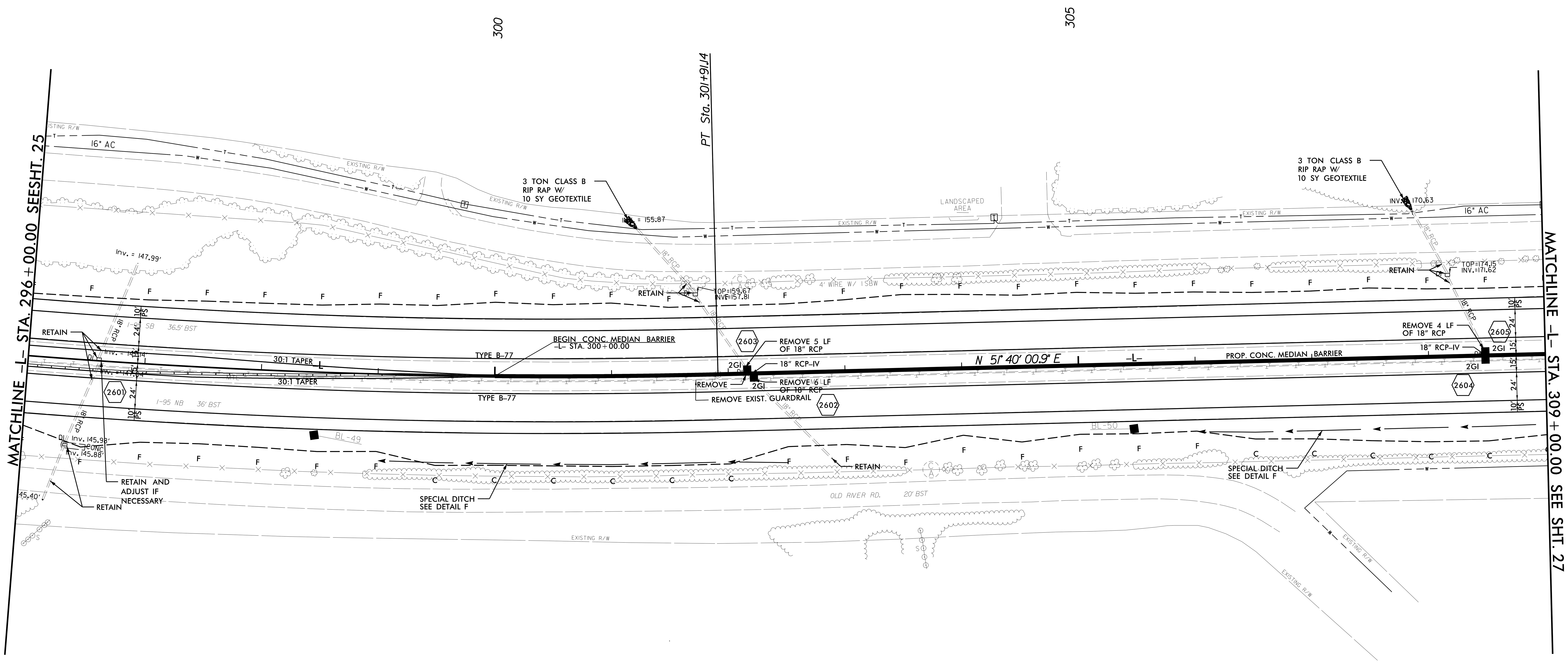
-L-
PI Sta 295+00.34
Δ = 13° 53' 03.6" (LT)
D = 1° 00' 00.0"
L = 1,388.43'
T = 697.63'
R = 5,729.58'

NAD 83/2011



FROM -L- STA. 299+00 TO STA. 302+50 RT
FROM -L- STA. 306+00 TO STA. 309+50 RT


300
305
PT Sta. 301+91.14
MATCHLINE -L- STA. 296+00.00 SEE SHT. 25
MATCHLINE -L- STA. 309+00.00 SEE SHT. 27
3 TON CLASS B RIP RAP W/ 10 SY GEOTEXTILE
RETAIN
BEGIN CONC. MEDIAN BARRIER -L- STA. 300+00.00
REMOVE 5 LF OF 18" RCP
18" RCP-IV
REMOVE 6 LF OF 18" RCP
REMOVE
REMOVE EXIST. GUARDRAIL
REMOVE 4 LF OF 18" RCP
PROP. CONC. MEDIAN BARRIER
N 51° 40' 00.9" E
TYPE B-77
30:1 TAPER
I-95 NB 36' BST
I-95 SB 36.5' BST
16" AC
LANDSCAPED AREA
EXISTING R/W
OLD RIVER RD. 20' BST
RETAIN AND ADJUST IF NECESSARY
SPECIAL DITCH SEE DETAIL F
2601
2602
2603
2604
2605
2GI

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
I-5786	27
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
DocuSigned by: Bob A. May

HYDRAULICS ENGINEER
6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD
DocuSigned by: K. B. Alford

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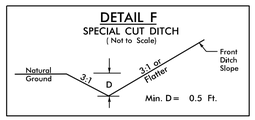
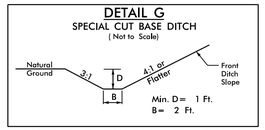
NAD 83/2011

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)



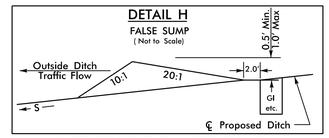
FROM –L– STA. 306+00 TO STA. 309+50 RT
FROM –L– STA. 314+00 TO STA. 319+00 RT
FROM –L– STA. 321+50 TO STA. 323+00 RT

DETAIL G
SPECIAL CUT BASE DITCH
(Not to Scale)



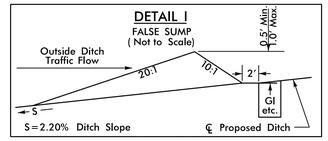
FROM –L– STA. 314+00 TO STA. 322+00 LT

DETAIL H
FALSE SUMP
(Not to Scale)



–L– STA. 316+75 LT.; S = 1.34% Ditch Slope
–L– STA. 320+05 LT.; S = 1.56% Ditch Slope

DETAIL I
FALSE SUMP
(Not to Scale)

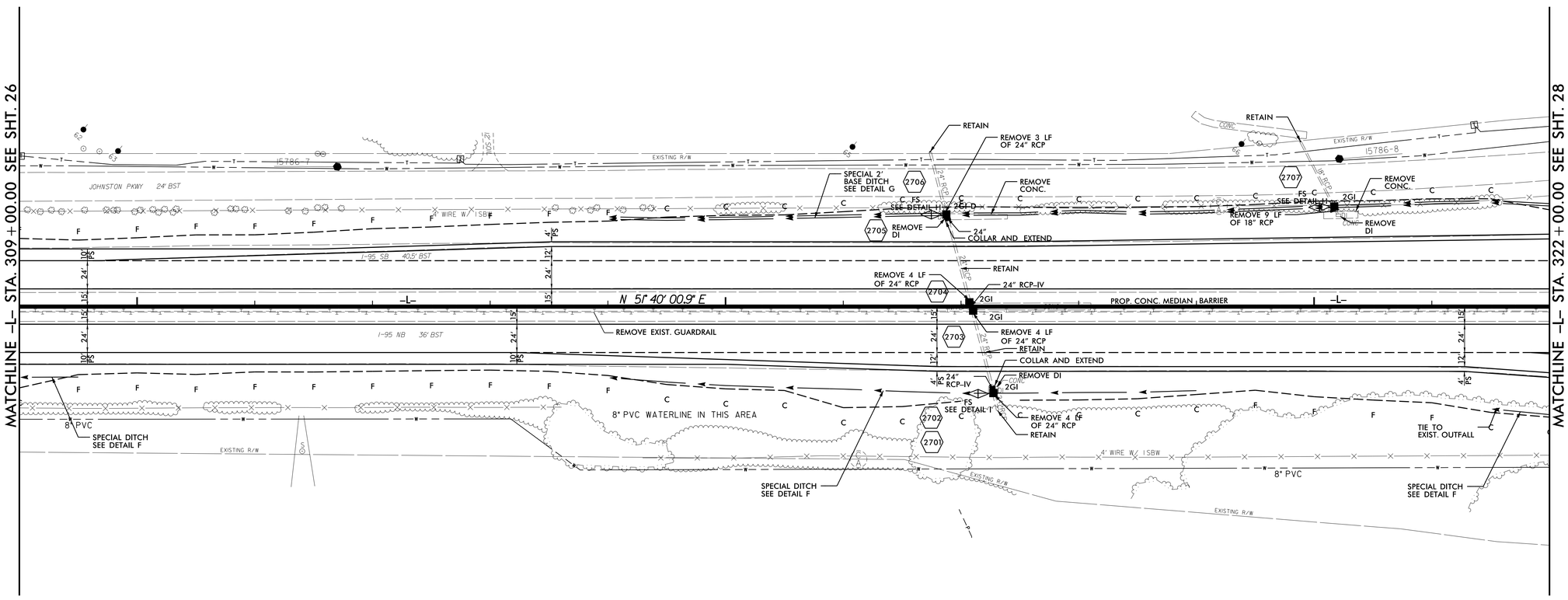


–L– STA. 317+15 RT.

310

315

320



5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
I-5786	28
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER 6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
DocuSigned by: Bob A. May 5150844224B4B0...

HYDRAULICS ENGINEER 6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. AFFOLD
DocuSigned by: K. B. Affold 5150844224B4B0...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y6RPB-
PIs Sta 11+44.04
Θs = 4° 19' 12.0"
Ls = 216.00'
LT = 144.04'
ST = 72.04'

PI Sta 15+11.86
Δ = 23° 20' 26.2" (LT)
D = 4° 00' 00.0"
L = 583.52'
T = 295.86'
R = 1,432.39'

PIs Sta 18+71.55
Θs = 4° 19' 12.0"
Ls = 216.00'
LT = 144.04'
ST = 72.04'

NAD 83/2011

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1 or Flatter, Front Ditch Slope
Min. D= 0.5 Ft.
FROM –L– STA. 321+50 TO STA. 323+00 RT

DETAIL J
SPECIAL CUT BASE DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, B, Front Ditch Slope
Min. D= 1 Ft.
B= 5 Ft.
FROM –L– STA. 329+50 TO STA. 336+50 RT

-Y6RPB- ST Sta. 10+00.00
-L- POT Sta. 324+45.62
OFF. 51' RT.

-Y6RPB- SC Sta. 12+16.00

-Y6RPB- CS Sta. 17+99.52

-Y6RPB- ST Sta. 20+15.52

END CONST.
-Y6RPB- STA. 17+26.00

325 330 335

B

RETAIN
18" RCP
CONC
EXISTING R/W
16" AC
40' BST
JOHNSTON PKWY 24' BST
4" WIRE W/ ISBN
CONC
RETAIN
CONC-DI
I-95 SB 36' BST
PROP. CONC. MEDIAN BARRIER
N 91° 40' 00.9" E
REMOVE EXIST. GUARDRAIL
N 55° 47' 00.9" E
I-95 NB 36.3' BST
DI
RETAIN
SPECIAL 5' BASE DITCH SEE DETAIL J
SPECIAL DITCH SEE DETAIL F
16" DI
4" WIRE W/ ISBN
EXISTING R/W
BL-51
BL-52
8:1

MATCHLINE –L– STA. 335+00.00 SEE SHT. 27

MATCHLINE –L– STA. 335+00.00 SEE SHT. 29

-Y6RPC- POT Sta. 10+00.00
-L- POT Sta. 322+95.00
OFF. 51' LT.

-Y6RPC- TS Sta. 11+93.59

-Y6RPC- SC Sta. 14+09.59

END CONST.
-Y6RPC- STA. 16+70.00

-Y6RPC- CS Sta. 17+03.33

-Y6RPC- ST Sta. 19+19.33

N 86° 22' 06.6" E

TBM #17
N - 666309
E - 2253557
ELEV 209.61'
BL STATION 343+82.00 105' RIGHT
YELLOW BENCH TIE WITH TAG IN 17" PINE

C

-Y6RPC-
PIs Sta 13+37.68
Θs = 6° 28' 48.0"
Ls = 216.00'
LT = 144.10'
ST = 72.09'

PI Sta 15+57.63
Δ = 17° 37' 29.8" (RT)
D = 6° 00' 00.0"
L = 293.75'
T = 148.04'
R = 954.93'

PIs Sta 17+75.42
Θs = 6° 28' 48.0"
Ls = 216.00'
LT = 144.10'
ST = 72.09'

6/6/2017
I:\5786_Rdy_psh28.dgn

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
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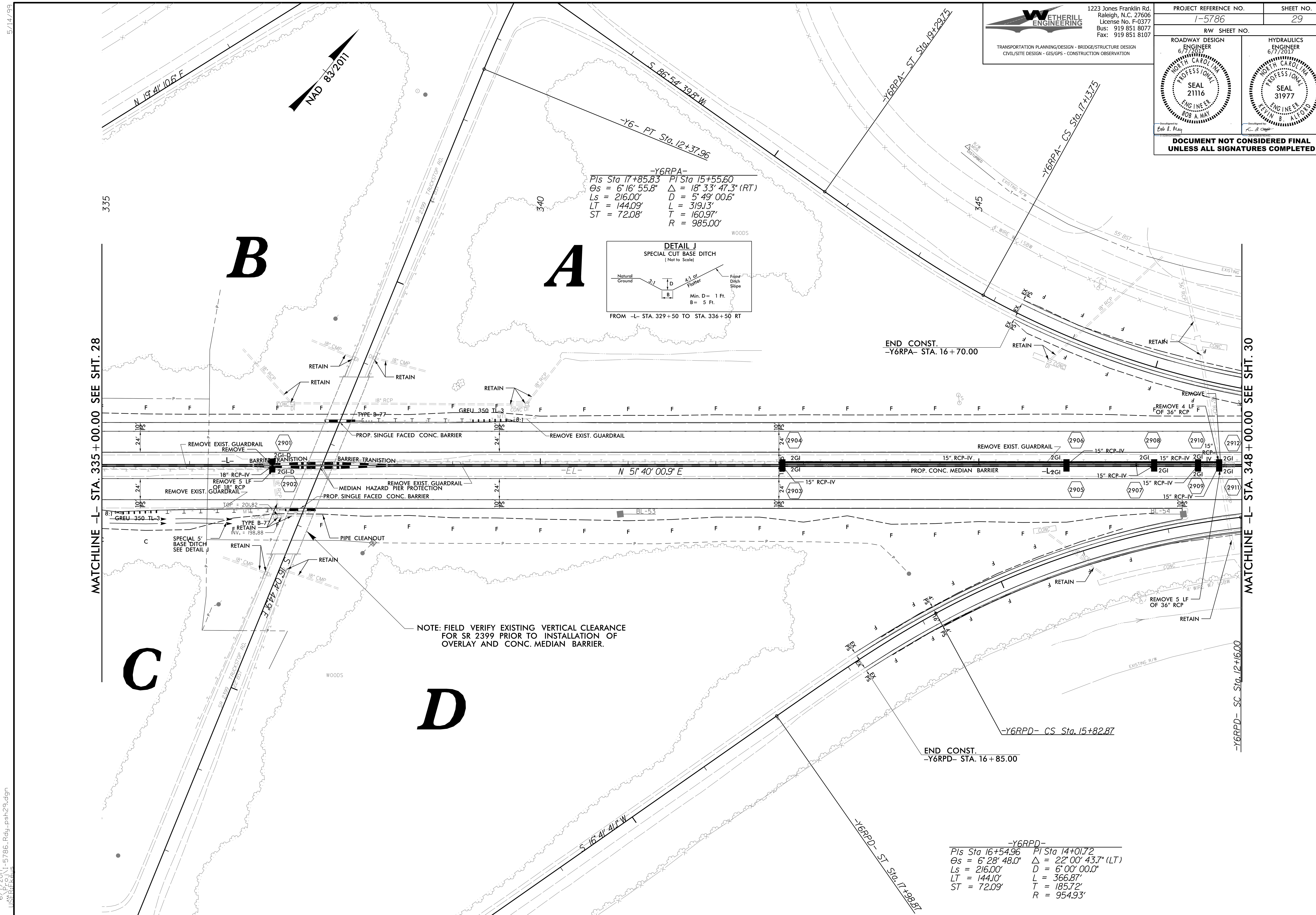
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 6/7/2017	HYDRAULICS ENGINEER 6/7/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED


NAD 83/2011
N 19° 41' 10.6" E
S 86° 54' 39.8" W
-Y6- PT Sta. 12+37.96
-Y6RPA- ST Sta. 19+29.75
-Y6RPA- CS Sta. 17+13.75
-Y6RPA-
PIs Sta 17+85.83 PI Sta 15+55.60
Θs = 6° 16' 55.8" △ = 18° 33' 47.3" (RT)
Ls = 216.00' D = 5° 49' 00.6"
LT = 144.09' L = 319.13'
ST = 72.08' T = 160.97'
R = 985.00'
DETAIL J
SPECIAL CUT BASE DITCH
(Not to Scale)
Natural Ground
3:1
4:1 or Flatter
Front Ditch Slope
Min. D = 1 Ft.
B = 5 Ft.
FROM -L- STA. 329+50 TO STA. 336+50 RT
335
340
345
A
B
C
D
MATCHLINE -L- STA. 335+00.00 SEE SHT. 28
MATCHLINE -L- STA. 348+00.00 SEE SHT. 30
END CONST. -Y6RPA- STA. 16+70.00
END CONST. -Y6RPD- STA. 16+85.00
-Y6RPD- CS Sta. 15+82.87
-Y6RPD- SC Sta. 12+16.00
-Y6RPD- ST Sta. 17+98.87
S 16° 41' 41.1" W
-EL-
N 51° 40' 00.9" E
PROP. SINGLE FACED CONC. BARRIER
REMOVE EXIST. GUARDRAIL
MEDIAN HAZARD PIER PROTECTION
BARRIER TRANSITION
PROP. CONC. MEDIAN BARRIER
GREU 350 TL-3
TYPE B-77
PIPE CLEANOUT
SPECIAL 5' BASE DITCH SEE DETAIL J
REMOVE 5 LF OF 18" RCP
REMOVE 4 LF OF 36" RCP
REMOVE 5 LF OF 36" RCP
RETAIN
REMOVE
15" RCP-IV
18" RCP-IV
2GI
2GI-D
2901
2902
2903
2904
2905
2906
2907
2908
2909
2910
2911
2912
BL-53
BL-54
SR 2399 TRICKSTOP RD.
WOODS
NOTE: FIELD VERIFY EXISTING VERTICAL CLEARANCE FOR SR 2399 PRIOR TO INSTALLATION OF OVERLAY AND CONC. MEDIAN BARRIER.
-Y6RPD-
PIs Sta 16+54.96 PI Sta 14+01.72
Θs = 6° 28' 48.0" △ = 22° 00' 43.7" (LT)
Ls = 216.00' D = 6° 00' 00.0"
LT = 144.10' L = 366.87'
ST = 72.09' T = 185.72'
R = 954.93'

5/14/99
6/7/2017
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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	30
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21116 BOB A. MAY	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 31977 KEVIN B. ALFORD

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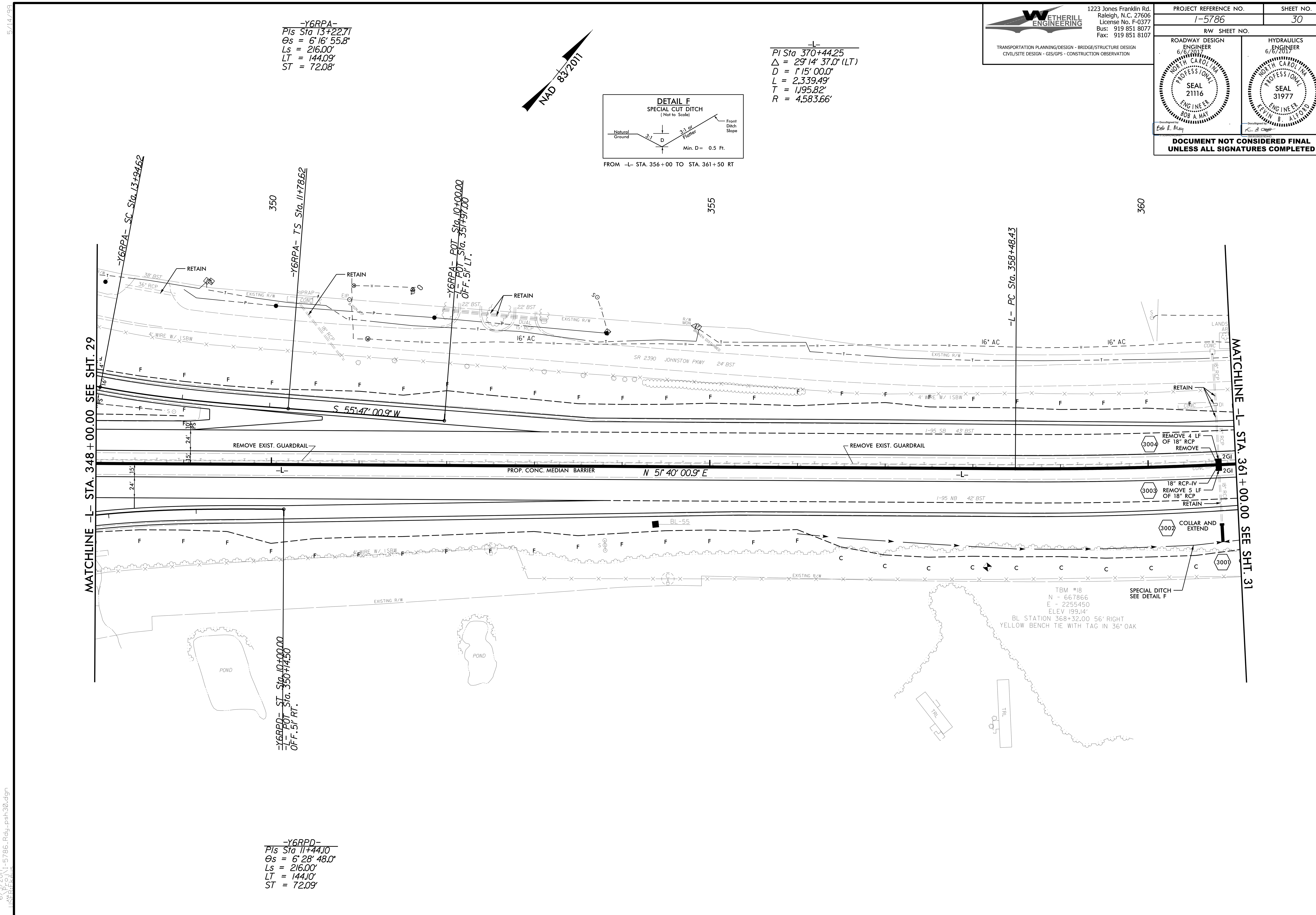
-Y6RPA-
PIs Sta 13+22.71
Θs = 6° 16' 55.8"
Ls = 216.00'
LT = 144.09'
ST = 72.08'
NAD 83/2011
DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1 or Flatter
Front Ditch Slope
Min. D = 0.5 Ft.
FROM -L- STA. 356+00 TO STA. 361+50 RT
-L-
PI Sta 370+44.25
Δ = 29° 14' 37.0" (LT)
D = 1° 15' 00.0"
L = 2,339.49'
T = 1,195.82'
R = 4,583.66'
350
355
360
-Y6RPA- SC Sta 13+94.62
-Y6RPA- TS Sta 11+78.62
-Y6RPA- POT Sta 10+00.00
-L- POT Sta 351+91.00
OFF. 51' LT.
-L- PC Sta 358+48.43
RETAIN
S 55°47' 00.9" W
16" AC
SR 2390 JOHNSTON PKWY 24' BST
I-95 SB 43' BST
REMOVE EXIST. GUARDRAIL
PROP. CONC. MEDIAN BARRIER
N 51° 40' 00.9" E
-L-
I-95 NB 42' BST
REMOVE 4 LF OF 18" RCP
REMOVE
2GI
18" RCP-IV
REMOVE 5 LF OF 18" RCP
COLLAR AND EXTEND
SPECIAL DITCH SEE DETAIL F
3001
3002
3003
3004
BL-55
EXISTING R/W
TBM #18
N - 667866
E - 2255450
ELEV 199.14'
BL STATION 368+32.00 56' RIGHT
YELLOW BENCH TIE WITH TAG IN 36" OAK
POND
MATCHLINE -L- STA. 348+00.00 SEE SHT. 29
MATCHLINE -L- STA. 361+00.00 SEE SHT. 31
-Y6RPD- ST Sta 10+00.00
-L- POT Sta. 350+14.50
OFF. 51' RT.
-Y6RPD-
PIs Sta 11+44.10
Θs = 6° 28' 48.0"
Ls = 216.00'
LT = 144.10'
ST = 72.09'

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

PROJECT REFERENCE NO.	SHEET NO.
I-5786	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 6/6/2017	HYDRAULICS ENGINEER 6/6/2017
SEAL 21116 BOB A. MAY	SEAL 31977 KEVIN B. ALFORD

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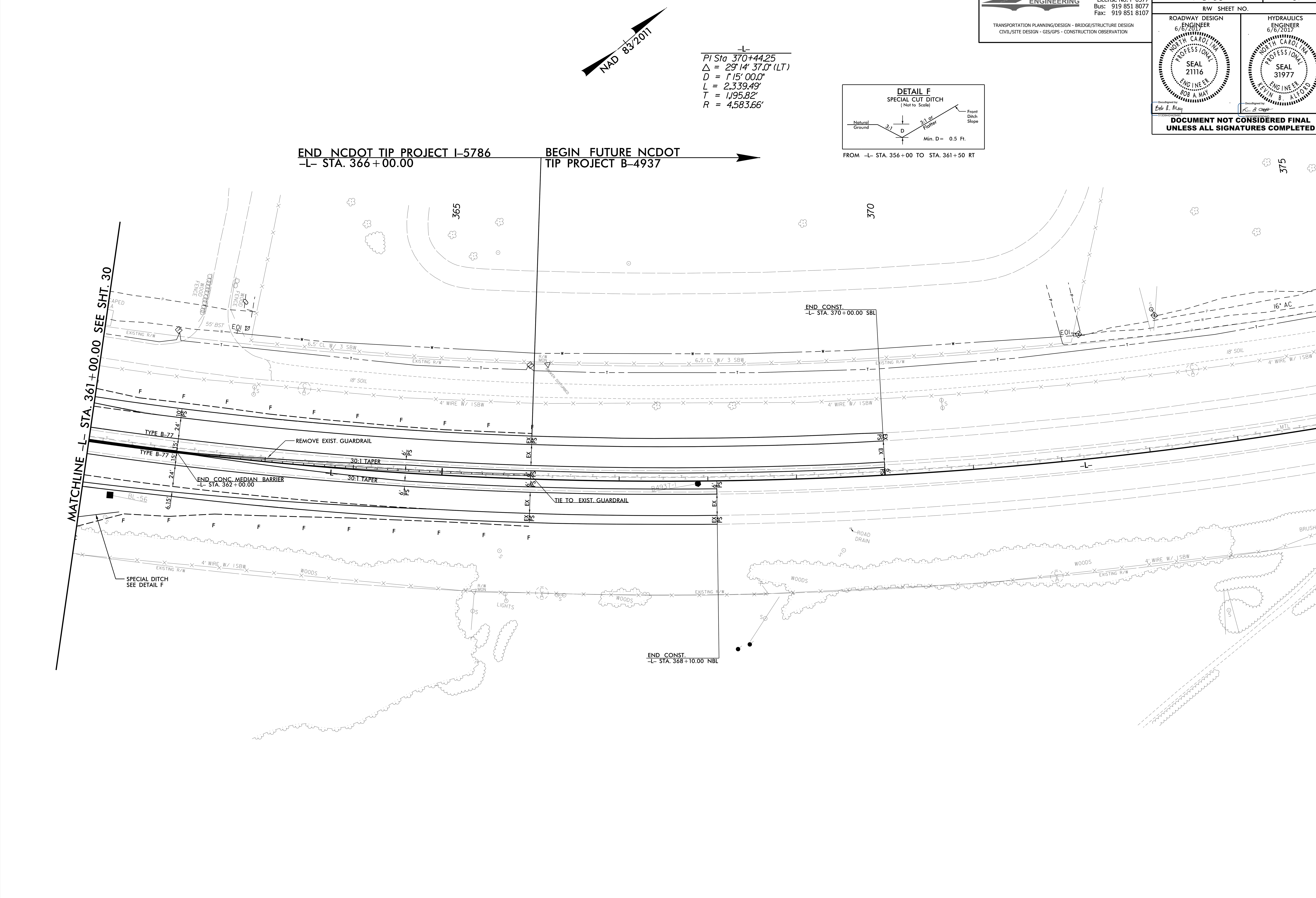
NAD 83/2011
-L-
PI Sta 370+44.25
△ = 29° 14' 37.0" (LT)
D = 1° 15' 00.0"
L = 2,339.49'
T = 1,195.82'
R = 4,583.66'
DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1
3:1 or Flatter
Front Ditch Slope
Min. D = 0.5 Ft.
FROM -L- STA. 356+00 TO STA. 361+50 RT
END NCDOT TIP PROJECT I-5786
-L- STA. 366+00.00
BEGIN FUTURE NCDOT
TIP PROJECT B-4937
365
370
375
MATCHLINE -L- STA. 361+00.00 SEE SHT. 30
END CONST.
-L- STA. 370+00.00 SBL
16" AC
REMOVE EXIST. GUARDRAIL
TYPE B-77
30:1 TAPER
END CONC. MEDIAN BARRIER
-L- STA. 362+00.00
TIE TO EXIST. GUARDRAIL
SPECIAL DITCH
SEE DETAIL F
END CONST.
-L- STA. 368+10.00 NBL
WOODS
BRUSH
LIGHTS
4' WIRE W/ 1SBW
EXISTING R/W
6.5' CL W/ 3 SBW
18' SOIL
55' BST

5/14/99

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	32
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

6/6/2017

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY

DocuSigned by: Bob A. May

HYDRAULICS ENGINEER

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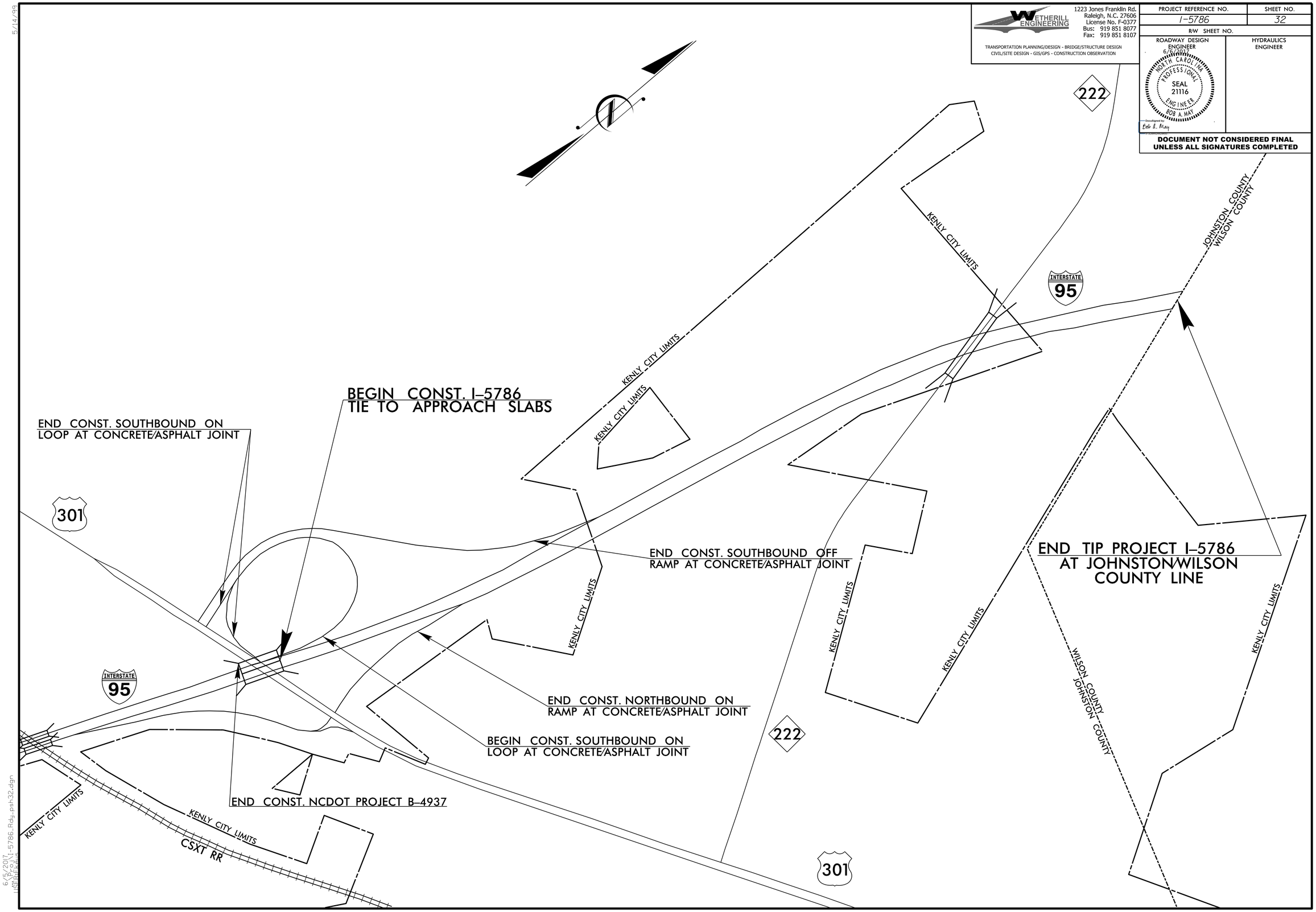

6/5/2017
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USER: kas

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

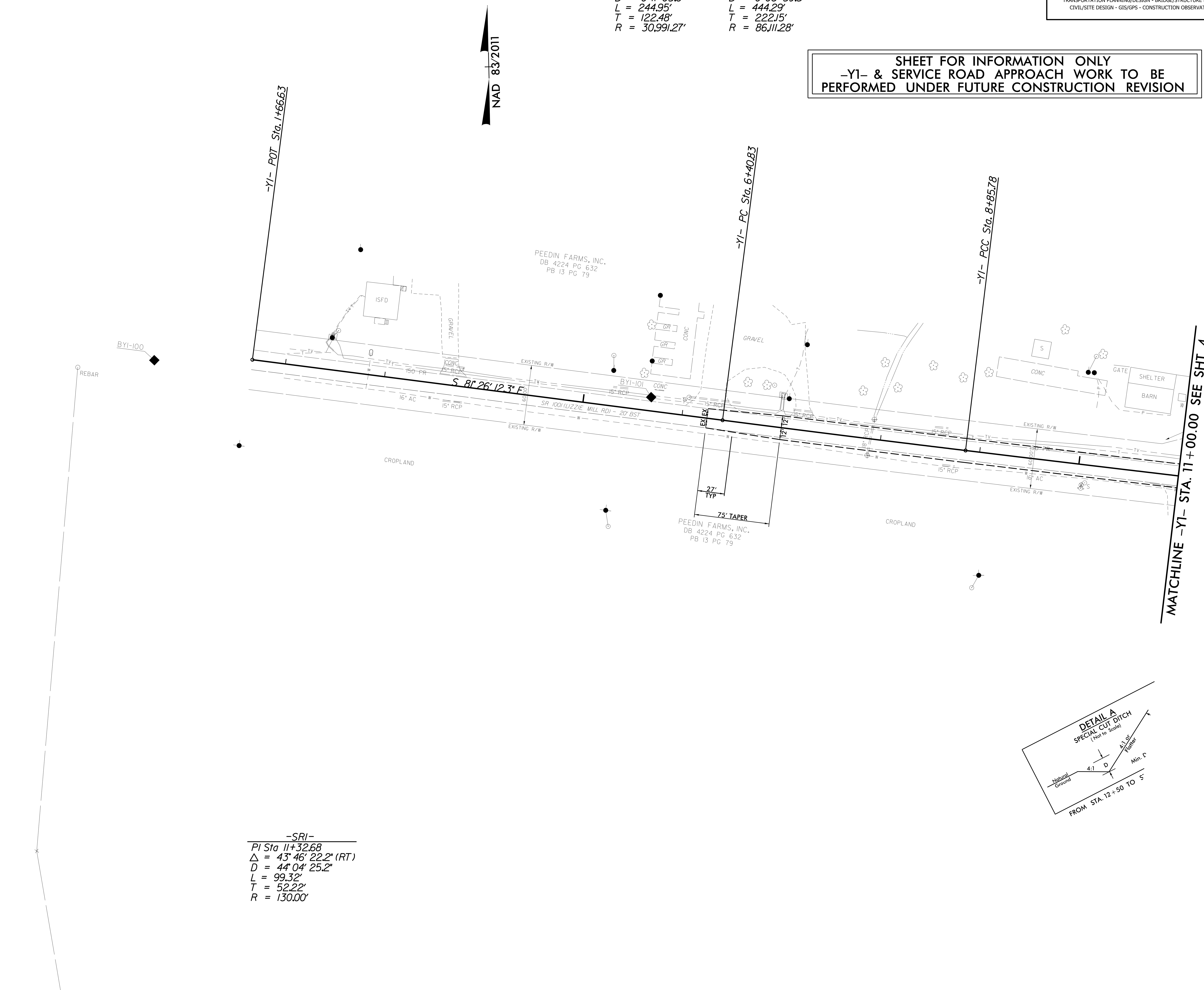
PROJECT REFERENCE NO.	SHEET NO.
I-5786	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/6/2017	6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD
DocuSigned by: Bob A. May	DocuSigned by: K. B. Alford

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SHEET FOR INFORMATION ONLY
-Y1- & SERVICE ROAD APPROACH WORK TO BE PERFORMED UNDER FUTURE CONSTRUCTION REVISION

-Y1-

PI Sta 7+63.30	PI Sta 11+07.92
Δ = 0° 27' 10.3" (LT)	Δ = 0° 17' 44.2" (LT)
D = 0° 11' 05.6"	D = 0° 03' 59.5"
L = 244.95'	L = 444.29'
T = 122.48'	T = 222.15'
R = 30,991.27'	R = 86,111.28'



-SRI-

PI Sta 11+32.68
Δ = 43° 46' 22.2" (RT)
D = 44° 04' 25.2"
L = 99.32'
T = 52.22'
R = 130.00'

DocuSign Envelope ID: 63FF4D1D-2E41-400B-B009-2E7051E46347

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5786	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21116 BOB A. MAY — Bob A. May

HYDRAULICS ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 31977 KEVIN B. ALFORD

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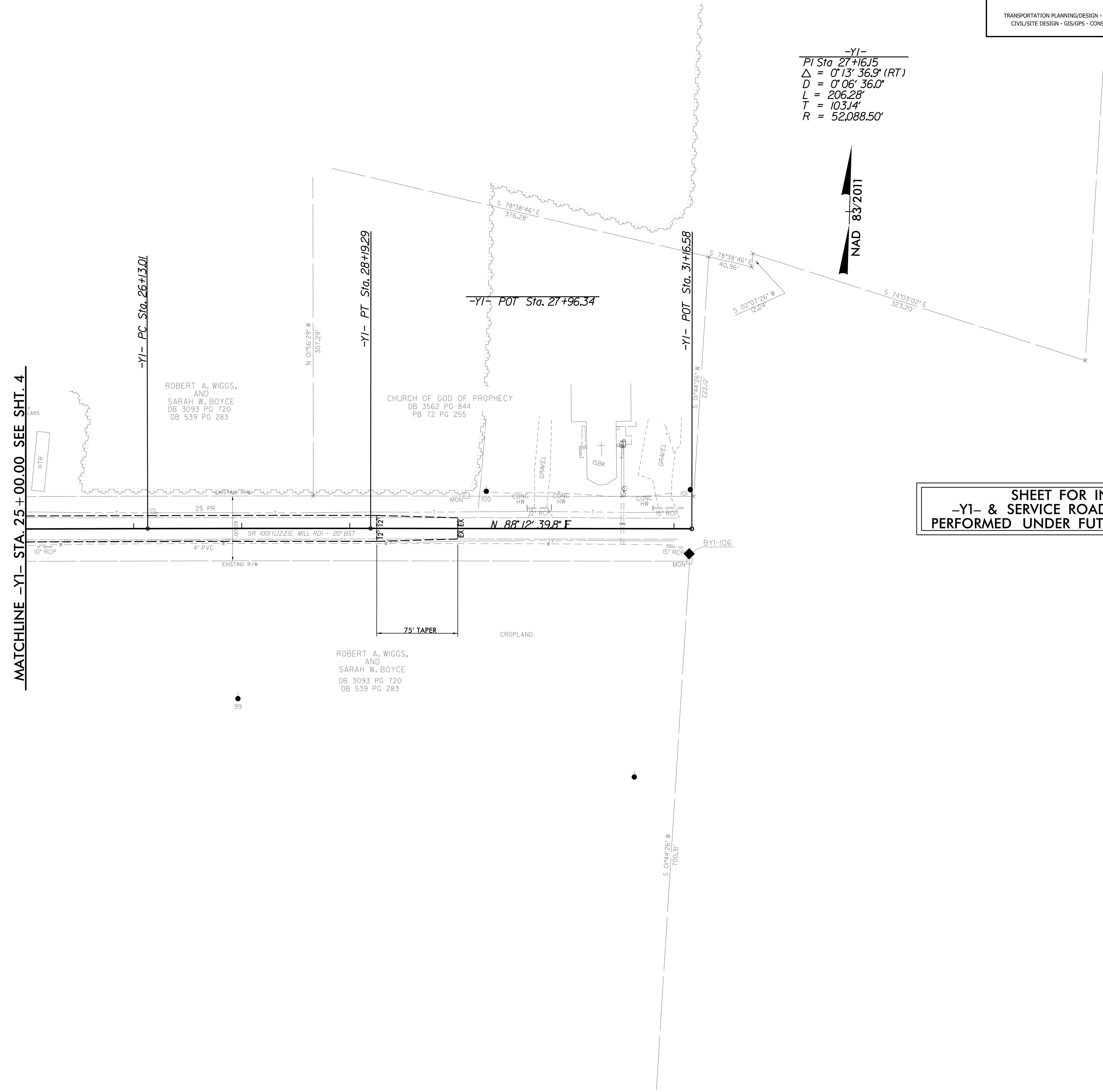

SHEET FOR INFORMATION ONLY
-Y1- & SERVICE ROAD APPROACH WORK TO BE PERFORMED UNDER FUTURE CONSTRUCTION REVISION

5/14/99

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

PROJECT REFERENCE NO.	SHEET NO.
I-5786	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 6/6/2017	HYDRAULICS ENGINEER 6/6/2017
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

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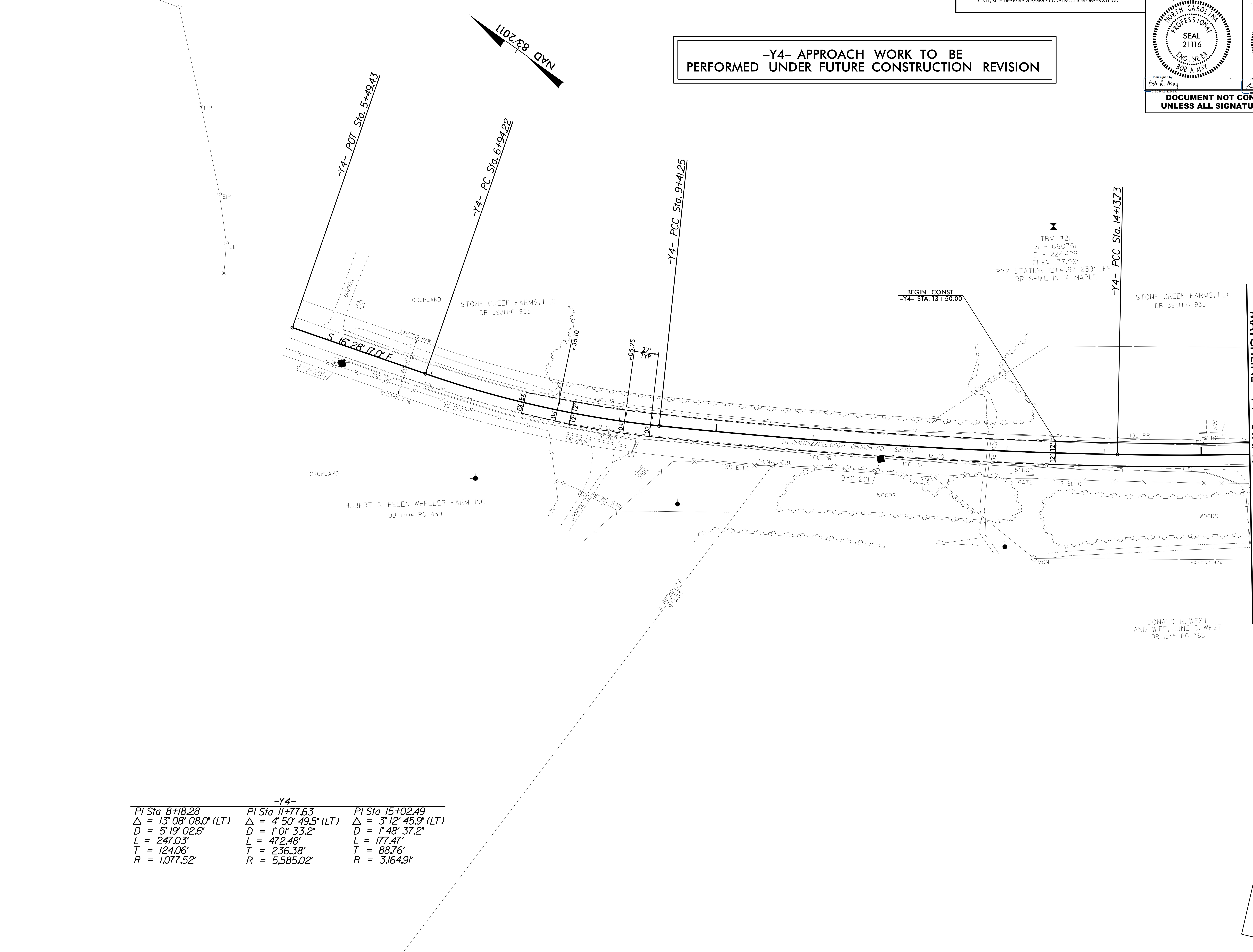
-Y4- APPROACH WORK TO BE PERFORMED UNDER FUTURE CONSTRUCTION REVISION



-Y4-

PI Sta 8+18.28	PI Sta 11+77.63	PI Sta 15+02.49
Δ = 13° 08' 08.0" (LT)	Δ = 4° 50' 49.5" (LT)	Δ = 3° 12' 45.9" (LT)
D = 5° 19' 02.6"	D = 1° 01' 33.2"	D = 1° 48' 37.2"
L = 247.03'	L = 472.48'	L = 177.47'
T = 124.06'	T = 236.38'	T = 88.76'
R = 1,077.52'	R = 5,585.02'	R = 3,164.91'

SEE SHT. 38 FOR -Y4- PROFILE

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

PROJECT REFERENCE NO.	SHEET NO.
I-5786	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY	HYDRAULICS ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD

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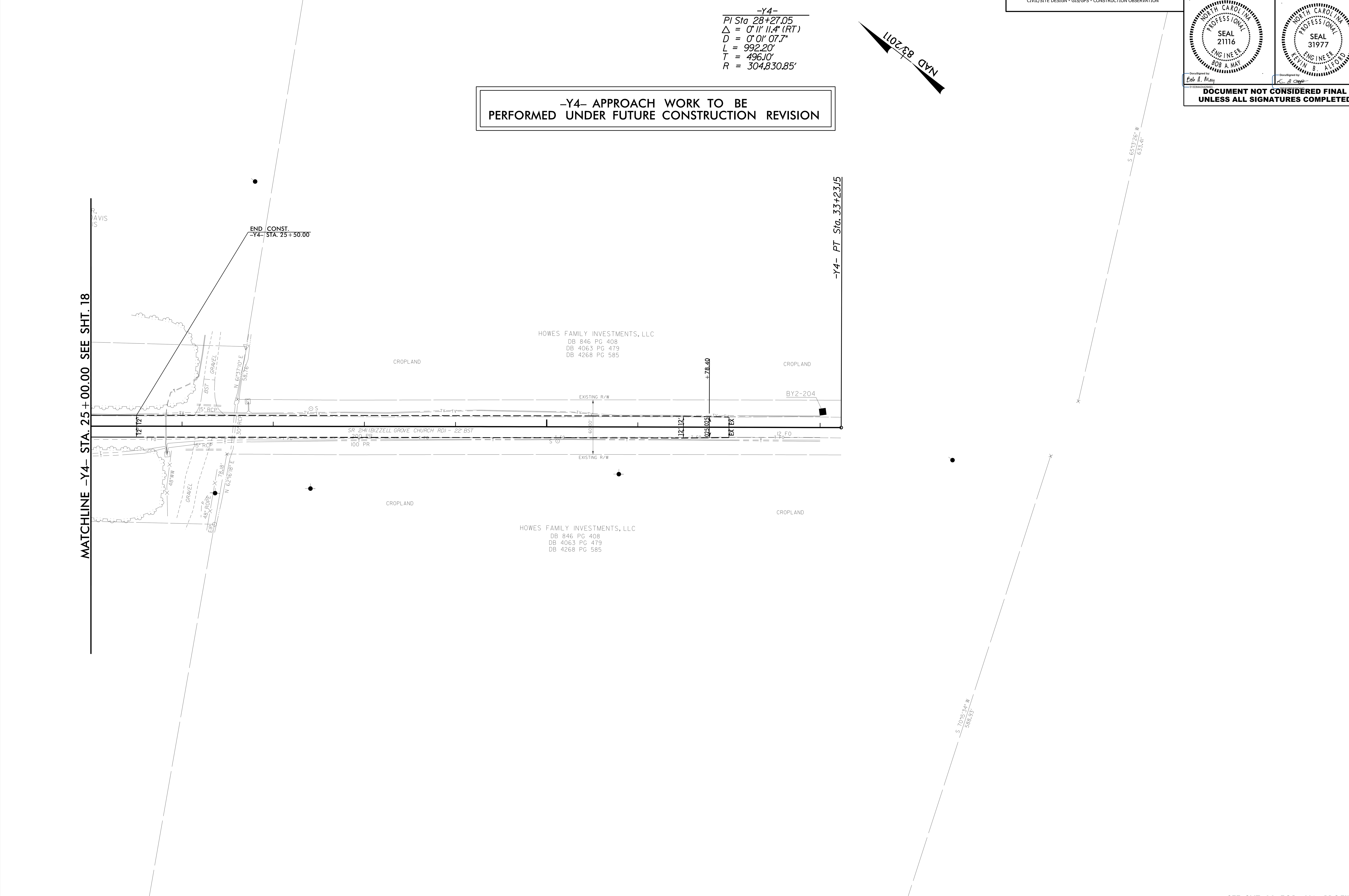

SEE SHT. 38 FOR -Y4- PROFILE

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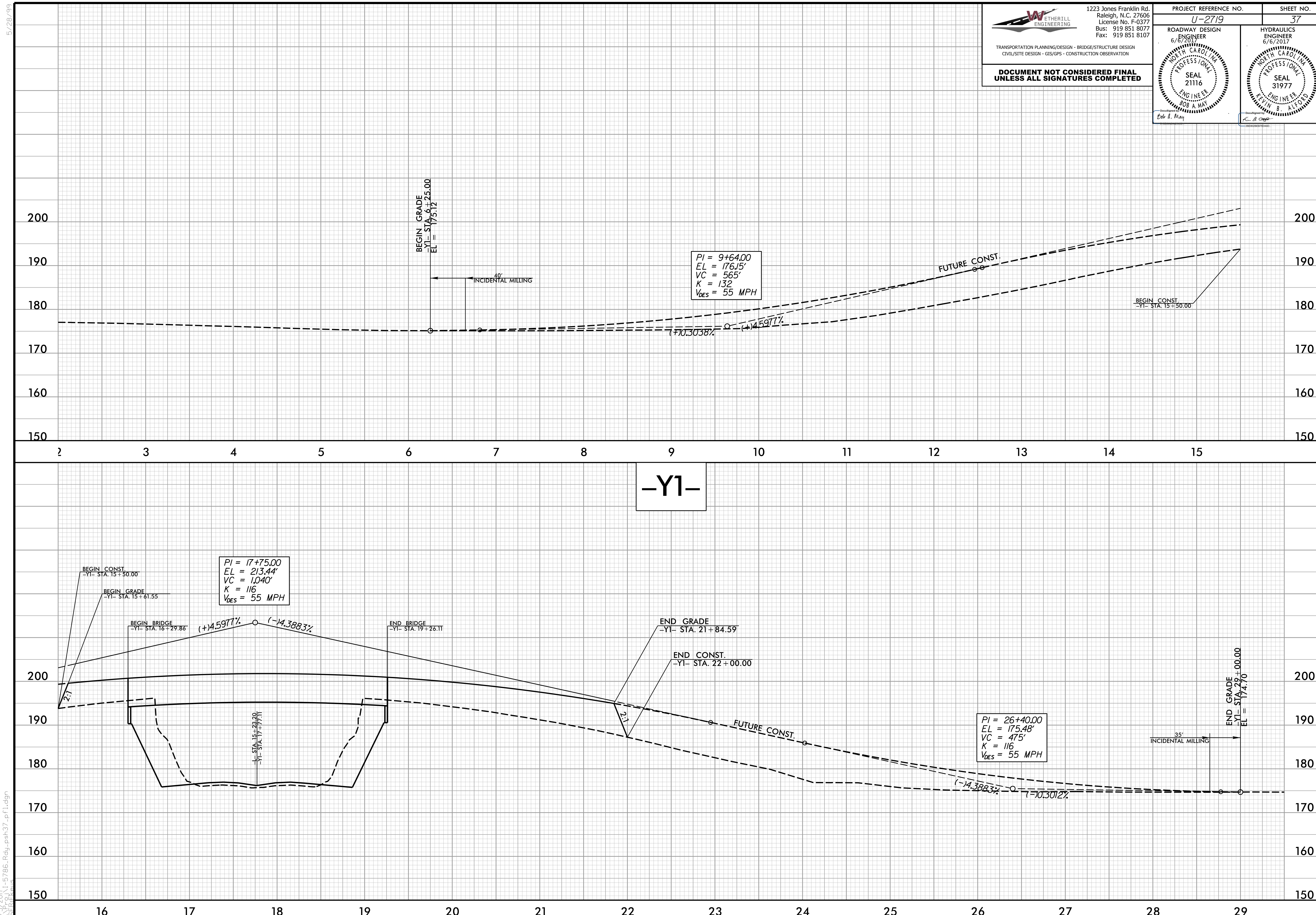
PROJECT REFERENCE NO.	SHEET NO.
U-2719	37

ROADWAY DESIGN ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY — Bob A. May

HYDRAULICS ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL SEAL 31977 ENGINEER KEVIN B. ALFORD


5/28/99
BEGIN GRADE
-Y1- STA. 6+25.00
EL = 175.12
40'
INCIDENTAL MILLING
PI = 9+64.00
EL = 176.15'
VC = 565'
K = 132
VDES = 55 MPH
(+)0.3038%
(+)4.5977%
FUTURE CONST.
BEGIN CONST.
-Y1- STA. 15+50.00
-Y1-
BEGIN CONST.
-Y1- STA. 15+50.00
BEGIN GRADE
-Y1- STA. 15+61.55
PI = 17+75.00
EL = 213.44'
VC = 1,040'
K = 116
VDES = 55 MPH
BEGIN BRIDGE
-Y1- STA. 16+29.86
(+)4.5977%
(-)4.3883%
END BRIDGE
-Y1- STA. 19+26.11
2:1
-L- STA. 15+23.20
-Y1- STA. 17+77.11
END GRADE
-Y1- STA. 21+84.59
END CONST.
-Y1- STA. 22+00.00
2:1
FUTURE CONST.
PI = 26+40.00
EL = 175.48'
VC = 475'
K = 116
VDES = 55 MPH
(-)4.3883%
(-)0.3012%
END GRADE
-Y1- STA. 29+00.00
EL = 174.70
35'
INCIDENTAL MILLING
6/5/2017
...\1-5786_Rdy_psh37_pfl.dgn

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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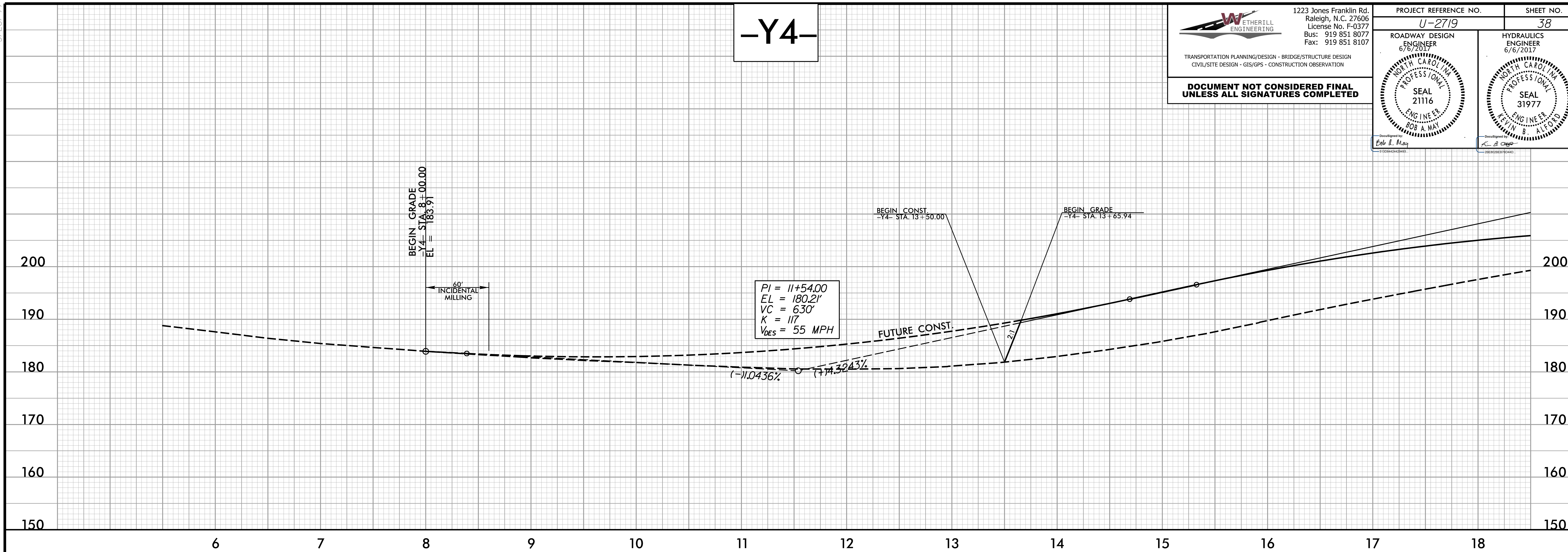
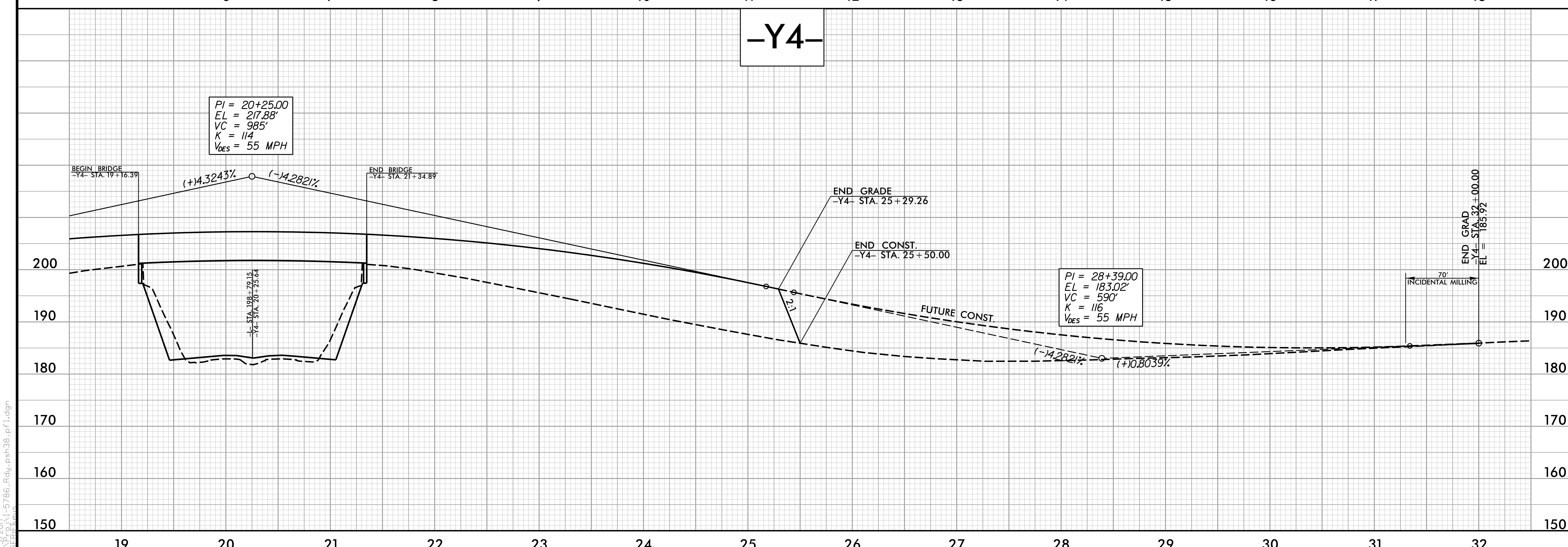
PROJECT REFERENCE NO.	SHEET NO.
U-2719	38

ROADWAY DESIGN ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21116 BOB A. MAY

HYDRAULICS ENGINEER 6/6/2017 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 31977 KEVIN B. ALFORD





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6/5/2017 ...\1-5786_Rdy_psh38_pf1.dgn