

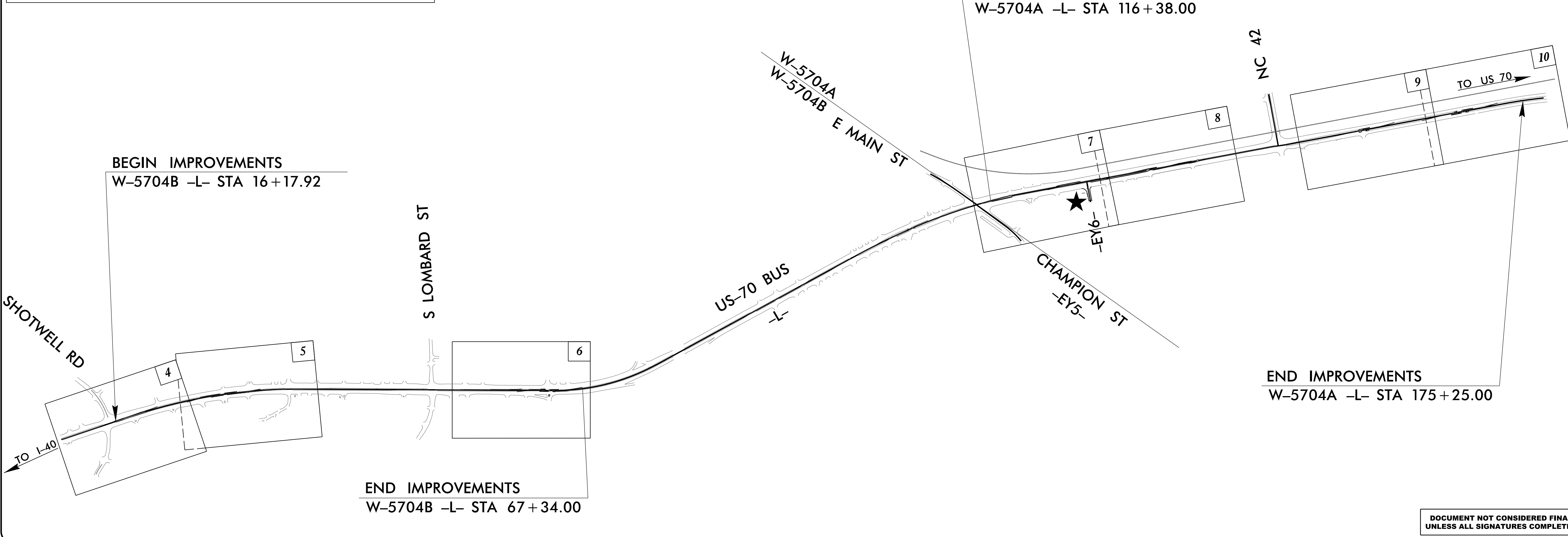
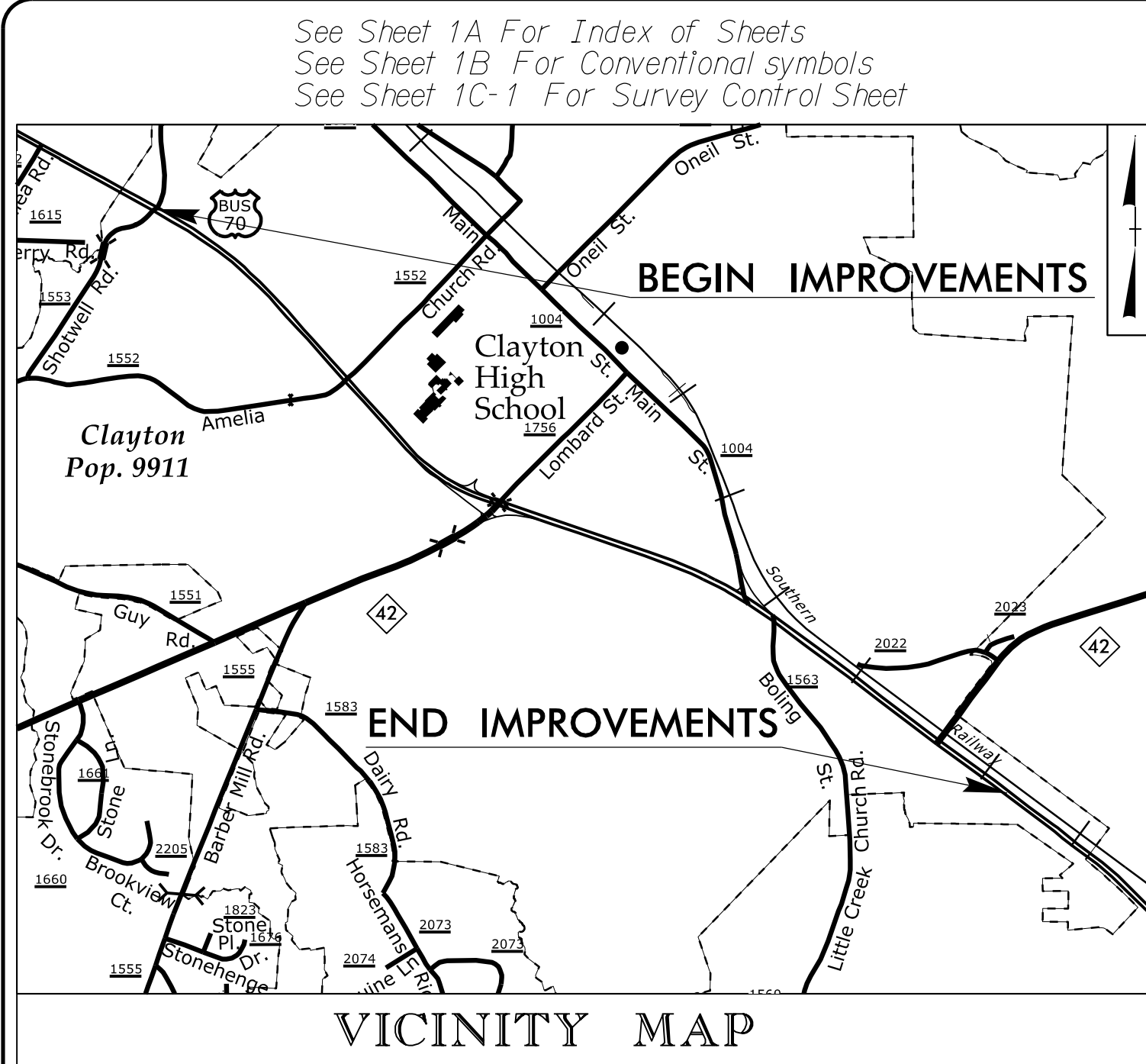
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TIP PROJECT: W-5704A&B

CONTRACT: C203885



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

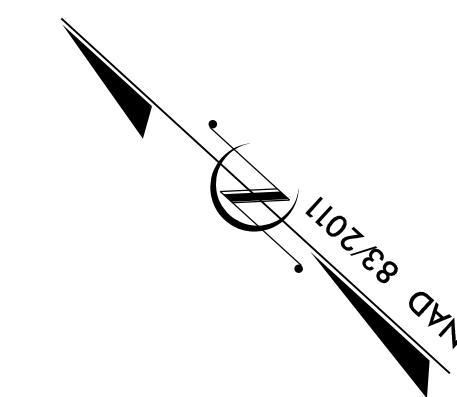
JOHNSTON COUNTY

**LOCATION: US-70 BUSINESS FROM SR 1553 (SHOTWELL ROAD)
TO WILDWOOD DRIVE**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNAL,
AND PAVEMENT MARKING**

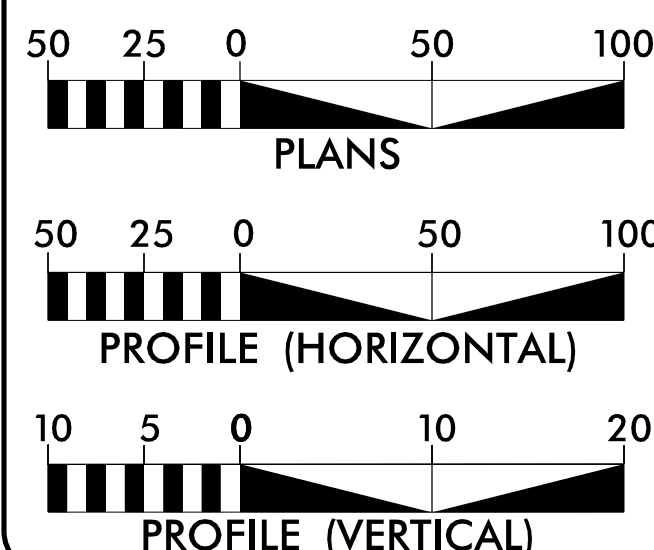
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5704A, W-5704B, 2016CPT.04.10.10511.1	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
44850.1.1	HSIP-0070(204)	W-5704A (PE)	
44850.1.2	HSIP-1553(007)	W-5704B (PE)	
44850.3.1	HSIP-0070(204)	W-5704A (CONST.)	
44850.3.1	HSIP-0070(204)	W-5704B (CONST.)	
2016CPT.04.10.10511.1		RESURF. (CONST.)	

★ SIGNAL PROPOSED



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2015 = 36000
K = %
D = %
T = % *
V = 50 MPH
* TTST = DUAL =
FUNC CLASS =
OTHER PRINCIPAL
ARTERIAL

PROJECT LENGTH

LENGTH OF PROJECT W-5704A = 1.115 MILES
LENGTH OF PROJECT W-5704B = 0.969 MILES
TOTAL LENGTH OF PROJECT W-5704A&B = 2.084 MILES

Prepared in the Office of:
SEPI
ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel: 919-789-9977
Fax: 919-789-9591
License: C-2197

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
NOVEMBER 21, 2017

STEVE SCOTT, PE
PROJECT ENGINEER

MATTHEW COPPLE, PE
PROJECT DESIGN ENGINEER

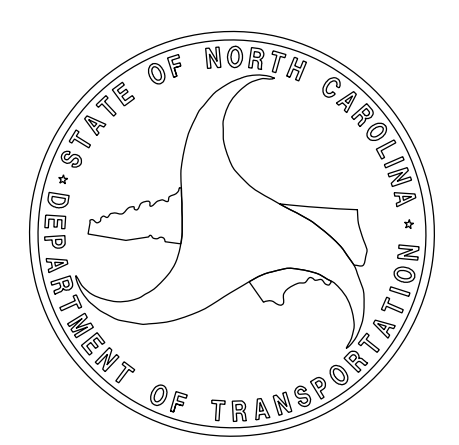
MATT CLARKE, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

DocuSigned by:
Andrew Farrell
SIGNATURE: Andrew Farrell
P.E. 10/4/2017

ROADWAY DESIGN ENGINEER

DocuSigned by:
Matthew Copple
SIGNATURE: Matthew Copple
P.E. 10/4/2017



SEPI
 ENGINEERING &
 CONSTRUCTION

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 License: C-2197

PROJECT REFERENCE NO. <i>W-5704A&B</i>	SHEET NO. <i>1A</i>
ROADWAY DESIGN ENGINEER	

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL PLAN SHEET SYMBOLS
1C-1 THRU 1C-6	SURVEY CONTROL SHEET
2A-1 THRU 2A-2	PAVEMENT SCHEDULE, WEDGING DETAILS, AND TYPICAL SECTIONS
2C-1	SPECIAL CONCRETE DROP INLET
2C-2	SPECIAL TRAFFIC BEARING JUNCTION BOX
2C-3	GUARDRAIL PLACEMENT DETAIL
2C-4 THRU 2C-7	GUARDRAIL INSTALLATION DETAIL
3B-1	SUMMARY OF EARTHWORK, REMOVAL OF ASPHALT PAVEMENT SUMMARY, AND GUARDRAIL SUMMARY
3D-1 THRU 3D-5	DRAINAGE SUMMARIES
4 THRU 10	PLAN SHEETS
11 THRU 14	PROFILE SHEETS
TMP-1 THRU TMP-12	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-10	PAVEMENT MARKING PLANS
EC-1 THRU EC-17	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-10	SIGNING PLANS
SIG-1 THRU SIG-8	SIGNAL PLANS
SCP-1 THRU SCP-3	COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS
X-1	CROSS SECTION SUMMARY
X-2 THRU X-33	CROSS SECTIONS

GENERAL NOTES:

2012 SPECIFICATIONS
 EFFECTIVE: 01-17-2012
 REVISED: 10-31-2014

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 11.

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

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.

UTILITIES:

UTILITY OWNER ON THIS PROJECT IS TOWN OF CLAYTON
 ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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	
200.02	Method of Clearing - Method II
225.01	Guide for Grading Subgrade - Interstate and Freeway
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.22	Frame and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
852.01	Concrete Islands
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-x-x-x-
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	▬
False Sump	▽

RAILROADS:

Standard Gauge	-----
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 Easement 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	-----
New Right of Way Line with Pin and Cap	-----
New Right of Way Line with Concrete or Granite R/W Marker	-----
New Control of Access Line with Concrete C/A Marker	-----
Existing Control of Access	-----
New Control of Access	-----
Existing Easement Line	-----
New Temporary Construction Easement	-----
New Temporary Drainage Easement	-----
New Permanent Drainage Easement	-----
New Permanent Drainage / Utility Easement	-----
New Permanent Utility Easement	-----
New Temporary Utility Easement	-----
New Aerial Utility Easement	-----

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	○
Single Shrub	○

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	-----

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	-----
Paved Ditch Gutter	-----
Storm Sewer Manhole	-----
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊠
Power Transformer	⊠
U/G Power Cable Hand Hole	-----
H-Frame Pole	●
U/G Power Line LOS B (S.U.E.*)	-----
U/G Power Line LOS C (S.U.E.*)	-----
U/G Power Line LOS D (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	-----
U/G Telephone Cable LOS B (S.U.E.*)	-----
U/G Telephone Cable LOS C (S.U.E.*)	-----
U/G Telephone Cable LOS D (S.U.E.*)	-----
U/G Telephone Conduit LOS B (S.U.E.*)	-----
U/G Telephone Conduit LOS C (S.U.E.*)	-----
U/G Telephone Conduit LOS D (S.U.E.*)	-----
U/G Fiber Optics Cable LOS B (S.U.E.*)	-----
U/G Fiber Optics Cable LOS C (S.U.E.*)	-----
U/G Fiber Optics Cable LOS D (S.U.E.*)	-----

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	-----
U/G Water Line LOS C (S.U.E.*)	-----
U/G Water Line LOS D (S.U.E.*)	-----
Above Ground Water Line	-----

TV:

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

GAS:

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

SANITARY SEWER:

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

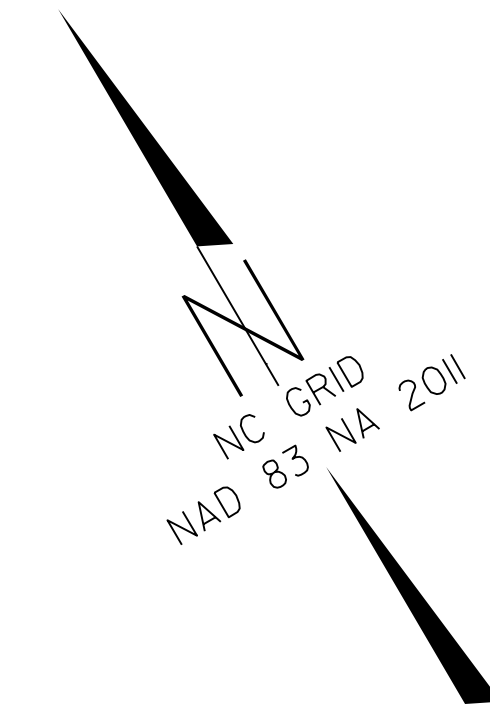
MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	-----
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
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.

PROJECT REFERENCE NO.	SHEET NO.
W-5704A&B	1C-1
Location and Surveys	

SURVEY CONTROL SHEET W-5704A

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



REVISIONS

MATCHLINE SHEET W-5704-B-1C-1

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "W5704A-4"

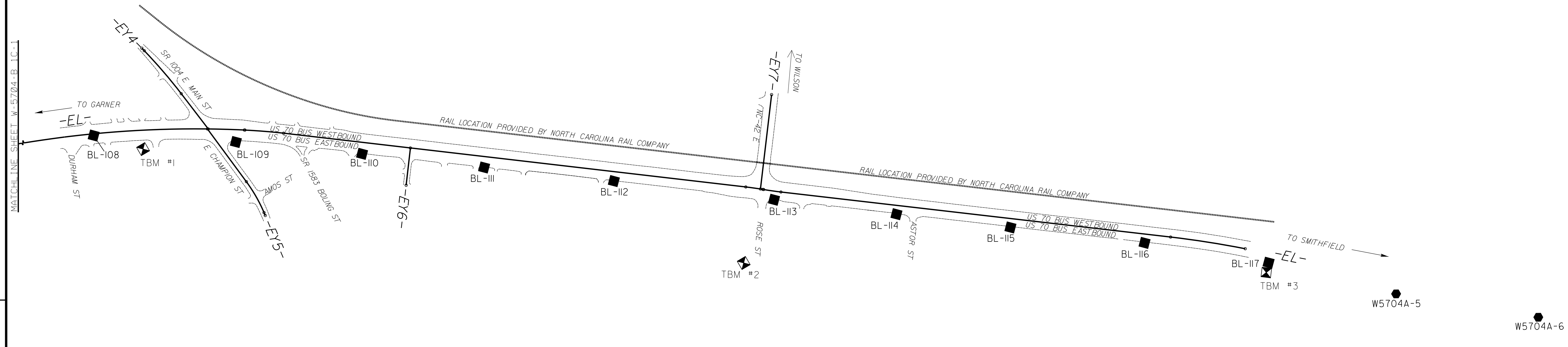
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
 NORTHING: 689572.893(ft) EASTING: 2161708.733(ft)
 ELEVATION: 324.246(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986687

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "W5704A-4" TO -L- 10+00.00 IS
 N 55°01'10.08"W 8.861.81'

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

10/12/2017 10:26:00am N:\Projects\W5704a-1s-1c-1.dgn



- NOTES:**
- IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
 - PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
 - NOTE: DRAWING NOT TO SCALE

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
W-5704A&B	1C-2
Location and Surveys	

PROJECT
SURVEYOR

SURVEY CONTROL SHEET W-5704A

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BASELINE DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION
4		W5704A-4	689572.8930	2161708.7330	324.25
108		BL-108	689345.3695	2162425.3667	328.06
109		BL-109	688880.4293	2163143.1222	320.05
110		BL-110	688436.0423	2163761.2867	322.78
111		BL-111	687995.1264	2164352.9502	325.35
112		BL-112	687530.9813	2164984.2051	321.35
113		BL-113	686948.4216	2165757.9893	330.82
114		BL-114	686501.8839	2166349.1019	322.49
115		BL-115	686087.5397	2166899.7295	325.31
116		BL-116	685600.4581	2167548.3923	316.12
117		BL-117	685121.3838	2168131.3292	311.61
5		W5704A-5	684573.1690	2168698.2740	303.97
6		W5704A-6	684020.4940	2169364.7240	306.11

BENCHMARK DATA

 BM1 ELEVATION = 322.29
 N 689126 E 2162641
 YELLOW BENCH TIE IN 8INTREE-UNKNOW TYPE

 BM2 ELEVATION = 326.86
 N 686713 E 2165409
 YELLOW BENCH TIE IN 27IN PINE

 BM3 ELEVATION = 312.91
 N 685091 E 2168094
 YELLOW BENCH TIE IN 7IN MAPLE

NOTES:

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

REVISIONS

10/12/2017
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 ISS: [unclear]

SURVEY CONTROL SHEET W-5704A

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT
SURVEYOR

ALIGNMENT DATA

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R	DELTA S	Ls	LT	ST
POT	694653.349	2154447.841											
LINE			S 61°02'24.2" E	777.63									
PC	694276.820	2155128.237											
CURVE			S 51°33'23.0" E	1888.08	18°58'02.4"(RT)	01°00'00.0"	1896.73	957.12	5729.58				
PT	693102.915	2156607.023											
LINE			S 42°04'21.8" E	2618.93									
TS	691158.893	2158361.901											
SPIRAL			S 43°09'21.7" E	259.96						03°15'00.0"(LT)	260.00	173.36	86.69
SC	690969.252	2158539.712											
CURVE			S 56°33'55.9" E	893.66	22°29'08.2"(LT)	02°30'00.0"	899.42	455.57	2291.83				
CS	690476.858	2159285.490											
SPIRAL			S 69°58'30.1" E	259.96						03°15'00.0"(LT)	260.00	173.36	86.69
ST	690387.839	2159529.736											
LINE			S 71°03'30.0" E	2341.46									
PC	689627.788	2161744.408											
CURVE			S 69°27'13.0" E	448.07	03°12'34.1"(RT)	00°42'58.3"	448.13	224.12	8000.00				
PT	689470.532	2162163.972											
LINE			S 67°50'55.9" E	0.82									
PC	689470.222	2162164.734											
CURVE			S 62°24'23.8" E	1195.02	10°53'04.3"(RT)	00°54'34.0"	1196.82	600.21	6300.00				
PT	688916.697	2163223.826											
LINE			S 56°57'51.6" E	3.10									
PC	688915.008	2163226.423											
CURVE			S 54°59'56.3" E	233.21	03°55'50.6"(RT)	01°41'06.6"	233.25	116.67	3400.00				
PT	688781.242	2163417.454											
LINE			S 53°02'01.0" E	2795.10									
PC	687100.418	2165650.708											
CURVE			S 51°30'29.5" E	103.82	03°03'03.0"(RT)	02°56'17.7"	103.83	51.93	1950.00				
PT	687035.800	2165731.967											
LINE			S 49°58'58.0" E	4.42									
PC	687032.960	2165735.350											
CURVE			S 51°31'34.1" E	105.04	03°05'12.1"(LT)	02°56'17.7"	105.05	52.54	1950.00				
PT	686967.609	2165817.584											
LINE			S 53°04'10.1" E	2356.54									
PC	685551.691	2167701.319											
CURVE			S 50°48'55.7" E	450.68	04°30'28.8"(RT)	01°00'00.0"	450.80	225.52	5729.58				
PT	685266.939	2168050.652											
LINE			S 48°33'41.3" E	3.25									
POT	685264.789	2168053.088											

EY4

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	689651.553	2162940.262							
LINE			S 13°39'21.3" E	20.66					
PC	689631.482	2162945.138							
CURVE			S 10°24'06.2" E	340.60	06°30'30.3"(RT)	01°54'35.5"	340.78	170.57	3000.00
PT	689296.482	2163006.632							
LINE			S 07°08'51.0" E	266.66					
POT	689031.899	2163039.811							

EY5

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	689034.481	2163035.519							
LINE			S 06°07'22.0" E	393.51					
PC	688643.220	2163077.490							
CURVE			S 00°34'54.0" W	213.65	13°24'32.1"(RT)	06°15'42.6"	214.14	107.56	915.00
PT	688429.583	2163075.322							
LINE			S 07°17'10.1" W	19.04					
POT	688410.696	2163072.907							

EY6

POINT	N	E	BEARING	DIST
POT	688320.079	2164030.186		
LINE			S 36°51'48.0" W	225.32
POT	688139.809	2163895.016		

EY7

POINT	N	E	BEARING	DIST
POT	687500.301	2166064.447		
LINE			S 37°05'17.0" W	570.33
POT	687045.342	2165720.514		

NOTES:

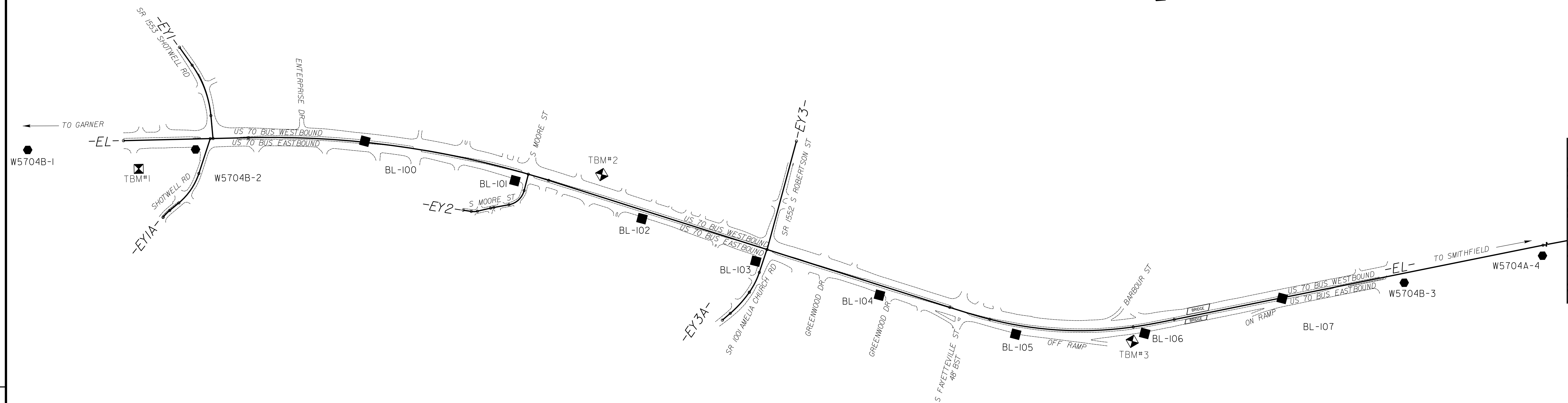
- IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
W-5704A&B	1C-4
Location and Surveys	

SURVEY CONTROL SHEET W-5704B

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "W5704A-4"

WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
 NORTHING: 689572.893(ft) EASTING: 2161708.733(ft)
 ELEVATION: 324.246(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988687

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "W5704A-4" TO -L- 10+00.00 IS
 N 55°01'10.08"W 8,861.81'

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

- NOTES:**
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
 2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
 3. NOTE: DRAWING NOT TO SCALE

6/2/99

10/12/2017 10:26:00 AM N:\Projects\w5704b_1s_1c_1.dgn

MATCH LINE SHEET W-5704A-1C-1

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
W-5704A&B	1C-5
Location and Surveys	

PROJECT
SURVEYOR

SURVEY CONTROL SHEET W-5704B

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BASELINE DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION
1		W5704B-1	694904.6232	2153904.3110	285.57
2		W5704B-2	694379.5330	2154807.5990	288.75
100		BL-100	693891.6345	2155742.4922	273.37
101		BL-101	693207.3621	2156424.6293	263.24
102		BL-102	692603.5960	2156987.6256	263.79
103		BL-103	692017.1447	2157465.0346	262.50
104		BL-104	691445.2714	2158022.7891	263.48
105		BL-105	690807.3685	2158631.1374	270.11
106		BL-106	690405.6063	2159327.1348	282.18
107		BL-107	690161.9456	2160176.0502	282.13
3		W5704B-3	689862.3680	2160880.9750	293.45

BENCHMARK DATA

```

*****
BM1      ELEVATION = 287.12
N 694468      E 2154424
YELLOW BENCH TIE IN 12IN MAPLE
*****
BM2      ELEVATION = 267.63
N 692967      E 2156910
YELLOW BENCH TIE IN 8IN OAK
*****
BM3      ELEVATION = 275.41
N 690403      E 2159235
YELLOW BENCH TIE IN 7IN CHERRY
*****

```

NOTES:

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

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

I:\Projects\2017\Projects\W5704B\1c.dgn
 11/15/2017 10:12:00 AM

PROJECT SURVEYOR

ALIGNMENT DATA

SURVEY CONTROL SHEET W-5704B W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R	DELTA S	Ls	LT	ST
POT	694653.349	2154447.841											
LINE			S 61°02'24.2" E	777.63									
PC	694276.820	2155128.237											
CURVE			S 51°33'23.0" E	1888.08	18°58'02.4"(RT)	01°00'00.0"	1896.73	957.12	5729.58				
PT	693102.915	2156607.023											
LINE			S 42°04'21.8" E	2618.93									
TS	691158.893	2158361.901											
SPIRAL			S 43°09'21.7" E	259.96						03°15'00.0"(LT)	260.00	173.36	86.69
SC	690969.252	2158539.712											
CURVE			S 56°33'55.9" E	893.66	22°29'08.2"(LT)	02°30'00.0"	899.42	455.57	2291.83				
CS	690476.858	2159285.490											
SPIRAL			S 69°58'30.1" E	259.96						03°15'00.0"(LT)	260.00	173.36	86.69
ST	690387.839	2159529.736											
LINE			S 71°03'30.0" E	2341.46									
PC	689627.788	2161744.408											
CURVE			S 69°27'13.0" E	448.07	03°12'34.1"(RT)	00°42'58.3"	448.13	224.12	8000.00				
PT	689470.532	2162163.972											
LINE			S 67°50'55.9" E	0.82									
PC	689470.222	2162164.734											
CURVE			S 62°24'23.8" E	1195.02	10°53'04.3"(RT)	00°54'34.0"	1196.82	600.21	6300.00				
PT	688916.697	2163223.826											
LINE			S 56°57'51.6" E	3.10									
PC	688915.008	2163226.423											
CURVE			S 54°59'56.3" E	233.21	03°55'50.6"(RT)	01°41'06.6"	233.25	116.67	3400.00				
PT	688781.242	2163417.454											
LINE			S 53°02'01.0" E	2795.10									
PC	687100.418	2165650.708											
CURVE			S 51°30'29.5" E	103.82	03°03'03.0"(RT)	02°56'17.7"	103.83	51.93	1950.00				
PT	687035.800	2165731.967											
LINE			S 49°58'58.0" E	4.42									
PC	687032.960	2165735.350											
CURVE			S 51°31'34.1" E	105.04	03°05'12.1"(LT)	02°56'17.7"	105.05	52.54	1950.00				
PT	686967.609	2165817.584											
LINE			S 53°04'10.1" E	2356.54									
PC	685551.691	2167701.319											
CURVE			S 50°48'55.7" E	450.68	04°30'28.8"(RT)	01°00'00.0"	450.80	225.52	5729.58				
PT	685266.939	2168050.652											
LINE			S 48°33'41.3" E	3.25									
POT	685264.789	2168053.088											

EY1 POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	694979.290	2155042.666							
LINE			S 04°56'48.2" E	136.44					
PC	694843.355	2155054.432							
CURVE			S 09°59'43.4" W	335.20	29°53'03.2"(RT)	08°48'53.0"	339.03	173.46	650.00
PT	694513.247	2154996.252							
LINE			S 24°56'15.0" W	143.31					
POT	694383.298	2154935.829							

EY1A POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	694391.674	2154920.694							
LINE			S 48°25'26.0" W	228.61					
PC	694239.963	2154749.674							
CURVE			S 64°29'34.3" W	221.44	32°08'16.6"(RT)	14°19'26.2"	224.37	115.22	400.00
PT	694144.608	2154549.821							
LINE			S 80°33'42.6" W	74.55					
PC	694132.383	2154476.280							
CURVE			S 74°40'33.8" W	57.43	11°46'17.5"(LT)	20°27'46.0"	57.53	28.86	280.00
PT	694117.206	2154420.896							
LINE			S 68°47'25.1" W	2.07					
POT	694116.459	2154418.970							

EY2 POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	693200.016	2156517.315							
LINE			S 44°43'43.0" W	105.16					
PC	693125.303	2156443.306							
CURVE			S 77°20'11.9" W	129.33	65°12'57.8"(RT)	47°44'47.3"	136.59	76.77	120.00
PT	693096.950	2156317.119							
LINE			N 70°03'19.2" W	95.60					
PC	693129.561	2156227.252							
CURVE			N 71°21'11.2" W	20.38	02°35'43.9"(LT)	12°43'56.6"	20.39	10.19	450.00
PT	693136.078	2156207.938							
LINE			N 72°39'03.1" W	84.76					
PC	693161.355	2156127.030							
CURVE			N 61°40'28.7" W	38.08	21°57'08.7"(RT)	57°17'44.8"	38.31	19.39	100.00
PT	693179.423	2156093.509							
LINE			N 50°41'54.4" W	51.21					
POT	693211.862	2156053.878							

EY3 POINT	N	E	BEARING	DIST
POT	692426.389	2157951.334		
LINE			S 45°27'35.0" W	545.06
POT	692044.079	2157562.839		

EY3A POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	692045.232	2157561.798							
LINE			S 48°36'40.0" W	150.34					
PC	691945.836	2157449.011							
CURVE			S 56°57'55.1" W	138.03	16°42'30.2"(RT)	12°03'44.2"	138.52	69.75	475.00
PT	691870.590	2157333.297							
LINE			S 65°19'10.2" W	0.39					
PC	691870.426	2157332.940							
CURVE			S 72°25'30.2" W	176.89	14°12'40.0"(RT)	08°00'48.2"	177.34	89.13	715.00
PT	691817.014	2157164.309							
LINE			S 79°31'50.2" W	65.07					
POT	691805.191	2157100.323							

NOTES:

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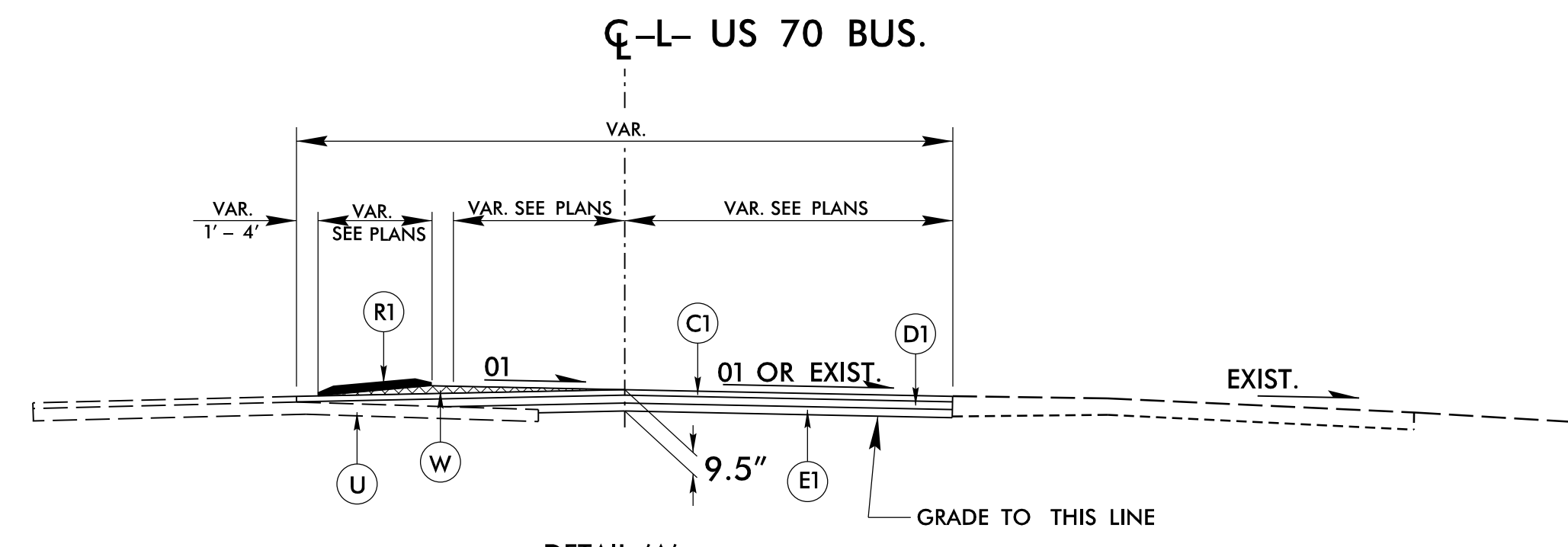
NOTE: ALL EXISTING PAVEMENT TO BE OVERLAYED
 WILL BE PLACED ON PREVIOUSLY MILLED PAVEMENT

PROJECT REFERENCE NO. W-5704A&B	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER 10/4/2017 NORTH CAROLINA PROFESSIONAL SEAL 27771 MATTHEW B. COPPLE	PAVEMENT DESIGN ENGINEER 10/5/2017 NORTH CAROLINA PROFESSIONAL SEAL 40257 MATTHEW CLARKE

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

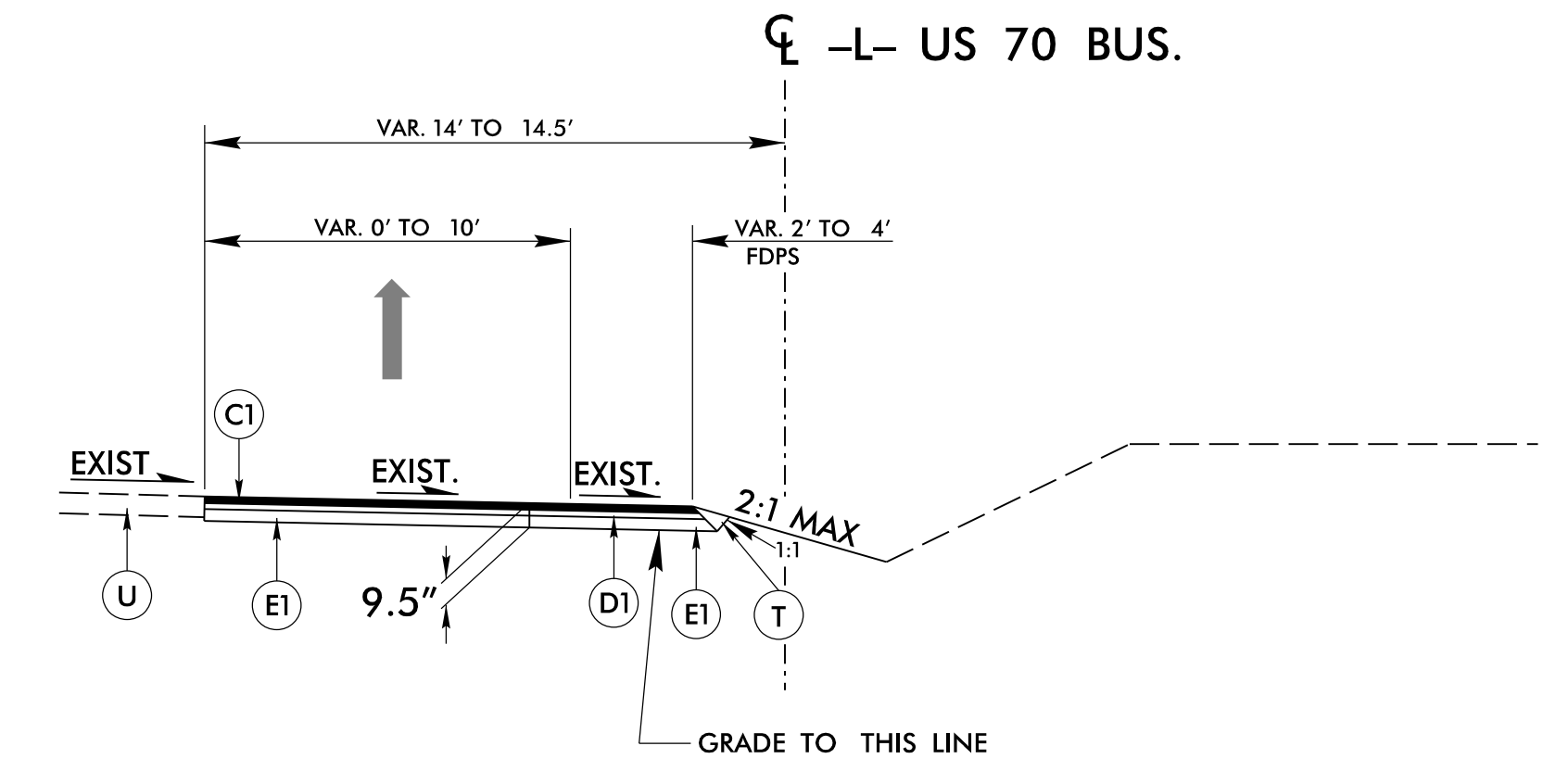
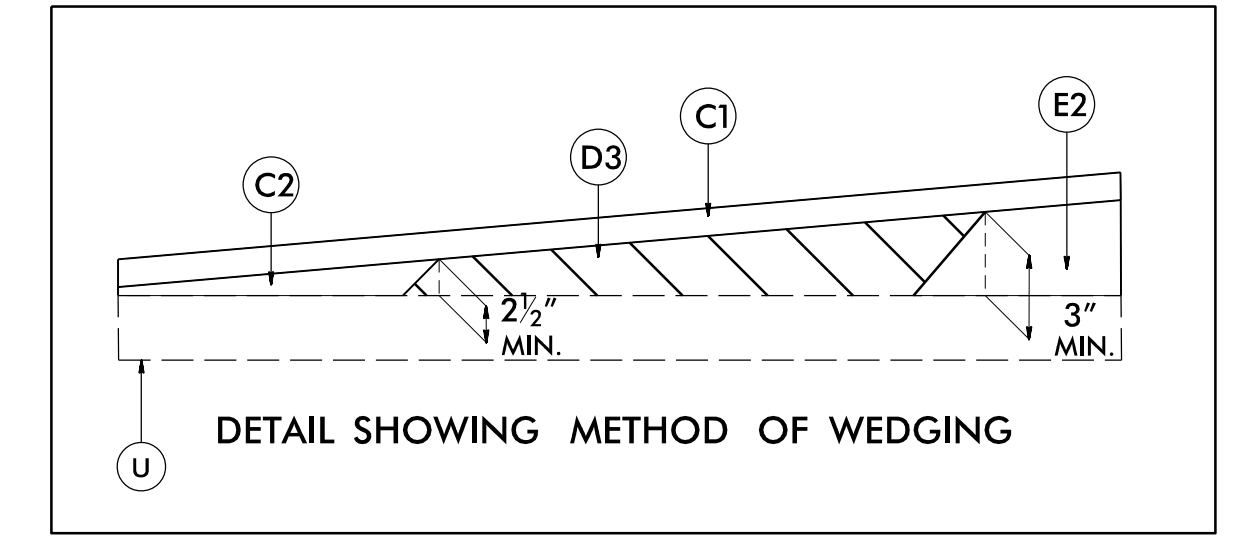
SEPI
 ENGINEERING & CONSTRUCTION

1025 Wade Avenue
 Raleigh, NC 27605
 Tel: 919-789-9977
 Fax: 919-789-9591
 License: C-2197



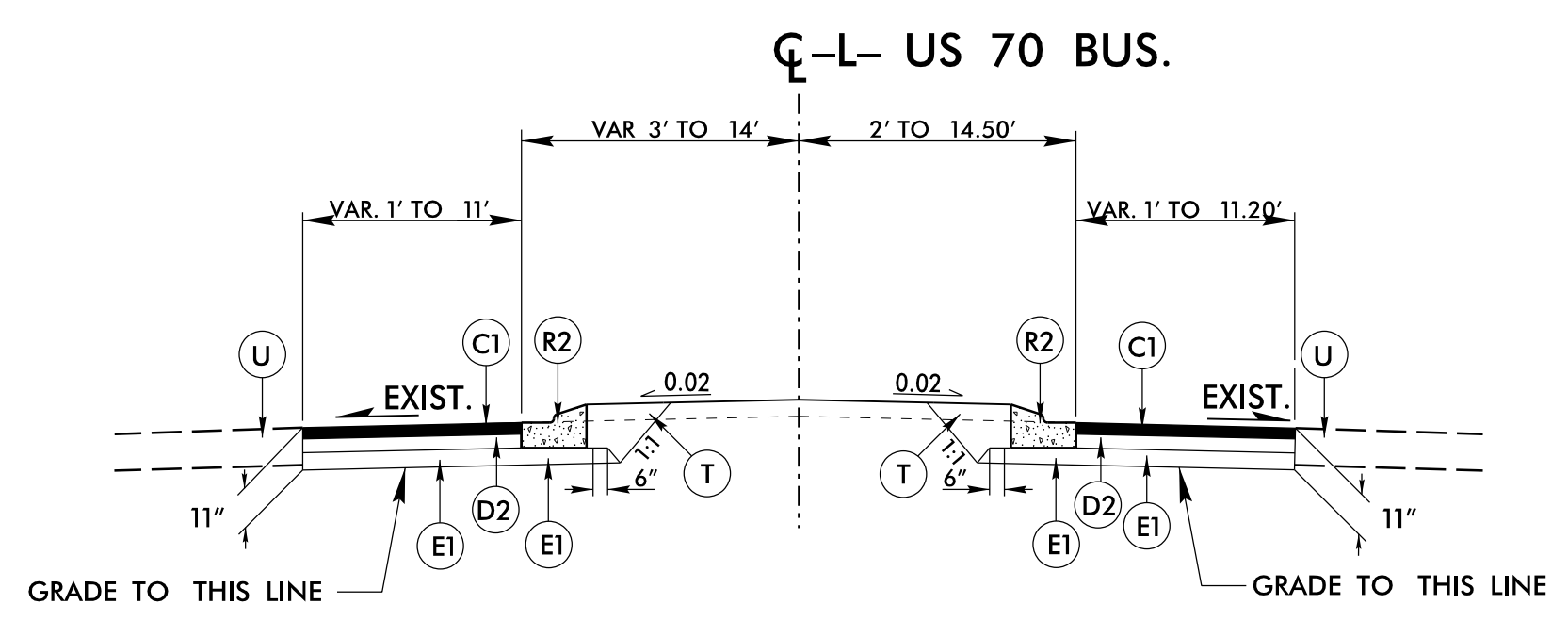
DETAIL 'A'
 MEDIAN DETAIL REVERSE FOR WESTBOUND TURN LANE

-L- STA. 16+17.92 TO 19+62.79	-L- STA. 133+60.00 TO 139+42.03
-L- STA. 25+74.02 TO 31+07.17	-L- STA. 157+12.00 TO 158+34.00
-L- STA. 61+53.54 TO 65+79.40	-L- STA. 167+31.00 TO 169+74.00



DETAIL 'B'
 MEDIAN WIDENING

-L- STA. 19+62.79 TO 20+97.82	-L- STA. 65+79.40 TO 67+34.00
-L- STA. 24+23.24 TO 25+74.02	-L- STA. 158+34.00 TO 161+08.00
-L- STA. 31+07.17 TO 32+31.00	-L- STA. 164+06.68 TO 167+31.00
-L- STA. 54+00.00 TO 60+73.81 (MED. LT)	-L- STA. 169+74.00 TO 172+50.00
-L- STA. 60+20.00 TO 61+53.54 (MED RT)	

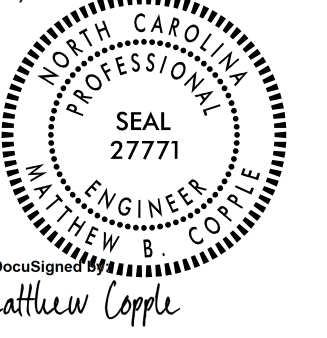
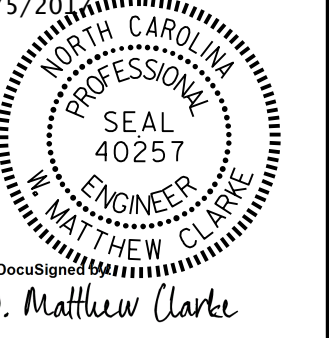


DETAIL 'C'
 DETAIL FOR PLACEMENT OF 1'-6" CURB
 ADJACENT TO EXISTING PAVEMENT

-L- STA. 122+68.06 TO 133+60.00 RT.
-L- STA. 123+64.65 TO 133+60.00 LT.

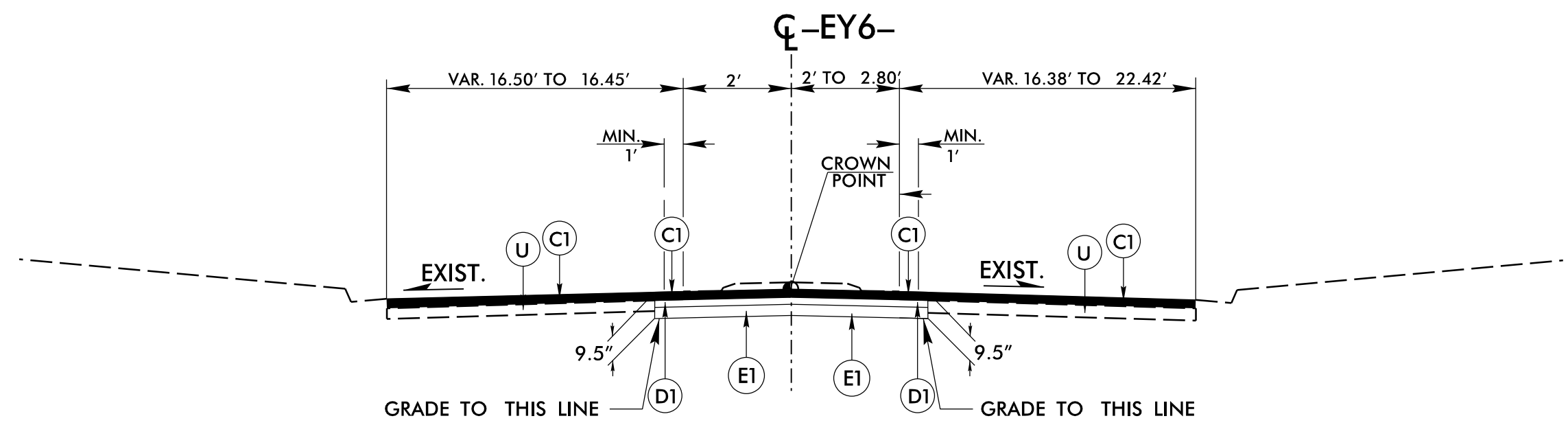
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.5" OR GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" OR GREATER THEN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5 1/2" IN DEPTH.
R1	PROP. 5" MONOLITHIC CONCRETE ISLAND (KEYED IN)
R2	PROP. 1'-6" CONCRETE CURB & GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

PROJECT REFERENCE NO. W-5704A&B	SHEET NO. 2A-2
ROADWAY DESIGN ENGINEER 10/4/2017 Matthew Coppe	PAVEMENT DESIGN ENGINEER 10/5/2017 W. Matthew Clarke
	

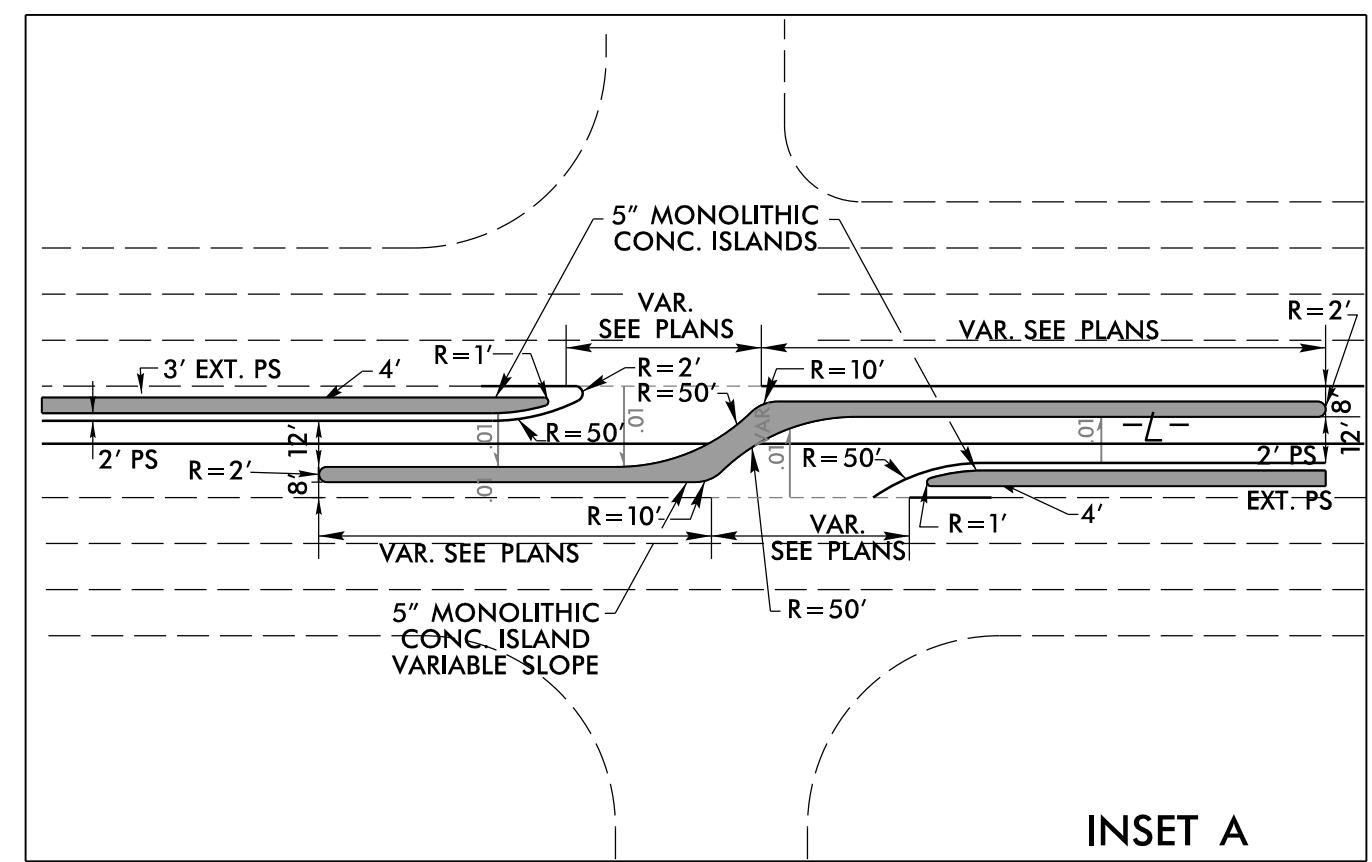
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

PAVEMENT SCHEDULE	
C1	3" S9.5C
D1	2.5" I19.0C
E1	4" B25.0C
U	EXISTING PAVEMENT

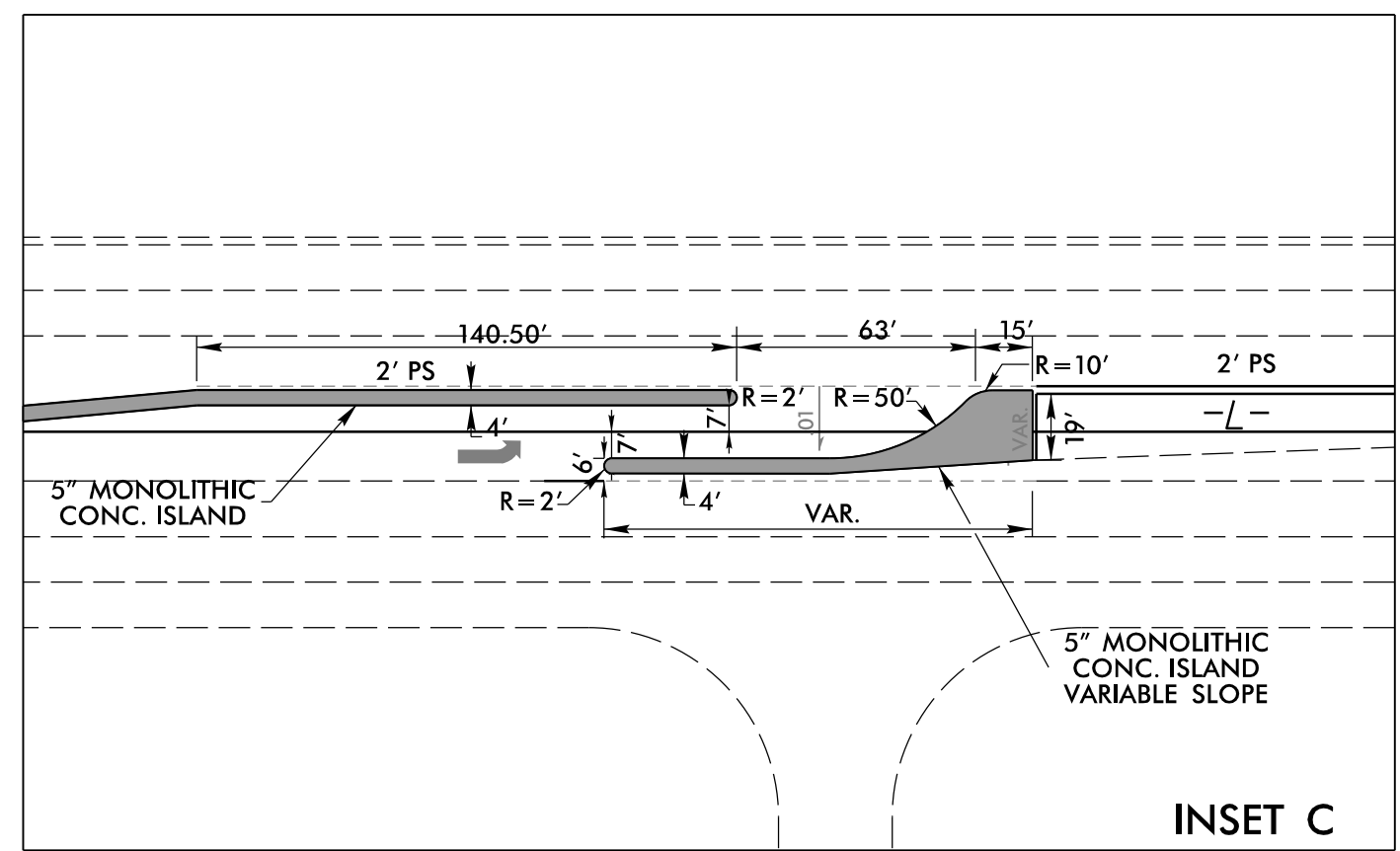


DETAIL 'D'
-EY6- STA. 10+96.29 TO 12+08.91

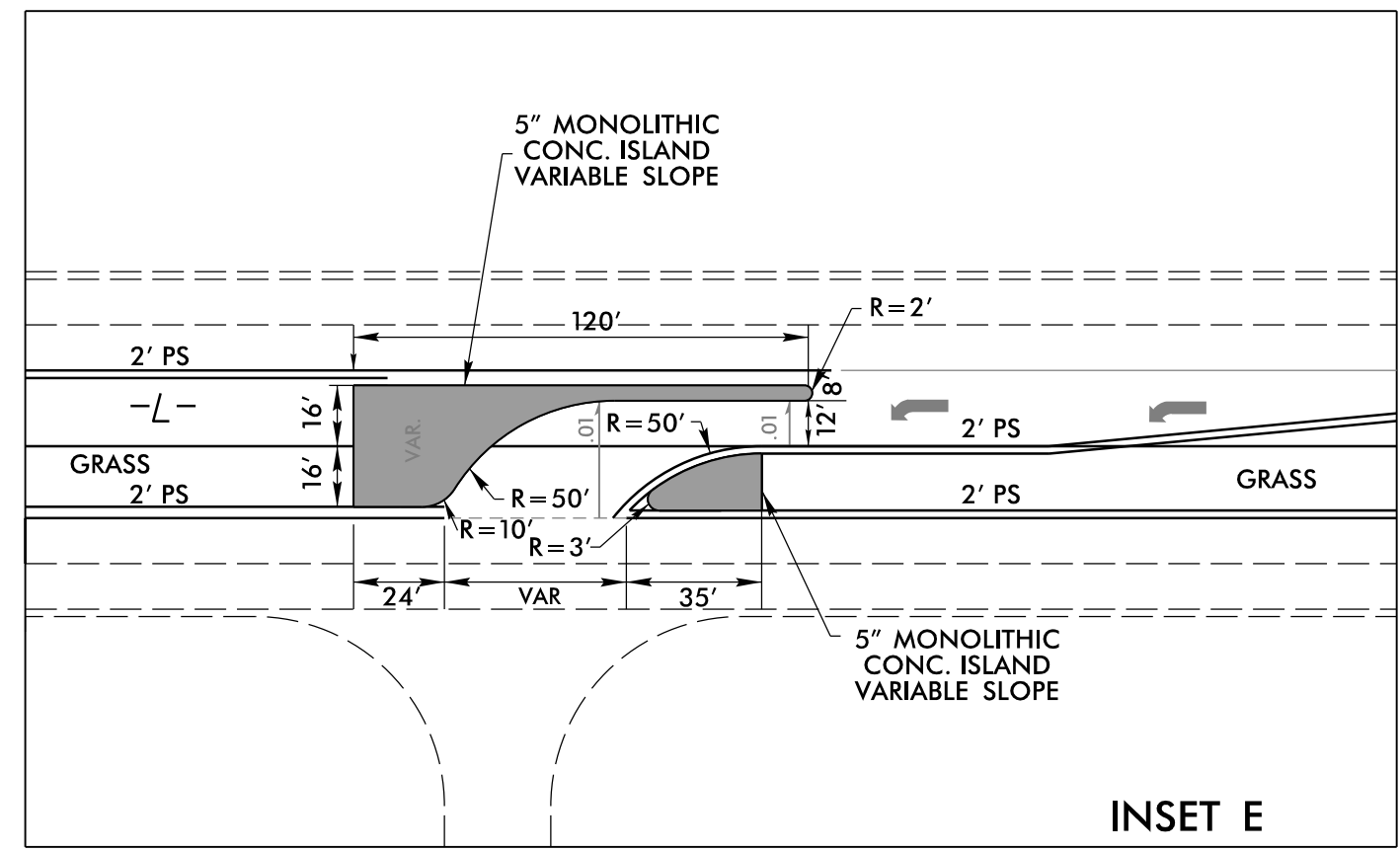
CHANNELIZATION DETAILS



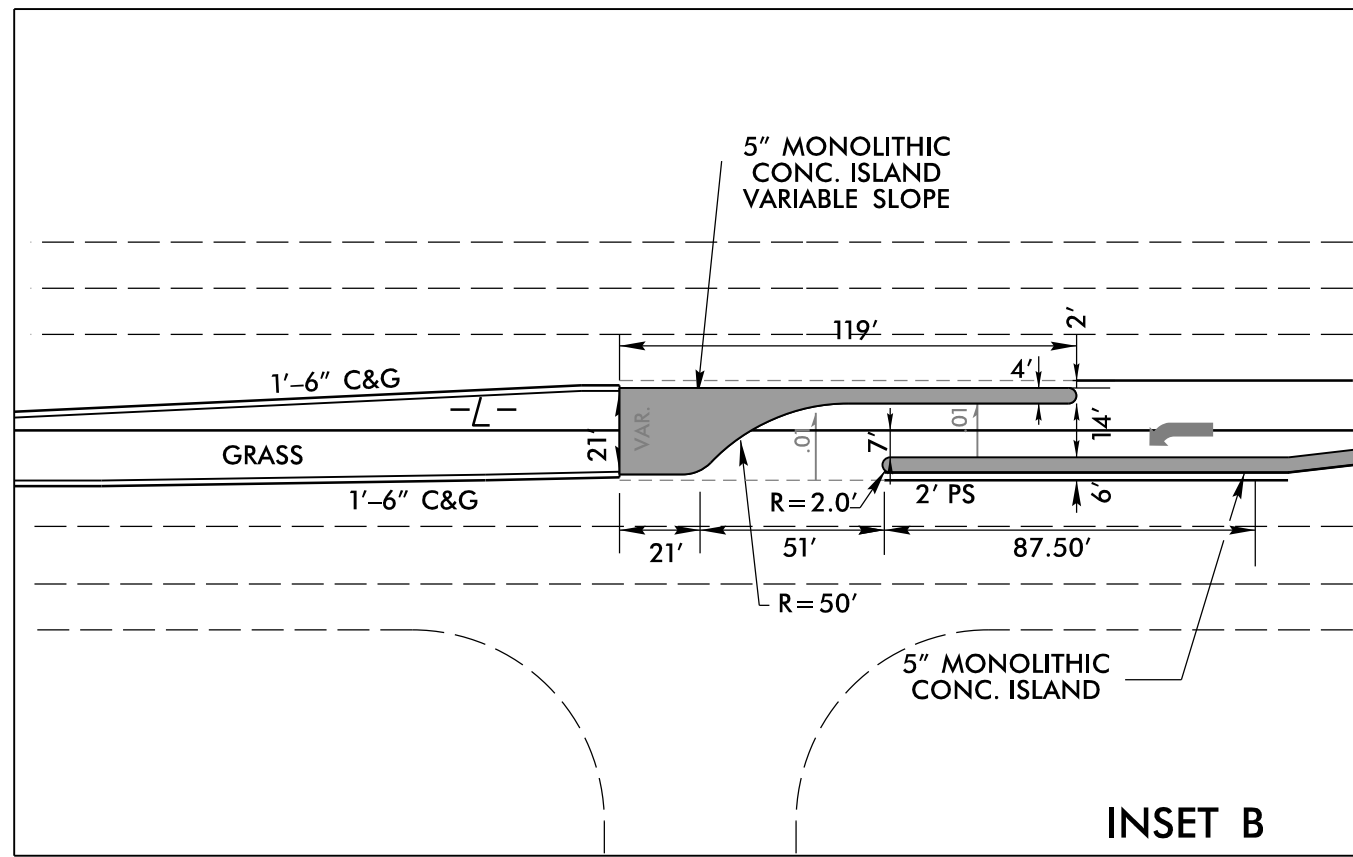
USE INSET A WITH DETAIL A:
-L- STA. 28+32.00 MEDIAN
-L- STA. 63+70.00 MEDIAN



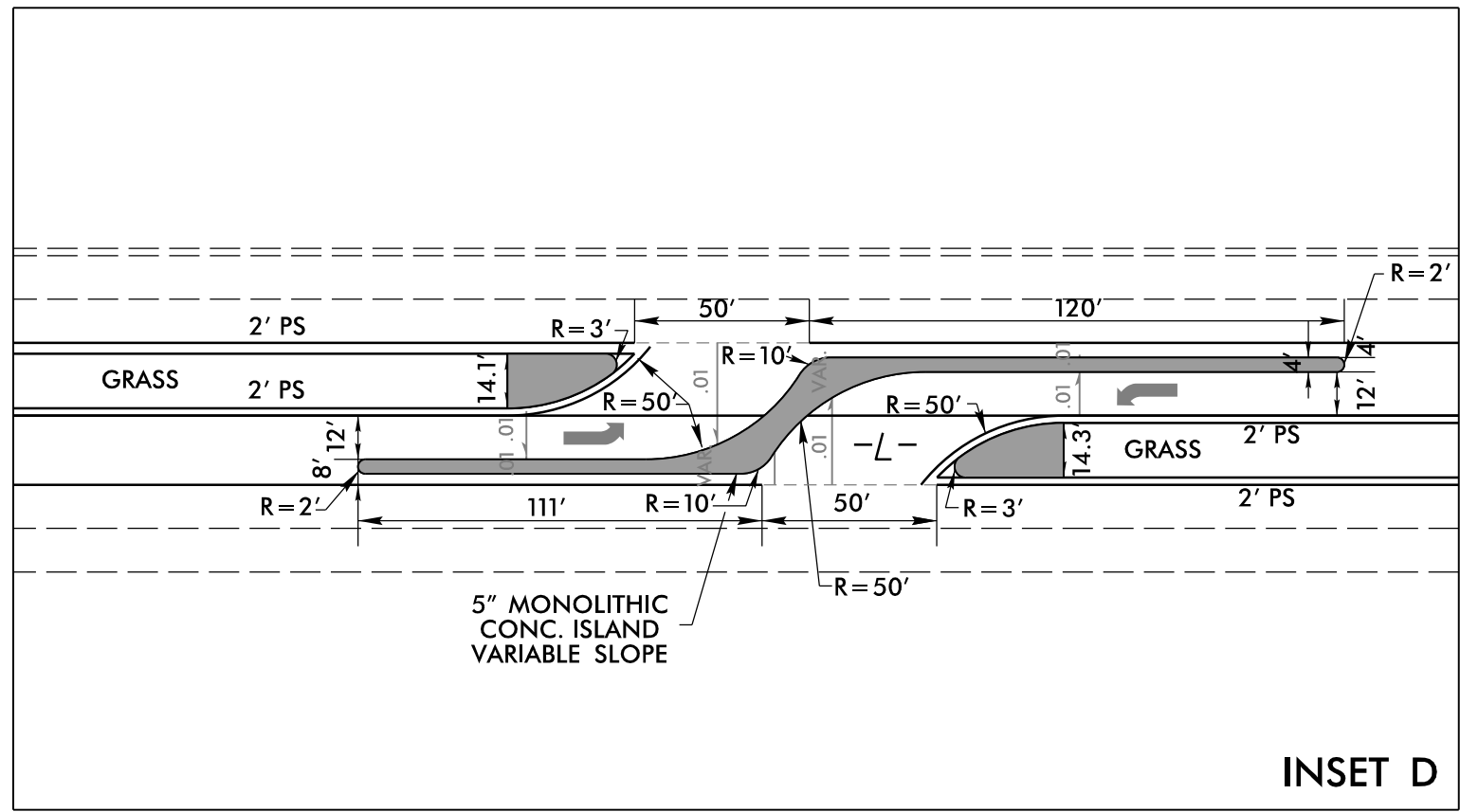
USE INSET C WITH DETAIL A:
-L- STA. 138+90.00 MEDIAN



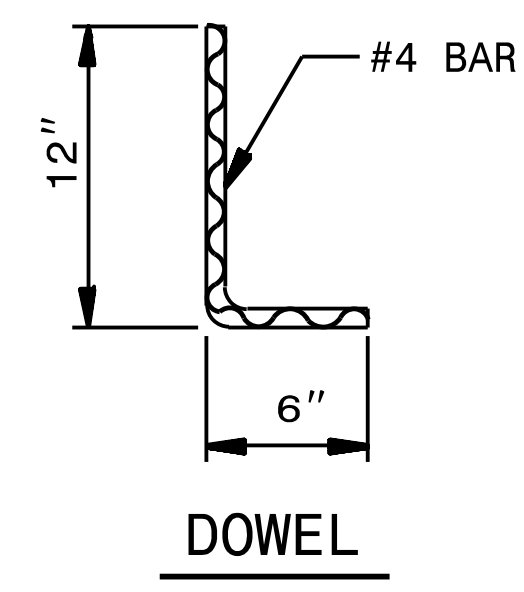
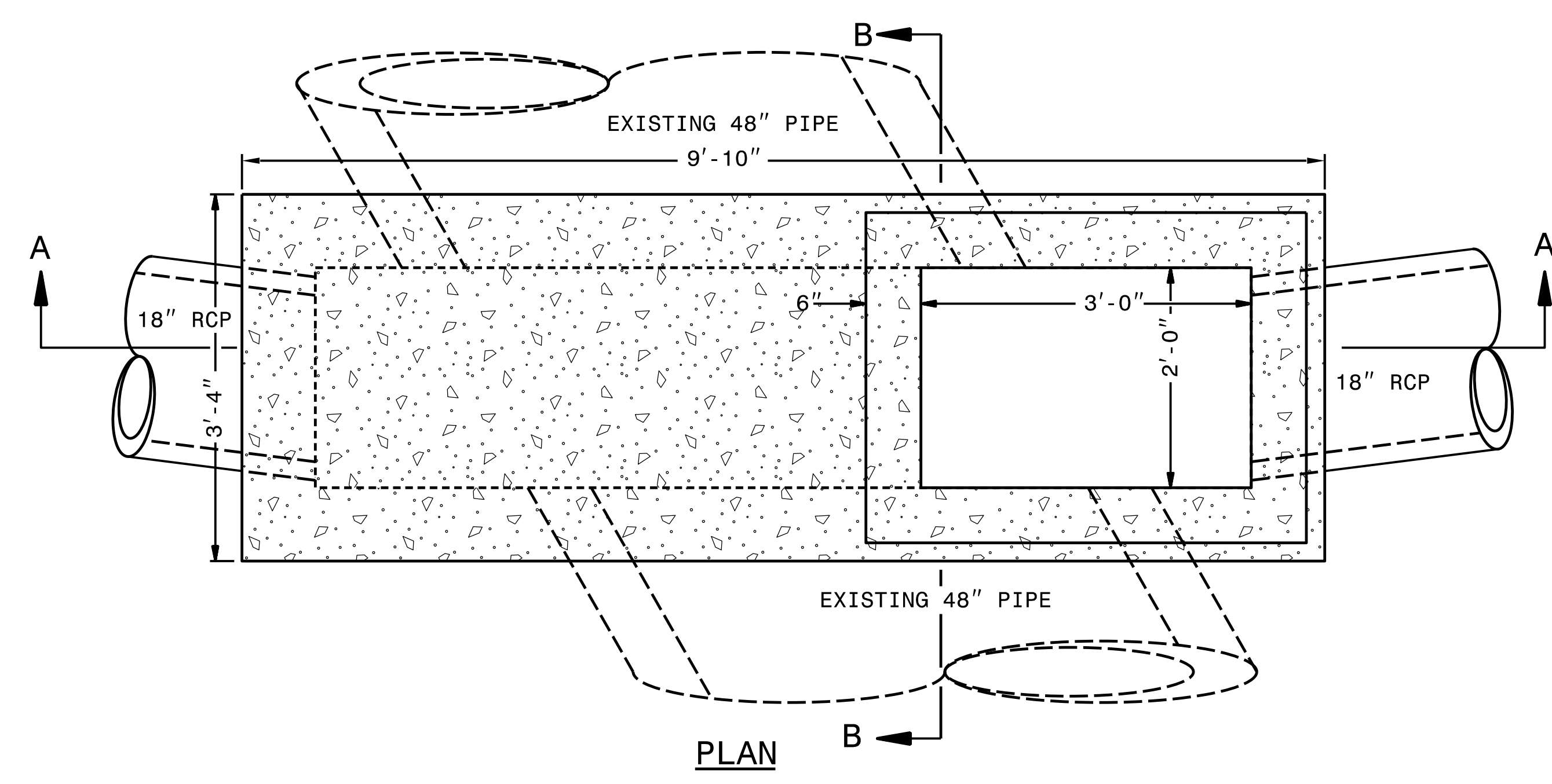
USE INSET E WITH DETAIL A:
-L- STA. 157+75.00 MEDIAN



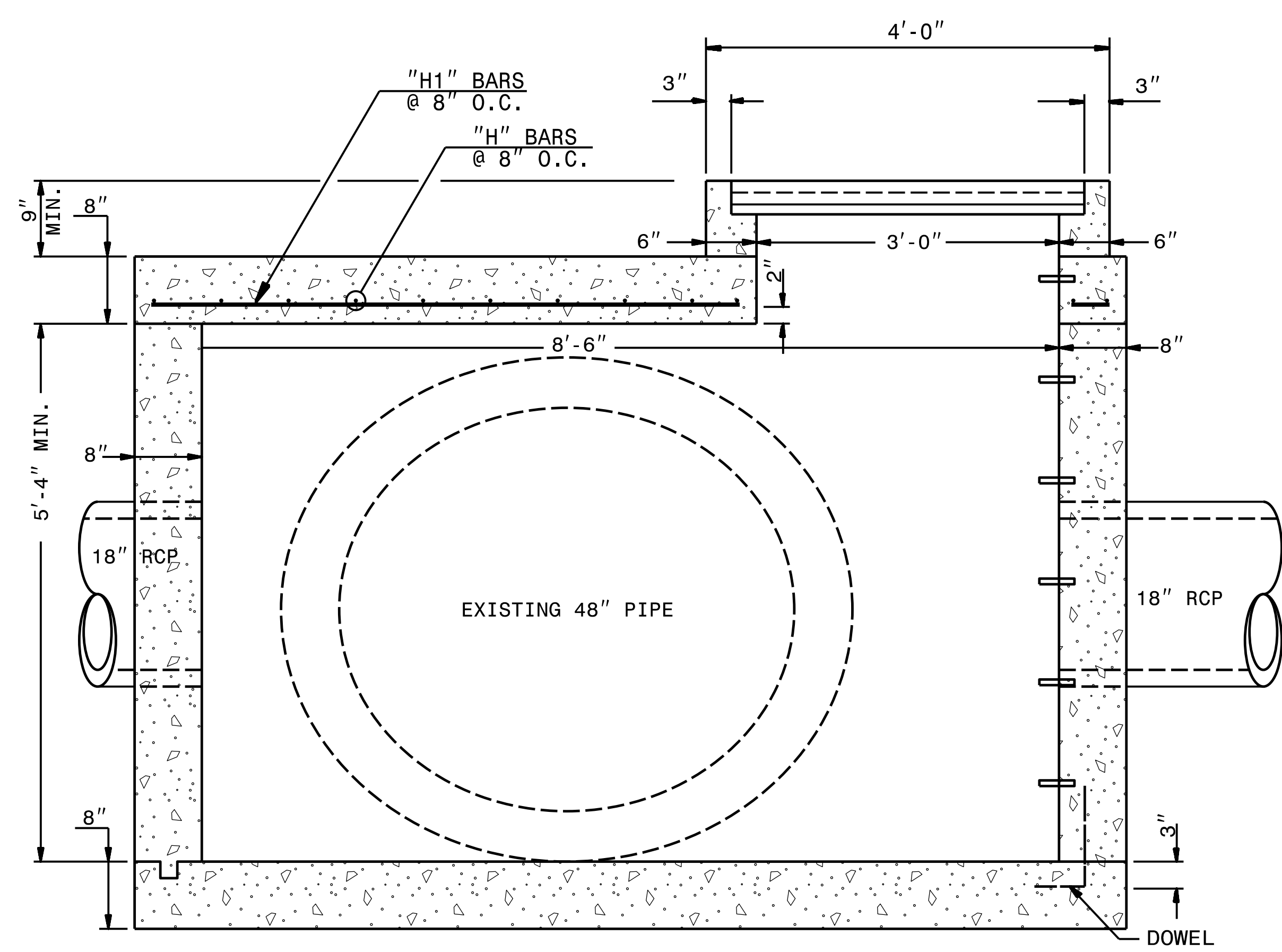
USE INSET B WITH DETAIL A:
-L- STA. 134+00.00 MEDIAN



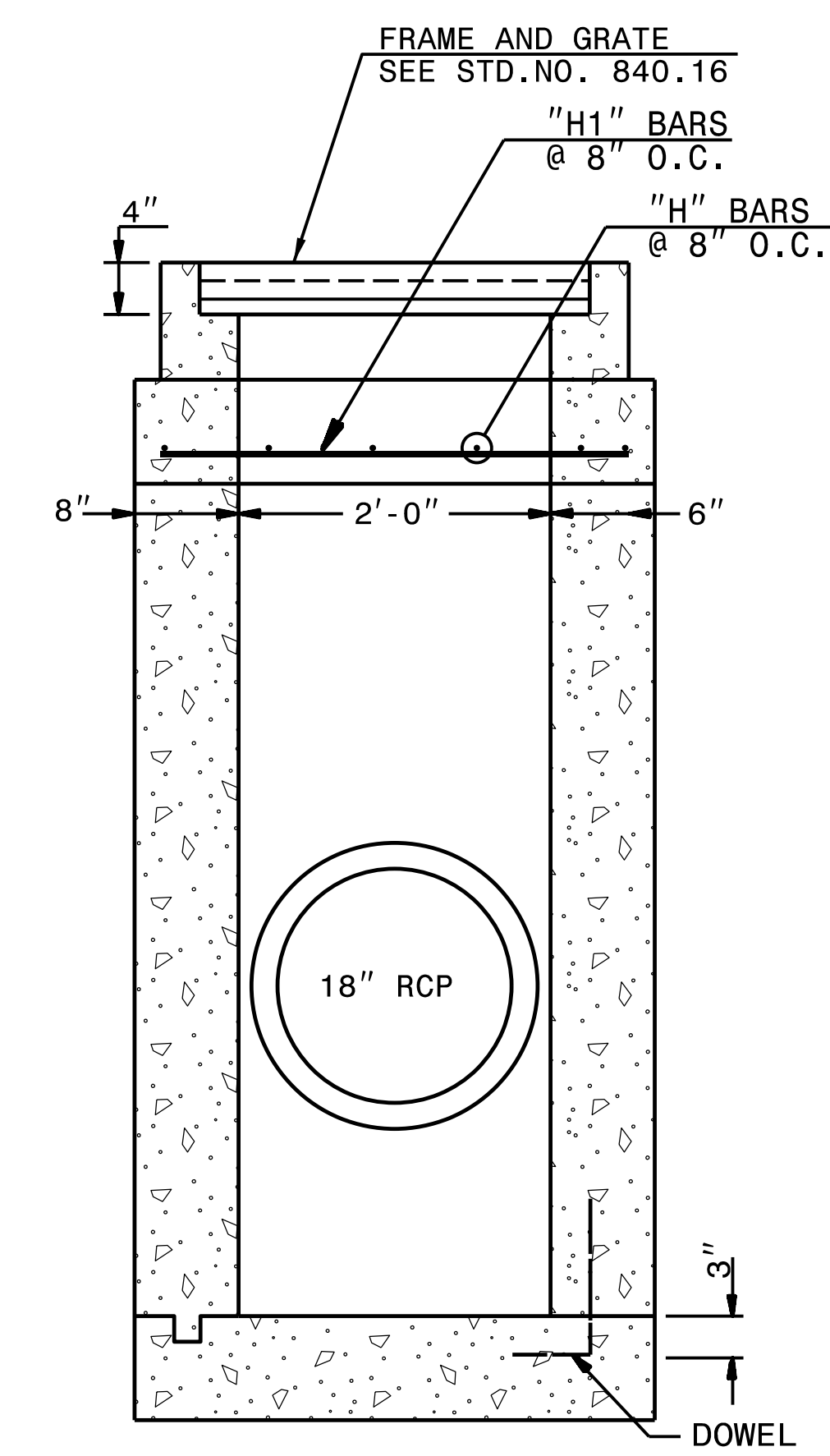
USE INSET D WITH DETAIL A:
-L- STA. 168+50.00 MEDIAN



GENERAL NOTES:
 CLASS "B" CONCRETE TO BE USED THROUGHOUT
 PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH 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" CENTER, AS DIRECTED BY ENGINEER.
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
 IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD 840.00.
 SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.
 INSTALL 2" WEEP HOLES AS DIRECTED BY THE ENGINEER.
 INSTALL STONE DRAINS, OF A MINIMUM 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.
 CHAMFER ALL EXPOSED CORNERS 1"
 DRAWING NOT TO SCALE.



SIDE ELEVATION
SECTION A-A



END ELEVATION
SECTION B-B

BILL OF MATERIAL				
BAR	NO.	SIZE	LENGTH	WEIGHT
H	10	#4	3'-0"	8
H1	6	#4	9'-6"	38
TOTAL REINF. STEEL (lbs.)				46
CLASS "B" CONC. (cu. yds.)				4.8

QUANTITIES ARE BASED ON MINIMUMS. NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES.



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

CONCRETE DROP INLET

ORIGINAL BY: K.A. KEMPF DATE: 9-17
 MODIFIED BY: DATE:
 CHECKED BY: DATE:
 FILE SPEC.: kkempf\english\840d14 48rcp sk.dgn

\$\$\$SYTIME\$\$\$\$\$
 \$\$\$CUTS\$\$\$\$\$
 \$\$\$PUSERNAME\$\$\$

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

ENGLISH DETAIL DRAWING FOR
PRECAST MANHOLE 7', 8' AND 9' DIAMETER

SHEET 1 OF 1
840D52

GENERAL NOTES

USE 4000 PSI MINIMUM COMPRESSIVE STRENGTH CONCRETE.

DESIGN, FABRICATE AND ASSEMBLE PRECAST MANHOLE COMPONENTS IN ACCORDANCE WITH AASHTO M199.

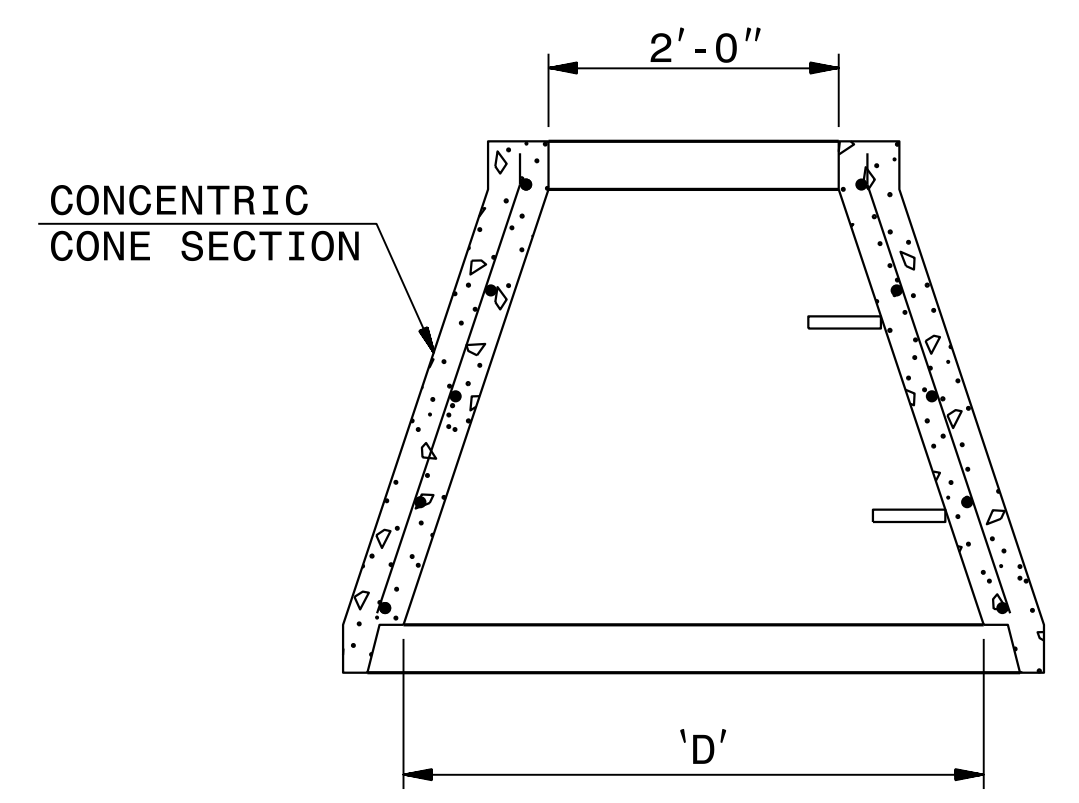
ASSEMBLE RISER AND GRADE RINGS WITH STEPS SPACED 16" FROM THE TOP TO THE BOTTOM OF THE MANHOLE.

WHERE THE MANHOLE IS EXPOSED TO ROAD TRAFFIC, THE TOP OF THE MANHOLE IS TO BE FLUSH WITH THE GROUND. AT OTHER LOCATIONS IT SHOULD BE A MINIMUM OF 9" ABOVE THE GROUND.

DEPTH OF FILL LIMITED TO 30'-0" FROM FINSH GRADE TO TOP OF BOTTOM SLAB.

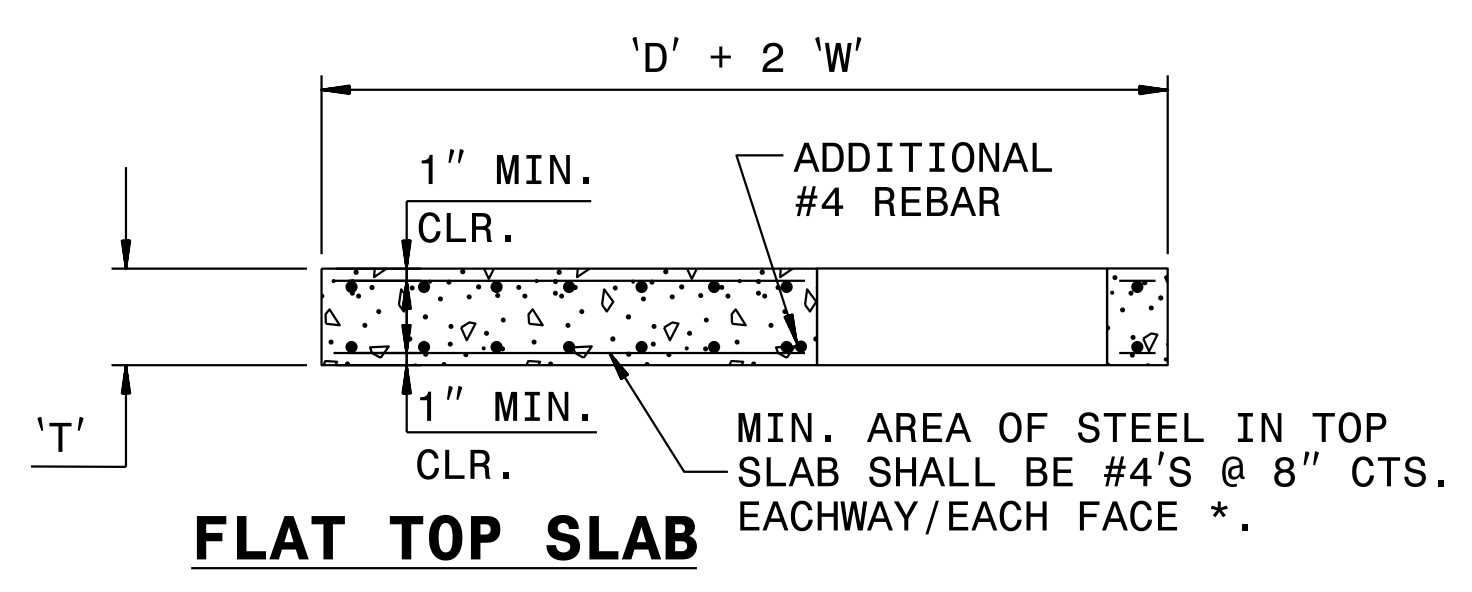
THE MIN. SLAB THICKNESS 'T' SHALL BE THE DIMENSION OF THE THINNEST PORTION OF THE TOP/BOTTOM SLAB.

* TOP MAT OF REINFORCEMENT MAY BE NEGLECTED IF TOP SLAB HAS A DISTINGUISHABLE TOP AND BOTTOM.



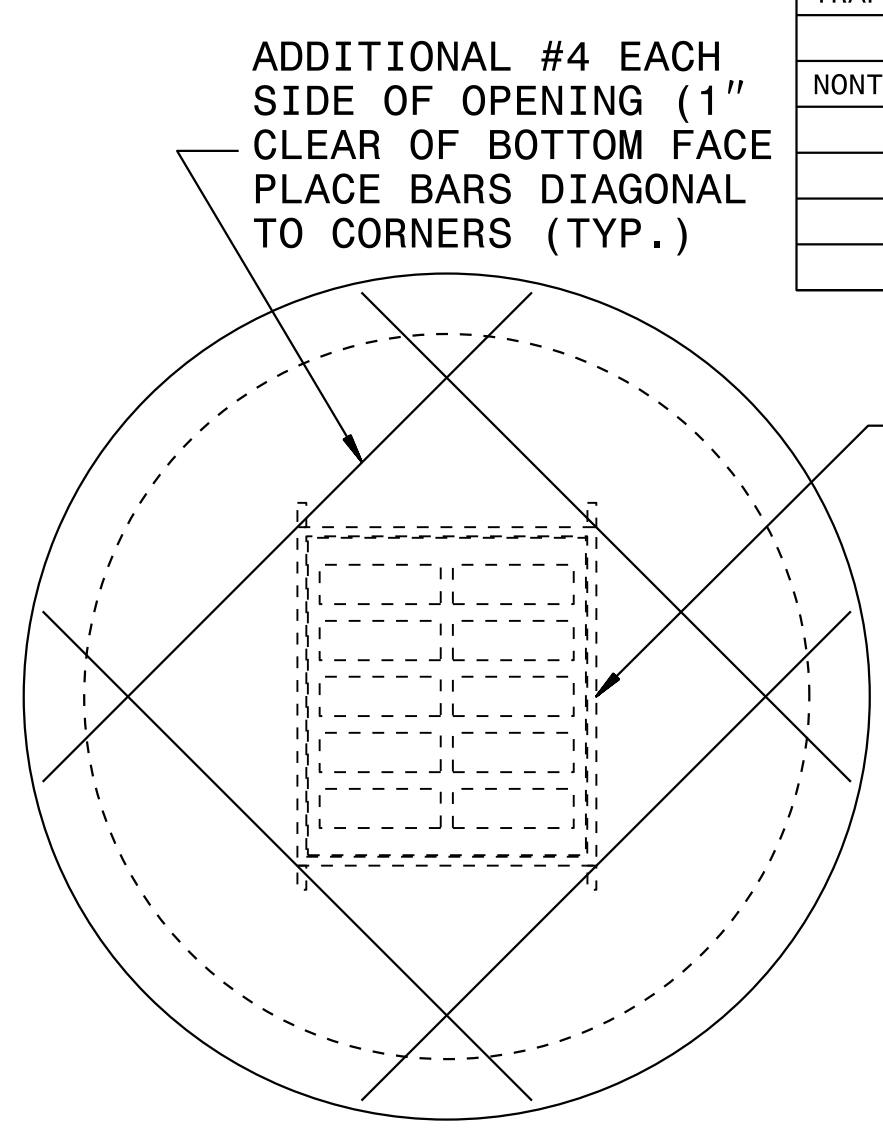
ALTERNATE CONE SECTION

D	W	T	As
INTERNAL DIAMETER (FT.)	MIN. WALL THICKNESS (IN.)	MIN. TOP/BOTTOM SLAB THICKNESS (IN.)	MIN. CIRCUMFERENTIAL AREA OF STEEL PER VERTICAL FT. (SQ. IN.)
7	8.0	8	0.21
8	8.5	8	0.24
9	9.0	9	0.27

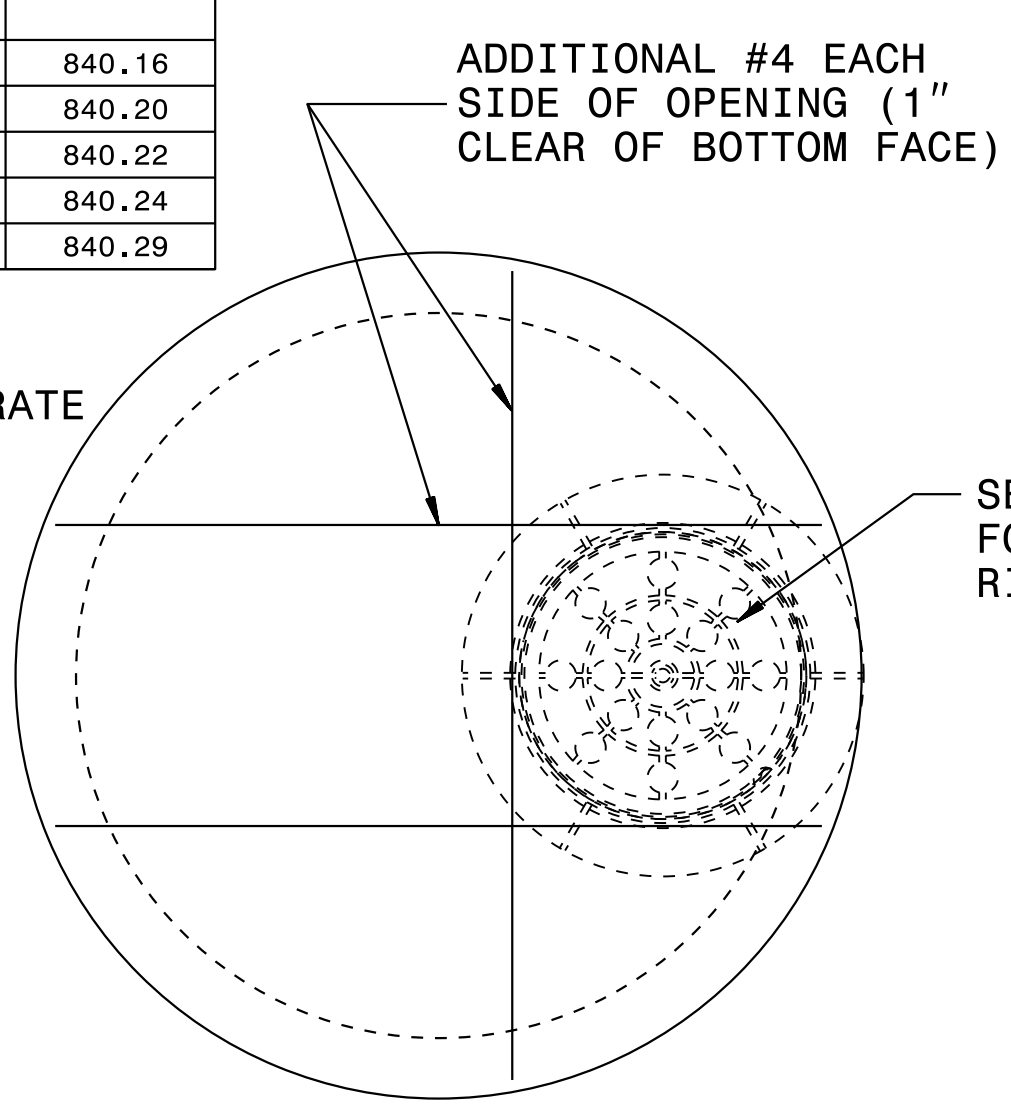


FLAT TOP SLAB

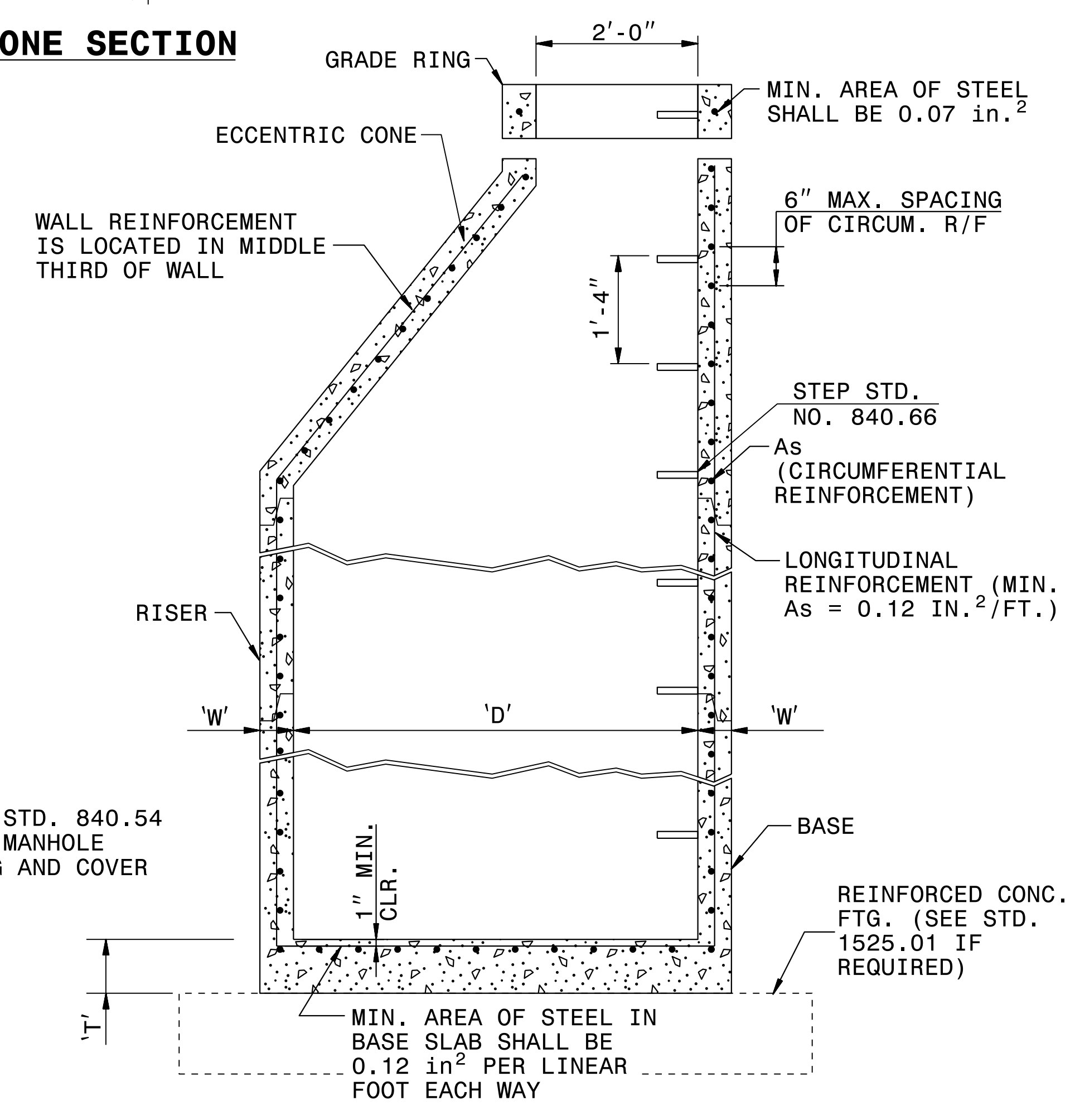
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TRAFFIC BEARING	840.37
NONTRAFFIC BEARING:	
	840.16
	840.20
	840.22
	840.24
	840.29



GRATED INLET OPTION



MANHOLE OPTION



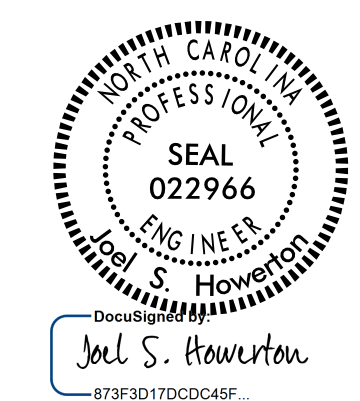
TYPICAL MANHOLE SECTION

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

ENGLISH DETAIL DRAWING FOR
PRECAST MANHOLE 7', 8' AND 9' DIAMETER

SHEET OF
840D52

05-OCT-2017 08:17
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10/5/2017

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: T.S. Spell	DATE: 7-17-00
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: ds174:usr/details/stand/840d52_8&9.dgn	

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

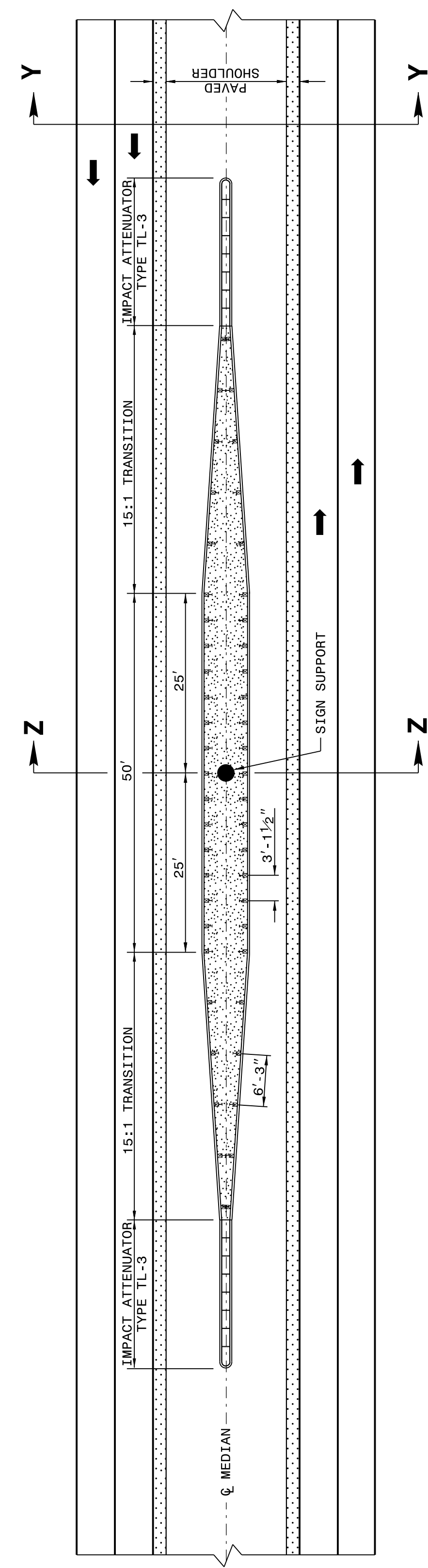
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 2 OF 11
862D01

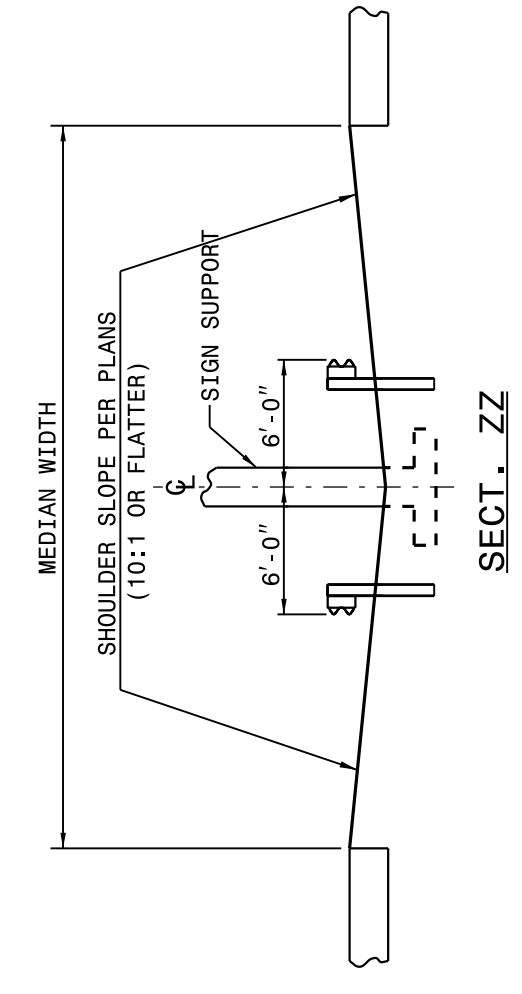
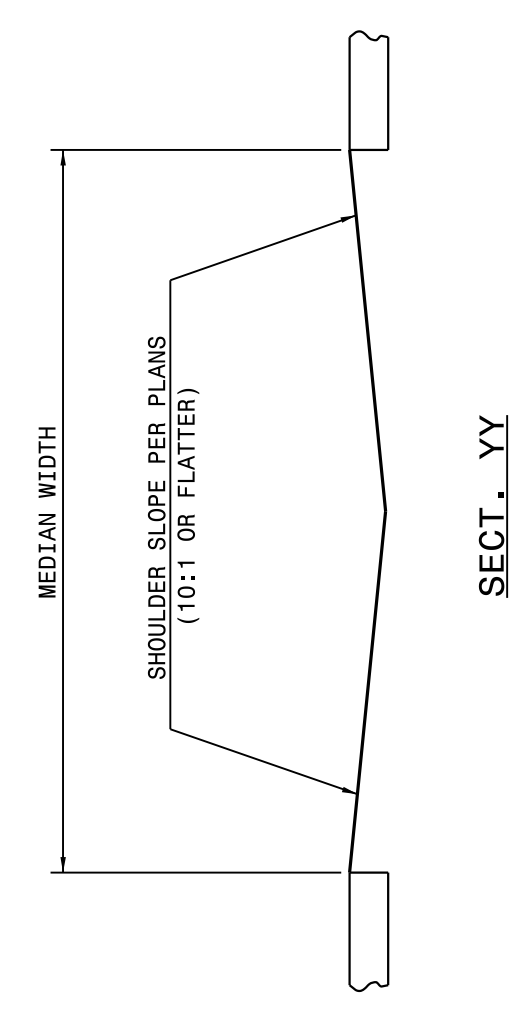
STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 2 OF 11
862D01



NOTE SPECIAL LAYER OF PAVEMENT
 USE 3'-1 1/2" 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 (STANDARD 862D01 SHEET 1 OF 12).

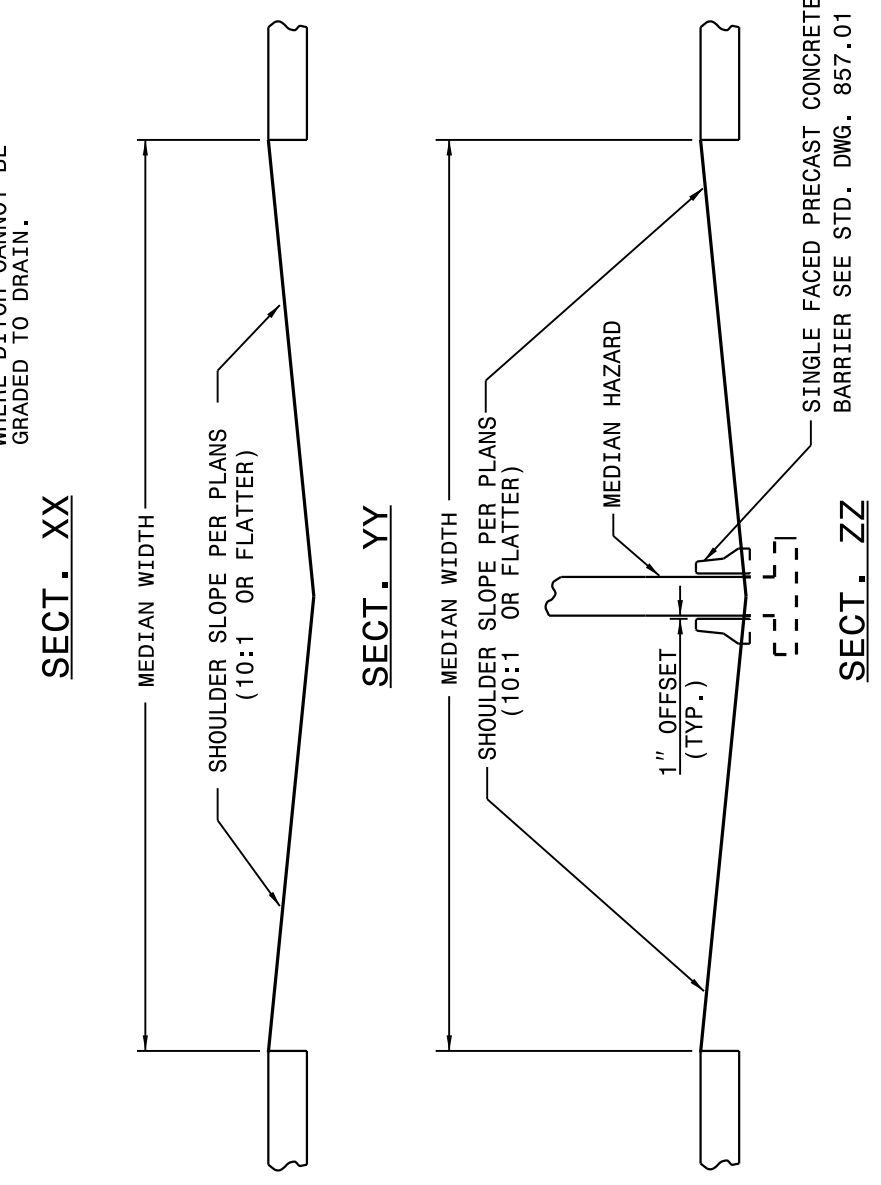
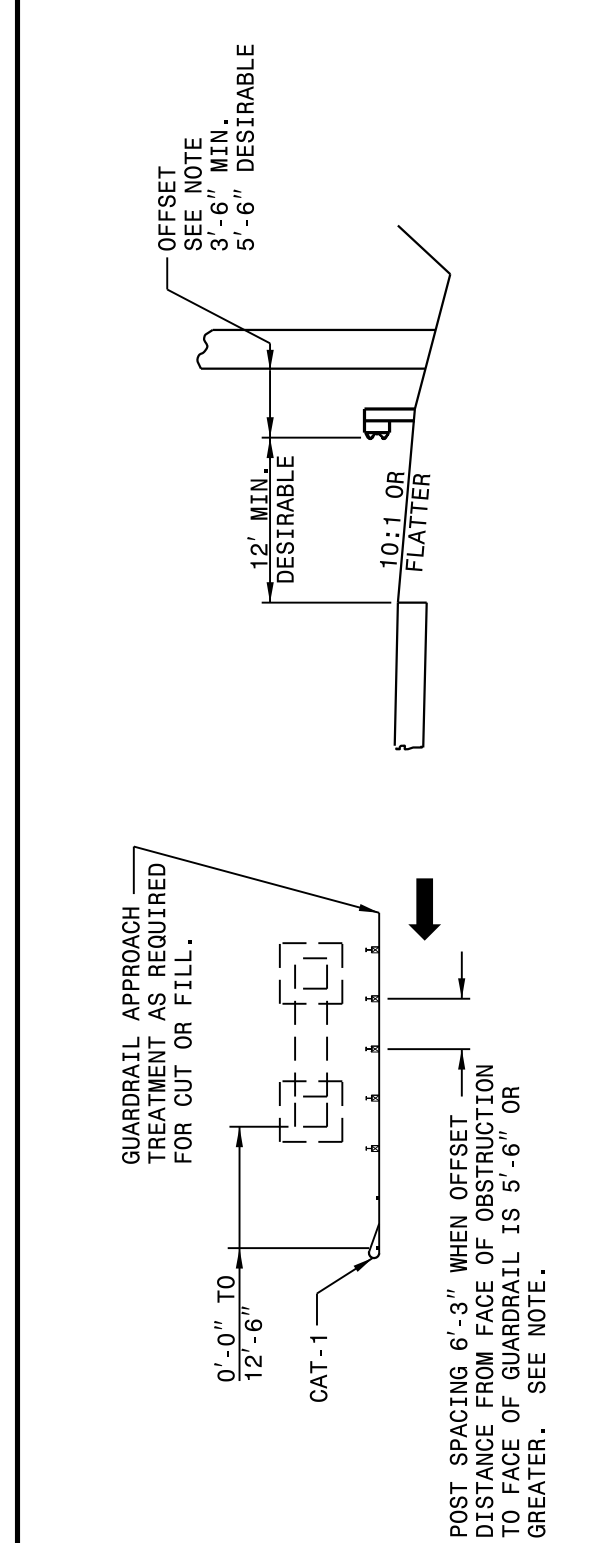
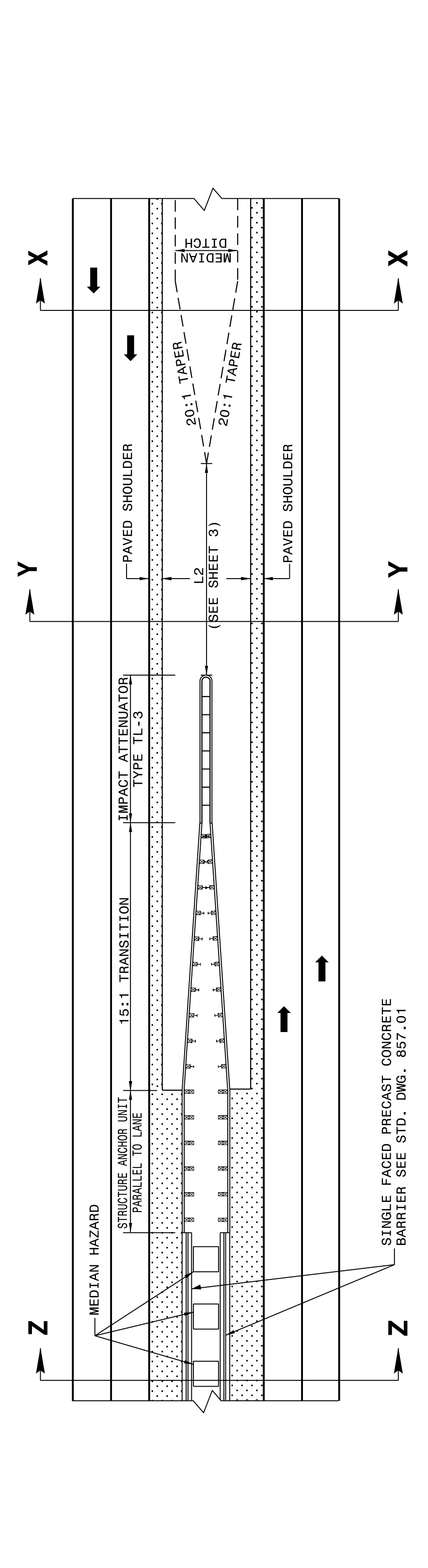


DETAIL OF GUARDRAIL AT MEDIAN SIGN SUPPORT

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

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 3'-1 1/2" POST SPACING AT A POINT 25' BEFORE REACHING THE OBSTRUCTION AND CARRY THROUGHOUT ITS LENGTH. IF THE OFFSET IS LESS THAN 3'-6" USE CONCRETE BARRIER.

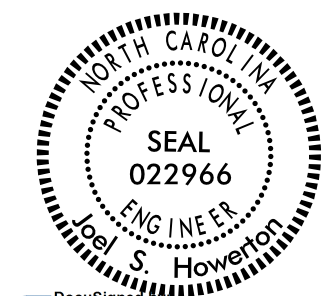
DETAIL OF RIGHT SIDE GUARDRAIL AT UNDERPASS

DETAIL OF MEDIAN TREATMENT AT UNDERPASS

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

SEE TITLE BLOCK

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 MODIFIED BY: DATE:
 CHECKED BY: DATE:
 FILE SPEC.:



10/5/2017

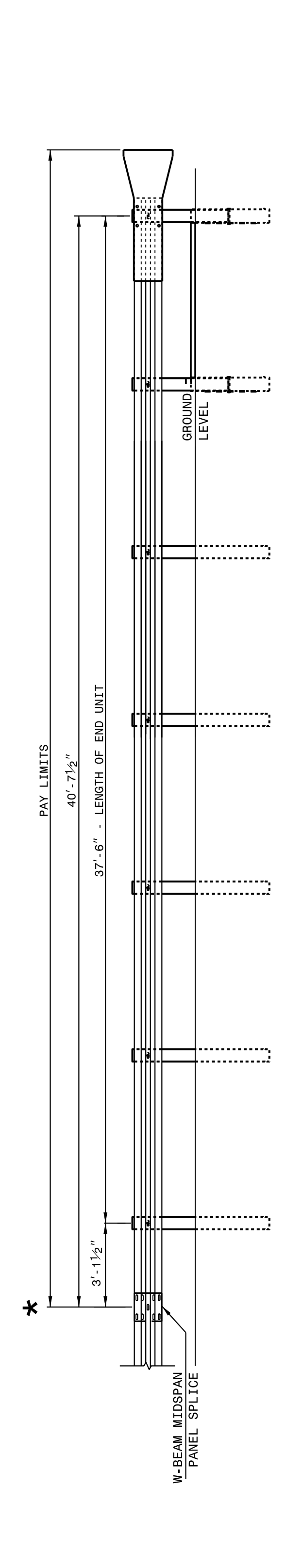
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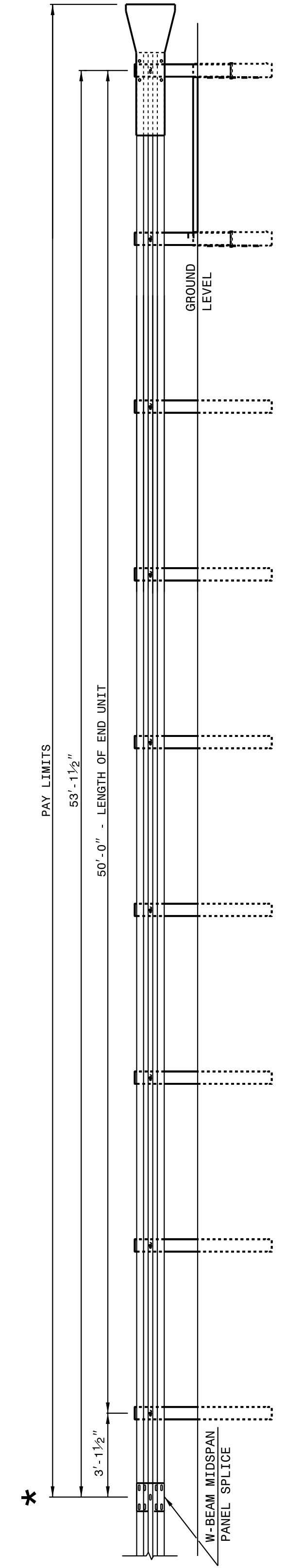
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 8
862D02



* 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.

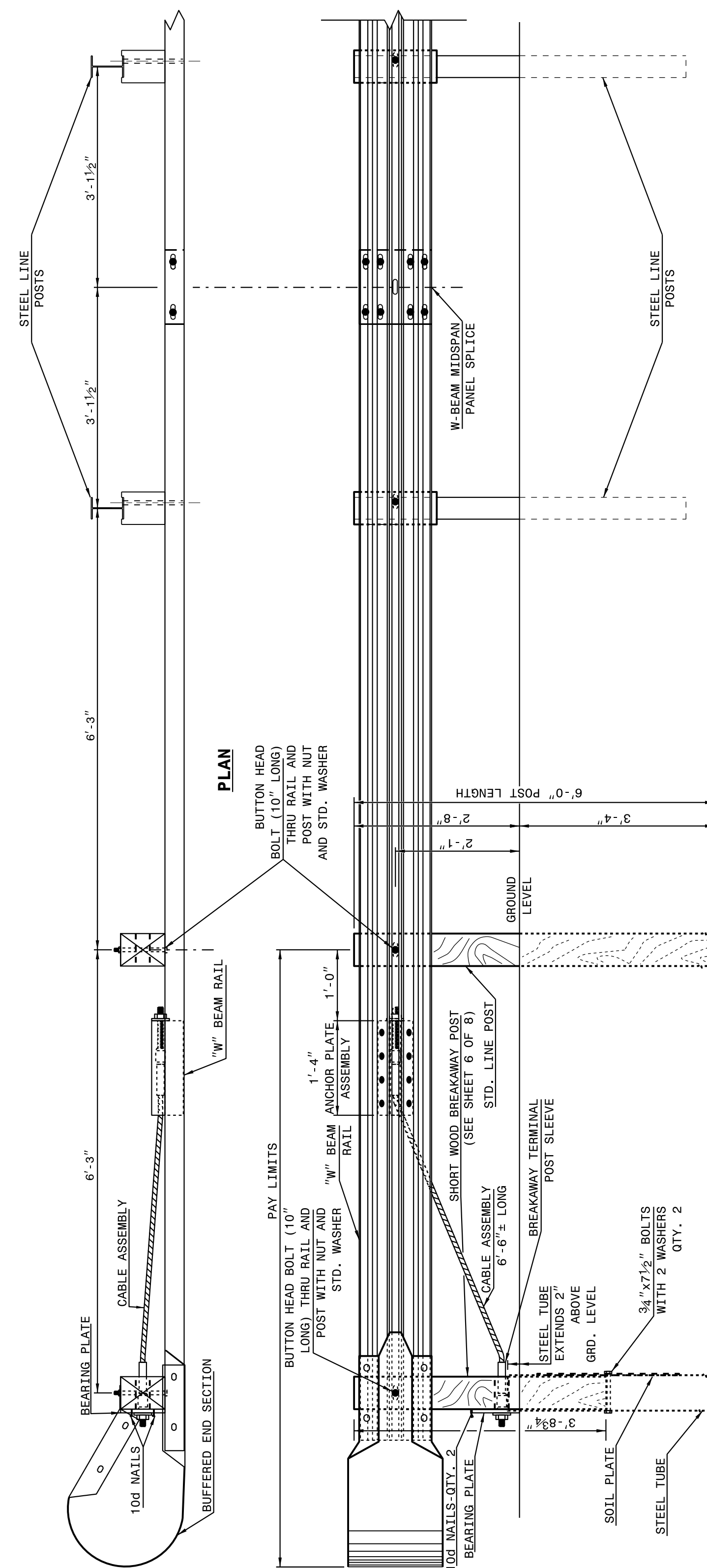


APPROACH END UNITS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 8
862D02



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

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

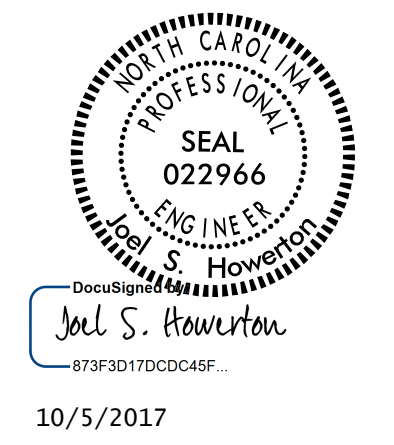
SHEET 1 OF 8
862D02

SEE TITLE BLOCK

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10/5/2017

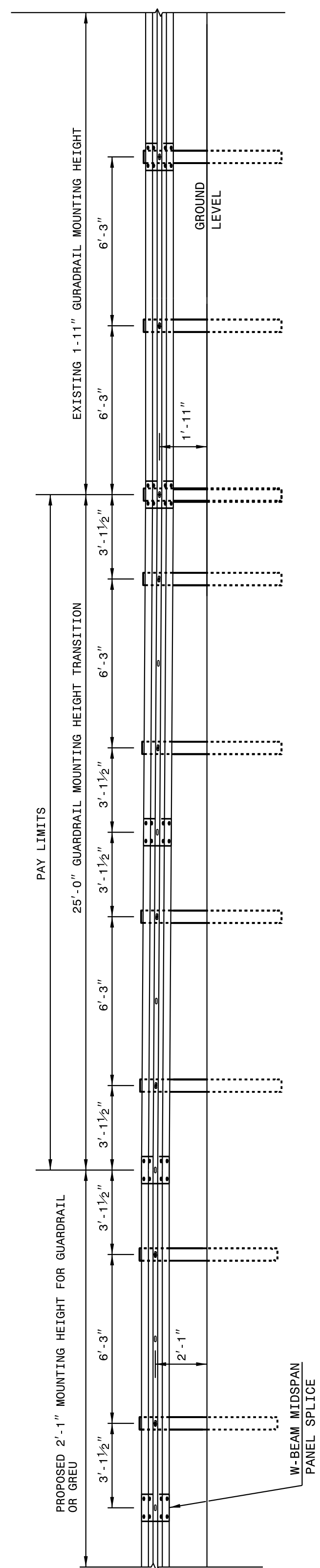
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RALEIGH, N.C.

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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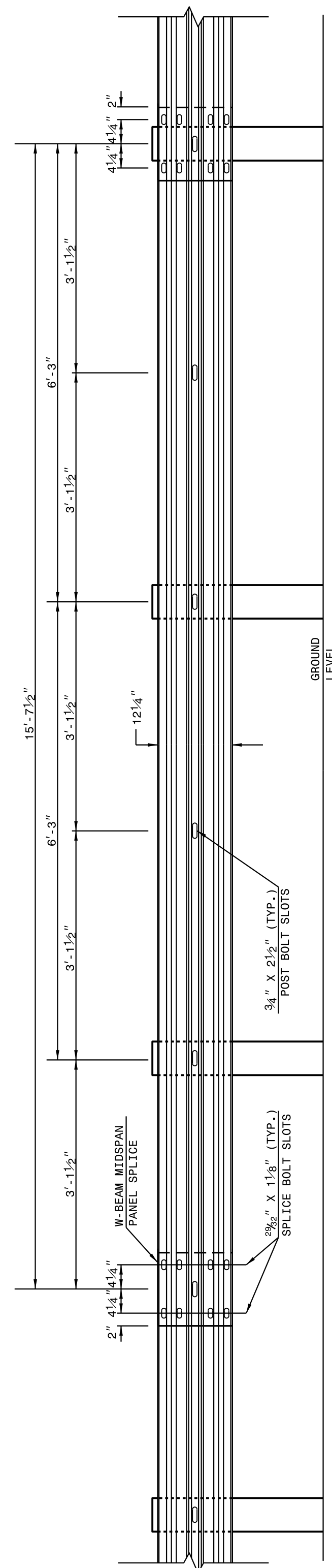
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 4 OF 8
862D02

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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 3 OF 8
862D02



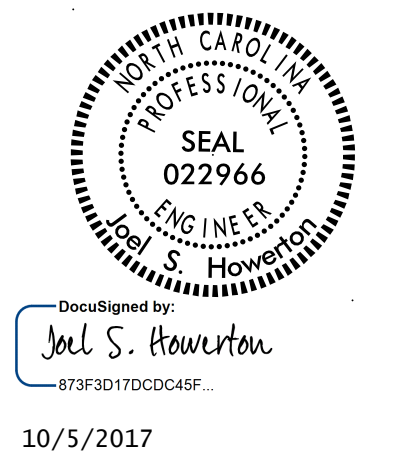
15'-7 1/2" W-BEAM GUARDRAIL PANEL

NOTE: USE 5-SPACE 15'-7 1/2" W-BEAM GUARDRAIL PANEL AT THE DOWNSTREAM END OF AN END UNIT OR EXISTING GUARDRAIL THAT DOES NOT OFFSET THE W-BEAM PANEL SPLICE TO MIDSPAN

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 3 OF 8
862D02



10/5/2017

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**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
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SEE TITLE BLOCK

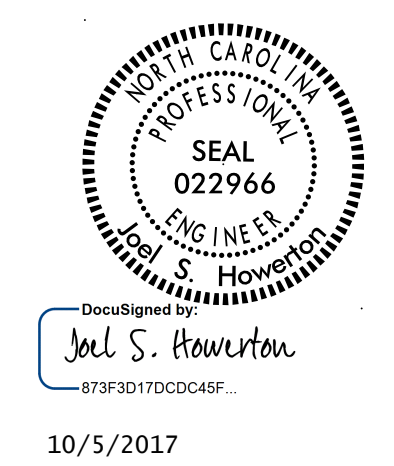
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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION	SHEET 6 OF 8 862D02
SYSTEM PARTS		
ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION		
SHEET 6 OF 8 862D02		

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

NOTES:
 A - 5/8" DIA. BUTTON HEAD SPLICE BOLT 1 1/4" LONG (8 REQ. PER SPLICE JOINT).
 B - 5/8" DIA. BUTTON HEAD BOLT 7 1/2" / 9" LONG WITH NUT FOR BOLTING 6" / 8" ROUTED OFFSET BLOCK TO STEEL POSTS.
 C - FIELD PUNCHING OF HOLES INTO GUARDRAIL AS DIRECTED BY THE ENGINEER.



10/5/2017

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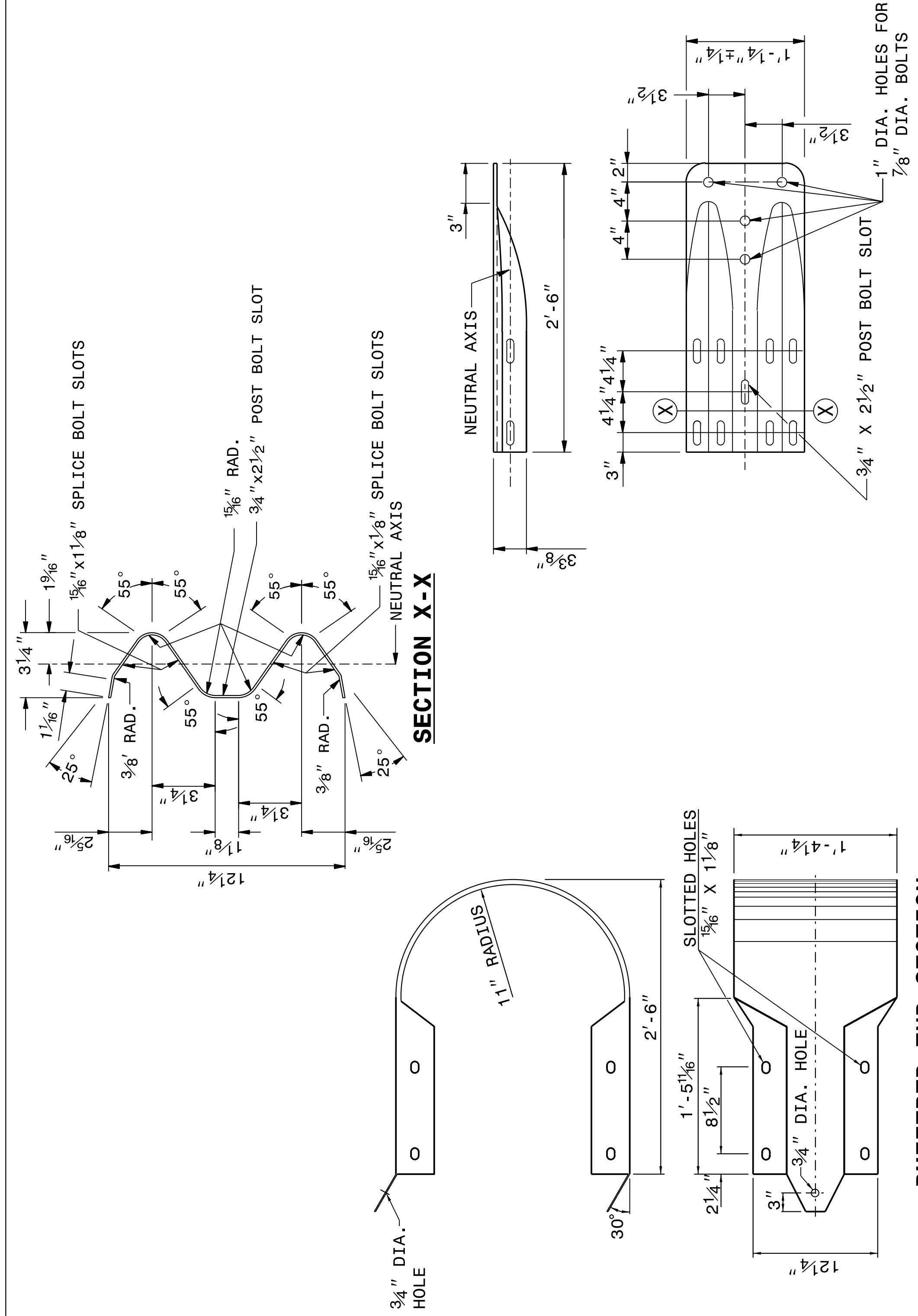
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NORTH CAROLINA
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 8 OF 8
862D02



BUFFERED END SECTION

TYPICAL END SHOE

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

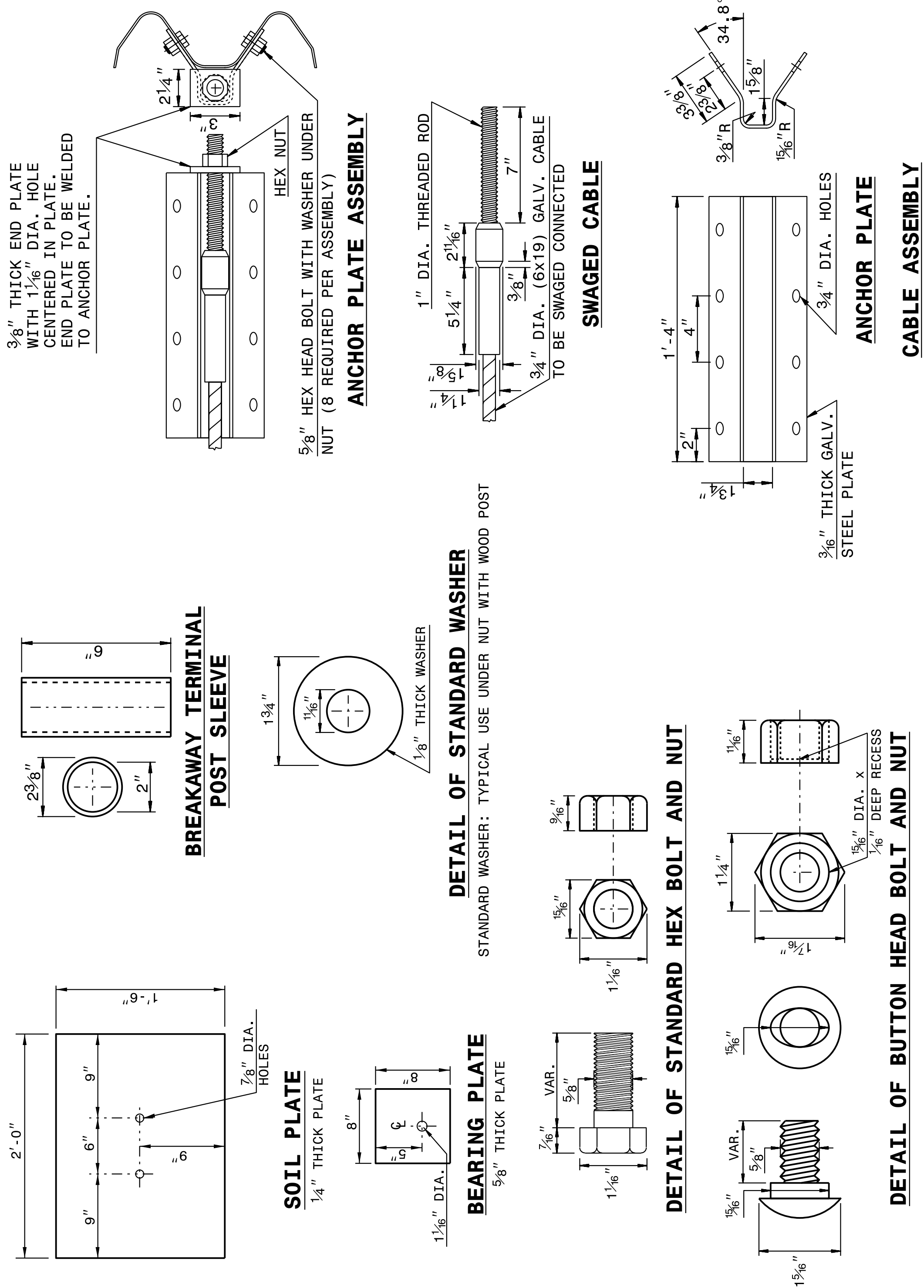
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 8 OF 8
862D02

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 8
862D02



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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 8
862D02

SYSTEM PARTS - GENERAL USE

SYSTEM PARTS



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**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
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SEE TITLE BLOCK

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

RD266404

COMPUTED BY: IY 9/26/2017
 CHECKED BY: JA 9/26/2017

PROJECT NO. W-5704A&B
 SHEET NO. 3B-1

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

CUBIC YARDS				
Station to Station	Uncl. Exc. C.Y.	Embank. +% C.Y.	Borrow C.Y.	Waste C.Y.
W-5704A				
-L- 123+00.00 TO 139+00.00	467	320		147
-L- 157+50.00 TO 161+00.00	48	81	33	
-L- 164+50.00 TO 172+50.00	119	101		18
SUB TOTAL	634	503	33	165
WASTE IN LIEU OF BORROW			-33	-33
PROJECT W-5704A TOTAL	634			132
SAY	650			
W-5704B				
-L- 17+50.00 TO 21+00.00	103			103
-L- 24+00.00 TO 32+00.00	136	48		89
-L- 54+00.00 TO 67+00.00	146	174	28	
SUB TOTAL	385	222	28	192
WASTE IN LIEU OF BORROW			-28	-28
PROJECT W-5704B TOTAL	385			164
SAY	400			

Approximate quantities only. Unclassified excavation, Fine Grading clearing and grubbing and removal of existing pavement will be paid for at the lump sum price for "Grading".

SUMMARY OF ASPHALT PAVEMENT REMOVAL

LINE	Station to Station	LOC LT/RT/CL	Asphalt Removal SQ. YDS.
W-5704A			
-L-	123+54.57 TO 126+36.82	MED	388.75
-L-	127+45.01 TO 133+60.00	MED	448.56
-L-	153+12.53 TO 157+12.00	MED	344.5
PROJECT TOTAL			1,181.81
SAY			1,200.00

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

LINE	BEG. STA.	END STA.	LOC.	LENGTH (FT.)			WARRANT POINT		"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH		W		ANCHORS						IMP. ATTN. TYPE 350			REMOVE EXISTING GUARDRAIL	REMARKS	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	EA	G	NG									
W-5704A																										
-L-	124+77	126+32	MED.	262.5'	25.0				0.75'	8.75'														1	1	SIGNAL POLE PROTECTION
-L-	127+47.77	129+02.77	MED.	262.5'	25.0				0.75'	8.75'														1		SIGNAL POLE PROTECTION
PROJECT TOTAL				525.0'	50.00'																		2		TOTAL	
5 ADDITIONAL GUARDRAIL POSTS																										

4/04/06

COMPUTED BY: PPS DATE: 9-19-17
CHECKED BY: AMH DATE: 9-19-17

PROJECT REFERENCE NO. W-5704A&B
SHEET NO. 3D-4

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUB-REGIONAL & REGIONAL

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

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

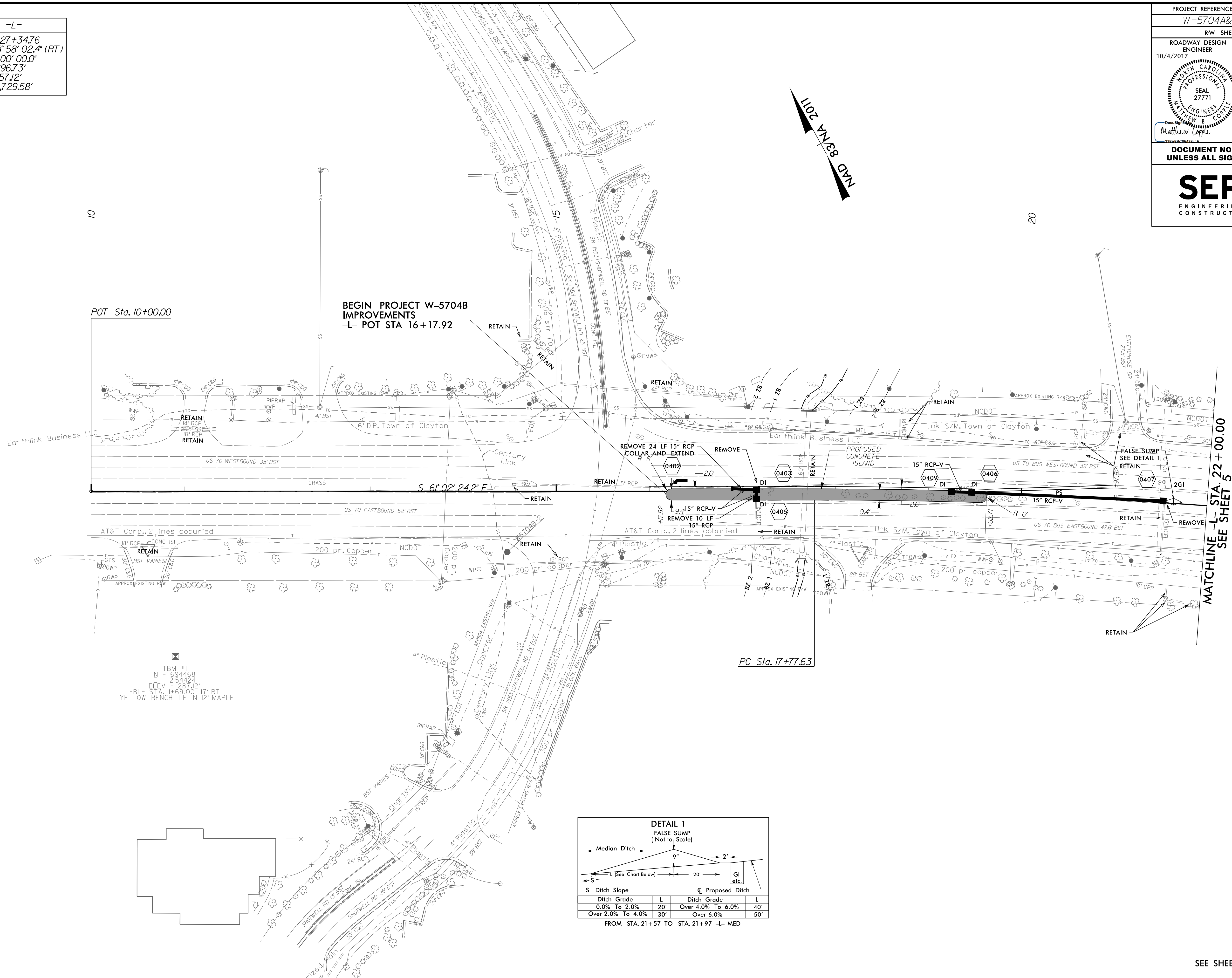
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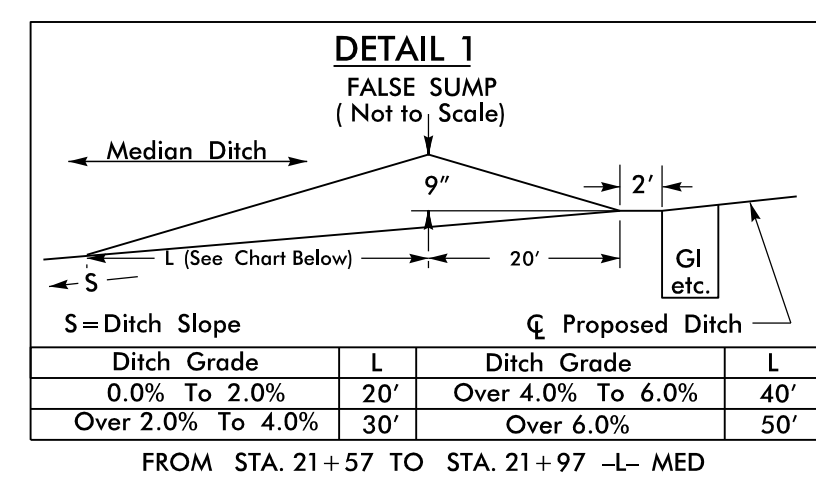
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-L-
 PI Sta 27+34.76
 $\Delta = 18^\circ 58' 02.4" (RT)$
 $D = 1^\circ 00' 00.0"$
 $L = 1,896.73'$
 $T = 957.12'$
 $R = 5,729.58'$

PROJECT REFERENCE NO. W-5704A&B		SHEET NO. 4	
RW SHEET NO. ROADWAY DESIGN ENGINEER 10/4/2017		HYDRAULICS ENGINEER 10/4/2017	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
		1025 Wade Avenue Raleigh, NC 27605 Tel: 919-789-9977 Fax: 919-789-9591 License: C-2197	



TBM #1
 N = 694468
 E = 2154424
 ELEV = 287.12'
 -BL- STA. 11+69.00 117' RT
 YELLOW BENCH TIE IN 12' MAPLE

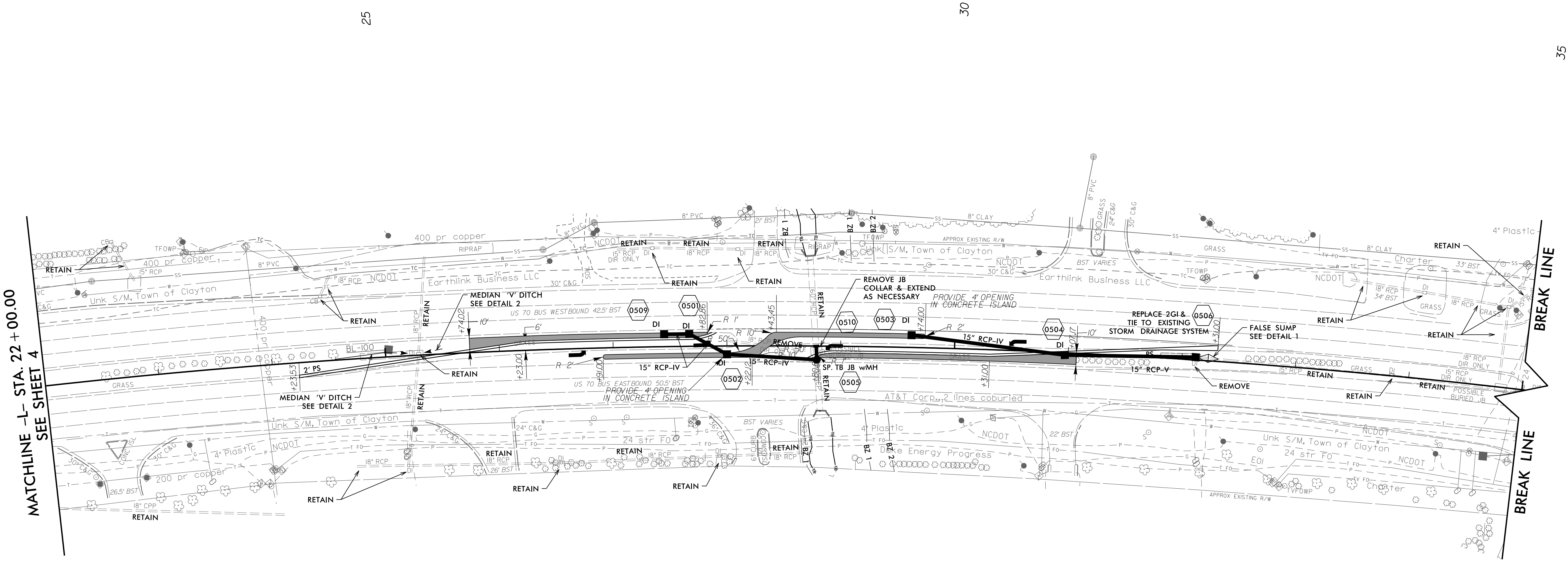


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8/17/99

-L-
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 $T = 957.12'$
 $R = 5,729.58'$

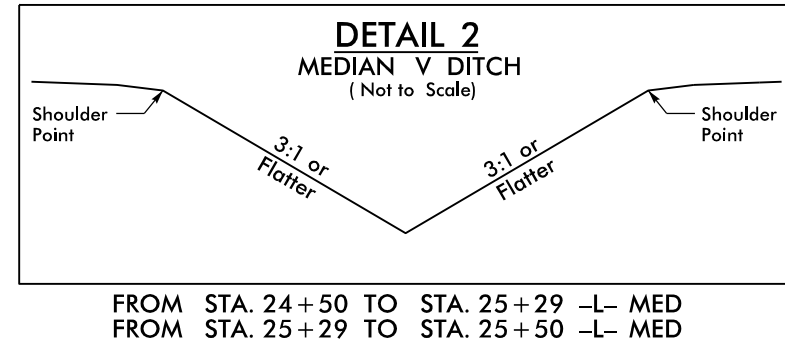
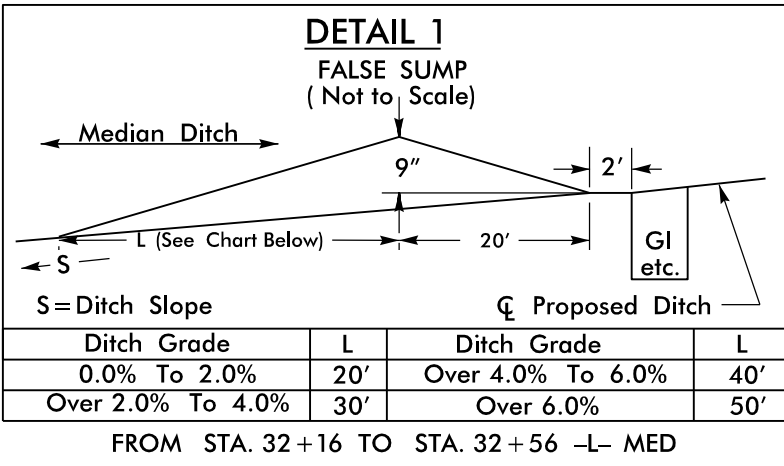
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RW SHEET NO.	
ROADWAY DESIGN 10/4/2017 ENGINEER MATTHEW B. COPPE SEAL 27771 Matthew Coppe	HYDRAULICS ENGINEER 10/4/2017 ANDREW M. HOWELL SEAL 35621 Andrew Howell
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
SEPI ENGINEERING & CONSTRUCTION 1025 Wade Avenue Raleigh, NC 27605 Tel: 919-789-9977 Fax: 919-789-9591 License: C-2197	



MATCHLINE -L- STA. 22 + 00.00
 SEE SHEET 4

BREAK LINE

NOTE: SEE SHEET 2A-2,
 INSET A FOR MEDIAN
 DIMENSIONS



10/4/2017
 W-5704A&B_Rdwy_psh_5.dgn

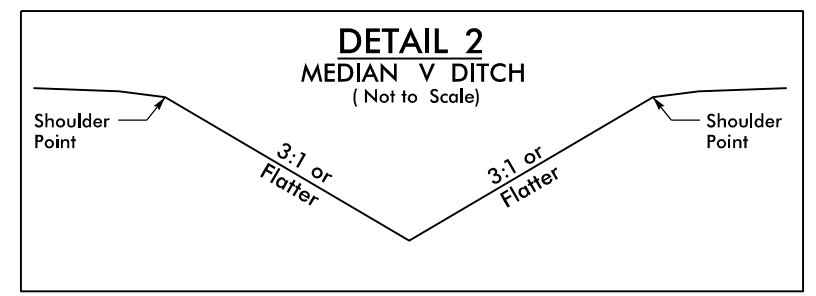
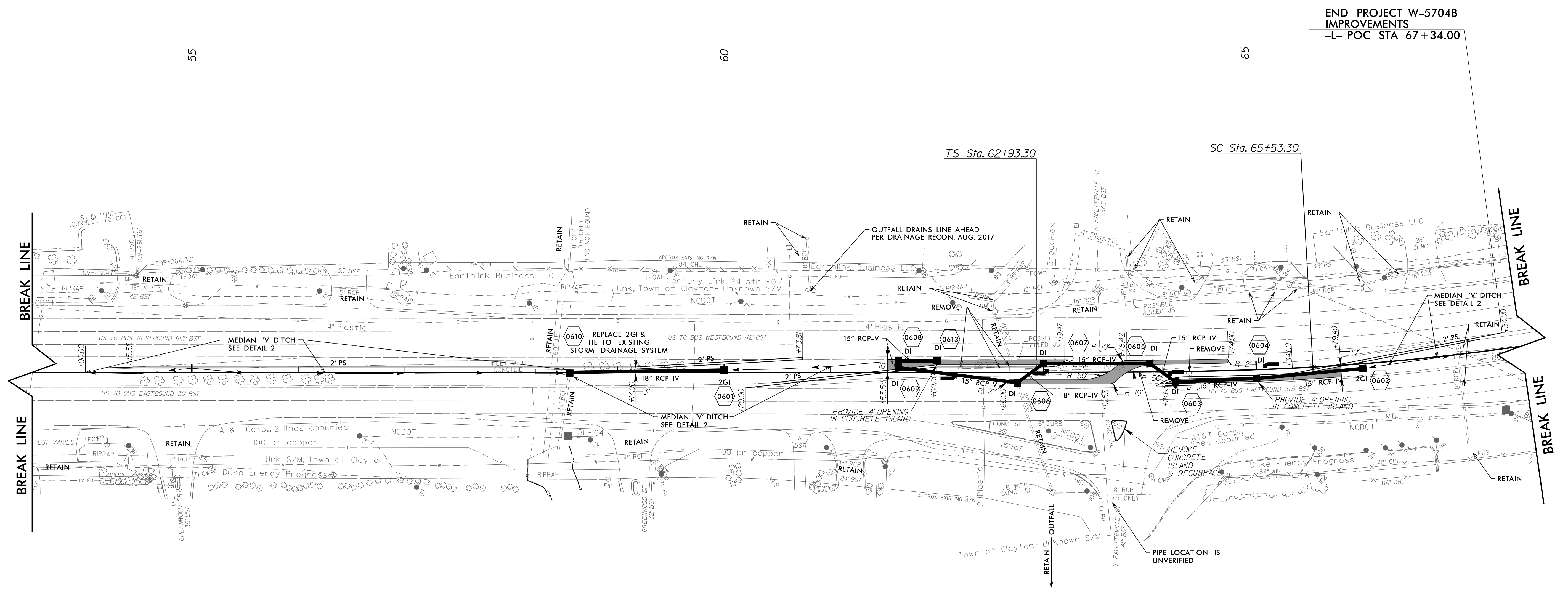
8/17/99

-L-		
Pls Sta 64+66.66	Pl Sta 70+08.87	Pls Sta 75+39.42
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$L_s = 260.00'$	$D = 2'30''00.0''$	$L_s = 260.00'$
$LT = 173.36'$	$L = 899.42'$	$LT = 173.36'$
$ST = 86.69'$	$T = 455.57'$	$ST = 86.69'$
	$R = 2,291.83'$	

NOTE: THERE MAY BE POTENTIAL CONFLICT BETWEEN PROPOSED STORM DRAINAGE SYSTEM AND EXISTING 10" CAST IRON WATER LINE NEAR -L- STA 63+53+/-

PROJECT REFERENCE NO. W-5704A&B	SHEET NO. 6
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	SEAL 27771
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
SEPI ENGINEERING & CONSTRUCTION	
1025 Wade Avenue Raleigh, NC 27605 Tel: 919-789-9977 Fax: 919-789-9591 License: C-2197	

REVISIONS



- FROM STA. 54+00 TO STA. 55+00 -L- MED
- FROM STA. 55+00 TO STA. 58+55 -L- MED
- FROM STA. 58+55 TO STA. 59+00 -L- MED
- FROM STA. 59+00 TO STA. 60+00 -L- MED
- FROM STA. 60+00 TO STA. 61+50 -L- MED
- FROM STA. 66+00 TO STA. 66+50 -L- MED
- FROM STA. 66+50 TO STA. 66+90 -L- MED

NOTE: SEE SHEET 2A-2, INSET A FOR MEDIAN DIMENSIONS

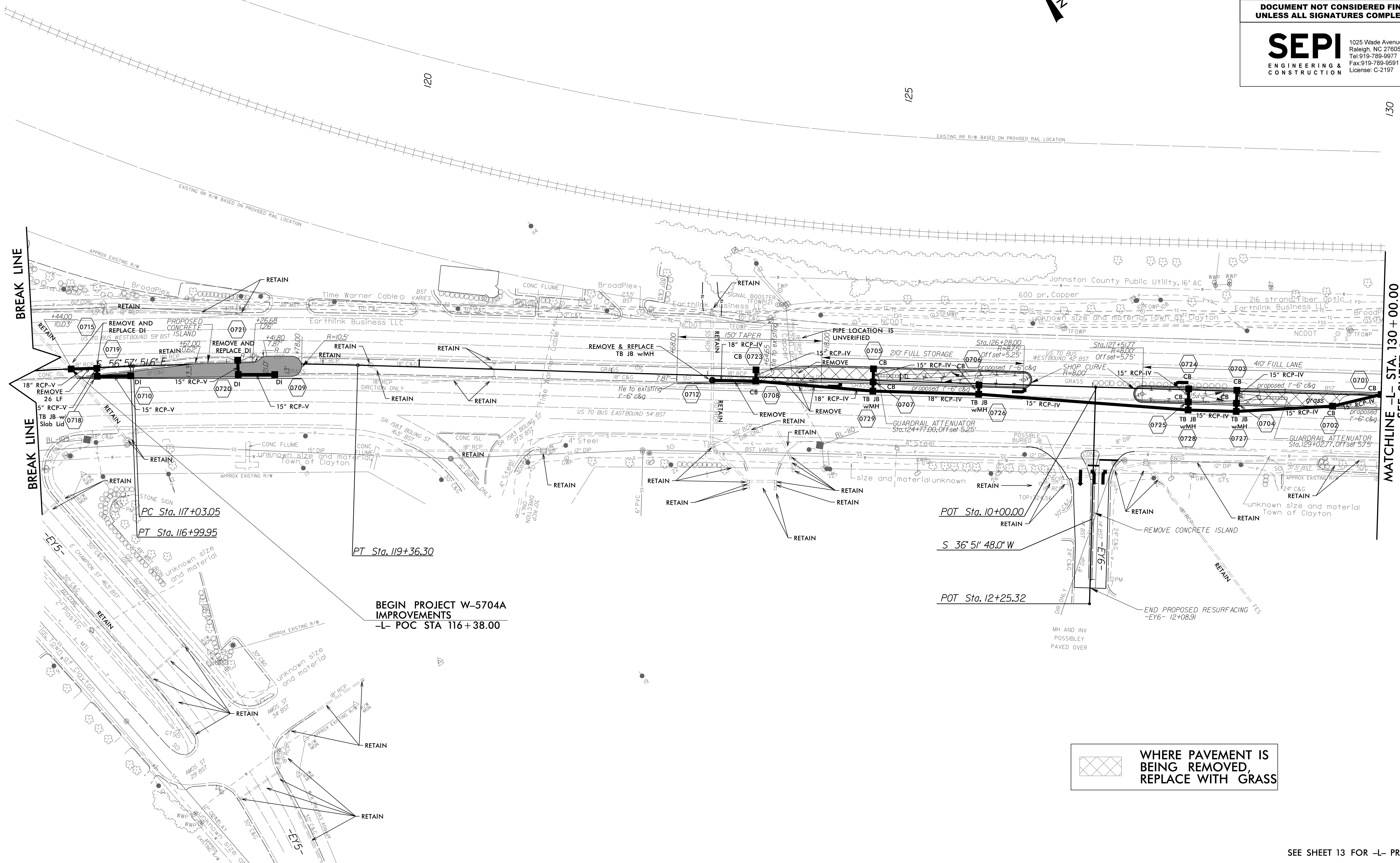
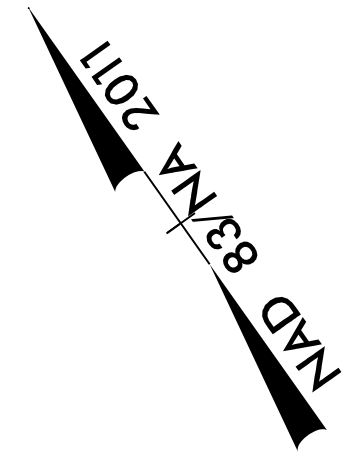
END PROJECT W-5704B IMPROVEMENTS
-L- POC STA 67+34.00

SEE SHEET 12 FOR -L- PROFILE

10/10/2017
P:\c\w-5704A&B_Rdy_psh_6.dgn
M:\P\101017

PROJECT REFERENCE NO. W-5704A&B	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 10/4/2017	HYDRAULICS ENGINEER 10/4/2017
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
SEPI ENGINEERING & CONSTRUCTION	
1025 Wade Avenue Raleigh, NC 27605 Tel: 919-789-9977 Fax: 919-789-9591 License: C-2197	

-L-	
PI Sta 111+03.35	PI Sta 118+19.72
$\Delta = 10^{\circ} 53' 04.3" (RT)$	$\Delta = 3^{\circ} 55' 50.6" (RT)$
$D = 0^{\circ} 54' 34.0"$	$D = 1^{\circ} 41' 06.6"$
$L = 1,196.82'$	$L = 233.25'$
$T = 600.21'$	$T = 116.67'$
$R = 6,300.00'$	$R = 3,400.00'$



REVISIONS

BREAK LINE

MATCHLINE -L- STA. 130 + 00.00
SEE SHEET 8

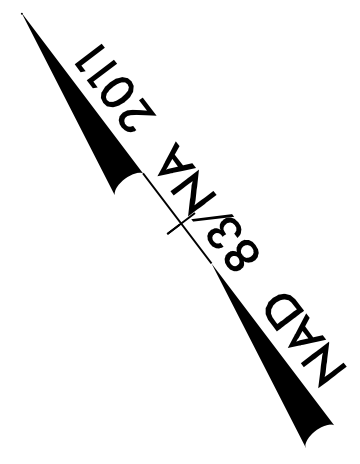
BEGIN PROJECT W-5704A
IMPROVEMENTS
-L- POC STA 116 + 38.00

WHERE PAVEMENT IS BEING REMOVED, REPLACE WITH GRASS

10/4/2017 10:41:00 W-5704A&B-Rdy.psh_7.dgn

8/17/17

NOTE: THERE MAY BE POTENTIAL CONFLICT BETWEEN PROPOSED STORM DRAINAGE SYSTEM AND EXISTING 8" DUCTILE IRON WATER LINE NEAR -L- STA 134 + 30 +/-

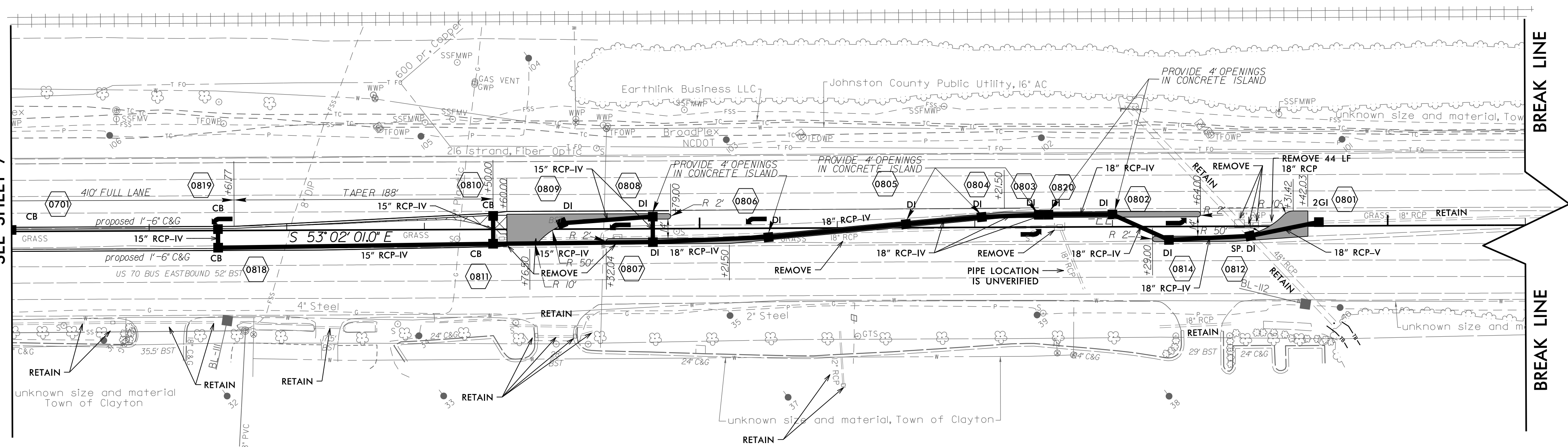


PROJECT REFERENCE NO. W-5704A&B	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

130 135 140

REVISIONS

MATCHLINE -L- STA. 130 + 00.00 SEE SHEET 7



BREAK LINE

BREAK LINE

NOTE: SEE SHEET 2A-2, INSET B FOR MEDIAN DIMENSIONS

WHERE PAVEMENT IS BEING REMOVED, REPLACE WITH GRASS

10/10/2017 10:51:00 AM W:\Projects\W-5704A&B.Rdy.psh.8.dgn

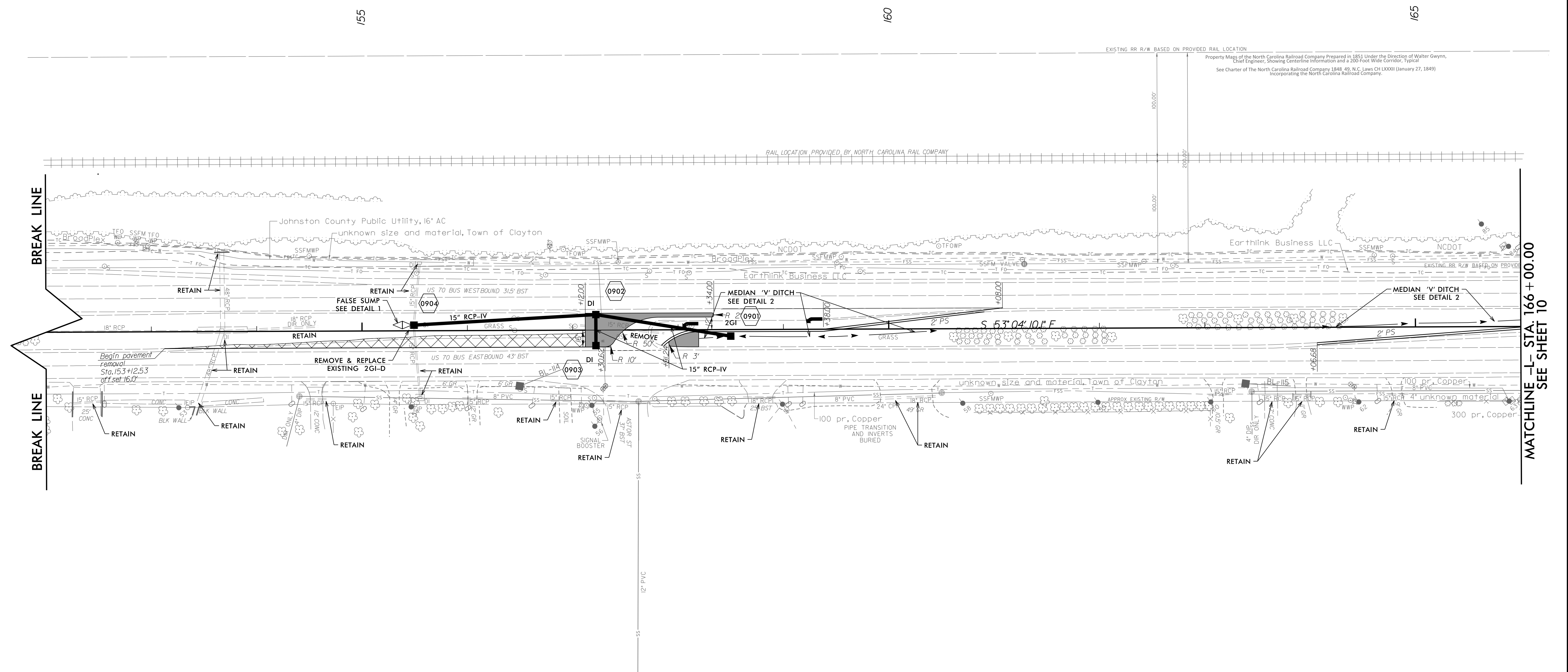
SEE SHEET 13 FOR -L- PROFILE

8/17/19

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PROJECT REFERENCE NO. W-5704A&B	SHEET NO. 9
RW SHEET NO. ROADWAY DESIGN ENGINEER 10/4/2017	HYDRAULICS ENGINEER 10/4/2017
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	

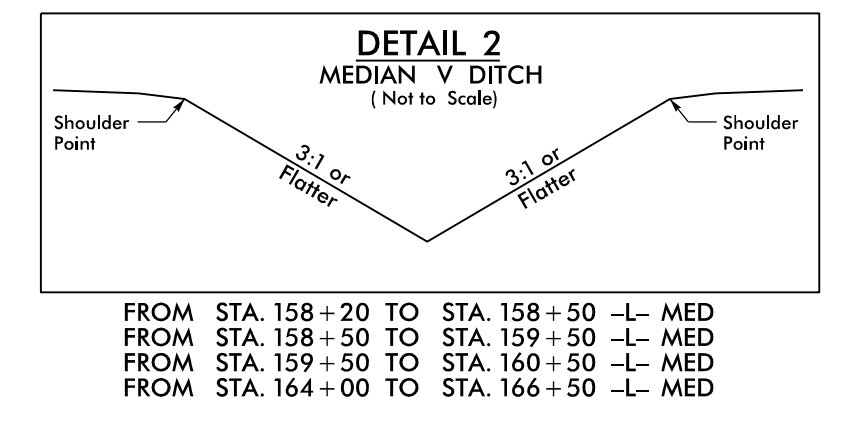
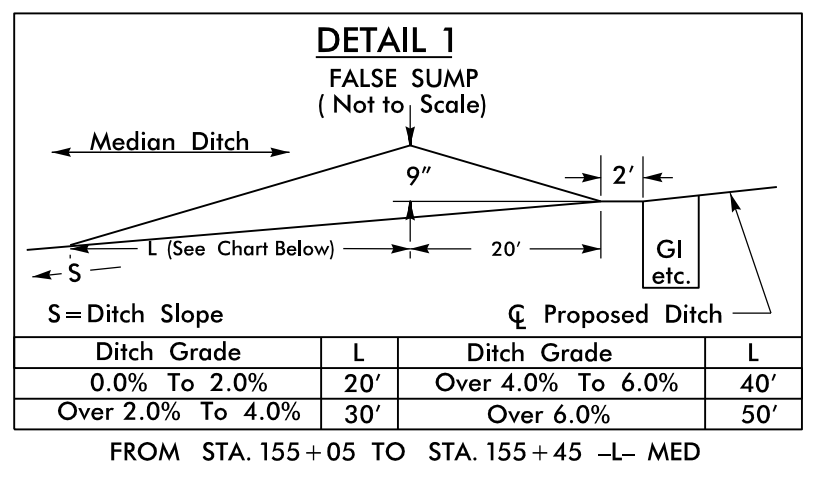
MAD 8/31/2017



REVISIONS

BREAK LINE

MATCHLINE L- STA. 166 + 00.00
SEE SHEET 10



**NOTE: SEE SHEET 2A-2,
INSET E FOR MEDIAN
DIMENSIONS**



10/4/2017
10:42:00 AM
W:\5704A&B_Rdy.psh_9.dgn

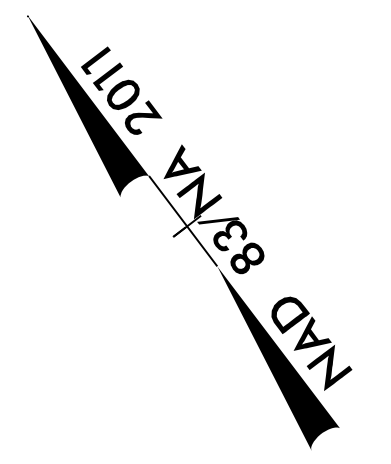
8/17/09

-L-
 PI Sta 175+26.76
 $\Delta = 4' 30'' 28.8'' (RT)$
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 $L = 450.80'$
 $T = 225.52'$
 $R = 5,729.58'$

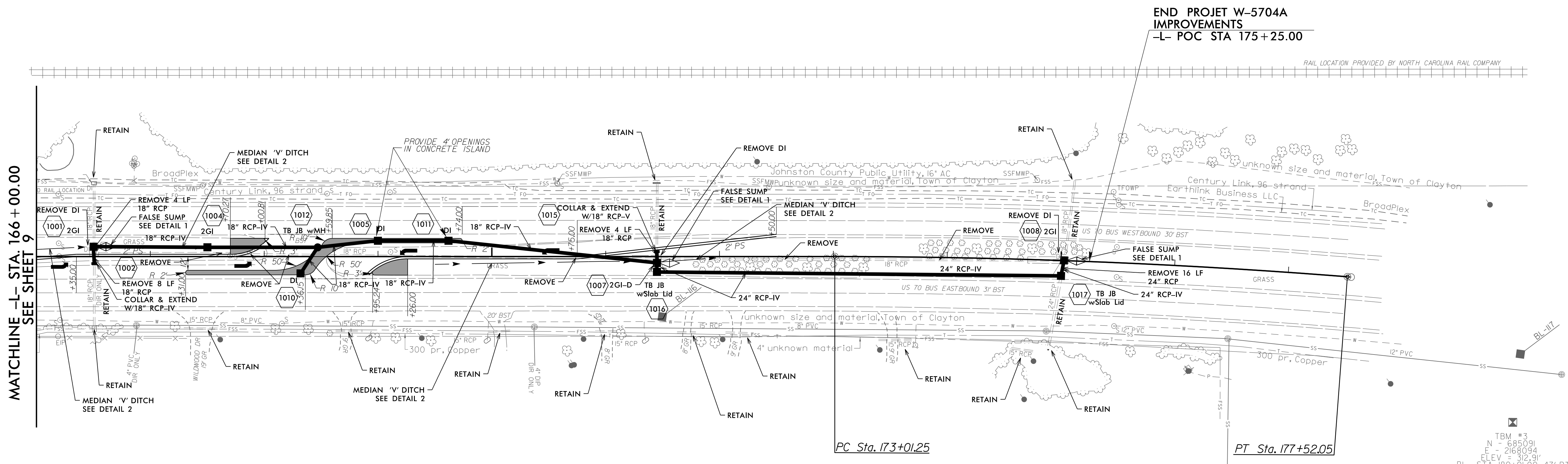
PROJECT REFERENCE NO. W-5704A&B	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 10/4/2017	HYDRAULICS ENGINEER 10/4/2017
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
1025 Wade Avenue Raleigh, NC 27605 Tel: 919-789-9977 Fax: 919-789-9591 License: C-2197	

170

175

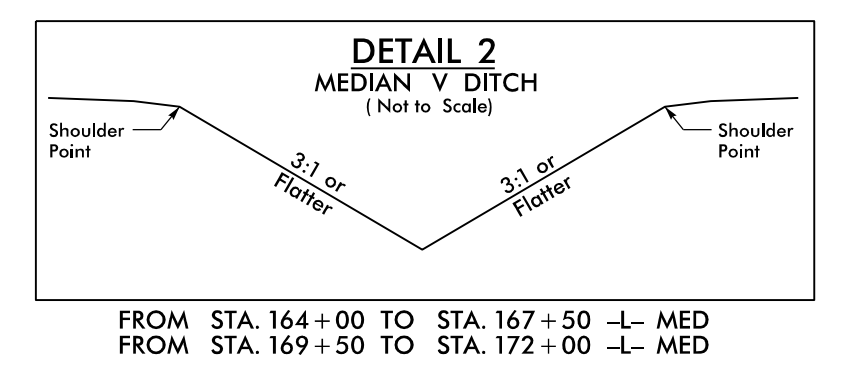
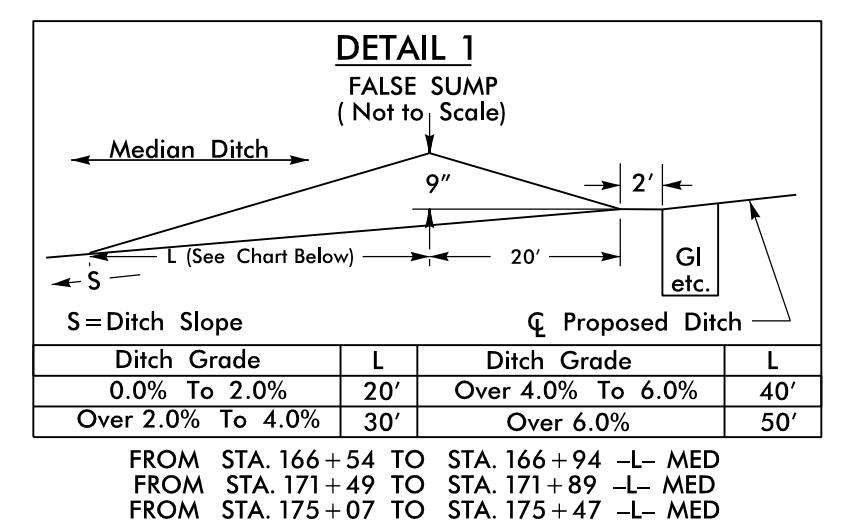


Property Maps of the North Carolina Railroad Company Prepared in 1851 Under the Direction of Walter Gwynn, Chief Engineer, Showing Centerline Information and a 200-Foot Wide Corridor, Typical
 See Charter of The North Carolina Railroad Company 1848, §§ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

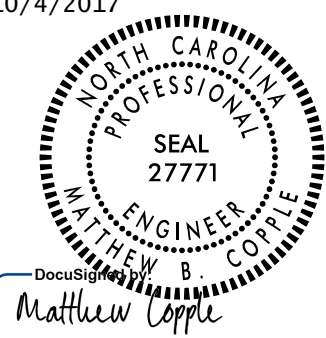
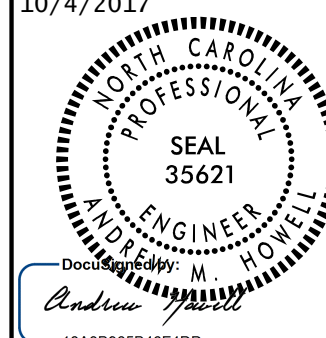


TBM #3
 N - 685091
 E - 2168094
 ELEV = 312.91'
 -BL- STA. 180+01.00 47' RT
 YELLOW BENCH TIE IN 7' MAPLE

NOTE: SEE SHEET 2A-2,
 INSERTS D FOR MEDIAN
 DIMENSIONS

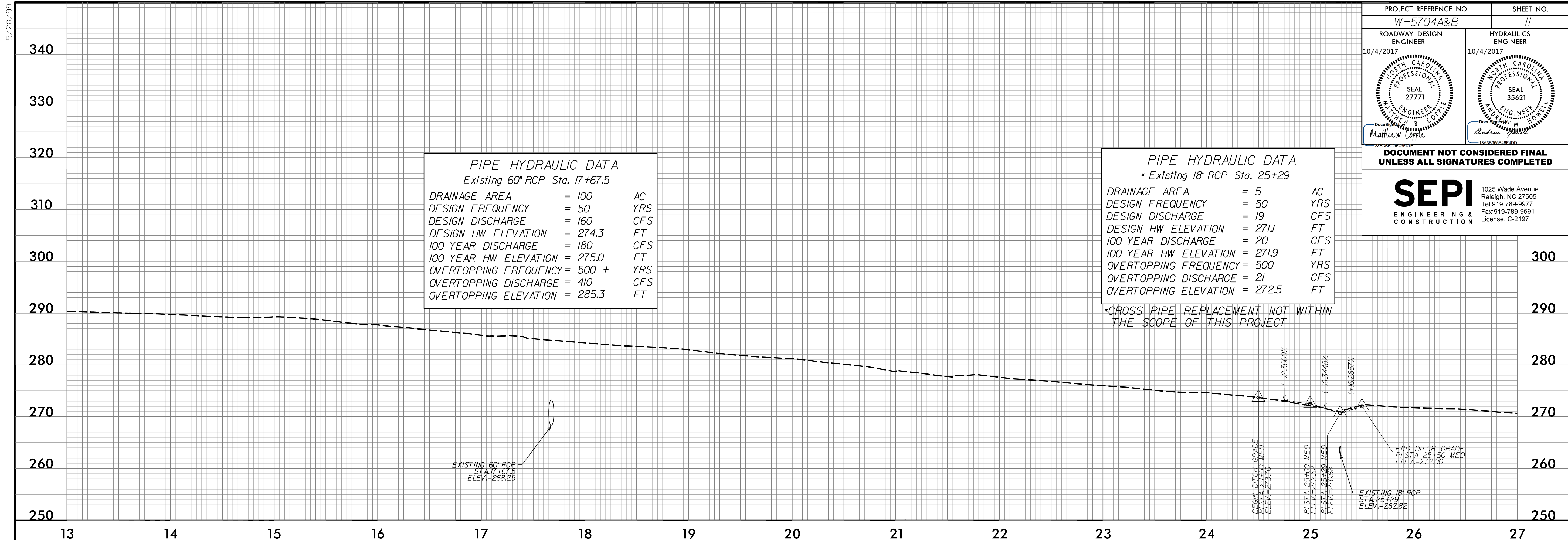


10/4/2017
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 J:\Ratkins

PROJECT REFERENCE NO. W-5704A&B	SHEET NO. 11
ROADWAY DESIGN ENGINEER 10/4/2017 	HYDRAULICS ENGINEER 10/4/2017 

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License: C-2197



PIPE HYDRAULIC DATA
* Existing 60" RCP Sta. 17+67.5

DRAINAGE AREA	= 100	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 160	CFS
DESIGN HW ELEVATION	= 274.3	FT
100 YEAR DISCHARGE	= 180	CFS
100 YEAR HW ELEVATION	= 275.0	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 410	CFS
OVERTOPPING ELEVATION	= 285.3	FT

PIPE HYDRAULIC DATA
* Existing 18" RCP Sta. 25+29

DRAINAGE AREA	= 5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 19	CFS
DESIGN HW ELEVATION	= 271.1	FT
100 YEAR DISCHARGE	= 20	CFS
100 YEAR HW ELEVATION	= 271.9	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 21	CFS
OVERTOPPING ELEVATION	= 272.5	FT

*CROSS PIPE REPLACEMENT NOT WITHIN THE SCOPE OF THIS PROJECT

PIPE HYDRAULIC DATA
* Existing 60" RCP Sta. 28+78

DRAINAGE AREA	= 80	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 140	CFS
DESIGN HW ELEVATION	= 265.2	FT
100 YEAR DISCHARGE	= 150	CFS
100 YEAR HW ELEVATION	= 265.4	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 335	CFS
OVERTOPPING ELEVATION	= 272.2	FT

PIPE HYDRAULIC DATA
* Existing 48" RCP Sta. 35+93

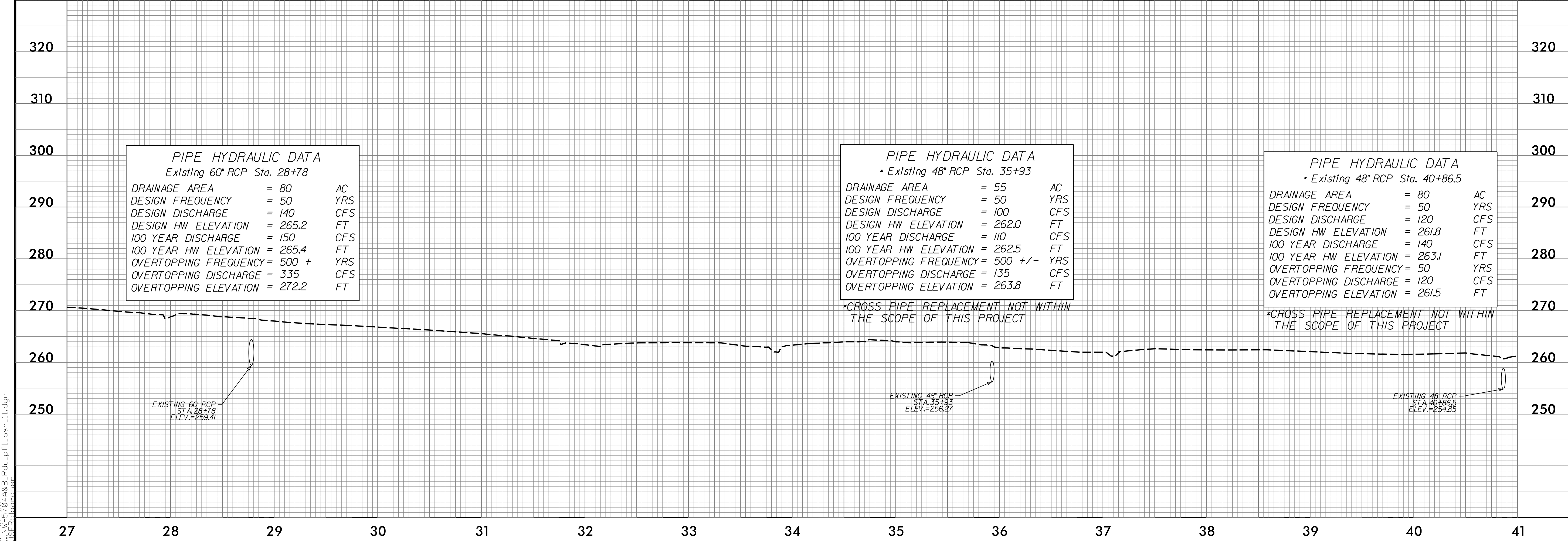
DRAINAGE AREA	= 55	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 100	CFS
DESIGN HW ELEVATION	= 262.0	FT
100 YEAR DISCHARGE	= 110	CFS
100 YEAR HW ELEVATION	= 262.5	FT
OVERTOPPING FREQUENCY	= 500 +/-	YRS
OVERTOPPING DISCHARGE	= 135	CFS
OVERTOPPING ELEVATION	= 263.8	FT

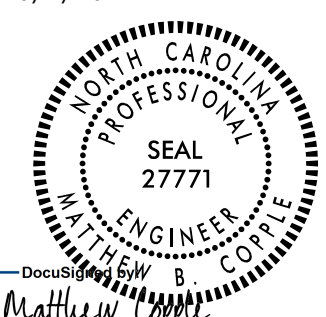
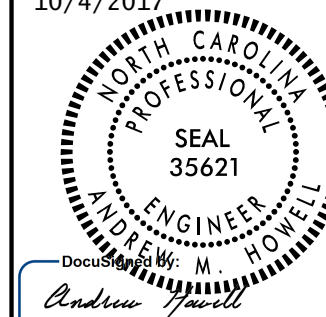
PIPE HYDRAULIC DATA
* Existing 48" RCP Sta. 40+86.5

DRAINAGE AREA	= 80	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 120	CFS
DESIGN HW ELEVATION	= 261.8	FT
100 YEAR DISCHARGE	= 140	CFS
100 YEAR HW ELEVATION	= 263.1	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 120	CFS
OVERTOPPING ELEVATION	= 261.5	FT

*CROSS PIPE REPLACEMENT NOT WITHIN THE SCOPE OF THIS PROJECT

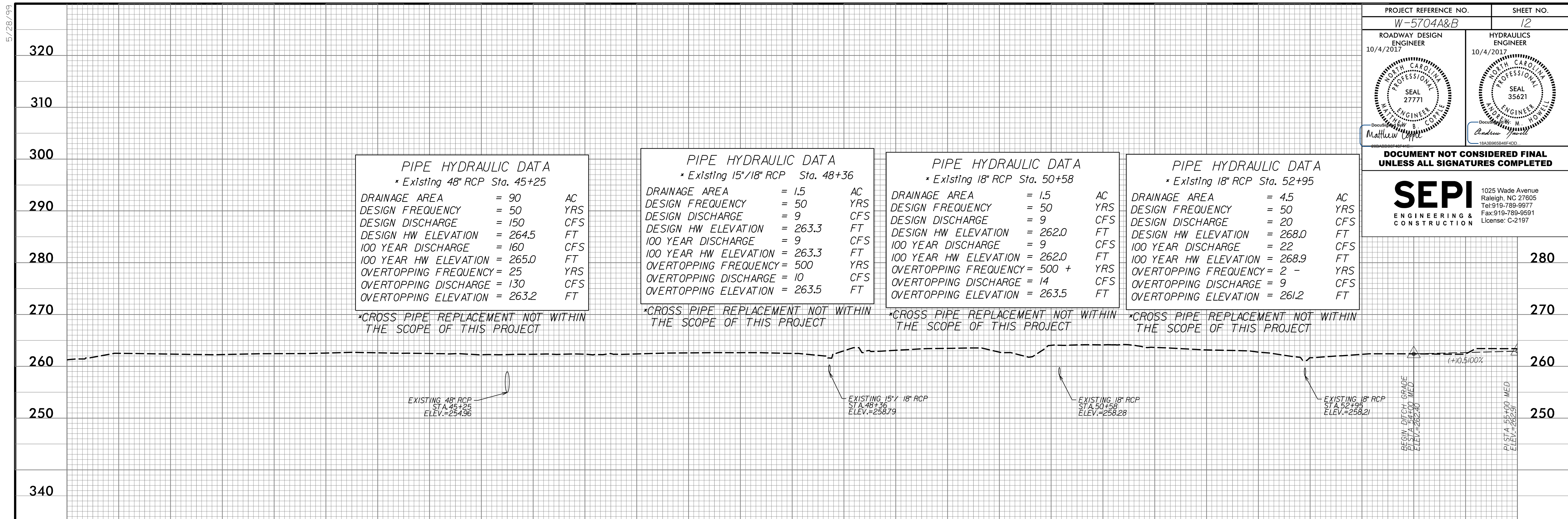
*CROSS PIPE REPLACEMENT NOT WITHIN THE SCOPE OF THIS PROJECT



PROJECT REFERENCE NO. W-5704A&B	SHEET NO. 12
ROADWAY DESIGN ENGINEER 10/4/2017 	HYDRAULICS ENGINEER 10/4/2017 

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PIPE HYDRAULIC DATA
* Existing 48" RCP Sta. 45+25

DRAINAGE AREA	= 90	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 150	CFS
DESIGN HW ELEVATION	= 264.5	FT
100 YEAR DISCHARGE	= 160	CFS
100 YEAR HW ELEVATION	= 265.0	FT
OVERTOPPING FREQUENCY	= 25	YRS
OVERTOPPING DISCHARGE	= 130	CFS
OVERTOPPING ELEVATION	= 263.2	FT

PIPE HYDRAULIC DATA
* Existing 15" / 18" RCP Sta. 48+36

DRAINAGE AREA	= 1.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 9	CFS
DESIGN HW ELEVATION	= 263.3	FT
100 YEAR DISCHARGE	= 9	CFS
100 YEAR HW ELEVATION	= 263.3	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 10	CFS
OVERTOPPING ELEVATION	= 263.5	FT

PIPE HYDRAULIC DATA
* Existing 18" RCP Sta. 50+58

DRAINAGE AREA	= 1.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 9	CFS
DESIGN HW ELEVATION	= 262.0	FT
100 YEAR DISCHARGE	= 9	CFS
100 YEAR HW ELEVATION	= 262.0	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 14	CFS
OVERTOPPING ELEVATION	= 263.5	FT

PIPE HYDRAULIC DATA
* Existing 18" RCP Sta. 52+95

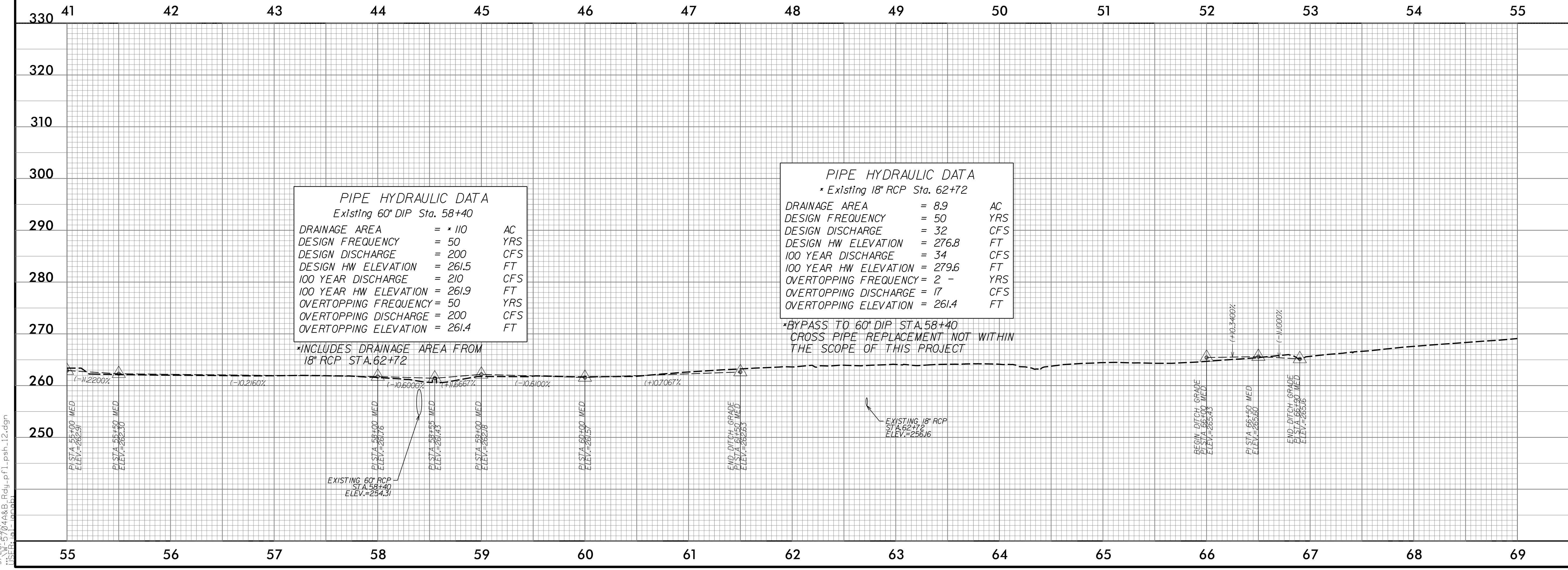
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DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 20	CFS
DESIGN HW ELEVATION	= 268.0	FT
100 YEAR DISCHARGE	= 22	CFS
100 YEAR HW ELEVATION	= 268.9	FT
OVERTOPPING FREQUENCY	= 2 -	YRS
OVERTOPPING DISCHARGE	= 9	CFS
OVERTOPPING ELEVATION	= 261.2	FT

PIPE HYDRAULIC DATA
Existing 60" DIP Sta. 58+40

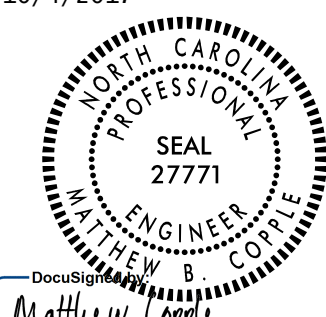
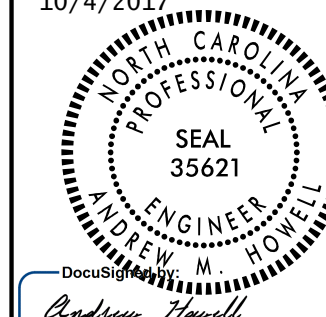
DRAINAGE AREA	= 110	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 200	CFS
DESIGN HW ELEVATION	= 261.5	FT
100 YEAR DISCHARGE	= 210	CFS
100 YEAR HW ELEVATION	= 261.9	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 200	CFS
OVERTOPPING ELEVATION	= 261.4	FT

PIPE HYDRAULIC DATA
* Existing 18" RCP Sta. 62+72

DRAINAGE AREA	= 8.9	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 32	CFS
DESIGN HW ELEVATION	= 276.8	FT
100 YEAR DISCHARGE	= 34	CFS
100 YEAR HW ELEVATION	= 279.6	FT
OVERTOPPING FREQUENCY	= 2 -	YRS
OVERTOPPING DISCHARGE	= 17	CFS
OVERTOPPING ELEVATION	= 261.4	FT



9/28/2017 10:48:11 AM W-5704A&B_Rdy.pfl - psh.12.dgn

ROADWAY DESIGN ENGINEER 10/4/2017 	HYDRAULICS ENGINEER 10/4/2017 
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PIPE HYDRAULIC DATA
 * Existing 24" RCP Sta. 116+38

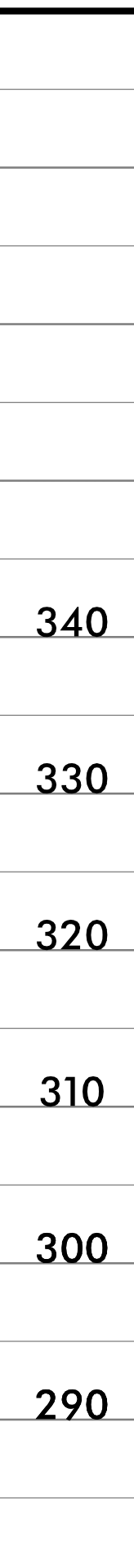
DRAINAGE AREA	= 2.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 319.0	FT
100 YEAR DISCHARGE	= 15	CFS
100 YEAR HW ELEVATION	= 319.5	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 18	CFS
OVERTOPPING ELEVATION	= 320.9	FT

PIPE HYDRAULIC DATA
 * Existing 30" RCP Sta. 123+05

DRAINAGE AREA	= 20	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 70	CFS
DESIGN HW ELEVATION	= 326.6	FT
100 YEAR DISCHARGE	= 75	CFS
100 YEAR HW ELEVATION	= 327.8	FT
OVERTOPPING FREQUENCY	= 2 +	YRS
OVERTOPPING DISCHARGE	= 45	CFS
OVERTOPPING ELEVATION	= 321.5	FT

*DOWNSTREAM PIPE SYSTEM UNDER SIZED - PIPE REPLACEMENTS OUTSIDE THE MEDIAN ARE NOT WITHIN THE SCOPE OF THIS PROJECT

*CROSS PIPE REPLACEMENT NOT WITHIN THE SCOPE OF THIS PROJECT



EXISTING 24" RCP
STA. 116+38
ELEV. = 315.64

EXISTING 30" RCP
STA. 123+05
ELEV. = 316.48

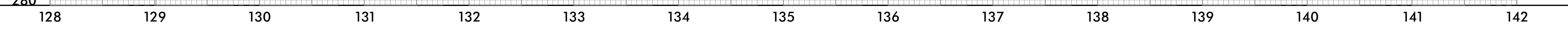
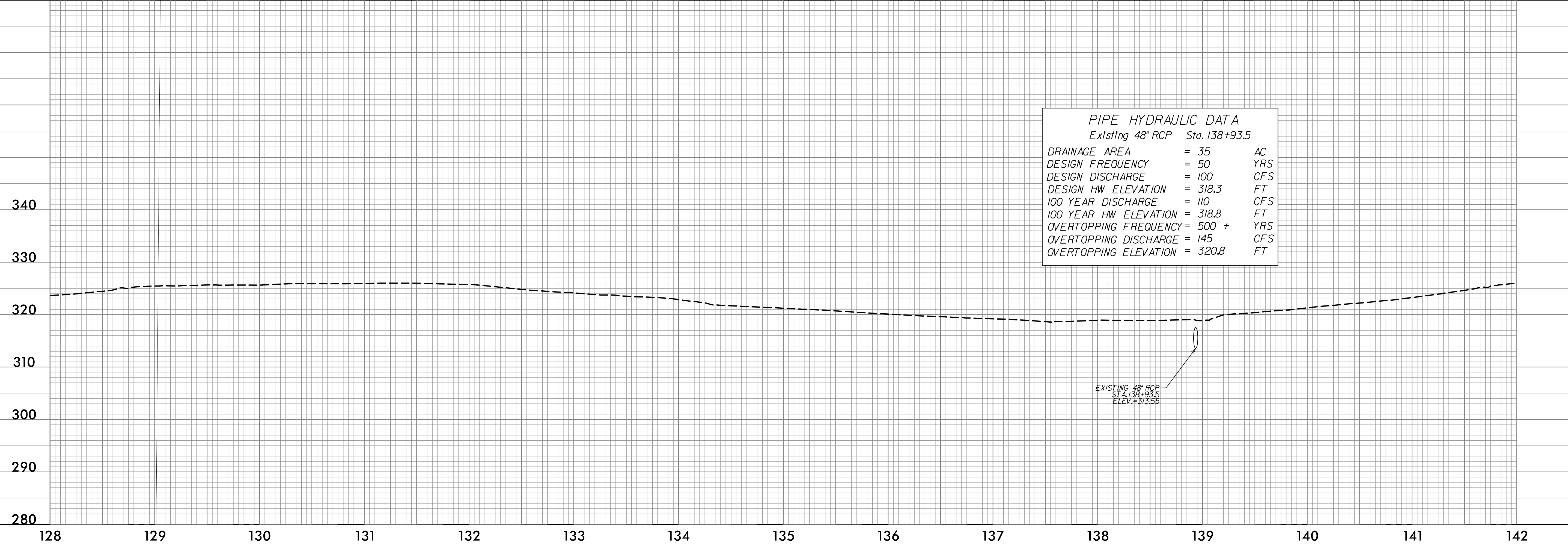
STA. 116 + 38 IS THE END OF THE IMPROVEMENTS FOR "B" AND THE BEGIN OF THE IMPROVEMENTS FOR "A"

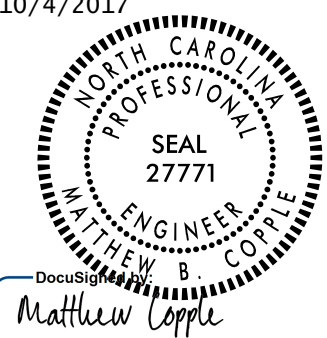
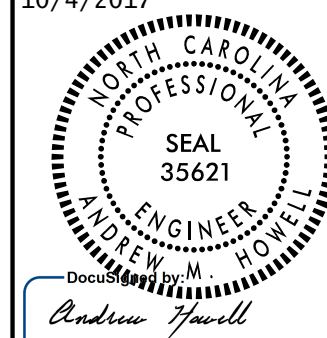


PIPE HYDRAULIC DATA
 Existing 48" RCP Sta. 138+93.5

DRAINAGE AREA	= 35	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 100	CFS
DESIGN HW ELEVATION	= 318.3	FT
100 YEAR DISCHARGE	= 110	CFS
100 YEAR HW ELEVATION	= 318.8	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 145	CFS
OVERTOPPING ELEVATION	= 320.8	FT

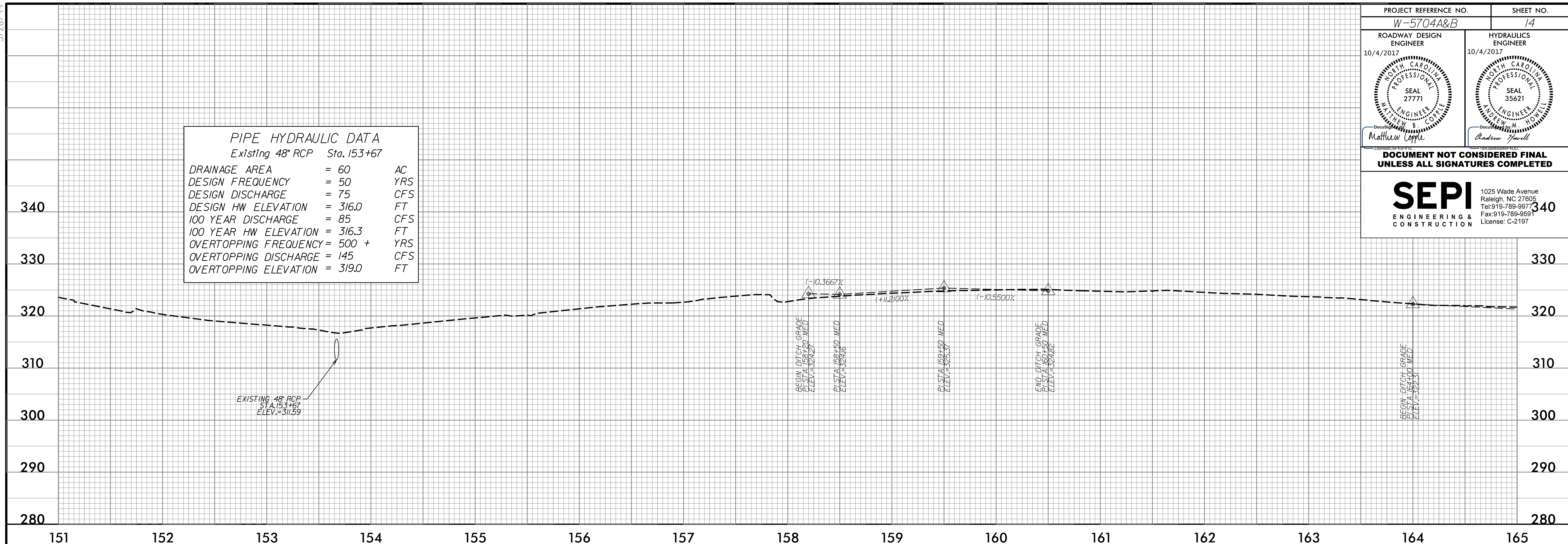
EXISTING 48" RCP
STA. 138+93.5
ELEV. = 313.55



PROJECT REFERENCE NO. W-5704A&B	SHEET NO. 14
ROADWAY DESIGN ENGINEER 10/4/2017 	HYDRAULICS ENGINEER 10/4/2017 
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
SEPI ENGINEERING & CONSTRUCTION	
1025 Wade Avenue Raleigh, NC 27605 Tel: 919-789-9977 Fax: 919-789-9591 License: C-2197	

PIPE HYDRAULIC DATA
Existing 48" RCP Sta. 153+67

DRAINAGE AREA	= 60	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 75	CFS
DESIGN HW ELEVATION	= 316.0	FT
100 YEAR DISCHARGE	= 85	CFS
100 YEAR HW ELEVATION	= 316.3	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 145	CFS
OVERTOPPING ELEVATION	= 319.0	FT



PIPE HYDRAULIC DATA
Existing 18" / 24" RCP Sta. 175+03

DRAINAGE AREA	= 0.65	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 2.4	CFS
DESIGN HW ELEVATION	= 307.8	FT
100 YEAR DISCHARGE	= 2.6	CFS
100 YEAR HW ELEVATION	= 307.8	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 16	CFS
OVERTOPPING ELEVATION	= 311.4	FT

