





# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. <i>R-5014</i>	SHEET NO. <i>1A</i>
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ROADWAY DESIGN ENGINEER  
3/31/2021  
NORTH CAROLINA PROFESSIONAL SEAL  
SEAL 017265  
ENGINEER  
STEWART ANTHONY  
DAE060C294F4407

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## LIST OF STANDARD DRAWINGS

GENERAL NOTES:	2018 SPECIFICATIONS EFFECTIVE: 01-16-2018 REVISED:
GRADING AND SURFACING OR RESURFACING AND WIDENING:	THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.
CLEARING:	CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD 11.
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. 560.02
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.
SUBSURFACE DRAINS:	SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.
DRIVEWAYS:	DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADIUS OR RADIUS AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
STREET TURNOUT:	STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADIUS NOTED ON PLANS.
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.
UTILITIES:	UTILITY OWNERS ON THIS PROJECT ARE DARE COUNTY WATER DEPARTMENT, DOMINION POWER, CENTURYLINK, SPECTRUM, DUKE ENERGY, PIEDMONT NATURAL GAS, KDHWWTP, AND KILL DEVIL HILLS.
RIGHT-OF-WAY MARKERS:	ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.
CURB RAMPS	ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.  CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

## STANDARD SPECIFICATIONS

2018 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
275.01	Rock Plating
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
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
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	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
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
876.02	Guide for Rip Rap at Pipe Outlets

# 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	--- FLOW ---
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	○ R W
New Right of Way Line with Pin and Cap	○ R W ▲
New Right of Way Line with Concrete or Granite R/W Marker	▲ R W
New Control of Access Line with Concrete CA Marker	△ C A
Existing Control of Access	△ C A
New Control of Access	△ C A
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	--- T ---
Proposed Guardrail	--- T ---
Existing Cable Guiderail	--- T ---
Proposed Cable Guiderail	--- T ---
Equality Symbol	⊕
Pavement Removal	⊗

## VEGETATION:

Single Tree	○
Single Shrub	○

Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

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	○ T
U/G Telephone Cable LOS B (S.U.E.*)	--- T ---
U/G Telephone Cable LOS C (S.U.E.*)	--- T ---
U/G Telephone Cable LOS D (S.U.E.*)	--- T ---
U/G Telephone Conduit LOS B (S.U.E.*)	--- TC ---
U/G Telephone Conduit LOS C (S.U.E.*)	--- TC ---
U/G Telephone Conduit LOS D (S.U.E.*)	--- TC ---
U/G Fiber Optics Cable LOS B (S.U.E.*)	--- T FO ---
U/G Fiber Optics Cable LOS C (S.U.E.*)	--- T FO ---
U/G Fiber Optics Cable LOS D (S.U.E.*)	--- T FO ---

## WATER:

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

## TV:

TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	○ TV
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	□
Utility Unknown U/G Line LOS B (S.U.E.*)	--- 7U/L ---
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.

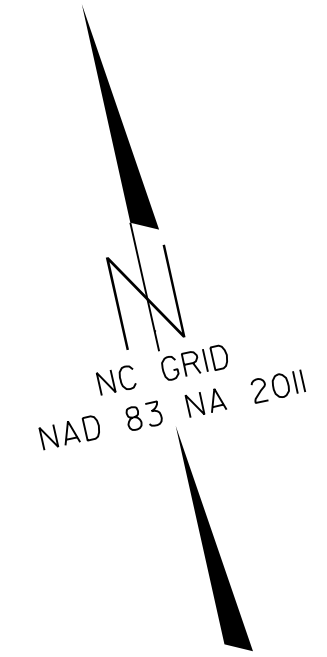


# SURVEY CONTROL SHEET R-5014

-L- STA 11+00  
BEGIN CONSTRUCTION

LOCALIZED PROJECT COORDINATES  
N = 842,691.635  
E = 2,971,970.4073

NCDOT GPS STATION "R5014 GPS-8"  
LOCALIZED PROJECT COORDINATES  
N = 841,988.169  
E = 2,971,957.317



NCDOT GPS STATION "R5014 GPS-16"  
LOCALIZED PROJECT COORDINATES  
N = 840,717.158  
E = 2,977,711.549

NCDOT GPS STATION "R5014 GPS-15"  
LOCALIZED PROJECT COORDINATES  
N = 840,209.704  
E = 2,977,562.949

NCDOT GPS STATION "R5014 GPS-7"  
LOCALIZED PROJECT COORDINATES  
N = 841,504.527  
E = 2,971,582.261

NCDOT GPS STATION "R5014 GPS-13"  
LOCALIZED PROJECT COORDINATES  
N = 839,740.307  
E = 2,976,469.215

NCDOT GPS STATION "R5014 GPS-14"  
LOCALIZED PROJECT COORDINATES  
N = 839,614.440  
E = 2,977,220.541

NCDOT GPS STATION "R5014 GPS-9"  
LOCALIZED PROJECT COORDINATES  
N = 839,364.923  
E = 2,973,118.726

NCDOT GPS STATION "R5014 GPS-10"  
LOCALIZED PROJECT COORDINATES  
N = 838,983.511  
E = 2,973,499.421

NCDOT GPS STATION "R5014 GPS-12"  
LOCALIZED PROJECT COORDINATES  
N = 838,416.480  
E = 2,975,781.285

NCDOT GPS STATION "R5014 GPS-5"  
LOCALIZED PROJECT COORDINATES  
N = 838,235.759  
E = 2,973,638.848

NCDOT GPS STATION "R5014 GPS-11"  
LOCALIZED PROJECT COORDINATES  
N = 838,189.588  
E = 2,975,224.230

NCDOT GPS STATION "R5014 GPS-6"  
LOCALIZED PROJECT COORDINATES  
N = 837,674.227  
E = 2,972,311.705

**CONTROL DATA**

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L. STATION	OFFSET
R50147	GPS MON R5014-7		841504.5270	2971582.2610	14.42	23+64.60	743.79 RT
R50148	GPS MON R5014-8		841988.1690	2971957.3170	14.73	17+80.89	354.45 RT
R50149	GPS MON R5014-9		839364.9230	2973118.7260	1.96	54+14.84	17.83 LT
R501410	GPS MON R5014-10		838983.5110	2973499.4210	4.29	59+57.61	17.37 RT
R50145	GPS MON R5014-5		838235.7590	2973638.8480	7.45	66+98.94	84.72 RT
R50146	GPS MON R5014-6		837674.2270	2972311.7050	21.59	66+12.30	1513.14 RT
R501411	GPS MON R5014-11		838189.5880	2975224.2300	3.78	83+86.56	13.71 RT
R501412	GPS MON R5014-12		838416.4800	2975781.2850	13.80	89+85.54	19.71 RT
R501413	GPS MON R5014-13		839740.3070	2976469.2150	2.43	105+32.14	8.54 LT
R501414	GPS MON R5014-14		839614.4400	2977220.5410	4.59	113+00.79	15.03 RT
R501415	GPS MON R5014-15		840209.7040	2977562.9490	5.08	122+95.93	16.82 LT
R501416	GPS MON R5014-16		840717.1580	2977711.5490	2.67	128+20.54	15.94 LT

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CENTROID1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 840,300.00(±) EASTING: 2,980,000.00(±) ELEVATION: 6.00(±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000332483 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CENTROID1" TO -L- STATION 11+00 IS N 73° 24' 49.23" E 8,378.2025

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

**NOTES:**

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.GOV/DOH/PRECONSTRUCT/HIGHWAYLOCATION/PROJECT/](http://www.ncdot.gov/DOH/PRECONSTRUCT/HIGHWAYLOCATION/PROJECT/)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
TIP R5014\_LS\_CONTROL.TXT

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

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

**NOTE: DRAWING NOT TO SCALE**



# SURVEY CONTROL SHEET R-5014

-L- STA 240+00  
END CONSTRUCTION

LOCALIZED PROJECT COORDINATES  
N = 840,566.837  
E = 2,987,724.6954

NCDOT GPS STATION "R5014 GPS-2"  
LOCALIZED PROJECT COORDINATES  
N = 840,401.002  
E = 2,987,475.393

NCDOT GPS STATION "R5014 GPS-1"  
LOCALIZED PROJECT COORDINATES  
N = 840,782.732  
E = 2,988,176.179

NCDOT GPS STATION "R5014 GPS-18"  
LOCALIZED PROJECT COORDINATES  
N = 840,550.147  
E = 2,981,789.103

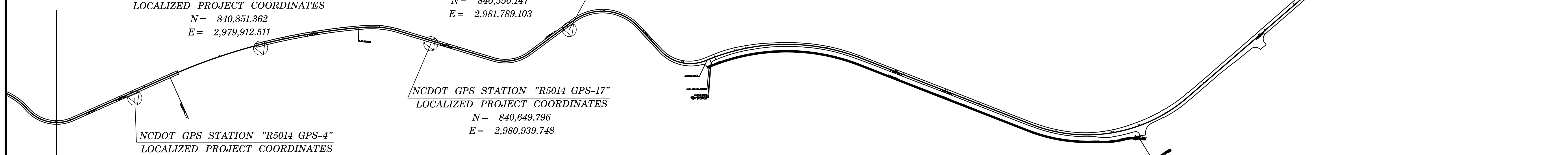
NCDOT GPS STATION "R5014 GPS-3"  
LOCALIZED PROJECT COORDINATES  
N = 840,851.362  
E = 2,979,912.511

NCDOT GPS STATION "R5014 GPS-17"  
LOCALIZED PROJECT COORDINATES  
N = 840,649.796  
E = 2,980,939.748

NCDOT GPS STATION "R5014 GPS-4"  
LOCALIZED PROJECT COORDINATES  
N = 840,718.607  
E = 2,979,090.807

### CONTROL DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
R50144	GPS MON R5014-4		840718.6070	2979090.8070	2.78	144+16.88	36.72 RT
R50143	GPS MON R5014-3		840851.3620	2979912.5110	12.78	152+54.83	21.58 RT
R501417	GPS MON R5014-17		840649.7960	2980939.7480	2.30	163+33.17	18.50 RT
R501418	GPS MON R5014-18		840550.1470	2981789.1030	3.26	172+45.69	28.48 RT
R50142	GPS MON R5014-2		840401.0020	2987475.3930	7.61	237+01.84	27.50 RT
R50141	GPS MON R5014-1		840782.7320	2988176.1790	6.93	119+21.95	10544.96 RT



### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CENTROID1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 840,300.00(ft) EASTING: 2,980,000.00(ft) ELEVATION: 6.00(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000332483

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CENTROID1" TO -L- STATION 11+00 IS  
N 73 ° 24' 49.23" E 8,378.2025

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

### NOTES:

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

**NOTE: DRAWING NOT TO SCALE**



# SURVEY CONTROL SHEET R-5014

FINAL ROW /EASEMENT POINTS (GROUND COORDINATES)

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+00.00	-30.00	842706.4629	2971996.4867
L	11+00.00	30.00	842676.8072	2971944.3279
L	16+61.82	30.00	842188.4055	2972222.0168
L	16+61.82	-30.00	842218.0613	2972274.1755
L	19+44.30	-30.00	841933.8083	2972351.1081
L	19+44.30	30.00	841933.1096	2972291.1122
L	24+14.02	30.00	841463.4260	2972296.5824
L	24+14.02	-30.00	841464.1248	2972356.5784
L	26+70.42	-30.01	841226.9428	2972407.8925
L	26+70.42	30.00	841202.7801	2972352.9617
L	32+97.29	-30.00	840653.1231	2972660.2898
L	32+97.29	30.00	840628.9646	2972605.3684
L	35+74.64	30.00	840384.5090	2972603.1321
L	35+74.64	-29.97	840359.3611	2972657.5779
L	35+97.56	30.00	840363.6958	2972593.5187
x	35+97.56	-30.00	840338.5366	2972647.9890
L	37+49.16	30.00	840243.2162	2972516.5099
L	37+49.16	-30.00	840204.3446	2972562.2154
L	38+83.34	-30.00	840102.1278	2972475.2820
L	38+83.34	30.00	840140.9994	2972429.5765
L	40+37.08	30.00	839996.7473	2972350.1081
L	40+37.08	-30.00	839978.8847	2972407.3875
L	42+66.10	-31.50	839759.8043	2972340.6377
L	46+86.80	43.00	839359.7813	2972407.7412
L	46+96.11	-30.34	839413.8536	2972458.1769
L	46+96.11	43.00	839353.6714	2972416.2630
L	47+92.93	-30.00	839358.2424	2972537.4325
x	47+92.93	35.00	839304.9035	2972500.2846
L	48+37.79	35.00	839279.6698	2972545.2653
L	49+99.73	37.00	839266.1368	2972728.1436
L	50+46.05	-30.00	839345.5877	2972746.4383
L	50+52.64	37.00	839290.0706	2972784.5277
L	50+61.32	-40.00	839361.3269	2972754.0843
L	50+85.31	43.00	839300.9704	2972815.9056
L	52+68.95	-40.00	839422.5228	2972971.6128
L	53+20.00	43.00	839335.1338	2973013.9393
L	53+93.00	-40.00	839394.2449	2973106.5520
L	53+93.00	35.00	839324.8479	2973078.1080
L	56+98.52	-40.00	839212.7834	2973370.3307
L	56+98.52	35.00	839161.4072	2973315.6911
L	58+94.19	-35.00	839066.8083	2973500.7242
L	58+94.19	35.00	839018.8572	2973449.7273
L	61+21.58	-35.00	838841.6708	2973600.5327
L	61+21.58	35.00	838836.0804	2973530.7563
L	61+21.58	40.00	838835.6810	2973525.7723
L	62+57.15	-40.00	838706.9316	2973616.3439
L	62+57.15	40.00	838700.5425	2973536.5994
L	63+83.95	-40.00	838587.3844	2973634.6406
L	63+83.95	40.00	838569.6298	2973556.6357
L	64+10.00	40.00	838544.2309	2973562.4167
L	64+92.60	-40.00	838481.4408	2973658.7546
L	65+20.00	45.00	838433.5890	2973583.3386
L	66+08.27	45.00	838343.8279	2973618.2857
L	74+47.67	-40.00	838218.5972	2974352.0179
L	75+21.71	-28.76	838254.2077	2974411.8494
x	75+30.07	50.00	838204.4438	2974473.4875
L	75+43.07	-36.27	838273.7031	2974420.4104
x	75+74.60	50.00	838240.9436	2974506.3353
x	76+50.00	45.00	838284.0011	2974547.8806
L	76+62.31	-41.62	838364.8645	2974514.5807
L	77+24.33	-89.80	838438.0959	2974571.3666
L	77+50.00	45.00	838310.7246	2974623.1709
L	78+00.00	40.00	838316.3622	2974663.8052
L	78+36.53	-40.00	838388.7442	2974713.3289
L	78+92.44	40.00	838294.5120	2974736.5174
L	78+92.44	-40.00	838365.0230	2974774.3090
L	80+18.96	-40.00	838305.2581	2974885.8175
L	80+18.96	35.00	838239.1540	2974850.3879
L	80+54.98	35.00	838222.1640	2974884.5094
L	81+12.24	40.00	838194.7354	2974939.0203
L	81+80.92	-40.00	838252.5857	2975027.0223
L	82+00.00	50.00	838160.5646	2975027.4316
L	84+56.46	50.00	838167.0311	2975303.0801
L	85+89.29	147.28	838128.3291	2975480.2998
L	87+07.56	30.00	838285.4881	2975535.4437
L	89+73.38	30.00	838401.6502	2975774.6254
L	94+45.00	30.00	838742.3736	2976116.3298
x	94+69.40	40.00	838761.2549	2976136.2854
L	95+17.03	40.00	838807.5025	2976155.3360
L	97+02.97	-42.00	839010.4458	2976144.8389
L	97+92.01	-42.00	839093.6659	2976176.5129
L	97+92.01	40.00	839064.4975	2976253.1498
L	98+15.74	40.00	839087.9310	2976261.6681
L	98+35.76	40.00	839107.8913	2976268.3044
L	99+76.92	40.00	839252.4602	2976300.4813
L	99+76.92	-42.00	839263.0652	2976219.1699
L	102+37.06	40.00	839510.4108	2976334.1245
L	102+37.06	-40.00	839520.7572	2976254.7963
x	104+09.32	40.00	839639.5058	2976397.2360
L	106+32.50	40.00	839706.0177	2976568.7326
x	107+19.81	-40.00	839764.4857	2976670.5375

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L	107+19.81	40.00	839690.2105	2976640.8187	
L	107+90.36	-45.00	839742.9202	2976737.8950	
L	107+90.36	45.00	839659.3606	2976704.4615	
L	109+68.37	-45.00	839707.1317	2976896.9063	
x	L	109+68.37	45.00	839617.3054	2976891.3160
L	111+00.00	45.00	839609.1295	2977022.6908	
L	111+00.00	-45.00	839698.9557	2977028.2810	
L	111+67.50	30.00	839619.9079	2977090.9918	
L	120+52.13	40.00	839989.9941	2977668.9108	
L	120+94.76	-41.82	839998.7548	2977577.0884	
L	121+03.92	-40.00	840008.5837	2977575.5143	
L	124+78.95	40.00	840379.3547	2977642.6288	
L	124+78.95	-40.00	840401.9584	2977565.8885	
L	125+50.00	40.00	840447.5088	2977662.7035	
L	126+29.10	-45.00	840547.4048	2977603.5171	
x	L	126+29.10	35.00	840524.8011	2977680.2574
x	L	127+25.00	-45.00	840643.0301	2977638.9600
L	127+63.00	-40.00	840677.1331	2977661.0106	
L	130+98.95	-40.00	840942.1120	2977892.3350	
L	130+98.95	35.00	840880.7738	2977935.4931	
L	131+55.98	35.00	840913.5950	2977982.1402	
L	131+55.98	-40.00	840974.9333	2977938.9821	
L	133+88.11	35.00	840950.2344	2978174.9902	
L	133+88.11	-40.00	841023.1267	2978192.6459	
L	133+95.79	37.00	840946.4832	2978181.9814	
L	133+95.79	-40.00	841021.3193	2978200.1079	
L	137+06.55	-40.00	840817.6330	2978465.1318	
L	137+08.69	37.00	840779.1658	2978398.3948	
L	138+43.40	-35.00	840731.8798	2978541.1337	
L	140+15.58	37.00	840638.5785	2978697.5722	
L	140+15.58	-35.00	840709.1422	2978683.2628	
L	141+44.34	37.00	840664.1688	2978823.7660	
x	L	145+80.98	-35.00	840821.5108	2979237.3863
L	156+32.97	40.00	840826.2006	2980287.1577	
L	156+83.47	-30.00	840892.4339	2980342.4300	
L	157+00.00	-35.00	840896.0591	2980359.4774	
L	158+45.30	40.00	840806.1176	2980495.8876	
L	158+45.30	-35.00	840880.5007	2980505.4871	
L	159+00.77	40.00	840799.0174	2980550.9045	
L	159+00.77	-35.00	840873.4005	2980560.5040	
L	161+20.13	40.00	840735.2636	2980743.4307	
L	161+20.13	-35.00	840800.6750	2980780.1233	
L	161+64.31	40.00	840713.6522	2980781.9570	
L	161+82.72	40.00	840704.6467	2980798.0110	
x	L	163+30.42	-35.00	840697.7973	2980963.5222
x	L	163+31.53	-30.00	840692.8930	2980962.0450
x	L	167+00.81	-30.00	840512.2265	2981284.1170
L	167+30.60	40.00	840436.6021	2981275.8510	
x	L	167+76.53	-29.99	840481.2117	2981346.9549
x	L	168+88.05	-30.37	840471.4410	2981443.7149
L	169+63.22	40.00	840424.6412	2981535.7792	
L	170+00.00	45.00	840435.0482	2981571.4135	
x	L	170+14.27	-30.00	840509.3636	2981553.9214
x	L	170+70.00	-30.00	840532.0478	2981604.8211
L	170+84.60	-30.00	840537.9903	2981618.1550	
x	L	171+00.00	-40.00	840553.3939	2981628.1523
L	172+98.50	45.00	840556.5583	2981844.0619	
L	172+98.50	-40.00	840634.1970	2981809.4610	
L	175+20.00	45.00	840565.7698	2982027.8593	
L	175+50.00	40.00	840561.1414	2982053.6668	
L	177+36.46	-40.00	840495.5765	2982241.1880	
L	177+36.46	40.00	840455.1213	2982172.1708	
L	178+40.00	-40.00	840406.2484	2982293.5486	
L	179+38.79	40.00	840280.5649	2982274.4889	
L	179+38.79	-35.00	840318.4916	2982339.1925	
L	181+82.28	40.00	840138.2308	2982505.6535	
L	182+22.35	65.00	840114.1513	2982554.5452	
L	182+37.96	-35.00	840215.3998	2982558.0915	
L	182+59.00	-35.00	840218.7586	2982578.8615	
L	182+61.70	-30.00	840214.2543	2982582.3283	
L	182+66.75	-30.00	840215.0599	2982587.3098	
L	182+73.27	30.00	840156.8295	2982603.1747	
L	192+23.32	-30.00	840010.7505	2983521.4752	
L	192+23.32	30.00	839960.9262	2983488.0455	
L	203+42.86	-30.00	839386.9880	2984451.1444	
L	203+42.86	30.00	839337.1638	2984417.7147	
L	210+87.03	103.61	839119.3927	2985166.0195	
L	210+90.21	114.85	839109.0915	2985171.7389	
L	213+65.57	-42.68	839352.9071	2985386.2331	
L	213+65.69	-30.00	839341.8032	2985392.3661	
L	218+65.69	55.89	839503.7473	2985873.1408	
L	219+65.69	55.60	839551.5034	2985961.0007	
L	231+50.00	-47.80	840205.1086	2986954.0217	
L	231+66.29	70.00	840109.1854	2987024.3217	
L	231+72.40	-60.00	840226.4793	2986967.9356	
L	231+91.98	52.10	840137.1347	2987038.4234	
L	232+20.12	-60.00	8402		



# SURVEY CONTROL SHEET R-5014

FINAL ROW /EASEMENT POINTS (GROUND COORDINATES)

PROJECT REFERENCE NO.	SHEET NO.
R-5014	IC-4
Location and Surveys	

ROW MARKER PERMANENT EASEMENT-E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	43+75.00	-29.67	839662.3721	2972324.8686
L	44+07.00	32.31	839626.3020	2972265.1773
L	44+07.00	49.00	839624.4346	2972248.5925
L	44+50.00	-31.00	839594.9315	2972334.9035
L	45+18.00	64.66	839496.1141	2972268.7924
L	45+25.00	-32.00	839531.4494	2972359.0542
L	46+00.00	-32.00	839474.3465	2972395.6135
L	46+60.00	-34.50	839437.1898	2972434.9619
L	46+60.00	-30.09	839433.8623	2972432.0753
L	46+79.00	61.23	839350.6679	2972389.5729
L	48+73.00	-30.00	839329.0275	2972600.2975
L	48+81.98	64.25	839235.2321	2972587.0539
L	48+98.05	48.88	839246.5839	2972609.5709
L	49+00.00	-30.00	839326.2486	2972692.5294
L	52+71.94	-51.00	839433.4213	2972975.3174
L	53+93.00	-58.00	839410.9002	2973113.3785
L	56+10.00	65.00	839195.9311	2973235.2225
L	56+10.00	35.00	839219.0227	2973254.3740
x L	56+37.00	-54.00	839268.5723	2973333.1866
x L	56+37.00	-40.00	839258.1413	2973323.8488
L	56+50.00	65.00	839171.9460	2973262.5495
L	56+50.00	45.00	839186.6026	2973276.1577
x L	56+62.00	-54.00	839250.2924	2973352.9023
x L	56+62.00	-40.00	839240.1941	2973343.2058
L	68+93.00	-40.00	838194.3405	2973870.9880
x L	68+93.00	-56.00	838208.2141	2973878.9581
L	69+26.00	-56.00	838194.5457	2973904.7434
L	69+26.00	-40.00	838180.1623	2973897.7350
x L	75+09.00	66.00	838176.5367	2974467.6991
x L	75+09.00	55.94	838183.9101	2974460.8485
x L	75+30.07	61.00	838196.7173	2974481.3170
L	84+33.00	50.00	838161.5435	2975278.2633
L	84+33.00	59.00	838152.7195	2975280.0343
x L	103+90.00	40.00	839627.4324	2976386.1391
x L	103+90.00	53.00	839618.9898	2976396.0246
x L	104+20.00	-40.00	839704.3186	2976349.1654
x L	104+24.00	-55.00	839718.5545	2976342.4889
x L	104+25.00	53.00	839639.0208	2976415.5597
x L	104+25.00	40.75	839648.1373	2976407.3701
x L	104+44.00	-50.00	839730.1217	2976364.0546
x L	104+44.00	-40.00	839722.2230	2976370.1874
L	107+90.36	-53.00	839750.3477	2976740.8669
L	109+68.37	-53.00	839715.1162	2976897.4032
L	111+15.00	-38.08	839691.1143	2977042.8220
L	111+15.00	-53.00	839706.0086	2977043.7489
L	121+30.00	-50.00	840032.1541	2977557.3556
L	121+30.00	-40.00	840035.0341	2977566.9319
L	122+47.00	-45.00	840156.7442	2977537.8027
L	123+22.00	-55.00	840237.4983	2977524.9100
L	123+75.00	-51.00	840294.7154	2977532.9365
L	124+32.00	-50.00	840355.5027	2977543.8423
L	125+45.00	-53.00	840468.9894	2977572.0801
L	126+45.00	-45.00	840563.5790	2977608.4814
L	126+70.00	-45.00	840588.7748	2977617.0277
L	126+70.00	-55.00	840592.1555	2977607.6165
x L	126+95.00	-45.00	840613.6493	2977626.4681
x L	126+95.00	-55.00	840617.3640	2977617.1836
x L	127+15.00	-45.00	840633.2963	2977634.6562
L	127+71.00	-40.00	840684.6211	2977664.9417
L	127+71.00	-50.00	840689.3199	2977656.1145
L	138+65.00	80.00	840618.8303	2978509.8959
L	138+65.00	37.00	840657.9633	2978527.7174
L	139+71.00	54.00	840616.0831	2978646.7323
L	141+78.00	39.48	840668.4312	2978857.2448
L	141+78.00	47.00	840661.0576	2978858.7401
L	166+06.00	50.00	840488.8400	2981162.2871
L	166+06.00	40.00	840497.5615	2981167.1795
L	167+55.00	47.00	840417.5715	2981298.3573
L	168+61.00	70.00	840369.5436	2981421.0512
L	172+35.00	58.00	840518.8354	2981791.3537
L	173+72.00	45.00	840574.7809	2981903.6576
L	180+80.00	40.00	840169.4975	2982392.0059
L	180+85.00	65.00	840144.4312	2982386.2386
L	182+05.00	52.70	840125.0752	2982532.3650

ROW MARKER PERMANENT EASEMENT-E				
ALIGN	STATION	OFFSET	NORTH	EAST
LA	115+10.00	55.00	839528.1366	2977427.2836

ROW MARKER PERMANENT EASEMENT-E				
ALIGN	STATION	OFFSET	NORTH	EAST
Y4	10+95.00	-27.69	839531.8379	2977559.7834

\* - POINT NOT SET DUE TO INACCESSIBILITY



8/17/19

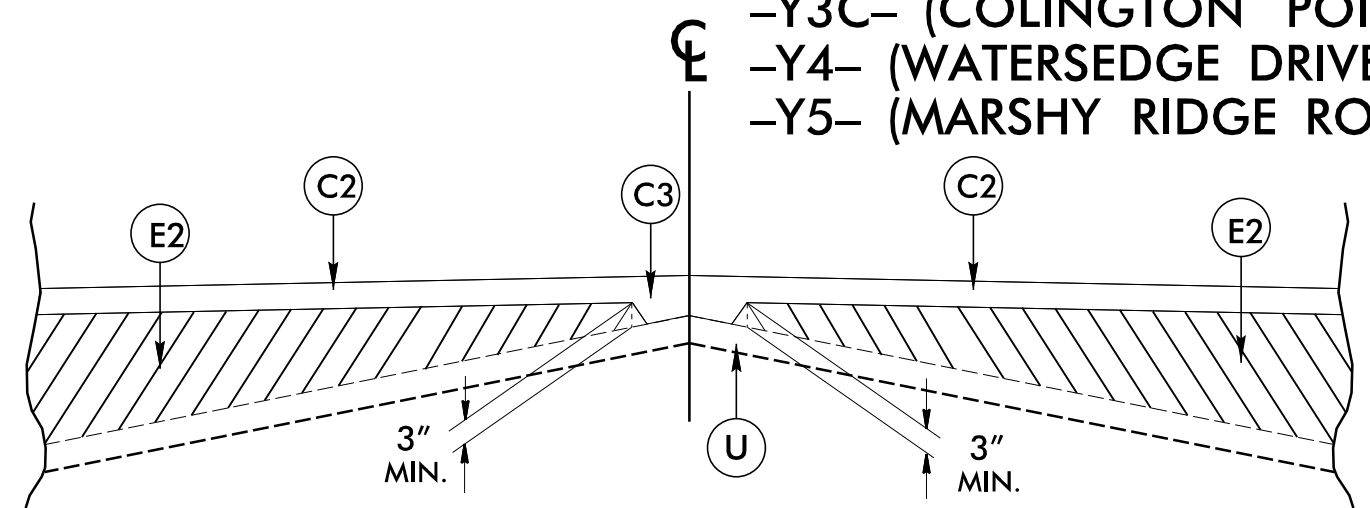
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN) JANUARY 4, 2019	
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.5" OR GREATER THAN 2" DEPTH.
C4	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" 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" IN DEPTH TO BE PLACED IN LAYERS NOT GREATER THAN 5.5" IN DEPTH OR LESS THAN 3"
R1	5" MONOLITHIC ISLAND (KEYED IN)
R2	2'-6" CURB & GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	VARIABLE DEPTH MILLING - 0" TO 3"
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

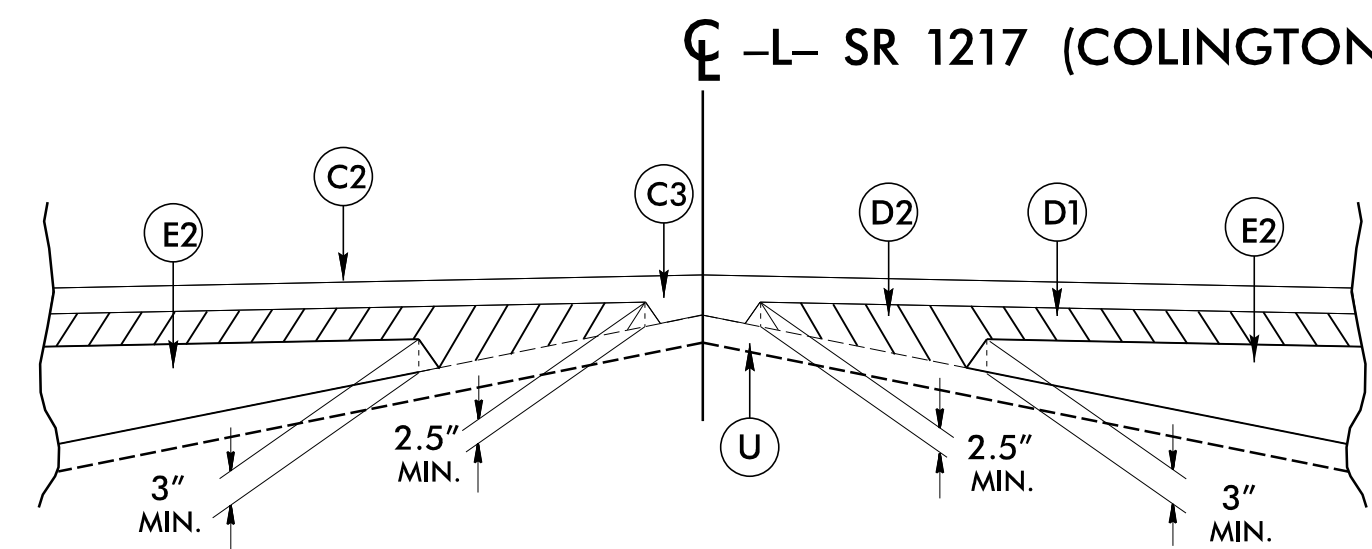
**CALYX**  
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6750 TRYON ROAD  
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CALYXengineers.com  
NC License # F-1333  
Formerly Mulvey Engineers & Consultants

PROJECT REFERENCE NO. <b>R-5014</b>	SHEET NO. <b>2A-1</b>
RW SHEET NO.	PAVEMENT DESIGN
ROADWAY DESIGN 1/8/2019 ENGINEER	PAVEMENT DESIGN 1/8/2019 ENGINEER
DocuSigned by: <i>Stephen C. Brown</i>	DocuSigned by: <i>Clark Morrison</i>
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

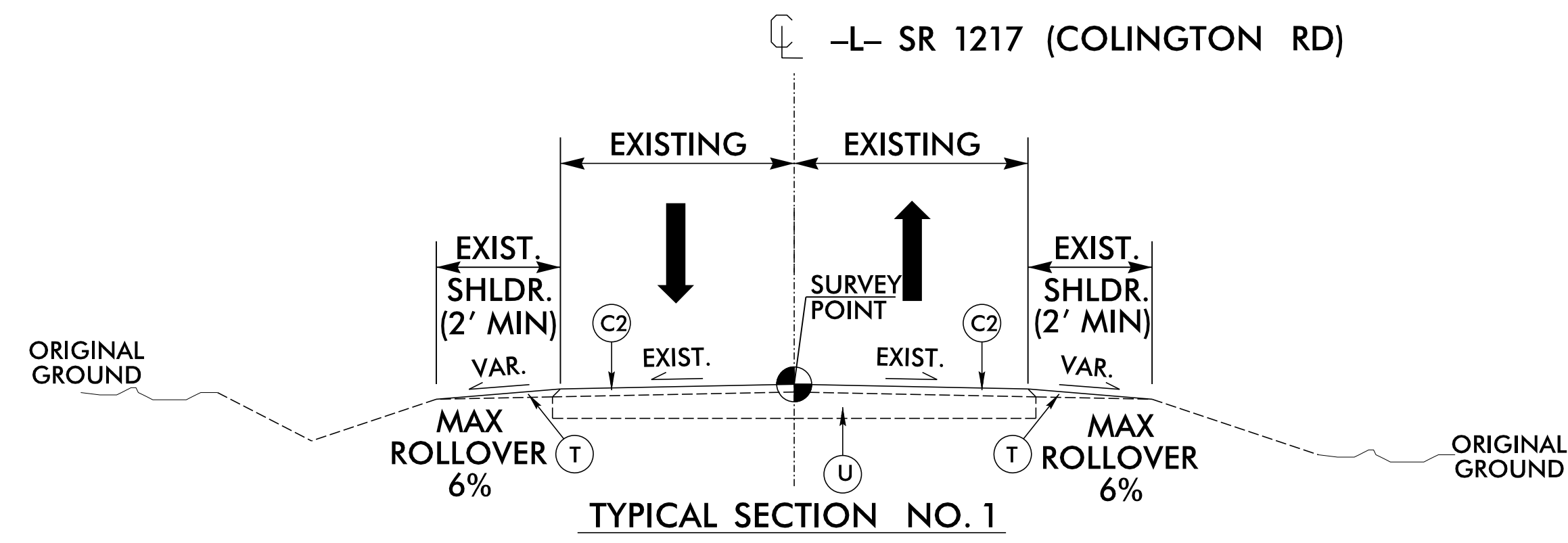
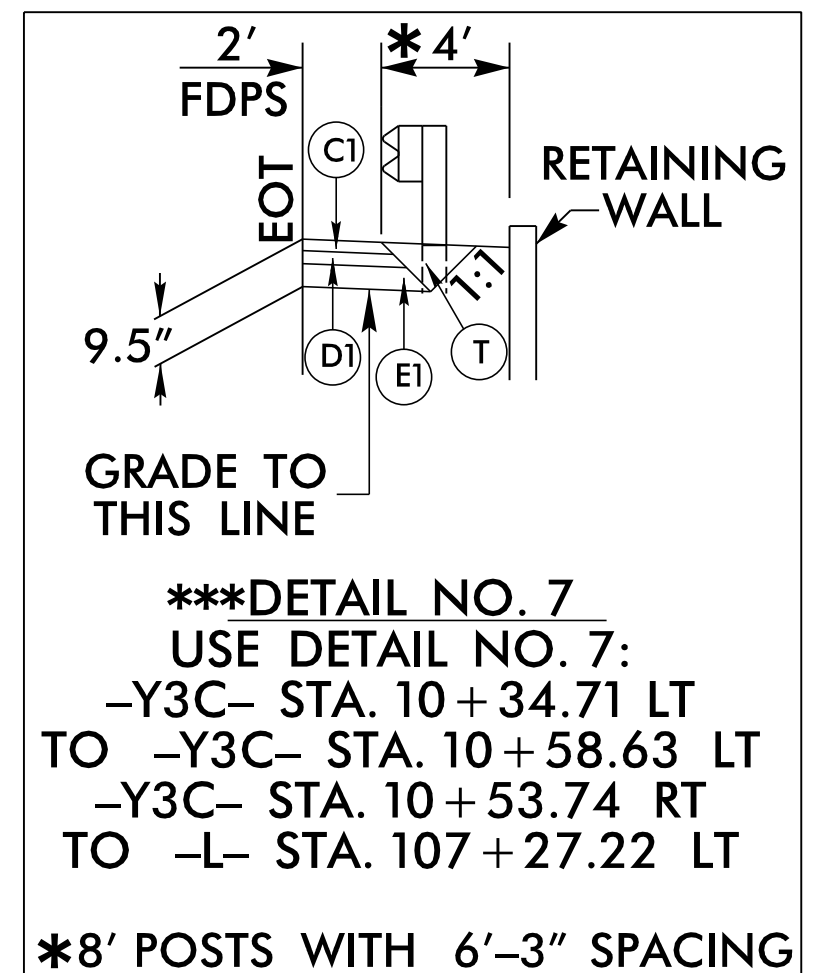
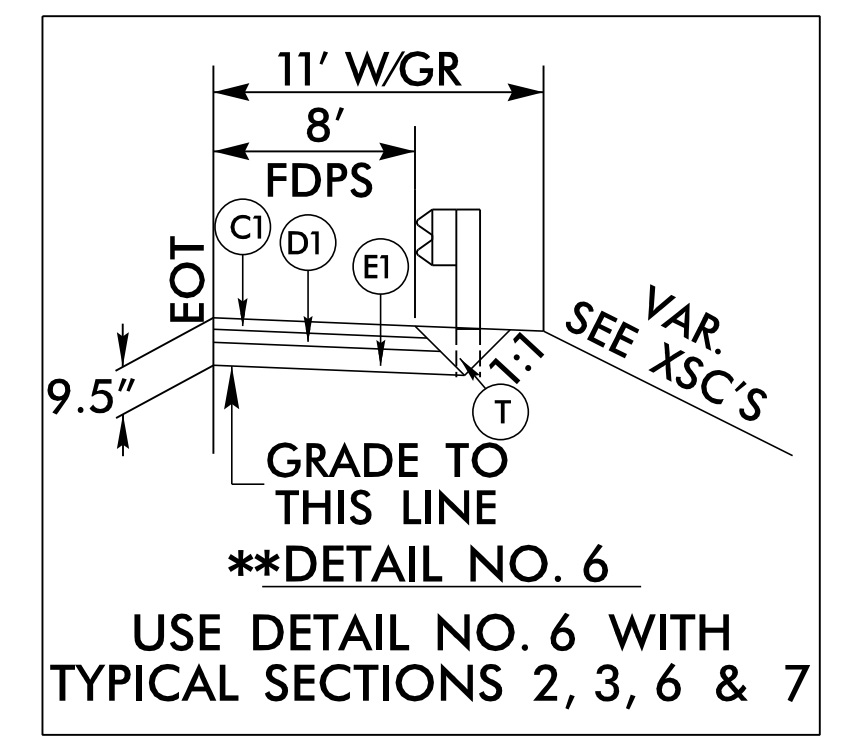
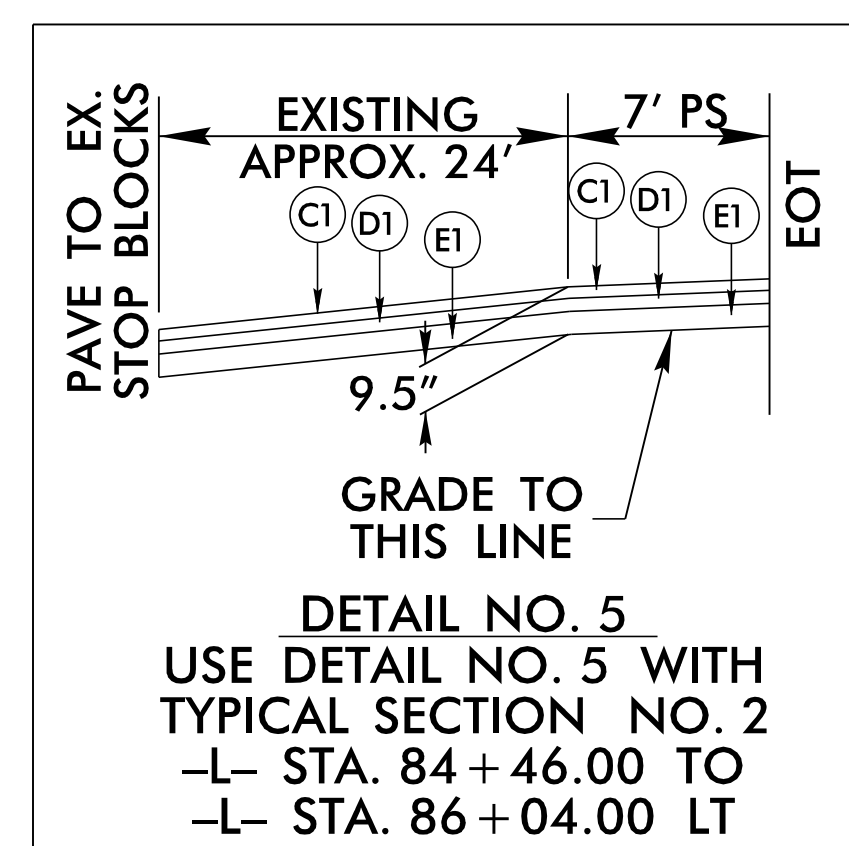
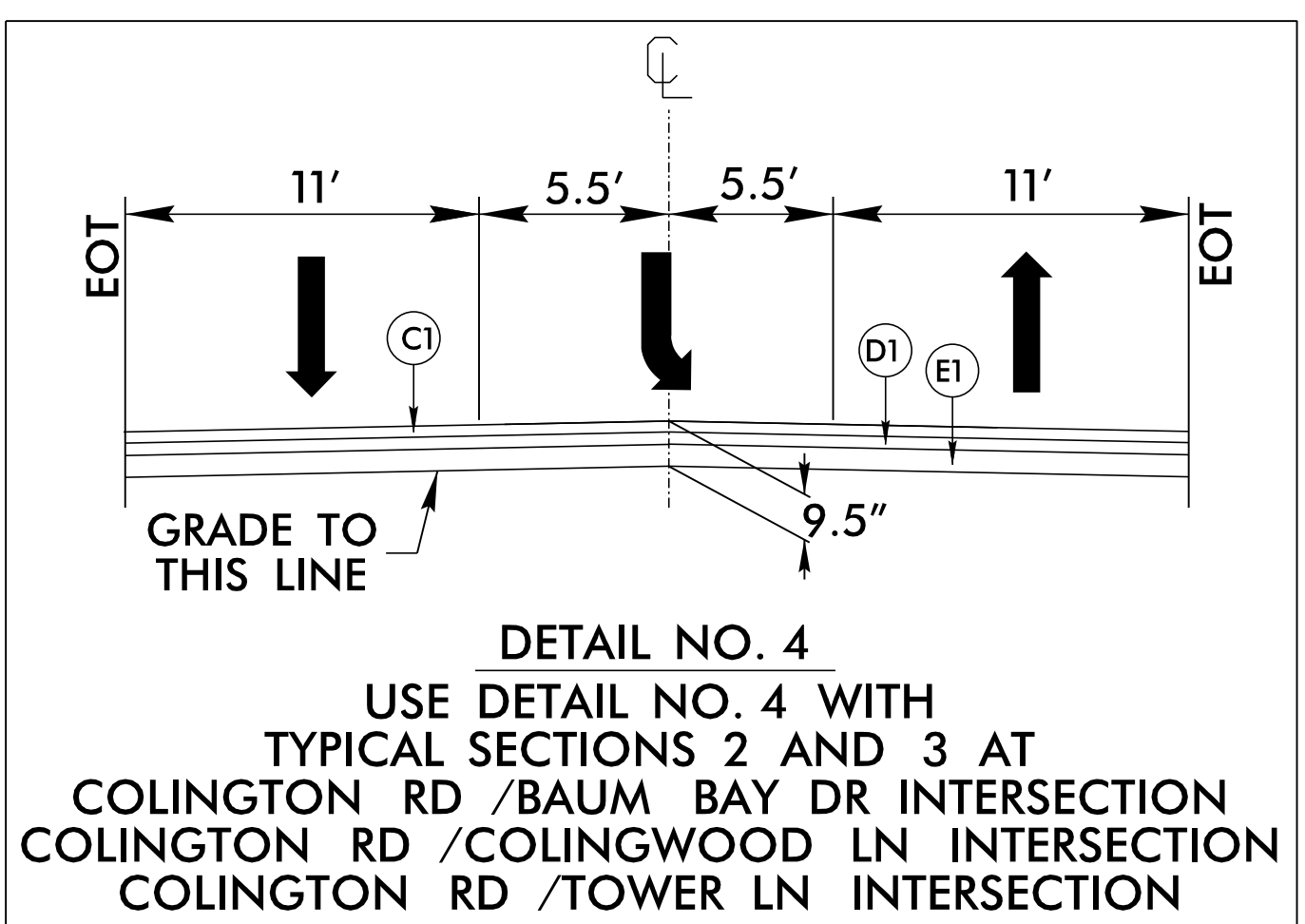
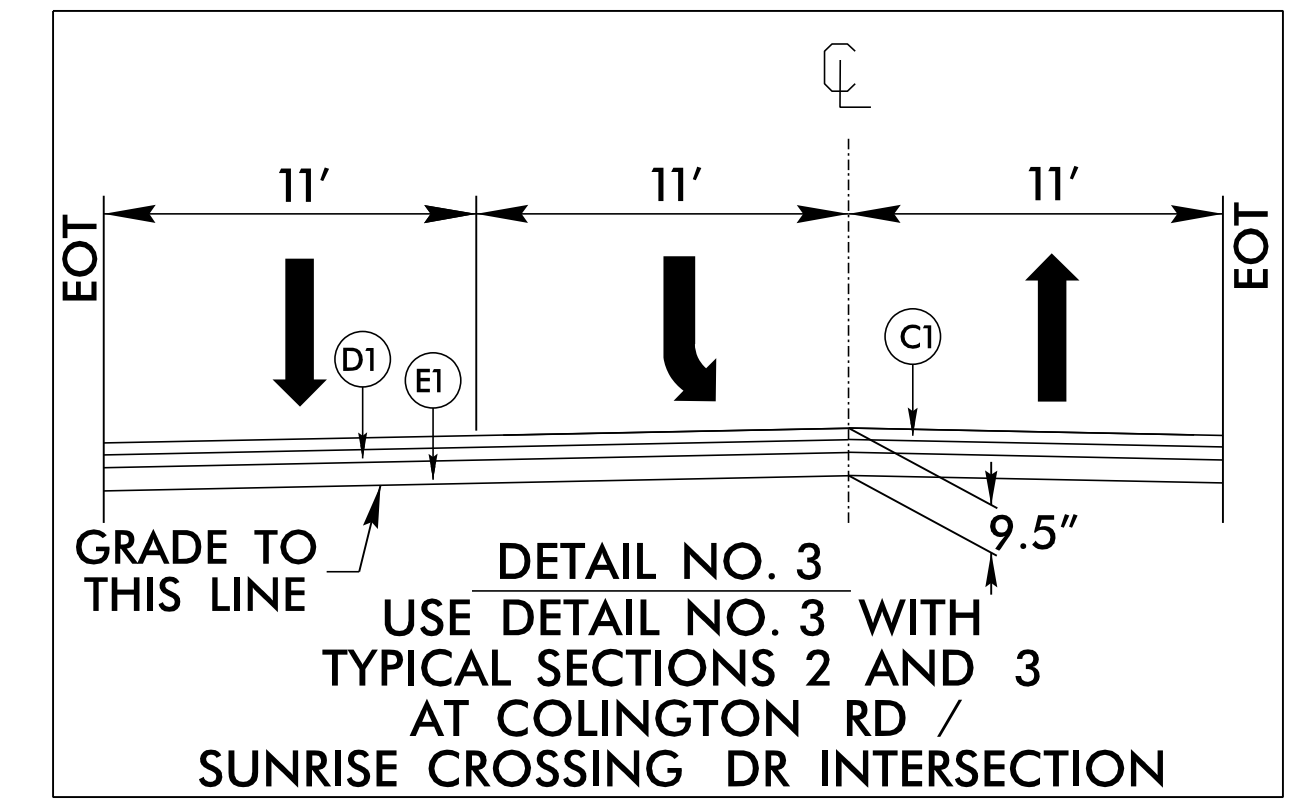
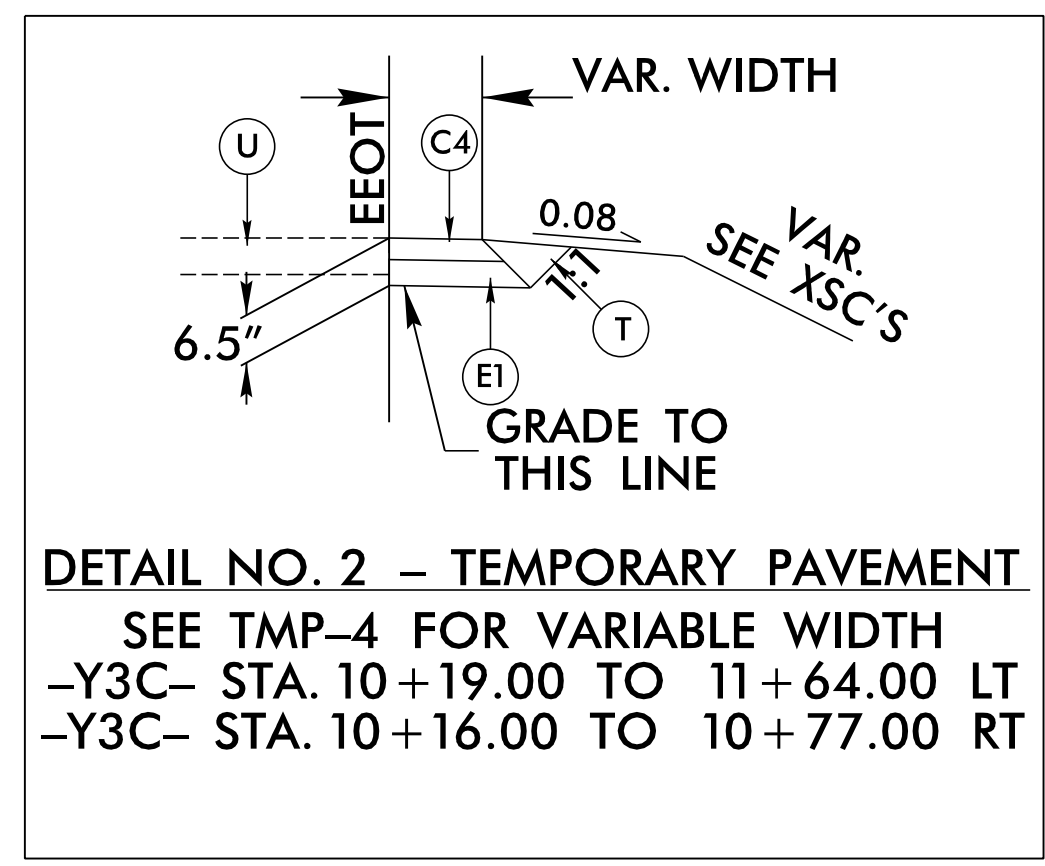
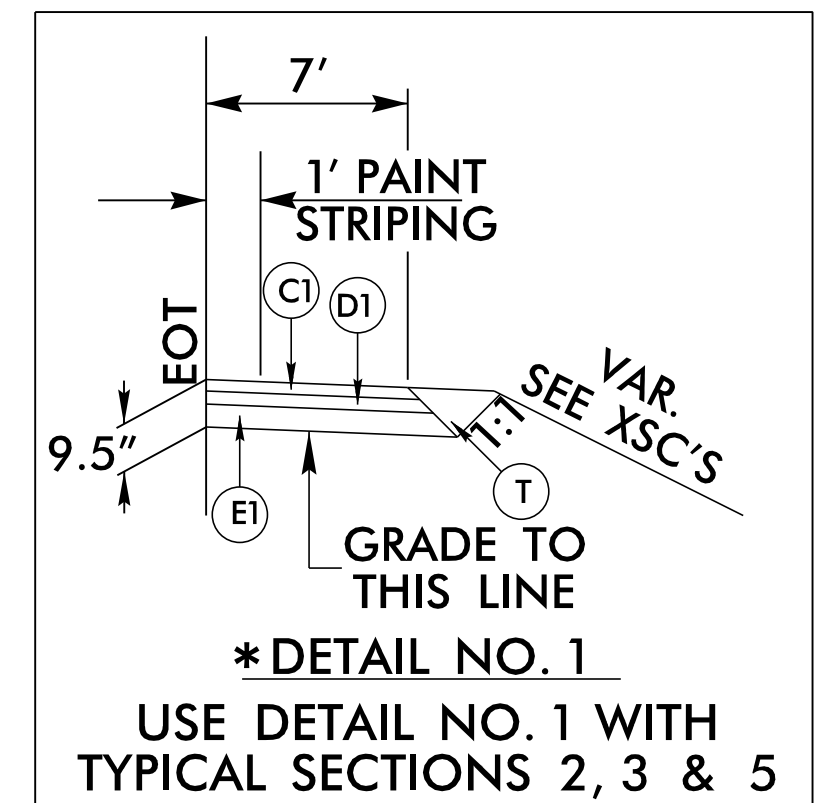
- Y1- (TOWER LANE)
- Y2- (COLINGWOOD LANE)
- Y3- (SANDPIPER DRIVE)
- Y3A- SR 1219 (SCHOOL HOUSE ROAD)
- Y3B- (SUNRISE CROSSING DRIVE)
- Y3C- (COLINGTON POINT)
- Y4- (WATERSEdge DRIVE)
- Y5- (MARSHY RIDGE ROAD)



Detail Showing Method of Wedging



Detail Showing Method of Wedging



USE TYPICAL SECTION NO. 1  
-L- STA. 11+00.00 TO -L- STA. 43+10.00  
-L- STA. 209+96.72 TO -L- STA. 229+00.00

NOTE:  
TRANSITION FROM TYP. 1 TO TYP. 2  
-L- STA. 41+98.74 TO 43+10.00.  
TRANSITION FROM 2 TO 3 LANES.  
TRANSITION FROM TYP. 2 TO TYP. 1  
-L- STA. 182+12.50 TO 183+00.00.

REVISIONS

1/8/2019 R:\Roadway\Proj\RF5014\_Rdy\_typ.dgn



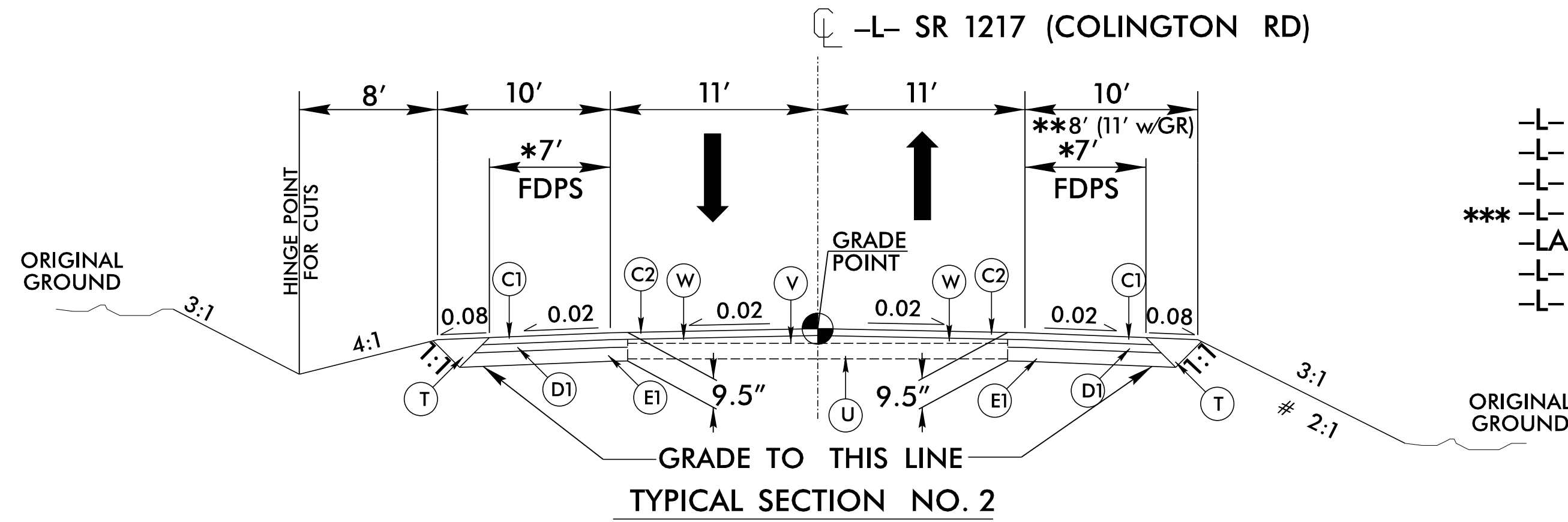
8/17/19

PAV'T SCHEDULE	
C1	3" S9.5B
C2	1½" S9.5B
C3	VAR. S9.5B
C4	2½" S9.5B
D1	2½" I19.0C
D2	VAR. I19.0C
E1	4" B25.0C
E2	VAR. B25.0C
R1	MON. ISLAND
R2	2'-6" C&G
T	EARTH MAT.
U	EX. PAV'T
V	VAR. MILL 0" -3"
W	WEDGING

REVISIONS



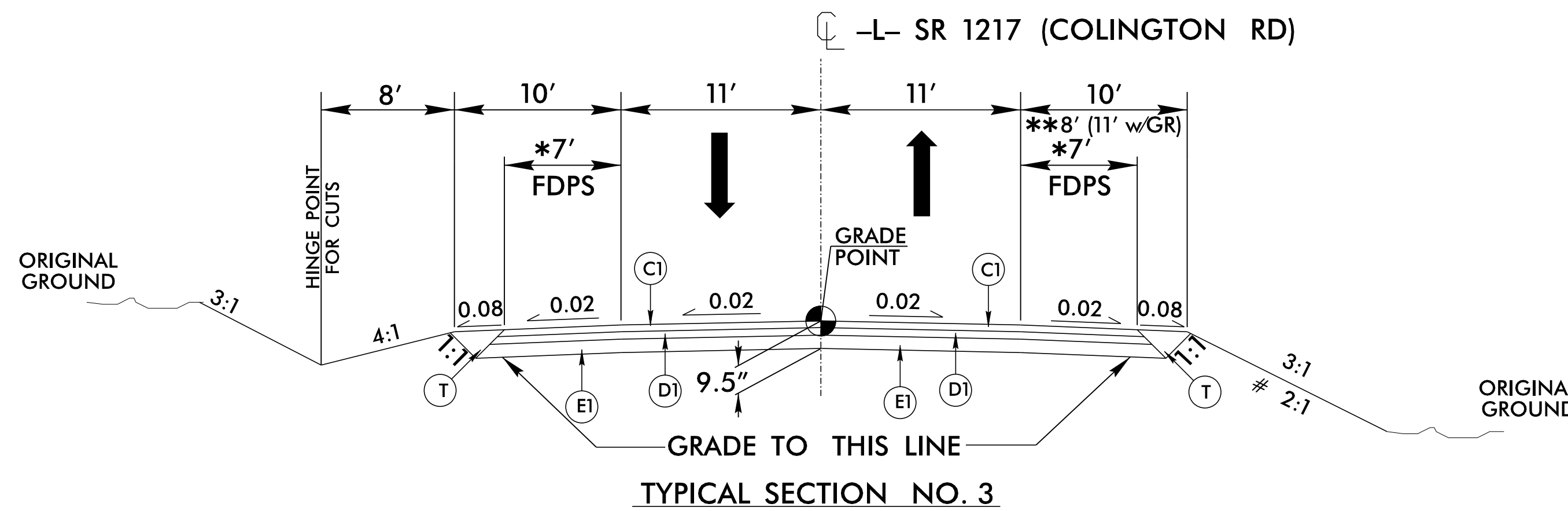
PROJECT REFERENCE NO. R-5014	SHEET NO. 2A-2
RW SHEET NO.	PAVEMENT DESIGN
ROADWAY DESIGN ENGINEER 8/8/2019	PAVEMENT DESIGN ENGINEER 8/8/2019
DocuSigned by: Stephen C. Broude	DocuSigned by: Clark Morrison
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



**USE TYPICAL SECTION NO. 2**

-L- STA. 43+10.00 TO -L- STA. 48+50.00  
 -L- STA. 50+00.00 TO -L- STA. 66+00.00  
 -L- STA. 75+25.00 TO -L- STA. 90+00.64 (EXISTING BRIDGE)  
 \*\*\* -L- STA. 91+89.27 (EXISTING BRIDGE) TO -L- STA. 111+67.50 (EQUALITY)  
 -LA- STA. 111+67.50 (EQUALITY) TO -LA- STA. 117+34.00  
 -L- STA. 121+00.00 TO -L- STA. 147+22.84 (EXISTING BRIDGE)  
 -L- STA. 152+34.13 (EXISTING BRIDGE) TO -L- STA. 182+57.16

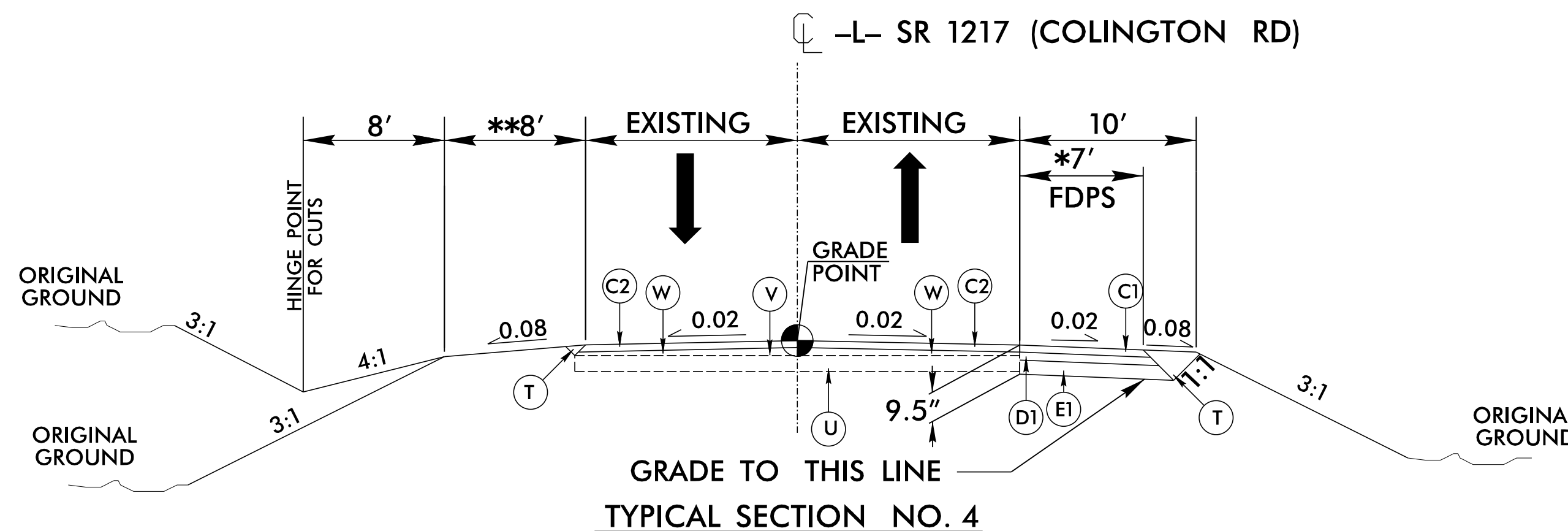
**NOTE:**  
 SEE PLANS FOR TURN LANES AND TAPERS.  
 USE DETAILS NO. 1 THRU 5 WITH TYPICAL NO. 2  
 MILL AS NEEDED.  
 \* SEE DETAIL NO. 1  
 \*\* SEE DETAIL NO. 6 WHERE PROP. GUARDRAIL PRESENT  
 \*\*\* SEE DETAIL NO. 7  
 # 2:1 FILL SLOPES USED WHERE ROCK PLATING REQUIRED  
 AND SAV (SUBMERGED AQUATIC VEGETATION) PRESENT



**USE TYPICAL SECTION NO. 3**

-L- STA. 48+50.00 TO -L- STA. 50+00.00  
 -L- STA. 66+00.00 TO -L- STA. 75+25.00  
 -LA- STA. 117+34.00 TO -LA- STA. 120+03.07 (EQUALITY)  
 -L- STA. 120+05.14 (EQUALITY) TO -L- STA. 121+00.00

**NOTE:**  
 SEE PLANS FOR TURN LANES AND TAPERS.  
 USE DETAILS NO. 1 & 4 WITH TYPICAL NO. 3  
 MILL AS NEEDED.  
 \* SEE DETAIL NO. 1  
 \*\* SEE DETAIL NO. 6 WHERE PROP. GUARDRAIL PRESENT  
 # 2:1 FILL SLOPES USED WHERE ROCK PLATING REQUIRED  
 AND SAV (SUBMERGED AQUATIC VEGETATION) PRESENT



**USE TYPICAL SECTION NO. 4**

-L- STA. 182+57.16 TO -L- STA. 183+00.00

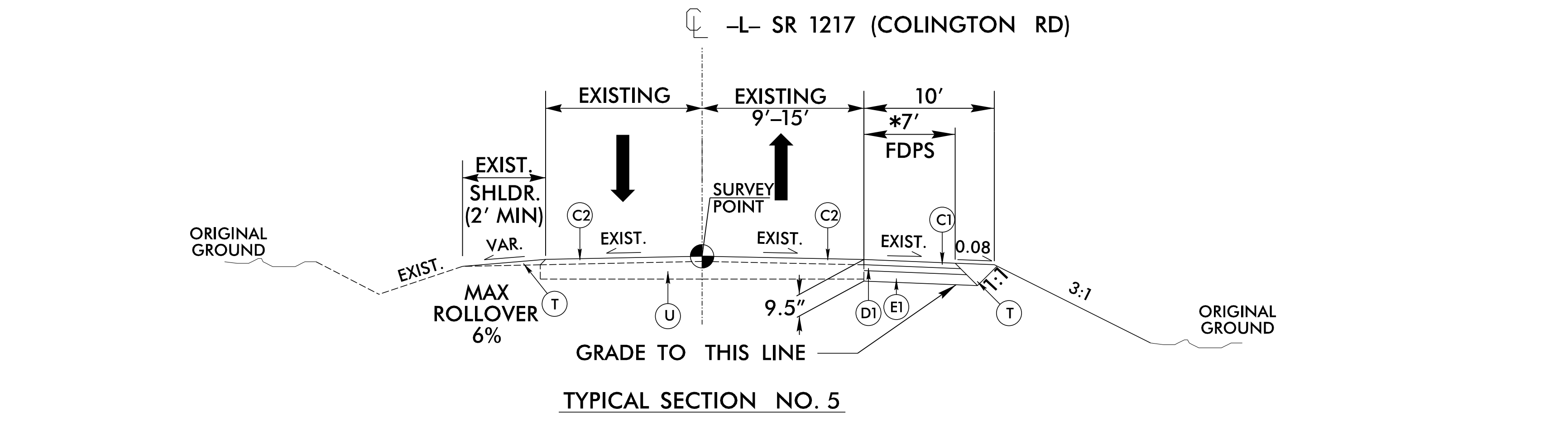
**NOTE:**  
 \* SEE DETAIL NO. 1  
 \*\* SEE DETAIL NO. 6 WHERE PROP. GUARDRAIL PRESENT

PAV'T SCHEDULE	
C1	3" S9.5B
C2	1 1/2" S9.5B
C3	VAR. S9.5B
C4	2 1/2" S9.5B
D1	2 1/2" I19.0C
D2	VAR. I19.0C
E1	4" B25.0C
E2	VAR. B25.0C
R1	MON. ISLAND
R2	2'-6" C&G
T	EARTH MAT.
U	EX. PAV'T
V	VAR. MILL 0"-3"
W	WEDGING

REVISIONS

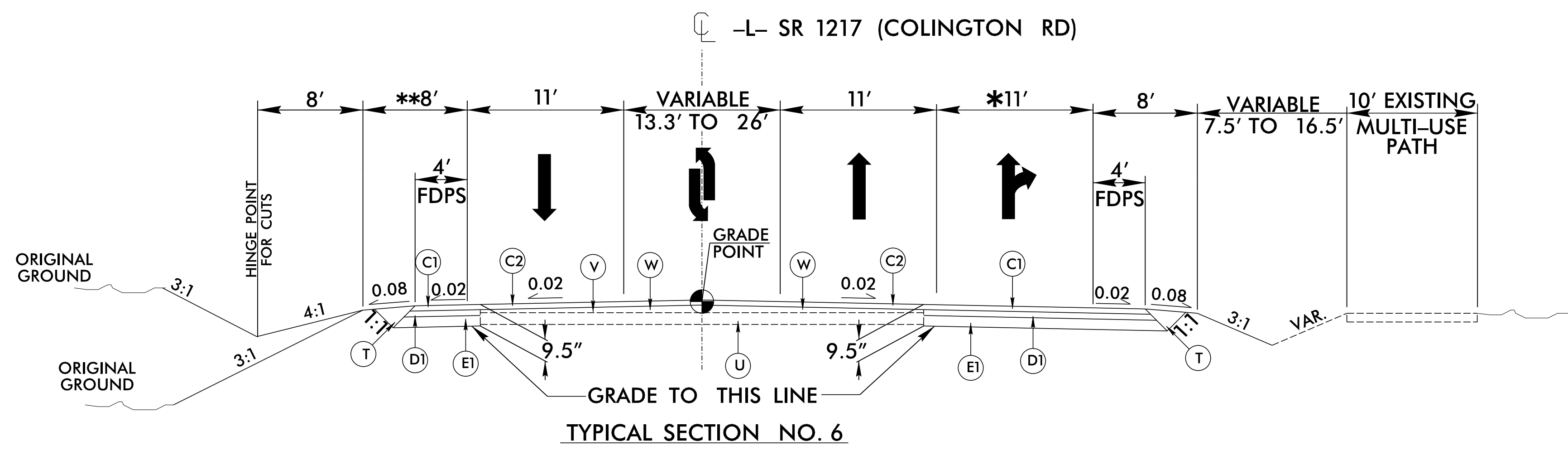
**CALYX**  
ENGINEERS + CONSULTANTS  
6750 TRYON ROAD  
CARY, NC 27518  
phone: 919.851.1912  
CALYXengineers.com  
NC License # F-1333  
Formerly Mulkey Engineers & Consultants

PROJECT REFERENCE NO. R-5014	SHEET NO. 2A-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 1/8/2019	PAVEMENT DESIGN ENGINEER 1/8/2019
DocuSigned by: Stephen C. Browde Clark Morrison <b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



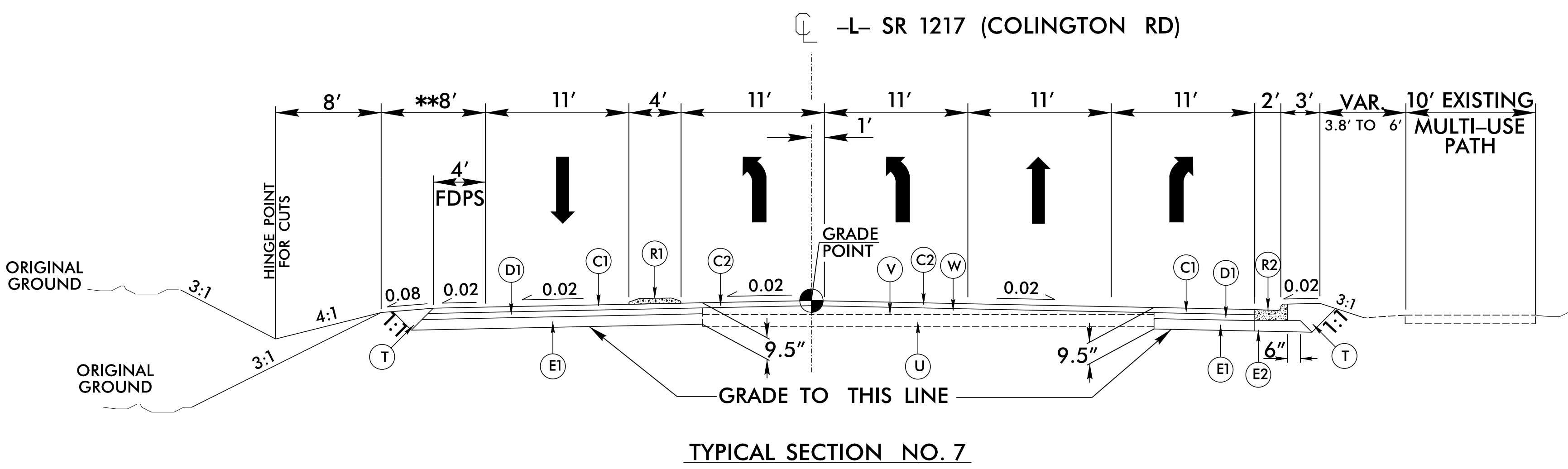
TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5  
-L- STA. 183+00.00 TO -L- STA. 209+96.72  
NOTE:  
\* SEE DETAIL NO. 1  
TIE TO EXISTING MULTI-USE PATH USING  
4" CONCRETE SIDEWALK AT -L- STA. 195+48.22



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6  
-L- STA. 229+00.00 TO -L- STA. 233+32.00  
\* TRANSITION FROM 0' TO 11'  
-L- STA. 229+00.00 TO -L- STA. 230+00.00  
\*\* SEE DETAIL NO. 6 WHERE PROP. GUARDRAIL  
NOTE:  
SEE PLANS FOR TURN LANES AND TAPERS.  
MILL AS NEEDED.



TYPICAL SECTION NO. 7

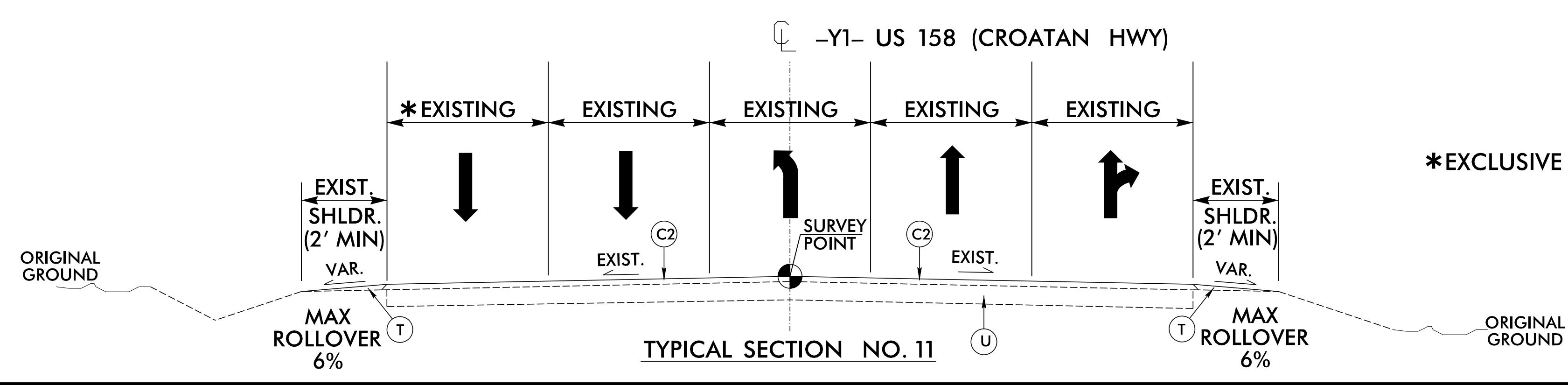
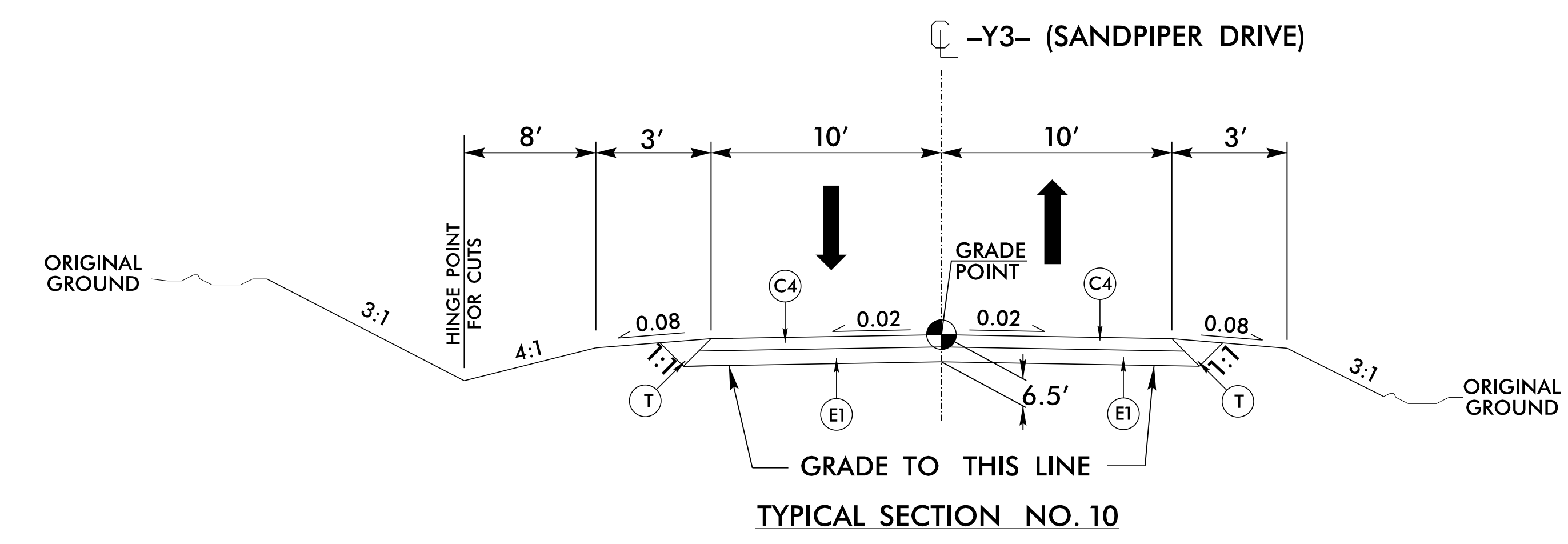
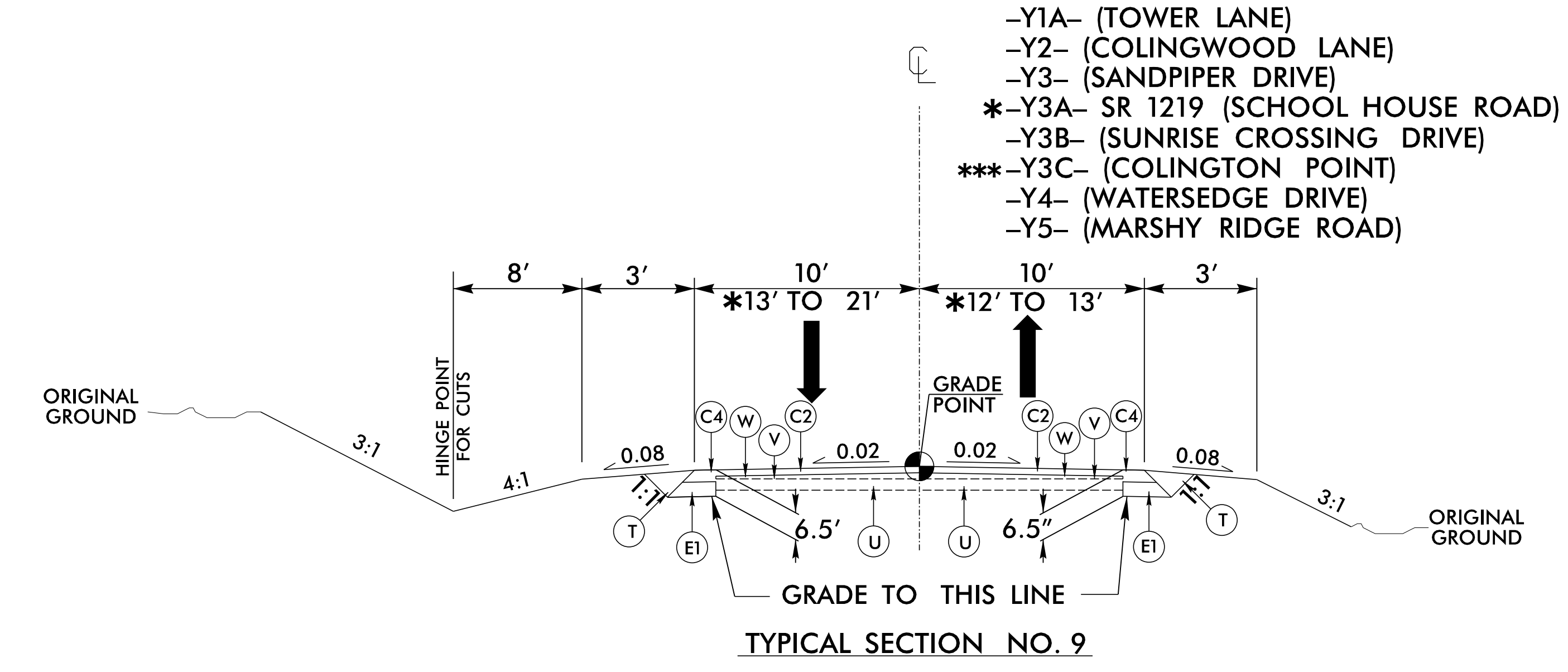
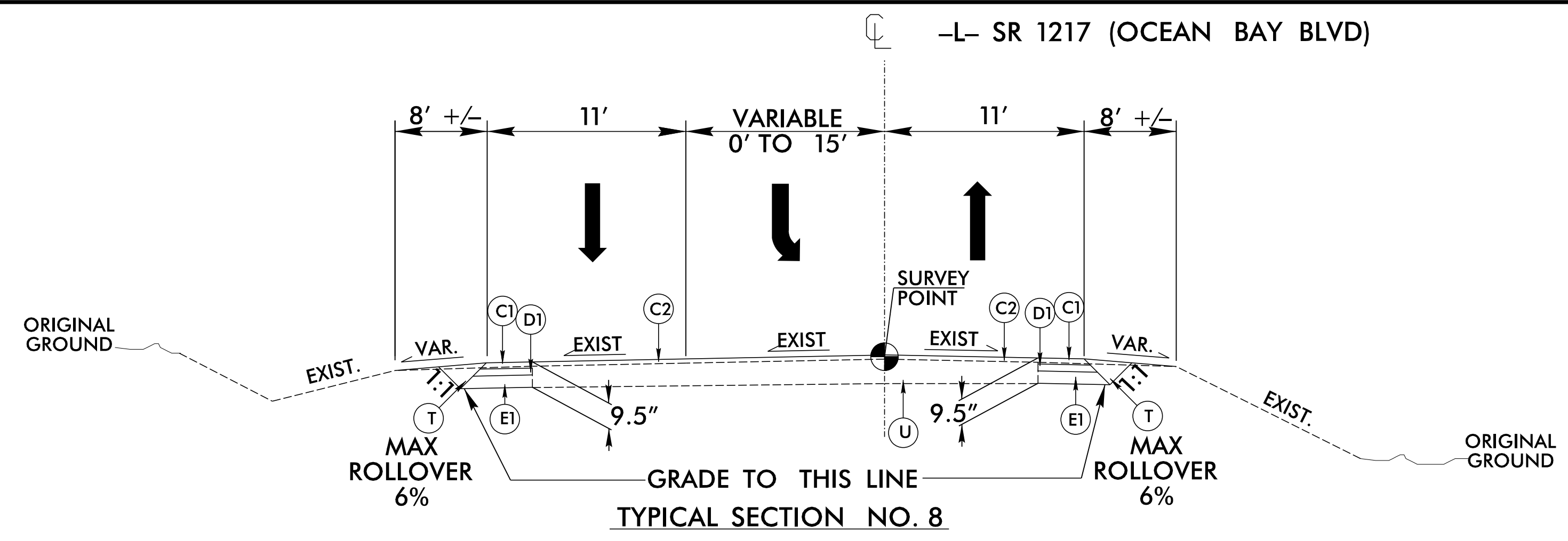
USE TYPICAL SECTION NO. 7  
-L- STA. 233+32.00 TO -L- STA. 235+77.02  
\*\* SEE DETAIL NO. 6 WHERE PROP. GUARDRAIL  
NOTE:  
SEE PLANS FOR TURN LANES AND TAPERS.  
MILL AS NEEDED.



8/17/19

PAV'T SCHEDULE	
C1	3" S9.5B
C2	1½" S9.5B
C3	VAR. S9.5B
C4	2½" S9.5B
D1	2½" I19.0C
D2	VAR. I19.0C
E1	4" B25.0C
E2	VAR. B25.0C
R1	MON. ISLAND
R2	2'-6" C&G
T	EARTH MAT.
U	EX. PAV'T
V	VAR. MILL 0"-3"
W	WEDGING

REVISIONS



**CALYX**  
ENGINEERS + CONSULTANTS  
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CARY, NC 27518  
phone: 919.851.1912  
CALYXengineers.com  
NC License # F-1333  
Formerly Mulkey Engineers & Consultants

PROJECT REFERENCE NO. <b>R-5014</b>	SHEET NO. <b>2A-4</b>
RW SHEET NO.	PAVEMENT DESIGN
ROADWAY DESIGN ENGINEER 1/8/2019	PAVEMENT DESIGN ENGINEER 1/8/2019
DocuSigned by: <i>Stephen C. Browde</i> DocuSigned by: <i>Clark Morrison</i>	
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**USE TYPICAL SECTION NO. 8**  
-L- STA. 236+49.02 TO -L- STA. 240+00.00  
**NOTE:**  
SEE PLANS FOR TURN LANES AND TAPERS.

**USE TYPICAL SECTION NO. 9**  
-Y1A- STA. 11+70.00 TO -Y1A- STA. 13+39.82  
-Y2- STA. 10+15.00 TO -Y2- STA. 11+34.31  
-Y3- STA. 11+00.00 TO -Y3- STA. 12+31.39  
\*-Y3A- STA. 11+60.00 TO -Y3A- STA. 12+63.62  
-Y3B- STA. 11+92.00 TO -Y3B- STA. 12+03.27  
\*\*\*-Y3C- STA. 10+18.02 TO -Y3C- STA. 11+00.00  
-Y4- STA. 10+15.00 TO -Y4- STA. 11+56.10  
-Y5- STA. 10+70.00 TO -Y5- STA. 12+55.03  
**NOTE:**  
SEE PLANS FOR TAPERS.  
MILL AS NEEDED.  
\*\*\* SEE DETAIL NO. 7  
\*\*\* SEE TMP-4 FOR TEMPORARY PAVEMENT  
LOCATIONS AND WIDTHS.


**USE TYPICAL SECTION NO. 10**  
-Y3- STA. 12+31.39 TO -Y3- STA. 12+59.93  
**NOTE:**  
SEE PLANS FOR TAPERS.

**USE TYPICAL SECTION NO. 11**  
-Y1- STA. 12+16.76 TO -Y1- STA. 13+87.34  
\*EXCLUSIVE RIGHT TURN LANE ON SOUTHBOUND US 158  
**NOTE:**  
SEE PLANS FOR TAPERS.  
MILL AS NEEDED.

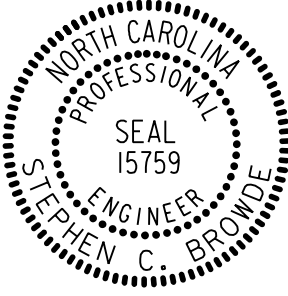
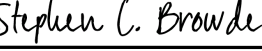
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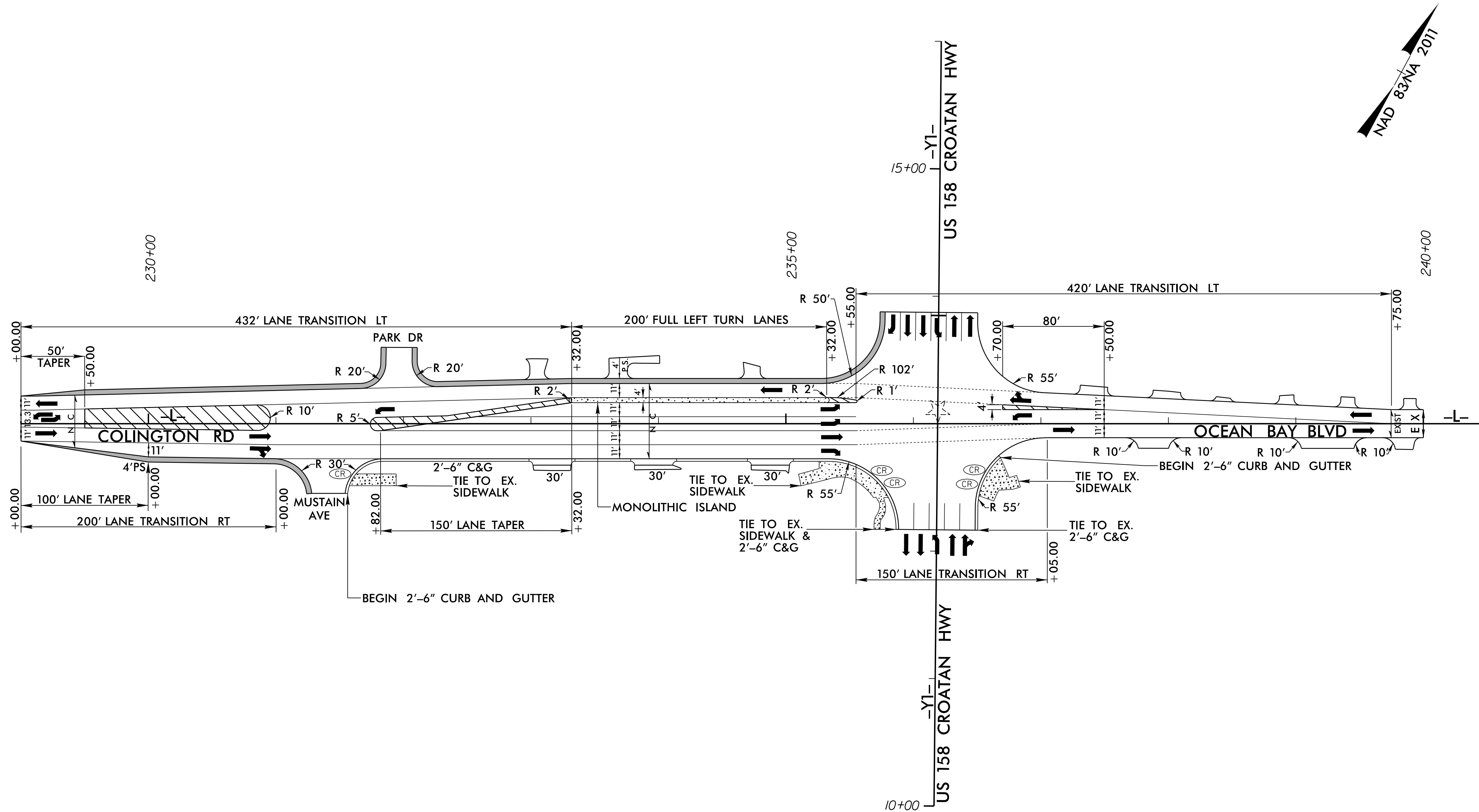
# INTERSECTION DETAIL


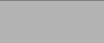

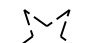
**-L- (COLINGTON RD / OCEAN BAY BLVD.) &  
-Y1- (US 158 CROATAN HWY)**



50' 0' 50' 100'  
25'  
(ENGLISH)

PROJECT REFERENCE NO. <b>R-5014</b>	SHEET NO. <b>2B-1</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
1/4/2019	
Documented by: 	
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-  CURB RAMP
-  PROPOSED PAVED SHOULDER
-  SIDEWALK / CONCRETE ISLAND
-  EXISTING TRAFFIC SIGNAL

NOTES:  
DRIVEWAY RADII ARE 5' UNLESS OTHERWISE NOTED  
SEE SHEETS 19 AND 20 ROADWAY PLANS



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

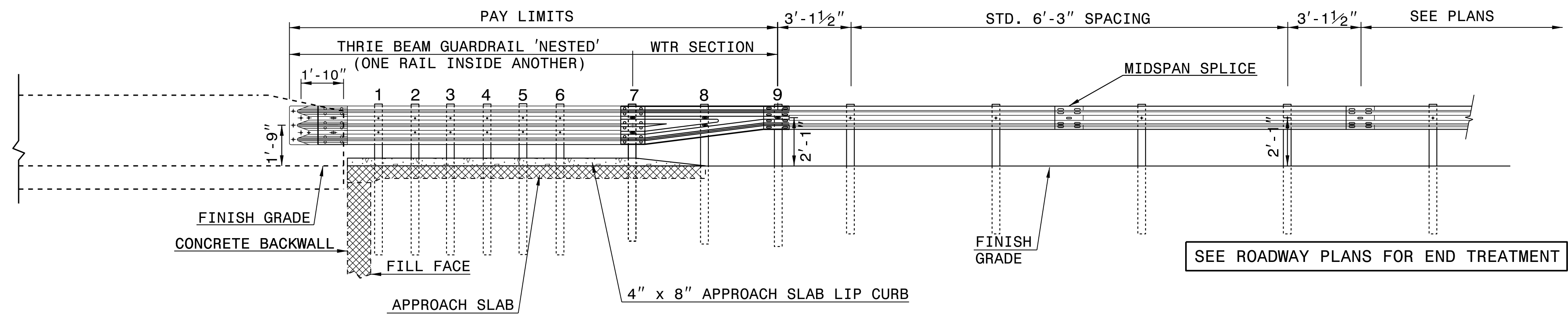
ENGLISH DETAIL DRAWING FOR TYPE III - SHOP CURVED STRUCTURE ANCHOR UNIT

SHEET 1 OF 1 TYPE III SC

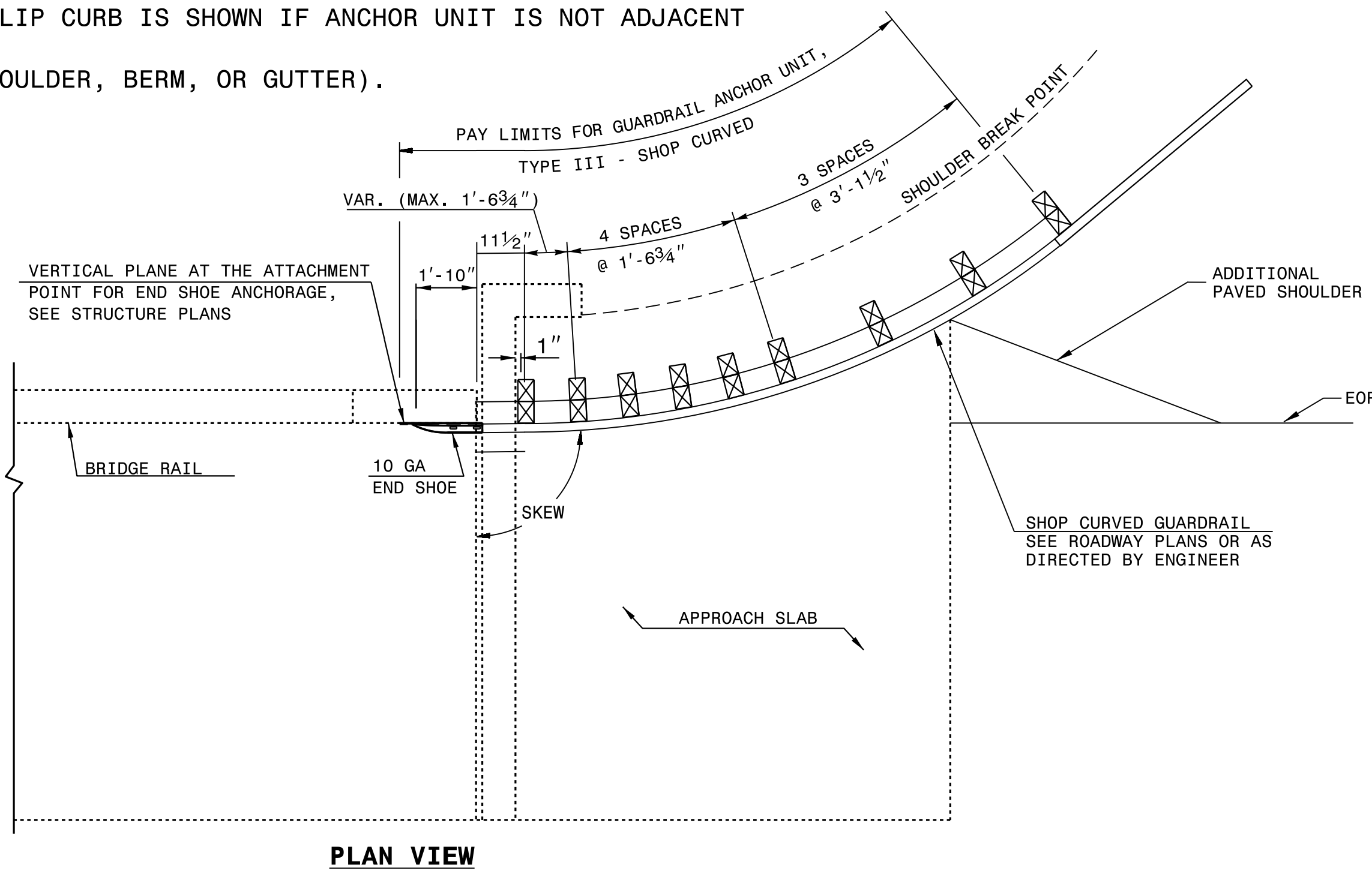
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR TYPE III - SHOP CURVED STRUCTURE ANCHOR UNIT

SHEET 1 OF 1 TYPE III SC



- 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 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
  - SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
  - MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
  - USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
  - LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
  - SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



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

01-FEB-2018 09:49 S:\Contracts\Special Details\howerton\Guardrail\31 inch Guardrail\type\_iii\_sc.dgn J:\howerton AT\_CSD-292595

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

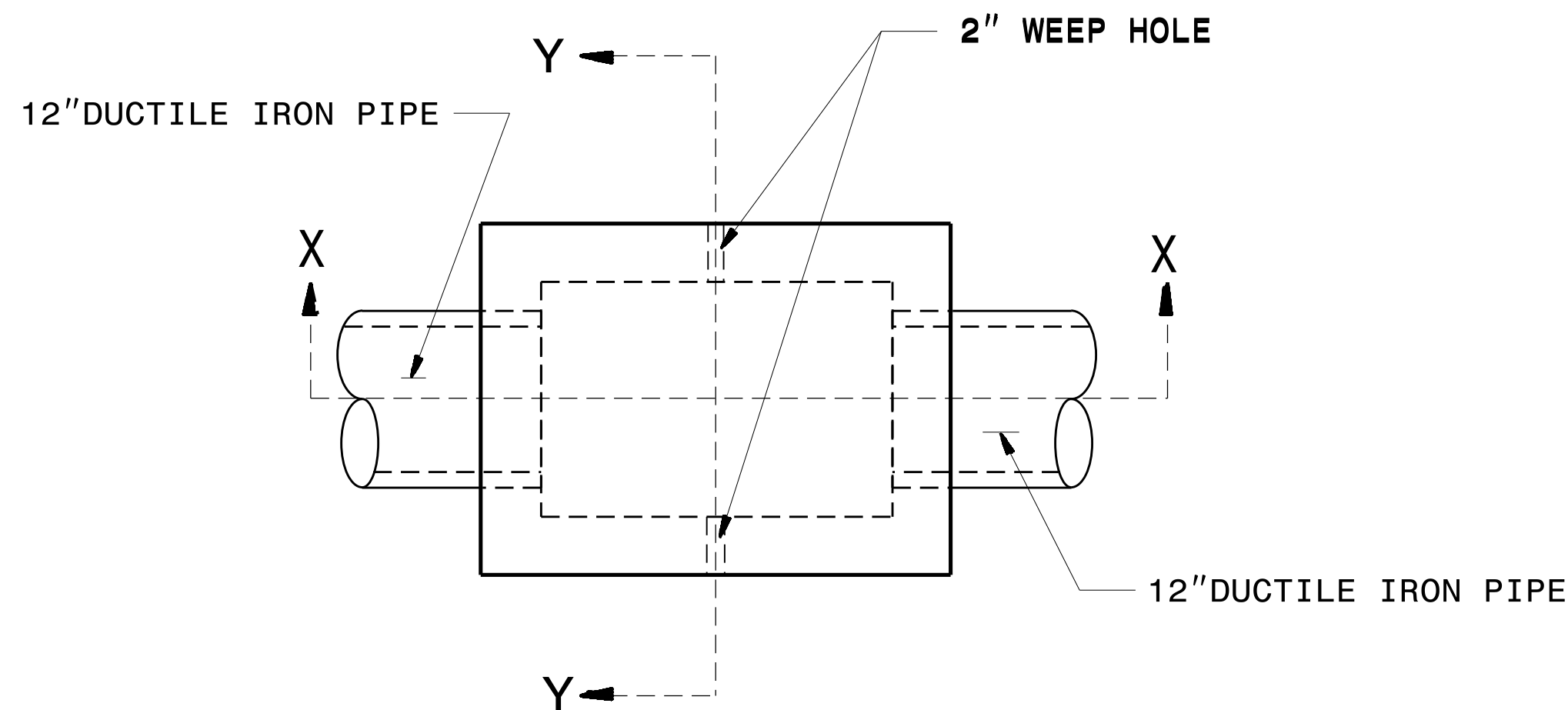
SEE PLATE FOR TITLE

ORIGINAL BY: E.E.Ward DATE: 4-4-02  
MODIFIED BY: T.S.Spell DATE: 2-01-18  
CHECKED BY: DATE:  
FILE SPEC.: J:\howerton\guardrail\31inchguardrail\typeiiiisc.dgn

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

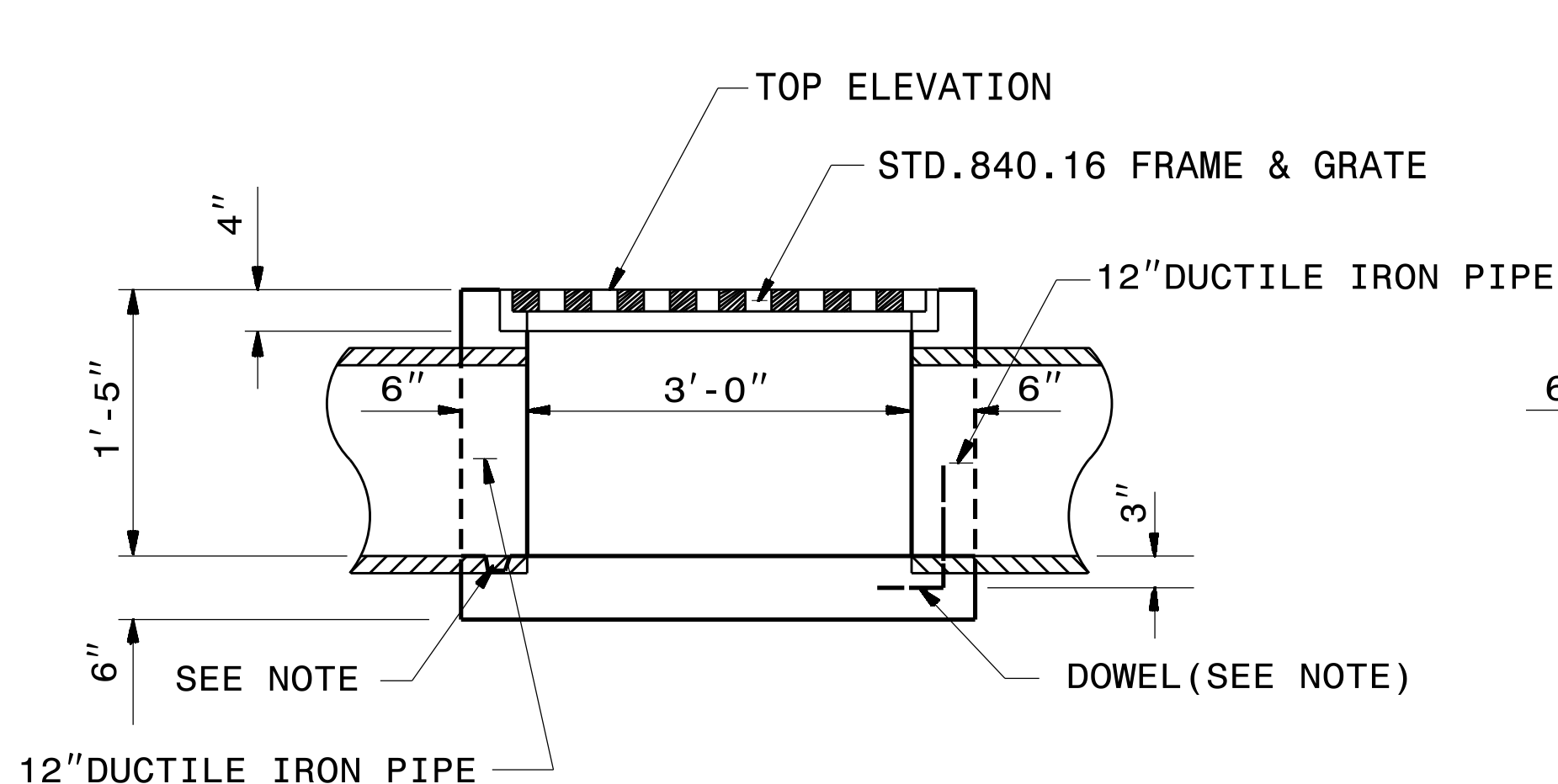
ENGLISH DETAIL DRAWING FOR SPECIAL CONCRETE DROP INLET 12" DUCTILE IRON PIPE

SHEET 1 OF 1 840D14

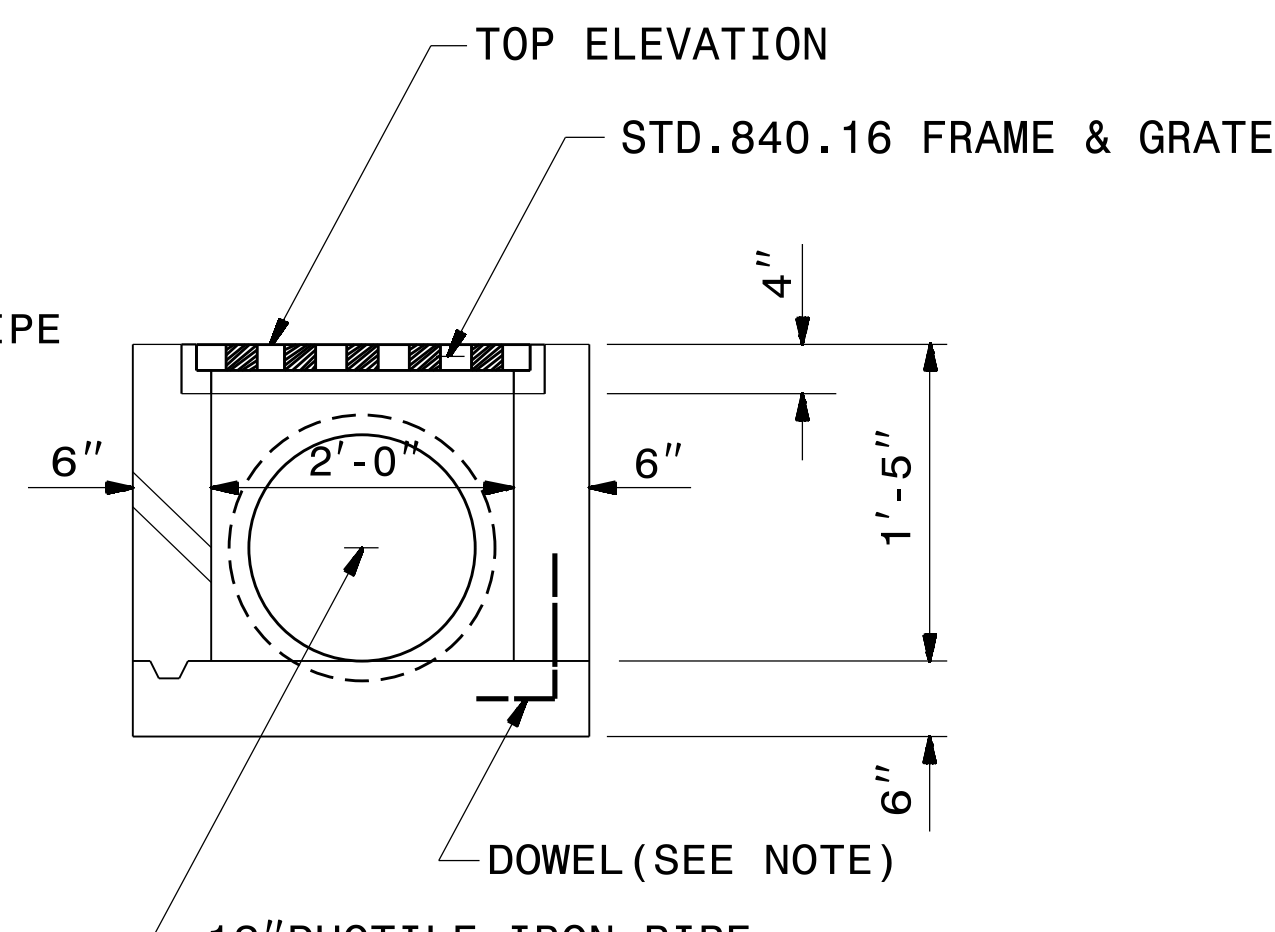


PLAN WITH GRATE & FRAME REMOVED

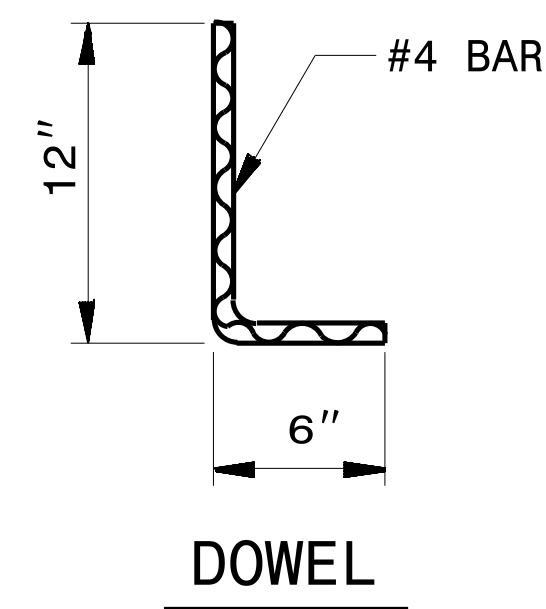
GENERAL NOTES: USE CLASS "B" CONCRETE THROUGHOUT. OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER. USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB. INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER. INSTALL STONE DRAINS, OF A MINIMUM OF 1 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.



SECTION X-X



SECTION Y-Y



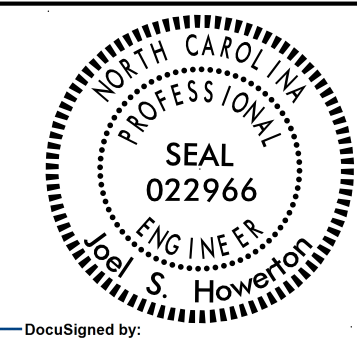
DOWEL

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

ENGLISH DETAIL DRAWING FOR SPECIAL CONCRETE DROP INLET 12" DUCTILE IRON PIPE

SHEET OF 840D14

5/14/99



DocuSigned by: S. Howerton 673F3D17DCDC45F 1/4/2019

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

SPECIAL CONCRETE DROP INLET

ORIGINAL BY: E.E. WARD DATE: 3-4-02 MODIFIED BY: rnbritt DATE: 09-27-2016 CHECKED BY: DATE: FILE SPEC: details/rnbritt/english/rural/r5014\_840d14min.dgn





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

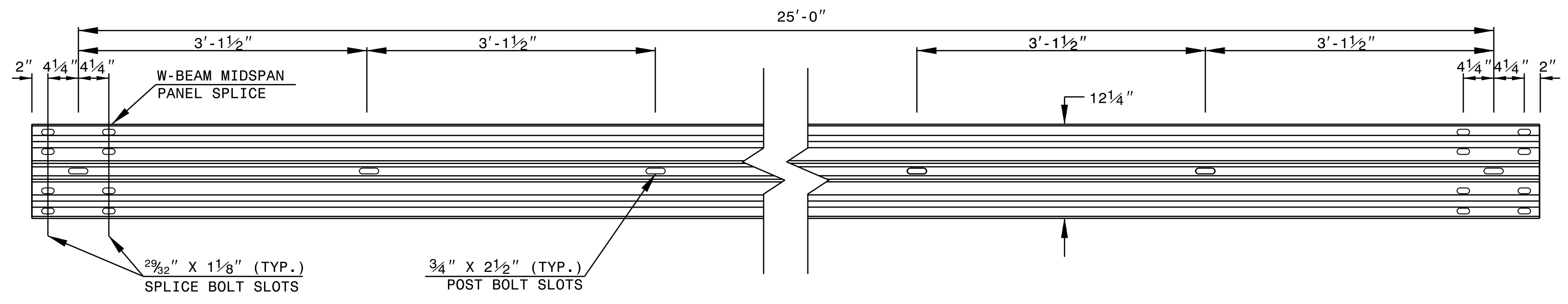
ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**

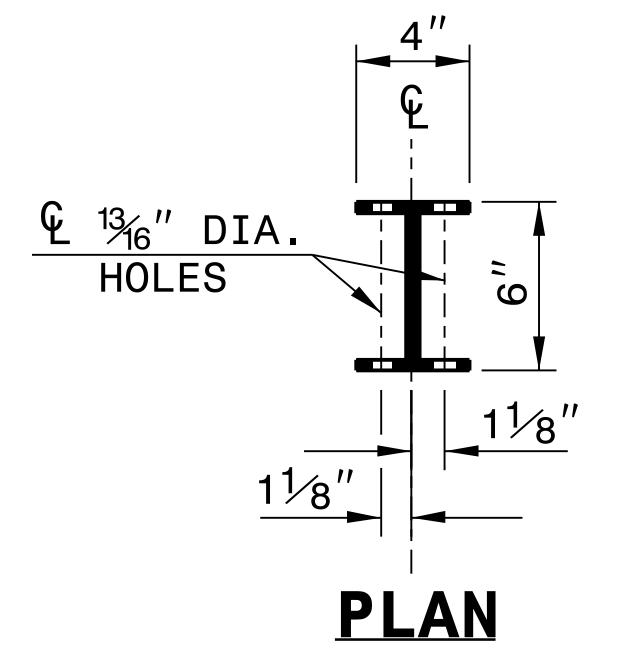
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

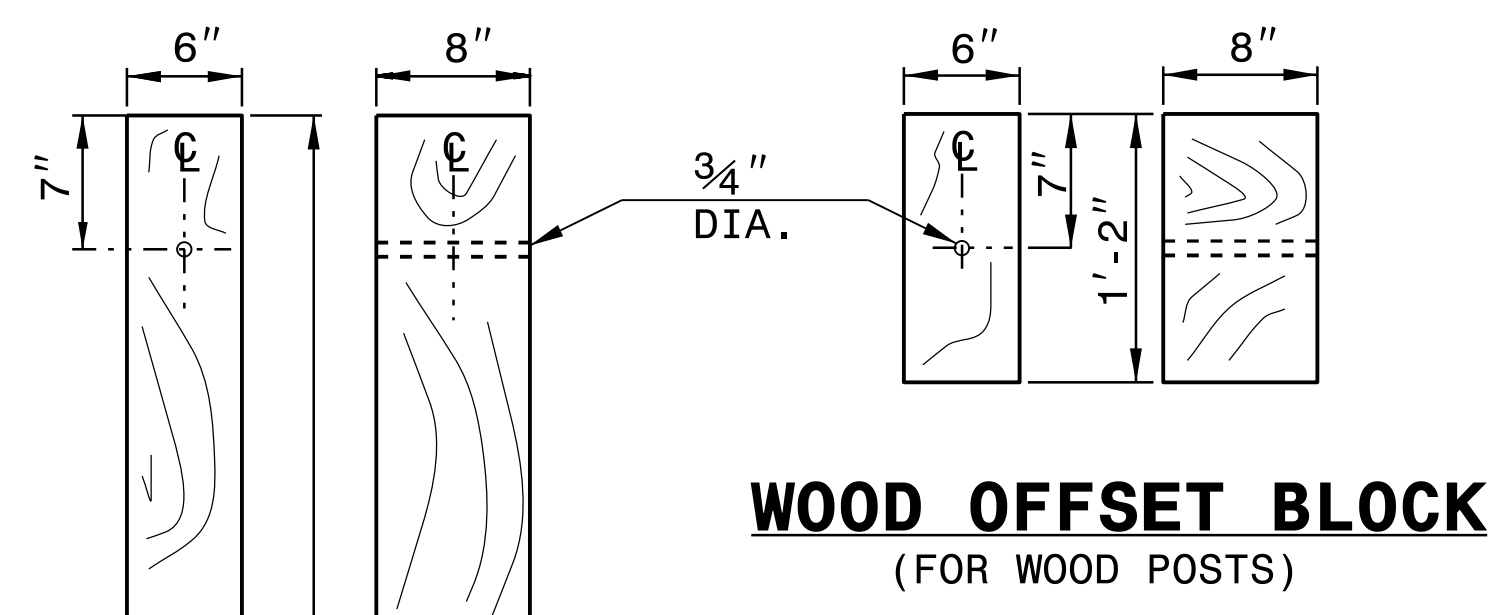
SHEET 6 OF 8  
**862D02**



**STANDARD W-BEAM GUARDRAIL**



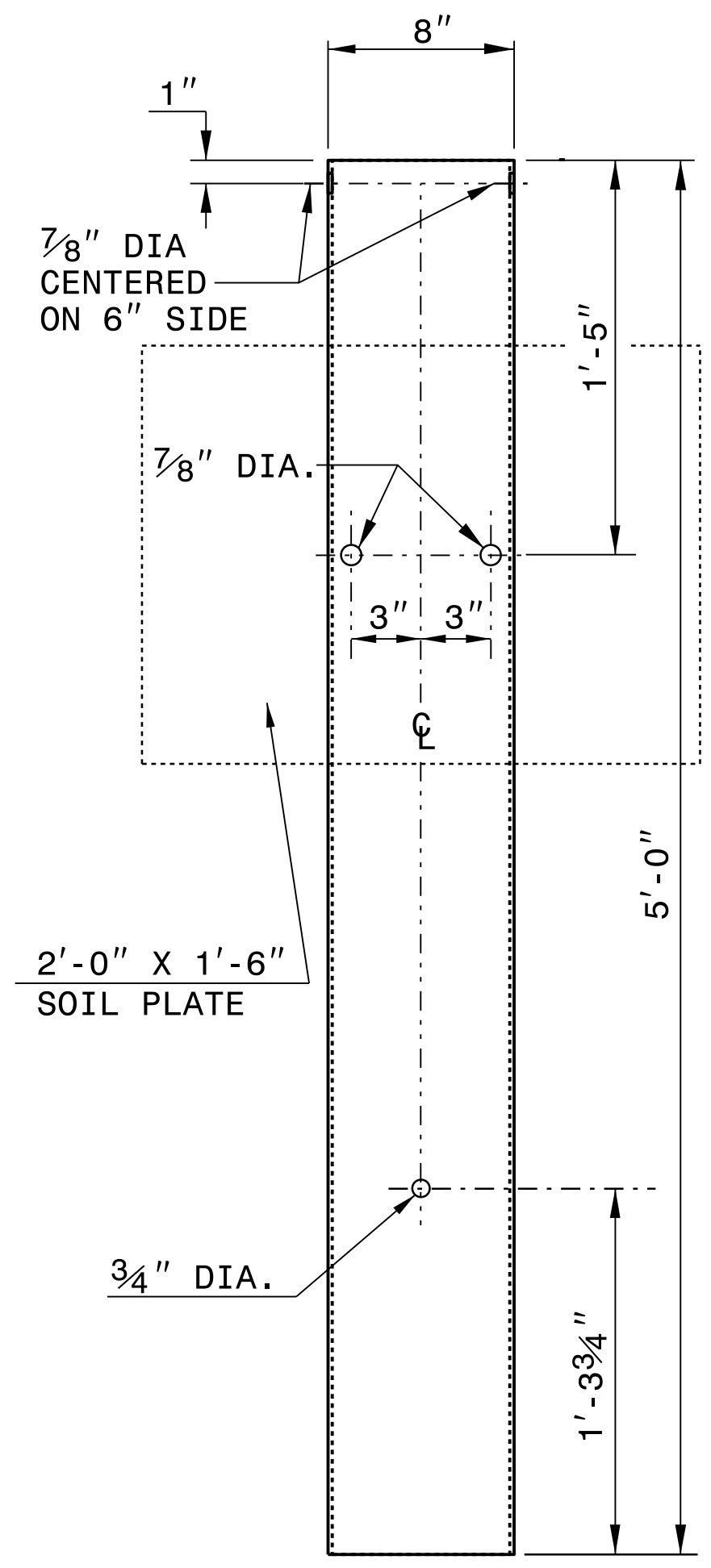
**PLAN**



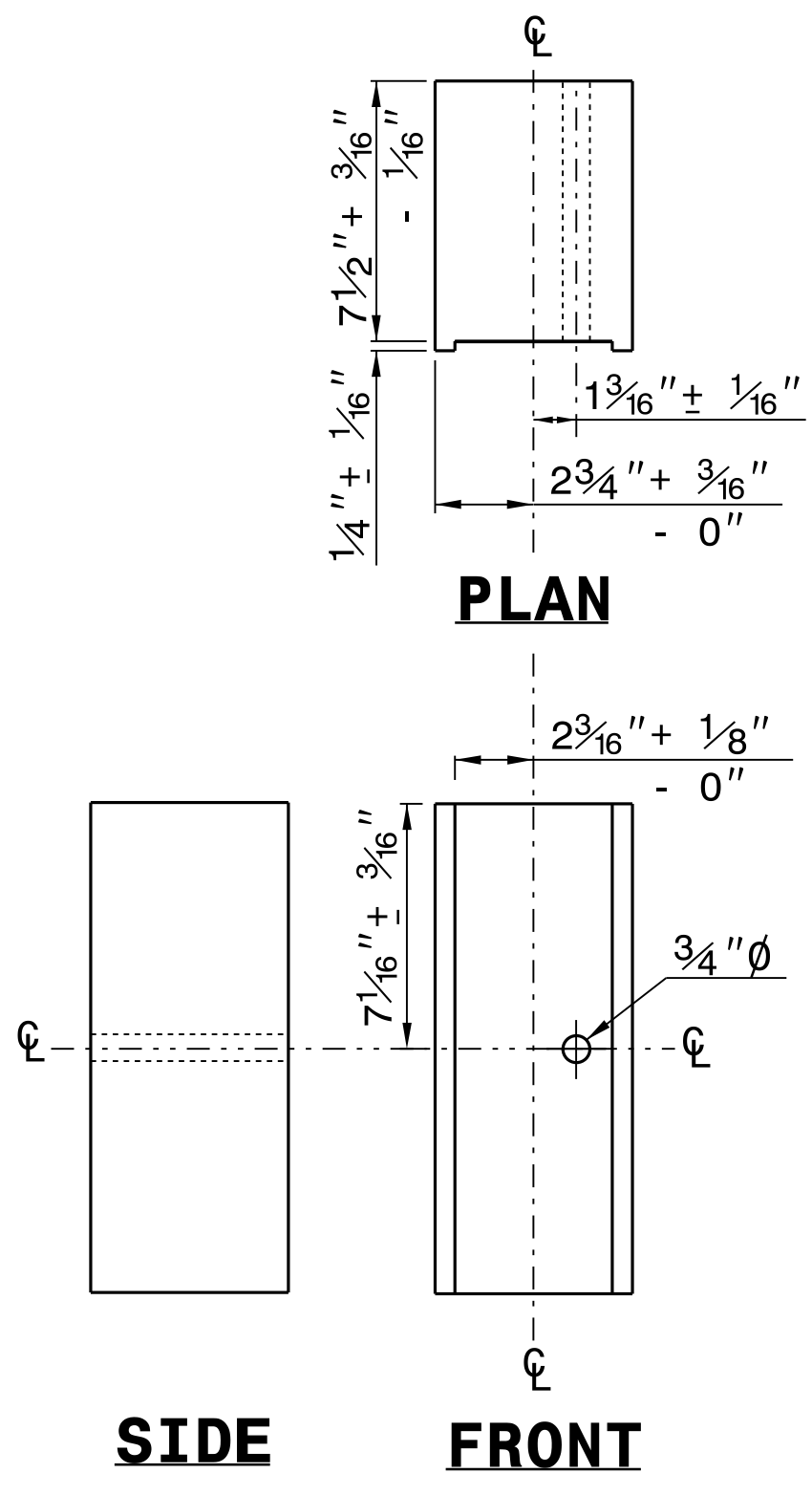
**WOOD OFFSET BLOCK  
(FOR WOOD POSTS)**

**STANDARD  
LINE POST**

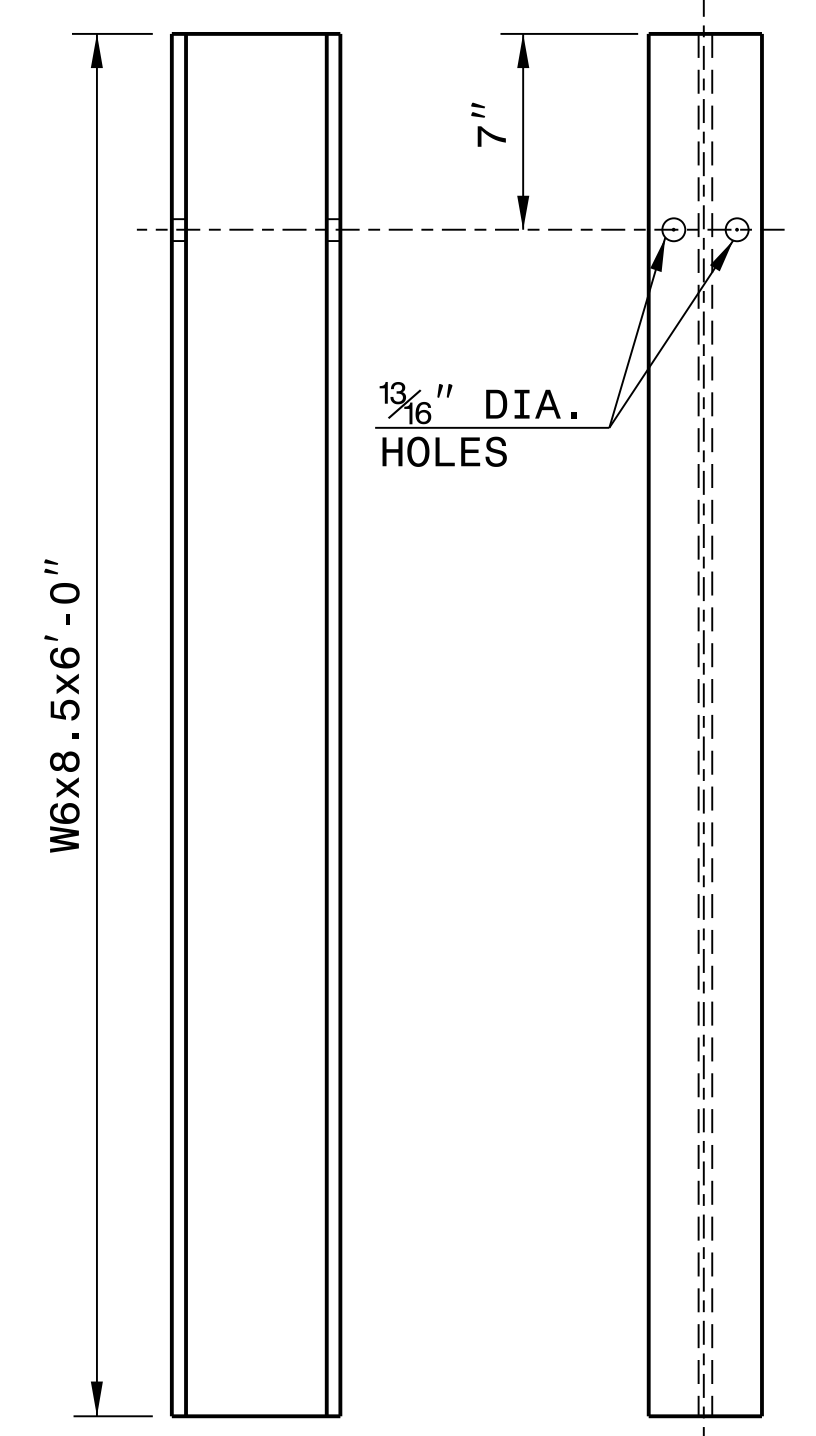
**SHORT WOOD  
BREAKAWAY POST**



**STEEL TUBE  
TS 6"x8"x0.1875"**



**ROUTED  
OFFSET BLOCK**



**"W6" STEEL POST**

**SYSTEM PARTS**



DocuSigned by:  
*J. Howerton*  
1/4/2019

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

**SEE TITLE BLOCK**

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



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

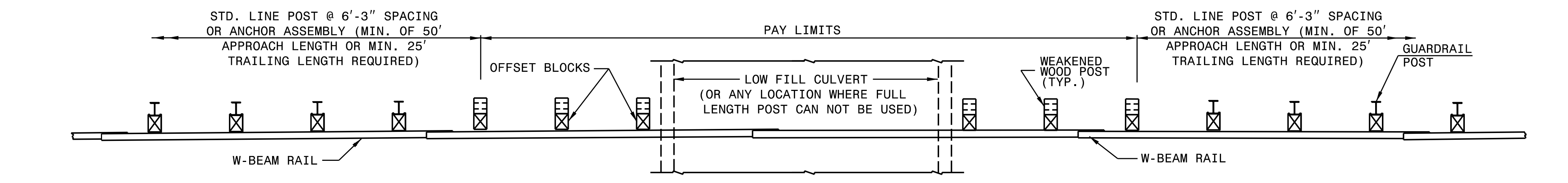
SPECIAL DETAIL FOR  
**GUARDRAIL PLACEMENT**  
25'-0" CLEAR SPAN

SHEET - OF -  
**862D01**

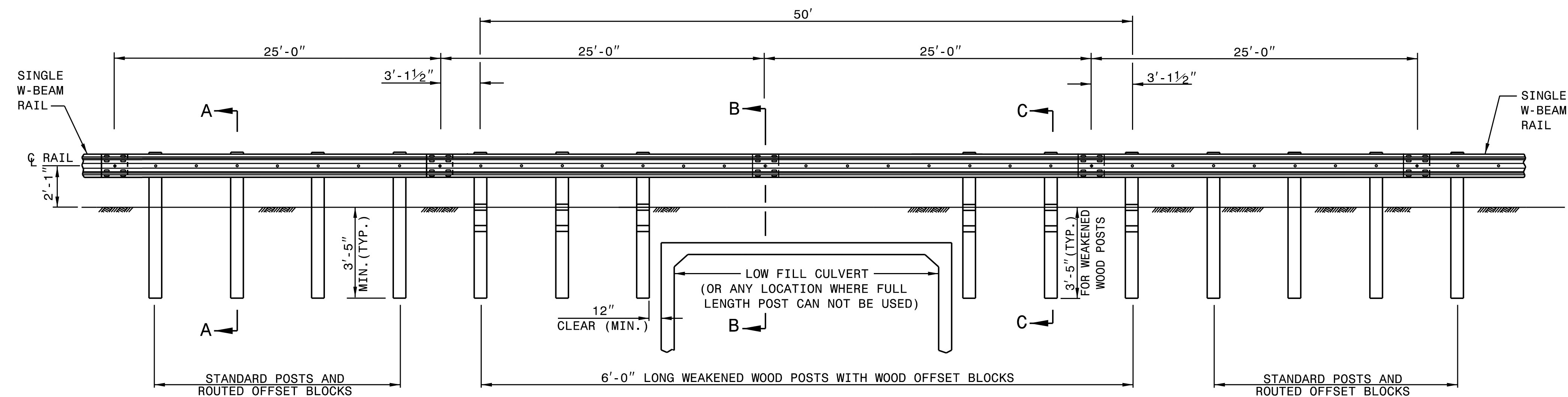
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

SPECIAL DETAIL FOR  
**GUARDRAIL PLACEMENT**  
25'-0" CLEAR SPAN

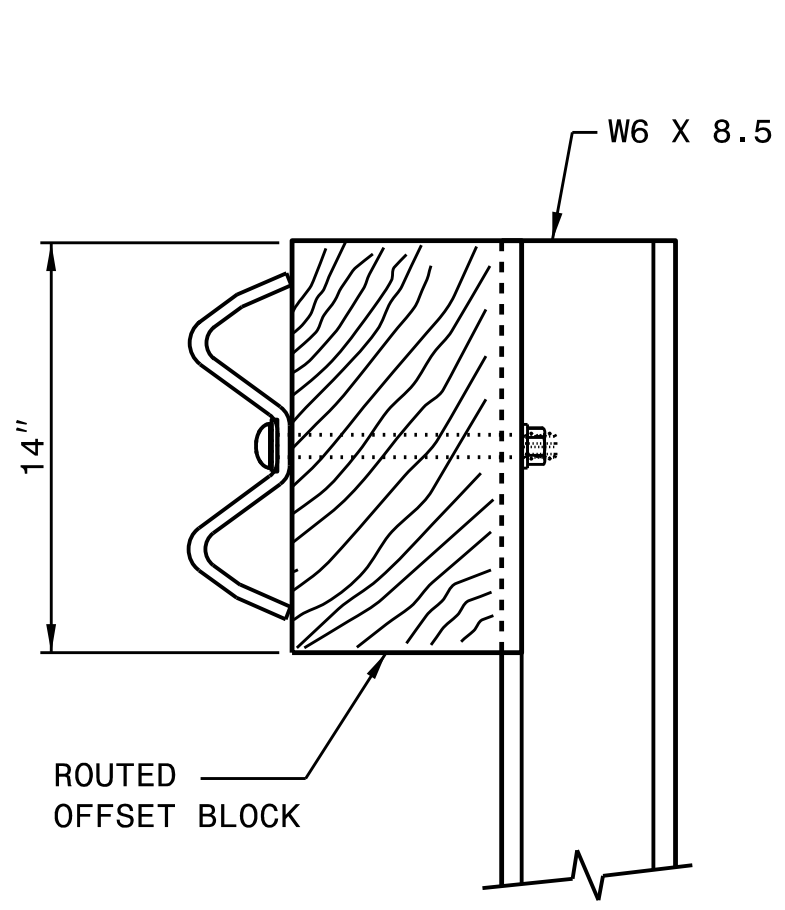
SHEET - OF -  
**862D01**



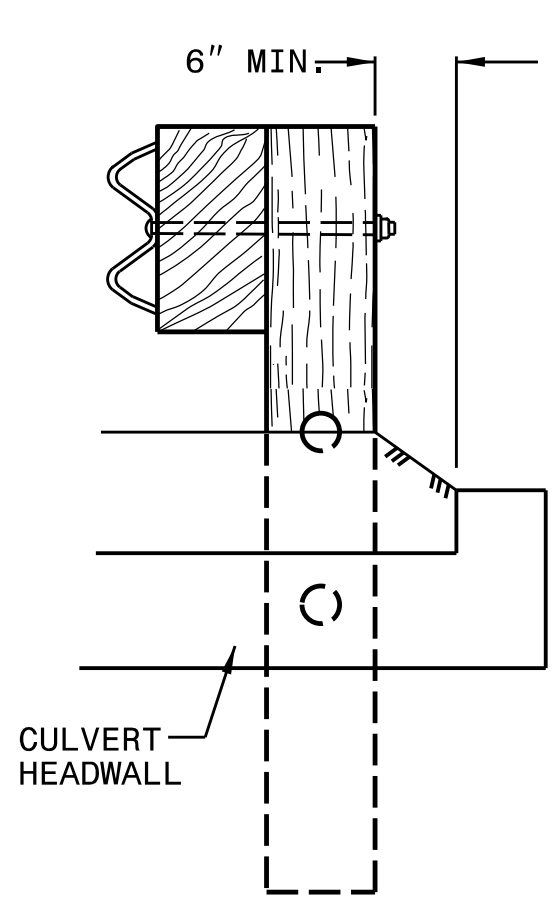
**PLAN**



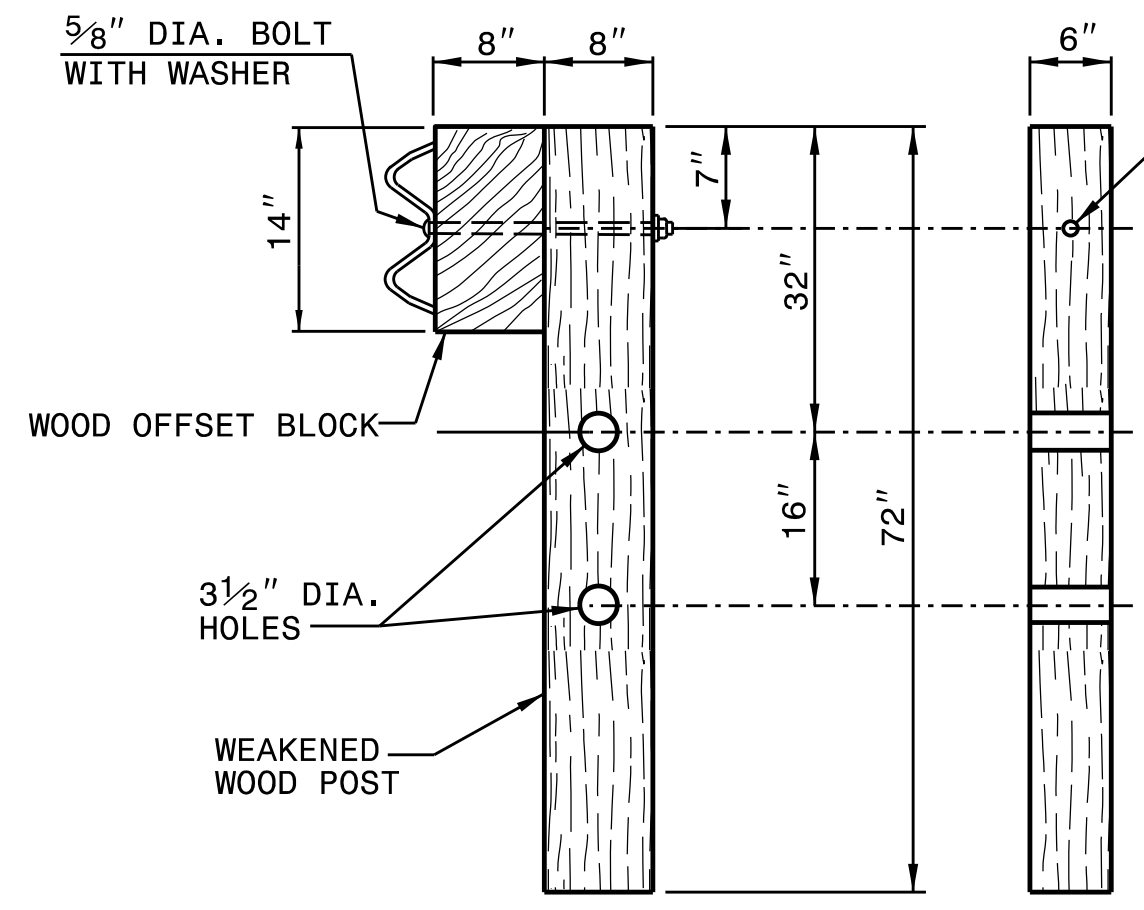
**ELEVATION  
25'-0" GUARDRAIL SPAN**



**SECTION A-A**



**SECTION B-B**



**SECTION C-C FRONT  
WEAKENED WOOD POST**

- GENERAL NOTES:
1. LAP RAIL IN THE DIRECTION OF TRAFFIC FLOW.
  2. SEE ROADWAY PLANS FOR LOCATIONS AND CONTINUATION OF RAIL OR END SECTIONS.
  3. MINIMUM DISTANCE OF 5 FEET BEHIND THE GUARDRAIL SHOULD BE CLEAR OF ANY FIXED-OBJECT HAZARDS THAT COULD SNAG AN IMPACTING VEHICLE.



DocuSigned by:  
*[Signature]*  
1/4/2019

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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

**25'-0" CLEAR SPAN GUARDRAIL PLACEMENT**

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

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

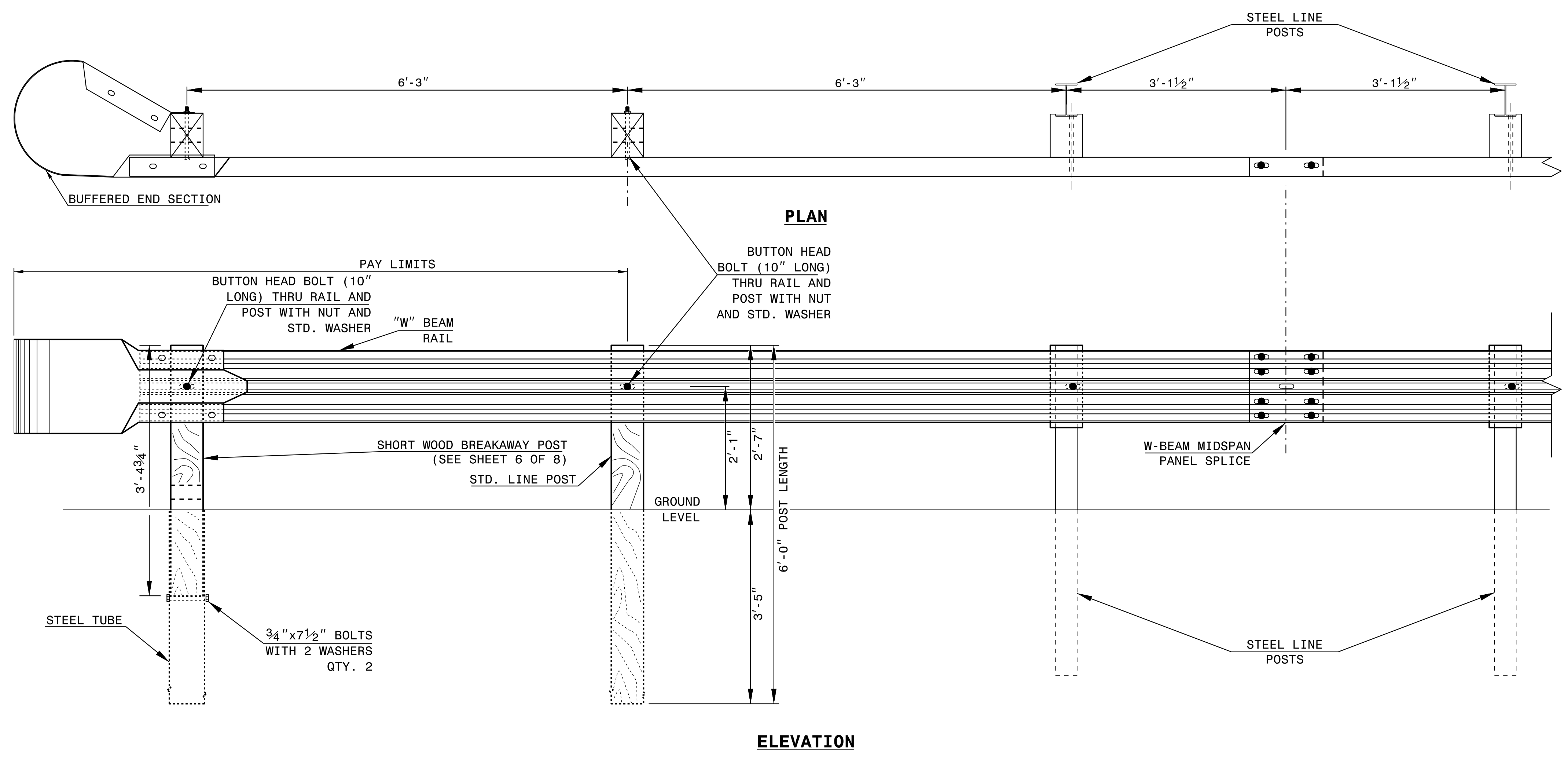
ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF

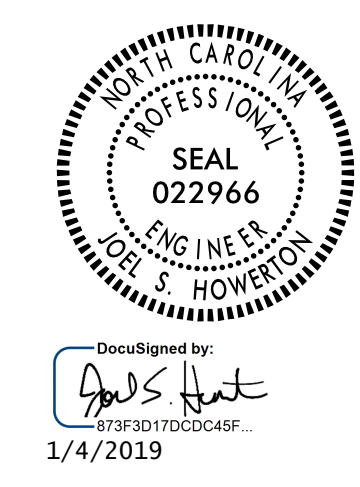
STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF



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

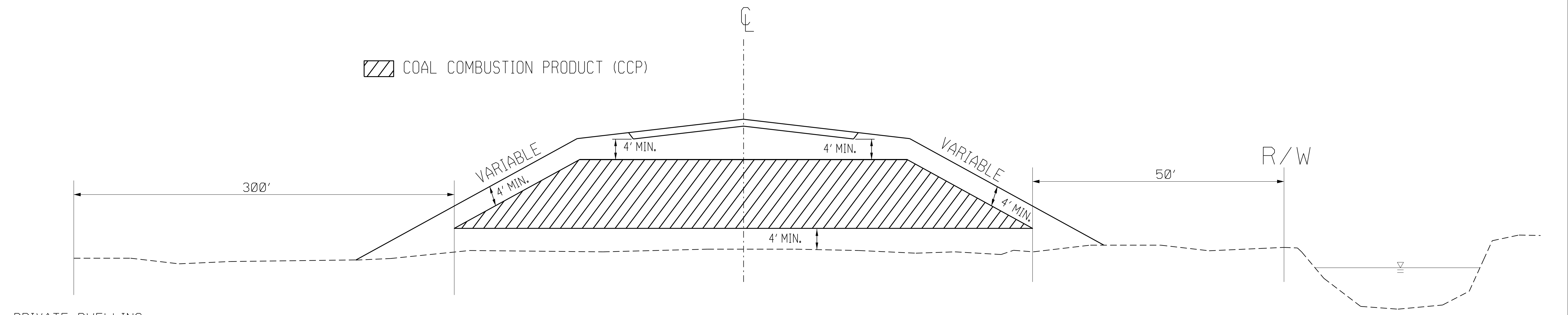


DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

<b>CONTRACTS STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950 FAX 919-250-4119	
<b>A.T. - 1 SYSTEM</b>	
ORIGINAL BY: _____	DATE: _____
MODIFIED BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
FILE SPEC.: _____	



# COAL COMBUSTION PRODUCT PLACEMENT



PRIVATE DWELLING OR WELL

PERENNIAL STREAM, OTHER SURFACE WATER BODY OR \*WETLAND

\*(OBTAIN PERMISSION FROM ARMY CORPS OF ENGINEERS)

PLACE CCP IN HATCHED AREA IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS

PLACE CCP A MINIMUM OF 5' ABOVE SEASONAL HIGH GROUND WATER

PLACE AT LOCATIONS AS APPROVED BY THE ENGINEER

PLACE SOIL BORROW MATERIAL ON THE OUTSIDE OF CCP AS EACH LIFT OF CCP IS PLACED

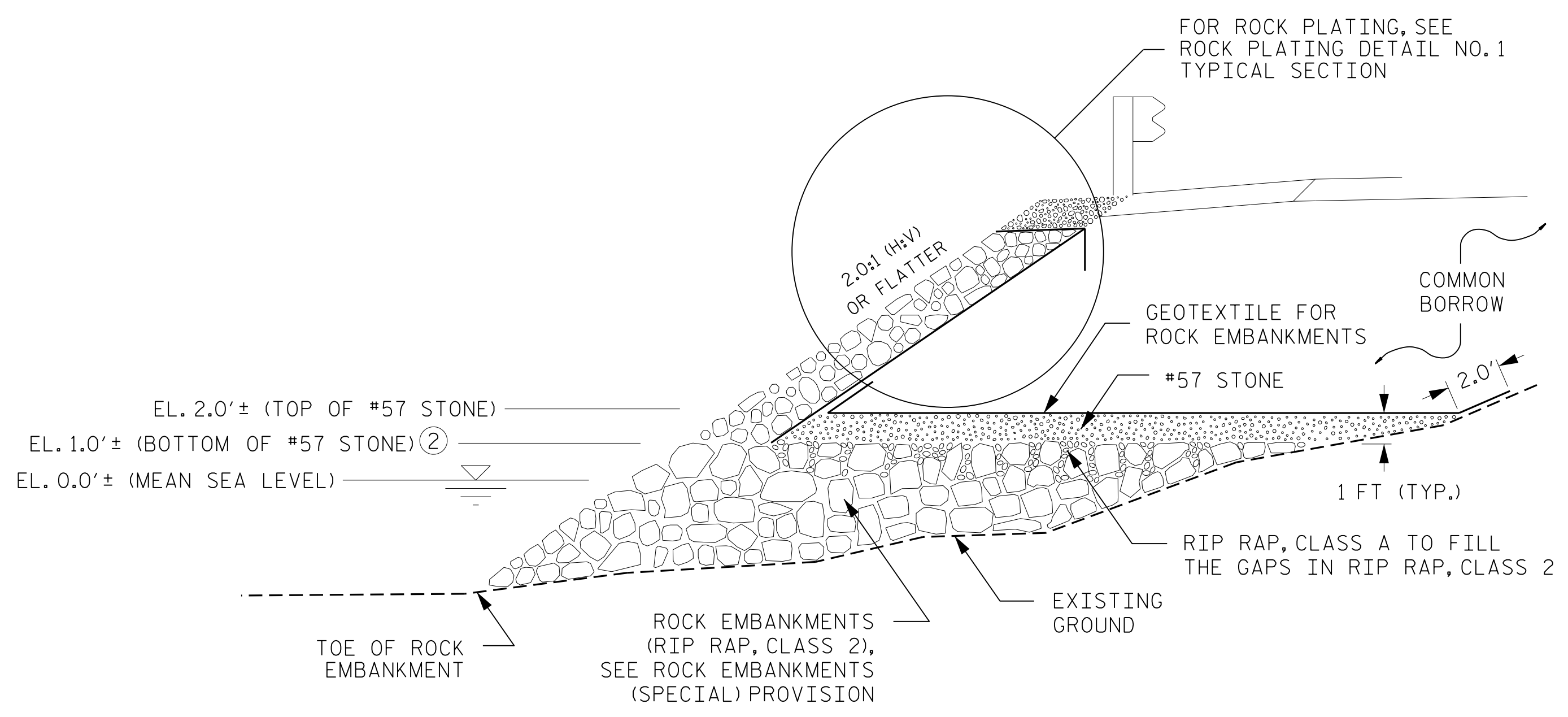
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S:\Contract\180150518\Special Details\Hoverton\Coal Combustion Product Detail.dgn  
Ktemp - AT - CSD-212516



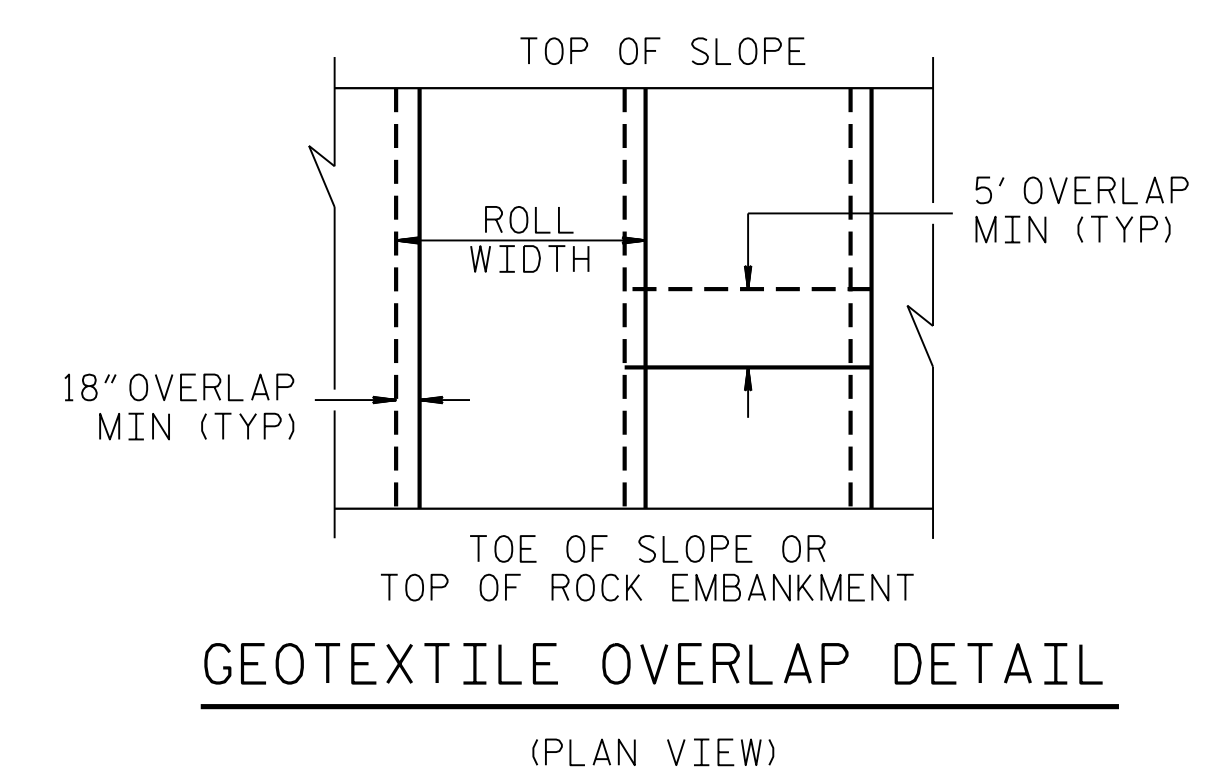
DocuSigned by:  
  
 1/4/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950 FAX 919-250-4119	
<b>COAL COMBUSTION PRODUCT PLACEMENT DETAIL</b>	
ORIGINAL BY: J.S.H.	DATE: 3/16/15
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: joel/coal combustion material detail.dgn	



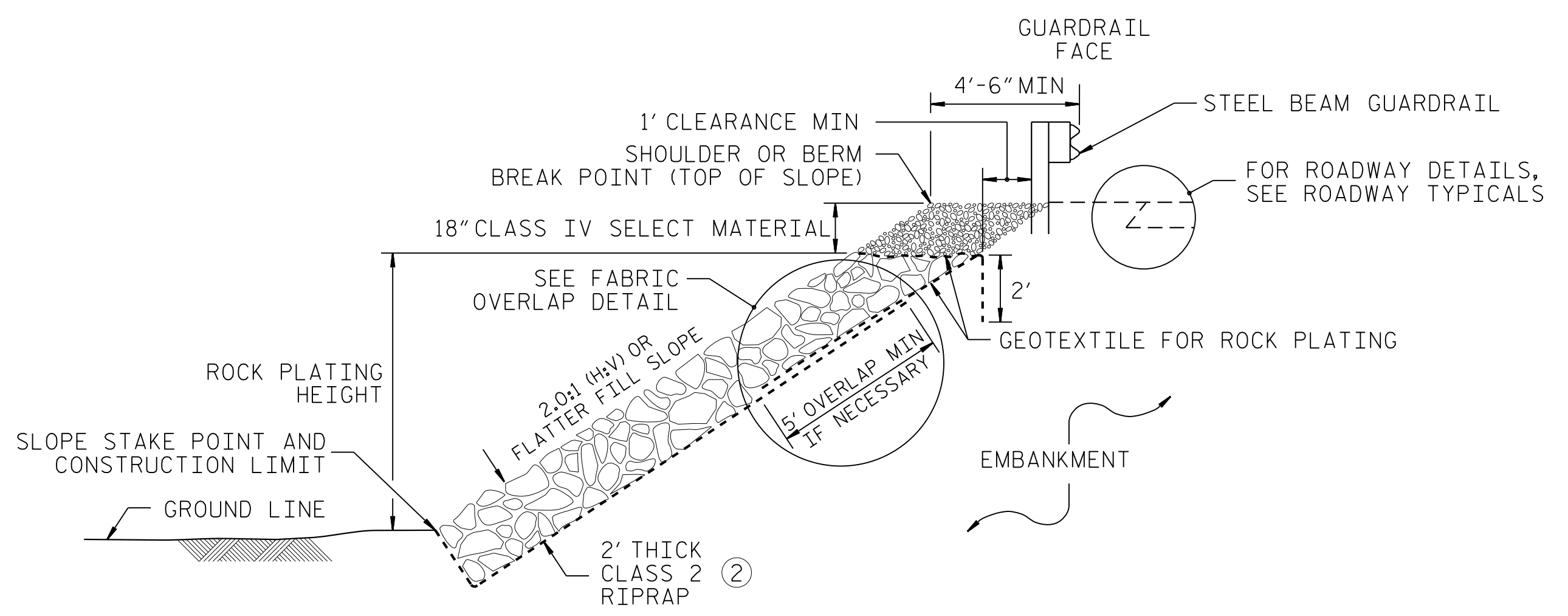
**ROCK EMBANKMENT/ROCK PLATING TYPICAL SECTION**  
NOT TO SCALE



**GEOTEXTILE OVERLAP DETAIL**  
(PLAN VIEW)

ROCK EMBANKMENT			
LINE	BEGIN	END	LT/RT
-L-	56+30±	56+75±	LT
-L-	104+10±	104+65±	LT
-L-	126+70±	127+25±	LT
-L-	163+08±	167+25±	LT

ESTIMATED ROCK EMBANKMENT QUANTITIES	
RIP RAP, CLASS 2	450 TONS
RIP RAP, CLASS A	220 TONS
#57 STONE (SELECT MATERIAL, CLASS VI)	240 TONS
GEOTEXTILE FOR ROCK EMBANKMENTS	600 SY



**ROCK PLATING DETAIL NO. 1 TYPICAL SECTION**  
NOT TO SCALE

ROCK PLATING LOCATIONS AND ESTIMATED QUANTITIES ②								
LINE	BEGINNING SLOPE	APPROX. STATION	ENDING SLOPE	APPROX. STATION	LT/RT	ROCK PLATING DETAIL NO.	RIP RAP CLASS*	QUANTITY (SY)
-L-	2.5:1	56+30±	2.5:1	56+75±	LT	1	2	45
-L-	2.5:1	92+85±	2.5:1	96+25±	LT	1	2	340
-L-	2.5:1	104+10±	2.5:1	104+65±	LT	1	2	60
-L-	2.5:1	126+70±	2.5:1	127+55±	LT	1	2	85
-L-	2.5:1	163+08±	2.5:1	173+60±	LT	1	2	750

\* USE RIP RAP CLASS 2 ONLY TOTAL = 1,280

**NOTES**

- FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS (SPECIAL) PROVISIONS.
- FOR ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
- USE CLASS 2 RIP RAP FOR ROCK EMBANKMENTS.
- USE CLASS 2 RIP RAP FOR ROCK PLATING. ②
- INSTALL ROCK EMBANKMENTS USING CLASS 2 RIP RAP AS SHOWN IN THE PLAN OR 1.0 FT ABOVE THE MEAN SEA LEVEL.
- FILL VOIDS IN THE TOP OF ROCK EMBANKMENTS WITH RIP RAP, CLASS A.
- PLACE #57 STONE (SELECT MATERIAL, CLASS VI) 1 FT. (TYP.) ABOVE RIP RAP, CLASS 2 AS SHOWN IN THE PLAN.
- INSTALL GEOTEXTILE FOR ROCK EMBANKMENT ON TOP OF #57 STONE.
- CONSTRUCT ROCK PLATING ABOVE ROCK EMBANKMENTS FROM ELEVATION SHOWN IN THE PLAN OR 1 FT. ABOVE THE MEAN SEA LEVEL TO THE SHOULDER HINGE POINT.
- EXTEND ROCK PLATING TO 2.5:1 (H:V) SLOPE.





# TIMBER RETAINING WALLS - NOTES

FOR TIMBER RETAINING WALLS, SEE TIMBER RETAINING WALL SPECIAL PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

BACKFILL BEHIND RETAINING WALL NO.1 AND NO.2 SHALL BE CLASS VI SELECT MATERIAL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS 1016-3 OR AT CONTRACTOR'S OPTION USE SELECT GRANULAR MATERIAL, CLASS III.

A SEPARATION GEOTEXTILE IS REQUIRED BETWEEN THE REAR FACE OF THE TIMBER WALL AND THE BACKFILL MATERIAL. A SEPARATION GEOTEXTILE SHALL ALSO BE PLACED BETWEEN EXISTING EMBANKMENT AND BACKFILL MATERIALS IF CLASS VI SELECT MATERIAL IS USED FOR BACKFILL.

BEFORE BEGINNING WALL DESIGN, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. FOR THE FOLLOWING:

1) IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 2 FT:

UNIT WEIGHT,  $\gamma = 120$  PCF  
 FRICTION ANGLE,  $\phi = 30$  DEGREES  
 COHESION,  $c = 0$  PSF

2) BACKFILL MATERIAL PARAMETERS:

COARSE (CLASS VI)  
 UNIT WEIGHT,  $\gamma = 110$  PCF  
 FRICTION ANGLE,  $\phi = 38$  DEGREES  
 COHESION,  $c = 0$  PSF

FINE (CLASS III)  
 UNIT WEIGHT,  $\gamma = 120$  PCF  
 FRICTION ANGLE,  $\phi = 34$  DEGREES  
 COHESION,  $c = 0$  PSF

DESIGN RETAINING WALLS NO.1 AND NO.2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

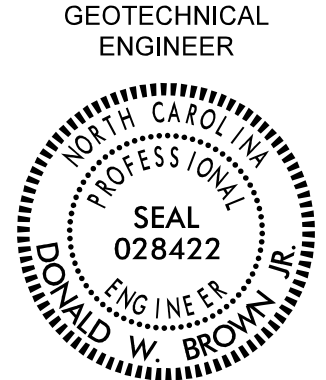
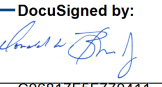
BEFORE BEGINNING TIMBER PILE WALL DESIGN FOR RETAINING WALLS NO.1 AND NO.2, SURVEY WALL LOCATION.

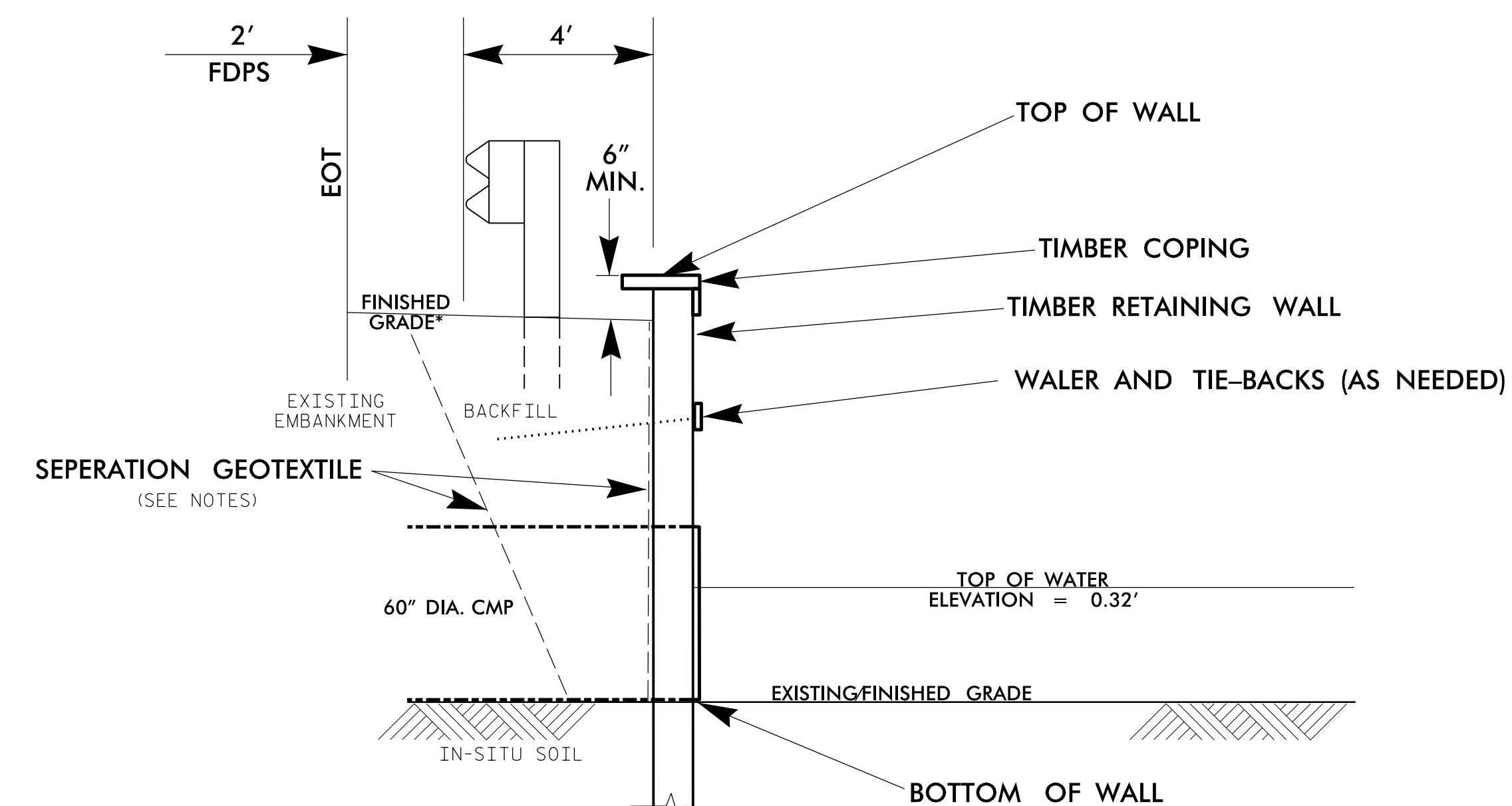
DESIGN RETAINING WALLS NO.1 AND NO.2 FOR A PIPE BEDDING UNDER OR THROUGH THE WALL AS SHOWN. VERIFY PIPE LOCATION AND ELEVATION BEFORE BEGINNING TIMBER WALL DESIGN OR CONSTRUCTION.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH TIE-BACKS FOR RETAINING WALL NO.1 AND NO.2.

TEMPORARY SHORING IS REQUIRED IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE TRAFFIC CONTROL PLANS.

AT THE CONTRACTOR'S OPTION, TEMPORARY SHORING FOR WALL CONSTRUCTION MAY BE USED TO CONSTRUCT RETAINING WALL NO.1 AND NO.2.

GEOTECHNICAL ENGINEER  DONALD W. BROWN	ENGINEER
DocuSigned by: 	1/2/2019
_____ SIGNATURE	_____ DATE

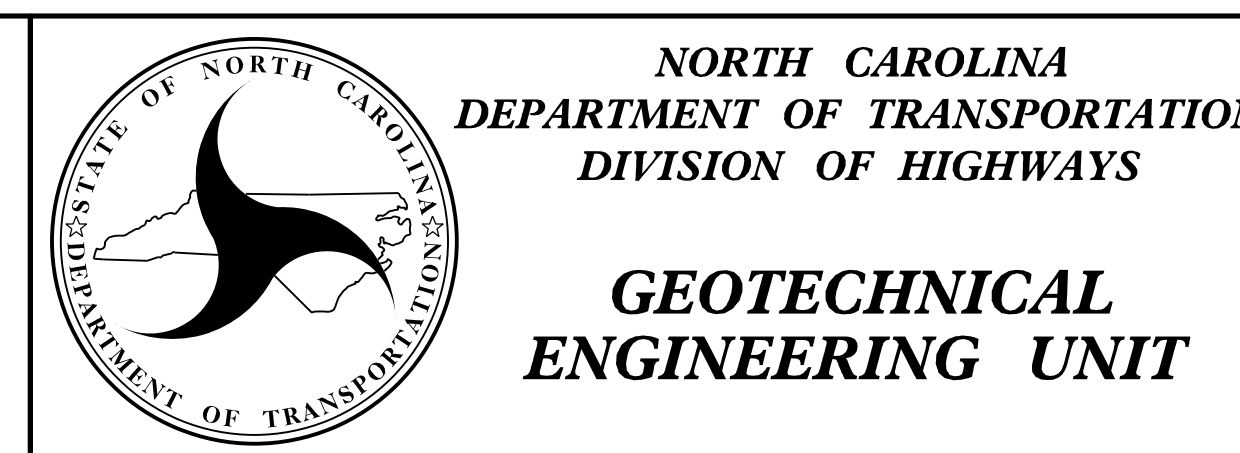


**TIMBER RETAINING WALL  
 TYPICAL SECTION (N.T.S.)**

\*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

PROJECT NO.: R-5014  
 DARE COUNTY  
 STATION: -Y3C- 10+30  
 SHEET 2 OF 2

PREPARED BY: D. BROWN, PE	DATE: 12-12-18
REVIEWED BY: C.T. TANG, PE	DATE: 12-12-18



<b>RETAINING WALL NO. 1 &amp; RETAINING WALL NO. 2 PLAN NOTES &amp; TYPICAL SECTION</b>					
<b>REVISIONS</b>					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		



**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**SUMMARY OF EARTHWORK (IN CUBIC YARDS)**

Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
-L- 11+00.00	-L- 43+10.00	41	0	0	0	41
<b>SUBTOTALS:</b>		<b>41</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>41</b>
-L- 43+10.00	-L- 73+10.00	1,772	2,358	7,969	6,197	2,358
-Y1A- 11+70.00	-Y1A- 13+39.82	23		181	158	
-Y2- 10+15.00	-Y2- 11+34.31	1		35	34	
-Y3- 11+00.00	-Y3- 12+59.93	3		172	169	
<b>SUBTOTALS:</b>		<b>1,799</b>	<b>2,358</b>	<b>8,357</b>	<b>6,558</b>	<b>2,358</b>
-L- 73+10.00	-L- 90+00.64 (BRIDGE)	636	581	3,056	2,420	581
-Y3A- 11+60.00	-Y3A- 12+63.62	4		49	45	
<b>SUBTOTALS:</b>		<b>640</b>	<b>581</b>	<b>3,105</b>	<b>2,465</b>	<b>581</b>
-L- 91+89.27 (BRIDGE)	-L- 111+67.50 (EQUALITY)	1,081		2,692	1,631	20
-Y3B- 11+92.00	-Y3B- 12+03.27	28		1		27
-Y3C- 10+18.02	-Y3C- 11+00.00	2		36	34	
<b>SUBTOTALS:</b>		<b>1,111</b>	<b>0</b>	<b>2,729</b>	<b>1,665</b>	<b>47</b>
-L- 111+67.50 (EQUALITY)	-LA- 120+03.07 (EQUALITY)	1,003	10	749		264
-Y4- 10+15.00	-Y4- 11+56.10	3		46	43	
-Y5- 10+70.00	-Y5- 12+55.03	7		117	110	
<b>SUBTOTALS:</b>		<b>1,013</b>	<b>10</b>	<b>912</b>	<b>153</b>	<b>264</b>
-L- 120+05.14 (EQUALITY)	-L- 147+22.84 (BRIDGE)	870	179	2,571	1,761	239
<b>SUBTOTALS:</b>		<b>870</b>	<b>179</b>	<b>2,571</b>	<b>1,761</b>	<b>239</b>
-L- 152+34.13 (BRIDGE)	-L- 183+00.00	1,213	44	3,203	1,990	44
<b>SUBTOTALS:</b>		<b>1,213</b>	<b>44</b>	<b>3,203</b>	<b>1,990</b>	<b>44</b>
-L- 183+00.00	-L- 209+96.72	356		484	128	0
<b>SUBTOTALS:</b>		<b>356</b>	<b>0</b>	<b>484</b>	<b>128</b>	<b>0</b>
-L- 209+96.72	-L- 235+77.02	263		696	433	
<b>SUBTOTALS:</b>		<b>263</b>	<b>0</b>	<b>696</b>	<b>433</b>	<b>0</b>
-L- 236+49.02	-L- 240+00.00	16		0	0	16
<b>SUBTOTALS:</b>		<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>
<b>PROJECT TOTALS:</b>		<b>7,322</b>	<b>3,172</b>	<b>22,057</b>	<b>15,153</b>	<b>3,590</b>
<b>MATERIAL FOR SHOULDER CONSTRUCTION</b>						
<b>LOSS DUE TO CLEARING &amp; GRUBBING</b>						
<b>ADDITIONAL UNDERCUT</b>						
<b>LESS SELECT GRANULAR MATERIAL</b>						
<b>WASTE IN LIEU OF BORROW</b>						
<b>PROJECT TOTALS:</b>						
<b>EST. 5% TO REPLACE TOP SOIL ON BORROW PIT</b>						
<b>GRAND TOTALS:</b>						
<b>SAY:</b>						
Pavement Structure Volume = 2,150 CY						
DDE = 40 CY						

Note: 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.























COMPUTED BY: JL STONE DATE: 11/18/2016  
 CHECKED BY: AEV DATE: 11/01/18

PROJECT NO. R-5014 SHEET NO. 3G-1

## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

### SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	2000
TOTAL LF:					2000

\*UD = Underdrain  
 \*BD = Blind Drain  
 \*SD = Subsurface Drain

### SUMMARY OF ROCK PLATING

LINE	Beginning Slope	Approx. Station	Ending Slope	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	SY
-L-	2.5:1	56+30 +/-	2.5:1	56+75 +/-	LT	1	*	45
-L-	2.5:1	92+85 +/-	2.5:1	96+25 +/-	LT	1	*	340
-L-	2.5:1	104+10 +/-	2.5:1	104+65 +/-	LT	1	*	60
-L-	2.5:1	126+70 +/-	2.5:1	127+55 +/-	LT	1	*	85
-L-	2.5:1	163+08 +/-	2.5:1	173+60 +/-	LT	1	*	750
TOTAL SY:								1,280

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

### SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			AST						5000
CONTINGENCY			ASU		5000	10000	15000		
CONTINGENCY			ASU	12	500	945	1500		
TOTAL CY/TONS/SY:					5500	10945	16500*	0	5000

ASU = Aggregate Subgrade, AST = Aggregate Stabilization  
 \*Total square yards of Geotextile for Soil Stabilization is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

**STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS**

**PARCEL INDEX SHEET**

<b>PROJ. REFERENCE NO.</b>	<b>SHEET NO.</b>
R-5014	3P-1

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	6	JEANNE M. LAURO
2	6	CYNTHIA STEVENS
3	6	THOMAS P. MAGNANELLI, SR.
4	6	DEBORAH H. STOKES CLINKSCALES
5	6	DEBORAH STOKES CLINKSCALES
6	6	STEVE P. KING
7	6	JOAN E. CASTEEL
8	6	COLINGTON HARBOUR ASSOCIATION INC
9	6	STEVEN R. HAMM
10	6	JOYCE L. JORDAN
11	6	JOHN W. DEMPEWOLF
12	6	ASHWORTH ONE, LLC
13	6	SANDRA RODRIGUEZ
14	6	CARLYN ANN LAUGHLIN
15	6	ROBBIE PAETOW
16	6	JEFFREY JUSTIN MITCHELL & NATALIE KAYLIN MITCHELL
17	6	MARGARETTE M. UMPHLETT
18	6	CARL E. WORSLEY, JR.
19	6	BEASLEY BEASLEY & BEASLEY
20	6	BJ DEVELOPMENTS
21	6	WILLIAM J. WEATHERLY - NO CLAIM
22	6	BJ DEVELOPMENTS
23	6 & 7	ALAIN J. TTEE PIRRONE & MONIKA C. TTEE PIRRONE
24	7	LEWIS R. BEASLEY & JUNE E. BEASLEY
25	7	NANCY K. BALONIS
26	7	TERRY BEASLEY
27	7	WILLIAM T. CAROON
28	6 & 7	RICHARD A. COHEN
29	7	JOSEPH JONES JR.
30	7	GARY LEE KENNEDY
31	7	HILDA GIFFORD
32	7	JASON B. HILL
33	7	GARLAND H. DUNSTAN, JR.
34	7	SHINGLE LANDING OF COLINGTON CORP
35	7	DARE COUNTY
35A	7	SHINGLE LANDING OF COLINGTON CORP
36	7 & 8	EDWARD G. COLLIER
37	7	ISABEL LOPEZ AND BLANDINA LOPEZ (NO CLAIM)
38	8	LUIS RODRIGEZ JR. (NO CLAIM)
40	7 & 8	HARBRINGER LAND & TIMBER, LLC
41	8	COLINGTON HARBOUR ASSOC.
42	8	NANCY Z. ROTEN
43	8	COLINGTON UNITED CHURCH
44	8 & 9	LIBERTY CHRISTIAN FELLOWSHIP
44A	9	GARY D. CRANE, JR.
45	8 & 9	NORTH BEACH DEVELOPMENT LLC
46	9	JLS PROPERTIES, LLC
47	9	RANDALL WIGGINS
48	9	TANYA TILLET CROW (NO CLAIM)
49	9 & 10	JOHN ROEHRS
50	10	LGI LAND NC, LLC
51	10	AVA COL SOL JOHNSON
52	10	REGINA OUTLAW ZEINER
53	10	JANICE WILLIAMS O'NEAL (NO CLAIM)
54	10	JOHN GIBSON
55	10	AUSTIN KELLY
56	10	CHRISTOPHER K. ARCHER
57	10	GARLAND H. DUNSTAN, JR.
58	10	JASPER DONNIE GAMIEL
59	10	MAYNARD R. OUTLAW

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
60	10	WILLIAM JOSEPH MEYERS, JR.
61	10	AMBER N. DODGE
62	10	COLINGTON VENTURES
63	10	BRANDON BEASLEY
64	10 & 11	ROBERT SHANE MOORE
65	10	COLINGTON POINT DEVELOPERS, LLC
66	10 & 11	COLINGTON POINT DEVELOPERS, LLC
67	11	STANLEY W. MOORE
68	11	MARK D. NUNEMAKER
69	11	CEMETERY
70	11	JUDY M. DEEVER
71	11	JUDY M. DEEVER
72	11	CAROLINA TELEPHONE
72A	11	WATERSEEDGE HOA
73	11	JAMES FRANKLIN MOORE
74	11	MARSHY RIDGE RETREAT
75	11	MILDRED B. BYRUM
76	11	MURRAY EUGENE BRIDGES
77	11	COLLINGTON RD LLC
78	11	CLAUDE H. EURE
79	11	JAMES M. SMITH
80	11	WILLIAM WALTER LADOW, JR.
81	11	SANDRA JEAN LADOW
82	11 & 12	DAVIE L. FLOYD
83	11	JIMMIE D. SUMMERELL
84	11 & 12	CHARLOTTE M. BEASLEY
85	12	JOBY LANE BEASLEY
86	12	LARRY R. PARKER
87	12	LARRY REID PARKER
88	12	GEORGE THOMAS BEASLEY
89	12	HAROLD E. GESSFORD
90	12	CARSON LEE BEASLEY
91	12	SANDRA BEASLEY NEAL
92	12	DARRELL BEASLEY
93	12	DALE BEASLEY
94	12	ADRIAN S. BRIDGES
95	12	JAMIE S. PARKER, SR.
96	12	DAVID C. CREECY
97	12	JERRY M. CREEF
98	12	BILLY CONRAD BEASLEY
99	12 & 13	JAMIE SCOTT PARKER
100	12	ANDREW R. OTTAVIO
101	12	COLINGTON MOBILE HOME PARK
102	12	BILLY CONRAD BEASLEY
103	12 & 13	CHESTER W. SMITH, 3RD
104	13	ROBERT J. LUNDEN
105	14	RALPH DEAN BEASLEY HEIRS
106	14	WALKABOUT LLC
107	14	WALKABOUT LLC
110	14	ARGIE SHULTZ
111	14	J. FRAZIER EDWARD TTEE
112	14	FAY B. MAJOR
113	14	W.E. BENNETT & CHERYL M. JEFFERS
114	14	JASON B. HILL & TANYA N. HILL
115	14	JON MIDGETT CONSTRUCTION, LLC
116	14 & 15	DARE COUNTY
117	15	WALTER WHELESS, ETAL
118	15	GEORGE GARDNER
119	15	1085 COLLINGTON RD LLC
120	15	JIMMIE D. SUMMERELL



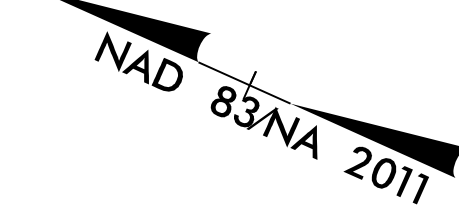






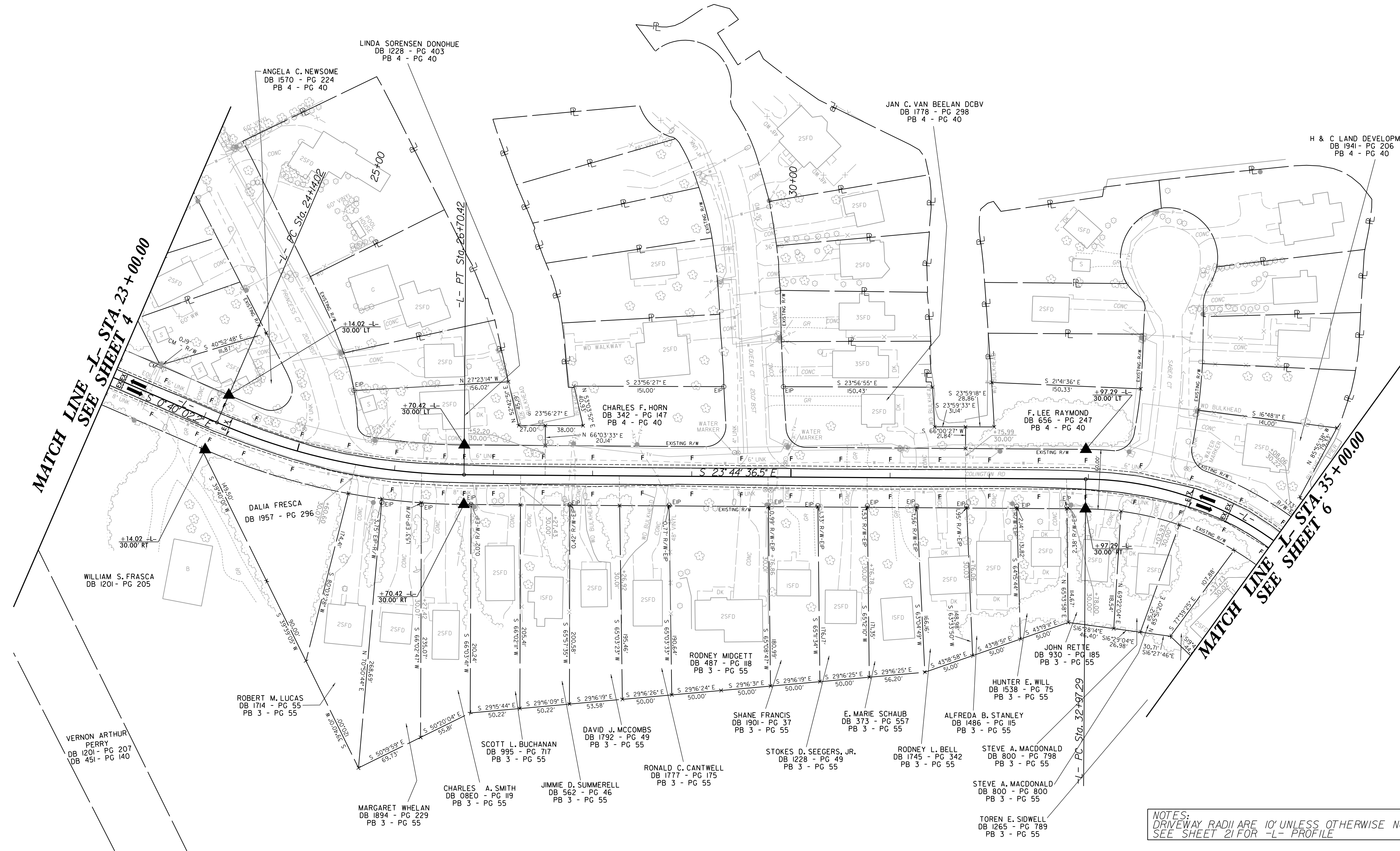


PROJECT REFERENCE NO. <b>R-5014</b>		SHEET NO. <b>5</b>	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER 1/4/2019		HYDRAULICS ENGINEER 1/4/2019	
DocuSigned by: <i>Stephen C. Browde</i>		DocuSigned by: <i>Craig A. Freeman Jr.</i>	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			



-L-

PI Sta 25+43.98 $\Delta = 23^{\circ}04'34.3"$ (LT) $D = 9^{\circ}00'00.0"$ $L = 256.40'$ $T = 129.96'$ $R = 636.62'$ $SE = EXIST.$ $V = EXIST.$	PI Sta 34+44.90 $\Delta = 48^{\circ}32'06.7"$ (RT) $D = 17^{\circ}30'00.0"$ $L = 277.34'$ $T = 147.61'$ $R = 327.40'$ $SE = EXIST.$ $V = EXIST.$
--	---



**MATCH LINE -L- STA. 23+00.00  
SEE SHEET 4**

**MATCH LINE -L- STA. 35+00.00  
SEE SHEET 6**

**NOTES:**  
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED  
SEE SHEET 21 FOR -L- PROFILE

8/17/99  
K:\2018\0814\0814.rdw\_psh\_05.dgn  
12/28/2018



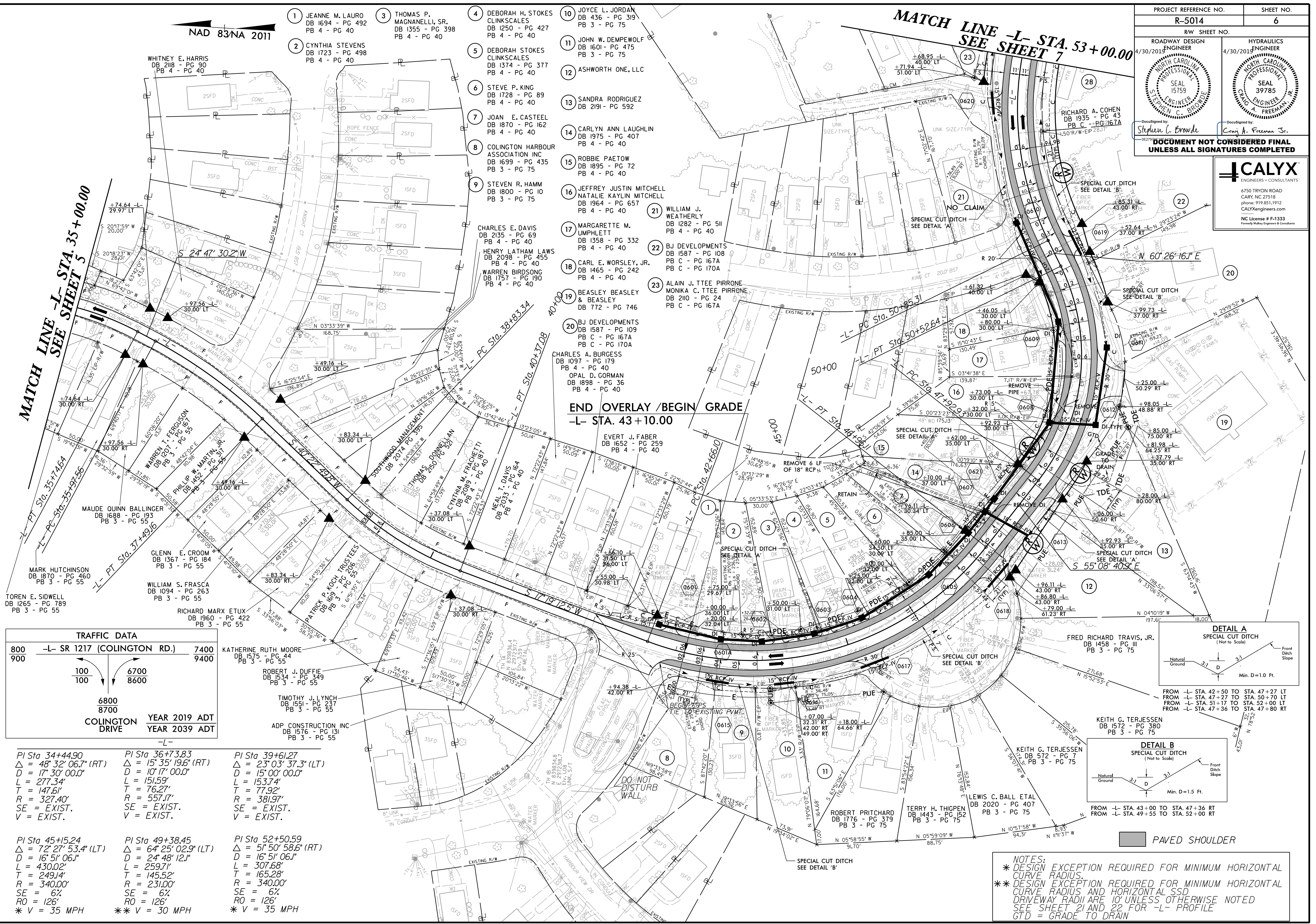
NAD 83NA 2011

PROJECT REFERENCE NO. <b>R-5014</b>	SHEET NO. <b>6</b>
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER 4/30/2019	4/30/2019
DocuSigned by: <b>Stephen C. Browde</b>	DocuSigned by: <b>Craig A. Freeman Jr.</b>

**DOCUMENT NOT CONSIDERED FINAL  
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**CALYX**  
ENGINEERS + CONSULTANTS

4750 TRYON ROAD  
CARY, NC 27518  
phone: 919.851.1912  
CALYXengineers.com  
NC License # F-1333  
Formerly Huber Engineers & Consultants



**MATCH LINE -L- STA. 35+00.00**  
SEE SHEET 5

**MATCH LINE -L- STA. 53+00.00**  
SEE SHEET 7

**END OVERLAY / BEGIN GRADE**  
-L- STA. 43+10.00

**TRAFFIC DATA**

800	-L- SR 1217 (COLINGTON RD.)	7400
900		9400

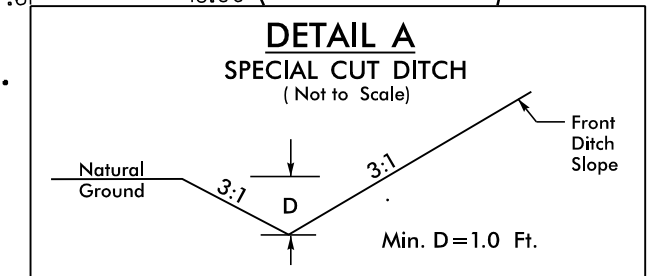
100	6700
100	8600

6800  
8700

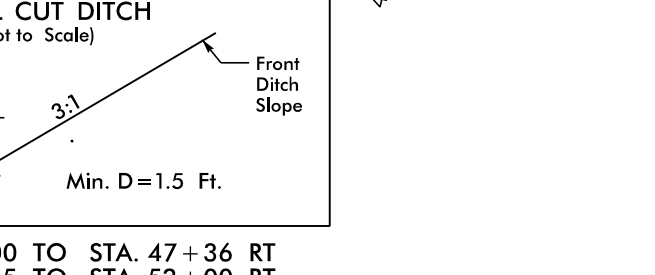
**COLINGTON DRIVE**

YEAR 2019 ADT	YEAR 2039 ADT
---------------	---------------

<p>PI Sta 34+44.90 Δ = 48° 32' 06.7" (RT) D = 17' 30" 00.0" L = 277.34' T = 147.61' R = 327.40' SE = EXIST. V = EXIST.</p>	<p>PI Sta 36+73.83 Δ = 15° 35' 19.6" (RT) D = 10' 17" 00.0" L = 151.59' T = 76.27' R = 557.17' SE = EXIST. V = EXIST.</p>	<p>PI Sta 39+61.27 Δ = 23° 03' 37.3" (LT) D = 15' 00" 00.0" L = 153.74' T = 77.92' R = 381.97' SE = EXIST. V = EXIST.</p>
<p>PI Sta 45+15.24 Δ = 72° 27' 53.4" (LT) D = 16' 51" 06.1" L = 430.02' T = 249.14' R = 340.00' SE = 6% RO = 126' * V = 35 MPH</p>	<p>PI Sta 49+38.45 Δ = 64° 25' 02.9" (LT) D = 24' 48' 12.1" L = 259.71' T = 145.52' R = 231.00' SE = 6% RO = 126' ** V = 30 MPH</p>	<p>PI Sta 52+50.59 Δ = 51° 50' 58.6" (RT) D = 16' 51" 06.1" L = 307.68' T = 165.28' R = 340.00' SE = 6% RO = 126' * V = 35 MPH</p>



FROM -L- STA. 42+50 TO STA. 47+27 LT  
FROM -L- STA. 47+27 TO STA. 50+70 LT  
FROM -L- STA. 51+17 TO STA. 52+00 LT  
FROM -L- STA. 47+36 TO STA. 47+80 RT



FROM -L- STA. 43+00 TO STA. 47+36 RT  
FROM -L- STA. 49+55 TO STA. 52+00 RT

PAVED SHOULDER

**NOTES:**  
\* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.  
\*\* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS AND HORIZONTAL SSD.  
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED  
SEE SHEET 21 AND 22 FOR -L- PROFILE  
GTD = GRADE TO DRAIN



**NV5**  
 NV5 ENGINEERS & CONSULTANTS, INC.  
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 NC License # F1333  
 Formerly CALN Engineers & Consultants

PROJECT REFERENCE NO. **R-5014** SHEET NO. **7**

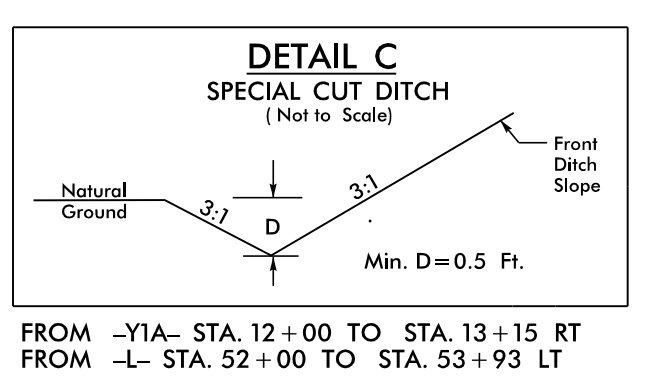
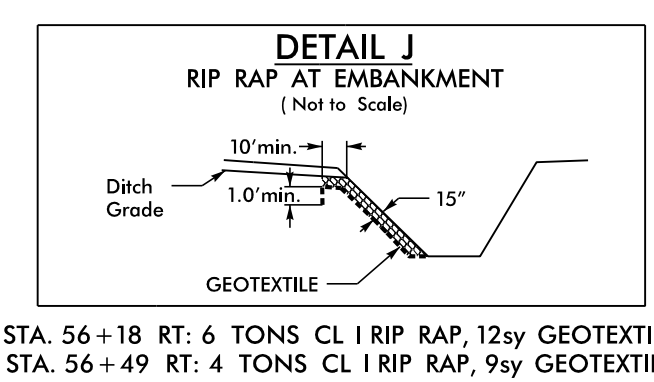
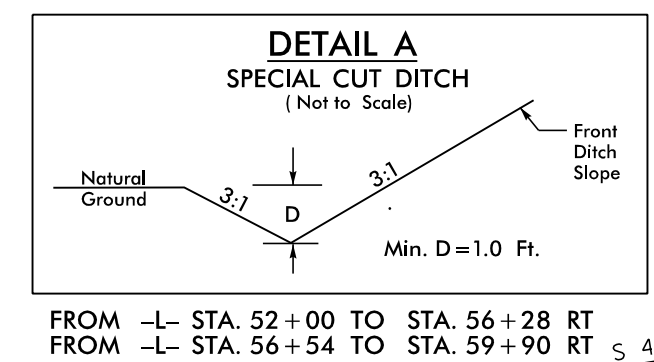
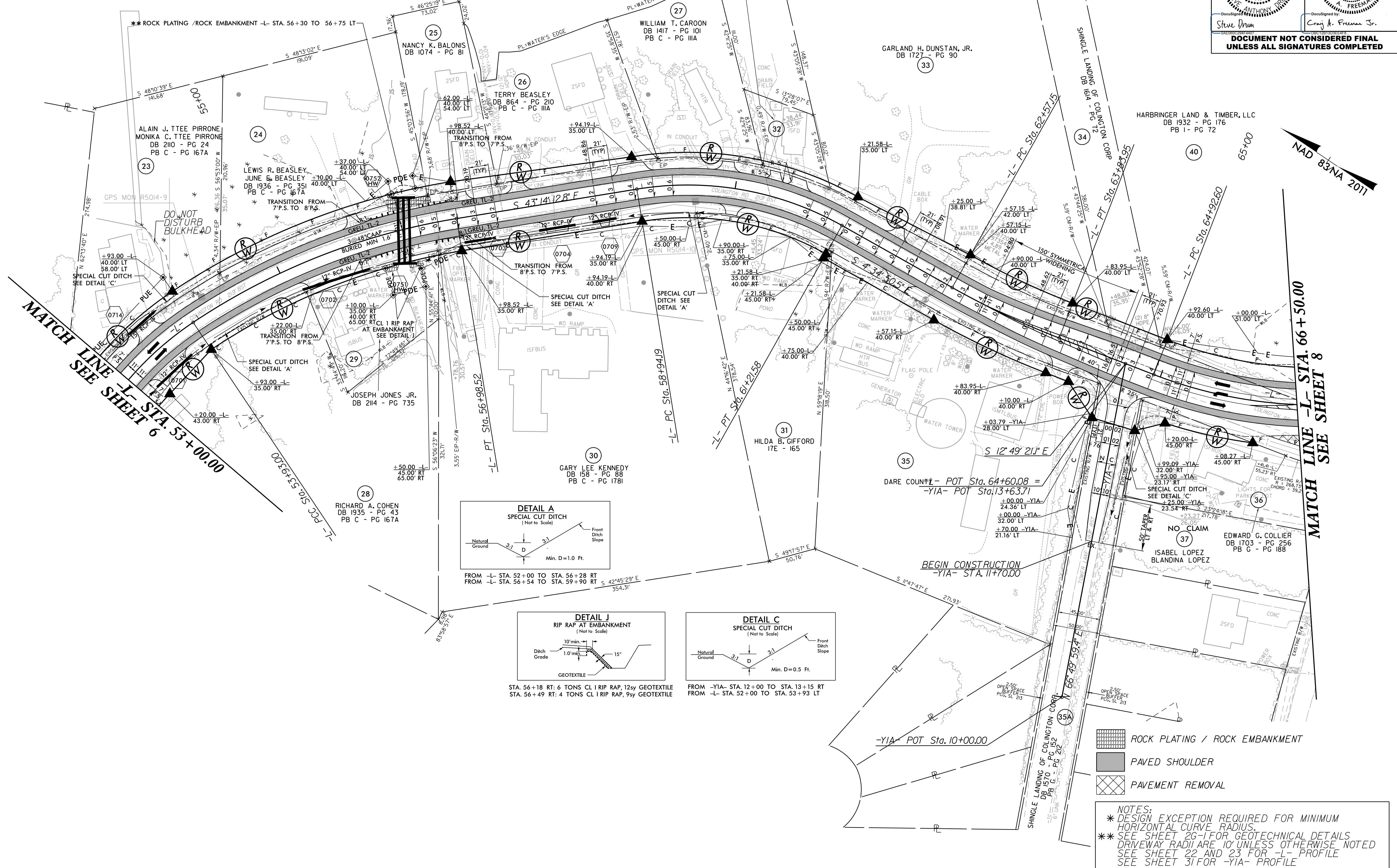
R/W SHEET NO. **3/31/2021**

ROADWAY DESIGN ENGINEER  
 SEAL 017265  
 STEVE DRYDEN

HYDRAULICS ENGINEER  
 SEAL 39785  
 CRAIG A. FREEMAN JR.

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

PI Sta	PI Sta	PI Sta	PI Sta	PI Sta
52+50.59	55+48.13	60+12.41	63+20.66	74+83.10
$\Delta = 51^{\circ}50'58.6"$ (RT)	$\Delta = 24^{\circ}28'32.5"$ (RT)	$\Delta = 38^{\circ}39'22.3"$ (RT)	$\Delta = 8^{\circ}14'30.6"$ (LT)	$\Delta = 127^{\circ}49'20.5"$ (LT)
D = 16'51'06.1"	D = 8'00'39.4"	D = 17'00'00.0"	D = 6'30'00.0"	D = 11'48'48.8"
L = 307.68'	L = 305.53'	L = 227.39'	L = 126.80'	L = 1,082.00'
T = 165.28'	T = 155.13'	T = 118.21'	T = 63.51'	T = 990.50'
R = 340.00'	R = 715.22'	R = 337.03'	R = 881.47'	R = 485.00'
SE = 6%	SE = 6%	SE = 6%	SE = 6%	SE = 6%
RO = 126'	RO = 126'	RO = 126'	RO = 105'	RO = 126'
V = 35 MPH	V = 45 MPH	V = 30 MPH	V = 50 MPH	V = 40 MPH



- ROCK PLATING / ROCK EMBANKMENT
- PAVED SHOULDER
- PAVEMENT REMOVAL

**NOTES:**  
 \* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.  
 \*\* SEE SHEET 26-1 FOR GEOTECHNICAL DETAILS  
 DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED  
 SEE SHEET 22 AND 23 FOR -L- PROFILE  
 SEE SHEET 31 FOR -Y1A- PROFILE

8/17/09

3/31/2021  
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 E:\Projects\014\_rdy\_psh\_07.dgn





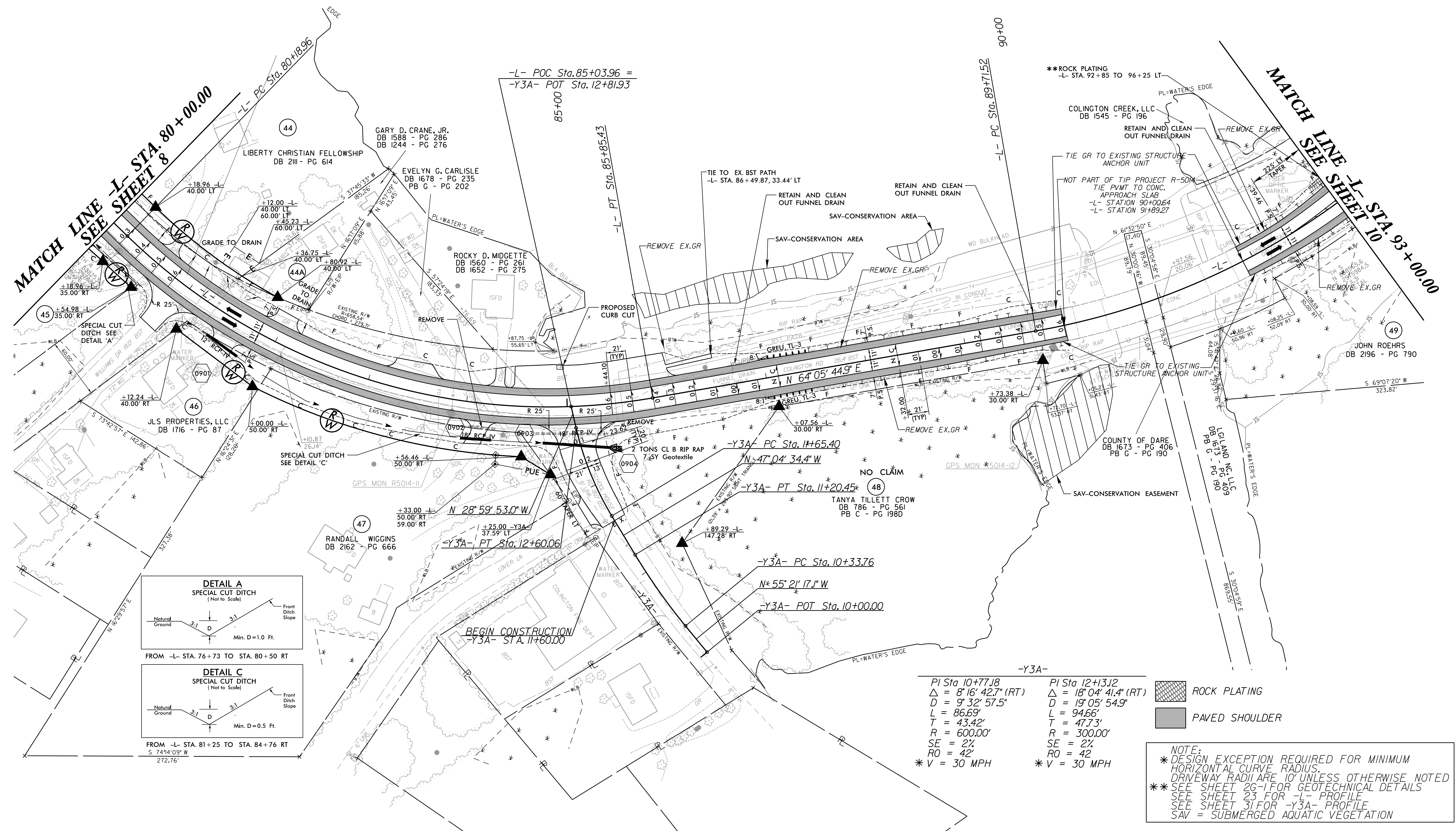




PROJECT REFERENCE NO. <b>R-5014</b>	SHEET NO. <b>9</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 8/31/2021	HYDRAULICS ENGINEER 4/1/2021
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

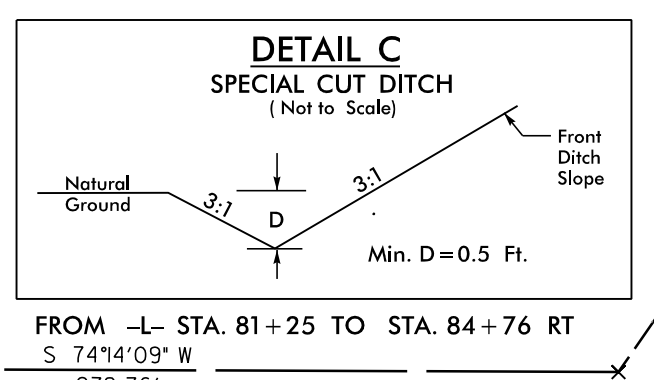
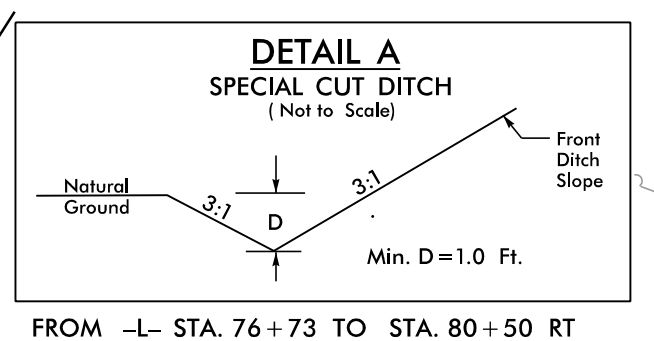
-L-

PI Sta 83+25.29 Δ = 54° 05' 38.6" (LT) D = 9° 32' 57.5" L = 566.47' T = 306.34' R = 600.00' SE = 6% RO = 126' V = 40 MPH	PI Sta 92+55.51 Δ = 43° 15' 31.2" (LT) D = 8° 00' 00.0" L = 540.73' T = 283.99' R = 716.20' SE = 6% RO = 126' V = 45 MPH
--	--



**MATCH LINE SEE SHEET 8**  
-L- STA. 80+00.00

**MATCH LINE SEE SHEET 10**  
-L- STA. 93+00.00



-Y3A-

PI Sta 10+77.18 Δ = 8° 16' 42.7" (RT) D = 9° 32' 57.5" L = 86.69' T = 43.42' R = 600.00' SE = 2% RO = 42' * V = 30 MPH	PI Sta 12+13.12 Δ = 18° 04' 41.4" (RT) D = 19° 05' 54.9" L = 94.66' T = 47.73' R = 300.00' SE = 2% RO = 42' * V = 30 MPH
--	--

ROCK PLATING  
 PAVED SHOULDER

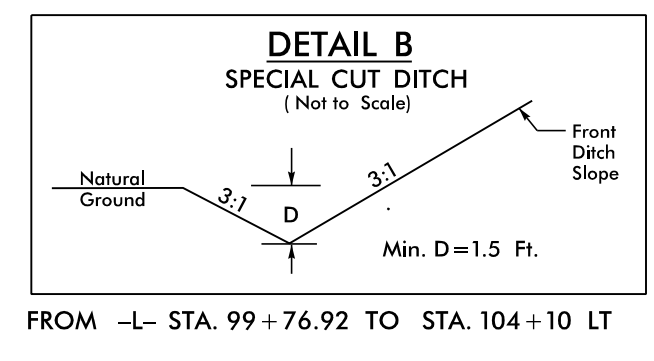
**NOTE:**  
\* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.  
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED  
\*\* SEE SHEET 26-I FOR GEOTECHNICAL DETAILS  
SEE SHEET 23 FOR -L- PROFILE  
SEE SHEET 31 FOR -Y3A- PROFILE  
SAV = SUBMERGED AQUATIC VEGETATION

8/17/2021 8:17:09 AM C:\Users\prouj\OneDrive\Documents\Projects\2021\08\08172021\08172021.dgn



8.17.19

-L-		
PI Sta 92+55.51 Δ = 43°15'31.2" (LT) D = 8'00'00.0" L = 540.73' T = 283.99' R = 716.20' SE = 6% RO = 126' V = 45 MPH	PI Sta 98+84.89 Δ = 13°24'22.6" (LT) D = 7'15'00.0" L = 184.91' T = 92.88' R = 790.29' SE = 5% RO = 105' V = 45 MPH	PI Sta 105+78.55 Δ = 104°22'34.7" (RT) D = 2'37'15.8" L = 482.75' T = 341.49' R = 265.00' SE = 6% RO = 126' * V = 30 MPH



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6750 TRYON ROAD  
CARY, NC 27513  
P: 919.851.1912  
www.NV5.com

PROJECT REFERENCE NO. **R-5014**  
SHEET NO. **10**

ROADWAY DESIGN  
ENGINEER  
3/31/2021

HYDRAULICS  
ENGINEER  
4/1/2021

SEAL  
017265  
STEVE ANTHONY  
STATE ENGINEER

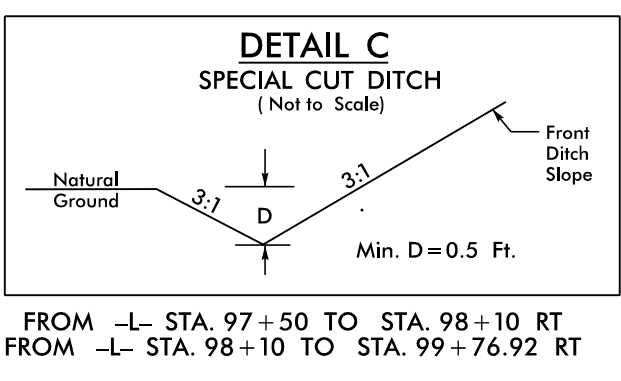
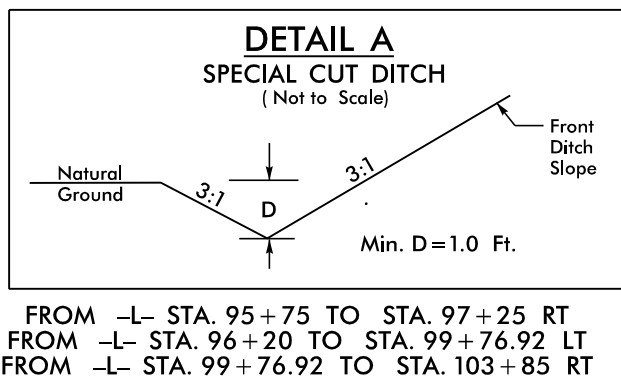
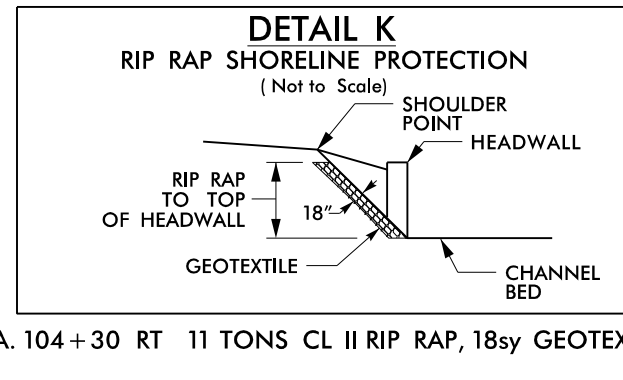
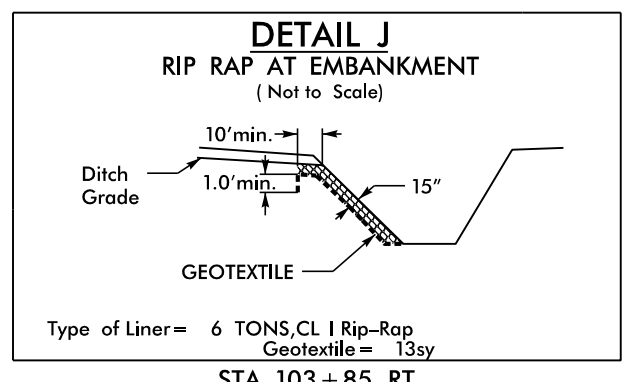
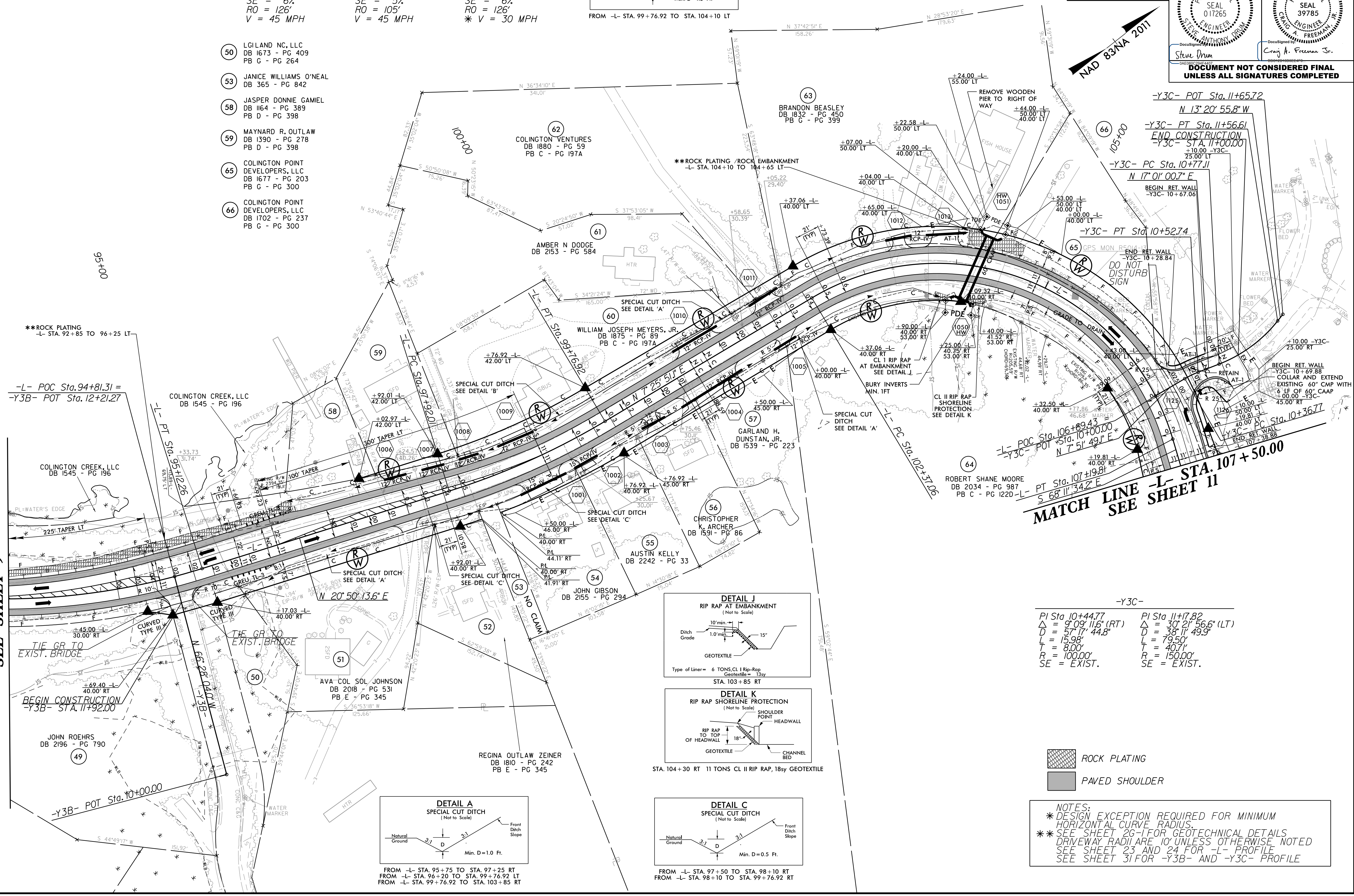
SEAL  
39785  
CRAIG A. FREEMAN JR.  
PROFESSIONAL ENGINEER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

- 50 LGLAND NC, LLC  
DB 1673 - PG 409  
PB G - PG 264
- 53 JANICE WILLIAMS O'NEAL  
DB 365 - PG 842
- 58 JASPER DONNIE GAMIEL  
DB 1164 - PG 389  
PB D - PG 398
- 59 MAYNARD R. OUTLAW  
DB 1390 - PG 278  
PB D - PG 398
- 65 COLINGTON POINT DEVELOPERS, LLC  
DB 1677 - PG 203  
PB G - PG 300
- 66 COLINGTON POINT DEVELOPERS, LLC  
DB 1702 - PG 237  
PB G - PG 300

MATCH LINE -L- STA. 93 + 00.00  
SEE SHEET 9

MATCH LINE -L- STA. 107 + 50.00  
SEE SHEET 11



-Y3C-	
PI Sta 10+44.77 Δ = 9°09'11.6" (RT) D = 57'17'44.8" L = 15.98' T = 8.00' R = 100.00' SE = EXIST.	PI Sta 11+17.82 Δ = 30°21'56.6" (LT) D = 38'11'49.9" L = 79.50' T = 40.71' R = 150.00' SE = EXIST.

- ROCK PLATING
- PAVED SHOULDER

NOTES:  
 \* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.  
 \*\* SEE SHEET 26-I FOR GEOTECHNICAL DETAILS DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED  
 SEE SHEET 23 AND 24 FOR -L- PROFILE  
 SEE SHEET 31 FOR -Y3B- AND -Y3C- PROFILE

3/31/2021  
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E:\Projects\2021\Projects\5014\RDY\psd\_10.dgn







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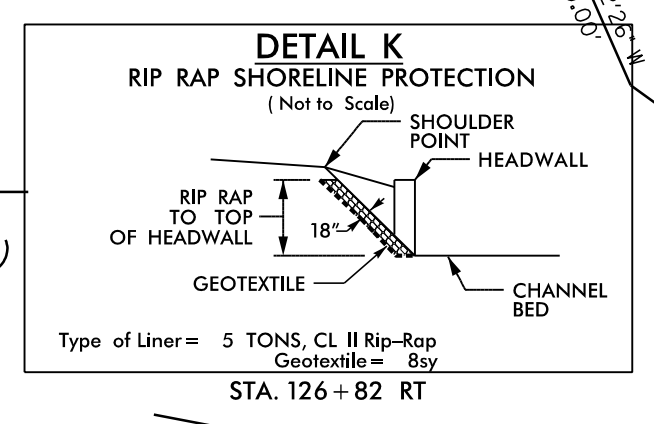
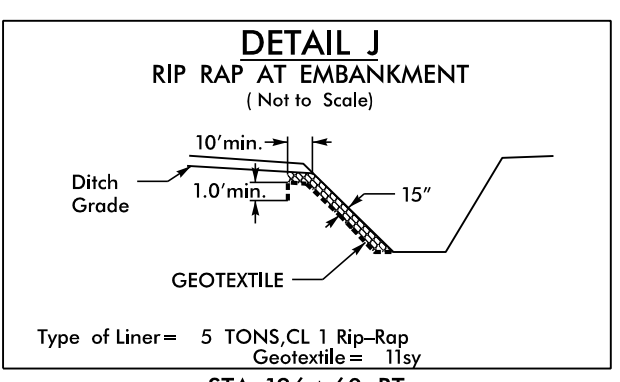
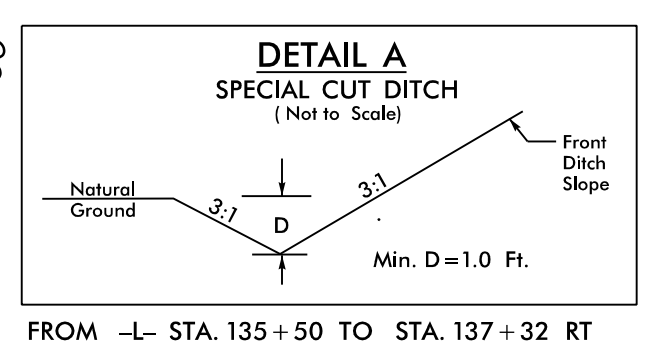
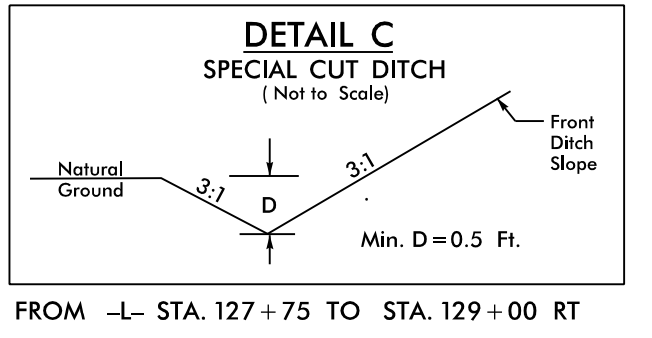
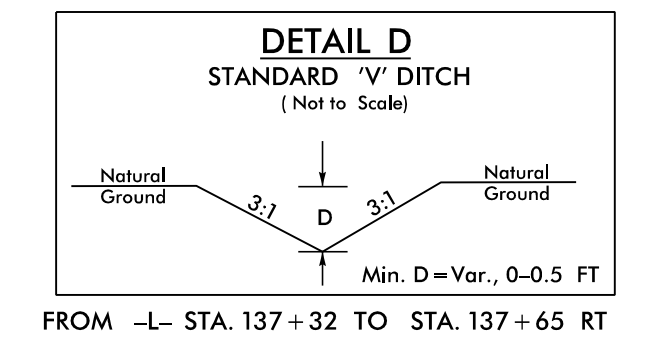
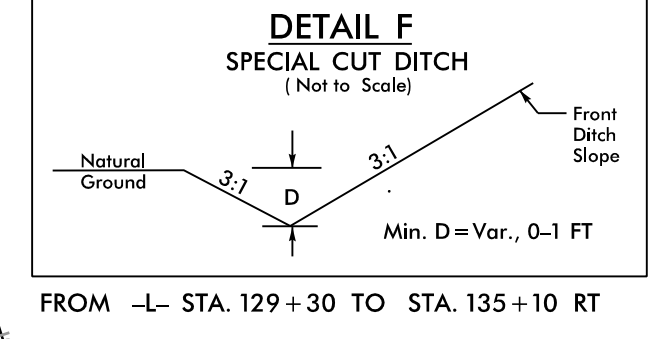
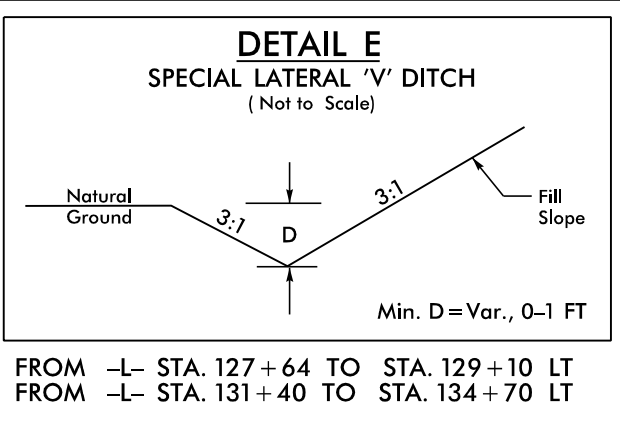
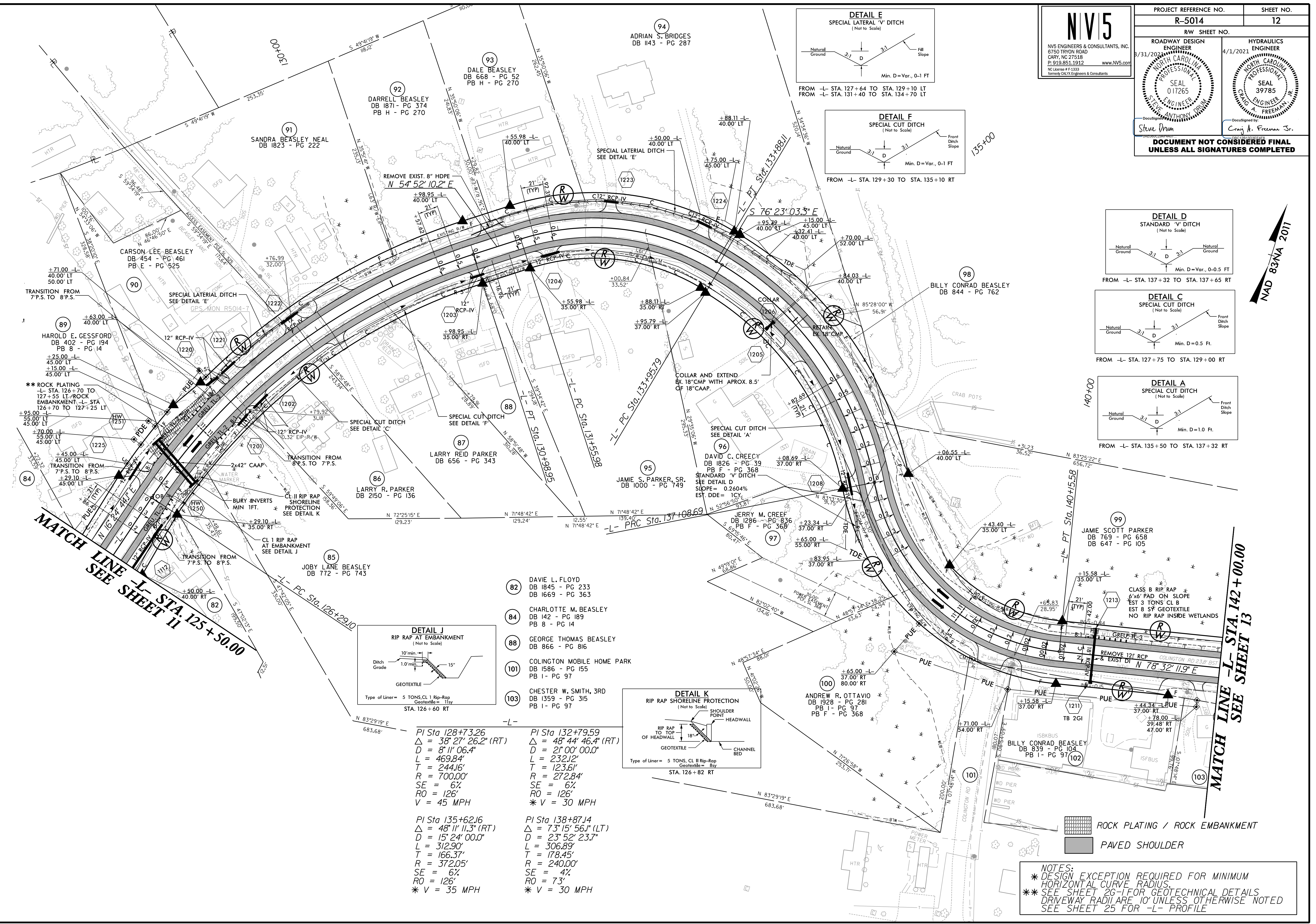
PROJECT REFERENCE NO. **R-5014** SHEET NO. **12**

R/W SHEET NO.

ROADWAY DESIGN ENGINEER  
 8/31/2021  
 NORTH CAROLINA PROFESSIONAL SEAL 017265  
 STEVE DRUM

HYDRAULICS ENGINEER  
 4/1/2021  
 NORTH CAROLINA PROFESSIONAL SEAL 39785  
 CRAIG A. FREEMAN JR.

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



- 82 DAVE L. FLOYD  
DB 1845 - PG 233  
DB 1669 - PG 363
- 84 CHARLOTTE M. BEASLEY  
DB 142 - PG 189  
PB 8 - PG 14
- 88 GEORGE THOMAS BEASLEY  
DB 866 - PG 816
- 101 COLINGTON MOBILE HOME PARK  
DB 1586 - PG 155  
PB 1 - PG 97
- 103 CHESTER W. SMITH, 3RD  
DB 1359 - PG 315  
PB 1 - PG 97

PI Sta 128+73.26  
 $\Delta = 38^\circ 27' 26.2''$  (RT)  
 D = 8' 11' 06.4"  
 L = 469.84'  
 T = 244.16'  
 R = 700.00'  
 SE = 6'  
 RO = 126'  
 V = 45 MPH

PI Sta 132+79.59  
 $\Delta = 48^\circ 44' 46.4''$  (RT)  
 D = 21' 00' 00.0"  
 L = 232.12'  
 T = 123.61'  
 R = 272.84'  
 SE = 6'  
 RO = 126'  
 \* V = 30 MPH

PI Sta 135+62.16  
 $\Delta = 48^\circ 11' 11.3''$  (RT)  
 D = 15' 24' 00.0"  
 L = 312.90'  
 T = 166.37'  
 R = 372.05'  
 SE = 6'  
 RO = 126'  
 \* V = 35 MPH

PI Sta 138+87.14  
 $\Delta = 73^\circ 15' 56.1''$  (LT)  
 D = 23' 52' 23.7"  
 L = 306.89'  
 T = 178.45'  
 R = 240.00'  
 SE = 4'  
 RO = 73'  
 \* V = 30 MPH

ROCK PLATING / ROCK EMBANKMENT  
 PAVED SHOULDER

**NOTES:**  
 \* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS.  
 \* SEE SHEET 26-1 FOR GEOTECHNICAL DETAILS.  
 \* DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.  
 \* SEE SHEET 25 FOR -L- PROFILE.

NAD 83/NA 2011

MATCH LINE -L- STA. 142+00.00  
 SEE SHEET 13

MATCH LINE -L- STA. 125+50.00  
 SEE SHEET 11

8/17/19

8/17/2021...\\proj\res014\_rdy\_psh\_12.dgn



**CALYX**  
ENGINEERS + CONSULTANTS

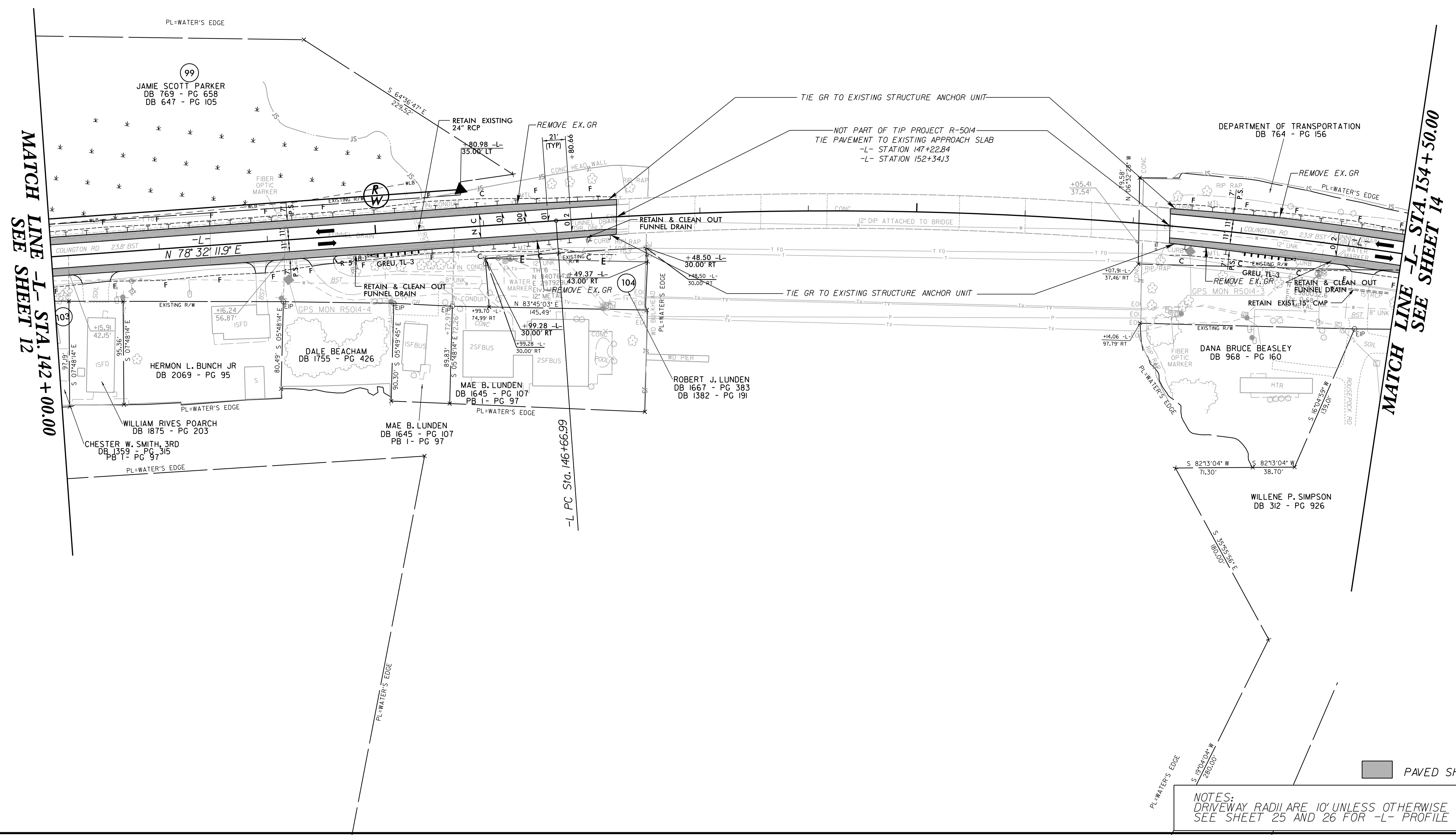
6750 TRYON ROAD  
CARY, NC 27518  
phone: 919.851.9192  
CALYXEngineers.com

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Formerly Maky Engineers & Consultants

PROJECT REFERENCE NO. <b>R-5014</b>		SHEET NO. <b>13</b>	
RW SHEET NO.			
ROADWAY DESIGN 1/4/2019 ENGINEER		HYDRAULICS 1/4/2019 ENGINEER	
Designed by: <i>Stephen C. Browde</i>		Designed by: <i>Craig A. Freeman Jr.</i>	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

-L-  
PI Sta 151+21.17  
 $\Delta = 14^{\circ} 36' 20.0''$  (RT)  
D = 1'37'00.0"  
L = 903.44'  
T = 454.18'  
R = 3,544.07'  
SE = 2%  
RO = 42'  
V = 80 MPH

NAD 83NA 2011



8/18/2018  
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prowd

NOTES:  
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED  
SEE SHEET 25 AND 26 FOR -L- PROFILE

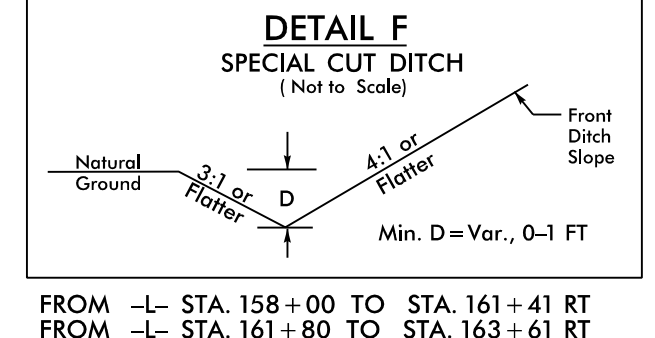
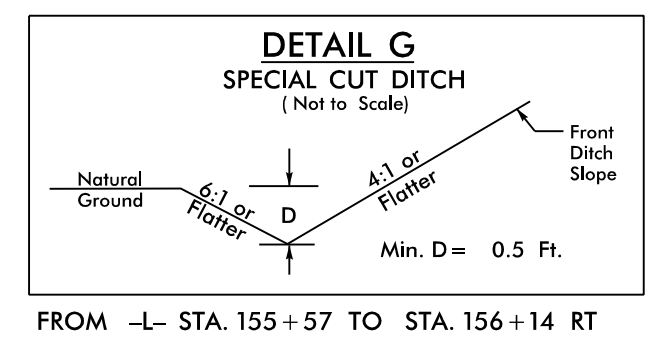
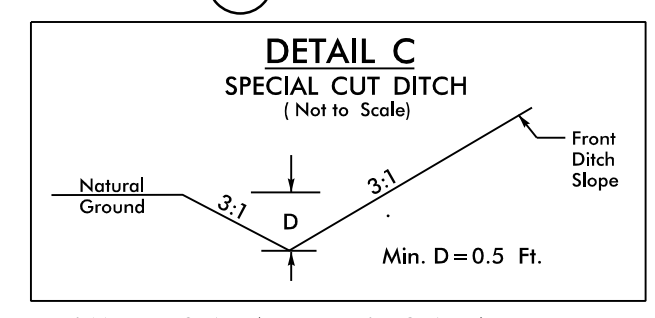
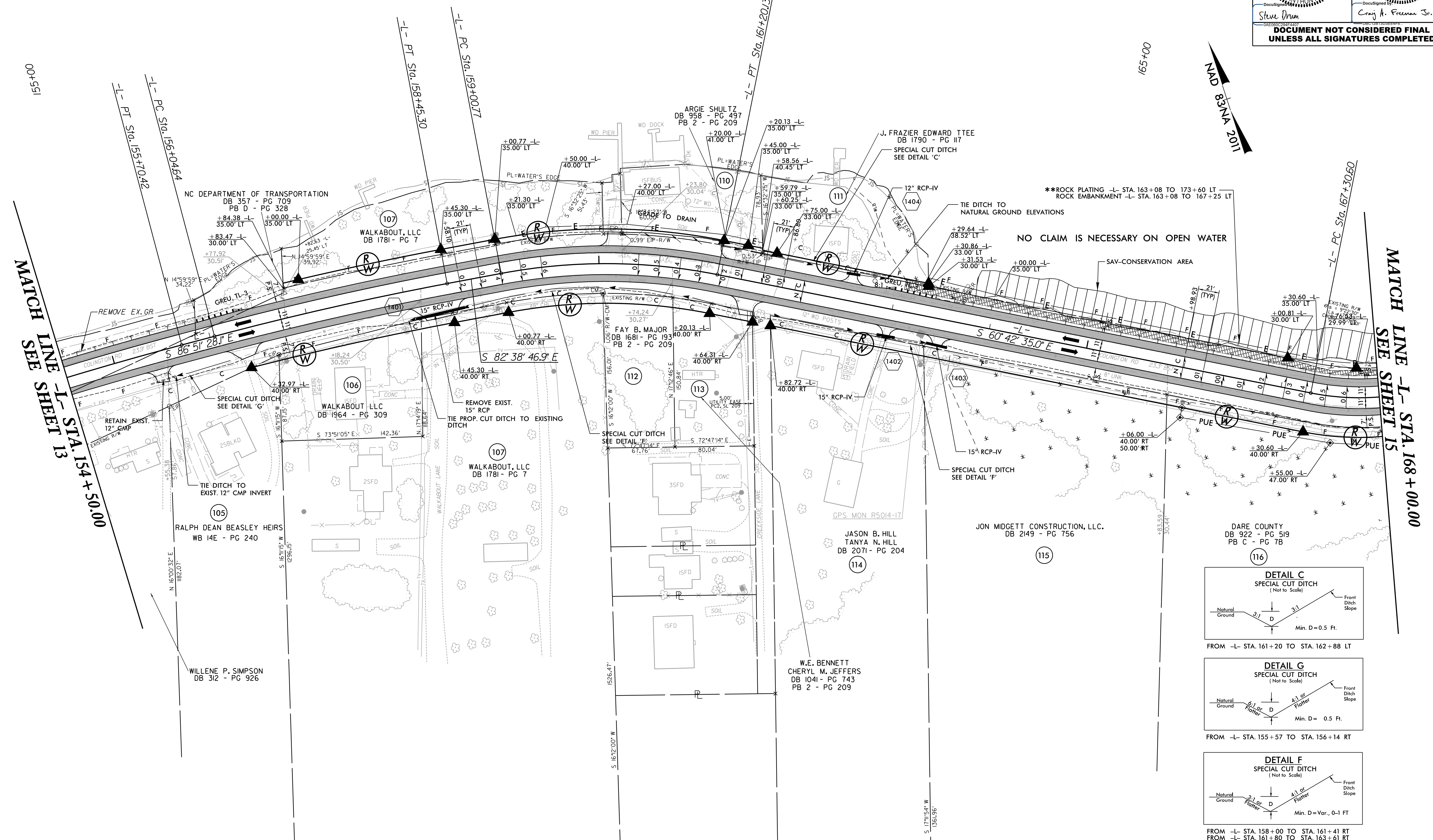


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 Formerly CALVIN Engineers & Consultants

PROJECT REFERENCE NO. <b>R-5014</b>	SHEET NO. <b>14</b>
R/W SHEET NO.	
ROADWAY DESIGN 8/31/2021 ENGINEER	HYDRAULICS ENGINEER 4/1/2021
SEAL 017265 STATE ENGINEER STEVE ANTHONY DRUM	SEAL 39785 STATE ENGINEER CRAIG A. FREEMAN JR.

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

PI Sta 151+21.17 $\Delta = 14' 36" 20.0" (RT)$ $D = 1' 37" 00.0"$ $L = 903.44'$ $T = 454.18'$ $R = 3,544.07'$ $SE = 2\%$ $RO = 42'$ $V = 80 MPH$	PI Sta 157+25.02 $\Delta = 4' 12" 41.2" (RT)$ $D = 1' 45" 00.0"$ $L = 240.65'$ $T = 120.38'$ $R = 3,274.04'$ $SE = 2\%$ $RO = 42'$ $V = 80 MPH$	PI Sta 160+11.81 $\Delta = 2' 56" 11.8" (RT)$ $D = 10' 00" 00.0"$ $L = 219.37'$ $T = 111.04'$ $R = 572.96'$ $SE = 6\%$ $RO = 126'$ $V = 40 MPH$	PI Sta 168+56.10 $\Delta = 53' 18" 40.2" (LT)$ $D = 22' 55" 05.9"$ $L = 232.61'$ $T = 125.49'$ $R = 250.00'$ $SE = 6\%$ $RO = 126'$ $*V = 30 MPH$
--	---	---	---



- ROCK PLATING / ROCK EMBANKMENT
- PAVED SHOULDER

**NOTES:**  
 \* DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS AND HORIZONTAL SSD  
 \*\* SEE SHEET 26-I FOR GEOTECHNICAL DETAILS  
 DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED  
 SEE SHEET 26 FOR -L- PROFILE  
 SAV = SUBMERGED AQUATIC VEGETATION

8/17/2021  
 8:17:09  
 C:\Users\pjohn\OneDrive\Documents\Projects\2021\08172021\08172021\08172021.dgn  
 8/17/2021 8:17:09 AM







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 NV5 ENGINEERS & CONSULTANTS, INC.  
 8750 TRYON ROAD  
 CARY, NC 27518  
 P: 919.851.1912 www.NV5.com  
 NC License # F-1333  
 formerly CVLW Engineers & Consultants

PROJECT REFERENCE NO. <b>R-5014</b>	SHEET NO. <b>16</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 3/20/2021 SEAL 017265 STATE ENGINEER	HYDRAULICS ENGINEER 3/19/2021 SEAL 39785 STATE ENGINEER
Steve Drum	Craig A. Freeman Jr.
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

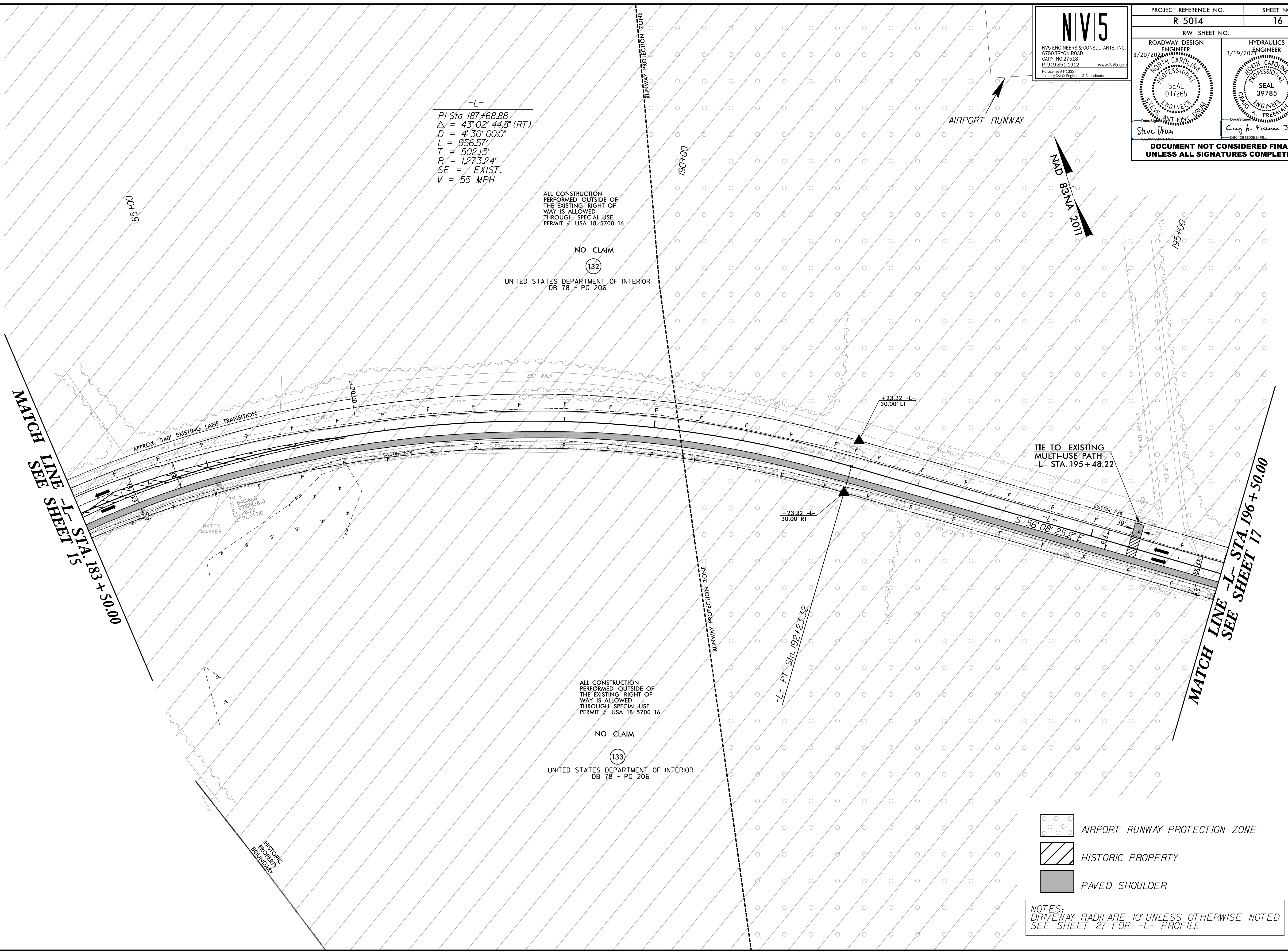
-L-  
 PI Sta 187+68.88  
 $\Delta = 43^{\circ}02'44.8" (RT)$   
 $D = 4^{\circ}30'00.0"$   
 $L = 956.57'$   
 $T = 502.13'$   
 $R = 1,273.24'$   
 $SE = EXIST.$   
 $V = 55 MPH$

ALL CONSTRUCTION PERFORMED OUTSIDE OF THE EXISTING RIGHT OF WAY IS ALLOWED THROUGH SPECIAL USE PERMIT # USA 18 5700 16

NO CLAIM  
 (132)  
 UNITED STATES DEPARTMENT OF INTERIOR  
 DB 78 - PG 206

ALL CONSTRUCTION PERFORMED OUTSIDE OF THE EXISTING RIGHT OF WAY IS ALLOWED THROUGH SPECIAL USE PERMIT # USA 18 5700 16

NO CLAIM  
 (133)  
 UNITED STATES DEPARTMENT OF INTERIOR  
 DB 78 - PG 206



MATCH LINE SEE SHEETS 15 - 18 STA 181+50.00

MATCH LINE -L- STA. 196 + 50.00 SEE SHEET 17

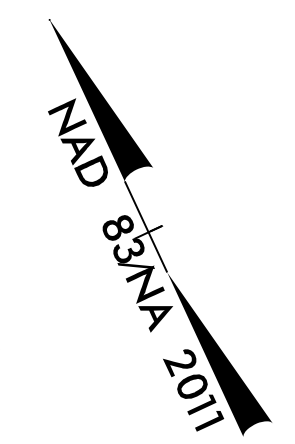
- AIRPORT RUNWAY PROTECTION ZONE
- HISTORIC PROPERTY
- PAVED SHOULDER

NOTES:  
 DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED  
 SEE SHEET 27 FOR -L- PROFILE



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 NC License # F-1333  
 formerly COLN Engineers & Consultants

PROJECT REFERENCE NO. <b>R-5014</b>	SHEET NO. <b>17</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 3/20/2021 STEVE ANTHONY DRUM SEAL 017265 STATE ENGINEER	HYDRAULICS ENGINEER 3/19/2021 CRAIG A. FREEMAN JR. SEAL 39785 STATE ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



-L-  
 PI Sta 209+11.27  
 $\Delta = 62^{\circ}13'20.7"$  (LT)  
 $D = 6^{\circ}05'00.0"$   
 $L = 1,022.83'$   
 $T = 568.41'$   
 $R = 941.85'$   
 $SE = EXIST.$   
 $V = 50$  MPH

ALL CONSTRUCTION PERFORMED OUTSIDE OF THE EXISTING RIGHT OF WAY IS ALLOWED THROUGH SPECIAL USE PERMIT # USA 18 5700 16

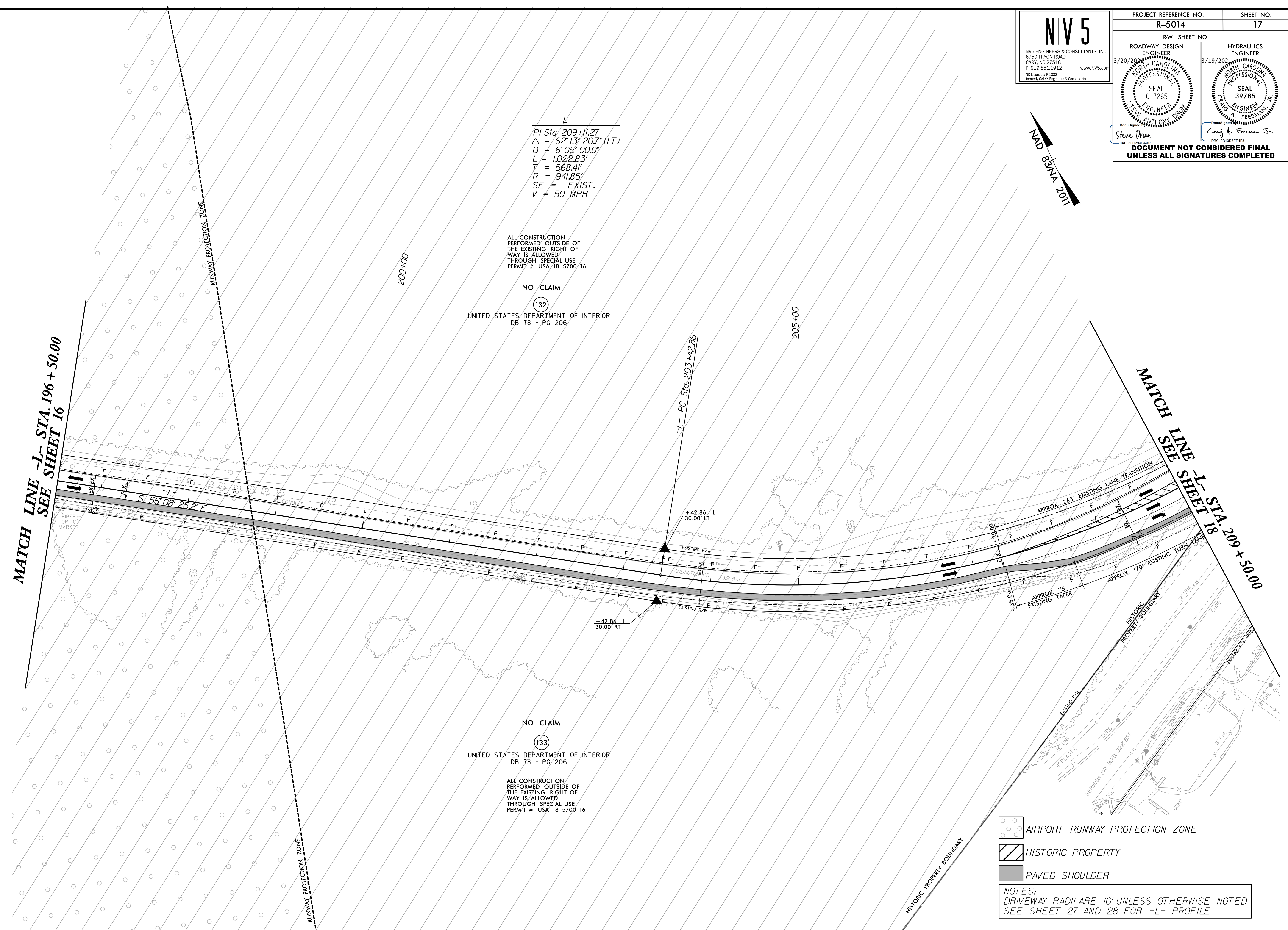
NO CLAIM

(132)  
 UNITED STATES DEPARTMENT OF INTERIOR  
 DB 78 - PG 206

NO CLAIM

(133)  
 UNITED STATES DEPARTMENT OF INTERIOR  
 DB 78 - PG 206

ALL CONSTRUCTION PERFORMED OUTSIDE OF THE EXISTING RIGHT OF WAY IS ALLOWED THROUGH SPECIAL USE PERMIT # USA 18 5700 16



- AIRPORT RUNWAY PROTECTION ZONE
- HISTORIC PROPERTY
- PAVED SHOULDER

NOTES:  
 DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED  
 SEE SHEET 27 AND 28 FOR -L- PROFILE

8/17/99

3/16/2021  
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 psh

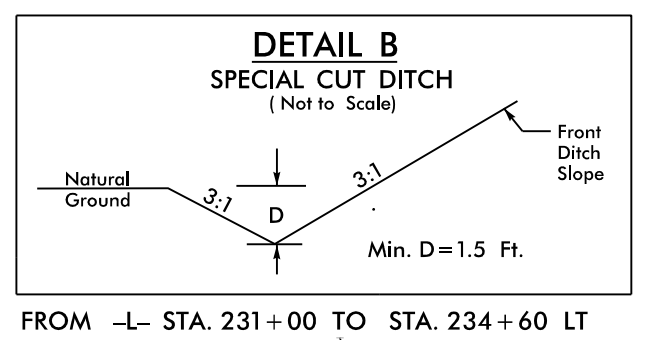
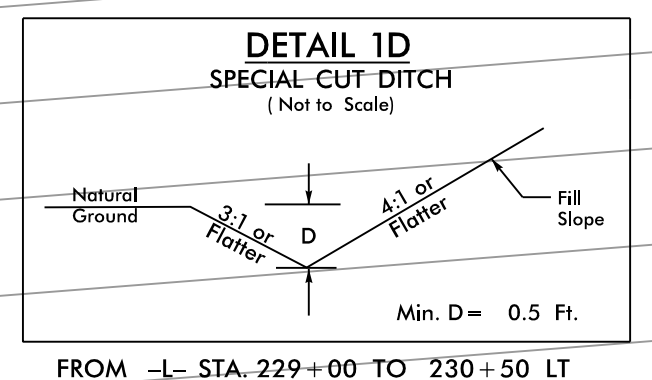






PROJECT REFERENCE NO. <b>R-5014</b>		SHEET NO. <b>19</b>	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER 3/20/2021 SEAL 017265 STEVE ANTHONY DRUM		HYDRAULICS ENGINEER 3/19/2021 SEAL 39785 CRAIG A. FREEMAN JR.	
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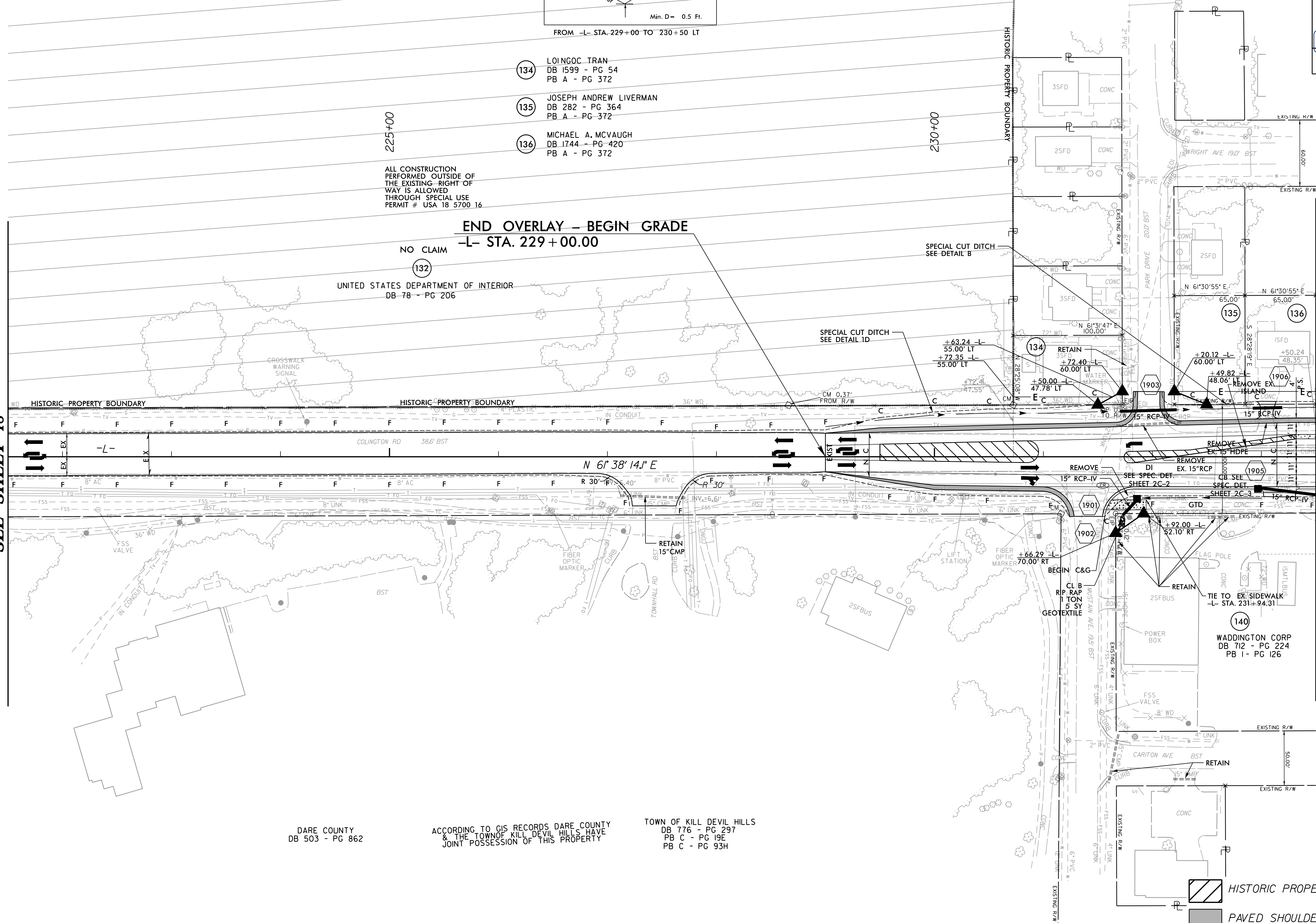


- 134 LOINGOC, TRAN  
DB 1599 - PG 54  
PB A - PG 372
- 135 JOSEPH ANDREW LIVERMAN  
DB 282 - PG 364  
PB A - PG 372
- 136 MICHAEL A. MCVAUGH  
DB 1744 - PG 420  
PB A - PG 372

ALL CONSTRUCTION PERFORMED OUTSIDE OF THE EXISTING RIGHT OF WAY IS ALLOWED THROUGH SPECIAL USE PERMIT # USA 18 5700 16

MATCH LINE -L- STA. 221 + 50.00  
SEE SHEET 18

MATCH LINE -L- STA. 233 + 50.00  
SEE SHEET 20



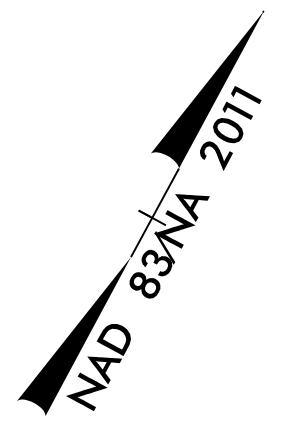
DARE COUNTY  
DB 503 - PG 862

ACCORDING TO GIS RECORDS DARE COUNTY & THE TOWN OF KILL DEVIL HILLS HAVE JOINT POSSESSION OF THIS PROPERTY

TOWN OF KILL DEVIL HILLS  
DB 776 - PG 297  
PB C - PG 19E  
PB C - PG 93H

- HISTORIC PROPERTY
- PAVED SHOULDER
- SIDEWALK / CONCRETE ISLAND
- GTD = GRADE TO DRAIN

NOTES:  
 DRIVEWAY RADII ARE 5' UNLESS OTHERWISE NOTED  
 SEE SHEET 28 FOR -L- PROFILE  
 SEE SHEET 2B-1 FOR INTERSECTION DETAIL



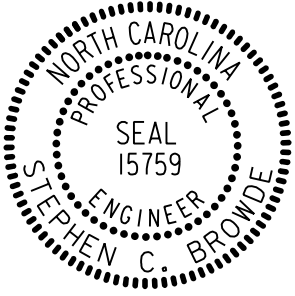
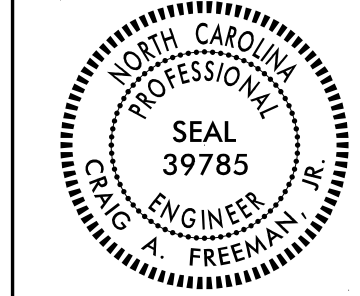


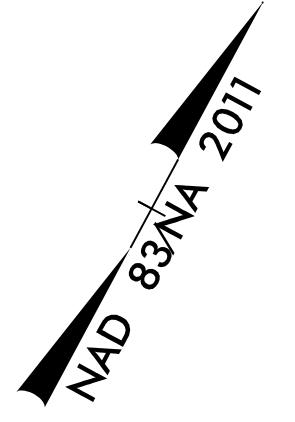
8/17/99

**CALYX**  
ENGINEERS + CONSULTANTS

6750 TRYON ROAD  
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phone: 919.851.9112  
CALYXengineers.com

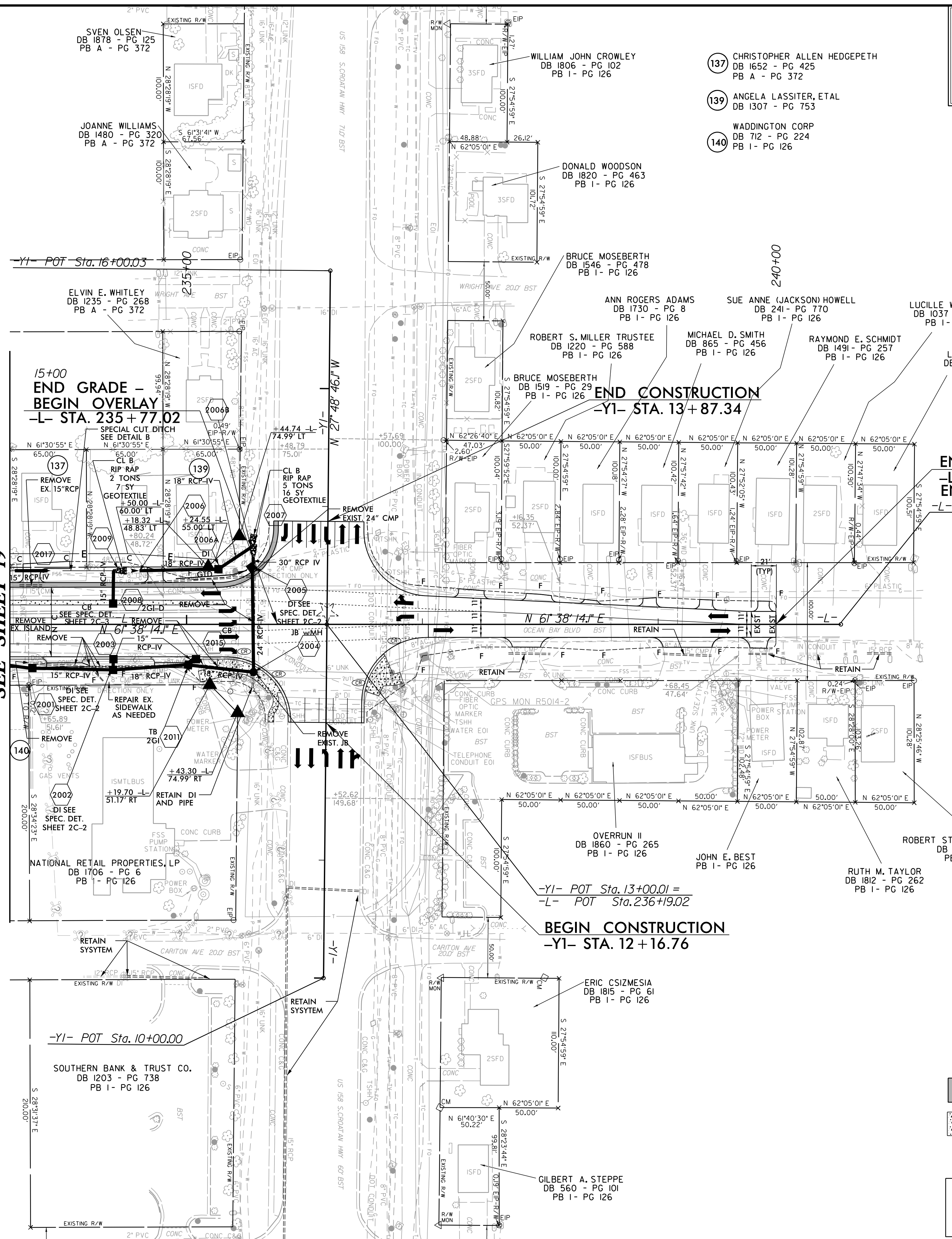
NC License # F-1333  
Formerly Makiy Engineers & Consultants


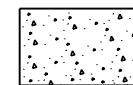

PROJECT REFERENCE NO. <b>R-5014</b>		SHEET NO. <b>20</b>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			



TRAFFIC DATA			
US 158 S. CROATAN HWY -Y1-			
33400		45000	
6700	635	9300	715
4500	635	6400	715
31300		42100	
-Y1- US 158 S. CROATAN HWY			
YEAR 2019 ADT		YEAR 2039 ADT	

MATCH LINE -L- STA. 233 + 50.00  
SEE SHEET 19



-  PAVED SHOULDER
-  SIDEWALK / CONCRETE ISLAND
-  EXISTING TRAFFIC SIGNAL

**NOTES:**  
DRIVEWAY RADII ARE 5' UNLESS OTHERWISE NOTED  
SEE SHEET 28 AND 29 FOR -L- PROFILE  
SEE SHEET 29 FOR -Y1- PROFILE  
SEE SHEET 2B-1 FOR INTERSECTION DETAIL

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5/28/19

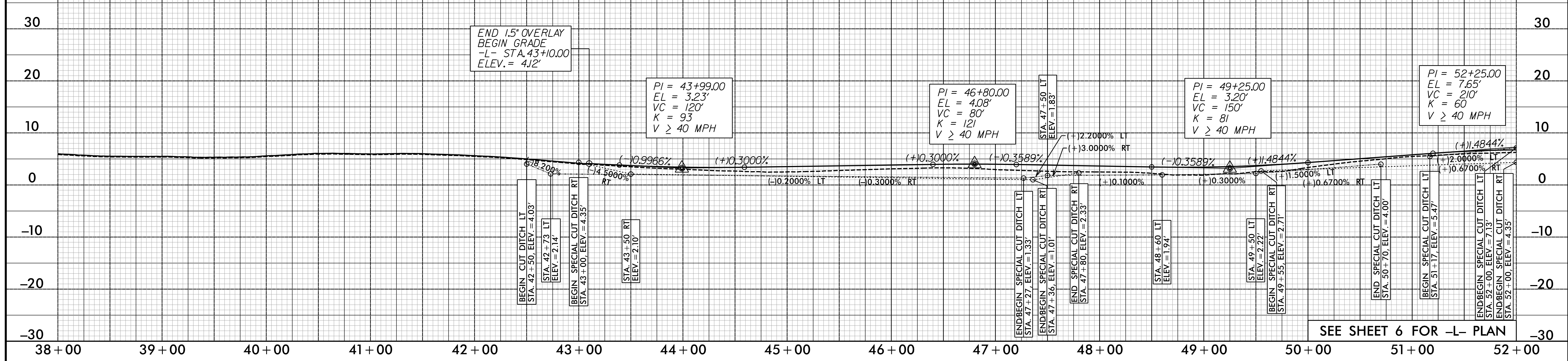
**NV5**  
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 6750 TRYON ROAD  
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 NC License # F-5333  
 formerly CALYX Engineers & Consultants

PROJECT REFERENCE NO. <b>R-5014</b>	SHEET NO. <b>22</b>
ROADWAY DESIGN ENGINEER 3/31/2021 NORTH CAROLINA PROFESSIONAL SEAL 017265 STEVEN ANTHONY DROWN	HYDRAULICS ENGINEER 4/1/2021 NORTH CAROLINA PROFESSIONAL SEAL 39785 CRAIG A. FREEMAN JR.

DocuSigned by:  
Steven Drown

DocuSigned by:  
Craig A. Freeman Jr.

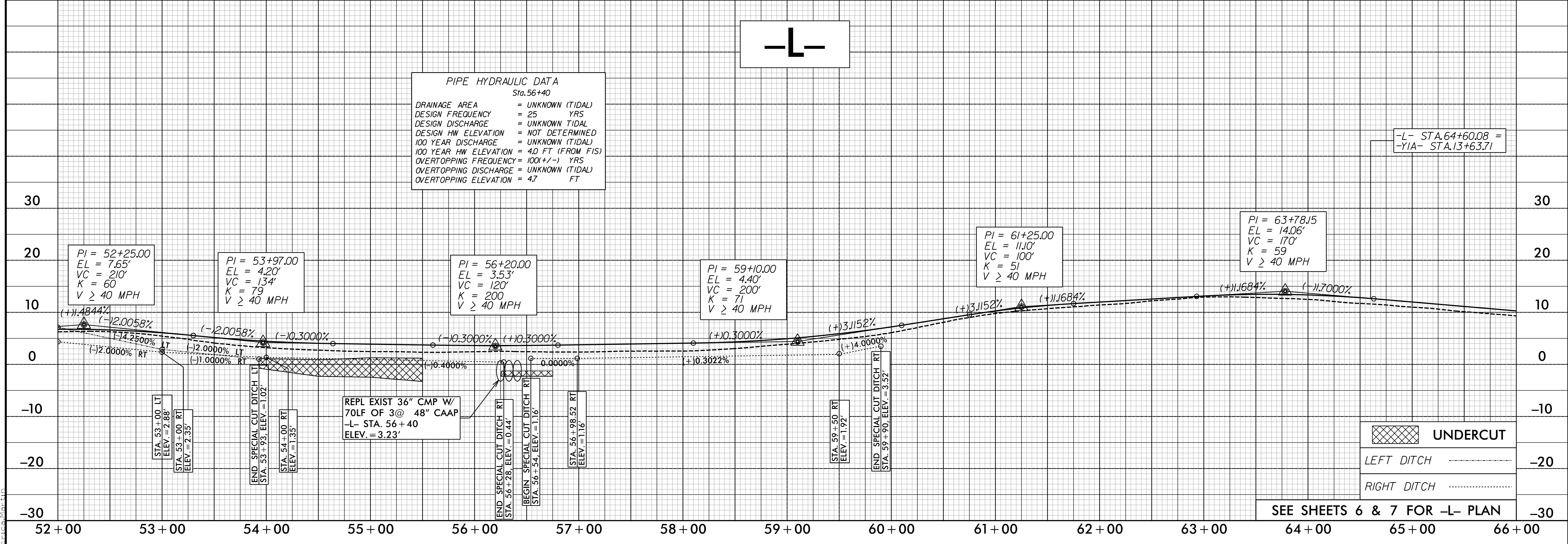
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



SEE SHEET 6 FOR -L- PLAN

**PIPE HYDRAULIC DATA**  
Sta. 56+40

DRAINAGE AREA	= UNKNOWN (TIDAL)
DESIGN FREQUENCY	= 25 YRS
DESIGN DISCHARGE	= UNKNOWN TIDAL
DESIGN HW ELEVATION	= NOT DETERMINED
100 YEAR DISCHARGE	= UNKNOWN (TIDAL)
100 YEAR HW ELEVATION	= 4.0 FT (FROM FIS)
OVERTOPPING FREQUENCY	= 100(+/-) YRS
OVERTOPPING DISCHARGE	= UNKNOWN (TIDAL)
OVERTOPPING ELEVATION	= 4.7 FT



-L- STA. 64+60.08 =  
-YIA- STA. 13+63.71

**UNDERCUT**

LEFT DITCH .....  
RIGHT DITCH .....

SEE SHEETS 6 & 7 FOR -L- PLAN

3/21/2021  
R:\Projects\N5014\_rdy.p1\_22.dgn  
E:\CADD\