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See Sheet 1A For Index of Sheets
 See Sheet 1B For Conventional Symbols
 See Sheets 1C-1 Through 1C-3 For Survey Control Sheets

Offsite Detour
 Improvements –
 SEE SHT 2B-2
 and TMP

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

FORSYTH COUNTY

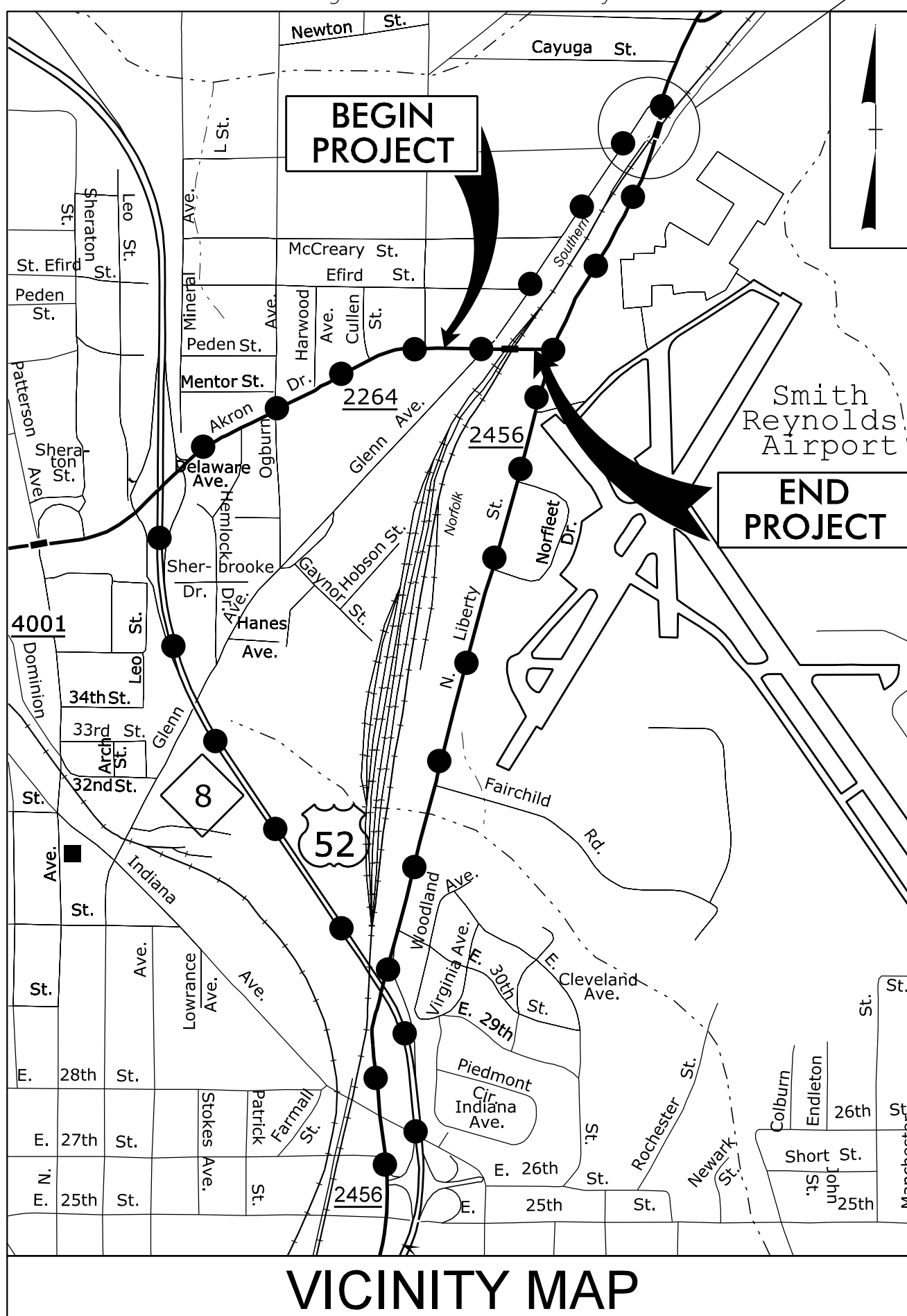
**LOCATION: BRIDGE NO. 229 OVER NORFOLK SOUTHERN
 RAILROAD ON SR 2264 (AKRON DR.)**

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

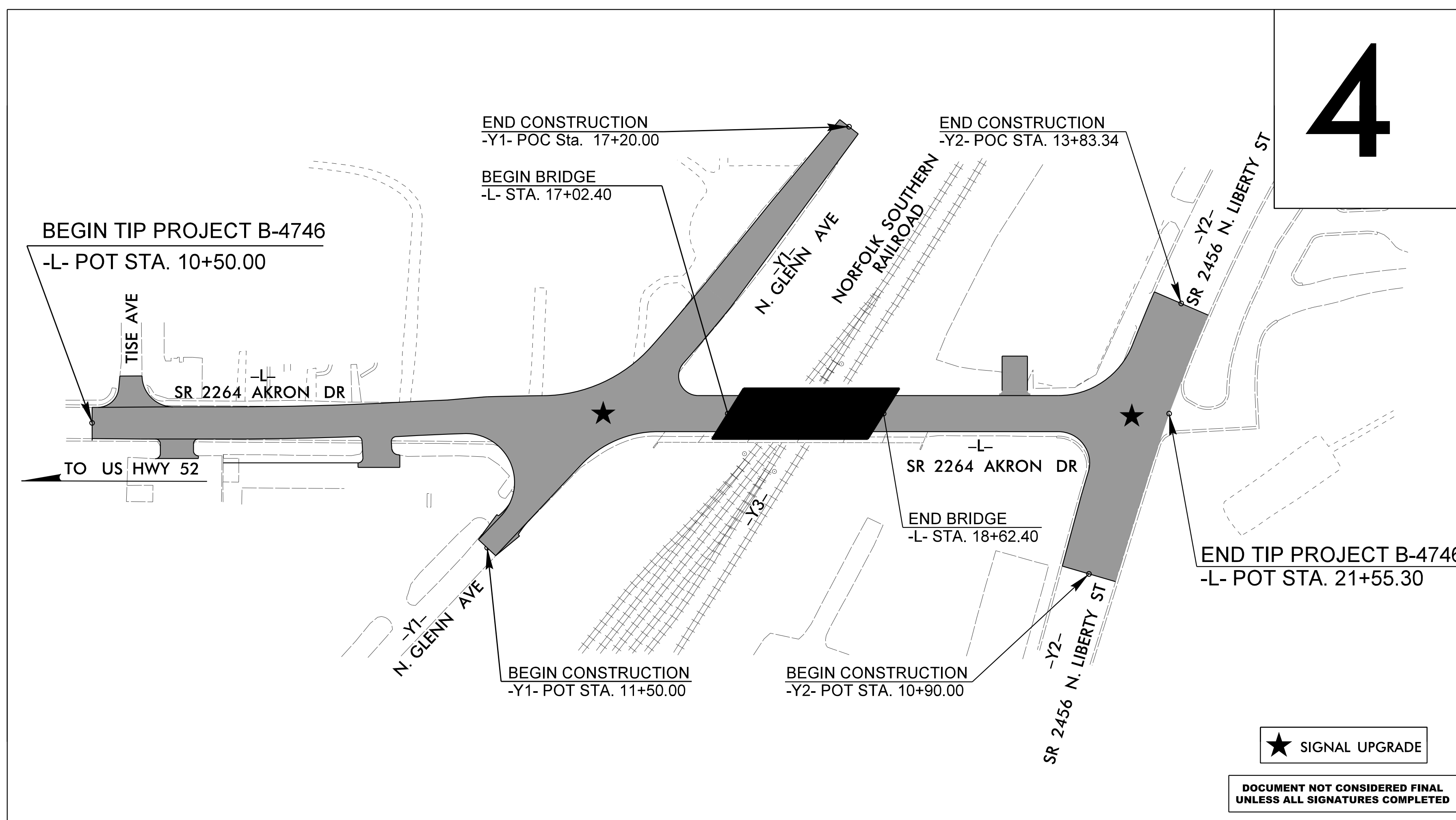
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4746	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
38518.1.1	BRZ-2264(3)	PE	
38518.2.1		RW	
38518.2.2		UTILITIES	
38518.3.1		CONST.	

TIP PROJECT: B-4746

CONTRACT: C204109



● — ● — ● — OFFSITE DETOUR



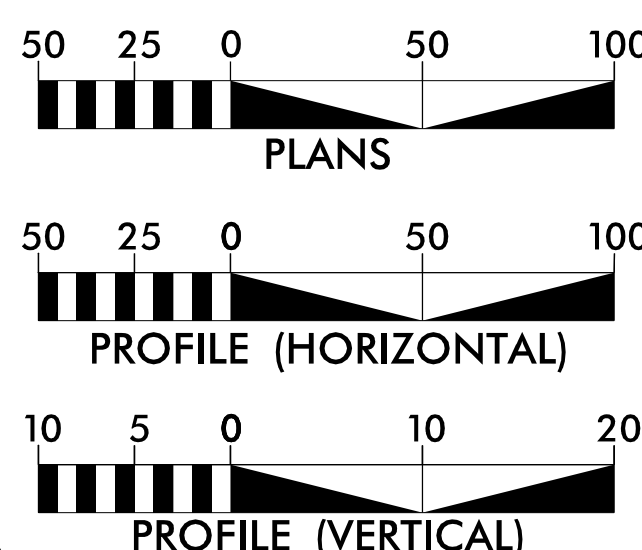
4

★ SIGNAL UPGRADE

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

NAD 83/
NSRS 2007

GRAPHIC SCALES



DESIGN DATA

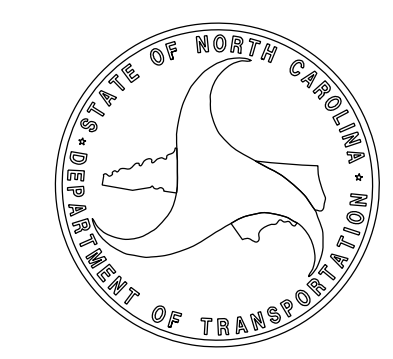
ADT 2017 = 8900
 ADT 2037 = 10600
 K = 10 %
 D = 55 %
 T = 7 % *
 V = 40 MPH
 * TTST = 2% + DUAL 5%
 FUNC CLASS = LOCAL
 SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4746 = 0.179 MI
 LENGTH OF STRUCTURE TIP PROJECT B-4746 = 0.030 MI
 TOTAL LENGTH OF TIP PROJECT B-4746 = 0.209 MI

PLANS PREPARED BY: wsp WSP ENGINEERING, INC. 1000 BIRCH RIDGE DR. RALEIGH, NC 27610 TEL: 919.836.4000 FAX: 919.836.4099 LICENSE NO. E-0065	PLANS PREPARED FOR: DIVISION OF HIGHWAYS 1000 Birch Ridge Dr. Raleigh NC, 27610
2018 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: OCTOBER 21, 2016	RONYELL THIGPEN, PE PROJECT ENGINEER
LETTING DATE: OCTOBER 16, 2018	ERIC MISAK PROJECT DESIGN ENGINEER
NCDOT CONTACT:	DAVID STUTTS, PE

<p>HYDRAULICS ENGINEER</p> DocuSigned by: Charles Thigpen 9/10/2018 1:48:57 P.M. SIGNATURE:	<p>ROADWAY DESIGN ENGINEER</p> DocuSigned by: Ronyell A. Thigpen 9/10/2018 1:41:04 P.M. SIGNATURE:
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INDEX OF SHEETS:

SHEET NUMBER	SHEET DESCRIPTION
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-3	SURVEY CONTROL SHEET
1-D	CENTERLINE COORDINATE LIST
2A-1 THRU 2A-2	PAVEMENT SCHEDULE, TYPICAL SECTIONS AND MILLING DETAIL
2B-1 THRU 2B-2	INTERSECTION DETAILS
2C-1	TYPE III ANCHOR DETAIL
2C-2	TYPE III REINFORCED APPROACH FILLS DETAIL
2C-3	GUARDRAIL INSTALLATION DETAIL
3B-1 THRU 3B-2	GUARDRAIL SUMMARY, SUMMARY OF EARTHWORK AND PAVEMENT REMOVAL SUMMARY
3D-1 THRU 3D-2	SUMMARY OF DRAINAGE
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN SHEET
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TMP-1 THRU TMP-7	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
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SIG-1 THRU SIG-9.1	SIGNAL PLANS
SIG-M1 THRU SIG-M8	SIGNAL METAL POLE DETAILS
SCP-1 THRU SCP-17	SIGNAL COMMUNICATION PLANS
UC-1 THRU UC-5	UTILITY CONSTRUCTION PLANS
UD-1 THRU UD-2	UTILITIES BY OTHERS PLANS
X-1 THRU X-1A	CROSS-SECTIONS INDEX & SUMMARY
X-2 THRU X-10	CROSS-SECTIONS
S-1 THRU S-35	STRUCTURE PLANS
W-1 THRU W-5	RETAINING WALL PLANS

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	STD.NO.	TITLE
DIVISION 2 - EARTHWORK		DIVISION 8 - INCIDENTALS (Cont.)	
200.03	Method of Clearing - Method III	840.32	Brick Junction Box - 12" thru 66" Pipe
225.02	Guide for Grading Subgrade - Secondary and Local	840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
225.04	Method of Obtaining Superlevation - Two Lane Pavement	840.45	Precast Drainage Structure
225.06	Method of Grading Sight Distance at Intersections	840.46	Traffic Bearing Precast Drainage Structure
DIVISION 3 - PIPE CULVERTS		840.54	Manhole Frame and Cover
300.01	Method of Pipe Installation	840.66	Drainage Structure Steps
310.02	Parallel Pipe End Section - Precast Concrete Section for 15" to 24" Pipe	846.01	Concrete Curb, Gutter and Curb & Gutter
310.03	Cross Pipe End Section - Precast Concrete Section for 18" to 30" Pipe	848.01	Concrete Sidewalk
310.10	Driveway Pipe Construction	848.02	Driveway Turnout - Radius Type
DIVISION 6 - ASPHALT BASES AND PAVEMENTS		848.04	Street Turnout
654.01	Pavement Repairs	848.05	Curb Ramp - Proposed Curb & Gutter
DIVISION 8 - INCIDENTALS		852.01	Concrete Islands
806.01	Concrete Right-of-Way Marker	862.01	Guardrail Placement
806.02	Granite Right-of-Way Marker	862.02	Guardrail Installation
815.02	Subsurface Drain	862.03	Structure Anchor Units
840.00	Concrete Base Pad for Drainage Structures	876.01	Rip Rap in Channels
840.01	Brick Catch Basin - 12" thru 54" Pipe	876.02	Guide for Rip Rap at Pipe Outlets
840.02	Concrete Catch Basin - 12" thru 54" Pipe	876.04	Drainage Ditches with Class 'B' Rip Rap
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		
840.25	Anchorage for Frames - Brick or Concrete or Precast		
840.31	Concrete Junction Box - 12" thru 66" Pipe		

GENERAL NOTES: 2018 SPECIFICATIONS
EFFECTIVE: 01-16-18
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 III.

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

SIDE ROADS:
THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVE EXISTING 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 RADII OR RADII 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 RADII 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.

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

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

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE:
AT&T, WSFCCU-WATER, WSFCCU-SEWER, DUKE ENERGY, SPECTRUM, AND PIEDMONT NG

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

RIGHT-OF-WAY MARKERS:
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

CURB RAMPS:
CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD. 848.05 AND/OR 848.06.

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	□ EDM
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	○
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	□

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	----- JS
Buffer Zone 1	----- BZ 1
Buffer Zone 2	----- BZ 2
Flow Arrow	←
Disappearing Stream	-----
Spring	○
Wetland	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	-----

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

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	----- (RW)
New Right of Way Line with Pin and Cap	----- (RW) ▲
New Right of Way Line with Concrete or Granite RW Marker	----- (RW) ●
New Control of Access Line with Concrete CA Marker	----- (CA) ●
Existing Control of Access	----- (CA)
New Control of Access	----- (CA)
Existing Easement Line	----- E
New Temporary Construction Easement	----- E
New Temporary Drainage Easement	----- TDE
New Permanent Drainage Easement	----- PDE
New Permanent Drainage / Utility Easement	----- DUE
New Permanent Utility Easement	----- PUE
New Temporary Utility Easement	----- TUE
New Aerial Utility Easement	----- AUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	○
Single Shrub	○

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

EXISTING STRUCTURES:

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

UTILITIES:

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

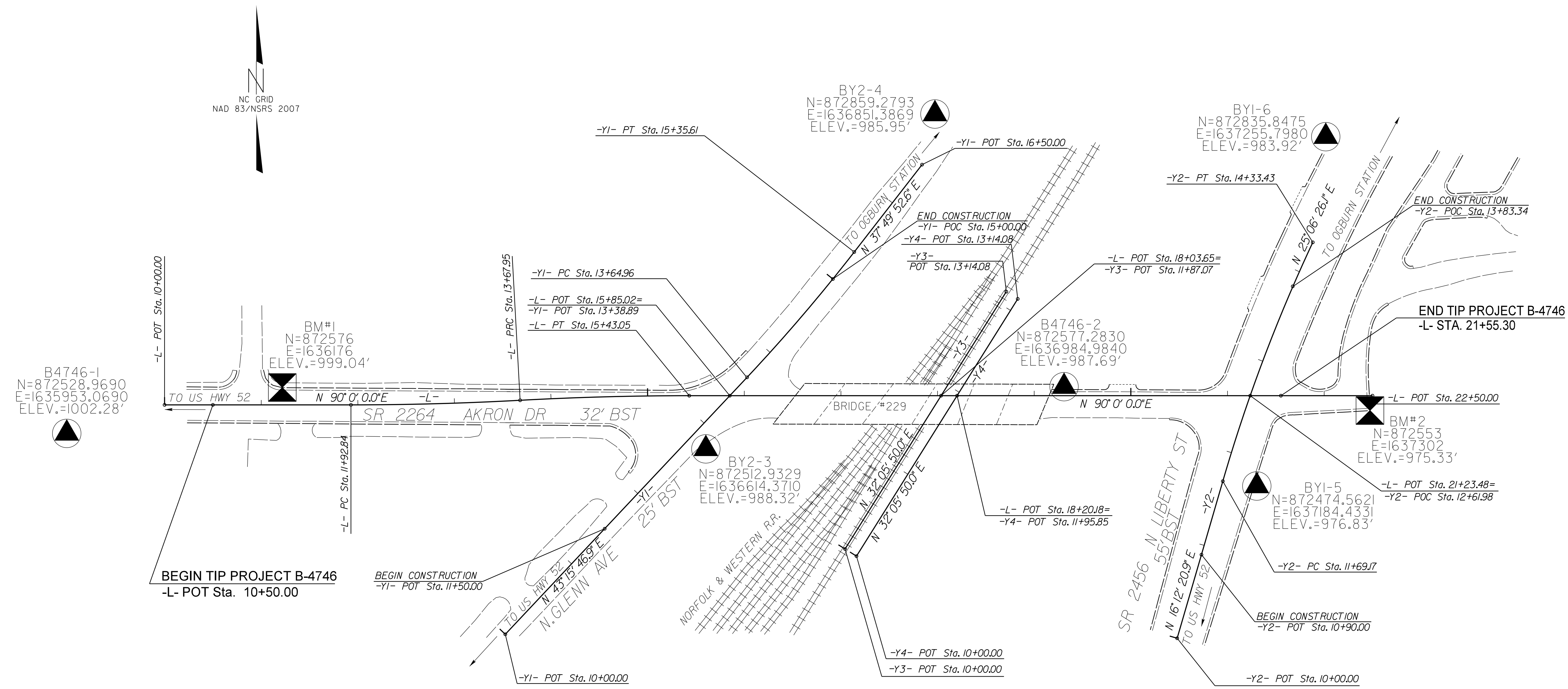
MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	⊠
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	----- 70TL
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊠
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

12/2/2016 10:58:58 AM

SURVEY CONTROL SHEET B-4746

PROJECT REFERENCE NO. B-4746	SHEET NO. 1C-1
Location and Surveys	



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4746 1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 872528.969(±) EASTING: 1635953.069(±) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999502683 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4746 1" TO -L- STATION 10+00.00 IS N 73° 47' 07.4" E 105.41'

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

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1		872528.9690	1635953.0690	1002.28	OUTSIDE PROJECT LIMITS	
2		872577.2830	1636984.9840	987.69	19+30.87	9.36 LT

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
5		872474.5621	1637184.4331	976.83	11+74.30	35.15 RT
6		872835.8475	1637255.7980	983.92	OUTSIDE PROJECT LIMITS	

BY2 POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
3		872512.9329	1636614.3710	988.32	12+81.87	19.65 RT
4		872859.2793	1636851.3869	985.95	OUTSIDE PROJECT LIMITS	

BM1	ELEVATION = 999.04	BM2	ELEVATION = 975.33
N 872576	E 1636176	N 872553	E 1637302
L STATION 11+22.00 18 LEFT		L STATION 22+47.00 15 RIGHT	
MAG NAIL SET IN TOP BACK OF CURB		SCRIBED 'X' IN TOP BACK OF CURB	

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/)

THE FILES TO BE FOUND ARE AS FOLLOWS:
B4746_LS_CONTROL.TXT

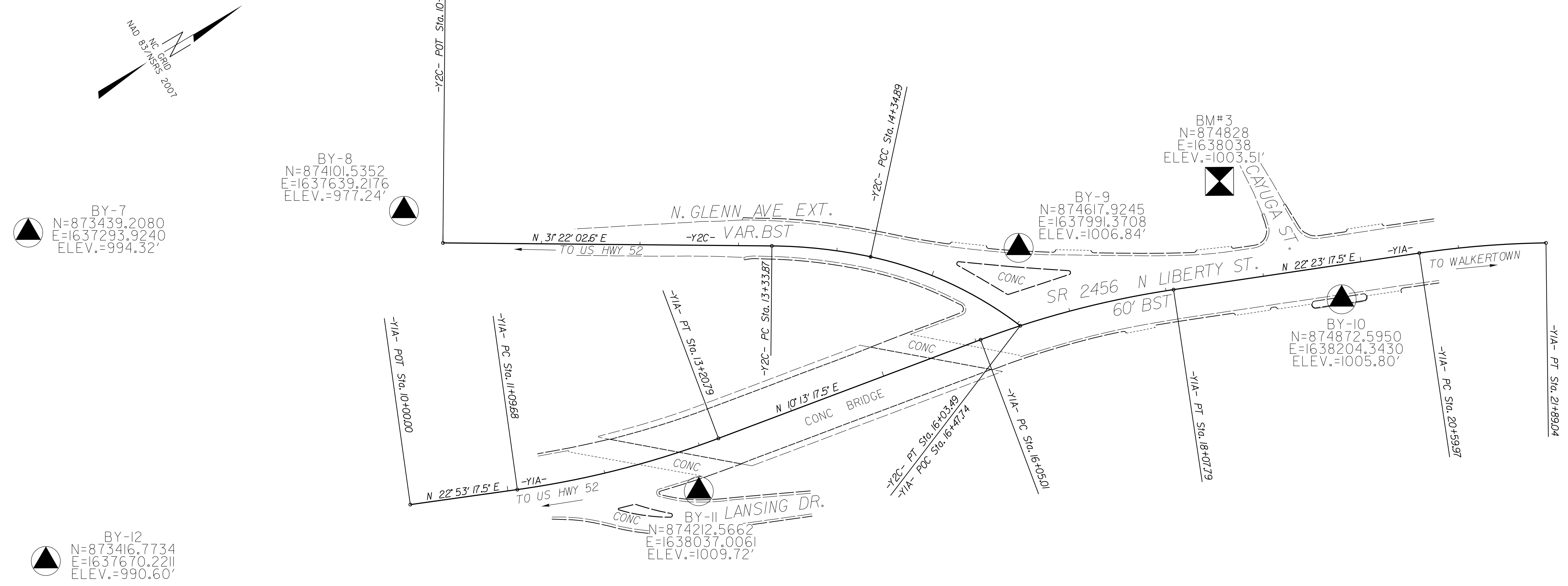
SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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 NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

SURVEY CONTROL B-4746



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4746 1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 872528.969(±) EASTING: 1635953.069(±) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999502683 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4746 1" TO -L- STATION 10+00.00 IS N 73° 47' 07.4" E 105.41'

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

BY2C POINT	DESC.	NORTH	EAST	ELEVATION	Y2C STATION	OFFSET
7		873439.2080	1637293.9240	994.32		OUTSIDE PROJECT LIMITS
8		874101.5352	1637639.2176	977.24		OUTSIDE PROJECT LIMITS
9		874617.9245	1637991.3708	1006.84	15+61.17	64.57 LT
10		874872.5950	1638204.3430	1005.80		OUTSIDE PROJECT LIMITS

BY1A POINT	DESC.	NORTH	EAST	ELEVATION	Y1A STATION	OFFSET
12		873416.7734	1637670.2211	990.60		OUTSIDE PROJECT LIMITS
11		874212.5662	1638037.0061	1009.72	12+84.82	43.87 RT
9		874617.9245	1637991.3708	1006.84	16+68.97	75.99 LT

.....
 BM3 ELEVATION = 1003.51
 N 874828 E 1638038
 Y1A STATION 18+70.00 102 LEFT
 CHISELED SQUARE IN THE SOUTH EAST
 CORNER OF A CONCRETE PAD

NOTES:

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B4746_LS_CONTROL.TXT

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 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
 SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

6/2/09 8:54:19 AM B:\462\017\1C-2.dgn

SURVEY CONTROL SHEET B-4746

PROJECT REFERENCE NO. B-4746	SHEET NO. 1C-3
Location and Surveys	

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+13.44	-50.00	872608.4034	1636167.7285
L	11+30.00	-29.17	872587.5754	1636184.2865
L	13+00.00	-25.46	872585.6354	1636353.4195
L	13+93.00	-25.00	872589.4006	1636446.0037
L	14+70.00	51.43	872515.6809	1636525.2868
L	15+14.70	-30.00	872597.7973	1636568.5479
L	15+18.84	-244.28	872812.1102	1636571.1201
L	16+50.21	-242.78	872810.7066	1636704.3271
L	18+05.00	91.77	872476.1552	1636859.1140
L	19+00.00	75.00	872492.9233	1636954.1140
L	19+00.00	34.96	872532.9680	1636954.1140
L	19+13.00	-62.23	872630.1570	1636967.1140
L	19+50.00	-60.00	872627.9233	1637004.1140
L	19+50.00	-35.00	872602.9233	1637004.1140
L	20+50.00	-35.00	872602.9233	1637104.1140

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	14+68.51	-29.96	872683.5611	1636702.8024
Y1	12+10.37	-30.00	872494.8965	1636529.2092

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	14+31.00	40.00	872525.9981	1636486.5282
L	17+30.00	211.39	872356.5382	1636784.1140
L	17+60.00	230.00	872337.9233	1636814.1140
L	18+52.00	95.00	872472.9233	1636906.1140
L	19+50.00	72.00	872495.9233	1637004.1140

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	11+84.00	-37.66	872504.5973	1637117.3958
Y2	13+09.00	-56.00	872632.0608	1637141.4530
Y2	13+09.00	-66.00	872635.6300	1637132.1139
Y2	13+28.00	-44.34	872646.0699	1637159.4053
Y2	13+28.00	-66.00	872654.0269	1637139.2629

L				
TYPE	STATION	NORTH	EAST	
POT	10+00.00	872558.4034	1636054.2865	
PC	11+92.84	872558.4034	1636247.1291	
PRC	13+67.95	872563.1634	1636422.1477	
PT	15+43.05	872567.9233	1636597.1663	
POT	22+50.00	872567.9233	1637304.1140	

Y1				
TYPE	STATION	NORTH	EAST	
POT	10+00.00	872321.1413	1636406.8787	
PC	13+64.96	872586.9135	1636657.0062	
PT	15+35.61	872716.5325	1636767.8959	
POT	16+50.00	872806.8816	1636838.0569	

Y2				
TYPE	STATION	NORTH	EAST	
POT	10+00.00	872317.1005	1637102.0544	
PC	11+69.17	872479.5451	1637149.2668	
PT	14+33.43	872726.5740	1637242.3970	

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4746 1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 872528.969(++) EASTING: 1635953.069(++) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999502683 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4746 1" TO -L- STATION 10+00.00 IS N 73° 47' 07.4" E 105.41'

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:
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/)
THE FILES TO BE FOUND ARE AS FOLLOWS:
B4746_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 NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	10+00.00	872558.4034	1636054.2865
2	L	11+00.00	872558.4034	1636154.2865
3	L	12+00.00	872558.4113	1636254.2865
4	L	13+00.00	872560.1863	1636354.2668
5	L	14+00.00	872564.7462	1636454.1610
6	L	15+00.00	872567.6355	1636554.1152
7	L	16+00.00	872567.9233	1636654.1140
8	L	17+00.00	872567.9233	1636754.1140
9	L	18+00.00	872567.9233	1636854.1140
10	L	19+00.00	872567.9233	1636954.1140
11	L	20+00.00	872567.9233	1637054.1140
12	L	21+00.00	872567.9233	1637154.1140
13	L	22+00.00	872567.9233	1637254.1140
14	L	22+50.00	872567.9233	1637304.1140
15	Y1	10+00.00	872321.1413	1636406.8787
16	Y1	10+50.00	872357.5521	1636441.1462
17	Y1	11+00.00	872393.9628	1636475.4136
18	Y1	11+50.00	872430.3736	1636509.6811
19	Y1	12+00.00	872466.7843	1636543.9485
20	Y1	12+50.00	872503.1951	1636578.2159
21	Y1	13+00.00	872539.6058	1636612.4834
22	Y1	13+50.00	872576.0166	1636646.7508
23	Y1	14+00.00	872612.6594	1636680.7684
24	Y1	14+50.00	872650.1914	1636713.8015
25	Y1	15+00.00	872688.6264	1636745.7795
26	Y1	15+50.00	872727.8996	1636776.7231
27	Y1	16+00.00	872767.3906	1636807.3901
28	Y1	16+50.00	872806.8816	1636838.0569
29	Y2	10+00.00	872317.1005	1637102.0544
30	Y2	10+50.00	872365.1138	1637116.0088
31	Y2	11+00.00	872413.1271	1637129.9633
32	Y2	11+50.00	872461.1404	1637143.9177
33	Y2	12+00.00	872509.0740	1637158.1400
34	Y2	12+50.00	872556.6018	1637173.6620
35	Y2	13+00.00	872603.6528	1637190.5742
36	Y2	13+50.00	872650.1864	1637208.8619
37	Y2	14+00.00	872696.1625	1637228.5094
38	Y2	14+35.95	872728.8567	1637243.4667
39	Y3	10+00.00	872409.4443	1636758.3625
40	Y3	10+50.00	872451.8016	1636784.9304
41	Y3	11+00.00	872494.1590	1636811.4982
42	Y3	11+50.00	872536.5164	1636838.0661
43	Y3	12+00.00	872578.8738	1636864.6340
44	Y3	12+50.00	872621.2312	1636891.2018
45	Y3	13+00.00	872663.5886	1636917.7697
46	Y3	13+14.08	872675.5127	1636925.2489
47	Y4	10+00.00	872402.0053	1636770.2226
48	Y4	10+50.00	872444.3626	1636796.7904
49	Y4	11+00.00	872486.7200	1636823.3583
50	Y4	11+50.00	872529.0774	1636849.9262
51	Y4	12+00.00	872571.4348	1636876.4940
52	Y4	12+50.00	872613.7922	1636903.0619
53	Y4	13+00.00	872656.1496	1636929.6298
54	Y4	13+14.08	872668.0737	1636937.1089

Point #	Chain	Station	Northing (Y)	Easting (X)
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Point #	Chain	Station	Northing (Y)	Easting (X)
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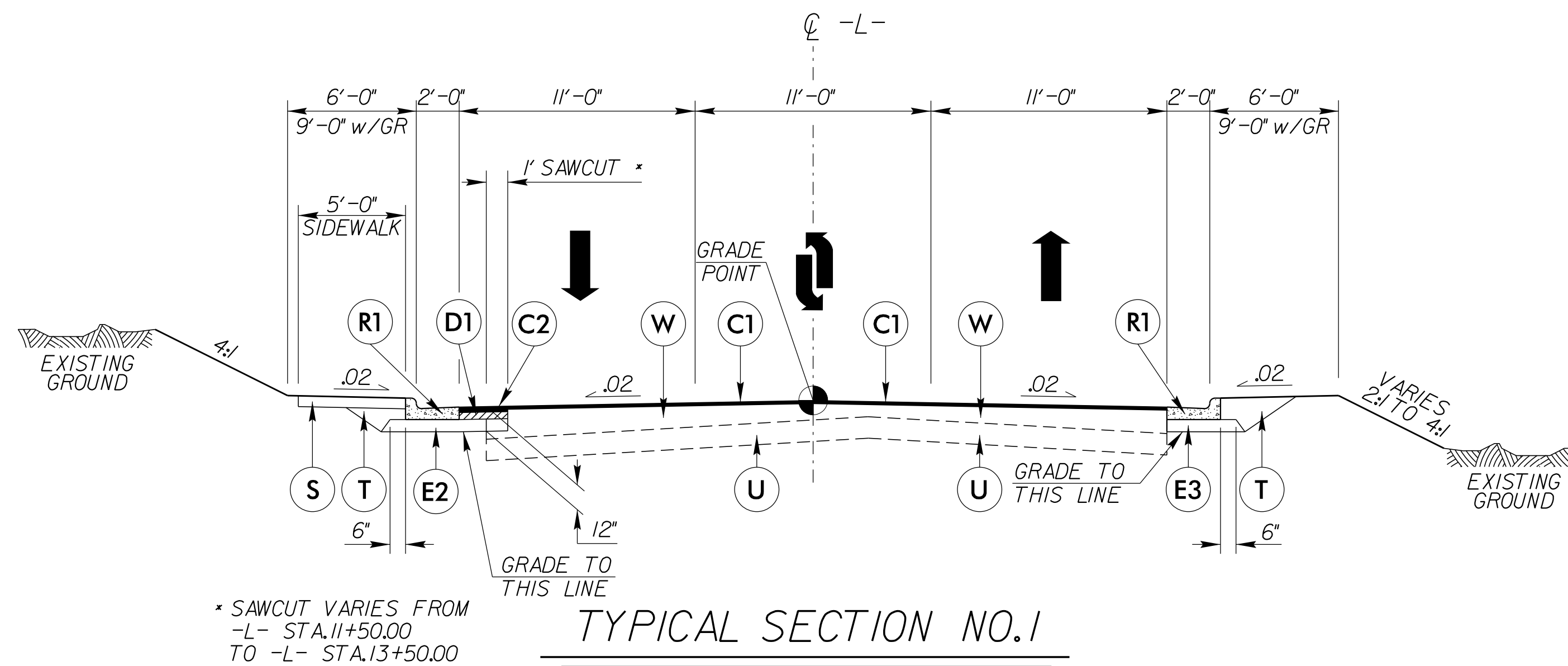
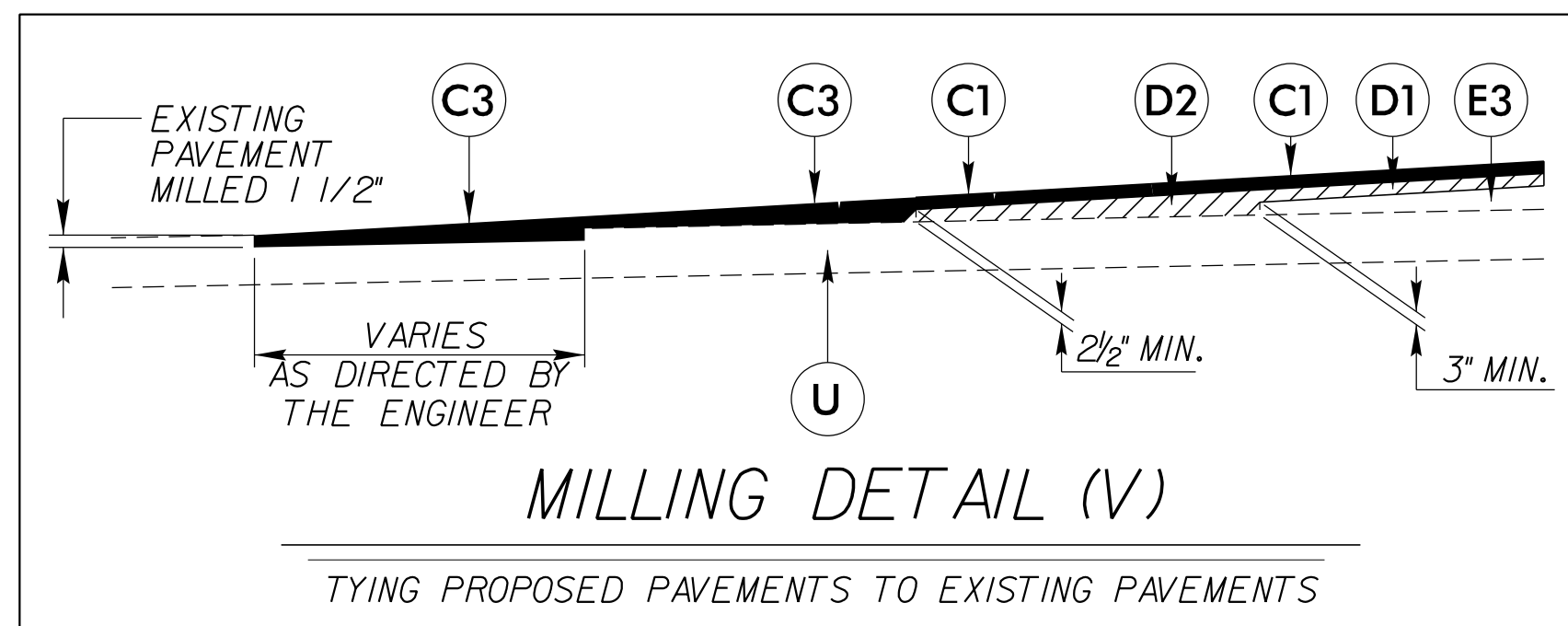
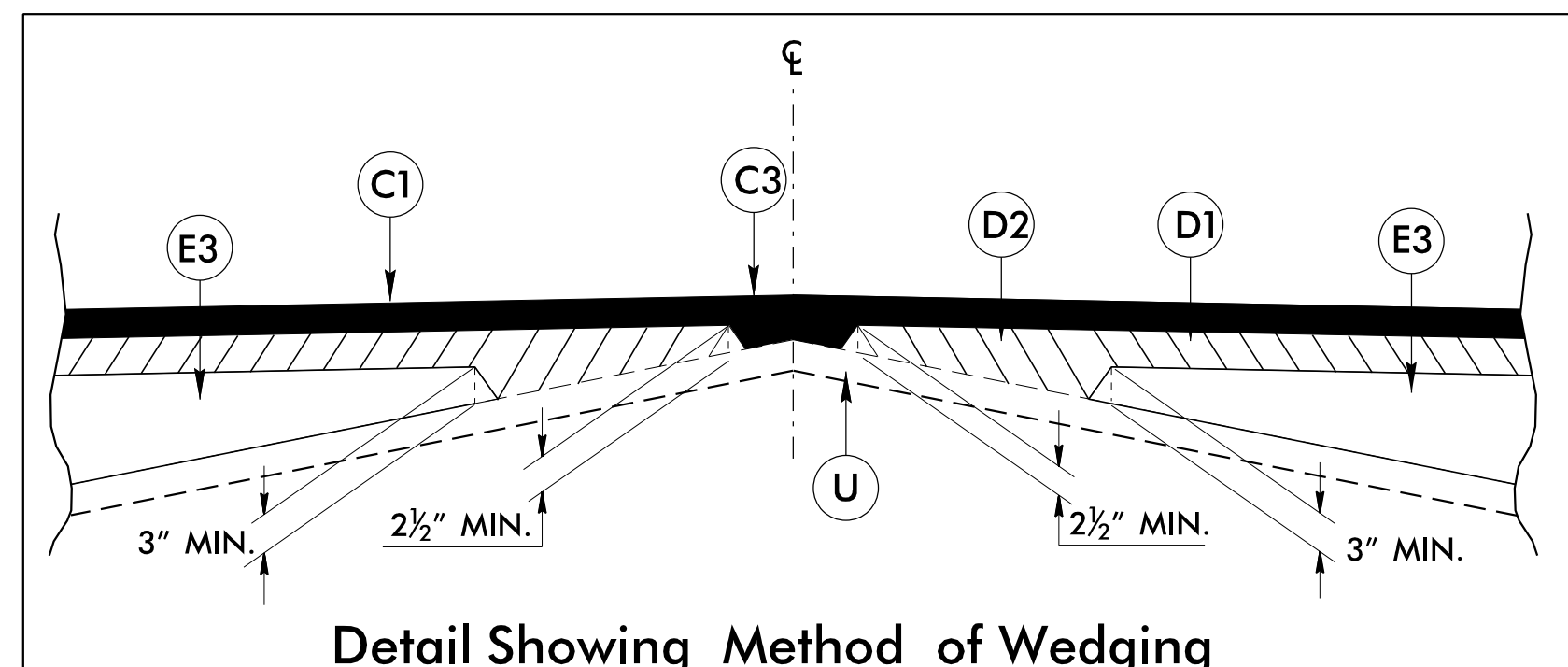
Point #	Chain	Station	Northing (Y)	Easting (X)
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Point #	Chain	Station	Northing (Y)	Easting (X)
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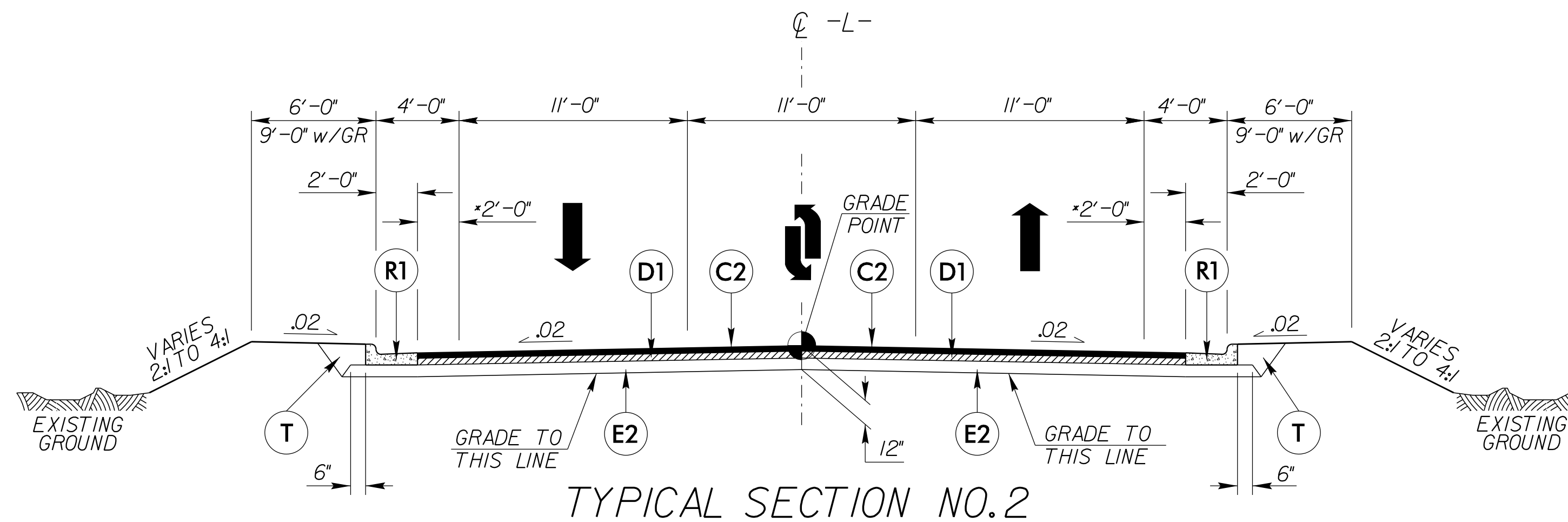
6/2/99

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YARD.
C2	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YARD, IN EACH OF TWO LAYERS.
C3	PROP. VARIABLE 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 2.0" IN DEPTH.
D1	PROP. APPROX. 4.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, TO BE PLACED IN A SINGLE LAYER. AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.
D2	PROP. VARIABLE DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD, PER 1.0" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4.0" IN DEPTH.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, TO BE PLACED IN A SINGLE LAYER. AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.
E2	PROP. APPROX. 5.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, TO BE PLACED IN A SINGLE LAYER. AT AN AVERAGE RATE OF 570 LBS. PER SQ. YARD.
E3	PROP. VARIABLE DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD, PER 1.0" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3.0" OR GREATER THAN 5.5" IN DEPTH.
R1	2'-6" CONCRETE CURB AND GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" MILLING OF ASPHALT PAVEMENT
W	WEDGING (SEE DETAIL)

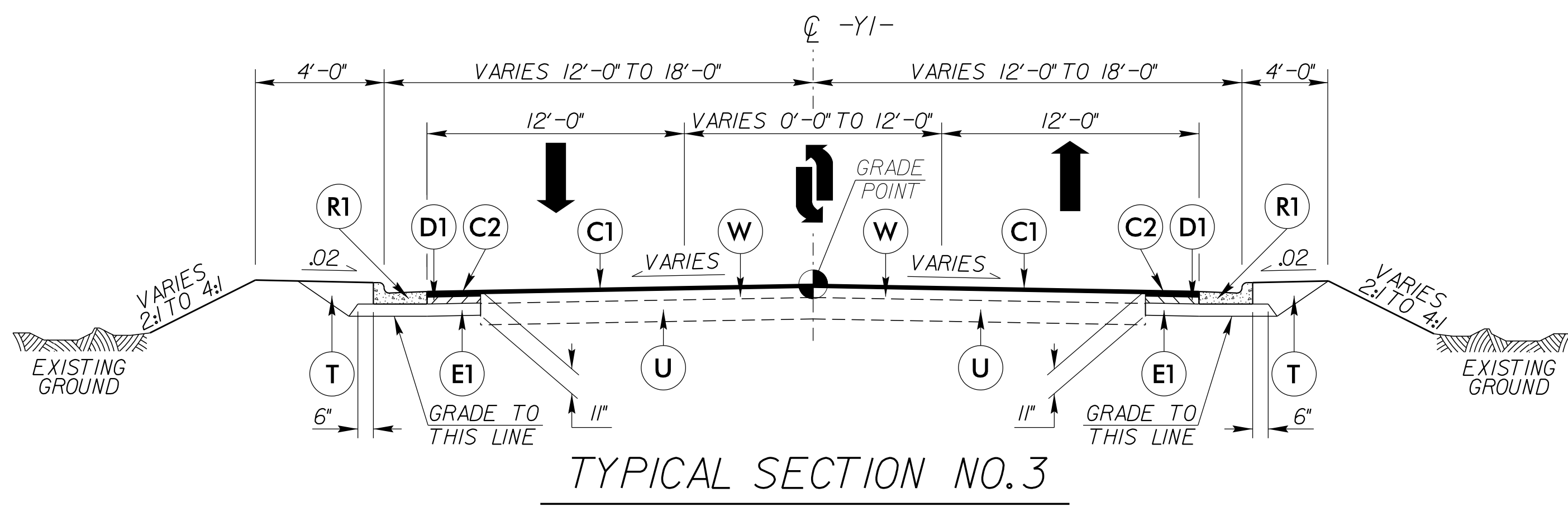
NOTE: ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN.



TYPICAL SECTION NO.1
USE TYPICAL SECTION No.1 AS FOLLOWS:
-L- STA.10+50.00 TO -L- STA.16+40.00



TYPICAL SECTION NO.2
USE TYPICAL SECTION No.2 AS FOLLOWS:
-L- STA.16+40.00 TO -L- STA.17+02.40 (BEGIN BRIDGE)
-L- STA.18+62.40 (END BRIDGE) TO -L- STA.20+91.72
*ADDITIONAL WIDTH FOR BICYCLE ACCOMMODATIONS



TYPICAL SECTION NO.3
USE TYPICAL SECTION No.3 AS FOLLOWS:
-Y1- STA.11+50.00 TO -Y1- STA.13+13.48
-Y1- STA.13+64.29 TO -Y1- STA.15+00.00

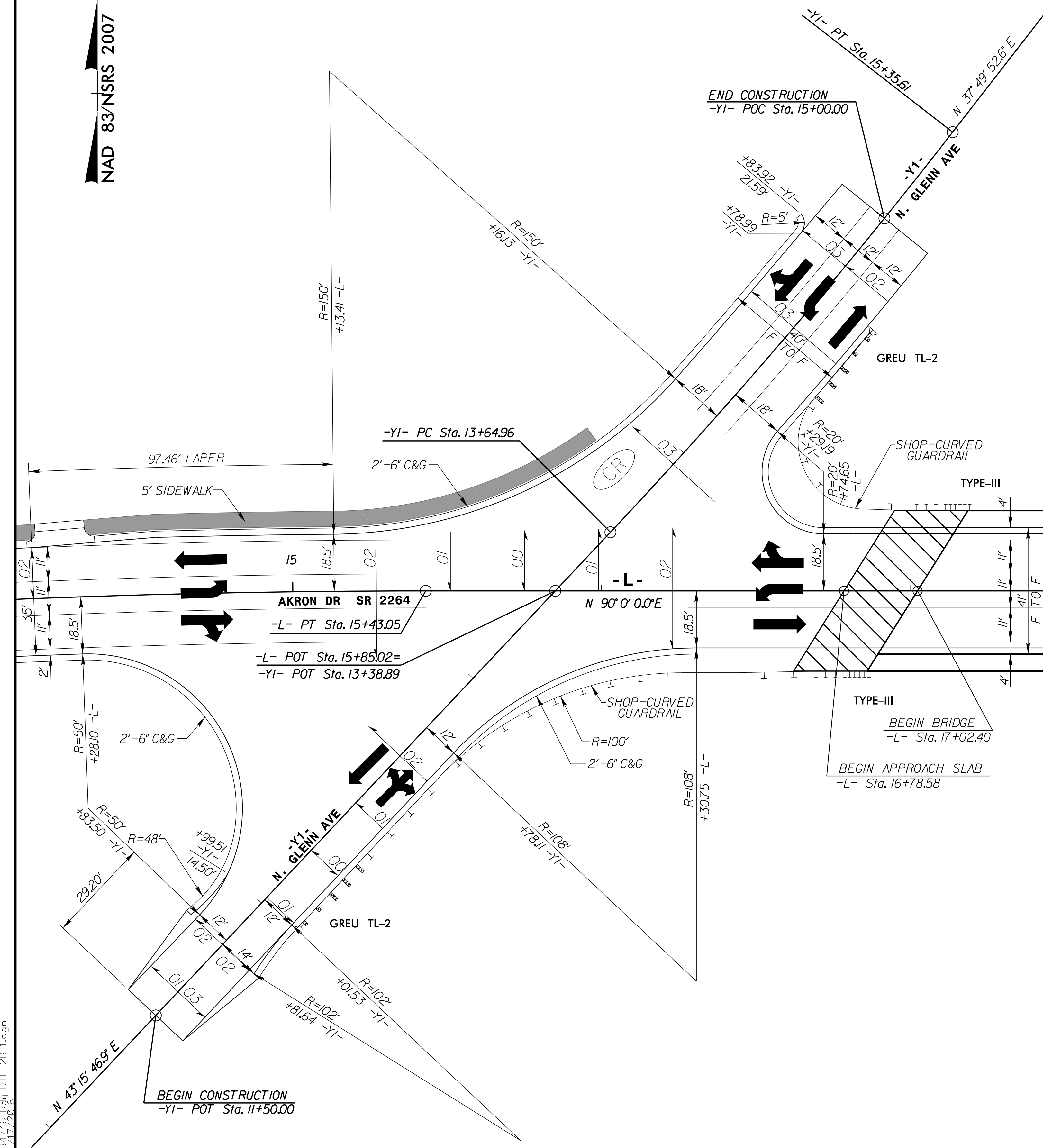
PROJECT REFERENCE NO. B-4746	SHEET NO. 2A-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER SEAL 33290 NORTH CAROLINA PROFESSIONAL ENGINEER MONTGOMERY A. THOMPSON	PAVEMENT DESIGN ENGINEER SEAL 022896 NORTH CAROLINA PROFESSIONAL ENGINEER CLARK'S MORRISON
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
PLANS PREPARED BY: WSP WSP USA 434 FAYETTEVILLE STREET SUITE 1500 RALEIGH, NC 27601 TEL: 919.836.4040 FAX: 919.836.4099 LICENSE NO. F-0165	

6/2/99

8/17/99

INTERSECTION DETAIL -Y1-

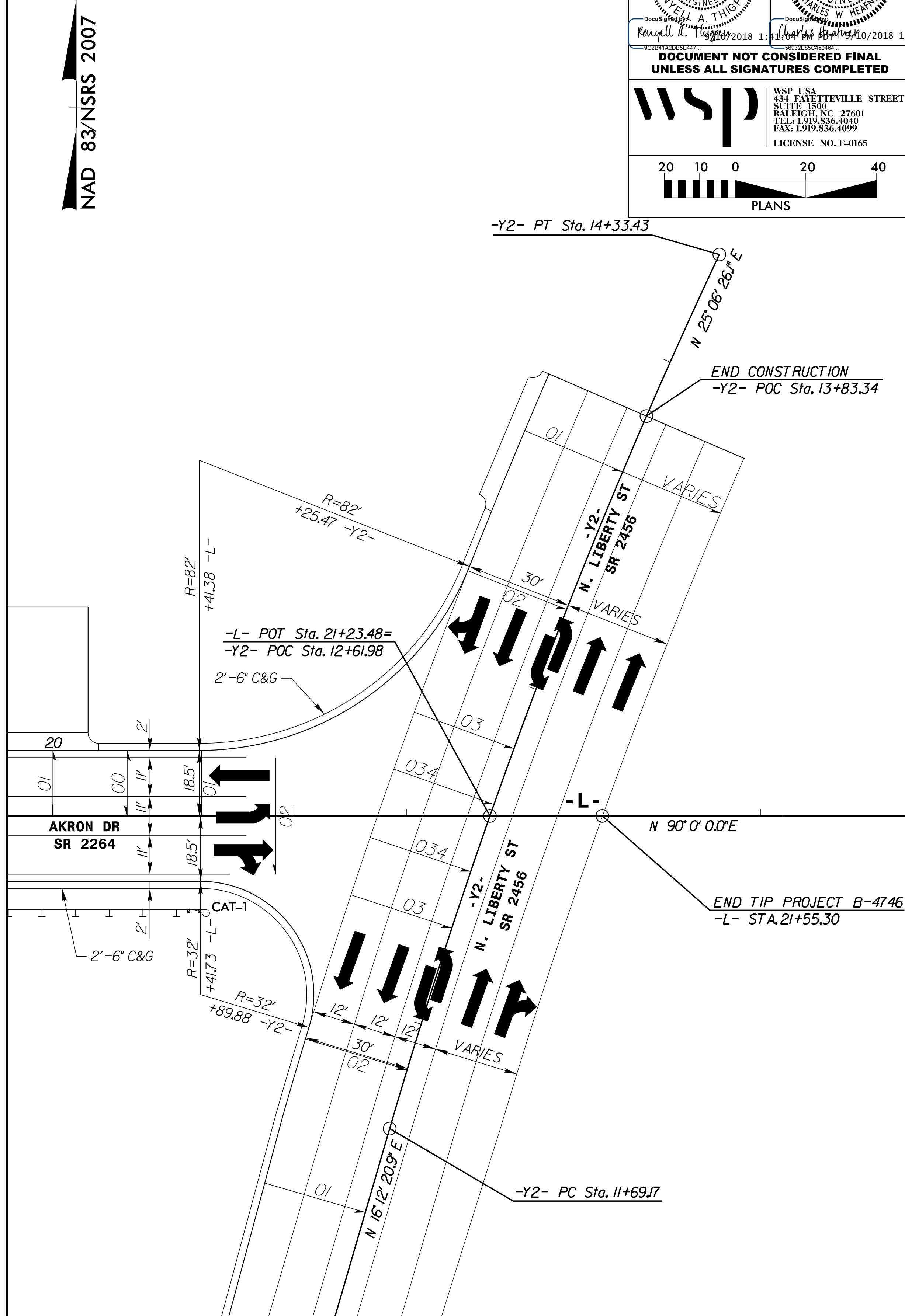
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8/17/2018

INTERSECTION DETAIL -Y2-

NAD 83/NSRS 2007

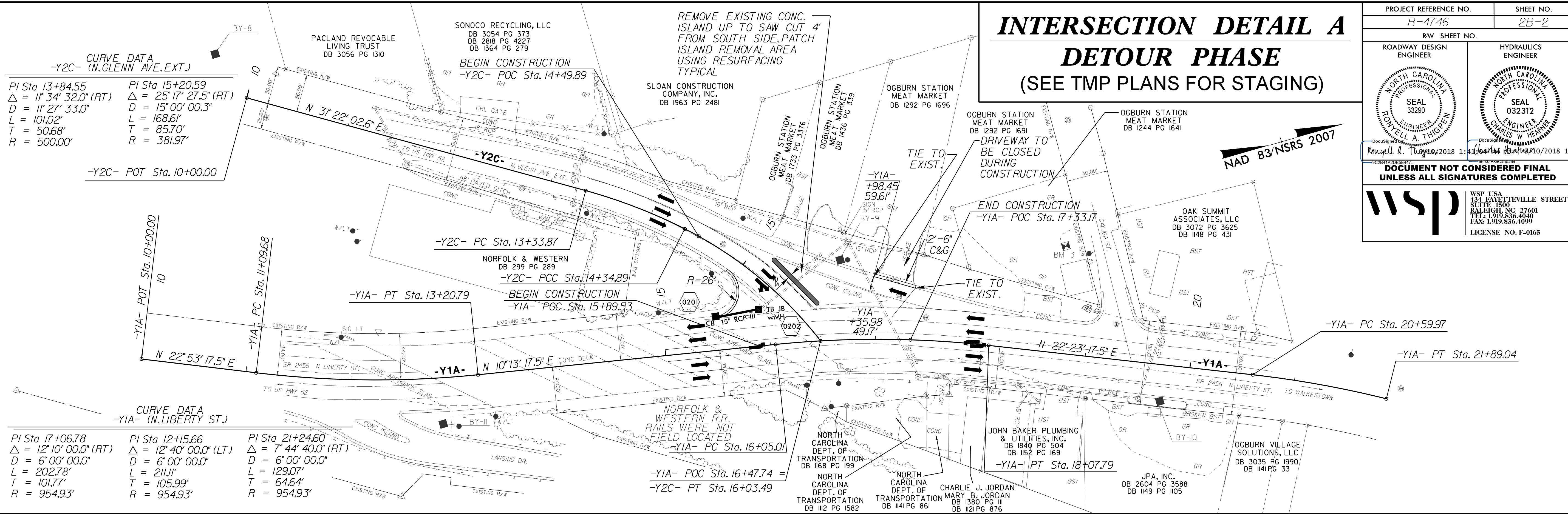


PROJECT REFERENCE NO. B-4746	SHEET NO. 2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 Ronnell A. Thigpen 2018 1:11:04 PM	 Charles W. Heaney 2018 11:08:57 PM
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 WSP USA 434 FAYETTEVILLE STREET SUITE 1500 RALEIGH, NC 27601 TEL: 1-919-836-4040 FAX: 1-919-836-4099 LICENSE NO. P-0165	

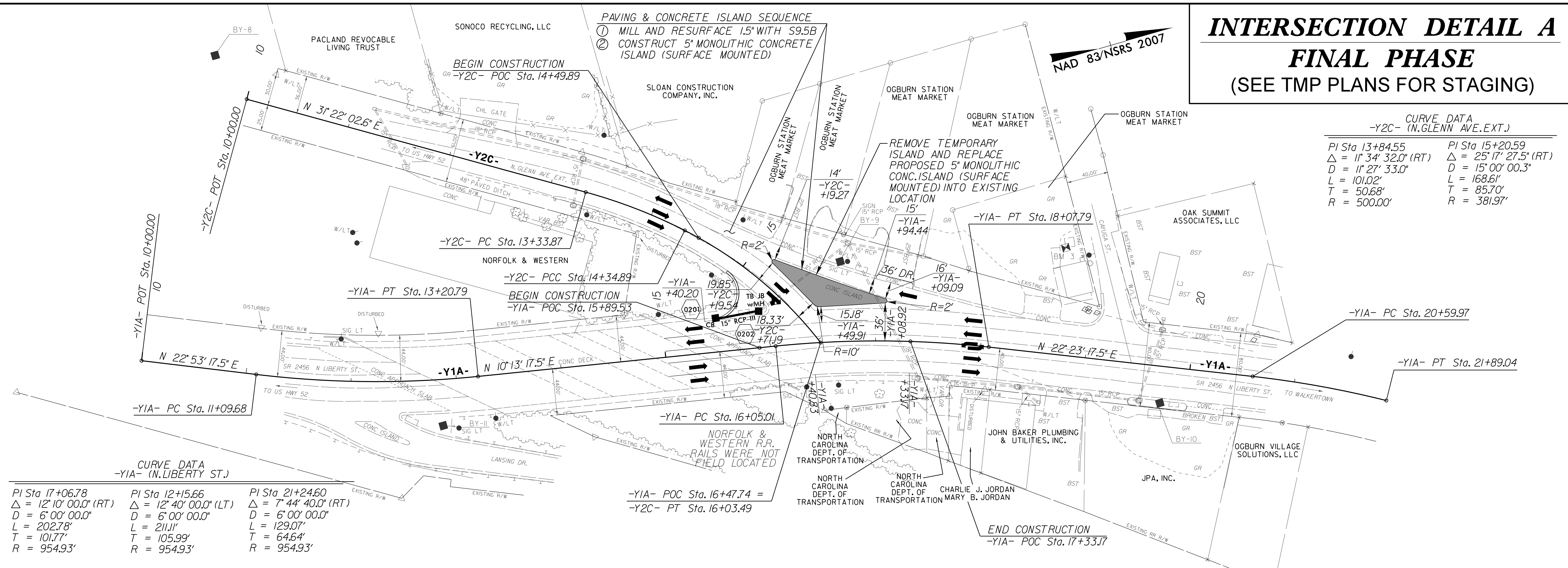
8/17/99

INTERSECTION DETAIL A DETOUR PHASE (SEE TMP PLANS FOR STAGING)

PROJECT REFERENCE NO. B-4746	SHEET NO. 2B-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
WSP USA 434 FAYETTEVILLE STREET SUITE 1500 RALEIGH, NC 27601 TEL: 919.836.4040 FAX: 919.836.4099 LICENSE NO. P-0165	



INTERSECTION DETAIL A FINAL PHASE (SEE TMP PLANS FOR STAGING)



10/3/01 AM
B:\746\Proj\DL\2B-2.dgn
8/28/2018

I4-DEC-2017 10:36 S:\Contracts\Projects\Special Details\Standard Drawings\Division 8\08662d0301.dgn Jhowerton AT:USD-292595

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

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

ELEVATION

PLAN VIEW

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).
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

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

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

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

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

ELEVATION

PLAN VIEW

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).
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

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

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

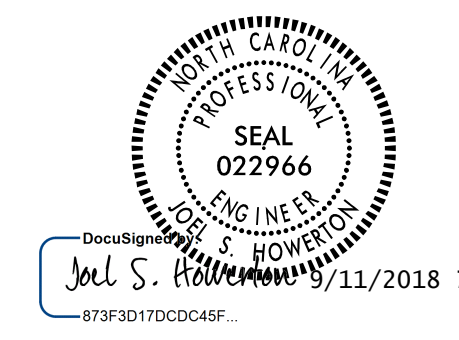
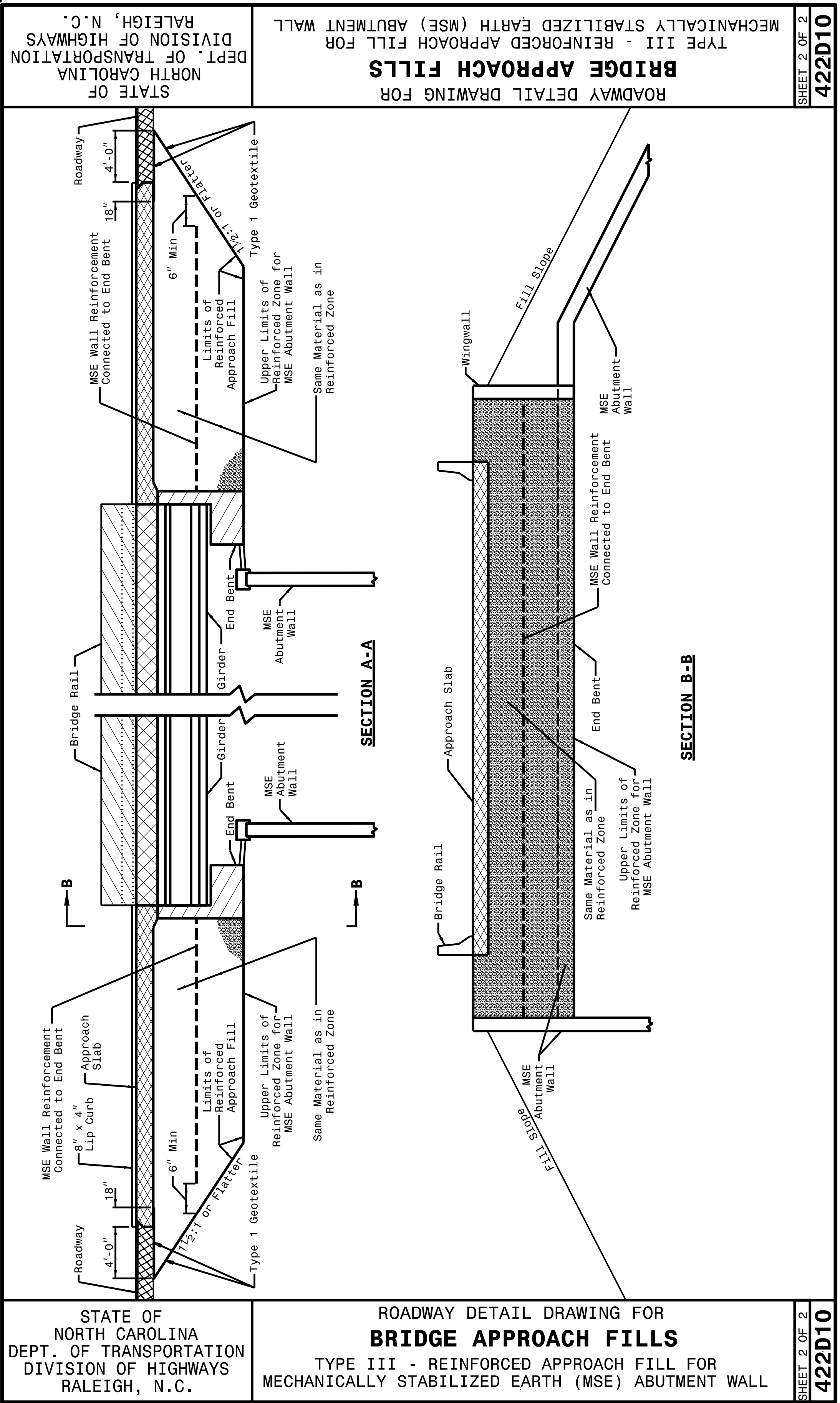
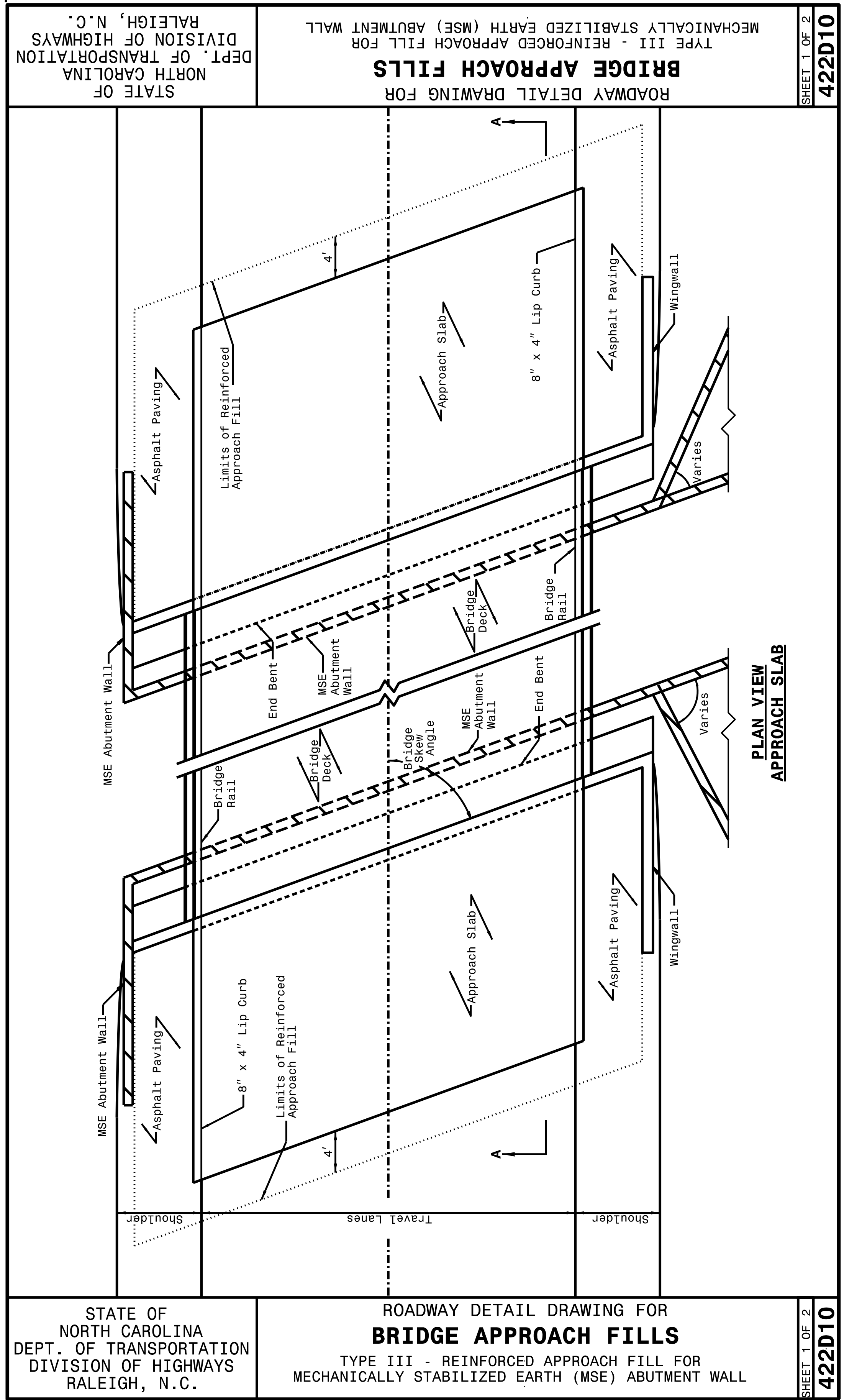
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

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

DocuSign Envelope ID: 873F3D17CCDC49F
9/11/2018 7:03:52 AM EDT



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

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

**TYPE III
REINFORCED
APPROACH FILLS**

ORIGINAL BY: K. A. KEMPF DATE: JULY 2017
 MODIFIED BY: DATE: _____
 CHECKED BY: DATE: _____
 FILE SPEC.: 2018 standard drawings\division 422d10.dgn

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

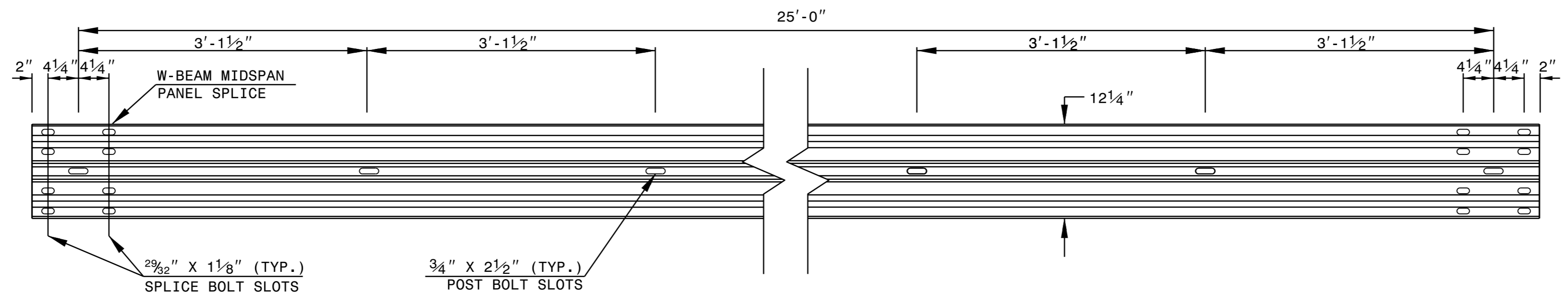
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

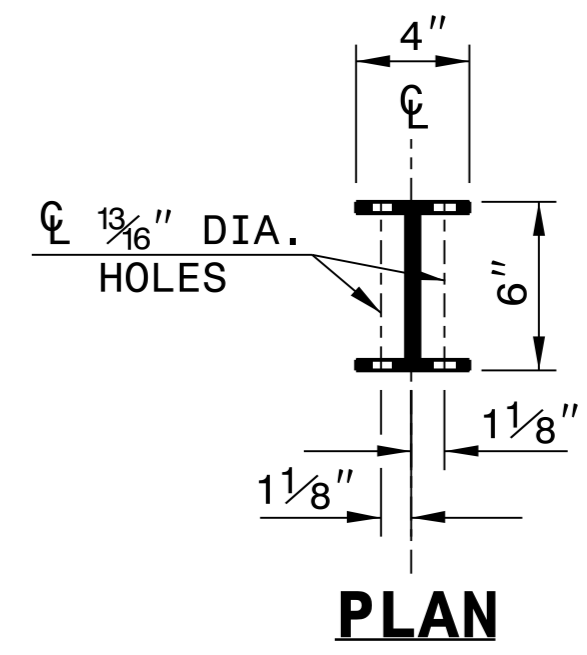
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

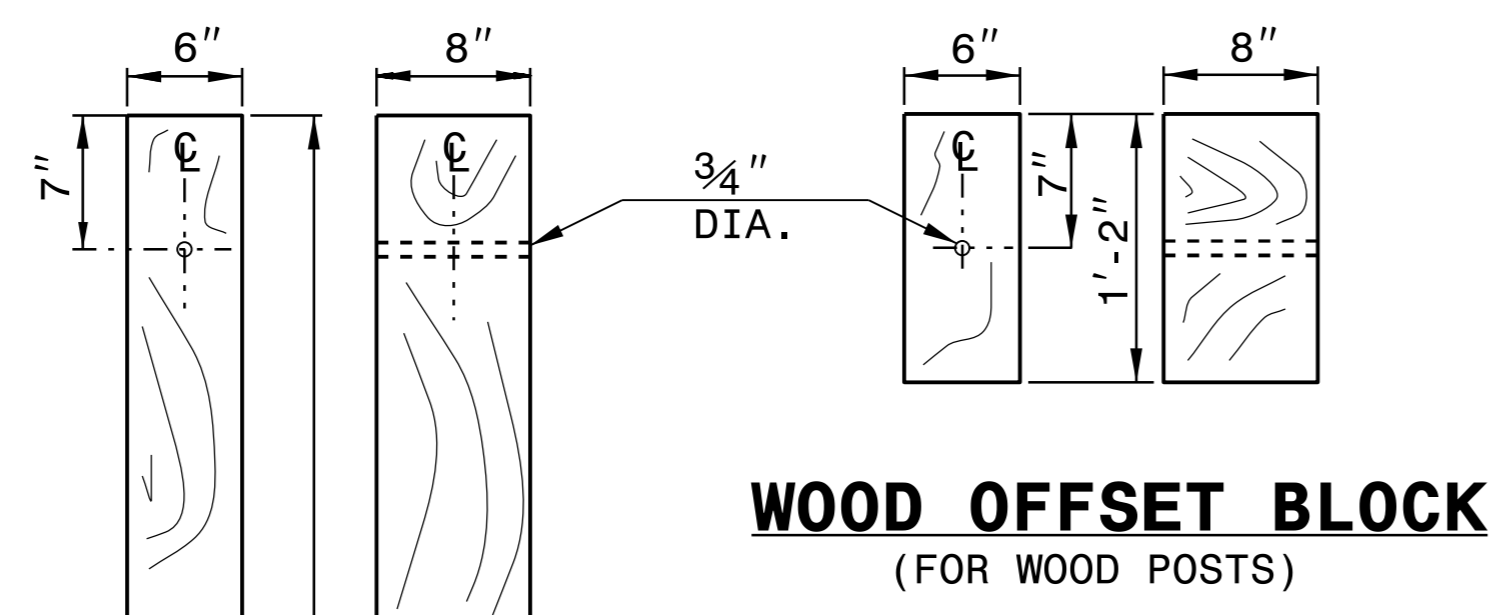
SHEET 6 OF 8
862D02



STANDARD W-BEAM GUARDRAIL



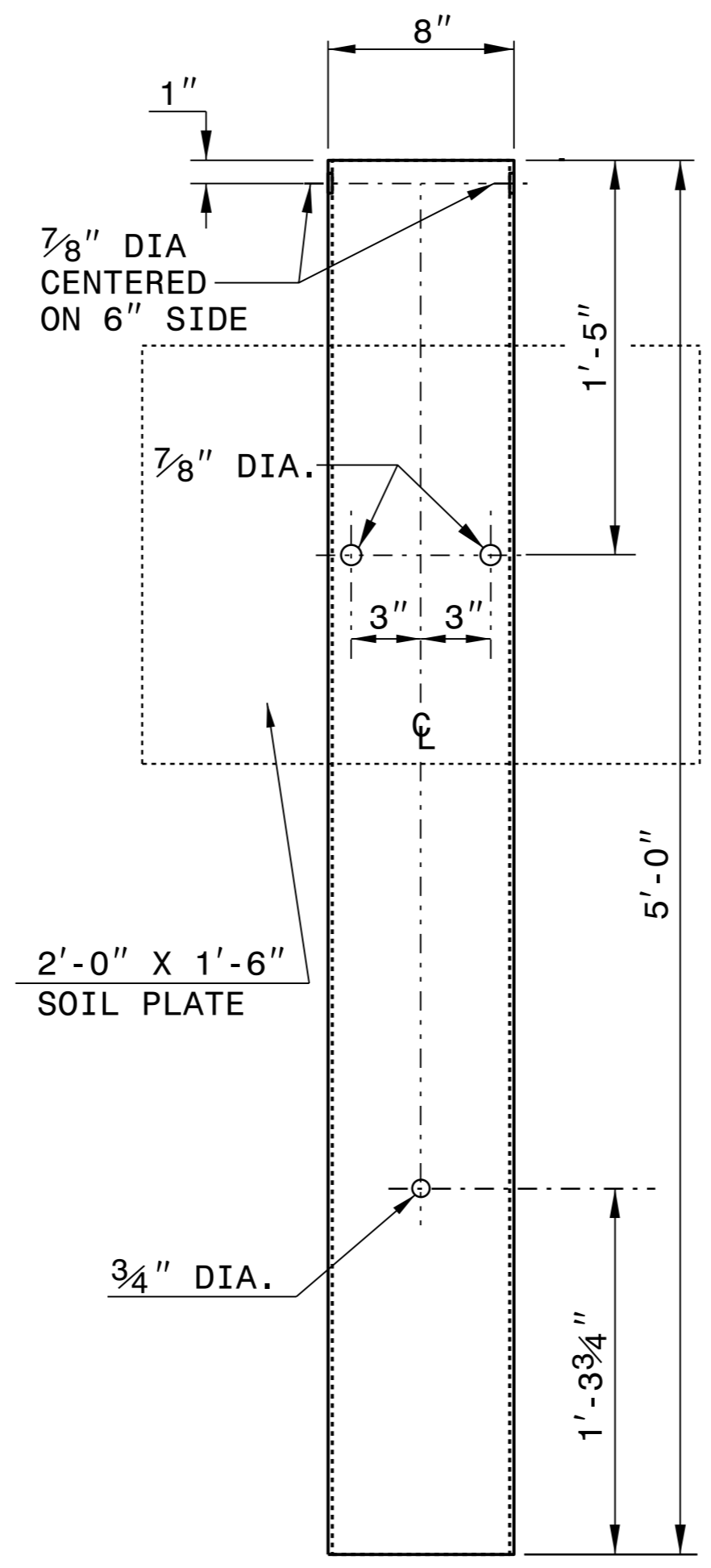
PLAN



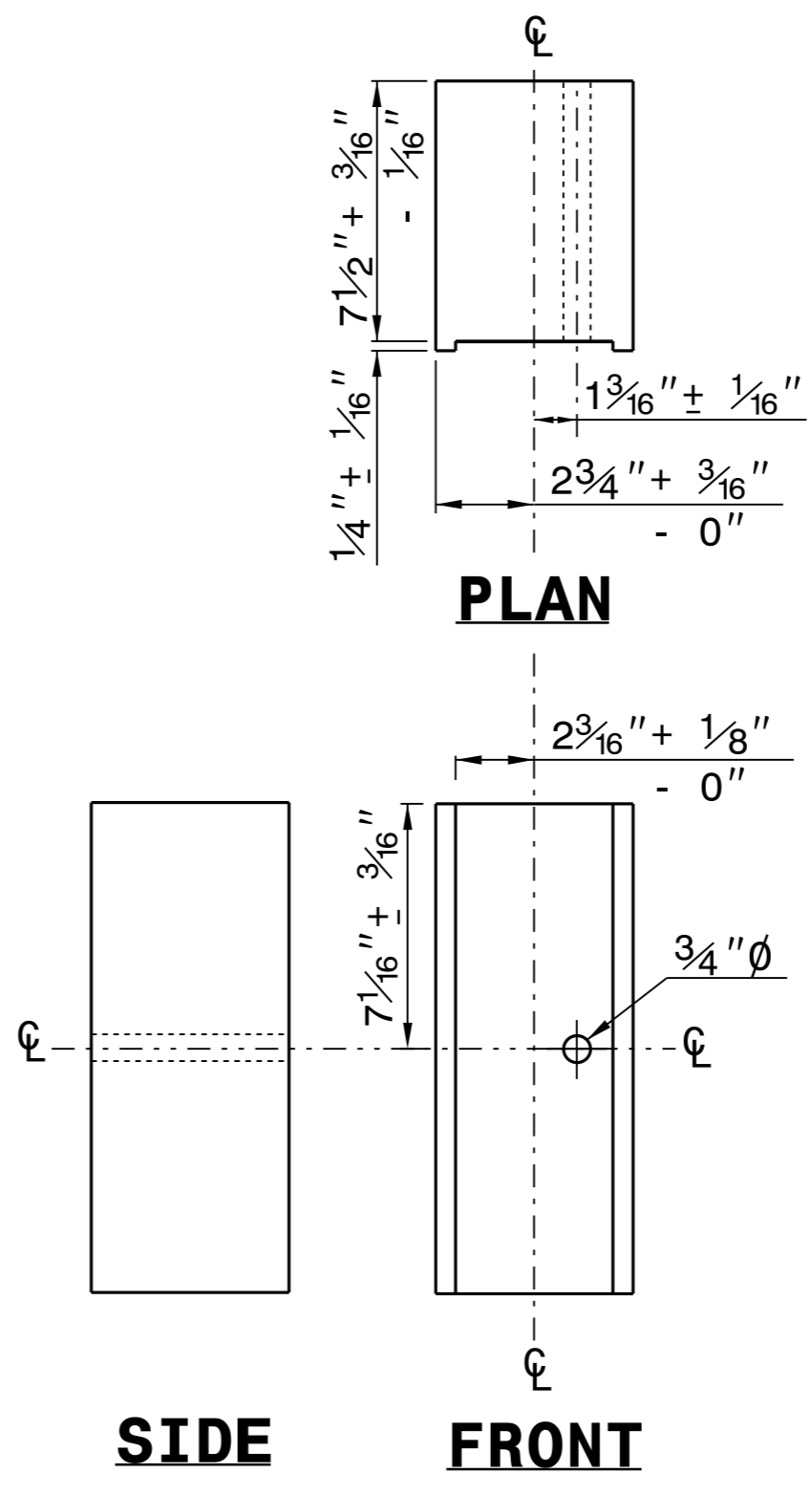
**WOOD OFFSET BLOCK
(FOR WOOD POSTS)**

**STANDARD
LINE POST**

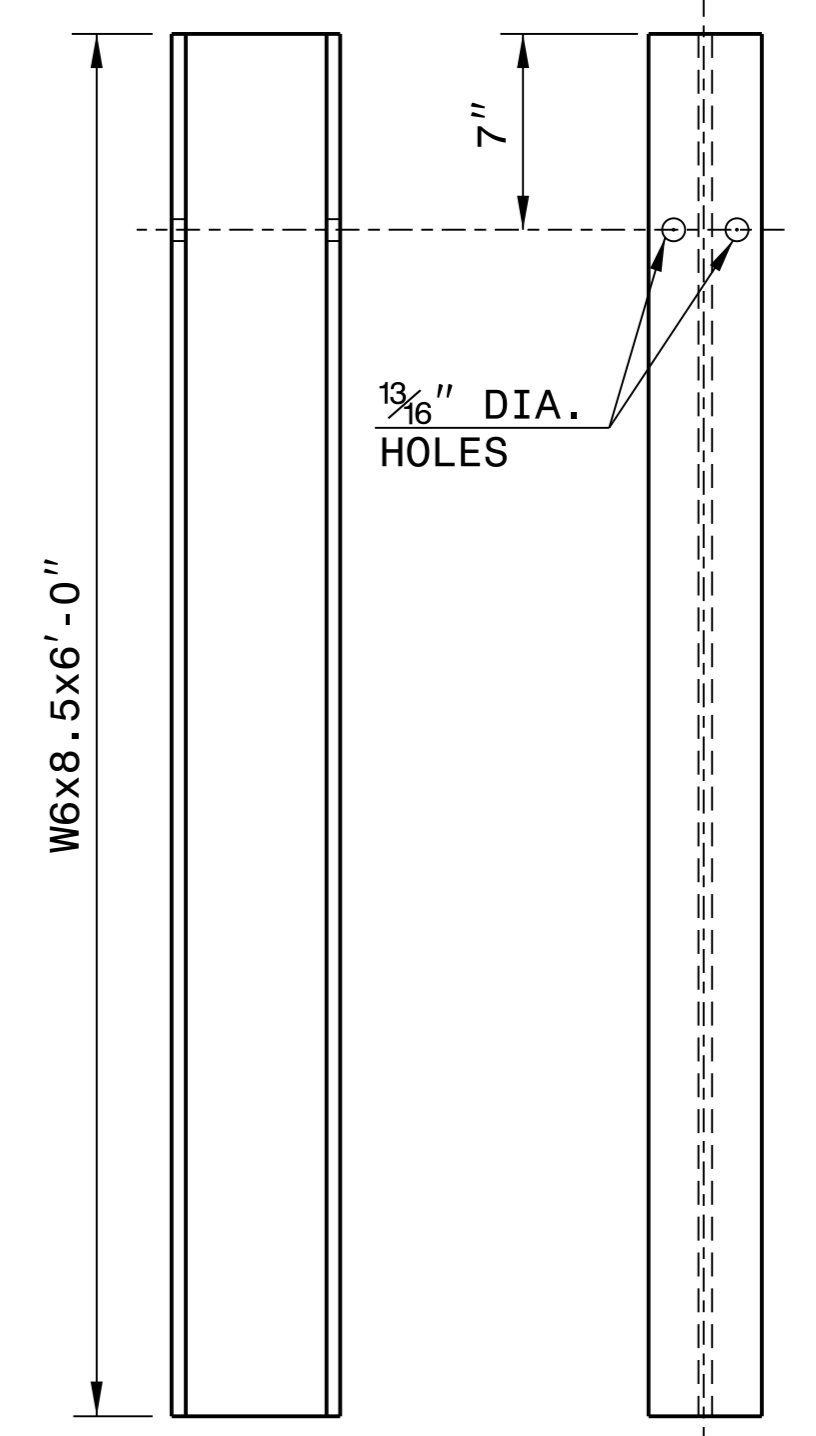
**SHORT WOOD
BREAKAWAY POST**



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

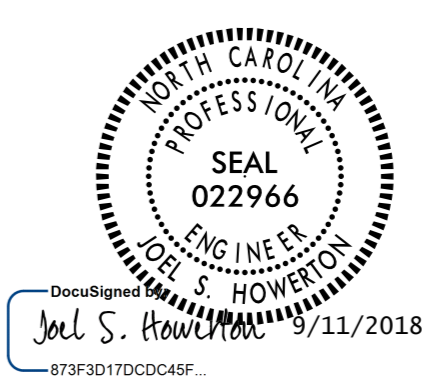


**ROUTED
OFFSET BLOCK**



**W6x8.5x6'-0"
"W6" STEEL POST**

SYSTEM PARTS



**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.:	

12/06/07

COMPUTED BY: LJW DATE: 12-3-14
 CHECKED BY: EDM DATE: 12-2-15

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK
IN CUBIC YARDS

PROJECT REFERENCE NO. B-4746	SHEET NO. 3B-2
PLANS PREPARED BY:  WSP USA 434 FAYETTEVILLE STREET SUITE 1500 RALEIGH, NC 27601 TEL: 1.919.836.4040 FAX: 1.919.836.4099 LICENSE NO. F-0165	

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 10+50.00	15+50.00	120	357	237	
-L- 16+00.00	BEGIN BRIDGE 17+02.40	0	2,681	2,681	
-Y1- 11+50.00	13+13.48	199	503	304	
-Y1- 13+64.29	15+00.00	30	59	29	
SUBTOTALS:		349	3,600	3,251	
END BRIDGE -L- 18+62.40	20+91.72	0	5,012	5,012	
-Y2- 10+90.00	13+83.34	8	69	61	
-Y2C- 14+90.18	-Y1A- 15+49.46	34	0	0	34
SUBTOTALS:		42	5,081	5,073	34
TOTAL:		391	8,681	8,324	34
LOSS DUE TO CLEARING & GRUBBING					
ADDITIONAL UNDERCUT					
WASTE IN LIEU OF BORROW				-34	
PROJECT TOTAL:		391	8,681	8,290	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				415	
GRAND TOTALS:		391	8,681	8,704	
SAY:		400		8,800	

EST. DDE = 254 CUBIC YARDS
 EST. SHALLOW UNDERCUT (CONTINGENCY) = 750 CY
 SUBGRADE UNDERCUT (CONTINGENCY) = 150 CY
 CLASS IV SUBGRADE STABILIZATION (CONTINGENCY) = 1,350 TONS
 GEOTEXTILE FOR SUBGRADE STABILIZATION (CONTINGENCY) = 500 SY
 SELECT GRANULAR MATERIAL (CONTINGENCY) = 250 CY
 EST. UNDERCUT EXCAVATION (CONTINGENCY) = 250 CY

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.

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

12/06/07
 WSP USA
 434 FAYETTEVILLE STREET
 SUITE 1500
 RALEIGH, NC 27601
 TEL: 1.919.836.4040
 FAX: 1.919.836.4099
 LICENSE NO. F-0165

VA-MCHL-0008

COMPUTED BY: EGC DATE: 2/3/2016
CHECKED BY: CWH DATE: 9/19/2017

PROJECT NO. B-4746 SHEET NO. 3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Minimum Required Slope, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C. S. PIPE, R. C. PIPE CLASS III, R. C. PIPE CLASS IV, ENDWALLS, REINFORCED ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD, CONCRETE TRANSITIONAL SECTION, and REMARKS. Includes a SHEET TOTALS row at the bottom.

12/06/07

COMPUTED BY: LIW	DATE: 1-17-2018
CHECKED BY: RAT	DATE: 1-17-2018

PROJECT REFERENCE NO.	SHEET NO.
B-4746	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

SURVEY LINE	STATION	STATION	LOCATION LTR/CL	DRAIN TYPE* UD/BD/SD	LF
CONTINGENCY				SD	100
TOTAL:					100

*UD = UNDERDRAIN
BD = BLIND DRAIN
SD = SUBSURFACE DRAIN

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

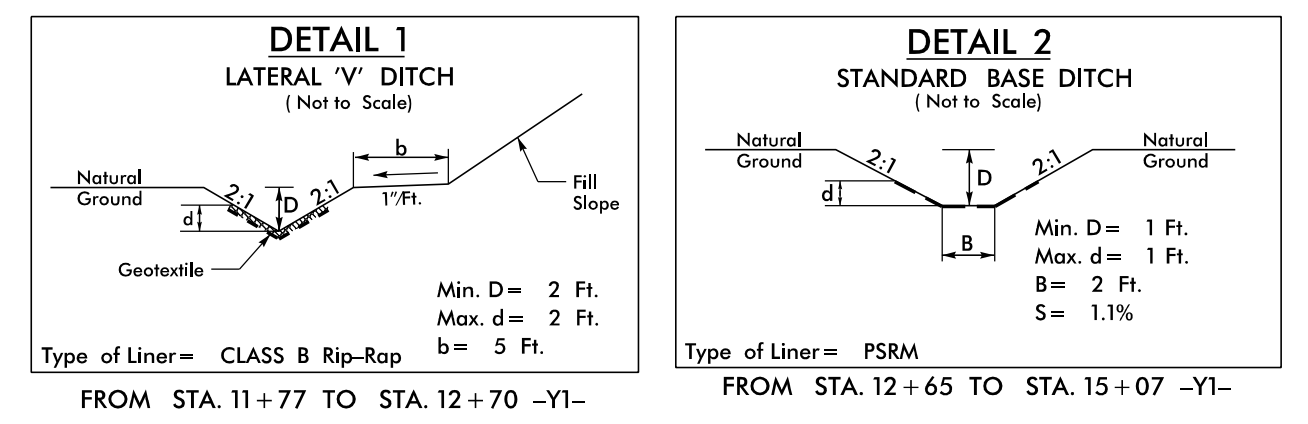
SURVEY LINE	STATION	STATION	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	CLASS IV SUBGRADE STABILIZATION TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU		750	1350	500		
TOTAL CY/TONSSY:					750	1350**	500**	0	0

*ASU = Aggregate Subgrade
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

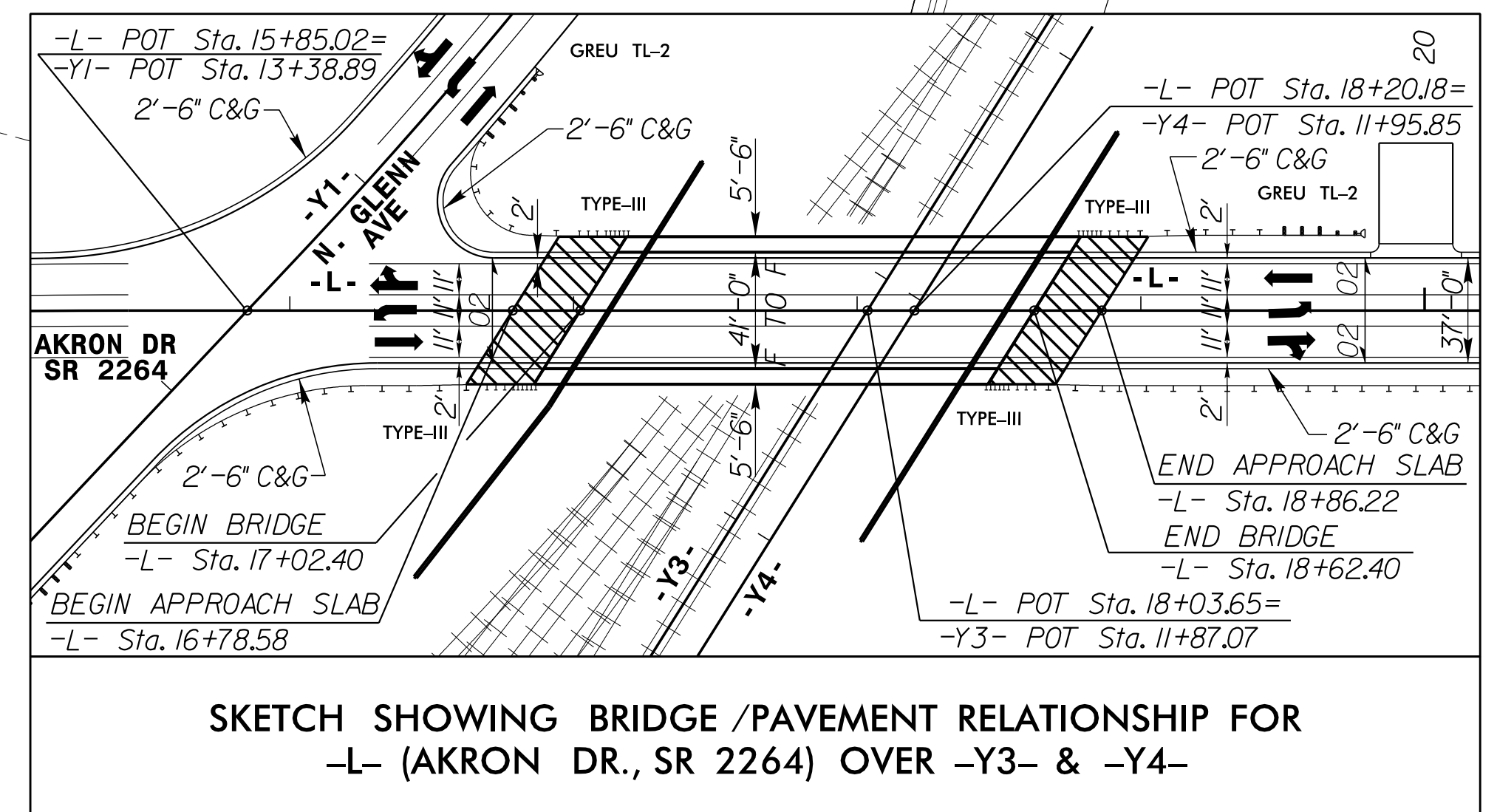
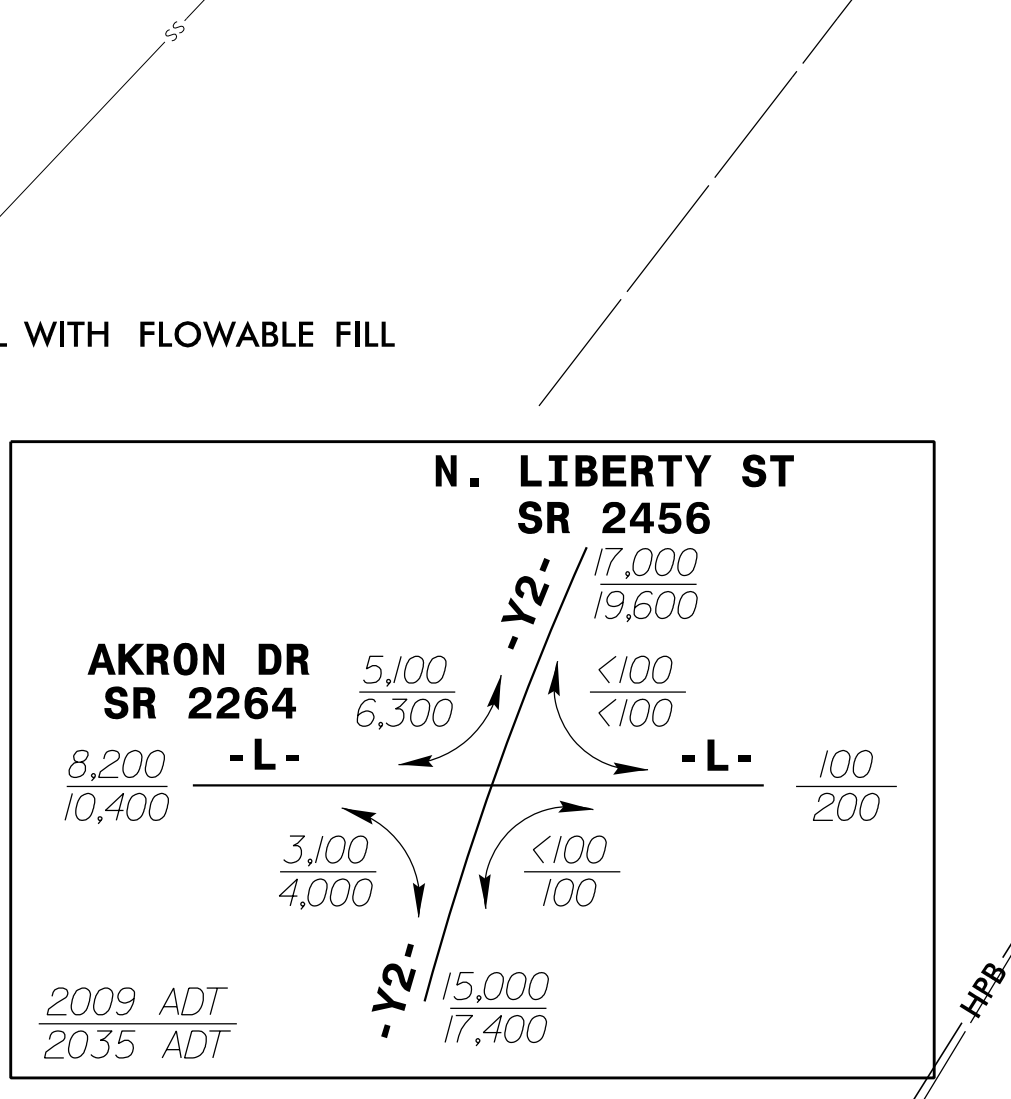
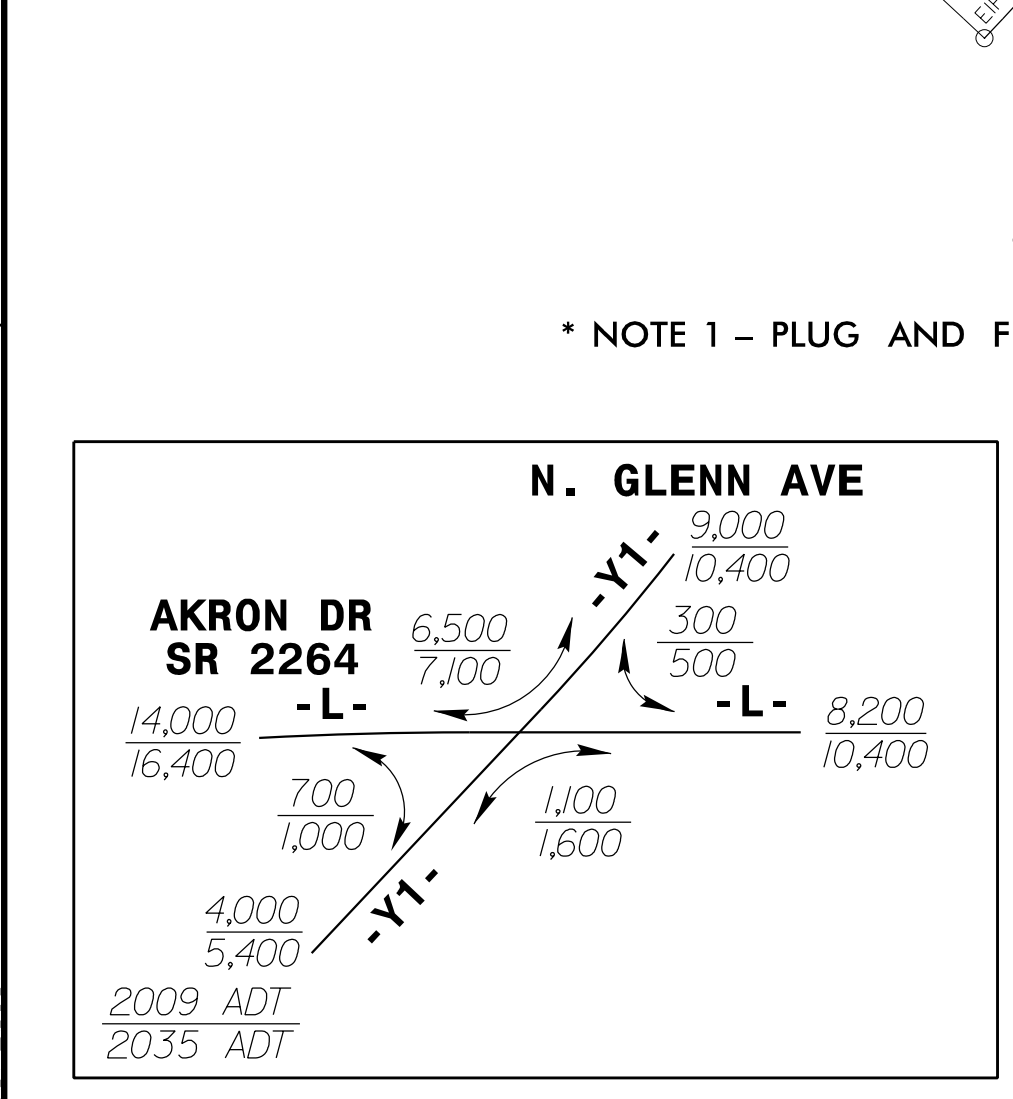
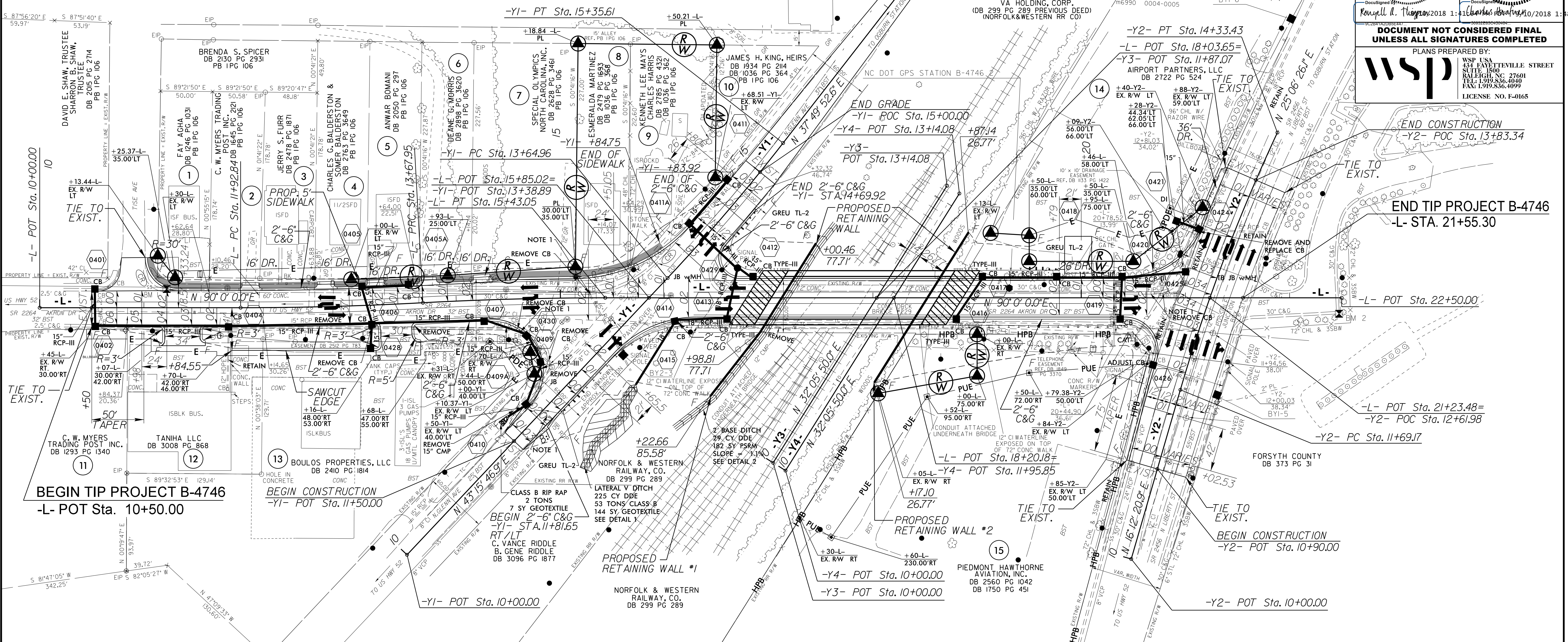
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2/28/2018

PROJECT REFERENCE NO. B-4746		SHEET NO. 4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
PLANS PREPARED BY: 			
WSP USA 434 FAYETTEVILLE STREET RALEIGH, NC 27601 TEL: 1.919.836.4040 FAX: 1.919.836.4099 LICENSE NO. F-0165			

CURVE DATA -L- (AKRON DR)		CURVE DATA -Y1- (N. GLENN AVE)		CURVE DATA -Y2- (N. LIBERTY ST.)	
PI Sta 12+80.42	PI Sta 14+55.52	PI Sta 14+50.35	PI Sta 13+01.57		
$\Delta = 3^{\circ}06'56.8"$ (LT)	$\Delta = 3^{\circ}06'56.8"$ (RT)	$\Delta = 5^{\circ}25'54.4"$ (LT)	$\Delta = 8^{\circ}54'05.2"$ (RT)		
D = 1'46'45.7"	D = 1'46'45.7"	D = 3'11'00.6"	D = 3'22'06.1"		
L = 175.10'	L = 175.10'	L = 170.62'	L = 264.27'		
T = 87.57'	T = 87.57'	T = 85.39'	T = 132.40'		
R = 3,220.00'	R = 3,220.00'	R = 1,800.00'	R = 1,701.00'		
SE = RC	SE = RC	SE = 3.0%	SE = 3.4%		
RO = 48'	RO = 48'	RO = 78'	RO = 143'		



NAD 83 NSRS 2007



* NOTE 1 - PLUG AND FILL WITH FLOWABLE FILL

SEE SHEET 5 FOR -L-, -Y1- & -Y2- PROFILES
SEE STRUCTURE PLANS S-1 THRU S-35
SEE RETAINING WALL PLANS W-1 THRU W-5

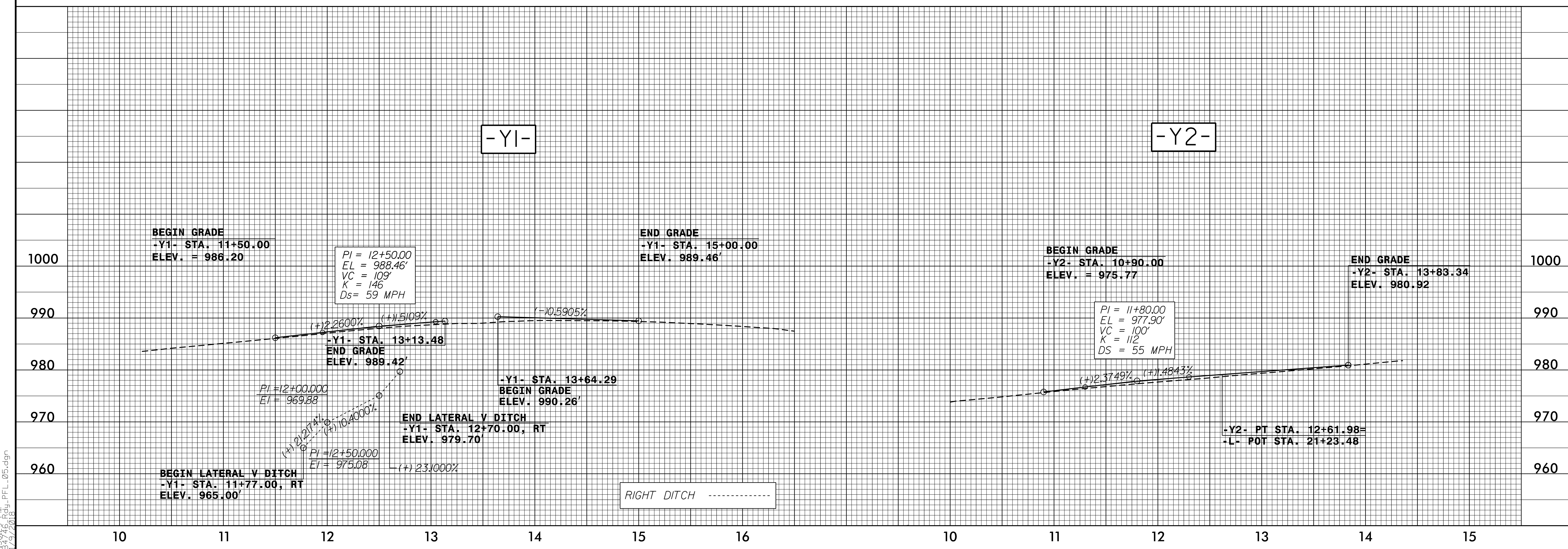
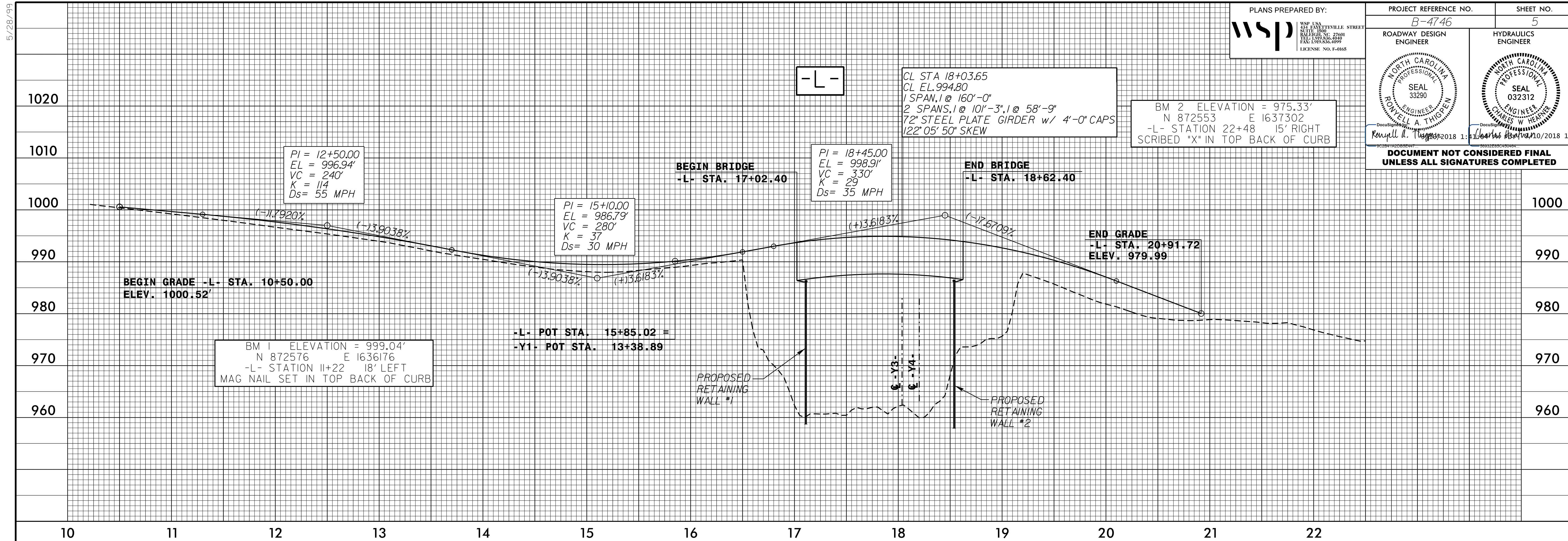
8:59:55 AM
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1/30/2018

5/28/18

PLANS PREPARED BY:
wsp
WSP USA
301 EAST WILHELMINE STREET
RALEIGH, NC 27601
TEL: 919.836.4000
FAX: 919.836.4999
LICENSE NO. F-0816

PROJECT REFERENCE NO. B-4746	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Renyll L. Thigpen 2018 1:11:10
Charles W. Heaver 2018 1:11:10



1:30:29 PM
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1/25/2018

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED