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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5601EV	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50138.1.153	HSIP - 0074 (186)	P.E.	
50138.2.153	HSIP - 0074 (186)	R/W, UTIL.	
50138.3.153	HSIP - 0074 (186)	CONST.	

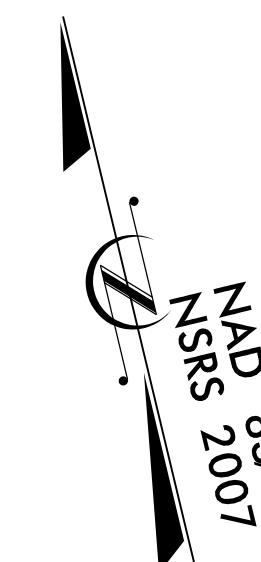
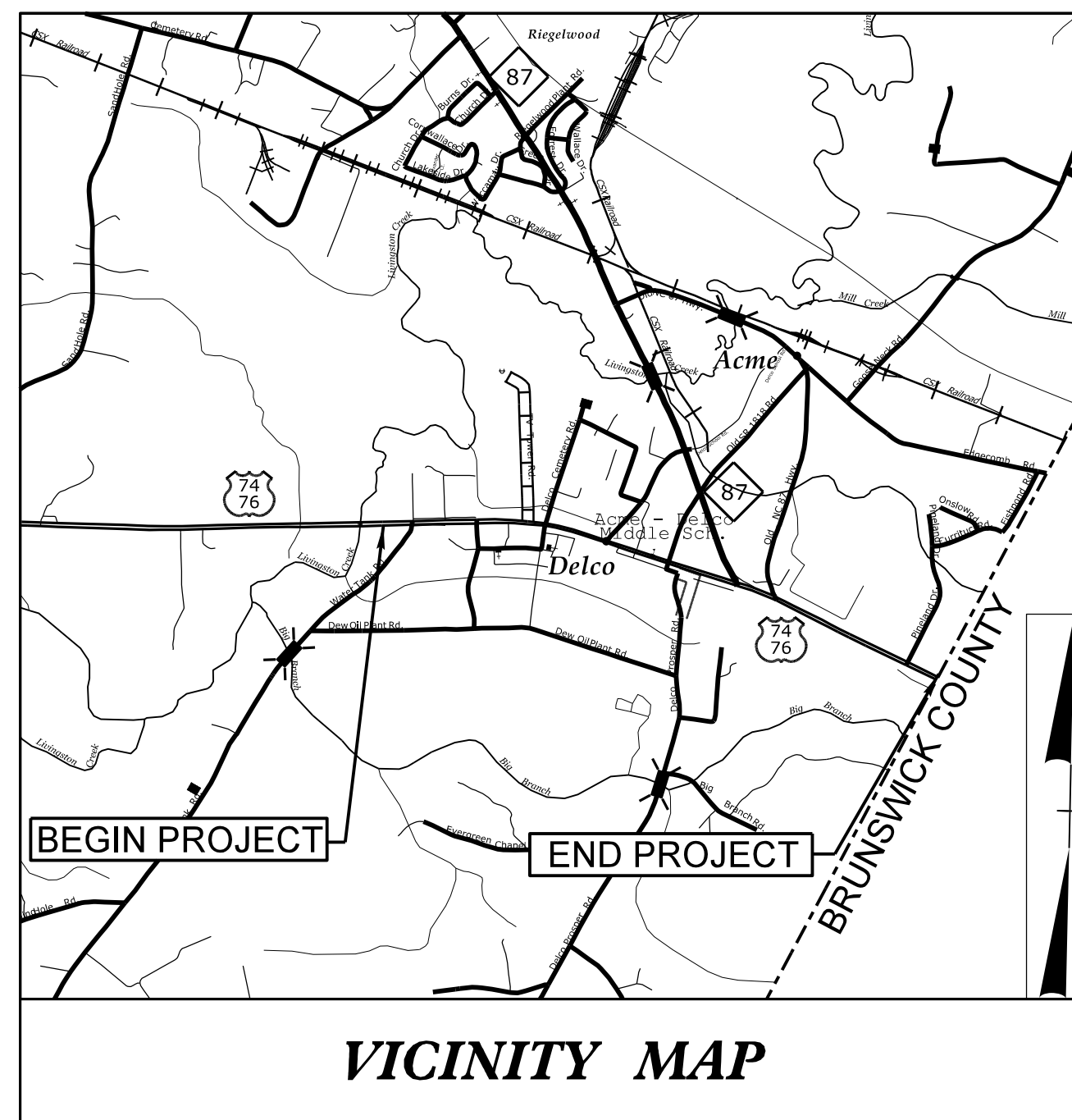
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**COLUMBUS/BRUNSWICK  
COUNTIES**

**LOCATION: US74 FROM SR 1824 (WATER TANK RD) TO JUST EAST OF THE  
BRUNSWICK COUNTY LINE**

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

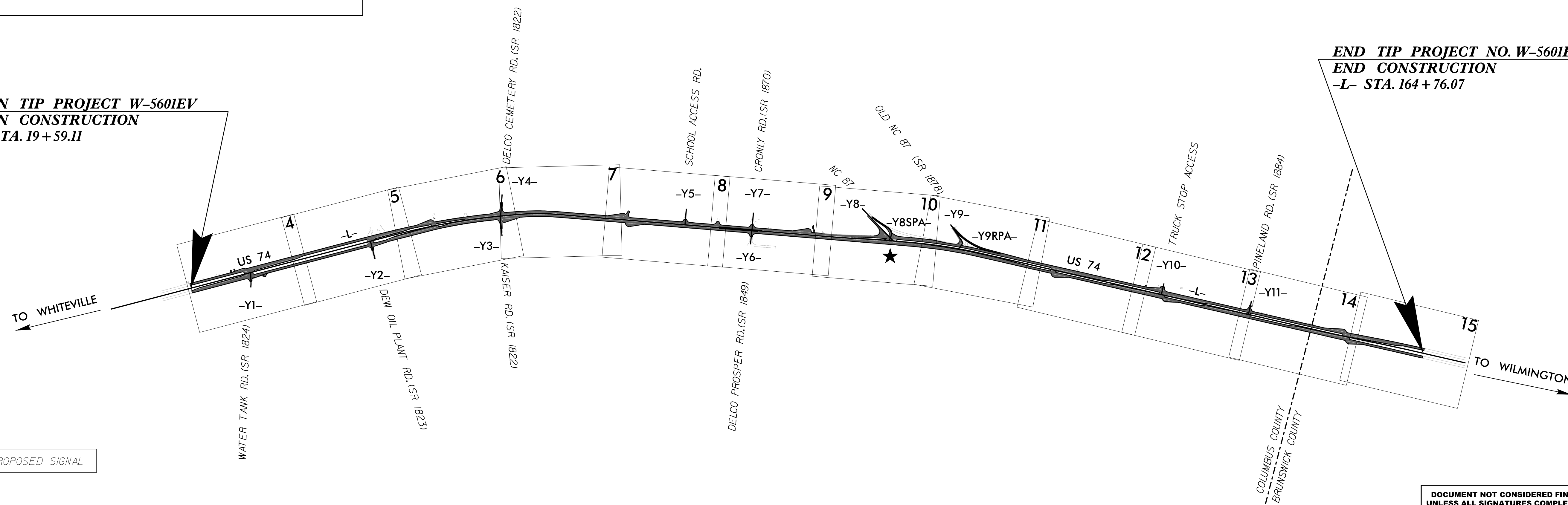
SEE SHEET 1A FOR INDEX OF SHEETS  
SEE SHEET 1B FOR CONVENTIONAL SYMBOLS



**TIP PROJECT: W-5601EV**

**BEGIN TIP PROJECT W-5601EV  
BEGIN CONSTRUCTION  
-L- STA. 19+59.11**

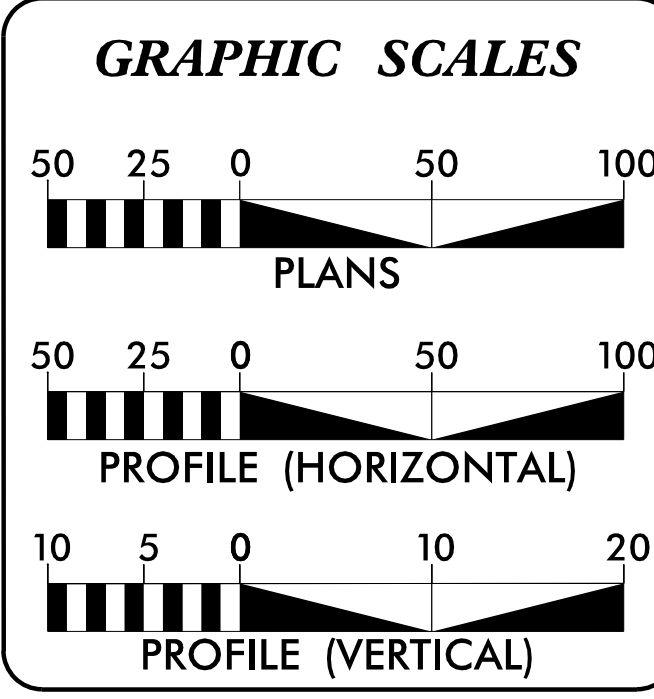
**END TIP PROJECT NO. W-5601EV  
END CONSTRUCTION  
-L- STA. 164+76.07**



★ PROPOSED SIGNAL

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**CONTRACT: C204133**



**DESIGN DATA**

ADT 2016 = 25,000  
V = 50/60 MPH  
FUNC CLASS = ARTERIAL

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT W-5601EV = 2.749 MILES  
TOTAL LENGTH TIP PROJECT W-5601EV = 2.749 MILES

Prepared In The Offices of:

Stantec Consulting Services Inc. Tel: (919) 851-6866  
801 Jones Franklin Road www.stantec.com  
Suite 300 Raleigh, NC 27606 Fax: (919) 851-7024  
License No. F-5372

2018 STANDARD SPECIFICATIONS	STANTEC CONTACT:
<b>RIGHT OF WAY DATE:</b> June 27, 2017	<b>STEVE SMALLWOOD, PE</b> PROJECT ENGINEER
<b>LETTING DATE:</b> August 21, 2018	NCDOT DIVISION 6 CONTACT: <b>STEVE KENDALL, PE</b> PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

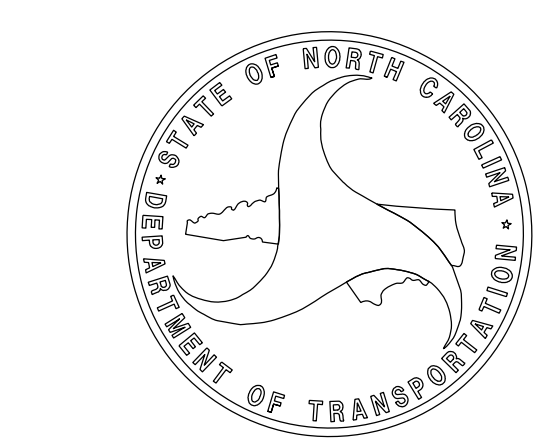
5/29/2018

SIGNATURE: \_\_\_\_\_

**ROADWAY DESIGN ENGINEER**

5/29/2018

SIGNATURE: \_\_\_\_\_

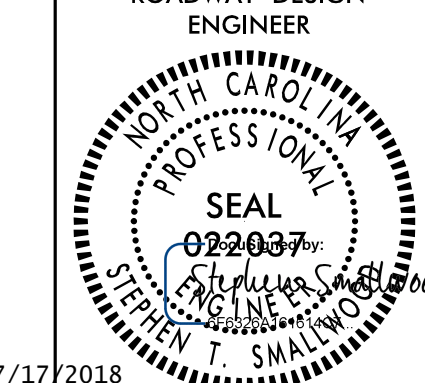




8/17/19



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PROJECT REFERENCE NO. W-5601EV	SHEET NO. 1A
ROADWAY DESIGN ENGINEER	
	
7/17/2018	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

INDEX OF SHEETS	
SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-2	SURVEY CONTROL SHEETS
1D-1	PROPOSED ALIGNMENT CONTROL SHEET
1E-1	RIGHT OF WAY CONTROL SHEET
1E-2	PERMANENT EASEMENT CONTROL SHEET
2A-1 THRU 2A-5	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-5	INTERSECTION DETAILS
2C-1	DETAIL ENDWALL FOR 15 IN. THRU 48 IN. PIPE - 45° SKEW
2C-2	DETAIL ENDWALL FOR 54 IN. - 45° SKEW
2C-3	DETAIL ENDWALL FOR 60 IN. - 60° SKEW
2C-4	TRAFFIC BEARING 2GI
2C-5	CONVERT JB TO DI
3B-1	SUMMARY OF ROADWAY QUANTITIES, PAVEMENT REMOVAL SUMMARY, EXPRESSWAY GUTTER SUMMARY
3D-1 THRU 3D-5	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEETS
4 THRU 15	PLAN SHEETS
16 THRU 22	PROFILE SHEETS
TMP-1 THRU TMP-7	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-13	PAVEMENT MARKING PLANS
EC-1 THRU EC-27	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-15	SIGNING PLANS
SIG.1.0 THRU SIG.3.0	SIGNAL PLANS
SIG.M1 THRU SIG.M8	METAL POLE STANDARDS
UO-1 THRU UO-13	UTILITIES BY OTHERS PLANS
X-1A THRU X-1B	CROSS-SECTION EARTHWORK SUMMARY SHEETS
X-1 THRU X-67	CROSS-SECTIONS

**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 II.

**SUPERELEVATION:**

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.05 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 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.

**TEMPORARY SHORING:**

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

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

**UTILITIES:**

UTILITY OWNERS ON THIS PROJECT ARE DUKE, SPECTRUM, CENTURY LINK, AT&T, AND COLUMBUS COUNTY WATER.

**UTILITIES:**

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

**RIGHT-OF-WAY MARKERS:**

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

2018 ROADWAY ENGLISH STANDARD DRAWINGS EFF. 01-16-2018 REV.

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
<b>DIVISION 2 - EARTHWORK</b>	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.05	Method of Obtaining Superelevation - Divided Highways
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
<b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>	
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
<b>DIVISION 8 - INCIDENTALS</b>	
815.02	Subsurface Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.27	Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.57	Reinforced Brick Endwall - for Single 60" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	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
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
852.01	Concrete Islands
852.04	Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
876.02	Guide for Rip Rac at Pipe Outlets

7/17/2018  
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# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

## CONVENTIONAL PLAN SHEET SYMBOLS

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

04/06/15

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
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	☠ ☠
Potential Contamination Area: Soil	☠ ☠
Known Contamination Area: Water	☠ ☠
Potential Contamination Area: Water	☠ ☠
Contaminated Site: Known or Potential	☠ ?

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	▬

### HYDROLOGY:

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

### RAILROADS:

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

### RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	○ RW
Proposed Right of Way Line with Iron Pin and Cap Marker	○ RW ▲
Proposed Right of Way Line with Concrete or Granite RW Marker	▲ RW
Proposed Control of Access Line with Concrete C/A Marker	○ C/A
Existing Control of Access	○ C/A
Proposed Control of Access	○ C/A
Existing Easement Line	-E-
Proposed Temporary Construction Easement	-E-
Proposed Temporary Drainage Easement	-TDE-
Proposed Permanent Drainage Easement	-PDE-
Proposed Permanent Drainage / Utility Easement	-DUE-
Proposed Permanent Utility Easement	-PUE-
Proposed Temporary Utility Easement	-TUE-
Proposed Aerial Utility Easement	-AUE-
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

### ROADS AND RELATED FEATURES:

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

### VEGETATION:

Single Tree	☼
Single Shrub	☼
Hedge	▬
Woods Line	▬

Orchard	☼ ☼ ☼ ☼
Vineyard	□ Vineyard

### EXISTING STRUCTURES:

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

### UTILITIES:

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

### TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○ T
Telephone Pedestal	□ T
Telephone Cell Tower	▬
U/G Telephone Cable Hand Hole	○ TH
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.*)	-----TFD-----
U/G Fiber Optics Cable LOS C (S.U.E.*)	-----TFD-----
U/G Fiber Optics Cable LOS D (S.U.E.*)	-----TFD-----

### 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	○ TH
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-----

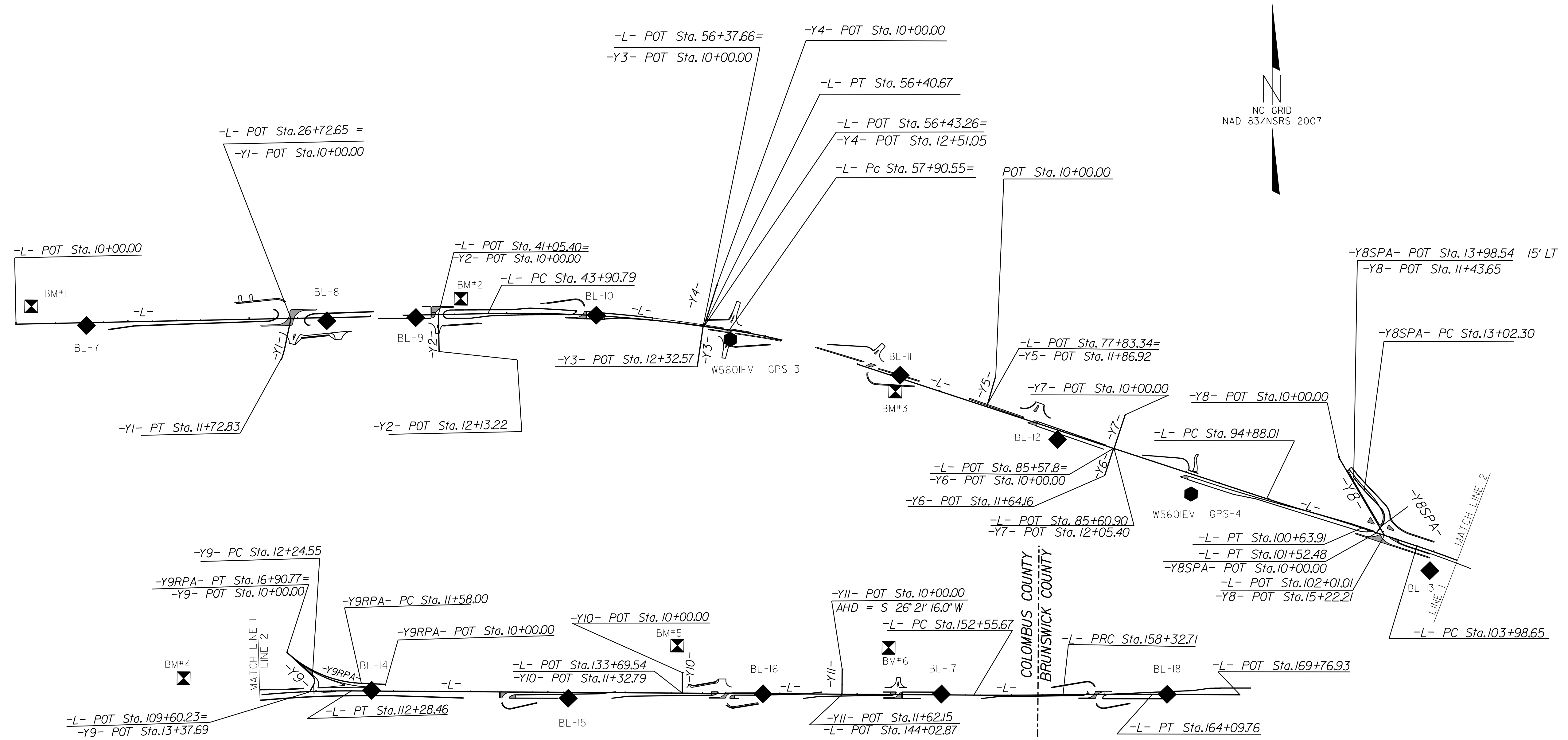
### MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line LOS B (S.U.E.*)	-----TU/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 W-5601EV

## W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



REVISIONS

### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CLOVER" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 207782.600(±) EASTING: 2198274.691(±) ELEVATION: 56.30(±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999992830

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CLOVER" TO -L- STATION 10+00.00 IS  
 S 88° 36' 15.71" E 31,281.6505

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

### NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

6/2/09

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 11/14/2016  
 k1100





# PROPOSED ALIGNMENT CONTROL SHEET W-5601EV

6/2/99

REVISIONS

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	207020.7026	2229547.0617
PC	43+90.79	207091.6297	2232937.1050
PT	56+40.67	207017.7570	2234183.4635
PC	57+90.55	206996.9426	2234331.8928
PT	63+24.15	206876.3584	2234850.9707
PC	94+88.01	205889.5572	2237857.0033
PRC	97+68.49	205807.4390	2238125.1679
PT	100+63.91	205720.6426	2238407.5325
PC	103+98.65	205615.5597	2238725.3478
PT	112+28.46	205300.6041	2239492.3267
PC	152+55.67	203512.8349	2243100.9653
PRC	158+32.71	203262.6615	2243620.9452
PT	164+09.76	203012.4880	2244140.9252
POT	169+76.93	202760.7091	2244649.1445

Y5

TYPE	STATION	NORTH	EAST
POT	10+00.00	206598.8340	2236295.6719
POT	11+86.92	206421.2393	2236237.3723

Y9

TYPE	STATION	NORTH	EAST
POT	10+00.00	205708.5657	2239226.8346
PC	12+24.55	205499.0274	2239307.5656
PT	12+86.55	205443.8601	2239290.9921
POT	13+37.69	205414.1737	2239249.3524

Y6

TYPE	STATION	NORTH	EAST
POT	10+00.00	206179.6860	2236973.2015
POT	11+64.16	206023.7194	2236922.0018

Y9RPA

TYPE	STATION	NORTH	EAST
POT	10+00.00	205241.6686	2239710.4051
PC	11+58.00	205316.8166	2239571.4224
PT	16+90.77	205708.5657	2239226.8346

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	207055.6905	2231219.3498
PC	11+24.06	206934.2829	2231193.8273
PT	11+72.83	206887.5293	2231180.1369

Y7

TYPE	STATION	NORTH	EAST
POT	10+00.00	206373.8780	2237040.2027
POT	12+05.40	206178.7220	2236976.1381

Y10

TYPE	STATION	NORTH	EAST
POT	10+00.00	204469.1187	2241469.8228
POT	11+32.79	204350.1295	2241410.8738

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	207085.6600	2232651.7800
POT	12+13.22	206872.4682	2232655.1682

Y8

TYPE	STATION	NORTH	EAST
POT	10+00.00	206128.1010	2238273.5891
POT	15+22.21	205677.6014	2238537.7074

Y11

TYPE	STATION	NORTH	EAST
POT	10+00.00	204036.7078	2242408.7830
POT	11+62.15	203891.4121	2242336.8016

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	207018.1734	2234180.4894
POT	12+32.57	206788.0080	2234147.1594

Y8SPA

TYPE	STATION	NORTH	EAST
POT	10+00.00	205692.8377	2238491.6263
PC	10+48.72	205731.4417	2238521.3476
PT	11+62.89	205836.2703	2238516.2436
PC	13+02.30	205937.9493	2238420.8687
PT	13+59.27	205981.0417	2238383.6250
POT	13+98.54	206011.7672	2238359.1810

Y4

TYPE	STATION	NORTH	EAST
POT	10+00.00	207257.1611	2234260.4545
POT	12+51.05	207017.3965	2234186.0343

**NOTES:**

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATINO REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.





# PERMANENT EASEMENT CONTROL SHEET W-5601EV

PROJECT REFERENCE NO. W-5601EV	SHEET NO. 1E-2
LOCATION AND SURVEYS	

PROJECT  
SURVEYOR

PERMANENT EASEMENT MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	60+00.00	51.78	206909.9864	2234527.3792
L	60+00.00	65.00	206897.0580	2234524.6353
L	59+80.00	65.00	206901.0565	2234505.4816
L	59+80.00	51.88	206913.9117	2234508.1205

PERMANENT EASEMENT MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	12+20.00	-45.00	206793.9953	2234193.4958
Y3	12+20.00	-24.15	206796.9831	2234172.8633

**NOTES:**

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

6/2/99

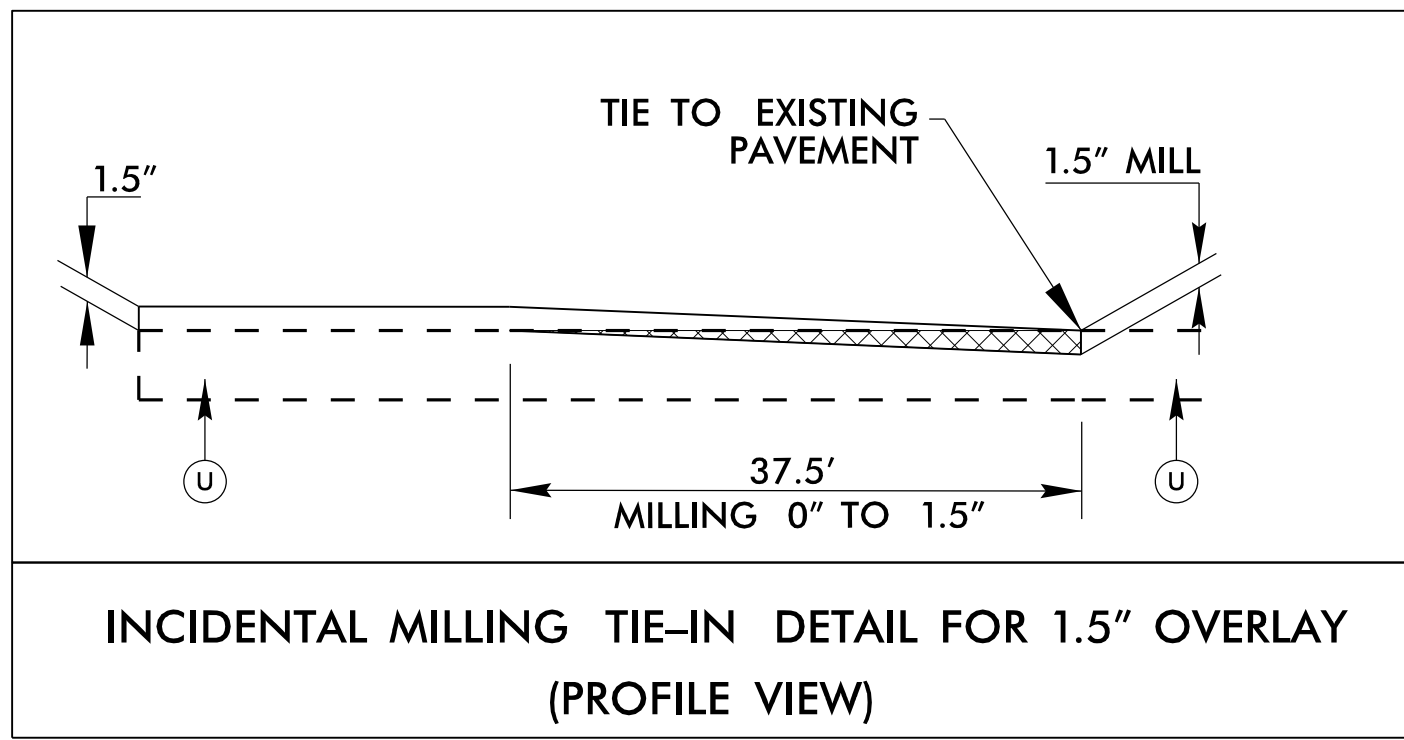
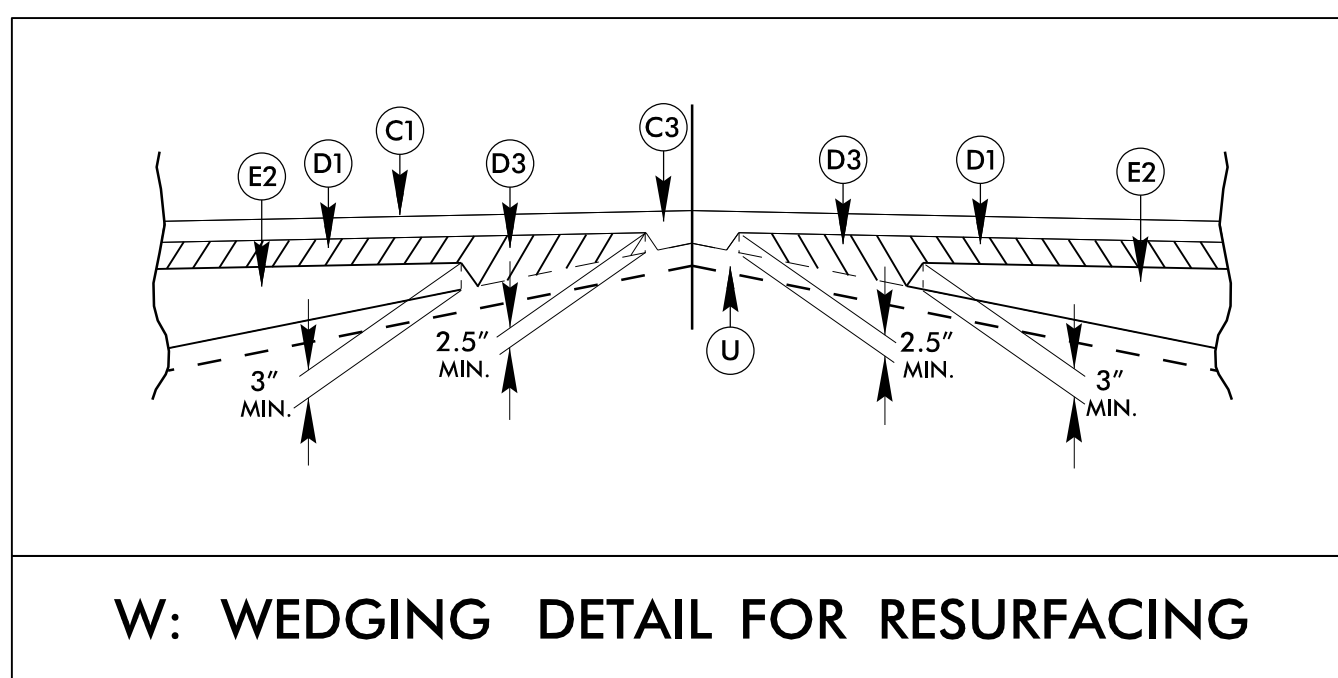
REVISIONS

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6/2/2018

# PAVEMENT SCHEDULE

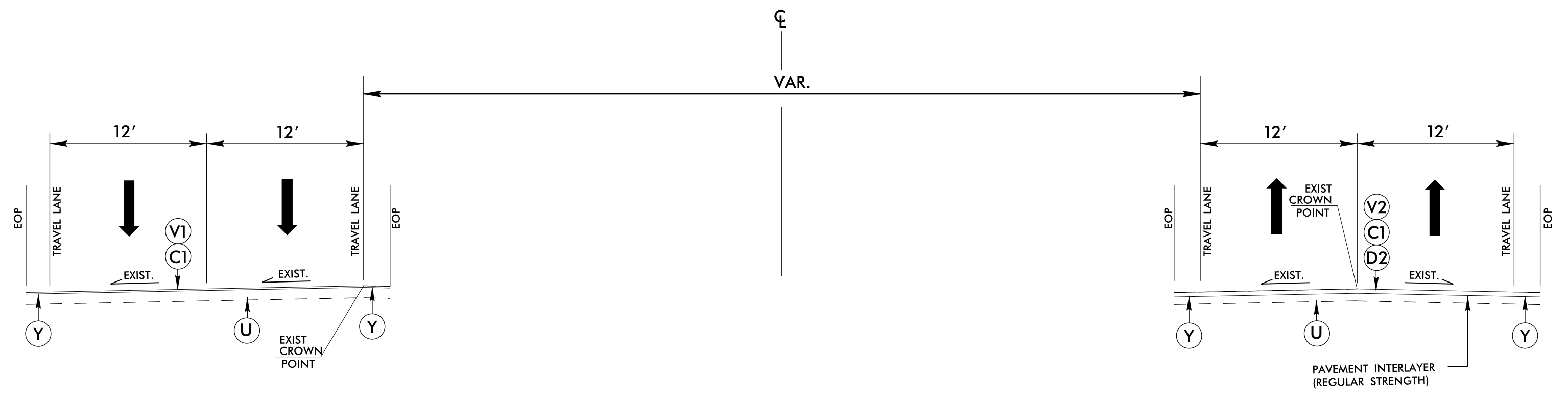
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R1	1'-6" CONCRETE CURB AND GUTTER.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	2'-6" CONCRETE CURB AND GUTTER.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	R3	5" MONOLITHIC CONCRETE ISLAND (KEYED-IN).
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
D2	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	V1	MILLING EXISTING PAVEMENT, 1.5" DEPTH
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	V2	MILLING EXISTING PAVEMENT, 4" DEPTH
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS).
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.		Y	MILLED RUMBLE STRIPS



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 Raleigh, NC 27606  
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 Fax. (919) 851-7024  
 www.stantec.com  
 License No. F-0672

PROJECT REFERENCE NO. <i>W-5601EV</i>	SHEET NO. <i>2A-1</i>
ROADWAY DESIGN ENGINEER <i>Stacy Smith</i> SEAL 022037 8/1/2018	PAVEMENT DESIGN ENGINEER <i>Clark Morris</i> SEAL 022896 8/1/2018

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



## TYPICAL SECTION No. 1

- L- STA. 33+15.04 TO 40+71.53
- L- STA. 48+88.60 TO 49+62.19
- L- STA. 118+54.44 TO 120+56.60
- L- STA. 144+24.87 TO 148+86.85
- L- STA. 162+31.20 TO 164+76.06

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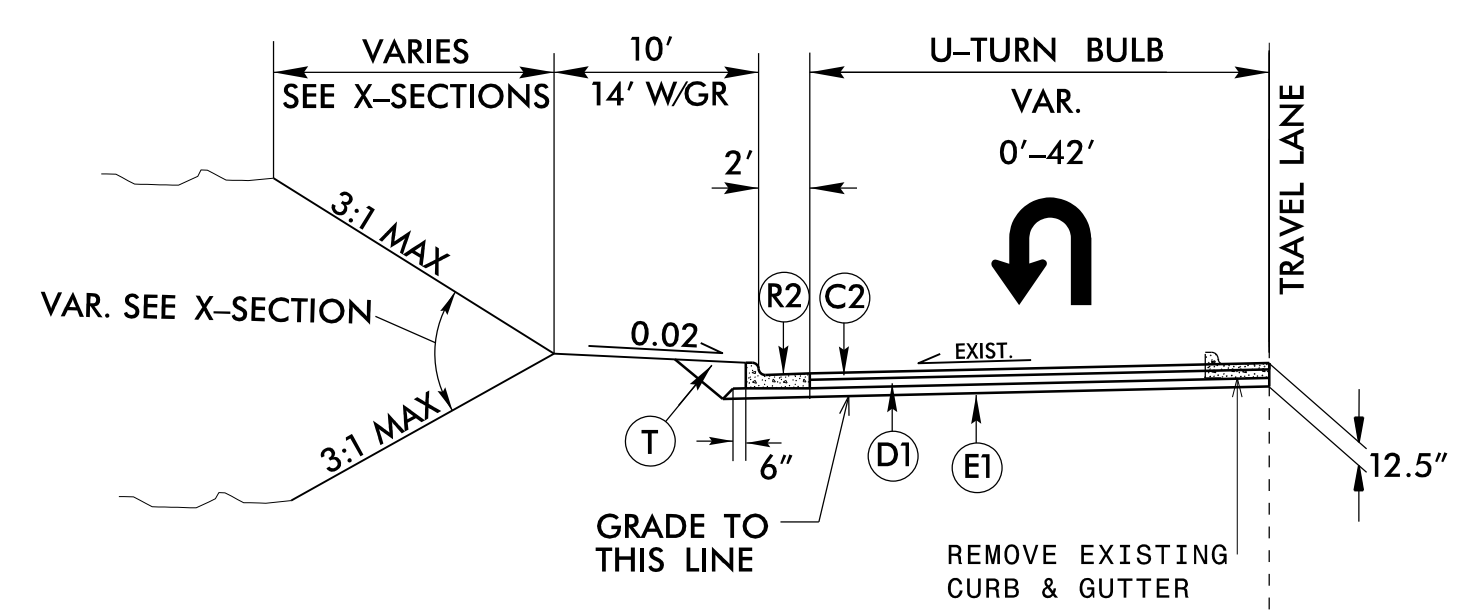
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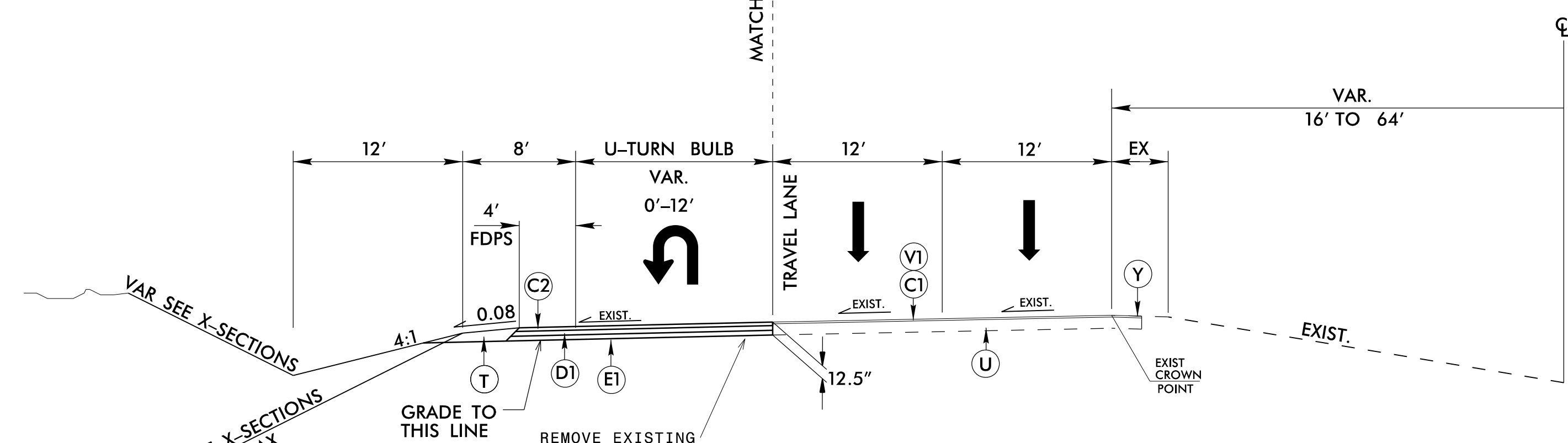
PROJECT REFERENCE NO. W-5601EV	SHEET NO. 2A-2
ROADWAY DESIGN ENGINEER SEAL 022037 8/2/2018	PAVEMENT DESIGN ENGINEER SEAL 022896 8/2/2018

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



**PARTIAL TYPICAL 2A**

- L- STA. 68 + 80.37 TO 70 + 84.98
- L- STA. 90 + 28.75 TO 92 + 48.25



**TYPICAL SECTION No. 2**

- USE TYPICAL SECTION No. 2 :
- L- STA. 24 + 32.29 TO 26 + 27.03
  - L- STA. 46 + 57.34 TO 48 + 76.80
  - L- STA. 55 + 08.77 TO 56 + 30.19
  - L- STA. 152 + 91.80 TO 155 + 60.09

PAVEMENT SCHEDULE	
C1	1.5" S9.5C
C2	3" S9.5C
C3	VAR. DEPTH S9.5C
D1	4" I19.0C
D2	2.5" I19.0C
D3	VAR. DEPTH I19.0C
E1	5.5" B25.0C
E2	VAR. DEPTH B25.0C
R1	1'-6" C&G
R2	2'-6" C&G
R3	CONC. MONO. ISLAND (KEYED-IN)
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5" DEPTH
V2	MILLING 4" DEPTH
W	WEDGING
Y	MILLED RUMBLE STRIPS

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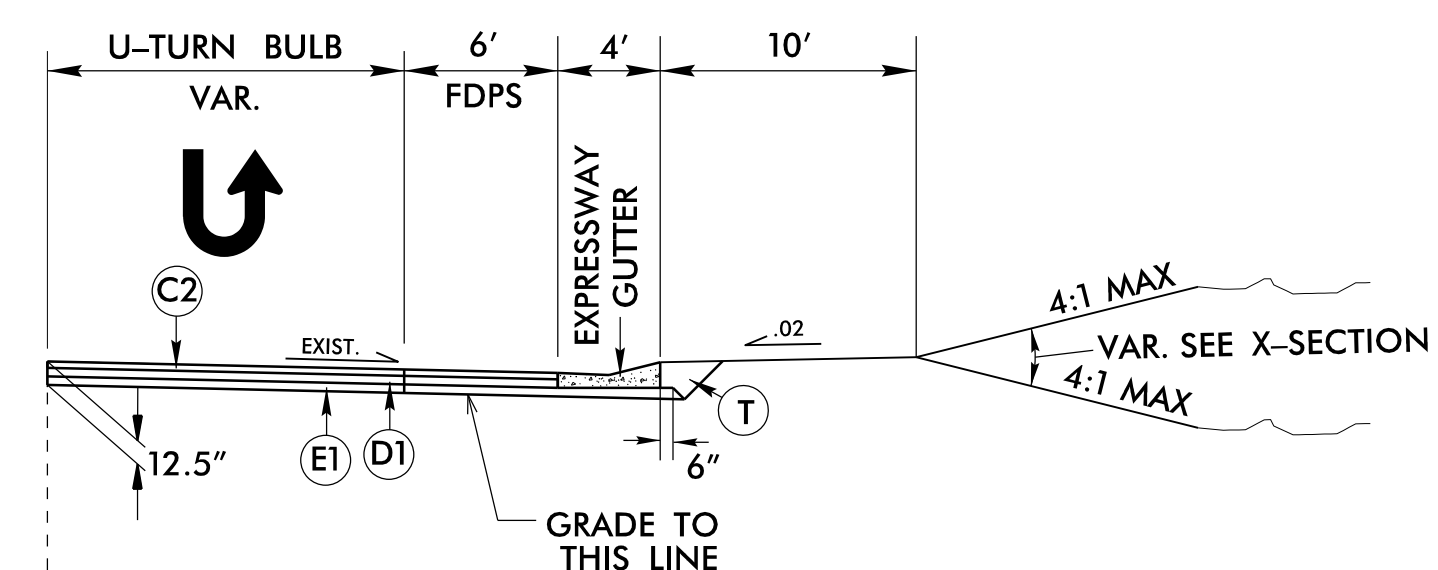


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PROJECT REFERENCE NO. W-5601EV	SHEET NO. 2A-3
ROADWAY DESIGN ENGINEER SEAL 022037 8/2/2018	PAVEMENT DESIGN ENGINEER SEAL 022896 8/2/2018

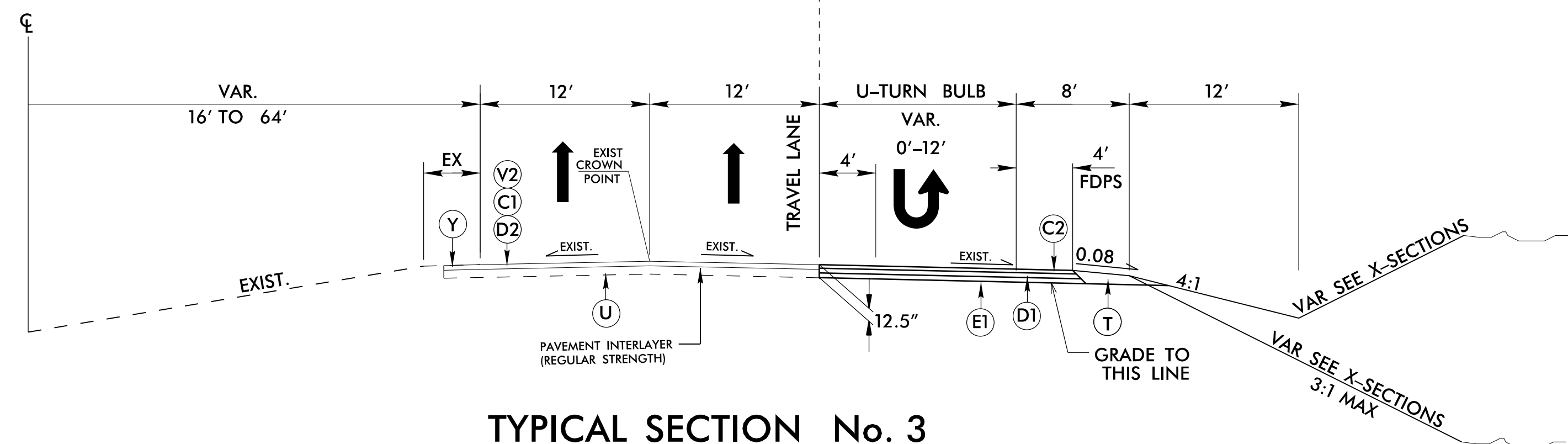
**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**

PAVEMENT SCHEDULE	
C1	1.5" S9.5C
C2	3" S9.5C
C3	VAR. DEPTH S9.5C
D1	4" I19.0C
D2	2.5" I19.0C
D3	VAR. DEPTH I19.0C
E1	5.5" B25.0C
E2	VAR. DEPTH B25.0C
R1	1'-6" C&G
R2	2'-6" C&G
R3	CONC. MONO. ISLAND (KEYED-IN)
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5" DEPTH
V2	MILLING 4" DEPTH
W	WEDGING
Y	MILLED RUMBLE STRIPS



**PARTIAL TYPICAL 3A**

- L- STA. 26+83.96 TO 28+08.66
- L- STA. 130+85.26 TO 133+30.53 (MIRRORED)
- L- STA. 133+81.04 TO 136+20.10



**TYPICAL SECTION No. 3**

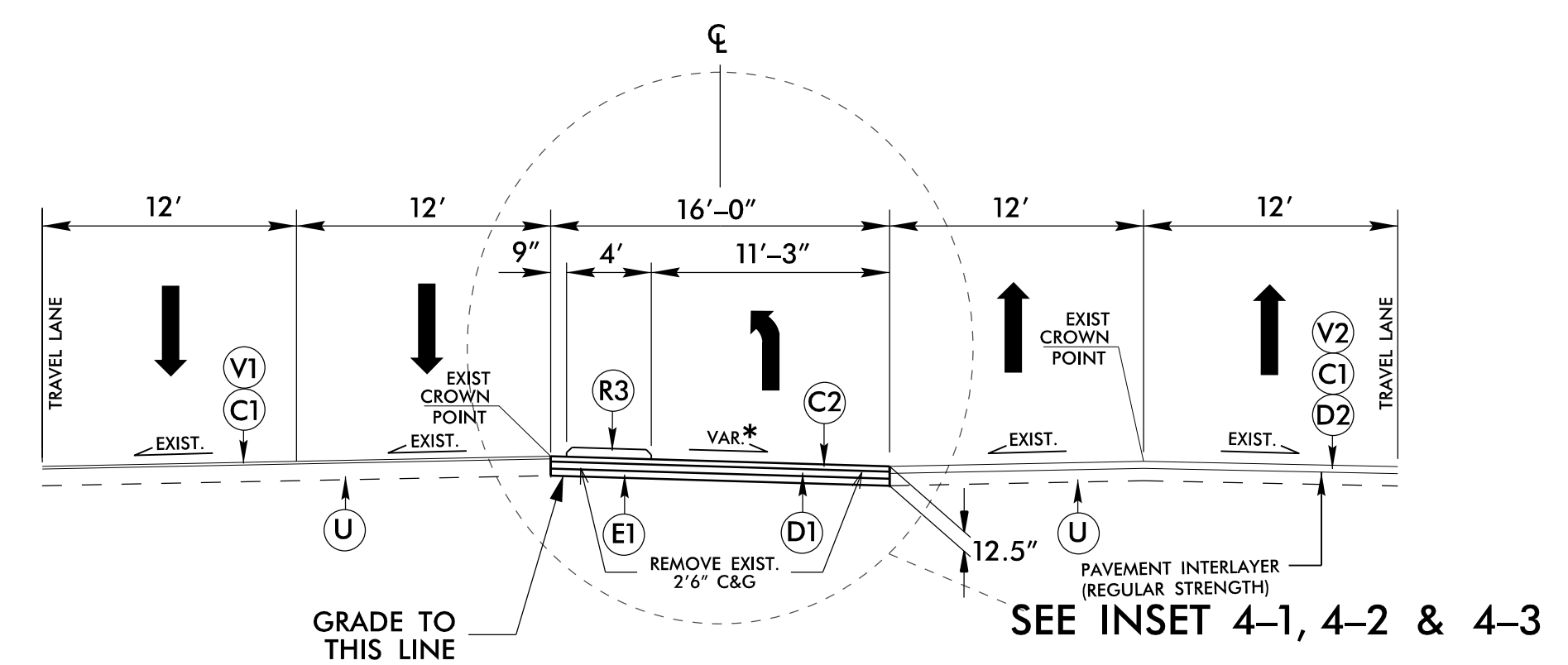
- USE TYPICAL SECTION No. 3 :
- L- STA. 41+30.00 TO 43+37.59
  - L- STA. 56+53.09 TO 56+73.61
  - L- STA. 70+89.91 TO 73+16.88
  - L- STA. 120+68.11 TO 122+82.13
  - L- STA. 155+61.24 TO 157+80.73





PROJECT REFERENCE NO. W-5601EV	SHEET NO. 2A-4
ROADWAY DESIGN ENGINEER SEAL 022037 8/2/2018	PAVEMENT DESIGN ENGINEER SEAL 022896 8/2/2018

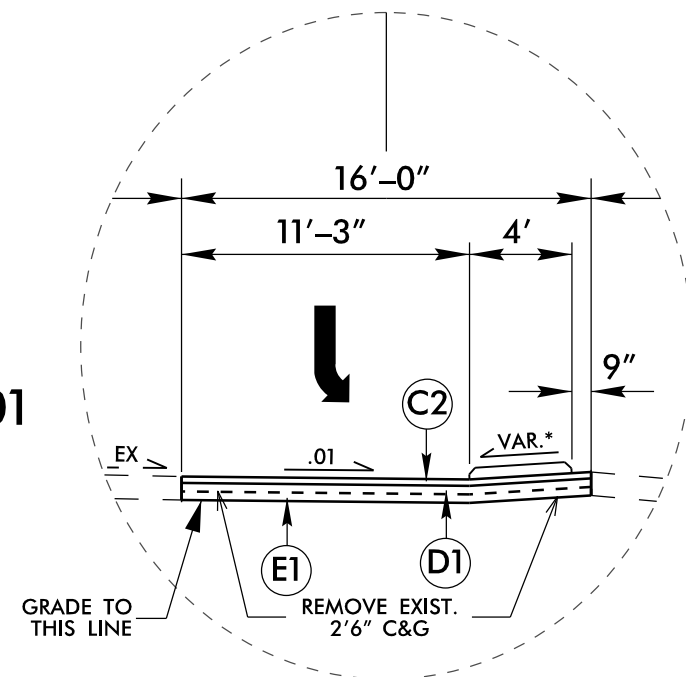
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**



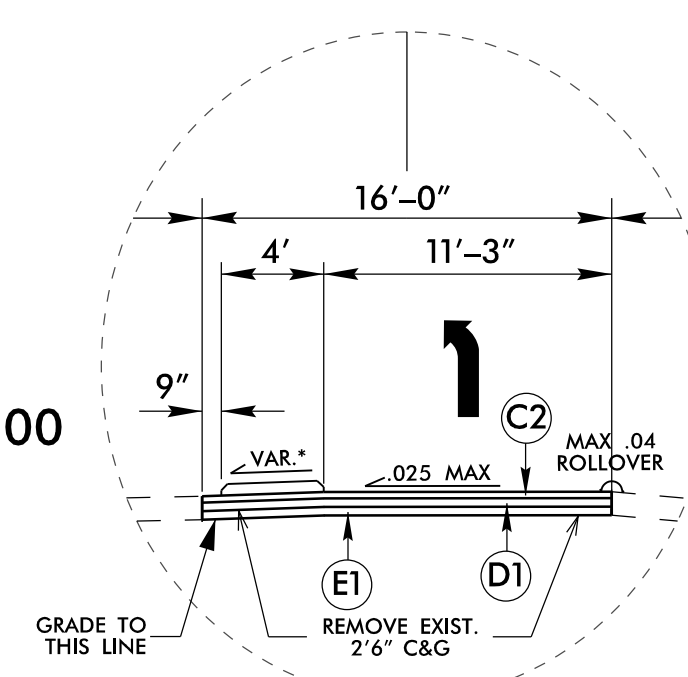
**TYPICAL SECTION No. 4**

USE TYPICAL SECTION No. 4:  
 -L- STA. 71+00.00 TO 81+72.78  
 -L- STA. 86+31.75 TO 93+31.75  
 \*SEE PLANS FOR SUPERELEVATION

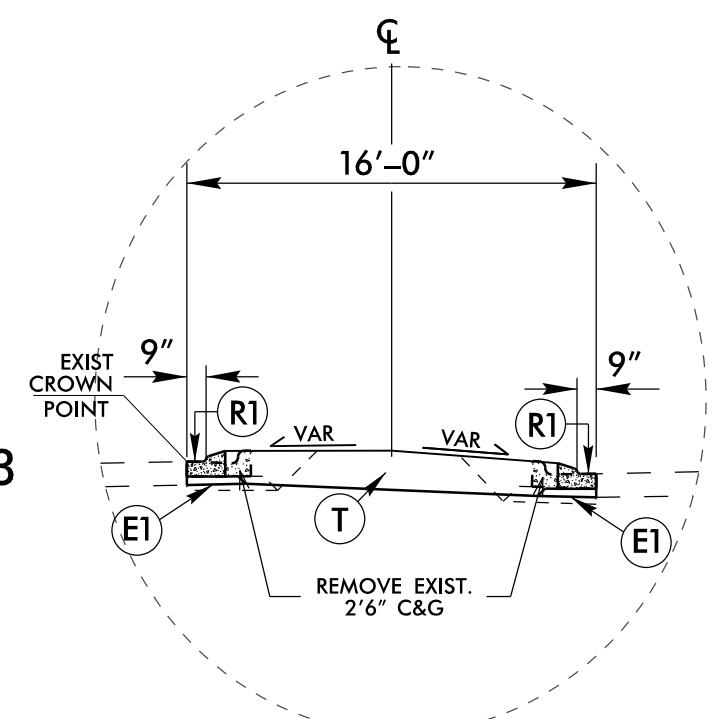
**INSET 4-1**  
 -L- STA. 56+37.66 TO 61+62.01



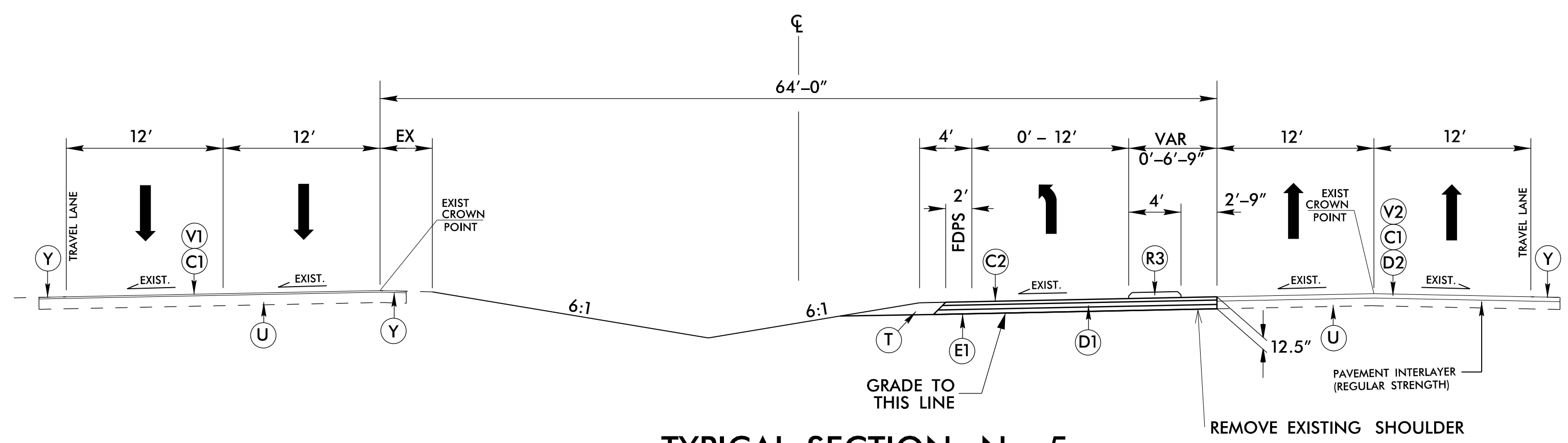
**INSET 4-2**  
 -L- STA. 64+87.01 TO 71+00.00



**INSET 4-3**  
 -L- STA. 81+72.78 TO 87+31.64  
 -L- STA. 92+56.24 TO 100+97.17  
 -Y8- STA. 12+05.93 TO 14+43.65  
 -Y9RPA- STA. 13+19.88 TO 15+09.53



PAVEMENT SCHEDULE	
C1	1.5" S9.5C
C2	3" S9.5C
C3	VAR. DEPTH S9.5C
D1	4" I19.0C
D2	2.5" I19.0C
D3	VAR. DEPTH I19.0C
E1	5.5" B25.0C
E2	VAR. DEPTH B25.0C
R1	1'-6" C&G
R2	2'-6" C&G
R3	CONC. MONO. ISLAND (KEYED-IN)
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5" DEPTH
V2	MILLING 4" DEPTH
W	WEDGING
Y	MILLED RUMBLE STRIPS



**TYPICAL SECTION No. 5**

USE TYPICAL SECTION No. 5:  
 -L- STA. 19+59.11 TO 26+72.65  
 -L- STA. 26+72.65 TO 33+15.04 (MIRRORED)  
 -L- STA. 40+71.53 TO 48+88.60  
 -L- STA. 49+62.19 TO 56+43.26  
 -L- STA. 101+99.53 TO 118+54.44  
 -L- STA. 120+56.60 TO 127+40.43 (MIRRORED)  
 -L- STA. 127+14.47 TO 133+69.54  
 -L- STA. 133+69.54 TO 139+53.96 (MIRRORED)  
 -L- STA. 138+40.87 TO 144+24.87  
 -L- STA. 148+86.85 TO 155+59.42  
 -L- STA. 155+59.42 TO 162+31.20 (MIRRORED)

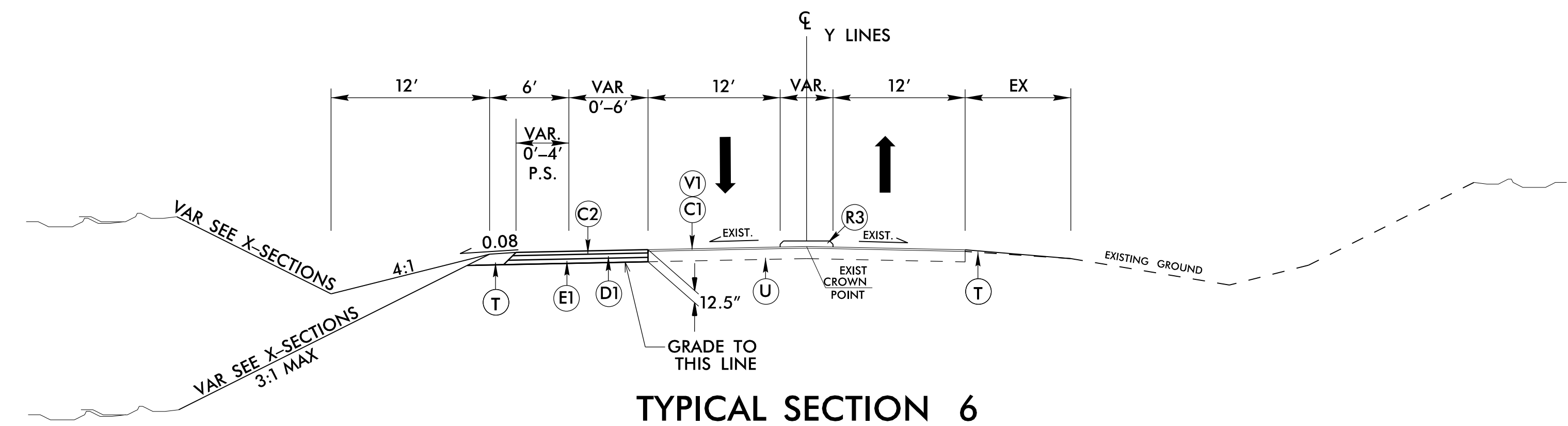
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PROJECT REFERENCE NO. W-5601EV	SHEET NO. 2A-5
ROADWAY DESIGN ENGINEER SEAL 022037 6/7/2018	PAVEMENT DESIGN ENGINEER SEAL 022896 6/7/2018

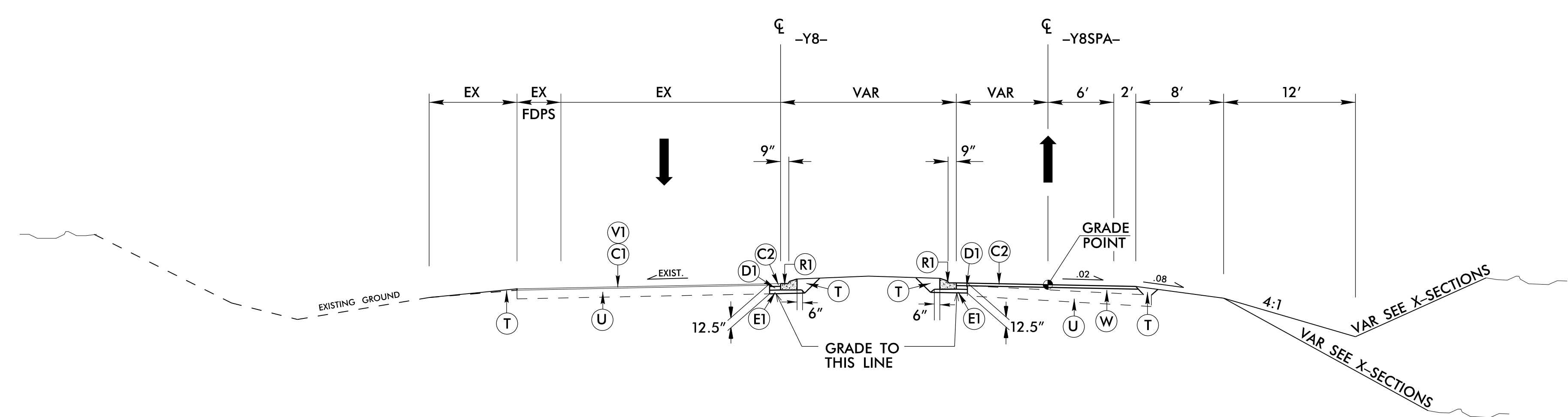
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**



**TYPICAL SECTION 6**

- USE TYPICAL SECTION No. 6:  
 -Y1- STA. 10+57.49 TO 11+02.62  
 -Y2- STA. 10+56.00 TO 11+10.56  
 -Y3- STA. 10+35.85 TO 11+46.25  
 -Y4- STA. 10+91.62 TO 12+13.91  
 -Y9- STA. 10+94.12 TO 12+40.56  
 -Y9RPA- STA. 11+11.99 TO 15+96.89  
 -Y10- STA. 10+37.61 TO 10+81.68  
 -Y11- STA. 10+57.62 TO 11+16.45

PAVEMENT SCHEDULE	
C1	1.5" S9.5C
C2	3" S9.5C
C3	VAR. DEPTH S9.5C
D1	4" I19.0C
D2	2.5" I19.0C
D3	VAR. DEPTH I19.0C
E1	5.5" B25.0C
E2	VAR. DEPTH B25.0C
R1	1'-6" C&G
R2	2'-6" C&G
R3	CONC. MONO. ISLAND (KEYED-IN)
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5" DEPTH
V2	MILLING 4" DEPTH
W	WEDGING
Y	MILLED RUMBLE STRIPS



**TYPICAL SECTION No. 7**

- USE TYPICAL SECTION No. 7:  
 -Y8SPA- STA. 10+00.00 TO 11+54.38

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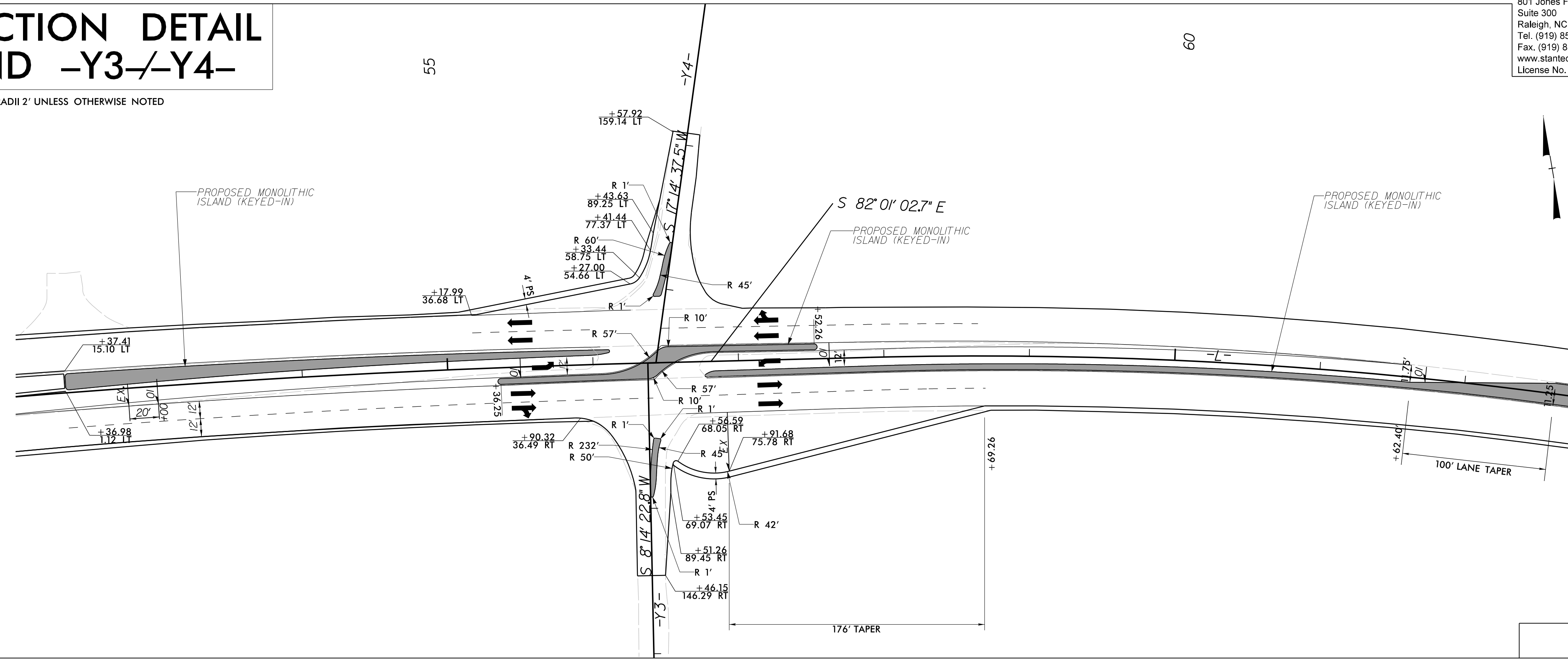




PROJECT REFERENCE NO. <i>W5601EV</i>	SHEET NO. <i>2B-2</i>
R/W SHEET NO.	ROADWAY DESIGN ENGINEER

# INTERSECTION DETAIL -L- AND -Y3-/-Y4-

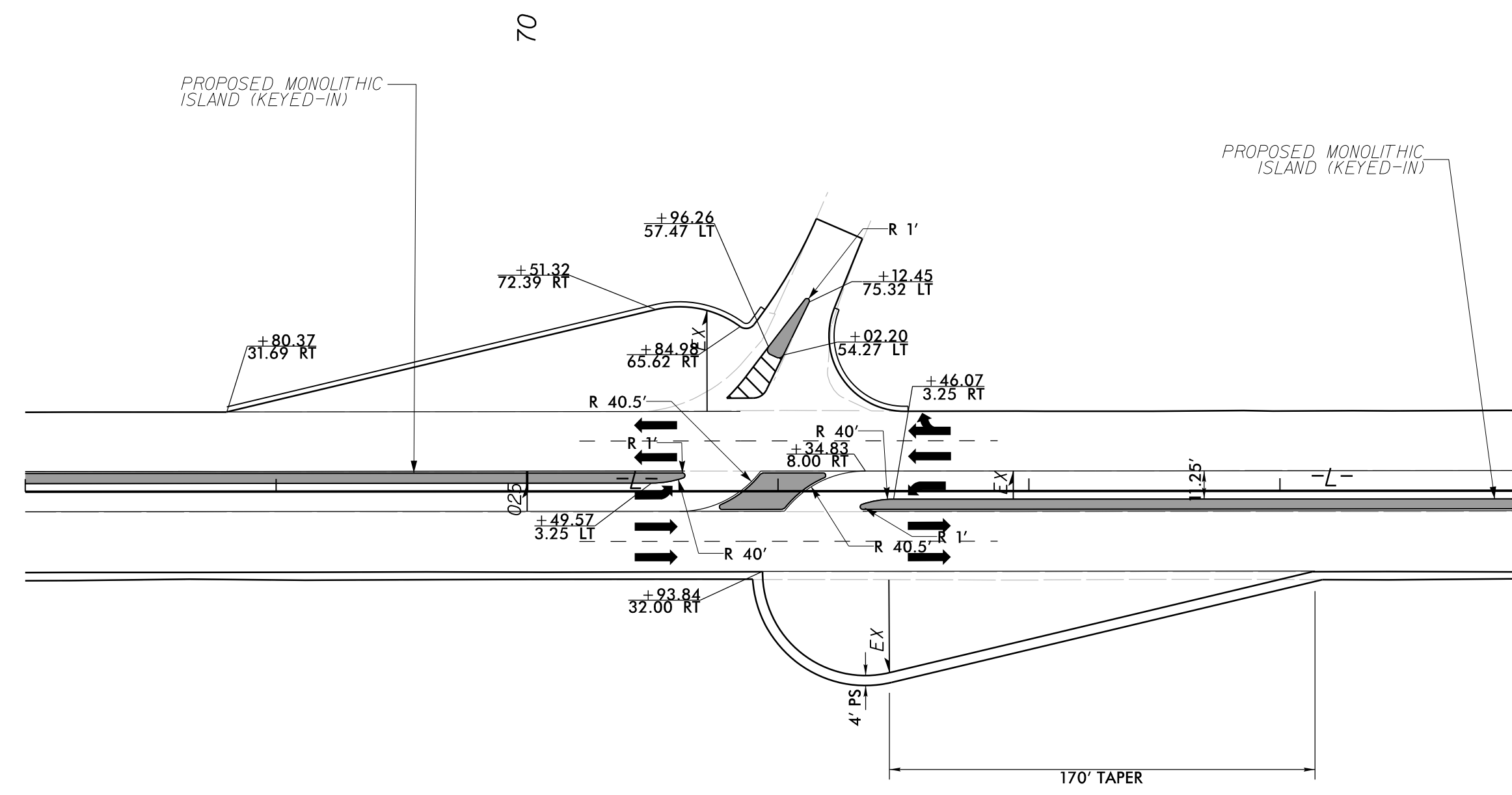
NOTE: ALL RADII 2' UNLESS OTHERWISE NOTED



SEE SHEET 7 FOR -L- PLAN

# INTERSECTION DETAIL -L- STA. 68+00-74+00

NOTE: ALL RADII 2' UNLESS OTHERWISE NOTED



SEE SHEET 8 FOR -L- PLAN

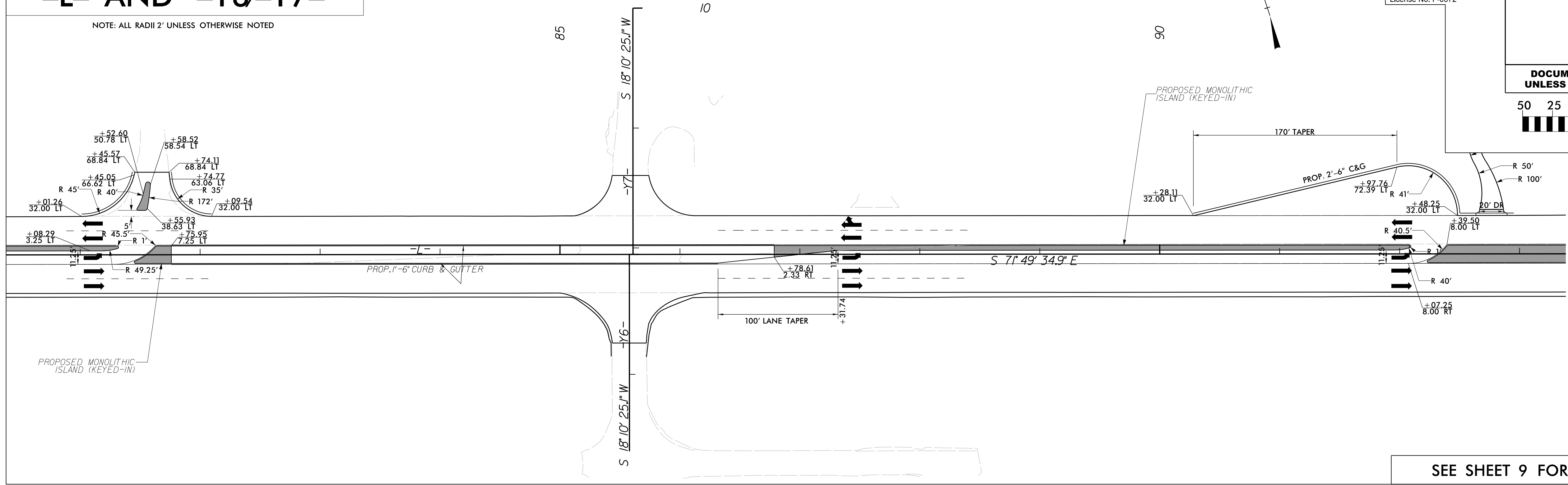
REVISIONS

PROJECT REFERENCE NO. W5601EV	SHEET NO. 2B-3
R/W SHEET NO.	ROADWAY DESIGN ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



# INTERSECTION DETAIL -L- AND -Y6/-Y7-

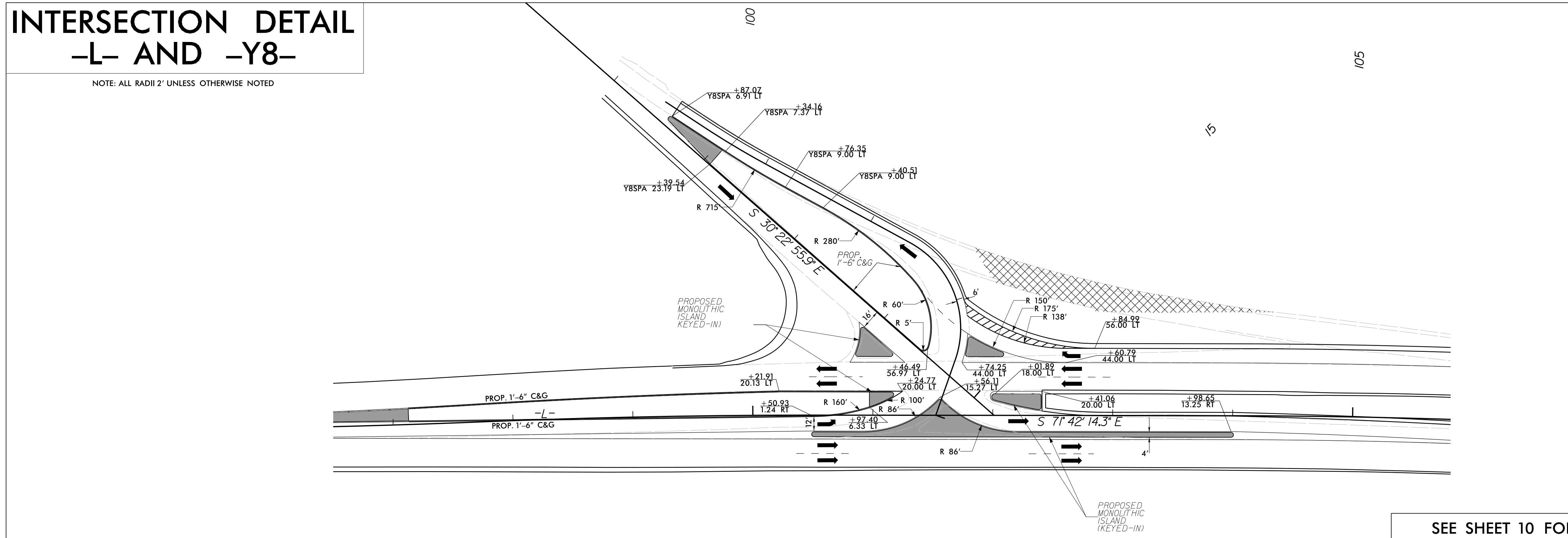
NOTE: ALL RADII 2' UNLESS OTHERWISE NOTED



SEE SHEET 9 FOR -L- PLAN

# INTERSECTION DETAIL -L- AND -Y8-

NOTE: ALL RADII 2' UNLESS OTHERWISE NOTED

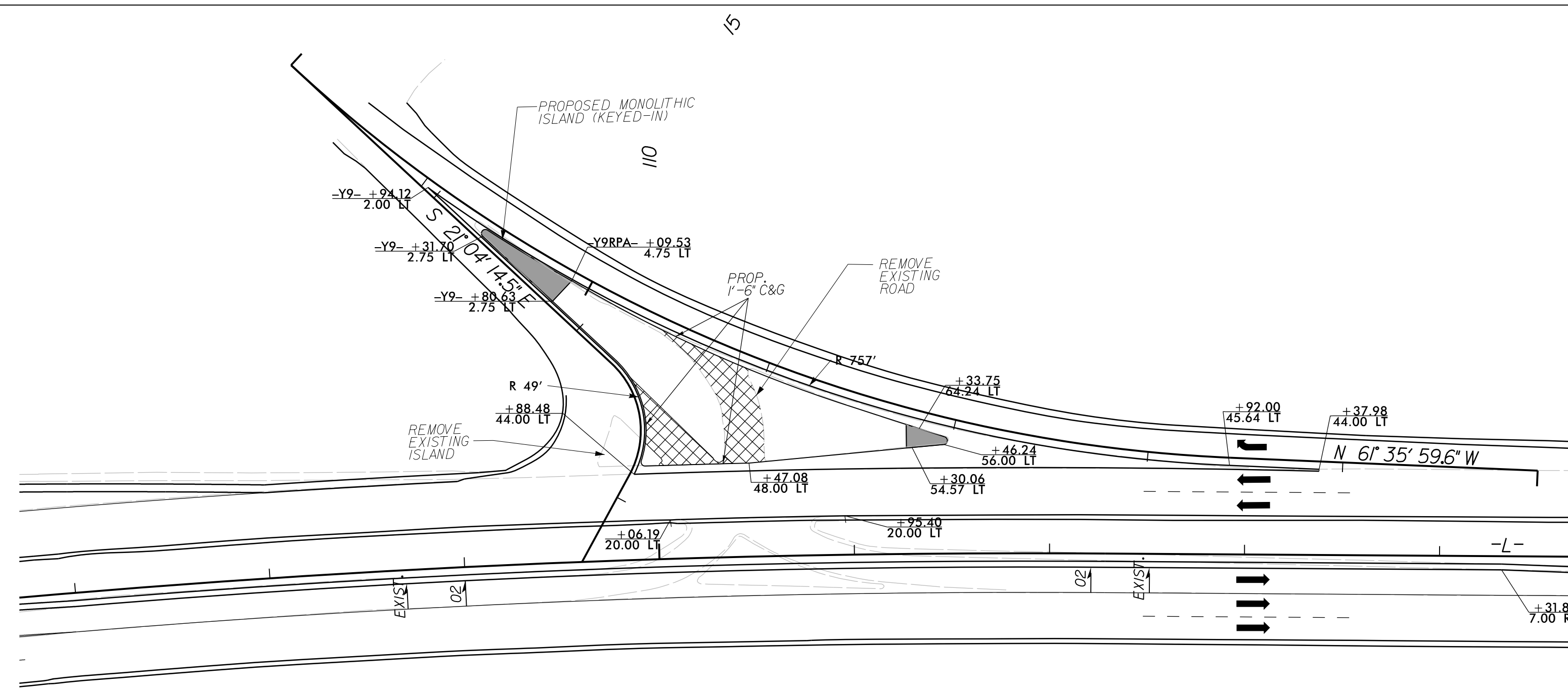


SEE SHEET 10 FOR -L- PLAN

REVISIONS

PROJECT REFERENCE NO. <i>W5601EV</i>	SHEET NO. <i>2B-4</i>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

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



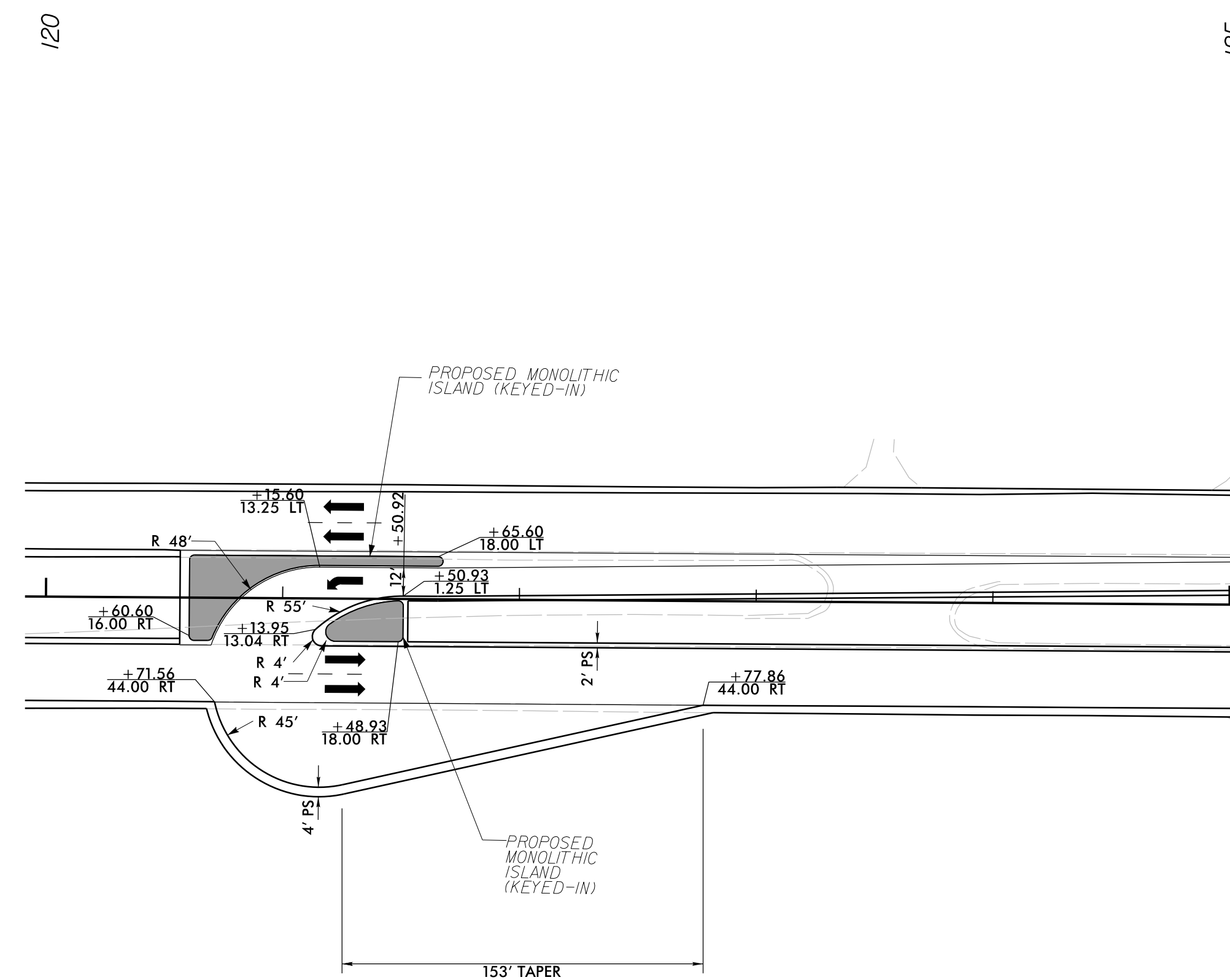
NOTE: ALL RADII 2' UNLESS OTHERWISE NOTED

# INTERSECTION DETAIL -L- AND -Y9-

SEE SHEET 11 FOR -L- PLAN

# INTERSECTION DETAIL -L- STA 120+00-125+00

NOTE: ALL RADII 2' UNLESS OTHERWISE NOTED



SEE SHEET 12 FOR -L- PLAN

REVISIONS



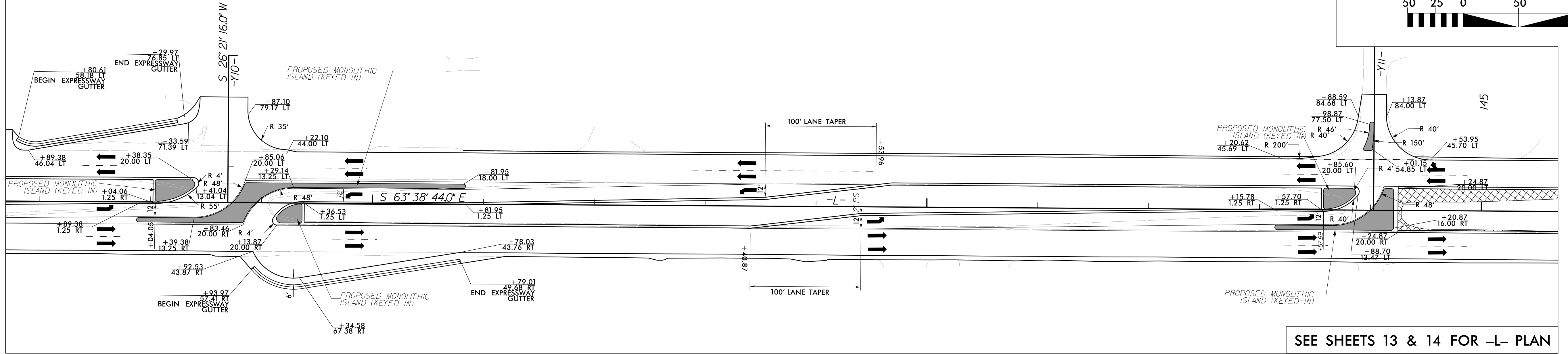
PROJECT REFERENCE NO. W5601EV	SHEET NO. 2B-5
R/W SHEET NO.	ROADWAY DESIGN ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



# INTERSECTION DETAIL

## -L- AND -Y10- -L- AND -Y11-

NOTE: ALL RADII 2' UNLESS OTHERWISE NOTED

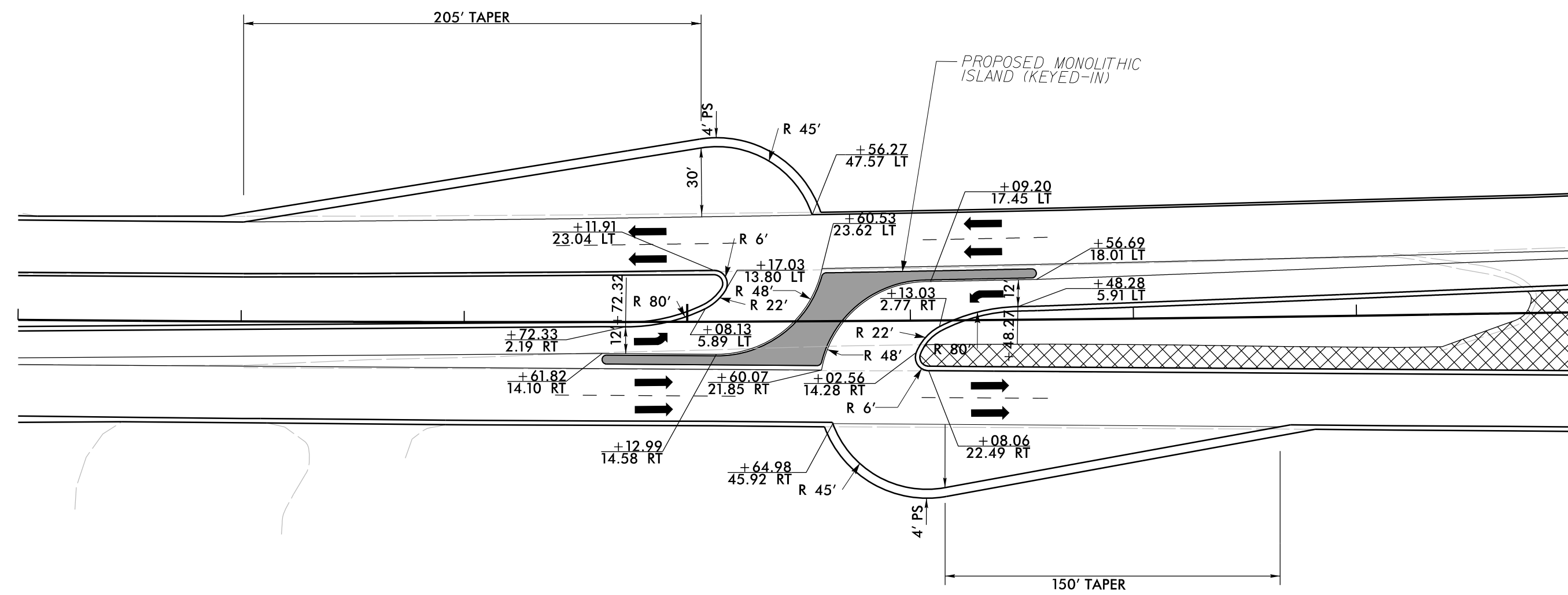


SEE SHEETS 13 & 14 FOR -L- PLAN

# INTERSECTION DETAIL

## -L- STA 152+00-159+00

NOTE: ALL RADII 2' UNLESS OTHERWISE NOTED



SEE SHEET 15 FOR -L- PLAN

REVISIONS

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

ENGLISH DETAIL DRAWING FOR  
**CONCRETE ENDWALL FOR SINGLE AND  
 DOUBLE PIPE CULVERTS**  
 15" THRU 48" PIPE

SHEET 2 OF 2  
**838D03**

GENERAL NOTES:  
 ALL CORNERS TO BE CHAMFERED 1".  
 \* THE CONTRACTOR WILL BE REQUIRED TO PLACE 2 - #6 BARS "Y" IN THE TOP OF ALL ENDWALLS FOR PIPE CULVERTS 42" AND OVER WITH A MINIMUM OF 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL.  
 FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.  
 WALL THICKNESS (T) SHOWN IS NOT TO BE INTERPRETED TO MEAN THE THICKNESS ACCEPTABLE, BUT ARE USED ONLY IN COMPUTING ENDWALL QUANTITIES.  
 IF CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE, BAR X (DOWELS SHALL BE PLACED IN THE BASE AS SHOWN ON PLANS. SPACING OF BARS TO BE APPROXIMATELY 12" CENTER UNLESS ENGINEER DIRECTS OTHERWISE.  
 WHEN CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE AND POURS BASE SEPARATELY, THE TOP BASE SHALL BE LEFT ROUGH.  
 WHEN SKEW ANGLE OF PIPE IS OVER 45° USE G-1 DIMENSION FOR 45° PLUS 6" FOR EACH 5° OVER 45°. G2 DIMENSION WILL BE THE NEW DIMENSION DIVIDED BY THE COSINE OF THE ANGLE OF PIPE SKEW.  
 CLASS "B" CONCRETE SHALL BE USED.

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

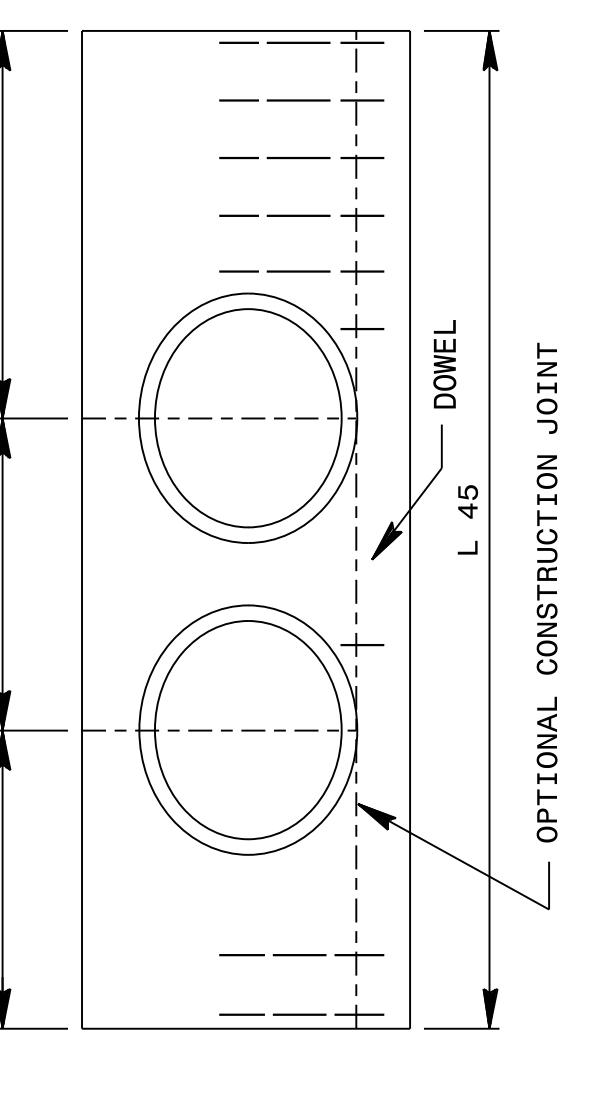
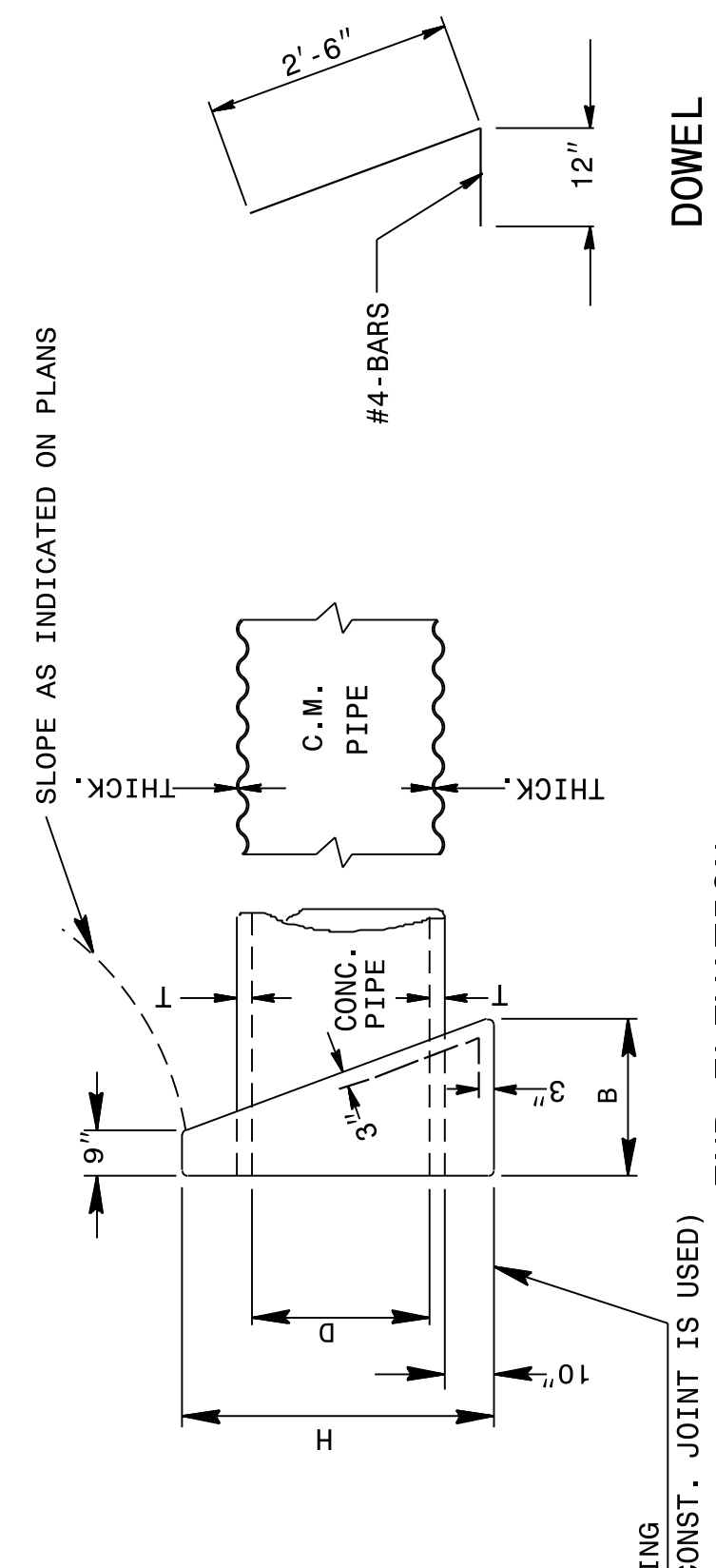
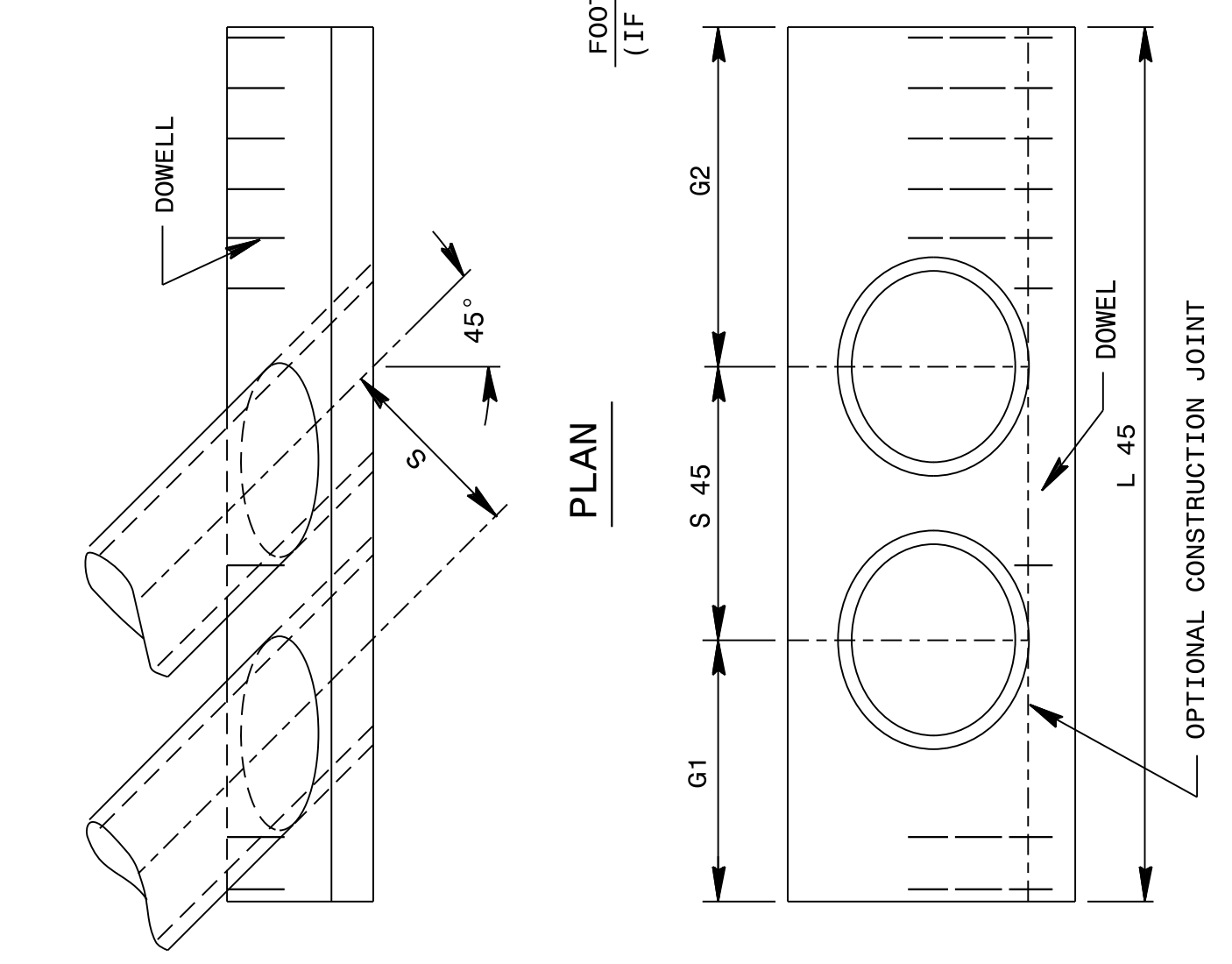
ENGLISH DETAIL DRAWING FOR  
**DOUBLE PIPE CULVERTS**  
 15" THRU 48" PIPE

SHEET 2 OF 2  
**838D03**

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

ENGLISH DETAIL DRAWING FOR  
**CONCRETE ENDWALL FOR SINGLE AND  
 DOUBLE PIPE CULVERTS**  
 15" THRU 48" PIPE 45° OR 135° SKEW

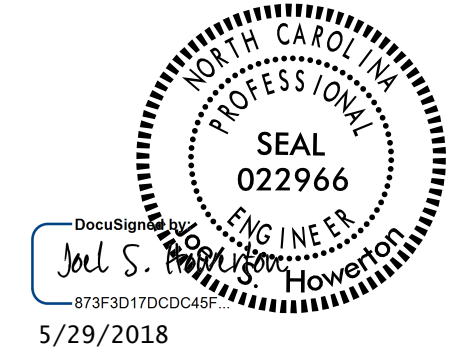
SHEET 1 OF 2  
**838D03**



PIPE DIA.	SINGLE PIPE										DOUBLE PIPE											
	LOC.	DIA.	BARS	QTY.	S	G1	G2	L	H	T	LOC.	DIA.	BARS	QTY.	S	G1	G2	L	H	T		
15"	15"	18"	2	2	2	2	2	2	2	2	15"	18"	24"	2	2	2	2	2	2	2	2	
24"	24"	30"	2	2	2	2	2	2	2	2	24"	30"	2	2	2	2	2	2	2	2	2	
30"	30"	36"	2	2	2	2	2	2	2	2	30"	36"	2	2	2	2	2	2	2	2	2	
42"	42"	48"	2	2	2	2	2	2	2	2	42"	48"	2	2	2	2	2	2	2	2	2	2
TOT. LBS.	16	16	19	21	26	73	81	19	19	21	26	30	96	117								

COMMON DIMS.	USING CONCRETE PIPE										USING CORRUGATED METAL PIPE												
	D	H	B	T	G1	G2	L	45	CU.YD.	H	B	G1	G2	L	30	CU.YD.	G1	G2	S	45	L	45	CU.YD.
15"	3'-4"	1'-8"	1'-10"	2"	3'-2"	4'-6"	7'-8"	1'-18"	3'-21/4"	9'-11"	1'-23/4"	3'-0"	1'-6"	2'-6"	3'-6"	6'-0"	0.626	2'-6"	3'-6"	6'-0"	2'-11"	3'-0"	0.977
24"	4'-2"	2'-11"	2 1/2"	2 1/2"	4'-0"	5'-8"	9'-8"	1'-18"	3'-21/4"	11'-4"	1'-582"	3'-3"	1'-8"	2'-11"	4'-2"	7'-1"	0.916	2'-11"	4'-2"	7'-1"	3'-7"	4'-9"	1.335
30"	4'-9"	2'-5"	2 3/4"	4'-7"	6'-6"	11'-1"	12'-509"	4'-7"	6'-6"	11'-1"	2'-509"	4'-3"	2'-2"	4'-5"	6'-3"	10'-8"	2.066	4'-5"	6'-3"	10'-8"	3'-10"	5'-5"	1.927
36"	5'-3"	2'-8"	3"	5'-6"	7'-9"	13'-3"	3.533	5'-6"	7'-9"	13'-3"	3.533	5'-6"	5'-2"	7'-4"	12'-6"	2.885	5'-2"	7'-4"	12'-6"	6'-4"	8'-1"	2.927	
42"	5'-10"	2'-11"	3 1/2"	6'-4"	8'-11"	15'-3"	4.772	6'-4"	8'-11"	15'-3"	4.772	6'-4"	5'-2"	7'-4"	12'-6"	3.856	5'-2"	7'-4"	12'-6"	6'-4"	8'-1"	5.442	
48"	6'-5"	3'-3"	4"	7'-2"	10'-2"	17'-4"	6.432	7'-2"	10'-2"	17'-4"	6.432	7'-2"	5'-9"	9'-5"	16'-1"	5.052	5'-9"	9'-5"	16'-1"	6'-0"	8'-5"	7.142	

\*SEE SHEET 2



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

**SEE PLATE FOR TITLE**

ORIGINAL BY: STD.NO.838.01 DATE: 4-17-99  
 MODIFIED BY: T.S. SPELL DATE: 12-10-08  
 CHECKED BY: DATE:  
 FILE SPEC.: s:user/details/metric/stand/838d02s1.dgn

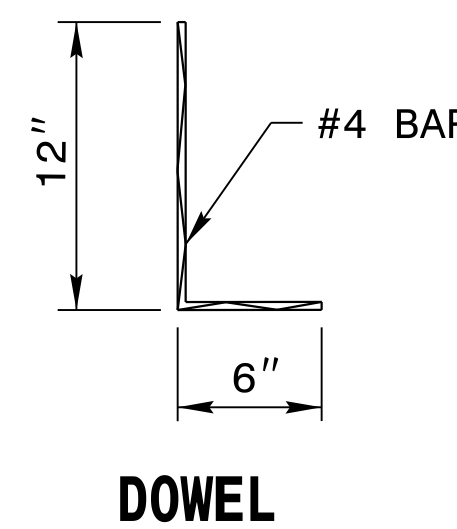
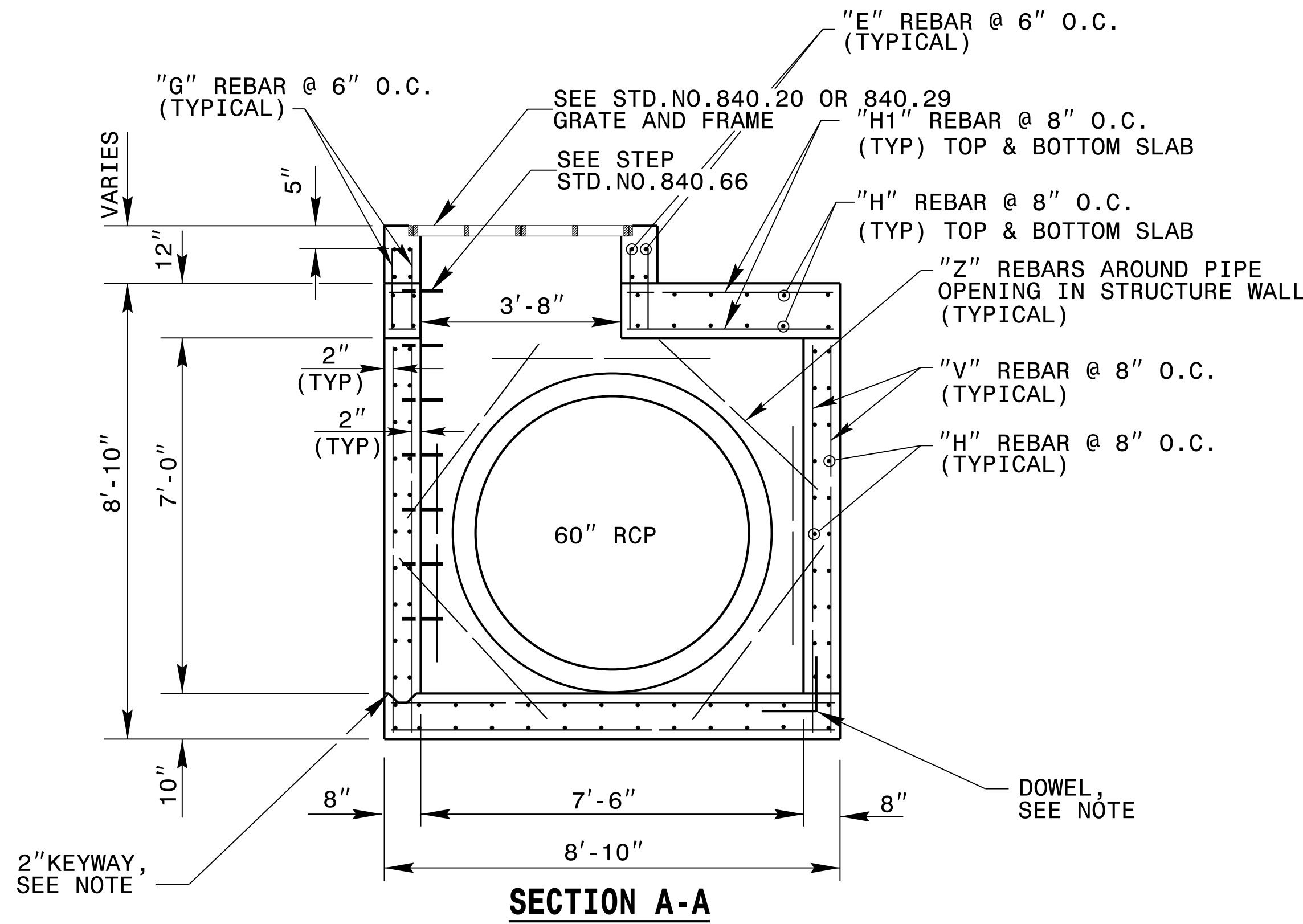
DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED





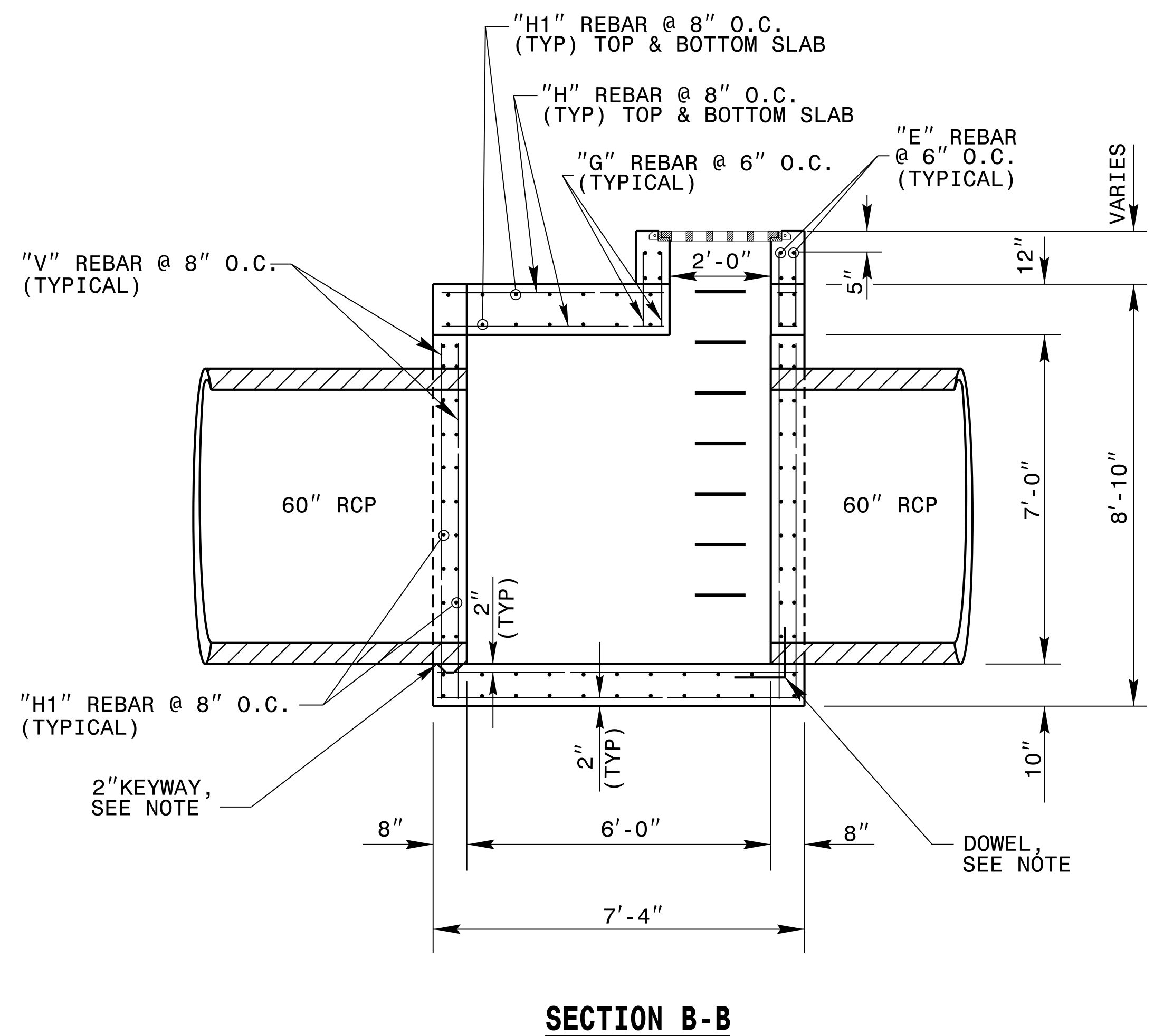
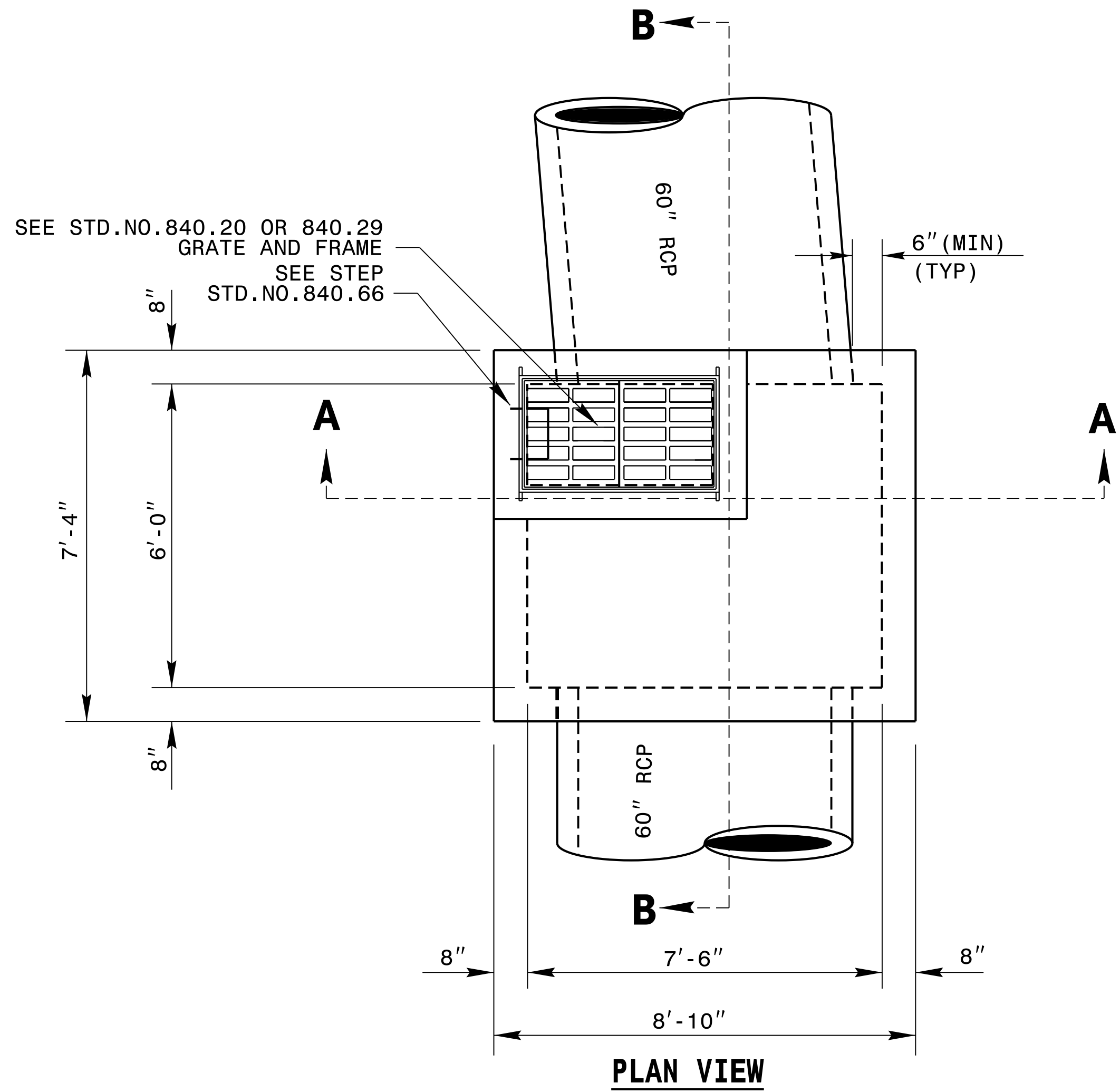




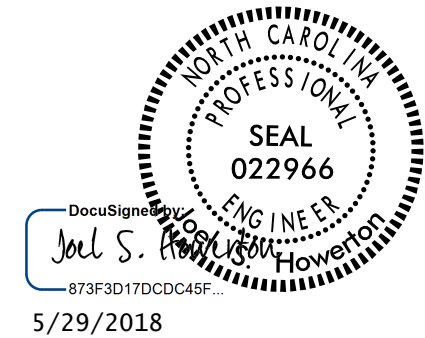


**GENERAL NOTES:**  
 USE CLASS "AA" CONCRETE THROUGHOUT.  
 PROVIDE ALL JUNCTION BOXES OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.  
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.  
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.  
 REFERENCE STD. DWG. 840.25 FOR FRAME ANCHORAGE.  
 CHAMFER ALL EXPOSED CORNERS 1".  
 2" MINIMUM CONCRETE COVERAGE ON ALL REBAR.  
 HEIGHT DIMENSIONS MAY BE ADJUSTED DOWN FOR SMALLER PIPES AS DIRECTED BY THE ENGINEER.

BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	WEIGHT
H	92	#5	7'-0"	672
H1	84	#5	8'-6"	745
V	92	#5	7'-6"	720
E	8	#5	4'-8"	39
F	8	#5	3'-0"	25
G	42	#5	1'-8"	73
Z	14	#5	4'-0"	59
TOTAL REINF. STEEL (LBS.)				2333
TOTAL CL. "AA" CONC. (CU.YDS.)				9.9



\* NO DEDUCTION HAS BEEN MADE FOR PIPES



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

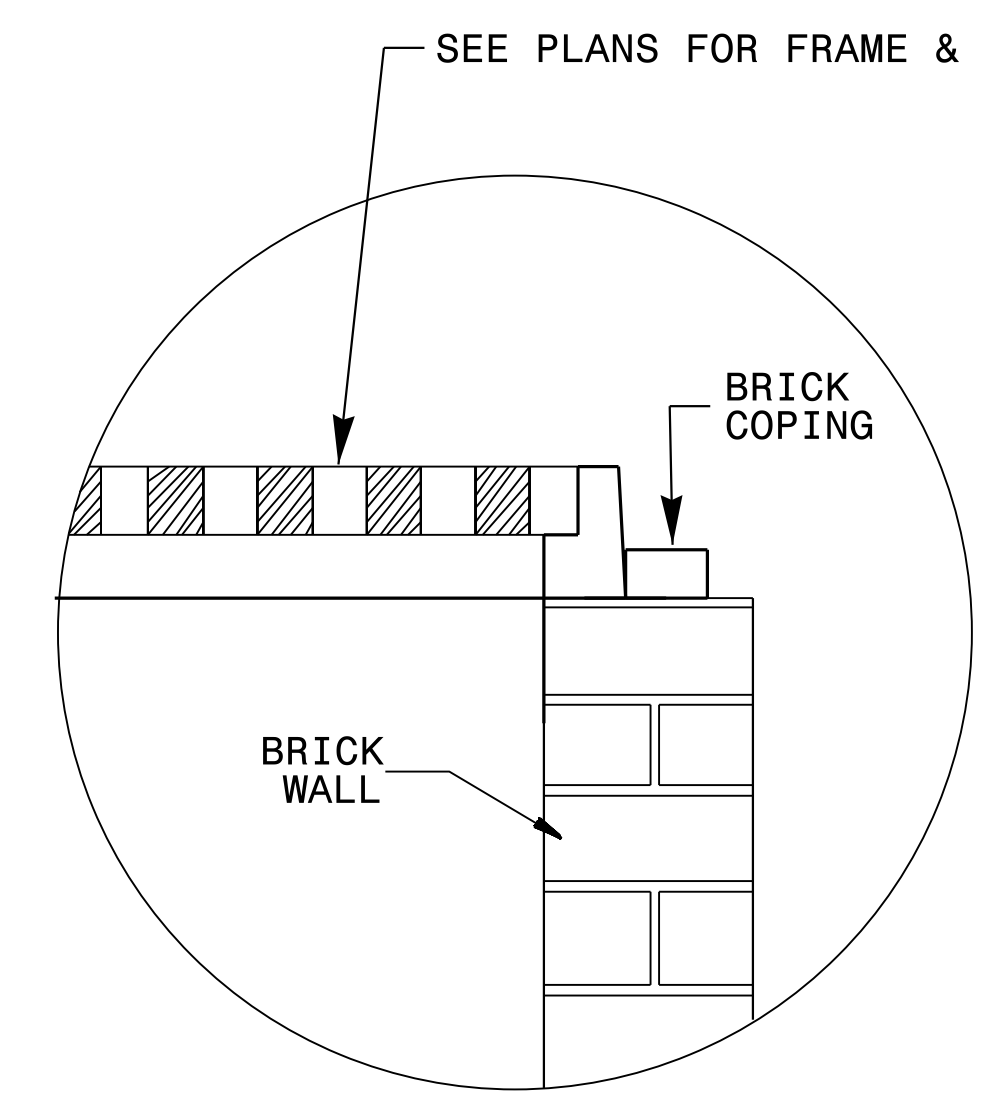
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ORIGINAL BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 MODIFIED BY: kkempf DATE: 11/08/17  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC.: detail/nbritt/english/hydro/66\_tbjb.dgn

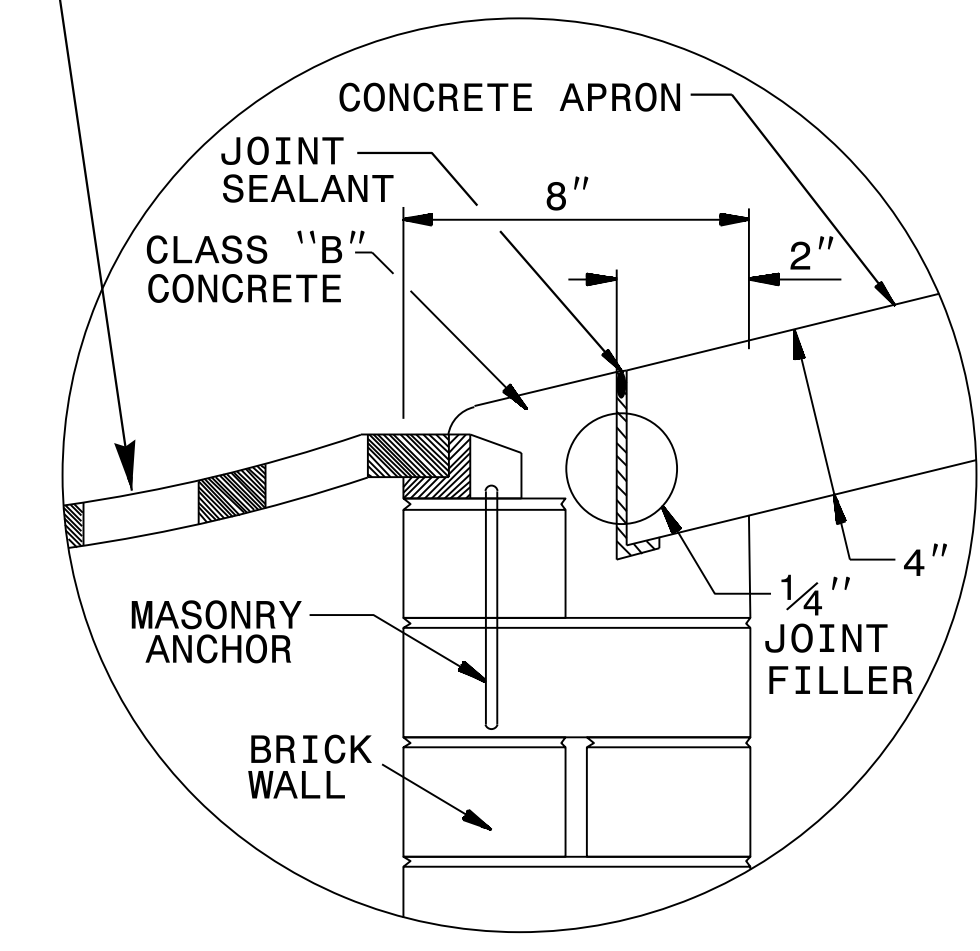
DRAWING NOT TO SCALE

25-MAY-2018 09:28  
 S:\Contracts\Special Details\english\hydro\66\_tbjb.dgn  
 JHowerton AT CSD-292595

5/14/99



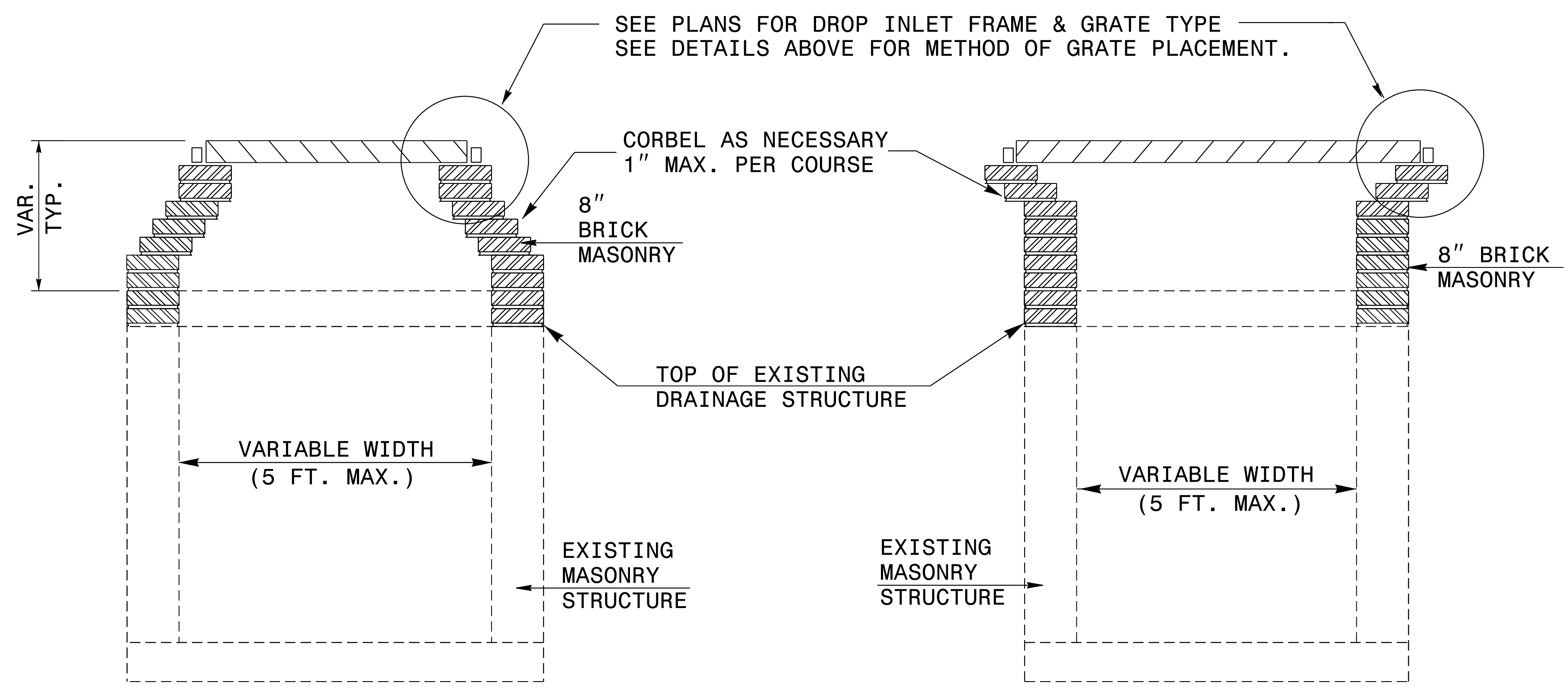
**GRATE PLACEMENT DETAIL**  
FOR DROP INLETS



**GRATE PLACEMENT DETAIL**  
FOR GRATED DROP INLETS

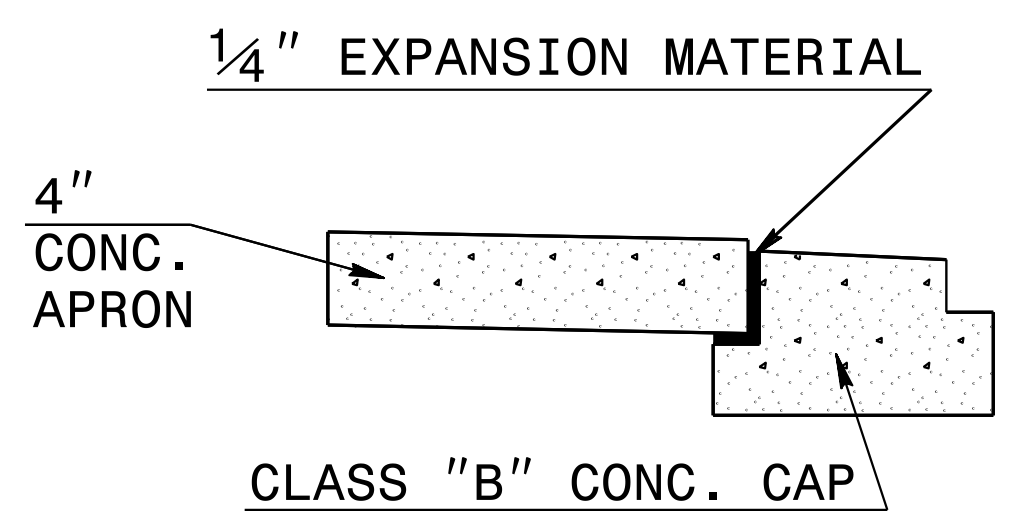
**GENERAL NOTES:**

- CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.
- USE CLASS B CONCRETE.
- THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.
- JUMBO CONCRETE BRICK WILL BE PERMITTED. 4" CONCRETE BRICK OR 8" SOLID CONCRETE BLOCK ARE REQUIRED FOR DRAINAGE STRUCTURE.
- INCLUDE 18" CONCRETE APRON IN UNIT PRICE BID PER EACH, CONVERT EXISTING CATCH BASIN TO DROP INLET.
- SPECIAL DESIGN IS REQUIRED FOR USE UNDER PAVEMENT.
- CONFIRM DIMENSIONS ON EACH INDIVIDUAL FRAME & GRATE PROPOSAL.
- SEE STD. DRAWING 840.25 FOR MASONRY ANCHORAGE.

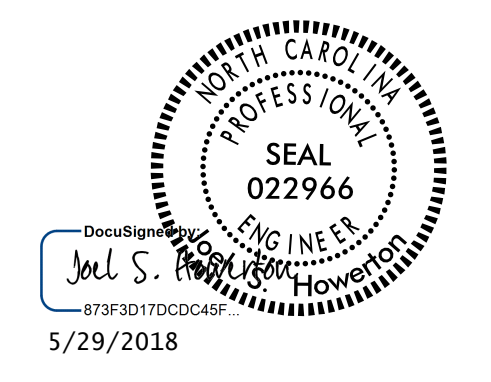


**TYPICAL SECTION**

**TYPICAL SECTION**



**EXPANSION JOINT DETAIL**



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

**DETAIL TO CONVERT EXISTING CATCH BASIN OR JUNCTION BOX TO DI OR 2-GI**

ORIGINAL BY: T.S.S. DATE: NOV. 1997  
 MODIFIED BY: T.S.S. DATE: FEB. 2000  
 CHECKED BY: DATE:  
 FILE SPEC.: s:\usr\details\stand\cbtod102.dgn

26-JUN-2017 10:39 S:\Contracts\Special Details\Howerton\Convert CB or JB to DI.dgn Howerton AT USD-292595

**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

SUMMARY OF EARTHWORK (IN CUBIC YARDS)						
Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
<b>-L- LT</b>						
20+00.00	49+50.00	356		261	0	95
50+00.00	79+50.00	381		33	0	348
80+00.00	109+50.00	1,029		30	0	999
110+00.00	139+50.00	109		73	0	36
140+00.00	162+50.00	481		619	138	0
<b>SUBTOTALS:</b>		2,356		1,016	138	1,478
<b>-L- MED</b>						
20+00.00	49+50.00	3,183		1,020		2,163
50+00.00	79+50.00	2,938		0		2,938
80+00.00	109+50.00	2,375		89		2,286
110+00.00	139+50.00	2,654		396		2,258
140+00.00	162+50.00	2,742		464		2,278
<b>SUBTOTALS:</b>		13,892		1,969	0	11,923
<b>-L- RT</b>						
20+00.00	49+50.00	833		563		271
50+00.00	79+50.00	1,546		780		766
80+00.00	109+50.00	0		0		0
110+00.00	139+50.00	629	50	401		278
140+00.00	162+50.00	435		90		345
<b>SUBTOTALS:</b>		3,443	50	1,834	0	1,659
<b>TOTAL</b>		19,691	50	4,819	138	15,060
LOSS DUE TO CLEARING & GRUBBING		1300		0	0	1300
ADDITIONAL UNDERCUT			3700	4625	4625	3700
WASTE IN LIEU OF BORROW					-4763	-4763
<b>PROJECT TOTALS:</b>		20,991	3,750	9,444	0	15,297
<b>GRAND TOTALS:</b>		20,991	3,750	9,444	0	15,297
<b>SAY:</b>		21,500	3,800			

EST. SHOULDER BORROW: 1,930 CY  
 EST. CONTINGENCY SHALLOW UNDERCUT: 500 CY

PAVEMENT STRUCTURE VOLUME: 11,881 CY

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE STANTEC DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

PAVEMENT REMOVAL SUMMARY IN SQUARE YARDS				
SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL
-L-	23+50	30+30	MED.	1051
-L-	24+30	26+30	LT	56
-L-	26+82	28+53	RT	70
-L-	38+05	45+86	MED.	1,044
-L-	41+44	43+38	RT	54
-L-	46+43	48+76	LT	66
-L-	48+43	48+94	LT	88
-L-	53+77	59+34	MED.	487
-L-	55+10	56+40	LT	44
-L-	56+65	58+70	RT	64
-L-	70+90	73+14	RT	78
-L-	74+88	78+30	MED.	273
-L-	81+18	82+02	LT	166
-L-	82+84	88+45	MED.	418
-L-	97+78	102+41	MED.	574
-L-	100+30	109+00	LT	1,253
-L-	108+99	114+28	MED.	885
-L-	109+95	110+50	LT	226
-L-	117+40	118+00	MED.	41
-L-	119+52	127+76	MED.	1,151
-L-	120+68	122+78	RT	73
-L-	130+57	136+96	MED.	987
-L-	131+75	134+13	LT	165
-L-	133+92	135+79	RT	68
-L-	140+62	147+25	MED.	923
-L-	152+97	155+59	LT	49
-L-	153+56	164+57	MED.	1,703
-L-	155+62	157+65	RT	41
<b>TOTAL:</b>				12,098
<b>SAY:</b>				12,100

EXPRESSWAY GUTTER SUMMARY			
LINE	Station	Station	LENGTH
-L-	26+82.10	27+87.97	106
-L-	131+78.39	133+29.00	147
-L-	133+80.92	135+79.66	194
<b>TOTAL:</b>			447
<b>SAY:</b>			450

















COMPUTED BY: Hunsberger, W. S. DATE: 2/9/2018  
 CHECKED BY: Hamm, J. R. DATE: 2/9/2018

(4-21-15)

PROJECT NO.  
W-5601EV

SHEET NO.  
3-G1

**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**SUMMARY OF SUBSURFACE DRAINAGE**

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD	LF
				SD	
CONTINGENCY				SD	500
				<b>TOTAL LF:</b>	500

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

**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									
			<b>TOTAL CY/TONS/SY:</b>						
			ASU	18	3,500	7,000	10,000		
			AST	3					250

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.





8/17/99

MI ENGINEERING  
1011 SCHUBB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM FE NUMBER: F-0671



Stantec Consulting Services Inc.  
801 Jones Franklin Road  
Suite 300  
Raleigh, NC 27606  
Tel. (919) 851-6866  
Fax. (919) 851-7024  
www.stantec.com  
License No. F-0672

PROJECT REFERENCE NO. <b>W-5601EV</b>	SHEET NO. <b>4</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

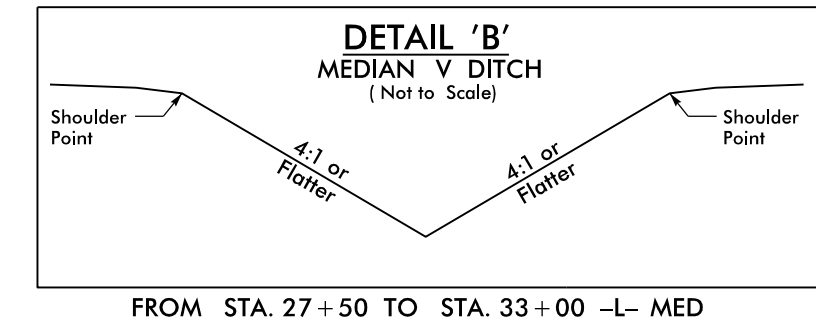
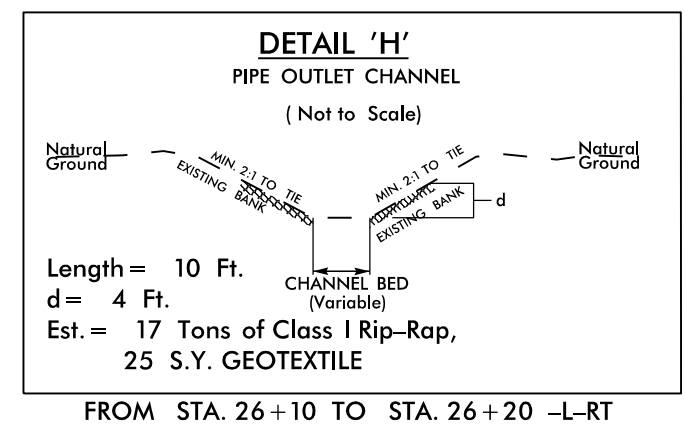
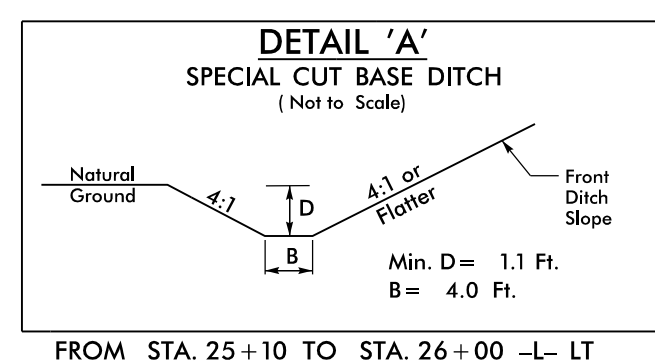
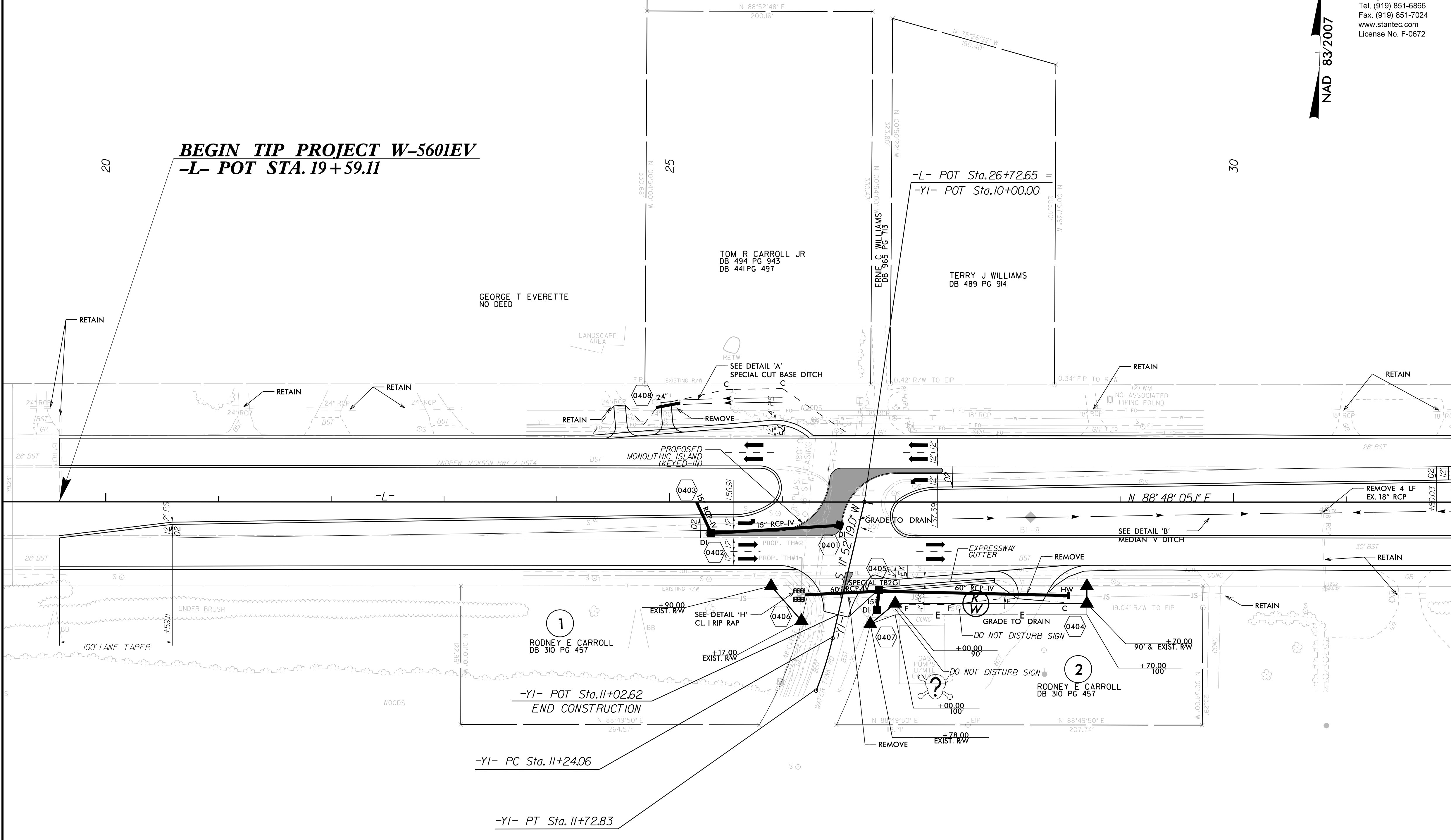
NAD 83/2007

**BEGIN TIP PROJECT W-5601EV**  
**-L- POT STA. 19+59.11**

**-L- POT Sta. 26+72.65 =**  
**-YI- POT Sta. 10+00.00**

REVISIONS

MATCHLINE -L- STA. 32+00.00 SEE SHEET 5



-YI-

PI Sta 11+48.49  
 $\Delta = 8' 53'' 54.0''$  (RT)  
 $D = 18' 14'' 49.4''$   
 $L = 48.77'$   
 $T = 24.43'$   
 $R = 314.00'$

PLACE BLOCKOUT PER RSD 904.50 SHEET 2 OF 2  
IN 2' CONCRETE ISLAND FOR SIGNS SHOWN ON  
SIGNING PLANS OR DIRECTED BY THE ENGINEER.

NOTE:  
SEE SHEET 2B-1 FOR INTERSECTION DETAIL  
SEE SHEET 16 FOR -L- PROFILE

5/29/2018  
U:\Roadway\Pro\W5601EV\_rdy\_psh04.dgn

8/17/99

MI ENGINEERING  
1011 SCHUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER - P-0671



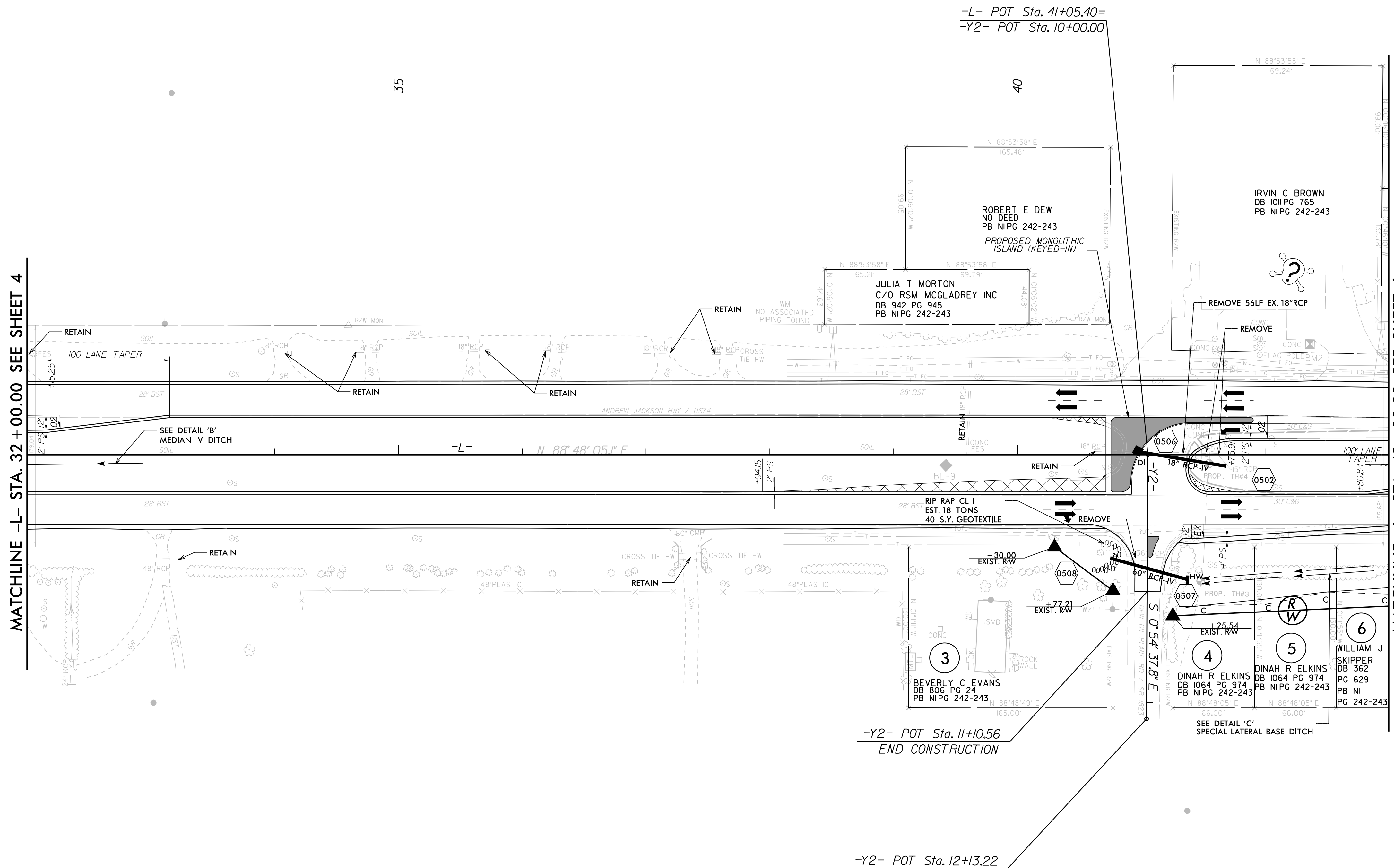
Stantec Consulting Services Inc.  
801 Jones Franklin Road  
Suite 300  
Raleigh, NC 27606  
Tel. (919) 851-6866  
Fax. (919) 851-7024  
www.stantec.com  
License No. F-0672

PROJECT REFERENCE NO. <b>W-5601EV</b>		SHEET NO. <b>5</b>
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>		

REVISIONS

MATCHLINE -L- STA. 32 + 00.00 SEE SHEET 4

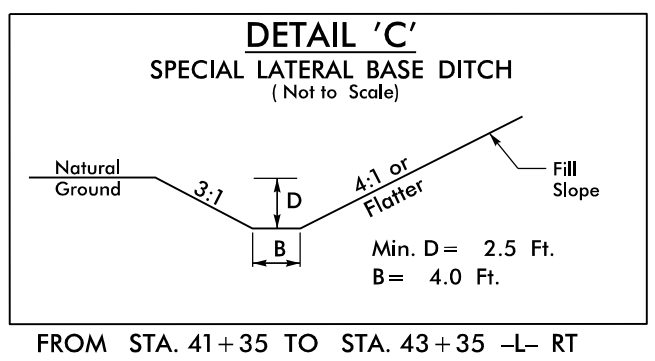
MATCHLINE -L- STA. 43 + 00.00 SEE SHEET 6



-L- POT Sta. 41+05.40=  
-Y2- POT Sta. 10+00.00

-Y2- POT Sta. 11+10.56  
END CONSTRUCTION

-Y2- POT Sta. 12+13.22



PLACE BLOCKOUT PER RSD 904.50 SHEET 2 OF 2  
IN 2' CONCRETE ISLAND FOR SIGNS SHOWN ON  
SIGNING PLANS OR DIRECTED BY THE ENGINEER.

NOTE:  
SEE SHEET 2B-1 FOR INTERSECTION DETAIL  
SEE SHEET 16 & 17 FOR -L- PROFILE

5/29/2018  
U:\Roadway\Pro\W5601EV.rdj\_psh05.dgn  
-chao



8/17/99

REVISIONS

5/29/2018  
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-chao

MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER - P-0671



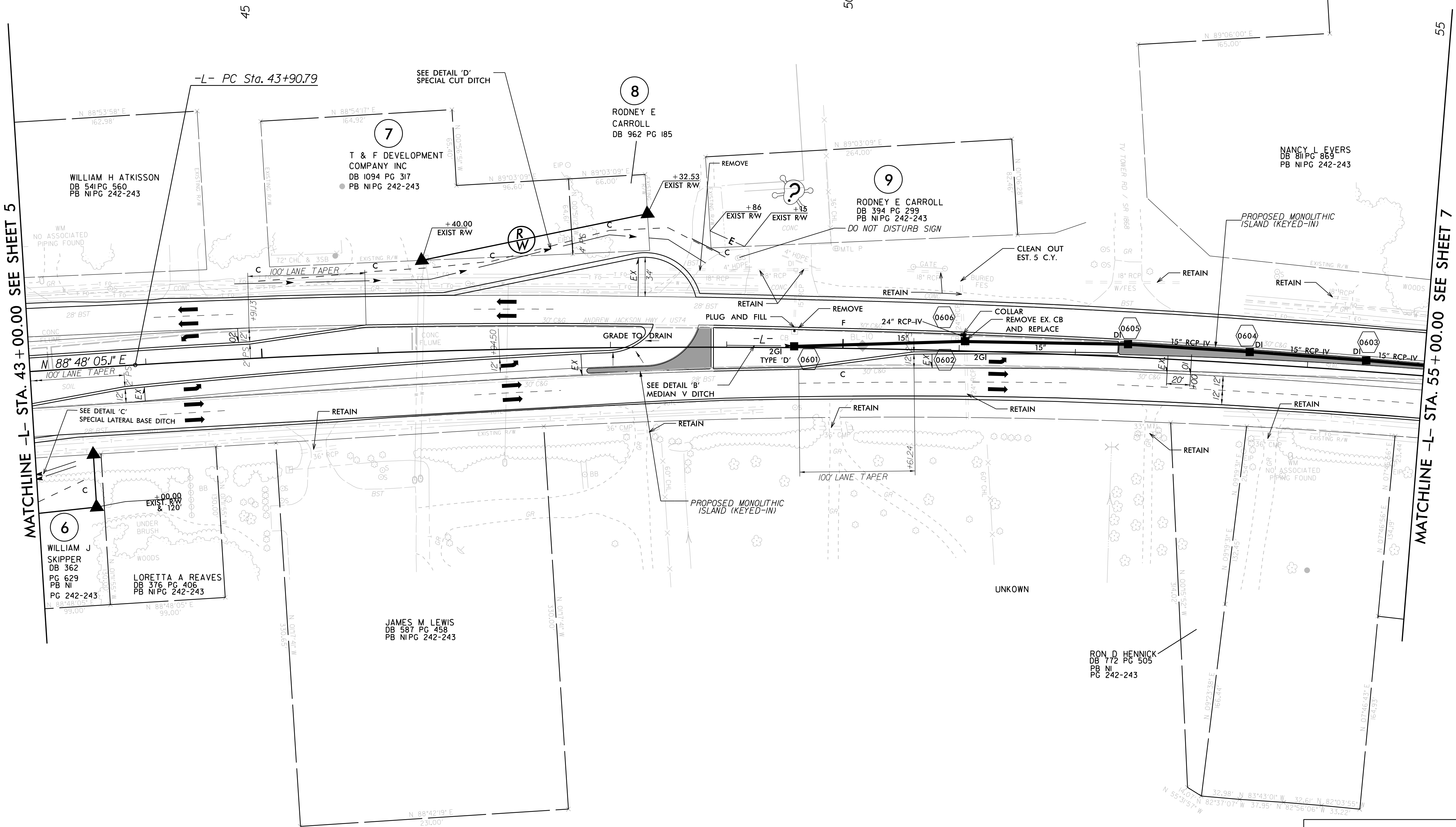
Stantec Consulting Services Inc.  
801 Jones Franklin Road  
Suite 300  
Raleigh, NC 27606  
Tel. (919) 851-6866  
Fax. (919) 851-7024  
www.stantec.com  
License No. F-0672

PROJECT REFERENCE NO. <b>W-5601EV</b>		SHEET NO. <b>6</b>	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

-L-

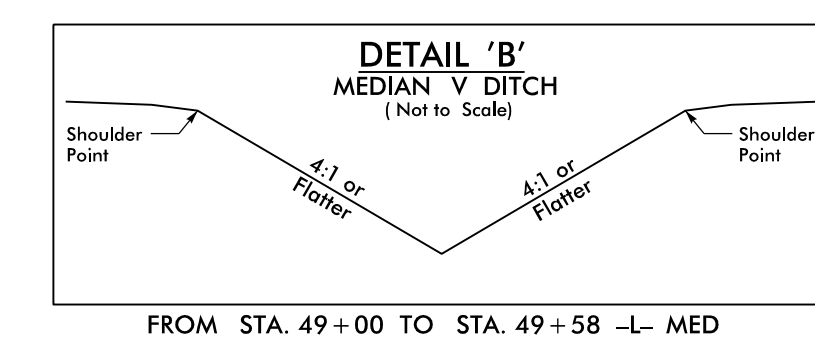
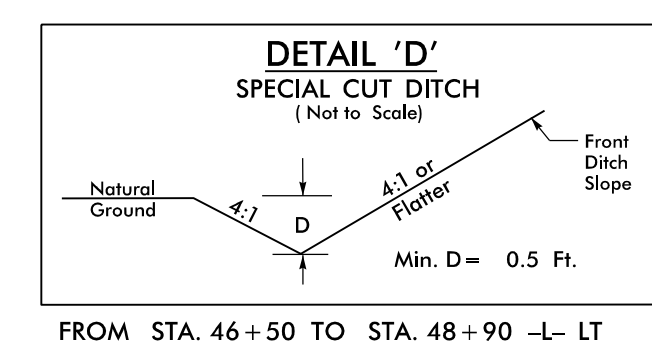
PI Sta 50+17.07  
 $\Delta = 9^{\circ}10'52.2''$  (RT)  
 $D = 0^{\circ}44'04.4''$   
 $L = 1,249.88'$   
 $T = 626.28'$   
 $R = 7,800.00'$   
 $e = \text{exist}$

NAD 83/2001



MATCHLINE -L- STA. 43+00.00 SEE SHEET 5

MATCHLINE -L- STA. 55+00.00 SEE SHEET 7



PLACE BLOCKOUT PER RSD 904.50 SHEET 2 OF 2  
IN 2' CONCRETE ISLAND FOR SIGNS SHOWN ON  
SIGNING PLANS OR DIRECTED BY THE ENGINEER.

**NOTE:**  
SEE SHEET 2B-1 FOR INTERSECTION DETAIL  
SEE SHEET 17 FOR -L- PROFILE



8/17/99

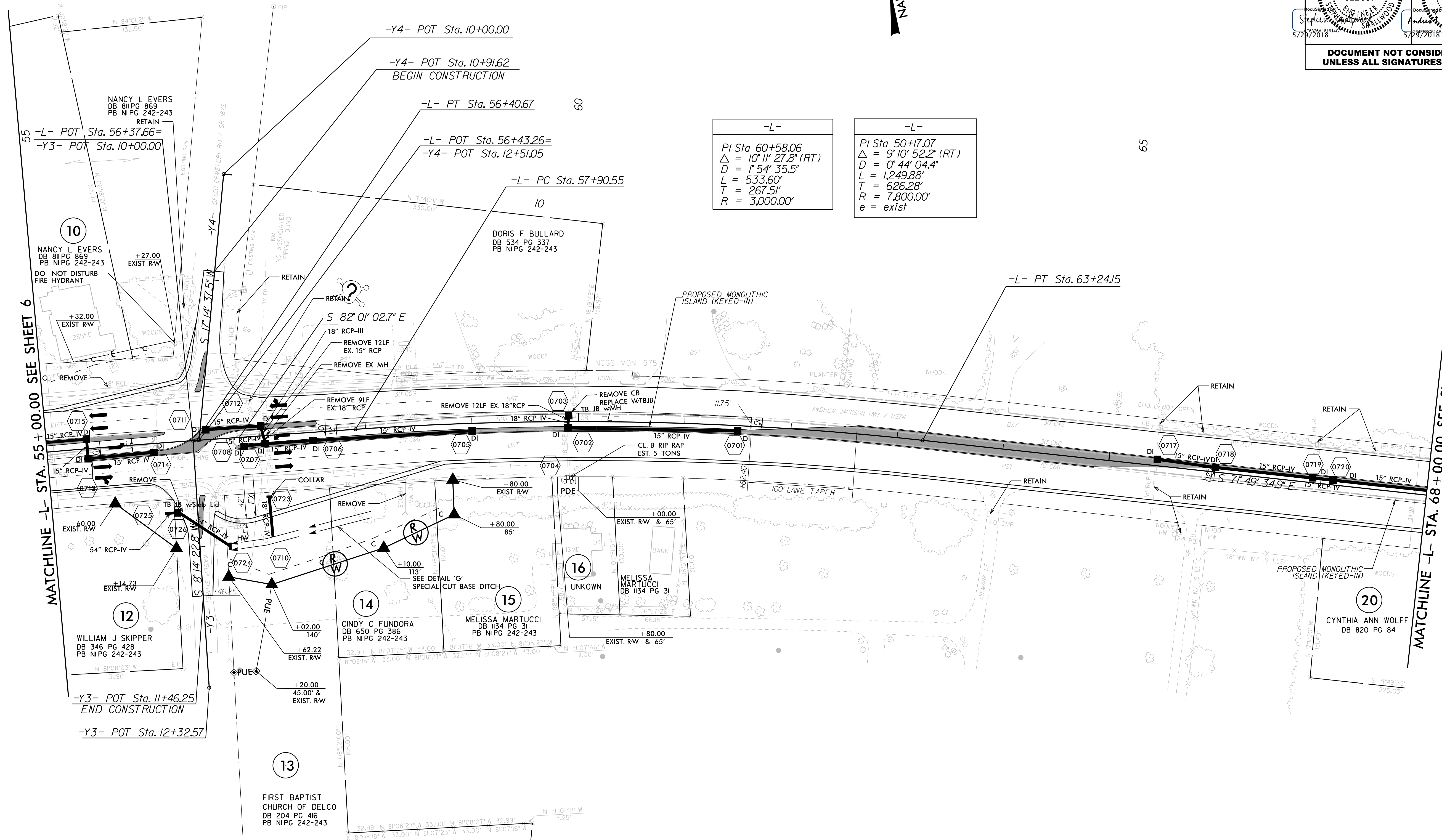
MI ENGINEERING  
1011 SCHUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER - P-0671



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801 Jones Franklin Road  
Suite 300  
Raleigh, NC 27606  
Tel. (919) 851-6866  
Fax. (919) 851-7024  
www.stantec.com  
License No. F-0672

PROJECT REFERENCE NO. <b>W-5601EV</b>		SHEET NO. <b>7</b>	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

NAD 83/2007

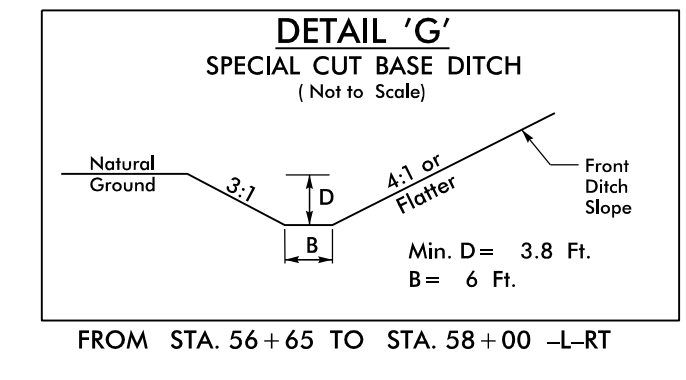


-L-	-L-
PI Sta 60+58.06 Δ = 10' 11" 27.8" (RT) D = 1' 54' 35.5" L = 533.60' T = 267.51' R = 3,000.00'	PI Sta 50+17.07 Δ = 9' 10' 52.2" (RT) D = 0' 44' 04.4" L = 1,249.88' T = 626.28' R = 7,800.00' e = exist

REVISIONS

MATCHLINE -L- STA. 55 + 00.00 SEE SHEET 6

MATCHLINE -L- STA. 68 + 00.00 SEE SHEET 8



PLACE BLOCKOUT PER RSD 904.50 SHEET 2 OF 2 IN 2' CONCRETE ISLAND FOR SIGNS SHOWN ON SIGNING PLANS OR DIRECTED BY THE ENGINEER.

NOTE:  
SEE SHEET 2B-2 FOR INTERSECTION DETAIL  
SEE SHEET 17 FOR -L- PROFILE

5/29/2018  
U:\Roadway\Proj\W5601EV.rdj\_psh07.dgn  
-chao



8/17/99

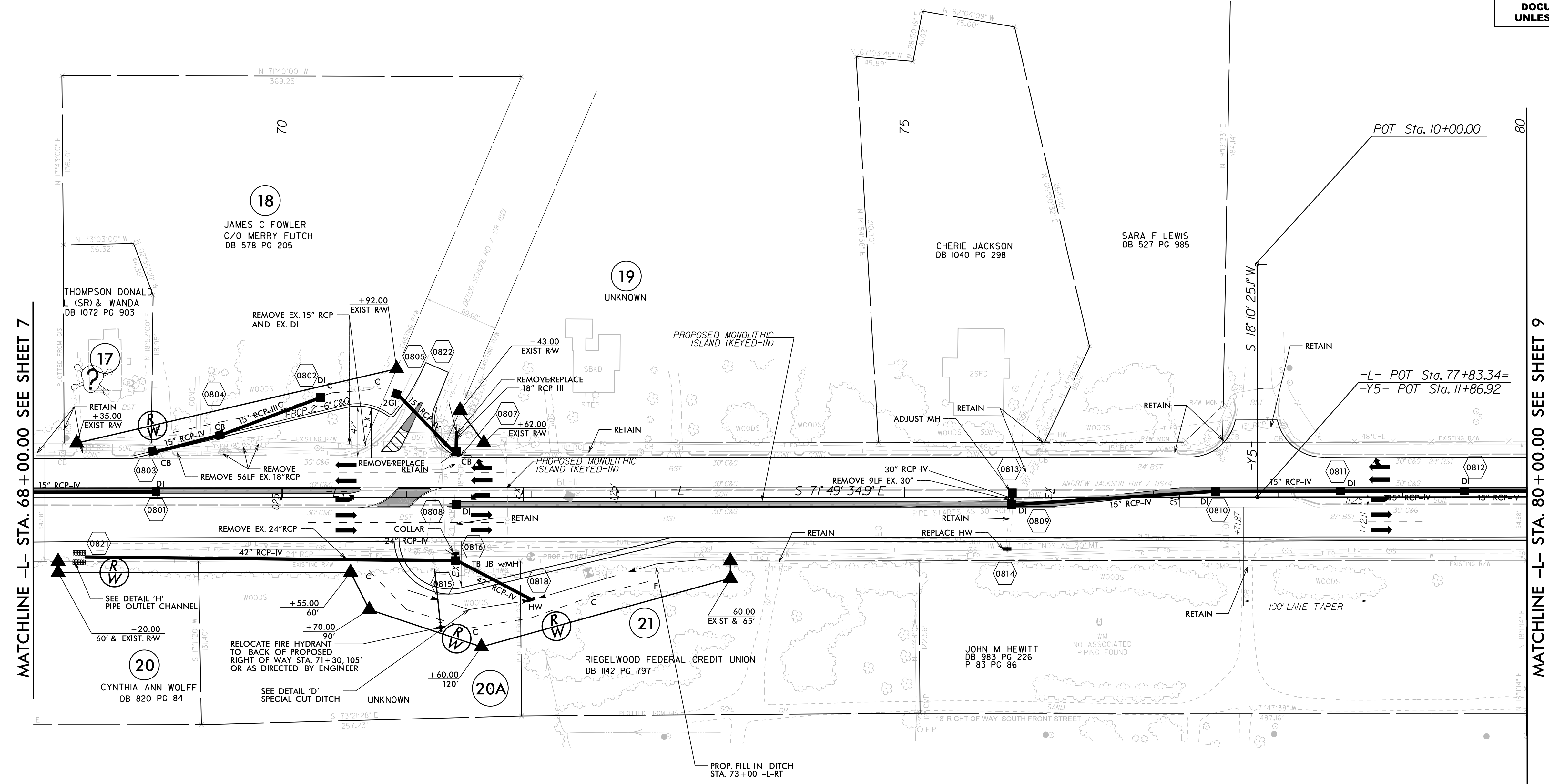


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www.stantec.com  
License No. F-0672

PROJECT REFERENCE NO. <b>W-5601EV</b>	SHEET NO. <b>8</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6866 FIRM PE NUMBER: P-0675/2 5/29/2018	MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6866 FIRM PE NUMBER: P-0675/2 5/29/2018

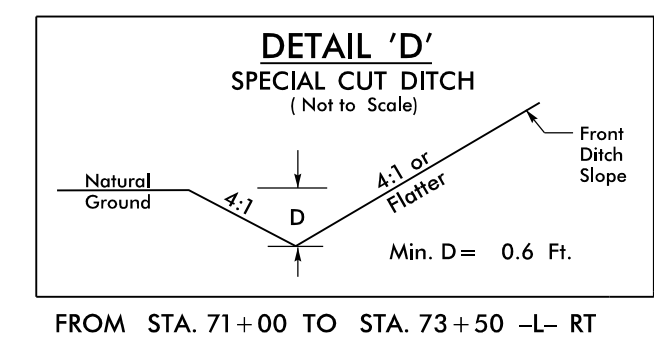
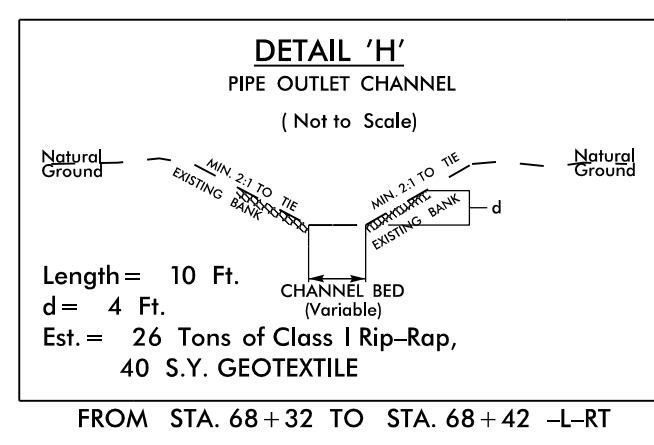
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

REVISIONS



MATCHLINE -L- STA. 68 + 00.00 SEE SHEET 7

MATCHLINE -L- STA. 80 + 00.00 SEE SHEET 9



PLACE BLOCKOUT PER RSD 904.50 SHEET 2 OF 2 IN 2' CONCRETE ISLAND FOR SIGNS SHOWN ON SIGNING PLANS OR DIRECTED BY THE ENGINEER.

NOTE:  
SEE SHEET 2B-2 FOR INTERSECTION DETAIL  
SEE SHEET 18 FOR -L- PROFILE

5/29/2018  
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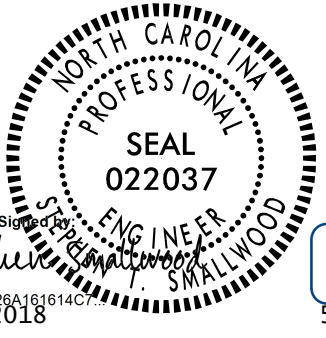
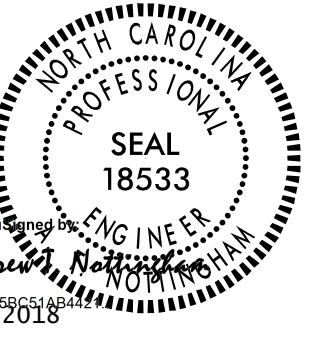


8/17/99

MI ENGINEERING  
1011 SCHAUH DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER - P-0671



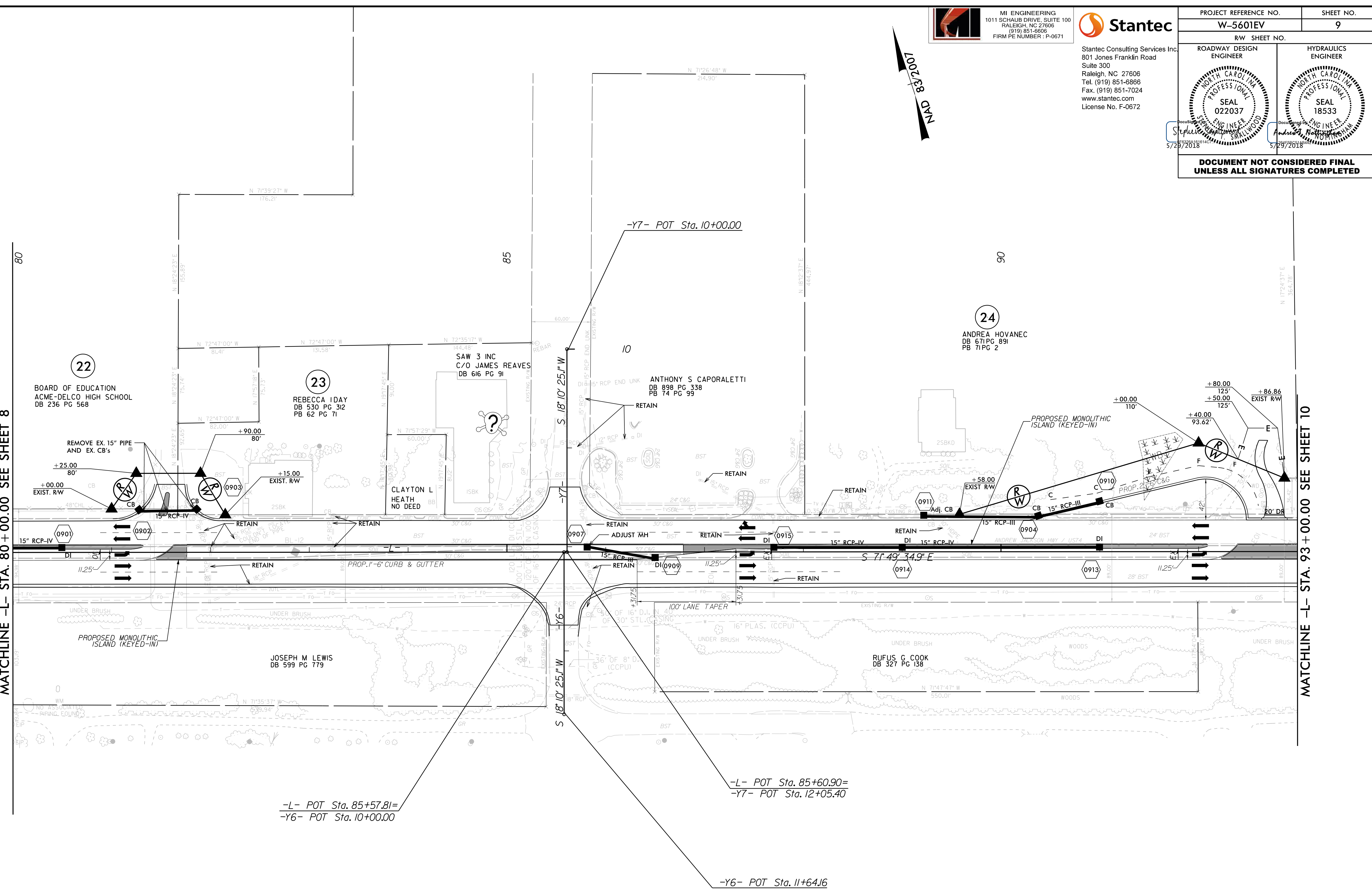
Stantec Consulting Services Inc.  
801 Jones Franklin Road  
Suite 300  
Raleigh, NC 27606  
Tel. (919) 851-6866  
Fax. (919) 851-7024  
www.stantec.com  
License No. F-0672

PROJECT REFERENCE NO. <b>W-5601EV</b>		SHEET NO. <b>9</b>
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
 SEAL 022037 5/29/2018		 SEAL 18533 5/29/2018
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>		

REVISIONS

MATCHLINE -L- STA. 80 + 00.00 SEE SHEET 8

MATCHLINE -L- STA. 93 + 00.00 SEE SHEET 10



-L- POT Sta. 85+57.81=  
-Y6- POT Sta. 10+00.00

-L- POT Sta. 85+60.90=  
-Y7- POT Sta. 12+05.40

-Y6- POT Sta. 11+64.16

PLACE BLOCKOUT PER RSD 904.50 SHEET 2 OF 2  
IN 2' CONCRETE ISLAND FOR SIGNS SHOWN ON  
SIGNING PLANS OR DIRECTED BY THE ENGINEER.

NOTE:  
SEE SHEET 2B-3 FOR INTERSECTION DETAIL  
SEE SHEET 18 FOR -L- PROFILE

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-chao



8/17/99



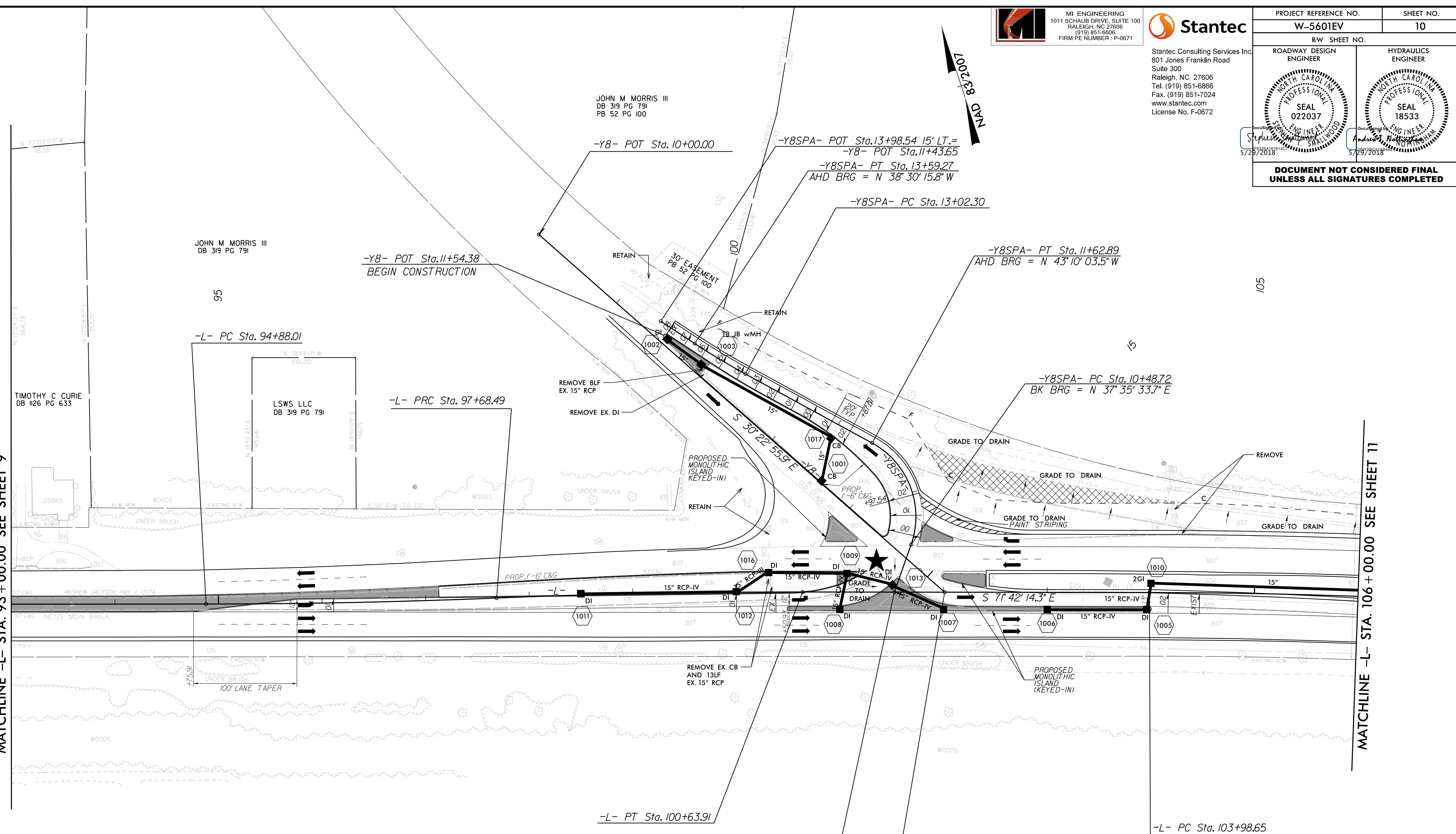
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Suite 300  
Raleigh, NC 27606  
Tel. (919) 851-6866  
Fax. (919) 851-7024  
www.stantec.com  
License No. F-0672

PROJECT REFERENCE NO. <b>W-5601EV</b>		SHEET NO. <b>10</b>	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

REVISIONS

MATCHLINE -L- STA. 93+00.00 SEE SHEET 9

MATCHLINE -L- STA. 106+00.00 SEE SHEET 11



-Y8SPA-		-L-		-L-	
PI Sta 13+30.80 Δ = 4° 39' 47.7" (RT) D = 8' 11' 06.4" L = 56.97' T = 28.50' R = 700.00'	PI Sta 11+17.61 Δ = 80° 45' 37.2" (LT) D = 70' 44' 07.9" L = 114.17' T = 68.89' R = 81.00'	PI Sta 96+28.27 Δ = 2° 17' 44.6" (LT) D = 0' 49' 06.6" L = 280.47' T = 140.26' R = 7,000.00'	PI Sta 99+16.22 Δ = 2° 25' 05.1" (RT) D = 0' 49' 06.6" L = 295.43' T = 147.73' R = 7,000.00'	PI Sta 108+14.24 Δ = 8° 03' 30.3" (RT) D = 0' 58' 16.0" L = 829.81' T = 415.59' R = 5,900.00'	

★ PROPOSED SIGNAL

PLACE BLOCKOUT PER RSD 904.50 SHEET 2 OF 2  
IN 2' CONCRETE ISLAND FOR SIGNS SHOWN ON  
SIGNING PLANS OR DIRECTED BY THE ENGINEER.

NOTE:  
SEE SHEET 2B-3 FOR INTERSECTION DETAIL  
SEE SHEET 18 & 19 FOR -L- PROFILE  
SEE SHEET 22 FOR -Y8SPA- PROFILE

5/29/2018  
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8/17/99

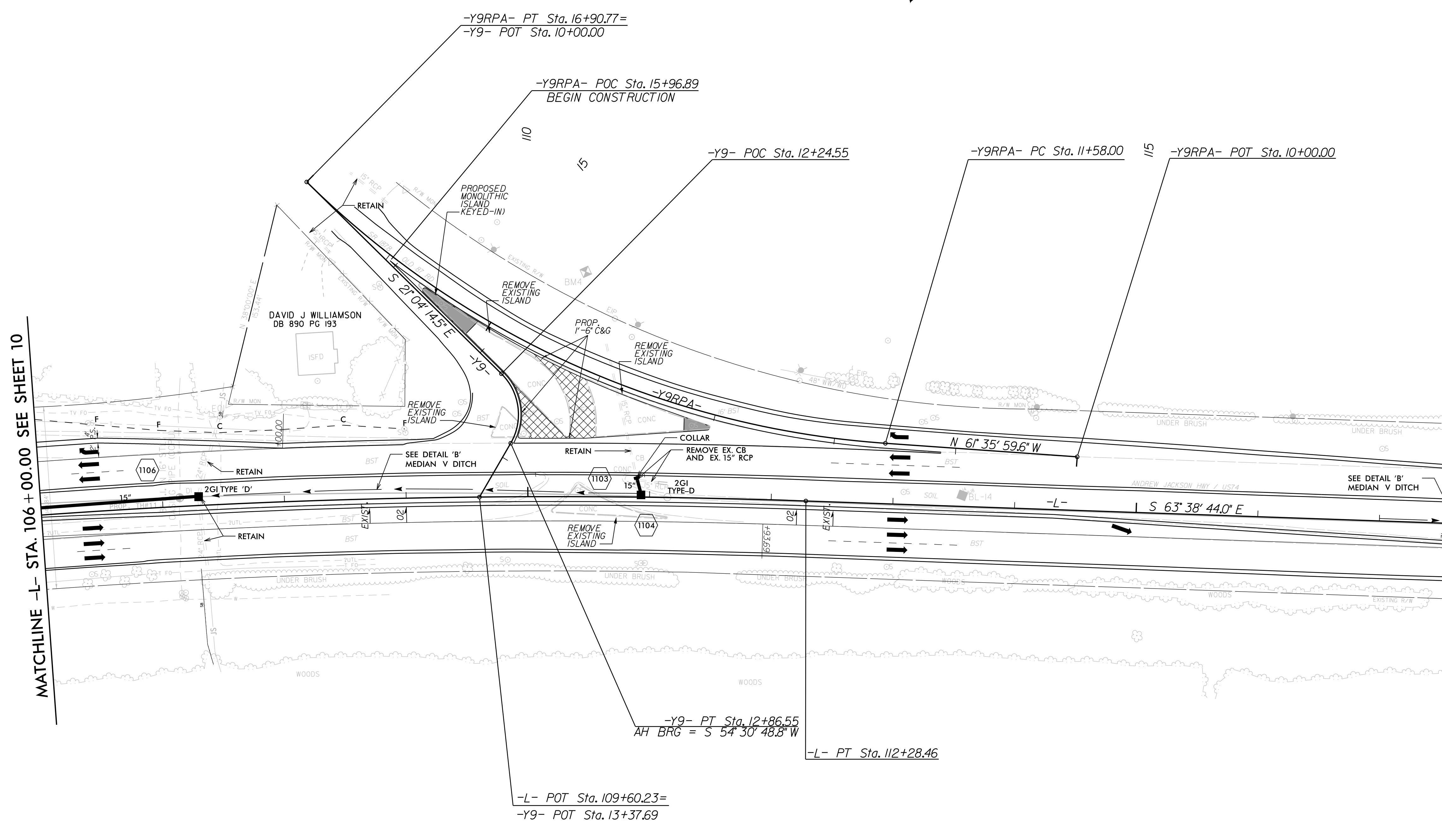
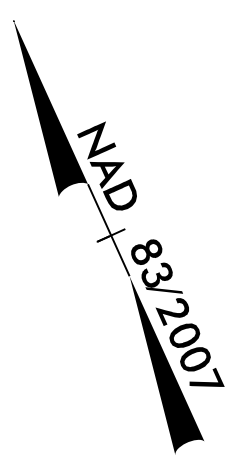
MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER: P-0671



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License No. F-0672

PROJECT REFERENCE NO. <b>W-5601EV</b>	SHEET NO. <b>11</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
5/29/2018	5/29/2018

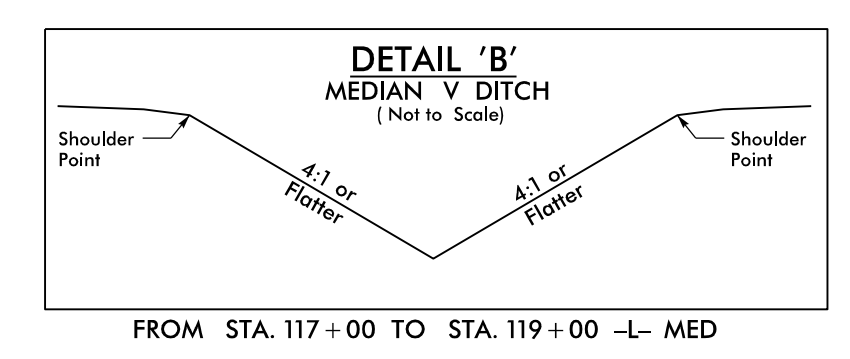
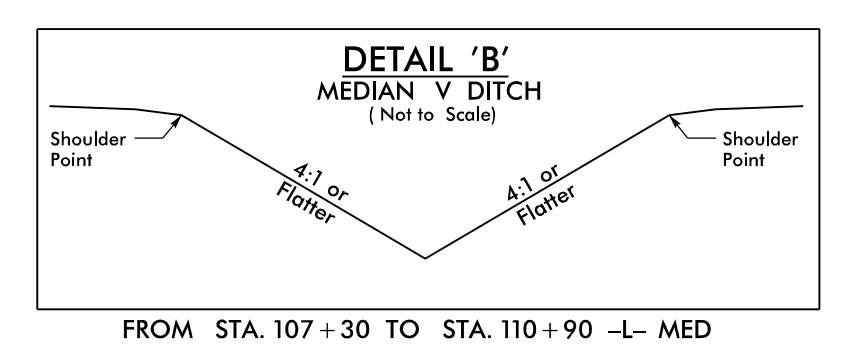
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



MATCHLINE -L- STA. 106+00.00 SEE SHEET 10

MATCHLINE -L- STA. 118+00.00 SEE SHEET 12

REVISIONS



-Y9RPA-
PI Sta 14+36.08
$\Delta = 40^\circ 31' 45.1''$ (RT)
$D = 7^\circ 36' 25.9''$
$L = 532.77'$
$T = 278.08'$
$R = 753.18'$

-Y9-
PI Sta 12+61.00
$\Delta = 75^\circ 35' 03.3''$ (RT)
$D = 12^\circ 54' 21.3''$
$L = 62.00'$
$T = 36.45'$
$R = 47.00'$

-L-
PI Sta 108+14.24
$\Delta = 8^\circ 03' 30.3''$ (RT)
$D = 0^\circ 58' 16.0''$
$L = 829.81'$
$T = 415.59'$
$R = 5,900.00'$

PLACE BLOCKOUT PER RSD 904.50 SHEET 2 OF 2 IN 2' CONCRETE ISLAND FOR SIGNS SHOWN ON SIGNING PLANS OR DIRECTED BY THE ENGINEER.

NOTE:  
SEE SHEET 2B-4 FOR INTERSECTION DETAIL  
SEE SHEET 19 FOR -L- PROFILE

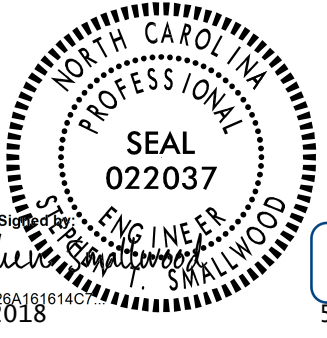
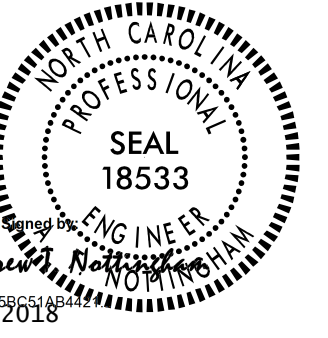
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-chao

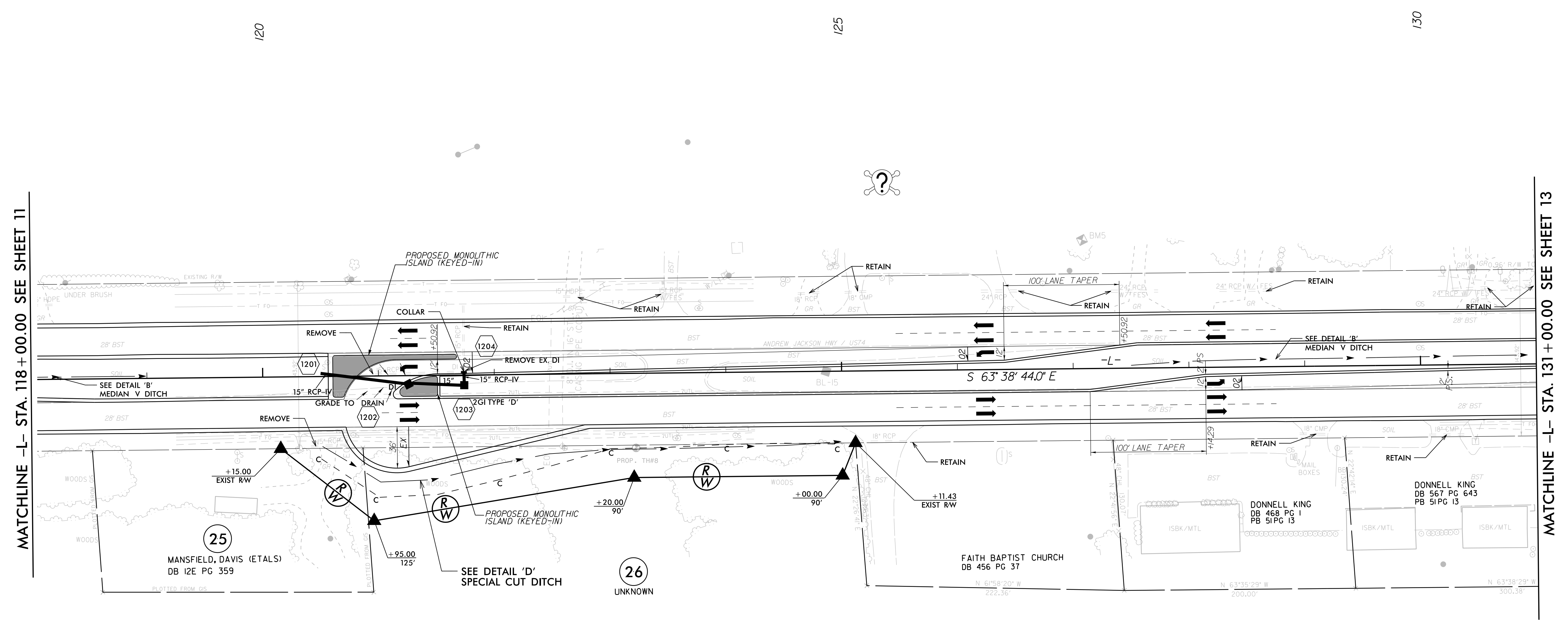
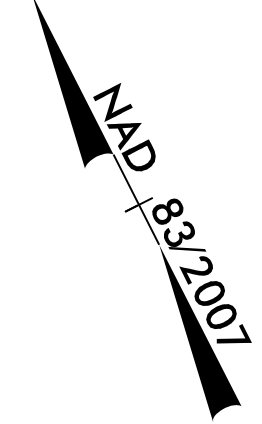
8/17/99

MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER - P-0671



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Fax. (919) 851-7024  
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License No. F-0672

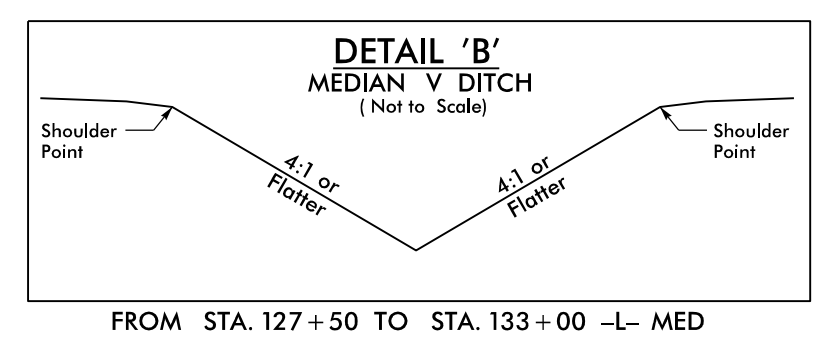
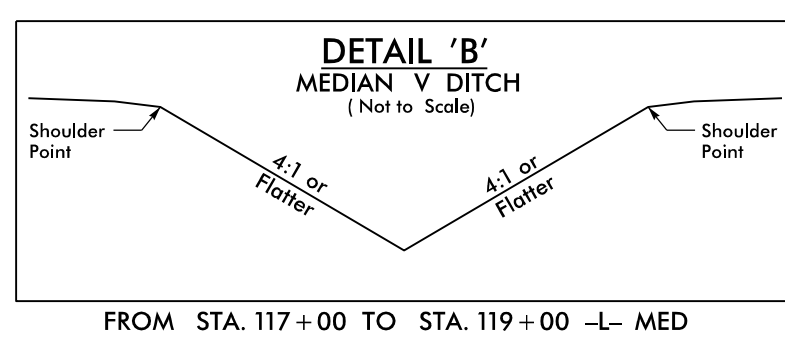
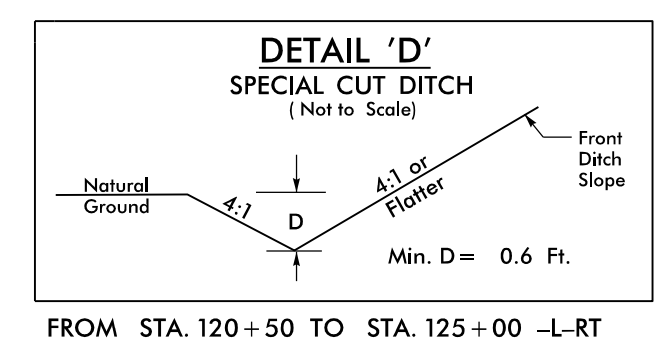
PROJECT REFERENCE NO. <b>W-5601EV</b>		SHEET NO. <b>12</b>	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
 SEAL 022037 5/29/2018		 SEAL 18533 5/29/2018	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			



REVISIONS

MATCHLINE -L- STA. 118 + 00.00 SEE SHEET 11

MATCHLINE -L- STA. 131 + 00.00 SEE SHEET 13



PLACE BLOCKOUT PER RSD 904.50 SHEET 2 OF 2  
IN 2' CONCRETE ISLAND FOR SIGNS SHOWN ON  
SIGNING PLANS OR DIRECTED BY THE ENGINEER.

**NOTE:**  
SEE SHEET 2B-4 FOR INTERSECTION DETAIL  
SEE SHEET 19 & 20 FOR -L- PROFILE

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-chao

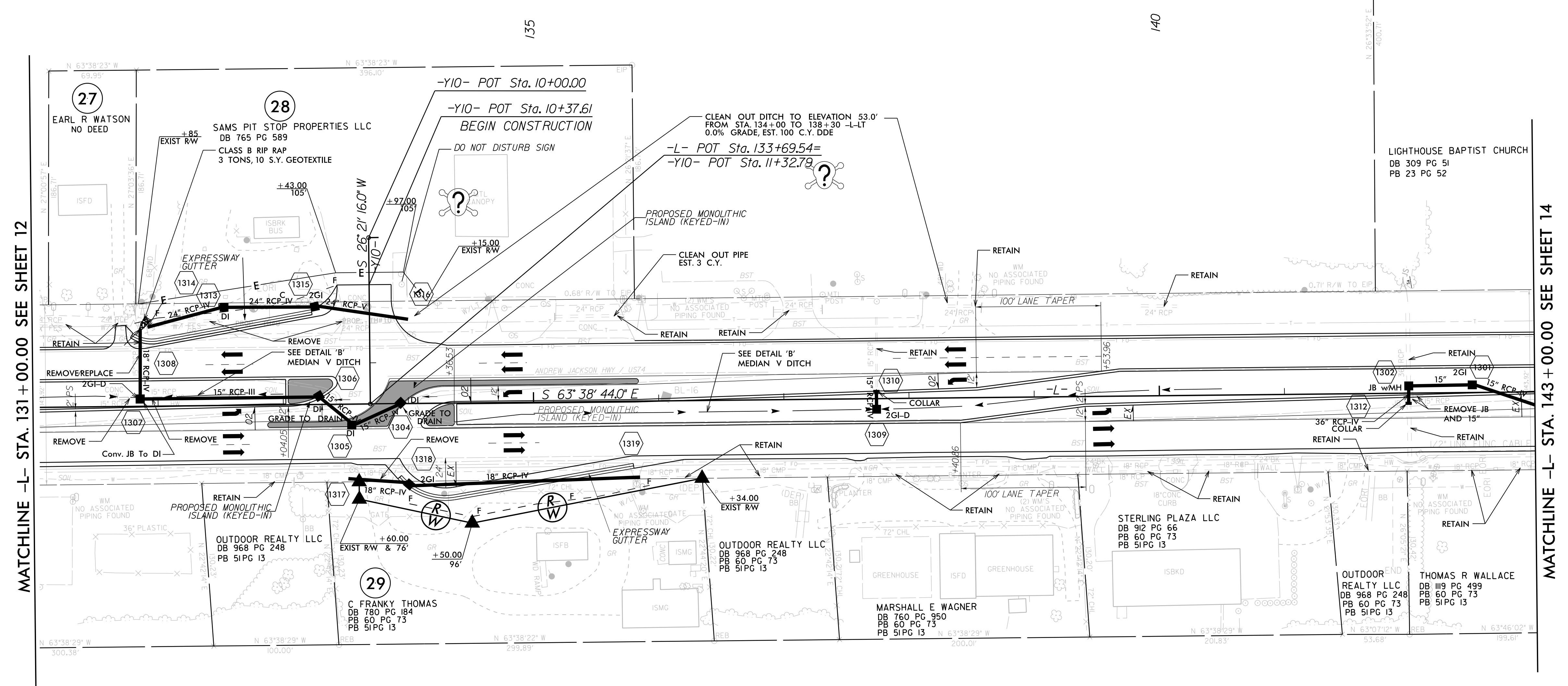
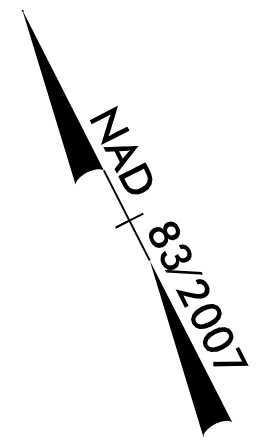


8/17/99



PROJECT REFERENCE NO. <b>W-5601EV</b>		SHEET NO. <b>13</b>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

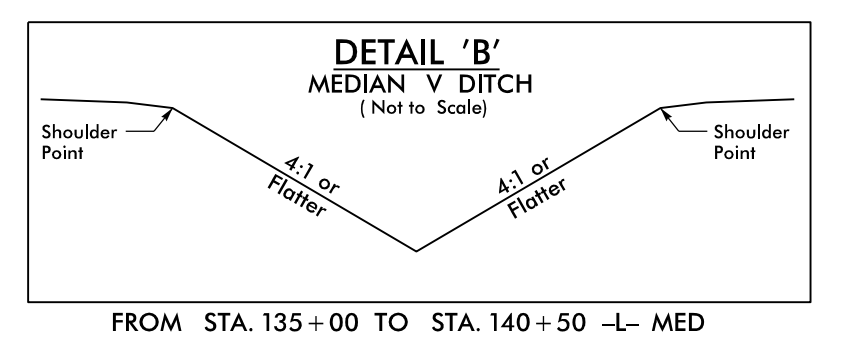
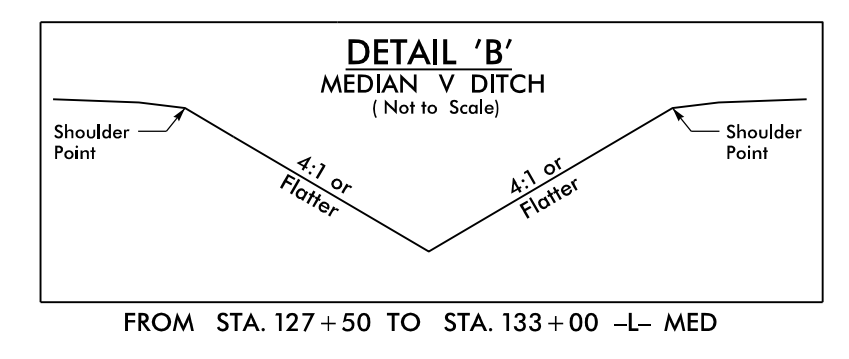
Stantec Consulting Services Inc.  
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Suite 300  
Raleigh, NC 27606  
Tel. (919) 851-6866  
Fax. (919) 851-7024  
www.stantec.com  
License No. F-0672



REVISIONS

MATCHLINE -L- STA. 131+00.00 SEE SHEET 12

MATCHLINE -L- STA. 143+00.00 SEE SHEET 14



PLACE BLOCKOUT PER RSD 904.50 SHEET 2 OF 2  
IN 2' CONCRETE ISLAND FOR SIGNS SHOWN ON  
SIGNING PLANS OR DIRECTED BY THE ENGINEER.

NOTE:  
SEE SHEET 2B-5 FOR INTERSECTION DETAIL  
SEE SHEET 20 FOR -L- PROFILE

5/29/2018  
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-chao



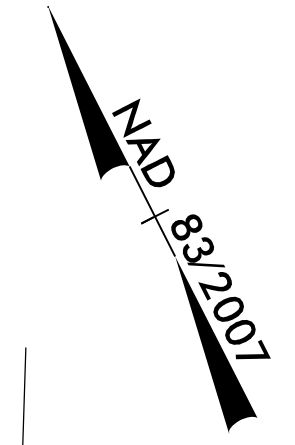
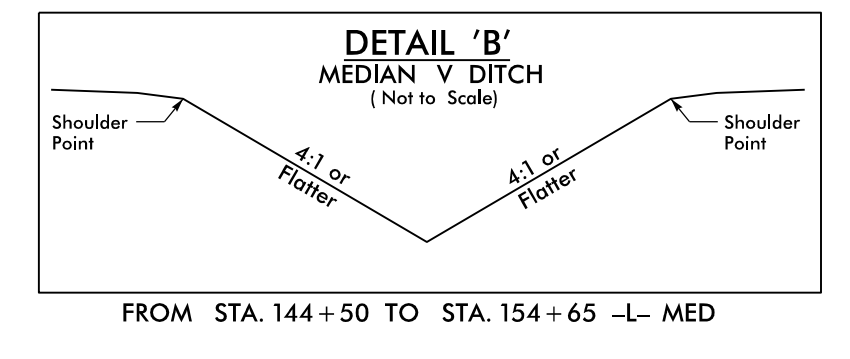
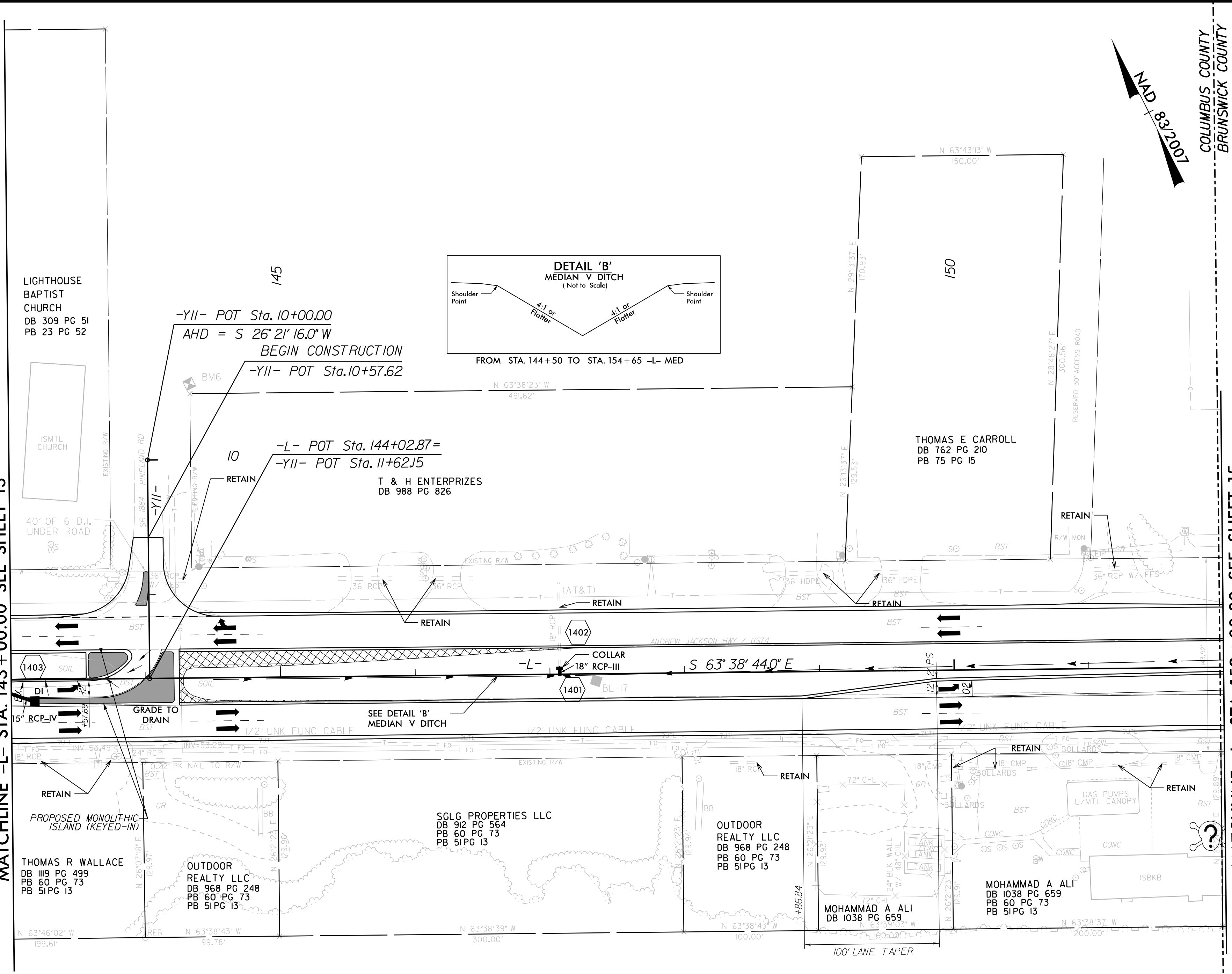
8/17/99

REVISIONS

5/29/2018  
U:\Roadway\Proj\W5601EV\_r.dwg\_psh14.dgn  
-chao

MATCHLINE -L- STA. 143+00.00 SEE SHEET 13

MATCHLINE -L- STA. 152+00.00 SEE SHEET 15



COLUMBUS COUNTY  
BRUNSWICK COUNTY

MI ENGINEERING  
1011 SCHUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER - P-0671

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Stantec Consulting Services Inc.  
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Raleigh, NC 27606  
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License No. F-0672

PROJECT REFERENCE NO. <b>W-5601EV</b>		SHEET NO. <b>14</b>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

PLACE BLOCKOUT PER RSD 904.50 SHEET 2 OF 2  
IN 2' CONCRETE ISLAND FOR SIGNS SHOWN ON  
SIGNING PLANS OR DIRECTED BY THE ENGINEER.

NOTE:  
SEE SHEET 2B-5 FOR INTERSECTION DETAIL  
SEE SHEET 20 & 21 FOR -L- PROFILE

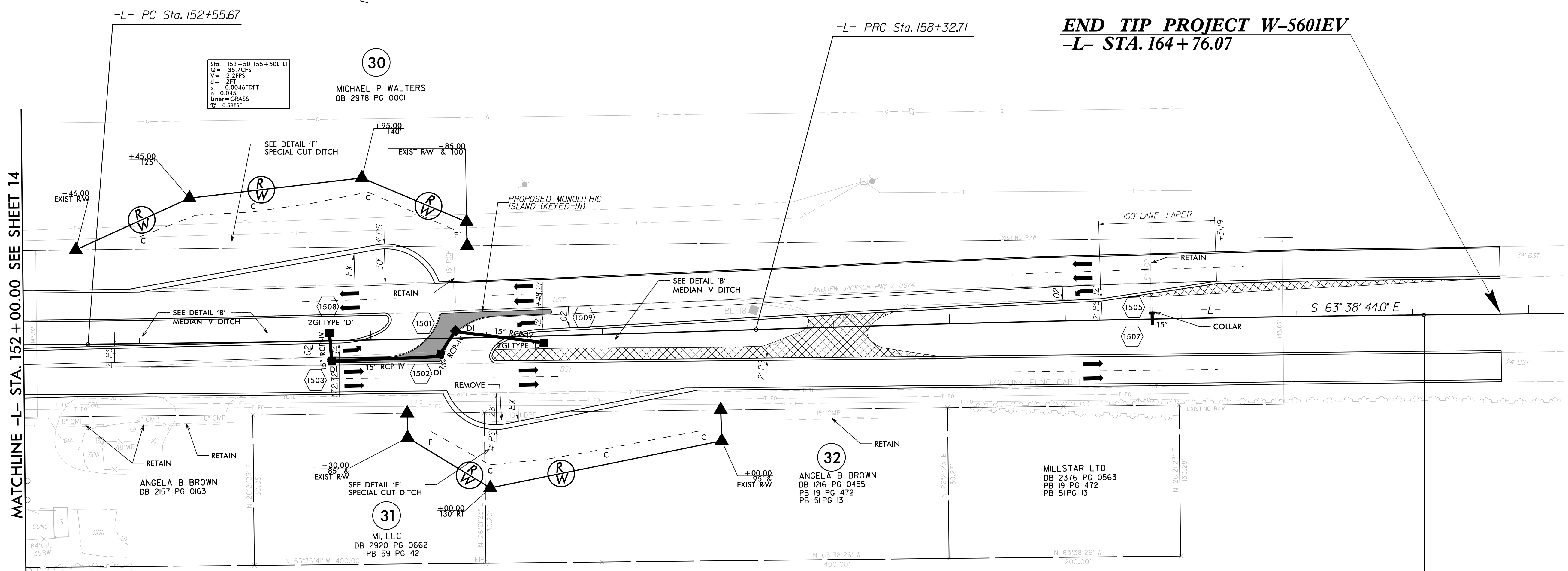
8/17/99



PROJECT REFERENCE NO. <b>W-5601EV</b>	SHEET NO. <b>15</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672	

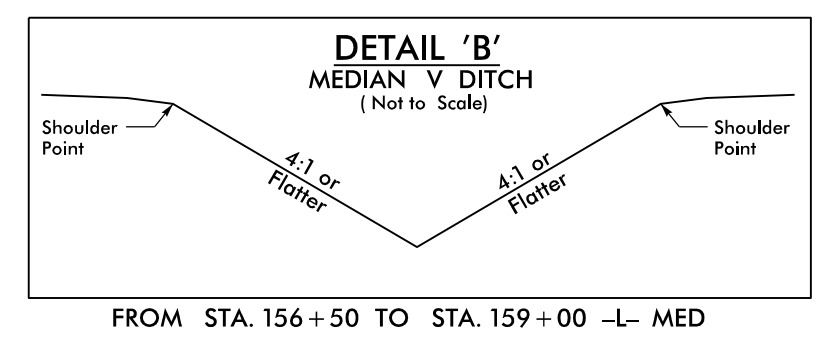
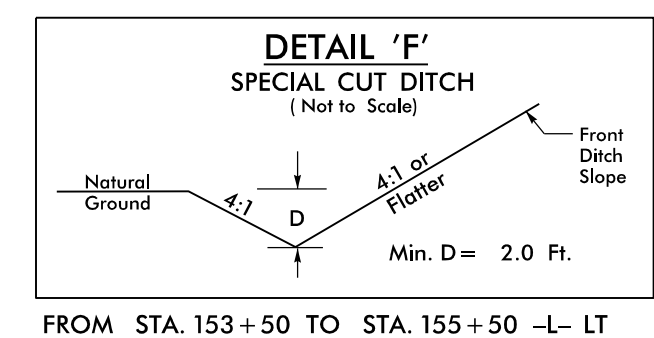
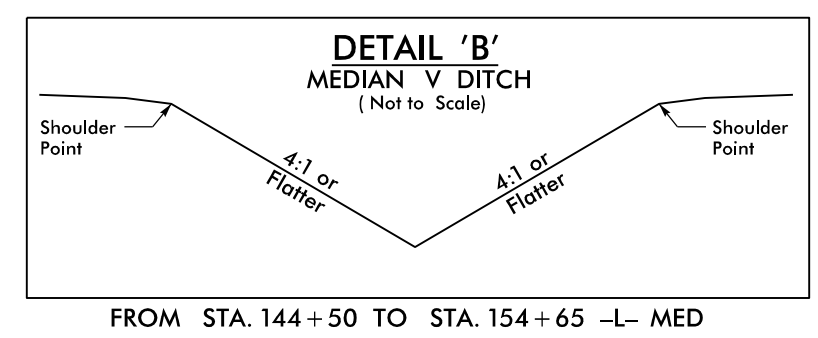
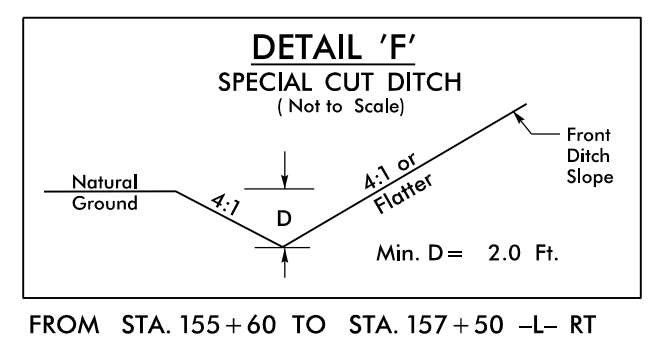
-L-	
PI Sta 155+44.20 $\Delta = 1' 19' 21.0"$ (LT) $D = 0' 13' 45.1"$ $L = 577.04'$ $T = 288.54'$ $R = 25,000.00'$	PI Sta 161+21.25 $\Delta = 1' 19' 21.0"$ (RT) $D = 0' 13' 45.1"$ $L = 577.04'$ $T = 288.54'$ $R = 25,000.00'$

**END TIP PROJECT W-5601EV**  
**-L- STA. 164+76.07**



MATCHLINE -L- STA. 152+00.00 SEE SHEET 14

REVISIONS



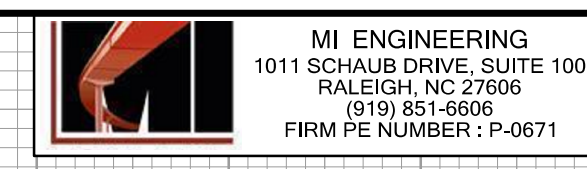
PLACE BLOCKOUT PER RSD 904.50 SHEET 2 OF 2 IN 2' CONCRETE ISLAND FOR SIGNS SHOWN ON SIGNING PLANS OR DIRECTED BY THE ENGINEER.

NOTE:  
SEE SHEET 2B-5 FOR INTERSECTION DETAIL  
SEE SHEET 2I FOR -L- PROFILE

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-chao



5/28/2018



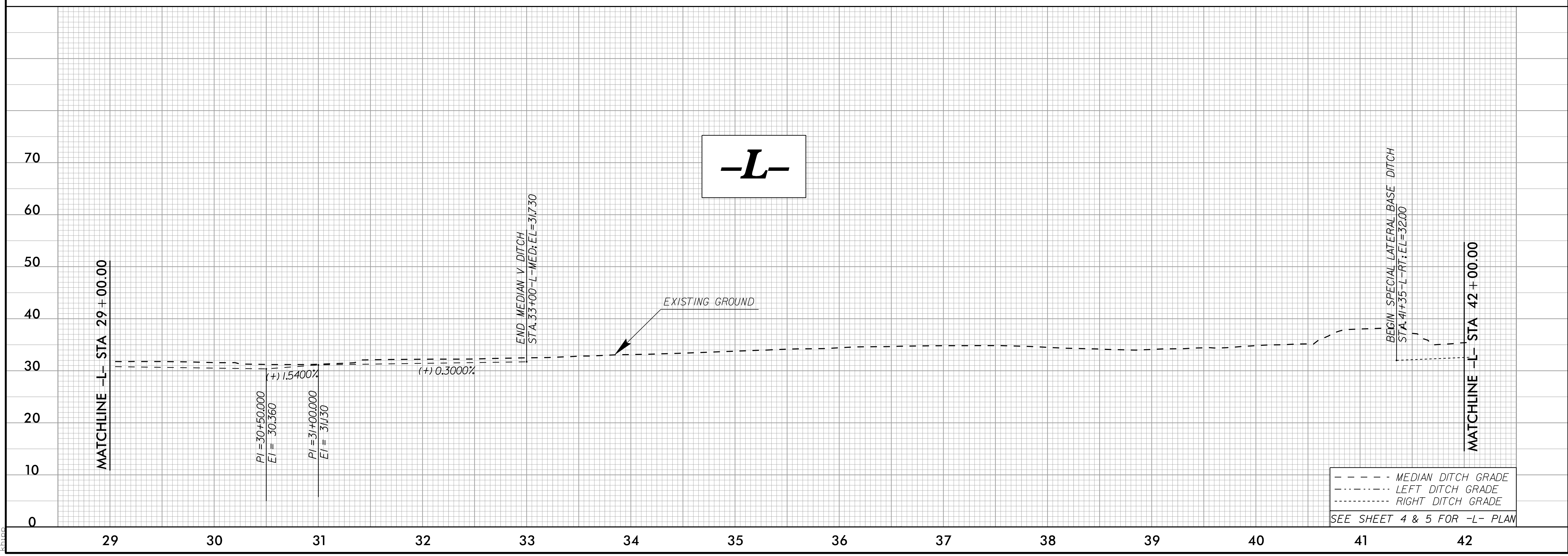
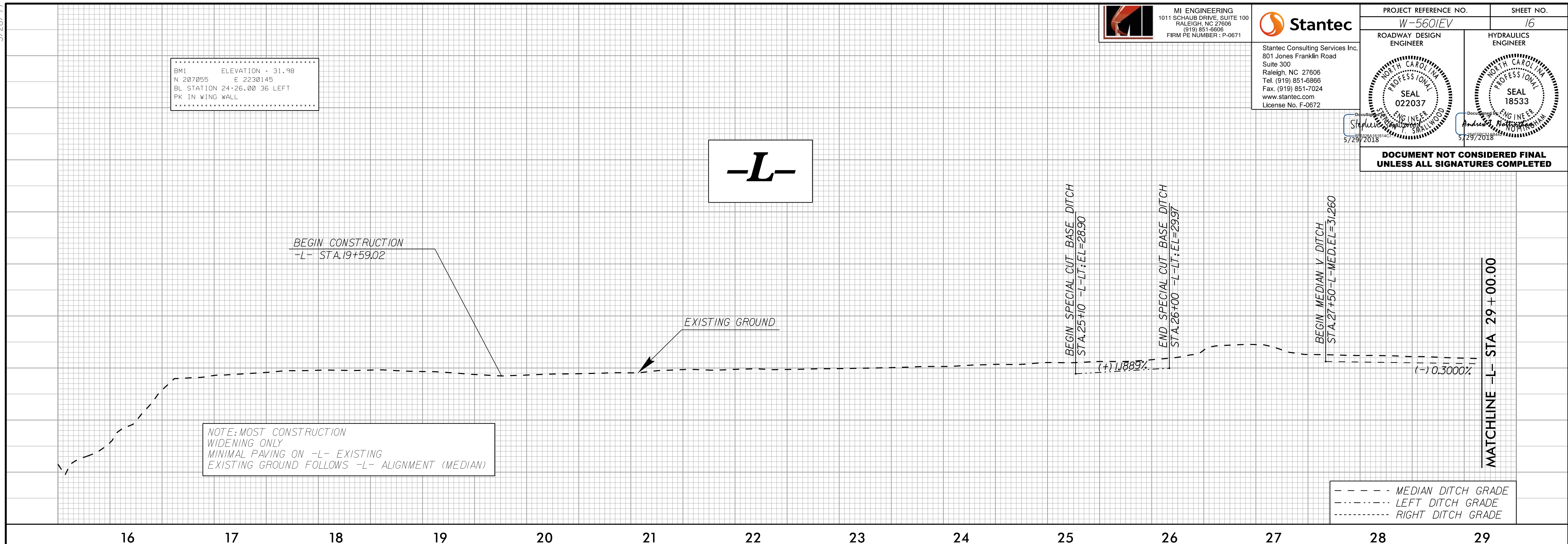
MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6866  
FIRM PE NUMBER: P-0671



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License No. F-0672

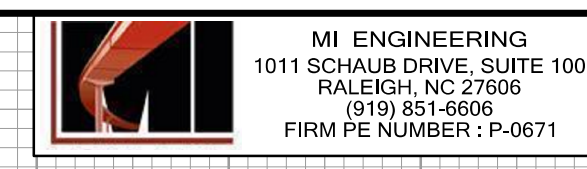
PROJECT REFERENCE NO. <i>W-5601EV</i>	SHEET NO. <i>16</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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k1100

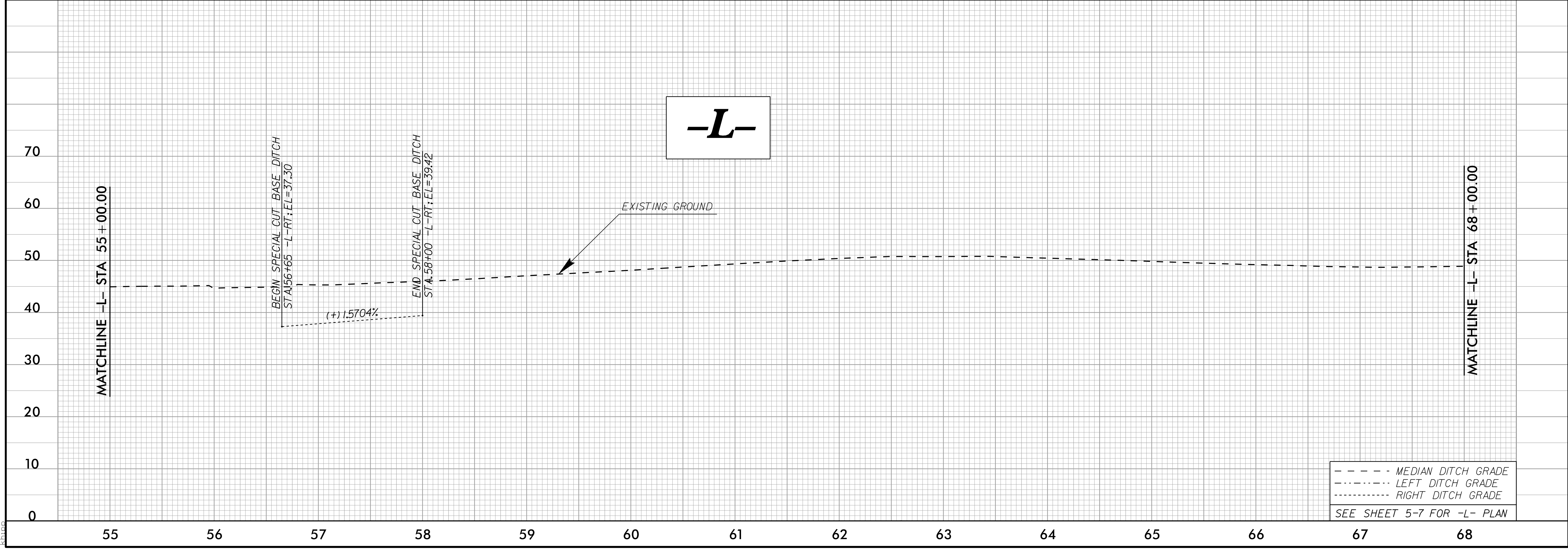
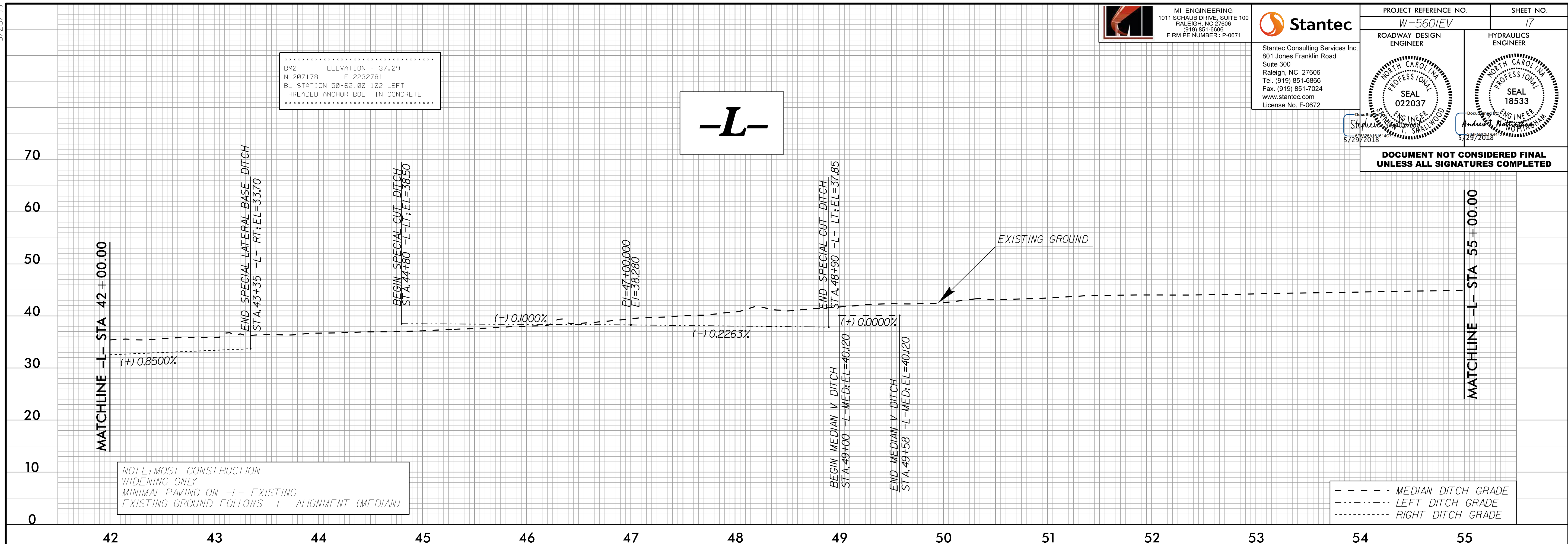
5/28/2018



PROJECT REFERENCE NO. <i>W-5601EV</i>		SHEET NO. <i>17</i>	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

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 k1100

5/28/99



MI ENGINEERING  
1011 SCHUBB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6605  
FIRM PE NUMBER: P-0671



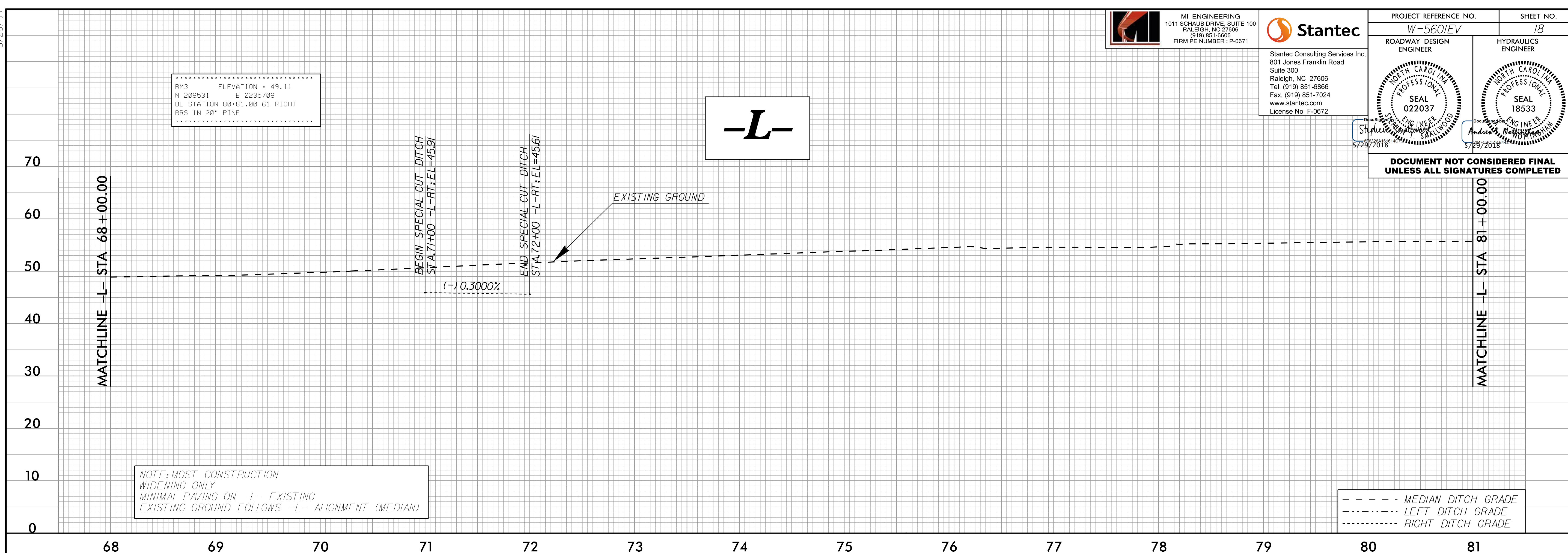
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Suite 300  
Raleigh, NC 27606  
Tel. (919) 851-6866  
Fax. (919) 851-7024  
www.stantec.com  
License No. F-0672

PROJECT REFERENCE NO. <i>W-5601EV</i>	SHEET NO. <i>18</i>
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

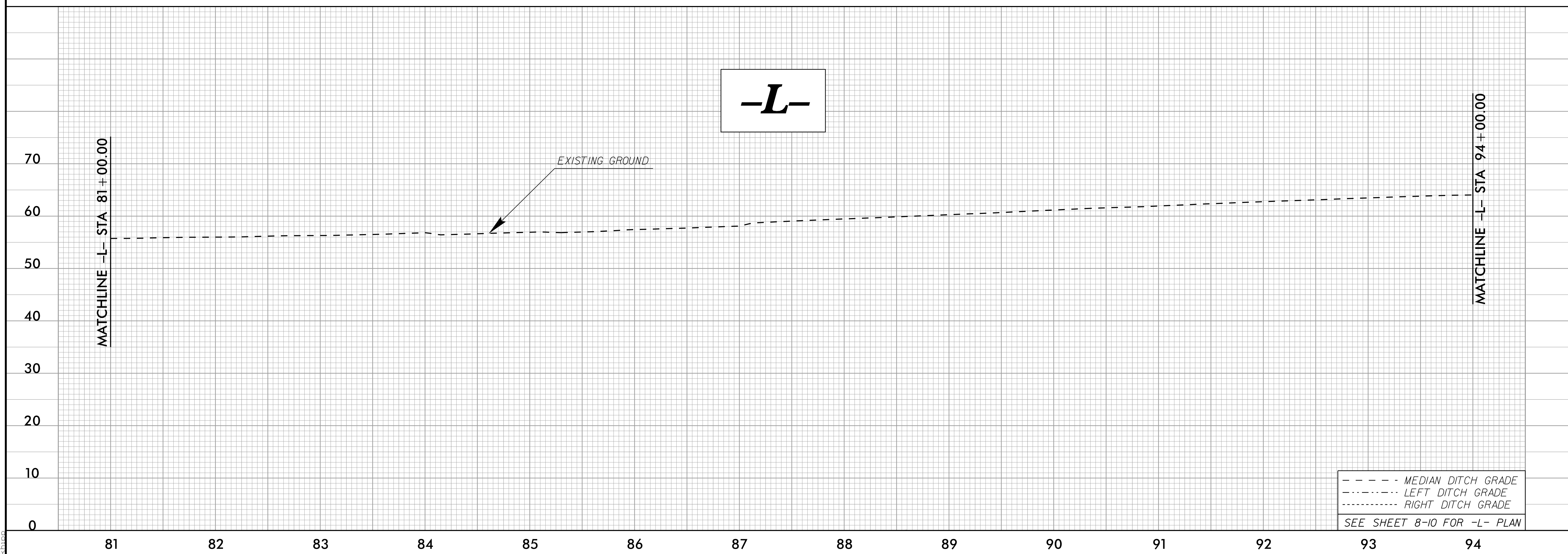
BM3 ELEVATION = 49.11  
N 206531 E 2235708  
BL STATION 80+81.00 61 RIGHT  
RRS IN 20' PINE

**-L-**



NOTE: MOST CONSTRUCTION  
WIDENING ONLY  
MINIMAL PAVING ON -L- EXISTING  
EXISTING GROUND FOLLOWS -L- ALIGNMENT (MEDIAN)

--- MEDIAN DITCH GRADE  
- - - LEFT DITCH GRADE  
- - - RIGHT DITCH GRADE



--- MEDIAN DITCH GRADE  
- - - LEFT DITCH GRADE  
- - - RIGHT DITCH GRADE

SEE SHEET 8-10 FOR -L- PLAN

5/28/2018  
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knap

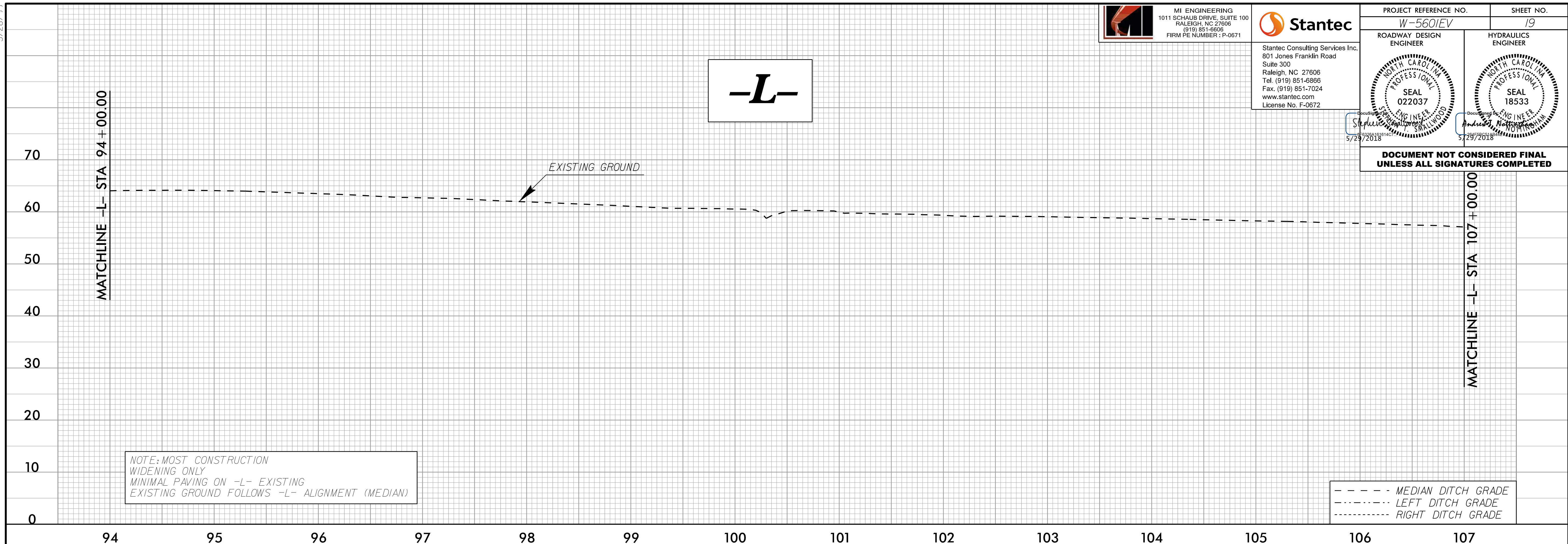


5/28/18



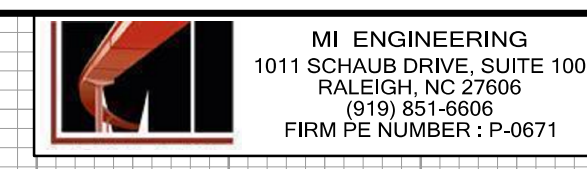
PROJECT REFERENCE NO. <i>W-5601EV</i>		SHEET NO. <i>19</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672		

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5/28/2018  
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k1100

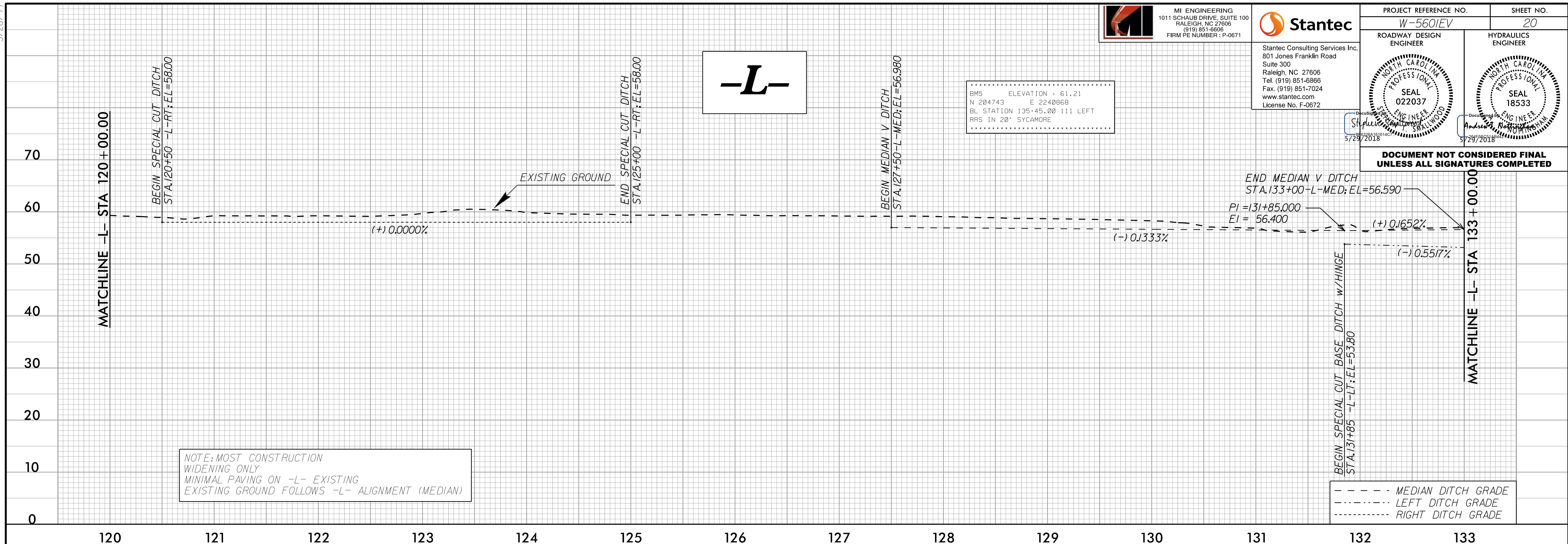
5/28/2018



PROJECT REFERENCE NO. W-5601EV	SHEET NO. 20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Stantec Consulting Services Inc.  
801 Jones Franklin Road  
Suite 300  
Raleigh, NC 27606  
Tel. (919) 851-6866  
Fax. (919) 851-7024  
www.stantec.com  
License No. F-0672

BMS ELEVATION = 61.21  
N 204743 E 2240868  
BL STATION 135+45.00 111 LEFT  
RRS IN 20' SYCAMORE

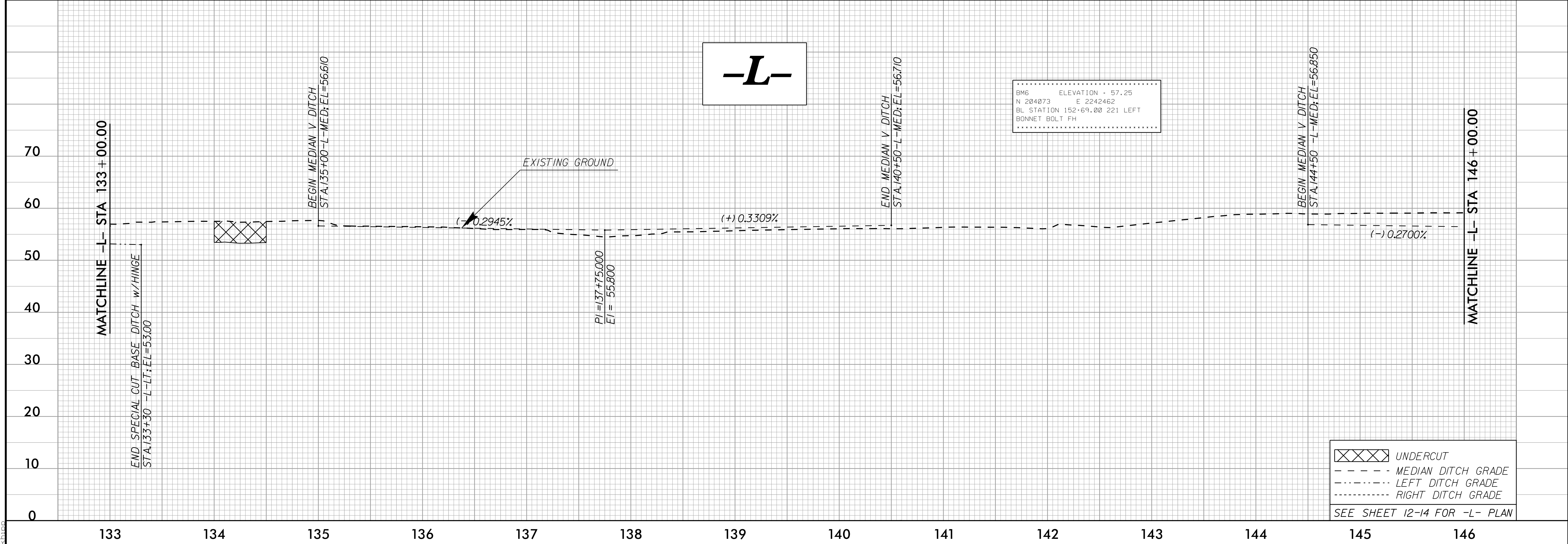


NOTE: MOST CONSTRUCTION  
WIDENING ONLY  
MINIMAL PAVING ON -L- EXISTING  
EXISTING GROUND FOLLOWS -L- ALIGNMENT (MEDIAN)

--- MEDIAN DITCH GRADE  
- - - LEFT DITCH GRADE  
- . . . RIGHT DITCH GRADE

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

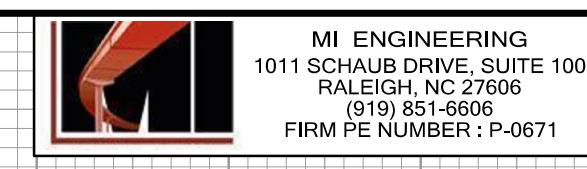
5/28/2018  
D:\Projects\W5601EV\_rdy\_psh\_pf1.dgn  
kh100



BMS ELEVATION = 57.25  
N 204073 E 2242462  
BL STATION 152+69.00 221 LEFT  
BONNET BOLT FH

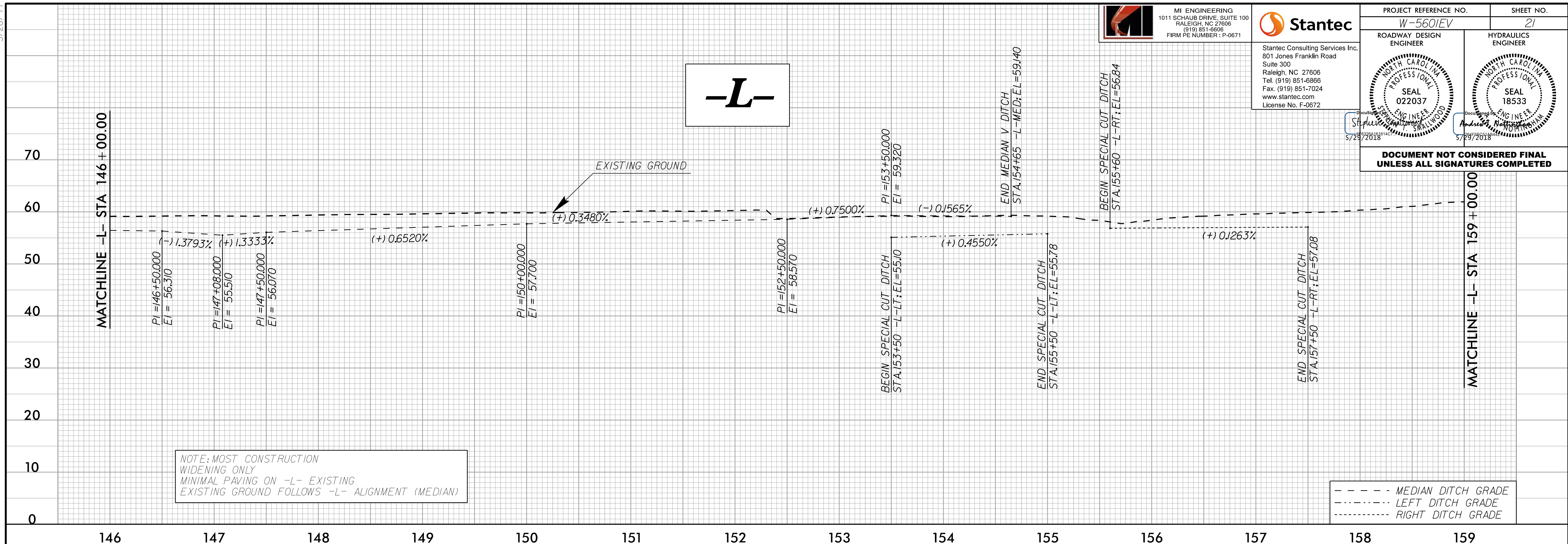
XXXX UNDERCUT  
--- MEDIAN DITCH GRADE  
- - - LEFT DITCH GRADE  
- . . . RIGHT DITCH GRADE  
SEE SHEET 12-14 FOR -L- PLAN

5/28/2018



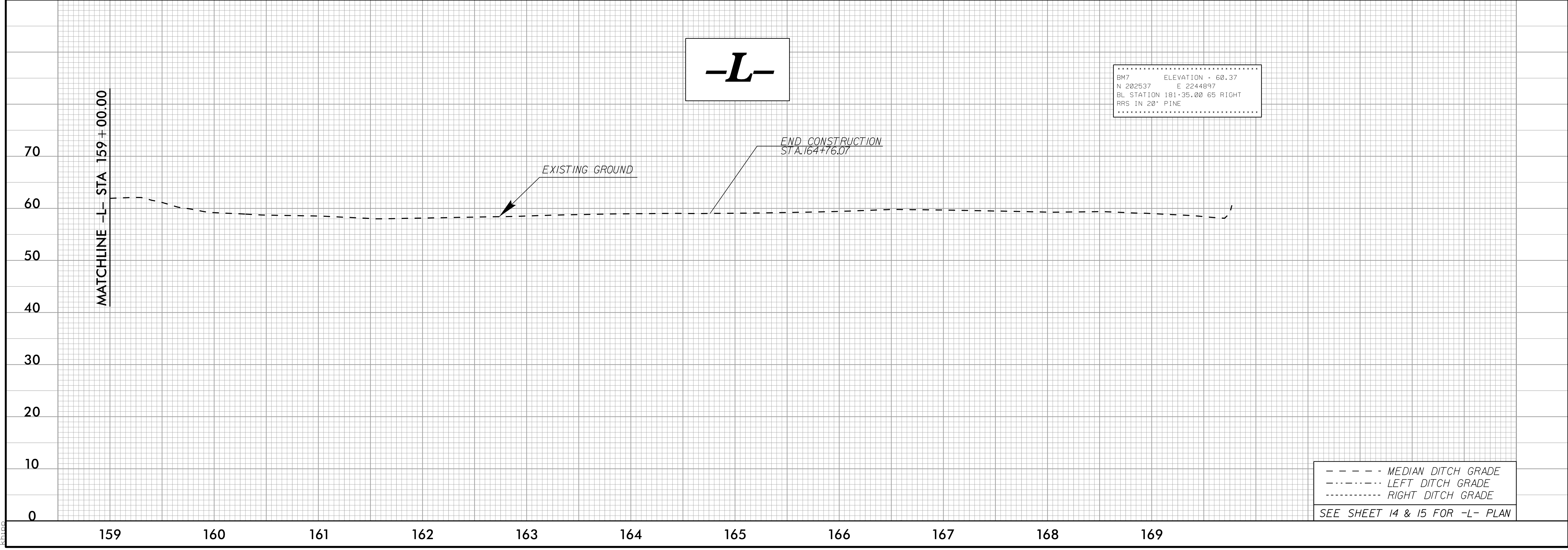
PROJECT REFERENCE NO. <i>W-5601EV</i>	SHEET NO. <i>21</i>
ROADWAY DESIGN ENGINEER <i>Stefan...</i>	HYDRAULICS ENGINEER <i>Andrew...</i>
Professional Engineer Seal: SEAL 022037	Professional Engineer Seal: SEAL 18533

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTE: MOST CONSTRUCTION WIDENING ONLY  
 MINIMAL PAVING ON -L- EXISTING  
 EXISTING GROUND FOLLOWS -L- ALIGNMENT (MEDIAN)

BM7 ELEVATION = 60.37  
 N 202537 E 2244897  
 BL STATION 181+35.00 65 RIGHT  
 PRR IN 20' PINE



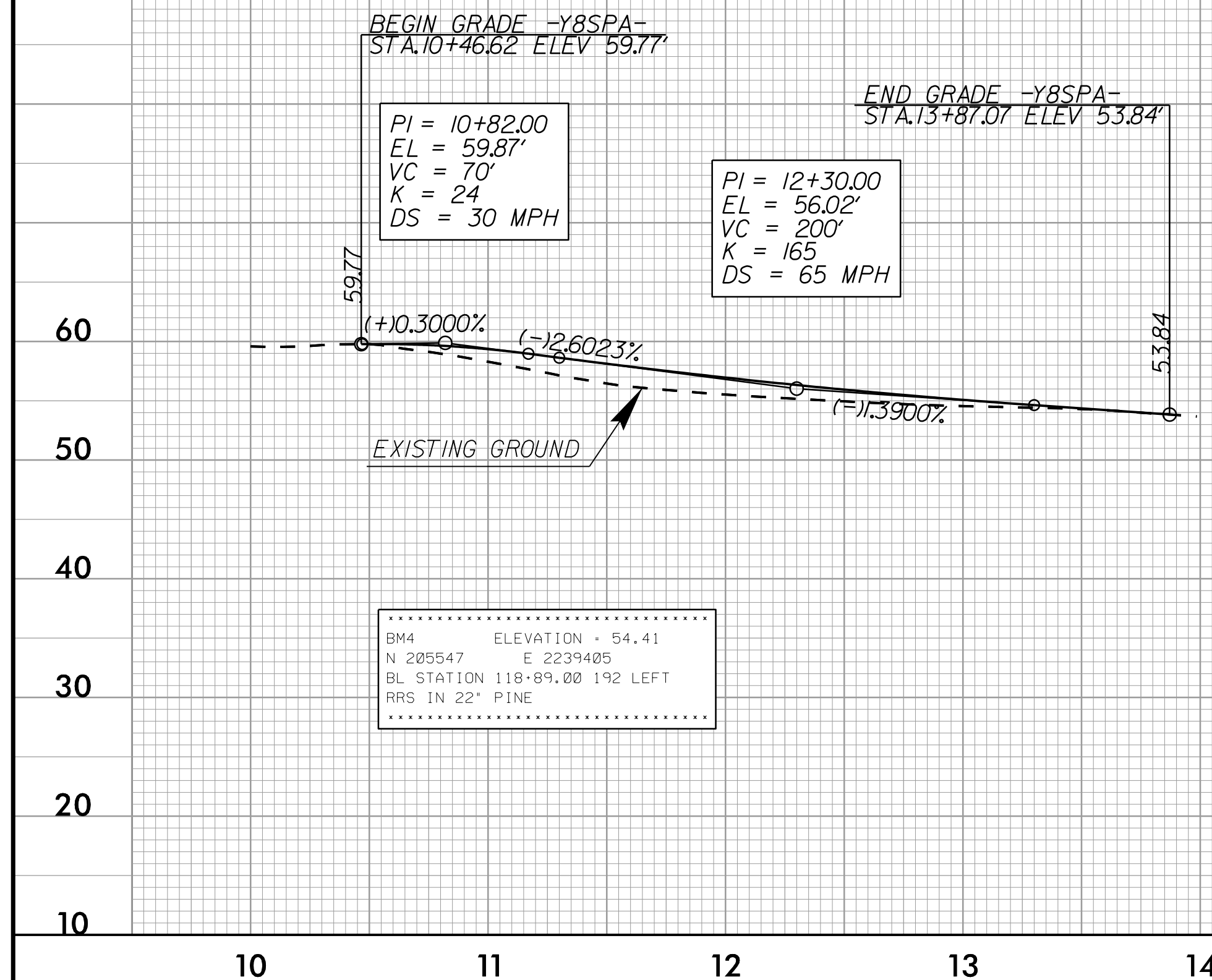
SEE SHEET 14 & 15 FOR -L- PLAN

5/28/2018 U:\Projects\W5601EV\_rdy\_psh\_pf1.dgn



5/28/2018

# -Y8SPA-



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



MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6666  
FIRM PE NUMBER: P-0671



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PROJECT REFERENCE NO. W-5601EV	SHEET NO. 22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

--- MEDIAN DITCH GRADE  
 - - - - LEFT DITCH GRADE  
 ..... RIGHT DITCH GRADE  
 SEE SHEET 10 FOR -L- PLAN

5/28/2018  
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k1100