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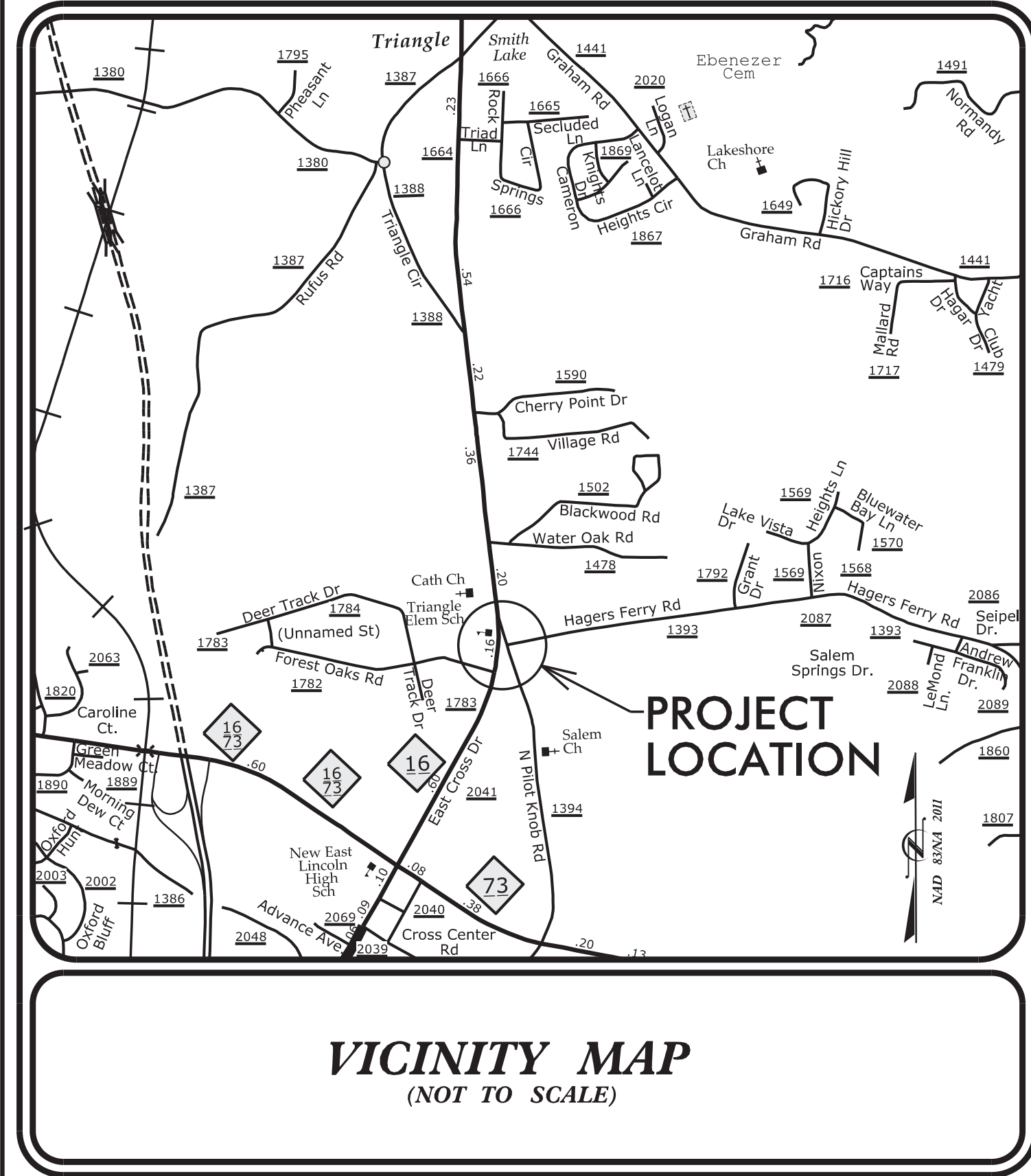
09\_08/2019

5/31/2019  
 P:\w\kgf\p\w\ing02.cor.por.cte.gamnet\11\fileing.com\6FPW02\Documents\Projects\W-56010\Roadway\Proj\W-56010\_Rdy\_tsh.dgn

**TIP PROJECT: W-5601Q**

**CONTRACT:**

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



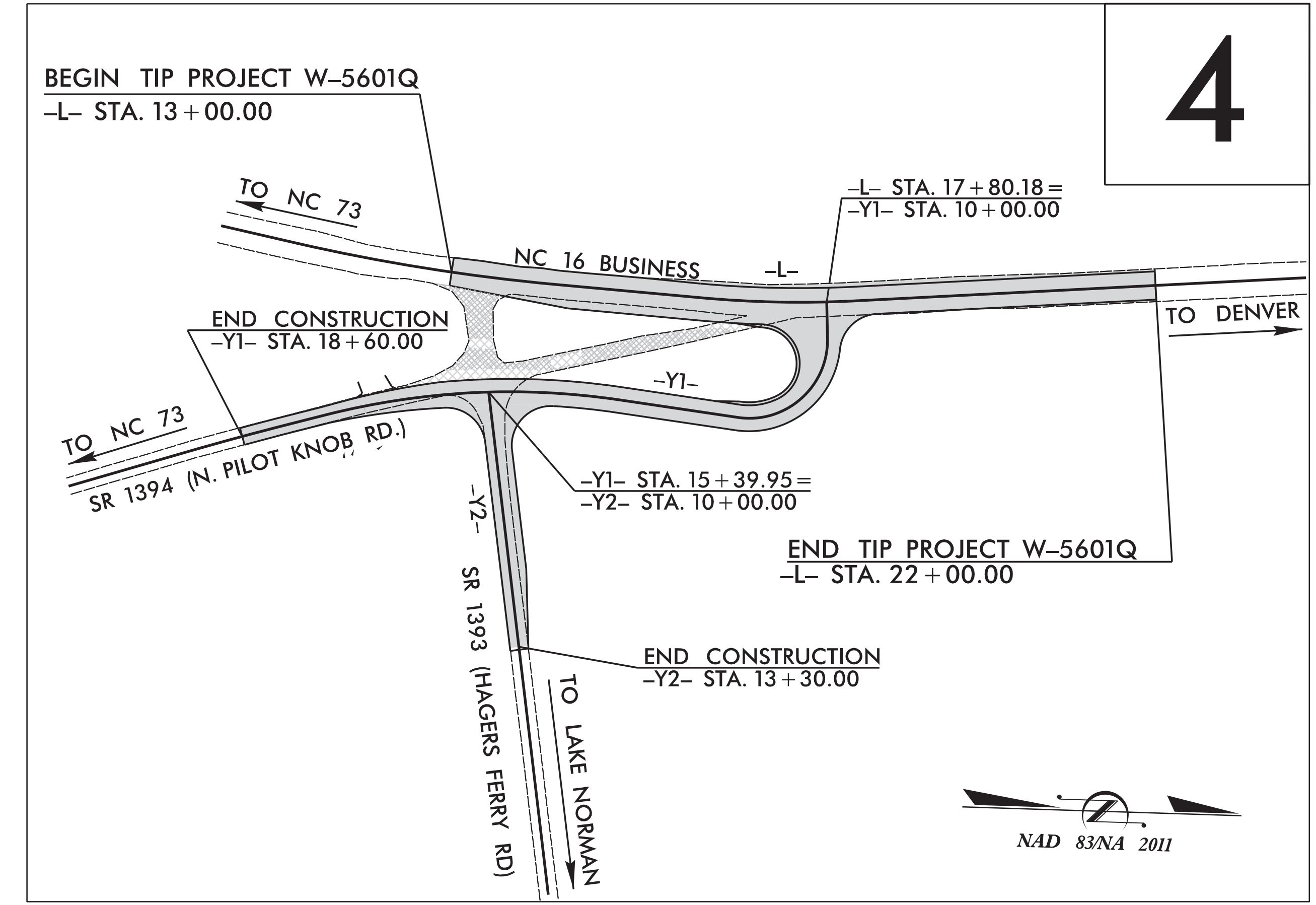
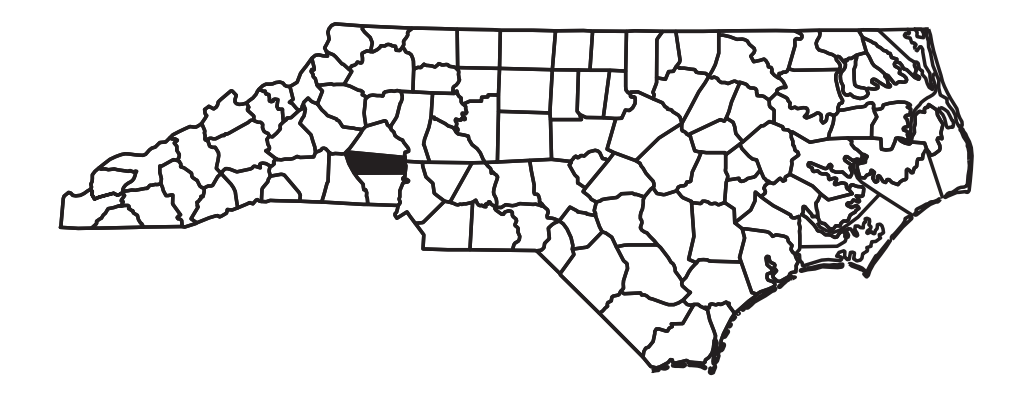
**100% PLANS**

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**LINCOLN COUNTY**

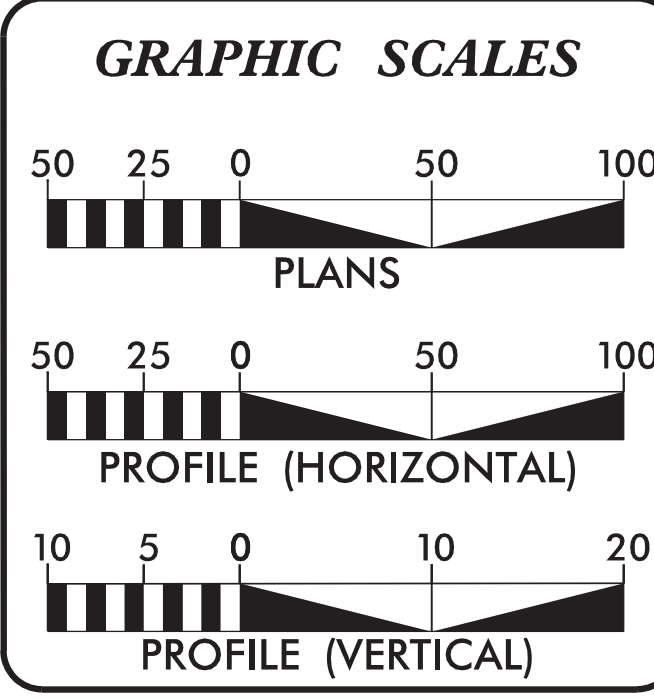
**LOCATION: NC 16 BUSINESS AT SR 1394 (N. PILOT KNOB ROAD)  
 AND SR 1393 (HAGERS FERRY ROAD) AT  
 SR 1394 (N. PILOT KNOB ROAD)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5601Q	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50138.1.FR18	HSIP-0016(60)	P.E.	
50138.2.FR18	HSIP-0016(60)	ROW	
50138.3.FR18	HSIP-0016(60)	CONST.	



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.



**DESIGN DATA**

ADT 2019 =	21,700
ADT 2029 =	25,000
V =	50 MPH
FUNC CLASS =	MINOR ARTERIAL

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT W-5601Q	=	0.170 MI
TOTAL LENGTH OF TIP PROJECT W-5601Q	=	0.170 MI

**NCDOT CONTACT:**  
**BRYAN SOWELL, P.E.**  
 DIVISION PROJECT ENGINEER

PLANS PREPARED BY:  
**Gannett Fleming**  
 Excellence Delivered As Promised

2610 Wycliff Road  
 Suite 102  
 Raleigh NC 27607-3073  
 (919) 420-7660  
 NC Lic. No. F-0270

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 2018 STANDARD SPECIFICATIONS

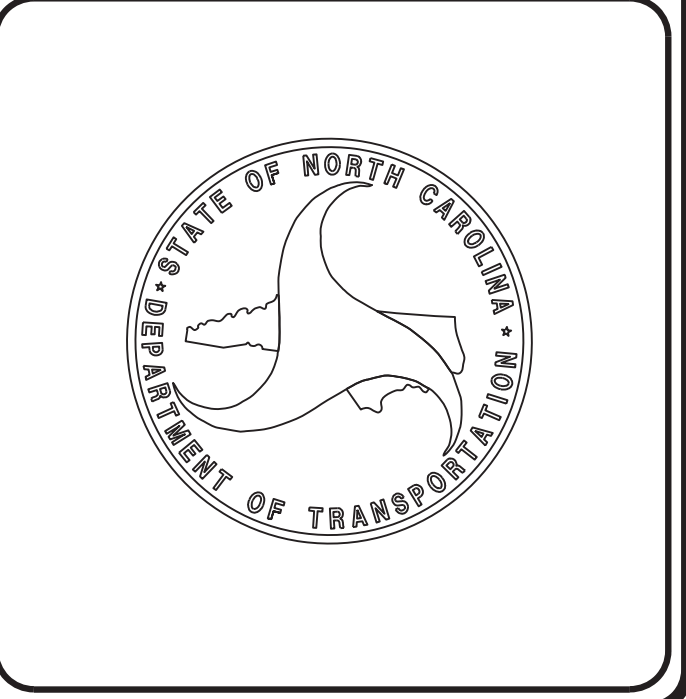
<b>RIGHT OF WAY DATE:</b> JUNE 20, 2017	<b>TERRY M. SNOW, P.E.</b> PROJECT ENGINEER
<b>LETTING DATE:</b> AUGUST 24, 2021	<b>THOMAS K. GOODWIN, P.E.</b> PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

DocuSigned by:  
**Paul Cameron**  
 6/3/2019

**ROADWAY DESIGN ENGINEER**

DocuSigned by:  
**Thomas K Goodwin**  
 6/5/2019



EFF. 01-16-2018

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE, WEDGING DETAIL, AND TYPICAL SECTIONS
3	SUMMARY OF QUANTITIES
4	PLAN SHEET
5 THRU 6	PROFILE SHEETS
RW01 THRU RW04-1	RIGHT OF WAY PLANS
TMP-1 THRU TMP-3	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-3	SIGNING PLANS
SIG-1 THRU SIG-3	SIGNAL PLANS
UC-1 THRU UC-6	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1 THRU X-16	CROSS SECTIONS

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.03	Cross Pipe End Section - Precast Concrete Section for 18" to 30" Pipe
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve -
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

GENERAL NOTES: 2018 SPECIFICATIONS EFFECTIVE: 01-16-2018

GRADE LINE:  
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED 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. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

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

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 PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE: DUKE ENERGY (POWER), SPECTRUM (CABLE), LINCOLN COUNTY (WATER & SEWER), PIEDMONT NATURAL GAS (GAS), AT&T (TELEPHONE).

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.



# 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.*)	-----ZUTL-----
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	□ UST
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	○
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

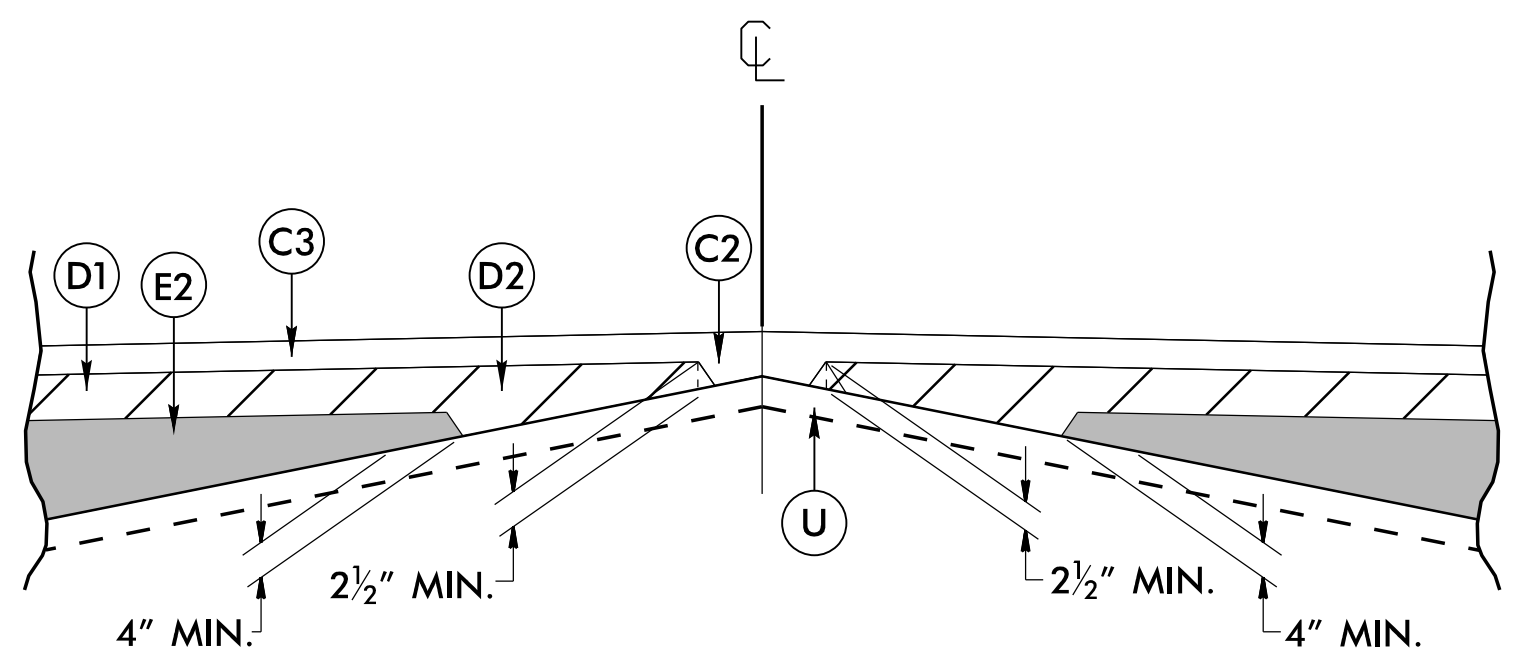


6/2/09

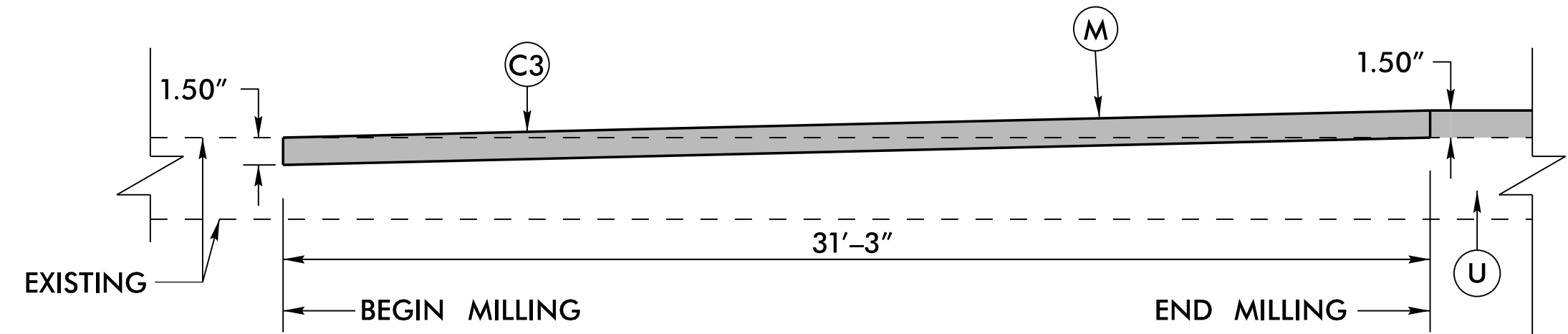
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PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 2.5" DEPTH.
C3	PROP. APPROX 1½" DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5.5" DEPTH.
E3	PROP. APPROX 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
M	MILLING
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING).

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

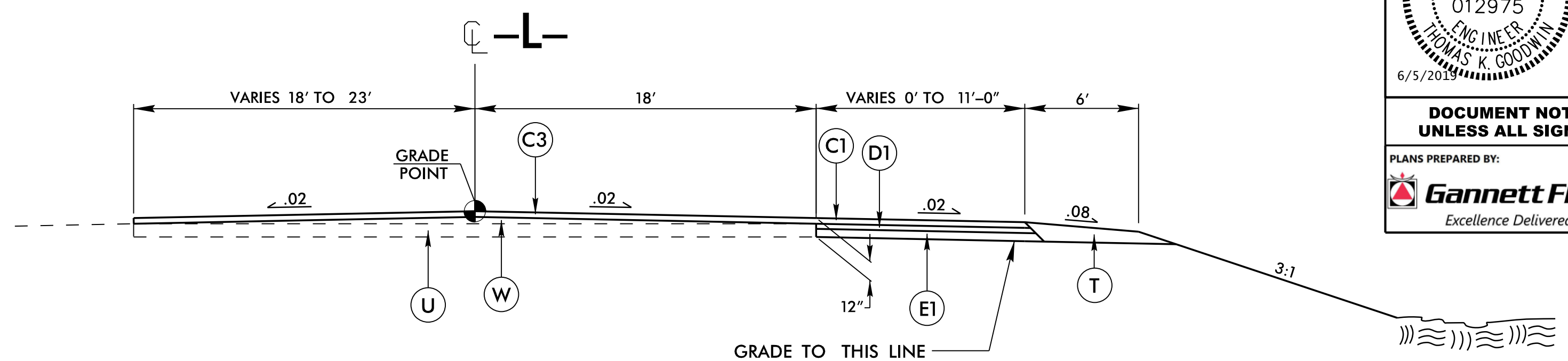


Detail Showing Method of Wedging

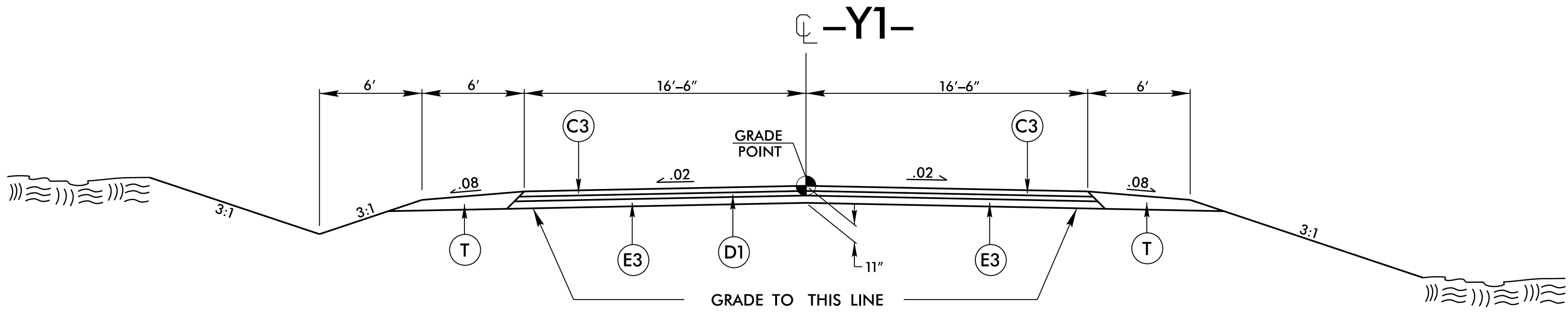


MILLING DETAIL (@ ENDS OF CONSTRUCTION) ALONG ROAD C

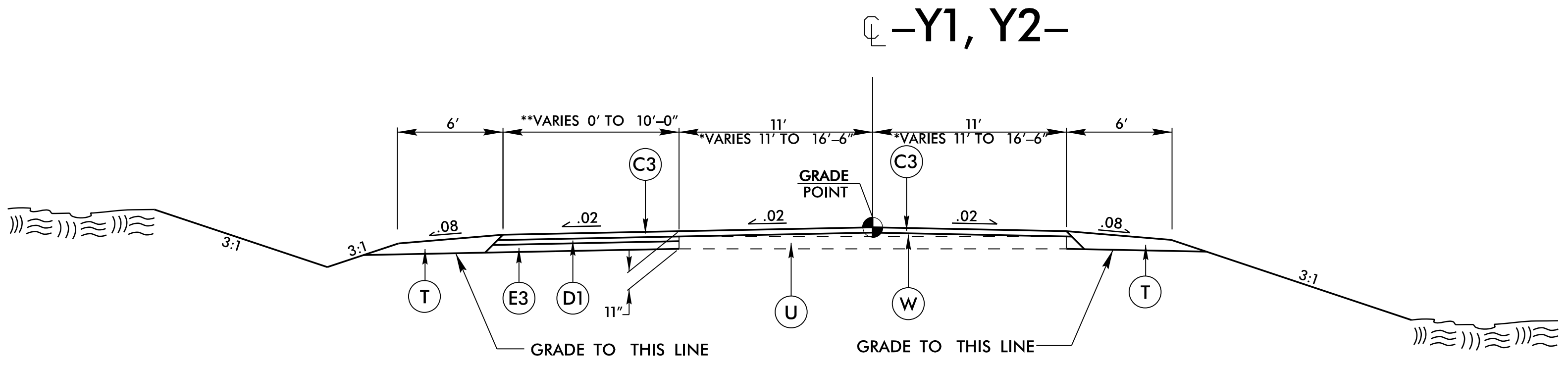
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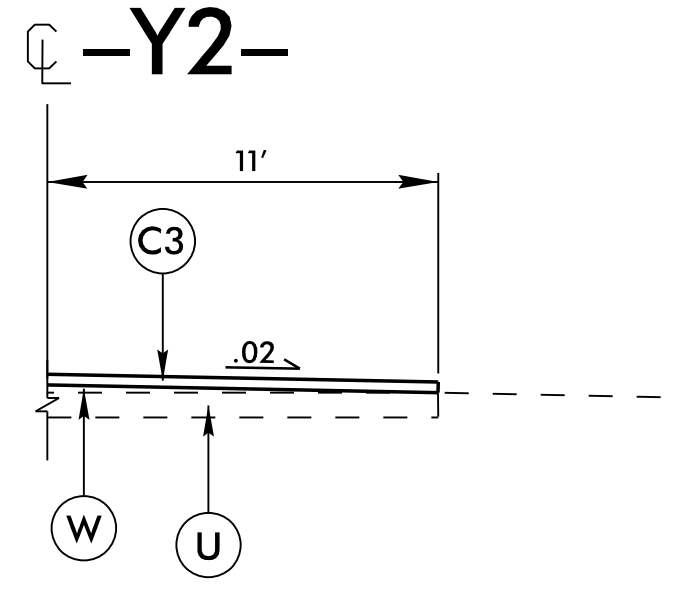
TYPICAL SECTION NO. 1  
-L- STA. 13+00.00 TO 22+00.00



TYPICAL SECTION NO. 2  
-Y1- STA. 10+18.10 TO 14+90.00



TYPICAL SECTION NO. 3  
\*-Y1- STA. 14+90.00 TO 18+60.00  
\*\*-Y2- STA. 10+16.50 TO 13+30.00



INSET A

-Y2- STA. 10+62.70 TO 13+30.00

PROJECT REFERENCE NO. <b>W-5601Q</b>	SHEET NO. <b>2A-1</b>
ROADWAY DESIGN ENGINEER <b>THOMAS K. GOODWIN</b> 6/5/2018	PAVEMENT DESIGN ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
PLANS PREPARED BY: <b>Gannett Fleming</b>	2510 Wycliff Road Suite 102 Raleigh, NC 27607-3073 (919) 420-7660 NC Lic. No. F-0270
<b>Excellence Delivered As Promised</b>	



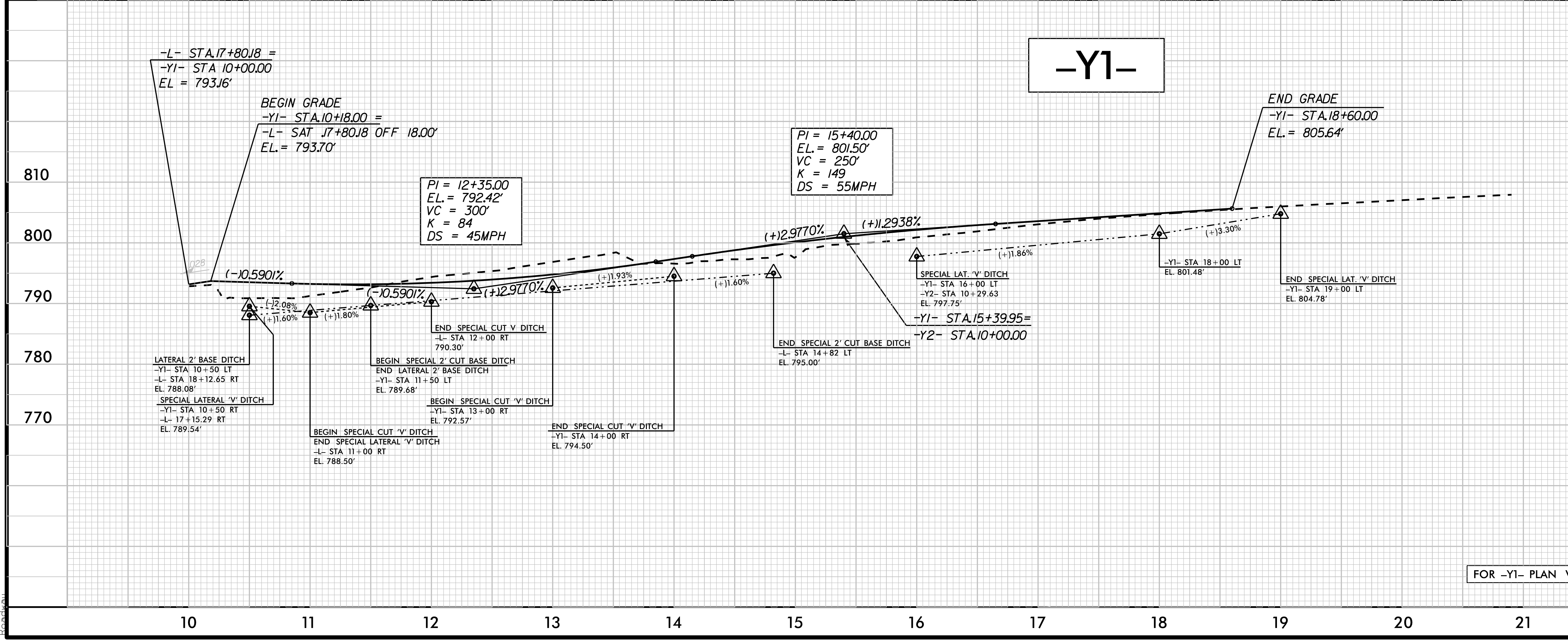
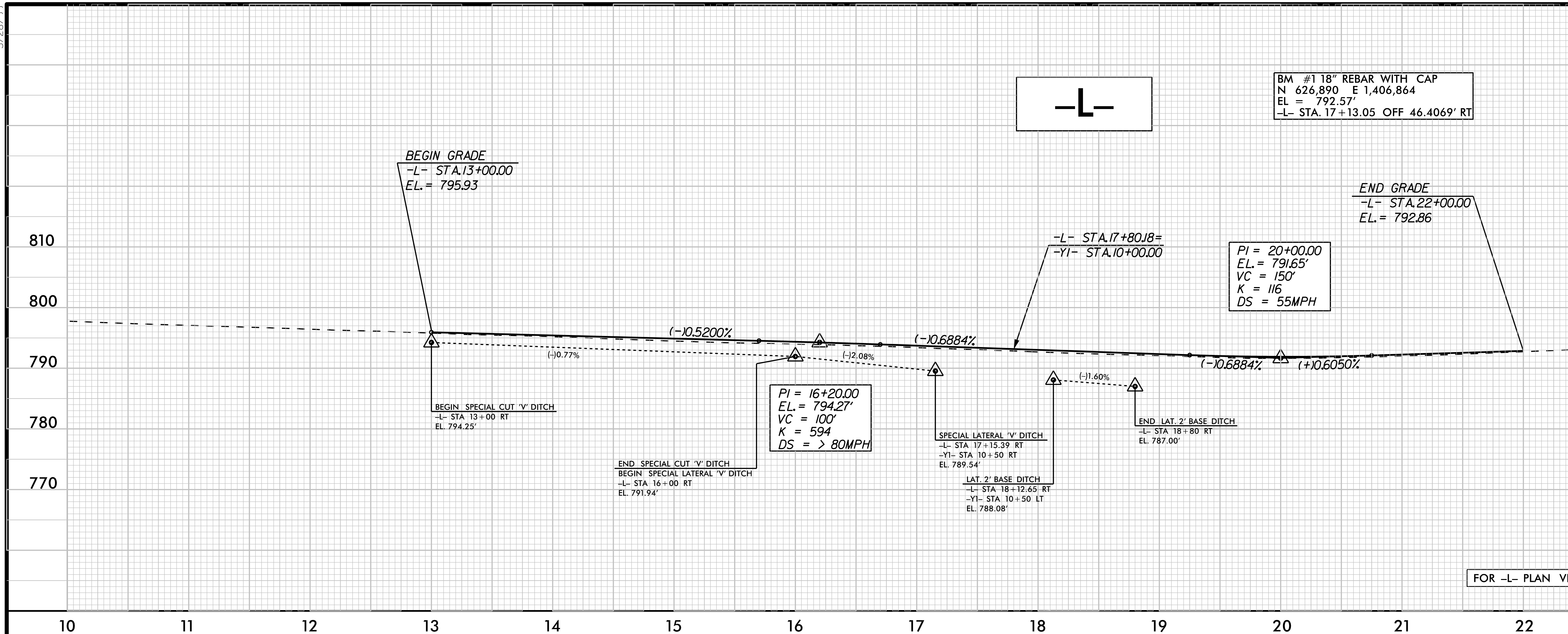






5/28/19

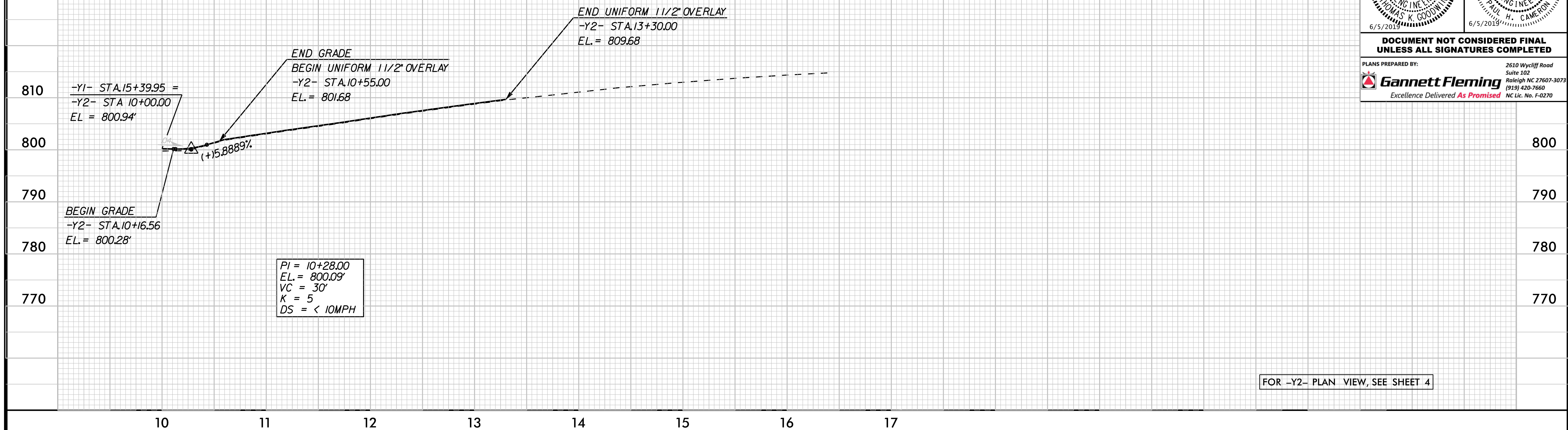
PROJECT REFERENCE NO. <b>W-5601Q</b>	SHEET NO. <b>5</b>
ROADWAY DESIGN ENGINEER <i>[Signature]</i> SEAL 012975 6/5/2019	HYDRAULICS ENGINEER <i>[Signature]</i> SEAL 40801 6/5/2019
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
PLANS PREPARED BY: <b>Gannett Fleming</b>	2510 Wycliff Road Suite 102 Raleigh, NC 27607-3073 (919) 420-7660 NC Lic. No. F-0270



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5/28/19

-Y2-



PROJECT REFERENCE NO. <b>W-5601Q</b>	SHEET NO. <b>6</b>
ROADWAY DESIGN ENGINEER Described by <i>Thomas K. Goodwin</i> PROFESSIONAL SEAL 012975 ENGINEER THOMAS K. GOODWIN 6/5/2019	HYDRAULICS ENGINEER Described by <i>Paul H. Camedon</i> PROFESSIONAL SEAL 40801 ENGINEER PAUL H. CAMEDON 6/5/2019
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
PLANS PREPARED BY: <b>Gannett Fleming</b> 2610 Wycliff Road Suite 102 Raleigh, NC 27607-3073 (919) 420-7660 Excellence Delivered <b>As Promised</b> NC Lic. No. F-0270	

FOR -Y2- PLAN VIEW, SEE SHEET 4

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**TIP PROJECT: W-5601Q**

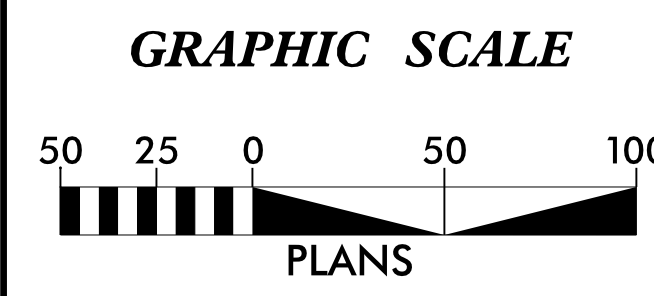
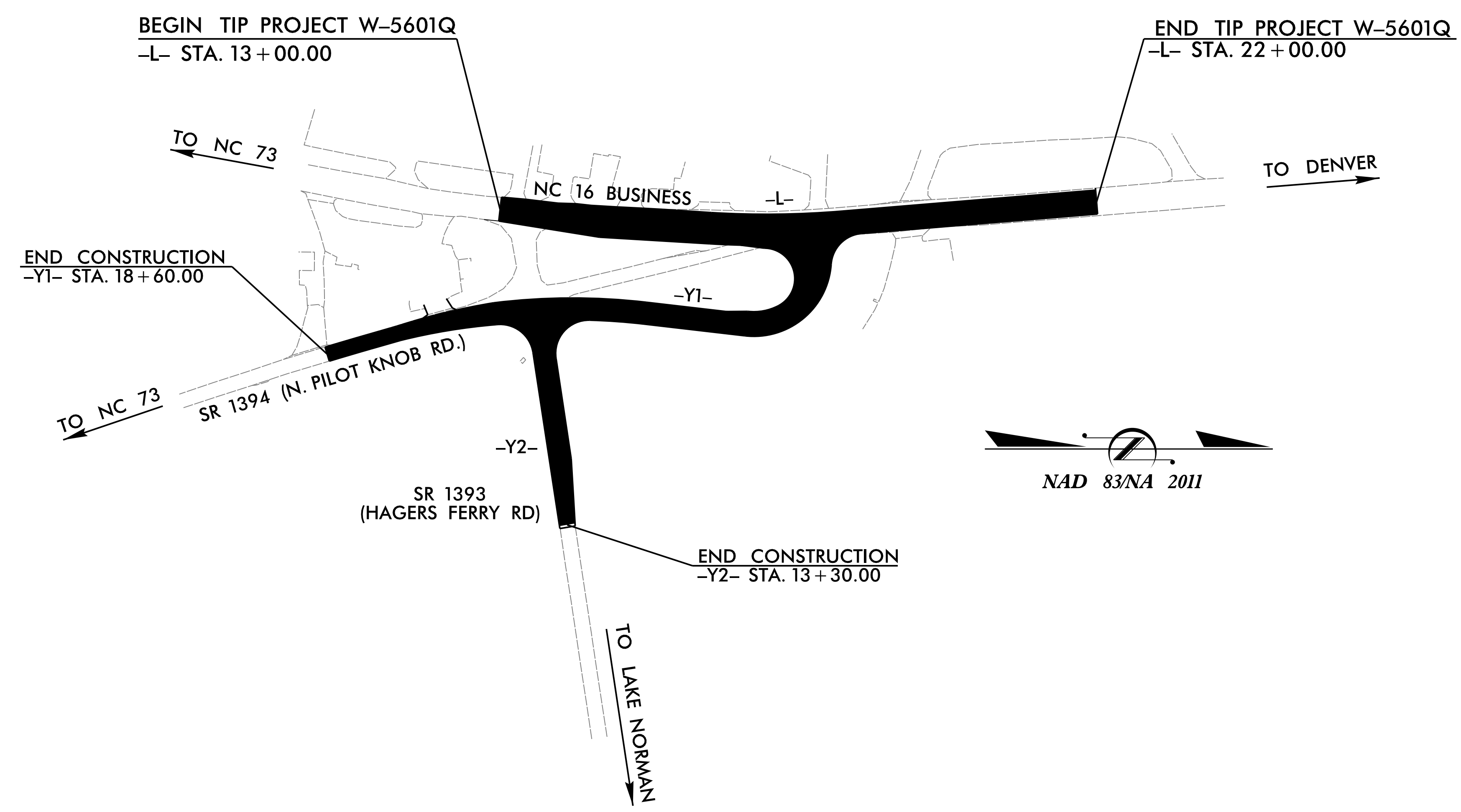
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5601Q	RW01	

SURVEY CONTROL, EXISTING CENTERLINES,  
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

**LINCOLN COUNTY**

**LOCATION: NC 16 BUSINESS /SR 1393 (HAGERS FERRY ROAD) /SR 1394 (N. PILOT KNOB ROAD)**  
**TYPE OF WORK: GRADING, PAVING, DRAINAGE, PAVEMENT MARKING, SIGNING AND SIGNAL**



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "BL-3" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 626,859.6020(ft) EASTING: 1,406,864.3180(ft) ELEVATION: 792.57(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998451486

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION 10+00.00 IS S 10-09'58.27" W 688.67(ft)

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

Prepared For:  
**DIVISION OF HIGHWAYS**  
Division 12, 1710 East Marion Street, Shelby, NC 28151  
By:

**M A Engineering Consultants, Inc.**  
598 East Chatham Street - Suite 137  
Cary, NC 27511  
Phone: 919.297.0220 Fax: 919.297.0221  
NC License: F-0160

2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
JUNE 20, 2017

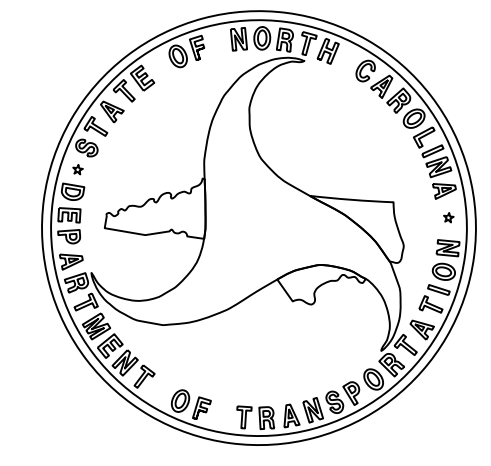
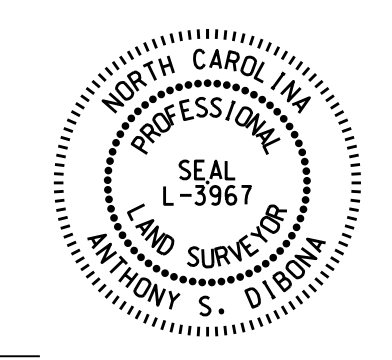
**LETTING DATE:**

**PROFESSIONAL LAND SURVEYOR**

2/25/2019

DocuSigned by:  
*Anthony S. DiBona*  
77EAE8B7A0A648B

SIGNATURE:



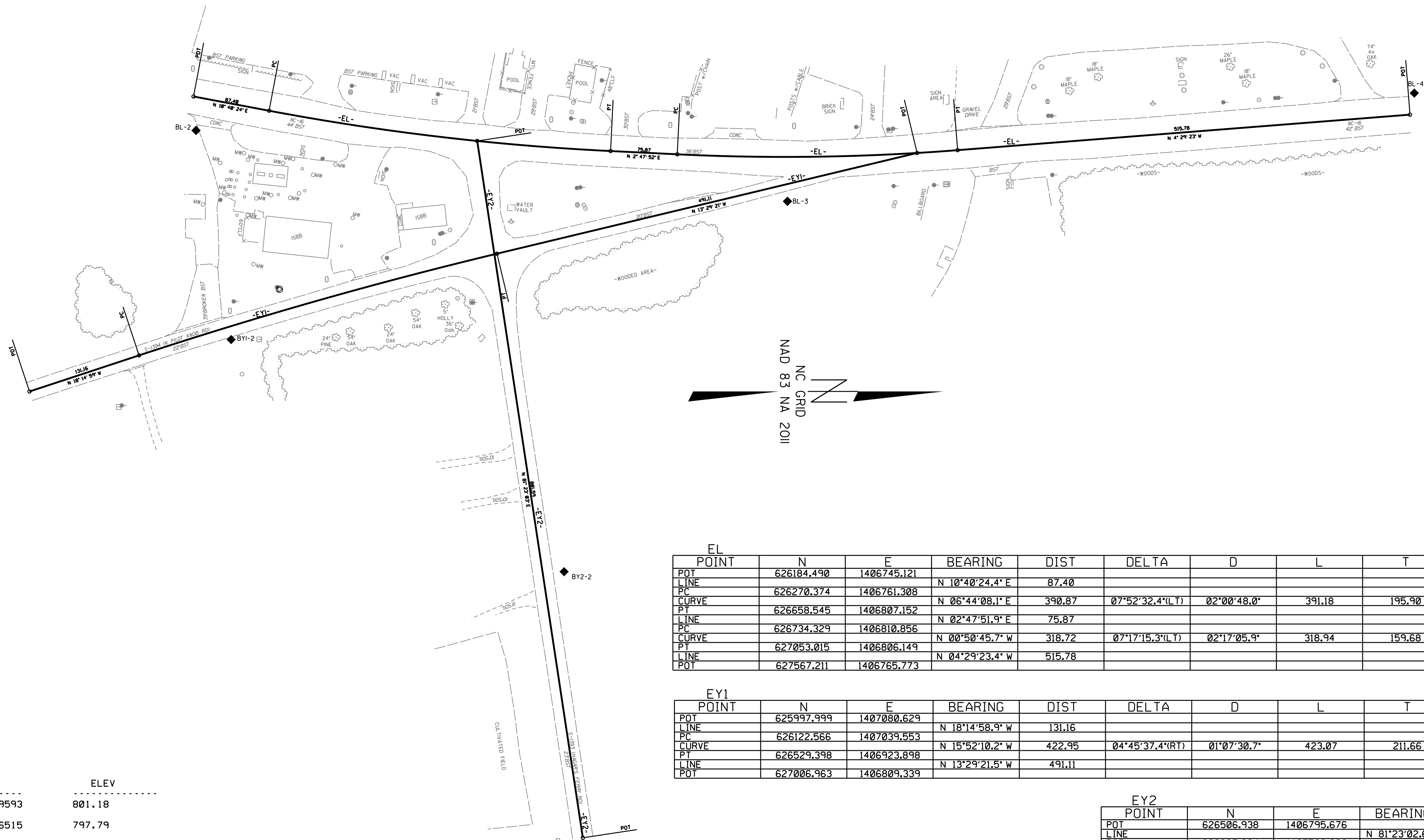
\$\$\$\$\$ SYSTEM \$\$\$\$\$\$ DGN \$\$\$\$\$\$ USER NAME \$\$\$\$\$\$



# SURVEY CONTROL SHEET

## W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. W-5601Q	SHEET NO. RW02C-1
Location and Surveys	
<b>M A Engineering</b> Consultants, Inc.	
598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221	



POINT	DESC	NORTH	EAST	ELEV
108	BL-1	625756.0671	1406639.9593	801.18
104	BL-2	626187.2789	1406783.6515	797.79
100	BL-3	626859.6020	1406864.3180	792.57
106	BL-4	627572.0913	1406741.2359	793.87
107	BL-5	628086.3020	1406755.3941	797.00
105	BY1-1	625696.2249	1407203.3275	805.80
103	BY1-2	626227.2451	1407021.5453	804.97
102	BY2-1	626673.0651	1407768.0479	814.26
101	BY2-2	626605.7087	1407285.5312	809.53

.....  
**BM\*1** ELEVATION = 792.57'  
 N 626,890 E 1406864  
 EL STATION 16+79.6 50.46 RIGHT  
 18" REBAR WITH CAP  
 .....

EL									
POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	626184.490	1406745.121							
LINE			N 10°40'24.4" E	87.40					
PC	626270.374	1406761.308							
CURVE			N 06°44'08.1" E	390.87	07°52'32.4"(LT)	02°00'48.0"	391.18	195.90	2845.83
PT	626658.545	1406807.152							
LINE			N 02°47'51.9" E	75.87					
PC	626734.329	1406810.856							
CURVE			N 00°50'45.7" W	318.72	07°17'15.3"(LT)	02°17'05.9"	318.94	159.68	2507.51
PT	627053.015	1406806.149							
LINE			N 04°29'23.4" W	515.78					
POT	627567.211	1406765.773							

EY1									
POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	625997.999	1407080.629							
LINE			N 18°14'58.9" W	131.16					
PC	626122.566	1407039.553							
CURVE			N 15°52'10.2" W	422.95	04°45'37.4"(RT)	01°07'30.7"	423.07	211.66	5092.10
PT	626529.398	1406923.898							
LINE			N 13°29'21.5" W	491.11					
POT	627006.963	1406809.339							

EY2				
POINT	N	E	BEARING	DIST
POT	626506.938	1406795.676		
LINE			N 81°23'02.6" E	801.59
POT	626627.024	1407588.220		

**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.















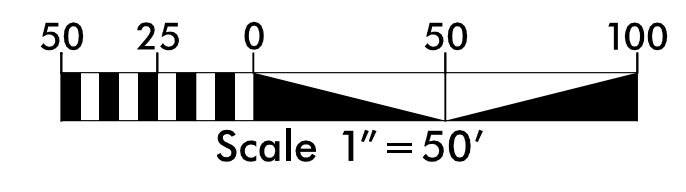
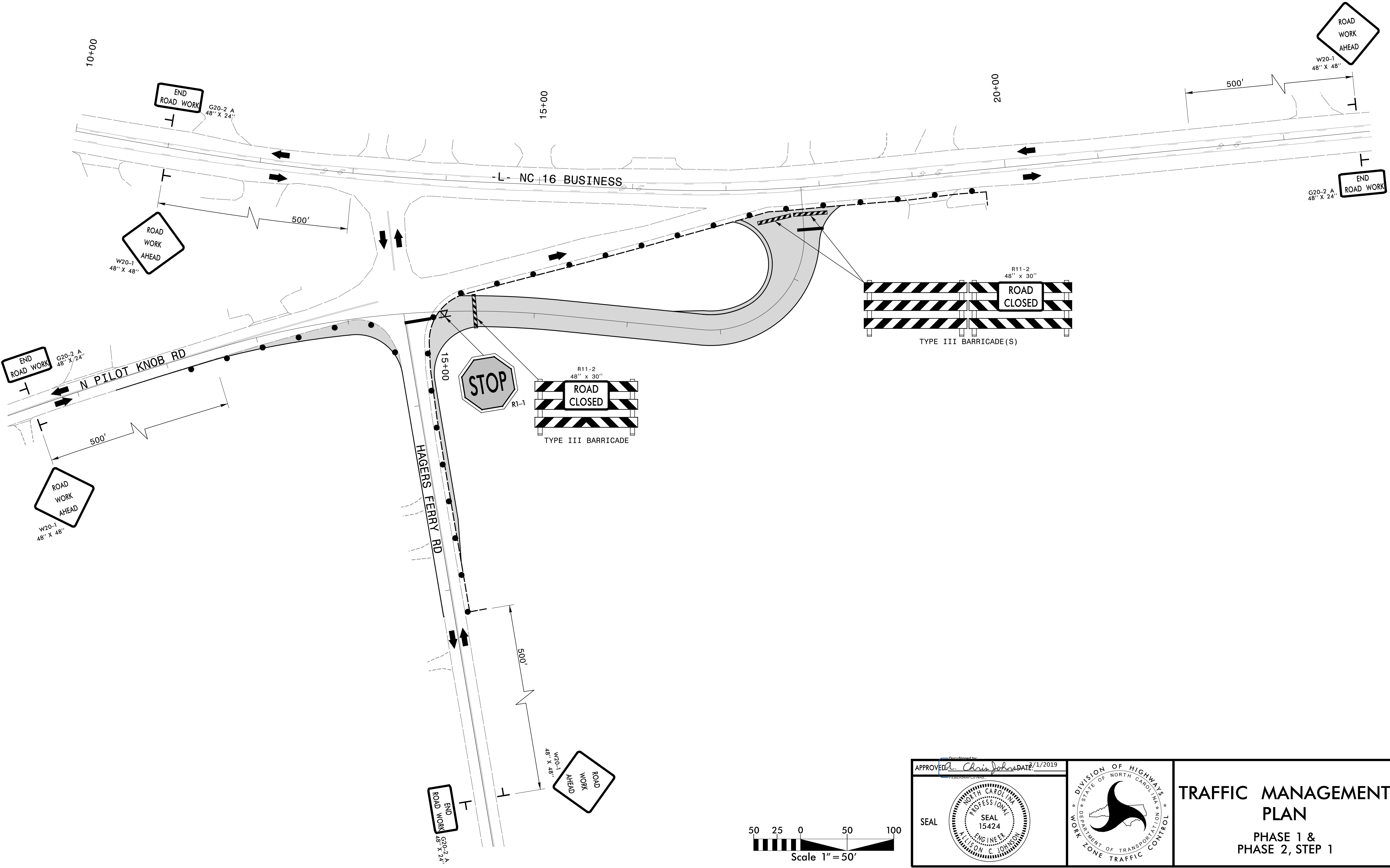




PROJECT REFERENCE NO.	SHEET NO.
W-5601Q	TMP-2
LINCOLN COUNTY	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

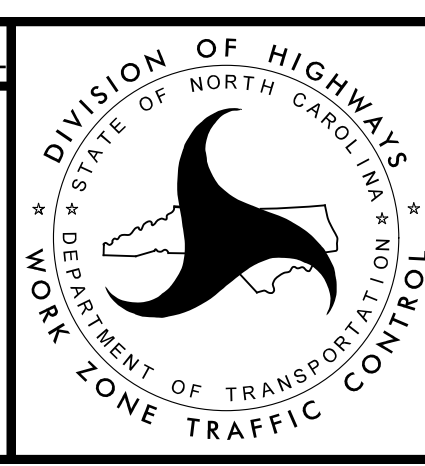


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 8/17/99



APPROVED: *Chris Johnson* DATE: 1/2019

SEAL



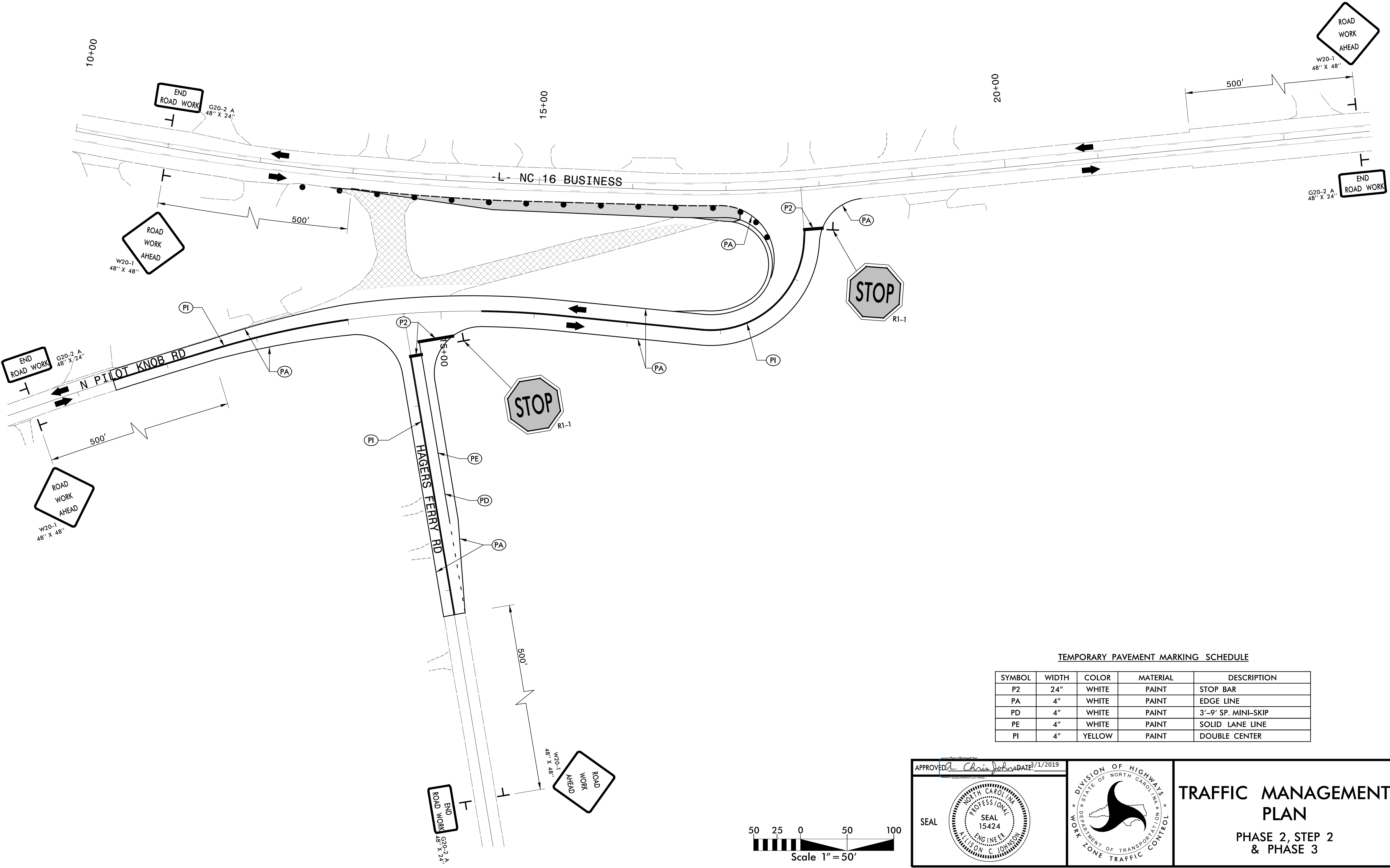
**TRAFFIC MANAGEMENT PLAN**

PHASE 1 &  
PHASE 2, STEP 1



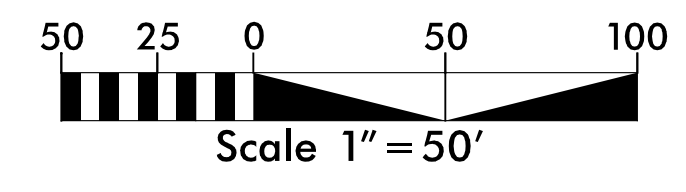


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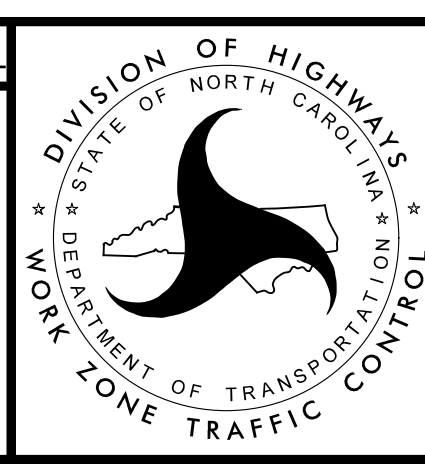
TEMPORARY PAVEMENT MARKING SCHEDULE

SYMBOL	WIDTH	COLOR	MATERIAL	DESCRIPTION
P2	24"	WHITE	PAINT	STOP BAR
PA	4"	WHITE	PAINT	EDGE LINE
PD	4"	WHITE	PAINT	3'-9" SP. MINI-SKIP
PE	4"	WHITE	PAINT	SOLID LANE LINE
PI	4"	YELLOW	PAINT	DOUBLE CENTER



APPROVED: *Chris Johnson* DATE: 2/1/2019

SEAL



**TRAFFIC MANAGEMENT PLAN**

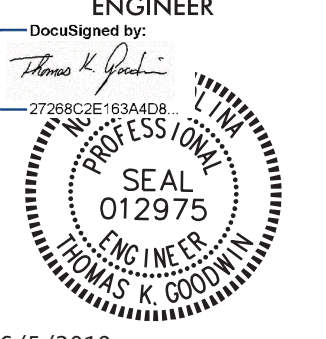
PHASE 2, STEP 2  
& PHASE 3

**CONTRACT: TIP PROJECT: W-5601Q**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**PAVEMENT MARKING PLAN  
LINCOLN COUNTY**

**LOCATION: NC 16 BUSINESS /SR 1393 (HAGERS FERRY ROAD) /SR 1394  
(N. PILOT KNOB ROAD)**

PROJECT REFERENCE NO. <b>W-5601Q</b>	SHEET NO. <b>PMP-1</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER  6/5/2019	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

**INDEX**

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
PMP-2	PAVEMENT MARKING SHEET

**ROADWAY STANDARD DRAWING**

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS

**W5601Q PAVEMENT MARKING SCHEDULE**

SYMBOL	FINAL PAVEMENT MARKINGS	DESCRIPTION
T2	<u>THERMOPLASTIC (24", 90 MIL)</u>	WHITE STOP BAR
TA	<u>THERMOPLASTIC (4", 90 MIL)</u>	WHITE EDGELINE
TD	<u>THERMOPLASTIC (4", 90 MIL)</u>	3 FT. - 9 FT. / SP WHITE MINISKIP
TE		WHITE SOLID LANE LINE
TF		10 FT. YELLOW SKIP
TH		YELLOW SINGLE CENTER
TI		YELLOW DOUBLE CENTER
TP	<u>THERMOPLASTIC (8", 90 MIL)</u>	YELLOW DIAGONAL
	<u>THERMOPLASTIC PAVEMENT MARKING SYMBOLS (90 MIL)</u>	
UA		LEFT TURN ARROW
UB		RIGHT TURN ARROW
UC		STRAIGHT ARROW

**GENERAL NOTES**

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

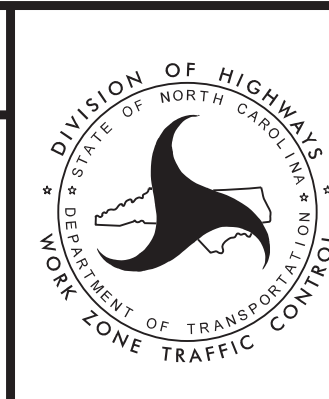
- A. INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS FOLLOWS:
 

ROAD NAME	MARKING	MARKER
-L-	THERMOPLASTIC	SNOWPLOWABLE THERMOPLASTIC MARKER
-Y1-	THERMOPLASTIC	SNOWPLOWABLE THERMOPLASTIC MARKER
-Y2-	THERMOPLASTIC	SNOWPLOWABLE THERMOPLASTIC MARKER
- B. TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES
- C. REMOVE / REPLACE ANY CONFLICTING / DAMAGED PAVEMENT MARKING AND MARKERS.
- D. STOP BAR LOCATIONS AT NON-SIGNALIZED INTERSECTIONS MY BE ADJUSTED AS DIRECTED BY THE ENGINEER.
- E. UNLESS OTHERWISE SPECIFIED, HEATED-IN-PLACE THERMOPLASTIC MY BE USED IN LIEU OF EXTRUDED THERMOPLASTIC FOR ARROWS, STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS. IF HEATED-IN-PLACE IS USED, IT SHALL BE PAID FOR USING THE EXTRUDED THERMOPLASTIC PAY ITEM.

**PLAN REVIEWED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT**

\_\_\_\_\_  
SIGNING & DELINEATION REGIONAL ENGINEER

\_\_\_\_\_  
SIGNING & DELINEATION PROJECT DESIGN ENGINEER



**PLAN PREPARED BY: Gannett Fleming**

THOMAS K. GOODWIN, P.E. PROJECT DESIGN ENGINEER

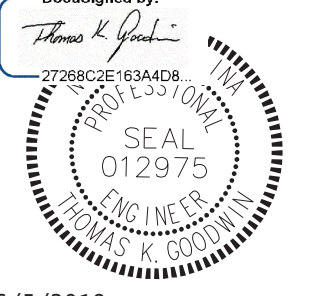

\_\_\_\_\_  
DESIGNER

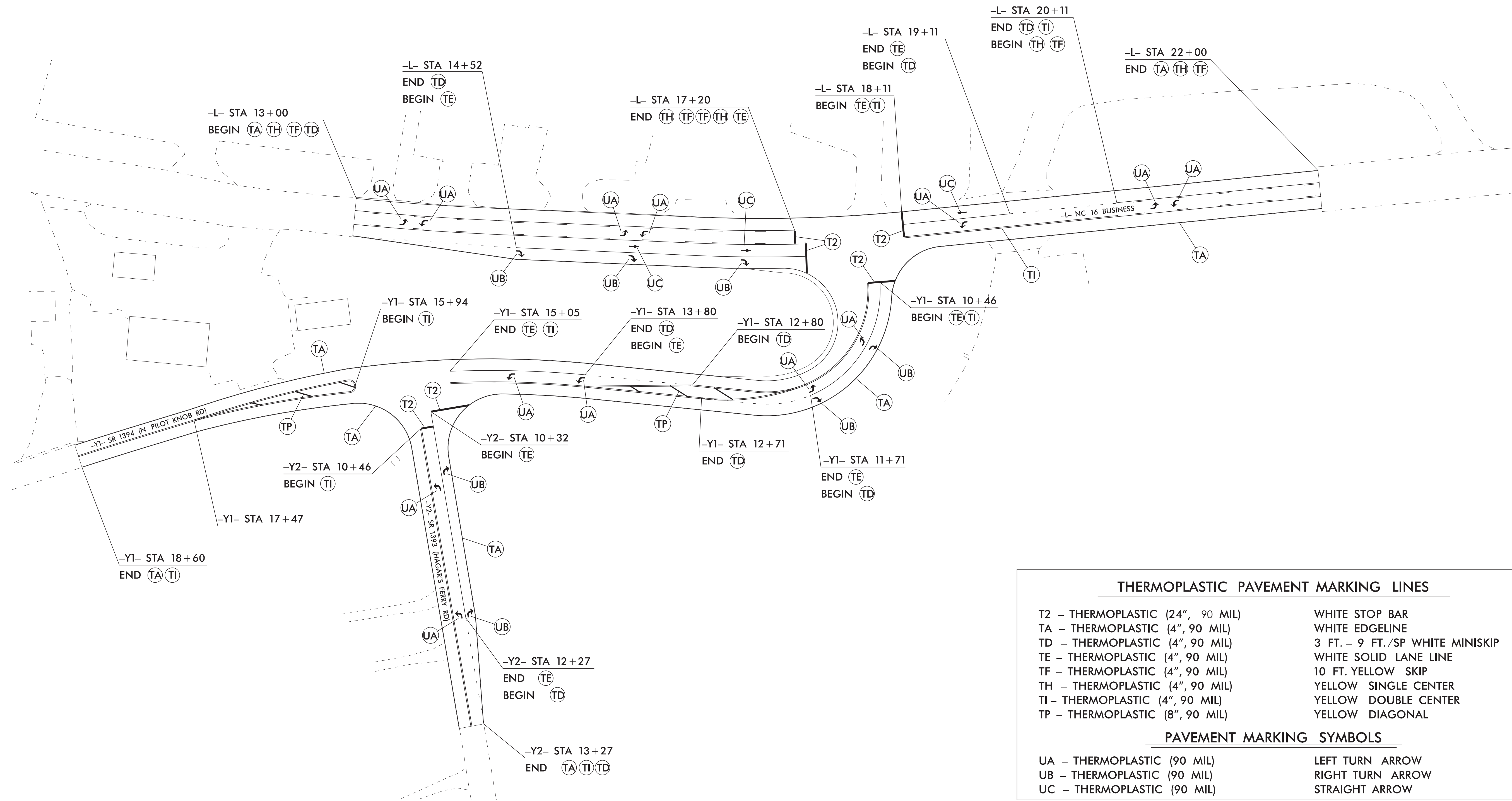
PLANS PREPARED BY:  **Gannett Fleming**

2610 Wycliff Road  
Suite 102  
Raleigh NC 27607-3073  
(919) 420-7660  
NC Lic. No. F-0270

Excellence Delivered As Promised



PROJECT REFERENCE NO. <b>W-5601Q</b>	SHEET NO. <b>PMP-2</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
6/5/2019	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
PLANS PREPARED BY:  <b>Gannett Fleming</b>	2610 Wycliff Road Suite 102 Raleigh, NC 27607-3073 (919) 420-7560 NC Lic. No. F-0270



THERMOPLASTIC PAVEMENT MARKING LINES	
T2 - THERMOPLASTIC (24", 90 MIL)	WHITE STOP BAR
TA - THERMOPLASTIC (4", 90 MIL)	WHITE EDGELINE
TD - THERMOPLASTIC (4", 90 MIL)	3 FT. - 9 FT./SP WHITE MINISKIP
TE - THERMOPLASTIC (4", 90 MIL)	WHITE SOLID LANE LINE
TF - THERMOPLASTIC (4", 90 MIL)	10 FT. YELLOW SKIP
TH - THERMOPLASTIC (4", 90 MIL)	YELLOW SINGLE CENTER
TI - THERMOPLASTIC (4", 90 MIL)	YELLOW DOUBLE CENTER
TP - THERMOPLASTIC (8", 90 MIL)	YELLOW DIAGONAL

PAVEMENT MARKING SYMBOLS	
UA - THERMOPLASTIC (90 MIL)	LEFT TURN ARROW
UB - THERMOPLASTIC (90 MIL)	RIGHT TURN ARROW
UC - THERMOPLASTIC (90 MIL)	STRAIGHT ARROW

8/17/19  
 5/3/2019  
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09/05/99

**TIP PROJECT: W-5601Q**

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

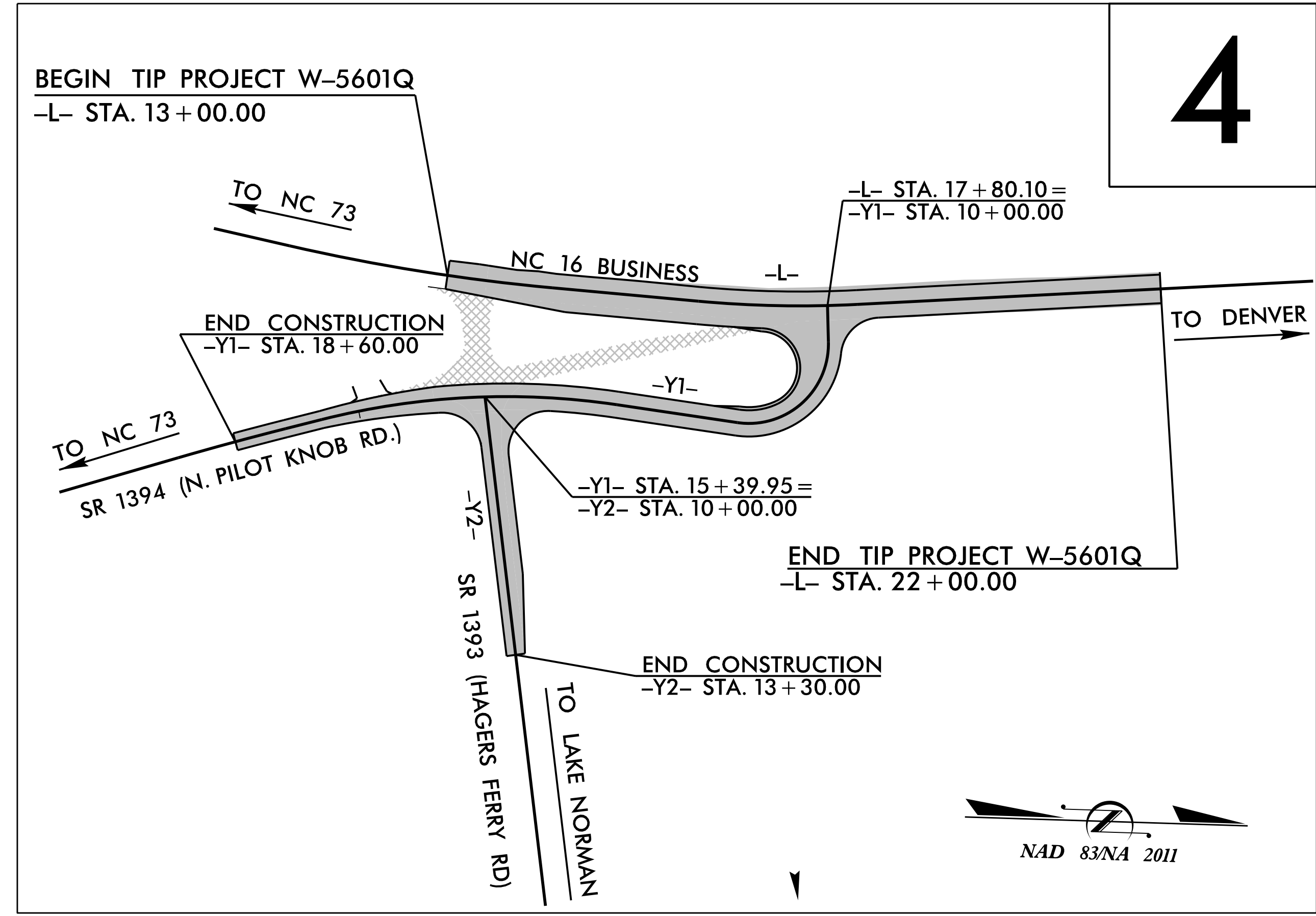
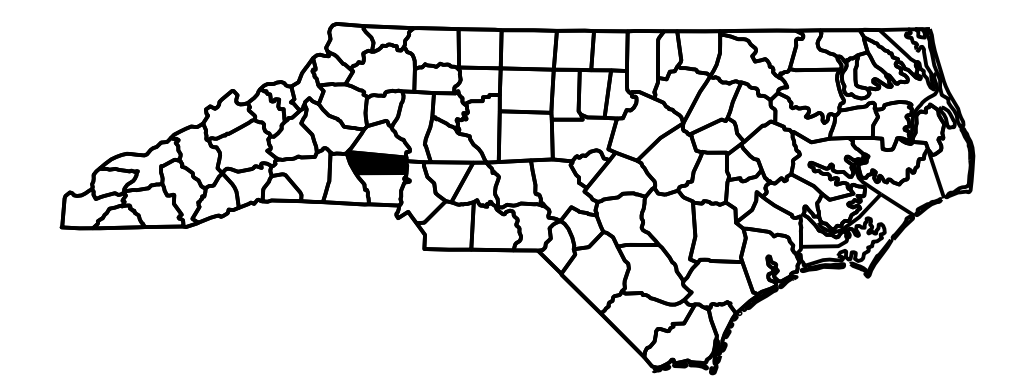
PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL

**LINCOLN COUNTY**

LOCATION: NC 16 BUSINESS /SR 1393 (HAGERS FERRY ROAD) /SR 1394 (N. PILOT KNOB ROAD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5601Q	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50138.1.FR18	HSIP-0016(60)	P.E.	
50138.2.FR18	HSIP-0016(60)	ROW	
50138.3.FR18	HSIP-0016(60)	CONST.	



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

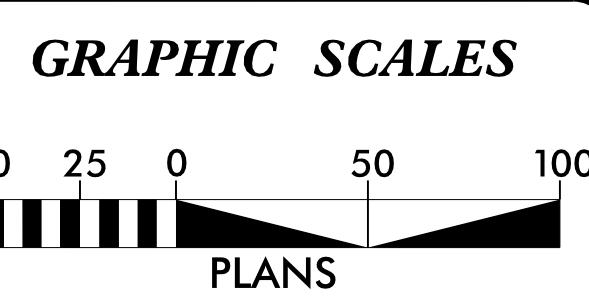
THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

HIGH QUALITY WATER(S) EXIST ON THIS PROJECT  
High Quality Water Zone(s) Exist  
From Sta. L 17+50 to Sta. L 22+00  
Refer To E. C. Special Provisions for Special Considerations.

303(d) IMPAIRED WATER(S) EXIST ON THIS PROJECT  
303(d) Impaired Water Zone(s) Exist  
From Sta. L 17+50 to Sta. L 22+00  
Refer To E. C. Special Provisions for Special Considerations.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT  
Refer To E. C. Special Provisions for Special Considerations.

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.



ROADSIDE ENVIRONMENTAL UNIT  
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

2012 STANDARD SPECIFICATIONS

Prepared In the Office of:

**M A Engineering Consultants, Inc.**  
598 East Chatham Street - Suite 137  
Cary, NC 27511  
Phone: 919.297.0220 Fax: 919.297.0221  
NC License: F-0160

for:

**NCDOT DIVISION 12**  
NCDOT CONTACT: STEVE CANNON, PE  
DISTRICT 1 ENGINEER, DIV. 14

Designed by:

**PAUL H. CAMERON, PE** 3624  
NAME LEVEL IIIA CERTIFICATION NO.

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type B
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type B	1634.02 Temporary Rock Sediment Dam Type B
1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type B
1630.05 Temporary Diversion	1640.01 Coir Fiber Baffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	

3/2/2018  
R:\HydrQualics\EC\W-5601Q-EC-EC1-Tsh.dgn  
11:40:48 AM

**CONTRACT:**



# WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL

**NOTES:**

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

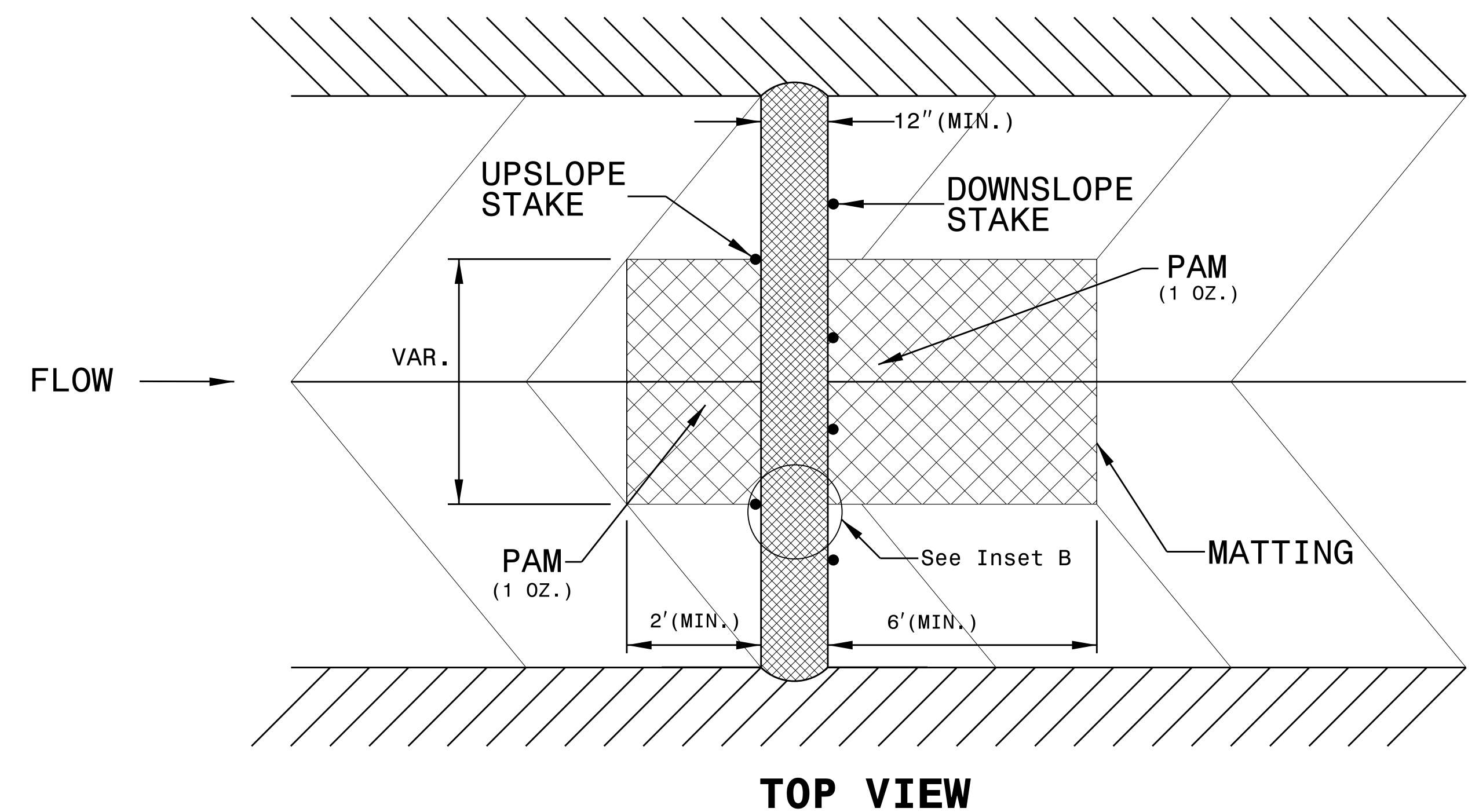
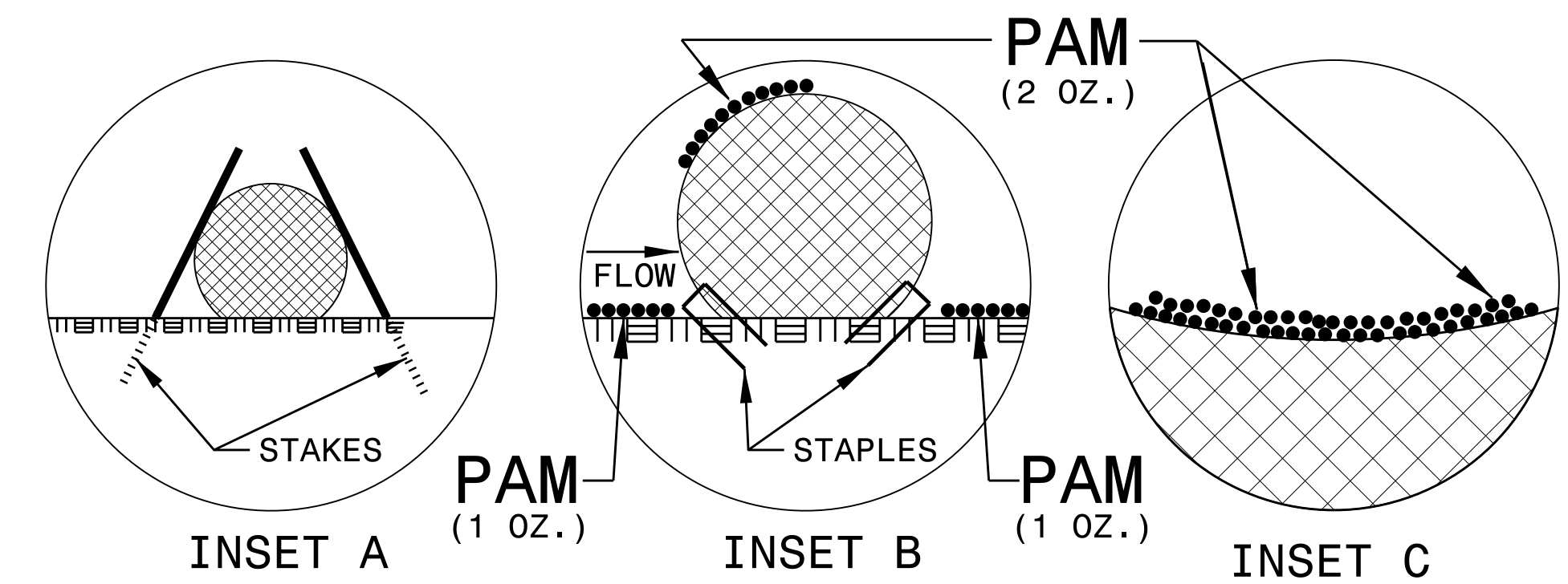
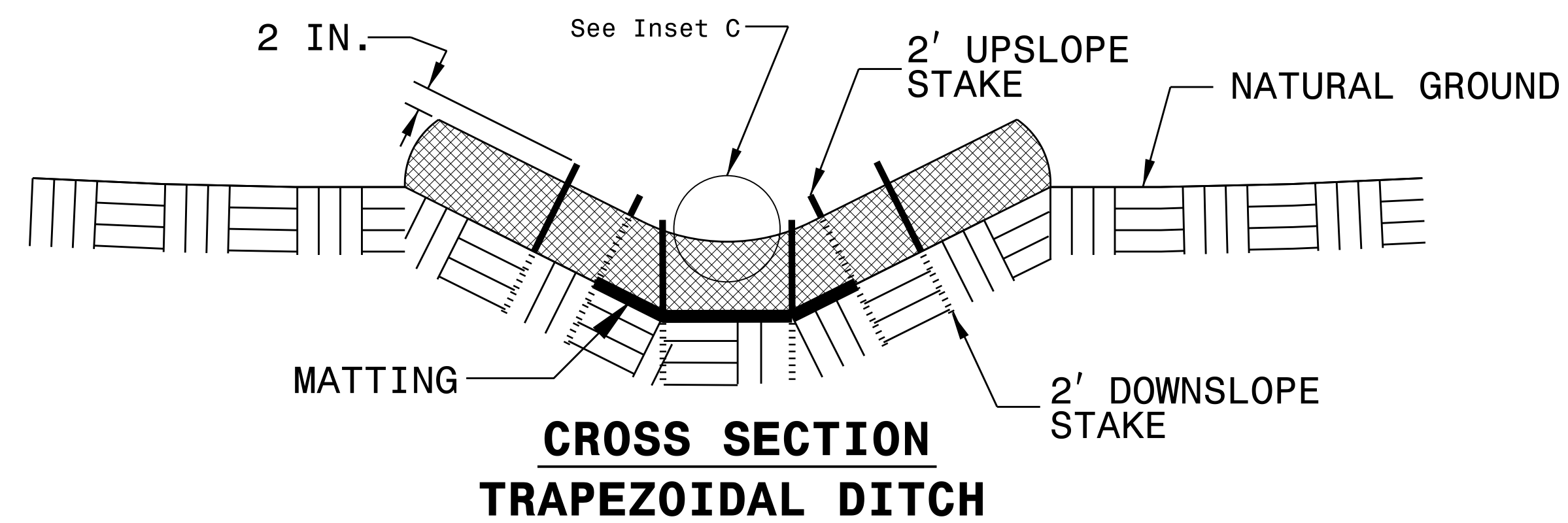
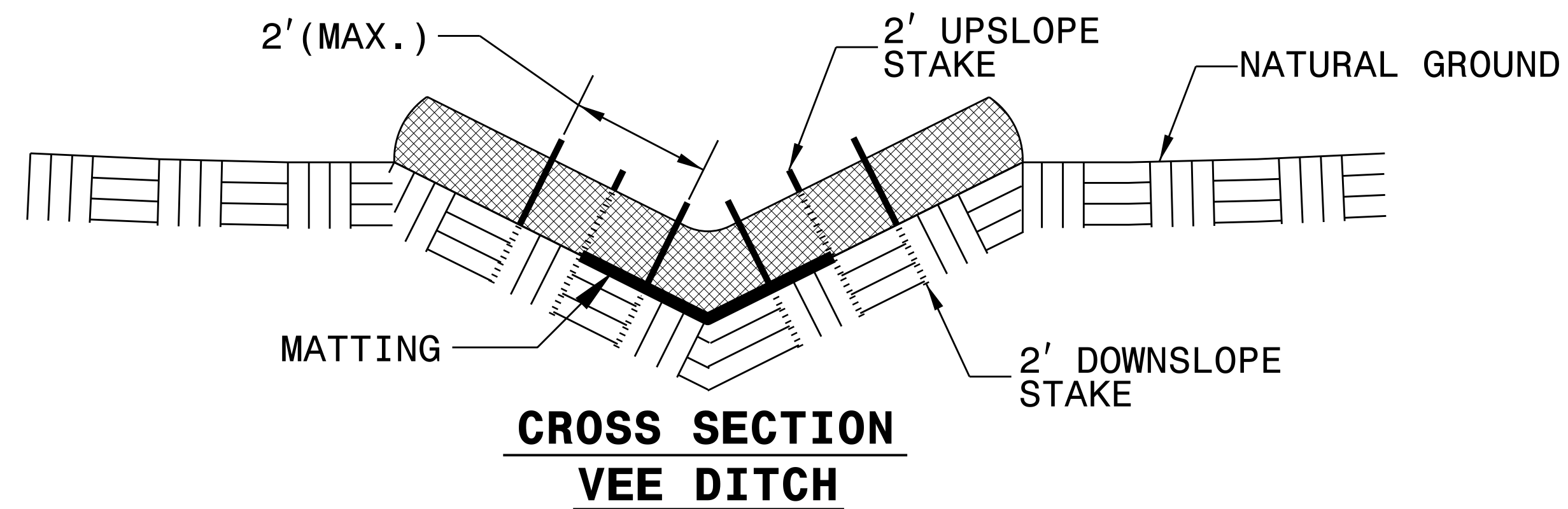
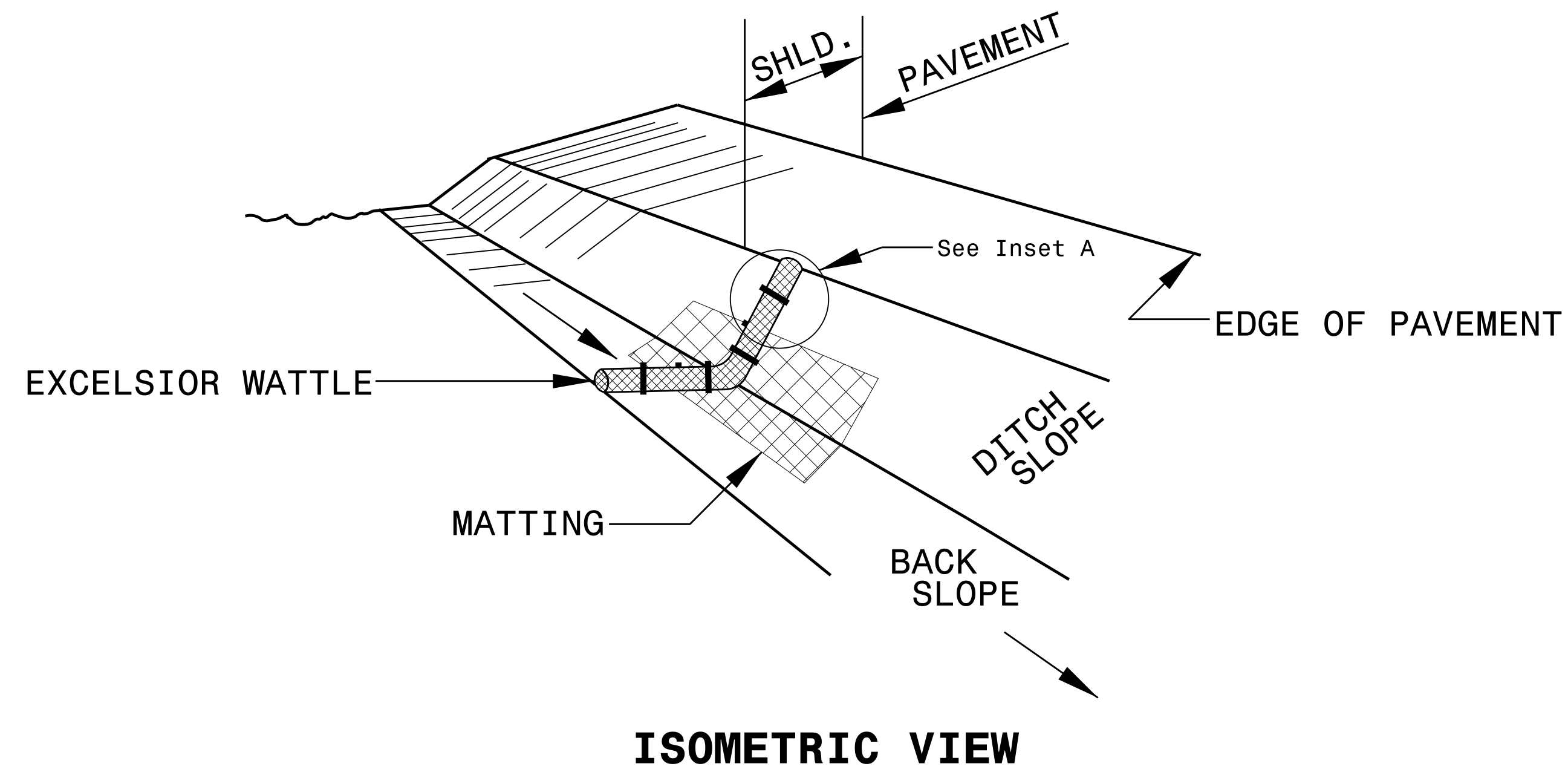
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.


INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



REVISIONS

8/17/99

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. W-5601Q	SHEET NO. EC-3
 <b>M A Engineering Consultants, Inc.</b> <small>598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221</small>	

**SOIL STABILIZATION SUMMARY SHEET**  
**GEOTEXTILE FOR EROSION CONTROL**

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	L	1600	1715	RT	120
4	L	1812	1880	RT	65
4	Y1	1050	1482	LT	325
4	Y1	1600	1900	LT	165
4	Y1	1100	1200	RT	25
4	Y1	1300	1400	RT	40
4	Y2	1029	1150	RT	80
4	Y2	1050	1150	LT	35
				SUBTOTAL	855
					MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER
					7500
				TOTAL	8355
				SAY	8360

**SOIL STABILIZATION TIME FRAMES**

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

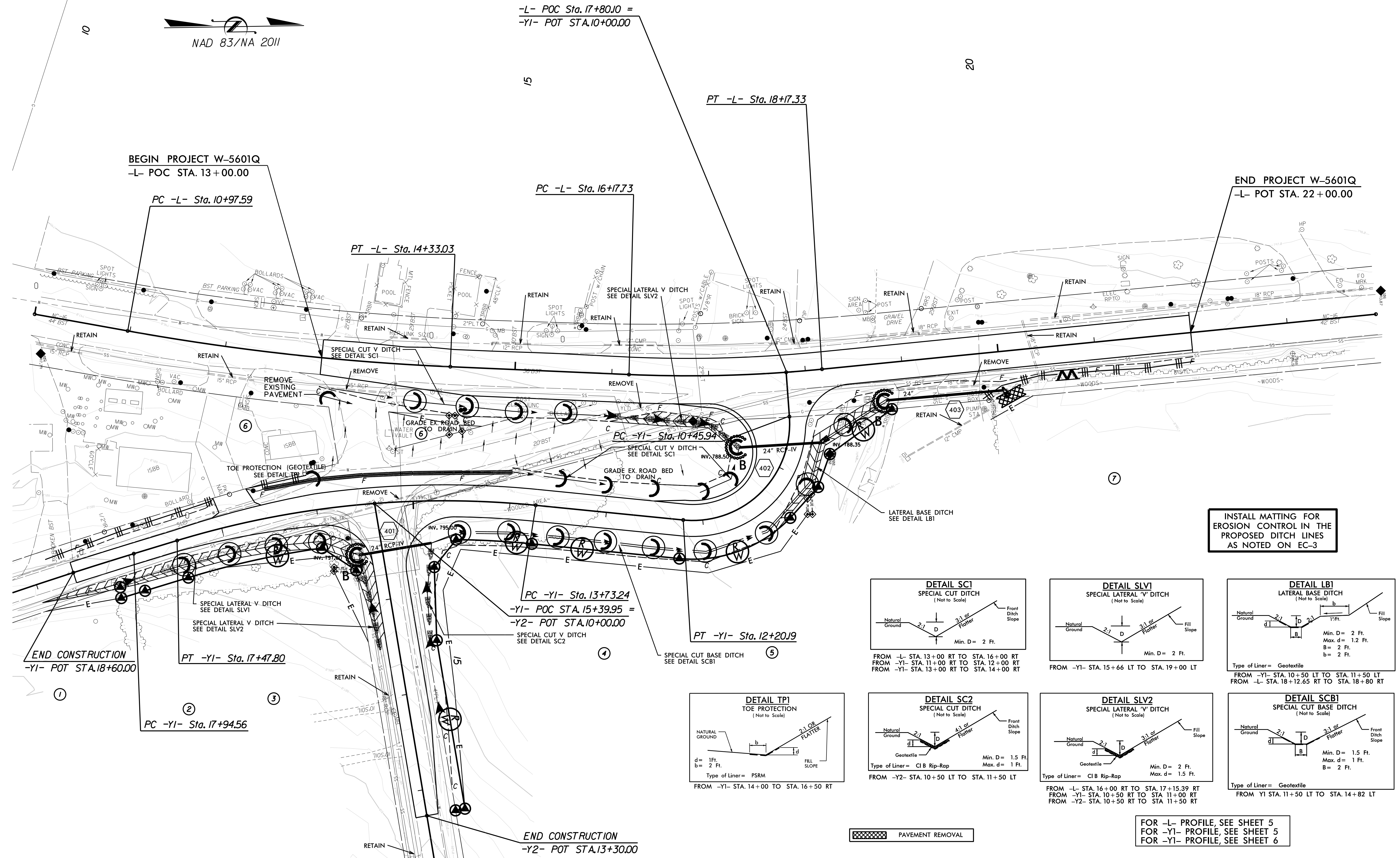


**-L- CURVE DATA**

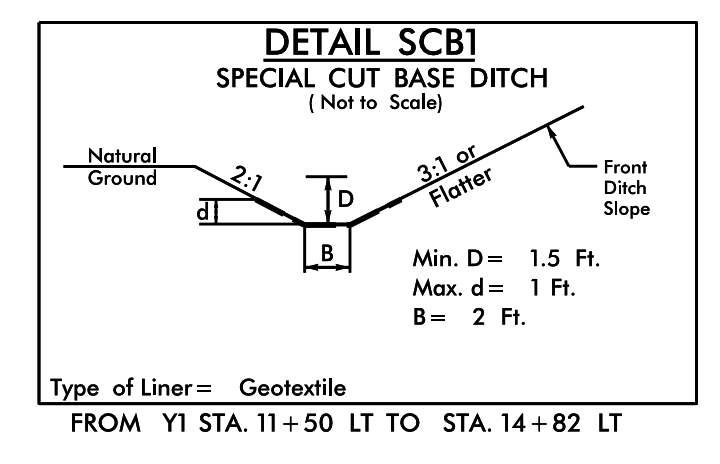
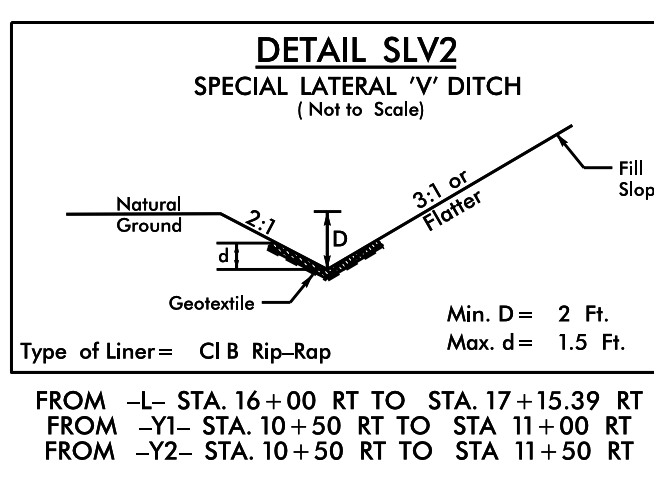
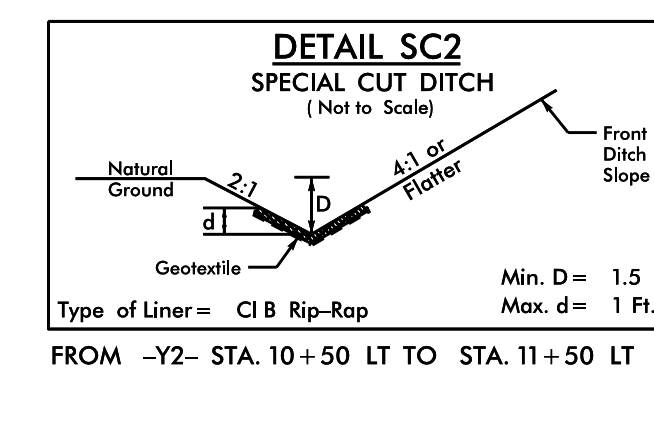
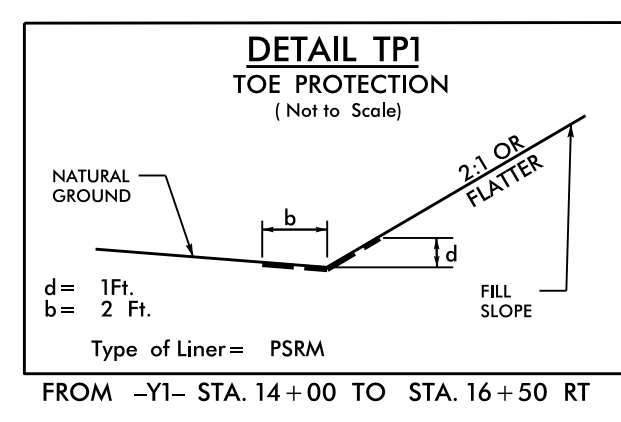
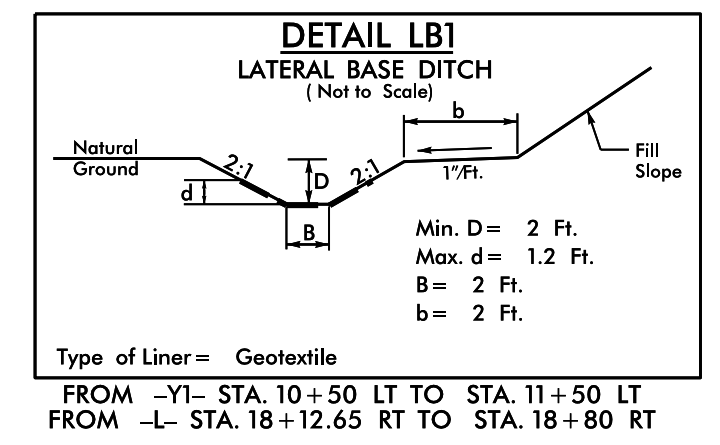
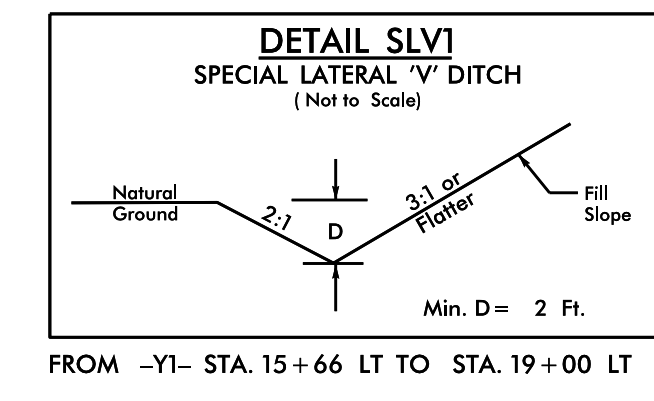
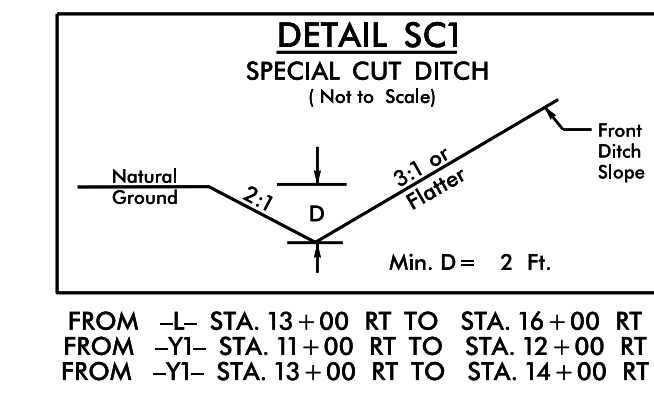
PI Sta 12+65.56	PI Sta 17+17.70
$\Delta = 7' 41" 16.1" (LT)$	$\Delta = 8' 05" 07.9" (LT)$
D = 2' 17" 30.6"	D = 4' 05" 33.2"
L = 335.44'	L = 199.60'
T = 167.97'	T = 99.97'
R = 2,500.00'	R = 1,400.00'
Se = SEE PLANS	Se = SEE PLANS
RUNOFF = 150'	RUNOFF = 150'

**-YI- CURVE DATA**

PI Sta 11+64.78	PI Sta 15+62.98	PI Sta 18+64.62
$\Delta = 99' 50" 13.0" (RT)$	$\Delta = 22' 35" 23.9" (LT)$	$\Delta = 2' 00" 25.0" (LT)$
D = 57' 17" 44.8"	D = 6' 01" 52.1"	D = 1' 25" 56.6"
L = 174.25'	L = 374.56'	L = 140.11'
T = 118.83'	T = 189.74'	T = 70.06'
R = 100.00'	R = 950.00'	R = 4,000.00'
Se = .04	Se = .04	Se = .04
RUNOFF = 104'	RUNOFF = 120'	RUNOFF = 112'



**INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINES AS NOTED ON EC-3**



PAVEMENT REMOVAL

FOR -L- PROFILE, SEE SHEET 5  
 FOR -Y1- PROFILE, SEE SHEET 5  
 FOR -Y2- PROFILE, SEE SHEET 6

8/17/99  
 3/2/2018  
 R:\114148\p\114148.ec\w-56010.ec\ec4.dgn  
 11/17/15 AM

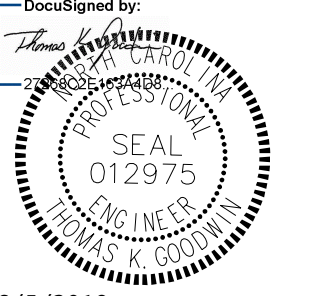
**TIP PROJECT: W-5601Q**

**CONTRACT:**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**SIGNING PLAN  
LINCOLN COUNTY**

**LOCATION: NC 16 BUSINESS /SR 1393 (HAGERS FERRY ROAD) /SR 1394  
(N. PILOT KNOB ROAD)**

PROJECT REFERENCE NO. <b>W-5601Q</b>	SHEET NO. <b>SIGN-1</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
6/5/2019	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

**INDEX**

SHEET NO.	DESCRIPTION
SIGN-1	SIGNING PLAN TITLE SHEET
SIGN-2	TYPE "E" SIGNS
SIGN-3	SIGNING PLAN SHEET

**GENERAL NOTES**

- A. SIGNS FURNISHED BY THE STATE.
- B. WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL "E" & "F" SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER.
- C. THE BACKGROUND FOR TYPE "E" & "F" SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
- D. ALL RELOCATED SIGNS SHALL BE INSTALLED ON NEW "U" CHANNEL POSTS.

**ROADWAY STANDARD DRAWING**

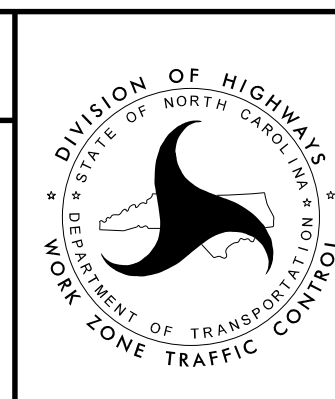
THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
903.10	GROUND MOUNTED SIGN SUPPORTS
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

**PLAN REVIEWED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT**

\_\_\_\_\_  
SIGNING & DELINEATION REGIONAL ENGINEER

\_\_\_\_\_  
SIGNING & DELINEATION PROJECT DESIGN ENGINEER



**PLAN PREPARED BY: Gannett Fleming**

THOMAS K. GOODWIN, P.E. PROJECT DESIGN ENGINEER

\_\_\_\_\_  
DESIGNER

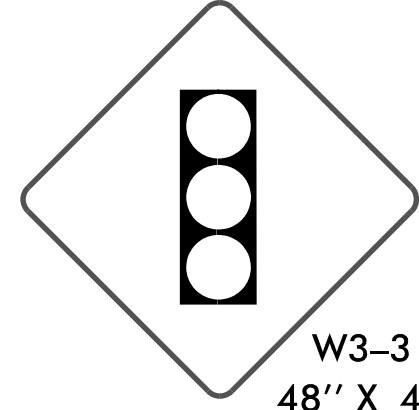
PLANS PREPARED BY:  2610 Wycliff Road  
Suite 302  
Raleigh, NC 27607-3073  
(919) 420-7660  
Excellence Delivered **As Promised** NC Lic. No. F-0270



**CONTRACT:**

**TIP PROJECT: W-5601Q**

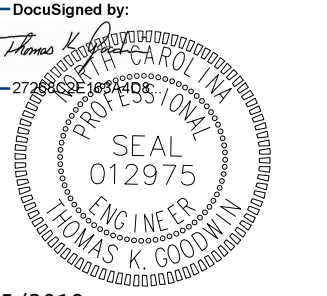

01 QUANTITY REQ'D: 1

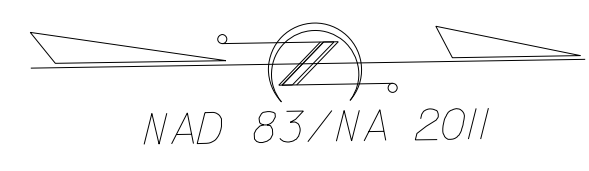
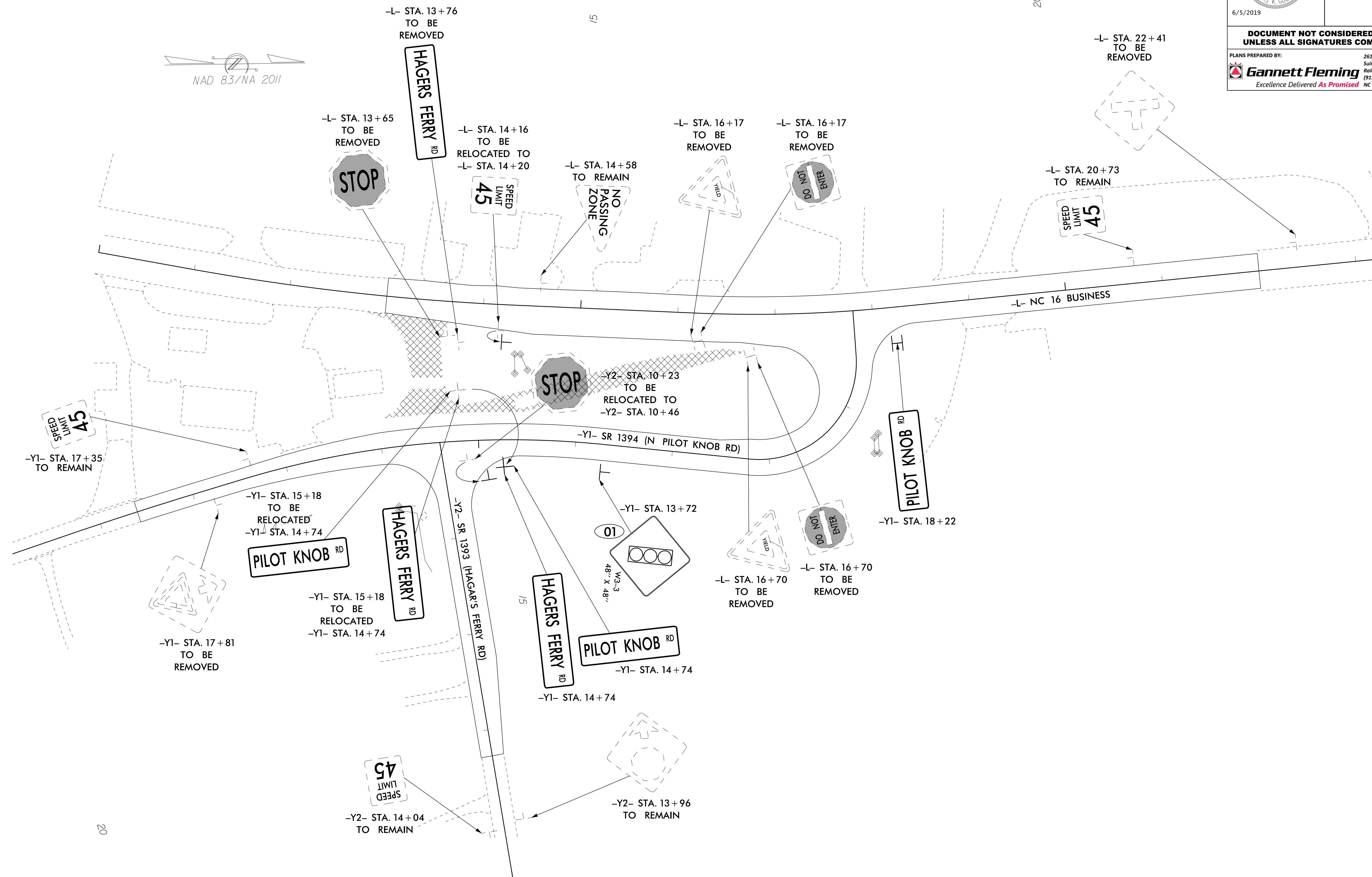


W3-3  
48" X 48"

ONE "U" POST  
PER SIGN

PROJECT REFERENCE NO. <b>W-5601Q</b>	SHEET NO. <b>SIGN-2</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
6/5/2019	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

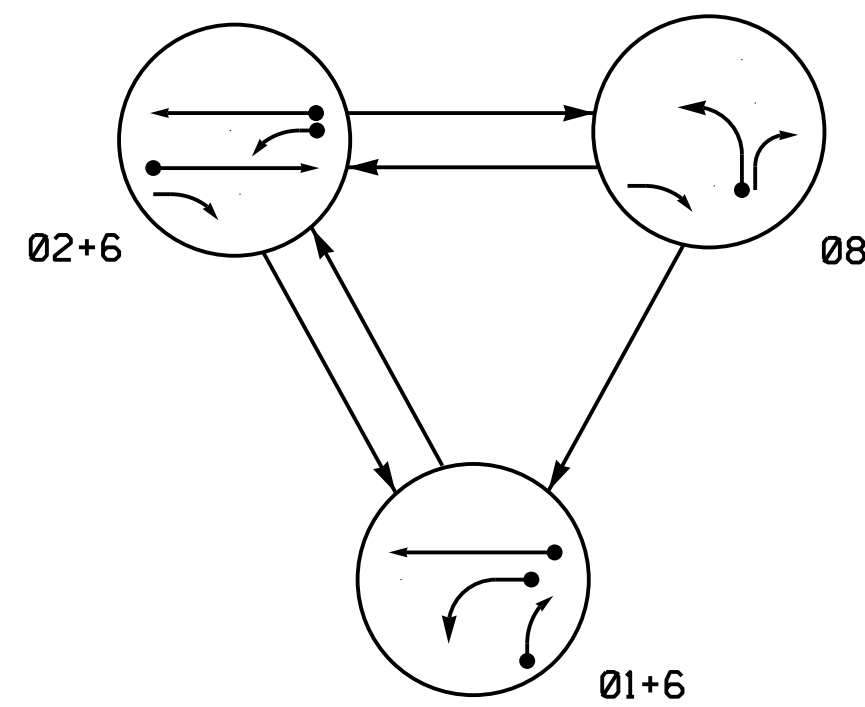
PROJECT REFERENCE NO. <b>W-5601Q</b>	SHEET NO. <b>SIGN-3</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
 6/5/2019	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
PLANS PREPARED BY:	2610 Wycliff Road Suite 102 Raleigh NC 27607-3073 (919) 420-7660 NC Lic. No. F-0270
 <b>Gannett Fleming</b> Excellence Delivered <i>As Promised</i>	



8/17/99  
 5/31/2019  
 C:\Users\gannett\Documents\Projects\61644\W-5601Q\Traffic\Signing\CADD\Signing\_Layout\_Plans\W-5601Q\_SGN\_PSH\_SIGN-3.dgn  
 gannett.com



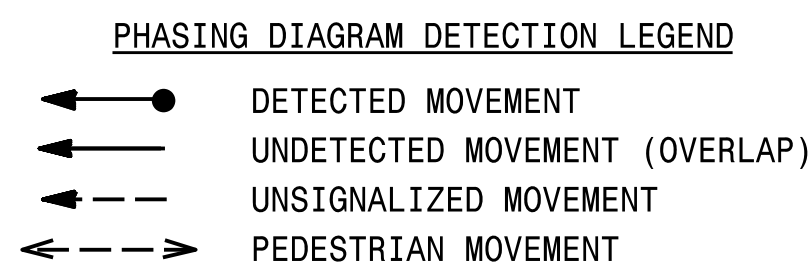
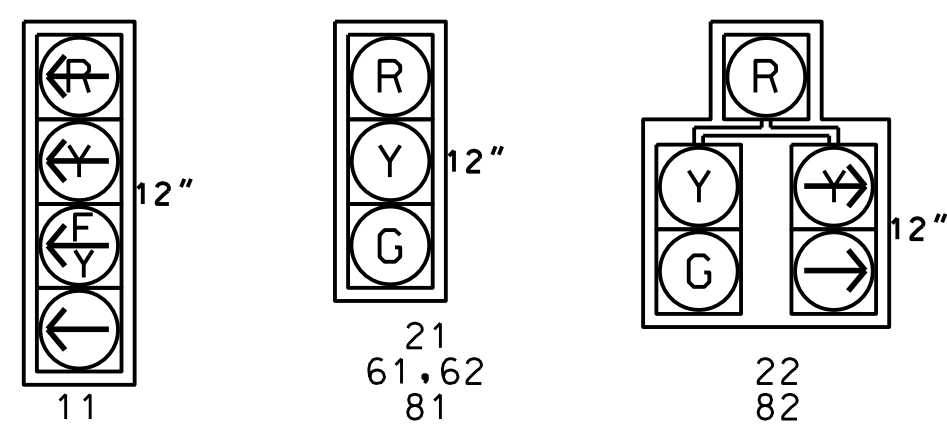
PHASING DIAGRAM



SIGNAL FACE	PHASE			
	01+6	02+6	08	FLASH
11	Y	R	R	Y
21	R	G	R	Y
22	R	G	R	Y
61,62	G	G	R	Y
81	R	R	G	R
82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

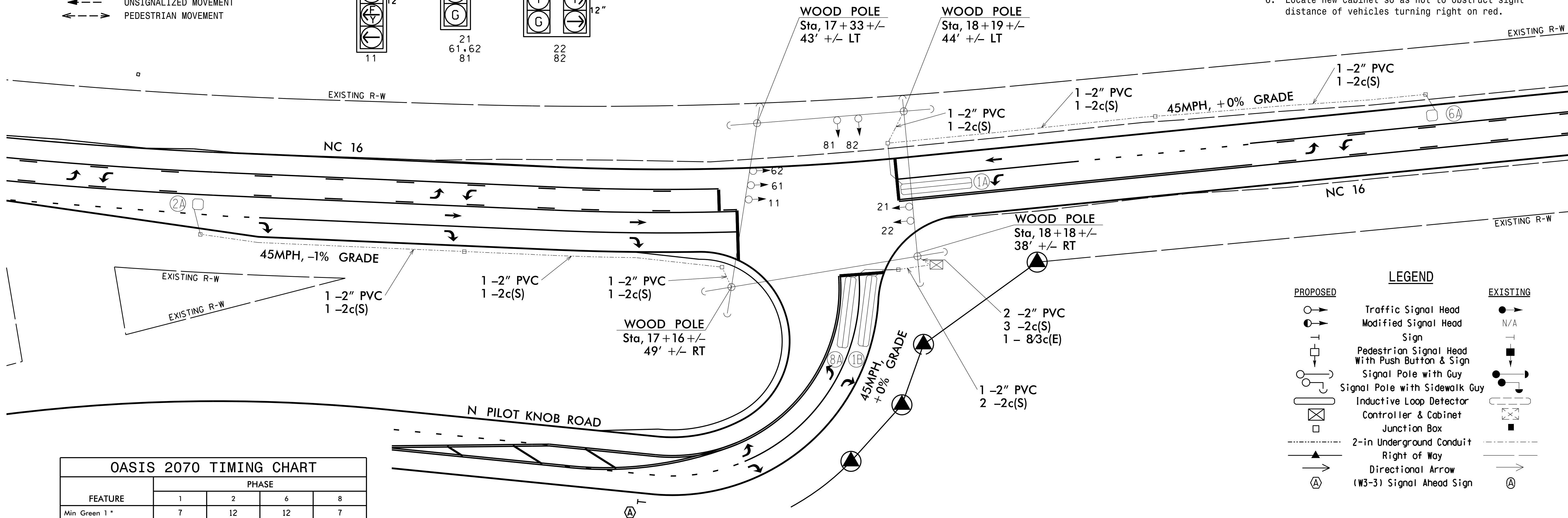


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS				DETECTOR PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
					6	Y	Y	-	-	3	-	Y
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
2A	6X6	300	4	Y	2	Y	Y	-	-	-	-	Y
6A	6X6	300	4	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y

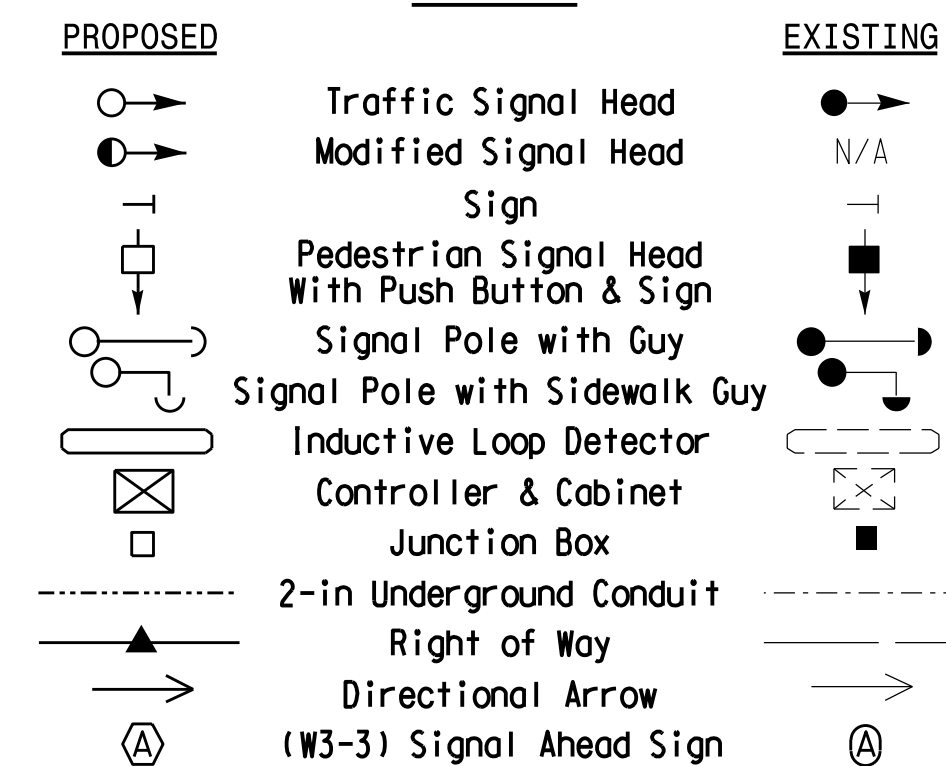
3 PHASE FULLY-ACTUATED ISOLATED SIGNAL

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018, "Standard Specifications for Roads and Structures" dated January 2018, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <https://connect.ncdot.gov/resources/safety/pages/ITS-Design-Resources.aspx>
- Do not program signal for late night flashing operation unless other wise directed by the Engineer.
- Phase 1 may be lagged.
- Install retroreflective backplates to all signal heads.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.



LEGEND

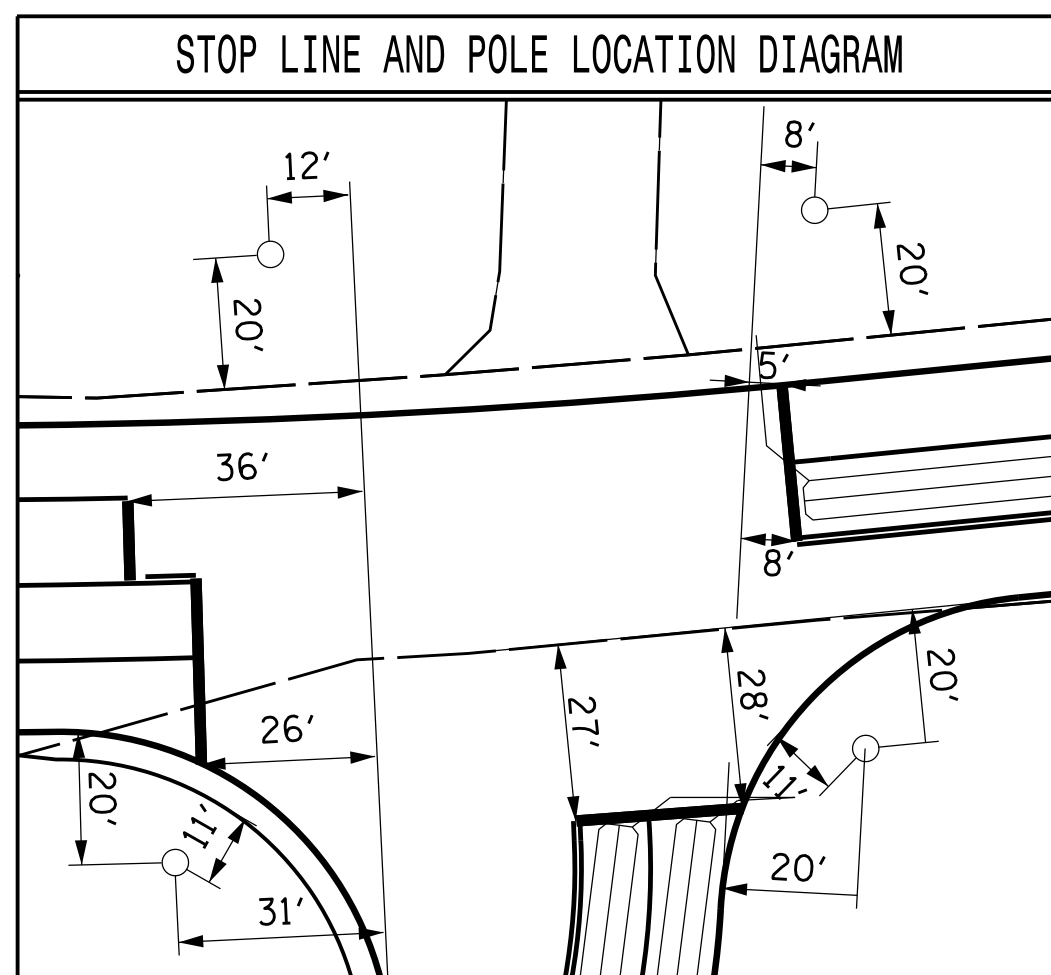


OASIS 2070 TIMING CHART

FEATURE	PHASE			
	1	2	6	8
Min Green 1 *	7	12	12	7
Extension 1 *	2.0	6.0	6.0	2.0
Max Green 1 *	21	46	50	25
Yellow Clearance	3.0	4.6	4.6	3.0
Red Clearance	1.6	1.5	1.5	2.1
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	2.5	2.5	-
Max Variable Initial *	-	34	34	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	3.0	3.0	-
Recall Mode	-	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

\* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

STOP LINE AND POLE LOCATION DIAGRAM



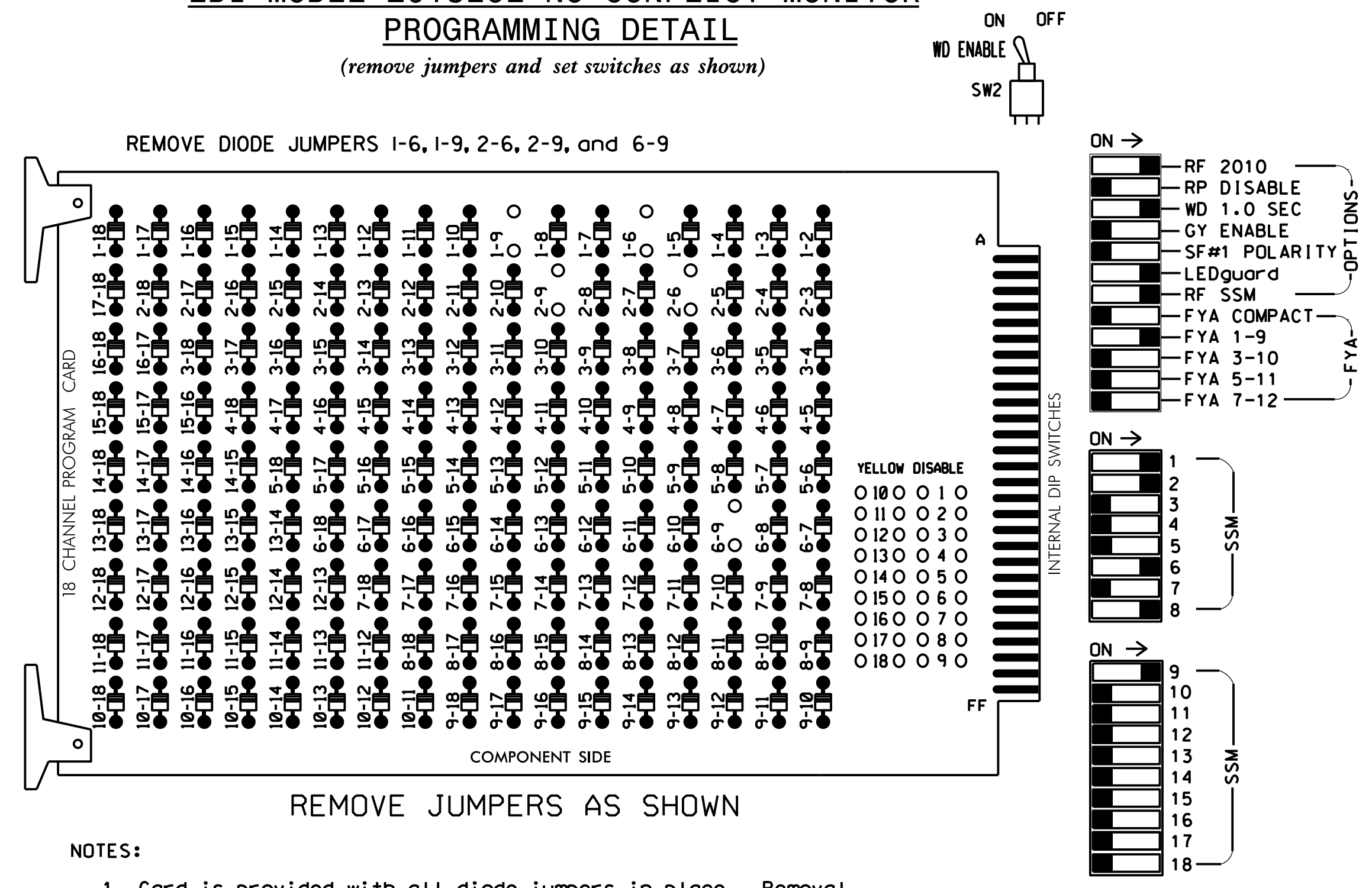
NEW INSTALLATION

	NC 16 AT N Pilot Knob Road	
	DIVISION 12 LINCOLN COUNTY DENVER PLAN DATE: March 2021 PREPARED BY: J Moore REVISIONS:	REVIEWED BY: Y Liu REVIEWED BY: T. Connor INIT. DATE



# EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



## NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps

## EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332/W/AUX  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...18 WITH AUX OUTPUT FILE  
 LOAD SWITCHES USED.....S1,S2,S8,S11,AUX S1  
 PHASES USED.....1,2,6,8  
 OVERLAP A .....1+2  
 OVERLAP B .....NONE  
 OVERLAP C .....NONE  
 OVERLAP D .....NONE

## SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	82	21,22	NU	NU	NU	NU	61,62	NU	NU	81,82	22	NU	11★	NU	NU	NU	NU
RED		*	128					134			107							
YELLOW			129					135			108							
GREEN			130					136			109							
RED ARROW													A121					
YELLOW ARROW		126										108	A122					
FLASHING YELLOW ARROW													A123					
GREEN ARROW	127	127									109							

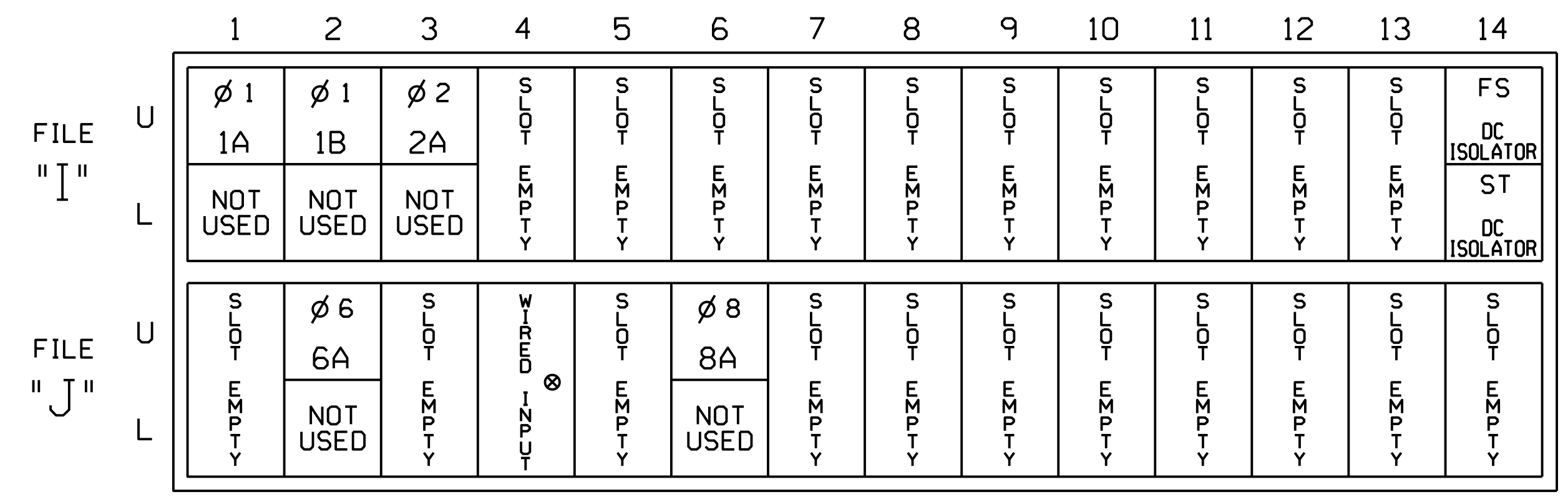
NU = Not Used

\* Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail this sheet.

## INPUT FILE POSITION LAYOUT

(front view)



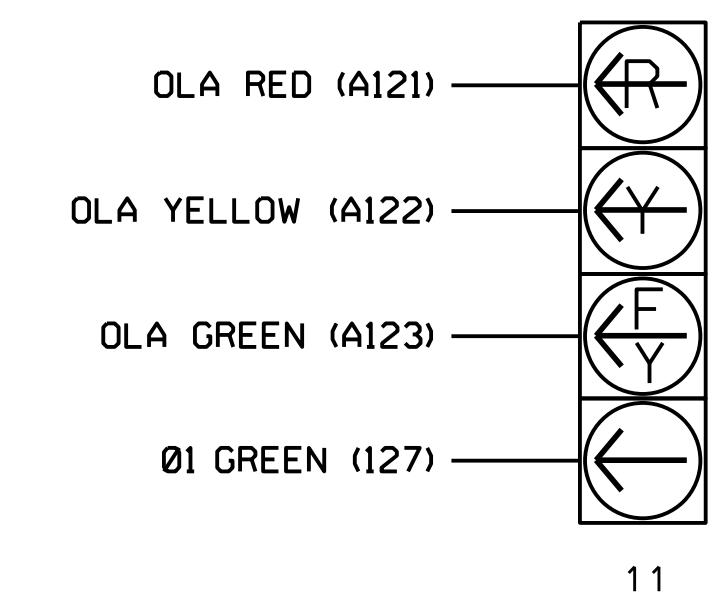
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
 ST = STOP TIME

⊗ Wired input - Do not populate slot with detector card.

## FYA SIGNAL WIRING DETAIL

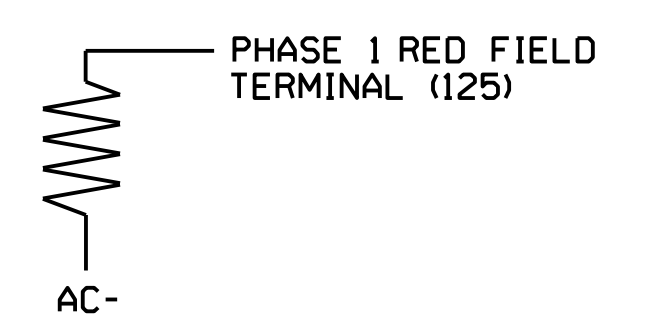
(wire signal head as shown)



NOTE:  
 The sequence display for signal head 11 requires special logic programming. See sheet 2 of 2 for programming instructions.

## LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES	
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



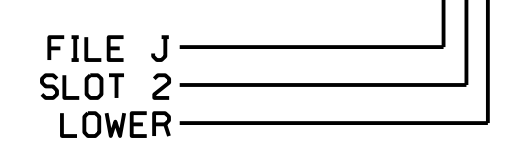
NOTE: The purpose of these resistors is to load the channel red monitor inputs in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

## INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A <sup>1</sup>	TB2-1,2	I1U	56	18	1	1	Y	Y	-	---	15
	-	J4U	48	10	26	6	Y	Y	Y	---	3
1B	TB2-5,6	I2U	39	1	2	1	Y	Y	-	---	15
2A	TB2-9,10	I3U	63	25	32	2	Y	Y	-	---	---
6A	TB3-5,6	J2U	40	2	6	6	Y	Y	-	---	---
8A	TB5-9,10	J6U	42	4	8	8	Y	Y	-	---	3

<sup>1</sup> Add jumper from I1-W to J4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 12-1829  
 DESIGNED: 05-2018  
 SEALED: N/A  
 REVISED: N/A

## ELECTRICAL DETAIL SHEET 1 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  Gannett Fleming Excellence Delivered As Promised	NC 16 AT N Pilot Knob Road		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027922 JEFFREY H. MOORE
	DIVISION 12 LINCOLN COUNTY DENVER		
PLAN DATE: May 2018 PREPARED BY: Y Liu	REVIEWED BY: T Connor REVIEWED BY: J. Moore	REVISIONS INIT. DATE	SEAL SIGNATURE DATE

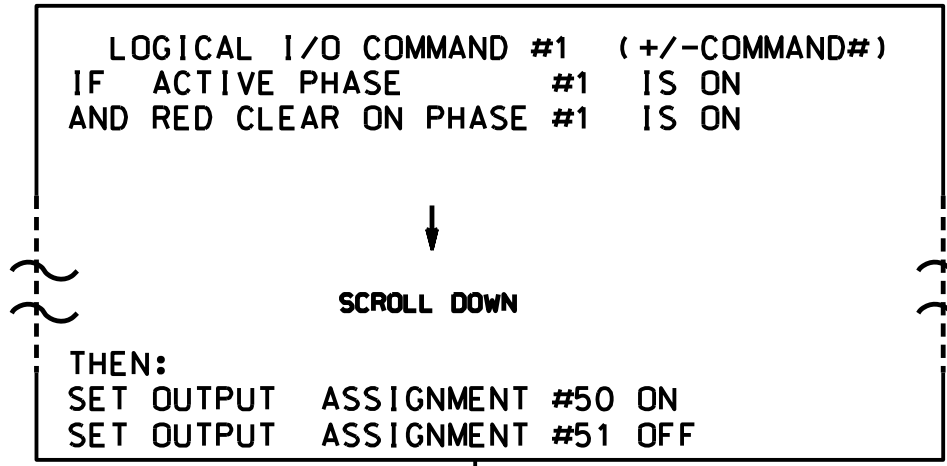
750 N. Greenfield Pkwy, Corner, NC 27529



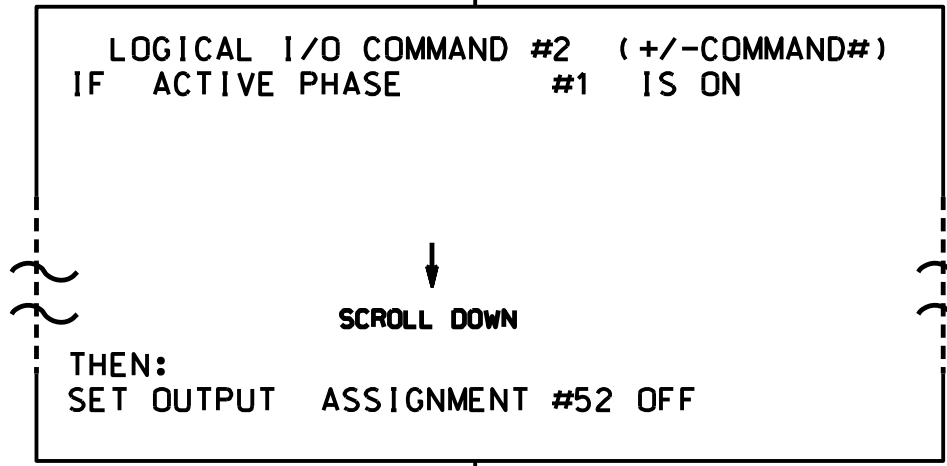
**LOGICAL I/O PROCESSOR PROGRAMMING DETAIL  
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE**

*(program controller as shown below)*

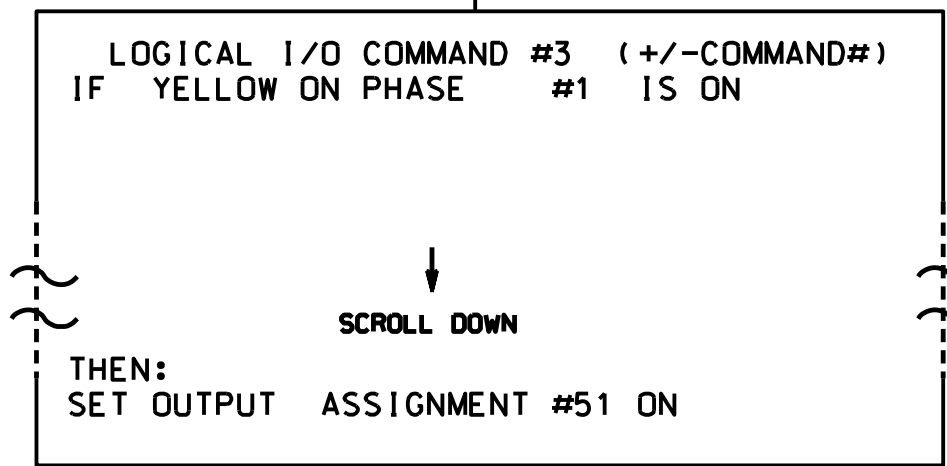
- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2 AND 3.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).



NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).



NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE	
OUTPUT 50	= Overlap A Red
OUTPUT 51	= Overlap A Yellow
OUTPUT 52	= Overlap A Green

**OVERLAP PROGRAMMING DETAIL**

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:      |12345678910111213141516
VEH OVL PARENTS: |XX
VEH OVL NOT VEH: |
VEH OVL NOT PED: |
VEH OVL GRN EXT: |
STARTUP COLOR:  | _ RED _ YELLOW _ GREEN
FLASH COLORS:   | _ RED _ YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0
  
```

← NOTICE GREEN FLASH


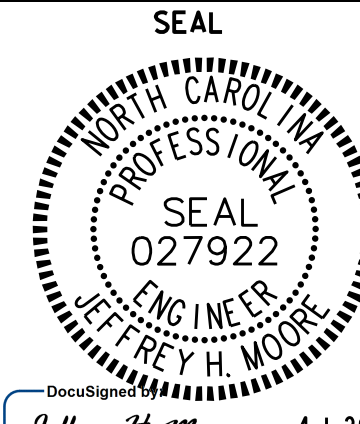
OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 12-1829  
DESIGNED: 05-2018  
SEALED: N/A  
REVISED: N/A

01-105-2021-144E S:\ITS\SSD\175\Sig\01\SS\Design\_Section\Western\_Reg\0401\12-1829\12-1829\sig\_dsn\_20210401.dgn

ELECTRICAL DETAIL SHEET 2 OF 2

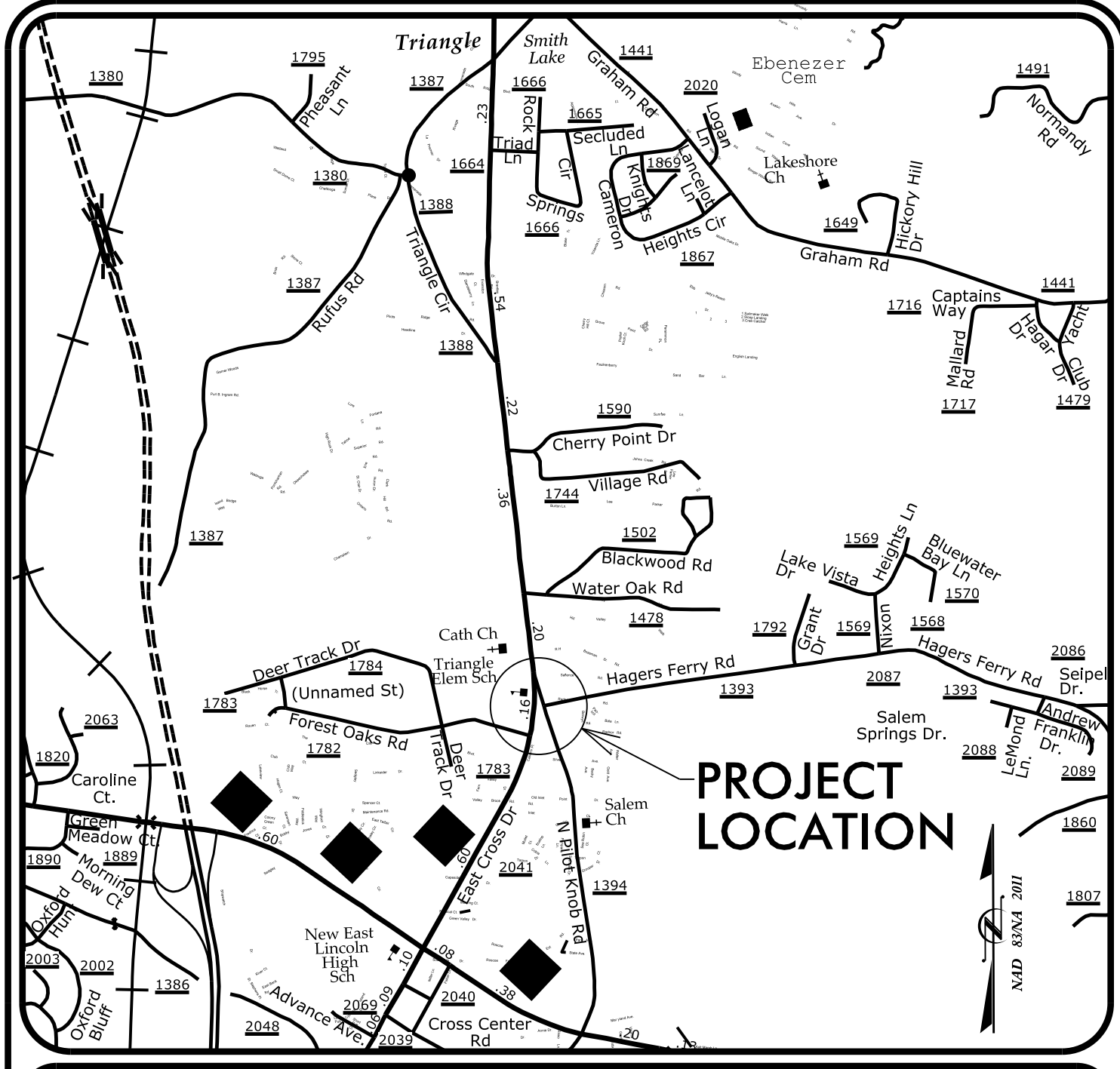
PLANS PREPARED BY: **Gannett Fleming**  
28 Schenck Parkway Suite 200 Asheville NC 28803 (828) 771-0871  
750 N. Greenfield Pkwy, Garner, NC 27529  
Excellence Delivered **As Promised** [NC Lic. No. F-0270]

ELECTRICAL AND PROGRAMMING DETAILS FOR:  Prepared in the Offices of: 	<b>NC 16</b> <b>AT</b> <b>N Pilot Knob Road</b>		SEAL 
	DIVISION 12 LINCOLN COUNTY DENVER PLAN DATE: May 2018 REVIEWED BY: T Connor PREPARED BY: Y Liu REVIEWED BY: J. MOORE	REVISIONS INIT. DATE	

SIG. INVENTORY NO. 12-1829

T.I.P. NO.	SHEET NO.
W-5601Q	UC-1

**TIP PROJECT: W-5601Q**



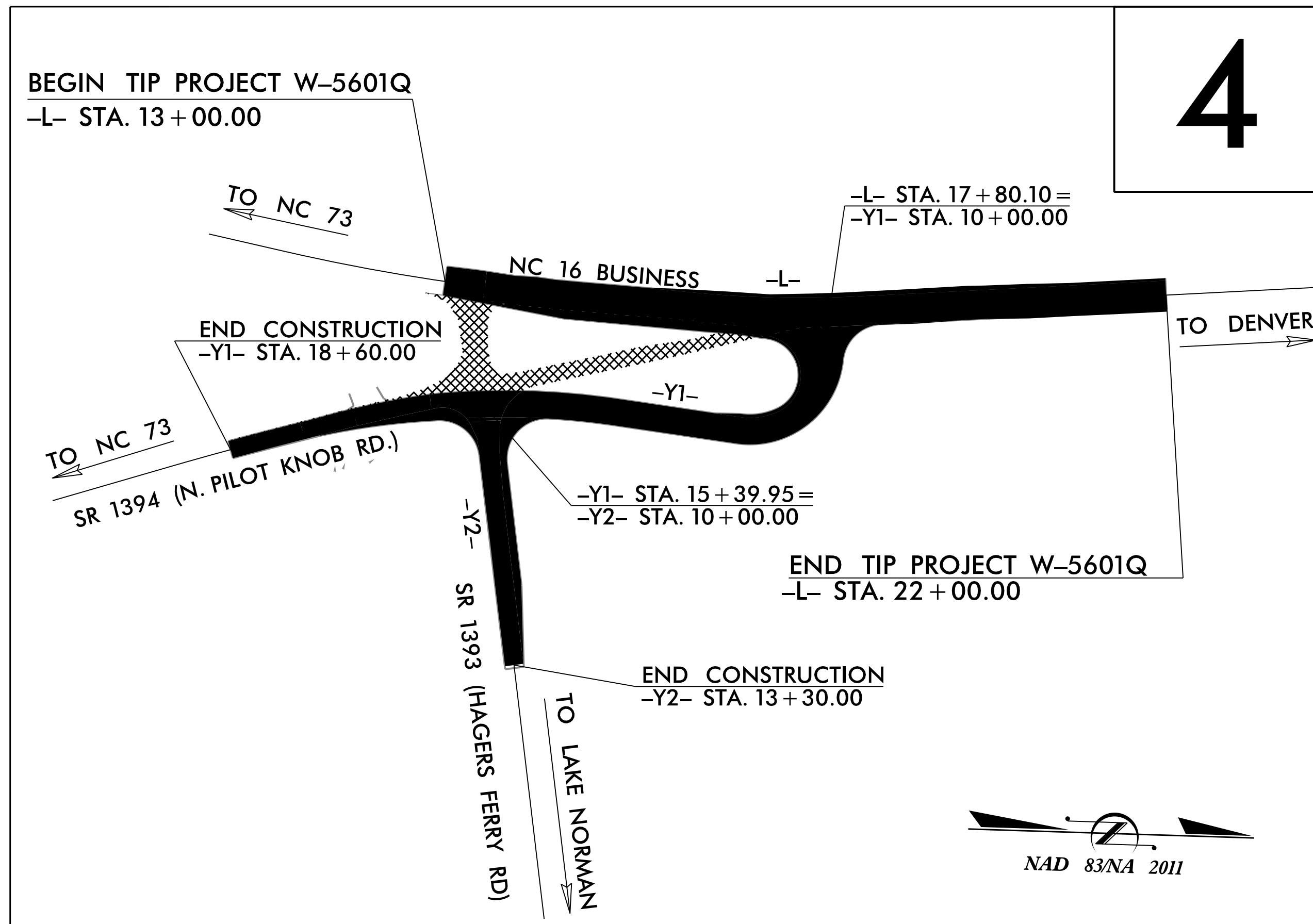
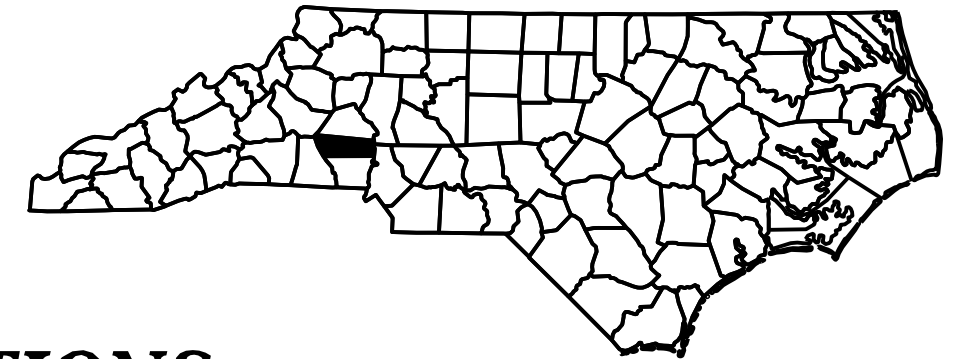
**VICINITY MAP**  
(NOT TO SCALE)

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS**  
**LINCOLN COUNTY**

**LOCATION: NC 16 BUSINESS /SR 1393 (HAGERS FERRY ROAD) /SR 1394 (N. PILOT KNOB ROAD)**

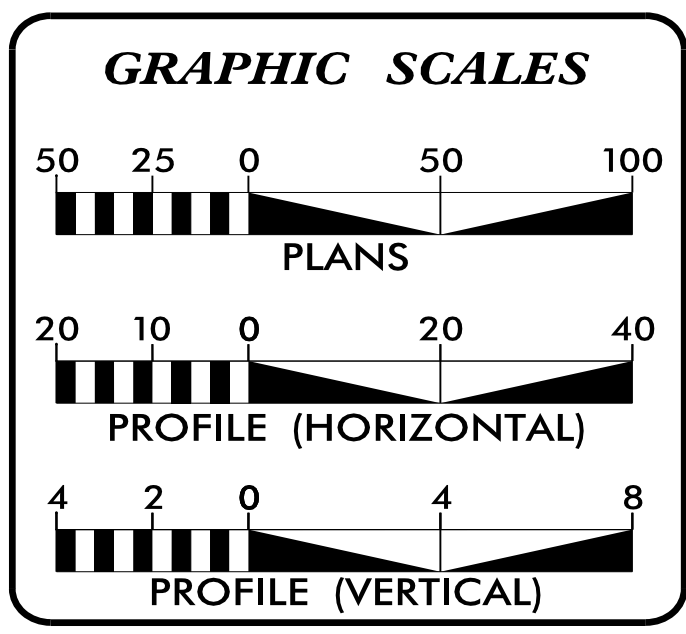
**TYPE OF WORK: WATER LINE AND SEWER LINE RELOCATIONS**



**4**



DOCUMENT NOT CONSIDERED FINAL  
UNTIL ALL SIGNATURES ARE COMPLETED



INDEX OF SHEETS	
SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A THRU UC-3C	DETAILS
UC-4	PLAN SHEET
UC-5 THRU UC-6	PROFILE SHEETS

**WATER AND SEWER OWNERS ON PROJECT**

(A) WATER - LINCOLN COUNTY  
(B) SANITARY SEWER - LINCOLN COUNTY

PREPARED IN THE OFFICE OF  
**M A Engineering Consultants, Inc.**  
598 East Chatham Street - Suite 137  
Cary, NC 27511  
Phone: 919.297.0220 Fax: 919.297.0221  
NC License: F-0160

FOR  
**GANNETT FLEMING**  
2610 Wycliff Road, Suite 102, Raleigh, NC, 27607  
Tel. (919) 420-7660 Fax: (919) 420-7611  
License No. F-0270

**KEVIN C. ZDEB, PE** PROJECT ENGINEER  
**ROBIN SOBHA** UTILITY COORDINATOR  
**SAM FORSTER** PROJECT DESIGN ENGINEER

SEAL

11/16/2018

**DIVISION OF HIGHWAYS HIGHWAY DIVISION 12**

P.O. BOX 47  
SHELBY NC 28151-0047  
OFFICE LOCATION: 1710 E. MARION ST.  
PHONE (980) 552-4200  
FAX (704) 480-5401

**MARK STAFFORD, PE** DIVISION ENGINEER  
**L. CARPENTER, JR, PE** DIVISION CONST. ENGINEER  
**CHAD DREWERY** DIVISION UTILITY ENGINEER  
**WARREN ANDERSON** DIVISION UTILITY COORDINATOR





# UTILITY CONSTRUCTION

## GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

2. THE EXISTING WATER LINE AND SEWER LINE UTILITIES BELONG TO LINCOLN COUNTY PUBLIC WORKS (LCPW).

CONTACT: CHRIS HENDERSON  
PHONE: 704-736-8497

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF ENVIRONMENTAL HEALTH.

4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.

5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND TWO WEEKS PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.

9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

10. CONTRACTOR SHALL NOT OPERATE ANY VALVES ON THE EXISTING UTILITY SYSTEMS. CONTRACTOR SHALL CONTACT THE UTILITY OWNER TO CONDUCT STRATEGIC OPERATION OF VALVES FOR SERVICE INTERRUPTION IN ORDER TO PERFORM SPECIFIC WORK.

## PROJECT SPECIFIC NOTES:

1. 6-INCH WATER LINE SHALL BE D.I.P. WITH RESTRAINED JOINT CONSTRUCTION AND A MINIMUM THICKNESS CLASS OF 50.

2. ALL WATER LINE FITTINGS, 4-INCHES THROUGH 12-INCHES IN DIAMETER, SHALL BE DUCTILE IRON, PRESSURE CLASS 350.

3. ALL WATER LINE SHALL BE INSTALLED WITH A MINIMUM OF 3 FEET OF COVER TO TOP OF PIPE, EXCEPT WHERE TIE-INS ARE MADE TO EXISTING PIPE.

4. ALL SANITARY FORCE MAIN AND LOW PRESSURE SEWERS SHALL BE INSTALLED WITH A MINIMUM OF 4 FEET OF COVER TO TOP OF PIPE, EXCEPT WHERE TIE-INS ARE MADE TO EXISTING PIPE.

5. 6-INCH SANITARY FORCE MAIN SHALL BE FUSIBLE PVC AWWA C900, PRESSURE CLASS 200 (DR-14).

6. ALL FORCE MAIN FITTINGS, 4-INCHES THROUGH 12-INCHES IN DIAMETER, SHALL BE CEMENT LINED DUCTILE IRON, PRESSURE CLASS 350.

7. ALL LOW PRESSURE SEWER PIPE, 1-INCH THROUGH 3-INCHES IN DIAMETER, SHALL BE IRON PIPE SIZE PVC PRESSURE CLASS 200 (SDR-21).

8. ALL LOW PRESSURE SEWER FITTINGS, LESS THAN 4-INCHES IN DIAMETER, SHALL BE IRON PIPE SIZE PVC PRESSURE CLASS 200 WITH BELLS CONFORMING TO ASTM F477.

9. ALL PROPOSED FITTINGS (BENDS, TEES, CROSSES, REDUCERS, PLUGS, ETC.) SHALL BE ADEQUATELY RESTRAINED BY THE USE OF RESTRAINED JOINT CONSTRUCTION AND/OR CAST IN PLACE CONCRETE THRUST RESTRAINTS AS DETAILED ON THESE DRAWINGS, OR AS DIRECTED BY THE RESIDENT ENGINEER.

10. ALL VALVES ON SANITARY FORCE MAINS AND LOW PRESSURE SEWER MAINS SHALL BE ECCENTRIC PLUG VALVES.

11. PVC THERMOPLASTIC BALL VALVES SHALL BE USED AT EACH SEWER SERVICE CONNECTION.

12. PVC THERMOPLASTIC BALL CHECK VALVES SHALL BE USED AT EACH SEWER SERVICE CONNECTION.

13. EXISTING PVC PIPE SHALL BE EXCAVATED AND FIELD BENT AS NEEDED TO PROVIDE FOR HORIZONTAL AND/OR VERTICAL TRANSITION AND TIE-IN TO PROPOSED PIPE, AS DIRECTED BY THE RESIDENT ENGINEER.

14. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION OF UTILITIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE THE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER AND ALSO CERTIFY THAT THE WORK WILL NOT DAMAGE THE ROADWAY ABOVE OR ENDANGER THE ROADWAY USER.

15. EXISTING PIPE MATERIALS TO BE REMOVED DURING THE COURSE OF CONSTRUCTION, INCLUDING: PIPE; VALVES; FITTINGS; ELECTRICAL AND CONTROL PARTS; AND OTHER SALVAGEABLE ITEMS, SHALL REMAIN THE PROPERTY OF LCPW. THE CONTRACTOR SHALL DELIVER THE SALVAGED ITEMS TO A MUTUALLY AGREED UPON STORAGE AREA FOR LCPW RETRIEVAL. SPECIAL CARE SHALL BE TAKEN FOR PROTECTION AND ELIMINATION OF DAMAGE TO SAID ITEMS. MATERIAL SHALL BE CLEANED PRIOR TO DELIVERY.

16. EXISTING PIPE MATERIALS TO BE REMOVED DURING THE COURSE OF CONSTRUCTION DESIGNATED FOR DISPOSAL SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AND BE DISPOSED OF IN A LEGAL MANNER IN ACCORDANCE WITH THE REQUIREMENTS OF LOCAL LAW AND AGENCIES HAVING JURISDICTION.

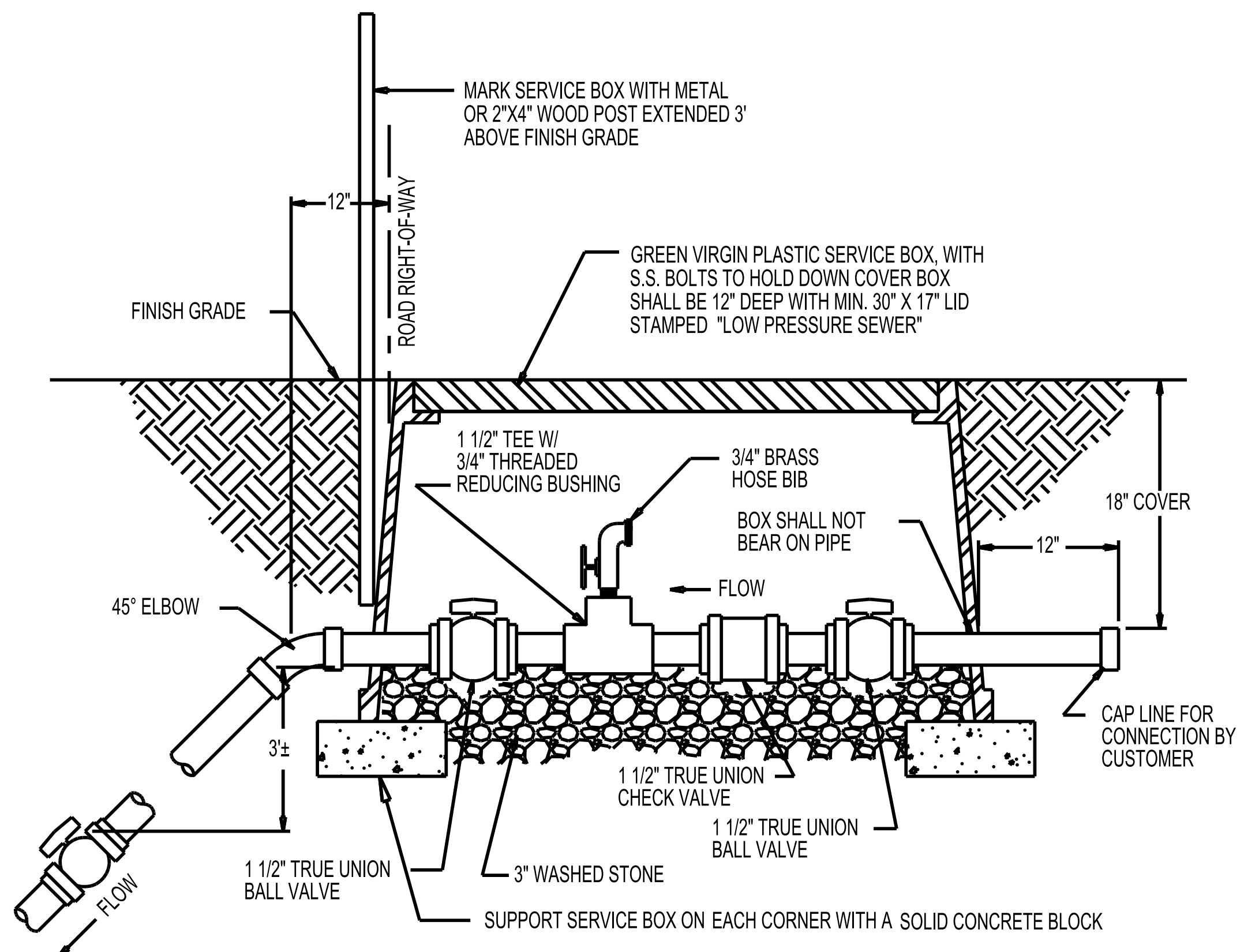
PROJECT REFERENCE NO. W-56010	SHEET NO. UC-3
DESIGNED BY: SHF	
DRAWN BY: SHF	
CHECKED BY: KCZ	
APPROVED BY: KCZ	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
<b>UTILITY CONSTRUCTION</b>	
<i>DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED</i>	

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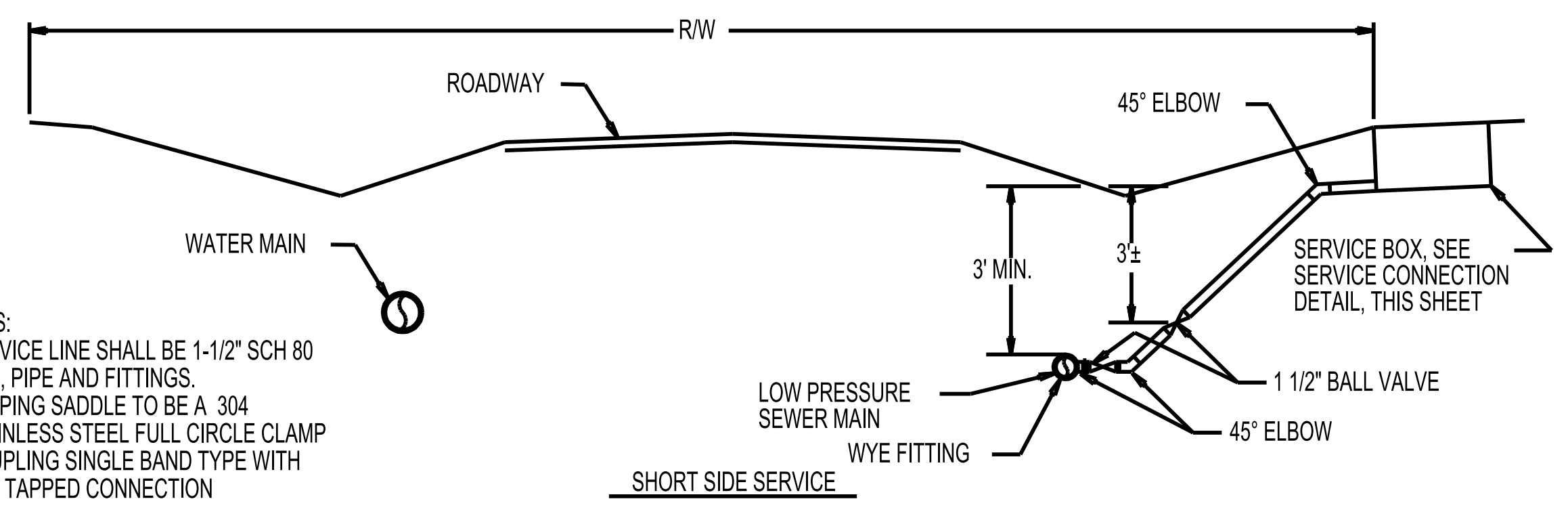


5/14/2018

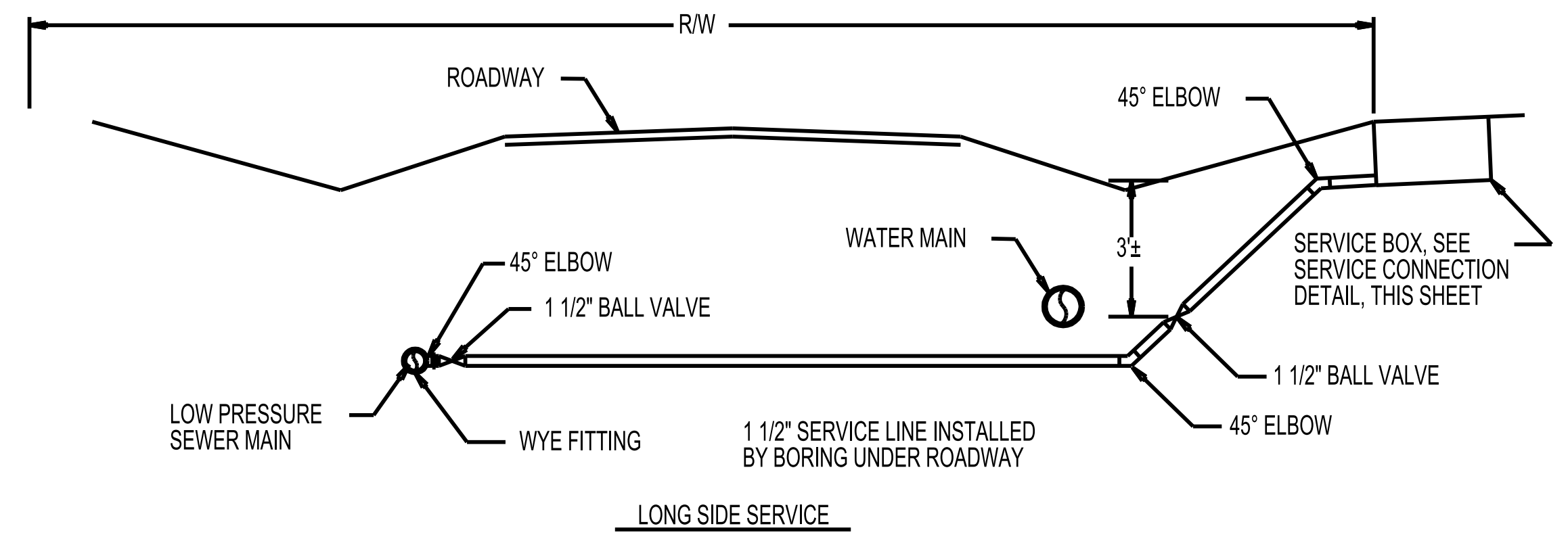
PROJECT REFERENCE NO. <b>W-5601Q</b>	SHEET NO. <b>UC-3A</b>
DESIGNED BY: <b>GJB</b>	
DRAWN BY: <b>GJB</b>	
CHECKED BY: <b>KCZ</b>	
APPROVED BY: <b>KCZ</b>	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY	
<b>UTILITY CONSTRUCTION</b>	
998 East Chatham Street - Suite 137 Cary, NC 27511 Phone: 919.292.0220 Fax: 919.297.0221 NC License: F-0160	
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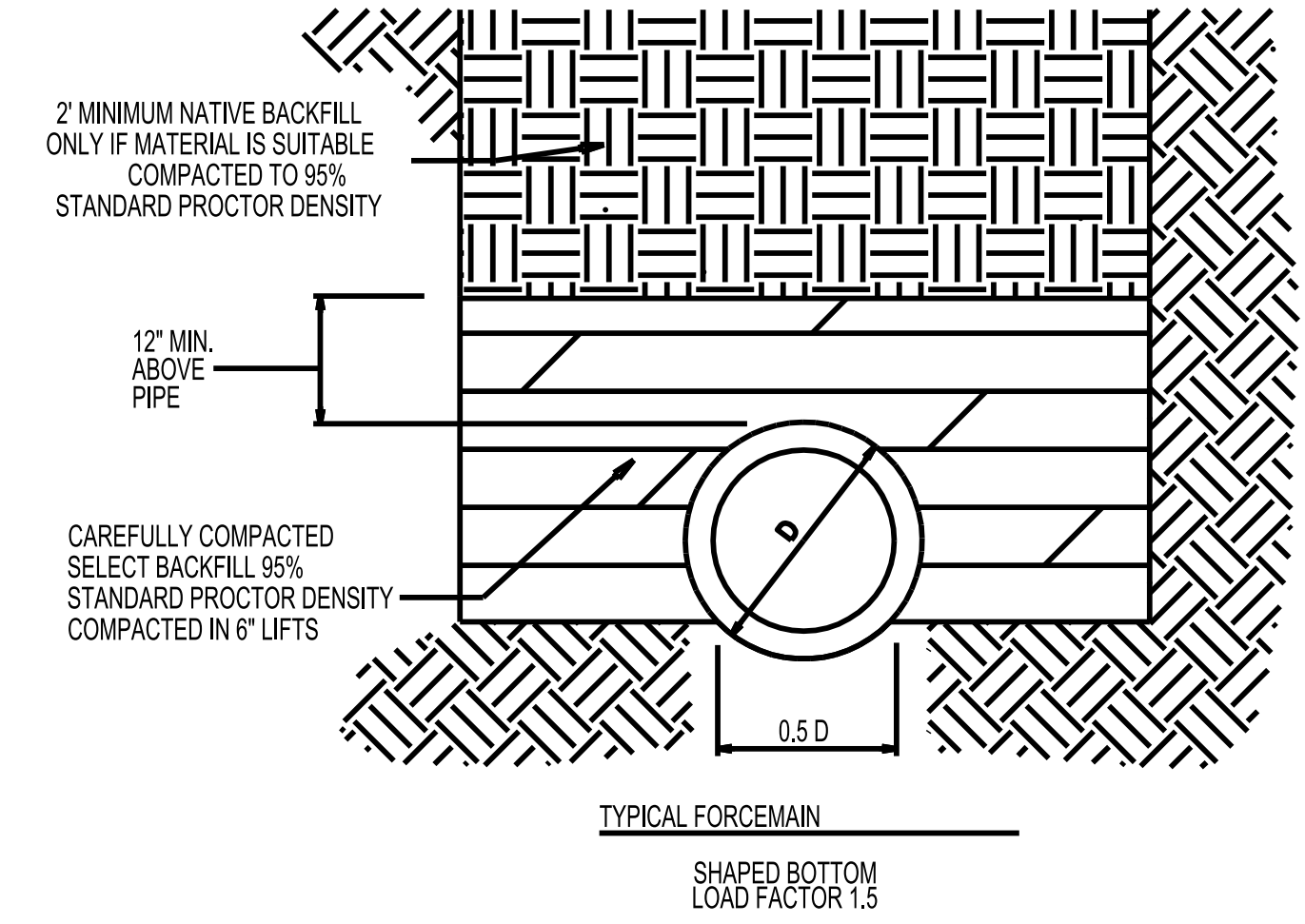
**LOW PRESSURE SEWER SERVICE CONNECTION**



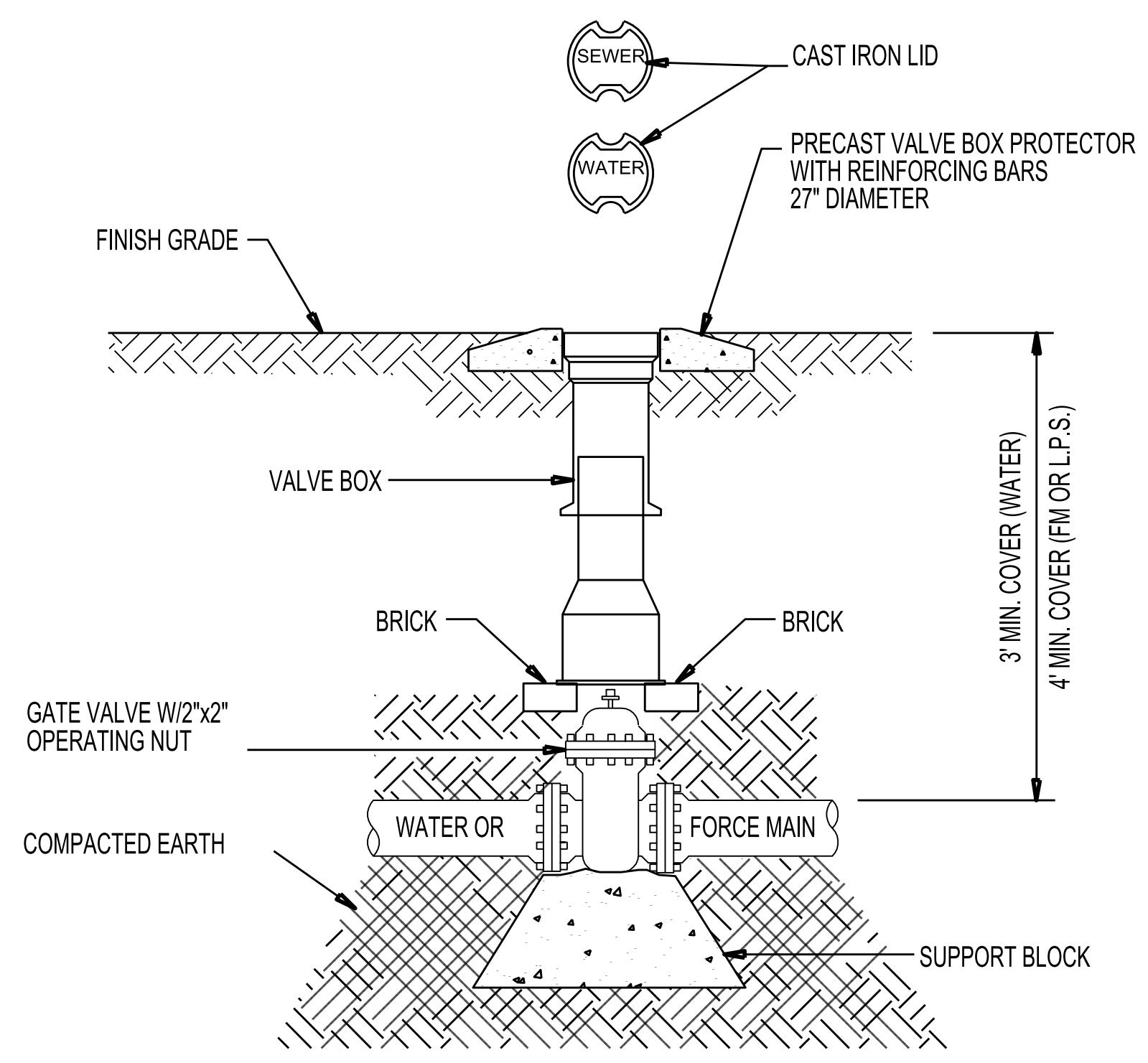
- NOTES:**
- 1) SERVICE LINE SHALL BE 1-1/2" SCH 80 PVC, PIPE AND FITTINGS.
  - 2) TAPPING SADDLE TO BE A 304 STAINLESS STEEL FULL CIRCLE CLAMP COUPLING SINGLE BAND TYPE WITH NPT TAPPED CONNECTION



**LOW PRESSURE SEWER SERVICE TAP**



**STANDARD BEDDING FOR SEWER PIPE**



**VALVE BOX AND VALVE**

- NOTES**
1. ALL POTABLE WATER VALVES SHALL BE RESILIENT SEAT GATE VALVES CONFORMING TO AWWA C509-01 OR CURRENT
  2. ALL SEWER FORCE MAIN VALVES SHALL BE ECCENTRIC PLUG VALVES UNLESS APPROVED IN WRITING BY LCPW
  3. ANY VALVE WITH AN OPERATING NUT DEEPER THAN 6' BELOW GRADE SHALL BE EQUIPPED WITH A RISER STEM TO WITHIN 12" OF GRADE

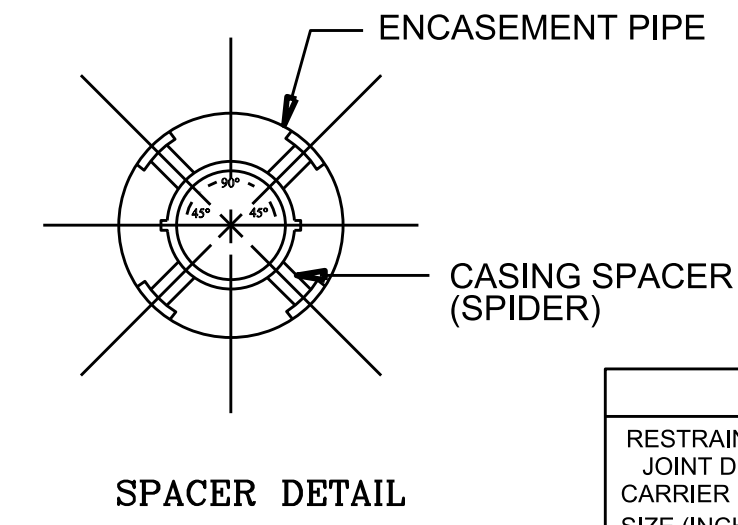
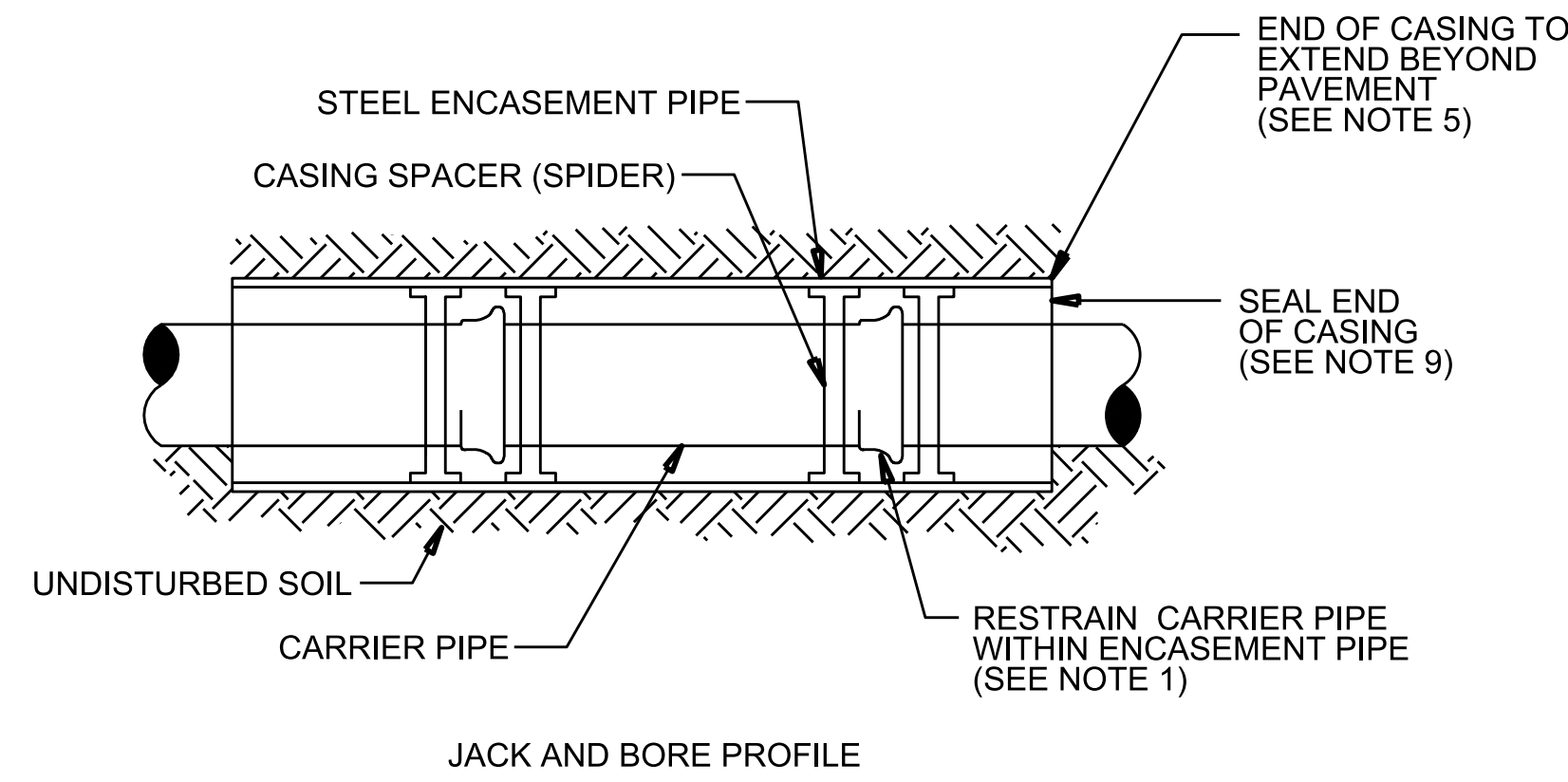
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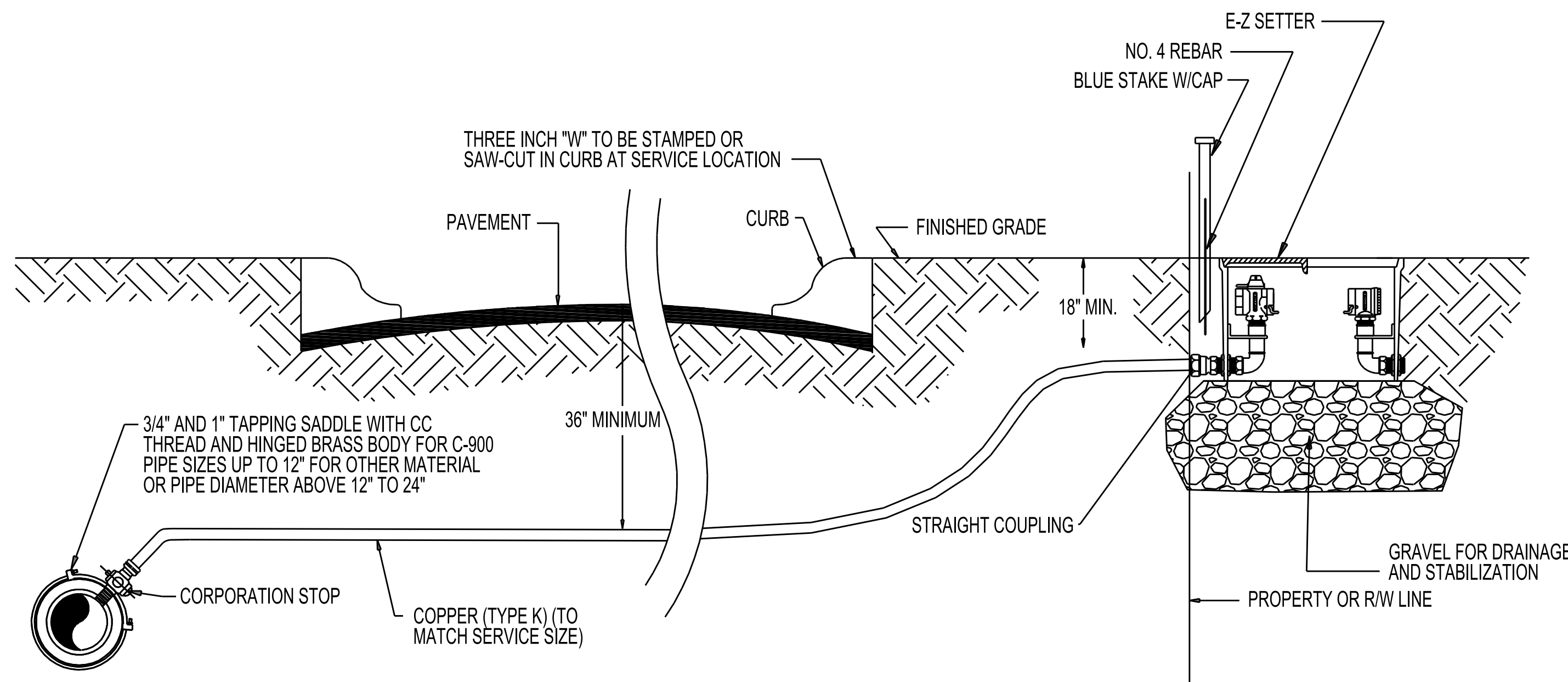
**NOTES:**

- CARRIER PIPE JOINTS SHALL BE RESTRAINED WITHIN THE ENCASEMENT PIPE. DUCTILE IRON PIPE SHALL UTILIZE RESTRAINED JOINT CONSTRUCTION. PVC PIPE SHALL UTILIZE EITHER: FUSIBLE PVC JOINTS; OR GRIP RING PIPE RESTRAINTS.
- STEEL ENCASEMENT PIPE SHALL CONFORM TO ASTM-139 WITH A MINIMUM ALLOWABLE YIELD STRENGTH OF 35,000 PSI. REFER TO TABLE IN THIS DETAIL FOR REQUIRED DIAMETER AND THICKNESS OF ENCASEMENT PIPE BASED ON DUCTILE IRON PIPE.
- STEEL ENCASEMENT PIPE FOR 6" FUSIBLE PVC D.I.P.S. CARRIER PIPE SHALL BE A 12" PIPE WITH AN O.D. OF 12.75" AND A WALL THICKNESS OF 0.250".
- STEEL ENCASEMENT PIPE FOR 2.5" PVC I.P.S. CARRIER PIPE SHALL BE A 10" PIPE WITH AN O.D. OF 10.75" AND A WALL THICKNESS OF 0.250".
- ALL ENCASEMENT PIPE SHALL BE INSTALLED WITH A MINIMUM OF 3' OF COVER FROM FINAL GRADE AND EXTEND AT A 1H:1V SLOPE FROM EDGE OF PAVEMENT OR BACK OF CURB TO CENTER OF ENCASEMENT PIPE.
- USE CASING SPACERS (SPIDERS) TO MOVE CARRIER PIPE THROUGH ENCASEMENT PIPE. CASING SPACERS SHALL CENTER AND RESTRAIN CARRIER PIPE INSIDE ENCASEMENT PIPE.
- CASING SPACER INTERVAL IS DICTATED BY MATERIAL TYPE OF CARRIER PIPE, THE NUMBER OF JOINTS OF CARRIER PIPE WITHIN THE ENCASEMENT PIPE, AND THE LENGTH OF THE ENCASEMENT PIPE. DUCTILE IRON PIPE SHALL UTILIZE A MINIMUM OF 2 CASING SPACERS PER FULL PIPE LENGTH. PVC PIPE SHALL UTILIZE A MINIMUM OF 4 CASING SPACERS PER FULL PIPE LENGTH.
- WELDING OF ENCASEMENT PIPE UNDER PAVEMENT IS NOT ALLOWED.
- SEAL CASING ENDS WITH A RUBBER END SEAL AND STAINLESS STEEL BANDS, OR TYPE II CONCRETE GROUT AND CONCRETE BRICKS WITH A WEEP HOLE AT THE BOTTOM OF THE ENCASEMENT PIPE TO ALLOW LEAKAGE TO PASS THROUGH THE CASING WALL IN CASE OF A BREAK IN THE CARRIER PIPE.



MINIMUM CASING REQUIREMENTS			
RESTRAINED JOINT DIP CARRIER PIPE SIZE (INCHES)	MINIMUM CASING SIZE (INCHES)	MINIMUM CASING THICKNESS NCDOT(INCHES)	MINIMUM CASING THICKNESS RR (INCHES)
6	14	.250	.281
8	18	.250	.281
10	20	.250	.344
12	22	.250	.375
16	28	.312	.469
18	30	.312	.469
20	32	.375	.501
24	36	.375	.532

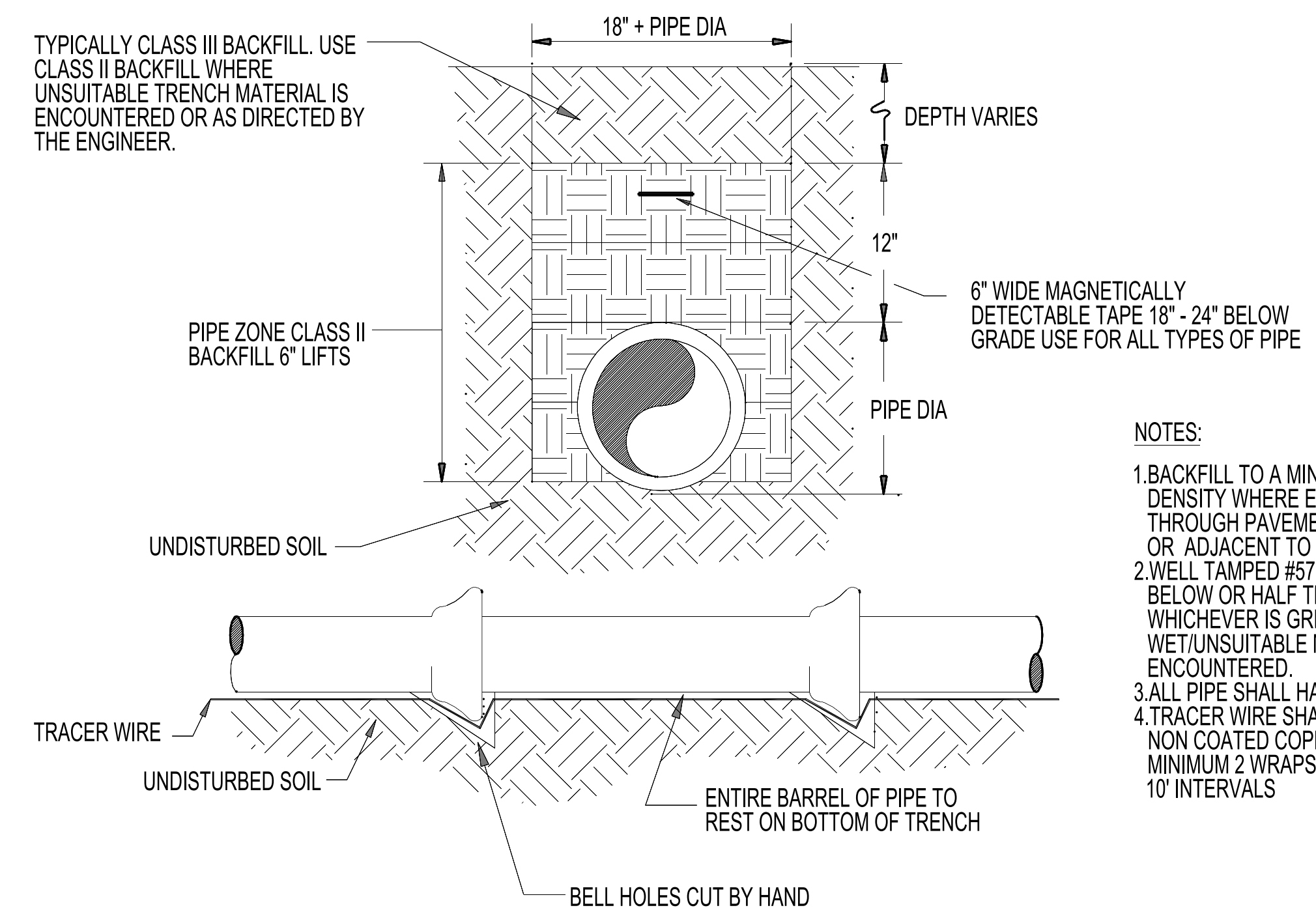
**JACK AND BORE CASING AND PIPE DETAIL**



**NOTES:**

- CONTRACTOR WILL PROVIDE ALL MATERIAL SHOWN OR INDICATED AND INSTALL SERVICES UNDER LCPW SUPERVISION. ALL TAPS WILL BE MADE IN ACCORDANCE WITH LCPW SPECIFICATIONS AND AWWA GUIDELINES.
- LCPW SHALL INSTALL ALL 3/4, 1, AND 2" METERS.
- ALL IRRIGATION SERVICES ALSO REQUIRE A RPZ ASSEMBLY (SEE RPZ ASSEMBLY DETAIL, THIS SHEET)

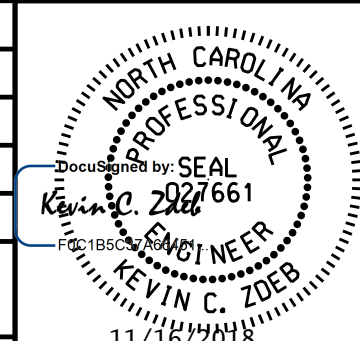
**3/4", 1" AND 2" WATER SERVICES**



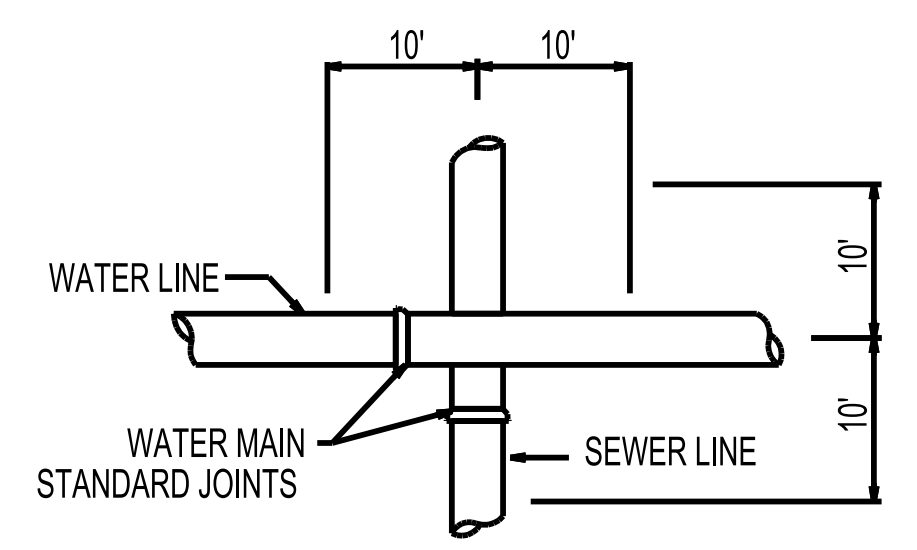
**NOTES:**

- BACKFILL TO A MINIMUM 95% OF MAXIMUM DENSITY WHERE EXCAVATIONS CUT THROUGH PAVEMENT, CURBS, AND UNDER OR ADJACENT TO STRUCTURES.
- WELL TAMPED #57 STONE IS REQUIRED TO 6" BELOW OR HALF THE PIPE DIAMETER WHICHEVER IS GREATER WHERE ROCK OR WET/UNSUITABLE MATERIAL IS ENCOUNTERED.
- ALL PIPE SHALL HAVE 36" MINIMUM COVER
- TRACER WIRE SHALL BE MINIMUM 14 GAUGE NON COATED COPPER SECURED WITH MINIMUM 2 WRAPS OF TAPE TO THE MAIN AT 10' INTERVALS

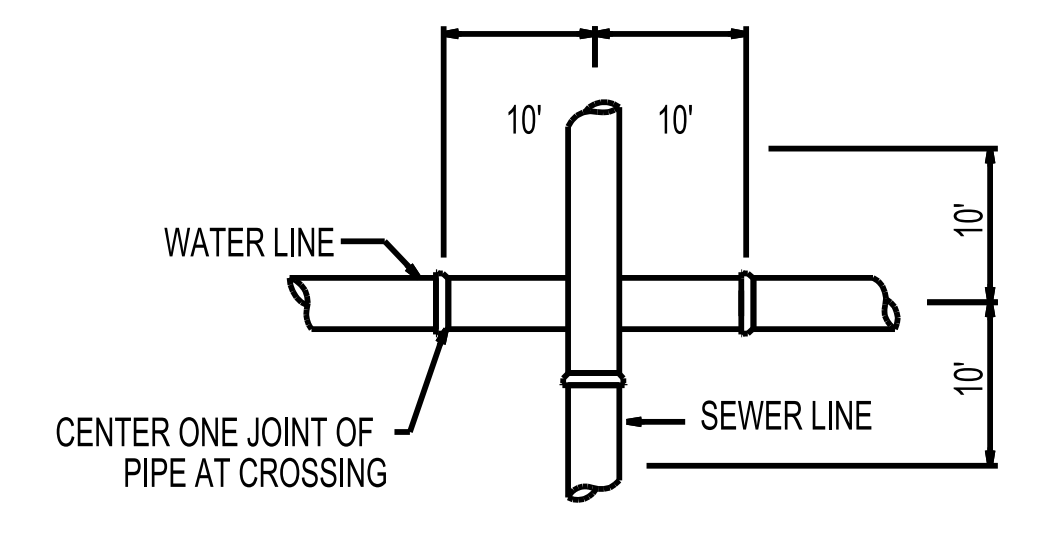
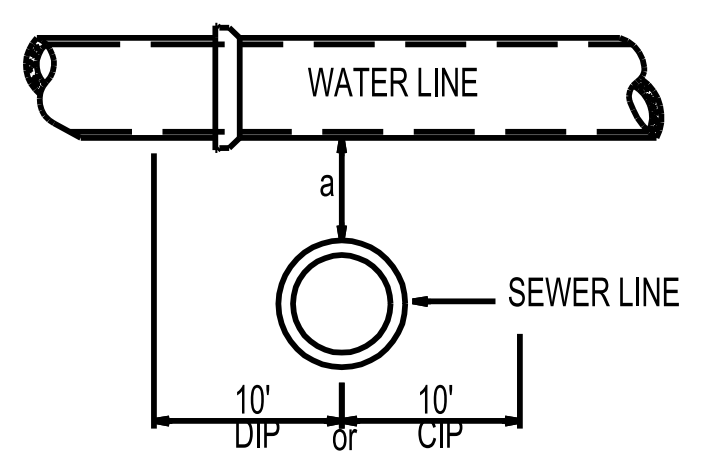
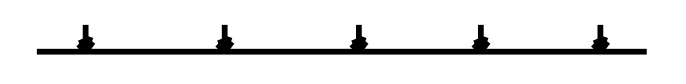
**STANDARD WATER MAIN TRENCH**

PROJECT REFERENCE NO. <b>W-5601Q</b>	SHEET NO. <b>UC-3B</b>
DESIGNED BY: <b>GJB</b>	
DRAWN BY: <b>GJB</b>	
CHECKED BY: <b>KCZ</b>	
APPROVED BY: <b>KCZ</b>	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
<b>UTILITY CONSTRUCTION</b>	
M A Engineering Consultants, Inc. 598 East Chatham Street - Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221 NC License: F-0160	
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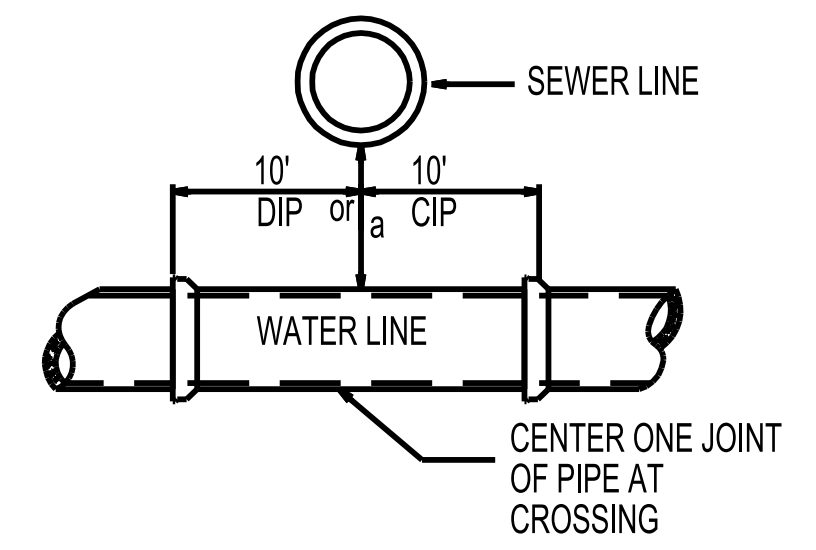




PLAN VIEW FOR WATER LINE OVER SEWER LINE W/LESS THAN 18" CLEARANCE



PLAN VIEW FOR WATER LINE UNDER SEWER LINE



**NOTES**

1. IF DIMENSION "a" IS LESS THAN 18" BOTH WATER AND SEWER LINE SHALL BE DUCTILE IRON PIPE, FOR 10' EACH SIDE OF CROSSING
2. WHERE WATER MUST CROSS UNDER SEWER ONE JOINT OF DIP WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING
3. ALL WATER AND SEWER CROSSINGS MUST MEET NCDENR MINIMUM SEPARATION REQUIREMENTS

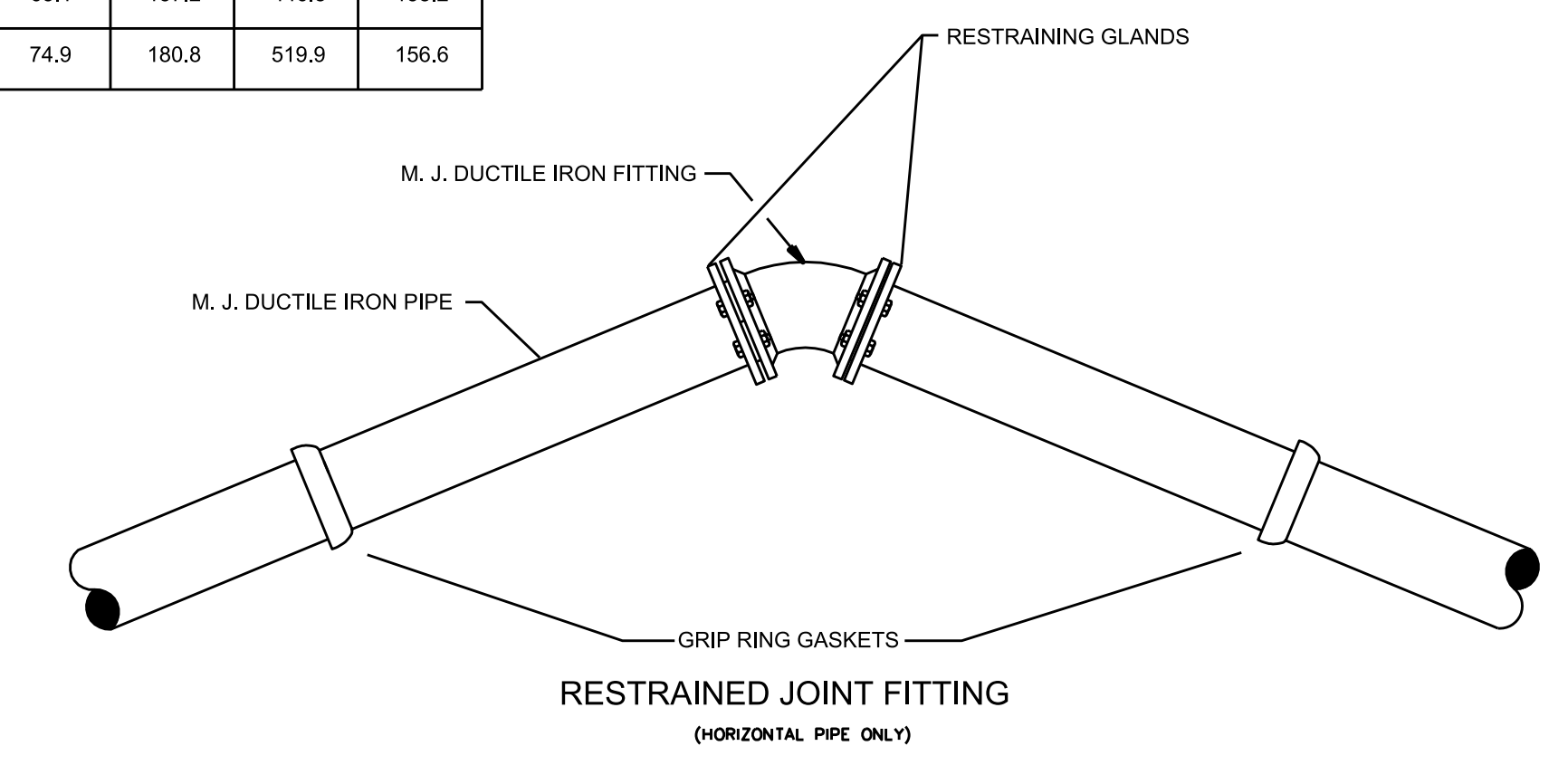
**WATER AND SEWER CROSSING REQUIREMENTS**

RESTRAINED JOINT TABLE  
ALL JOINTS WITHIN THESE LENGTHS  
(IN FEET EACH SIDE OF THE BEND)  
\*NO LENGTH SHALL BE LESS THAN ONE FULL JOINT OF PIPE

SIZE	11 1/4° BEND	22 1/2° BEND	45° BEND	90° BEND	TEE BRANCH	REDUCER
6	5.7"	11.6"	24.1	58.1	-	-
8	7.3"	14.8"	30.9	74.5	202.3	86.2
10	8.8"	17.8"	37.1	89.5	245.1	83.4
12	10.3"	20.7"	43.1	104.1	287.6	85.3
16	13"	26.2"	54.6	131.8	369.7	158.5
20	15.5"	31.3	65.1	157.2	446.8	158.2
24	17.8"	36"	74.9	180.8	519.9	156.6

NOTES:  
ALL CALCULATIONS ARE BASED ON ROMAC INDUSTRIES, INC. THRUST RESTRAINT CALCULATOR FOR DI AND PVC PIPING SYSTEMS.  
THE FOLLOWING CONDITIONS WERE USED TO CALCULATE THE RESTRAINED LENGTHS:  
PIPE MATERIAL IS PVC  
SOIL TYPE IS ML  
TRENCH TYPE IS 3  
SAFETY FACTOR IS 2.  
DESIGN PRESSURE (TEST) IS 200 PSI;  
DEPTH IS 3 FT.

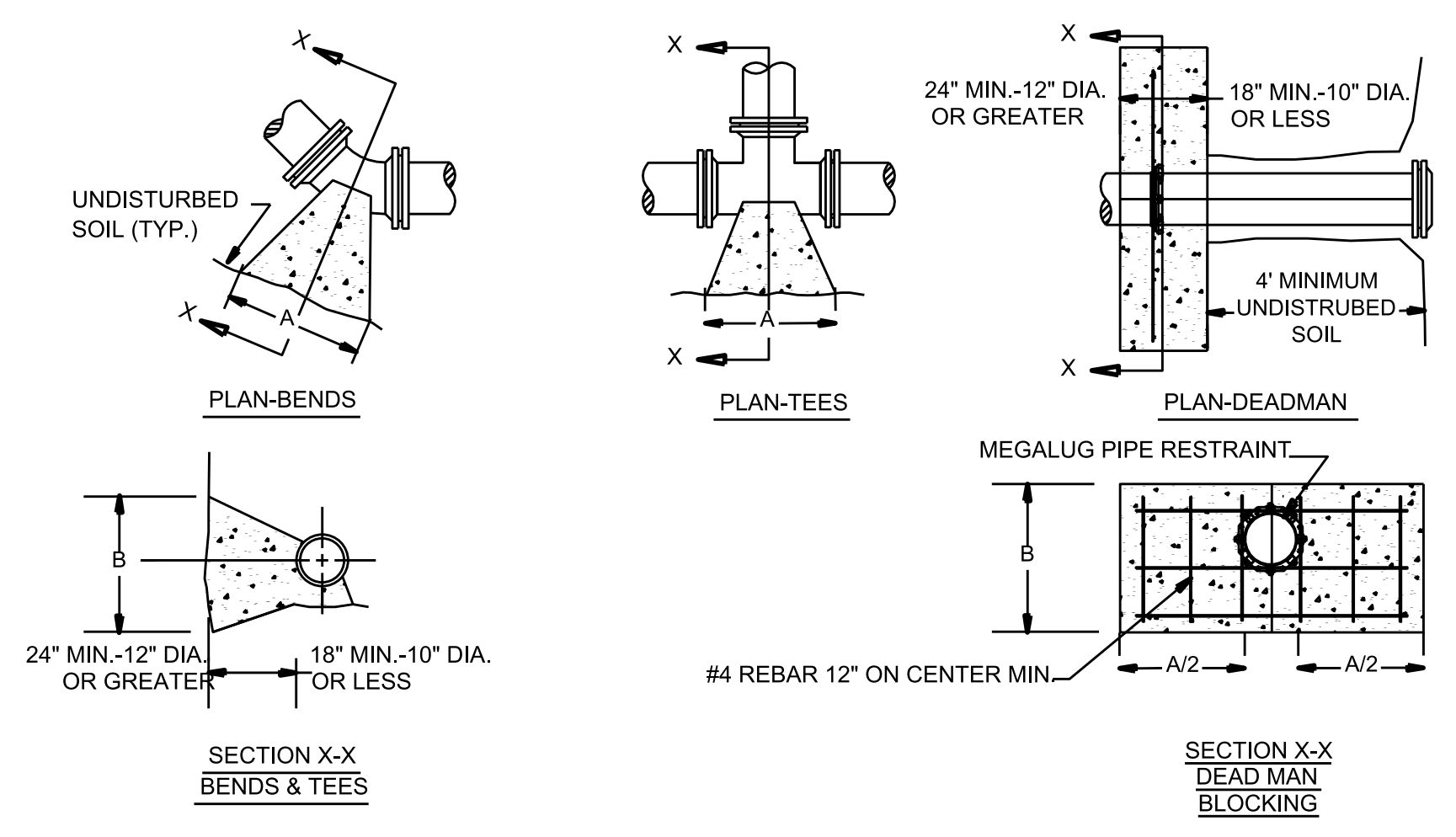
FOR THE TEE BRANCH THE NOMINAL AND BRANCH SIZES ARE BOTH THE SIZE LISTED IN THE TABLE.  
REDUCERS ARE FOR THE NEXT SIZE DOWN IN THE TABLE.  
DEVIATIONS FROM THESE CONDITIONS MUST BE BASED ON THE ABOVE PARAMETERS.



**RESTRAINED JOINT PIPING**

**THRUST BLOCK SPECIFICATIONS AND DIMENSIONS**

FITTING	AREA (IN <sup>2</sup> )	TEES		AREA OF THRUST BLOCK (FT <sup>2</sup> )		90° BENDS AND DEAD MAN (FT)		AREA OF THRUST BLOCK (FT <sup>2</sup> )		45° BENDS AND "Y" S (FT)		AREA OF THRUST BLOCK (FT <sup>2</sup> )		22.5° BENDS (FT)		AREA OF THRUST BLOCK (FT <sup>2</sup> )		11.25° BENDS (FT)		AREA OF THRUST BLOCK (FT <sup>2</sup> )		
		A (FT)	B (FT)	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
6	28.3	2.1	1.0	2.1	2.4	1.2	3.0	1.8	0.9	1.6	1.3	0.6	0.8	1.3	0.6	0.8	1.3	0.6	0.8	1.3	0.6	0.8
8	50.3	2.7	1.4	3.8	3.3	1.6	5.3	2.4	1.2	2.9	1.7	0.9	1.5	1.7	0.9	1.5	1.7	0.9	1.5	1.7	0.9	1.5
10	78.5	3.4	1.7	5.9	4.1	2.0	8.3	3.0	1.5	4.5	2.1	1.1	2.3	2.1	1.1	2.3	2.1	1.1	2.3	2.1	1.1	2.3
12	113.1	4.1	2.1	8.5	4.9	2.4	12.0	3.6	1.8	6.5	2.6	1.3	3.3	2.6	1.3	3.3	2.6	1.3	3.3	2.6	1.3	3.3
14	153.9	4.8	2.4	11.5	5.7	2.9	16.3	4.2	2.1	8.8	3.0	1.5	4.5	3.0	1.5	4.5	3.0	1.5	4.5	3.0	1.5	4.5
16	201.1	5.5	2.7	15.1	7.1	3.0	21.3	4.8	2.4	11.5	3.4	1.7	5.9	3.4	1.7	5.9	3.4	1.7	5.9	3.4	1.7	5.9
18	254.5	6.4	3.0	19.1	18.0	CY	27.0	5.4	2.7	14.6	3.9	1.9	7.4	3.9	1.9	7.4	3.9	1.9	7.4	3.9	1.9	7.4
20	314.2	7.9	3.0	23.6	22.2	CY	33.3	6.0	3.0	18.0	4.3	2.1	9.2	4.3	2.1	9.2	4.3	2.1	9.2	4.3	2.1	9.2
24	452.4	22	CY	33.9	32.0	CY	48.0	17.3	CY	26.0	5.1	2.6	13.2	5.1	2.6	13.2	5.1	2.6	13.2	5.1	2.6	13.2



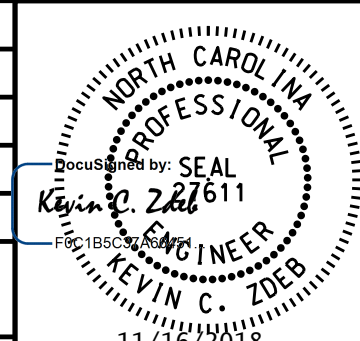
**THRUST BLOCKING DETAIL**

**NOTES:**

1. BASED ON 200 PSI STATIC PRESSURE PLUS AWWA WATER HAMMER ALLOWANCE ASSUMING 4000 PSF BEARING CAPACITY OF SOIL
2. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.
3. THRUST BLOCKS TO BE USED AT ALL LINES OPERATING UNDER PRESSURE.
4. THESE DETAILS IN NO WAY LIMIT THE SIZE OR LOCATION OF ADDITIONAL BLOCKING WHEN REQUESTED BY THE COUNTY ENGINEER.
5. DEPTH FROM GROUND SURFACE TO TOP OF BLOCKING SHALL BE GREATER THAN HEIGHT OF BLOCKING
6. ALL FITTINGS, VALVES, ETC. SHALL BE WRAPPED WITH VISQUEEN OR POLYWRAP BEFORE CONCRETE IS PLACED, TO PREVENT CORROSION OR BONDING OF THE CONCRETE TO THE BOLTS, FITTINGS, OR PIPE.
7. WIDTH OF THE THRUST BLOCK SHOULD BE AT LEAST TWO TIMES THE HEIGHT OF THE THRUST BLOCK.
8. CUBIC YARDS OF CONCRETE IS SPECIFIED TO OPPOSE THE THRUST FORCE WHEN DIMENSION "A" EXCEEDS 8 FEET
9. ALTHOUGH THE BEARING STRENGTHS USED IN THIS TABLE HAVE BEEN USED SUCCESSFULLY IN THE DESIGN OF THRUST BLOCKS AND ARE CONSIDERED TO BE CONSERVATIVE, THEIR ACCURACY IS TOTALLY DEPENDANT ON ACCURATE SOIL IDENTIFICATION AND EVALUATION. THE ULTIMATE RESPONSIBILITY FOR SELECTING THE PROPER BEARING STRENGTH OF A PARTICULAR SOIL TYPE RESTS WITH THE DESIGN ENGINEER.

PROJECT REFERENCE NO. <b>W-5601Q</b>	SHEET NO. <b>UC-3C</b>
DESIGNED BY: <b>GJB</b>	
DRAWN BY: <b>GJB</b>	
CHECKED BY: <b>KCZ</b>	
APPROVED BY: <b>KCZ</b>	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
<b>UTILITY CONSTRUCTION</b>	
M A Engineering Consultants, Inc. 598 East Chatham Street - Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221 NC License: F-0160	
<b>DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED</b>	



PROJECT REFERENCE NO.	W-56010	SHEET NO.	UC-4
DESIGNED BY:	GJB		
DRAWN BY:	GJB		
CHECKED BY:	KCZ		
APPROVED BY:	KCZ		
REVISED:		NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

### UTILITY CONSTRUCTION

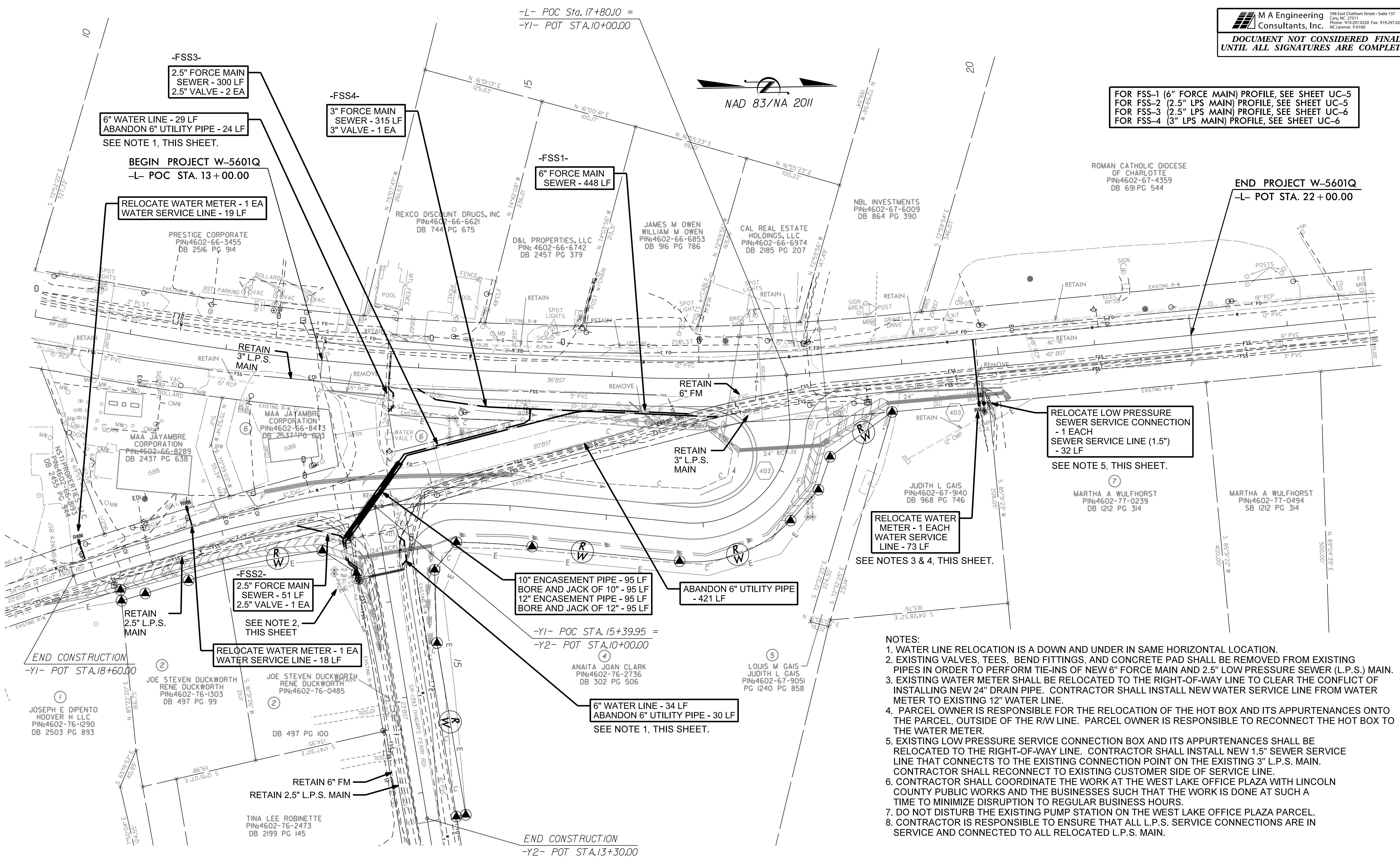
**M A Engineering Consultants, Inc.**  
 298 East Chatham Street - Suite 137  
 Cary, NC 27511  
 Phone: 919.297.0220 Fax: 919.297.0221  
 NC License: F-0160

**DOCUMENT NOT CONSIDERED FINAL  
 UNTIL ALL SIGNATURES ARE COMPLETED**

UTILITY OWNER(S) ON THIS PROJECT:  
 LINCOLN COUNTY PUBLIC WORKS  
 UTILITIES: 6" & 12" WATER LINES  
 6" SANITARY FORCE MAIN  
 2.5" & 3" LOW PRESSURE SEWER MAINS  
 CONTACT: CHRIS HENDERSON  
 PHONE: 704-736-8497

THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 300 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 600 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



FOR FSS-1 (6" FORCE MAIN) PROFILE, SEE SHEET UC-5  
 FOR FSS-2 (2.5" LPS MAIN) PROFILE, SEE SHEET UC-5  
 FOR FSS-3 (2.5" LPS MAIN) PROFILE, SEE SHEET UC-6  
 FOR FSS-4 (3" LPS MAIN) PROFILE, SEE SHEET UC-6

RELOCATE LOW PRESSURE SEWER SERVICE CONNECTION - 1 EACH  
 SEWER SERVICE LINE (1.5") - 32 LF  
 SEE NOTE 5, THIS SHEET.

RELOCATE WATER METER - 1 EACH  
 WATER SERVICE LINE - 73 LF  
 SEE NOTES 3 & 4, THIS SHEET.

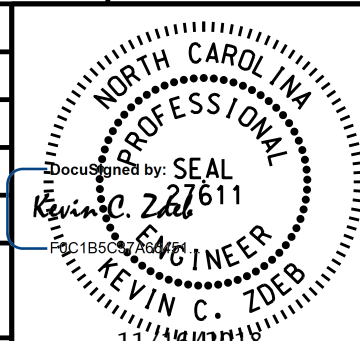
- NOTES:**
1. WATER LINE RELOCATION IS A DOWN AND UNDER IN SAME HORIZONTAL LOCATION.
  2. EXISTING VALVES, TEES, BEND FITTINGS, AND CONCRETE PAD SHALL BE REMOVED FROM EXISTING PIPES IN ORDER TO PERFORM TIE-INS OF NEW 6" FORCE MAIN AND 2.5" LOW PRESSURE SEWER (L.P.S.) MAIN.
  3. EXISTING WATER METER SHALL BE RELOCATED TO THE RIGHT-OF-WAY LINE TO CLEAR THE CONFLICT OF INSTALLING NEW 24" DRAIN PIPE. CONTRACTOR SHALL INSTALL NEW WATER SERVICE LINE FROM WATER METER TO EXISTING 12" WATER LINE.
  4. PARCEL OWNER IS RESPONSIBLE FOR THE RELOCATION OF THE HOT BOX AND ITS APPURTENANCES ONTO THE PARCEL, OUTSIDE OF THE R/W LINE. PARCEL OWNER IS RESPONSIBLE TO RECONNECT THE HOT BOX TO THE WATER METER.
  5. EXISTING LOW PRESSURE SERVICE CONNECTION BOX AND ITS APPURTENANCES SHALL BE RELOCATED TO THE RIGHT-OF-WAY LINE. CONTRACTOR SHALL INSTALL NEW 1.5" SEWER SERVICE LINE THAT CONNECTS TO THE EXISTING CONNECTION POINT ON THE EXISTING 3" L.P.S. MAIN. CONTRACTOR SHALL RECONNECT TO EXISTING CUSTOMER SIDE OF SERVICE LINE.
  6. CONTRACTOR SHALL COORDINATE THE WORK AT THE WEST LAKE OFFICE PLAZA WITH LINCOLN COUNTY PUBLIC WORKS AND THE BUSINESSES SUCH THAT THE WORK IS DONE AT SUCH A TIME TO MINIMIZE DISRUPTION TO REGULAR BUSINESS HOURS.
  7. DO NOT DISTURB THE EXISTING PUMP STATION ON THE WEST LAKE OFFICE PLAZA PARCEL.
  8. CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL L.P.S. SERVICE CONNECTIONS ARE IN SERVICE AND CONNECTED TO ALL RELOCATED L.P.S. MAIN.





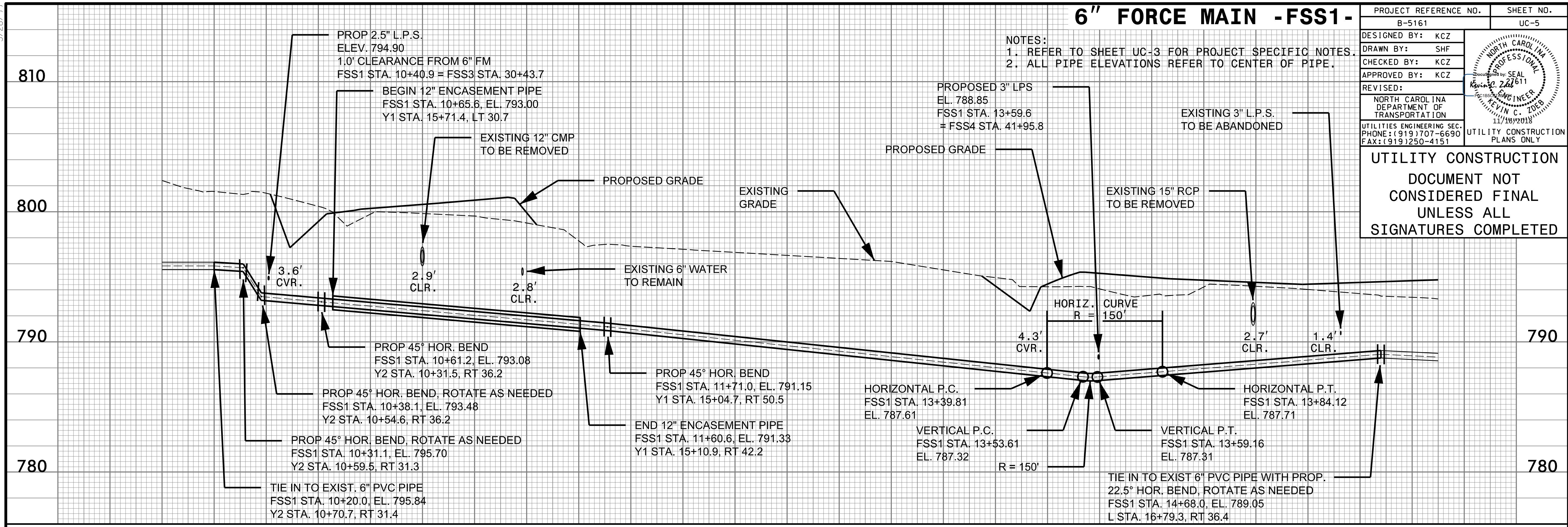
5/28/99

# 6" FORCE MAIN - FSS1-

PROJECT REFERENCE NO. B-5161	SHEET NO. UC-5
DESIGNED BY: KCZ	
DRAWN BY: SHF	
CHECKED BY: KCZ	
APPROVED BY: KCZ	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

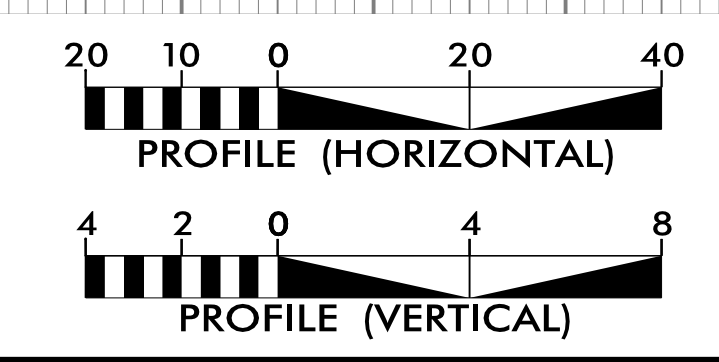
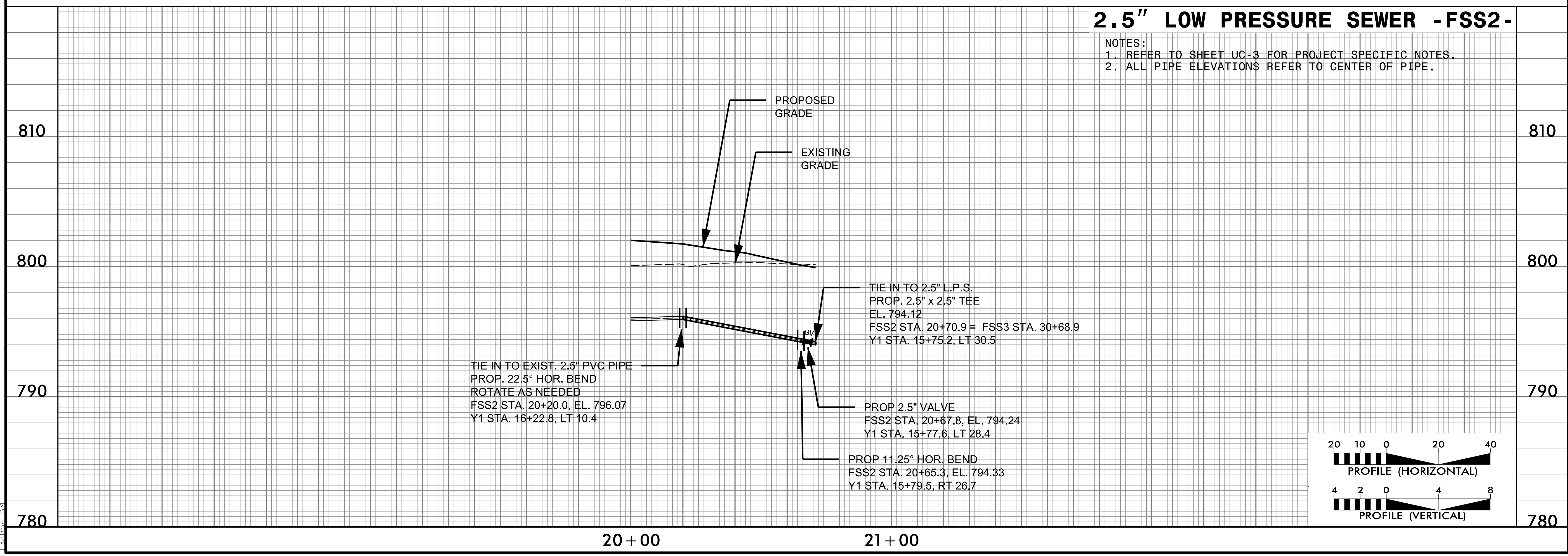
**UTILITY CONSTRUCTION DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

NOTES:  
 1. REFER TO SHEET UC-3 FOR PROJECT SPECIFIC NOTES.  
 2. ALL PIPE ELEVATIONS REFER TO CENTER OF PIPE.



# 2.5" LOW PRESSURE SEWER - FSS2-

NOTES:  
 1. REFER TO SHEET UC-3 FOR PROJECT SPECIFIC NOTES.  
 2. ALL PIPE ELEVATIONS REFER TO CENTER OF PIPE.

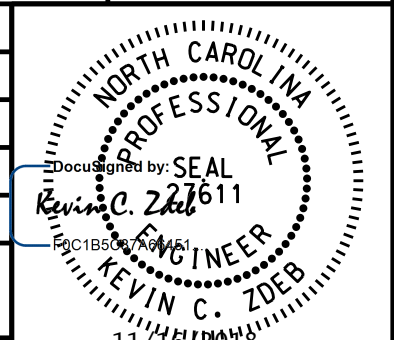


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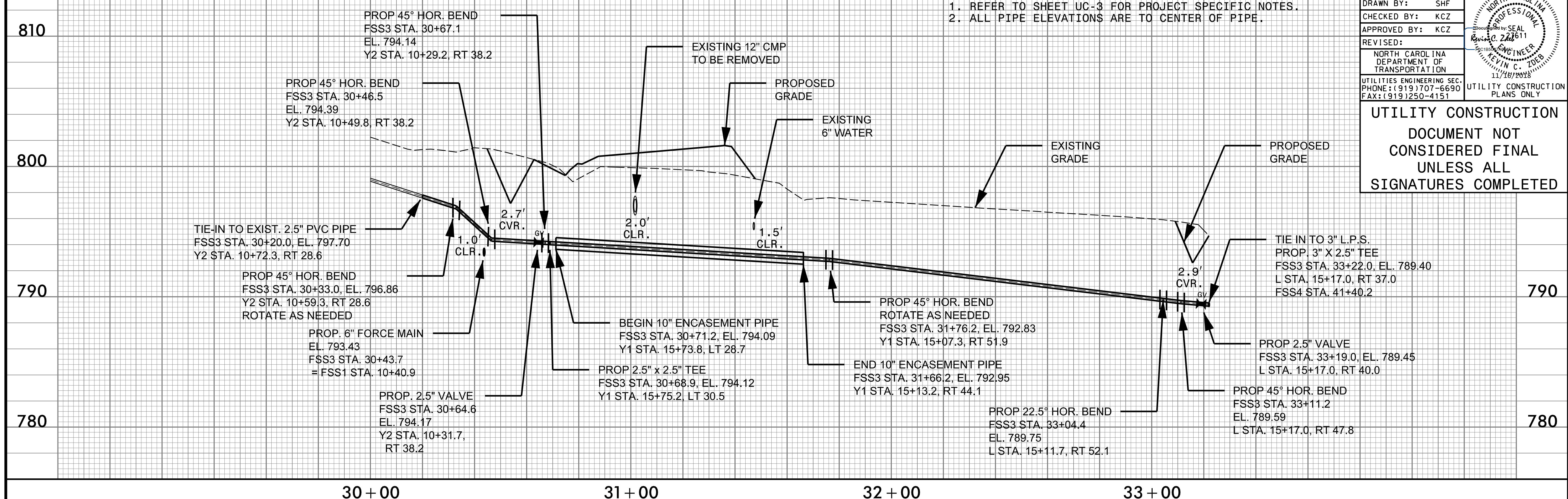


5/28/09

### 2.5" LOW PRESSURE SEWER - FSS3-

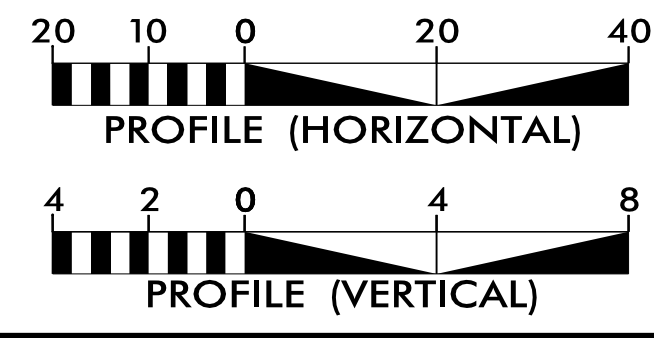
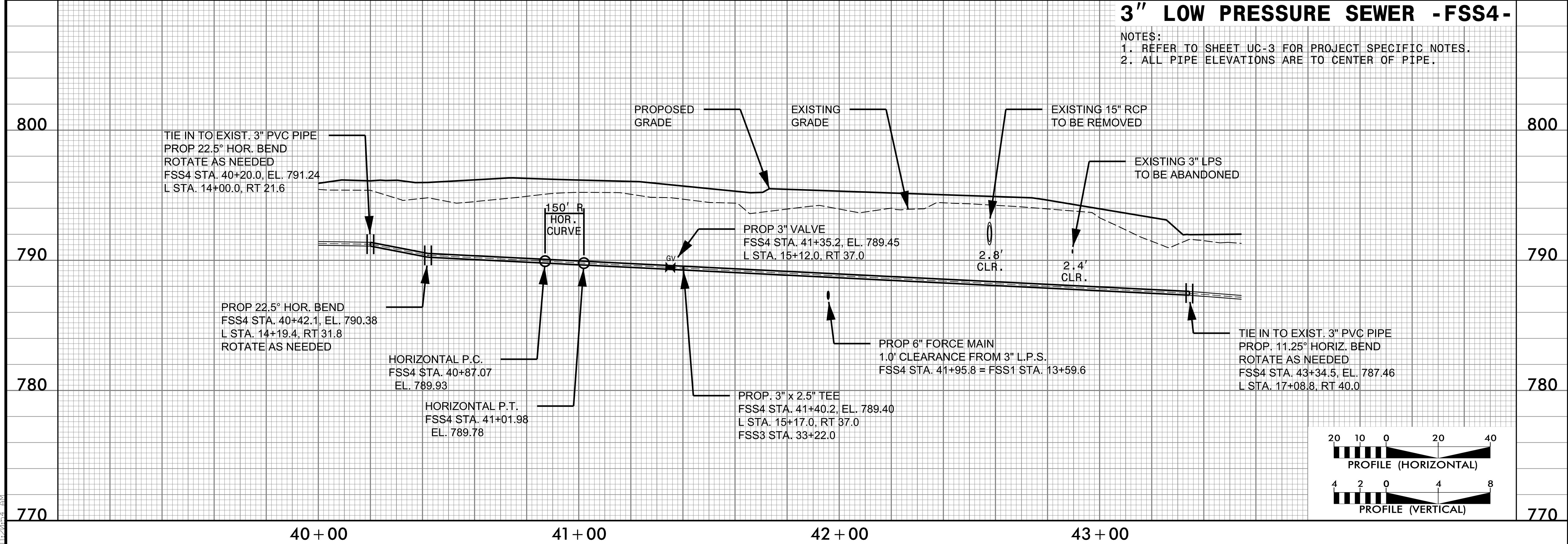
PROJECT REFERENCE NO. B-5161	SHEET NO. UC-6
DESIGNED BY: KCZ	
DRAWN BY: SHF	
CHECKED BY: KCZ	
APPROVED BY: KCZ	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NOTES:  
 1. REFER TO SHEET UC-3 FOR PROJECT SPECIFIC NOTES.  
 2. ALL PIPE ELEVATIONS ARE TO CENTER OF PIPE.



### 3" LOW PRESSURE SEWER - FSS4-

NOTES:  
 1. REFER TO SHEET UC-3 FOR PROJECT SPECIFIC NOTES.  
 2. ALL PIPE ELEVATIONS ARE TO CENTER OF PIPE.



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T.I.P. NO.	SHEET NO.
W-5601Q	UO-1

NOTE:  
 ALL UTILITY WORK SHOWN ON THIS SHEET IS DONE BY OTHERS.  
 NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

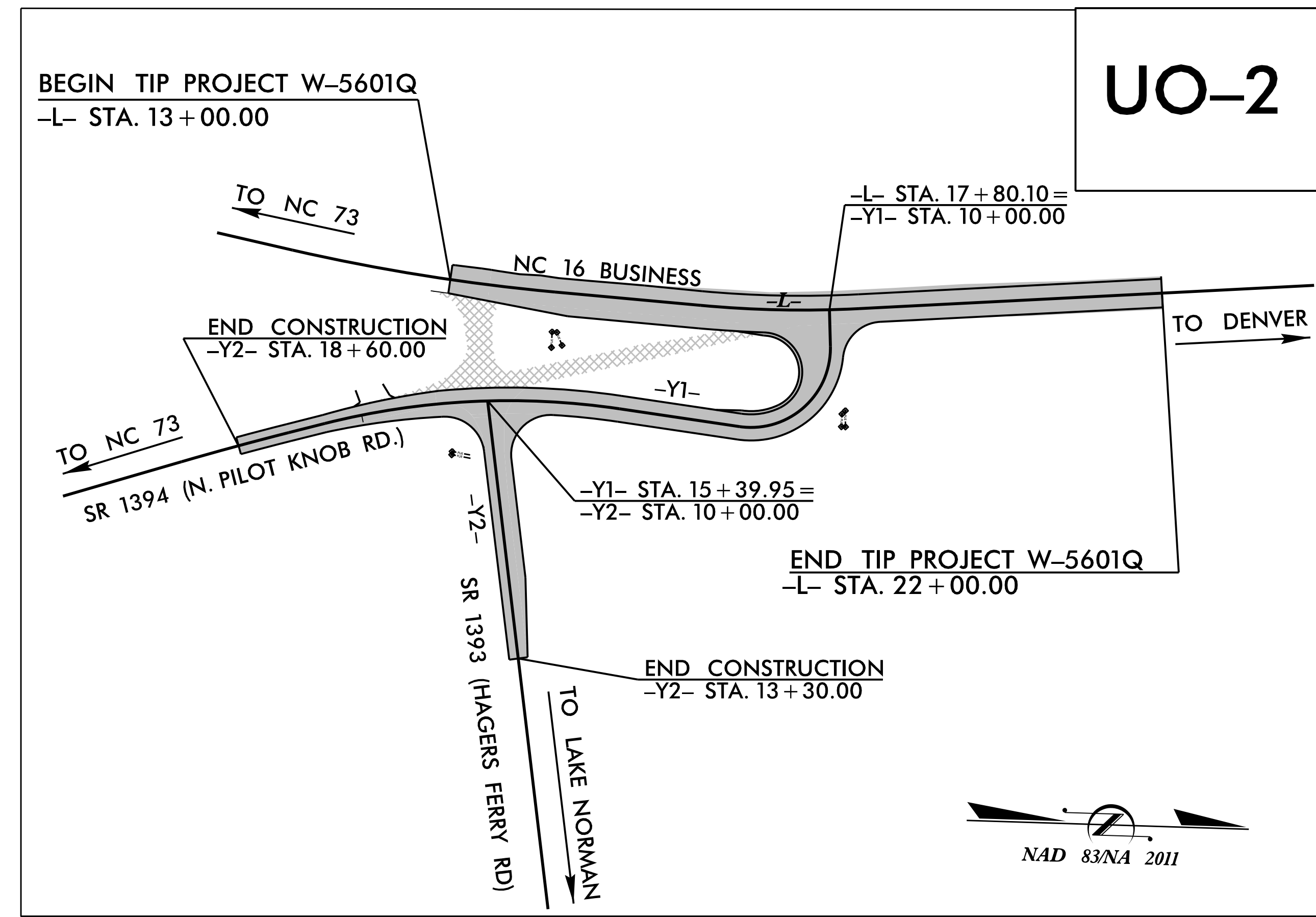
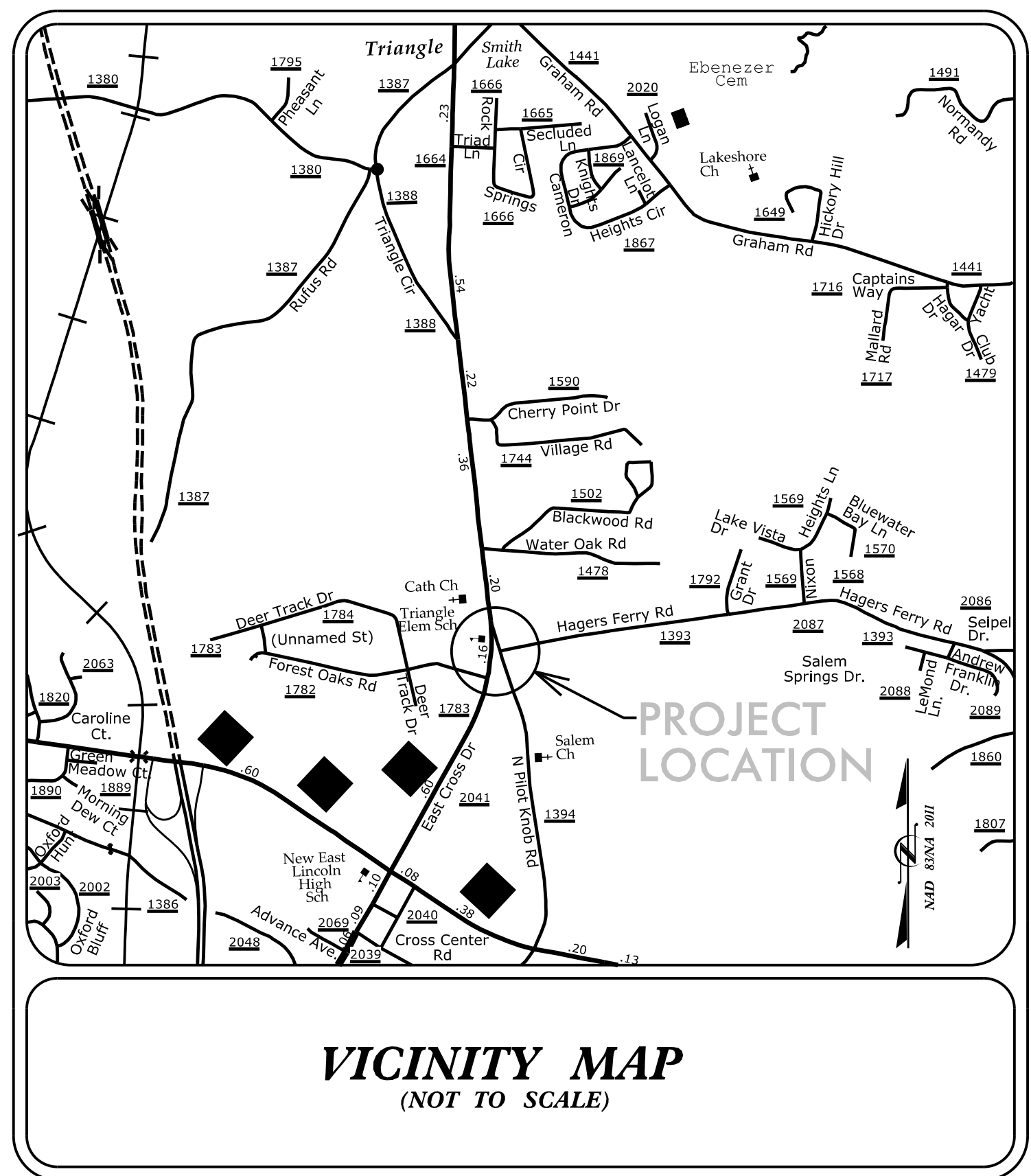
STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**UTILITIES BY OTHERS PLANS  
 LINCOLN COUNTY**

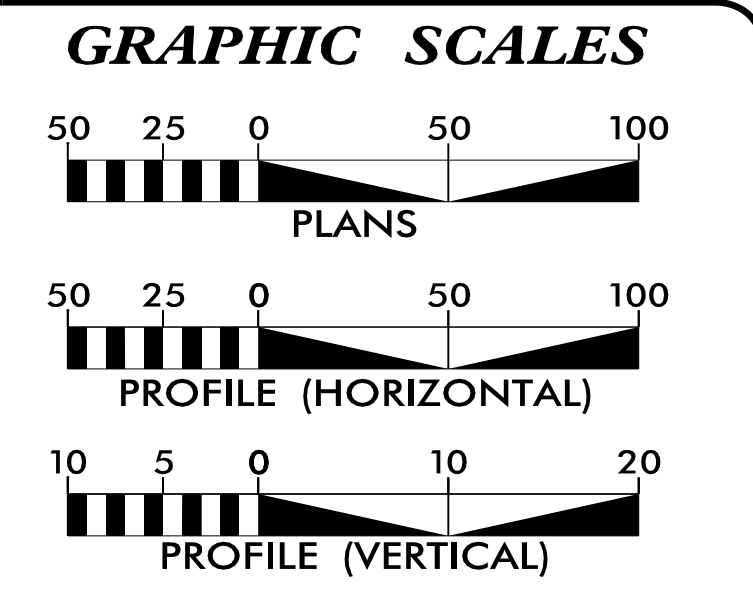
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 SR 1394 (N. PILOT KNOB ROAD)

TYPE OF WORK: POWER, PHONE, CABLE AND GAS RELOCATION

TIP PROJECT: W-5601Q



PRELIMINARY PLANS  
 DO NOT USE FOR CONSTRUCTION



SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-2	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS
(A) POWER - DUKE ENERGY
(B) PHONE - AT&T
(C) CABLE - SPECTRUM
(D) GAS - PIEDMONT NATURAL GAS

PREPARED IN THE OFFICE OF:

**M A Engineering**  
 Consultants, Inc.

598 East Chatham Street - Suite 137  
 Cary, NC 27511  
 Phone: 919.297.0220 Fax: 919.297.0221  
 NC License: F-0160

**WEBB WHITE** UTILITY PROJECT MANAGER  
**WARREN ANDERSON** PROJECT UTILITY COORDINATOR

**DIVISION OF HIGHWAYS  
 DIVISION 12**

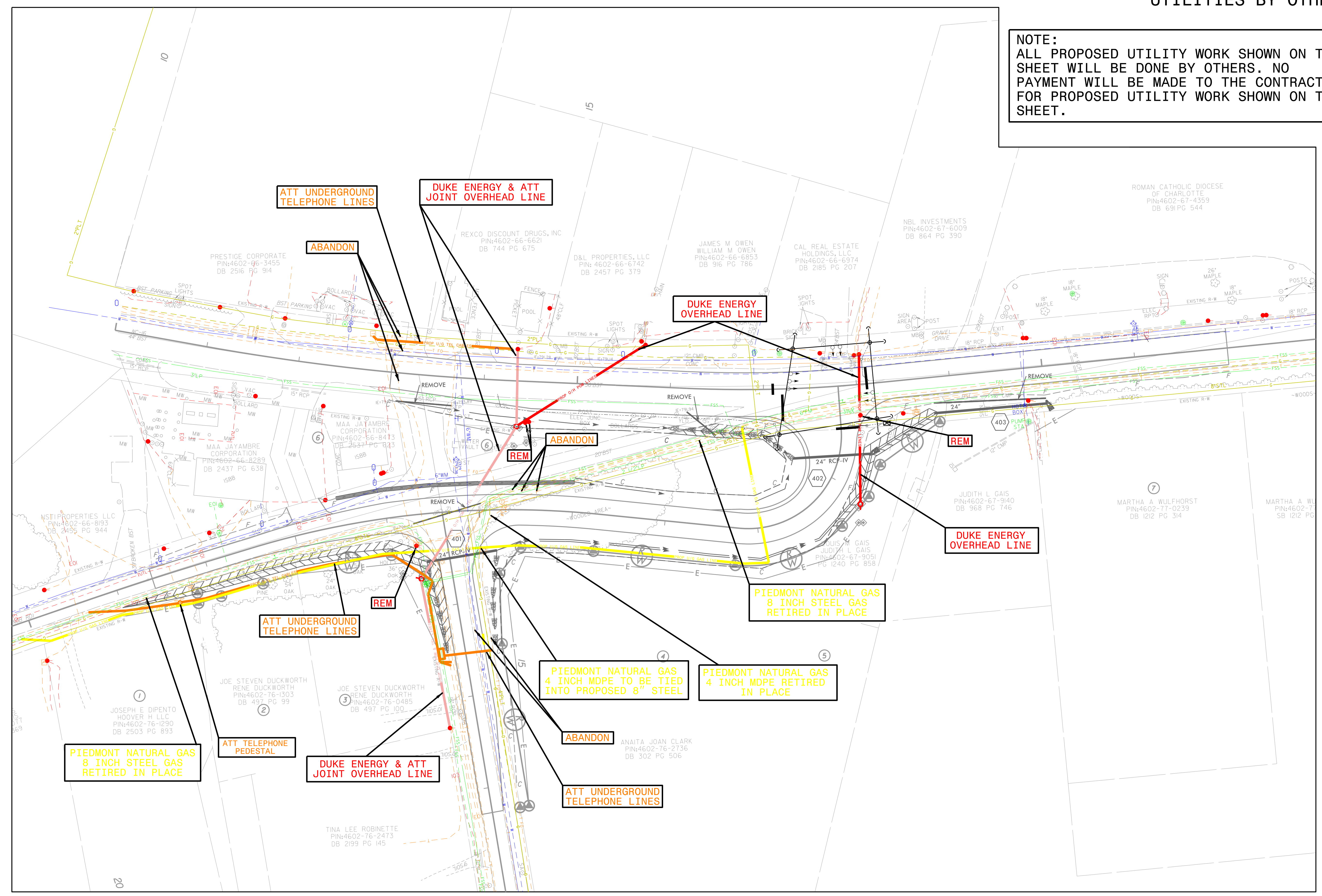
DIV ADDRESS  
 HIGHWAY DIVISION 12  
 1710 E. MARION ST. (US 74 BUSINESS)  
 SHELBY NC 28151

**CHAD DREWERY**  
 NCDOT DIVISION 12  
 PROJECT UTILITY ENGINEER

4/9/2018 P:\J00BS\_0814\006\10900\W5601Q\Roadway\Proj\UBO\W-5601Q\_UO-1.sh.dgn 2:56:42 PM

### UTILITIES BY OTHERS

**NOTE:**  
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

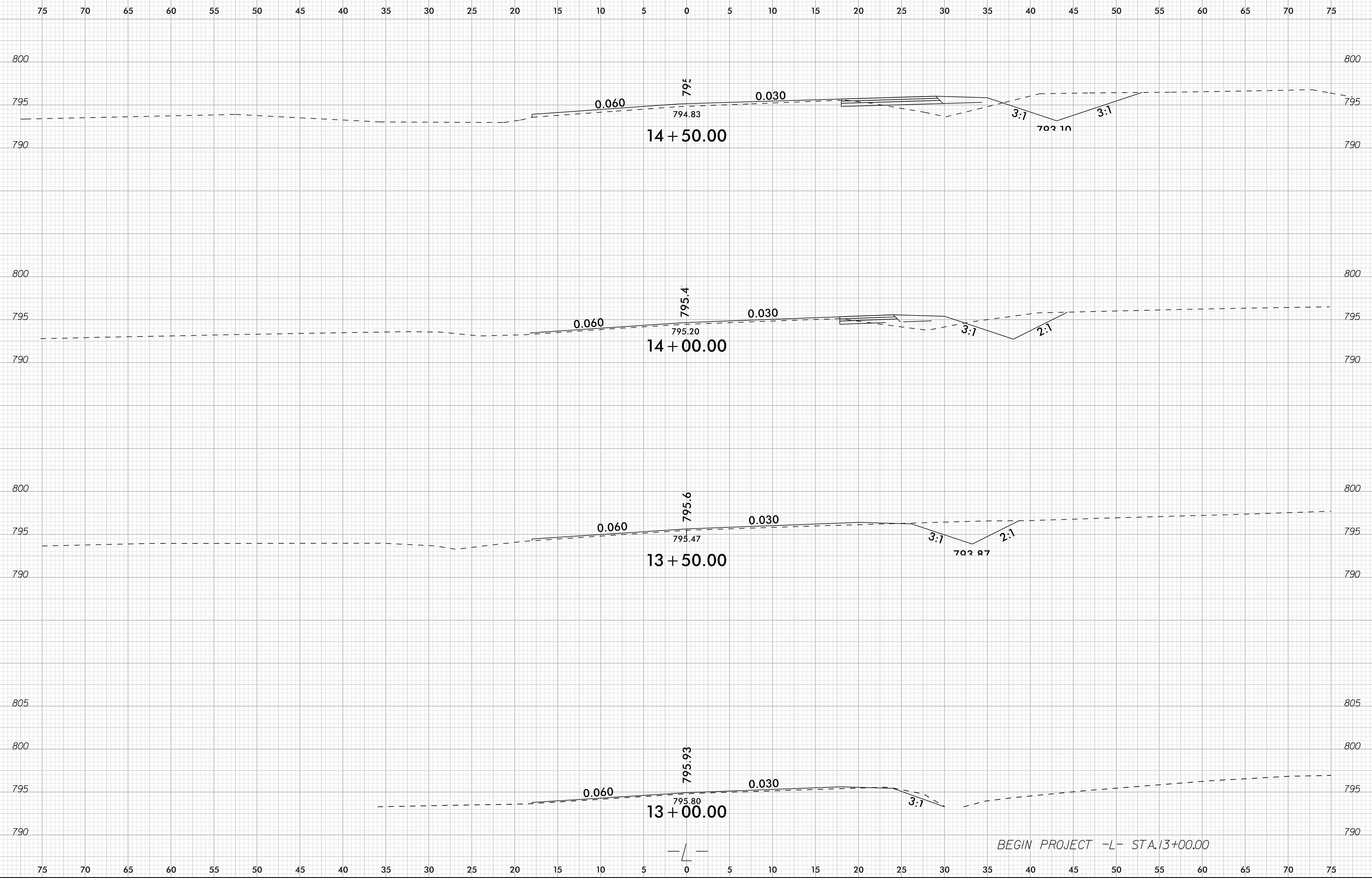


8/17/99  
 3/7/2016  
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8/23/99

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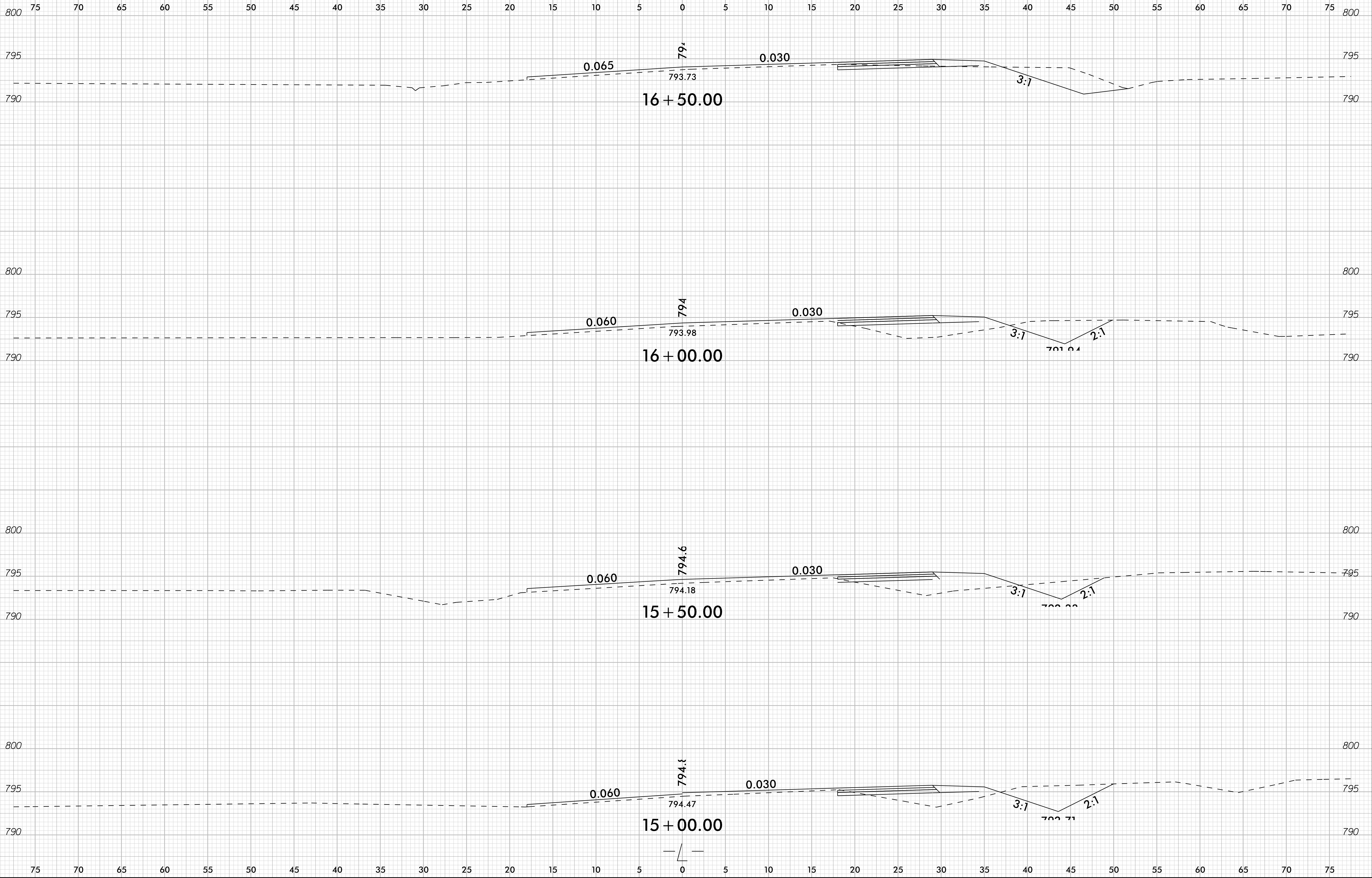
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8/23/99



PROJ. REFERENCE NO.	SHEET NO.
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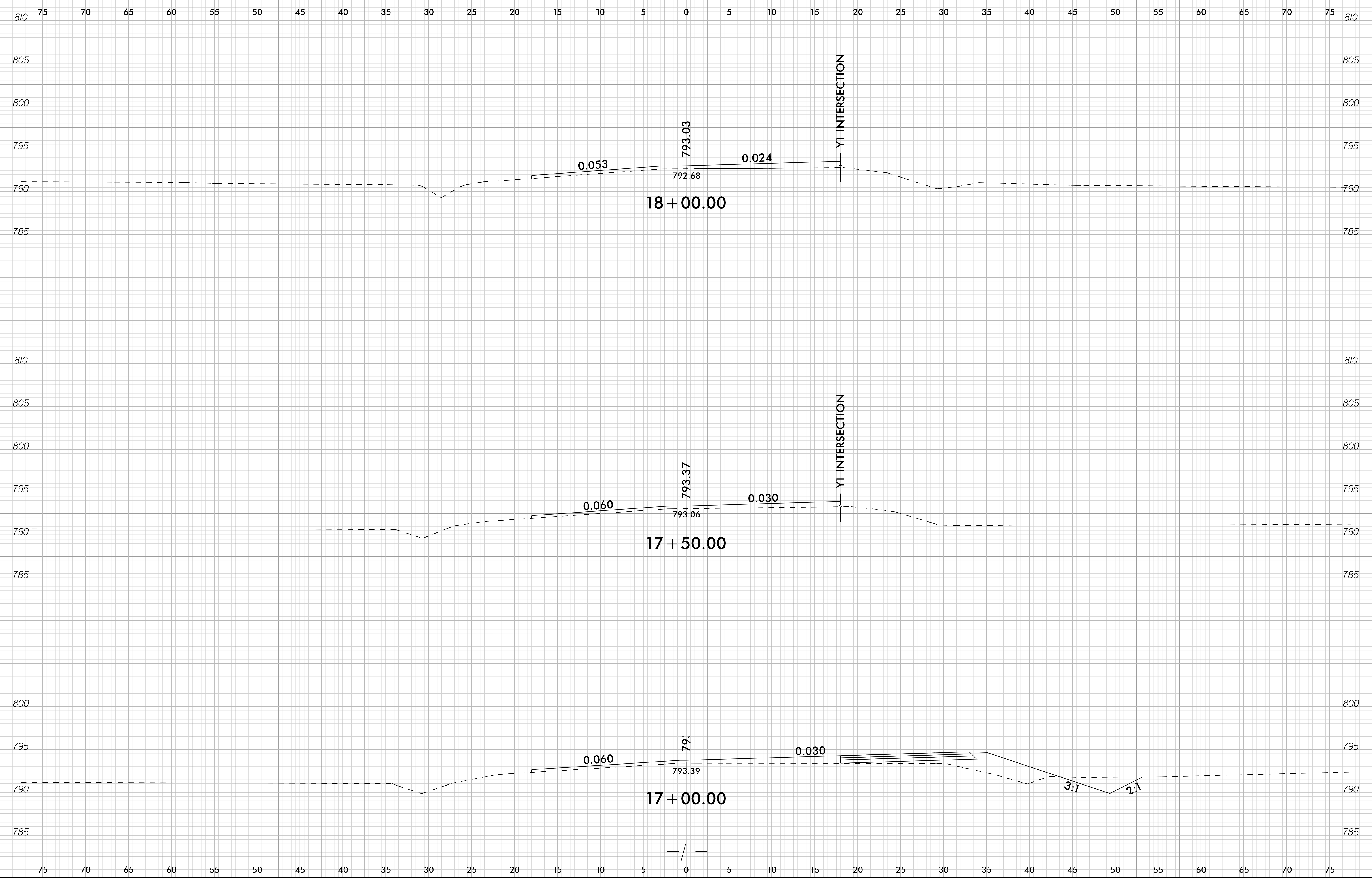
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2/12/2019



8/23/99

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	W-5601Q	X-3



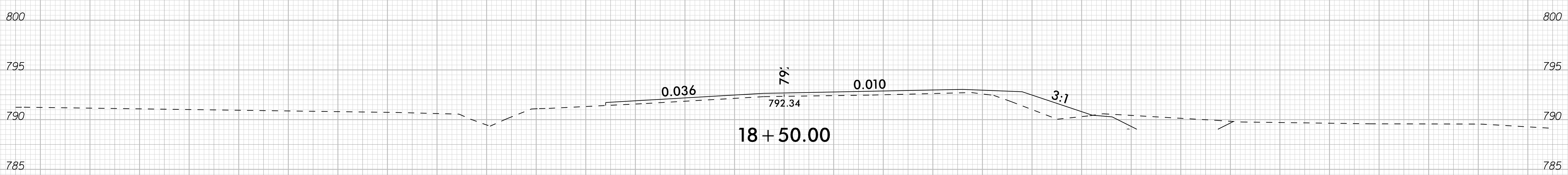
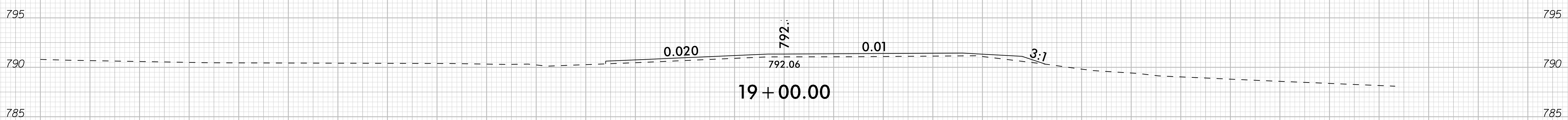
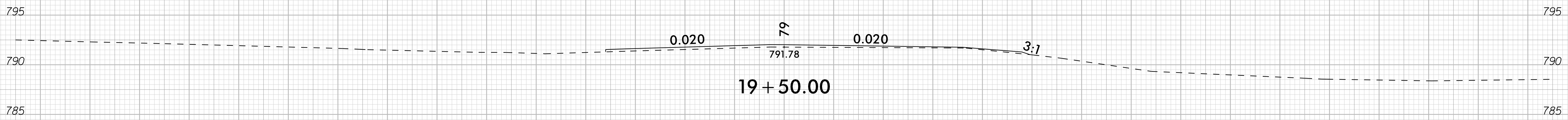
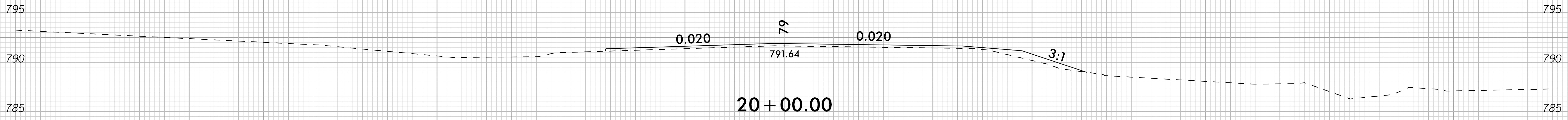
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8/23/99



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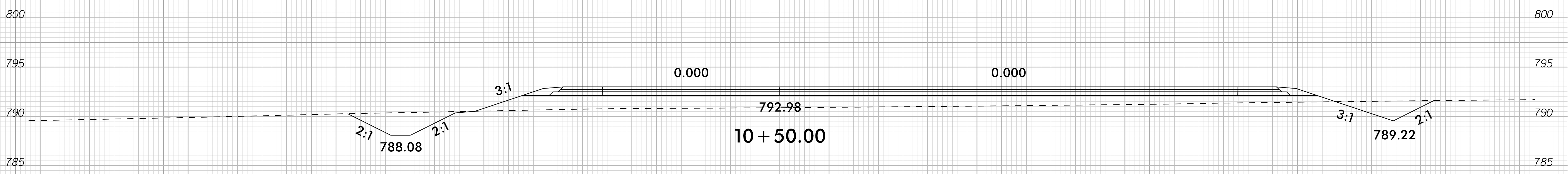
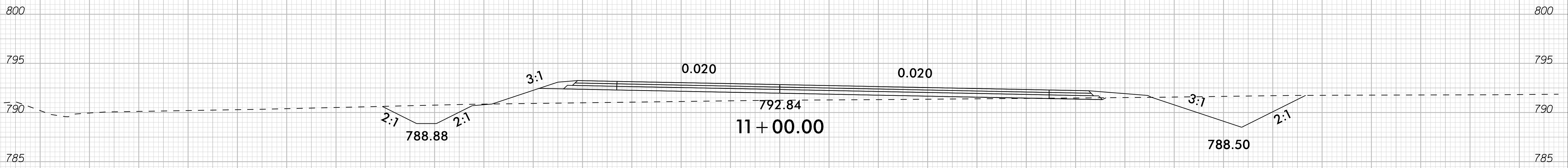


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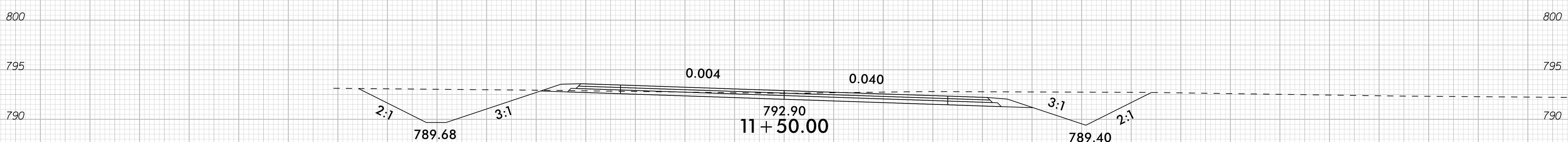
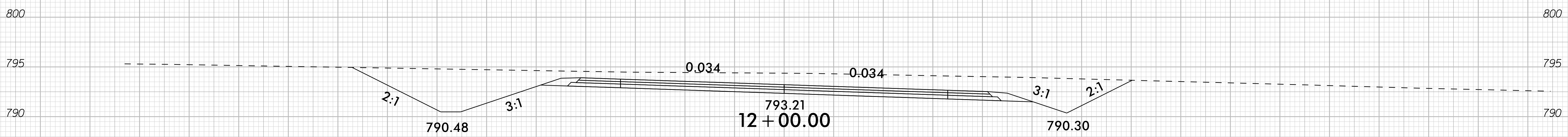
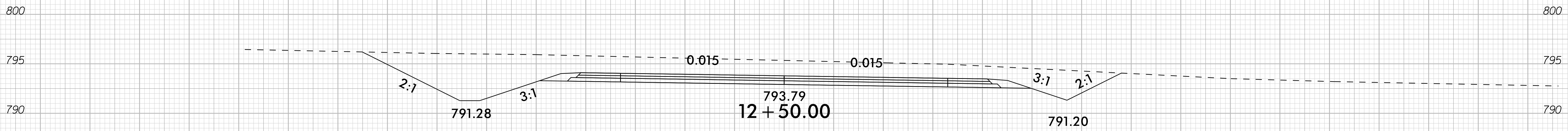
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PROJ. REFERENCE NO.	SHEET NO.
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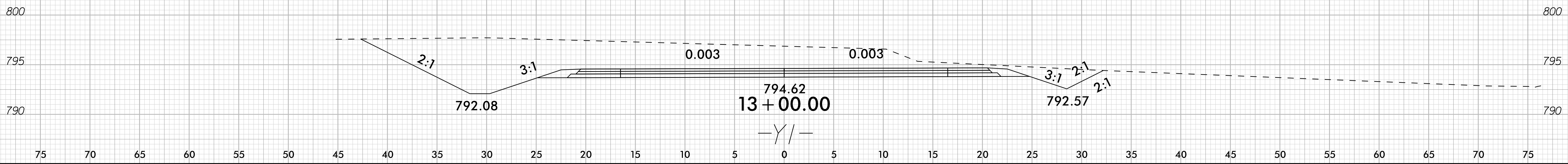
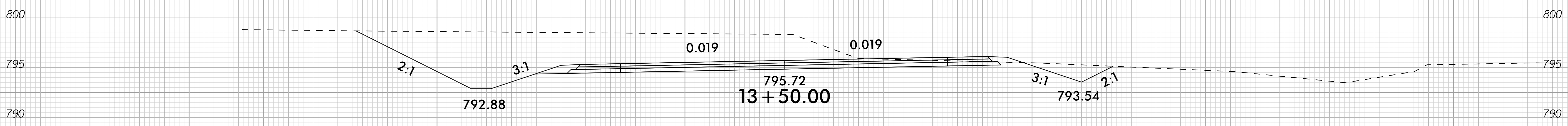
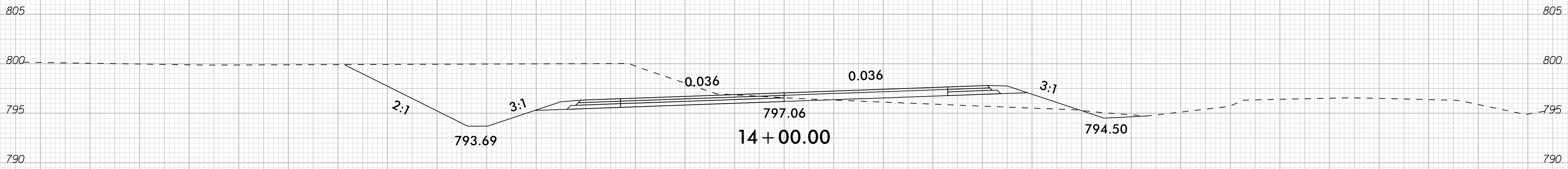
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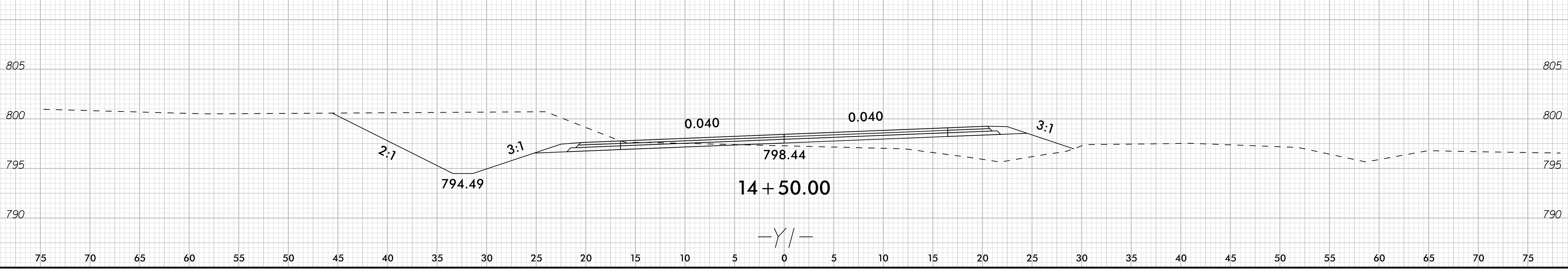
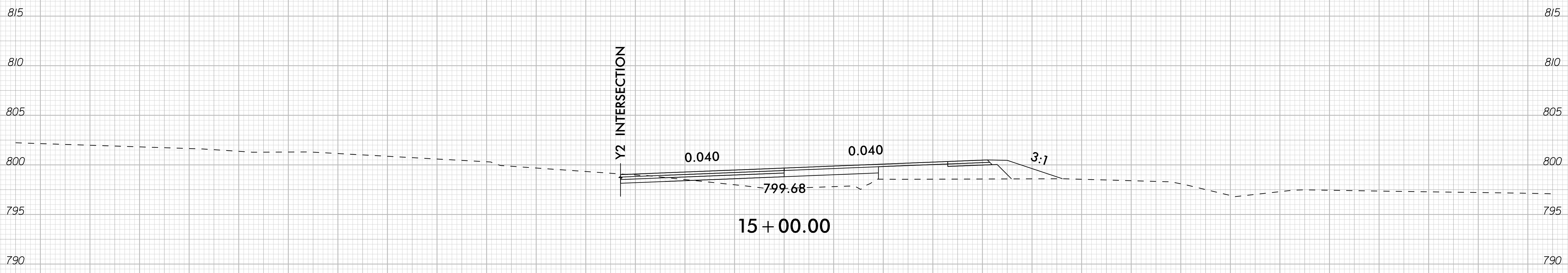
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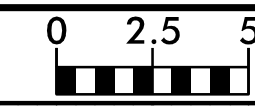


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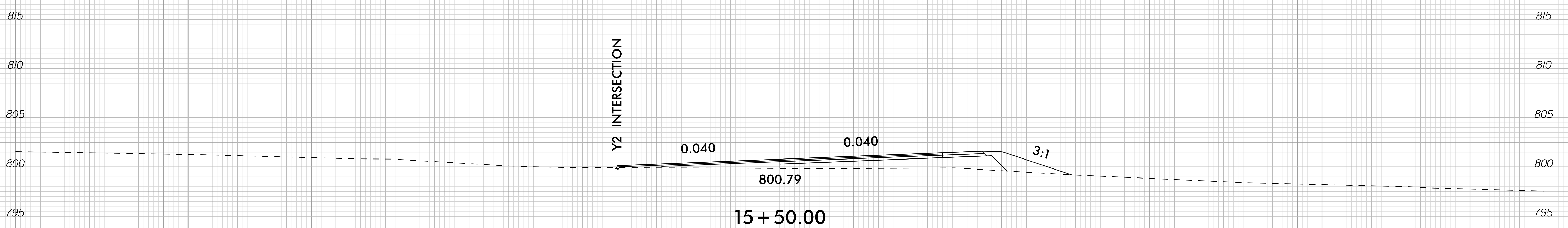
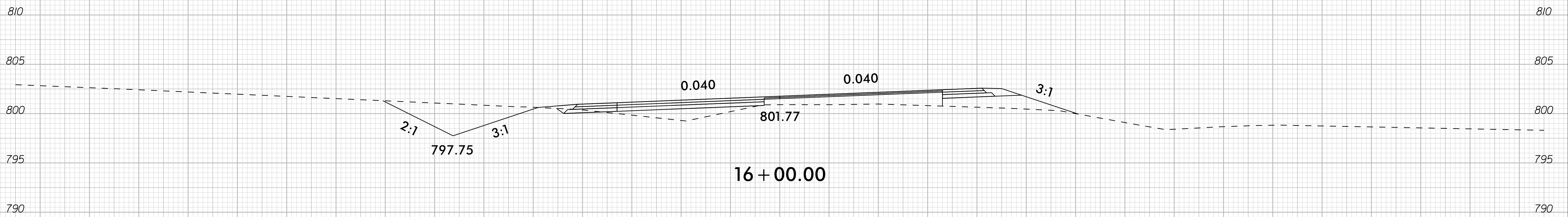


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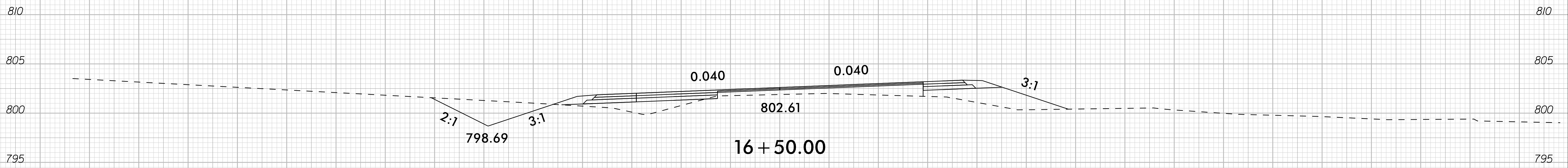
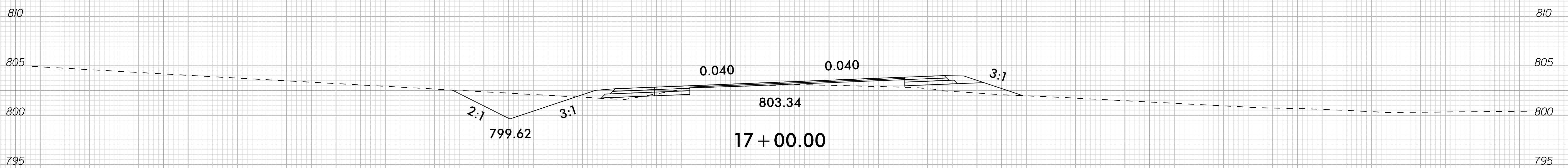
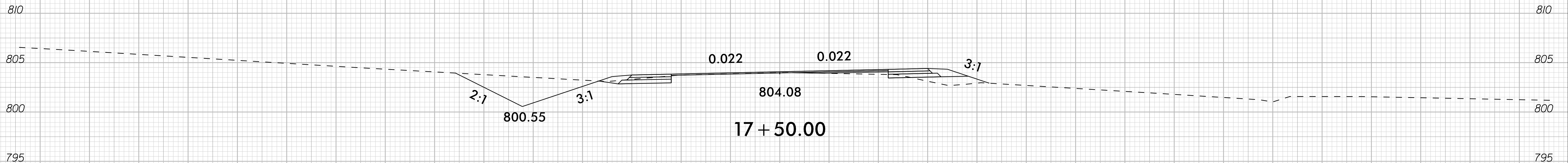
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W-5601Q	X-12

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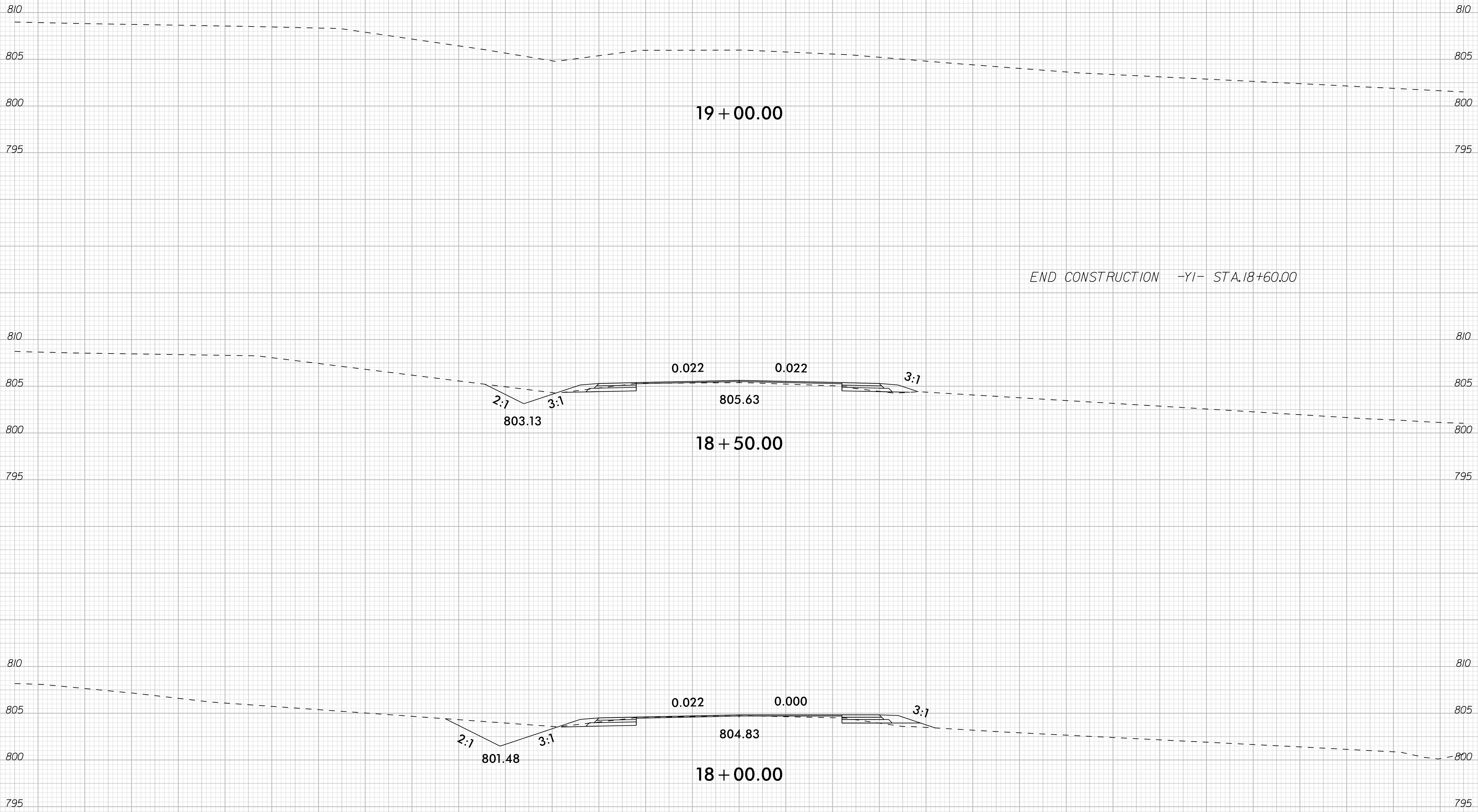
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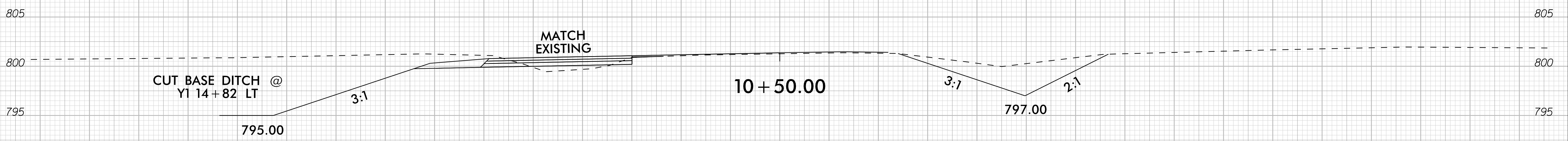
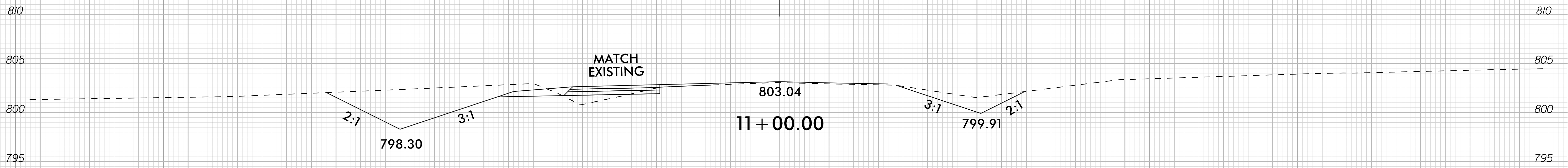
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W-5601Q	X-14

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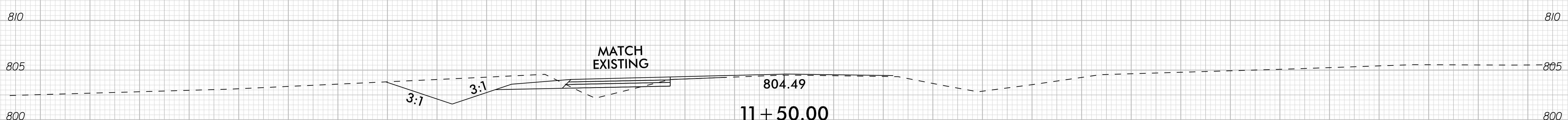
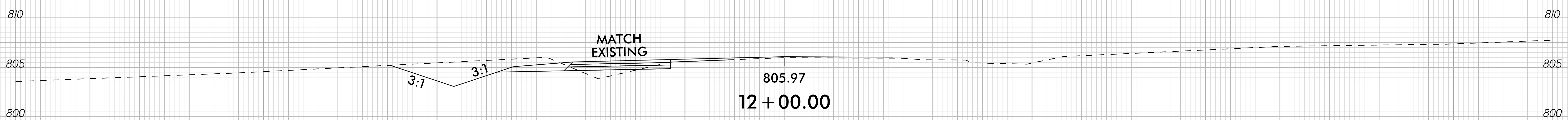
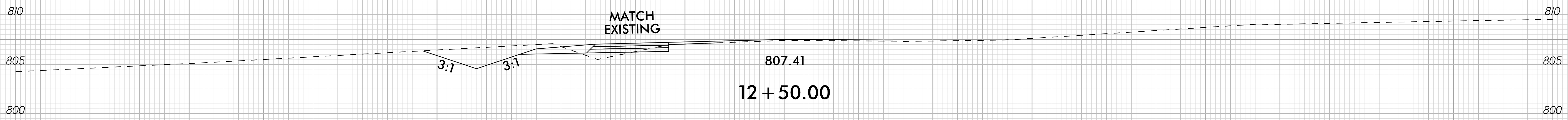
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-Y2-

