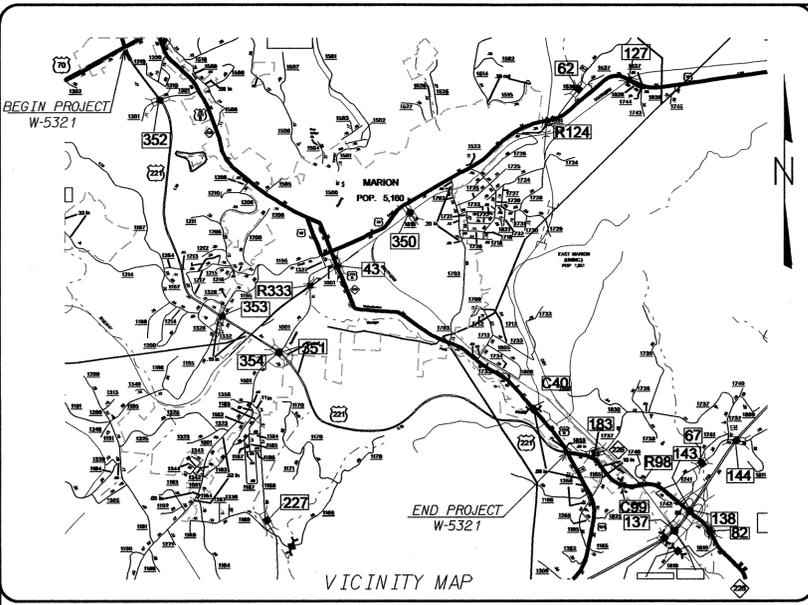


TIP PROJECT: W-5321

CONTRACT: C203388

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\$\$\$\$\$US\$ERNAME\$\$\$\$\$



See Sheet 1-A For Index of Sheets

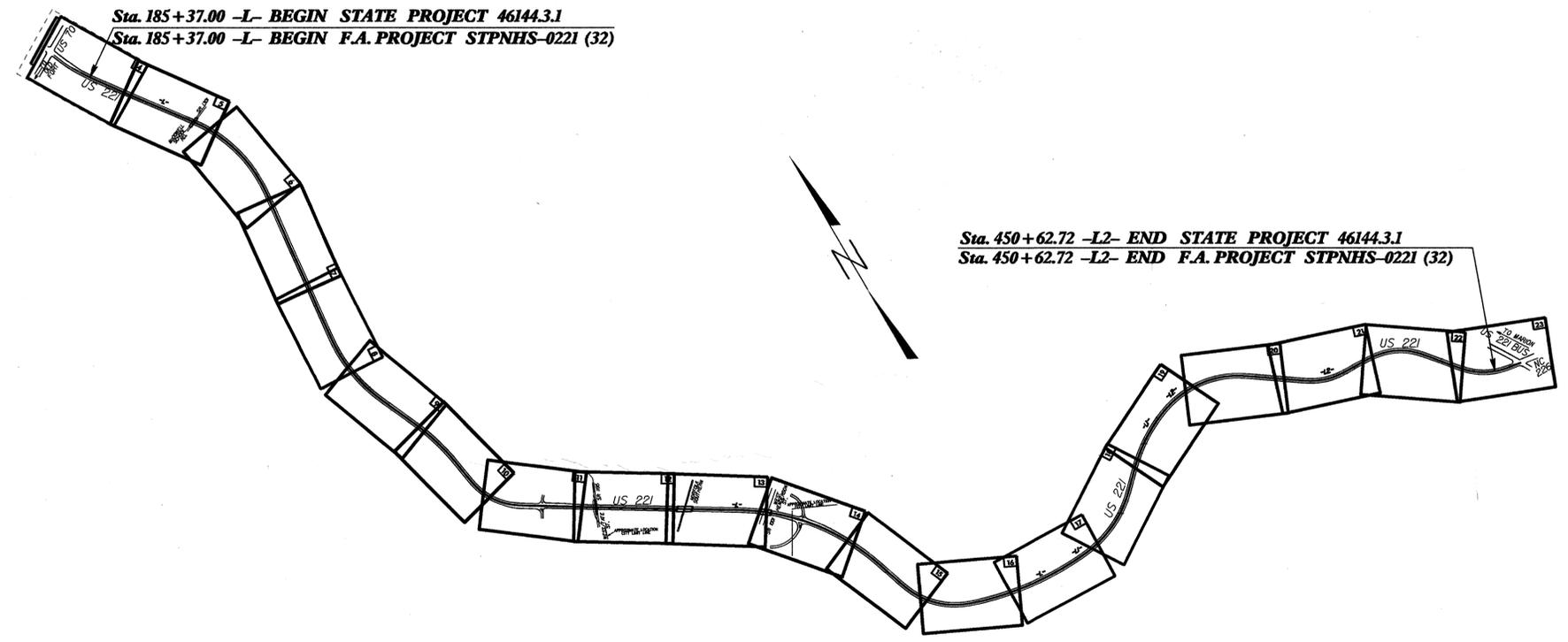
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# McDOWELL COUNTY

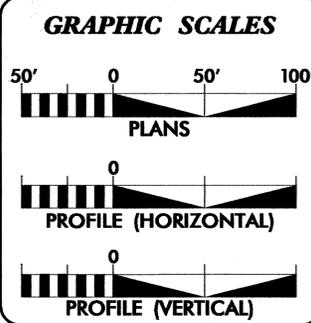
**LOCATION: US 221 (MARION BYPASS) FROM US 70  
TO NC 226**

**TYPE OF WORK: INSTALL CONCRETE MEDIAN BARRIER,  
GRADING, DRAINAGE AND PAVING**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5321	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46144.1.1	STPNHS-0221 (32)	PE	
46144.2.1	STPNHS-0221 (32)	RW & UTL	
46144.3.1	STPNHS-0221 (32)	CONSTRUCTION	



THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS LIMITED TO THE INTERCHANGES



**DESIGN DATA**

ADT	=	
ADT	=	
DHV	=	%
D	=	%
T	=	% *
V	=	MPH
* TTST	=	DUAL
FUNC CLASS	=	

**PROJECT LENGTH**

**PROJECT LENGTH W-5321 = 5.02 MILES**

Prepared In the Office of:  
**DIVISION OF HIGHWAYS**  
55 Orange Street, Asheville, NC 28801

2012 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
AUGUST 17, 2012

**LETTING DATE:**  
SEPTEMBER 17, 2013

KENNETH ARTHUR WILSON P.E.  
PROJECT ENGINEER

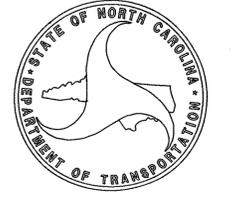
M.K. PENLAND  
PROJECT DESIGN ENGINEER

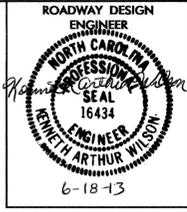
**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

Kenneth Arthur Wilson P.E.  
SIGNATURE: \_\_\_\_\_ 6-18-13





SHEET NUMBER	INDEX OF SHEETS SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND DETAIL FOR 5" MONOLITHIC CONCRETE ISLAND
2-A	DETAIL OF OFFSET DROP INLET
2-B	DETAIL OF DOUBLE FACED CONCRETE BARRIER ON EXISTING BRIDGR DECK
2-C	TEMPORARY STEEL PLATE COVERS FOR MASONRY DRAINAGE STRUCTURES
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF EARTHWORK
3-B	DRAINAGE SUMMARY
4 THRU 23	PLAN SHEET
TMP-1 THRU TMP-4	TRANSPORTATION MANAGEMENT PLANS

GENERAL NOTES: 2012 SPECIFICATIONS  
 EFFECTIVE: 01-17-2012  
 REVISED: 07-30-2012

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

2012 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-17-2012  
 REV. 10-30-2012

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
DIVISION 8 - INCIDENTALS	
852.01	Concrete Islands
854.01	Double Faced Concrete Barrier - Types I, II, III and IV
840.25	Anchorage for Frames - Brick or Concrete

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

*Note: Not to Scale*

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

### 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-
Known Soil Contamination: Area or Site	☠
Potential Soil Contamination: Area or Site	☠

### BUILDINGS AND OTHER CULTURE:

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

### HYDROLOGY:

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

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	CSX TRANSPORTATION 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	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	○ R/W ▲
Proposed Right of Way Line with Concrete or Granite R/W Marker	○ R/W
Proposed Control of Access Line with Concrete CA 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	-----

### 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	●
Recorded U/G Power Line	----- P
Designated U/G Power Line (S.U.E.*)	----- P

### TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○ T
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	○ T
Recorded U/G Telephone Cable	----- T
Designated U/G Telephone Cable (S.U.E.*)	----- T
Recorded U/G Telephone Conduit	----- TC
Designated U/G Telephone Conduit (S.U.E.*)	----- TC
Recorded U/G Fiber Optics Cable	----- T FO
Designated U/G Fiber Optics Cable (S.U.E.*)	----- T FO

### WATER:

Water Manhole	○ W
Water Meter	○
Water Valve	⊗
Water Hydrant	○
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	----- A/G Water

### TV:

TV Satellite Dish	⊗
TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	○ TV
Recorded U/G TV Cable	----- TV
Designated U/G TV Cable (S.U.E.*)	----- TV
Recorded U/G Fiber Optic Cable	----- TV FO
Designated U/G Fiber Optic Cable (S.U.E.*)	----- TV FO

### GAS:

Gas Valve	◇
Gas Meter	○
Recorded U/G Gas Line	----- G
Designated U/G Gas Line (S.U.E.*)	----- G
Above Ground Gas Line	----- A/G Gas

### SANITARY SEWER:

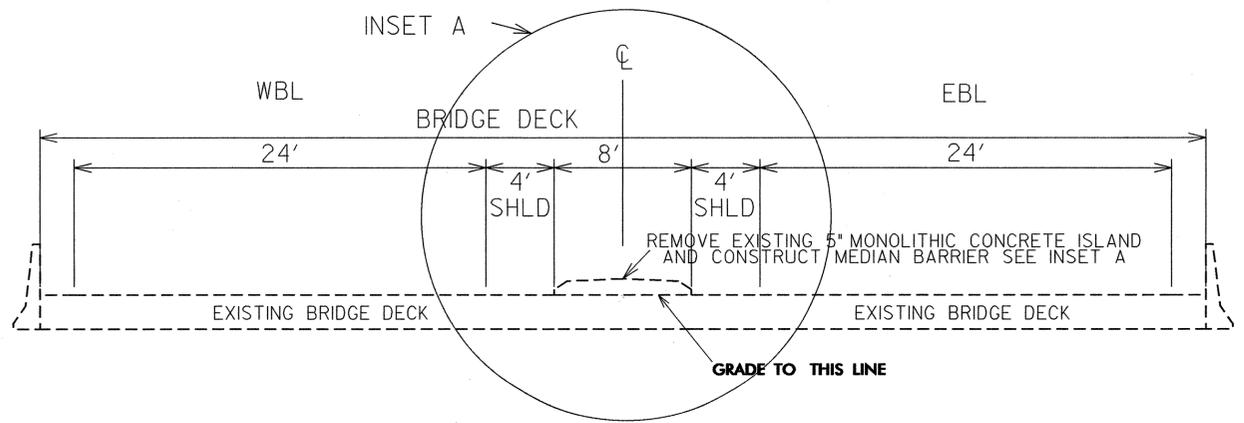
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	----- SS
Above Ground Sanitary Sewer	----- A/G Sanitary Sewer
Recorded SS Forced Main Line	----- FSS
Designated SS Forced Main Line (S.U.E.*)	----- FSS

### MISCELLANEOUS:

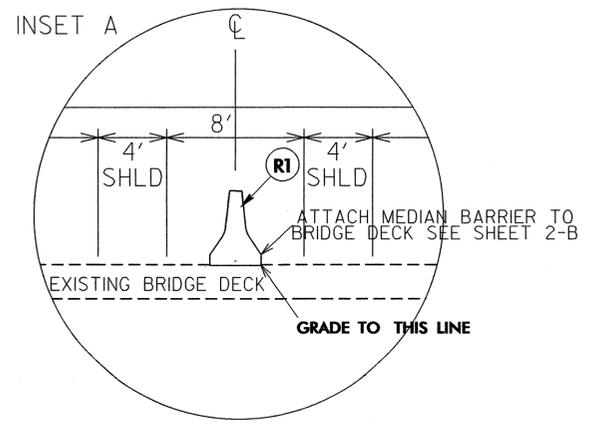
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line	----- UNL
U/G Tank; Water, Gas, Oil	▭
Underground Storage Tank, Approx. Loc.	⊕ (UST)
A/G Tank; Water, Gas, Oil	▭
Geoenvironmental Boring	⊗
U/G Test Hole (S.U.E.*)	⊗
Abandoned According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

6/2/09

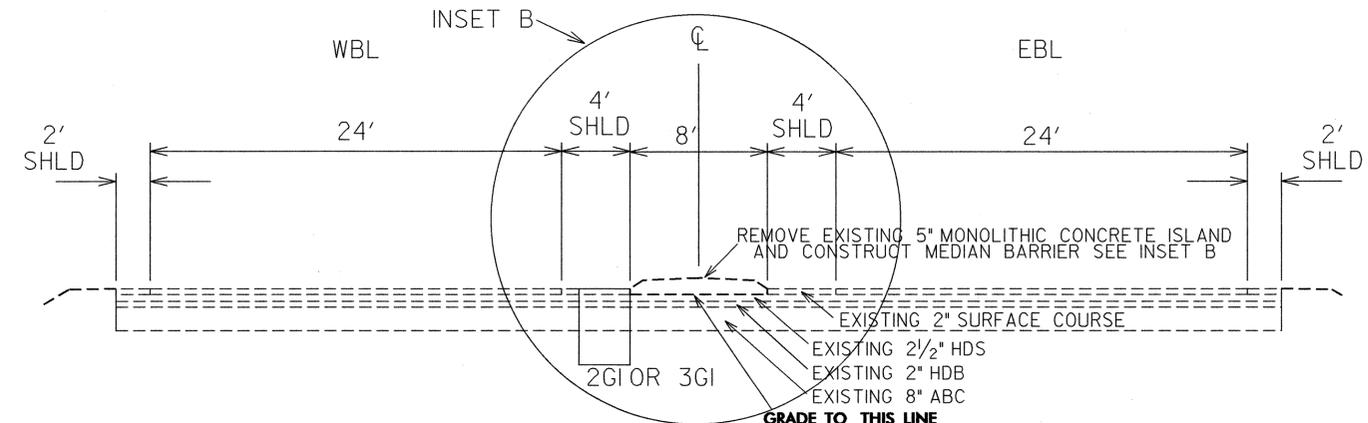
PROJECT REFERENCE NO. W-5321	SHEET NO. 2
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	PAVEMENT DESIGN ENGINEER
	
6-18-13	



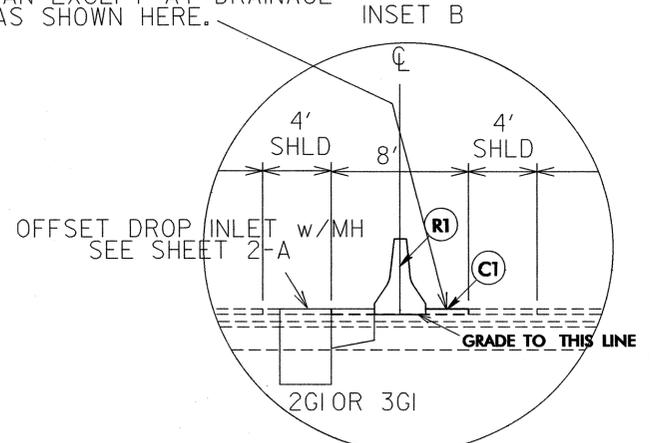
**TYPICAL SECTION NO. 1**  
BRIDGE TYPICAL



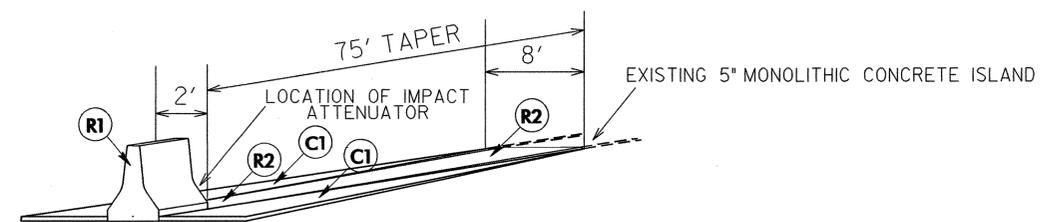
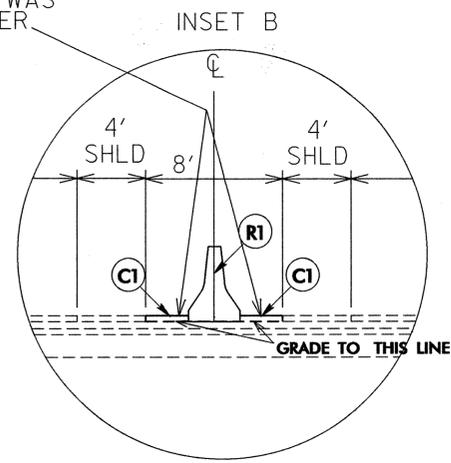
WHERE 5" MONOLITHIC ISLAND IS REMOVED,  
PAVE AREA WHERE ISLAND WAS TO KEY-IN MEDIAN BARRIER  
BOTH SIDES OF MEDIAN EXCEPT AT DRAINAGE  
LOCATION AS SHOWN HERE.



**TYPICAL SECTION NO. 2**  
ROADWAY TYPICAL



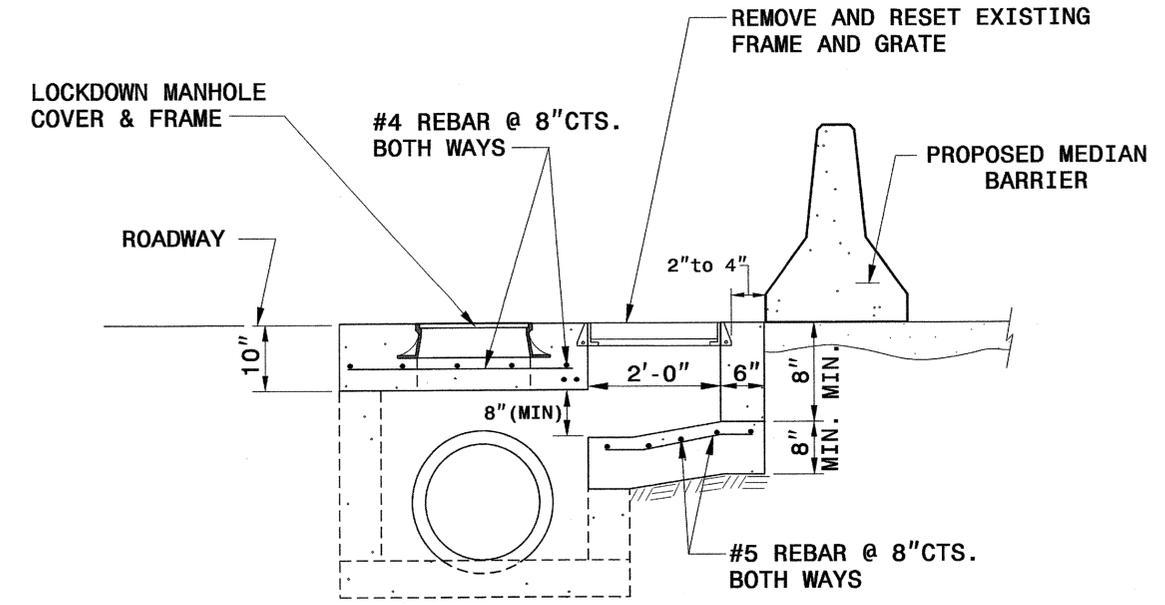
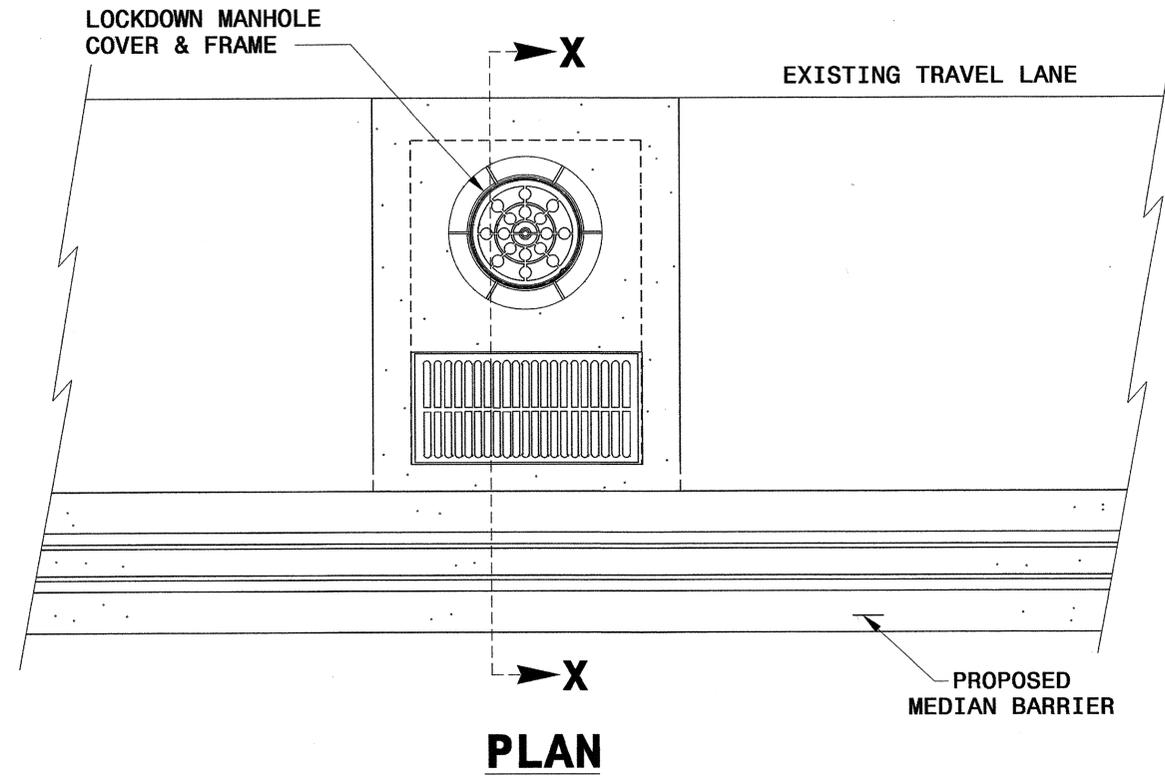
WHERE 5" MONOLITHIC ISLAND IS REMOVED,  
PAVE AREA WHERE ISLAND WAS  
TO KEY-IN MEDIAN BARRIER



**DETAIL FOR 5" MONOLITHIC CONCRETE ISLAND**  
**(KEYED IN)**

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
R1	CONCRETE BARRIER, TYPE IV
R2	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)

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**SECTION X-X**

REINFORCING STEEL (LBS.) =	<u>74</u>
CONCRETE TOTAL (CU.YDS.) =	<u>1</u>

**NOTES:**

- MANHOLE RING AND COVER WILL MEET STANDARD 840.54 AND HAVE LOCKABLE COVER MECHANISM.
- USE CLASS "B" CONCRETE THROUGHOUT.
- CHAMFER ALL EXPOSED CORNERS 1".
- DRAWING NOT TO SCALE.
- DIMENSIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.



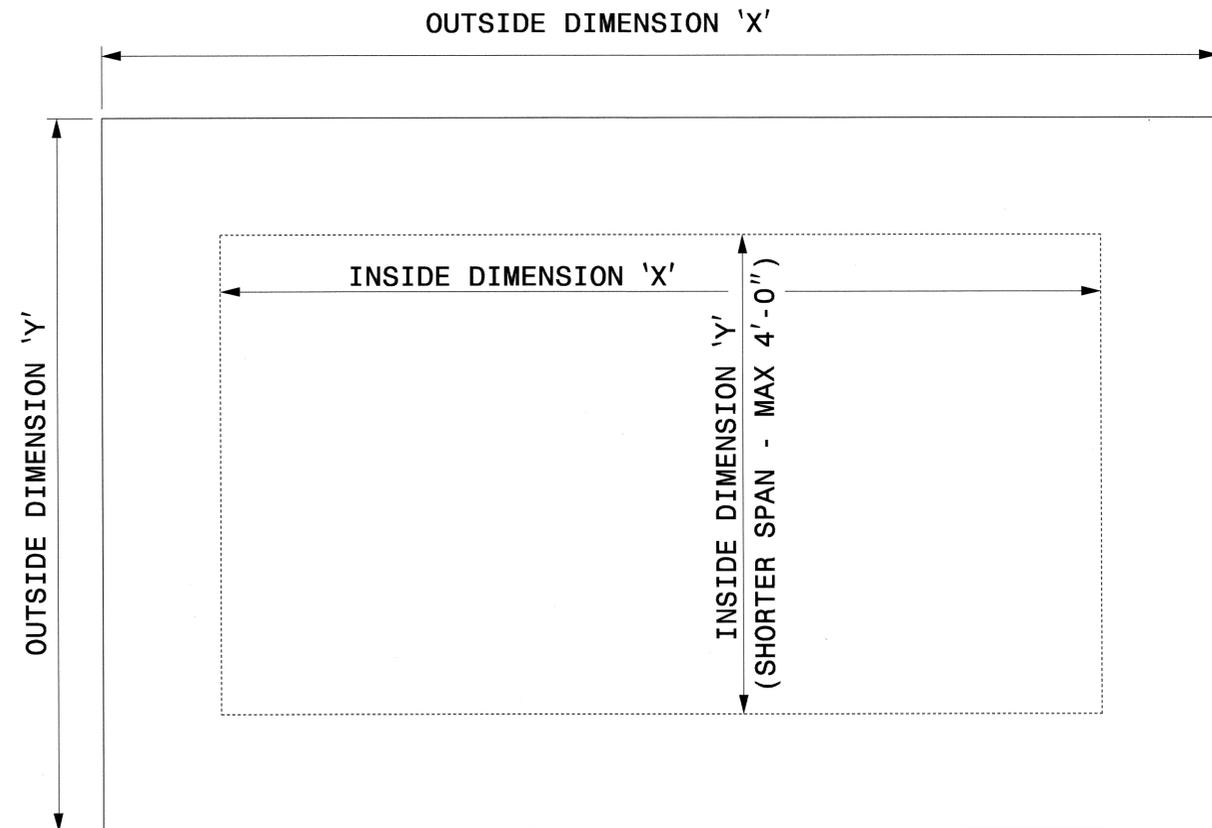
**CONTRACT STANDARDS AND DEVELOPMENT UNIT**  
Office 919-250-4128 FAX 919-250-4119

**OFFSET DROP INLET**

ORIGINAL BY: E.E. WARD DATE: 1-24-02  
 MODIFIED BY: *abrit* DATE: 01-10-13  
 CHECKED BY: *abrit* DATE: 1/14/13  
 FILE SPEC.: *abrit/english/hydro/w5321\_offset01.dgn*

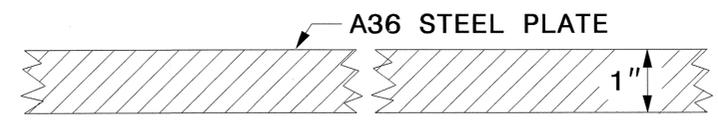
\*\*\*\*\*  
 SYSTEMS  
 DESIGN  
 \*\*\*\*\*





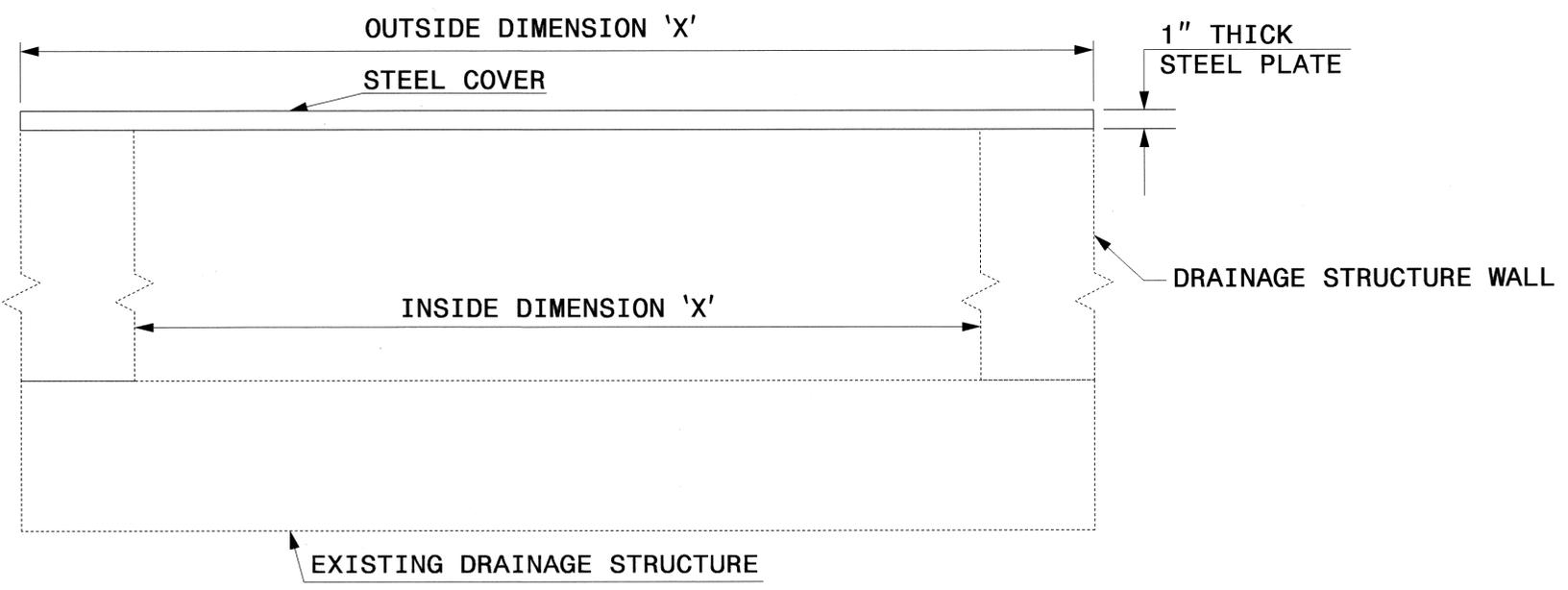
**GENERAL NOTES:**

- USE GRADE A36 STEEL
- STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
- FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
- SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
- QUANTITIES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.



**SECTION VIEW OF STEEL TOP PLATE**

**PLAN VIEWS**



**ELEVATION VIEWS**



<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE</b>	
ORIGINAL BY: E.E. WARD	DATE: 2-2-98
MODIFIED BY: <i>[Signature]</i>	DATE: <i>[Signature]</i>
CHECKED BY: <i>[Signature]</i>	DATE: 7/25/13
FILE SPEC.: <i>[Signature]</i> : \\usr\details\metric\stand\stlcvr2.dgn	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C203388

Item Number	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
002200000-E	225	3,090	CY	UNCLASSIFIED EXCAVATION
151900000-E	610	1,980	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
157500000-E	620	119	TON	ASPHALT BINDER FOR PLANT MIX
219000000-N	828	16	EA	TEMPORARY STEEL PLATE COVERS FOR MASONRY DRAINAGE STRUCTURE
247300000-N	SP	48	EA	GENERIC DRAINAGE ITEM LOCKDOWN MANHOLE FRAME AND COVER
247300000-N	SP	48	EA	GENERIC DRAINAGE ITEM OFFSET DROP INLET
265500000-E	852	50	SY	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)
270300000-E	854	26,000	LF	CONCRETE BARRIER, TYPE ***** (IV)
275200000-E	SP	400	LF	GENERIC PAVING ITEM CONCRETE BARRIER, TYPE IV ON BRIDGE DECK
300000000-N	SP	2	EA	IMPACT ATTENUATOR UNIT, TYPE 350
369100000-N	SP	16	EA	GENERIC EROSION CONTROL ITEM GEOTEXTILE INSERT INLET PROTECTION DEVICE
440000000-E	1110	1,417	SF	WORK ZONE SIGNS (STATIONARY)
440500000-E	1110	873	SF	WORK ZONE SIGNS (PORTABLE)
441500000-N	1115	4	EA	FLASHING ARROW BOARD
442000000-N	1120	4	EA	PORTABLE CHANGEABLE MESSAGE SIGN
443000000-N	1130	875	EA	DRUMS
448000000-N	1165	4	EA	TMA
451000000-N	SP	50	HR	LAW ENFORCEMENT
481000000-E	1205	53,000	LF	PAINT PAVEMENT MARKING LINES (4")

5/28/99

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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**SUMMARY OF EARTHWORK**  
**IN CUBIC YARDS**

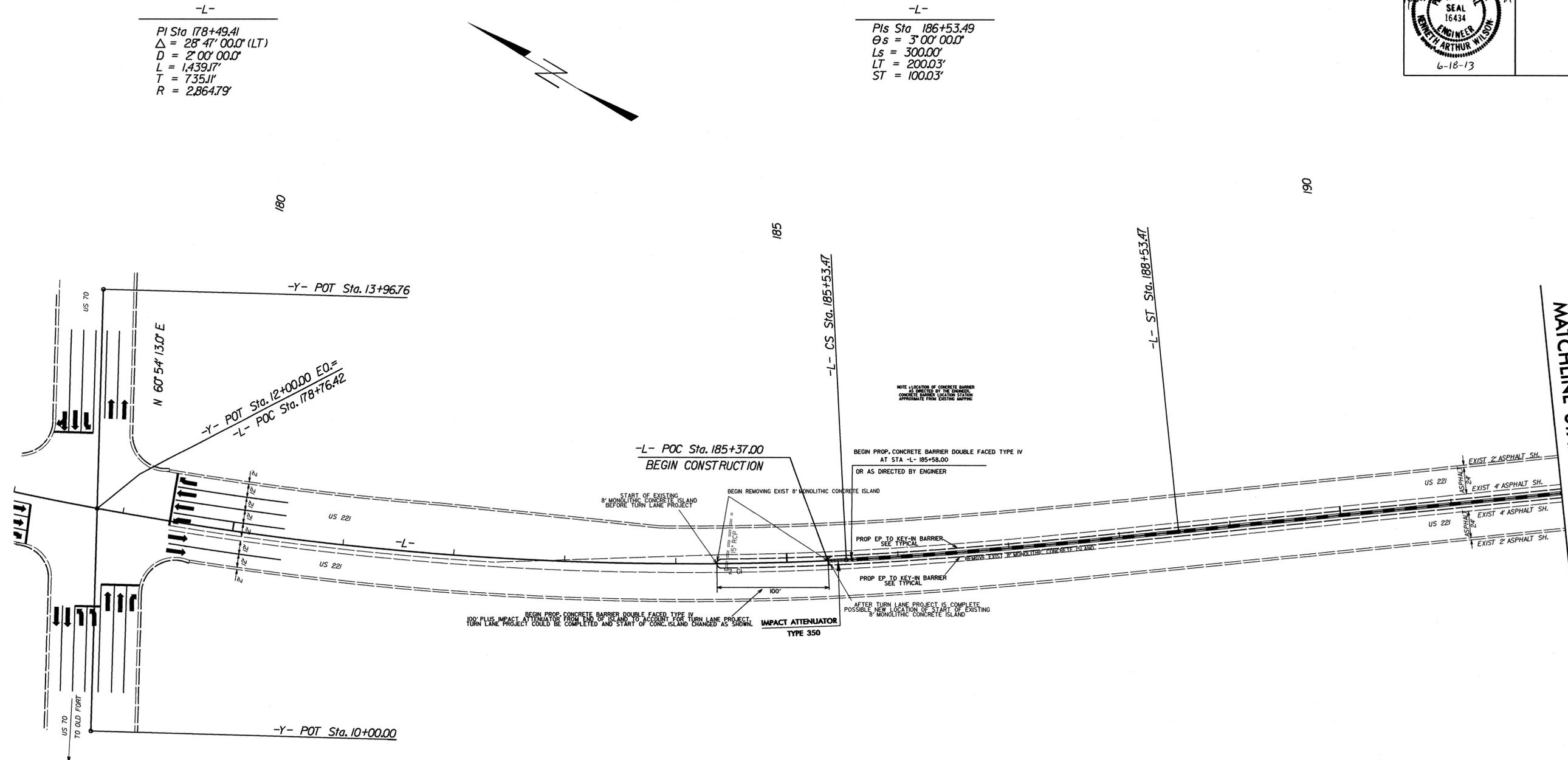
LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
L 185+37 215+37	349.53				349.53
L 215+37 245+37	349.53				349.53
L 245+37 275+37	349.53				349.53
L 275+37 305+37	349.53				349.53
L 305+37 335+37	349.53				349.53
L 335+37 365+37	349.53				349.53
L 1 365+37 371+00.03	65.60				65.60
L 1 371+00.03 399+68.05	322.51				322.51
L 2 399+00.01 429+00.01	349.53				349.53
L 2 429+00.01 450+62.72	251.98				251.98
<b>SUBTOTAL</b>	<b>3086.80</b>				<b>3086.80</b>
<b>PROJECT TOTAL</b>	<b>3086.80</b>				<b>3086.80</b>
<b>GRAND TOTAL</b>	<b>3086.80</b>				<b>3086.80</b>
<b>SAY</b>	<b>3090</b>				



PROJECT REFERENCE NO.	SHEET NO.
W-5321	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

8/17/99

REVISIONS



-L-  
 PI Sta 178+49.41  
 $\Delta = 28^{\circ} 47' 00.0''$  (LT)  
 $D = 2^{\circ} 00' 00.0''$   
 $L = 1,439.17'$   
 $T = 735.11'$   
 $R = 2,864.79'$

-L-  
 PIs Sta 186+53.49  
 $\theta s = 3^{\circ} 00' 00.0''$   
 $Ls = 300.00'$   
 $LT = 200.03'$   
 $ST = 100.03'$

MATCHLINE STA. 192+00 -L- SEE SHEET 5

Plans were derived from existing mapping.  
 No field surveys were performed.

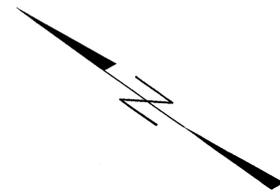
NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

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 \$\$\$\$SERVICING\$\$\$\$

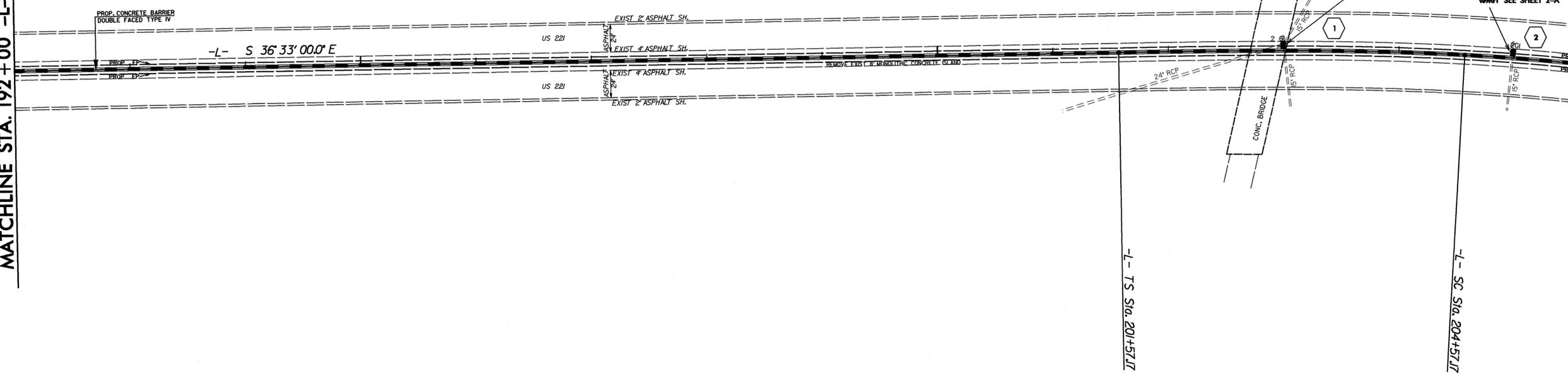
PROJECT REFERENCE NO. <b>W 5321</b>	SHEET NO. <b>5</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

-L-  
 Pts Sta 203+57.22  
 $\theta_s = 4' 07'' 30.0''$   
 $L_s = 300.00'$   
 $LT = 200.05'$   
 $ST = 100.05'$



MATCHLINE STA. 192 + 00 -L- SEE SHEET 4

MATCHLINE STA. 206 + 00 -L- SEE SHEET 6



REVISIONS


Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

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8/17/99

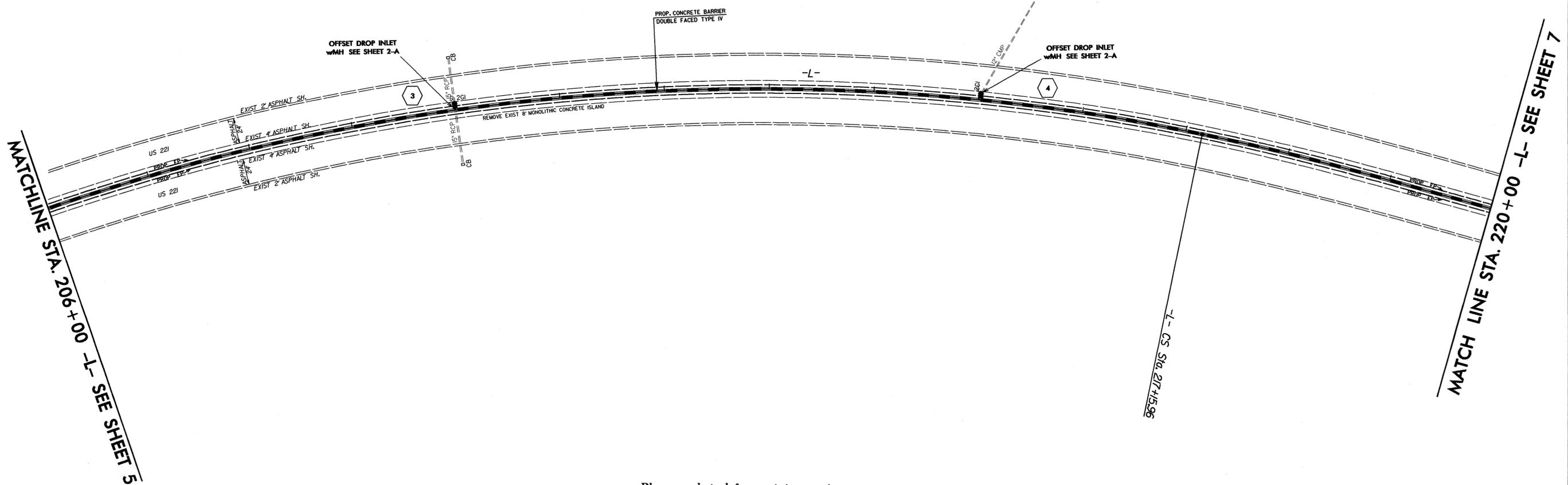
REVISIONS

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\$\$\$\$\$SERING\$\$\$\$\$

PROJECT REFERENCE NO. <b>W 5321</b>	SHEET NO. <b>6</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
6-18-13	

-L-  
 PI Sta 211+06.44  
 $\Delta = 34^{\circ} 37' 00.0''$  (RT)  
 $D = 2^{\circ} 45' 00.0''$   
 $L = 1,258.79'$   
 $T = 649.27'$   
 $R = 2,083.48'$

-L-  
 PIs Sta 218+16.01  
 $\Theta s = 4^{\circ} 07' 30.0''$   
 $Ls = 300.00'$   
 $LT = 200.05'$   
 $ST = 100.05'$



MATCHLINE STA. 206+00 -L- SEE SHEET 5

MATCH LINE STA. 220+00 -L- SEE SHEET 7

Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

8/17/99

REVISIONS

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\$\$\$\$\$

MATCH LINE STA. 220 + 00 -L- SEE SHEET 6

-L- ST. Sta. 220+15.96

220

PROP. EP

PROP. EP

US 221

US 221

EXIST. 2' ASPHALT SH.

EXIST. 4' ASPHALT SH.

EXIST. 4' ASPHALT SH.

EXIST. 2' ASPHALT SH.

225

REMOVE EXIST. R. MONOLITHIC CONCRETE ISLAND

PROP. CONCRETE BARRIER  
DOUBLE FACED TYPE IV

-L-

S 6'19" 00.0" W

230

PROP. EP

PROP. EP

MATCHLINE STA. 234 + 00 -L- SEE SHEET 8



PROJECT REFERENCE NO. W 5321	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Plans were derived from existing mapping.  
No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

8/17/99

REVISIONS

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PROJECT REFERENCE NO. W 5321	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER KIMBETH ARTHUR WILSON 6-18-13	HYDRAULICS ENGINEER

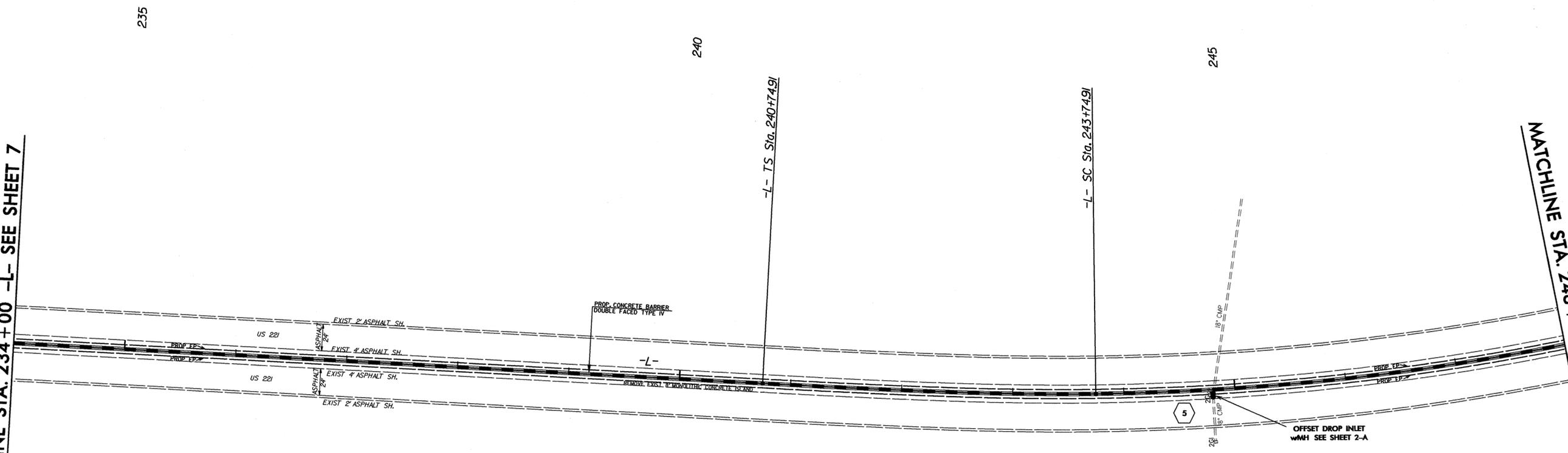
-L-  
 PIs Sta 242+74.96  
 $\theta s = 3^{\circ} 45' 00.0''$   
 $Ls = 300.00'$   
 $LT = 200.04'$   
 $ST = 100.04'$

-L-  
 PIs Sta 248+39.45  
 $\Delta = 22^{\circ} 55' 00.0'' (LT)$   
 $D = 2^{\circ} 30' 00.0''$   
 $L = 916.67'$   
 $T = 464.54'$   
 $R = 2,291.83'$



MATCH LINE STA. 234+00 -L- SEE SHEET 7

MATCHLINE STA. 248+00 -L- SEE SHEET 9

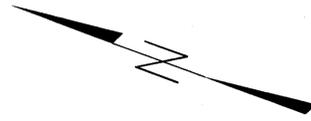


Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

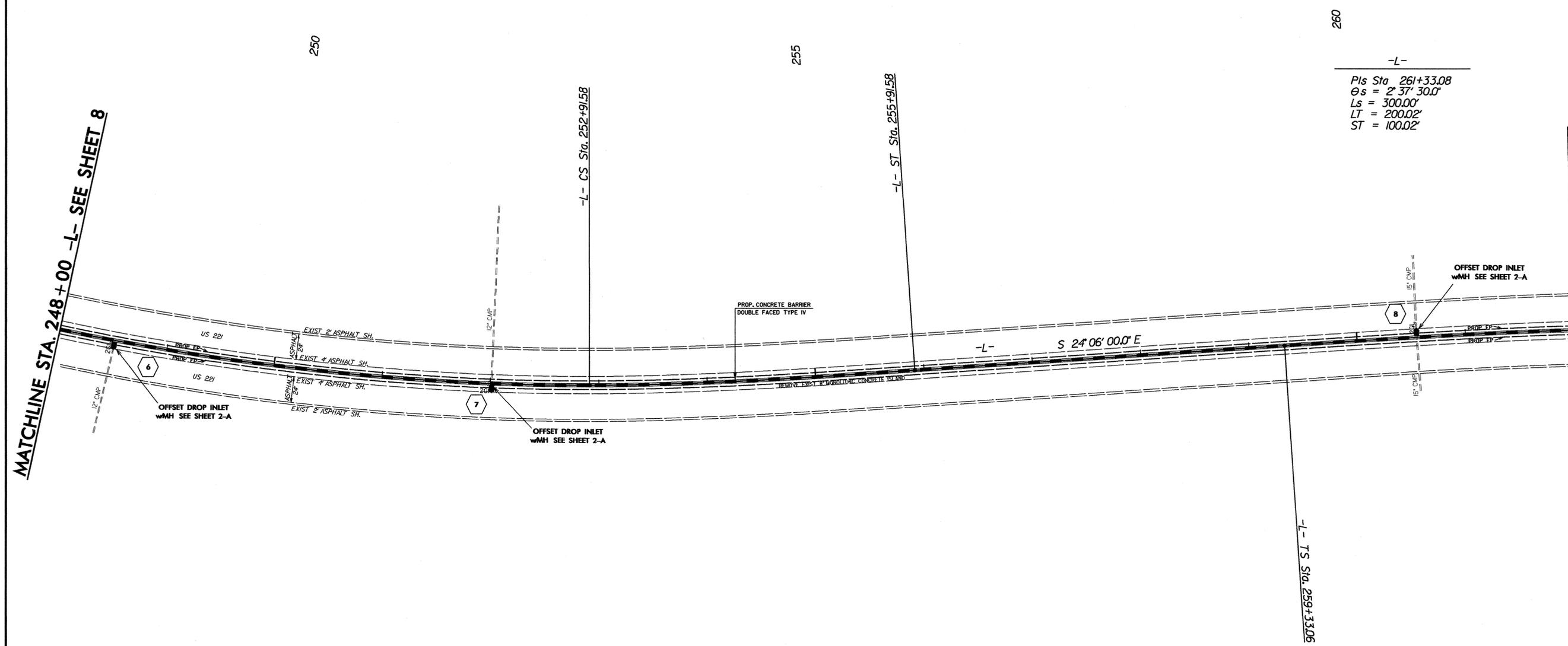
NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

PROJECT REFERENCE NO. <b>W 5321</b>	SHEET NO. <b>9</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <b>ARTHUR WILSON</b> NORTH CAROLINA PROFESSIONAL SEAL 16434 6-18-13	HYDRAULICS ENGINEER



-L-  
 PIs Sta 253+91.62  
 $\theta s = 3^{\circ} 45' 00.0''$   
 $Ls = 300.00'$   
 $LT = 200.04'$   
 $ST = 100.04'$

-L-  
 PIs Sta 261+33.08  
 $\theta s = 2^{\circ} 37' 30.0''$   
 $Ls = 300.00'$   
 $LT = 200.02'$   
 $ST = 100.02'$



REVISIONS

8/17/99

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Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

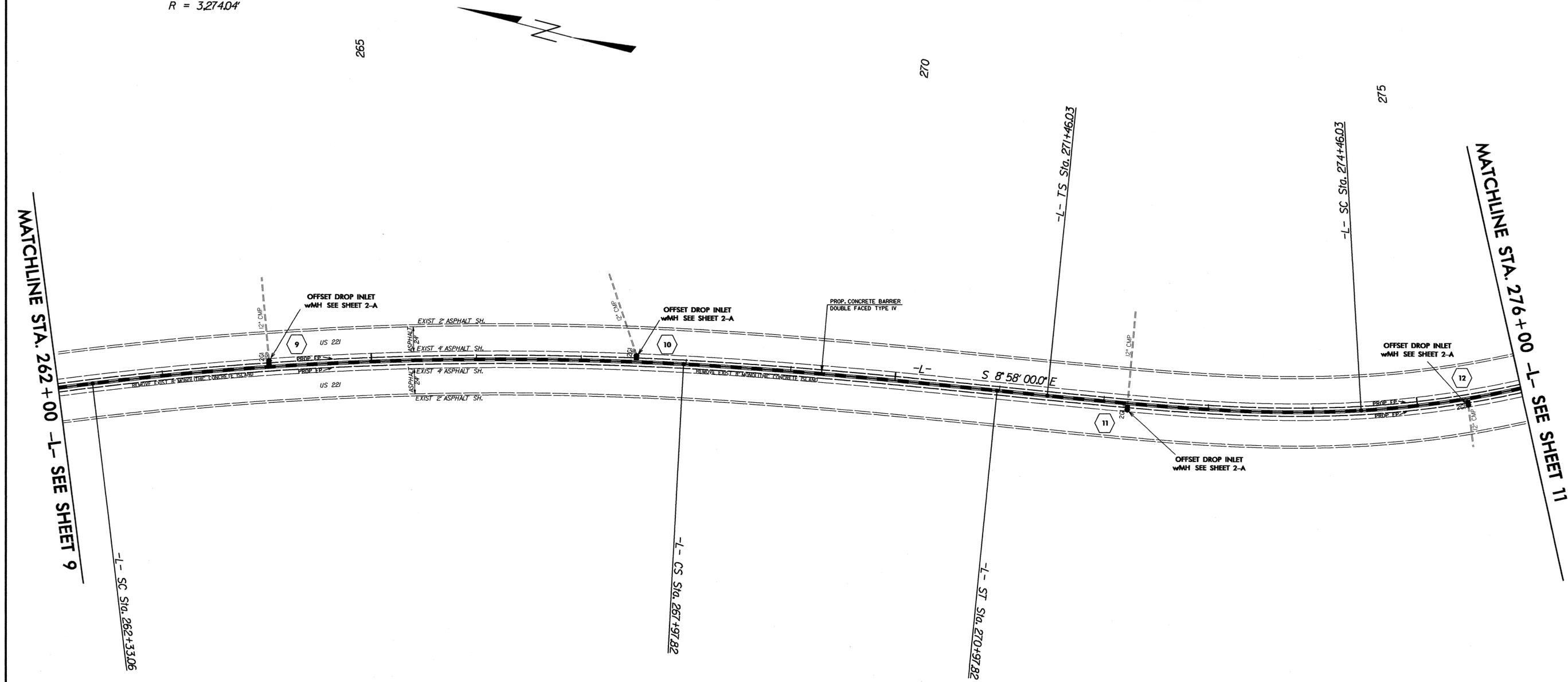
NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

PROJECT REFERENCE NO. <b>W 5321</b>	SHEET NO. <b>10</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <b>KENNETH ARTHUR WILSON</b> PROFESSIONAL SEAL 16434 6-18-13	HYDRAULICS ENGINEER

-L-  
PI Sta 265+16.15  
 $\Delta = 9^{\circ} 53' 00.0''$  (RT)  
D = 1'45' 00.0"  
L = 564.76'  
T = 283.08'  
R = 3,274.04'

-L-  
PIs Sta 268+97.84  
 $\Theta s = 2^{\circ} 37' 30.0''$   
Ls = 300.00'  
LT = 200.02'  
ST = 100.02'

-L-  
PIs Sta 273+46.29  
 $\Theta s = 9^{\circ} 00' 00.0''$   
Ls = 300.00'  
LT = 200.26'  
ST = 100.24'



REVISIONS

Plans were derived from existing mapping.  
No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

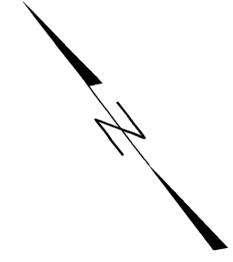
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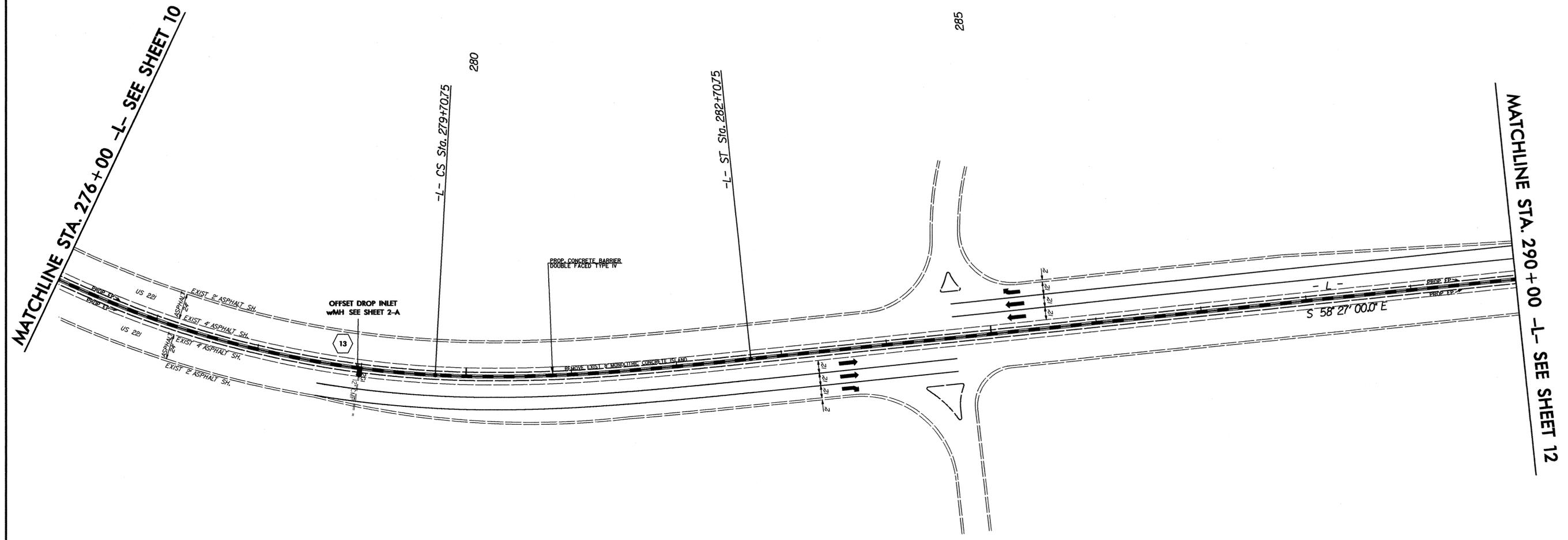
PROJECT REFERENCE NO. W 5321	SHEET NO. 11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

-L-  
 PI Sta 277+15.20  
 $\Delta = 31^{\circ}29'00.0''$  (LT)  
 $D = 6'00'00.0''$   
 $L = 5247.2'$   
 $T = 269.17'$   
 $R = 954.93'$

-L-  
 Pls Sta 280+70.99  
 $\theta_s = 9^{\circ}00'00.0''$   
 $L_s = 300.00'$   
 $LT = 200.26'$   
 $ST = 100.24'$



290



Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

REVISIONS

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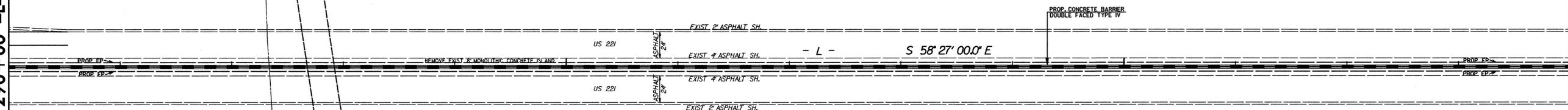
14-JUN-2017 15:10  
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8/17/99

REVISIONS

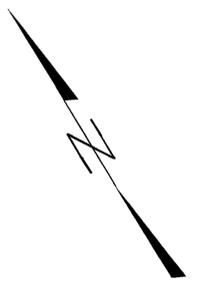
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\$\$\$\$\$

MATCHLINE STA. 290 + 00 -L- SEE SHEET 11



295

300



Plans were derived from existing mapping.  
No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE  
STRUCTURES FUNCTIONING AS DESIGNED  
DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT  
INLET PROTECTION DEVICE IN DRAINAGE  
INLETS AS DIRECTED BY ENGINEER.

PROJECT REFERENCE NO. <b>W 5321</b>	SHEET NO. <b>12</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6-18-13	

MATCHLINE STA. 304 + 00 -L- SEE SHEET 13

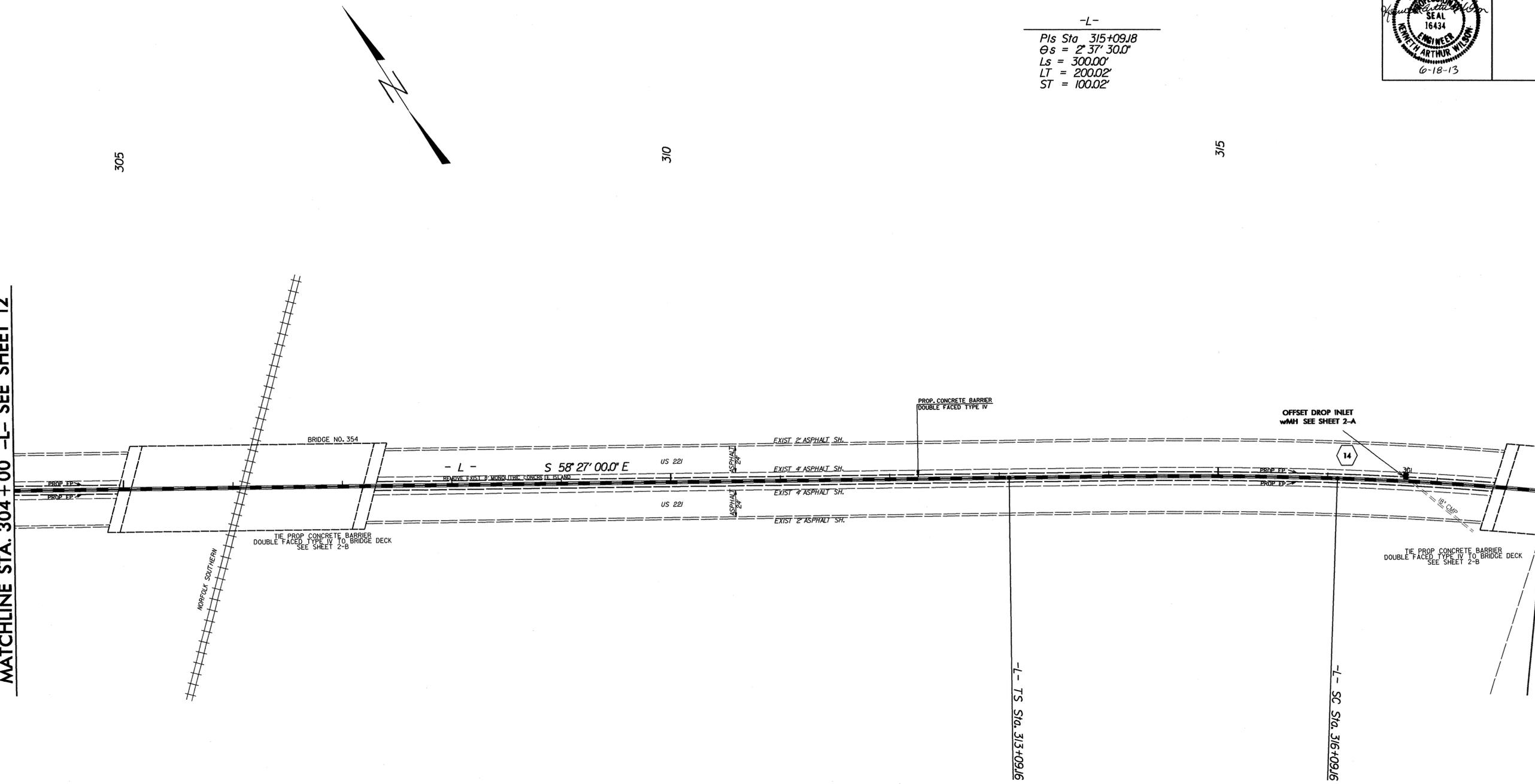
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PROJECT REFERENCE NO. W 5321	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NEWBY ARTHUR WILSON 6-18-13	HYDRAULICS ENGINEER

-L-  
 PIs Sta 315+09.18  
 $\theta_s = 2^\circ 37' 30.0"$   
 Ls = 300.00'  
 LT = 200.02'  
 ST = 100.02'

MATCHLINE STA. 304 + 00 -L- SEE SHEET 12

MATCHLINE STA. 318 + 00 -L- SEE SHEET 14



REVISIONS

Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

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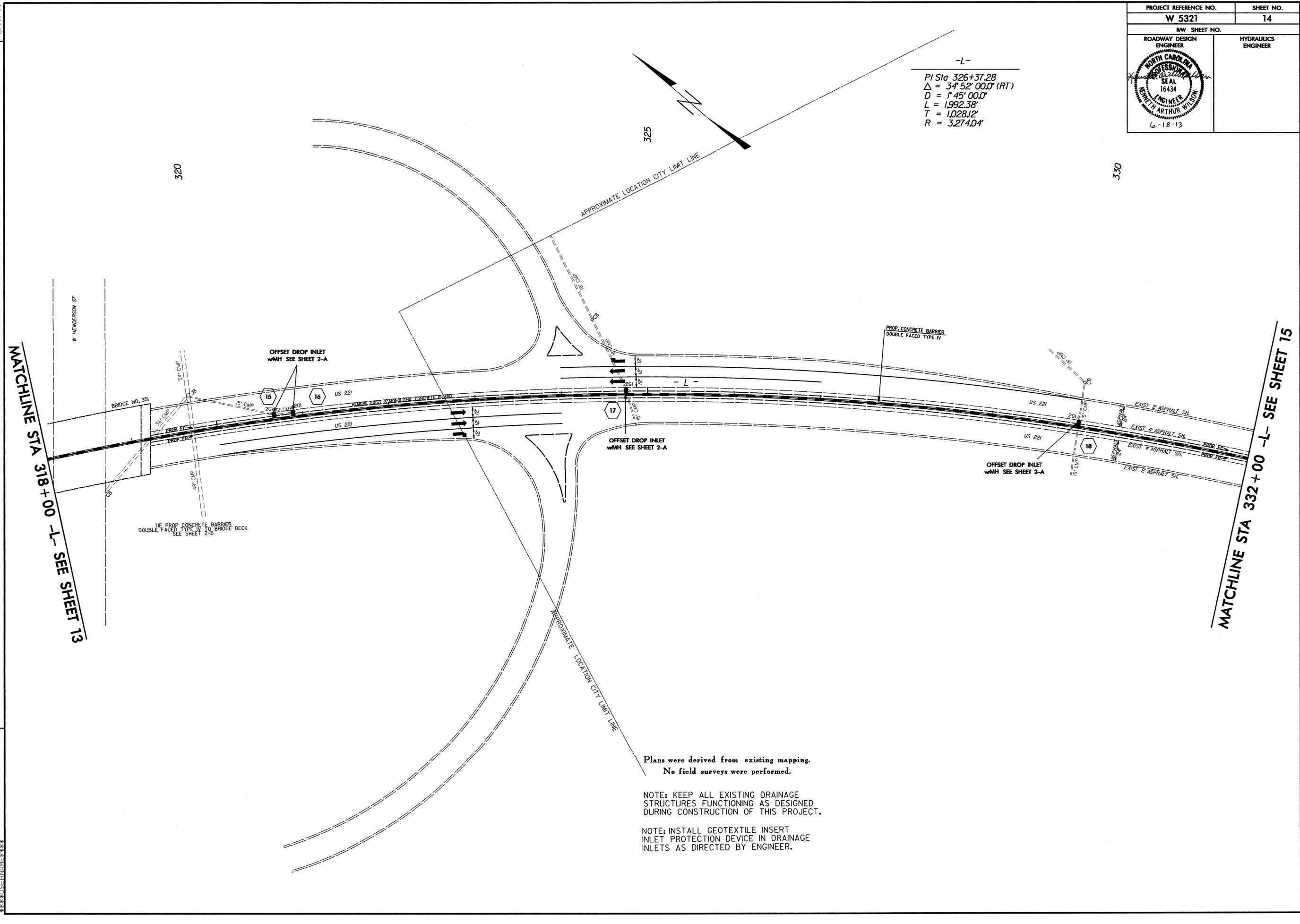
PROJECT REFERENCE NO. <b>W 5321</b>	SHEET NO. <b>14</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

-L-  
 PI Sta 326+37.28  
 $\Delta = 34^{\circ} 52' 00.0''$  (RT)  
 $D = 1^{\circ} 45' 00.0''$   
 $L = 1,992.38'$   
 $T = 1,028.12'$   
 $R = 3,274.04'$

REVISIONS

MATCHLINE STA 318+00 -L- SEE SHEET 13

MATCHLINE STA 332+00 -L- SEE SHEET 15



Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

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PROJECT REFERENCE NO.	SHEET NO.
W 5321	16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

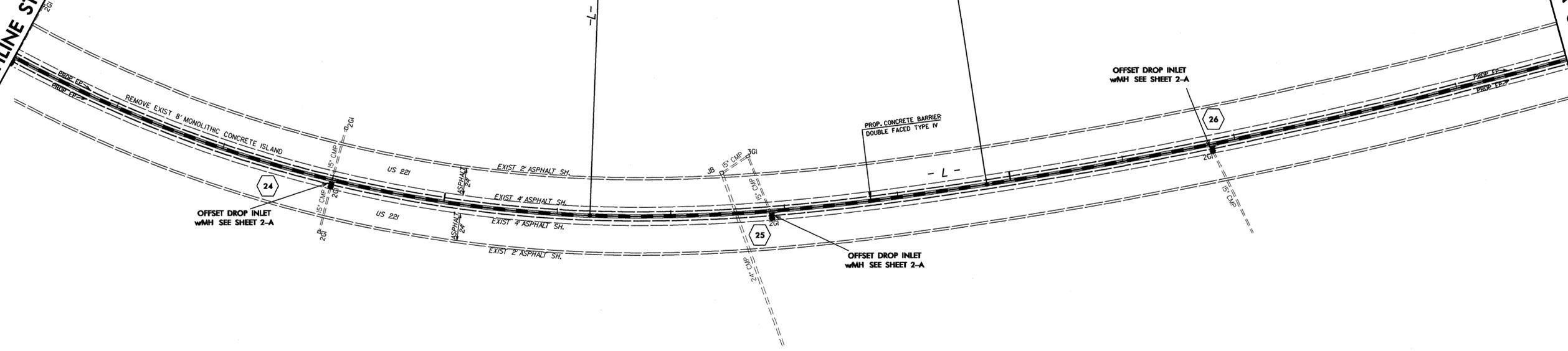
-L-

$PI\ Sta\ 347+76.84$ $\Delta = 36^{\circ}30'00.0" (LT)$ $D = 5^{\circ}00'00.0"$ $L = 730.00'$ $T = 377.87'$ $R = 1,145.92'$	$PI\ Sta\ 352+69.45$ $\Theta s = 10^{\circ}56'15.0"$ $Ls = 350.00'$ $LT = 210.51'$ $ST = 140.48'$
--	---



MATCHLINE STA 346+00 -L- SEE SHEET 15

MATCHLINE STA 360+00 -L- SEE SHEET 17



REVISIONS

Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

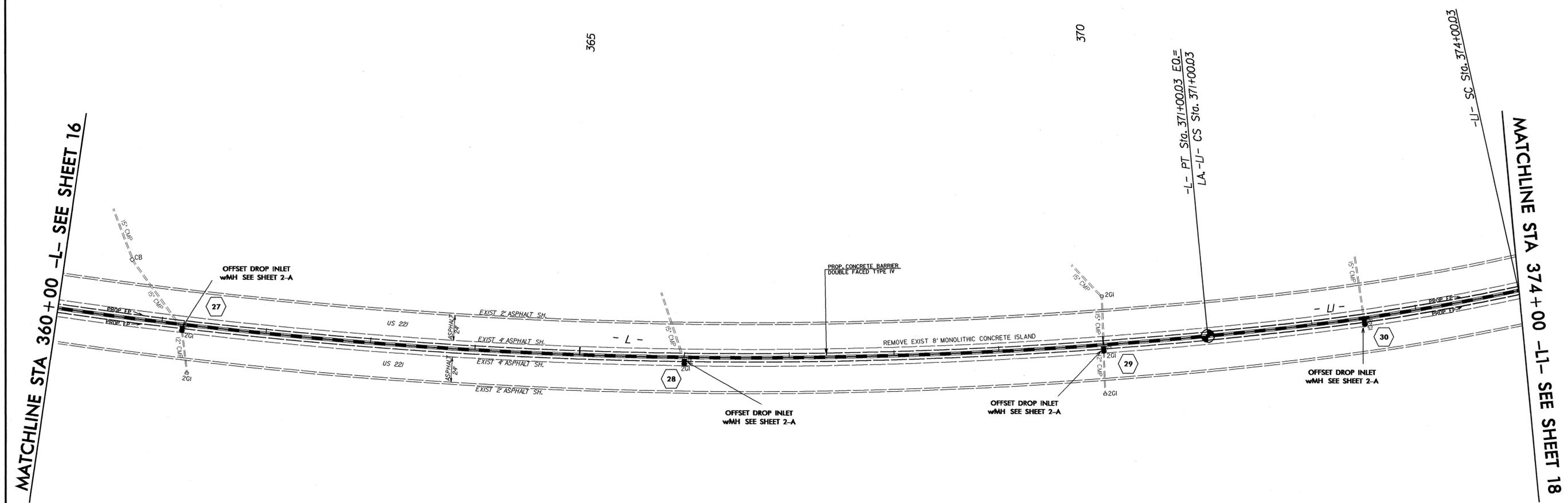
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PROJECT REFERENCE NO. W 5321	SHEET NO. 17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 16434 ARTHUR WILSON 6-18-13	HYDRAULICS ENGINEER

-L-  
 PI Sta 362+98.06  
 $\Delta = 20' 15' 47.7''$  (LT)  
 $D = 1' 15' 00.0''$   
 $L = 1,621.06'$   
 $T = 819.09'$   
 $R = 4,583.66'$

-LI-  
 PIs Sta 372+73.90  
 $\Theta s = 7' 07' 30.0''$   
 $Ls = 300.00'$   
 $LT = 173.87'$   
 $ST = 126.50'$



REVISIONS

Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

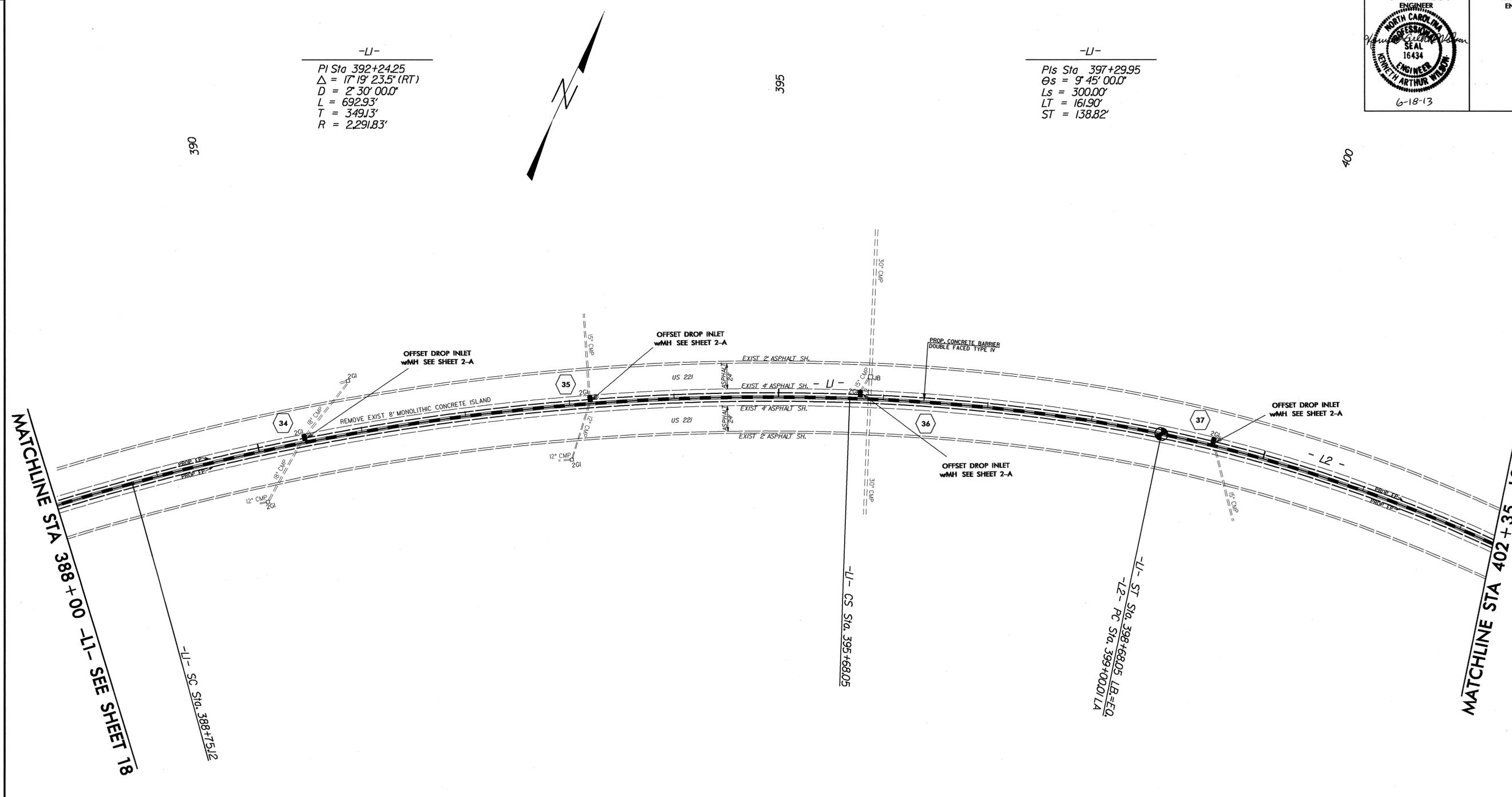
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PROJECT REFERENCE NO.	SHEET NO.
W 5321	19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L1-  
 PI Sta 392+24.25  
 $\Delta = 17^{\circ}19'23.5"$  (RT)  
 $D = 2^{\circ}30'00.0"$   
 $L = 692.93'$   
 $T = 349.13'$   
 $R = 2,291.83'$

-L1-  
 PIs Sta 397+29.95  
 $\Theta s = 9^{\circ}45'00.0"$   
 $Ls = 300.00'$   
 $LT = 161.90'$   
 $ST = 138.82'$



Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

REVISIONS

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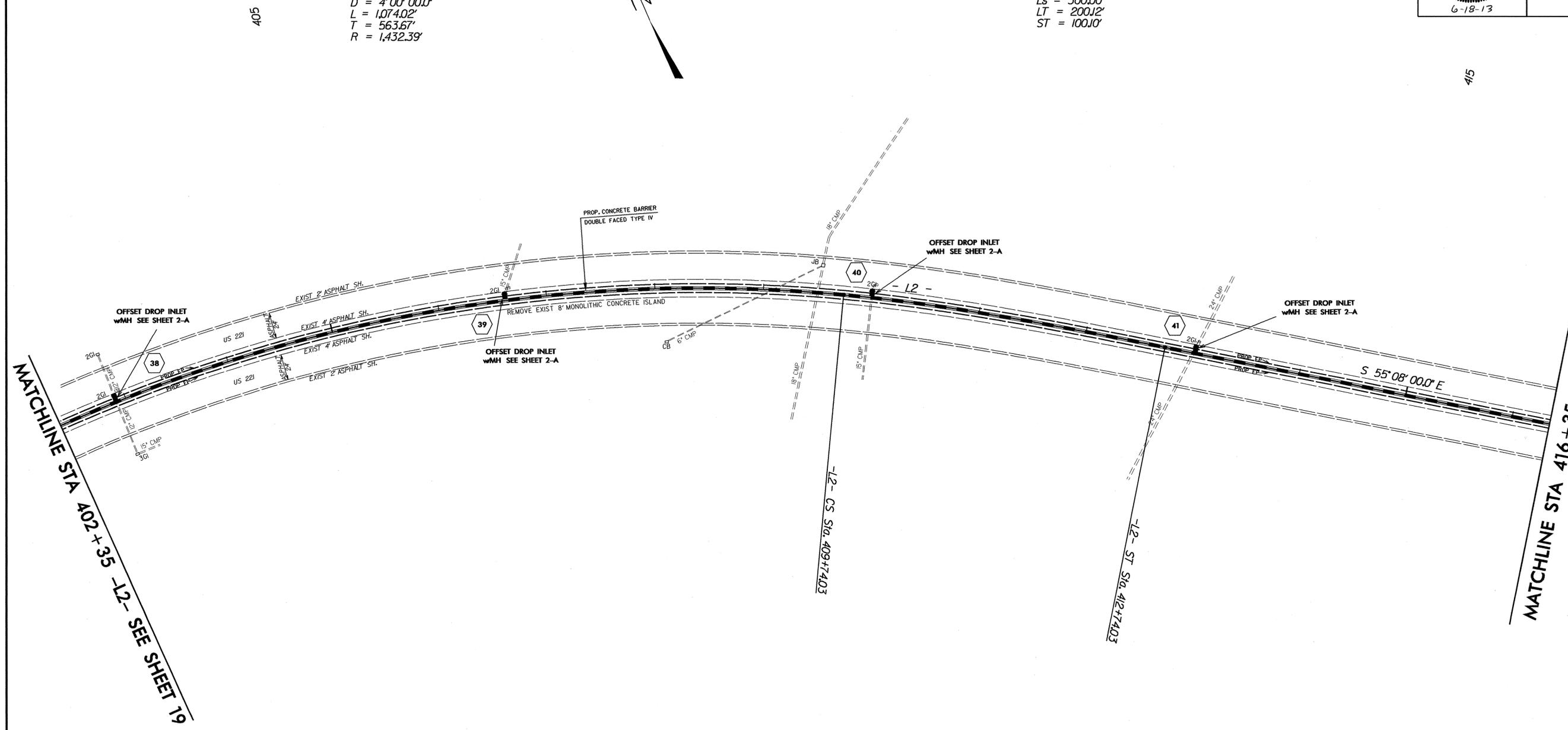
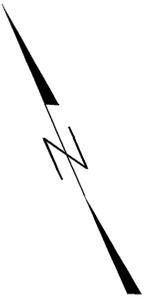
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PROJECT REFERENCE NO. <b>W 5321</b>	SHEET NO. <b>20</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L2-  
 PI Sta 404+63.68  
 $\Delta = 42^{\circ} 57' 39.0''$  (RT)  
 $D = 4' 00'' 00.0''$   
 $L = 1,074.02'$   
 $T = 563.67'$   
 $R = 1,432.39'$

-L2-  
 PI Sta 410+74.14  
 $\Theta s = 6' 00'' 00.0''$   
 $Ls = 300.00'$   
 $LT = 200.12'$   
 $ST = 100.10'$



REVISIONS

Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

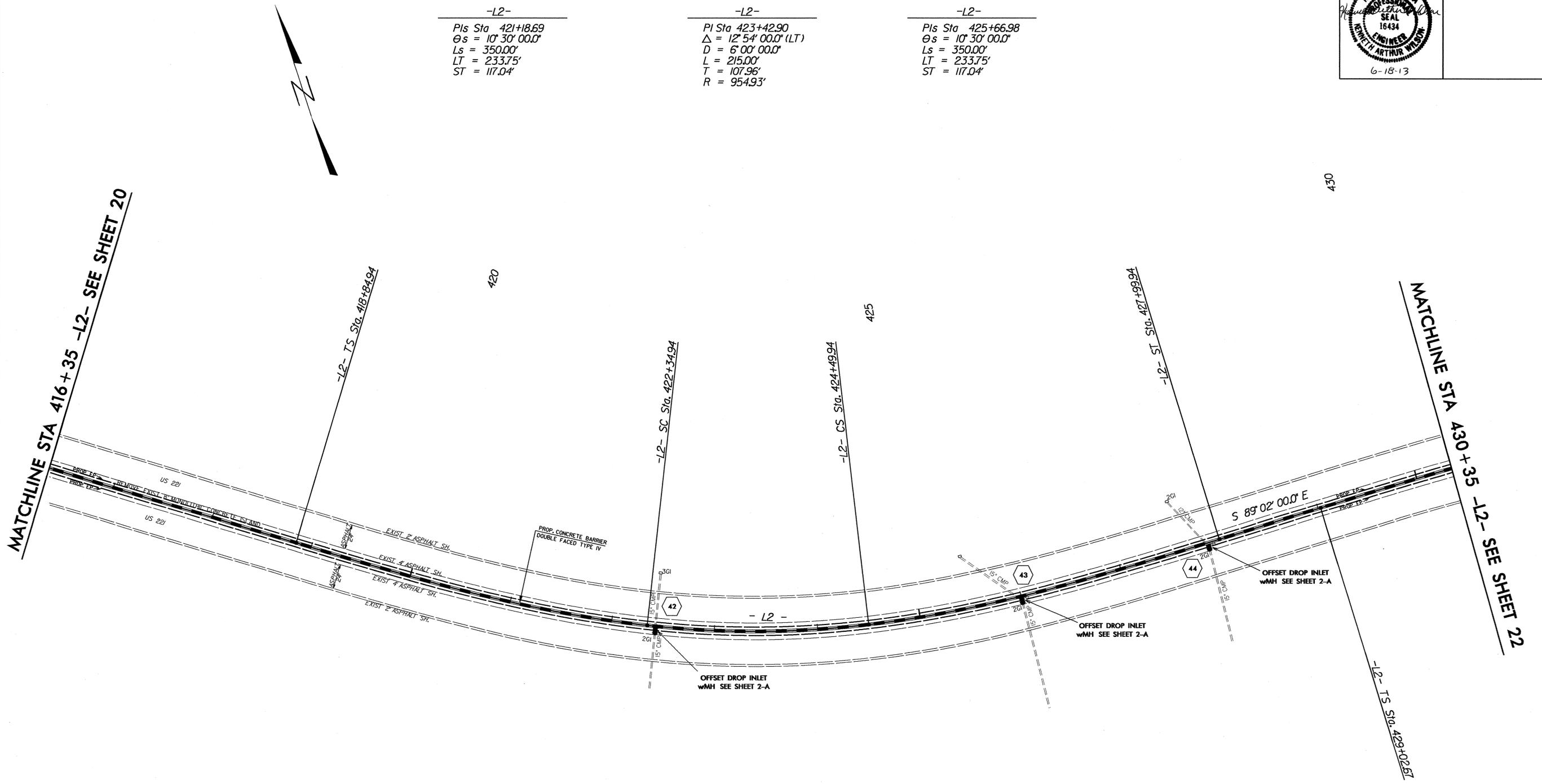
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PROJECT REFERENCE NO. W 5321	SHEET NO. 21
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

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Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

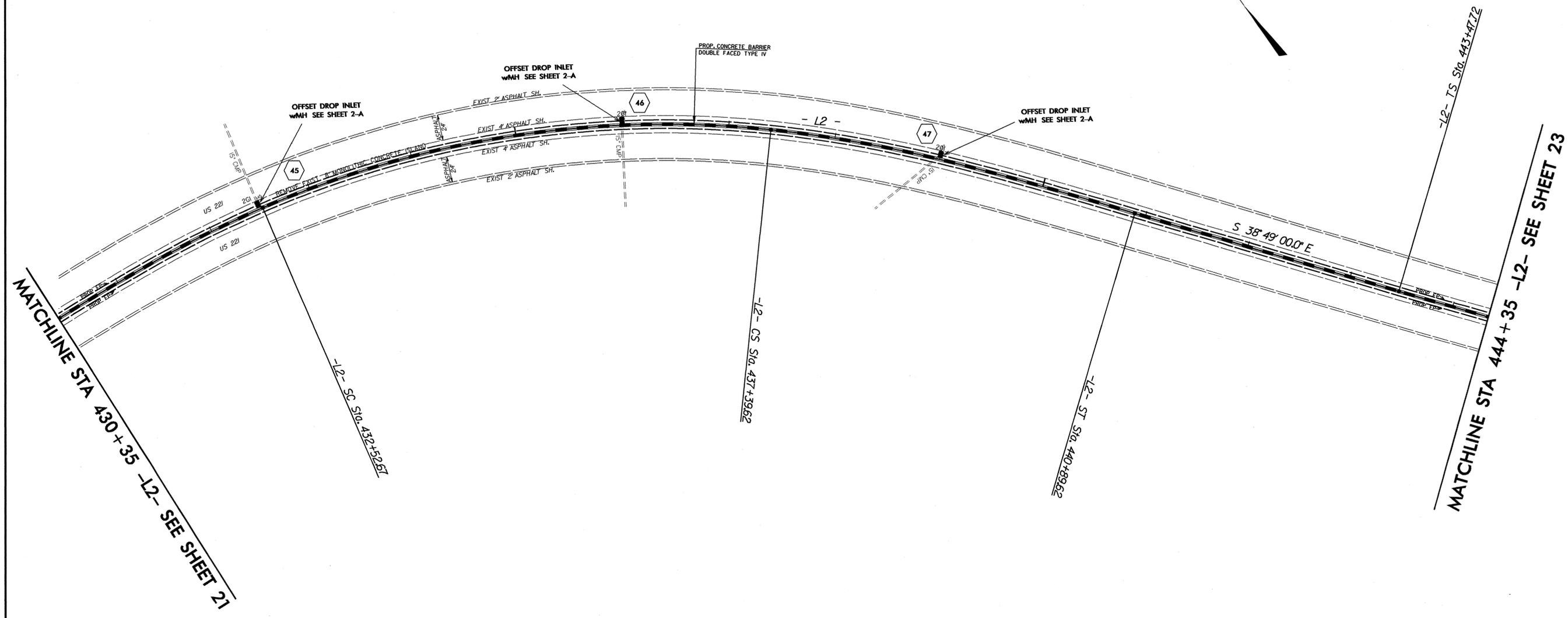
PROJECT REFERENCE NO. W 5321	SHEET NO. 22
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

435

-L2-  
 PI Sta 435+01.56  
 $\Delta = 29^{\circ}13'00.0''$  (RT)  
 $D = 6^{\circ}00'00.0''$   
 $L = 486.94'$   
 $T = 248.89'$   
 $R = 954.93'$

-L2-  
 PIs Sta 438+56.66  
 $\Theta s = 10^{\circ}30'00.0''$   
 $Ls = 350.00'$   
 $LT = 233.75'$   
 $ST = 117.04'$

440



-L2-  
 PIs Sta 431+36.42  
 $\Theta s = 10^{\circ}30'00.0''$   
 $Ls = 350.00'$   
 $LT = 233.75'$   
 $ST = 117.04'$

Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

REVISIONS

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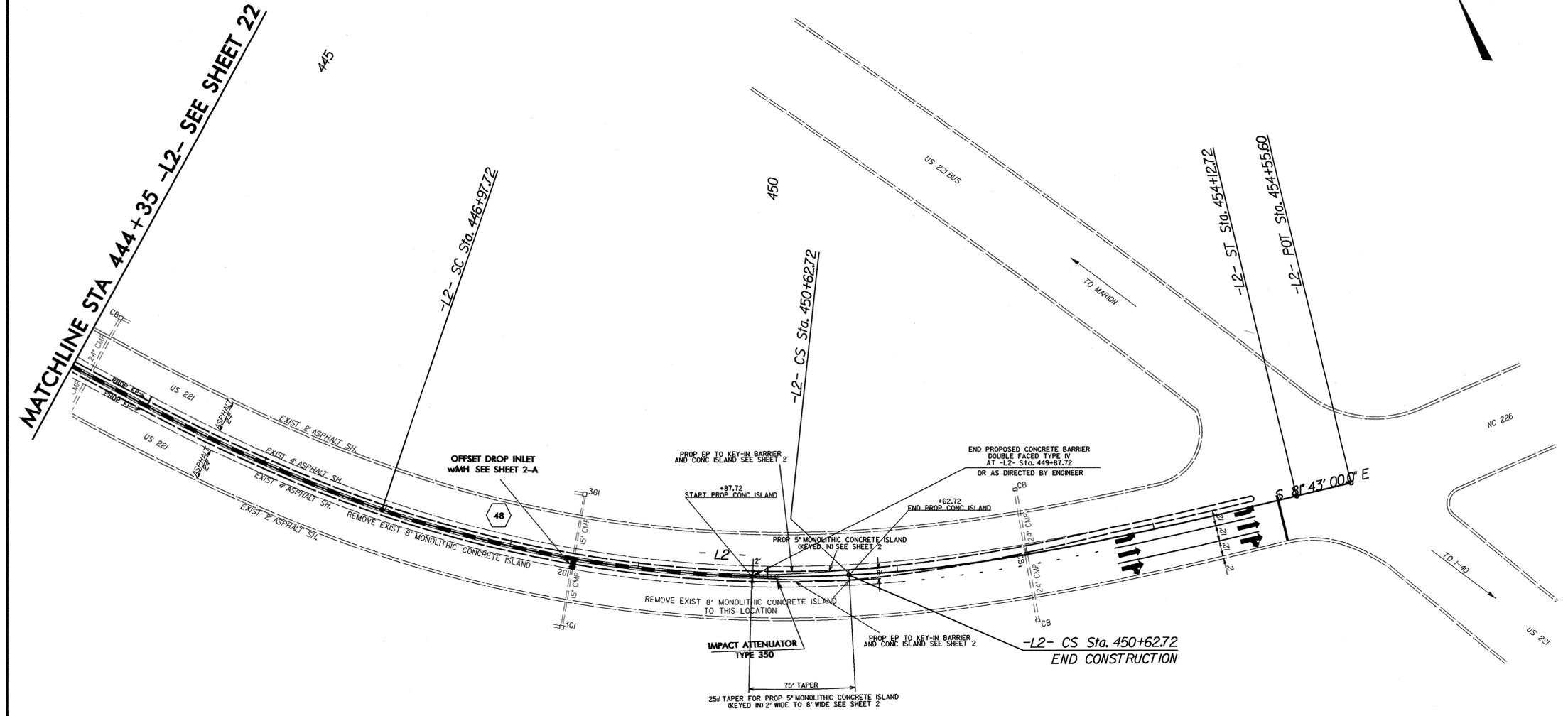
PROJECT REFERENCE NO.	SHEET NO.
W 5321	23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L2-

<p>Pls Sta 445+81.46  <math>\theta s = 10^{\circ} 30' 00.0''</math>  <math>Ls = 350.00'</math>  <math>LT = 233.75'</math>  <math>ST = 117.04'</math></p>	<p style="text-align: center;">-L2-</p> <p>Pls Sta 448+82.47  <math>\Delta = 2^{\circ} 54' 00.0'' (LT)</math>  <math>D = 6^{\circ} 00' 00.0''</math>  <math>L = 365.00'</math>  <math>T = 184.75'</math>  <math>R = 954.93'</math></p>	<p style="text-align: center;">-L2-</p> <p>Pls Sta 451+79.76  <math>\theta s = 10^{\circ} 30' 00.0''</math>  <math>Ls = 350.00'</math>  <math>LT = 233.75'</math>  <math>ST = 117.04'</math></p>
--	--	--



MATCHLINE STA 444+35 -L2- SEE SHEET 22



Plans were derived from existing mapping.  
 No field surveys were performed.

NOTE: KEEP ALL EXISTING DRAINAGE STRUCTURES FUNCTIONING AS DESIGNED DURING CONSTRUCTION OF THIS PROJECT.

NOTE: INSTALL GEOTEXTILE INSERT INLET PROTECTION DEVICE IN DRAINAGE INLETS AS DIRECTED BY ENGINEER.

REVISIONS

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## ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

<u>STD. NO.</u>	<u>TITLE</u>
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUM
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	POSITIVE PROTECTION
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING

## LEGEND

### GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.

- WORK AREA
- REMOVAL
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

### TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM    SKINNY DRUM    TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

### TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

### SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

### PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

### PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

### PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

### TEMPORARY PAVEMENT MARKING

SEE SHEET TMP - 1B , PAVEMENT MARKINGS AND MARKERS

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# TRANSPORTATION OPERATIONS

### CONSTRUCTION

CONSTRUCT PROPOSED MEDIAN BARRIER, DRAINAGE ALTERATIONS AND PAVING AS SHOWN IN THE CONSTRUCTIONS PLANS.

### TMP DESIGN PARAMETERS

PROJECT IS LIMITED TO 2 MILE WORK AREA OR AS DIRECTED BY THE ENGINEER.

WORK AREAS WILL REQUIRE THAT BOTH INSIDE LANES OF US 221 BE CLOSED UTILIZING TMA, FLASHING ARROW PANELS, DRUMS, CONSTRUCTION SIGNS AND CHANGEABLE MESSAGE SIGNS. (SEE SHEET TMP-3)

NO LANE CLOSURES WILL BE ALLOWED DURING HOLIDAYS. (SEE SHEET TMP-1B, TIME RESTRICTIONS)

THE "WORK ZONE VEHICLE ACCESS TYPICAL DETAIL" SHALL BE UTILIZED FOR ALL CONSTRUCTION VEHICLES ENTERING & EXITING THE WORK AREA. (SEE SHEET TMP-4)

# GENERAL NOTES / LOCAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRABLE OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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.

### TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

#### ROAD NAME

US 221

#### HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 3:00 P.M. DECEMBER 31st TO 9:00 A.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9:00 A.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 3:00 P.M. THURSDAY AND 9:00 A.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 3:00 P.M. FRIDAY TO 9:00 A.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 3:00 P.M. THE DAY BEFORE INDEPENDENCE DAY AND 9:00 A.M. THE DAY AFTER INDEPENDENCE DAY.  
  
IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 3:00 P.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 9:00 A.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 3:00 P.M. FRIDAY AND 9:00 A.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 3:00 P.M. TUESDAY TO 9:00 A.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 3:00 P.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 A.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

B) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS	DURATION AND OPERATION
US 221	ANYTIME	NA

C) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

### LANE AND SHOULDER CLOSURE REQUIREMENTS

- D) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.  
  
WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- G) DO NOT INSTALL MORE THAN 2 MILES OF LANE CLOSURE ON US 221 MEASURED FROM THE BEGINNING OF THE WORK AREA (SEE SHEET TMP-3) TO THE END OF THE WORK AREA UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

### PAVEMENT EDGE DROP OFF REQUIREMENTS

H) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS A DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

### TRAFFIC PATTERN ALTERATIONS

I) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

### SIGNING

J) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

K) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

### TRAFFIC CONTROL DEVICES

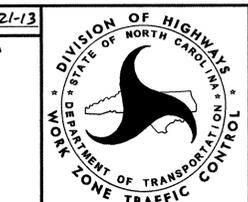
L) SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADIUS, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY, WHEN LANE CLOSURES ARE NOT IN EFFECT.

M) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES (DRUMS) PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

### PAVEMENT MARKINGS AND MARKERS

N) REPLACE PAVEMENT MARKINGS REMOVED DURING CONSTRUCTION WITH 4" PAINT WHEN ALL CONSTRUCTION HAS BEEN COMPLETED IN THAT AREA.

APPROVED: \_\_\_\_\_ DATE: 5-21-13



## TRANSPORTATION OPERATIONS AND PROJECT NOTES

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mkpenning AT DSCAD251171

## PHASE I

NOTE: THIS PROJECT IS LIMITED TO 2 MILE LONG LANE CLOSURES OR AS DIRECTED BY THE ENGINEER. CONTRACTOR SHALL COMPLETE ALL REQUIRED WORK IN THE AREA PRIOR TO PROCEEDING TO THE NEXT AREA WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY ELECT TO PLACE THE FINAL PAVEMENT MARKINGS AFTER ALL AREAS HAVE BEEN COMPLETED.

STEP 1: -- CONTRACTOR SHALL PLACE ADVANCE WORK ZONE WARNING SIGNS ALONG US 221 AND ALL ON/OFF-RAMPS, USING ROADWAY STANDARD DRAWING NO. 1101.01, SHEET 2 OF 3

STEP 2: -- CONTRACTOR SHALL, USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 3 & 12 OF 15.

-- IN THE AREA OF CHOICE PLACE DAILY LANE CLOSURES, STATIONARY SIGNS AS SHOWN ON SHEET TMP-3.

STEP 3: -- CONTRACTOR SHALL CONSTRUCT PROPOSED MEDIAN BARRIER, CONCRETE ISLAND, DRAINAGE ALTERATIONS AND PROPOSED MEDIAN PAVEMENT AS SHOWN IN THE CONSTRUCTION PLANS. AT THE END OF EACH WORK DAY PROTECT THE END OF THE MEDIAN BARRIER WITH TMA AND COVER UNFINISHED DRAINAGE STRUCTURES WITH STEEL PLATS.

NOTE: DURING CONSTRUCTION THE CONTRACTOR SHALL INSTALL ADDITIONAL CHANGEABLE MESSAGE SIGNS, DRUMS AND WORK ZONE CONSTRUCTION SIGNS UPSTREAM & DOWNSTREAM OF THE LANE CLOSURE TO ALLOW CONSTRUCTION VEHICLES TO ENTER & EXIT THE WORK AREA AND TO MERGE INTO EXISTING TRAFFIC (SEE SHEET TMP-4).

NOTE: DURING PERIODS OF CONSTRUCTION INACTIVITY THE CONTRACTOR SHALL ENSURE THAT THE WORK AREA IS SETUP AS SHOWN ON SHEET TMP-3

STEP 4: -- CONTRACTOR SHALL, USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 3 & 12 OF 15.

-- REMOVE STATIONARY SIGNS.

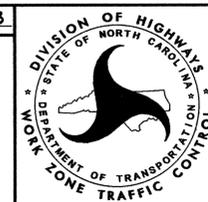
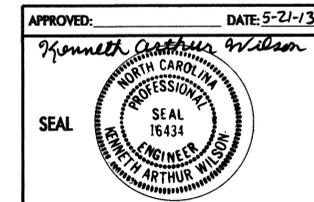
-- REPLACE PAVEMENT MARKINGS REMOVED DURING CONSTRUCTION WITH PAINT (4") AND OPEN AREA TO TRAFFIC.

NOTE: WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY REPLACE EXISTING PAVEMENT MARKINGS WITH TEMPORARY PAINT (4") AND OPEN TO TRAFFIC.

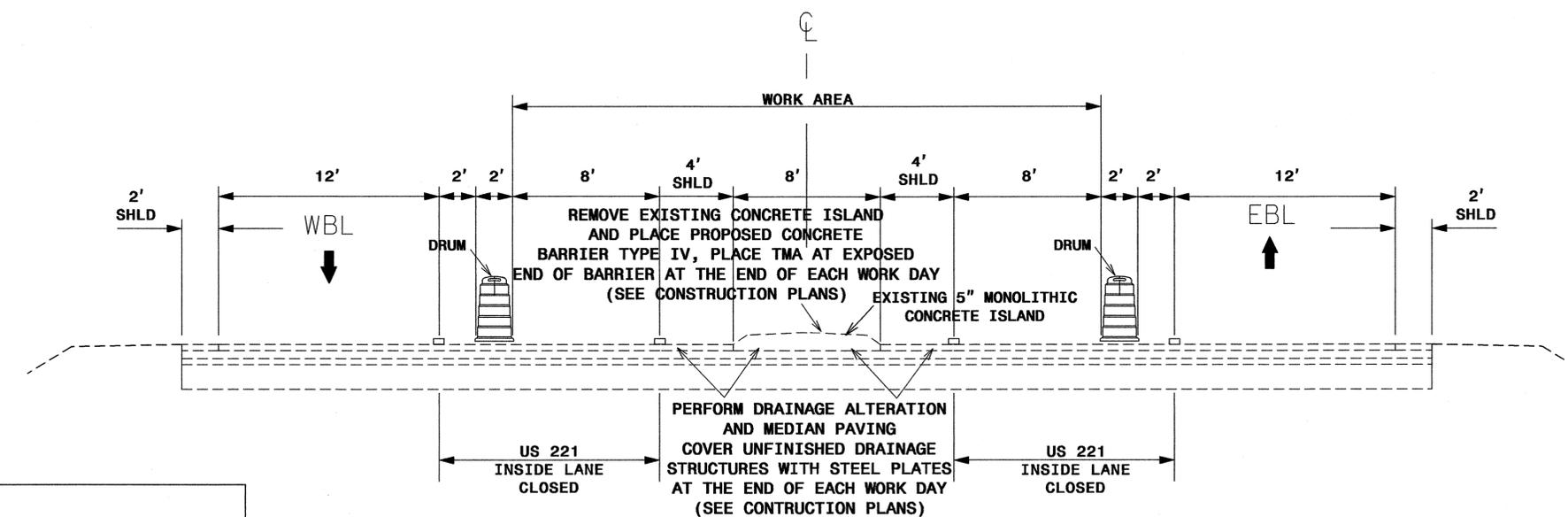
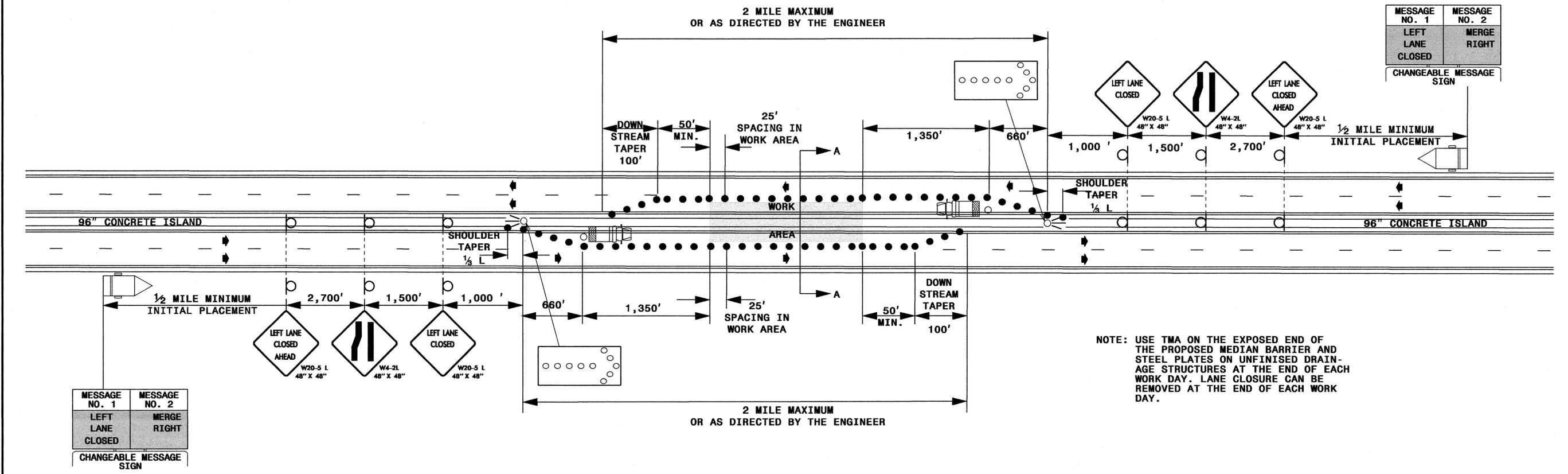
UPON COMPLETION OF ALL ROADWAY THE CONTRACTOR SHALL, USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 3 & 12 OF 15 PLACE THE FINAL PAVEMENT MARKINGS PAINT (4") ON TOTAL PROJECT.

NOTE: REPEAT PHASE I, STEPS 2 THRU STEP 4 UNTIL ALL AREAS HAVE BEEN CONSTRUCTED.

STEP 5: -- UPON COMPLETION OF ALL CONSTRUCTION OPERATIONS THE CONTRACTOR SHALL REMOVE ALL TRAFFIC CONTROL DEVICES FROM THE PROJECT.



PHASING



## TYPICAL "A"

- 1 - IF THE BOUNDARIES OF THE WORK AREA ARE CONFINED TO THE LANE BEING CLOSED, L1 IS EQUAL TO 10 FEET UNLESS EXTRA ROOM IS NEEDED FOR STAGING AND STORAGE OF EQUIPMENT. IF THE BOUNDARIES OF THE WORK AREA ARE NOT CONFINED TO THE LANE BEING CLOSED, REFER TO THE "AASHTO ROADSIDE DESIGN GUIDE" FOR APPLICABLE VALUES FOR L1.
- 2 - PORTABLE SIGNS MAY BE USED IN LIEU OF STATIONARY SIGNS FOR SHORT TERM LANE CLOSURES (3 DAYS OR LESS).
- 3 - REFER TO NOTES ON STD. 1101.02 SHEET 3 FOR ADDITIONAL REQUIREMENTS.
- 4 - PLACE CHANGEABLE MESSAGE SIGN (CMS) ON THE OUTSIDE OF THE TRAVELWAY AS DIRECTED BY THE ENGINEER. PLACE CMS APPROXIMATELY 1/2 MILE IN ADVANCE OF THE W20-5 L SIGNS. IF TRAFFIC BACKS UP TO WHERE THE CMS IS INITIALLY PLACED, RELOCATE CMS 1/2 MILE FROM ANTICIPATED BACKUP. CONTINUE TO MONITOR TRAFFIC, MOVE CMS APPROXIMATELY 1/2 MILE IN CONJUNCTION WITH ANTICIPATED BACKUP.

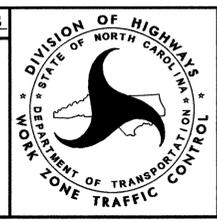
LEGEND	
	PORTABLE CONCRETE BARRIER
	CRASH CUSHION
	FLASHING ARROW PANEL (TYPE C)
	TRUCK MOUNTED ATTENUATOR (TMA)
	DRUM
	STATIONARY OR PORTABLE SIGN
	CHANGEABLE MESSAGE SIGN (CMS)
	DIRECTION OF TRAFFIC FLOW

APPROVED: \_\_\_\_\_ DATE: 5-21-13

*Kenneth Arthur Wilson*

SEAL

NORTH CAROLINA  
PROFESSIONAL  
ENGINEER  
KENNETH ARTHUR WILSON  
16434

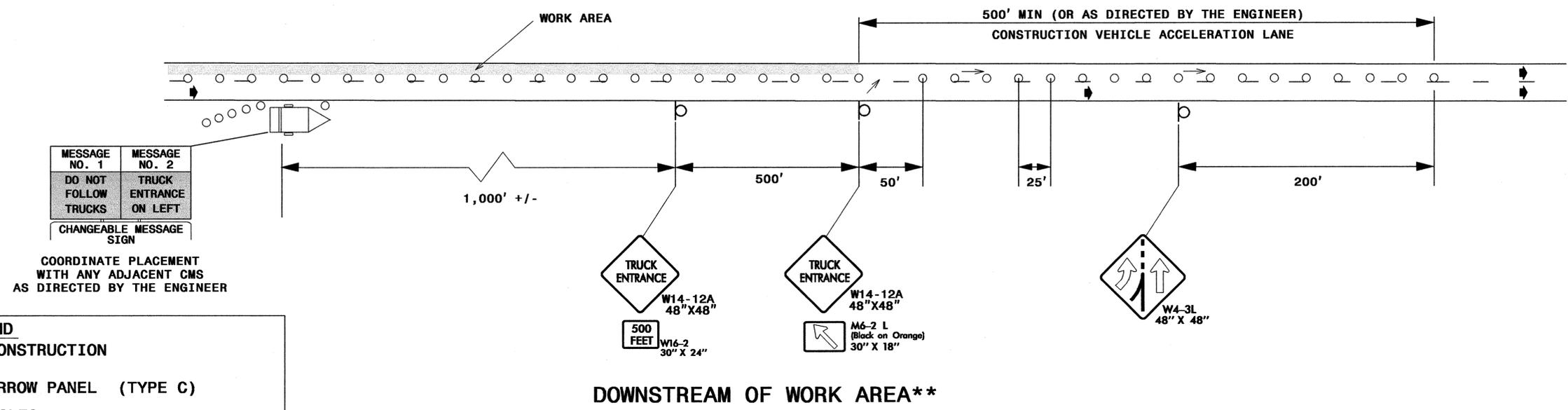
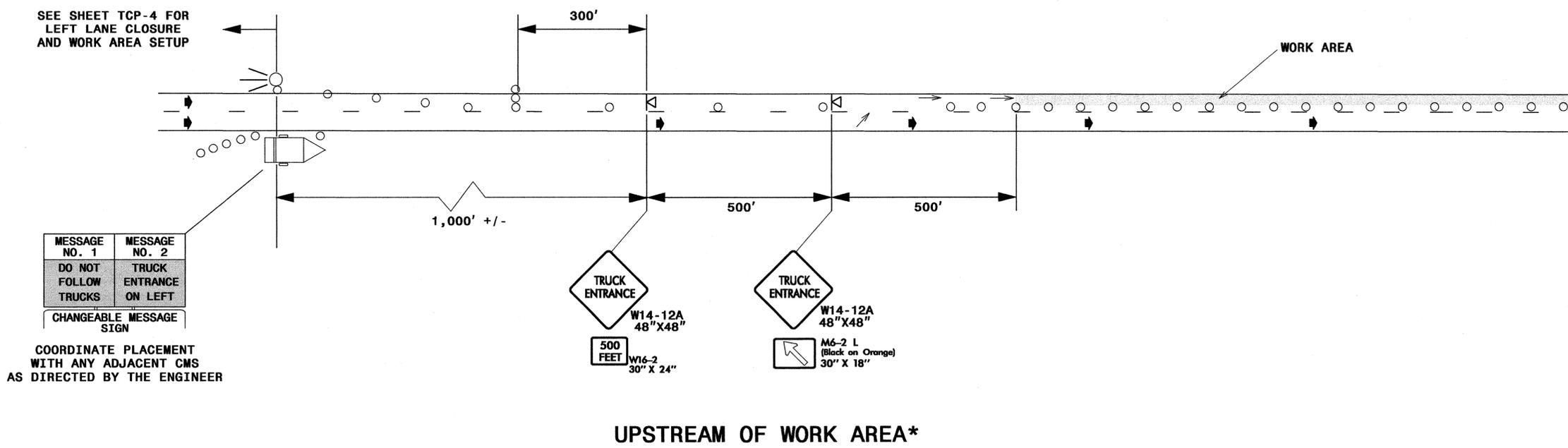


WORK AREA WITH  
LANE CLOSURE

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# WORK ZONE VEHICLE ACCESS TYPICAL DETAIL

FOR USE WHILE US 221 IS REDUCED TO ONE LANE



LEGEND	
	PROPOSED CONSTRUCTION
	FLASHING ARROW PANEL (TYPE C)
	TRUCK VEHICLES
	DRUM
	PORTABLE SIGN
	STATIONARY OR PORTABLE SIGN
	CHANGEABLE MESSAGE SIGN (CMS)
	DIRECTION OF TRAFFIC FLOW

**NOTES:**

\*1. UPSTREAM SETUP SHALL ONLY BE UTILIZED FOR WORK VEHICLES ENTERING THE WORK AREA.

\*\*2. DOWNSTREAM SETUP MAY BE UTILIZED FOR BOTH VEHICLES ENTERING AND EXISTING WORK AREA.

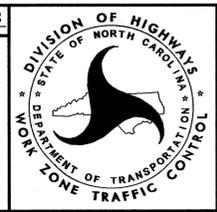
3. DURING CONSTRUCTION INACTIVITY REMOVE WORK AREA SIGNS, AND RETURN WORK AREA SETUP AS SHOWN ON SHEET TMP-3. CMS SHALL BE TURNED AWAY FROM TRAFFIC OR AS DIRECTED BY THE ENGINEER.

APPROVED: \_\_\_\_\_ DATE: 5-21-13

*Kenneth Arthur Wilson*

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16434 KENNETH ARTHUR WILSON



**WORK ZONE VEHICLE  
ACCESS TYPICAL DETAIL**

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