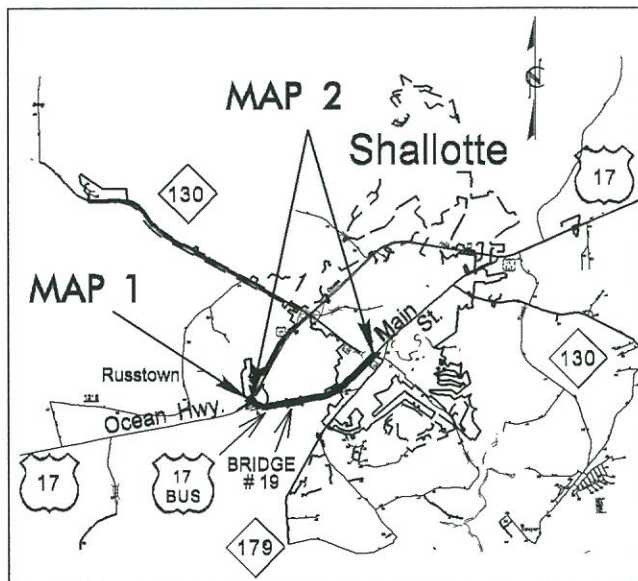


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

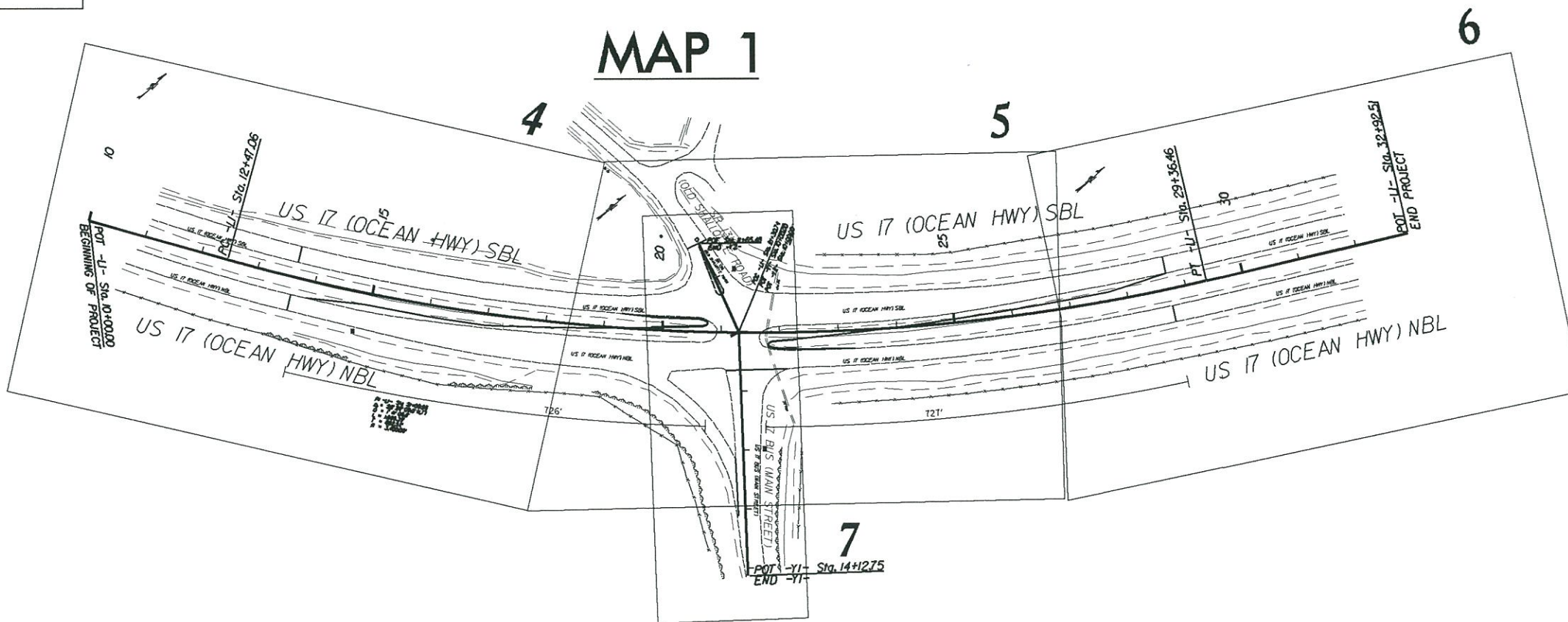
**BRUNSWICK COUNTY**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SS-4903AH	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
43034.1.1	SS-4903AH	P.E.	
43034.3.1	SS-4903AH	CONST.	
3CR.10101.164		RESURF.	



**LOCATION:** US 17 (OCEAN HIGHWAY) FROM APPROXIMATELY 0.14 MILES SOUTH OF US 17 /US 17 BUSINESS TO APPROXIMATELY 0.14 MILES NORTH OF US 17 /US 17 BUSINESS AND ON US 17 BUSINESS FROM THE INTERSECTION OF US 17 /US 17 BUSINESS TO THE INTERSECTION OF US 17 BUSINESS / NC 130 (WHITEVILLE RD NW) /NC 179

**TYPE OF WORK:** RESURFACING, WIDENING, DRAINAGE, PAVEMENT MARKINGS, AND PAVEMENT MARKERS.



THIS PROJECT IS LOCATED WITHIN THE MUNICIPAL BOUNDARY OF SHALLOTTE.

NOT TO SCALE

TIP PROJECT: SS-4903AH

CONTRACT: DC00088

GRAPHIC SCALES



PROJECT LENGTH

MAP NO. 1 (43034.3.1) = 0.28 MI.  
TOTAL = 0.28 MI.

MAP NO. 2 (3CR.10101.164) = 1.82 MI.  
TOTAL = 1.82 MI.

Prepared in the Office of  
**DIVISION OF HIGHWAYS**  
5501 Barbados Blvd., Castle Hayne, NC 28429

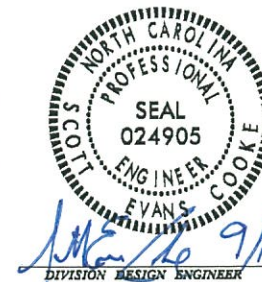
2012 STANDARD SPECIFICATIONS

LETTING DATE:  
OCTOBER 16, 2014

HYDRAULICS ENGINEER

SIGNATURE: \_\_\_\_\_ P.E.  
ROADWAY DESIGN  
TECHNICIAN  
CMS  
SIGNATURE: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA



GENERAL NOTES:

2012 SPECIFICATIONS  
 EFFECTIVE: 01-17-12  
 REVISED: 11/01/11

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

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.

UTILITIES:

NO SUBSURFACE UTILITY INVESTIGATIONS HAVE BEEN PERFORMED. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS. UTILITY OWNERS ON THIS PROJECT ARE:  
 TELEPHONE - ATMC (BROCK HOMES, 910-754-4311)  
 POWER - BRUNSWICK ELECTRIC (TONY SELLERS, 910-540-0191)  
 WATER - BRUNSWICK COUNTY (910-253-2860)

SUBSURFACE PLANS:

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

SHEET NUMBER

SHEET

1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	ALIGNMENT NOTES
2 THRU 2-T	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND DETAIL SHEETS
3 THRU 3-D	SUMMARY OF QUANTITIES
3-E	SUMMARY OF DRAINAGE QUANTITIES
3-F	SUMMARY OF EARTHWORK QUANTITIES
4 THRU 7	PLAN SHEETS
PM-1 THRU PM-5	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL
SIG-1 THRU SIG-8	SIGNAL PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-5	CROSS-SECTIONS

2012 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, 2012 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
225.01	Guide for Grading Subgrade - Interstate and Freeway
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 8 - INCIDENTALS	
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.36	Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates
840.37	Steel Grate and Frame
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter



8/17/99  
 I:\SEP-2014\14055 - BRUNSWICK\17\_US 17 BUS\_SHALLOTTE OFFSET LEFTS\ROADWAY\Pr-o\4303A\_Rdly\_tsh.dgn  
 0: \HD\YD\THREE - BRUNSWICK\17\_US 17 BUS\_SHALLOTTE OFFSET LEFTS\ROADWAY\Pr-o\4303A\_Rdly\_tsh.dgn

04/16/11

Note: Not to Scale

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. SS-4903AH SHEET NO. 1-B

# CONVENTIONAL PLAN SHEET SYMBOLS

## BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----
Property Monument	□ EDM
Parcel/Sequence Number	⑫③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	----- MLB
Proposed Wetland Boundary	----- MLB
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	○
Well	○
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	○
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	○
Proposed Right of Way Line with Concrete or Granite R/W Marker	○
Proposed Control of Access Line with Concrete C/A Marker	○
Existing Control of Access	○
Proposed Control of Access	○
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	-----
Single Tree	☼
Single Shrub	☼
Hedge	-----
Woods Line	-----

## VEGETATION:

Orchard	☼ ☼ ☼ ☼
Vineyard	□ Vineyard

## EXISTING STRUCTURES:

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

## UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊗
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	⊕
Telephone Booth	□
Telephone Pedestal	⊕
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	⊕
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	⊕
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	⊕
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	----- TUTL
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
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.

Beginning chain L1 description

=====

Point 10000            N        76,653.8061 E    2,175,661.5582 Sta        10+00.00

Course from 10000 to PC C1N 57° 28' 41.92" E Dist 247.0645

Curve Data  
•-----•

Curve C1  
P.I. Station            21+09.58    N            77,250.3375    E        2,176,597.1431  
Delta                =    28° 28' 08.98" (LT)  
Degree                =    1° 41' 06.61"  
Tangent                =        862.5160  
Length                =        1,689.3940  
Radius                =        3,400.0000  
External                =        107.6964  
Long Chord            =        1,672.0686  
Mid. Ord.             =        104.3898  
P.C. Station            12+47.06    N            76,786.6326    E        2,175,869.8800  
P.T. Station            29+36.46    N            78,004.6442    E        2,177,015.4197  
C.C.                    N            79,653.4718    E        2,174,041.9760  
Back                 = N    57° 28' 41.92" E  
Ahead                = N    29° 00' 32.94" E  
Chord Bear            = N    43° 14' 37.43" E

Course from PT C1 to 10002 N 29° 00' 32.94" E Dist 356.0480

Point 10002            N        78,316.0232 E    2,177,188.0849 Sta        32+92.51

=====

Ending chain L1 description

Beginning chain Y1 description

=====

Point 80000            N        77,352.6636 E    2,176,545.2302 Sta        10+00.00

Course from 80000 to 80001 S 50° 03' 16.42" E Dist 412.7452

Point 80001            N        77,087.6573 E    2,176,861.6639 Sta        14+12.75

=====

Ending chain Y1 description

Beginning chain Y2 description

=====

Point 9000            N        77,352.6636 E    2,176,545.2302 Sta        10+00.00

Course from 9000 to 9001 N 72° 27' 51.19" W Dist 165.4788

Point 9001            N        77,402.5226 E    2,176,387.4414 Sta        11+65.48

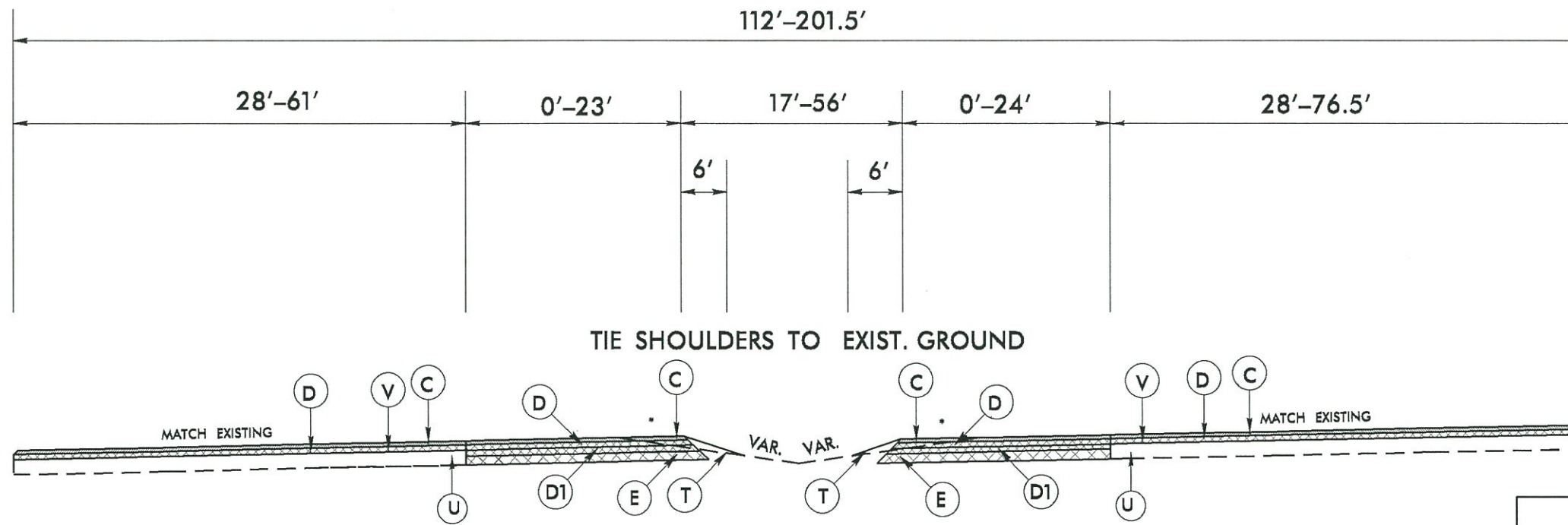
=====

Ending chain Y2 description

CONTROL POINT LIST:

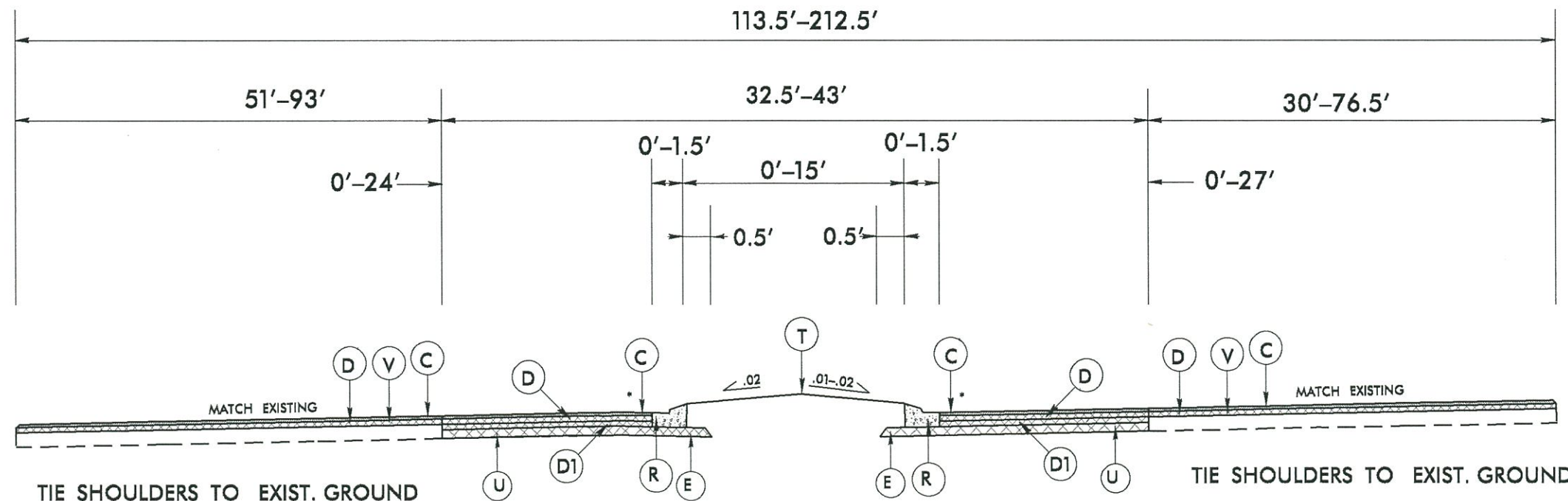
Point#	North(Y)	East(X)	Elev(Z)
Pt 1,	N 77315.3710,	E 2176510.5730,	Z 21.1860,
Pt 2,	N 76863.1780,	E 2176102.0080,	Z 19.8070,
Pt 3,	N 77253.4390,	E 2176721.2360,	Z 24.4380,
Pt 4,	N 77784.7240,	E 2176860.8130,	Z 25.5200,
Pt 5,	N 77418.2300,	E 2176459.9320,	Z 19.6130,

17\_10-SEP-2014 11:01:17 BUS-SHALE LOTTE OFFSET LEFTS ROADWAY\Proj\43034\_Raj\_tsh.dgn  
5/14/99



**TYPICAL SECTION NO. 1**  
**MAP NO. 1**  
 US 17  
 -L1- 13 + 65-19 + 80  
 -L1- 22 + 28-28 + 72

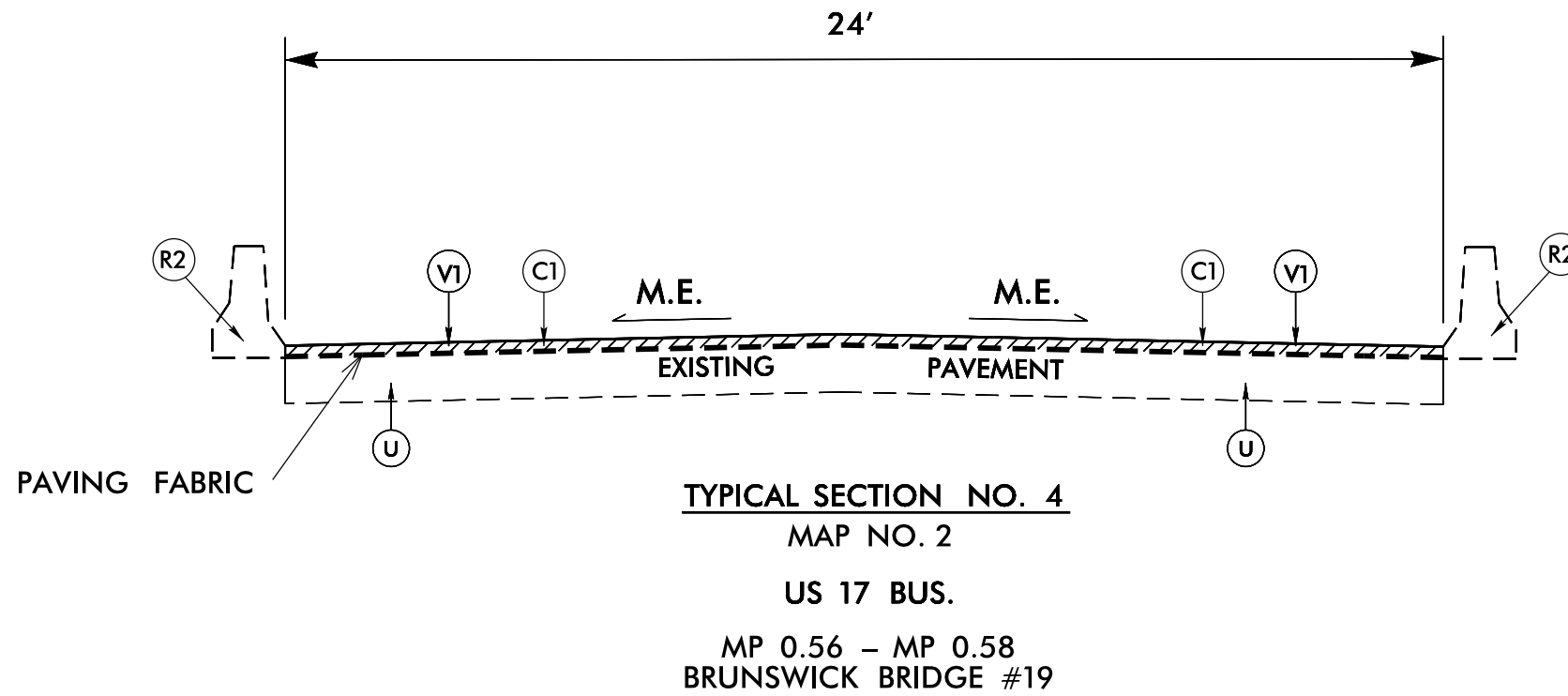
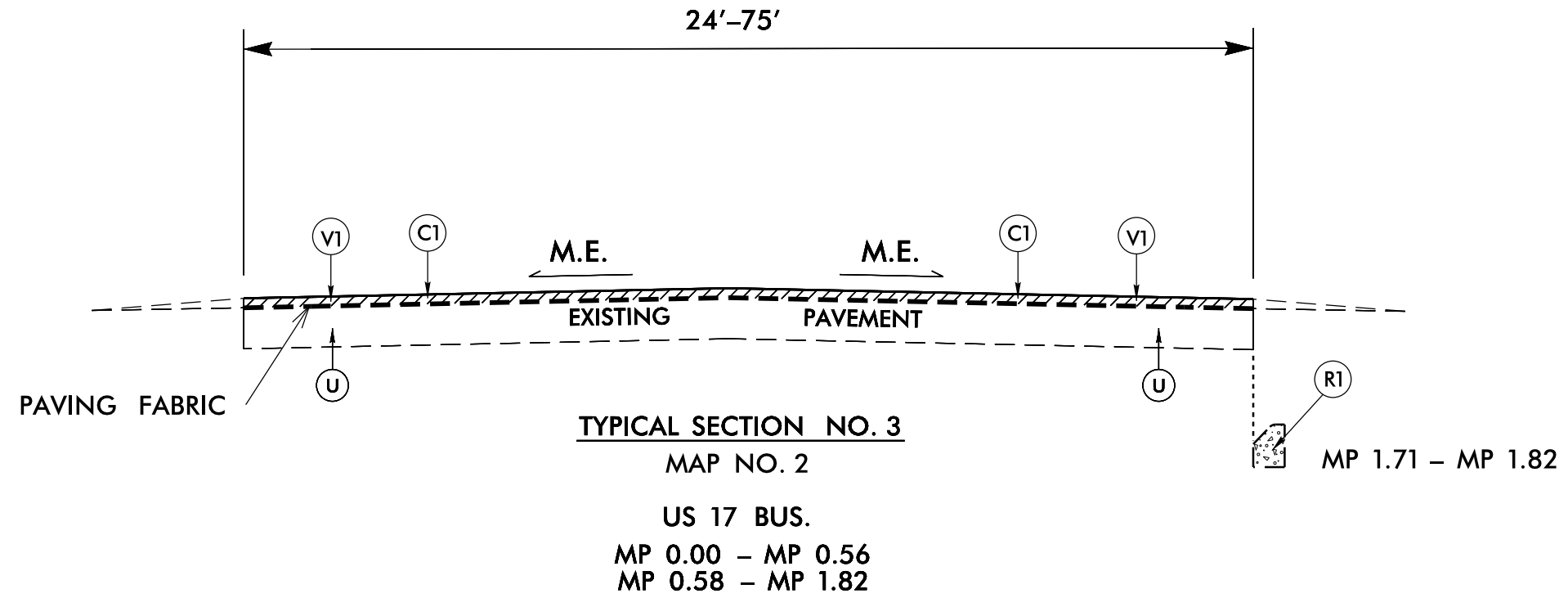
PAVEMENT SCHEDULE	
C	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
D	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
E	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R	1' 6" CONCRETE CURB & GUTTER.
R1	EXISTING CURB
R2	EXISTING CONCRETE BARRIER RAIL
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	4" MILLING.
V1	1 1/2" MILLING.



**TYPICAL SECTION NO. 2**  
**MAP NO. 1**  
 US 17  
 -L1- 19 + 80-22 + 28

\* SEE PLAN SHEETS FOR SUPERELEVATION ON WIDENING

NOT TO SCALE

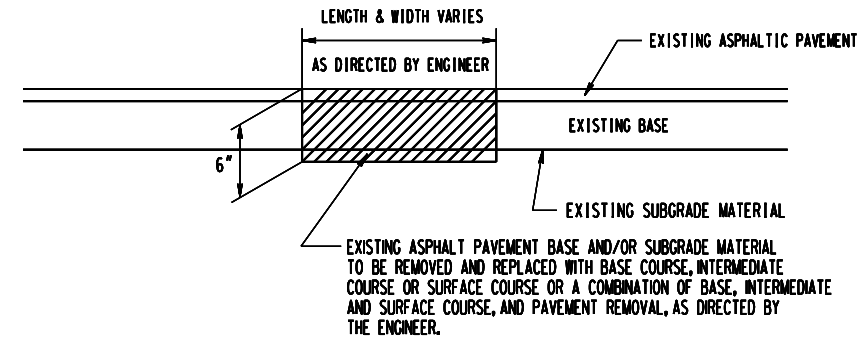


PAVEMENT SCHEDULE	
C1	2" S9.5B
R1	EXISTING CURB
R2	EXIST. CONCRETE BARRIER RAIL
U	EXISTING PAVEMENT
V1	MILLING 1 1/2" DEPTH

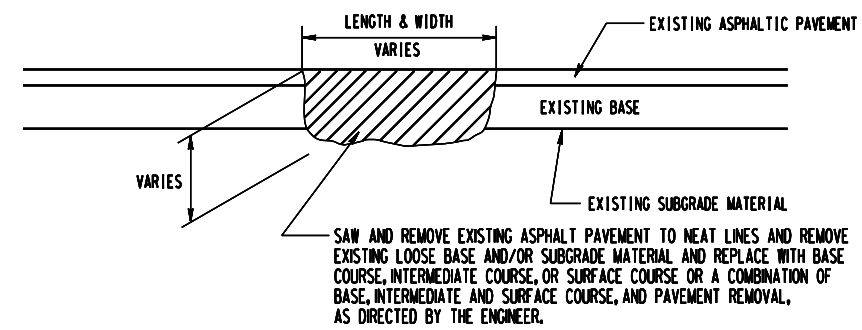
REVISIONS

10-SEP-2014 09:46  
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 8/17/99

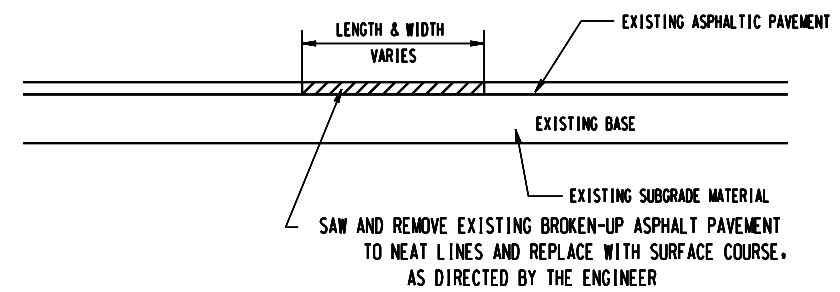
DETAILS OF REPAIRING EXISTING PAVEMENT PRIOR TO RESURFACING FOR FULL DEPTH AND MILLING



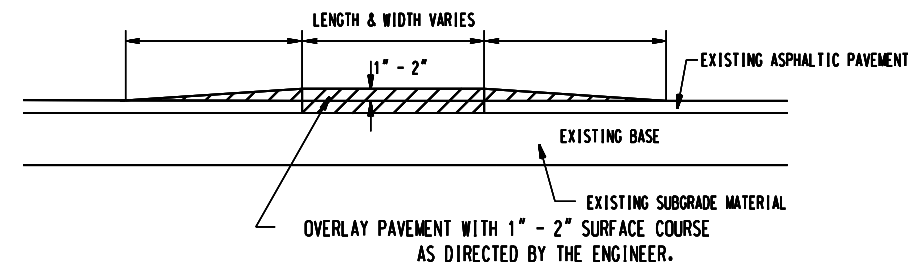
DETAIL NO. 1



DETAIL NO. 2

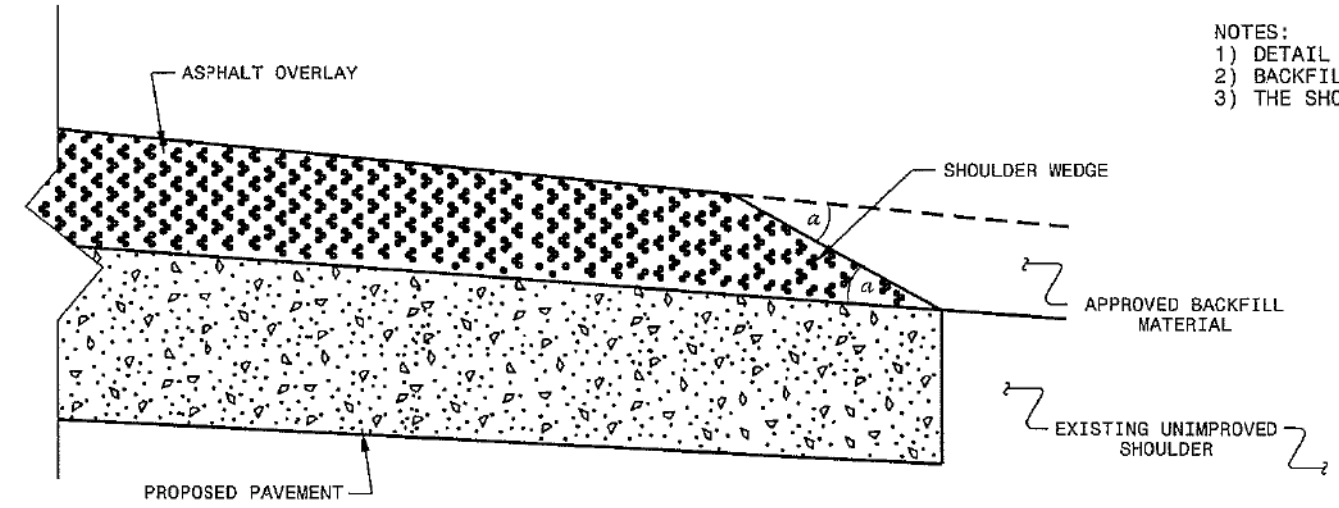


DETAIL NO. 3



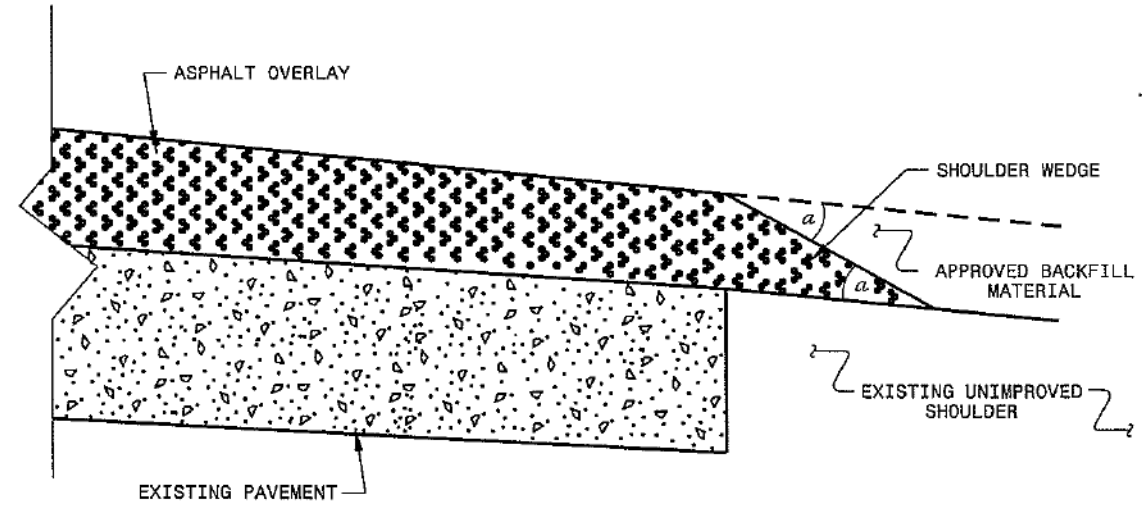
DETAIL NO. 4

8/17/99

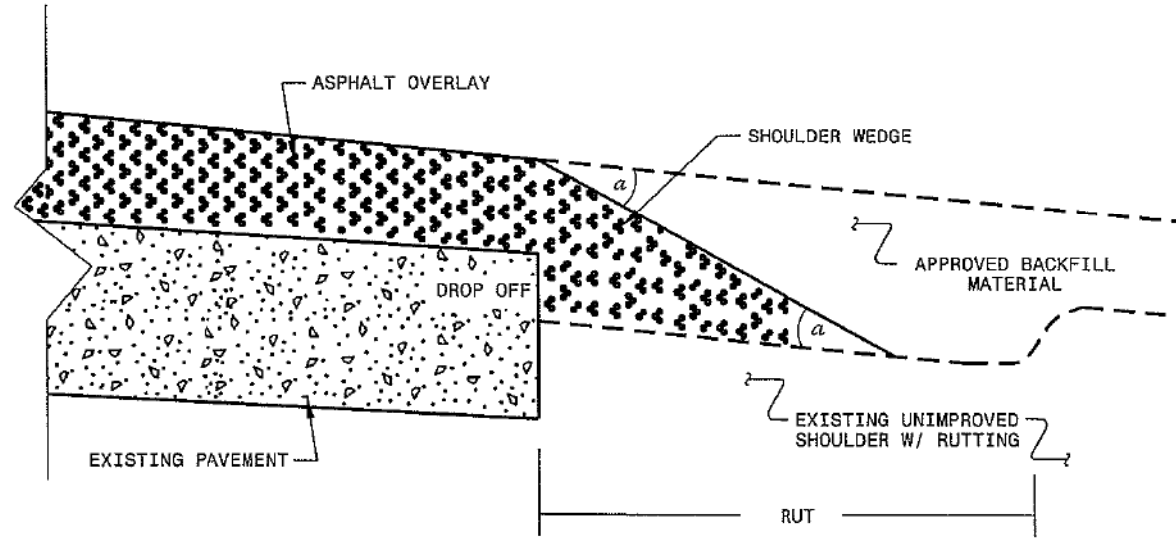


- NOTES:
- 1) DETAIL DOES NOT APPLY TO OGAFCC AND ULTRA-THIN BONDED WEARING COURSE.
  - 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
  - 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.

**SHOULDER WEDGE DETAIL**  
 (Resurfacing Projects w/ Widening or  
 with Existing Paved Shoulder having no dropoffs)



**SHOULDER WEDGE DETAIL**  
 (Resurfacing Projects w/ NO Widening)



**SHOULDER WEDGE DETAIL**  
 (Resurfacing Adjacent to  
 Rutted Shoulder)

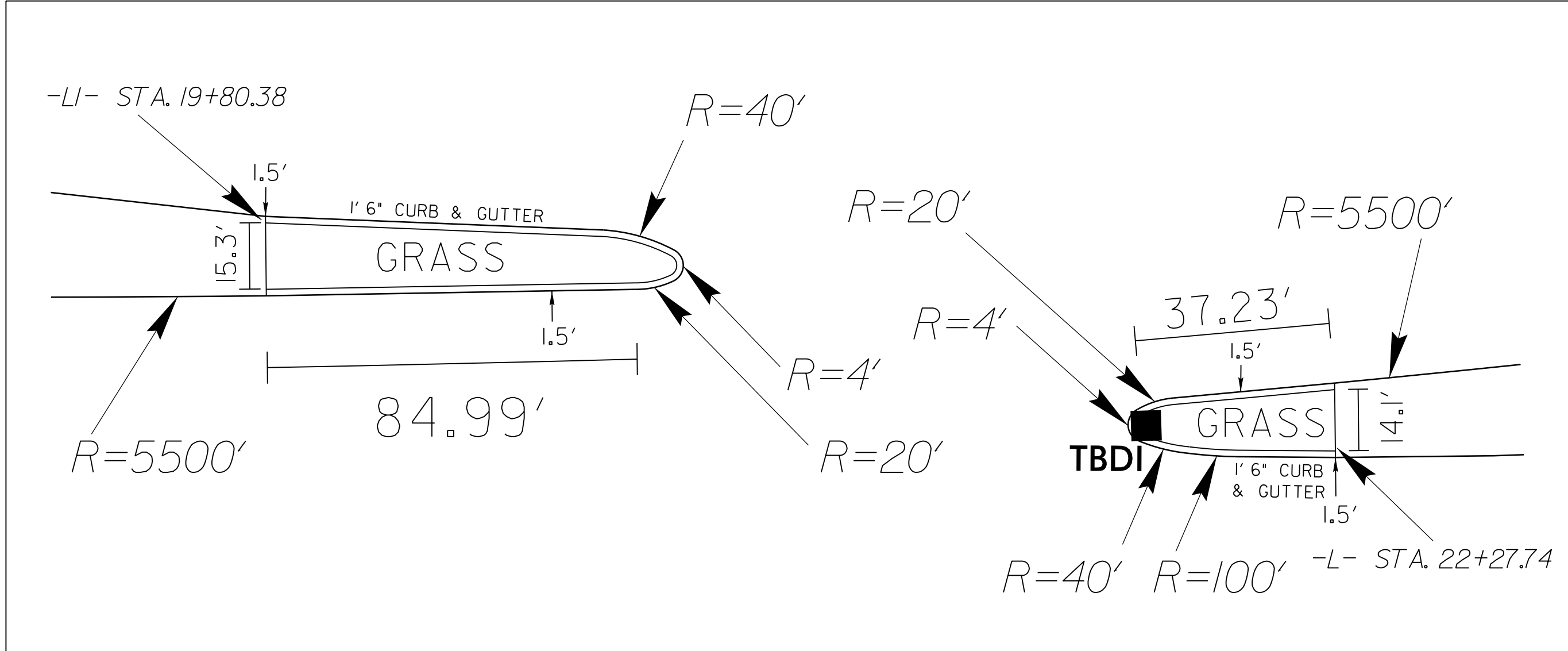
- SHOULDER WEDGE ANGLE = 30°

NOT TO SCALE

10-SEP-2014 10:41 AM C:\BRUNSWICK\US 17 - US 17 BUS. SHALLOTTE OFFSET LEFTS\ROADWAY\PROJ\43034.RDg.tsh.dgn



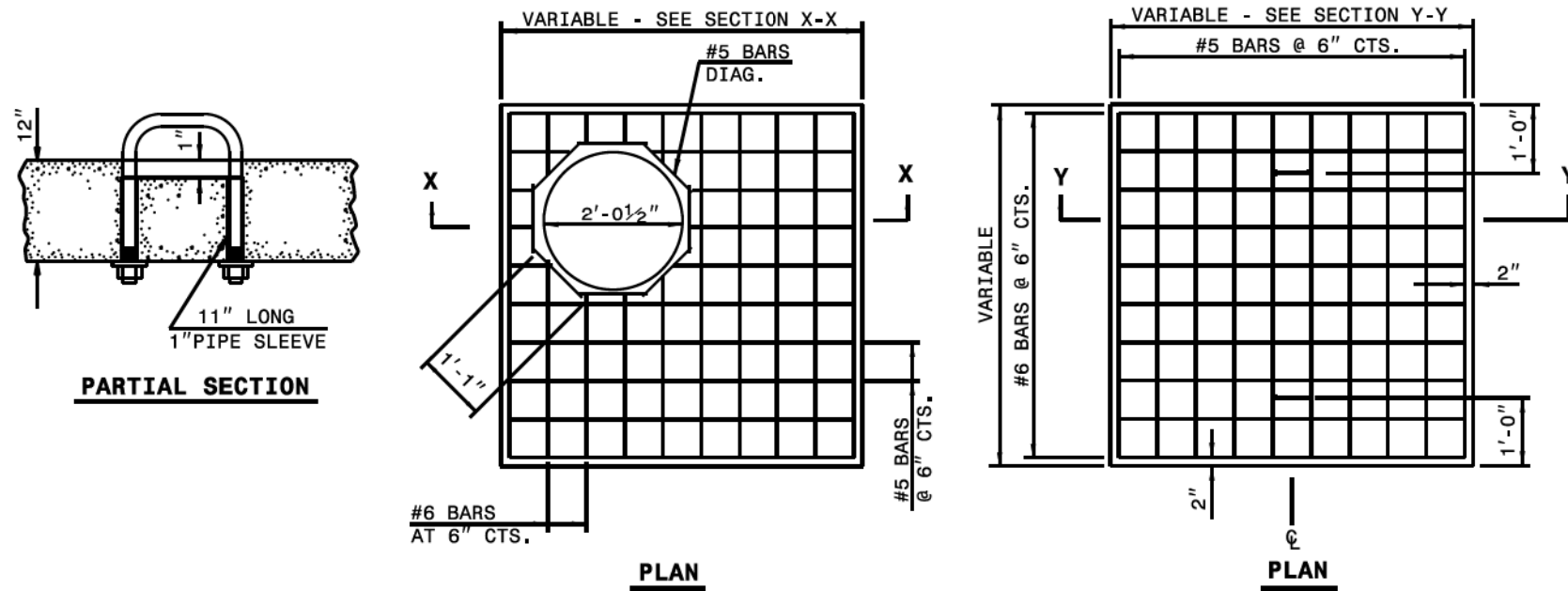
# DETAIL SHEET-GRASS ISLANDS



NOT TO SCALE

10-SEP-2014 10:14  
 G:\RDY\03THREE\BRUNSWICK\US 17 - US 17 BUS. SHALLOTTE OFFSET LEFTS\ROADWAY\Proj\43034\_Rdy\_tsh.dgn  
 8/17/99

# DETAIL TO CONVERT EXISTING DROP INLET OR CATCH BASIN TO TRAFFIC BEARING JUNCTION BOX



**GENERAL NOTES:**

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

FIELD VERIFY THE DIMENSIONS FOR THE EXISTING BOXES.

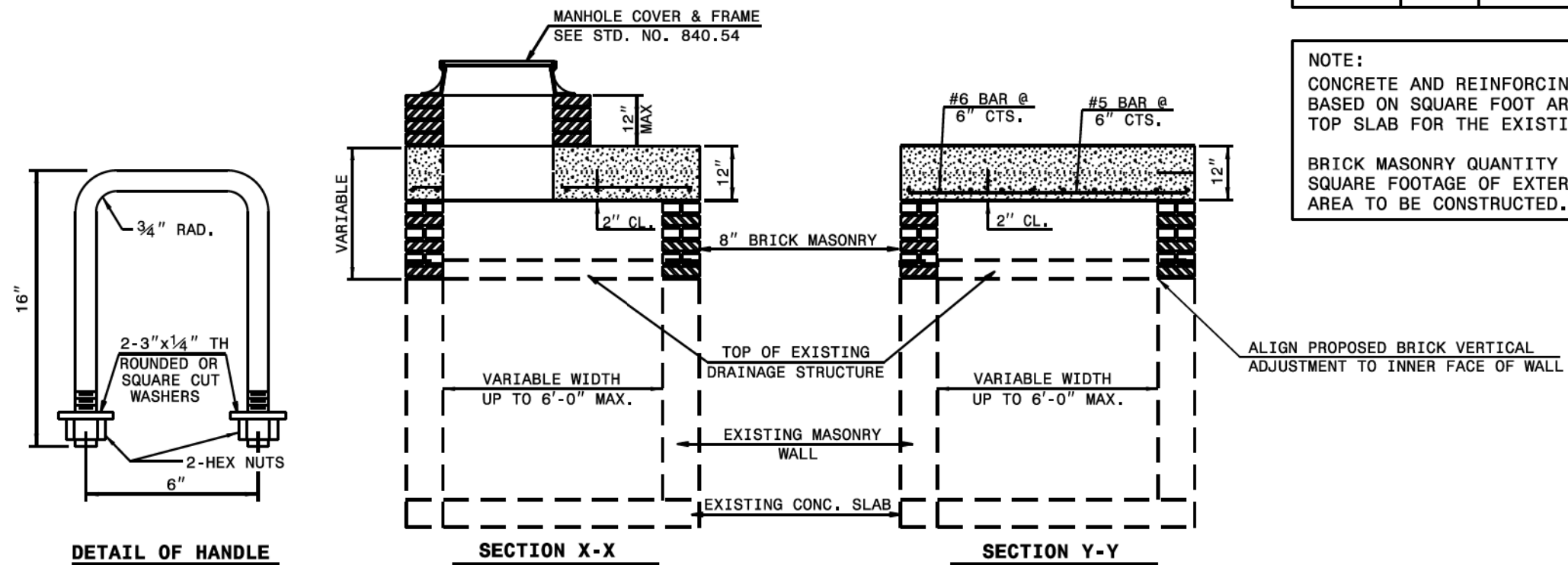
**BILL OF MATERIALS**

MASONRY			
TOP SLAB CONCRETE CLASS "A"	.037YDS <sup>3</sup> PER FT <sup>2</sup>		
BRICK MASONRY	.025YDS <sup>3</sup> PER FT <sup>2</sup>		
REINFORCING STEEL	7.64LBS PER FT <sup>2</sup>		
MANHOLE OPTION QUANTITIES			
SIZE	QTY.	LENGTH	REINF. STEEL LBS.
#5 DIAG.	8	1'-1"	9.04

**NOTE:**

CONCRETE AND REINFORCING STEEL QUANTITIES BASED ON SQUARE FOOT AREA OF THE PROPOSED TOP SLAB FOR THE EXISTING DRAINAGE STRUCTURE.

BRICK MASONRY QUANTITY IS BASED ON THE TOTAL SQUARE FOOTAGE OF EXTERIOR WALL SURFACE AREA TO BE CONSTRUCTED.



ALIGN PROPOSED BRICK VERTICAL ADJUSTMENT TO INNER FACE OF WALL

NOT TO SCALE

10-SEP-2014 10:19  
 G:\RDY\03THREE\BRUNSWICK\US\_17-US\_17\_BUS\_SHALLOTTE OFFSET LEFTS\ROADWAY\PROJ\_43034\_Rdy\_tsh.dgn  
 8/17/99

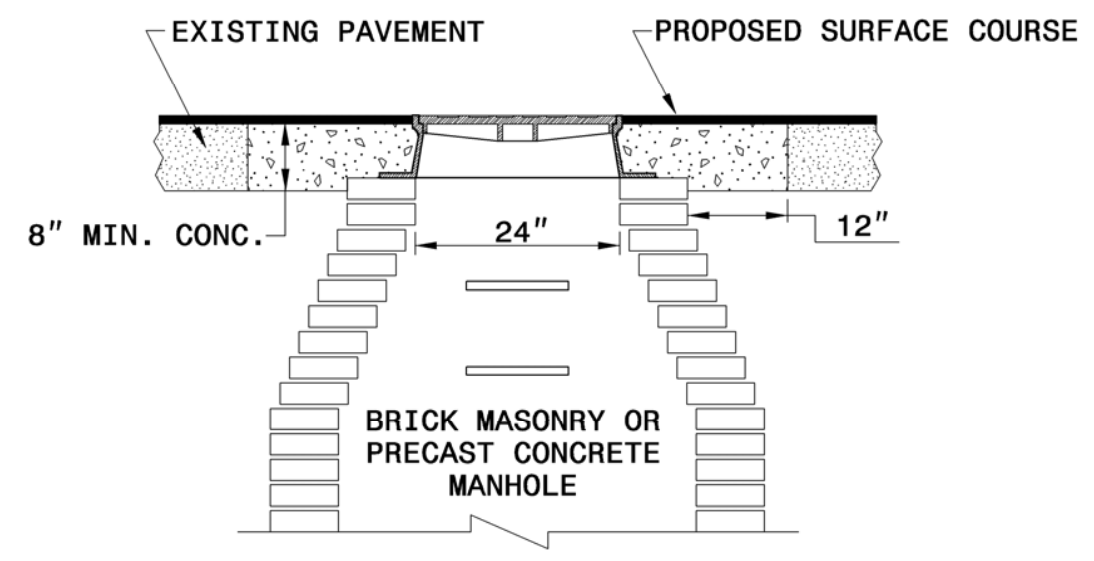
STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**MANHOLE AND VALVE BOX ADJUSTMENTS**

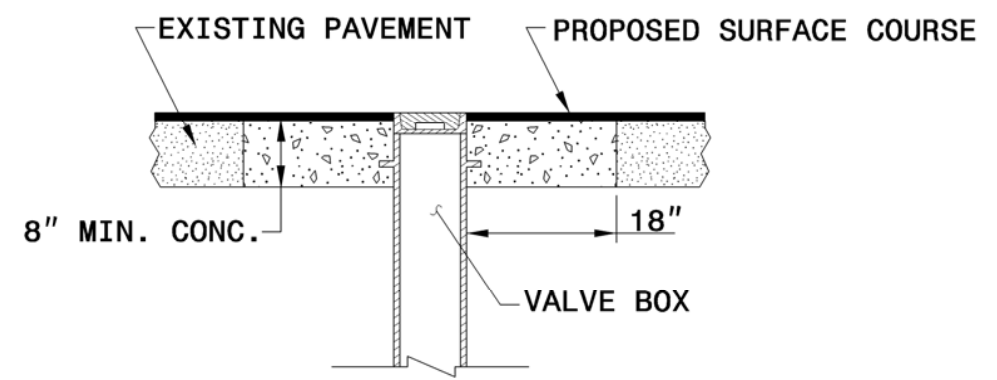
SHEET 1 OF 1  
**840D55**

**GENERAL NOTES:**

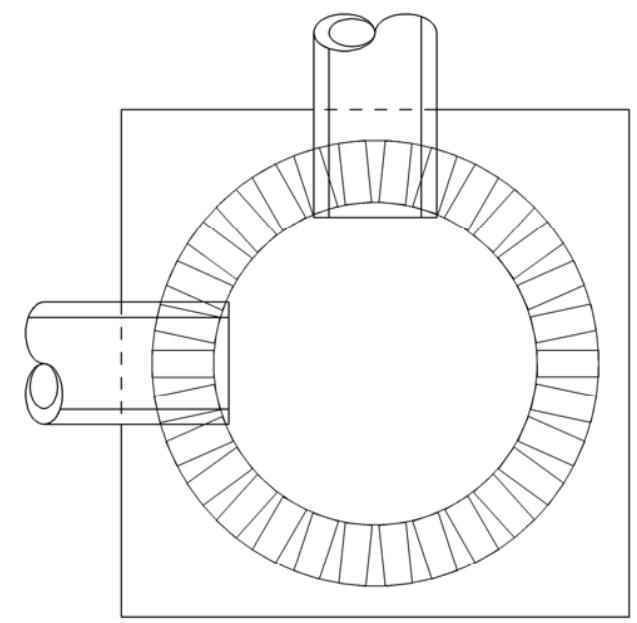
1. USE RAPID SET GROUT, MORTAR, OR CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI.
2. REMOVE ALL FAULTY EXISTING BRICKWORK AND REPLACE WITH NEW BRICK MASONRY.
3. SHEER CUT EXCAVATION FOR THE ADJUSTMENT ON ALL SIDES.
4. FILL AREA BELOW 8" DEPTH WITH 78M OR NO. 57 CLEAN STONE.
5. MIX MORTAR TO NCDOT SPECIFICATIONS.
6. MORTAR JOINTS  $\frac{1}{2}$ "  $\pm$   $\frac{1}{8}$ "



**MANHOLE CONCRETE ENCASEMENT**



**VALVE BOX CONCRETE ENCASEMENT**



**ELEVATION VIEW**

PLACE BRICK ACCORDING TO ELEVATION VIEW

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

ENGLISH DETAIL DRAWING FOR  
**MANHOLE AND VALVE BOX ADJUSTMENTS**

SHEET 1 OF 1  
**840D55**

**PROJECT SERVICES UNIT  
STANDARDS AND SPECIAL DESIGN**  
Office 919-250-4128 FAX 919-250-4119

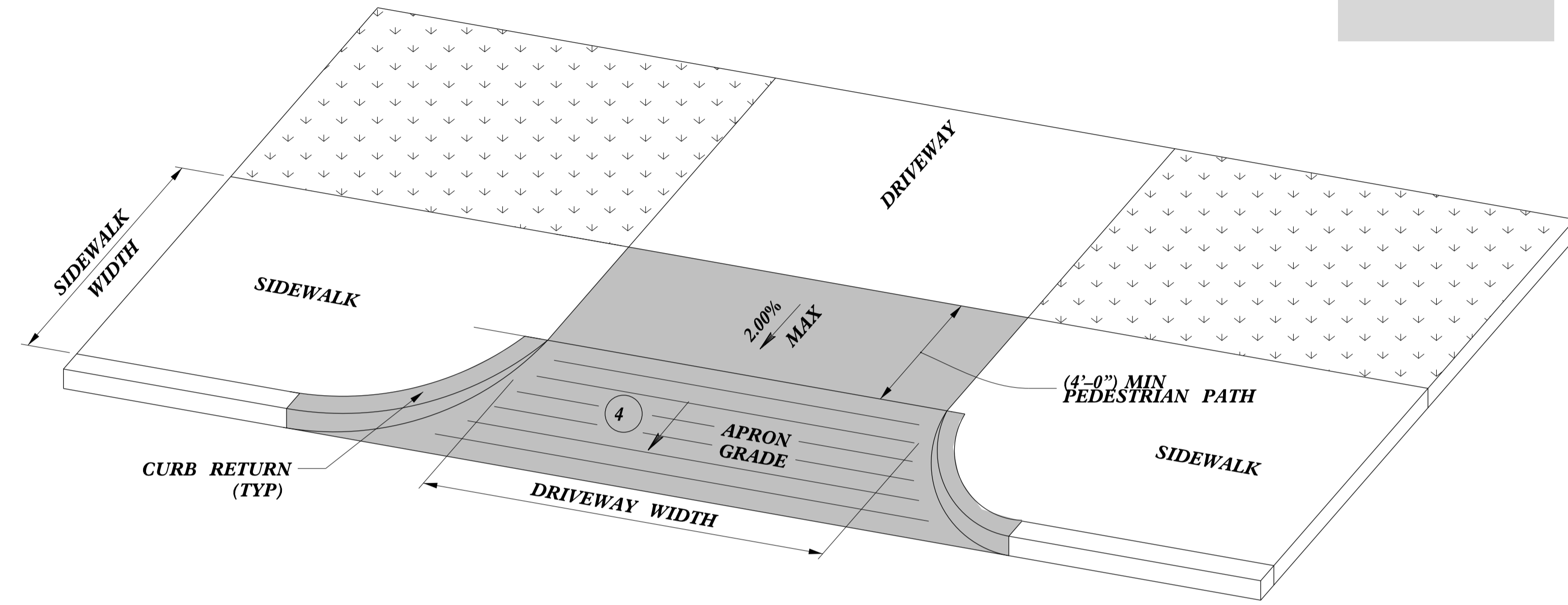
**SEE PLATE FOR TITLE**

ORIGINAL BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
MODIFIED BY: E.E. WARD DATE: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
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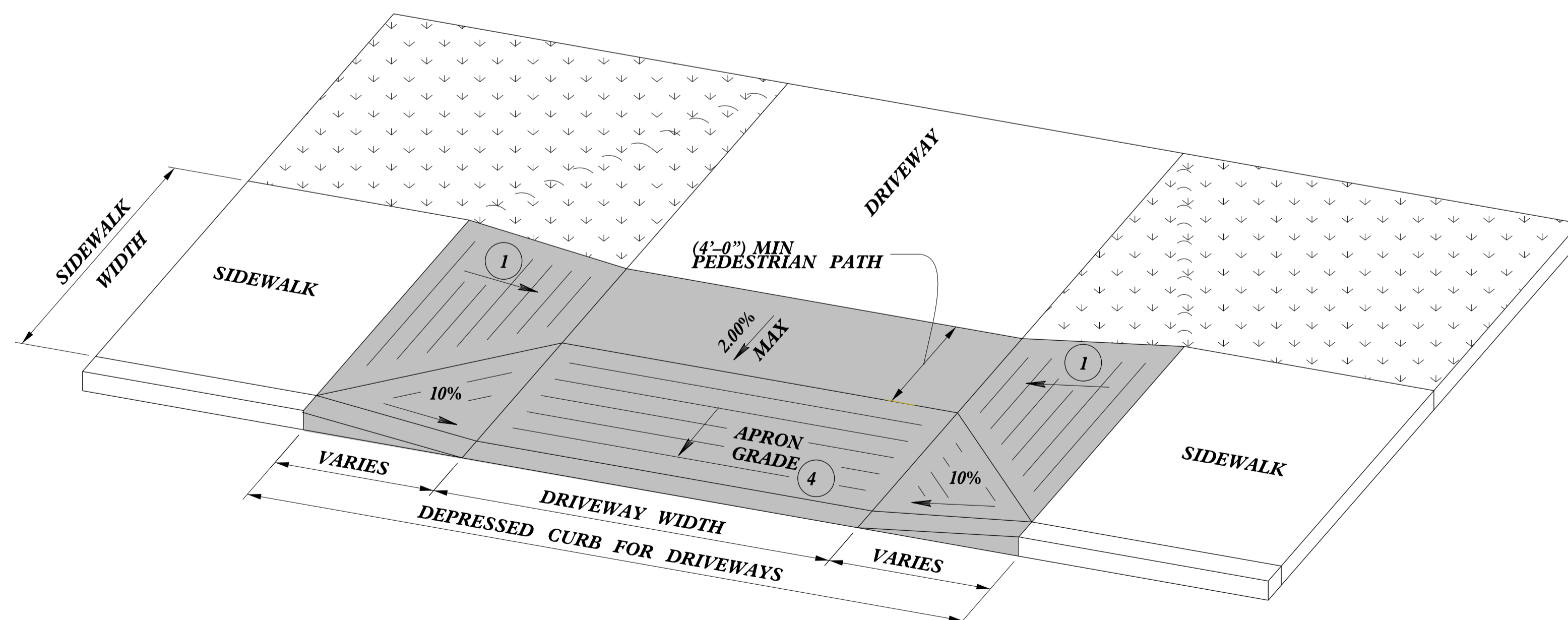
5/14/99

- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 4 8.00% MAX CHANGE IN GRADE BETWEEN ROAD SURFACE AND DRIVEWAY

 PAY LIMITS FOR 1 CURB RAMP



**DRIVEWAY APRON**  
**OPTION 1**



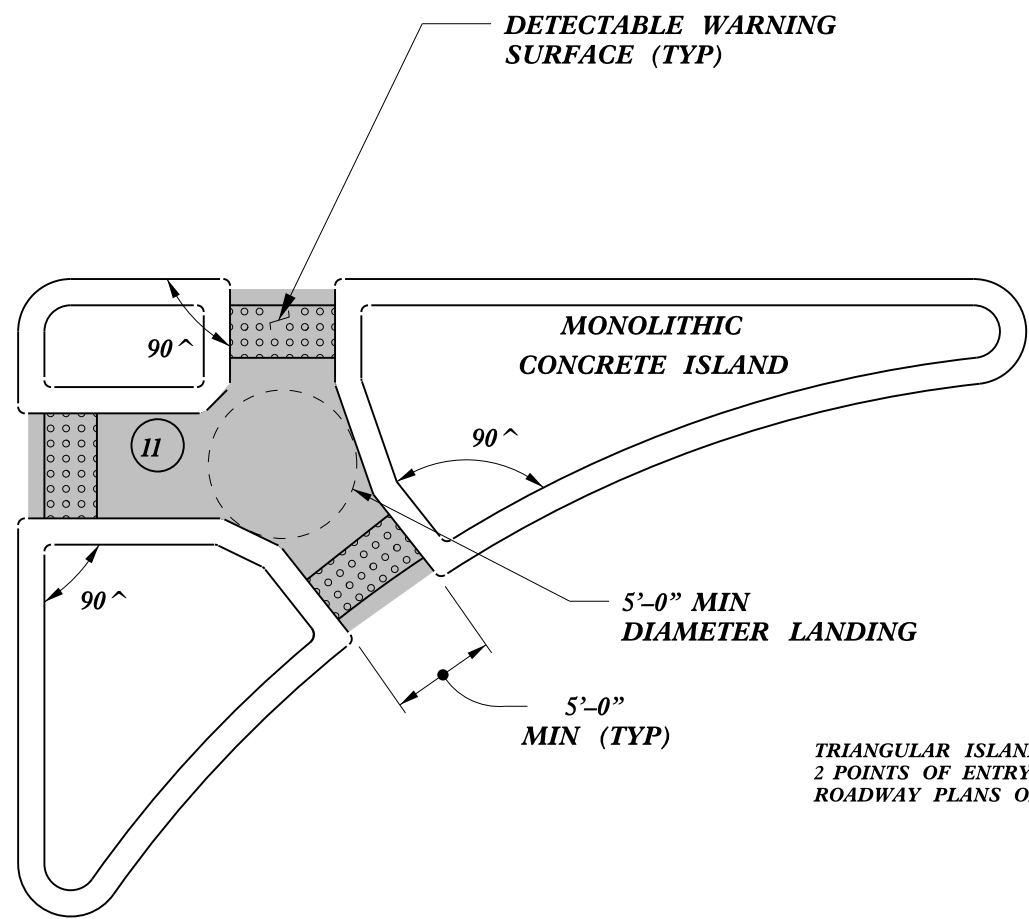
**DRIVEWAY APRON**  
**OPTION 2**

-SEE ROADWAY DETAIL DRAWING 848.05 FOR DETECTABLE WARNING SURFACE AND FOR RAMP NOTES.  
-SEE ROADWAY STANDARD DRAWING 848.02 FOR CONCRETE DRIVEWAYS.

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950 FAX 919-250-4119	
<b>CURB RAMPS</b>	
@ DRIVEWAY OPENINGS	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:stds/2012CurbRamp/CurbRampDetails.dgn	

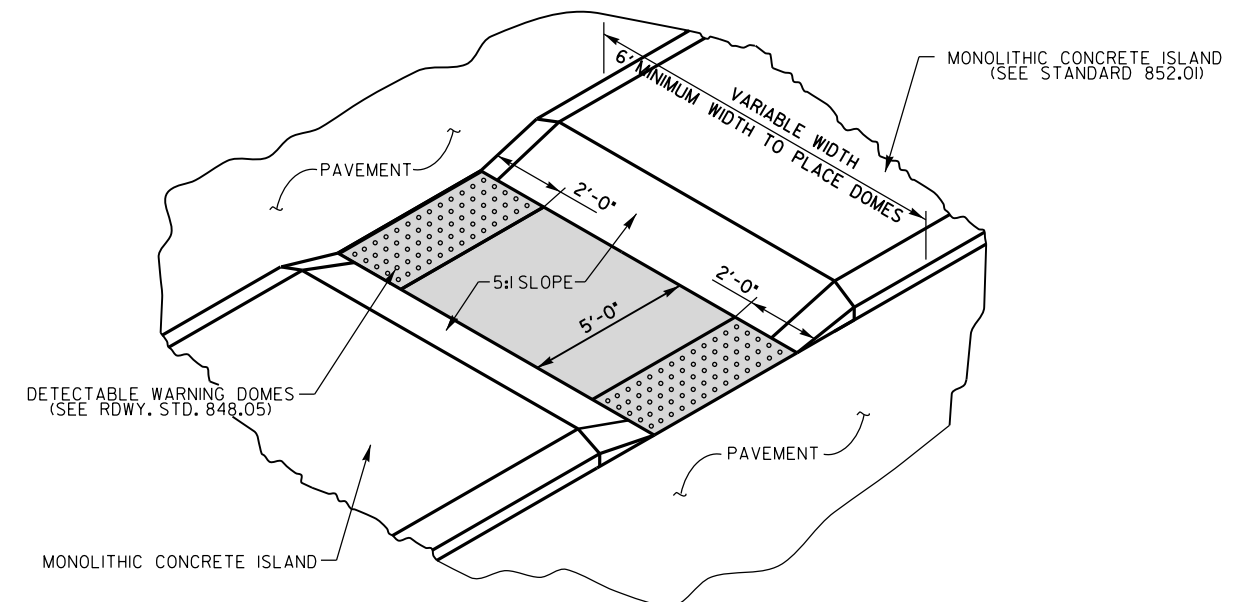
TIME \$\$\$\$\$\$  
 CURB \$\$\$\$\$\$  
 Y- \$\$\$\$\$\$  
 USER \$\$\$\$\$\$  
 \$\$\$\$\$\$

PAY LIMITS FOR 1 CURB RAMP

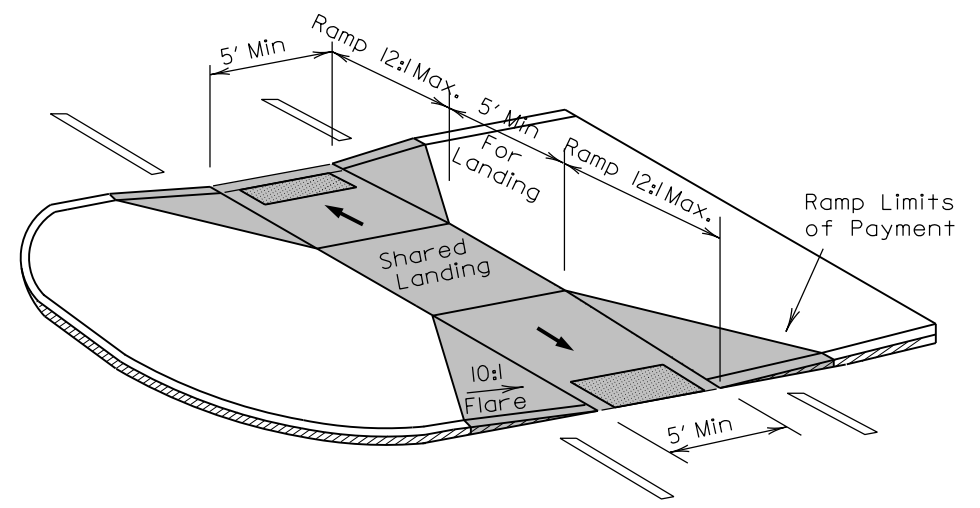


TRIANGULAR ISLANDS MAY BE CONSTRUCTED WITH ONLY 2 POINTS OF ENTRY AND EXIT AS SHOWN IN THE ROADWAY PLANS OR AS DIRECTED BY THE ENGINEER.

**TRIANGULAR ISLAND WITH CUT THROUGH**



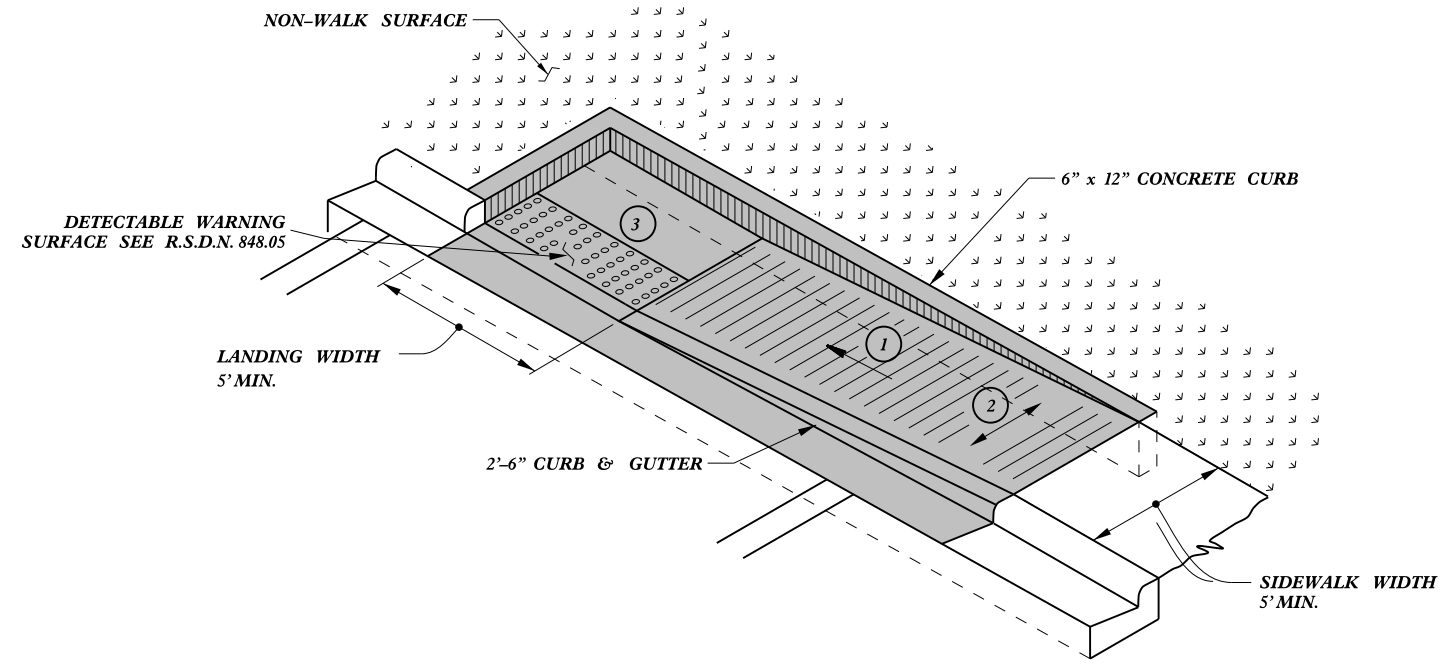
**MEDIAN ISLAND WITH CUT THROUGH**



**MEDIAN ISLAND CURB RAMPS**

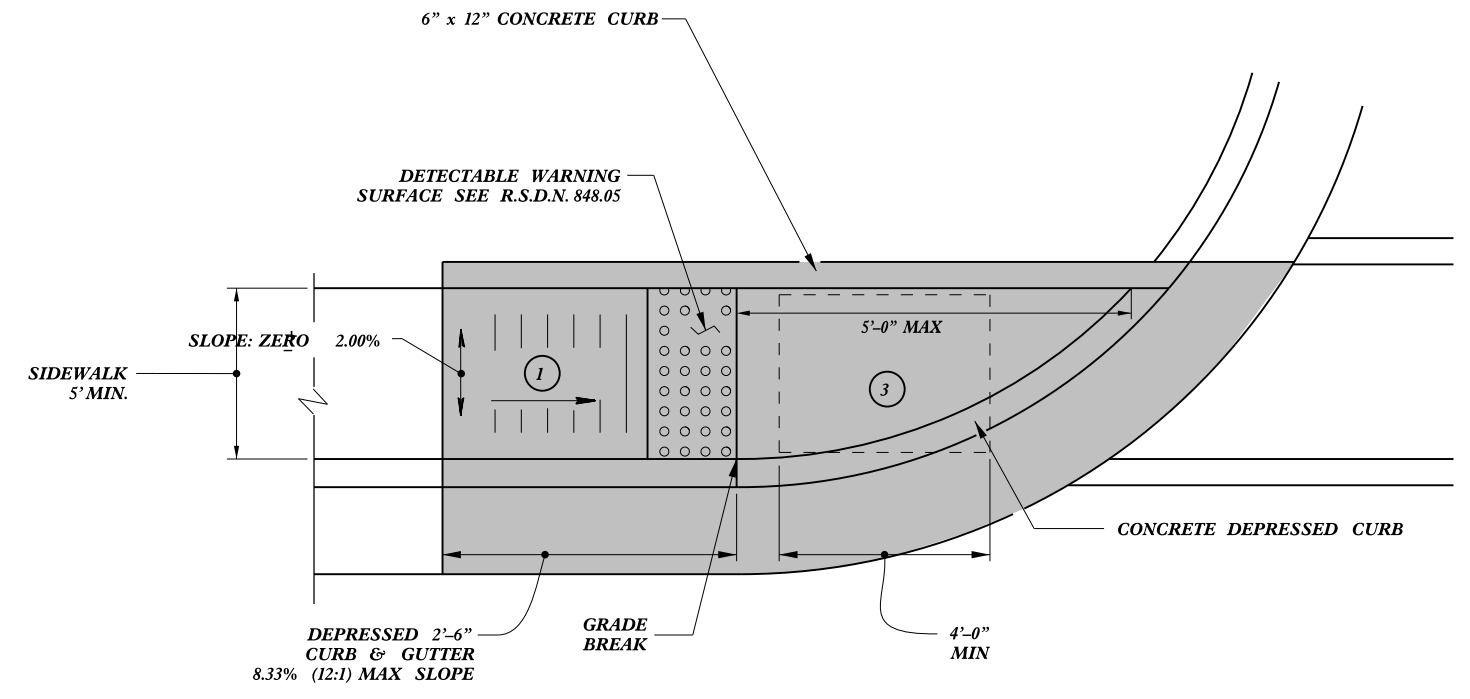
<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>CURB RAMPS</b>	
Median or Turn Lane Islands	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: sstds/2012CurbRamp/CurbRampDetails.dwg	

5/14/99  
C:\P\2012\SS-4903AH\2-H.dwg



PAY LIMITS FOR CURB RAMP

**TYPE 1A**



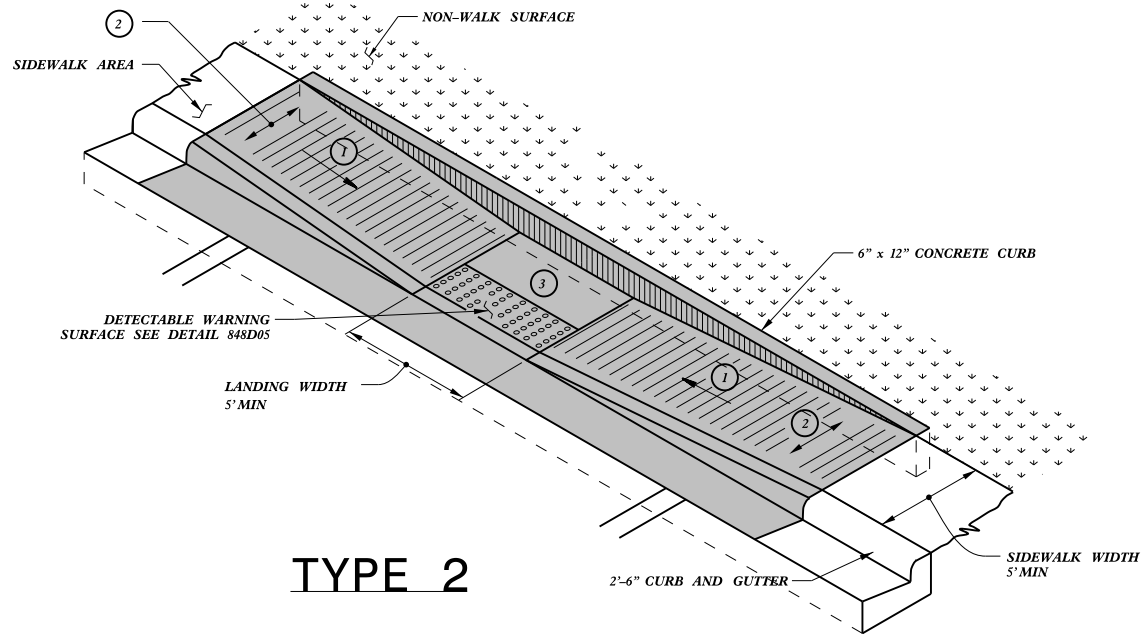
**TYPE 1**

- ① 8.33% (12:1) MAX RAMP SLOPE
- ② CROSS SLOPE: 2.00%
- ③ CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.


REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>CURB RAMPS</b>	
Directional Ramps	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
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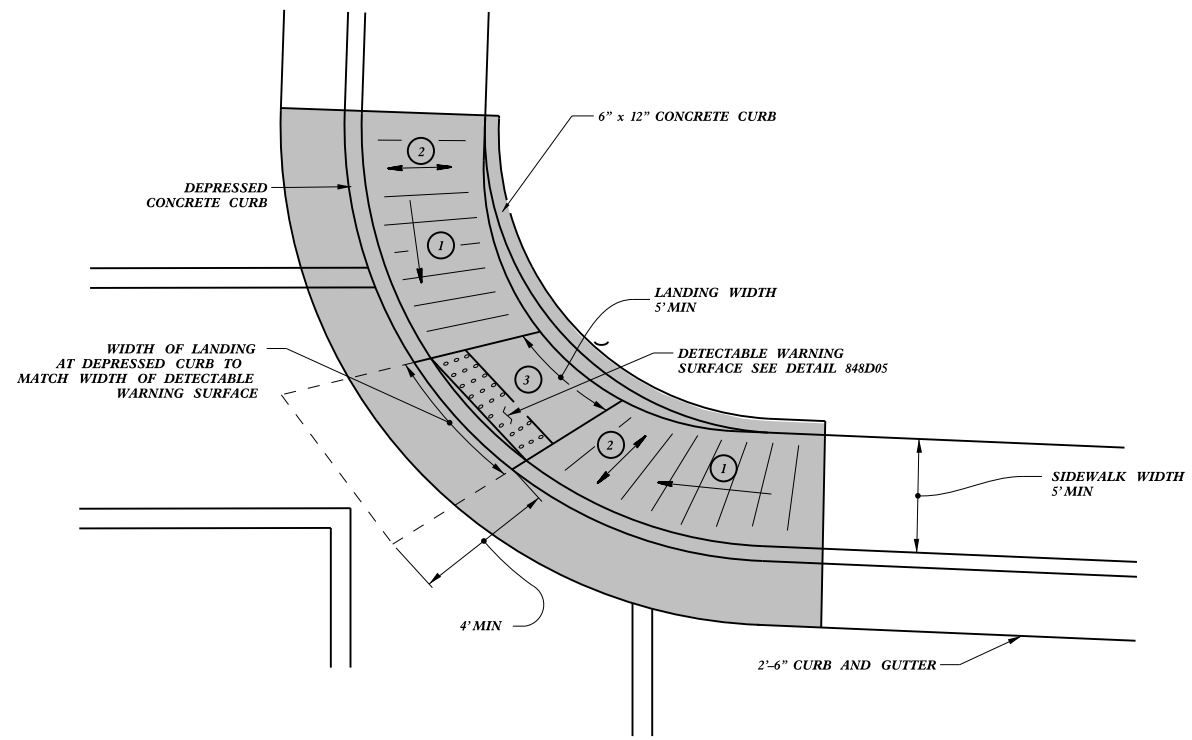
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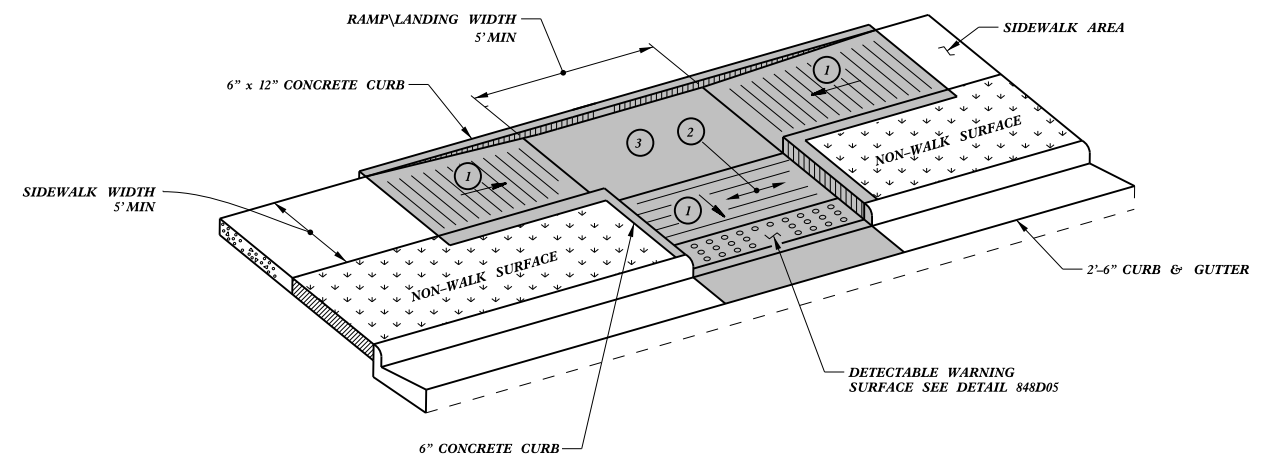
**TYPE 2**

 PAY LIMITS FOR CURB RAMP

- ① 8.33% (12:1) MAX RAMP SLOPE
- ② CROSS SLOPE: 2.00%
- ③ CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



**TYPE 2A**



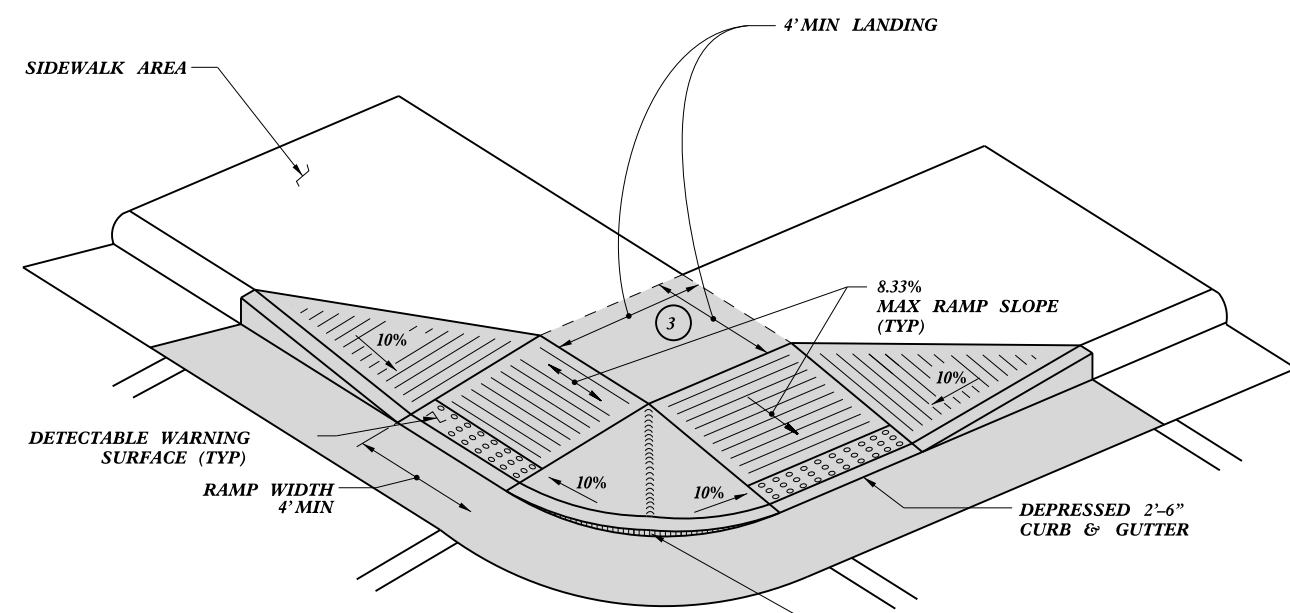
**TYPE 3**

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>CURB RAMPS</b>	
Parallel Ramps	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: sstds/2012CurbRamp/CurbRampDetails.dwg	

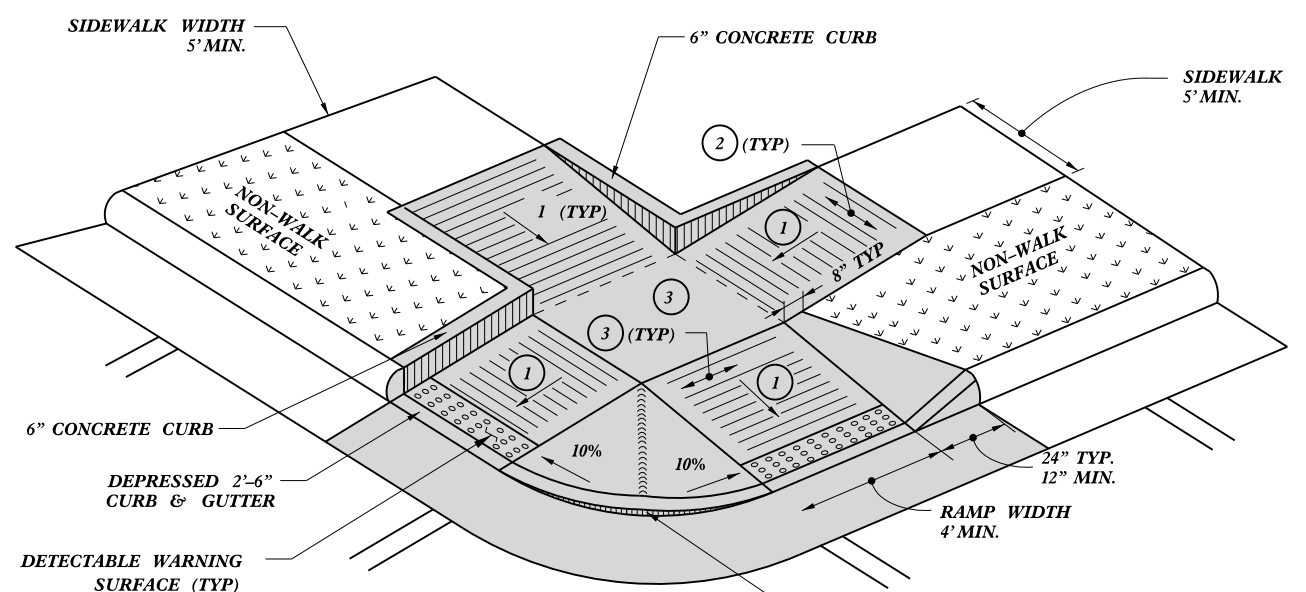
REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

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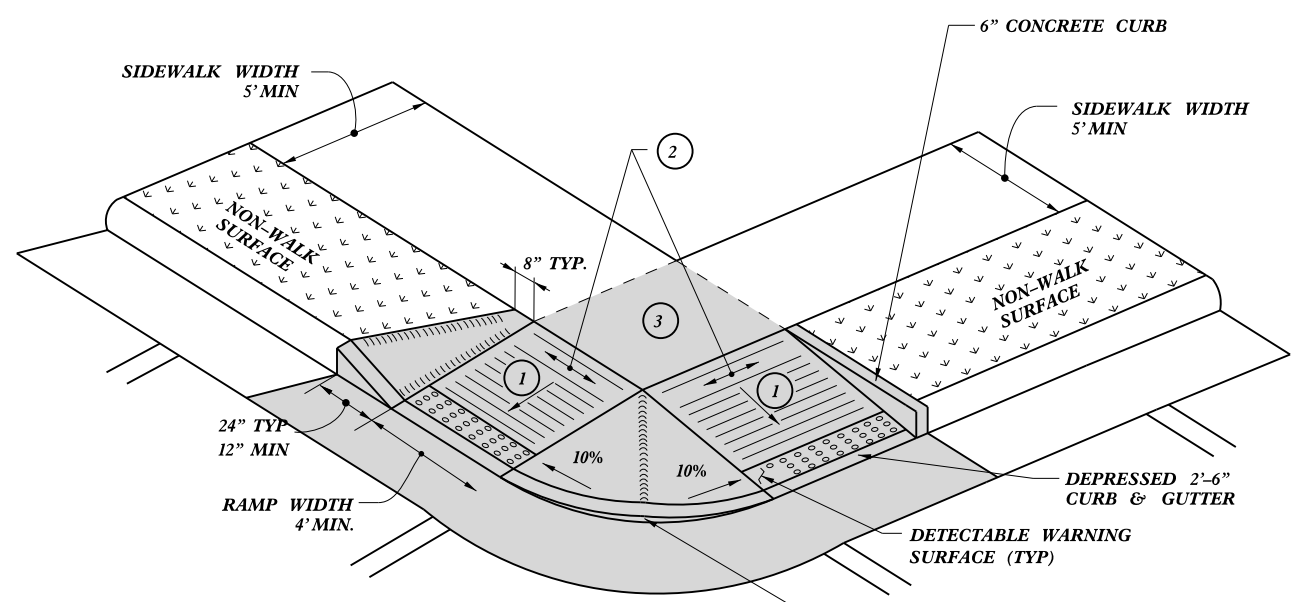
5/14/99



**TYPE 4**



**TYPE 5**



**TYPE 4A**

PAY LIMITS FOR CURB RAMP

- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>CURB RAMPS</b>	
Shared Landing	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: sstds/2012CurbRamp/CurbRampDetails.dwg	

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

23-MAR-2012 15:08  
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 J.Howerton



DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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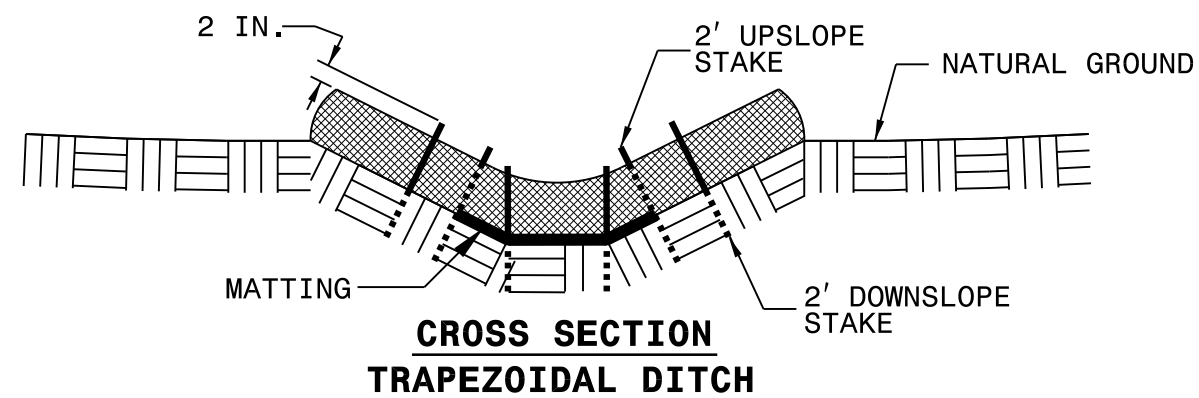
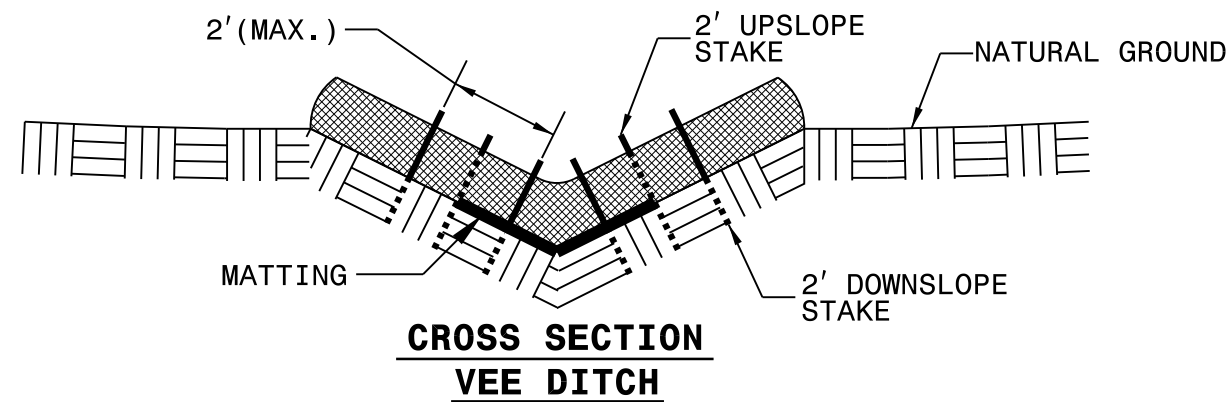
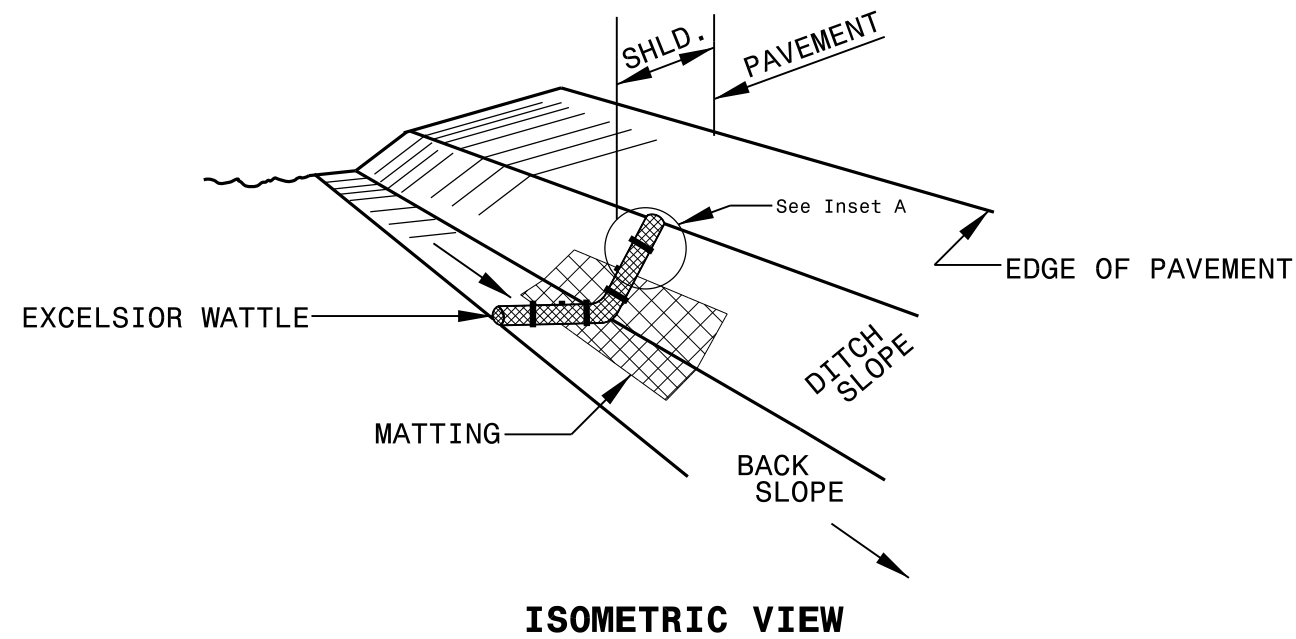


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## ***SOIL STABILIZATION TIMEFRAMES***

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
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.

# WATTLE DETAIL



**NOTES:**

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

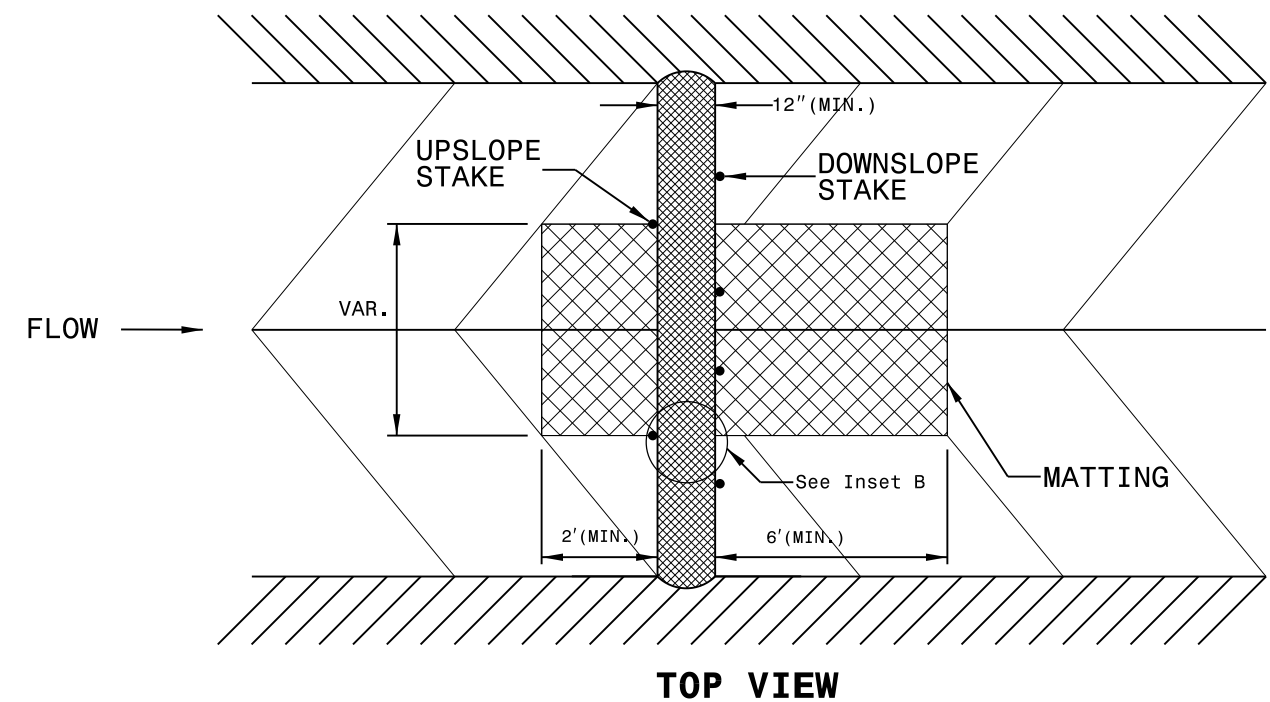
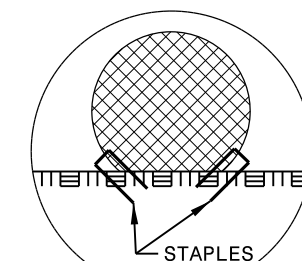
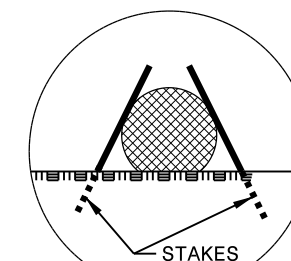
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

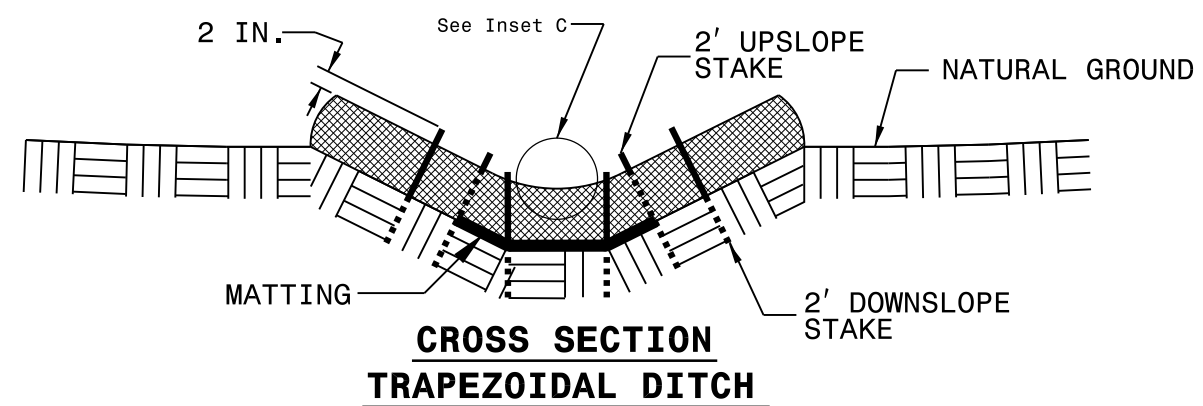
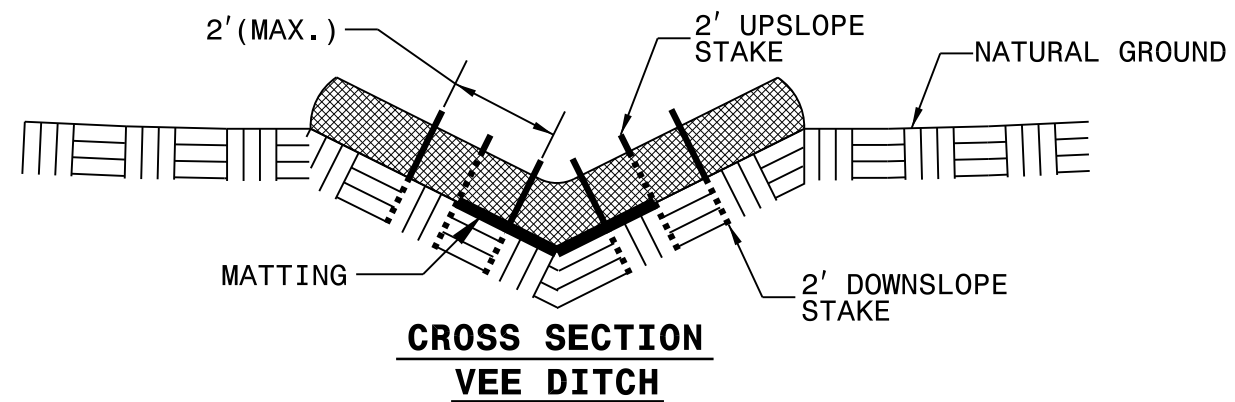
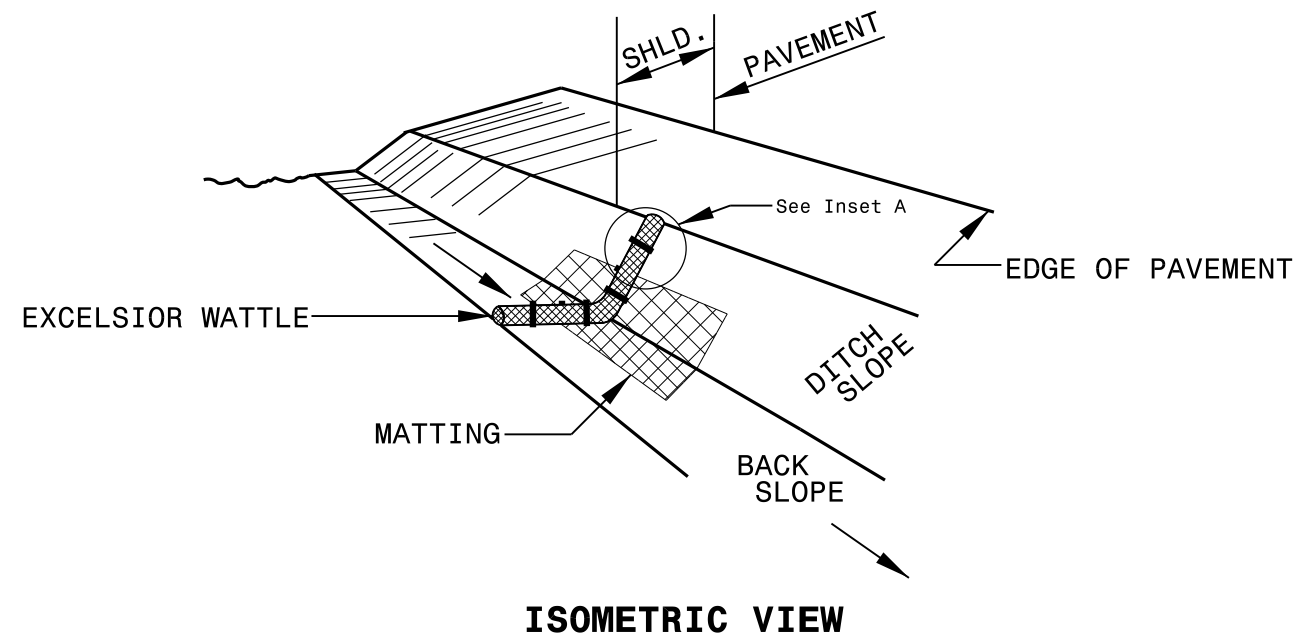
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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.



# 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.

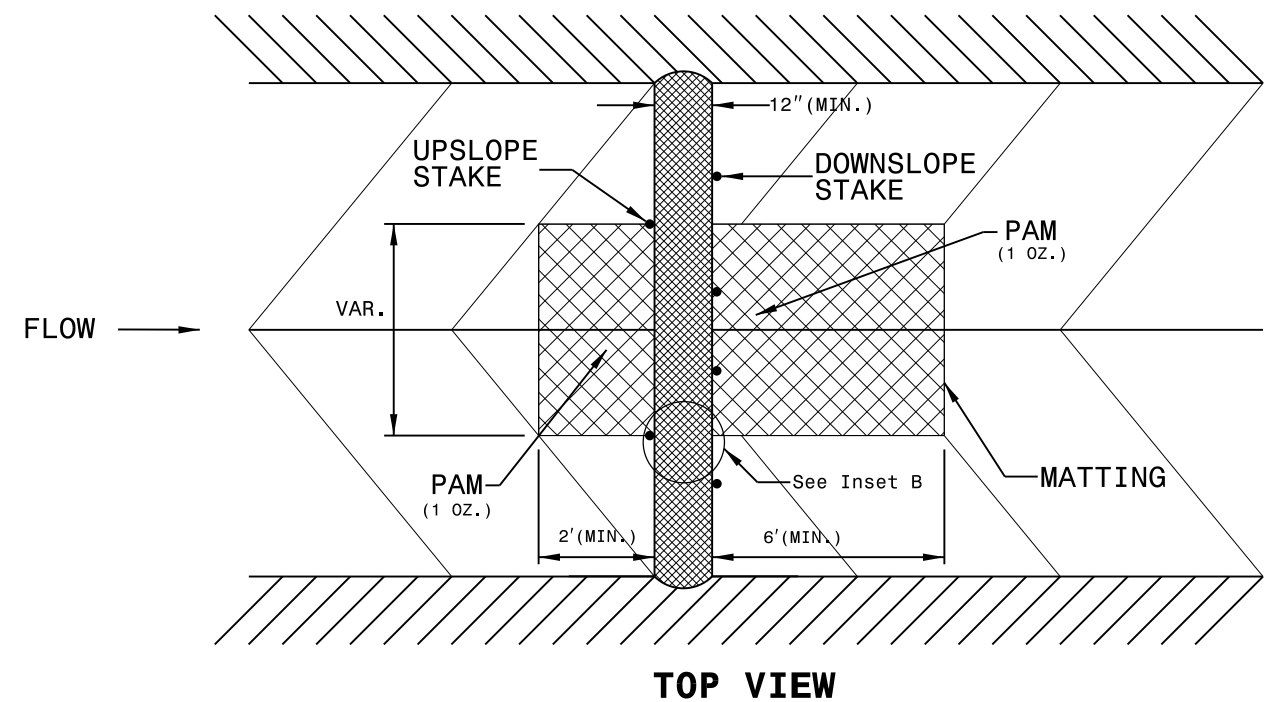
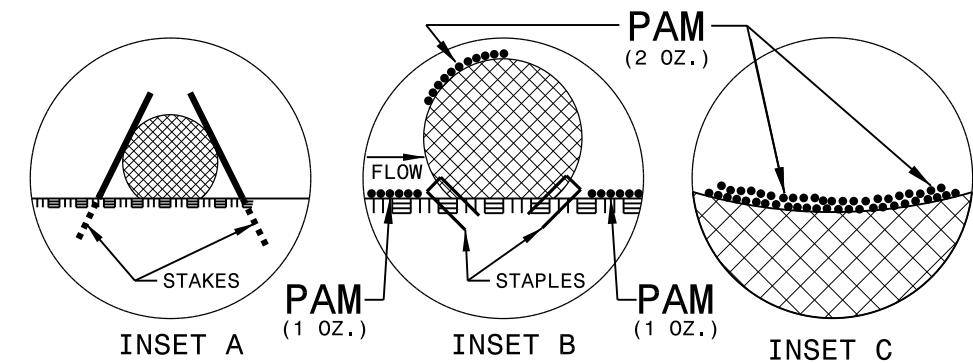
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

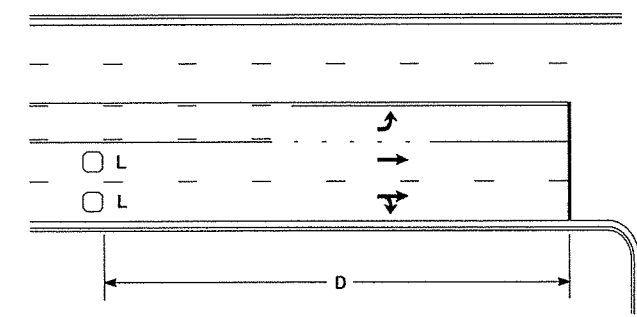
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

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.



### High Speed Detection [≥40 mph (64 km/hr)]

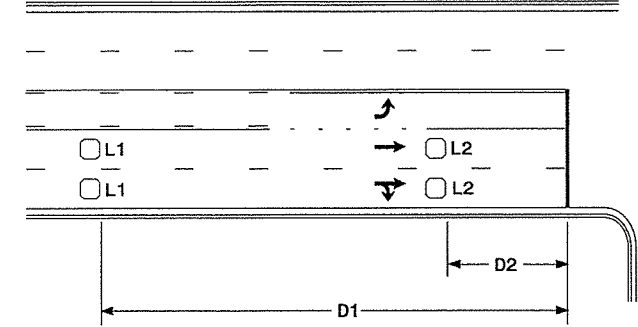


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series for TS1  
Controllers  
Wired separately for TS2,  
170, and 2070L Controllers

Volume Density Operation

OR

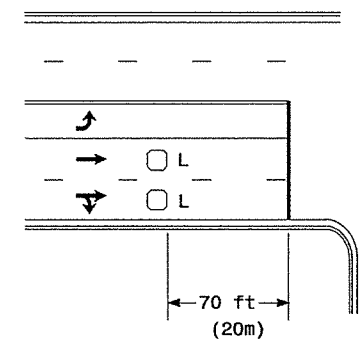


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

L1 = 6ft X 6ft  
(1.8m X 1.8m)  
Wired in series  
L2 = 6ft X 6ft  
(1.8m X 1.8m)  
Wired in series

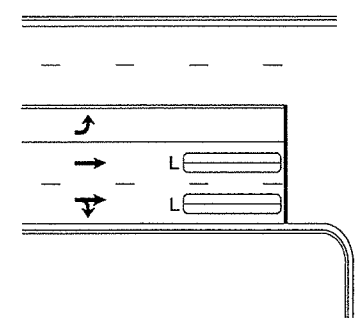
"Stretch" Operation

### Low Speed Detection [≤35 mph (56 km/hr)]



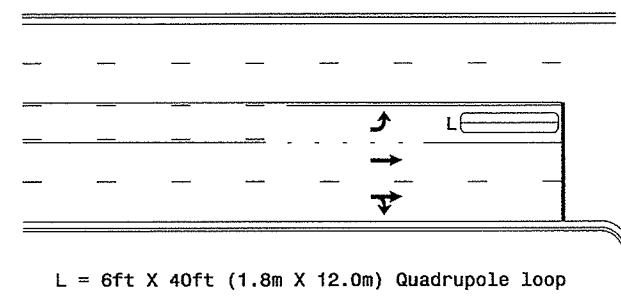
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



L = 6ft X 40ft (1.8m X 12.0m)  
Quadrapole loop, wired separately

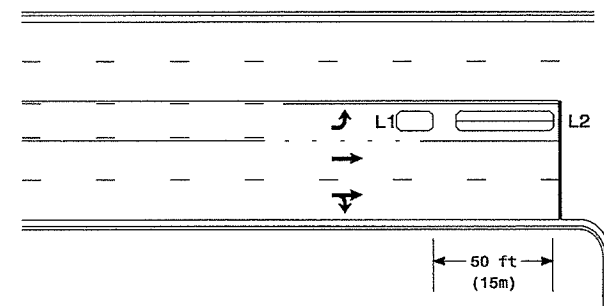
### Left Turn Lane Detection



L = 6ft X 40ft (1.8m X 12.0m) Quadrapole loop

Presence Loop Detection

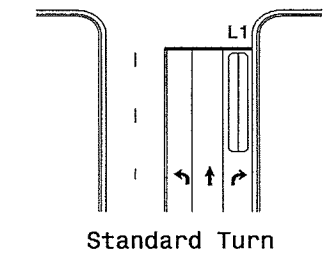
OR



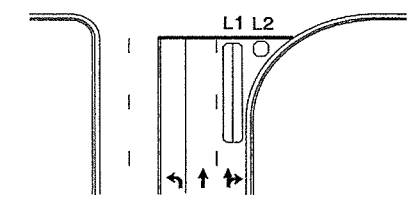
L1 = 6ft X 15ft (1.8m X 4.6m) Queue detector  
L2 = 6ft X 40ft (1.8m X 12.0m) Quadrapole loop

Queue Loop Detection

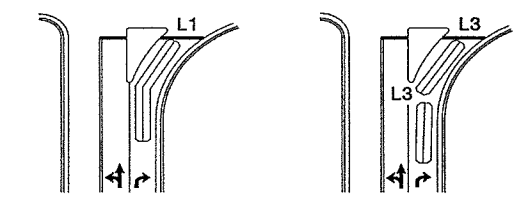
### Right Turn Lane Detection



Standard Turn



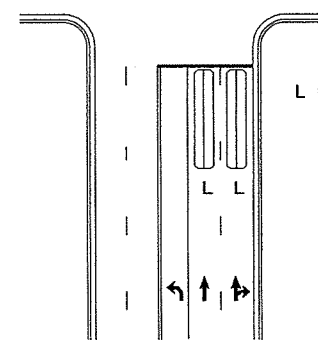
Wide Radius Turn



Channelized Turn

L1 = 6ft X 40ft (1.8m X 12.0m) Quadrapole loop  
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop  
Wired separately  
L3 = 6ft X 20ft (1.8m X 6.0m) Quadrapole loop  
Wired in series

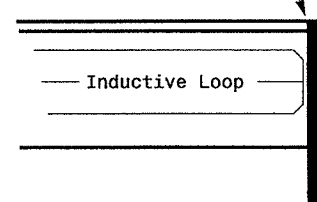
### Side Street Detection



L = 6ft X 40ft (1.8m X 12.0m)  
Quadrapole loop  
Wired to separate  
detectors/channels

### Presence Loop Placement at Stop Lines

Locate loop slightly  
behind leading  
edge of stop line



Note:  
Loop may be located in advance  
of stop line when stop line is  
greater than 15' (4.5m) from edge  
of intersecting roadway; or, when  
loop detects a permissive or  
protected/permissive left turn.

### Recommended Number of Turns

Single 6' X 6' (1.8m X 1.8m)  
loop (wired separately):

Length of Lead-in ft (m)	Number of Turns
< 250 (75)	3
250-375 (75-115)	4
375-525 (115-160)	5
> 525 (160)	6

Quadrapole loops: Use 2-4-2 turns

6' X 15' (1.8m X 4.6m) Loops:  
Lead-in < 150' (45 m), use 2 turns  
Lead-in > 150' (45 m), use 3 turns

19-DEC-2006 14:29 ss-4903ah-1b turn\_inmisclooptyp.cad2006.dgn

	Typical Loop Locations		
	PLAN DATE: June 2006 PREPARED BY: P. L. Alexander	REVIEWED BY: REVIEWED BY:	

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

ENGLISH STANDARD DRAWING FOR  
**DEEP-CUT INDUCTIVE DETECTION LOOPS**  
(FOR INSTALLATION PRIOR TO MILLING)

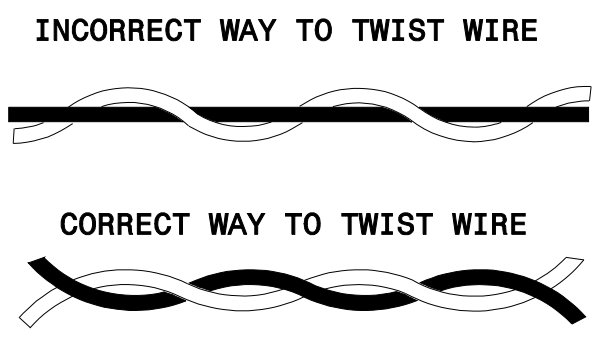
**NOTES**

- OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
- MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
- WIRE LOOPS CONNECTED TO THE SAME DETECTOR IN SERIES.
- LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS.
- USE A SERIES OF ONE INCH PIECES OF BACKER ROD SPACED ONE FOOT APART ALONG THE ENTIRE LENGTH OF THE FEEDER SLOT AND LOOP SAW SLOT.
- CONSULT LOOP SEALANT MANUFACTURER TO DETERMINE CURING TIME REQUIRED PRIOR TO MILLING.

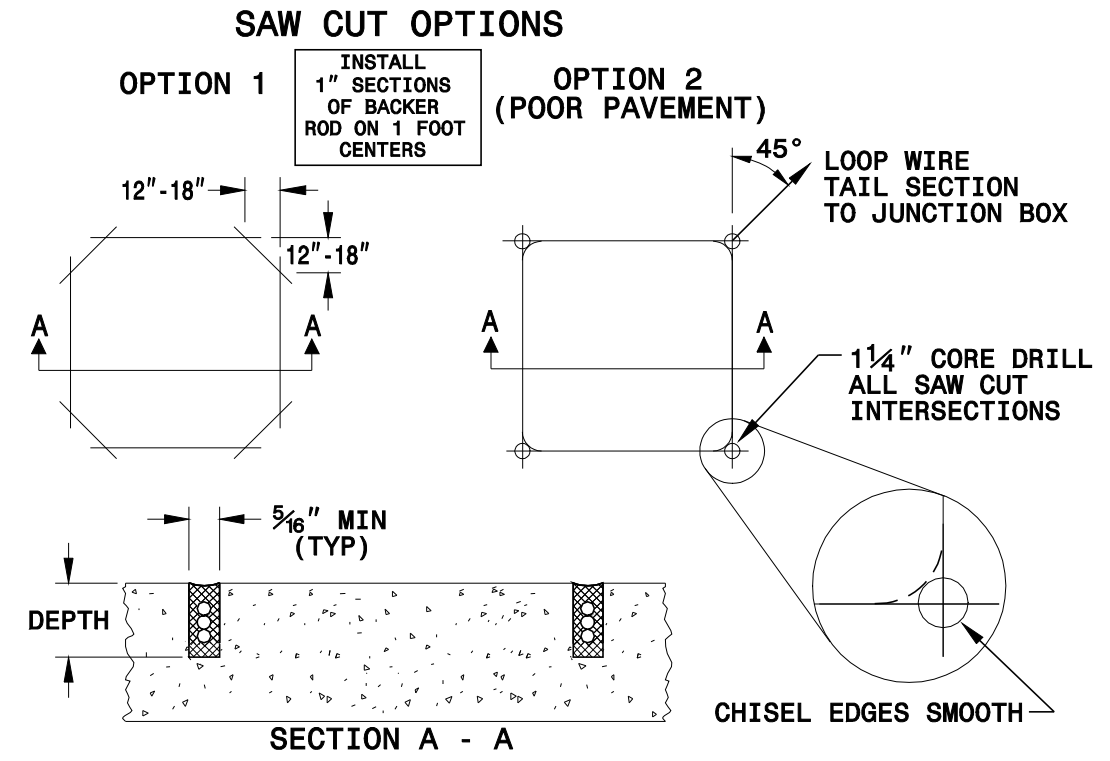
**SAW SLOT DEPTH CHART**  
ASSUMING 2" MILLING DEPTH

DEPTH (IN)	NO. OF WIRE LAYERS				
	2	3	4	5	6
SAW SLOT DEPTH	4.0	4.5	5.0	5.0	5.0
MINIMUM TOTAL ASPHALT DEPTH REQUIRED	5.0	5.5	6.0	6.0	6.0

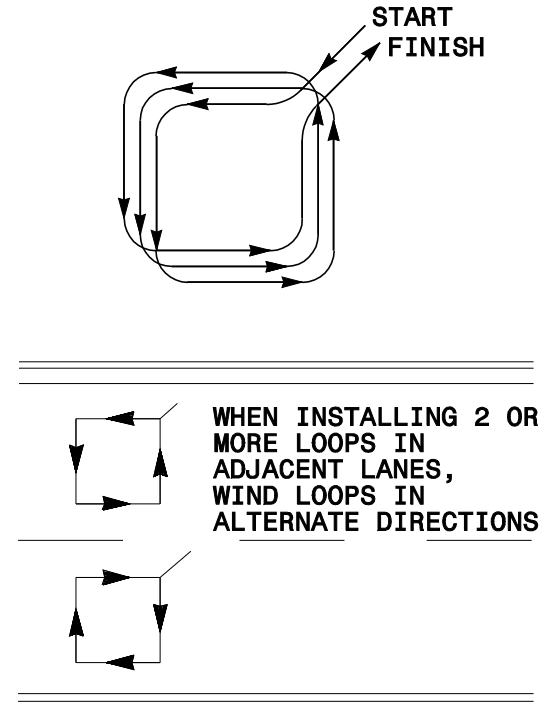
**LOOP WIRE TWISTING METHOD**



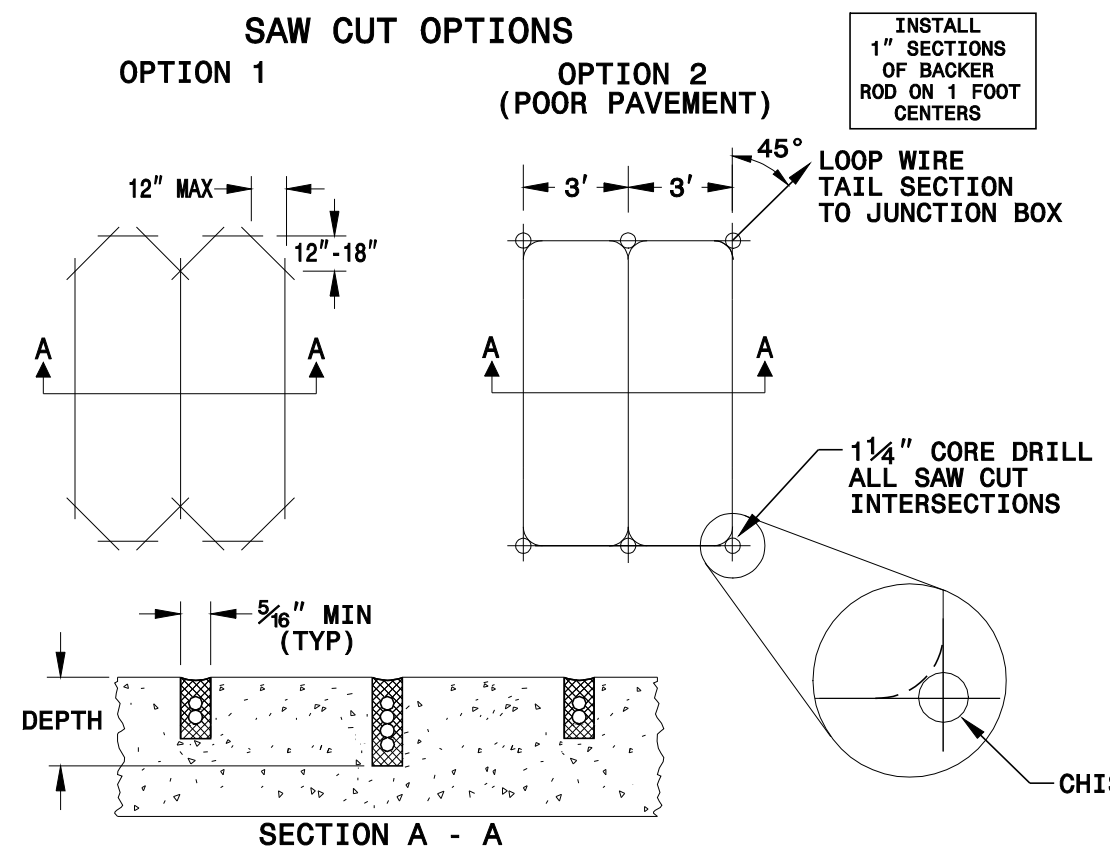
**CONVENTIONAL 4-SIDED LOOP**



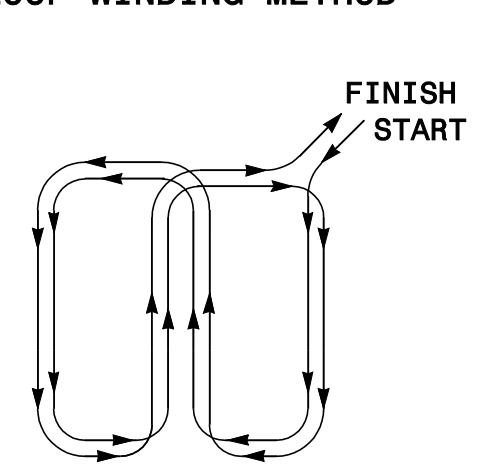
**LOOP WINDING METHOD**



**QUADRUPOLE LOOP**



**LOOP WINDING METHOD**



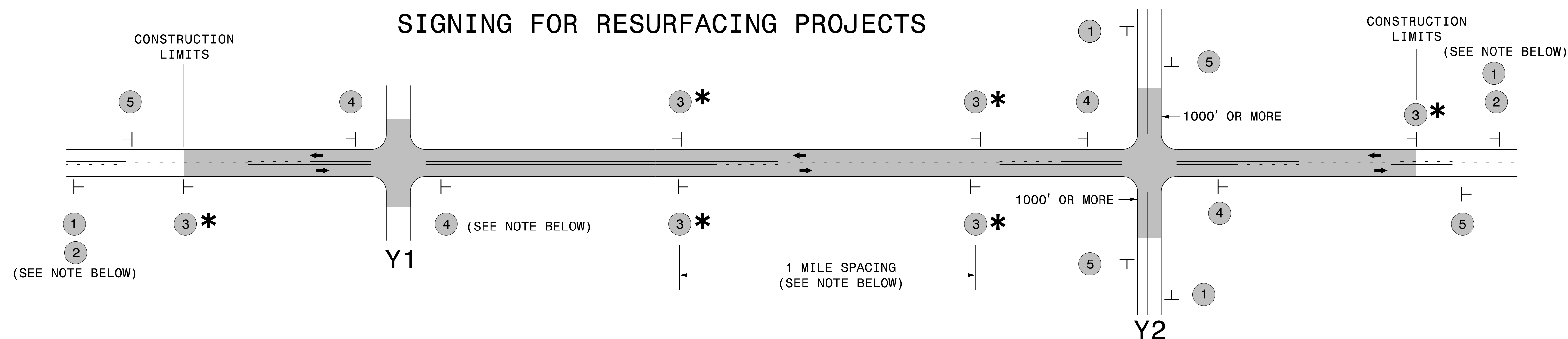
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR  
**DEEP-CUT INDUCTIVE DETECTION LOOPS**  
(FOR INSTALLATION PRIOR TO MILLING)

**REVISIONS**

1	REMOVED TWISTING NOTES FROM TAIL SECTION TO JUNCTION BOX. 2/26/08 MWH
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## SIGNING FOR RESURFACING PROJECTS



LEGEND	
	STATIONARY SIGN
←	DIRECTION OF TRAFFIC FLOW

### MAINLINE (-L-) SIGNING

### -Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION		
1 2		<p style="text-align: center;"><b>NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:</b></p> <ol style="list-style-type: none"> <li>1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE</li> <li>2) SUBDIVISION ROADS</li> <li>3) DEAD END ROADS</li> </ol> <p style="text-align: center;">WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, ADVANCE WARNING PORTABLE SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>W20-1 48" X 48"</p> </div> <div style="text-align: center;"> <p>W20-7 A 48" X 48"</p> </div> </div> <p style="text-align: center;">PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.</p>
3 *		
4		
5		

### \* SIGNING FOR ASPHALT SURFACE TREATMENTS (ONLY)

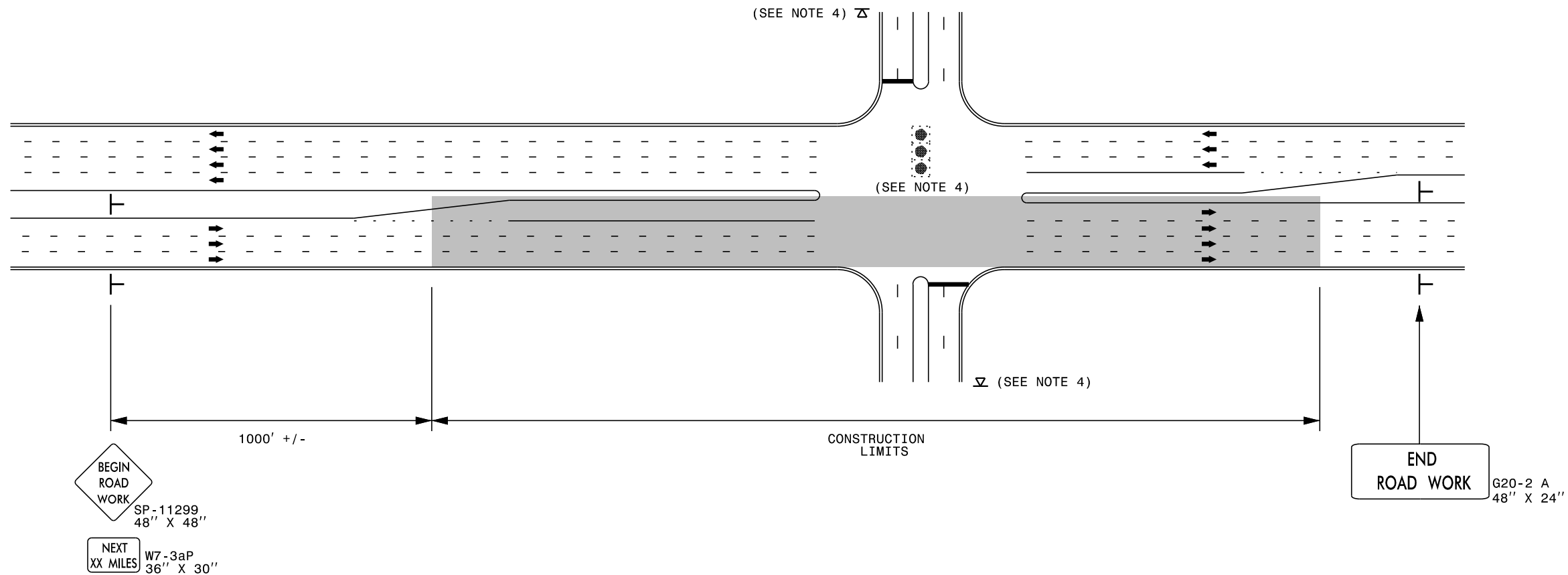
SUBSTITUTE LOW/SOFT SHOULDER SIGNS BY ALTERNATING THE FOLLOWING TWO SIGNS:  
STARTING WITH "UNMARKED PAVEMENT AHEAD" (SP 06026) FOLLOWED BY "LOOSE GRAVEL" (W8-7).



**RESURFACING  
ADVANCE WARNING SIGNS  
FOR  
RURAL AND SUBURBAN  
2 LANE ROADWAYS**

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## URBAN / SUBURBAN WORKZONES



### NOTES:

- 1) 48" x 48" SIZED SIGNS (SP- 11299) MAY BE REDUCED TO 36" X 36" ON ROADWAYS WITH SPEED LIMITS OF 40 MPH OR LESS.
- 2) MOUNT SIGNS THAT ARE LARGER THAN 10 SQUARE FEET IN AREA ON TWO OR MORE WOOD OR U-CHANNEL SUPPORTS. PERFORATED SQUARE TUBING SUPPORT SYSTEMS MAY SUPPORT LARGER AREAS ON A SINGLE SUPPORT. FOLLOW MANUFACTURER'S RECOMMENDATIONS. THESE SYSTEMS SHALL BE NCHRP 350 COMPLIANT AND NCDOT APPROVED.
- 3) ADVANCE WARNING SIGNS NOT REQUIRED ON NON-SIGNALIZED SIDE STREETS.
- 4) MAY USE LAW ENFORCEMENT TO CONTROL TRAFFIC AT SIGNALIZED INTERSECTIONS AS DIRECTED BY THE ENGINEER. PROVIDE PORTABLE "ROAD WORK AHEAD" (W20-1) SIGNS 500' IN ADVANCE ALONG BOTH APPROACHES FROM THE SIDE STREETS WHEN PAVING PROCEEDS THROUGH THE INTERSECTION.
- 5) LATERAL CLEARANCE AT ALL SIGN LOCATIONS SHALL BE 2' AS MEASURED FROM THE EDGE OF PAVEMENT OR THE FACE OF THE CURB. WHEN UNABLE TO OBTAIN THE LATERAL CLEARANCE WITHIN THE MEDIAN AREA USE SHOULDER MOUNTS ONLY.
- 6) SIGN MOUNT LOCATIONS SHALL NOT BLOCK SIDEWALKS OR DRIVEWAYS.
- 7) IF STATIONARY GENERAL WARNING SIGNS ARE USED, THEY WILL BE PAID FOR PER SECTION 104 OF THE NCDOT STANDARD SPECIFICATIONS AS EXTRA WORK.
- 8) IF MILLED AREAS ARE NOT PAVED BACK BY THE END OF THE WORK DAY, PORTABLE SIGNS SHALL BE USED TO WARN DRIVERS OF THE PRESENT CONDITIONS. THESE ARE TO INCLUDE, BUT NOT LIMITED TO "ROUGH ROAD" W8-8, "UNEVEN LANES" W8-11, "GROOVED PAVEMENT" W8-15 w/MOTORCYCLE PLAQUE MOUNTED BELOW. THESE ARE TO BE DOUBLE INDICATED ON MULTI-LANE ROADWAYS WITH SPEED LIMITS 45 MPH AND GREATER WHERE LATERAL CLEARANCE CAN BE OBTAINED WITHIN THE MEDIAN AREAS. THESE PORTABLE SIGNS ARE INCIDENTAL TO THE OTHER ITEMS OF WORK INCLUDED IN THE TEMPORARY TRAFFIC CONTROL (LUMP SUM) PAY ITEM.

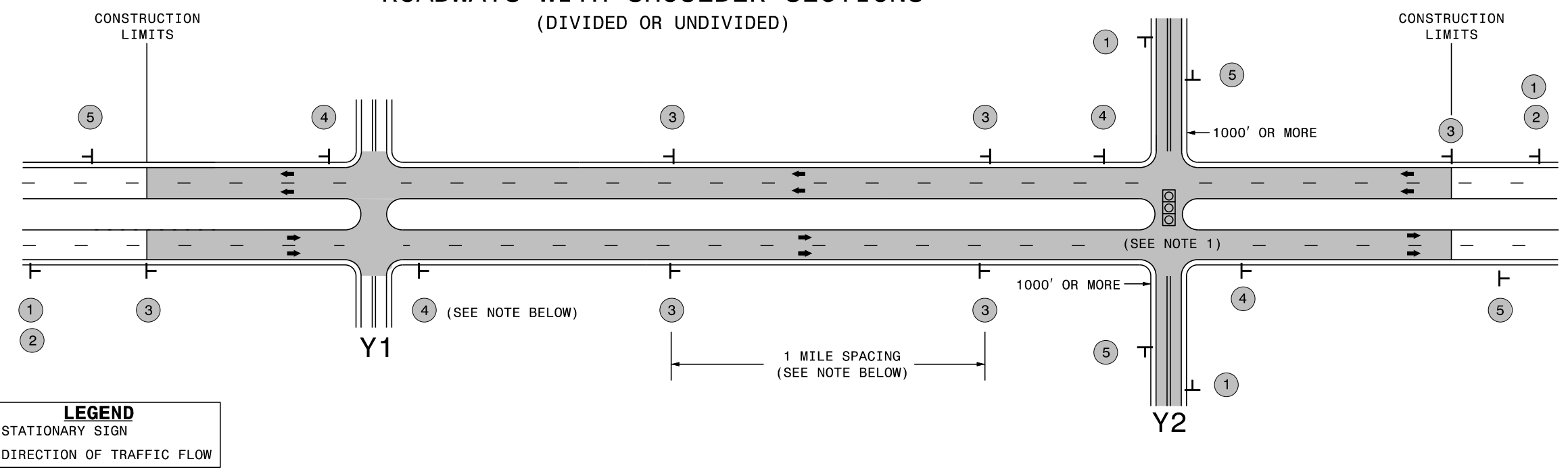
### LEGEND

- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW



**RESURFACING ADVANCE  
WARNING SIGNS FOR  
URBAN / SUBURBAN  
FACILITIES**

## SIGNING FOR RURAL AND SUBURBAN MULTI-LANE ROADWAYS WITH SHOULDER SECTIONS (DIVIDED OR UNDIVIDED)



LEGEND	
⊥	STATIONARY SIGN
←	DIRECTION OF TRAFFIC FLOW

### MAINLINE (-L-) SIGNING

### -Y- LINE SIGNING

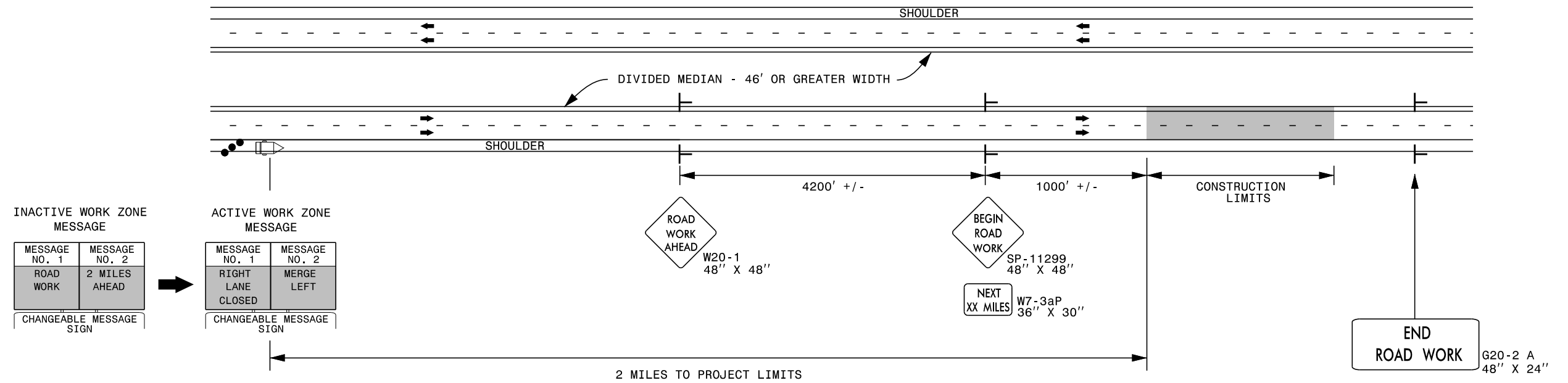
SIGNING NOTES AND PLACEMENT PER DIRECTION	 	<p>PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.</p> <p>#2 SIGN ONLY USED WHEN RESURFACING LIMITS ARE 2 OR MORE MILES IN LENGTH. ROUND UP TO NEXT WHOLE NUMBER. (NO FRACTIONAL OR DECIMAL NUMBERS)</p>	<p>NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:</p> <ol style="list-style-type: none"> <li>1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE</li> <li>2) SUBDIVISION ROADS</li> <li>3) DEAD END ROADS</li> </ol> <p>WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, ADVANCE WARNING PORTABLE SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <small>W20-1 48" X 48"</small> </div> <div style="text-align: center;">   <small>W20-7 A 48" X 48"</small> </div> </div> <p>PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.</p> <p>NOTES:</p> <ol style="list-style-type: none"> <li>1) MAY USE LAW ENFORCEMENT TO CONTROL TRAFFIC AT SIGNALIZED INTERSECTIONS AS DIRECTED BY THE ENGINEER. PROVIDE PORTABLE "ROAD WORK AHEAD" (W20-1) SIGNS 500' IN ADVANCE ALONG BOTH APPROACHES FROM THE SIDE STREETS WHEN PAVING PROCEEDS THROUGH THE INTERSECTION.</li> </ol>
		<p>PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACED 1 MILE APART THEREAFTER. IF NO -Y- LINES EXIST, PLACE 2ND SET 1/2 MILE FROM THE CONSTRUCTION LIMITS AND THEN SPACE 1 MILE THEREAFTER.</p>	
		<p>THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS. DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS. INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE. FOR MULTIPLE -Y- LINES THAT ARE SEPARATED BY 0.25 MILES OR LESS, TREAT AS A SINGLE UNIT AND INSTALL WITHIN 500' OF EACH APPROACH. A MAXIMUM OF 2 SIGN SETS PER MILE. DO NOT INSTALL WHEN -Y- LINES ARE WITHIN 0.5 MILES FROM "END ROAD WORK" SIGN.</p>	
		<p>PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS.</p>	

**RESURFACING  
ADVANCE WARNING SIGNS  
FOR RURAL AND SUBURBAN  
MULTI-LANE ROADWAYS  
W/ SHOULDER SECTIONS  
(DIVIDED OR UNDIVIDED)**

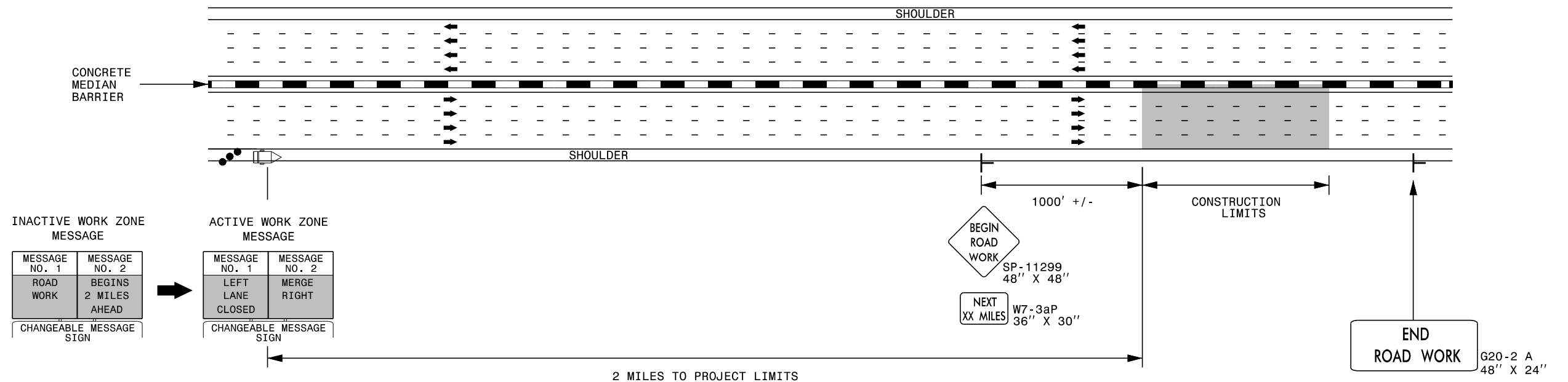
2/24/2014 5:11:10 PM \\TMU\WZTC\Resurfacing\2013\Documents\New\_Procedures\_05\_09\_2013\Resurfacing\_AdvWarn\_UrSu\_Shldr.dgn User:rmgarrrett



## DIVIDED MEDIANS WITH WIDTHS 46' OR GREATER



## DIVIDED MEDIANS WITH WIDTHS LESS THAN 46' OR WITH PERMANENT MEDIAN BARRIER



### NOTES:

- 1) LATERAL CLEARANCE AT ALL SIGN LOCATIONS SHALL BE 6' AS MEASURED FROM THE EDGE OF PAVEMENT.
- 2) MOUNT SIGNS THAT ARE LARGER THAN 10 SQUARE FEET IN AREA ON TWO OR MORE WOOD OR U-CHANNEL SUPPORTS. PERFORATED SQUARE TUBING SUPPORT SYSTEMS MAY SUPPORT LARGER AREAS ON A SINGLE SUPPORT. FOLLOW MANUFACTURER'S RECOMMENDATIONS. THESE SYSTEMS SHALL BE NCHRP 350 COMPLIANT AND NCDOT APPROVED.
- 3) FOR MEDIAN WIDTHS LESS THAN 46' (MEASURED EDGELINE TO EDGELINE) USE THE BOTTOM DRAWING.
- 4) IF STATIONARY GENERAL WARNING SIGNS ARE USED, THEY WILL BE PAID FOR PER SECTION 104 OF THE NCDOT STANDARD SPECIFICATIONS AS EXTRA WORK.
- 5) INSTALL "ROAD WORK AHEAD" (W20-1) ALONG ENTRANCE RAMP 500' PRIOR TO RAMP TERMINAL, AND "END ROAD WORK" (G20-2a) AT THE END OF EXIT RAMP WITHIN THE WORK ZONE.
- 6) IF MILLED AREAS ARE NOT PAVED BACK BY THE END OF THE WORK DAY, PORTABLE SIGNS SHALL BE USED TO WARN DRIVERS OF THE PRESENT CONDITIONS. THESE ARE TO INCLUDE, BUT NOT LIMITED TO "ROUGH ROAD" W8-8, "UNEVEN LANES" W8-11, "GROOVED PAVEMENT" W8-15 w/MOTORCYCLE PLAQUE MOUNTED BELOW. THESE ARE TO BE DOUBLE INDICATED ON MULTI-LANE ROADWAYS WITH SPEED LIMITS 45 MPH AND GREATER AND WITH DIVIDED MEDIANS OF 46' OR GREATER. THESE PORTABLE SIGNS ARE INCIDENTAL TO THE OTHER ITEMS OF WORK INCLUDED IN THE TEMPORARY TRAFFIC CONTROL (LUMP SUM) PAY ITEM.

### LEGEND

- CHANGEABLE MESSAGE SIGN (CMS)
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW
- TRAFFIC DRUM



**RESURFACING ADVANCE  
WARNING SIGNS FOR  
HIGH SPEED FACILITIES  
≥ 60 MPH**

PROJECT NO.	SHEET NO.	TOTAL NO.
SS-4903AH	3	

## SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	CONSTRUCTION SURVEYING LS	CLEARING & GRUBBING .. ACRE(S) LS	UNCLASSIFIED EXC. CY	BORROW EXC. CY	SELECT GRANULAR MAT., CLASS III CY	FOUND. COND. MAT., MINOR STRUCT TON	FOUND. COND. GEO-TEXTILE SY	15" RC PIPE CULVERTS, CLASS III LF	15" RC PIPE CULVERTS, CLASS IV LF	FINE GRADING LS	INC. STONE BASE TONS	SHOULDER CONSTRUCTION SMI	4" MILLING SY	1 1/2" MILLING SY	INC. MILLING SY	BASE COURSE, B25.0C TONS	INT. COURSE, I19.0C TONS	SURFACE COURSE, S9.5B TONS	SURFACE COURSE, S9.5C TONS	LEVELING COURSE, S9.5C TONS	ASPHALT BINDER FOR PLANT MIX TON		
43034	Brunswick	1	US 17	FROM 0.14 MI. SOUTH OF THE INTERSECTION OF US 17/US 17 BUS TO 0.14 MI. NORTH OF THE INTERSECTION OF US17/US 17 BUS (13+65-28+72)		1,2	4	MD	NO	NO	0.28	111	1.00	1.00	36	1,218	36	60	190	360	200	1		0.35	13,095		625	559	2,709		1,419	22	240	
<b>TOTAL FOR MAP NO. 1</b>										<b>0.28</b>		<b>1.00</b>	<b>1.00</b>	<b>36</b>	<b>1,218</b>	<b>36</b>	<b>60</b>	<b>190</b>	<b>360</b>	<b>200</b>	<b>1</b>		<b>0.35</b>	<b>13,095</b>		<b>625</b>	<b>559</b>	<b>2,709</b>		<b>1,419</b>	<b>22</b>	<b>240</b>		
<b>TOTAL FOR PROJ NO. 43034</b>										<b>0.28</b>		<b>1.00</b>	<b>1.00</b>	<b>36</b>	<b>1,218</b>	<b>36</b>	<b>60</b>	<b>190</b>	<b>360</b>	<b>200</b>	<b>1</b>		<b>0.35</b>	<b>13,095</b>		<b>625</b>	<b>559</b>	<b>2,709</b>		<b>1,419</b>	<b>22</b>	<b>240</b>		
3CR.10101.164	Brunswick	2	US 17 BUSINESS	FROM THE INTERSECTION OF US 17/US 17 BUS TO THE INTERSECTION OF US 17 BUS/NC 130		3,4	2	M2	NO	NO	1.82	49.5																						
<b>TOTAL FOR MAP NO. 2</b>										<b>1.82</b>																								
<b>TOTAL FOR PROJ NO. 3CR.10101.164</b>										<b>1.82</b>																								
<b>GRAND TOTAL</b>										<b>2.1</b>		<b>1.00</b>	<b>1.00</b>	<b>36</b>	<b>1,218</b>	<b>36</b>	<b>60</b>	<b>190</b>	<b>360</b>	<b>200</b>	<b>1</b>		<b>0.35</b>	<b>13,095</b>	<b>34,693</b>	<b>625</b>	<b>559</b>	<b>2,709</b>	<b>4,101</b>	<b>1,419</b>	<b>22</b>	<b>486</b>		

PROJECT NO.	SHEET NO.	TOTAL NO.
SS-4903AH	3-A	

**SUMMARY OF QUANTITIES**

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	PATCHING EXISTING PAVEMENT (FULL DEPTH) TONS	PATCHING EXISTING PAVEMENT (MILL) S9.5B TON	WEDGING EXISTING PAVEMENT TONS	PAVEMENT INTERLAYER SY	MASONRY DRAINAGE STRUCT EA	FRAME WITH TWO GRATES, STD 840.22 EA	STEEL FRAME W/2GRT 840.37 EA	CONCRETE TRANSITIONAL SECTION FOR DROP INLET EA	1'-6" CONCRETE CURB & GUTTER LF	REMOVE & REPLACE CURB RAMPS EA	ADJ. OF DROP INLET EA	ADJ. OF MANHOLES EA	ADJ. OF METER OR VALVE BOX EA	CONVERT EXIST DI TO TBJB EA	TEMP. SILT FENCE LF	STONE FOR EROSION CONTROL, CLASS B TON	SEDIMENT CONTROL STONE TON	TEMP MULCHING AC	SEED FOR TEMP. SEEDING LB	FERTILIZER FOR TEMPORARY SEED-ING TON	SILT EXCAVATION CY	MATTING FOR EROSION CONTROL SY	1/4" HARDWARE CLOTH LF	WATTLE LF				
43034	Brunswick	1	US 17	FROM 0.14 MI. SOUTH OF THE INTERSECTION OF US 17/US 17 BUS TO 0.14 MI. NORTH OF THE INTERSECTION OF US17/US 17 BUS (13+65-28+72)		4	MD	NO	60				5	3	1	1	322																			
<b>TOTAL FOR MAP NO. 1</b>									<b>60</b>				<b>5</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>322</b>						<b>1.00</b>	<b>100</b>	<b>14</b>	<b>30</b>	<b>0.28</b>	<b>100</b>	<b>0.50</b>	<b>11</b>	<b>30</b>	<b>154</b>	<b>220</b>			
<b>TOTAL FOR PROJ NO. 43034</b>									<b>60</b>				<b>5</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>322</b>						<b>1.00</b>	<b>100</b>	<b>14</b>	<b>30</b>	<b>0.28</b>	<b>100</b>	<b>0.50</b>	<b>11</b>	<b>30</b>	<b>154</b>	<b>220</b>			
3CR.10101.164	Brunswick	2	US 17 BUSINESS	FROM THE INTERSECTION OF US 17/US 17 BUS TO THE INTERSECTION OF US 17 BUS/NC 130		2	M2	NO		100	5	34,693																								
<b>TOTAL FOR MAP NO. 2</b>										<b>100</b>	<b>5</b>	<b>34,693</b>																								
<b>TOTAL FOR PROJ NO. 3CR.10101.164</b>										<b>100</b>	<b>5</b>	<b>34,693</b>																								
<b>GRAND TOTAL</b>									<b>60</b>	<b>100</b>	<b>5</b>	<b>34,693</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>322</b>	<b>3</b>	<b>6</b>	<b>1</b>	<b>3</b>	<b>1.00</b>	<b>100</b>	<b>14</b>	<b>30</b>	<b>0.28</b>	<b>100</b>	<b>0.50</b>	<b>11</b>	<b>30</b>	<b>154</b>	<b>220</b>				

PROJECT NO.	SHEET NO.	TOTAL NO.
SS-4903AH	3-B	

**SUMMARY OF QUANTITIES**

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	POLYACRYLAMIDE (PAM) LB	SEED & MULCHING AC	SEED FOR REPAIR SEEDING LB	FERTILIZER FOR REPAIR SEEDING TON	SIGNAL CABLE LF	VEHICLE SIGNAL HEAD (12", 1 SECTION) EA	UNPAVED TRENCHING (1 CONDUIT, 2 INCH) LF	JUNCTION BOX (STANDARD SIZE) EA	INDUCTIVE LOOP SAWCUT LF	LEAD-IN CABLE (14-2) LF	SIGN FOR SIGNALS EA	TYPE III PEDESTAL WITH FOUNDATION EA
43034	Brunswick	1	US 17	FROM 0.14 MI. SOUTH OF THE INTERSECTION OF US 17/US 17 BUS TO 0.14 MI. NORTH OF THE INTERSECTION OF US17/US 17 BUS (13+65-28+72)	1,2	4	MD	NO	8	0.28	14	1	310	4	30	2	415		2	2
<b>TOTAL FOR MAP NO. 1</b>									<b>8</b>	<b>0.28</b>	<b>14</b>	<b>1</b>	<b>310</b>	<b>4</b>	<b>30</b>	<b>2</b>	<b>415</b>		<b>2</b>	<b>2</b>
<b>TOTAL FOR PROJ NO. 43034</b>									<b>8</b>	<b>0.28</b>	<b>14</b>	<b>1</b>	<b>310</b>	<b>4</b>	<b>30</b>	<b>2</b>	<b>415</b>		<b>2</b>	<b>2</b>
3CR.10101.164	Brunswick	2	US 17 BUSINESS	FROM THE INTERSECTION OF US 17/US 17 BUS TO THE INTERSECTION OF US 17 BUS/NC 130	3,4	2	M2	NO									2,450	350		
<b>TOTAL FOR MAP NO. 2</b>																	<b>2,450</b>	<b>350</b>		
<b>TOTAL FOR PROJ NO. 3CR.10101.164</b>																	<b>2,450</b>	<b>350</b>		
<b>GRAND TOTAL</b>									<b>8</b>	<b>0.28</b>	<b>14</b>	<b>1</b>	<b>310</b>	<b>4</b>	<b>30</b>	<b>2</b>	<b>2,865</b>	<b>350</b>	<b>2</b>	<b>2</b>

PROJECT NO.	SHEET NO.	TOTAL NO.
SS-4903AH	3-C	

**THERMOPLASTIC AND PAINT QUANTITIES**

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	LENGTH	WIDTH	4413000000-E	4415000000-N	4457000000-N	4480000000-N	4510000000-N	4685000000-E		4686000000-E		4695000000-E	4700000000-E	4702000000-E	4710000000-E	4725000000-E				4810000000-E		4820000000-E
										WORK ZONE ADVANCE/GENERAL WARNING SIGNING SF	FLASHING ARROW BOARD EA	TEMPORARY TRAFFIC CONTROL LS	TMA EA	LAW ENFORCEMENT HR	4" X 90 M YELLOW THERMO LF	4" X 90 M WHITE THERMO LF	4" X 120 M WHITE THERMO LF	4" X 120 M YELLOW THERMO LF	8" X 90 M WHITE THERMO LF	12" X 90 M WHITE THERMO LF	12" X 120 M WHITE THERMO LF	24" X 120 M WHITE THERMO LF	THERMO RT ARROW 90 M EA	THERMO LT ARROW 90 M EA	THERMO STR ARROW 90 M EA	THERMO STR & RT ARROW 90 M EA	4" WHITE PAINT LF	4" YELLOW PAINT LF	8" WHITE PAINT LF
43034	Brunswick	1	US 17	FROM 0.14 MI. SOUTH OF THE INTERSECTION OF US 17/US 17 BUS TO 0.14 MI. NORTH OF THE INTERSECTION OF US17/US 17 BUS (13+65-28+72)	1,2	4	MD	0.28	111	316	2	0.73	2	40	2,635	3,555	668		2,033	397		322	3	5	9		4,223	2,635	2,033
<b>TOTAL FOR MAP NO. 1</b>								<b>0.28</b>		<b>316</b>	<b>2</b>	<b>0.73</b>	<b>2</b>	<b>40</b>	<b>2,635</b>	<b>3,555</b>	<b>668</b>		<b>2,033</b>	<b>397</b>		<b>322</b>	<b>3</b>	<b>5</b>	<b>9</b>		<b>4,223</b>	<b>2,635</b>	<b>2,033</b>
<b>TOTAL FOR PROJ NO. 43034</b>								<b>0.28</b>		<b>316</b>	<b>2</b>	<b>0.73</b>	<b>2</b>	<b>40</b>	<b>2,635</b>	<b>3,555</b>	<b>668</b>		<b>2,033</b>	<b>397</b>		<b>322</b>	<b>3</b>	<b>5</b>	<b>9</b>		<b>4,223</b>	<b>2,635</b>	<b>2,033</b>
															6,190		668						17				6,858		
3CR.10101.164	Brunswick	2	US 17 BUSINESS	FROM THE INTERSECTION OF US 17/US 17 BUS TO THE INTERSECTION OF US 17 BUS/NC 130	3,4	2	M2	1.82	49.5	208		0.27		80	160	19,430	530	22,210	178		50	214	4	28	3	3	19,960	22,370	178
<b>TOTAL FOR MAP NO. 2</b>								<b>1.82</b>		<b>208</b>		<b>0</b>		<b>80</b>	<b>160</b>	<b>19,430</b>	<b>530</b>	<b>22,210</b>	<b>178</b>		<b>50</b>	<b>214</b>	<b>4</b>	<b>28</b>	<b>3</b>	<b>3</b>	<b>19,960</b>	<b>22,370</b>	<b>178</b>
<b>TOTAL FOR PROJ NO. 3CR.10101.164</b>								<b>1.82</b>		<b>208</b>		<b>0</b>		<b>80</b>	<b>160</b>	<b>19,430</b>	<b>530</b>	<b>22,210</b>	<b>178</b>		<b>50</b>	<b>214</b>	<b>4</b>	<b>28</b>	<b>3</b>	<b>3</b>	<b>19,960</b>	<b>22,370</b>	<b>178</b>
															19,590		22,740						38				42,330		
<b>GRAND TOTAL</b>								<b>2.1</b>		<b>524</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>120</b>	<b>2,795</b>	<b>22,985</b>	<b>1,198</b>	<b>22,210</b>	<b>2,211</b>	<b>397</b>	<b>50</b>	<b>536</b>	<b>7</b>	<b>33</b>	<b>12</b>	<b>3</b>	<b>24,183</b>	<b>25,005</b>	<b>2,211</b>
															25,780		23,408						55				49,188		

PROJECT NO.	SHEET NO.	TOTAL NO.
SS-4903AH	3-D	

**THERMOPLASTIC AND PAINT QUANTITIES**

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	4825000000-E	4835000000-E	4845000000-N				4900000000-N	4905000000-N	
							12" WHITE PAINT LF	24" WHITE PAINT LF	PAINT RT ARROW EA	PAINT STR ARROW EA	PAINT LT ARROW EA	PAINT STR & RT ARROW EA	YELLOW & YELLOW MARKERS EA	SNOW PLOWABLE MARKERS (C/R) EA	SNOW PLOWABLE MARKERS (Y/Y) EA
43034	Brunswick	1	US 17	FROM 0.14 MI. SOUTH OF THE INTERSECTION OF US 17/US 17 BUS TO 0.14 MI. NORTH OF THE INTERSECTION OF US17/US 17 BUS (13+65-28+72)	1,2	4	397	322	3	9	5		32	127	
<b>TOTAL FOR MAP NO. 1</b>							397	322	3	9	5		32	127	
<b>TOTAL FOR PROJ NO. 43034</b>							397	322	3	9	5		32	127	
							17				127				
3CR.10101.164	Brunswick	2	US 17 BUSINESS	FROM THE INTERSECTION OF US 17/US 17 BUS TO THE INTERSECTION OF US 17 BUS/NC 130	3,4	2	50	214	4	3	28	3	47	178	
<b>TOTAL FOR MAP NO. 2</b>							50	214	4	3	28	3	47	178	
<b>TOTAL FOR PROJ NO. 3CR.10101.164</b>							50	214	4	3	28	3	47	178	
							38				225				
<b>GRAND TOTAL</b>							447	536	7	12	33	3	32	174	178
							55				352				

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
SUB-REGIONAL & REGIONAL

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

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

Table with columns: STATION, SIZE, THICKNESS OR GAUGE, LOCATION (RT, OR, CU), STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, SLOPE CRITICAL, DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC), C.S. PIPE, R.C. PIPE (CLASS III), R.C. PIPE (CLASS IV), ENDWALLS, QUANTITIES FOR STRUCTURES, FRAME GRATES AND HOOD STANDARD 840.03, CONCRETE TRANSITIONAL SECTION, TYPE OF GRATE, CATCH BASIN, DROP INLET, D.I. FRAME & GRATE STD. 840.16, G.D.I. FRAME WITH GRATE STD. 840.22, G.D.I. FRAME WITH TWO GRATES STD. 840.24, T.B.D.I. FRAME WITH TWO GRATES STD. 840.36, STEEL GRATE AND FRAME STD. 840.37, CONY. EMST. D.I. TO T.B.J.B., CONC. COLLARS CL. 'B' C.Y. STD. 840.72, CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71, PIPE REMOVAL LIN. FT., REMARKS, ABBREVIATIONS (C.B., N.D.I., D.I., G.D.I., G.D.I. (N.S.), T.B.D.I., T.B.J.B., J.B., M.H., T.B.D.I., T.B.J.B.).

# SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV. (C.Y.)	EMBANK. + 25% (C.Y.)	BORROW (C.Y.)	SUITABLE WASTE (C.Y.)
(NB) -L1- 14 + 50	-L1- 20 + 50	36	148	112	
(SB) -L1- 22 + 00	-L1- 28 + 50	0	1106	1106	
PROJECT TOTALS:		36	1254	1218	
GRAND TOTALS:		36	1254	1218	
SAY:		36	-	1218	-

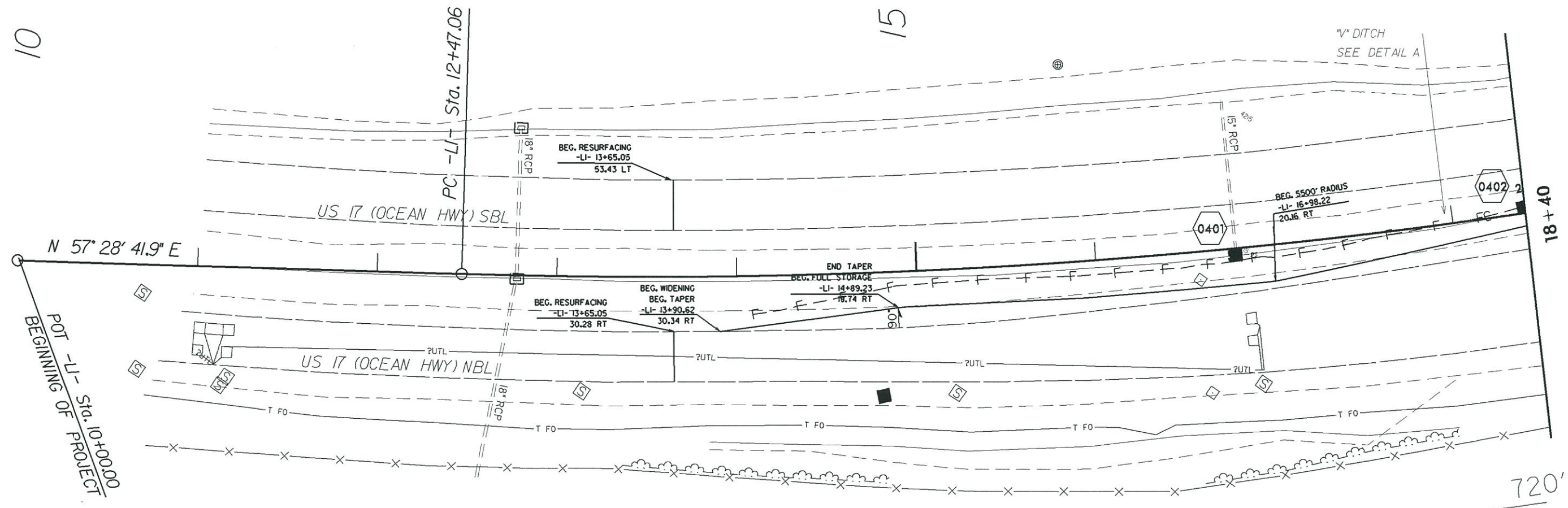
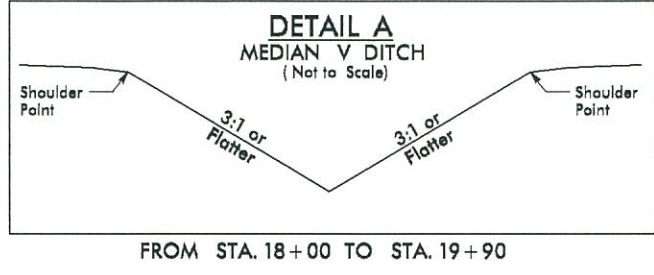
NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, SHOULDER BORROW, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

10-SEP-2014 10:32  
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 6/21/00





9/12/19  
 DIVISION DESIGN ENGINEER



PI - LI - Sta 21+09.58  
 $\Delta = 28^\circ 28' 09.0''$  (LT)  
 $D = 1' 41' 06.6''$   
 $L = 1,689.39'$   
 $T = 862.52'$   
 $R = 3,400.00'$

REVISIONS

10-SEP-2014 14:30 D:\BRUNSWICK\US 17-US 17 BUS. SHALLOTTE OFFSET LEFTS\ROADWAY\ProJ\43034\_psh4.dgn  
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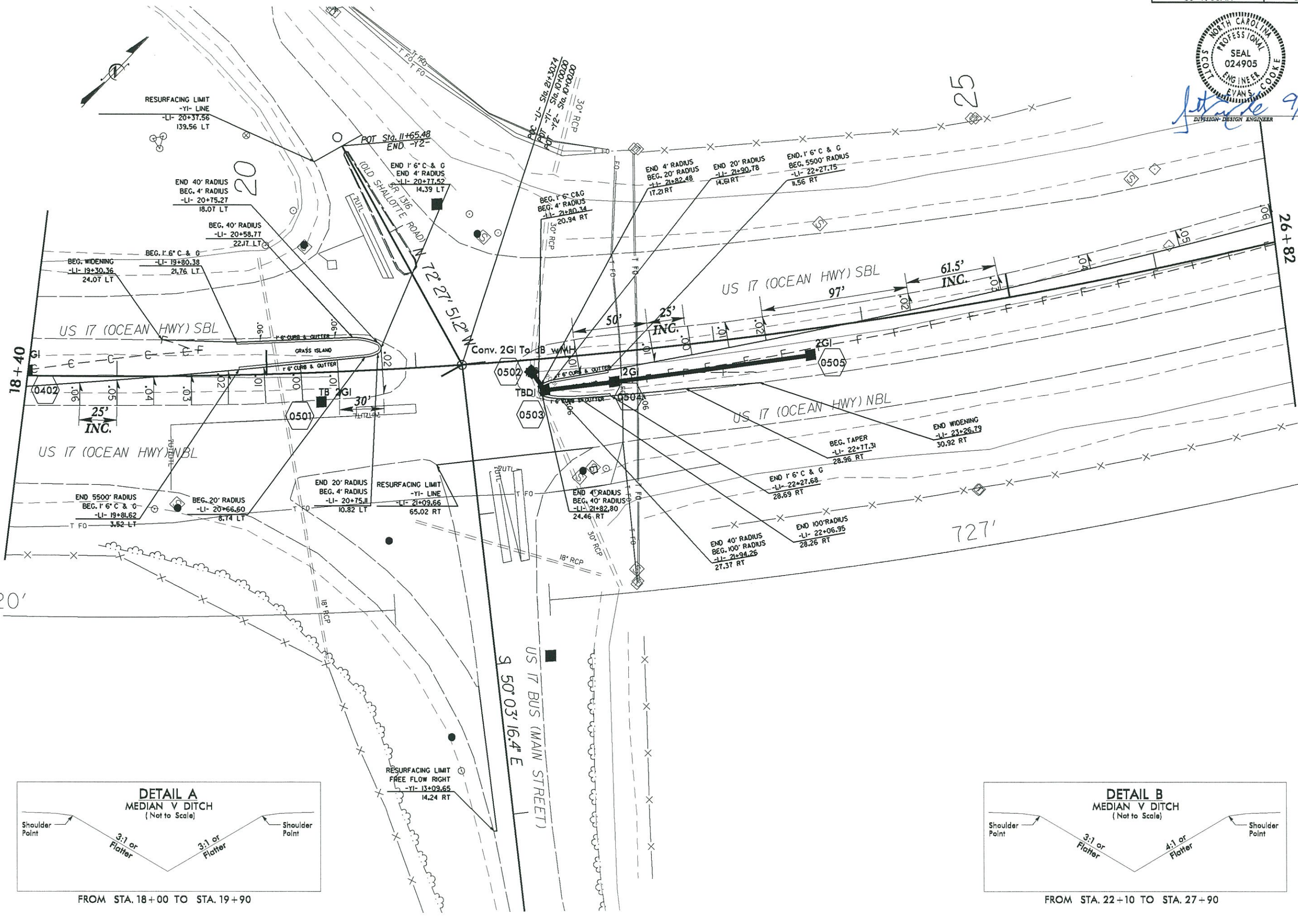
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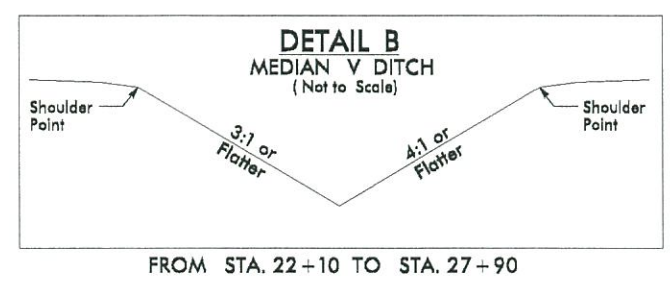
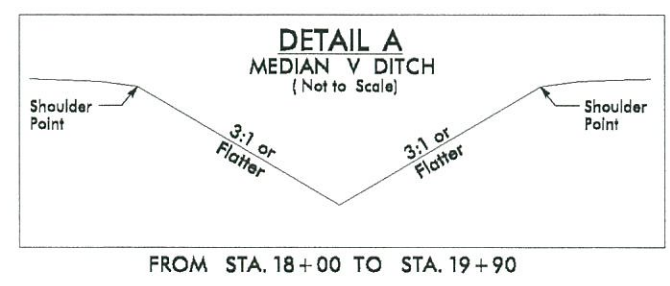
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8/17/99  
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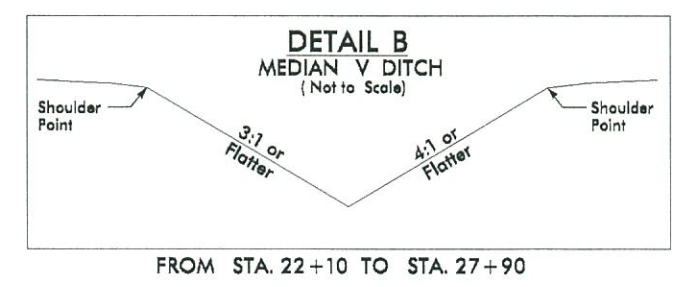
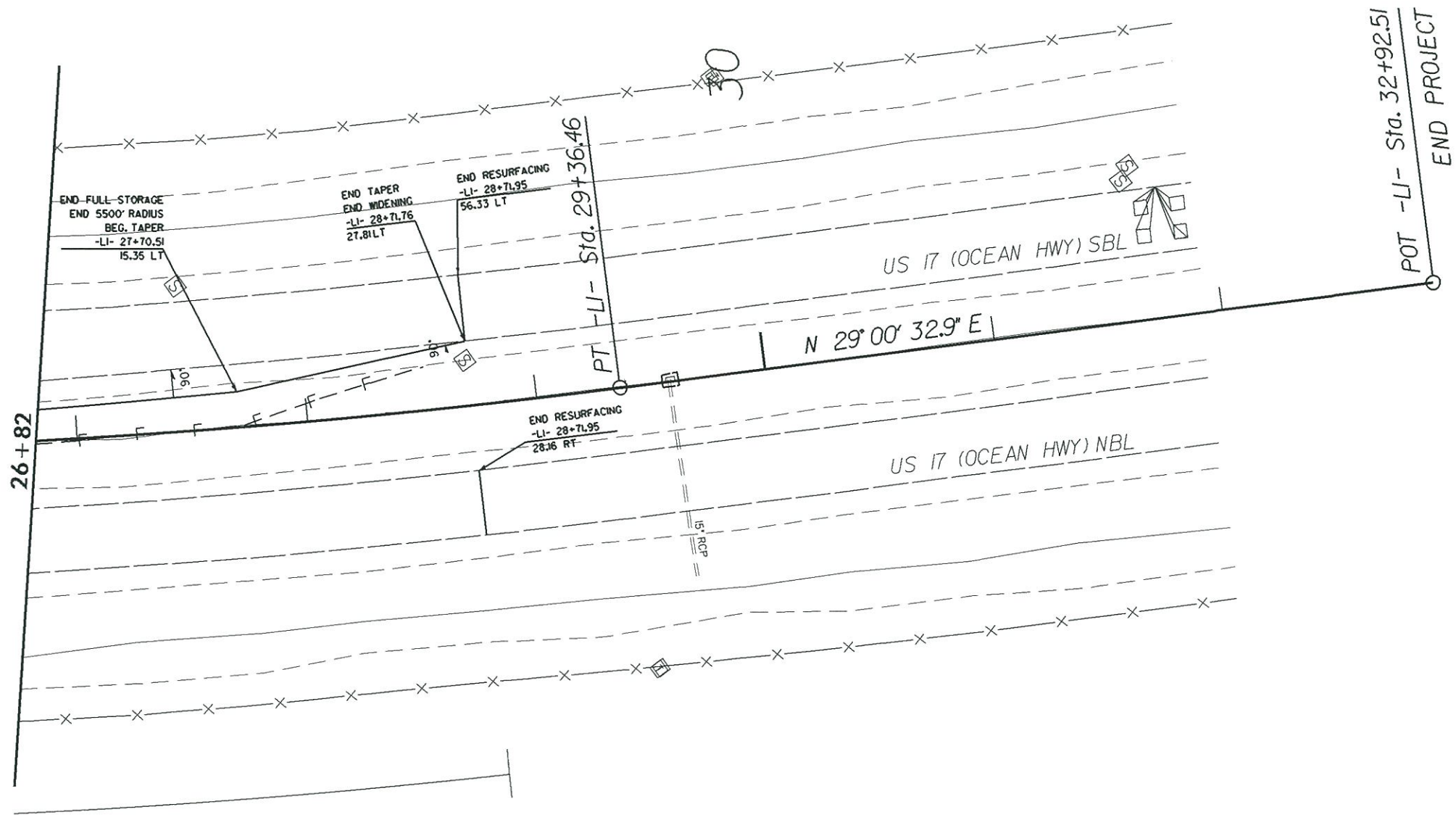
REVISIONS



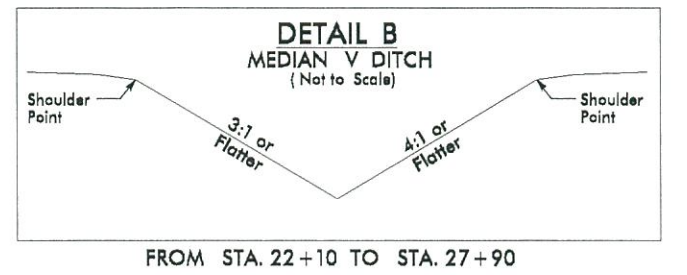
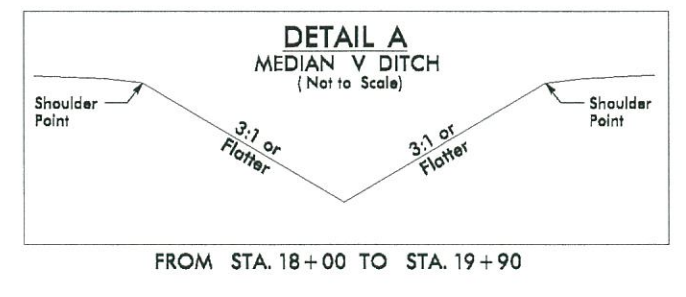
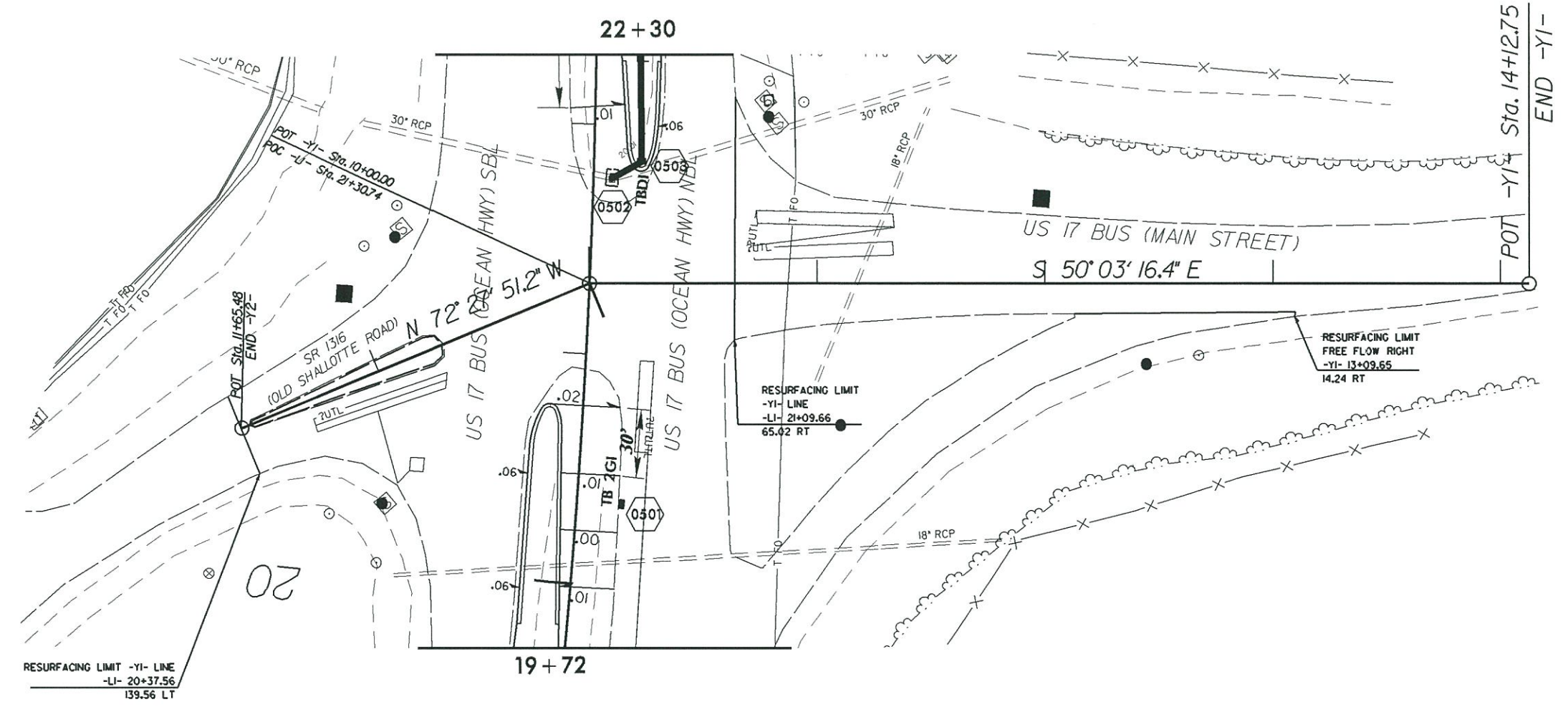


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8/17/09  
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 11/16/2014



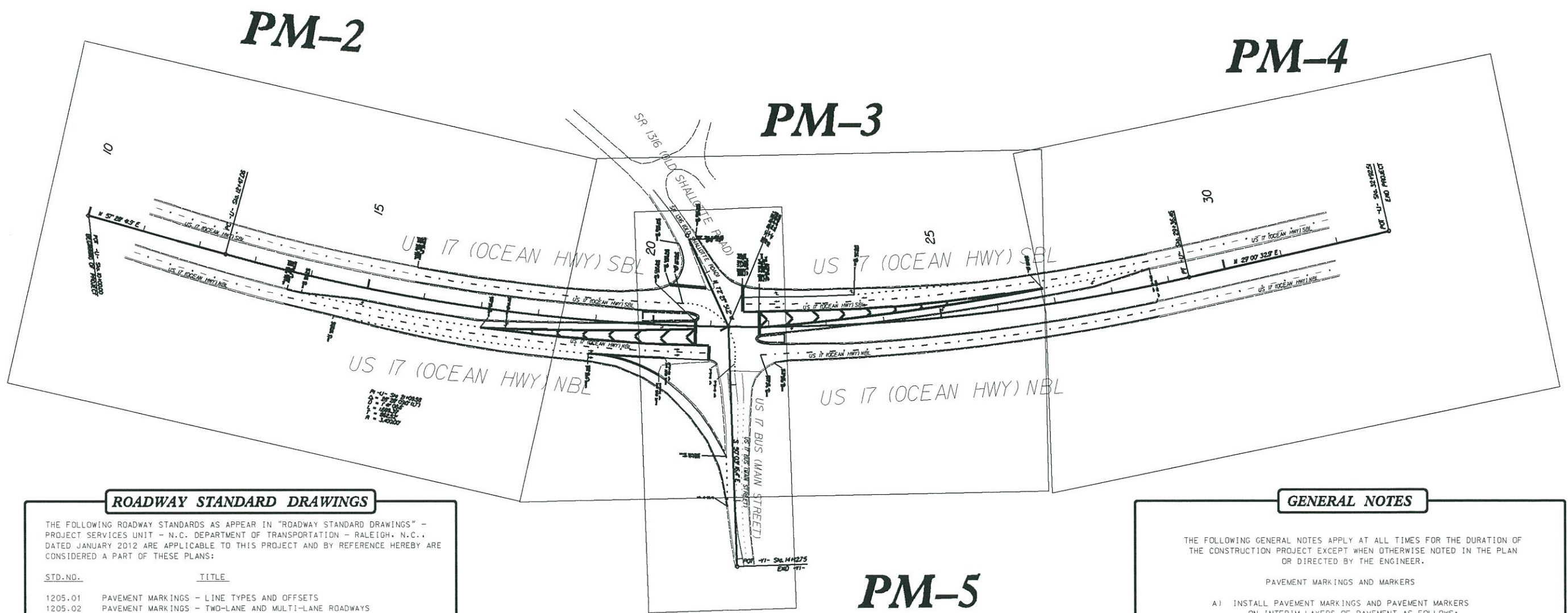
FROM STA. 22+10 TO STA. 27+90



REVISIONS

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 8/17/99

# BRUNSWICK COUNTY NC 17 - OCEAN HIGHWAY PAVEMENT MARKINGS AND SHEET LAYOUT -L1-



ROADWAY STANDARD DRAWINGS	
STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMP
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
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1250.03	RAISED PAVEMENT MARKERS - SNOWPLOWABLE

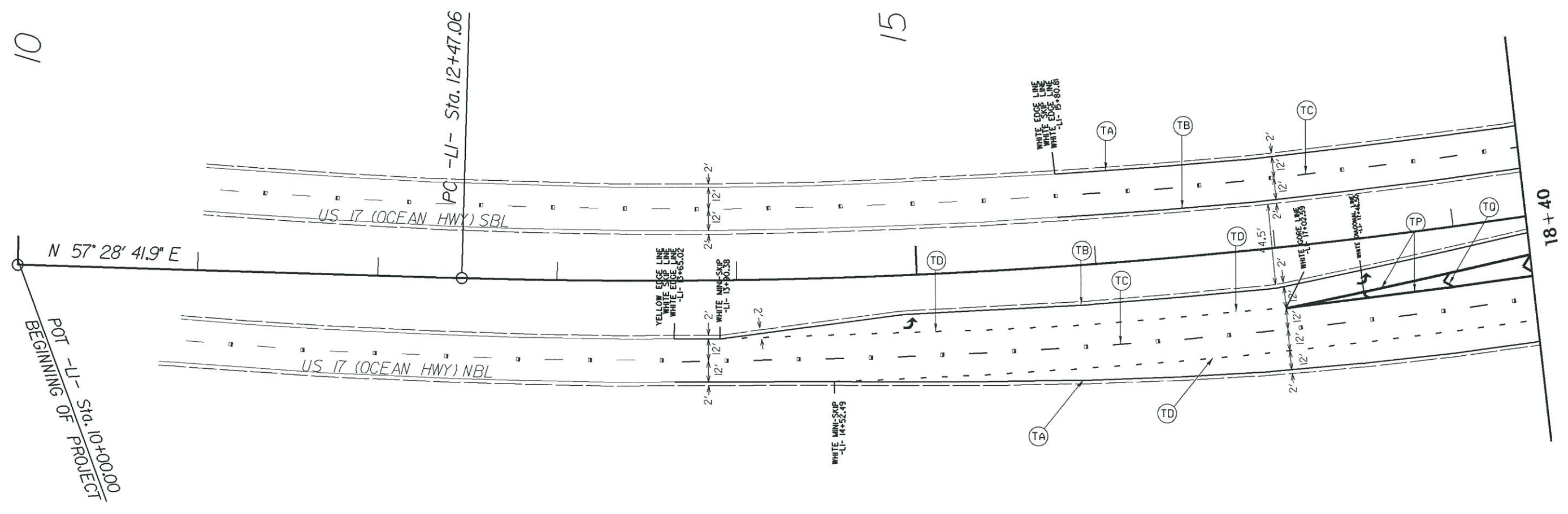
GENERAL NOTES		
THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.		
PAVEMENT MARKINGS AND MARKERS		
A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:		
<u>ROAD NAME</u> ALL ROADS	<u>MARKING</u> THERMOPLASTIC	<u>MARKER</u> SNOWPLOWABLE
B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.		
C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.		

**NOT TO SCALE**



*Scott Evans Cooke*  
 DIVISION DESIGN ENGINEER  
 9/12/14

8/17/99  
 REVISIONS  
 10-SEP-2014 JIE36  
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 10-SEP-2014 JIE36  
 C:\RDY\03HREE\17-US 17 BUS-SHILLOTTE OFFSET LEFTS\ROADWAY\Proj\43034-pmp2.dgn



PI - LI - Sta 21+09.58  
 $\Delta = 28^\circ 28' 09.0''$  (LT)  
 $D = 1' 41' 06.6''$   
 $L = 1,689.39'$   
 $T = 862.52'$   
 $R = 3,400.00'$

PAVEMENT MARKING LEGEND	
T2	= WHITE STOPBAR (24", 120 MIL)
T8	= WHITE MINI-SKIP 2' - 6"/SP (4", 120 MIL)
TA	= WHITE EDGELINE, (4", 90 MIL)
TC	= 10' WHITE SKIP (4", 120 MIL)
TB	= YELLOW EDGELINE, (4", 90 MIL)
TE	= WHITE SOLID LANE LINE (4", 120 MIL)
TD	= WHITE MINI-SKIP 3' - 9"/SP (4", 120 MIL)
TI	= YELLOW DOUBLE CENTER (4", 120 MIL)
TP	= WHITE GORELINE (8", 90 MIL)
TO	= WHITE DIAGONAL (12", 90 MIL)

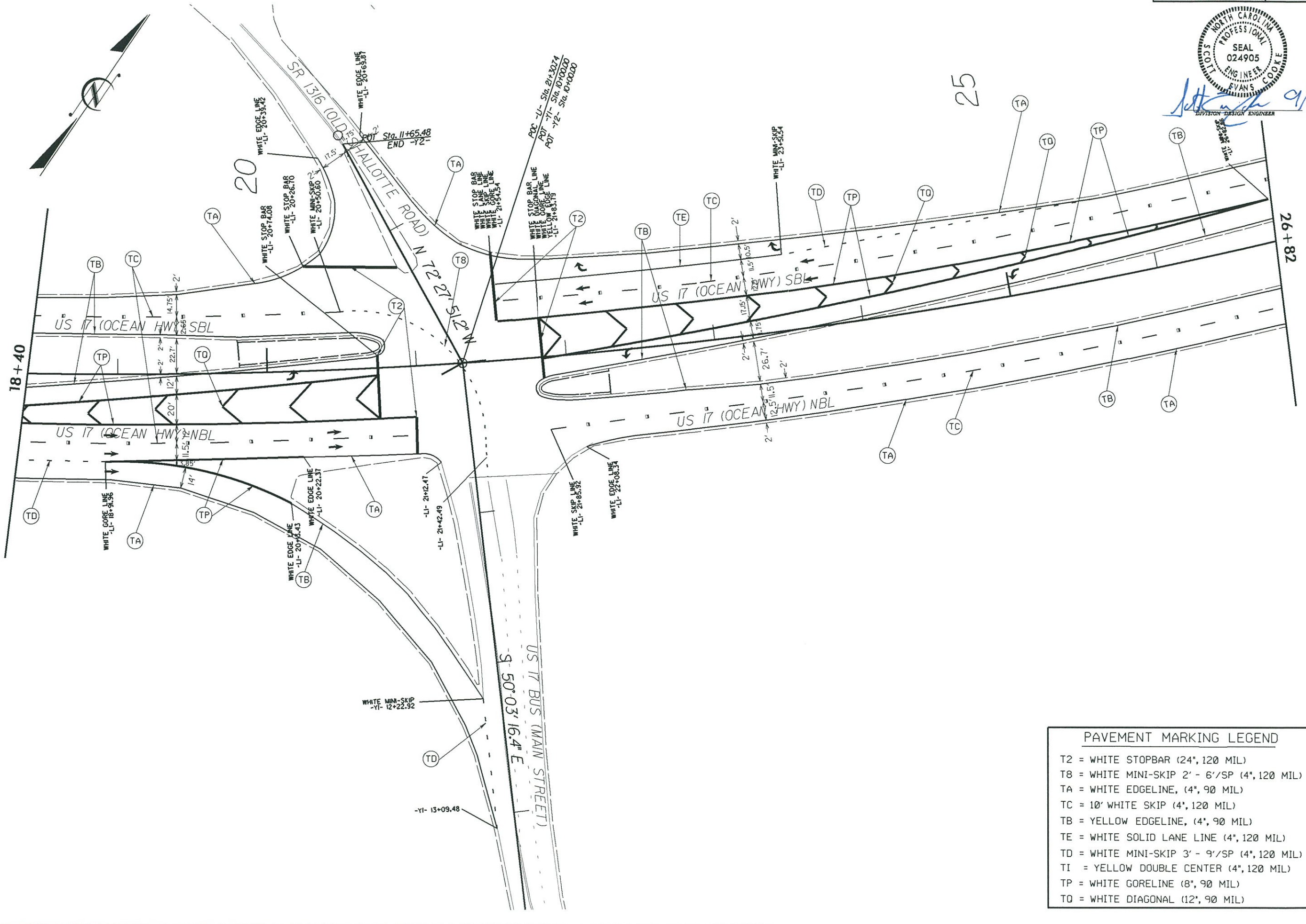


*J. Evans Cooke*  
DIVISION DESIGN ENGINEER

8/17/99

REVISIONS

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PAVEMENT MARKING LEGEND	
T2	= WHITE STOPBAR (24", 120 MIL)
T8	= WHITE MINI-SKIP 2' - 6"/SP (4", 120 MIL)
TA	= WHITE EDGELINE, (4", 90 MIL)
TC	= 10' WHITE SKIP (4", 120 MIL)
TB	= YELLOW EDGELINE, (4", 90 MIL)
TE	= WHITE SOLID LANE LINE (4", 120 MIL)
TD	= WHITE MINI-SKIP 3' - 9"/SP (4", 120 MIL)
TI	= YELLOW DOUBLE CENTER (4", 120 MIL)
TP	= WHITE GORELINE (8", 90 MIL)
TO	= WHITE DIAGONAL (12", 90 MIL)

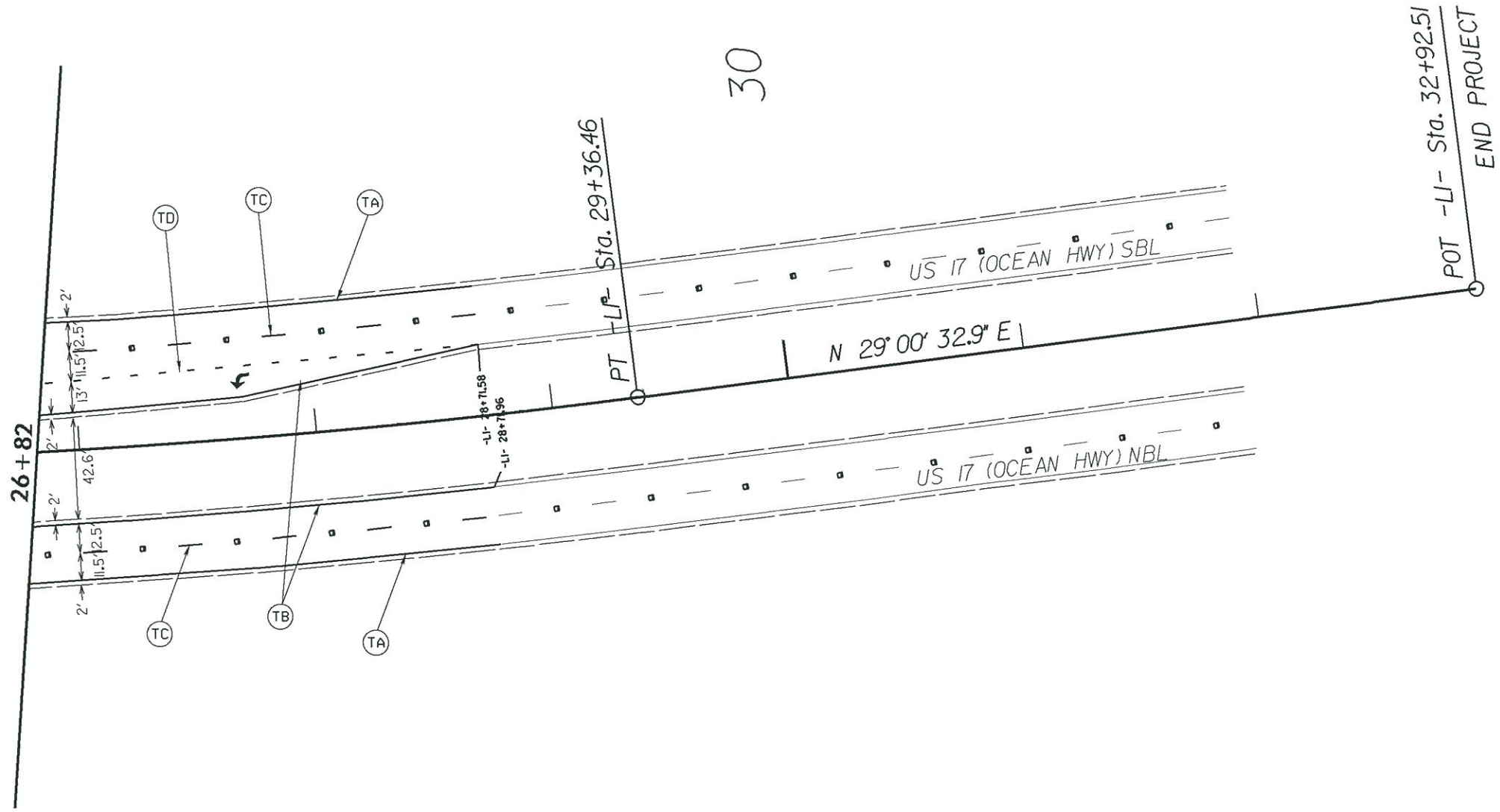
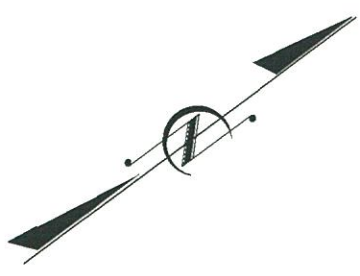


*[Signature]* 9/12/14  
DIVISION DESIGN ENGINEER

8/17/99

REVISIONS

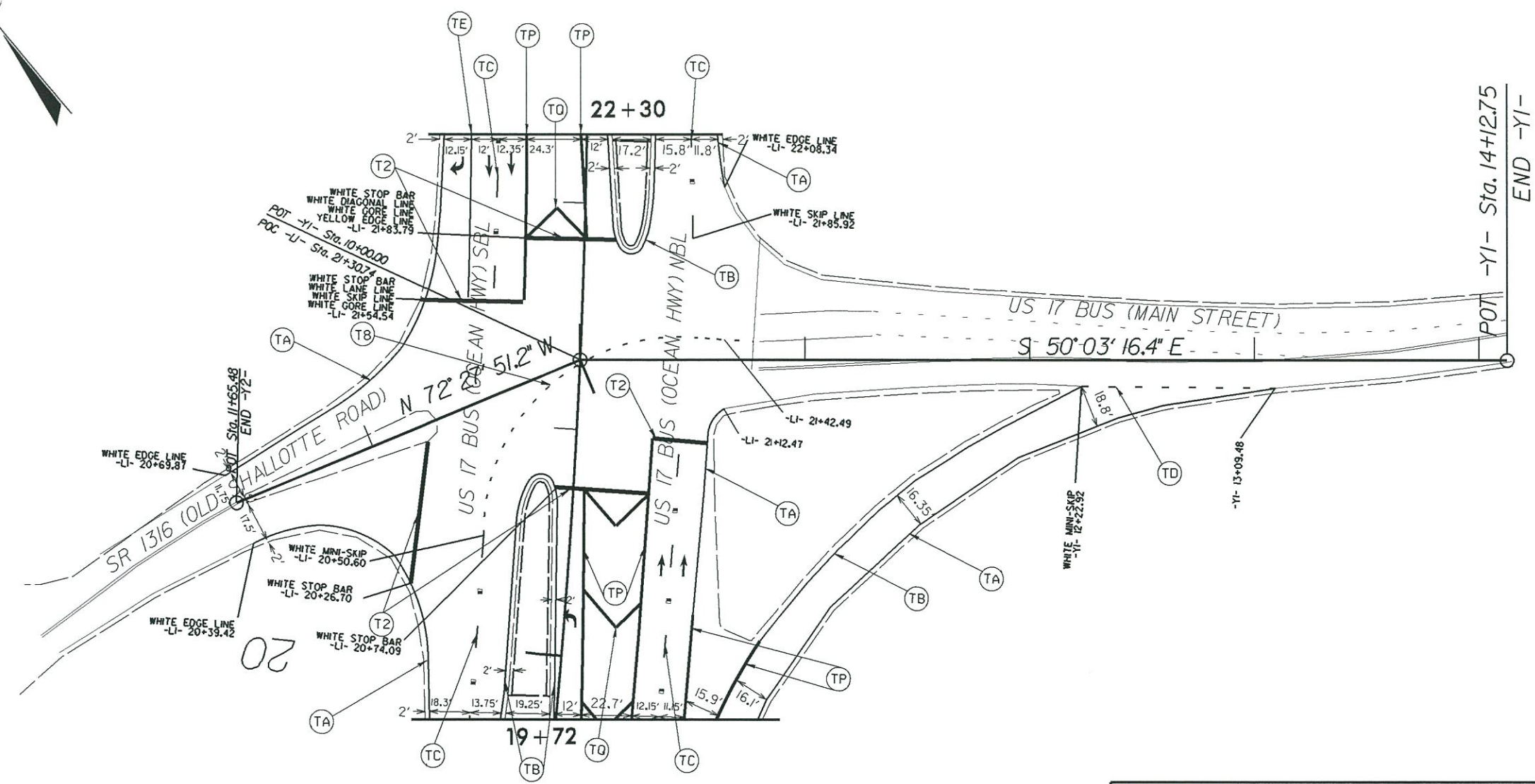
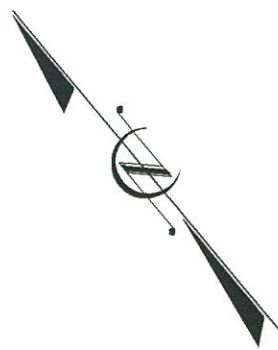
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30

PAVEMENT MARKING LEGEND	
T2	= WHITE STOPBAR (24", 120 MIL)
T8	= WHITE MINI-SKIP 2' - 6"/SP (4", 120 MIL)
TA	= WHITE EDGELINE, (4", 90 MIL)
TC	= 10' WHITE SKIP (4", 120 MIL)
TB	= YELLOW EDGELINE, (4", 90 MIL)
TE	= WHITE SOLID LANE LINE (4", 120 MIL)
TD	= WHITE MINI-SKIP 3' - 9"/SP (4", 120 MIL)
TI	= YELLOW DOUBLE CENTER (4", 120 MIL)
TP	= WHITE GORELINE (8", 90 MIL)
TQ	= WHITE DIAGONAL (12", 90 MIL)





PAVEMENT MARKING LEGEND	
T2	= WHITE STOPBAR (24", 120 MIL)
T8	= WHITE MINI-SKIP 2' - 6'/SP (4", 120 MIL)
TA	= WHITE EDGELINE, (4", 90 MIL)
TC	= 10' WHITE SKIP (4", 120 MIL)
TB	= YELLOW EDGELINE, (4", 90 MIL)
TE	= WHITE SOLID LANE LINE (4", 120 MIL)
TD	= WHITE MINI-SKIP 3' - 9'/SP (4", 120 MIL)
TI	= YELLOW DOUBLE CENTER (4", 120 MIL)
TP	= WHITE GORELINE (8", 90 MIL)
TQ	= WHITE DIAGONAL (12", 90 MIL)

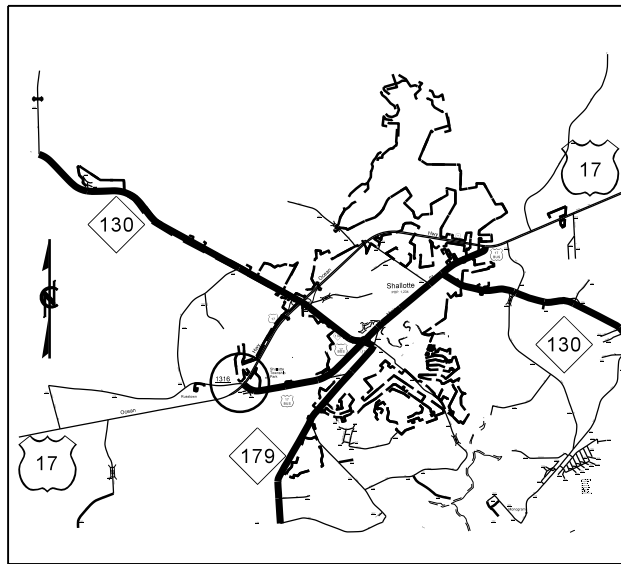
REVISIONS

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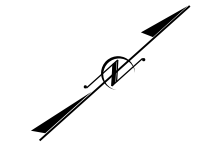
8/17/99

09/18/2013

COUNTY: BRUNSWICK TIP PROJECT: SS-4903AH



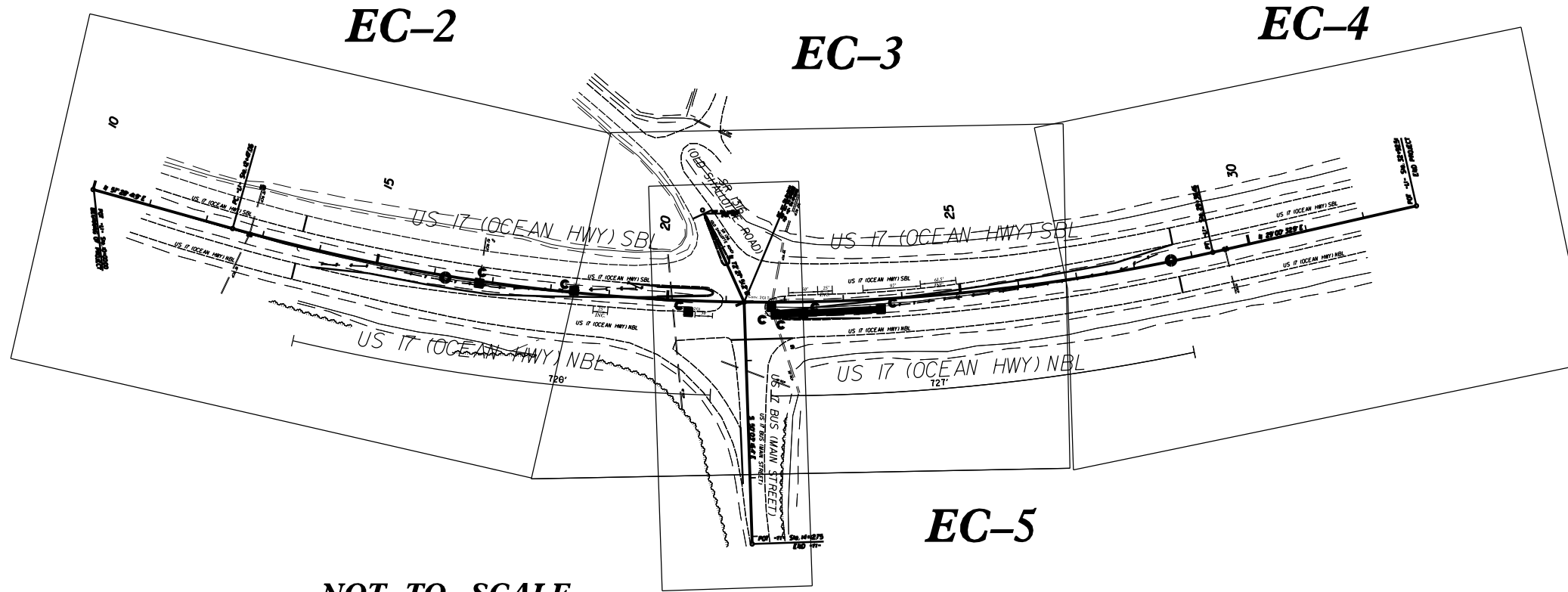
# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS PLAN FOR PROPOSED HIGHWAY EROSION CONTROL



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SS-4903AH	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
43034.3.1			

### EROSION AND SEDIMENT CONTROL MEASURES

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	--- --- ---
	Safety Fence	--- --- ---



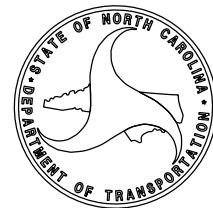
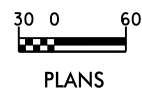
NOT TO SCALE

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.

**SEEDING REQUIREMENTS:**  
"Slopes left exposed will, within 14 calendar days of completion of any phase of grading, be planted or otherwise provided with temporary or permanent ground cover, devices, or structures sufficient to restrain erosion."

G:\RDY\THREE\BRUNSWICK\US\_17\_US\_17\_01\03\02\TIP\OFFSET\_LEFTS\ROADWAY\Pro\43034\_Rdy\_EC.dgn

#### GRAPHIC SCALE



SIGNATURE:

P.E.

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.

For Reference Please Visit Roadside Environment at:  
<http://www.ncdot.org/roadsideenvironment/roadsideenvironment.htm>

#### DIVISION 3 DDC UNIT

5501 Barbados Blvd.  
Castle Hayne, NC 28429  
By: Carla Schoonmaker, No. 3591

2012 STANDARD SPECIFICATIONS

OCTOBER 16, 2014

LETTING DATE:

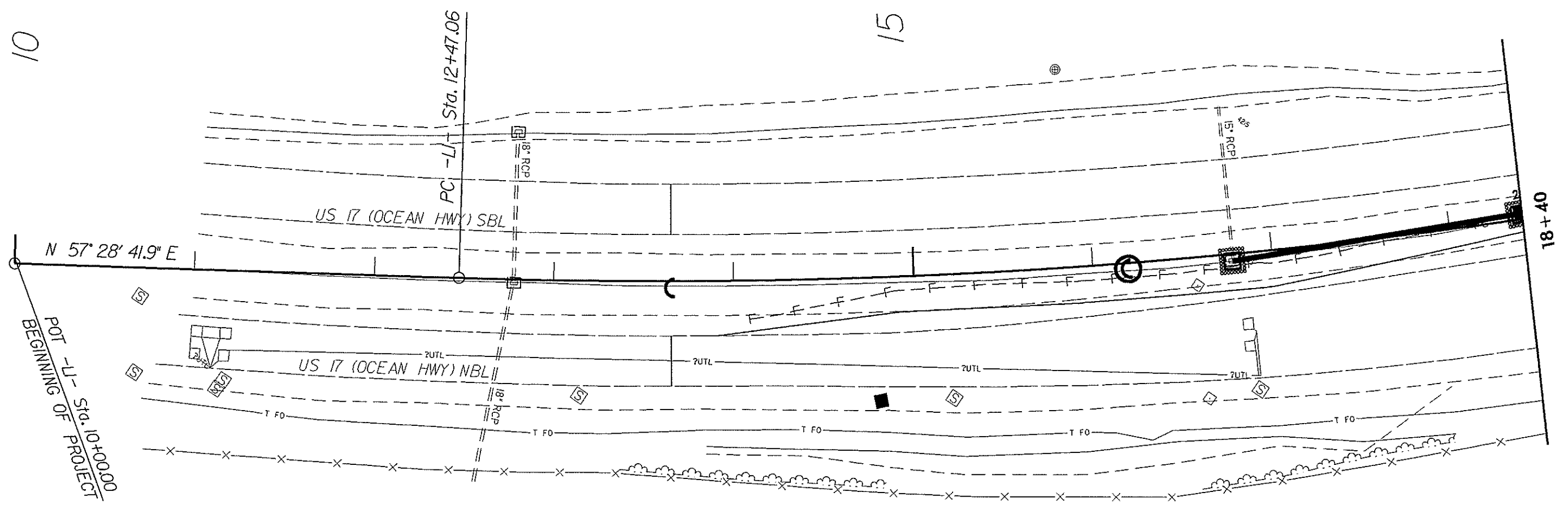
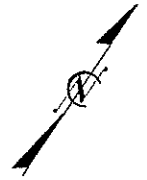
CMS

PROJECT DESIGN TECHNICIAN

#### 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	



PI -LI- Sta 21+09.58  
 $\Delta = 28^{\circ} 28' 09.0''$  (LT)  
 $D = 1^{\circ} 41' 06.6''$   
 $L = 1,689.39'$   
 $T = 862.52'$   
 $R = 3,400.00'$

10

15

18+40

$N 57^{\circ} 28' 41.9'' E$

BEGINNING OF PROJECT  
 -LI- Sta. 10+00.00

REVISIONS

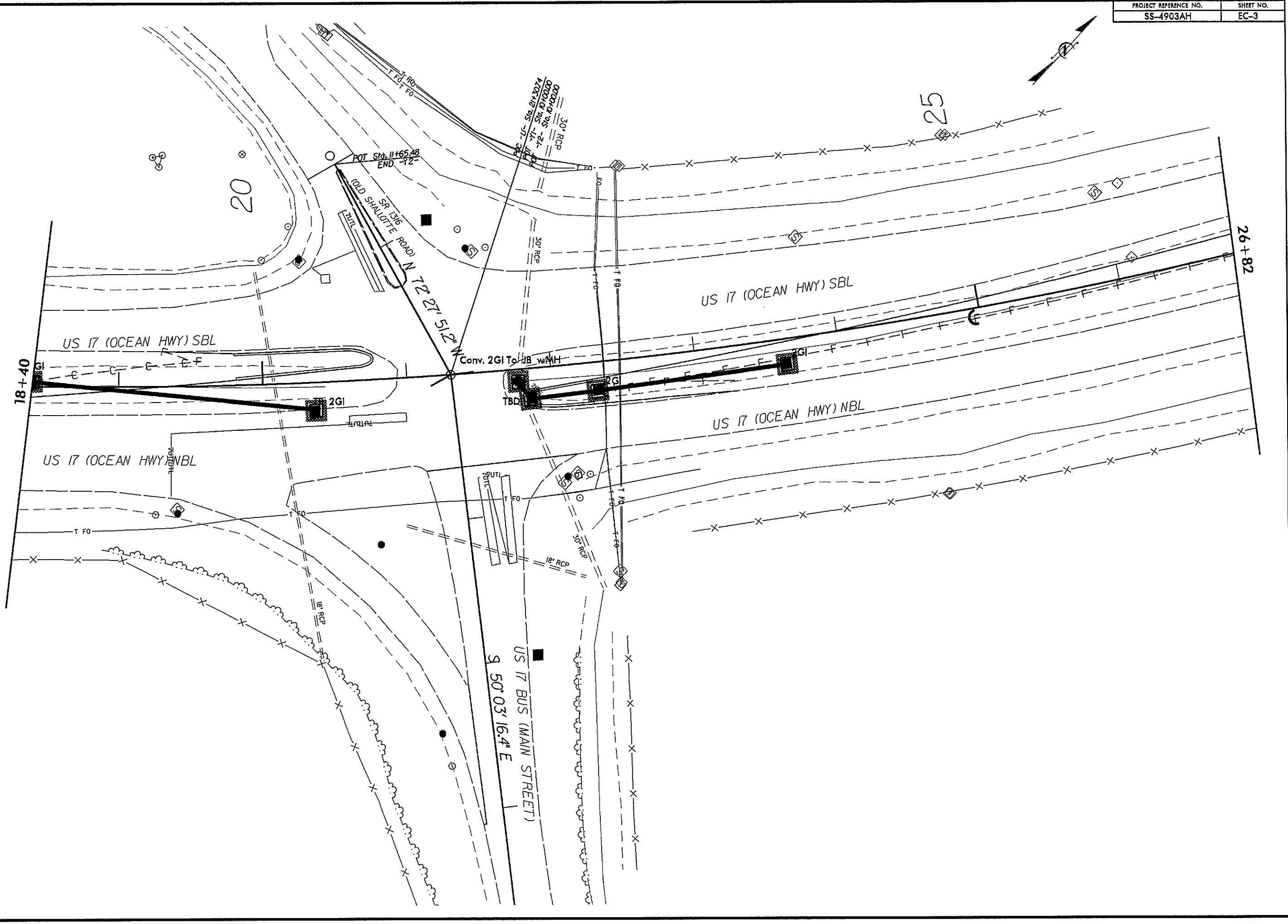
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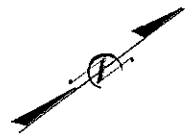
8/17/99

B.17/99

REVISIONS

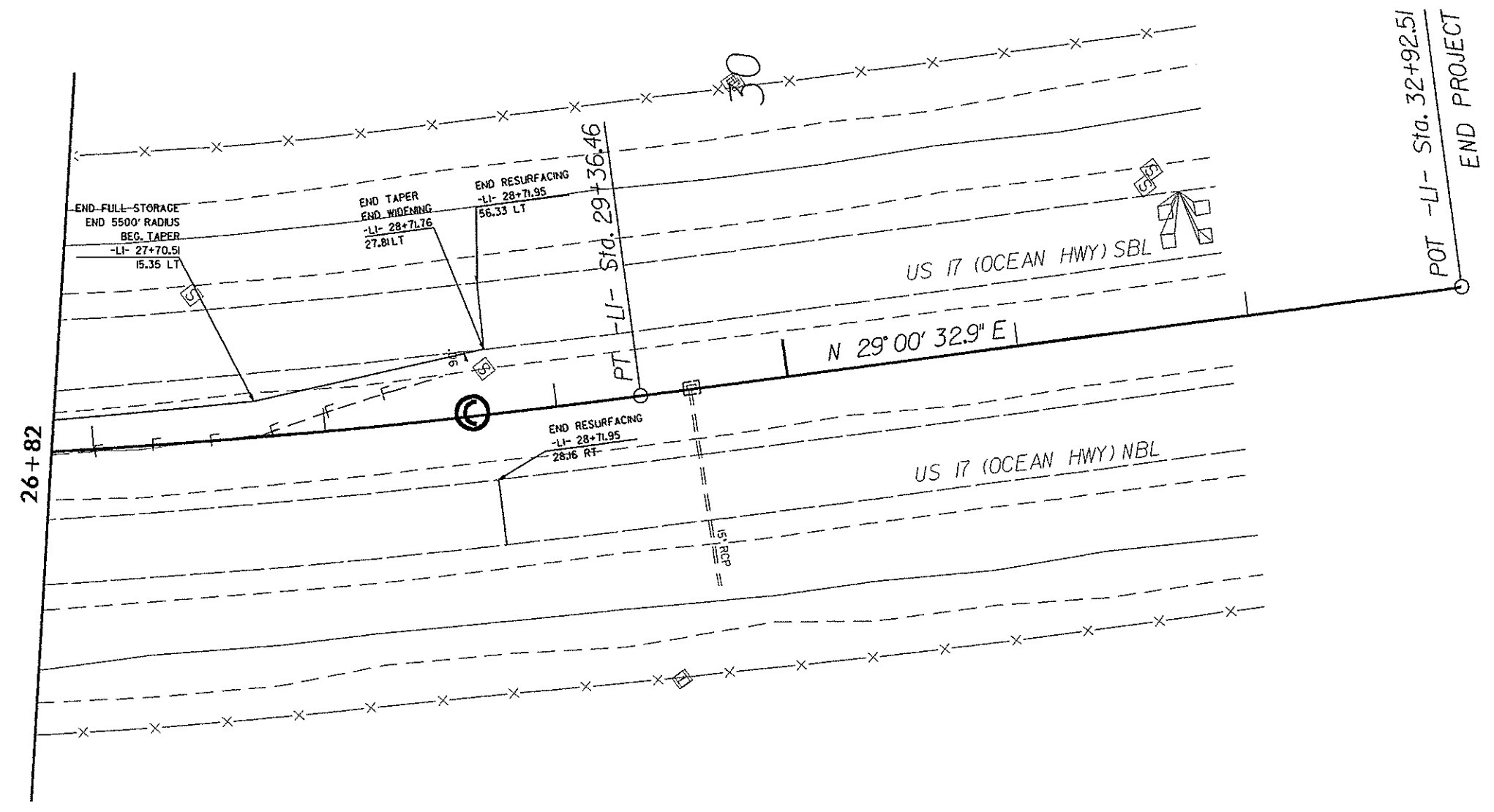
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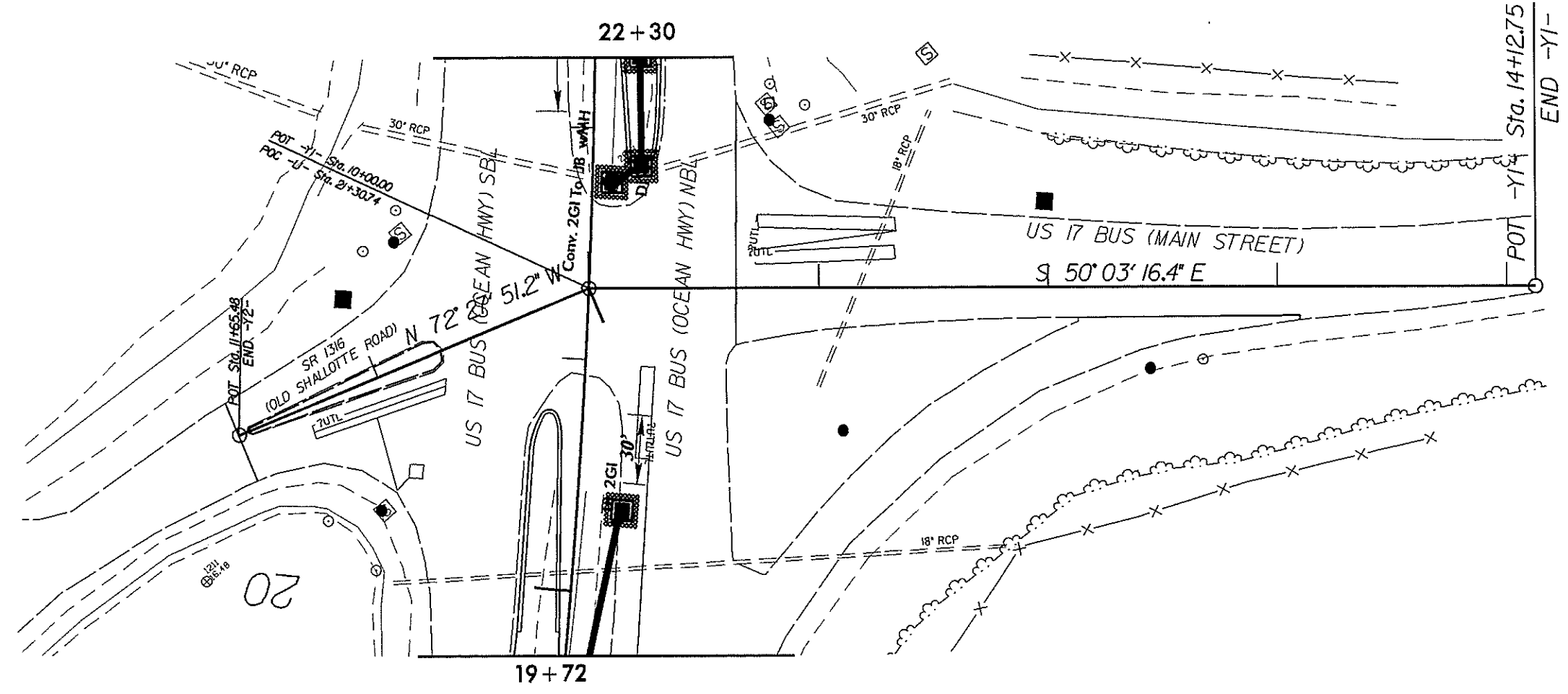
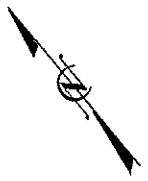




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 22-MAY-2014 JPH  
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8/17/99

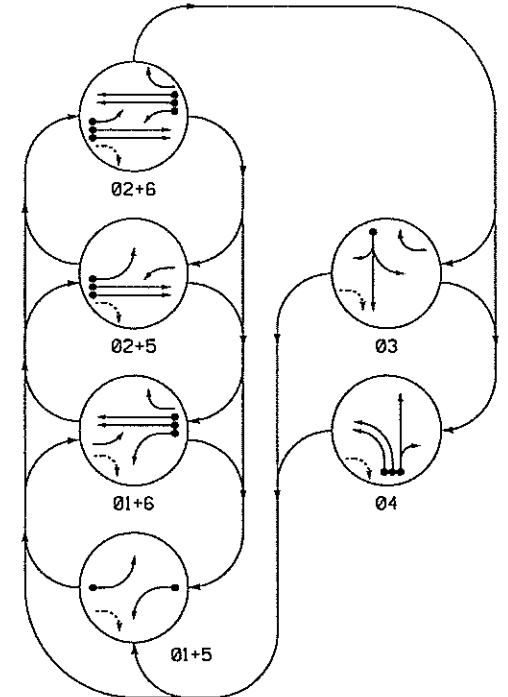




REVISIONS

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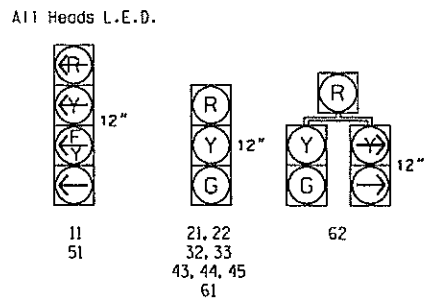
**PHASING DIAGRAM**



**PHASING DIAGRAM DETECTION LEGEND**

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

**SIGNAL FACE I.D.**



**TABLE OF OPERATION**

SIGNAL FACE	INTERVAL	
	1	2
23,25	ON	OFF
24,26	OFF	DN
63,65	ON	OFF
64,66	OFF	DN

**STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL**

TO	FROM			
	1	2	1	2
←	←	←	←	←
→	→	→	→	→
↔	↔	↔	↔	↔
↔	↔	↔	↔	↔

↔ = Flashing Yellow Arrow

**TABLE OF OPERATION**

SIGNAL FACE	PHASE						FLASH
	01+5	02+5	02+6	03	04	05	
11	—	—	—	—	—	—	—
21, 22	R	R	G	G	R	R	Y
23,24,25,26	ON	ON	OFF	OFF	ON	ON	OFF
31	R	R	R	R	G	R	R
32, 33	R	R	R	R	G	R	R
41, 42	—	—	—	—	—	—	—
43, 44, 45	R	R	R	R	G	R	R
51	—	—	—	—	—	—	—
61	R	G	R	G	R	R	Y
62	R	G	R	G	R	R	Y
63,64,65,66	ON	OFF	ON	OFF	ON	ON	OFF

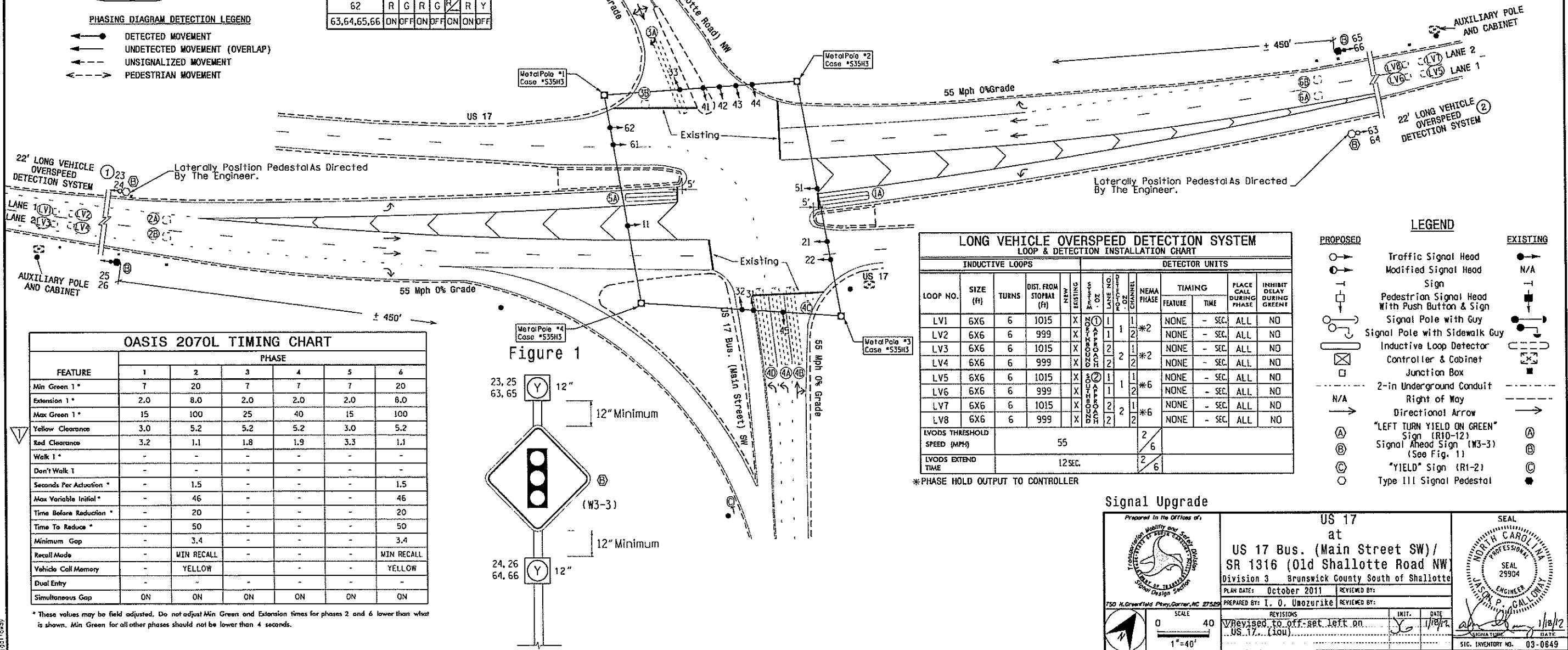
**OASIS 2070L LOOP & DETECTOR INSTALLATION CHART**

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	STRETCH TIME		
1A	6X60	+5	2-4-2	Y	1	Y	Y	-	15	-
2A	6X6	420	5	-	2	Y	Y	-	-	-
2B	6X6	420	5	-	2	Y	Y	-	-	-
3A	6X60	+5	2-4-2	-	3	Y	Y	-	-	-
3B	6X6	0	4	-	3	Y	Y	-	15	-
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	-
4B	6X60	+5	2-4-2	-	4	Y	Y	-	5	-
4C	6X6	0	4	-	4	Y	Y	-	15	-
4D	6X60	+5	2-4-2	-	4	Y	Y	-	3	-
5A	6X60	+5	2-4-2	Y	5	Y	Y	-	15	-
6A	6X6	420	5	-	6	Y	Y	-	-	-
6B	6X6	420	5	-	6	Y	Y	-	-	-

6 Phase Fully Actuated Isolated

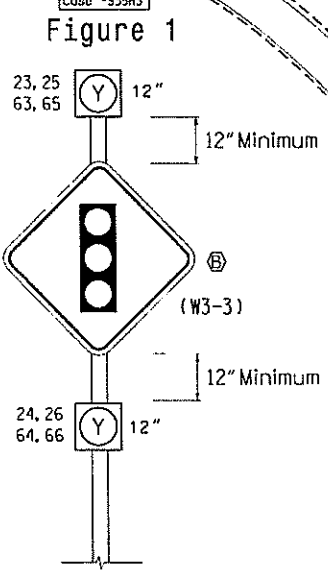
**NOTES**

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Reposition existing signal heads numbered 11, 51.
- Set all detector units to presence mode.
- Pavement markings are existing.
- Activate flashers at the end of green for phase 2 and/or phase 6.
- Flash vertically mounted beacons alternately.



**OASIS 2070L TIMING CHART**

FEATURE	PHASE					
	1	2	3	4	5	6
Min Green 1 *	7	20	7	7	7	20
Extension 1 *	2.0	8.0	2.0	2.0	2.0	8.0
Max Green 1 *	15	100	25	40	15	100
Yellow Clearance	3.0	5.2	5.2	5.2	3.0	5.2
Red Clearance	3.2	1.1	1.8	1.9	3.3	1.1
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5
Max Variable Initial *	-	46	-	-	-	46
Time Before Reduction *	-	20	-	-	-	20
Time To Reduce *	-	50	-	-	-	50
Minimum Gap	-	3.4	-	-	-	3.4
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON



**LONG VEHICLE OVERSPEED DETECTION SYSTEM LOOP & DETECTION INSTALLATION CHART**

LOOP NO.	SIZE (FT)	TURNS	DIST. FROM STOPBAR (FT)	NEW	EXISTING	DETECTOR UNITS							
						NEMA PHASE	TIMING FEATURE	TIME	PLACE CALL DURING PHASE	INHIBIT DELAY DURING GREEN			
LV1	6X6	6	1015	X	①	1	1	2	*2	NONE	- SEC.	ALL	NO
LV2	6X6	6	999	X	②	1	1	2	*2	NONE	- SEC.	ALL	NO
LV3	6X6	6	1015	X	③	2	2	2	*2	NONE	- SEC.	ALL	NO
LV4	6X6	6	999	X	④	2	2	2	*2	NONE	- SEC.	ALL	NO
LV5	6X6	6	1015	X	⑤	1	1	1	*6	NONE	- SEC.	ALL	NO
LV6	6X6	6	999	X	⑥	1	1	2	*6	NONE	- SEC.	ALL	NO
LV7	6X6	6	1015	X	⑦	2	2	2	*6	NONE	- SEC.	ALL	NO
LV8	6X6	6	999	X	⑧	2	2	2	*6	NONE	- SEC.	ALL	NO
LVODS THRESHOLD SPEED (MPH)										2	6		
LVODS EXTEND TIME										2	6		

\*PHASE HOLD OUTPUT TO CONTROLLER

**LEGEND**

PROPOSED	EXISTING
○ → Traffic Signal Head	● → N/A
○ → Modified Signal Head	○ → N/A
○ → Pedestrian Signal Head With Push Button & Sign	○ → N/A
○ → Signal Pole with Guy	○ → N/A
○ → Signal Pole with Sidewalk Guy	○ → N/A
○ → Inductive Loop Detector	○ → N/A
○ → Controller & Cabinet	○ → N/A
○ → Junction Box	○ → N/A
○ → 2-in Underground Conduit	○ → N/A
○ → Right of Way	○ → N/A
○ → Directional Arrow	○ → N/A
○ → "LEFT TURN YIELD ON GREEN" Sign (R10-12)	○ → N/A
○ → Signal Ahead Sign (W3-3) (See Fig. 1)	○ → N/A
○ → "YIELD" Sign (R1-2)	○ → N/A
○ → Type III Signal Pedestal	○ → N/A

**Signal Upgrade**

Prepared in the Offices of  
  
**US 17**  
 at  
**US 17 Bus. (Main Street SW) / SR 1316 (Old Shallotte Road NW)**  
 Division 3 Brunswick County South of Shallotte  
 PLAN DATE: October 2011 REVISIONS:  
 PREPARED BY: I. O. Ubozurike REVISIONS:  
 REVISOR: [Signature] DATE: 1/18/12  
 SCALE: 1"=40'  
 SHEET NO. 03-0849

2011-10-24 08:58  
 S:\TCS\111111\111111\111111\111111\111111.dgn  
 I:\111111\111111\111111\111111\111111.dgn  
 11/18/11

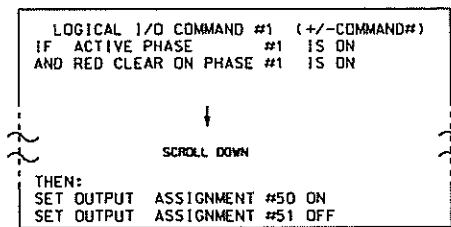




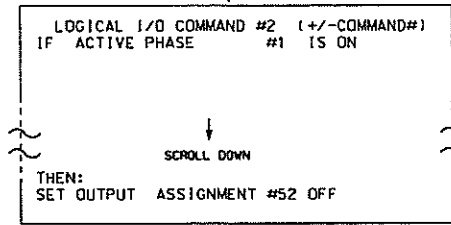
**LOGICAL I/O PROCESSOR PROGRAMMING DETAIL**  
**TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE**

(program controller as shown below)

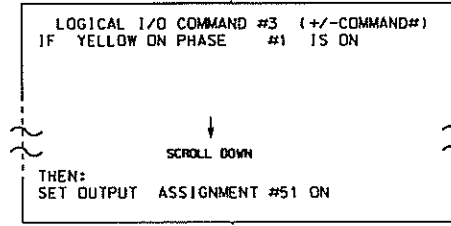
- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



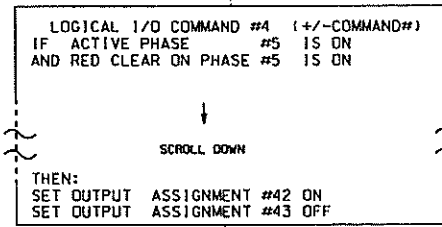
NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).



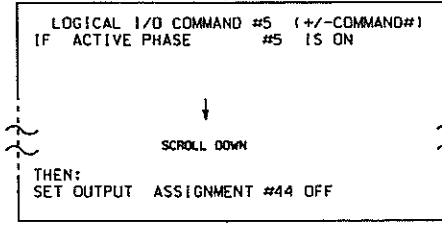
NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).



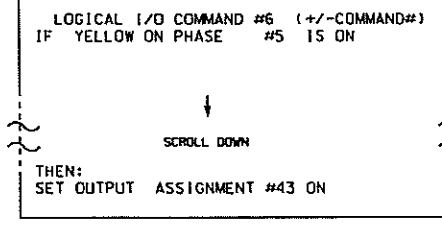
NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).



NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).



NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).



NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

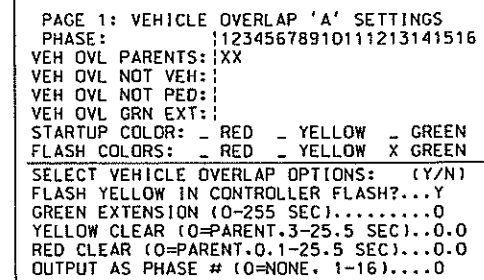
**OUTPUT REFERENCE SCHEDULE**

- OUTPUT 42 = Overlap C Red
- OUTPUT 43 = Overlap C Yellow
- OUTPUT 44 = Overlap C Green
- OUTPUT 50 = Overlap A Red
- OUTPUT 51 = Overlap A Yellow
- OUTPUT 52 = Overlap A Green

**OVERLAP PROGRAMMING DETAIL**

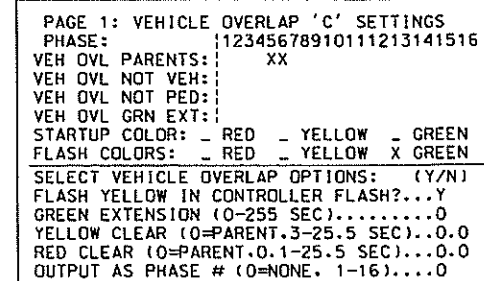
(program controller as shown below)

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



← NOTICE GREEN FLASH

PRESS '+' TWICE

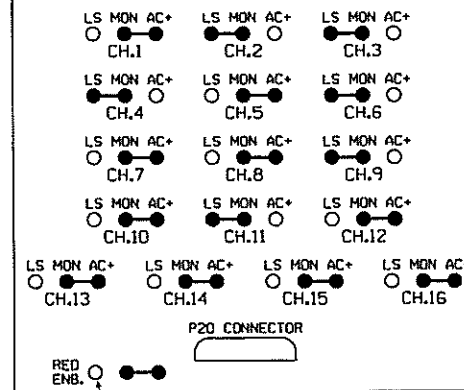


← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

**RED MONITOR BOARD PROGRAMMING**

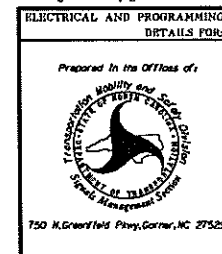
(position jumpers as shown below)



This pin clipped at the factory.

Signal Upgrade - Sheet 2 of 7

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0649  
 DESIGNED: October 2011  
 SEALED: 1-18-12  
 REVISED: 1-18-12



ELECTRICAL AND PROGRAMMING DETAILS FOR:		US 17	
Prepared in the Office of:		at	
US 17 Bus. (Main Street SW)/		SR 1316 (Old Shallotte Road NW)	
Division 3	Brunswick County	South of Shallotte	
PLAN DATE: April 2011	REVIEWED BY: T. Joyce		
PREPARED BY: S. Armstrong	REVIEWED BY:		
REVISIONS	INIT.	DATE	
		1/18/12	
No change to electrical detail		1/18/12	

SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 SEAL 022013  
 GEORGE C. BROWN  
 DATE: 1/18/12

SIG. INVENTORY NO. 03-0649

**INPUT ASSIGNMENT PROGRAMMING DETAIL FOR LONG VEHICLE  
OVERSPEED DETECTION SYSTEM PHASE HOLD INPUTS**

(program controller as shown below)

FROM MAIN MENU PRESS '5' (INPUTS). THEN '+'  
UNTIL PIN 51 (INPUT 13) IS REACHED.

```

PAGE: 1 C1 PIN:51 HOLD PHASES
INPUT ASSIGNMENT #.....13
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....2
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)....
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4)....
CHANGE OVERLAP CONTROL PAGE (1-4)....
CHANGE INPUT PAGE (1-4).....
CHANGE OUTPUT PAGE (1-4).....
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

PRESS THE 'ENT' KEY, THEN  
PRESS '+' ONCE

```

PAGE: 1 C1 PIN:52 HOLD PHASES
INPUT ASSIGNMENT #.....14
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....6
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)....
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4)....
CHANGE OVERLAP CONTROL PAGE (1-4)....
CHANGE INPUT PAGE (1-4).....
CHANGE OUTPUT PAGE (1-4).....
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

PRESS THE 'ENT' KEY, THEN PRESS '+'  
UNTIL PIN '0' (INPUT 64) IS REACHED

```

PAGE: 1 C1 PIN:0 PLAN
INPUT ASSIGNMENT #.....64
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE)... [65] OFFSET#... [0]
CHANGE PHASE SEQUENCE PAGE (1-12)....
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4)....
CHANGE OVERLAP CONTROL PAGE (1-4)....
CHANGE INPUT PAGE (1-4).....
CHANGE OUTPUT PAGE (1-4).....
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

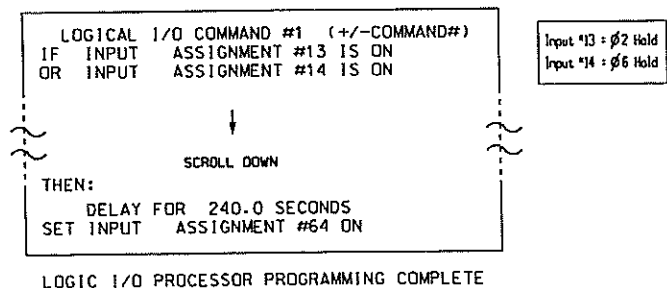
PROGRAMMING COMPLETE

← Note: Program for Plan 65 and Offset 0

**LOGICAL I/O PROCESSOR PROGRAMMING DETAIL  
TO PUT CABINET IN FLASH UPON LV DETECTOR FAIL**

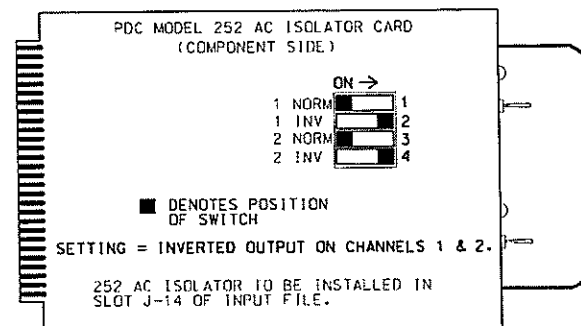
(program controller as shown below)

1. From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and Enable Act Logic Command 1.
2. From Main Menu press '6' (Outputs), Then '3' (Logical I/O Processor).
3. The programming shown below will place the controller in flash if the output of the Long Vehicle Detection Unit is active for longer than 4 minutes



**AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL**

(set DIP switches as shown below)



NOTE: IF ANOTHER MANUFACTURER TYPE OF AC ISOLATOR IS USED, OUTPUT PROGRAMMING IS LIKELY NOT TO EQUATE TO THAT SHOWN ABOVE.

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 03-0649  
DESIGNED: October 2011  
SEALED: 1-18-12  
REVISED: 1-18-12

Signal Upgrade - Sheet 3 of 7

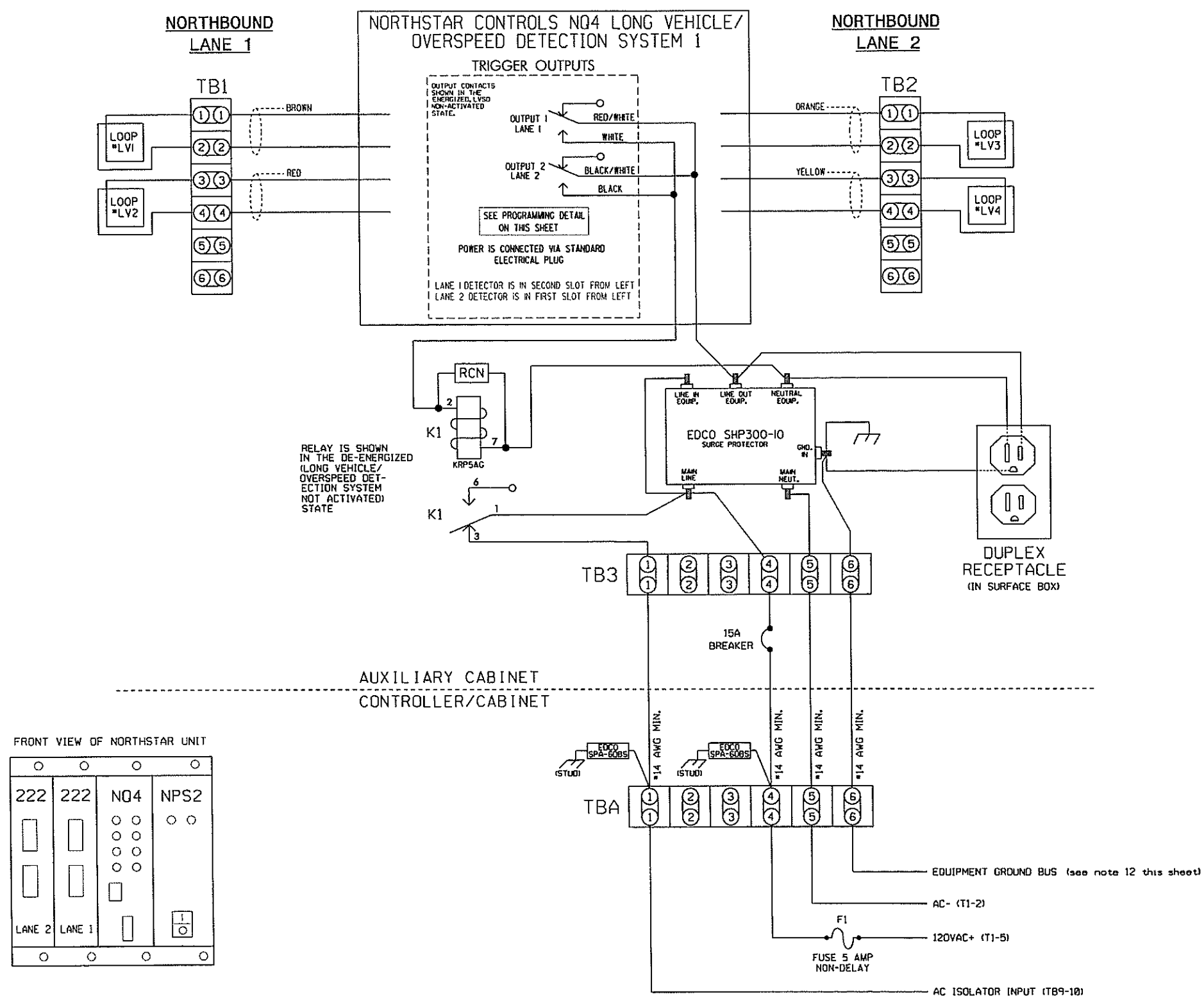
Prepared in the Office of:  750 N. Grandfield Pkwy, Greensboro, NC 27407	US 17 at US 17 Bus. (Main Street SW) / SR 1316 (Old Shallotte Road NW)		SEAL  GEORGE C. BROWN ENGINEER
	Division 5 Brunswick County South of Shallotte	PLAN DATE: April 2011 REVIEWED BY: T. Joyce PREPARED BY: S. Armstrong REVIEWED BY:	
REVISIONS No change to electrical detail. 04/16/12 S.A.B. 2/12/12		INIT. DATE S.A.B. 2/12/12	SIGNATURE DATE [Signature] 2/13/12
SIG. INVENTORY NO. 03-0649			

15-JAN-2012 15:45  
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 030649.dwg

**WIRING DETAIL FOR NORTHSTAR CONTROLS NQ4 LONG VEHICLE / OVERSPEED DETECTION SYSTEM NO. 1**  
(wire unit as shown below)

**NOTES**

- All loop lead-ins shall be twisted.
  - Loop spacing is critical to the proper operation of this Overspeed Detection System. Make sure loop spacing is correctly programmed in N04 Unit.
  - Insure that connectors on rear of N04 are seated securely.
  - N04 Unit shall be located in an auxiliary cabinet adjacent to Speed Warning System loops.
  - Unit power is connected by standard electrical plug.
  - Terminal strips TB1, TB2, TB3, & TBA to be added by installer.
  - Relay 'K1' is a SPDT with an 120VAC coil. Potter & Brumfield no. KRP5AGAG. Dot Material no. 625028600.
  - The RC Network across the coil of 'K1' is a .1 micro farad, 100 ohm. Dot Material no. 106018075. P&B no. 104M060C100
  - EDCO SPA-60BS is a surge protector for 120VAC interconnect circuits. Dot Material no. 625022076.
  - EDCO SHP300-10 is an AC service surge protector. Dot Material no. 625022075.
- Do not install ground rods at auxiliary cabinet.
  - Install equipment ground from controller cabinet to auxiliary cabinet if not already present.
  - Install disconnect if there is no disconnect present at auxiliary cabinet.
  - IMPORTANT! A jumper must be installed between input file terminals J14-E and J14-K if not already present.
  - IMPORTANT! For proper operation of the Long Vehicle Detection Unit, tie TB9-12 to AC neutral.
  - IMPORTANT! Make sure both channels of AC Isolator card inserted at input file position J14 are set for inverted operation.



**NORTHSTAR CONTROLS MODEL NQ4**  
**PROGRAMMING DETAIL**  
(program unit as shown)

NOTE: UNIT MUST BE PROGRAMMED USING PC AND HYPERTERMINAL PROGRAM. FOR CONNECTION TO HYPERTERMINAL REFER TO N04 OPERATION MANUAL.

PROGRAM N04 BY TYPING THE FOLLOWING COMMANDS

- SET SPEED=55
- SET LENGTH=22'
- SET ALARMTIME=12
- SET SEPARATION=16' (LEADING EDGE TO LEADING EDGE)  
(THIS VALUE MAY VARY. PROGRAM ACTUAL MEASURED SEPARATION)
- SET LOOP LENGTH=6'  
(THIS VALUE MAY VARY. PROGRAM ACTUAL MEASURED LOOP LENGTH)
- SAVE

NOTE  
PROGRAMMING APPLIES TO BOTH LANE 1 AND LANE 2

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0649  
DESIGNED: October 2011  
SEALED: 1-18-12  
REVISED: 1-18-12

Signal Upgrade - Sheet 4 of 7

Prepared in the Office of 	US 17 at US 17 Bus. (Main Street SW)/ SR 1316 (Old Shallotte Road NW)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN
	Division 3 Brunswick County South of Shallotte PLAN DATE: April 2011 REVIEWED BY: T. Joyce	PREPARED BY: S. Armstrong REVIEWED BY:	
	REVISIONS No change to electrical detail... 03/11/12	INIT. DATE KRB 2/15/12	
	SIGNATURE: <i>George C. Brown</i> DATE: 2/15/12		

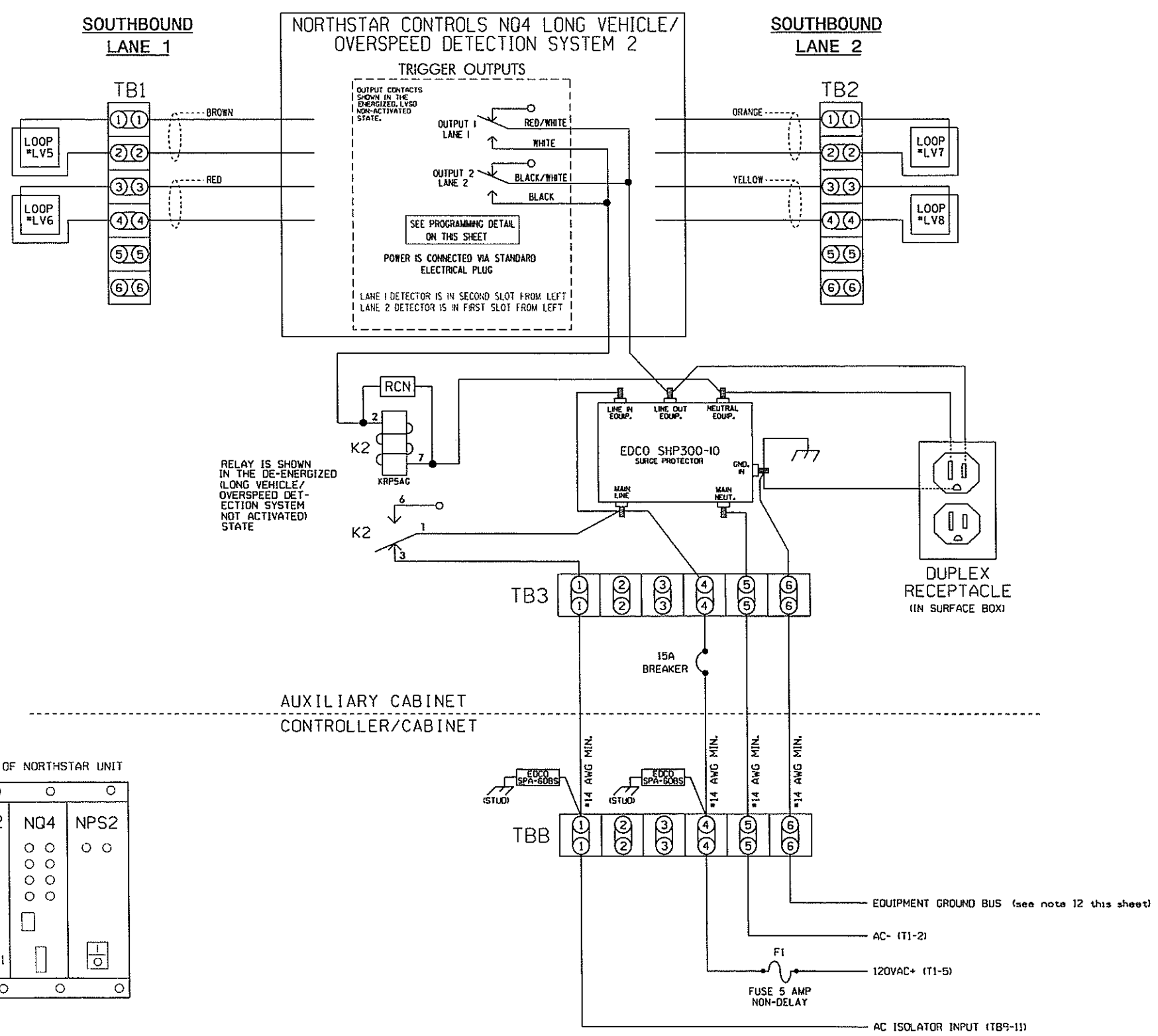
SIG. INVENTORY NO. 03-0649

18-JAN-2012 15:46 C:\Users\jstiles\Documents\Signal Upgrade\03-0649\03-0649.dwg

WIRING DETAIL FOR NORTHSTAR CONTROLS NQ4 LONG VEHICLE / OVERSPEED DETECTION SYSTEM NO. 2  
(wire unit as shown below)

NOTES

- All loop lead-ins shall be twisted.
- Loop spacing is critical to the proper operation of this Overspeed Detection System. Make sure loop spacing is correctly programmed in NQ4 Unit.
- Insure that connectors on rear of NQ4 are seated securely.
- NQ4 Unit shall be located in an auxiliary cabinet adjacent to Speed Warning System Loops.
- Unit power is connected by standard electrical plug.
- Terminal strips TB1, TB2, TB3, & TBB to be added by installer.
- Relay 'K2' is a SPDT with an 120VAC coil. Potter & Brumfield no. KRP5AGAG. Dot Material no. 625028600.
- The RC Network across the coil of 'K2' is a .1 micro farad, 100 ohm. Dot Material no. 106018075. P&B no. 104M060C100
- EDCO SPA-60BS is a surge protector for 120VAC interconnect circuits. Dot Material no. 625022076.
- EDCO SHP300-10 is an AC service surge protector. Dot Material no. 625022075.
- Do not install ground rods at auxiliary cabinet.
- Install equipment ground from controller cabinet to auxiliary cabinet if not already present.
- Install disconnect if there is no disconnect present at auxiliary cabinet.



**NORTHSTAR CONTROLS MODEL NQ4  
PROGRAMMING DETAIL**  
(program unit as shown)

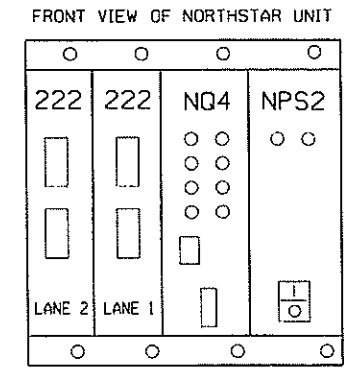
NOTE: UNIT MUST BE PROGRAMMED USING PC AND HYPERTERMINAL PROGRAM. FOR CONNECTION TO HYPERTERMINAL REFER TO NQ4 OPERATION MANUAL.

PROGRAM NQ4 BY TYPING THE FOLLOWING COMMANDS

- SET SPEED=55
- SET LENGTH=22'
- SET ALARMTIME=12
- SET SEPARATION=16' (LEADING EDGE TO LEADING EDGE)  
(THIS VALUE MAY VARY, PROGRAM ACTUAL MEASURED SEPARATION)
- SET LOOP LENGTH=6'  
(THIS VALUE MAY VARY, PROGRAM ACTUAL MEASURED LOOP LENGTH)
- SAVE

NOTE  
PROGRAMMING APPLIES TO BOTH LANE 1 AND LANE 2

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0649  
DESIGNED: October 2011  
SEALED: 1-18-12  
REVISED: 1-18-12



Signal Upgrade - Sheet 5 of 7

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 17 at US 17 Bus. (Main Street SW) / SR 1316 (Old Shallotte Road NW)  
Division 3 Brunswick County South of Shallotte

PLAN DATE: April 2011 REVIEWED BY: T. Joyce  
PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS

NO.	DESCRIPTION	INIT.	DATE
1	As shown	SA	1/18/12
2	Change to electrical detail, NIS 1.3-12	SA	2/13/12

750 N. Greenfield Pkwy, Garner, NC 27529

SEAL  
NORTH CAROLINA  
REGISTERED PROFESSIONAL ENGINEER  
SEAL 022013  
ENGINEER  
GEORGE C. BROWN

SIG. INVENTORY NO. 03-0649

03-0649-15-117  
 03-0649-15-117 (1 of 1)  
 03-0649-15-117 (1 of 1)  
 03-0649-15-117 (1 of 1)  
 03-0649-15-117 (1 of 1)

## ADVANCE BEACON #1 OUTPUT ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #33 (PIN 35) IS REACHED.

```

PAGE:1 C1 PIN:35 NOT ENABLED.....33
OUTPUT ASSIGNMENT #.....33
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...50
MODE (0=SOLID,1=FLASH).....1
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
  
```

THE FIRST THREE PROGRAMMING ROWS DEFINE THE OUTPUT TO FLASH, ALONG WITH THE RATE IN WHICH IT WILL FLASH.

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:35 NOT ENABLED
SELECT BEACON INDEX (1-4).....1
  
```

WHEN A 'Y' IS ENTERED FOR 'ADVANCE BEACON' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'ADVANCE BEACON' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:35 ADVANCE BEACON.....33
OUTPUT ASSIGNMENT #.....33
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...50
MODE (0=SOLID,1=FLASH).....1
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
  
```

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #34 (PIN 36) IS REACHED.

```

PAGE:1 C1 PIN:36 NOT ENABLED.....34
OUTPUT ASSIGNMENT #.....34
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
  
```

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:36 NOT ENABLED
SELECT OUTPUT ASSIGNMENT (1-64).....33
  
```

WHEN A 'Y' IS ENTERED FOR 'OUT OF PHASE FLASHER' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'OUT OF PHASE FLASHER' AS SHOWN BELOW.

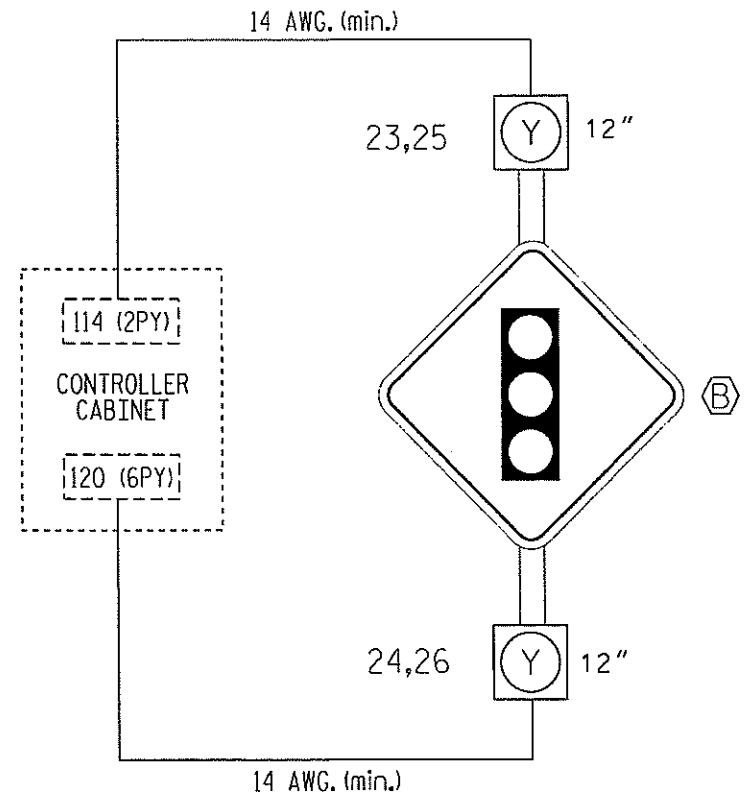
```

PAGE:1 C1 PIN:36 OUT OF PHASE FLASHER.....34
OUTPUT ASSIGNMENT #.....34
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
  
```

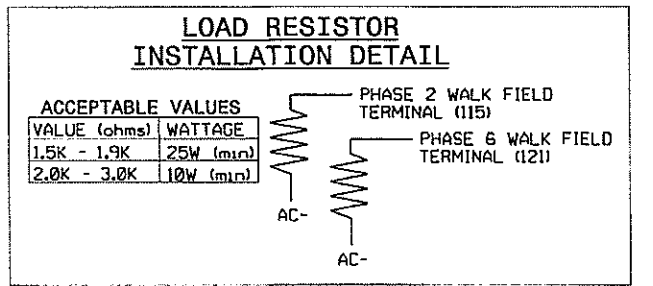
**OUTPUT REFERENCE SCHEDULE**

OUTPUT 33 = ø 2 Ped Yellow  
 OUTPUT 34 = ø 6 Ped Yellow

## ADVANCE BEACON #1 WIRING DETAIL (wire flashers as shown below)



- IMPORTANT**
- REMOVE, TAPE AND LABEL CONFLICT MONITOR WIRE ATTACHED TO THE REAR OF TERMINAL 114 (2PY) AND TERMINAL 120 (6PY).
  - INSERT LOADSWITCH FOR S2P AND S6P.
  - MAKE SURE LOAD RESISTORS ARE IN PLACE AS SHOWN IN LOAD RESISTOR INSTALLATION DETAIL ON THIS SHEET.
  - TO ACTIVATE SIGN OPERATION AS INDICATED ON THE SIGNAL PLANS, RE-ASSIGN OUTPUT 33 AND 34 AS SHOWN ON THIS SHEET.



## ADVANCE BEACON PROGRAMMING DETAIL (program controller as shown below)

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '2' (OUTPUT BEACON SETTINGS).

OUTPUT BEACON SETTINGS				
TRIGGER PHASES:	1	2	3	4
BEACON #1 OFF	X			
BEACON #2 OFF		X		
BEACON #3 OFF			X	
BEACON #4 OFF				X
OFF DELAY TIME (0-255):	0	0	0	0
ON DELAY TIME (0-255):	0	0	0	0
STOP-TIME HOLD (0-255):	0	0	0	0

SCROLL DOWN TO VIEW ALL DATA

ADVANCE BEACON PROGRAMMING COMPLETE

NOTE: AN OUTPUT HAS TO BE ASSIGNED AS AN ADVANCE BEACON IN ORDER FOR PROPER OPERATION TO OCCUR. SEE OUTPUT ASSIGNMENT DETAIL ON THIS SHEET.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0649  
 DESIGNED: October 2011  
 SEALED: 1-18-12  
 REVISED: 1-18-12

Signal Upgrade - Sheet 6 of 7

ELECTRICAL AND PROGRAMMING DETAILS FOR:  	<b>US 17</b> at <b>US 17 Bus. (Main Street SW) / SR 1316 (Old Shallotte Road NW)</b> Division 3 Brunswick County South of Shallotte PLAN DATE: April 2011 REVIEWED BY: T. Joyce PREPARED BY: S. Armstrong REVIEWED BY:	SEAL  SIGNATURE: <i>S. Armstrong</i> 2/3/12 DATE: 2/3/12											
	REVISIONS <table border="1" style="width: 100%;"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NO. 030009 TO ELECTRICAL DETAIL DIS. 1-5-12</td> <td>SA</td> <td>1/5/12</td> </tr> <tr> <td>2</td> <td></td> <td>SA</td> <td>1/18/12</td> </tr> </tbody> </table>		NO.	DESCRIPTION	INIT.	DATE	1	NO. 030009 TO ELECTRICAL DETAIL DIS. 1-5-12	SA	1/5/12	2		SA
NO.	DESCRIPTION	INIT.	DATE										
1	NO. 030009 TO ELECTRICAL DETAIL DIS. 1-5-12	SA	1/5/12										
2		SA	1/18/12										

750 N. Greenfield Place, Cary, NC 27513

03-0649-002 151-48  
 S:\11\SSUNAT\3\_Signals\work\sig\cuss4510\work\build\ng\sig\prog\ass030649\_fm\_01a\_2012x.dgn  
 2/3/12 10:58 AM

## ADVANCE BEACON #2 OUTPUT ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #35 (PIN 37) IS REACHED.

```

PAGE:1 C1 PIN:37 NOT ENABLED
OUTPUT ASSIGNMENT #.....35
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...50
MODE (0=SOLID,1=FLASH).....1
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE FIRST THREE PROGRAMMING ROWS DEFINE THE OUTPUT TO FLASH, ALONG WITH THE RATE IN WHICH IT WILL FLASH.

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:37 NOT ENABLED
SELECT BEACON INDEX (1-4).....2
    
```

WHEN A 'Y' IS ENTERED FOR 'ADVANCE BEACON' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'ADVANCE BEACON' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:37 ADVANCE BEACON
OUTPUT ASSIGNMENT #.....35
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...50
MODE (0=SOLID,1=FLASH).....1
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #36 (PIN 38) IS REACHED.

```

PAGE:1 C1 PIN:38 NOT ENABLED
OUTPUT ASSIGNMENT #.....36
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:38 NOT ENABLED
SELECT OUTPUT ASSIGNMENT (1-64).....35
    
```

WHEN A 'Y' IS ENTERED FOR 'OUT OF PHASE FLASHER' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'OUT OF PHASE FLASHER' AS SHOWN BELOW.

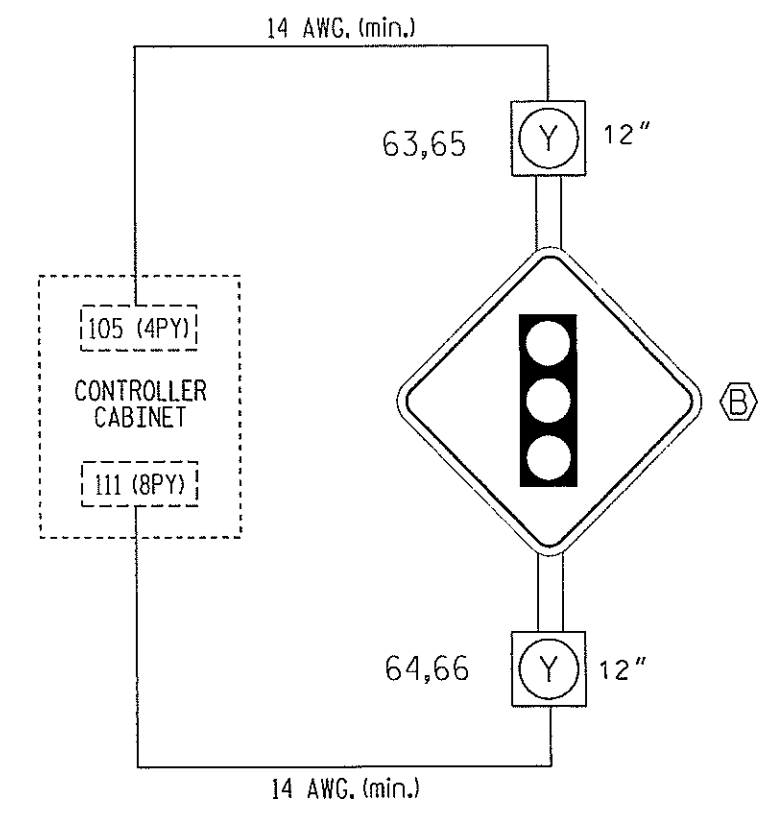
```

PAGE:1 C1 PIN:38 OUT OF PHASE FLASHER
OUTPUT ASSIGNMENT #.....36
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

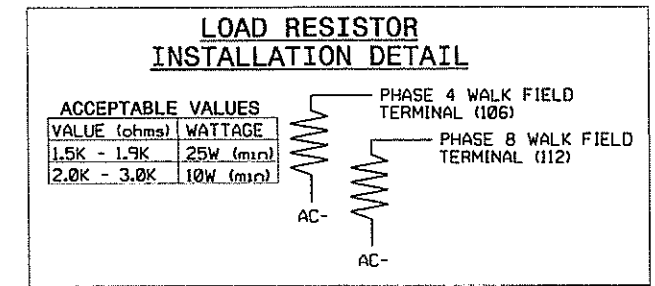
**OUTPUT REFERENCE SCHEDULE**

OUTPUT 35 =  $\phi$  4 Ped Yellow  
OUTPUT 36 =  $\phi$  8 Ped Yellow

## ADVANCE BEACON #2 WIRING DETAIL (wire flashers as shown below)



- IMPORTANT**
- REMOVE, TAPE AND LABEL CONFLICT MONITOR WIRE ATTACHED TO THE REAR OF TERMINAL 105 (4PY) AND TERMINAL 111 (8PY).
  - INSERT LOADSWITCH FOR S4P AND S8P.
  - MAKE SURE LOAD RESISTORS ARE IN PLACE AS SHOWN IN LOAD RESISTOR INSTALLATION DETAIL ON THIS SHEET.
  - TO ACTIVATE SIGN OPERATION AS INDICATED ON THE SIGNAL PLANS, RE-ASSIGN OUTPUT 35 AND 36 AS SHOWN ON THIS SHEET.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0649  
DESIGNED: October 2011  
SEALED: 1-18-12  
REVISED: 1-18-12

Signal Upgrade - Sheet 7 of 7

<p>Prepared in the Office of: <b>STATE OF NORTH CAROLINA</b> Department of Transportation Signal Management Section</p>	<p><b>US 17</b> at <b>US 17 Bus. (Main Street SW) / SR 1316 (Old Shallotte Road NW)</b></p> <p>Division 3 Brunswick County South of Shallotte</p> <p>PLAN DATE: April 2011 REVIEWED BY: T. Joyce</p> <p>PREPARED BY: S. Armstrong REVIEWED BY:</p>	<p>SEAL <b>NORTH CAROLINA</b> PROFESSIONAL ENGINEER SEAL 022013 <b>GEORGE C. BROWN</b></p>												
<p>REVISIONS</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>No change to electrical detail. BUS 1-5-12</td> <td>ATJ</td> <td>1/5/12</td> </tr> <tr> <td>2</td> <td></td> <td>ATJ</td> <td>1/18/12</td> </tr> </tbody> </table>			NO.	DESCRIPTION	INIT.	DATE	1	No change to electrical detail. BUS 1-5-12	ATJ	1/5/12	2		ATJ	1/18/12
NO.	DESCRIPTION	INIT.	DATE											
1	No change to electrical detail. BUS 1-5-12	ATJ	1/5/12											
2		ATJ	1/18/12											
<p>750 N. Greenfield Place, Garner, NC 27529</p>		<p>Signature: <i>George C. Brown</i> 2/3/12 DATE: 2/3/12 SEC. INVENTORY NO. 03-0649</p>												

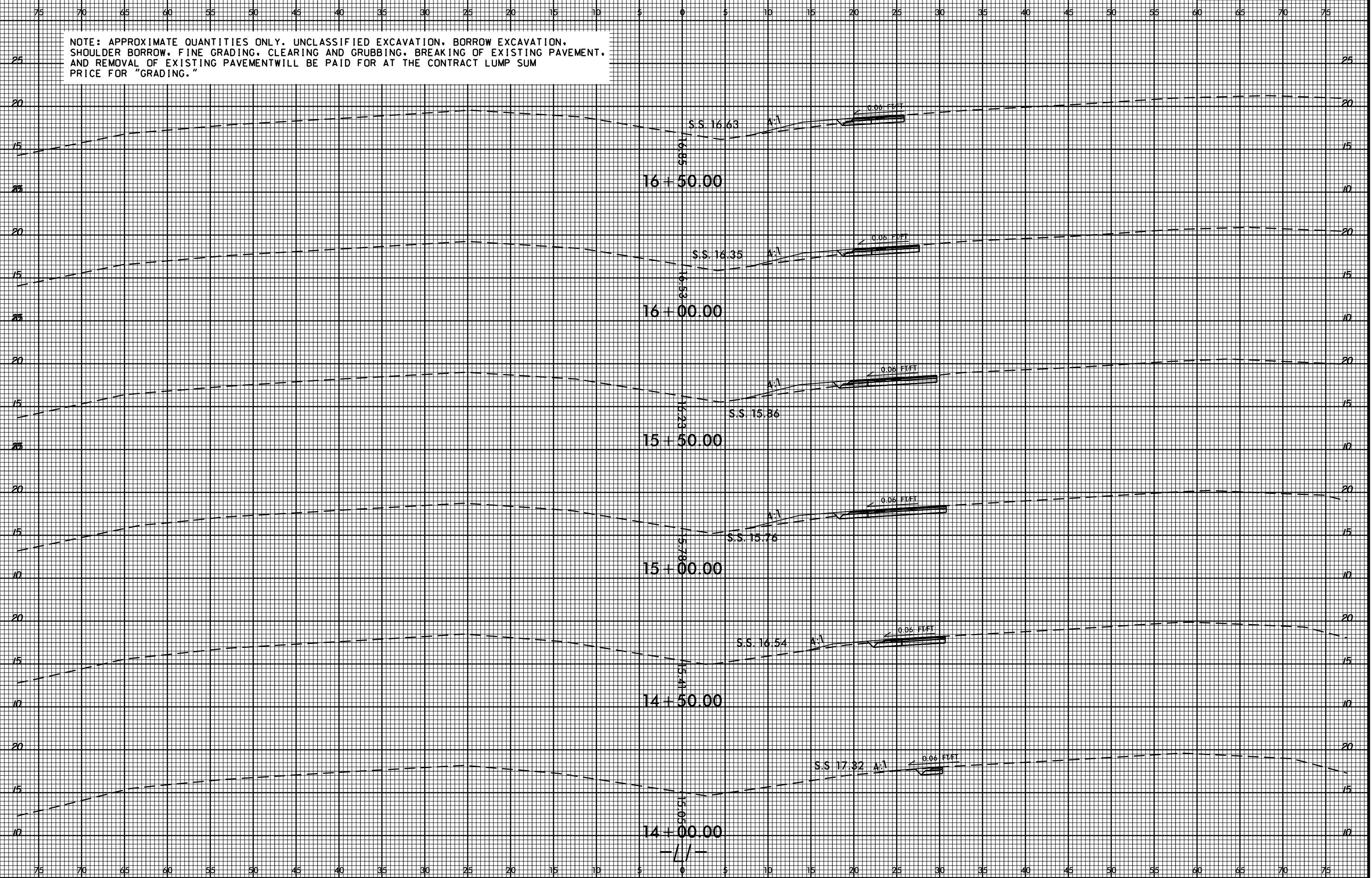
15-111-0013 15148  
 Statewide Signal Management System  
 15-111-0013 15148  
 Statewide Signal Management System  
 15-111-0013 15148  
 Statewide Signal Management System

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJ. REFERENCE NO.	SHEET NO.
SS-4903AH	X-1A

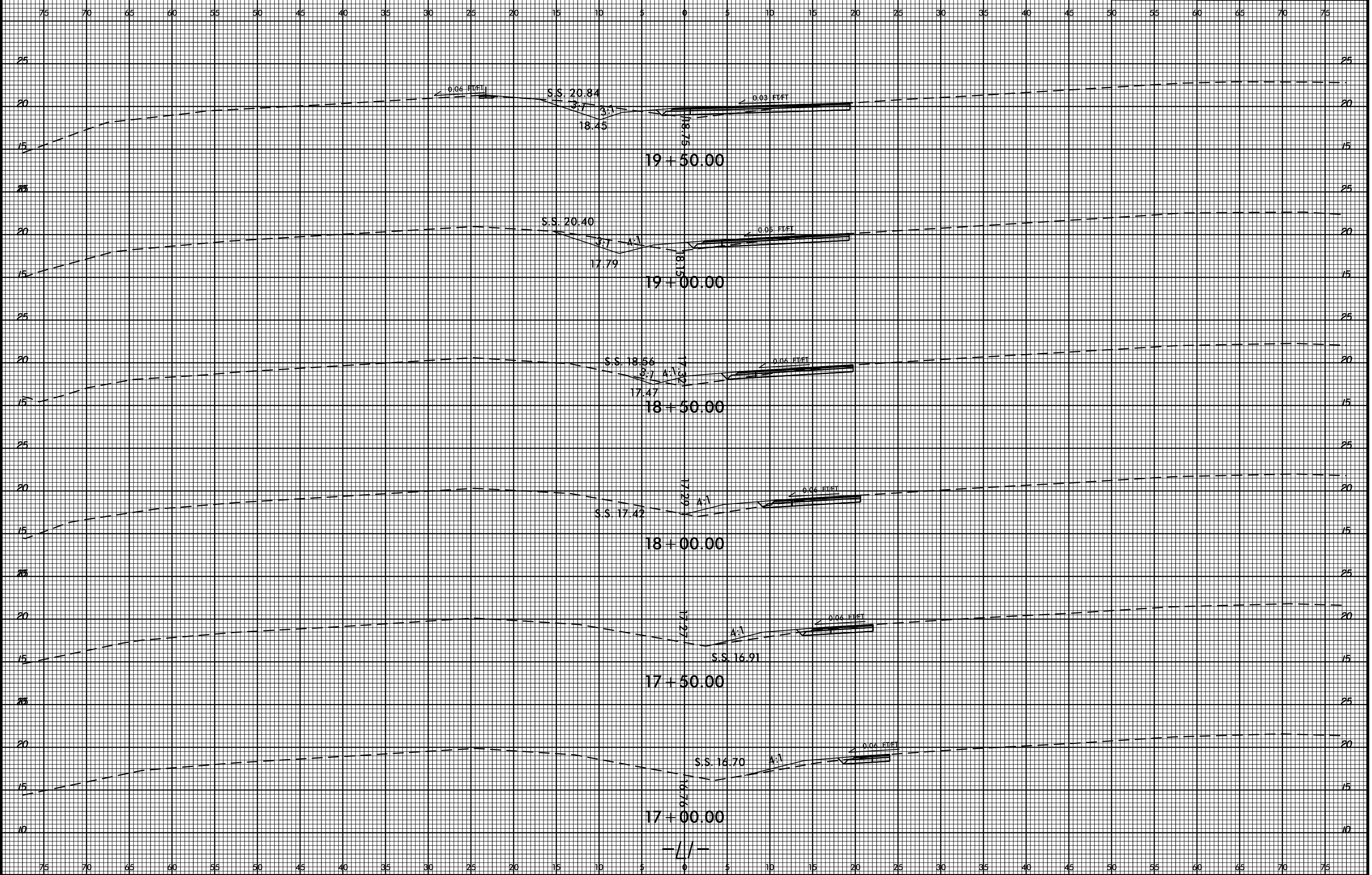
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L1 (RT)	(cu. yd.)	(cu. yd.)	L1 (LT)	(cu. yd.)	(cu. yd.)						
14+50.00	0	2	14+50.00	0	0						
15+00.00	0	7	15+00.00	0	0						
15+50.00	0	10	15+50.00	0	0						
16+00.00	0	12	16+00.00	0	0						
16+50.00	0	12	16+50.00	0	0						
17+00.00	0	10	17+00.00	0	0						
17+50.00	0	9	17+50.00	0	0						
18+00.00	0	12	18+00.00	0	0						
18+50.00	0	10	18+50.00	1	4						
19+00.00	0	3	19+00.00	6	7						
19+50.00	0	2	19+50.00	15	4						
20+00.00	0	7	20+00.00	12	12						
20+50.00	0	0	20+50.00	2	25						
21+00.00	0	0	21+00.00	0	0						
21+50.00	0	0	21+50.00	0	0						
22+00.00	0	131	22+00.00	0	22						
22+50.00	0	67	22+50.00	0	13						
23+00.00	0	68	23+00.00	0	13						
23+50.00	0	71	23+50.00	0	13						
24+00.00	0	60	24+00.00	0	19						
24+50.00	0	37	24+50.00	0	36						
25+00.00	0	36	25+00.00	0	36						
25+50.00	0	38	25+50.00	0	38						
26+00.00	0	20	26+00.00	0	62						
26+50.00	0	20	26+50.00	0	63						
27+00.00	0	20	27+00.00	0	62						
27+50.00	0	0	27+50.00	0	81						
28+00.00	0	0	28+00.00	0	60						
28+50.00	0	0	28+50.00	0	20						

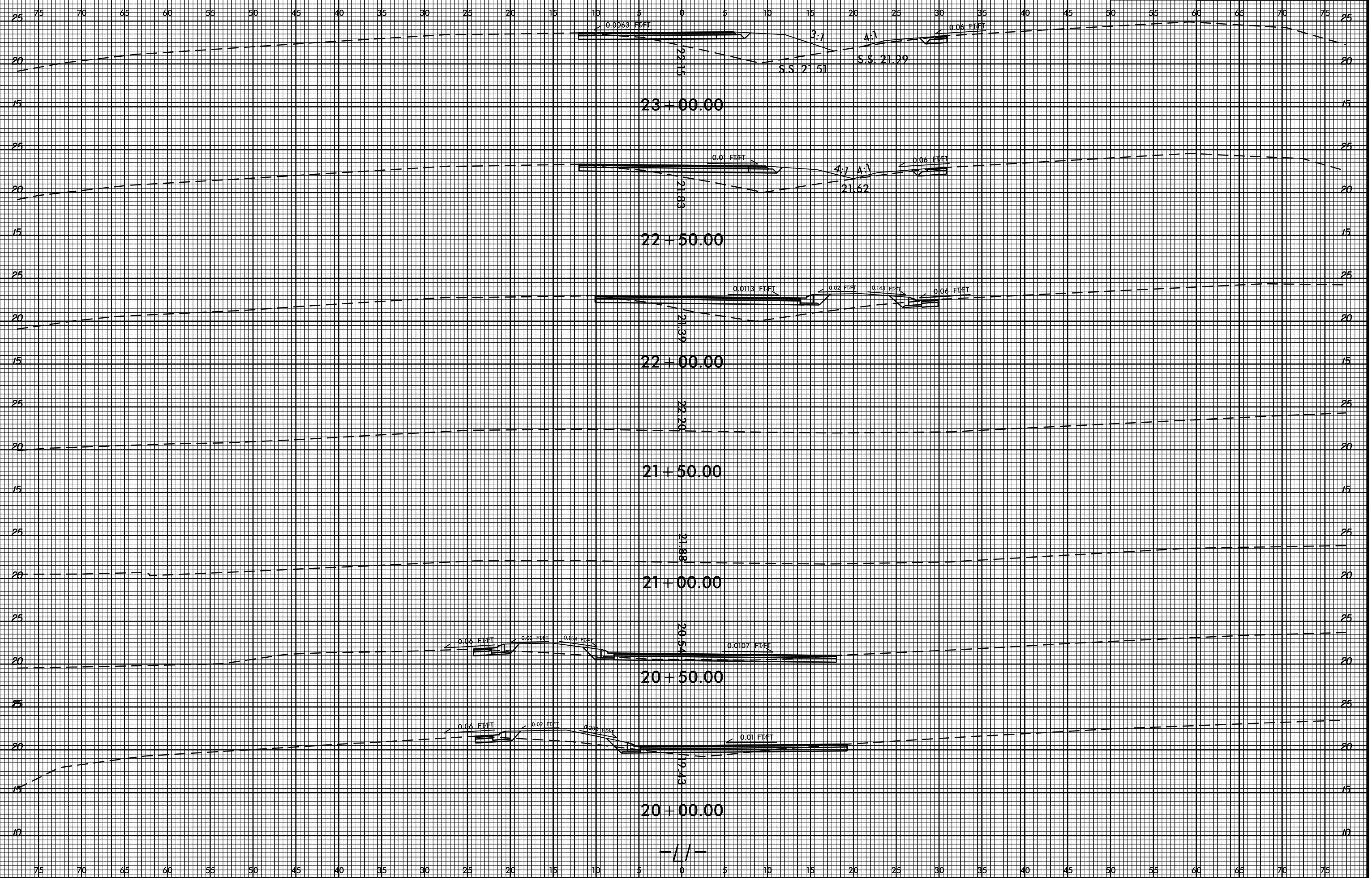
NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, SHOULDER BORROW, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

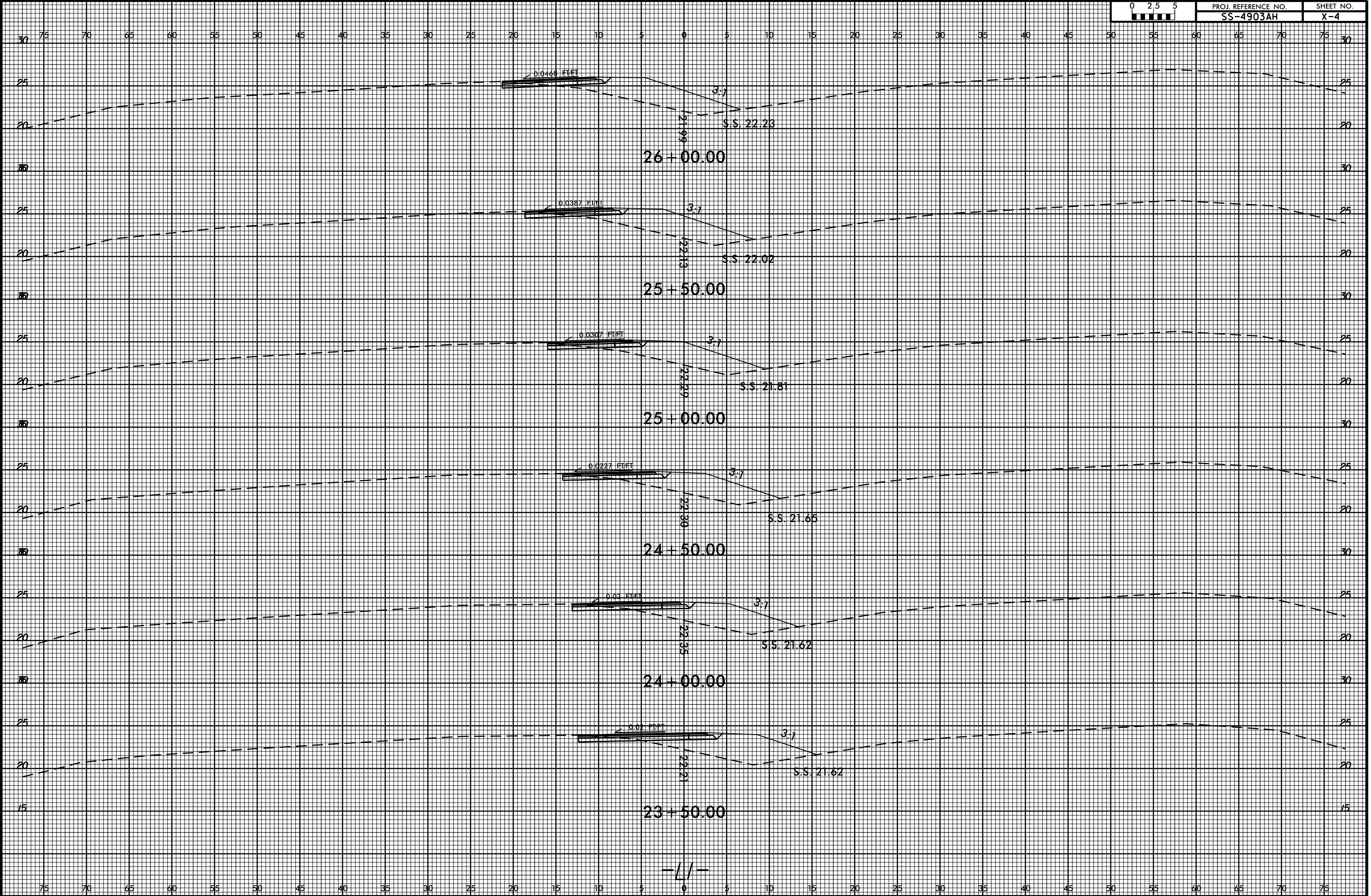


15-SEP-2014 10:46 BRUNSWICK\US\_17\_US\_17\_BUS\_SHALLOTTE\_OFFSET\_LEFTS\ROADWAY\CorridorModeling\43034\_Rdy\_xpl.dgn  
0:\RDY\01\FRE\AT\_D3CAD27449  
c:\cshomaker









15-SEP-2014 10:44  
D:\RD\01\FREI - AT D3CAD27445  
c:\cshomaker

-L/-

