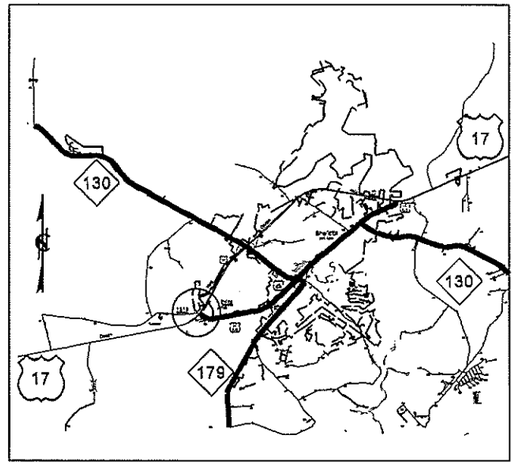
TIP PROJECT: SS-4903AH

CONTRACT: DC0065

See Sheet 1-A For Index of Sheets



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

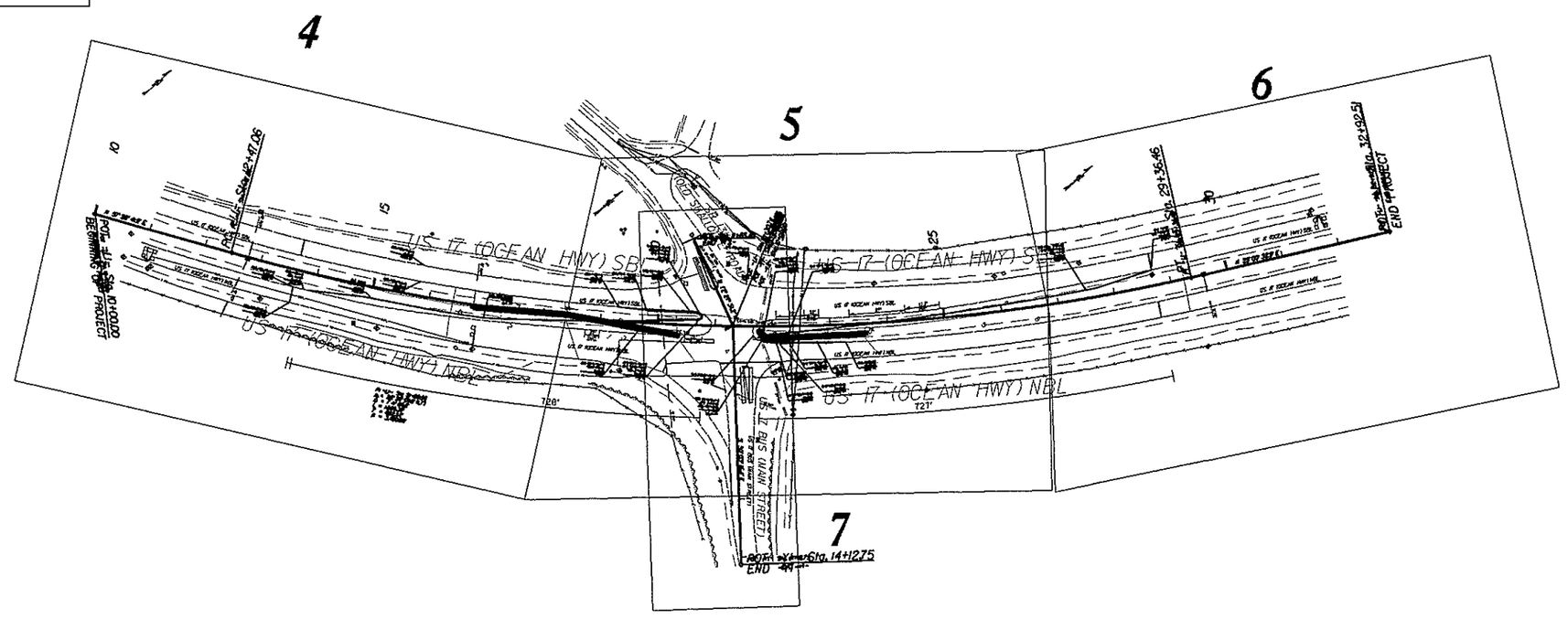
BRUNSWICK COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SS-4903AH	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
43034.1.1	SS-4903AH	P.E.
43034.1.3	SS-4903AH	CONST.

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.

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



THIS PROJECT IS LOCATED WITHIN THE MUNICIPAL BOUNDARY OF SHALLOTTE.

NOT TO SCALE

GRAPHIC SCALES

30 15 0 30 60
PLANS

PROJECT LENGTH

MAP NO. 1 = 0.28 MI.

TOTAL = 0.28 MI.

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

2012 STANDARD SPECIFICATIONS

LETTING DATE:
MARCH 6, 2014

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN TECHNICIAN
CMS

SIGNATURE:

SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 024905 ENGINEER SCOTT COOKE EVANS

2-3-14

DIVISION DESIGN ENGINEER

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

NORTH CAROLINA PROFESSIONAL SEAL 024905 ENGINEER SCOTT EVANS COOKE
2-3-14
DIVISION DESIGN ENGINEER

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.

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
03-FEB-2014 16:... BRUNSWICK\US 17_US 17 BUS_SHALLOTTE OFFSET LEFTS\ROADWAY\Proj\43034_Rdy_tsh.dgn

04/15/11

PROJECT REFERENCE NO.	SHEET NO.
55-4903AH	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — IP
- Property Corner
- Property Monument — CM
- Parcel/Sequence Number — 23
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- 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 — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- 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 — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — PH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

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

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — PH
- 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 — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

CONTROL AND ALIGNMENT -L1-, -Y1-, AND -Y2- DESCRIPTIONS

Beginning chain L1 description
==

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

Course from 10000 to PC C1 N 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

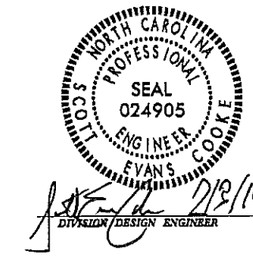
Point 9001 N 77,402.5226 E 2,176,387.4414 Sta 11+65.48

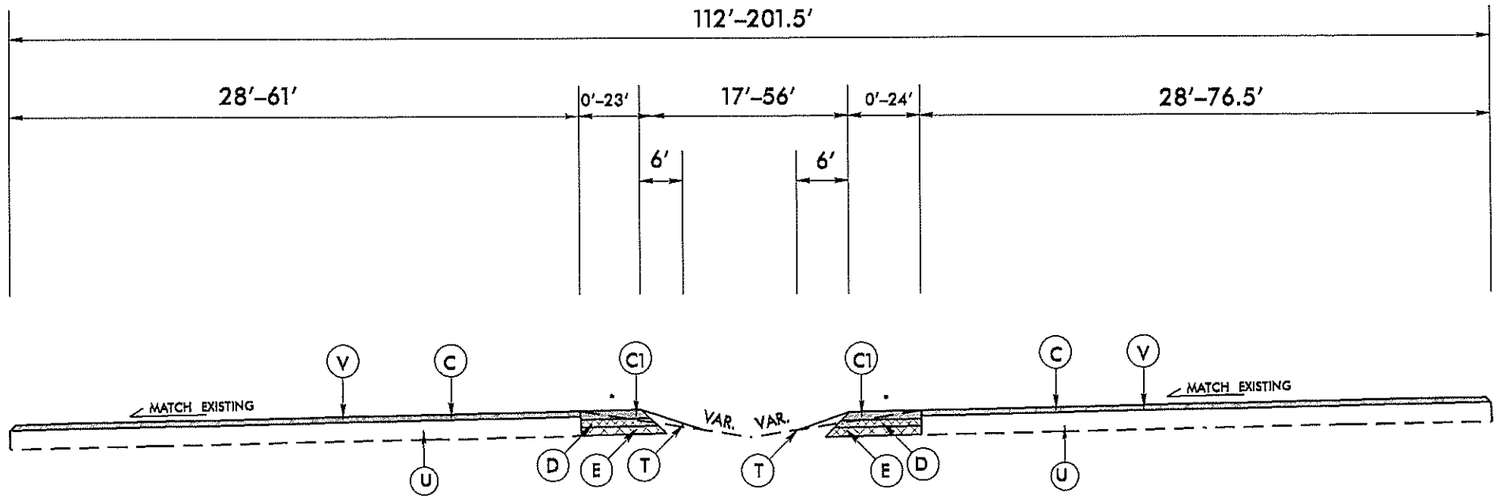
==
Ending chain Y2 description

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,

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	2





TIE SHOULDERS TO EXIST. GROUND

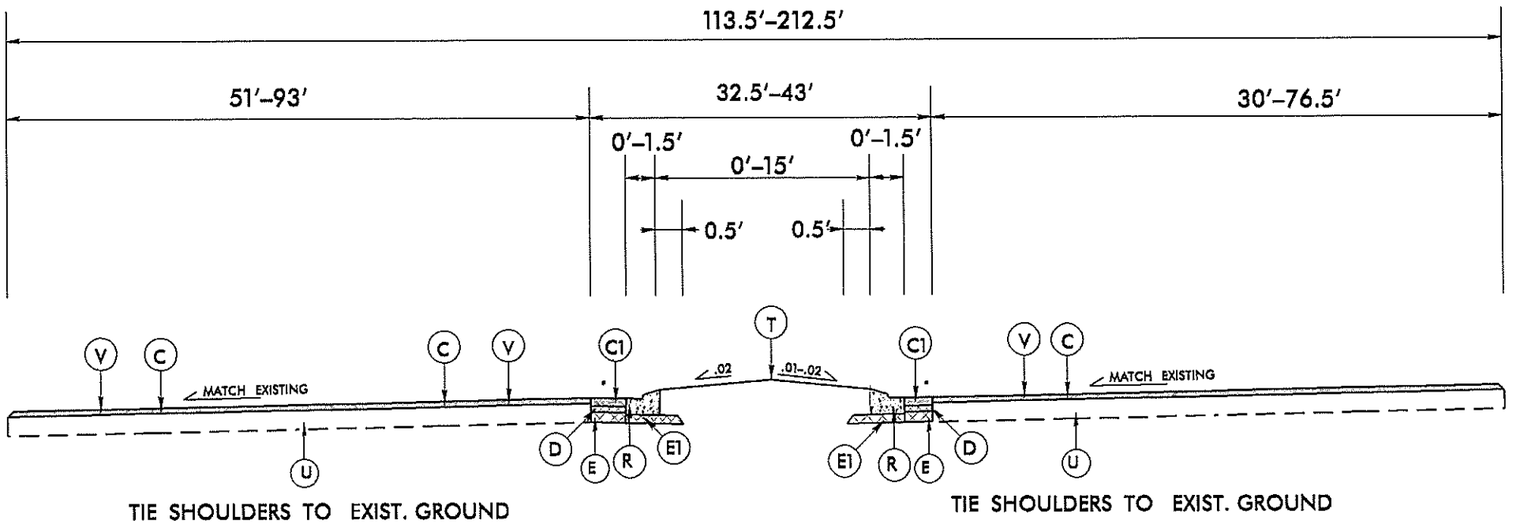
TYPICAL SECTION NO. 1

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 S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 336 LBS. PER SQ. YD.
D	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
R	1' 6" CONCRETE CURB & GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	1 1/2" MILLING.



TIE SHOULDERS TO EXIST. GROUND

TIE SHOULDERS TO EXIST. GROUND

TYPICAL SECTION NO. 2

US 17

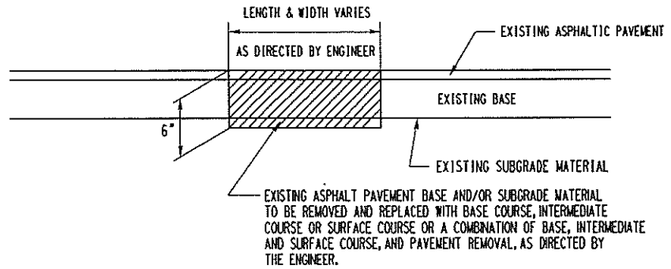
-L1- 19+80-22+28

* SEE PLAN SHEETS FOR SUPERELEVATION

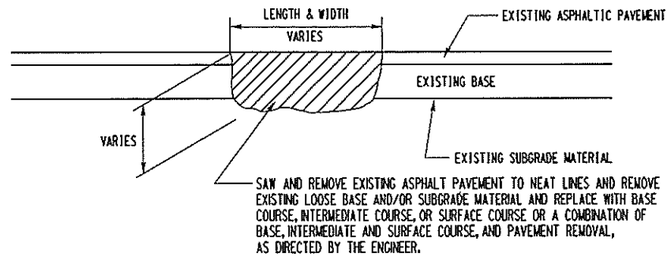
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	2-A

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



DETAIL NO. 1



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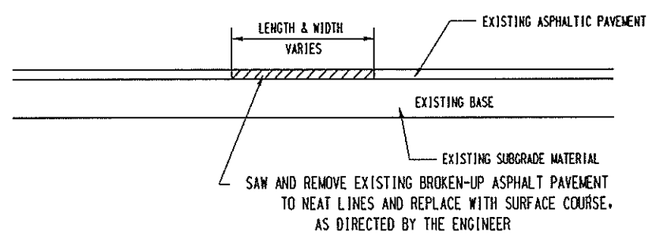
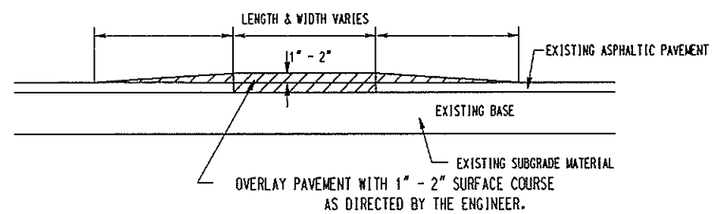
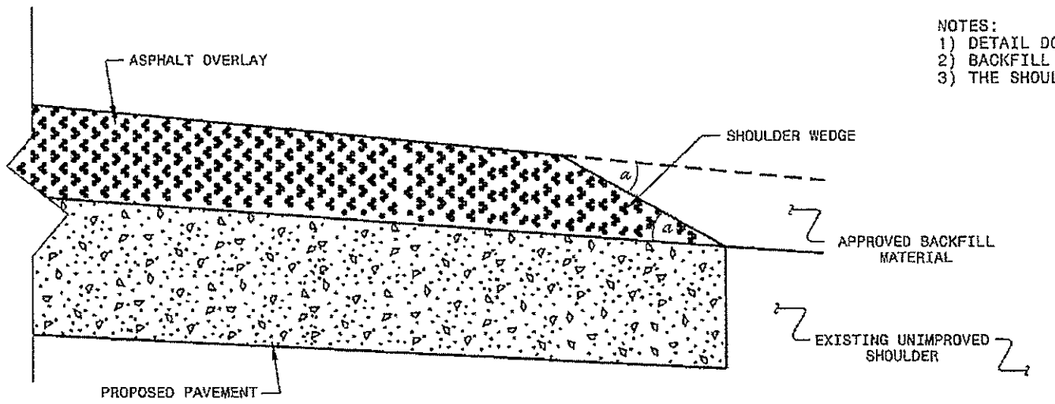


DETAIL NO. 3



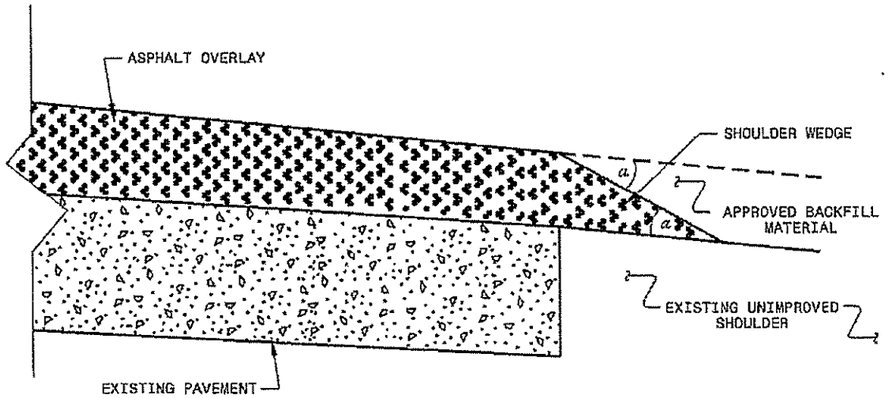
DETAIL NO. 4



NOTES:
1) DETAIL DOES NOT APPLY TO OGAFC 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.

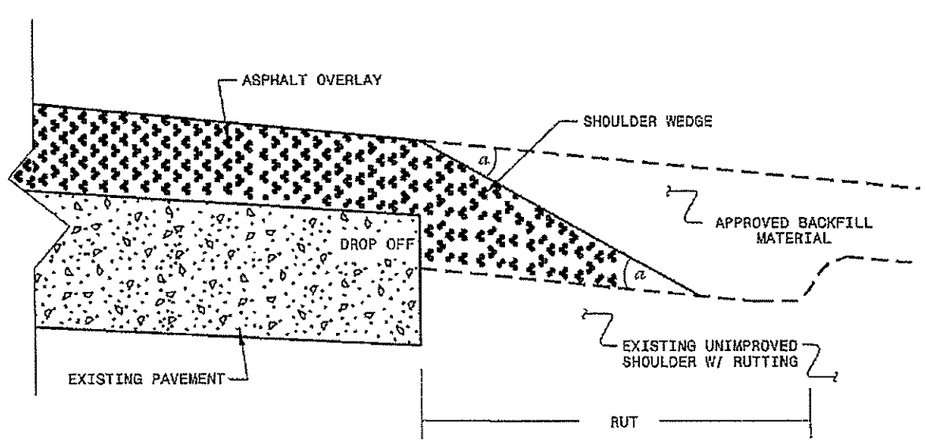
SHOULDER WEDGE DETAIL

(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)

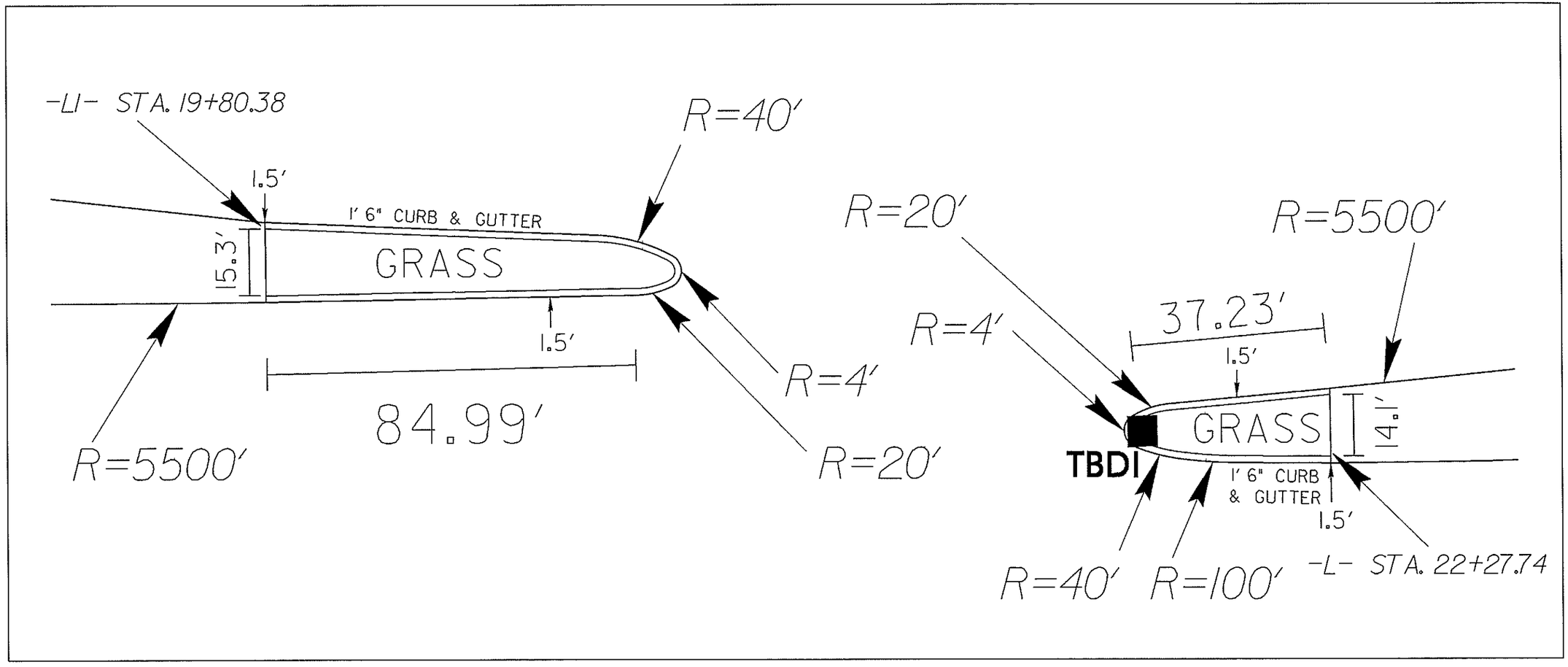
- SHOULDER WEDGE ANGLE = 30°

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	2-C

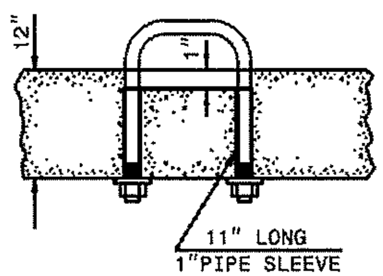
8/17/99

DETAIL SHEET-GRASS ISLANDS

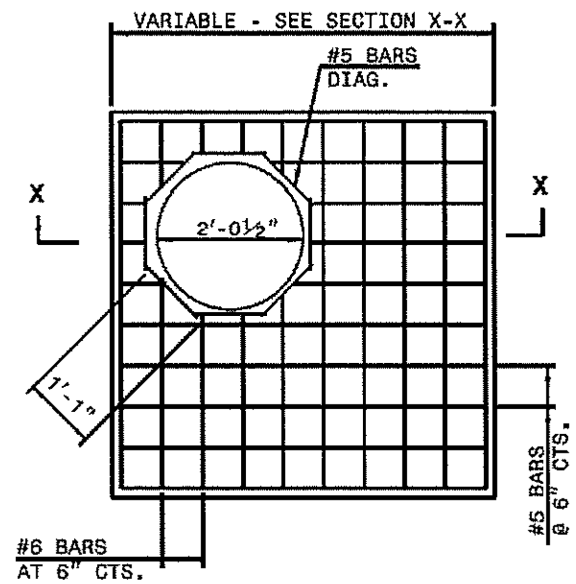


NOT TO SCALE

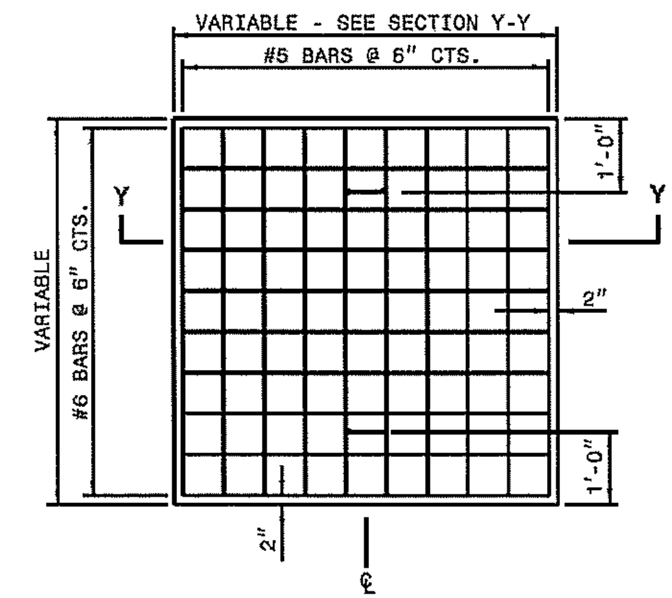
DETAIL TO CONVERT EXISTING DROP INLET OR CATCH BASIN TO TRAFFIC BEARING JUNCTION BOX



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

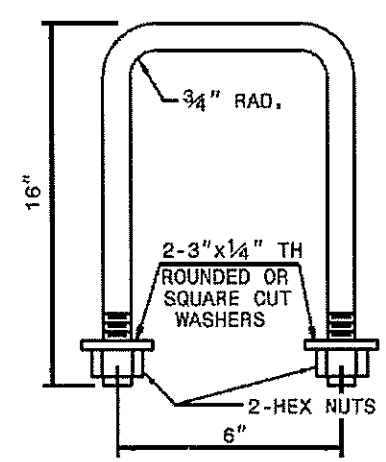
CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

FIELD VERIFY THE DIMENSIONS FOR THE EXISTING BOXES.

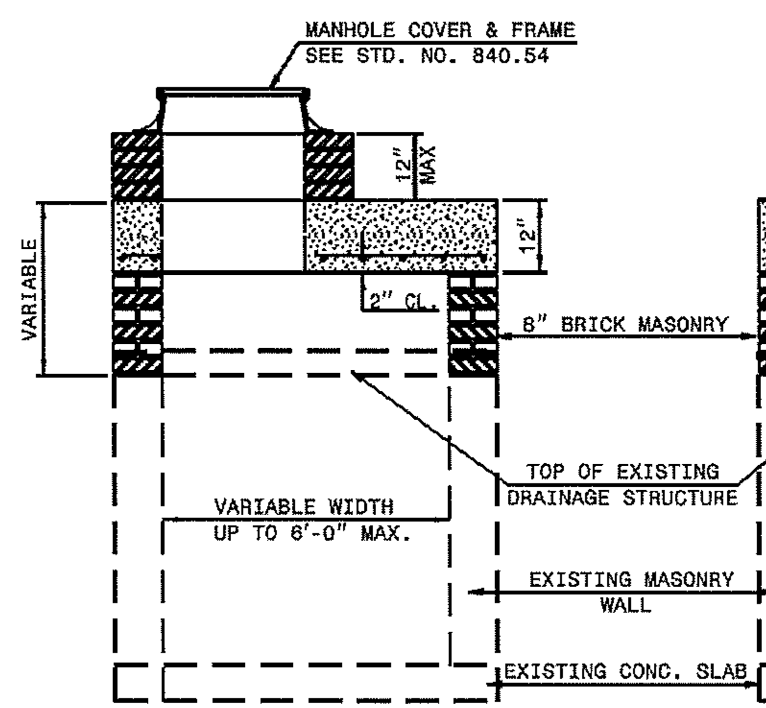
BILL OF MATERIALS			
MASONRY			
TOP SLAB CONCRETE CLASS "A"		.037YDS^3 PER FT^2	
BRICK MASONRY		.025YDS^3 PER FT^2	
REINFORCING STEEL		7.64LBS PER FT^2	
MANHOLE OPTION QUANTITIES			
SIZE	QTY.	LENGTH	REINF. STEEL LBS.
#5 DIAG.	8	1'-1"	9.04

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

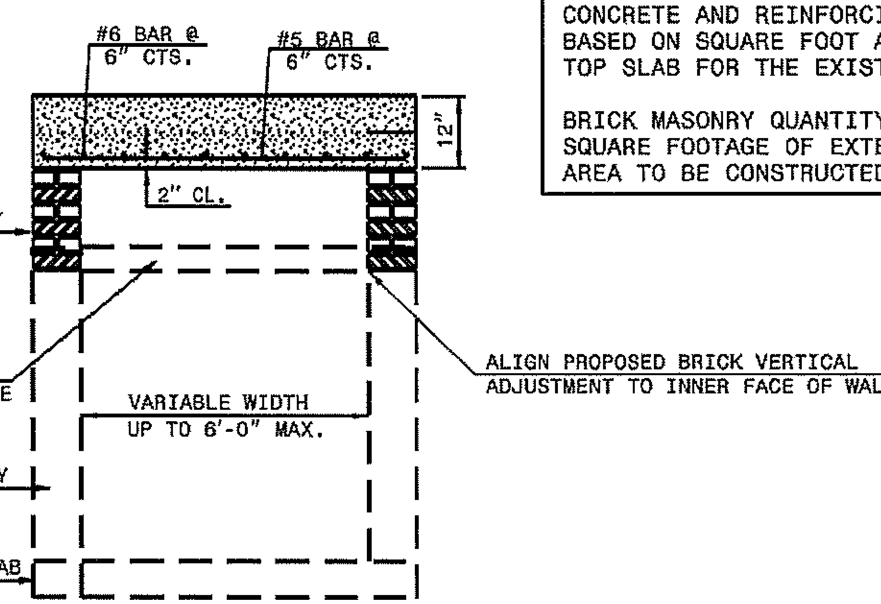
BRICK MASONRY QUANTITY IS BASED ON THE TOTAL SQUARE FOOTAGE OF EXTERIOR WALL SURFACE AREA TO BE CONSTRUCTED.



DETAIL OF HANDLE



SECTION X-X



SECTION Y-Y

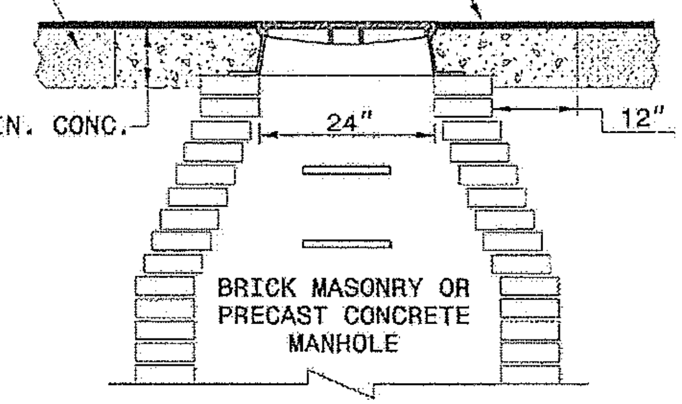
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	2-E

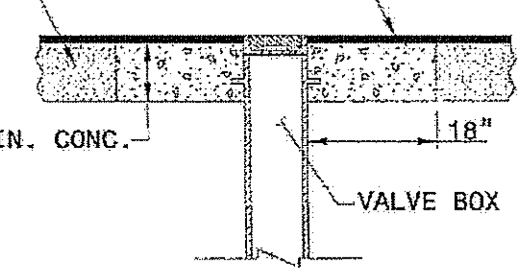
MANHOLE AND VALVE BOX ADJUSTMENTS

GENERAL NOTES:

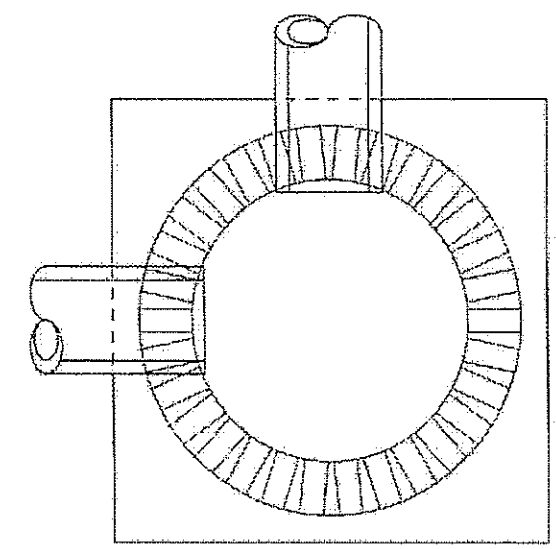
1. USE RAPID SET GROUT, MORTAR, OR CONCRETE WITH A MINIMUM COMPRESSIVE STRENGHT OF 4000 PSI.
2. REMOVE ALL FAULTY EXISTING BRICKWORK AND REPLACE WITH NEW BRICK MASONRY.
3. SHEER CUT EXCAVATION FOR THE ADJUSTMENT ON ALL SIDES.
4. FILL AREA BELOW 8" DEPTH WITH 78M OR NO. 57 CLEAN STONE.
5. MIX MORTAR TO NCDOT SPECIFICATIONS.
6. MORTAR JOINTS ½" +/- ⅛"



MANHOLE CONCRETE ENCASEMENT



VALVE BOX CONCRETE ENCASEMENT



ELEVATION VIEW

PLACE BRICK ACCORDING TO ELEVATION VIEW

NOT TO SCALE

8/17/99

21-JAN-2014 09:55
G:\RDY\OTHREE_BRUNSWICK\US 17_US 17 BUS_SHALLOTTE OFFSET LEFTS\ROADWAY\Proj\43034_Rdy_tsh.dgn

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	2-F

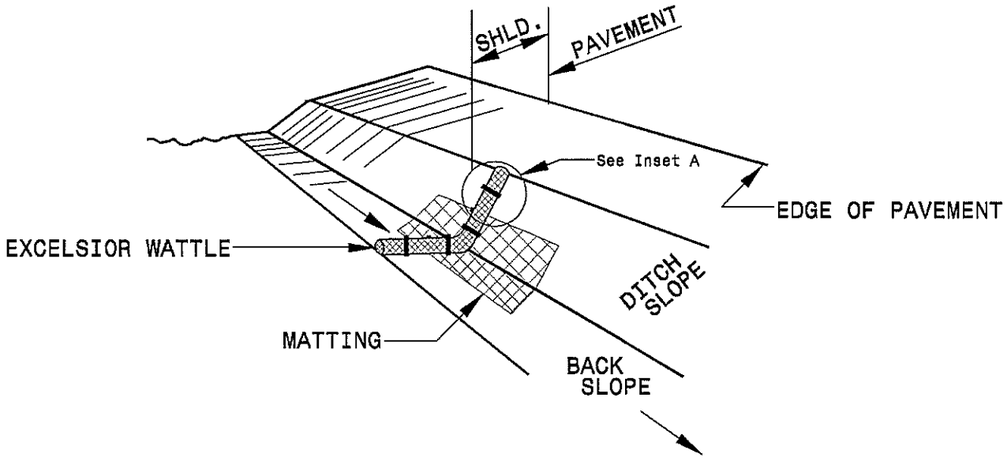
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

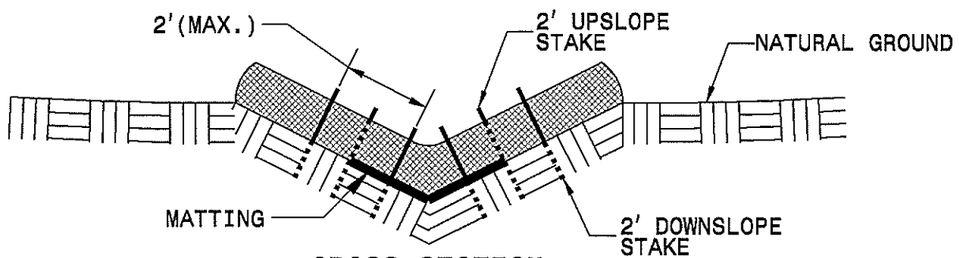
SITE DESCRIPTION	*STABILIZATION TIME*	*TIMEFRAME EXCEPTIONS*
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14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

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	2-G

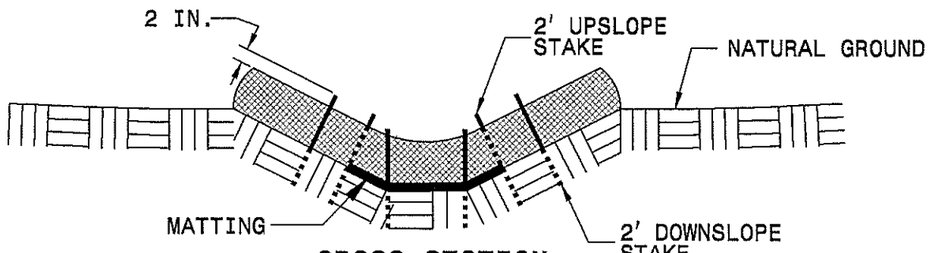
WATTLE DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

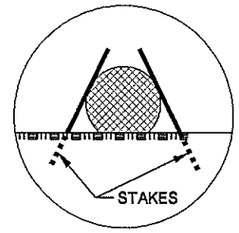
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

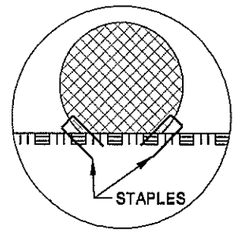
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

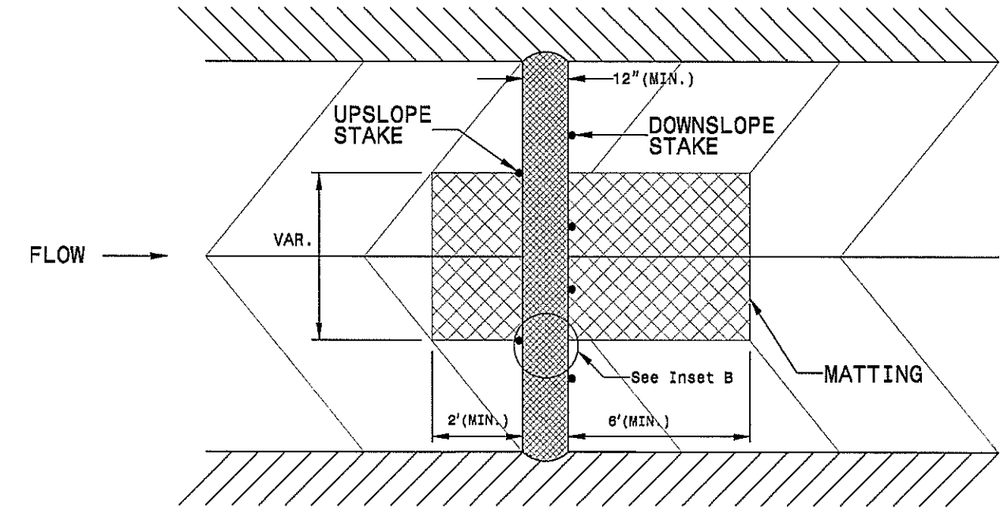
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



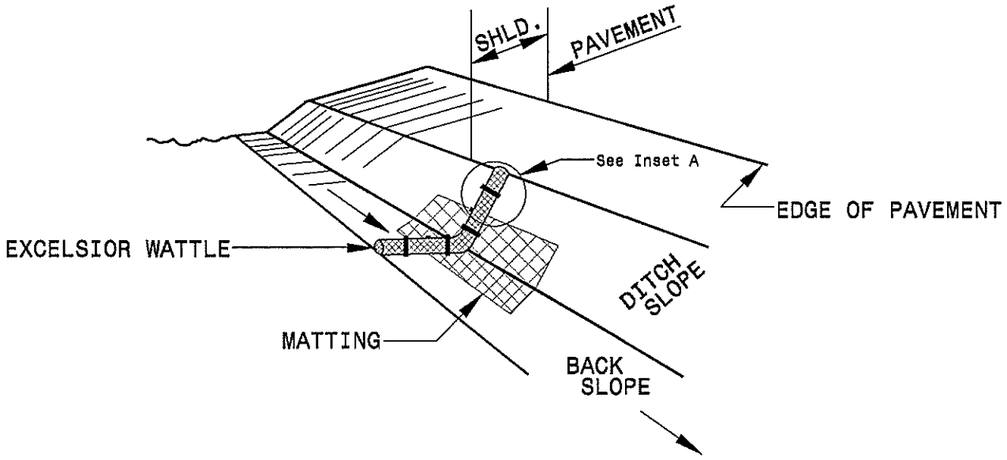
INSET B



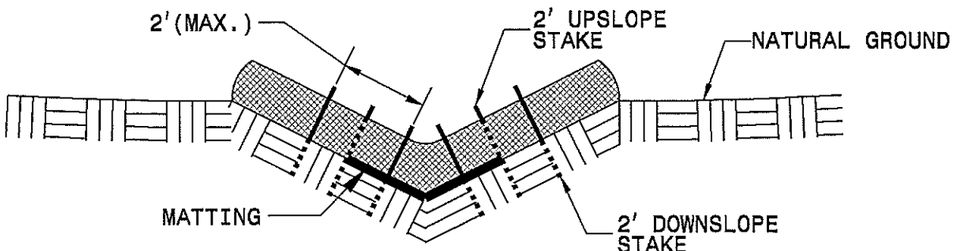
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	2-H

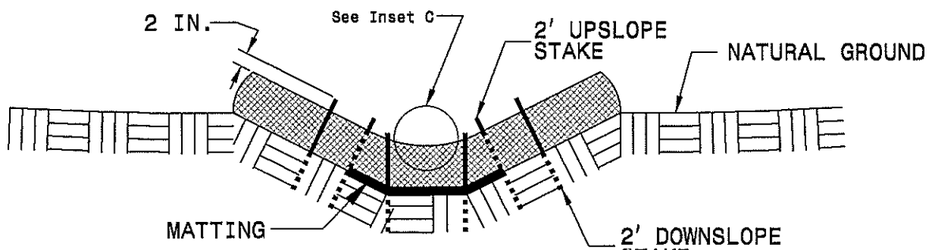
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

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.

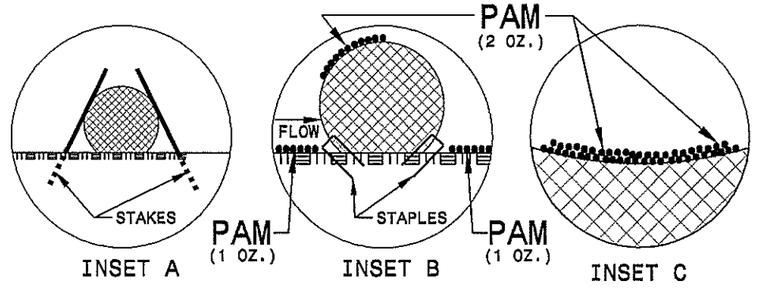
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

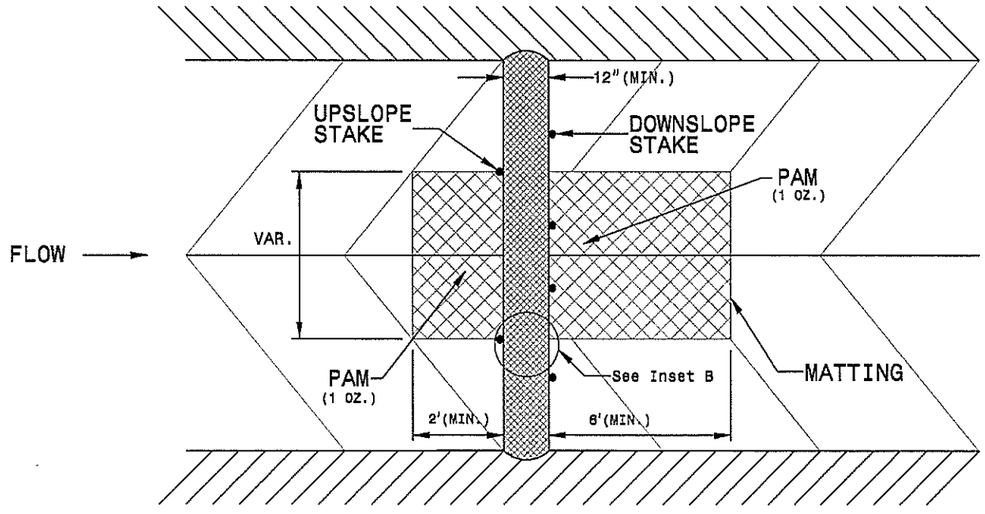
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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.

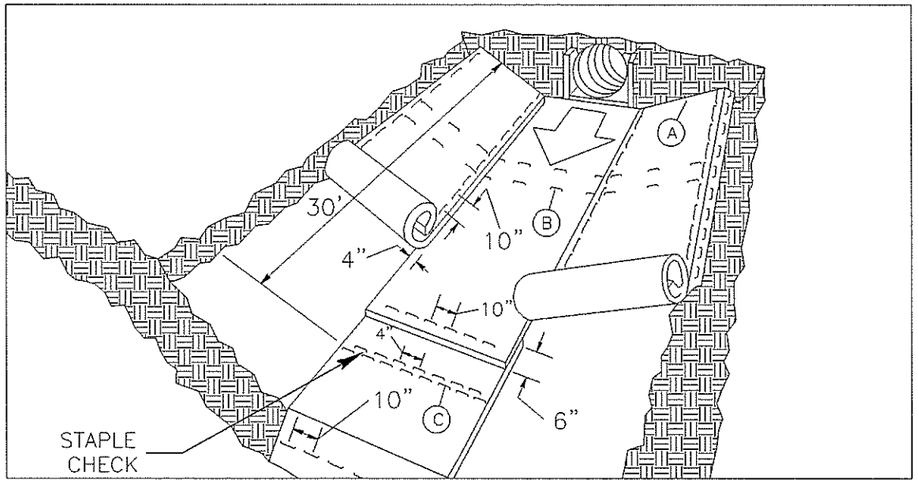




TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	2-I

MATTING INSTALLATION DETAIL



MATTING IN DITCHES

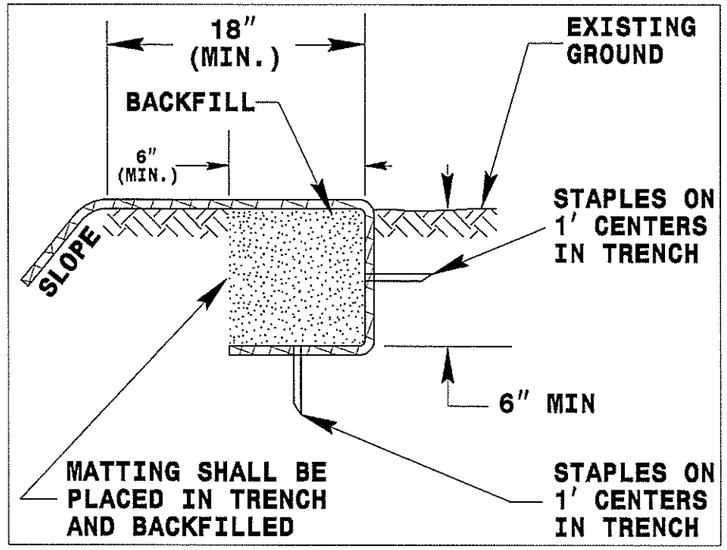
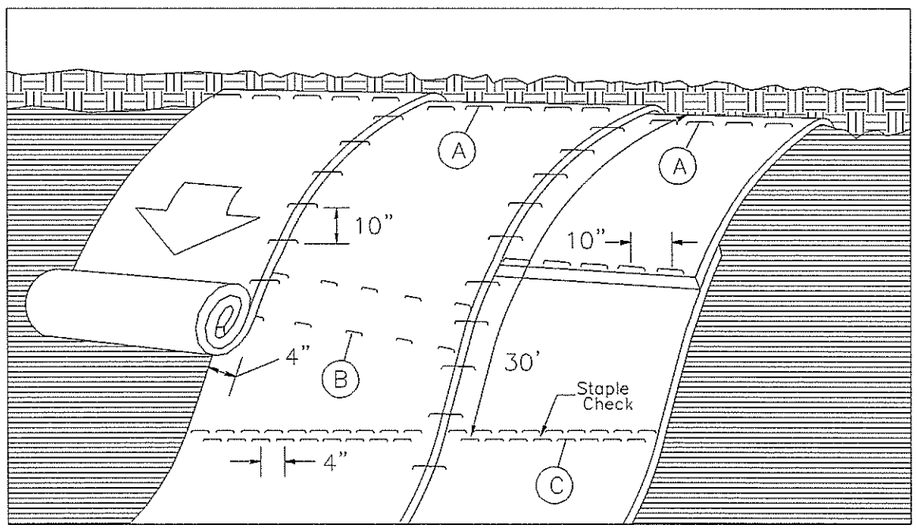


DIAGRAM (A)



MATTING ON SLOPES

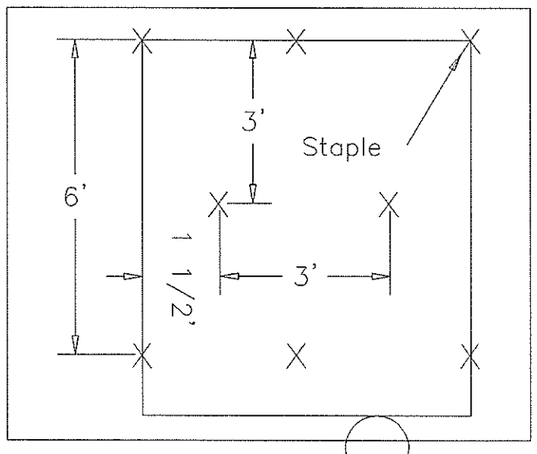


DIAGRAM (B)

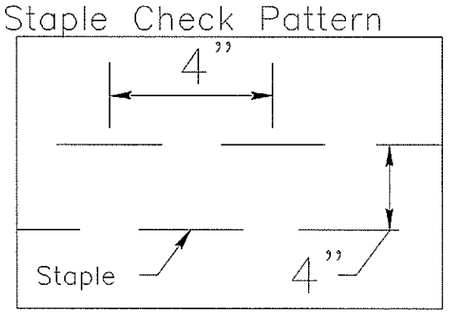


DIAGRAM (C)

NOTES:

THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.

NOT TO SCALE

4/04/06

COMPUTED BY: JWG DATE: 01-22-2014
CHECKED BY: CMS DATE: 01-22-2014

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

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".

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUB-REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
16+77.77	RT	0401	0402	M.E.	13.3	14.11													
18+39.99	LT	0402		17.6	14.11														
18+39.99	LT	0402	0501		14.11	15.42													
20+35.89	RT	0501		20.9	15.42														
21+76.88	RT	0502		22.25	16.27														
21+76.88	RT	0502	0503		16.27	16.35													
21+84.54	RT	0503		21.2	16.35														
21+84.54	RT	0503	0504		16.35	16.59													
22+31.27	RT	0504		21.5	16.59														
22+31.27	RT	0504	0505		16.59	17.25													
23+62.75	RT	0505		21.5	17.25														
TOTALS																			

STATION	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"
16+77.77								164						
18+39.99														
18+39.99								200						
20+35.89														
21+76.88														
21+76.88								16						
21+84.54														
21+84.54								48						
22+31.27														
22+31.27								132						
23+62.75														
TOTALS								560						

STATION	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"	*** R. C. PIPE (CLASS V)	*** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	*** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE
16+77.77													
18+39.99													
18+39.99													
20+35.89													
21+76.88													
21+76.88													
21+84.54													
21+84.54													
22+31.27													
22+31.27													
23+62.75													
TOTALS													

STATION	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION 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. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	T.B.D.I. FRAME WITH TWO GRATES STD. 840.36	STEEL GRATE AND FRAME STD. 840.37	CONV. EXIST. 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
16+77.77																							
18+39.99			1												1								
18+39.99																							
20+35.89			1	0.48													1	1					
21+76.88																			1				
21+76.88																							
21+84.54			1									1					1	1					
21+84.54																							
22+31.27			1												1								
22+31.27																							
23+62.75			1												1								
TOTALS			5	0.48								1			3		2	2	1				

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

SUMMARY OF EARTHWORK

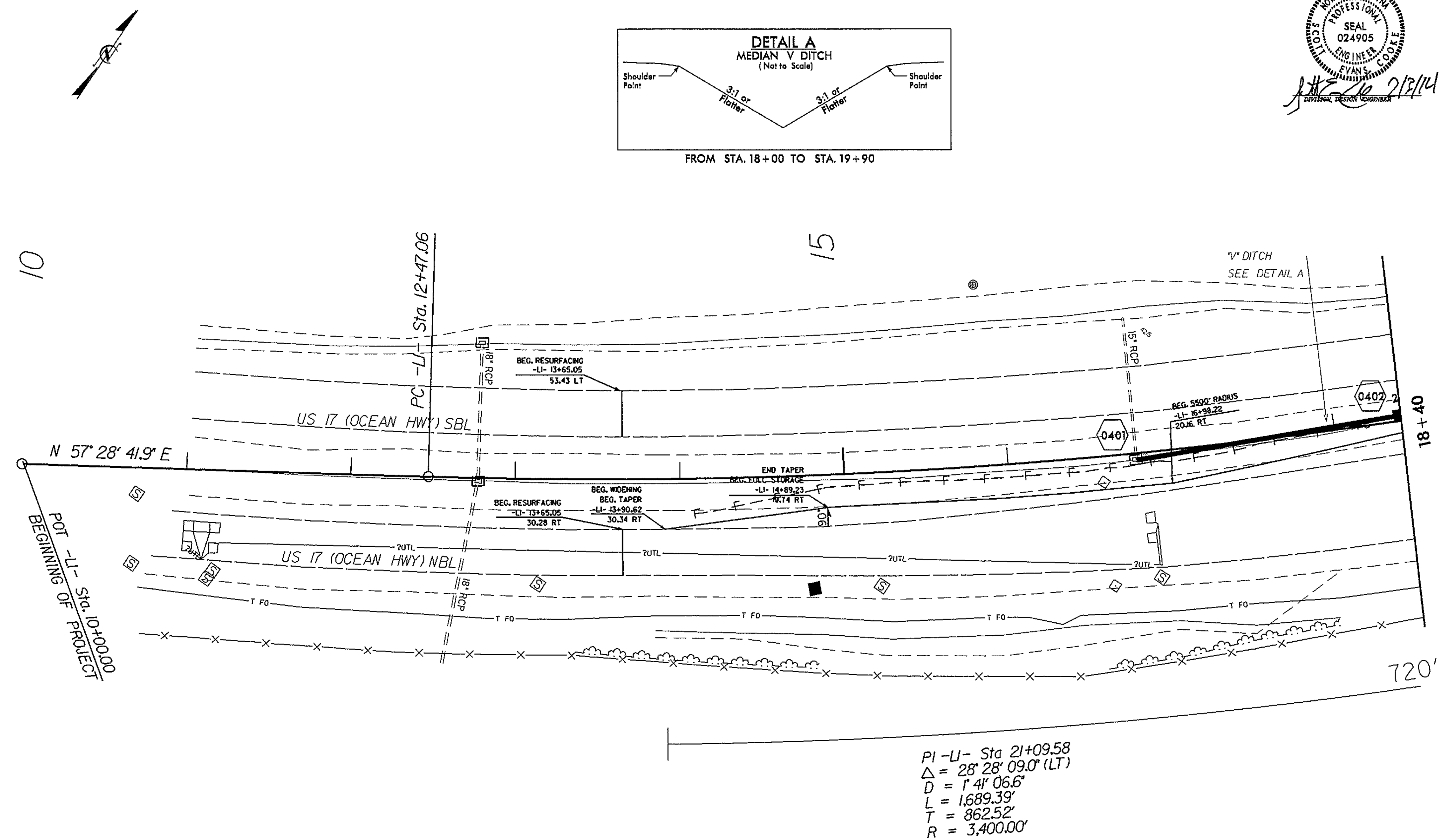
STATION	STATION	UNCL. EXCAV. (C.Y.)	EMBANK. +25% (C.Y.)	BORROW (C.Y.)	SUITABLE WASTE (C.Y.)
(NB) -L1- 14+50	-L1- 20+50	36	148	112	
(SB) -L1- 22+00	-L1- 28+50	0	1106	1106	
PROJECT TOTALS:		36	1254	1218	
GRAND TOTALS:		36	1254	1218	
SAY:		36	–	1218	–

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

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	4

NORTH CAROLINA PROFESSIONAL SEAL 024905 ENGINEER SCOTT EVANS COOKE

DIVISION DESIGN ENGINEER 2/3/14



REVISIONS

8/17/99

24-JAN-2014 16:12
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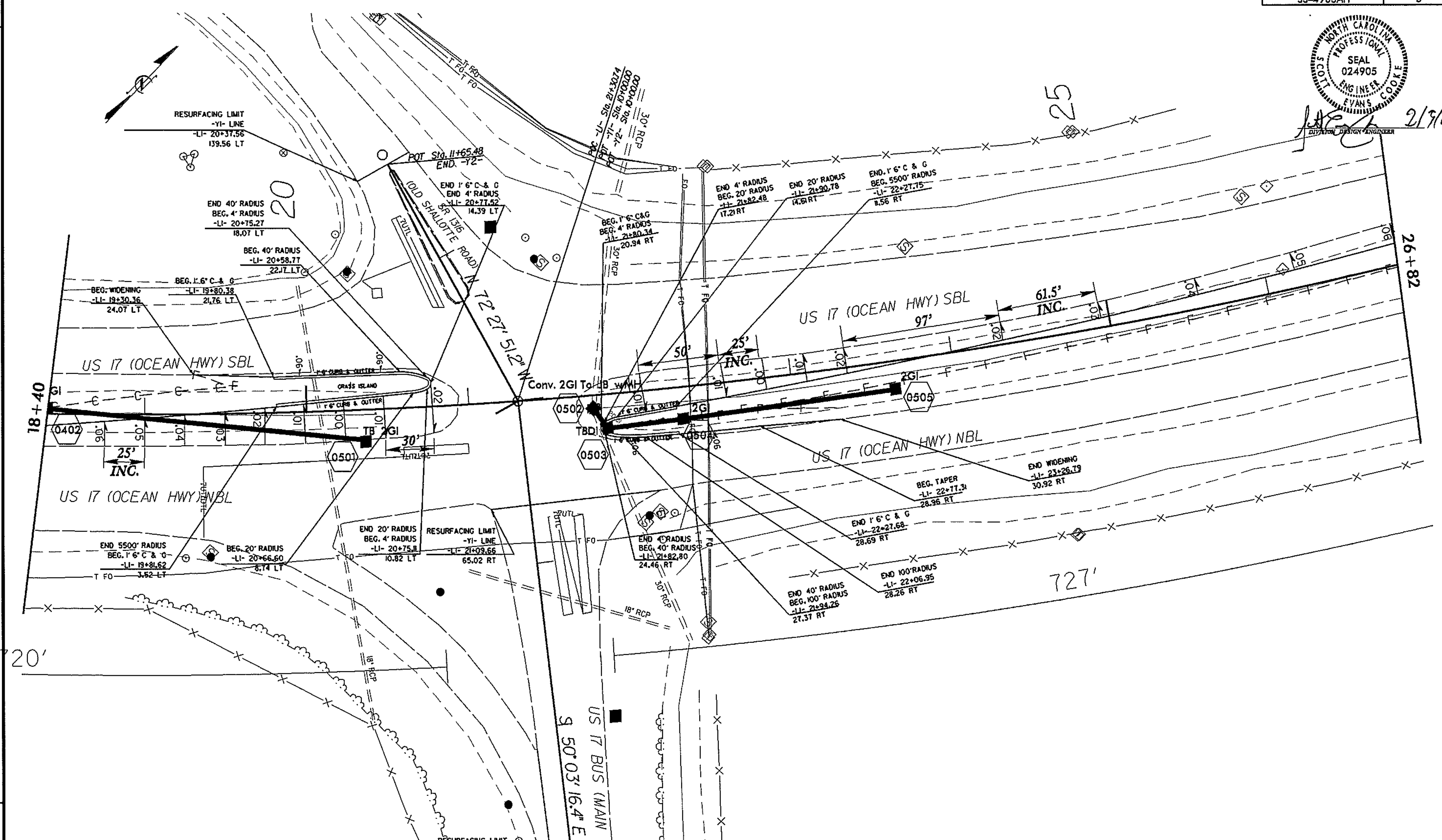
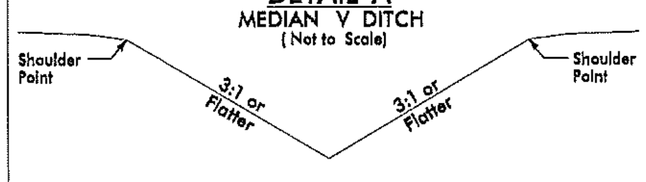
PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	5



DETAIL A

MEDIAN V DITCH

(Not to Scale)

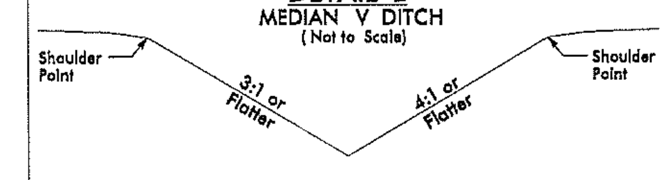


FROM STA. 18+00 TO STA. 19+90

DETAIL B

MEDIAN V DITCH

(Not to Scale)



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

REVISIONS

8/17/99

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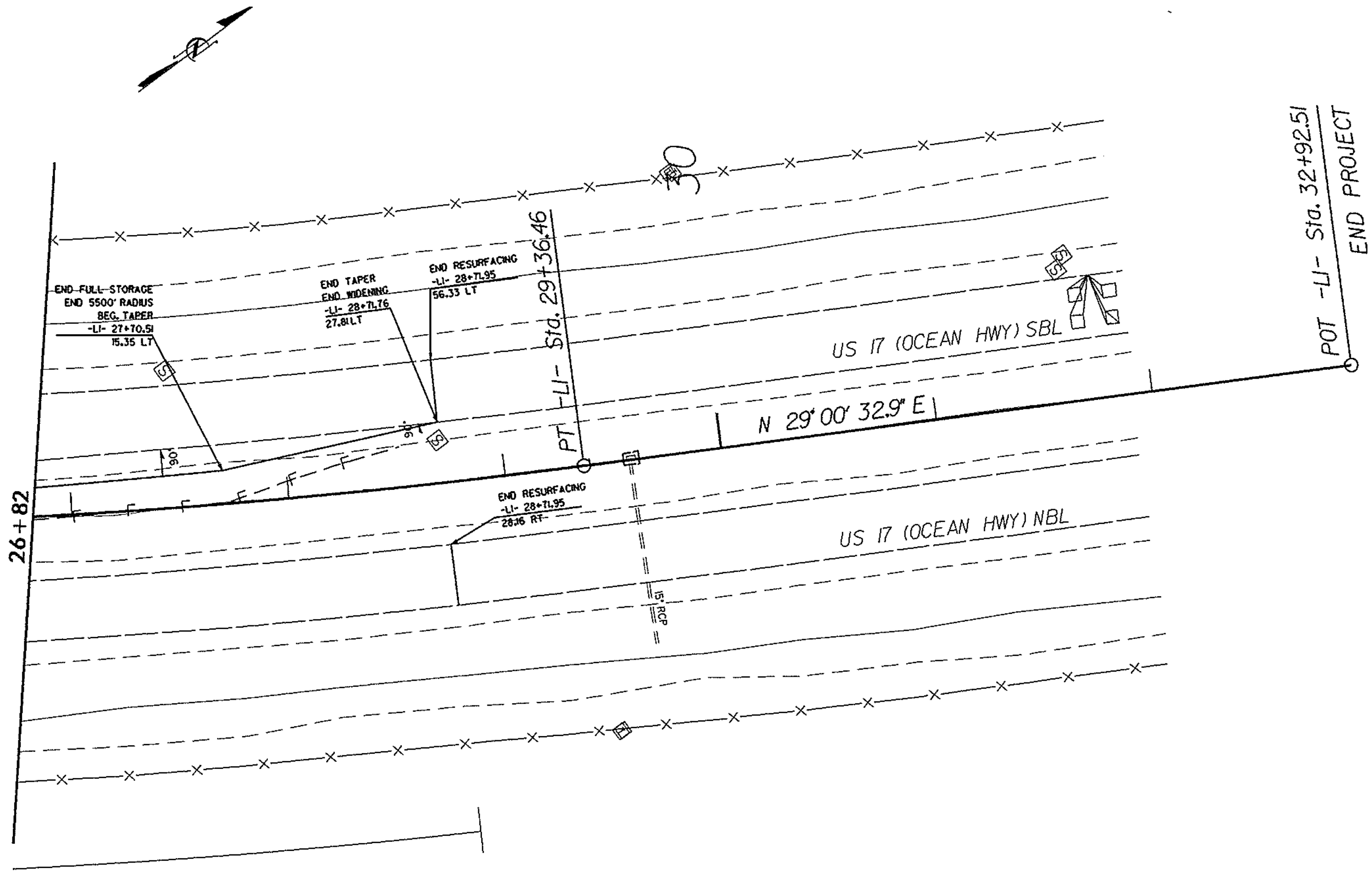
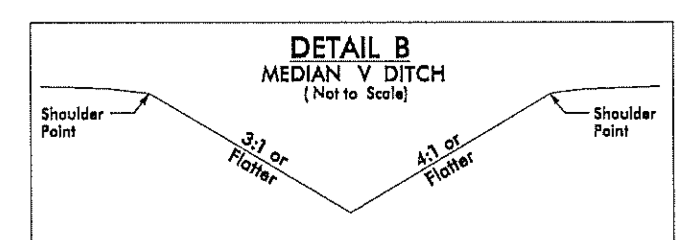
PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	6

NORTH CAROLINA PROFESSIONAL SEAL 024905 ENGINEER SCOTT EVANS COOKE

2/3/14

DIVISION DESIGN ENGINEER





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

REVISIONS

8/17/99

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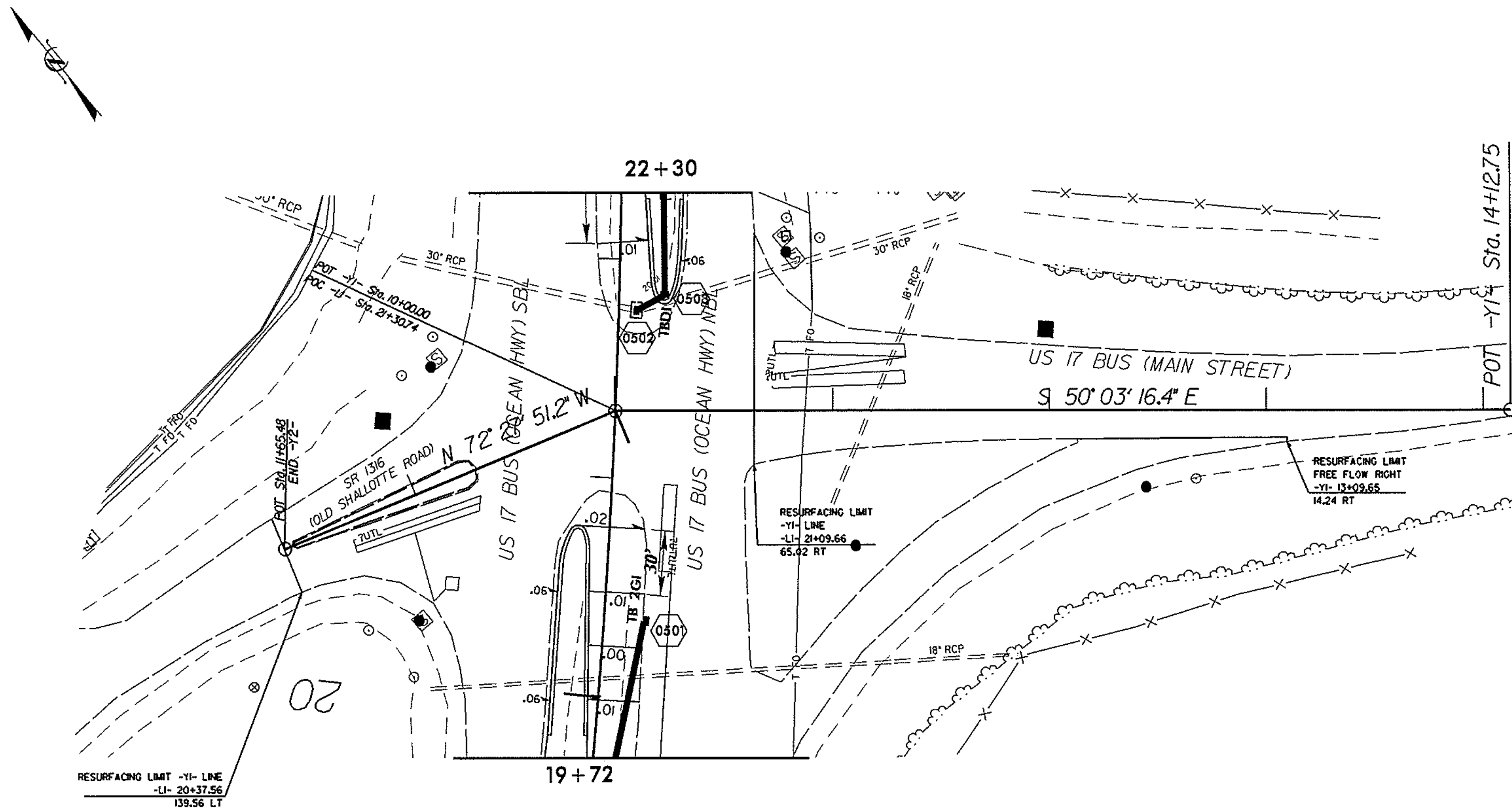
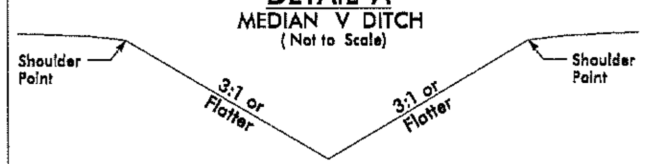
PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	7

REVISIONS

8/17/99

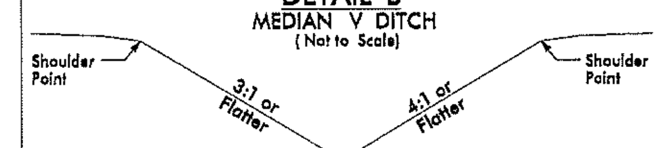


DETAIL A
MEDIAN V DITCH
(Not to Scale)



FROM STA. 18+00 TO STA. 19+90

DETAIL B
MEDIAN V DITCH
(Not to Scale)



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

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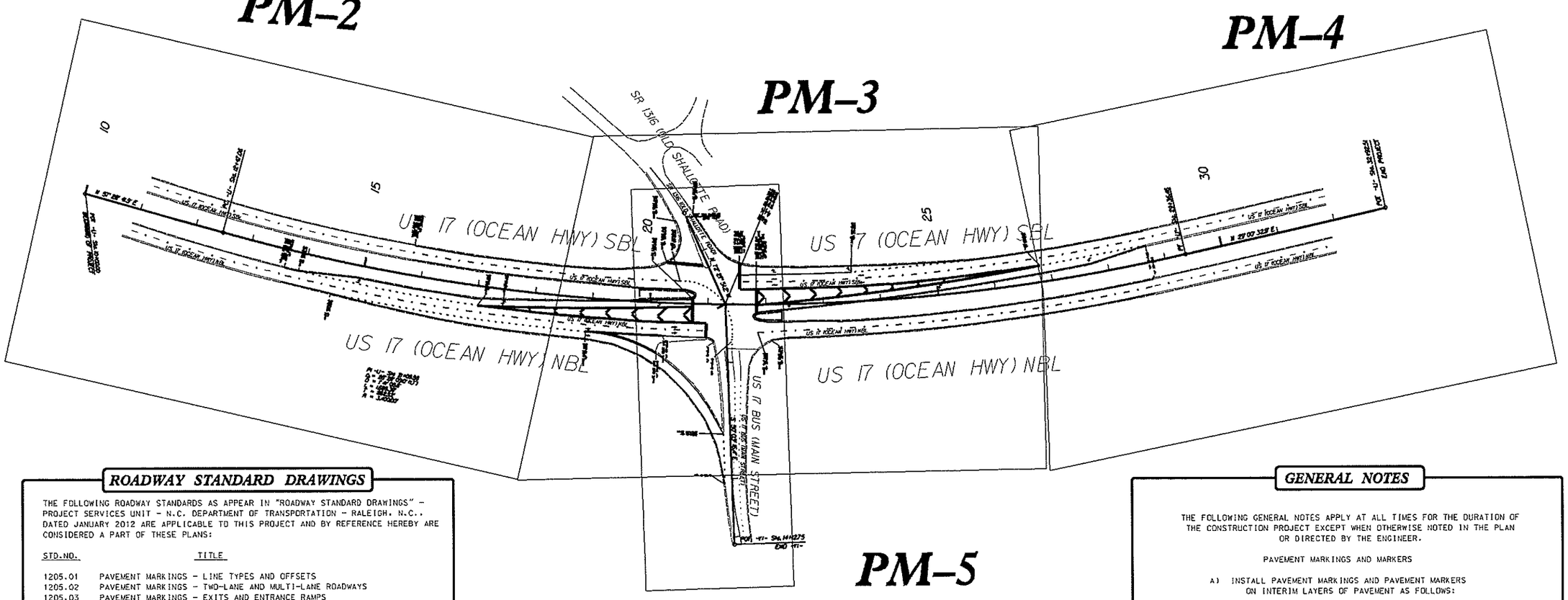
PROJECT REFERENCE NO.	SHEET NO.
55-4903AH	PM-1

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

NORTH CAROLINA PROFESSIONAL SEAL 024905 ENGINEER SCOTT EVANS COOKE

2/5/14



ROADWAY STANDARD DRAWINGS

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

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 RAMPS
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:

ROAD NAME	MARKING	MARKER
ALL ROADS	THERMOPLASTIC	SNOWPLOWABLE

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

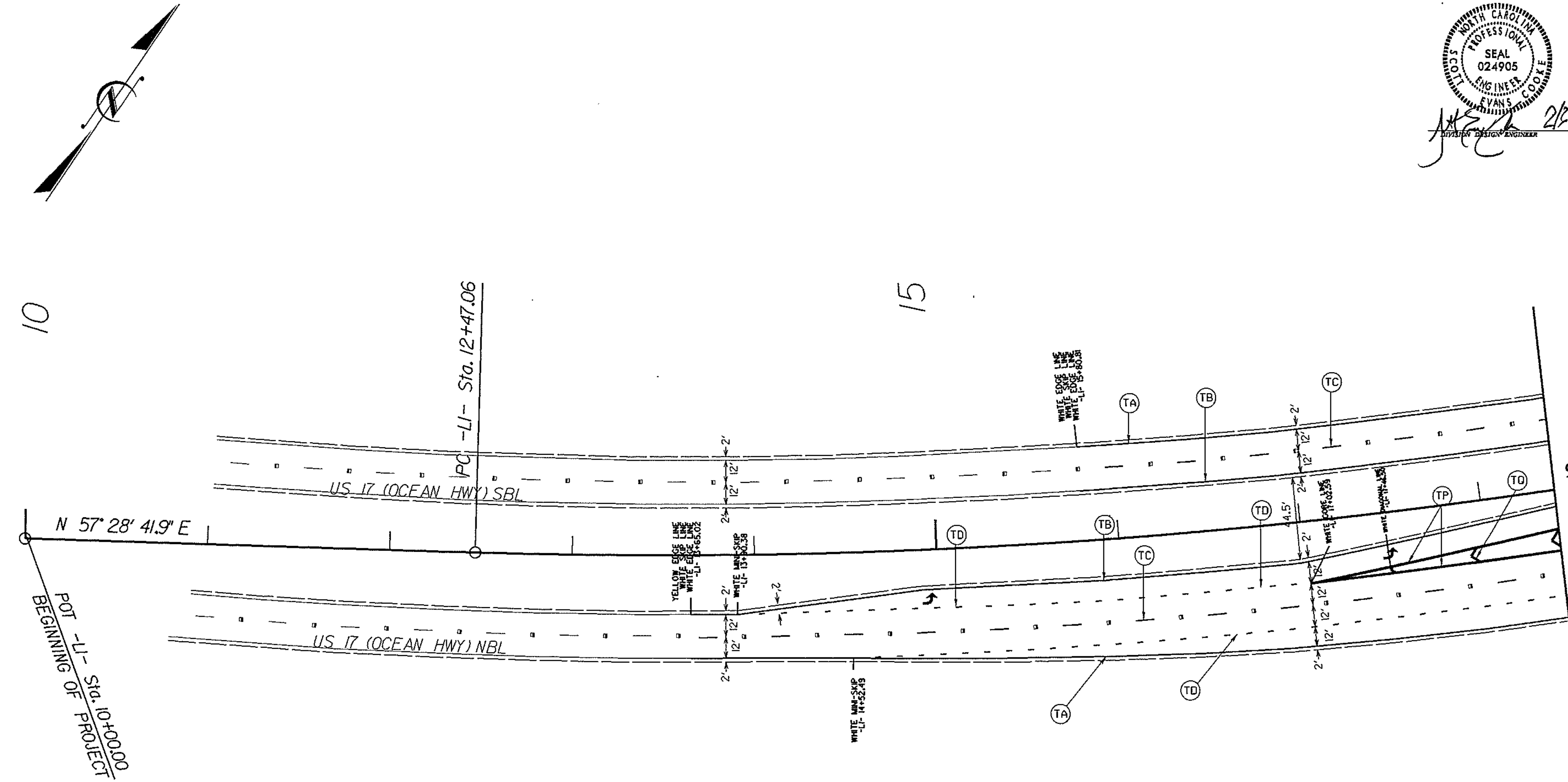
C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	PM-2

NORTH CAROLINA PROFESSIONAL SEAL 024905 ENGINEER SCOTT EVANS COOKE

DIVISION DESIGN ENGINEER 2/6/14



PI -L1- Sta 21+09.58
Δ = 28° 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)
TQ = WHITE DIAGONAL (12", 90 MIL)

REVISIONS

8/17/99

24-JAN-2014 14:33
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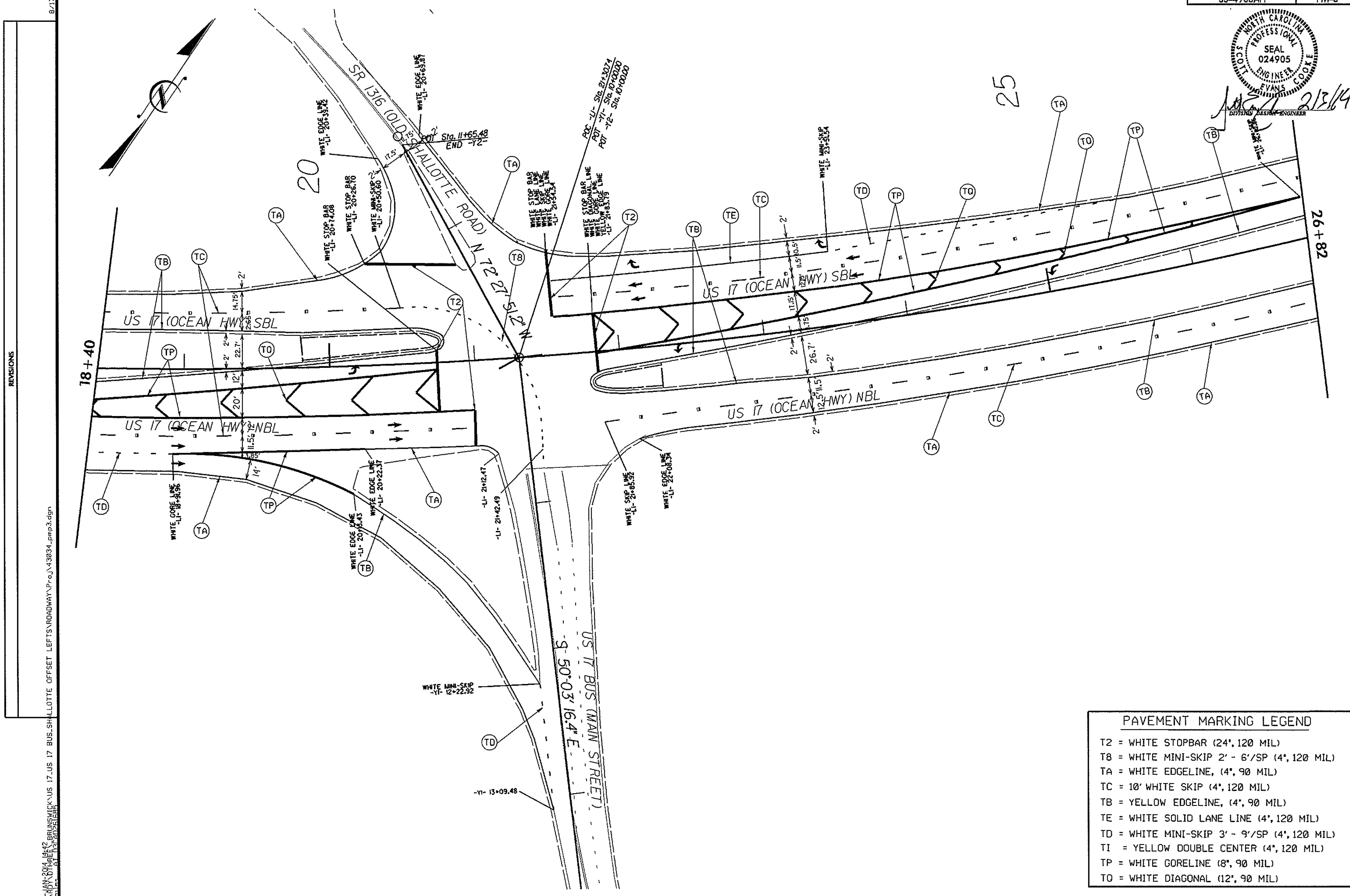
PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	PM-3



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)

24-JAN-2014 16:42
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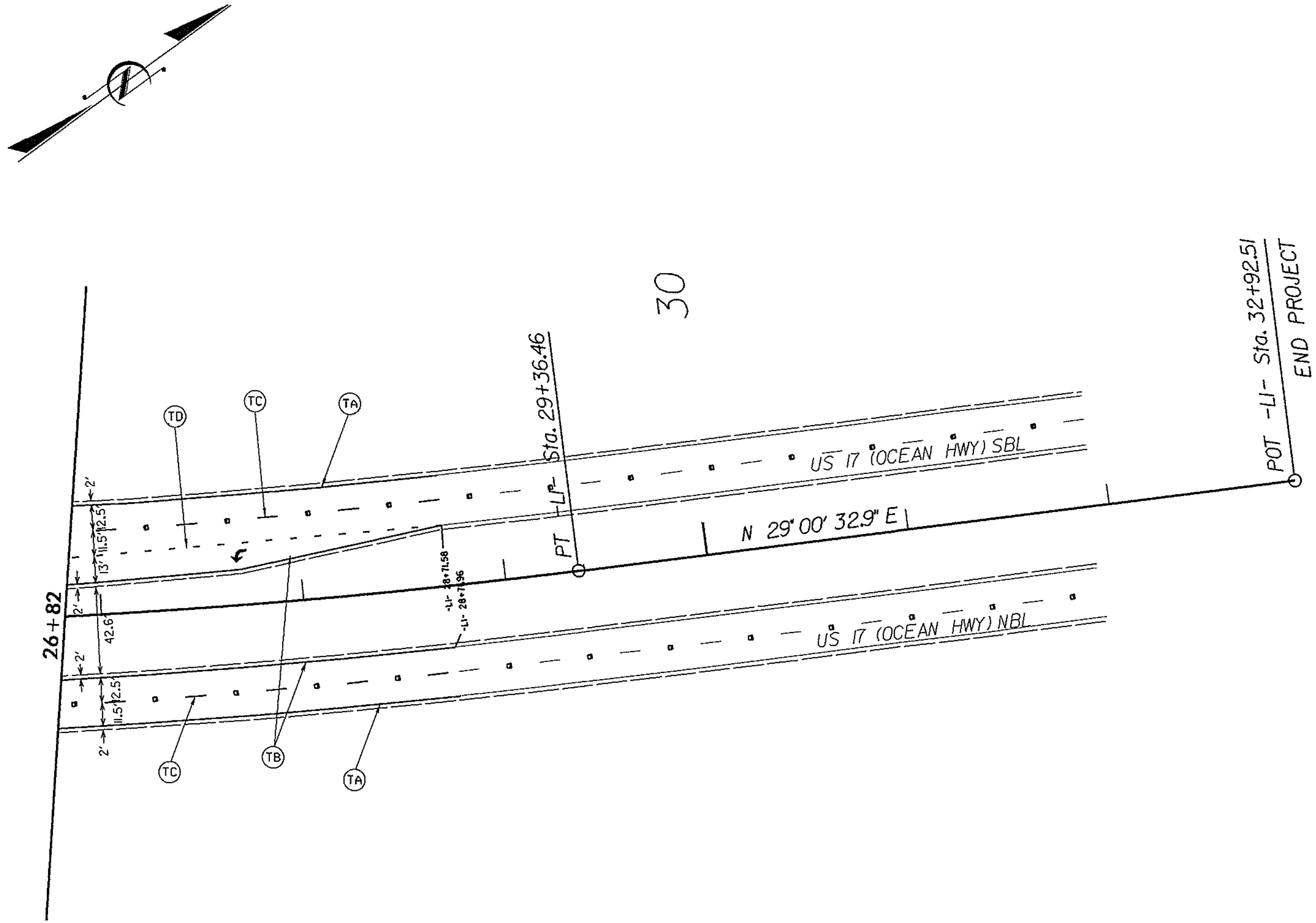
PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	PM-4

NORTH CAROLINA PROFESSIONAL SEAL 024905 ENGINEER SCOTT EVANS COOKE

DIVISION DESIGN ENGINEER 2/3/14



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TI = YELLOW DOUBLE CENTER (4", 120 MIL)
TP = WHITE GORELINE (8", 90 MIL)
TQ = WHITE DIAGONAL (12", 90 MIL)

REVISIONS

8/17/99

22-JAN-2014 09:49
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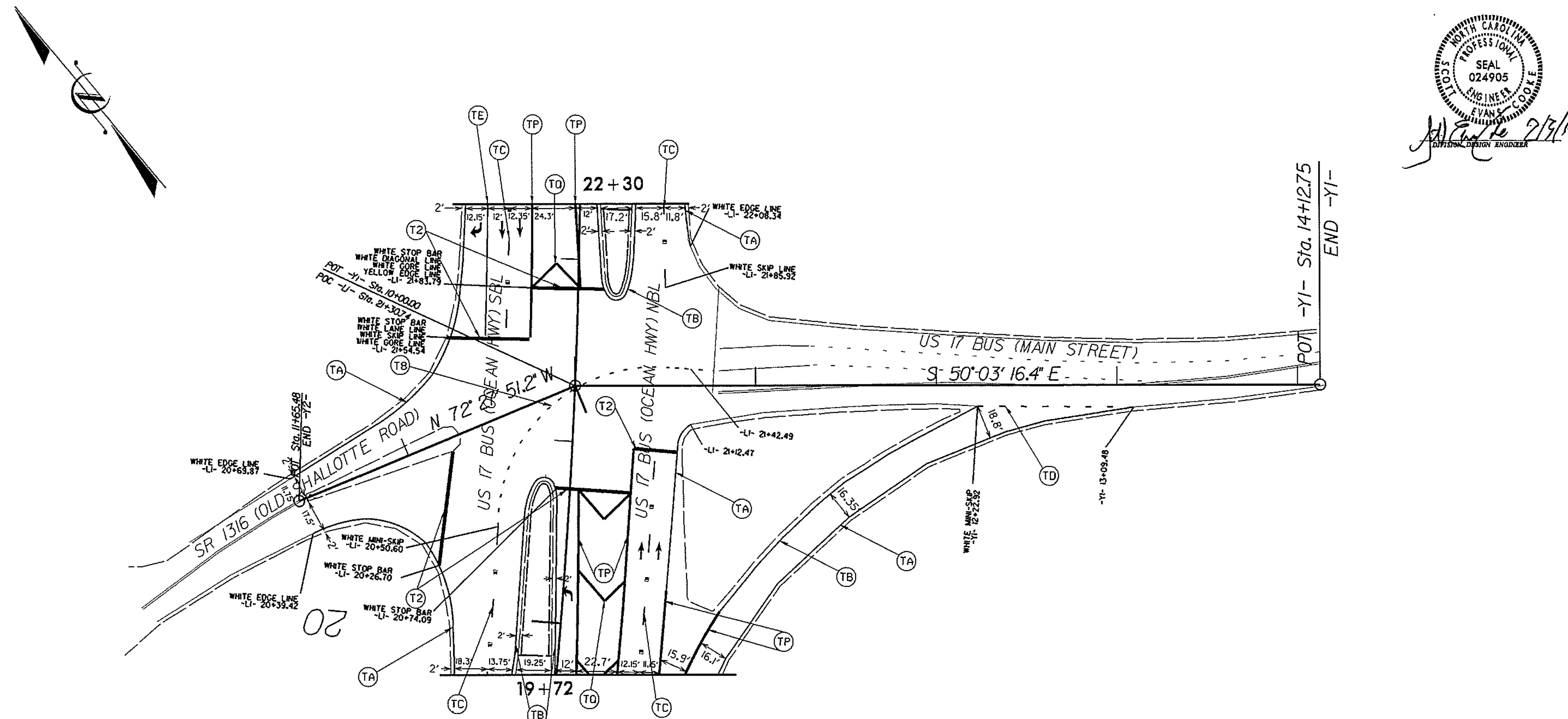
PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	PM-5

NORTH CAROLINA PROFESSIONAL SEAL 024905 ENGINEER SCOTT EVANS COOKE

2/3/14

DIVISION DESIGN ENGINEER

REVISIONS



PAVEMENT MARKING LEGEND

T2 = WHITE STOPBAR (24", 120 MIL)
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TI = YELLOW DOUBLE CENTER (4", 120 MIL)
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TQ = WHITE DIAGONAL (12", 90 MIL)

8/17/99

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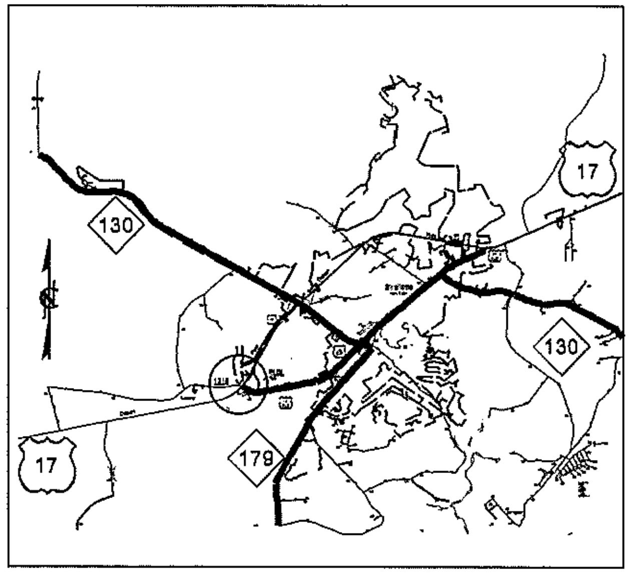
COUNTY: BRUNSWICK

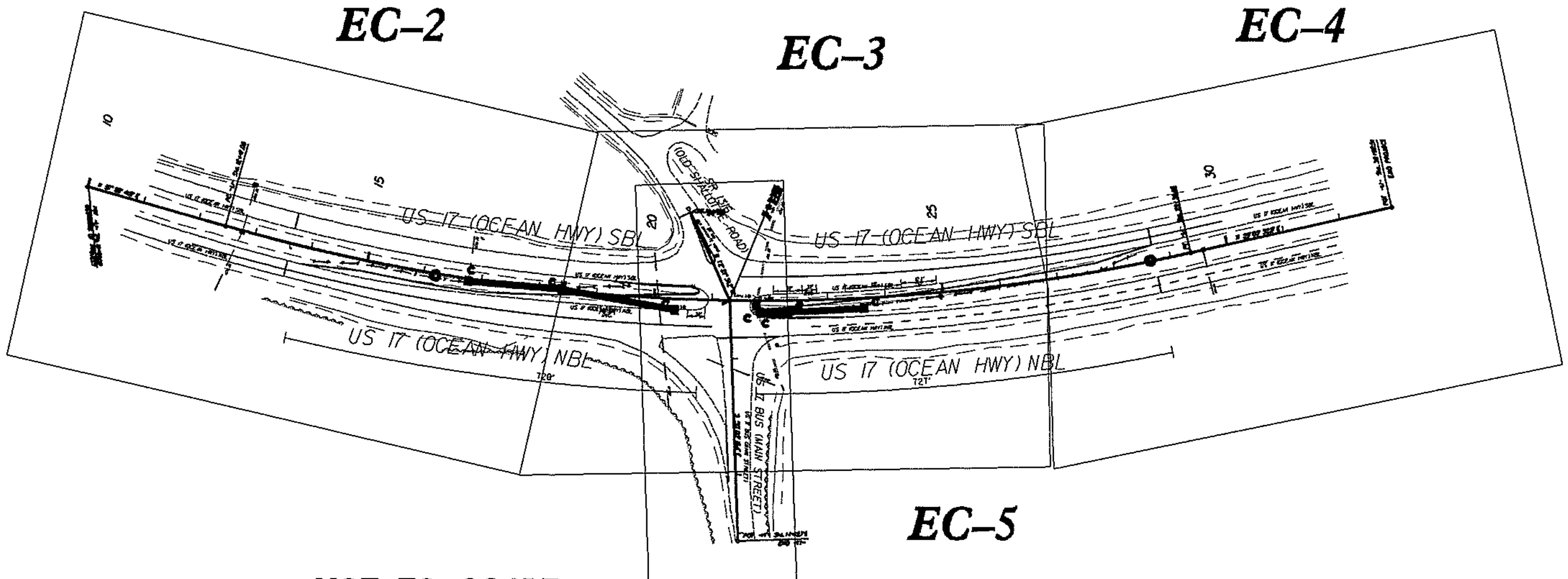
TIP PROJECT: SS-4903AH

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	3603.3.25	EC-1	3

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
	3603.3.25	

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





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.

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	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	
	Safety Fence	

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."

GRAPHIC SCALE

30 0 60

PLANS

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 Environmental

DIVISON 3 DDC UNIT
5501 Barbados Blvd.
Castle Hayne, NC 28429
By: Carla Schoonmaker, No. 3591

2012 STANDARD SPECIFICATIONS

FEBRUARY 20, 2014
LETTING DATE:

CMS
PROJECT DESIGN TECHNICIAN

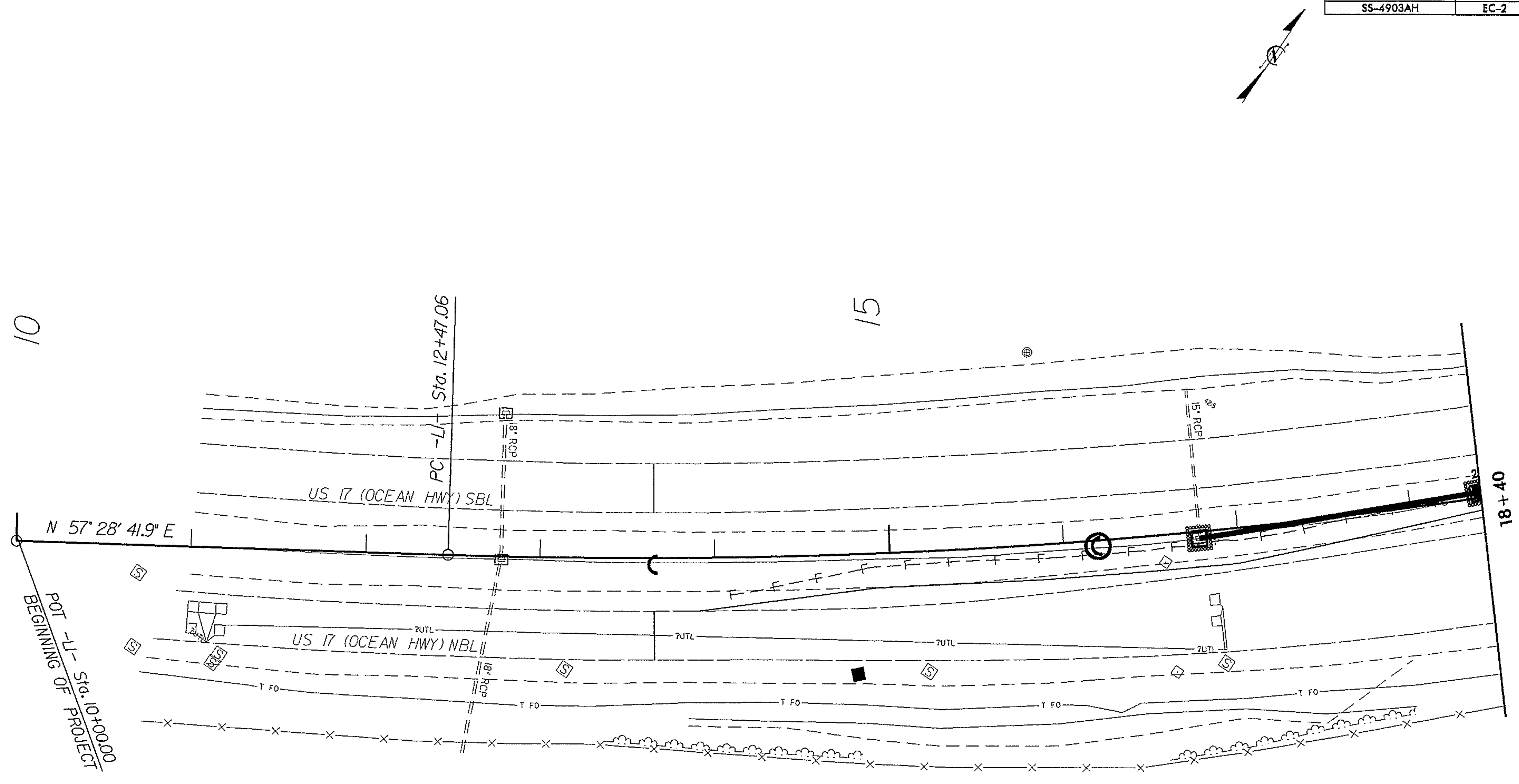
Roadway Standard Drawings

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 revison 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		

09/18/2013

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	EC-2



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	EC-3

REVISIONS

8/17/99

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US 17 (OCEAN HWY) SBL

US 17 (OCEAN HWY) NBL

US 17 BUS (MAIN STREET)

SR 1316 (OLD SHALLOTTE ROAD)

N 72° 27' 51.2" W

S 50° 03' 16.4" E

Conv. 2GI To JB w/MH

POT Sta. 11+65.48
END -Y2-

-Y1- Sta. 21+30.74
-Y2- Sta. 10+00.00

18+40

26+82

20

25

30" RCP

18" RCP

2GI

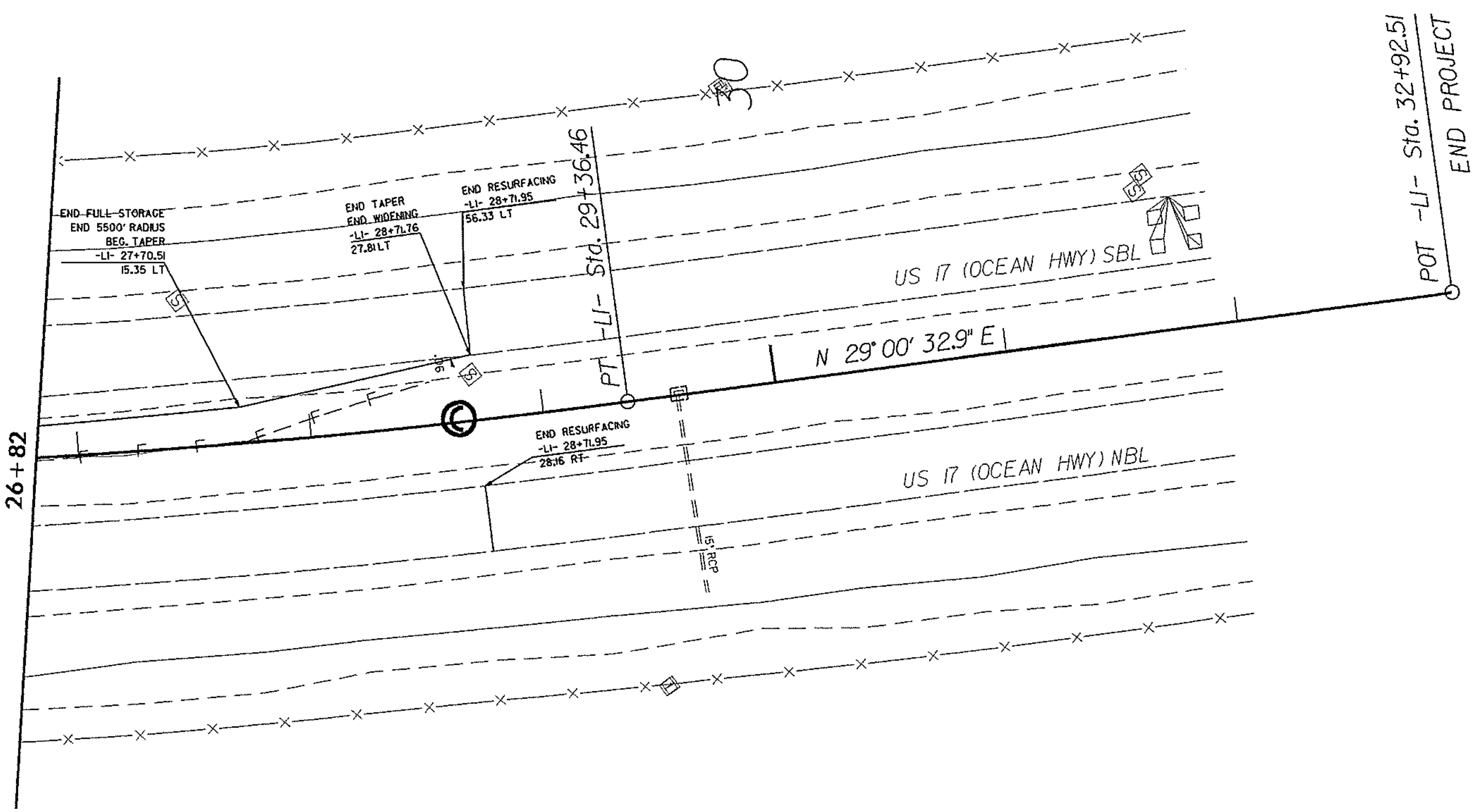
TBD

T FO

2UTL

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	EC-4

REVISIONS



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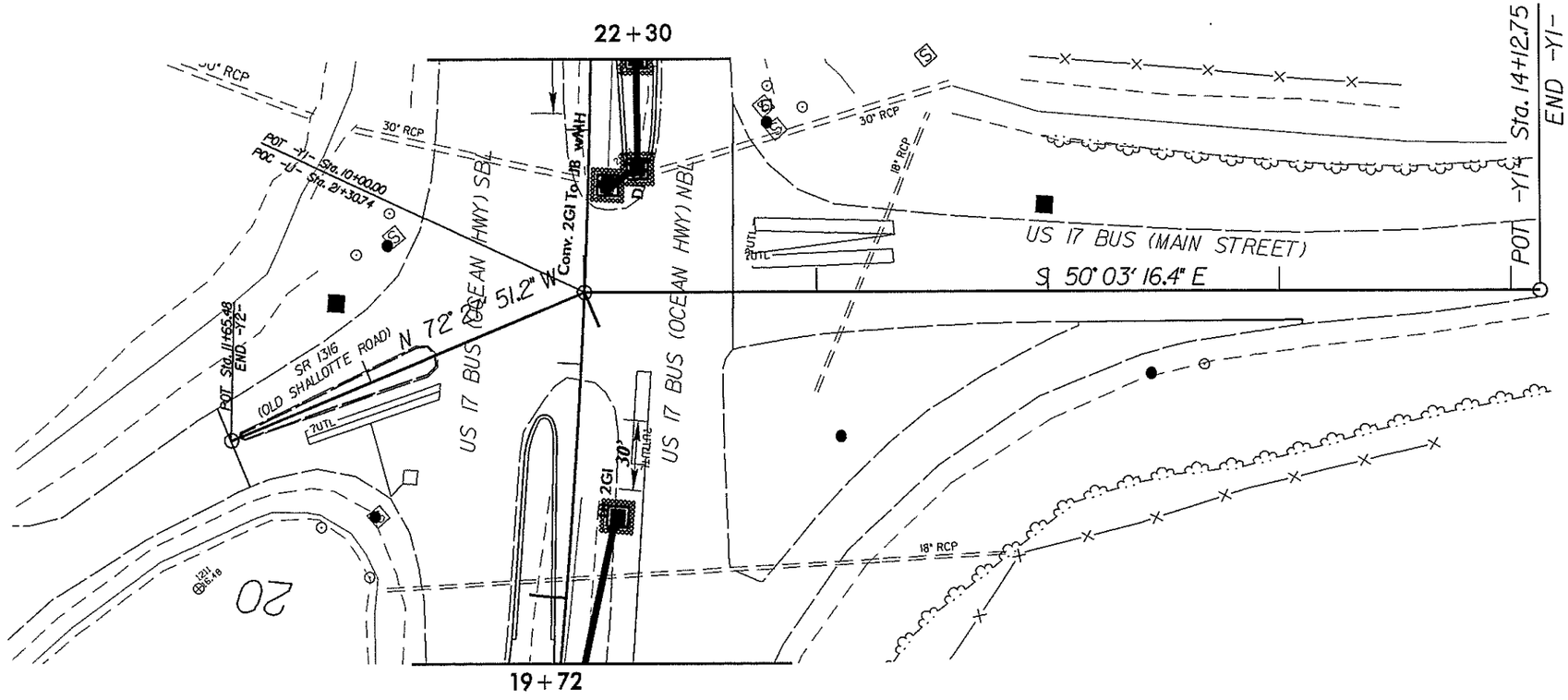
PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	EC-5



REVISIONS

8/17/99

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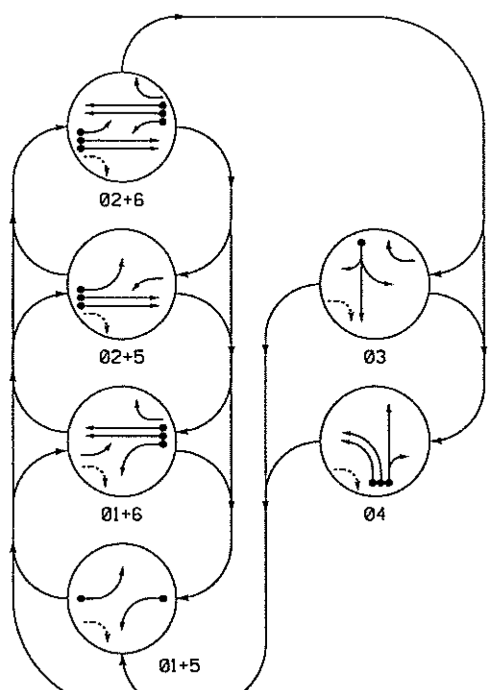
6 Phase
Fully Actuated
Isolated

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.

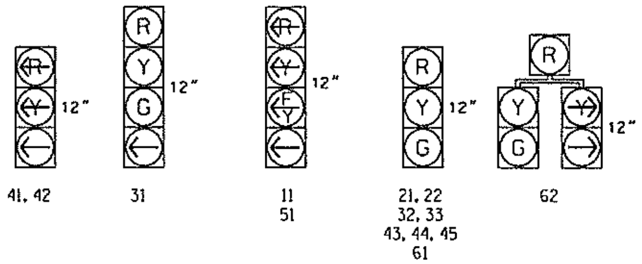


TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3	Ø4	FLASH
11	←	←	←FY	←FY	←R	←R	←Y
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	←R	←R	←R	←R	←R	←	←R
43, 44, 45	R	R	R	R	R	G	R
51	←	←FY	←	←FY	←R	←R	←Y
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

TABLE OF OPERATION

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

STANDARD SIGNAL FACE CLEARANCES FOR FLASHING LEFT TURN SIGNAL

FROM	TO ← 1	← 2	←FY 1	←FY 2	←R 1	←R 2
←	←	←	←Y	←R	←Y	←R
←FY	←FY	←FY	←FY	←FY	←Y	←R
←R	←R	←R	←R	←R	←R	←R

←FY = Flashing Yellow Arrow

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

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

NOTES

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

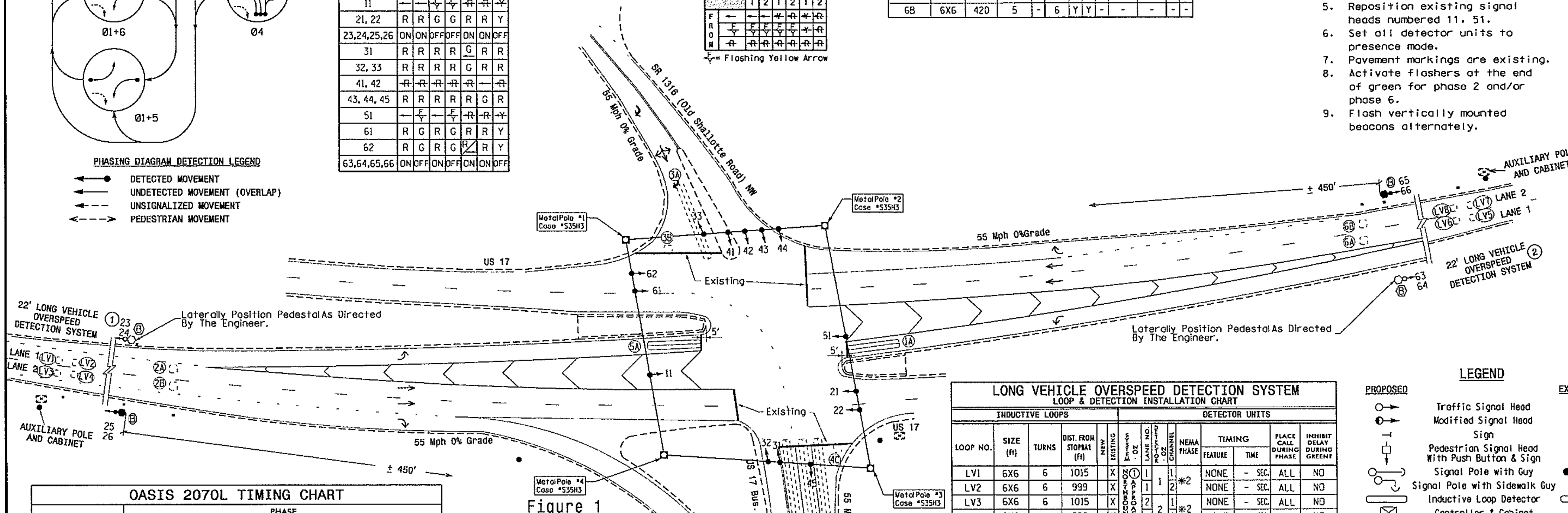
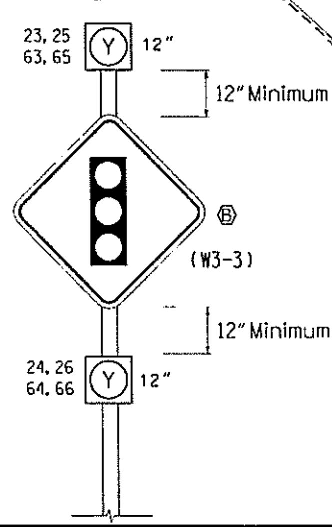


Figure 1



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

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

LONG VEHICLE OVERSPEED DETECTION SYSTEM
LOOP & DETECTION INSTALLATION CHART

LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING	SYSTEM NO.	LANE NO.	DETECTOR NO.	CHANNEL	NEMA PHASE	TIMING FEATURE	TIMING TIME	PLACE CALL DURING PHASE	INHIBIT DELAY DURING GREEN
LV1	6X6	6	1015		X	① NORTHBOUND APPROACH	1	1	1	*2	NONE	- SEC.	ALL	NO
LV2	6X6	6	999		X		1		2		NONE	- SEC.	ALL	NO
LV3	6X6	6	1015		X		2	2	1	*2	NONE	- SEC.	ALL	NO
LV4	6X6	6	999		X		2		2		NONE	- SEC.	ALL	NO
LV5	6X6	6	1015		X	② SOUTHBOUND APPROACH	1	1	1	*6	NONE	- SEC.	ALL	NO
LV6	6X6	6	999		X		1		2		NONE	- SEC.	ALL	NO
LV7	6X6	6	1015		X		2	2	1	*6	NONE	- SEC.	ALL	NO
LV8	6X6	6	999		X		2		2		NONE	- SEC.	ALL	NO
LVODS THRESHOLD SPEED (MPH)	55									2/6				
LVODS EXTEND TIME	12 SEC.									2/6				

*PHASE HOLD OUTPUT TO CONTROLLER

LEGEND

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

Signal Upgrade

Prepared in the Offices of: Transportation Mobility and Safety Division, Signal Design Section, 750 N.Greenfield Pkwy,Garner,NC 27529

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	REVIEWED BY:
PREPARED BY: I. O. Umozurike	REVIEWED BY:

SCALE 0 40, 1"=40'

REVISIONS	INIT.	DATE
1 Revised to off-set left on US 17. (iou)	[illegible]	1/18/12

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29904 JASON P. GALLOWAY
SIGNATURE 1/18/12 DATE

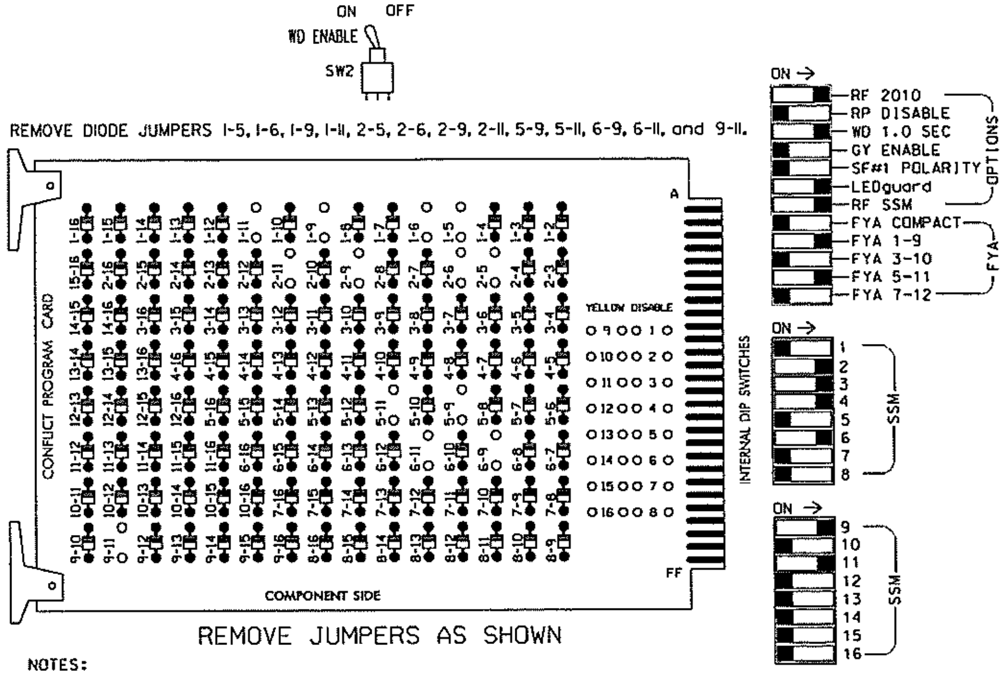
SIG. INVENTORY NO. 03-0649

22-JAN-2014 08:59 S:*ITS*ITS Signals*Signal Design Section\Eastern Region\Div-03\030649_sig_dsn_20120118.dgn

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 2-5, 2-6, 2-9, 2-11, 5-9, 5-11, 6-9, 6-11, and 9-11.



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

! IMPORTANT! 2010ECL-NC conflict monitor required for FYA operation.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail on sheet 2.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash, and overlap 1 as WAG Overlaps.

EQUIPMENT INFORMATION

CONTROLLER..............EAGLE TYPE 2070L
* CABINET.................McCAIN/CONTROL TECHNOLOGIES (DWG.NO.9500-332-NCDOT)
SOFTWARE................ECONOLITE OASIS
CABINET MOUNT...........BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED......S1,S2,**S2P,S3,S4,**S4P,S5 S6,**S6P,**S8P,S9,S12
PHASES USED.............1,2,3,4,5,6
OVERLAP "A".............1+2
OVERLAP "B".............NOT USED
OVERLAP "C".............5+6
OVERLAP "D".............NOT USED

* Auxiliary Output File required.
** Used for Advance Beacon only.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3			S4		S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
PHASE	1	2	2 PED	3			4		4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	21,22	** BEACON	31	32,33	62	41,42	43,44 45	** BEACON	51★	61,62	** BEACON	NU	NU	** BEACON	11★	NU	NU	51★	NU	NU
RED		128		116	116			101			134										
YELLOW	*	129		117	117			102		*	135										
GREEN		130		118	118			103			136										
RED ARROW							101									A121			A114		
YELLOW ARROW						117	102									A122			A115		
FLASHING YELLOW ARROW																A123			A116		
GREEN ARROW	127			118		118	103			133											

NU = Not Used

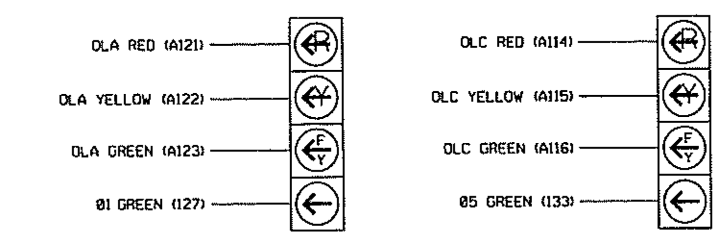
★ See pictorial of head wiring in detail below.

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

** Special advance beacons will be wired to S2P-Y, S4P-Y, S6P-Y, and S8P-Y. See wiring and programming details on sheets 6 and 7 of this electrical detail.

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

The sequence display for signal heads 11 and 51 requires special logic programming. See sheet 2 of 7 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø3 3A	Ø2 2A	WIRED INPUT ⊗	Ø3 3B	Ø4 4A	Ø4 4C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED	Ø2 2B		NOT USED	Ø4 4B	Ø4 4D							ST DC ISOLATOR
FILE "J"	U	Ø5 5A	SLOT EMPTY	Ø6 6A	WIRED INPUT ⊗	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 HOLD AC ISOLATOR
	L	NOT USED		Ø6 6B											Ø6 HOLD AC ISOLATOR

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

⊗ Wired Input - Do not populate slot with detector card

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y	Y		3
2A	TB2-9,10	I3U	63	25	32	2	Y	Y			
2B	TB2-11,12	I3L	76	38	42	2	Y	Y			
3A	TB2-5,6	I2U	39	1	2	3	Y	Y			5
3B	TB4-5,6	I5U	58	20	3	3	Y	Y			15
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			5
4C	TB6-1,2	I7U	65	27	34	4	Y	Y			15
4D	TB6-3,4	I7L	78	40	44	4	Y	Y			3
5A[2]	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	2	Y	Y	Y		3
6A	TB3-9,10	J3U	64	26	36	6	Y	Y			
6B	TB3-11,12	J3L	77	39	46	6	Y	Y			

[1] Ensure jumper is installed from I1-W to J4-W, on rear of input file.

[2] Ensure jumper is installed from J1-W to I4-W, on rear of input file.

IMPORTANT! Ensure that no jumpers are installed from TB2-5 to TB2-7, TB2-6 to TB2-8, TB3-5 to TB3-7, and TB3-6 to TB3-8.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

BACKUP PROTECTION NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phases 2 and 6 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.

DYNAMIC BACK-UP CONTROL PROGRAMMING

(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~~ disable Dynamic/Backup Control Functions 1 and 2.

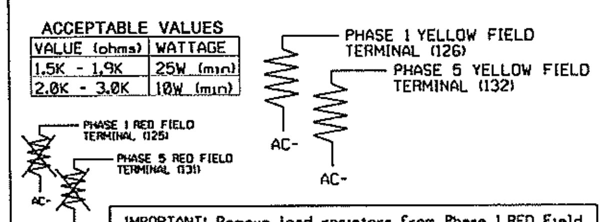
! IMPORTANT! Ensure that each of the backup protect methods shown above is DISABLED in the controller.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

ACCEPTABLE VALUES

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



IMPORTANT! Remove load resistors from Phase 1 RED Field Terminal (125), and from Phase 5 RED Field Terminal (131) if present.

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

Signal Upgrade - Sheet 1 of 7

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of: Transportation Mobility and Safety Division, Signals Management Section, 750 N.Greenfield Pkwy,Garner,NC 27529

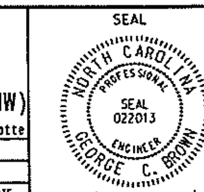
US 17 at US 17 Bus. (Main Street SW)/ SR 1316 (Old Shallotte Road NW)

Division 3 | Brunswick County | South of Shallotte

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

REVISIONS	INIT.	DATE
1. No change to electrical detail DHS 1-5-12 OTL 1/11/12	NCB	2/3/12

SEAL



SIGNATURE 2/3/12 DATE

SIG. INVENTORY NO. 03-0649

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

(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 COMMANDS 1, 2, 3, 4, 5 AND 6.

2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1   (+/-COMMAND#)
IF  ACTIVE PHASE          #1   IS ON
AND RED CLEAR ON PHASE #1      IS ON
            SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

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

PRESS '+'

```
LOGICAL I/O COMMAND #2   (+/-COMMAND#)
IF  ACTIVE PHASE          #1   IS ON
            SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

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

PRESS '+'

```
LOGICAL I/O COMMAND #3   (+/-COMMAND#)
IF  YELLOW ON PHASE       #1   IS ON
            SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

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

PRESS '+'

```
LOGICAL I/O COMMAND #4   (+/-COMMAND#)
IF  ACTIVE PHASE          #5   IS ON
AND RED CLEAR ON PHASE #5      IS ON
            SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

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

PRESS '+'

```
LOGICAL I/O COMMAND #5   (+/-COMMAND#)
IF  ACTIVE PHASE          #5   IS ON
            SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

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

PRESS '+'

```
LOGICAL I/O COMMAND #6   (+/-COMMAND#)
IF  YELLOW ON PHASE       #5   IS ON
            SCROLL DOWN
THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

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).

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

NOTICE GREEN FLASH

PRESS '+' TWICE

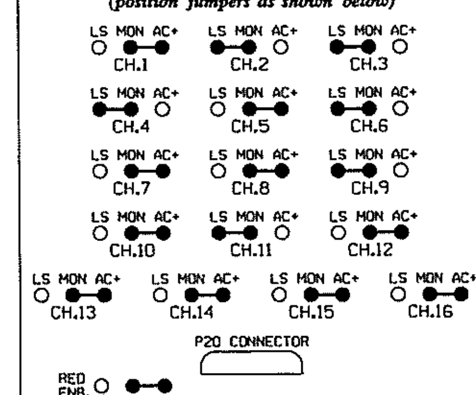
```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
 PHASE:          |12345678910111213141516
VEH OVL PARENTS: |    XX
VEH OVL NOT VEH: |
VEH OVL NOT PED: |
VEH OVL GRN EXT: |
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:    (Y/N)
FLASH YELLOW IN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

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

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 (1)

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of: Transportation Mobility and Safety Division, Signals Management Section, 750 N.Greenfield Pkwy,Garner,NC 27529

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	INIT.	DATE
(1) No change to electrical detail DHS 1-5-12		

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

SIGNATURE / DATE 2/3/12

SIG. INVENTORY NO. 03-0649

PROJECT REFERENCE NO.	SHEET NO.
SS-4903AH	Sig.4

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 SYCHRONIZATION (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 SYCHRONIZATION (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 SYCHRONIZATION (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).-
```

← Note: Program for Plan 65 and Offset 0

PROGRAMMING COMPLETE

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

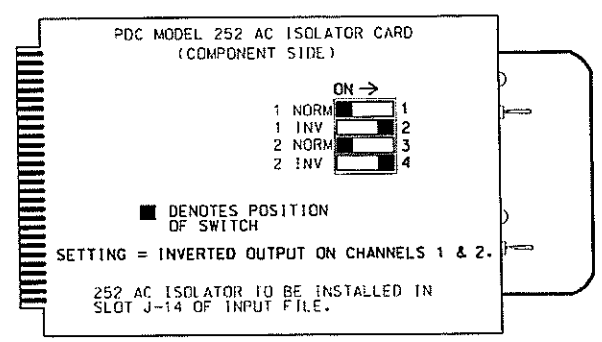
```
  LOGICAL I/O COMMAND #1   (+/-COMMAND#)
IF   INPUT    ASSIGNMENT #13 IS ON
OR   INPUT    ASSIGNMENT #14 IS ON

                 SCROLL DOWN
THEN:
     DELAY FOR  240.0 SECONDS
SET INPUT    ASSIGNMENT #64 ON
```

Input #13 = Ø2 Hold
Input #14 = Ø6 Hold

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

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 ▽1

Signal Upgrade - Sheet 3 of 7

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 17
at
US 17 Bus. (Main Street SW)/
SR 1316 (Old Shallotte Road NW)

Division 3 | Brunswick County | South of Shallotte

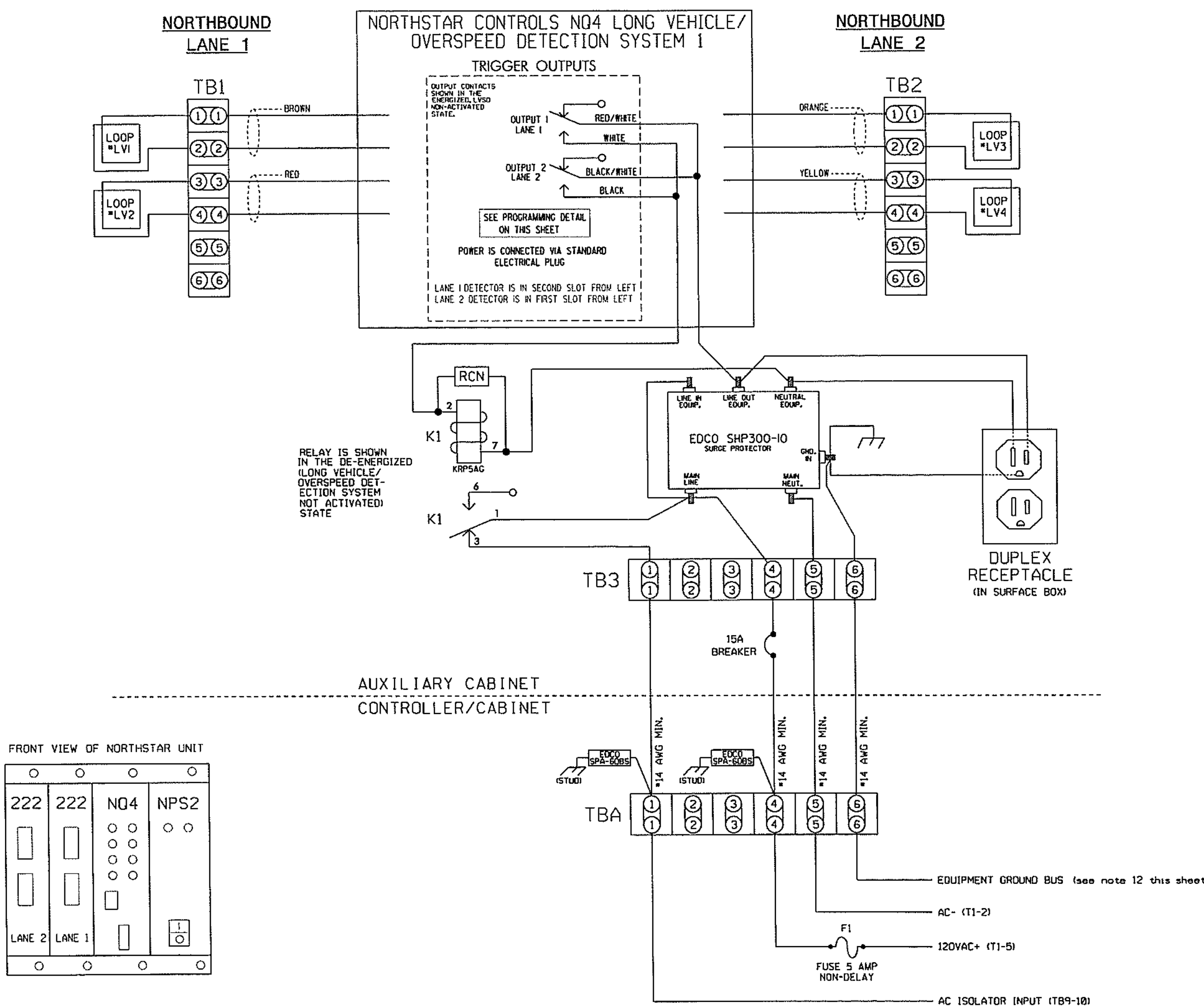
PLAN DATE: April 2011	REVIEWED BY: T. Joyce
PREPARED BY: S. Armstrong	REVIEWED BY:

REVISIONS	INIT.	DATE
▽1 No change to electrical detail DHS 1-5-12 ATJ 1/18/12	GCB	2/3/12

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN
SIGNATURE: [signature] DATE: 2/3/12
SIG. INVENTORY NO. 03-0649

WIRING DETAIL FOR NORTHSTAR CONTROLS NQ4 LONG VEHICLE / OVERSPEED DETECTION SYSTEM NO. 1

(wire unit as shown below)



NOTES

1. All loop lead-ins shall be twisted.
2. Loop spacing is critical to the proper operation of this Overspeed Detection System. Make sure loop spacing is correctly programmed in NQ4 Unit.
3. Insure that connectors on rear of NQ4 are seated securely.
4. NQ4 Unit shall be located in an auxiliary cabinet adjacent to Speed Warning System loops.
5. Unit power is connected by standard electrical plug.
6. Terminal strips TB1, TB2, TB3, & TBA to be added by installer.
7. Relay 'K1' is a SPDT with an 120VAC coil. Potter & Brumfield no. KRP5AGAG. Dot Material no. 625028600.
8. The RC Network across the coil of 'K1' is a .1 micro farad, 100 ohm. Dot Material no. 106018075. P&B no. 104M06QC100
9. EDCO SPA-60BS is a surge protector for 120VAC interconnect circuits. Dot Material no. 625022076.
10. EDCO SHP300-10 is an AC service surge protector. Dot Material no. 625022075.
11. Do not install ground rods at auxiliary cabinet.
12. Install equipment ground from controller cabinet to auxiliary cabinet if not already present.
13. Install disconnect if there is no disconnect present at auxiliary cabinet.
14. IMPORTANT! A jumper must be installed between input file terminals J14-E and J14-K if not already present.
15. IMPORTANT! For proper operation of the Long Vehicle Detection Unit, tie TB9-12 to AC neutral.
16. 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 NQ4 OPERATION MANUAL.

PROGRAM NQ4 BY TYPING THE FOLLOWING COMMANDS

1. SET SPEED=55
2. SET LENGTH=22'
3. SET ALARMTIME=12
4. SET SEPARATION=16' (LEADING EDGE TO LEADING EDGE) (THIS VALUE MAY VARY. PROGRAM ACTUAL MEASURED SEPARATION)
5. SET LOOP LENGTH=6' (THIS VALUE MAY VARY. PROGRAM ACTUAL MEASURED LOOP LENGTH)
6. 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 ▽1

Signal Upgrade - Sheet 4 of 7

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of: Signals Management Section, 750 N. Greenfield Pkwy, Garner, NC 27529

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	INIT.	DATE
▽1 No change to electrical detail DHS 1-5-12 OTJ 1/19/12	KCB	2/3/12

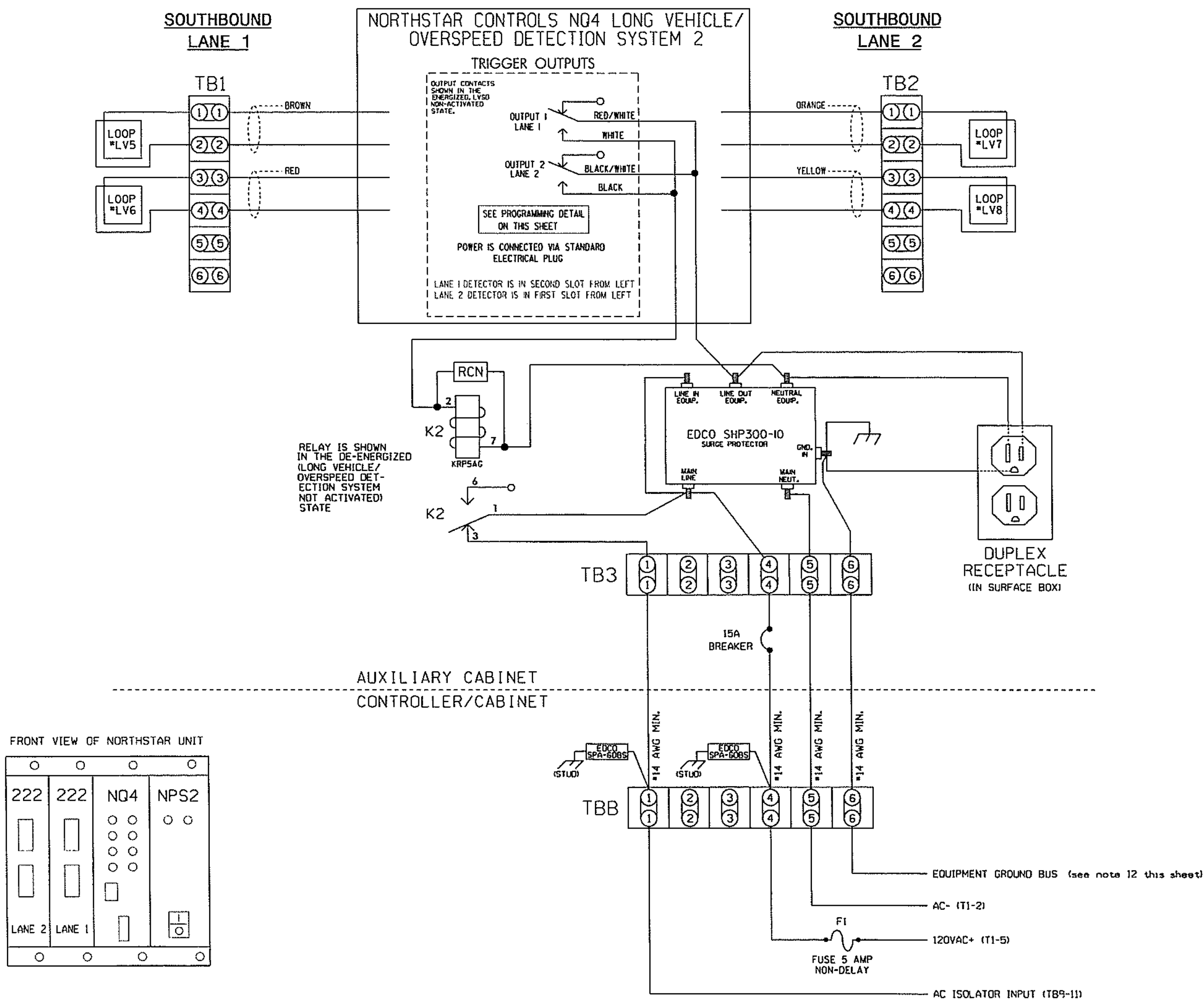
SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN

SIGNATURE: George C. Brown DATE: 2/3/12

SIG. INVENTORY NO. 03-0649

WIRING DETAIL FOR NORTHSTAR CONTROLS NQ4 LONG VEHICLE / OVERSPEED DETECTION SYSTEM NO. 2

(wire unit as shown below)



NOTES

1. All loop lead-ins shall be twisted.
2. Loop spacing is critical to the proper operation of this Overspeed Detection System. Make sure loop spacing is correctly programmed in NQ4 Unit.
3. Insure that connectors on rear of NQ4 are seated securely.
4. NQ4 Unit shall be located in an auxiliary cabinet adjacent to Speed Warning System Loops.
5. Unit power is connected by standard electrical plug.
6. Terminal strips TB1, TB2, TB3, & TBB to be added by installer.
7. Relay 'K2' is a SPDT with an 120VAC coil. Potter & Brumfield no. KRP5AGAG. Dot Material no. 625028600.
8. The RC Network across the coil of 'K2' is a .1 micro farad, 100 ohm. Dot Material no. 106018075. P&B no. 104M060C100
9. EDCO SPA-60BS is a surge protector for 120VAC interconnect circuits. Dot Material no. 625022076.
10. EDCO SHP300-10 is an AC service surge protector. Dot Material no. 625022075.
11. Do not install ground rods at auxiliary cabinet.
12. Install equipment ground from controller cabinet to auxiliary cabinet if not already present.
13. 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

1. SET SPEED=55
2. SET LENGTH=22'
3. SET ALARMTIME=12
4. SET SEPARATION=16' (LEADING EDGE TO LEADING EDGE) (THIS VALUE MAY VARY. PROGRAM ACTUAL MEASURED SEPARATION)
5. SET LOOP LENGTH=6' (THIS VALUE MAY VARY. PROGRAM ACTUAL MEASURED LOOP LENGTH)
6. 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:

Prepared in the Offices of: Signals Management Section, 750 N. Greenfield Pkwy, Garner, NC 27529

REVISIONS	INIT.	DATE
▽ No change to electrical detail.	KCB	2/3/12

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER, SEAL 022013, GEORGE C. BROWN — SIGNATURE, DATE 2/3/12

SIG. INVENTORY NO. 03-0649

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
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 OUTOUT 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
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.........................-
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
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 OUTOUT 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
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.........................-
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 PROGRAMMING DETAIL

(program controller as shown below)

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

```
          OUTPUT BEACON SETTINGS
TRIGGER PHASES: |12345678910111213141516
BEACON #1 OFF   | X
BEACON #2 OFF   |     X
BEACON #3 OFF   |
BEACON #4 OFF   |
             BEACON |  1   2   3   4
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

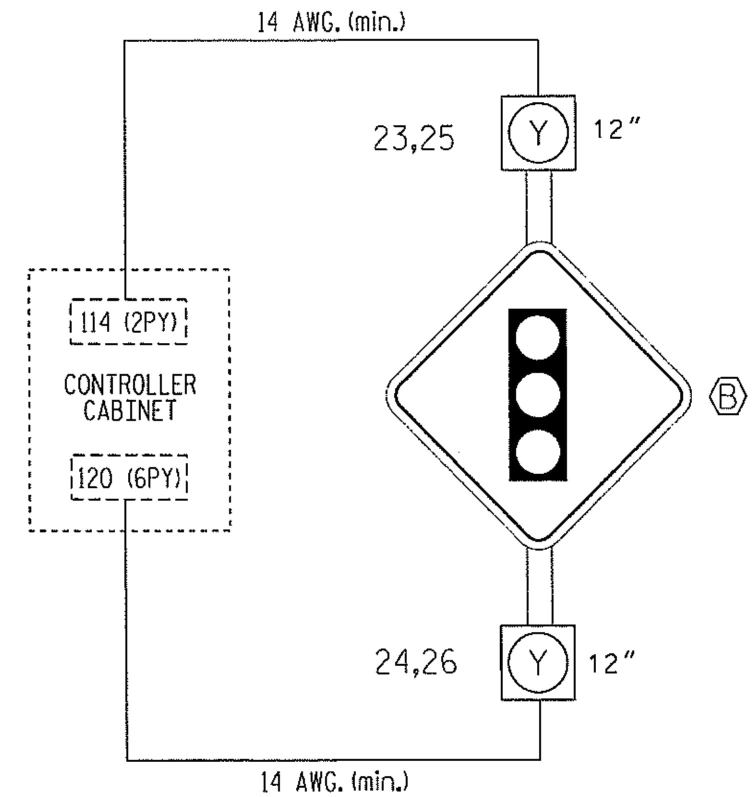
ADVANCE BEACON PROGRAMMING COMPLETE

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 ▽1

ADVANCE BEACON #1 WIRING DETAIL

(wire flashers as shown below)



IMPORTANT

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

LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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

PHASE 2 WALK FIELD TERMINAL (115)
PHASE 6 WALK FIELD TERMINAL (121)
AC-
AC-

Signal Upgrade - Sheet 6 of 7

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, State of North Carolina Department of Transportation, Signals Management Section, 750 N. Greenfield Pkwy, Garner, NC 27529

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	INIT.	DATE
▽1 No change to electrical detail. DHS 1-5-12 OTJ 1/19/12	GCB	2/3/12

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

SIGNATURE: [signature] DATE: 2/3/12

SIG. INVENTORY NO. 03-0649

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..........................
```

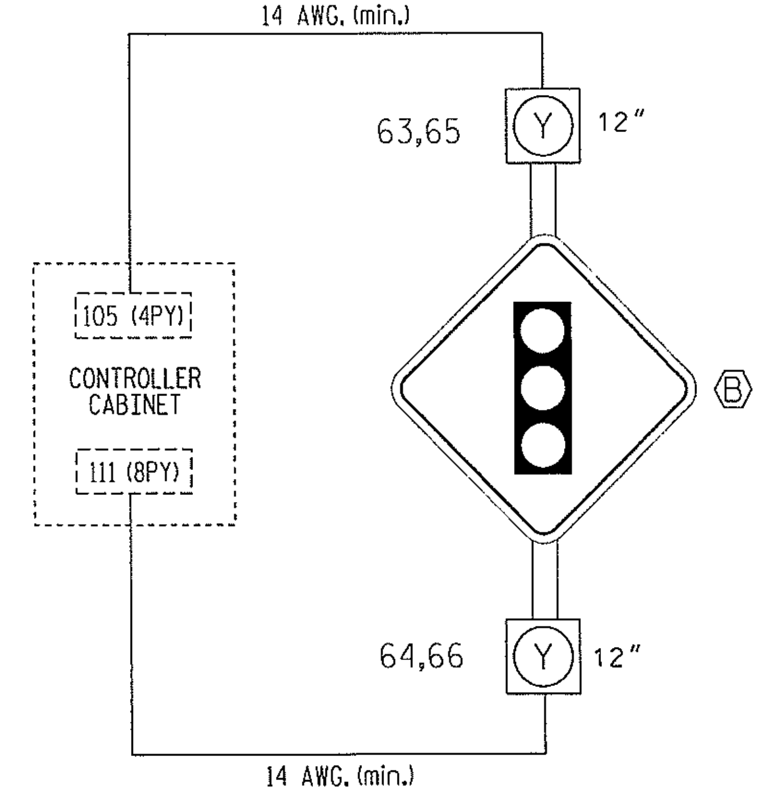
OUTPUT REFERENCE SCHEDULE

OUTPUT 35 = Ø 4 Ped Yellow
OUTPUT 36 = Ø 8 Ped Yellow

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

ADVANCE BEACON #2 WIRING DETAIL

(wire flashers as shown below)



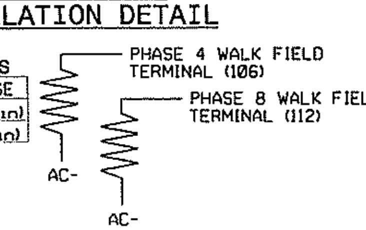
IMPORTANT

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

LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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



Signal Upgrade - Sheet 7 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:

Prepared in the Offices of: Signal Management Section, 750 N. Greenfield Pkwy, Garner, NC 27529

REVISIONS	INIT.	DATE
No change to electrical detail 1-5-12	SCB	2/3/12

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN — SIGNATURE, DATE 2/3/12

SIG. INVENTORY NO. 03-0649

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

Station L1 (RT)	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station L1 (LT)	Uncl. Exc. (cu. yd.)	Embt (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

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	SS-4903AH	X-1

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

16+50.00

S.S. 16.68

A-1

0.06 FT/FT

16+00.00

S.S. 16.35

A-1

0.06 FT/FT

15+50.00

S.S. 15.86

A-1

0.06 FT/FT

15+00.00

S.S. 15.76

A-1

0.06 FT/FT

14+50.00

S.S. 16.54

A-1

0.06 FT/FT

14+00.00

S.S. 17.32

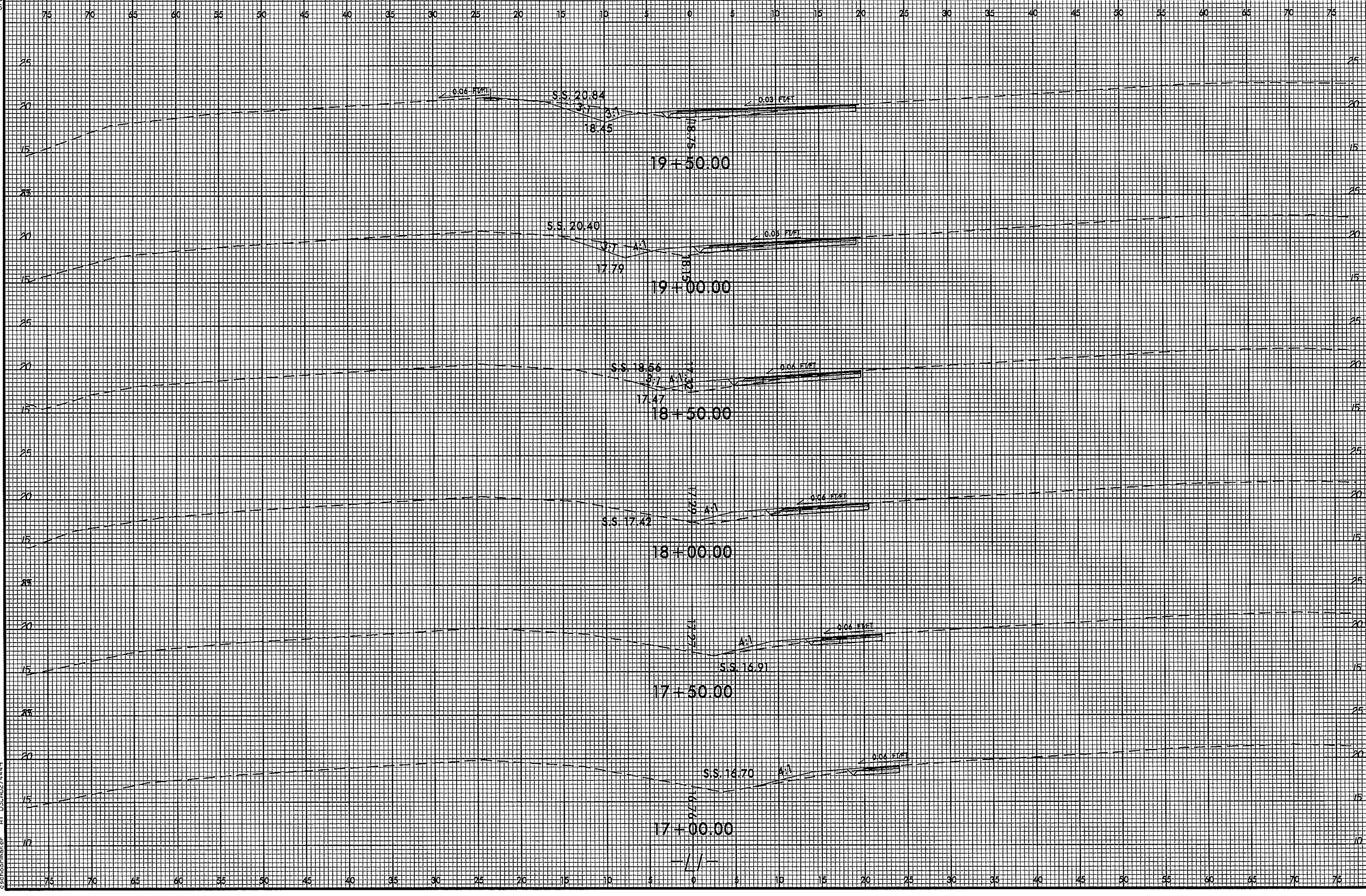
A-1

0.06 FT/FT

8/23/99

22-JAN-2014 16:40
D:\ADY\DTHREE_BRUNSWICK\US 17_US 17 BUS_SHALLOTTE OFFSET LEFTS\ROADWAY\CorridorModeling\43034_Rdy_xpl.dgn
dschoonmaker

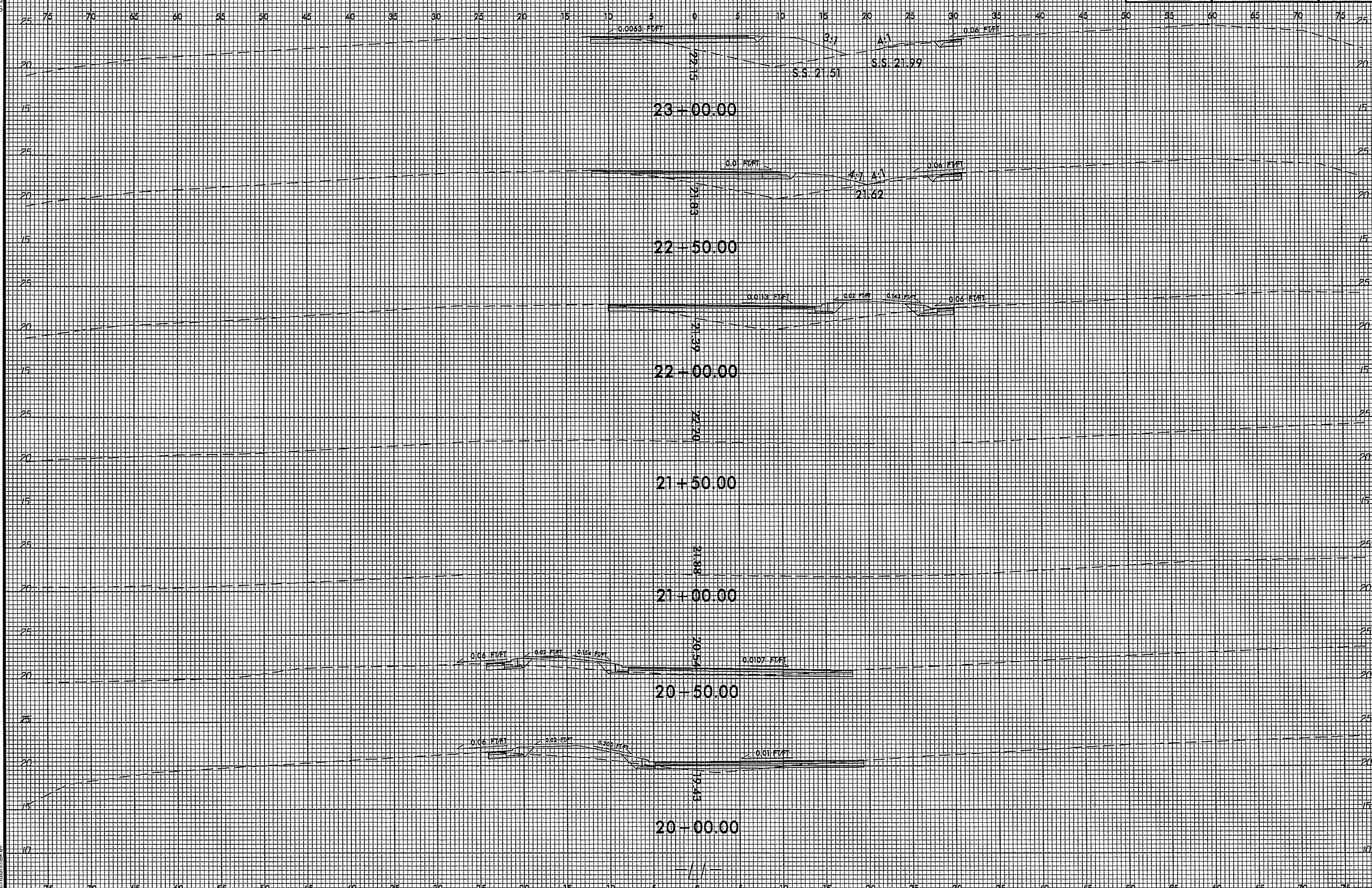
	PROJ. REFERENCE NO.	SHEET NO.
0 2.5 5	SS-4903AH	X-2



8/23/99

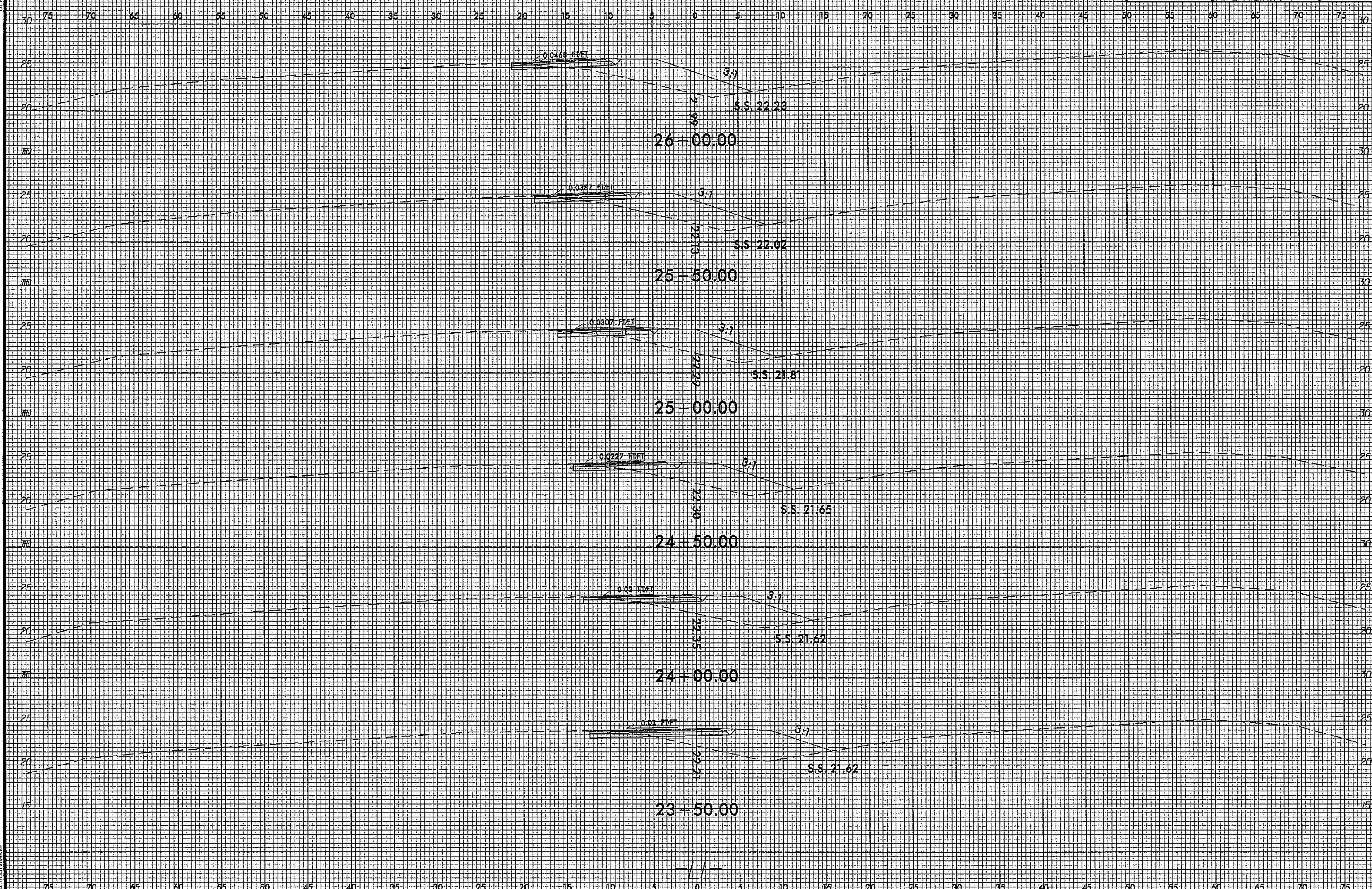
24-JAN-2014 16:14
D:\RDY\DTHREE_BRUNSWICK\US_17_US 17 BUS_SHALLOTTE OFFSET LEFTS\ROADWAY\CorridorModeling\43034_Rdy_xpl.dgn
cschoonmaker AT D3CAD274449

	PROJ. REFERENCE NO.	SHEET NO.
	SS-4903AH	X-3



22-JAN-2014 16:44
U:\RDY\DTHREE_BRUNSWICK\US 17.US 17 BUS_SHALLOTTE OFFSET LEFTS\ROADWAY\CorridorModeling\43034_Rdy_xpl.dgn
cschoonmaker

PROJ. REFERENCE NO.	SHEET NO.
SS-4903AH	X-4



8/23/99

22-JAN-2014 16:45
O:\RDY\DTHREE_BRUNSWICK\US 17_US 17 BUS_SHALLOTTE OFFSET LEFTS\ROADWAY\CorridorModeling\43034_Rdy_xpl.dgn
eschoonmaker

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	SS-4903AH	X-5

29+00.00

23.00

0.06 FT/FT

3:1

S.S. 25.90

28+50.00

23.00

0.06 FT/FT

3:1

S.S. 23.30

28+00.00

23.00

0.06 FT/FT

3:1

S.S. 23.10

27+50.00

22.72

0.06 FT/FT

3:1

S.S. 22.80

27+00.00

22.62

0.0548 FT/FT

3:1

S.S. 22.54

26+50.00

22.00

22-JAN-2014 16:45
G:\RDY\DTHREE_BRUNSWICK\US 17_US 17 BUS_SHALLOTTE OFFSET LEFTS\ROADWAY\Corridor Modeling\43034_Rdy_xpl.dgn
esehagenmaker