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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.25, 2018CPT.03.22.10101 2018CPT.03.22.20101	1	

BRUNSWICK COUNTY

LOCATION: WBS: 2018CPT.03.22.10101

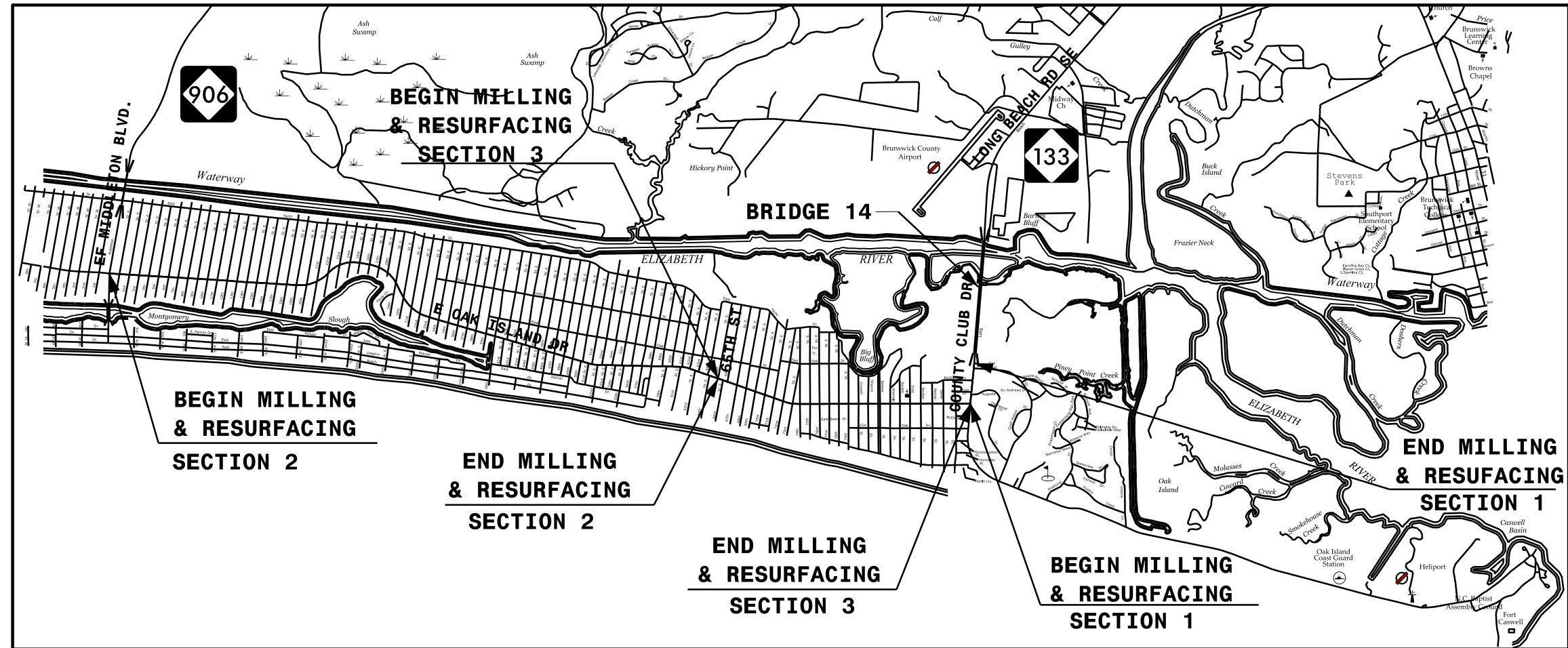
SECTION 1: NC 133 (COUNTRY CLUB DRIVE) FROM SR 1190 (E OAK ISLAND DRIVE) TO BRIDGE 14.

WBS: 2018CPT.03.22.20101

SECTION 2: SR 1190 (E OAK ISLAND DRIVE) FROM NC 906 (N MIDDLETON AVE) TO 65TH STREET.

SECTION 3: SR 1190 (E OAK ISLAND DRIVE) FROM 65TH STREET TO NC 133 (COUNTRY CLUB DRIVE).

TYPE OF WORK: MILLING, RESURFACING, GUARDRAIL, BRIDGE PRESERVATION



CONTRACT: C204185 WBS ELEMENT: 15BPR.25, 2018CPT.03.22.10101, 2018CPT.03.22.20101

NTS

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT = 5.5 MI.

Prepared in the Office of:



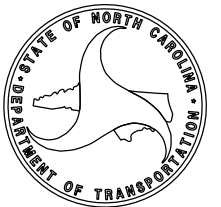
NC FIRM LICENSE No. C-1506
4800 Six Forks Rd.,
Suite 150
Raleigh, NC 27609
(919) 882-7839

2018 STANDARD SPECIFICATIONS

LETTING DATE:
5/15/2018

JOHN P. MAZERES
PROJECT ENGINEER

JASON DEBONE
PROJECT DESIGN ENGINEER



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	LOOP LOCATIONS
2C-1	ROADWAY DETAILS
3B-1	SUMMARY OF QUANTITIES

GENERAL NOTES

SIDE ROADS:

- A) 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.

GRADING AND SURFACING OR RESURFACING:

- B) 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.

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
DIVISION 6 654.01	ASPHALT BASES AND PAVEMENTS Pavement Repairs
DIVISION 8 862.01 862.02 862.03	INCIDENTALS Guardrail Placement Guardrail Installation (Special Detail for Sheet 6 of 8) Structure Anchor Units (Special Detail for Type III Anchor Units Sheets 1 of 7 and 2 of 7, See Structure Plans)

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	○
Computed Property Corner	-----
Property Monument	□
Parcel/Sequence Number	⑫③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	WLB
Proposed Wetland Boundary	WLB
Existing Endangered Animal Boundary	EAB
Existing Endangered Plant Boundary	EPB
Existing Historic Property Boundary	HPB
Known Contamination Area: Soil	☠-S-☠
Potential Contamination Area: Soil	☠-S-☠
Known Contamination Area: Water	☠-W-☠
Potential Contamination Area: Water	☠-W-☠
Contaminated Site: Known or Potential	☠☠

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	WLB
Proposed Lateral, Tail, Head Ditch	▬
False Sump	▽

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	③⑤
Switch	□
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Exist Permanent Easement Pin and Cap	◇
New Permanent Easement Pin and Cap	◆
Vertical Benchmark	⊕
Existing Right of Way Marker	△
Existing Right of Way Line	-----
New Right of Way Line	-----
New Right of Way Line with Pin and Cap	-----
New Right of Way Line with Concrete or Granite R/W Marker	-----
New Control of Access Line with Concrete C/A Marker	-----
Existing Control of Access	-----
New Control of Access	-----
Existing Easement Line	-----
New Temporary Construction Easement	-----
New Temporary Drainage Easement	-----
New Permanent Drainage Easement	-----
New Permanent Drainage / Utility Easement	-----
New Permanent Utility Easement	-----
New Temporary Utility Easement	-----
New Aerial Utility Easement	-----

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----
Proposed Slope Stakes Fill	-----
Proposed Curb Ramp	-----
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	▨

VEGETATION:

Single Tree	☼
Single Shrub	☼

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

Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	-----

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	-----
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	⊕
U/G Power Cable Hand Hole	-----
H-Frame Pole	●
U/G Power Line LOS B (S.U.E.*)	-----
U/G Power Line LOS C (S.U.E.*)	-----
U/G Power Line LOS D (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	-----
U/G Telephone Cable LOS B (S.U.E.*)	-----
U/G Telephone Cable LOS C (S.U.E.*)	-----
U/G Telephone Cable LOS D (S.U.E.*)	-----
U/G Telephone Conduit LOS B (S.U.E.*)	-----
U/G Telephone Conduit LOS C (S.U.E.*)	-----
U/G Telephone Conduit LOS D (S.U.E.*)	-----
U/G Fiber Optics Cable LOS B (S.U.E.*)	-----
U/G Fiber Optics Cable LOS C (S.U.E.*)	-----
U/G Fiber Optics Cable LOS D (S.U.E.*)	-----

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	-----
U/G Water Line LOS C (S.U.E.*)	-----
U/G Water Line LOS D (S.U.E.*)	-----
Above Ground Water Line	-----

TV:

TV Pedestal	⊕
TV Tower	⊗
U/G TV Cable Hand Hole	-----
U/G TV Cable LOS B (S.U.E.*)	-----
U/G TV Cable LOS C (S.U.E.*)	-----
U/G TV Cable LOS D (S.U.E.*)	-----
U/G Fiber Optic Cable LOS B (S.U.E.*)	-----
U/G Fiber Optic Cable LOS C (S.U.E.*)	-----
U/G Fiber Optic Cable LOS D (S.U.E.*)	-----

GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	-----
U/G Gas Line LOS C (S.U.E.*)	-----
U/G Gas Line LOS D (S.U.E.*)	-----
Above Ground Gas Line	-----

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
SS Forced Main Line LOS B (S.U.E.*)	-----
SS Forced Main Line LOS C (S.U.E.*)	-----
SS Forced Main Line LOS D (S.U.E.*)	-----

MISCELLANEOUS:

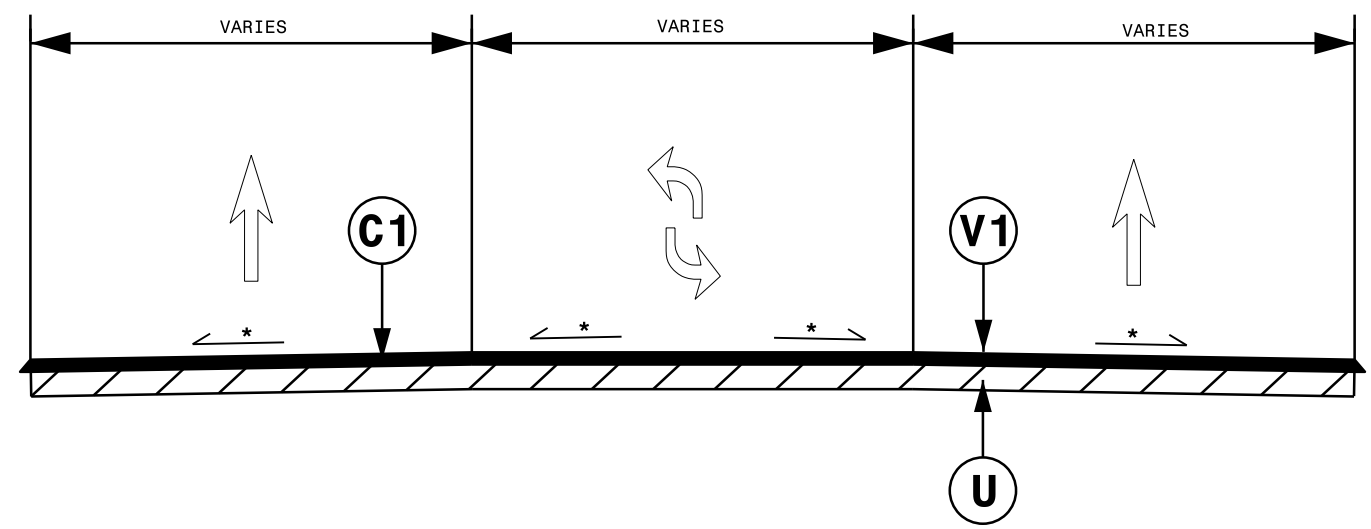
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line LOS B (S.U.E.*)	-----
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	⊕
Abandoned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

I:\APR-2018\2:32 C:\Users\jdp\Documents\misc\discar\N5BPR.25 Brunswick\200_058_15BPR.25_RDY_SYMBOLS.dgn
 \$PROJECT_CURRENTSETD00.\$

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168 LBS. PER. SQ. YD.
V1	MILLING BITUMINOUS PAVEMENT. 1.5" DEPTH.
U	EXISTING PAVEMENT

NOTES:

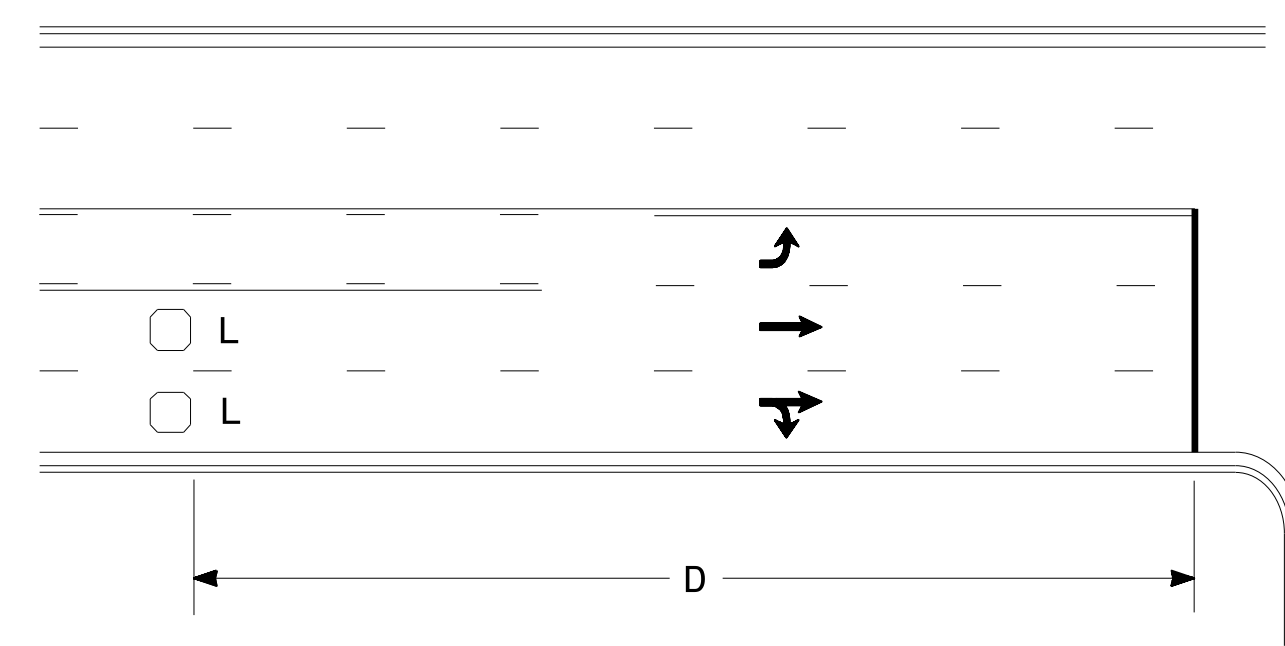
1. MILL PATCHING MUST BE COMPLETED BEFORE CLOSING THE BRIDGE.
2. BRIDGE WORK MUST BE COMPLETED BEFORE MILLING AND RESURFACING.
3. ALL PAVED SIDE STREETS TO BE RESURFACED TO THE ENDS OF THE RADII, OR AS DIRECTED BY THE ENGINEER.
4. CONTRACTOR SHALL MILL 1.5" BELOW EXISTING PAVEMENT.
5. PAVEMENT WIDTHS VARY.
6. * MATCH EXISTING CROSS SLOPE.



TYPICAL SECTION #1

I3-APR-2018 09:12
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 #BOOSEIT_CURRENTSETD06\$

High Speed Detection (≥40 mph)

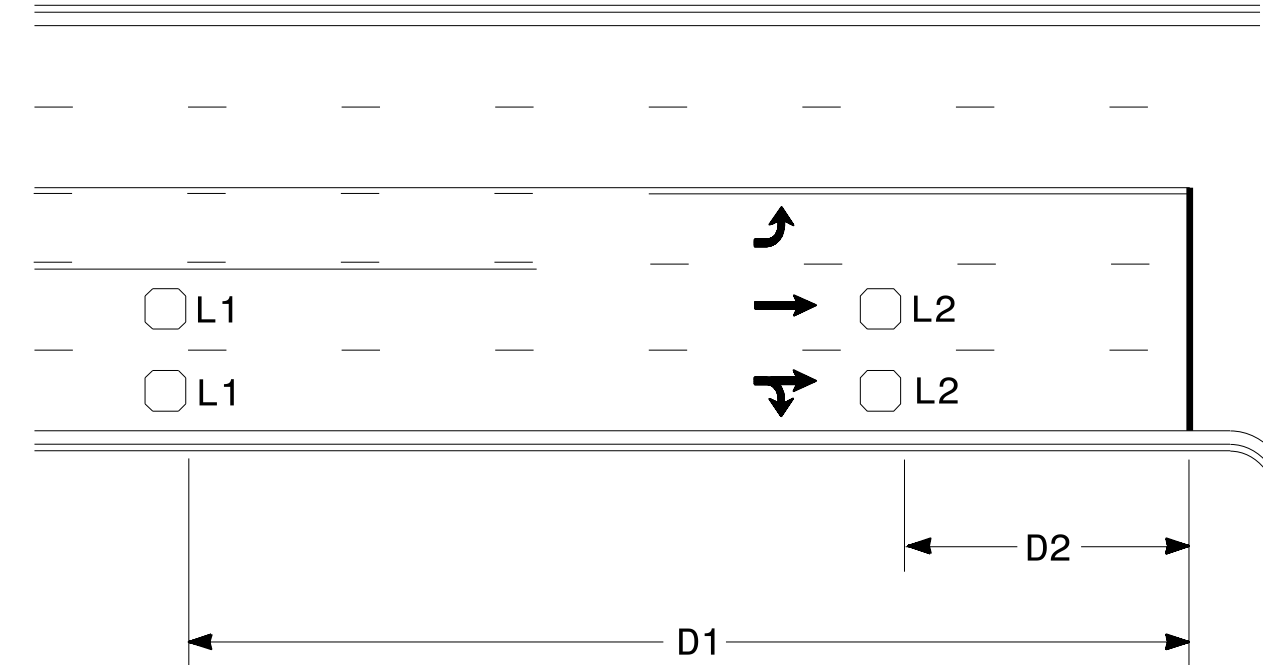


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

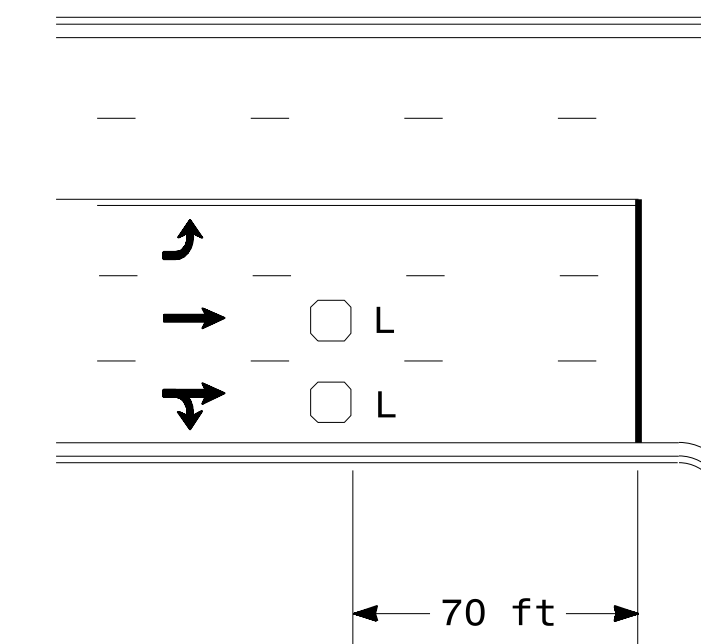


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

L1 = 6ft X 6ft
Wired in series
L2 = 6ft X 6ft
Wired in series

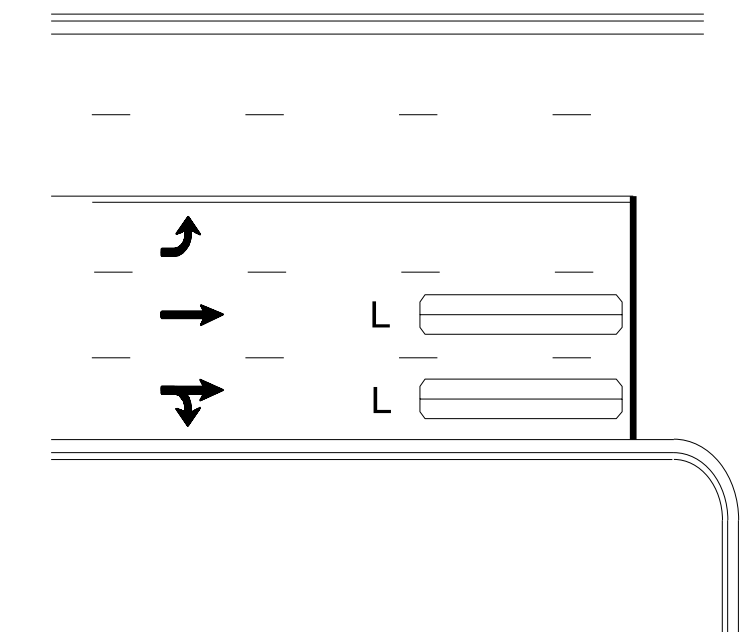
"Stretch" Operation

Low Speed Detection (≤35 mph)



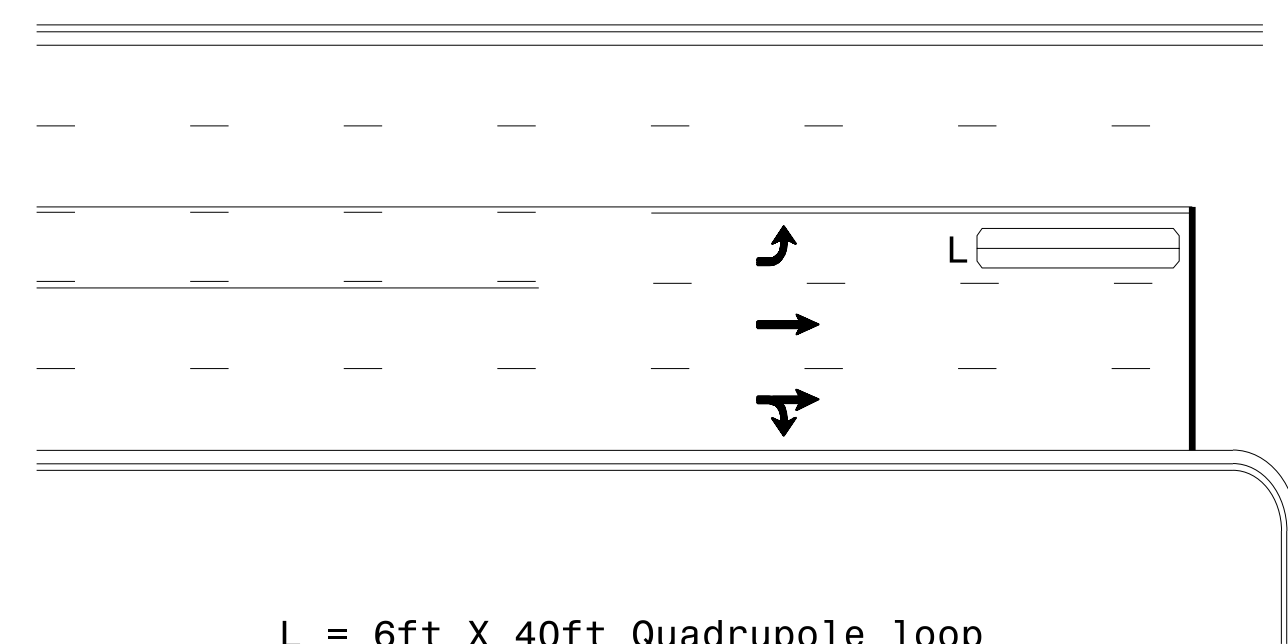
L = 6ft X 6ft
Wired in series

OR



L = 6ft X 40ft
Quadrupole loop, wired separately

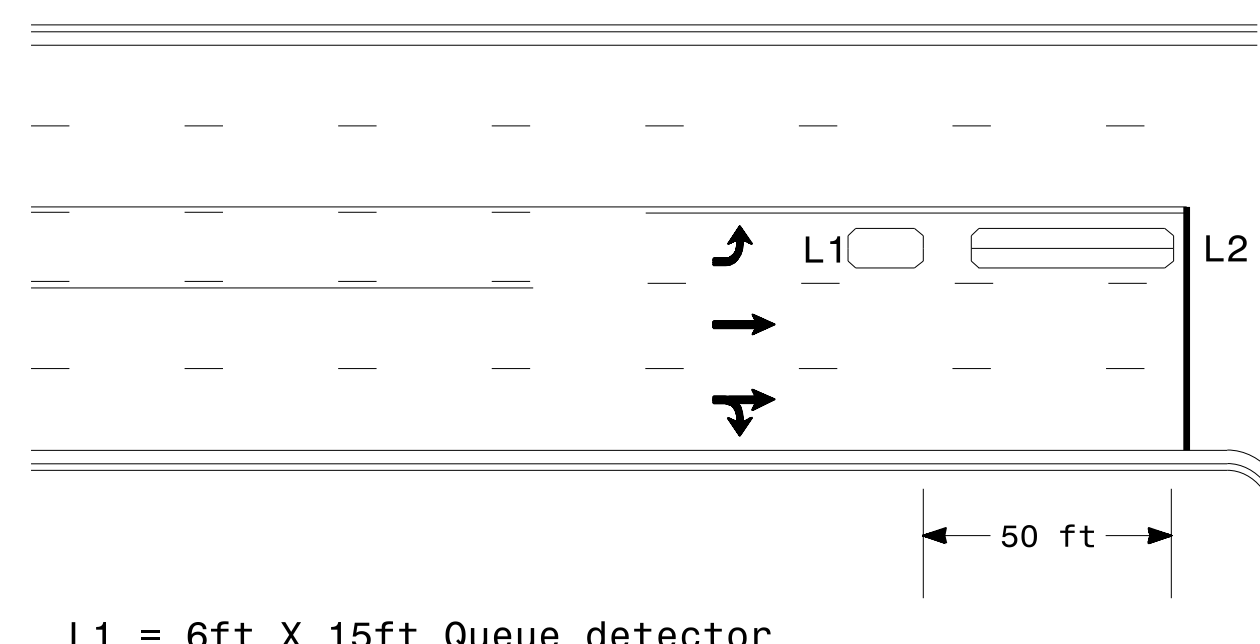
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

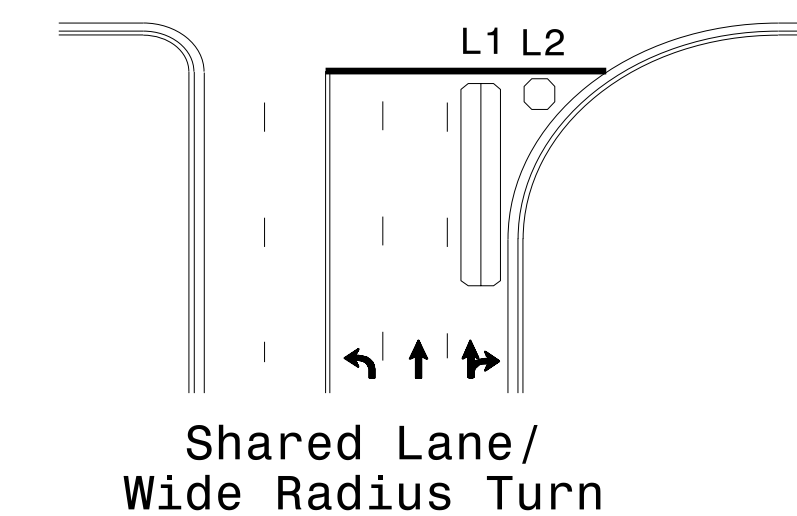
OR



L1 = 6ft X 15ft Queue detector
L2 = 6ft X 40ft Quadrupole loop

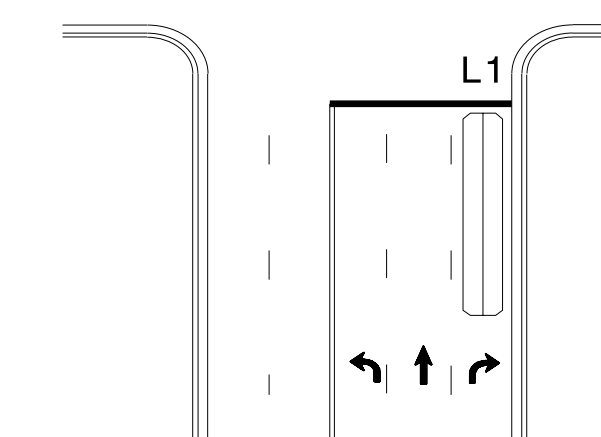
Queue Loop Detection

Right Turn Lane Detection

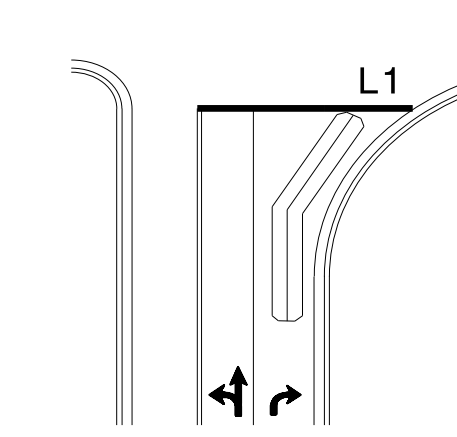


Shared Lane/
Wide Radius Turn

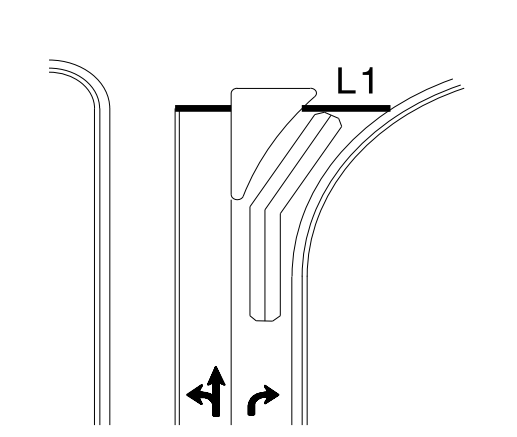
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

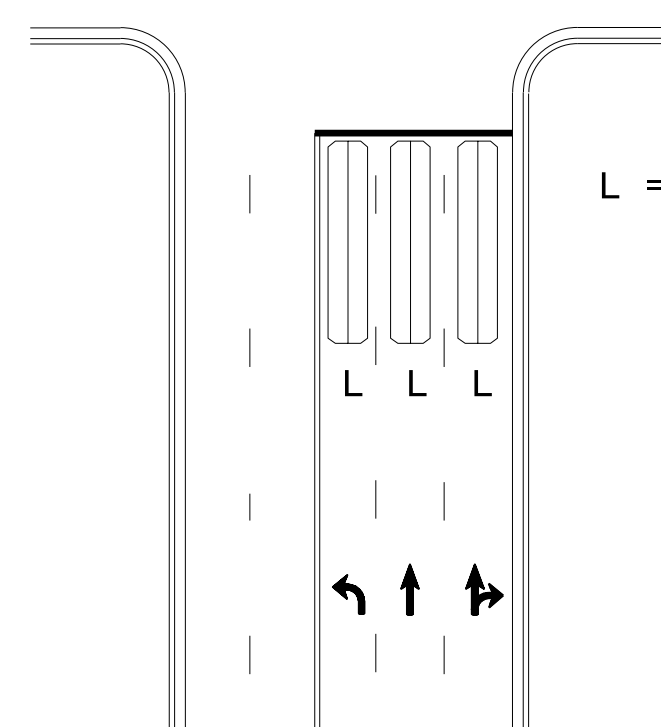


Wide Radius Turn



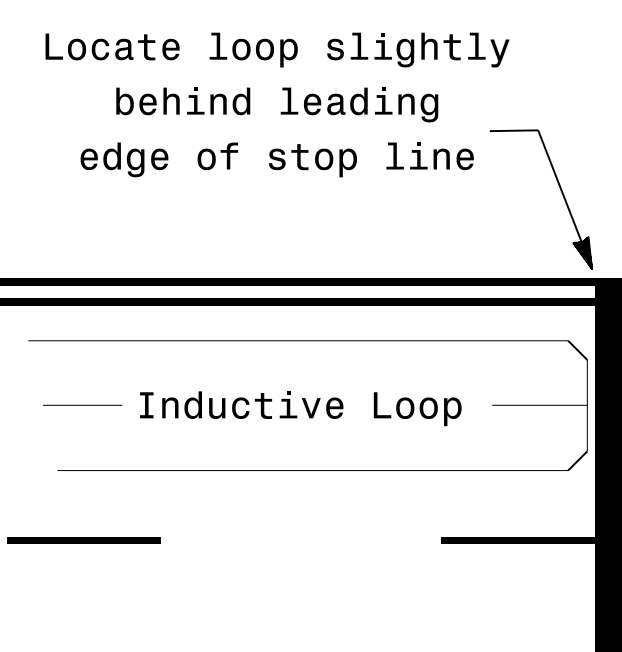
Channelized Turn

Side Street Detection



L = 6ft X 40ft
Quadrupole 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 under any of the
following conditions:
1) stop line is greater than 15'
from edge of intersecting
roadway
2) loop detects a permissive or
protected/permissive left turn
3) for an exclusive right turn
lane

Recommended Number of Turns

Single 6' X 6' loop
(when wired separately):

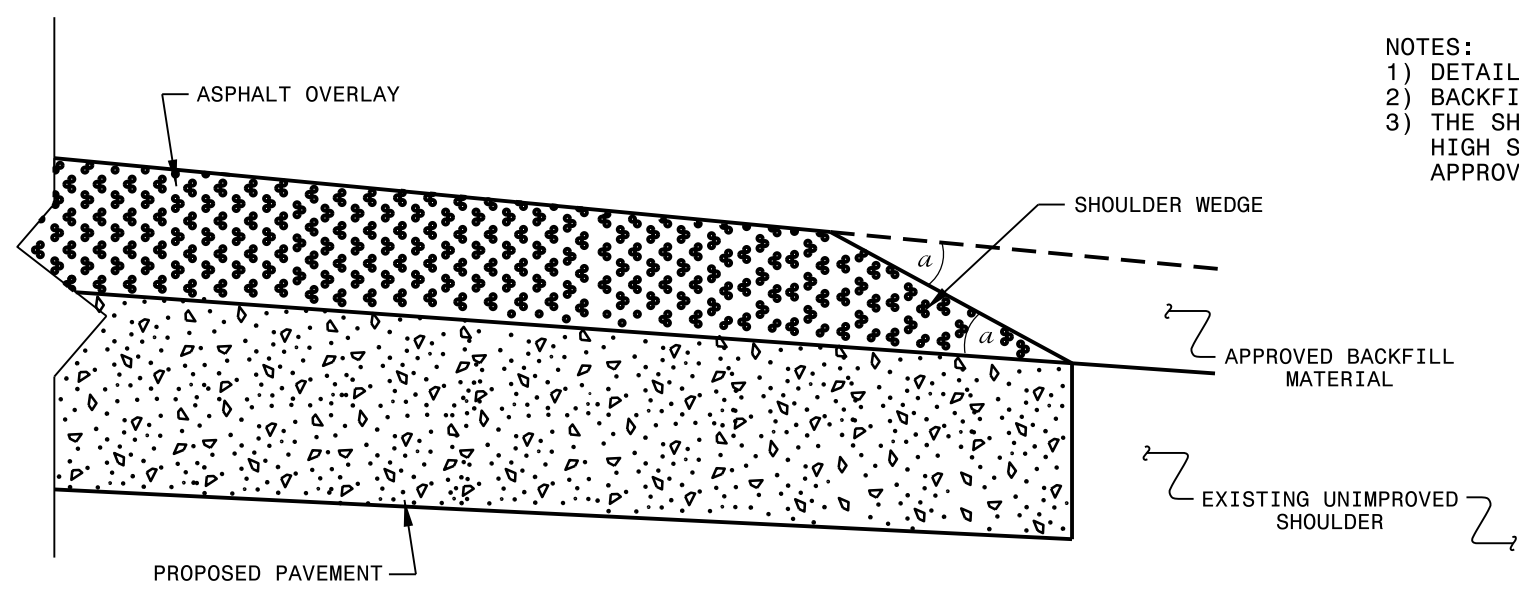
Length of Lead-in ft	Number of Turns
< 250	3
250-375	4
375-525	5
> 525	6

Quadrupole loops: Use 2-4-2 turns

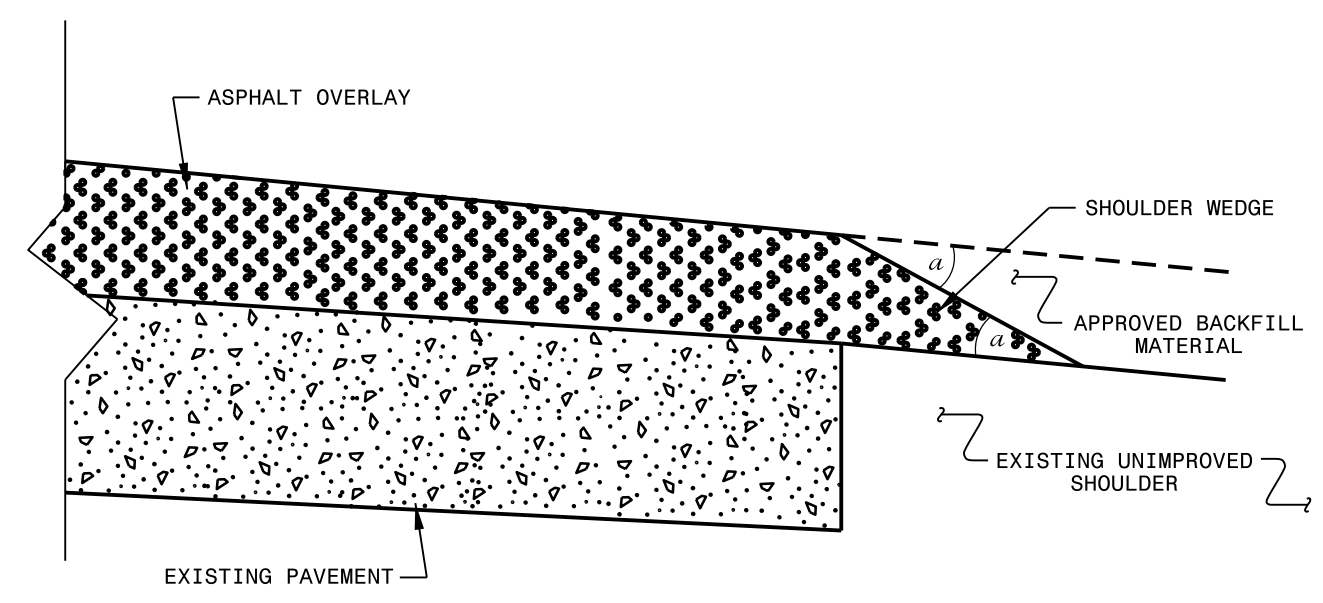
6' X 15' Loops:
Lead-in < 150', use 2 turns
Lead-in > 150', use 3 turns

<p>Prepared In the Offices of: TRANSPORTATION MOBILITY AND SAFETY SOLUTIONS, INC. SIGNAL DESIGN SECTION 750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER 23489</p>	
	<p>Typical Signal Loop Locations</p>	
<p>PLAN DATE: January 2015 REVIEWED BY: JPG</p>	<p>PREPARED BY: PLA REVIEWED BY:</p>	
<p>SCALE N/A</p>	<p>REVISIONS</p>	<p>INIT. DATE</p>
<p>SIG. INVENTORY NO.</p>		

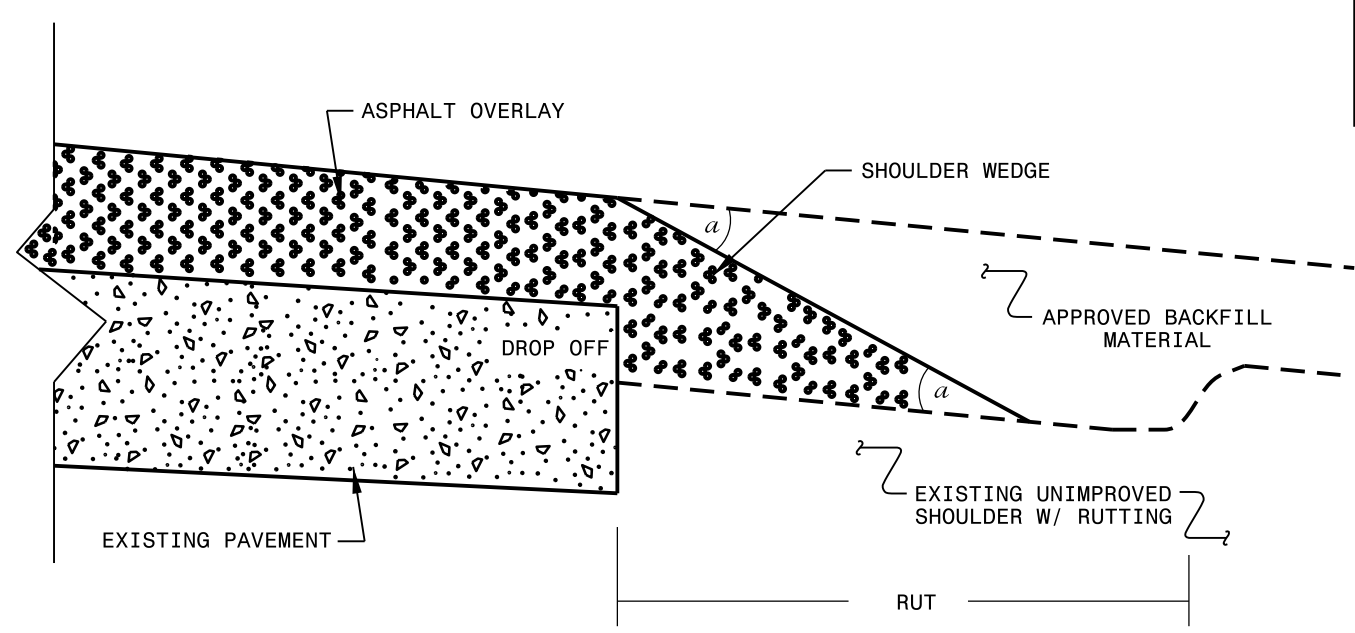
- NOTES:
- 1) DETAIL DOES NOT APPLY TO OGAFB AND ULTRA-THIN BONDED WEARING COURSE.
 - 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
 - 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT AS APPROVED BY THE ENGINEER.



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°

CONTRACT STANDARDS AND DEVELOPMENT UNIT		
Office 919-707-6950 FAX 919-250-4119		
SHOULDER WEDGE DETAILS		
ORIGINAL BY: T.SPELL	DATE: 7-19-11	
MODIFIED BY:	DATE: 2/2/16	
CHECKED BY:	DATE:	
FILE SPEC.: szusr/details/stand/shoulderwedgedetail.dgn		

22 JAN-2018 09:41
 S:\Contracts\1030-2018\Resurfacing Projects\Division 4\1-5937 Wilson March 2018\Revised Shoulder Wedge Detail.dgn
 P:\piper\at\USD-2018

PROJECT NO.	SHEET NO.
2018CPT.03.22.10101, etc	3B-1

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP SECTION	ROUTE	DESCRIPTION	TYP NO	LANES	LANES	LENGTH	WIDTH	MILLING 1.5"	S9.5C	S9.5C LEVELING	PATCHING EXISTING PAVEMENT (MILL PATCHING)	ASPHALT BINDER FOR PLANT MIX	ADJ. OF METER OR VALVE BOXES	INDUCTIVE LOOP SAWCUT	LEAD-IN CABLE
								MI	FT	SY	TON	TON	TON	TONS	EA	LF	LF
2018CPT.03.22.10101	BRUNSWICK	1	NC 133	FROM SR 1190 TO BRIDGE 14	1	3	MUD	0.3	34.5	6,679	561	2	33	34	1	27	27
2018CPT.03.22.20101		2	SR 1190	FROM NC 906 TO 65TH ST	1	3	MUD	1.5	36	34,848	2,927	11	164	177	2	136	136
2018CPT.03.22.20101		3	SR 1190	FROM 65TH ST TO NC 133	1	3	MUD	3.7	36.67	87,558	7,355	27	404	443	2	336	336
TOTAL								5.5		129,085	10,843	40	601	654	5	499	499

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP SECTION	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	WORK ZONE SIGNS (PORTABLE)	WORK ZONE ADV/GEN WARNING SIGNS	PORTABLE CHANGE-ABLE MSG SIGN	SKINNY DRUMS	FLAGGER	THERMO (4" 120 MIL) WHITE EDGELINE	THERMO (4" 120 MIL) YELLOW CENTER LINE	THERMO (24" 120 MIL) WHITE STOPBAR	PM SYMBOL THERMO 90 MILS	RAISED YELLOW & YELLOW MARKERS
								MI	FT	SF	SF	EA	EA	DAY	LF	LF	LF	EA	EA
2018CPT.03.22.10101	BRUNSWICK	1	NC 133	FROM SR 1190 TO BRIDGE 14	1	3	MUD	0.3	34.5	128	168	2	50	10	3,218	3,982	27	11	79
2018CPT.03.22.20101		2	SR 1190	FROM NC 906 TO 65TH ST	1	3	MUD	1.5	36	384	107	1	30	40	16,091	19,909	137	55	396
2018CPT.03.22.20101		3	SR 1190	FROM 65TH ST TO NC 133	1	3	MUD	3.7	36.67	384	107	1	30	40	39,691	49,109	336	135	977
TOTAL								5.5		896	382	4	110	90	59,000	73,000	500	201	1,452
																132,000			

Quantities may only represent a portion of the amount in the Item Sheets of the Proposal.