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PROJECT REFERENCE NO.		SHEET NO.
I–5787		1
53027.1.1	NHPP–0085(014)	PE
53027.3.1	NHPP–0085(014)	CONST.

END PROJECT I-5787

BEGIN PROJECT I-5787

GRANVILLE COUNTY
VANCE COUNTY

Henderson

Epsom

Kittrell

1

2

3

I–5787, I–85 from North of NC 56 in Granville County to N of Vance County Line Diamond Grinding, Joint Sealing and Concrete Repair

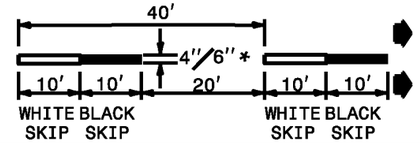
PROJECT REFERENCE NO.	SHEET NO.
I-5787	2

PAVEMENT SCHEDULE

C1	PROP. 2" ASPHALT CONCRETE SURFACE COURSE, S9.5C AT AN AVG. RATE OF 224 LBS PER SQ. YD.
C2	PROP. 1.5" ASPHALT CONCRETE SURFACE COURSE, S9.5B AT AN AVG. RATE OF 168 LBS PER SQ. YD.
J	INCIDENTAL STONE BASE, AS DIRECTED BY THE ENGINEER
S	PROP. SHOULDER RECONSTRUCTION WITH AGGREGATE SHOULDER BORROW, AS DIRECTED BY THE ENGINEER
U	EXISTING PAVEMENT
V1	PROP. 2" MILLING
V2	PROP. CONTINUOUS MILLED RUMBLE STRIP, AS DIRECTED BY THE ENGINEER
V3	PROP. 1.5" MILLING
Y	PROPOSED DIAMOND GRINDING

BLACK - WHITE COMBINATION
10' WHITE SKIP LINES
10' BLACK SKIP LINES

FOR USE ON CONCRETE PAVEMENTS TO PROVIDE CONTRAST FOR THE WHITE LANE LINE, ALONG THRU LANES AND RAMP LANES.



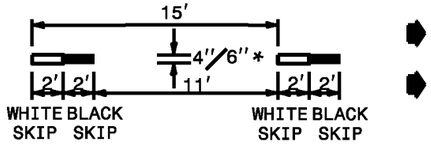
*NOTE:
WHERE TWO WIDTHS ARE INDICATED, THE FIRST WIDTH APPLIES TO A "NORMAL" WIDTH LINE, THE SECOND WIDTH APPLIES TO A "WIDE" LINE.

"WIDE" LINES ARE REQUIRED WHEN DESIGNATED IN THE PLANS, OR WHEN DIRECTED BY THE ENGINEER.

6" LINE REMOVAL SHALL BE USED TO REMOVE 100% OF THE 4" TEMPORARY PAINT ON THE CONCRETE SURFACE BY GRINDING METHOD ONLY. ALSO 6" LINE REMOVAL BY GRINDING SHALL BE USED IN THE AREA OF THE BLACK CONTRAST FOR SURFACE PREPARATION.

BLACK - WHITE COMBINATION
2' MINI WHITE SKIP LINES
2' MINI BLACK SKIP LINES

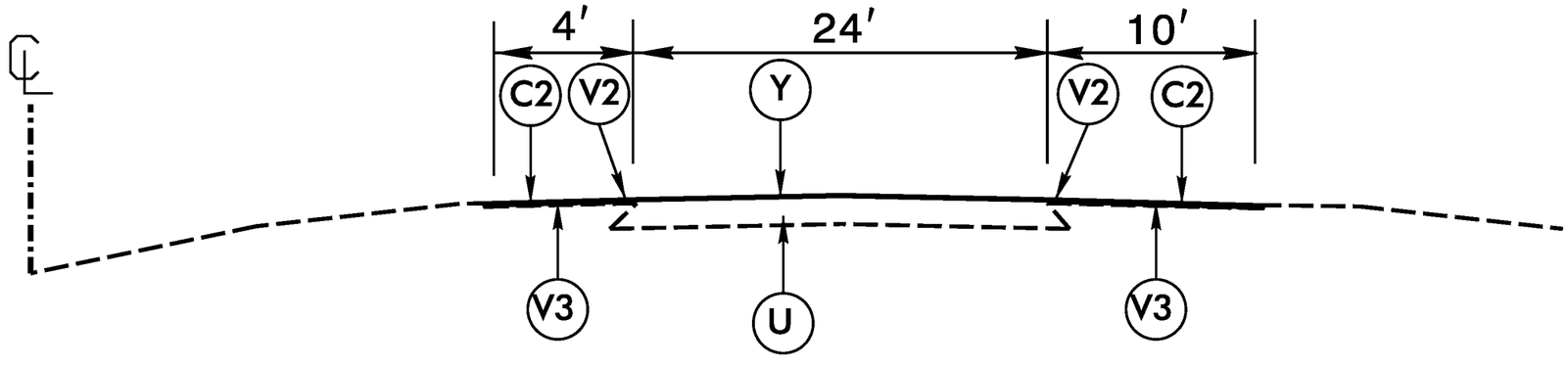
FOR USE ON CONCRETE PAVEMENTS TO PROVIDE CONTRAST FOR THE WHITE LANE LINE, ALONG THRU LANES AND RAMP LANES.



*NOTE:
WHERE TWO WIDTHS ARE INDICATED, THE FIRST WIDTH APPLIES TO A "NORMAL" WIDTH LINE, THE SECOND WIDTH APPLIES TO A "WIDE" LINE.

"WIDE" LINES ARE REQUIRED WHEN DESIGNATED IN THE PLANS, OR WHEN DIRECTED BY THE ENGINEER.

6" LINE REMOVAL SHALL BE USED TO REMOVE 100% OF THE 4" TEMPORARY PAINT ON THE CONCRETE SURFACE BY GRINDING METHOD ONLY. ALSO 6" LINE REMOVAL BY GRINDING SHALL BE USED IN THE AREA OF THE BLACK CONTRAST FOR SURFACE PREPARATION.



TYPICAL SECTION NO. 1

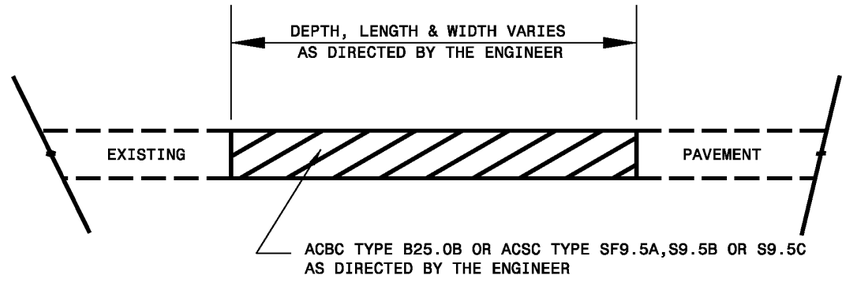
DIAMOND GRIND EXISTING 24' TRAVEL LANES ONLY

DIAMOND GRINDING OPERATION SHALL BE PERFORMED AFTER SLAB REPLACEMENT OPERATION AND PRIOR TO JOINT SEALING OPERATION

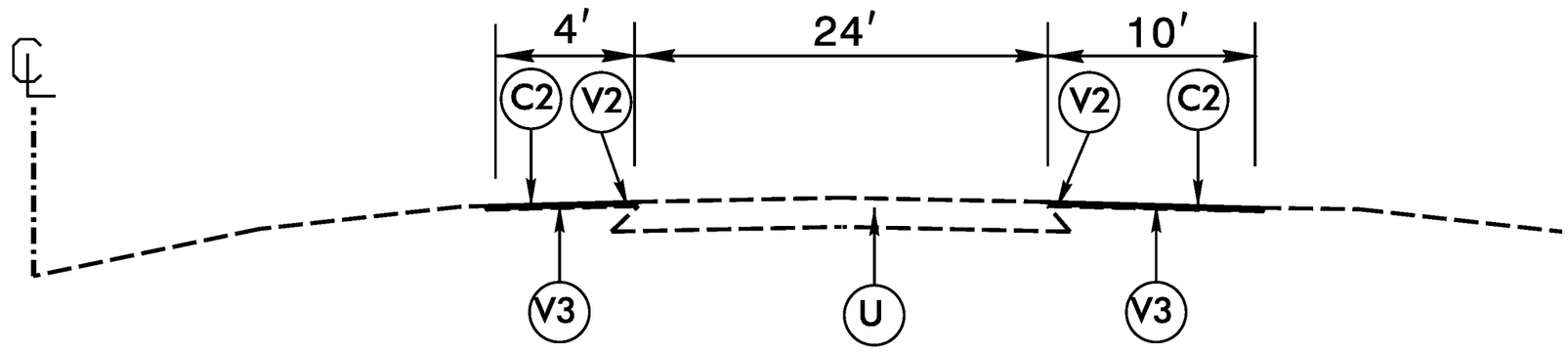
PROJECT REFERENCE NO.	SHEET NO.
I-5787	3

PAVEMENT SCHEDULE

C1	PROP. 2″ ASPHALT CONCRETE SURFACE COURSE, S9.5C, AT AN AVG. RATE OF 224 LBS PER SQ. YD.	V1	PROP. 2″ MILLING
C2	PROP. 1.5″ ASPHALT CONCRETE SURFACE COURSE, S9.5B AT AN AVG. RATE OF 168 LBS PER SQ. YD.	V2	PROP. CONTINUOUS MILLED RUMBLE STRIP, AS DIRECTED BY THE ENGINEER
J	INCIDENTAL STONE BASE, AS DIRECTED BY THE ENGINEER	V3	PROP. 1.5″ MILLING
S	PROP. SHOULDER RECONSTRUCTION WITH AGGREGATE SHOULDER BORROW, AS DIRECTED BY THE ENGINEER	Y	PROPOSED DIAMOND GRINDING
U	EXISTING PAVEMENT		



PATCHING EXISTING PAVEMENT



TYPICAL SECTION NO. 2

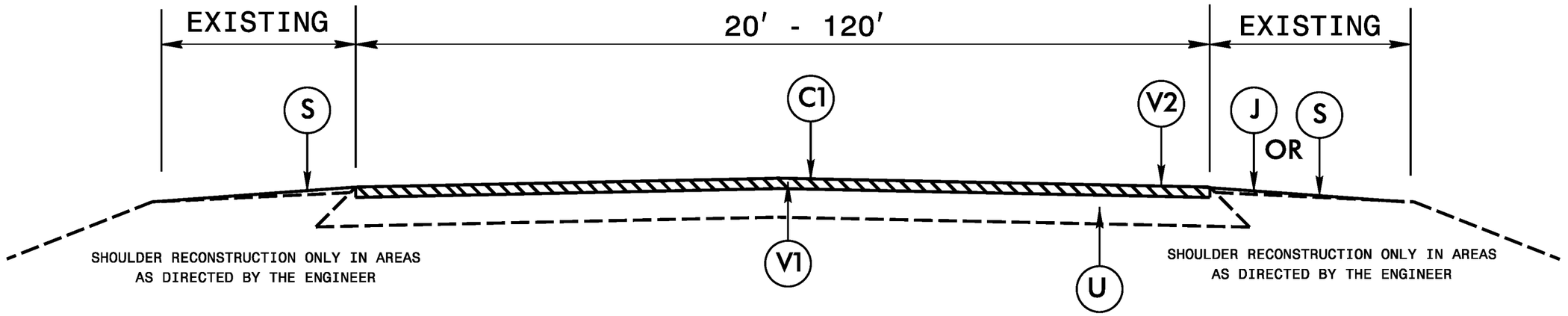
EXISTING MAINLINE HAS ALREADY BEEN DIAMOND GROUND
DIAMOND GRIND SLAB REPLACEMENT AREAS ONLY

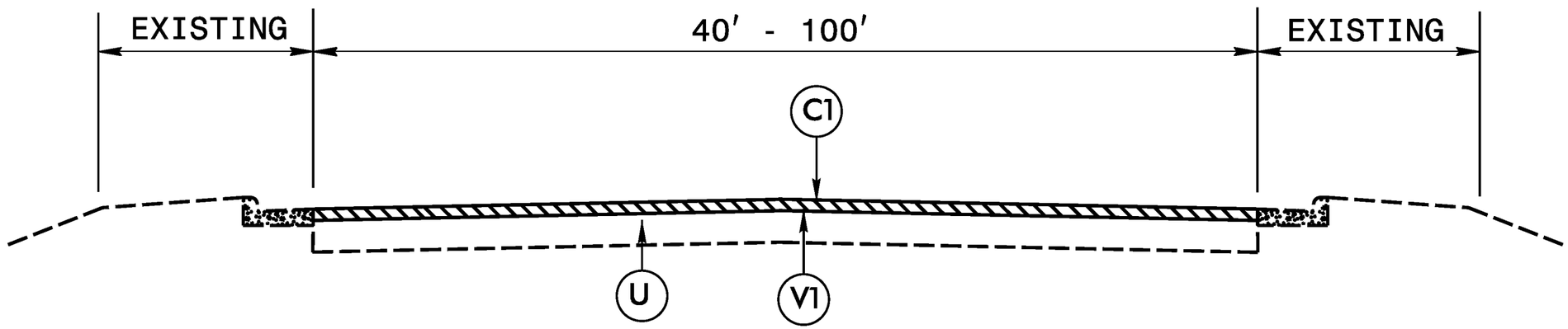
DIAMOND GRINDING OPERATION SHALL BE PERFORMED AFTER SLAB REPLACEMENT OPERATION AND PRIOR TO JOINT SEALING OPERATION

PROJECT REFERENCE NO.	SHEET NO.
I-5787	4

PAVEMENT SCHEDULE

C1	PROP. 2" ASPHALT CONCRETE SURFACE COURSE, S9.5C, AT AN AVG. RATE OF 224 LBS PER SQ. YD.	V1	PROP. 2" MILLING
C2	PROP. 1.5" ASPHALT CONCRETE SURFACE COURSE, S9.5B AT AN AVG. RATE OF 168 LBS PER SQ. YD.	V2	PROP. CONTINUOUS MILLED RUMBLE STRIP, AS DIRECTED BY THE ENGINEER
J	INCIDENTAL STONE BASE, AS DIRECTED BY THE ENGINEER	V3	PROP. 1.5" MILLING
S	PROP. SHOULDER RECONSTRUCTION WITH AGGREGATE SHOULDER BORROW, AS DIRECTED BY THE ENGINEER	Y	PROPOSED DIAMOND GRINDING
U	EXISTING PAVEMENT		

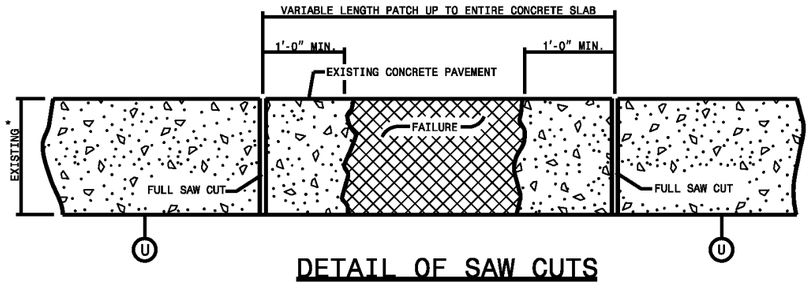




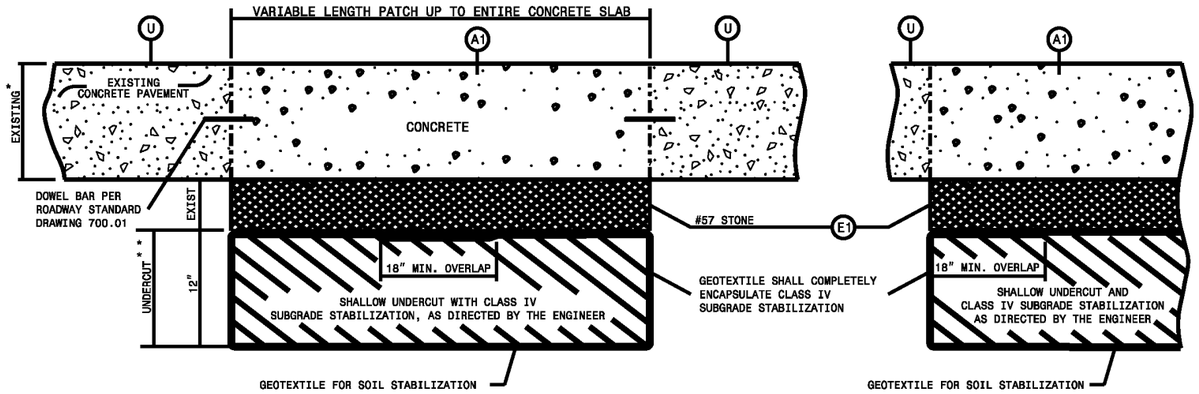
TYPICAL SECTION NO. 3

* CONTRACTOR SHALL USE THIS TYPICAL FOR THE APHALT RAMPS

PROJECT REFERENCE NO.	SHEET NO.
I-5787	5



DETAIL OF SAW CUTS



DETAIL OF CONCRETE PAVEMENT REPAIR

* DIMENSIONS ARE APPROXIMATE AND SHOULD BE FIELD VERIFIED

** UNDERCUT REQUIRED ONLY IN AREAS AS DIRECTED BY THE ENGINEER

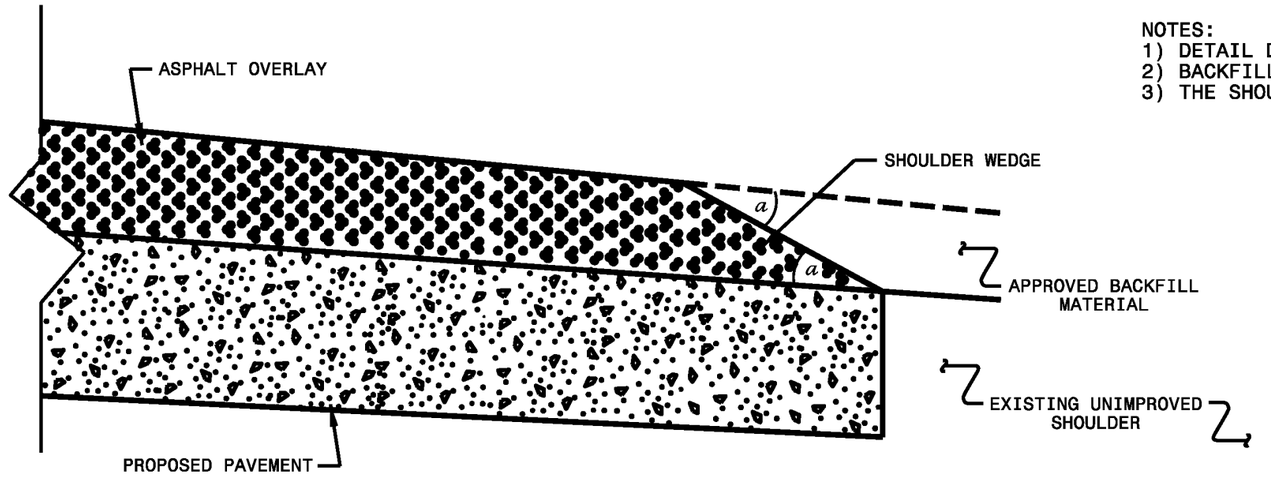
PAVEMENT SCHEDULE	
A1	PROPOSED CONCRETE TO MATCH DEPTH OF EXISTING SLABS (APPROX 11")
E1	PROP. #57 STONE TO MATCH DEPTH OF EXISTING PADL
U	EXISTING PAVEMENT

Refer to the North Carolina Department of Transportation "Partial and Full Depth Repair Manual" when Replacing Slabs and when Repairing Concrete Pavement.

DETAIL FOR REPAIR OF CONCRETE PAVEMENT

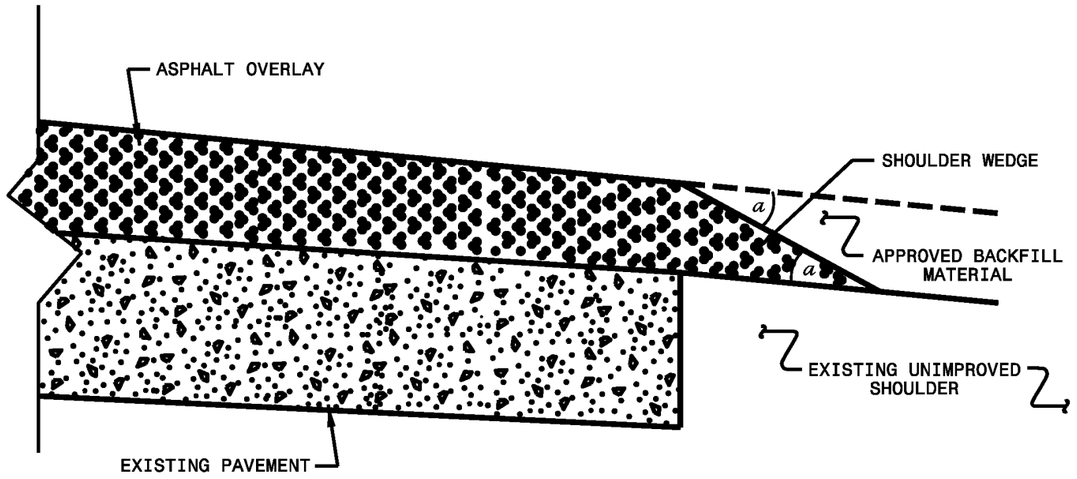
PROJECT REFERENCE NO.	SHEET NO.
I-5787	6

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.



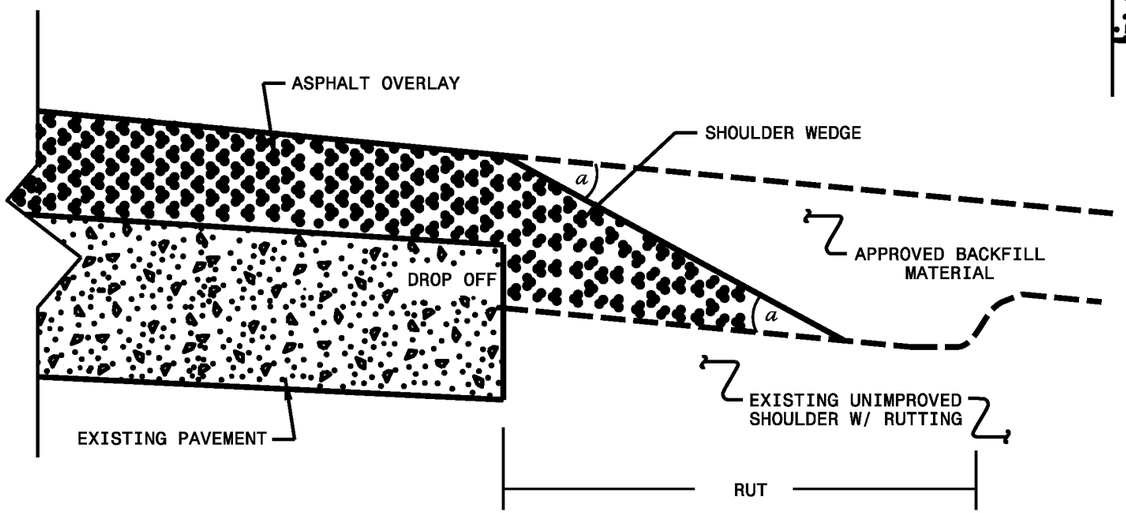
SHOULDER WEDGE DETAIL

(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°

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:	10/16/12
CHECKED BY:		DATE:	
FILE SPEC.:	s:\usr\details\stand\shoulderwedgedetail.dgn		

$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$DGN$$$$$$$$$$$$$$$$$$

PROJECT NO.	SHEET NO.	TOTAL NO.
I-5787	7	

SUMMARY OF QUANTITIES

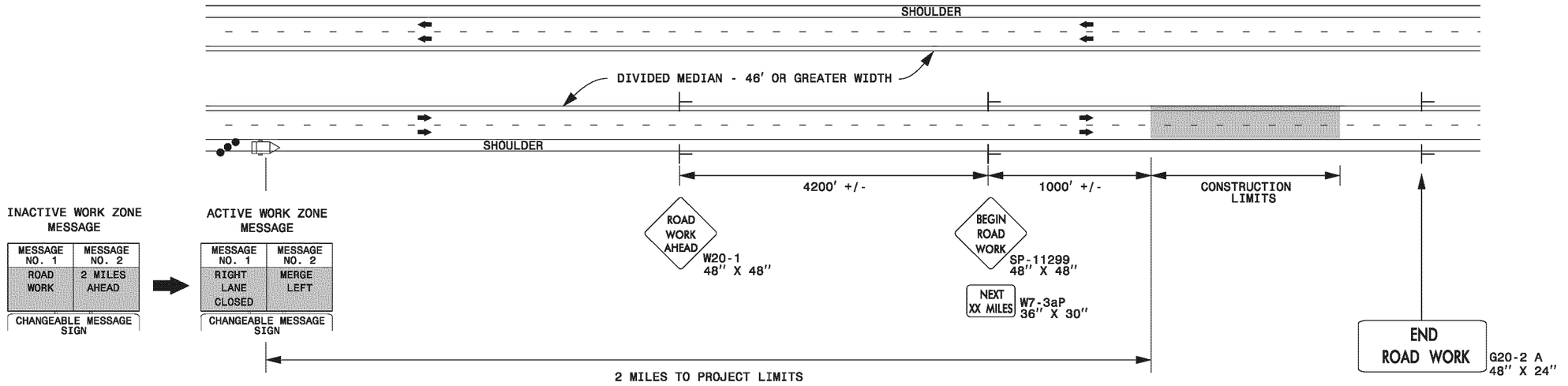
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	DIAMOND GRIND SY	SHALLOW UNDERCUT CY	AGGREGATE SHOULDER BORROW TON	GEOTEXTILE FOR SOIL STABILIZATION SY	CLASS IV, SUBGRADE STABILIZATION TON	#57 STONE TON	INCIDENTAL STONE BASE TONS	SHOULDER RECON STRUCTION SMI	1.5" MILLING SY	2" MILLING SY	SURFACE COURSE, S9.5B TONS	SURFACE COURSE, S9.5C TONS	ASPHALT BINDER FOR PLANT MIX TON	PATCHING EXISTING PAVEMENT TONS	PATCHING CONCRETE PAVEMENT SPALLS SF	MILLED RUMBLE STRIPS (ASPHALT CEMENT CONCRETE) LF	REPAIR OF JOINTED CONCRETE PAVEMENT SLABS SY	SURFACE TESTING DIAMOND GROUND PAVEMENT LS	SEALING EXISTING PAVEMENT CRACKS LF	SEALING EXISTING CONCRETE PAVEMENT JOINT LF	PORTABLE LIGHTING LS	INDUCTIVE LOOP LF
53027.3.1	Granville	1	I-85 NB	FROM BEG OF CONCRETE PAVEMENT N OF NC 56 TO THE VANCE CO LINE	2, 3	2		NO	17	20-120	1,468	20	290	59.00	40	164	731	1.25	142,420	26,105	11,963	3,070	899	50	200	179,520	734	0.1	188,212.00	217,050.00	0.50	250
TOTAL FOR MAP NO. 1									**17**		**1,468**	**20**	**290**	**59.00**	**40**	**164**	**731**	**1.25**	**142,420**	**26,105**	**11,963**	**3,070**	**899**	**50**	**200**	**179,520**	**734**	**0.1**	**188,212.00**	**217,050.00**	**0.50**	**250**
53027.3.1	Vance	2	I-85 NB	FROM GRANVILLE COUNTY LINE TO CONSTRUCTION JOINT/START OF NEW CONCRETE PAVEMENT	1	2		NO	0.19	24	2,675								1,560		131		8		20	2,006		0.1	2,006.00	2,388.00		
TOTAL FOR MAP NO. 2									**0.19**		**2,675**								**1,560**		**131**		**8**		**20**	**2,006**		**0.1**	**2,006.00**	**2,388.00**		
53027.3.1	Granville and Vance	3	I-85 SB	FROM CONCRETE PAVEMENT CONSTRUCTION JOINT IN VANCE COUNTY TO ASPHALT PAVEMENT JOINT N OF NC 56	1, 3	2		NO	17.35	20-120	246,833	20	243	59.00	40	65	931	1.36	145,351	24,400	12,209	2,870	902	50	200	183,216	293	0.8	192,377.00	219,000.00	0.50	310
TOTAL FOR MAP NO. 3									**17.35**		**246,833**	**20**	**243**	**59.00**	**40**	**65**	**931**	**1.36**	**145,351**	**24,400**	**12,209**	**2,870**	**902**	**50**	**200**	**183,216**	**293**	**0.8**	**192,377.00**	**219,000.00**	**0.50**	**310**
TOTAL FOR PROJ NO. 53027.3.1									**34.54**		**250,976**	**40**	**533**	**118.00**	**80**	**229**	**1,662**	**2.61**	**289,331**	**50,505**	**24,303**	**5,940**	**1,809**	**100**	**420**	**364,742**	**1,027**	**1.0**	**382,595.00**	**438,438.00**	**1.00**	**560**
GRAND TOTAL									**34.54**		**250,976**	**40**	**533**	**118.00**	**80**	**229**	**1,662**	**2.61**	**289,331**	**50,505**	**24,303**	**5,940**	**1,809**	**100**	**420**	**364,742.00**	**1,027**	**1.0**	**382,595.00**	**438,438.00**	**1.00**	**560**

THERMOPLASTIC AND PAINT QUANTITIES

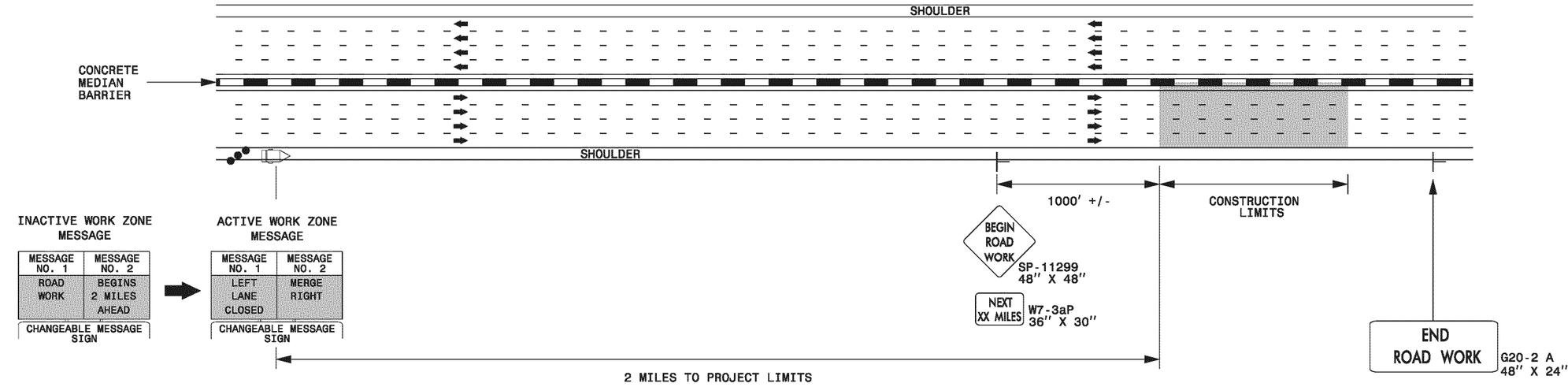
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	WIDTH	4413000000-E WORK ZONE ADVANCE/ GENERAL WARNING SIGNING SF	4399000000-N TEMPORARY TRAFFIC CONTROL LS	4510000000-N LAW ENFORCEMENT HR	4685000000-E 4" X 90 M YELLOW THERMO LF	4" X 90 M WHITE THERMO LF	4695000000-E 8" X 90 M WHITE THERMO LF	4700000000-E 12" X 90 M WHITE THERMO LF	4710000000-E 24" X 120 M WHITE THERMO LF	4725000000-E THERMO STR & LT ARROW 90 M EA	THERMO RT ARROW 90 M EA	4805000000-N COLD APPLIED PLASTIC MERGE ARROW, TYPE III EA	4810000000-E 4" WHITE PAINT LF	4" YELLOW PAINT LF	4" BLACK PAINT LF	4847100000-E 6" YELLOW POLYUREA (HIGHLY REFLECTIVE ELEMENTS) LF	6" WHITE POLYUREA (HIGHLY REFLECTIVE ELEMENTS) LF	4847120000-E 12" WHITE POLYUREA (HIGHLY REFLECTIVE ELEMENTS) LF	4855000000-E 6" LINE REMOVAL LF	4865000000-E 12" LINE REMOVAL LF	4875000000-N REML OF PVMT MRKG SYMBOLS & CHARACTERS EA	4890000000-E 6" BLACK EPOXY PAVEMENT MARKING LINE LF	4895000000-N REPLACE SNOWPLOWABLE PAVEMENT MARKER REFLECTOR EA	4900000000-N CRYSTAL & RED MARKERS EA	4905000000-N SNOW PLOWABLE MARKERS EA
53027.3.1	Granville	1	I-85 NB	FROM BEG OF CONCRETE PAVEMENT N OF NC 56 TO THE VANCE CO LINE	2, 3	2		24	250.00	0.40	150	7,165	8,520	466	1,261	130	3	3	12	550	550		89,760	111,750	5,041	213,185	5,041	12	23,350	1,302	42	78
TOTAL FOR MAP NO. 1									**250.00**	**0.40**	**150**	**7,165**	**8,520**	**466**	**1,261**	**130**	**3**	**3**	**12**	**550**	**550**		**89,760**	**111,750**	**5,041**	**213,185**	**5,041**	**12**	**23,350**	**1,302**	**42**	**78**
53027.3.1	Vance	2	I-85 NB	FROM GRANVILLE COUNTY LINE TO CONSTRUCTION JOINT/START OF NEW CONCRETE PAVEMENT	1	2		24	50.00	0.10	10									1,250	1,000	250	1,000	1,250		2,500			250			13
TOTAL FOR MAP NO. 2									**50.00**	**0.10**	**10**									**1,250**	**1,000**	**250**	**1,000**	**1,250**		**2,500**			**250**			**13**
53027.3.1	Granville and Vance	3	I-85 SB	FROM CONCRETE PAVEMENT CONSTRUCTION JOINT IN VANCE COUNTY TO ASPHALT PAVEMENT JOINT N OF NC 56	1, 3	2		24	300.00	0.50	200	7,450	8,175	475	630	140	1	1	12	115,069	91,608	23,885	91,608	115,069	5,575	230,562	5,575		23,885			1,669
TOTAL FOR MAP NO. 3									**300**	**1**	**200**	**7,450**	**8,175**	**475**	**630**	**140**	**1**	**1**	**12**	**115,069**	**91,608**	**23,885**	**91,608**	**115,069**	**5,575**	**230,562**	**5,575**		**23,885**			**1,669**
TOTAL FOR PROJ NO. 53027.3.1									**600**	**1**	**360**	**14,615**	**16,695**	**941**	**1,891**	**270**	**4**	**4**	**24**	**116,869**	**93,158**	**24,135**	**182,368**	**228,069**	**10,616**	**446,247**	**10,616**	**12**	**47,485**	**1,302**	**42**	**1,760**
												31,310					**8**			**234,162**			**410,437**									
GRAND TOTAL									**600**	**1**	**360**	**14,615**	**16,695**	**941**	**1,891**	**270**	**4**	**4**	**24**	**116,869**	**93,158**	**24,135**	**182,368**	**228,069**	**10,616**	**446,247**	**10,616**	**12**	**47,485**	**1,302**	**42**	**1,760**
												31,310					**8**			**234,162**			**410,437**									

PROJ. REFERENCE NO.	SHEET NO.
I-5787	TMP-1

DIVIDED MEDIANS WITH WIDTHS 46′ OR GREATER



DIVIDED MEDIANS WITH WIDTHS LESS THAN 46′ OR WITH PERMANENT MEDIAN BARRIER



NOTES:

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

LEGEND

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

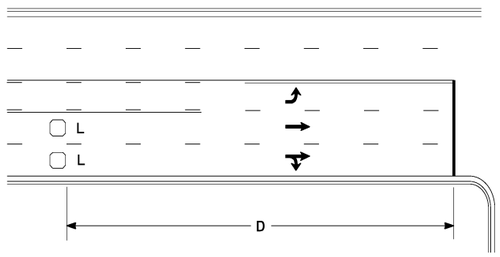
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

RESURFACING ADVANCE WARNING SIGNS FOR HIGH SPEED FACILITIES ≥ 60 MPH

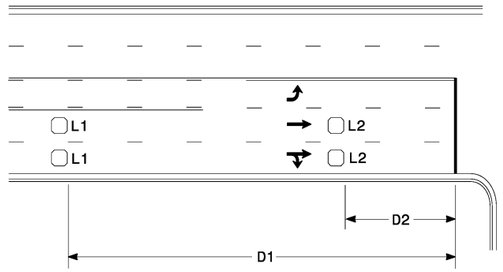
3/23/2015
C:\Users\rmgarrett\Downloads\Resurfacing_AdvWarn_HSpd.dgn
User:rmgarrett

PROJECT REFERENCE NO.	SHEET NO.
I-5787	SIG-1

High Speed Detection
(≥40 mph)



OR



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

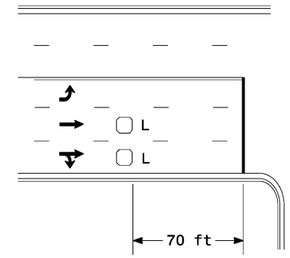
Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

L1 = 6ft X 6ft
Wired in series

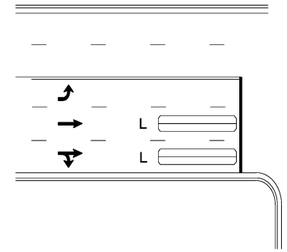
L2 = 6ft X 6ft
Wired in series

"Stretch" Operation

Low Speed Detection
(≤35 mph)



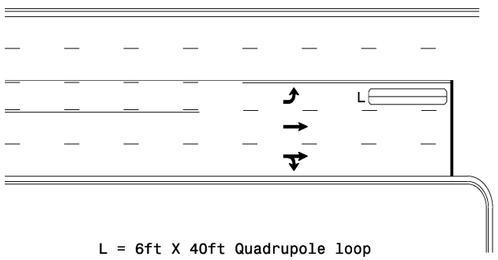
OR



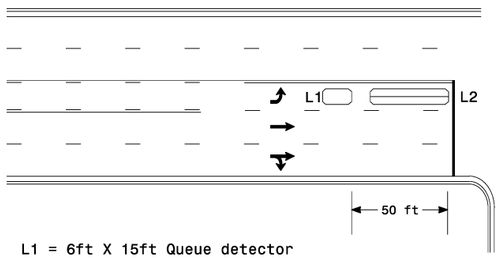
L = 6ft X 6ft
Wired in series

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

Left Turn Lane Detection



OR



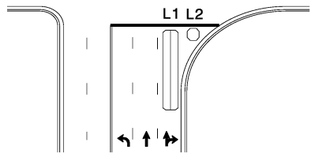
L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

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

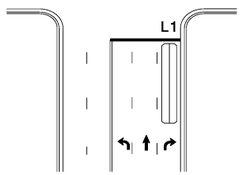
Queue Loop Detection

Right Turn Lane Detection

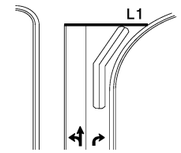


Shared Lane/
Wide Radius Turn

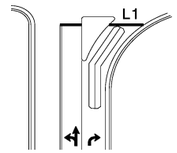
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

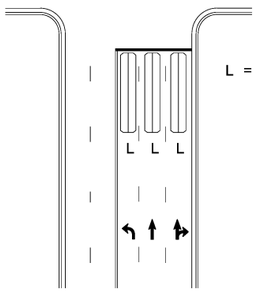


Wide Radius Turn



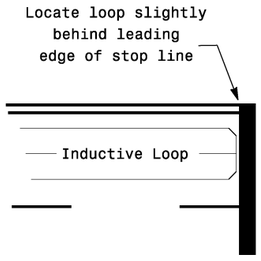
Channelized Turn

Side Street Detection



L = 6ft X 40ft
Quadrupole loop
Wired to separate detectors/channels

Presence Loop Placement at Stop Lines



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

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

Typical Signal Loop Locations

PLAN DATE: January 2015 | REVIEWED BY: JPG
PREPARED BY: PLA | REVIEWED BY:

SCALE: N/A

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA L. ALEXANDER

DocuSigned by: P L Alexander B4756E00CE4E460...
1/30/2015
DATE

SIG. INVENTORY NO.

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