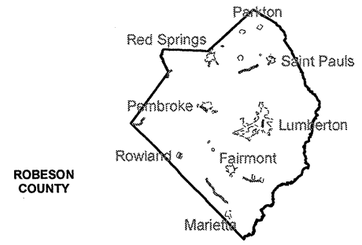
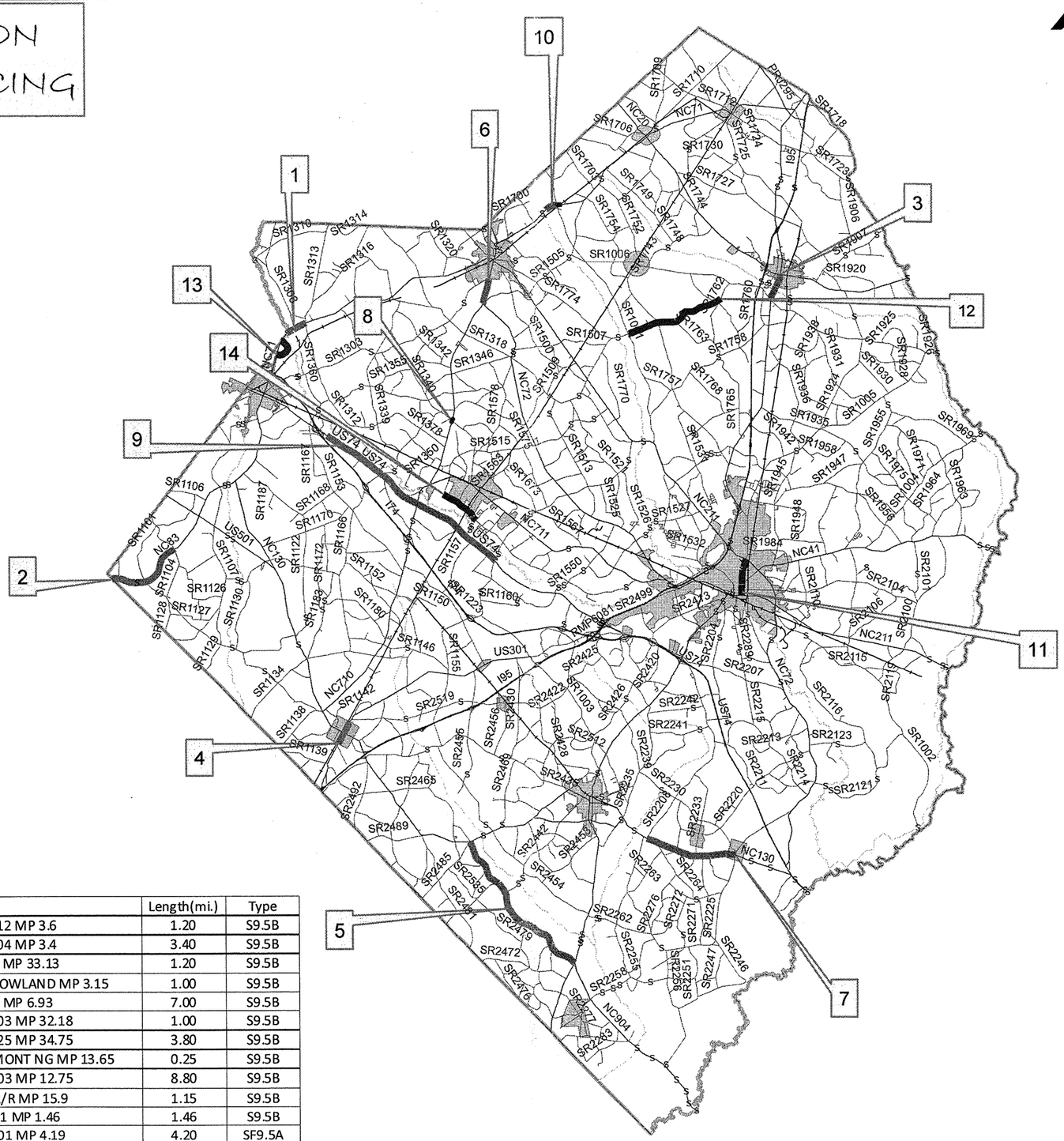
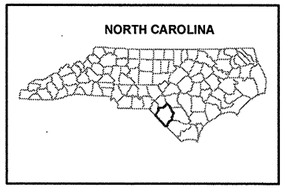
2012-2013 ROBESON COUNTY RESURFACING

6CR.10781.74 Sheet 1
6CR.20781.74







Map No.	Route	From	To	Length(mi.)	Type
1	NC 71	SR 1376 MP 2.4	SR 1312 MP 3.6	1.20	S9.5B
2	NC 83	SC LINE MP 0.0	SR 1104 MP 3.4	3.40	S9.5B
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4	US 301	SCL ROWLAND MP 2.15	NCL ROWLAND MP 3.15	1.00	S9.5B
5	NC 904	NC 130 MP 0.0	NC 41 MP 6.93	7.00	S9.5B
6	NC 72	NC 710 MP 31.15	SR 1303 MP 32.18	1.00	S9.5B
7	NC 130	SR 2208 MP 31.0	SR 2225 MP 34.75	3.80	S9.5B
8	NC 710	SR 1340 MP 13.35	PIEDMONT NG MP 13.65	0.25	S9.5B
9	US 74 ALT	I74 MP 3.75	SR 1003 MP 12.75	8.80	S9.5B
10	NC 71	CJ S BRIDGE PROJ MP 14.75	CJ N R/R MP 15.9	1.15	S9.5B
11	SR 1997	NC 41 MP 0.0	NC 211 MP 1.46	1.46	S9.5B
12	SR 1318	SR 1762 MP 0.0	SR 1001 MP 4.19	4.20	SF9.5A
13	SR 1376	NC 71 MP 0.0	NC 71 1.3	1.30	SF9.5A
14	SR 1339	SR 1583 MP 7.76	SR 1557 MP 9.48	1.81	SF9.5A

Legend

- Primary Routes Resurfacing
- Secondary Routes Resurfacing
- Primary Routes
- Secondary Routes
- Railroad
- Major Drainageways
- s Bridges
- Robeson County
- MunicipalBoundaries

2012-2013 ROBESON COUNTY RESURFACING

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Sheet 2

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

Legend

- Primary Routes Resurfacing
- Secondary Routes Resurfacing
- Primary Routes
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- MunicipalBoundaries

Map No.	Route	From	To	Length(mi.)	Type
1	NC 71	SR 1376 MP 2.40	SR 1312 MP 3.6	1.20	S9.5B
2	NC 83	SC LINE MP 0.0	SR 1104 MP 3.4	3.40	S9.5B
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4	US 301	SCL ROWLAND MP 2.15	NCL ROWLAND MP 3.15	1.00	S9.5B
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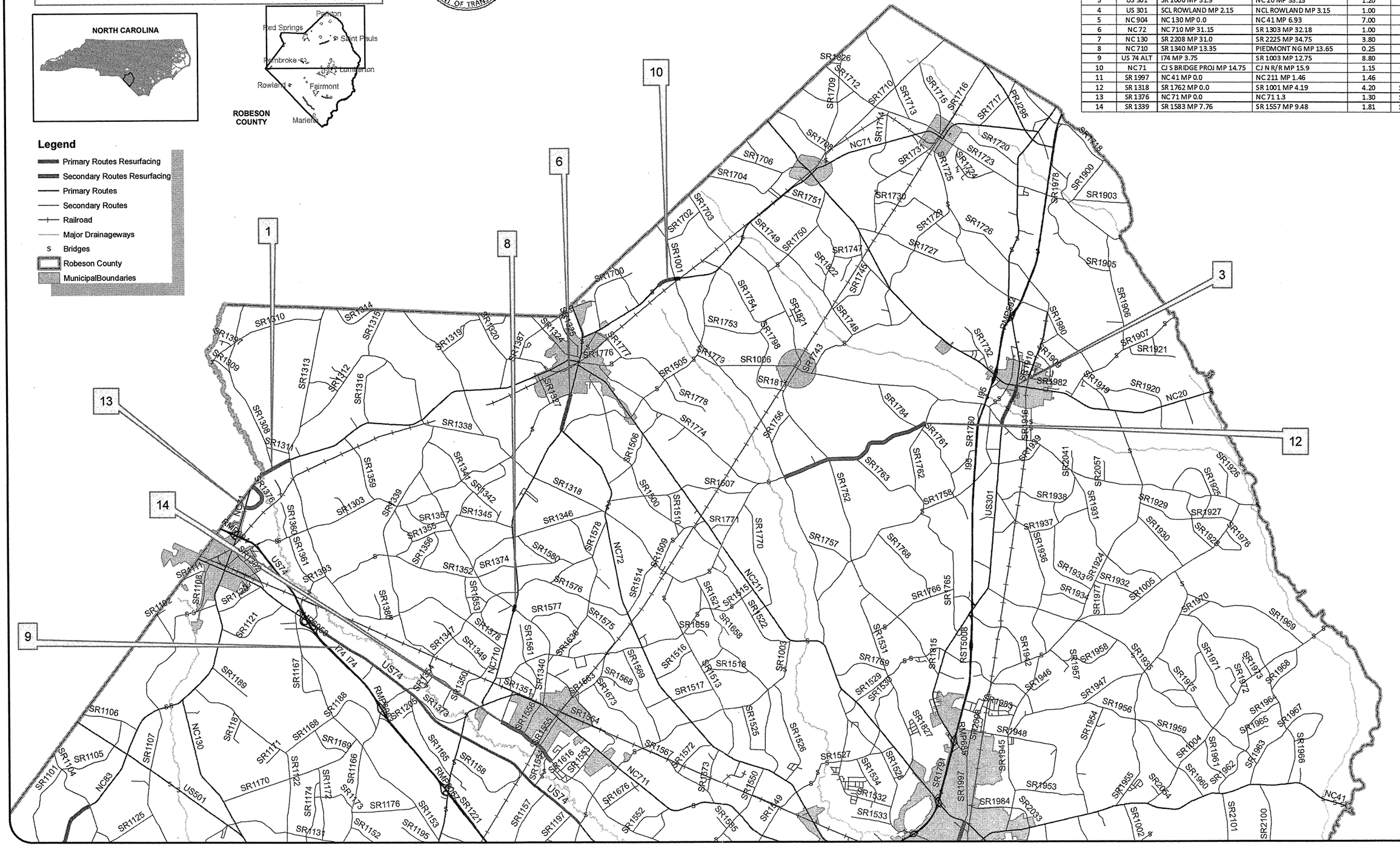
14	SR 1339	SR 1583 MP 7.76	SR 1557 MP 9.48	1.81	SF9.5A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Sheet 3

2012-2013 ROBESON COUNTY RESURFACING

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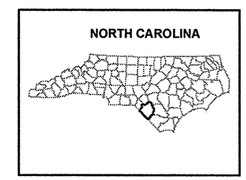

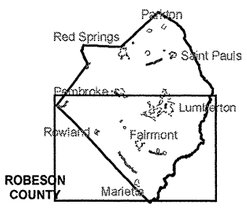

Legend

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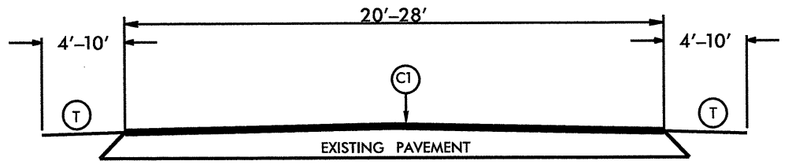
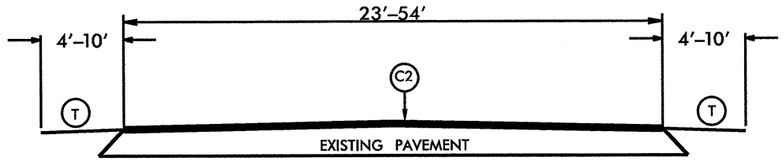
PROJECT REFERENCE NO.	SHEET NO.
6CR.10781.74 & 6CR.20781.74	4

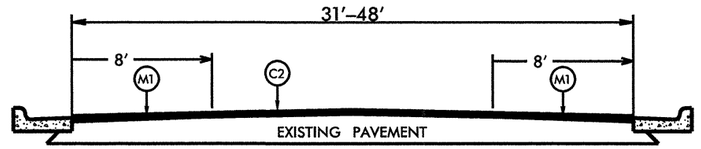


TYPICAL SECTION NO. 1



TYPICAL SECTION NO. 2

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B,
D1	PROP. APPROX. 5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
M	MILLING BITUMINOUS PAVEMENT. 1½" DEPTH. FULL WIDTH.
M1	MILLING BITUMINOUS PAVEMENT. 0-1½" DEPTH. 8' WIDTH.
M2	MILLING BITUMINOUS PAVEMENT. 4" DEPTH. 6' WIDTH.



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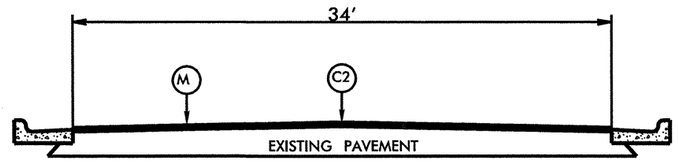

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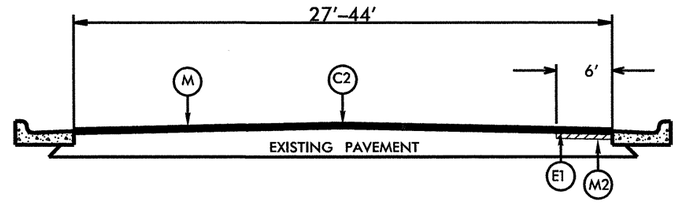
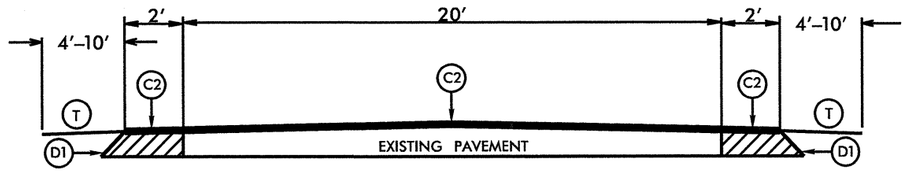


TYPICAL SECTION NO. 5

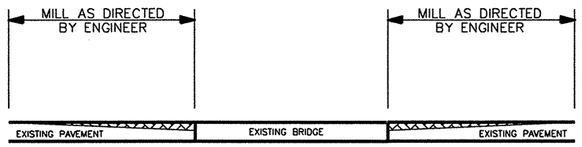
NOTE: LIMITS OF FULL DEPTH MILLING SHALL BE FROM GODWIN AVE. TO ROBERTS AVE.



TYPICAL SECTION NO. 6

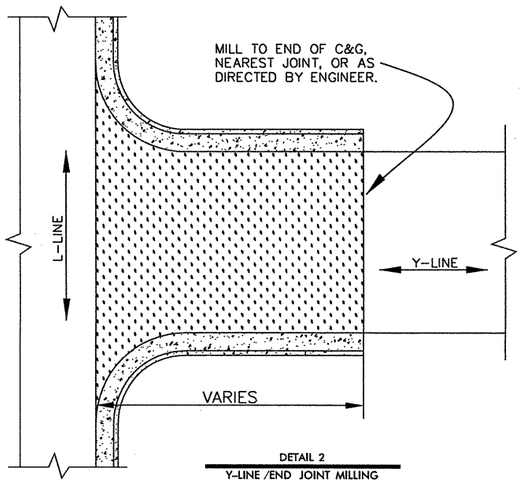
ROBESON COUNTY RESURFACING

PROJECT REFERENCE NO.	SHEET NO.
6CR.10781.74 & 6CR.20781.74	5



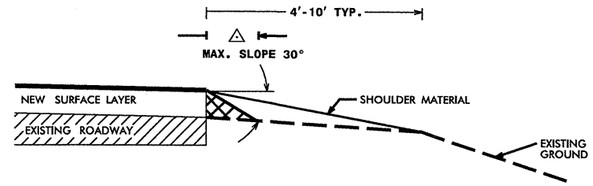
DETAIL 1
MILLING APPROACHES

NOTE:
INCIDENTAL MILLING SHALL BE PERFORMED AT BRIDGES AND RAILROAD APPROACHES AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH DETAIL 1.



DETAIL 2
Y-LINE /END JOINT MILLING

NOTE: INCLUDES INCIDENTAL MILLING AT THE ENDS OF SECTIONS FOR SMOOTH TIE-INS, CURB RADII, AND STREET INTERSECTIONS, AS NEEDED, OR AS DIRECTED BY THE ENGINEER. SEE DETAIL 2.



DETAIL 3
PAVEMENT SAFETY EDGE /SHOULDER WEDGE

GENERAL NOTES

1 THE SAFETY EDGE WILL BE CONSTRUCTED AS PART OF THE ROADWAY PAVEMENT. A SHOULDER WEDGE DEVICE WILL BE ADDED TO THE SCREED OF THE PAVING MACHINE.

2 SAFETY EDGE TO BE INCLUDED ON ALL TYPICALS EXCEPT CURB AND GUTTER SECTIONS, OR AS OTHERWISE DIRECTED BY THE ENGINEER.

3 SAFETY EDGE IS TO BE USED ON THE SURFACE LAYER ONLY.

4 SHORT SECTIONS OF HANDWORK WILL BE ALLOWED WHEN NECESSARY FOR TRANSITIONS AND TURNOUTS.

5 SITE PREPARATION AND ADDITIONAL EARTHWORK REQUIRED TO CONSTRUCT THE SAFETY EDGE WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.

ROBESON COUNTY RESURFACING

EROSION CONTROL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
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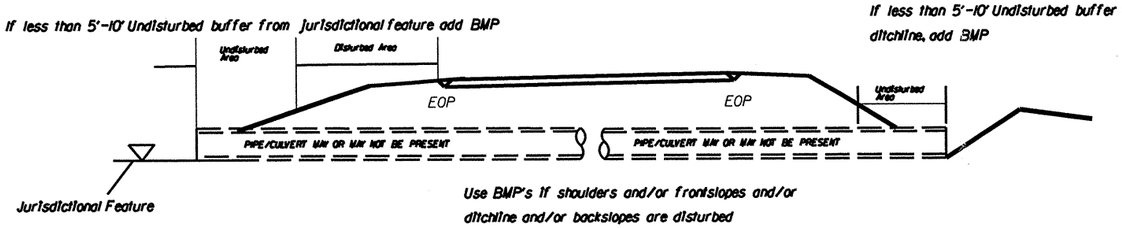
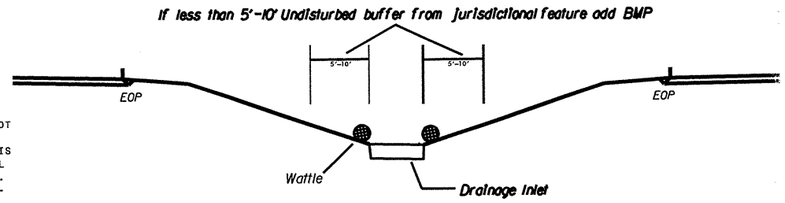
ROBESON COUNTY RESURFACING



DETAIL EC1

NOTES:

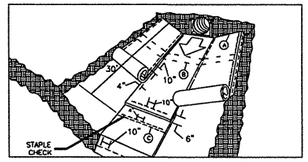
1. IF A 5'-10' VEGETATED, UNDISTURBED BUFFER FROM R/W, DITCHLINE, WATER FEATURE, OR DRAINAGE INLET CAN BE MAINTAINED. THEN NO BMPs NEEDED.
2. IF LESS THAN A 5'-10' VEGETATED, UNDISTURBED BUFFER FROM R/W, DITCHLINE, WATER FEATURE, OR DRAINAGE INLET, THEN ADD BMPs.
3. BMP OPTIONS:
   a. MATTING MAY BE APPLIED AS SHOWN IN NCDOT STD. DWG. 1631.01 TO ESTABLISH BUFFER.
   b. IF MATTING IS NOT PRACTICAL, OR THERE IS NOT ENOUGH SHOULDER WIDTH, THEN INSTALL TEMP. SILT FENCE AS SHOWN IN NCDOT STD. DWG. 1605.01 AND WATTLES WITH POLYACRYLAMIDE (PAM) WHERE APPLICABLE.



DETAIL EC2

NOT TO SCALE

MATTING INSTALLATION DETAIL



MATTING IN DITCHES

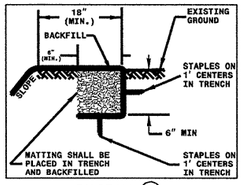
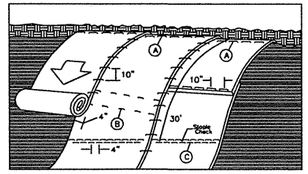


DIAGRAM (A)



MATTING ON SLOPES

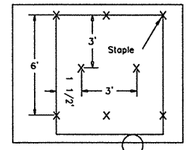


DIAGRAM (B)

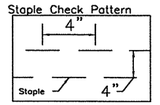


DIAGRAM (C)

NOTES:

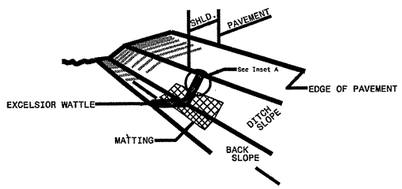
THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

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.

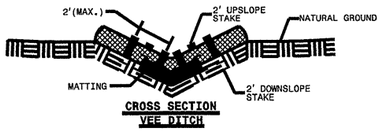
NOT TO SCALE

DETAIL EC4

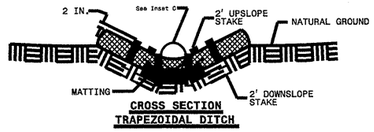
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



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.

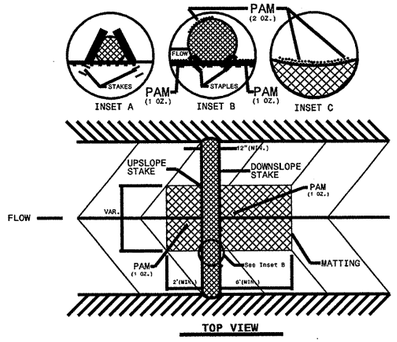
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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.

INITIIALLY 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.



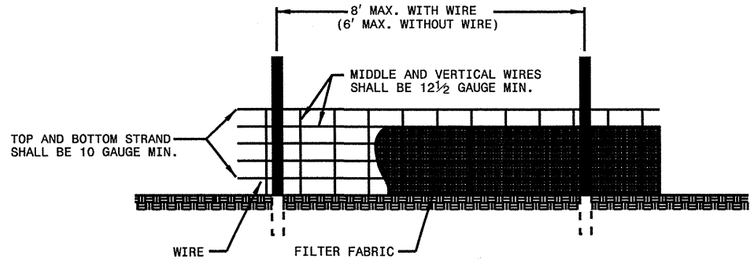
TOP VIEW

DETAIL EC3

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

ENGLISH STANDARD DRAWING FOR
TEMPORARY SILT FENCE

SHEET 1 OF 1
1605.01

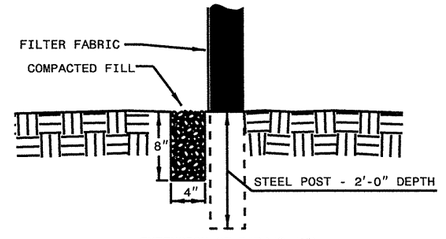


NOTES

USE WIRE A MINIMUM OF 32" IN WIDTH AND WITH A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.

USE FILTER FABRIC A MINIMUM OF 36" IN WIDTH AND FASTEN ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.

PROVIDE 5'-0" STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.



EXTENSION OF FABRIC AND WIRE INTO TRENCH

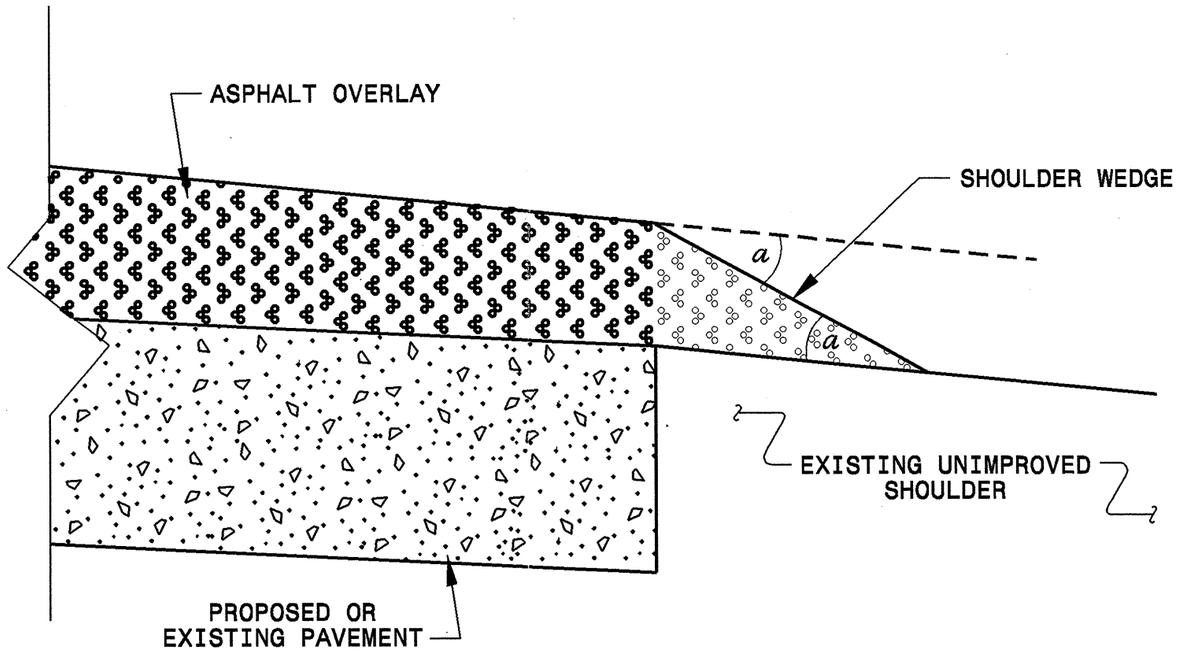
DETAIL EC5

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

ENGLISH STANDARD DRAWING FOR
TEMPORARY SILT FENCE

SHEET 1 OF 1
1605.01

PROJECT REFERENCE NO.	SHEET NO.
6CR.10781.74, ETC	7



a - SHOULDER WEDGE ANGLE

SHOULDER WEDGE DETAIL

06-MAR-2012 14:36
C:\misc\shoulderwedgedetail8aug2011.dgn
pjporter

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SHOULDER WEDGE DETAIL

ORIGINAL BY: T.SPELL DATE: 7-19-11
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: a:\pwr/details/stands/shoulderwedgedetail.dgn

PROJECT NO.	SHEET NO.	TOTAL NO.
6CR.10781.74, 6CR.20781.74	8	

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	FINAL SURFACE TESTING REQUIRED	AGGREGATE SHOULDER BORROW ALLOWED	LENGTH MI	WIDTH FT	INCIDENTAL STONE BASE TONS	BORROW CY	SHOULDER RECONSTRUCTION SMI	1½" MILLING SY	4" MILLING SY	0" TO 1.5" MILLING SY	INCIDENTAL MILLING SY	BASE COURSE, B25.0B TONS	INTER-MEDIATE COURSE, I19.0B TONS	SURFACE COURSE, S9.5B TONS	SURFACE COURSE, SF9.5A TONS	ASPHALT BINDER FOR PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	ADJ. OF MAN-HOLES EA	ADJ. OF METER OR VALVE BOX EA	TEMPORARY SILT FENCE LF	MATTING FOR EROSION CONTROL SY	WATTLE LF	POLY-ACRYLAMIDE (PAM) LB	SEED & MULCHING AC	PAVED TRENCHING (1CONDUIT, 2") LF	UNPAVED TRENCHING (1CONDUIT, 2") LF	JUNCTION BOX (STANDARD SIZE) EA	JUNCTION BOX (OVER-SIZED, HEAVY DUTY) EA	2" RISER WITH WEATHER-HEAD EA	INDUCTIVE LOOP SAWCUT LF	LEAD-IN CABLE (14-2)(FT) LF
6CR.10781.74	Robeson	1	NC 71-A	FROM SR 1376 MP 2.4 TO SR 1312 MP 3.6	2	NO	NO	1.2	28	29	43	2.40				800			2,386		143			2	180	48	86	4	2.91							
		2	NC 83	FROM SC LINE MP 0.0 TO SR 1104 MP 3.4	6	NO	NO	3.4	24	82		6.80				300		2,274	4,059		353				510	146	245		8.24							
		3	US 301-A	FROM SR 1006 MP 31.9 TO NC 20 MP 33.13	2	NO	NO	0.82	24	20	33	1.64							1,100		66			2	180	48	86	4	1.99	10	100	1	1	1	1,025	100
		"	"	FROM SR 1006 MP 31.9 TO NC 20 MP 33.13	3	NO	NO	0.38	40						3,567	600			871		52		4	2												
		4	US 301-B	FROM SCL ROWLAND MP 2.15 TO NCL ROWLAND MP 3.15	2	NO	NO	0.3	24	7	12	0.60							393		24		2	2	150	40	72	3	0.73	10	100	1	1	1	1,000	100
		"	"	FROM SCL ROWLAND MP 2.15 TO NCL ROWLAND MP 3.15	4	NO	NO	0.7	34				13,963						1,349		81		13	7												
		5	NC 904	FROM NC 130 MP 0.0 TO NC 41 MP 6.93	2	NO	NO	7	23	168	280	14.00							7,934		476				1,050	280	504	21	16.97							
		6	NC 72	FROM NC 710 MP 31.15 TO SR 1303 MP 32.18	2	NO	NO	1	29	24	40	2.00							1,442		87				150	40	72	3	2.42							
		7	NC 130	FROM SR 2208 MP 31.0 TO SR 2225 MP 34.75	2	NO	NO	3.8	23	91	152	7.60							4,408		264				570	152	274	11	9.21							
		8	NC 710	FROM SR 1340 MP 13.35 TO PIEDMONT NG MP 13.65	2	NO	NO	0.25	39	6	10	0.50							506		30				38	10	18	1	0.61							
		9	US 74 ALT	FROM I-74 MP 3.75 TO SR 1003 MP 12.75	2	NO	NO	8.8	28	211	352	17.60				440			13,342		801				1,320	352	634	26	21.33	10	100	1	1	1	500	100
		10	NC 71-B	FROM CJ SOUTH OF BRIDGE PROJECT SHANNON MP 14.75 TO CJ NORTH OF R/R MP 15.9	2	NO	NO	1.15	38	28	46	2.30				1,000			2,179		131				173	46	83	4	2.79							
TOTAL FOR PROJ NO. 6CR.10781.74								**28.8**		**666**	**968**	**55.44**	**13,963**		**3,567**	**3,140**		**2,274**	**39,969**		**2,508**		**19**	**15**	**4,321**	**1,162**	**2,074**	**77**	**67.20**	**30**	**300**	**3**	**3**	**3**	**2,525**	**300**
6CR.20781.74	Robeson	11	SR 1997	FROM NC 41 MP 0.0 TO NC 211 MP 1.46	5	NO	NO	1.46	27				27,322	704			161		2,825		177	200	22	6	219	58	105	4		30	300	3	3	3	5,100	300
		12	SR 1318	FROM SR 1762 MP 0.0 TO SR 1001 MP 4.19	1	NO	NO	4.2	25	101	168	8.40								5,181	347				630	168	302	13	10.18	10	100	1	1	1	500	100
		13	SR 1376	FROM NC 71 MP 0.0 TO NC 71 MP 1.3	1	NO	NO	1.3	20	31	52	2.60								1,258	84				195	52	94	4	3.15							
		14	SR 1339	FROM SR 1583 MP 7.76 TO SR 1557 MP 9.48	1	NO	NO	1.81	28	43	72	3.62								2,552	171		6	2	272	72	130	5	4.39							
TOTAL FOR PROJ NO. 6CR.20781.74								**8.77**		**175**	**292**	**14.62**	**27,322**	**704**			**161**		**2,825**	**8,991**	**779**	**200**	**28**	**8**	**1,316**	**350**	**631**	**26**	**17.72**	**40**	**400**	**4**	**4**	**4**	**5,600**	**400**
GRAND TOTAL								**37.57**		**841**	**1,260**	**70.06**	**41,285**	**704**	**3,567**	**3,140**	**161**	**2,274**	**42,794**	**8,991**	**3,287**	**200**	**47**	**23**	**5,637**	**1,512**	**2,705**	**103**	**84.92**	**70**	**700**	**7**	**7**	**7**	**8,125**	**700**

PROJECT NO.	SHEET NO.	TOTAL NO.
6CR.10781.74, 6CR.20781.74	9	

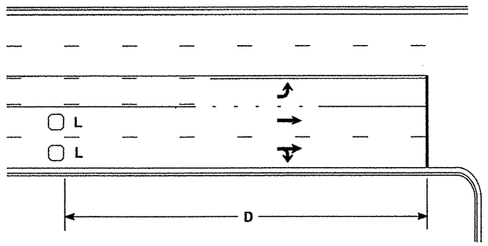
THERMOPLASTIC AND PAINT QUANTITIES

PROJECT	COUNTY	MAP	ROUTE	DESCRIPTION	LENGTH	WIDTH	4399000000-N	4685000000-E	4686000000-E		4697000000-E		4705000000	4710000000	4715000000-E	4721000000-E			4725000000-E				4810000000-E		4835000000-E	4900000000-N	
							TEMPORARY TRAFFIC CONTROL	4" X 90 M WHITE THERMO	4" X 120 M WHITE THERMO	4" X 120 M YELLOW THERMO	8" X 120 M WHITE THERMO	8" X 120 M YELLOW THERMO	16" X 120 M WHITE THERMO	24" X 120 M WHITE THERMO	THERMO-PLASTIC RUMBLE STRIP (4"240 MILS)	THERMO RXR 120 M	THERMO MSG SCHOOL 120 M	THERMO MSG ONLY 120 M	THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR ARROW 90 M	THERMO STR & RT ARROW 90 M	4" WHITE PAINT	4" YELLOW PAINT	24" WHITE PAINT	CRYSTAL & RED MARKERS	YELLOW & YELLOW MARKERS
NO		NO					LS	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	LF	LF	LF	EA	EA
6CR.10781.74	Robeson	1	NC 71-A	FROM SR 1376 MP 2.4 TO SR 1312 MP 3.6	1.2	28	*	27,000	750	28,200		1,200							17	5	8					51	195
		2	NC 83	FROM SC LINE MP 0.0 TO SR 1104 MP 3.4	3.4	24	*	34,800		29,580																	235
		3	US 301-A	FROM SR 1006 MP 31.9 TO NC 20 MP 33.13	0.82	24	*	9,400	650	12,000	80			30					12	2		2				35	120
		"	"	FROM SR 1006 MP 31.9 TO NC 20 MP 33.13	0.38	40	*																				
		4	US 301-B	FROM SCL ROWLAND MP 2.15 TO NCL ROWLAND MP 3.15	0.3	24	*	3,080	275	11,000			100	225		4			3	1		3	3,300	8,000		7	70
		"	"	FROM SCL ROWLAND MP 2.15 TO NCL ROWLAND MP 3.15	0.7	34	*																				
		5	NC 904	FROM NC 130 MP 0.0 TO NC 41 MP 6.93	7	23	*	74,000		62,900				20	220												465
		6	NC 72	FROM NC 710 MP 31.15 TO SR 1303 MP 32.18	1	29	*	11,000		9,350																	70
		7	NC 130	FROM SR 2208 MP 31.0 TO SR 2225 MP 34.75	3.8	23	*	40,000		34,000				50				6									265
		8	NC 710	FROM SR 1340 MP 13.35 TO PIEDMONT NG MP 13.65	0.25	39	*	4,000	300	6,400		840							4							18	55
		9	US 74 ALT	FROM I-74 MP 3.75 TO SR 1003 MP 12.75	8.8	28	*	90,400	1,025	96,065		2,240		80					20	4	10	8				65	645
		10	NC 71-B	FROM CJ SOUTH OF BRIDGE PROJECT SHANNON MP 14.75 TO CJ NORTH OF R/R MP 15.9	1.15	38	*	11,000	200	12,025		455	50	65		2			7							9	110
TOTAL FOR PROJ NO. 6CR.10781.74					**28.8**		**1**	**304,680**	**3,200**	**301,520**	**80**	**4,735**	**150**	**470**	**220**	**6**	**6**		**63**	**12**	**18**	**13**	**3,300**	**8,000**		**185**	**2,230**
									304,720		**4,815**					**12**			**106**				**11,300**			**2,415**	
6CR.20781.74	Robeson	11	SR 1997	FROM NC 41 MP 0.0 TO NC 211 MP 1.46	1.46	27	*		1,425	17,000				145				8	16		3	8	1,425	17,000	145	85	135
		12	SR 1318	FROM SR 1762 MP 0.0 TO SR 1001 MP 4.19	4.2	25	*																56,000	47,600			
		13	SR 1376	FROM NC 71 MP 0.0 TO NC 71 MP 1.3	1.3	20	*																22,000	22,000			
		14	SR 1339	FROM SR 1583 MP 7.76 TO SR 1557 MP 9.48	1.81	28	*						150	205		6	12						40,000	34,000			125
TOTAL FOR PROJ NO. 6CR.20781.74					**8.77**		**1**		**1,425**	**17,000**			**150**	**350**		**6**	**12**	**8**	**16**		**3**	**8**	**119,425**	**120,600**	**145**	**85**	**260**
									18,425							**26**			**27**				**240,025**			**345**	
GRAND TOTAL					**37.57**		**1**	**304,680**	**4,625**	**318,520**	**80**	**4,735**	**300**	**820**	**220**	**12**	**18**	**8**	**79**	**12**	**21**	**21**	**122,725**	**128,600**	**145**	**270**	**2,490**
									323,145		**4,815**					**38**			**133**				**251,325**			**2,760**	

PROJECT REFERENCE NO.	SHEET NO.
SEE BELOW	SIG 1

6CR.10781.74 AND
6CR.20781.74

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



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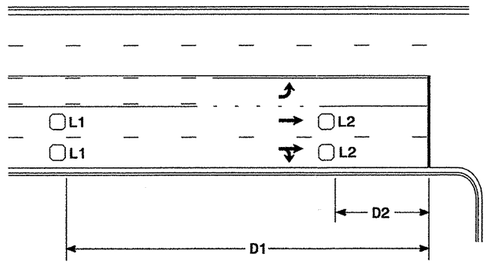


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

Volume Density Operation

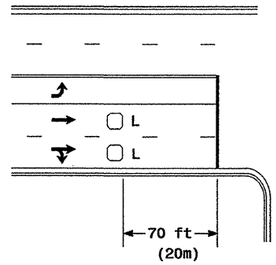
Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

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

"Stretch" Operation

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



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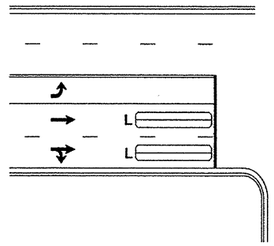
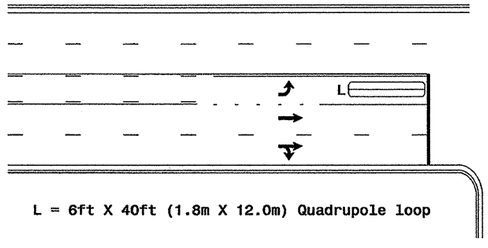


L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

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

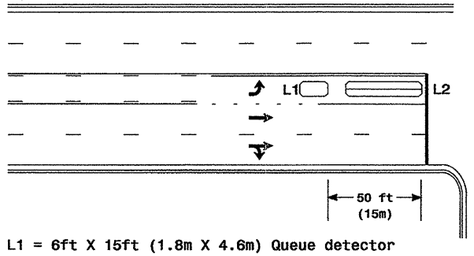
Left Turn Lane Detection



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

Presence Loop Detection

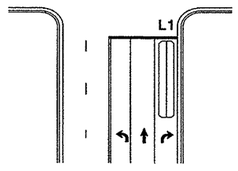
OR



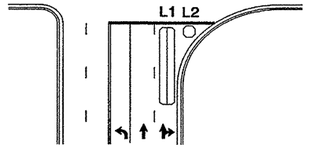
L1 = 6ft X 15ft (1.8m X 4.6m) Queue detector
L2 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Queue Loop Detection

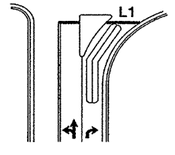
Right Turn Lane Detection

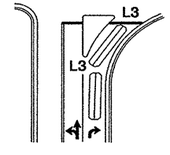


Standard Turn



Wide Radius Turn

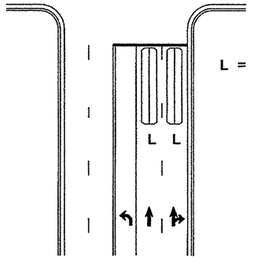




Channelized Turn

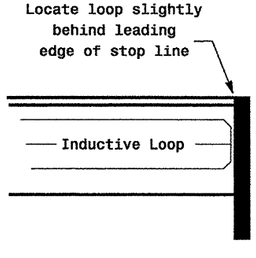
L1 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop
Wired separately
L3 = 6ft X 20ft (1.8m X 6.0m) Quadrupole loop
Wired in series

Side Street Detection



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

Presence Loop Placement at Stop Lines



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

Recommended Number of Turns

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

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

Quadrupole loops: Use 2-4-2 turns

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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Traffic Engineering Unit
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
122 N. McDowell St., Raleigh, NC 27603

Typical Loop Locations

PLAN DATE:	June 2006	REVIEWED BY:	
PREPARED BY:	P L Alexander	REVIEWED BY:	

SCALE: N/A

REVISIONS	INIT.	DATE
Revise pavement markings	JAC	12/11/09

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
23486
ENGINEER
PHILIP L ALEXANDER

SIGNATURE 6/6/06 DATE

SIG. INVENTORY NO.

19-DEC-2006 14:29
st+its signals\lb turn lanes\loop typical2006.dgn
pdalexander