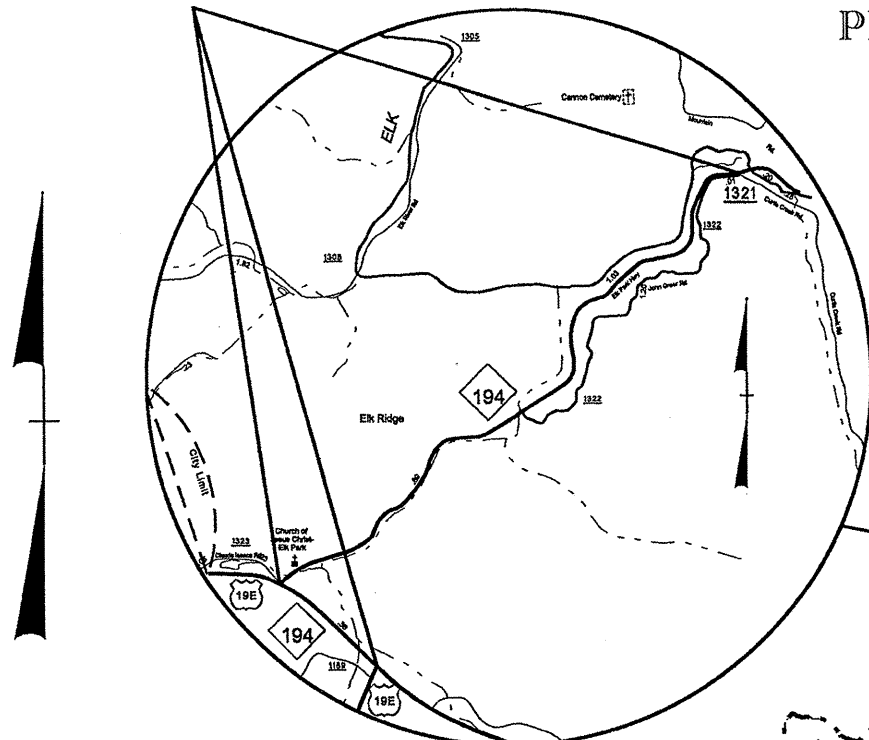


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

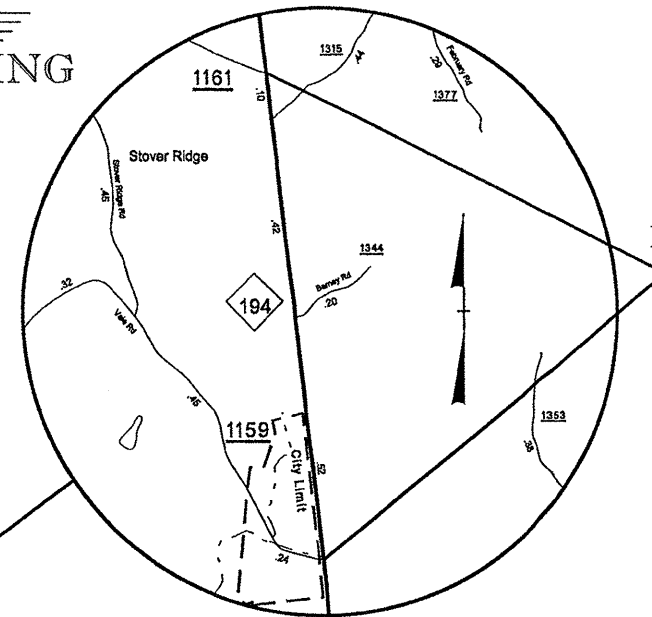
AVERY COUNTY

PRIMARY ASPHALT RESURFACING

MAP #3 NC 194
FROM US 19E TO SR 1321

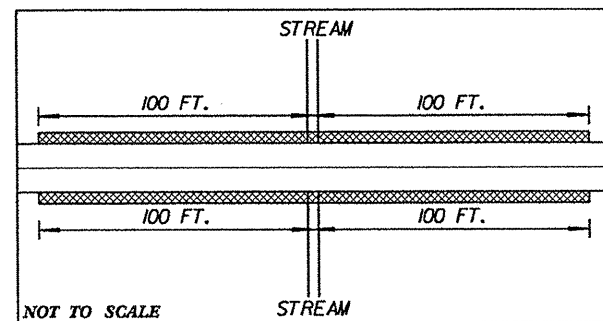


MAP #2 NC 194
FROM SR 1159 TO SR 1161
(MILL FULL WIDTH - 1 1/2")



AGGREGATE SHOULDER BORROW TO BE PLACED:
* APPROX. STATION 61+00 TO 65+00 RIGHT

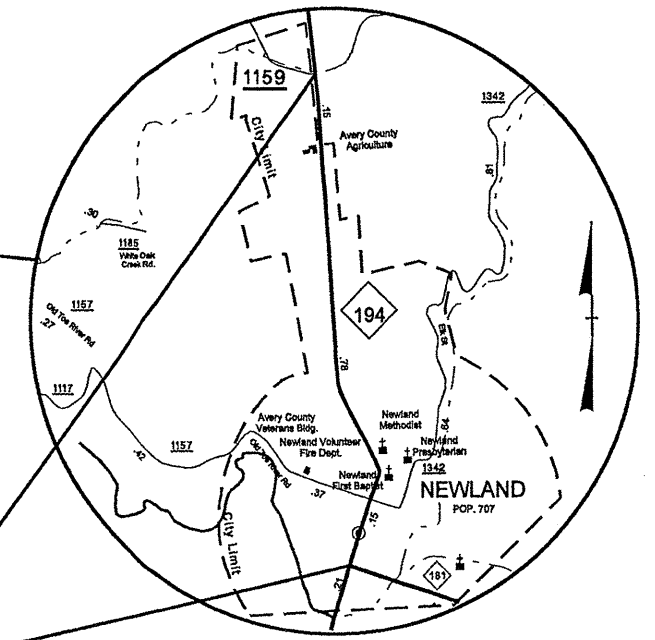
*DETAIL FOR AGGREGATE SHOULDER BORROW
AT STREAM CROSSING



NOT TO SCALE

HATCHED AREA SHOWS PLACEMENT
OF AGGREGATE SHOULDER BORROW

MAP #1 NC 194
FROM NC 181 TO SR 1159
(MILL FULL WIDTH 0" - 3")



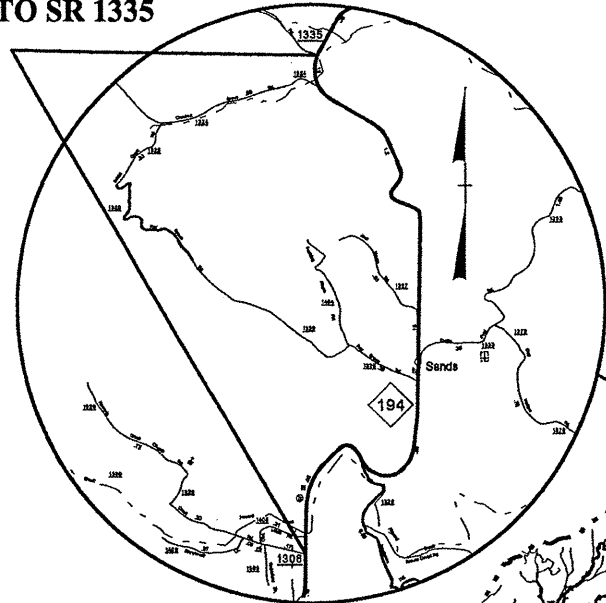
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

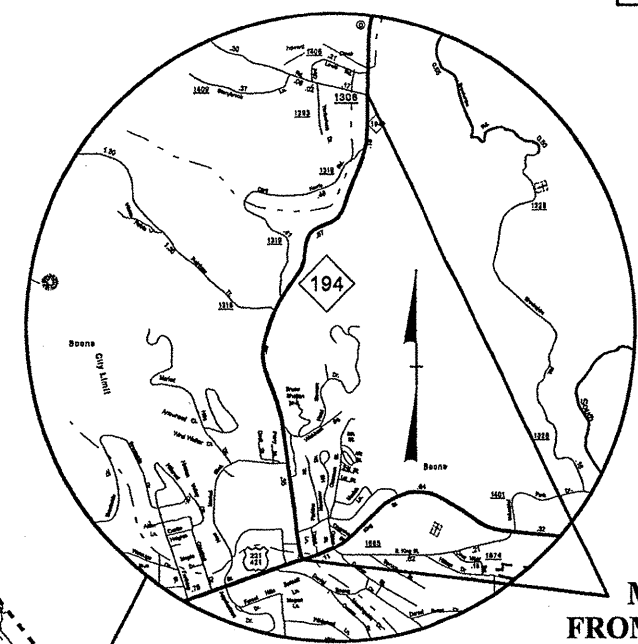
WATAUGA COUNTY

PRIMARY ASPHALT RESURFACING

MAP #10 NC 194
FROM SR 1306 TO SR 1335



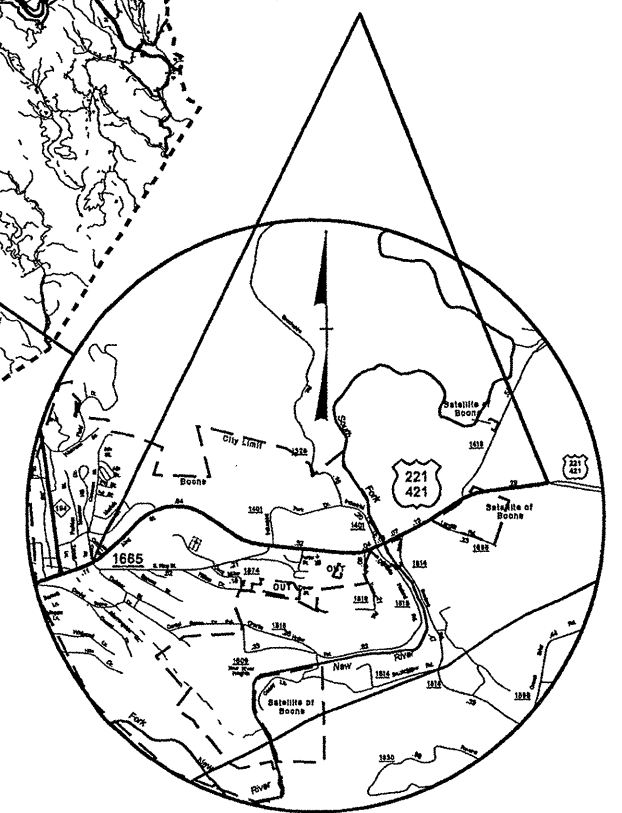
AGGREGATE SHOULDER BORROW TO BE PLACED:
 * APPROX. STATION 14+75 TO 25+50 RIGHT
 * LIVE STREAMS: SEE DETAIL
 APPROX. STATION 39+60
 APPROX. STATION 131+50



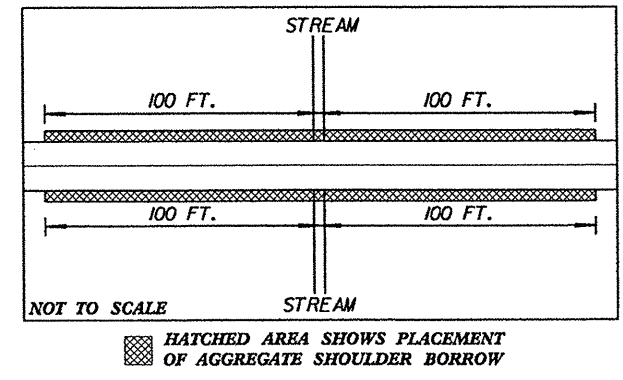
MAP #9 NC 194
FROM US 221 TO SR 1306

AGGREGATE SHOULDER BORROW TO BE PLACED:
 * APPROX. STATION 67+50 TO 72+50 LEFT
 * LIVE STREAMS: SEE DETAIL
 APPROX. STATION 60+75

MAP #8 US 221/421
FROM OLD W. KING STREET
TO BEGIN DIVIDED HIGHWAY
(MILL FULL WIDTH - 1 1/2")



*DETAIL FOR AGGREGATE SHOULDER BORROW
AT STREAM CROSSING

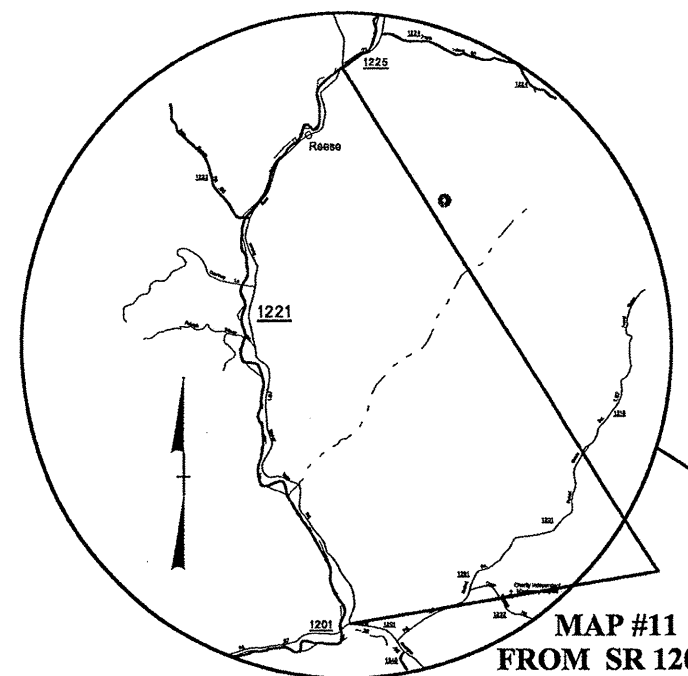


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1432

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WATAUGA COUNTY

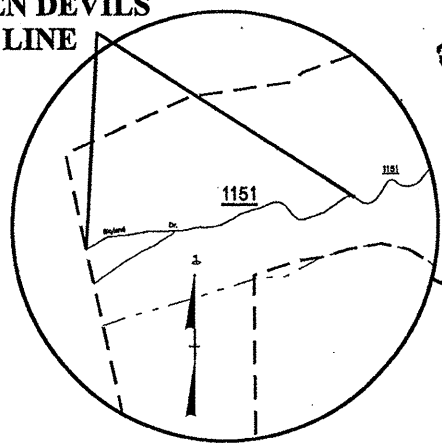
SECONDARY ASPHALT RESURFACING



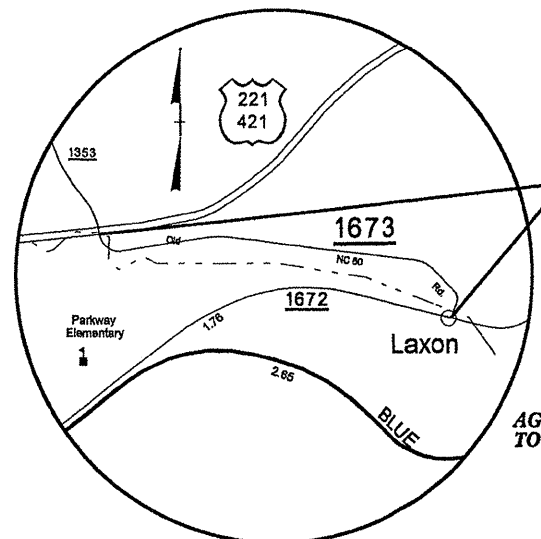
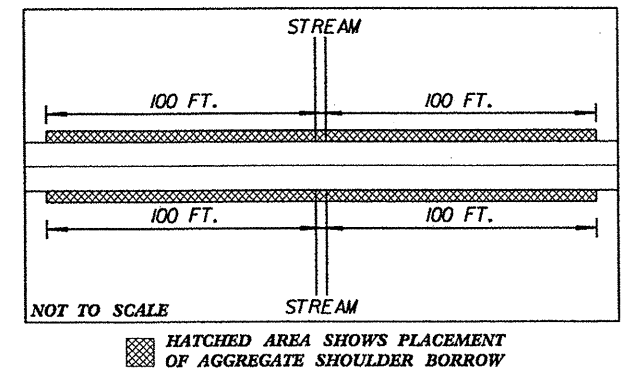
MAP #11 SR 1221
FROM SR 1201 TO SR 1225

AGGREGATE SHOULDER BORROW TO BE PLACED:
 * APPROX. STATION 120+00 RIGHT
 * LIVE STREAMS: SEE DETAIL
 APPROX. STATION 39+25
 APPROX. STATION 50+00
 APPROX. STATION 56+25
 APPROX. STATION 72+00
 APPROX. STATION 127+90
 APPROX. STATION 135+00

MAP #15 SR 1151
FROM SCL OF SEVEN DEVILS
TO AVERY CO. LINE



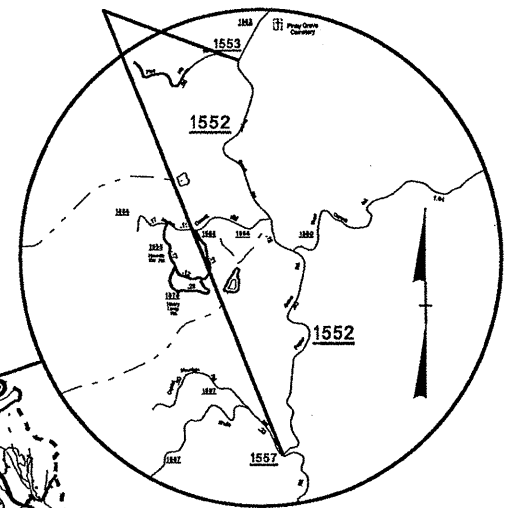
*DETAIL FOR AGGREGATE SHOULDER BORROW
AT STREAM CROSSING



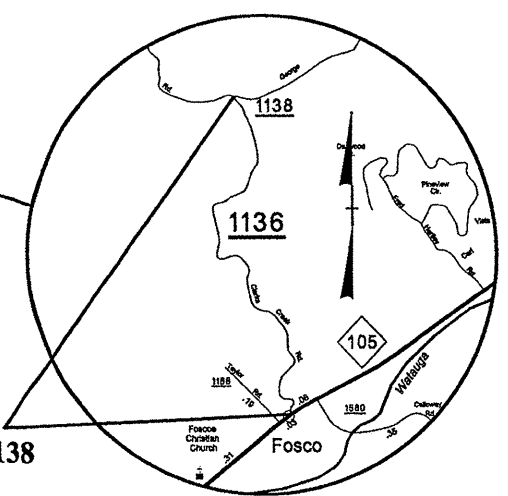
MAP #14 SR 1673
FROM SR 1672 TO US 221

AGGREGATE SHOULDER BORROW
TO BE PLACED:
 * LIVE STREAMS: SEE DETAIL
 APPROX. STATION 2+00

MAP #13 SR 1552
FROM SR 1553 TO SR 1557

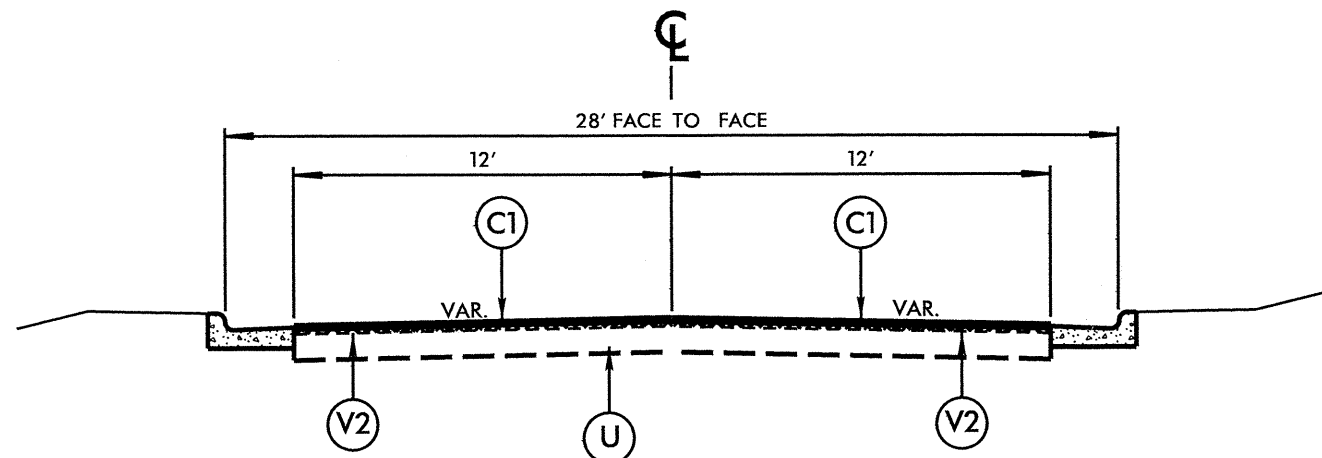


MAP #12 SR 1136
FROM NC 105 TO SR 1138



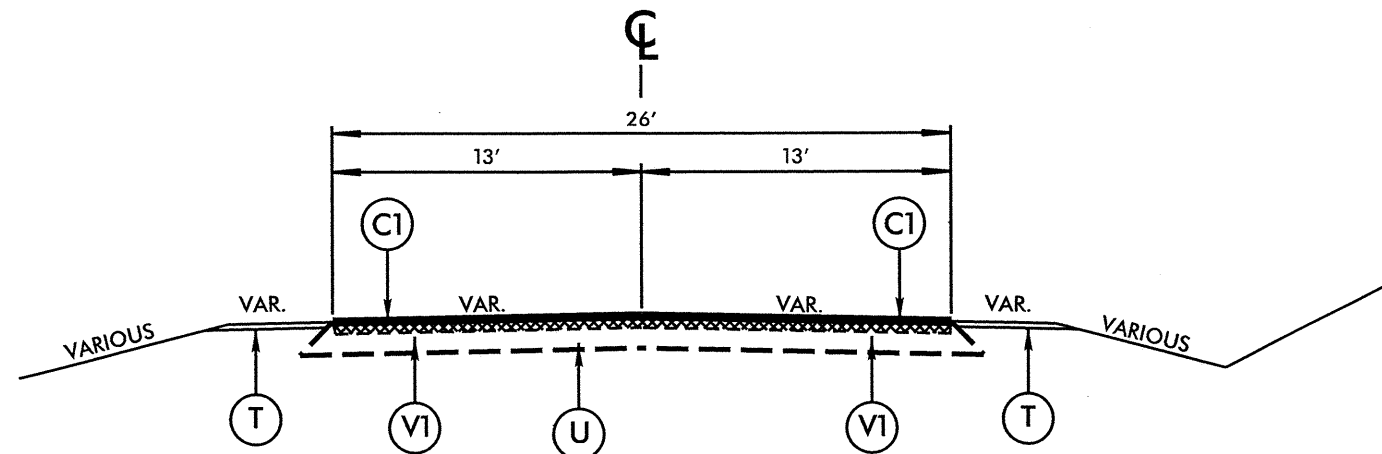
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8/17/99



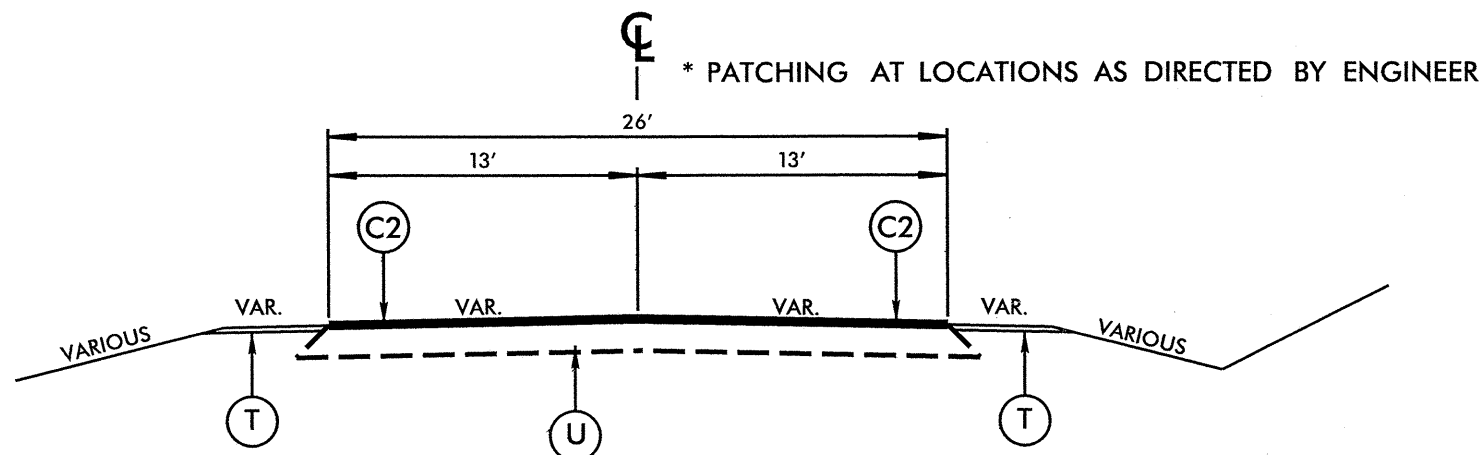
TYPICAL SECTION NO. 1

MAP 1 - NC 194 FROM NC 181 TO SR 1159



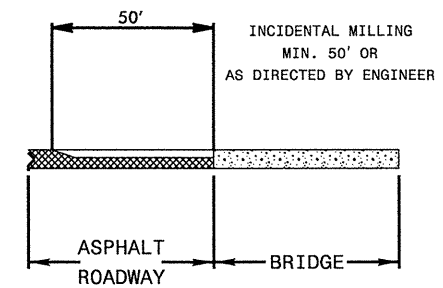
TYPICAL SECTION NO. 2

MAP 2 - NC 194 FROM SR 1159 TO SR 1161



TYPICAL SECTION NO. 3

* MAP 3 - NC 194 FROM US 19E TO SR 1321



BRIDGE TIE IN DETAIL

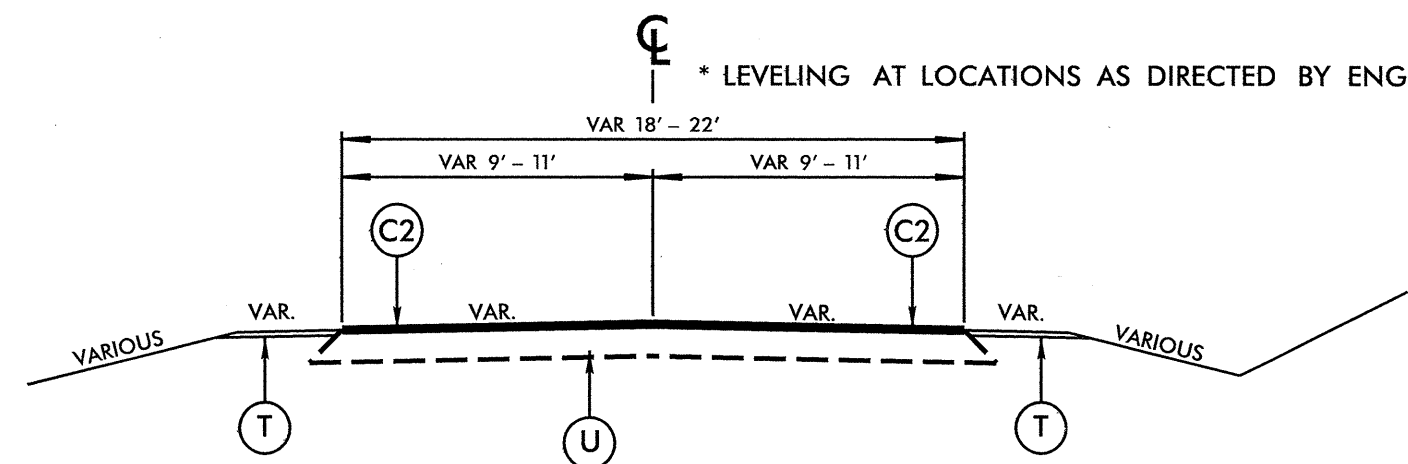
TIE ASPHALT OVERLAY TO BRIDGE APPROACH SLABS OR AS DIRECTED BY THE ENGINEER

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C3	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
T	SHOULDER RECONSTRUCTION
U	EXISTING PAVEMENT
V1	MILLING OF EXISTING ASPHALT PAVEMENT AT DEPTH OF 1½"
V2	MILLING OF EXISTING ASPHALT PAVEMENT AT DEPTH OF 0 - 3"

AVERY & WATAUGA COUNTIES PRIMARY AND SECONDARY RESURFACING			
DIVISION II			
REVSIONS	BY	DATE	
N.C. DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS DIVISION ELEVEN			SCALE: N/A DATE: 04/2003 PREPARED BY: O.J. PILKINGTON REVIEWED BY: _____ REVIEWED BY: _____

8/17/95

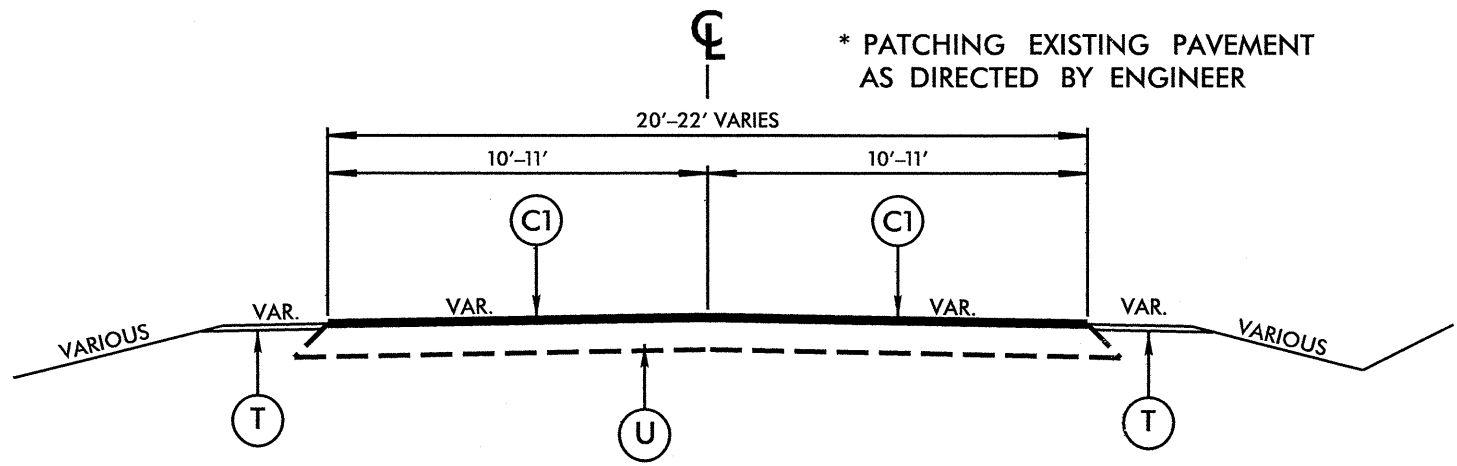
PROJECT REFERENCE NO.	SHEET NO.
NCR006121, NCR2006121	6
NCR0095121, NCR20095121	



* LEVELING AT LOCATIONS AS DIRECTED BY ENGINEER

TYPICAL SECTION NO. 4

- * MAP 4 - SR 1346 FROM NC 181 TO SR 1347
- * MAP 5 - SR 1501 FROM SR 1543 TO SR 1543
- * MAP 6 - SR 1501 FROM SR 1543 TO SR 1544
- * MAP 7 - SR 1501 FROM SR 1504 TO SR 1543
- * MAP 11 - SR 1221 FROM SR 1201 TO SR 1225
- * MAP 12 - SR 1136 FROM NC 105 TO SR 1138
- * MAP 13 - SR 1552 FROM SR 1553 TO SR 1557
- * MAP 14 - SR 1673 FROM SR 1672 TO US 221
- MAP 15 - SR 1151 FROM SCL OF SEVEN DEVILS TO AVERY CO LINE



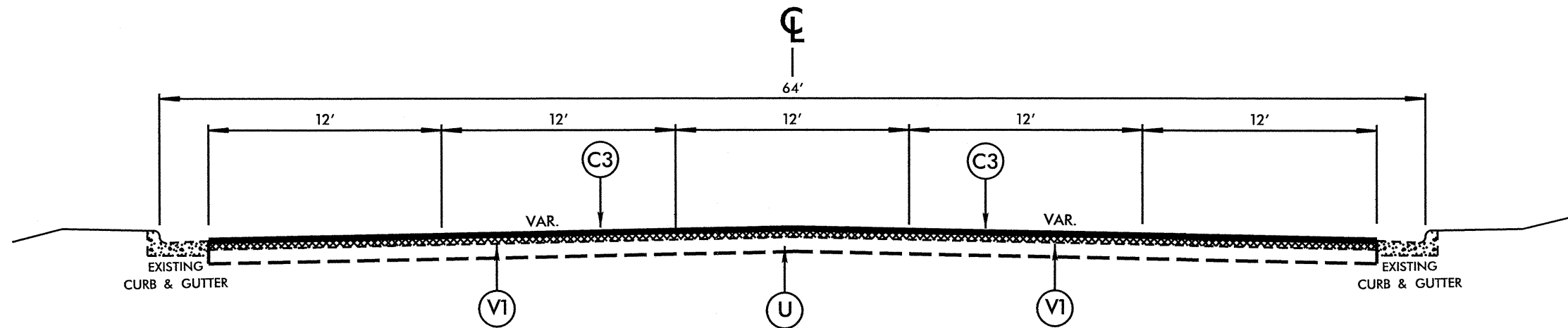
* PATCHING EXISTING PAVEMENT AS DIRECTED BY ENGINEER

TYPICAL SECTION NO. 5

- * MAP 9 - NC 194 FROM US 221 TO SR 1306
- * MAP 10 - NC 194 FROM SR 1306 TO SR 1335

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C3	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
T	SHOULDER RECONSTRUCTION
U	EXISTING PAVEMENT
V1	MILLING OF EXISTING ASPHALT PAVEMENT AT DEPTH OF 1½"
V2	MILLING OF EXISTING ASPHALT PAVEMENT AT DEPTH OF 0 - 3"

<p>AVERY & WATAUGA COUNTIES PRIMARY AND SECONDARY RESURFACING</p>													
<p>DIVISION II</p> <table border="1"> <thead> <tr> <th>REVISIONS</th> <th>BY</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			REVISIONS	BY	DATE								
REVISIONS	BY	DATE											
<p>N.C. DEPARTMENT of TRANSPORTATION DIVISION of HIGHWAYS DIVISION ELEVEN</p>		<p>SCALE: N/A DATE: 04/2013 PREPARED BY: O.J. PLKINGTON REVIEWED BY: _____ REVISION BY: _____</p>											



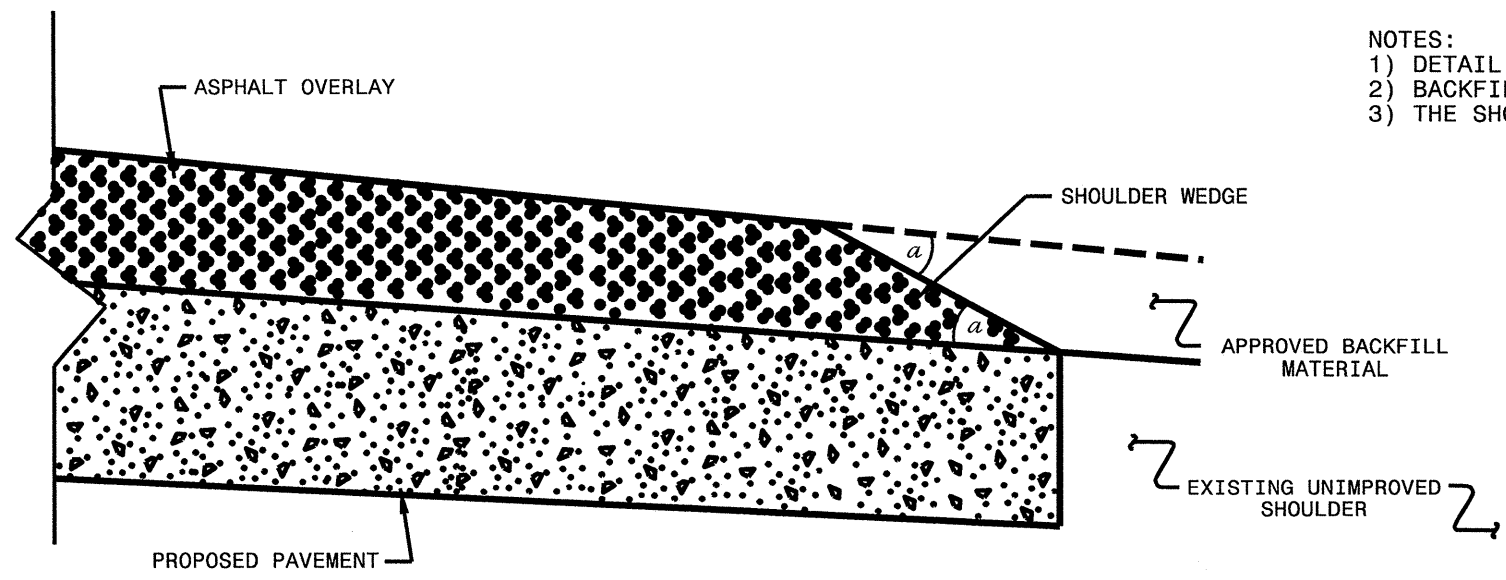
TYPICAL SECTION NO. 6

MAP 8 - US 221/421 FROM OLD W. KING ST TO BEGIN DIVIDED HIGHWAY

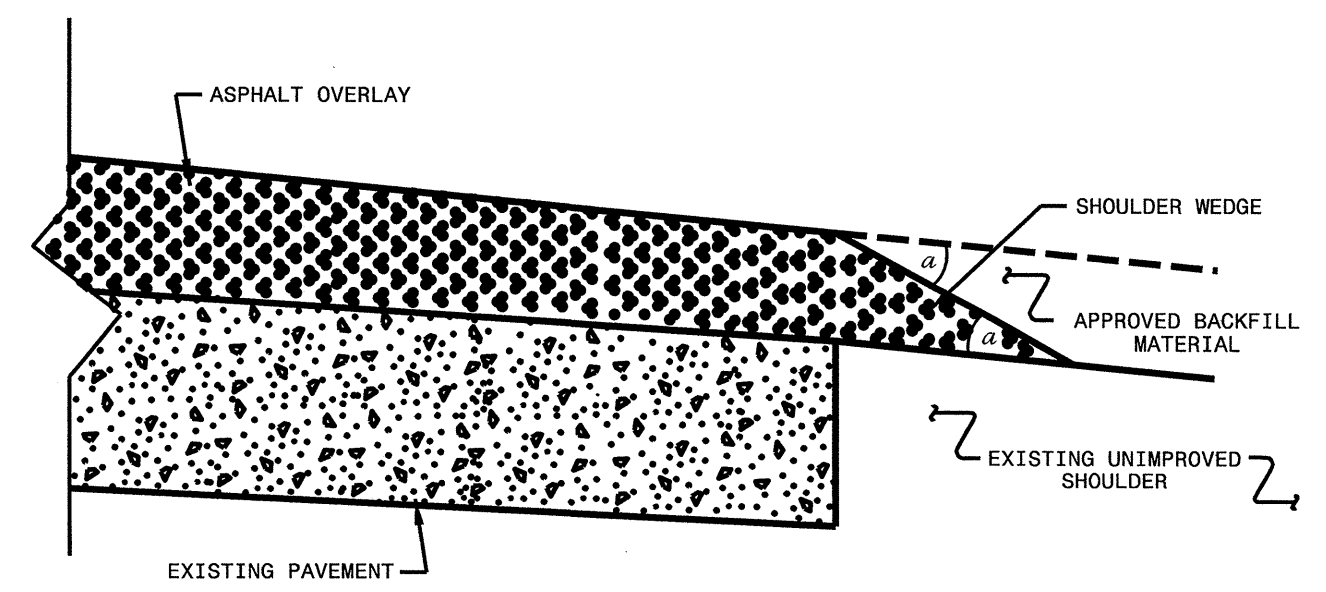
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C3	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
T	SHOULDER RECONSTRUCTION
U	EXISTING PAVEMENT
V1	MILLING OF EXISTING ASPHALT PAVEMENT AT DEPTH OF 1½"
V2	MILLING OF EXISTING ASPHALT PAVEMENT AT DEPTH OF 0 - 3"

AVERY & WATAUGA COUNTIES PRIMARY AND SECONDARY RESURFACING		
DIVISION II		
REVISIONS	REV.	DATE
N.C. DEPARTMENT of TRANSPORTATION DIVISION of HIGHWAYS DIVISION ELEVEN		SCALE: N/A DATE: 04/2013 PREPARED BY: O.L. PILKINGTON REVIEWED BY:

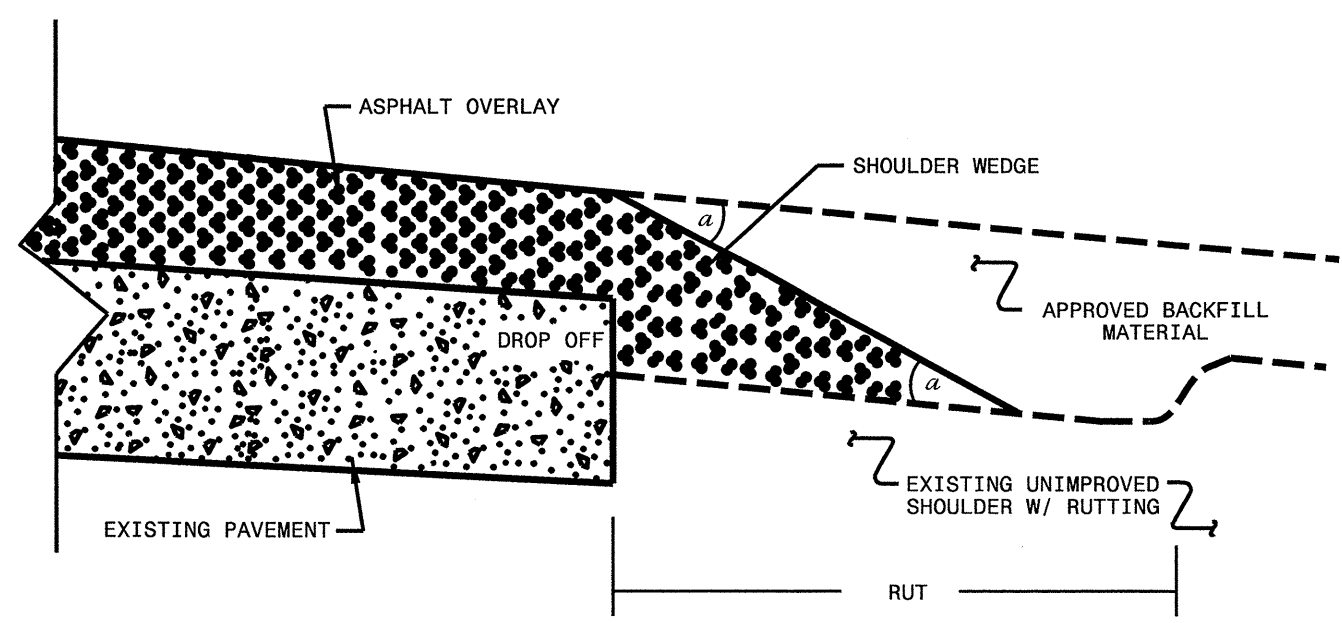
- NOTES:
 1) DETAIL DOES NOT APPLY TO OGAFB AND ULTRA-THIN BONDED WEARING COURSE.
 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



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\shoulderwedge\detail.dgn	

 SYSTEMS

PROJECT NO.	SHEET NO.	TOTAL NO.
11CR.10061.21, 11CR.20061.21 11CR.10951.21, ETC.	9	

SUMMARY OF QUANTITIES

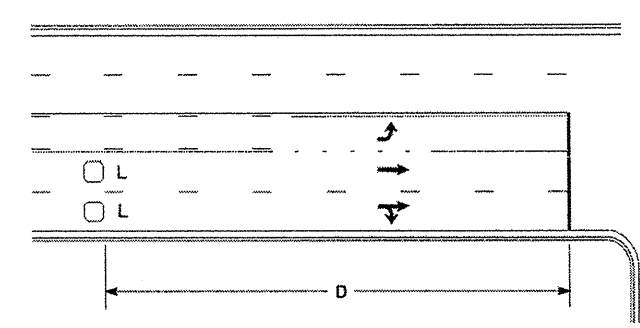
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	BORROW EXCAVATION CY	INCIDENTAL STON BASE TONS	SHOULDER RECONSTRUCTION SMI	1 1/2" MILLING SY	0" TO 3" MILLING SY	INCIDENTAL MILLING SY	SURFACE COURSE, S9.5B TONS	SURFACE COURSE, S9.5C TONS	SURFACE COURSE, SF9.5A TONS	SURFACE COURSE, TYPE SF9.5A (LEVELING COURSE) TON	ASPHALT BINDER FOR PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	ADJ. OF CATCH BASIN EA	ADJ. OF MANHOLES EA	ADJ. OF METER OR VALVE BOX EA	SEED & MULCHING AC	PAVED TRENCHING (1 EA, 2") LF	UNPAVED TRENCHING (1 EA, 2") LF	PAVED TRENCHING (3 EA, 2") LF	UNPAVED TRENCHING (3 EA, 2") LF	JUNCTION BOX (STANDARD SIZE) EA	INDUCTIVE LOOP LF	LEAD-IN CABLE LF	PORTABLE LIGHTING LS		
11CR.10061.21	Avery	1	NC 194	FROM NC 181 TO SR 1159	1	2	2WU	NO	NO	1.1	24	154	25	1.54		19,488		1,644				99		1	9	4	0.90	100	100			4.00	300	200			
		2	NC 194	FROM SR 1159 TO SR 1161	2	2	2WU	NO	NO	1	26	200	50	2.00	15,676				1,323				79				0.75										
		3	NC 194	FROM SR 19E TO SR 1321	3	2	2WU	NO	NO	2.3	26	460	100	4.60							2,975		199	500			1.70										
TOTAL FOR PROJ NO. 11CR.10061.21										4.4		814	175	8.14	15,676	19,488	300	2,967		2,975		377	500	1	9	4	3.35	100	100			4.00	300	200			
11CR.10951.21	Watauga	8	US 221/421	FROM OLD W. KING ST. TO BEGIN DIVIDED HIGHWAY	6	5	MU	NO	NO	1.51	60				55,152				4,794			283			5	1				200	200		600	200	1		
		9	NC 194	FROM US 221 TO SR 1306	5	2	2WU	NO	NO	1.62	22	324	100	3.24				122	2,016				121	500		3	4	1.20									*
		10	NC 194	FROM SR 1306 TO SR 1335	5	2	2WU	NO	NO	2.7	20	540	150	5.40				555	2,747				165	800			2.00										*
TOTAL FOR PROJ NO. 11CR.10951.21										5.83		864	250	8.64	55,152		677	4,763	4,794			569	1,300		8	5	3.20			200	200		600	200	1		
11CR.20061.21	Avery	4	SR 1346	FROM NC 181 TO SR 1347	4	2	2WU	NO	NO	2.25	18	450	100	4.50			200			1,974	403.00	156					1.70										
		5	SR 1501	FROM SR 1543 TO SR 1543	4	2	2WU	NO	NO	1.21	20	242	60	2.42							1,213	476.00	110				0.90										
		6	SR 1501	FROM SR 1543 TO SR 1544	4	2	2WU	NO	NO	0.22	20	44	10	0.44			111				303	89.00	26				0.15										
		7	SR 1501	FROM SR 1504 TO SR 1543	4	2	2WU	NO	NO	1.21	18	242	60	2.42			100				1,061	448.00	98				0.90										
TOTAL FOR PROJ NO. 11CR.20061.21										4.89		978	230	9.78		411				4,551	1,416.00	390				3.65											
11CR.20951.21	Watauga	11	SR 1221	FROM SR 1201 TO SR 1225	4	2	2WU	NO	NO	2.65	18	530	150	5.30			400			2,475	871.00	218					2.00										
		12	SR 1136	FROM NC 105 TO SR 1138	4	2	2WU	NO	NO	1.03	18	206	50	2.06			200			1,004	324.00	87				0.75											
		13	SR 1552	FROM SR 1553 TO SR 1557	4	2	2WU	NO	NO	1.77	20	354	100	3.54			222			1,924	622.00	166				1.30											
		14	SR 1673	FROM SR 1672 TO US 221	4	2	2WU	NO	NO	0.48	20	96	30	0.96			200			465	250.00	43				0.35											
		15	SR 1151	FROM SCL OF SEVEN DEVILS TO AVERY CO LINE	4	2	2WU	NO	NO	0.73	22	146	50	1.46			244			882		59				0.55											
TOTAL FOR PROJ NO. 11CR.20951.21										6.66		1,332	380	13.32		1,266				6,750	2,067.00	573				4.95											
GRAND TOTAL										21.78		3988	1035	39.88	70828	19488	2654	7730	4794	14276	3483	1909	1800	1	17	9	15.15	100	100	200	200	4	900	400	1		

PROJECT NO.	SHEET NO.	TOTAL NO.
11CR.10061.21, 11CR.20061.21 11CR.10951.21, ETC.	10	

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4366000000-E	4510000000-N	4589000000-N	4810000000-E		4820000000-E		4835000000-E	4840000000-N		4845000000-N				4905000000-N	
										GENERIC SIGNING ITEM WORK ZONE ADVANCE/ GENERAL WARNING SIGNING LF	LAW ENFORCEMENT HR	GENERIC TRAFFIC CONTROL ITEM TEMPORARY TRAFFIC CONTROL LS	4" WHITE PAINT LF	4" YELLOW PAINT LF	8" YELLOW PAINT LF	8" WHITE PAINT LF	24" WHITE PAINT LF	PAINT MSG ONLY EA	PAINT MSG SCHOOL EA	PAINT LT ARROW EA	PAINT STR & RT ARROW EA	PAINT STR ARROW EA	PAINT RT ARROW EA	SNOW PLOWABLE MARKERS EA	
11CR.10061.21	Avery	1	NC 194	FROM NC 181 TO SR 1159	1	2	2WU	1.1	24	159.75	10.66	1	16,880	21,000	300	838		4		7	3	4		95	
		2	NC 194	FROM SR 1159 TO SR 1161	2	2	2WU	1	26	159.75	10.66	*	21,120	22,320	300									67	
		3	NC 194	FROM US 19E TO SR 1321	3	2	2WU	2.3	26	159.75	10.66	*	48,576	50,000	300									300	
TOTAL FOR PROJ NO. 11CR.10061.21								4.4		479.25	31.98		86,576	93,320	900	838		4		7	3	4		462	
													179,896		1,738		4		14						
11CR.10951.21	Watauga	8	US 221/421	FROM OLD W. KING ST. TO BEGIN DIVIDED HIGHWAY	6	5	MU	1.51	60	159.75	10.66	*	13,666	37,330	160		528			49	6	14	1	420	
		9	NC 194	FROM US 221 TO SR 1306	5	2	2WU	1.62	22	159.75	10.66	*	33,000	34,000			100		12			2	200		
		10	NC 194	FROM SR 1306 TO SR 1335	5	2	2WU	2.7	20	159.75	10.66	*	57,024	57,024			150							350	
TOTAL FOR PROJ NO. 11CR.10951.21								5.83		479.25	31.98		103,690	128,354	160		778		12	49	6	14	3	970	
													232,044		160		12		72						
11CR.20061.21	Avery	4	SR 1346	FROM NC 181 TO SR 1347	4	2	2WU	2.25	18	159.75	10.66	*	47,520	47,520											
		5	SR 1501	FROM SR 1543 TO SR 1543	4	2	2WU	1.21	20	159.75	10.66	*	25,556	25,556		150									
		6	SR 1501	FROM SR 1543 TO SR 1544	4	2	2WU	0.22	20	159.75	10.66	*	4,648	4,648											
		7	SR 1501	FROM SR 1504 TO SR 1543	4	2	2WU	1.21	18	159.75	10.66	*	25,556	25,556		300									
TOTAL FOR PROJ NO. 11CR.20061.21								4.89		639	42.64		103,280	103,280		450									
													206,560		450										
11CR.20951.21	Watauga	11	SR 1221	FROM SR 1201 TO SR 1225	4	2	2WU	2.65	18	159.75	10.66	*	55,968	55,968			24								
		12	SR 1136	FROM NC 105 TO SR 1138	4	2	2WU	1.03	18	159.75	10.66	*	21,752	21,752			24								
		13	SR 1552	FROM SR 1553 TO SR 1557	4	2	2WU	1.77	20	159.75	10.66	*	37,384	37,384			24								
		14	SR 1673	FROM SR 1672 TO US 221	4	2	2WU	0.48	20	159.75	10.66	*	10,136	10,136			24								
		15	SR 1151	FROM SCL OF SEVEN DEVILS TO AVERY CO LINE	4	2	2WU	0.73	22	159.74	10.7	*	15,416	15,416			24								
TOTAL FOR PROJ NO. 11CR.20951.21								6.66		798.74	53.34		140,656	140,656		96									
													281,312												
GRAND TOTAL								21.78		2,396.24	160	1	434,202	465,610	1,060	1,288	874	4	12	56	9	18	3	1,432	
													899,812		2,348		16		86						

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

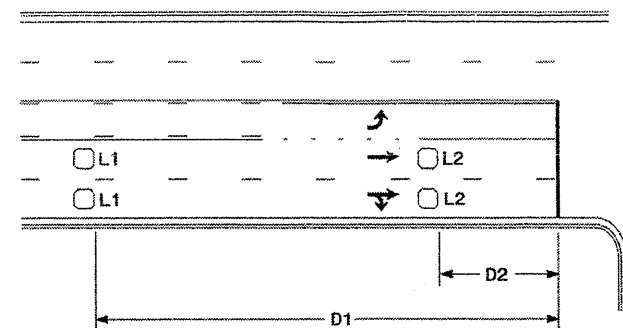


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

Volume Density Operation

OR

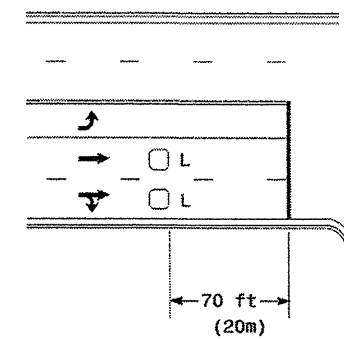


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

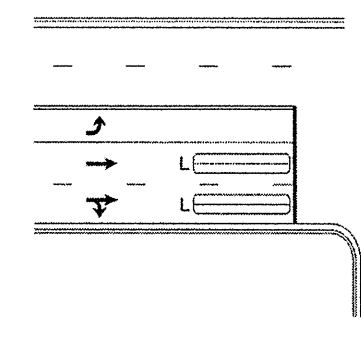
"Stretch" Operation

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



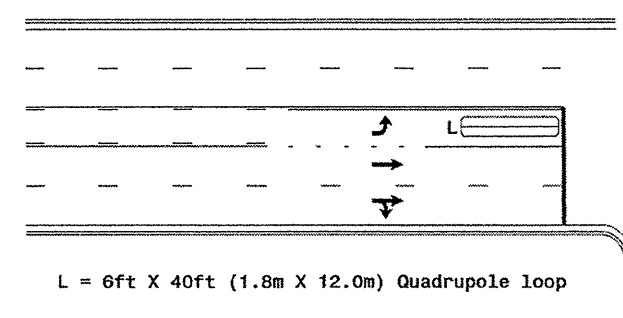
L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

OR



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

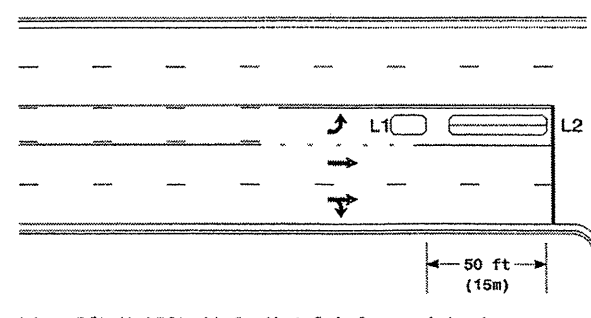
Left Turn Lane Detection



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

Presence Loop Detection

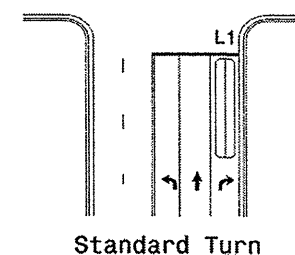
OR



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

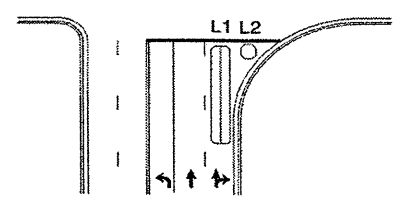
Queue Loop Detection

Right Turn Lane Detection

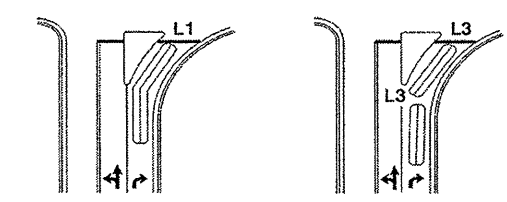


Standard Turn

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

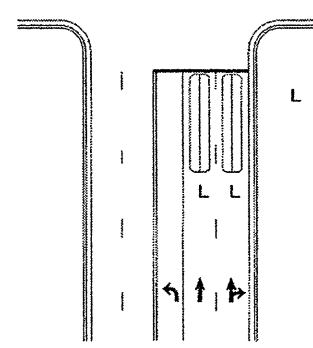


Wide Radius Turn



Channelized Turn

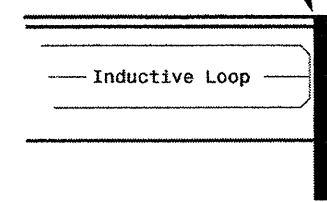
Side Street Detection



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

Presence Loop Placement at Stop Lines

Locate loop slightly
behind leading
edge of stop line



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

Recommended Number of Turns

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

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

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

	Typical Loop Locations		
	PLAN DATE: June 2006 PREPARED BY: P. L. Alexander	REVIEWED BY: [Signature] DATE: [Date]	

19-DEC-2006 14:29
21:11:16
turn_inm1sctopsp1con2006.dgn
alexander