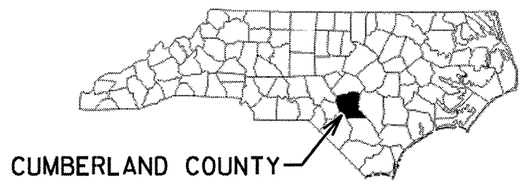
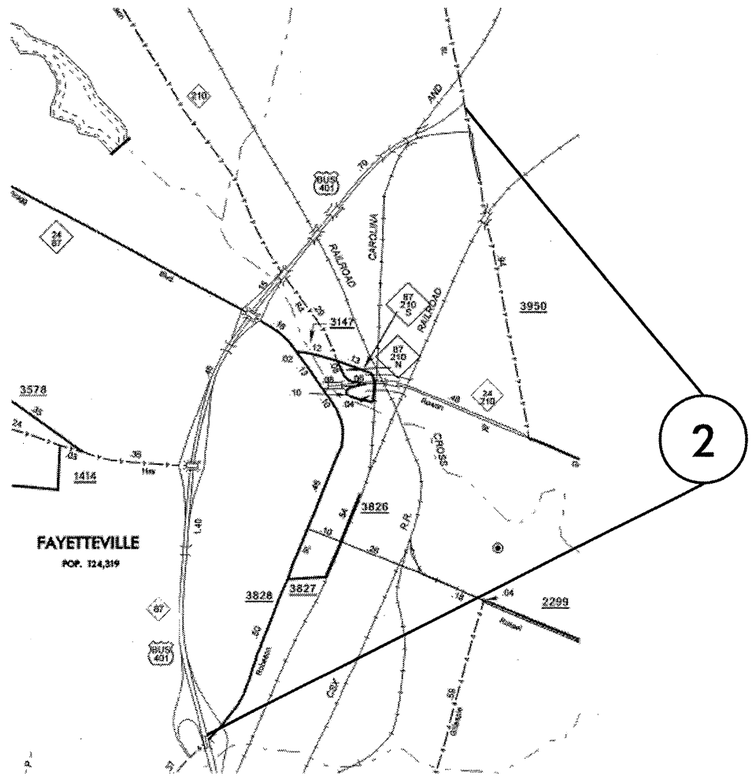
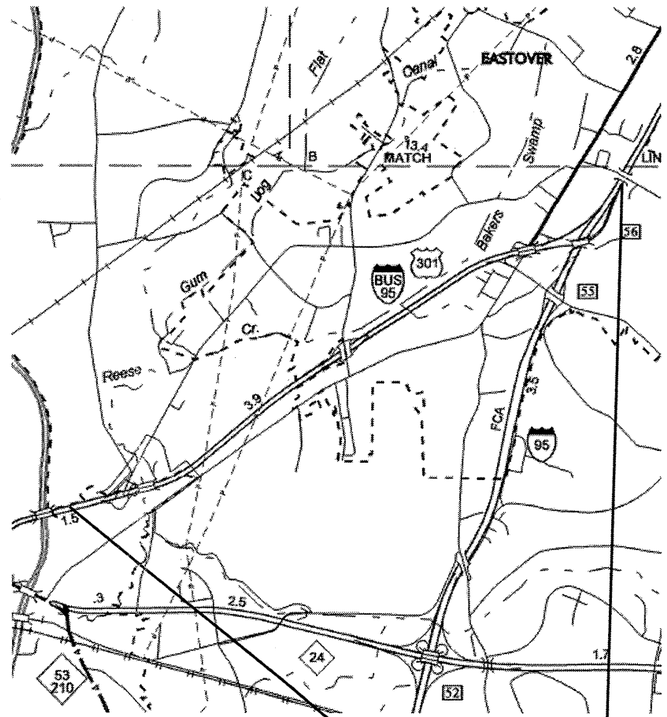
PROJECT REFERENCE NO.	SHEET NO.
6CRJ0261.79	1

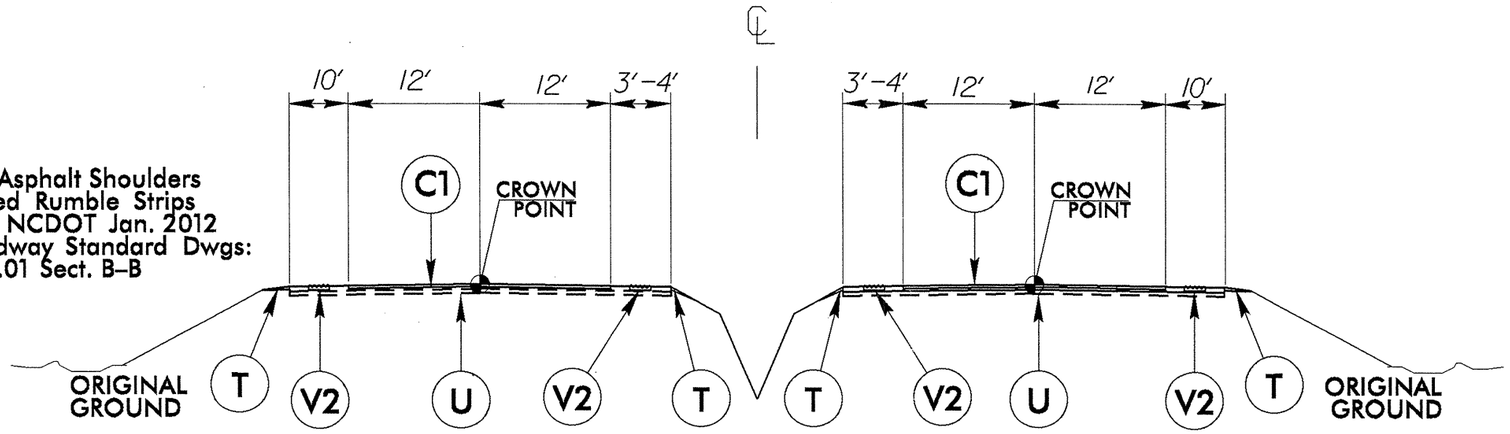
RESURFACING MAPS - CUMBERLAND COUNTY





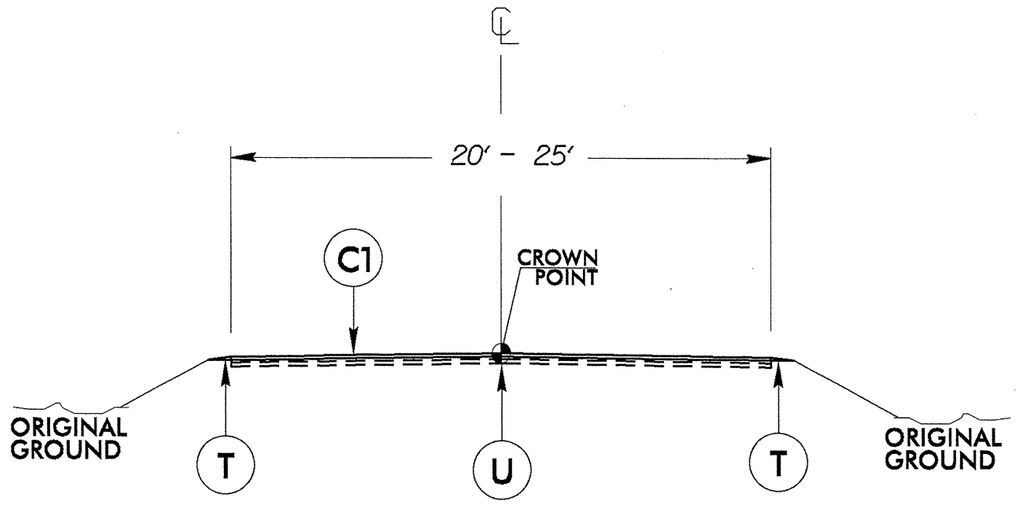


For Asphalt Shoulders
Milled Rumble Strips
See NCDOT Jan. 2012
Roadway Standard Dwgs:
665.01 Sect. B–B

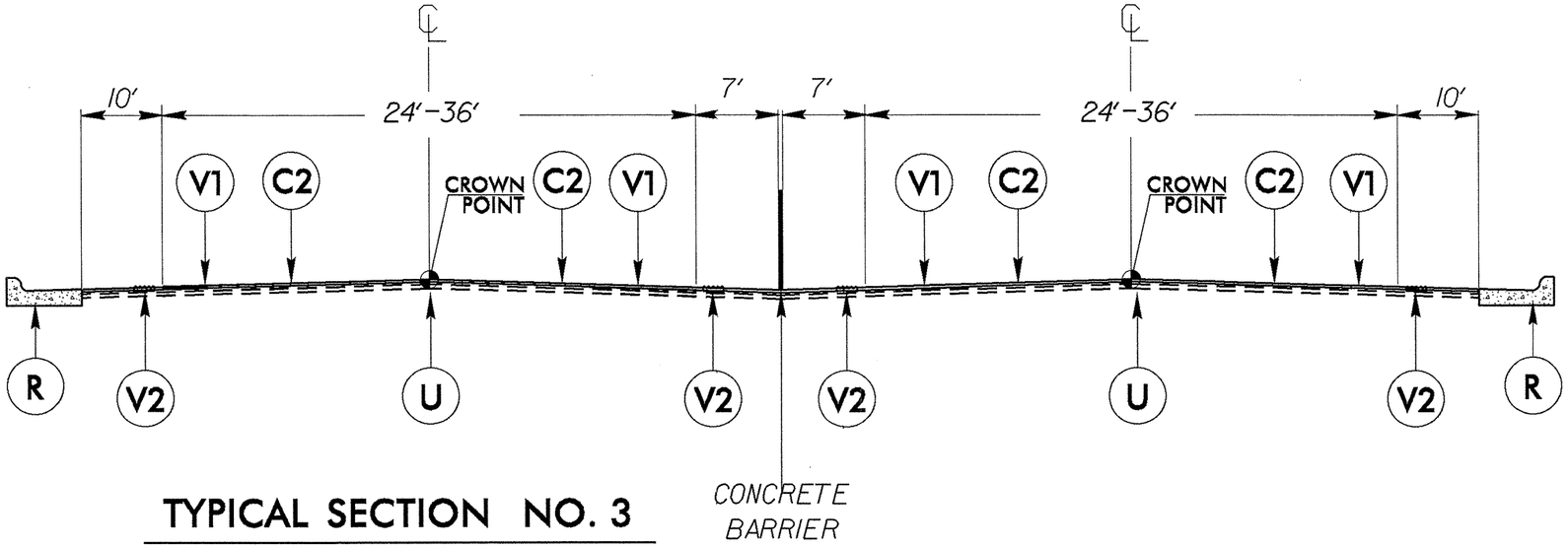


TYPICAL SECTION NO. 1

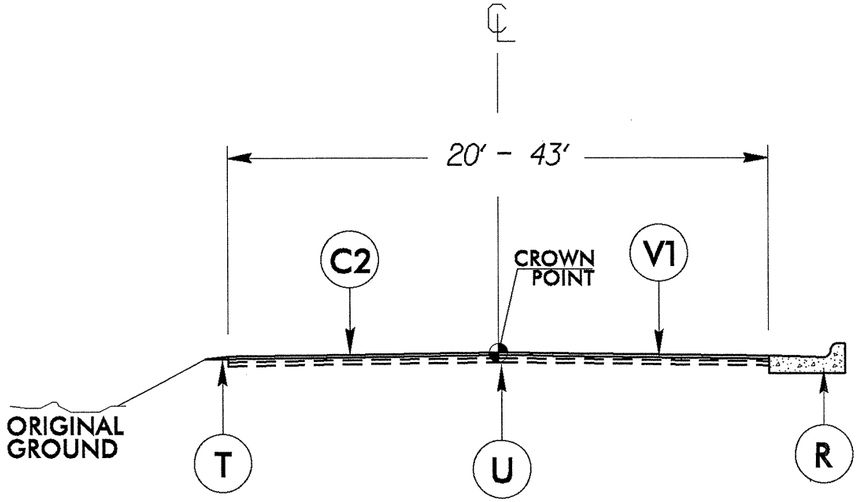
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
R	EXISTING CONCRETE CURB & GUTTER (WIDTHS VARY)
V1	MILLING AT A DEPTH OF 1.5″ AS DIRECTED BY THE ENGINEER
V2	16″ MILLED RUMBLE STRIPS
T	ASB TAPERED FROM 2″ TO 0″ AT A WIDTH OF 2′
U	EXISTING PAVEMENT



TYPICAL SECTION NO. 2



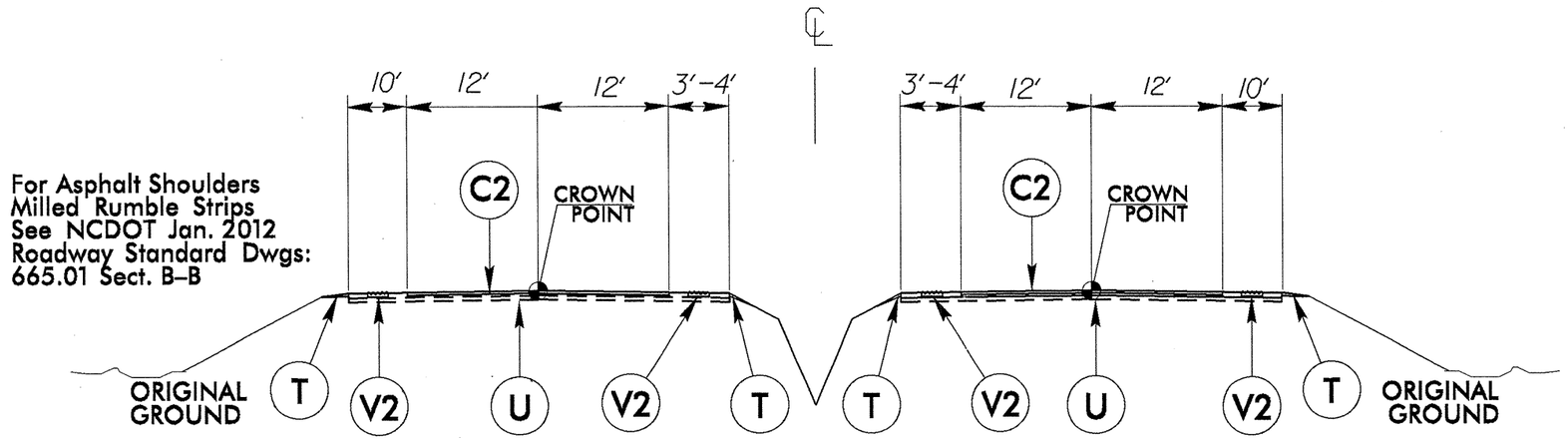
TYPICAL SECTION NO. 3



TYPICAL SECTION NO. 4

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
R	EXISTING CONCRETE CURB & GUTTER (WIDTHS VARY)
V1	MILLING AT A DEPTH OF 1.5" AS DIRECTED BY THE ENGINEER
V2	16" MILLED RUMBLE STRIPS
T	ASB TAPERED FROM 2" TO 0" AT A WIDTH OF 2'
U	EXISTING PAVEMENT



For Asphalt Shoulders
Milled Rumble Strips
See NCDOT Jan. 2012
Roadway Standard Dwgs:
665.01 Sect. B–B

TYPICAL SECTION NO. 5

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
R	EXISTING CONCRETE CURB & GUTTER (WIDTHS VARY)
V1	MILLING AT A DEPTH OF 1.5″ AS DIRECTED BY THE ENGINEER
V2	16″ MILLED RUMBLE STRIPS
T	ASB TAPERED FROM 2″ TO 0″ AT A WIDTH OF 2′
U	EXISTING PAVEMENT

PROJECT REFERENCE NO.	SHEET NO.
6CRJ10261.79	5

PROJECT NOTES

1. The Contractor shall not work on both sides of the road simultaneously within the same area.
2. Ingress and egress shall be maintained to all businesses and dwellings on the project.
3. At the end of each workday, the Contractor shall be required to backfill any area adjacent to existing travelway that has been graded leaving no more than a $1\frac{1}{2}$" drop-off.
4. A minimum of two-way, two-lane traffic (plus all existing left and right turn lanes) shall be maintained during periods of construction inactivity.
5. The Contractor shall not be allowed to stop traffic for more than 5 minutes at a time in any one direction.
6. During periods of construction inactivity, the difference in elevation between lanes shall not exceed 1-1/2 inch.
7. Access to police and fire station, fire hydrants, and hospitals shall be maintained at all times.
8. During periods of construction inactivity, place cones/drums 3' from existing edge of pavement (travelway) as directed by the Engineer.
9. Channelizing devices in work areas shall be spaced not greater than 50' on center in tangent areas, 45' on center in tapers, and 10' on center in radii, and shall be set 3' off the edge of travelway, unless otherwise indicated on plans.
10. Contractor to install Erosion Control devices as directed by the Engineer.
11. Contractor shall coordinate with the Division Six Traffic Services Unit (910-486-1452) for placement of all pavement markings and signs.
12. Removal of existing road signs is incidental to the project.

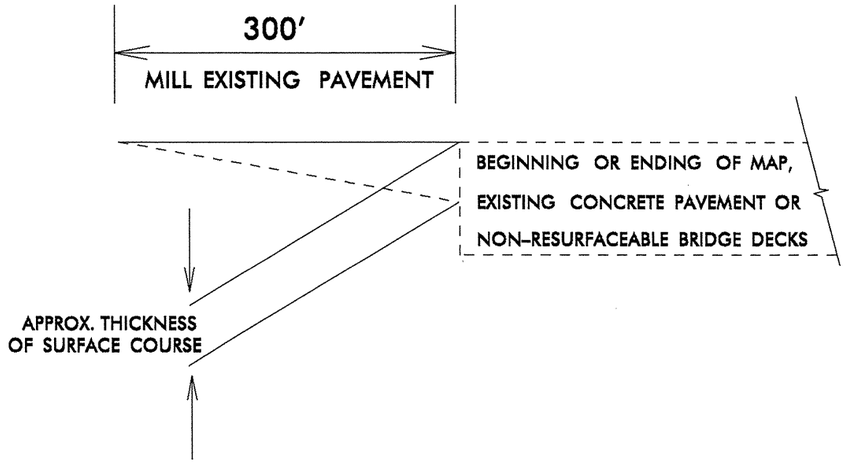
MILLING AT PAVEMENT TIE-INS

NOTES TO CONTRACTOR

For surface mixes over 1" in thickness, mill the existing pavement in acoordance with the following sketch as directed by the Engineer.

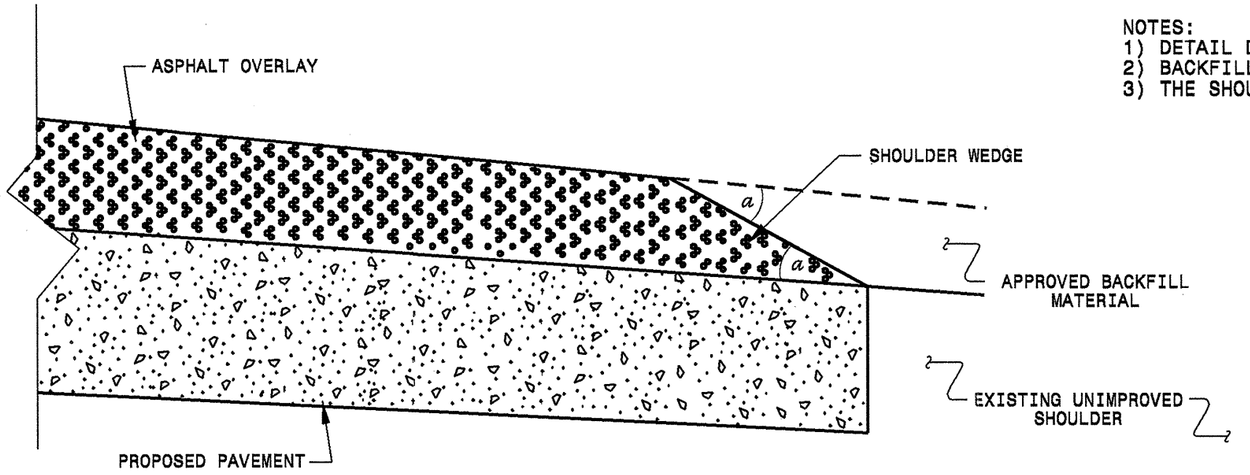
Locations shall include ties into existing concrete pavement, at bridge approaches where the bridge will not be resurfaced, and at the beginning and ending point of each resurfacing map.

Perform the work in accordance with Section 607 of the January 2012 North Carolina Department of Transportation Standard Specifications for Roads and Structures. Resurfacing will be accomplished at the same time as the milling operation.



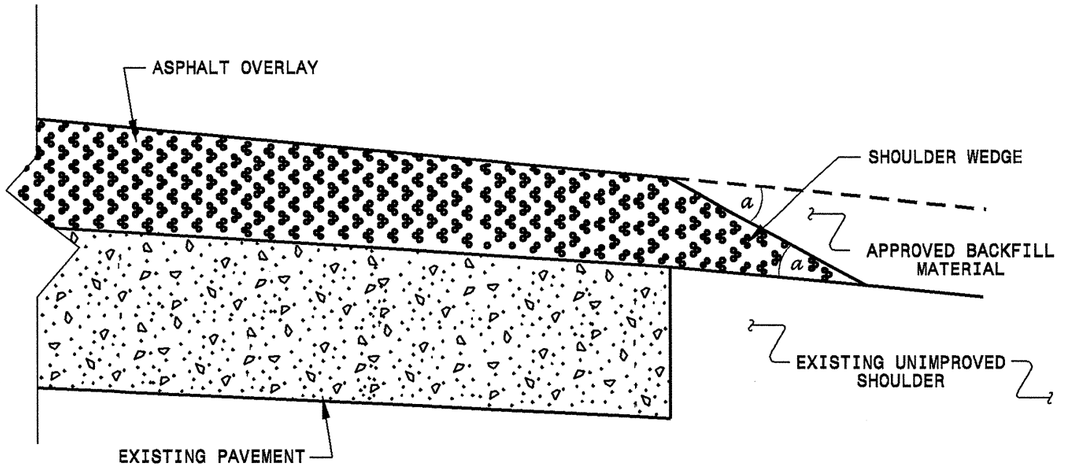
PROJECT REFERENCE NO.	SHEET NO.
6CR.10261.79	6

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.



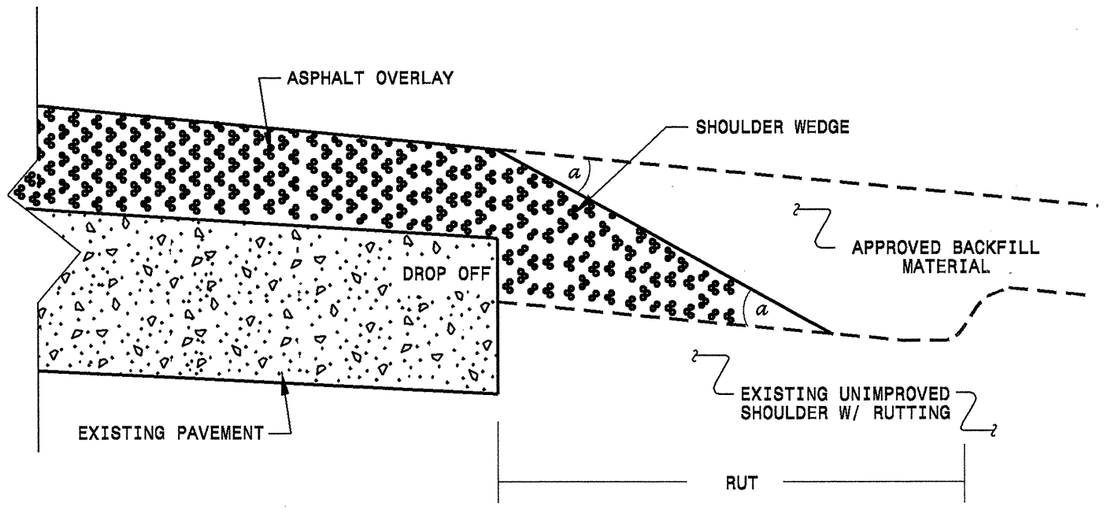
SHOULDER WEDGE DETAIL

(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:\ur\details\stand\shoulderwedgedetail.dgn

PROJECT NO.	SHEET NO.	TOTAL NO.
6CR.10261.79	7	8

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	AGGREGATE SHOULDER BORROW TON	SHOULDER RECONSTRUCTION SMI	1½" MILLING SY	INCIDENTAL MILLING SY	SURFACE COURSE, S9.5B TONS	SURFACE COURSE, S9.5C TONS	ASPHALT BINDER FOR PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	MILLED RUMBLE STRIPS (ASPHALT CEMENT CONCRETE) LF	PORTABLE LIGHTING LS	PAVED TRENCHING (1 CONDUIT-2") LF	UNPAVED TRENCHING (1 CONDUIT-2") LF	JUNCTION BOX (STANDARD SIZE) EA	JUNCTION BOX (OVER-SIZED, HEA-VY DUTY) EA	2" RISER WITH WEATHERHEAD EA	INDUCTIVE LOOP SAWCUT LF	LEAD-IN CABLE (14-2) LF
6CR.10261.79	Cumberland	1	US 301	FROM I-95 (MP 0.00) TO CAPE FEAR RIVER PROJECT LIMITS (MP 4.92)	1	NO	NO	4.92	74	1,420	3.73	868	18,559		16,888	996	2,000	104,000		10	100	1	1	1	350	100
		"	"	FROM I-95 (MP 0.00) TO CAPE FEAR RIVER PROJECT LIMITS (MP 4.92)	2	NO	NO		22						2,337	138										
TOTAL FOR MAP NO. 1								**4.92**		**1,420**	**3.73**	**868**	**18,559**		**19,225**	**1,134**	**2,000**	**104,000**		**10**	**100**	**1**	**1**	**1**	**350**	**100**
6CR.10261.79	Cumberland	2	US 401 BUS (MLK EXPWY)	FROM BRIDGE OVER SR 3828 (MP 5.05) TO RAMSEY STREET (MP 7.15)	5	NO	NO	0.25	74	70	0.20	124,919	100	875		53	1,500	44,352	1.00	40	400	4	4	4	2,900	400
		"	"	FROM BRIDGE OVER SR 3828 (MP 5.05) TO RAMSEY STREET (MP 7.15)	3	NO	NO	0.78	106					3,813		229										
		"	"	FROM BRIDGE OVER SR 3828 (MP 5.05) TO RAMSEY STREET (MP 7.15)	3	NO	NO	0.98	82					3,758		225										
		"	"	FROM BRIDGE OVER SR 3828 (MP 5.05) TO RAMSEY STREET (MP 7.15)	4	NO	NO		20					2,045		123										
TOTAL FOR MAP NO. 2								**2.01**		**70**	**0.20**	**124,919**	**100**	**10,491**		**630**	**1,500**	**44,352**	**1.00**	**40**	**400**	**4**	**4**	**4**	**2,900**	**400**
TOTAL FOR PROJ NO. 6CR.10261.79								**6.93**		**1,490**	**3.93**	**125,787**	**18,659**	**10,491**	**19,225**	**1,764**	**3,500**	**148,352**	**1.00**	**50**	**500**	**5**	**5**	**5**	**3,250**	**500**
GRAND TOTAL								**6.93**		**1,490**	**3.93**	**125,787**	**18,659**	**10,491**	**19,225**	**1,764**	**3,500**	**148,352**	**1.00**	**50**	**500**	**5**	**5**	**5**	**3,250**	**500**

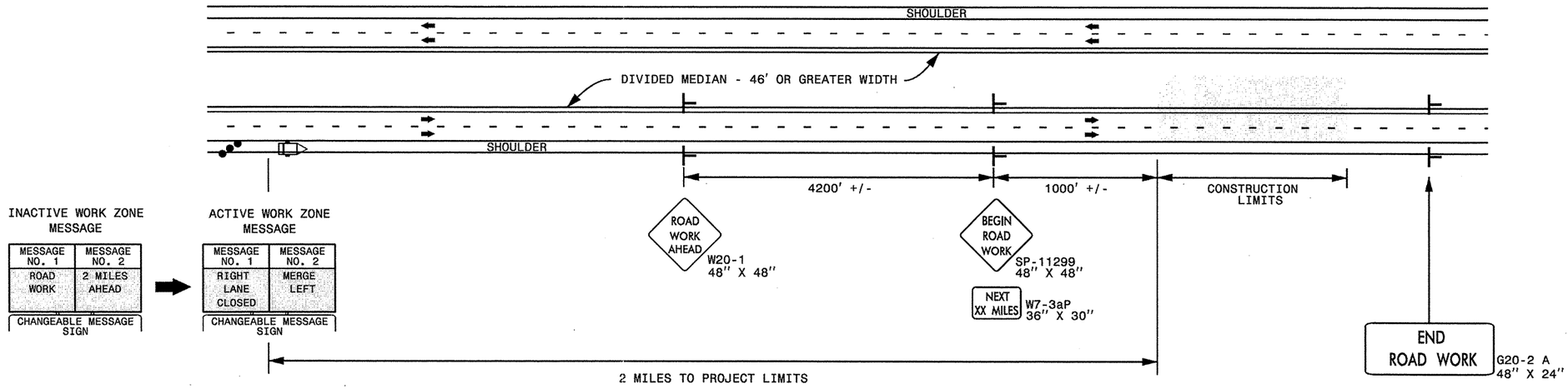
PROJECT NO.	SHEET NO.	TOTAL NO.
6CR.10261.79	8	8

THERMOPLASTIC AND PAINT QUANTITIES

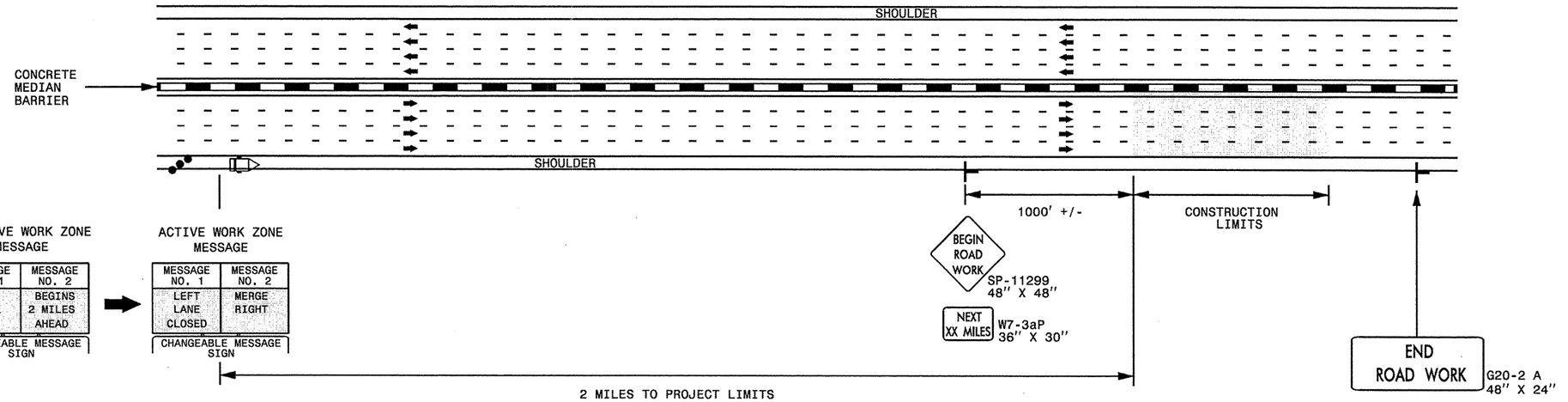
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LENGTH	WIDTH	4457000000-N TEMPORARY TRAFFIC CONTROL LS	4413000000-E WORK ZONE ADVANCE/GENERAL WARNING SIGNING SF	4685000000-E 4" X 90 M WHITE THERMO LF	4685000000-E 4" X 90 M YELLOW THERMO LF	4686000000-E 4" X 120 M WHITE THERMO LF	4686000000-E 4" X 120 M YELLOW THERMO LF	4695000000-E 8" X 90 M WHITE THERMO LF	4710000000-E 24" X 120 M WHITE THERMO LF	4721000000-E THERMO MSG ONLY 120 M EA	4725000000-E THERMO RAMP ARROW (90 MILS) EA	4725000000-E THERMO MERGE ARROW(90 MILS) EA	4725000000-E THERMO LT ARROW 90 M EA	4725000000-E THERMO RT ARROW 90 M EA	4725000000-E THERMO STR & LT ARROW 90 M EA	4810000000-E 4" WHITE PAINT LF	4810000000-E 4" YELLOW PAINT LF	4820000000-E 8" WHITE PAINT LF	4900000000-N CRYSTAL & RED MARKERS EA	4900000000-N YELLOW & YELLOW MARKERS EA
6CR.10261.79	Cumberland	1	US 301	FROM I-95 (MP 0.00) TO CAPE FEAR RIVER PROJECT LIMITS (MP 4.92)	1	4.92	74	1	363.14	59,680	59,205	7,390	1,900	5,600	50		7	3							1,050	40
		"	"	FROM I-95 (MP 0.00) TO CAPE FEAR RIVER PROJECT LIMITS (MP 4.92)	2		22																			
TOTAL FOR MAP NO. 1						4.92		1	363.14	59,680	59,205	7,390	1,900	5,600	50		7	3							1,050	40
6CR.10261.79	Cumberland	2	US 401 BUS (MLK EXPWY)	FROM BRIDGE OVER SR 3828 (MP 5.05) TO RAMSEY STREET (MP 7.15)	5	0.25	74	1	148.36	31,200	31,825	16,785		8,270	300	20			20	30	2	47,985	31,825	8,270	1,000	
		"	"	FROM BRIDGE OVER SR 3828 (MP 5.05) TO RAMSEY STREET (MP 7.15)	3	0.78	106																			
		"	"	FROM BRIDGE OVER SR 3828 (MP 5.05) TO RAMSEY STREET (MP 7.15)	3	0.98	82																			
		"	"	FROM BRIDGE OVER SR 3828 (MP 5.05) TO RAMSEY STREET (MP 7.15)	4		20																			
TOTAL FOR MAP NO. 2						2.01		1	148.36	31,200	31,825	16,785		8,270	300	20			20	30	2	47,985	31,825	8,270	1,000	
TOTAL FOR PROJ NO. 6CR.10261.79						6.93		1	511.50	90,880	91,030	24,175	1,900	13,870	350	20	7	3	20	30	2	47,985	31,825	8,270	2,050	40
										181,910		26,075							62			79,810			2,090	

PROJ. REFERENCE NO.	SHEET NO.
6CR.10261.79	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

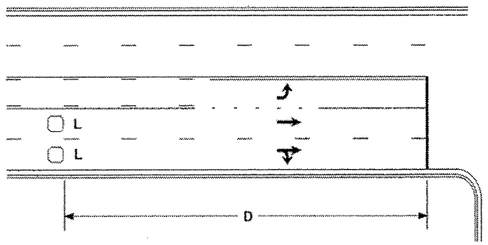
- CHANGEABLE MESSAGE SIGN (CMS)
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW
- TRAFFIC DRUM

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

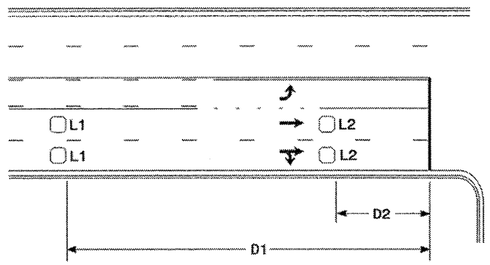
RESURFACING ADVANCE WARNING SIGNS FOR HIGH SPEED FACILITIES ≥ 60 MPH

PROJECT REFERENCE NO.	SHEET NO.
6CR.10261.79	SIG 1

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



OR



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

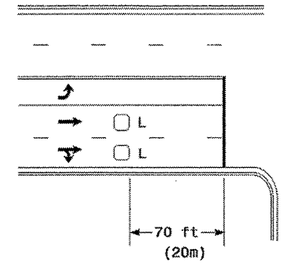
Speed Limit mph (km/hr)		D1 ft	(m)	D2 ft	(m)
40	(64)	250	(75)	80	(25)
45	(72)	300	(90)	90	(27)
50	(80)	355	(110)	100	(30)
55	(88)	420	(130)	110	(35)

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

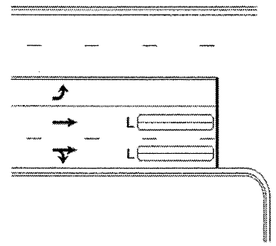
L2 = 6ft X 6ft (1.8m X 1.8m) Wired in series

"Stretch" Operation

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



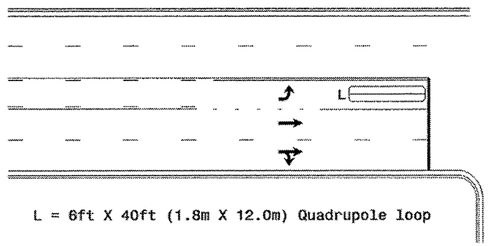
OR



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

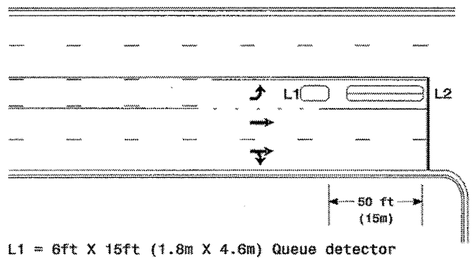
Left Turn Lane Detection



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

Presence Loop Detection

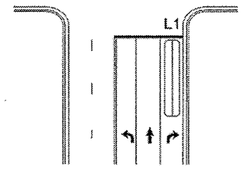
OR



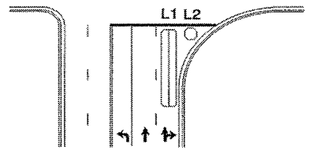
L1 = 6ft X 15ft (1.8m X 4.6m) Queue detector
L2 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Queue Loop Detection

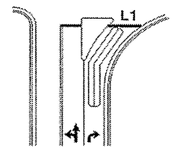
Right Turn Lane Detection

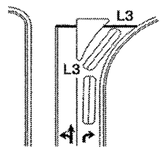


Standard Turn



Wide Radius Turn

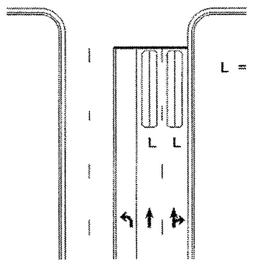




Channelized Turn

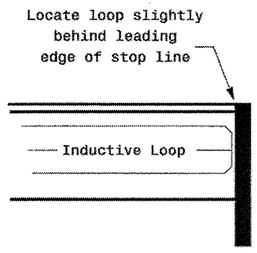
L1 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop
Wired separately
L3 = 6ft X 20ft (1.8m X 6.0m) Quadrupole loop
Wired in series

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
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
322 N. McDowell St., Raleigh, NC 27603

Typical Loop Locations

SCALE	PLAN DATE: June 2006	REVIEWED BY:
N/A	PREPARED BY: P L Alexander	REVIEWED BY:

REVISIONS	INIT.	DATE
Revise pavement markings	ae	12/11/06

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23486 ENGINEER PAMELA L ALEXANDER
SIGNATURE 6/6/07 DATE
SIG. INVENTORY NO.

19-DEC-2006 14:29
s:\ts signals\ts tb turn inmaster\loopdetail2006.dgn
palexander