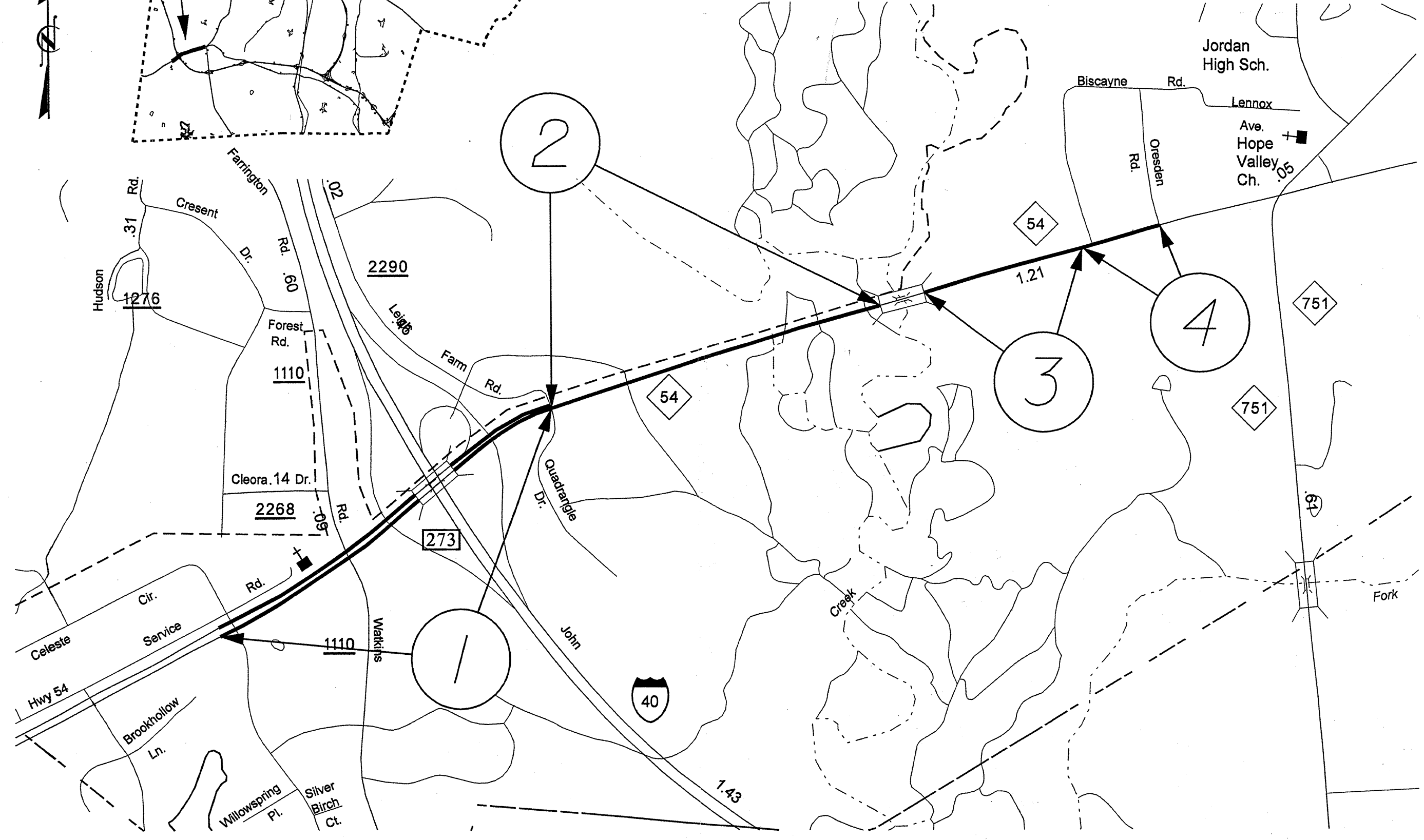
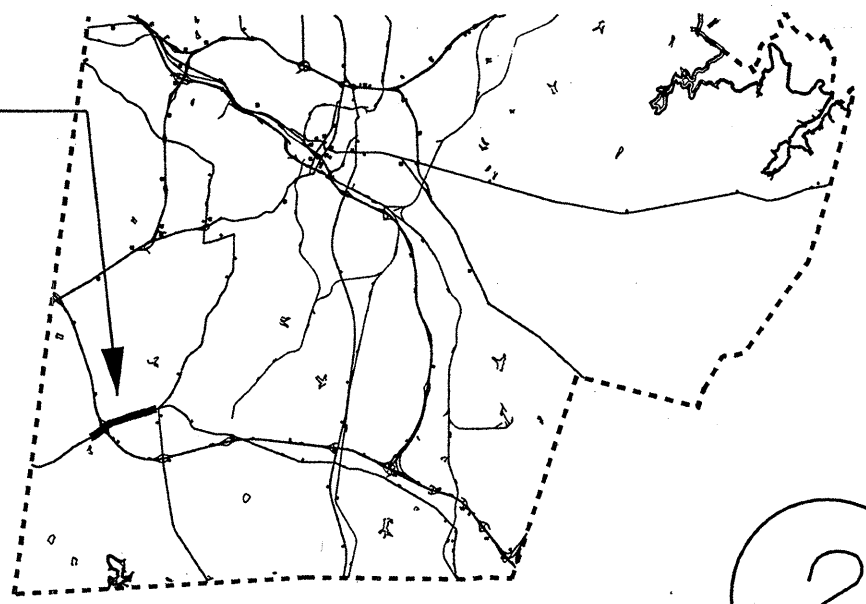


Durham County *201719*

PROJECT LOCATION



Jordan High Sch.

Lennox Ave. Hope Valley Ch.

751

751

64

Fork

40

1.43

273

2268

1110

2290

1276

54

1.21

3

4

2

1

PROJECT NO. 5CR.10321.7	SHEET NO. <b>2</b>	TOTAL NO.
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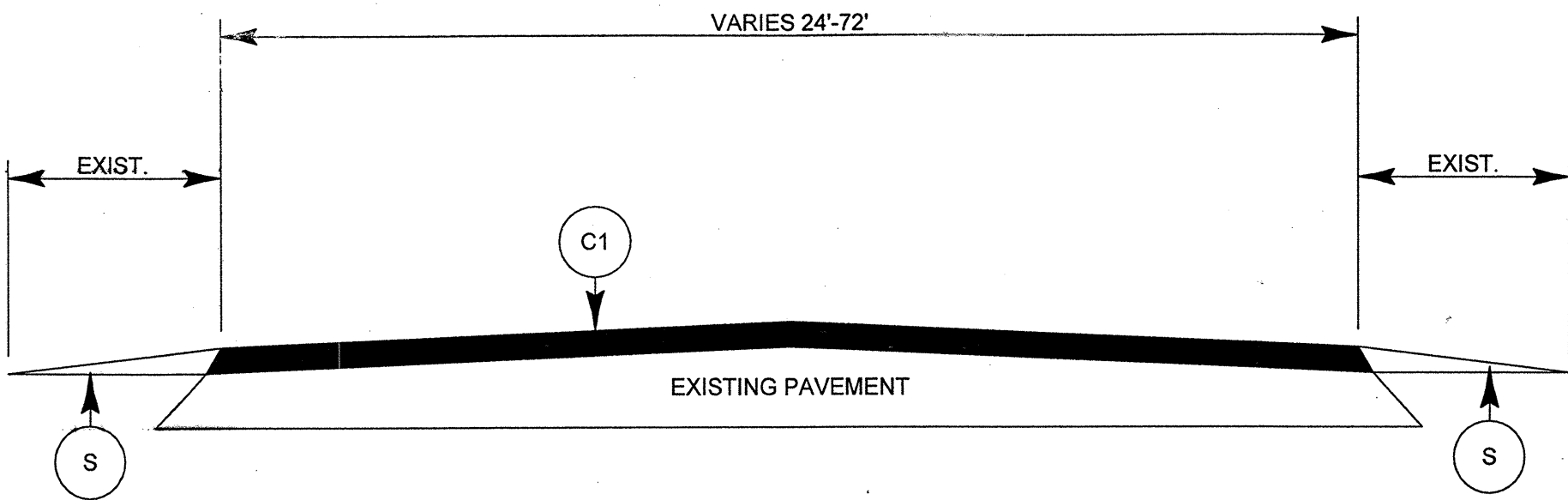
## SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LENGTH MI	WIDTH FT	SHOULDER RECONSTRUCTION SMI	INCIDENTAL MILLING SY	SURFACE COURSE, S9.5B TONS	PG 64-22 PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	GUARDRAIL ANCHOR UNIT - TYPE 350 EA	ADJUST. OF METER BOXES OR VALVE BOXES EA	ADJUST. OF MANHOLES EA	REMOVE & RESET EXIST GUARDRAIL LF	SEED & MULCHING AC	LEAD-IN CABLE (18-4) LF
5CR.10321.7	Durham	1	NC 54	FROM FALCONBRIDGE RD TO SR 2290 (LEIGH FARM RD)	1	0.6	60	1.2	660	1,958	117						0.90	3,600
		2	NC 54	FROM SR 2290 (LEIGH FARM RD) TO BRIDGE OVER NEW HOPE CREEK	1	0.49	24	0.98	150	669	40	100	6			440	0.74	1,200
		3	NC 54	FROM BRIDGE OVER NEW HOPE CREEK TO BEGIN C&G WEST OF MANDY COURT	1	0.2	24	0.4	150	250	15	40	2			500	0.30	
		4	NC 54	FROM C&G WEST OF MANDY COURT TO DRESDEN DRIVE	2	0.16	36			325	19	30		3	2			
<b>TOTAL FOR PROJ NO. 5CR.10321.7</b>						<b>1.45</b>		<b>2.58</b>	<b>960</b>	<b>3,202</b>	<b>191</b>	<b>170</b>	<b>8</b>	<b>3</b>	<b>2</b>	<b>940</b>	<b>1.94</b>	<b>4,800</b>
<b>GRAND TOTAL</b>						<b>1.45</b>		<b>2.58</b>	<b>960</b>	<b>3,202</b>	<b>191</b>	<b>170</b>	<b>8</b>	<b>3</b>	<b>2</b>	<b>940</b>	<b>1.94</b>	<b>4,800</b>

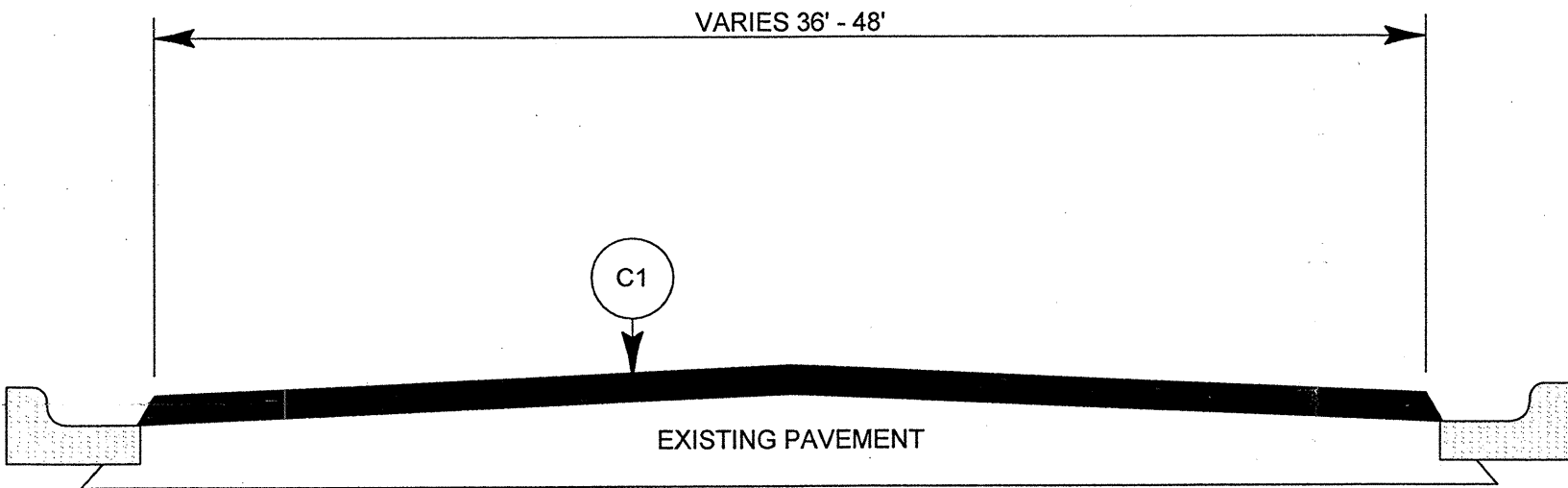
## THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	4685000000-E	4686000000-E		4710000000-E	4721000000-E	4725000000-E					4900000000-N	4900000000-N
					4" X 90 M WHITE THERMO LF	4" X 120 M WHITE THERMO LF	4" X 120 M YELLOW THERMO LF	24" X 120 M WHITE THERMO LF	THERMO MSG ONLY 120 M EA	THERMO LT ARROW 90 M EA	THERMO STR ARROW 90 M EA	THERMO RT ARROW 90 M EA	THERMO STR & RT ARROW 90 M EA	CRYSTAL & RED MARKERS EA	YELLOW & YELLOW MARKERS EA	
5CR.10321.7	Durham	1	NC 54	FROM FALCONBRIDGE RD TO SR 2290 (LEIGH FARM RD)	6,576	3,168	6,336	225	16	15	22	12	6		158	40
		2	NC 54	FROM SR 2290 (LEIGH FARM RD) TO BRIDGE OVER NEW HOPE CREEK	5,272		3,234	60		2	2	1			20	32
		3	NC 54	FROM BRIDGE OVER NEW HOPE CREEK TO BEGIN C&G WEST OF MANDY COURT	2,152		1,320									26
		4	NC 54	FROM C&G WEST OF MANDY COURT TO DRESDEN DRIVE		300	2,112			2					15	22
<b>TOTAL FOR PROJ NO. 5CR.10321.7</b>					<b>14,000</b>	<b>3,468</b>	<b>13,002</b>	<b>285</b>	<b>16</b>	<b>19</b>	<b>24</b>	<b>13</b>	<b>6</b>		<b>193</b>	<b>121</b>
<b>GRAND TOTAL</b>					<b>14,000</b>	<b>3,468</b>	<b>13,002</b>	<b>285</b>	<b>16</b>	<b>19</b>	<b>24</b>	<b>13</b>	<b>6</b>		<b>193</b>	<b>121</b>

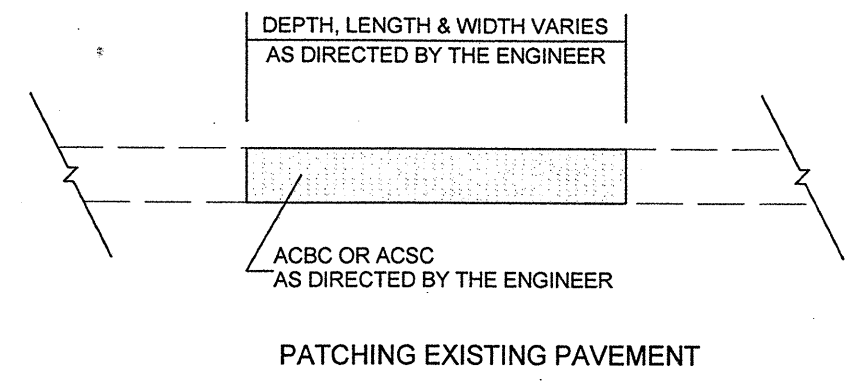
PROJECT NO. 5CR.10321.7	SHEET NO. 3	TOTAL SHEETS 4
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TYPICAL SECTION NO. 1

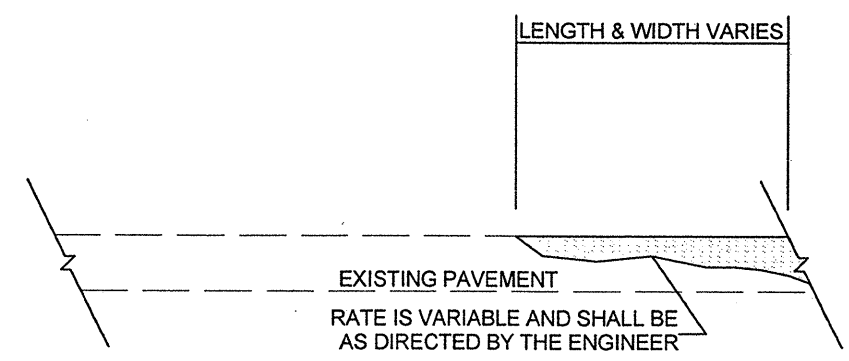
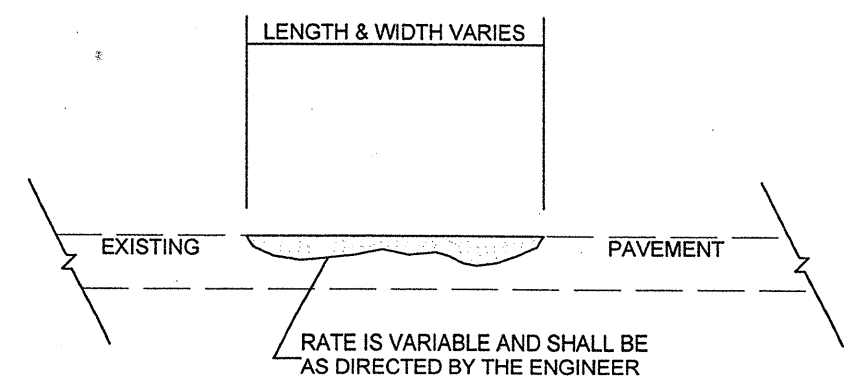


TYPICAL SECTION NO. 2

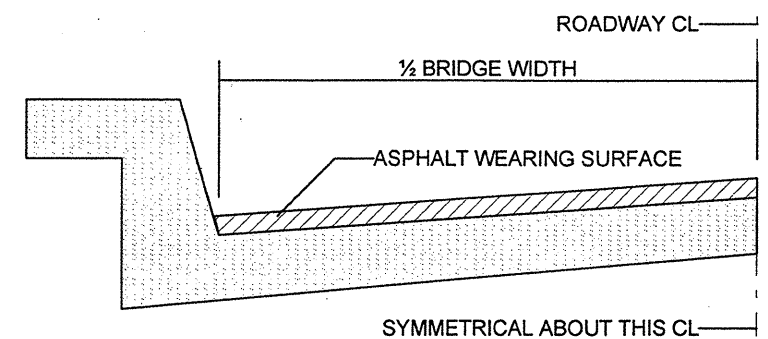


PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT THE AVERAGE RATE OF 168 LBS PER SQ YD.
S	SHOULDER RECONSTRUCTION.

PROJECT NO.	SHEET NO.	TOTAL SHEETS
5CR.10321.7	4	4



**ASPHALT CONCRETE SURFACE COURSE  
(LEVELING COURSE)**



**BRIDGE HALF TYPICAL SECTION**

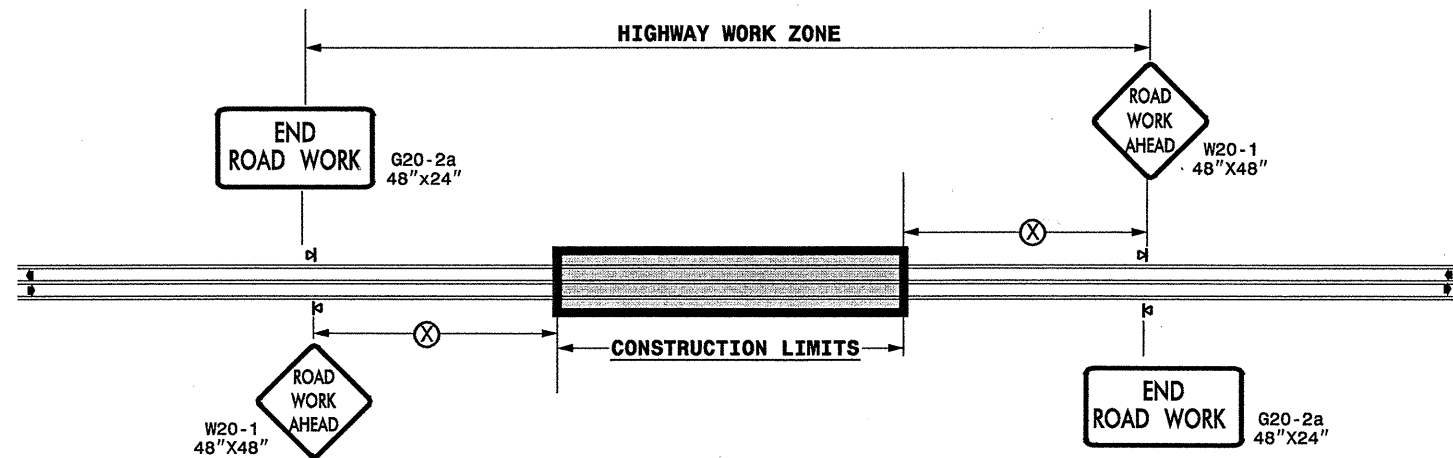
FOR BRIDGES WITH FLOOR DRAINS, CARE SHALL BE EXERCISED IN PLACING THE WEARING SURFACE AROUND FLOOR DRAINS SO AS NOT TO HINDER EFFECTIVE DRAINAGE. ALL DRAINS SHALL BE LEFT OPEN

THE PROPOSED WEARING SURFACE SHALL VARY IN THICKNESS AS NECESSARY TO PROVIDE A SMOOTH RIDING SURFACE. A THICKNESS OF NOT LESS THAN 5/8" SHALL BE PROVIDED. THE MAXIMUM THICKNESS SHALL PREFERABLY BE 1 1/2" UNLESS IT IS IMPRACTICAL TO PROVIDE A SMOOTH RIDING SURFACE OTHERWISE.

**NOTES**

ALL UNPAVED ROADS TO BE RESURFACED 50' FROM EDGE OF PAVEMENT OF MAIN PROJECT.  
 ALL PAVED S.R. ROADS TO BE RESURFACED TO THE ENDS OF THE RADII, OR AS DIRECTED BY THE ENGINEER.  
 EDGES, PAVEMENT WIDENING, INTERSECTIONS AND BRIDGE FLARES ARE INCLUDED IN THE TABLE OF QUANTITIES.  
 SHOULDERS AND DITCHES ARE TO BE CONSTRUCTED BY OTHERS UNLESS OTHERWISE INDICATED.  
 BRIDGES ARE TO BE RESURFACED AT LOCATIONS AND TO DEPTH AS DIRECTED BY THE ENGINEER

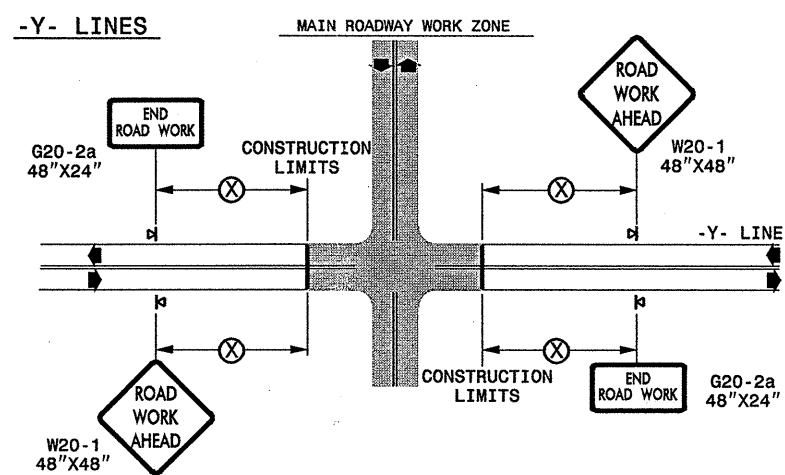
**TWO-WAY UNDIVIDED \*\* (L-LINES)**



POSTED SPEED LIMIT (M.P.H.)	RECOMMENDED MINIMUM SIGN SPACING
≤ 50	500'
≥ 55	1000'

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DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

**ROADWAYS INTERSECTING ALONG 2 WAY UNDIVIDED WORK ZONE (Y-LINES)**



**GENERAL NOTES**

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE PORTABLE WORK ZONE SIGNS ONLY WITH PORTABLE WORK ZONE SIGN STANDS SPECIFICALLY DESIGNED FOR ONE ANOTHER. PORTABLE WORK ZONE SIGNS MAY BE ROLL UP OR APPROVED COMPOSITE.
- PROVIDE PORTABLE WORK ZONE SIGN STANDS, PORTABLE SIGNS AND SIGN SHEETING WHICH ARE LISTED ON THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S APPROVED PRODUCT LIST OR ACCEPTED AS TRAFFIC QUALIFIED BY THE TRAFFIC CONTROL UNIT.
- \*\* TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON URBAN MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

**LEGEND**

◀ PORTABLE SIGN

➡ DIRECTION OF TRAFFIC FLOW

DETAIL DRAWING  
FOR TWO-WAY UNDIVIDED  
WORK ZONE WARNING SIGNS

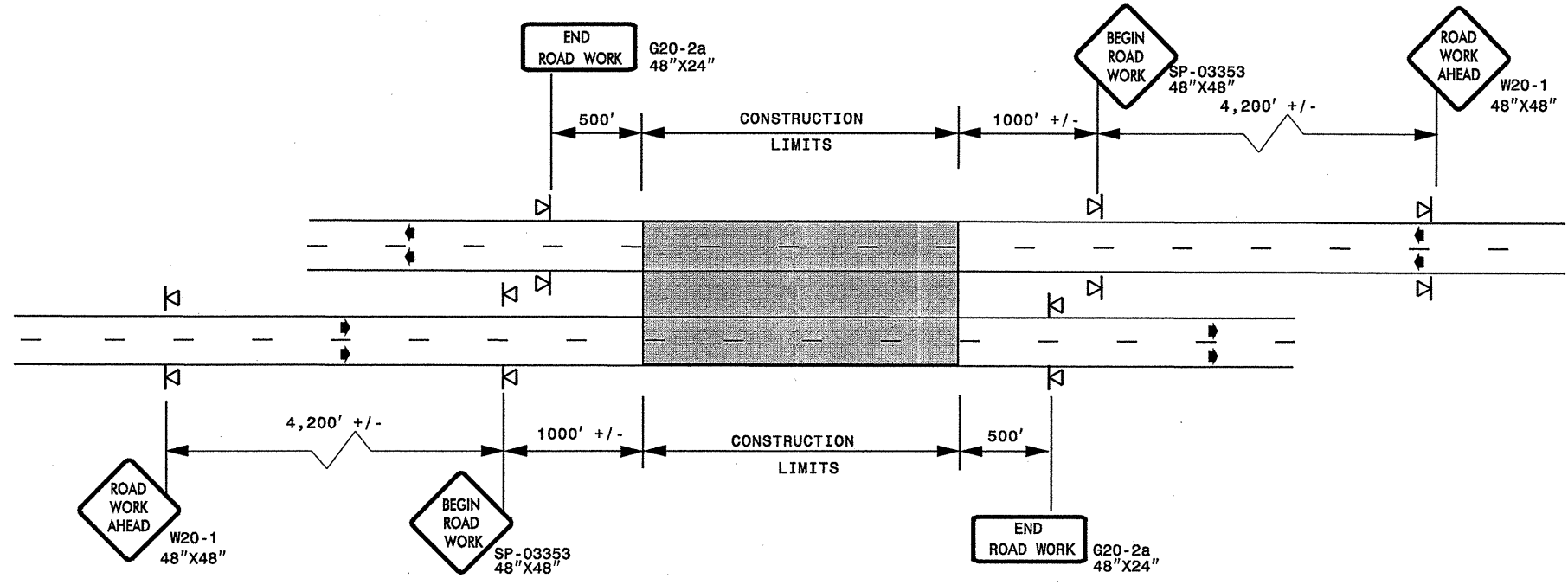
SHEET 1 OF 1

APPROVED: _____	DATE: _____	DETAIL DRAWING FOR TWO-WAY UNDIVIDED ADVANCED WORK ZONE WARNING SIGNS		
SEAL 	SCALE: NONE			
	DATE: _____			REVISIONS
	DWG. BY: _____			7-98 10/01
	DESIGN BY: _____			10-98 03/04
REVIEWED BY: _____	01/01 11/04	CADD FILE		

12-DEC-2006 17:42  
 \\DOT\DFSROOT\groups\wz\cc\design\group4\resurfacing\resurfacing2006\div05\scr10321\durham\scr10321\_2wayundivurbfr.wys\july2006.dgn  
 psymore AT WZTC206427

**ADVANCED WORK ZONE WARNING SIGNING FOR FREEWAYS (4 LANES OR GREATER)**

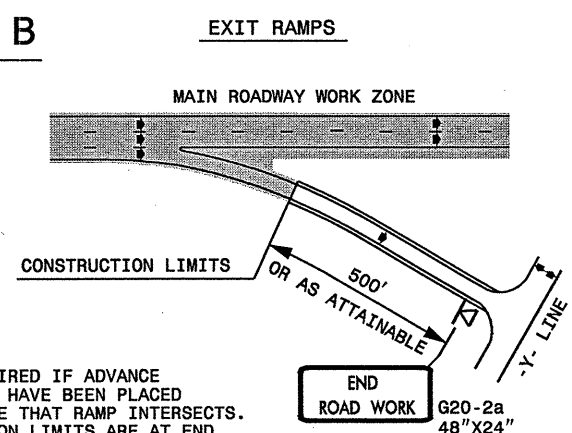
**DETAIL A**



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DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

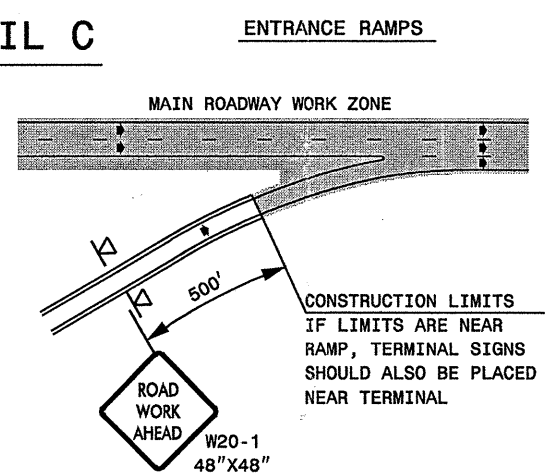
**ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)**

**DETAIL B**



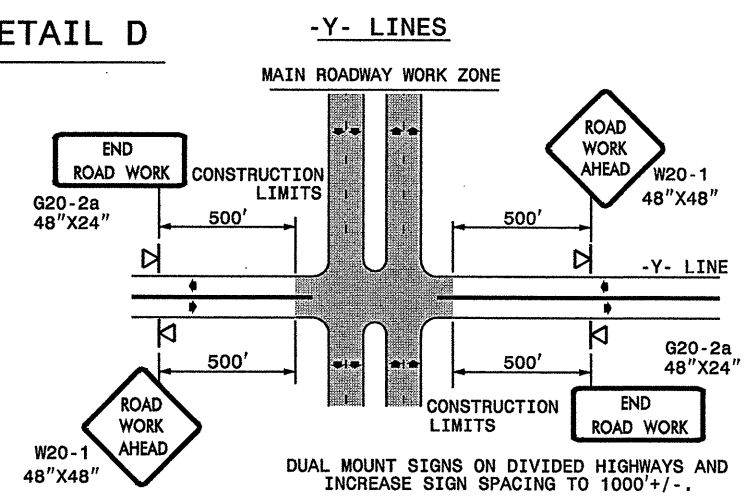
NOTE:  
SIGN NOT REQUIRED IF ADVANCE WARNING SIGNS HAVE BEEN PLACED ALONG -Y- LINE THAT RAMP INTERSECTS. IF CONSTRUCTION LIMITS ARE AT END OF RAMP, PLACE SIGN AT END OF RAMP.

**DETAIL C**



CONSTRUCTION LIMITS IF LIMITS ARE NEAR RAMP, TERMINAL SIGNS SHOULD ALSO BE PLACED NEAR TERMINAL

**DETAIL D**



DUAL MOUNT SIGNS ON DIVIDED HIGHWAYS AND INCREASE SIGN SPACING TO 1000'+/-.

**GENERAL NOTES**

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE PORTABLE WORK ZONE SIGNS ONLY WITH PORTABLE WORK ZONE SIGN STANDS SPECIFICALLY DESIGNED FOR ONE ANOTHER. PORTABLE WORK ZONE SIGNS MAY BE ROLL UP OR APPROVED COMPOSITE.
- PROVIDE PORTABLE WORK ZONE SIGN STANDS, PORTABLE SIGNS AND SIGN SHEETING WHICH ARE LISTED ON THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S APPROVED PRODUCT LIST OR ACCEPTED AS TRAFFIC QUALIFIED BY THE TRAFFIC CONTROL UNIT.
- \*\* TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

**LEGEND**

- ◁ PORTABLE SIGN
- ➔ DIRECTION OF TRAFFIC FLOW

**DETAIL DRAWING  
FOR FREEWAYS  
WORK ZONE WARNING SIGNS  
(SHORT-DURATION LANE CLOSURES)**

SHEET 1 OF 1

APPROVED: _____	DATE: _____	<b>DETAIL DRAWING FOR FREEWAYS WORK ZONE WARNING SIGNS</b>	
SEAL	SCALE: NONE		REVISIONS
	DATE: _____		7-98    10/01
	DWG. BY: _____		10-98    03/04
	DESIGN BY: _____		01/01    11/04
REVIEWED BY: _____	DATE: _____		

I:\DEC-2006\1743\GROUPS-WZTCCC\design\group4\resurfacing\resurfacing2006\div05\scr10321\tr\ee4\onesgreat\July2006.dgn

## SP 03353

<p>SIGN NUMBER: SP-03353 TYPE: A QUANTITY: 1</p> <p>SIGN WIDTH: 4'-0" HEIGHT: 4'-0" TOTAL AREA: 16.0 Sq.Ft.</p> <p>BORDER TYPE: FLUSH RECESS: 0.59" WIDTH: 0.75" RADIUS: 1.38"</p> <p>NO. Z BARS: N/A LENGTH: N/A</p> <p>USE NOTES: 2, 4 1. Legend and border shall be direct applied Type VII reflective sheeting. 2. Legend and border shall be direct applied non-reflective sheeting. 3. Shields shall be Type VII reflective sheeting on 0.032" (0.8mm) aluminum and demountable. 4. Background shall be Type VII reflective sheeting. 5. Background shall be Type I reflective sheeting. 6. Center arrow(s) vertically on sign. 7. Bottom panel shall be yellow Type III sheeting. Legend shall be direct applied black non-reflective sheeting. Yellow panel is:</p>	<p>BACKG COLOR: Fluorescent Orange COPY COLOR: Black</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <th>SYMBOL</th> <th>X</th> <th>Y</th> <th>WID</th> <th>HT</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>	SYMBOL	X	Y	WID	HT																																									<p>DESIGN BY: CL DOWNEY PROJECT ID: ALL PROJECTS</p> <p>CHECKED BY: CHECKED DIV: DIV</p> <p>STD #: W20-1 DATE: Aug 20, 2003</p> <div style="text-align: center;"> </div>																																																				
SYMBOL	X	Y	WID	HT																																																																																															
<p>LETTER POSITIONS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="11">Letter spacings are to start of next letter</th> <th>Series/Size</th> <th>Text Length</th> </tr> </thead> <tbody> <tr> <td> </td><td>B</td><td>E</td><td>G</td><td>I</td><td>N</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td>C7</td><td> </td> </tr> <tr> <td>22.4</td><td>5.3</td><td>4.6</td><td>5.4</td><td>2.5</td><td>3.8</td><td>22.4</td><td> </td><td> </td><td> </td><td> </td><td> </td><td>21.6</td><td> </td> </tr> <tr> <td> </td><td>R</td><td>O</td><td>A</td><td>D</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td>C7</td><td> </td> </tr> <tr> <td>23.4</td><td>5</td><td>5.2</td><td>5.6</td><td>3.8</td><td>23.4</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td>19.8</td><td> </td> </tr> <tr> <td> </td><td>W</td><td>O</td><td>R</td><td>K</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td>C7</td><td> </td> </tr> <tr> <td>22.6</td><td>6.4</td><td>5.6</td><td>5.2</td><td>4</td><td>22.6</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td>21.2</td><td> </td> </tr> </tbody> </table> <p>Spacing Factor is 1 unless specified otherwise</p> <p style="font-size: small;">FILENAME: SPECISHAK NORTH CAROLINA D.O.T. SIGN DETAIL</p>			Letter spacings are to start of next letter											Series/Size	Text Length		B	E	G	I	N							C7		22.4	5.3	4.6	5.4	2.5	3.8	22.4						21.6			R	O	A	D								C7		23.4	5	5.2	5.6	3.8	23.4							19.8			W	O	R	K								C7		22.6	6.4	5.6	5.2	4	22.6							21.2	
Letter spacings are to start of next letter											Series/Size	Text Length																																																																																							
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22.6	6.4	5.6	5.2	4	22.6							21.2																																																																																							

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

DETAIL DRAWING FOR  
WORK ZONE SIGNS  
BEGIN ROAD WORK

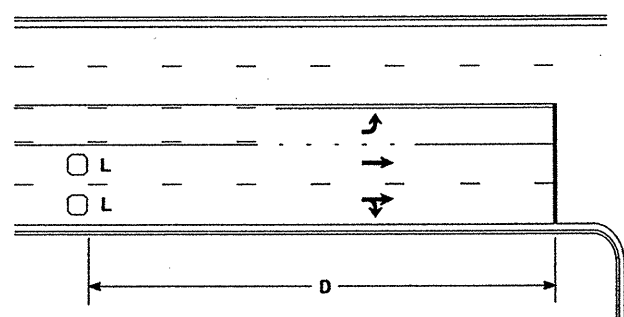
### GENERAL NOTES FOR SIGN SP-03353 "BEGIN ROAD WORK"

- SIGN SP-03353 "BEGIN ROAD WORK" ONLY APPLIES TO FULL CONTROL AND PARTIAL CONTROL OF ACCESS ROADWAYS
- WHEN USED, INSTALL SIGN SP-03353 "BEGIN ROAD WORK" ACCORDING TO DETAIL FOR FREEWAY WORK ZONE SIGNS

APPROVED: _____	DATE: _____	DETAIL DRAWING FOR ADVANCED WORK ZONE WARNING SIGN DESIGNS	
	SCALE: NONE		REVISIONS
	DATE: 08/03		04/04
	DWG. BY:		11/04
	DESIGN BY:		
REVIEWED BY:			

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DSEYMONS A1 WZT06421

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

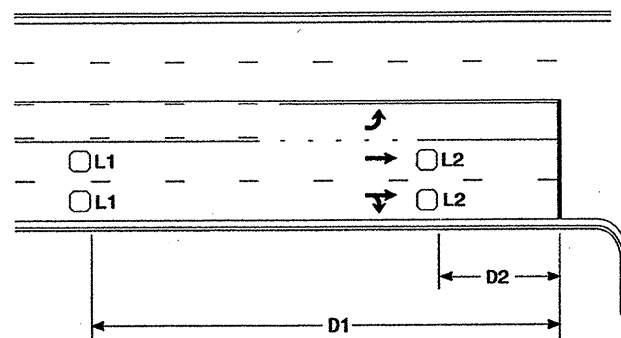


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

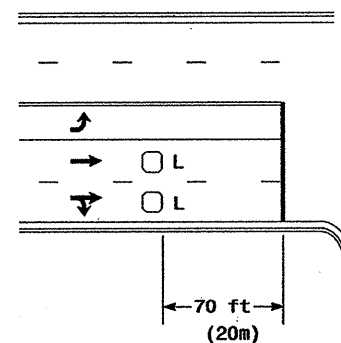


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

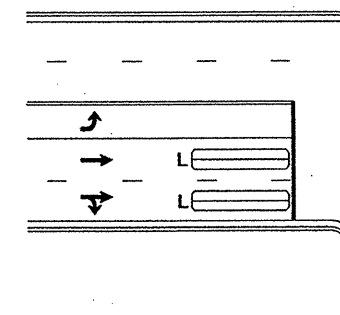
"Stretch" Operation

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



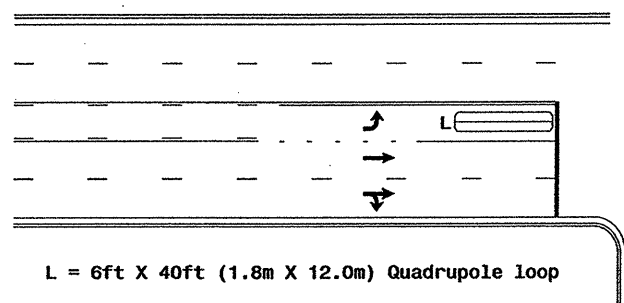
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



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

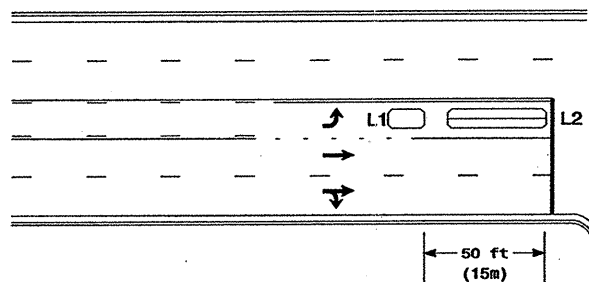
### Left Turn Lane Detection



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

Presence Loop Detection

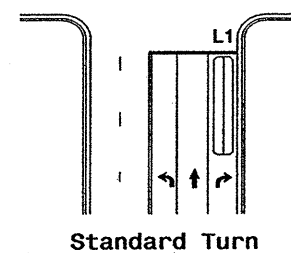
OR



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

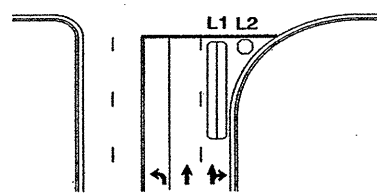
Queue Loop Detection

### Right Turn Lane Detection

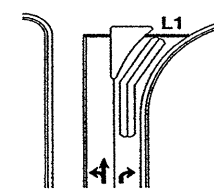


Standard Turn

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

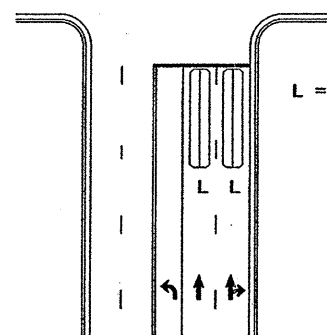


Wide Radius Turn



Channelized Turn

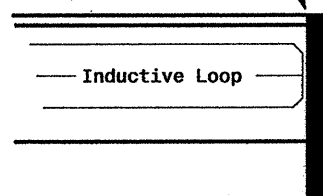
### Side Street Detection



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

	<h4>Typical Loop Locations</h4>			
	PLAN DATE: June 2006 PREPARED BY: P L Alexander	REVIEWED BY:		SCALE: N/A
	REVISIONS: Revise pavement markings	INT. DATE: 12/19/06		SIGNATURE: [Signature] DATE: 6/6/06