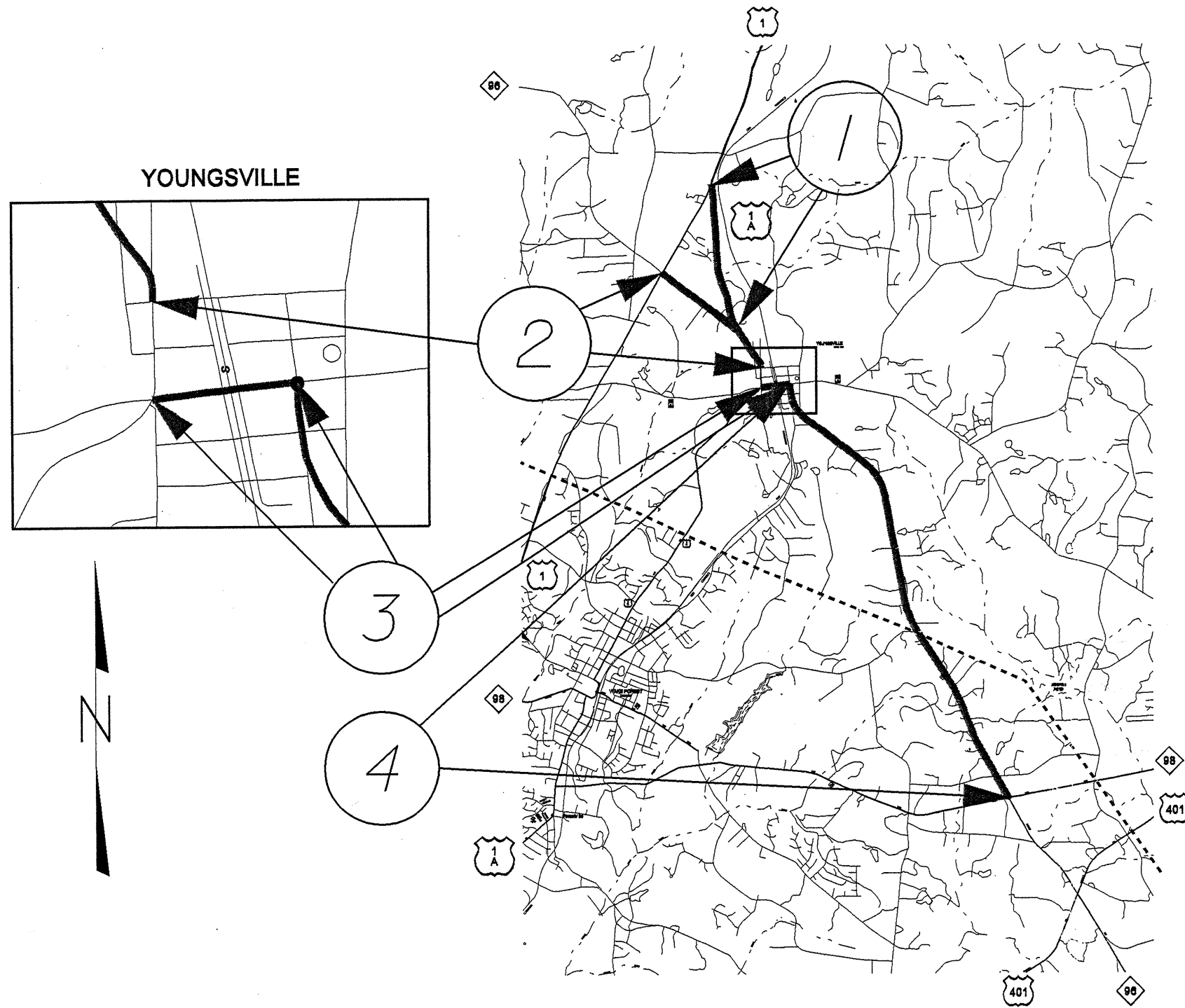


# MA05022R

## 37669

WBS ELEMENT	SHEET NO.	TOTAL NO.
37669	1	
MA05022R		

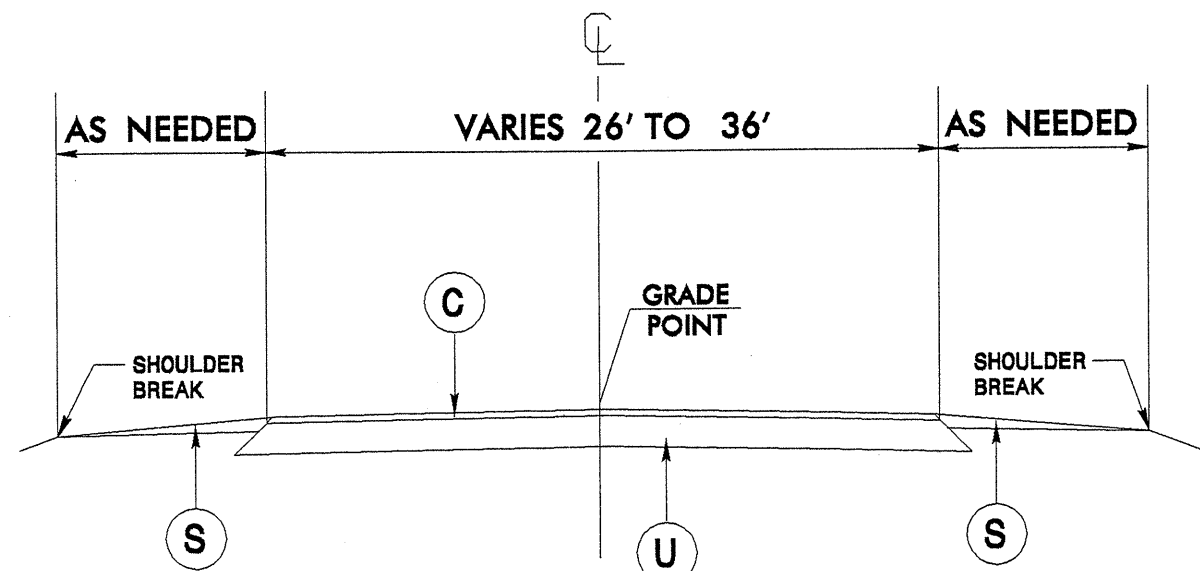
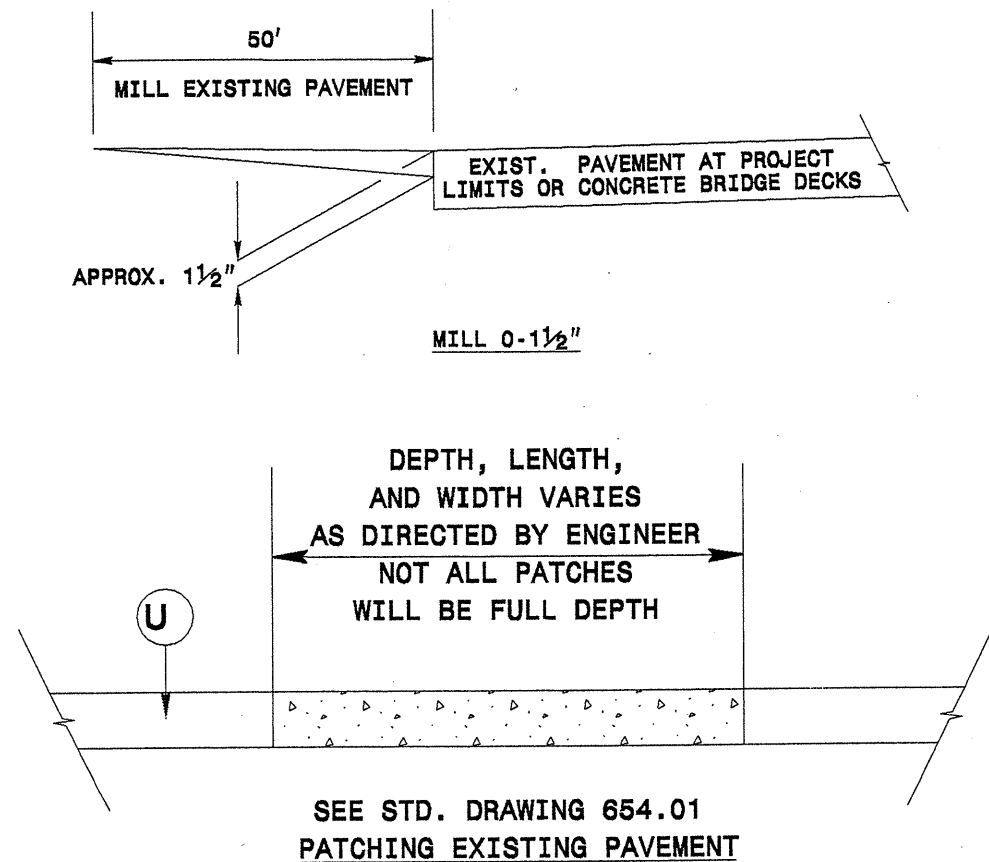


*Franklin and Wake Counties*

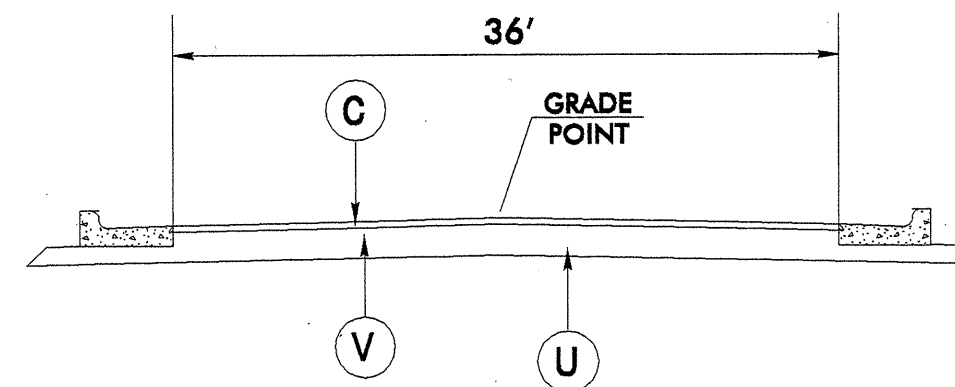
WBS Element	SHEET NO.	TOTAL SHEETS
37869	2	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
MA05022R		

**NOTES**

ALL UNPAVED S.R. 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.



TYPICAL NO. 1



TYPICAL NO. 2

**PAVEMENT SCHEDULE**

C	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
U	EXISTING PAVEMENT.
V	MILLING 2.5"
S	SHOULDER RECONSTRUCTION.

WBS Element	SHEET NO.	TOTAL NO.
37669	3	
MA05022R		

### SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LENGTH MI	WIDTH FT	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	2.5" MILLING SY	INCIDENTAL MILLING SY	SURFACE COURSE, S9.5B TONS	PG 64-22 PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	MANHOLES EA	SEED & MULCHING AC	INDUCTIVE LOOP LF
37669	Franklin	1	US 1A	FROM US 1 TO NC 96	1	1.5	26	75	3		800	4,075	244	200		2.25	
		2	NC 96	FROM US 1 TO WINSTON ST	1	1.4	26	70	2.8		1050	3,803	228	200		2.10	1,200
		3	NC 96	C&G SECTION THROUGH YOUNGSVILLE	2	0.3	36			6336		1,072	64	30	5		2,400
	Franklin Wake	4	NC 96	FROM MAIN ST IN YOUNGSVILLE TO NC 98 IN WAKE CO.	1	5.09	26	255	10.18		3600	13,827	830	700		7.64	
<b>TOTAL FOR PROJ NO. 37669</b>						<b>8.29</b>		<b>400</b>	<b>15.98</b>	<b>6336</b>	<b>5450</b>	<b>22,777</b>	<b>1,366</b>	<b>1,130</b>	<b>5</b>	<b>11.99</b>	<b>3,600.00</b>
<b>GRAND TOTAL</b>						<b>8.29</b>		<b>400</b>	<b>15.98</b>	<b>6336</b>	<b>5450</b>	<b>22,777</b>	<b>1,366</b>	<b>1,130</b>	<b>5</b>	<b>11.99</b>	<b>3,600.00</b>

### THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	4685000000-E	4686000000-E		4705000000-E	4721000000-E	4725000000-E	4810000000-E	4830000000-E	4835000000-E	4840000000-N	4900000000-N	4900000000-N
					4" X 90 M WHITE THERMO LF	4" X 120 M YELLOW THERMO LF	4" X 120 M WHITE THERMO LF	16" X 120 M WHITE THERMO LF	THERMO RXR 120 M EA	THERMO LT ARROW 90 M EA	4" YELLOW PAINT LF	16" WHITE PAINT LF	24" WHITE PAINT LF	PAINT MSG RXR EA	YELLOW & YELLOW MARKERS EA	CRYSTAL & RED MARKERS EA
37669	Franklin	1	US 1A	FROM US 1 TO NC 96	16,140	15,840	100			2	15,840				99	10
		2	NC 96	FROM US 1 TO WINSTON ST	15,064	14,784	200			2	14,784				92	10
		3	NC 96	C&G SECTION THROUGH YOUNGSVILLE		3,168		200	4		3,168	100	122	4		
	Franklin Wake	4	NC 96	FROM MAIN ST IN YOUNGSVILLE TO NC 98 IN WAKE CO.	54,768	53,750	300	200	4	4	53,750	100	122	4	336	20
<b>TOTAL FOR PROJ NO. 37669</b>					<b>85,972</b>	<b>87,542</b>	<b>300</b>	<b>200</b>	<b>4</b>	<b>4</b>	<b>87,542</b>	<b>100</b>	<b>122</b>	<b>4</b>	<b>527</b>	<b>20</b>
<b>GRAND TOTAL</b>					<b>85,972</b>	<b>87,542</b>	<b>300</b>	<b>200</b>	<b>4</b>	<b>4</b>	<b>87,542</b>	<b>100</b>	<b>122</b>	<b>4</b>	<b>527</b>	<b>20</b>

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

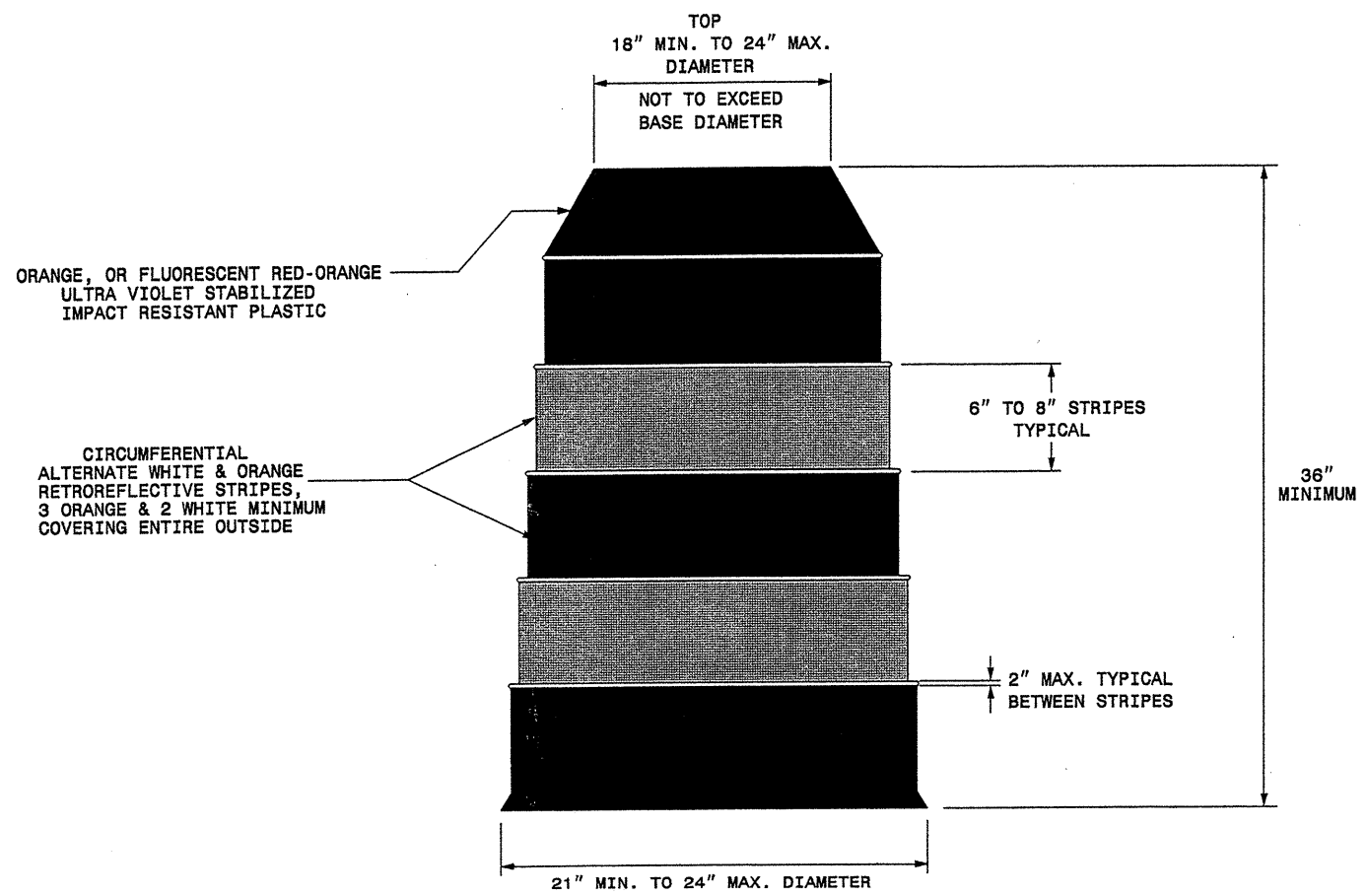
ENGLISH STANDARD DRAWING FOR  
**DRUMS**

SHEET 1 OF 1  
**1130D01**

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

ENGLISH STANDARD DRAWING FOR  
**DRUMS**

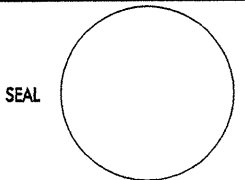
SHEET 1 OF 1  
**1130D01**



**GENERAL NOTES**

- BALLASTING SHALL BE ACHIEVED BY THE SAND BAG, TIRE-SIDEWALL BALLAST, OR PREFORMED WEIGHTED BASE BALLASTING METHODS. DO NOT PLACE BALLAST ON TOP OF THE DRUM.
- IF NECESSARY PLACE THE NAME OF THE AGENCY, CONTRACTOR, OR SUPPLIER ON NON-RETROREFLECTIVE DRUM SURFACES. SHOW THE LETTERS AND NUMBERS USING A NON-RETROREFLECTIVE COLOR AND NOT OVER 2" IN HEIGHT.

07-APR-2006 09:26  
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pseymer AT WZT206427

APPROVED: _____	DATE: _____	<b>REPLACEMENT DETAIL FOR RSD 1130.01</b>	
			
SCALE: NONE	DATE: 4/02	REVISIONS	
DWG. BY: MMM	DESIGN BY: MMM	11/02	
REVIEWED BY: MMM			

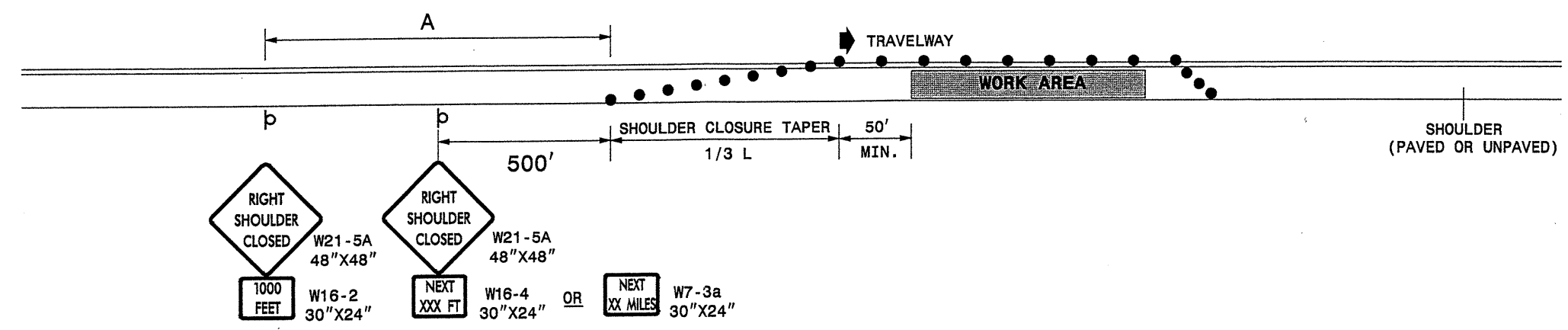
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

1-05

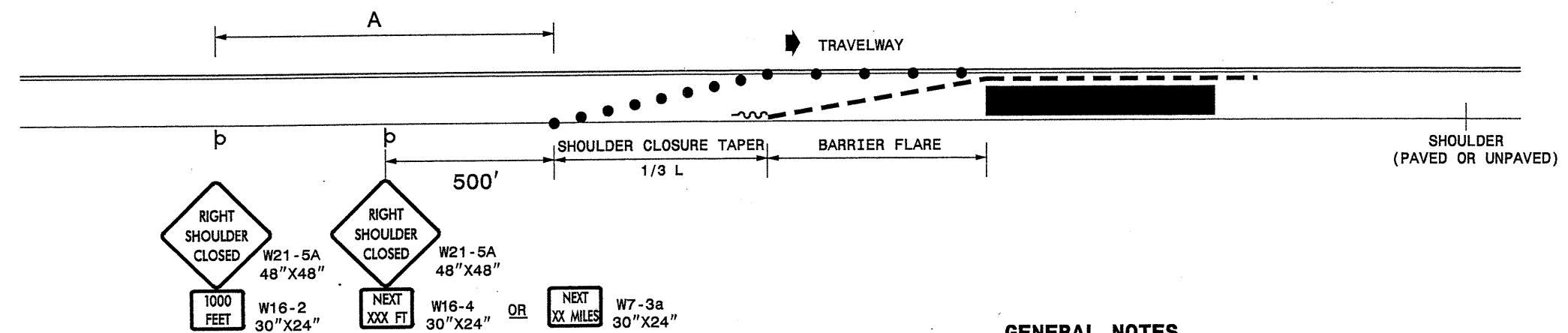
ENGLISH STANDARD DRAWING FOR  
**TEMPORARY SHOULDER CLOSURES**

SHEET 1 OF 1  
**1101D04**

**SHOULDER CLOSURES UTILIZING DRUMS**



**SHOULDER CLOSURES UTILIZING TEMPORARY BARRIER**



**GENERAL NOTES**

- PLACE SHOULDER CLOSURE SIGNS ON THE SAME SIDE AS THE SHOULDER THAT IS CLOSED.
- PLACE DRUMS IN THE SHOULDER TAPER AT THE MAXIMUM SPACING EQUAL IN FEET TO THE POSTED SPEED LIMIT. THE MAXIMUM SPACING OF DRUMS ALONG THE WORK AREA AND BARRIER FLARE IS EQUAL IN FEET TO 2 TIMES THE POSTED SPEED LIMIT.
- FLARE THE APPROACH END OF PORTABLE CONCRETE BARRIER BEYOND THE SHOULDER AND USE A CRASH CUSHION FOR PROTECTION IF THE EXPOSED END OF THE BARRIER IS WITHIN THE "CLEAR ZONE".
- USE STATIONARY SIGNS FOR LONG TERM OPERATIONS (LONGER THAN 3 DAYS).
- REFER TO STD. 1101.11 SHEETS 1, 3, & 4, FOR "L" DISTANCE, BARRIER FLARE RATES, AND SIGN SPACING.

**LEGEND**

- ~ TEMPORARY CRASH CUSHION
- - - PORTABLE CONCRETE BARRIER
- DRUM
- Ⓟ STATIONARY OR PORTABLE SIGN
- ➔ DIRECTION OF TRAFFIC FLOW

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

1-05

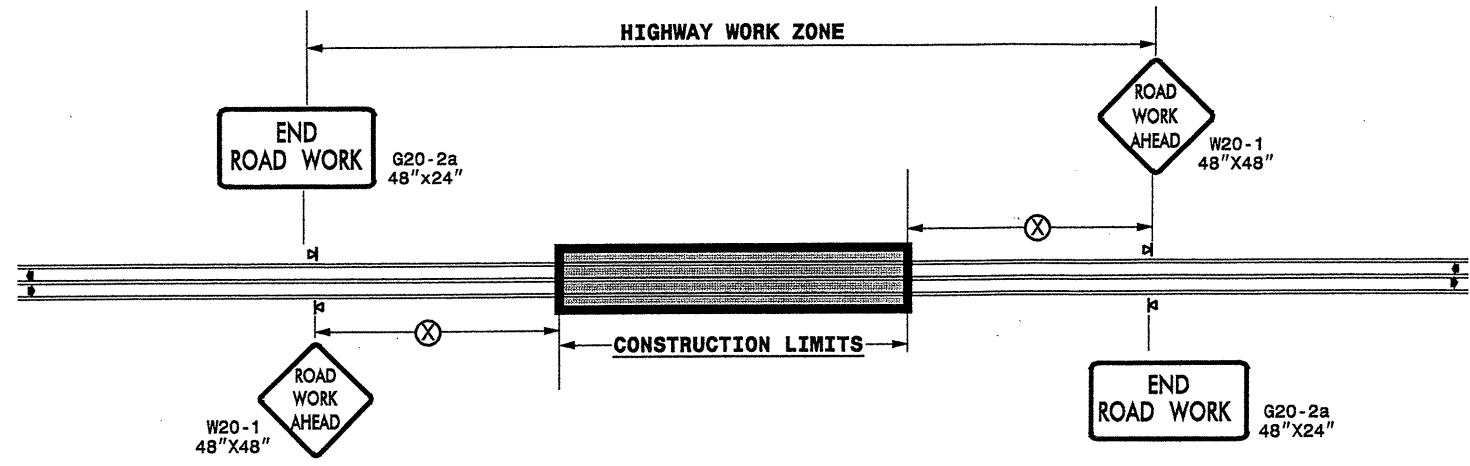
ENGLISH STANDARD DRAWING FOR  
**TEMPORARY SHOULDER CLOSURES**

SHEET 1 OF 1  
**1101D04**

APPROVED:	DATE:	<b>REPLACEMENT DETAIL FOR RSD 1101.04</b>	
SCALE:	NONE		
DATE:	11/04		
DWG. BY:	PS		
DESIGN BY:	JPG		
REVIEWED BY:	MMM	REVISIONS	
		08/05	

07-APR-2006 09:27 \\dot\dfsroot\groupp\design\group4\resur\facin\div05\37669par\1101\1101d04\shoulder\_closures05.dgn psey/mor e AT WZTC206427

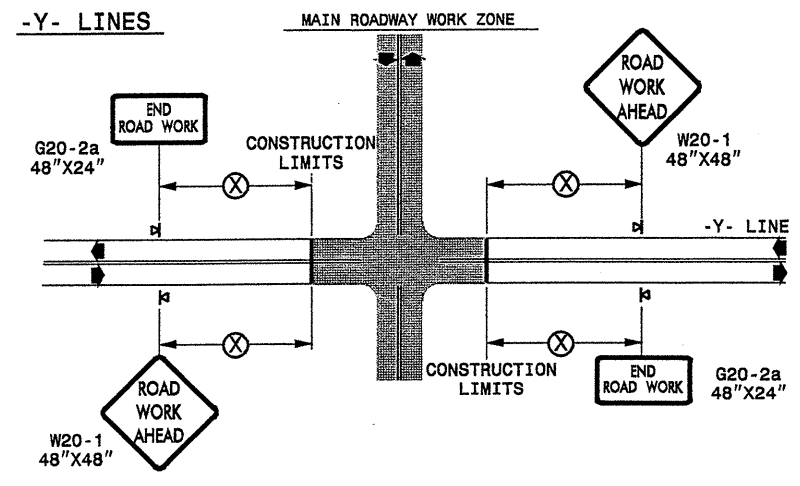
**TWO-WAY UNDIVIDED \*\* (L-LINES)**



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

STATE OF NORTH CAROLINA  
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.

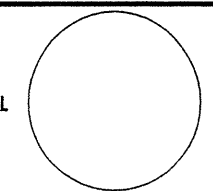
**LEGEND**

◀ 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		REVISIONS	
SEAL 			SCALE: NONE	7-98
	DATE:	10-98	03/04	
	DWG. BY:	01/01	11/04	
	DESIGN BY:			
REVIEWED BY:				

07-APR-2006 09:29  
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 pseymore AT WZTCC206427

# TWO LANE, TWO WAY WORK ZONE (L-LINES)

FURNISHED BY THE DEPARTMENT

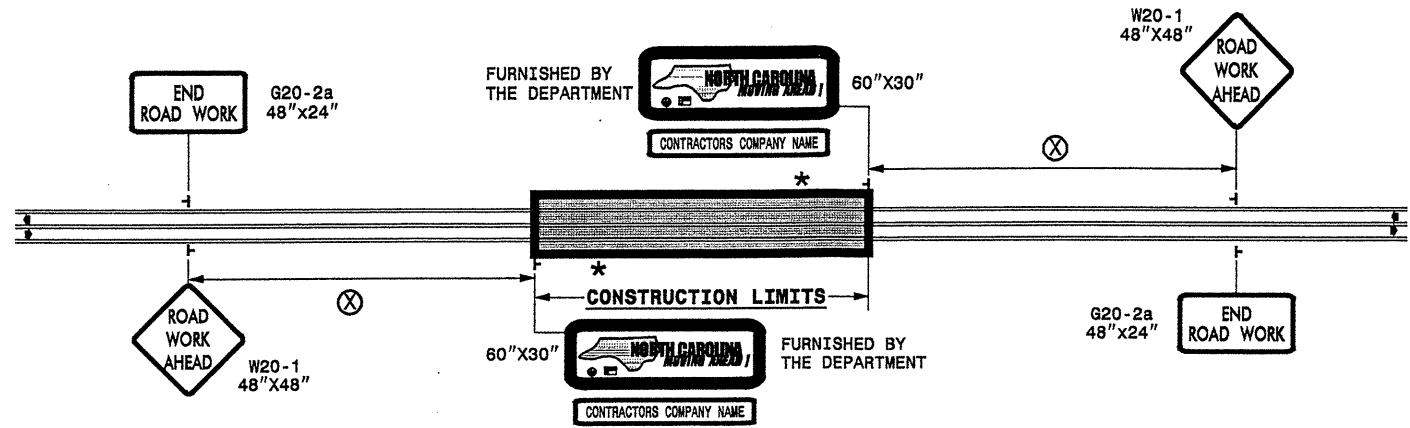


60" X 30"

---

CONTRACTORS COMPANY NAME

60" Max. X 12"



POSTED SPEED LIMIT (M.P.H.)	RECOMMENDED MINIMUM SIGN SPACING
P.S.L. ≤ 50	⊗
P.S.L. ≥ 55	350'
	500'

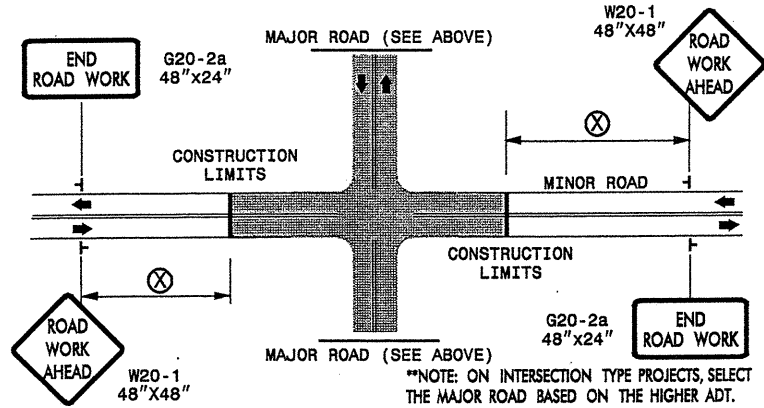
**\* ROAD WORK G20-1A 60"X24"**  
NEXT XX MILES

THIS SIGN TO BE USED ON PROJECTS LONGER THAN 2 MILES  
THE NUMBER DISPLAYED ON THE SIGN IS TO BE A WHOLE NUMBER ROUNDED UP TO THE NEXT MILE  
IT'S TO BE LOCATED 1,500 FEET INSIDE OF THE CONSTRUCTION LIMITS

PROJ. REFERENCE NO. 37669	SHEET NO. NCMA-1
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STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

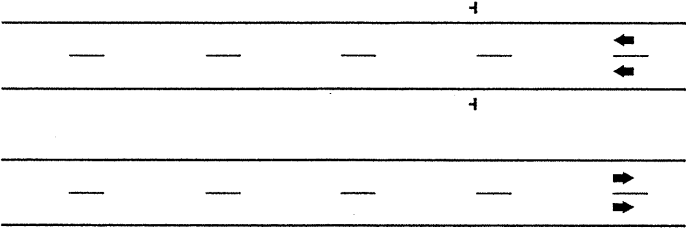
# INTERSECTIONS (-Y- LINES)



# FREEWAYS/INTERSTATES

DUAL MOUNT "ROAD WORK AHEAD" SIGNS 1,000' IN ADVANCE OF PROJECT LIMITS

DUAL MOUNT "MOVING AHEAD" SIGNS 500' IN ADVANCE OF PROJECT LIMITS



## 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.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT OVERNIGHT. FOR SHORT-TERM DAILY MAINTENANCE TYPE OPERATIONS, THIS SIGNING APPLICATION IS OPTIONAL; MAY USE ONLY APPLICABLE ROADWAY STANDARD DRAWINGS INSTEAD. HOWEVER, IF THIS SIGNING APPLICATION IS USED, SIGNS MAY BE PORTABLE MOUNTED. 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.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE 3LB STEEL U-CHANNEL POST OR 4" X 4" WOOD POST FOR ALL WORK ZONE SIGNS. 3LB STEEL U-CHANNEL POSTS MUST MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 1094-1(B), MAY BE GALVANIZED STEEL, OR MAY BE PAINTED GREEN BY THE POST MANUFACTURER. SQUARE STEEL TUBING POSTS HAVING EQUIVALENT STRENGTH OF THE 3 LB STEEL U-CHANNEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATION "WORK ZONE SIGNS" SECTION 1110.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01. REMOVE ENTIRE POST WHEN REMOVING SIGNS WITH SPLICED POSTS.
- DO NOT BACK BRACE SIGN SUPPORTS.

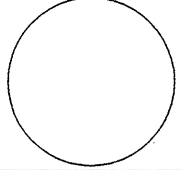

**LEGEND**

└ STATIONARY SIGN

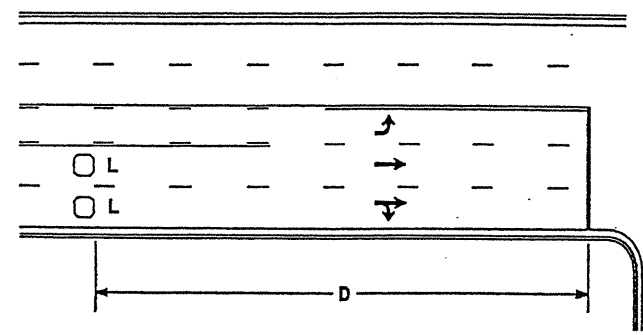
◀ DIRECTION OF TRAFFIC FLOW

DETAIL DRAWING FOR ADVANCE  
WARNING WORK ZONE SIGNS

SHEET 1 OF 1

APPROVED: _____	DATE: _____	<b>ADVANCE WARNING WORK ZONE SIGNS FOR "MOVING AHEAD"</b>	
SEAL 	SCALE: NONE		REVISIONS
	DATE: 07/03		11/04
	DWG. BY: JSK		12/04
	DESIGN BY: JSK		
REVIEWED BY: SK			

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

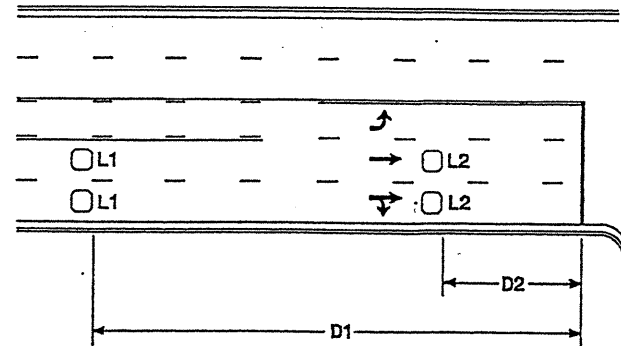


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

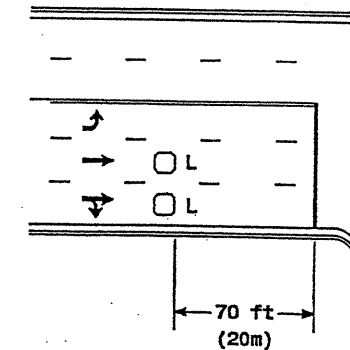


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

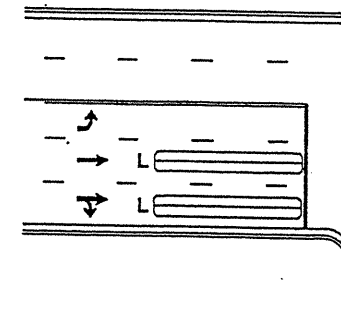
"Stretch" Operation

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



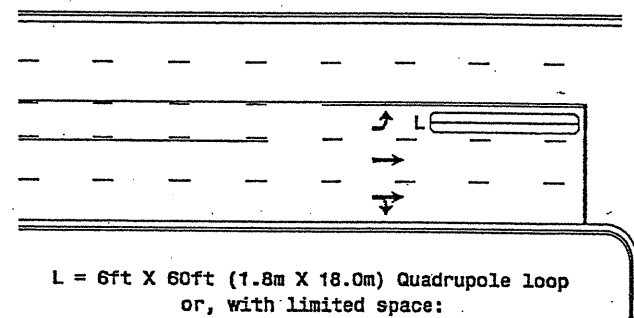
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



L = 6ft X 60ft (1.8m X 18.0m)  
Quadrupole loop, wired separately

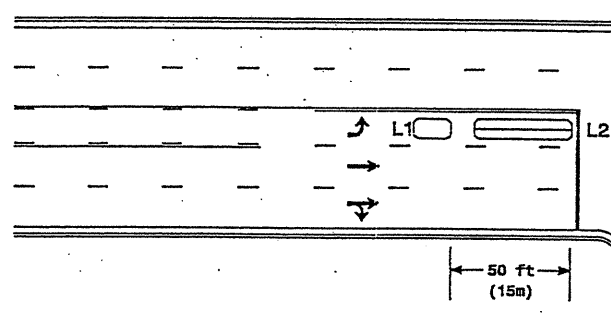
### Left Turn Lane Detection



L = 6ft X 60ft (1.8m X 18.0m) Quadrupole loop  
or, with limited space:  
6ft X 50ft (1.8m X 15.0m) Quadrupole loop  
or  
6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Presence Loop Detection

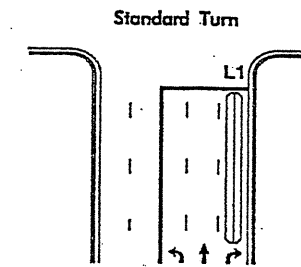
OR



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

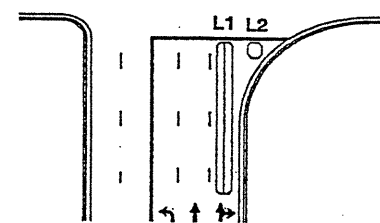
Queue Loop Detection

### Right Turn Lane Detection

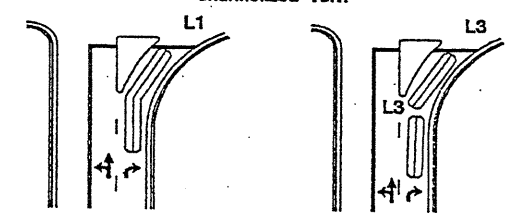


L1 = 6ft X 60ft (1.8m X 18.0m) Quadrupole loop  
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop  
Wired separately  
L3 = 6ft X 30ft (1.8m X 9.0m) Quadrupole loop  
Wired in series

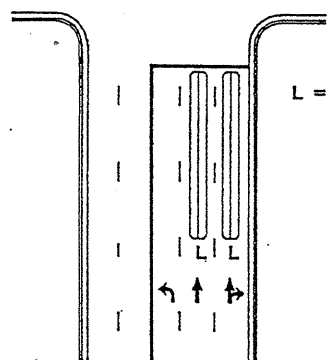
Wide Radius Turn



Channelized Turn



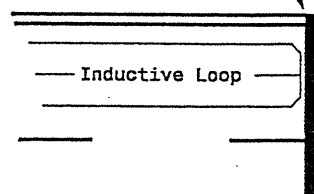
### Side Street Detection



L = 6ft X 60ft (1.8m X 18.0m)  
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 permitted or  
exclusive/permitted 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

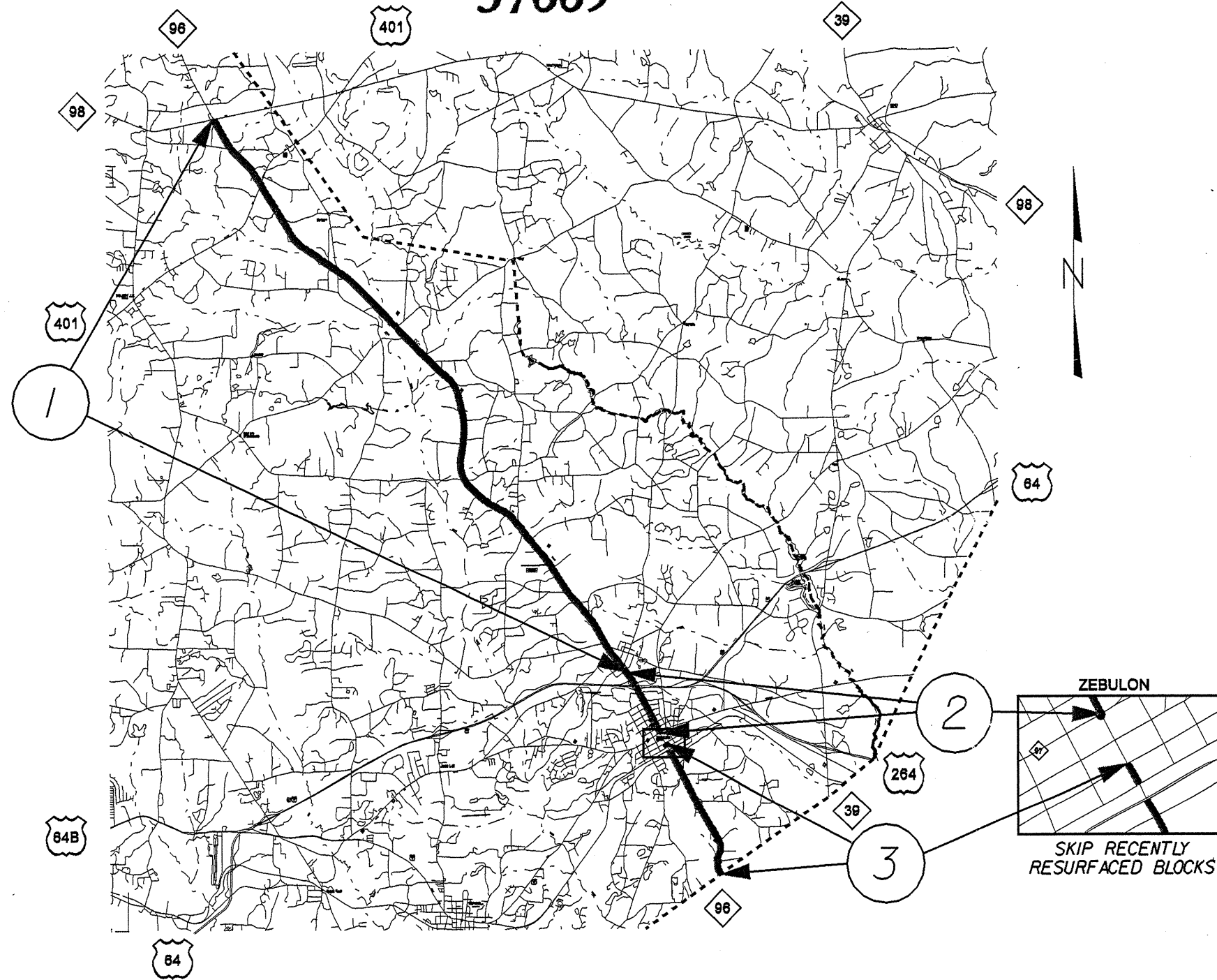
	<p>Typical Loop Locations</p>		
	<p>PLAN DATE: July 2003</p>	<p>REVIEWED BY:</p>	
<p>PREPARED BY: P. L. Alexander</p>	<p>REVIEWED BY:</p>	<p>DATE: 7/15/03</p>	<p>SIGNATURE: P. L. Alexander</p>
<p>REVISIONS:</p>	<p>INIT. DATE:</p>	<p>SIG. INVENTORY NO.:</p>	<p>DATE:</p>



WBS ELEMENT	SHEET NO.	TOTAL SHEETS
37669	1	
STATE PROJ. NO.		
MA05022R		

# MA05022R

## 37669

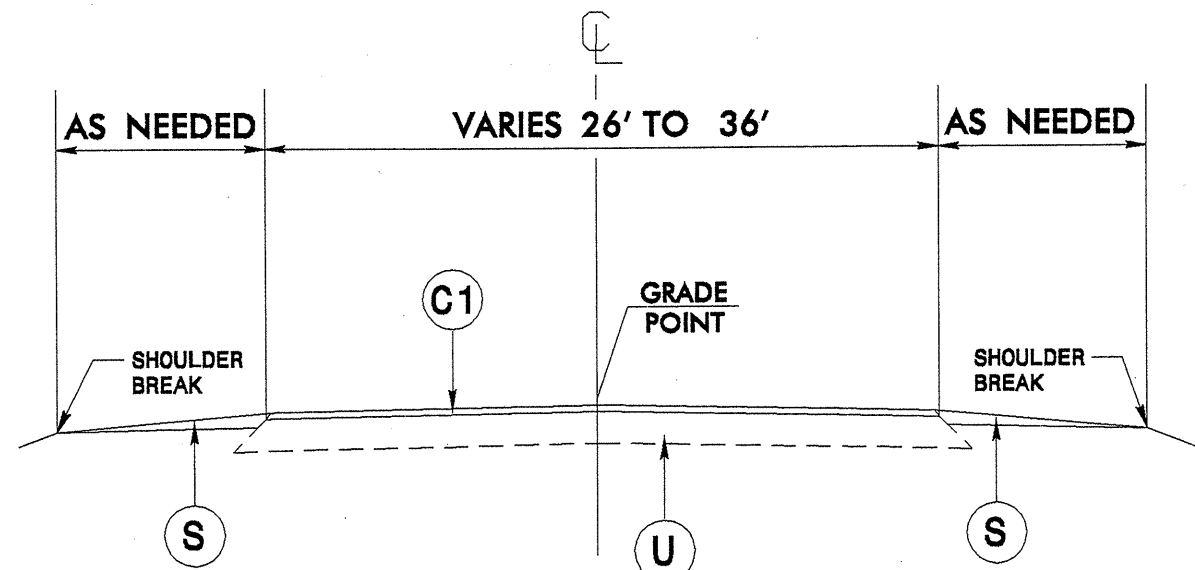
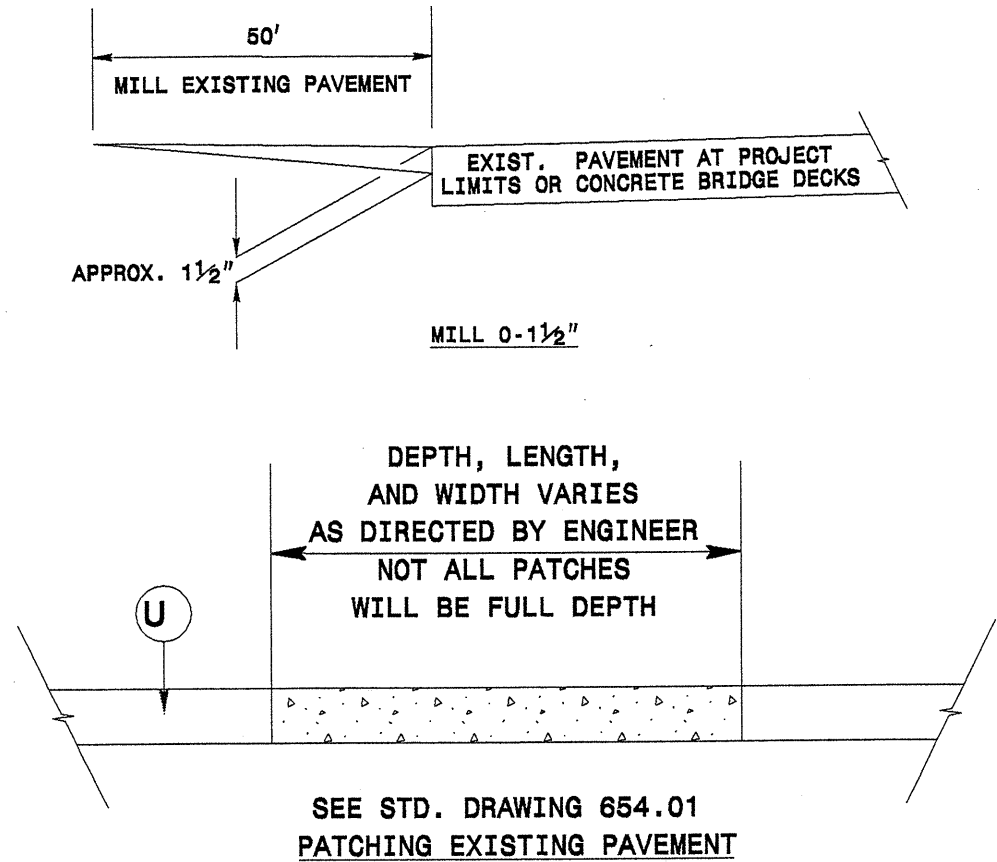


**Wake County**

WBS ELEMENT	SHEET NO.	TOTAL SHEETS
37888	2	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
MA05022R		

**NOTES**

ALL UNPAVED S.R. 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.

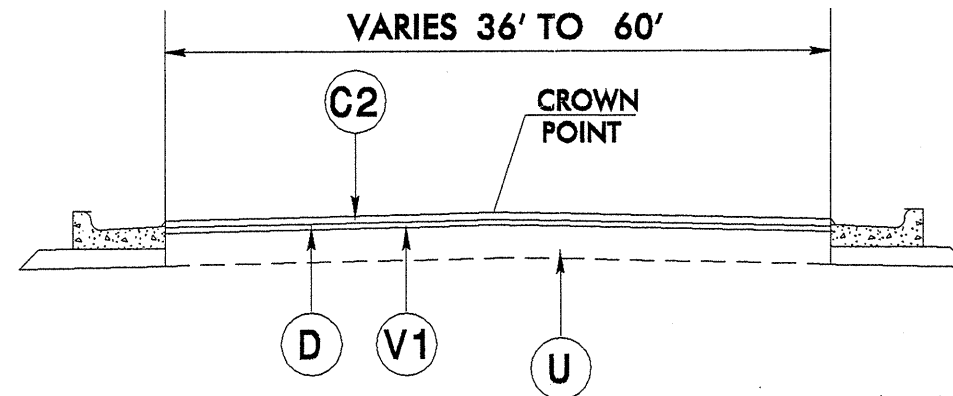


**TYPICAL NO. 1**

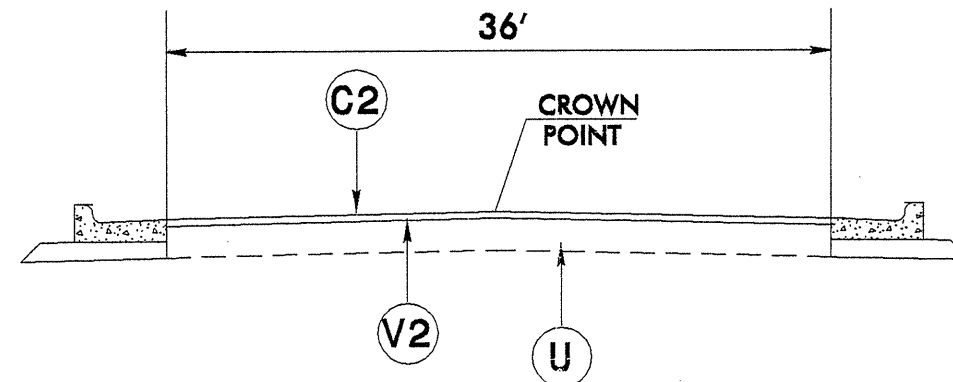
**PAVEMENT SCHEDULE**

C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D	PROP. APPROX. 2.5" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
U	EXISTING PAVEMENT.
V1	MILLING 3"
V2	MILLING 1.5"
S	SHOULDER RECONSTRUCTION.

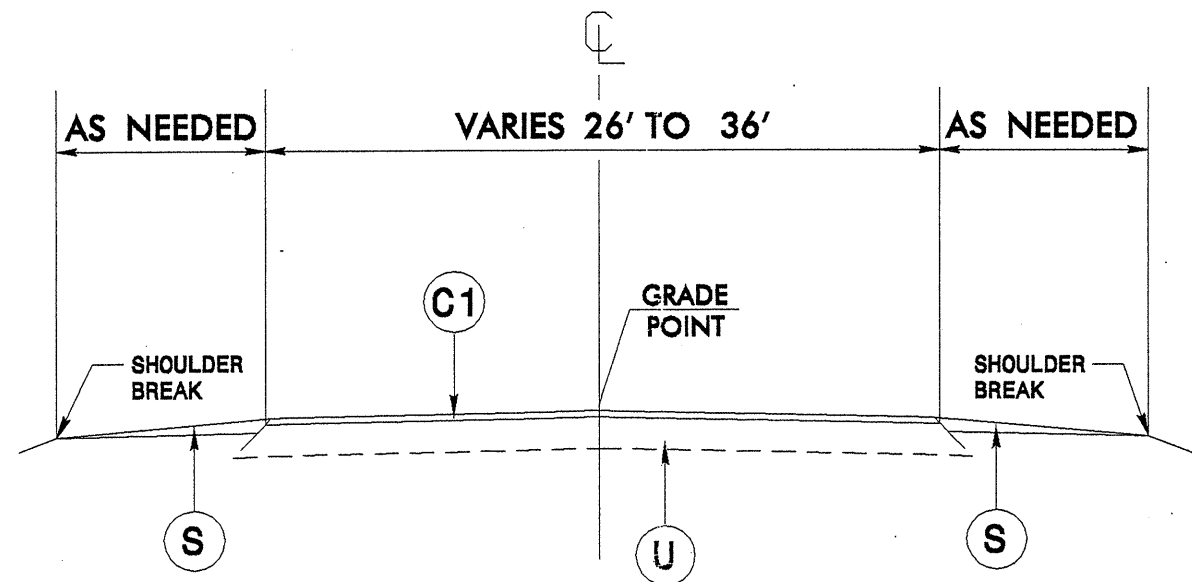
WBS ELEMENT	SHEET NO.	TOTAL SHEETS
37669	3	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
MA05022R		



TYPICAL NO. 2



TYPICAL NO. 3



TYPICAL NO. 4

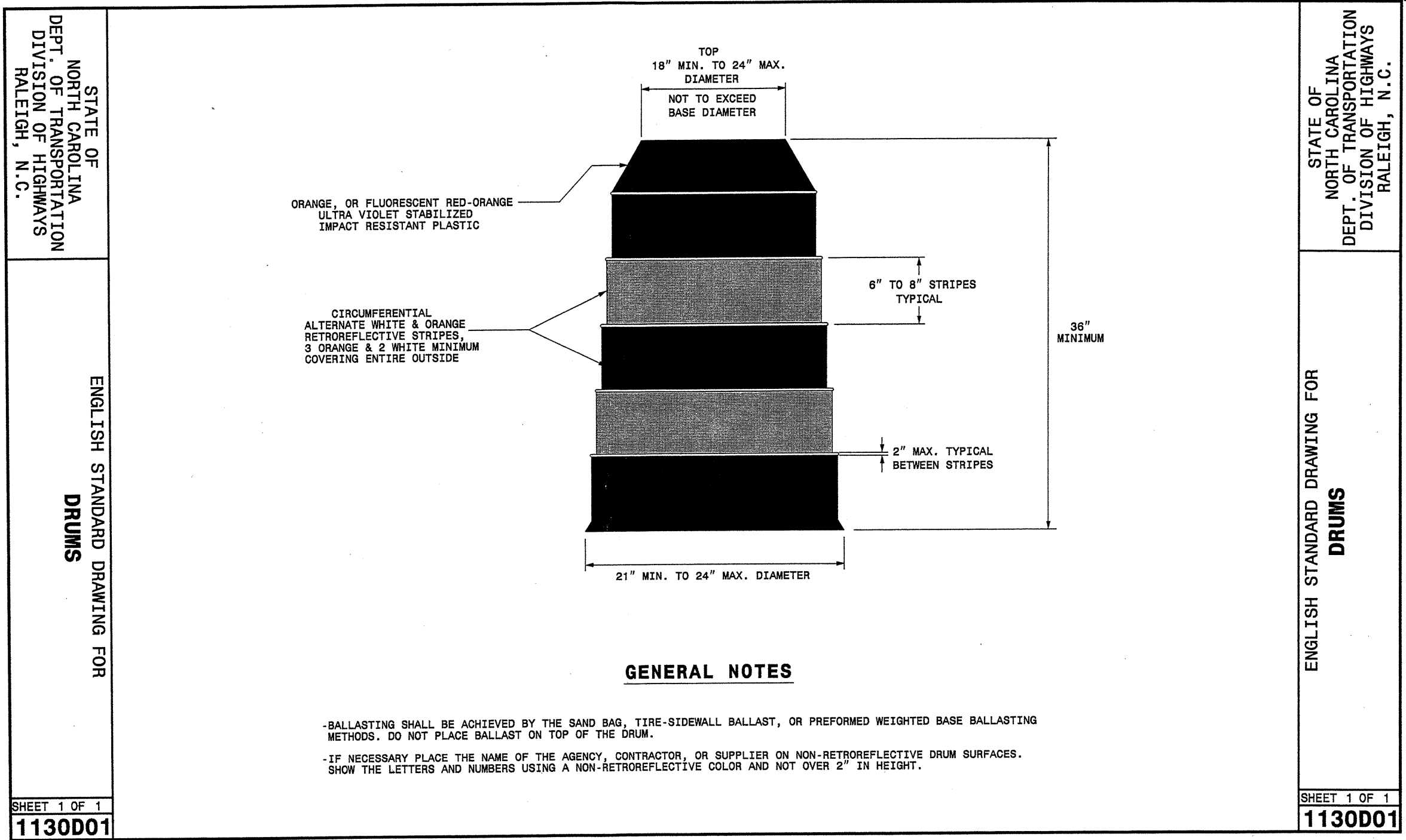
WBS ELEMENT	SHEET NO.	TOTAL NO.
37669	4	
MA05022R		

### SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LENGTH MI	WIDTH FT	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	3" MILLING SY	1½" MILLING SY	INCIDENTAL MILLING SY	INTERMEDIATE COURSE, 119.08 TONS	SURFACE COURSE, S9.5B TONS	PG 64-22 PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	MANHOLES EA	METER OR VALVE BOX EA	SEED & MULCHING AC
37669	Wake	1	NC 96	FROM NC 98 TO BEGIN C&G NORTH OF US 64	1	11	26	550	22			4,000		29,882	1,793	1,000			22.00
		2	NC 96	FROM BEGIN C&G NORTH OF US 64 TO JUST SOUTH OF NC 97	2	1	50			29,333			4,197	2,470	345		7	12	
		3	NC 96	FROM RR CROSSING IN ZEBULON TO JOHNSTON CO LINE	3, 4	1	28	30	1.8		3,733	1,000		1,455	87	75			1.00
TOTAL FOR PROJ NO. 37669						13		580	23.8	29,333	3,733	5,000	4,197	33,807	2,225	1,075	7	12	23.00
GRAND TOTAL						13		580	23.8	29,333	3,733	5,000	4,197	33,807	2,225	1,075	7	12	23.00

### THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	4685000000-E	4686000000-E	4705000000-E	4710000000-E	4721000000-E	4725000000-E	4810000000-E	4900000000-N	4900000000-N
					4" X 90 M WHITE THERMO LF	4" X 120 M YELLOW THERMO LF	4" X 120 M WHITE THERMO LF	16" X 120 M WHITE THERMO LF	24" X 120 M WHITE THERMO LF	THERMO RXR 120 M EA	THERMO STR & RT ARROW 90 M EA	THERMO LT ARROW 90 M EA	THERMO STR ARROW 90 M EA
37669	Wake	1	NC 96	FROM NC 98 TO BEGIN C&G NORTH OF US 64	118,360	116,160	300			4	4		30
		2	NC 96	FROM BEGIN C&G NORTH OF US 64 TO JUST SOUTH OF NC 97		13,200	2,500		60	4	30	15	100
		3	NC 96	FROM RR CROSSING IN ZEBULON TO JOHNSTON CO LINE	10,760	10,560		100	75	2			66
TOTAL FOR PROJ NO. 37669					129,120	139,920	2,800	100	135	8	34	15	130
GRAND TOTAL					129,120	139,920	2,800	100	135	8	34	15	130



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APPROVED: _____ DATE: _____  <div style="text-align: center;"> <p>SEAL</p> </div>	<p><b>REPLACEMENT DETAIL FOR RSD 1130.01</b></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">REVISIONS</th> </tr> <tr> <td style="width: 50%;">DATE</td> <td style="width: 50%;">REVISIONS</td> </tr> <tr> <td>11/02</td> <td></td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table>	REVISIONS		DATE	REVISIONS	11/02					
REVISIONS												
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11/02												
SCALE: NONE DATE: 4/02 DWG. BY: MMM DESIGN BY: MMM REVIEWED BY: MMM		CADD FILE										

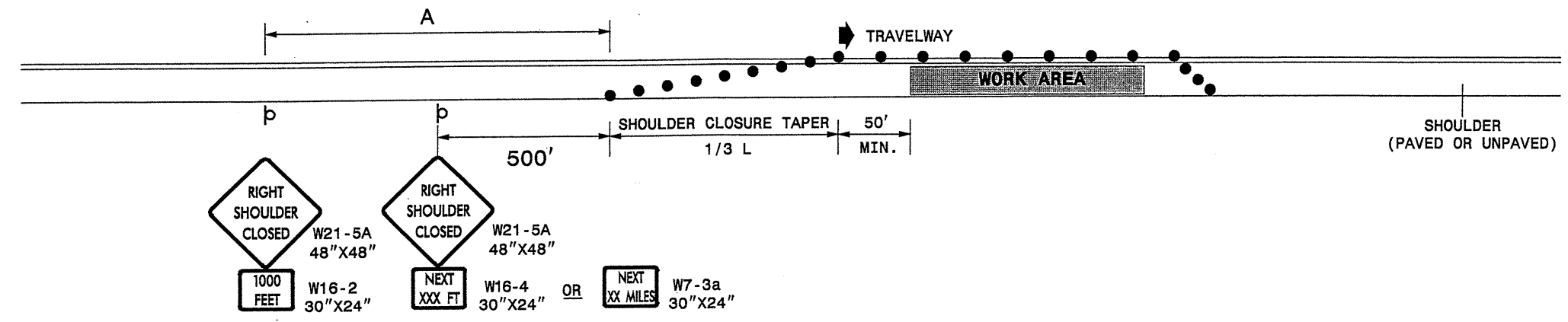
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

1-05

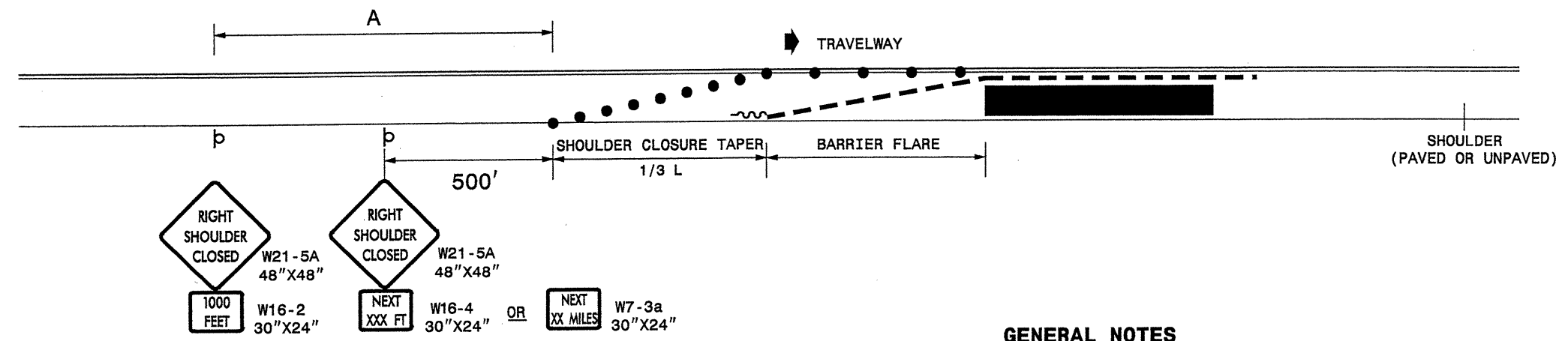
ENGLISH STANDARD DRAWING FOR  
**TEMPORARY SHOULDER CLOSURES**

SHEET 1 OF 1  
**1101D04**

**SHOULDER CLOSURES UTILIZING DRUMS**



**SHOULDER CLOSURES UTILIZING TEMPORARY BARRIER**



**GENERAL NOTES**

- PLACE SHOULDER CLOSURE SIGNS ON THE SAME SIDE AS THE SHOULDER THAT IS CLOSED.
- PLACE DRUMS IN THE SHOULDER TAPER AT THE MAXIMUM SPACING EQUAL IN FEET TO THE POSTED SPEED LIMIT. THE MAXIMUM SPACING OF DRUMS ALONG THE WORK AREA AND BARRIER FLARE IS EQUAL IN FEET TO 2 TIMES THE POSTED SPEED LIMIT.
- FLARE THE APPROACH END OF PORTABLE CONCRETE BARRIER BEYOND THE SHOULDER AND USE A CRASH CUSHION FOR PROTECTION IF THE EXPOSED END OF THE BARRIER IS WITHIN THE "CLEAR ZONE".
- USE STATIONARY SIGNS FOR LONG TERM OPERATIONS (LONGER THAN 3 DAYS).
- REFER TO STD. 1101.11 SHEETS 1, 3, & 4, FOR "L" DISTANCE, BARRIER FLARE RATES, AND SIGN SPACING.

**LEGEND**

- ~ TEMPORARY CRASH CUSHION
- - - PORTABLE CONCRETE BARRIER
- DRUM
- ⊓ STATIONARY OR PORTABLE SIGN
- ➔ DIRECTION OF TRAFFIC FLOW

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

1-05

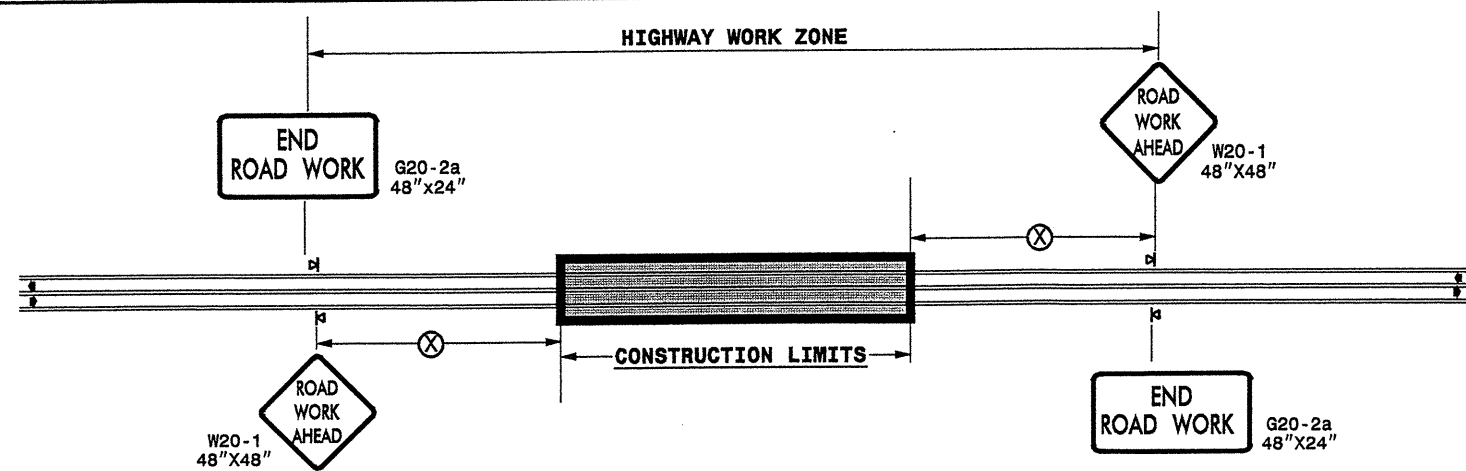
ENGLISH STANDARD DRAWING FOR  
**TEMPORARY SHOULDER CLOSURES**

SHEET 1 OF 1  
**1101D04**

APPROVED: _____ DATE: _____	<b>REPLACEMENT DETAIL FOR RSD 1101.04</b>	
SCALE: NONE	DATE: 11/04	REVISIONS
DWG. BY: PS	DESIGN BY: JPG	08/05
REVIEWED BY: MMM		

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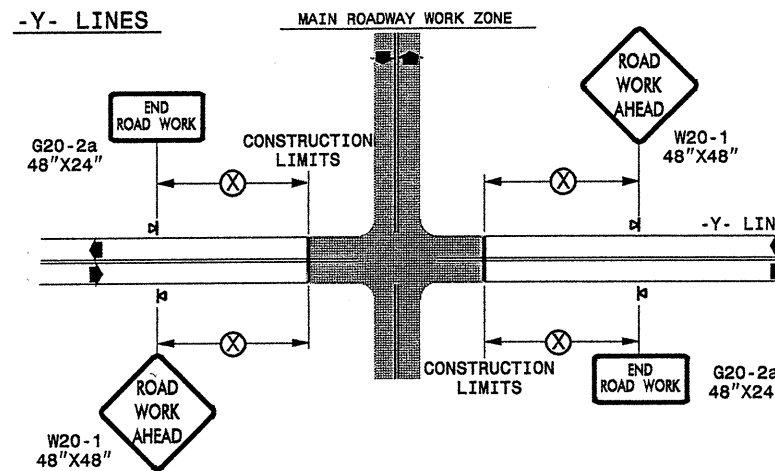
**TWO-WAY UNDIVIDED \*\* (L-LINES)**



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

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

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



DETAIL DRAWING  
FOR TWO-WAY UNDIVIDED  
WORK ZONE WARNING SIGNS

**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

SHEET 1 OF 1

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

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# TWO LANE, TWO WAY WORK ZONE (L-LINES)

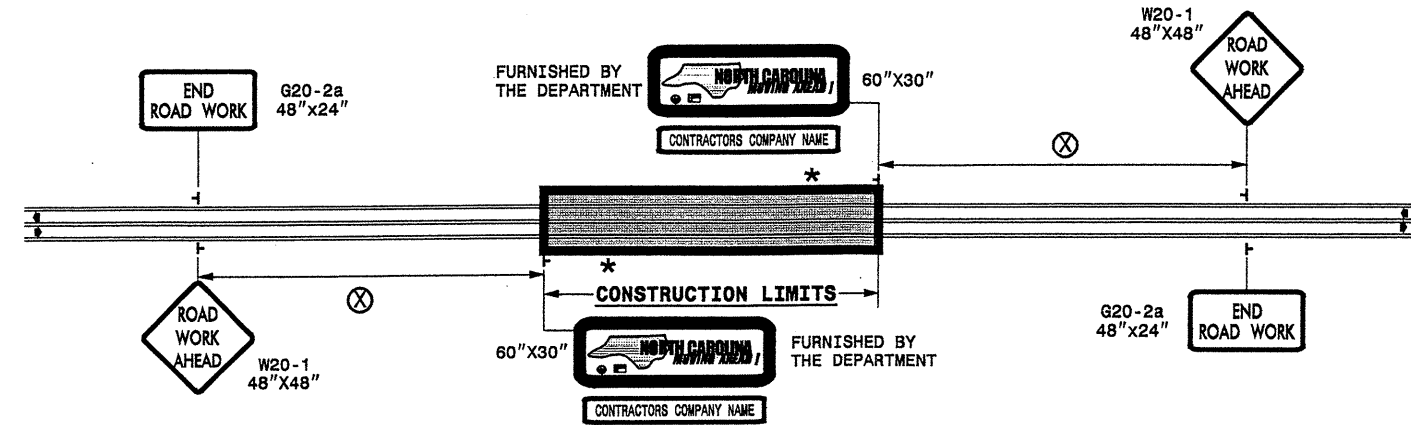
FURNISHED BY THE DEPARTMENT



60"X30"

CONTRACTORS COMPANY NAME

60" Max. X 12"



POSTED SPEED LIMIT (M.P.H.)	RECOMMENDED MINIMUM SIGN SPACING
P.S.L. ≤ 50	350'
P.S.L. ≥ 55	500'

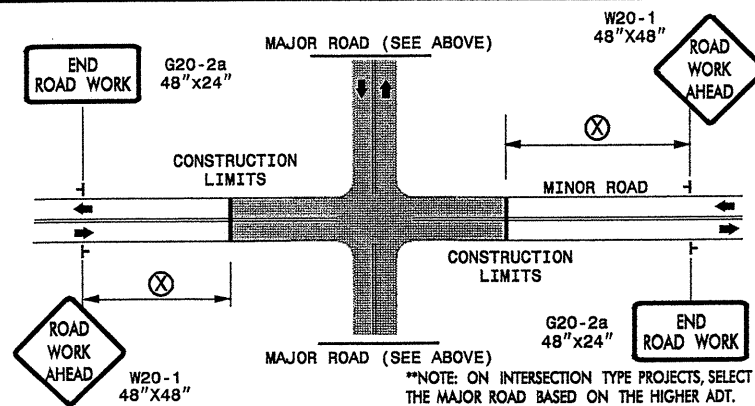
\* ROAD WORK NEXT XX MILES G20-1A 60"x24"

THIS SIGN TO BE USED ON PROJECTS LONGER THAN 2 MILES. THE NUMBER DISPLAYED ON THE SIGN IS TO BE A WHOLE NUMBER ROUNDED UP TO THE NEXT MILE. IT'S TO BE LOCATED 1,500 FEET INSIDE OF THE CONSTRUCTION LIMITS.

PROJ. REFERENCE NO. 37669	SHEET NO. NCMA-1
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STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

# INTERSECTIONS (-Y- LINES)

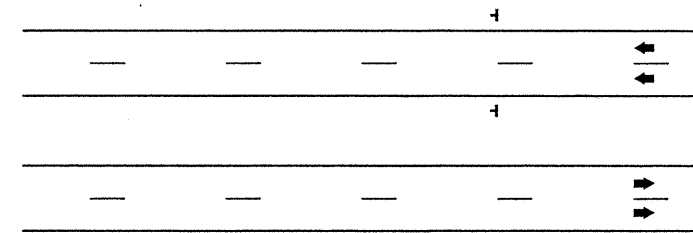


\*\*NOTE: ON INTERSECTION TYPE PROJECTS, SELECT THE MAJOR ROAD BASED ON THE HIGHER ADT.

# FREEWAYS/INTERSTATES

DUAL MOUNT "ROAD WORK AHEAD" SIGNS 1,000' IN ADVANCE OF PROJECT LIMITS

DUAL MOUNT "MOVING AHEAD" SIGNS 500' IN ADVANCE OF PROJECT LIMITS



## 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.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT OVERNIGHT. FOR SHORT-TERM DAILY MAINTENANCE TYPE OPERATIONS, THIS SIGNING APPLICATION IS OPTIONAL; MAY USE ONLY APPLICABLE ROADWAY STANDARD DRAWINGS INSTEAD. HOWEVER, IF THIS SIGNING APPLICATION IS USED, SIGNS MAY BE PORTABLE MOUNTED. 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.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE 3LB STEEL U-CHANNEL POST OR 4" X 4" WOOD POST FOR ALL WORK ZONE SIGNS. 3LB STEEL U-CHANNEL POSTS MUST MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 1094-1(B), MAY BE GALVANIZED STEEL, OR MAY BE PAINTED GREEN BY THE POST MANUFACTURER. SQUARE STEEL TUBING POSTS HAVING EQUIVALENT STRENGTH OF THE 3 LB STEEL U-CHANNEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATION "WORK ZONE SIGNS" SECTION 1110.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01. REMOVE ENTIRE POST WHEN REMOVING SIGNS WITH SPLICED POSTS.
- DO NOT BACK BRACE SIGN SUPPORTS.

### LEGEND

- ┆ STATIONARY SIGN
- ◀ DIRECTION OF TRAFFIC FLOW

DETAIL DRAWING FOR ADVANCE  
WARNING WORK ZONE SIGNS

SHEET 1 OF 1

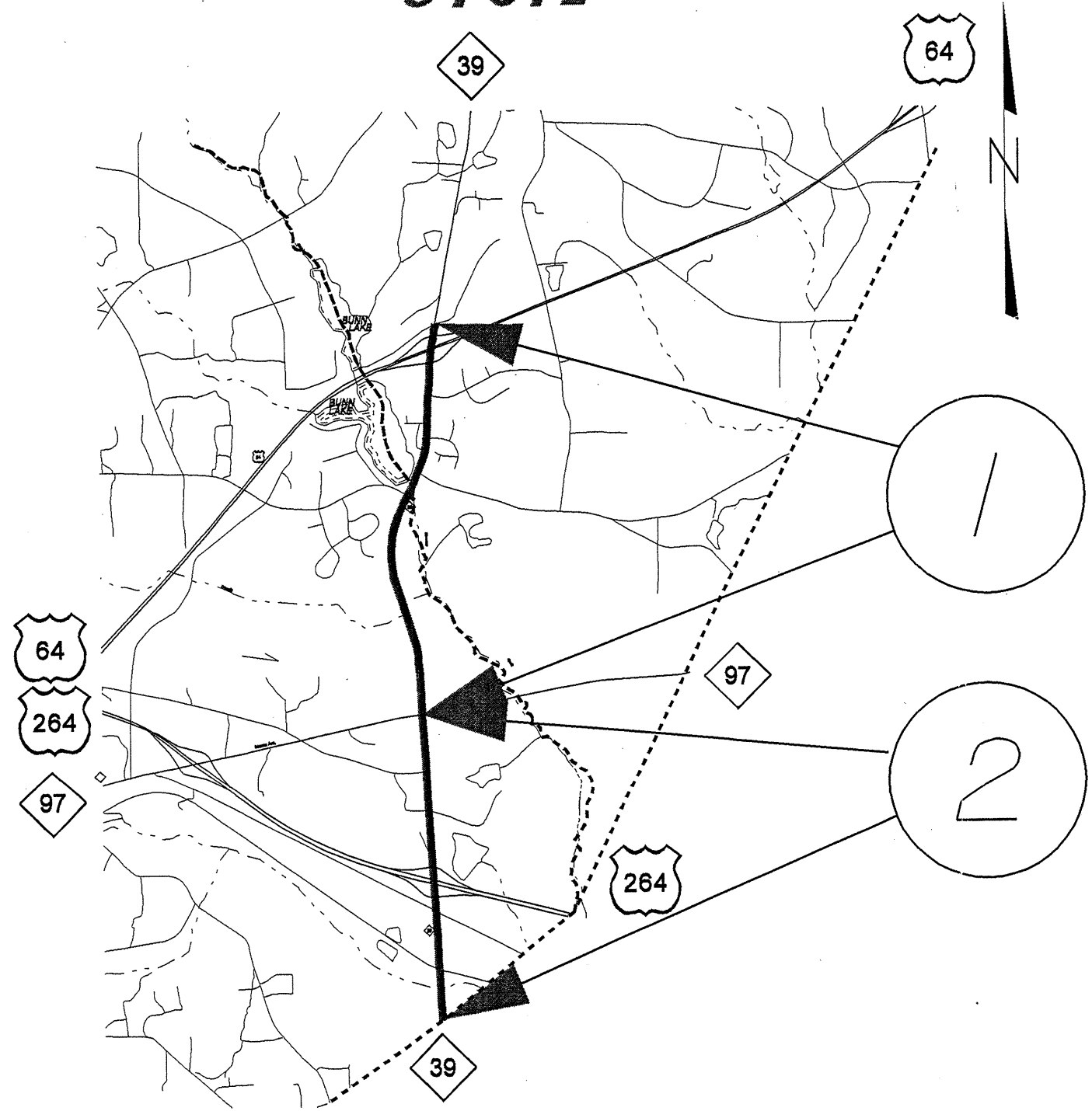
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SEAL	SCALE: NONE	REVISIONS	
	DATE: 07/03	11/04	
	DWG. BY: JSK	12/04	
	DESIGN BY: JSK		
	REVIEWED BY: SK		



# MA05025R

## 37671

WBS ELEMENT	SHEET NO.	TOTAL SHEETS
37671	1	
MA05025R		

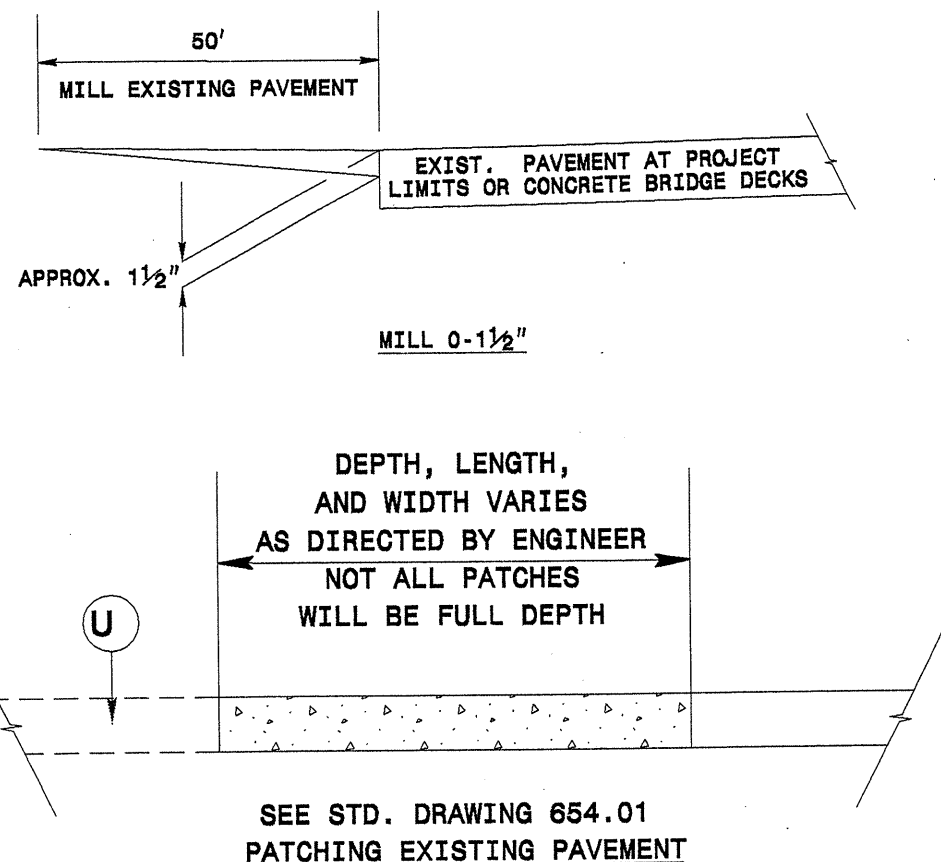


*Franklin and Wake Counties*

WBS ELEMENT	SHEET NO.	TOTAL SHEETS
37671	2	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
MA05025R		

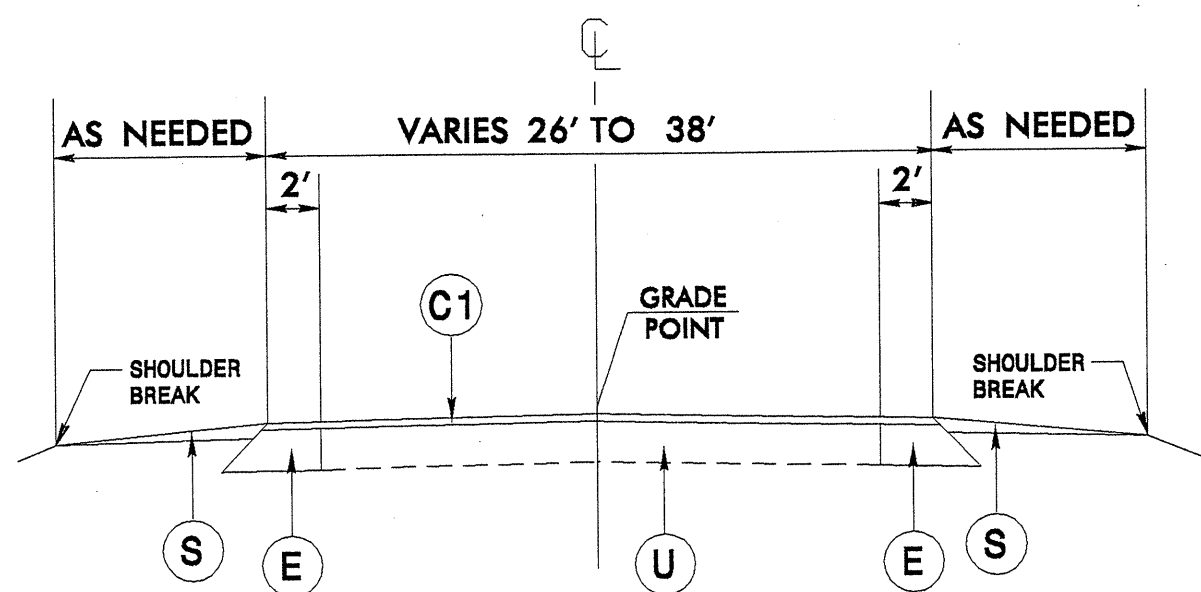
**NOTES**

ALL UNPAVED S.R. 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.

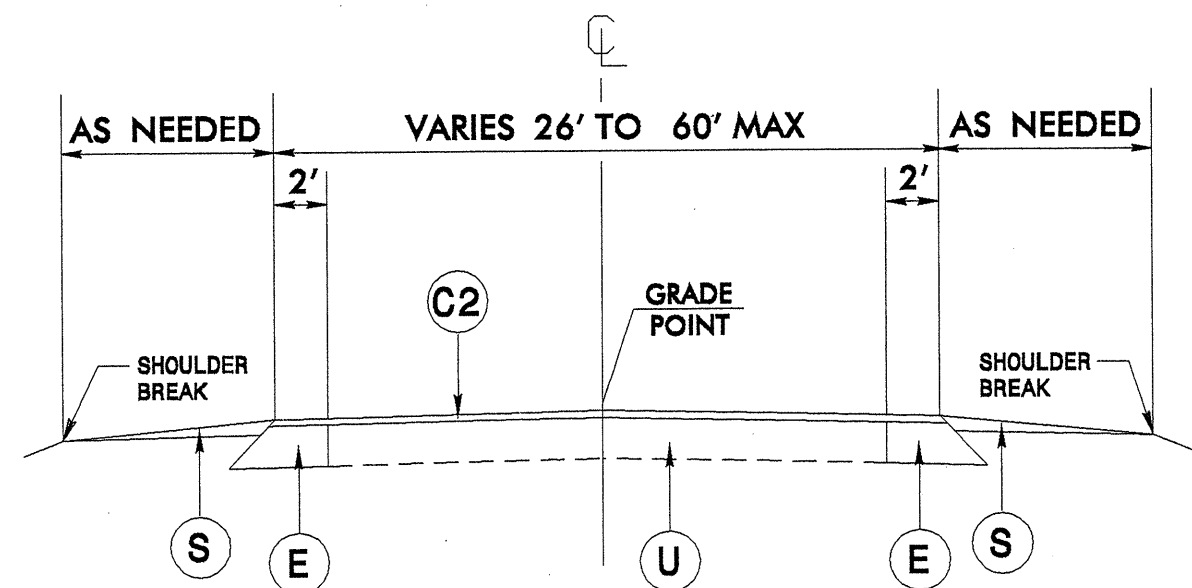


**PAVEMENT SCHEDULE**

C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
E	PROP. APPROX. 8.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
U	EXISTING PAVEMENT.
S	SHOULDER RECONSTRUCTION.



**TYPICAL NO. 1**



**TYPICAL NO. 2**

WBS ELEMENT	SHEET NO.	TOTAL NO.
37671	3	
MA05025R		

### SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LENGTH MI	WIDTH FT	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	INCIDENTAL MILLING SY	BASE COURSE, B25.0B TONS	SURFACE COURSE, S9.5B TONS	PG 64-22 PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	GUARDRAIL ANCHOR UNIT - TYPE 350 EA	SEED & MULCHING AC	INDUCTIVE LOOP LF
37671	Franklin	1	NC 39	FROM 500' NORTH OF THE US 64 RAMP IN FRANKLIN COUNTY TO NC 97 IN WAKE COUNTY	1	2.25	26 - 38	113	4.5	1,600	3,090	6,403	517	900	9.00	3.38	1,200
	Wake	2	NC 39	NC 97 TO JOHNSTON COUNTY LINE	2	1.6	26 - 60	50	3.2	1,400	6,478	3,054	462	300	8.00	1.60	
TOTAL FOR PROJ NO. 37671						3.85		163	7.7	3,000	9,568	9,457	979	1,200	17.00	4.98	1,200
GRAND TOTAL						3.85		163	7.7	3,000	9,568	9,457	979	1,200	17.00	4.98	1,200

### THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	4685000000-E	4686000000-E	4695000000-E	4705000000-E	4710000000-E	4721000000-E	4725000000-E	4810000000-E	4900000000-N	4900000000-N			
					4" X 90 M WHITE THERMO LF	4" X 120 M YELLOW THERMO LF	4" X 120 M WHITE THERMO LF	8" X 90 M YELLOW THERMO LF	16" X 120 M WHITE THERMO LF	24" X 120 M WHITE THERMO LF	THERMO RXR 120 M EA	THERMO MSG ONLY 120 M EA	THERMO LT ARROW 90 M EA	THERMO RT ARROW 90 M EA	4" YELLOW PAINT LF	YELLOW & YELLOW MARKERS EA	CRYSTAL & RED MARKERS EA
37671	Franklin	1	NC 39	FROM 500' NORTH OF THE US 64 RAMP IN FRANKLIN COUNTY TO NC 97 IN WAKE COUNTY	24,210	23,760							47,520	149			
	Wake	2	NC 39	NC 97 TO JOHNSTON COUNTY LINE	17,216	16,896	1,000	1,000	100	250	4	8	12	6	106	100	
TOTAL FOR PROJ NO. 37671					41,426	40,656	1,000	1,000	100	250	4	8	12	6	47,520	255	100
GRAND TOTAL					41,426	40,656	1,000	1,000	100	250	4	8	12	6	47,520	255	100

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

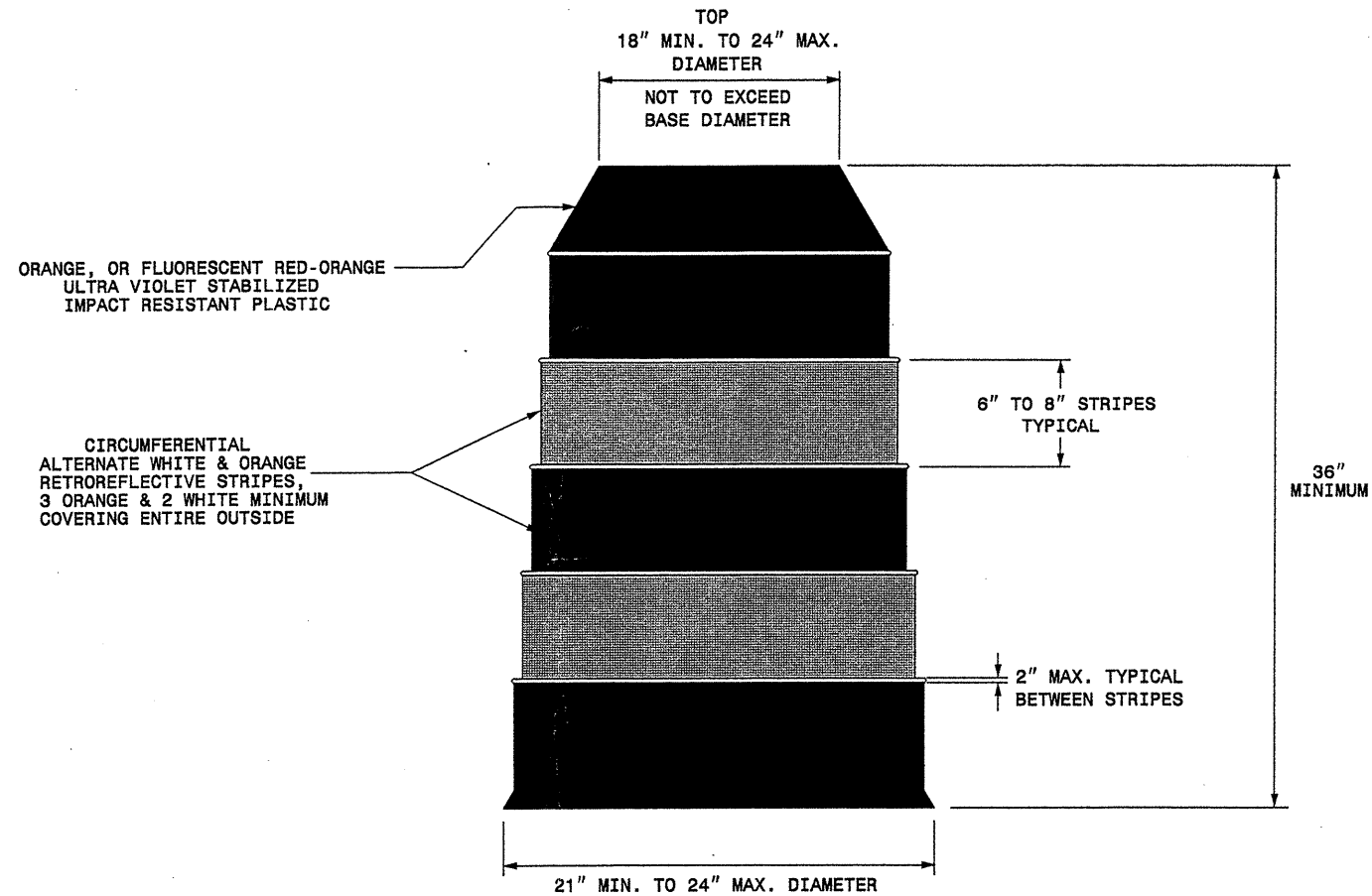
ENGLISH STANDARD DRAWING FOR  
**DRUMS**

SHEET 1 OF 1  
**1130D01**

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

ENGLISH STANDARD DRAWING FOR  
**DRUMS**

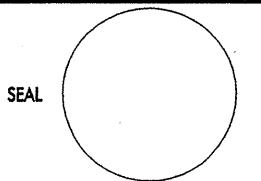
SHEET 1 OF 1  
**1130D01**



**GENERAL NOTES**

- BALLASTING SHALL BE ACHIEVED BY THE SAND BAG, TIRE-SIDEWALL BALLAST, OR PREFORMED WEIGHTED BASE BALLASTING METHODS. DO NOT PLACE BALLAST ON TOP OF THE DRUM.
- IF NECESSARY PLACE THE NAME OF THE AGENCY, CONTRACTOR, OR SUPPLIER ON NON-RETROREFLECTIVE DRUM SURFACES. SHOW THE LETTERS AND NUMBERS USING A NON-RETROREFLECTIVE COLOR AND NOT OVER 2" IN HEIGHT.

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pseymore AT WZT206427

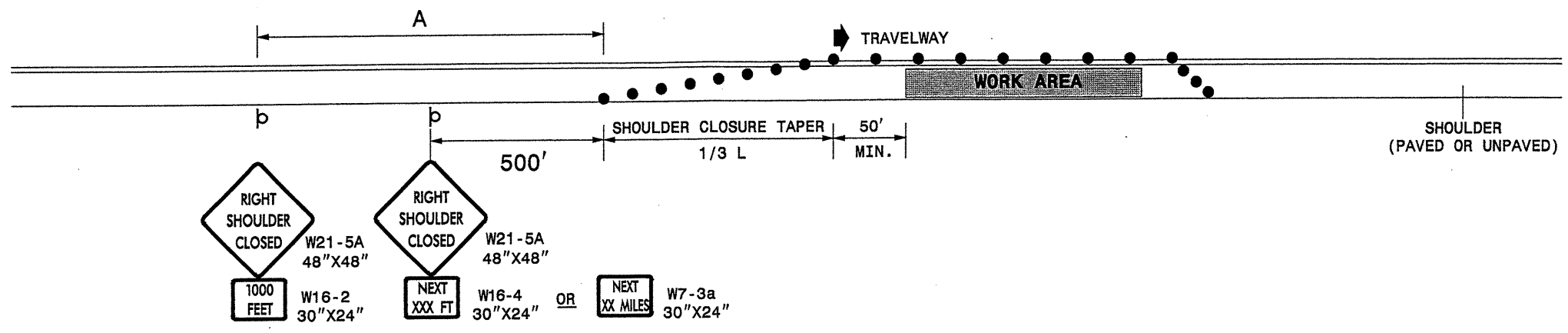
APPROVED: _____	DATE: _____	<b>REPLACEMENT DETAIL FOR RSD 1130.01</b>	
			
		DATE: 4/02	
DWG. BY: MMM			
DESIGN BY: MMM			
REVIEWED BY: MMM			

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

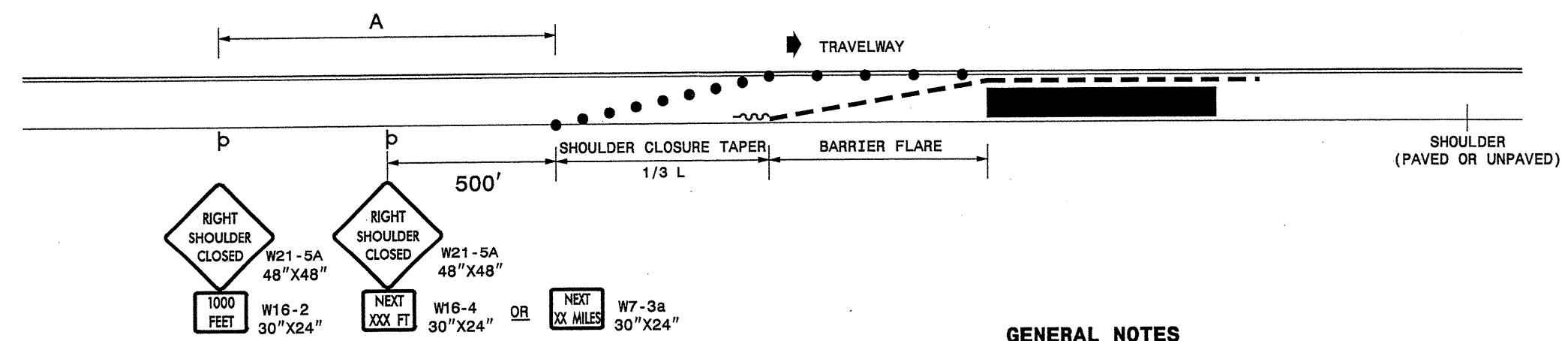
1-05

ENGLISH STANDARD DRAWING FOR  
TEMPORARY SHOULDER CLOSURES

**SHOULDER CLOSURES UTILIZING DRUMS**



**SHOULDER CLOSURES UTILIZING TEMPORARY BARRIER**



**GENERAL NOTES**

- PLACE SHOULDER CLOSURE SIGNS ON THE SAME SIDE AS THE SHOULDER THAT IS CLOSED.
- PLACE DRUMS IN THE SHOULDER TAPER AT THE MAXIMUM SPACING EQUAL IN FEET TO THE POSTED SPEED LIMIT. THE MAXIMUM SPACING OF DRUMS ALONG THE WORK AREA AND BARRIER FLARE IS EQUAL IN FEET TO 2 TIMES THE POSTED SPEED LIMIT.
- FLARE THE APPROACH END OF PORTABLE CONCRETE BARRIER BEYOND THE SHOULDER AND USE A CRASH CUSHION FOR PROTECTION IF THE EXPOSED END OF THE BARRIER IS WITHIN THE "CLEAR ZONE".
- USE STATIONARY SIGNS FOR LONG TERM OPERATIONS (LONGER THAN 3 DAYS).
- REFER TO STD. 1101.11 SHEETS 1, 3, & 4, FOR "L" DISTANCE, BARRIER FLARE RATES, AND SIGN SPACING.

**LEGEND**

- ~ TEMPORARY CRASH CUSHION
- - - PORTABLE CONCRETE BARRIER
- DRUM
- ⊖ STATIONARY OR PORTABLE SIGN
- ➔ DIRECTION OF TRAFFIC FLOW

SHEET 1 OF 1  
**1101D04**

SHEET 1 OF 1  
**1101D04**

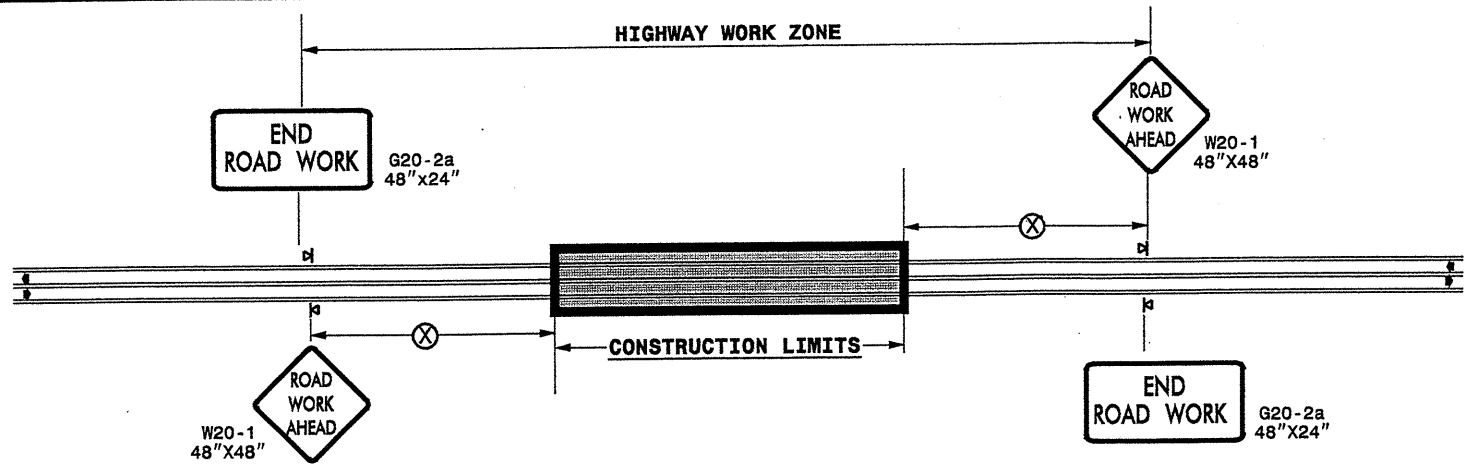
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR  
**TEMPORARY SHOULDER CLOSURES**

07-APR-2006 09:44 \\dot\ofsr00101\groups-wz\tccc\design\group4\resurfacing\div05\37671\cp2\shoulder\_closures05.dgn psey/mor.e AT WZTC206427

APPROVED: _____ DATE: _____	<b>REPLACEMENT DETAIL FOR RSD 1101.04</b>	
SCALE: NONE	DATE: 11/04	REVISIONS
DWG. BY: PS	DESIGN BY: JPG	08/05
REVIEWED BY: MMM		

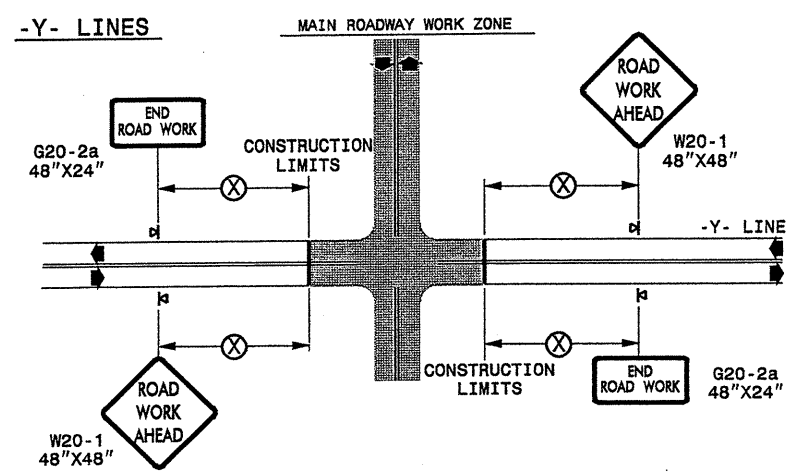
**TWO-WAY UNDIVIDED \*\* (L-LINES)**



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

STATE OF NORTH CAROLINA  
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

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

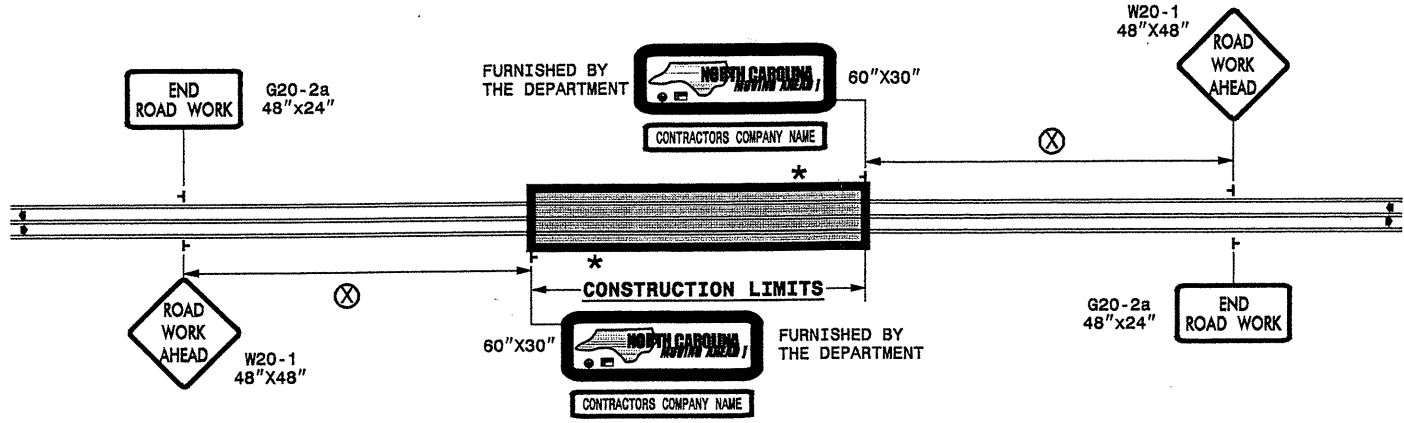
07-APR-2006 09:44  
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 pssymore AT WZTCC206427

# TWO LANE, TWO WAY WORK ZONE (L-LINES)

POSTED SPEED LIMIT (M.P.H.)	RECOMMENDED MINIMUM SIGN SPACING
P.S.L. ≤ 50	⊗
P.S.L. ≥ 55	350'
	500'

**\* ROAD WORK NEXT XX MILES** G20-1A 60"x24"

THIS SIGN TO BE USED ON PROJECTS LONGER THAN 2 MILES. THE NUMBER DISPLAYED ON THE SIGN IS TO BE A WHOLE NUMBER ROUNDED UP TO THE NEXT MILE. IT'S TO BE LOCATED 1,500 FEET INSIDE OF THE CONSTRUCTION LIMITS.



FURNISHED BY THE DEPARTMENT



60"x30"

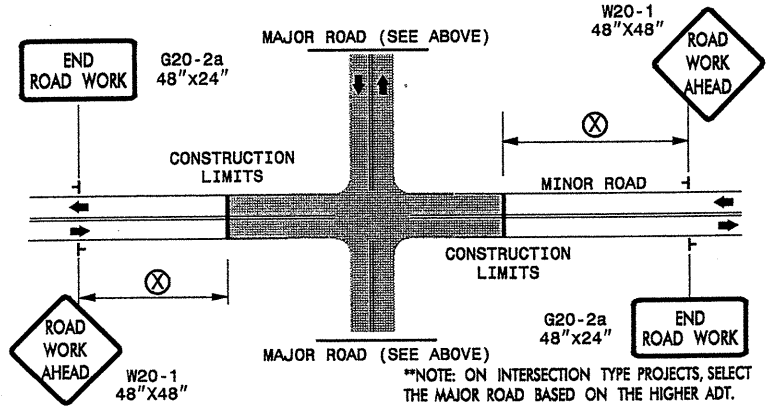
CONTRACTORS COMPANY NAME

60" Max. X 12"

PROJ. REFERENCE NO. 37671	SHEET NO. NCMA-1
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STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

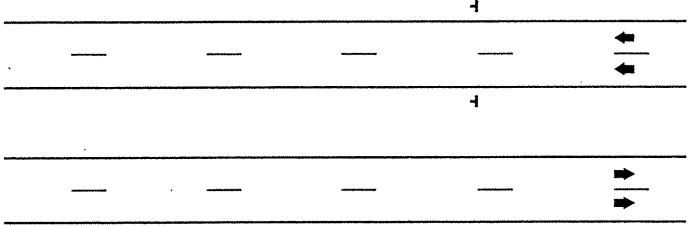
# INTERSECTIONS (-Y- LINES)



# FREEWAYS/INTERSTATES

DUAL MOUNT "ROAD WORK AHEAD" SIGNS 1,000' IN ADVANCE OF PROJECT LIMITS

DUAL MOUNT "MOVING AHEAD" SIGNS 500' IN ADVANCE OF PROJECT LIMITS



## 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.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT OVERNIGHT. FOR SHORT-TERM DAILY MAINTENANCE TYPE OPERATIONS, THIS SIGNING APPLICATION IS OPTIONAL; MAY USE ONLY APPLICABLE ROADWAY STANDARD DRAWINGS INSTEAD. HOWEVER, IF THIS SIGNING APPLICATION IS USED, SIGNS MAY BE PORTABLE MOUNTED. 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.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE 3LB STEEL U-CHANNEL POST OR 4" X 4" WOOD POST FOR ALL WORK ZONE SIGNS. 3LB STEEL U-CHANNEL POSTS MUST MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 1094-1(B), MAY BE GALVANIZED STEEL, OR MAY BE PAINTED GREEN BY THE POST MANUFACTURER. SQUARE STEEL TUBING POSTS HAVING EQUIVALENT STRENGTH OF THE 3 LB STEEL U-CHANNEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATION "WORK ZONE SIGNS" SECTION 1110.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01. REMOVE ENTIRE POST WHEN REMOVING SIGNS WITH SPLICED POSTS.
- DO NOT BACK BRACE SIGN SUPPORTS.

**LEGEND**

┆ STATIONARY SIGN

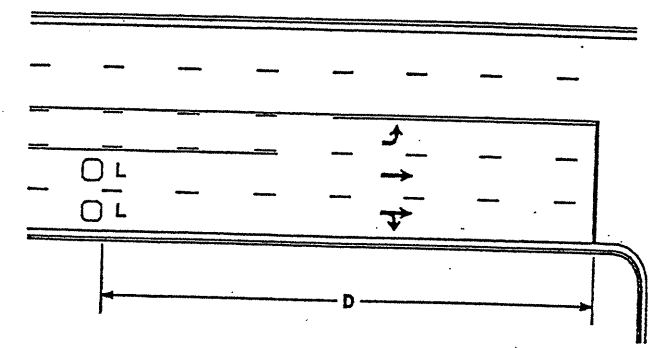
◄ DIRECTION OF TRAFFIC FLOW

DETAIL DRAWING FOR ADVANCE  
WARNING WORK ZONE SIGNS

SHEET 1 OF 1

APPROVED: _____ DATE: _____	<b>ADVANCE WARNING WORK ZONE SIGNS FOR "MOVING AHEAD"</b>	
SEAL	SCALE: NONE	REVISIONS
	DATE: 07/03	11/04
	DWG. BY: JSK	12/04
	DESIGN BY: JSK	
REVIEWED BY: SK		

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

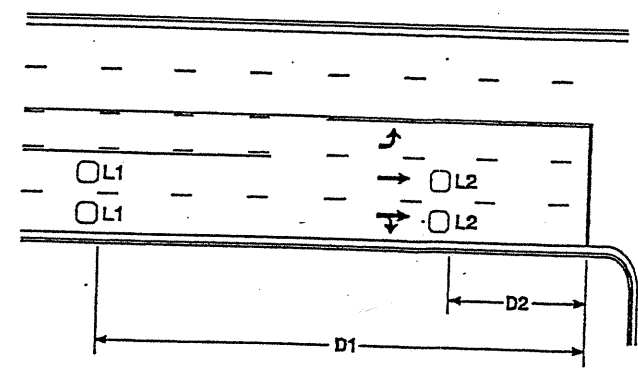


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

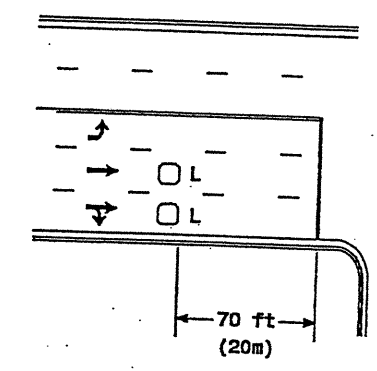


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

"Stretch" Operation

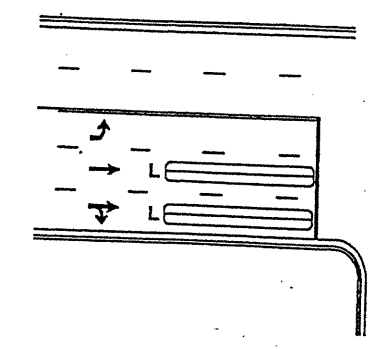
L1 = 6ft X 6ft  
(1.8m X 1.8m)  
Wired in series  
L2 = 6ft X 6ft  
(1.8m X 1.8m)  
Wired in series

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



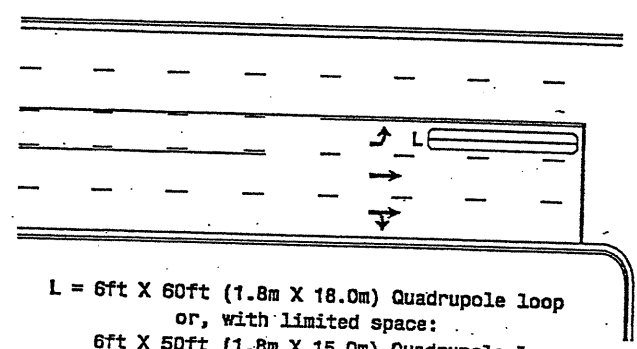
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



L = 6ft X 60ft (1.8m X 18.0m)  
Quadrupole loop, wired separately

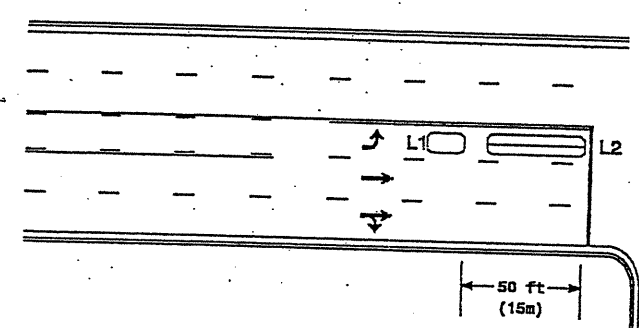
### Left Turn Lane Detection



L = 6ft X 60ft (1.8m X 18.0m) Quadrupole loop  
or, with limited space:  
6ft X 50ft (1.8m X 15.0m) Quadrupole loop  
or  
6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Presence Loop Detection

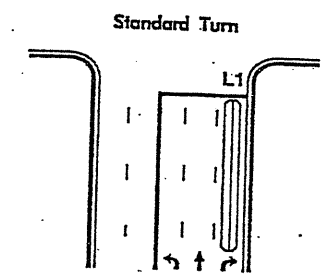
OR



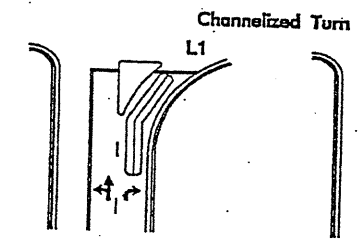
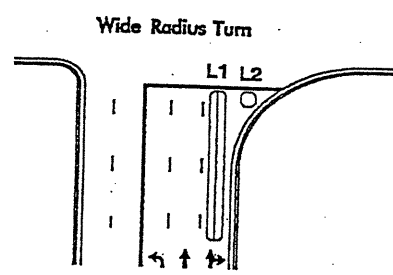
L1 = 6ft X 15ft (1.8m X 4.6m) Queue detector  
L2 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Queue Loop Detection

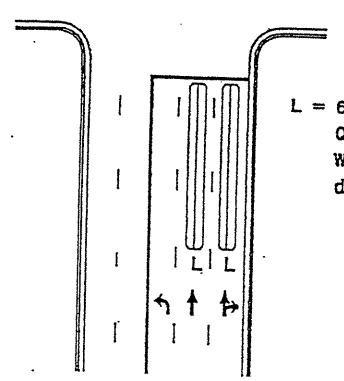
### Right Turn Lane Detection



L1 = 6ft X 60ft (1.8m X 18.0m) Quadrupole loop  
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop  
Wired separately  
L3 = 6ft X 30ft (1.8m X 9.0m) Quadrupole loop  
Wired in series

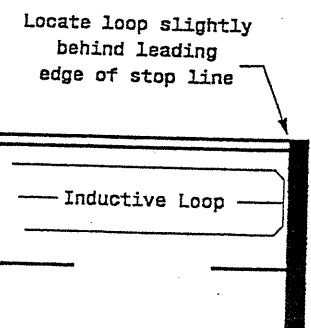


### Side Street Detection



L = 6ft X 60ft (1.8m X 18.0m)  
Quadrupole loop  
Wired to separate  
detectors/channels

### Presence Loop Placement at Stop Lines



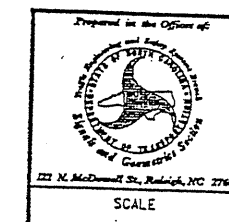
Note:  
Loop may be located in advance  
of stop line when stop line is  
greater than 15' (4.5m) from edge  
of intersecting roadway; or, when  
loop detects a permitted or  
exclusive/permitted left turn.

### 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: July 2003	REVIEWED BY:
PREPARED BY: P. L. Alexander	REVIEWED BY:
SCALE:	REVISIONS:
INIT.	DATE

