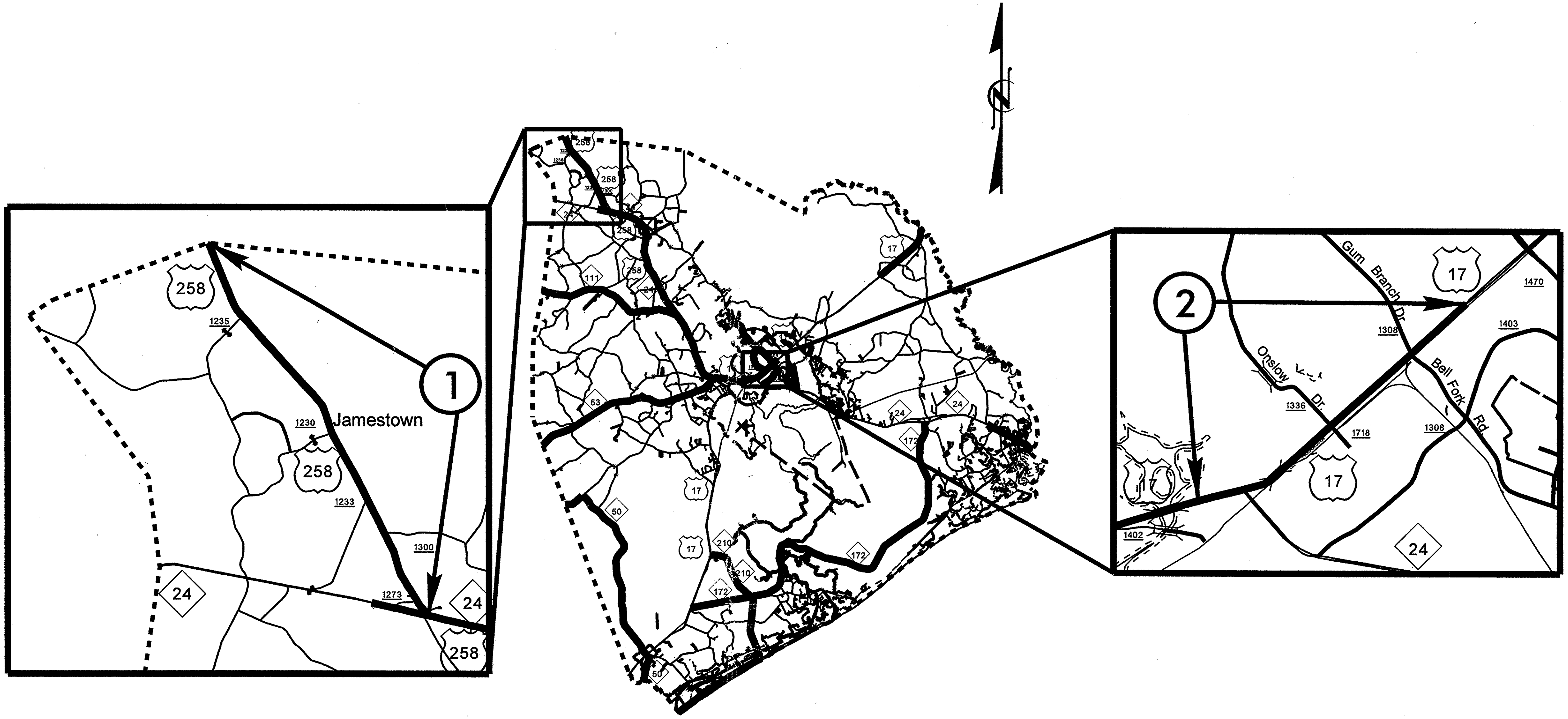
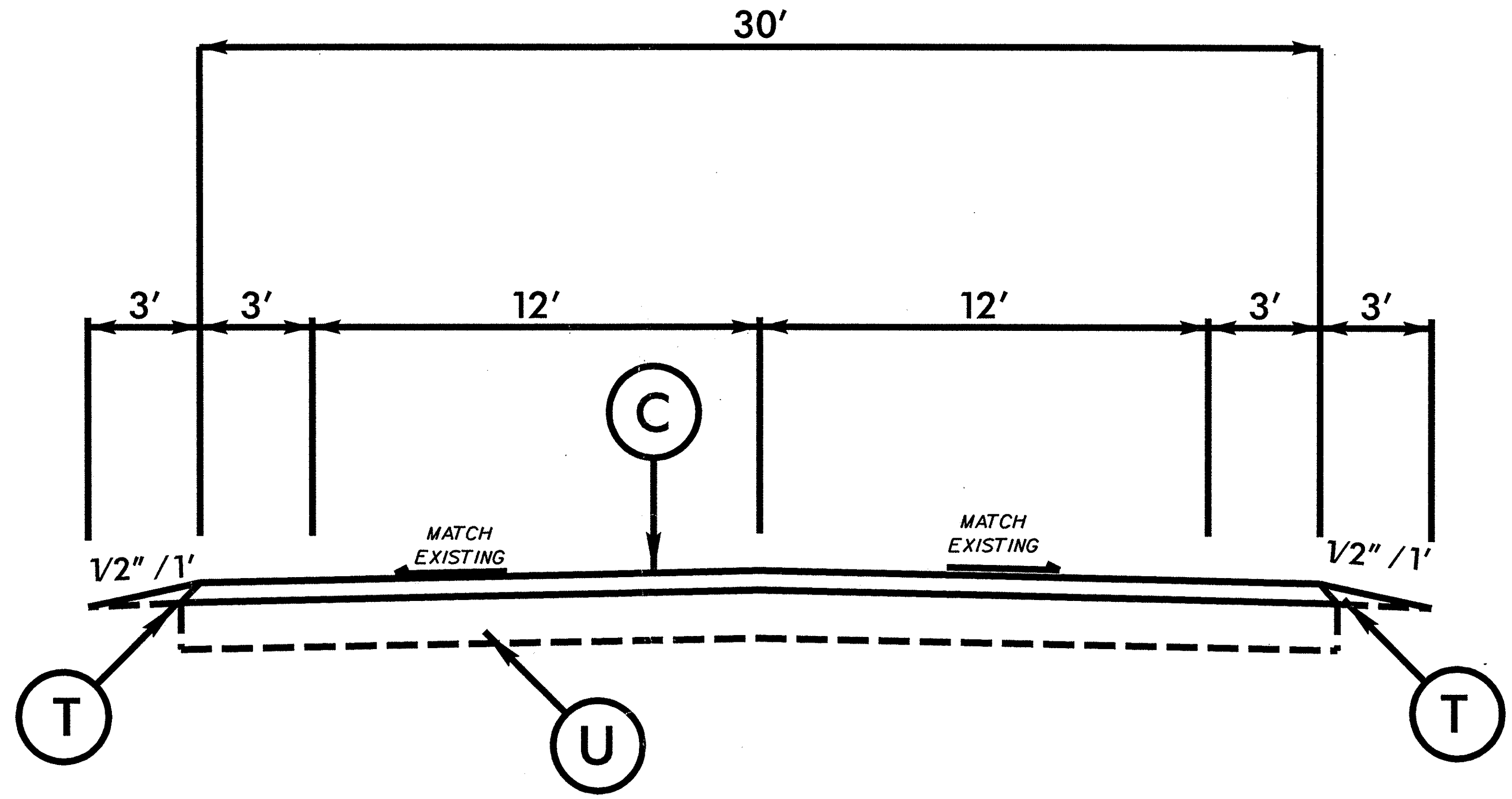
PROJECT REFERENCE NO.	SHEET NO.
3CR10671.51	1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



ONSLOW COUNTY

PROJECT REFERENCE NO.	SHEET NO.
3CR.10671.51	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



TYPICAL SECTION NO.1

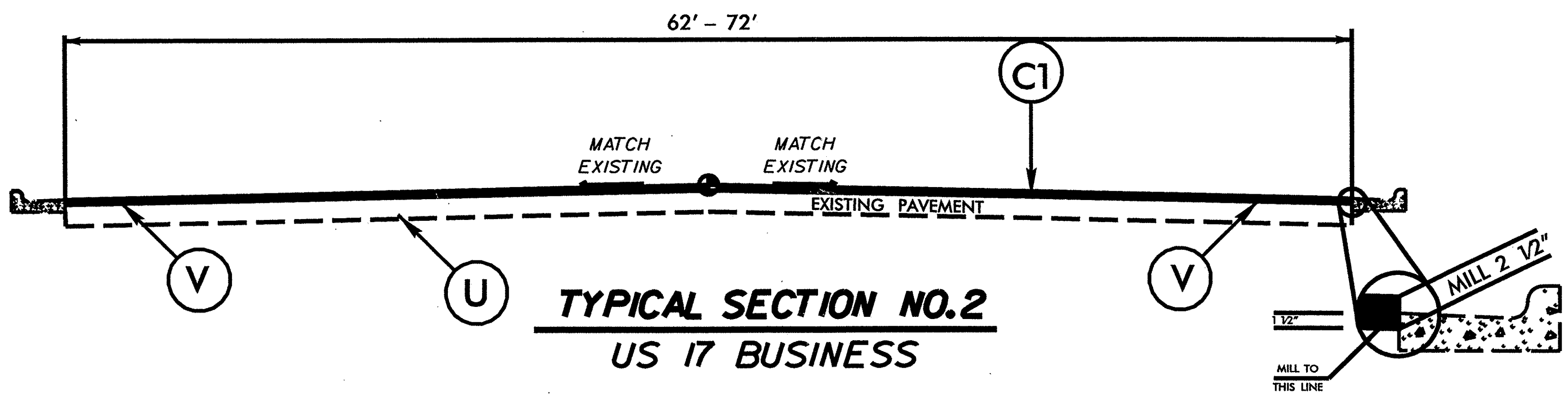
US 258

PAVEMENT SCHEDULE			
C	PROP. APPROX. 3 ″ DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LIFTS.	V1	MILLING BITUMINOUS PAVEMENT. 3¼″ DEPTH.
C1	PROP. APPROX. 1½″ DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	V2	MILLING BITUMINOUS PAVEMENT. 3 ″ DEPTH.
W	WEDGING SURFACE COURSE	V3	MILLING BITUMINOUS PAVEMENT. 1½″ DEPTH.
D	PROP. APPROX. 2½″ DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	T	EARTH MATERIAL
E	PROP. APPROX. 5½″ DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. 2½″ DEPTH.		

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

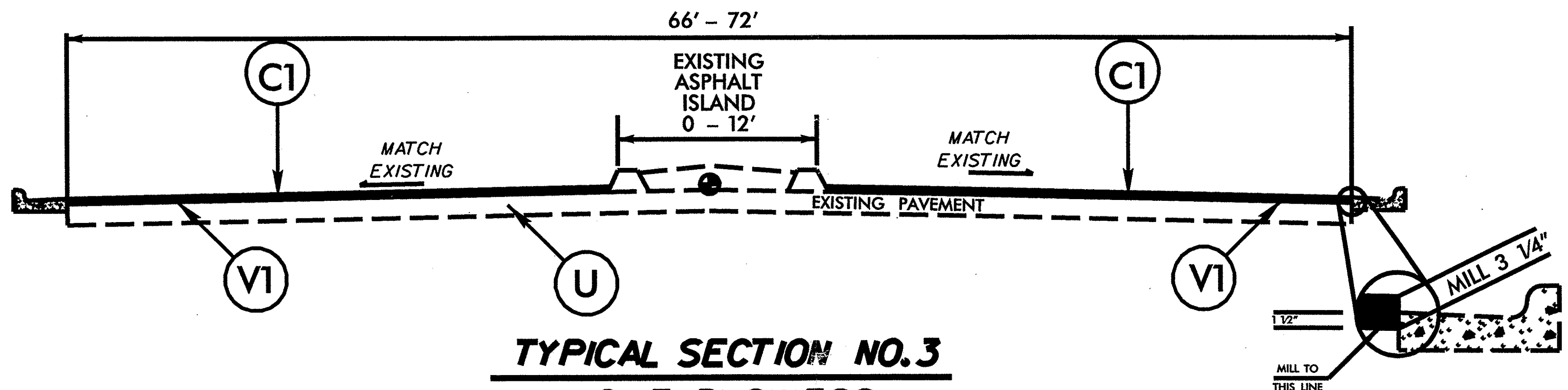
PROJECT REFERENCE NO.	SHEET NO.
3CRJ06715I	3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

6/2/99



TYPICAL SECTION NO.2

US 17 BUSINESS



TYPICAL SECTION NO.3

US 17 BUSINESS

PAVEMENT SCHEDULE

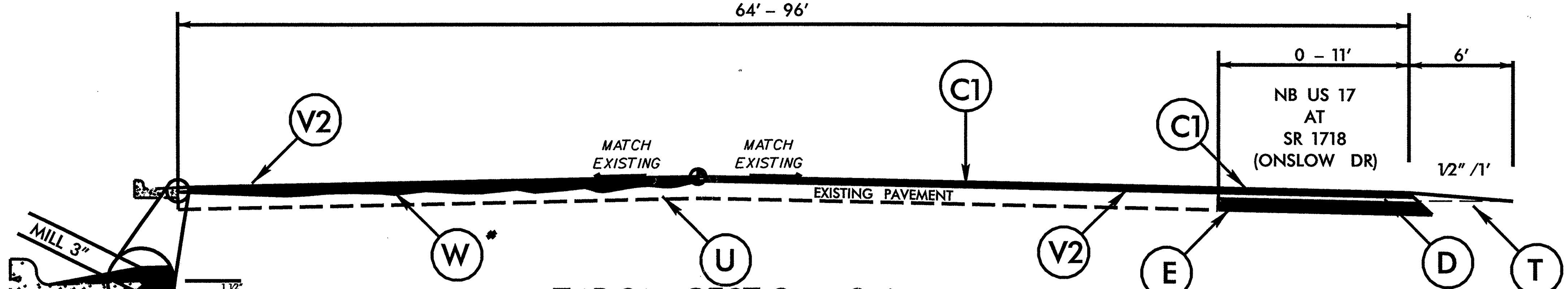
C	PROP. APPROX. 3 " DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LIFTS.	V1	MILLING BITUMINOUS PAVEMENT. 3¼" DEPTH.
C1	PROP. APPROX. 1½" DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	V2	MILLING BITUMINOUS PAVEMENT. 3 " DEPTH.
W	WEDGING SURFACE COURSE	V3	MILLING BITUMINOUS PAVEMENT. 1½" DEPTH.
D	PROP. APPROX. 2½" DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	T	EARTH MATERIAL
E	PROP. APPROX. 5½" DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. 2½" DEPTH.		

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
3CRJ0671.51	4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

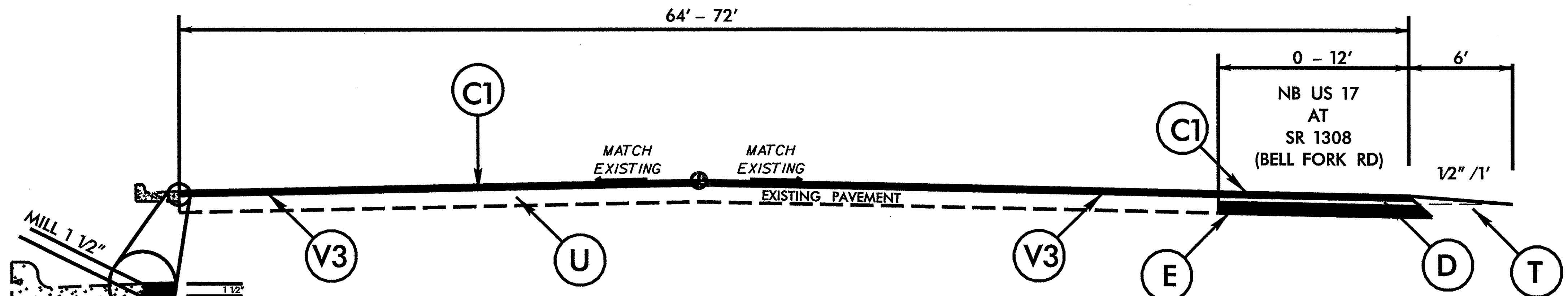
6/2/99



TYPICAL SECTION NO.4

US 17 BUSINESS

* WEDGING COURSE TO BE USED IN CONJUNCTION WITH 2'–6' C&G REMOVE & REPLACE, FROM MP 0.69 TO 0.72



TYPICAL SECTION NO.5

US 17 BUSINESS

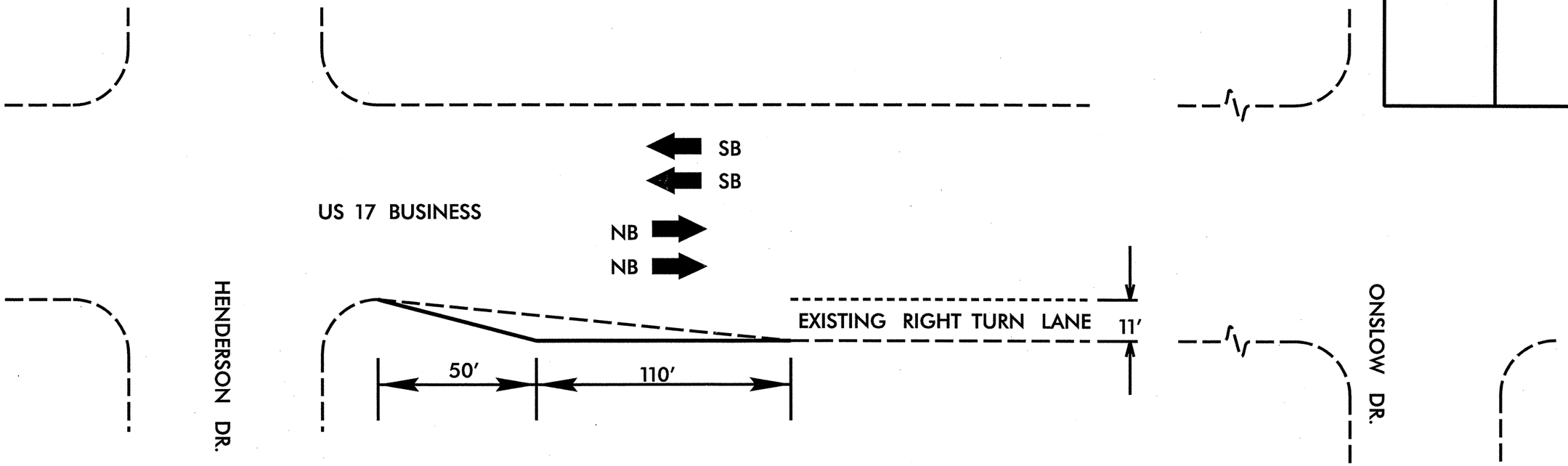
PAVEMENT SCHEDULE

C	PROP. APPROX. 3 " DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LIFTS.	V1	MILLING BITUMINOUS PAVEMENT. 3¼" DEPTH.
C1	PROP. APPROX. 1½" DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	V2	MILLING BITUMINOUS PAVEMENT. 3 " DEPTH.
W	WEDGING SURFACE MIX	V3	MILLING BITUMINOUS PAVEMENT. 1½" DEPTH.
D	PROP. APPROX. 2½" DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	T	EARTH MATERIAL
E	PROP. APPROX. 5½" DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. 2½" DEPTH.		

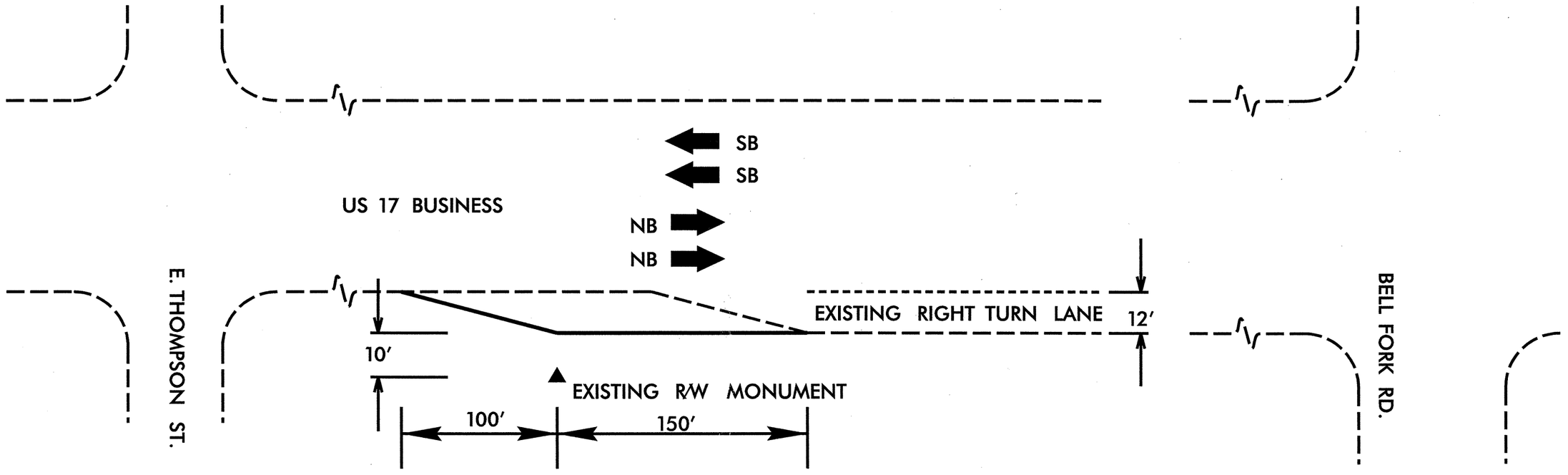
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

$$$$SYSTIME$$$$
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$
$$USERNAME$$$$$

PROJECT REFERENCE NO.	SHEET NO.
3CRJ06715I	5
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



RIGHT TURN LANE EXTENSION
VICINTY OF ONSLOW DR.

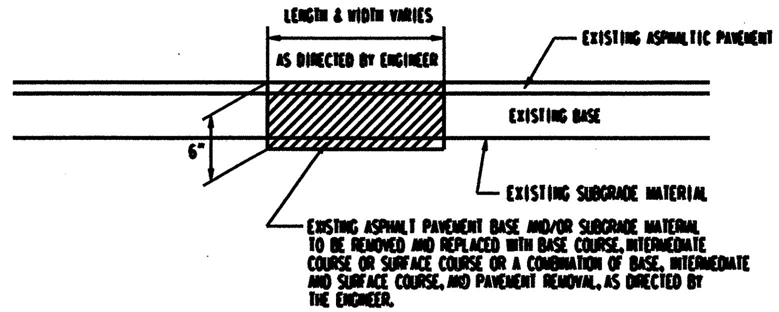


RIGHT TURN LANE EXTENSION
VICINTY OF BELL FORK RD.

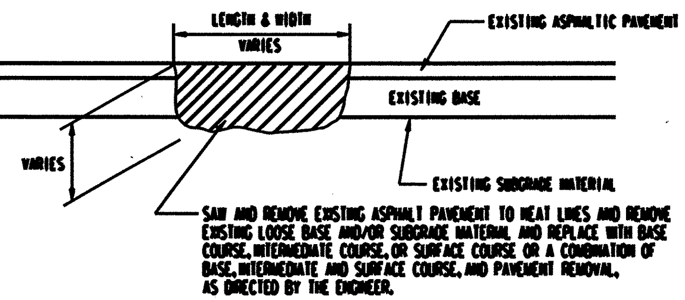
PROJECT REFERENCE NO.	SHEET NO.
3CR.10671.51	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

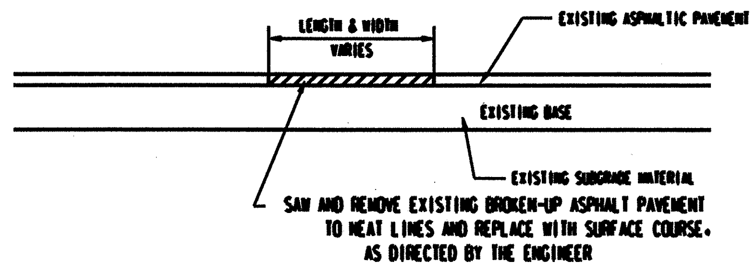
DETAILS OF REPAIRING EXISTING PAVEMENT PRIOR TO RESURFACING FOR FULL DEPTH AND MILLING



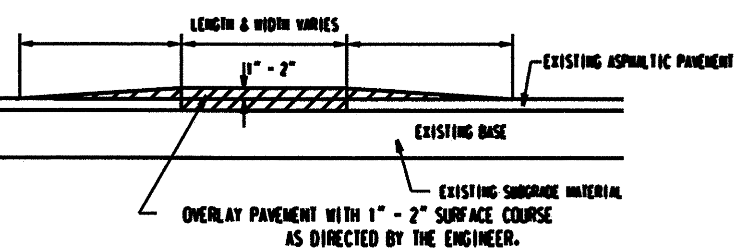
DETAIL NO. 1



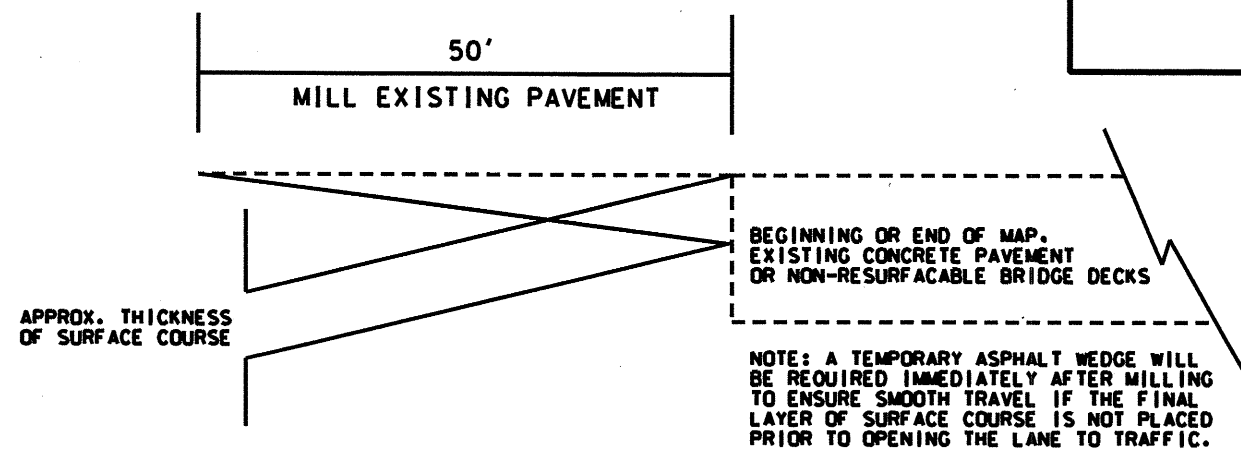
DETAIL NO. 2



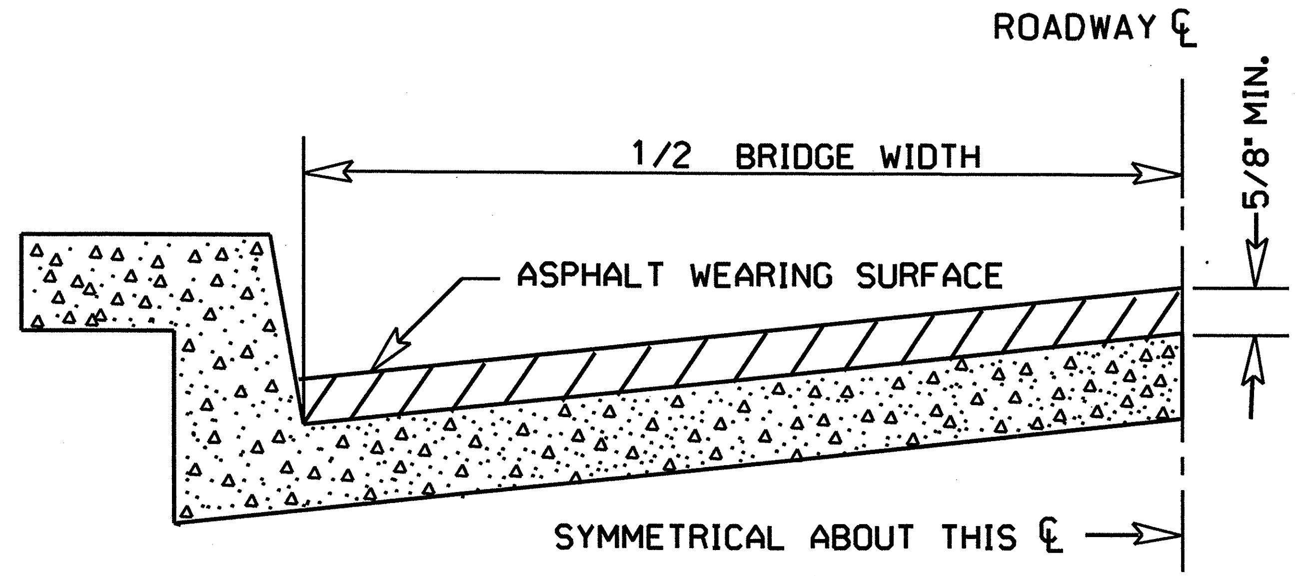
DETAIL NO. 3



DETAIL NO. 4



NOTE: A TEMPORARY ASPHALT WEDGE WILL BE REQUIRED IMMEDIATELY AFTER MILLING TO ENSURE SMOOTH TRAVEL IF THE FINAL LAYER OF SURFACE COURSE IS NOT PLACED PRIOR TO OPENING THE LANE TO TRAFFIC.



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.

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT NO.	SHEET NO.	TOTAL NO.
3CR.1067151	4	

SUMMARY OF QUANTITIES

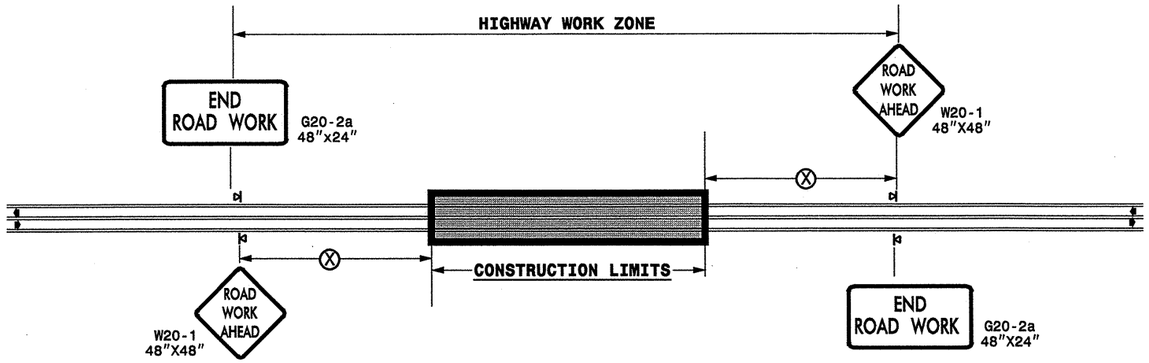
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LENGTH MI	WIDTH FT	BORROW EXC CY	INC STONE BASE TONS	SHDR RECONSTR SMI	2 1/2" MILL SY	3 1/4" MILL SY	3" MILL SY	1 1/2" MILL SY	INC MILL SY	BASE COURSE, B25.0C TONS	INT COURSE, I19.0C TONS	SURF COURSE, S9.5B TONS	SURF COURSE, S9.5C TONS	PG 64-22 PLANT MIX TONS	PG 70-22 PLANT MIX TONS	PATCH (MILL) TON	PATCH (FULL DEPTH) TONS	WEDGING EXISTING PAVEMENT TONS	2'-6" C & G, REMOVE AND REPLACE LF	WHEELCH AIR RAMPS EA	INC CONC SY	ADJ CB EA	ADJ MH EA	ADJ METER OR VALVE BOX EA	PORTABLE LIGHTING LS	TEMP SILT FENCE LF	STONE FOR EC CLASS B TON	SEDIMENT CONTROL STONE TON	TEMP MULCHING ACR	SEED FOR TEMP SEEDING LBS	FERTILIZER FOR TEMP SEEDING TON	1/4" HARDWARE CLOTH LF	SEED & MULCHING AC	INDUCTIVE LOOP LF	LEAD-IN CABLE (18-4) LF
3CR.1067151	Onslow	1	US 258	NC 24 TO JONES CO. LINE	1	5.5	30	3498	400	11					350			18,858		1,131		1,500	300										550	138	137.50	6.00	275.00	1.00	275.00	5.50		
		2	US 17 BUS	(MP 0-0.073) TAPER 62' - 72'	2	0.073	67				2866								278		17																					
		"	"	(MP 0.073-0.389) FULL WIDTH 72'	3	0.316	72					13360							1,292		77																					
		"	"	(MP 0.389-0.477) FULL WIDTH 72' (ISLANDS)	3	0.088	72					3720							360		22																					
		"	"	(MP 0.477-0.574) TAPER 72' - 66'	3	0.097	69					3910							380		23																					
		"	"	(MP 0.574-0.693) TAPER 72' - 66'	2	0.119	69				4830								466		28																					
		"	"	(MP 0.693-0.718) TAPER 66 ' - 68'	4	0.025	67			0.03			968						95		6				169	130			1											0.02		
		"	"	(MP 0.718-0.979) FULL WIDTH 68'	4	0.261	68			0.26			10427						1,008		60																			0.20		
		"	"	(MP 0.979-1.020) TAPER 68' - 74'	4	0.04	71			0.04			1680						161		10																			0.03		
		"	"	(MP 1.020-1.080) FULL WIDTH 74'	4	0.06	74			0.06			2607						252		15																			0.05		
		"	"	(MP 1.080-1.104) TAPER 74' - 84'	4	0.025	79			0.03			1141				39	17	122	2	7																			0.02		
		"	"	(MP 1.104-1.172) FULL WIDTH 84'	4	0.068	84			0.07			3360						324		19																			0.05		
		"	"	(MP 1.172-1.189) TAPER 84' - 96'	4	0.017	90			0.02			900						87		5																			0.01		
		"	"	(MP 1.189-1.212) FULL WIDTH 96'	4	0.023	96			0.02			1280						125		8																			0.02		
		"	"	(MP 1.212-1.246) FULL WIDTH 90'	4	0.034	90			0.03			1800						174		10																			0.03		
		"	"	(MP 1.246-1.313) 90' - 64'	4	0.066	77			0.07			2995						288		17																			0.05		
		"	"	(MP 1.313-1.600) FULL WIDTH 64'	4	0.288	64			0.29			10809						1,047		63																			0.22		
		"	"	(MP 1.600-1.761) FULL WIDTH 64'	5	0.161	64			0.16				6038					585		35																			0.12		
		"	"	(MP 1.761-1.785, 1.964-1.992) TAPER 64' - 72'	5	0.052	68			0.05				2085			97	43	227	6	14																			0.04		
		"	"	(MP 1.785-1.964) FULL WIDTH 72'	5	0.179	72			0.18				7580					732		44																			0.13		
		"	"	(MP 1.992-2.297) FULL WIDTH 64'	5	0.305	64			0.31				11449					1,108		67																			0.23		
		"	"	800' EAST OF B-4214 (NEW RIVER BRIDGE) TO US 17 BYPASS	2 thru 5	2.297	62-96		59	0					2000							25		120	27	250	1	31	40	1	66	17	17.00	0.66	33.00	0.17	33.00		15,000	1,500
TOTAL FOR MAP NO. 2						4.594		0	59	1.62	7696	20990	37967	27132	2000	136	60		9,111	8	547		25	169	250	27	250	2	31	40	1	66	17	17.00	0.66	33.00	0.17	33.00	1.22	15,000	1,500
TOTAL FOR PROJ NO. 3CR.1067151						10.094		3498	459	12.62	7696	20990	37967	27132	2350	136	60	18,858	9,111	1,139	547	1,500	325	169	250	27	250	2	31	40	1	616	155	154.50	6.66	308.00	1.17	308.00	6.72	15,000	1,500
GRAND TOTAL						10.094		3498	459	12.62	7696	20990	37967	27132	2350	136	60	18,858	9,111	1,139	547	1,500	325	169	250	27	250	2	31	40	1	616	155	154.50	6.66	308.00	1.17	308.00	6.72	15,000	1,500

PROJECT NO.	SHEET NO.	TOTAL NO.
3CR.1067151	8	

THERMOPLASTIC AND PAINT QUANTITIES

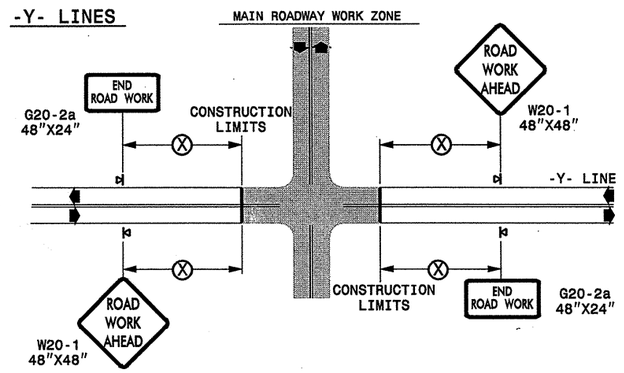
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	4685000000-E 4" X 90 M WHITE THERMO LF	4686000000-E 4" X 120 M YELLOW THERMO LF	4" X 120 M WHITE THERMO LF	4695000000-E 8" X 90 M WHITE THERMO LF	4710000000-E 24" X 120 M WHITE THERMO LF	4721000000-E THERMO MSG ONLY 120 M EA	4725000000-E THERMO LT ARROW 90 M EA	THERMO STR ARROW 90 M EA	THERMO RT ARROW 90 M EA	THERMO STR & RT ARROW 90 M EA	4810000000-E 4" YELLOW PAINT LF	4" WHITE PAINT LF	4820000000-E 8" WHITE PAINT LF	4835000000-E 24" WHITE PAINT LF	4840000000-N PAINT MSG ONLY EA	4845000000-N PAINT LT ARROW EA	PAINT STR ARROW EA	PAINT RT ARROW EA	PAINT STR & RT ARROW EA	4905000000-N SNOW PLOWABLE MARKERS (Y/Y) EA	SNOW PLOWABLE MARKERS (C/R) EA
3CR.1067151	Onslow	1	US 258	NC 24 TO JONES CO. LINE	59,180	36,300									36,300			1,100						385	
		2	US 17 BUS	(MP 0-0.073) TAPER 62' - 72'		964	385								964	385								19	10
		"	"	(MP 0.073-0.389) FULL WIDTH 72'		4,171	1,668								4,171	1,668								83	83
		"	"	(MP 0.389-0.477) FULL WIDTH 72' (ISLANDS)		1,162	465								1,162	465								23	23
		"	"	(MP 0.477-0.574) TAPER 72' - 66'		1,280	512								1,280	512								26	19
		"	"	(MP 0.574-0.693) TAPER 72' - 66'		1,571	628								1,571	628								31	24
		"	"	(MP 0.693-0.718) TAPER 66 ' - 68'	132	330	132								330	132								7	5
		"	"	(MP 0.718-0.979) FULL WIDTH 68'	1378	3,445	2,067								3,445	2,067								69	34
		"	"	(MP 0.979-1.020) TAPER 68' - 74'	211	528	317								528	317								11	5
		"	"	(MP 1.020-1.080) FULL WIDTH 74'	317	634	1,109								634	1,109								4	40
		"	"	(MP 1.080-1.104) TAPER 74' - 84'	132	264	462	264							264	462								2	23
		"	"	(MP 1.104-1.172) FULL WIDTH 84'	359	718	1,616								718	1,616								4	63
		"	"	(MP 1.172-1.189) TAPER 84' - 96'	90	180	404	180							180	404	180							1	26
		"	"	(MP 1.189-1.212) FULL WIDTH 96'	121	243	334								243	334								2	11
		"	"	(MP 1.212-1.246) FULL WIDTH 90'	180	359	494								359	494								2	16
		"	"	(MP 1.246-1.313) TAPER 90' - 64'	348	871	958								871	958								4	30
		"	"	(MP 1.313-1.600) FULL WIDTH 64'	1521	3,802	3,802								3,802	3,802								19	57
		"	"	(MP 1.600-1.761) FULL WIDTH 64'	850	2,125	2,125								2,125	2,125								11	32
		"	"	(MP 1.761-1.785, 1.964-1.992) TAPER 64' - 72'	275	686	686								686	686								14	
		"	"	(MP 1.785-1.964) FULL WIDTH 72'	945	2,363	4,253								2,363	4,253								12	154
		"	"	(MP 1.992-2.297) FULL WIDTH 64'	1610	4,026	2,416								4,026	2,416								81	40
		"	"	800' EAST OF B-4214 (NEW RIVER BRIDGE) TO US 17 BYPASS				265	1,100	8	126	54	20	13					8	126	54	20	13		
TOTAL FOR MAP NO. 2					8,469	29,721	24,833	709	1,100	8	126	54	20	13	29,721	24,833	180		8	126	54	20	13	424	695
TOTAL FOR PROJ NO. 3CR.1067151					67,649	66,021	24,833	709	1,100	8	126	54	20	13	66,021	24,833	180	1,100	8	126	54	20	13	809	695
						90,854					213				90,854					213				1,504	
GRAND TOTAL					67,649	66,021	24,833	709	1,100	8	126	54	20	13	66,021	24,833	180	1,100	8	126	54	20	13	809	695
						90,854					213				90,854					213				1504	

TWO-WAY UNDIVIDED ** (L-LINES)



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

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

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

DETAIL DRAWING FOR TWO-WAY UNDIVIDED WORK ZONE WARNING SIGNS

SHEET 1 OF 1

APPROVED:_____ DATE:_____

SEAL

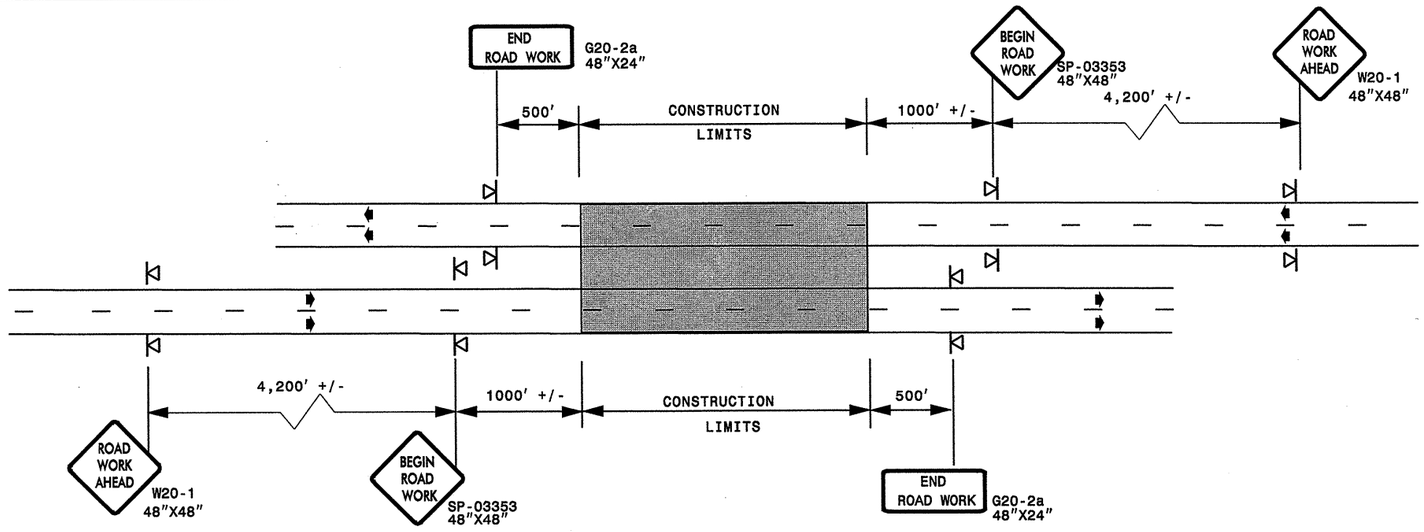
DETAIL DRAWING
FOR TWO-WAY UNDIVIDED
ADVANCED WORK ZONE WARNING SIGNS

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

PROJ. REFERENCE NO.	SHEET NO.
3CR.10671.51	TCP-2

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

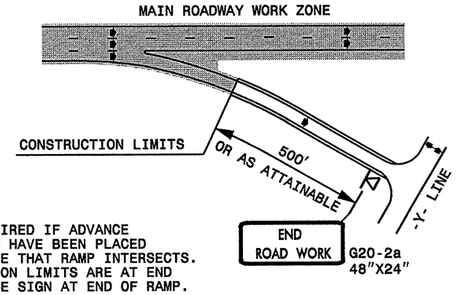
DETAIL A



ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)

DETAIL B

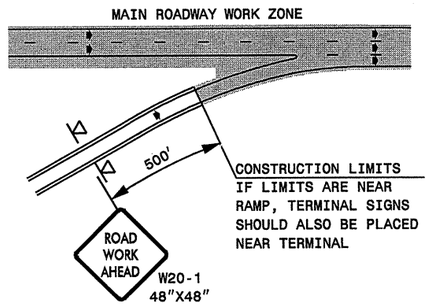
EXIT RAMPS



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.

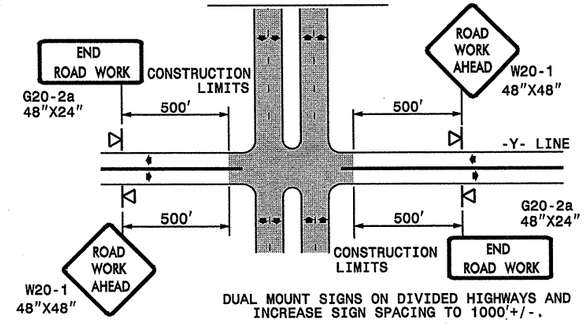
DETAIL C

ENTRANCE RAMPS



DETAIL D

-Y- LINES



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

GENERAL NOTES

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCE 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

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

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

SHEET 1 OF 1

APPROVED: _____ DATE: _____

SEAL

DETAIL DRAWING
FOR FREEWAYS
WORK ZONE WARNING SIGNS

SCALE:	NONE
DATE:	
DWG. BY:	
DESIGN BY:	
REVIEWED BY:	

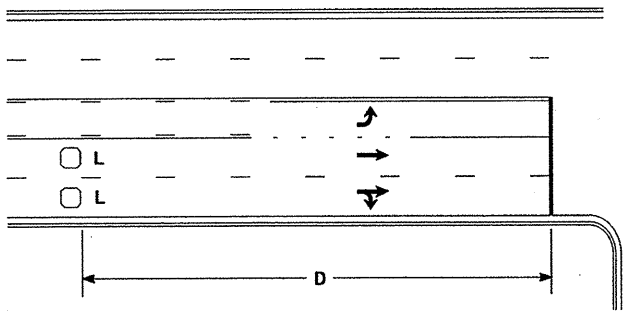
REVISIONS	
7-98	10/01
10-98	03/04
01/01	11/04
CADD FILE	

02-MAR-2008 17:02
\\DOT\DFSROOT01\GROUPS-WTCCC\designgroup4\resurfacing\resurfacing2007\div03\c202054_3cr10671sl_onslow_us258etc\C202054_3CR10671SL_free4lanesgreatJuly2006.dgn
psaymore AT WZTC23T502

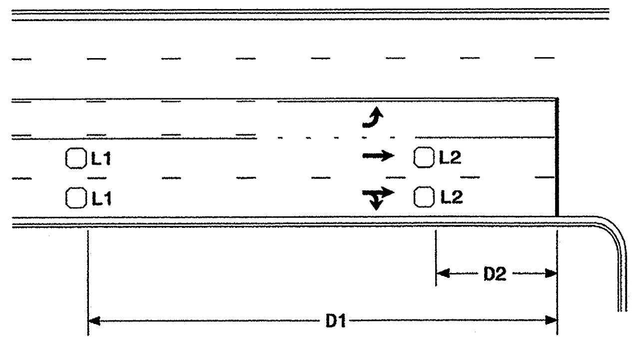
PROJECT REFERENCE NO.	SHEET NO.
	SIG 1

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)

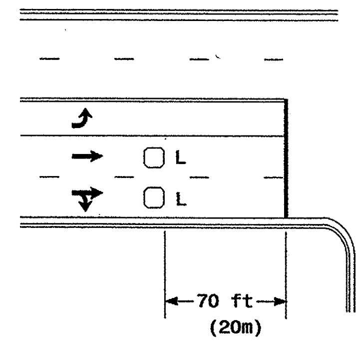
L1 = 6ft X 6ft (1.8m X 1.8m)
Wired in series

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

"Stretch" Operation

Low Speed Detection

[≤35 mph (56 km/hr)] 3CR.10671.51



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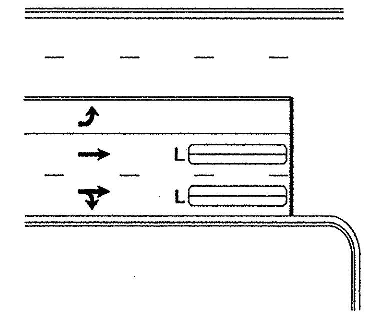
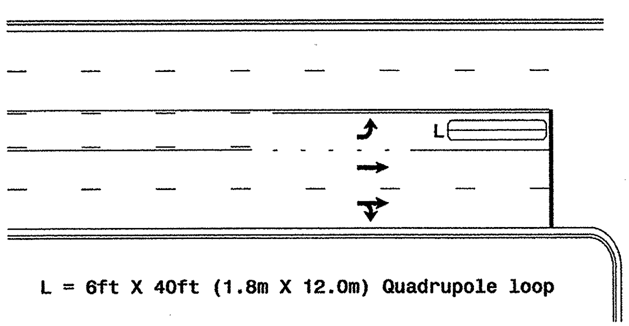


L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

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

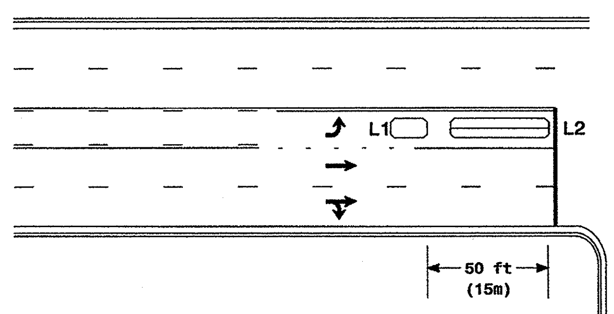
Left Turn Lane Detection



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

Presence Loop Detection

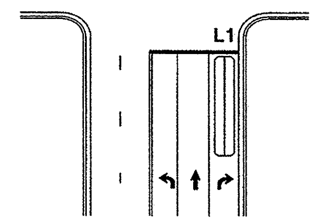
OR



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

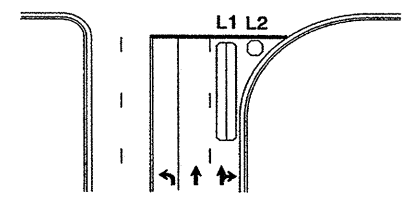
Queue Loop Detection

Right Turn Lane Detection

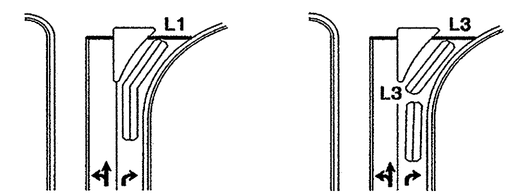


Standard Turn

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

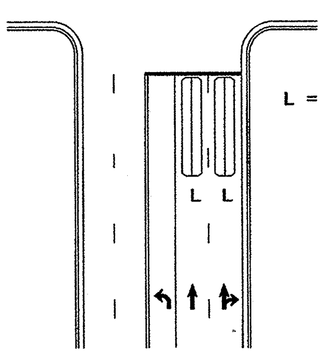


Wide Radius Turn



Channelized Turn

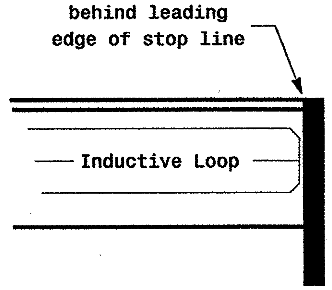
Side Street Detection



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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
State of North Carolina Department of Transportation
Signals and Geometrics Section
122 N. McDowell St., Raleigh, NC 27603

SCALE
N/A

Typical Loop Locations

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

REVISIONS	INIT.	DATE
∇ Revise pavement markings	aa	12/11/06

SEAL
North Carolina Professional Engineer Seal 23489 Pamela A. Alexander

SIGNATURE 6/6/06 DATE

SIG. INVENTORY NO.

19-DEC-2006 14:29
s:*its signals*lib turn in*misc*looptypical2006.dgn
palexander

PROJECT REFERENCE NO.	SHEET NO.
	Sig.

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

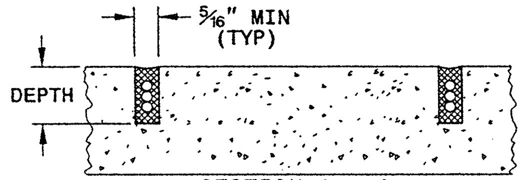
5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

CONVENTIONAL 4-SIDED LOOP

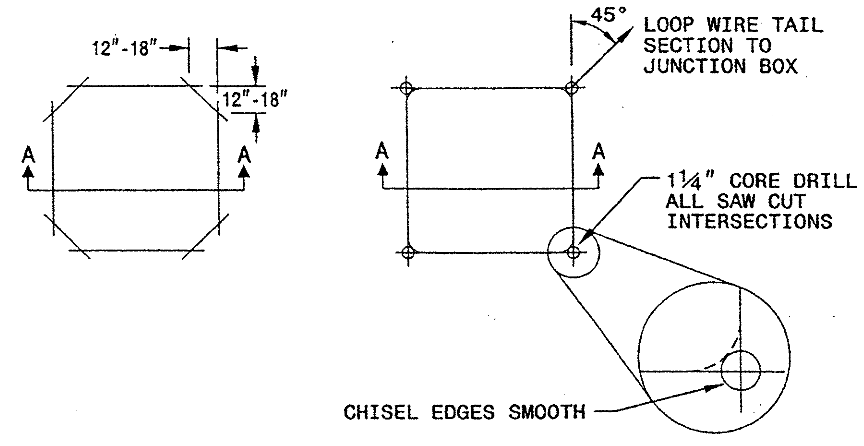
SAW SLOT DEPTH CHART

DEPTH (IN)	NO. OF WIRE TURNS				
	2	3	4	5	6
CONCRETE	2.0	2.0	2.5	2.5	3.0
ASPHALT	2.0	2.5	3.0	3.0	3.0

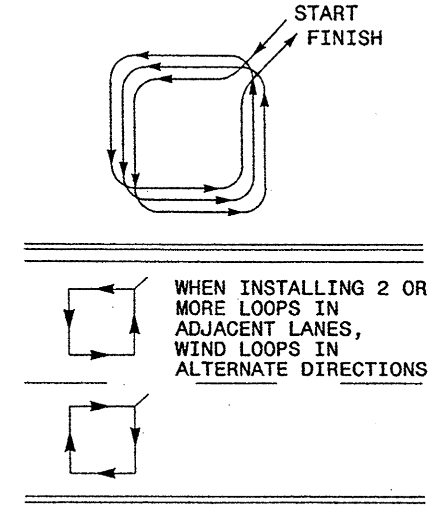


SECTION A - A

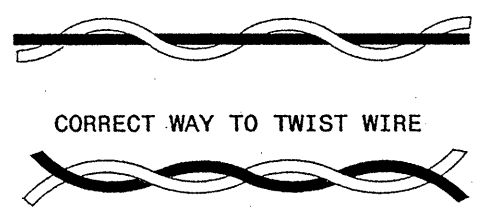
SAW CUT OPTIONS



LOOP WINDING METHOD



LOOP WIRE TWISTING METHOD

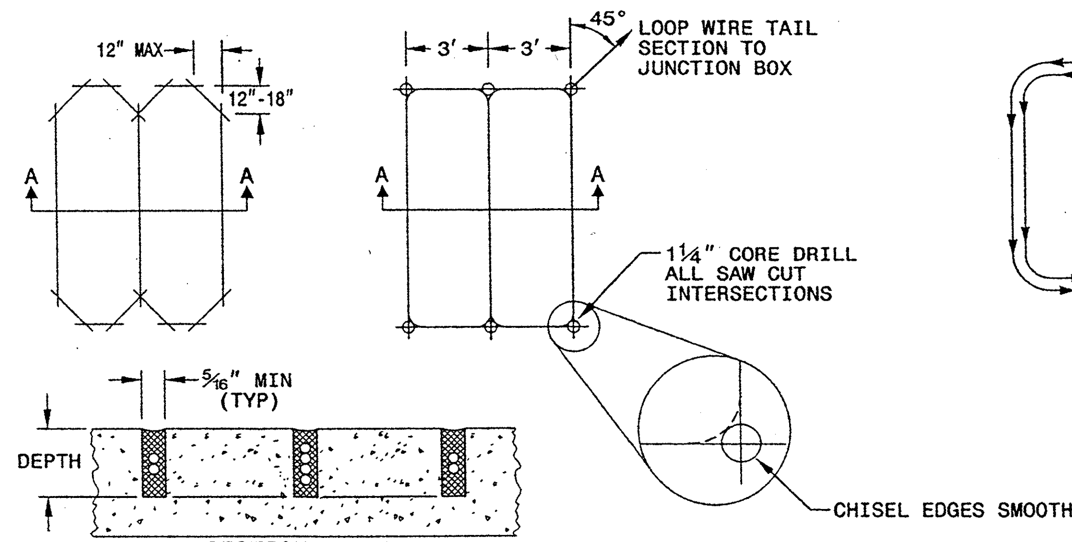


NOTES

1. OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
2. MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
3. WIRE LOOPS CONNECTED TO THE SAME DETECTOR CHANNEL IN SERIES.
4. LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS OR APPROVED BY ENGINEER.

QUADRUPOLE LOOP

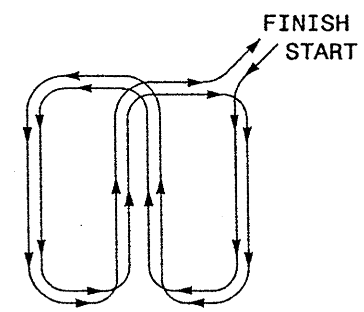
SAW CUT OPTIONS



SECTION A - A

DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

LOOP WINDING METHOD



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

5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

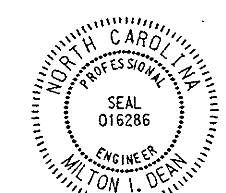
SHEET 1 OF 3
1725D01

SHEET 1 OF 3
1725D01

See Plate for Title

Prepared in the Offices of:
Intelligent Transportation Systems & Signals Unit
750 N. Greenfield Parkway
Garner, NC 27529

SEAL



SIGNATURE 9/5/07 DATE

PROJECT REFERENCE NO.	SHEET NO.
	Sig.

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

5-07

ENGLISH DETAIL DRAWING FOR

INDUCTIVE DETECTION LOOPS

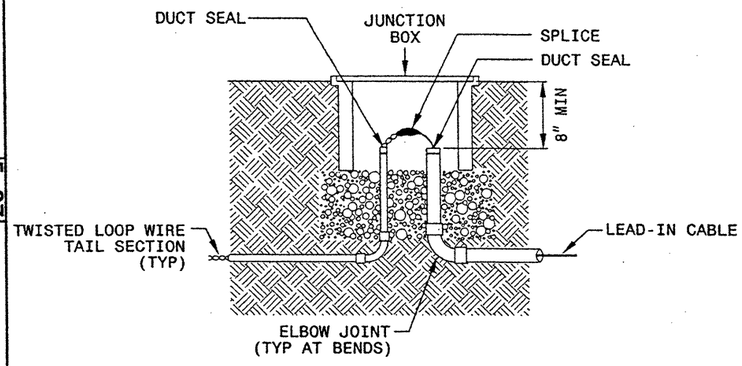
LOOP WIRE DETAILS

SHEET 2 OF 3

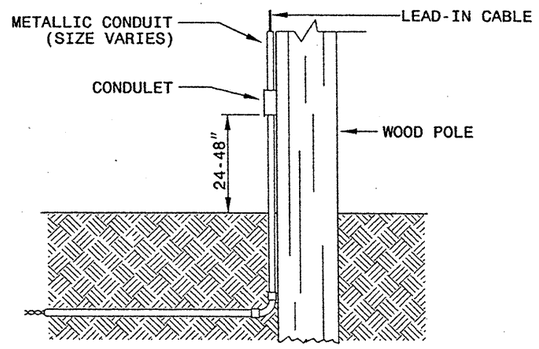
1725D01

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

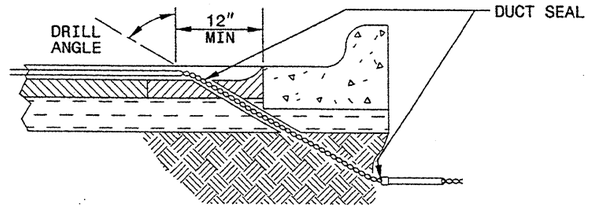


NOTE

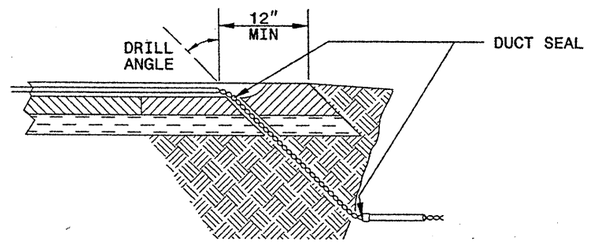
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

LOOP WIRE PAVEMENT EDGE DETAILS

LOOP WIRE AT CURB & GUTTER SECTION



LOOP WIRE AT PAVEMENT SECTION



NOTES

1. DO NOT EXCAVATE UNDER CURB AND GUTTER SECTIONS FOR CONDUIT INSTALLATION.
2. TWIST LOOP WIRE TAIL SECTIONS FROM WHERE LOOP WIRE TAIL LEAVES SAW CUT TO JUNCTION BOX, INCLUDING THROUGH CONDUIT.
3. BEFORE SEALING LOOPS, INSTALL DUCT SEAL WHERE LOOP WIRE TAIL SECTION LEAVES SAW CUT IN PAVEMENT AND AT ENTRANCE OF CONDUIT TO JUNCTION BOX.

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

5-07

ENGLISH DETAIL DRAWING FOR

INDUCTIVE DETECTION LOOPS

LOOP WIRE DETAILS

SHEET 2 OF 3

1725D01

See Plate for Title

Prepared in the Offices of:

Intelligent Transportation Systems & Signals Unit

750 N. Greenfield Parkway
Garner, NC 27529

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 016286 ENGINEER MILTON I. DEAN

SIGNATURE 9/5/07 DATE

05-SEP-2007 14:00
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emilittle

PROJECT REFERENCE NO.	SHEET NO.
	Sig.

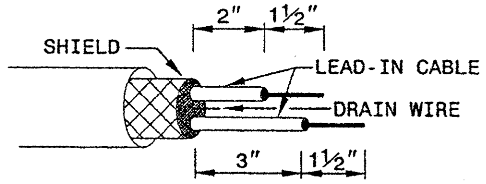
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

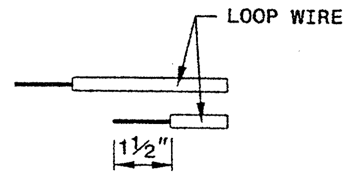
5-07

ENGLISH DETAIL DRAWING FOR
INDUCTION DETECTION LOOPS
SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

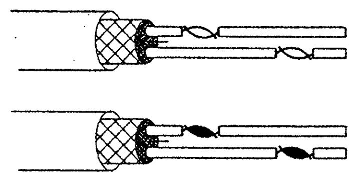
SHEET 3 OF 3
1725D01

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE



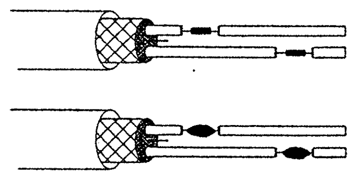


STEP 2. CONNECT AND SOLDER



TWIST BARE CONDUCTORS TOGETHER AND SOLDER WITH RESIN CORE SOLDER

— OR —

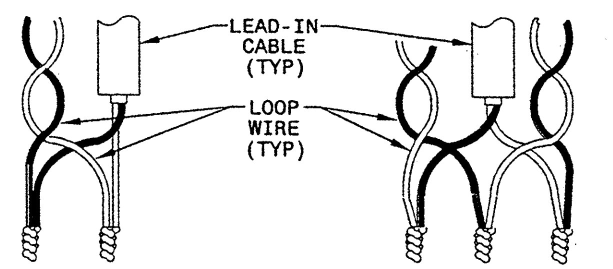


CRIMP BARE CONDUCTORS TOGETHER WITH AN UNINSULATED BUTT CONNECTOR AND SOLDER WITH RESIN CORE SOLDER

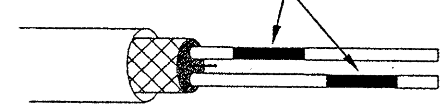
BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS

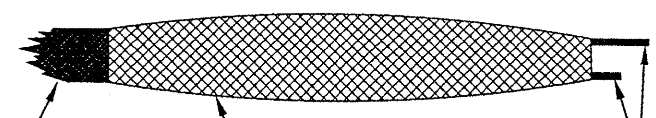
SINGLE CONNECTION · SERIES CONNECTION



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



STEP 4. ENVIRONMENTALLY PROTECT SPLICE



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

5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3
1725D01

See Plate for Title

Prepared in the Offices of:
Intelligent Transportation Systems & Signals Unit
750 N. Greenfield Parkway
Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 016286 MILTON I. DEAN

SIGNATURE 9/5/07 DATE

05-SEP-2007 14:01