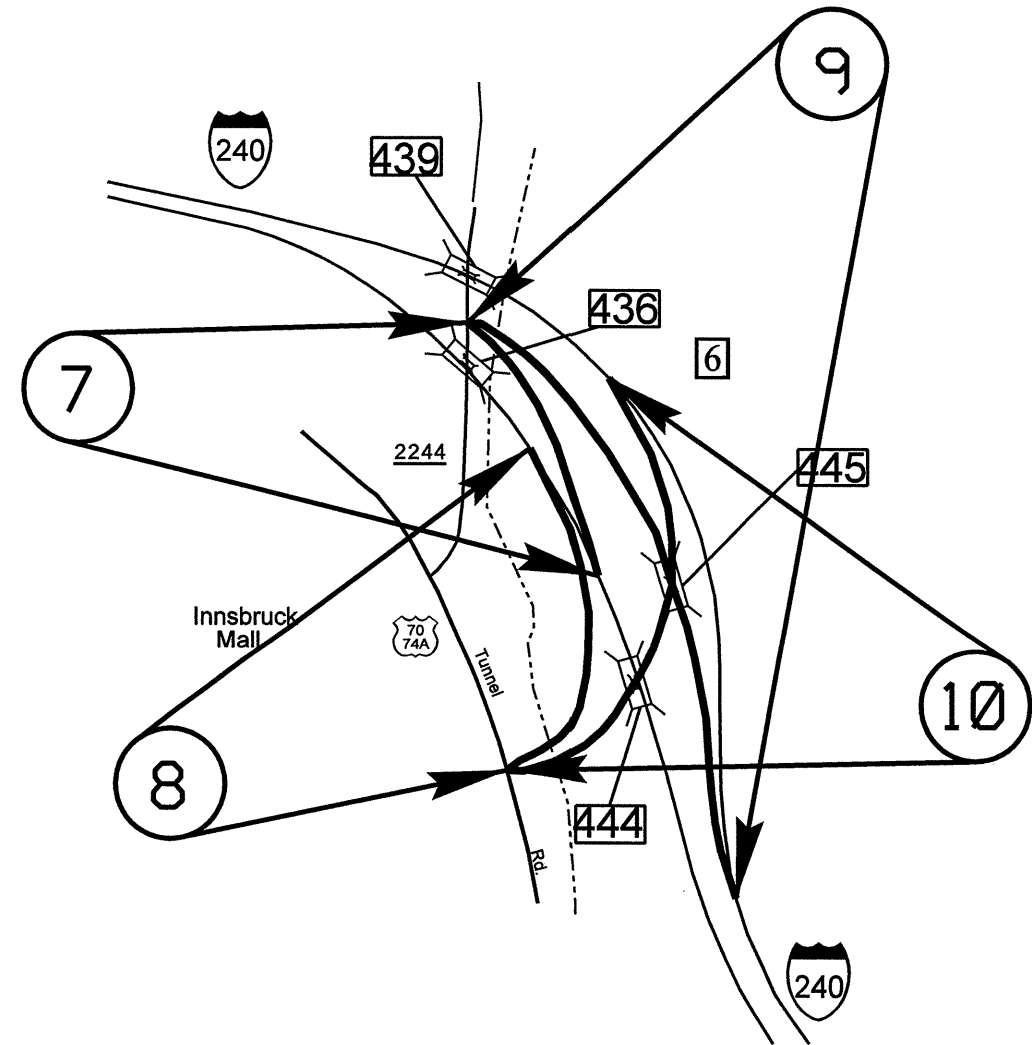
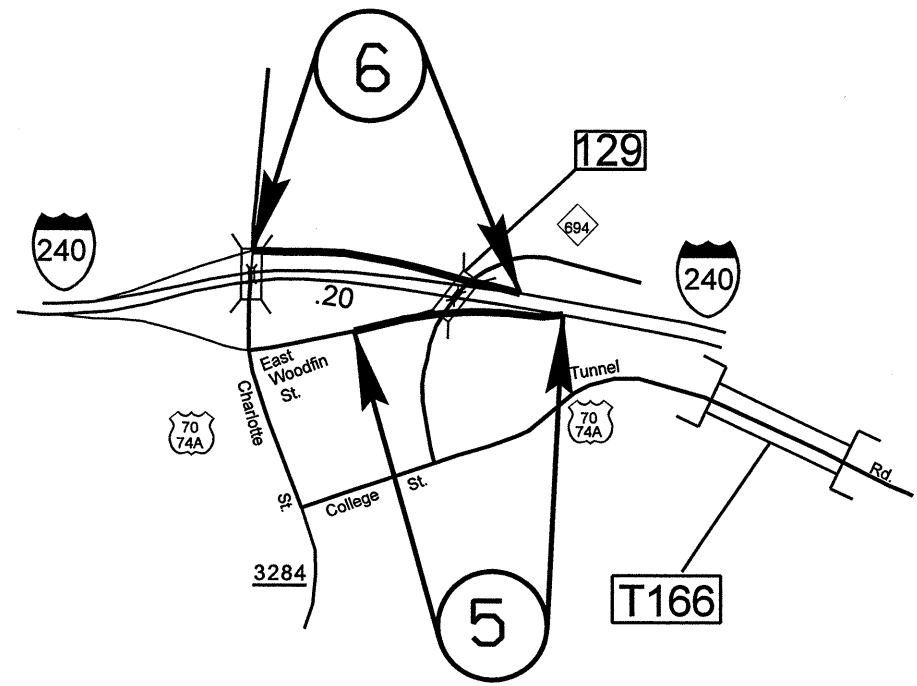


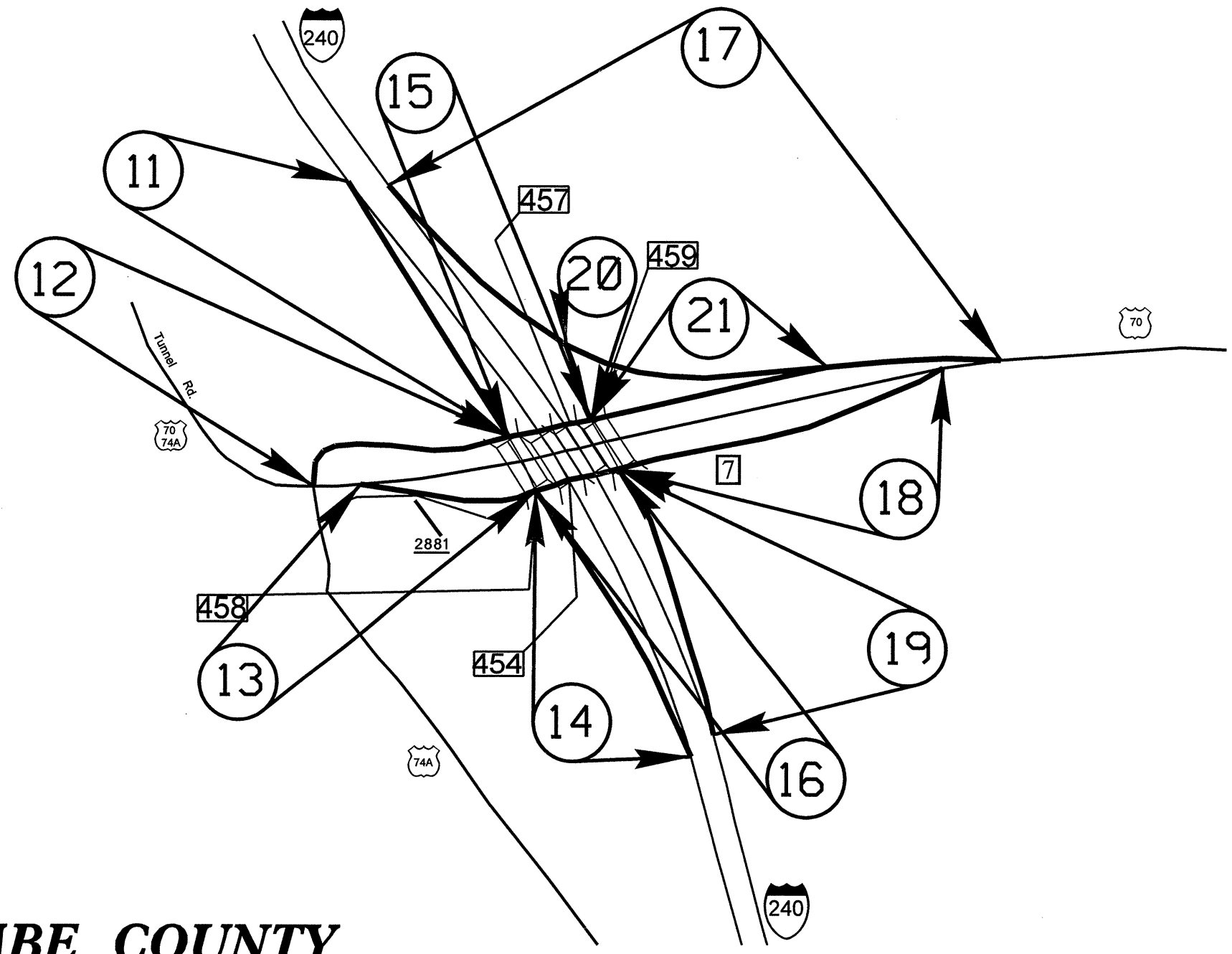


PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5139	2	



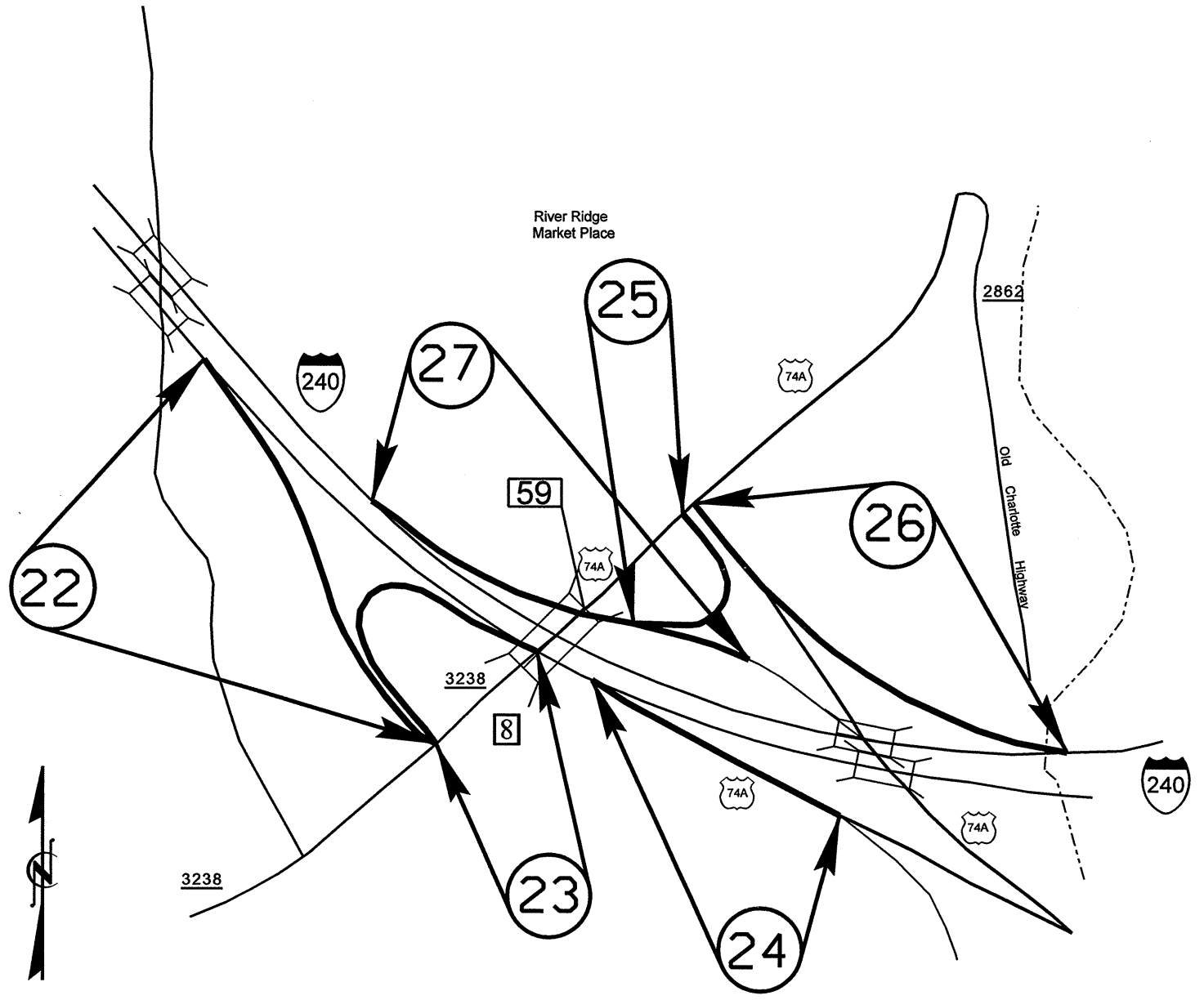
**BUNCOMBE COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5139	3	



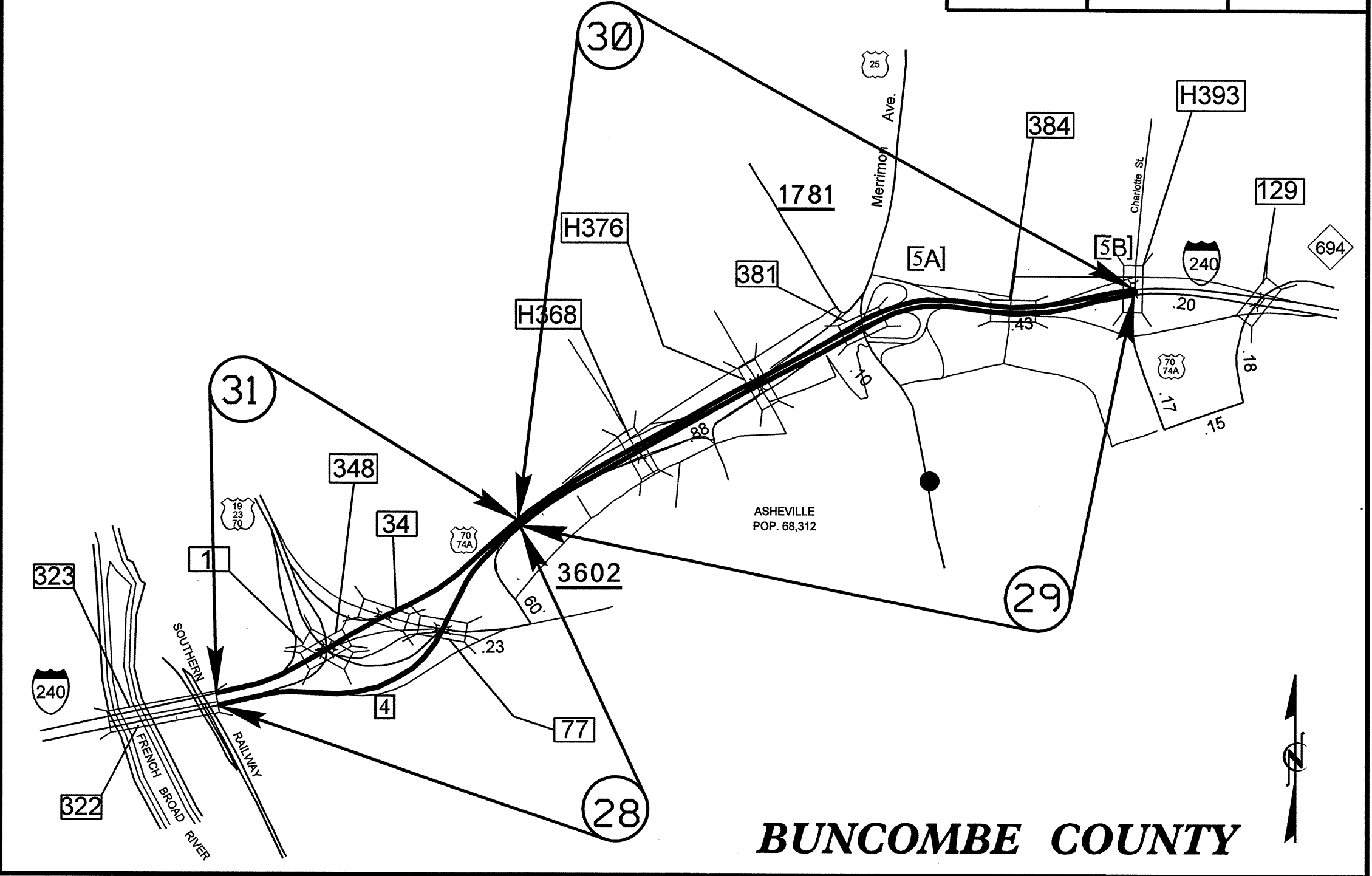
**BUNCOMBE COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5139	4	

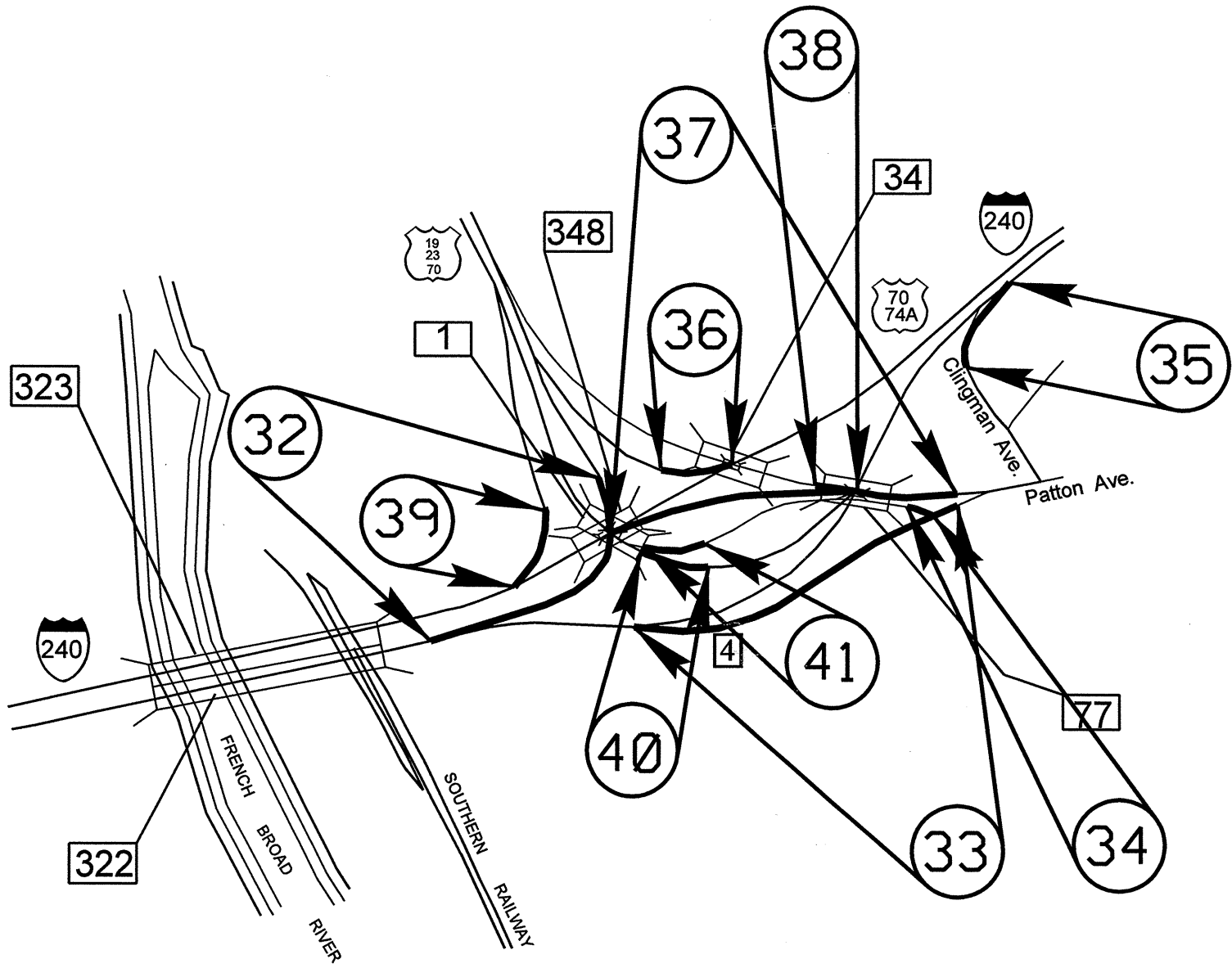


**BUNCOMBE COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5139	5	

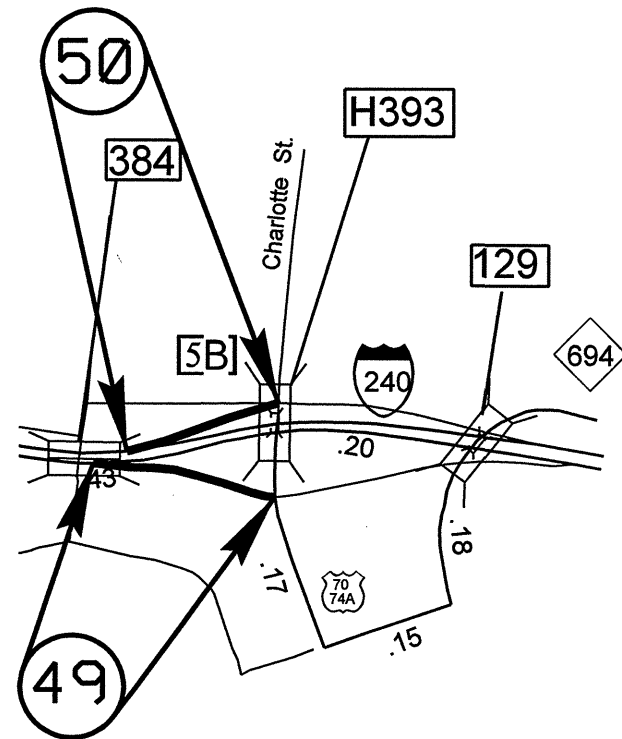
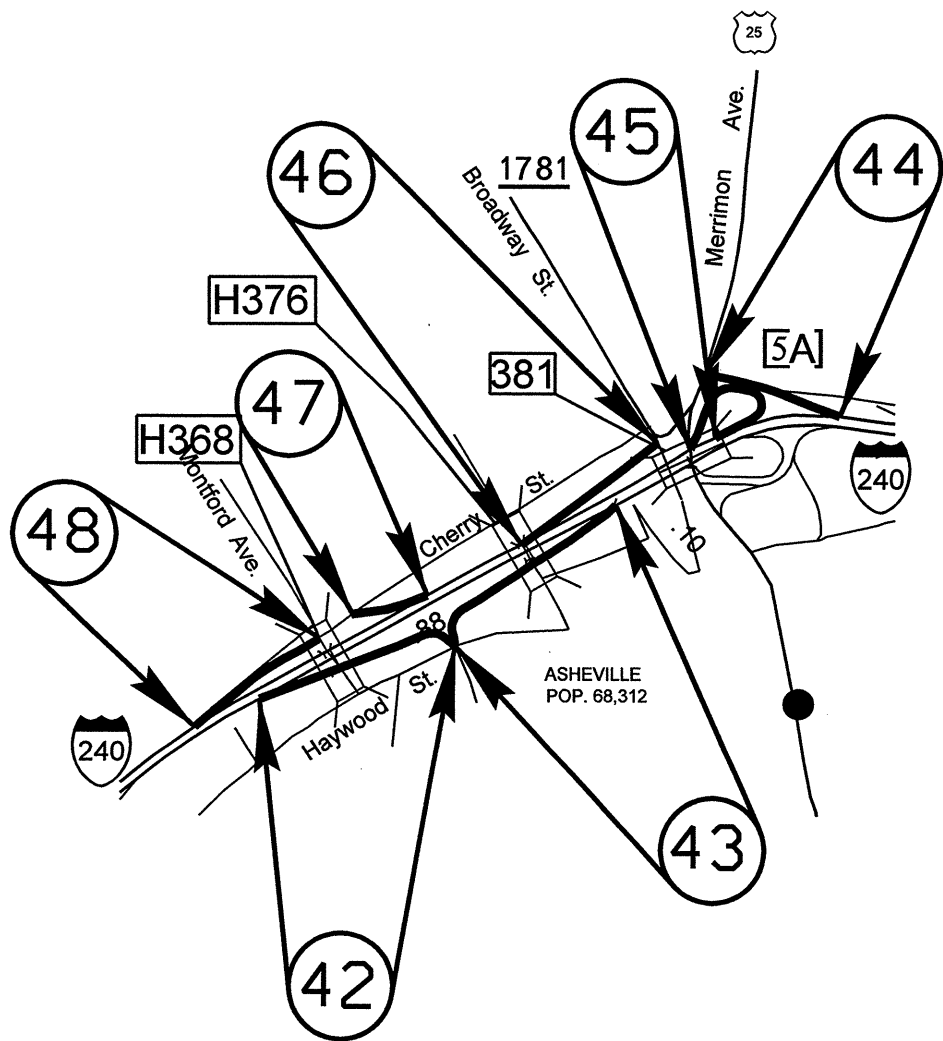


PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5139	6	



**BUNCOMBE COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5139	7	

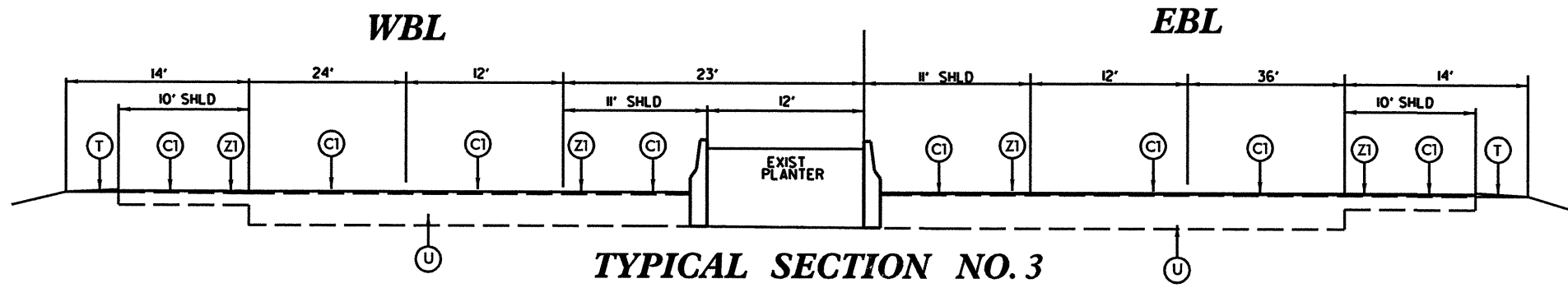


**BUNCOMBE COUNTY**



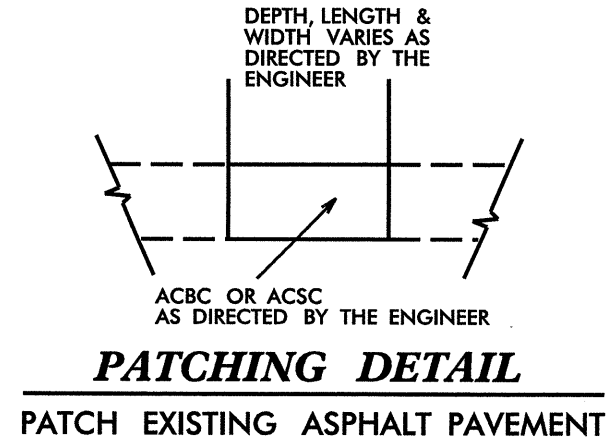


PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5139	9	



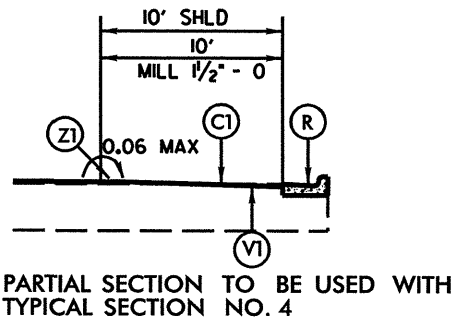
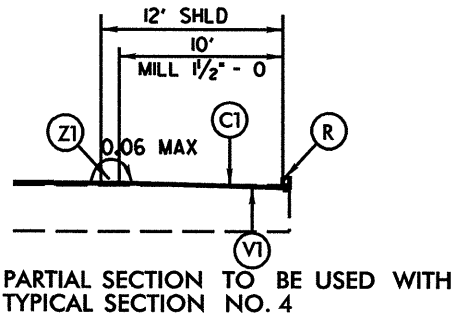
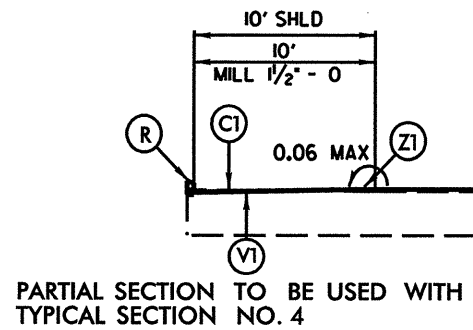
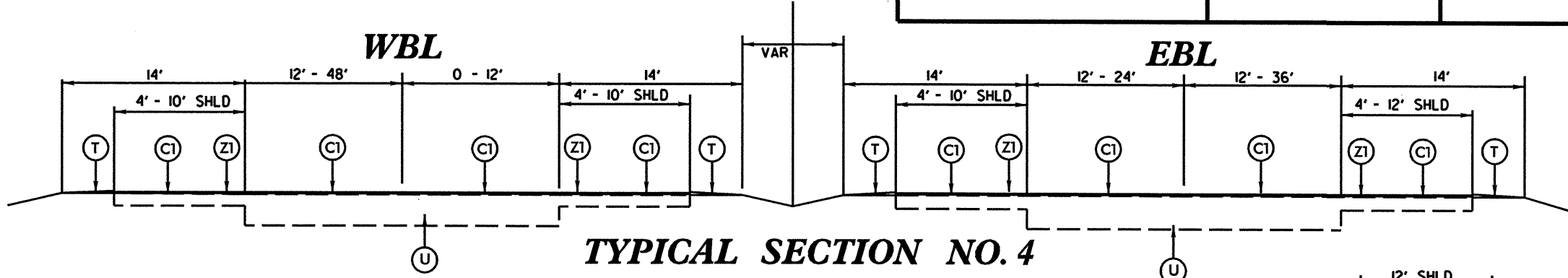
**TYPICAL SECTION NO. 3**

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
T	SHOULDER RECONSTRUCTION USING EARTH MATERIAL, LOCATIONS AS DIRECTED BY ENGINEER
U	EXISTING PAVEMENT
V1	MILL 0 - 1½"
Z1	MILLED RUMBLE STRIPS IN ACCORDANCE WITH STD. DWG. 665.01



**BUNCOMBE COUNTY**

<b>PROJECT NO.</b>	<b>SHEET NO.</b>	<b>TOTAL SHEETS</b>
I-5139	10	

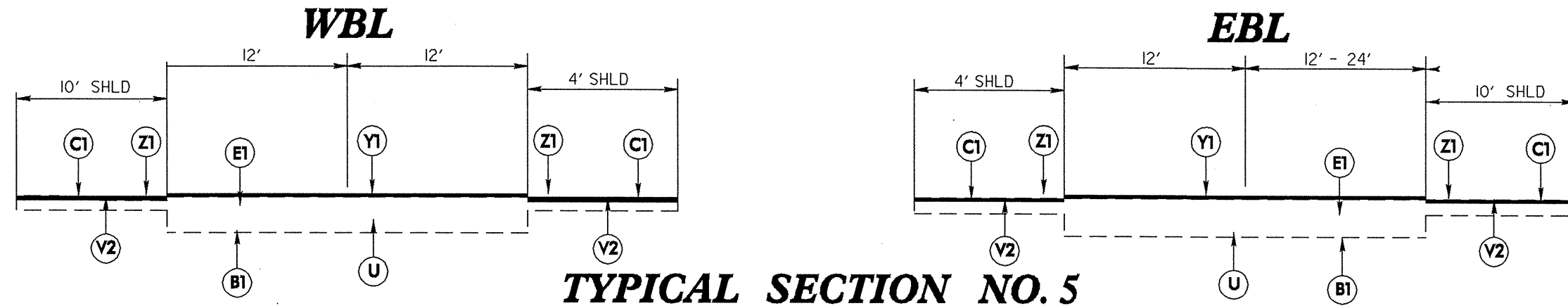


PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
R	EXISTING CONCRETE CURB OR CONCRETE ISLAND
T	SHOULDER RECONSTRUCTION USING EARTH MATERIAL, LOCATIONS AS DIRECTED BY ENGINEER
U	EXISTING PAVEMENT
V1	MILL 0 - 1 1/2"
Z1	MILLED RUMBLE STRIPS IN ACCORDANCE WITH STD. DWG. 665.01

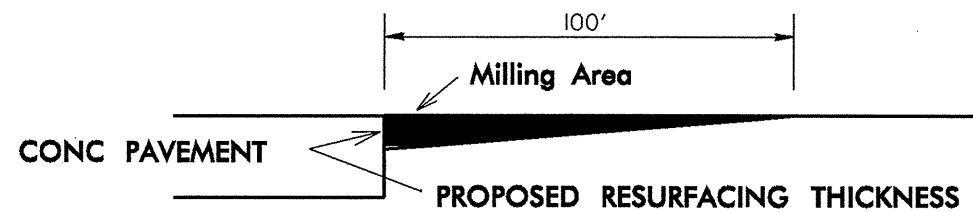
**BUNCOMBE COUNTY**

# BUNCOMBE COUNTY

<b>PROJECT NO.</b>	<b>SHEET NO.</b>	<b>TOTAL SHEETS</b>
I-5139	11	



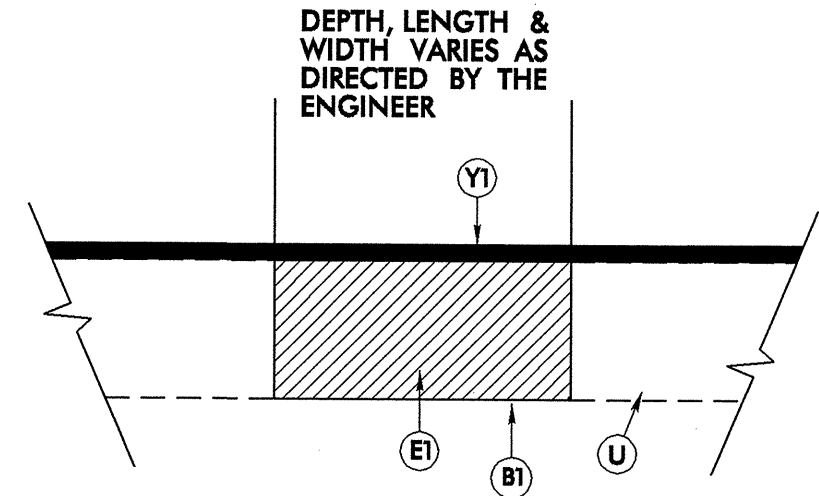
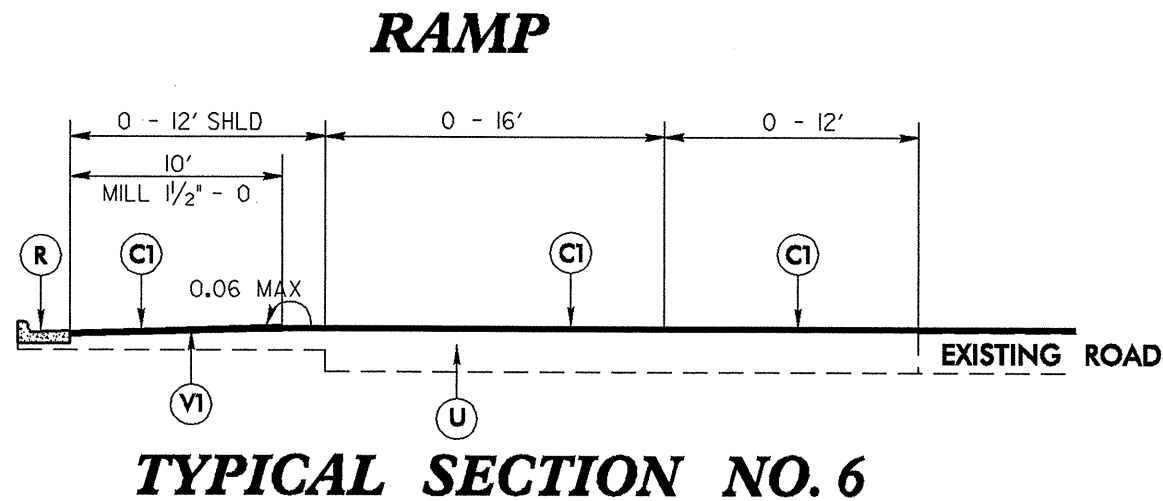
**TYPICAL SECTION NO. 5**



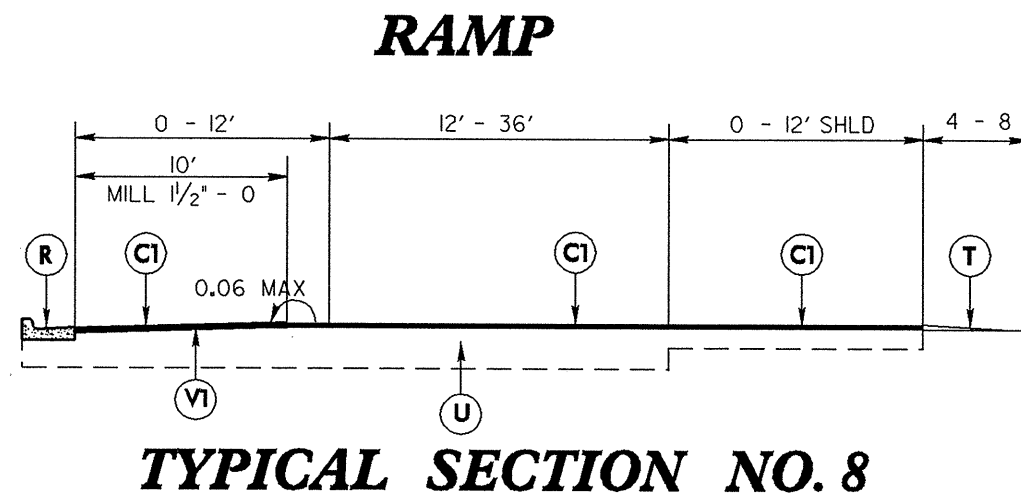
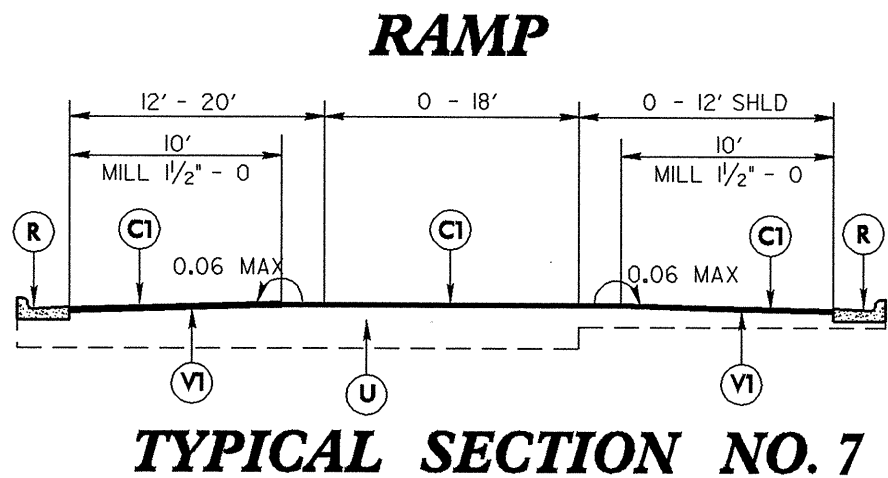
**MILLING DETAIL AT CONCRETE PAVEMENT**  
**USE THIS DETAIL WHERE ASPHALT PAVEMENT**  
**AND CONCRETE PAVEMENT MEET**  
**COST OF MILLING IS INCIDENTAL TO OTHER ITEMS**

PAVEMENT SCHEDULE	
B1	UNDERCUT EXCAVATION, CLASS IV SUBGRADE STABILIZATION AND FABRIC FOR SOIL STABILIZATION, LOCATION AS DIRECTED BY THE ENGINEER
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
E1	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5-1/2" IN DEPTH. LOCATION AS DIRECTED BY THE ENGINEER
R	EXISTING CONCRETE CURB OR CONCRETE ISLAND
U	EXISTING PAVEMENT
V1	MILL 0 - 1½"
V2	MILL 1½"
Y1	PROP APPROX 5/8" ULTRATHIN HOT MIX ASPHALT, TYPE B, AT AN AVERAGE RATE OF 70 LBS PER SQ YARD
Z1	MILLED RUMBLE STRIPS IN ACCORDANCE WITH STD. DWG. 865.01

<b>PROJECT NO.</b>	<b>SHEET NO.</b>	<b>TOTAL SHEETS</b>
I-5139	12	



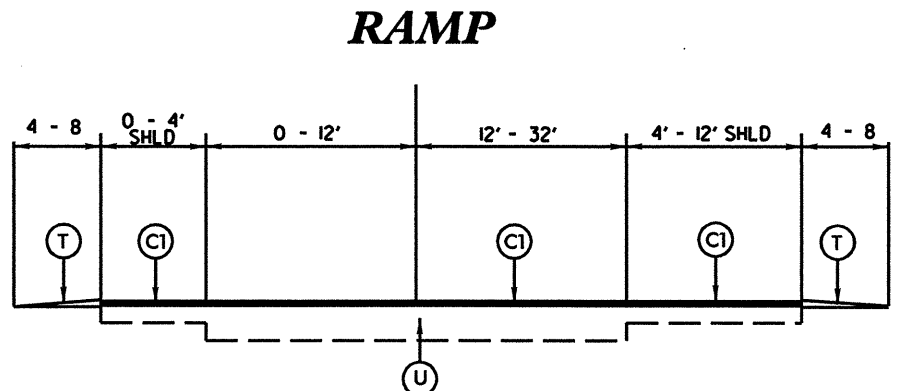
**FULL DEPTH PATCHING DETAIL**  
FOR CONCRETE PAVEMENT  
AS DIRECTED BY ENGINEER



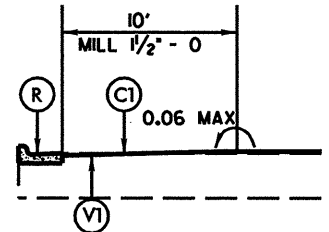
PAVEMENT SCHEDULE	
B1	UNDERCUT EXCAVATION, CLASS IV SUBGRADE STABILIZATION AND FABRIC FOR SOIL STABILIZATION, LOCATION AS DIRECTED BY THE ENGINEER
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE 99.6C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
E1	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5-1/2" IN DEPTH. LOCATION AS DIRECTED BY THE ENGINEER
R	EXISTING CONCRETE CURB OR CONCRETE ISLAND
T	SHOULDER RECONSTRUCTION USING EARTH MATERIAL, LOCATIONS AS DIRECTED BY ENGINEER
U	EXISTING PAVEMENT
V1	MILL 0 - 1 1/2"

**BUNCOMBE COUNTY**

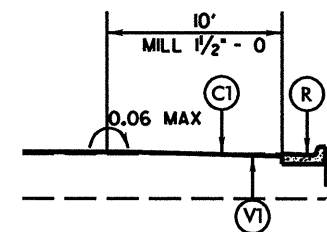
PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5139	13	



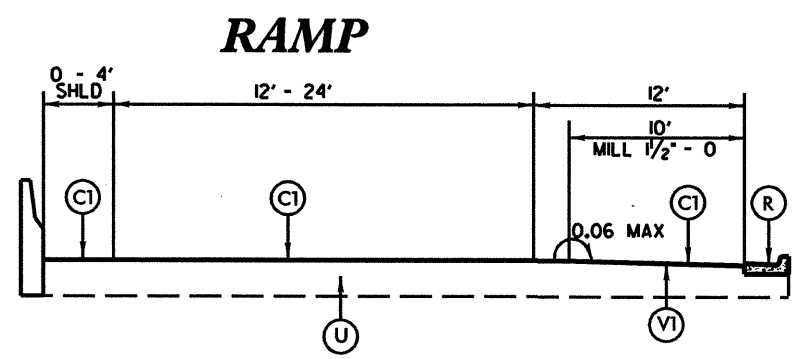
**TYPICAL SECTION NO. 9**  
FOR MAP 25 USE THIS TYPICAL ON ASPHALT PORTION



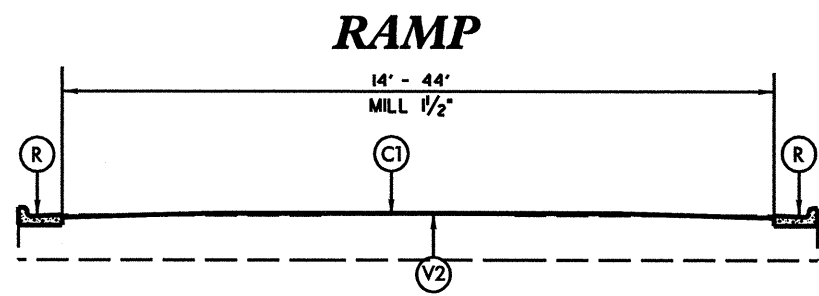
PARTIAL SECTION TO BE USED WITH TYPICAL SECTION NO. 9



PARTIAL SECTION TO BE USED WITH TYPICAL SECTION NO. 9



**TYPICAL SECTION NO. 10**

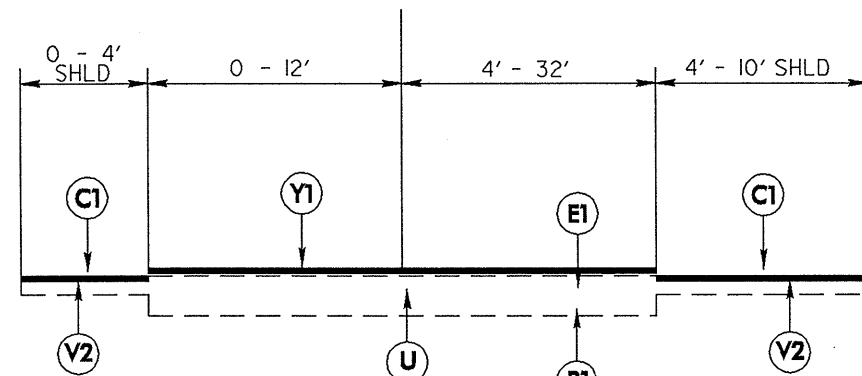


**TYPICAL SECTION NO. 9A**

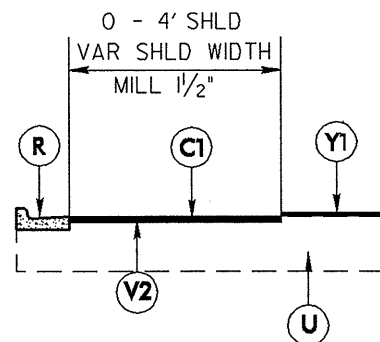
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
R	EXISTING CONCRETE CURB OR CONCRETE ISLAND
T	SHOULDER RECONSTRUCTION USING EARTH MATERIAL, LOCATIONS AS DIRECTED BY ENGINEER
U	EXISTING PAVEMENT
V1	MILL 0 - 1½"
V2	MILL 1½"

**BUNCOMBE COUNTY**

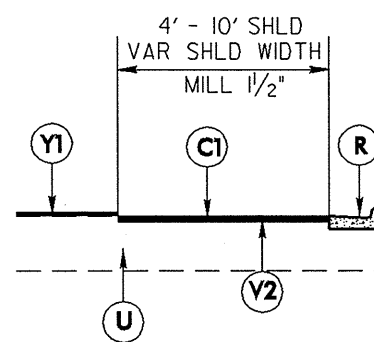
# RAMP



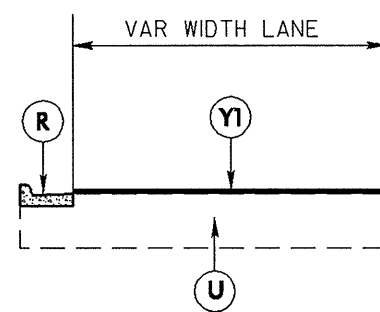
**TYPICAL SECTION NO. 11**  
FOR MAP 25 USE THIS TYPICAL ON CONCRETE PORTION



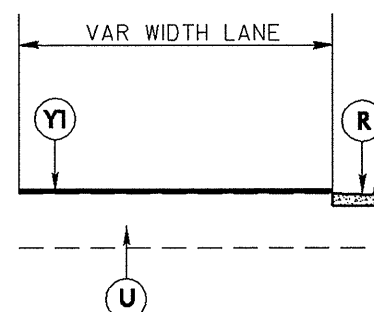
PARTIAL SECTION TO BE USED WITH TYPICAL SECTION NO. 11



PARTIAL SECTION TO BE USED WITH TYPICAL SECTION NO. 11



PARTIAL SECTION TO BE USED WITH TYPICAL SECTION NO. 11



PARTIAL SECTION TO BE USED WITH TYPICAL SECTION NO. 11

<b>PROJECT NO.</b>	<b>SHEET NO.</b>	<b>TOTAL SHEETS</b>
I-5139	14	

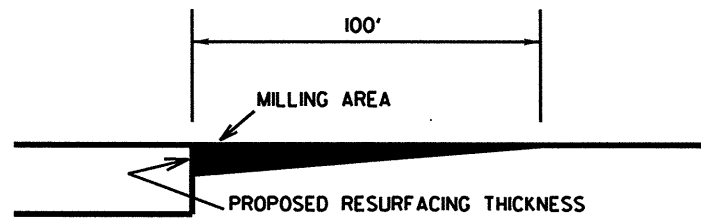
2006 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

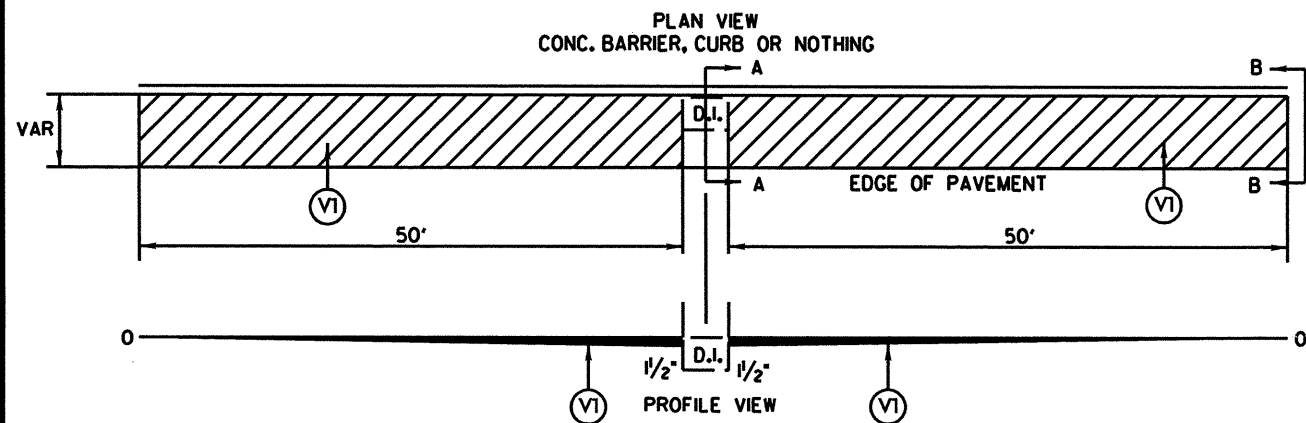
- |   |   |
|---|---|
| STD.NO.   | TITLE   |
| <b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b> |   |
| 665.01  | Milled Rumble Strips - Asphalt Pavements                |
| <b>DIVISION 8 - INCIDENTALS</b>                 |   |
| 848.05  | Wheelchair Ramp - Curb Cut                              |
| 848.06  | Wheelchair Ramp - Retrofitting of Existing Curb         |
| 862.01  | Guardrail Placement                                     |
| 862.02  | Guardrail Installation                                  |
| 862.03  | Structure Anchor Units                                  |
| 862.04  | Anchoring End of Guardrail - B-77 and B-83 Anchor Units |

PAVEMENT SCHEDULE	
B1	UNDERCUT EXCAVATION, CLASS IV SUBGRADE STABILIZATION AND FABRIC FOR SOIL STABILIZATION, LOCATION AS DIRECTED BY THE ENGINEER
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
E1	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5-1/2" IN DEPTH. LOCATION AS DIRECTED BY THE ENGINEER
R	EXISTING CONCRETE CURB OR CONCRETE ISLAND
U	EXISTING PAVEMENT
V2	MILL 1½"
Y1	PROP APPROX 5/8" ULTRATHIN HOT MIX ASPHALT, TYPE B, AT AN AVERAGE RATE OF 70 LBS PER SQ YARD

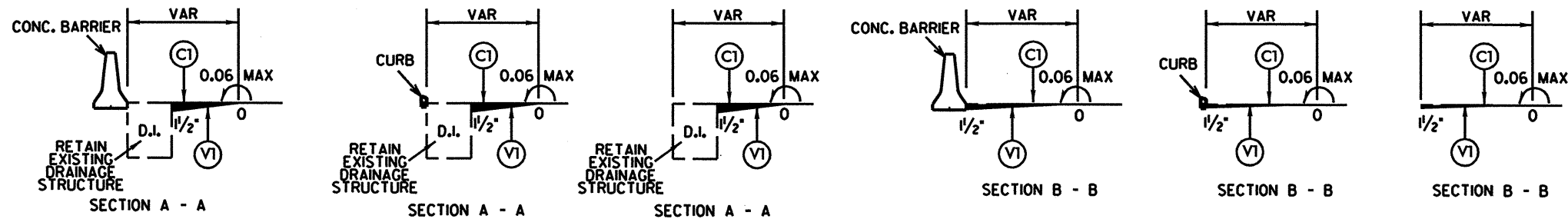
PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5139	15	



**MILLING DETAIL AT BRIDGE APPROACHES**  
**COST OF MILLING IS INCIDENTAL TO OTHER ITEMS**



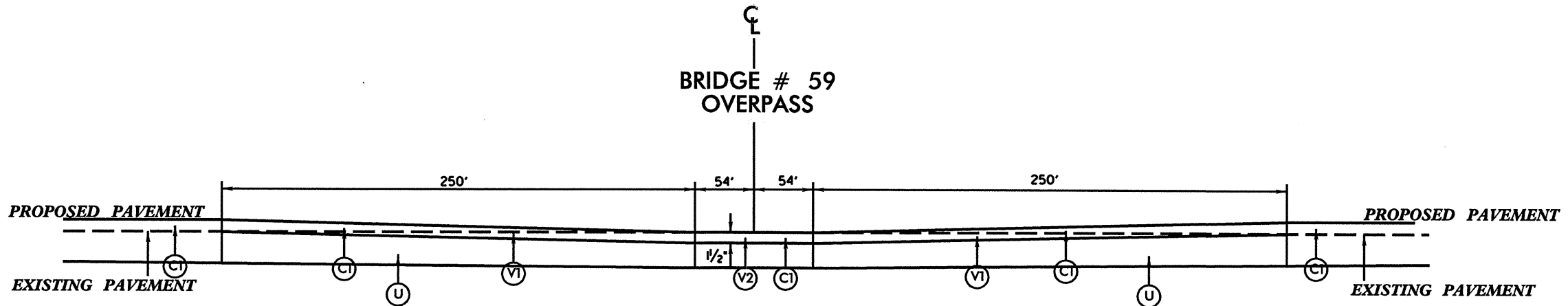
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
V1	MILL 0 - 1½"
V2	MILL 1½"



**MILLING DETAILS FOR**  
**EXISTING DRAINAGE STRUCTURES.**  
 AS DIRECTED BY THE ENGINEER

**BUNCOMBE COUNTY**

<b>PROJECT NO.</b>	<b>SHEET NO.</b>	<b>TOTAL SHEETS</b>
I-5139	16	



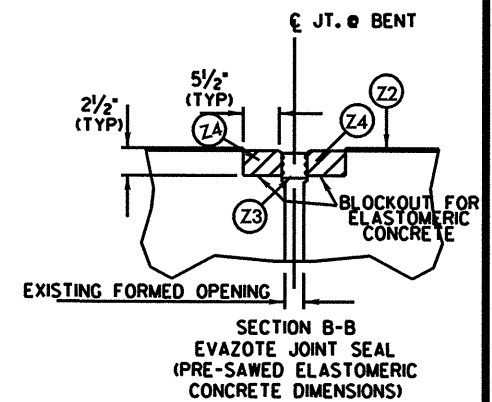
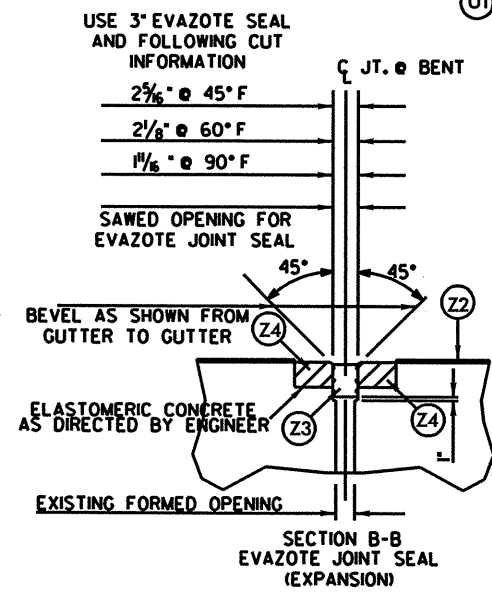
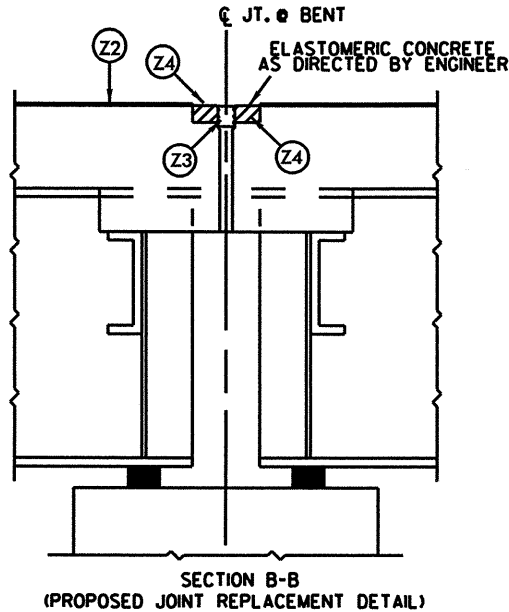
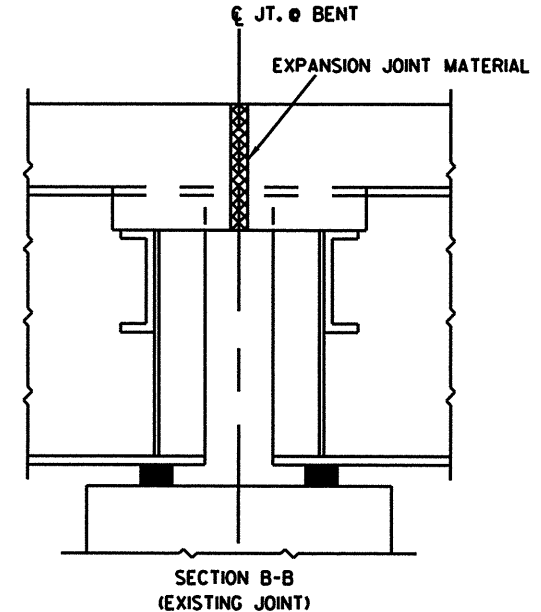
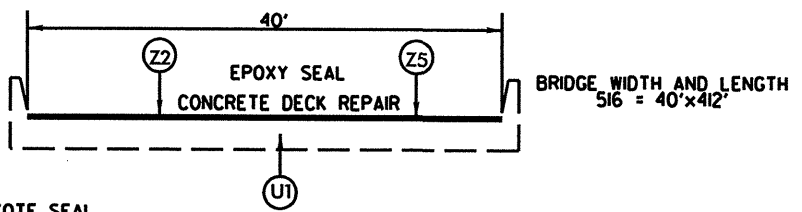
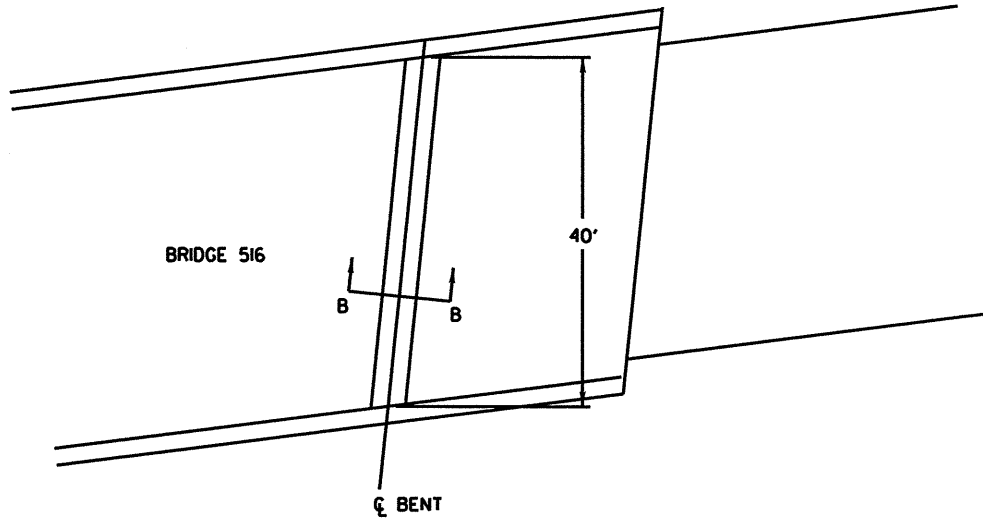
**BRIDGE OVERPASS MILLING DETAIL**  
 MILL 0 - 1 1/2" AND MILL 1 1/2"  
 MILL LANES AND SHOULDERS  
 FOR BRIDGE # 59 OVERPASS ONLY  
 SEE MAPS FOR BRIDGE #59 LOCATION  
 MILLING DETAIL FOR MAP 1, MAP 4, MAP 23 AND MAP 27

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.50, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
U	EXISTING PAVEMENT
V1	MILL 0 - 1 1/2"
V2	MILL 1 1/2"

**BUNCOMBE COUNTY**



<b>PROJECT NO.</b>	<b>SHEET NO.</b>	<b>TOTAL SHEETS</b>
I-5139	17	



PAVEMENT SCHEDULE	
U1	EXISTING BRIDGE DECK
Z2	GENERIC STRUCTURE ITEM PLACEMENT OF EPOXY
Z3	GENERIC STRUCTURE ITEM EVAZOTE EXPANSION JOINT REPLACEMENT
Z4	GENERIC STRUCTURE ITEM ELASTOMERIC CONCRETE FOR JOINT REPAIR AS DIRECTED BY THE ENGINEER
Z5	GENERIC STRUCTURE ITEM CONCRETE DECK REPAIR USING ELASTOMERIC CONCRETE AS DIRECTED BY THE ENGINEER

**BRIDGE DETAILS**

BRIDGE NUMBER 516 ONLY  
DO EVAZOTE EXPANSION JOINT REPLACEMENT  
ON BRIDGE JOINTS, CONCRETE DECK REPAIR  
USING ELASTOMERIC CONCRETE AND PLACEMENT  
OF EPOXY TO BRIDGE DECK  
SEE MAPS FOR LOCATION OF BRIDGE 516

**BUNCOMBE COUNTY**

# BUNCOMBE COUNTY

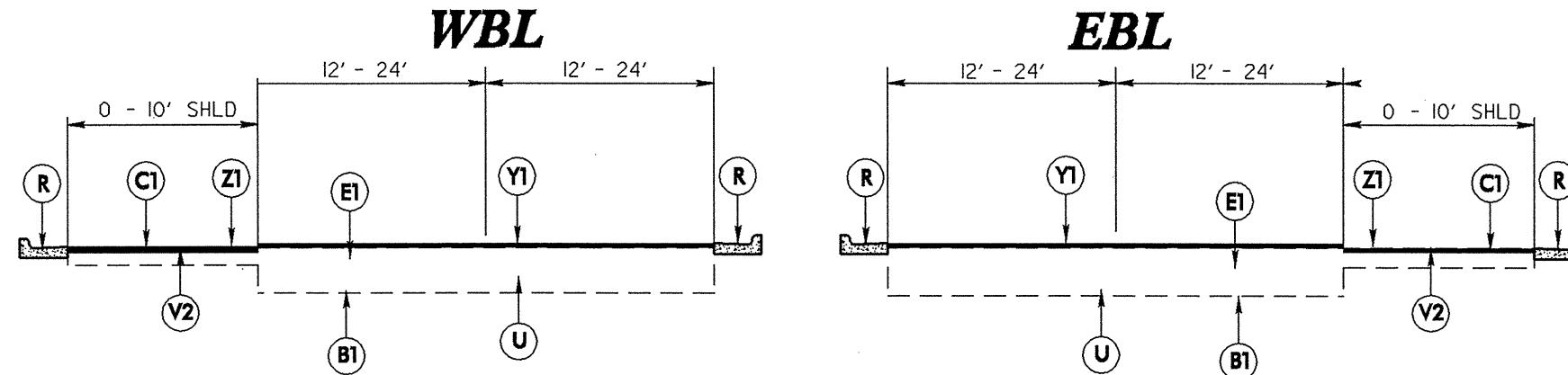
PROJECT NO.

SHEET NO.

TOTAL SHEETS

I-5139

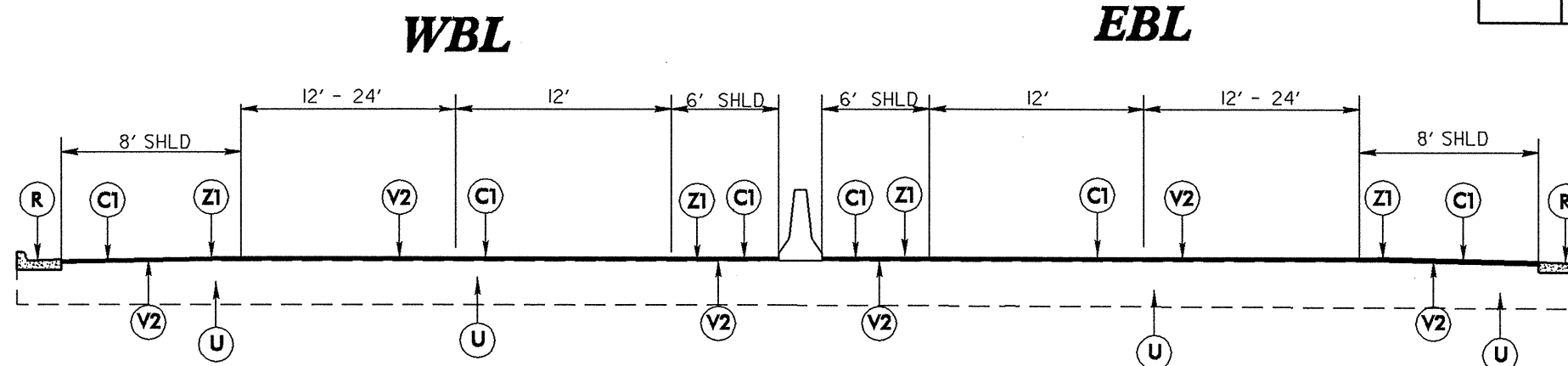
18



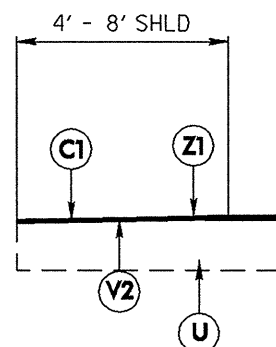
TYPICAL SECTION NO. 12

PAVEMENT SCHEDULE

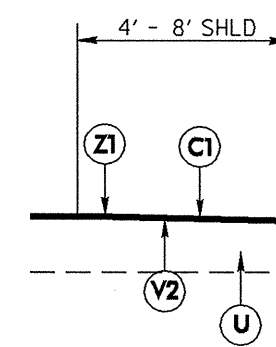
B1	UNDERCUT EXCAVATION, CLASS IV SUBGRADE STABILIZATION AND FABRIC FOR SOIL STABILIZATION, LOCATION AS DIRECTED BY THE ENGINEER
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
E1	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5-1/2" IN DEPTH. LOCATION AS DIRECTED BY THE ENGINEER
R	EXISTING CONCRETE CURB OR CONCRETE ISLAND
U	EXISTING PAVEMENT
V2	MILL 1½"
Y1	PROP APPROX 5/8" ULTRATHIN HOT MIX ASPHALT, TYPE B, AT AN AVERAGE RATE OF 70 LBS PER SQ YARD
Z1	MILLED RUMBLE STRIPS IN ACCORDANCE WITH STD. DWG. 665.01



TYPICAL SECTION NO. 13



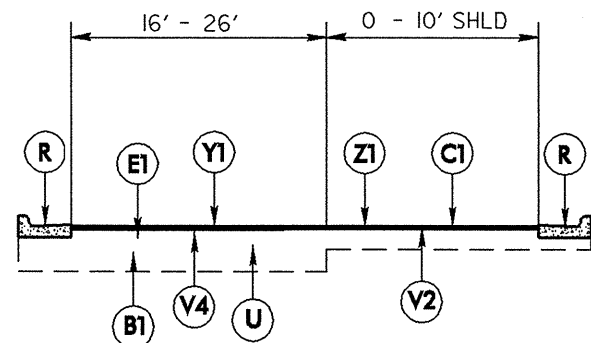
PARTIAL SECTION TO BE USED WITH TYPICAL SECTION NO. 13



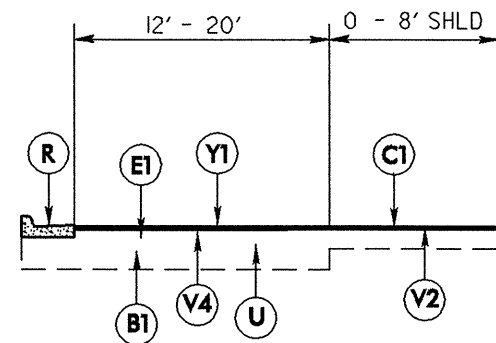
PARTIAL SECTION TO BE USED WITH TYPICAL SECTION NO. 13

# BUNCOMBE COUNTY

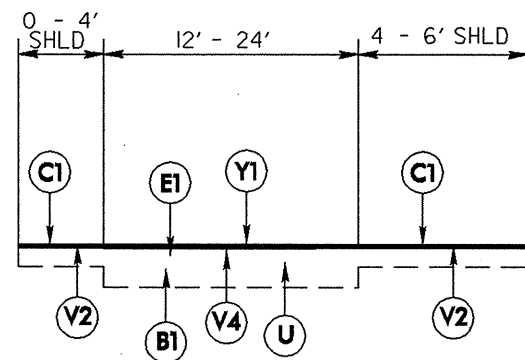
## RAMP



**TYPICAL SECTION NO. 14**

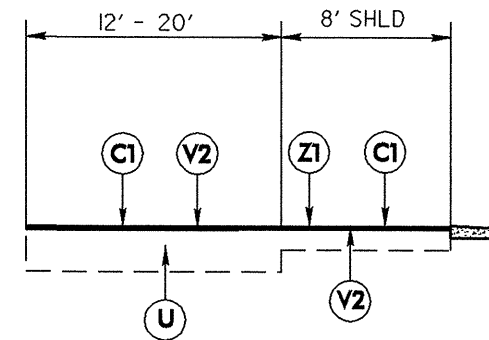


**TYPICAL SECTION NO. 15**



**TYPICAL SECTION NO. 16**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5139	19	



**TYPICAL SECTION NO. 17**

PAVEMENT SCHEDULE	
B1	UNDERCUT EXCAVATION, CLASS IV SUBGRADE STABILIZATION AND FABRIC FOR SOIL STABILIZATION, LOCATION AS DIRECTED BY THE ENGINEER
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
E1	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5-1/2" IN DEPTH. LOCATION AS DIRECTED BY THE ENGINEER
R	EXISTING CONCRETE CURB OR CONCRETE ISLAND
U	EXISTING PAVEMENT
V2	MILL 1 1/2"
V4	MILL 5/8" , LAGATIONS AS DIRECTED BY THE ENGINEER
Y1	PROP APPROX 5/8" ULTRATHIN HOT MIX ASPHALT, TYPE B, AT AN AVERAGE RATE OF 70 LBS PER SQ YARD
Z1	MILLED RUMBLE STRIPS IN ACCORDANCE WITH STD. DWG. 665.01

PROJECT NO.	SHEET NO.	TOTAL NO.
I-5139 (45279.3.ST1)	20	

## SUMMARY OF QUANTITIES

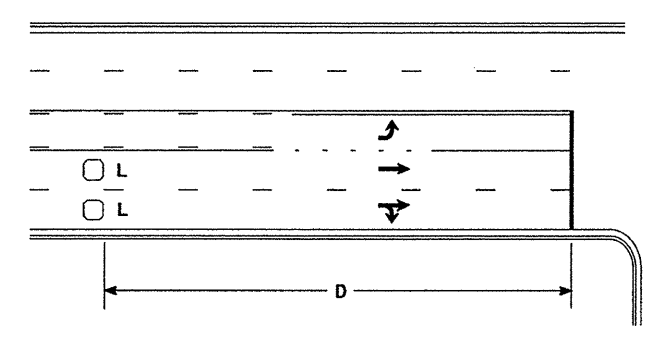
PROJECT NO	COUNTY	MAP	ROUTE	DESCRIPTION	TYP	LENGTH	WIDTH	UNDERCUT EXCAVATION	CLASS IV SUBGRADE STABILIZATION	BORROW EXCAVATION	FABRIC FOR SOIL STABILIZATION	SHOULDER RECONSTRUCTION	1/2" MILLING	5/8" MILLING	0" TO 1 1/2" MILLING	BASE COURSE, B25.0C	SURFACE COURSE, S9.5C	PG 64-22 PLANT MIX	PG 70-22 PLANT MIX	PG 70-28 PLANT MIX	PATCHING EXISTING PAVEMENT	ULTRATHIN HOT MIX ASPHALT, TYPE B	APPLICATION OF ULTRATHIN HOT MIX ASPHALT	GENERIC PAVING ITEM REPAIR OF JOINTED CONCRETE PAVEMENT SLABS	MILLED RUMBLE STRIPS	RETROFIT EXISTING WHEEL-CHAIR RAMPS	CONCRETE WHEEL-CHAIR RAMPS	ADJUST. OF DROP INLET	ADJUST. OF MANHOLE	
NO		NO			NO	MI	FT	CY	TONS	CY	SY	SMI	SY	SY	SY	TONS	TONS	TON	TONS	TON	TONS	TON	SY	SY	LF	EA	EA	EA	EA	
I-5139 (45279.3.ST1)	Buncombe	1	I-240 EBL	FROM US 70 (CHARLOTTE ST.) TO BRIDGE 504	1,2,3,4	3.68	38-74			129		6.44	600		6,100		10,980		659		200				38,861					
		2	I-240 EBL	FROM BRIDGE 504 TO I-40 (END CONC)	5	0.73	38-50	128	77		128		5,996			352	508	15	30	19		370	10,571	514		7,709				
		3	I-240 WBL	FROM I-40 (BEGIN CONC) TO BRIDGE 507	5	0.58	38	102	61		102		4,764			279	404	12	24	15		286	8,166	408		6,125				
		4	I-240 WBL	FROM BRIDGE 507 TO US 70 (CHARLOTTE ST.)	1,2,3,4	3.70	38-57			128		6.39	460		6,320		9,980		599		200				39,072			3		
		5	I-240 ON RAMP	FROM EAST WOODFIN ST. TO I-240	6,7	0.15	24-36								1,640		260		16											
		6	I-240 OFF RAMP	FROM I-240 TO US 70 (CHARLOTTE ST.)	6,7	0.21	20-36								2,280		300		18											
		7	I-240 ON RAMP	FROM SR 2244 TO I-240	9	0.29	20-24			12		0.58				390		23			3									
		8	I-240 OFF RAMP	FROM I-240 TO US 70/74A	9	0.31	20-32			10		0.51			40		490		29		3									
		9	I-240 OFF RAMP	FROM I-240 TO SR 2244	9	0.53	24-38			19		0.96			120		850		51		5									
		10	I-240 ON RAMP	FROM US 70/74A TO I-240	9	0.43	24-32			15		0.75			60		630		38		4									
		11	I-240 OFF RAMP	FROM I-240 TO US 70 ON RAMP	8,9	0.24	28-52			5		0.24			730		520		31		2									
		12	US 70 ON RAMP	FROM I-240 OFF RAMP TO US 70	7	0.15	24-36								1,760		250		15		2									
		13	US 70 OFF RAMP	FROM US 70 TO I-240 ON RAMP	6,8	0.13	16-36			1		0.07			750		150		9		1									
		14	I-240 ON RAMP	FROM US 70 OFF RAMP TO I-240	8,9	0.21	28-32			2		0.11			700		240		14		2									
		15	US 70 RAMP	FROM US 70 OFF RAMP TO US 70 ON RAMP	10	0.07	28								530		110		7		1									
		16	US 70 RAMP	FROM US 70 OFF RAMP TO US 70 ON RAMP	10	0.07	40								410		160		10		1									
		17	I-240 ON RAMP	FROM US 70 TO I-240	8,9	0.49	28-36			12		0.58			1,980		810		49		5									
		18	US 70 ON RAMP	FROM I-240 OFF RAMP TO US 70	6,8	0.30	16-32			3		0.16			1,850		410		25		3									
		19	I-240 OFF RAMP	FROM I-240 TO US 70 ON RAMP	8,9	0.21	22-34			5		0.24			660		280		17		2									
		20	I-240 ON RAMP	FROM US 70 OFF RAMP TO I-240 ON RAMP	7	0.05	24								650		80		5		1									
		21	US 70 OFF RAMP	FROM I-240 ON RAMP TO I-240 ON RAMP	6,7	0.20	16-24								2,120		230		14		2									
		22	I-240 OFF RAMP	FROM I-240 TO SR 3238	9	0.35	22-42			6		0.30			1,660		590		35		4									
		23	I-240 ON RAMP	FROM SR 3238 TO I-240	9,9A	0.22	16-24			1		0.06	1,310		670		220		13		2									
		24	US 74A EAST	FROM I-240 TO BEGIN CONC	9	0.14	34-38			4		0.19					270		16		2				990					
		25	I-240 ON RAMP	FROM US 74A TO I-240 ON RAMP	9,11	0.05	20-40	9	6	2	9	0.08	60		860	25	120	1	7	1	2	26	733	37						
		26	I-240 OFF RAMP	FROM I-240 TO US 74A	11	0.35	22-40	49	29		49		2,160			133	210	6	13	7	50	144	4,107	195						
		27	I-240 ON RAMP	FROM US 74A (END CONC.) TO I-240	9	0.33	34-38			11		0.56	460		2,450		640		38		4									
		28	I-240 EBL	FROM BRIDGE 322 TO 0.49 MILES EAST (END CONC.)	12	0.49	24-58	111	67		111		2,580			304	250	13	15	19		362	10,349	445	2,600					
		29	I-240 EBL	FROM 0.49 MILES EAST (END CONC.) OF BRIDGE 322 TO US 70 (CHARLOTTE STREET)	13	1.03	30-50						26,480				2,460		148		50				10,877					
		30	I-240 WBL	FROM US 70 (CHARLOTTE STREET) TO 1.03 MILES WEST (BEG CONC)	13	1.03	30-50						23,740				2,207		132		50				10,877					
		31	I-240 WBL	FROM 1.03 MILES WEST OF US 70 (CHARLOTTE STREET) BEG CONC TO BRIDGE 323	12	0.46	24-48	105	63		105					286	31	12	2	17		321	9,175	418	299					
		32	I-240 OFF RAMP	FROM I-240 TO I-240 OFF RAMP	14	0.16	18-22	21	13		21				1,680		57		2	3		59	1,690	84						
		33	I-240 OFF RAMP	FROM I-240 TO END CONC.	14	0.27	24-34	48	29		48			1,584		130	148	6	9	7		133	3,802	190	1,426					
		34	US 19/23 OFF RAMP	FROM END OF CONC TO I-240 OFF RAMP	14	0.01	18	1	1		1					2						2	63	3						
		35	I-240 ON RAMP	FROM BEG CONC. TO I-240	14	0.04	16-26	4	3		4		67	142		12	6	1		1		13	375	18	200					
		36	I-240 OFF RAMP	FROM I-240 TO I-240 OFF RAMP	14	0.10	18	13	8		13			178		35		1		2		37	1,056	51						
		37	I-240 ON RAMP	FROM BEG CONC TO I-240	14	0.25	18-24	38	23		38					104		4		6		113	3,227	152						
		38	US 19/23 ON RAMP	FROM I-240 ON RAMP TO END OF CONC	14	0.01	18	2	1		2		67		4	6						4	127	6						
		39	I-240 ON RAMP	FROM I-240 ON RAMP TO I-240	14	0.05	18	6	4		6			400		17		1		1		18	528	25						
		40	I-240 ON RAMP	FROM BRIDGE 1 TO I-240 ON RAMP	14	0.03	18	4	2		4			320		11						11	320	16						
		41	US 19/23 OFF RAMP	FROM BRIDGE 1 TO US 19/23 OFF RAMP	14	0.03	18	4	2		4			320		11						11	320	16						
		42	I-240 OFF RAMP	FROM I-240 TO HAYWOOD STREET	16	0.16	20-30	23	14		23		416	391		62	40	3	2	3		67	1,913	91						
		43	I-240 ON RAMP	FROM HAYWOOD STREET TO I-240	15,16	0.21	16-20	26	16		26		102	409		71	10	3	1	4		78	2,218	104						
		44	I-240 OFF RAMP	FROM I-240 TO US 25 (MERRIMON AVE.)	14	0.14	16-24	20	12		20		204	1,276		54	19	2	1	3		57	1,643	79						
		45	I-240 ON RAMP	FROM US 25 (MERRIMON AVE.) TO I-240	14,17	0.11	20-22	16	10		16		1,856			44	174	2	10	3		50	1,420	64	520					
		46	I-240 ON RAMP	FROM SR 1781 (BROADWAY STREET) TO I-240	14,16	0.15	20-24	20	12		20		278	777		54	26	2	2	3		56	1,605	79		2				
		47	I-240 OFF RAMP	FROM I-240 TO CHERRY STREET	14	0.05	16-20	6	4		6		94	411		17	9	1	1	1		18	507	25						
		48	I-240 ON RAMP	FROM MONTFORD AVE TO I-240	14,15	0.23	16-24	27	16		27		480	1,913		74	45	3	3	4		76	2,159	108		1	1			1
		49	I-240 OFF RAMP	FROM I-240 TO US 70 (CHARLOTTE STREET)	14,16	0.15	24-32	22	13		22		667	580		60	63	3	4	3		62	1,478	88		2				
		50	I-240 ON RAMP	FROM US 70 (CHARLOTTE STREET) TO I-240	14,16	0.14	20-26	18	11		18		280	906																

## SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	STEEL BM GUARDRAIL LF	STEEL BM GUARDRAIL, SHOP CURVED LF	ADDITIONAL GUARDRAIL POSTS EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1 EA	GUARDRAIL ANCHOR UNITS, TYPE III EA	GUARDRAIL ANCHOR UNITS, TYPE 350 EA	GUARDRAIL ANCHOR UNITS, TYPE M-350 EA	GUARDRAIL ANCHOR UNITS, TYPE B-77 EA	GUARDRAIL ANCHOR UNITS, TYPE B-83 EA	REMOVE EXISTING GUARDRAIL LF	PORTABLE LIGHTING LS	MATTING FOR EROSION CONTROL SY	GENERIC EROSION CONTROL ITEM SEEDING AC	JUNCTION BOX (STANDARD SIZE) EA	INDUCTIVE LOOP SAWCUT LF	LEAD-IN CABLE (14-2) LF	GENERIC STRUCTURE ITEM EVAZOTE EXPANSION JOINT REPLACEMENT LF	GENERIC STRUCTURE ITEM PLACEMENT OF EPOXY SF	GENERIC STRUCTURE ITEM CONCRETE DECK REPAIR USING ELASTOMERIC CONCRETE SY	GENERIC STRUCTURE ITEM ELASTOMERIC CONCRETE FOR JOINT REPAIR SY
I-5139 (45279.3.ST1)	Buncombe	1	I-240 EBL	FROM US 70 (CHARLOTTE ST.) TO BRIDGE 504	5,850.0		10	2	2	7	7	13	1	6,000	1	18,876	3.90							
		2	I-240 EBL	FROM BRIDGE 504 TO I-40 (END CONC)																	240	16,480	183	12
		3	I-240 WBL	FROM I-40 (BEGIN CONC) TO BRIDGE 507																				
		4	I-240 WBL	FROM BRIDGE 507 TO US 70 (CHARLOTTE ST.)	6,600.0			6	1	7	4	7	5	7,000		18,731	3.87	1	400	800				
		5	I-240 ON RAMP	FROM EAST WOODFIN ST. TO I-240																				
		6	I-240 OFF RAMP	FROM I-240 TO US 70 (CHARLOTTE ST.)															600	1,200				
		7	I-240 ON RAMP	FROM SR 2244 TO I-240												1,694	0.35							
		8	I-240 OFF RAMP	FROM I-240 TO US 70/74A	200.0			1						200		1,500	0.31		200	400				
		9	I-240 OFF RAMP	FROM I-240 TO SR 2244												2,807	0.58							
		10	I-240 ON RAMP	FROM US 70/74A TO I-240												2,178	0.45							
		11	I-240 OFF RAMP	FROM I-240 TO US 70 ON RAMP												726	0.15							
		12	US 70 ON RAMP	FROM I-240 OFF RAMP TO US 70																				
		13	US 70 OFF RAMP	FROM US 70 TO I-240 ON RAMP	300.0	100.0				1				400		194	0.04							
		14	I-240 ON RAMP	FROM US 70 OFF RAMP TO I-240	1,362.5	50.0		1						1,413		339	0.07							
		15	US 70 RAMP	FROM US 70 OFF RAMP TO US 70 ON RAMP															400	800				
		16	US 70 RAMP	FROM US 70 OFF RAMP TO US 70 ON RAMP															600	1,200				
		17	I-240 ON RAMP	FROM US 70 TO I-240	662.5					1				663		1,694	0.35							
		18	US 70 ON RAMP	FROM I-240 OFF RAMP TO US 70	437.5			1						438		484	0.10							
		19	I-240 OFF RAMP	FROM I-240 TO US 70 ON RAMP	1,362.5					1				1,363		726	0.15		400	800				
		20	I-240 ON RAMP	FROM US 70 OFF RAMP TO I-240 ON RAMP																				
		21	US 70 OFF RAMP	FROM I-240 ON RAMP TO I-240 ON RAMP															400	800				
		22	I-240 OFF RAMP	FROM I-240 TO SR 3238	300.0			1						300		871	0.18	1	200	400				
		23	I-240 ON RAMP	FROM SR 3238 TO I-240												194	0.04							
		24	US 74A EAST	FROM I-240 TO BEGIN CONC	175.0									175		581	0.12							
		25	I-240 ON RAMP	FROM US 74A TO I-240 ON RAMP												242	0.05							
		26	I-240 OFF RAMP	FROM I-240 TO US 74A																				
		27	I-240 ON RAMP	FROM US 74A (END CONC.) TO I-240	250.0			1						250		1,646	0.34		400	800				
		28	I-240 EBL	FROM BRIDGE 322 TO 0.49 MILES EAST (END CONC.)																				
		29	I-240 EBL	FROM 0.49 MILES EAST (END CONC) OF BRIDGE 322 TO US 70 (CHARLOTTE STREET)																				
		30	I-240 WBL	FROM US 70 (CHARLOTTE STREET) TO 1.03 MILES WEST (BEG CONC)																				
		31	I-240 WBL	FROM 1.03 MILES WEST OF US 70 (CHARLOTTE STREET) BEG CONC TO BRIDGE 323																				
		32	I-240 OFF RAMP	FROM I-240 TO I-240 OFF RAMP																				
		33	I-240 OFF RAMP	FROM I-240 TO END CONC.																				
		34	US 19/23 OFF RAMP	FROM END OF CONC TO I-240 OFF RAMP																				
		35	I-240 ON RAMP	FROM BEG CONC. TO I-240																				
		36	I-240 OFF RAMP	FROM I-240 TO I-240 OFF RAMP																				
		37	I-240 ON RAMP	FROM BEG CONC TO I-240																				
		38	US 19/23 ON RAMP	FROM I-240 ON RAMP TO END OF CONC																				
		39	I-240 ON RAMP	FROM I-240 ON RAMP TO I-240																				
		40	I-240 ON RAMP	FROM BRIDGE 1 TO I-240 ON RAMP																				
		41	US 19/23 OFF RAMP	FROM BRIDGE 1 TO US 19/23 OFF RAMP																				
		42	I-240 OFF RAMP	FROM I-240 TO HAYWOOD STREET															1	400	800			
		43	I-240 ON RAMP	FROM HAYWOOD STREET TO I-240																				
		44	I-240 OFF RAMP	FROM I-240 TO US 25 (MERRIMON AVE.)															1	400	800			
		45	I-240 ON RAMP	FROM US 25 (MERRIMON AVE.) TO I-240																				
		46	I-240 ON RAMP	FROM SR 1781 (BROADWAY STREET) TO I-240																				
		47	I-240 OFF RAMP	FROM I-240 TO CHERRY STREET																				
		48	I-240 ON RAMP	FROM MONTFORD AVE TO I-240																				
		49	I-240 OFF RAMP	FROM I-240 TO US 70 (CHARLOTTE STREET)																				
		50	I-240 ON RAMP	FROM US 70 (CHARLOTTE STREET) TO I-240															1	400	800			
<b>TOTAL FOR PROJ NO. I-5139 (45279.3.ST1)</b>					<b>17,500.0</b>	<b>150.0</b>	<b>10</b>	<b>13</b>	<b>3</b>	<b>19</b>	<b>11</b>	<b>20</b>	<b>6</b>	<b>18,200</b>	<b>1</b>	<b>53,483</b>	<b>11.05</b>	<b>6</b>	<b>4,800</b>	<b>9,600</b>	<b>240</b>	<b>16,480</b>	<b>183</b>	<b>12</b>
<b>GRAND TOTAL</b>					<b>17,500.0</b>	<b>150.0</b>	<b>10</b>	<b>13</b>	<b>3</b>	<b>19</b>	<b>11</b>	<b>20</b>	<b>6</b>	<b>18,200</b>	<b>1</b>	<b>53,483</b>	<b>11.05</b>	<b>6</b>	<b>4,800</b>	<b>9,600</b>	<b>240</b>	<b>16,480</b>	<b>183</b>	<b>12</b>



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

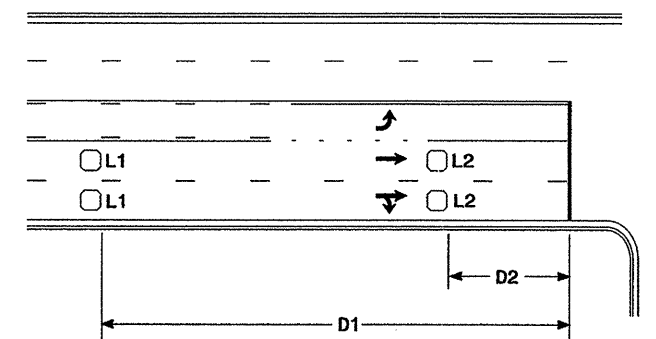


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

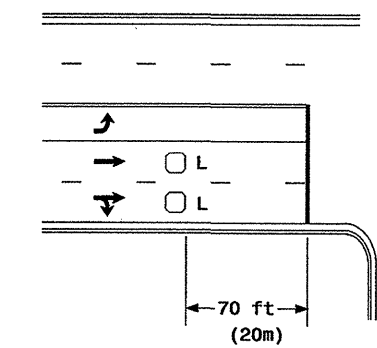


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

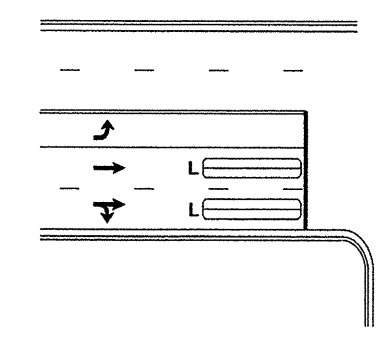
"Stretch" Operation

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



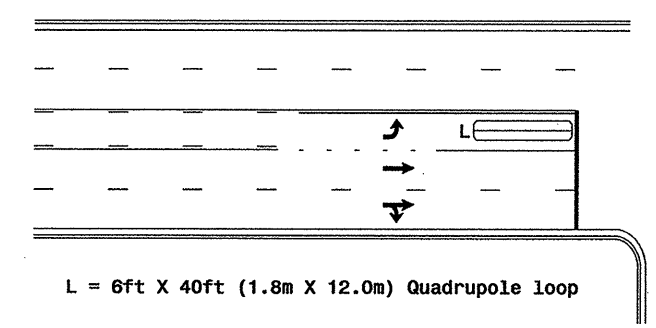
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



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

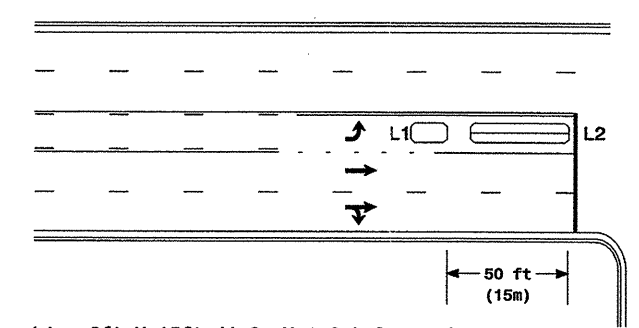
### Left Turn Lane Detection



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

Presence Loop Detection

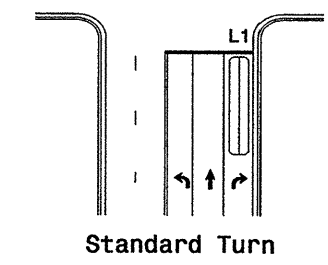
OR



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

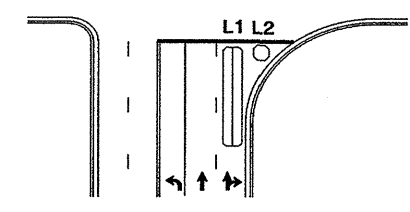
Queue Loop Detection

### Right Turn Lane Detection

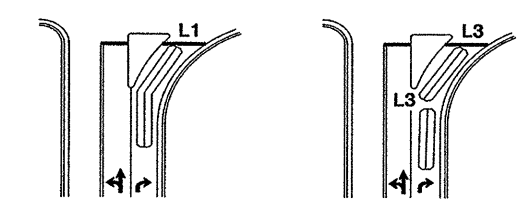


Standard Turn

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

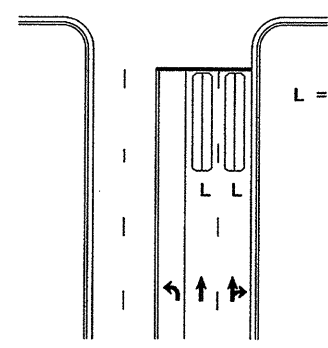


Wide Radius Turn



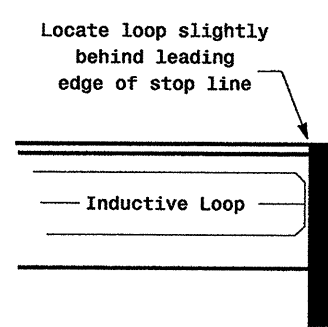
Channelized Turn

### 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

Inductive Loop

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

<p>Prepared in the Offices of: The State of North Carolina Department of Transportation Signal and Geometric Division 122 N. McDowell St., Raleigh, NC 27603</p>	<p>Typical Loop Locations</p>		
	<p>SCALE N/A</p>	<p>PLAN DATE: June 2006 REVIEWED BY: P. L. Alexander</p>	
<p>SIGNATURE: [Signature]</p>		<p>INIT. DATE: [Signature] 11/21/06</p>	<p>SIGNATURE: [Signature]</p>

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

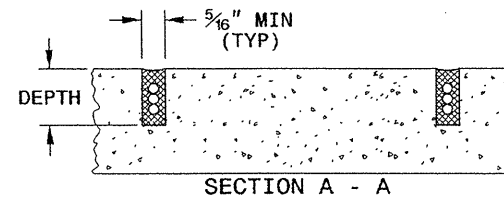
11-08

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**

SHEET 1 OF 3  
**1725D01**

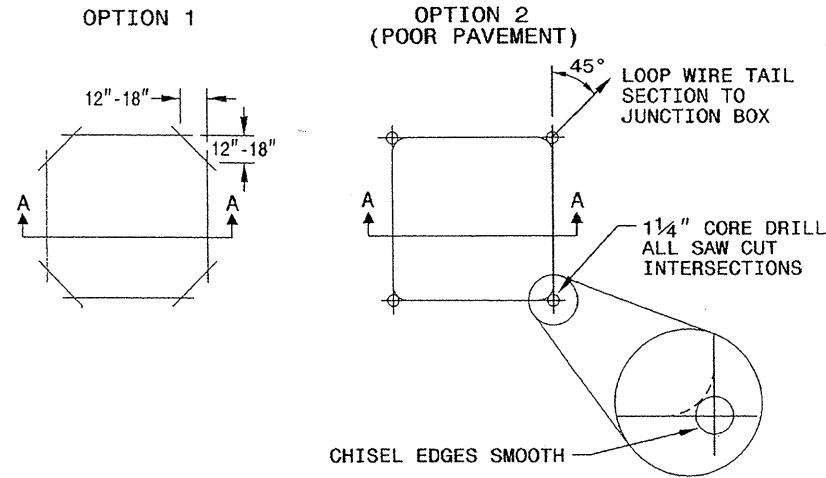
**SAW SLOT DEPTH CHART**

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

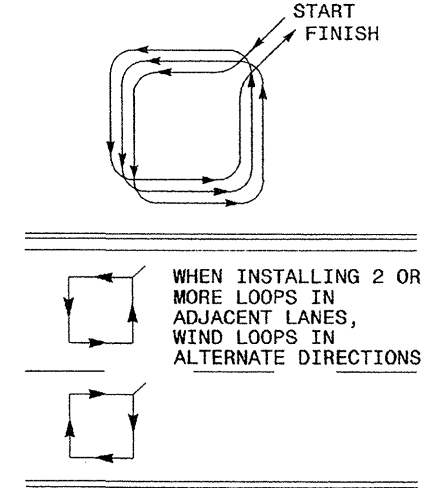


**CONVENTIONAL 4-SIDED LOOP**

**SAW CUT OPTIONS**



**LOOP WINDING METHOD**



**LOOP WIRE TWISTING METHOD**

INCORRECT WAY TO TWIST WIRE



CORRECT WAY TO TWIST WIRE

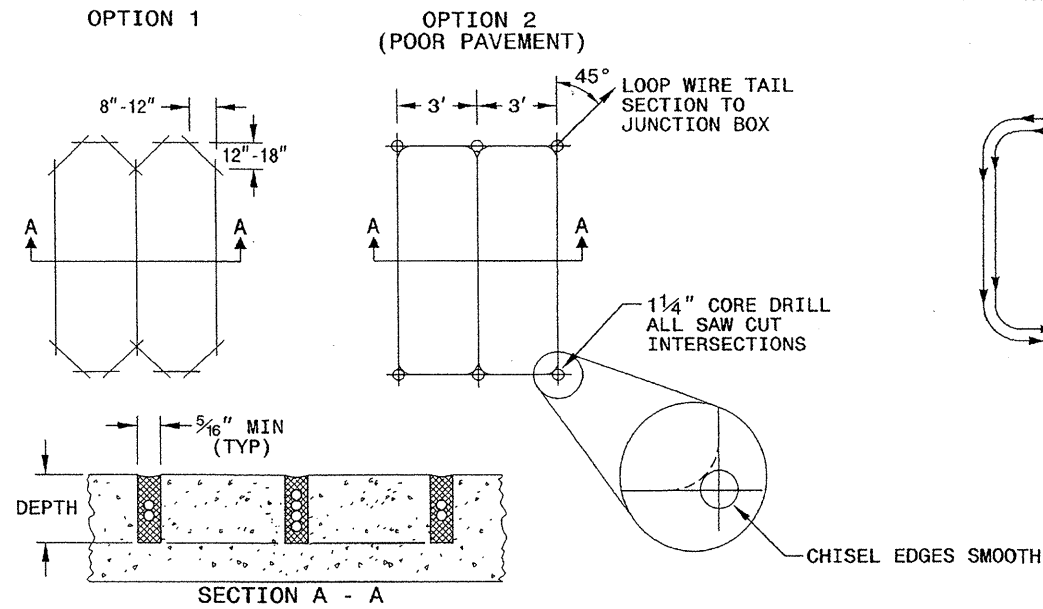


**NOTES**

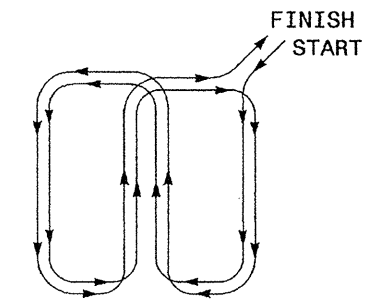
- OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
- MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
- WIRE LOOPS CONNECTED TO THE SAME DETECTOR CHANNEL IN SERIES.
- LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS OR APPROVED BY ENGINEER.

**QUADRUPOLE LOOP**

**SAW CUT OPTIONS**



**LOOP WINDING METHOD**



DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

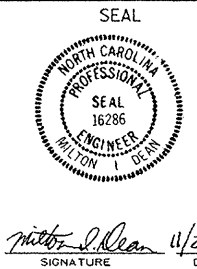
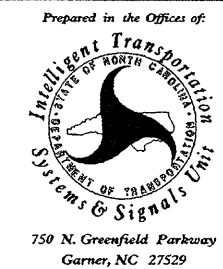
STATE OF NORTH CAROLINA  
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DIVISION OF HIGHWAYS  
RALEIGH, N.C.

11-08

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**

SHEET 1 OF 3  
**1725D01**

See Plate for Title





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DIVISION OF HIGHWAYS  
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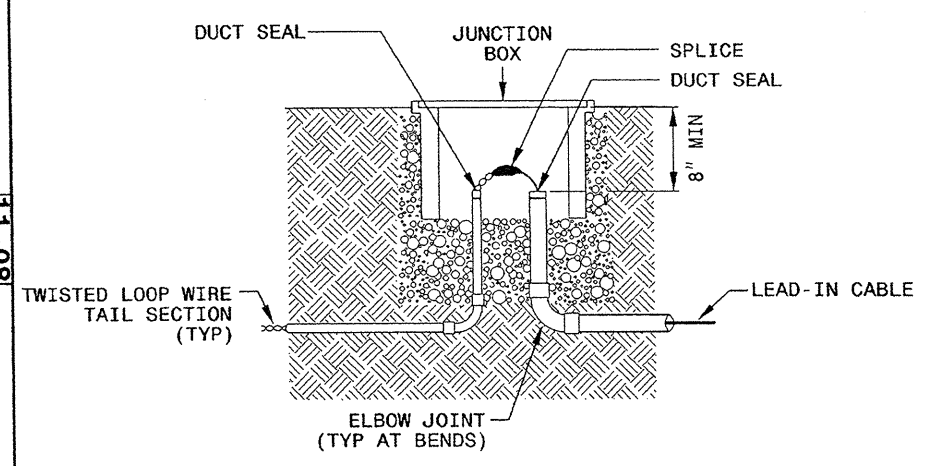
11-08

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
LOOP WIRE DETAILS

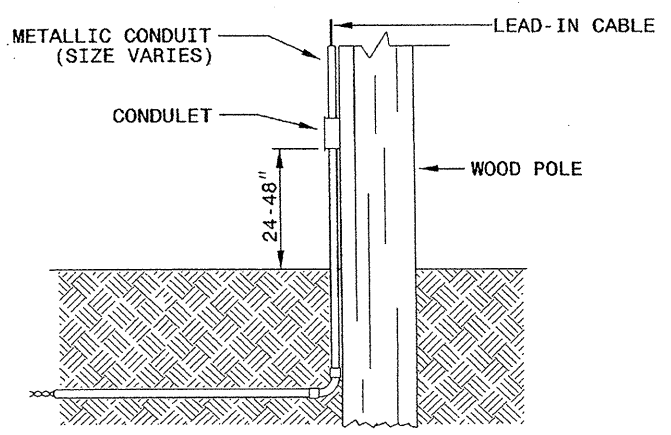
SHEET 2 OF 3  
**1725D01**

**LOOP WIRE SPLICE POINT DETAILS**

**LOOP WIRE AT JUNCTION BOX**



**LOOP WIRE AT POLE**

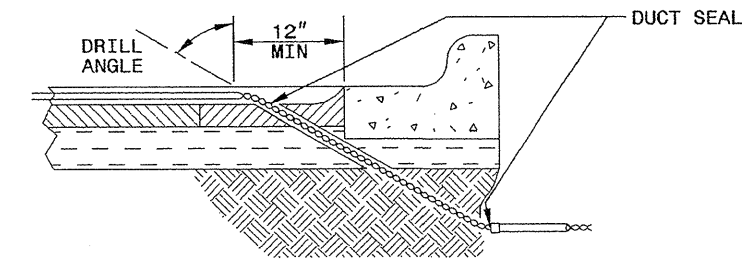


**NOTE**

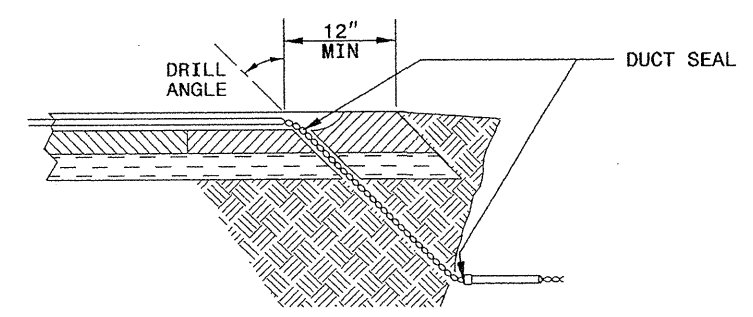
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

**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.

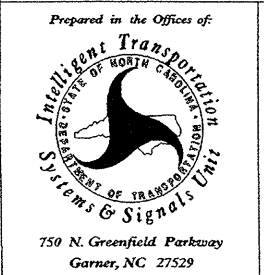
STATE OF NORTH CAROLINA  
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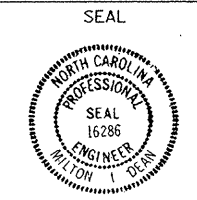
ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
LOOP WIRE DETAILS

SHEET 2 OF 3  
**1725D01**

See Plate for Title



750 N. Greenfield Parkway  
Garner, NC 27529



Milton A. Dean 11/24/08  
SIGNATURE DATE

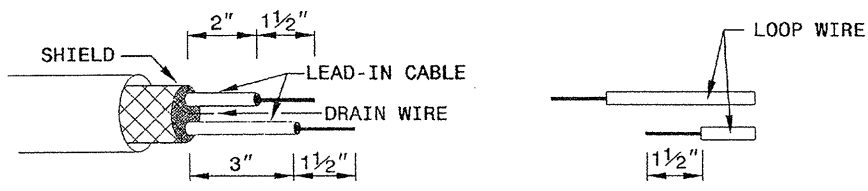
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

11-08

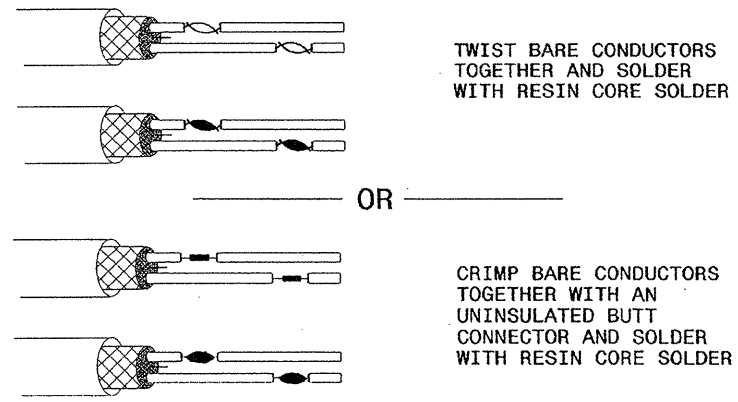
ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
SPlicing FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3  
**1725D01**

**STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE**

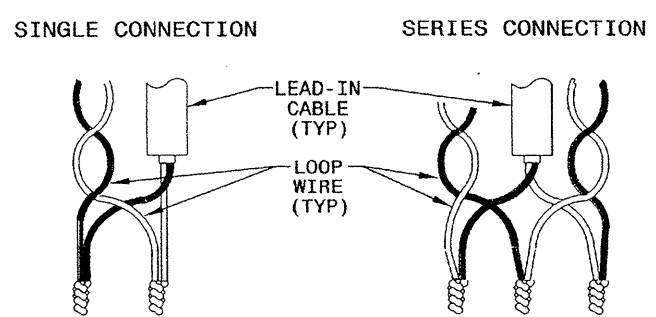


**STEP 2. CONNECT AND SOLDER**

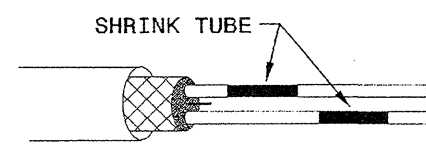


BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

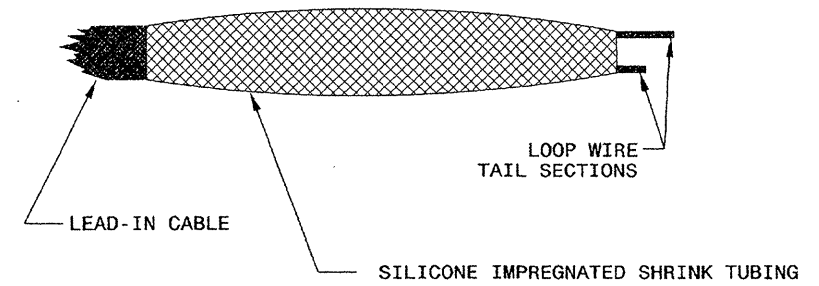
**LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS**



**STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY**



**STEP 4. ENVIRONMENTALLY PROTECT SPLICE**



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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:

750 N. Greenfield Parkway  
Garner, NC 27529

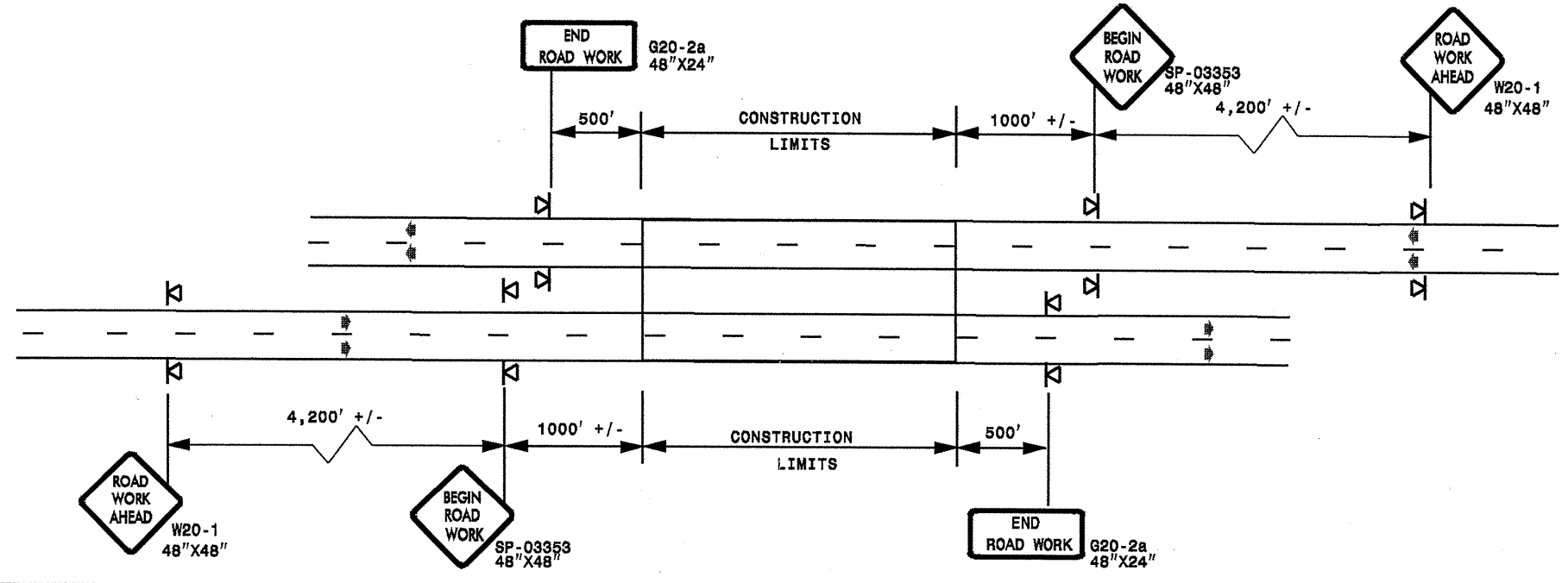
SEAL

Milton I. Dean 11/24/08  
SIGNATURE DATE

24-Nov-08 08:35  
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ZML/jtl

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

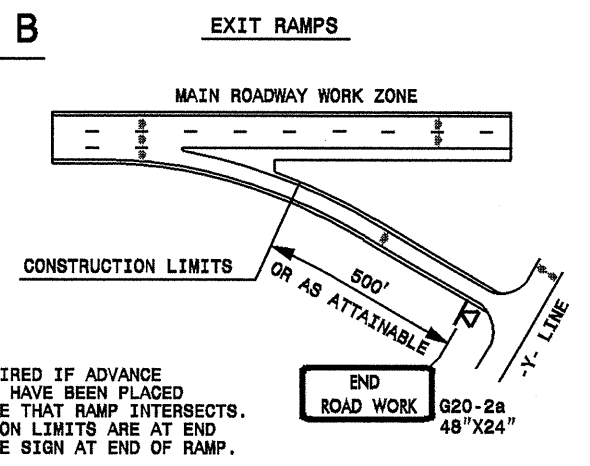
**DETAIL A**



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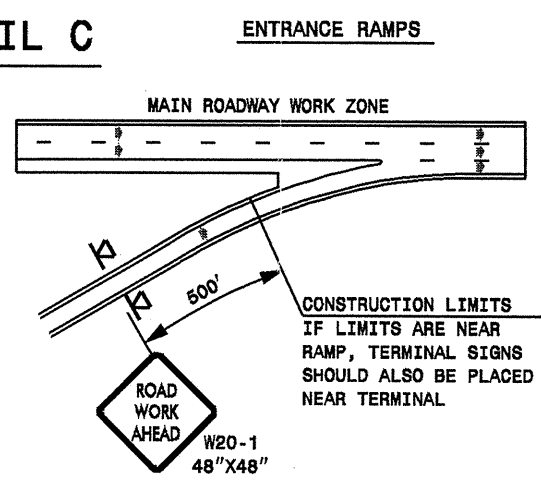
**ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)**

**DETAIL B**



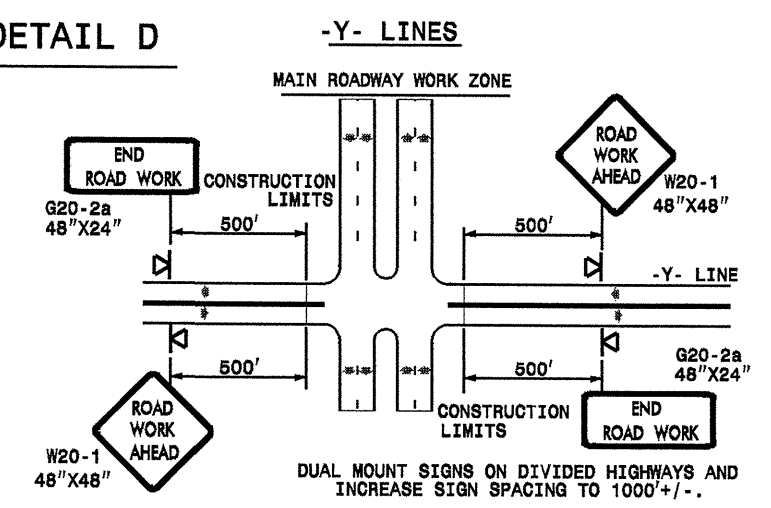
NOTE:  
SIGN NOT REQUIRED IF ADVANCE WARNING SIGNS HAVE BEEN PLACED ALONG -Y- LINE THAT RAMP INTERSECTS. IF CONSTRUCTION LIMITS ARE AT END OF RAMP, PLACE SIGN AT END OF RAMP.

**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' +/-.

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

**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

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: _____	GOOD FILE		

05-JAN-2010 16:06 St:\Signing\resurfacing\030509 Resurfacing\030509\DIVISION\2010\030509\4527933.T1-I-5139-freeway-advance-work-zone-warning-signing.dgn