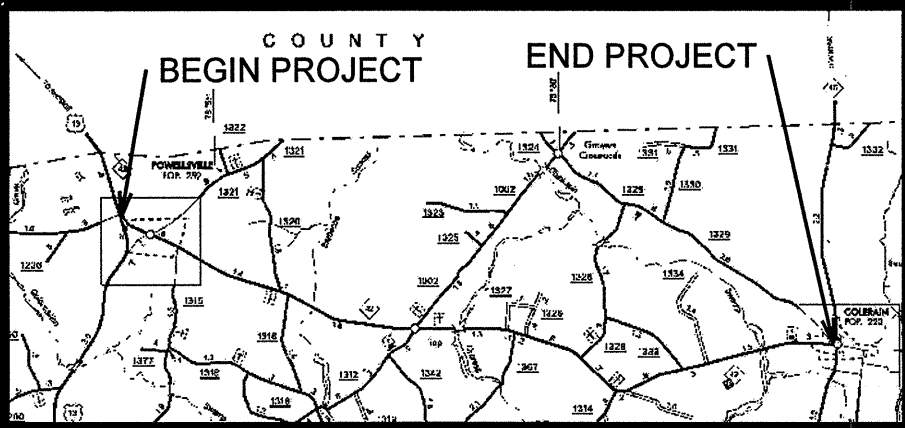


09/08/05



VICINITY MAP

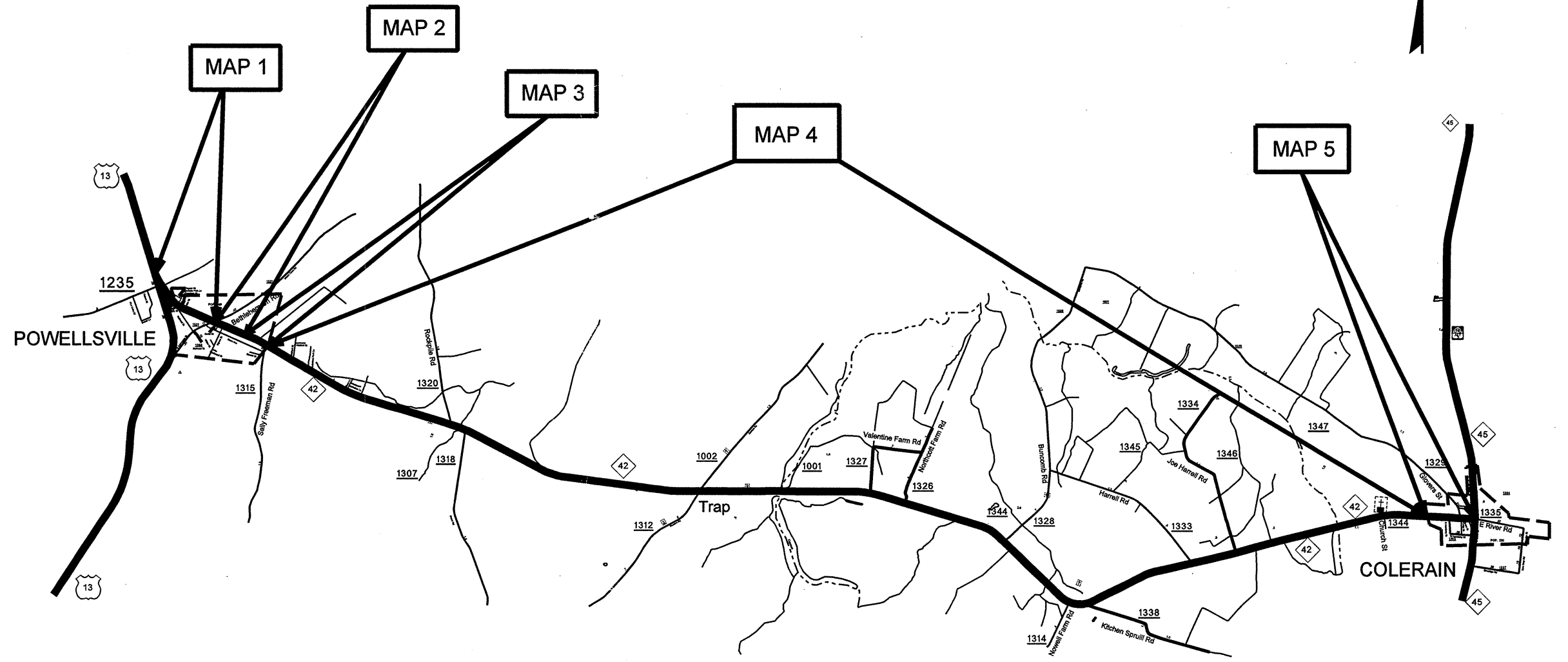
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**BERTIE COUNTY**

LOCATION: NC 42 FROM US 13 NEAR ( POWELLSVILLE, NC )  
TO NC 45 IN ( COLERAIN, NC )

TYPE OF WORK: WIDENING, MILLING, RESURFACING, PIPE REPLACEMENTS,  
AND GUARDRAIL INSTALLATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	39416	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	



WBS ELEMENT: 39416

NTS

PROJECT LENGTH  
LENGTH ROADWAY STATE PROJECT = 10.6 MILES  
TOTAL LENGTH STATE PROJECT = 10.6 MILES

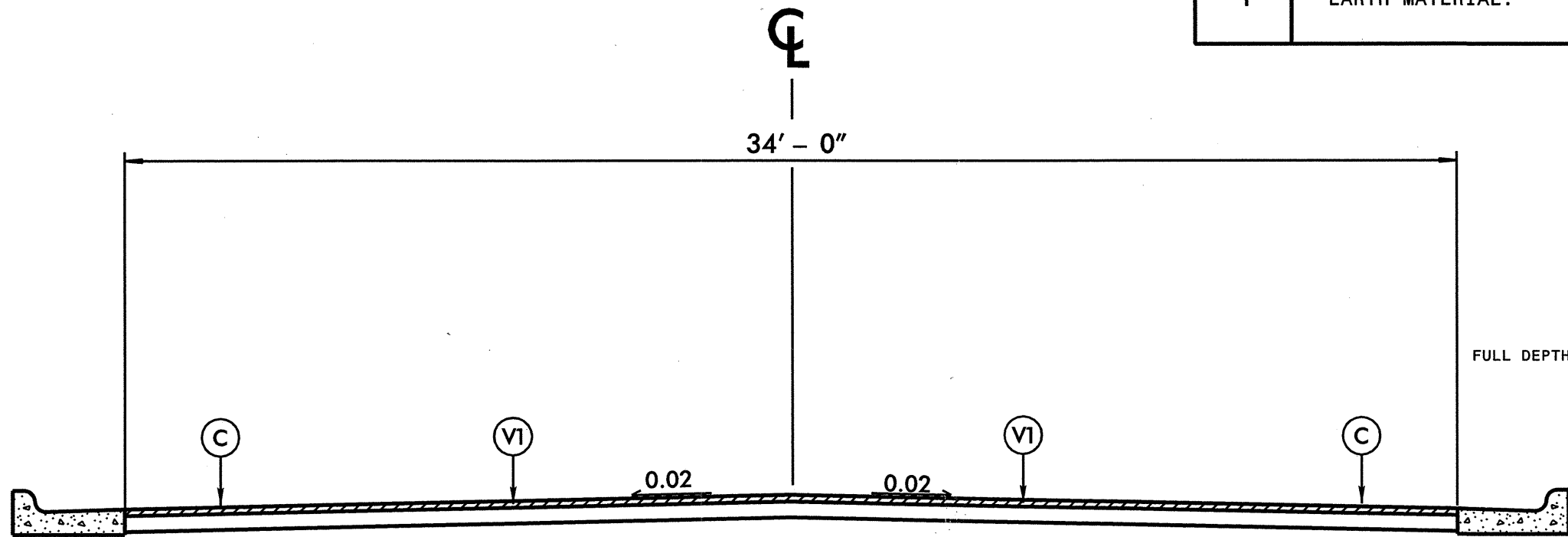
Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
113 Airport Dr., Suite 100, Edenton, NC 27932

2002 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	J. D. JENNINGS, P.E. DIVISION OPERATIONS ENGINEER
LETTING DATE:	S. P. FENWICK, PLS DIVISION DESIGN CONSTRUCT ENGINEER

5/28/99

REVISIONS

C	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D	PROP. APPROX. 2½" " ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
V1	MILLING BITUMINOUS PAVEMENT VARIABLE DEPTH. (SEE NOTE)
V2	MILLING BITUMINOUS PAVEMENT 2½" DEPTH.
T	EARTH MATERIAL.



FULL DEPTH PATCHING WILL BE REQUIRED AS DIRECTED BY THE ENGINEER

THE FOLLOWING PAVEMENT DESIGN SHALL BE USED FOR PATCHING EXISTING PAVEMENT:

- 1½" ACSC, TYPE S9.5B
- 5½" ACBC, TYPE B25.0B

PRIOR TO PATCHING, EXISTING PAVEMENT SHALL BE SAW-CUT AND REMOVED.

\* PATCHED AND REPAIRED AREAS WILL RECEIVE AN ADDITIONAL 1½" OF S9.5B. WHEN FINAL LAYER OF SURFACE IS APPLIED.

**NOTE:**

- ON MAPS WHERE ASPHALT HAS BEEN PLACED IN THE GUTTER OR WHERE ASPHALT IS HIGHER THAN GUTTER, MILL ASPHALT PAVEMENT 1 1/2" BELOW THE TOP EDGE OF GUTTER. ESTABLISH CROSS SLOPE OF 0.02 BACK TOWARD CENTER OF ROAD. REMOVE ASPHALT FROM GUTTER WHERE IT EXISTS.

- AREAS WITH NO ASPHALT IN GUTTER SHOULD BE MILLED 1 1/2" BELOW THE EDGE OF EXISTING GUTTER AND EXISTING CROSS SLOPE SHOULD BE MATCHED.

# TYPICAL SECTION NO. 1

## USE WITH MAP 1 & MAP 2

JAME\*\*\*\*

5/28/99

REVISIONS

C	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D	PROP. APPROX. 2½" " ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
V1	MILLING BITUMINOUS PAVEMENT VARIABLE DEPTH (SEE NOTE).
V2	MILLING BITUMINOUS PAVEMENT 2½" DEPTH.
T	EARTH MATERIAL.

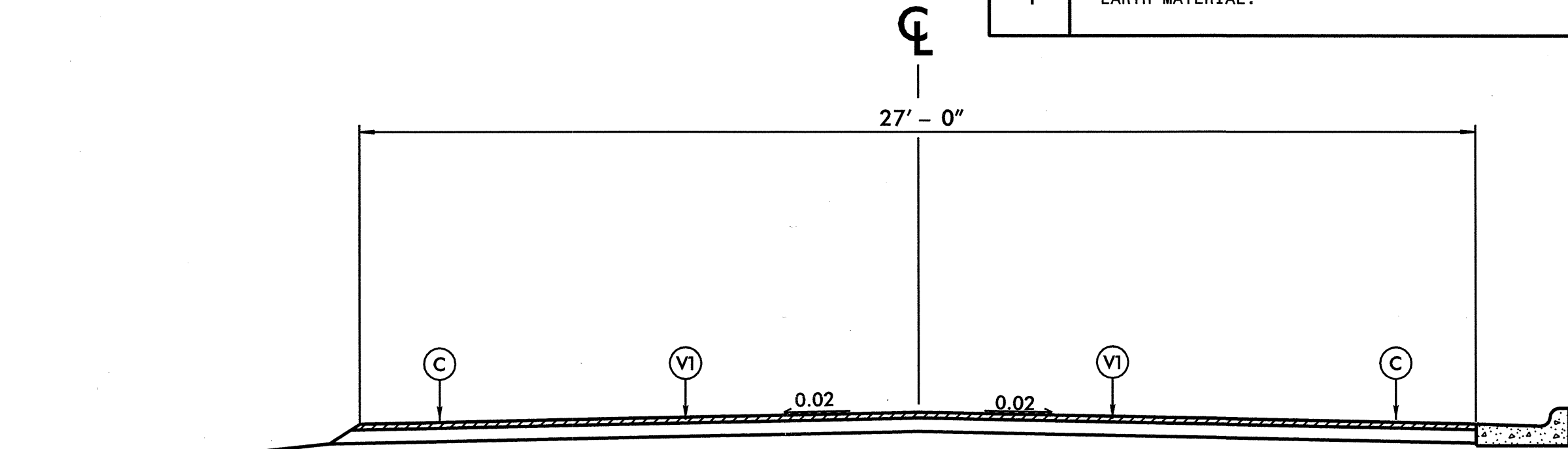
FULL DEPTH PATCHING WILL BE REQUIRED AS DIRECTED BY THE ENGINEER

THE FOLLOWING PAVEMENT DESIGN SHALL BE USED FOR PATCHING EXISTING PAVEMENT:

- 1½" ACSC, TYPE S9.5B
- 5½" ACBC, TYPE B25.0B

PRIOR TO PATCHING, EXISTING PAVEMENT SHALL BE SAW-CUT AND REMOVED.

\* PATCHED AND REPAIRED AREAS WILL RECEIVE AN ADDITIONAL 1½" OF S9.5B. WHEN FINAL LAYER OF SURFACE IS APPLIED.



# TYPICAL SECTION NO. 2

## USE WITH MAP 3

NOTE:

- ON MAPS WHERE ASPHALT HAS BEEN PLACED IN THE GUTTER OR WHERE ASPHALT IS HIGHER THAN GUTTER, MILL ASPHALT PAVEMENT 1 1/2" BELOW THE TOP EDGE OF GUTTER. ESTABLISH CROSS SLOPE OF 0.02 BACK TOWARD CENTER OF ROAD. REMOVE ASPHALT FROM GUTTER WHERE IT EXISTS.

- AREAS WITH NO ASPHALT IN GUTTER SHOULD BE MILLED 1 1/2" BELOW THE EDGE OF EXISTING GUTTER AND EXISTING CROSS SLOPE SHOULD BE MATCHED.

RNAME\*\*\*\*\*  
\*\*\*\*\*SYTIME\*\*\*\*\*  
\*\*\*\*\*DGN\*\*\*\*\*

6/2/09

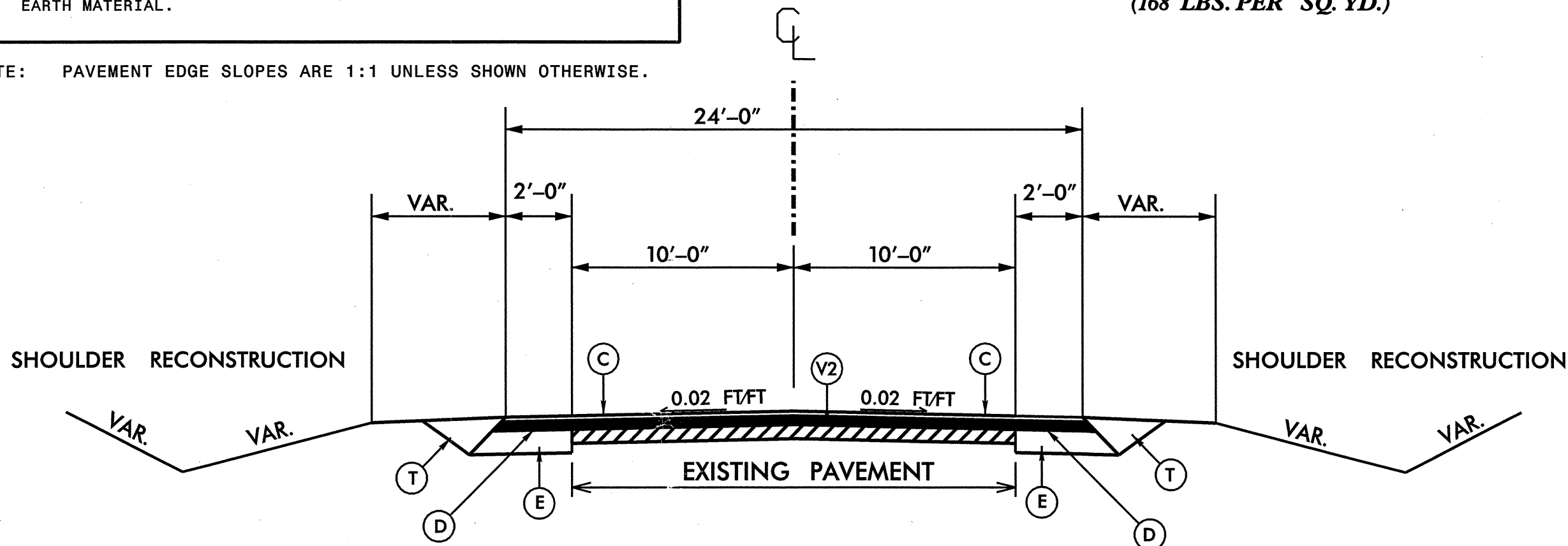
PROJECT REFERENCE NO. <b>39416</b>	SHEET NO. <b>4</b>
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

C	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D	PROP. APPROX. 2½" " ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
V1	MILLING BITUMINOUS PAVEMENT VARIABLE DEPTH (SEE NOTE).
V2	MILLING BITUMINOUS PAVEMENT 2½" DEPTH.
T	EARTH MATERIAL.

**NOTE:**

**BRIDGE #21 LOCATED APPROX. 5.4 MILES WEST OF THE INTERSECTION OF NC45 & NC42, WILL ONLY BE MILLED 1 1/2" AND WILL BE REPLACED WITH 1 1/2" OF S9.5B, AT AN AVERAGE RATE OF (168 LBS. PER SQ. YD.)**

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



# TYPICAL SECTION NO. 3

USE WITH MAP 4

\* SHOULDER RECONSTRUCTION TO BE PERFORMED AS DIRECTED BY THE ENGINEER

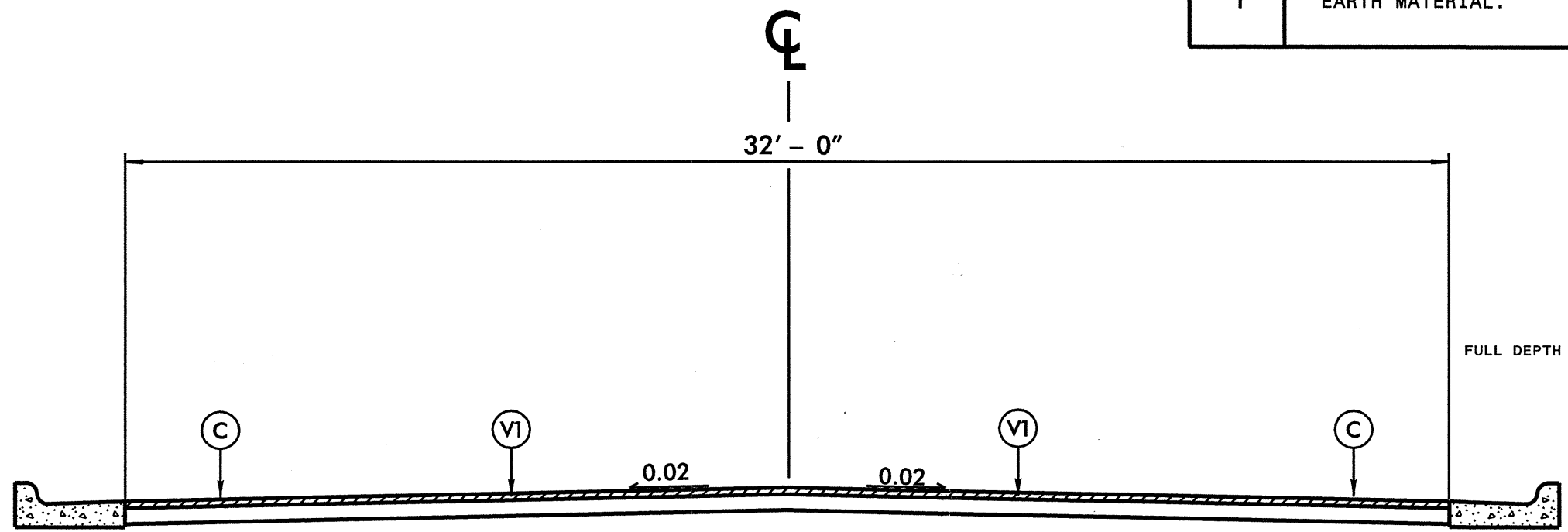
\*\*\*\*\*  
SYSTEM TIME \*\*\*\*\*  
\*\*\*\*\*  
\*\*\*\*\*

5/28/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
3946	5
RW SHEET NO.	

C	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D	PROP. APPROX. 2½" " ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
V1	MILLING BITUMINOUS PAVEMENT VARIABLE DEPTH (SEE NOTE).
V2	MILLING BITUMINOUS PAVEMENT 2½" DEPTH.
T	EARTH MATERIAL.



FULL DEPTH PATCHING WILL BE REQUIRED AS DIRECTED BY THE ENGINEER

THE FOLLOWING PAVEMENT DESIGN SHALL BE USED FOR PATCHING EXISTING PAVEMENT:

- 1½" ACSC, TYPE S9.5B
- 5½" ACBC, TYPE B25.0B

PRIOR TO PATCHING, EXISTING PAVEMENT SHALL BE SAW-CUT AND REMOVED.

\* PATCHED AND REPAIRED AREAS WILL RECEIVE AN ADDITIONAL 1½" OF S9.5B. WHEN FINAL LAYER OF SURFACE IS APPLIED.

NOTE:

- ON MAPS WHERE ASPHALT HAS BEEN PLACED IN THE GUTTER OR WHERE ASPHALT IS HIGHER THAN GUTTER, MILL ASPHALT PAVEMENT 1 1/2" BELOW THE TOP EDGE OF GUTTER. ESTABLISH CROSS SLOPE OF 0.02 BACK TOWARD CENTER OF ROAD. REMOVE ASPHALT FROM GUTTER WHERE IT EXISTS.

- AREAS WITH NO ASPHALT IN GUTTER SHOULD BE MILLED 1 1/2" BELOW THE EDGE OF EXISTING GUTTER AND EXISTING CROSS SLOPE SHOULD BE MATCHED.

# TYPICAL SECTION NO. 4

## USE WITH MAP 5

RNAME\*\*\*\*  
SYSTEMTIME\*\*\*\*  
\*\*\*\*\*

PROJECT NO.	SHEET NO.	TOTAL NO.
39416	6	

### SUMMARY OF QUANTITIES

PROJECT NO.	COUNTY	MAP NO.	ROUTE	DESCRIPTION	TYP	LENGTH MI	WIDTH FT	BORROW CY	FOUNDATION CONDITIONING MATERIAL TON	24" RC PIPE CULVERT, CLASS III LF	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	VARIABLE DEPTH MILLING SY	2.5" MILLING SY	BASE COURSE, B25.0B TONS	INTERMEDIATE COURSE, I19.0B TONS	SURFACE COURSE, S9.5B TONS	PG 64-22 PLANT MIX TONS	ASPHALT PLANT MIX, PAVEMENT REPAIR TONS	PATCHING EXISTING PAVEMENT TONS	ENDWALLS CY	TRENCHING (UNPAVED) L.F.	INDUCTIVE LOOP SAWCUT LF	JUNCTION BOX STANDARD SIZE EA
NCMA-NC42	Bertie	5	NC 42	CURB & GUTTER SECTION-COLERIAN	4	0.35	32			35			6,571				610	37		80			606	
		4	NC 42	OUT OF CURB & GUTTER- 20' PVT END 20' PVT-BEGIN CURB & GUTTER LT	3	9.1	20			1,045	18.2			107,573	9,436	20,852	11,963	2,104		3,500				
		3	NC 42	CURB & GUTTER SECTION- POWELLSVILLE	2	0.25	27			25	0.3		3,960				368	22						
		2	NC 42	CURB & GUTTER SECTION- POWELLSVILLE	1	0.2	34	30		30			4,460				469	28						
		1	NC 42	CURB & GUTTER- POWELLSVILLE (NO ASPHALT IN GUTTER)	1	0.65	34	30	5	48	65		12,965				1,367	82	20	10	1.5	10	935	2
TOTAL FOR PROJ NO. NCMA-NC42						10.6		60	5	48	1,200	18.5	27,956	107,573	9,436	20,852	14,777	2,273	20	3,590	1.5	10	1,541	2
GRAND TOTAL						10.6		60	5	48	1,200	18.5	27,956	107,573	9,436	20,852	14,777	2,273	20	3,590	1.5	10	1,541	2

PROJECT NO.	COUNTY	MAP NO.	ROUTE	DESCRIPTION	TYP	LENGTH MI	WIDTH FT	PIPE COLLARS CY	MASONRY DRAINAGE STRUCTURE EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** EA	2'-6" CURB & GUTTER LF	4" CONCRETE SIDEWALK SY	WHEELCHAIR RAMPS EA	6" DRIVEWAYS SY	RETROFIT EXT WHEELCHAIR RAMPS EA	ADJUSTMENT CATCH BASIN EA	ADJUSTMENT MANHOLES EA	STEEL BM GUARDRAIL LF	GRAU, TYPE 350 EA	TEMPORARY SILT FENCE LF	REMOVAL OF EXISTING PAVEMENT SY	SEDIMENT CONTROL STONE TON	1/4" HARDWARE CLOTH LF	SEED & MULCHING AC	
NCMA-NC42	Bertie	5	NC 42	CURB & GUTTER SECTION-COLERIAN	4	0.35	32	2			150		2		2		7								
		4	NC 42	OUT OF CURB & GUTTER- 20' PVT END 20' PVT-BEGIN CURB & GUTTER LT	3	9.1	20												1,050	12	300	5,410			10
		3	NC 42	CURB & GUTTER SECTION- POWELLSVILLE	2	0.25	27																		
		2	NC 42	CURB & GUTTER SECTION- POWELLSVILLE	1	0.2	34				2,112	67		35											
		1	NC 42	CURB & GUTTER- POWELLSVILLE (NO ASPHALT IN GUTTER)	1	0.65	34		2	2	167		2	35	2	2	7		1,050	12	300	5,410	10	40	10
TOTAL FOR PROJ NO. NCMA-NC42						10.6		2	2	2	2,429	67	2	35	2	2	7		1,050	12	300	5,410	10	40	10
GRAND TOTAL						10.6		2	2	2	2,429	67	2	35	2	2	7		1,050	12	300	5,410	10	40	10

PROJECT NO.	SHEET NO.	TOTAL NO.
39416	7	

### THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	4685000000-E	4686000000-E	4710000000-E	4721000000-E	4725000000-E	4810000000-E		4835000000-E	4840000000-N	4845000000-N	4900000000-N
					4" X 90 M WHITE THERMO LF	4" X 120 M YELLOW THERMO LF	24" X 120 M WHITE THERMO LF	THERMO MSG SCHOOL 120 M EA	THERMO LT ARROW 90 M EA	4" YELLOW PAINT LF	4" WHITE PAINT LF	24" WHITE PAINT LF	PAINT MSG SCHOOL EA	PAINT LT ARROW EA	YELLOW & YELLOW MARKERS EA
NCMA-NC42	Bertie	5	NC 42	CURB & GUTTER SECTION- COLERIAN		4,620	16			4,620		16			24
		4	NC 42	OUT OF CURB & GUTTER- 20' PVT END 20' PVT-BEGIN CURB & GUTTER LT	120,120	60,060			4	60,060	120,120			4	601
		3	NC 42	CURB & GUTTER SECTION- POWELLSVILLE	3,300	1,650	170	12		1,650	3,300	170	12		17
		2	NC 42	CURB & GUTTER SECTION- POWELLSVILLE		2,112	60			2,112		60			13
		1	NC 42	CURB & GUTTER- POWELLSVILLE (NO ASPHALT IN GUTTER)		6,864	16			6,864		16			51
<b>TOTAL FOR PROJ NO. NCMA-NC42</b>					<b>123,420</b>	<b>75,306</b>	<b>262</b>	<b>12</b>	<b>4</b>	<b>75,306</b>	<b>123,420</b>	<b>262</b>	<b>12</b>	<b>4</b>	<b>706</b>
										<b>198,726</b>					
<b>GRAND TOTAL</b>					<b>123,420</b>	<b>75,306</b>	<b>262</b>	<b>12</b>	<b>4</b>	<b>75,306</b>	<b>123,420</b>	<b>262</b>	<b>12</b>	<b>4</b>	<b>706</b>
										<b>198,726</b>					





COMPUTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

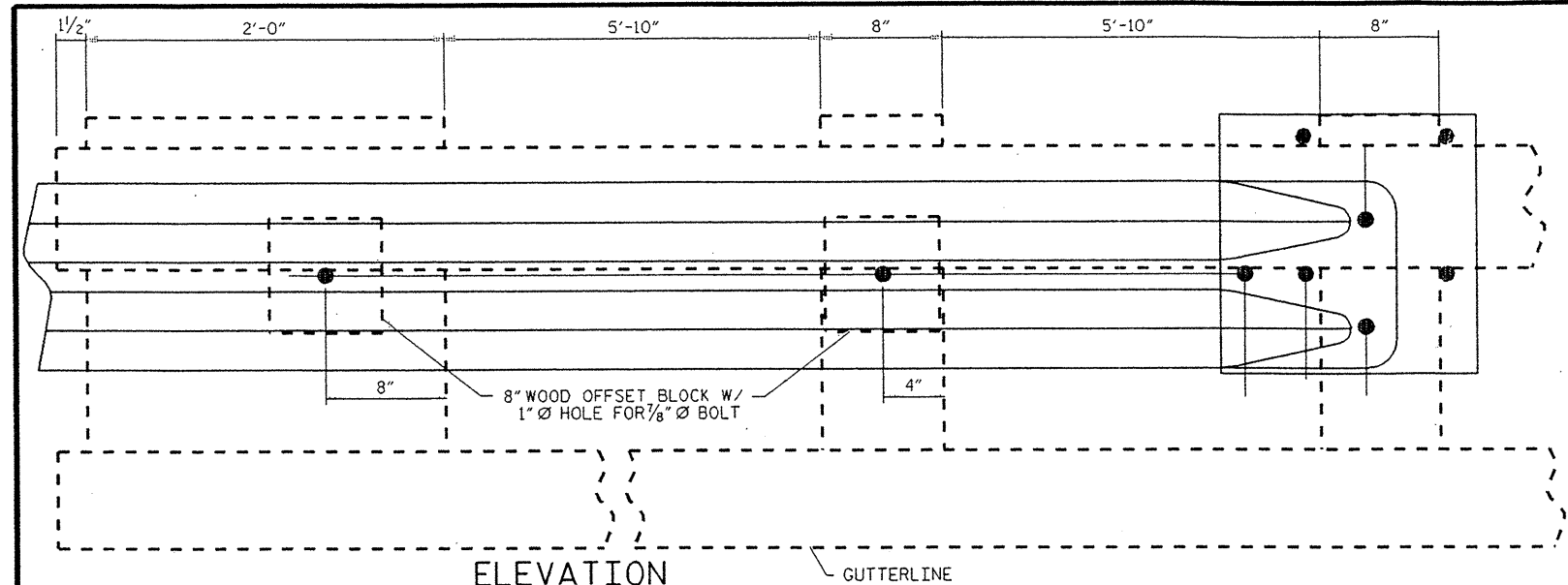
DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA  
**GUARDRAIL SUMMARY**

PROJECT REFERENCE NO. 39416 SHEET NO. 9

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL  
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.  
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL  
 W = TOTAL WIDTH OF FLARE FROM BEGIN

G = GATING IMPACT ATTENUATOR TYPE 350  
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

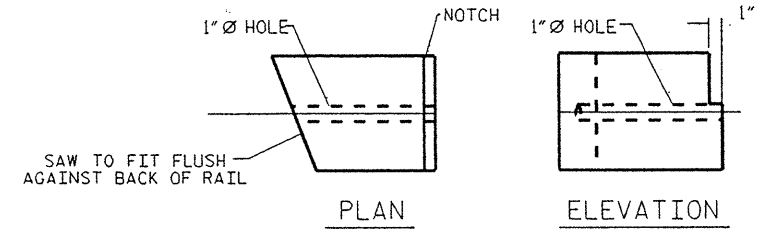
SURVEY LINE (MILE)	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS																	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYING TO THRIE	XI	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	G					NG																
MAP 4																																													
CONC. BOX CULVERT																																													
3.2				200					4	6																																			
3.2				200					4	6																																			
MAP 4 / BRIDGE #21																																													
5.2				287.5																																									
5.2				137.5																								APPROACH																	
5.2				287.5																								TRAILING																	
5.2				137.5																								APPROACH																	
																												TRAILING																	
MAP 4																																													
CONC. BOX CULVERT																																													
9.6				200					4	6																																			
9.6				200					4	6																																			
<b>TOTAL</b>				<b>1650</b>																																									
				<b>LESS ANCHOR DEDUCTIONS</b>																																									
				GRAU-350	12	50																					600																		
				M-350	0	37.5																					0																		
				CAT-1	0	6.25																					0																		
				AT-1	0	6.25																					0																		
				TYPE III	0	18.75																					0																		
				TYING TO THRIE	0	18.75																					0																		
				<b>TOTAL DEDUCTIONS</b>																								<b>600.00</b>																	
				<b>TOTAL LENGTH STRAIGHT</b>																								<b>1050.00</b>	<b>feet</b>																



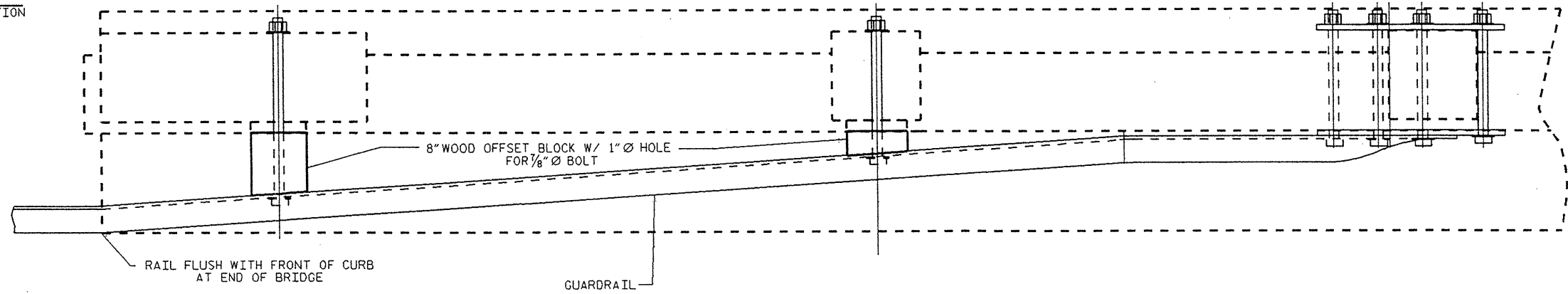
ELEVATION

NOTES

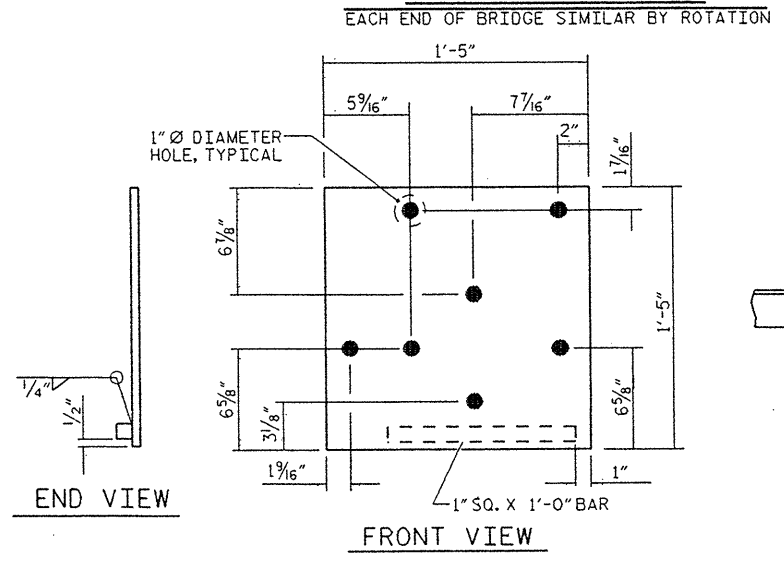
ALL BOLTS FOR ATTACHMENT PLATE SHALL HAVE A STANDARD WASHER AT THE HEAD AND NUT END.  
 THE ATTACHMENT PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE ATTACHMENT PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.  
 BOLTS FOR THE ATTACHMENT PLATE SHALL BE 3/8" DIAMETER AND CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.  
 AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.  
 CONTRACTOR SHALL BE PREPARED TO DRILL THROUGH CONCRETE AND STEEL REINFORCING.



OFFSET BLOCKS



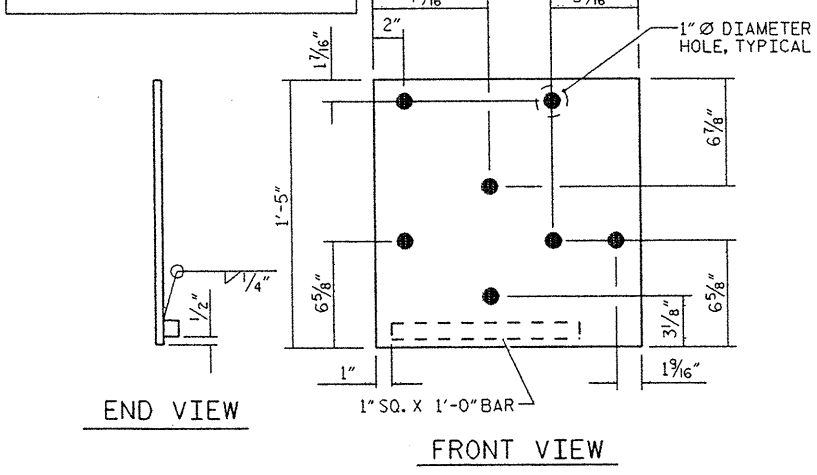
PLAN



1/2" ATTACHMENT PLATE (TYPE 1)

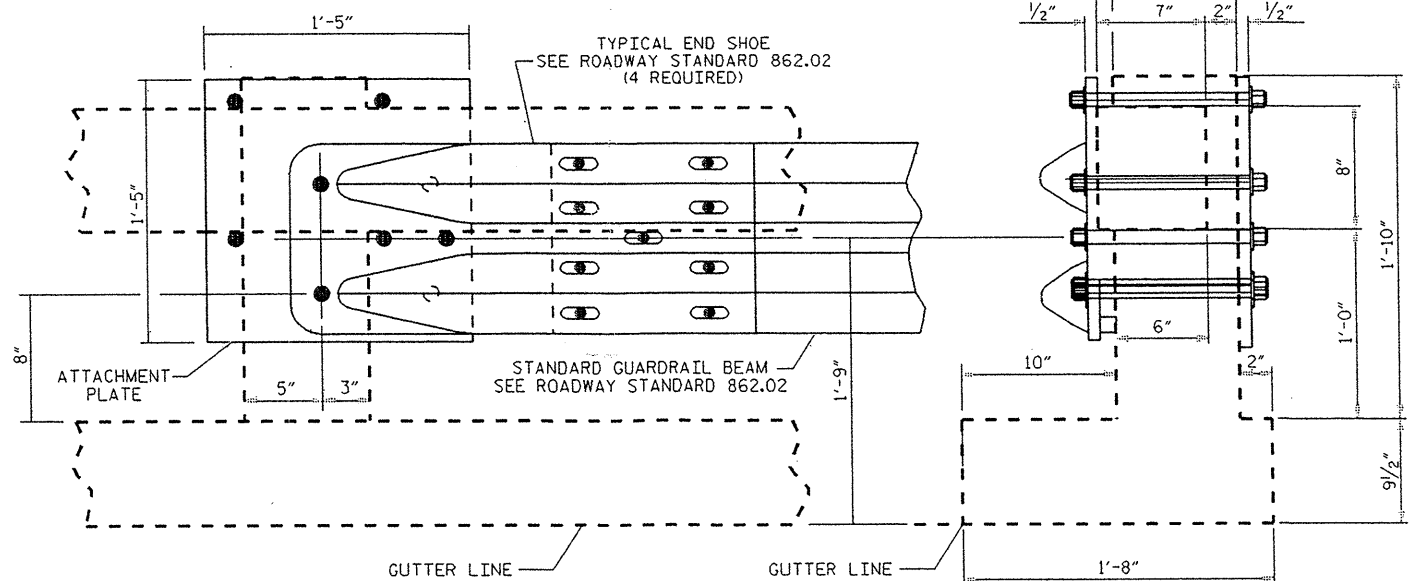
(4 REQUIRED)

NOTE: THE 1" SQUARE BAR SHALL BE PLACE ON THE PLATE USED ON THE TRAFFIC SIDE OF THE ATTACHMENT ONLY.



1/2" ATTACHMENT PLATE (TYPE 2)

(4 REQUIRED)

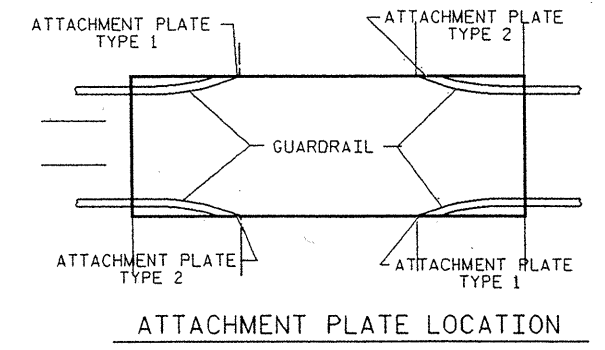


ELEVATION VIEW

END VIEW

(ATTACHMENT DETAIL)

(ATTACHMENT DETAIL)



ATTACHMENT PLATE LOCATION

PROJECT NO. 39416  
BERTIE COUNTY  
 STATION: \_\_\_\_\_

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

DETAILS FOR  
 GUARDRAIL ATTACHMENT  
 BRIDGE No. 21

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			10
2			4			

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

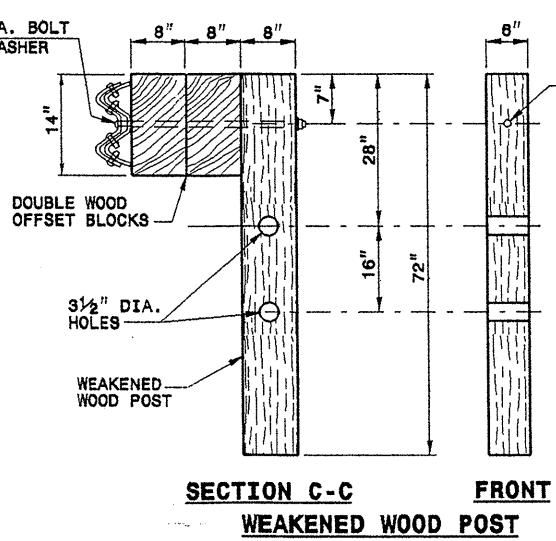
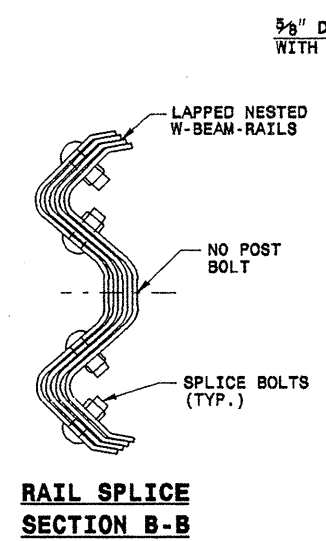
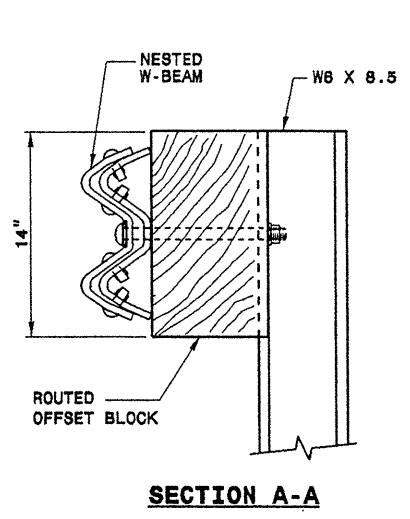
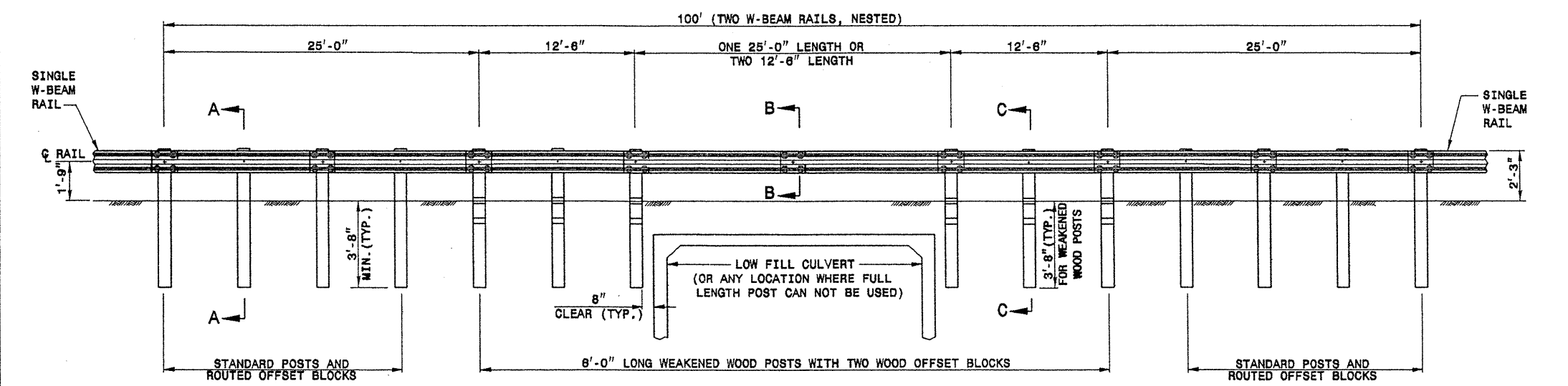
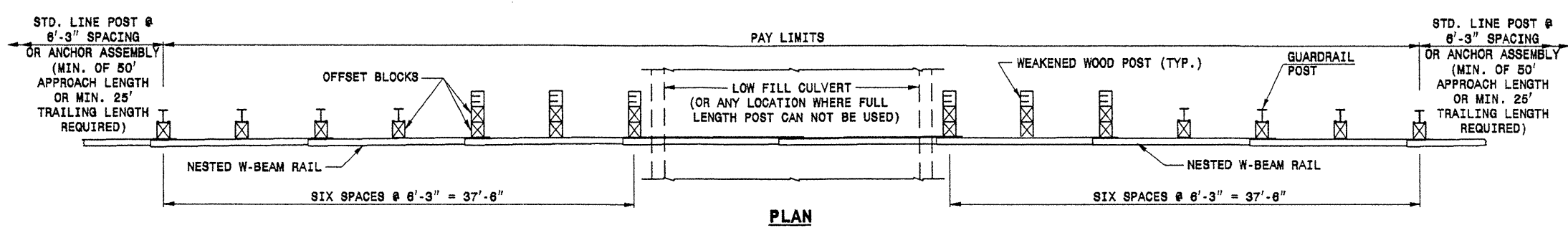
ENGLISH DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**  
25'-0" CLEAR SPAN  
(MEETING NCHRP 350 TL-3 CRITERIA)

SHEET 1 OF 1  
**862D01**

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

ENGLISH DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**  
25'-0" CLEAR SPAN  
(MEETING NCHRP 350 TL-3 CRITERIA)

SHEET 1 OF 1  
**862D01**



- GENERAL NOTES:
- LAP RAIL IN THE DIRECTION OF TRAFFIC FLOW.
  - SEE ROADWAY PLANS FOR LOCATIONS AND CONTINUATION OF RAIL OR END SECTIONS.
  - 25'-0" SPAN: POSTS MAY BE ELIMINATED SUCH THAT A MAXIMUM OF ONE RAIL SPLICE IS LOCATED WITHIN THE UNSUPPORTED LENGTH. A 25'-0" LENGTH OF NESTED W-BEAM RAIL MAY BE USED TO ELIMINATE A SPLICE WITHIN THE 25'-0" CLEAR SPAN.
  - MINIMUM DISTANCE OF 5 FEET BEHIND THE GUARDRAIL SHOULD BE CLEAR OF ANY FIXED-OBJECT HAZARDS THAT COULD SNAG AN IMPACTING VEHICLE.

5/14/99  
25-OCT-2004 10:05  
C:\current\Projects\MOVING AHEAD\NC 42 Bertie Co\Guardrail\Box\Culvert.dgn  
calachto

DESIGN SERVICES UNIT  
STANDARDS AND SPECIAL DESIGN  
Office 919-250-4128 FAX 919-250-4119

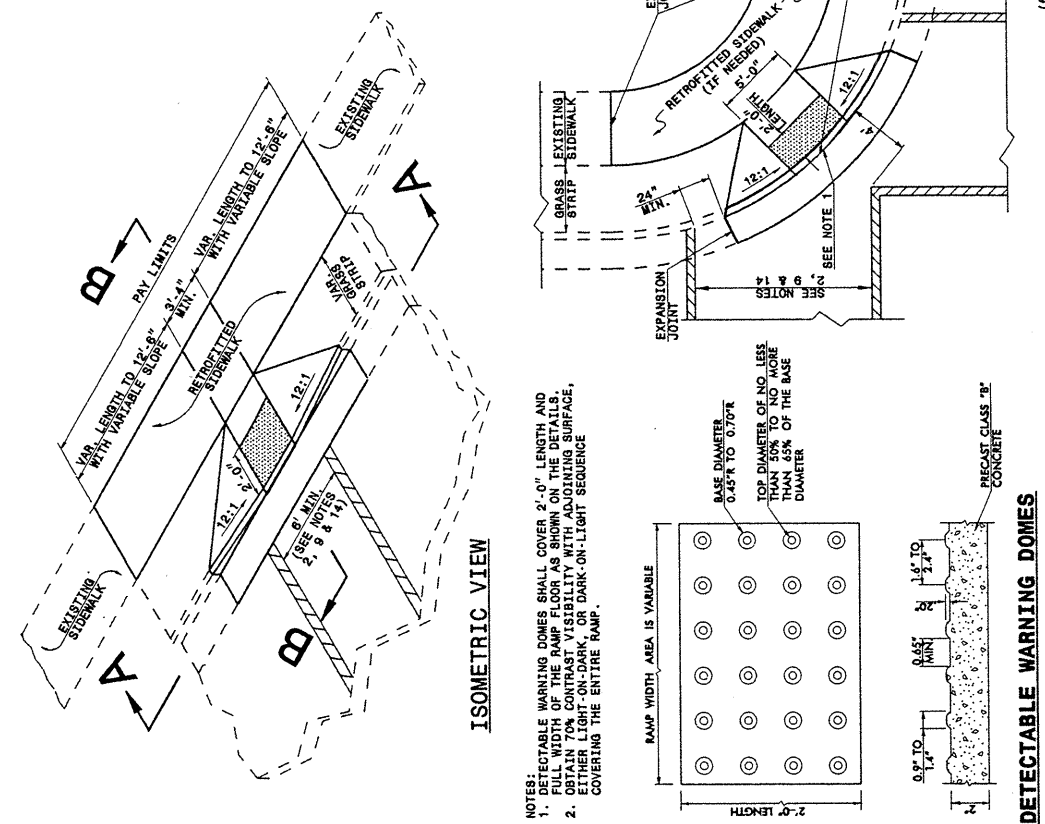
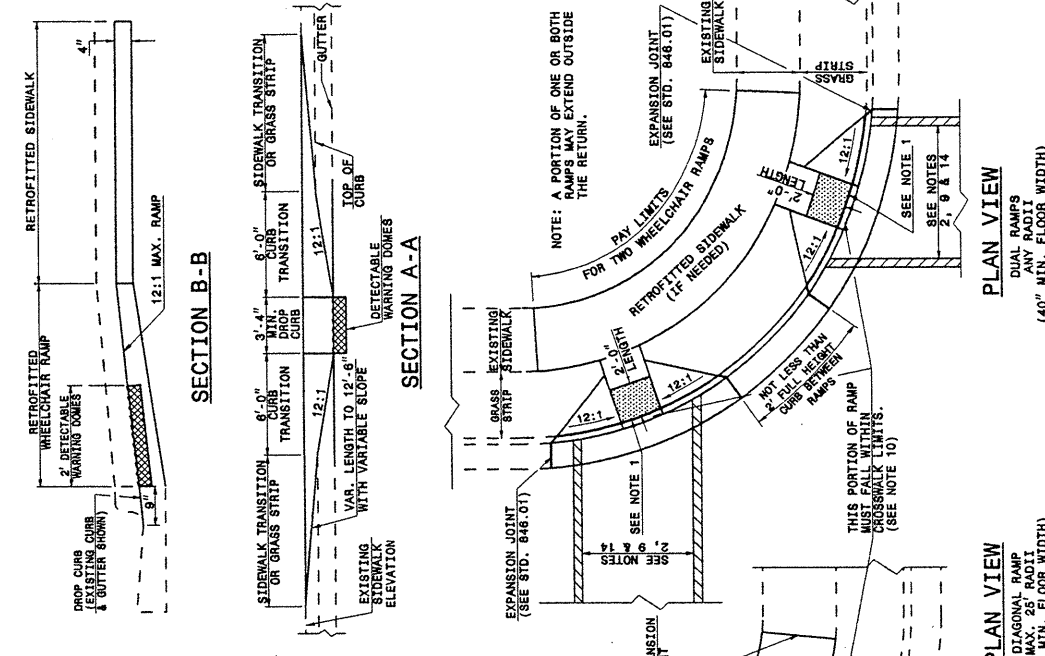
**SEE PLATE FOR TITLE**

ORIGINAL BY: FHA HMHS-B58 DATE: \_\_\_\_\_  
MODIFIED BY: E.E. WARD DATE: 08-11-09  
CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
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STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
WHEELCHAIR RAMP AND EXISTING SIDEWALK  
WITH GRASS STRIP  
CURB CUT

SHEET 1 OF 5  
848D06



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

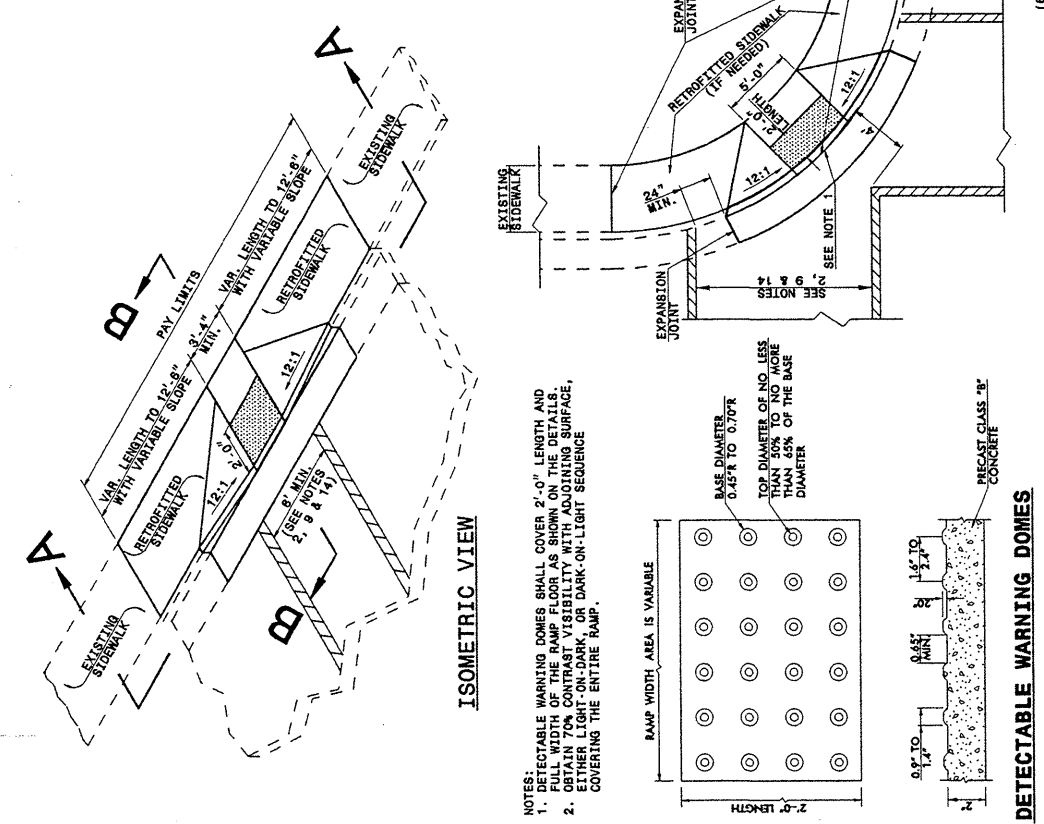
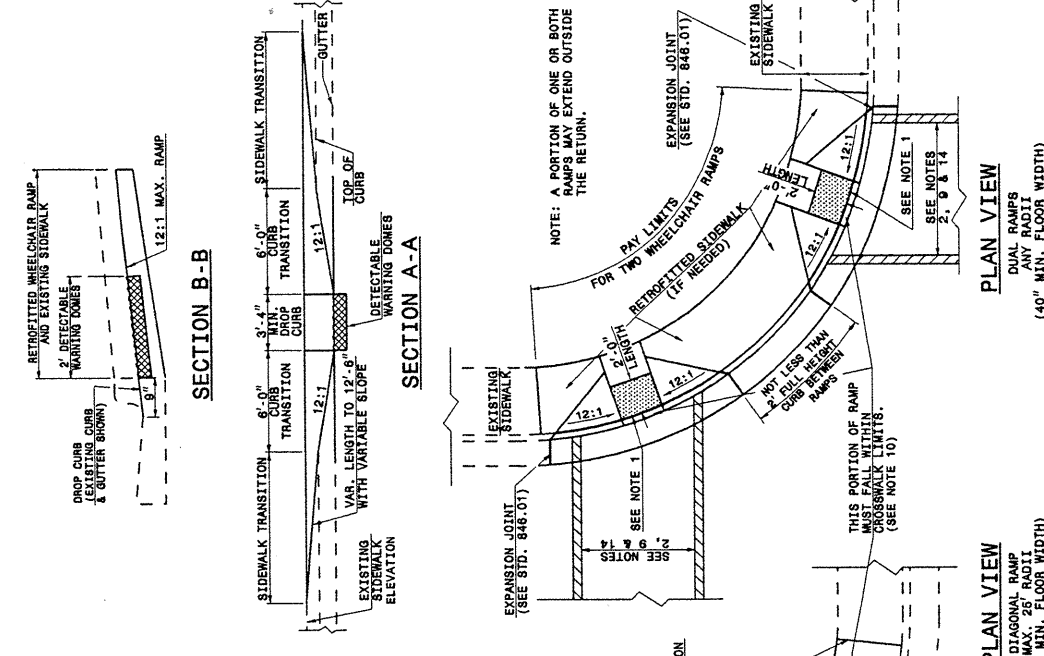
ENGLISH DETAIL DRAWING FOR  
WHEELCHAIR RAMP AND EXISTING SIDEWALK  
WITH GRASS STRIP  
CURB CUT

SHEET 1 OF 5  
848D06

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

ENGLISH DETAIL DRAWING FOR  
WHEELCHAIR RAMP AND EXISTING SIDEWALK  
ADJACENT TO CURB  
CURB CUT

SHEET 2 OF 5  
848D06



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

ENGLISH DETAIL DRAWING FOR  
WHEELCHAIR RAMP AND EXISTING SIDEWALK  
ADJACENT TO CURB  
CURB CUT

SHEET 2 OF 5  
848D06

PROJECT SERVICES UNIT  
STANDARDS AND SPECIAL DESIGN  
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: DETAIL 848D05 DATE: 09-06-05  
MODIFIED BY: E.E. WARD DATE:  
CHECKED BY: DATE:  
FILE SPEC.: /usr/stds/02tdetail/eng/lish/84806/848d06.dgn

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

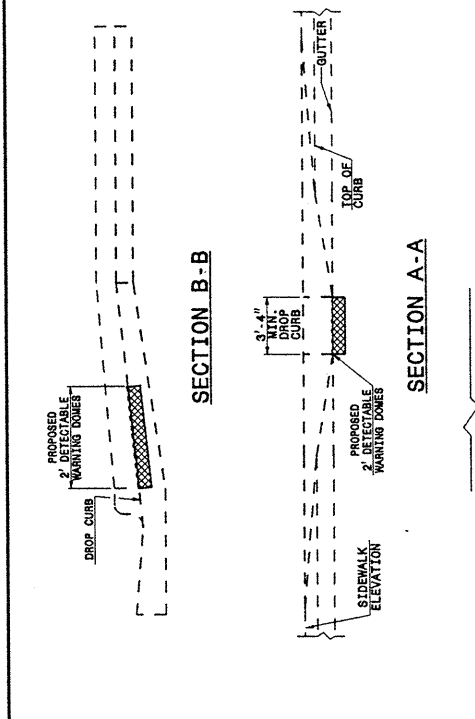
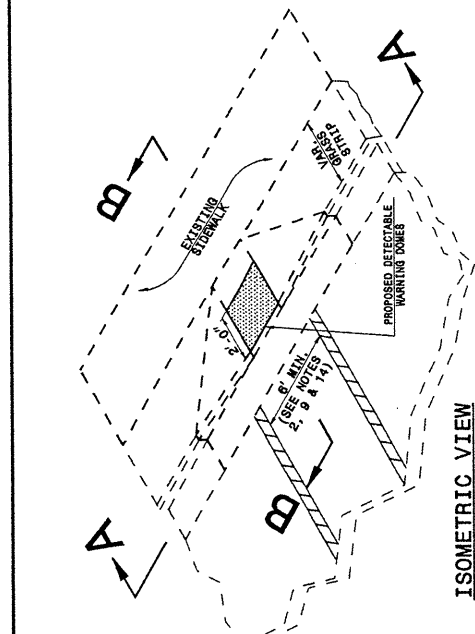
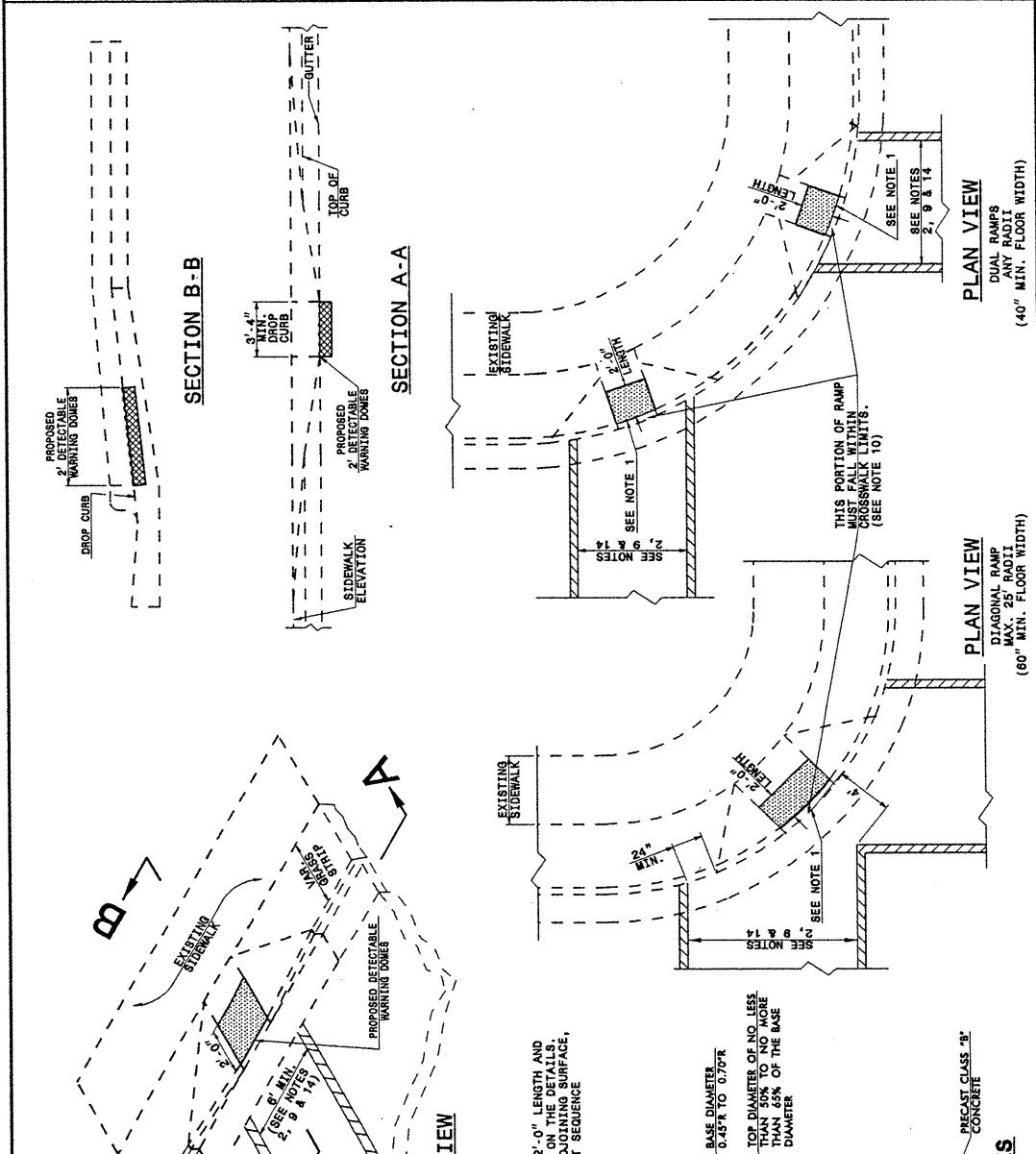
ENGLISH DETAIL DRAWING FOR  
**RETROFITTING DETECTABLE WARNING DOMES  
 ONTO EXISTING WHEELCHAIR RAMP**  
 CURB CUT

SHEET 3 OF 5  
**848D06**

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

ENGLISH DETAIL DRAWING FOR  
**RETROFITTING DETECTABLE WARNING DOMES  
 ONTO EXISTING WHEELCHAIR RAMP**  
 CURB CUT

SHEET 3 OF 5  
**848D06**



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

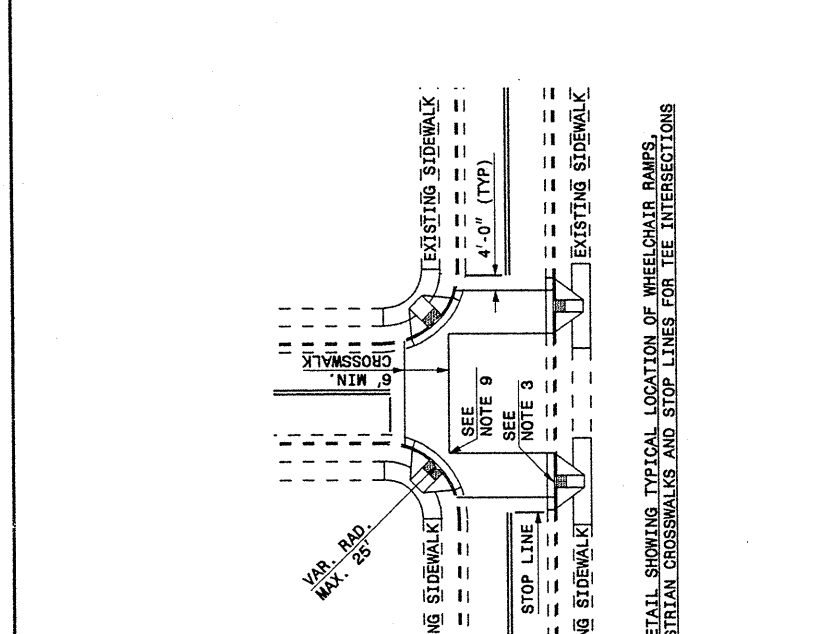
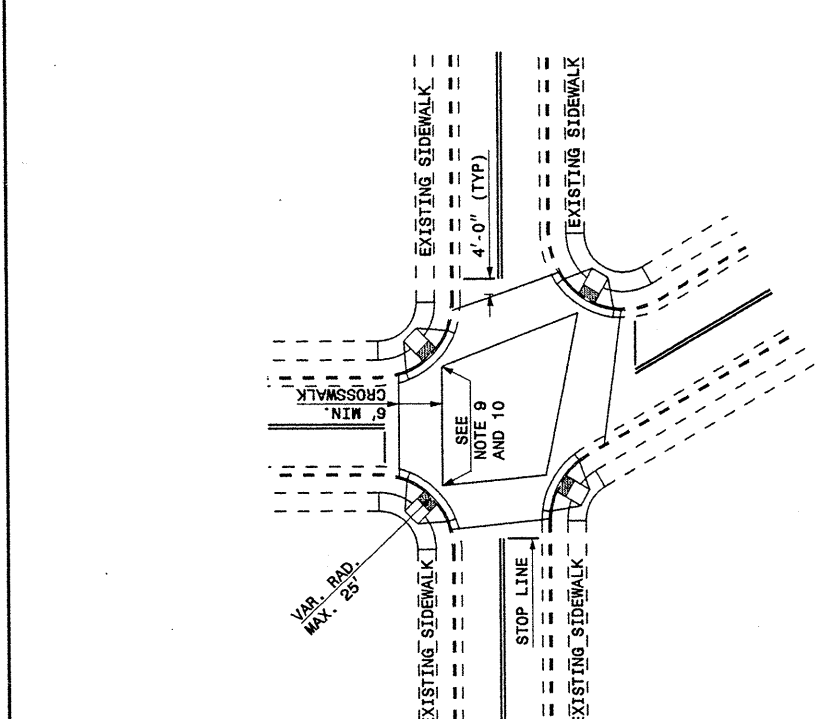
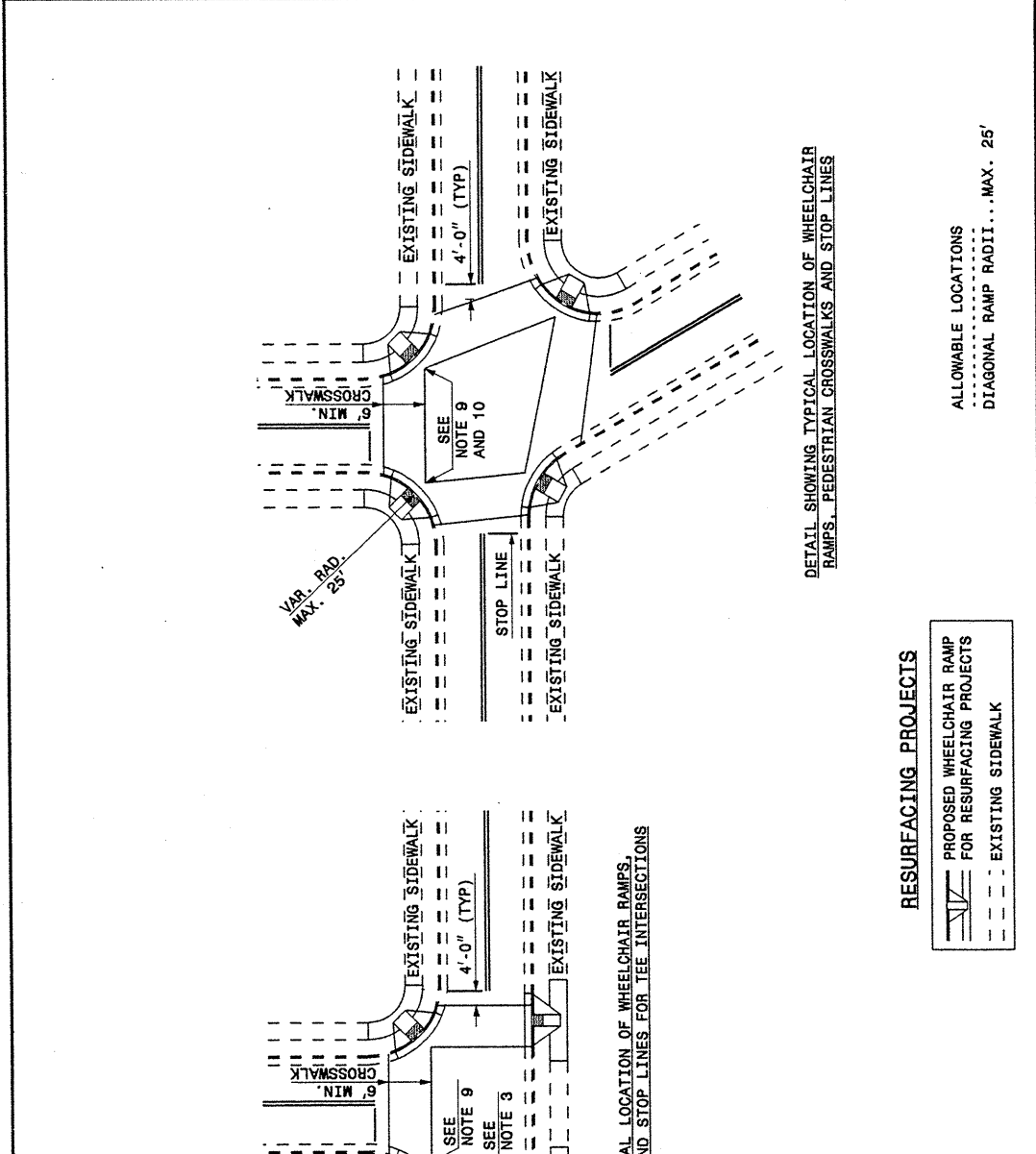
ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
 CURB CUT

SHEET 4 OF 5  
**848D06**

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

ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
 CURB CUT

SHEET 4 OF 5  
**848D06**



PROJECT SERVICES UNIT  
 STANDARDS AND SPECIAL DESIGN  
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**SEE PLATE FOR TITLE**

ORIGINAL BY: DETAIL 848D05 DATE:  
 MODIFIED BY: E.E. WARD DATE: 09-06-05  
 CHECKED BY: DATE:  
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STATE OF  
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DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP AND EXISTING SIDEWALK**  
CURB CUT

SHEET 5 OF 5  
**848D06**

NOTES:

1. CONSTRUCT THE WALKING SURFACE WITH SLIP RESISTANCE AND A 70% CONTRASTING COLOR TO THE SIDEWALK.
2. CROSSWALK WIDTHS AND CONFIGURATION VARY, BUT MUST CONFORM TO TRAFFIC DESIGN STANDARDS.
3. NORTH CAROLINA GENERAL STATUTE 136-44.14 REQUIRES THAT ALL STREET CURBS BEING CONSTRUCTED OR RECONSTRUCTED FOR MAINTENANCE PROCEDURES, TRAFFIC OPERATIONS, REPAIRS, CORRECTION OF UTILITIES OR ALTERED FOR ANY REASON AFTER SEPTEMBER 1, 1973 SHALL PROVIDE WHEELCHAIR RAMPS FOR THE PHYSICALLY DISABLED AT ALL INTERSECTIONS WHERE BOTH CURB AND GUTTER AND SIDEWALKS ARE PROVIDED AND AT OTHER POINTS OF PEDESTRIAN FLOW.  
IN ADDITION, SECTION 228 OF THE 1973 FEDERAL AID HIGHWAY SAFETY ACT REQUIRES PROVISION OF CURB RAMPS ON ANY CURB CONSTRUCTION AFTER JULY 1, 1976 WHETHER A SIDEWALK IS PROPOSED INITIALLY OR IS PLANNED FOR A FUTURE DATE.  
THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990 EXTENDS TO INDIVIDUALS WITH DISABILITIES, COMPREHENSIVE CIVIL RIGHTS PROTECTIONS SIMILAR TO THOSE PROVIDED TO PERSONS ON THE BASIS OF RACE, SEX, NATIONAL ORIGIN AND RELIGION UNDER THE CIVIL RIGHTS ACT OF 1964. THESE CURB RAMPS HAVE BEEN DESIGNED TO COMPLY WITH THE CURRENT ADA STANDARDS.
4. PROVIDE WHEELCHAIR RAMPS AT LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. LOCATE WHEELCHAIR RAMPS AS DIRECTED BY THE ENGINEER WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. AFFECT PLACEMENT. WHERE TWO RAMPS ARE INSTALLED, PLACE NOT LESS THAN 2 FEET OF FULL HEIGHT CURB BETWEEN THE RAMPS. PLACE DUAL RAMPS AS NEAR PERPENDICULAR TO THE TRAVEL LANE BEING CROSSED AS POSSIBLE.
5. DO NOT EXCEED 0.08 (12:1) SLOPE ON THE WHEELCHAIR RAMP IN RELATIONSHIP TO THE GRADE OF THE STREET.
6. CONSTRUCT WHEELCHAIR RAMPS 40" (3'-4") OR GREATER FOR DUAL RAMPS AND 60" (5'-0") OR GREATER FOR DIAGONAL RAMPS.
7. USE CLASS "B" CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NON-SKID TYPE SURFACE.
8. PLACE A 1/2" EXPANSION JOINT WHERE THE CONCRETE WHEELCHAIR RAMP JOINS THE CURB AND AS SHOWN ON STD. DWG. 848.01.
9. PLACE THE INSIDE PEDESTRIAN CROSSWALK LINES NO CLOSER IN THE INTERSECTION BY BISECTING THE INTERSECTION RADIUS, WITH ALLOWANCE OF A 4' CLEAR ZONE IN THE VEHICULAR TRAVELWAY WHEN ONE RAMP IS INSTALLED. (SEE NOTE 14)
10. COORDINATE THE CURB CUT AND THE PEDESTRIAN CROSSWALK LINES SO THE FLOOR OF THE WHEELCHAIR RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES. PLACE DIAGONAL RAMPS WITH FLARED SIDES SO 24" OF FULL HEIGHT CURB FALLS WITHIN THE CROSSWALK MARKINGS ON EACH SIDE OF THE FLARES.
11. CONSTRUCT THE PEDESTRIAN CROSSWALK A MINIMUM OF 6 FEET. A CROSSWALK WIDTH OF 10 FEET OR GREATER IS DESIRABLE.
12. USE STOP LINES, NORMALLY PERPENDICULAR TO THE LANE LINES, WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT. AN UNUSUAL APPROACH SKEW MAY REQUIRE THE PLACEMENT OF THE STOP LINE TO BE PARALLEL TO THE INTERSECTING ROADWAY.
13. TERMINATE PARKING A MINIMUM OF 20 FEET BACK OF PEDESTRIAN CROSSWALK.
14. PLACE ALL PAVEMENT MARKINGS IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD.

STATE OF  
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ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP AND EXISTING SIDEWALK**  
CURB CUT

SHEET 5 OF 5  
**848D06**

PROJECT REFERENCE NO. SHEET NO.  
39416 14

PROJECT SERVICES UNIT  
STANDARDS AND SPECIAL DESIGN  
Office 919-250-4128 FAX 919-250-4119

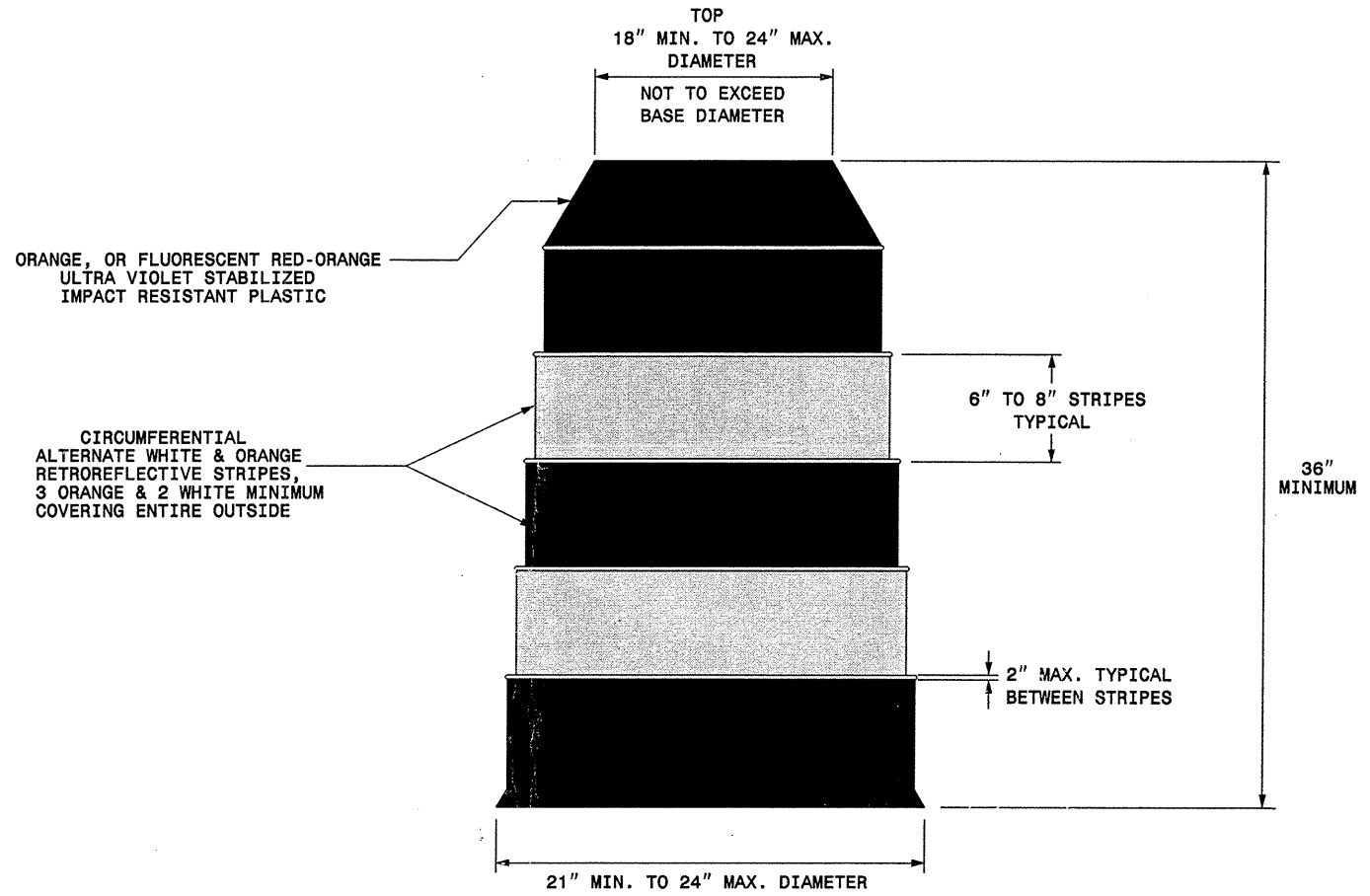
**SEE PLATE FOR TITLE**

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MODIFIED BY: E.E. WARD DATE: 09-06-05  
CHECKED BY: DATE:  
FILE SPEC.: /usr/stds/02todetail/english/84806/848d06.dgn

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**

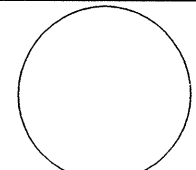
- BALLASTING SHALL BE ACHIEVED BY THE SAND BAG, TIRE-SIDEWALL BALLAST, OR PREFORMED WEIGHTED BASE BALLASTING METHODS. DO NOT PLACE BALLAST ON TOP OF THE DRUM.
- IF NECESSARY PLACE THE NAME OF THE AGENCY, CONTRACTOR, OR SUPPLIER ON NON-RETROREFLECTIVE DRUM SURFACES. SHOW THE LETTERS AND NUMBERS USING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

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

ENGLISH STANDARD DRAWING FOR  
**DRUMS**

SHEET 1 OF 1  
**1130D01**

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

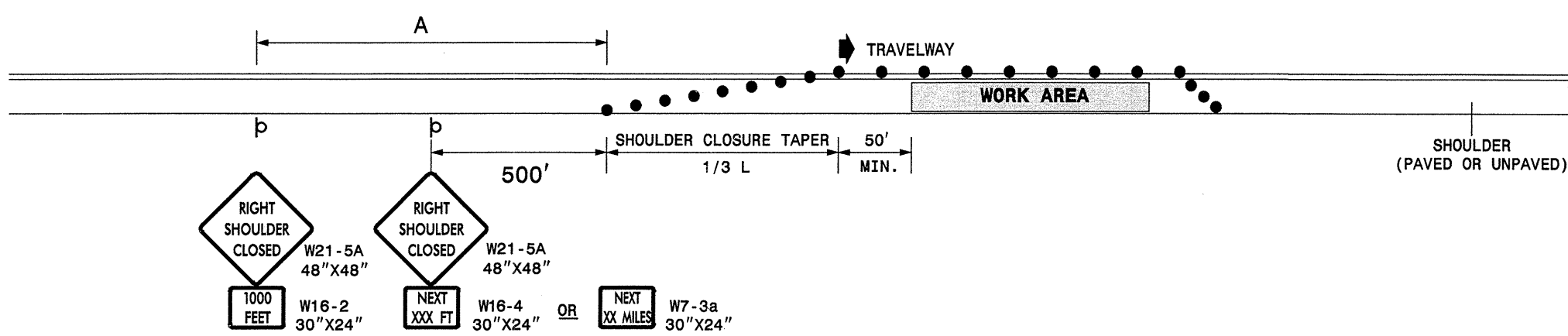
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR  
**TEMPORARY SHOULDER CLOSURES**

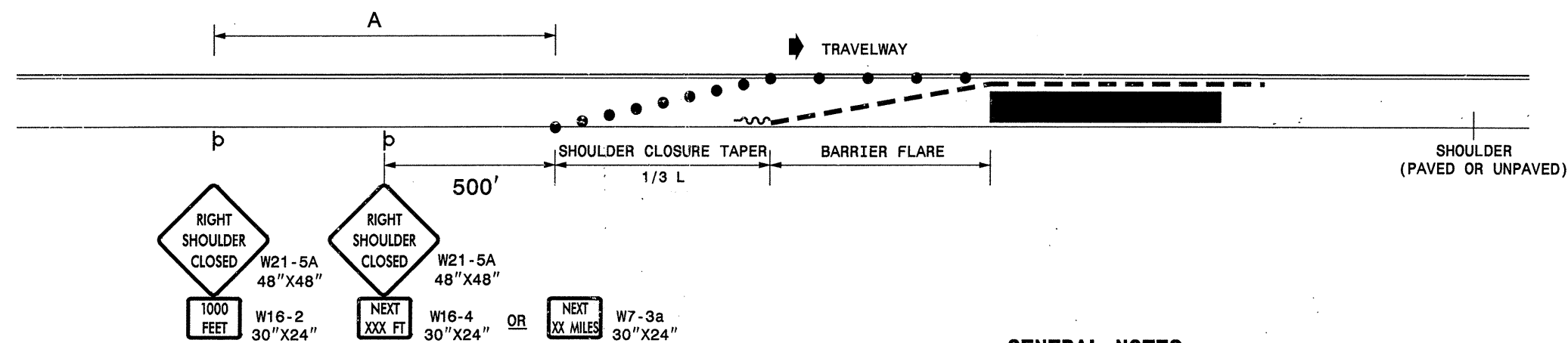
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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**

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

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pssymore AT WZTC06427



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

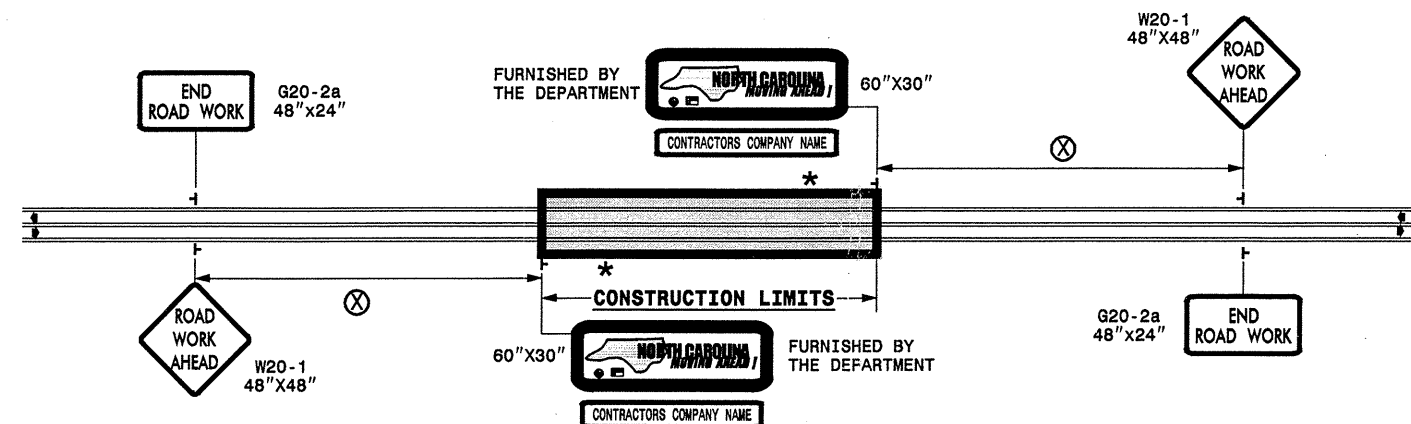
FURNISHED BY THE DEPARTMENT



60" X 30"

CONTRACTORS COMPANY NAME

60" Max. X 12"



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

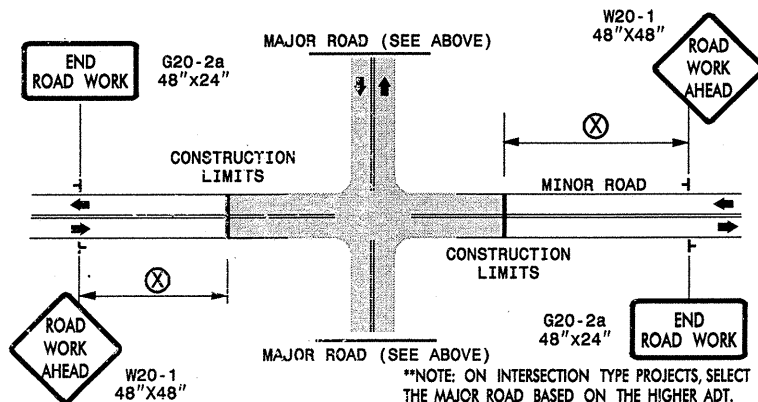
**\* ROAD WORK G20-1A NEXT XX MILES 60" X 24"**

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. 39416	SHEET NO. NCMA-1
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STATE OF NORTH CAROLINA  
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DIVISION OF HIGHWAYS  
RALEIGH, N.C.

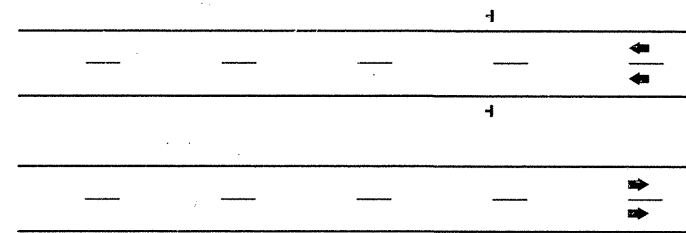
# INTERSECTIONS (-Y- LINES)



# 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.

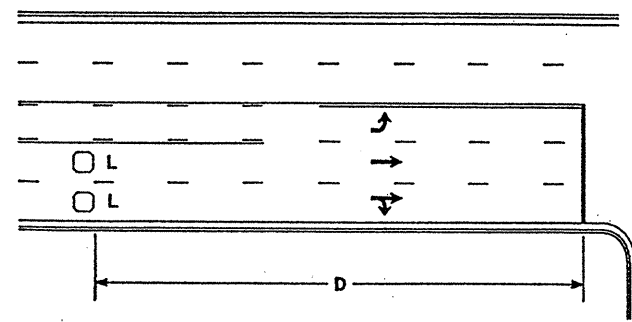
LEGEND	
⊥	STATIONARY SIGN
◀	DIRECTION OF TRAFFIC FLOW

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		
	DATE: 07/03		
	DWG. BY: JSK		
	DESIGN BY: JSK		
REVIEWED BY: SK	REVISIONS	11/04	
		12/04	

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

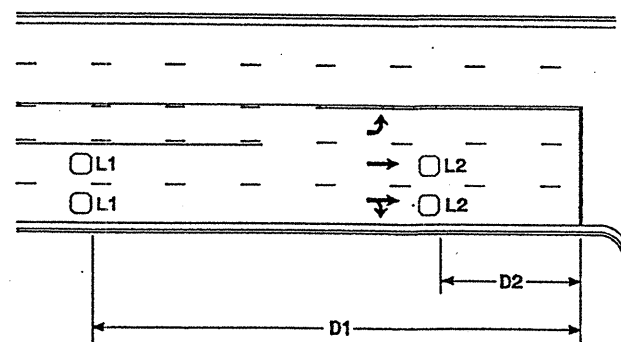


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

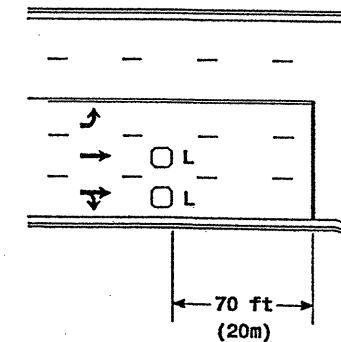


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

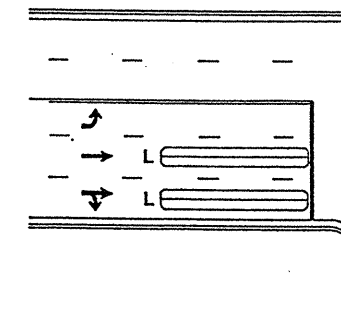
"Stretch" Operation

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



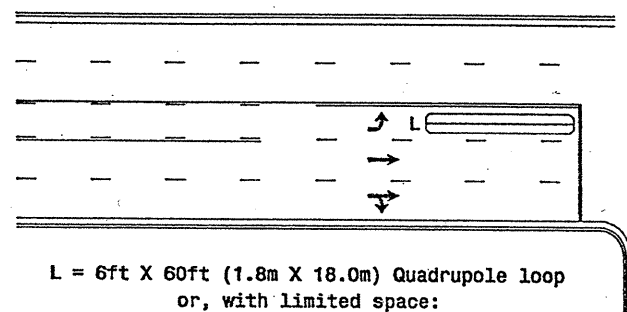
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



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

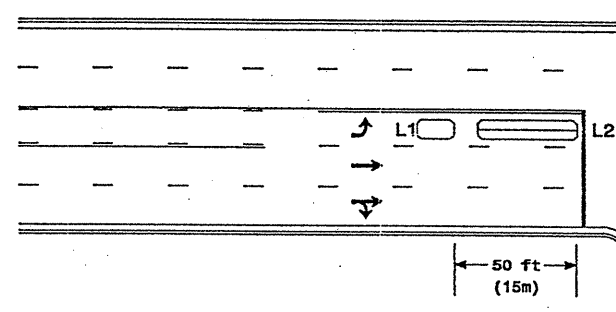
### Left Turn Lane Detection



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

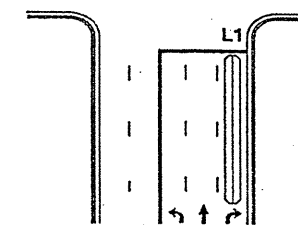


L1 = 6ft X 15ft (1.8m X 4.6m) Queue detector  
L2 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Queue Loop Detection

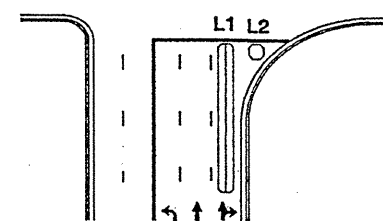
### Right Turn Lane Detection

Standard Turn

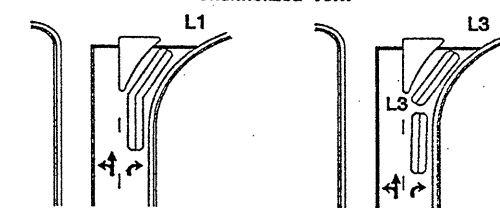


L1 = 6ft X 60ft (1.8m X 18.0m) Quadrupole loop  
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop  
Wired separately  
L3 = 6ft X 30ft (1.8m X 9.0m) Quadrupole loop  
Wired in series

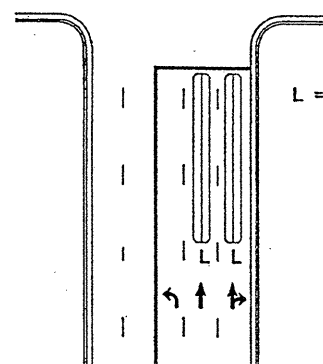
Wide Radius Turn



Channelized Turn



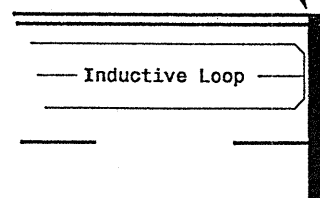
### Side Street Detection



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

Prepared in the Office of  
  
 123 N. McDowell St., Raleigh, NC 27603

Typical Loop Locations

PLAN DATE: July 2003  
 PREPARED BY: P. L. Alexander  
 REVISIONS: \_\_\_\_\_  
 SCALE: N/A

REVIEWED BY: \_\_\_\_\_  
 DATE: 7/15/03  
 SIGNATURE: \_\_\_\_\_  
 SEAL: \_\_\_\_\_  
 SIG. INVENTORY NO. \_\_\_\_\_