

09/08/99  
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**CONTRACT: 202688 WBS NO.: 3CR.10671.99 & 3CR.20671.99**

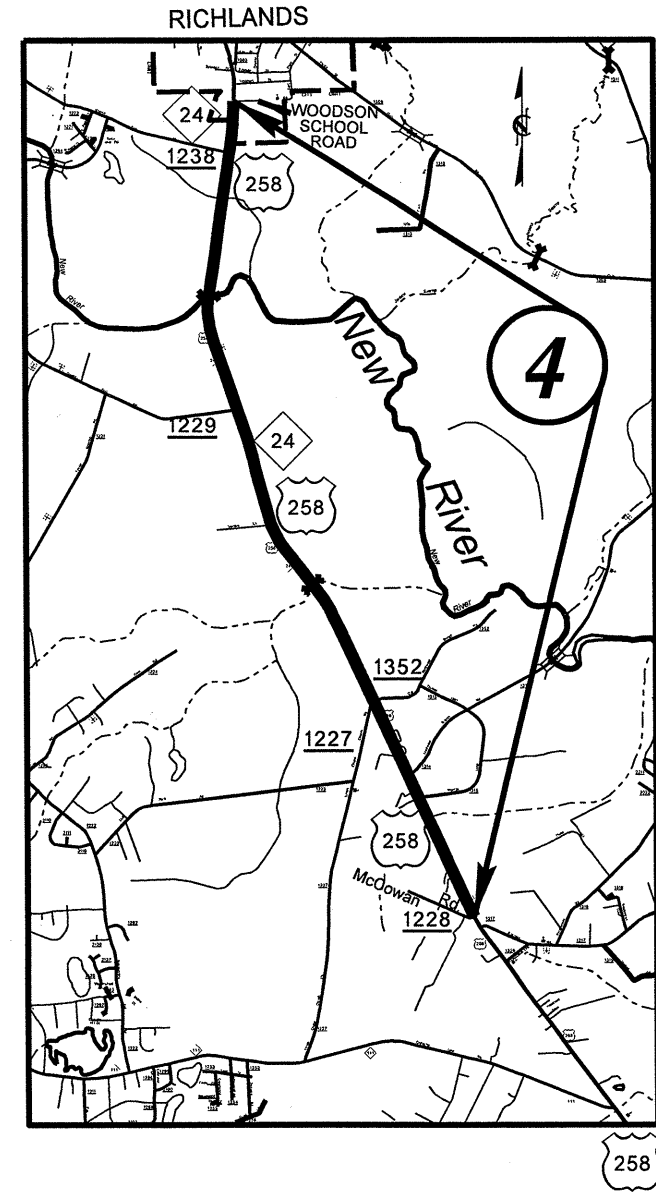
**T.I.P. NO.: W-5147A**

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

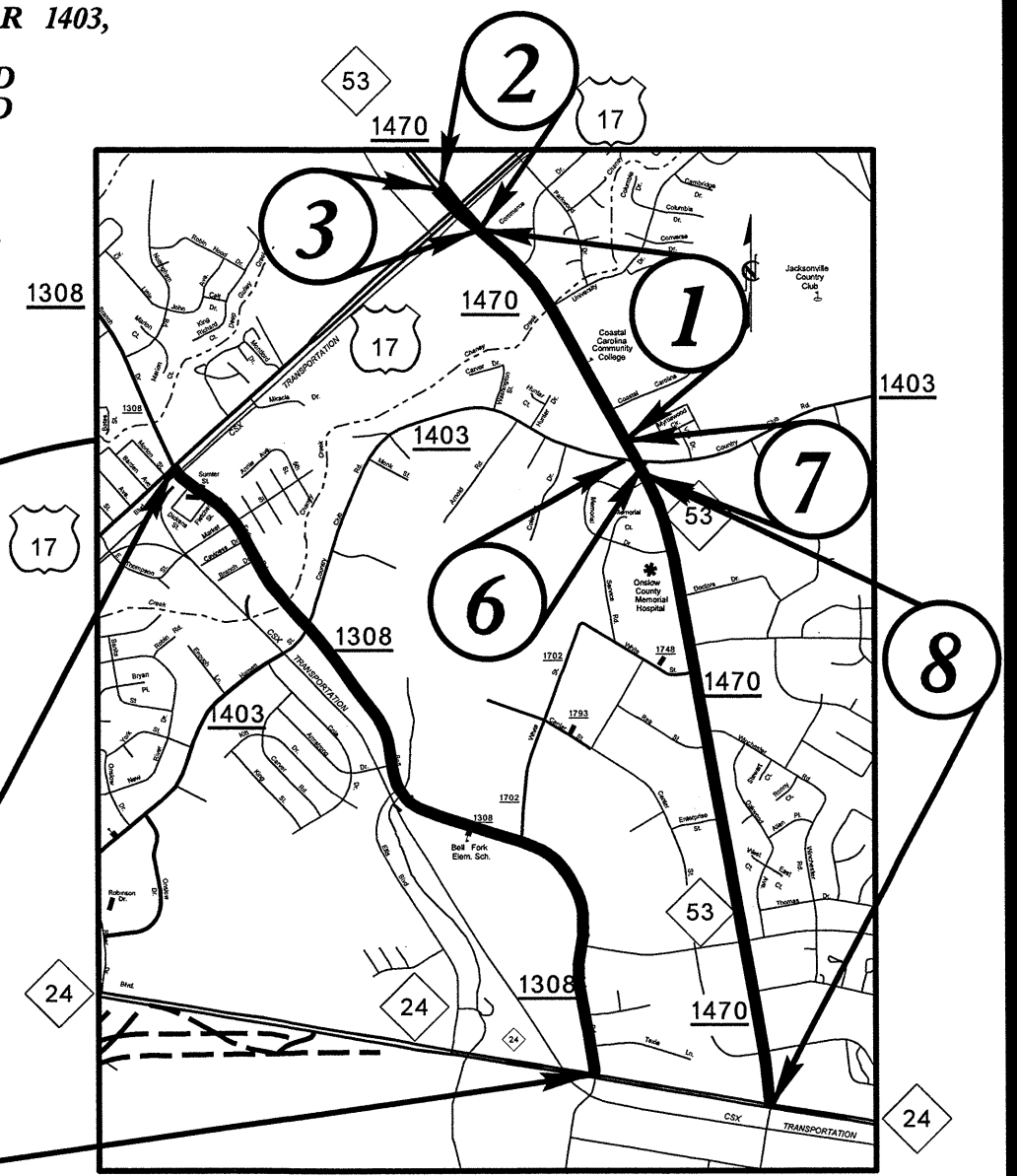
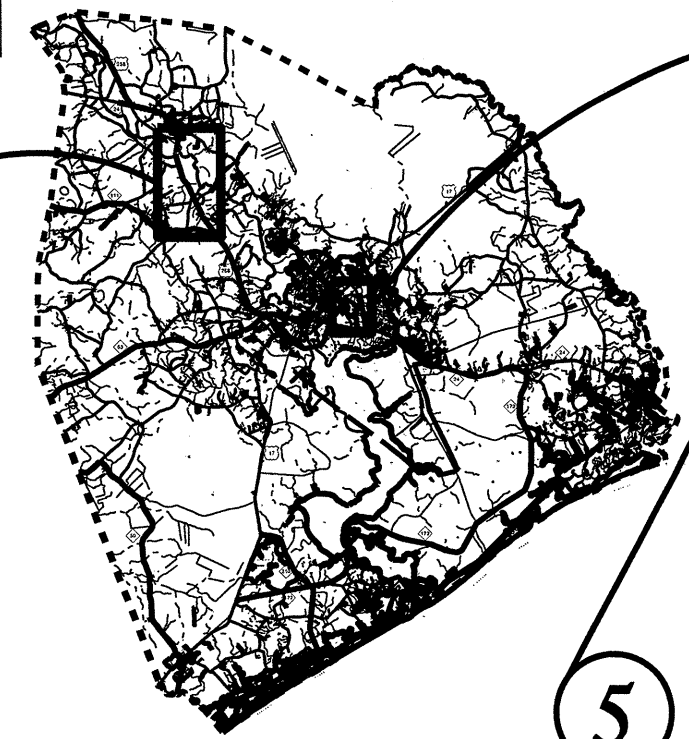
# ONSLOW COUNTY

**LOCATION: INTERSECTION OF NC 53 AND SR 1403,  
 2 SECTIONS OF NC 53,  
 1 SECTION OF US 258 /NC 24 AND  
 1 SECTION OF SECONDARY ROAD**  
**TYPE OF WORK: MILLING, RESURFACING,  
 WIDENING,  
 MISC. CONCRETE WORK,  
 INDUCTIVE LOOP SAWCUT,  
 PAVEMENT MARKERS, AND  
 PAVEMENT MARKINGS.**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	3CR.10671.99, ETC. & W-5147A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
3CR.10671.99		PRIMARY-RESURF	
3CR.20671.99		SECONDARY-RESURF	
45362.3.1	STPNHS-0017(107)	CROSSWALKS CONST.	
45362.1.1	STPNHS-0017(107)	PRELIM. ENG.	



NOT TO SCALE



**PROJECT LENGTH**

**PRIMARY**  
 MAP NO. 1 = 0.63 MI.  
 MAP NO. 2 = 0.33 MI.  
 MAP NO. 3 = 0.32 MI.  
 MAP NO. 4 = 4.58 MI.  
 MAP NO. 7 = 0.16 MI.  
 MAP NO. 8 = 1.65 MI.  
**PRIMARY SUB-TOTAL = 7.67 MI.**  
  
**SECONDARY**  
 MAP NO. 5 = 2.07 MI.  
 MAP NO. 6 = 0.19 MI.  
**SECONDARY SUB-TOTAL = 2.26 MI.**  
  
**TOTAL = 9.93 MI.**

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
 124 Division Dr., Wilmington, NC 28401

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:  
 FEBRUARY 15, 2011

HYDRAULICS ENGINEER

SIGNATURE: \_\_\_\_\_ P.E.

ROADWAY DESIGN TECHNICIAN

SIGNATURE: \_\_\_\_\_ DNL

SIGNATURE: \_\_\_\_\_ MPK

DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
W-5147A, 3CRJ0671.99, ETC	1-A

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS AND GENERAL NOTES
1-B	CONVENTIONAL SYMBOLS
2 THRU 2D	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2-E THRU 2-N	DETAILS
3 THRU 3-C	SUMMARY OF QUANTITIES AND THERMOPLASTIC/PAINT QUANTITIES
4	PLAN SHEET
TCP-1 THRU TCP-2	TRAFFIC CONTROL PLANS
PM-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-2	EROSION CONTROL PLANS
SIG-1 THRU SIG-7	SIGNAL PLANS

GENERAL NOTES:

2006 SPECIFICATIONS  
EFFECTIVE: 07-18-06  
REVISED: 07-30-08

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

WHEELCHAIR RAMPS:

WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH DETAILS.

09/08/09

Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○
Property Corner	-----
Property Monument	□
Parcel/Sequence Number	②
Existing Fence Line	x-x-x-x
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-----
Proposed Wetland Boundary	-----
Existing Endangered Animal Boundary	-----
Existing Endangered Plant Boundary	-----

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	♀
Well	♀
Small Mine	⊗
Foundation	□
Area Outline	□
Cemetery	+
Building	□
School	□
Church	□
Dam	□

### HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	-----
Buffer Zone 1	BZ 1
Buffer Zone 2	BZ 2
Flow Arrow	-----
Disappearing Stream	-----
Spring	○
Wetland	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	-----

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	①
Switch	□
RR Abandoned	-----
RR Dismantled	-----

### RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite Marker	-----
Existing Control of Access	-----
Proposed Control of Access	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage / Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Permanent Easement with Iron Pin and Cap Marker	-----

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----
Proposed Slope Stakes Fill	-----
Proposed Wheel Chair Ramp	-----
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	XXXX

### VEGETATION:

Single Tree	⊕
Single Shrub	○
Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	-----

### EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊕
Storm Sewer	-----

### UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	⊕
Proposed Joint Use Pole	⊕
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	⊗
H-Frame Pole	-----
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

### TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	□
Telephone Pedestal	⊕
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	⊗
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

### WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊕
Water Hydrant	⊕
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

### TV:

TV Satellite Dish	⊕
TV Pedestal	⊕
TV Tower	⊗
U/G TV Cable Hand Hole	⊗
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

### GAS:

Gas Valve	◇
Gas Meter	◇
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
Above Ground Gas Line	-----

### SANITARY SEWER:

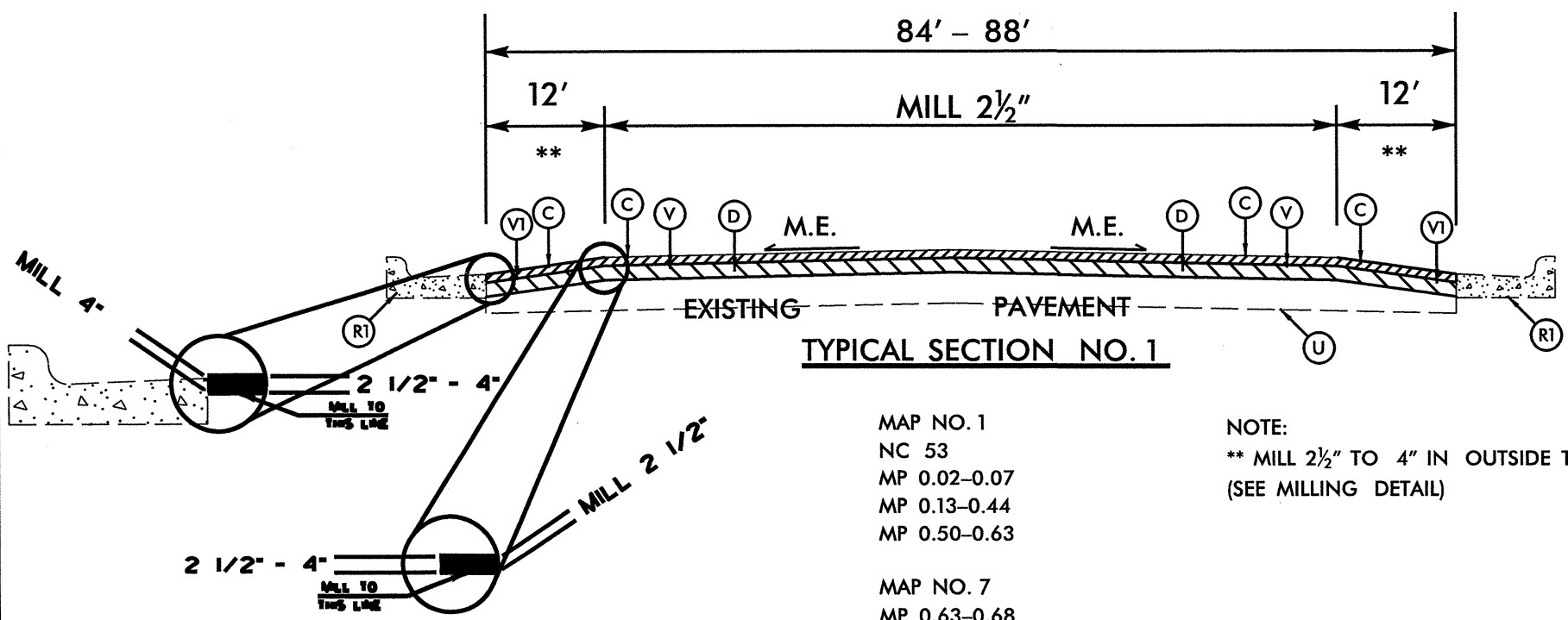
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

### MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line	-----
U/G Tank; Water, Gas, Oil	□
AG Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

### PAVEMENT SCHEDULE

C	PROP. APPROX. 1 1/2" DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C1	PROP. APPROX. 1 1/2" DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D	PROP. APPROX. 2 1/2" DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E	PROP. APPROX. 5 1/2" DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
R	EXISTING CONC. ISLAND
R1	EXISTING CURB & GUTTER
R2	EXISTING CONC. CURB
R3	PROPOSED 5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)
R4	PROPOSED 4" CONCRETE SIDEWALK
R5	PROPOSED 2'-6" CURB & GUTTER
T	EARTH MATERIAL (SHOULDER RECONSTRUCTION)
T1	EARTH MATERIAL (GRADING PER SHOULDER MILE)
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. 2 1/2" DEPTH.
V1	MILLING BITUMINOUS PAVEMENT. 2 1/2" TO 4" DEPTH.
V2	MILLING BITUMINOUS PAVEMENT. 1 1/2" DEPTH.
V3	MILLING BITUMINOUS PAVEMENT. 4" DEPTH.
V4	MILLING BITUMINOUS PAVEMENT. 3" DEPTH.



TYPICAL SECTION NO. 1

- MAP NO. 1
- NC 53
- MP 0.02-0.07
- MP 0.13-0.44
- MP 0.50-0.63
  
- MAP NO. 7
- MP 0.63-0.68
- MP 0.76-0.79
  
- MAP NO. 8
- MP 1.04-1.11
- MP 1.11-1.27 NO WORK
- MP 1.27-2.44

NOTE:  
\*\* MILL 2 1/2" TO 4" IN OUTSIDE THRU LANES  
(SEE MILLING DETAIL)

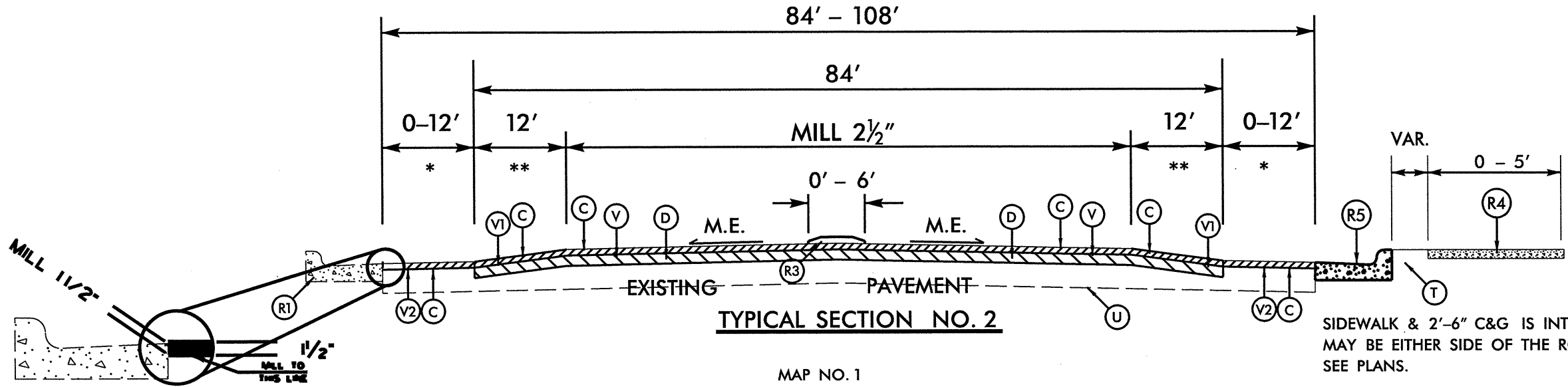
NOTE: M.E. = MATCH EXISTING

REVISIONS

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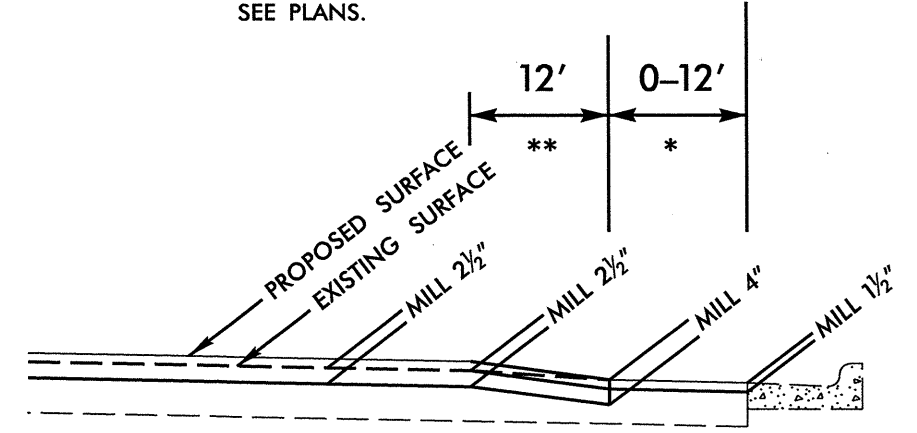
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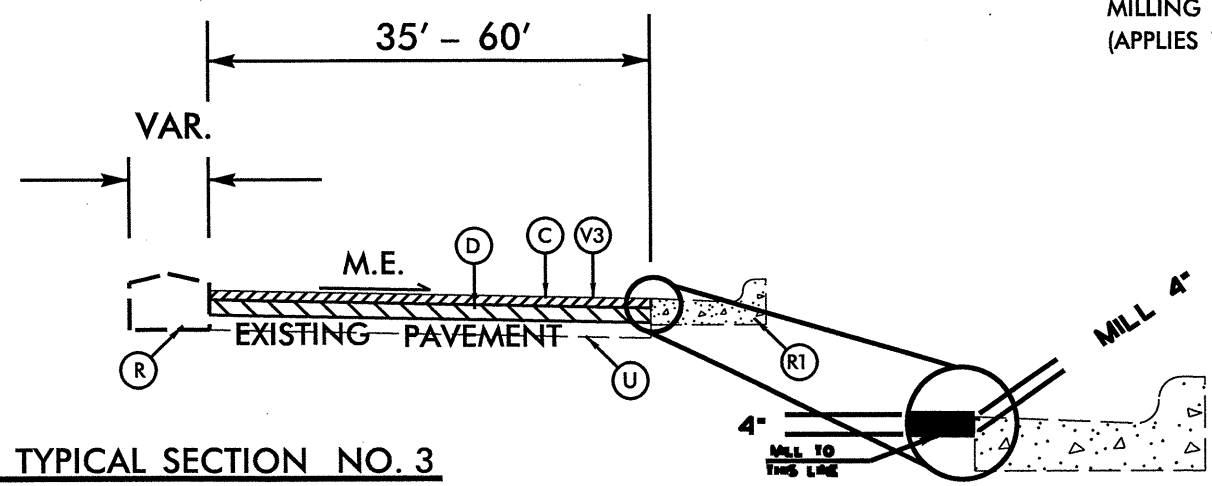
SIDEWALK & 2'-6" C&G IS INTERMITTENT, MAY BE EITHER SIDE OF THE ROADWAY. SEE PLANS.

NOTE:  
 \* MILL 1 1/2" IN OUTSIDE TURN LANES  
 \*\* MILL 2 1/2" TO 4" IN OUTSIDE THRU LANES  
 (SEE MILLING DETAIL)

MAP NO. 1  
 NC 53  
 MP 0.00-0.02  
 MP 0.07-0.13  
 MP 0.44-0.50  
 MAP NO. 7  
 MP 0.68-0.76  
 MAP NO. 8  
 MP 0.79-1.04



C	1 1/2" S9.5B
D	2 1/2" I19.0B
R	EXIST. CONC. ISLAND
R1	EXIST. CURB & GUTTER
R3	5" CONC. ISLAND
R4	4" SIDEWALK
R5	2'-6" CURB & GUTTER
T	SHLDR RECONST
U	EXIST. PAVEMENT
V	MILL 2 1/2"
V1	MILL 2 1/2" - 4"
V2	MILL 1 1/2"
V3	MILL 4"



MAP NO. 2  
 NC 53 WBL  
 MP 0.00-0.10  
 MP 0.10-0.12 NO WORK  
 MAP NO. 3  
 NC 53 EBL  
 MP 0.24-0.32

NOTE: M.E. = MATCH EXISTING

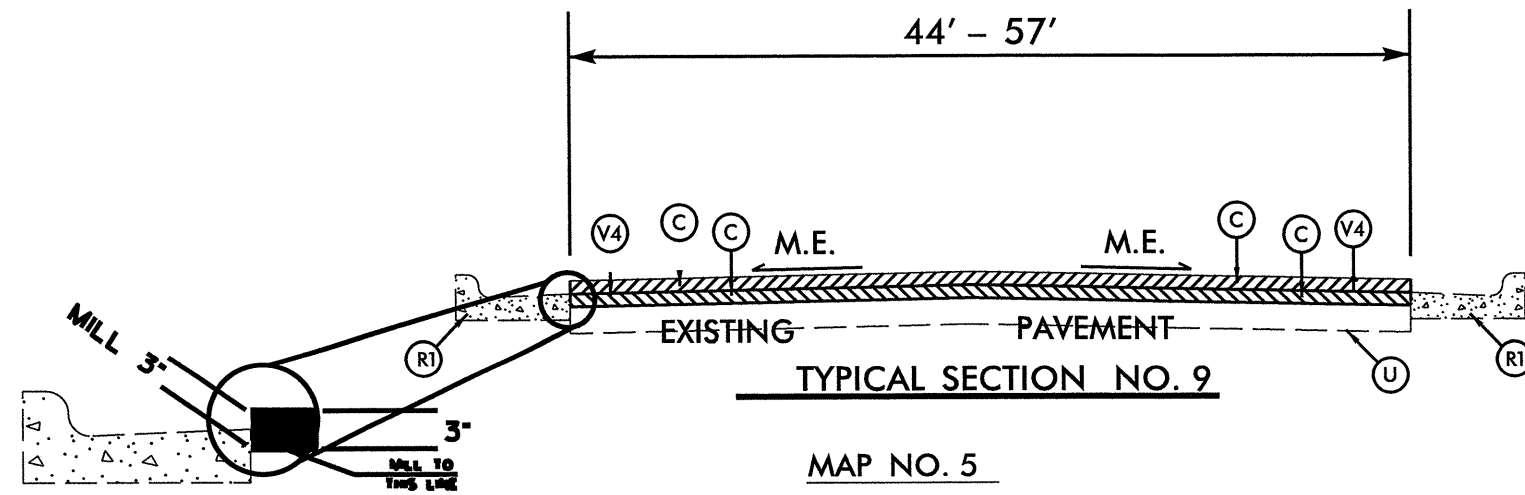
REVISIONS

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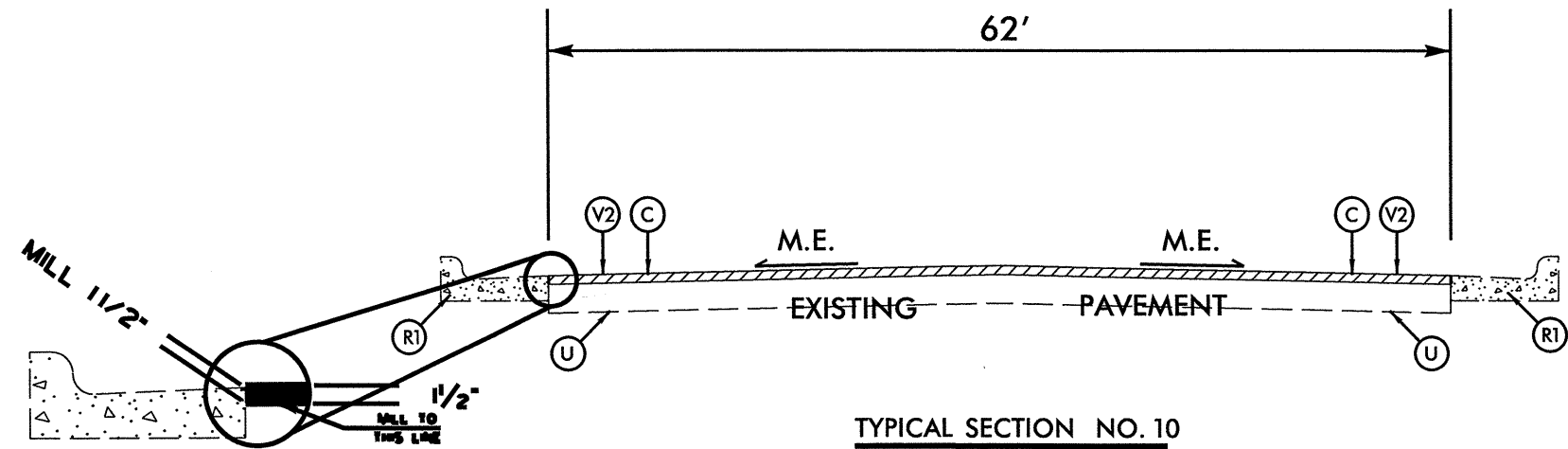


PROJECT REFERENCE NO. 3CR.10671.99, ETC.	SHEET NO. 2-D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



TYPICAL SECTION NO. 9

MAP NO. 5  
 SR 1308  
 MP 0.00-0.50  
 MP 0.50-0.79 MILL PATCHING ONLY  
 MP 0.79-1.31  
 MP 1.31-1.44 MILL PATCHING ONLY  
 MP 1.44-1.50  
 MP 1.50-1.63 NO WORK  
 MP 1.63-2.07



TYPICAL SECTION NO. 10

MAP NO. 6  
 SR 1403  
 MP 0.00-0.19

C	1 1/2" S9.5B
R1	EXIST. CURB & GUTTER
U	EXIST. PAVEMENT
V2	MILL 1 1/2"
V4	MILL 3"

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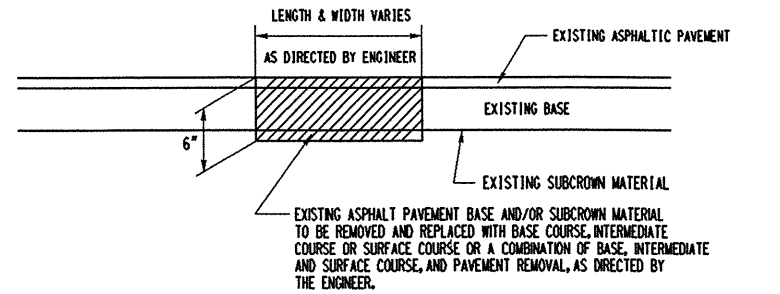
REVISIONS

SECTION CONDITION

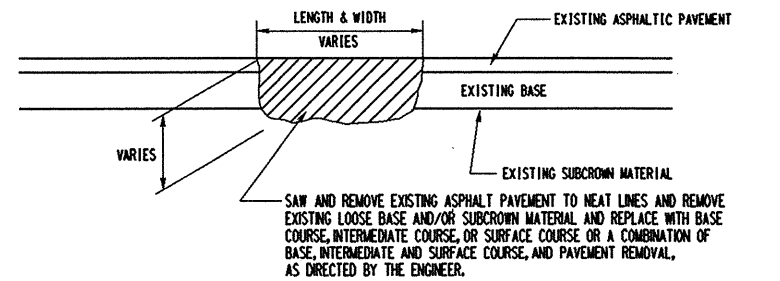


PROJECT REFERENCE NO. W-9147A, SCR.10671.99, ETC.		SHEET NO. 2-E
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

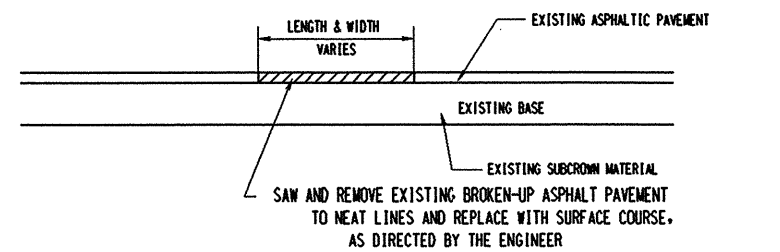
DETAILS OF REPAIRING EXISTING PAVEMENT PRIOR TO RESURFACING FOR FULL DEPTH AND MILLING



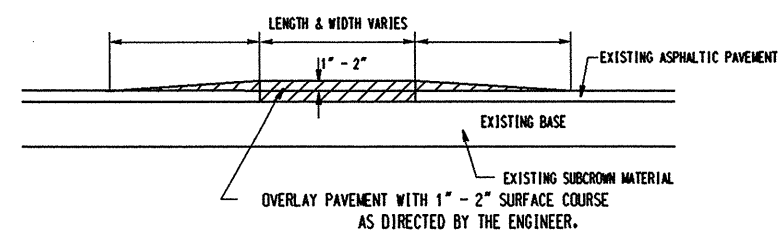
DETAIL NO. 1



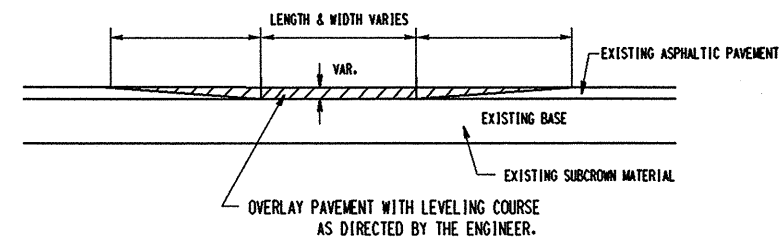
DETAIL NO. 2



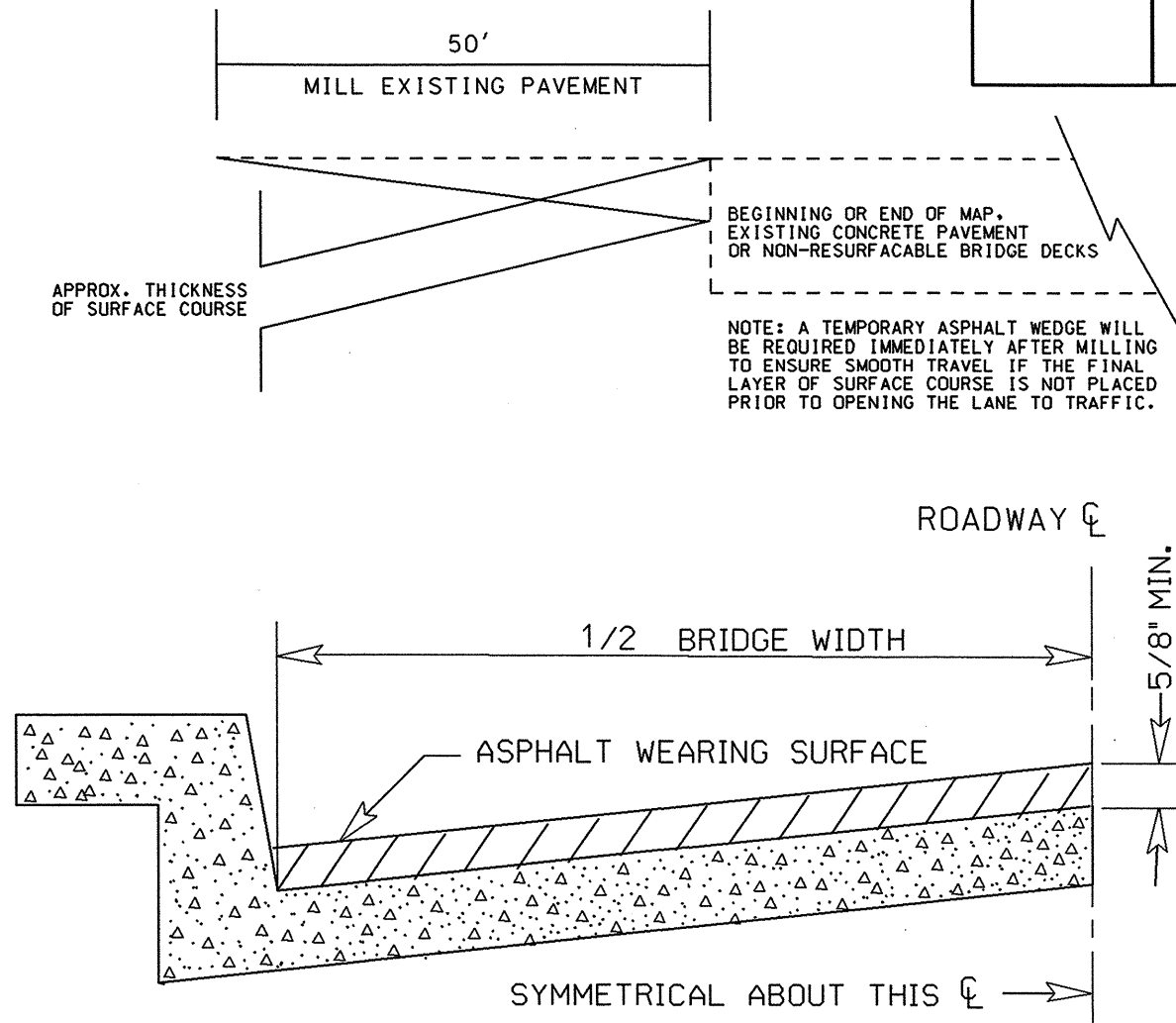
DETAIL NO. 3



DETAIL NO. 4



DETAIL NO. 5



BRIDGE HALF TYPICAL SECTION

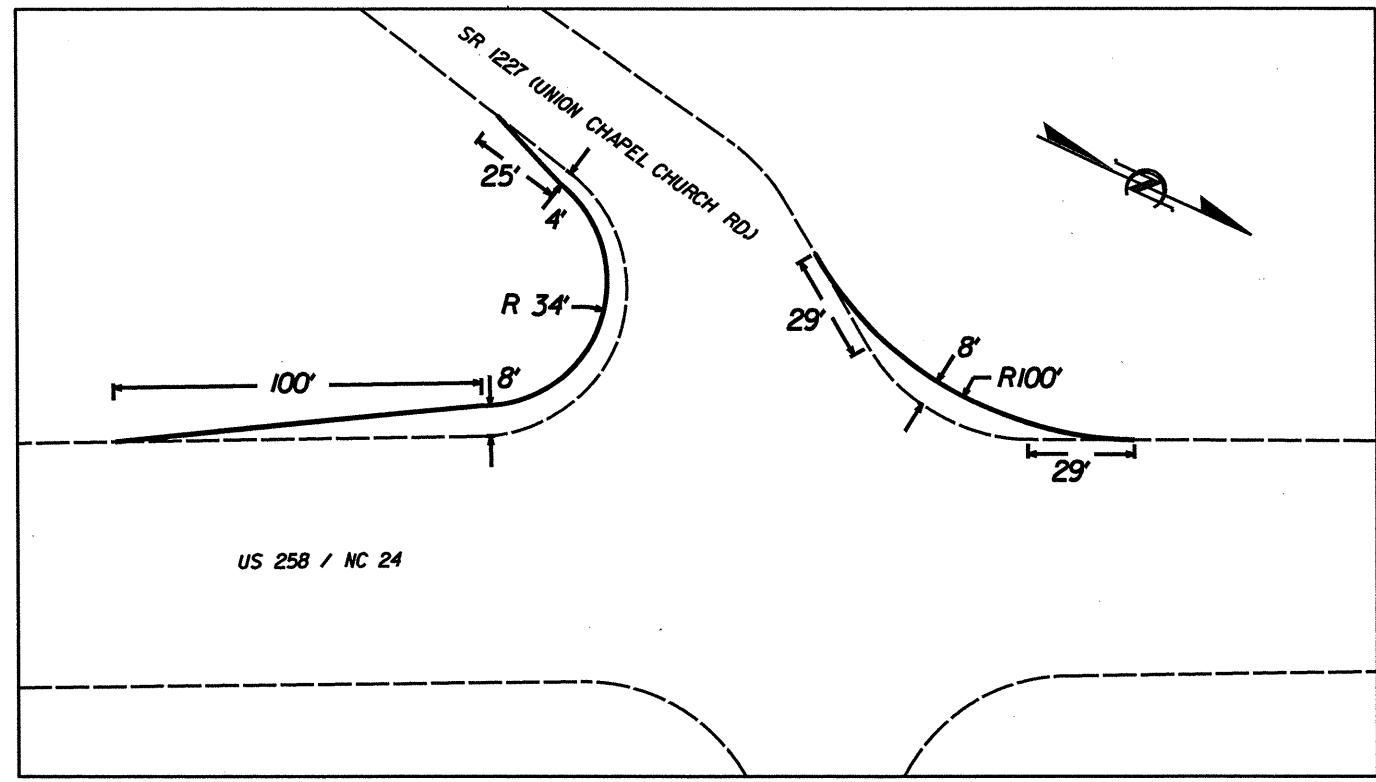
FOR BRIDGES WITH FLOOR DRAINS, CARE SHALL BE EXERCISED IN PLACING THE WEARING SURFACE AROUND FLOOR DRAINS SO AS NOT TO HINDER EFFECTIVE DRAINAGE. ALL DRAINS SHALL BE LEFT OPEN.

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.

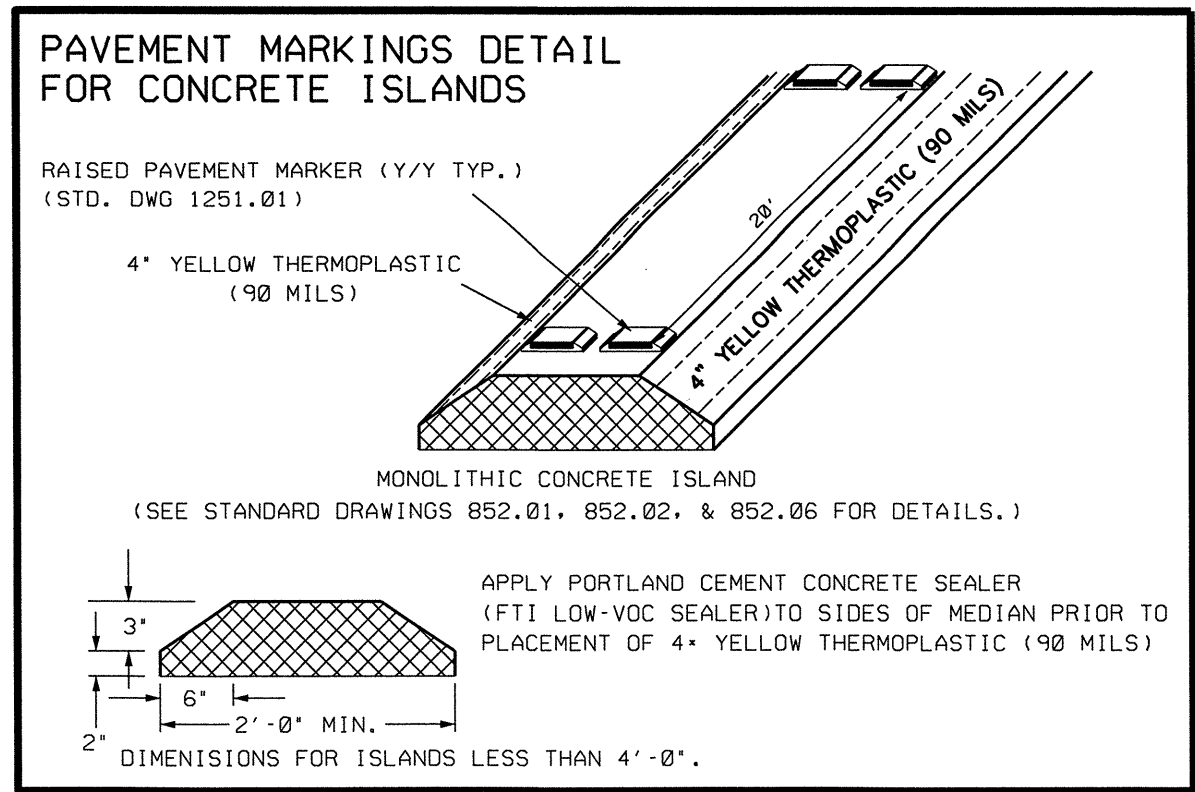
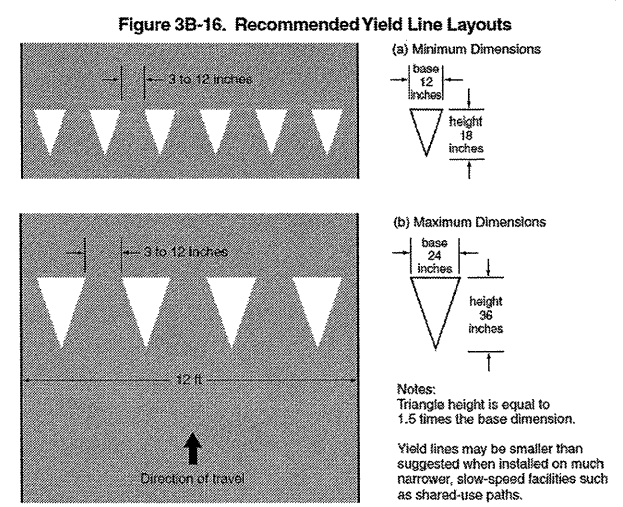
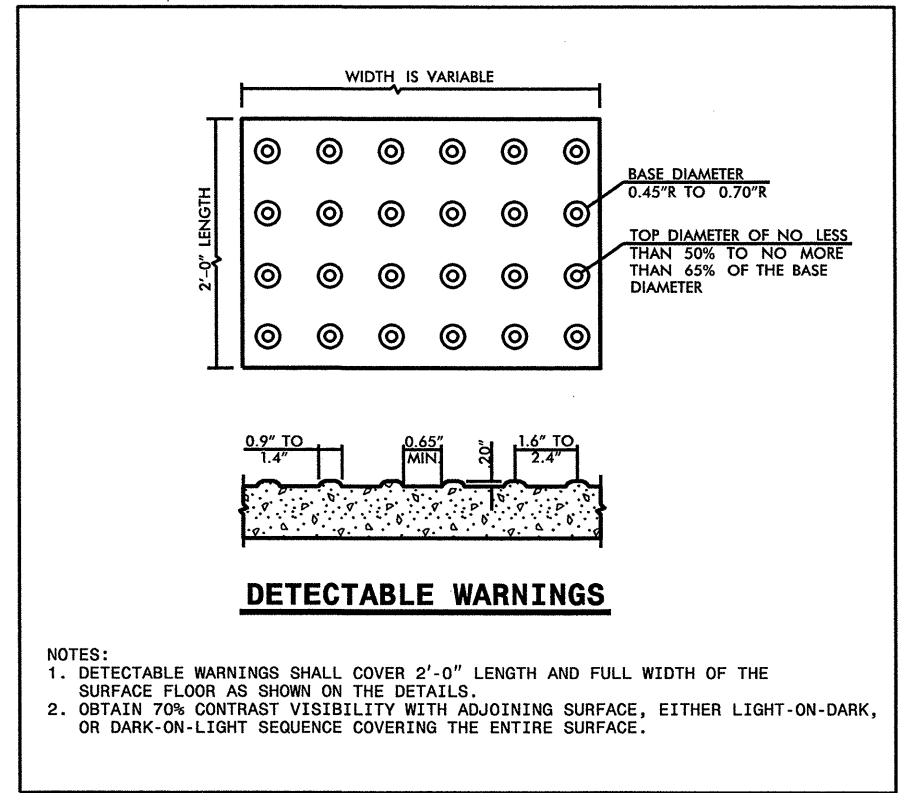
REVISIONS

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UNLESS INDICATED OTHERWISE, ALL DIMENSIONS ARE IN FEET AND INCHES. FRACTIONS SHALL BE IN EIGHTHS OR SIXTEENTHS OF AN INCH. DIMENSIONS SHALL BE TO THE CENTERLINE OF THE MEMBER UNLESS OTHERWISE SPECIFIED.



**WIDENING DETAIL  
MAP NO. 4**

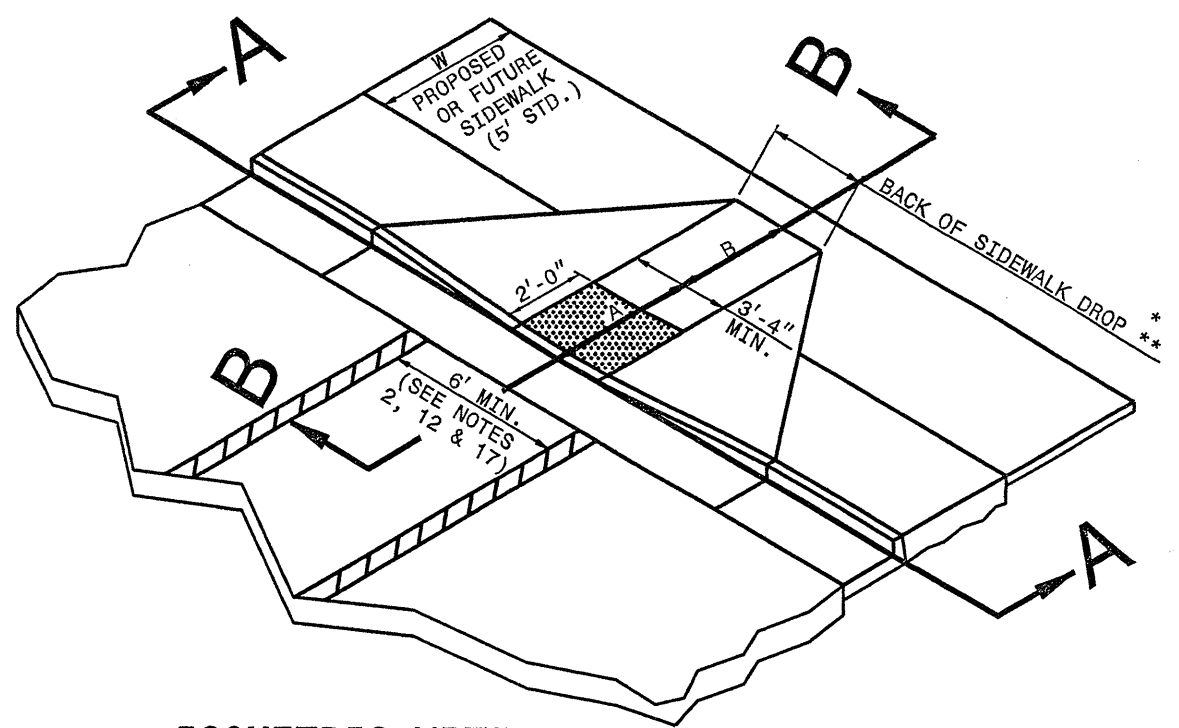


REVISIONS

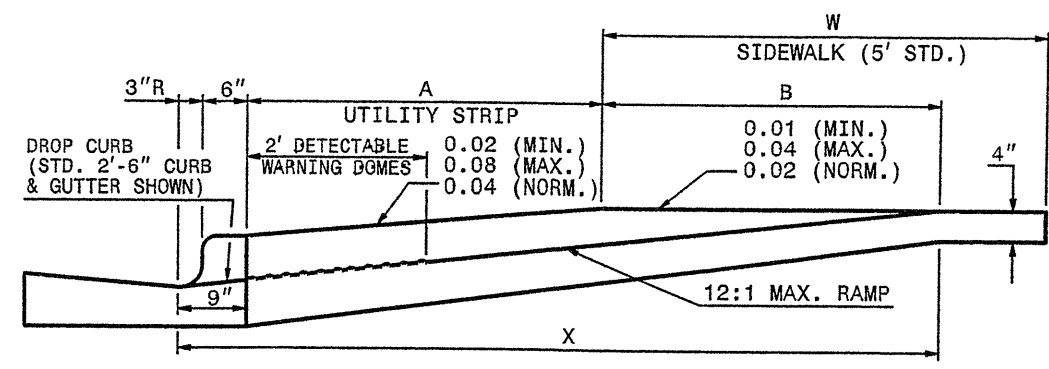
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STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

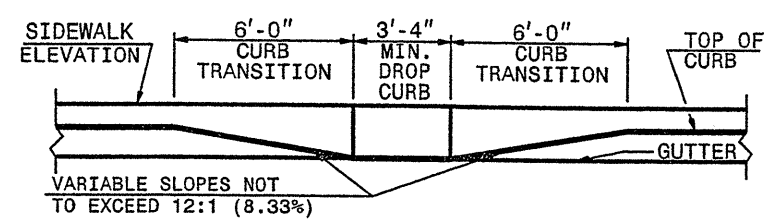
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
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RALEIGH, N.C.



ISOMETRIC VIEW

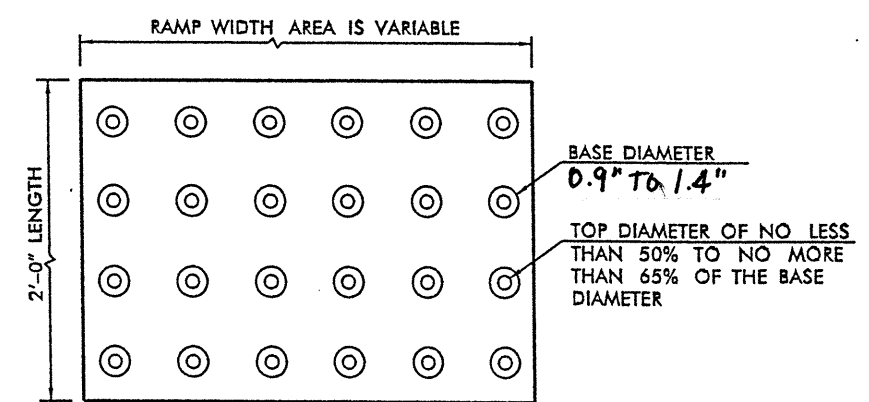


SECTION B-B



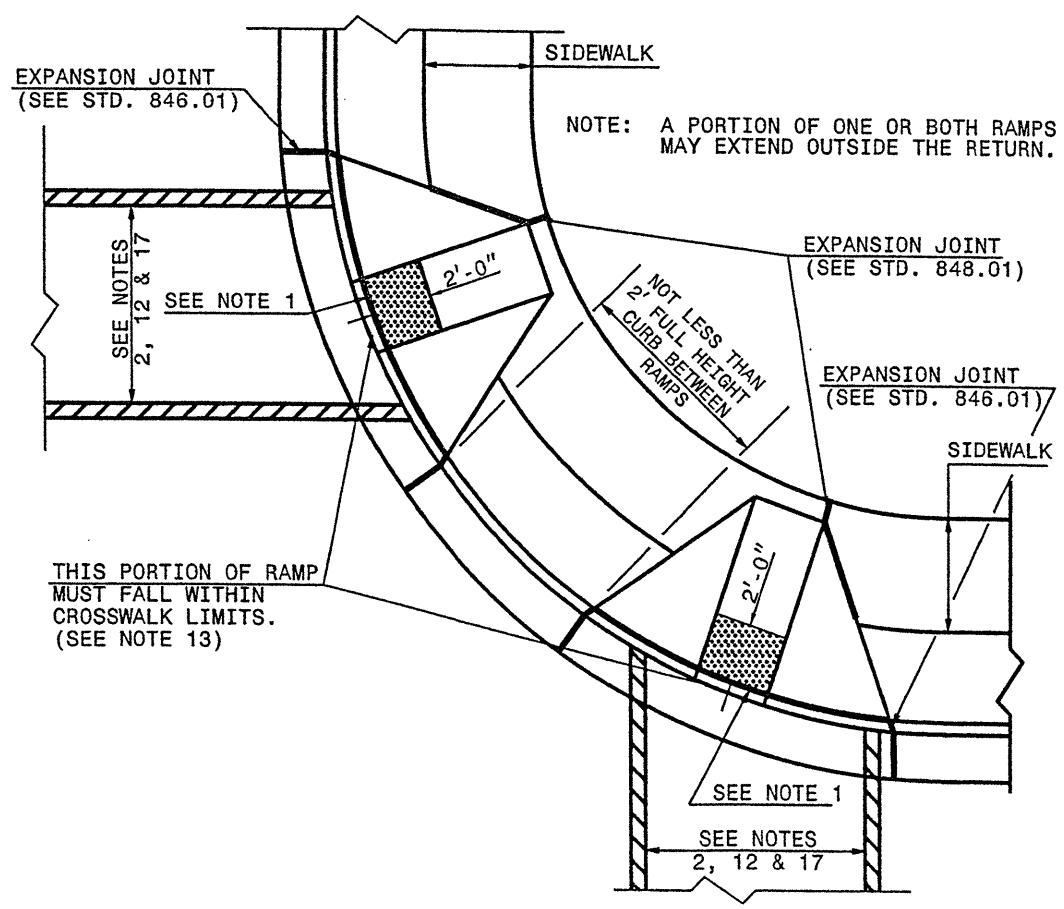
SECTION A-A

- NOTES:
1. DETECTABLE WARNING DOMES SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
  2. OBTAIN 70% CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



W	A	W+A+9"	X	B
5'	0.0'	5.8'	5.8'	5.0'*
6'	0.0'	6.8'	6.8'	6.0'**
7'	0.0'	7.8'	7.3'	6.5'**
8'	0.0'	8.8'	7.3'	6.5'**
5'	2.0'	7.8'	7.8'	5.0'
5'	2.5'	8.3'	8.1'	4.8'
5'	3.0'	8.8'	8.3'	4.4'
5'	3.5'	9.3'	8.4'	4.1'
5'	4.0'	9.8'	8.6'	3.8'
5'	4.5'	10.3'	8.7'	3.4'
5'	5.0'	10.8'	8.9'	3.1'

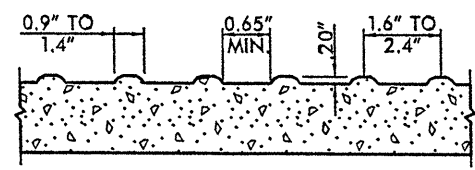
$B = X - (A + 9")$   
 B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE.  
 \* BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.  
 \*\* BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.



PLAN VIEW

DUAL RAMPS  
ANY RADII  
(40" MIN. FLOOR WIDTH)

DETECTABLE WARNING DOMES



ENGLISH DETAIL DRAWING FOR  
WHEELCHAIR RAMP  
PROPOSED CURB AND GUTTER

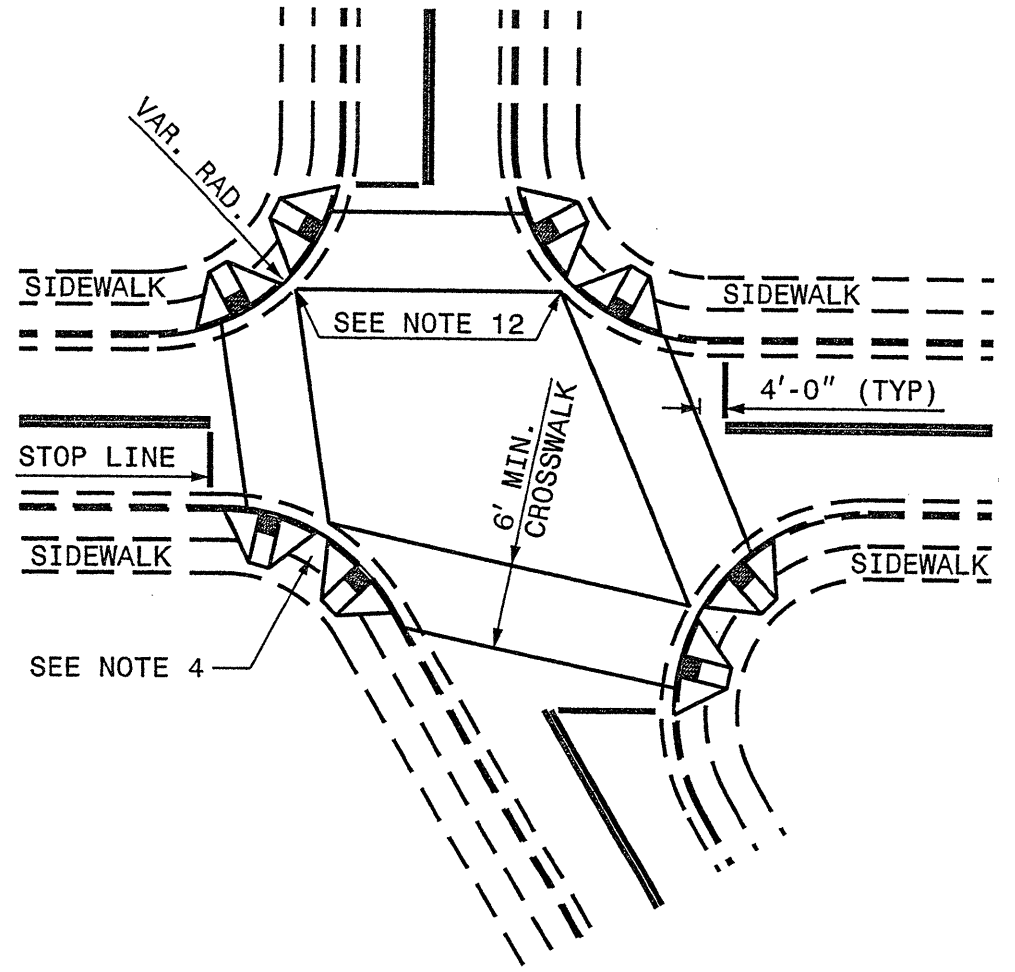
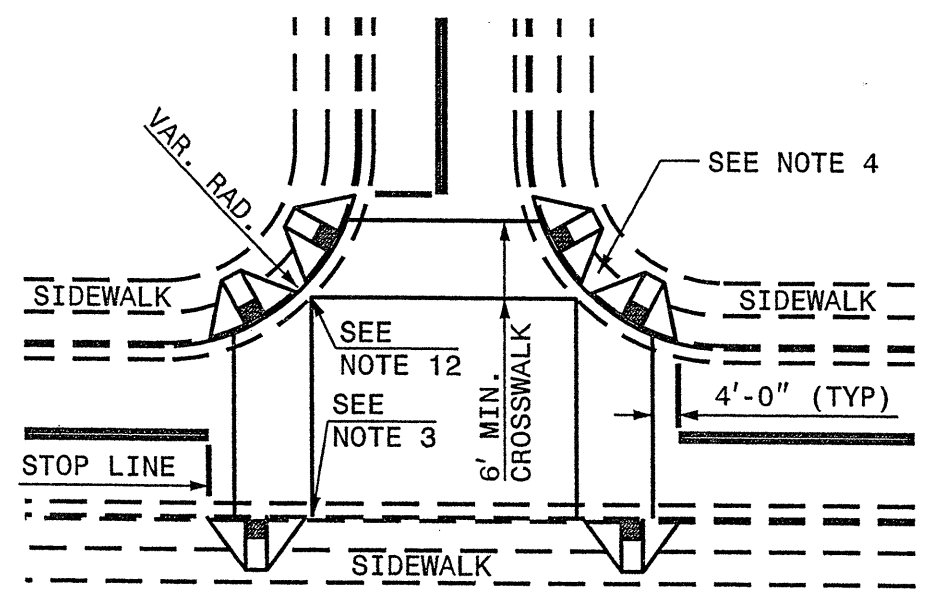
ENGLISH DETAIL DRAWING FOR  
WHEELCHAIR RAMP  
PROPOSED CURB AND GUTTER

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

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

ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
PROPOSED CURB AND GUTTER


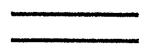
ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
PROPOSED CURB AND GUTTER



DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS

DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES

ROADWAY  
PLAN SYMBOL  
**WCR**  
FOR PROPOSED  
WHEELCHAIR RAMP

 PROPOSED WHEELCHAIR RAMP  
 PROPOSED OR FUTURE SIDEWALK

ALLOWABLE LOCATIONS  
-----  
DUAL RAMP RADII.....ANY

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

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

NOTES:

1. CONSTRUCT THE WALKING SURFACE WITH SLIP RESISTANTANCE 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 SIMILIAR 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.
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 RADII, WITH ALLOWANCE OF A 4' CLEAR ZONE IN THE VEHICULAR TRAVELWAY WHEN ONE RAMP IS INSTALLED. (SEE NOTE 17)
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.

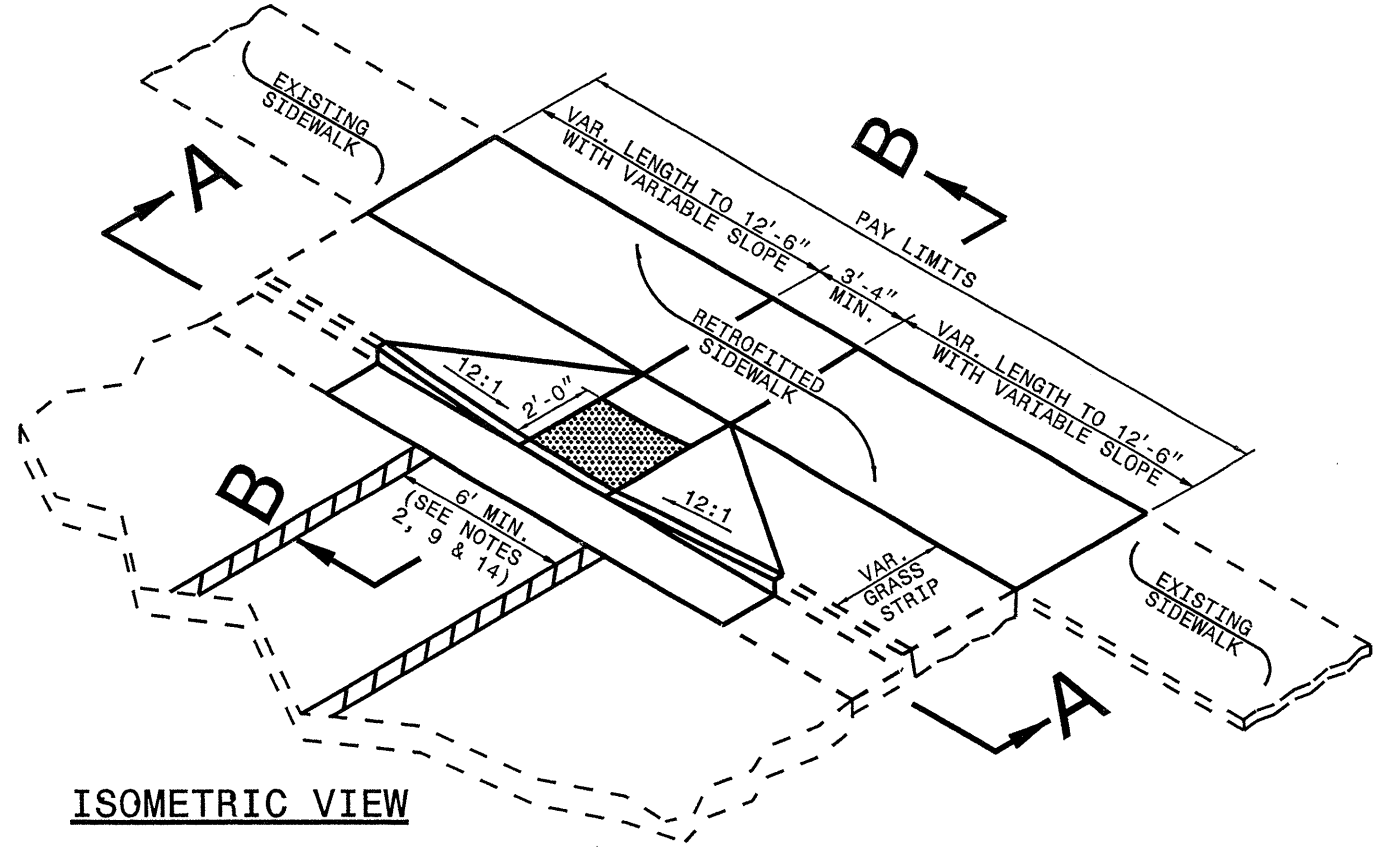
ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
PROPOSED CURB AND GUTTER

ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
PROPOSED CURB AND GUTTER

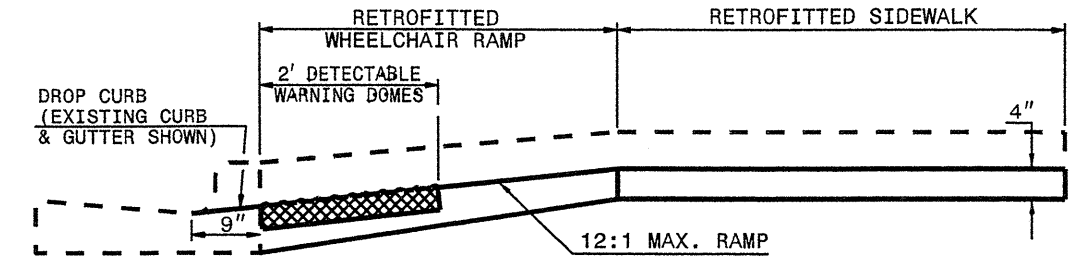
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

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

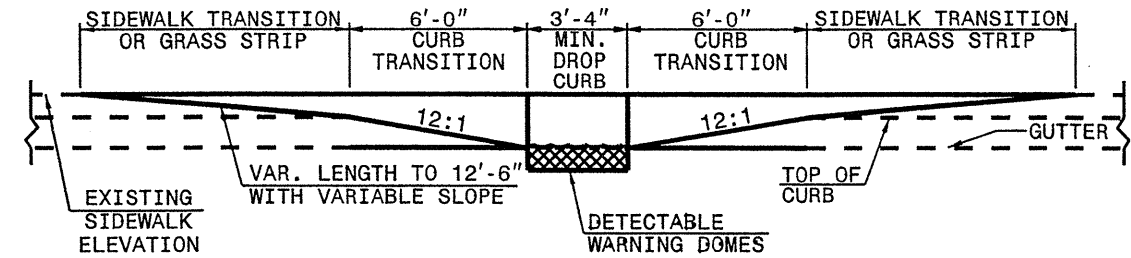
WHEELCHAIR RAMP AND EXISTING SIDEWALK WITH GRASS STRIP



ISOMETRIC VIEW

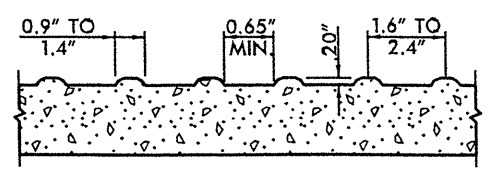
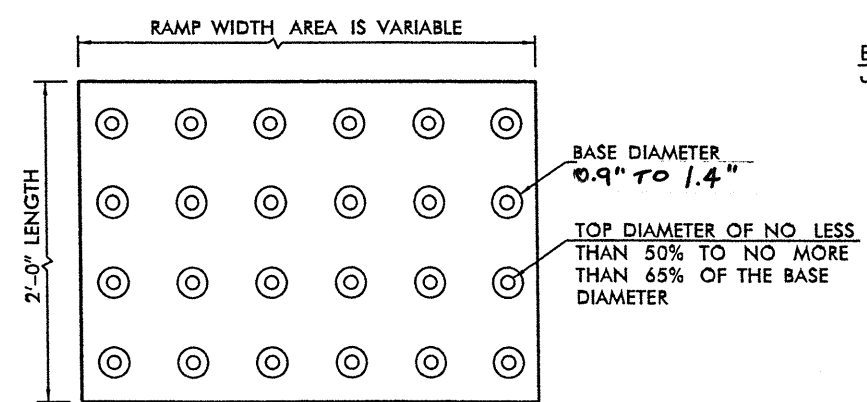


SECTION B-B

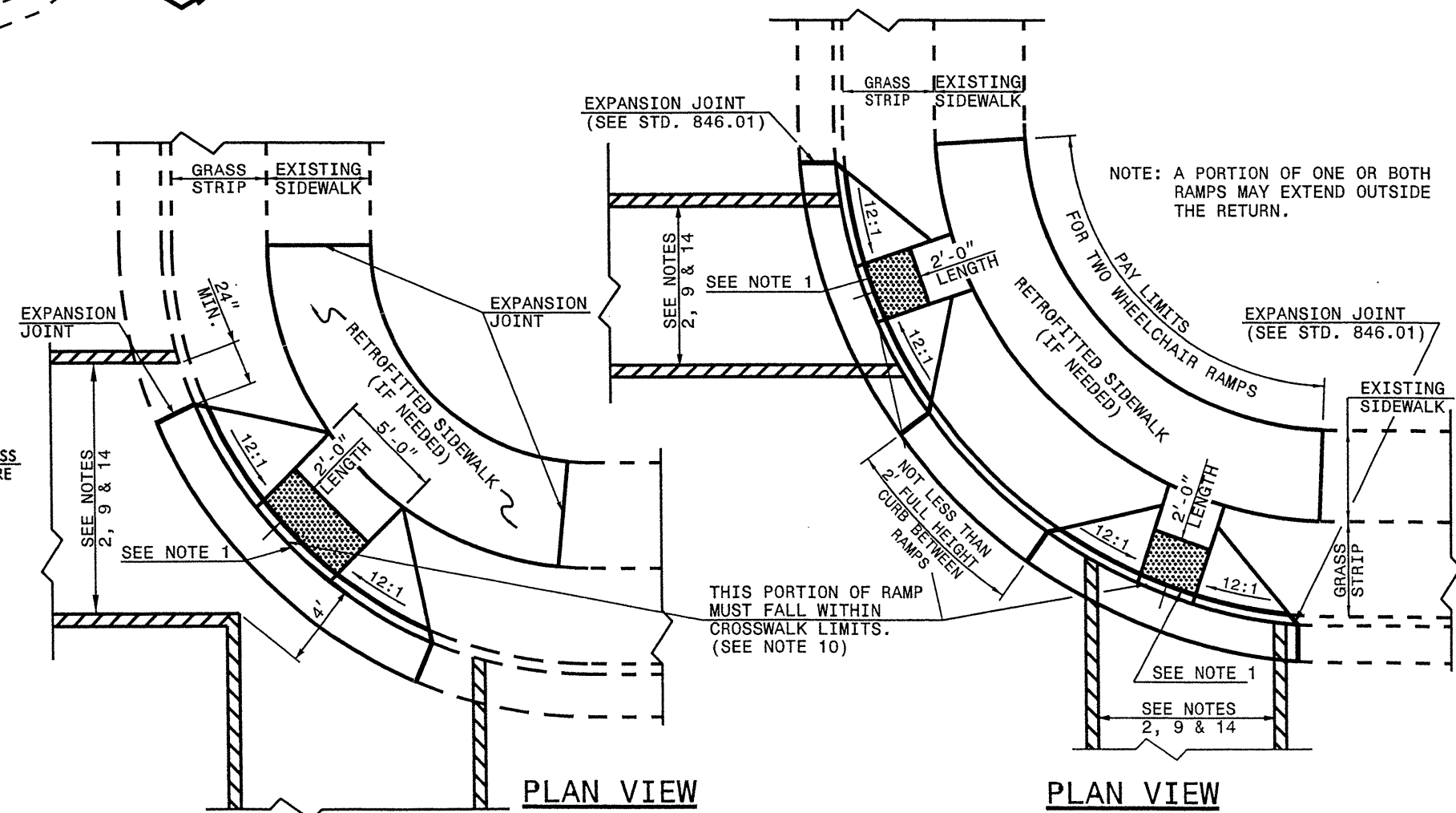


SECTION A-A

- NOTES:
1. DETECTABLE WARNING DOMES SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
  2. OBTAIN 70% CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



DETECTABLE WARNING DOMES



PLAN VIEW

DIAGONAL RAMP  
MAX. 25' RADII  
(60" MIN. FLOOR WIDTH)

PLAN VIEW

DUAL RAMPS  
ANY RADII  
(40" MIN. FLOOR WIDTH)

ENGLISH DETAIL DRAWING FOR WHEELCHAIR RAMP EXISTING CURB AND GUTTER

ENGLISH DETAIL DRAWING FOR WHEELCHAIR RAMP EXISTING CURB AND GUTTER

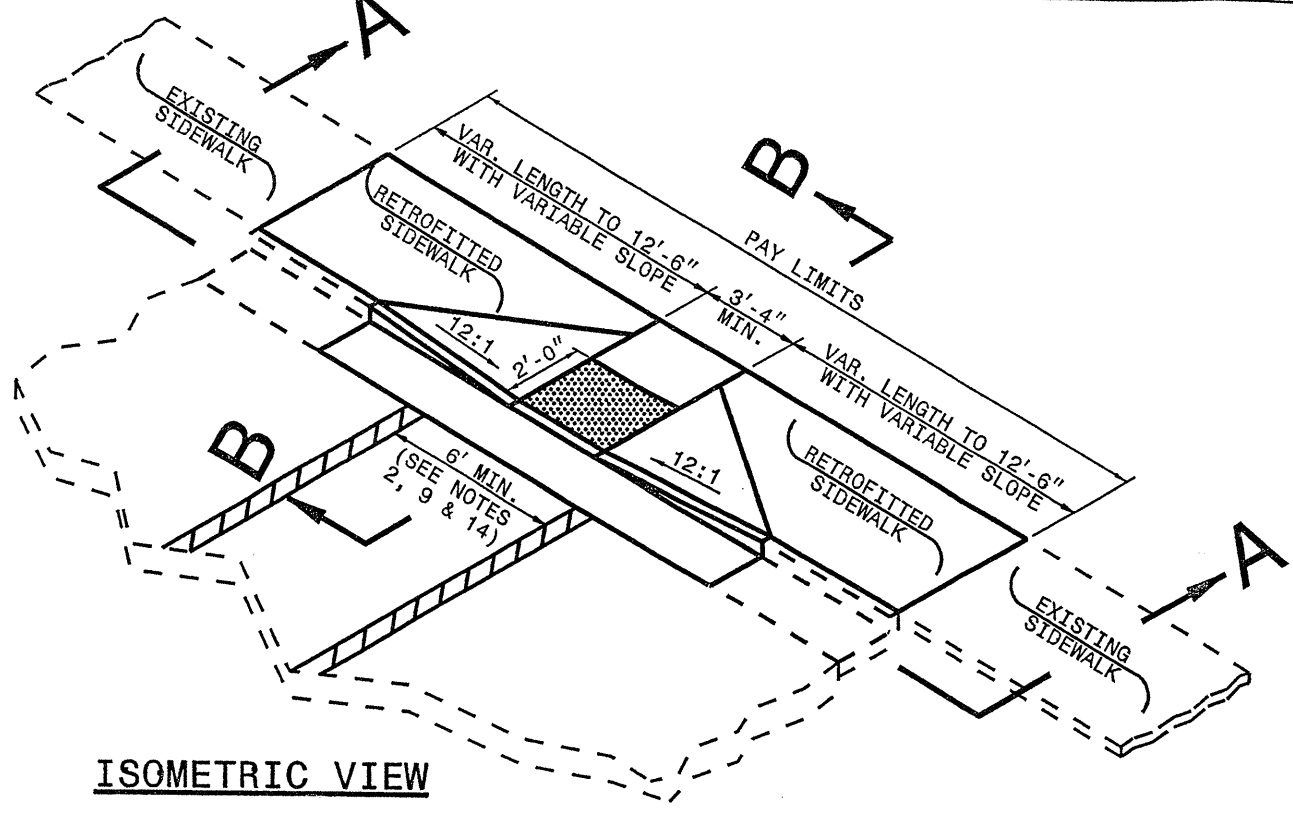
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
EXISTING CURB AND GUTTER

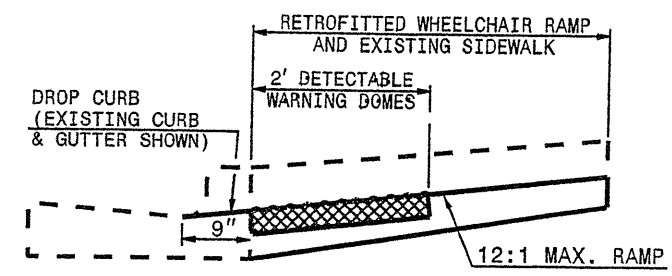
ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
EXISTING CURB AND GUTTER

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

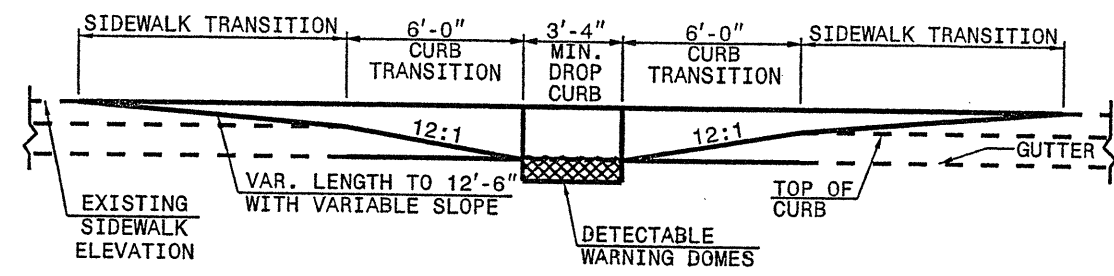
**WHEELCHAIR RAMP AND EXISTING SIDEWALK ADJACENT TO CURB**



**ISOMETRIC VIEW**

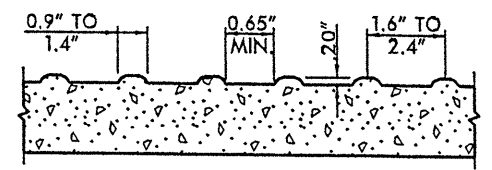
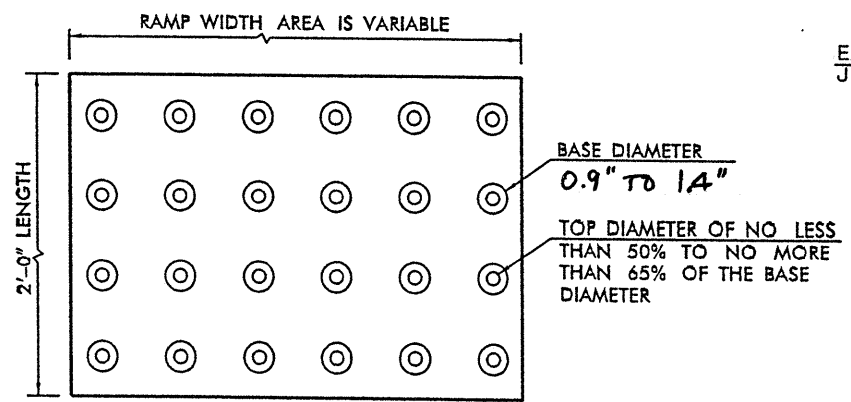


**SECTION B-B**

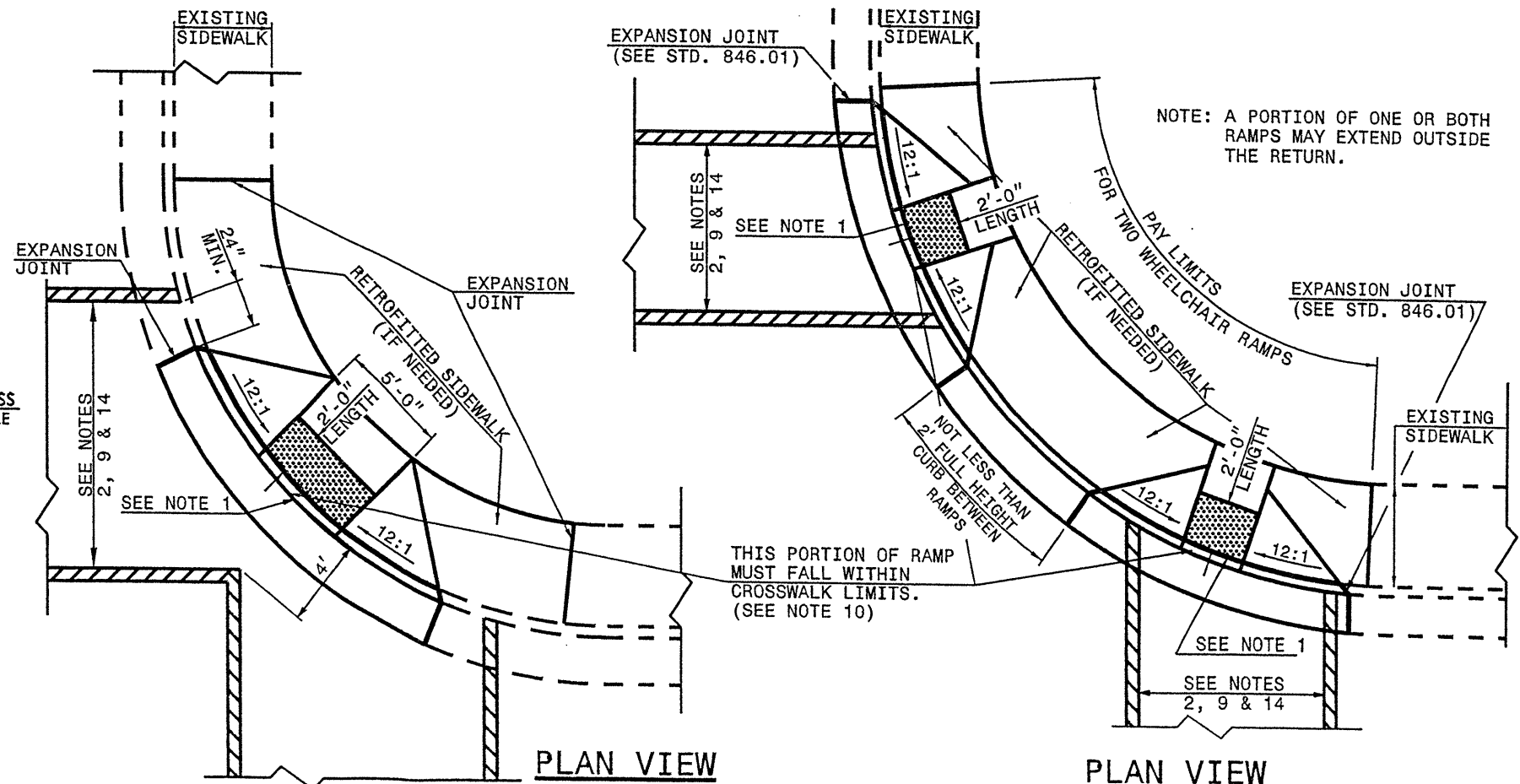


**SECTION A-A**

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  2. OBTAIN 70% CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



**DETECTABLE WARNING DOMES**



**PLAN VIEW**

DIAGONAL RAMP  
MAX. 25' RADII  
(60" MIN. FLOOR WIDTH)

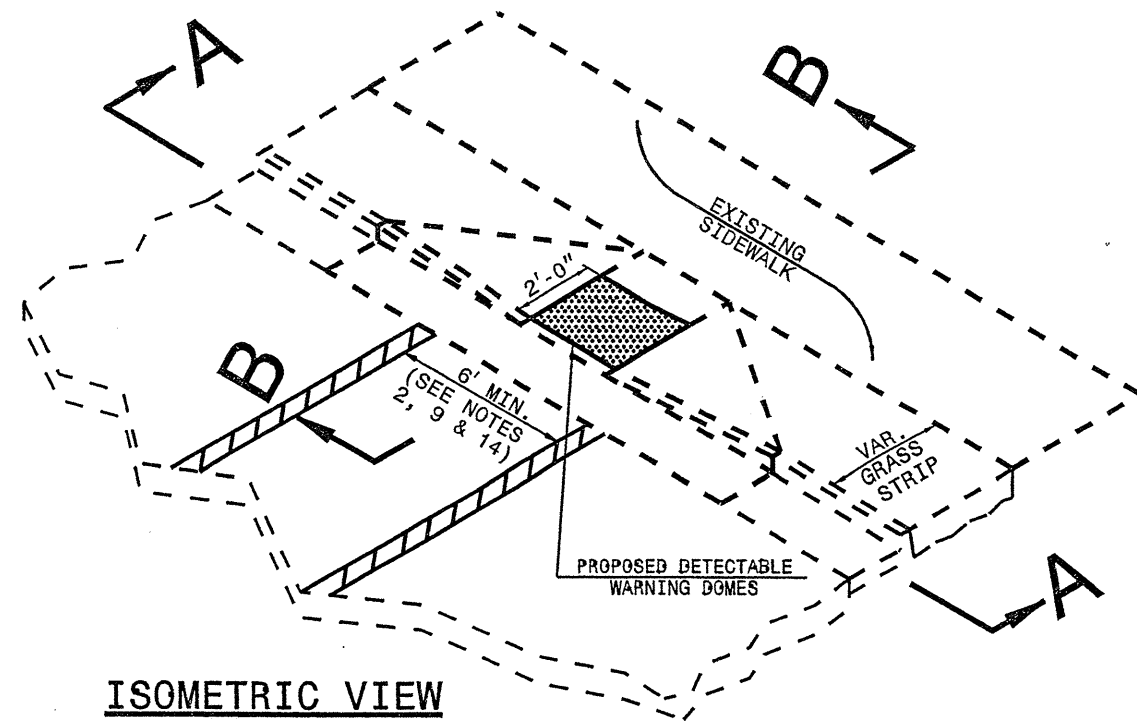
**PLAN VIEW**

DUAL RAMPS  
ANY RADII  
(40" MIN. FLOOR WIDTH)

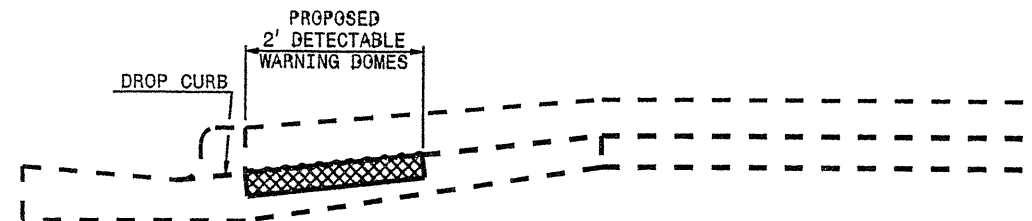
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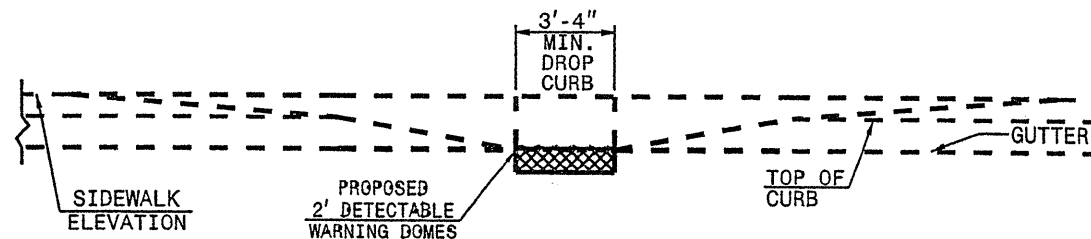
### RETROFITTING DETECTABLE WARNING DOMES ONTO EXISTING WHEELCHAIR RAMP



**ISOMETRIC VIEW**



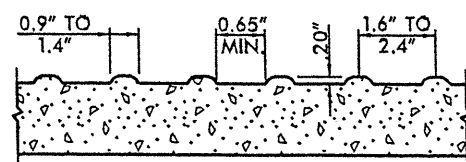
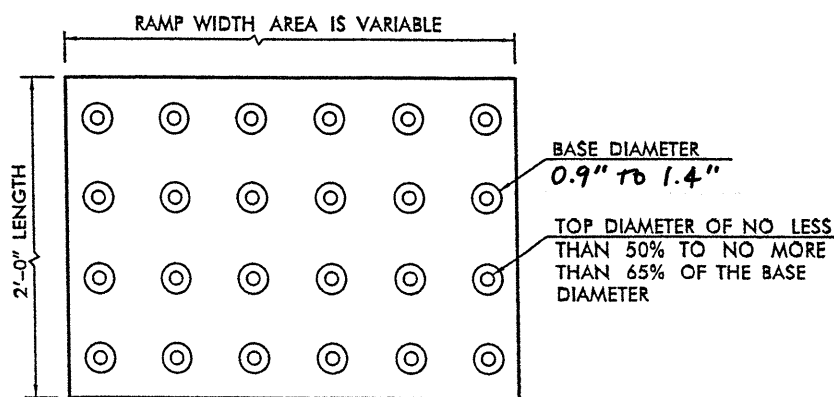
**SECTION B-B**



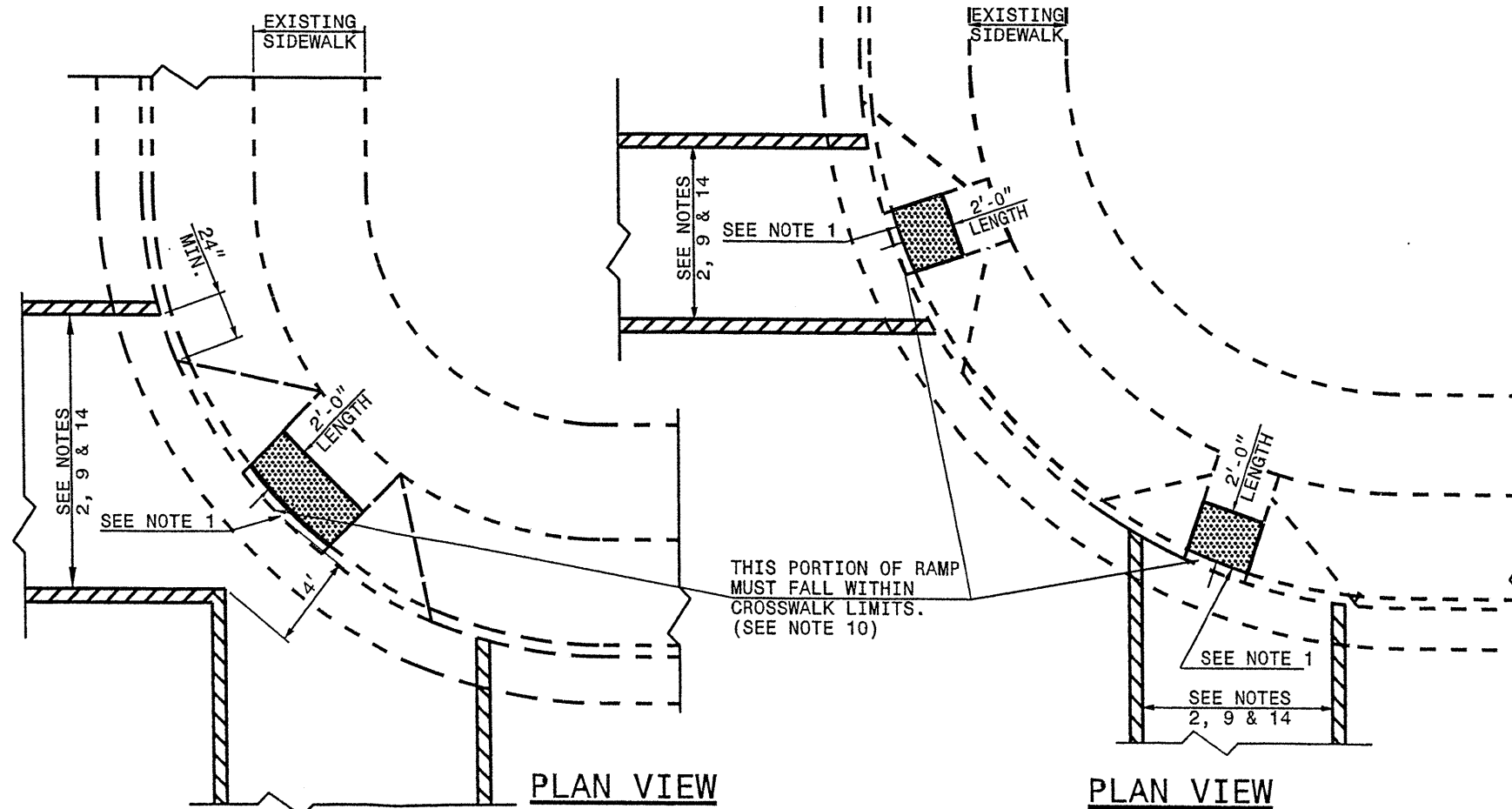
**SECTION A-A**

**NOTES:**

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2. OBTAIN 70% CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



**DETECTABLE WARNING DOMES**



**PLAN VIEW**

DIAGONAL RAMP  
MAX. 25' RADII  
(60" MIN. FLOOR WIDTH)

**PLAN VIEW**

DUAL RAMPS  
ANY RADII  
(40" MIN. FLOOR WIDTH)

ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
EXISTING CURB AND GUTTER

ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
EXISTING CURB AND GUTTER



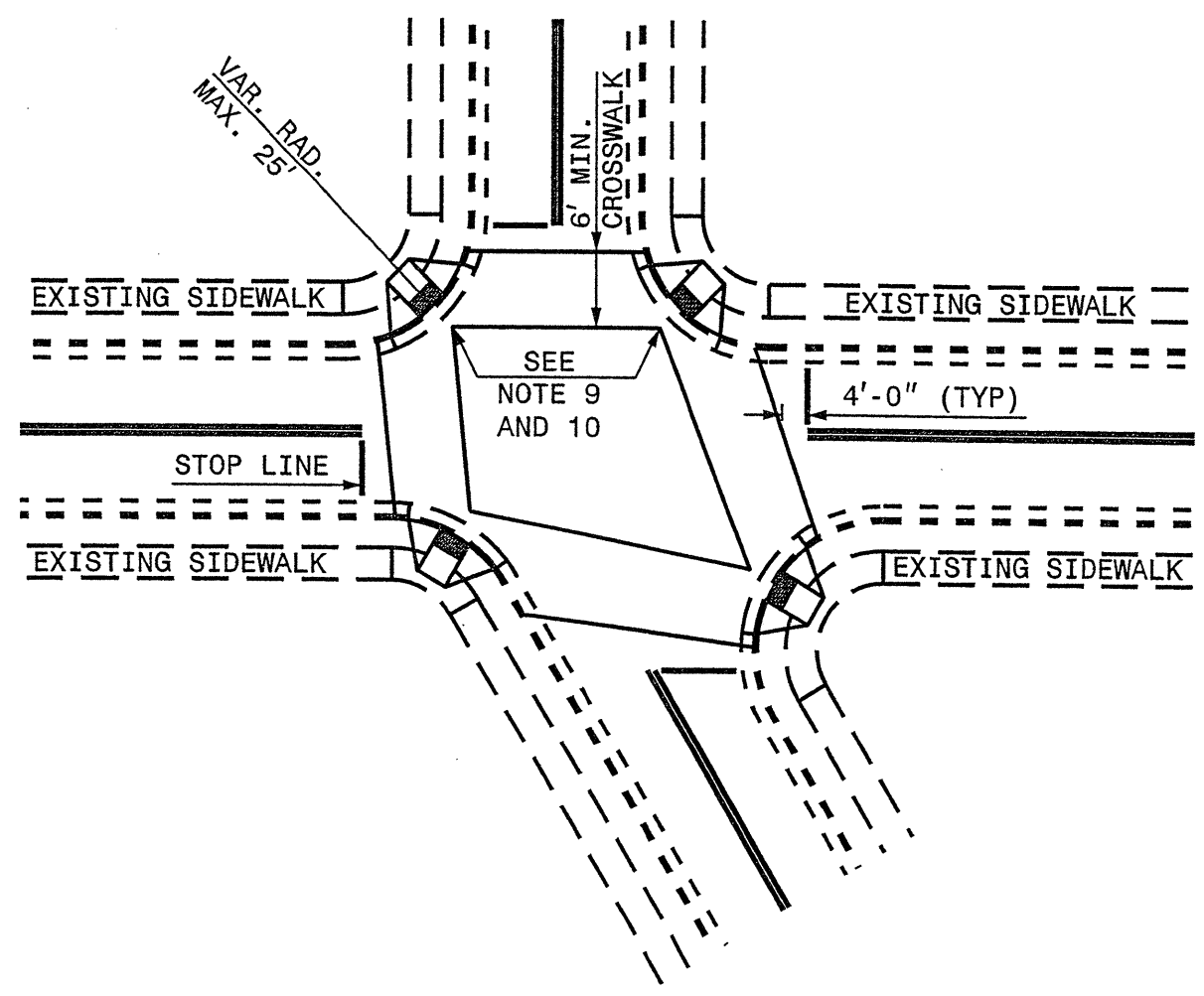
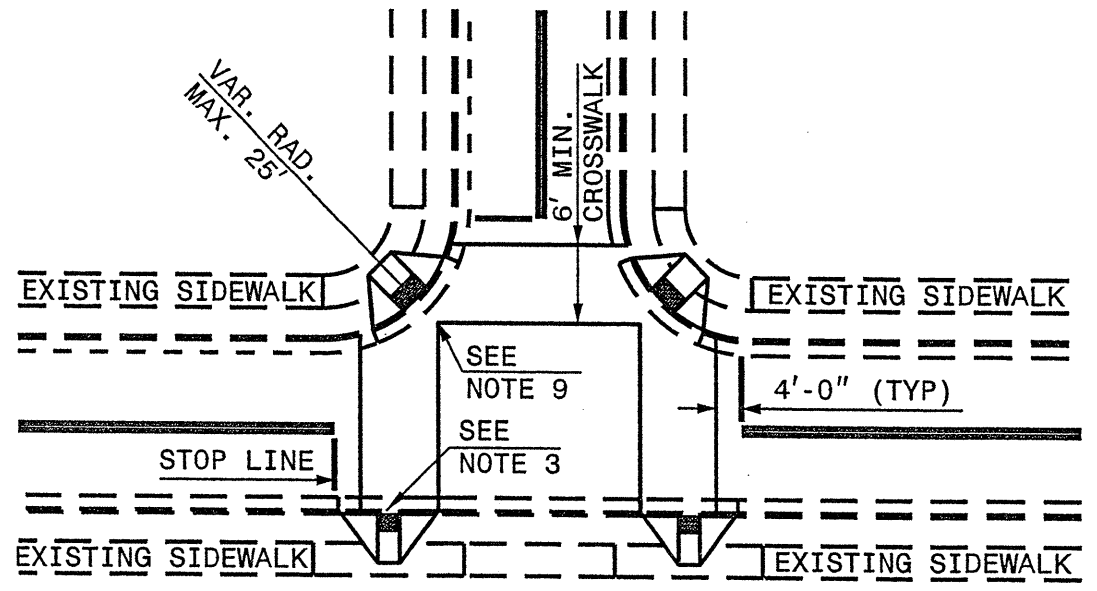
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STATE OF NORTH CAROLINA  
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ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
EXISTING CURB AND GUTTER

ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
EXISTING CURB AND GUTTER

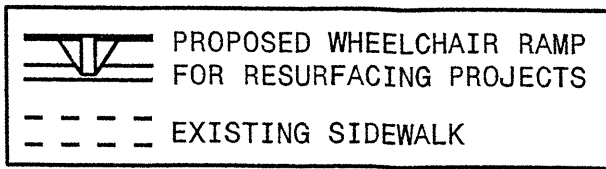
**WHEELCHAIR RAMP AND EXISTING SIDEWALK**



DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS

DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES

**RESURFACING PROJECTS**



ALLOWABLE LOCATIONS  
-----  
DIAGONAL RAMP RADII...MAX. 25'

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

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

ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
EXISTING CURB AND GUTTER

ENGLISH DETAIL DRAWING FOR  
**WHEELCHAIR RAMP**  
EXISTING CURB AND GUTTER

**WHEELCHAIR RAMP AND EXISTING SIDEWALK**

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 SIMILIAR 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 RADII, 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.

Note: Approximate quantities only. Unclassified Excavation, Clearing and Grubbing and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

### SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	FINAL SURFACE TESTING REQUIRED	LENGTH MI	WIDTH FT	GRADING LS	BORROW EXC. CY	GENERIC GRADING ITEM - REMOVE & REPLACE 5' SIDEWALK CY	REMOVE & REPLACE DRIVEWAY TURN OUT SY	2'-6" CURB & GUTTER, REMOVE AND REPLACE LF	CONCRETE VALLEY GUTTER, REMOVE AND REPLACE LF	GENERIC GRADING ITEM - GRADING PER SHOULDER MILE SMI	INC. STONE BASE TONS	SHOULDER RECONST. SMI	2-1/2"	1-1/2"	4"	3"	MILLING ASPHALT PAVEMENT, 2-1/2" TO 4" DEPTH	INC.	BASE	INT.	SURFACE	SURFACE	PG	PG	PATCHING	PATCHING	4"						
																		MILLING SY	MILLING SY	MILLING SY	MILLING SY	SY	TONS	TONS	TONS	TONS	PG 64-22 PLANT MIX TONS	PG 70-22 PLANT MIX TONS	EXISTING PAVEMENT (MILL), S9.5B OR S9.5C TON	EXISTING PAVEMENT (FULL DEPTH) TON	CONCRETE SIDEWALK SY							
3CR.10671.99	Onslow	1	NC 53	0.10 MI. EAST OF US 17 TO NC 24, FULL WIDTH (MP 0.00-0.02, 0.07-0.13, 0.46-0.50)	2	NO	0.12	96			52	75	108					4,224	845			1,690	2,180		1,062	1,279			127					60				
		"	"	FULL WIDTH (MP 0.02-0.07, 0.13-0.44, 0.50-0.63)	1	NO	0.49	84										17,248				6,899			3,794	2,336			319									
		"	"	TAPER 84'-96' (MP 0.44-0.46)	2	NO	0.02	90										704	70			282			144	102			13									
<b>TOTAL FOR MAP NO. 1</b>							<b>0.63</b>				<b>52</b>	<b>75</b>	<b>108</b>					<b>22,176</b>	<b>915</b>			<b>8,871</b>	<b>2,180</b>		<b>5,000</b>	<b>3,717</b>			<b>459</b>					<b>60</b>				
3CR.10671.99	Onslow	2	NC 53 WBL	BEG. DIVIDED HWY (0.10 MI. EAST OF US 17) TO 0.13 MI. WEST OF COMMERCE RD., TAPER 48'-60' (MP 0.00-0.04)	3	NO	0.04	54																														
		"	"	NO WORK (MP 0.04-0.18)	NW	NO	0.14	60															375			199	155			19								
		"	"	TAPER 26'-37' (MP 0.18-0.20)	4	NO	0.02	31.5																		58	36			5								
		"	"	FULL WIDTH (MP 0.20-0.23)	4	NO	0.03	37																		103	63			9								
		"	"	TAPER 37'-49' (MP 0.23-0.27)	5	NO	0.04	43																		159	98			13								
		"	"	FULL WIDTH (MP 0.27-0.31)	5	NO	0.04	49																		181	111			15								
		"	"	FULL WIDTH (MP 0.31-0.33)	6	NO	0.02	49																		91	56			8								
<b>TOTAL FOR MAP NO. 2</b>							<b>0.33</b>																<b>375</b>			<b>791</b>	<b>519</b>			<b>69</b>								
3CR.10671.99	Onslow	3	NC 53 EBL	0.13 MI. WEST OF COMMERCE RD. TO END DIVIDED HWY (0.10 MI EAST OF US 17), FULL WIDTH (MP 0.00-0.08)	5	NO	0.08	50															375			369	259			33								
		"	"	FULL WIDTH (MP 0.08-0.10)	4	NO	0.02	54																		100	61			8								
		"	"	TAPER 54'-64' (MP 0.10-0.14)	4	NO	0.04	59																		218	134			18								
		"	"	NO WORK (MP 0.14-0.27)	NW	NO	0.13	52																														
		"	"	FULL WIDTH (MP 0.27-0.29)	3	NO	0.02	35																		65	40			5								
		"	"	FULL WIDTH (MP 0.29-0.32)	3	NO	0.03	47																		130	80			11								
<b>TOTAL FOR MAP NO. 3</b>							<b>0.32</b>																<b>375</b>			<b>882</b>	<b>574</b>			<b>75</b>								
3CR.10671.99	Onslow	4	US 258 / NC 24	SR 1228 TO 0.20 MI. NORTH OF RICHLANDS CITY LIMITS (BEG. C&G), FULL WIDTH (MP 0.00-2.19, 2.26-2.88, 2.94-4.26, 4.36-4.49)	7	NO	4.26	64		4,332					0.08	325	8.52						800	75			31,063	3	1,864	150	20							
		"	"	TAPER 64'-76' (MP 2.19-2.24, 4.26-4.28, 4.34-4.36, 4.49-4.56)	7	NO	0.16	70		163							0.32										1,274		76									
		"	"	FULL WIDTH (MP 2.24-2.26, 4.28-4.34, 4.56-4.58)	7	NO	0.1	76		102							0.20										864		52									
		"	"	FULL WIDTH (MP 2.88-2.94)	8	NO	0.06	70		31							0.06										478		29									
<b>TOTAL FOR MAP NO. 4</b>							<b>4.58</b>			<b>4,628</b>					<b>0.08</b>	<b>325</b>	<b>9.10</b>						<b>800</b>	<b>75</b>			<b>33,679</b>	<b>3</b>	<b>2,021</b>	<b>150</b>	<b>20</b>							
3CR.10671.99	Onslow	8	NC 53	FULL WIDTH (MP 0.86-1.01)	2	NO	0.15	96		123		175	252										5,280	1,056		2,112	5,085		1,327	1,442		149			140			
		"	"	FULL WIDTH (MP 1.04-1.11, 1.27-2.44)	1	NO	1.24	84																43,648			17,459		9,602	5,912		806						
		"	"	NO WORK (MP 1.11-1.27)	NW	NO	0.16	84																														
		"	"	TAPER 84'-96' (MP 0.79-0.86, 1.01-1.04)	2	NO	0.1	90																														
<b>TOTAL FOR MAP NO. 8</b>							<b>1.65</b>			<b>123</b>		<b>175</b>	<b>252</b>											<b>52,448</b>	<b>1,408</b>		<b>20,979</b>	<b>5,085</b>		<b>11,648</b>	<b>7,865</b>		<b>1,019</b>			<b>140</b>		
<b>TOTAL FOR PROJ NO. 3CR.10671.99</b>							<b>7.51</b>			<b>4,628</b>		<b>175</b>	<b>250</b>	<b>360</b>		<b>0.08</b>	<b>325</b>	<b>9.10</b>						<b>74,624</b>	<b>2,323</b>	<b>10,626</b>		<b>29,850</b>	<b>8,815</b>	<b>75</b>	<b>18,321</b>	<b>12,675</b>	<b>33,679</b>	<b>1,625</b>	<b>2,021</b>	<b>150</b>	<b>20</b>	<b>200</b>
3CR.20671.99	Onslow	5	SR 1308	0.04 MI. NORTH OF NC 24 TO 0.06 MI. SOUTH OF US 17, FULL WIDTH (MP 0.00-0.02)	9	NO	0.02	57					300	100													270		16			1,250	100					
		"	"	TAPER 57'-44' (MP 0.02-0.08, 1.63-1.68)	9	NO	0.11	50.5																			633		38									
		"	"	FULL WIDTH (MP 0.08-0.50, 0.79-1.31, 1.68-2.07)	9	NO	1.33	44																			6,671		400									
		"	"	MILL PATCH (MP 0.50-0.79, 1.31-1.44)	MP	NO	0.42	44																														
		"	"	TAPER 46'-55' (MP 1.44-1.50)	9	NO	0.06	50.5																			345		21									
		"	"	NO WORK (MP 1.50-1.63)	NW	NO	0.13	55																														
<b>TOTAL FOR MAP NO. 5</b>							<b>2.07</b>						<b>300</b>	<b>100</b>													<b>7,919</b>		<b>475</b>			<b>1,500</b>	<b>125</b>					
<b>TOTAL FOR PROJ NO. 3CR.20671.99</b>							<b>2.07</b>						<b>300</b>	<b>100</b>													<b>7,919</b>		<b>475</b>			<b>1,500</b>	<b>125</b>					
W-5147A 45362.3.1	Onslow	7	NC 53	MILL & RESURFACE, FULL WIDTH (MP 0.63-0.68, 0.76-0.79)	1, 2	NO	0.08	88																			650	400		55								
		"	"	MILL, RESURFACE, AND CONC. ISLANDS, FULL WIDTH (MP 0.68-0.76)	2	NO	0.08	96	1																		709	486		63						72		
<b>TOTAL FOR MAP NO. 7</b>							<b>0.16</b>		<b>1</b>										<b>5,258</b>	<b>1,126</b>							<b>1,359</b>	<b>886</b>		<b>118</b>						<b>72</b>		
W-5147A 45362.3.1	Onslow	6	SR 1403	0.13 MI. WEST OF NC 53 TO 0.06 MI. EAST OF NC 53, FULL WIDTH (MP 0.00-0.19)	10	NO	0.19	62																														
<b>TOTAL FOR MAP NO. 6</b>							<b>0.19</b>																															
<b>TOTAL FOR PROJ NO. W-5147A, 45362.3.1</b>							<b>0.35</b>		<b>1</b>										<b>5,258</b>	<b>8,037</b>							<b>689</b>	<b>669</b>		<b>40</b>	</							

Note: Approximate quantities only. Unclassified Excavation, Clearing and Grubbing and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

PROJECT NO. 3CR.10671.99, W-5147A, ETC	SHEET NO. 3-A	TOTAL NO.
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## SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	FINAL SURFACE TESTING REQUIRED	LENGTH MI	WIDTH FT	2'-6" CURB & GUTTER LF	RETROFIT EXISTING WC RAMPS EA	WHEEL CHAIR RAMPS EA	5" MONOLITHIC CONC. ISLANDS (SURFACE MOUNTED) SY	GENERIC PAVING ITEM INC. CONC SY	UNCLASSIFIED EXCAV. CY	ASPHALT PAVT REMOVAL SY	CONC. SIDEWALK REMOVAL SY	GENERIC PAVING ITEM - DETECTABLE WARNINGS EA	ADJ. OF MAN-HOLES EA	ADJ. OF 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	MATting (EROSION CONTROL) SY	1/4" HARDWARE CLOTH LF	WATTLE LF	SEED & MULCHING AC	SEED FOR REPAIR SEEDING LB	FERTILIZER FOR REPAIR SEEDING TON				
3CR.10671.99	Onslow	1	NC 53	0.10 MI. EAST OF US 17 TO NC 24, FULL WIDTH (MP 0.00-0.02, 0.07-0.13, 0.46-0.50)	2	NO	0.12	96		7	3							5	6	*														
	"	"	"	FULL WIDTH (MP 0.02-0.07, 0.13-0.44, 0.50-0.63)	1	NO	0.49	84																										
				TAPER 84'-96' (MP 0.44-0.46)	2	NO	0.02	90																										
<b>TOTAL FOR MAP NO. 1</b>							<b>0.63</b>			<b>7</b>	<b>3</b>							<b>5</b>	<b>6</b>	<b>1</b>														
3CR.10671.99	Onslow	2	NC 53 WBL	BEG. DIVIDED HWY (0.10 MI. EAST OF US 17) TO 0.13 MI. WEST OF COMMERCE RD., TAPER 48'-60' (MP 0.00-0.04)	3	NO	0.04	54										1	3		33	9	9	0.33	10	17	10		17	0.09				
				NO WORK (MP 0.04-0.18)	NW	NO	0.14	60																										
				TAPER 26'-37' (MP 0.18-0.20)	4	NO	0.02	31.5																										
				FULL WIDTH (MP 0.20-0.23)	4	NO	0.03	37																										
				TAPER 37'-49' (MP 0.23-0.27)	5	NO	0.04	43																										
				FULL WIDTH (MP 0.27-0.31)	5	NO	0.04	49																										
				FULL WIDTH (MP 0.31-0.33)	6	NO	0.02	49																										
<b>TOTAL FOR MAP NO. 2</b>							<b>0.33</b>											<b>1</b>	<b>3</b>		<b>33</b>	<b>9</b>	<b>9</b>	<b>0.33</b>	<b>10</b>	<b>17</b>	<b>10</b>		<b>17</b>	<b>0.09</b>				
3CR.10671.99	Onslow	3	NC 53 EBL	0.13 MI. WEST OF COMMERCE RD. TO END DIVIDED HWY (0.10 MI EAST OF US 17), FULL WIDTH (MP 0.00-0.08)	5	NO	0.08	50										1	3		32	8	8	0.32	10	16	10		16	0.08				
				FULL WIDTH (MP 0.08-0.10)	4	NO	0.02	54																										
				TAPER 54'-64' (MP 0.10-0.14)	4	NO	0.04	59																										
				NO WORK (MP 0.14-0.27)	NW	NO	0.13	52																										
				FULL WIDTH (MP 0.27-0.29)	3	NO	0.02	35																										
				FULL WIDTH (MP 0.29-0.32)	3	NO	0.03	47																										
<b>TOTAL FOR MAP NO. 3</b>							<b>0.32</b>											<b>1</b>	<b>3</b>		<b>32</b>	<b>8</b>	<b>8</b>	<b>0.32</b>	<b>10</b>	<b>16</b>	<b>10</b>		<b>16</b>	<b>0.08</b>				
3CR.10671.99	Onslow	4	US 258 / NC 24	SR 1228 TO 0.20 MI. NORTH OF RICHLANDS CITY LIMITS (BEG. C&G), FULL WIDTH (MP 0.00-2.19, 2.26-2.88, 2.94-4.26, 4.36-4.49)	7	NO	4.26	64										2	6	*	458	115	115	4.58	30	229	70	6.39	229	1.15				
				TAPER 64'-76' (MP 2.19-2.24, 4.26-4.28, 4.34-4.36, 4.49-4.56)	7	NO	0.16	70																										
				FULL WIDTH (MP 2.24-2.26, 4.28-4.34, 4.56-4.58)	7	NO	0.1	76																										
				FULL WIDTH (MP 2.88-2.94)	8	NO	0.06	70																										
<b>TOTAL FOR MAP NO. 4</b>							<b>4.58</b>											<b>2</b>	<b>6</b>	<b>1</b>	<b>458</b>	<b>115</b>	<b>115</b>	<b>4.58</b>	<b>30</b>	<b>229</b>	<b>70</b>	<b>6.83</b>	<b>229</b>	<b>1.15</b>				
3CR.10671.99	Onslow	8	NC 53	FULL WIDTH (MP 0.86-1.01)	2	NO	0.15	96		17	9							12	15	*	244	61	61	2.44	20	122	40		122	0.61				
				FULL WIDTH (MP 1.04-1.11, 1.27-2.44)	1	NO	1.24	84																										
				NO WORK (MP 1.11-1.27)	NW	NO	0.16	84																										
				TAPER 84'-96' (MP 0.79-0.86, 1.01-1.04)	2	NO	0.1	90																										
<b>TOTAL FOR MAP NO. 8</b>							<b>1.65</b>			<b>17</b>	<b>9</b>							<b>12</b>	<b>15</b>	<b>1</b>	<b>244</b>	<b>61</b>	<b>61</b>	<b>2.44</b>	<b>20</b>	<b>122</b>	<b>40</b>		<b>122</b>	<b>0.61</b>				
<b>TOTAL FOR PROJ NO. 3CR.10671.99</b>							<b>7.51</b>			<b>24</b>	<b>12</b>								<b>21</b>	<b>33</b>	<b>1</b>	<b>767</b>	<b>193</b>	<b>193</b>	<b>7.67</b>	<b>70</b>	<b>384</b>	<b>130</b>	<b>6.83</b>	<b>384</b>	<b>1.93</b>			
3CR.20671.99	Onslow	5	SR 1308	0.04 MI. NORTH OF NC 24 TO 0.06 MI. SOUTH OF US 17, FULL WIDTH (MP 0.00-0.02)	9	NO	0.02	57		15	10		800					11	6		207	52	52	2.07	20	104	40		104	0.52				
				TAPER 57'-44' (MP 0.02-0.08, 1.63-1.68)	9	NO	0.11	50.5																										
				FULL WIDTH (MP 0.08-0.50, 0.79-1.31, 1.68-2.07)	9	NO	1.33	44																										
				MILL PATCH (MP 0.50-0.79, 1.31-1.44)	MP	NO	0.42	44																										
				TAPER 46'-55' (MP 1.44-1.50)	9	NO	0.06	50.5																										
				NO WORK (MP 1.50-1.63)	NW	NO	0.13	55																										
<b>TOTAL FOR MAP NO. 5</b>							<b>2.07</b>			<b>15</b>	<b>10</b>		<b>800</b>					<b>11</b>	<b>6</b>		<b>207</b>	<b>52</b>	<b>52</b>	<b>2.07</b>	<b>20</b>	<b>104</b>	<b>40</b>		<b>104</b>	<b>0.52</b>				
<b>TOTAL FOR PROJ NO. 3CR.20671.99</b>							<b>2.07</b>			<b>15</b>	<b>10</b>		<b>800</b>					<b>11</b>	<b>6</b>		<b>207</b>	<b>52</b>	<b>52</b>	<b>2.07</b>	<b>20</b>	<b>104</b>	<b>40</b>		<b>104</b>	<b>0.52</b>				
W-5147A 45362.3.1	Onslow	7	NC 53	MILL & RESURFACE, FULL WIDTH (MP 0.63-0.68, 0.76-0.79)	1, 2	NO	0.08	88																										
				MILL, RESURFACE, AND CONC. ISLANDS, FULL WIDTH (MP 0.68-0.76)	2	NO	0.08	96	78		11	315		64	35	52	4		9		250								0.05					
<b>TOTAL FOR MAP NO. 7</b>							<b>0.16</b>		<b>78</b>		<b>11</b>	<b>315</b>		<b>64</b>	<b>35</b>	<b>52</b>	<b>4</b>		<b>9</b>		<b>250</b>								<b>0.05</b>					
W-5147A 45362.3.1	Onslow	6	SR 1403	0.13 MI. WEST OF NC 53 TO 0.06 MI. EAST OF NC 53, FULL WIDTH (MP 0.00-0.19)	10	NO	0.19	62												2														
<b>TOTAL FOR MAP NO. 6</b>							<b>0.19</b>													<b>2</b>														
<b>TOTAL FOR PROJ NO. W-5147A, 45362.3.1</b>							<b>0.35</b>		<b>78</b>		<b>11</b>	<b>315</b>		<b>64</b>	<b>35</b>	<b>52</b>	<b>4</b>		<b>11</b>			<b>250</b>								<b>0.05</b>				
<b>GRAND TOTAL</b>							<b>9.93</b>		<b>78</b>		<b>39</b>	<b>33</b>		<b>800</b>		<b>64</b>	<b>35</b>	<b>52</b>	<b>4</b>	<b>32</b>	<b>50</b>	<b>1</b>	<b>1,224</b>	<b>245</b>	<b>245</b>	<b>9.74</b>	<b>90</b>	<b>488</b>	<b>170</b>	<b>6.88</b>	<b>488</b>	<b>2.45</b>		

included in lump sum grading pay item

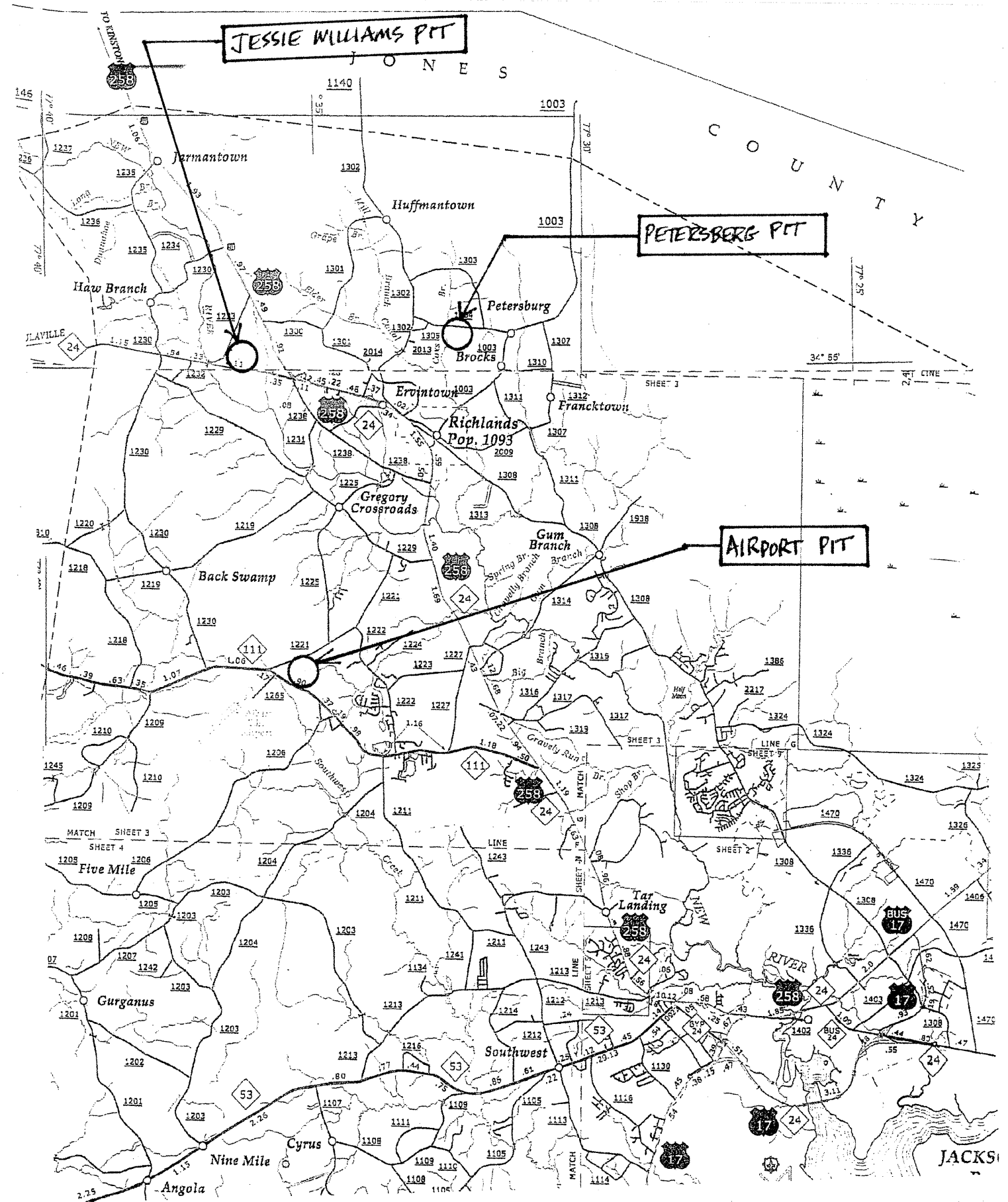


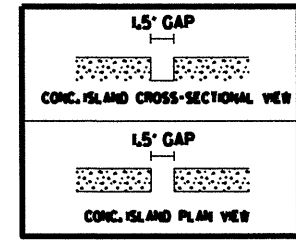
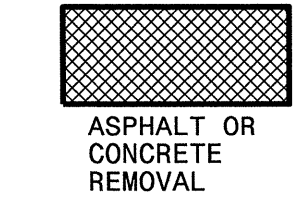
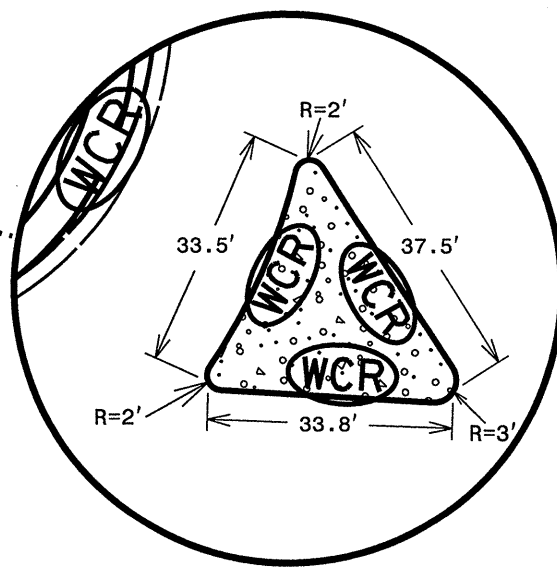
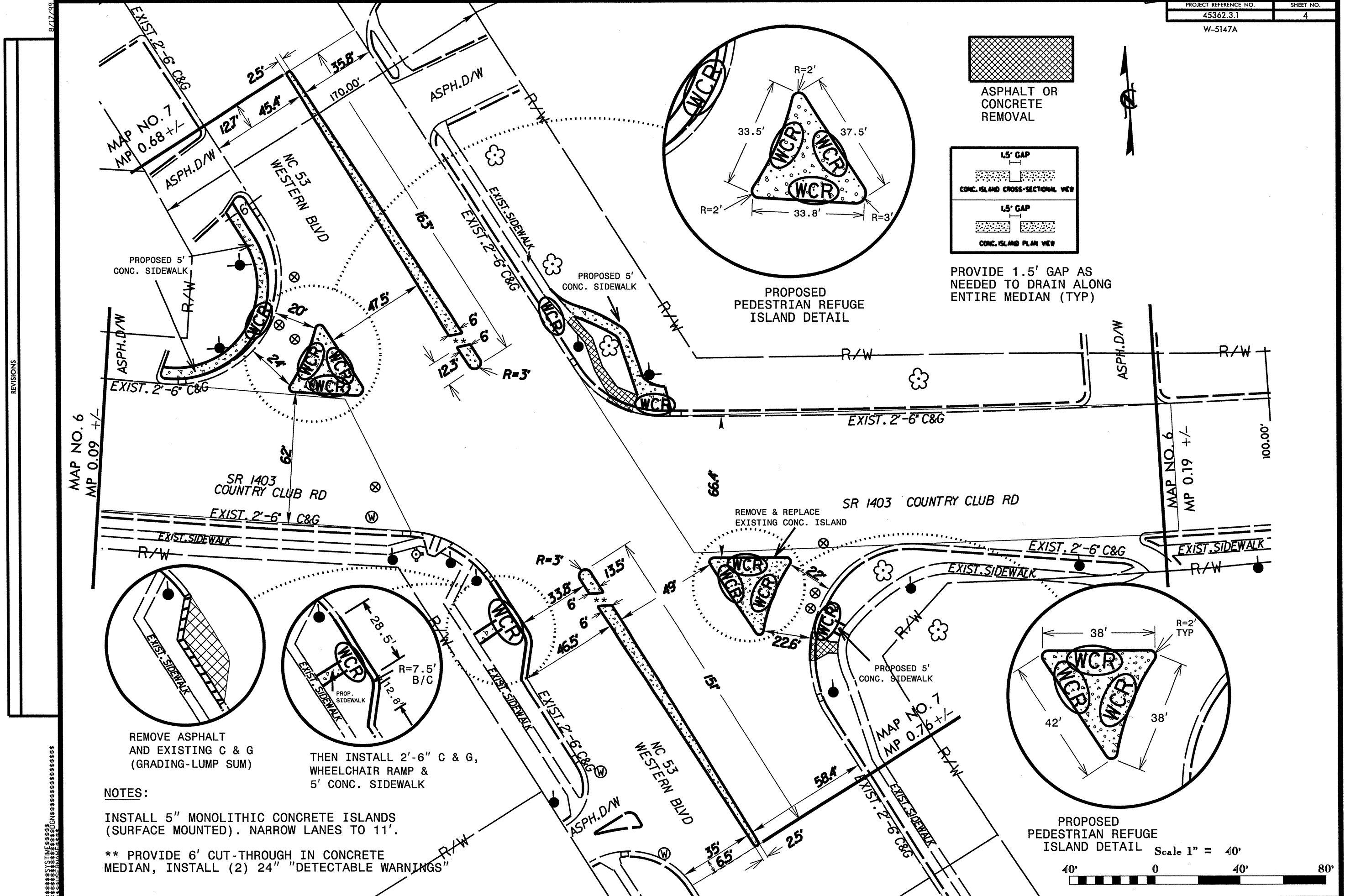
PROJECT NO. 3CR.10671.99, 3CR.20671.99 W-5147A	SHEET NO. 3-C	TOTAL NO.
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**THERMOPLASTIC AND PAINT QUANTITIES**

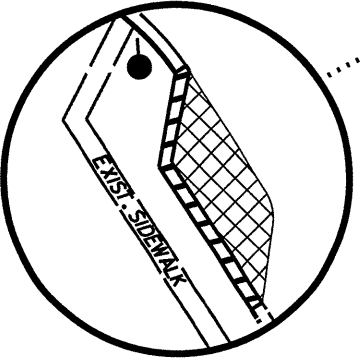
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	LENGTH	WIDTH	485000000-N	486000000-N	487000000-N	487500000-N	490000000-N	490500000-N	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION) EA	SIGNAL CABLE LF	PAVED TRENCHING (1, 2") LF	PAVED TRENCHING (2, 2") LF	UNPAVED TRENCHING (1, 2") LF	UNPAVED TRENCHING (2, 2") LF	DIRECTIONAL DRILL (1, 2") LF	DIRECTIONAL DRILL (3, 2") LF	JUNCTION BOX (STANDARD SIZE) EA	JUNCTION BOX (OVER-SIZED, HEAVY DUTY) EA	2" RISER WITH WEATHER-HEAD EA	INDUCTIVE LOOP SAWCUT LF	LEAD-IN CABLE (14-2) LF	SIGNAL PEDESTAL W/ FOUNDATION EA	PUSH BUTTON POSTS EA							
							4" LINE REMOVAL LF	8" LINE REMOVAL LF	24" LINE REMOVAL LF	REMOVAL OF PAVEMENT MARKING SYMBOLS & EA	CYAN & RED MARKERS EA	YELLOW & YELLOW MARKERS EA																SNOW PLOWABLE MARKERS EA	SNOW PLOWABLE MARKERS (Y/Y) EA					
3CR.10671.99	Onslow	1	NC 53	WIDTH (MP 0.00-0.02, 0.07-0.13, 0.46-0.50)	0.12	96	200	150	100	5											9			3,660	900									
				FULL WIDTH (MP 0.02-0.07, 0.13-0.44, 0.50-0.63)	0.49	84									291	129																		
				TAPER 84'-96' (MP 0.44-0.46)	0.02	90									17	5																		
<b>TOTAL FOR MAP NO. 1</b>					<b>0.63</b>		<b>200</b>	<b>150</b>	<b>100</b>	<b>5</b>											<b>9</b>			<b>3,660</b>	<b>900</b>									
3CR.10671.99	Onslow	2	NC 53 WBL	BEG. DIVIDED HWY (0.10 MI. EAST OF US 17) TO 0.13 MI. WEST OF COMMERCE RD., TAPER 48'-60' (MP 0.00-0.04)	0.04	54	150	50	50	3														400	100									
				NO WORK (MP 0.04-0.18)	0.14	60																												
				TAPER 26'-37' (MP 0.18-0.20)	0.02	31.5									3																			
				FULL WIDTH (MP 0.20-0.23)	0.03	37									4																			
				TAPER 37'-49' (MP 0.23-0.27)	0.04	43									16																			
				FULL WIDTH (MP 0.27-0.31)	0.04	49									26																			
<b>TOTAL FOR MAP NO. 2</b>					<b>0.33</b>		<b>150</b>	<b>50</b>	<b>50</b>	<b>3</b>														<b>400</b>	<b>100</b>									
3CR.10671.99	Onslow	3	NC 53 EBL	0.13 MI. WEST OF COMMERCE RD. TO END DIVIDED HWY (0.10 MI EAST OF US 17), FULL WIDTH (MP 0.00-0.08)	0.08	50	150	50	50	3														400	100									
				FULL WIDTH (MP 0.08-0.10)	0.02	54									4																			
				TAPER 54'-64' (MP 0.10-0.14)	0.04	59									8																			
				NO WORK (MP 0.14-0.27)	0.13	52																												
				FULL WIDTH (MP 0.27-0.29)	0.02	35									4																			
				FULL WIDTH (MP 0.29-0.32)	0.03	47									14																			
<b>TOTAL FOR MAP NO. 3</b>					<b>0.32</b>		<b>150</b>	<b>50</b>	<b>50</b>	<b>3</b>														<b>400</b>	<b>100</b>									
3CR.10671.99	Onslow	4	US 258 / NC 24	SR 1228 TO 0.20 MI. NORTH OF RICHLANDS CITY LIMITS (BEG. C&G), FULL WIDTH (MP 0.00-2.19, 2.26-2.88, 2.94-4.26, 4.36-4.49)	4.26	64	250	100	100	5																								
				TAPER 64'-76' (MP 2.19-2.24, 4.26-4.28, 4.34-4.36, 4.49-4.56)	0.16	70									21	42																		
				FULL WIDTH (MP 2.24-2.26, 4.28-4.34, 4.56-4.58)	0.1	76									13	26																		
				FULL WIDTH (MP 2.88-2.94)	0.06	70									8	16																		
				<b>TOTAL FOR MAP NO. 4</b>					<b>4.58</b>		<b>250</b>	<b>100</b>	<b>100</b>	<b>5</b>																				
				FULL WIDTH (MP 0.86-1.01)	0.15	96	200	150	100	5					89	40									21			8,540	2,100					
3CR.10671.99	Onslow	8	NC 53	FULL WIDTH (MP 1.04-1.11, 1.27-2.44)	1.24	84						737	327																					
				NO WORK (MP 1.11-1.27)	0.16	84																												
				TAPER 84'-96' (MP 0.79-0.86, 1.01-1.04)	0.1	90									86	26																		
				<b>TOTAL FOR MAP NO. 8</b>					<b>1.65</b>		<b>200</b>	<b>150</b>	<b>100</b>	<b>5</b>														<b>8,540</b>	<b>2,100</b>					
				<b>TOTAL FOR PROJ NO. 3CR.10671.99</b>					<b>7.51</b>		<b>950</b>	<b>500</b>	<b>400</b>	<b>21</b>												<b>21</b>			<b>13,000</b>	<b>3,200</b>				
																	<b>3,766</b>																	
3CR.20671.99	Onslow	5	SR 1308	0.04 MI. NORTH OF NC 24 TO 0.06 MI. SOUTH OF US 17, FULL WIDTH (MP 0.00-0.02)	0.02	57	250	50	50	5																								
				TAPER 57'-44' (MP 0.02-0.08, 1.63-1.68)	0.11	50.5									22	7																		
				FULL WIDTH (MP 0.08-0.50, 0.79-1.31, 1.68-2.07)	1.33	44									263	88																		
				MILL PATCH (MP 0.50-0.79, 1.31-1.44)	0.42	44																												
				TAPER 46'-55' (MP 1.44-1.50)	0.06	50.5									12	4																		
				NO WORK (MP 1.50-1.63)	0.13	55																												
<b>TOTAL FOR MAP NO. 5</b>					<b>2.07</b>		<b>250</b>	<b>50</b>	<b>50</b>	<b>5</b>																								
<b>TOTAL FOR PROJ NO. 3CR.20671.99</b>					<b>2.07</b>		<b>250</b>	<b>50</b>	<b>50</b>	<b>5</b>																								
													<b>406</b>																					
W-5147A 45362.3.1	Onslow	7	NC 53	MILL & RESURFACE, FULL WIDTH (MP 0.63-0.68, 0.76-0.79)	0.08	88							24	8	3260	20	50	455	75	80	245	13	4	6	1750	7484	8	2						
				MILL, RESURFACE, AND CONC. ISLANDS, FULL WIDTH (MP 0.68-0.76)	0.08	96					24	33	29	24	8	3,260	20	50	455	75	80	245	13	4	6	1,750	7,484	8	2					
				<b>TOTAL FOR MAP NO. 7</b>					<b>0.16</b>						<b>24</b>	<b>33</b>	<b>29</b>	<b>24</b>	<b>8</b>	<b>3,260</b>	<b>20</b>	<b>50</b>	<b>455</b>	<b>75</b>	<b>80</b>	<b>245</b>	<b>13</b>	<b>4</b>	<b>6</b>	<b>1,750</b>	<b>7,484</b>	<b>8</b>	<b>2</b>	
W-5147A 45362.3.1	Onslow	6	SR 1403	0.13 MI. WEST OF NC 53 TO 0.06 MI. EAST OF NC 53, FULL WIDTH (MP 0.00-0.19)	0.19	62																												
				<b>TOTAL FOR MAP NO. 6</b>					<b>0.19</b>																									
<b>TOTAL FOR PROJ NO. W-5147A, 45362.3.1</b>					<b>0.35</b>							<b>24</b>	<b>33</b>	<b>29</b>	<b>24</b>	<b>8</b>	<b>3,260</b>	<b>20</b>	<b>50</b>	<b>455</b>	<b>75</b>	<b>80</b>	<b>245</b>	<b>13</b>	<b>4</b>	<b>6</b>	<b>1,750</b>	<b>7,484</b>	<b>8</b>	<b>2</b>				
							<b>57</b>		<b>53</b>																									
<b>GRAND TOTAL</b>					<b>9.93</b>		<b>1,200</b>	<b>550</b>	<b>450</b>	<b>26</b>	<b>24</b>	<b>33</b>	<b>2,333</b>	<b>1,892</b>	<b>8</b>	<b>3,260</b>	<b>20</b>	<b>50</b>	<b>455</b>	<b>75</b>	<b>80</b>	<b>245</b>	<b>43</b>	<b>4</b>	<b>6</b>	<b>14,750</b>	<b>10,684</b>	<b>8</b>	<b>2</b>					
													<b>57</b>		<b>53</b>																			

# STATE FURNISHED BORROW PIT SITES

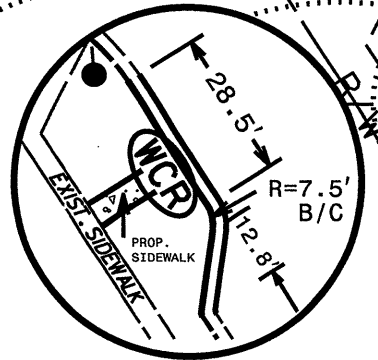




PROVIDE 1.5' GAP AS NEEDED TO DRAIN ALONG ENTIRE MEDIAN (TYP)



REMOVE ASPHALT AND EXISTING C & G (GRADING-LUMP SUM)

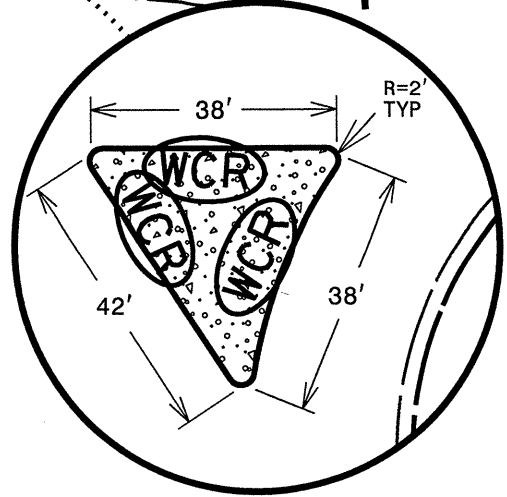


THEN INSTALL 2'-6" C & G, WHEELCHAIR RAMP & 5' CONC. SIDEWALK

NOTES:

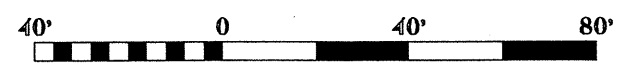
INSTALL 5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED). NARROW LANES TO 11'.

\*\* PROVIDE 6' CUT-THROUGH IN CONCRETE MEDIAN, INSTALL (2) 24" "DETECTABLE WARNINGS"



PROPOSED PEDESTRIAN REFUGE ISLAND DETAIL

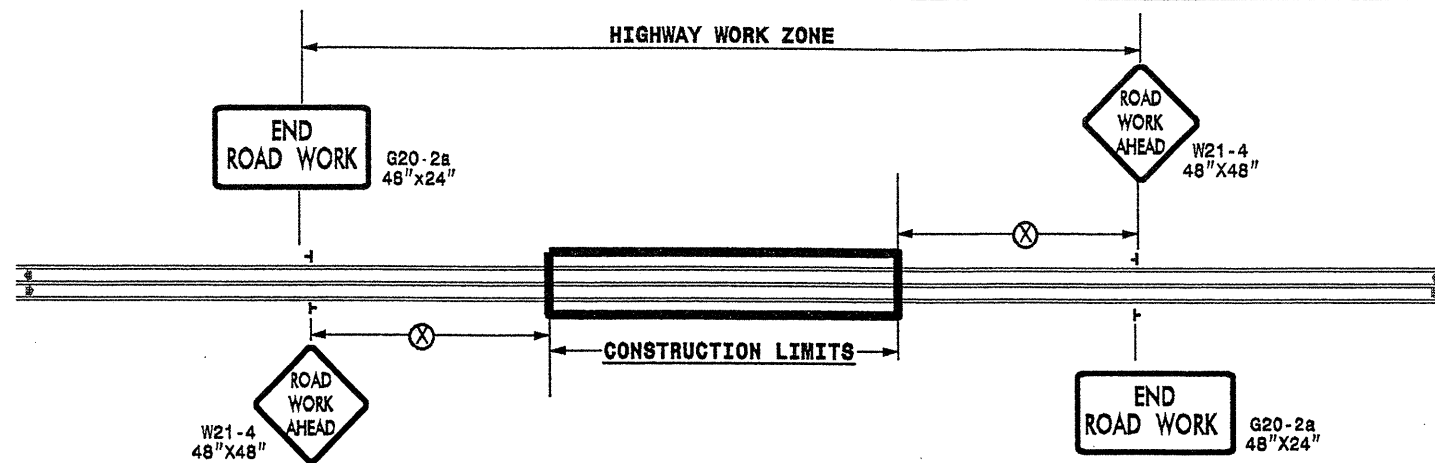
Scale 1" = 40'



8/17/99  
 REVISIONS  
 SYSTEMS ENGINEERING



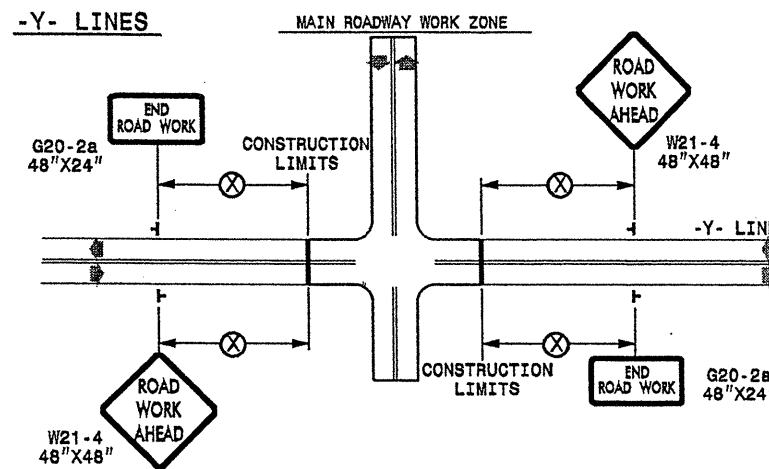
**TWO-WAY UNDIVIDED \*\* (L-LINES)**



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

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

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



DETAIL DRAWING FOR  
TWO-WAY UNDIVIDED  
WORK ZONE WARNING SIGNS

**GENERAL NOTES**

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- 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.
- 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.
- \*\* 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**

- ┆ STATIONARY SIGN
- ➔ DIRECTION OF TRAFFIC FLOW

SHEET 1 OF 1

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

I:\NOV-2000\1000\1000\FREAT\2011\2011\Resurf\3CR.20671.99\_3CR.20671.99\_2011\RESURF.dgn  
 AT 03:40:24 11/98



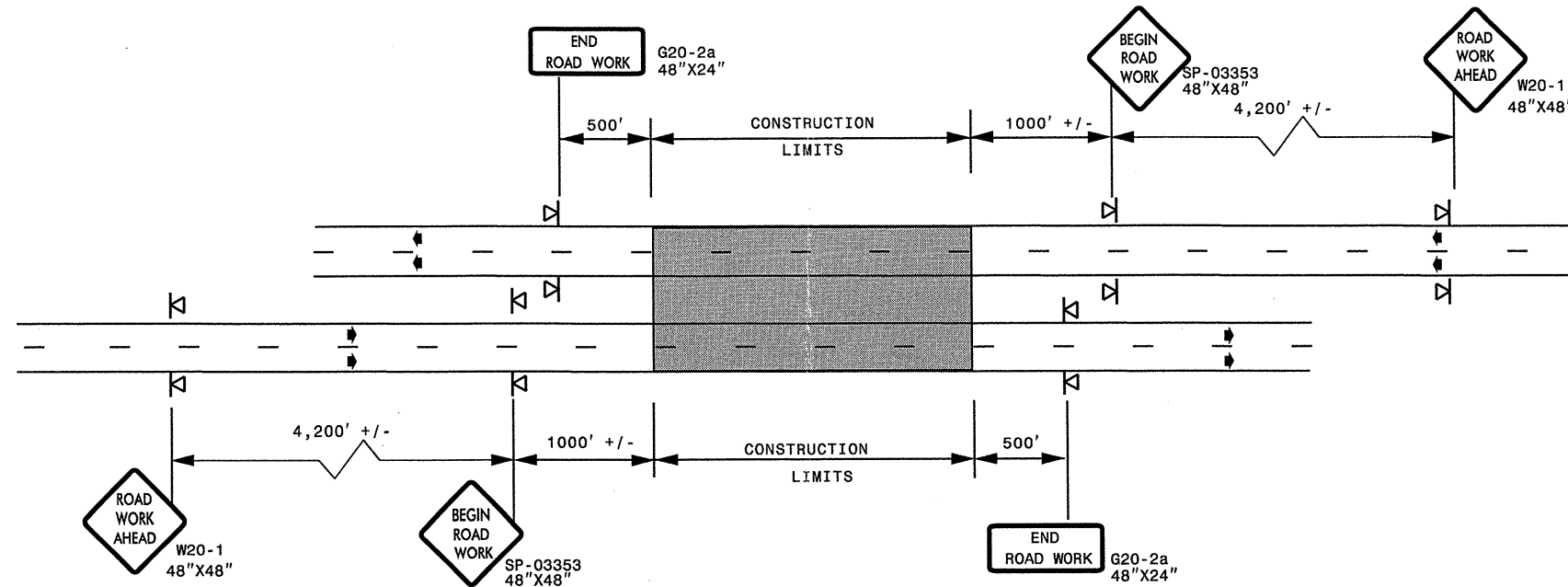
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 okotel AT WZTCC244748

WBS ELEMENTS: 3CR.10671.99,  
3CR.20671.99 & 45362.3.1 (W-5147)

PROJ. REFERENCE NO. SHEET NO.  
SEE TO THE LEFT TCP-3

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

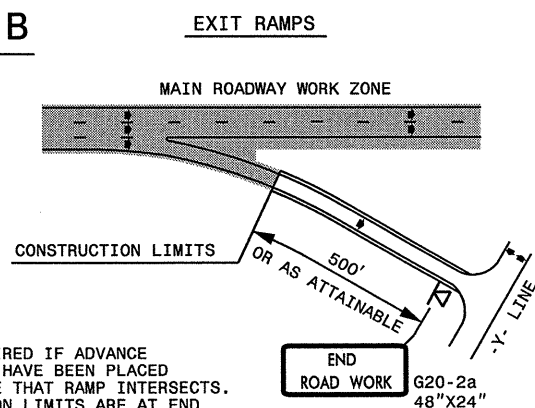
**DETAIL A**



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

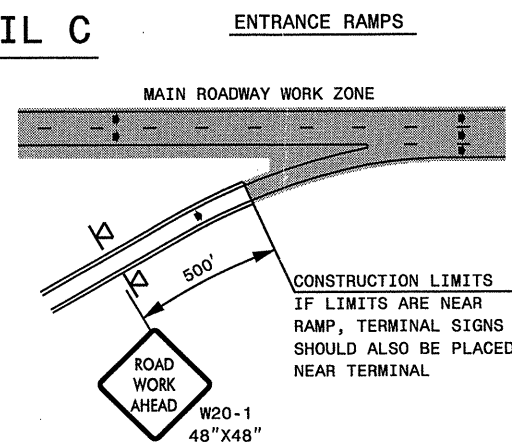
**ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)**

**DETAIL B**



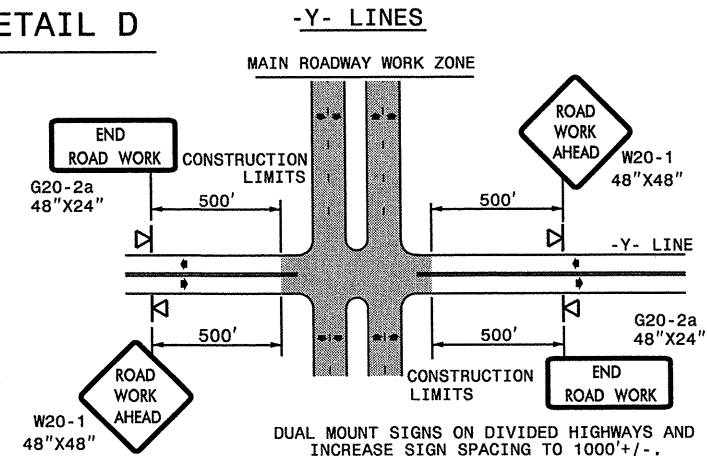
NOTE:  
SIGN NOT REQUIRED IF ADVANCE  
WARNING SIGNS HAVE BEEN PLACED  
ALONG -Y- LINE THAT RAMP INTERSECTS.  
IF CONSTRUCTION LIMITS ARE AT END  
OF RAMP, PLACE SIGN AT END OF RAMP.

**DETAIL C**



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

**DETAIL D**



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

**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

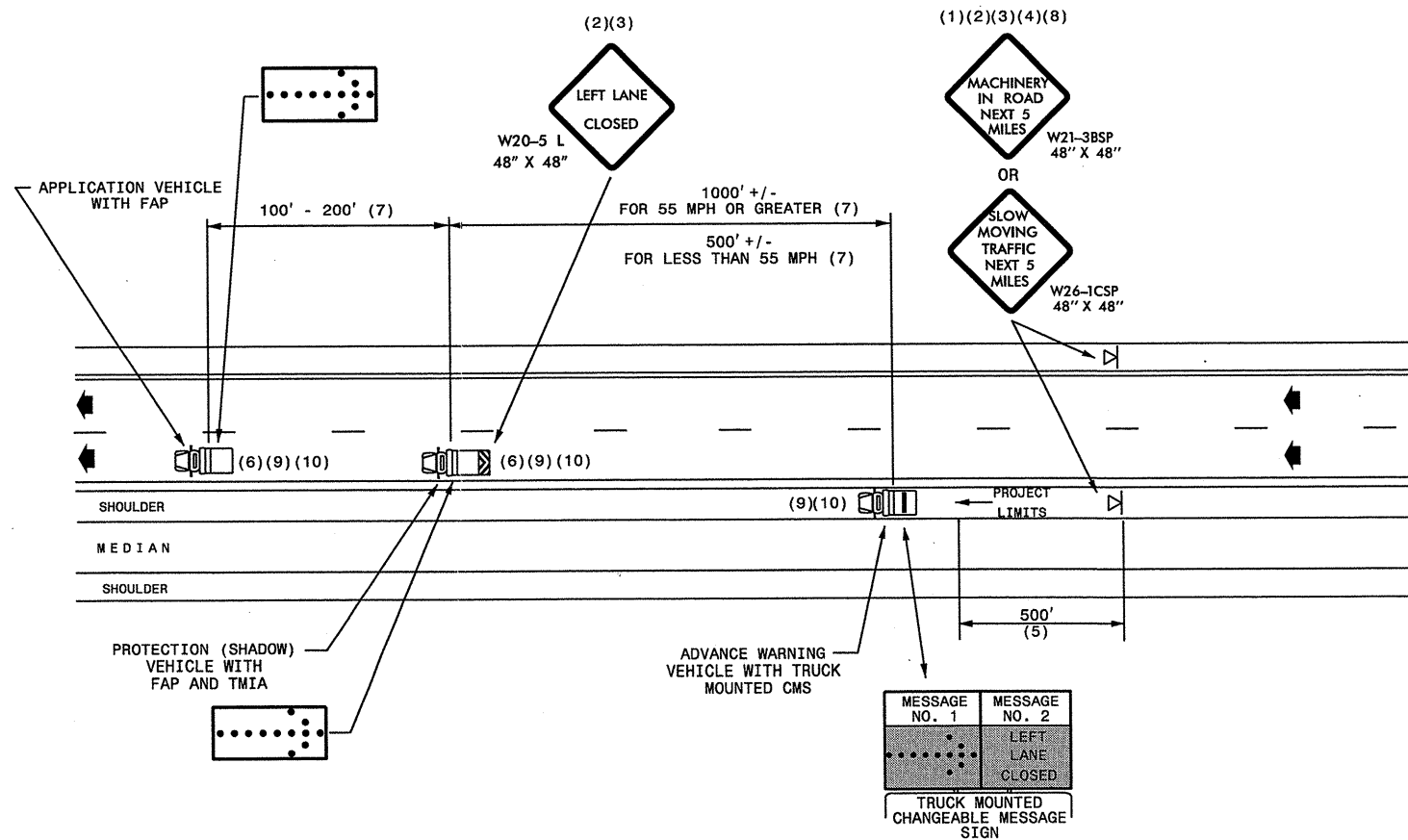
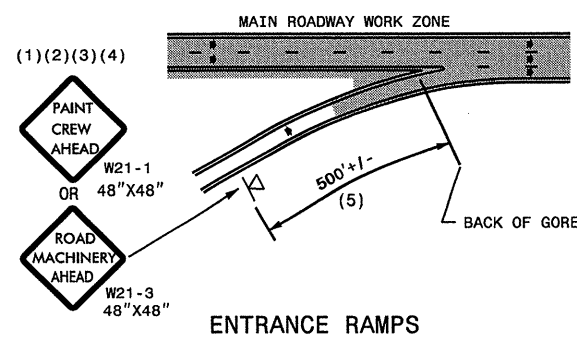
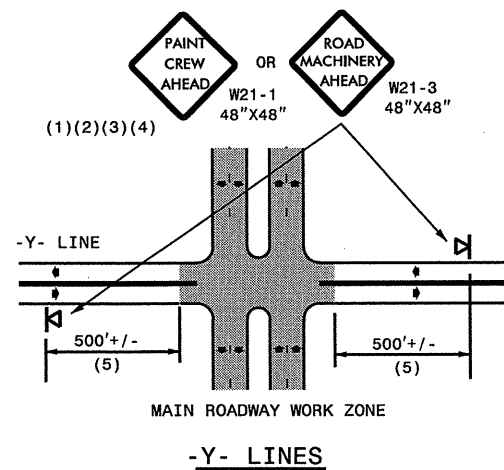
APPROVED: _____ DATE: _____	DETAIL DRAWING FOR FREEWAYS WORK ZONE WARNING SIGNS	
SEAL 	SCALE: NONE	REVISIONS
	DATE: 12/10	7-98 10/01
	DWG. BY:	10-98 03/04
	DESIGN BY:	01/01 11/04
REVIEWED BY:		

**GENERAL NOTES**

- (1) THE FOLLOWING OPTIONS MAY BE USED FOR ADVANCE WARNING SIGNS:
  - A. TRUCK MOUNTED SIGNS
  - B. TRUCK MOUNTED CHANGEABLE MESSAGE SIGN (CMS)
  - C. GROUND MOUNTED ADVANCE WARNING SIGNS (MUST CIRCLE TO PICK UP SIGNS)
  - D. GROUND MOUNTED CHANGEABLE MESSAGE SIGN (CMS) (MUST USE CIRCLE TO PICK UP SIGNS)
- (2) ALL ADVANCE WARNING SIGNS MUST BE 48" X 48" WITH FLUORESCENT ORANGE TYPE VII, VIII OR IX SHEETING. IF SPACE LIMITATIONS ON SHOULDER PROHIBIT A 48" X 48" SIGN, A SMALLER SIGN CAN BE USED WITH APPROVAL FROM ENGINEER.
- (3) SIGNS ON VEHICLES SHOULD BE MOUNTED A MINIMUM OF ONE (1) FOOT FROM THE GROUND AND SHOULD NOT BLOCK THE MOTORIST'S SIGHT OF THE FLASHING ARROW PANEL AND/OR LIGHTBAR.
- (4) GROUND MOUNTED ADVANCED WARNING SIGNS SHOULD BE MOUNTED A MINIMUM OF FIVE (5) FEET FROM THE GROUND TO BOTTOM OF SIGN.
- (5) SIGN SPACING SHOULD BE ADJUSTED FOR HORIZONTAL AND VERTICAL CURVES, ETC. TO IMPROVE SIGHT DISTANCES.
- (6) ADDITIONAL VEHICLES SHOULD BE USED IN WORK CARAVAN TO FACILITATE DRYING OF PAVEMENT MARKING MATERIAL (TMIA'S ARE OPTIONAL ON THESE ADDITIONAL VEHICLES). HOWEVER, THE FIRST VEHICLE MOTORISTS SEE IN THE TRAVEL LANE SHALL HAVE A TMIA.
- (7) ADJUST DISTANCE AS NEEDED TO PREVENT MOTORISTS FROM ENTERING SPACE BETWEEN THE APPLICATION AND PROTECTION VEHICLE. DISTANCE CAN BE LENGTHENED TO ACCOMMODATE SIGHT DISTANCE NEEDS.
- (8) ROUND UP MILEAGE TO NEXT WHOLE MILE. WORK ZONE SHOULD NOT EXCEED FIVE (5) MILES IN LENGTH.
- (9) RADIO COMMUNICATION BETWEEN VEHICLES IS REQUIRED.
- (10) USE OF A LIGHT BAR ON ALL VEHICLES IS PREFERRED, BUT A ROTATING BEACON MAY BE USED INSTEAD.
- (11) IF WORK IS PERFORMED AT NIGHT, THE WORK AREA MUST BE ILLUMINATED WITH MACHINE AND/OR TOWER LIGHTS AS APPROVED BY THE ENGINEER.
- (12) ALL TRAFFIC CONTROL DEVICES WILL BE CONSIDERED INCIDENTAL TO THE PAY ITEMS FOR PAVEMENT MARKING AND MARKERS.

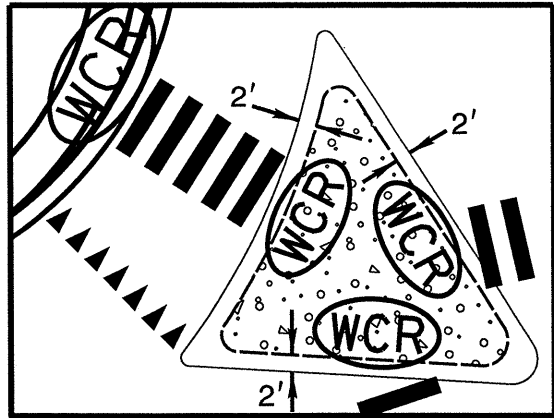
**LEGEND**

-  PORTABLE SIGN. SIGNS MUST BE NCHRP-350 AND NCDOT APPROVED.
-  DIRECTION OF TRAFFIC FLOW
-  APPLICATION VEHICLE WITH LIGHT BAR
-  PROTECTION VEHICLE WITH TRUCK MOUNTED IMPACT ATTENUATOR (TMIA) AND LIGHT BAR (SEE ROADWAY STANDARD NO. 1165.01). TMIA MUST BE NCHRP-350 TEST LEVEL 3 (60+MPH) APPROVED.
-  ADVANCE WARNING VEHICLE WITH TRUCK MOUNTED CHANGEABLE MESSAGE SIGN (CMS) AND LIGHT BAR. MESSAGE SIGN LETTER HEIGHT SHOULD BE A MINIMUM OF 10 INCHES.
-  FLASHING ARROW PANEL, TYPE "B" (60"X30" MIN.), APPROPRIATE DIRECTION INDICATED
-  CHANGEABLE MESSAGE SIGN

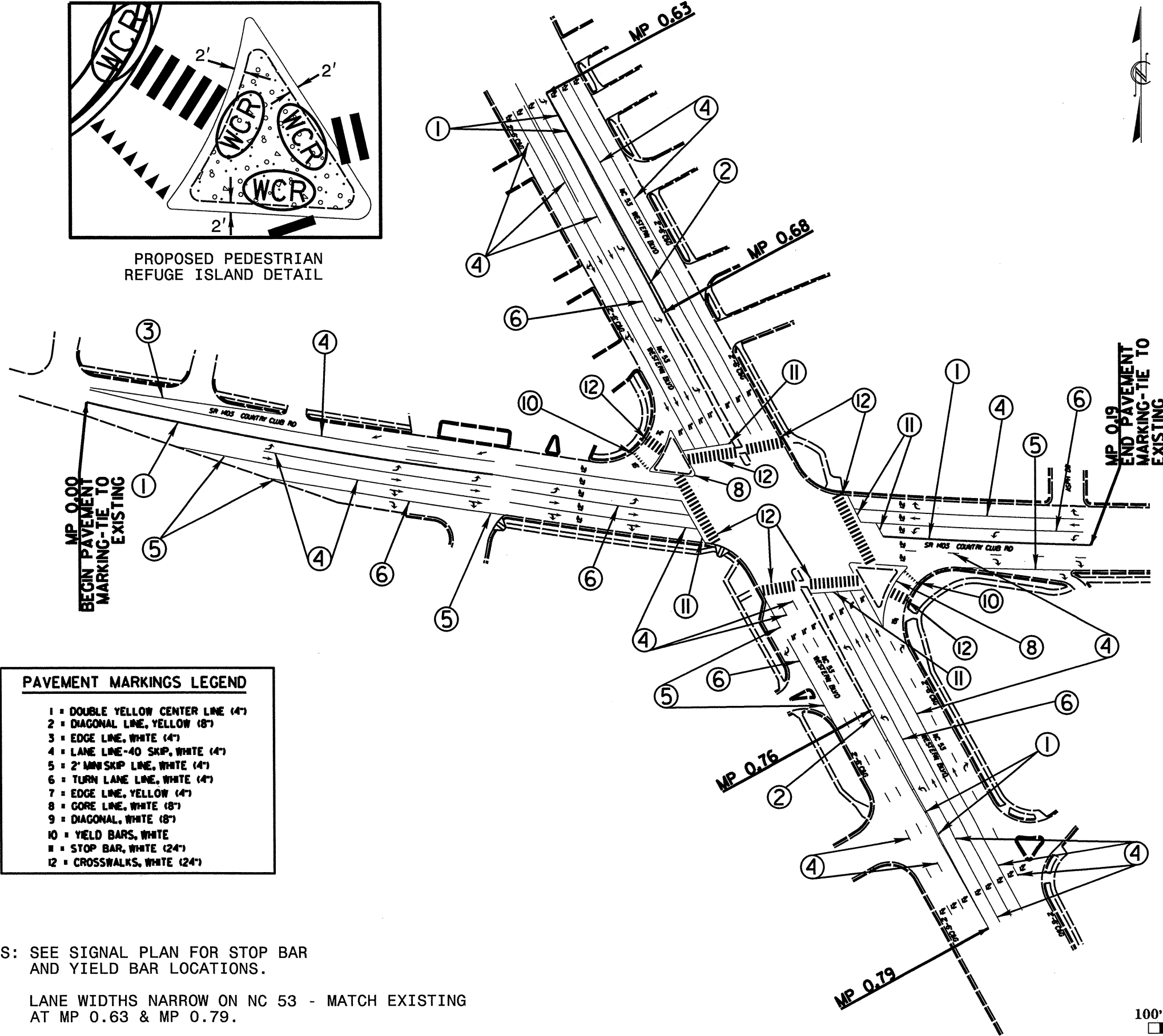


**MOVING OPERATION CARAVAN**  
 (OPERATIONS TRAVELING 3 MPH OR FASTER)  
 PLACING PAVEMENT MARKING OR MARKERS  
 ON NON-INTERSTATE MULTILANE DIVIDED ROADWAYS

**DRAWING NUMBER 7**  
 IMPLEMENTATION DATE: 07/01/97  
 REVISED: 11/03/04



PROPOSED PEDESTRIAN  
REFUGE ISLAND DETAIL

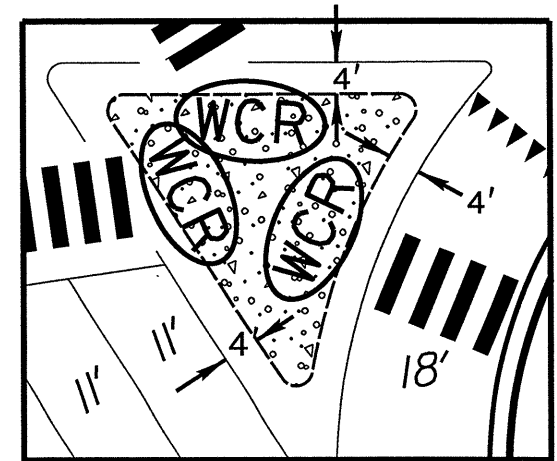


MP 0.99  
END PAVEMENT  
MARKING-TIE TO  
EXISTING

MP 0.00  
BEGIN PAVEMENT  
MARKING-TIE TO  
EXISTING

**PAVEMENT MARKINGS LEGEND**

- 1 = DOUBLE YELLOW CENTER LINE (4')
- 2 = DIAGONAL LINE, YELLOW (8')
- 3 = EDGE LINE, WHITE (4')
- 4 = LANE LINE-40 SKIP, WHITE (4')
- 5 = 2' MIN SKIP LINE, WHITE (4')
- 6 = TURN LANE LINE, WHITE (4')
- 7 = EDGE LINE, YELLOW (4')
- 8 = CORE LINE, WHITE (8')
- 9 = DIAGONAL, WHITE (8')
- 10 = YIELD BARS, WHITE
- 11 = STOP BAR, WHITE (24')
- 12 = CROSSWALKS, WHITE (24')



PROPOSED PEDESTRIAN  
REFUGE ISLAND DETAIL

NOTES: SEE SIGNAL PLAN FOR STOP BAR  
AND YIELD BAR LOCATIONS.

LANE WIDTHS NARROW ON NC 53 - MATCH EXISTING  
AT MP 0.63 & MP 0.79.

Scale 1" = 100'



REVISIONS

8/17/95

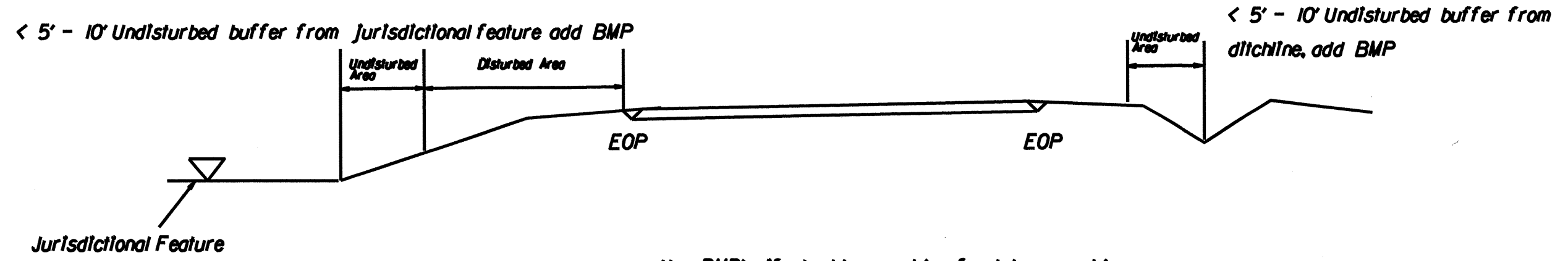
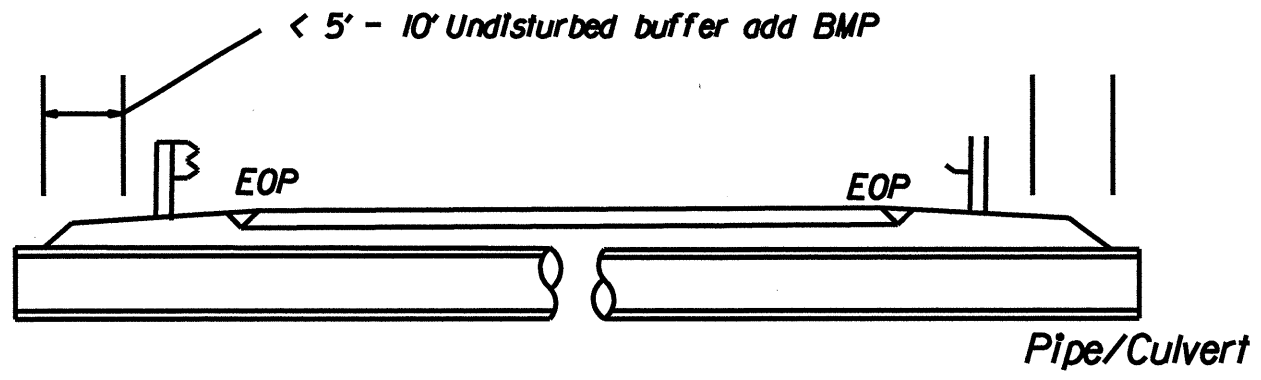
\*\*\*\*\*SYTIME\*\*\*\*\*

PROJECT REFERENCE NO.	SHEET NO.
W-5147A, 3CR.10671.99, ETC.	EC-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

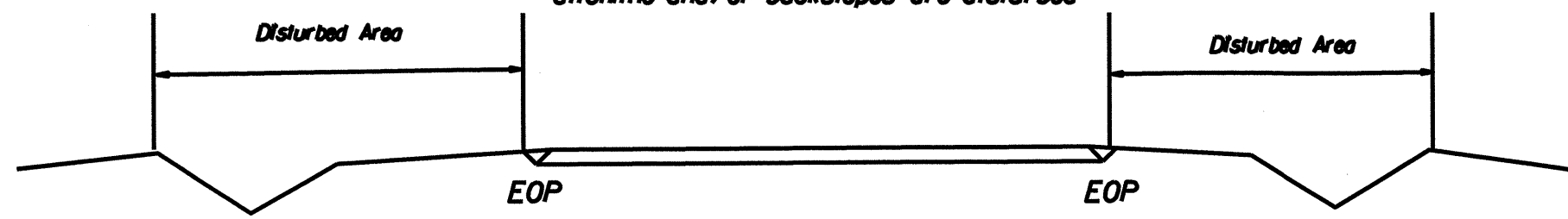
**NOTES:** Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

BMP Options: Wattle or Silt Fence

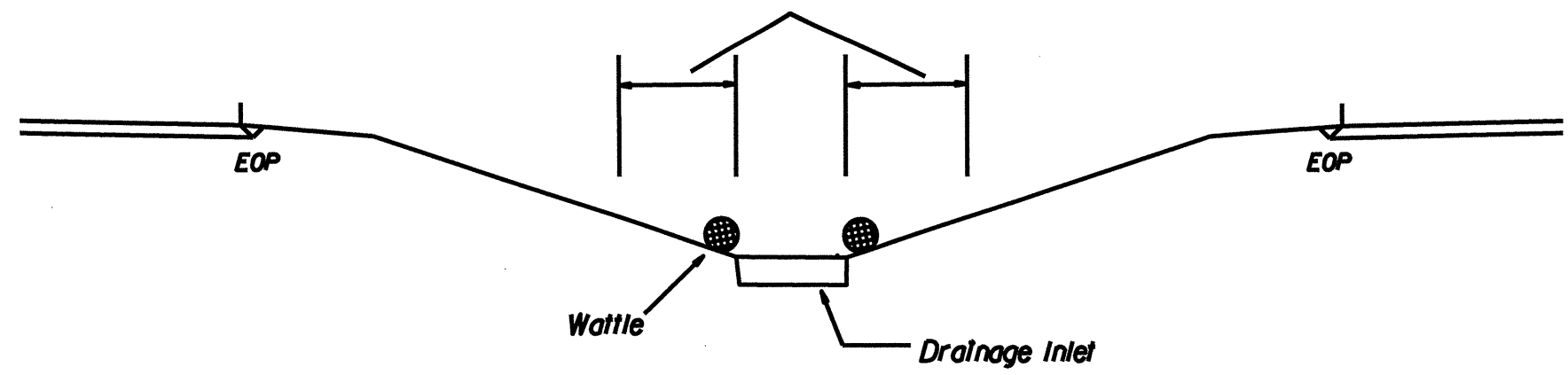
# EROSION CONTROL DETAIL



Use BMP's if shoulders and/or front slopes and/or ditchline and/or backslopes are disturbed



< 5' - 10' Undisturbed buffer from Inlet, add wattle



NOT TO SCALE

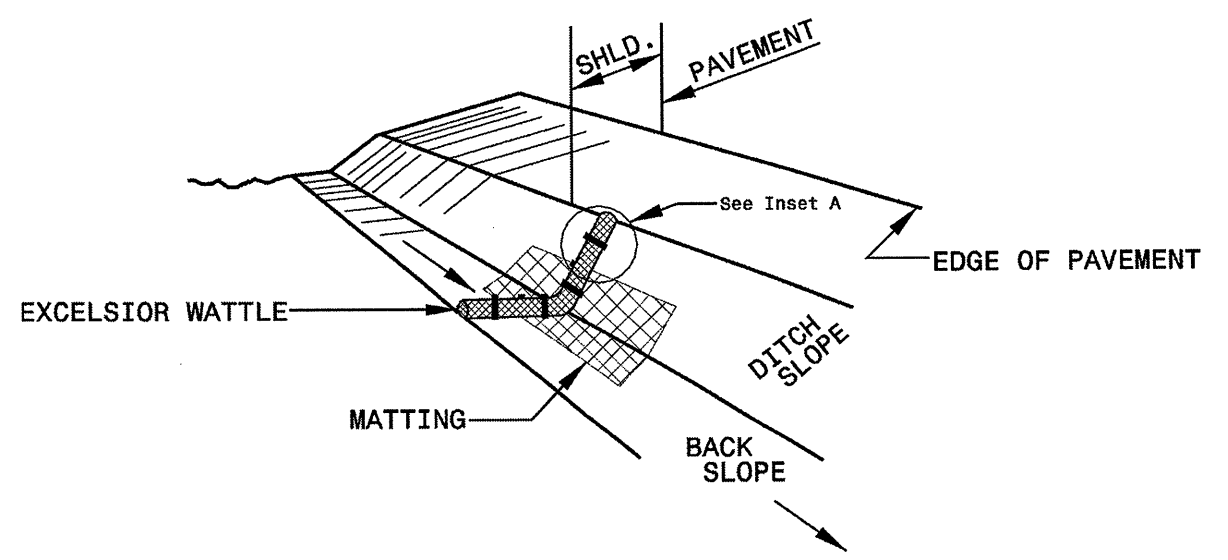
REVISIONS

\*\*\*\*\* SYSTEMS DESIGN \*\*\*\*\*

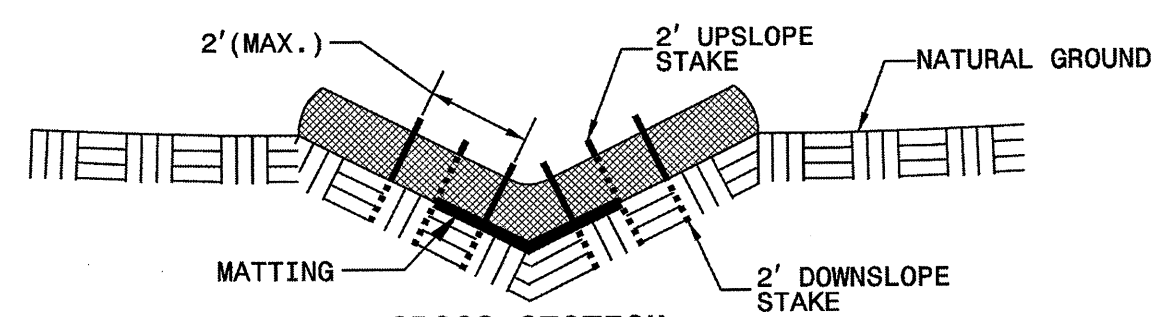
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

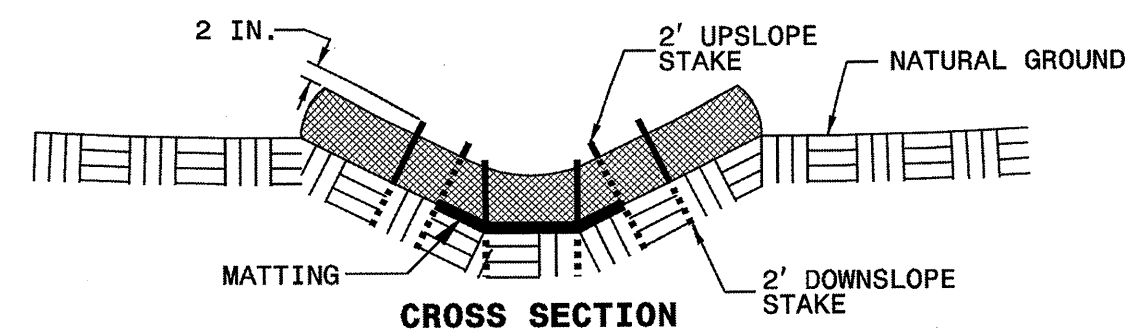
# WATTLE DETAIL



**ISOMETRIC VIEW**

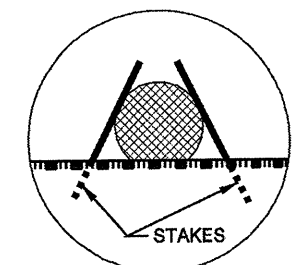


**CROSS SECTION VEE DITCH**

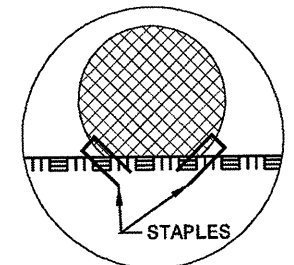


**CROSS SECTION TRAPEZOIDAL DITCH**

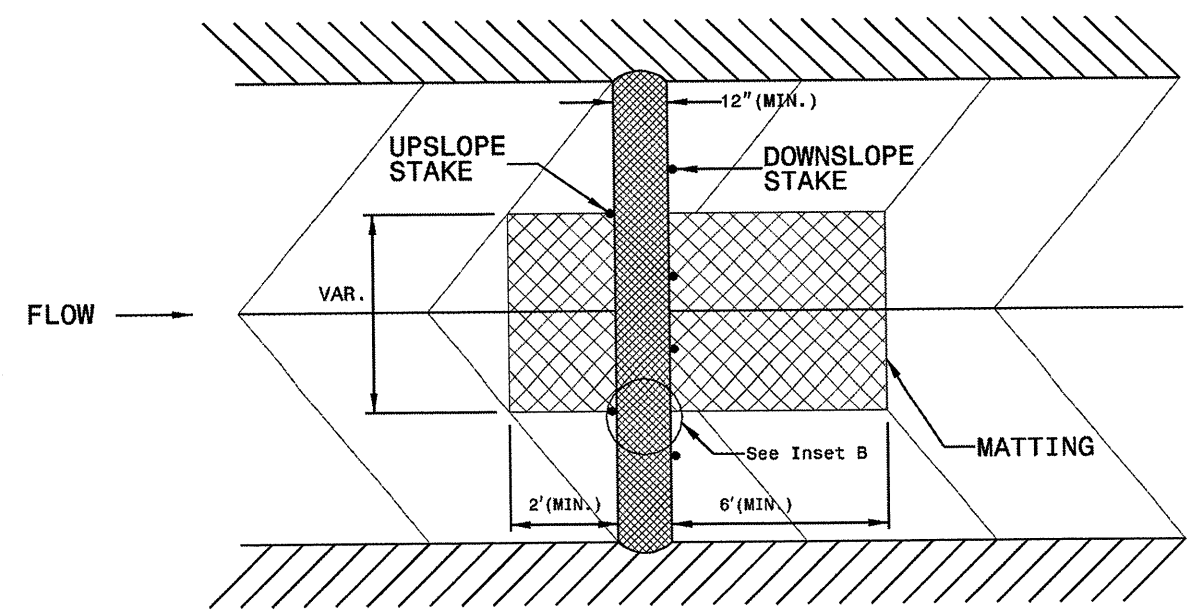
- NOTES:
- USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.
  - USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
  - ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
  - INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
  - PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
  - INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
  - INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



**INSET A**



**INSET B**



**TOP VIEW**



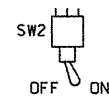


EDI MODEL 2010ECL CONFLICT MONITOR

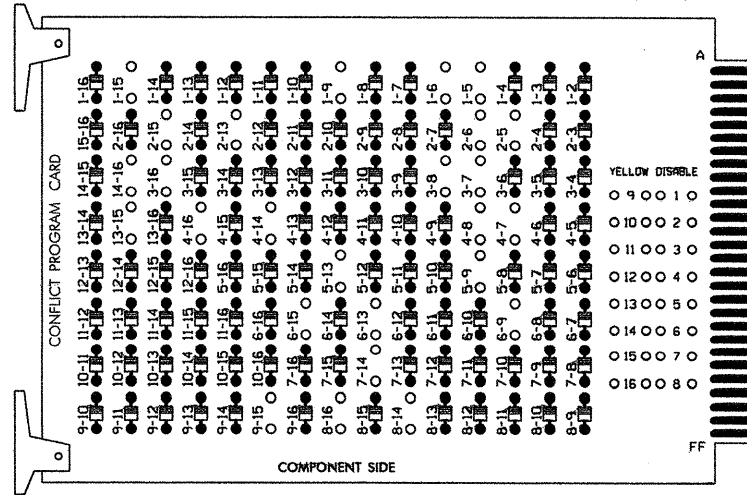
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

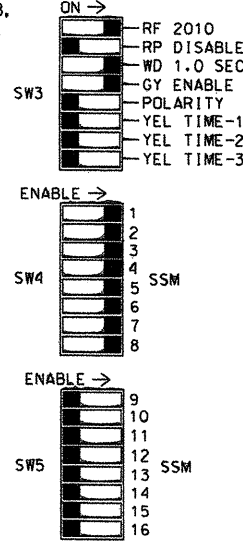
WD ENABLE



REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-15, 2-5, 2-6, 2-13, 2-15, 3-7, 3-8, 3-16, 4-7, 4-8, 4-14, 4-16, 5-9, 5-13, 6-9, 6-13, 6-15, 7-14, 8-14, 8-16, 9-15, 13-15, and 14-16.



OPTIONS



REMOVE JUMPERS AS SHOWN

● = DENOTES POSITION OF SWITCH

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the Jacksonville Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L  
 CABINET.....McCAIN/CONTROL TECHNOLOGIES (DWG.NO.9500-332-NCDOT)  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S2,S2P,S3,S4,S4P,S5,S6,S6P,S7,S8,S8P  
 PHASES USED.....1,2,2 PED,3,4,4 PED,5,6,6 PED,7,8,8 PED  
 OVERLAP 'A'.....NOT USED  
 OVERLAP 'B'.....NOT USED  
 OVERLAP 'C'.....NOT USED  
 OVERLAP 'D'.....NOT USED  
 OVERLAP 'E'.....Ø 1

\* USED FOR PEDS. AND OUTPUT TO OVERLAP 'E'

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11	21,22	P21, P22	31	41,42	P41, P42	51	61,62	P61, P62	71	81,82	P81, P82
RED		128			101			134				107
YELLOW		129	**		102	**		135				108
GREEN		130			103			136				109
RED ARROW	125			116			131					122
YELLOW ARROW	126			117			105 132					123
GREEN ARROW	127			114 118			133					124
				113			104					110
				115			106					112

NU = Not Used

\*\* Remove existing manufacturer-installed Load Resistors from Ped Yellow field terminals.

# Install Load Resistors on 2ped & 4ped 'Walk' field terminals 115 & 106. (See 'Load Resistor Installation Detail' on sheet 2).

IMPORTANT! If present, remove load resistors from 2-Ped Walk and 4-Ped Walk field terminals.

\* See sheet 2 of 3 for Details & Programming regarding re-assignment & wiring of head 82 to Overlap 'E'.

INPUT FILE POSITION LAYOUT

(from view)

FILE U "I"	1 ø 1 1A	2 ø 2/sys 2A,SD1	3 ø 2/sys 2C,SD3	4 ø 3	5 ø 4	6 ø 3	7 ø 4	8 ø 4	9 ø 1	10 ø 1	11 ø 1	12 ø 2 PED ISOLATOR	13 ø 6 PED ISOLATOR	14 FS
FILE U "J"	5A	6A	6C	7A	8A							SEE NOTE BELOW *		

EX. : 1A, 2A, ETC. = LOOP NO.'S

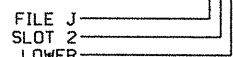
FS = FLASH SENSE  
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	11U	56	18	1	1	Y	Y			
2A,SD1	TB2-5,6	12U	39	1	2	2/SYS	Y	Y			
2B,SD2	TB2-7,8	12L	43	5	12	2/SYS	Y	Y			
2C,SD3	TB2-9,10	13U	63	25	32	2/SYS	Y	Y			
3A	TB4-5,6	15U	58	20	3	3	Y	Y			3
4A	TB4-9,10	16U	41	3	4	4	Y	Y			
4B	TB4-11,12	16L	45	7	14	4	Y	Y			3
1B	TB6-9,10	19U	60	22	11	1	Y	Y			15
5A	TB3-1,2	11U	55	17	5	5	Y	Y			
6A	TB3-5,6	12U	40	2	6	6	Y	Y			
6B	TB3-7,8	12L	44	6	16	6	Y	Y			
6C	TB3-9,10	13U	64	26	36	6	Y	Y			
7A	TB5-5,6	15U	57	19	7	7	Y	Y			3
8A	TB5-9,10	16U	42	4	8	8	Y	Y			
PED PUSH BUTTONS											
P21,P22	TB8-4,6	112U	67	29		2 PED					
P41,P42	TB8-5,6	112L	69	31		4 PED					
P61,P62	TB8-7,9	113U	68	30		6 PED					
P81,P82	TB8-8,9	113L	70	32		8 PED					

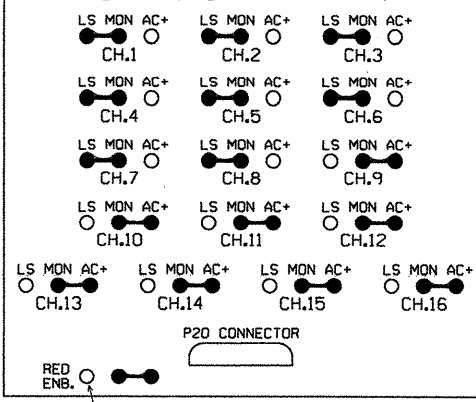
NOTE:  
INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

INPUT FILE POSITION LEGEND: J2L



RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



OPTICAL DETECTOR INTERFACE CARD (2-CHANNEL)

OPTICAL DETECTOR TYPICAL WIRE LIST

COLOR	FUNCTION
blue	AC-
bare	AC-
orange	24V DC
yellow	Input File

EVP3: PRE3 - J12-D  
EVP5: PRE5 - J12-J

\* NOTE: WIRE OPTICAL DETECTORS TO INPUT FILE AS INDICATED

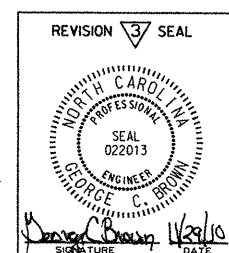
COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0169  
DESIGNED: October 2010  
SEALED: 10/26/10  
REVISED: N/A

SEE SHEET 2 FOR DETAILS & PROGRAMMING REGARDING RE-ASSIGNMENT & WIRING OF HEAD 82 TO OVERLAP 'E'  
SEE SHEET 3 FOR EMERGENCY VEHICLE PREEMPTION CONTROLLER PROGRAMMING

Electrical Detail - Sheet 1 of 3



ELECTRICAL AND PROGRAMMING DETAILS FOR:  
 Prepared in the Office of:  
 SR 1470 (Western Boulevard) at SR 1403 (Country Club Dr)  
 Division 03 Onslow County Jacksonville  
 PLAN DATE: May 2007 REVIEWED BY: T. Joyce  
 PREPARED BY: A. Wasiewicz REVIEWED BY:  
 REVISIONS: [Table with columns REVISIONS, INIT., DATE]  
 REVISION 1: REVISE EXIST. THRU-RT. LANE TO AN EXCLUS-IVE LEFT TURN LANE ON THE APPROACH. REVISED PER S&P SIGNAL UPGRAD TO ADD EV. PREEMPTION. PER 12-2-08 ADD'D. REVISED: NICK GREEN 08/29/09 CBR [Signature]

SEAL  
 Not a certified document as to the Original Documents but Only as to Revision 3 - This document originally Issued, Revised and sealed by George C. Brown, #022013 on 5/31/07  
 This document is only certified as to Revision 3.  
 SIGNATURE DATE

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 This document is only certified as to Revision 3.  
 SIGNATURE DATE

### OVERLAP 'E' OUTPUT ASSIGNMENT PROGRAMMING DETAIL (program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #33 (PIN 35) IS REACHED.

```

PAGE:1 C1 PIN:35 NOT ENABLED
OUTPUT ASSIGNMENT #.....33
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

#### VEHICLE OVERLAP 'E' GREEN - L/S S2P

THE OUTPUT IS 'NOT ENABLED' BY DEFAULT, THIS 'Y' WILL REMAIN UNTIL THE OUTPUT IS CHANGED.

ENTER A 'Y' FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:35 NOT ENABLED
SELECT VEHICLE OVERLAP (A=1, P=16)...5
SELECT COLOR (0=RED,1=YEL,2=GRN)...2
    
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS 'ENT' AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:35 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....33
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

PRESS '+' KEY TWICE FOR OUTPUT ASSIGNMENT 35 (PIN 37)

```

PAGE:1 C1 PIN:37 NOT ENABLED
OUTPUT ASSIGNMENT #.....35
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

#### VEHICLE OVERLAP 'E' YELLOW - L/S S4P

THE OUTPUT IS 'NOT ENABLED' BY DEFAULT, THIS 'Y' WILL REMAIN UNTIL THE OUTPUT IS CHANGED.

ENTER A 'Y' FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:37 NOT ENABLED
SELECT VEHICLE OVERLAP (A=1, P=16)...5
SELECT COLOR (0=RED,1=YEL,2=GRN)...1
    
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS 'ENT' AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:37 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....35
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

PROGRAMMING COMPLETE

TAKE EXTREME CARE THAT NO CHANGES ARE MADE TO 'C1 PIN:' FIELDS

### OVERLAP PROGRAMMING DETAIL (program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS). PRESS '+' UNTIL OVERLAP 'E' IS REACHED.

```

PAGE 1: VEHICLE OVERLAP 'E' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW - GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0
    
```

OVERLAP PROGRAMMING COMPLETE

### OVERLAP 'E' (SIGNAL HEAD 82) WIRING & PROGRAMMING INSTRUCTIONS

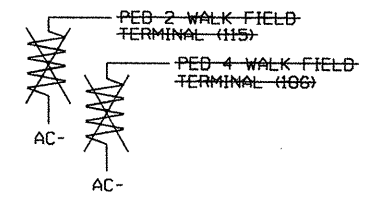
1. Install load switch in each of slots 'S2P' and 'S4P'. (See 'Signal Head Hook-up Chart' on sheet 1).
  2. Remove existing factory-installed load resistors from Ped Yellow field terminals 105 and 114.
  3. Install load resistors on 2-Ped Walk & 4-Ped Walk field terminals 115 and 106. (See 'Load Resistor Installation Detail' this sheet).
- IMPORTANT!** If present, remove load resistors from 2-Ped Walk and 4-Ped Walk field terminals.
4. Switch the 'GY ENABLE' option switch on the 2010ECL Conflict Monitor to the 'ON' position.
  5. Ensure that the white 'Molex' plug located on the inside of the rear panel is configured so as to make connections as follows:
 

CMU-13	-----	2PY
CMU-16	-----	4PY
  6. Program Output Assignments and Overlap 'E' as shown in details this sheet.
  7. Program PRE3 (EVP 3) to omit Overlap 'E'. (See 'Emergency Vehicle Preemption Programming Detail' on sheet 3).

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0169  
DESIGNED: October 2010  
SEALED: 10/26/10  
REVISED: N/A

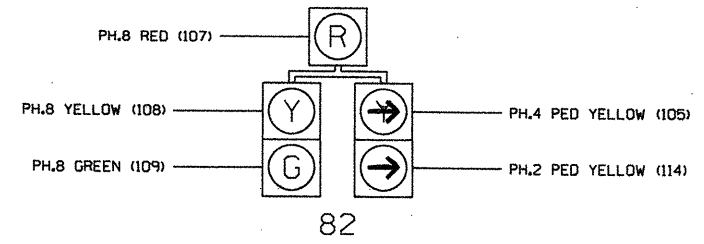
### LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES	
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



NOTE: See note 3 under 'Overlap E (Signal Head 82) Wiring & Programming Instructions' this sheet.

### OVERLAP 'E' (SIGNAL HEAD 82) WIRING DETAIL



NOTE: See 'Overlap E (Signal Head 82) Wiring & Programming Instructions' notes on this sheet.

Electrical Detail - Sheet 2 of 3

REVISION 3 SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN ENGINEER	ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Office of: THE STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SIGNAL MANAGEMENT SECTION 759 N. Greenfield Place, Garner, NC 27529	SR 1470 (Western Boulevard) at SR 1403 (Country Club Dr)		SEAL Not a certified document as to the Original Documents but Only as to Revision 3 - This document originally Issued, Revised and sealed by George C. Brown, #022013 on 5/31/07 This document is only certified as to Revision 3.
		Division 03 Onslow County Jacksonville	PLAN DATE: May 2007 REVIEWED BY: T. Joyce	

15-MOV-2010-13:25 Start/Stop/Start Signal/Control/Outputs/10/103\_sml\_ele\_xxx.dgn

**EMERGENCY VEHICLE PREEMPTION  
PROGRAMMING DETAIL**

(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press the 'Next' key 2-times to advance to Preempt 3:

PRE3 (EVP 3):

PREEMPTION #3	SETTINGS (NEXT:1-10)
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0* 0.0*	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	

EXIT CALLS	OPTIONS
PRIORITY (Y/N TO SELECT) .....	MED
DELAY TIMER (0-255 SEC) .....	0
MIN GREEN BEFORE PRE (0= DEFAULT)...	1
PED CLEAR BEFORE PRE (0= DEFAULT)...	0
YELLOW CLEAR BEFORE PRE (0= DEFAULT)...	0.0
RED CLEAR BEFORE PRE (0= DEFAULT)...	0.0
DWELL MIN TIMER (0-255 SEC) .....	12
DWELL MAX TIMER (0=OFF,1-255MIN) .....	0
DWELL HOLD-OVER TIMER (0-255) .....	0
LATCH CALL? .....	Y
LINK TO NEXT PREEMPT? .....	N
ENABLE BACKUP PROTECTION? .....	N
HOLD CLEAR 1 PHASES DURING DELAY? .....	N
FAST GREEN FLASH DWELL PHASES? .....	N
PED CLEARANCE THROUGH YELLOW? .....	N
INHIBIT OVERLAP GREEN EXTENSION? .....	N
SERVICE DURING SOFTWARE FLASH? .....	N
REST IN RED DURING DWELL INTERVAL? ..	N
FLASH DWELL INTERVAL? .....	N
ALLOW PEDS IN DWELL INTERVAL? .....	N
RE-TIME DWELL INTERVAL? .....	N
OVERLAPS: .....	ABCDEFGHIJKLMNPO
DWELL INT FLASH YELLOW	
OMIT OVERLAPS: .....	X

! NOTICE --->

PRESS 'NEXT' 2-TIMES

PRE5 (EVP 5):

PREEMPTION #5	SETTINGS (NEXT:1-10)
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0* 0.0*	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	

EXIT CALLS	OPTIONS
PRIORITY (Y/N TO SELECT) .....	MED
DELAY TIMER (0-255 SEC) .....	0
MIN GREEN BEFORE PRE (0= DEFAULT)...	1
PED CLEAR BEFORE PRE (0= DEFAULT)...	0
YELLOW CLEAR BEFORE PRE (0= DEFAULT)...	0.0
RED CLEAR BEFORE PRE (0= DEFAULT)...	0.0
DWELL MIN TIMER (0-255 SEC) .....	12
DWELL MAX TIMER (0=OFF,1-255MIN) .....	0
DWELL HOLD-OVER TIMER (0-255) .....	0
LATCH CALL? .....	Y
LINK TO NEXT PREEMPT? .....	N
ENABLE BACKUP PROTECTION? .....	N
HOLD CLEAR 1 PHASES DURING DELAY? .....	N
FAST GREEN FLASH DWELL PHASES? .....	N
PED CLEARANCE THROUGH YELLOW? .....	N
INHIBIT OVERLAP GREEN EXTENSION? .....	N
SERVICE DURING SOFTWARE FLASH? .....	N
REST IN RED DURING DWELL INTERVAL? ..	N
FLASH DWELL INTERVAL? .....	N
ALLOW PEDS IN DWELL INTERVAL? .....	N
RE-TIME DWELL INTERVAL? .....	N
OVERLAPS: .....	ABCDEFGHIJKLMNPO
DWELL INT FLASH YELLOW	
OMIT OVERLAPS: .....	

PROGRAMMING COMPLETE

\* TIME DEFAULTS TO TIME USED BY PHASE DURING NORMAL OPERATION

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0169  
DESIGNED: October 2010  
SEALED: 10/26/10  
REVISED: N/A

15-NOV-2010 13:25  
C:\Users\jacob\Documents\Signal\wrt\for\opus\sig\ManMcrms\trng\030169\_sml.e\l\_sxxx.dgn  
Sheet 3 of 3

	Electrical and Programming Details For:		SR 1470 (Western Boulevard) at SR 1403 (Country Club Dr)	Division 03 Onslow County Jacksonville	PLAN DATE: May 2007 REVIEWED BY: T. Joyce
	Prepared in the Office of: 				
REVISIONS			INIT.	DATE	This document is only certified as to Revision 3.
REVISE EXIST. THRU-RT. LANE TO AN EXCLUS- IVE RT. TURN LANE ON THE WB APPROACH REVISED PER SIG SIGNAL UPGRADE TO ADD EV PREEMPTION. PER 12-3-08 MH ADDED PEDS CHANGED PREEMT AND L205 CHANGE REVISED NOTES QUESY 07/27/10			GCB	5/31/07	
SIGNATURE:		DATE: 11/2/10	SIGNATURE:		DATE: 10/26/10

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

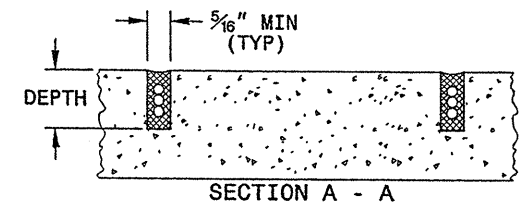
11-08

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**

SHEET 1 OF 3  
**1725D01**

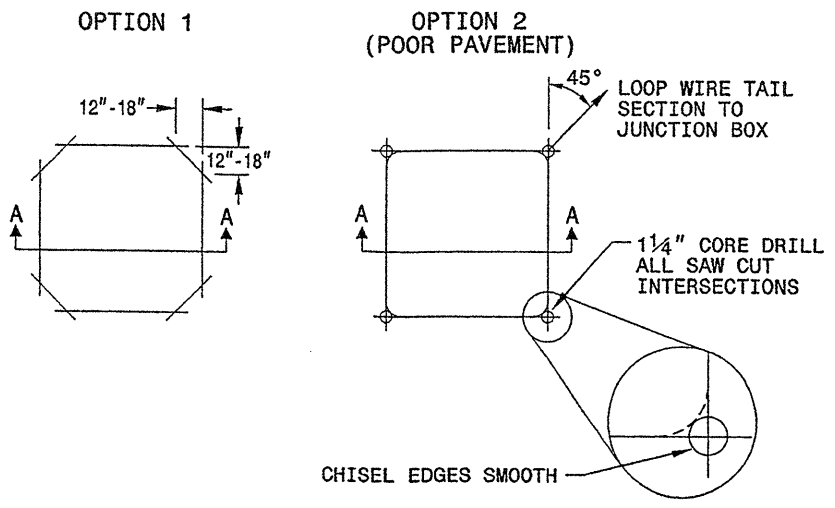
**SAW SLOT DEPTH CHART**

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	

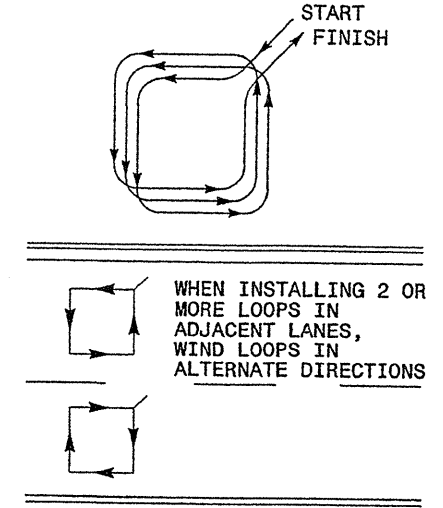


**CONVENTIONAL 4-SIDED LOOP**

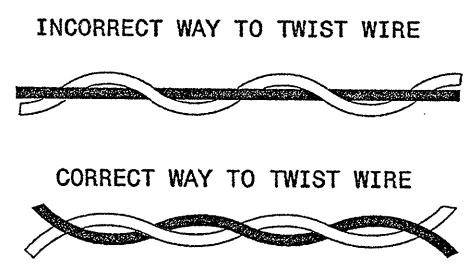
**SAW CUT OPTIONS**



**LOOP WINDING METHOD**



**LOOP WIRE TWISTING METHOD**

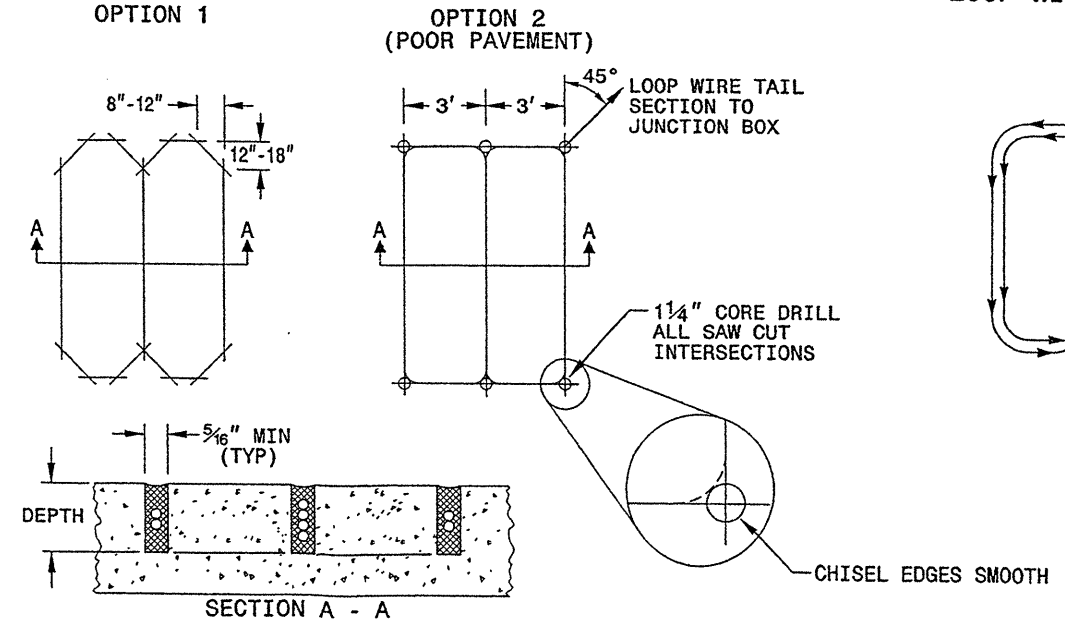


**NOTES**

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.

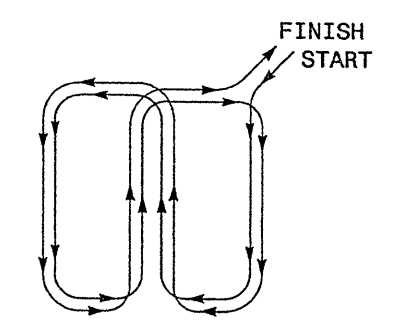
**QUADRUPOLE LOOP**

**SAW CUT OPTIONS**



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.

11-08

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**

SHEET 1 OF 3  
**1725D01**

See Plate for Title

Prepared in the Offices of:

750 N. Greenfield Parkway  
Garnet, NC 27529

SEAL

Milton Dean 11/24/08  
SIGNATURE DATE

24-Nov-08 09:52  
1725D01-standrd plate sheets\1725D01.mxd\2307.dgn  
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STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

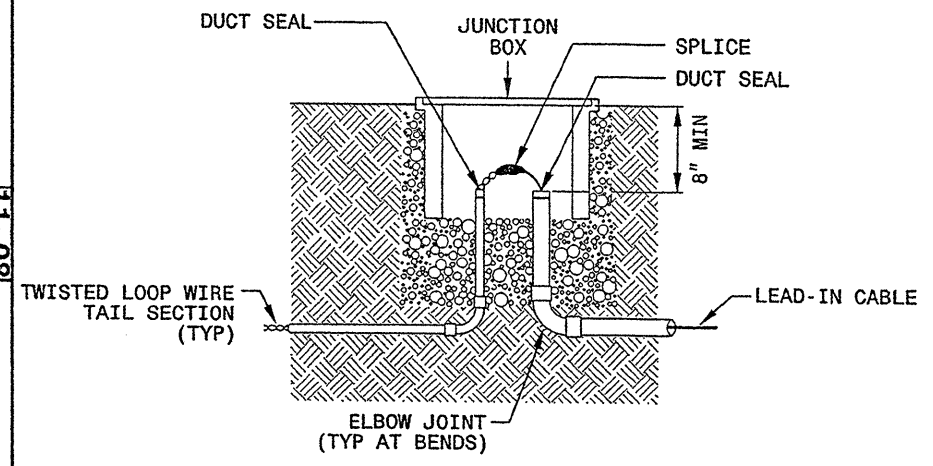
11-08

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

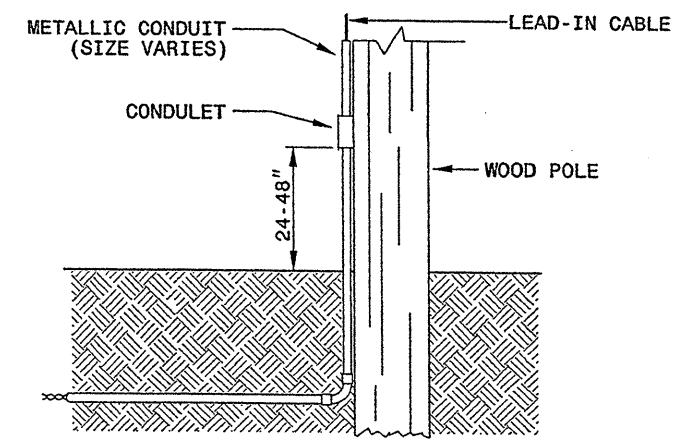
SHEET 2 OF 3  
**1725D01**

**LOOP WIRE SPLICE POINT DETAILS**

**LOOP WIRE AT JUNCTION BOX**



**LOOP WIRE AT POLE**

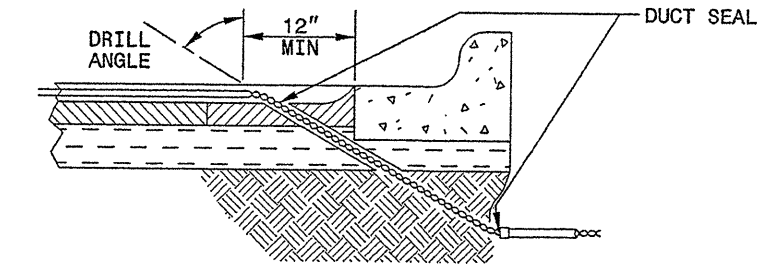


**NOTE**

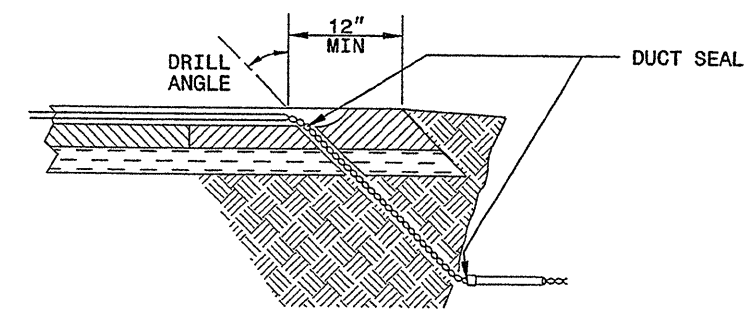
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

**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.

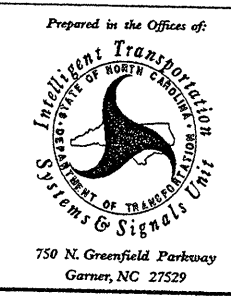
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DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

11-08

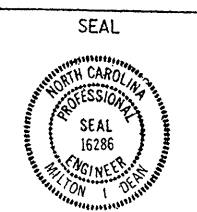
ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
LOOP WIRE DETAILS

SHEET 2 OF 3  
**1725D01**

See Plate for Title



750 N. Greenfield Parkway  
Garner, NC 27529



Milton S. Dean 11/24/08  
SIGNATURE DATE

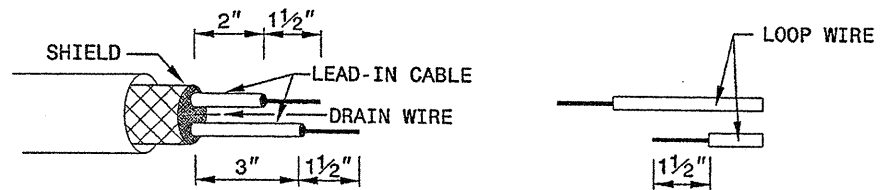
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DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

11-08

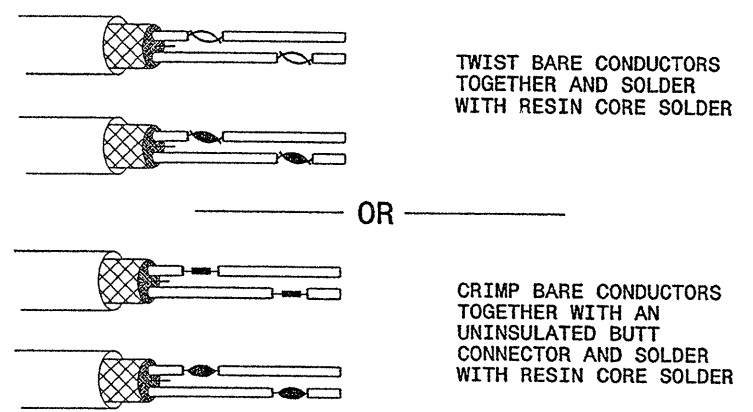
ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
SPlicing FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3  
**1725D01**

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

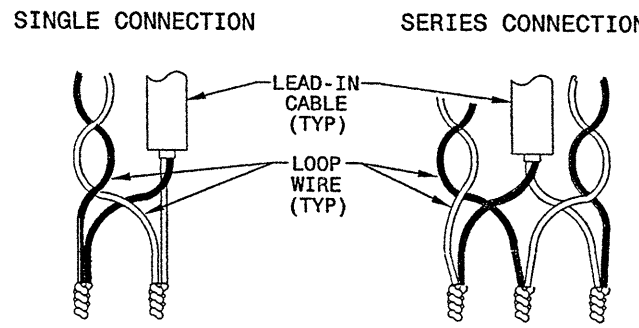


**STEP 2. CONNECT AND SOLDER**

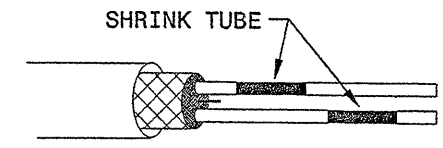


BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

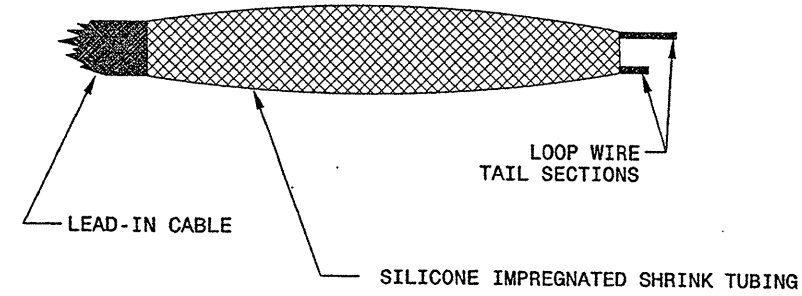
**LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS**



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



**STEP 4. ENVIRONMENTALLY PROTECT SPLICE**



STATE OF NORTH CAROLINA  
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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**

See Plate for Title

Prepared in the Offices of:

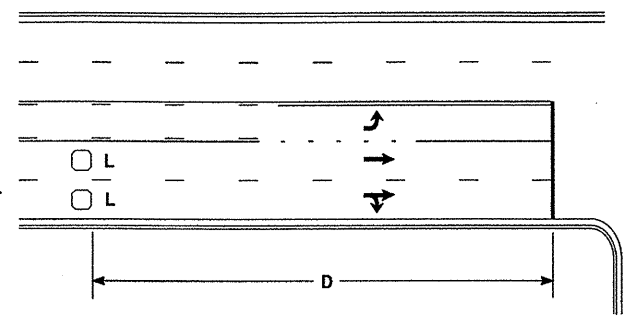
750 N. Greenfield Parkway  
Garner, NC 27529

SEAL

Milton I. Dean 11/24/08  
SIGNATURE      DATE

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

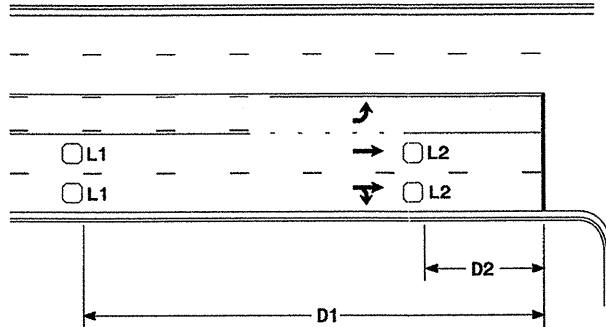


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

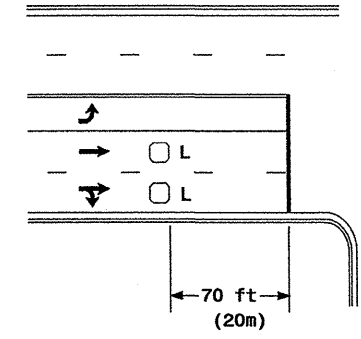


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

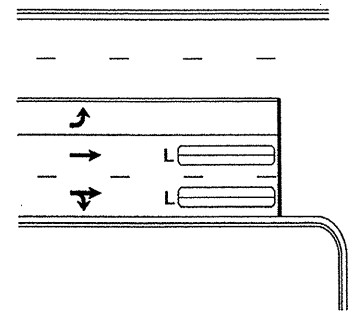
"Stretch" Operation

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



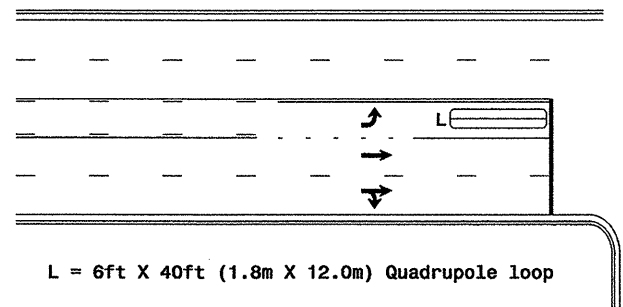
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



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

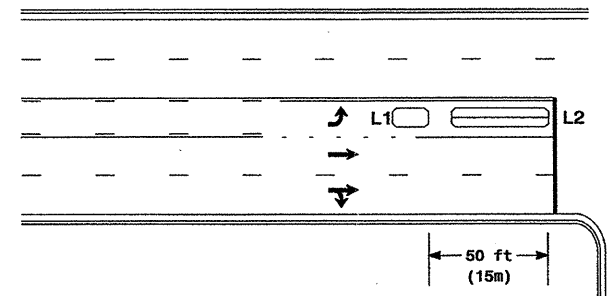
### Left Turn Lane Detection



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

Presence Loop Detection

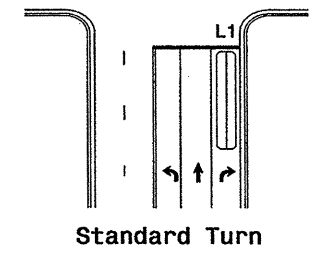
OR



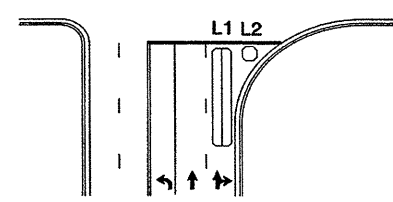
L1 = 6ft X 15ft (1.8m X 4.6m) Queue detector  
L2 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Queue Loop Detection

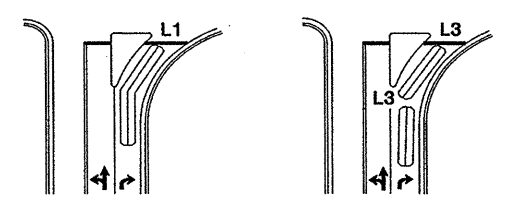
### Right Turn Lane Detection



Standard Turn



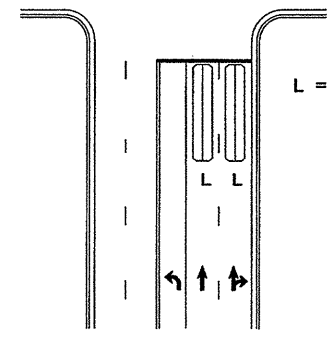
Wide Radius Turn



Channelized 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

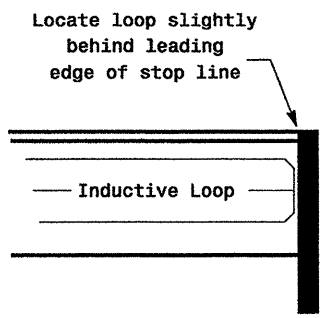
### Side Street Detection



L = 6ft X 40ft (1.8m X 12.0m)  
Quadrupole loop  
Wired to separate  
detectors/channels

Side Street Detection

### 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

#### Typical Loop Locations

PLAN DATE: June 2006 REVIEWED BY:

PREPARED BY: P. L. Alexander REVIEWED BY:

SCALE: N/A

REVISIONS: 

NO.	REVISIONS	INIT.	DATE
1	Revise pavement markings	PLA	12/1/06

SIGNATURE: *P. L. Alexander* DATE: 6/16/06

SIG. INVENTORY NO.

19-DEC-2006 14:28  
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