

MAP 2

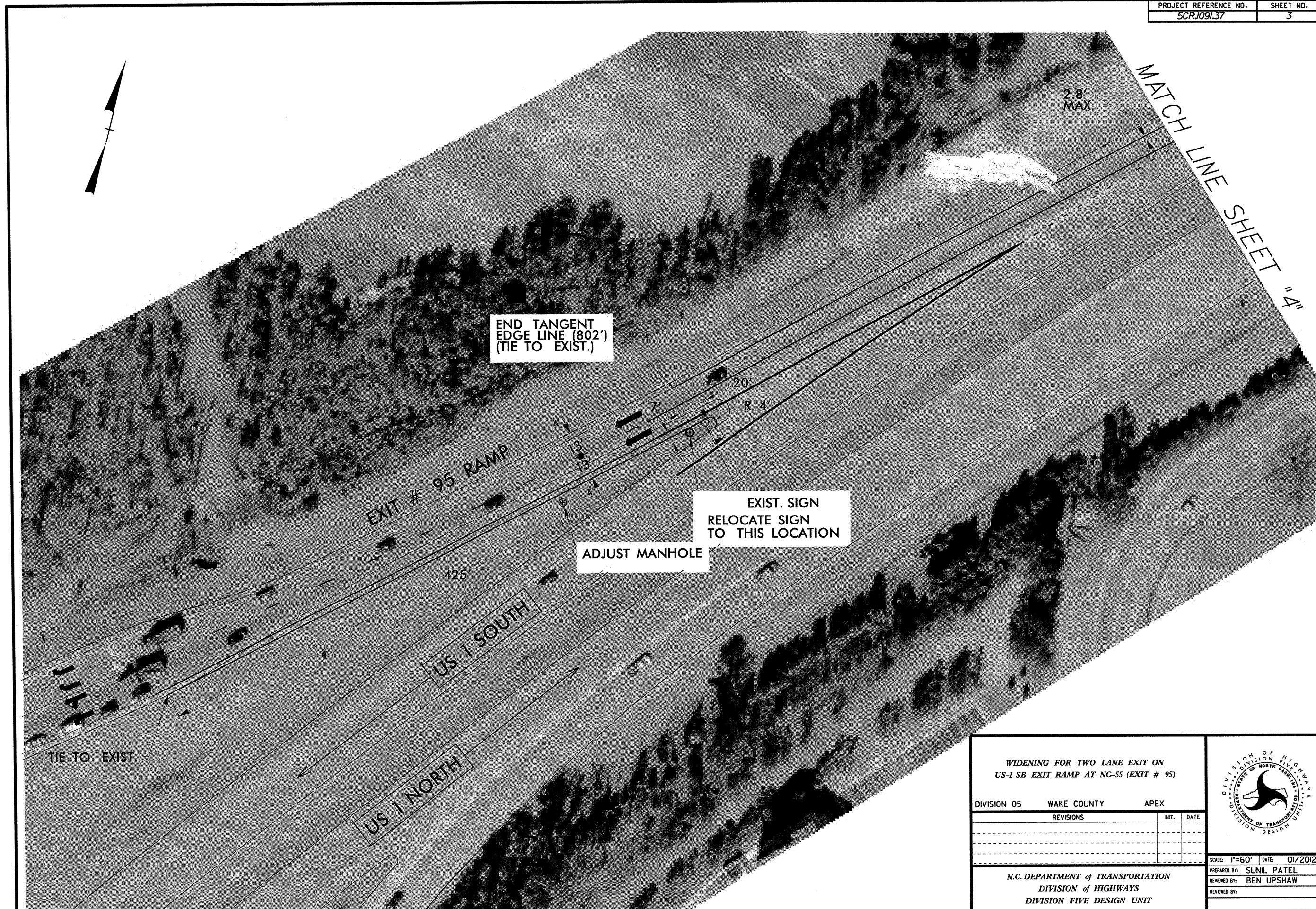
MAP 1

**see sheets 3&4
for detail on widening
in this area**

APEX
POP. 27,216

- 1. Winding Oak Way .25
- 2. Mossy Rock Way .04
- 3. Oak Branch Dr. .08
- 4. Branch Creek Way .07

SYSTEMS ENGINEERING
 CONSULTANTS
 10000 W. ...
 ...
 ...



WIDENING FOR TWO LANE EXIT ON US-1 SB EXIT RAMP AT NC-55 (EXIT # 95)			
DIVISION 05	WAKE COUNTY	APEX	
REVISIONS			INT. DATE
N.C. DEPARTMENT of TRANSPORTATION DIVISION of HIGHWAYS DIVISION FIVE DESIGN UNIT			SCALE: 1"=60' DATE: 01/2012 PREPARED BY: SUNIL PATEL REVIEWED BY: BEN UPSHAW REVIEWED BY:



MATCH LINE SHEET "3"

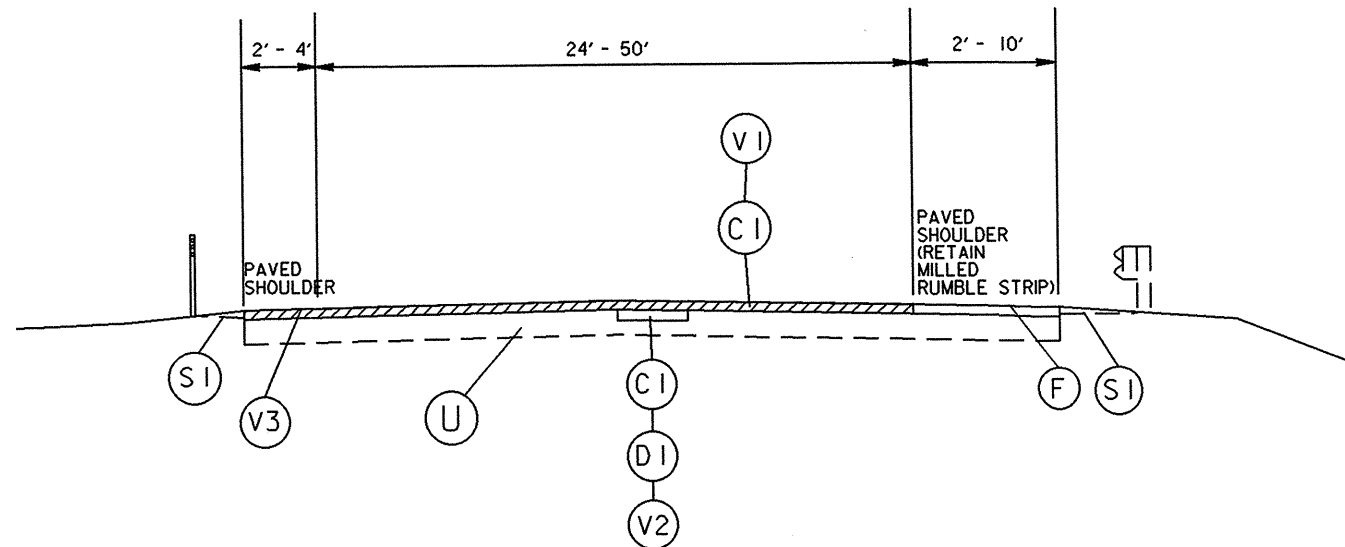
<p>WIDENING FOR TWO LANE EXIT ON US-1 SB EXIT RAMP AT NC-55 (EXIT # 95)</p>			
<p>DIVISION 05 WAKE COUNTY APEX</p>			
REVISIONS	INT.	DATE	<p>SCALE: 1"=60' DATE: 01/2012</p>
<p>N.C. DEPARTMENT of TRANSPORTATION DIVISION of HIGHWAYS DIVISION FIVE DESIGN UNIT</p>			<p>PREPARED BY: SUNIL PATEL REVIEWED BY: BEN UPSHAW REVIEWED BY: _____</p>

PAVEMENT SCHEDULE

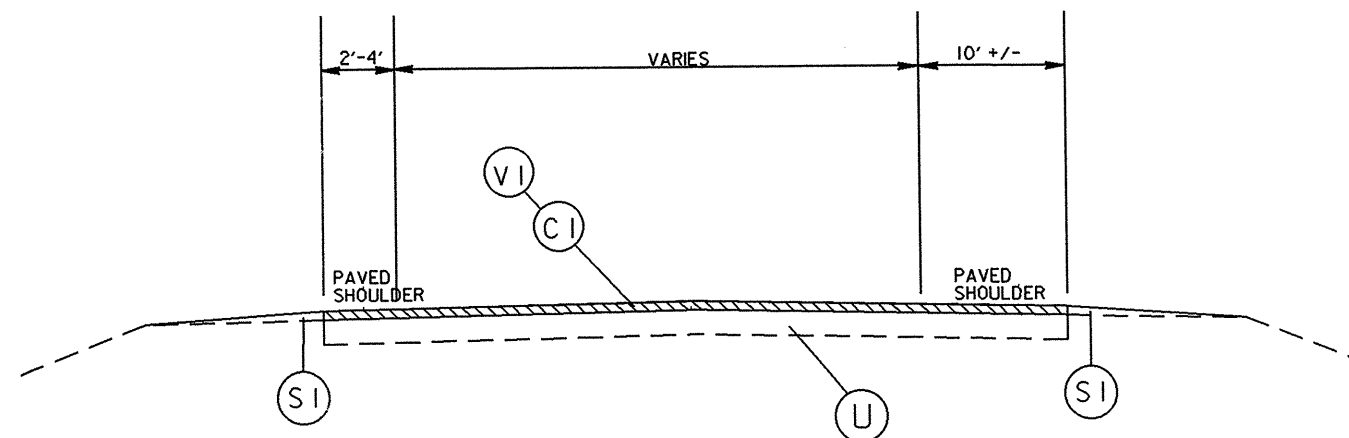
(C1)	PROP. APPROX. 1.5" ASPH. CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
(C2)	PROP. APPROX. 3" ASPH. CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD., IN EACH OF TWO LIFTS
(D1)*	PROP. APPROX. 4" ASPH. CONC. INTERMEDIATE COURSE, TYPE 119.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
(D2)	PROP. APPROX. 3" ASPH. CONC. INTERMEDIATE COURSE, TYPE 119.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
(E1)	PROP. APPROX. 5.5" ASPH. CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
(E2)	PROP. APPROX. 7" ASPH. CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD., IN EACH OF TWO LIFTS
(F)	PROPOSED FOG SEAL TO BE APPLIED TO THE EXISTING SHOULDER
(J1)	PROP. APPROX. 6" OF AGGREGATE BASE COURSE, AS DIRECTED BY THE ENGINEER
(J2)	PROP. INCIDENTAL STONE BASE, AS DIRECTED BY THE ENGINEER
(V1)	MILL 1.5" IN DEPTH
(V2)*	MILL 5.5" IN DEPTH, VARIOUS WIDTHS
(V3)	PROP. MILLED RUMBLE STRIPS
(U)	EXISTING PAVEMENT
(S1)	PROP. SHOULDER GRADING AS DIRECTED BY THE ENGINEER
(S2)	PROP. GRADING FOR RAMP WIDENING AS DIRECTED BY THE ENGINEER

* NOTE: 5.5" MILL/PATCH TO BE DONE PRIOR TO 1.5" MILL AND REPLACE 1.5" MILL AND REPLACE WILL REMOVE TOP 1.5" OF PATCH PAYMENT WILL BE MADE FOR BOTH OPERATIONS

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
5CR.1092 I.37	5	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION



TYPICAL SECTION NO. 1



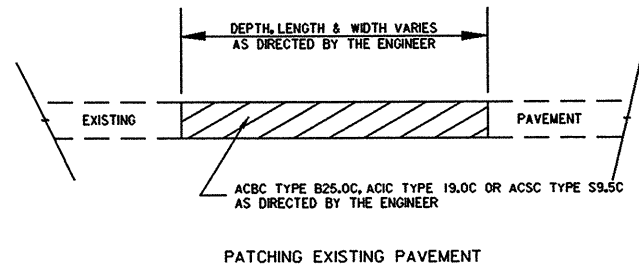
TYPICAL SECTION NO. 2

*CONTRACTOR SHALL USE THIS TYPICAL FOR RAMPS (EXCEPT AS NOTED)

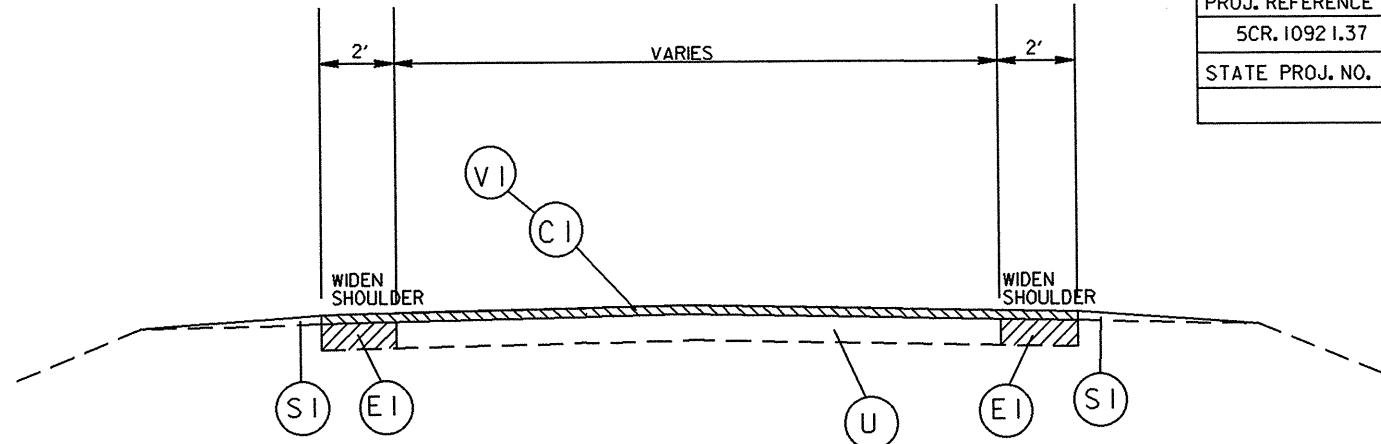
PAVEMENT SCHEDULE

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 1.5" MILL AND REPLACE WILL REMOVE TOP 1.5" OF PATCH
 PAYMENT WILL BE MADE FOR BOTH OPERATIONS

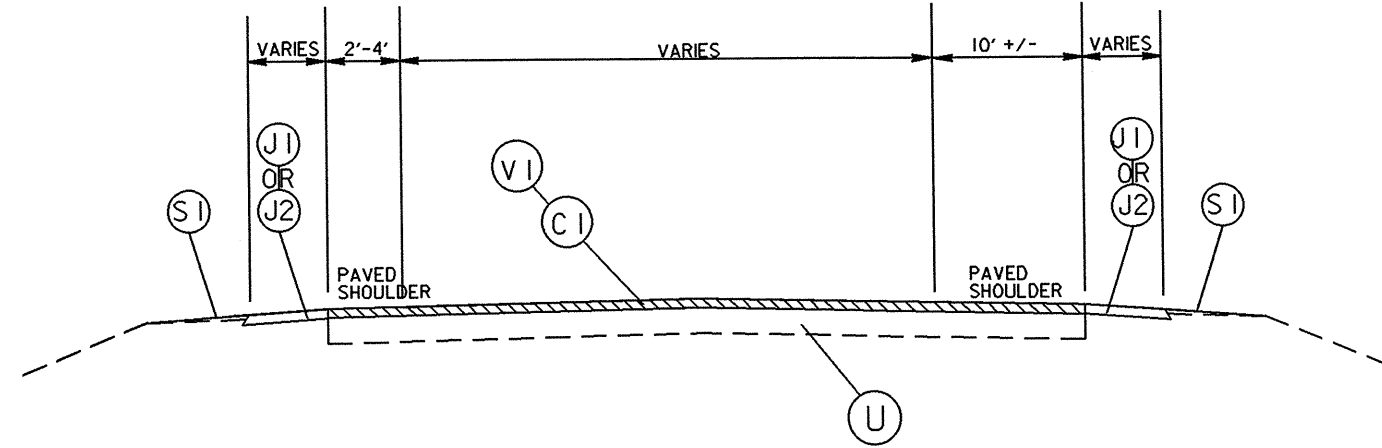


PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
5CR.1092 I.37	6	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION



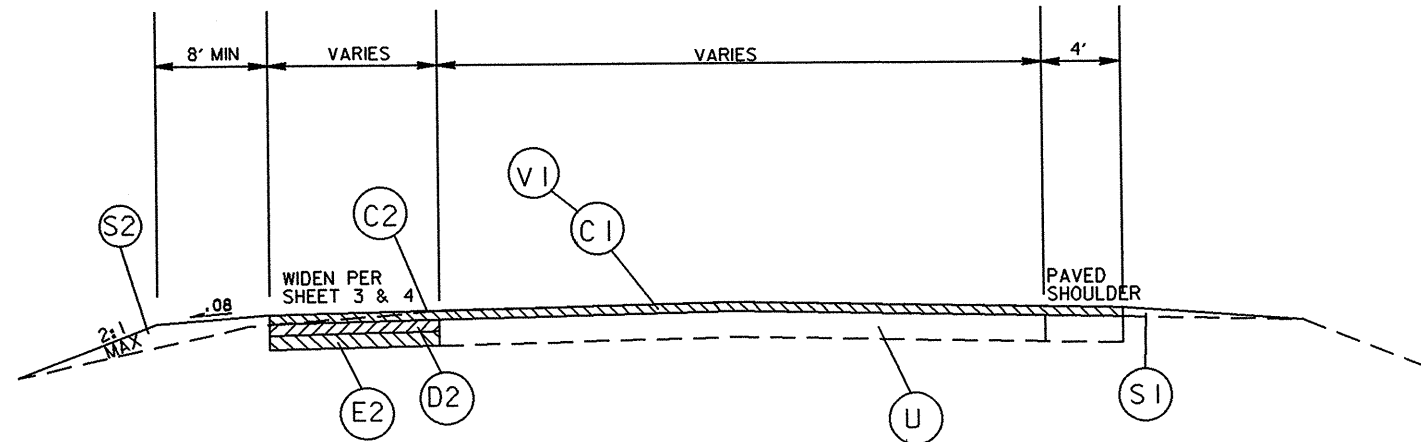
TYPICAL SECTION NO. 3

*CONTRACTOR SHALL USE THIS TYPICAL FOR THE SB OFF RAMP AT TEN TEN



TYPICAL SECTION NO. 4

*CONTRACTOR SHALL USE THIS TYPICAL FOR THE RAMPS AT NEW HILL HOLLEMAN



TYPICAL SECTION NO. 5

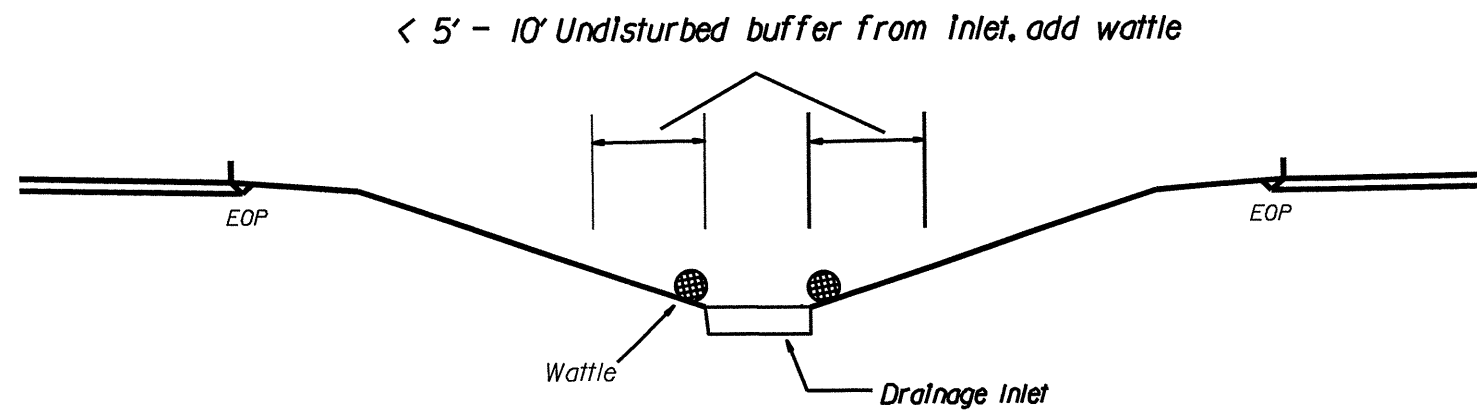
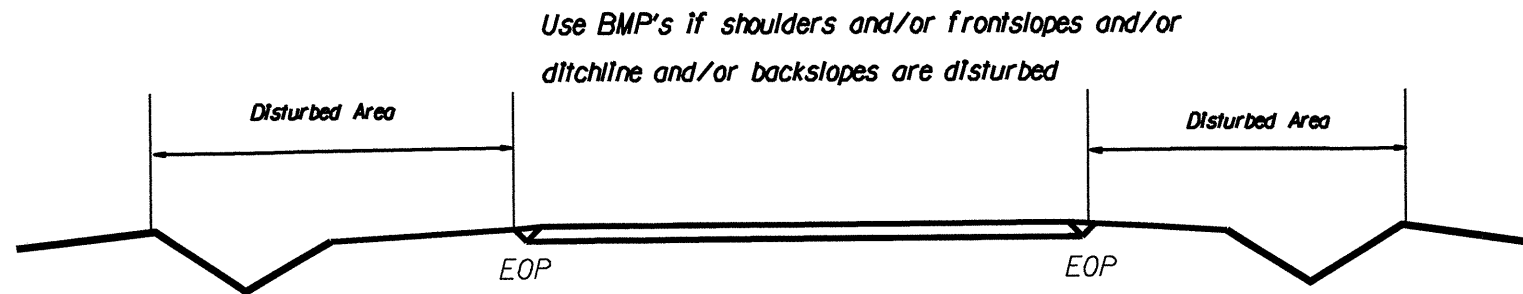
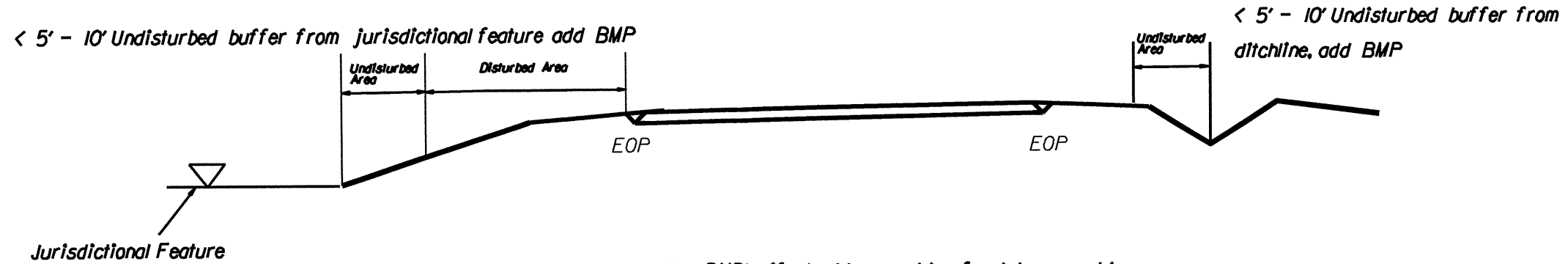
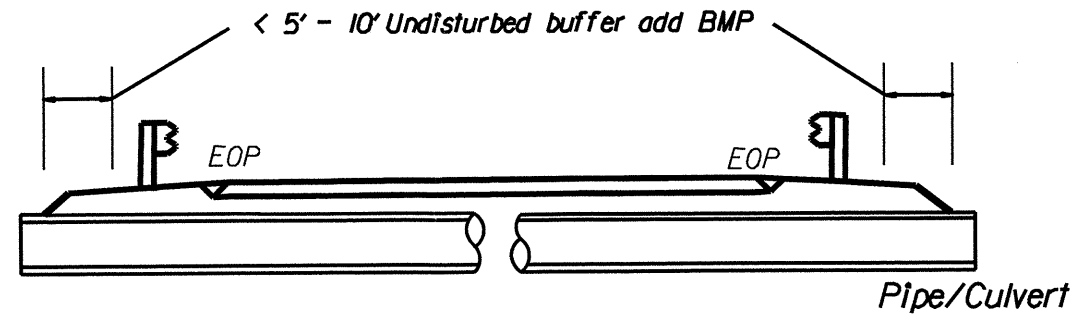
*CONTRACTOR SHALL USE THIS TYPICAL FOR THE SB OFF RAMP AT NC 55

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

BMP Options: Wattle, Silt Fence, or Hardened Aggregate.

EROSION CONTROL DETAIL

DATE: 1-2018	BY: [Signature]
PROJECT: [Blank]	PROJECT NO: [Blank]
DATE: [Blank]	BY: [Blank]
PROJECT: [Blank]	PROJECT NO: [Blank]



NOT TO SCALE

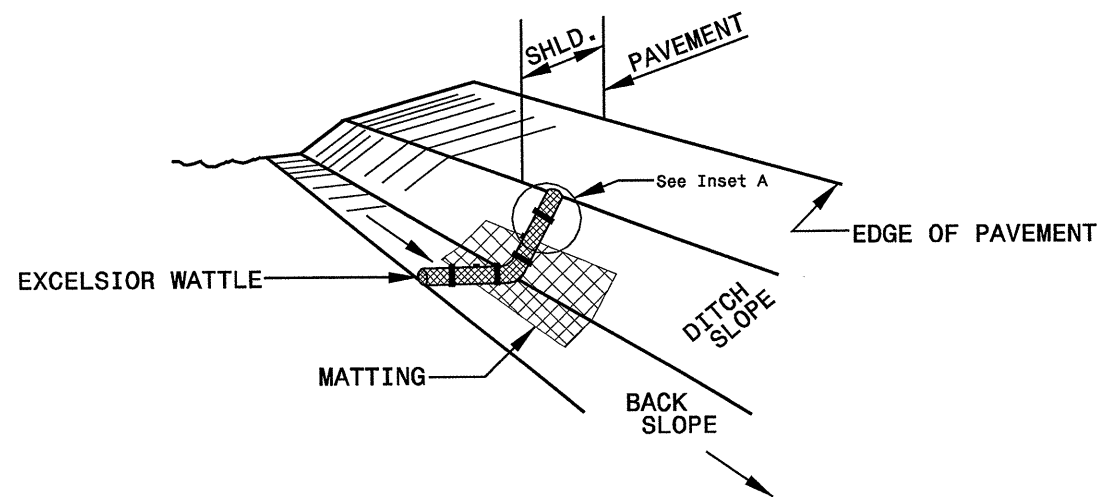
**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

SOIL STABILIZATION TIMEFRAMES

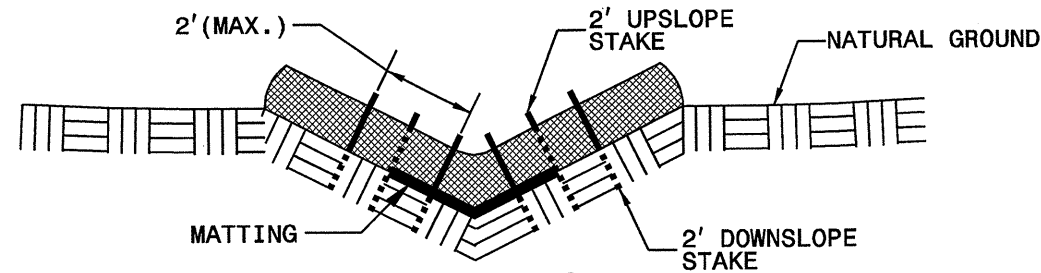
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HOW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HOW ZONES.

PROJECT REFERENCE NO.	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

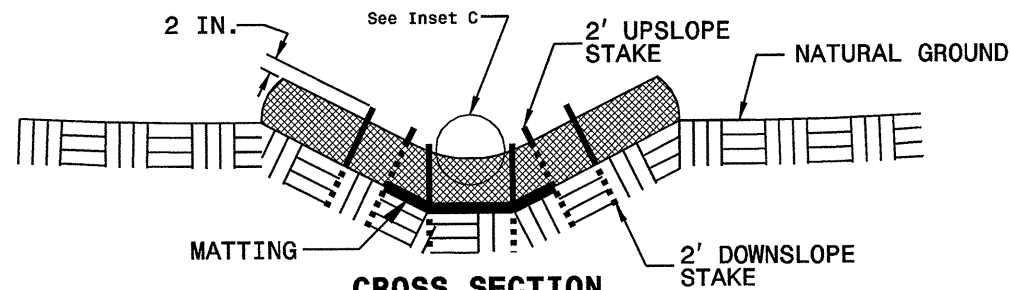
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



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.

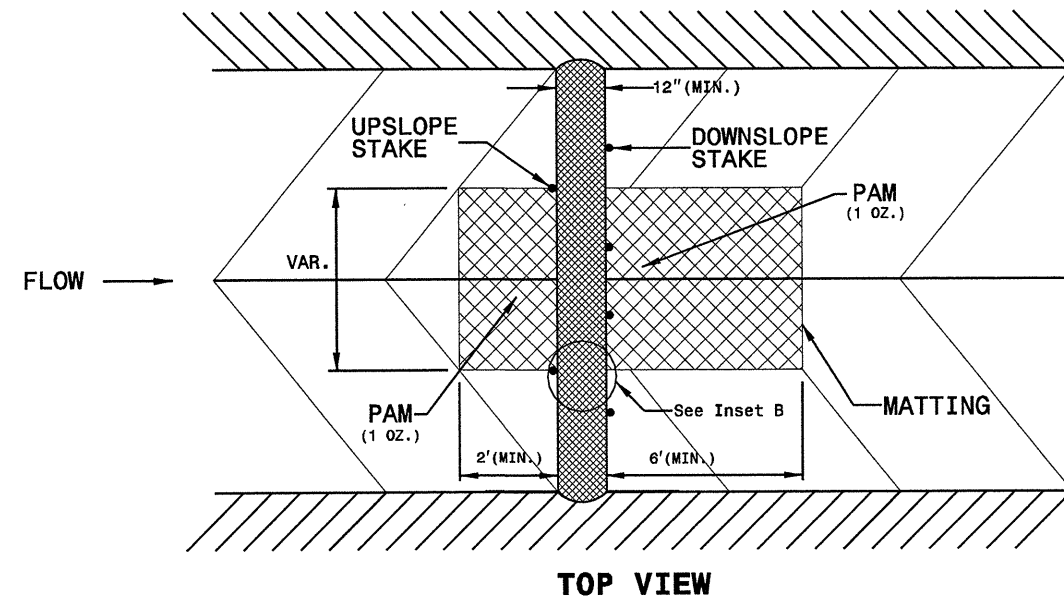
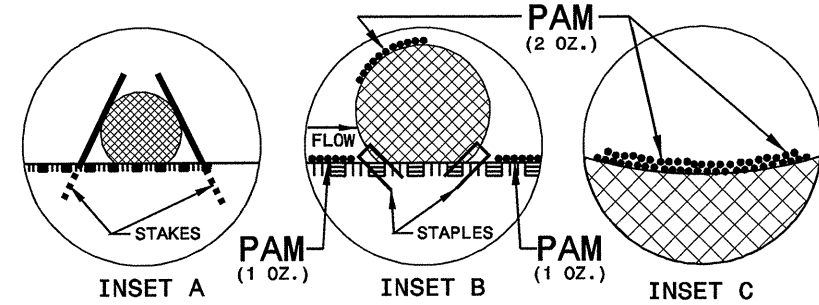
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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.

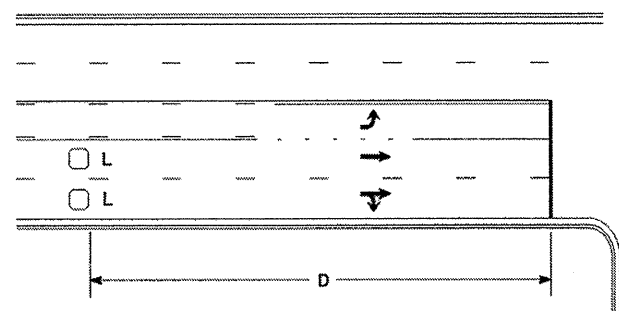
PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



TOP VIEW

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

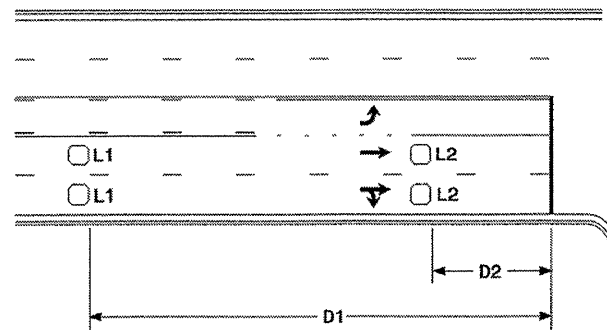


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

L = 6ft X 6ft (1.8m X 1.8m)
Wired in series for TS1
Controllers
Wired separately for TS2,
170, and 2070L Controllers

Volume Density Operation

OR

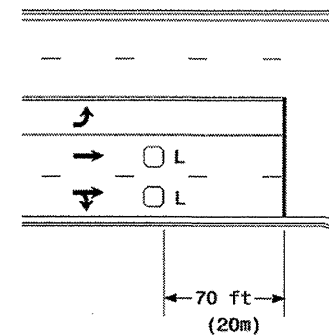


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

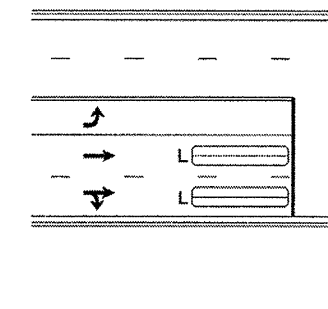
"Stretch" Operation

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



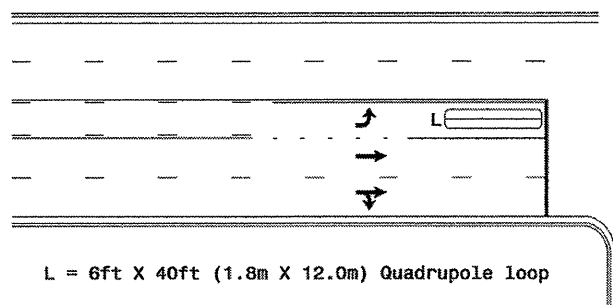
L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

OR



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

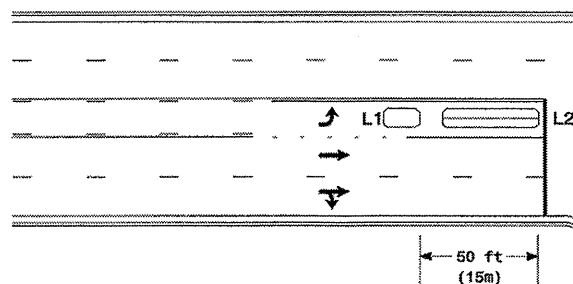
Left Turn Lane Detection



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

Presence Loop Detection

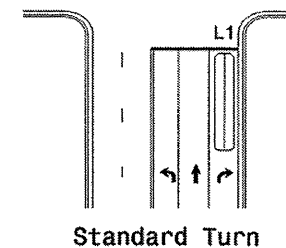
OR



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

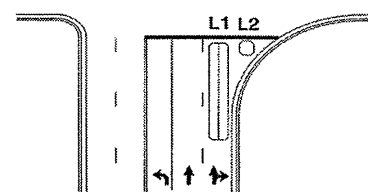
Queue Loop Detection

Right Turn Lane Detection

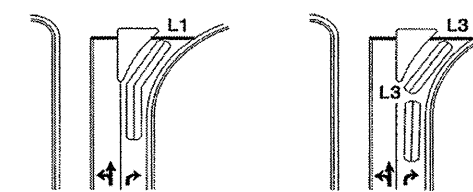


Standard Turn

L1 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop
Wired separately
L3 = 6ft X 20ft (1.8m X 6.0m) Quadrupole loop
Wired in series

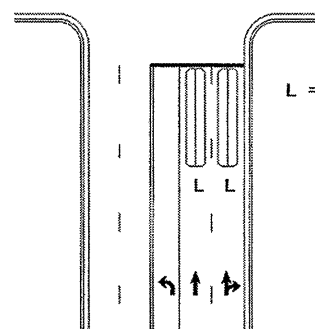


Wide Radius Turn



Channelized Turn

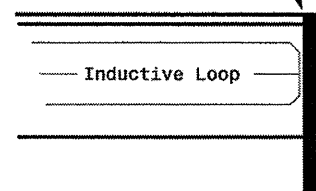
Side Street Detection



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

Presence Loop Placement at Stop Lines

Locate loop slightly
behind leading
edge of stop line



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

Recommended Number of Turns

Single 6' X 6' (1.8m X 1.8m)
loop (wired separately):

Length of Lead-in ft (m)	Number of Turns
< 250 (75)	3
250-375 (75-115)	4
375-525 (115-160)	5
> 525 (160)	6

Quadrupole loops: Use 2-4-2 turns

6' X 15' (1.8m X 4.6m) Loops:
Lead-in < 150' (45 m), use 2 turns
Lead-in > 150' (45 m), use 3 turns

Prepared in the Offices of
The North Carolina State Department of Transportation
222 N. McDowell St., Raleigh, NC 27603

SCALE
N/A

Typical Loop Locations

PLAN DATE: June 2006 REVISIONS:
PREPARED BY: P L Alexander REVISOR: [Signature]
REVIEWED BY: [Signature]

REVISIONS:
1. Revise pavement markings

SIGNATURE: [Signature] DATE: 12/15/06

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL 23488
[Signature]
DATE: 12/15/06
SIG. INVENTORY NO.

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

11-08

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

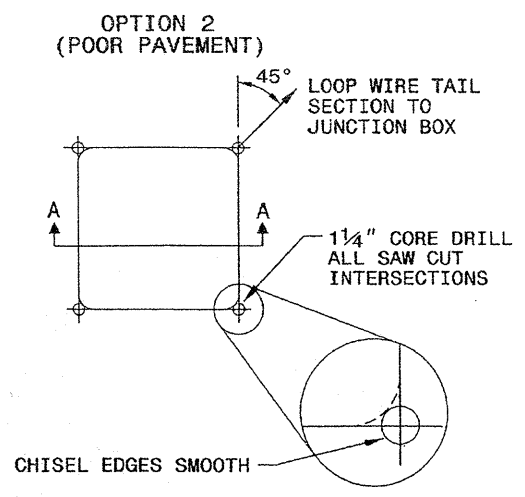
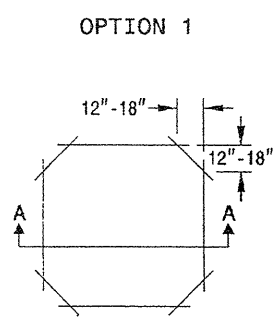
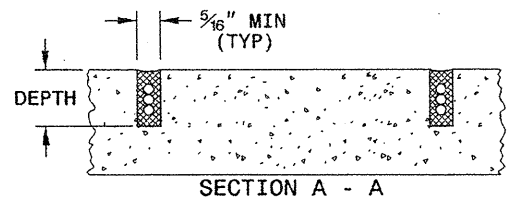
SHEET 1 OF 3
1725D01

CONVENTIONAL 4-SIDED LOOP

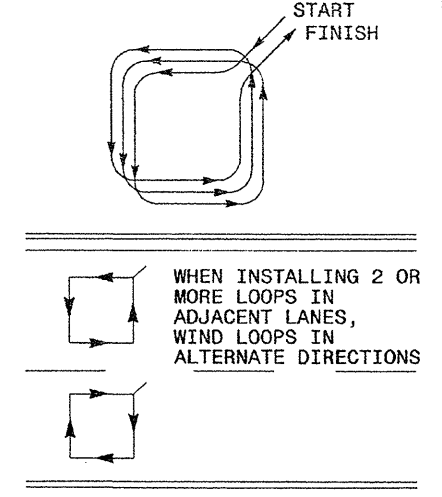
SAW CUT OPTIONS

SAW SLOT DEPTH CHART

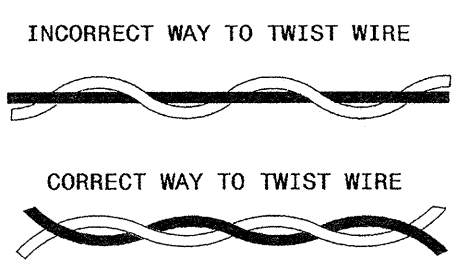
DEPTH (IN)	NO. OF WIRE TURNS					
	2	3	4	5	6	
CONCRETE	2.0	2.0	2.5	2.5	3.0	
ASPHALT	2.0	2.5	3.0	3.0	3.0	



LOOP WINDING METHOD



LOOP WIRE TWISTING METHOD

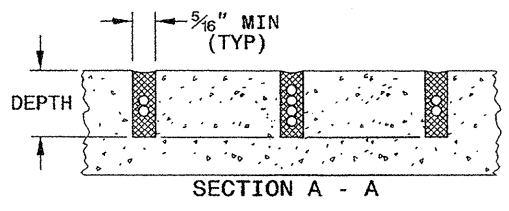
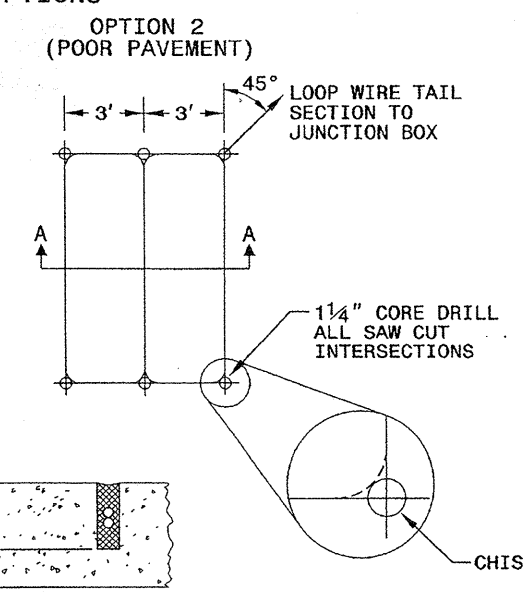
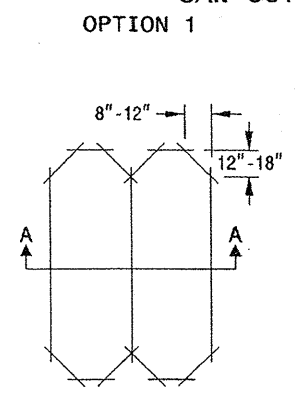


NOTES

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.

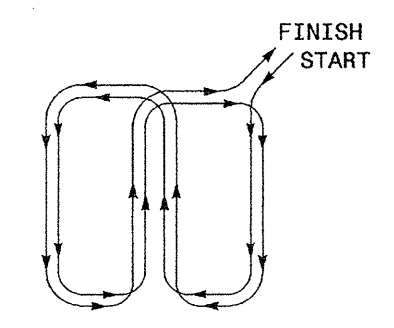
QUADRUPOLE LOOP

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
 Garner, NC 27529

SEAL

Milton I. Dean 4/24/08
 SIGNATURE DATE

24-Nov-2008 09:28
 c:\work\files\std-standard plate sheets\1725D01_m072307.dgn
 11/11/08

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

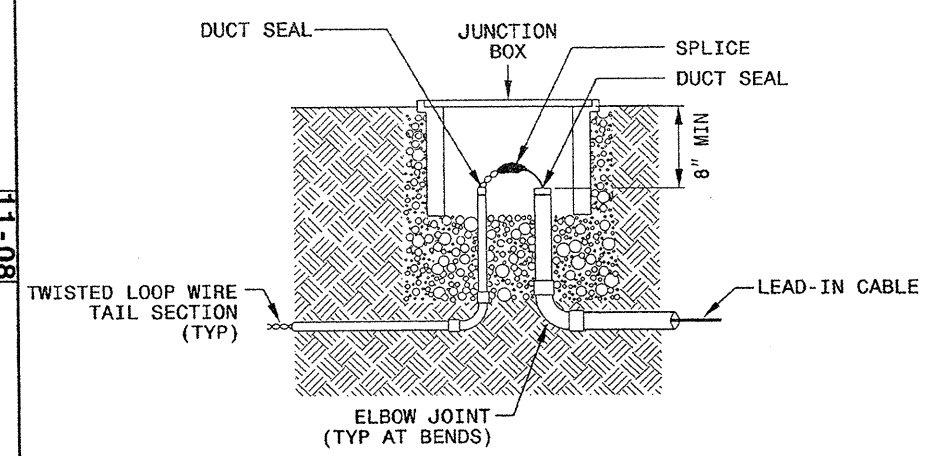
11-08

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

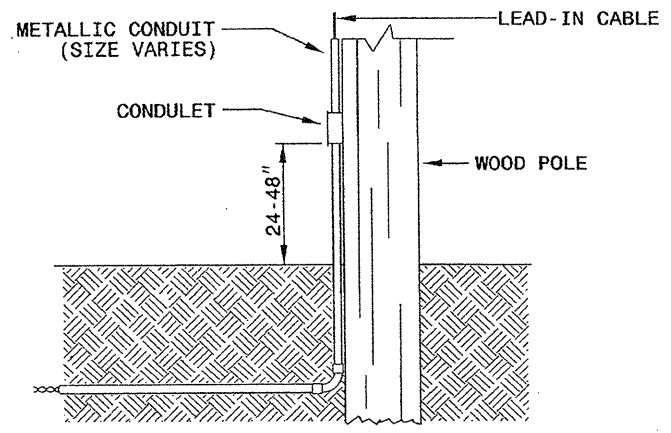
SHEET 2 OF 3
1725D01

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

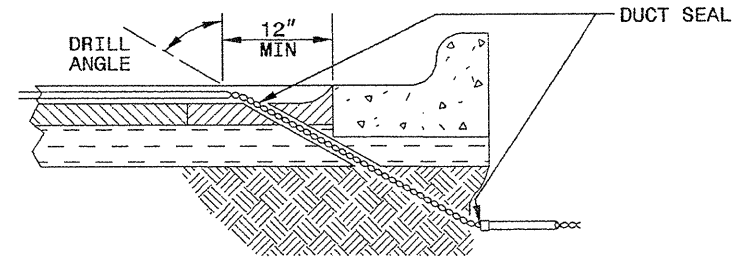


NOTE

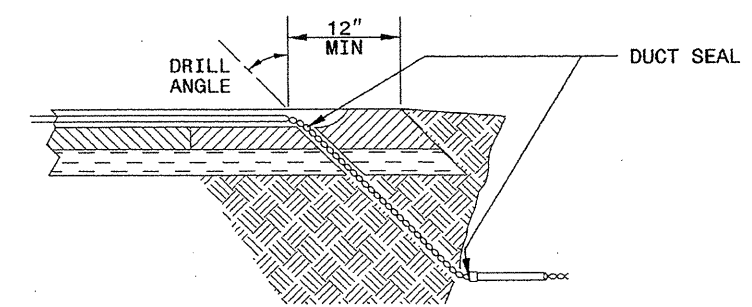
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

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.

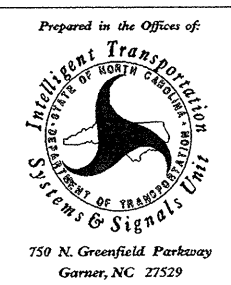
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

11-08

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

SHEET 2 OF 3
1725D01

See Plate for Title



SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
16286
ENGINEER
MILTON I. DEAN
Signature: Milton I. Dean
DATE: 11/24/08

