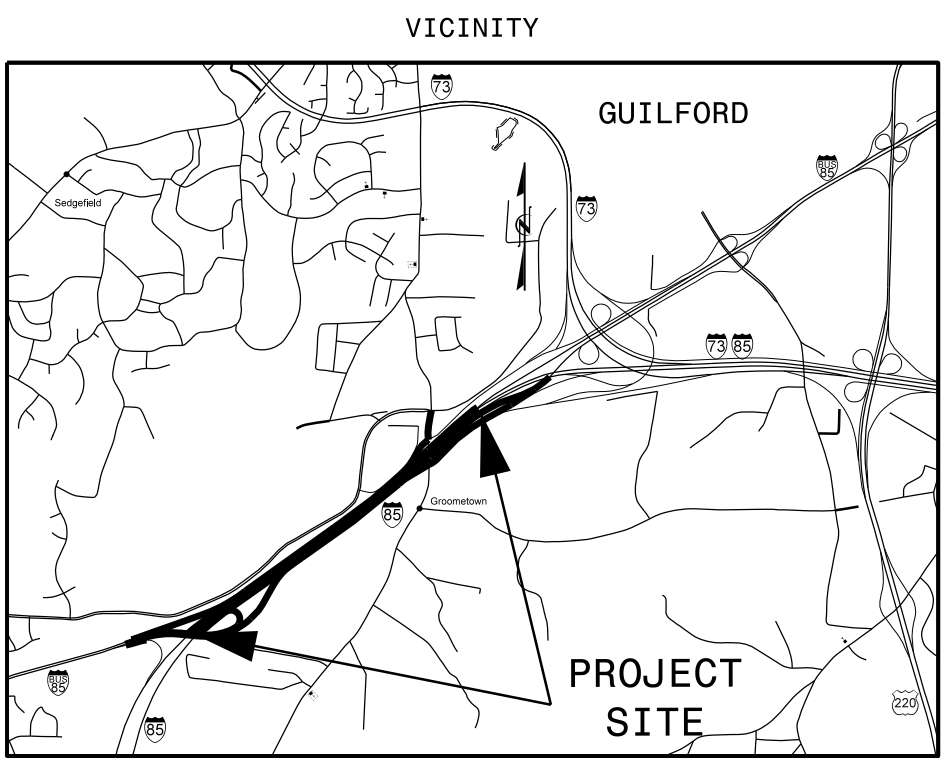


06-APR-2018 08:59
 S:\Contracts\Resurfacing Projects\Division 7\I-5853 Guilford\I-5853 Title.dgn
 At CSD-292520
 05/08/99

CONTRACT: C204183 **TIP PROJECT: I-5853**



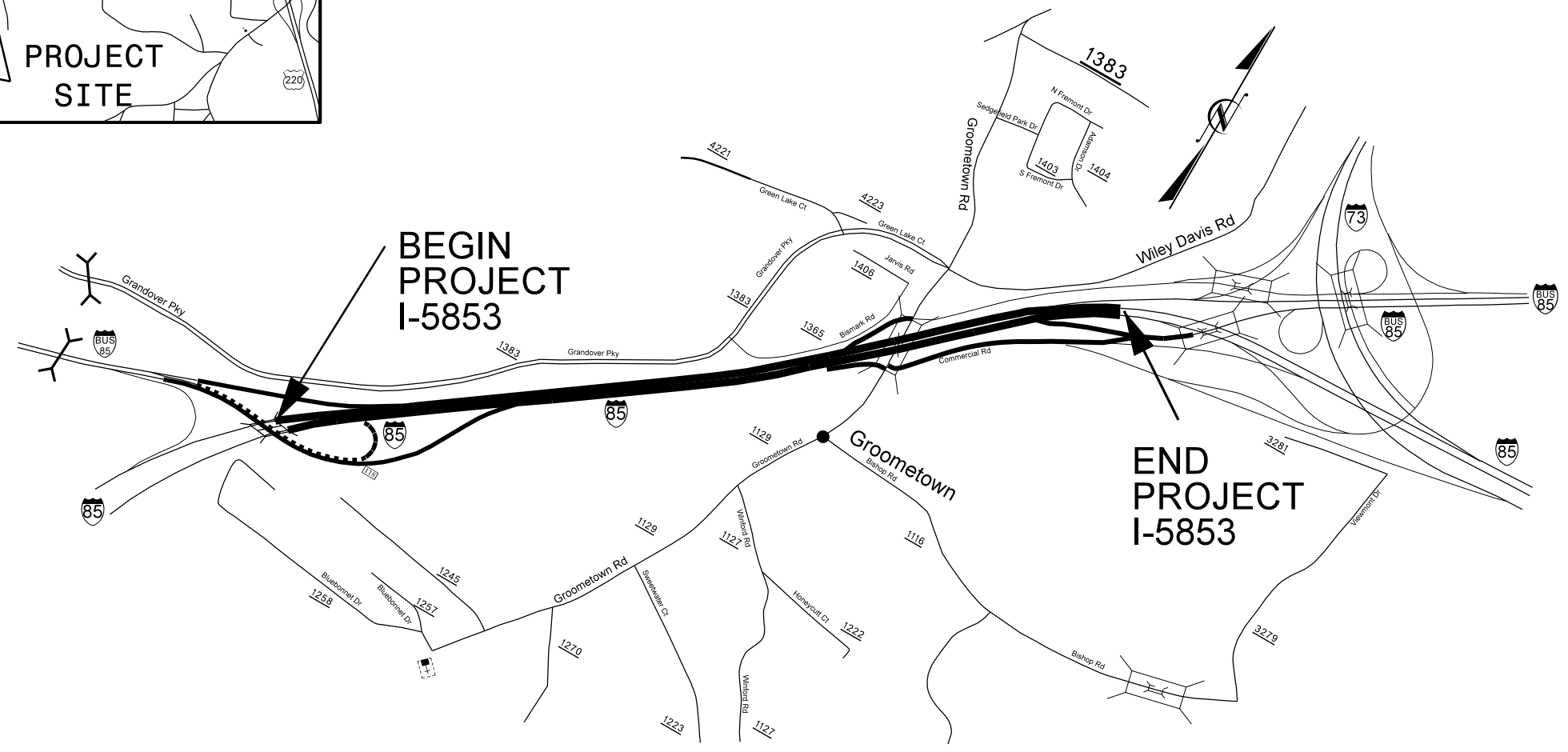
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

GUILFORD COUNTY

**LOCATION: FROM 1 MILES SOUTH OF SR 1129
 (GROOMTOWN ROAD) TO 0.3 MILE NORTH
 OF SR 1129 (GROOMTOWN ROAD) IN
 GREENSBORO**

TYPE OF WORK: PAVEMENT REHABILITATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5853	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
53057.1.1	NHPIM-0085(6)126	PE	
53057.3.1	NHPIM-0085(6)126	CONST	



GRAPHIC SCALES
 NOT TO SCALE

DESIGN DATA
 NA

PROJECT LENGTH
 I-5853 = 1.874 miles

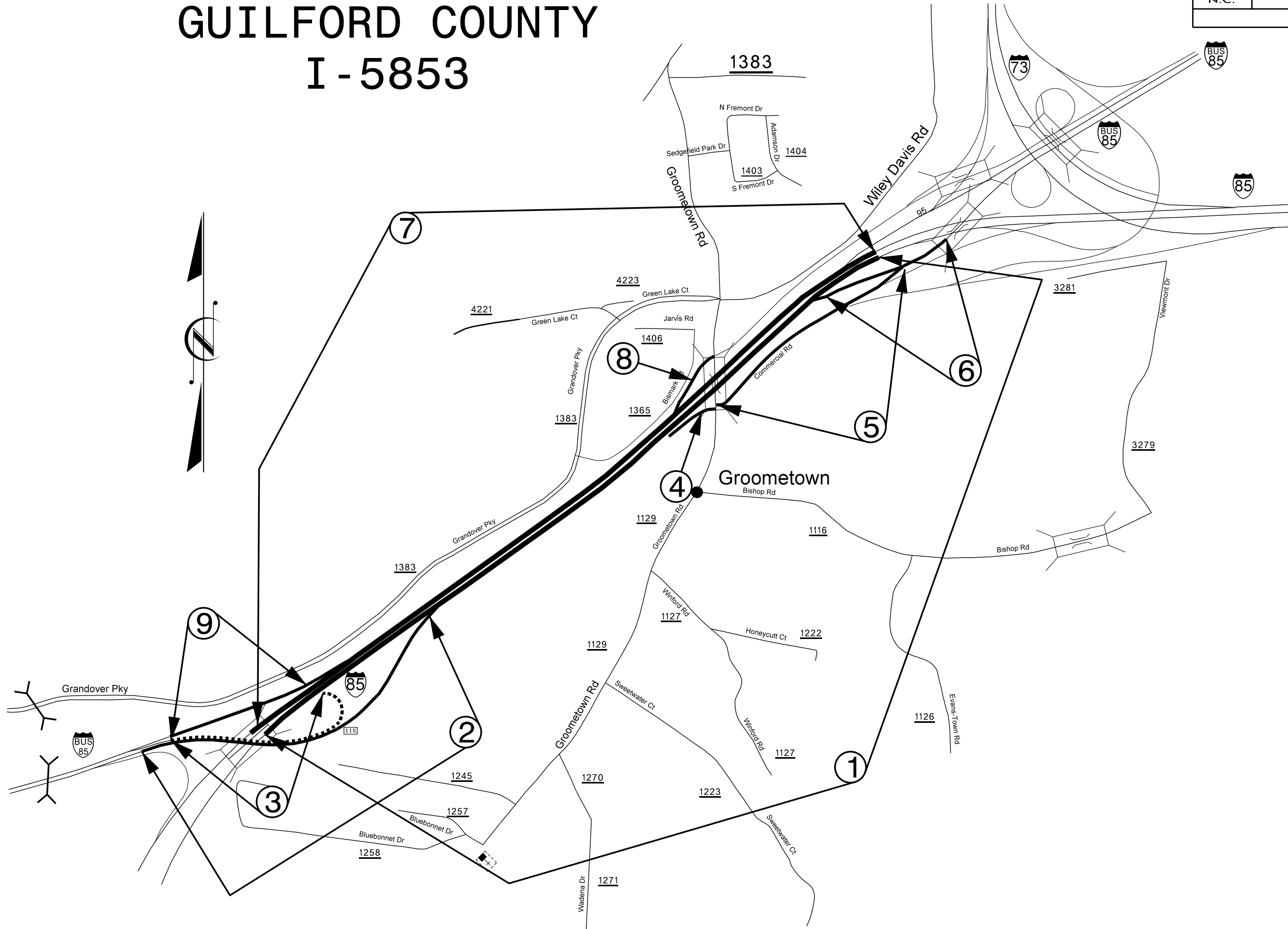
Prepared in the Office of:
DIVISION OF HIGHWAYS
 1584 Yanceyville St. Greensboro NC, 27405
 2018 STANDARD SPECIFICATIONS
C. B. SMITHERMAN, P.E.
 PROJECT ENGINEER
CLINTON A. WILES
 ENGINEERING TECHNICIAN
 LETTING DATE:
 May 15, 2018



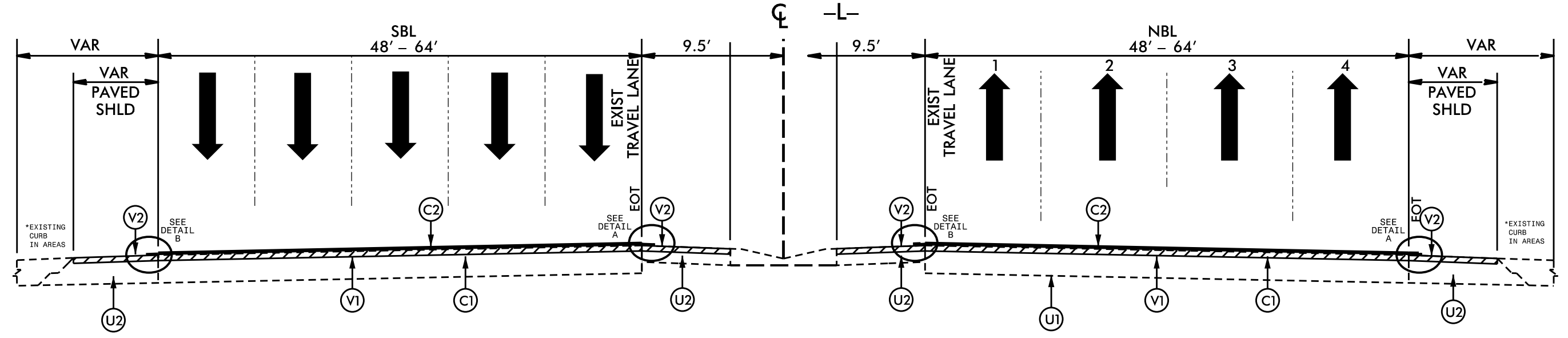
GUILFORD COUNTY

I - 5853

STATE	PROJECT NO.	SHEET NO.
N.C.	I-5853	2

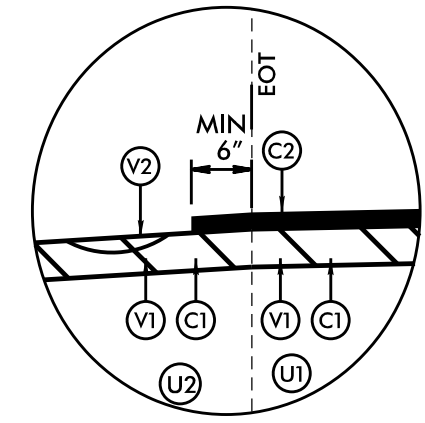


STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5853	3	

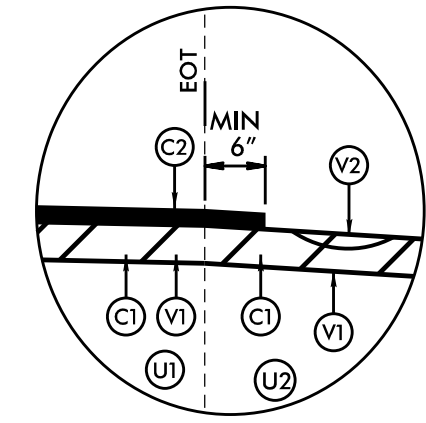


*NOTE: TYPICAL SECTION CONSTRUCTION SEQUENCE:
 1. MILL 1½" AND FILL WITH 1½" SURFACE COURSE, TYPE S9.5D
 2. OVERLAY TRAVEL LANES WITH ¾" OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-1 MODIFIED.

TYPICAL SECTION NO. 1
 TO BE USED ON MAPS 1, 7



DETAIL B
 OVER LAP SHOULDERS

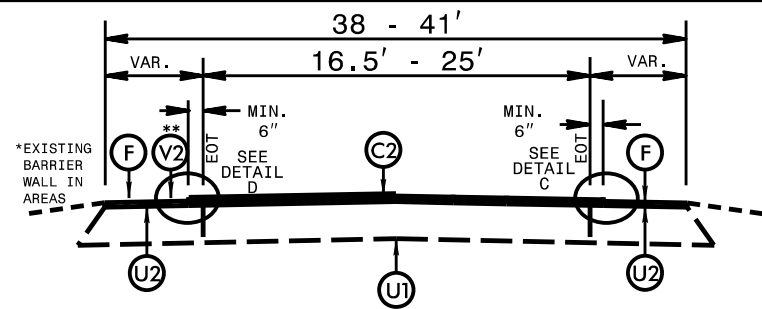


DETAIL A
 OVER LAP SHOULDERS

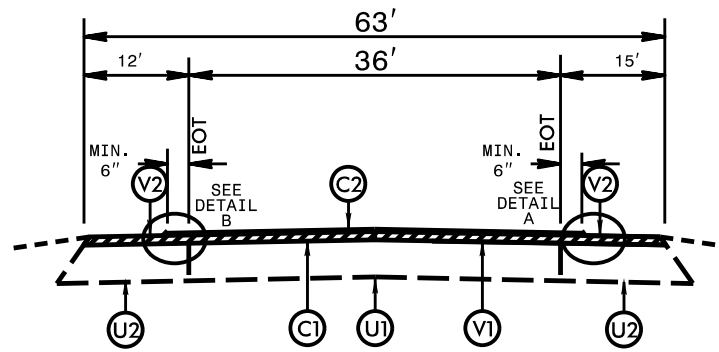
PAVEMENT SCHEDULE			
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.		
C2	PROP. APPROX. ¾" OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-1 MODIFIED, AT AN AVERAGE RATE OF 90 LBS PER SQ. YD.		
D	PROP. APPROX. 4½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.		
F	PROPOSED FOG SEAL TO BE APPLIED TO THE EXISTING SHOULDER		
R	EXISTING CONCRETE STRUCTURE	U1	EXISTING TRAVELWAY.
U2	EXISTING PAVED SHOULDER.		
V1	MILLING ASPHALT PAVEMENT. 1½" DEPTH.		
V2	MILL RUMBLE STRIP	V3	MILLING ASPHALT PAVEMENT 0 - ¾" DEPTH.
V4	MILLING ASPHALT PAVEMENT VAR DEPTH		

5/14/99

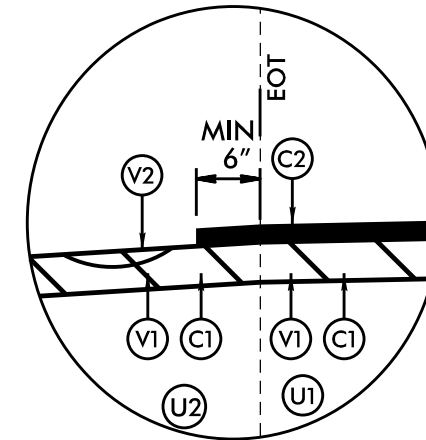
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5853	4	



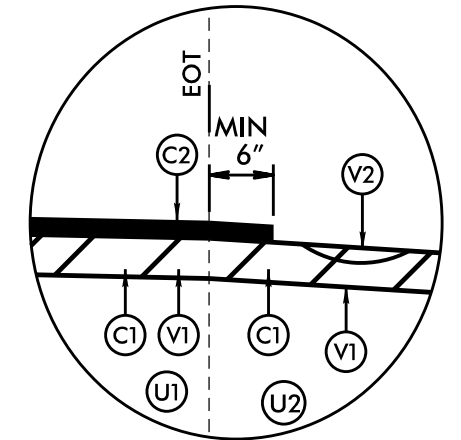
**NOTE: NO RUMBLE STRIPS ON MAP 3
TYPICAL SECTION NO. 2
 TO BE USED ON MAPS 2, 3
 MAP 3: STA. 17+45 TO STA. 36+90



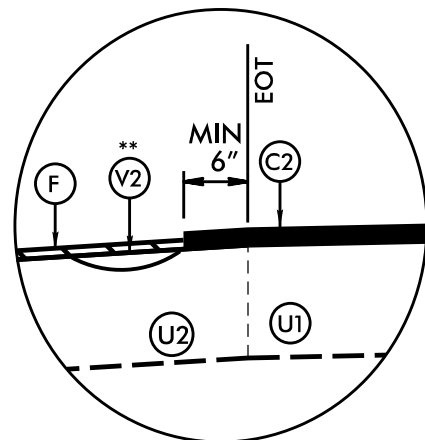
TYPICAL SECTION NO. 5
 TO BE USED ON MAPS 6
 MAP 6: STA. 10+00 TO STA. 20+46



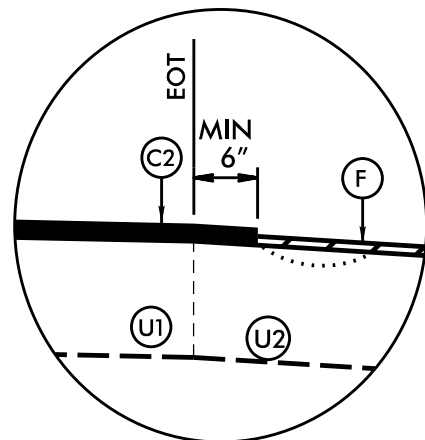
DETAIL B
 OVER LAP SHOULDERS



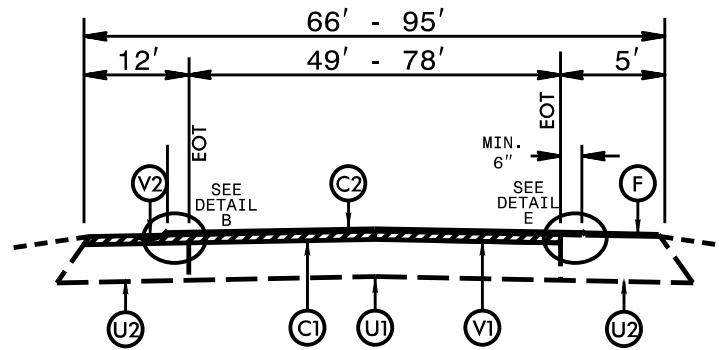
DETAIL A
 OVER LAP SHOULDERS



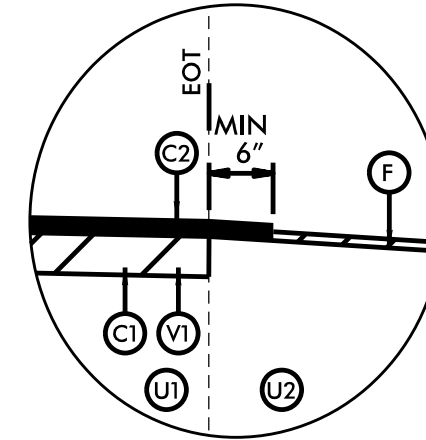
DETAIL D
 OVER LAP SHOULDERS



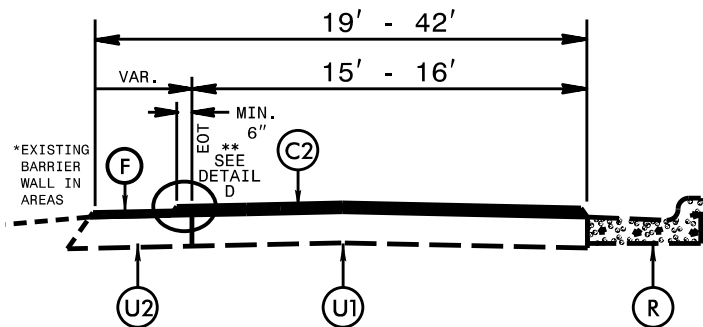
DETAIL C
 OVER LAP SHOULDERS



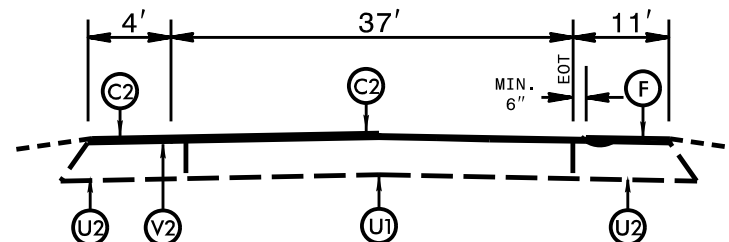
TYPICAL SECTION NO. 6
 TO BE USED ON MAPS 6
 MAP 6: STA. 20+46 TO STA. 26+72



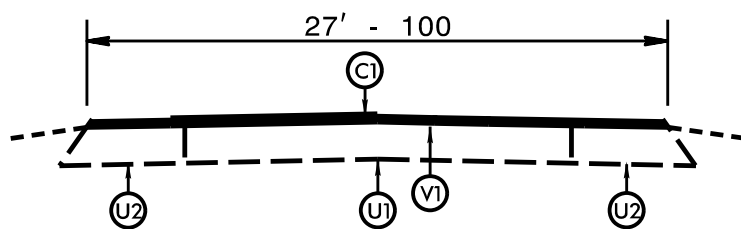
DETAIL E
 OVER LAP SHOULDERS



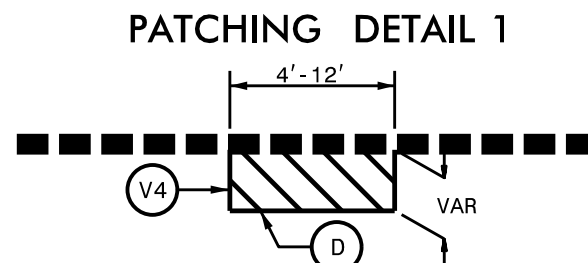
**NOTE: NO RUMBLE STRIPS ON MAP 3
TYPICAL SECTION NO. 3
 TO BE USED ON MAP 3
 MAP 3: STA. 10+00 TO STA. 17+45



TYPICAL SECTION NO. 7
 TO BE USED ON MAP 9



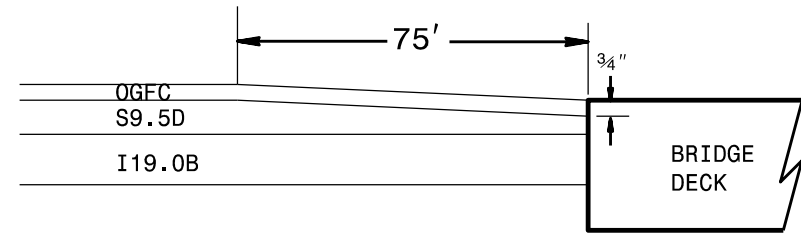
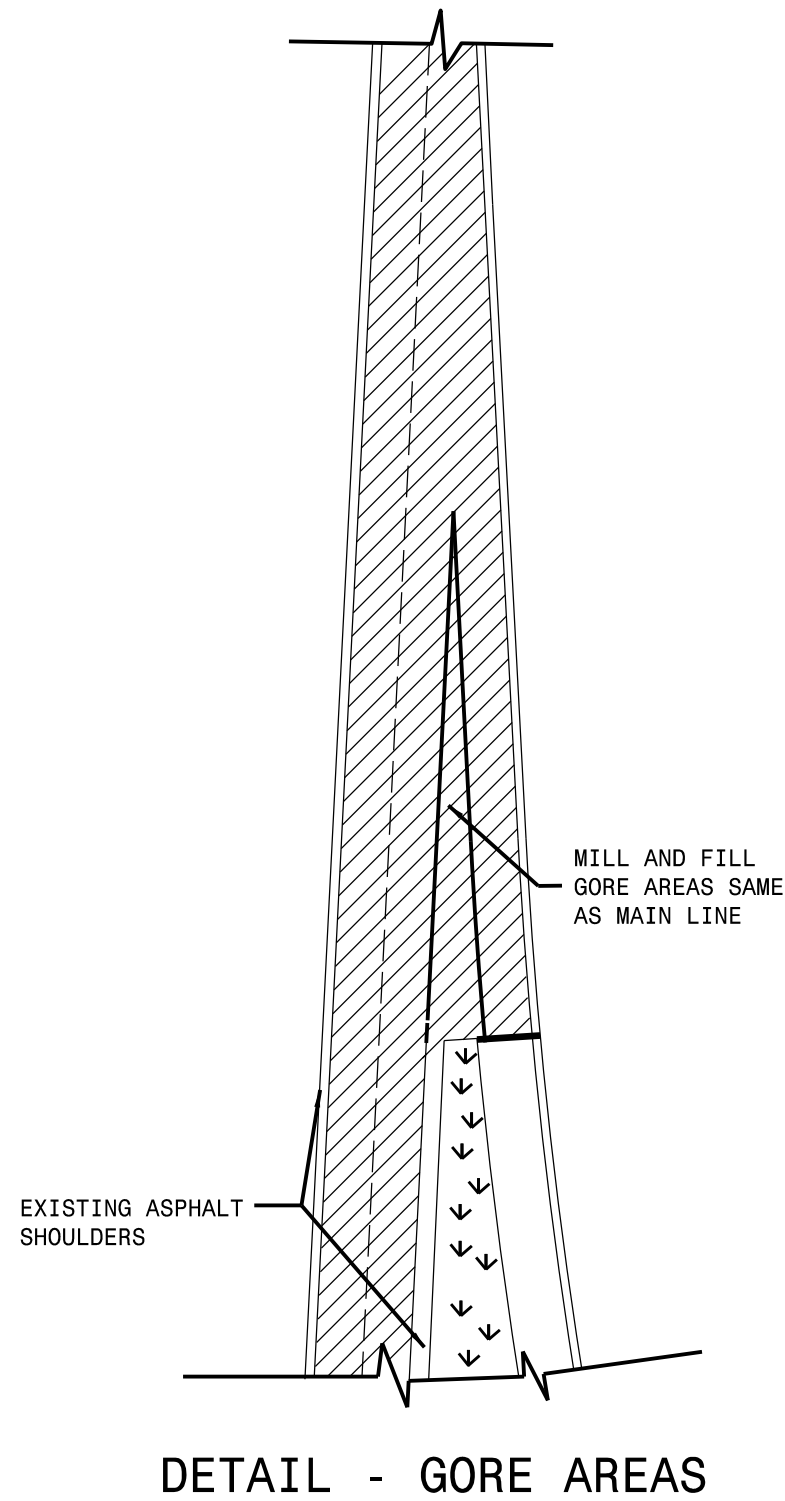
TYPICAL SECTION NO. 4
 TO BE USED ON MAPS 4, 5, 8



MILL EXISTING ASPHALT PAVEMENT AND FILL WITH INTERMEDIATE COURSE, TYPE I19.0B AT LOCATIONS AND DEPTH AS DIRECTED BY THE ENGINEER.

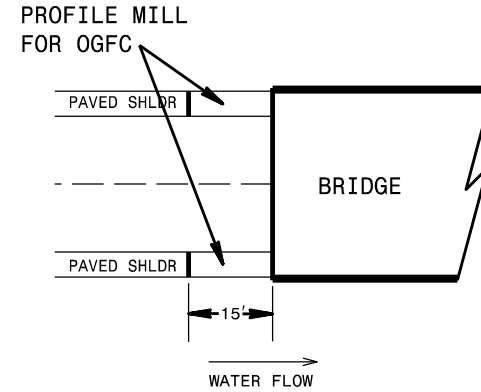
PAVEMENT SCHEDULE			
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.		
C2	PROP. APPROX. 3/4" OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-1 MODIFIED, AT AN AVERAGE RATE OF 90 LBS PER SQ. YD.		
D	PROP. APPROX. 4 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.		
F	PROPOSED FOG SEAL TO BE APPLIED TO THE EXISTING SHOULDER		
R	EXISTING CONCRETE STRUCTURE	U1	EXISTING TRAVELWAY.
U2	EXISTING PAVED SHOULDER.		
V1	MILLING ASPHALT PAVEMENT. 1 1/2" DEPTH.		
V2	MILL RUMBLE STRIP	V3	MILLING ASPHALT PAVEMENT 0 - 3/4" DEPTH.
V4	MILLING ASPHALT PAVEMENT VAR DEPTH		

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5853	5	

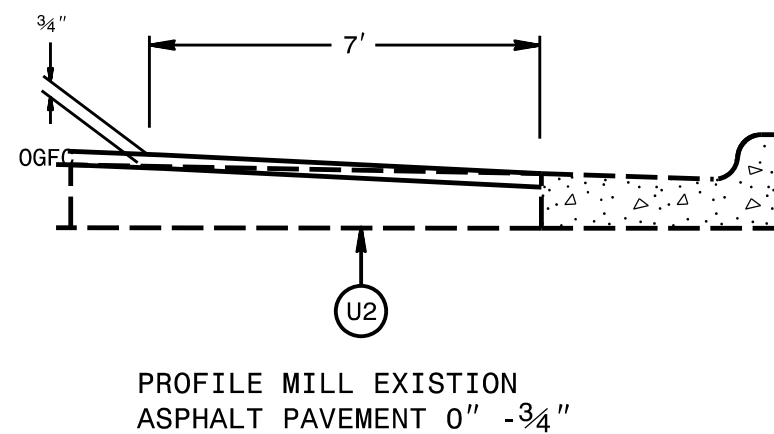


INCIDENTAL MILLING PAVEMENT
DETAIL AT BRIDGE

MILLING DETAIL 1



MILLING DETAIL 2



PAVEMENT SCHEDULE

C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.		
C2	PROP. APPROX. 3/4" OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-1 MODIFIED, AT AN AVERAGE RATE OF 90 LBS PER SQ. YD.		
D	PROP. APPROX. 4 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.		
F	PROPOSED FOG SEAL TO BE APPLIED TO THE EXISTING SHOULDER		
R	EXISTING CONCRETE STRUCTURE	U1	EXISTING TRAVELWAY.
U2	EXISTING PAVED SHOULDER.		
V1	MILLING ASPHALT PAVEMENT. 1 1/2" DEPTH.		
V2	MILL RUMBLE STRIP	V3	MILLING ASPHALT PAVEMENT 0 - 3/4" DEPTH.
V4	MILLING ASPHALT PAVEMENT VAR DEPTH		

PROJECT REFERENCE NO.	SHEET NO.
I-5853	7

SUMMARY OF DRAINAGE REPAIR

MAP #	STATION	LOCATION	REMOVE & REPLACE CONCRETE APRON & BACKFILL	4" CONCRETE PAVED DITCH	DRAINAGE STRUCTURE REPAIR		RIP RAP, CLASS 'B' AT PIPE OUTLETS	GEOTEXTILE FOR DRAINAGE
		LT or RT			GROUT UNDER FRAME WITH GRATE & HOOD & BACKFILL DRAINAGE	GROUT AROUND EXISTING SHOULDER DRAIN PIPE & CUT PIPE FLUSH WITH WALL		
			EA	SY	EA	EA	TON	SY
1	15+75	RT					5	14
1	45+50	RT			1			
1	53+60	RT			1			
1	55+25	RT			1			
1	66+30	RT			1			
1	67+85	RT			1			
1	77+20	RT	1					
1	78+30	RT	1			1		
1	90+00	RT	1					
TOTAL FOR MAP 1			3	0	6		5	14
2	12+35	RT	1					
TOTAL FOR MAP 2			1	0	0		0	0
5	22+75	RT			1			
TOTAL FOR MAP 5			0	0	1		0	0
7	18+20	MEDIAN	1					
7	37+32	RT				1		
7	43+10	RT	1					
7	65+27	RT	1					
7	70+75	RT	1					
7	104+70	RT	1	8				
TOTAL FOR MAP 7			5	8	1		0	0
GRAND TOTAL			9	8	8		5	14

PROJECT NO.	SHEET NO.	TOTAL NO.
I-5853	9	

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH		4400000000-E	4405000000-E	4410000000-E	4415000000-N	4420000000-N	4422000000-N	4430000000-N	4445000000-E	4480000000-N	4688000000-E		4690000000-E	4700000000-E	4702000000-E	4710000000-E	4721000000-E				
								MI	FT	WORK ZONE SIGNS (STATIONARY)	WORK ZONE SIGNS (PORTABLE)	WORK ZONE SIGNS (BARRICADE MOUNTED)	FLASHING ARROW BOARD	PORTABLE CHANGEABLE MESSAGE SIGN	PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM)	DRUMS	TYPE III BARRICADE	TMA	6" X 90 M WHITE THERMO	6" X 90 M YELLOW THERMO	6" X 120 M WHITE THERMO	12" X 90 M WHITE THERMO	12" X 120 M WHITE THERMO	24" X 120 M WHITE THERMO	THERMO MSG ONLY 120 M				
I-5853	Guilford	1	I-85 NB	FROM 1 MILE SOUTH OF SR 1129 (GROOMTOWN ROAD) TO 0.3 MILE NORTH OF SR 1129 (GROOMTOWN ROAD)	1	2	MD	0.061	60	270	224	26	3	3	8	276	64.00	2	9,620	9,750	7,686	3,138	886	48	24				
					1	3		0.076	64																				
					1	2		0.033	82																				
					1	2	MD	0.313	59																				
					1	2	MD	0.066	94																				
					1	2	MD	0.481	82																				
					1	5	MD	0.159	102																				
					1	2	MD	0.364	86																				
					1	2	MD	0.063	92																				
					1	2		0.072	119																				
TOTAL FOR MAP NO. 1								1.846		270	224	26	3	3	8	276	64	2	9,620	9,750	7,686	3,138	886	48	24				
I-5853	Guilford	2	ON RAMP	FROM GORE AT OFF RAMP TOI-85 SB/NB TO FORE AT I-85 NB	2	2		0.494	25											4,358	4,358	1,090							
					2	2		0.331	25																				
TOTAL FOR MAP NO. 2								0.825											4,358	4,358	1,090								
I-5853	Guilford	3	OFF RAMP TO I-85 SB	FROM I-85 NB TO I-85 BUS SB	3	2		0.104	16											1,945	2,690								
					3	2		0.037	17																				
					2	2		0.368	17																				
TOTAL FOR MAP NO. 3								0.509											1,945	2,690									
I-5853	Guilford	4	OFF RAMP	FROM I-85 NB TO SR 1129 (GROOMTOWN ROAD)	4	2		0.113	27											654	654			48					
					4	2		0.011	64																				
TOTAL FOR MAP NO. 4								0.124												654	654			48					
I-5853	Guilford	5	ON RAMP	FROM SR 1129 (GROOMTOWN ROAD) TO I-85 NB	4	2		0.018	88											2,923	2,923		482						
					4	2		0.231	17																				
					4	2		0.046	17																				
					4	2		0.054	25																				
					4	2		0.009	48																				
TOTAL FOR MAP NO. 5								0.517												2,923	2,923		482						
I-5853	Guilford	6	ON RAMP	FROM I-85 NB TO I-85 NB BUS	5	2		0.198	62											1,700	1,600	836	570						
					5	2		0.053	75																				
					6	2		0.066	60																				
TOTAL FOR MAP NO. 6								0.317											1,700	1,600	836	570							
I-5853	Guilford	7	I-85 SB	FROM 0.3 MILE N OF SR 1129 (GROOMTOWN ROAD) TO 1 MILE S OF SR 1129 (GROOMTOWN ROAD) (BRIDGE OVER NB I-85 BUS))	1	2	MU	0.026	62											9,882	9,895	9,826	2,934	885	16				
					1	2		0.134	114																				
					1	2		0.196	91																				
					1	2		0.242	87																				
					1	2		0.047	104																				
					1	2		0.12	95																				
					1	2		0.093	91																				
					1	2		0.748	85																				
					1	2		0.095	105																				
TOTAL FOR MAP NO. 7								1.874											9,882	9,895	9,826	2,934	885	16					
I-5853		8	ON RAMP	FROM SR 1129 (GROOMTOWN ROAD) TO I-85 SB	4	2		0.027	70											735	735								
					4	2		0.112	24																				
TOTAL FOR MAP NO. 8								0.139											735	735									
I-5853	Guilford	9	OFF RAMP	FROM I85 SB TO I-85 BUS SB	7	2		0.346	24											1,828	1,828	460							
TOTAL FOR MAP NO. 9								0.346													1,828	1,828	460						
TOTAL FOR PROJ NO. I-5853								6.497		270	224	26	3	3	8	276	64	2	33,645	34,433	19,898	7,124	1,771	48	40				
GRAND TOTAL								6.497		270	224	26	3	3	8	276	64	2	33,645	34,433	19,898	7,124	1,771	48	40				

DIVIDED MEDIANS WITH WIDTHS 46' OR GREATER

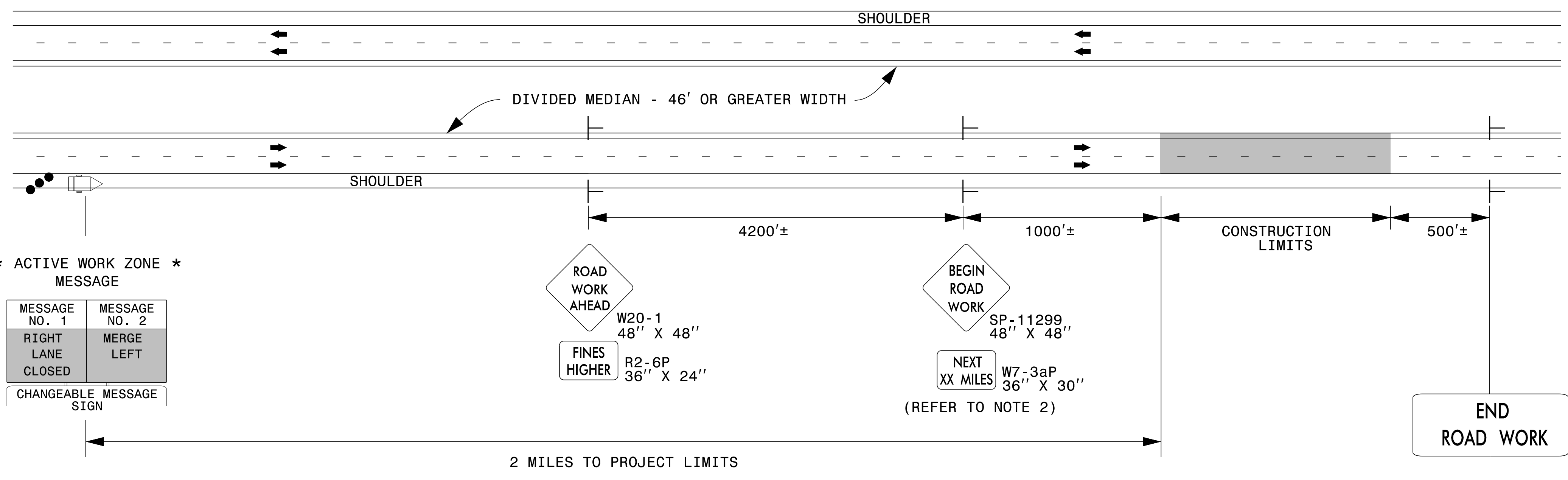
* NOTE: ADVANCE THIS CMS CONTINUOUSLY AS WORK OPERATIONS PROGRESS.

* INACTIVE WORK ZONE MESSAGE

MESSAGE NO. 1	MESSAGE NO. 2
ROAD WORK	2 MILES AHEAD
CHANGEABLE MESSAGE SIGN	

* ACTIVE WORK ZONE MESSAGE

MESSAGE NO. 1	MESSAGE NO. 2
RIGHT LANE CLOSED	MERGE LEFT
CHANGEABLE MESSAGE SIGN	



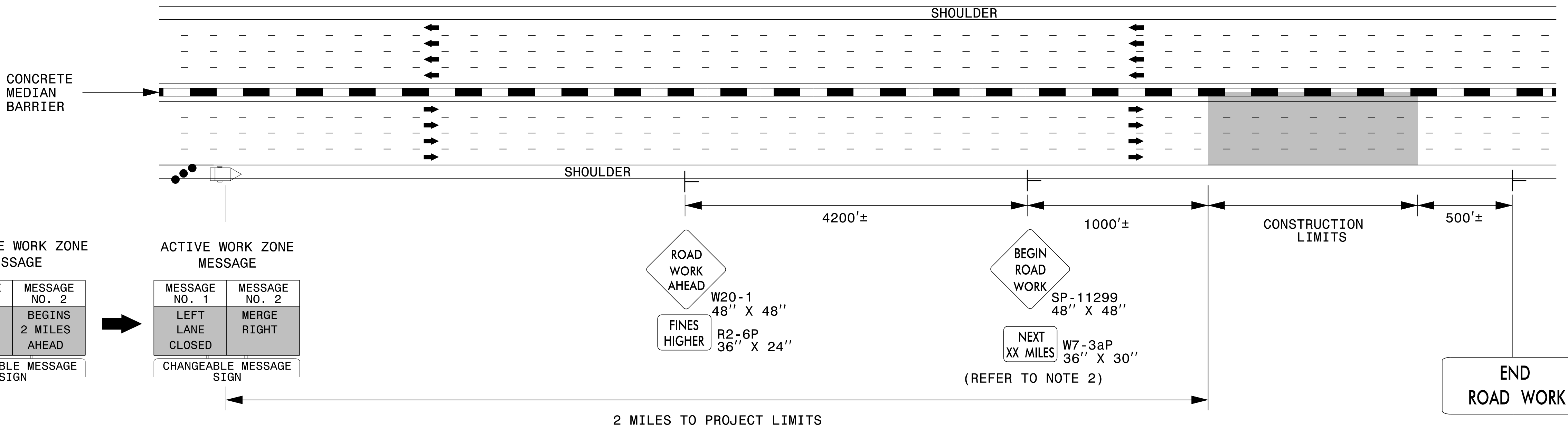
DIVIDED MEDIANS WITH WIDTHS LESS THAN 46' OR WITH PERMANENT MEDIAN BARRIER

INACTIVE WORK ZONE MESSAGE

MESSAGE NO. 1	MESSAGE NO. 2
ROAD WORK	BEGINS 2 MILES AHEAD
CHANGEABLE MESSAGE SIGN	

ACTIVE WORK ZONE MESSAGE

MESSAGE NO. 1	MESSAGE NO. 2
LEFT LANE CLOSED	MERGE RIGHT
CHANGEABLE MESSAGE SIGN	



NOTES

1. THIS DRAWING IS TO BE USED IN CONJUNCTION WITH THE WORK ZONE VARIABLE SPEED LIMIT USING DIGITAL SPEED LIMIT SIGNS FOR INTERSTATE/FREEWAY RESURFACING PROJECTS DETAIL.
2. FOR SIGN W7-3aP, ROUND TO THE NEAREST MILE.
3. FOR ENTRANCE AND EXIT RAMP, REFER TO RSD 1101.01, SHEET 1, DETAIL B & C.
4. FOR ADDITIONAL NOTES, REFER TO RSD 1101.01, SHEET 1.

LEGEND

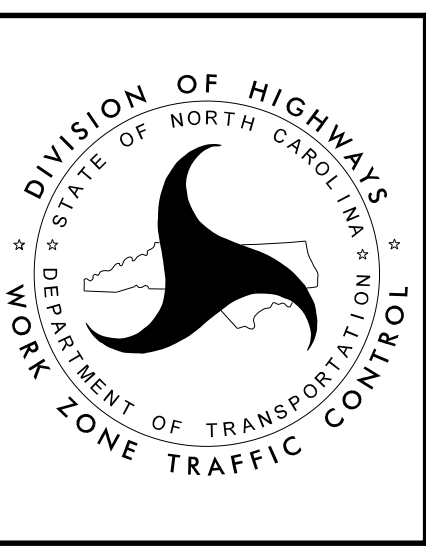
- CHANGEABLE MESSAGE SIGN (CMS)
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW
- TRAFFIC DRUM

APPROVED:
 DATE: 2/23/2017

DocuSigned by:
E27CE30E10FC442...

SEAL
022104
JOHN S. KITE, II
ENGINEER

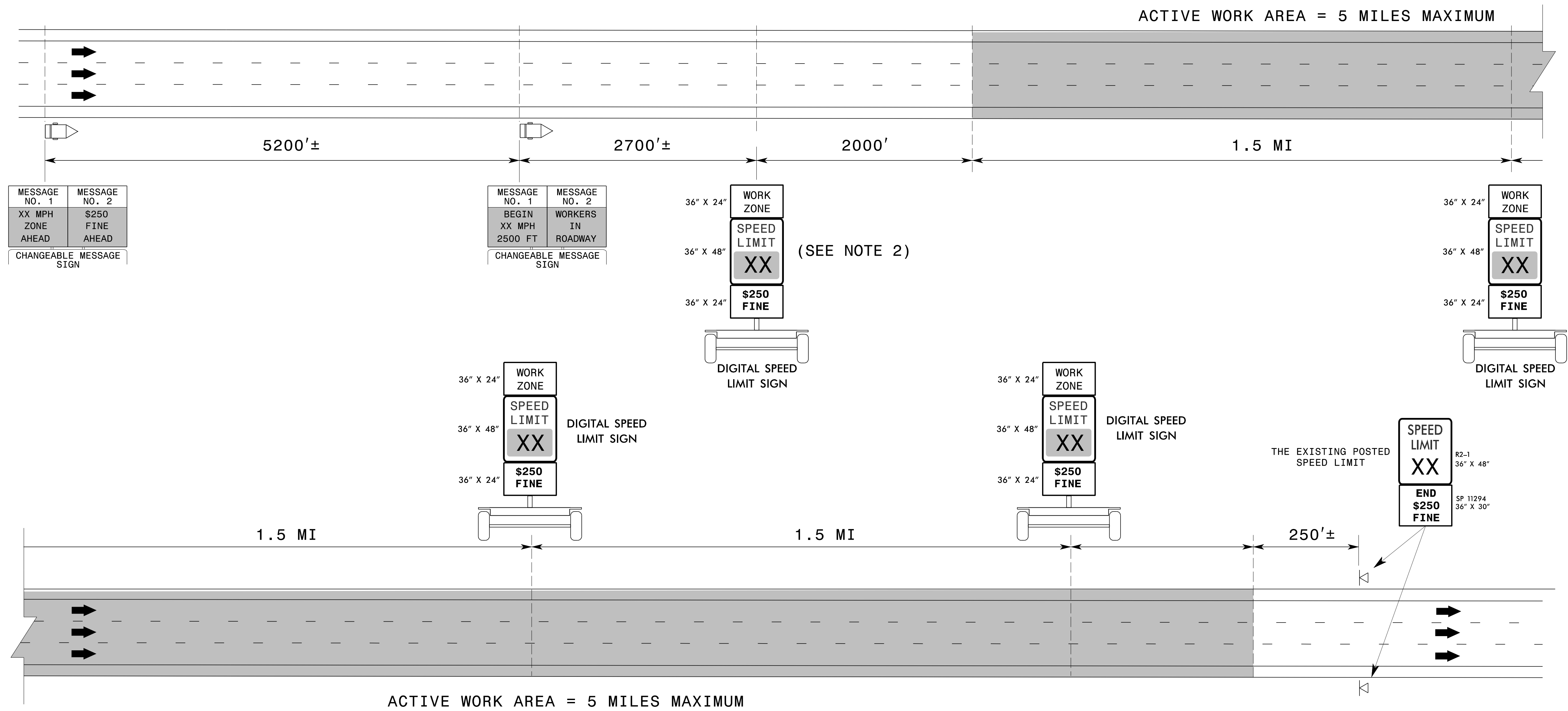
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



STATIONARY ADVANCE
WARNING SIGNS FOR
INTERSTATE/FREEWAY
RESURFACING PROJECTS

2/23/2017 S:\TMD\WZTC\DesignGroup3\Squad3B\0ats\Interstate Resurfacing Provisions and Details\Kite\Resurfacing_AdvWarn_HSpd.dgn User:kedais

INTERSTATE RESURFACING OPERATIONS WITH DIGITAL SPEED LIMIT SIGNS



WHEN THERE IS NOT ACTIVE WORK IN THE TRAVEL LANE

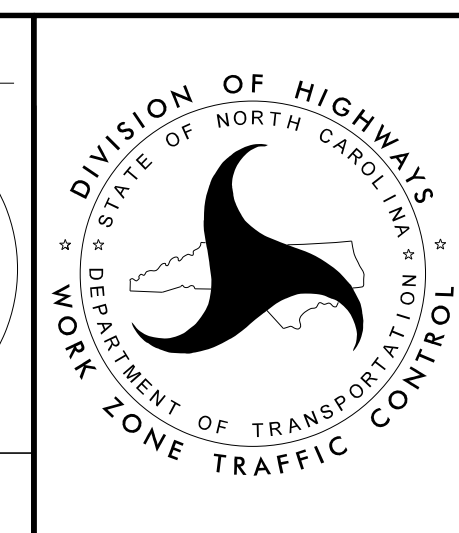
SPEED LIMIT DISPLAY	CONDITIONS	
	DROP-OFFS BETWEEN OPEN TRAVEL LANES	PAVED SHOULDER DROP-OFFS
USE EXISTING SPEED LIMIT	< 1.0"	≤ 3.0"
REDUCE SPEED LIMIT 5 MPH	1.0" - 2.0"	> 3.0"

DROP-OFFS BETWEEN OPEN TRAVEL LANES SHOULD NOT EXCEED 2.0"

- ### NOTES
1. THE SPEED LIMITS DISPLAYED WITHIN THE ACTIVE WORK AREA MAY VARY BETWEEN 55 MPH AND 70 MPH, DEPENDENT UPON ROAD WORK CONDITIONS AND THE EXISTING SPEED LIMIT. 55 MPH IS ONLY DISPLAYED DURING ACTIVE LANE CLOSURE OPERATIONS.
 2. AT THE FIRST DIGITAL SPEED LIMIT LOCATION, PLACE A DIGITAL SPEED LIMIT SIGN ON BOTH THE INSIDE AND OUTSIDE SHOULDERS, UNLESS DIRECTED OTHERWISE BY THE ENGINEER WHEN THERE IS NOT ENOUGH ROOM ON THE INSIDE SHOULDER DUE TO NARROW MEDIAN AND PERMANENT MEDIAN BARRIER. AT SUBSEQUENT LOCATIONS DOWNSTREAM, PLACE A SINGLE DIGITAL SPEED LIMIT SIGN ON THE OUTSIDE SHOULDER.
 3. THE ENGINEER MAY DETERMINE TO INSTALL THE DIGITAL SPEED LIMIT SIGNS ON THE OUTSIDE SHOULDER OR ON THE MEDIAN SIDE IF THE SIGNS ARE NOT HIGHLY VISIBLE TO ALL MOTORISTS. AT THE FIRST DIGITAL SPEED LIMIT
 4. THIS APPLICATION IS FOR SHORT-TERM ACTIVITIES. THE MAXIMUM ACTIVE WORK AREA IS 5 MILES.
 5. THE DIGITAL SPEED LIMIT SIGNS TAKE PRECEDENCE OVER EXISTING SPEED LIMIT SIGNS. ALL EXISTING SPEED LIMIT SIGNS SHALL BE COVERED OR REMOVED.
 6. THE DIGITAL SPEED LIMITS SIGNS WILL BE INSTALLED (TRAILER MOUNTED OR STATIONARY MOUNTED) IN ADVANCE AND SPACED APPROXIMATELY 1.5 MILES THROUGHOUT THE ACTIVE WORK AREA, UNLESS DIRECTED OTHERWISE.
 7. NCDOT HAS SOLE AUTHORITY OF THE SPEED LIMITS DISPLAYED ON THE DIGITAL SPEED LIMIT SIGNS.
 8. THE WORK ZONE VARIABLE SPEED LIMIT AND THE \$250 SPEEDING PENALTY ARE SEPARATE ORDINANCES THAT MUST BE SIGNED BY THE STATE TRAFFIC ENGINEER TO BE VALID AND ENFORCEABLE. WITHOUT A SIGNED ORDINANCE, THE SPEED LIMIT ON A FACILITY SHALL REMAIN UNCHANGED.

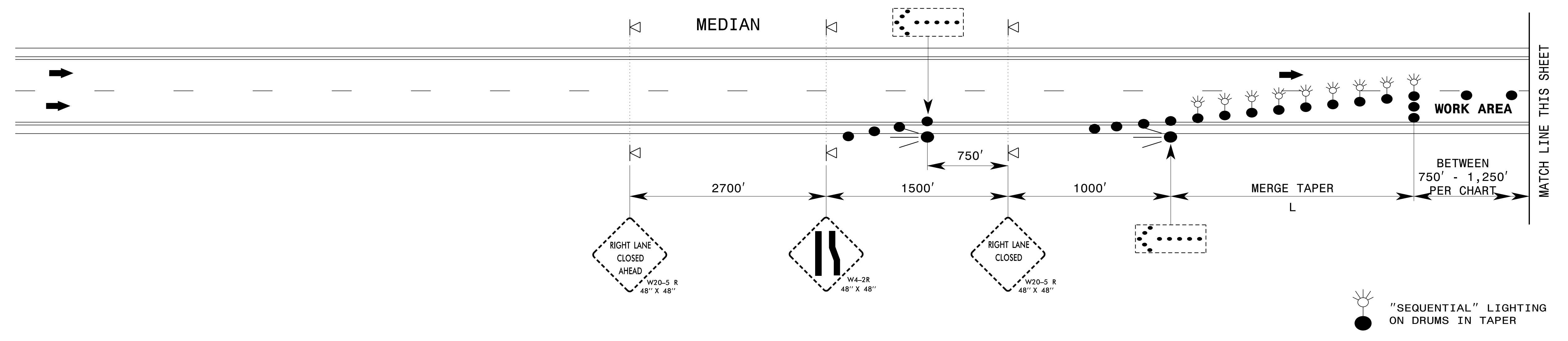
APPROVED: *Steve Kite*
DATE: 2/23/2017

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

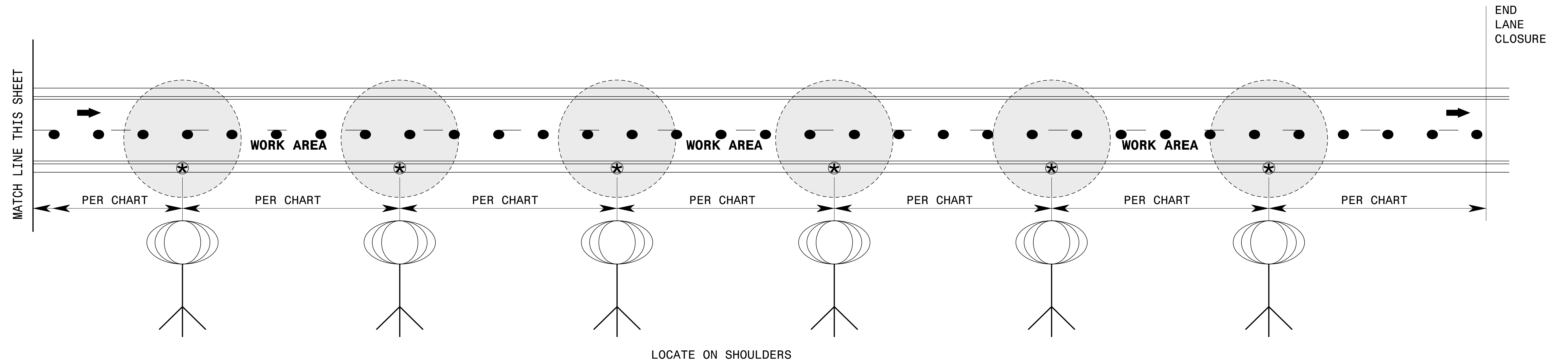


WORK ZONE "VARIABLE"
SPEED LIMIT USING
DIGITAL SPEED LIMIT
SIGNS FOR INTERSTATE/
FREEWAY RESURFACING
PROJECTS

ADVANCE WARNING AREA



WORK ZONE AREA



SPACING CHART

LIGHT OUTPUT (LUMENS)	MINIMUM LIGHTED FIXTURE AREA (SQUARE FEET)	MAXIMUM SPACING (FEET)	LIGHT UNITS (PER MILE)
50,000 TO 65,000	5.5	750'	6
66,000 TO 80,000	5.5	1,000'	5
81,000 TO 100,000	36	1,250'	4

NOTES

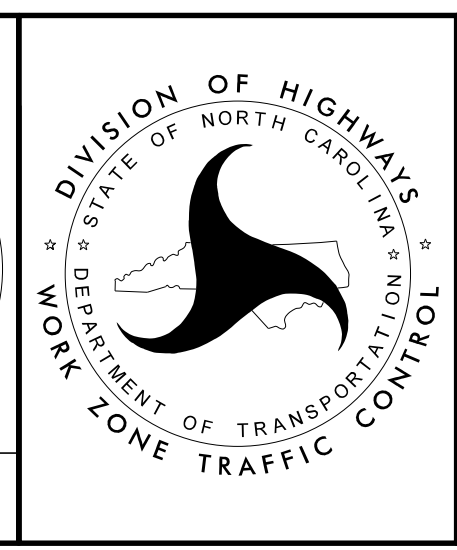
- 1) SPACE LIGHT UNITS ACCORDING TO THE CHART.
- 2) EACH LIGHT UNIT SHALL BE CAPABLE OF ELEVATING TO A MINIMUM HEIGHT OF 14' ABOVE THE PAVEMENT.
- 3) PLACE ON PAVED SHOULDER IF POSSIBLE.

APPROVED: *Steve Kite*
DATE: 3/17/2017

DocuSigned by:
E27CE30E1DFC442...

SEAL
022104
ENGINEER
JOHN S. KITE, II

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



SEQUENTIAL FLASHING
WARNING LIGHTS
AND
WORK ZONE
PRESENCE LIGHTING

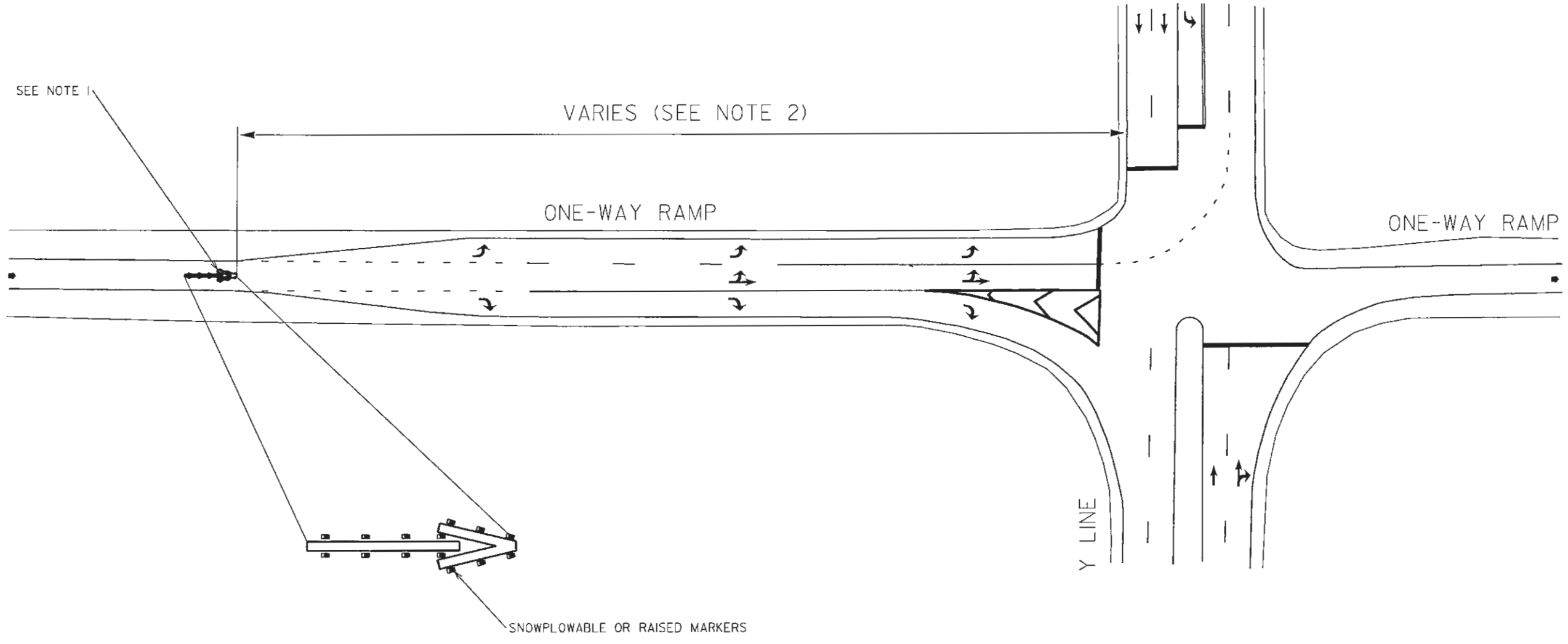
3/17/2017 S:\TMU\WZTC\DesignGroup3\Squad3B\Data\Inter-state Resurfacing Provisions and Details\Detail Drawings\Sequential.and.Presence Lighting_20170227.dgn User:kedais

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

8-15

ENGLISH STANDARD DETAIL FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
ONE-LANE EXIT RAMP AT MULTI-LANE APPROACH

ASPHALT TREATMENT



NOTES:

- 1) REFER TO THE 2012 ROADWAY STANDARD DRAWING 1205.09, SHEET 1 OF 8 FOR RAMP ARROW DIMENSION REQUIREMENTS.
- 2) PLACEMENT OF WRONG-WAY RAMP ARROW VARIES AND SHOULD BE LOCATED JUST BEFORE THE MULTI-LANE APPROACH.
- 3) INSTALL MARKERS (SNOWPLOWABLE/RAISED) IN ACCORDANCE TO THE ROADWAY STANDARD DETAIL.
- 4) MARKING SHALL BE THERMOPLASTIC MATERIAL.

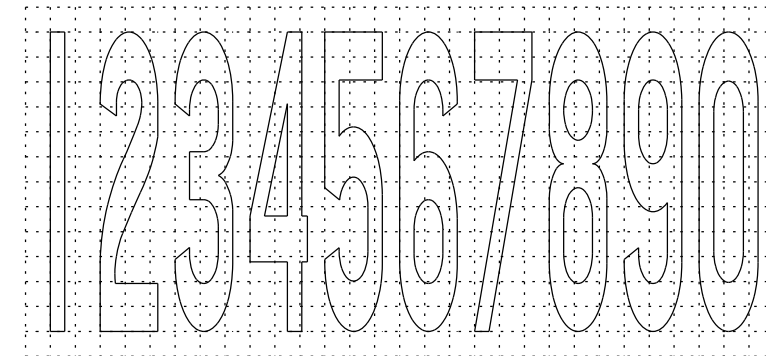
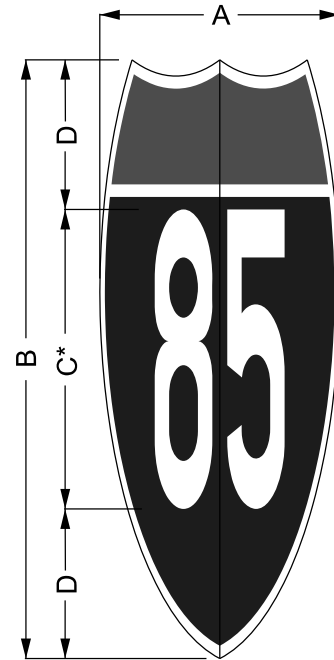
LEGEND	
	DIRECTION OF TRAFFIC FLOW
	PAVEMENT MARKING SYMBOLS

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

8-15

ENGLISH STANDARD DETAIL FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
ONE-LANE EXIT RAMP AT MULTI-LANE APPROACH

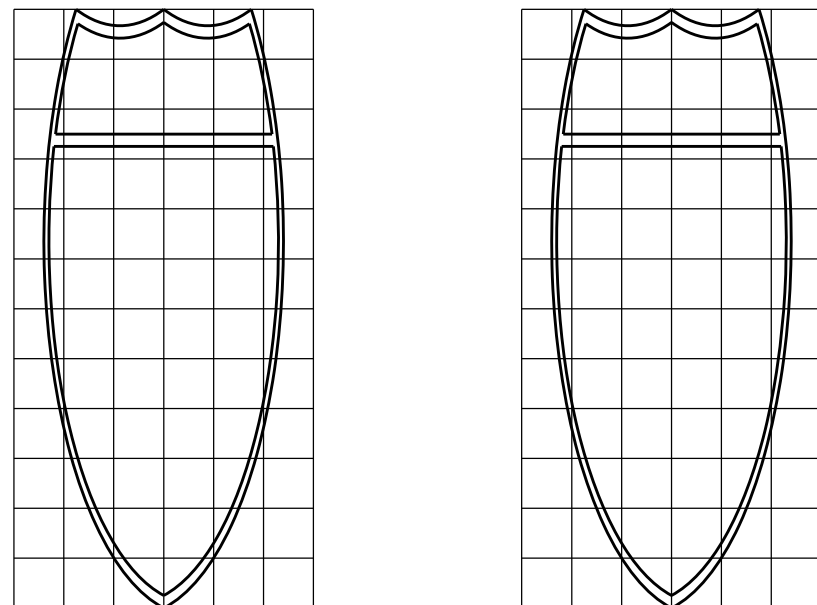
NOTE:
Contact Traffic Services prior to installation of shields.



Font series for one and two digit shields

- * See chart for font style
- ** Optically space numerals about vertical centerline
- Legend - white (retroreflective)
- Top - red (retroreflective)
- Bottom - blue (retroreflective)

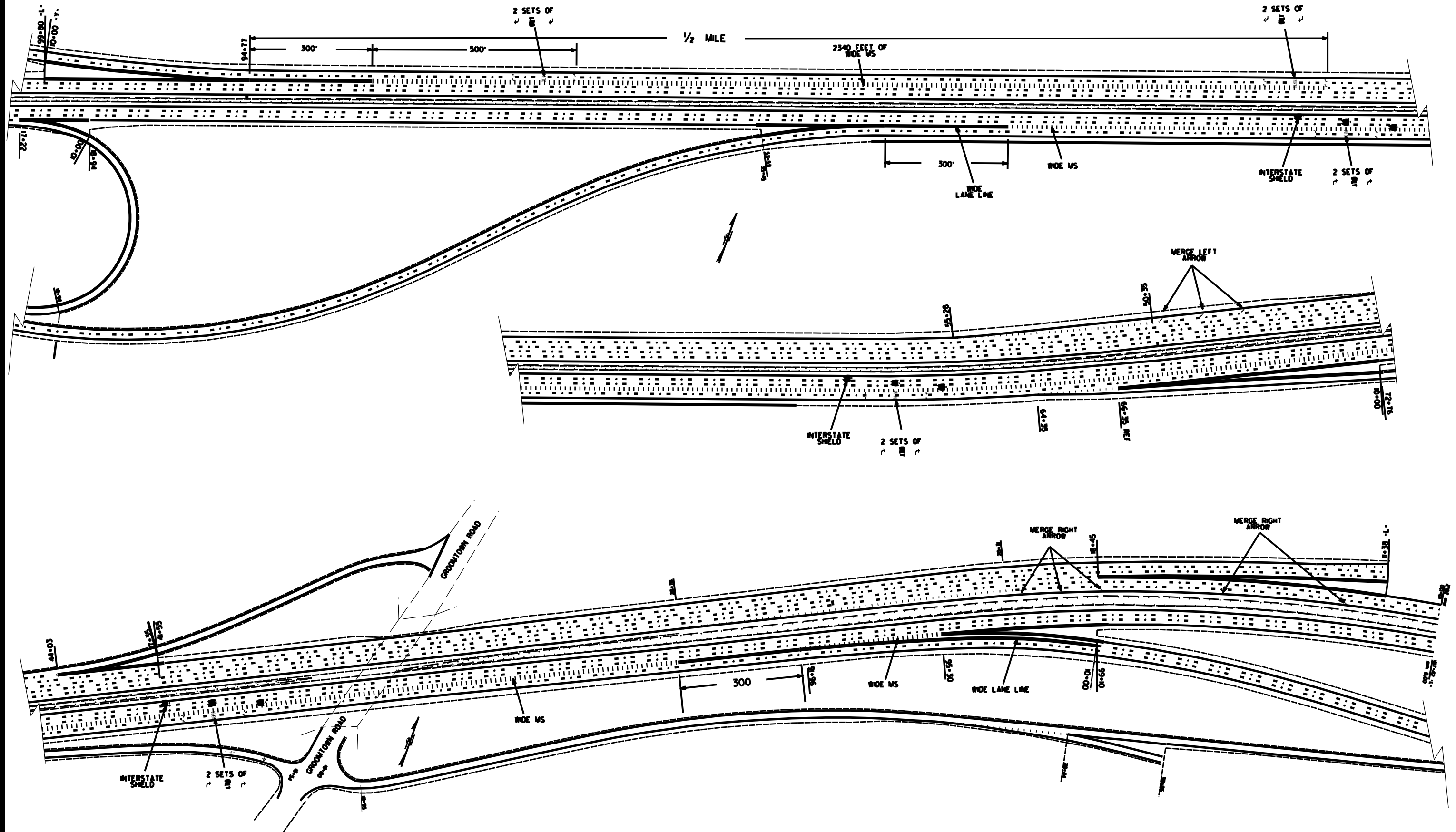
A	B	C	D
72"	180"*	90"	45"



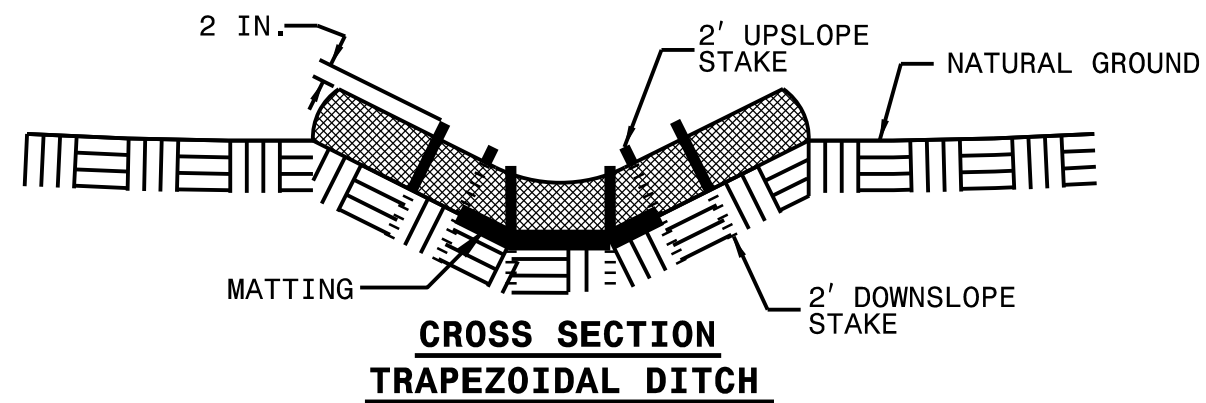
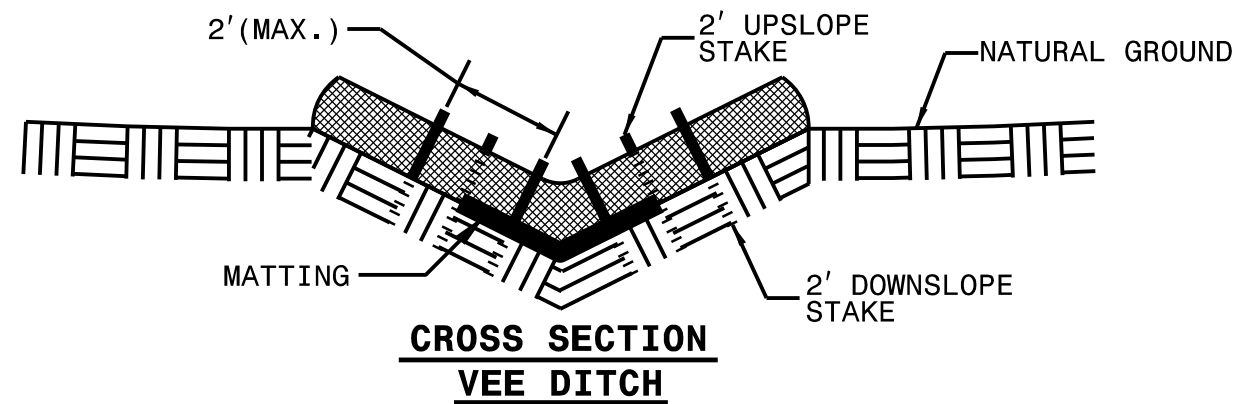
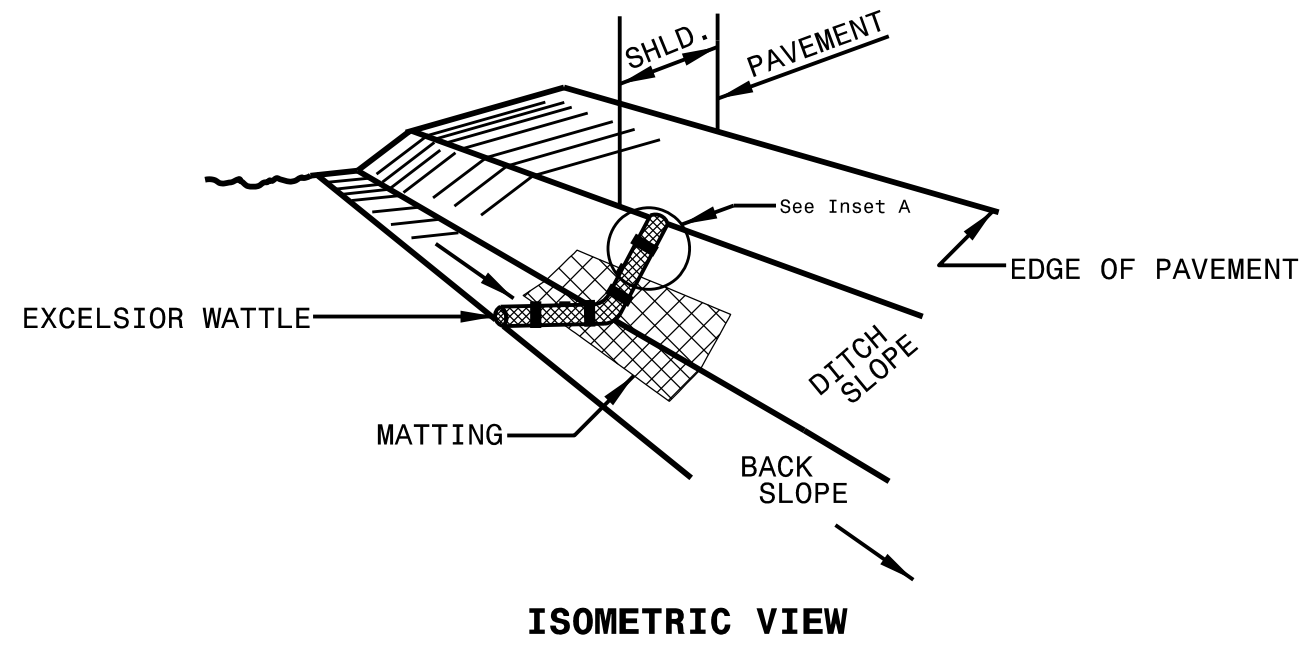
One and two digit Interstate shield

PARTIAL MARKING PLAN

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5853	PMP-3	



WATTLE DETAIL



NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

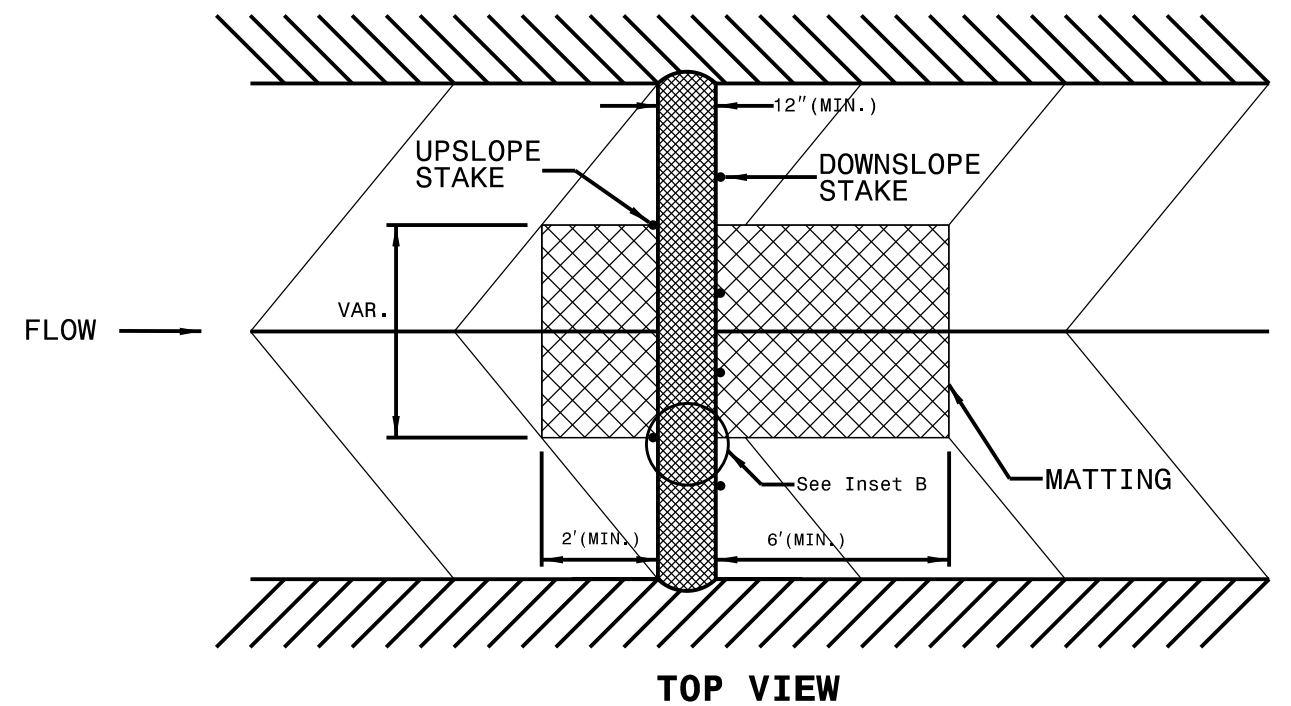
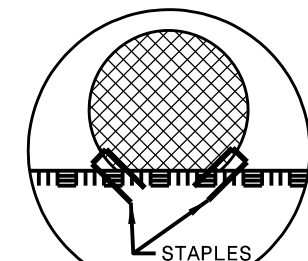
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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.

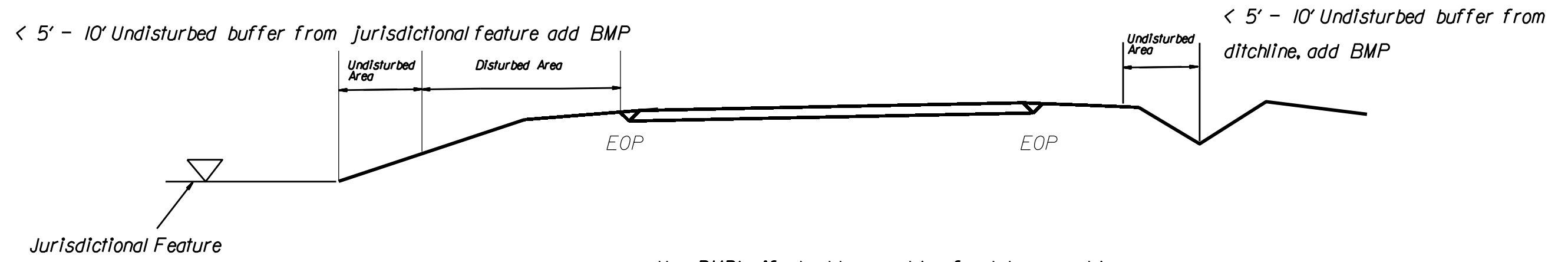
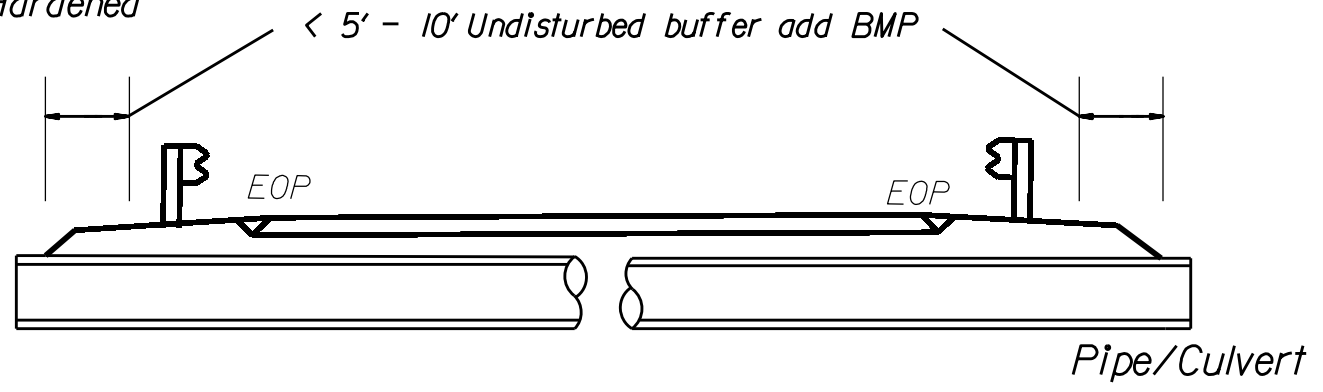
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



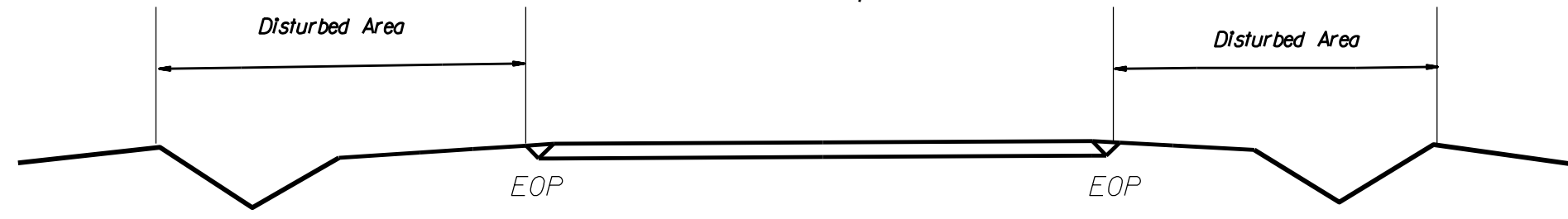
NOTES: Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

BMP Options: Wattle, Silt Fence or Hardened Aggregate.

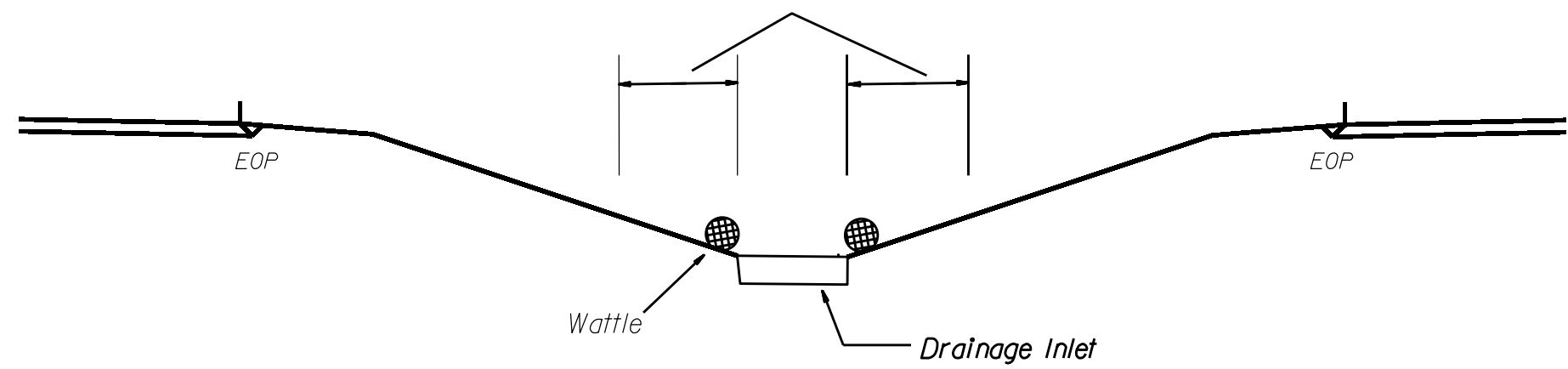
EROSION CONTROL DETAIL



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

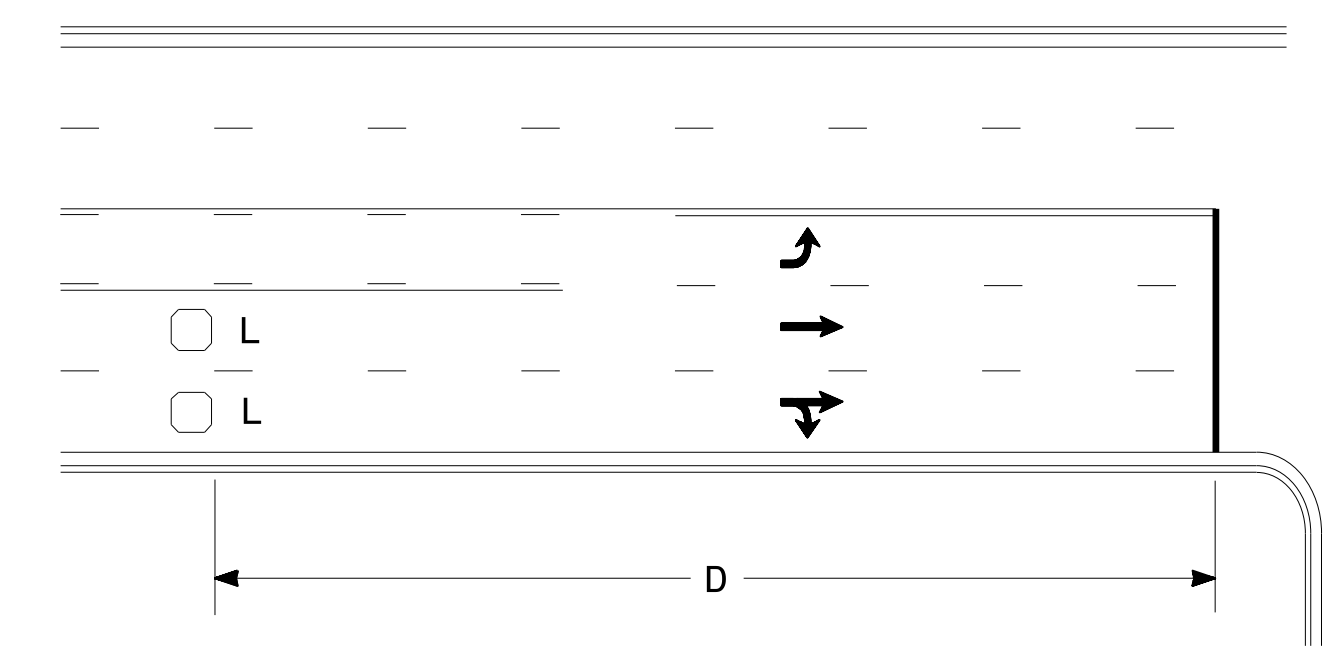


< 5' - 10' Undisturbed buffer from inlet, add wattle



NOT TO SCALE

High Speed Detection (≥40 mph)

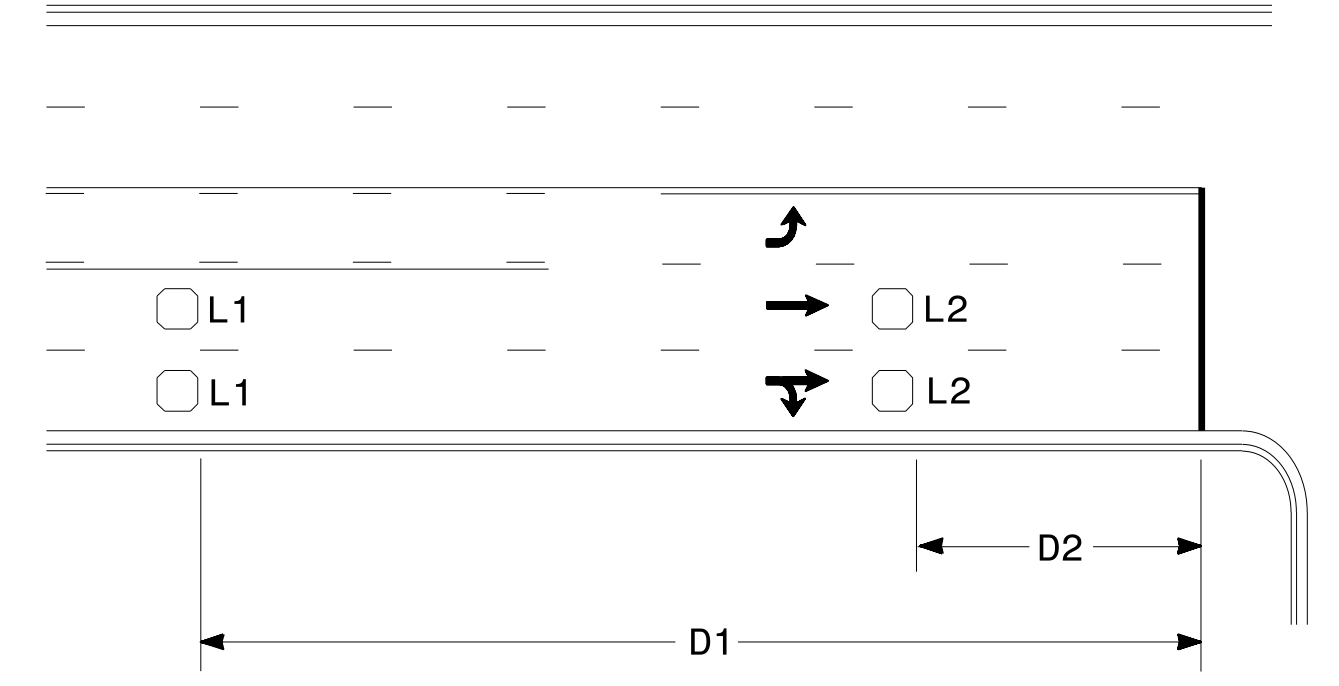


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

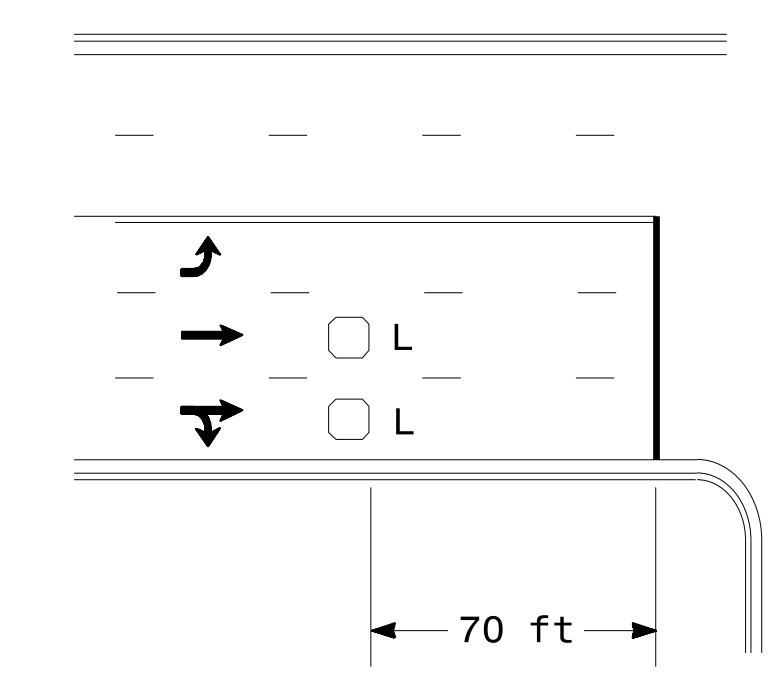


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

L1 = 6ft X 6ft
Wired in series
L2 = 6ft X 6ft
Wired in series

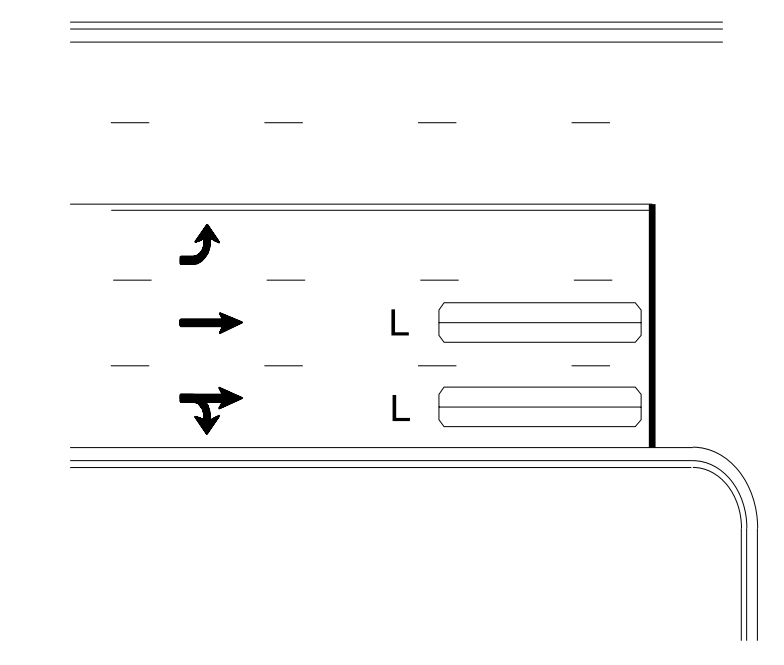
"Stretch" Operation

Low Speed Detection (≤35 mph)



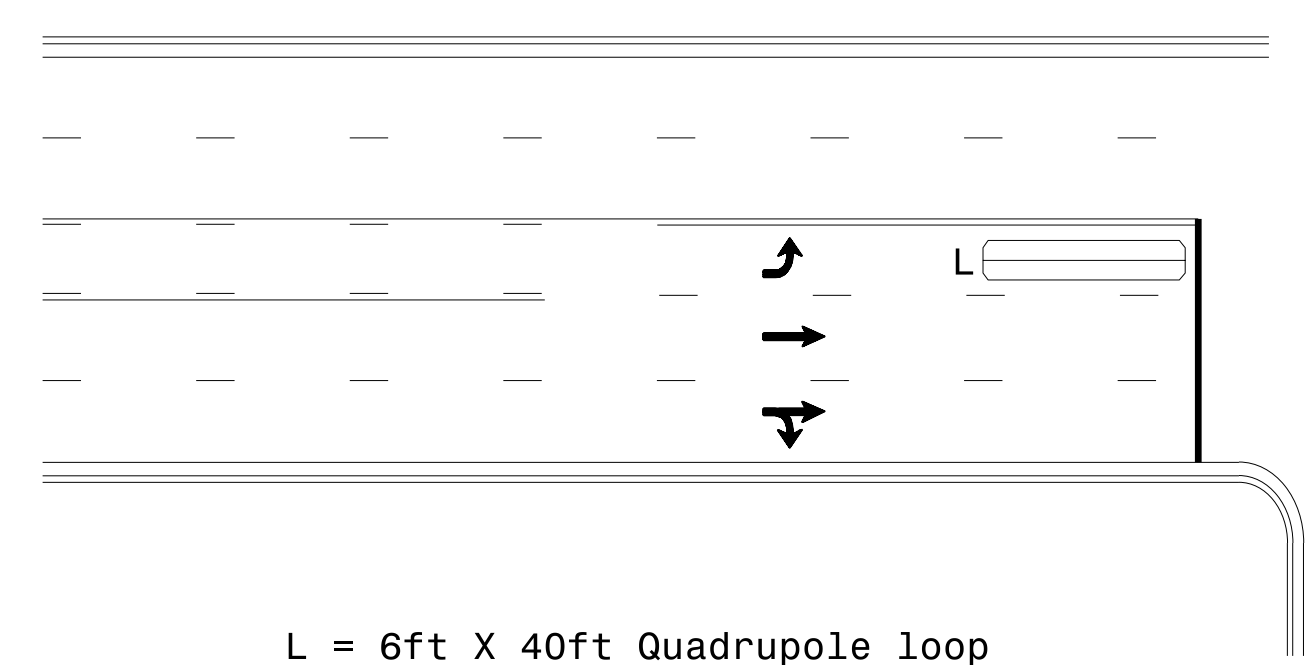
L = 6ft X 6ft
Wired in series

OR



L = 6ft X 40ft
Quadrupole loop, wired separately

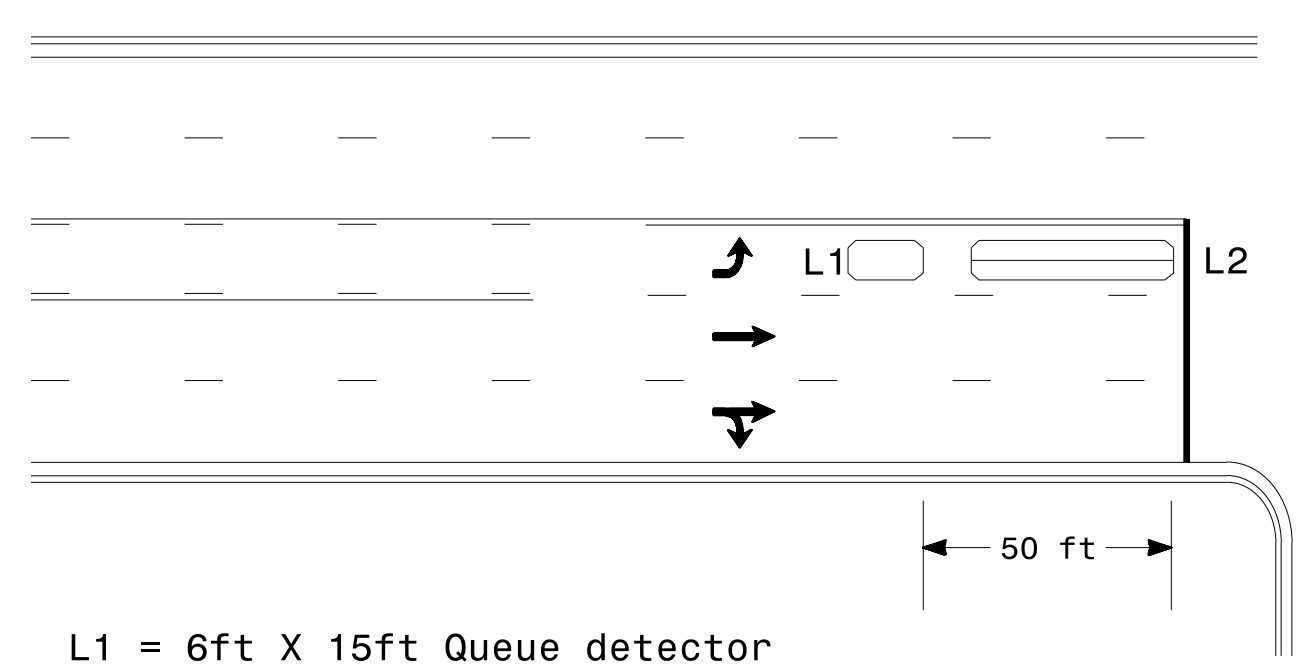
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

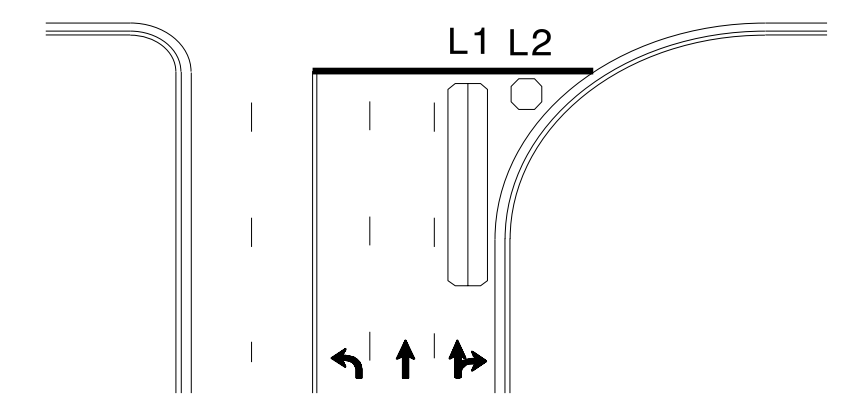
OR



L1 = 6ft X 15ft Queue detector
L2 = 6ft X 40ft Quadrupole loop

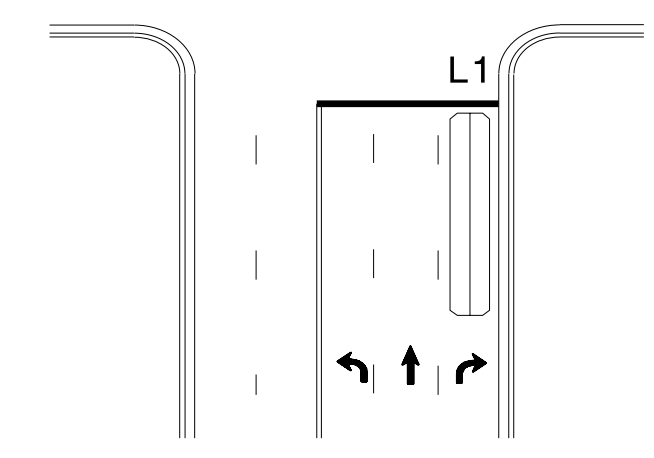
Queue Loop Detection

Right Turn Lane Detection

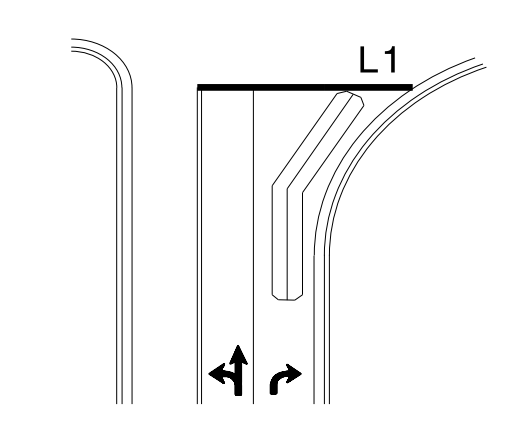


Shared Lane/
Wide Radius Turn

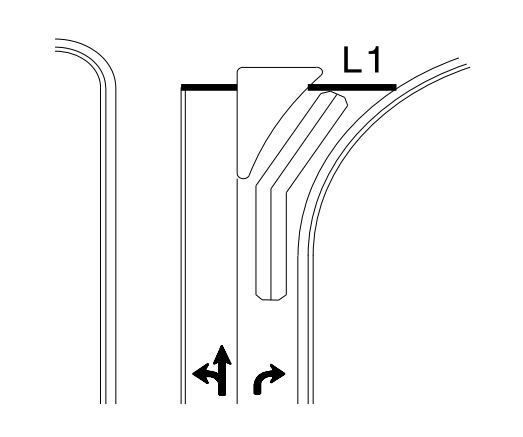
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

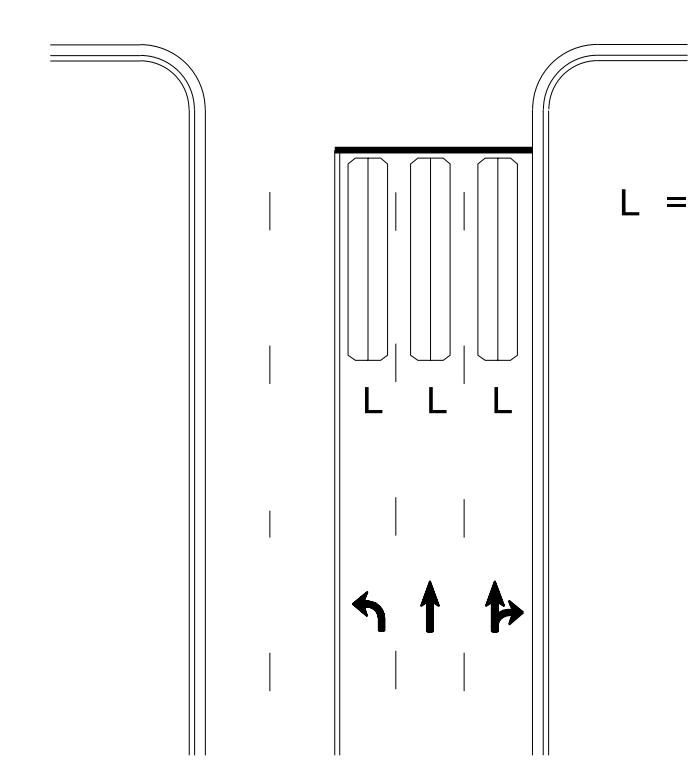


Wide Radius Turn



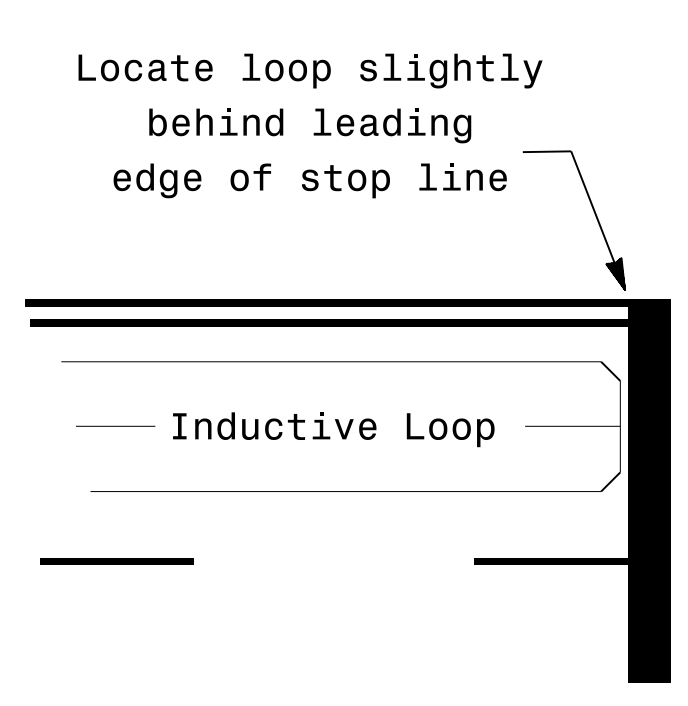
Channelized Turn

Side Street Detection



L = 6ft X 40ft
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 under any of the
following conditions:
1) stop line is greater than 15'
from edge of intersecting
roadway
2) loop detects a permissive or
protected/permissive left turn
3) for an exclusive right turn
lane

Recommended Number of Turns

Single 6' X 6' loop
(when wired separately):

Length of Lead-in ft	Number of Turns
< 250	3
250-375	4
375-525	5
> 525	6

Quadrupole loops: Use 2-4-2 turns
6' X 15' Loops:
Lead-in < 150', use 2 turns
Lead-in > 150', use 3 turns

750 N. Greenfield Pkwy, Garner, NC 27529

Typical Signal Loop Locations

PLAN DATE: January 2015	REVIEWED BY: JPG
PREPARED BY: PLA	REVIEWED BY:
REVISIONS	INIT. DATE

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
PAMELA L. ALEXANDER
23489

1/30/2015

3D:\4146-2015-12-29
 S:\ITS\5853\15-Signal\Loop\Signal Design\Section\Eastern\Region\loop\ypj\ca\2015.dgn
 paalexander

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

ENGLISH STANDARD DRAWING FOR DEEP-CUT INDUCTIVE DETECTION LOOPS (FOR INSTALLATION PRIOR TO MILLING)

NOTES

- OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
- MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
- WIRE LOOPS CONNECTED TO THE SAME DETECTOR IN SERIES.
- LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS.
- USE A SERIES OF ONE INCH PIECES OF BACKER ROD SPACED ONE FOOT APART ALONG THE ENTIRE LENGTH OF THE FEEDER SLOT AND LOOP SAW SLOT.
- CONSULT LOOP SEALANT MANUFACTURER TO DETERMINE CURING TIME REQUIRED PRIOR TO MILLING.
- REFER TO STANDARD DRAWING 1725.01 SHEETS 2 AND 3 FOR ADDITIONAL REQUIREMENTS.

SAW SLOT DEPTH CHART
ASSUMING 2" MILLING DEPTH

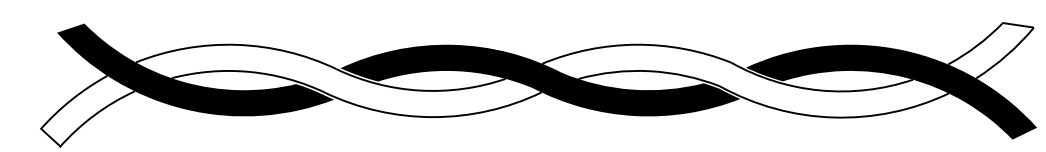
DEPTH (IN)	MAX NO. OF WIRE LAYERS				
	2	3	4	5	6
SAW SLOT DEPTH	4.0	4.5	5.0	5.0	5.0
MINIMUM TOTAL ASPHALT DEPTH REQUIRED	5.0	5.5	6.0	6.0	6.0

LOOP WIRE TWISTING METHOD

INCORRECT WAY TO TWIST WIRE

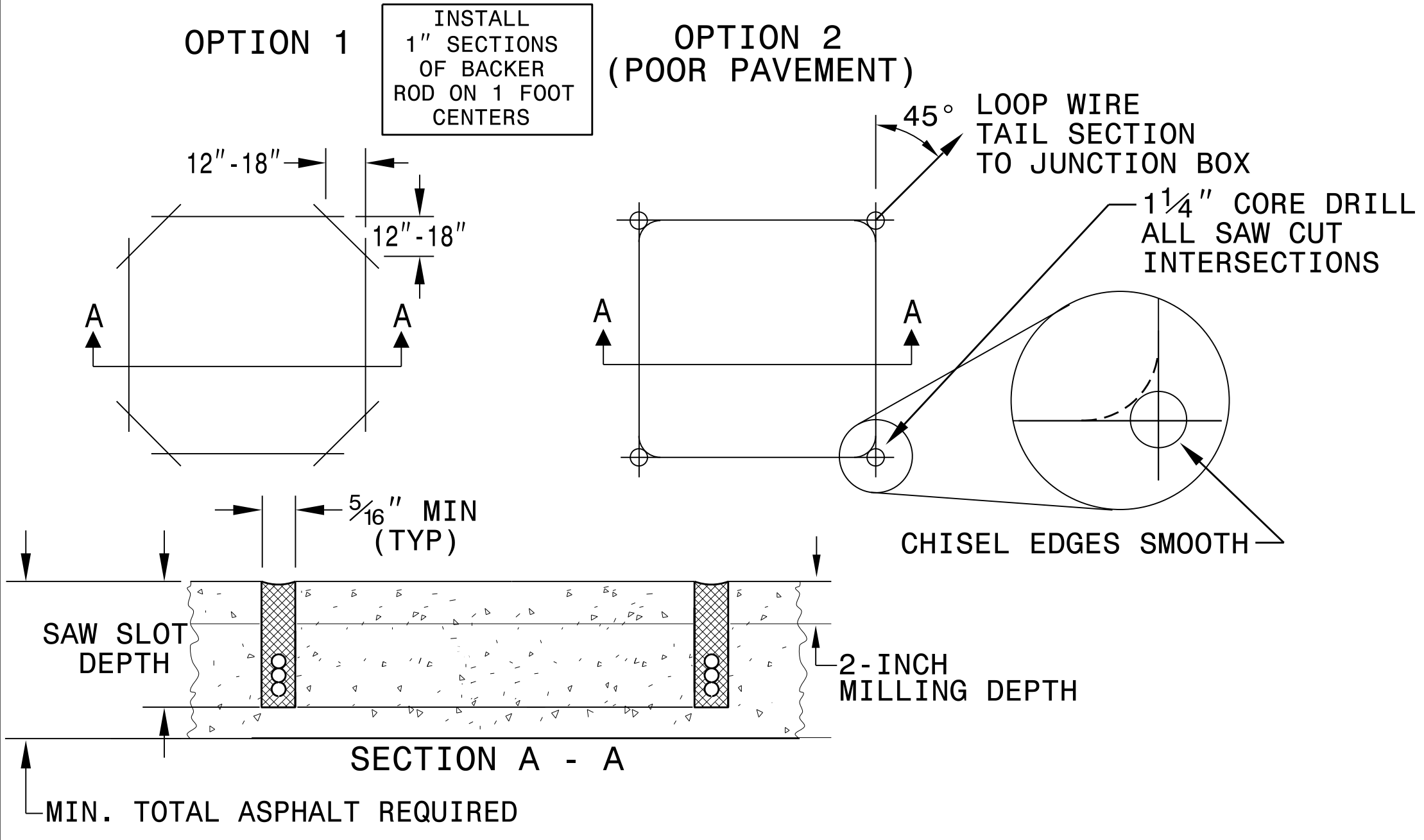


CORRECT WAY TO TWIST WIRE

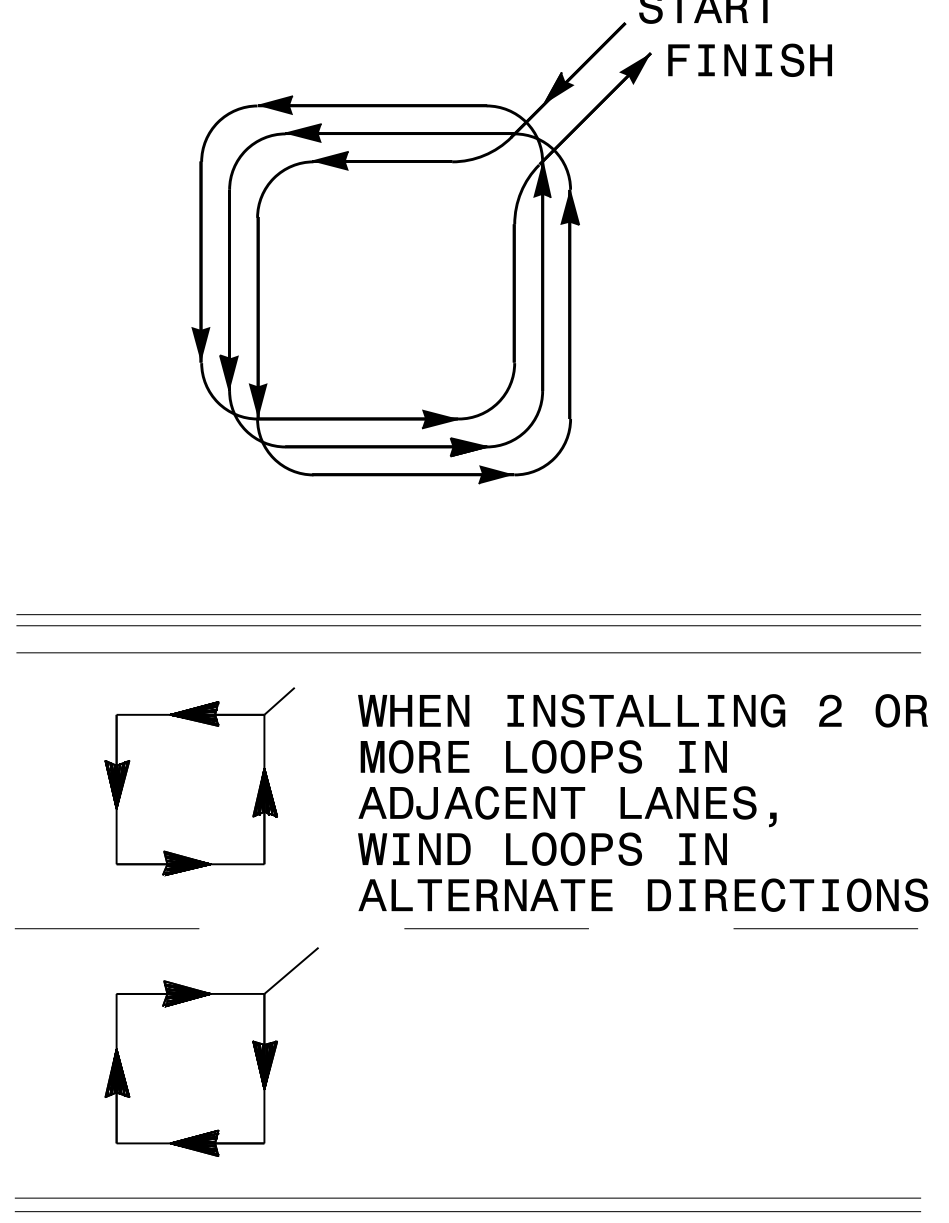


CONVENTIONAL 4-SIDED LOOP

SAW CUT OPTIONS

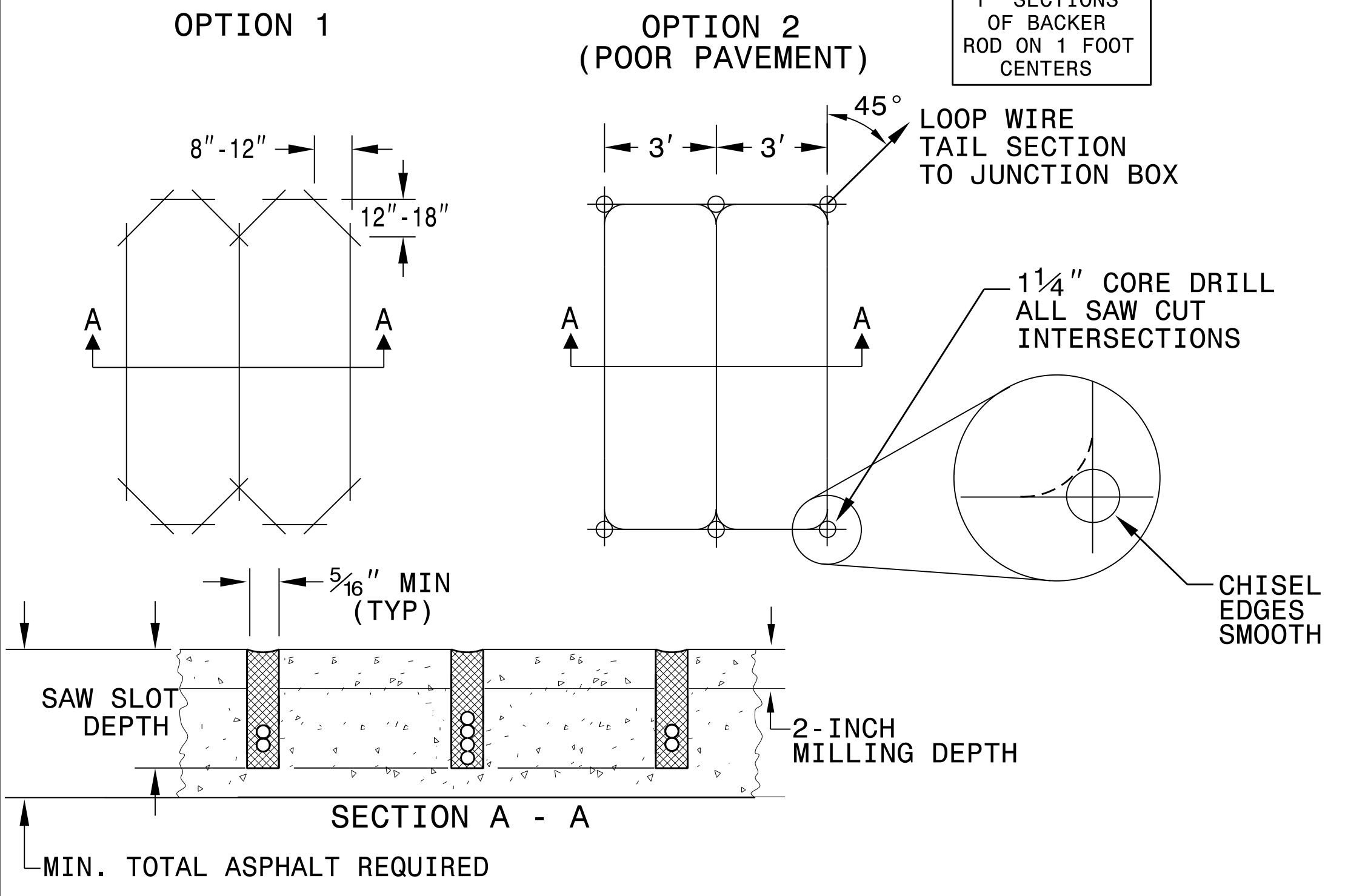


LOOP WINDING METHOD

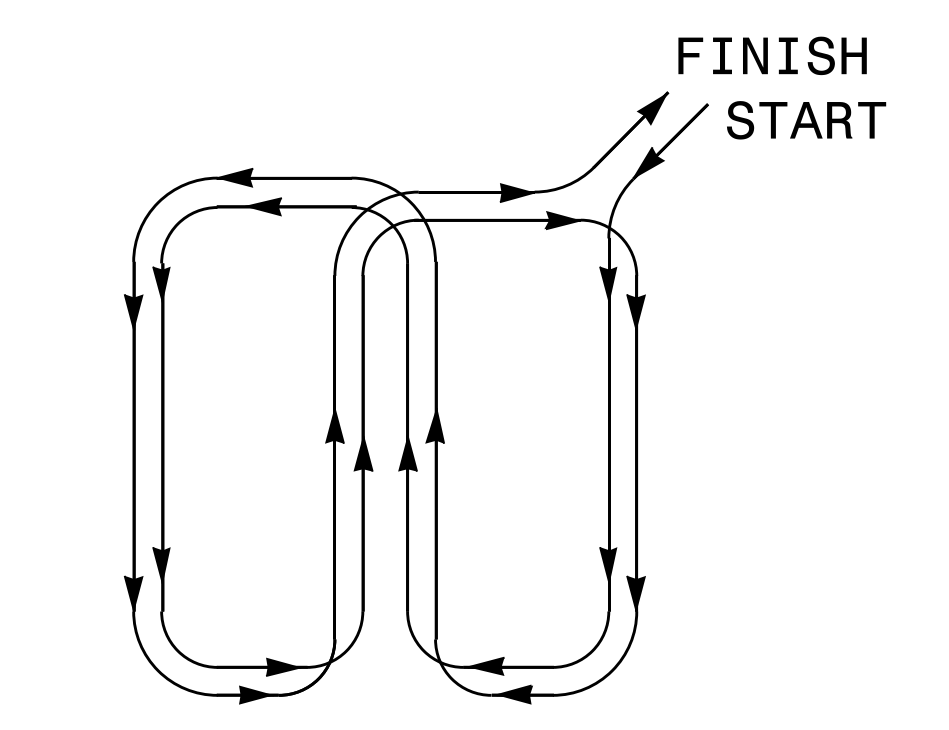


QUADRUPOLE LOOP

SAW CUT OPTIONS

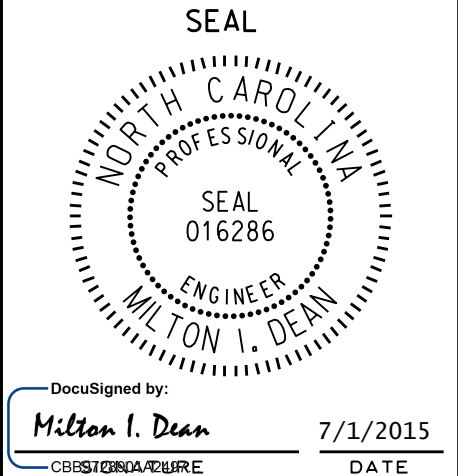
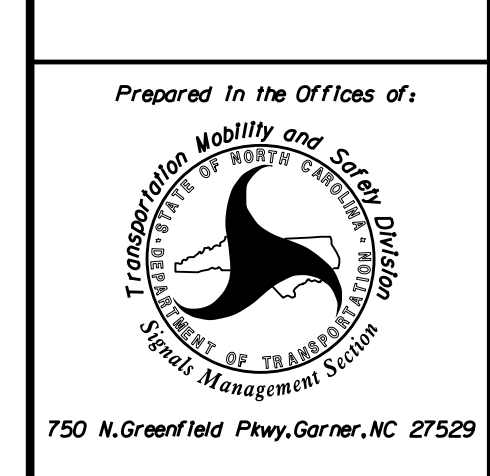


LOOP WINDING METHOD



REVISIONS

1. REMOVED TWISTING NOTES FROM TAIL SECT. TO JUNCTION BOX. 2/26/08 MWH
2. REVISED SECTION A - A DETAILS. 6/29/15 JTP



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

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