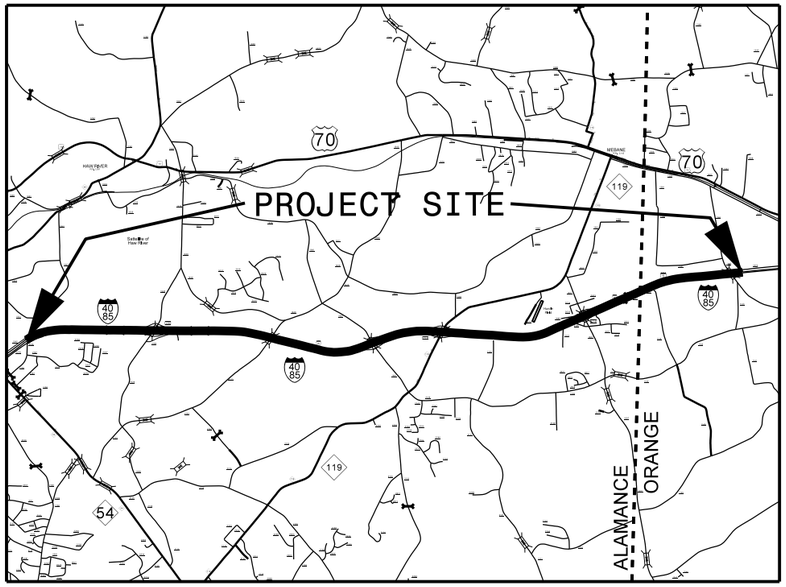
09/08/99

TIP PROJECT: I-5954

CONTRACT: C204025

VICINITY



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

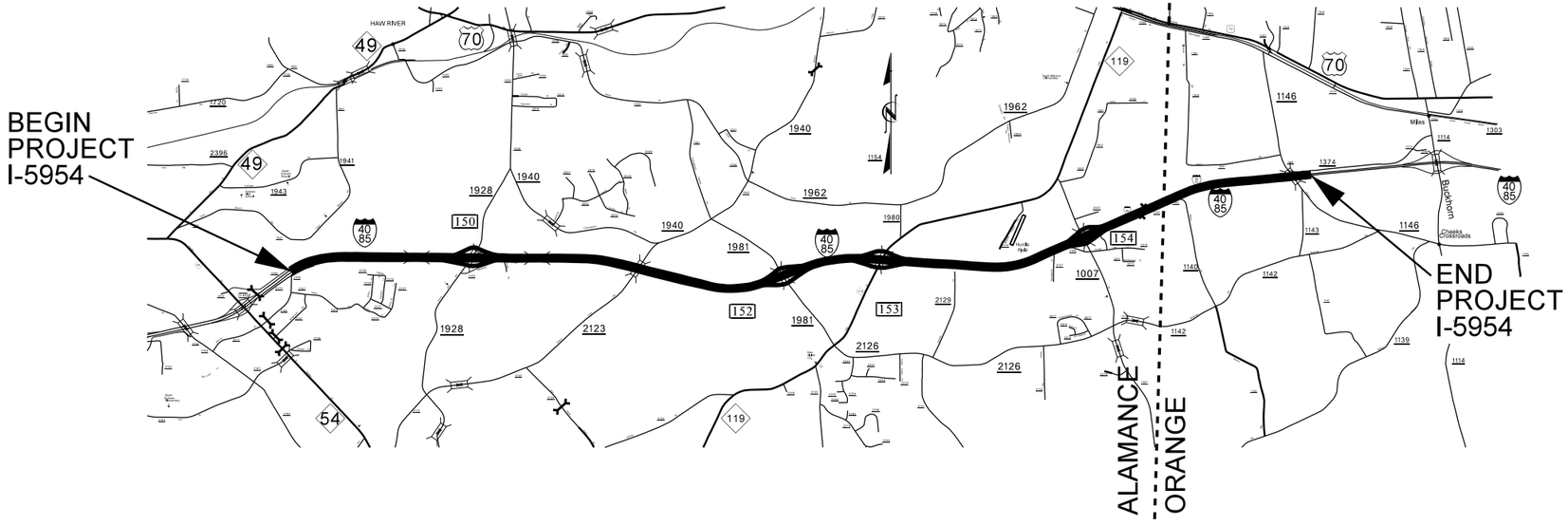
ALAMANCE and ORANGE COUNTIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5954	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45907.1.1	NHPIM-0040(066)	I-5954 (PE)
45907.3.1	NHPIM-0040(066)	I-5954 (CONST)

LOCATION: I-40/I-85 FROM EAST OF NC 54 IN GRAHAM IN ALAMANCE COUNTY TO WEST OF SR 1114 (BUCKHORN ROAD) IN ORANGE COUNTY

TYPE OF WORK: PAVEMENT REHABILITATION



GRAPHIC SCALES	DESIGN DATA	PROJECT LENGTH
NOT TO SCALE		I-5954 = 7.855 miles

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE:
July 18, 2017

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

25-MAY-2017 07:46
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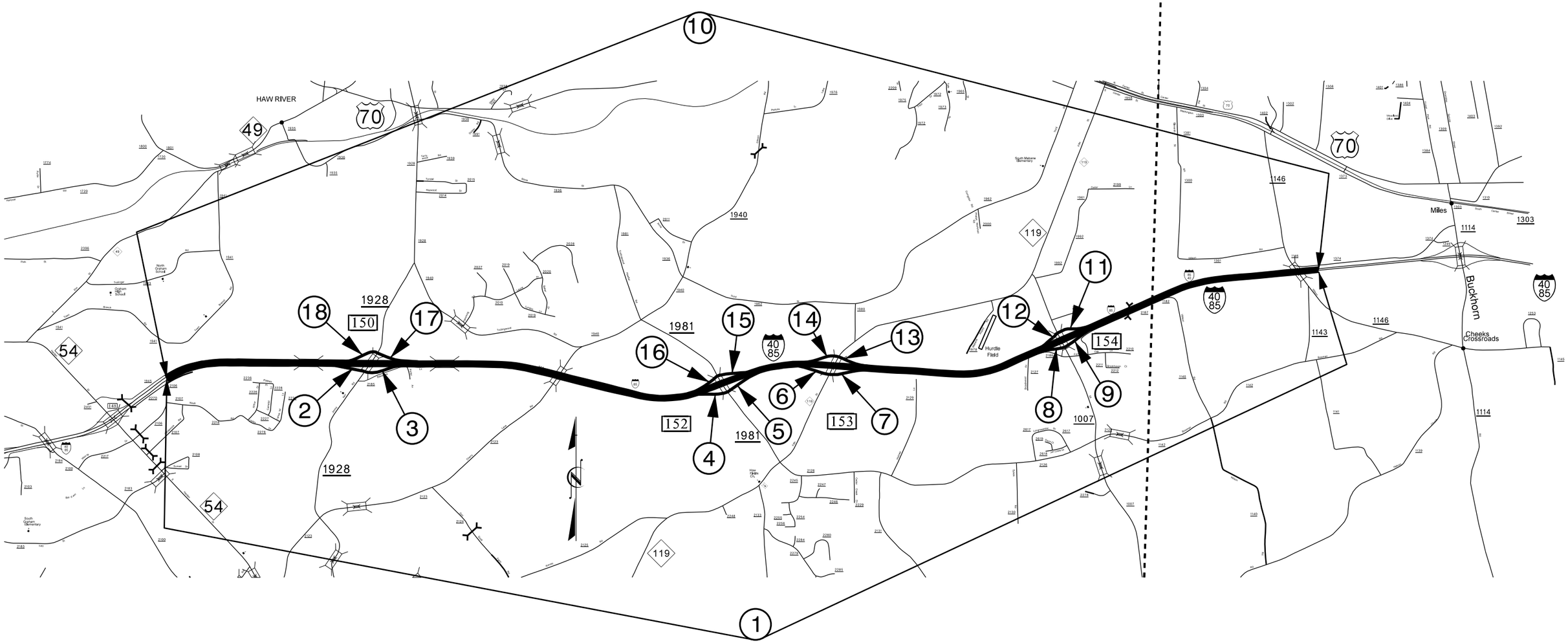
cwiles AT DIV07-300048

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5954	2	

ALAMANCE COUNTY I-5954 ORANGE COUNTY



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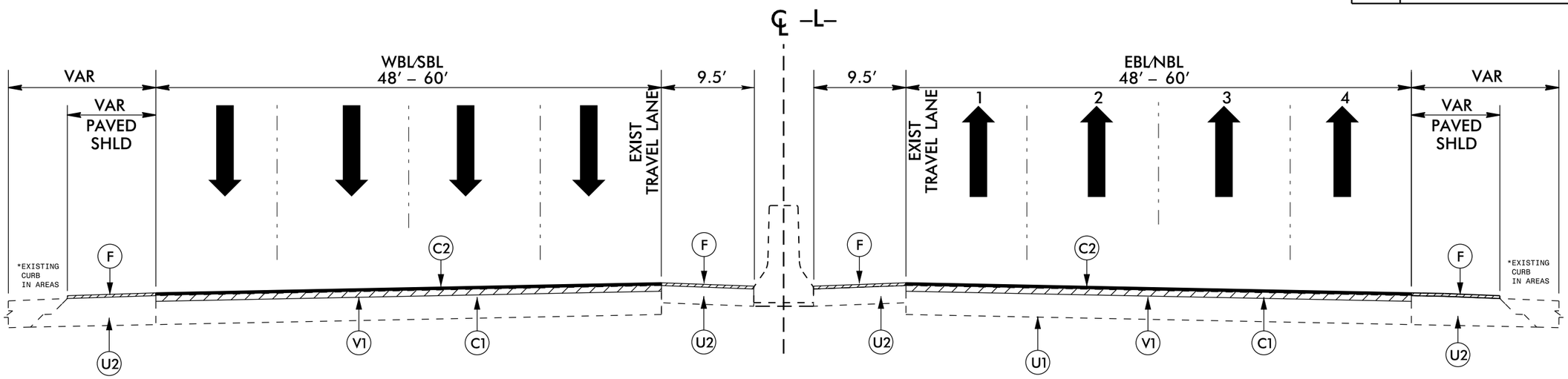
cwiles AT DIV07-300048

5/14/99

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5954	3	

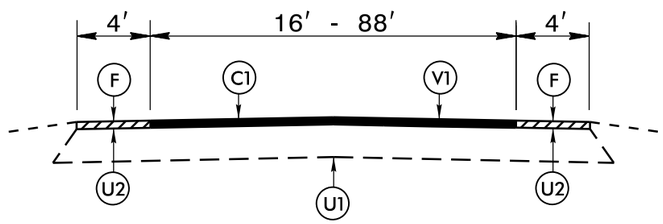


*NOTE: TYPICAL SECTION CONSTRUCTION SEQUENCE:
1. MILL TRAVEL LANES 2″ AND FILL WITH 2″ SURFACE COURSE, TYPE S9.5D
2. OVERLAY WITH TRAVEL LANES WITH ¾″ OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-2 MODIFIED
3. OVERLAY SHOULDERS WITH FOG SEAL

TYPICAL SECTION NO. 1

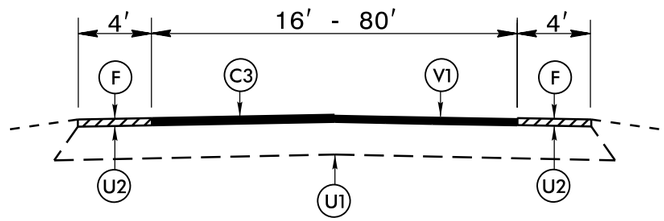
TO BE USED ON MAPS 1, 10

MAP 1: STA. 0+00 TO STA. 411+94 EB/NB
MAP 10: STA. 0+00 TO STA. 414+74 WB/SB



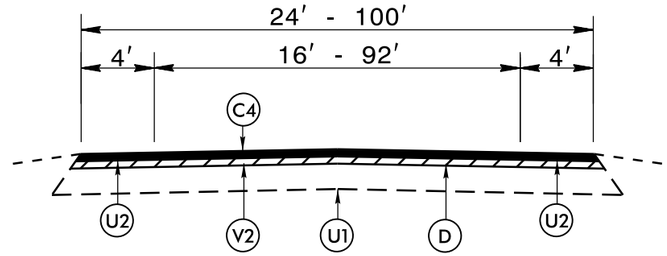
TYPICAL SECTION NO. 2

TO BE USED ON MAPS 2, 4, 5, 15, 16, 17



TYPICAL SECTION NO. 3

TO BE USED ON MAPS 6 THRU 9, 11 THRU 14



TYPICAL SECTION NO. 4

TO BE USED ON MAPS 3, 18

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	D	PROP. APPROX. 4 ″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.		
C2	PROP. APPROX. ¾″ OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-2 MODIFIED, AT AN AVERAGE RATE OF 90 LBS PER SQ. YD.	F	PROPOSED FOG SEAL TO BE APPLIED TO THE EXISTING SHOULDER		
C3	PROP. APPROX. 1½″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	U1	EXISTING TRAVELWAY.	U2	EXISTING PAVED SHOULDER.
C4	PROP. APPROX. 2 ″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.				

MILLING SCHEDULE

V1	MILLING ASPHALT PAVEMENT. 1½″ DEPTH.
V2	MILLING ASPHALT PAVEMENT 4 ″ DEPTH

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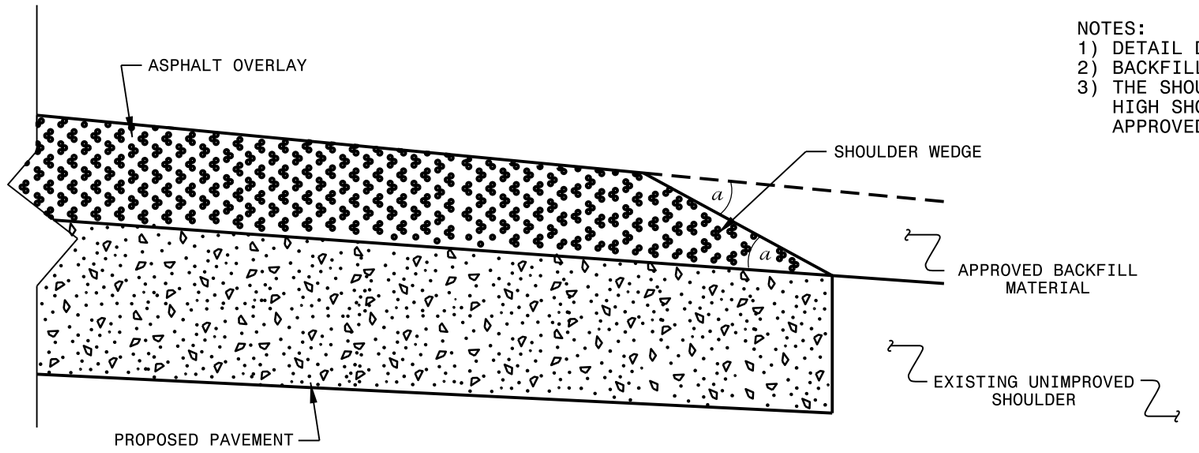
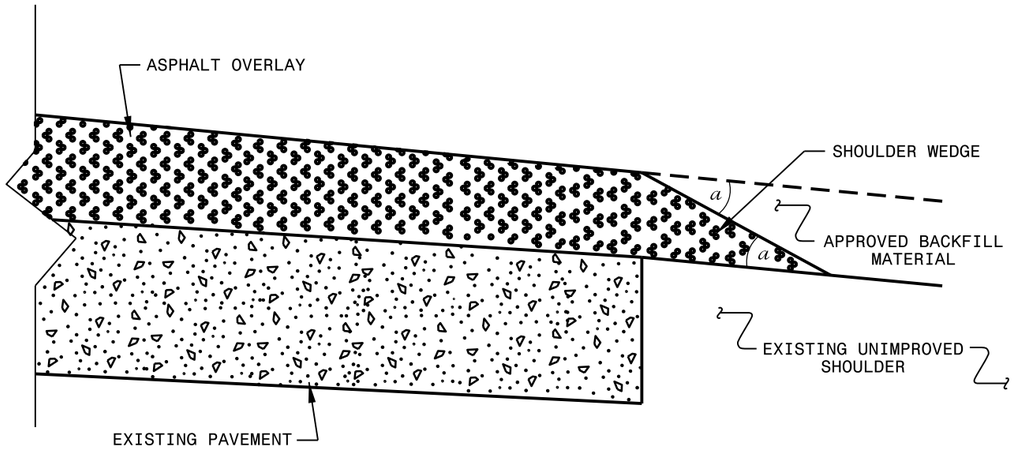
PROJECT REFERENCE NO.	SHEET NO.
I-5954	4



NOTES:
1) DETAIL DOES NOT APPLY TO OGAFC AND ULTRA-THIN BONDED WEARING COURSE.
2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT AS APPROVED BY THE ENGINEER.

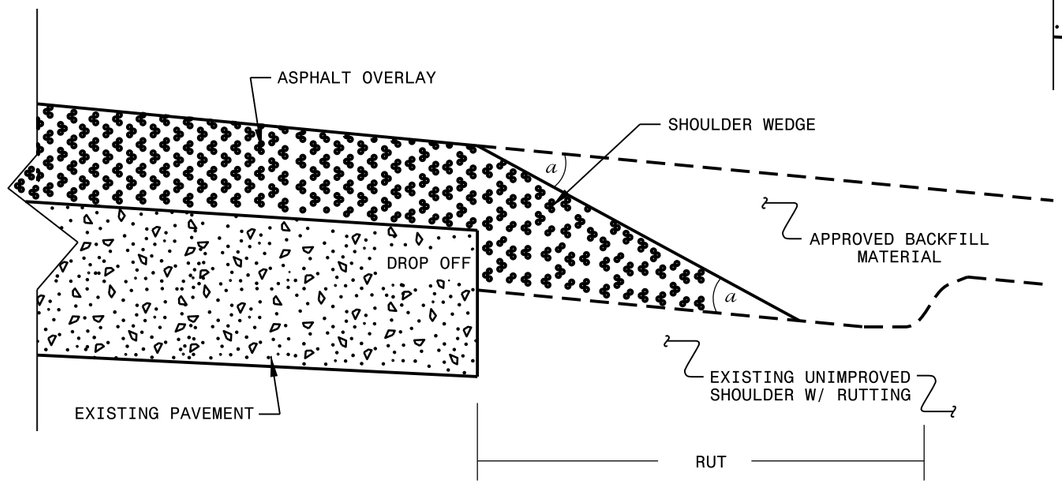
SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ Widening or with Existing Paved Shoulder having no dropoffs)



SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ NO Widening)



SHOULDER WEDGE DETAIL

(Resurfacing Adjacent to Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SHOULDER WEDGE DETAILS

ORIGINAL BY:	T.SPELL	DATE:	7-19-11
MODIFIED BY:		DATE:	2/2/16
CHECKED BY:		DATE:	
FILE SPEC.:	s:usr/details/stand/shoulderwedgedetail.dgn		

PROJECT REFERENCE NO.	SHEET NO.
I-5954	5

Drainage Structure Repair Summary

PROJECT #	MAP #	STATION	Location	Remove & Replace Concrete Apron	Flowable Fill	Pipe Collar	Pipe Plug	Install Shoulder Drain Outlet Pad	Side Drain Pipe (CSP)	Side Drain Pipe Elbows No. & Size	Repair of Drop Inlet
			LT or RT	EA	CY	CY	CY	EA	12" FT	EA	EA
I-5954	1	8+00	RT					1			
I-5954	1	66+00	RT		5		0.065				
I-5954	1	70+90	RT								1
I-5954	1	192+09	RT	1							
MAP 1 TOTALS				1	5		0.065	1			1
I-5954	5	6+95	LT		1						
MAP 5 TOTALS					1						
I-5954	10	86+40	RT	1		0.45					
I-5954	10	90+25	RT	1		0.45					
I-5954	10	151+30	RT		1						
I-5954	10	168+60	RT	1							
I-5954	10	176+60	RT								1
I-5954	10	212+90	RT	1							
I-5954	10	214+60	RT	1		0.35			20	2 @ 12"	
I-5954	10	219+60	RT	1							
I-5954	10	275+90	RT	1		0.35					
I-5954	10	332+00	RT	1							
MAP 10 TOTALS				8	1	1.6			20	2	1
I-5954	13	4+30	RT		1						
MAP 13 TOTALS					1						
I-5954	15	4+40	LT		1						
MAP 15 TOTALS					1						
PROJECT GRAND TOTALS				**9**	**9**	**1.60**	**0.07**	**1**	**20**	**2**	**2**

PROJECT NO.	SHEET NO.	TOTAL NO.
I-5954	6	

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES TONS	FOUNDATION CONDITIONING GEOTEXTILE SY	12" SIDE DRAIN PIPE LF	12" SIDE DRAIN PIPE ELBOWS EA	INCIDENTAL STONE BASE TONS	MILLING ASPHALT PAVEMENT, 1½" DEPTH SY	MILLING ASPHALT PAVEMENT, 4" DEPTH SY	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0D TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5D TON	ASPHALT BINDER FOR PLANT MIX TONS	POLYMER MODIFIED ASPHALT BINDER FOR PLANT MIX TONS	OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-2 MODIFIED TON	FOG SEAL SY	CONCRETE PAD FOR SHOULDER DRAIN PIPE OUTLET (STD. 816.01) EA	PIPE COLLARS CY	PIPE PLUGS CY	FLOWABLE FILL (EXCAVATABLE) CY	REMOVE AND REPLACE CONCRETE APRON (STD. 852.04, 852.05 and/or 852.06) EA	REPAIR OF DROP INLETS EA	PORTABLE LIGHTING LS	WATTLE LF	SEEDING & MULCHING AC	INDUCTIVE LOOP SAW CUT LF
	Alamance & Orange	1	I-85 NB/ I-40 EB	FROM NC 54 IN ALAMANCE TO 1.1 MILES EAST OF THE ALAMANCE/ORANGE CTY LINE	1	4	MD	NO	NO	7.802	48						236,029				19,893		1,783	10,635	92,165	1		0.07	5	1	1	0.50	20	0.10	
			TOTAL FOR MAP NO. 1							**7.802**							**236,029**				**19,893**		**1,783**	**10,635**	**92,165**	**1**		**0.07**	**5**	**1**	**1**	**0.50**	**20**	**0.10**	
	Alamance	2	OFF RAMP EB - JIMMIE KERR ROAD	EXIT 150	2	1		NO	NO	0.073	16					25	685				58		3		343										205
		"	"		2	1		NO	NO	0.037	27						586				49		3		174										
		"	"		2	1		NO	NO	0.006	46						162				14		1		28										
		"	"		2	2		NO	NO	0.019	88						981				83		5		89										
			TOTAL FOR MAP NO. 2							**0.135**						**25**	**2,414**				**204**		**12**		**634**										**205**
	Alamance	3	ON RAMP EB - JIMMIE KERR ROAD	EXIT 150	4	1		NO	NO	0.008	77					35		361	83		41	4	2											
		"	"		4	1		NO	NO	0.014	33							271	62		31	3	2											
		"	"		4	1		NO	NO	0.013	27							145	34		23	2	1											
		"	"		4	1		NO	NO	0.179	24							1,680	391		284	18	16											
			TOTAL FOR MAP NO. 3							**0.214**						**35**		**2,457**	**570**		**379**	**27**	**21**											
	Alamance	4	OFF RAMP EB - TROLLINGWOOD HAWFIELDS ROAD	EXIT 152	2	1		NO	NO	0.08	16					35	1,267				64		4		634										375
		"	"		2	1		NO	NO	0.089	28						444				123		7		127										
		"	"		2	2		NO	NO	0.009	86						454				38		2		42										
			TOTAL FOR MAP NO. 4							**0.178**						**35**	**2,165**				**225**		**13**		**803**										**375**
	Alamance	5	ON RAMP EB - TROLLINGWOOD ROAD	EXIT 152	2	1	M2	NO	NO	0.015	78					20	686				58		3		70				1						
		"	"		2	1		NO	NO	0.18	16						1,690				143		8		845										
			TOTAL FOR MAP NO. 5							**0.195**						**20**	**2,376**				**201**		**11**		**915**				**1**						
	Alamance	6	OFF RAMP EB - NC 119	EXIT 153	3	1	M2	NO	NO	0.075	16					25	704			60		4			352										210
		"	"		3	1		NO	NO	0.029	20						408			34		2			136										
		"	"		3	2		NO	NO	0.05	24						704			59		4			235										
		"	"		3	2		NO	NO	0.018	76						803			68		4			84										
			TOTAL FOR MAP NO. 6							**0.172**						**25**	**2,619**			**221**		**14**			**807**										**210**
	Alamance	7	ON RAMP EB - NC 119	EXIT 153	3	1	M2	NO	NO	0.188	16					20	1,765			149		9			882										
			TOTAL FOR MAP NO. 7							**0.188**						**20**	**1,765**			**149**		**9**			**882**										
	Alamance	8	OFF RAMP EB - MEBANE OAKS ROAD	EXIT 154	3	3	M2	NO	NO	0.076	36					15	1,605			135		8			357										450
		"	"		3	3		NO	NO	0.043	68						1,715			144		9			202										
			TOTAL FOR MAP NO. 8							**0.119**						**15**	**3,320**			**279**		**17**			**559**										**450**
	Alamance	9	ON RAMP EB - MEBANE OAKS ROAD	EXIT 154	3	2	M2	NO	NO	0.025	48					20	704			59		3			117										
		"	"		3	2		NO	NO	0.051	24						718			61		4			239										
		"	"		3	1		NO	NO	0.063	23						850			72		4			296										
			TOTAL FOR MAP NO. 9							**0.139**						**20**	**2,272**			**192**		**11**			**652**										
I-5954	Alamance & Orange	10	I-85 SB/I-40 WB	FROM 1.1 MILES EAST OF THE ALAMANCE/ORANGE COUNTY LINE TO NC 54 IN ALAMANCE	1	4	MD	NO	NO	7.855	48	2	7	20	2		236,887				19,964		1,789	10,673	92,165		1.60		1	8	1	0.50	20	0.20	
			TOTAL FOR MAP NO. 10							**7.855**		**2**	**7**	**20**	**2**		**236,887**				**19,964**		**1,789**	**10,673**	**92,165**		**1.60**		**1**	**8**	**1**	**0.50**	**20**	**0.20**	
	Alamance	11	OFF RAMP WB - MEBANE OAKD ROAD	EXIT 154	3	3	M2	NO	NO	0.028	30					15	493			42		2			131										450
		"	"		3	3		NO	NO	0.121	36						2,556			215		13			568										
		"	"		3	3		NO	NO	0.013	80						610			51		3			61										
			TOTAL FOR MAP NO. 11							**0.162**						**15**	**3,659**			**308**		**18**			**760**										**450**
	Alamance	12	ON RAMP WB - MEBANE OAKS ROAD	EXIT 154	3	1	M2	NO	NO	0.11	16					40	1,503			127		8			516										
			TOTAL FOR MAP NO. 12							**0.11**						**40**	**1,503**			**127**		**8**			**516**										
	Alamance	13	OFF RAMP - NC 119	EXIT 153	3	1	M2	NO	NO	0.06	16					15	563			48		3			282				1						150
		"	"		3	2		NO	NO	0.031	20						364			31		2			145										
		"	"		3	2		NO	NO	0.046	24						648			55		3			216										
		"	"		3	2		NO	NO	0.02	52						610			51		3			94										
			TOTAL FOR MAP NO. 13							**0.157**						**15**	**2,185**			**185**		**11**			**737**				**1**						**150**
	Alamance	14	ON RAMP WB - NC 119	EXIT 153	3	1	M2	NO	NO	0.015	46					40	405			34		2			70										
		"	"		3	1		NO	NO	0.191	16						1,793			1,740		103			896										
			TOTAL FOR MAP NO. 14							**0.206**						**40**	**2,198**			**1,774**		**105**			**966**										
	Alamance	15	OFF RAMP WB - TROLLINGWOOD ROAD	EXIT 152	2	1	M2	NO	NO	0.063	16					20	591				50		3		296				1						375
		"	"		2	1		NO	NO	0.055	22						710				60		3		258										
		"	"		2	2		NO	NO	0.024	27						301				32		2		89										
		"	"		2	2		NO	NO	0.019	34						379				32		2		89										
		"	"		2	2		NO	NO	0.019	83						925				78		4		89										
			TOTAL FOR MAP NO. 15							**0.18**						**20**	**2,906**				**252**		**14**		**821**				**1**						**375**
	Alamance	16	ON RAMP WB - TROLLINGWOOD ROAD	EXIT 152	2	1	M2	NO	NO	0.015	62					50	546				46		3		70										
		"	"		2	1		NO	NO	0.129	16						1,211				103		6		605										
			TOTAL FOR MAP NO. 16							**0.144**						**50**	**1,757**				**149**		**9**		**675**										
	Alamance	17	OFF RAMP WB - JIMMIE KERR ROAD	EXIT 150	2	1	M2	NO	NO	0.132	16					10	1,239				105		6		620										425
		"	"		2	1		NO	NO	0.012	22						155				13		1		56										
		"	"		2	1		NO	NO	0.014	73						600				50		3		66										
		"	"		2	1		NO	NO	0.014	73						600				50		3		66										
			TOTAL FOR MAP NO. 17							**0.172**						**10**	**2,594**				**218**		**13**		**808**										**425**
	Alamance	18	ON RAMP WB - JIMMIE KERR ROAD	EXIT 150	4	1	M2	NO	NO	0.026	100					50		1,525	349		171	16	10											
		"	"		4	1		NO	NO	0.012	27							190	44		21	2	1											
		"	"		4	1		NO	NO	0.146	24							2,056	475		232	21	13											
			TOTAL FOR MAP NO. 18							**0.184**						**50**		**3,771**	**868**		**424**	**39**	**24**											
			TOTAL FOR PROJ NO. I-5954							**18.312**		**2**	**7**	**20**	**2**	**435**	**506,649**	**6,228**	**1,438**	**3,235**	**41,909**	**259**	**3,689**	**21,308**	**194,865**	**1**	**1.60**	**0.07**	**9**	**9**	**2**	**1**	**40**	**0.30**	**2,640**
			GRAND TOTAL							**18.312**		**2**	**7**	**20**	**2**	**435**	**506,649**	**6,228**	**1,438**	**3,235**	**41,909**	**259**	**3,689**	**21,308**	**194,865**	**1**	**1.60**	**0.07**	**9**	**9**	**2**	**1**	**40**	**0.30**	**2,640**

PROJECT NO.	SHEET NO.	TOTAL NO.
I-5954	7	

TRAFFIC CONTROL QUANTITIES

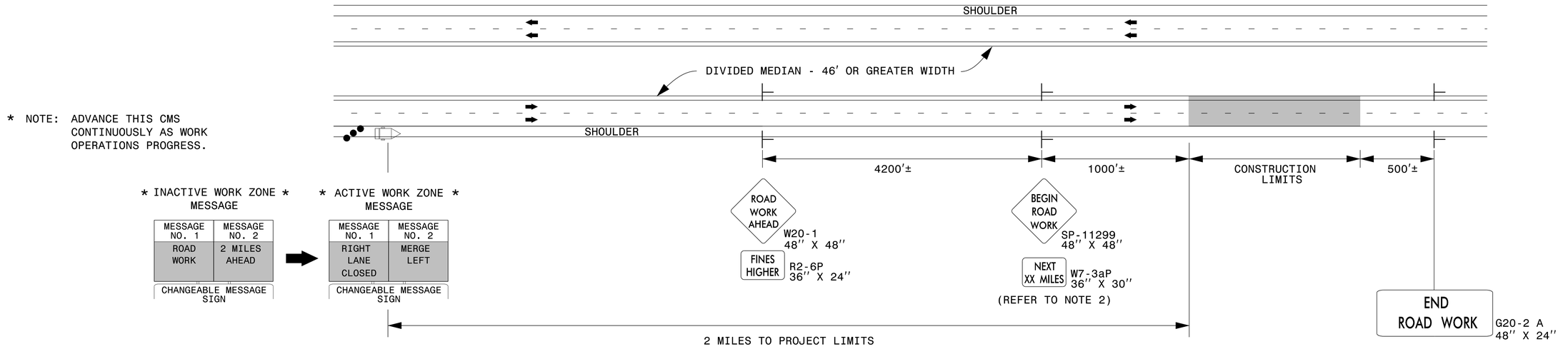
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4400000000-E WORK ZONE SIGNS (STATIONARY) SF	4405000000-E PORTABLE WORK ZONE SIGN SF	4410000000-E BARRICADE MOUNTED WORK ZONE SIGN SF	4415000000-N FLASHING ARROW PANELS, TYPE C EA	4420000000-N CHAGEABLE MESSAGE SIGN EA	4422000000-N PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM) DAY	4430000000-N DRUMS EA	4445000000-E TYPE III BARICADE LF	4480000000-N TMIA EA	4600000000-N WORK ZONE DIGITAL SPEED LIMIT SIGNS EA	4600000000-N SEQUENTIAL FLASHING WARNING LIGHTS EA	4600000000-N WORK ZONE PRESENCE LIGHTING EA
	Alamance & Orange	1	I-85 NB/ I-40 EB	FROM NC 54 IN ALAMANCE TO 1.1 MILES EAST OF THE ALAMANCE/ORANGE CTY LINE	1	4	MD	7.802	48	510	224	26	4	3	32	324	64	2	5	21	15
	TOTAL FOR MAP NO. 1							**7.802**		**510**	**224**	**26**	**4**	**3**	**32**	**324**	**64**	**2**	**5**	**21**	**15**
	Alamance	2	OFF RAMP EB - JIMMIE KERR ROAD	EXIT 150	2	1		0.073	16												
					2	1		0.037	27												
					2	1		0.006	46												
					2	2		0.019	88												
	TOTAL FOR MAP NO. 2							**0.135**													
	Alamance	3	ON RAMP EB - JIMMIE KERR ROAD	EXIT 150	4	1		0.008	77												
					4	1		0.014	33												
					4	1		0.013	27												
					4	1		0.179	24												
	TOTAL FOR MAP NO. 3							**0.214**													
	Alamance	4	OFF RAMP EB - TROLLINGWOOD HAWFIELDS ROAD	EXIT 152	2	1		0.08	16												
					2	1		0.089	28												
					2	2		0.009	86												
	TOTAL FOR MAP NO. 4							**0.178**													
	Alamance	5	ON RAMP EB - TROLLINGWOOD ROAD	EXIT 152	2	1	M2	0.015	78												
					2	1		0.18	16												
	TOTAL FOR MAP NO. 5							**0.195**													
	Alamance	6	OFF RAMP EB - NC 119	EXIT 153	3	1	M2	0.075	16												
					3	1		0.029	20												
					3	2		0.05	24												
					3	2		0.018	76												
	TOTAL FOR MAP NO. 6							**0.172**													
	Alamance	7	ON RAMP EB - NC 119	EXIT 153	3	1	M2	0.188	16												
	TOTAL FOR MAP NO. 7							**0.188**													
	Alamance	8	OFF RAMP EB - MEBANE OAKS ROAD	EXIT 154	3	3	M2	0.076	36												
					3	3		0.043	68												
	TOTAL FOR MAP NO. 8							**0.119**													
	Alamance	9	ON RAMP EB - MEBANE OAKS ROAD	EXIT 154	3	2	M2	0.025	48												
					3	2		0.051	24												
					3	1		0.063	23												
	TOTAL FOR MAP NO. 9							**0.139**													
I-5954	Alamance & Orange	10	I-85 SB/I-40 WB	FROM 1.1 MILES EAST OF THE ALAMANCE/ORANGE COUNTY LINE TO NC 54 IN ALAMANCE	1	4	MD	7.855	48												
	TOTAL FOR MAP NO. 10							**7.855**													
	Alamance	11	OFF RAMP WB - MEBANE OAKD ROAD	EXIT 154	3	3	M2	0.028	30												
					3	3		0.121	36												
					3	3		0.013	80												
	TOTAL FOR MAP NO. 11							**0.162**													
	Alamance	12	ON RAMP WB - MEBANE OAKS ROAD	EXIT 154	3	1	M2	0.11	16												
	TOTAL FOR MAP NO. 12							**0.11**													
	Alamance	13	OFF RAMP - NC 119	EXIT 153	3	1	M2	0.06	16												
					3	2		0.031	20												
					3	2		0.046	24												
					3	2		0.02	52												
	TOTAL FOR MAP NO. 13							**0.157**													
	Alamance	14	ON RAMP WB - NC 119	EXIT 153	3	1	M2	0.015	46												
			"		3	1		0.191	16												
	TOTAL FOR MAP NO. 14							**0.206**													
	Alamance	15	OFF RAMP WB - TROLLINGWOOD ROAD	EXIT 152	2	1	M2	0.063	16												
					2	1		0.055	22												
					2	2		0.024	27												
					2	2		0.019	34												
					2	2		0.019	83												
	TOTAL FOR MAP NO. 15							**0.18**													
	Alamance	16	ON RAMP WB - TROLLINGWOOD ROAD	EXIT 152	2	1	M2	0.015	62												
			"		2	1		0.129	16												
	TOTAL FOR MAP NO. 16							**0.144**													
	Alamance	17	OFF RAMP WB - JIMMIE KERR ROAD	EXIT 150	2	1	M2	0.132	16												
					2	1		0.012	22												
					2	1		0.014	73												
					2	1		0.014	73												
	TOTAL FOR MAP NO. 17							**0.172**													
	Alamance	18	ON RAMP WB - JIMMIE KERR ROAD	EXIT 150	4	1	M2	0.026	100												
					4	1		0.012	27												
					4	1		0.146	24												
	TOTAL FOR MAP NO. 18							**0.184**													
TOTAL FOR PROJ NO. I-5954								**18.312**		**510**	**224**	**26**	**4**	**3**	**32**	**324**	**64**	**2**	**5**	**21**	**15**
GRAND TOTAL								**18.312**		**510**	**224**	**26**	**4**	**3**	**32**	**324**	**64**	**2**	**5**	**21**	**15**

PROJECT NO.	SHEET NO.	TOTAL NO.
I-5954	8	

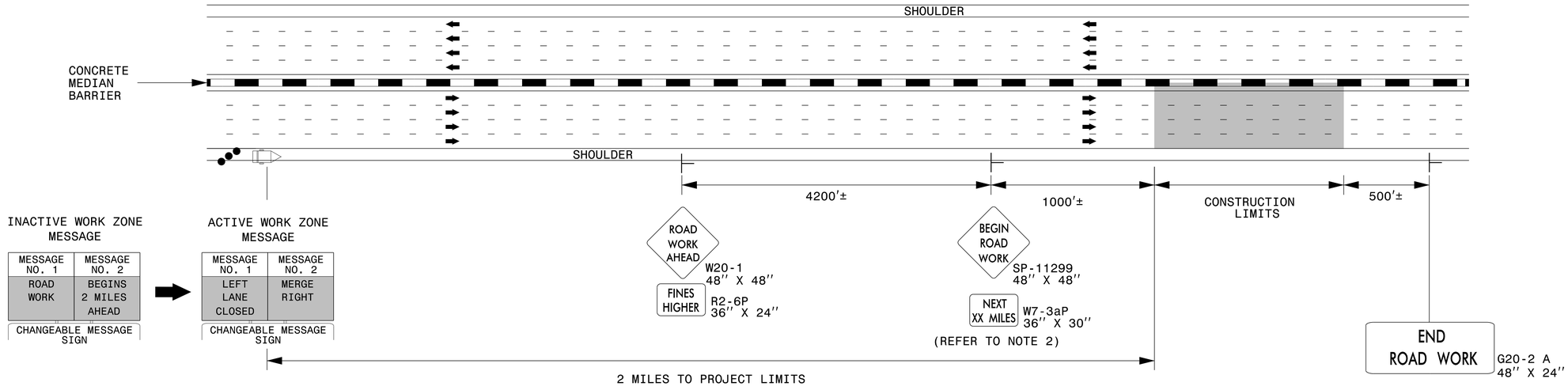
THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4688000000-E 6" X 90 M WHITE THERMO LF	4688000000-E 6" X 90 M YELLOW THERMO LF	4690000000-E 6" X 120 M WHITE THERMO LF	4695000000-E 8" X 90 M WHITE THERMO LF	4700000000-E 12" X 90 M WHITE THERMO LF	4702000000-E 12" X 120 M WHITE THERMO LF	4710000000-E 24" X 120 M WHITE THERMO LF	4725000000-E THERMO MERGE LEFT ARROW 90 M EA	4725000000-E THERMO RAMP ARROW EA	4725000000-E THERMO RT ARROW 90 M EA	4725000000-E THERMO STR & LT ARROW 90 M EA	4725000000-E THERMO PVT SYMBOL 24" YIELD LINE (90 MILS) EA	4725000000-E THERMO LT ARROW 90 MILS EA	4725000000-E THERMO STR ARROW 90 MILS EA	4725000000-E THERMO MERGE RT ARROW 90 M EA	4815000000-E 6" WHITE PAINT LF	4815000000-E 6" YELLOW PAINT LF	4820000000-E 8" WHITE PAINT LF	4825000000-E 12" WHITE PAINT LF	4835000000-E 24" WHITE PAINT LF	4845000000-N PAINT MERGE LEFT ARROW EA	4845000000-N PAINT RT ARROW EA	4845000000-N PAINT STR & LT ARROW EA	4845000000-N PAINT RAMP ARROW SYMBOL EA	4845000000-N PAINT LT ARROW EA	4845000000-N PAINT STR ARROW EA	4847100000-E POLYUREA PAVEMENT MARKING LINES (6", WHITE) (HRM) LF	4847100000-E POLYUREA PAVEMENT MARKING LINES (6", YELLOW) (HRM) LF	4855000000-E 6" LINE REMOVAL LF	4890000000-E WHITE HOT SPRAY THERMO, 6", 50 MILS LF	4890000000-E YELLOW HOT SPRAY THERMO, 6", 50 MILS LF	4890000000-E WHITE HOT SPRAY THERMO, 12", 50 MILS LF	4905000000-N SNOWPLOWABLE PAVEMENT MARKERS CRYSTAL/ RED EA	4960000000-N REPLACE EXISTING BARRIER DELINEATOR EA
I-5954	Alamance & Orange	1	I-85 NB/ I-40 EB	FROM NC 54 IN ALAMANCE TO 1.1 MILES EAST OF THE ALAMANCE/ORANGE CTY LINE	1	4	MD	7.802	48	41,195	41,195	32,046		5,801	204		9								146,482	82,390		12,010		18							995	575	1,570	73,241	41,195	6,005	2,040	429
	TOTAL FOR MAP NO. 1							**7.802**		**41,195**	**41,195**	**32,046**		**5,801**	**204**		**9**								**146,482**	**82,390**		**12,010**		**18**							**995**	**575**	**1,570**	**73,241**	**41,195**	**6,005**		**429**
	Alamance	2	OFF RAMP EB - JIMMIE KERR ROAD	EXIT 150	2	1		0.073	16	1,071	811			300		30		1	1	1	7				2,142	1,622		600	60		2	2	2									28	
					2	1		0.037	27																																	
					2	1		0.006	46																																	
					2	2		0.019	88																																	
	TOTAL FOR MAP NO. 2							**0.135**		**1,071**	**811**			**300**		**30**		**1**	**1**	**1**	**7**				**2,142**	**1,622**		**600**	**60**		**2**	**2**	**2**									**28**	
	Alamance	3	ON RAMP EB - JIMMIE KERR ROAD	EXIT 150	4	1		0.008	77	1,171	1,170					30									2,342	2,340			60													
					4	1		0.014	33																																	
					4	1		0.013	27																																	
					4	1		0.179	24																																	
	TOTAL FOR MAP NO. 3							**0.214**		**1,171**	**1,170**					**30**									**2,342**	**2,340**			**60**													
	Alamance	4	OFF RAMP EB - TROLLINGWOOD HAWFIELDS ROAD	EXIT 152	2	1		0.08	16	1,079	1,079	175		275		53		1	1		7	2	1		2,508	2,158		550	106		2		2	4	2							32	
					2	1		0.089	28																																	
					2	2		0.009	86																																	
	TOTAL FOR MAP NO. 4							**0.178**		**1,079**	**1,079**	**175**		**275**		**53**		**1**	**1**		**7**	**2**	**1**		**2,508**	**2,158**		**550**	**106**		**2**		**2**	**4**	**2**							**32**	
	Alamance	5	ON RAMP EB - TROLLINGWOOD ROAD	EXIT 152	2	1	M2	0.015	78	1,165	1,038		210								7				2,330	2,076	420															5	
					2	1		0.18	16																																	
	TOTAL FOR MAP NO. 5							**0.195**		**1,165**	**1,038**		**210**								**7**				**2,330**	**2,076**	**420**															**5**	
	Alamance	6	OFF RAMP EB - NC 119	EXIT 153	3	1	M2	0.075	16	1,123	913	285		175		32		1	4	3	7				2,816	1,826		350	64		8	6	2									37	
					3	1		0.029	20																																	
					3	2		0.05	24																																	
					3	2		0.018	76																																	
	TOTAL FOR MAP NO. 6							**0.172**		**1,123**	**913**	**285**		**175**		**32**		**1**	**4**	**3**	**7**				**2,816**	**1,826**		**350**	**64**		**8**	**6**	**2**									**37**	
	Alamance	7	ON RAMP EB - NC 119	EXIT 153	3	1	M2	0.188	16	991	991														1,982	1,982																
	TOTAL FOR MAP NO. 7							**0.188**		**991**	**991**														**1,982**	**1,982**																
	Alamance	8	OFF RAMP EB - MEBANE OAKS ROAD	EXIT 154	3	3	M2	0.076	36	629	629	696.00		140		60			4	4		4			2,650	1,258		280	120		8	8		8							36	
					3	3		0.043	68																																	
	TOTAL FOR MAP NO. 8							**0.119**		**629**	**629**	**696**		**140**		**60**			**4**	**4**		**4**			**2,650**	**1,258**		**280**	**120**		**8**	**8**		**8**							**36**	
	Alamance	9	ON RAMP EB - MEBANE OAKS ROAD	EXIT 154	3	2	M2	0.025	48	731	731	186									7			3	1,834	1,462																5	
					3	2		0.051	24																																	
					3	1		0.063	23																																	
	TOTAL FOR MAP NO. 9							**0.139**		**731**	**731**	**186**									**7**			**3**	**1,834**	**1,462**																**5**	
	Alamance & Orange	10	I-85 SB/I-40 WB	FROM 1.1 MILES EAST OF THE ALAMANCE/ORANGE COUNTY LINE TO NC 54 IN ALAMANCE	1	4	MD	7.855	48	41,474	41,474	32,784		5,899	381		9								148,516	82,948		12,560		18							1,025	575	1,600	74,258	41,474	6,280	2,013	434
	TOTAL FOR MAP NO. 10							**7.855**		**41,474**	**41,474**	**32,784**		**5,899**	**381**		**9**								**148,516**	**82,948**		**12,560**		**18**							**1,025**	**575**	**1,600**	**74,258**	**41,474**	**6,280**	**2,013**	**434**
	Alamance	11	OFF RAMP WB - MEBANE OAKD ROAD	EXIT 154	3	3	M2	0.028	30	933	893	556		120		60			10	5					2,978	1,786		240	120		20	10										32	
					3	3		0.121	36																																	
					3	3		0.013	80																																	
	TOTAL FOR MAP NO. 11							**0.162**		**933**	**893**	**556**		**120**		**60**			**10**	**5**					**2,978**	**1,786**		**240**	**120**		**20**	**10**										**32**	
	Alamance	12	RAMP WB - MEBANE OAKS F	EXIT 154	3	1	M2	0.11	16	583	583										7				1,166	1,166																
	TOTAL FOR MAP NO. 12							**0.11**		**583**	**583**										**7**				**1,166**	**1,166**																
	Alamance	13	OFF RAMP - NC 119	EXIT 153	3	1	M2	0.06	16	959	841	270		180		20		1	4	3	7				2,458	1,682		360	40		8	6	2									34	
					3	2		0.031	20																																	
					3	2		0.046	24																																	
					3	2		0.02	52																																	
	TOTAL FOR MAP NO. 13							**0.157**		**959**	**841**	**270**		**180**		**20**		**1**	**4**	**3**	**7**				**2,458**	**1,682**		**360**	**40**		**8**	**6**	**2**									**34**	
	Alamance	14	ON RAMP WB - NC 119	EXIT 153	3	1	M2	0.015	46	1,088	1,088														2,176	2,176																
			"		3	1		0.191	16																																	
	TOTAL FOR MAP NO. 14							**0.206**		**1,088**	**1,088**														**2,176**	**2,176**																
	Alamance	15	OFF RAMP WB - TROLLINGWOOD ROAD	EXIT 152	2	1	M2	0.063	16	950	950	290		110		45		1	3	3	7				2,480	1,900		220	90		6	6	2									35	
					2	1		0.055	22																																	
					2	2		0.024	27																																	
					2	2		0.019	34																																	
					2	2		0.019	83																																	
	TOTAL FOR MAP NO. 15							**0.18**		**950**	**950**	**290**		**110**		**45**		**1**	**3**	**3**	**7**				**2,480**	**1,900**		**220**	**90**		**6**	**6**	**2**									**35**	
	Alamance	16	RAMP WB - TROLLINGWOOD	EXIT 152	2	1	M2	0.015	62	763	763		180								7				1,526	1,526	360															5	
			"		2	1		0.129	16																																	
	TOTAL FOR MAP NO. 16							**0.144**		**763.00**	**763.00**		**180**								**7**				**1,526**	**1,526**	**360**															**5**	
	Alamance	17	OFF RAMP WB - JIMMIE KERR ROAD	EXIT 150	2	1	M2	0.132	16	835.00	835.00			120		86		1	1	1					1,670	1,670		240			2	2	2									20	
					2	1		0.012	22																																	
					2	1		0.014	73																																	
					2	1		0.014	73																																	
	TOTAL FOR MAP NO. 17							**0.172**		**835**	**835**			**120**		**86**		**1**	**1**	**1**					**1,670**	**1,670**		**240**			**2**	**2**	**2**									**20**	
	Alamance	18	ON RAMP WB - JIMMIE KERR ROAD	EXIT 150	4	1	M2	0.026	100	973	973		120								7				1,946	1,946	240															
					4	1		0.012	27																																	
					4	1		0.146	24																																	
	TOTAL FOR MAP NO. 18							**0.184**		**973**	**973**		**120**								**7**				**1,946**	**1,946**	**240**															
TOTAL FOR PROJ NO. I-5954								**18.312**		**97,713**	**96,957**	**67,288**	**510**	**13,120**	**585**	**416**	**18**	**6**	**28**	**20**	**70**	**6**	**1**	**3**	**330,002**	**193,914**	**1,020**	**27,410**	**660**	**36**	**56**	**40**	**12**	**12**	**2**	**2,020**	**1,150**	**3,170**	**147,499**	**82,669**	**12,285**	**4,322**	**863**
										194,670							**152**								**523,916**					**158**						**3,170**			**230,168**				
GRAND TOTAL								**18.312**		**97,713**	**96,957**	**67,288**	**510**	**13,120**	**585**	**416**	**18**	**6**	**28**	**20**	**70**	**6**	**1**	**3**	**330,002**	**193,914**	**1,020**	**27,410**	**660**	**36**	**56**	**40**	**12**	**12**	**2**	**2,020**	**1,150**	**3,170**	**147,499**	**82,669**	**12,285**	**4,322**	**863**
										194,670							**152**								**523,916**					**158**						**3,170**			**230,168**				

DIVIDED MEDIANS WITH WIDTHS 46′ OR GREATER



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



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 RAMPS, 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: DocuSigned by: Steve Lutz E27CE30E1DFC442...

DATE: 2/23/2017

NORTH CAROLINA PROFESSIONAL SEAL 022104 ENGINEER JOHN S. KITE III

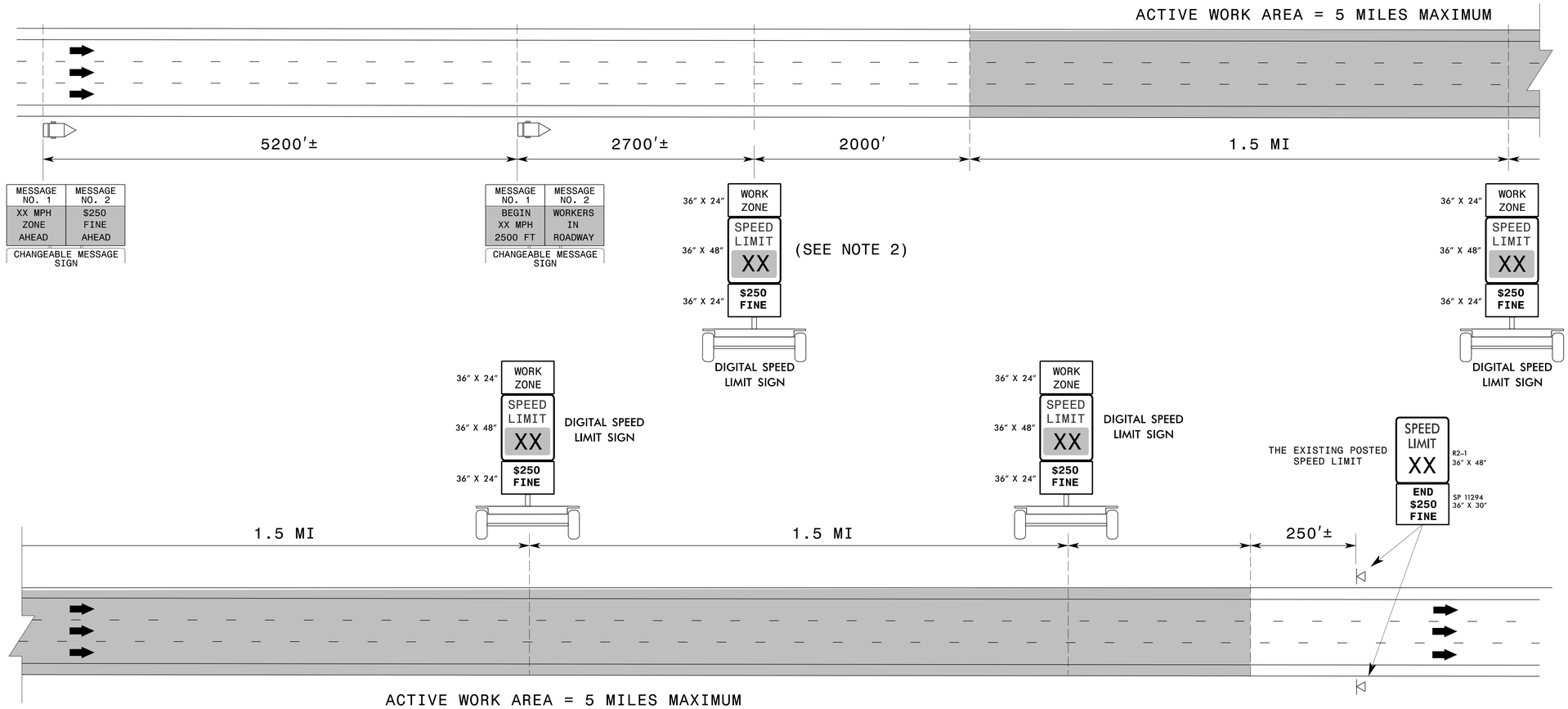
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

STATIONARY ADVANCE WARNING SIGNS FOR INTERSTATE/FREEWAY RESURFACING PROJECTS

2/23/2017
S:\TMU\WZTC\DesignGroup3\Squad3B\Dals\Interstate Resurfacing Provisions and Details\Pkg\Resurfacing_AdvWarn_HSpd.dgn
User:kedals

INTERSTATE RESURFACING OPERATIONS WITH DIGITAL SPEED LIMIT SIGNS



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 MAXIUMUM 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.

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″

APPROVED: DocuSigned by: Steve Kite E27CE30E1DFC442...

DATE: 2/23/2017

NORTH CAROLINA PROFESSIONAL SEAL 022104 ENGINEER JOHN S. KITE, III

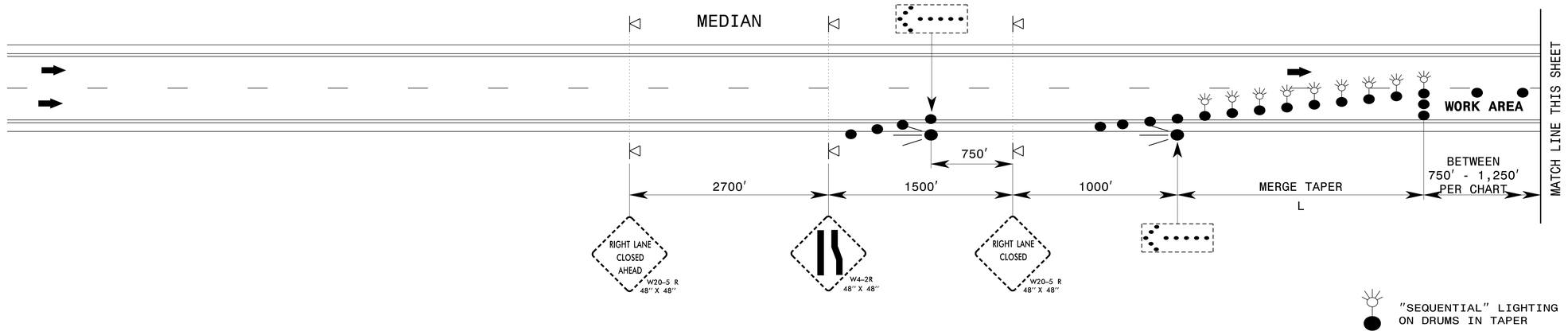
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

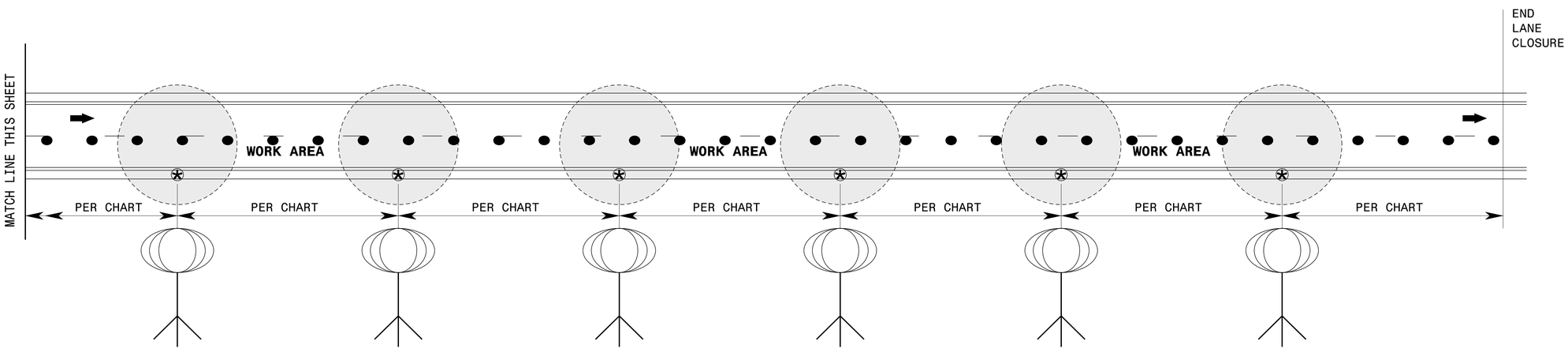
WORK ZONE "VARIABLE" SPEED LIMIT USING DIGITAL SPEED LIMIT SIGNS FOR INTERSTATE/ FREEWAY RESURFACING PROJECTS

2/23/2017
S:\TMU\WZTC\DesignGroup3\Squad3B\Dgns\Interstate Resurfacing Provisions and Details\WSVSL_Interstate_DSLS.dgn
User:kedgis

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: DocuSigned by: Steve Kite E27CE30E1DFC442...
DATE: 3/17/2017

NORTH CAROLINA PROFESSIONAL SEAL 022104 ENGINEER JOHN S. KITE JR

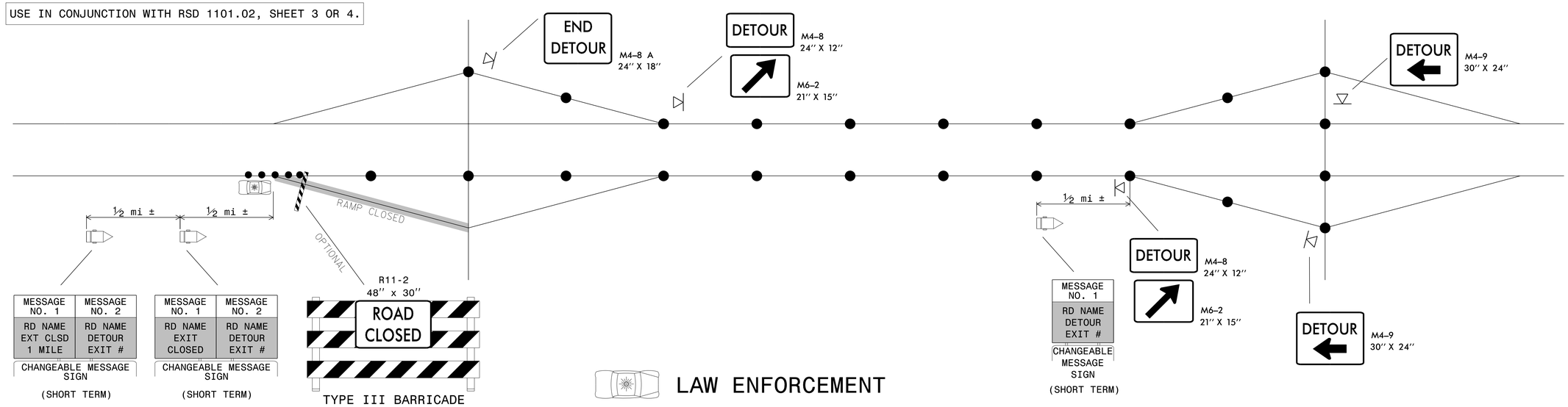
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

SEQUENTIAL FLASHING WARNING LIGHTS AND WORK ZONE PRESENCE LIGHTING

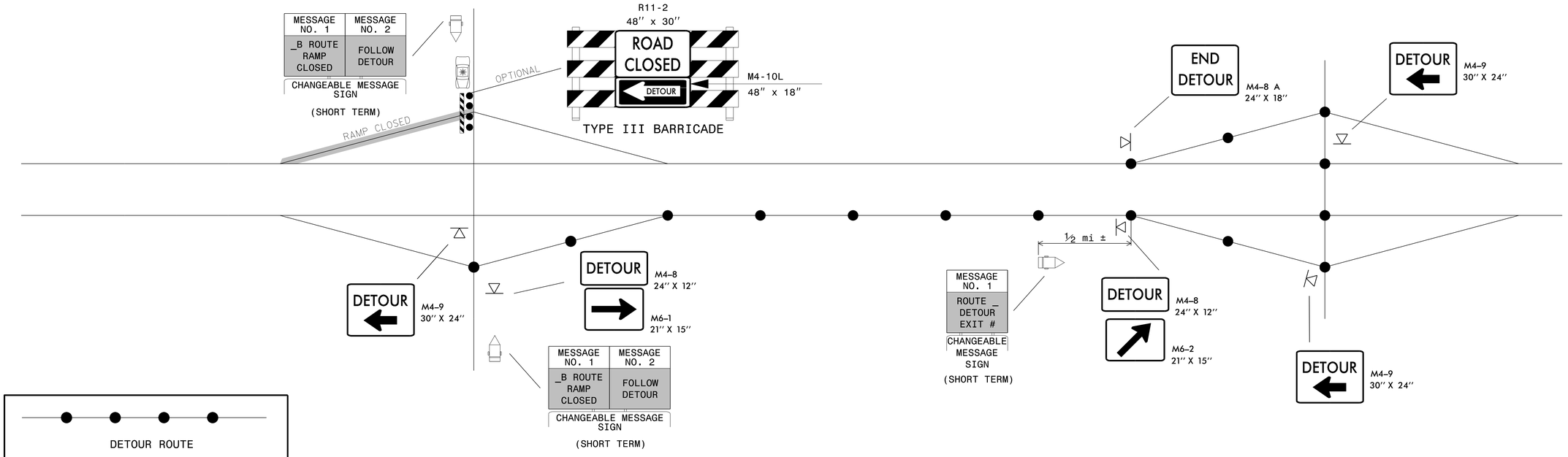
SHORT TERM CLOSURE AND DETOUR OF OFF-RAMP TO ADJACENT INTERCHANGE

USE IN CONJUNCTION WITH RSD 1101.02, SHEET 3 OR 4.



SHORT TERM CLOSURE AND DETOUR OF ON-RAMP TO ADJACENT INTERCHANGE

USE IN CONJUNCTION WITH RSD 1101.02, SHEET 3 OR 4.



GENERAL NOTES:
1. THIS DRAWING IS INTENDED FOR USE DURING SHORT TERM CLOSURES OF INTERSTATE AND FREEWAY RAMPS.
2. RAMP CLOSURES SHALL BE APPROVED BY THE ENGINEER.
3. IF RAMP CLOSURE RESTRICTIONS APPLY, SEE SPECIAL PROVISION, "INTERMEDIATE CONTRACT TIMES AND LIQUIDATED DAMAGES".
4. ADDITIONAL CHANGEABLE MESSAGE SIGNS AND POSSIBLE DETOUR SIGNS MAY BE NECESSARY FOR MORE COMPLEX CLOSURES/DETOURS. COMPENSATION FOR ADDITIONAL DEVICES SHALL BE MADE BASED ON THE UNIT BID PRICE FOR THE RESPECTIVE DEVICE.

APPROVED: DocuSigned by: Steve Lotz E27CE30E10FC442...
DATE: 2/23/2017

NORTH CAROLINA PROFESSIONAL SEAL 022104 ENGINEER JOHN S KITE JR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

SHORT TERM CLOSURE AND DETOUR OF INTERSTATE/FREEWAY RAMPS

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

8-15

ENGLISH STANDARD DETAIL FOR

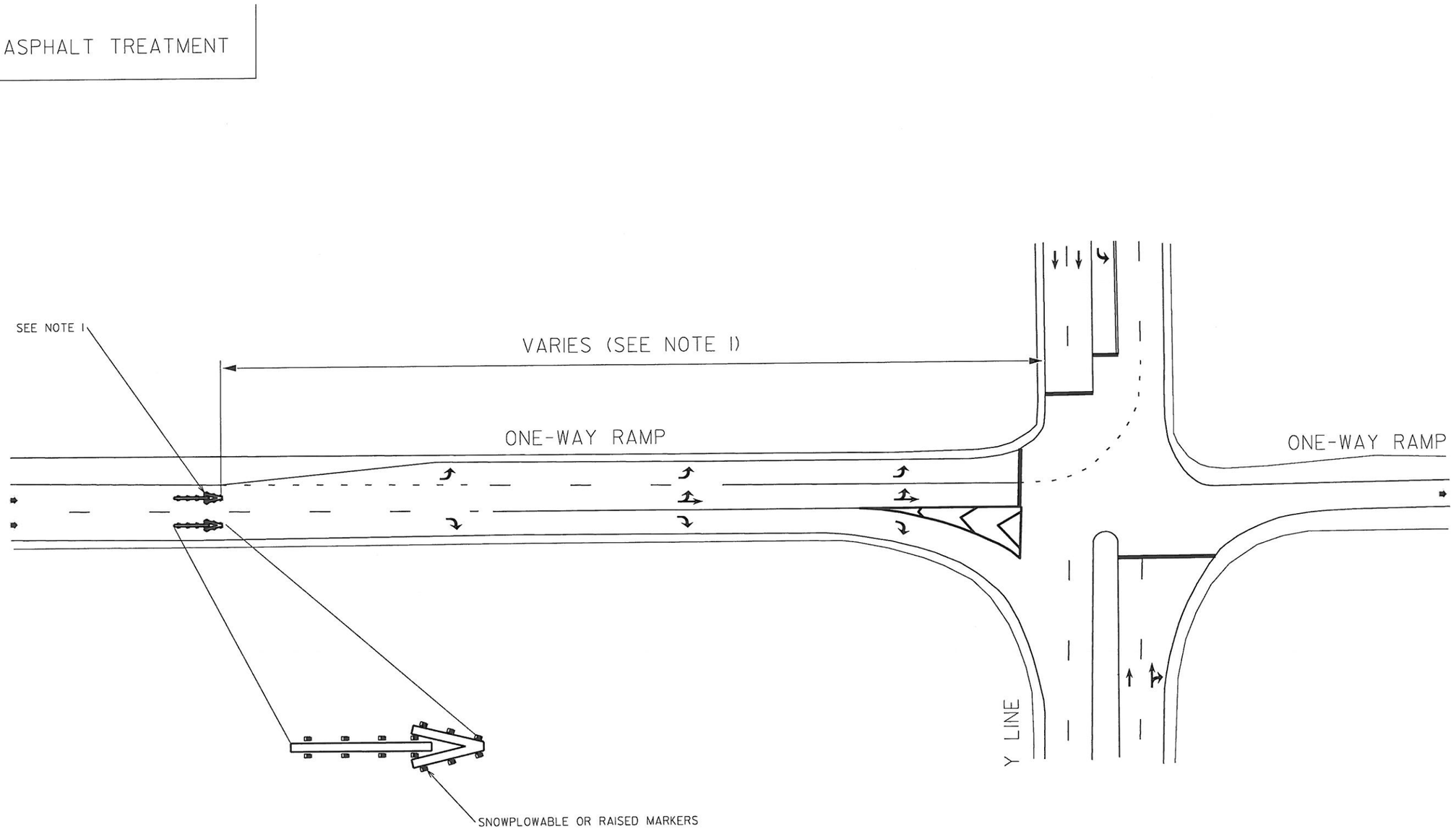
PAVEMENT MARKINGS

WRONG WAY RAMP ARROW

TWO-LANE EXIT RAMP AT MULTI-LANE APPROACH

SHEET 1 OF 2

1205.XX



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

TWO-LANE EXIT RAMP AT MULTI-LANE APPROACH

SHEET 1 OF 2

1205.XX

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

4-16

ENGLISH DETAIL DRAWING FOR

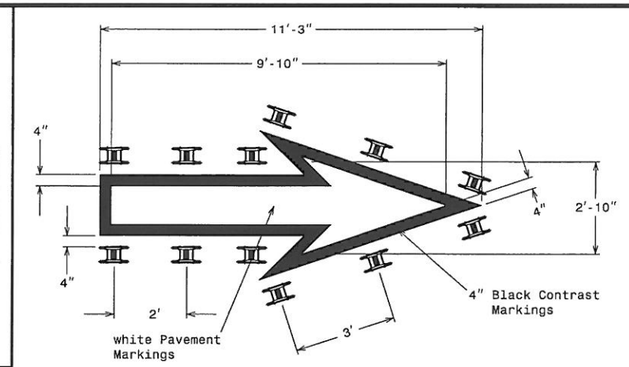
PAVEMENT MARKINGS

WRONG WAY RAMP ARROW

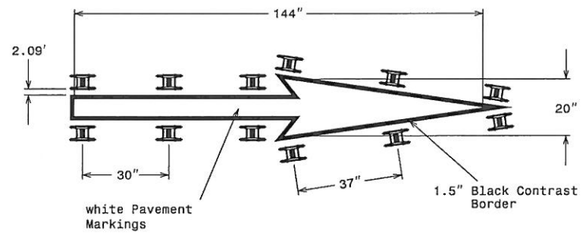
TWO-LANE EXIT RAMP AT MULTI-LANE APPROACH

SHEET 2 OF 2

1205.XX

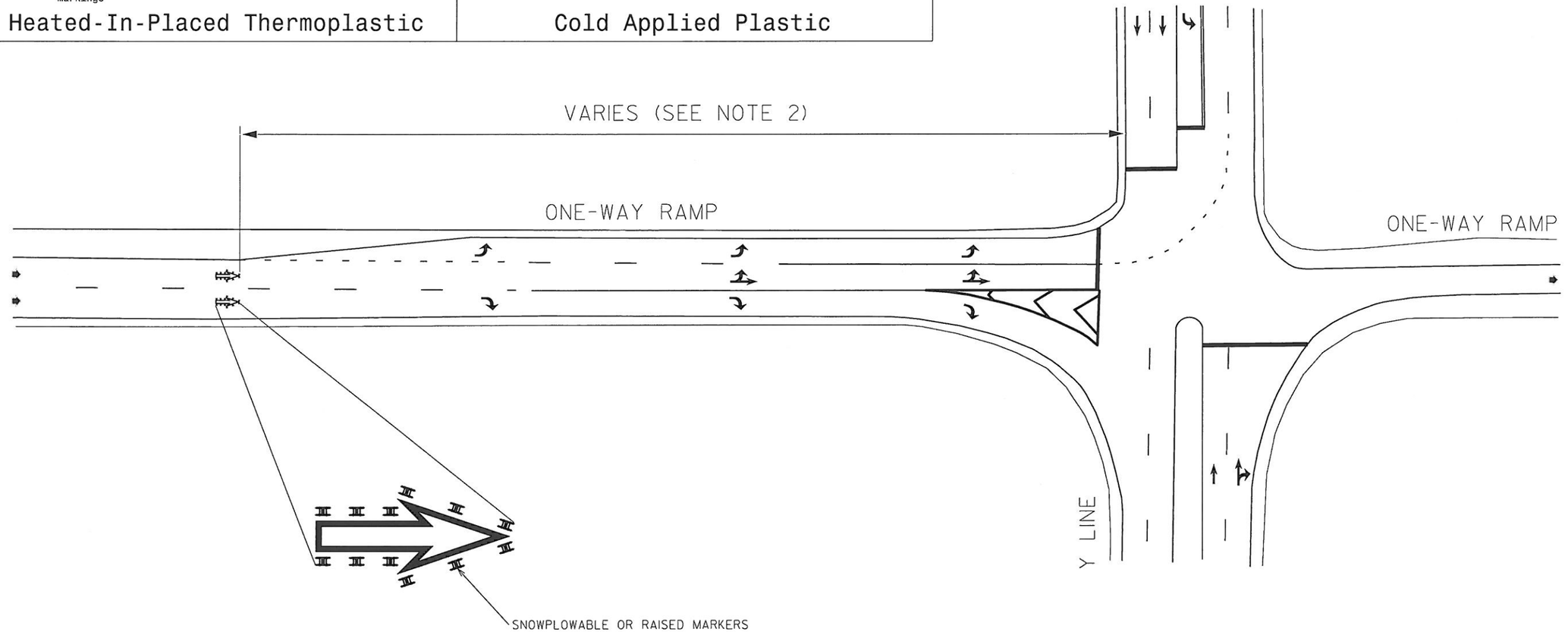


Heated-In-Placed Thermoplastic



Cold Applied Plastic

CONCRETE TREATMENT



NOTES:

1) PAVEMENT MARKINGS SHALL BE INSTALLED ON CONCRETE SURFACES ONLY.

2) PLACEMENT OF WRONG-WAY RAMP ARROW VARIES AND SHOULD BE LOCATED JUST BEFORE THE MULTI-LANE APPROACH.

3) INSTALL MARKERS, SNOWPLOWABLE OR RAISED, IN ACCORDANCE TO THE DETAILS ON THIS SHEET.

4) MARKING SHALL BE WHITE HEATED-IN-PLACED THERMOPLASTIC WITH 4 INCH BLACK CONTRAST BORDER OR COLD APPLIED PLASTIC WITH 1.5 INCH BLACK CONTRAST BORDER.

LEGEND

- DIRECTION OF TRAFFIC FLOW
- PAVEMENT MARKING SYMBOLS

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

4-16

ENGLISH DETAIL DRAWING FOR

PAVEMENT MARKINGS

WRONG WAY RAMP ARROW

TWO-LANE EXIT RAMP AT MULTI-LANE APPROACH

SHEET 2 OF 2

1205.XX

04-12-2016

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

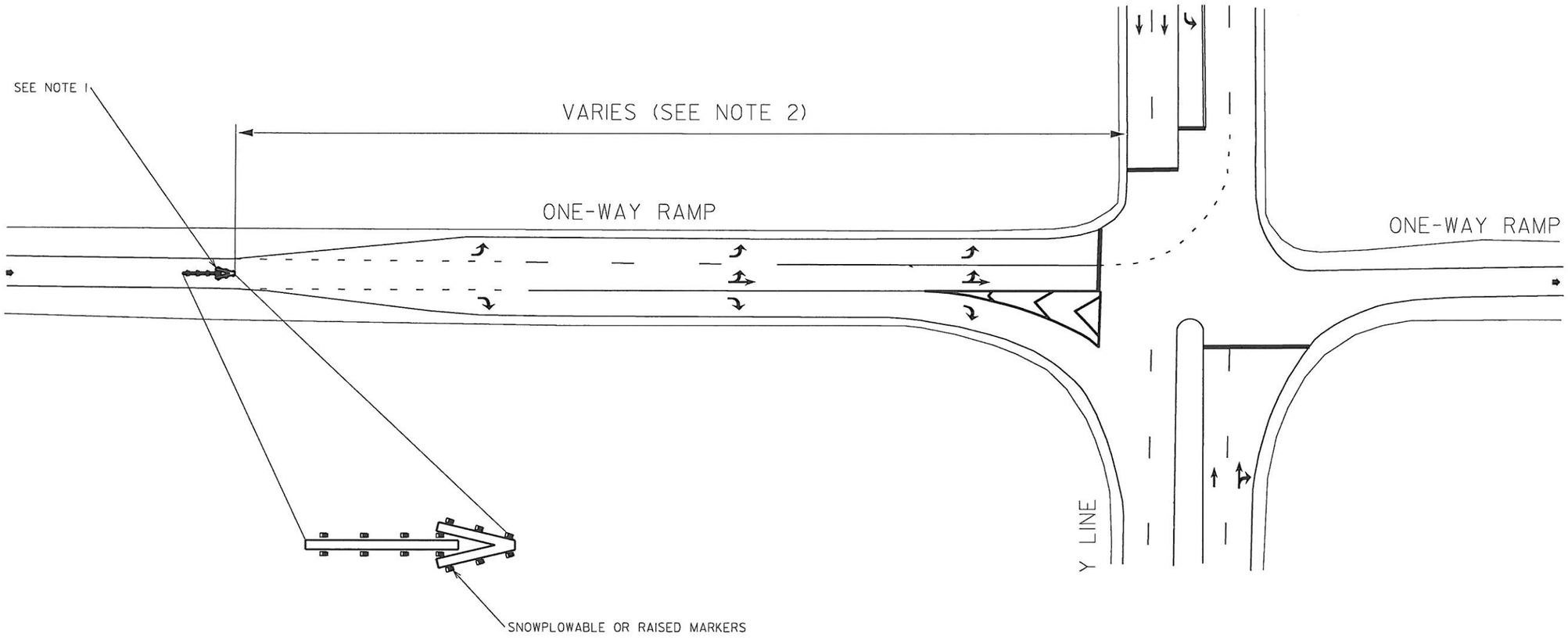
8-15

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

SHEET 1 OF 2

1205.XX

ASPHALT TREATMENT



NOTES:

1) REFER TO THE 2012 ROADWAY STANDARD DRAWING 1205.09, SHEET 1 OF 8 FOR RAMP ARROW DIMENSION REQUIREMENTS.

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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

SHEET 1 OF 2

1205.XX

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

4-16

ENGLISH DETAIL DRAWING FOR

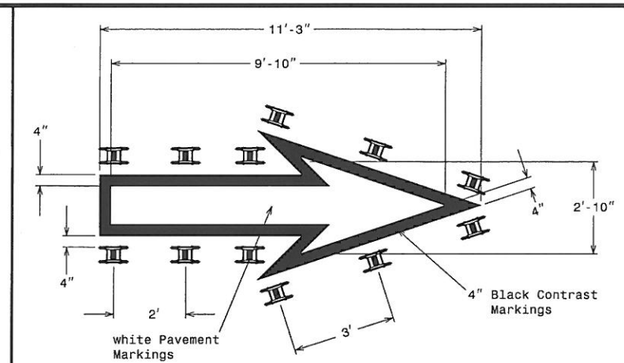
PAVEMENT MARKINGS

WRONG WAY RAMP ARROW

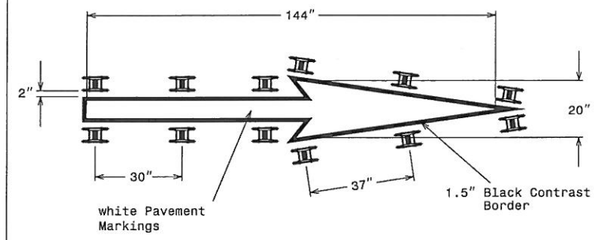
ONE-LANE EXIT RAMP AT MULTI-LANE APPROACH

SHEET 2 OF 2

1205.XX

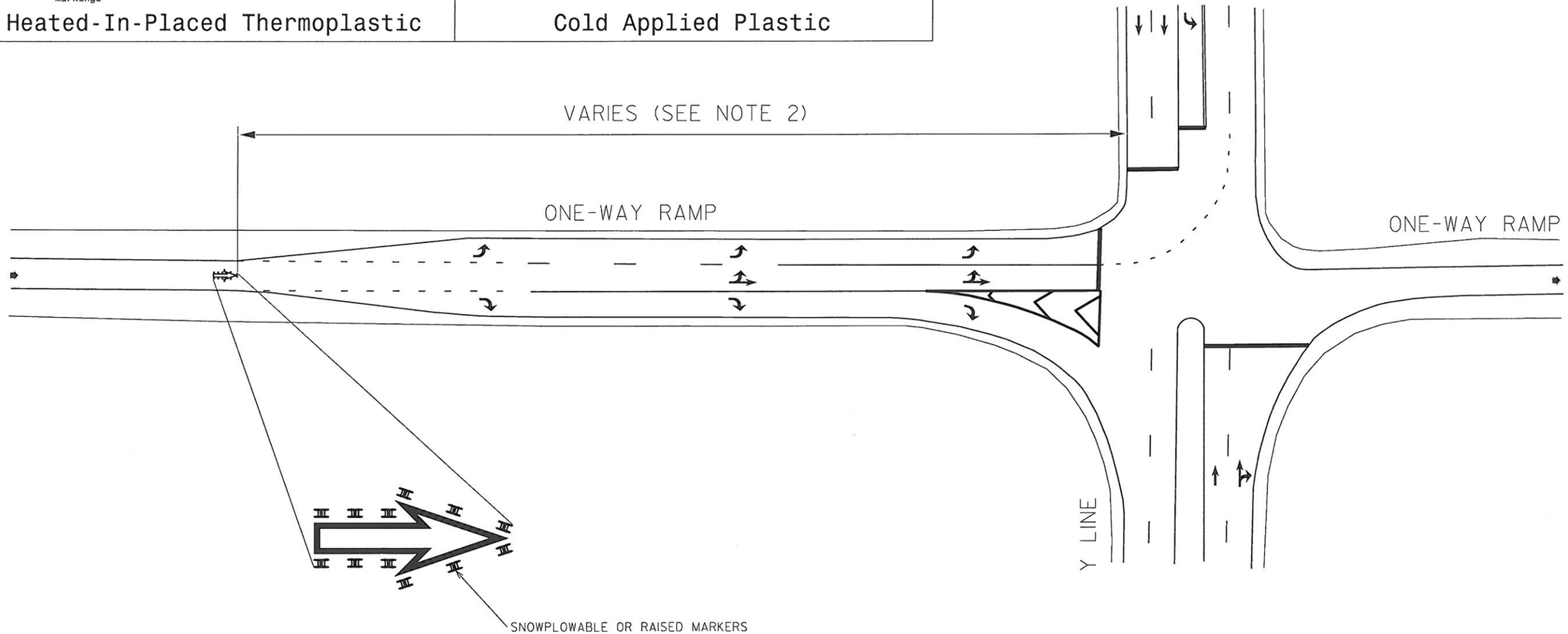


Heated-In-Placed Thermoplastic



Cold Applied Plastic

CONCRETE TREATMENT



NOTES:

1) PAVEMENT MARKINGS SHALL BE INSTALLED ON CONCRETE SURFACES ONLY.

2) PLACEMENT OF WRONG-WAY RAMP ARROW VARIES AND SHOULD BE LOCATED JUST BEFORE THE MULTI-LANE APPROACH.

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4) MARKING SHALL BE WHITE HEATED-IN-PLACED THERMOPLASTIC WITH 4 INCH BLACK CONTRAST BORDER OR COLD APPLIED PLASTIC WITH 1.5 INCH WITH BLACK CONTRAST BORDER.

LEGEND

- DIRECTION OF TRAFFIC FLOW
- PAVEMENT MARKING SYMBOLS

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

4-16

ENGLISH DETAIL DRAWING FOR

PAVEMENT MARKINGS

WRONG WAY RAMP ARROW

ONE-LANE EXIT RAMP AT MULTI-LANE APPROACH

SHEET 2 OF 2

1205.XX

04-12-16

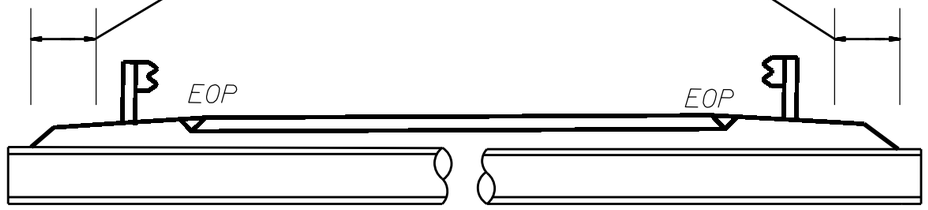
PROJECT REFERENCE NO.	SHEET NO.
I-5954	EC-1

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

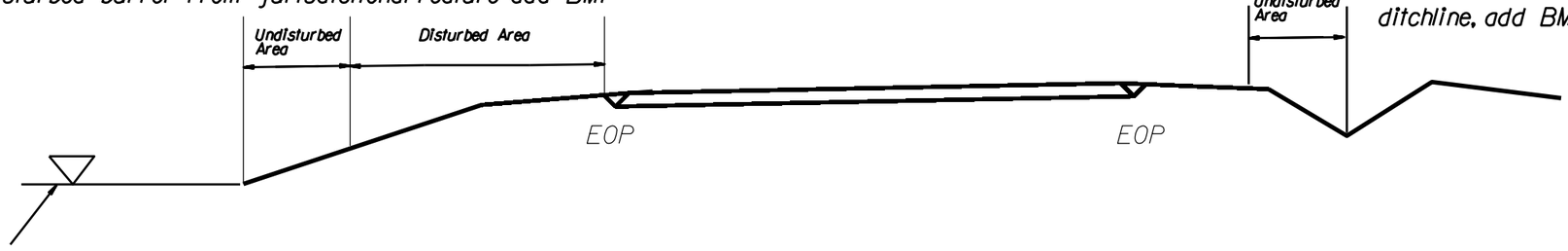
< 5' - 10' Undisturbed buffer add BMP



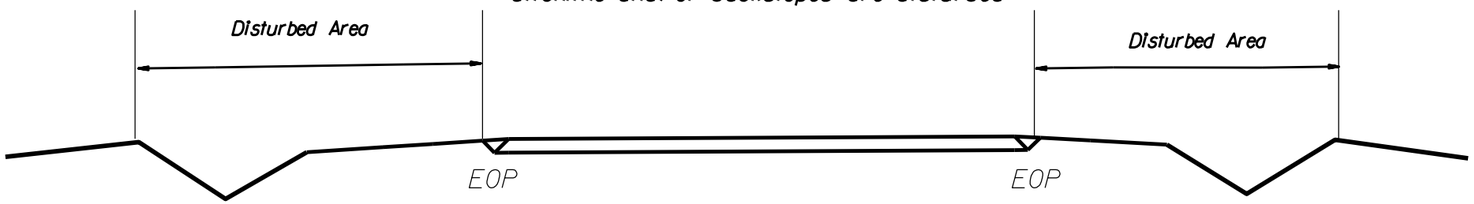
Pipe/Culvert

< 5' - 10' Undisturbed buffer from jurisdictional feature add BMP

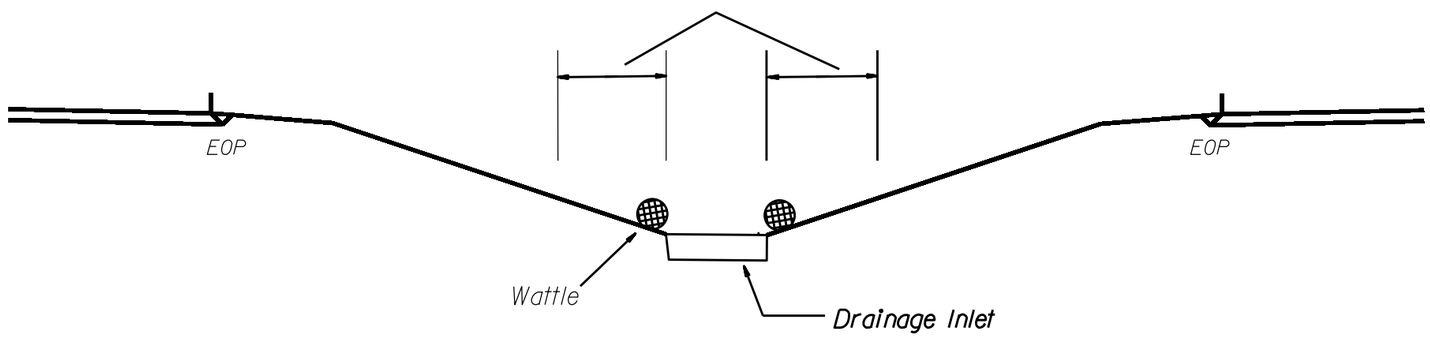
< 5' - 10' Undisturbed buffer from ditchline, add BMP



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



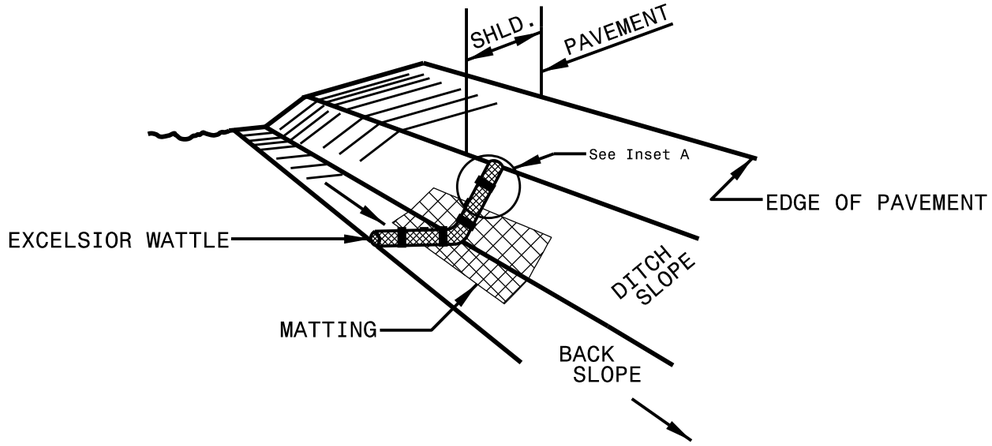
< 5' - 10' Undisturbed buffer from inlet, add wattle



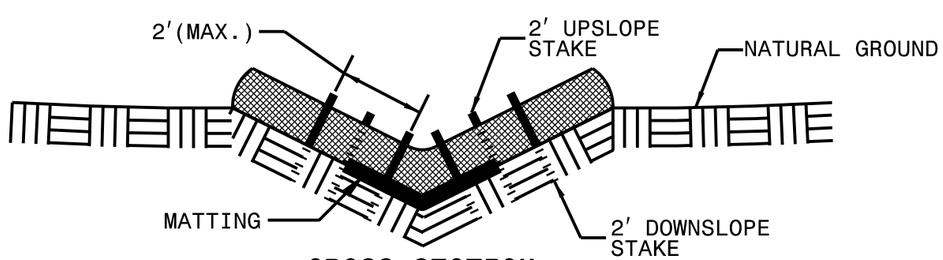
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
I-5954	EC-2

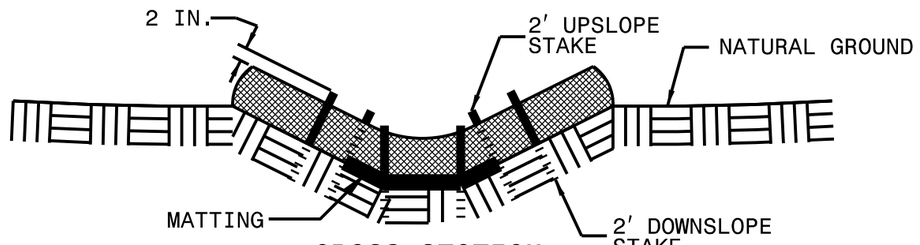
WATTLE DETAIL



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.

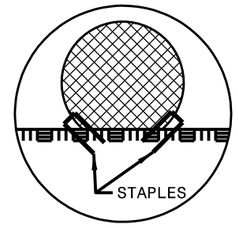
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

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

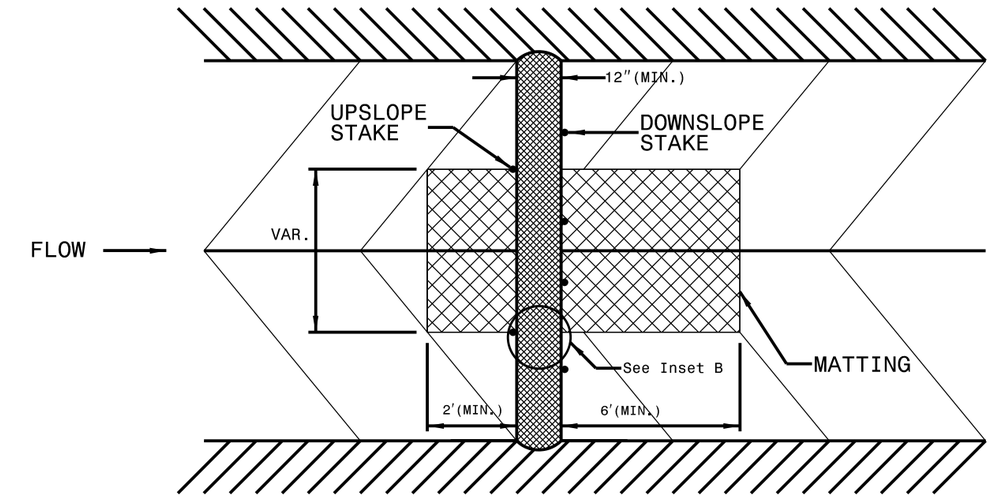
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

INSET A



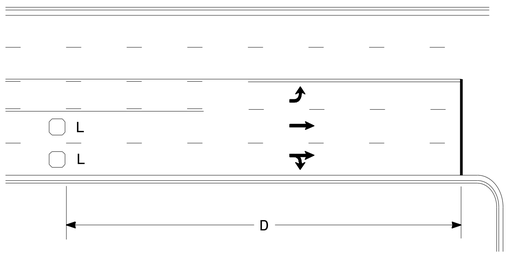
INSET B



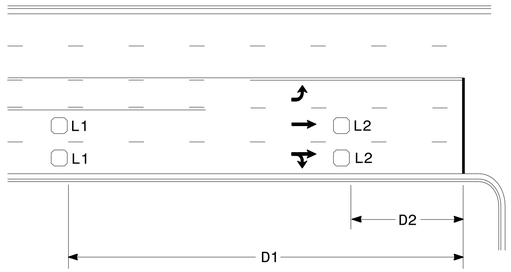
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
I-5954	SIG-1

High Speed Detection
(≥40 mph)



OR



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

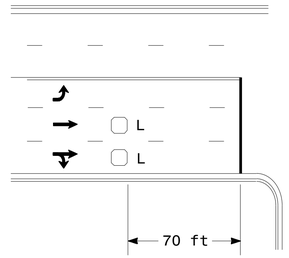
Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

L1 = 6ft X 6ft
Wired in series

L2 = 6ft X 6ft
Wired in series

"Stretch" Operation

Low Speed Detection
(≤35 mph)



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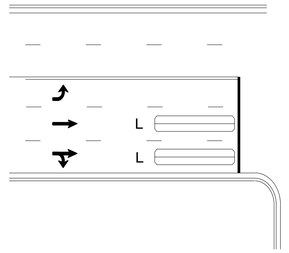
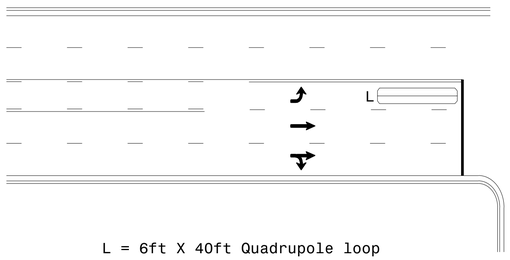


L = 6ft X 6ft
Wired in series

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

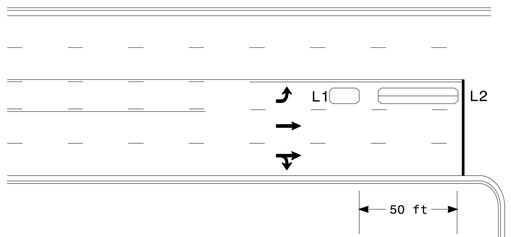
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

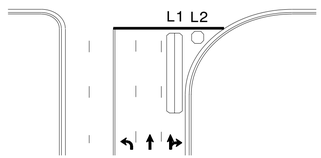
OR



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

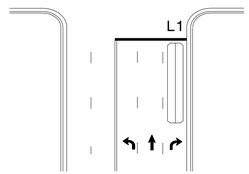
Queue Loop Detection

Right Turn Lane Detection

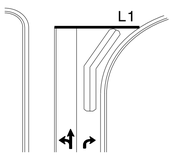


Shared Lane/
Wide Radius Turn

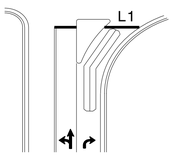
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

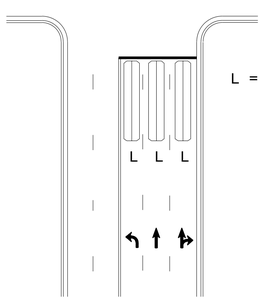


Wide Radius Turn



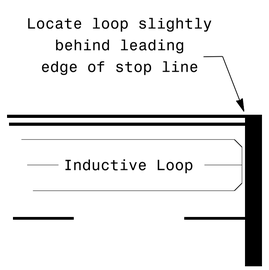
Channelized Turn

Side Street Detection



L = 6ft X 40ft
Quadrupole loop
Wired to separate detectors/channels

Presence Loop Placement at Stop Lines



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

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

Typical Signal Loop Locations

PLAN DATE: January 2015	REVIEWED BY: JPG
PREPARED BY: PLA	REVIEWED BY:

SCALE
N/A

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA L. ALEXANDER

DocuSigned by: P L Alexander B4756E00CE4E46D...
1/30/2015
DATE

SIG. INVENTORY NO.

30-JAN-2015 12:39
S:\Traffic\Signal\Signal Design Section\Eastern Region\looptypical2015.dgn
palexander

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)

SHEET 1 OF 1

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

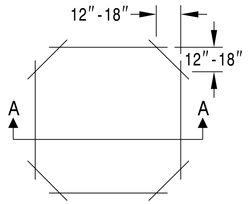
CORRECT WAY TO TWIST WIRE

CONVENTIONAL 4-SIDED LOOP

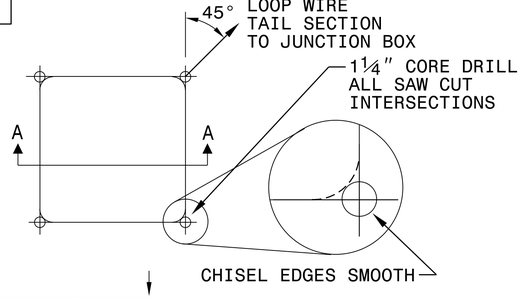
SAW CUT OPTIONS

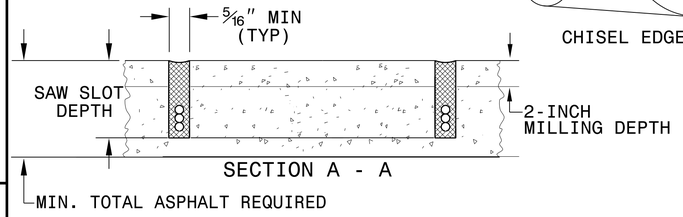
OPTION 1

INSTALL 1″ SECTIONS OF BACKER ROD ON 1 FOOT CENTERS

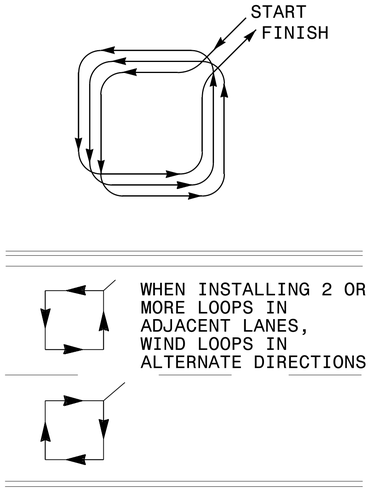


OPTION 2 (POOR PAVEMENT)





LOOP WINDING METHOD



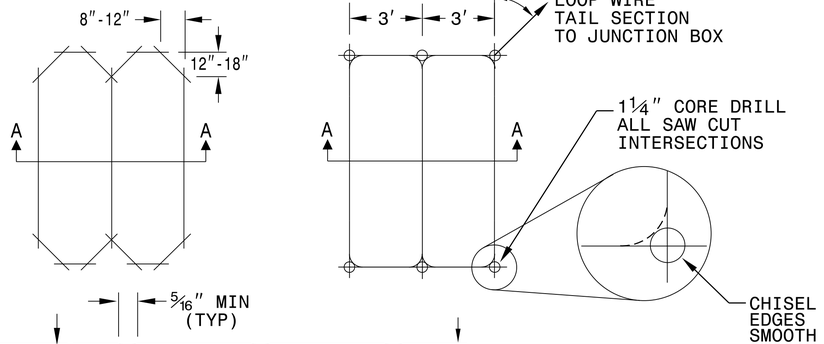
QUADRUPOLE LOOP

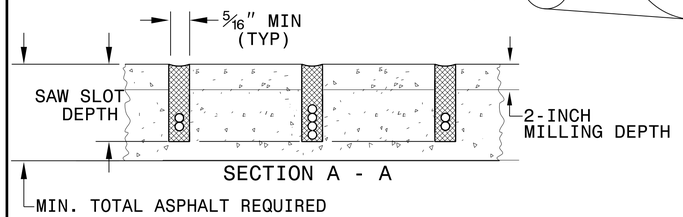
SAW CUT OPTIONS

OPTION 1

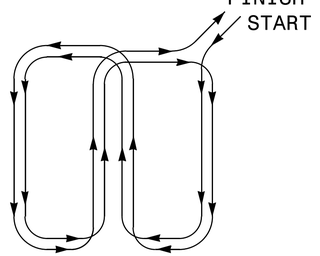
OPTION 2 (POOR PAVEMENT)

INSTALL 1″ SECTIONS OF BACKER ROD ON 1 FOOT CENTERS





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

Prepared in the Offices of:
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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 016286 ENGINEER MILTON I. DEAN

DocuSigned by: Milton I. Dean
SIGNATURE
7/1/2015
DATE

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)

SHEET 1 OF 1