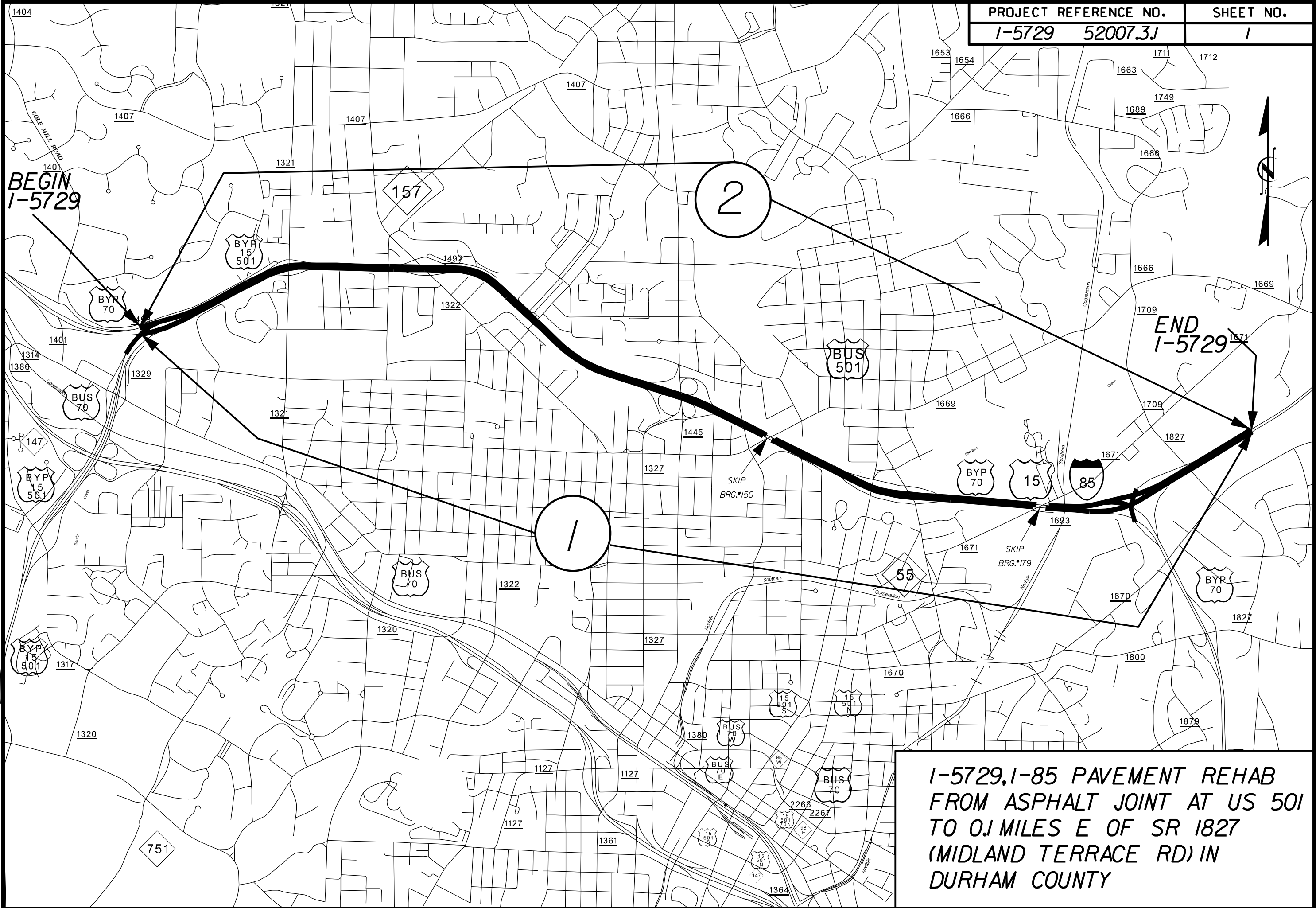


**This electronic collection of documents is provided  
for the convenience of the user  
and is Not a Certified Document –**

**The documents contained herein were originally issued  
and sealed by the individuals whose names and license  
numbers appear on each page, on the dates appearing  
with their signature on that page.**

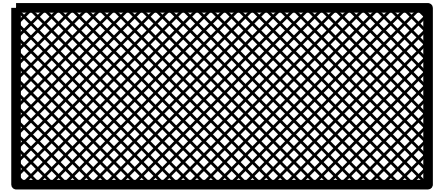
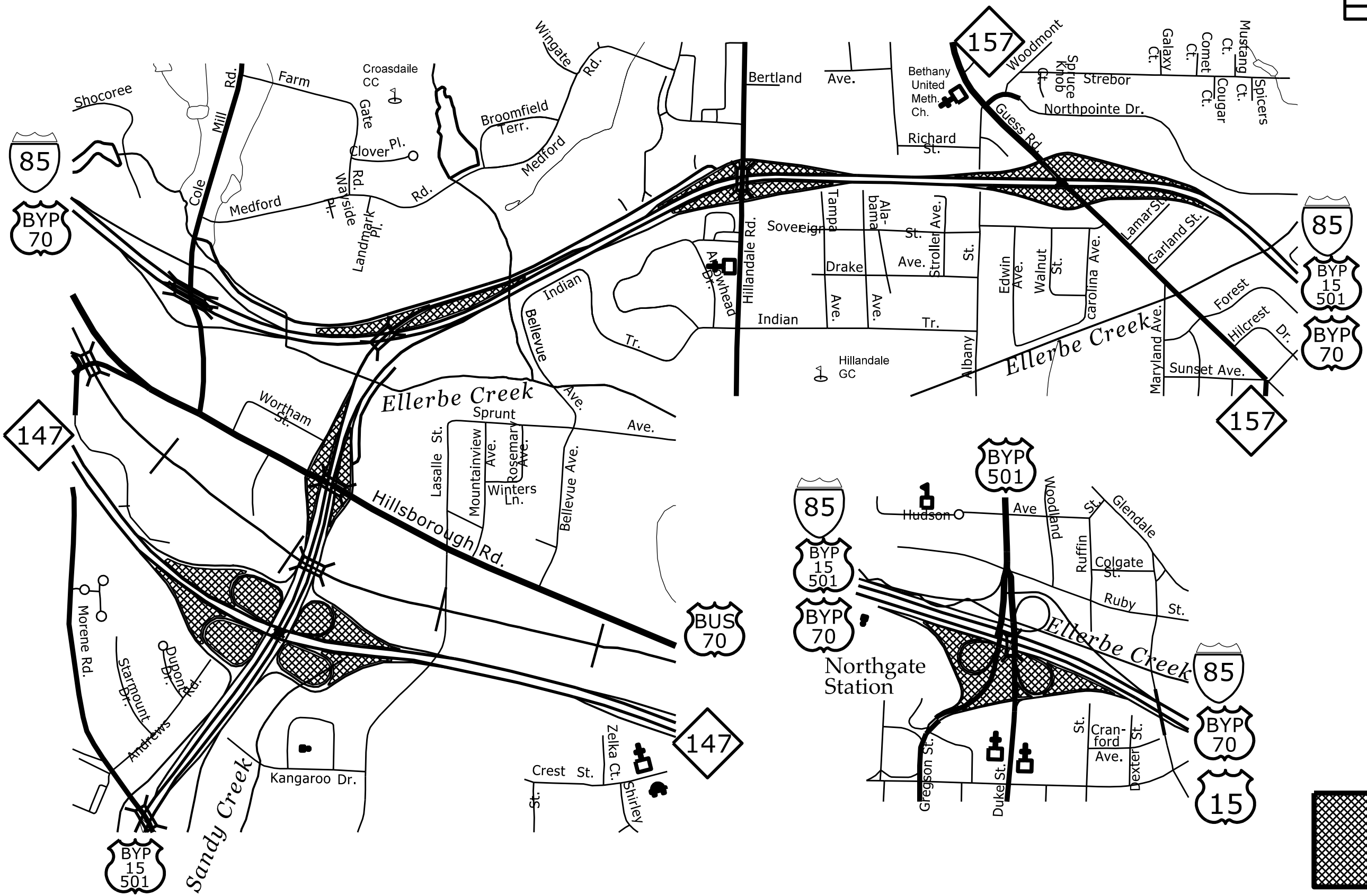
**This file or an individual page  
shall not be considered a certified document.**



BEGIN  
I-5729

END  
I-5729

I-5729, I-85 PAVEMENT REHAB  
FROM ASPHALT JOINT AT US 501  
TO 0.1 MILES E OF SR 1827  
(MIDLAND TERRACE RD) IN  
DURHAM COUNTY



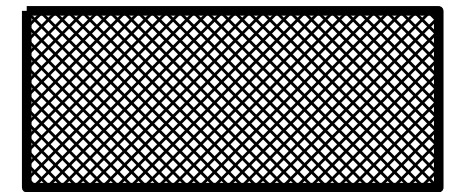
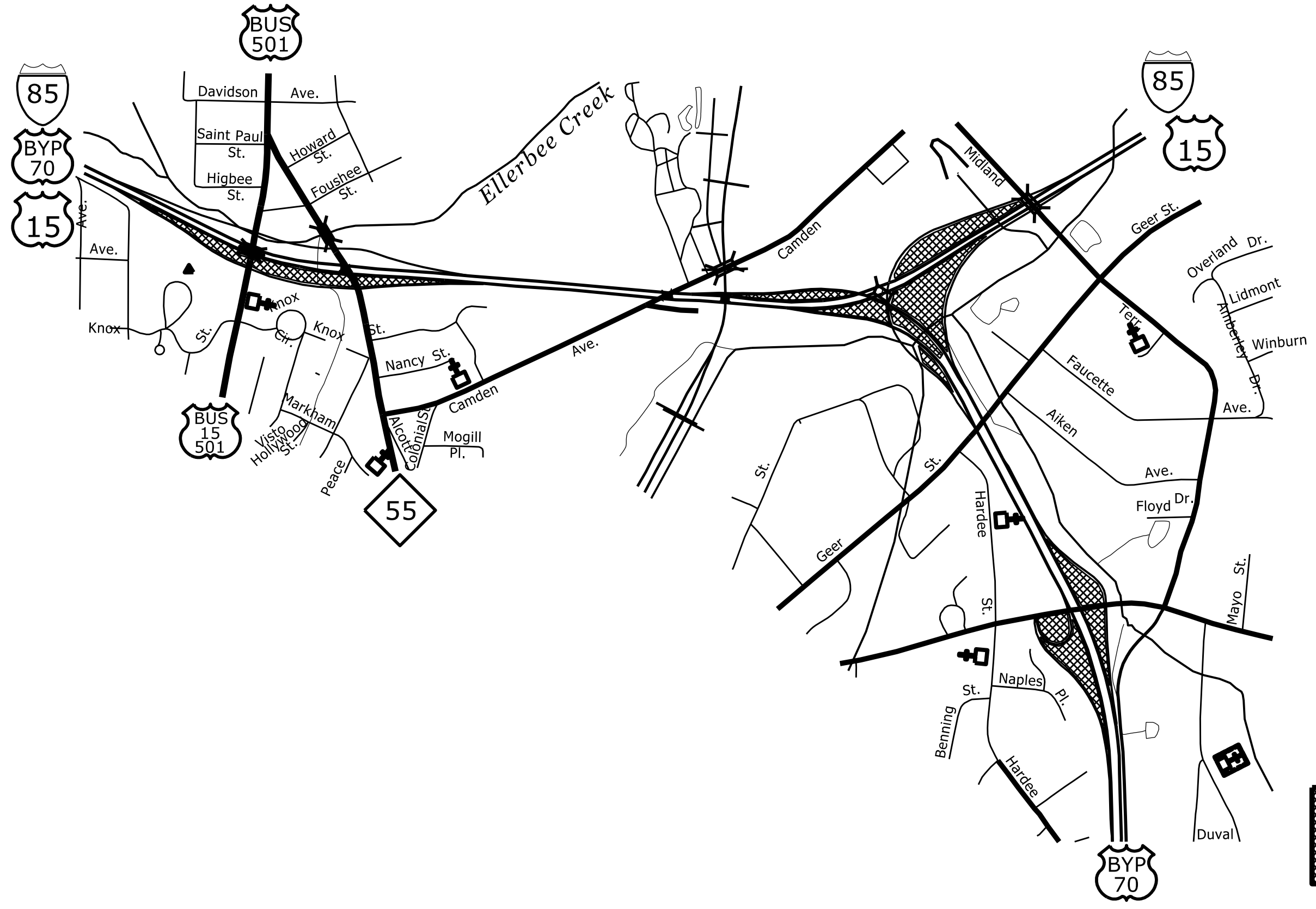
AVAILABLE LAND APPLICATION AREA

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

**DIAMOND GRINDING SLURRY LAND APPLICATION AREAS**

ORIGINAL BY: K. KEMPF DATE: JULY 2017  
 MODIFIED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC: details\kkempf\english\15729 diamond slurry.dgn

\$\$\$\$\$SYTIME\$\$\$\$\$  
 \$\$\$\$\$\$DGN\$\$\$\$\$  
 \$\$\$\$\$\$SUGERNAME\$\$\$\$\$



AVAILABLE LAND APPLICATION AREA

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

**DIAMOND GRINDING SLURRY LAND APPLICATION AREAS**

ORIGINAL BY: K. KEMPF DATE: JULY 2017  
 MODIFIED BY: DATE:  
 CHECKED BY: DATE:  
 FILE SPEC: details\kkempf\english\15729 diamond slurry.dgn

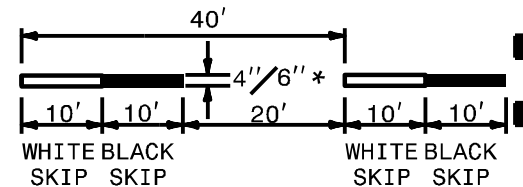
SYSTEMS DESIGN  
 SUGGERNAME

# PAVEMENT SCHEDULE

U	EXISTING CONCRETE PAVEMENT
Y	PROPOSED DIAMOND GRINDING

## BLACK - WHITE COMBINATION 10' WHITE SKIP LINES 10' BLACK SKIP LINES

FOR USE ON CONCRETE PAVEMENTS TO PROVIDE CONTRAST FOR THE WHITE LANE LINE, ALONG THRU LANES AND RAMP LANES.



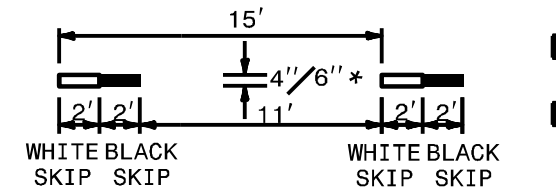
\*NOTE:  
WHERE TWO WIDTHS ARE INDICATED, THE FIRST WIDTH APPLIES TO A "NORMAL" WIDTH LINE, THE SECOND WIDTH APPLIES TO A "WIDE" LINE.

"WIDE" LINES ARE REQUIRED WHEN DESIGNATED IN THE PLANS, OR WHEN DIRECTED BY THE ENGINEER.

6" LINE REMOVAL SHALL BE USED TO REMOVE 100% OF THE 4" TEMPORARY PAINT ON THE CONCRETE SURFACE BY GRINDING METHOD ONLY. ALSO 6" LINE REMOVAL BY GRINDING SHALL BE USED IN THE AREA OF THE BLACK CONTRAST FOR SURFACE PREPARATION.

## BLACK - WHITE COMBINATION 2' MINI WHITE SKIP LINES 2' MINI BLACK SKIP LINES

FOR USE ON CONCRETE PAVEMENTS TO PROVIDE CONTRAST FOR THE WHITE LANE LINE, ALONG THRU LANES AND RAMP LANES.

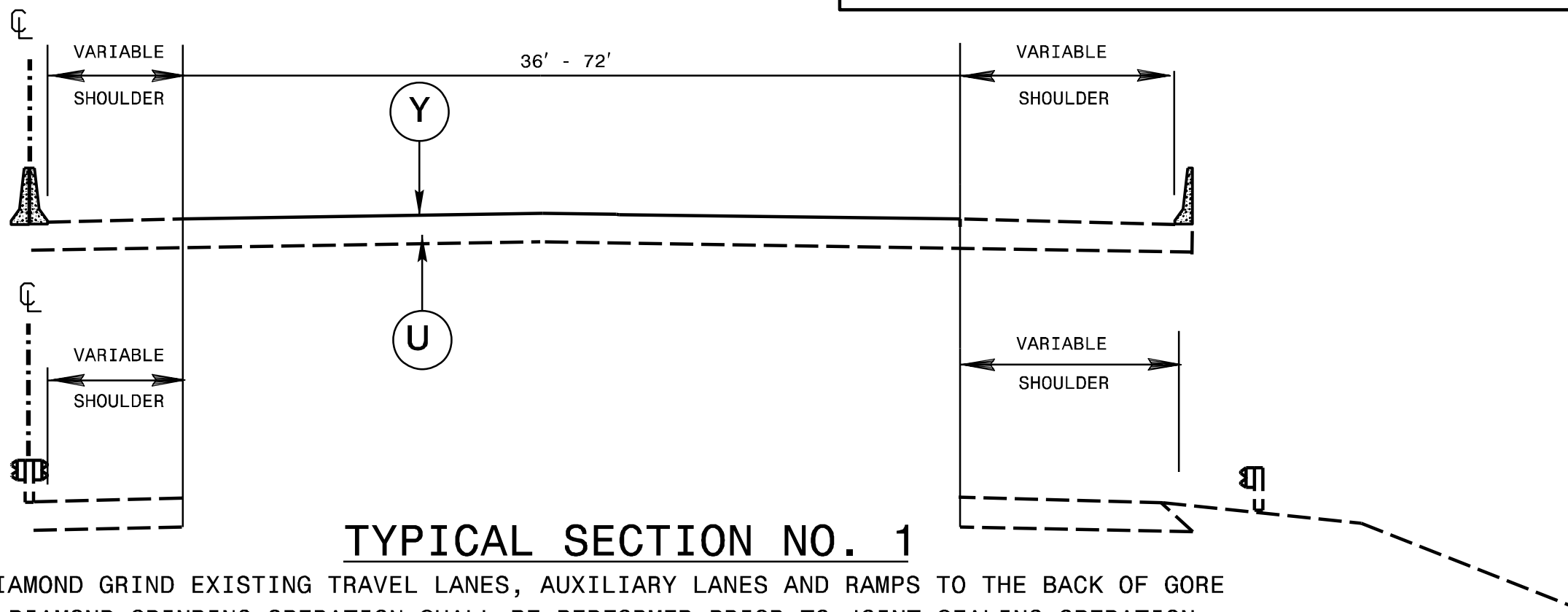


\*NOTE:  
WHERE TWO WIDTHS ARE INDICATED, THE FIRST WIDTH APPLIES TO A "NORMAL" WIDTH LINE, THE SECOND WIDTH APPLIES TO A "WIDE" LINE.

"WIDE" LINES ARE REQUIRED WHEN DESIGNATED IN THE PLANS, OR WHEN DIRECTED BY THE ENGINEER.

6" LINE REMOVAL SHALL BE USED TO REMOVE 100% OF THE 4" TEMPORARY PAINT ON THE CONCRETE SURFACE BY GRINDING METHOD ONLY. ALSO 6" LINE REMOVAL BY GRINDING SHALL BE USED IN THE AREA OF THE BLACK CONTRAST FOR SURFACE PREPARATION.

PRIOR TO PLACING FINAL PAVEMENT MARKING MATERIAL ON CONCRETE SURFACES THAT ARE DIAMOND GROUND, THE CONTRACTOR SHALL USE AN ACCEPTABLE METHOD TO GRIND RIDGES SMOOTH ONLY WHERE PAVEMENT MARKINGS WILL BE INSTALLED.



### TYPICAL SECTION NO. 1

DIAMOND GRIND EXISTING TRAVEL LANES, AUXILIARY LANES AND RAMPS TO THE BACK OF GORE  
DIAMOND GRINDING OPERATION SHALL BE PERFORMED PRIOR TO JOINT SEALING OPERATION

PROJECT NO.	SHEET NO.	TOTAL NO.
52007.3.1		

**SUMMARY OF QUANTITIES**

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	DIAMOND GRINDING PCC PAVEMENT SY	PATCHING CONCRETE PAVEMENT SPALLS SF	SEALING EXISTING CONCRETE PAVEMENT JOINTS LF	PORTABLE LIGHTING LS	TEMPORARY SILT FENCE LF	WATTLE LF
52007.3.1	Durham	1	I-85 NORTH BOUND	FROM ASPHALT PAVEMENT JOINT SOUTH OF US 15/501 EXIT TO ASPHALT PAVEMENT JOINT NORTH OF SR 1827 (MIDLAND TERRACE RD)	1	5		YES	NO	5.61	72	177,708	125	339,303.00	0.50	50	50
<b>TOTAL FOR MAP NO. 1</b>										<b>5.61</b>		<b>177,708</b>	<b>125</b>	<b>339,303.00</b>	<b>0.50</b>	<b>50</b>	<b>50</b>
52007.3.1	Durham	2	I-85 SOUTH BOUND	FROM ASPHALT JOINT NORTH OF SR 1827 (MIDLAND TERRACE RD) TO ASPHALT PAVEMENT JOINT SOUTH OF US 15/501 EXIT	1	5		YES	NO	5.61	72	179,288	125	344,340.00	0.50	50	50
<b>TOTAL FOR MAP NO. 2</b>										<b>5.61</b>		<b>179,288</b>	<b>125</b>	<b>344,340.00</b>	<b>0.50</b>	<b>50</b>	<b>50</b>
<b>TOTAL FOR PROJ NO. 52007.3.1</b>										<b>11.22</b>		<b>356,996</b>	<b>250</b>	<b>683,643.00</b>	<b>1.00</b>	<b>100</b>	<b>100</b>
<b>GRAND TOTAL</b>										<b>11.22</b>		<b>356,996</b>	<b>250</b>	<b>683,643.00</b>	<b>1.00</b>	<b>100</b>	<b>100</b>

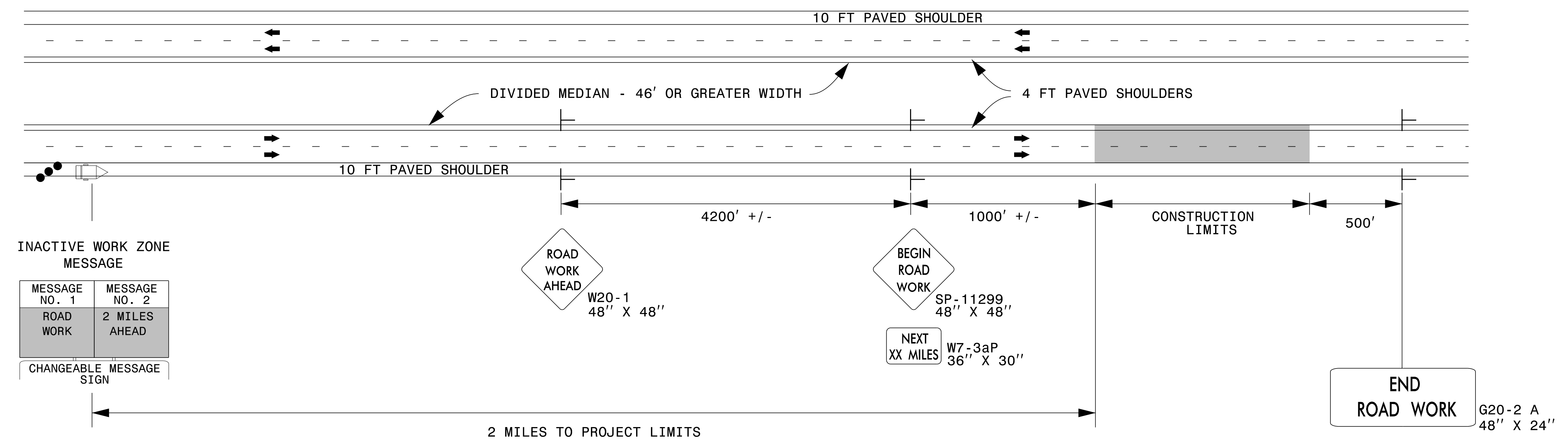
PROJECT NO.	SHEET NO.	TOTAL NO.
52007.3.1		

### THERMOPLASTIC AND PAINT QUANTITIES

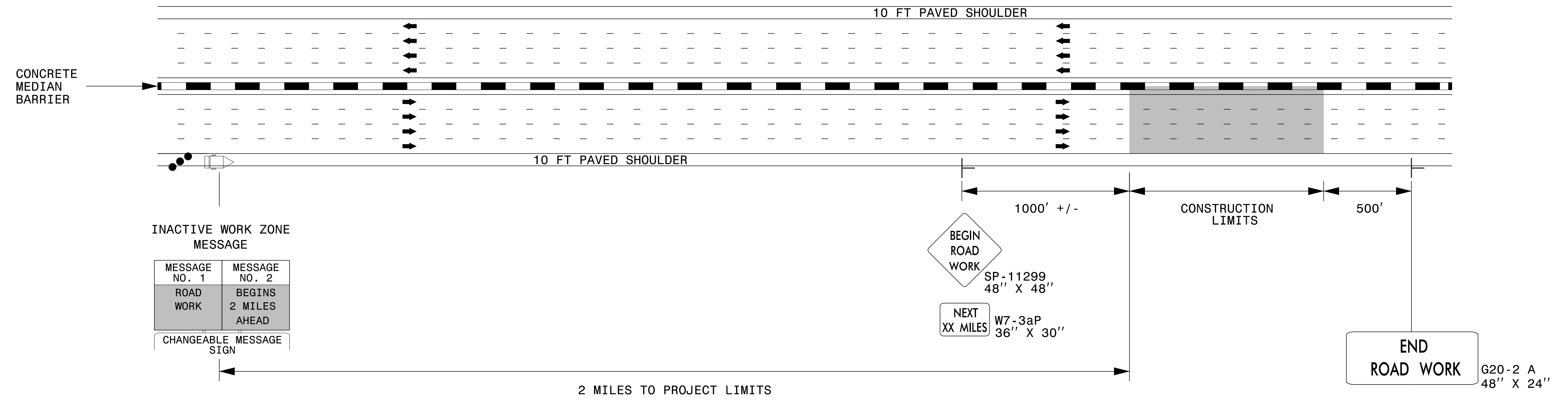
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	LENGTH	WIDTH	4400000000-E	4405000000-E	4410000000-E	4415000000-N	4420000000-N	4422000000-N	4430000000-N	4445000000-E	4480000000-N	4510000000-N	4600000000-N			4785000000-E	4800000000-N	4805000000-N			
										STATIONARY WORK ZONE SIGN	PORTABLE WORK ZONE SIGN	BARRICADE MOUNTED WORK ZONE SIGN	FLASHING ARROW BOARD	PORTABLE CHANGABLE MESSAGE SIGNS	PORTABLE CHANGEABLE MESSAGE SIGNS (SHORT TERM)	DRUMS	TYPE III BARRICADE	TMA	LAW ENFORCEMENT	GENERIC TRAFFIC CONTROL ITEM, PRESENCE LIGHTING	GENERIC TRAFFIC CONTROL ITEM, SEQUENTIAL FLASHING WARNING LIGHTS	GENERIC TRAFFIC CONTROL ITEM, WORK ZONE DIGITAL SPEED LIMIT SIGNS	12" WHITE COLD APPLIED PLASTIC, TYPE II	COLD APPLIED MSG ONLY, TYPE II	COLD APPLIED PLASTIC RT ARROW, TYPE II	COLD APPLIED PLASTIC STR ARROW, TYPE II	COLD APPLIED PLASTIC STRAIGHT RIGHT ARROW, TYPE II	COLD APPLIED PLASTIC MERGE ARROW, TYPE II
52007.3.1	Durham	1	I-85 NORTH BOUND	FROM ASPHALT PAVEMENT JOINT SOUTH OF US 15/501 EXIT TO ASPHALT PAVEMENT JOINT NORTH OF SR 1827 (MIDLAND TERRACE RD)	1	5		5.61	72	262	180	10	1	2.00	22	100	16	1	60	6	16	1	340	35	14	8	10	16
<b>TOTAL FOR MAP NO. 1</b>							5.61		262	180	10	1	2.00	22	100	16	1	60	6	16	1	340	35	14	8	10	16	
52007.3.1	Durham	2	I-85 SOUTH BOUND	FROM ASPHALT JOINT NORTH OF SR 1827 (MIDLAND TERRACE RD) TO ASPHALT PAVEMENT JOINT SOUTH OF US 15/501 EXIT	1	5		5.61	72	262	180	10	1	2.00	22	100	16	1	60	6	16	1	354	75	31	16	14	9
<b>TOTAL FOR MAP NO. 2</b>							5.61		262	180	10	1	2	22	100	16	1	60	6	16	1	354	75	31	16	14	9	
<b>TOTAL FOR PROJ NO. 52007.3.1</b>							11.22		524	360	20	2	4	44	200	32	2	120	12	32	2	694	110	45	24	24	25	
<b>GRAND TOTAL</b>							11.22		524	360	20	2	4	44	200	32	2	120	12	32	2	694	110	45	24	24	25	

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	LENGTH	WIDTH	4810000000-E		4815000000-E		4820000000-E	4825000000-E	4835000000-E	4847100000-E			4847120000-E	4855000000-E	4865000000-E	4900000000-N	4905000000-N
										4" WHITE PAINT	4" YELLOW PAINT	6" YELLOW PAINT	6" WHITE PAINT	8" WHITE PAINT	12" WHITE PAINT	24" WHITE PAINT	6" WHITE POLYUREA (HIGHLY REFLECTIVE ELEMENTS)	6" YELLOW POLYUREA (HIGHLY REFLECTIVE ELEMENTS)	6" BLACK POLYUREA (HIGHLY REFLECTIVE ELEMENTS)	12" WHITE POLYUREA (HIGHLY REFLECTIVE ELEMENTS)	6" LINE REMOVAL	12" LINE REMOVAL	CRYSTAL & RED MARKERS	SNOW PLOWABLE MARKERS
52007.3.1	Durham	1	I-85 NORTH BOUND	FROM ASPHALT PAVEMENT JOINT SOUTH OF US 15/501 EXIT TO ASPHALT PAVEMENT JOINT NORTH OF SR 1827 (MIDLAND TERRACE RD)	1	5		5.61	72	56,160	27,990			10,570			56,160	27,990	25,910	11,046	110,060	11,046	64	2,276
<b>TOTAL FOR MAP NO. 1</b>							5.61		56,160	27,990			10,570			56,160	27,990	25,910	11,046	110,060	11,046	64	2,276	
52007.3.1	Durham	2	I-85 SOUTH BOUND	FROM ASPHALT JOINT NORTH OF SR 1827 (MIDLAND TERRACE RD) TO ASPHALT PAVEMENT JOINT SOUTH OF US 15/501 EXIT	1	5		5.61	72	76,690	42,498	1,648	2,529	12,440	1,394	330	61,481	30,280	26,516	11,468	118,277	11,468	150	1,991
<b>TOTAL FOR MAP NO. 2</b>							5.61		76,690	42,498	1,648	2,529	12,440	1,394	330	61,481	30,280	26,516	11,468	118,277	11,468	150	1,991	
<b>TOTAL FOR PROJ NO. 52007.3.1</b>							11.22		132,850	70,488	1,648	2,529	23,010	1,394	330	117,641	58,270	52,426	22,514	228,337	22,514	214	4,267	
<b>GRAND TOTAL</b>							11.22		132,850	70,488	1,648	2,529	23,010	1,394	330	117,641	58,270	52,426	22,514	228,337	22,514	214	4,267	

## DIVIDED MEDIANS WITH WIDTHS 46' OR GREATER



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

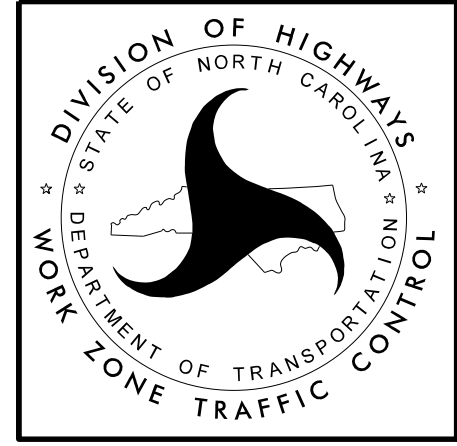


**NOTES:**

- 1) LATERAL CLEARANCE AT ALL SIGN LOCATIONS SHALL BE 6' AS MEASURED FROM THE EDGE OF PAVEMENT.
- 2) MOUNT SIGNS THAT ARE LARGER THAN 10 SQUARE FEET IN AREA ON TWO OR MORE WOOD OR U-CHANNEL SUPPORTS. PERFORATED SQUARE TUBING SUPPORT SYSTEMS MAY SUPPORT LARGER AREAS ON A SINGLE SUPPORT. FOLLOW MANUFACTURER'S RECOMMENDATIONS. THESE SYSTEMS SHALL BE NCHRP 350 COMPLIANT AND NCDOT APPROVED.
- 3) FOR MEDIAN WIDTHS LESS THAN 46' (MEASURED EDGELINE TO EDGELINE) USE THE BOTTOM DRAWING.
- 4) IF STATIONARY GENERAL WARNING SIGNS ARE USED, THEY WILL BE PAID FOR PER SECTION 104 OF THE NCDOT STANDARD SPECIFICATIONS AS EXTRA WORK.
- 5) INSTALL "ROAD WORK AHEAD" (W20-1) ALONG ENTRANCE RAMP 500' PRIOR TO RAMP TERMINAL, AND "END ROAD WORK" (G20-2a) AT THE END OF EXIT RAMP WITHIN THE WORK ZONE.

**LEGEND**

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



**RESURFACING ADVANCE  
WARNING SIGNS FOR  
HIGH SPEED FACILITIES  
≥ 60 MPH**

8/12/2016 S:\T\U\WZTC\DesignGroup3\Squad3B\0Data\Projects\I-5729\I5729\_Resurfacing\_AdvWarn\_HSpd.dgn User:kedds

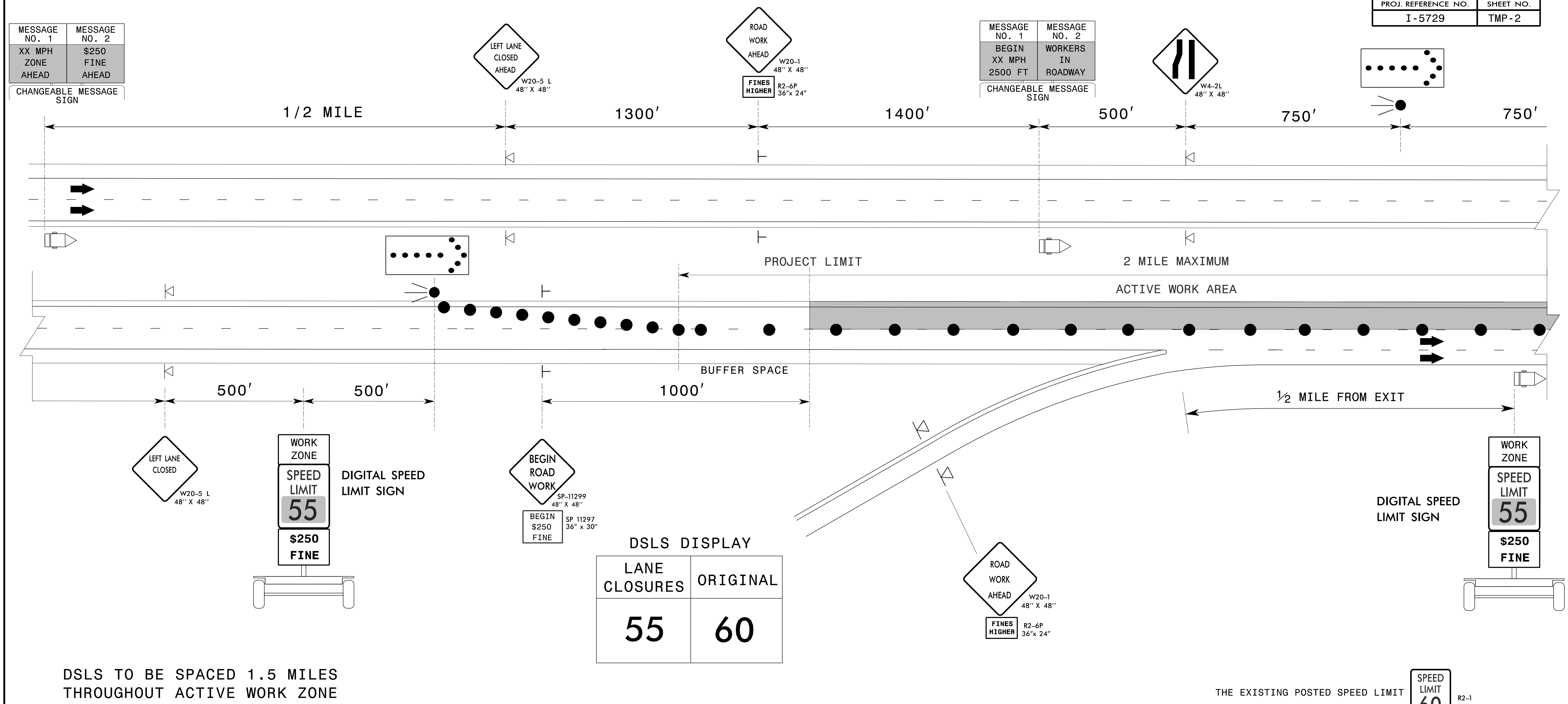


MESSAGE NO. 1	MESSAGE NO. 2
XX MPH ZONE AHEAD	\$250 FINE AHEAD

CHANGEABLE MESSAGE SIGN

MESSAGE NO. 1	MESSAGE NO. 2
BEGIN XX MPH 2500 FT	WORKERS IN ROADWAY

CHANGEABLE MESSAGE SIGN



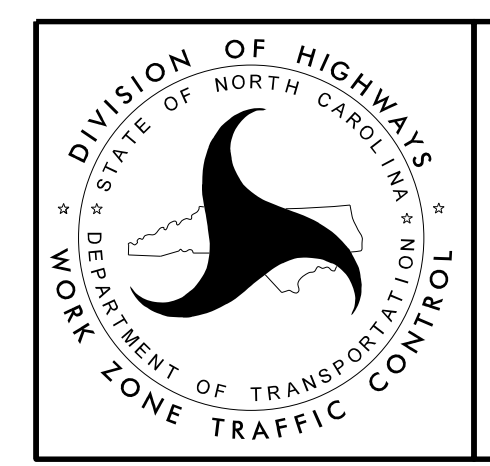
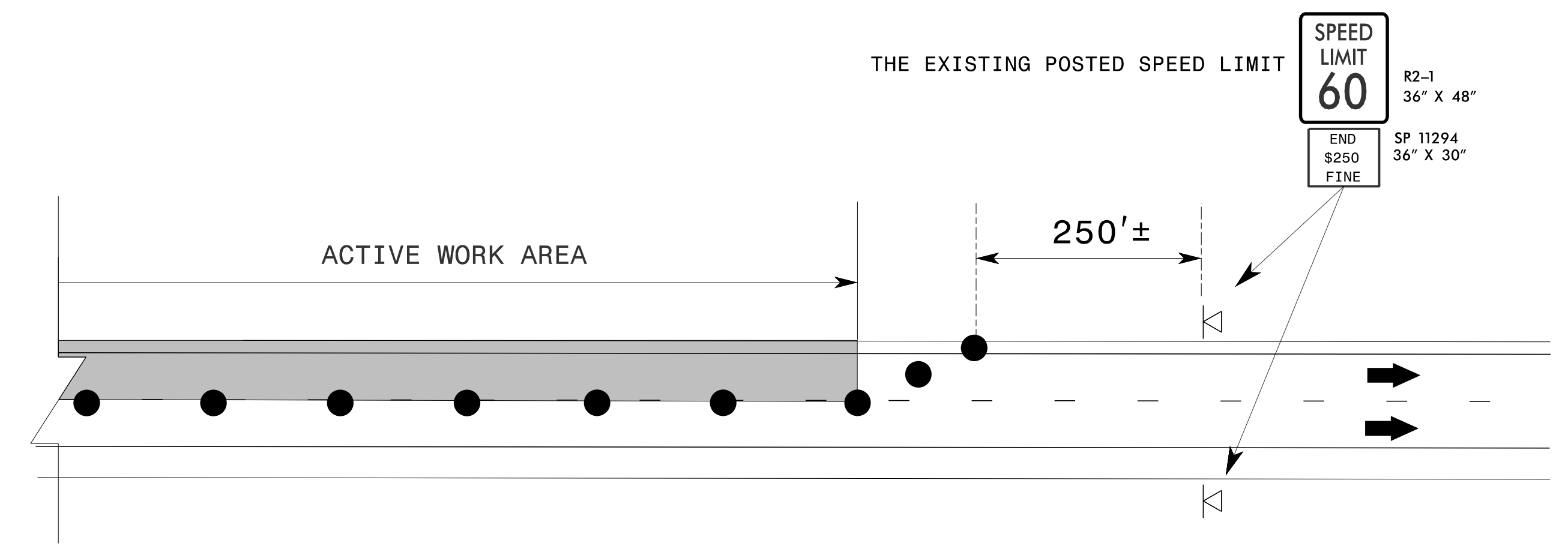
DSLS DISPLAY

LANE CLOSURES	ORIGINAL
55	60

DSLS TO BE SPACED 1.5 MILES THROUGHOUT ACTIVE WORK ZONE

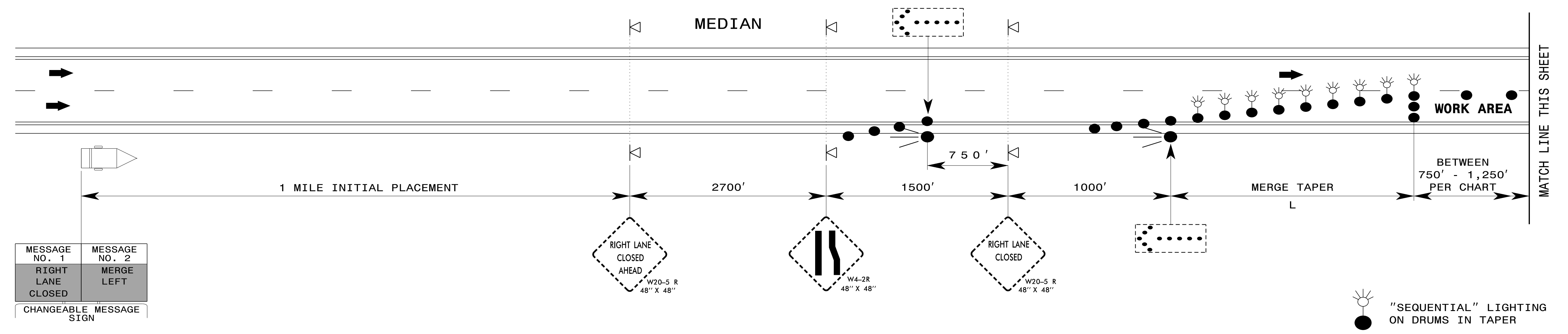
### GUIDELINES

1. NCDOT HAS SOLE AUTHORITY OF THE SPEED LIMITS DISPLAYED ON THE DIGITAL SPEED LIMIT SIGNS.
2. THE WORK ZONE VARIABLE SPEED LIMIT REDUCTION ("WZVSLR") IS FOR USE ONLY AFTER AN ENGINEERING INVESTIGATION HAS BEEN PERFORMED BY THE REGIONAL TRAFFIC ENGINEER, THE DIVISION AND THE WORK ZONE TRAFFIC CONTROL SECTION.
3. THE "WZVSLR" IS INTENDED FOR USE ON FREEWAYS WITH ORIGINAL SPEED LIMITS 60 MPH OR GREATER. THE POSTED SPEED LIMITS DISPLAYED WITHIN THE ACTIVE WORK ZONE MAY VARY BETWEEN 55 MPH TO 70 MPH, DEPENDENT UPON ROAD WORK CONDITIONS AND THE ORIGINAL SPEED LIMIT OF THE FACILITY.
4. THIS APPLICATION IS FOR SHORT-TERM ACTIVITIES (i.e. LANE CLOSURES AND ROAD CLOSURES). THE MAXIMUM LANE CLOSURE LENGTH IS 2 MILES UNLESS OTHERWISE SHOWN IN THE PLANS. THE "WZVSLR" SHALL NOT BE IN OPERATION CONTINUOUSLY (24/7) FOR A PERIOD EXCEEDING 30 CALENDAR DAYS.
5. ALL ORIGINAL SPEED LIMIT SIGNS SHALL BE COVERED OR REMOVED. THE DIGITAL SPEED LIMIT SIGNS WILL TAKE THE PLACE OF ALL ORIGINAL STATIONARY SPEED LIMIT SIGNS. THE DIGITAL SPEED LIMIT SIGNS MAY BE TRAILER MOUNTED OR STATIONARY MOUNTED.
6. THE STATE TRAFFIC ENGINEER HAS TO ORDINANCE THE "WZVSLR" IN ORDER FOR THE REDUCTION AND/OR \$250 SPEEDING FINE TO BE VALID AND ENFORCEABLE. NO SPEED LIMIT MESSAGES/SIGNS SHALL BE INSTALLED PRIOR TO RECEIVING A SIGNED ORDINANCE. IN ADDITION, THE \$250 SPEEDING FINE ALSO REQUIRES A SEPARATE SIGNED ORDINANCE BY THE STATE TRAFFIC ENGINEER.
6. EACH DIRECTION OF THE PROJECT IS TO BE EVALUATED FOR THE "WZVSLR". THIS DRAWING INTENTIONALLY HAS 1 DIRECTION SIGNED AS A REMINDER TO CAREFULLY CONSIDER WHETHER BOTH DIRECTIONS OF THE PROJECT NEED TO HAVE THE SPEED LIMIT REDUCED.

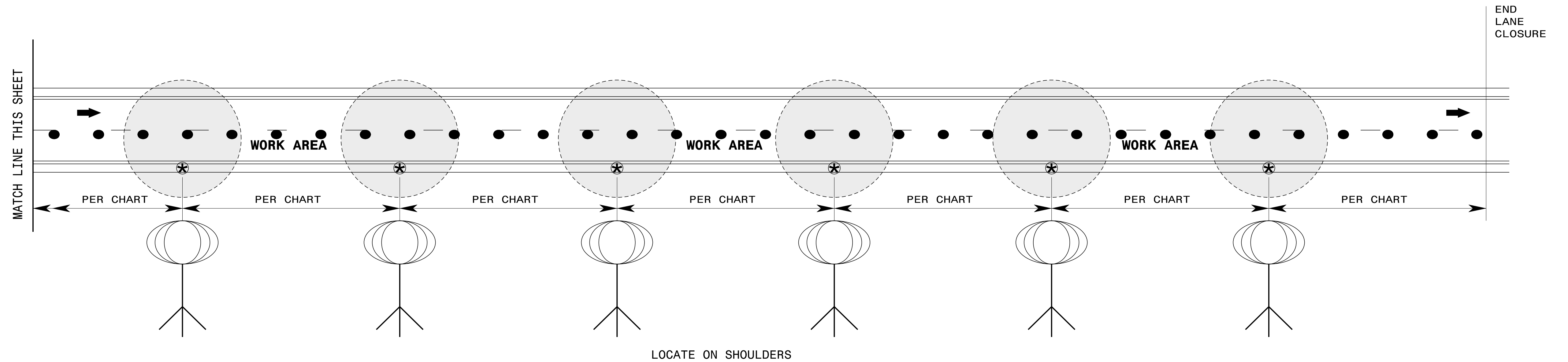


WORK ZONE "VARIABLE" SPEED LIMIT REDUCTION USING DIGITAL SPEED LIMIT SIGNS

# ADVANCE WARNING AREA



# WORK ZONE AREA

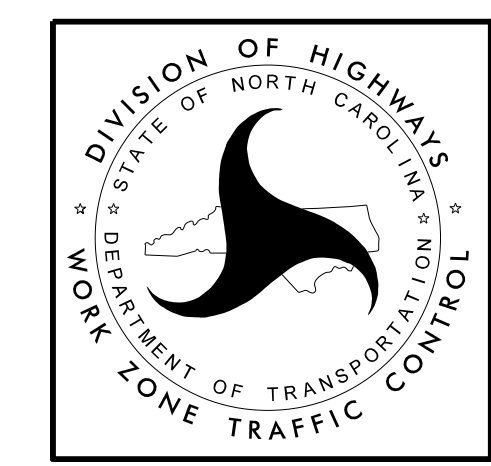


## SPACING CHART

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

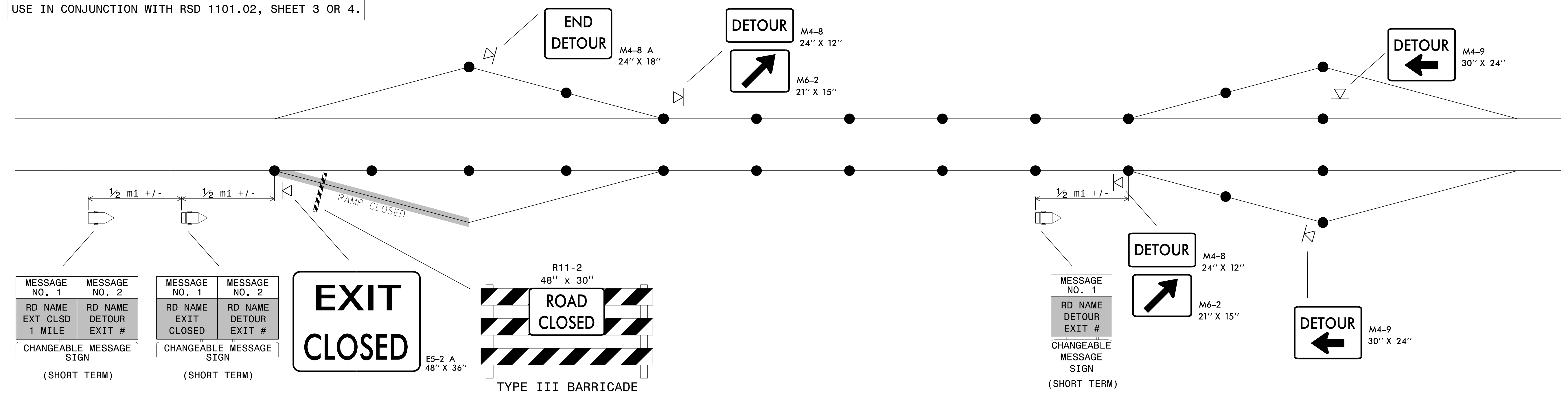
- 1) SPACE LIGHT UNITS ACCORDING TO THE CHART.
- 2) EACH LIGHT UNIT SHALL BE CAPABLE OF ELEVATING TO A MINIMUM HEIGHT OF 14' ABOVE THE PAVEMENT.
- 3) PLACE ON PAVED SHOULDER IF POSSIBLE.



WORK ZONE  
"PRESENCE"  
LIGHTING

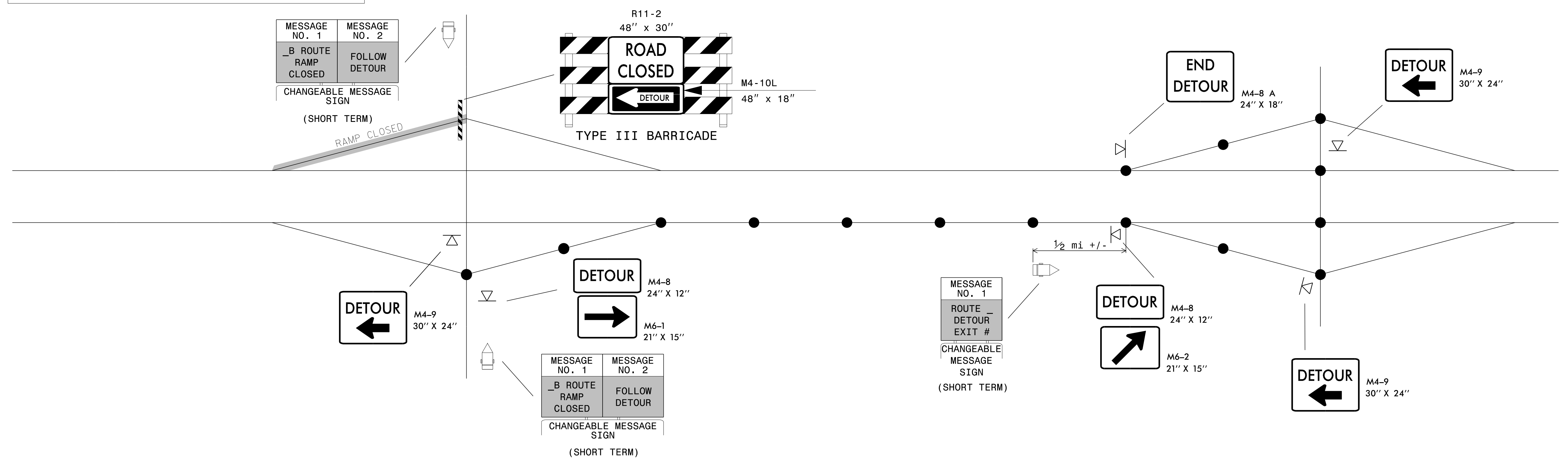
### SHORT TERM CLOSURE AND DETOUR OF OFF-RAMP TO ADJACENT INTERCHANGE

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



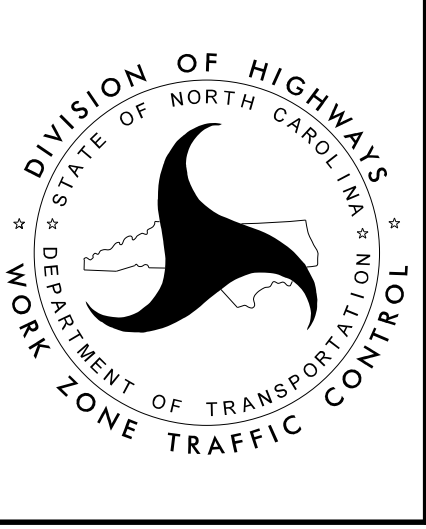
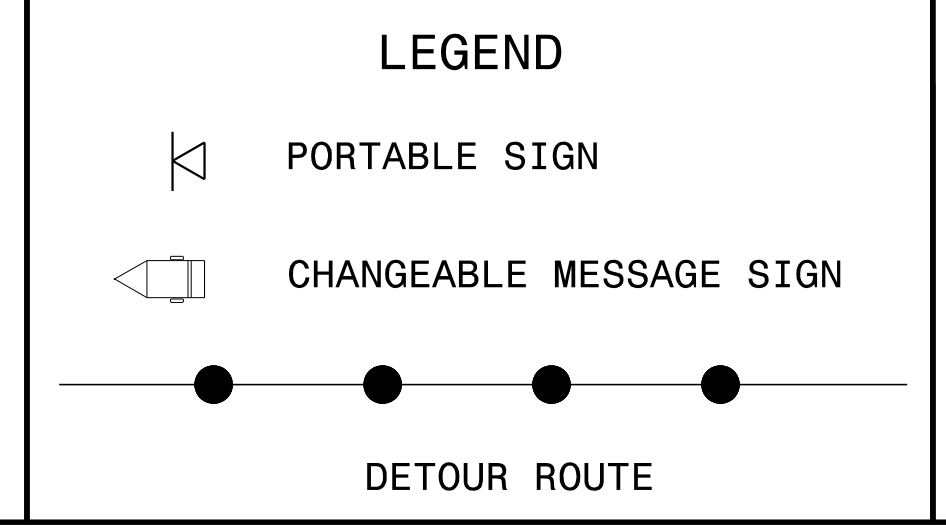
### SHORT TERM CLOSURE AND DETOUR OF ON-RAMP TO ADJACENT INTERCHANGE

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.



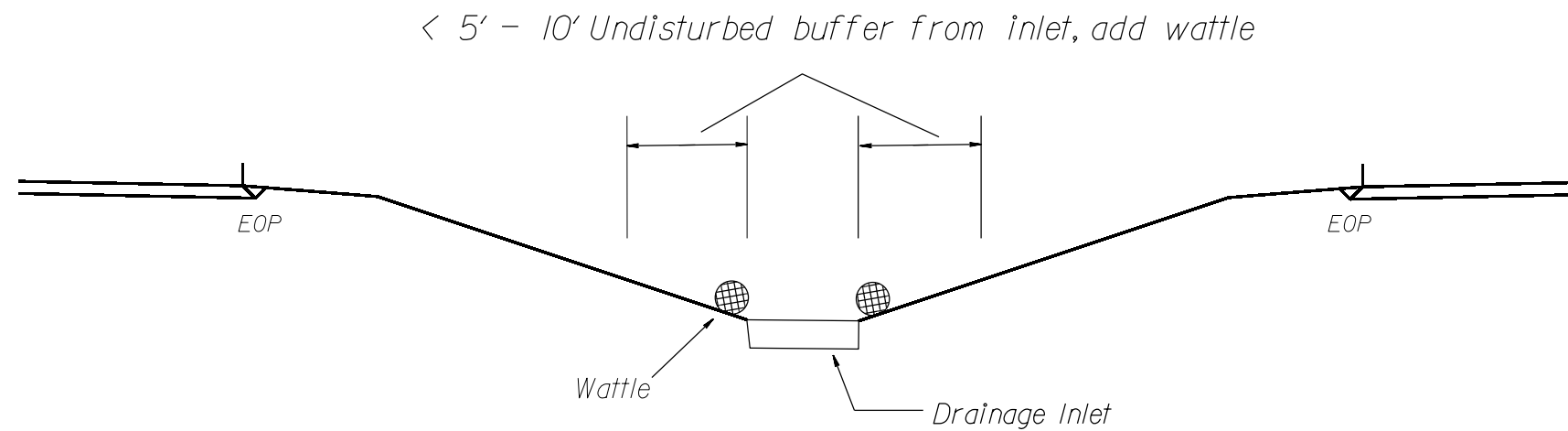
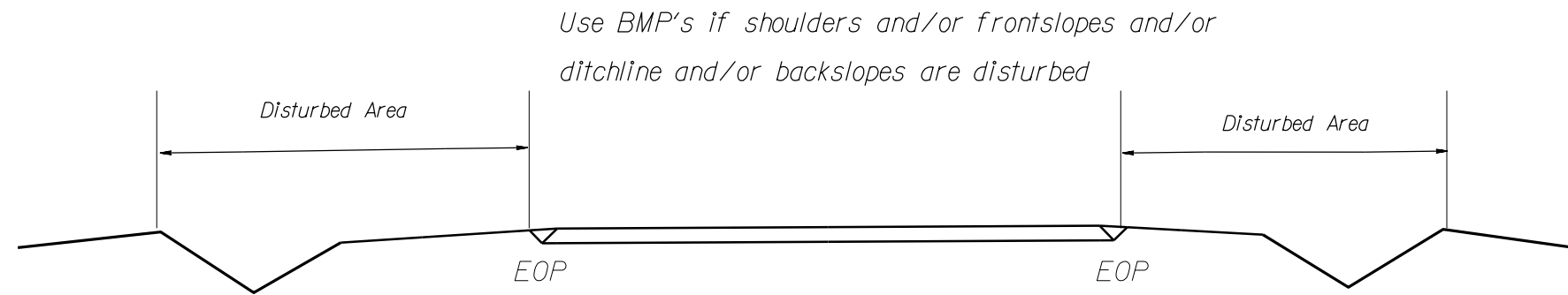
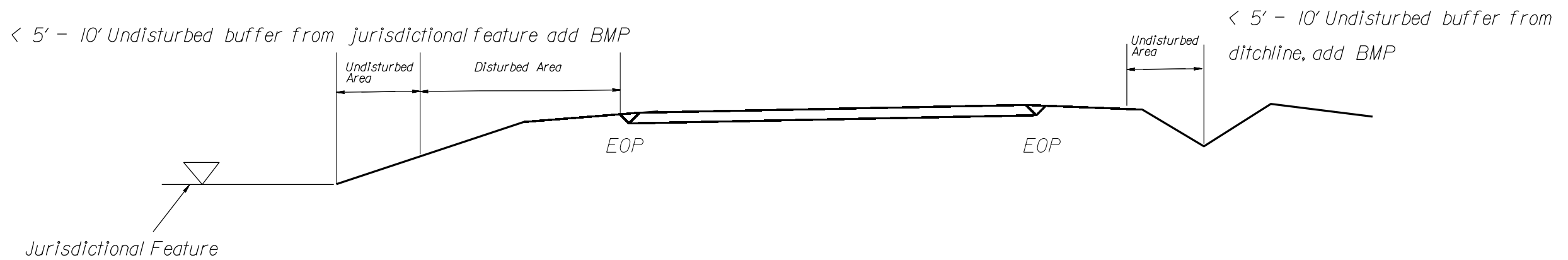
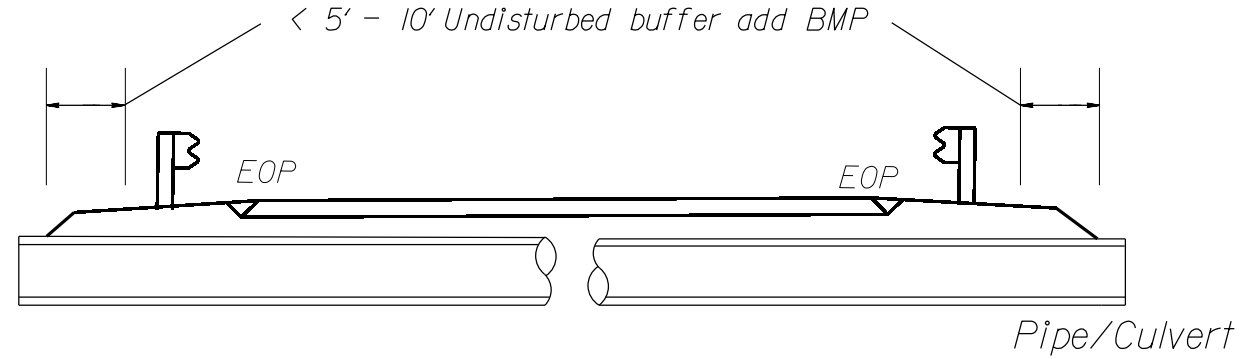
**SHORT TERM CLOSURE AND DETOUR OF INTERSTATE/FREEWAY RAMPS**

8/12/2016 S:\TMD\WZTC\DesignGroup3\Squad3B\0Data\Projects\I-5729\Typical\Off-Ramp\_Detour.dgn User:keddis

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

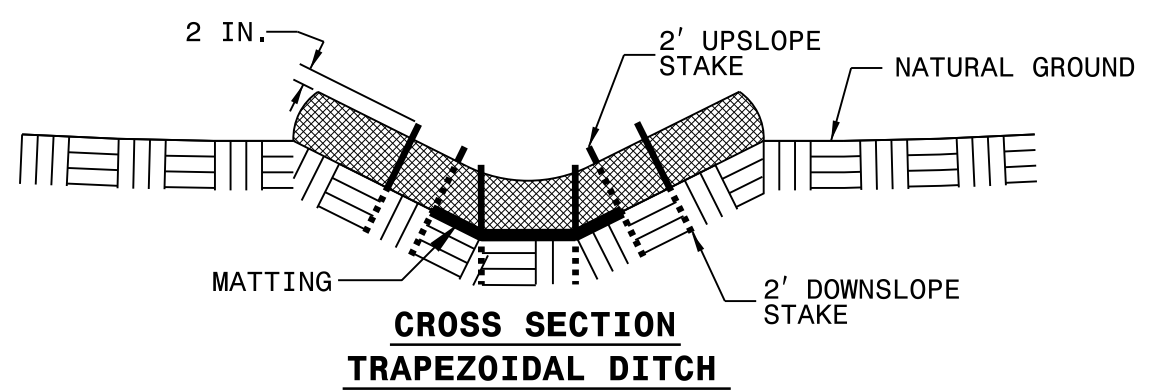
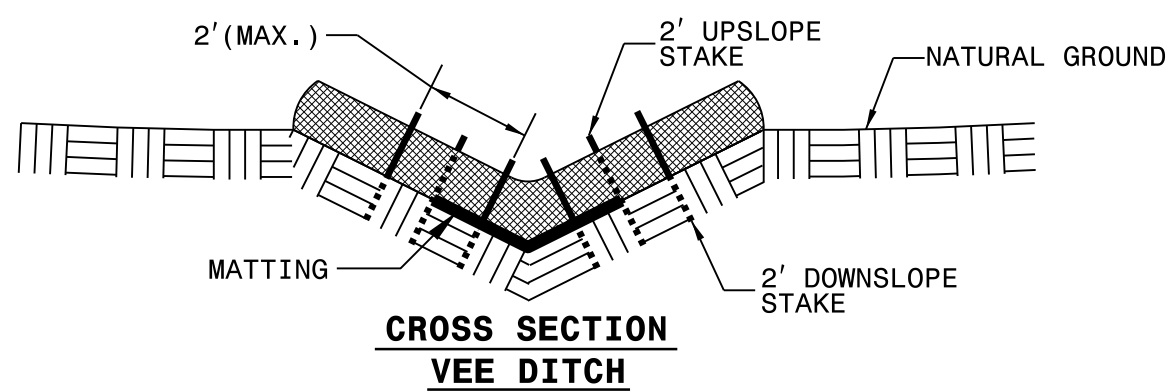
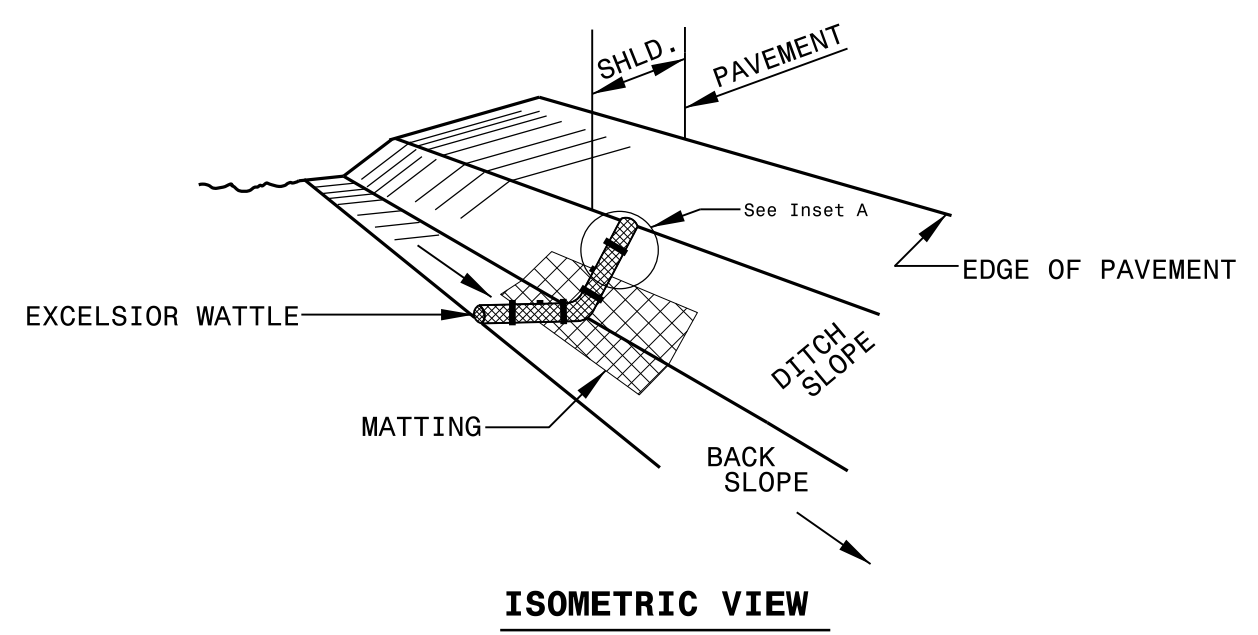
BMP Options: Wattle, Silt Fence or Hardened Aggregate.

# EROSION CONTROL DETAIL



NOT TO SCALE

# 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.

