

05/08/99

93-DEC-2014 11:37  
 S:\Contracts\C203630\Resurfacing Projects\Division 3\1-5357\1-40 -Rdy.-tsh.-2015 RESURFACING.dgn

**TIP PROJECT: I-5357**

**CONTRACT: C203630**

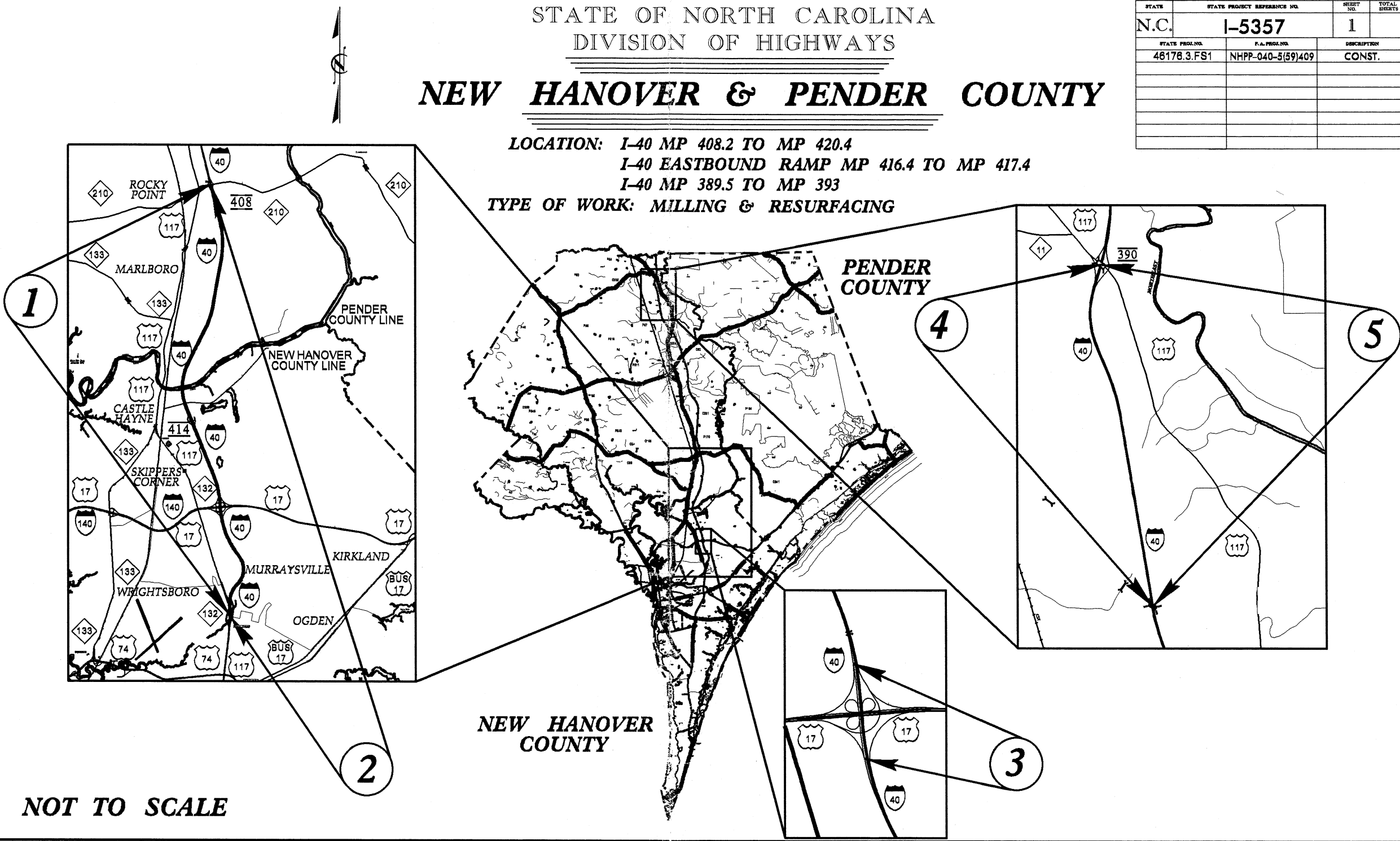
STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**NEW HANOVER & PENDER COUNTY**

LOCATION: I-40 MP 408.2 TO MP 420.4  
 I-40 EASTBOUND RAMP MP 416.4 TO MP 417.4  
 I-40 MP 389.5 TO MP 393

TYPE OF WORK: MILLING & RESURFACING

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | I-5357                      | 1           |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 46178.3.FS1     | NHPP-040-5(59)409           | CONST.      |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |



NOT TO SCALE

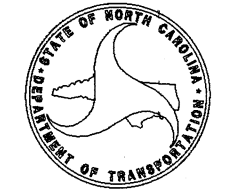
PROJECT LENGTH

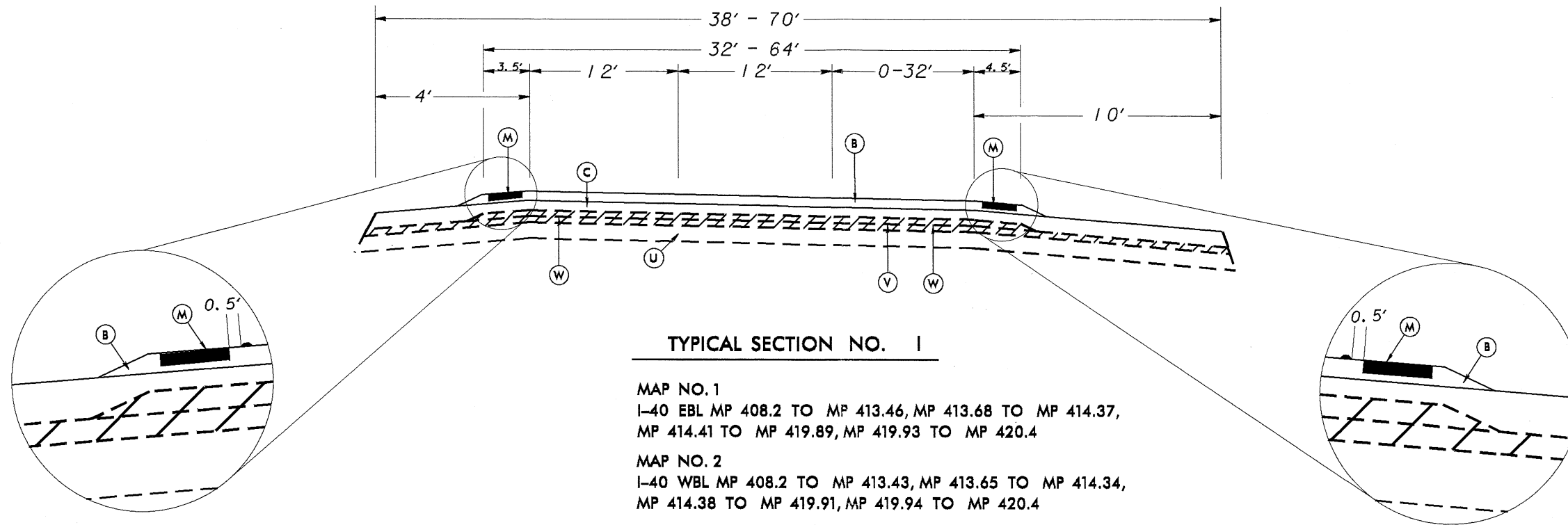
MAP NO.1 (E.B.L.) & MAP NO.2 (W.B.L.)= 12.2 MI.  
 MAP NO.3 (E.B.L.) RAMP= 1.01 MI.  
 MAP NO.4 (E.B.L.) & MAP NO.5 (W.B.L.)= 3.5 MI.

TOTAL LENGTH OF PROJECT  
 (EXCLUDING RAMPS)= 15.7 MI.

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
 5501 BARBADOS BLVD., CASTLE HAYNE, NC, 28429

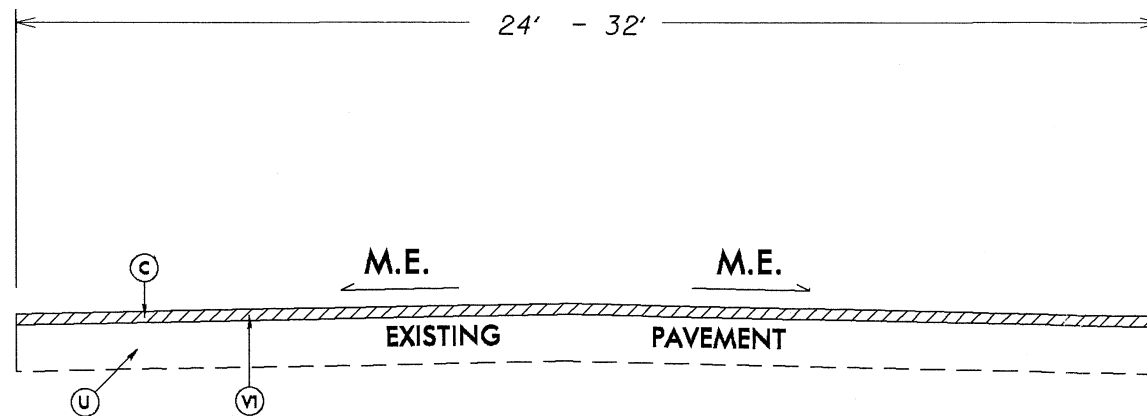
|                              |   |
|------------------------------|---|
| 2012 STANDARD SPECIFICATIONS | SCOTT E. COOKE, PE<br>PROJECT DESIGN ENGINEER |
| RIGHT OF WAY DATE:           |   |
| LETTING DATE:                | MPK / JWM<br>PROJECT DESIGN TECHNICIAN        |





**TYPICAL SECTION NO. 1**

- MAP NO. 1  
I-40 EBL MP 408.2 TO MP 413.46, MP 413.68 TO MP 414.37,  
MP 414.41 TO MP 419.89, MP 419.93 TO MP 420.4
- MAP NO. 2  
I-40 WBL MP 408.2 TO MP 413.43, MP 413.65 TO MP 414.34,  
MP 414.38 TO MP 419.91, MP 419.94 TO MP 420.4
- MAP NO. 4  
I-40 EBL MP 389.5 TO MP 393
- MAP NO. 5  
I-40 WBL MP 389.5 TO MP 393

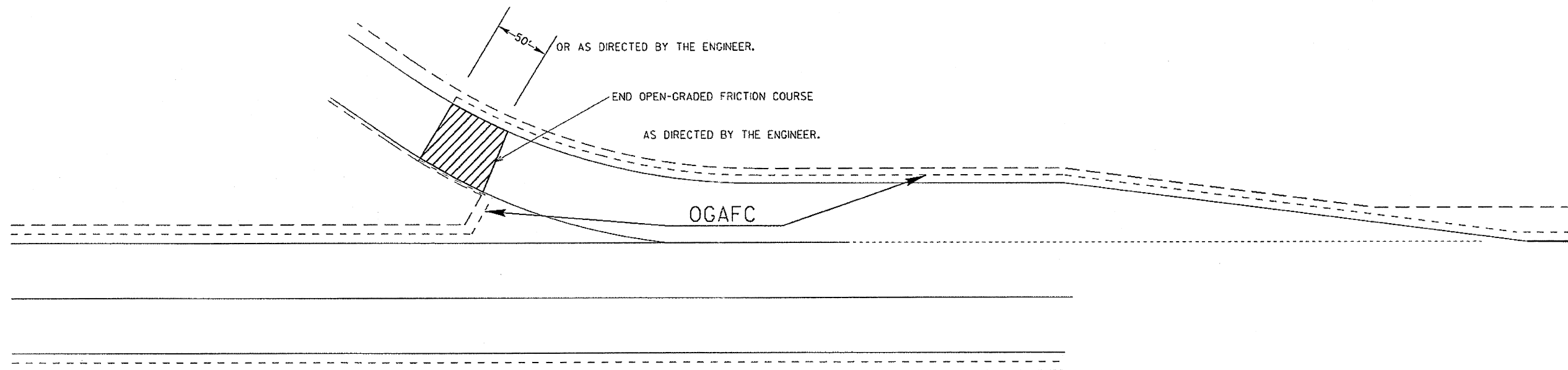


**TYPICAL SECTION NO. 2**

- MAP NO. 3  
I-40 EBL RAMP MP 416.4 TO MP 417.4

| PAVEMENT SCHEDULE |   |
|-------------------|---|
| B                 | PROP. APPROX. 7/8" OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-2 MODIFIED, AT AN AVERAGE RATE OF 90 LBS. PER SQ. YD. |
| C                 | PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.            |
| M                 | MILLED RUMBLE STRIP   |
| U                 | EXISTING PAVEMENT   |
| V                 | MILLING ASPHALT PAVEMENT 1.5" PLUS 0.5" TO 1 1/4" DEPTH TO REMOVE EXISTING OPEN-GRADED FRICTION COURSE.               |
| V1                | MILLING 1.5" DEPTH  |
| W                 | WEDGING   |

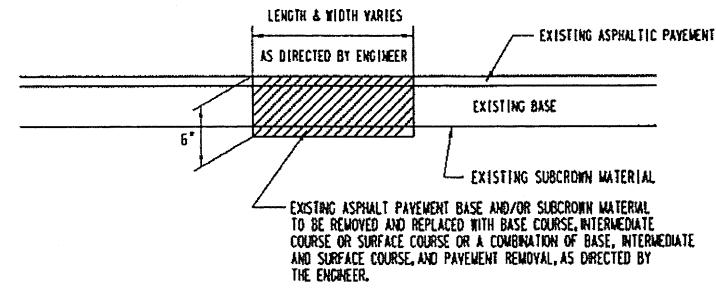
# PAVING LIMITS FOR OPEN-GRADED FRICTION COURSE AT EXIT AND ENTRANCE RAMPS



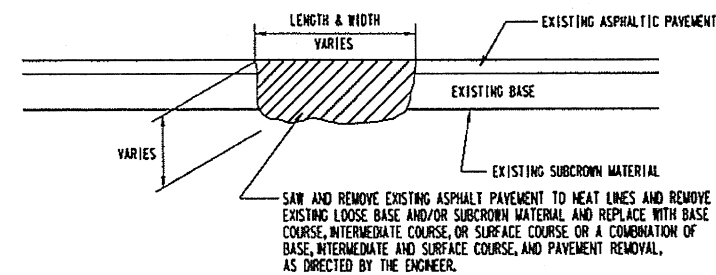
5/14/99

18-NOV-2014 15:10 I:\ADMSA\PROJECT\1-40 .Rdy. syp. 2015 RESURFACING.dgn

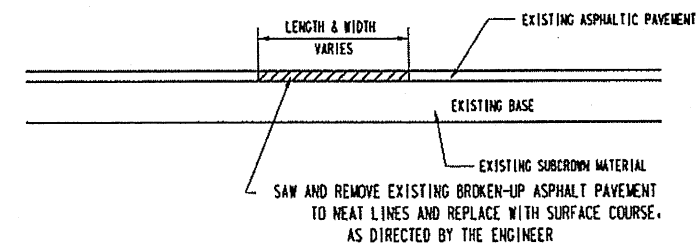
### DETAILS OF REPAIRING EXISTING PAVEMENT PRIOR TO RESURFACING FOR FULL DEPTH AND MILLING



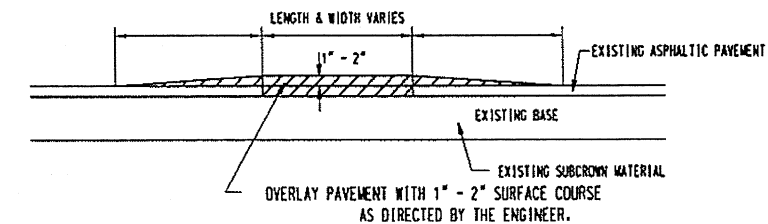
DETAIL NO. 1



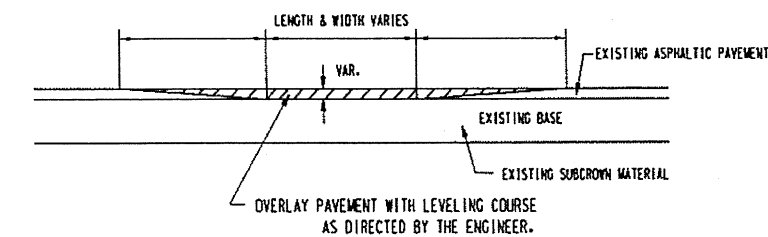
DETAIL NO. 2



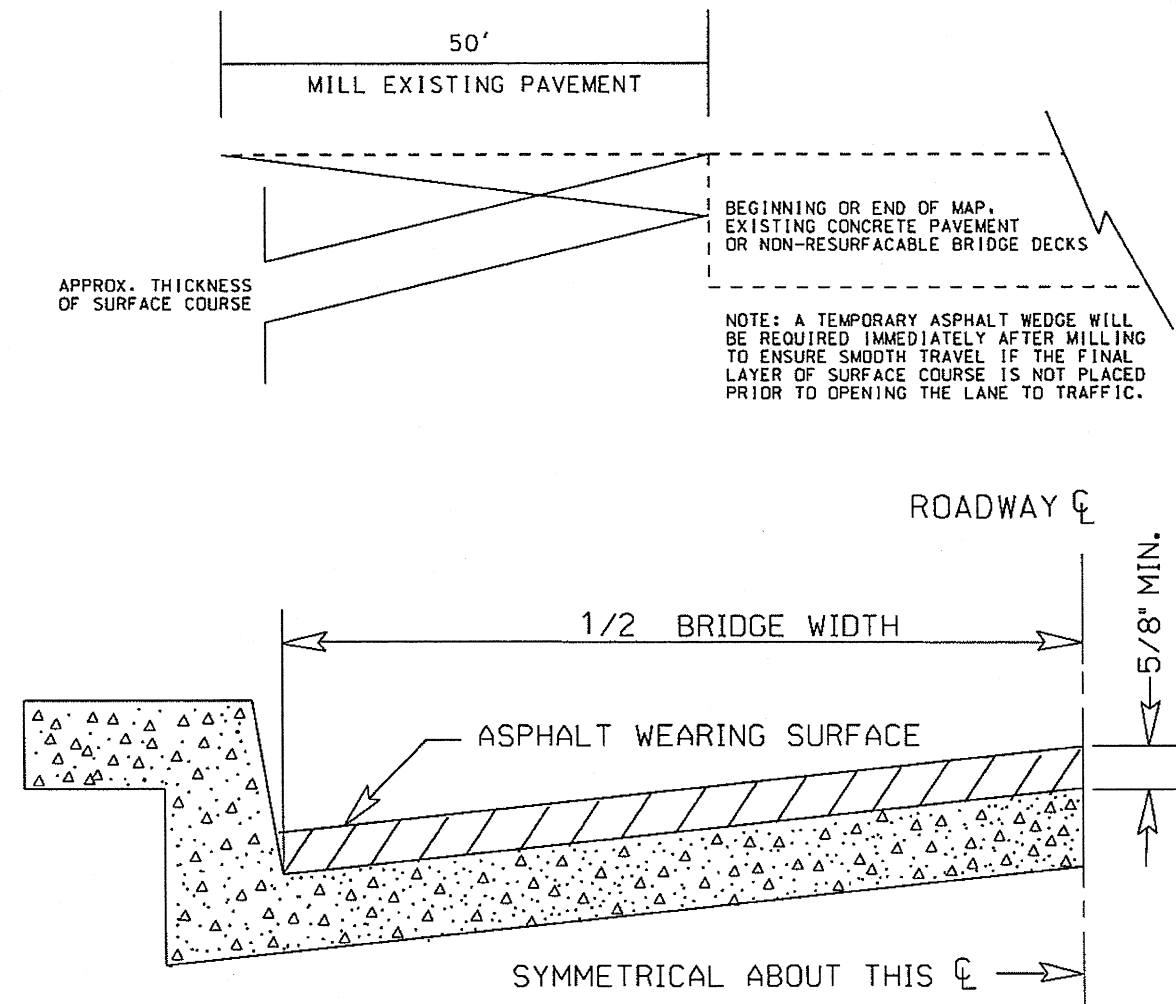
DETAIL NO. 3



DETAIL NO. 4



DETAIL NO. 5



### BRIDGE HALF TYPICAL SECTION

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

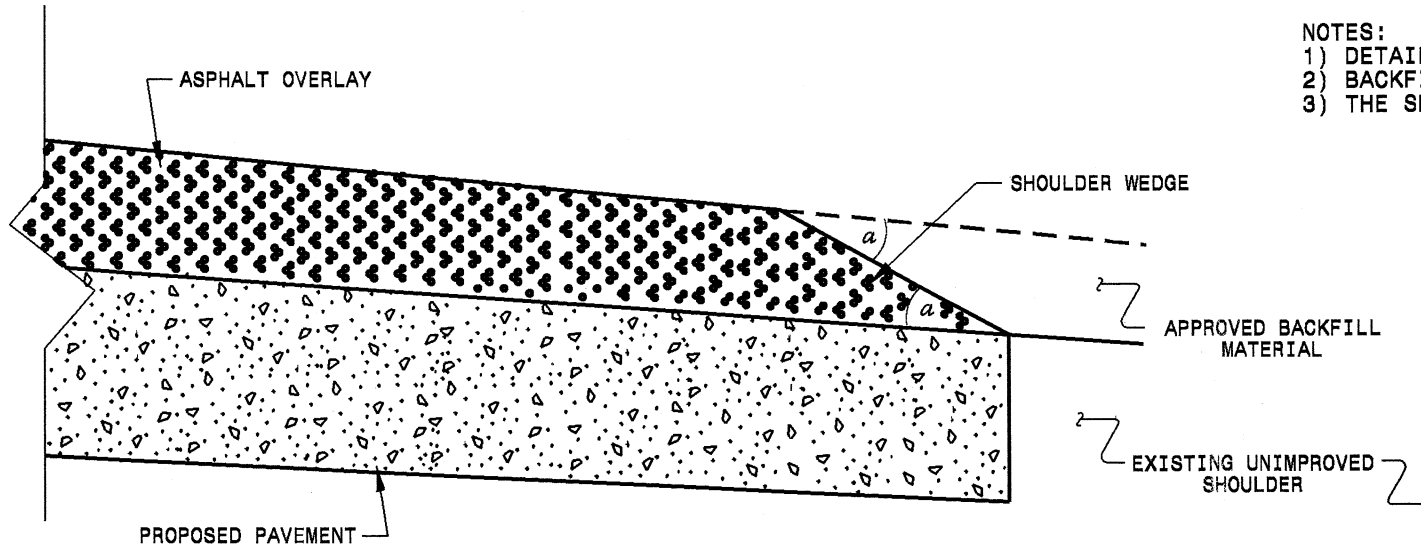
THE PROPOSED WEARING SURFACE SHALL VARY IN THICKNESS AS NECESSARY TO PROVIDE A SMOOTH RIDING SURFACE. A THICKNESS OF NOT LESS THAN 5/8" SHALL BE PROVIDED. THE MAXIMUM THICKNESS SHALL PREFERABLY BE 1-1/2" UNLESS IT IS IMPRACTICAL TO PROVIDE A SMOOTH RIDING SURFACE OTHERWISE.

REVISIONS

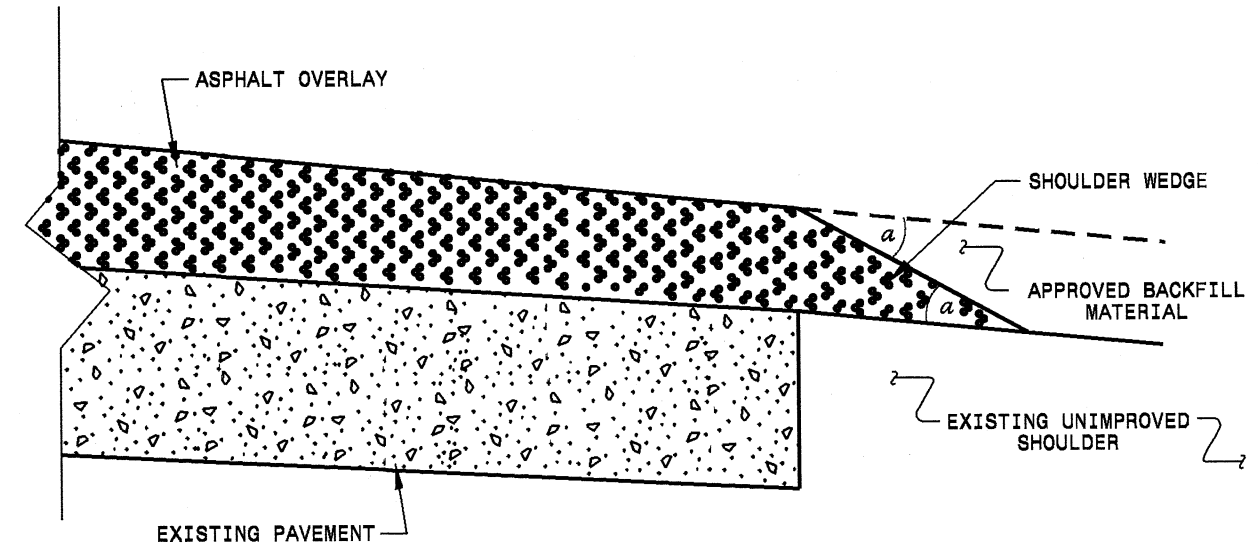
8.8.72 PPS

9-NOV-2004 1452  
C:\p11\work\11\Draws\for SHEETS\RDG\pot\cd.dgn  
11/11/04 11:52 AM

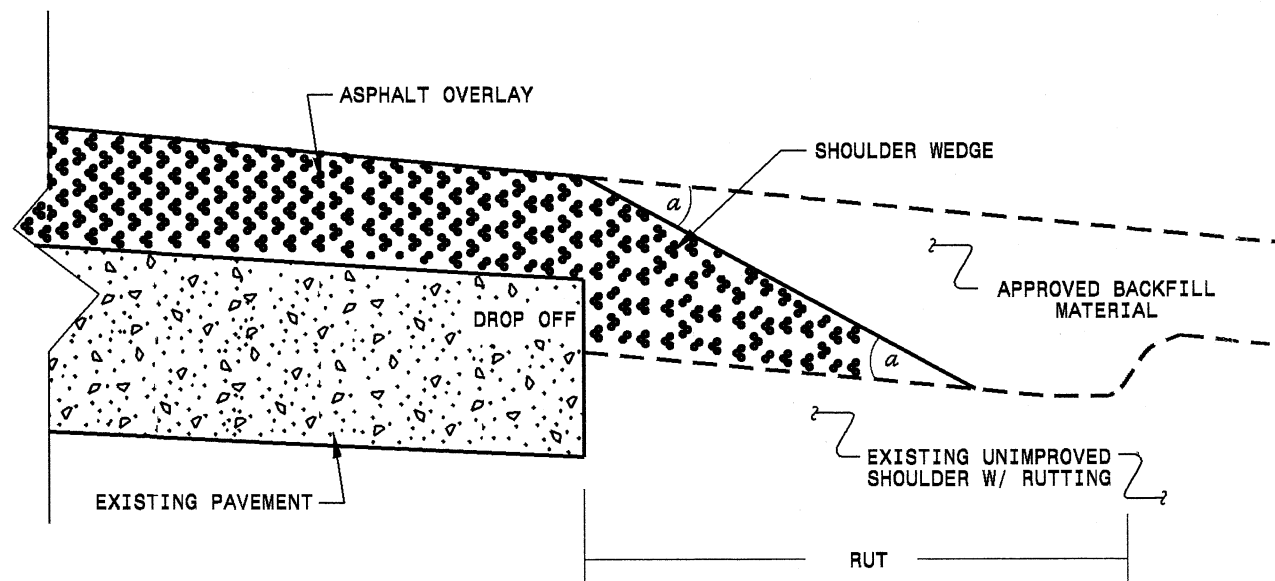
- NOTES:  
 1) DETAIL DOES NOT APPLY TO OGAFD AND ULTRA-THIN BONDED WEARING COURSE.  
 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.  
 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



**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: 10/16/12  
 CHECKED BY: DATE:  
 FILE SPEC: s:\usr\details\stand\shoulderwedge\std1.dgn

|                     |           |           |
|---------------------|-----------|-----------|
| PROJECT NO.         | SHEET NO. | TOTAL NO. |
| I-5357, 46176.3.FS1 | 6         |           |

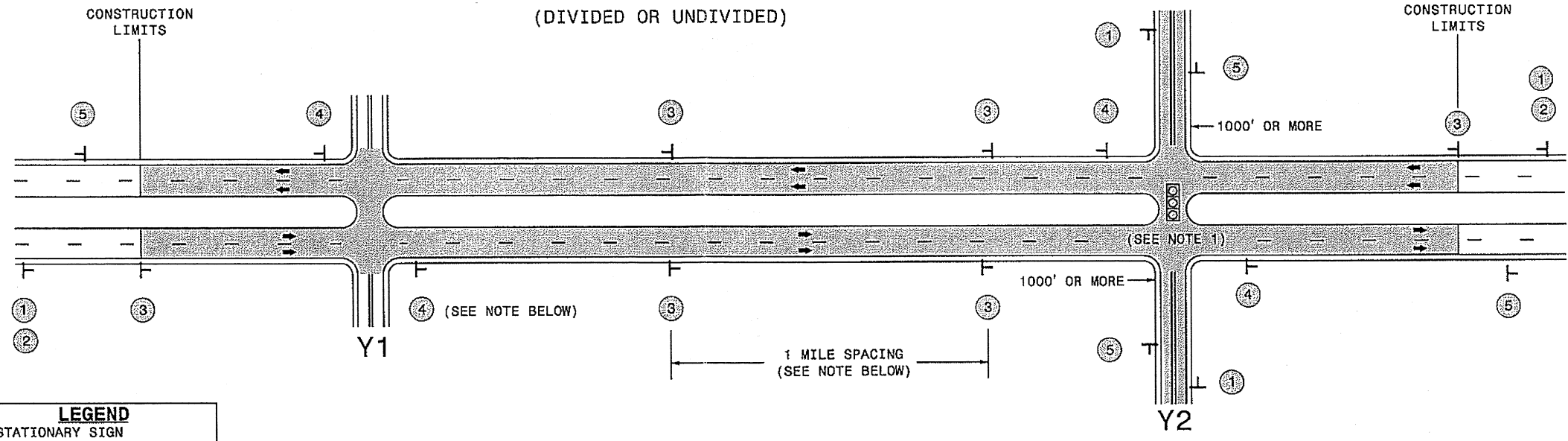
### SUMMARY OF QUANTITIES

| PROJECT NO   | COUNTY      | MAP NO | ROUTE                    | DESCRIPTION               | TYP | LANES | LANE TYPE | FINAL SURFACE TESTING REQUIRED | WARM MIX ASPHALT REQUIRED | LENGTH MI    | WIDTH FT | DEBRIS REMOVAL EXISTING SHOULDER BERM GUTTER LF | 1-1/2" MILLING SY | MILLING ASPHALT PAVEMENT, 1.5" TO 2.75" SY | SURFACE COURSE, S9.5C TONS | ASPHALT BINDER FOR PLANT MIX TON | POLYMER MODIFIED ASPHALT BINDER FOR PLANT MIX TON | OGFC, FC-2 MODIFIED TONS | PATCHING EXISTING PAVEMENT (FULL DEPTH) TON | MILLED RUMBLE STRIPS LF | PATCHING EXISTING PAVEMENT (MILL) TON | WEDGING COURSE TON | REMOVE & REPLACE SHOULDER BERM GUTTER LF | STEEL BM GUARD RAIL LF | GUARD RAIL ANCHOR UNIT, TYPE CAT-1 EA | GUARD RAIL ANCHOR UNIT, TYPE 350 EA | GUARD RAIL ANCHOR UNIT, TYPE M-350 EA | REMOVE & RESET EXISTING GUARD RAIL LF | ADDITIONAL GUARD RAIL POSTS EA | INDUCTIVE LOOP SAWCUT LF |
|--|-------------|--------|--------------------------|---------------------------|-----|-------|-----------|--------------------------------|---------------------------|--------------|----------|---|-------------------|--|----------------------------|----------------------------------|---|--------------------------|---|-------------------------|---------------------------------------|--------------------|--|------------------------|---------------------------------------|-------------------------------------|---------------------------------------|---------------------------------------|--------------------------------|--------------------------|
| 46176.3.FS1  | New Hanover | 1      | I-40 EASTBOUND           | FROM MP 408.2 TO MP 420.4 | 1   | 2     | MD        | YES                            | NO                        | 11.87        | 38 - 64  | 296   |                   | 282,562                                    | 26,189                     | 1,545                            | 850   | 13,934                   | 150   | 125,347                 | 250                                   | 100                | 15                                       | 200                    | 2                                     | 2                                   | 1                                     | 11,648                                | 70                             |                          |
| 46176.3.FS1  | New Hanover | 2      | I-40 WESTBOUND           | FROM MP 420.4 TO MP 408.2 | 1   | 2     | MD        | YES                            | NO                        | 11.89        | 38 - 64  | 550   |                   | 279,198                                    | 25,878                     | 1,527                            | 838   | 13,736                   | 200   | 125,558                 | 150                                   |                    | 140                                      | 200                    | 2                                     | 2                                   | 1                                     | 10,136                                | 70                             | 350                      |
| 46176.3.FS1  | New Hanover | 3      | I-40 EASTBOUND RAMP LANE | RAMP LANE AT EXIT 416     | 2   | 1     | 2WU       | YES                            | NO                        | 1.01         | 24 - 32  |   | 19,419            |  | 1,801                      | 106                              |   |                          |   |                         |                                       |                    |  |                        |                                       |                                     |                                       |                                       |                                |                          |
| 46176.3.FS1  | Pender      | 4      | I-40 EASTBOUND           | FROM MP 389.5 TO MP 393   | 1   | 2     | MD        | YES                            | NO                        | 3.5          | 38 - 64  |   |                   | 81,207                                     | 7,527                      | 444                              | 243   | 3,987                    |   | 36,960                  | 150                                   |                    |  | 200                    | 1                                     | 1                                   | 1                                     | 730                                   | 30                             |                          |
| 46176.3.FS1  | Pender      | 5      | I-40 WESTBOUND           | FROM MP 393 TO MP 389.5   | 1   | 2     | MD        | YES                            | NO                        | 3.5          | 38 - 64  | 35  |                   | 81,392                                     | 7,544                      | 445                              | 244   | 3,998                    | 150   | 36,960                  | 200                                   |                    | 15                                       | 200                    | 1                                     | 1                                   | 1                                     | 882                                   | 30                             |                          |
| <b>GRAND TOTAL FOR PROJ NO. I-5357 46176.3.FS1</b> |             |        |                          |                           |     |       |           |                                |                           | <b>31.77</b> |          | <b>881</b>                                      | <b>19,419</b>     | <b>724,359</b>                             | <b>68,939</b>              | <b>4,067</b>                     | <b>2,175</b>                                      | <b>35,655</b>            | <b>500</b>                                  | <b>324,825</b>          | <b>750</b>                            | <b>100</b>         | <b>170</b>                               | <b>800</b>             | <b>6</b>                              | <b>6</b>                            | <b>4</b>                              | <b>23,396</b>                         | <b>200</b>                     | <b>350</b>               |

### THERMOPLASTIC AND PAINT QUANTITIES

| PROJECT NO   | COUNTY      | MAP NO | ROUTE                    | DESCRIPTION               | TYP | LANES | LANE TYPE | LENGTH | WIDTH   | 4413000000                                   | 4457000000                   | 4510000000         | 4725000000-E        |                          |                         | 4815000000-E      |                    |                    | 48250000       | 4845000000-N       |                   |   | 4847100000-E                                       |  |   | 4847120000                     | 4850000000                             | 49050000             | 49600000  | 5255000000-N |
|--|-------------|--------|--------------------------|---------------------------|-----|-------|-----------|--------|---------|--|------------------------------|--------------------|---------------------|--------------------------|-------------------------|-------------------|--------------------|--------------------|----------------|--------------------|-------------------|---|--|--|---|--------------------------------|--|----------------------|-----------|--------------|
|  |             |        |                          |                           |     |       |           |        |         | WORK ZONE ADVANCE/GENERAL WARNING SIGNING SF | TEMPORARY TRAFFIC CONTROL LS | LAW ENFORCEMENT HR | MERGE ARROW 90 M EA | THERMO STR ARROW 90 M EA | THERMO RT ARROW 90 M EA | 6" WHITE PAINT LF | 6" YELLOW PAINT LF | 12" WHITE PAINT LF | MERGE ARROW EA | PAINT STR ARROW EA | PAINT RT ARROW EA | 6" WHITE POLYUREA (HIGHLY REFLECTIVE ELEMENTS) LF | 6" YELLOW POLYUREA (HIGHLY REFLECTIVE ELEMENTS) LF | 12" WHITE POLYUREA (HIGHLY REFLECTIVE ELEMENTS) LF | REMOVAL OF PAVEMENT MARKING LINES (4") LF | SNOW PLOWABLE MARKERS (C/R) EA | RELENS SNOWPLOWABLE PAVEMENT MARKER EA | PORTABLE LIGHTING LS |           |              |
| 46176.3.FS1  | New Hanover | 1      | I-40 EASTBOUND           | FROM MP 408.2 TO MP 420.4 | 1   | 2     | MD        | 11.87  | 38 - 64 | 176  |                              |                    | 120                 | 12                       | 10                      | 5                 | 91,050             | 72,864             | 3,475          | 12                 | 10                | 5   | 91,050   | 72,864   | 3,475                                     | 3,592                          | 750                                    | 20                   |           | *            |
| 46176.3.FS1  | New Hanover | 2      | I-40 WESTBOUND           | FROM MP 420.4 TO MP 408.2 | 1   | 2     | MD        | 11.89  | 38 - 64 | 176  |                              |                    | 120                 | 9                        | 6                       | 3                 | 91,050             | 72,864             | 3,475          | 9                  | 6                 | 3   | 91,050   | 72,864   | 3,475                                     | 3,592                          | 759                                    | 20                   |           | *            |
| 46176.3.FS1  | New Hanover | 3      | I-40 EASTBOUND RAMP LANE | RAMP LANE AT EXIT 416     | 2   | 2     | 2WU       | 1.01   | 24 - 32 | 128  | *                            |                    | 3                   |                          |                         | 5,858             | 5,332              | 1,994              | 3              |                    |                   |   | 5,858  | 5,332  | 1,994                                     |                                | 172                                    |                      |           |              |
| 46176.3.FS1  | Pender      | 4      | I-40 EASTBOUND           | FROM MP 389.5 TO MP 393   | 1   | 2     | MD        | 3.5    | 38 - 64 | 64   |                              |                    | 35                  | 3                        |                         | 23,100            | 18,480             | 1,515              | 3              |                    |                   |   | 23,100   | 18,480   | 1,515                                     |                                | 361                                    |                      |           |              |
| 46176.3.FS1  | Pender      | 5      | I-40 WESTBOUND           | FROM MP 393 TO MP 389.5   | 1   | 2     | MD        | 3.5    | 38 - 64 | 64   |                              |                    | 35                  | 3                        |                         | 23,100            | 18,480             | 1,330              | 3              |                    |                   |   | 23,100   | 18,480   | 1,330                                     |                                | 361                                    |                      |           |              |
| <b>GRAND TOTAL FOR PROJ NO. I-5357 46176.3.FS1</b> |             |        |                          |                           |     |       |           |        |         | <b>31.77</b>                                 |                              | <b>608</b>         | <b>1</b>            | <b>310</b>               | <b>30</b>               | <b>16</b>         | <b>8</b>           | <b>234,158</b>     | <b>188,020</b> | <b>11,789</b>      | <b>30</b>         | <b>16</b>   | <b>8</b>   | <b>234,158</b>                                     | <b>188,020</b>                            | <b>11,789</b>                  | <b>7,184</b>                           | <b>2,403</b>         | <b>40</b> | <b>1</b>     |
|  |             |        |                          |                           |     |       |           |        |         |  |                              |                    |                     |                          | <b>54</b>               |                   | <b>422,178</b>     |                    |                |                    | <b>54</b>         |   | <b>422,178</b>                                     |  |   |                                |  |                      |           |              |

## SIGNING FOR RURAL AND SUBURBAN MULTI-LANE ROADWAYS WITH SHOULDER SECTIONS (DIVIDED OR UNDIVIDED)



| LEGEND |                           |
|--------|---------------------------|
| ┌      | STATIONARY SIGN           |
| ←      | DIRECTION OF TRAFFIC FLOW |

### MAINLINE (-L-) SIGNING

### -Y- LINE SIGNING

|  |   |   |   |
|--|---|---|---|
| SIGNING NOTES AND<br>PLACEMENT PER DIRECTION | ① | <br><small>W20-1<br/>48" X 48"</small>    | PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS.<br>ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.   |
|  | ② | <br><small>W7-3aP<br/>24" X 18"</small>   | #2 SIGN ONLY USED WHEN RESURFACING LIMITS ARE 2 OR MORE MILES IN LENGTH.<br>ROUND UP TO NEXT WHOLE NUMBER. (NO FRACTIONAL OR DECIMAL NUMBERS)   |
|  | ③ | <br><small>SP 13107<br/>48" X 48"</small> | PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACED 1 MILE APART THEREAFTER. IF NO -Y- LINES EXIST, PLACE 2ND SET 1/2 MILE FROM THE CONSTRUCTION LIMITS AND THEN SPACE 1 MILE THEREAFTER.   |
|  | ④ | <br><small>SP 13106<br/>48" X 48"</small> | THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS. DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS. INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE. FOR MULTIPLE -Y- LINES THAT ARE SEPARATED BY 0.25 MILES OR LESS, TREAT AS A SINGLE UNIT AND INSTALL WITHIN 500' OF EACH APPROACH. A MAXIMUM OF 2 SIGN SETS PER MILE. DO NOT INSTALL WHEN -Y- LINES ARE WITHIN 0.5 MILES FROM "END ROAD WORK" SIGN. |
|  | ⑤ | <br><small>G20-2 A<br/>48" X 24"</small>  | PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS.  |

NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:

- 1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE
- 2) SUBDIVISION ROADS
- 3) DEAD END ROADS

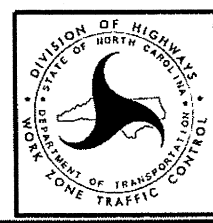
WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, ADVANCE WARNING PORTABLE SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.



PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.

**NOTES:**

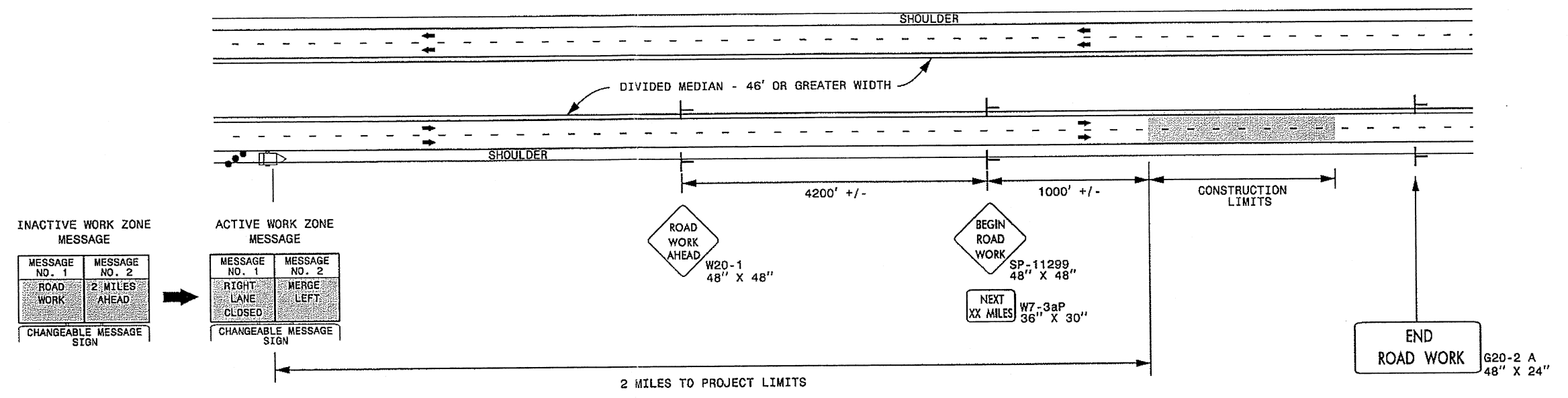
- 1) MAY USE LAW ENFORCEMENT TO CONTROL TRAFFIC AT SIGNALIZED INTERSECTIONS AS DIRECTED BY THE ENGINEER. PROVIDE PORTABLE "ROAD WORK AHEAD" (W20-1) SIGNS 500' IN ADVANCE ALONG BOTH APPROACHES FROM THE SIDE STREETS WHEN PAVING PROCEEDS THROUGH THE INTERSECTION.



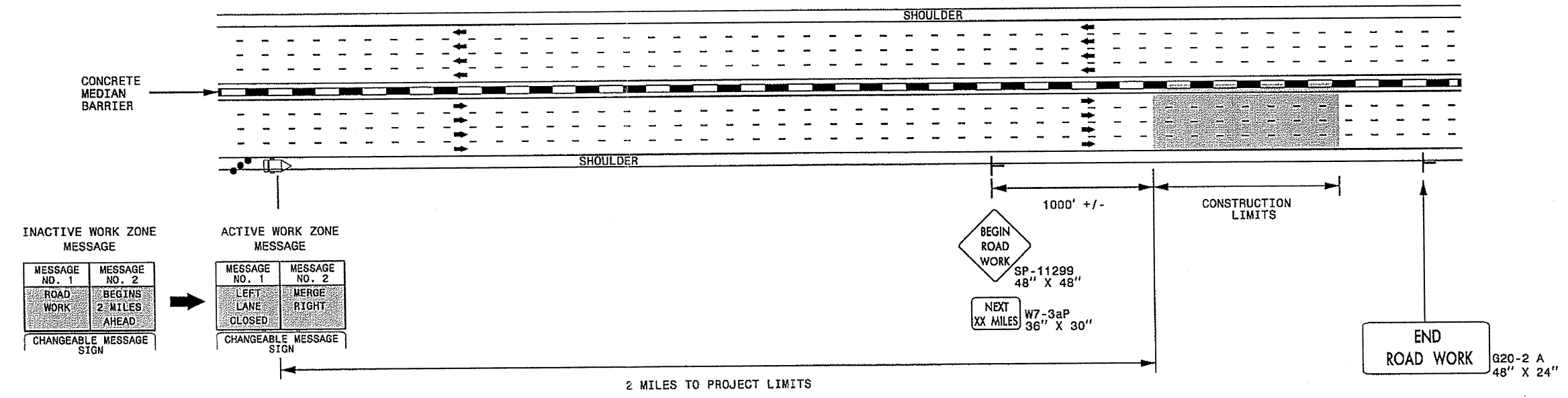
RESURFACING  
ADVANCE WARNING SIGNS  
FOR RURAL AND SUBURBAN  
MULTI-LANE ROADWAYS  
W/ SHOULDER SECTIONS  
(DIVIDED OR UNDIVIDED)

2/24/2014 5:17:00 PM \\TC\Resurfacing\2013\documents\New\_Procedures\_05\_09\_2013\Resurfacing\_AdvWarn\_UrSu\_Signs.dgn User: rmaorrett

### DIVIDED MEDIANS WITH WIDTHS 46' OR GREATER



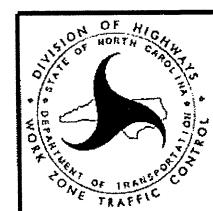
### DIVIDED MEDIANS WITH WIDTHS LESS THAN 46' OR WITH PERMANENT MEDIAN BARRIER



**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.
- 6) IF MILLED AREAS ARE NOT PAVED BACK BY THE END OF THE WORK DAY, PORTABLE SIGNS SHALL BE USED TO WARN DRIVERS OF THE PRESENT CONDITIONS. THESE ARE TO INCLUDE, BUT NOT LIMITED TO "ROUGH ROAD" W8-8, "UNEVEN LANES" W8-11, "GROOVED PAVEMENT" W8-15 w/MOTORCYCLE PLAQUE MOUNTED BELOW. THESE ARE TO BE DOUBLE INDICATED ON MULTI-LANE ROADWAYS WITH SPEED LIMITS 45 MPH AND GREATER AND WITH DIVIDED MEDIANS OF 46' OR GREATER. THESE PORTABLE SIGNS ARE INCIDENTAL TO THE OTHER ITEMS OF WORK INCLUDED IN THE TEMPORARY TRAFFIC CONTROL (LUMP SUM) PAY ITEM.

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



RESURFACING ADVANCE WARNING SIGNS FOR HIGH SPEED FACILITIES ≥ 60 MPH

I:\2013\2013 Resurfacing\2013 Documents\New\_Procedures\05\_09\_2013\Resurfacing\_AdvWarn\_HSpd.dgn  
 User: rmdarrrett