

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**PLAN FOR PROPOSED
TRAFFIC CONTROL, MARKING & DELINEATION
WATAUGA COUNTY**

| | |
|--|---------------------------|
| STATE PROJECT REFERENCE NO. B-4316 | SHEET NO. TCP-1 |
|--|---------------------------|

B-4316

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - ROADWAY DESIGN UNIT-N.C. DEPARTMENT OF TRANSPORTATION-RALEIGH, N.C. DATED JULY 2006 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

| STD. NO. | TITLE |
|----------|---|
| 1101.02 | TEMPORARY LANE CLOSURES |
| 1101.04 | TEMPORARY SHOULDER CLOSURES |
| 1101.05 | WORK ZONE VEHICLE ACCESSES |
| 1101.11 | TRAFFIC CONTROL DESIGN TABLES |
| 1110.01 | STATIONARY WORK ZONE SIGNS |
| 1110.02 | PORTABLE WORK ZONE SIGNS |
| 1135.01 | CONES |
| 1145.01 | BARRICADES |
| 1150.01 | FLAGGING DEVICES |
| 1160.01 | TEMPORARY CRASH CUSHION |
| 1165.01 | TRUCK MOUNTED IMPACT ATTENUATOR |
| 1170.01 | PORTABLE CONCRETE BARRIER |
| 1205.01 | PAVEMENT MARKINGS - LINE TYPES & OFFSETS |
| 1205.02 | PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS |
| 1205.12 | PAVEMENT MARKINGS - BRIDGES |
| 1261.01 | GUARDRAIL & BARRIER DELINEATOR SPACING |
| 1261.02 | GUARDRAIL & BARRIER DELINEATOR TYPES |
| 1262.01 | GUARDRAIL END DELINEATION |

INDEX OF SHEETS

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| TCP-8 | DETAIL DRAWING FOR ADVANCE WORK ZONE WARNING SIGNS |
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LEGEND

- GENERAL**
- DIRECTION OF TRAFFIC FLOW
 - NORTH ARROW
 - PROPOSED PVMT. EXIST. PVMT.
 - WORK AREA
 - REMOVAL OF EXISTING PAVEMENT
- TRAFFIC CONTROL DEVICES**
- TYPE I BARRICADE
 - TYPE II BARRICADE
 - TYPE III BARRICADE
 - CONE
 - DRUM SKINNY DRUM
 - FLASHING ARROW PANEL (TYPE C)
 - STATIONARY SIGN
 - PORTABLE SIGN
 - STATIONARY OR PORTABLE SIGN
 - CRASH CUSHION
 - CHANGEABLE MESSAGE SIGN
 - TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
 - POLICE
 - FLAGGER
- PAVEMENT MARKINGS**
- CRYSTAL/CRYSTAL PAVEMENT MARKER
 - YELLOW/YELLOW PAVEMENT MARKER
 - CRYSTAL/RED PAVEMENT MARKER
 - PAVEMENT MARKING SYMBOLS

FINAL PAVEMENT MARKING SCHEDULE

| SYMBOL | DESCRIPTION | QUANTITY | TOTAL |
|---|---------------------------|----------|---------|
| FINAL PAVEMENT MARKINGS PAINT (4") | | | |
| PA | WHITE EDGELINE (2X) | 2244 LF | 4488 LF |
| PI | YELLOW DOUBLE CENTER (2X) | 2244 LF | |
| TEMPORARY PAVEMENT MARKINGS PAINT (4") | | | |
| PA | WHITE EDGELINE (2X) | 1864 LF | 1864 LF |
| COLD APPLIED PLASTIC (4") TYPE 4 - REMOVABLE TAPE | | | |
| CA | WHITE EDGELINE | 135 LF | 135 LF |

NOTE: "2X" DENOTES TWO APPLICATIONS OF PAINT

TIP PROJECT:

**N.C.D.O.T. TRAFFIC CONTROL, MARKING & DELINEATION SECTION
LIST OF CONTACTS**

| | |
|----------------------------|---|
| <u>STUART BOURNE, P.E.</u> | TRAFFIC CONTROL ENGINEER |
| <u>JOSEPH ISHAK, P.E.</u> | TRAFFIC CONTROL PROJECT ENGINEER |
| <u>HABIB LAWANDOS</u> | TRAFFIC CONTROL PROJECT DESIGN ENGINEER |
| _____ | TRAFFIC CONTROL DESIGN ENGINEER |

Bob A. May APPROVED: _____
DATE: 10/15/08

SEAL

PLAN PREPARED FOR NCDOT BY:

| | |
|-----------------------|-------------------|
| <u>B.A. MAY, P.E.</u> | PROJECT ENGINEER |
| <u>C.L. MULLEN</u> | DESIGN ENGINEER |
| _____ | DESIGN TECHNICIAN |

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS, OR RESULT IN DUPLICATE, OR UNDESIRE OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING OR REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED, OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.
- F) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- G) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:
 BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.
 BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.
 BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.
- H) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT. IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

- I) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- J) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- K) PROVIDE PERMANENT SIGNING.
- L) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

- M) SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH). EXCEPT 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. WHEN LANE CLOSURES ARE NOT IN EFFECT WHEN SKINNY DRUMS ARE ALLOWED, REFER TO SECTION 1180 OF STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES OR AS SHOWN IN THE PLANS.
- N) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

TRAFFIC BARRIER

- O) INSTALL PORTABLE CONCRETE BARRIER ACCORDING TO THE TRAFFIC CONTROL PLAN A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE PORTABLE CONCRETE BARRIER IS INSTALLED AT ANY LOCATION, PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRAFFIC CONTROL PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE PORTABLE CONCRETE BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE CONCRETE BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS REMOVE/RESET PORTABLE CONCRETE BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRAFFIC CONTROL PLANS, PORTABLE CONCRETE BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL PORTABLE CONCRETE BARRIER WITH THE TRAFFIC FLOW, BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE CONCRETE BARRIER AGAINST THE TRAFFIC FLOW, BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE PORTABLE CONCRETE BARRIER CAN BE PLACED OR AFTER THE CONCRETE BARRIER IS REMOVED.
- P) PROTECT THE APPROACH END OF PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE CONCRETE BARRIER BY EITHER A TRUCK MOUNTED IMPACT ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS, OR AS SHOWN IN THE PLANS:

| | |
|------------|-------|
| 40 OR LESS | 15 FT |
| 45 - 50 | 20 FT |

PAVEMENT MARKINGS AND MARKERS

- Q) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

| ROAD NAME | MARKING | MARKER |
|---------------------|---------|--------|
| 1. WILEY HARMON RD. | PAINT | NONE |
- R) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

| ROAD NAME | MARKING | MARKER |
|---------------------|----------------------|--------|
| 1. WILEY HARMON RD. | PAINT | NONE |
| 2. NEW BRIDGE DECK | COLD APPLIED PLASTIC | NONE |
- S) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.
- T) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- U) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MISCELLANEOUS

- V) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAYS TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION, AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) 500 FT. AND 1000 FT. RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

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 10/15/2008

559 Jones Franklin Rd. Suite 164
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *[Signature]* DATE: 10/15/08

SEAL

PROFESSIONAL ENGINEER
 SEAL
 21116
 ENGINEER
 JOB A. WAI

GENERAL NOTES

| | | |
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| SCALE: NONE | | REVISIONS |
| DATE: 5/08 | | |
| DWG. BY: CLM | | |
| DESIGN BY: CLM | | |
| REVIEWED BY: BAM | | |

PHASE I

- STEP 1. PRIOR TO CONSTRUCTION, INSTALL ADVANCE WARNING SIGNING AND ONE LANE ROAD "YIELD" SIGNING ON SR 1153 AND SR 1125 (SEE TCP-4 AND TCP-8).
- STEP 2. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, INSTALL PORTABLE CONCRETE BARRIER AND CRASH CUSHIONS AS SHOWN ON TCP-4 AND AS FOLLOWS:
- L- STA. 13+75+/- TO STA. 14+96+/- (BRIDGE)
 - L- STA. 15+45+/- (BRIDGE) TO STA. 16+60+/-
- BEGIN PROPOSED DRAINAGE INSTALLATIONS AS MUCH AS POSSIBLE AWAY FROM TRAFFIC WHILE MAINTAINING THE EXISTING TRAFFIC PATTERN.
- INSTALL TEMPORARY SHORING LINES #1 AND #2 AS SHOWN ON TCP-4.
- STEP 3. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, GRADE AND CONSTRUCT PROPOSED -L- STRUCTURE AND APPROACHES UP TO, BUT NOT INCLUDING, THE FINAL LAYER AS SHOWN IN THE CONSTRUCTION PLANS AND AS FOLLOWS:
- L- STA. 13+73+/- TO STA. 16+87+/-
- INSTALL PROPOSED -L- LEFT SIDE GUARDRAIL AS MUCH AS POSSIBLE.
- CONSTRUCT PROPOSED DRIVEWAYS ALONG THE RIGHT SIDE OF SR 1153 AS SHOWN IN THE CONSTRUCTION PLANS AND ON TCP-4.


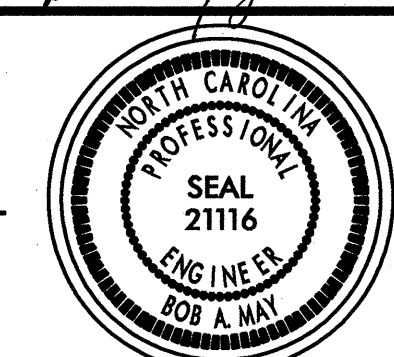



PHASE II

- STEP 1. PLACE PAVEMENT MARKINGS AS MUCH AS POSSIBLE ON -L- FOR THE ONE LANE, TWO-WAY TRAFFIC PATTERN (SEE TCP-5).
- WORK IN A CONTINUOUS MANNER TO COMPLETE THE WORK OF STEP 2 THRU STEP 4 IN ONE WORKDAY.
- STEP 2. ADJUST ADVANCE WARNING SIGNING FOR THE TEMPORARY ONE-LANE, TWO-WAY TRAFFIC PATTERN (SEE TCP-5).
- USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, WEDGE AND CONSTRUCT -L- RIGHT LANE TIE-INS UP TO, AND INCLUDING, THE FINAL LAYER AS FOLLOWS:
- L- STA. 12+78+/- TO STA. 13+73+/-
 - L- STA. 16+87+/- TO STA. 17+85+/-
- STEP 3. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, SHIFT SR 1153 TRAFFIC ONTO -L- RIGHT LANE IN A ONE-LANE, TWO-WAY PATTERN.
- PLACE TYPE III BARRICADES TO CLOSE EXISTING SR 1153.
- STEP 4. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, RESET PCB AND CRASH CUSHIONS FROM EXISTING SR 1153 AND INSTALL ON -L- AS SHOWN ON TCP-5 AND AS FOLLOWS:
- L- STA. 13+50+/- TO STA. 14+50+/-
- STEP 5. OBLITERATE SR 1153 ROADWAY AND COMPLETE -L- LEFT SIDE GRADING, DRAINAGE, GUARDRAIL, AND PAVEMENT WEDGING UP TO, BUT NOT INCLUDING, THE FINAL LAYER AS SHOWN IN THE CONSTRUCTION PLANS AND AS FOLLOWS:
- L- STA. 12+78+/- TO STA. 13+73+/-
 - L- STA. 16+87+/- TO STA. 17+85+/-
- COMPLETE PROPOSED DRIVEWAYS ALONG THE LEFT SIDE OF SR 1153.
- STEP 6. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, REMOVE PCB AND CRASH CUSHIONS FROM -L- AND PLACE LEFT SIDE PAVEMENT MARKING WHITE EDGELINE AND YELLOW DOUBLE CENTERLINE (SEE TCP-6).
- OPEN -L- AND NEW BRIDGE TO A TWO-LANE, TWO-WAY TRAFFIC PATTERN.

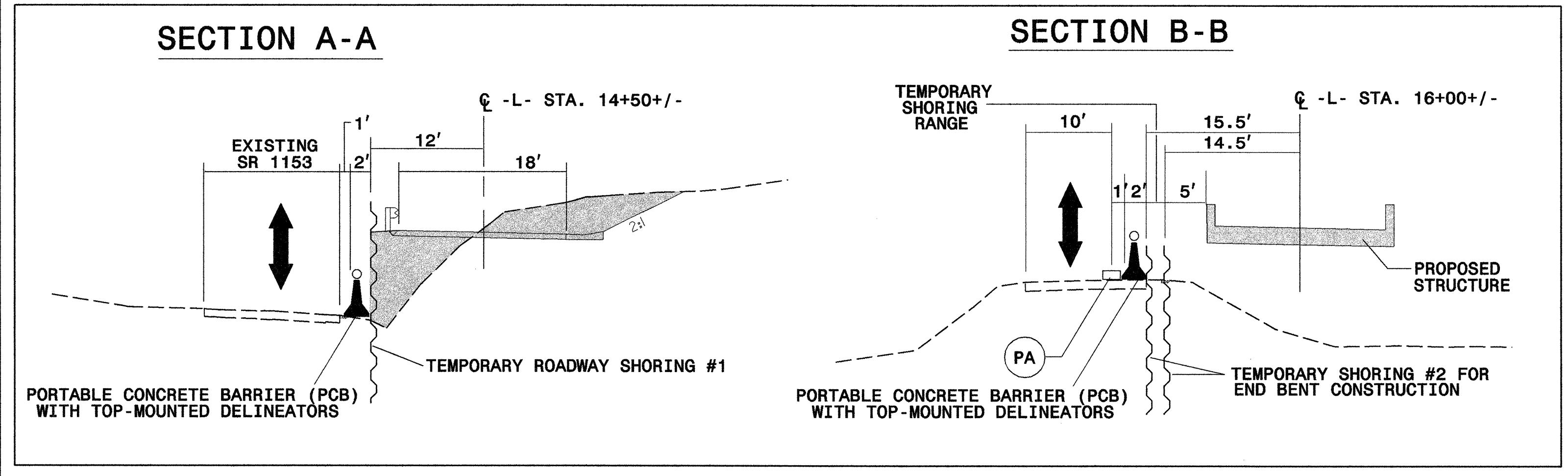
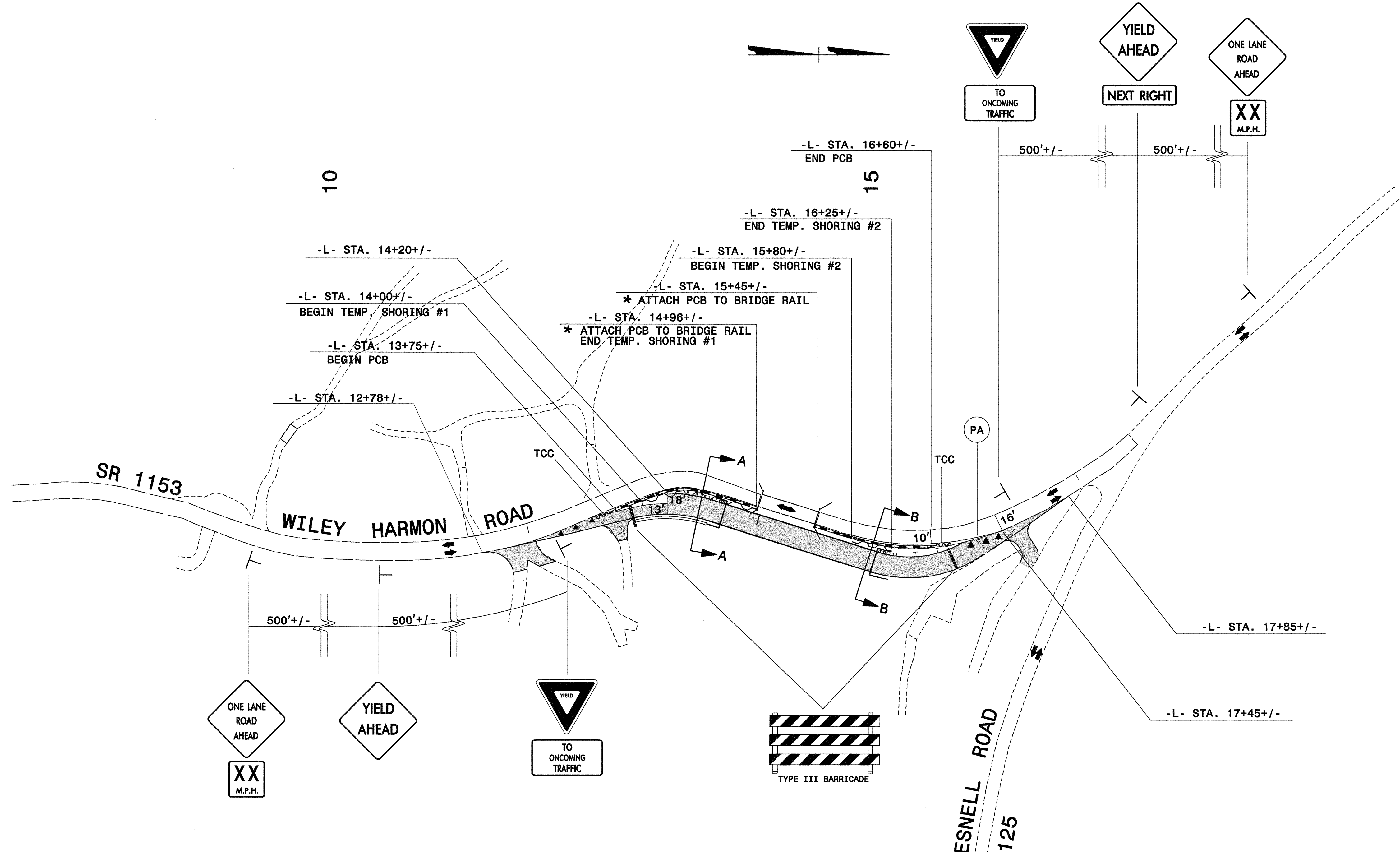
PHASE III

- STEP 1. REMOVE THE EXISTING SR 1153 STRUCTURE.
- STEP 2. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, PLACE THE FINAL LAYER OF SURFACE COURSE ON -L- AS FOLLOWS:
- L- STA. 12+50.00- TO STA. 18+11.50
- PLACE FINAL PAVEMENT MARKINGS ON -L- AND OPEN SR 1153 TO THE FINAL TRAFFIC PATTERN (SEE TCP-6).
- STEP 3. REMOVE ALL TRAFFIC CONTROL DEVICES FROM THE PROJECT.

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|  <p>559 Jones Franklin Rd. Suite 164 Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107</p> | APPROVED: <i>[Signature]</i> DATE: 1/21/09 | <h2>PHASING</h2> | | | | | | | | | | | | | | | | | | |
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION



NOTES: SEE TCP-1 FOR PAVEMENT MARKING SCHEDULE

* ATTACH PORTABLE CONCRETE BARRIER TO EXISTING BRIDGE RAIL USING A "GUARDRAIL ANCHOR UNIT TYPE - TEMPORARY RETROFIT" AS SHOWN IN THE CONSTRUCTION PLANS.

AT THE END OF EACH WORKDAY, LOCATE MACHINERY AND EQUIPMENT IN A MANNER THAT PROVIDES THE BEST SIGHT DISTANCE FOR THE EXISTING ONE-LANE, TWO-WAY PATTERN UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

APPROVED: *Bob A. May* DATE: 10/15/08

PHASE I

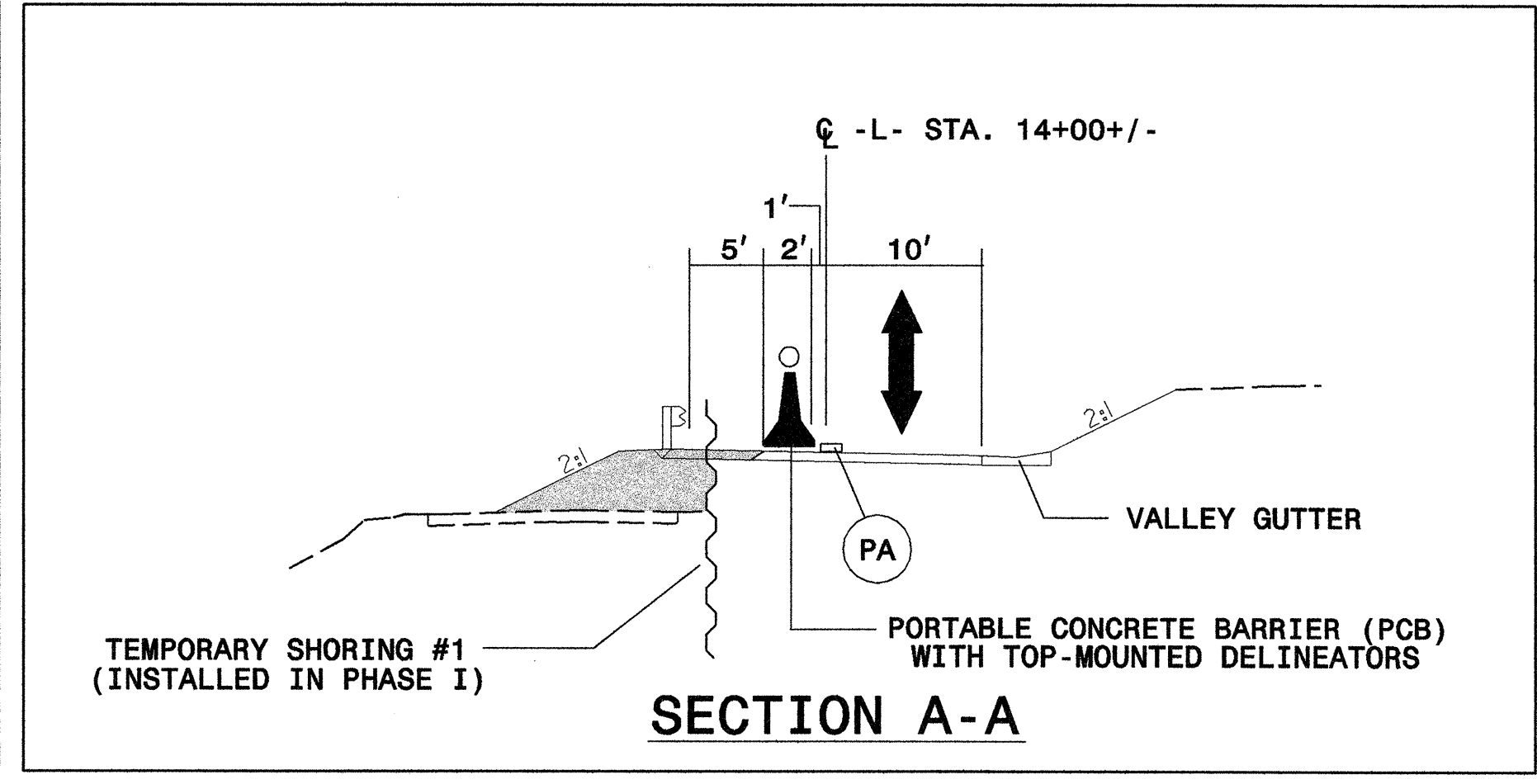
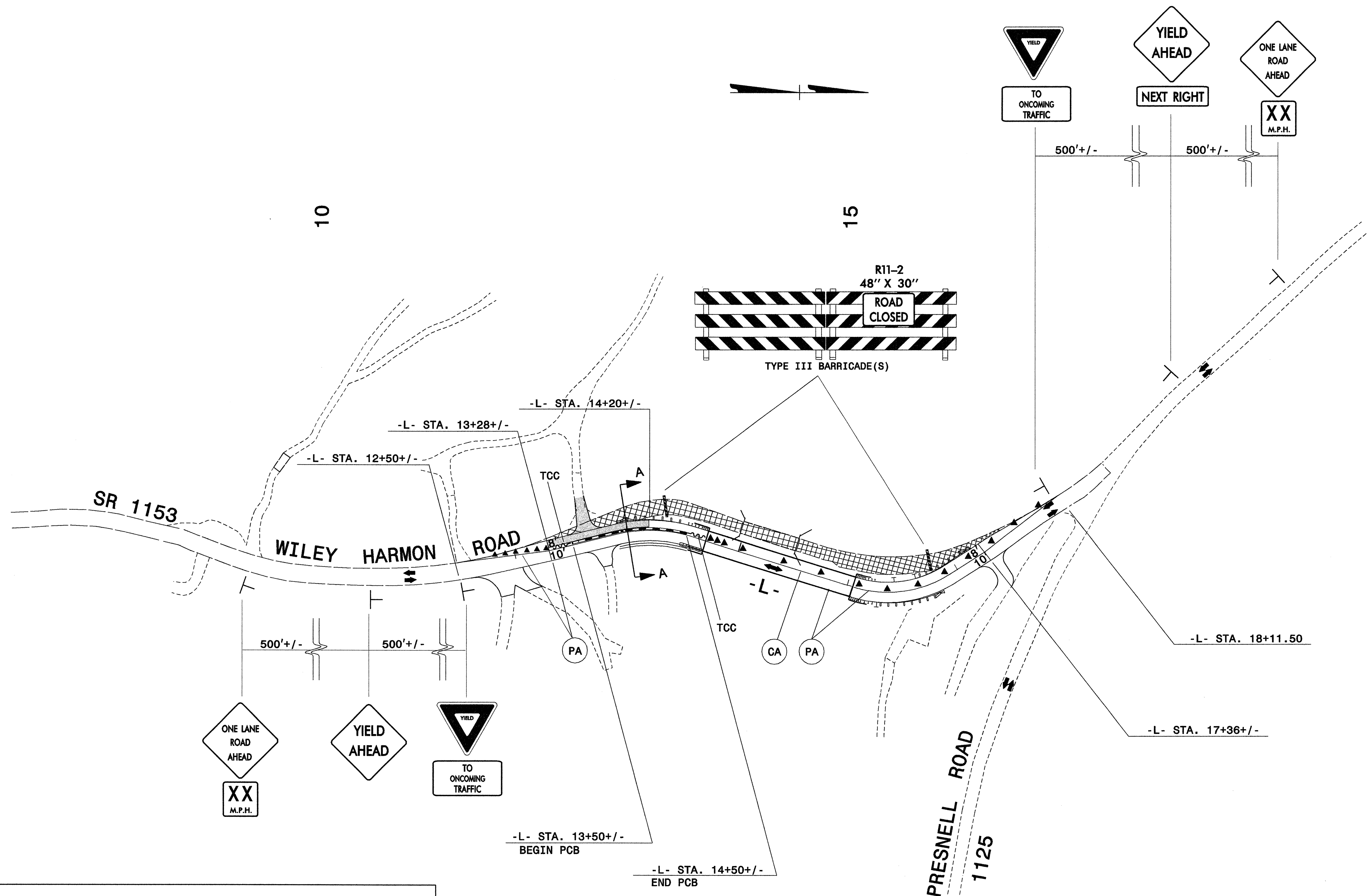
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 DATE: 508
 DWG. BY: CLM
 DESIGN BY: CLM
 REVIEWED BY: BAM

SEAL: BOB A. MAY, PROFESSIONAL ENGINEER, NO. 21116, STATE OF NORTH CAROLINA

| REVISIONS | |
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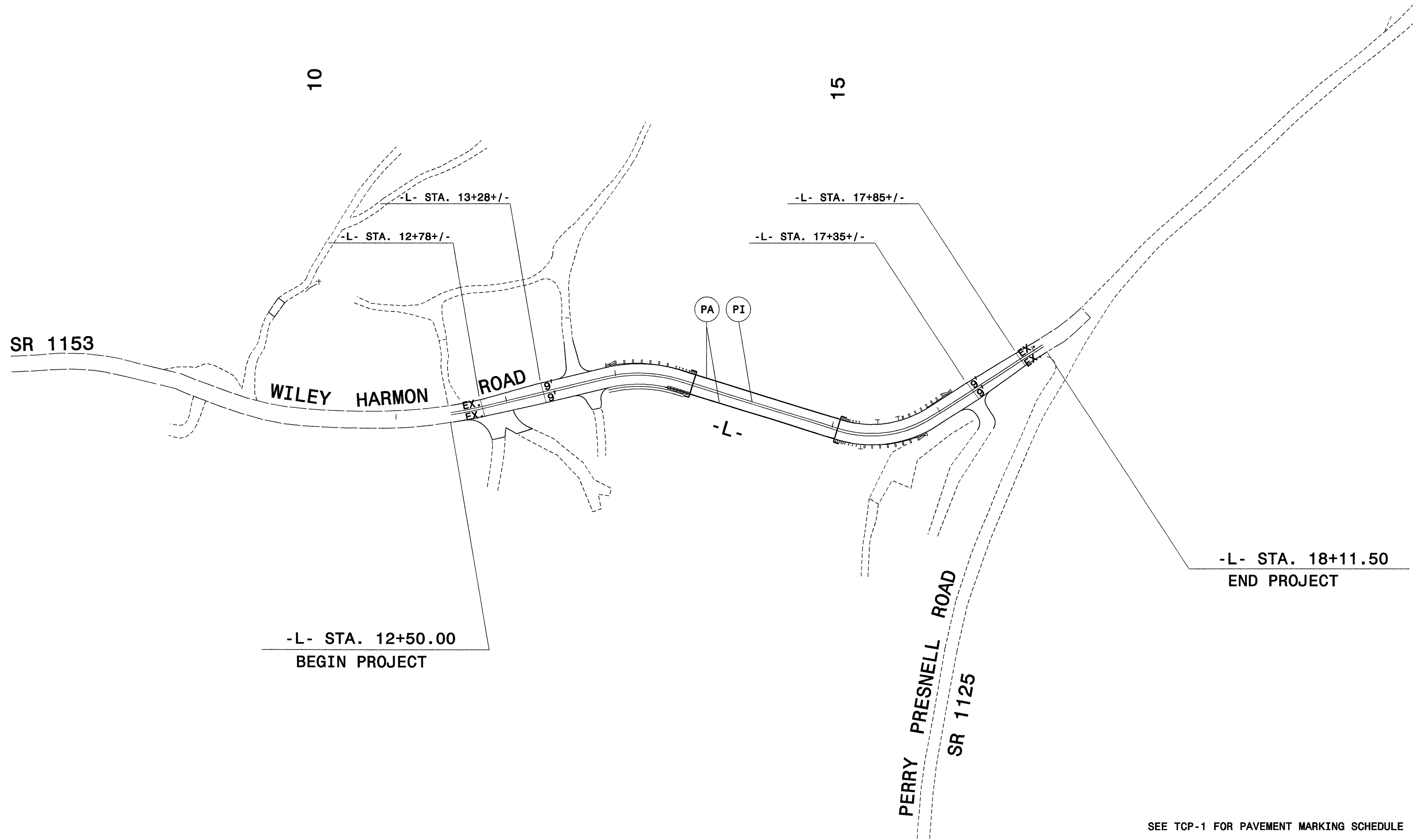


NOTES: SEE TCP-1 FOR PAVEMENT MARKING SCHEDULE
 AT THE END OF EACH WORKDAY, LOCATE MACHINERY AND EQUIPMENT IN A MANNER THAT PROVIDES THE BEST SIGHT DISTANCE FOR THE TEMPORARY ONE-LANE, TWO-WAY PATTERN UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

| APPROVED: <i>[Signature]</i> DATE: 10/13/08 | PHASE II | | | | | | | | | |
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| B-4316 | TCP-6 |



SEE TCP-1 FOR PAVEMENT MARKING SCHEDULE

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 10/15/2008

|  TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION | 559 Jones Franklin Rd. Suite 164 Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 | APPROVED: <i>[Signature]</i> DATE: 10/15/08  | PHASE III | | | | | | | |
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| | SCALE: NONE DATE: 508 DWG. BY: CLM DESIGN BY: CLM REVIEWED BY: BAM |  | <table border="1"> <thead> <tr> <th colspan="2">REVISIONS</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table> | REVISIONS | | | | | | |
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TEMPORARY SHORING RECOMMENDATIONS

Temporary Shoring No.1

FOR TEMPORARY SHORING, SEE TEMPORARY SHORING SPECIAL PROVISION.

FOR CONTRACTOR DESIGNED SHORING, SURVEY THE SHORING LOCATION TO DETERMINE EXISTING ELEVATIONS AND ACTUAL DESIGN HEIGHTS BEFORE BEGINNING DESIGN.

WHEN USING CONTRACTOR DESIGNED SHORING FROM STATION 14+00.00+/- -L-, 12 FT. LEFT OF -L-, TO STATION 14+96.00+/- -L-, 12 FT. LEFT OF -L-, USE THE FOLLOWING SOIL PARAMETERS:

UNIT WEIGHT OF SOIL ABOVE WATER TABLE, $\gamma = 120$ PCF
 UNIT WEIGHT OF SOIL BELOW WATER TABLE, $\gamma = 60$ PCF
 FRICTION ANGLE, $\phi =$ DEGREES
 COHESION, $c = 0$ PSF

NO SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STATION 14+00.00+/- -L-, 12 FT. LEFT OF -L-, TO STATION 14+96.00+/- -L-, 12 FT. LEFT OF -L-. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

Temporary Shoring No.2

FOR TEMPORARY SHORING, SEE TEMPORARY SHORING SPECIAL PROVISION.

FOR CONTRACTOR DESIGNED SHORING, SURVEY THE SHORING LOCATION TO DETERMINE EXISTING ELEVATIONS AND ACTUAL DESIGN HEIGHTS BEFORE BEGINNING DESIGN.

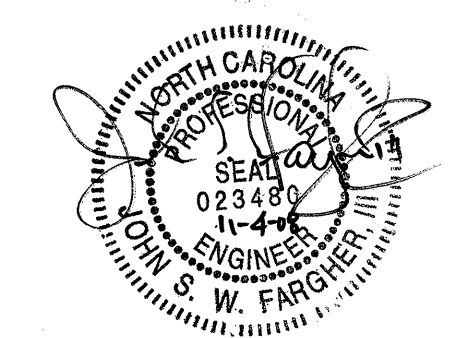

WHEN USING CONTRACTOR DESIGNED SHORING FROM STATION 15+80.00+/- -L-, 14.5 FT. TO 15.5 FT. LEFT OF -L-, TO STATION 16+25.00+/- -L-, 14.5 FT. TO 15.5 FT. LEFT OF -L-, USE THE FOLLOWING SOIL PARAMETERS:

UNIT WEIGHT OF SOIL ABOVE WATER TABLE, $\gamma = 120$ PCF
 UNIT WEIGHT OF SOIL BELOW WATER TABLE, $\gamma = 60$ PCF
 FRICTION ANGLE, $\phi =$ DEGREES
 COHESION, $c = 0$ PSF

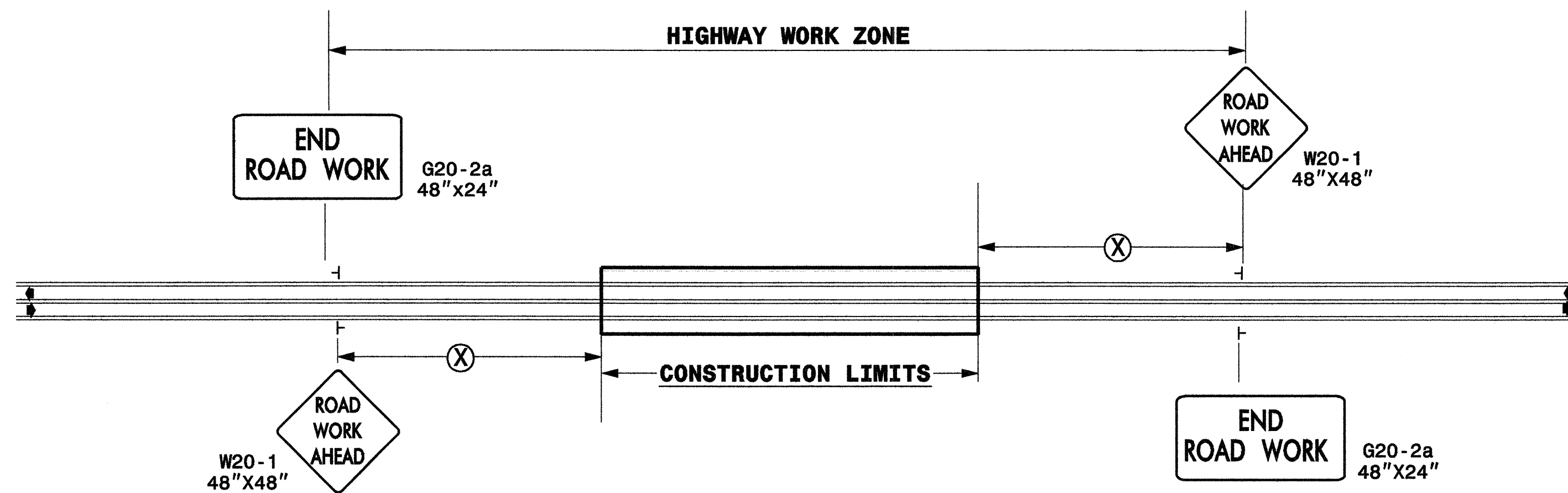
NO SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STATION 15+80.00+/- -L-, 14.5 FT. TO 15.5 FT. LEFT OF -L-, TO STATION 16+25.00+/- -L-, 14.5 FT. TO 15.5 FT. LEFT OF -L-. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

FOR PORTABLE CONCRETE BARRIERS ABOVE AND BEHIND TEMPORARY SHORING, USE AN NCDOT PORTABLE CONCRETE BARRIER (UNANCHORED OR ANCHORED) OR AN OREGON TALL F-SHAPE CONCRETE BARRIER IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS.

\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DCN\$\$\$\$\$
 \$\$\$USERNAM\$\$\$\$\$

| APPROVED: _____ DATE: _____  | <h3>TEMPORARY SHORING RECOMMENDATIONS</h3> | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">REVISIONS</th> </tr> <tr> <td style="width: 50%;"> </td> <td style="width: 50%;"> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table> | REVISIONS | | | | | | | | | |
|--|--|--|-----------|-------|---------|----------|----|------------|-----|--------------|-----|---|
| REVISIONS | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>SCALE:</td> <td>NONE</td> </tr> <tr> <td>DATE:</td> <td>11-9-08</td> </tr> <tr> <td>DWG. BY:</td> <td>CB</td> </tr> <tr> <td>DESIGN BY:</td> <td>MRB</td> </tr> <tr> <td>REVIEWED BY:</td> <td>JSF</td> </tr> </table> | | SCALE: | NONE | DATE: | 11-9-08 | DWG. BY: | CB | DESIGN BY: | MRB | REVIEWED BY: | JSF |  |
| SCALE: | NONE | | | | | | | | | | | |
| DATE: | 11-9-08 | | | | | | | | | | | |
| DWG. BY: | CB | | | | | | | | | | | |
| DESIGN BY: | MRB | | | | | | | | | | | |
| REVIEWED BY: | JSF | | | | | | | | | | | |

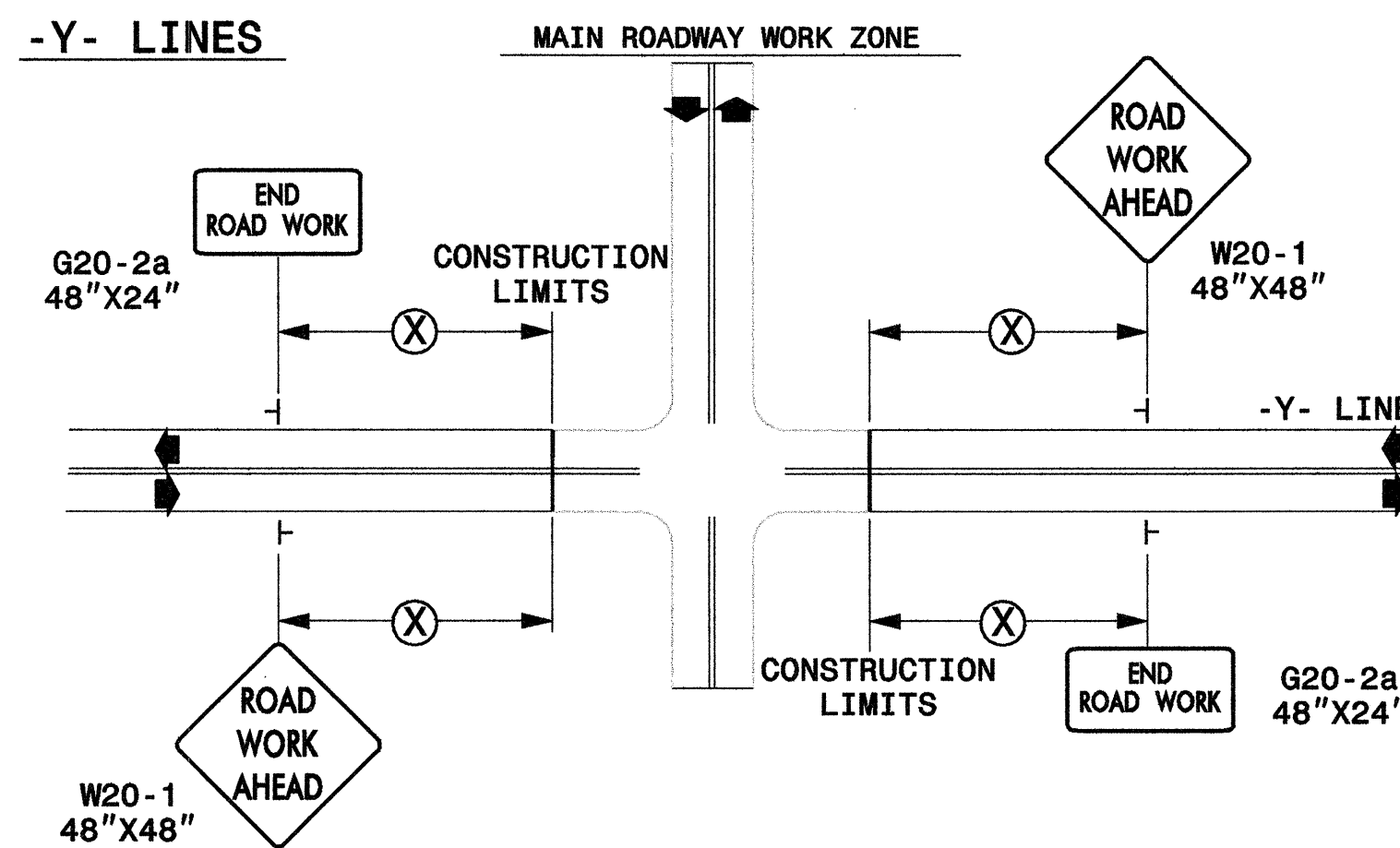
TWO-WAY UNDIVIDED ** (L-LINES)



| POSTED SPEED LIMIT (M.P.H.) | RECOMMENDED MINIMUM SIGN SPACING |
|-----------------------------|----------------------------------|
| ≤ 50 | 500' |
| ≥ 55 | 1000' |

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

ROADWAYS INTERSECTING ALONG 2 WAY UNDIVIDED WORK ZONE (Y-LINES)



DETAIL DRAWING FOR
TWO-WAY UNDIVIDED
WORK ZONE WARNING SIGNS

GENERAL NOTES

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT OVERNIGHT. FOR SHORT-TERM DAILY MAINTENANCE TYPE OPERATIONS, THIS SIGNING APPLICATION IS OPTIONAL; MAY USE ONLY APPLICABLE ROADWAY STANDARD DRAWINGS INSTEAD. HOWEVER, IF THIS SIGNING APPLICATION IS USED, SIGNS MAY BE PORTABLE MOUNTED.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE 3LB STEEL U-CHANNEL POST OR 4" X 4" WOOD POST FOR ALL WORK ZONE SIGNS. 3LB STEEL U-CHANNEL POSTS MUST MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 1094-1(B), MAY BE GALVANIZED STEEL, OR MAY BE PAINTED GREEN BY THE POST MANUFACTURER. SQUARE STEEL TUBING POSTS HAVING EQUIVALENT STRENGTH OF THE 3 LB STEEL U-CHANNEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATION "WORK ZONE SIGNS" SECTION 1110.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01. REMOVE ENTIRE POST WHEN REMOVING SIGNS WITH SPLICED POSTS.
- DO NOT BACK BRACE SIGN SUPPORTS.
- ** TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON URBAN MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

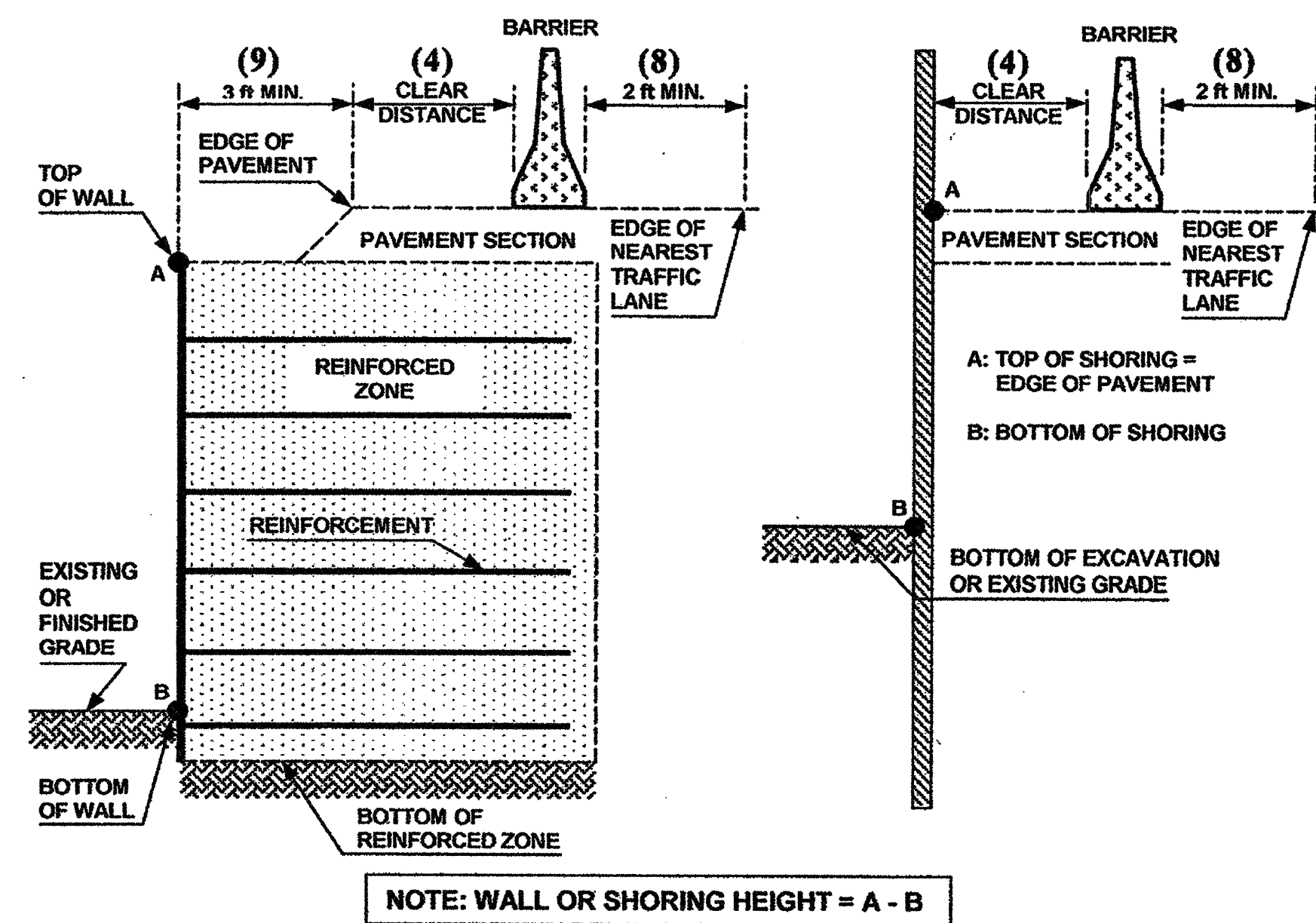
LEGEND

┆ STATIONARY SIGN

◀ DIRECTION OF TRAFFIC FLOW

SHEET 1 OF 1

| APPROVED: <i>[Signature]</i> DATE: 10/15/08 | DETAIL DRAWING FOR TWO-WAY UNDIVIDED AND URBAN FREEWAYS ADVANCED WORK ZONE WARNING SIGNS | | | | | | | | | |
|---|--|---|-----------|--|------|-------|-------|-------|-------|-------|
| SEAL | SCALE: NONE | <table border="1"> <thead> <tr> <th colspan="2">REVISIONS</th> </tr> </thead> <tbody> <tr> <td>7-98</td> <td>10/01</td> </tr> <tr> <td>10-98</td> <td>03/04</td> </tr> <tr> <td>01/01</td> <td>11/04</td> </tr> </tbody> </table> | REVISIONS | | 7-98 | 10/01 | 10-98 | 03/04 | 01/01 | 11/04 |
| | REVISIONS | | | | | | | | | |
| | 7-98 | | 10/01 | | | | | | | |
| | 10-98 | | 03/04 | | | | | | | |
| 01/01 | 11/04 | | | | | | | | | |
| DATE: 508 | | | | | | | | | | |
| DWG. BY: CLM | | | | | | | | | | |
| DESIGN BY: CLM | | | | | | | | | | |
| REVIEWED BY: BAM | | | | | | | | | | |



NOTE: WALL OR SHORING HEIGHT = A - B

FIGURE A

NOTES

- REFER TO THE TRAFFIC CONTROL PLANS FOR SHORING LOCATIONS AND SOIL PARAMETERS.
- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR MORE INFORMATION ABOUT TEMPORARY SHORING, MEASUREMENT AND PAYMENT.
- PROVIDE PORTABLE CONCRETE BARRIER TO PROTECT TEMPORARY SHORING IF SHORING IS LOCATED WITHIN THE CLEAR ZONE AS DEFINED IN THE AASHTO ROADSIDE DESIGN GUIDE.
- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED PCB, ANCHORED PCB OR AN OREGON BARRIER FROM THE TABLE SHOWN IN FIGURE B. FOR TRAFFIC LANES AND PORTABLE CONCRETE BARRIER LOCATED ABOVE AND BEHIND TEMPORARY SHORING, THE FOLLOWING ARE DEFINED AS:

 CLEAR DISTANCE - HORIZONTAL DISTANCE FROM THE BACK FACE OF THE BARRIER TO THE EDGE OF PAVEMENT FOR TEMPORARY MSE WALL OR TO THE FACE OF NON-ANCHORED TEMPORARY SHORING AS SHOWN IN FIGURE A.

 OFFSET - HORIZONTAL DISTANCE FROM THE FRONT FACE OF THE BARRIER TO CENTERLINE OF THE FURTHEST TRAFFIC LANE AS SHOWN IN FIGURE B FOR 3 TRAFFIC LANES.
- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET AN UNANCHORED PCB AGAINST THE TRAFFIC SIDE OF THE SHORING AND DESIGN SHORING FOR TRAFFIC IMPACT OR USE THE "SURCHARGE CASE WITH TRAFFIC IMPACT" FOR THE STANDARD TEMPORARY SHORING.
- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.
- USE OREGON TALL F-SHAPE CONCRETE BARRIER IN ACCORDANCE WITH DETAIL DRAWING AND SPECIAL PROVISION OBTAINED FROM: [HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/WZTC/DESRES/ENGLISH/DESRESENG.HTML](http://www.ncdot.org/DOH/PRECONSTRUCT/WZTC/DESRES/ENGLISH/DESRESENG.HTML)
- UNLESS NOTED OTHERWISE ON THE PLANS, SET PORTABLE CONCRETE BARRIER WITH A MINIMUM DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A.
- FOR PORTABLE CONCRETE BARRIER ABOVE AND BEHIND TEMPORARY MSE WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THESE MINIMUM REQUIRED DISTANCES ARE NOT AVAILABLE, CONTACT THE ENGINEER.
- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS. BARRIER DEFLECTIONS AND RESULTING MINIMUM REQUIRED CLEAR DISTANCES MIGHT VARY SIGNIFICANTLY FOR LARGER HEAVIER VEHICLES, RUNS OF BARRIER LESS THAN 200' IN LENGTH AND WET OR DRY PAVEMENT.

MINIMUM REQUIRED CLEAR DISTANCE, inches

| Barrier Type | Pavement Type | Offset (4) ft | Design Speed, mph | | | | | |
|--------------------------------|--|------------------|--------------------------|-------|-------|-------|-------|-------|
| | | | <30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 |
| Unanchored PCB | Asphalt | <8 | 24 | 26 | 29 | 32 | 36 | 40 |
| | | 8-14 | 26 | 28 | 31 | 35 | 38 | 42 |
| | | 14-20 | 27 | 29 | 34 | 36 | 39 | 43 |
| | | 20-26 | 28 | 31 | 35 | 38 | 40 | 44 |
| | | 26-32 | 29 | 32 | 36 | 39 | 42 | 45 |
| | | 32-38 | 30 | 34 | 38 | 41 | 43 | 46 |
| | | 38-44 | 31 | 34 | 41 | 43 | 45 | 48 |
| | | 44-50 | 31 | 35 | 41 | 43 | 46 | 49 |
| | | 50-56 | 32 | 36 | 42 | 44 | 47 | 50 |
| | >56 | 32 | 36 | 42 | 45 | 47 | 51 | |
| | Concrete | <8 | 17 | 18 | 21 | 22 | 25 | 26 |
| | | 8-14 | 19 | 20 | 23 | 25 | 26 | 29 |
| | | 14-20 | 22 | 22 | 24 | 26 | 28 | 31 |
| | | 20-26 | 23 | 24 | 26 | 27 | 30 | 34 |
| | | 26-32 | 24 | 25 | 27 | 28 | 32 | 35 |
| | | 32-38 | 24 | 26 | 27 | 30 | 33 | 36 |
| | | 38-44 | 25 | 26 | 28 | 30 | 34 | 37 |
| | | 44-50 | 26 | 26 | 28 | 32 | 35 | 37 |
| 50-56 | | 26 | 26 | 28 | 32 | 35 | 38 | |
| >56 | 26 | 27 | 29 | 32 | 36 | 38 | | |
| Anchored PCB or Oregon Barrier | Asphalt | All Offsets (4) | 24 for All Design Speeds | | | | | |
| Anchored PCB or Oregon Barrier | Concrete (including bridge approach slabs) | All Offsets (4) | 12 for All Design Speeds | | | | | |

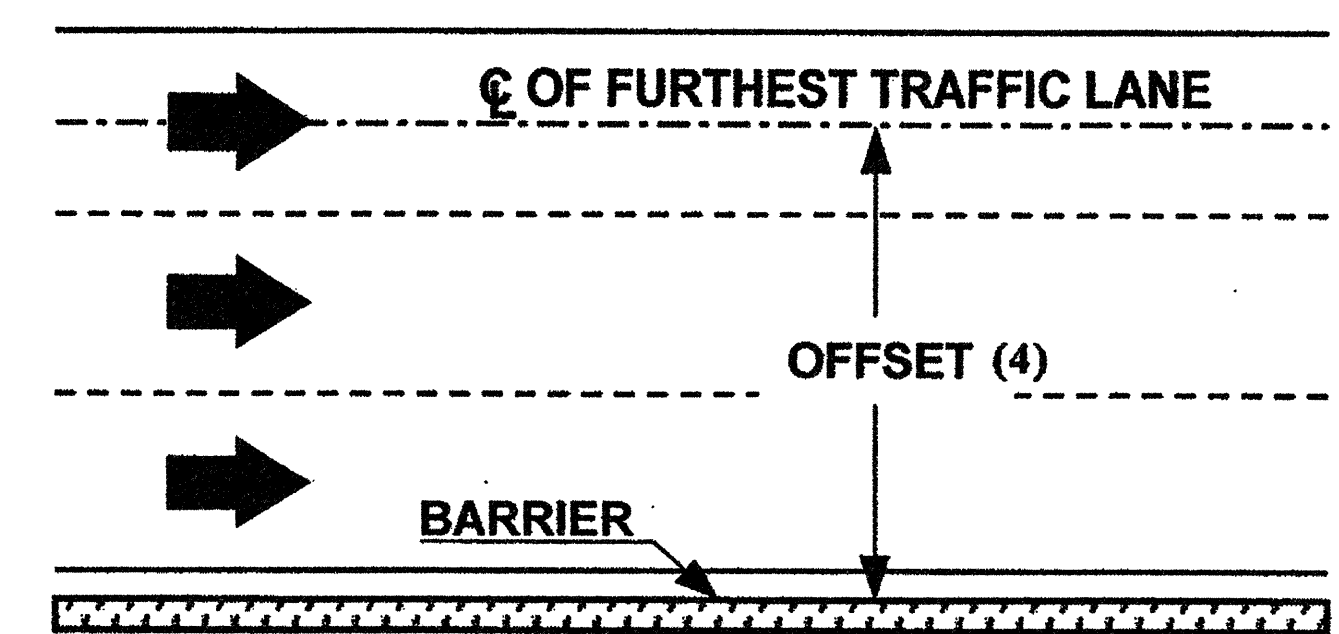


FIGURE B

| | | | |
|------------------------------|--------------------------|--|--|
| APPROVED: <i>[Signature]</i> | DATE: <i>Jan 23 2007</i> | PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS | |
| | SCALE: NONE | | |
| | DATE: 1/07 | | |
| | DWG. BY: JI | | |
| | DESIGN BY: JI | | |
| REVIEWED BY: JI | | REVISIONS | |

25-JAN-2007 12:53
 \\DOT\DFSROOT\GROUPS\WZTCC\share\share\stds.in.\progress\barrierstd.dgn
 rmgortett AT WZTC2229