

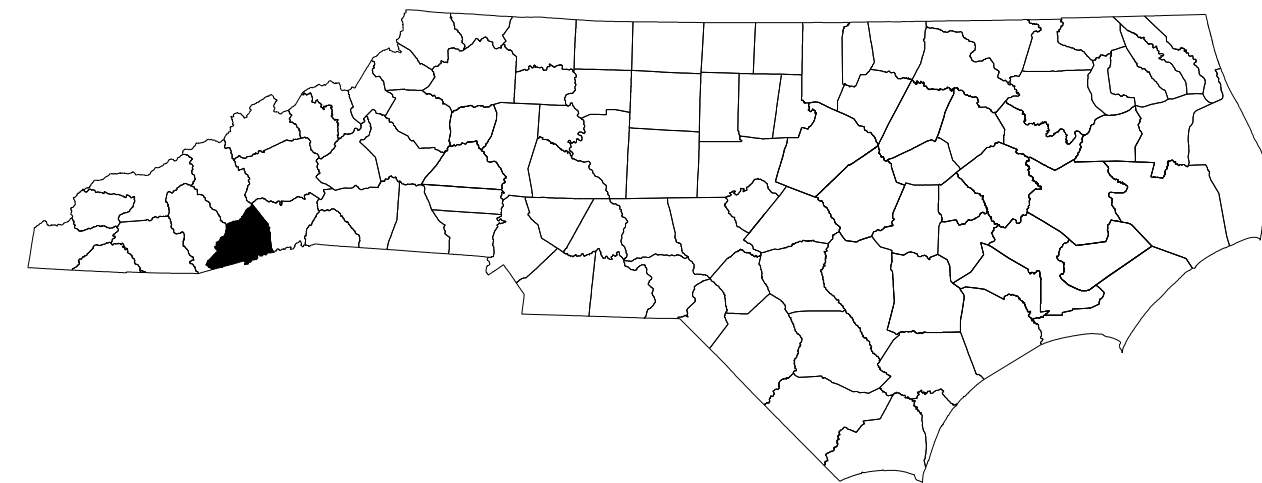
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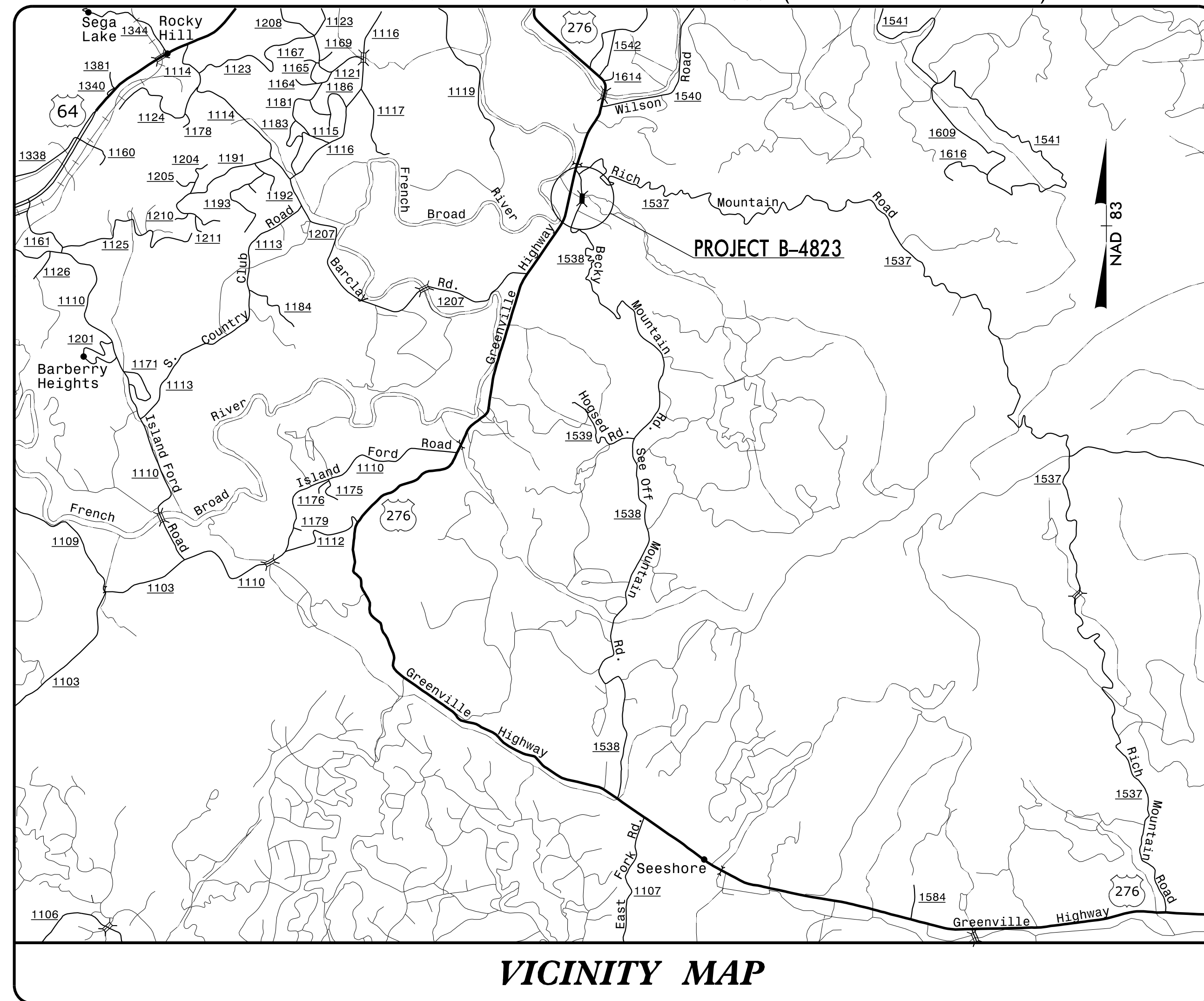
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN
TRANSYLVANIA COUNTY



LOCATION: BRIDGE NO.12 OVER HOGSED CREEK ON SR 1538 (BECKY MOUNTAIN ROAD)



VICINITY MAP

| INDEX OF SHEETS | |
|------------------------|---|
| <u>SHEET NO.</u> | <u>TITLE</u> |
| TMP-1 | TITLE SHEET, AND INDEX OF SHEETS |
| TMP-1A | LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKINGS |
| TMP-1B | TRANSPORTATION OPERATIONS PLAN: (GENERAL NOTES AND PHASING) |
| TMP-2 | TEMPORARY SHORING NOTES |
| TMP-2A | PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS |
| TMP-3 | PHASE I DETAILS |
| TMP-4 | PHASE I DETAILS |
| TMP-5 | PHASE II DETAILS |

SHEET NO.
TMP-1

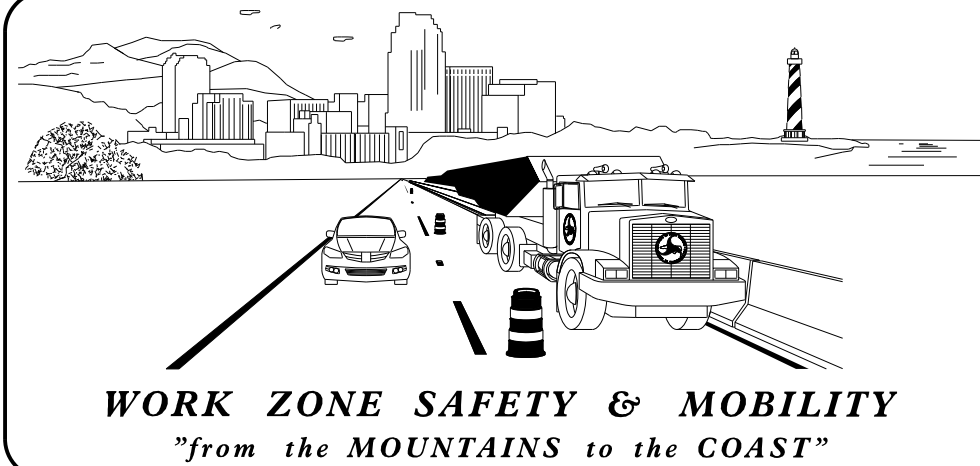
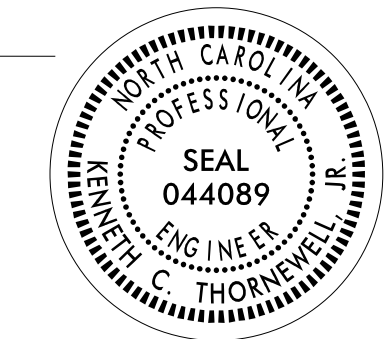
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TIP PROJECT:

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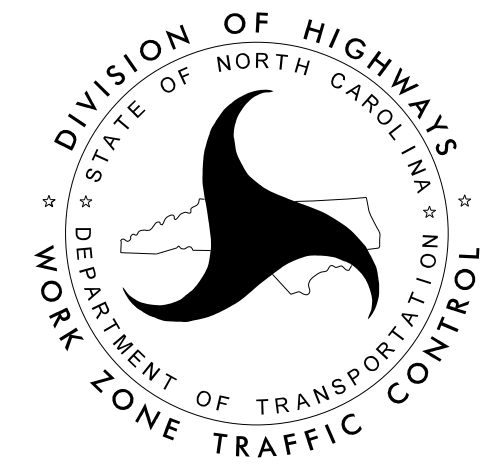
APPROVED: *Kenneth C. Thornevell, Jr., P.E.*
DATE: 11/28/2017

SEAL



N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. E. HUMMER, P.E. STATE TRAFFIC MANAGEMENT ENGINEER
D. A. PARKER, P.E. TRAFFIC CONTROL PROJECT ENGINEER
K. C. THORNEWELL, JR., P.E. TRAFFIC CONTROL PROJECT DESIGN ENGINEER
S. B. COATS TRAFFIC CONTROL DESIGN ENGINEER



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ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

| STD. NO. | TITLE |
|----------|--|
| 1101.01 | WORK ZONE ADVANCE WARNING SIGNS |
| 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 |
| 1130.01 | DRUM |
| 1135.01 | CONES |
| 1145.01 | BARRICADES |
| 1150.01 | FLAGGING DEVICES |
| 1160.01 | TEMPORARY CRASH CUSHION |
| 1170.01 | POSITIVE PROTECTION |
| 1205.01 | PAVEMENT MARKINGS - LINE TYPES AND OFFSETS |
| 1205.02 | PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS |
| 1250.01 | RAISED PAVEMENT MARKERS - INSTALLATION SPACING |
| 1251.01 | RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY |

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)

- WORK AREA
- REMOVAL
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

SIGNALS

- EXISTING
- (PTS)
PORT
- (DS)
PORT

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

- PA - WHITE EDGETLINE (PAINT) - 4"
- PD - WHITE MINISKIP (PAINT) - 4"
- P2 - WHITE STOP BAR (PAINT) - 24"

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| | | | |
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| APPROVED: <small>1E991EF27373405</small> DATE: 11/28/2017 | | | <h3 style="margin: 0;">ROADWAY STANDARD DRAWINGS & LEGEND</h3> |
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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 UNDESIRABLE 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.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- F) 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.

- G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 350 FT. IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

- I) 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.
- J) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC BARRIER

- K) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

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

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

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY 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 TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

- L) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

| POSTED SPEED LIMIT | MINIMUM OFFSET |
|--------------------|----------------|
| 40 OR LESS | 15 FT |
| 45 - 50 | 20 FT |
| 55 | 25 FT |
| 60 MPH or HIGHER | 30 FT |

TRAFFIC CONTROL DEVICES

- M) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

- N) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

| ROAD NAME | MARKING | MARKER |
|---------------|---------|-----------|
| SR 1538 (-L-) | PAINT | TEMPORARY |
- O) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
- P) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- Q) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.
- R) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS SHOWN IN FINAL PAVEMENT MARKING PLAN.

PHASING

NOTE: BEFORE BEGINNING CONSTRUCTION THE CONTRACTOR SHALL PLACE ADVANCE WORK ZONE WARNING SIGNS ALONG -L- LINE SR 1538 (BECKY MOUNTAIN RD.) AND SR 1537 (RICH MOUNTAIN RD.), (SEE RSD 1101.01, SHEET 3 OF 3)

PHASE I

- STEP 1. USING RSD NO. 1101.02 (SHEET 1 OF 15), PLACE TEMPORARY PAVEMENT MARKINGS AND MARKERS, AS FOLLOWS (SEE TMP-3):
 - STA. 14+20+/- -L- TO STA. 19+25+/- -L-
 - PLACE WATER FILLED BARRIER AS FOLLOWS (SEE TMP-3).
 - STA. 15+20+/- -L- TO STA. 17+10+/- -L-
 - STA. 17+35+/- -L- TO STA. 18+25+/- -L-
 - PLACE TEMPORARY SIGNAL SIGNAGE AND TEMPORARY PORTABLE SIGNALS AND ACTIVATE (SEE TMP-3).
 - SHIFT TRAFFIC FROM A TWO-LANE, TWO WAY PATTERN TO A ONE-LANE, TWO WAY PATTERN ON SR 1538 AS SHOWN ON TMP-3.
- STEP 2. USING FLAGGERS, REMOVE BRIDGE RAIL AND TWO GIRDERS OF EXISTING BRIDGE AND REINSTALL BRIDGE RAIL AS SHOWN ON TMP-3.
- STEP 3. AWAY FROM TRAFFIC, CONSTRUCT TEMPORARY SHORING AS SHOWN ON TMP-3. STAGE CONSTRUCT PROPOSED CULVERT, INCLUDING GUARDRAIL, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AS FOLLOWS (SEE CONSTRUCTION PLANS AND TMP-4):
 - STA. 15+25+/- -L- TO STA. 18+00+/- -L-
 - USING RSD 1101.02 (SHEET 1 OF 15), WIDEN -L- UP TO EXISTING EDGE OF PAVEMENT ELEVATIONS AS FOLLOWS (SEE CONSTRUCTION PLANS AND TMP-4):
 - STA. 13+50+/- -L- TO STA. 15+25+/- -L-
 - STA. 18+00+/- -L- TO STA. 20+10+/- -L-

NOTE: WORK IN STEP 2 SHALL BE CONTINUOUS UNTIL COMPLETE.

PHASE II

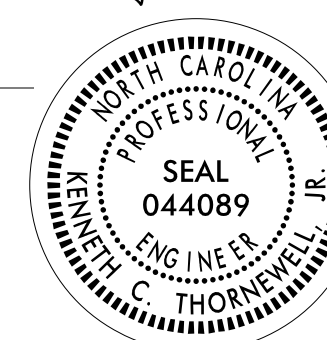
- STEP 1. USING RSD NO. 1101.02 (SHEET 1 OF 15), PAVE UP TO BUT NOT INCLUDING THE FINAL OF SURFACE COURSE, AS FOLLOWS (SEE TMP-5):
 - STA. 14+20+/- -L- TO STA. 15+25+/- -L-
 - STA. 18+00+/- -L- TO STA. 19+25+/- -L-
 - PLACE TEMPORARY PAVEMENT MARKINGS AND MARKERS AS FOLLOWS (SEE TMP-5):
 - STA. 14+20+/- -L- TO STA. 19+25+/- -L-
 - PLACE PORTABLE CONCRETE BARRIER AS FOLLOWS (SEE TMP-5):
 - STA. 16+70+/- -L- TO STA. 17+60+/- -L-
 - SHIFT TRAFFIC FROM A ONE-LANE, TWO WAY PATTERN ON EXISTING SR 1538 TO A ONE-LANE, TWO WAY PATTERN ON -L- LINE AS SHOWN ON TMP-5.
- STEP 2. AWAY FROM TRAFFIC, REMOVE EXISTING BRIDGE AND COMPLETE STAGED CONSTRUCTION OF PROPOSED CULVERT, INCLUDING GUARDRAIL, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AS FOLLOWS (SEE CONSTRUCTION PLANS AND TMP-5):
 - STA. 15+25+/- -L- TO STA. 18+00+/- -L-
 - USING RSD 1101.02 (SHEET 1 OF 15), WIDEN -L- UP TO EXISTING EDGE OF PAVEMENT ELEVATIONS AS FOLLOWS (SEE CONSTRUCTION PLANS AND TMP-5):
 - STA. 13+50+/- -L- TO STA. 15+25+/- -L-
 - STA. 18+00+/- -L- TO STA. 20+10+/- -L-
 - USING RSD 1101.02 (SHEET 1 OF 15), CONSTRUCT DRIVEWAYS, (SEE CONSTRUCTION PLANS AND TMP-5):
 - AWAY FROM TRAFFIC, REMOVE PAVEMENT AS SHOWN ON CONSTRUCTION PLANS AND TMP-5.

PHASE III

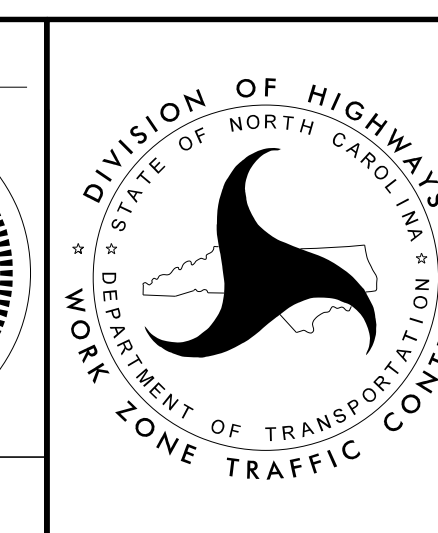
- STEP 1. USING RSD NO. 1101.02 (SHEET 1 OF 15), REMOVE PORTABLE CONCRETE BARRIER AS FOLLOWS (SEE TMP-5):
 - STA. 16+70+/- -L- TO STA. 17+60+/- -L-
 - REMOVE TEMPORARY SIGNAL SIGNAGE AND TEMPORARY PORTABLE SIGNALS.
- STEP 2. USING RSD NO. 1101.02 (SHEET 1 OF 15), PAVE THE FINAL LAYER OF SURFACE COURSE FOR -L- LINE AS FOLLOWS:
 - STA. 13+50+/- -L- TO STA. 20+10+/- -L-
- STEP 3. USING RSD NO. 1101.02 (SHEET 1 OF 15), PLACE FINAL PAVEMENT MARKINGS AND MARKERS FOR -L- LINE (SEE FINAL PAVEMENT MARKING PLANS) AND REMOVE ALL TRAFFIC CONTROL DEVICES.

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APPROVED: *Kenneth C. Thorneill Jr., P.E.*
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DATE: 11/28/2017



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TRANSPORTATION OPERATIONS PLAN

| SHORING LOCATION NO. | BEGIN STATION AND OFFSET | END STATION AND OFFSET | ESTIMATED AVERAGE HEIGHT | ESTIMATED MAXIMUM HEIGHT | SHORING LOCATION TYPE |
|----------------------|-----------------------------------|-----------------------------------|--------------------------|--------------------------|-----------------------|
| NO. 1 | STA. 17+04+/- -L- 13.1 FT. RT. | STA. 17+11+/- -L- 12.5 FT. RT. | 9.3 FT. | 9.5 FT. | STRUCTURE |
| NO. 2 | STA. 17+35+/- -L- 10.6 FT. RT. | STA. 17+43+/- -L- 10.1 FT. RT. | 9.3 FT. | 9.5 FT. | STRUCTURE |
| NO. 3 | STA. 17+04+/- -L- 6.0 FT. RT. | STA. 17+43+/- -L- 6.0 FT. RT. | 4.5 FT. | 11.5 FT. | STRUCTURE |

TEMPORARY SHORING NOTES

SHORING LOCATION NO. 1

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION. TEMPORARY SHORING IS REQUIRED FOR THE BRIDGE DECK REMOVAL FROM STATION 17+04+/- -L-, 13.1' RT., TO STATION 17+11+/- -L-, 12.5' RT.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING FROM STATION 17+04+/- -L-, 13.1' RT., TO STATION 17+11+/- -L-, 12.5' RT., FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 120 LB/CF
 FRICTION ANGLE (ϕ) = 34 DEGREES
 COHESION (c) = 0 LB/SF
 GROUNDWATER ELEVATION = 2112 FT

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 17+04+/- -L-, 13.1' RT., TO STATION 17+11+/- -L-, 12.5' RT.. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 17+04+/- -L-, 13.1' RT., TO STATION 17+11+/- -L-, 12.5' RT. MAY NOT PENETRATE BELOW ELEVATION 2095 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 17+04+/- -L-, 13.1' RT., TO STATION 17+11+/- -L-, 12.5' RT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 17+04+/- -L-, 13.1' RT., TO STATION 17+11+/- -L-, 12.5' RT. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION 17+04+/- -L-, 13.1' RT., TO STATION 17+11+/- -L-, 12.5' RT. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

SHORING LOCATION NO. 2

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION. TEMPORARY SHORING IS REQUIRED FOR THE BRIDGE DECK REMOVAL FROM STATION 17+35+/- -L-, 10.6' RT., TO STATION 17+43+/- -L-, 10.1' RT.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING FROM STATION 17+35+/- -L-, 10.6' RT., TO STATION 17+43+/- -L-, 10.1' RT., FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 120 LB/CF
 FRICTION ANGLE (ϕ) = 34 DEGREES
 COHESION (c) = 0 LB/SF
 GROUNDWATER ELEVATION = 2112 FT

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 17+35+/- -L-, 10.6' RT., TO STATION 17+43+/- -L-, 10.1' RT.. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 17+35+/- -L-, 10.6' RT., TO STATION 17+43+/- -L-, 10.1' RT. MAY NOT PENETRATE BELOW ELEVATION 2095 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 17+35+/- -L-, 10.6' RT., TO STATION 17+43+/- -L-, 10.1' RT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 17+35+/- -L-, 10.6' RT., TO STATION 17+43+/- -L-, 10.1' RT. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION 17+35+/- -L-, 10.6' RT., TO STATION 17+43+/- -L-, 10.1' RT. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

SHORING LOCATION NO. 3

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION. TEMPORARY SHORING IS REQUIRED FOR THE CULVERT INSTALLATION FROM STATION 17+04+/- -L-, 6.0' RT., TO STATION 17+43+/- -L-, 6.0' RT.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING FROM STATION 17+04+/- -L-, 6.0' RT., TO STATION 17+43+/- -L-, 6.0' RT., FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 120 LB/CF
 FRICTION ANGLE (ϕ) = 34 DEGREES
 COHESION (c) = 0 LB/SF
 GROUNDWATER ELEVATION = 2112 FT

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 17+04+/- -L-, 6.0' RT., TO STATION 17+43+/- -L-, 6.0' RT.. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 17+04+/- -L-, 6.0' RT., TO STATION 17+43+/- -L-, 6.0' RT. MAY NOT PENETRATE BELOW ELEVATION 2095 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 17+04+/- -L-, 6.0' RT., TO STATION 17+43+/- -L-, 6.0' RT. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

WHEN BACKFILL FOR CULVERT OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR CULVERT, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

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| APPROVED:  DATE: 11/28/2017  |  | <h2>TEMPORARY SHORING NOTES</h2> |
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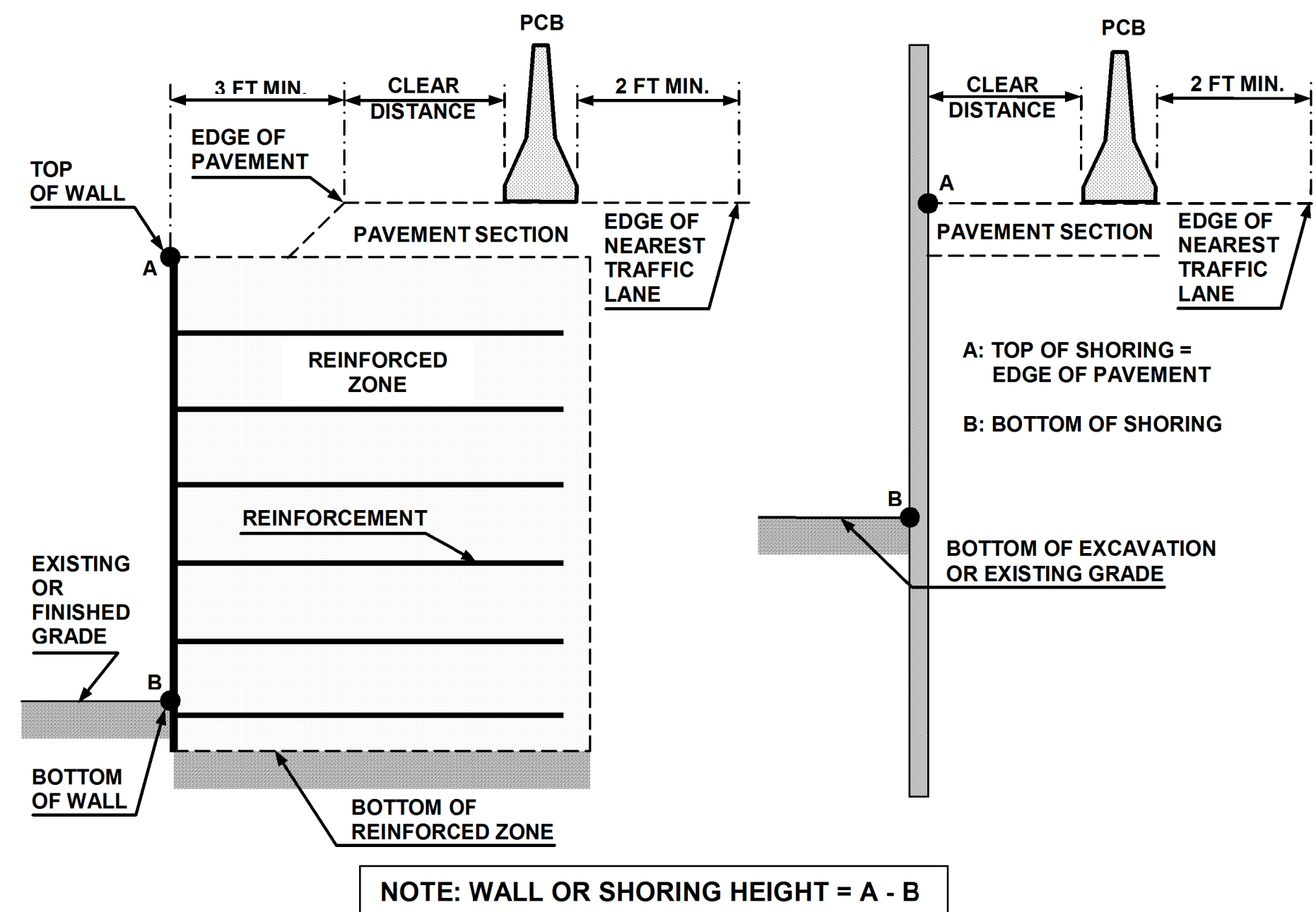


FIGURE A

NOTES

- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.
- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).
- PCB IS REQUIRED IF TEMPORARY SHORING IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT UNIT FOR APPLICABLE PAVEMENT DESIGN).
- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.
- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.
- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.
- PCB REQUIREMENTS FOR TEMPORARY WALLS APPLY TO TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS AND TEMPORARY SOIL NAIL WALLS.
- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS AND OR AS APPROVED BY THE ENGINEER.
- FOR PCB ABOVE AND BEHIND TEMPORARY 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 FT IN LENGTH AND WET OR DRY PAVEMENT.

MINIMUM REQUIRED CLEAR DISTANCE, inches

| Barrier Type | Pavement Type | Offset * 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 | Asphalt | All Offsets | 24 for All Design Speeds | | | | | |
| Anchored PCB | Concrete (including bridge approach slabs) | All Offsets | 12 for All Design Speeds | | | | | |

* See Figure Below

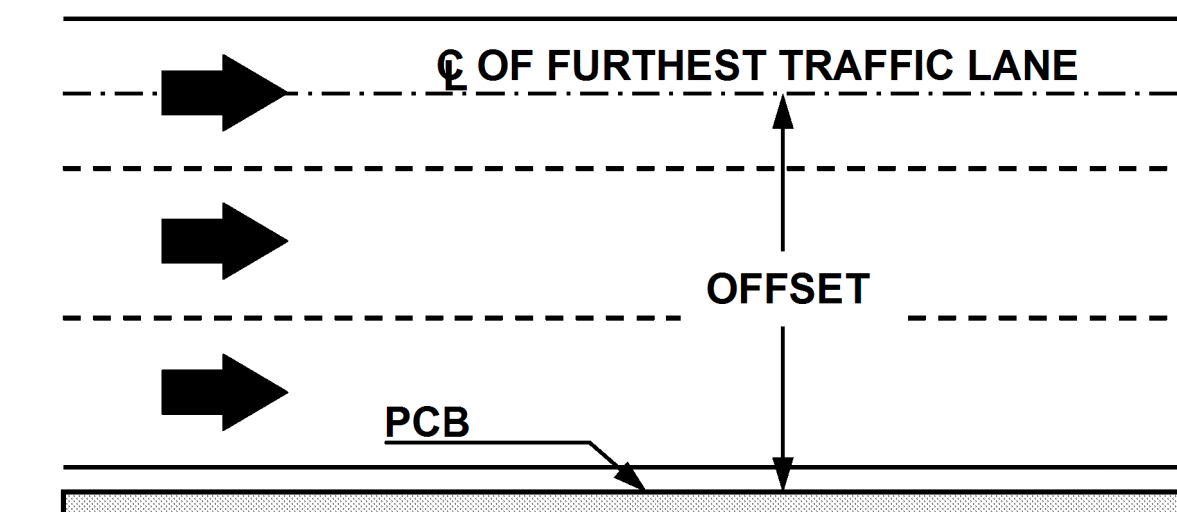
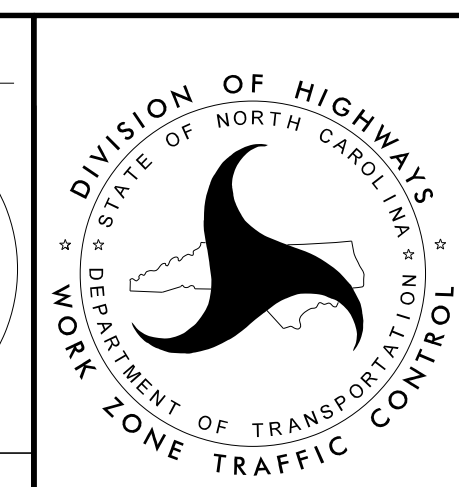


FIGURE B

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1E991E27373405
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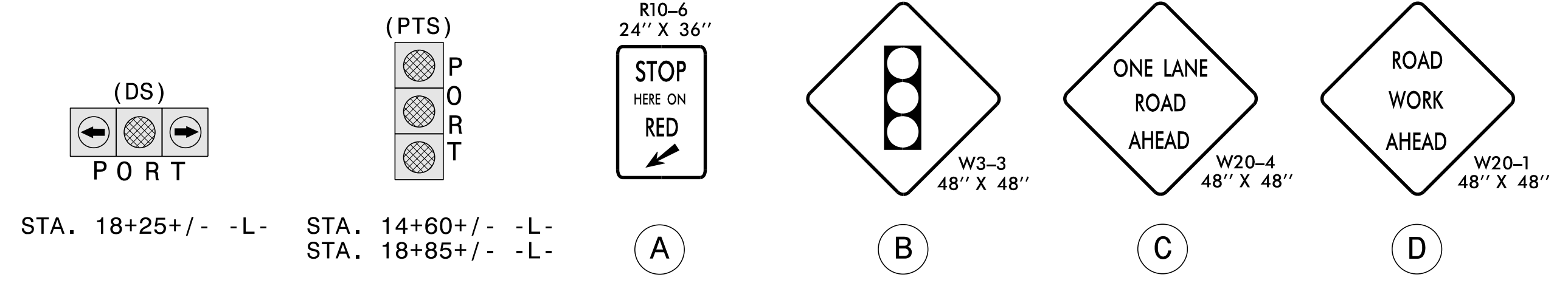


PORTABLE CONCRETE
 BARRIER
 AT
 TEMPORARY SHORING
 LOCATIONS

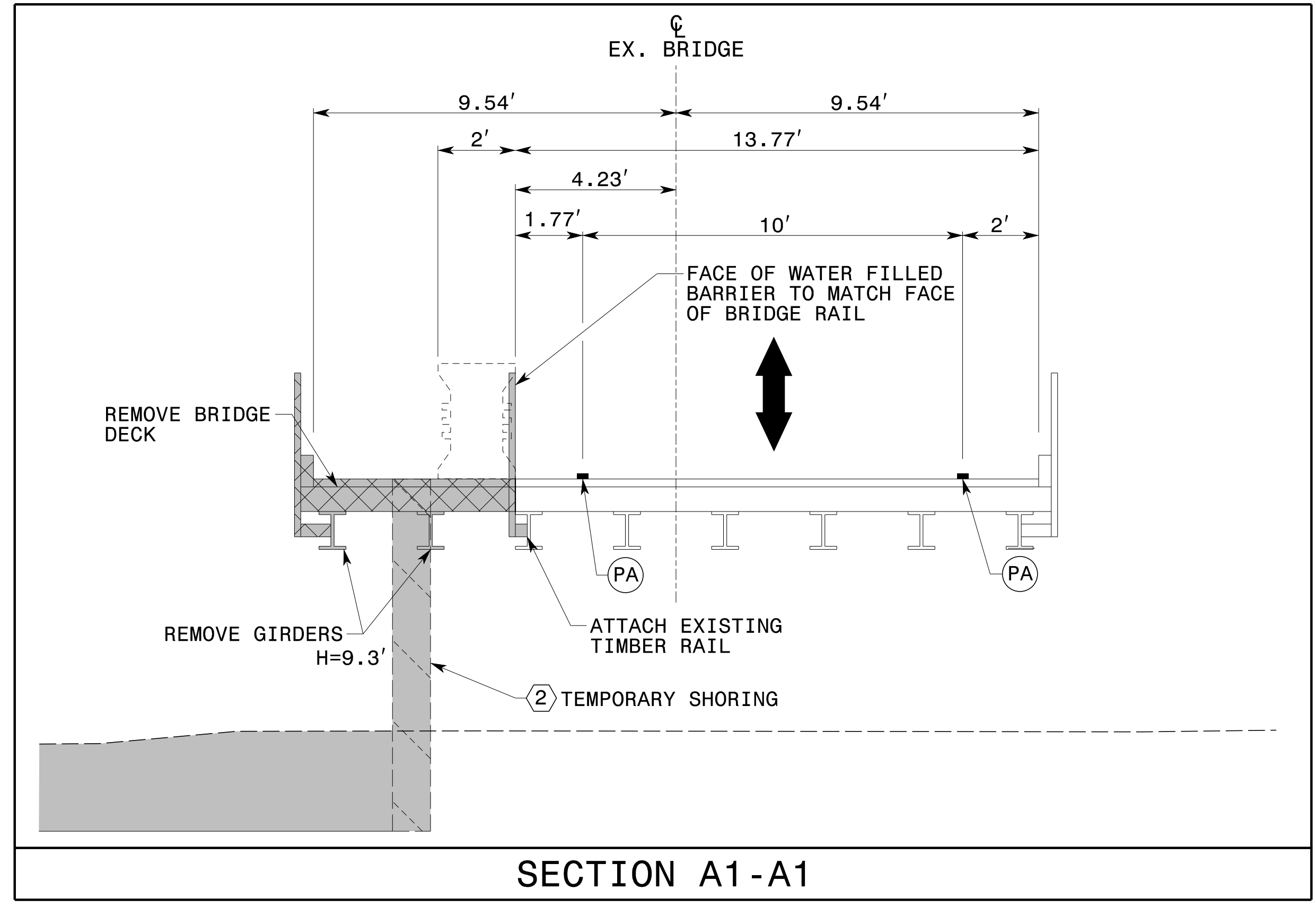
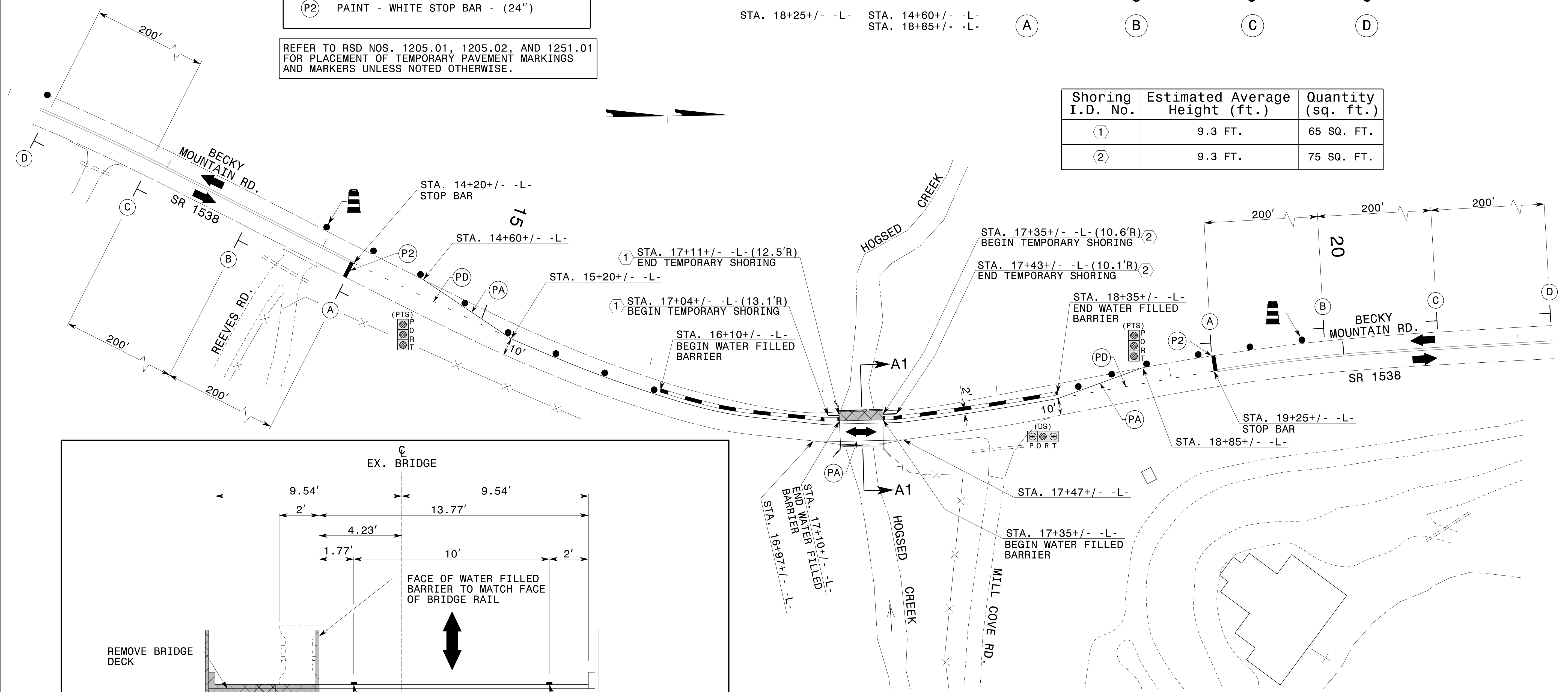
TEMPORARY PAVEMENT MARKING LEGEND

| | |
|------|--------------------------------|
| (PA) | PAINT - WHITE EDGELINE - (4") |
| (PD) | PAINT - WHITE MINISKIP - (4") |
| (P2) | PAINT - WHITE STOP BAR - (24") |

REFER TO RSD NOS. 1205.01, 1205.02, AND 1251.01 FOR PLACEMENT OF TEMPORARY PAVEMENT MARKINGS AND MARKERS UNLESS NOTED OTHERWISE.



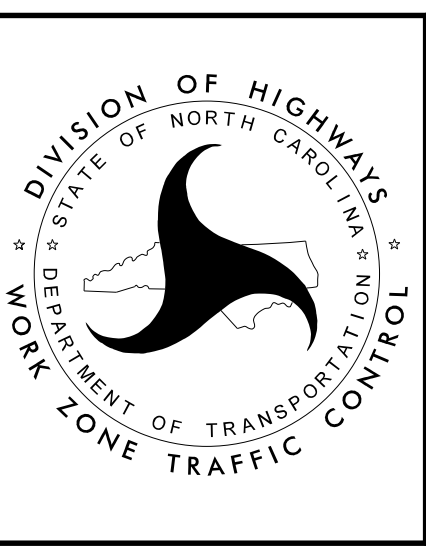
| Shoring I.D. No. | Estimated Average Height (ft.) | Quantity (sq. ft.) |
|------------------|--------------------------------|--------------------|
| ① | 9.3 FT. | 65 SQ. FT. |
| ② | 9.3 FT. | 75 SQ. FT. |



SECTION A1-A1

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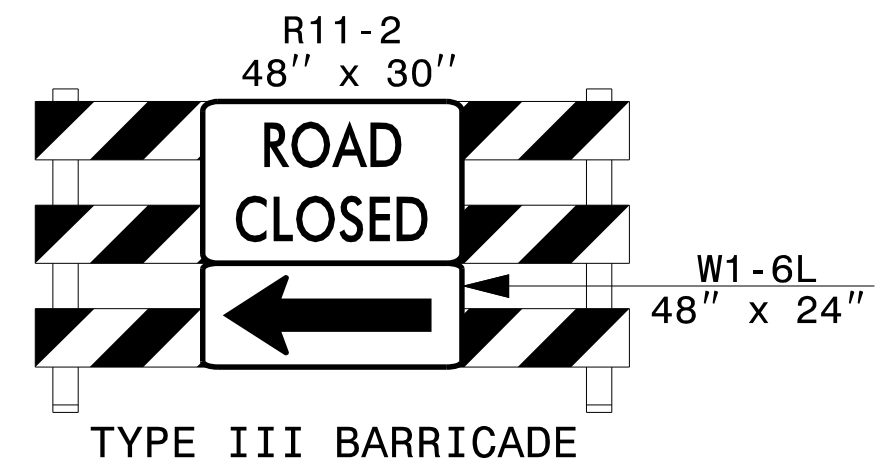
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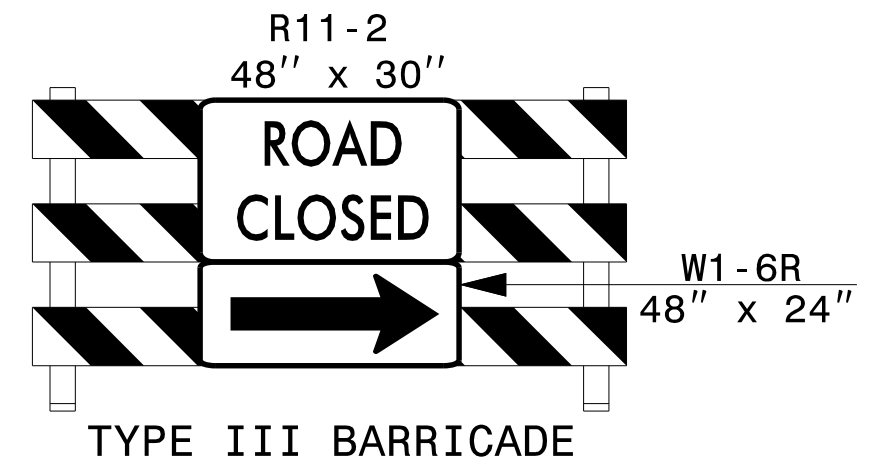
PHASE I DETAILS

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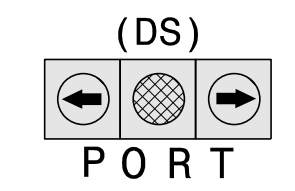
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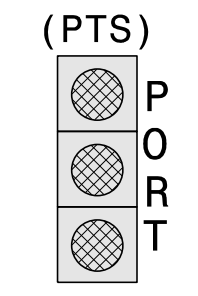
①



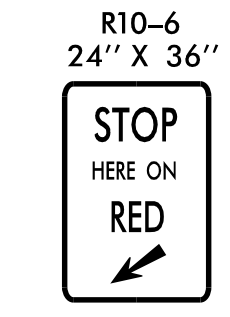
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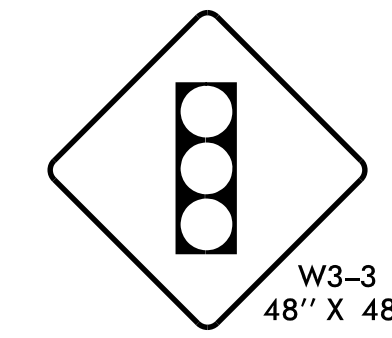
STA. 18+25+/- -L-



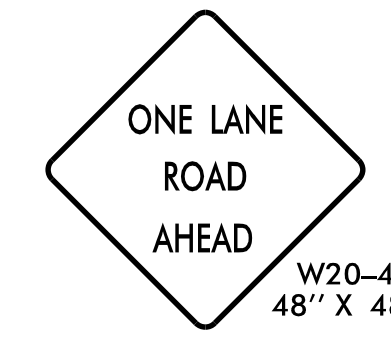
STA. 14+60+/- -L-
STA. 18+85+/- -L-



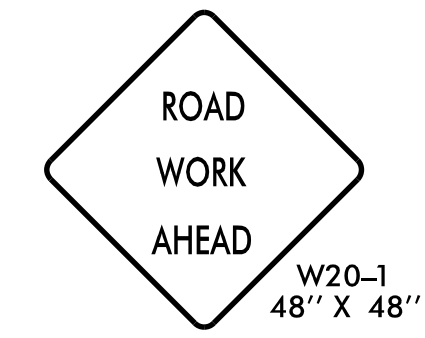
③ A



③ B

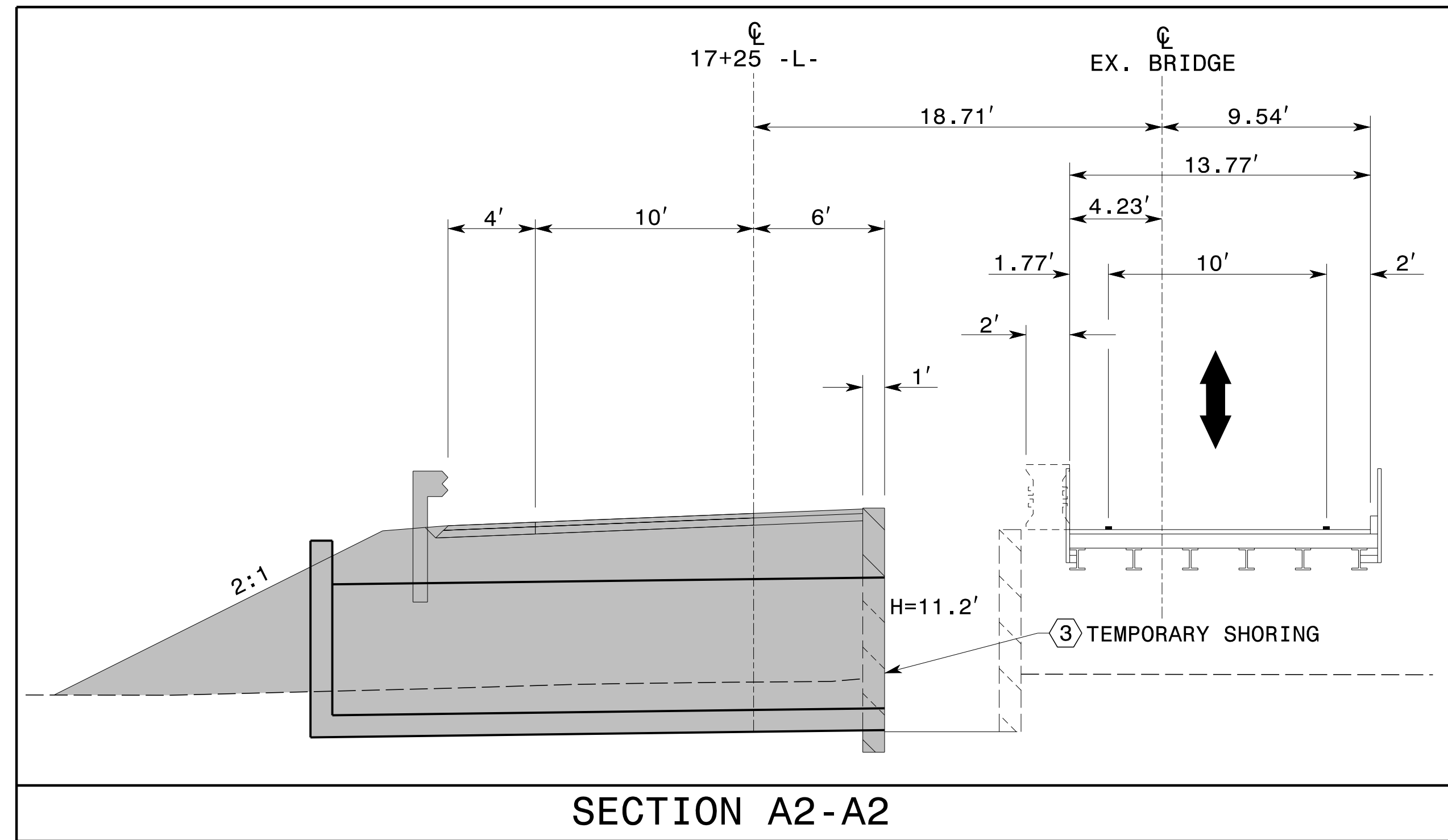
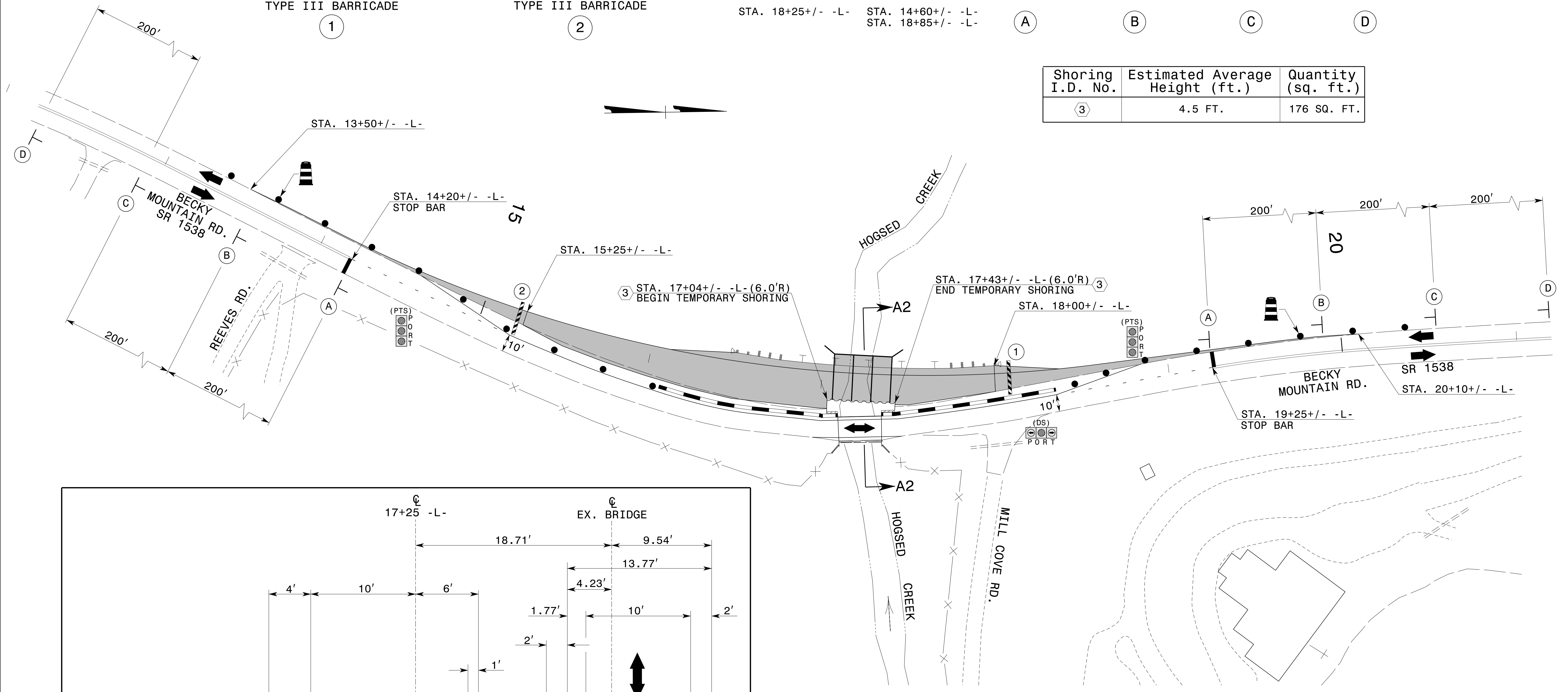


③ C



③ D

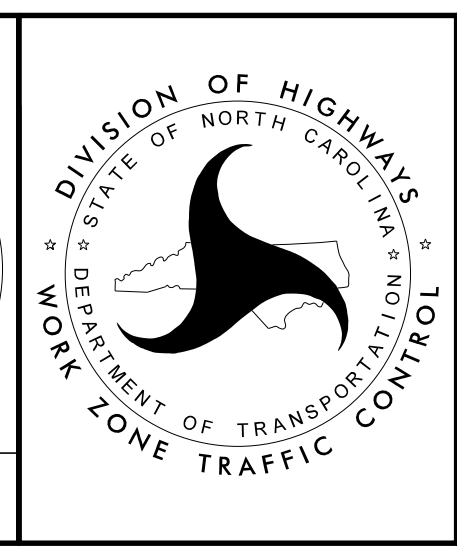
| Shoring I.D. No. | Estimated Average Height (ft.) | Quantity (sq. ft.) |
|------------------|--------------------------------|--------------------|
| ③ | 4.5 FT. | 176 SQ. FT. |



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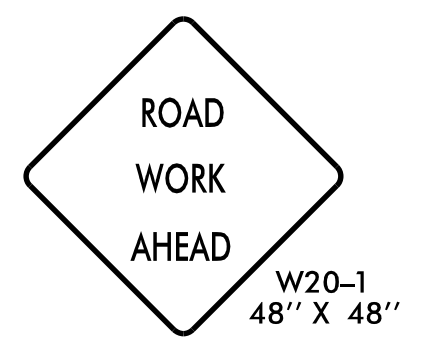
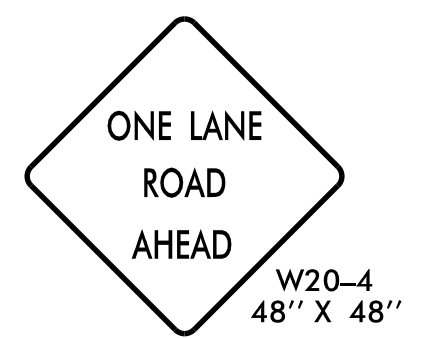
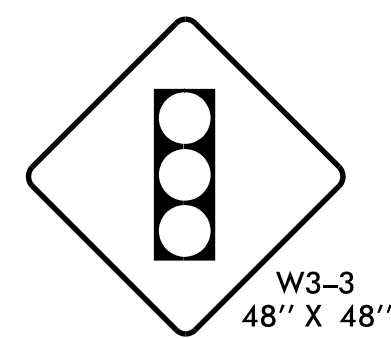
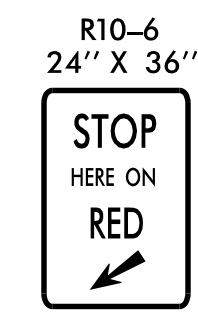
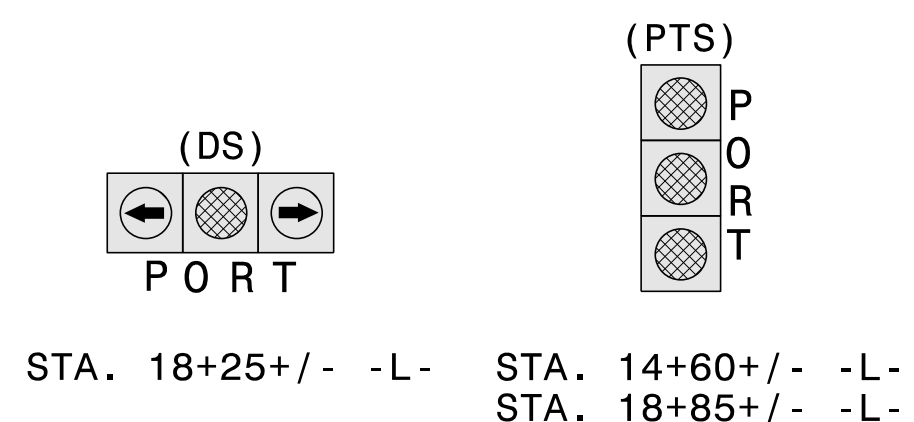
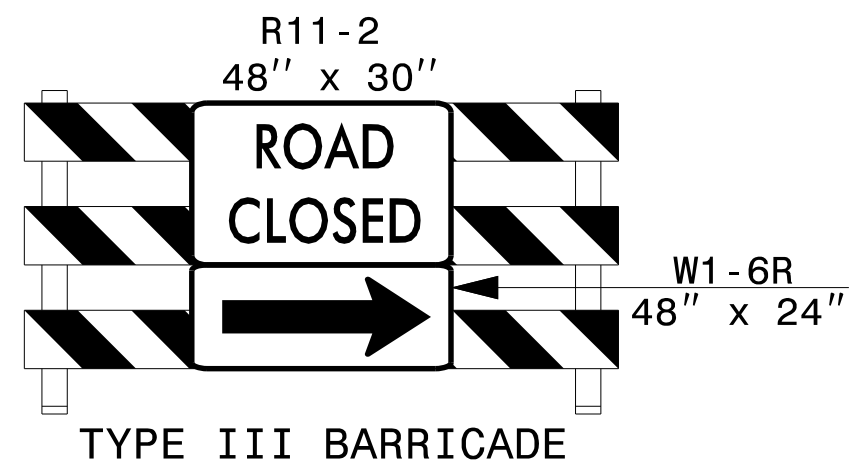
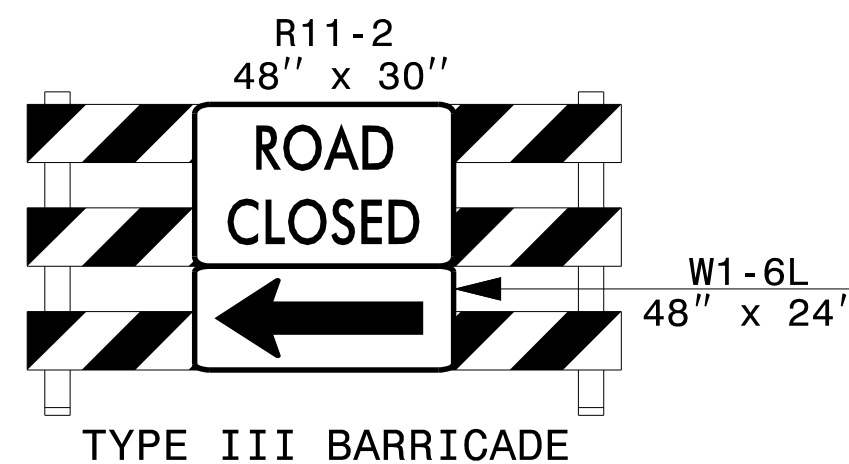
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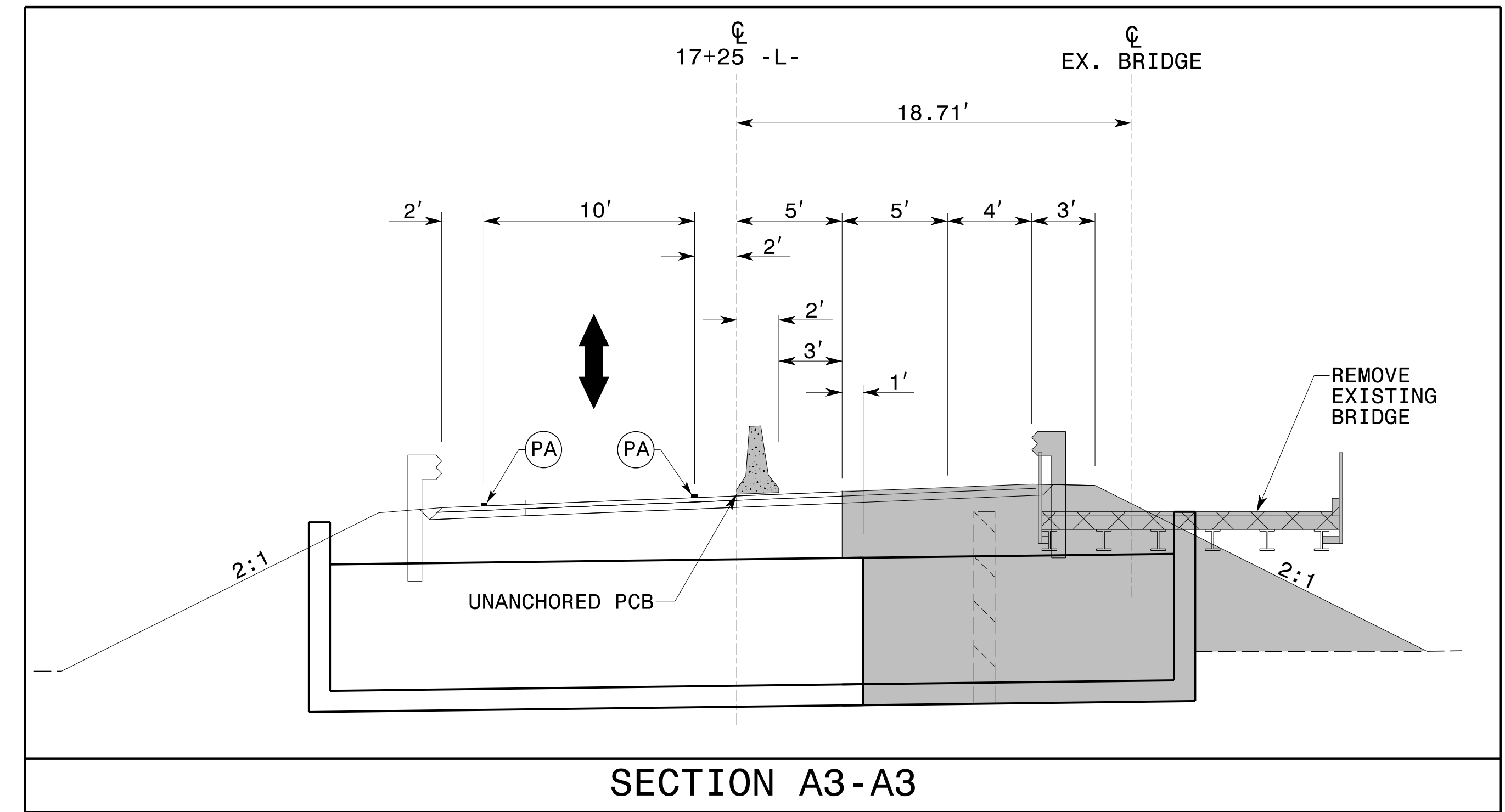
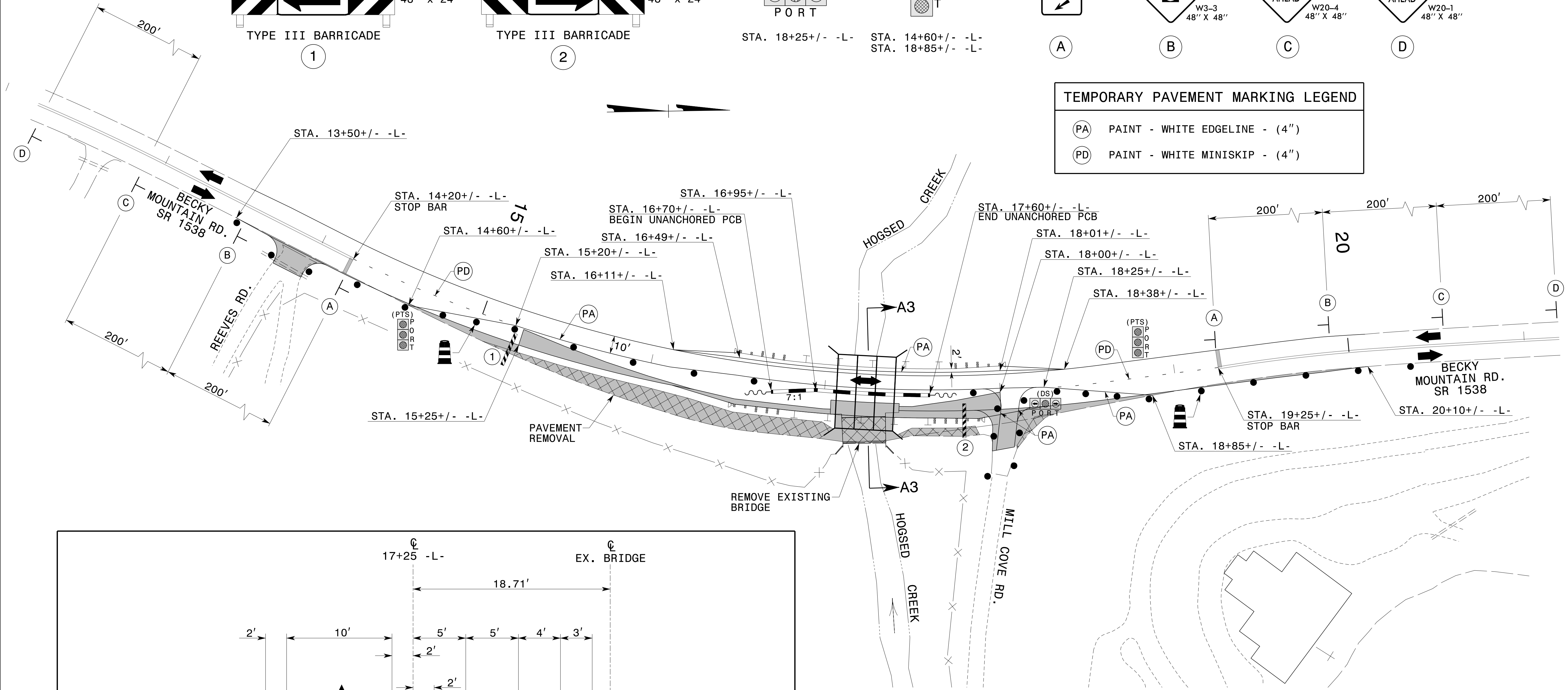


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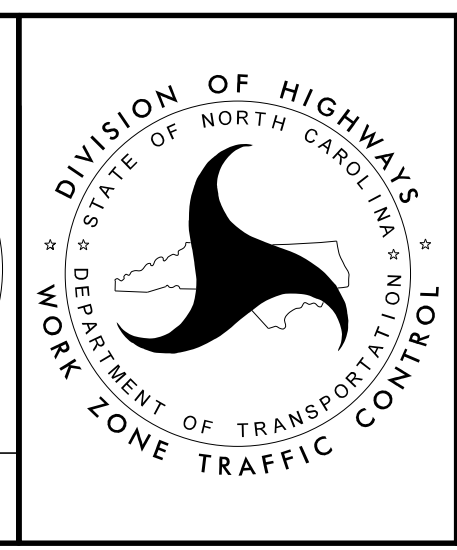
| TEMPORARY PAVEMENT MARKING LEGEND | |
|-----------------------------------|-------------------------------|
| (PA) | PAINT - WHITE EDGELINE - (4") |
| (PD) | PAINT - WHITE MINISKIP - (4") |



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