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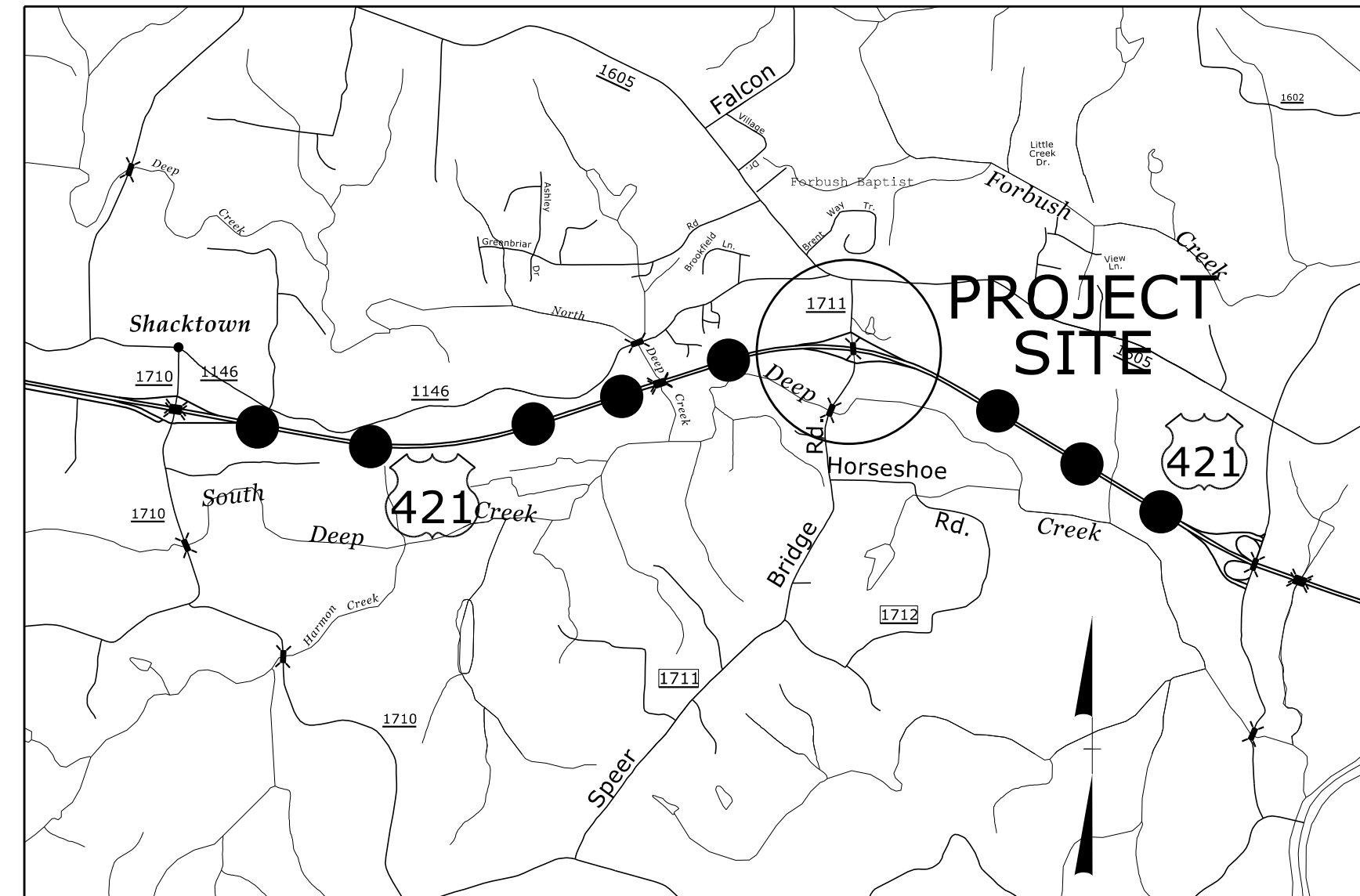
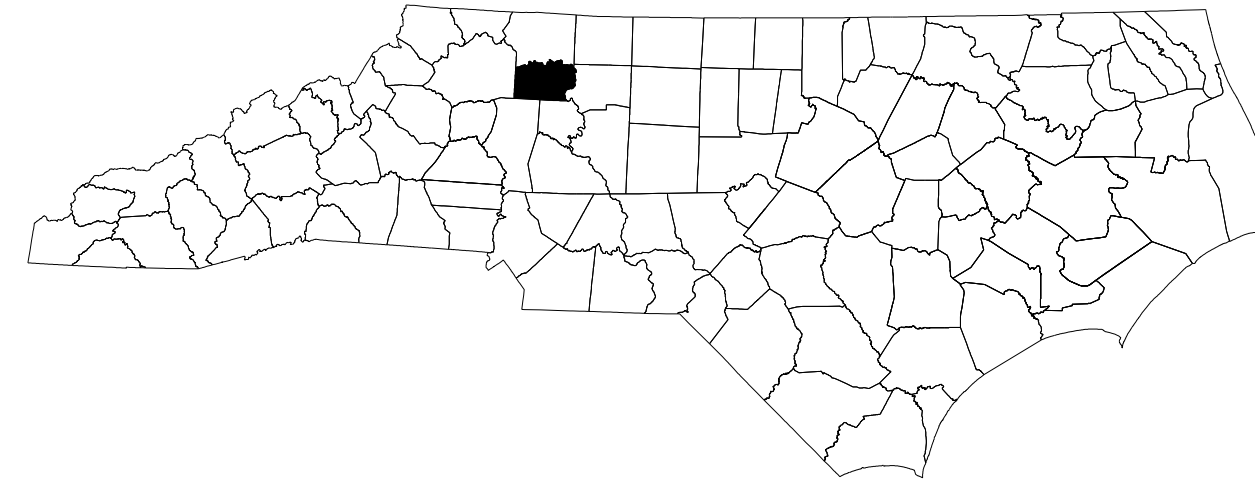
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

YADKIN COUNTY



VICINITY MAP

DETOUR ROUTE ●—●—●—●—●

DETOUR ROUTE UTILIZES RAMPS OF ADJACENT INTERCHANGES

LOCATION: BRIDGE #90 ON SR 1711 (SPEER BRIDGE ROAD)
OVER US 421

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B-1C	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES)
TMP-2	TEMPORARY SHORING DATA
TMP-2A	SPECIAL SIGN DESIGN
TMP-2B	SPEER BRIDGE RD. OFFSITE DETOUR DETAILS
TMP-2C	TYPICAL RAMP OFFSITE DETOUR DETAILS
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP-4	PHASE I DETAILS

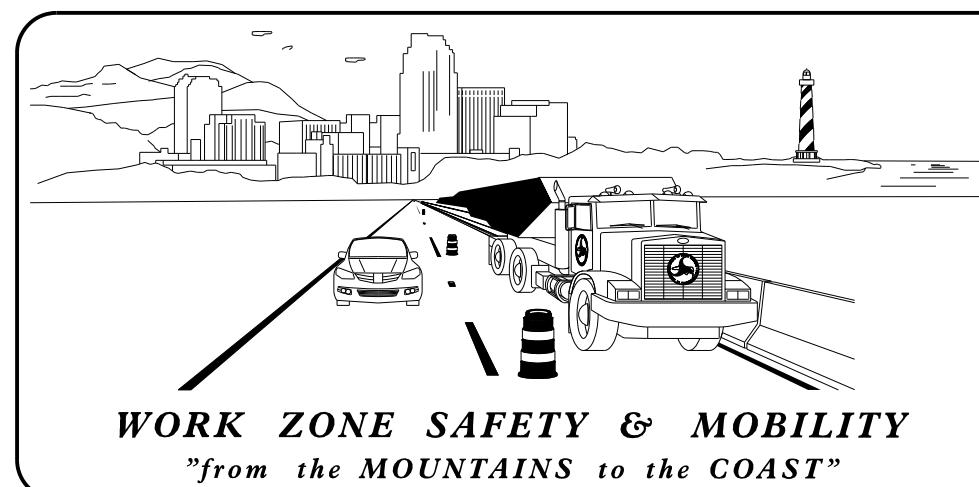
SHEET NO.

TMP-01

BR-0051

TIP PROJECT:

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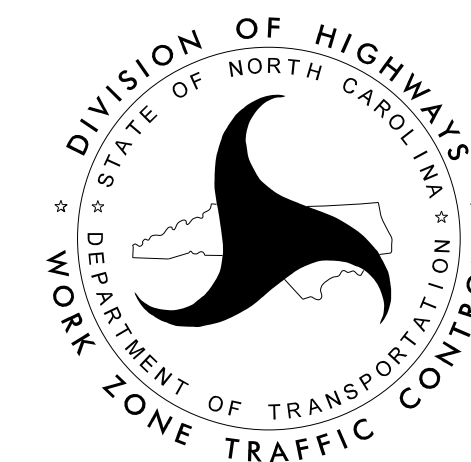
PLANS PREPARED BY:

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PROJECT ENGINEER

S. N. GREEN
PROJECT DESIGN ENGINEER



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APPROVED: _____

Don A. Parker
40482862618410

DATE: 05/11/2022

SEAL



ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - 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 WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.06	WARNING SIGNS FOR BLASTING ZONES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	TRUCK MOUNTED ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMP
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.11	PAVEMENT MARKINGS - RAILROAD CROSSINGS
1205.12	PAVEMENT MARKINGS - BRIDGES
1205.13	PAVEMENT MARKINGS - LANE REDUCTIONS
1205.14	PAVEMENT MARKINGS - ROUNDABOUTS
1205.15	PAVEMENT MARKINGS - SUPERSTREETS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

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

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY
- PORTABLE

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

SYMBOL	PAINT 6"
P21	- PAINT - WHITE SOLID LANE LINE
P30	- PAINT - YELLOW EDGELINE

SYMBOL	PAINT SYMBOL
P72	- PAINT - STRAIGHT ARROW

SYMBOL	MARKER
MM	- MARKER - TEMPORARY RAISED (CRYSTAL & CRYSTAL)

COVERED IN PHASING

SYMBOL	PAINT 4"
P1	- PAINT - WHITE EDGELINE
P13	- PAINT - 3FT - YELLOW DOUBLE CENTER

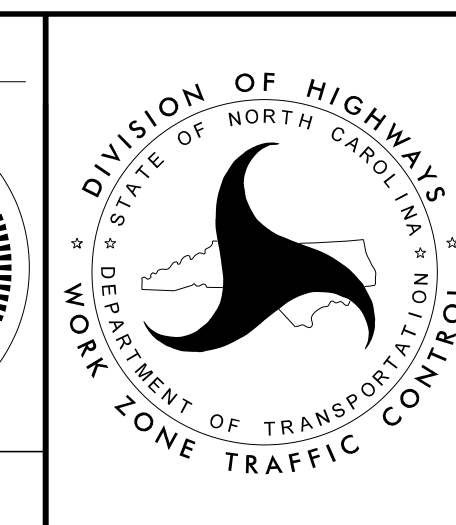
SYMBOL	PAINT 24"
P61	- PAINT - WHITE STOPBAR (24")

SYMBOL	PAINT SYMBOL
P70	- PAINT - LEFT TURN ARROW
P71	- PAINT - RIGHT TURN ARROW
P80	- PAINT - RAMP ARROW
P102	- PAINT - 12" YIELD LINE TRIANGLE

SYMBOL	COLD APPLIED PLASTIC 4" (TYPE IV)
C1	- PAINT - WHITE EDGELINE
C13	- PAINT - 3FT - YELLOW DOUBLE CENTER

APPROVED:
 DATE: 05/11/2022

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ROADWAY STANDARD
DRAWINGS & LEGEND

MANAGEMENT STRATEGIES

THE FOLLOWING LISTED WORK ZONE STRATEGIES ARE RECOMMENDED FOR INCLUSION WITHIN THIS TRANSPORTATION MANAGEMENT PLAN (TMP).

RECOMMENDED STRATEGIES:

TRAFFIC MANAGEMENT STRATEGIES:
 ROLLING ROADBLOCK
 LANE SHIFTS OR CLOSURES
 SHOULDER CLOSURES
 ONE-LANE, TWO WAY OPERATION (FLAGGING)
 NIGHT WORK
 WEEKEND WORK
 WORK HOUR RESTRICTIONS FOR PEAK TRAVEL
 OFF-SITE DETOURS

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 UNDESIRED 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.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
US 421	MONDAY - FRIDAY 6:00 AM - 9:00 AM 4:00 PM - 6:00 PM

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME
HOLIDAY
US 421

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 AM DECEMBER 31st TO 6:00 PM JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 6:00 PM THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 AM THURSDAY AND 6:00 PM MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 AM FRIDAY TO 6:00 PM TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 AM THE DAY BEFORE INDEPENDENCE DAY AND 6:00 PM THE DAY AFTER INDEPENDENCE DAY.

IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00 AM THE THURSDAY BEFORE INDEPENDENCE DAY AND 6:00 PM THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 AM FRIDAY AND 6:00 PM TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 AM TUESDAY TO 6:00 PM MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 AM THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 6:00 PM THE FOLLOWING

C) DO NOT CLOSE ROAD AS FOLLOWS:

ROAD NAME	DAY & TIME RESTRICTIONS	OPERATION
US 421	MONDAY - SUNDAY 6:00 AM - 10:00 PM	GIRDER INSTALLATION, BRIDGE DEMOLITION, PCB INSTALLATION & REMOVAL
US 421 RAMPS	MONDAY - SUNDAY 6:00 AM - 10:00 PM	RAMP CONSTRUCTION

D) DO NOT CONDUCT MULTI-VEHICLE HAULING AS FOLLOWS; INGRESS AND EGRESS FROM RAMPS BE ALLOWED:

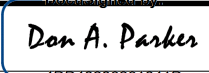
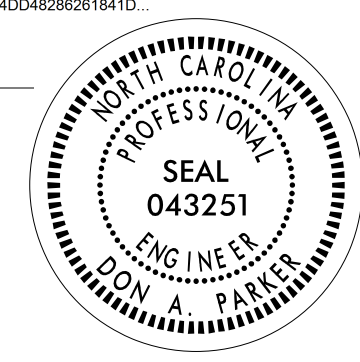

ROAD NAME	DAY AND TIME RESTRICTIONS
US 421	MONDAY - FRIDAY 6:00 AM - 9:00 AM 4:00 PM - 6:00 PM

LANE AND SHOULDER CLOSURE REQUIREMENTS

- E) 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.
- F) 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.
- G) 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.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 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.
- H) 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.
- I) 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.

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GENERAL NOTES CONTINUED

PAVEMENT EDGE DROP OFF REQUIREMENTS

- J) 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.

- K) 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) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

- L) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- M) 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.
- N) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- O) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.
- PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.
- P) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.
- COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

TRAFFIC CONTROL DEVICES

- Q) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.
- R) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
ALL ROADS	PAINT	CRYSTAL/CRYSTAL
BRIDGE DECK	COLD APPLIED PLASTIC TYPE IV (REMOVABLE TAPE)	N/A

- T) FOR US 421, PLACE TWO APPLICATIONS OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A THIRD APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

FOR OTHER ROADS, 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.

- U) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- V) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

TRAFFIC BARRIER

- W) 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.

- X) 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

MISCELLANEOUS

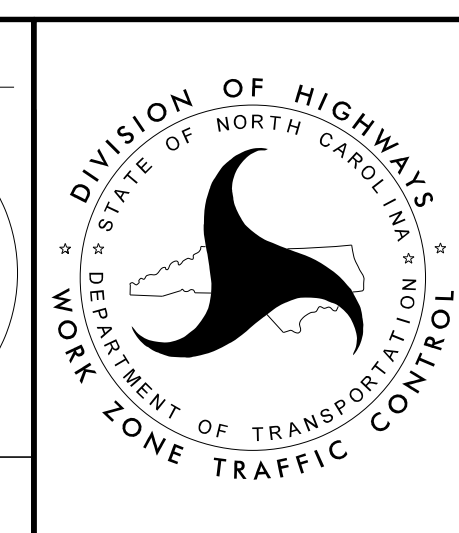
- Y) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.

APPROVED: Don A. Parker
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DATE: 05/11/2022

SEAL
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ENGINEER
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**TRANSPORTATION
OPERATIONS
PLAN**

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 REMOVAL OF EXISTING BENT FROM STATION 12+59 ±-Y-, 51' RT, TO STATION 13+09 ± -Y-, 51' 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 12+59 ±-Y-, 51' RT, TO STATION 13+09 ±-Y-, 51' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:
 UNIT WEIGHT (γ) = 120 LB/CF
 FRICTION ANGLE (ϕ) = 30 DEGREES
 COHESION (C) = 0 LB/SF
 GROUNDWATER ELEVATION = 755 FT

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 12+59 ±-Y-, 51' RT, TO STATION 13+09 ±-Y-, 51' RT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 12+59 ±-Y-, 51' RT, TO STATION 13+09 ±-Y-, 51' RT. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

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 BRIDGE INTERIOR BENT CONSTRUCTION FROM STATION 12+45 ±-Y-, 8' RT, TO STATION 12+95 ± -Y-, 8' 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 12+45 ±-Y-, 8' RT, TO STATION 12+95 ±-Y-, 8' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:
 UNIT WEIGHT (γ) = 120 LB/CF
 FRICTION ANGLE (ϕ) = 30 DEGREES
 COHESION (C) = 0 LB/SF
 GROUNDWATER ELEVATION = 760 FT

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 12+45 ±-Y-, 8' RT, TO STATION 12+95 ±-Y-, 8' RT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 12+45 ±-Y-, 8' RT, TO STATION 12+95 ±-Y-, 8' RT. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

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 REMOVAL OF EXISTING BENT FROM STATION 12+82 ±-Y-, 51' LT, TO STATION 12+32 ±-Y-, 51' LT.

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 12+82 ±-Y-, 51' LT, TO STATION 12+32 ±-Y-, 51' LT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:
 UNIT WEIGHT (γ) = 120 LB/CF
 FRICTION ANGLE (ϕ) = 30 DEGREES
 COHESION (C) = 0 LB/SF
 GROUNDWATER ELEVATION = 755 FT

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 12+82 ±-Y-, 51' LT, TO STATION 12+32 ±-Y-, 51' LT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 12+82 ±-Y-, 51' LT, TO STATION 12+32 ±-Y-, 51' LT. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

SHORING LOCATION NO. 4

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

TEMPORARY SHORING IS REQUIRED FOR THE BRIDGE INTERIOR BENT CONSTRUCTION FROM STATION 12+95 ±-Y-, 8' LT, TO STATION 12+45 ±-Y-, 8' LT.

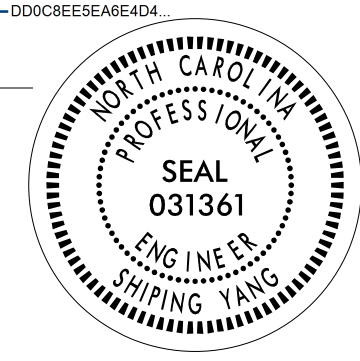

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

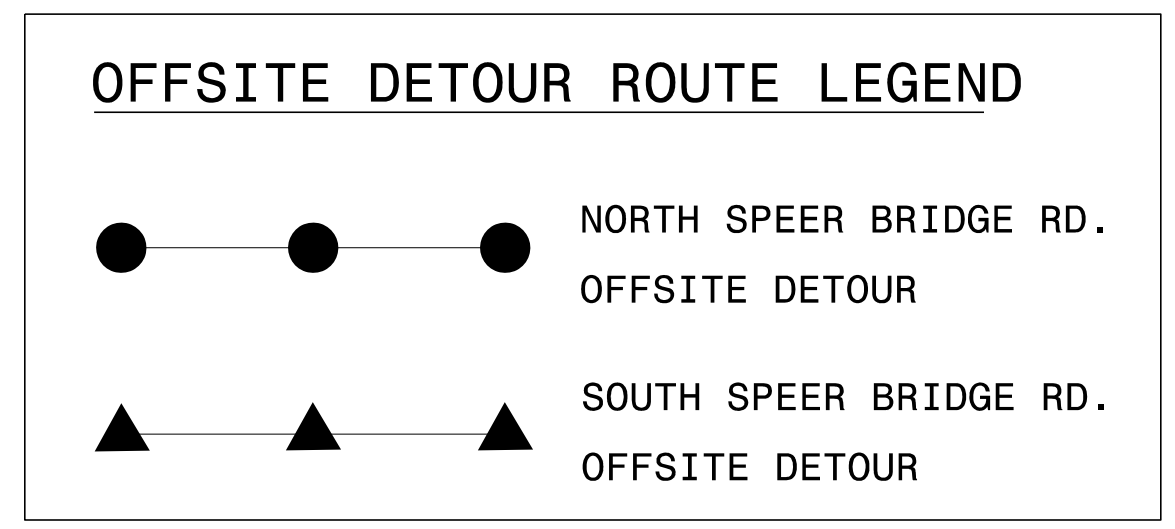
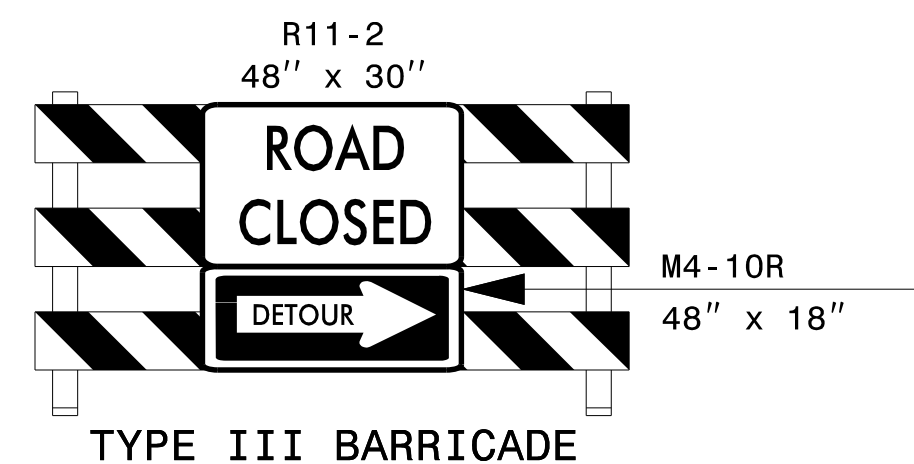
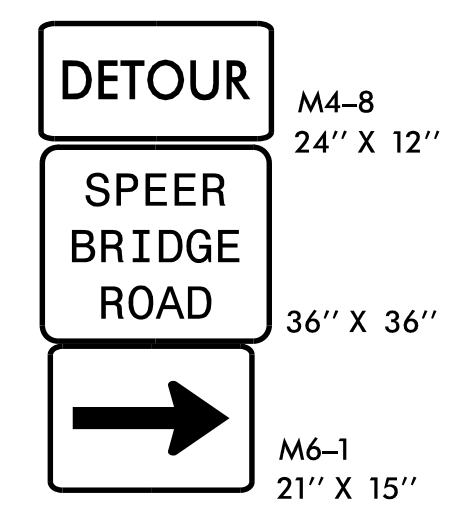
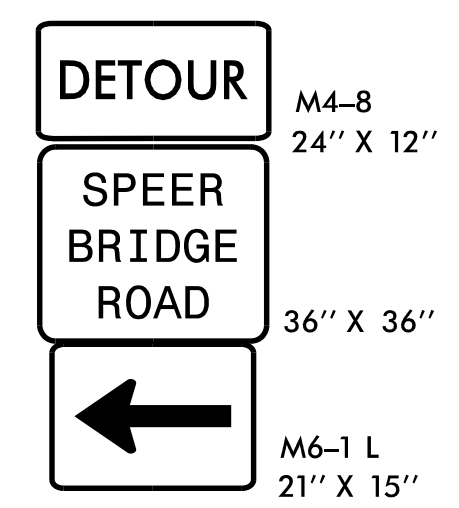
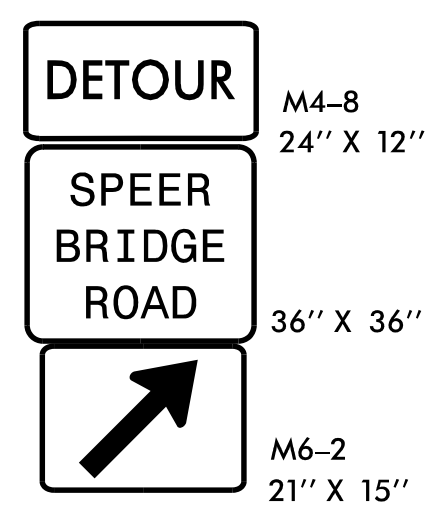
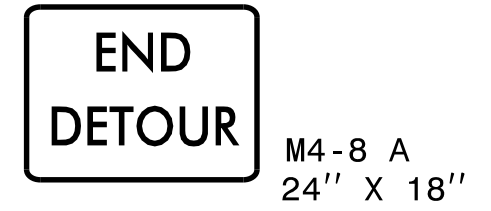
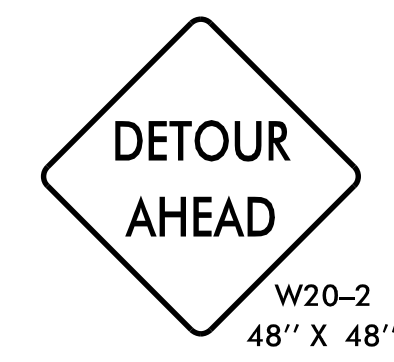
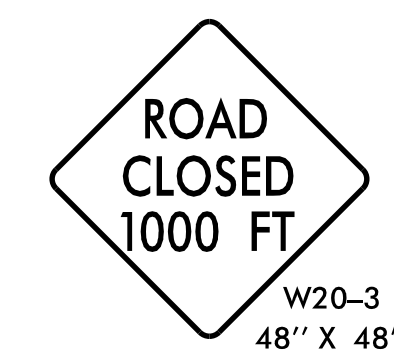
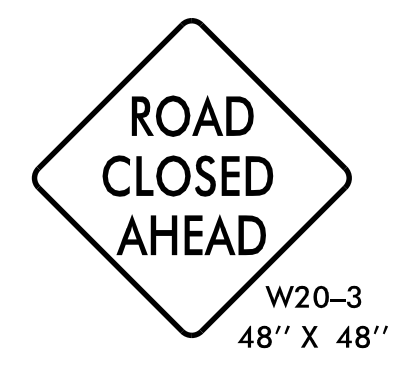
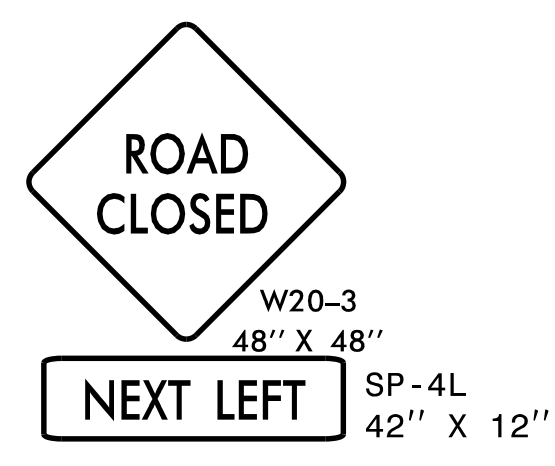
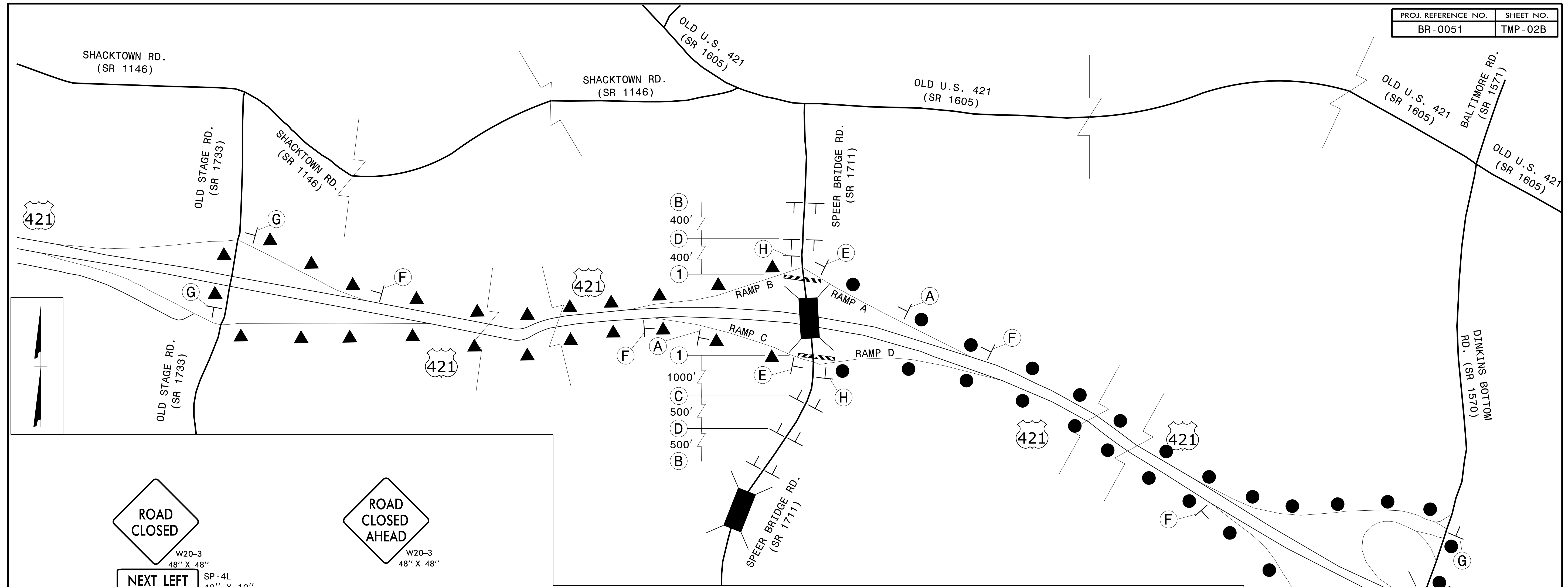
DESIGN TEMPORARY SHORING FROM STATION 12+95 ±-Y-, 8' LT, TO STATION 12+45 ±-Y-, 8' LT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:
 UNIT WEIGHT (γ) = 120 LB/CF
 FRICTION ANGLE (ϕ) = 30 DEGREES
 COHESION (C) = 0 LB/SF
 GROUNDWATER ELEVATION = 760 FT

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 12+95 ±-Y-, 8' LT, TO STATION 12+45 ±-Y-, 8' LT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 12+95 ±-Y-, 8' LT, TO STATION 12+45 ±-Y-, 8' LT. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

5/11/2022
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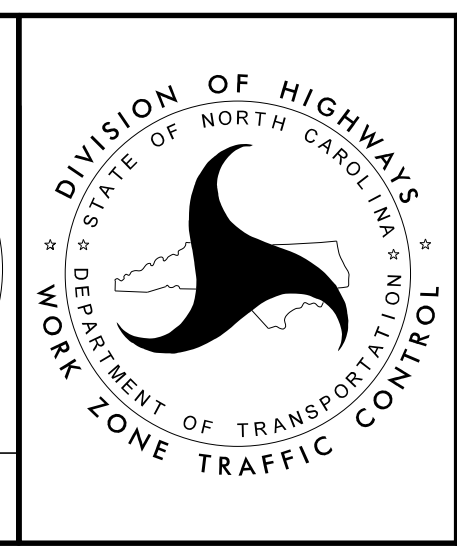
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<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>		



APPROVED: _____
 DATE: 05/11/2022

Don A. Parker
 PROFESSIONAL ENGINEER
 SEAL 043251
 DON A. PARKER

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 UNLESS ALL SIGNATURES COMPLETED**

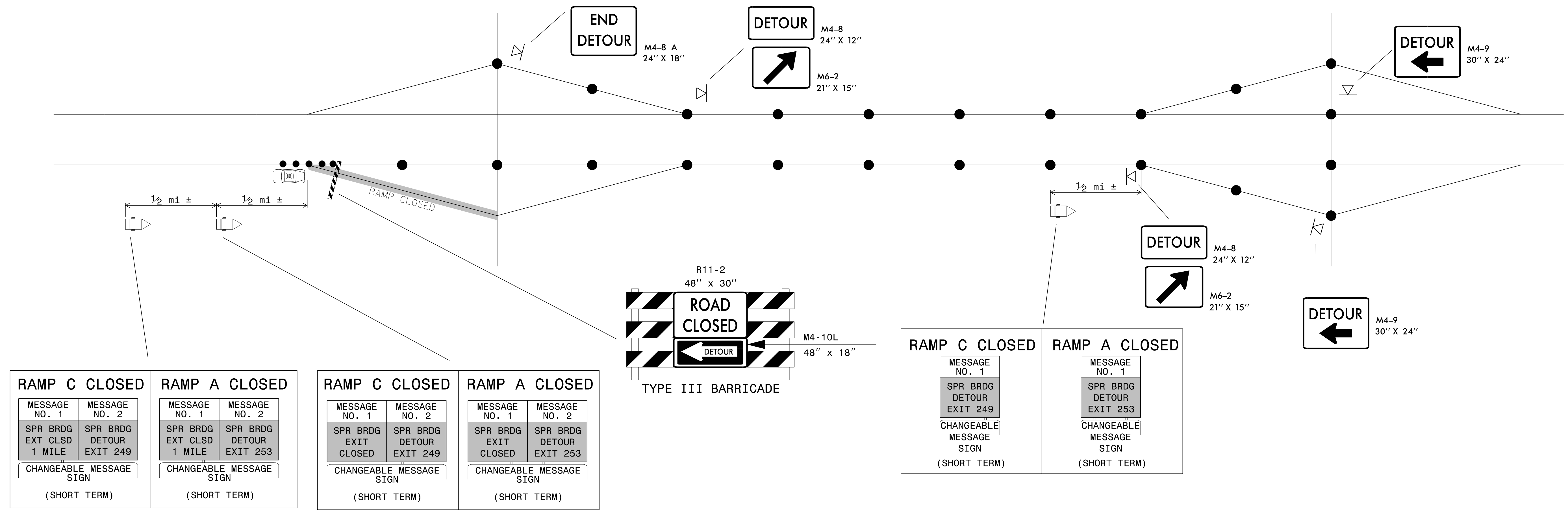


**SPEER BRIDGE RD.
 OFFSITE DETOUR
 DETAILS**

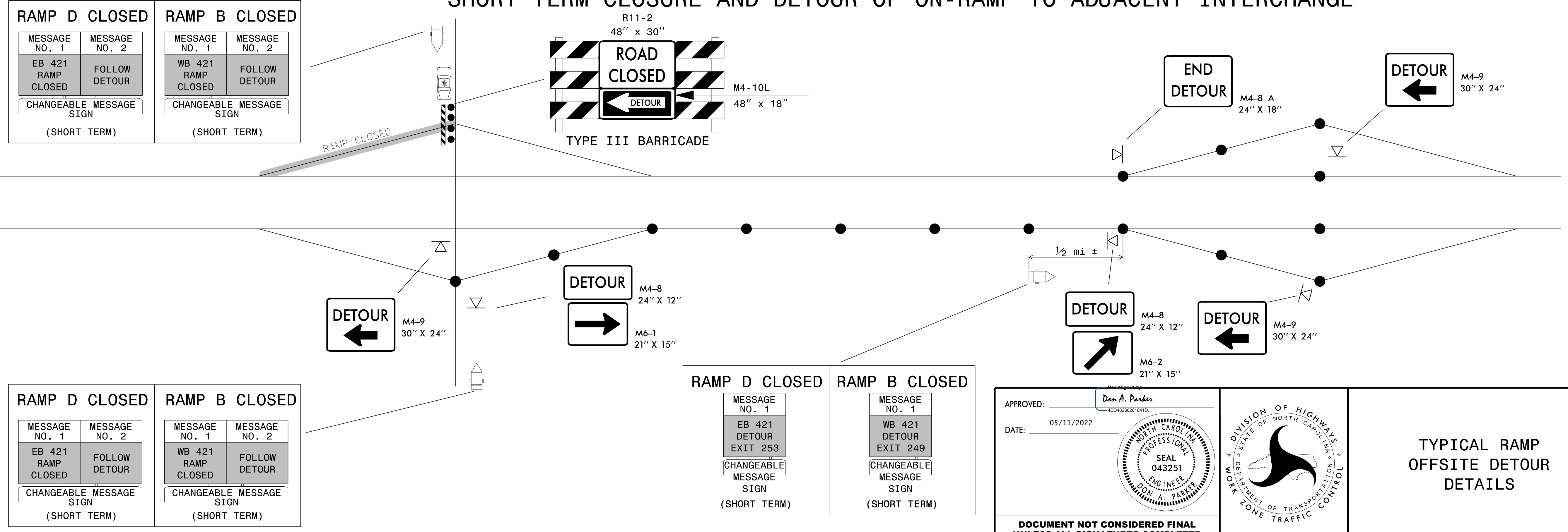
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NOTE: BARRICADE SETUP SHOWN ON TMP-04

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



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



APPROVED: <i>Don A. Parker</i> DATE: 05/11/2022			TYPICAL RAMP OFFSITE DETOUR DETAILS
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TEMPORARY TRAFFIC CONTROL PHASING

PHASE I

STEP 1: - USING RSD 1101.01 AND TMP-04, INSTALL WORK ZONE ADVANCE WARNING SIGNS.

STEP 2: - INSTALL AND COVER DETOUR SIGNS FOR -L- (SPEER BRIDGE RD). (SEE SHEETS TMP-02B AND TMP-02C).

STEP 3: - USING RSD 1101.02 (SHEET 4 OF 14) AND RSD 1101.04, PERFORM THE FOLLOWING:

-- FILL MILLED RUMBLE STRIPS ON BOTH SHOULDERS OF -Y- (US 421) IN BOTH DIRECTIONS.

-- PLACE TEMPORARY PAVEMENT MARKINGS & MARKERS ON -Y- (US 421) (IN BOTH DIRECTIONS), FOR REDUCED LANE WIDTHS (SHIFTED TOWARDS OUTSIDE SHOULDERS). (SEE SHEET TMP-04).

STEP 4: - USING RSD 1101.03 (SHEET 7 OF 14) AND RSD 1101.04, INSTALL TEMPORARY CONCRETE BARRIER ON BOTH SHOULDERS OF US 421 (IN BOTH DIRECTIONS), THEN REMOVE EXISTING GUARDRAIL ALONG INSIDE LANES OF -Y- (US 421) (IN BOTH DIRECTIONS). (SEE SHEET TMP-04).

STEP 5: - USING FLAGGERS, REMOVE CONCRETE ISLANDS ON -L- (SPEER BRIDGE RD) AT RAMPS -RPA- AND -RPC- AND PATCH PAVEMENT. PLACE TEMPORARY PAVEMENT MARKINGS AND DRUMS FOR TEMPORARY TRAFFIC PATTERN. (SEE SHEET TMP-04).

NOTE: MAINTAIN MINIMUM LANE WIDTHS OF 12' WITH TEMPORARY TRAFFIC PATTERN ON -L- (SPEER BRIDGE RD) AT RAMPS. (SEE SHEET TMP-04).

- UNCOVER SIGNS PLACED IN STEP 2, PLACE BARRICADES TO CLOSE THE EXISTING BRIDGE, AND DETOUR -L- (SPEER BRIDGE RD) TRAFFIC OFF-SITE, USING RSD 1101.03 (SHEET 2 OF 9), AND SHEET TMP-02B.

STEP 6: - USING RSD 1101.03 (SHEET 7 OF 9) DURING ALLOWABLE CLOSURE HOURS, REMOVE BRIDGE DECK AND GIRDERS OVER -Y- (US 421).

EXISTING BRIDGE DECK AND GIRDER REMOVAL:

-- US 421 WB: UTILIZE RAMPS -RPA- AND -RPB- TO RETURN TRAFFIC TO US 421 WB. OPEN WESTBOUND LANES OF US 421 TO TRAFFIC AT THE END OF EACH NIGHT (SEE SHEET TMP-04).

-- US 421 EB: UTILIZE RAMPS -RPC- AND -RPD- TO RETURN TRAFFIC TO US 421 EB. OPEN EASTBOUND LANES OF US 421 TO TRAFFIC AT THE END OF EACH NIGHT (SEE SHEET TMP-04).

STEP 7: - WORKING AWAY FROM TRAFFIC, AND BEHIND TEMPORARY CONCRETE BARRIER, INSTALL SHORING, REMOVE EXISTING SUBSTRUCTURE AND CONSTRUCT PROPOSED SUBSTRUCTURE AS SHOWN ON SHEET TMP-04 AND STRUCTURAL PLANS.

STEP 8: - USING RSD 1101.02 (SHEET 4 OF 14), RSD 1101.04, AND SHEET TMP-04, PERFORM THE FOLLOWING:

-- REMOVE TEMPORARY SHORING PLACED IN STEP 7.

-- CONSTRUCT SLOPE PROTECTION.

-- INSTALL GUARDRAIL IN EXISTING LOCATION ON US 421.

STEP 9: - USING RSD 1101.03 (SHEET 7 OF 14) AND RSD 1101.04, REMOVE TEMPORARY CONCRETE BARRIER ON -Y- (US 421) (IN BOTH DIRECTIONS), REMOVE TEMPORARY PAVEMENT MARKINGS AND INSTALL PERMANENT PAVEMENT MARKINGS AND RUMBLE STRIPS PER THE ORIGINAL TRAFFIC PATTERN AND RETURN TRAFFIC TO ITS ORIGINAL PATTERN.

STEP 10: - AWAY FROM TRAFFIC AND USING RSD 1101.03 (SHEET 7 OF 9), AS NECESSARY, DURING ALLOWABLE CLOSURE HOURS, COMPLETE BRIDGE DECK, GIRDERS AND APPROACHES ON -L- (SPEER BRIDGE RD) FROM -L- STA. 16+68 +/- TO STA. 20+70 +/- OVER -Y- (US 421), UP TO, BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AND PLACE TEMPORARY PAVEMENT MARKINGS IN THE FINAL PATTERN.

PROPOSED BRIDGE DECK AND GIRDER INSTALLATION:

-- US 421 WB: UTILIZE RAMPS -RPA- AND -RPB- TO RETURN TRAFFIC TO US 421 WB. OPEN WESTBOUND LANES OF US 421 TO TRAFFIC AT THE END OF EACH NIGHT (SEE SHEET TMP-04).

-- US 421 EB: UTILIZE RAMPS -RPC- AND -RPD- TO RETURN TRAFFIC TO US 421 EB. OPEN EASTBOUND LANES OF US 421 TO TRAFFIC AT THE END OF EACH NIGHT (SEE SHEET TMP-04).

NOTE: WEDGE AS NEEDED TO MAINTAIN SMOOTH TRANSITION FROM PROPOSED TO EXISTING ON -L- (SPEER BRIDGE RD).

NOTE: PLACE TEMPORARY PAVEMENT MARKINGS AND/OR UTILIZE CONES TO DELINEATE PROPOSED CONCRETE ISLANDS, FOR FINAL TRAFFIC PATTERN, AS DIRECTED BY THE ENGINEER.

STEP 11: - REMOVE ALL BARRICADES AND DETOUR SIGNS AND RE-OPEN -L- (SPEER BRIDGE RD) TO TRAFFIC.

PHASE II

STEP 1 CONSTRUCTION OF RAMPS -RPA- THRU -RPD- MAY BE CONSTRUCTED IN ANY ORDER, BUT SHALL NOT BE CONSTRUCTED CONCURRENTLY.

STEP 1: - USING NIGHTLY RAMP CLOSURES AND SHEET TMP-02C, WEDGE RAMPS -RPA-, -RPB-, -RPC- AND -RPD-, UP TO, BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AND PLACE TEMPORARY PAVEMENT MARKINGS. (SEE RSD 1101.03 (SHEET 7 OF 9), CONSTRUCTION PLANS AND FINAL PAVEMENT MARKING PLAN).

NOTE: WEDGE AS NEEDED TO MAINTAIN SMOOTH TRANSITION TO -L- (SPEER BRIDGE RD).

NOTE: IN THE EVENT A RAMP CANNOT BE COMPLETED BY THE END OF THE WORK PERIOD, PLACE TEMPORARY PAVEMENT MARKINGS ON INTERIM SURFACE COURSE, IN THE FINAL PATTERN, BEFORE REOPENING TO TRAFFIC.

NOTE: PLACE TEMPORARY PAVEMENT MARKINGS AND/OR UTILIZE CONES TO DELINEATE PROPOSED CONCRETE ISLANDS, AS DIRECTED BY THE ENGINEER.

STEP 2: - USING FLAGGERS, PERFORM THE FOLLOWING:

-- COMPLETE WEDGING OF -L- (SPEER BRIDGE RD)

-- INSTALL CONCRETE ISLANDS AT -RPA- AND -RPC-

-- PLACE FINAL LAYER OF SURFACE COURSE ON -L- (SPEER BRIDGE RD) AND RAMPS -RPA-, -RPB-, -RPC- & -RPD-

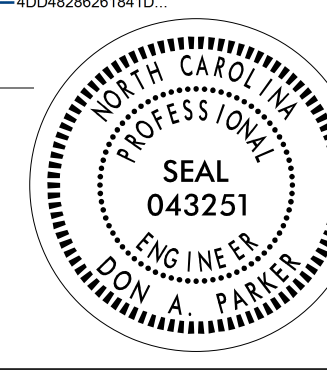
-- PLACE FINAL PAVEMENT MARKINGS ACCORDING TO THE FINAL PAVEMENT MARKING PLAN.

STEP 3: - REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES.

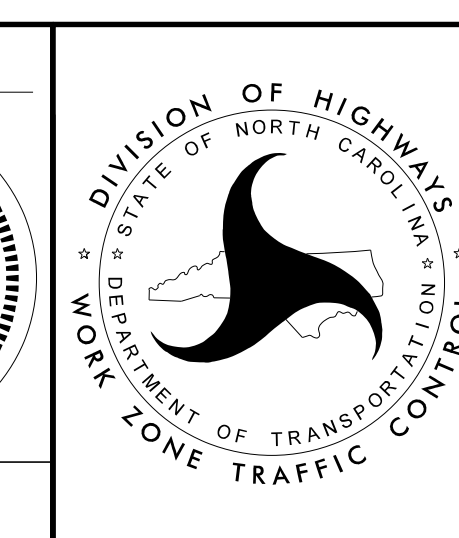
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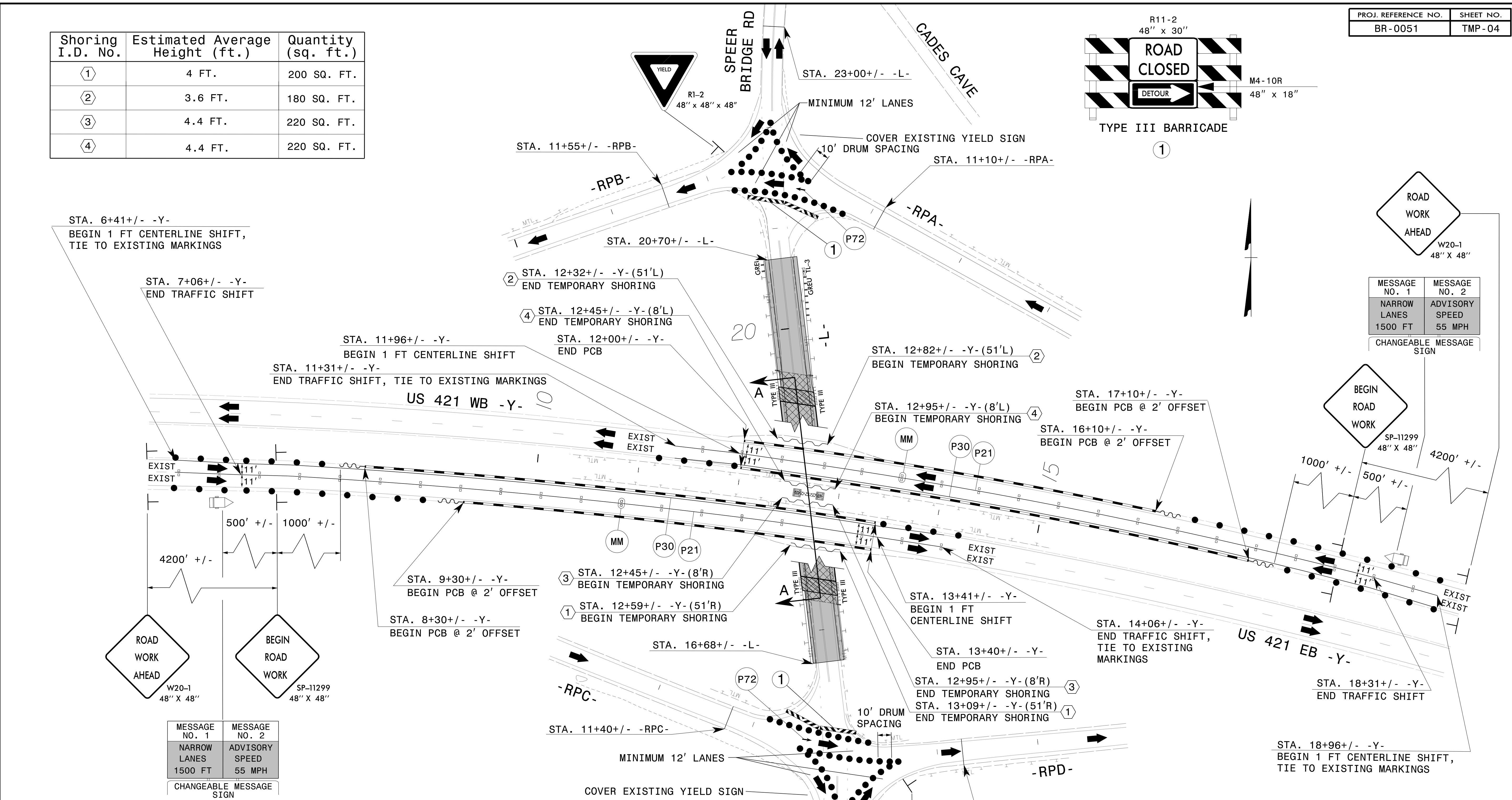
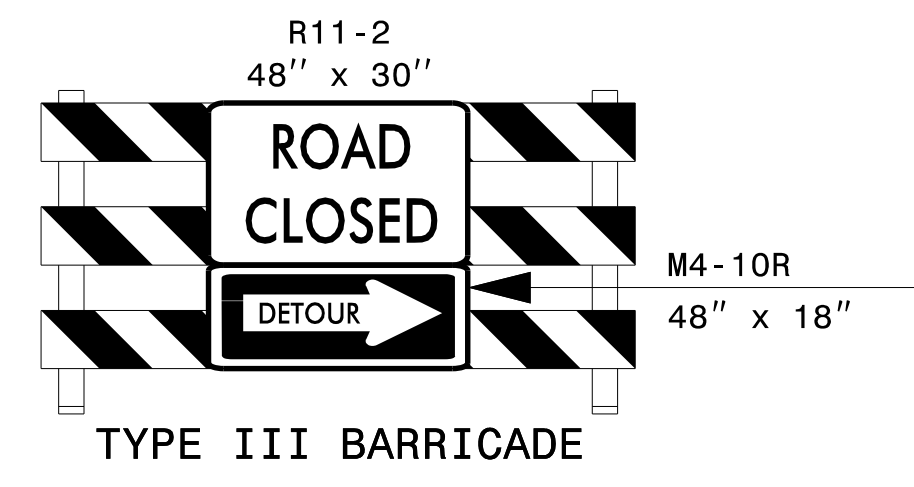


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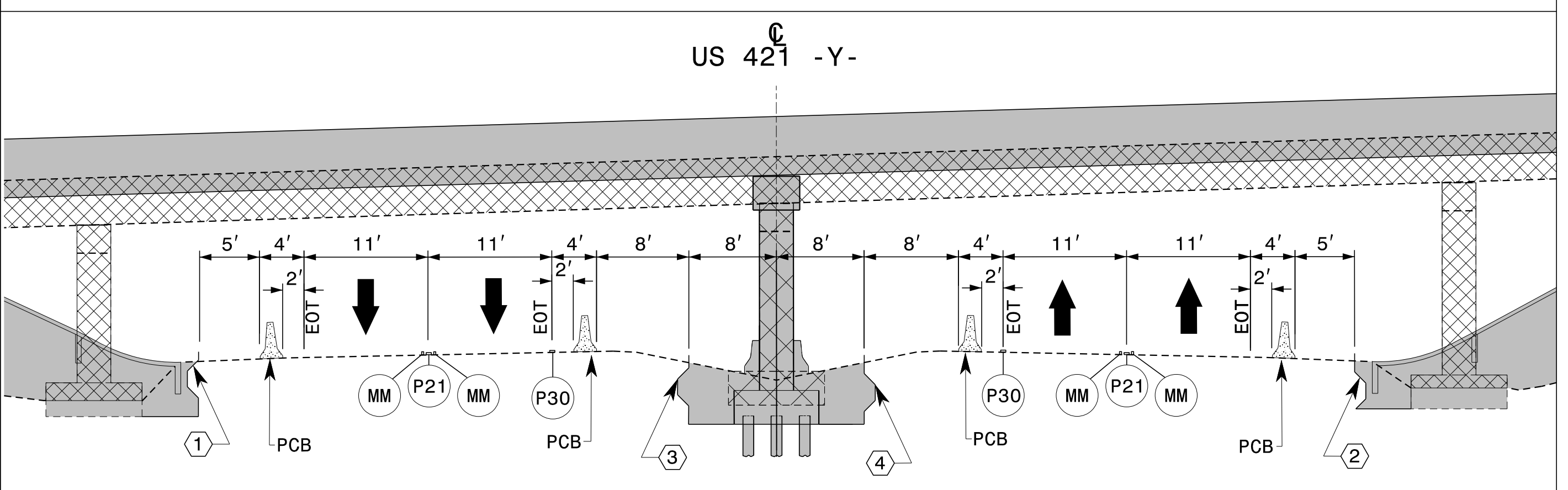
TEMPORARY TRAFFIC CONTROL PHASING

Shoring I.D. No.	Estimated Average Height (ft.)	Quantity (sq. ft.)
①	4 FT.	200 SQ. FT.
②	3.6 FT.	180 SQ. FT.
③	4.4 FT.	220 SQ. FT.
④	4.4 FT.	220 SQ. FT.



MESSAGE NO. 1	MESSAGE NO. 2
NARROW LANES 1500 FT	ADVISORY SPEED 55 MPH
CHANGEABLE MESSAGE SIGN	

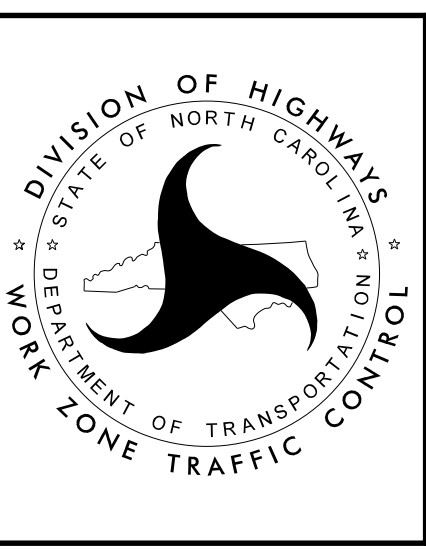
SECTION A-A



APPROVED: *Don A. Parkes*
 DATE: 05/11/2022

SEAL 043251
 ENGINEER
 DON A. PARKES

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PHASE I DETAILS

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 WORK ZONE TRAFFIC CONTROL

5/11/2022
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