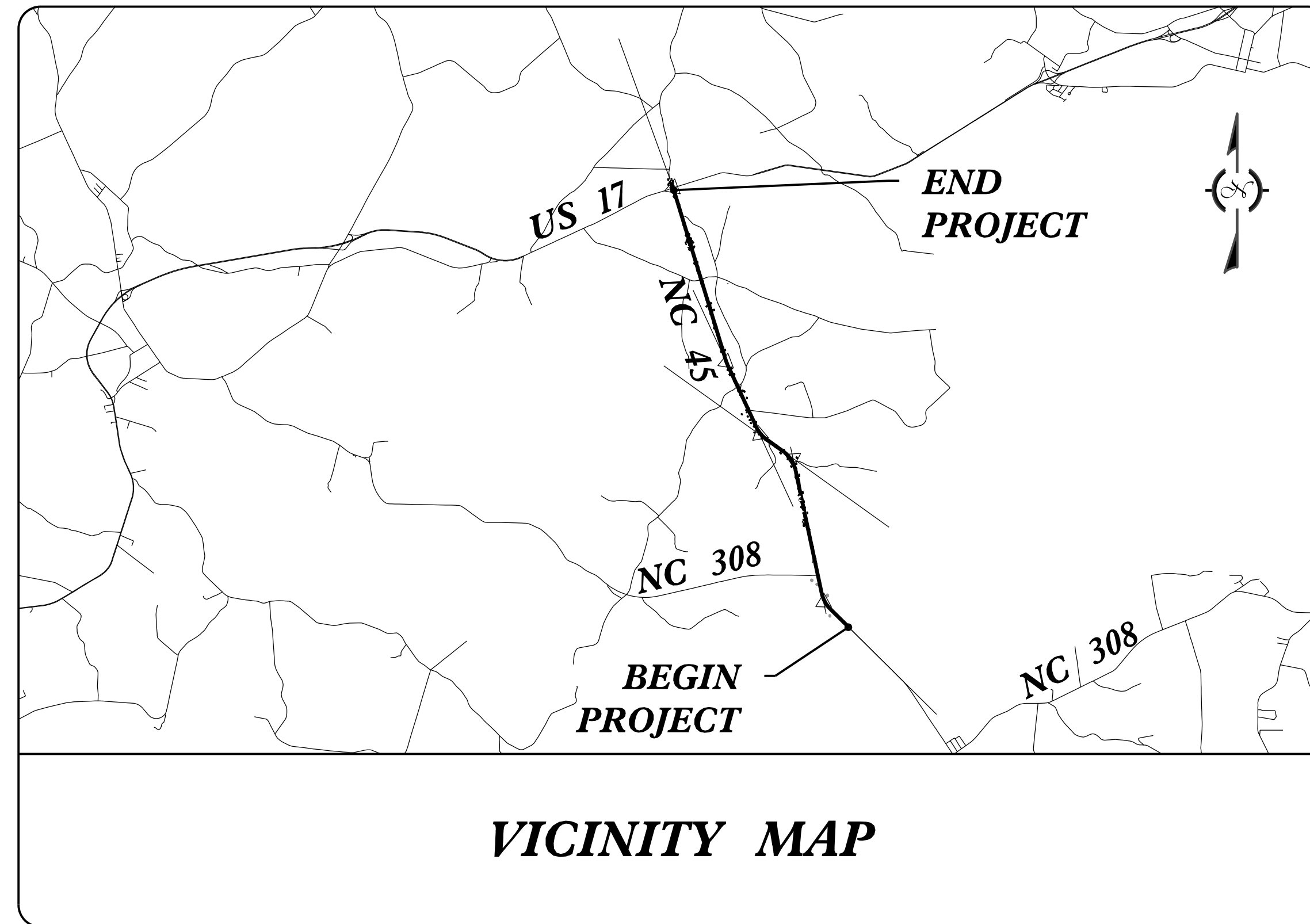
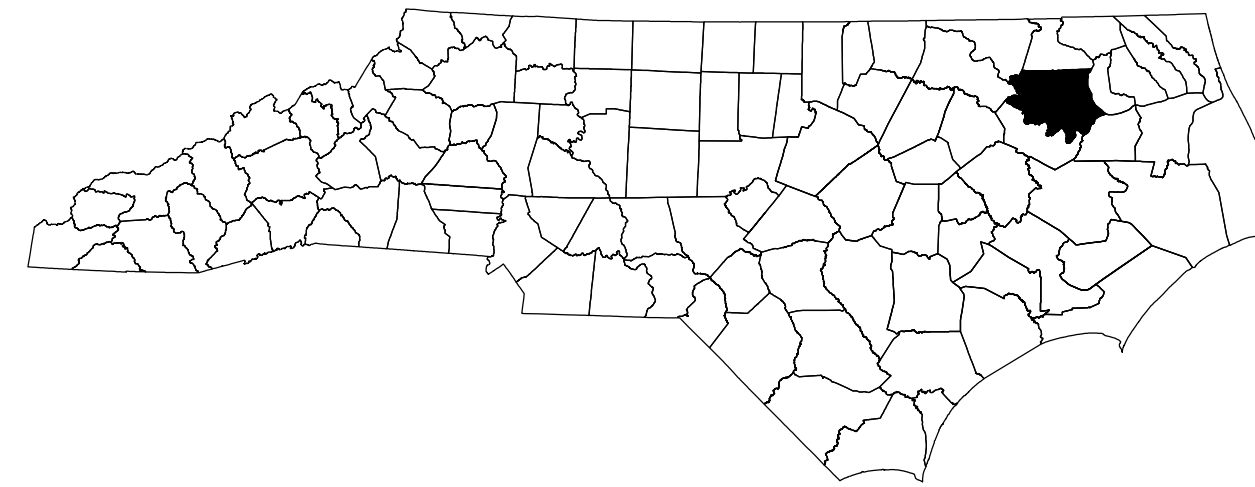


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**BERTIE COUNTY**



**VICINITY MAP**

**INDEX OF SHEETS**

<u>SHEET NO.</u>	<u>TITLE</u>
TMP-1	TITLE SHEET, AND INDEX OF SHEETS
TMP-1A THRU TMP-1C	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, TEMPORARY PAVEMENT MARKINGS, MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES
TMP-1D	PHASING NOTES
TMP-1E	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TMP-1F THRU TMP-1G	TEMPORARY SHORING NOTES
TMP-2A THRU TMP-2C	PHASE I DETAILS
TMP-3A THRU TMP-3C	PHASE II DETAILS
TMP-4A THRU TMP-4C	PHASE III DETAILS
TMP-5A THRU TMP-5C	PHASE IV DETAILS

SHEET NO.  
TMP 1

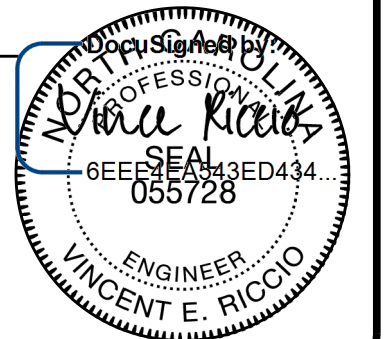
**R-5809A**

**TIP PROJECT:**

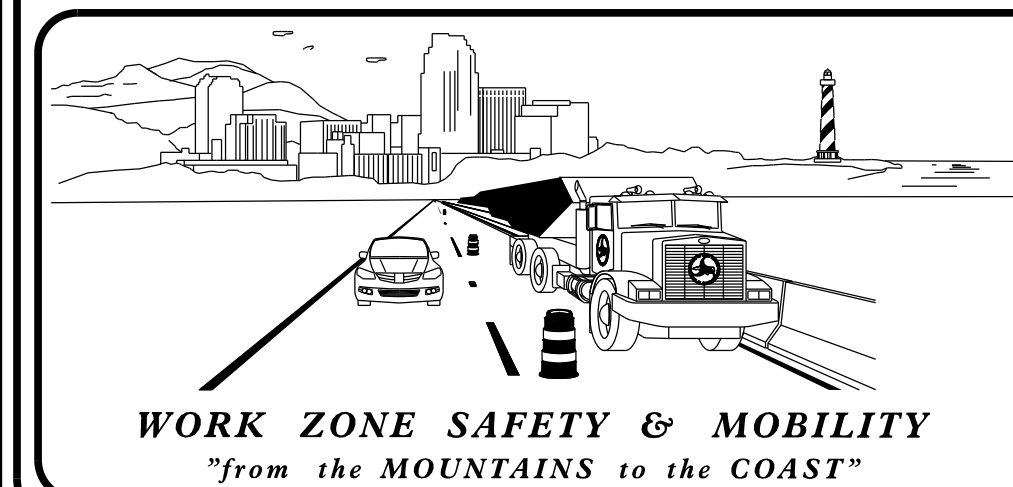
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UNLESS ALL SIGNATURES COMPLETED**

APPROVED: \_\_\_\_\_  
DATE: 10/11/2024

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PLANS PREPARED BY:  
Kevin Puninske  
Vince Riccio, P.E.

NCDOT CONTACTS:  
John Abel, Jr.  
PROJECT ENGINEER  
PROJECT DESIGN ENGINEER



# ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

<u>STD. NO.</u>	<u>TITLE</u>
1101.01	WORK ZONE ADVANCED WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD 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	DRUMS
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1170.01	PORTABLE CONCRETE BARRIER
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
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.
- WORK AREA
- TEMPORARY PAVEMENT

### TEMPORARY PAVEMENT MARKING

- PAVEMENT MARKING LINES:
- P1 - PAINT (4" WHITE, 2X) EDGELINE
  - P13 - PAINT (4" YELLOW, 2X) DOUBLE CENTER LINE

- TEMPORARY RAISED PAVEMENT MARKINGS:
- MH - YELLOW & YELLOW

### TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- DRUM
- TEMPORARY CRASH CUSHION
- PORTABLE CONCRETE BARRIER

### TEMPORARY SIGNING

- STATIONARY OR PORTABLE SIGN

### PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

### PAVEMENT MARKERS

- YELLOW/YELLOW

**Kimley»Horn**

APPROVED: _____ DATE: _____		<p><b>ROADWAY STANDARD DRAWINGS &amp; LEGEND</b></p>

\$DATE\$ \$FILE\$

## MANAGEMENT STRATEGIES

PROPOSED IMPROVEMENTS ALONG NC-45 WILL BE CONSTRUCTED WHILE MAINTAINING TRAFFIC AND USING TEMPORARY TRAFFIC MANAGEMENT STRATEGIES INCLUDING TEMPORARY ROAD CLOSURE WITH TEMPORARY ON-SITE DETOUR, SHOULDER CLOSURES AND ONE-LANE, TWO WAY OPERATION (FLAGGING).

## 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. MODIFICATIONS 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:

<u>ROAD NAME</u>	<u>DAY AND TIME RESTRICTIONS</u>
NC-45	<p>MONDAY-FRIDAY, FROM THIRTY (30) MINUTES BEFORE SUNSET TO THIRTY (30) MINUTES AFTER SUNRISE THE FOLLOWING DAY AND</p> <p>SATURDAY, FROM THIRTY (30) MINUTES BEFORE SUNSET TO THIRTY (30) MINUTES AFTER SUNRISE THE FOLLOWING MONDAY</p> <p>DAY AND TIME LANE CLOSURE RESTRICTIONS APPLY TO ALL TIMES EXCEPT AS FOLLOWS:</p> <p>DAY AND TIME LANE CLOSURE RESTRICTIONS DO NOT APPLY TO PHASES 5 AND 6 DURING CONSTRUCTION OF PROPOSED PIPES ACROSS NC-45</p>

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

<u>ROAD NAME</u>
NC-45

### HOLIDAY

- FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 7:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.
- FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
- FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
- FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE DAY AFTER INDEPENDENCE DAY.  
  
IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
- FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.
- FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.
- FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

C) DO NOT CLOSE ROADS AS FOLLOWS:

<u>ROAD NAME</u>	<u>DAY AND TIME RESTRICTIONS</u>
NC-45	ANYTIME

D) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

## 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 UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

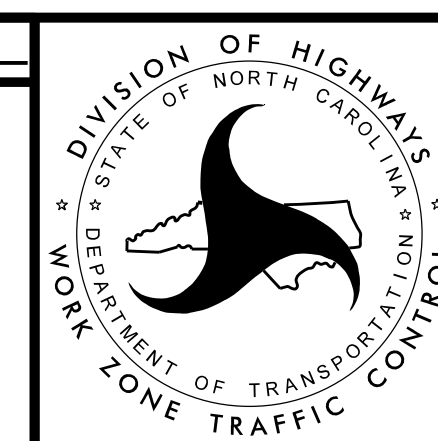
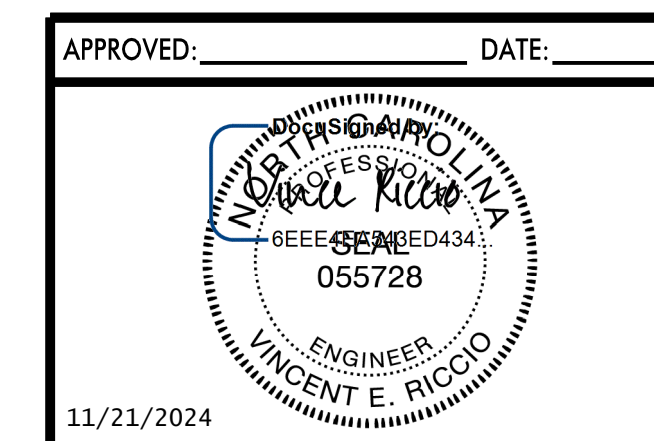
## PAVEMENT EDGE DROP OFF REQUIREMENTS

- 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) 500 FT 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.

# Kimley»Horn



## TRANSPORTATION OPERATIONS PLAN

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## GENERAL NOTES (CONT.)

### 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.

### TRAFFIC BARRIER

- O) 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.

- P) 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	0 FT

### 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 RADIUS, 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.
- S) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

## LOCAL NOTES

### PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
ALL ROADS	PAINT	TEMPORARY RAISED

- U) 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.


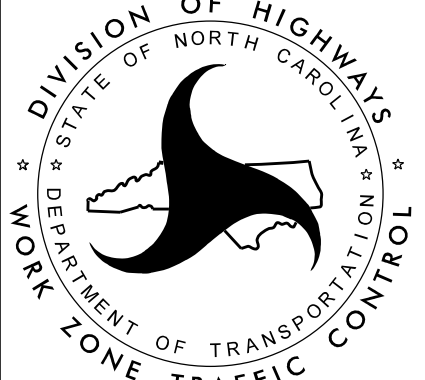
- V) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

- W) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS BY THE END OF EACH DAY'S OPERATION.

### MISCELLANEOUS

- MM) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S 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.

**Kimley»Horn**

APPROVED: _____ DATE: _____  12/5/2024		<h2 style="margin: 0;">TRANSPORTATION OPERATIONS PLAN</h2>
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# PHASING

## GENERAL

PHASES 1-4 ARE INTENDED TO CONSTRUCT THE BOX CULVERT UNDER NC 45 UTILIZING RSD 1101.03 FOR TEMPORARY ROAD CLOSURE WITH ONSITE DETOUR. PHASES 5-7 ARE INTENDED FOR THE REMAINDER OF THE PROJECT. SEE TYPICAL SECTIONS FOR PHASES 5 AND 6 BELOW.

## PHASE 1

WHILE MAINTAINING TRAFFIC IN THE EXISTING PATTERN AWAY FROM TRAFFIC AND USING RSD 1101.04 FOR SHOULDER CLOSURES AS NECESSARY, PERFORM THE FOLLOWING:

- STEP 1: INSTALL WORK ZONE ADVANCED WARNING SIGNS ON NC-45 IN ACCORDANCE WITH RSD 1101.01.
- STEP 2: INSTALL TEMPORARY SHORING NO. 1 AND NO. 8 IN ACCORDANCE WITH TMP 2A-2C TO SUPPORT TEMPORARY ROAD.
- STEP 3: USING FLAGGERS, REMOVE EXISTING GUARDRAILS ALONG NC-45 NORTHBOUND AND INSTALL TEMPORARY ANCHORED CONCRETE BARRIER WITH CRASH CUSHIONS 14 FEET RIGHT OF -L- ALONG EXISTING SHOULDER PER THE STATIONS SHOWN ON PHASE 1 DRAWINGS.
- STEP 4: INSTALL TEMPORARY SHORING NO. 2, NO. 3, NO. 4, NO.5, NO. 6 AND NO. 7 IN ACCORDANCE WITH TMP 2B TO CLOSE OFF EXISTING PIPES TO BE REMOVED AND DEWATERING.
- STEP 5: CONSTRUCT PORTION OF FIRST BOX CULVERT CELL AND TEMPORARY ROAD.
- STEP 6: AFTER COMPLETION OF INITIAL BOX CULVERT CELL, REMOVE TEMPORARY SHORING NO. 5 AND PORTION OF NO. 4, INSTALL TEMPORARY SHORING NO. 9 (SHEET TMP 3B) AND COMPLETE TEMPORARY ROAD.
- STEP 7: ONCE TEMPORARY ONSITE DETOUR IS COMPLETE, RESET TEMPORARY ANCHORED CONCRETE BARRIER AND CRASH CUSHIONS 13 FEET LEFT OF -LDET- ALONG SHOULDER PER THE STATIONS SHOWN ON PHASE 2 DRAWINGS.
- STEP 8: INSTALL TEMPORARY ANCHORED CONCRETE BARRIER AND CRASH CUSHIONS 13 FEET RIGHT OF -LDET- FROM STATION 0+00.00 TO STATION 24+40.00 TO BE USED IN PHASES 1, 2 AND 3.
- STEP 9: INSTALL TEMPORARY PAVEMENT MARKINGS AND REMOVE CONFLICTING MARKINGS.
- STEP 10: SHIFT TRAFFIC ONTO TEMPORARY ROADWAY.

## PHASE 2

WITH TRAFFIC SHIFTED ONTO TEMPORARY DETOUR ROADWAY BEHIND TEMPORARY PCB AND AWAY FROM TRAFFIC, PERFORM THE FOLLOWING:

- STEP 1: REMOVE EXISTING GUARDRAIL ALONG NC-45 SOUTHBOUND.
- STEP 2: INSTALL TEMPORARY SHORING NO. 6A AND NO. 10 IN ACCORDANCE WITH TMP 3B.
- STEP 3: INSTALL REMAINDER OF BOX CULVERT FROM PHASE 1 UNDER EXISTING ROAD IN ACCORDANCE WITH TMP 3B.
- STEP 4: MAINTAIN TRAFFIC ON TEMPORARY ROADWAY

## PHASE 3

WITH TRAFFIC SHIFTED ONTO TEMPORARY DETOUR ROADWAY BEHIND TEMPORARY PCB AND AWAY FROM TRAFFIC, PERFORM THE FOLLOWING:

- STEP 1: REMOVE TEMPORARY SHORING NO. 2, NO. 3, NO. 4, NO. 6, NO. 6A, NO. 7, AND NO. 8 AND INSTALL TEMPORARY SHORING NO. 11, NO.12, NO. 13, NO. 14 AND NO. 10A IN ACCORDANCE WITH TMP 4B.
- STEP 2: INSTALL PORTION OF BOX CULVERT CELLS 2 AND 3 UNDER EXISTING ROAD IN ACCORDANCE WITH TMP 4B.
- STEP 3: CONSTRUCT PROPOSED ROADWAY IMPROVEMENTS.
- STEP 4: AFTER COMPLETION OF INITIAL BOX CULVERT CELLS 2 AND 3, REMOVE TEMPORARY SHORING NO. 10 AND NO. 10A.
- STEP 5: INSTALL PROPOSED GUARDRAIL ON WEST SIDE OF NC-45.
- STEP 6: INSTALL PAVEMENT MARKINGS AND MARKERS AND SHIFT TRAFFIC BACK ONTO NC-45 IN THE EXISTING 2L2W PATTERN.

## PHASE 4

WHILE MAINTAINING TRAFFIC IN THE EXISTING PATTERN AWAY FROM TRAFFIC AND USING RSD 1101.04 FOR SHOULDER CLOSURES AS NECESSARY, PERFORM THE FOLLOWING:

- STEP 1: RESET TEMPORARY ANCHORED CONCRETE BARRIER AND CRASH CUSHIONS 13 FEET RIGHT OF -L- ALONG SHOULDER PER THE STATIONS SHOWN ON PHASE 4 DRAWINGS.
- STEP 2: REMOVE ALL TEMPORARY PAVEMENT AND TEMPORARY BORROW.
- STEP 3: INSTALL TEMPORARY SHORING NO. 15 IN ACCORDANCE WITH TMP 5B.
- STEP 4: INSTALL REMAINDER OF BOX CULVERT CELLS 2 AND 3 IN ACCORDANCE WITH TMP 5B.
- STEP 5: REMOVE ALL REMAINING TEMPORARY SHORING, ANCHORED PCB, CRASH CUSHIONS AND RESTORE SLOPES.
- STEP 6: INSTALL PROPOSED GUARDRAIL ON EAST SIDE OF NC-45.

## PHASE 5 (NOT SHOWN)

PLACE TEMPORARY PAVEMENT ALONG SB NC-45 PER PHASE 5 TYPICAL SECTION BELOW USING RSD 1101.02 AND 1150.01 FOR LANE CLOSURES AND FLAGGING PROCEDURES AS NECESSARY AT PIPE CULVERT CROSSINGS. SHIFT TRAFFIC TO PROPOSED SOUTHBOUND LANE AND NEWLY INSTALLED TEMPORARY PAVEMENT USING RSD 1101.02 AND 1150.01 FOR LANE CLOSURES AND FLAGGING PROCEDURES AS NECESSARY, PERFORM THE FOLLOWING:

- STEP 1: REDUCE TRAVEL WAY TO SINGLE LANE FOR BOTH DIRECTIONS (FLAGGING) DURING NORMAL WORK HOURS.
- STEP 2: CONSTRUCT PROPOSED ROADWAY WIDENING IMPROVEMENTS AND PIPE CULVERT REPLACEMENTS AS NOTED IN PHASE 5 TYPICAL SECTION BELOW.
- STEP 3: CONTRACTOR SHALL RESTORE LANES TO MATCH EXISTING LANE WIDTH AT THE END OF EACH WORK DAY.

## PHASE 6 (NOT SHOWN)

PLACE TEMPORARY PAVEMENT ALONG NB NC-45 PER PHASE 6 TYPICAL SECTION BELOW USING RSD 1101.02 AND 1150.01 FOR LANE CLOSURES AND FLAGGING PROCEDURES AS NECESSARY AT PIPE CULVERT CROSSINGS. SHIFT TRAFFIC TO PROPOSED NORTHBOUND LANE AND NEWLY INSTALLED TEMPORARY PAVEMENT USING RSD 1101.02 AND 1150.01 FOR LANE CLOSURES AND FLAGGING PROCEDURES AS NECESSARY, PERFORM THE FOLLOWING:

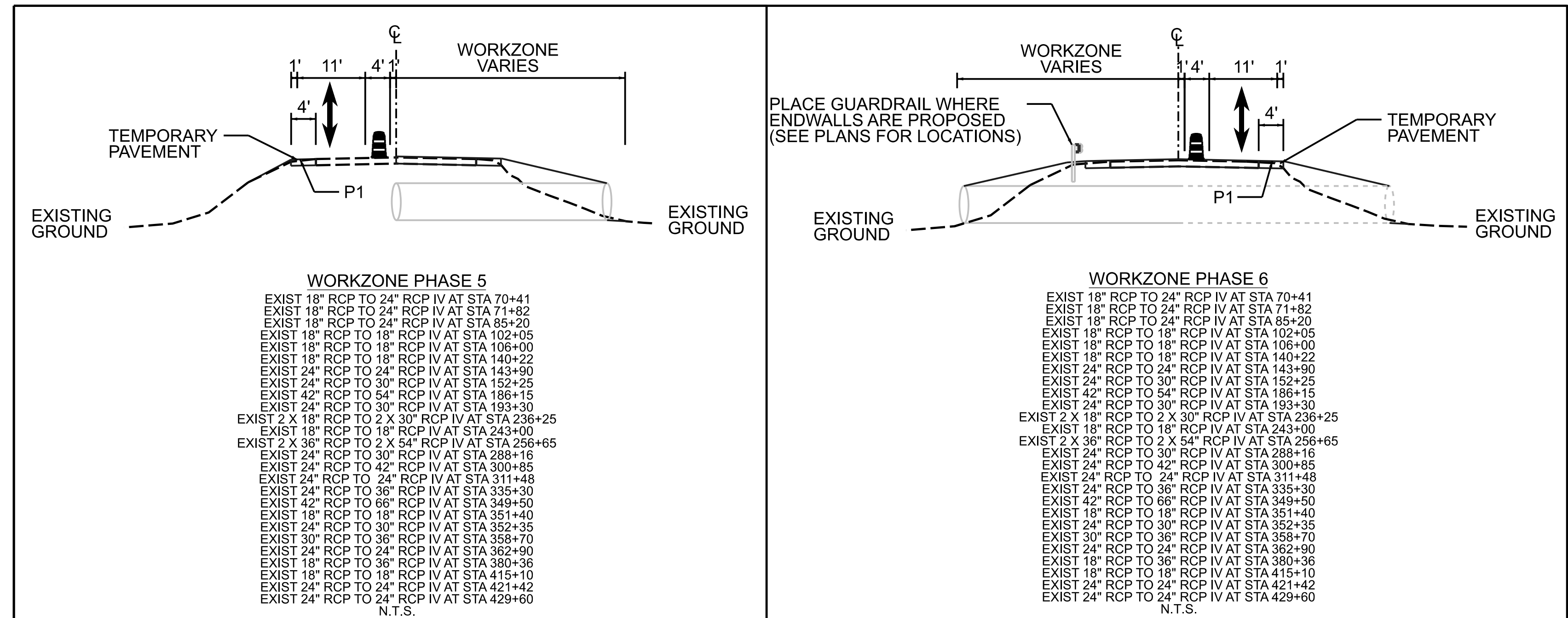
- STEP 1: REDUCE TRAVEL WAY TO SINGLE LANE FOR BOTH DIRECTIONS (FLAGGING) DURING NORMAL WORK HOURS.
- STEP 2: CONSTRUCT PROPOSED ROADWAY WIDENING IMPROVEMENTS AND PIPE CULVERT REPLACEMENTS AS NOTED IN PHASE 6 TYPICAL SECTION BELOW.
- STEP 3: CONTRACTOR SHALL RESTORE LANES TO MATCH EXISTING LANE WIDTH AT THE END OF EACH WORK DAY.

## PHASE 7 (NOT SHOWN)

USING RSD 1101.02 SHEET 1 OF 19, PERFORM THE FOLLOWING:

- STEP 1: REMOVE TEMPORARY PAVEMENTS CONSTRUCTED IN PHASE 5 AND PHASE 6 FOR PIPE CULVERT REPLACEMENT.
- STEP 2: PLACE FINAL SURFACE COURSE AND FINAL PAVEMENT MARKINGS ON NC-45
- STEP 3: REMOVE ALL TEMPORARY DEVICES.

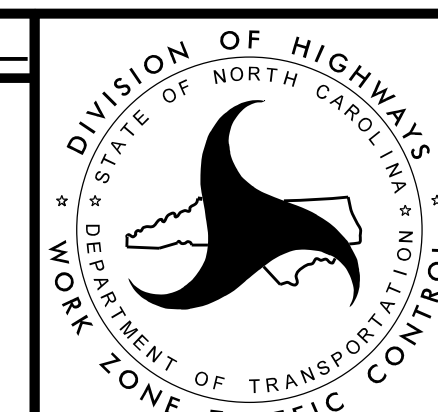
## TYPICAL SECTIONS FOR PIPE REPLACEMENTS



**NOTE: PHASE 5 AND PHASE 6 CAN BE CONSTRUCTED CONCURRENTLY.**

**Kimley»Horn**

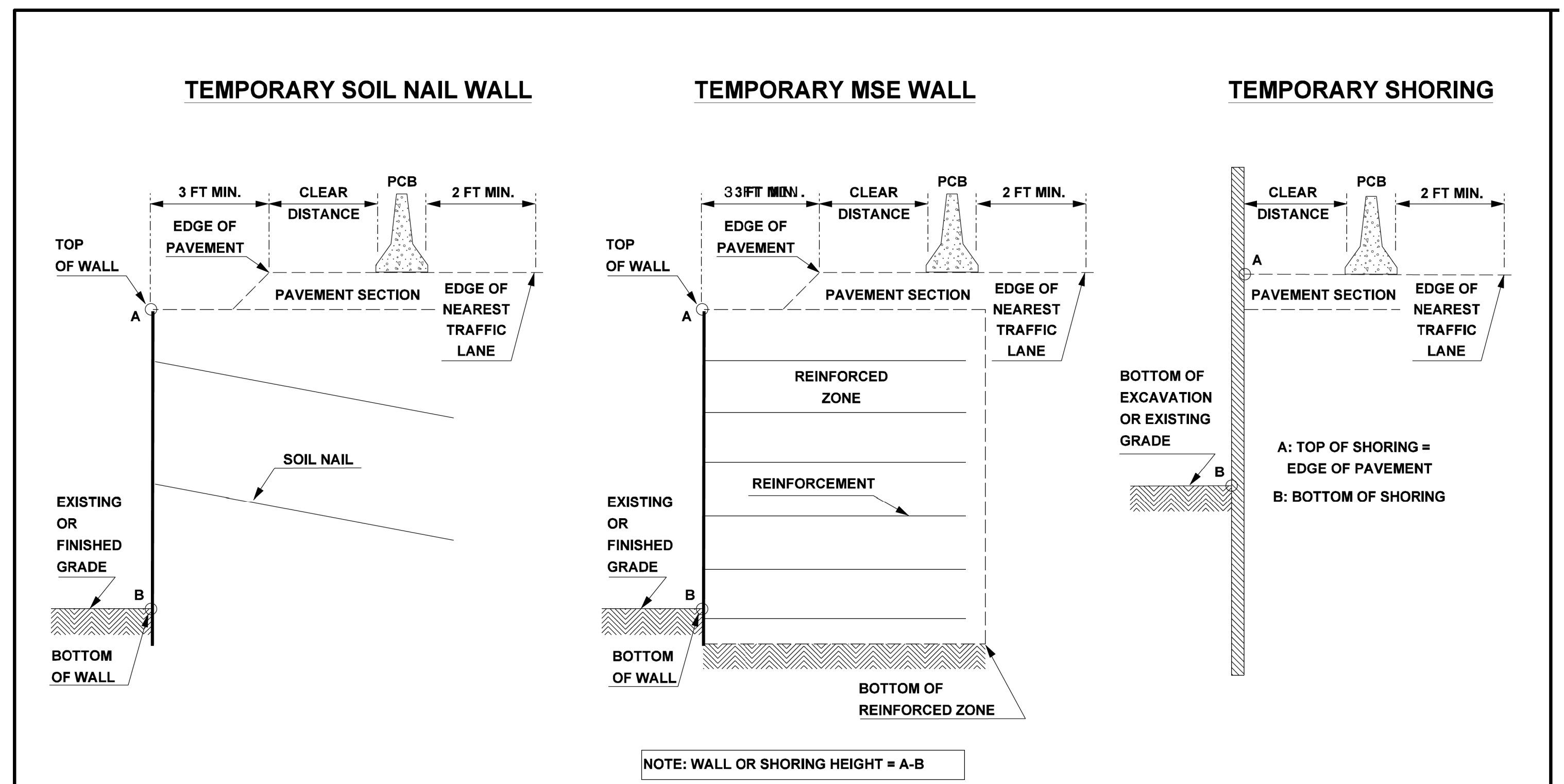
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PHASING NOTES

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**FIGURE A**

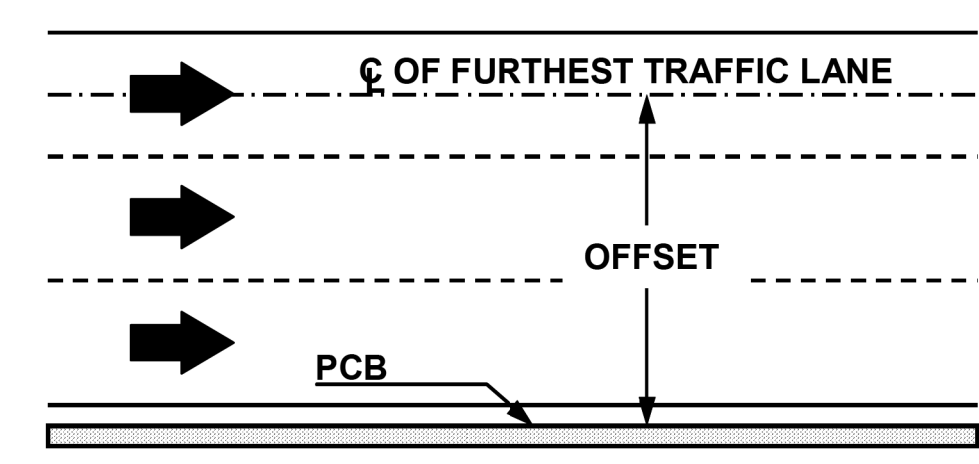
**NOTES**

- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.
- REFER TO THE "TEMPORARY SHORING" STANDARD PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).
- PCB IS REQUIRED IF TEMPORARY SHORING/WALL 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 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/WALLS 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.
- 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 OR 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 THIS MINIMUM REQUIRED DISTANCE IS 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.

**MINIMUM REQUIRED CLEAR DISTANCE, inches**

Barrier Type	Pavement Type	Offset *	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	
		<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						

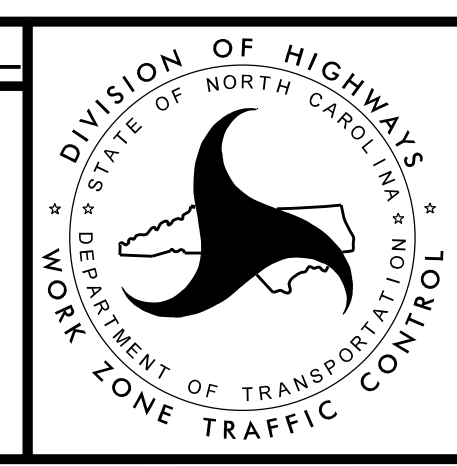
\* See Figure Below



**FIGURE B**

**Kimley»Horn**

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
  
 VINCENT E. RICCIO  
 ENGINEER  
 10/11/2024



**PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS**

\$DATE\$ \$FILE\$

Shoring Location No. TM-1

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

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 -L- 391+46±, 27' RT TO 398+48±, 55' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  17 FT±)
- = 120 PCF (EL  $\geq$  17 &  $\geq$  13 FT±)
- = 95 PCF (EL  $\leq$  13 &  $\geq$  10 FT±)
- = 120 PCF (EL  $\leq$  10 &  $\geq$  3 FT±)
- = 95 PCF (EL  $\leq$  3 &  $\geq$  5 FT±)
- = 125 PCF (EL  $\leq$  5 FT±)
- FRICITION ANGLE ( $\phi$ ) = 0 DEGREES (EL  $\geq$  17 FT±)
- = 32 DEGREES (EL  $\geq$  17 &  $\geq$  13 FT±)
- = 0 DEGREES (EL  $\leq$  13 &  $\geq$  10 FT±)
- = 32 DEGREES (EL  $\leq$  10 &  $\geq$  3 FT±)
- = 0 DEGREES (EL  $\leq$  3 &  $\geq$  5 FT±)
- = 32 DEGREES (EL  $\leq$  5 FT±)
- COHESION (c) = 1500 PSF (EL  $\geq$  17 FT±)
- = 0 PSF (EL  $\leq$  17 &  $\geq$  13 FT±)
- = 300 PSF (EL  $\leq$  13 &  $\geq$  10 FT±)
- = 0 PSF (EL  $\leq$  10 &  $\geq$  3 FT±)
- = 1000 PSF (EL  $\leq$  3 &  $\geq$  5 FT±)
- = 0 PSF (EL  $\leq$  5 FT±)
- GROUNDWATER ELEVATION = 2 FT± BELOW GROUND SURFACE

DO NOT USE CANTILEVER, BRACED and/or ANCHORED SHORING FOR TEMPORARY SHORING FROM STATION -L- 391+46±, 27' RT TO 398+48±, 55' RT.

Shoring Location No. TM-2

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

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 -L- 398+48±, 55' RT TO 398+48±, 81' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  6 FT±)
- = 110 PCF (EL  $\leq$  6 &  $\geq$  5 FT±)
- = 125 PCF (EL  $\leq$  5 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  6 FT±)
- = 0 DEGREES (EL  $\leq$  6 &  $\geq$  5 FT±)
- = 32 DEGREES (EL  $\leq$  5 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  6 FT±)
- = 500 PSF (EL  $\leq$  6 &  $\geq$  5 FT±)
- = 0 PSF (EL  $\leq$  5 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+48±, 55' RT TO 398+48±, 81' RT.

Shoring Location No. TM-3

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

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 -L- 398+48±, 81' RT TO 398+89±, 81' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  6 FT±)
- = 110 PCF (EL  $\leq$  6 &  $\geq$  5 FT±)
- = 125 PCF (EL  $\leq$  5 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  6 FT±)
- = 0 DEGREES (EL  $\leq$  6 &  $\geq$  5 FT±)
- = 32 DEGREES (EL  $\leq$  5 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  6 FT±)
- = 500 PSF (EL  $\leq$  6 &  $\geq$  5 FT±)
- = 0 PSF (EL  $\leq$  5 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+48±, 81' RT TO 398+89±, 81' RT.

Shoring Location No. TM-4

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

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 -L- 398+89±, 81' RT TO 398+88±, 55' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  6 FT±)
- = 110 PCF (EL  $\leq$  6 &  $\geq$  5 FT±)
- = 125 PCF (EL  $\leq$  5 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  6 FT±)
- = 0 DEGREES (EL  $\leq$  6 &  $\geq$  5 FT±)
- = 32 DEGREES (EL  $\leq$  5 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  6 FT±)
- = 500 PSF (EL  $\leq$  6 &  $\geq$  5 FT±)
- = 0 PSF (EL  $\leq$  5 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+89±, 81' RT TO 398+88±, 55' RT.

Shoring Location No. TM-5

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

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 -L- 398+20±, 17.5' RT TO 398+88±, 17.5' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  7 FT±)
- = 95 PCF (EL  $\leq$  7 &  $\geq$  7 FT±)
- = 125 PCF (EL  $\leq$  7 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  7 FT±)
- = 0 DEGREES (EL  $\leq$  7 &  $\geq$  7 FT±)
- = 32 DEGREES (EL  $\leq$  7 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  7 FT±)
- = 300 PSF (EL  $\leq$  7 &  $\geq$  7 FT±)
- = 0 PSF (EL  $\leq$  7 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+20±, 17.5' RT TO 398+88±, 17.5' RT.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION -L- 398+20±, 17.5 FT RT, TO STATION -L- 398+88±, 17.5 FT RT. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

Shoring Location No. TM-6

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

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 -L- 398+88±, 77' LT TO 398+88±, 52' LT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  7 FT±)
- = 95 PCF (EL  $\leq$  7 &  $\geq$  7 FT±)
- = 125 PCF (EL  $\leq$  7 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  7 FT±)
- = 0 DEGREES (EL  $\leq$  7 &  $\geq$  7 FT±)
- = 32 DEGREES (EL  $\leq$  7 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  7 FT±)
- = 300 PSF (EL  $\leq$  7 &  $\geq$  7 FT±)
- = 0 PSF (EL  $\leq$  7 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+88±, 77' LT TO 398+88±, 52' LT.

Shoring Location No. TM-6A

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

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 -L- 398+88±, 52' LT TO 398+88±, 21' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  7 FT±)
- = 95 PCF (EL  $\leq$  7 &  $\geq$  7 FT±)
- = 125 PCF (EL  $\leq$  7 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  7 FT±)
- = 0 DEGREES (EL  $\leq$  7 &  $\geq$  7 FT±)
- = 32 DEGREES (EL  $\leq$  7 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  7 FT±)
- = 300 PSF (EL  $\leq$  7 &  $\geq$  7 FT±)
- = 0 PSF (EL  $\leq$  7 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+88±, 52' LT TO 398+88±, 21' RT.

Shoring Location No. TM-7

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

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 -L- 398+46±, 77' LT TO 398+88±, 77' LT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  7 FT±)
- = 95 PCF (EL  $\leq$  7 &  $\geq$  7 FT±)
- = 125 PCF (EL  $\leq$  7 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  7 FT±)
- = 0 DEGREES (EL  $\leq$  7 &  $\geq$  7 FT±)
- = 32 DEGREES (EL  $\leq$  7 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  7 FT±)
- = 300 PSF (EL  $\leq$  7 &  $\geq$  7 FT±)
- = 0 PSF (EL  $\leq$  7 FT±)
- GROUNDWATER ELEVATION = 9 FT±

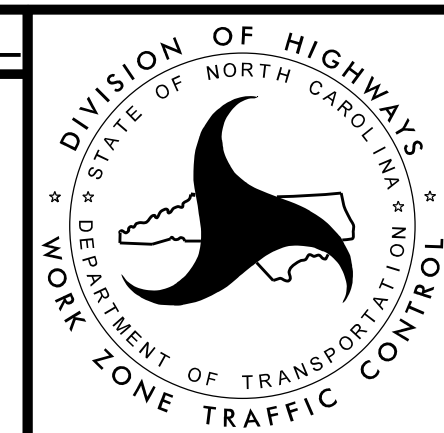
DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+46±, 77' LT TO 398+88±, 77' LT.

\$FILE\$

\$DATE\$

**Kimley»Horn**

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_



**TEMPORARY SHORING NOTES**

**Shoring Location No. TM-8**

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

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 -L- 398+88±, 55' RT TO 405+43±, 28' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  8 FT±)
- = 95 PCF (EL -8 &  $\geq$  4 FT±)
- = 120 PCF (EL -4 &  $\geq$  5 FT±)
- = 110 PCF (EL < -5 &  $\geq$  8 FT±)
- = 125 PCF (EL < -8 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  8 FT±)
- = 0 DEGREES (EL -8 &  $\geq$  4 FT±)
- = 32 DEGREES (EL -4 &  $\geq$  5 FT±)
- = 0 DEGREES (EL < -5 &  $\geq$  8 FT±)
- = 32 DEGREES (EL < -8 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  8 FT±)
- = 300 PSF (EL -8 &  $\geq$  4 FT±)
- = 0 PSF (EL -4 &  $\geq$  5 FT±)
- = 1000 PSF (EL < -5 &  $\geq$  8 FT±)
- = 0 PSF (EL < -8 FT±)
- GROUNDWATER ELEVATION = 2 FT± BELOW GROUND SURFACE

DO NOT USE CANTILEVER, BRACED and/or ANCHORED SHORING FOR TEMPORARY SHORING FROM STATION -L- 398+88±, 55' RT TO 405+43±, 28' RT.

**Shoring Location No. TM-9**

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

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 -L- 398+48±, 55' RT TO 398+88±, 55' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  6 FT±)
- = 110 PCF (EL -6 &  $\geq$  5 FT±)
- = 125 PCF (EL < -5 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  6 FT±)
- = 0 DEGREES (EL -6 &  $\geq$  5 FT±)
- = 32 DEGREES (EL < -5 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  6 FT±)
- = 500 PSF (EL -6 &  $\geq$  5 FT±)
- = 0 PSF (EL < -5 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+48±, 55' RT TO 398+64±, 55' RT.

DO NOT USE CANTILEVER, BRACED and/or ANCHORED SHORING FOR TEMPORARY SHORING FROM STATION -L- 398+64±, 55' RT TO 398+88±, 55' RT.

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+64±, 55' RT TO 398+78±, 55' RT. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

**Shoring Location No. TM-10**

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

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 -L- 398+20±, 21' RT TO 398+88±, 21' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  6 FT±)
- = 110 PCF (EL -6 &  $\geq$  5 FT±)
- = 125 PCF (EL < -5 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  6 FT±)
- = 0 DEGREES (EL -6 &  $\geq$  5 FT±)
- = 32 DEGREES (EL < -5 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  6 FT±)
- = 500 PSF (EL -6 &  $\geq$  5 FT±)
- = 0 PSF (EL < -5 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE CANTILEVER, BRACED and/or ANCHORED SHORING FOR TEMPORARY SHORING FROM STATION -L- 398+20±, 21' RT TO 398+88±, 21' RT.

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+64±, 21' RT TO 398+78±, 21' RT. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

**Shoring Location No. TM-10A**

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

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 -L- 398+88±, 21' RT TO 399+60±, 20' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  6 FT±)
- = 110 PCF (EL -6 &  $\geq$  5 FT±)
- = 125 PCF (EL < -5 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  6 FT±)
- = 0 DEGREES (EL -6 &  $\geq$  5 FT±)
- = 32 DEGREES (EL < -5 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  6 FT±)
- = 500 PSF (EL -6 &  $\geq$  5 FT±)
- = 0 PSF (EL < -5 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+88±, 21' RT TO 399+60±, 20' RT.

**Shoring Location No. TM-11**

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

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 -L- 398+77±, 55' RT TO 398+78±, 81' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  6 FT±)
- = 110 PCF (EL -6 &  $\geq$  5 FT±)
- = 125 PCF (EL < -5 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  6 FT±)
- = 0 DEGREES (EL -6 &  $\geq$  5 FT±)
- = 32 DEGREES (EL < -5 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  6 FT±)
- = 500 PSF (EL -6 &  $\geq$  5 FT±)
- = 0 PSF (EL < -5 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+77±, 55' RT TO 398+78±, 81' RT.

**Shoring Location No. TM-12**

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

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 -L- 398+78±, 81' RT TO 399+33±, 81' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  6 FT±)
- = 110 PCF (EL -6 &  $\geq$  5 FT±)
- = 125 PCF (EL < -5 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  6 FT±)
- = 0 DEGREES (EL -6 &  $\geq$  5 FT±)
- = 32 DEGREES (EL < -5 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  6 FT±)
- = 500 PSF (EL -6 &  $\geq$  5 FT±)
- = 0 PSF (EL < -5 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+78±, 81' RT TO 399+33±, 81' RT.

**Shoring Location No. TM-13**

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

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 -L- 398+77±, 51' LT TO 398+78±, 78' LT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  7 FT±)
- = 95 PCF (EL -7 &  $\geq$  7 FT±)
- = 125 PCF (EL < -7 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  7 FT±)
- = 0 DEGREES (EL -7 &  $\geq$  7 FT±)
- = 32 DEGREES (EL < -7 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  7 FT±)
- = 300 PSF (EL -7 &  $\geq$  7 FT±)
- = 0 PSF (EL < -7 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+77±, 51' LT TO 398+78±, 78' LT.

**Shoring Location No. TM-14**

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

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 -L- 398+78±, 78' LT TO 399+77±, 78' LT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  7 FT±)
- = 95 PCF (EL -7 &  $\geq$  7 FT±)
- = 125 PCF (EL < -7 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  7 FT±)
- = 0 DEGREES (EL -7 &  $\geq$  7 FT±)
- = 32 DEGREES (EL < -7 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  7 FT±)
- = 300 PSF (EL -7 &  $\geq$  7 FT±)
- = 0 PSF (EL < -7 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+78±, 78' LT TO 399+77±, 78' LT.

**Shoring Location No. TM-15**

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

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 -L- 398+58±, 17.5' RT TO 399+36±, 17.5' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF (EL  $\geq$  6 FT±)
- = 110 PCF (EL -6 &  $\geq$  5 FT±)
- = 125 PCF (EL < -5 FT±)
- FRICITION ANGLE ( $\phi$ ) = 32 DEGREES (EL  $\geq$  6 FT±)
- = 0 DEGREES (EL -6 &  $\geq$  5 FT±)
- = 32 DEGREES (EL < -5 FT±)
- COHESION (c) = 0 PSF (EL  $\geq$  6 FT±)
- = 500 PSF (EL -6 &  $\geq$  5 FT±)
- = 0 PSF (EL < -5 FT±)
- GROUNDWATER ELEVATION = 9 FT±

DO NOT USE CANTILEVER, BRACED and/or ANCHORED SHORING FOR TEMPORARY SHORING FROM STATION -L- 398+58±, 17.5' RT TO 399+36±, 17.5' RT.

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L- 398+64±, 17.5' RT TO 399+04±, 17.5' RT. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

Prepared By:



J. Lee Stone, PG  
Geotechnical Program Manager



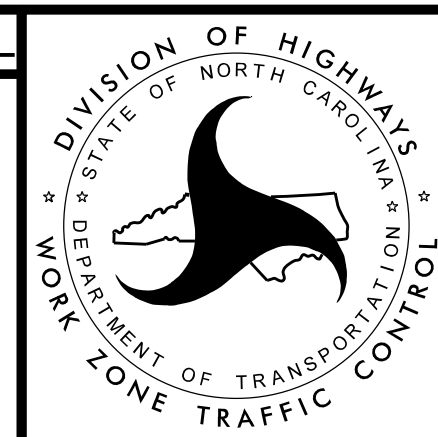
Yinhui Liu, PE, PhD.  
Senior Geotechnical Engineer

CATLIN recommends including the Temporary Shoring provision (SP11 R002) in the contract for the referenced project. Include the attached Temporary Soil Nail Walls provision, Standard Shoring provision and Geotechnical Standard Detail No. 1801.02 in the contract. Please call Lee Stone and Yinhui Liu at (910) 452-5861 if there are any questions concerning this memorandum.

**Kimley»Horn**

**TEMPORARY SHORING NOTES**

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

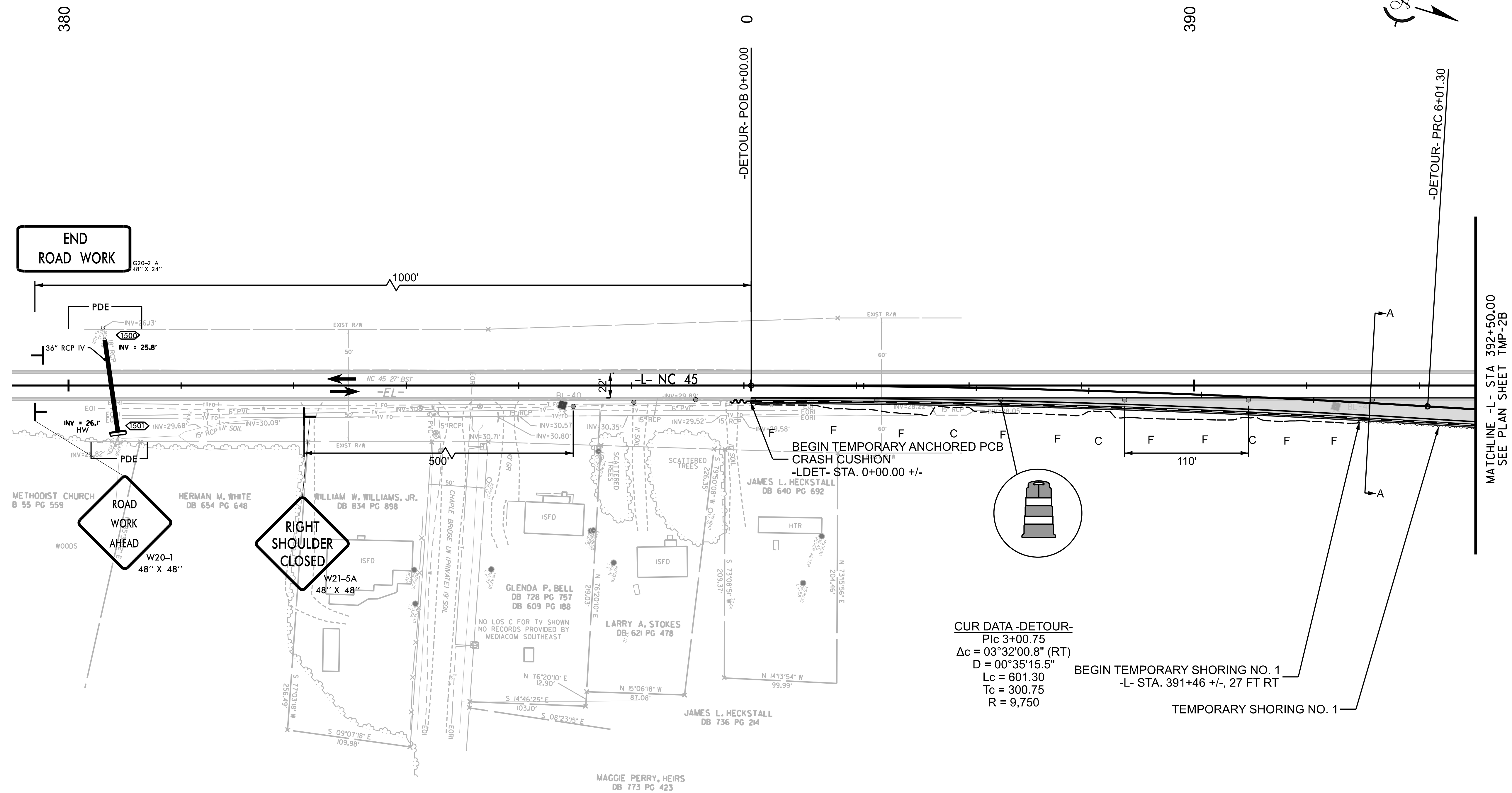


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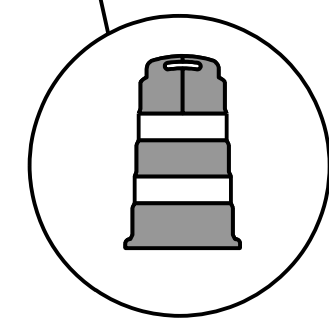




**END ROAD WORK**

**ROAD WORK AHEAD**  
W20-1  
48" X 48"

**RIGHT SHOULDER CLOSED**  
W21-5A  
48" X 48"

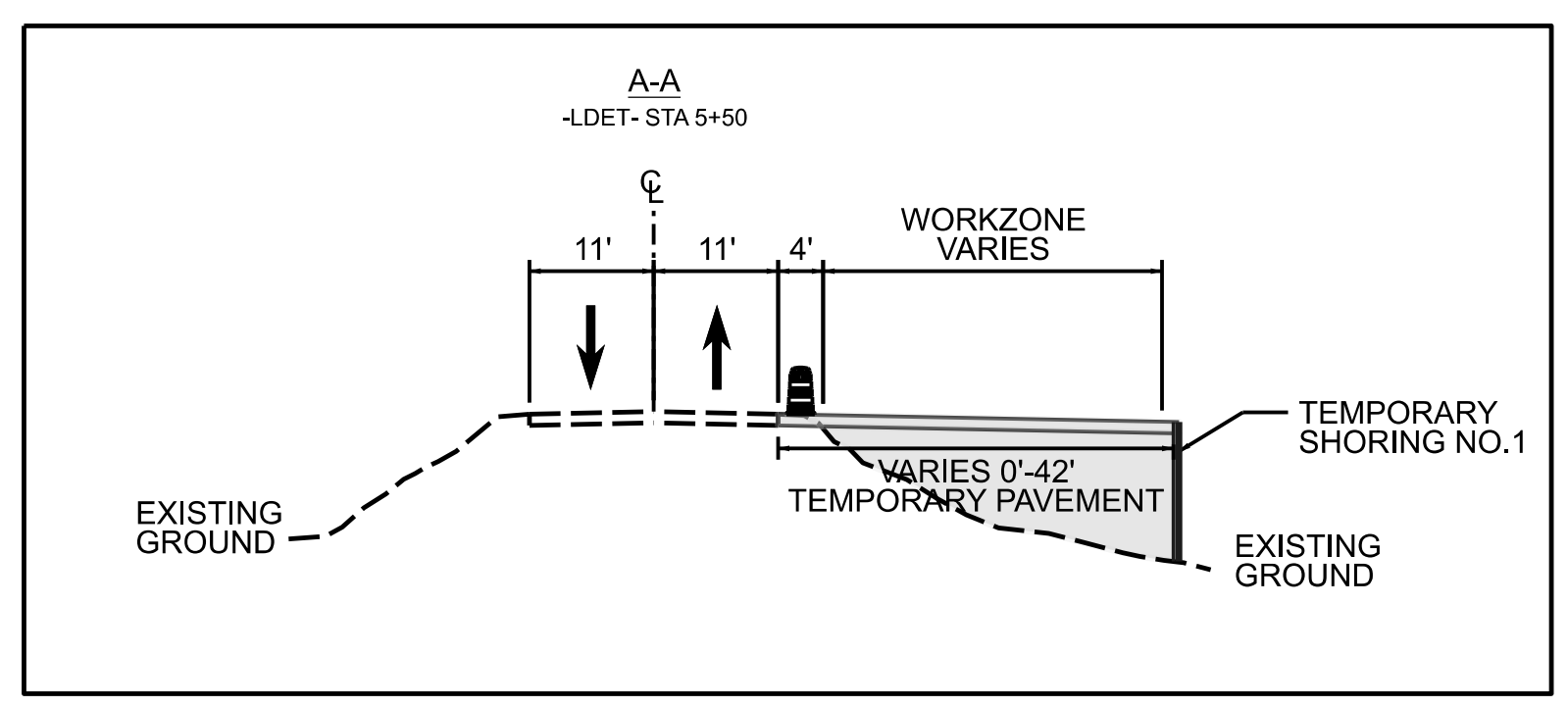


**CUR DATA -DETOUR-**  
Plc 3+00.75  
Δc = 03°32'00.8" (RT)  
D = 00°35'15.5"  
Lc = 601.30  
Tc = 300.75  
R = 9,750

**BEGIN TEMPORARY SHORING NO. 1**  
-L- STA. 391+46 +/-, 27 FT RT

**TEMPORARY SHORING NO. 1**

**MATCHLINE -L- STA 392+50.00**  
SEE PLAN SHEET TMP-2B

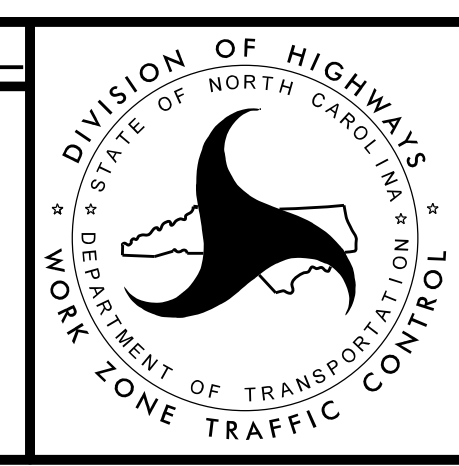


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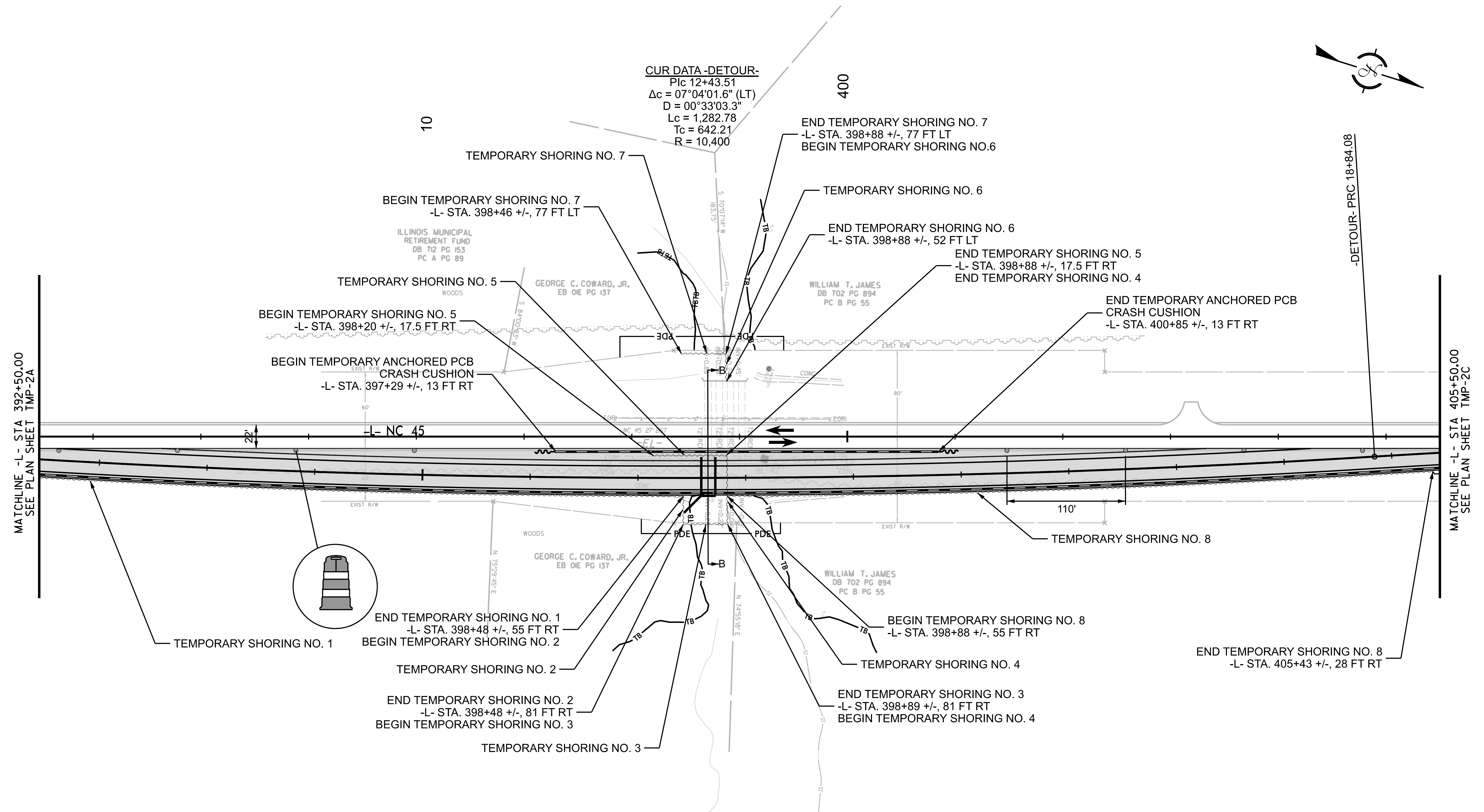
**Kimley»Horn**

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

10/11/2024

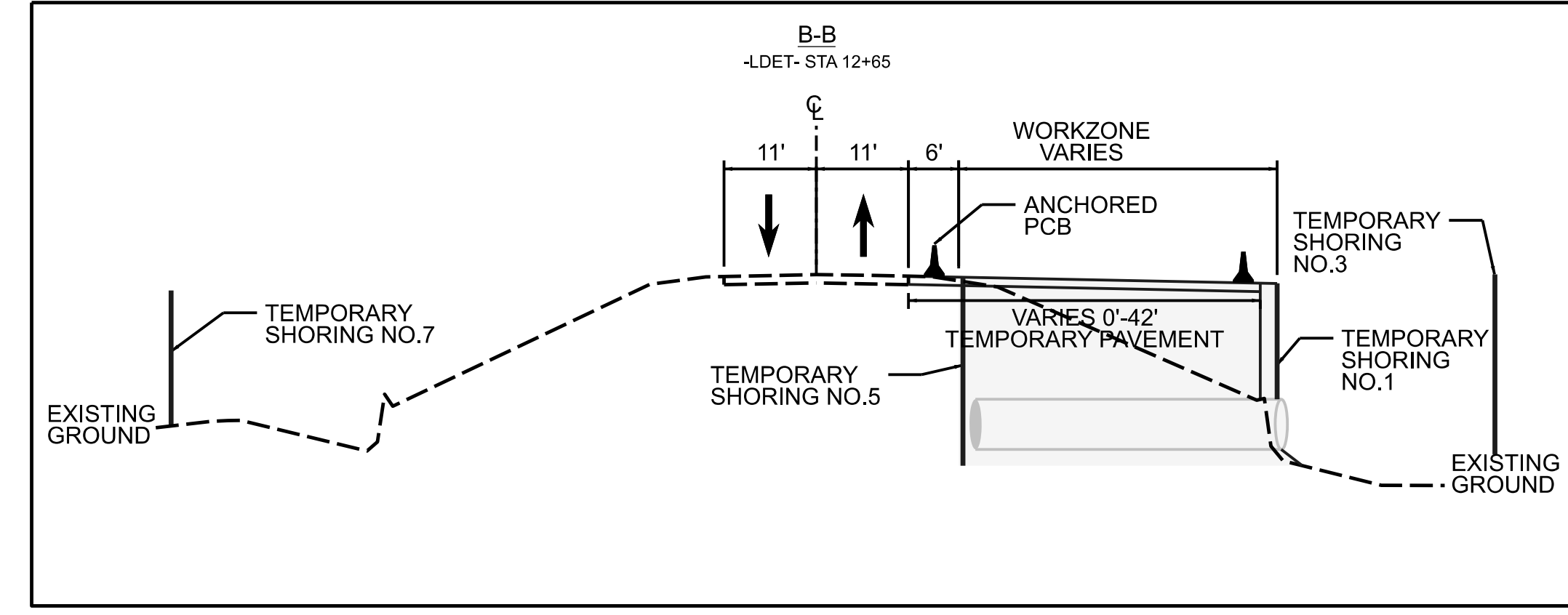
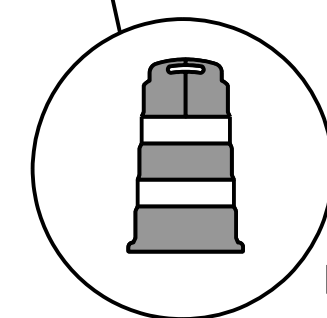


**TRAFFIC CONTROL PHASE I**



MATCHLINE -L- STA 392+50.00  
SEE PLAN SHEET TMP-2A

MATCHLINE -L- STA 405+50.00  
SEE PLAN SHEET TMP-2C

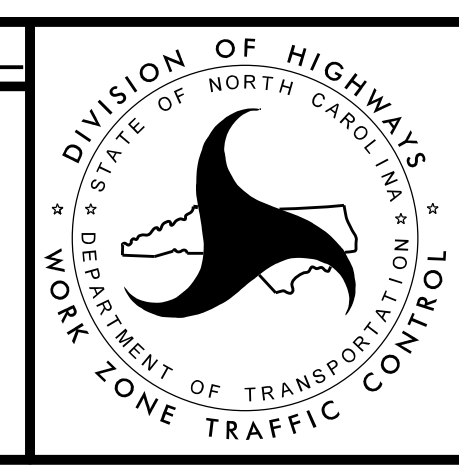


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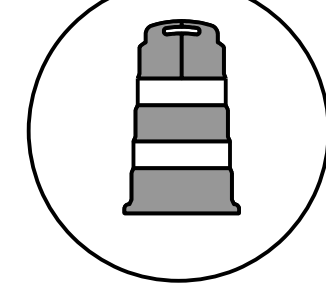
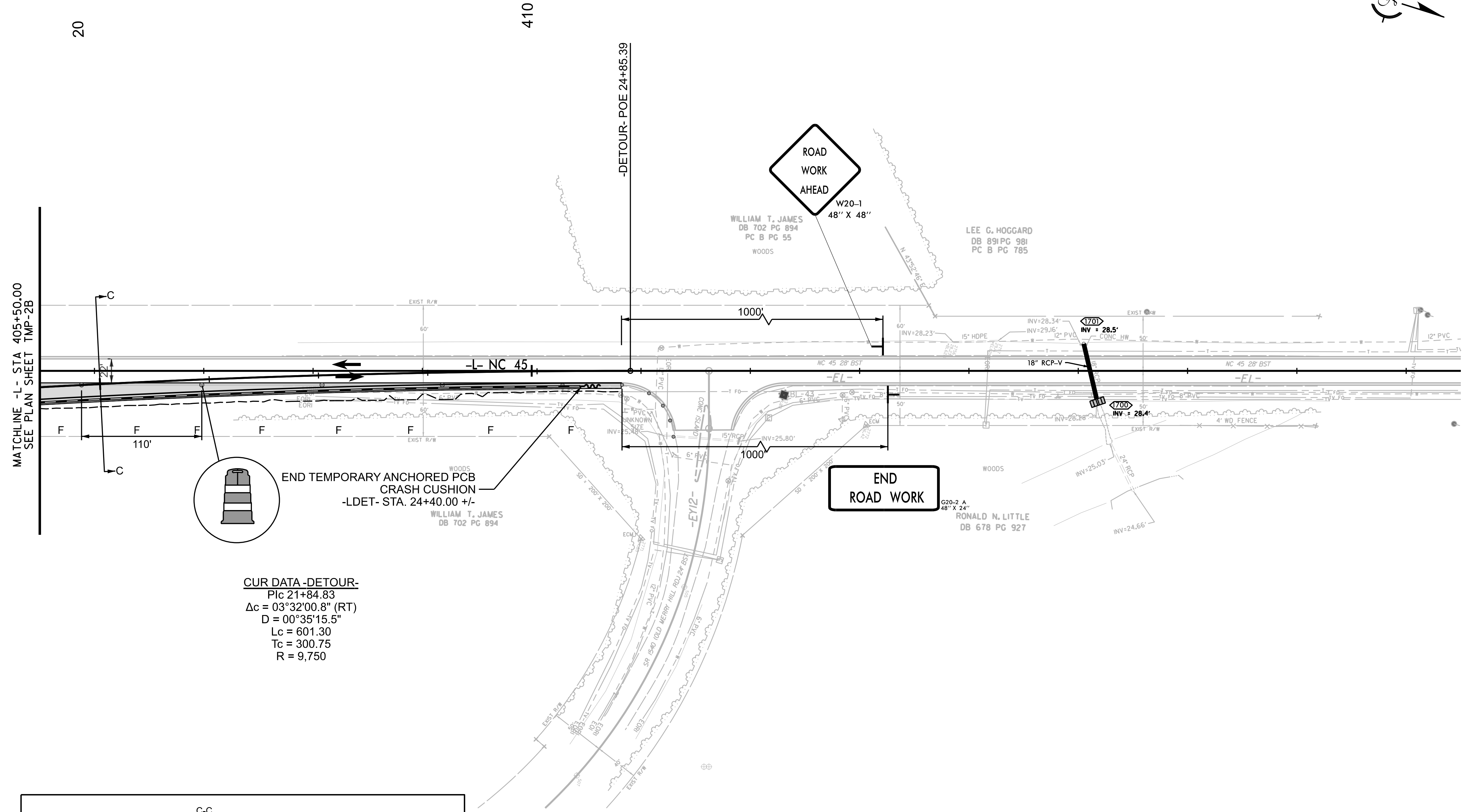
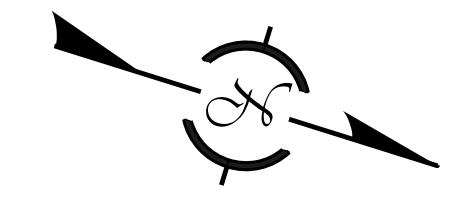
**Kimley»Horn**

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10/11/2024

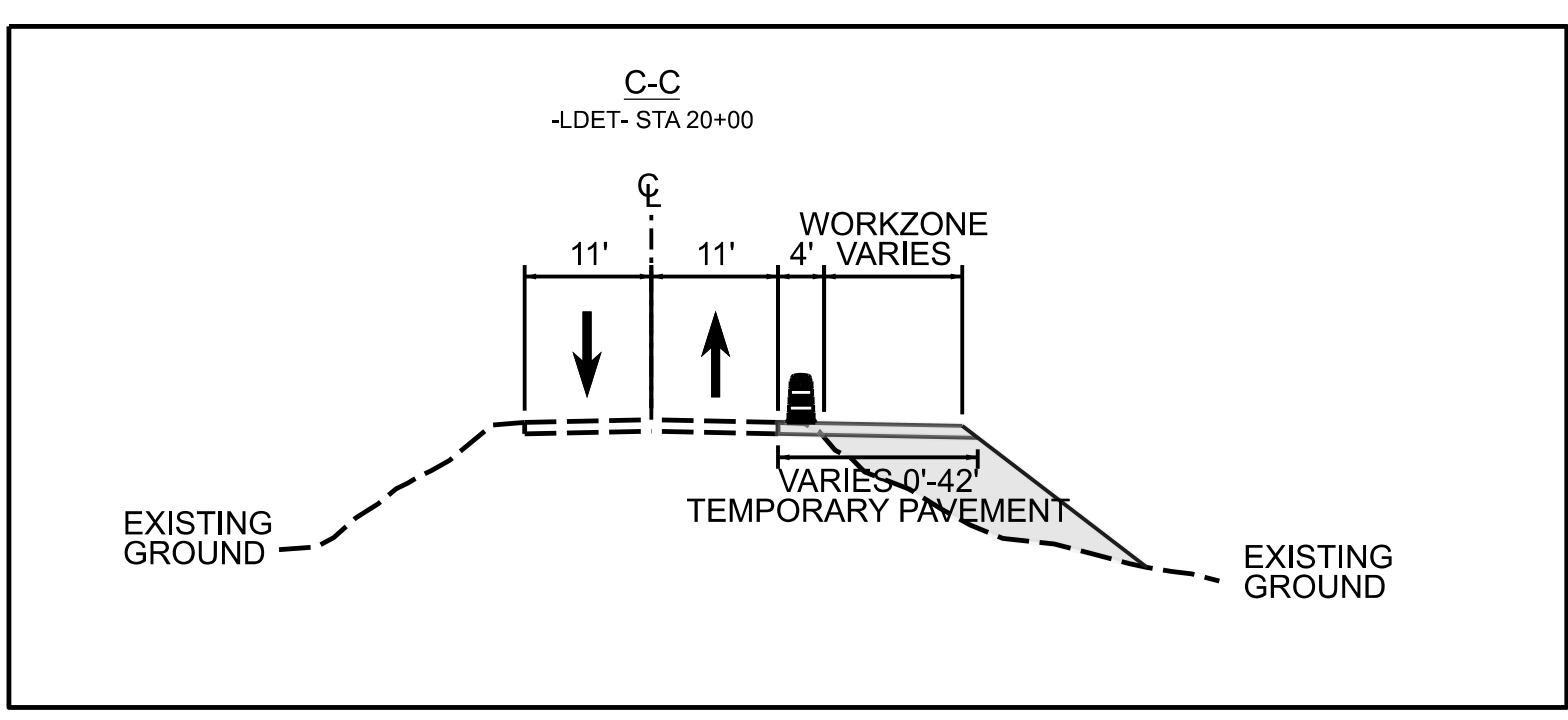


**TRAFFIC CONTROL  
PHASE I**



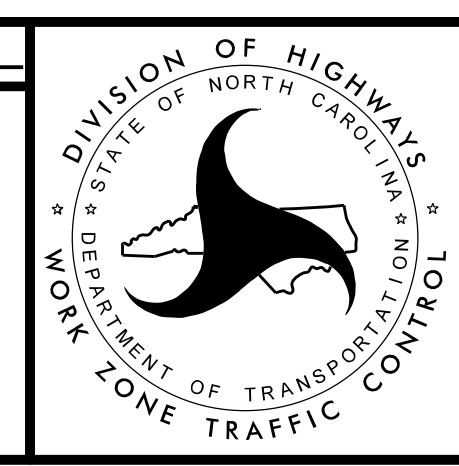
**CUR DATA -DETOUR-**  
 P/c 21+84.83  
 $\Delta c = 03^{\circ}32'00.8''$  (RT)  
 $D = 00^{\circ}35'15.5''$   
 $Lc = 601.30$   
 $Tc = 300.75$   
 $R = 9,750$

MATCHLINE -L- STA 405+50.00  
 SEE PLAN SHEET TMP-2B



**Kimley»Horn**

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
  
 VINCENT E. RICCIO  
 ENGINEER  
 10/11/2024



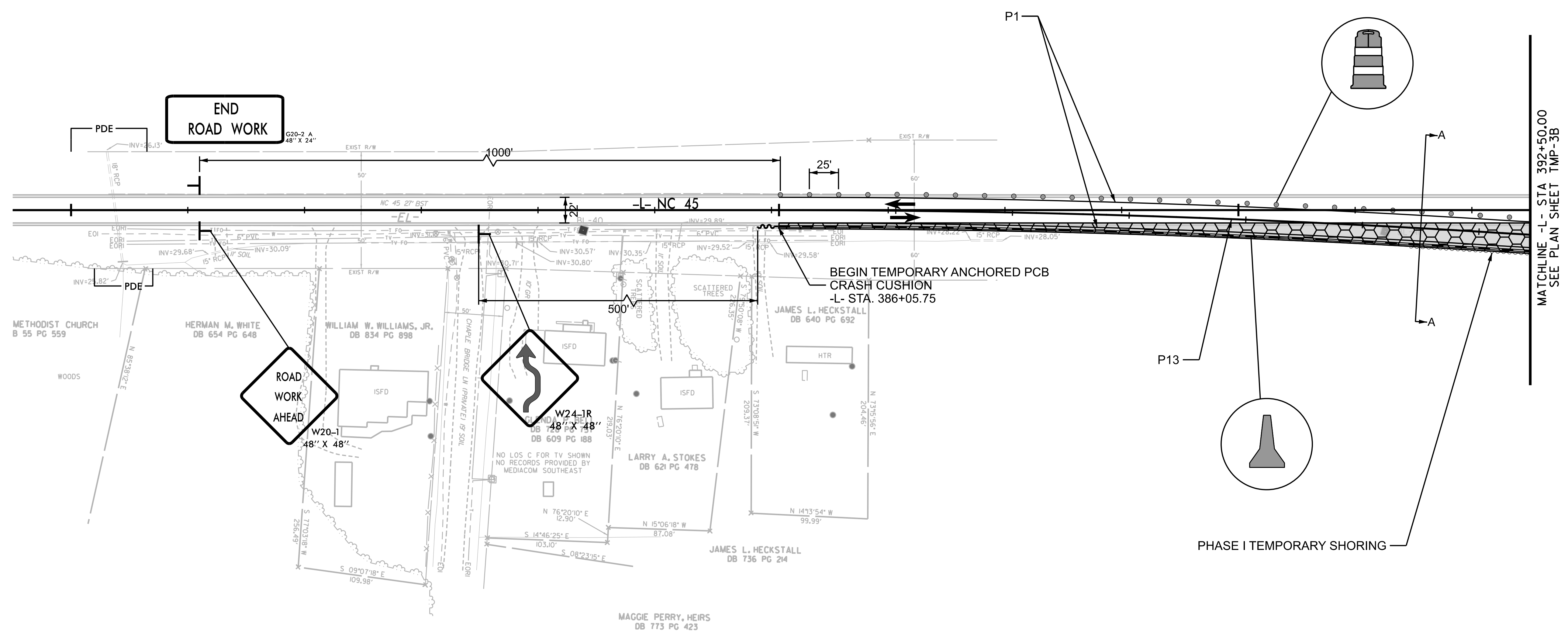
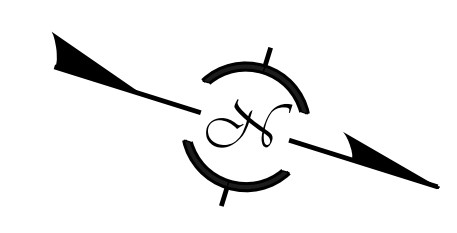
**TRAFFIC CONTROL  
 PHASE I**

\$DATE\$ \$FILE\$

380

0

390



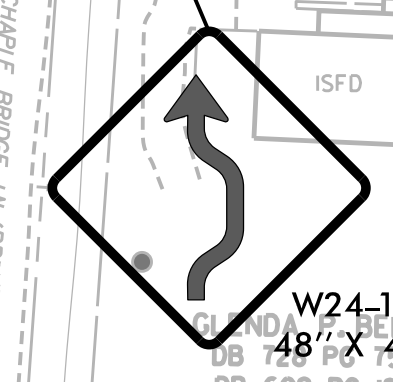
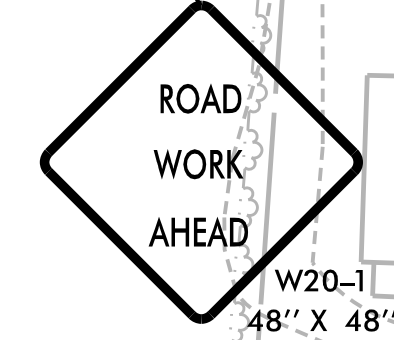
METHODIST CHURCH  
B 55 PG 559

HERMAN M. WHITE  
DB 654 PG 648

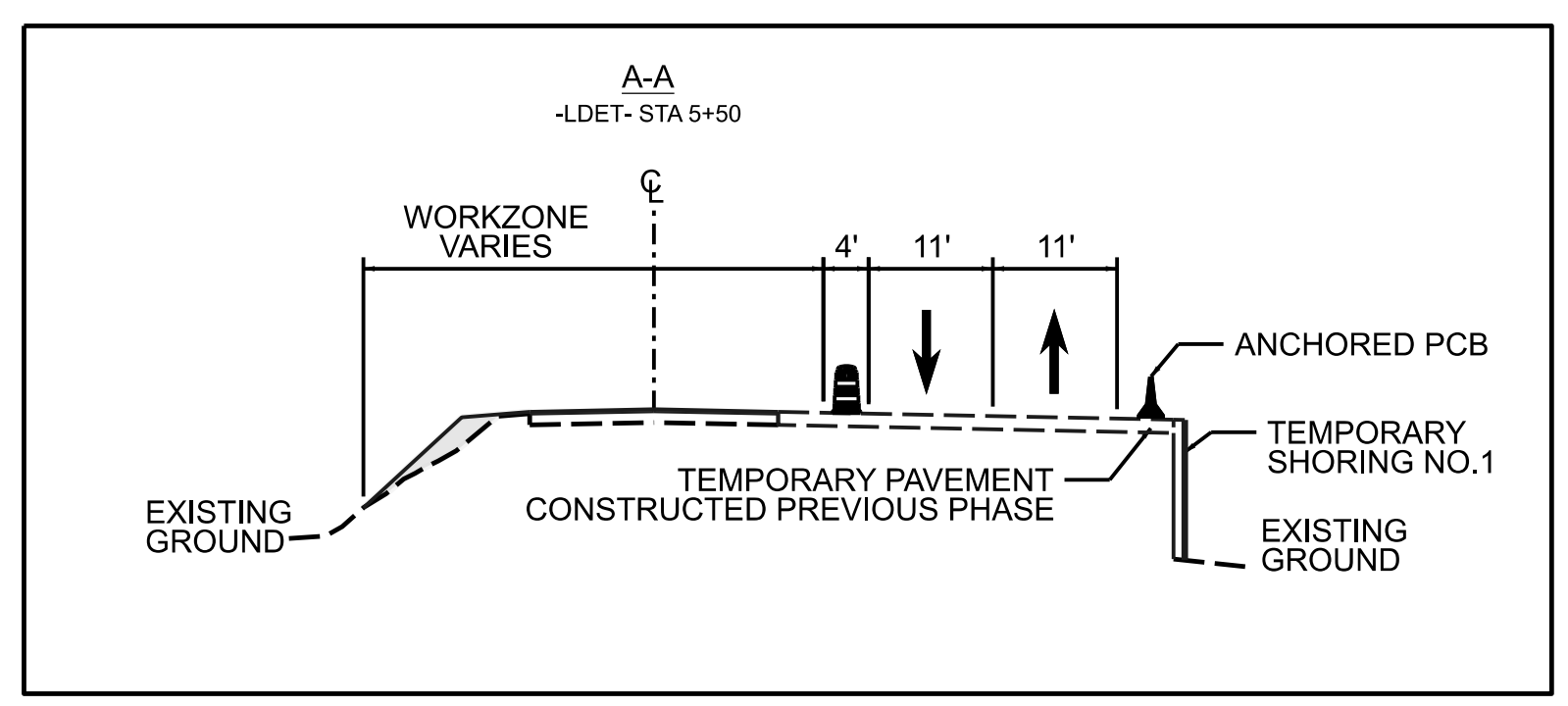
WILLIAM W. WILLIAMS, JR.  
DB 834 PG 898

JAMES L. HECKSTALL  
DB 640 PG 692

MAGGIE PERRY, HEIRS  
DB 773 PG 423



W24-JR  
48" X 48"



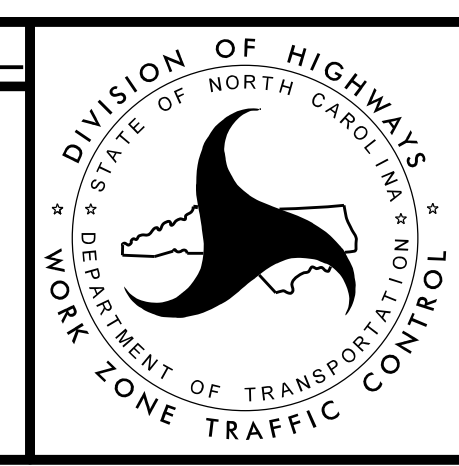
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# Kimley»Horn

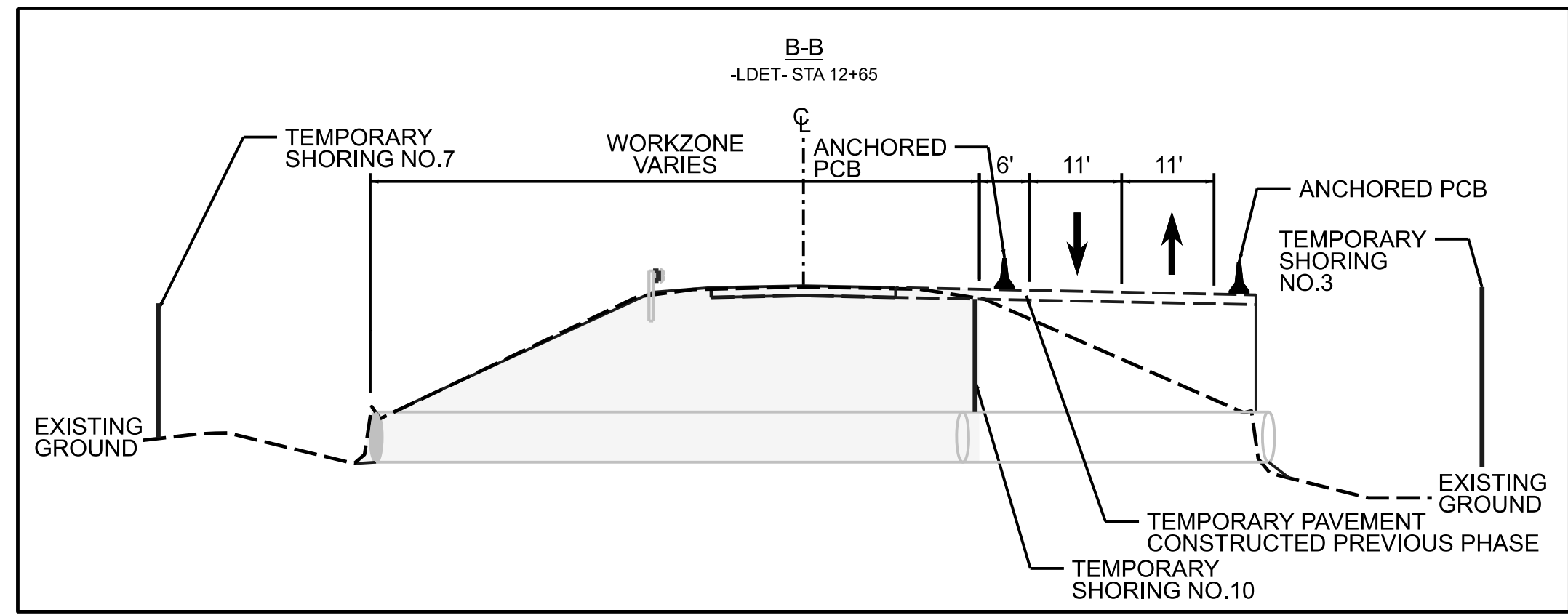
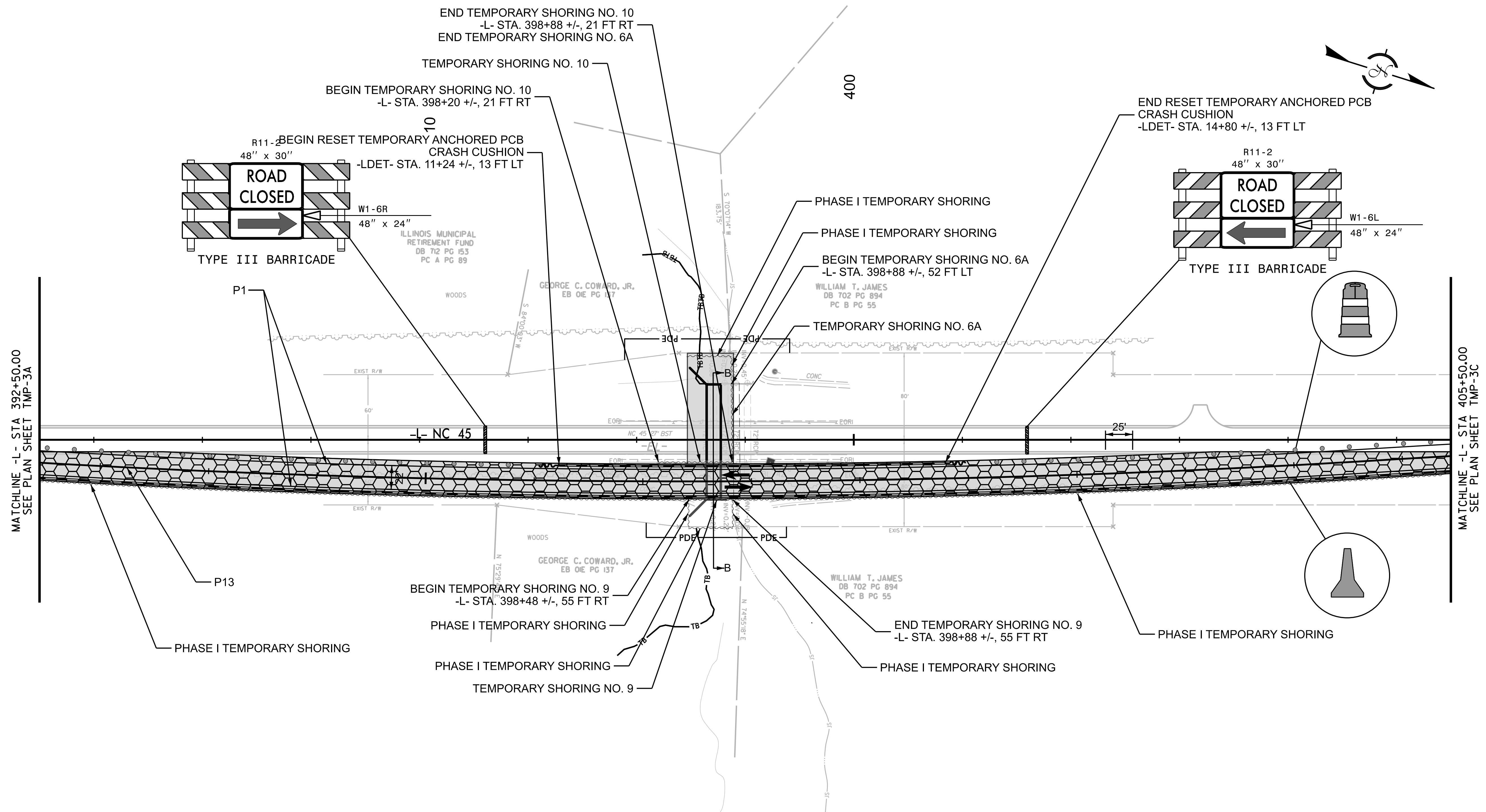
APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

10/11/2024



TRAFFIC CONTROL  
PHASE II

MATCHLINE -L- STA 392+50.00  
SEE PLAN SHEET TMP-3B



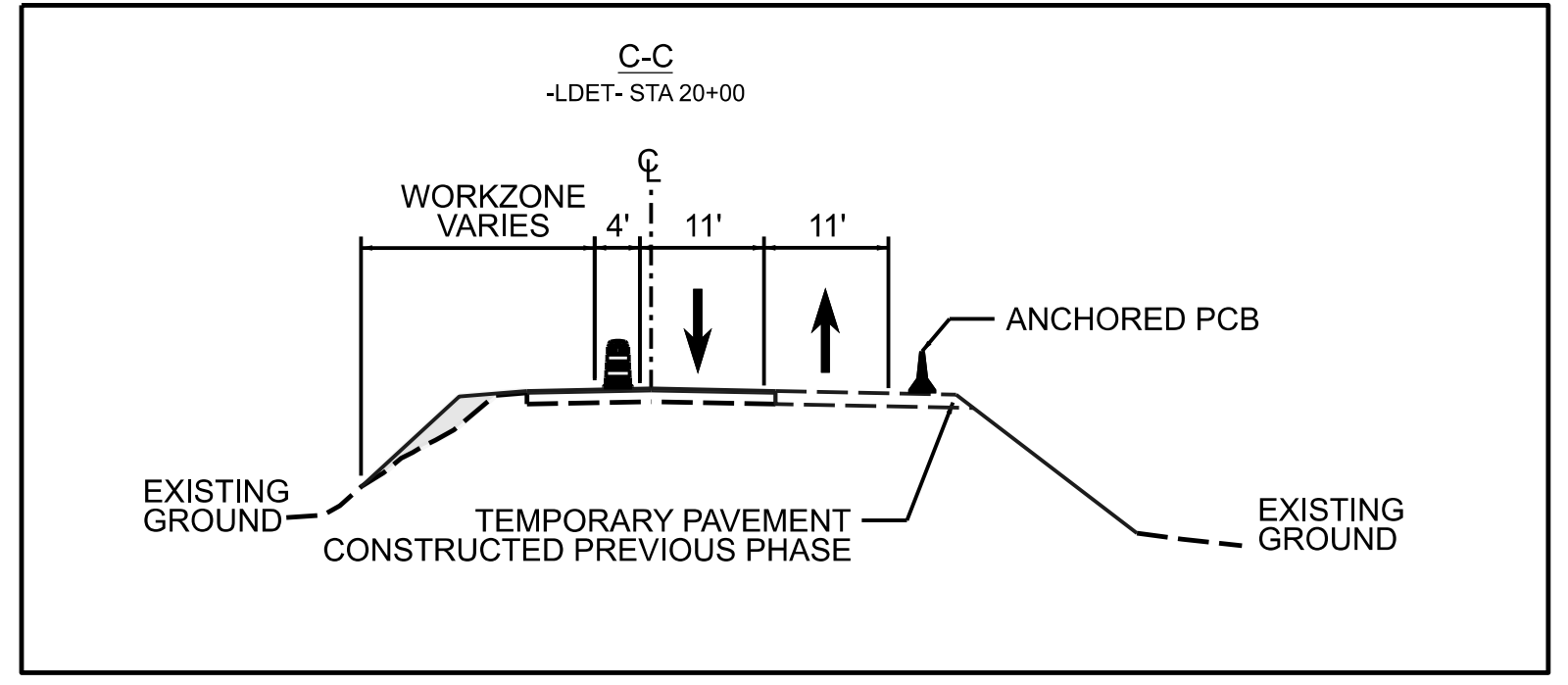
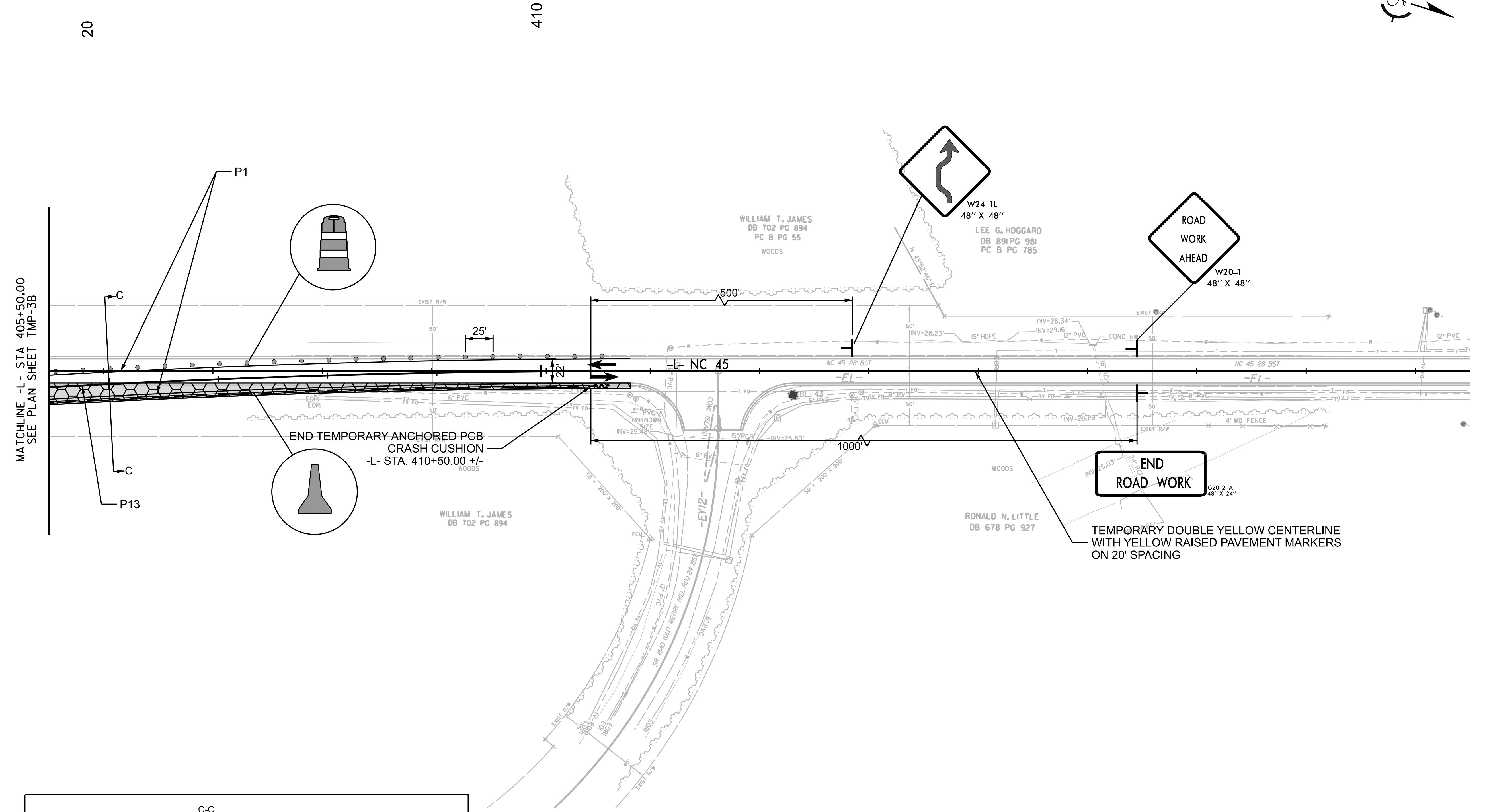
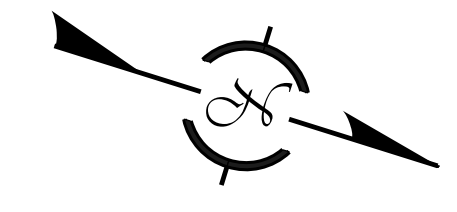
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# Kimley»Horn

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

10/11/2024

TRAFFIC CONTROL  
PHASE II

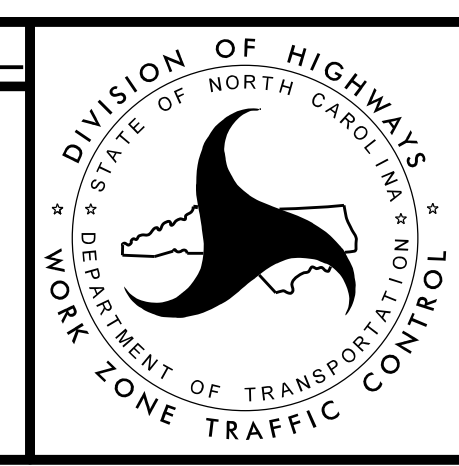


\$DATE\$

**Kimley»Horn**

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

10/11/2024

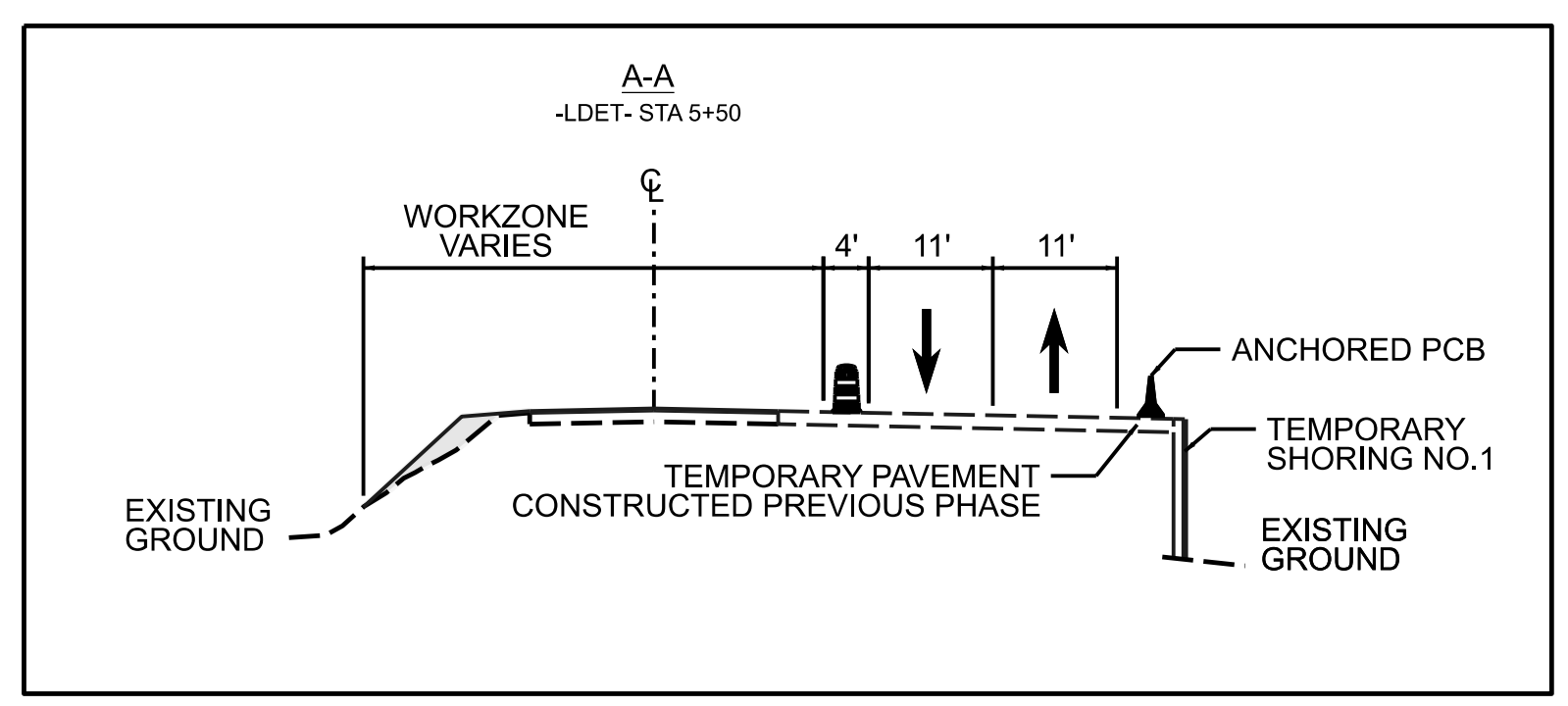
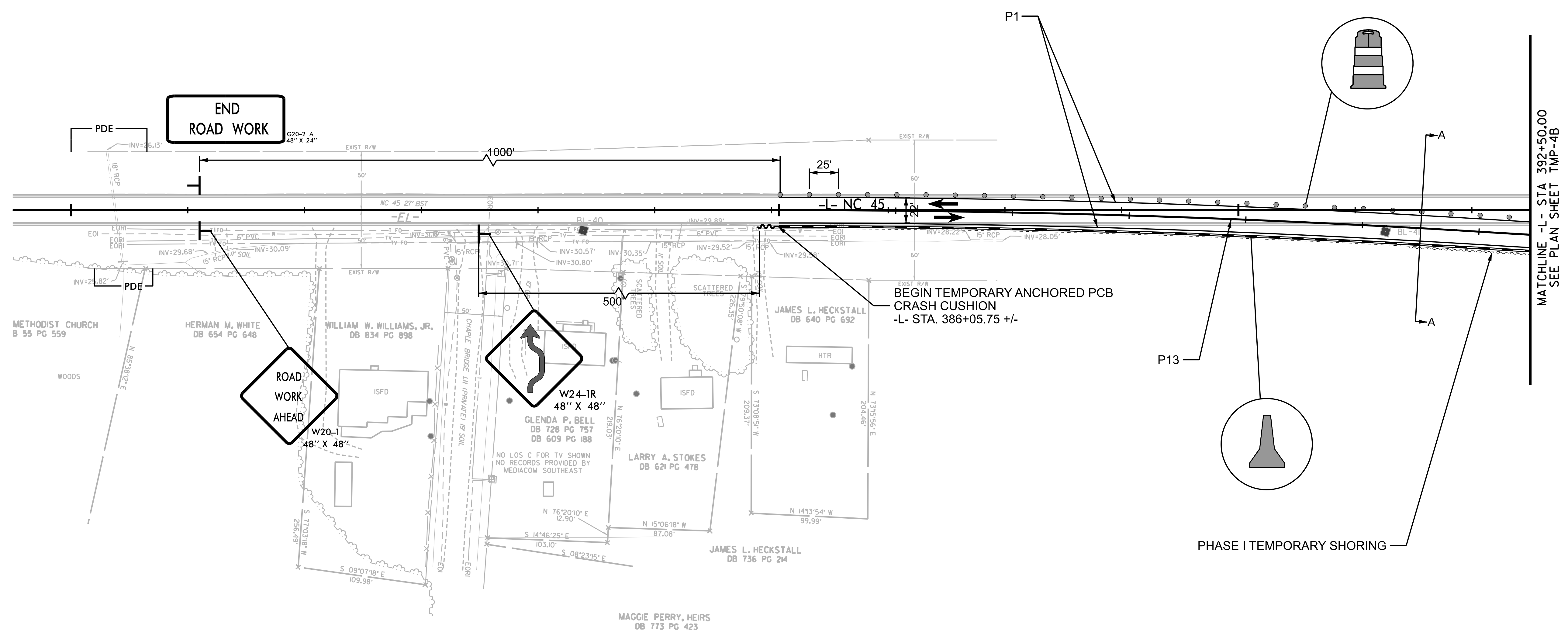
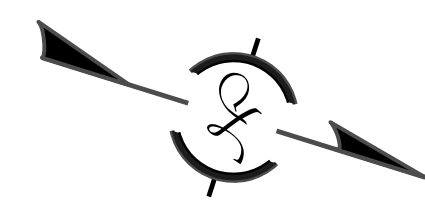


**TRAFFIC CONTROL  
PHASE II**

380

0

390

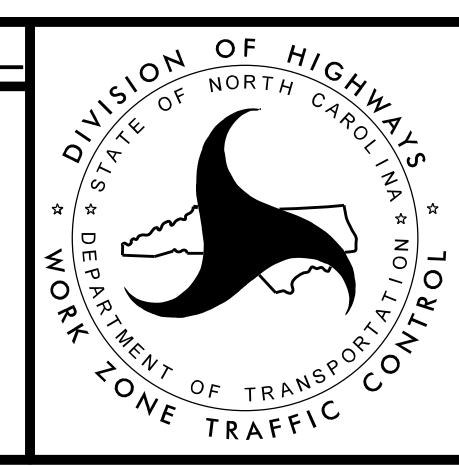


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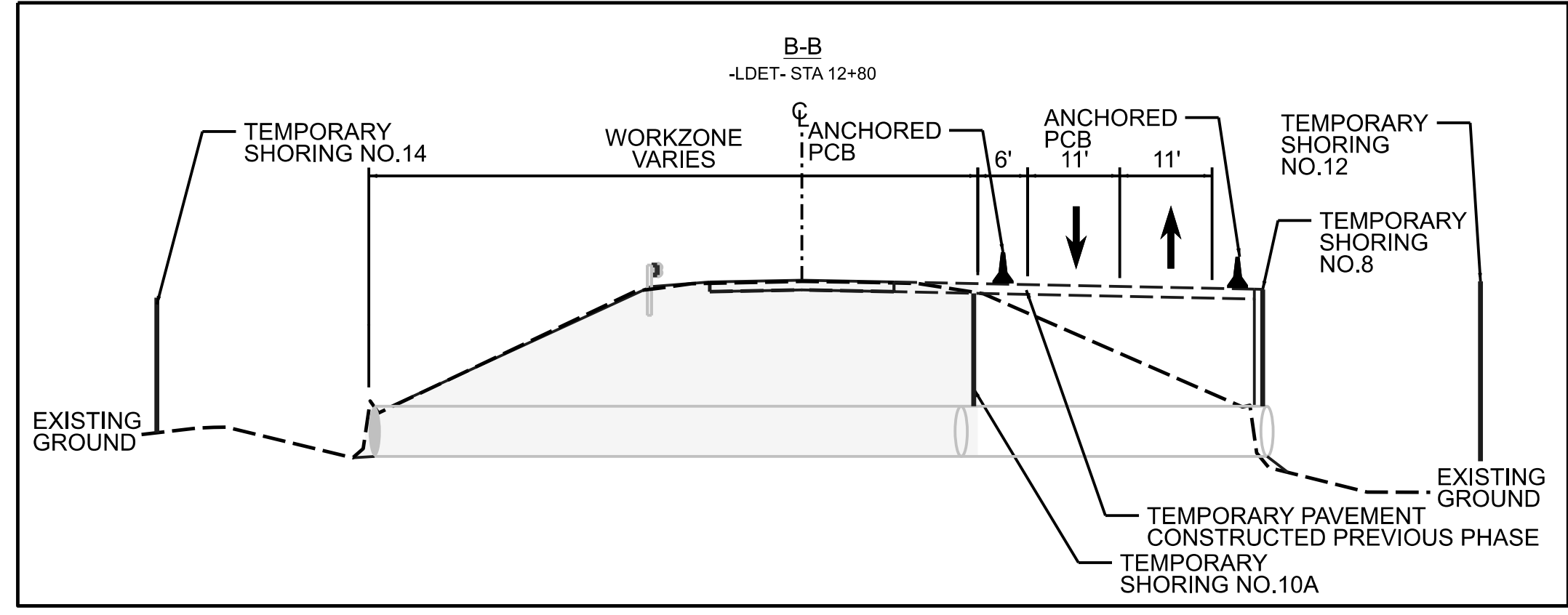
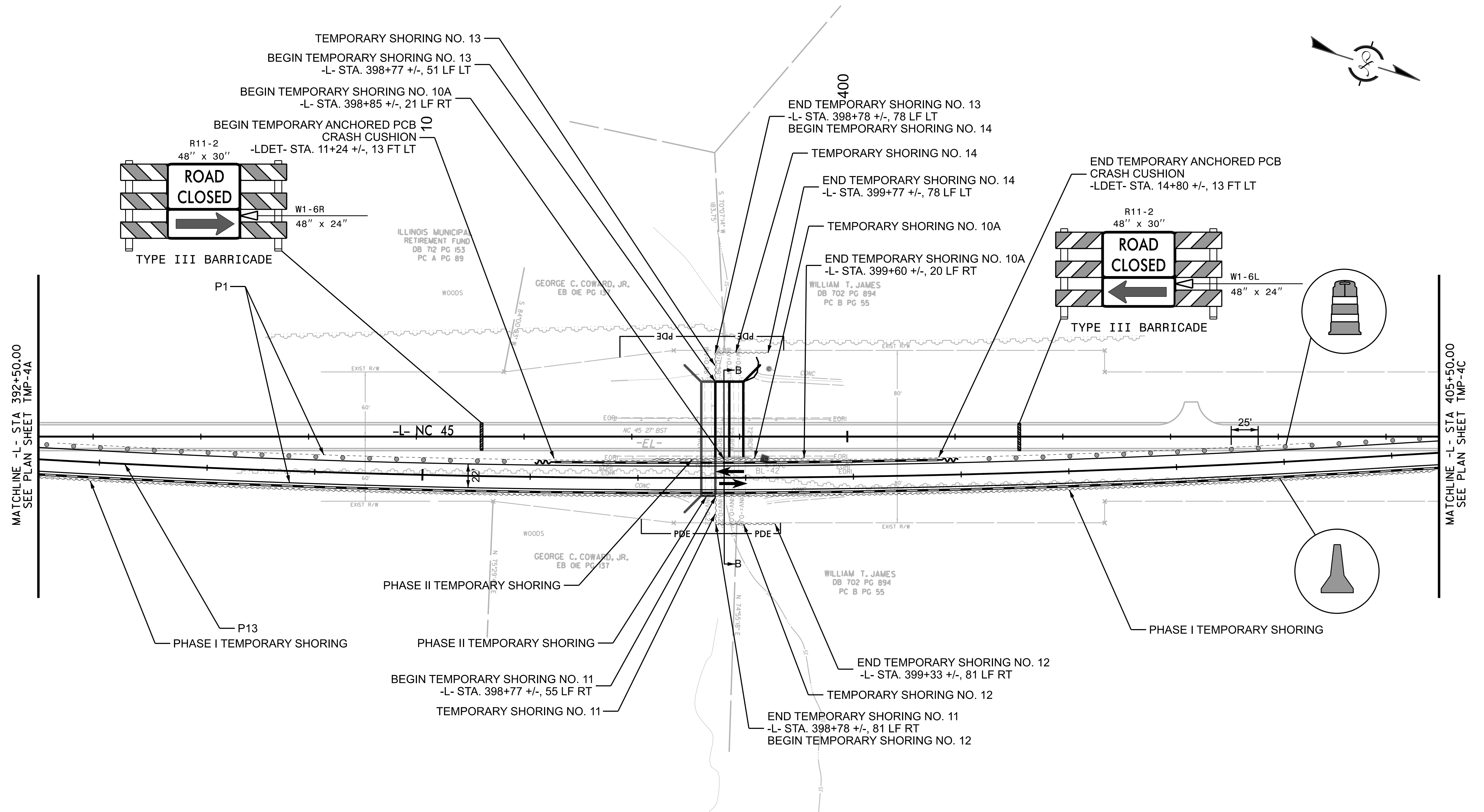
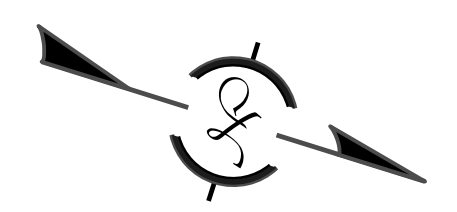
# Kimley»Horn

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

10/30/2024



**TRAFFIC CONTROL  
PHASE III**



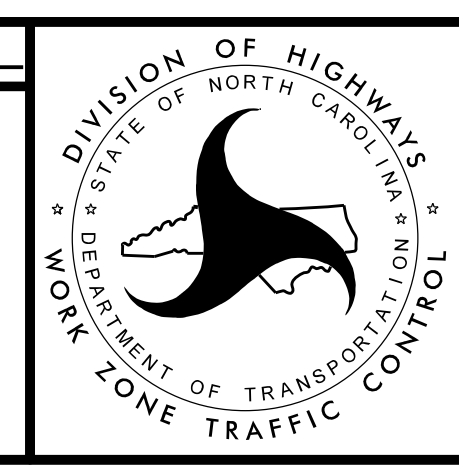
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**Kimley»Horn**

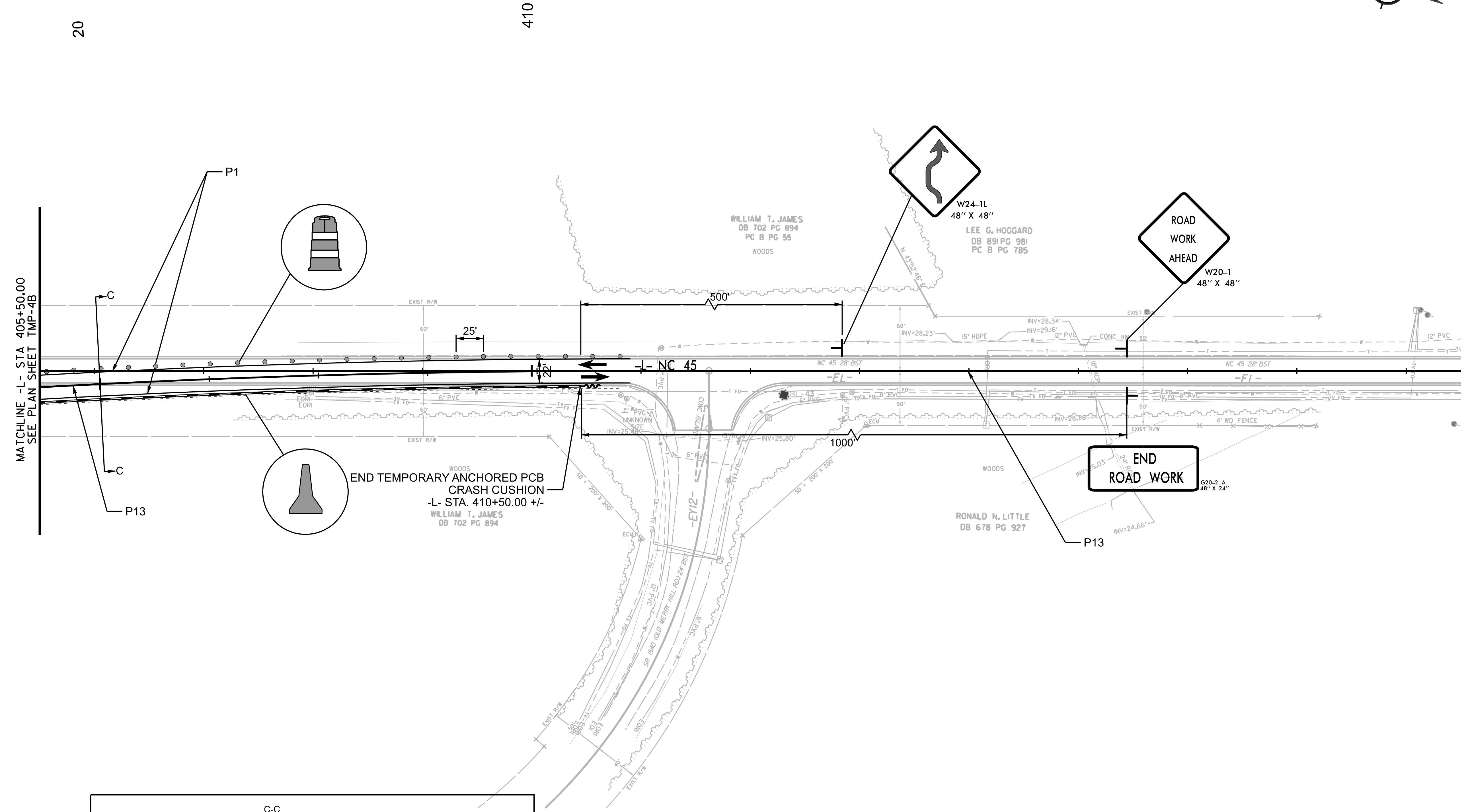
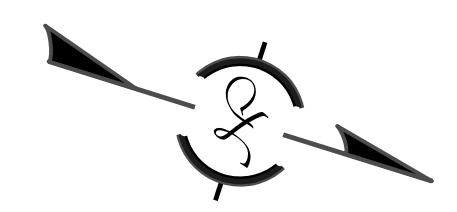
APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

10/11/2024



TRAFFIC CONTROL  
PHASE III

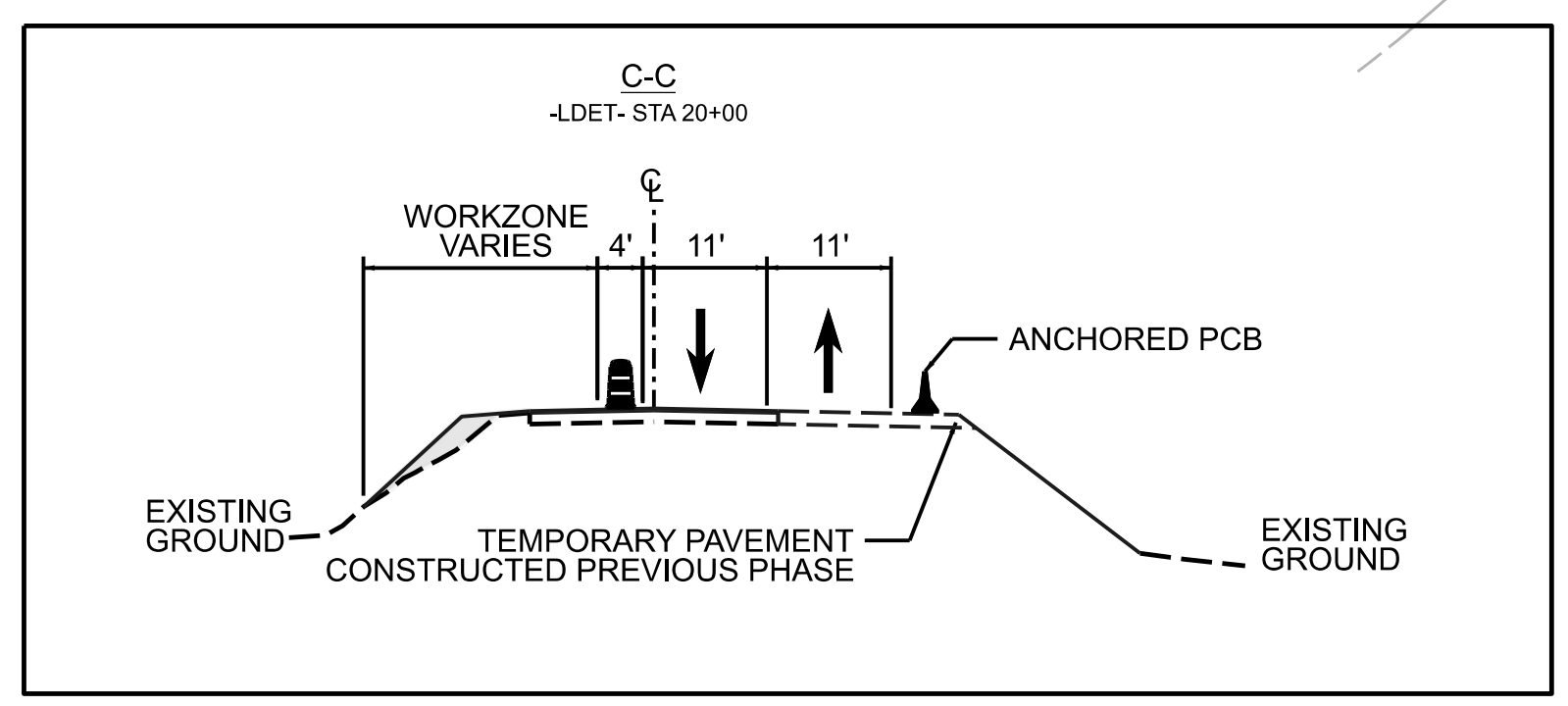




MATCHLINE -L- STA 405+50.00  
SEE PLAN SHEET TMP-4B

END TEMPORARY ANCHORED PCB  
CRASH CUSHION  
-L- STA. 410+50.00 +/-  
WILLIAM T. JAMES  
DB 702 PG 894

END  
ROAD WORK

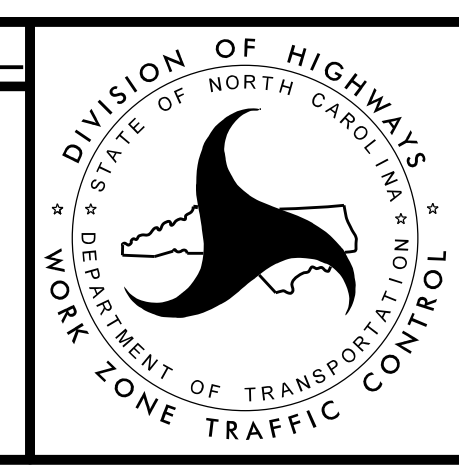


\$DATE\$

**Kimley»Horn**

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

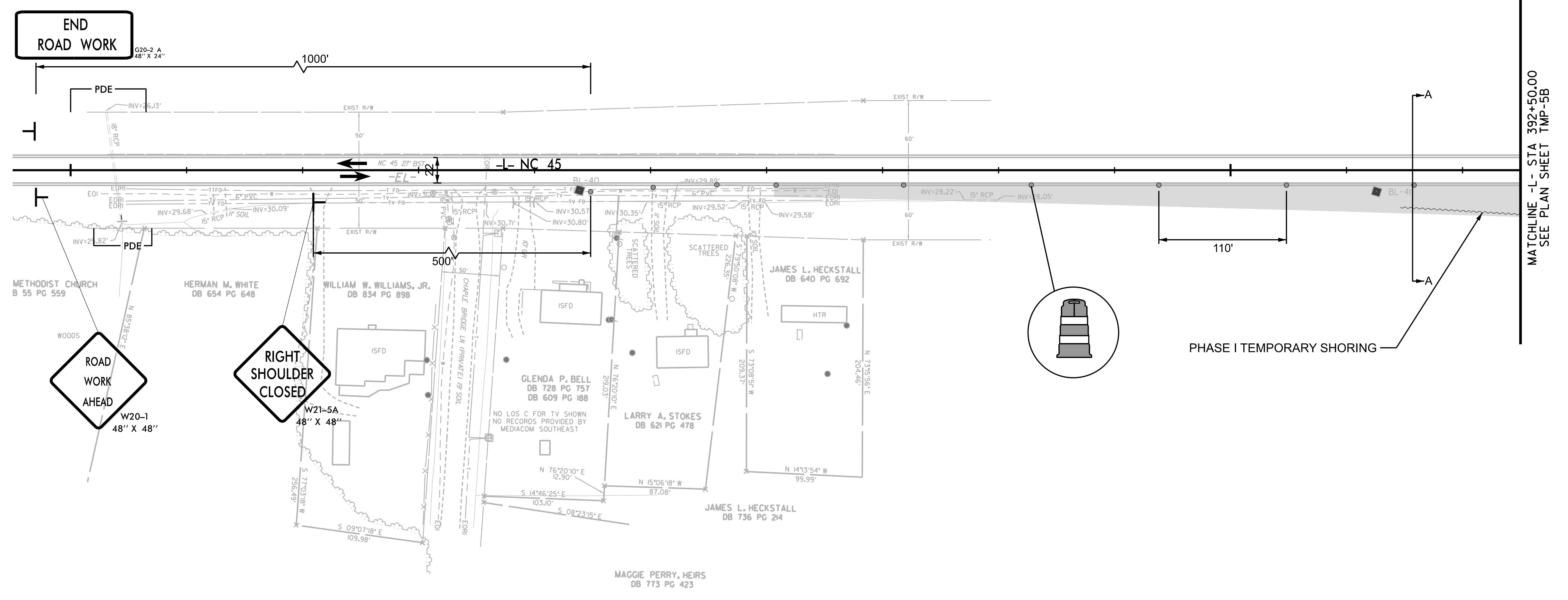
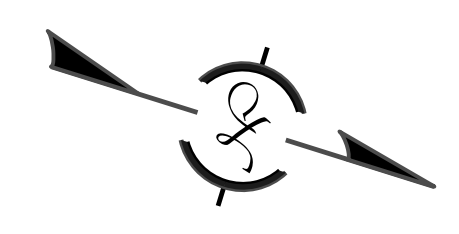
10/11/2024



TRAFFIC CONTROL  
PHASE III

380

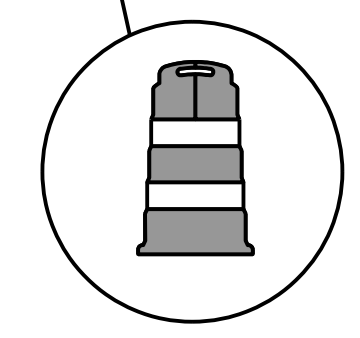
390



END ROAD WORK

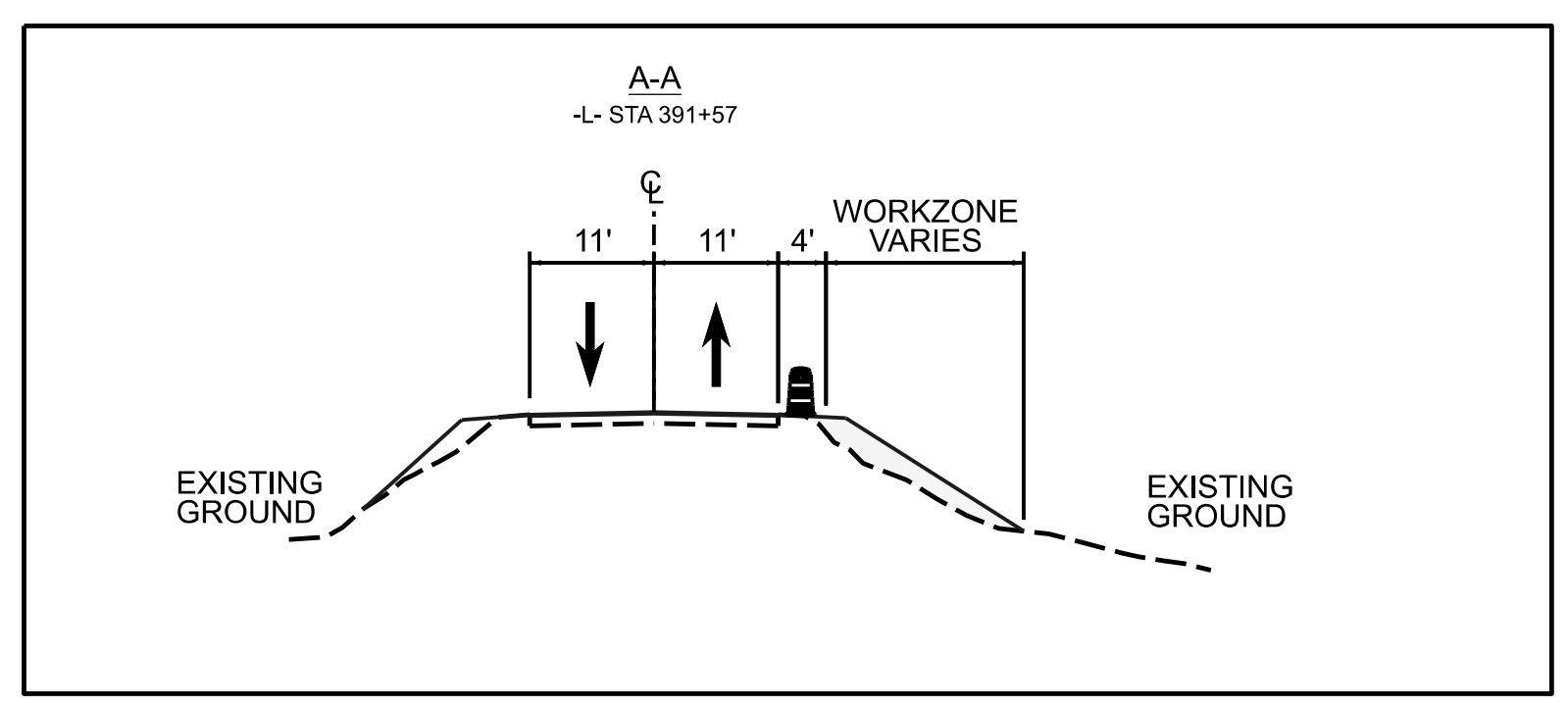
ROAD WORK AHEAD  
W20-1  
48" X 48"

RIGHT SHOULDER CLOSED  
W21-5A  
48" X 48"



PHASE I TEMPORARY SHORING

MATCHLINE -L- STA 392+50.00  
SEE PLAN SHEET TMP-5B

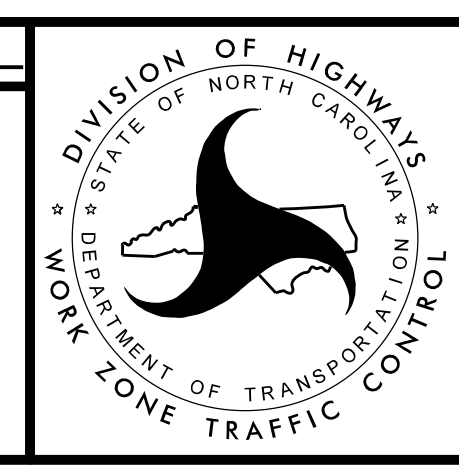


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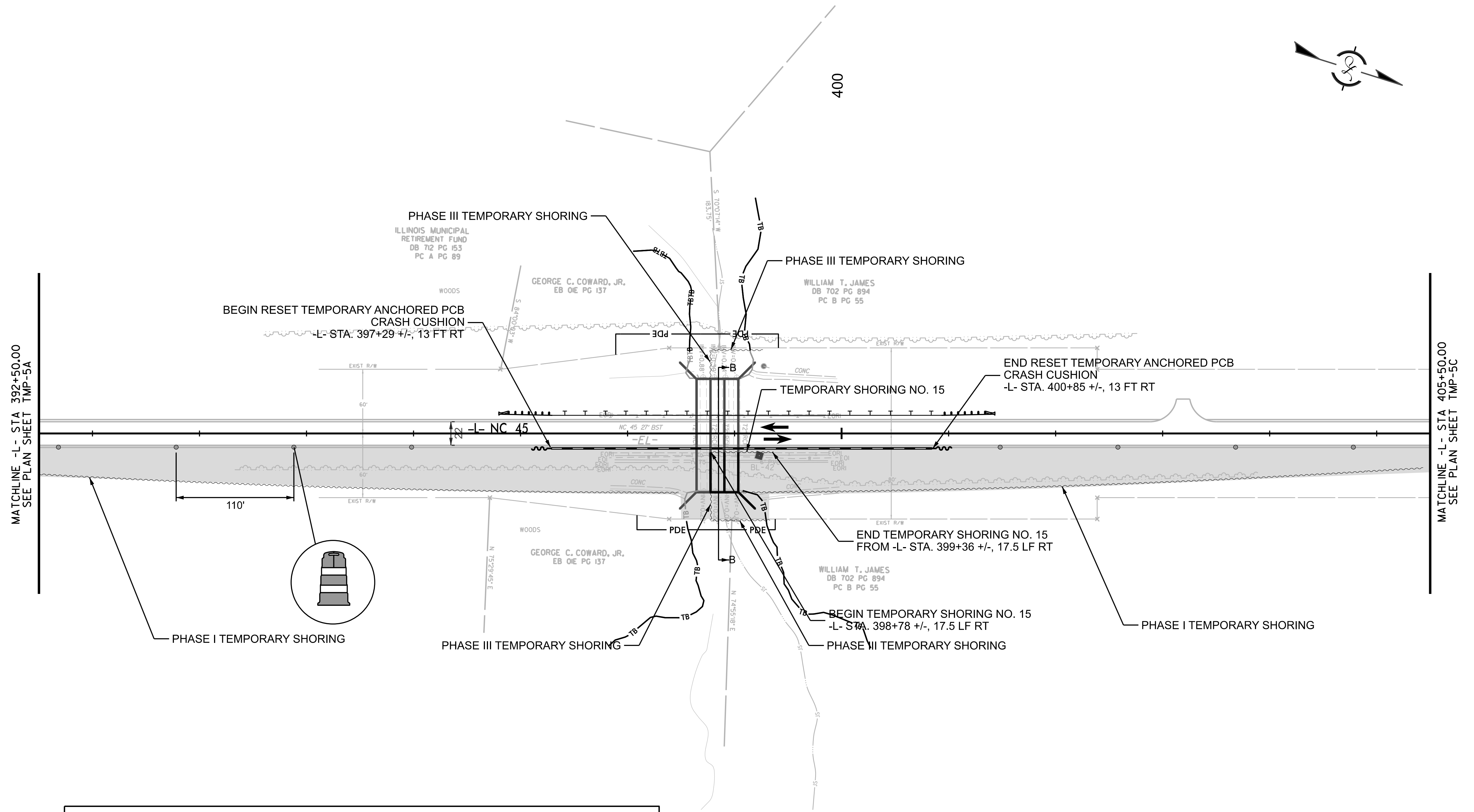
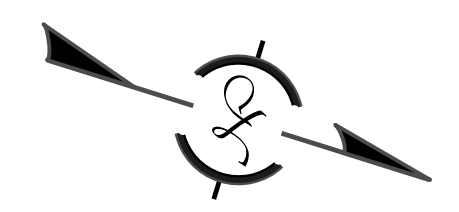
# Kimley»Horn

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

10/30/2024

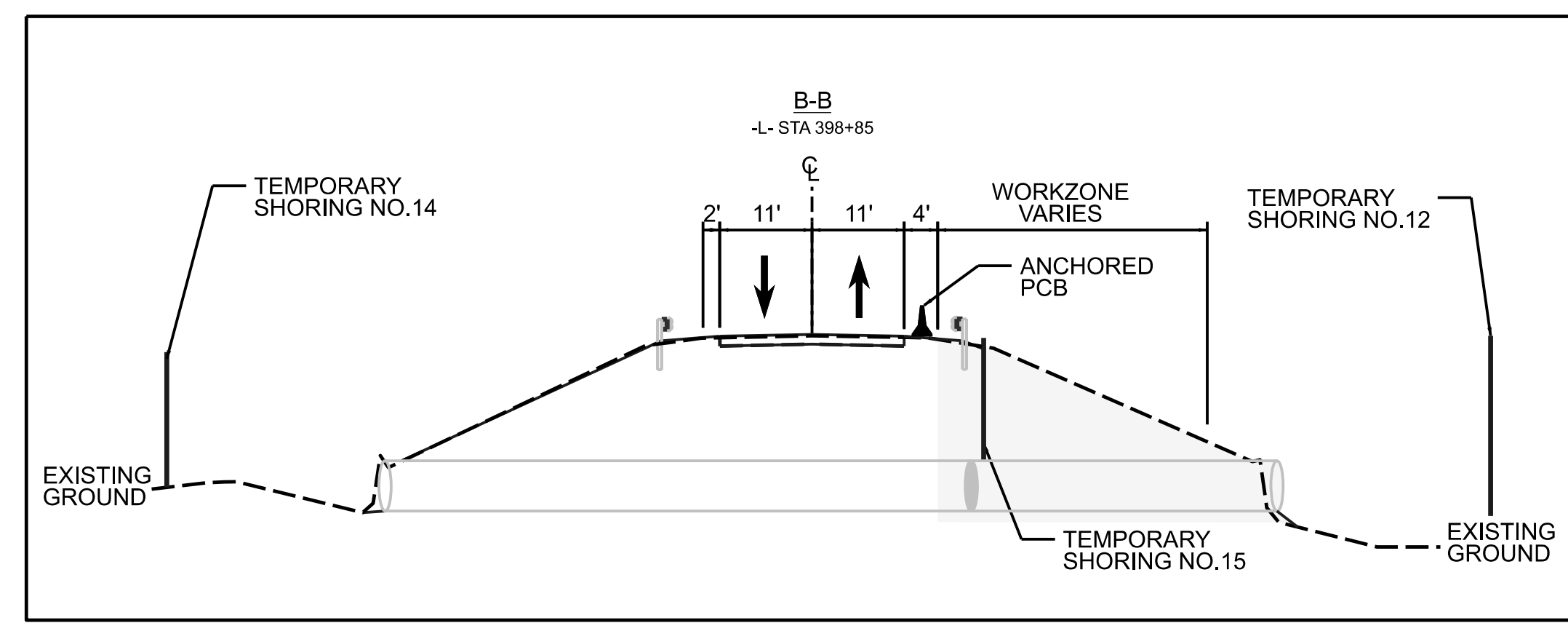
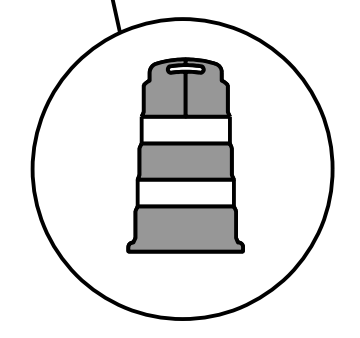


## TRAFFIC CONTROL PHASE IV



MATCHLINE -L- STA 392+50.00  
SEE PLAN SHEET TMP-5A

MATCHLINE -L- STA 405+50.00  
SEE PLAN SHEET TMP-5C

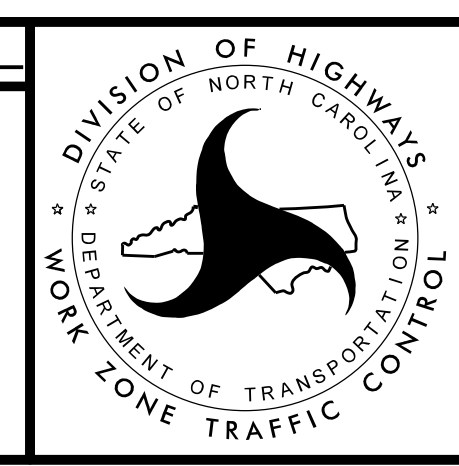


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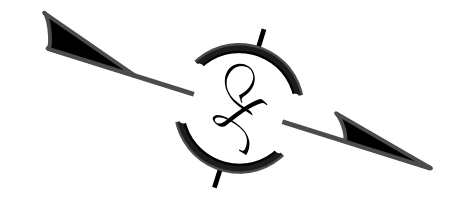
**Kimley»Horn**

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

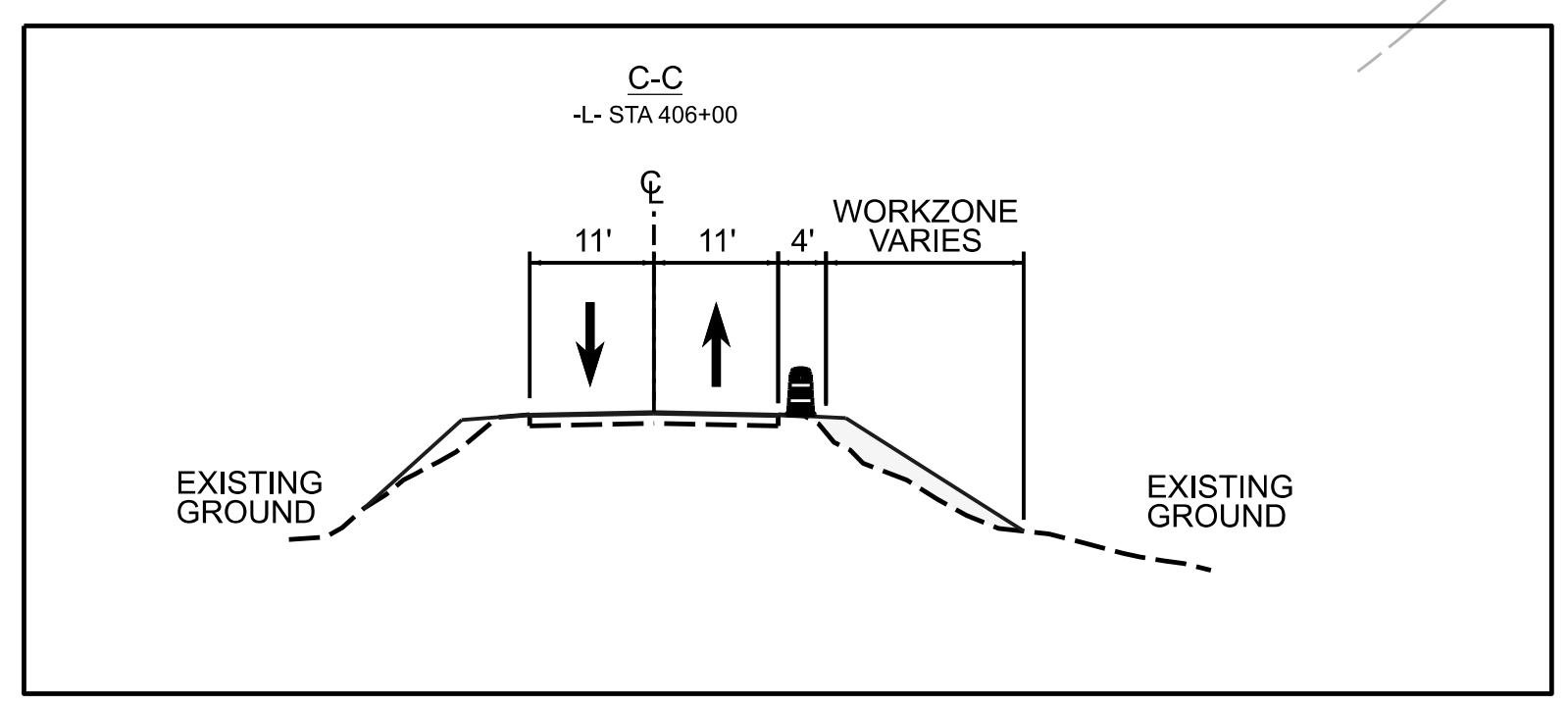
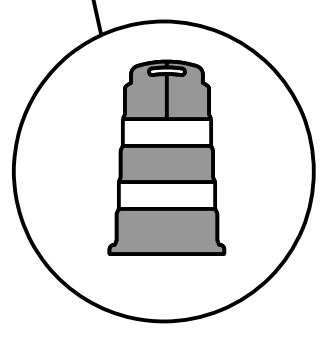
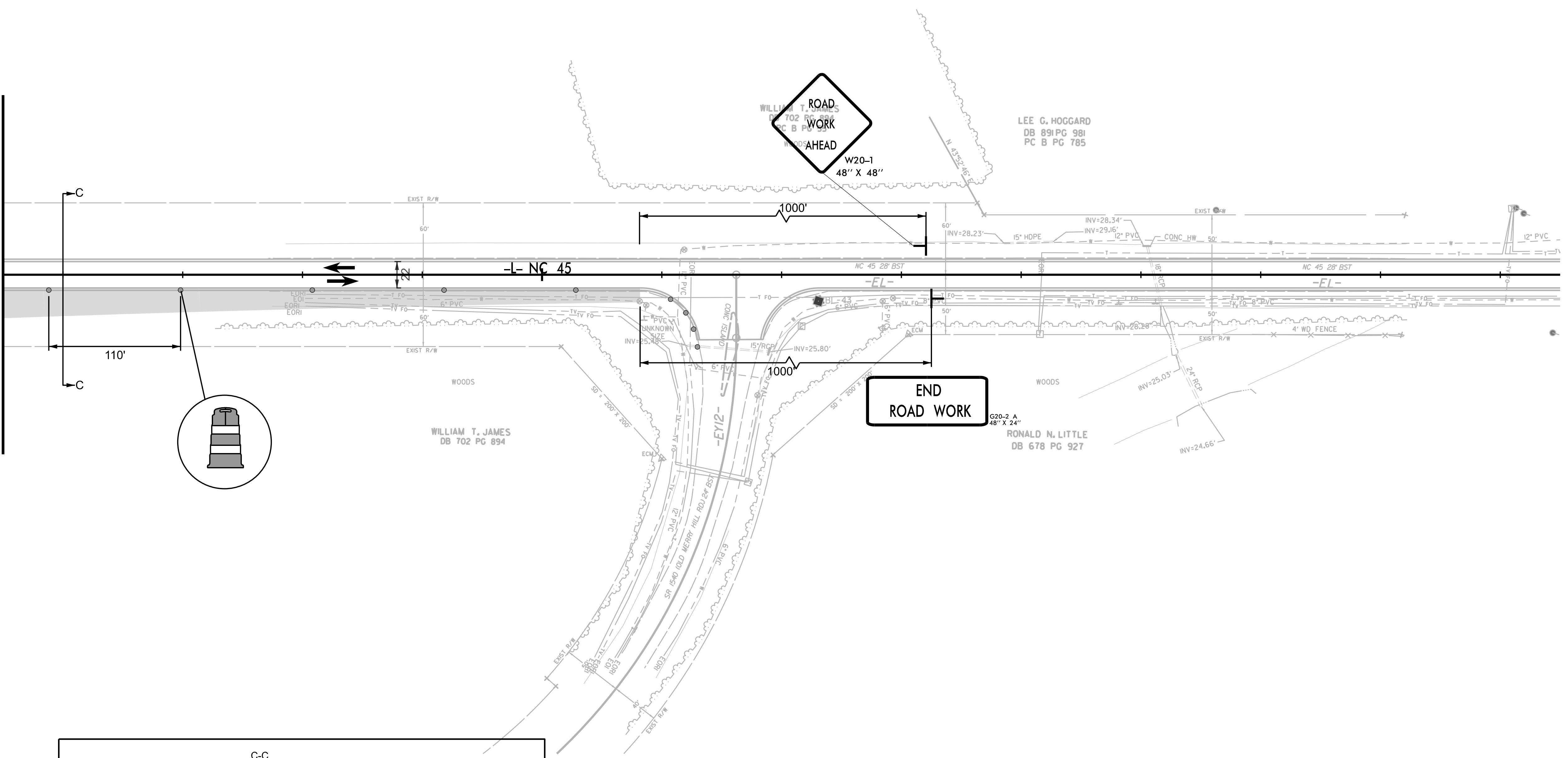
10/11/2024



**TRAFFIC CONTROL  
PHASE IV**



MATCHLINE -L- STA 405+50.00  
SEE PLAN SHEET TMP-5B

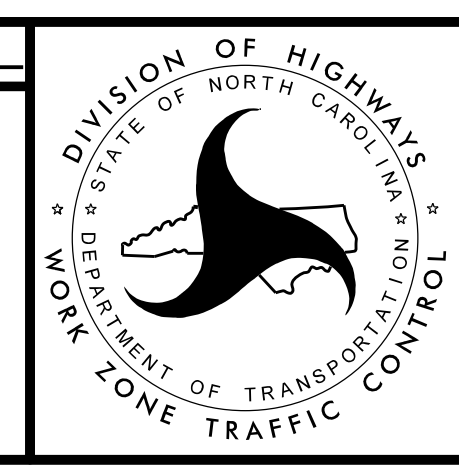


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**Kimley»Horn**

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

10/11/2024



**TRAFFIC CONTROL  
PHASE IV**