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# INDEX OF SHEETS

AND PHASING)

PHASE I DETAILS

PHASE II DETAILS

PHASE III DETAILS

TEMPORARY SHORING NOTES

TITLE SHEET, AND INDEX OF SHEETS

TITLE

LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKINGS

TRANSPORTATION OPERATIONS PLAN: (GENERAL NOTES

SHEET NO.

TMP-1

**BR-0009** 

	NOT CONSIDERED FINAL SIGNATURES COMPLETED
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SEAL	SEAL 046203

# ROADWAY STANDARD DRAWI

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRA PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEI DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENC 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 ROAD
1205.03	PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMPS
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 TEMPOR
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND M
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

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INGS	LEGEND
AWINGS" -	
IGH, N.C., CE HEREBY	<u>GENERAL</u>
	DIRECTION OF TRAFFIC FLOW
	EXIST. PVMT.
	NORTH ARROW
	PROPOSED PVMT. 
	WORK AREA
	REMOVAL
	SIGNALS (PTS)
	$ \begin{array}{c} \bigotimes \\ \bigotimes \\ \bigotimes \\ EXISTING \end{array} \xrightarrow{\otimes} \\ \bigotimes \\ B \\ B \\ EXISTING \end{array} $
ADWAYS	PAVEMENT MARKINGS
	TEMPORARY PAVEMENT MARKING
	P1 - WHITE EDGELINE (PAINT) - 4" P4 - WHITE MINISKIP (PAINT) - 4"
	P13 - YELLOW DOUBLE CENTER (PAINT) - 4" P61 - WHITE STOP BAR (PAINT) - 24"
G	
ORARY) ION SPACING MOUNTING	
MOUNTING	
	DocuSigned by:
	APPROVED: <u>kormen Dois</u> 596D97024696449 DATE: $\frac{3/17/2020}{1000}$
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	PROJ. REFERENCE NO. BR - 0009	sheet no. TMP - 1A
TRAFFIC CONTROL DEVICES		
BARRICADE (TYPE III)		
<b>CONE</b>		
■ DRUM	TUBULAR MARKER	
TEMPORARY CRASH CUSHION		
FLASHING ARROW BOARD		
FLAGGER		
TRUCK MOUNTED ATTENUATOR (T	MA)	
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



### ROADWAY STANDARD DRAWINGS & LEGEND

# 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.

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.
- WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN B) 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.
- WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER C) 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 WITHIN A LANE OF TRAVEL D) 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.
- DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN G) 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 THIRTY (30) 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 CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

M)	INSTALL MARKERS						
	ROAD NAM	IE		MA	<u>RKI</u>	NG	
	NC 9 (-1	- )		P/	7 L VI.	г	

- NG 9 (-L-) PAINI PAINT NC 9 (-DET-) N) 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. 0) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING
- LINES.
- P) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.
- Q) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS SHOWN IN FINAL PAVEMENT MARKING PLAN.

D TEMPORARY PAVEMENT AS FOLLOWS:

> MARKER N/A N/A

		PROJ. REFERENCE NO.	SHEET NO.
	PHASING	BR-0009	TMP-1B
NOTE:	BEFORE BEGINNING CONSTRUCTION THE CONTRACTOR SHALL PLACE ADVANCE WORK ZONE WARNING SIGNS ALONG -L- LINE (NC 9), (SEE RSD 1101.01, SHEET 3 OF 3)		
NOTE:	IF NECESSARY, USE RSD 1101.06 (SHEET 1 OF 1) FOR PLACEMENT OF ADVANCE WARNING SIGNS FOR BLASTING ZONES		
STEP 1.	PHASE I USING RSD NO. 1101.02 (SHEET 1 OF 14), CONSTRUCT -DET- LINE, INCLUDING DETOUR BRIDGE, GUARDRAIL, AND SHORING, UP TO EXISTING EDGE OF PAVEMENT ELEVATIONS AS FOLLOWS (SEE TMP-3): - STA. 10+00+/DET- TO STA. 16+43+/DET-		
STEP 2.	USING RSD NO. 1101.02 (SHEET 1 OF 14), PLACE TEMPORARY PAVEMENT MARKINGS AS FOLLOWS (SEE TMP-4): - STA. 9+00+/L- TO STA. 15+75+/L-		
-	PLACE TEMPORARY SIGNAL SIGNAGE AND TEMPORARY PORTABLE SIGNALS AND ACTIVATE (SEE TMP-4).		
-	SHIFT TRAFFIC FROM A TWO-LANE, TWO WAY PATTERN TO A ONE-LANE, TWO WAY PATTERN ON NC 9 AS SHOWN ON TMP-4.		
STEP 1.	PHASE II AWAY FROM TRAFFIC, REMOVE EXISTING BRIDGE AND CONSTRUCT PROPOSED BRIDGE, INCLUDING APPROACHES, SHORING, DRAINAGE, AND GUARDRAIL, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AS FOLLOWS (SEE CONSTRUCTION PLANS AND TMP-4):		
	- STA. 12+00+/L- TO STA. 14+00+/L-		
-	AWAY FROM TRAFFIC , WIDEN -L- UP TO EXISTING EDGE OF PAVEMENT ELEVATIONS AS FOLLOWS (SEE CONSTRUCTION PLANS AND TMP-4):		
	- STA. 10+00+/L- TO STA. 12+00+/L- (RIGHT) - STA. 14+00+/L- TO STA. 16+23+/L- (RIGHT) - DRIVEWAYS (RIGHT) - STA. 14+00+/L- TO STA. 14+20+/L- (LEFT)		
STEP 2.	USING RSD NO. 1101.02 (SHEET 1 OF 14), PAVE UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AS FOLLOWS (SEE TMP-4):		
	- STA. 10+00+/L- TO STA. 12+00+/L- (RIGHT) - STA. 14+00+/L- TO STA. 16+23+/L- (RIGHT)		
	USING RSD NO. 1101.02 (SHEET 1 OF 14), PLACE TEMPORARY PAVEMENT MARKINGS AS FOLLOWS (SEE TMP-5): - STA. 9+00+/L- TO STA. 16+23+/L- REMOVE TEMPORARY SIGNAL SIGNAGE AND TEMPORARY PORTABLE SIGNALS.		
-	SHIFT TRAFFIC FROM A ONE-LANE, TWO WAY PATTERN TO A TWO-LANE, TWO WAY PATTERN ON NC 9 AS SHOWN ON TMP-5.		
	PHASE III		
STEP 1.	USING RSD NO. 1101.02 (SHEET 1 OF 14), CONSTRUCT PAVED SHOULDERS UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AS FOLLOWS (SEE TMP-5):		
	- STA. 10+00+/L- TO STA. 12+15+/L- (LEFT) - STA. 14+20+/L- TO STA. 16+23+/L- (LEFT) - GRAVEL DRIVE (LEFT)		
	REMOVE DETOUR BRIDGE (SEE TMP-5).		
_	REMOVE PAVEMENT AS SHOWN ON TMP-5. USING RSD NO. 1101.02 (SHEET 1 OF 14), PAVE THE FINAL LAYER OF SURFACE COURSE AS FOLLOWS: - STA. 10+00+/L- TO STA. 16+23+/L-		
STEP 3.	USING RSD NO. 1101.02 (SHEET 1 OF 14), PLACE FINAL PAVEMENT		
STEP 4.	MARKINGS FOR -L- LINE (SEE FINAL PAVÉMENT MARKING PLANS). REMOVE ALL TRAFFIC CONTROL DEVICES AND SIGNAGE.		
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	APPROVED: <u>Kurmen Dais</u> 596D97024696449 DATE: <u>3/17/2020</u> TRA	NSPORTATIO PERATIONS	



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PLAN

#### 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 DETOUR CONSTRUCTION FROM STATION 13+38+/- -L-, 22' LT., TO STATION 13+53+/- -L-, 22' 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 13+38+/- -L-, 22' LT., TO STATION 13+53+/- -L-, 22' LT., FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

> UNIT WEIGHT  $(\gamma) = 120 \text{ LB/CF}$ FRICTION ANGLE  $(\phi) = 30$  DEGREES COHESION (c) = 0 LB/SF GROUNDWATER ELEVATION = 2180 FT

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 13+38+/- -L-, 22' LT., TO STATION 13+53+/- -L-, 22' LT. MAY NOT PENETRATE BELOW ELEVATION 2166 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 13+38+/- -L-, 22' LT., TO STATION 13+53+/- -L-, 22' LT. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

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 END BENT INSTALLATION FROM STATION 12+62+/- -L-, 21' LT., TO STATION 12+77+/- -L-, 21' 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+62+/- -L-, 21' LT., TO STATION 12+77+/- -L-, 21' LT., FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

> UNIT WEIGHT  $(\gamma) = 120 \text{ LB/CF}$ FRICTION ANGLE  $(\phi) = 30$  DEGREES COHESION (c) = 0 LB/SF GROUNDWATER ELEVATION = 2182 FT

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 12+62+/- -L-, 21' LT., TO STATION 12+77+/- -L-, 21' LT. MAY NOT PENETRATE BELOW ELEVATION 2175 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 12+62+/- -L-, 21' LT., TO STATION 12+77+/- -L-, 21′LT.

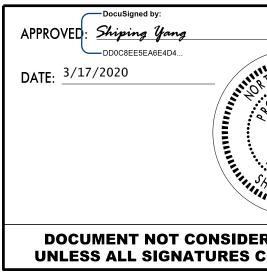
AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 12+62+/- -L-, 21' LT., TO STATION 12+77+/- -L-, 21' LT. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING. IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION 12+62+/- -L-, 21' LT., TO STATION 12+77+/- -L-, 21' LT. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

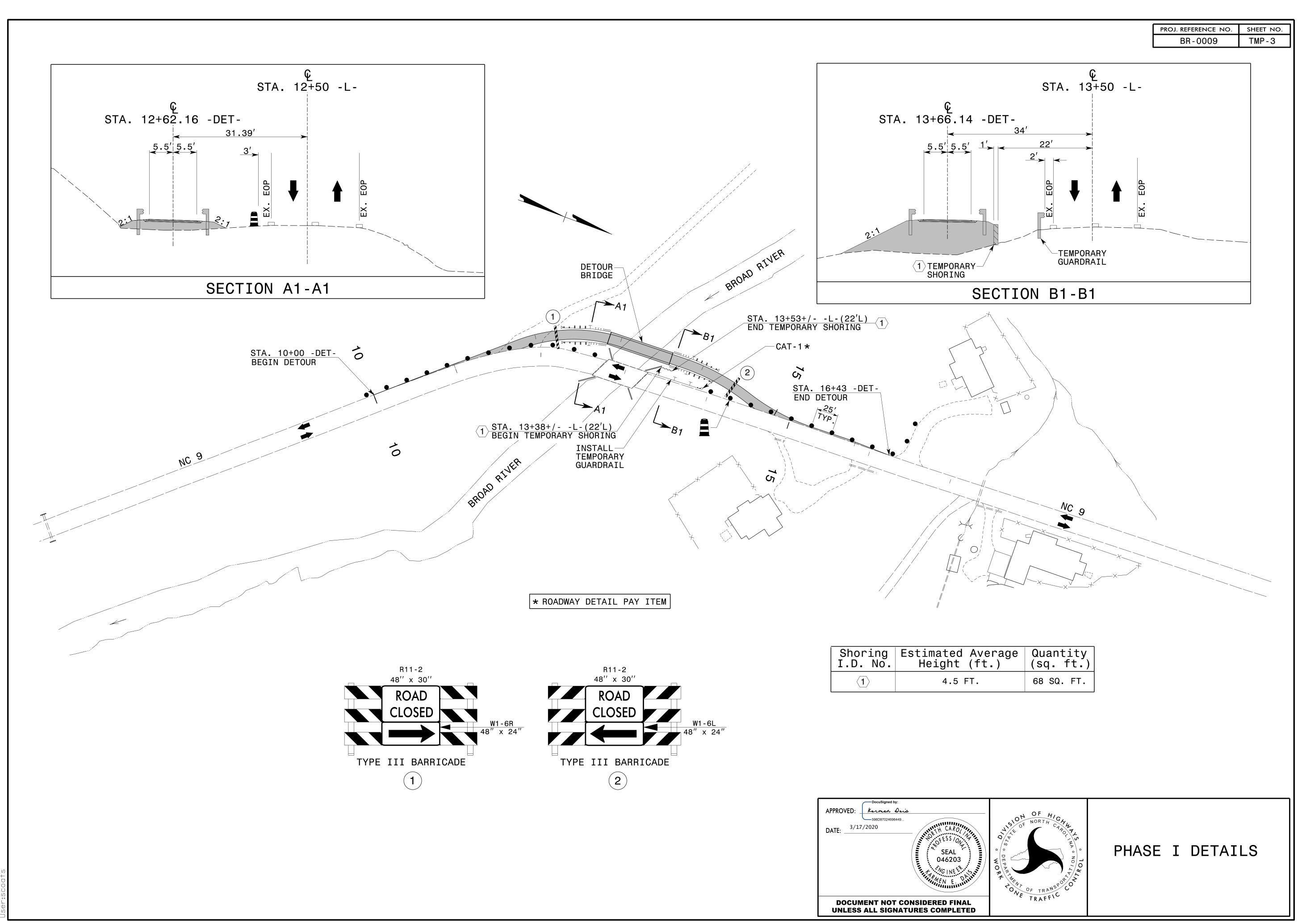
SHORING LOCATION NO.	BEGIN STATION AND OFFSET	END STATION AND OFFSET	ESTIMATED AVERAGE HEIGHT	ESTIMATED MAXIMUM HEIGHT	SHORING LOCATION TYPE	
NO. 1	STA. 13+38+/L- 22 FT. LT.	STA. 13+53+/L- 22 FT. LT.	4.5 FT.	6.0 FT.	ROADWAY	
NO. 2	STA. 12+62+/L- 21 FT. LT.	STA. 12+77+/L- 21 FT. LT.	5.5 FT.	7.0 FT.	STRUCTURE	
	APPROVED: Shiping Yang DDOCREESEAGEADA DATE: 3/17/2020	POFESSION	TRAFFIC		ARY SHORI	NG NOTES

PROJ. REFERENCE NO.

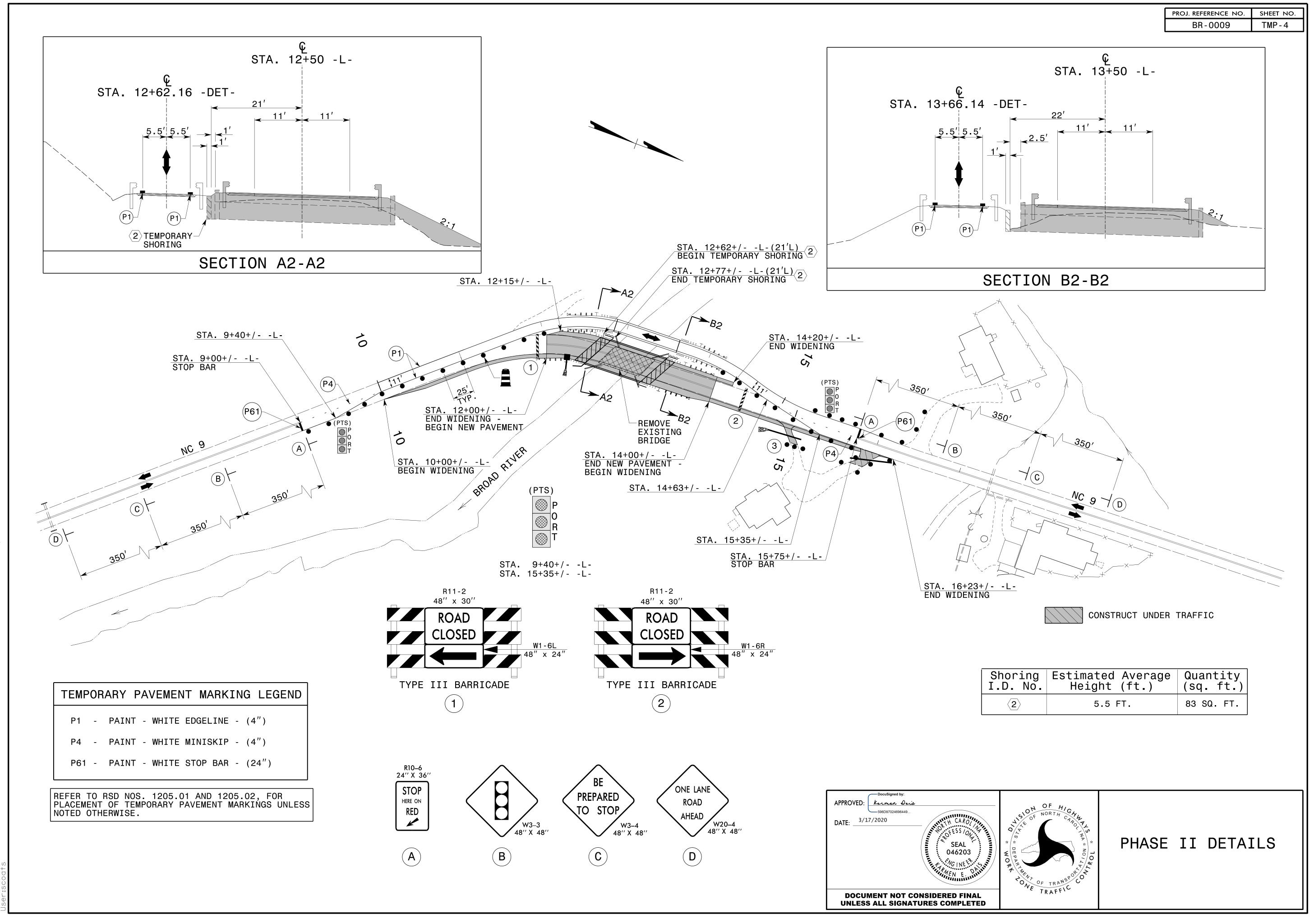
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