

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

STATE PROJECT REFERENCE NO.	SHEET NO.
B - 4 2 8 1	TCP-1

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

B-4281

**ROADWAY STANDARD DRAWINGS**

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

STD. NO.	TITLE
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGERS
1165.01	TRUCK MOUNTED IMPACT ATTENUATOR
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	PAVEMENT MARKER SPACING
1251.01	RAISED PAVEMENT MARKERS (TEMPORARY & PERMANENT)
1253.01	SNOWPLOWABLE RAISED PAVEMENT MARKERS
1261.01	GUARDRAIL & BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL & BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS
1264.02	PLACEMENT OF OBJECT MARKERS

**INDEX OF SHEETS**

SHEET NO.	TITLE
TCP-1	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, INDEX OF SHEETS AND TEMPORARY PAVEMENT MARKING SCHEDULE
TCP-2 AND TCP-2A	PROJECT NOTES
TCP-3	PHASE I OVERVIEW AND PHASING
TCP-4 AND TCP-5	PHASE I DETAILS
TCP-6	PHASE II OVERVIEW AND PHASING
TCP-7 AND TCP-8	PHASE II DETAILS
TCP-9	DETAIL DRAWING FOR TWO-WAY UNDIVIDED AND URBAN FREEWAYS ADVANCE WORK ZONE WARNING SIGNS
TCP-10	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
PM-1	FINAL PAVEMENT MARKING SCHEDULE
PM-2	FINAL PAVEMENT MARKING PLAN

**LEGEND**

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

**TEMP. PAV'T. MARKING SCHEDULE**

SYMBOL	DESCRIPTION	QUANTITY BREAKDOWN	PAY ITEM	TOTAL QUANTITY
PAVEMENT MARKING LINES				
PA	WHITE EDGELINE 2X	6,172 LF	PAINT (4")	
PI	YELLOW DOUBLE CENTER LINE 2X	5,680 LF		
				TOTAL 11,852 LF
P4	WHITE STOP BAR	84 LF	PAINT (24")	
				TOTAL 84 LF
PAVEMENT MARKERS				
MH	YELLOW & YELLOW	72 EA	TEMPORARY RAISED	
				TOTAL 72 EA

NOTE: FOR EACH PAINT PAVEMENT MARKING ITEM, 1X IMPLIES A SINGLE APPLICATION, 2X IMPLIES TWO APPLICATIONS, AND 3X IMPLIES THREE APPLICATIONS.

PLAN REVIEWED BY: N.C.D.O.T. WORK ZONE TRAFFIC CONTROL UNIT J. S. BOURNE, P.E. WORK ZONE TRAFFIC CONTROL ENGINEER G. L. GETTIER, P.E. TRAFFIC CONTROL PROJECT ENGINEER J. W. WOOLARD, P.E. TRAFFIC CONTROL PROJ. DESIGN ENGINEER TRAFFIC CONTROL DESIGN ENGINEER TRAFFIC CONTROL DESIGN TECHNICIAN		APPROVED: <i>Michael T. Rzepka</i> DATE: 10-22-07 SEAL 	PLAN PREPARED FOR N.C.D.O.T. BY: M. T. RZEPKA, P.E. PROJECT ENGINEER B. L. MARIOTTE DESIGN ENGINEER B. L. MARIOTTE DESIGN TECHNICIAN
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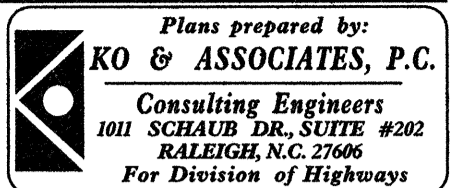
TIP PROJECT:

# PROJECT NOTES

PROJ. REFERENCE NO. SHEET NO.

B-4281

TCP-2



## GENERAL NOTES

ADAPT THE TRAFFIC CONTROL PLANS, WHEN DIRECTED BY THE ENGINEER, TO MEET FIELD CONDITIONS TO PROVIDE SAFE AND EFFICIENT TRAFFIC MOVEMENT. CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE, OR RESULT IN DUPLICATE, OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING OR REMOVAL OF DEVICES.

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
1. NC 8 / 89	6:00 AM - 8:00 AM, MONDAY THRU FRIDAY

B) DO NOT STOP TRAFFIC FOR MORE THAN 15 MINUTES AS FOLLOWS:

ROAD NAME	OPERATION
1. NC 8 / 89	TIE-INS AND SHIFTS

### LANE AND SHOULDER CLOSURE REQUIREMENTS

- C) 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.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 40 FT (12m) 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.
- E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT (1.5m) 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.
- F) 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.
- G) DO NOT WORK SIMULTANEOUSLY, ON BOTH SIDES OF AN OPEN TRAVELWAY, WITHIN THE SAME LOCATION, ON A TWO-LANE, TWO-WAY ROAD.
- H) DO NOT PERFORM WORK INVOLVING HEAVY EQUIPMENT WITHIN 15 FT (5m) OF THE EDGE OF TRAVELWAY WHEN WORK IS BEING PERFORMED BEHIND A LANE CLOSURE ON THE OPPOSITE SIDE OF THE TRAVELWAY.
- I) DO NOT INSTALL MORE THAN ONE LANE CLOSURE, IN ANY ONE DIRECTION, ON NC 8 / 89.
- J) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURE FOR SURVEYING DONE BY THE DEPARTMENT.

### PAVEMENT EDGE DROP OFF REQUIREMENTS

K) 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 A DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES (50mm) ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

L) DO NOT EXCEED A DIFFERENCE OF 1.5 INCHES (40mm) IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT (150m) IN ADVANCE AND A MINIMUM OF ONCE EVERY MILE THROUGHOUT THE UNEVEN AREA.

### TRAFFIC PATTERN ALTERATIONS

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

### SIGNING

N) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 100 FT (31m) FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. WHEN NO WORK IS BEING CONDUCTED FOR A PERIOD LONGER THAN ONE WEEK, REMOVE OR COVER ALL ADVANCE WORK ZONE WARNING SIGNS, AS DIRECTED BY THE ENGINEER, AT NO COST TO THE DEPARTMENT.

O) STATE FORCES WILL BE RESPONSIBLE FOR PERMANENT SIGNING.

P) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

APPROVED: <i>Michael T. Kleppa</i> DATE: 10-22-07		PROJECT NOTES	
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	DATE: 10-07		
	DWG. BY: BLM		
	DESIGN BY: BLM		
REVIEWED BY: MTR			

# PROJECT NOTES

## GENERAL NOTES

### TRAFFIC CONTROL DEVICES

- Q) WHEN USING ROADWAY STANDARD NO. 1101.02, DRUMS OR SKINNY DRUMS MAY BE USED IN LIEU OF CONES ON NC 8 / 89.
- R) SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH), EXCEPT 10 FT (3m) ON-CENTER IN RADII, AND 3 FT (1m) OFF THE EDGE OF AN OPEN TRAVELWAY, WHEN LANE CLOSURES ARE NOT IN EFFECT.
- S) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY. STAGGER OR OVERLAP BARRICADES TO ALLOW FOR INGRESS OR EGRESS.

### PAVEMENT MARKINGS AND MARKERS

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

	<u>ROAD NAME</u>	<u>MARKING</u>	<u>MARKER</u>
1.	NC 8 / 89	THERMOPLASTIC	SNOWPLOWABLE
2.	NC 8 / 89 STRUCTURE	COLD APPLIED PLASTIC TYPE III	PERMANENT RAISED

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

	<u>ROAD NAME</u>	<u>MARKING</u>	<u>MARKER</u>
1.	NC 8 / 89	PAINT	TEMPORARY RAISED

- V) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- W) REPLACE ANY PAVEMENT MARKINGS THAT HAVE BEEN DAMAGED BY THE END OF EACH DAY'S OPERATION.
- X) PLACE AT LEAST TWO APPLICATIONS OF PAINT ON NEW ASPHALT WITH TEMPORARY TRAFFIC PATTERNS WHICH WILL REMAIN IN PLACE OVER THREE (3) MONTHS. PLACE ADDITIONAL APPLICATIONS OF PAINT UPON SUFFICIENT DRYING TIME, AS DETERMINED BY THE ENGINEER.

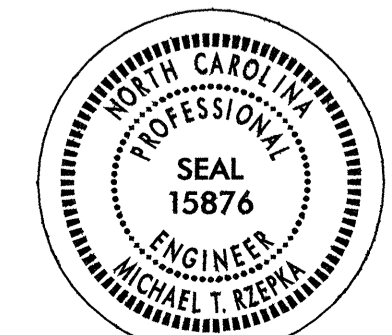
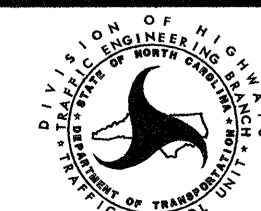
### MISCELLANEOUS

- Y) MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES.

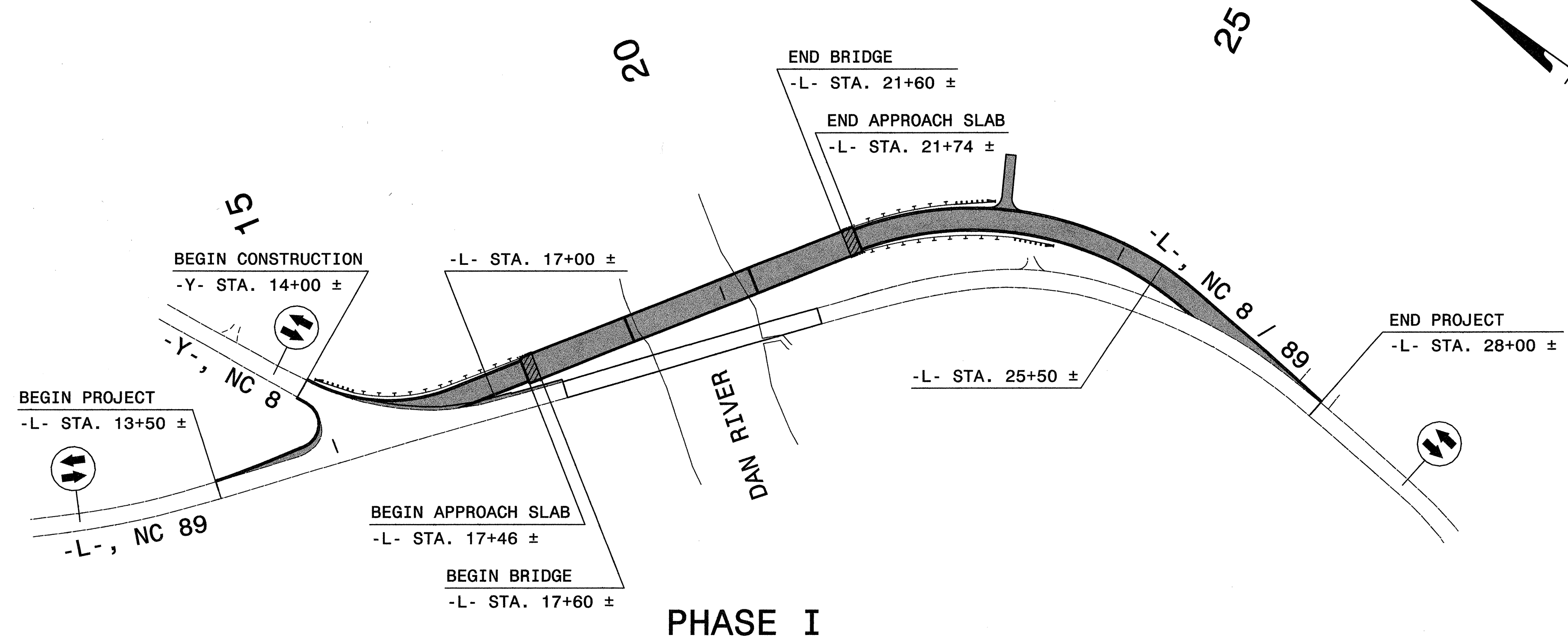
## LOCAL NOTES

- 1) REPLACE ANY MISSING OR DAMAGED TYPE 3 OBJECT MARKERS (OM-3L AND OM-3R) AT THE APPROACHES TO THE EXISTING STRUCTURE.

MAINTAIN TYPE 3 OBJECT MARKERS (OM-3L AND OM-3R) AT THE APPROACHES TO THE EXISTING STRUCTURE UNTIL TRAFFIC IS PLACED ON THE PROPOSED STRUCTURE.

APPROVED: <i>Michael T. Kleppa</i> DATE: 5-19-08		PROJECT NOTES									
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**PHASE I**

STEP 1: - INSTALL WORK ZONE WARNING SIGNS (SEE SHEET TCP-9).

COMPLETE THE FOLLOWING WORK IN PHASE I STEPS 2 AND 3 USING ROADWAY STANDARD DRAWING NUMBER 1101.02, SHEET 1 OF 9.

- STEP 2: - CONSTRUCT TEMPORARY WIDENING LEFT OF EXISTING NC 8 / 89 AS FOLLOWS (SEE SHEET TCP-4 AND SECTION A-A):
- 4' FROM -L- STA. 16+60 ± TO -L- STA. 17+20 ±.
  - 3' FROM -L- STA. 17+20 ± TO -L- STA. 17+83 ±.
- STEP 3: - PLACE TEMPORARY CONCRETE BARRIER LEFT OF EXISTING NC 8 / 89 FROM -L- STA. 16+60 ± TO -L- STA. 17+83 ±. ATTACH THE APPROACH END OF THE TEMPORARY CONCRETE BARRIER TO THE EXISTING BRIDGE RAIL SO THAT THE TRAFFIC SIDE OF THE TEMPORARY CONCRETE BARRIER IS FLUSH WITH THE TRAFFIC SIDE OF THE BRIDGE RAIL, KEEP THE TRAILING END OF THE TEMPORARY CONCRETE BARRIER PROTECTED BY A TEMPORARY CRASH CUSHION (SEE SHEET TCP-4 AND SECTION A-A).
- STEP 4: - PLACE TEMPORARY SHORING-BARRIER SUPPORTED LEFT OF EXISTING NC 8 / 89 FROM -L- STA. 17+20 ± TO -L- STA. 17+80 ±, REFER TO ROADWAY STANDARD DRAWING NUMBER 1101.02, SHEET 1 OF 9.
- STEP 5: - AWAY FROM TRAFFIC BEGIN CONSTRUCTION OF PROPOSED STRUCTURE FROM -L- STA. 17+46 ± TO -L- STA. 21+74 ± (SEE SHEET TCP-4 AND STRUCTURE PLANS).
- STEP 6: - BEHIND BARRIER, BEGIN CONSTRUCTION OF PROPOSED -L- UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM -L- STA. 17+00 ± TO -L- STA. 17+46 ± EXCLUDING PROPOSED GUARDRAILS (SEE SHEET TCP-4, SECTION A-A AND ROADWAY PLANS).
- USING ROADWAY STANDARD DRAWING NUMBER 1101.04, SHEET 1 OF 1, BEGIN CONSTRUCTION OF PROPOSED -L- UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM -L- STA. 21+74 ± TO -L- STA. 25+50 ± INCLUDING PROPOSED DRIVEWAY LEFT OF -L- AND GUARDRAILS (SEE SHEET TCP-4 AND ROADWAY PLANS).
  - AWAY FROM TRAFFIC COMPLETE CONSTRUCTION OF PROPOSED STRUCTURE FROM -L- STA. 17+46 ± TO -L- STA. 21+74 ± (SEE SHEET TCP-5 AND STRUCTURE PLANS).
  - BEHIND BARRIER, BEGIN CONSTRUCTION UP TO THE EXISTING EDGE AND ELEVATION LEFT OF EXISTING NC 8 / 89 FROM -Y- STA. 14+00 ± TO -L- STA. 17+00 ± (SEE SHEET TCP-4 AND ROADWAY PLANS).
  - USING ROADWAY STANDARD DRAWING NUMBER 1101.02, SHEET 1 OF 9, BEGIN CONSTRUCTION OF THE FOLLOWING UP TO THE EDGE AND ELEVATION OF NC 8 / 89 (SEE SHEET TCP-5 AND ROADWAY PLANS):
- L- STA. 13+50 ± TO RIGHT OF -Y- STA. 14+00 ±
  - L- 25+50 ± TO -L- 28+00 ±

STEP 7: - BEHIND BARRIER, REMOVE TEMPORARY SHORING FROM -L- STA. 17+20 ± TO -L- STA. 17+80 ±, (REFERRING TO ROADWAY STANDARD DRAWING NUMBER 1101.02, SHEET 1 OF 9).

STEP 8: - WORKING IN A CONTINUOUS MANNER AND USING ROADWAY STANDARD DRAWING NUMBER 1101.02, SHEET 1 OF 9, REMOVE TEMPORARY CONCRETE BARRIER LEFT OF EXISTING NC 8 / 89 FROM -L- STA. 16+60 TO -L- STA. 17+00 ± AND RESET TEMPORARY CRASH CUSHION (SEE SHEETS TCP-4 AND TCP-5).

STEP 9: - USING ROADWAY STANDARD DRAWING NUMBER 1101.02, SHEET 1 OF 9, COMPLETE CONSTRUCTION OF THE FOLLOWING UP TO THE EXISTING EDGE AND ELEVATION OF NC 8 / 89 (SEE SHEET TCP-5, SECTION B-B AND ROADWAY PLANS):

- LEFT OF -Y- STA. 14+00 ± TO -L- STA. 17+00 ±
- L- STA. 13+50 ± TO RIGHT OF -Y- STA. 14+00 ±
- L- STA. 25+50 ± TO -L- STA. 28+00 ±

- COMPLETE CONSTRUCTION UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AT THE FOLLOWING LOCATIONS (SEE SHEET TCP-5 AND ROADWAY PLANS):

- L- STA. 17+00 ± TO -L- STA. 17+46 ±
- L- STA. 21+75 ± TO -L- STA. 25+50 ± (INCLUDING PROPOSED GUARDRAIL)

- USING ROADWAY STANDARD DRAWING NUMBER 1101.02, SHEET 1 OF 9, INSTALL PROPOSED GUARDRAIL FROM -Y- STA. 14+00 ± TO -L- STA. 17+46 ± (SEE SHEET TCP-5 AND ROADWAY PLANS).

- BEHIND BARRIER, INSTALL PROPOSED GUARDRAIL ANCHOR UNIT ON SOUTHBOUND APPROACH END OF PROPOSED STRUCTURE (SEE SHEET TCP-5 AND ROADWAY PLANS).

**LEGEND**

PROPOSED CONSTRUCTION

APPROVED: *Michael T. Kiepla* DATE: 10-22-07

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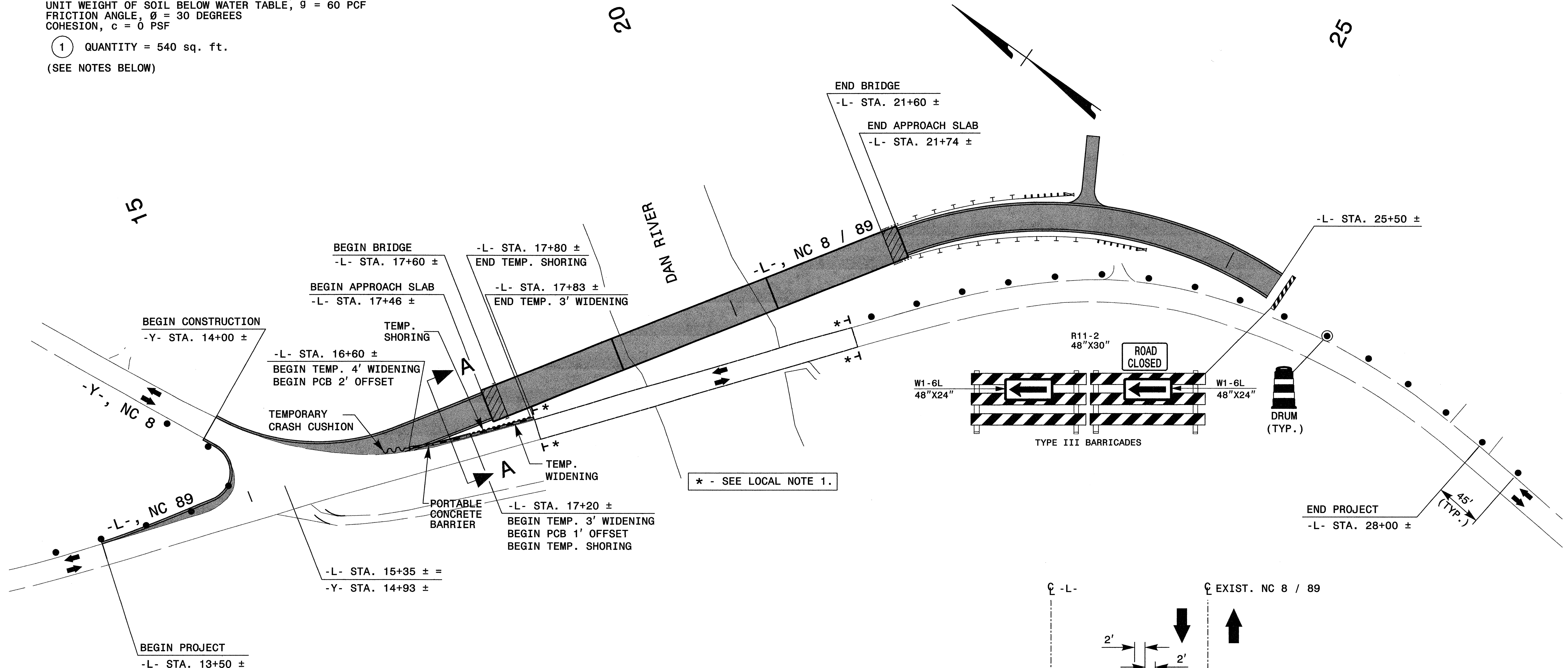
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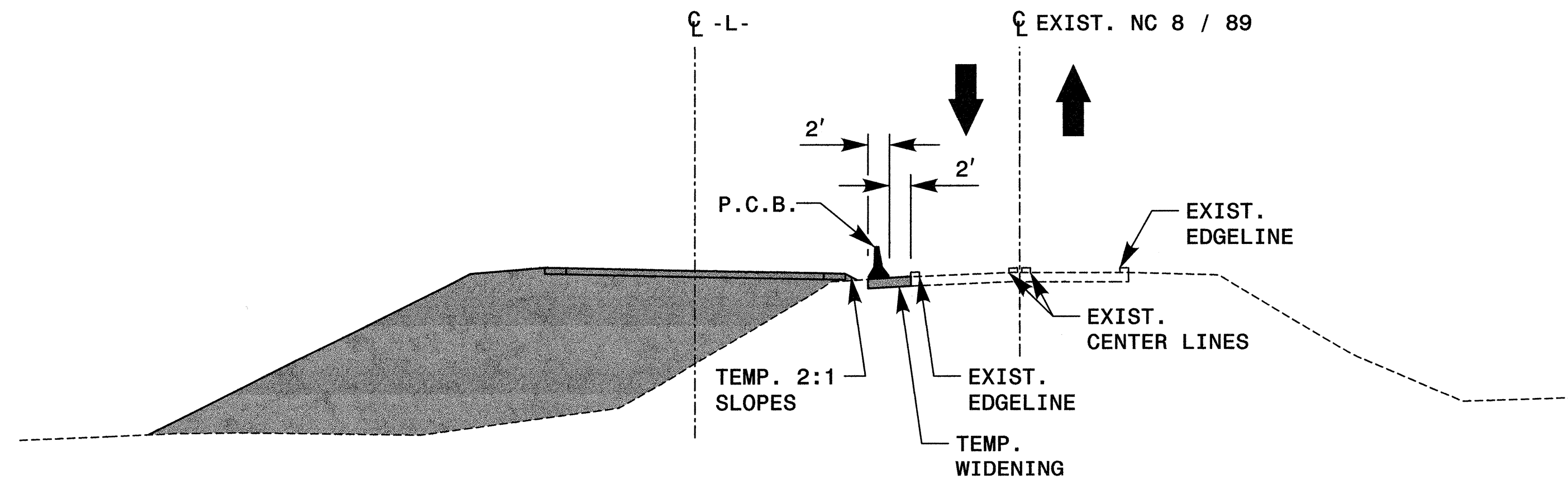
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 KO & Associates, P.C.

FOR TEMPORARY SHORING NO. 1  
 THE FOLLOWING SOIL PARAMETERS SHALL BE USED:  
 UNIT WEIGHT OF SOIL ABOVE WATER TABLE,  $\gamma = 120$  PCF  
 UNIT WEIGHT OF SOIL BELOW WATER TABLE,  $\gamma = 60$  PCF  
 FRICTION ANGLE,  $\phi = 30$  DEGREES  
 COHESION,  $c = 0$  PSF

① QUANTITY = 540 sq. ft.  
 (SEE NOTES BELOW)



\* - SEE LOCAL NOTE 1.



**TEMPORARY SHORING NO. 1**

FOR TEMPORARY SHORING, SEE TEMPORARY SHORING SPECIAL PROVISIONS.

DO NOT USE TEMPORARY MSE WALL FROM STATION 17+20.00 -L-, 3 FT. OFFSET FROM EXISTING EDGE OF PAVEMENT, TO STATION 17+80.00 -L-, 3 FT. OFFSET FROM EXISTING EDGE OF PAVEMENT.

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

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

NO SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM -L- STA. 17+20 ± LT. TO -L- STA. 17+80 ± LT.. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

**LEGEND**

█ PROPOSED CONSTRUCTION

APPROVED: *Michael T. Rzepka* DATE: 2-1-08

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**PHASE I DETAILS**

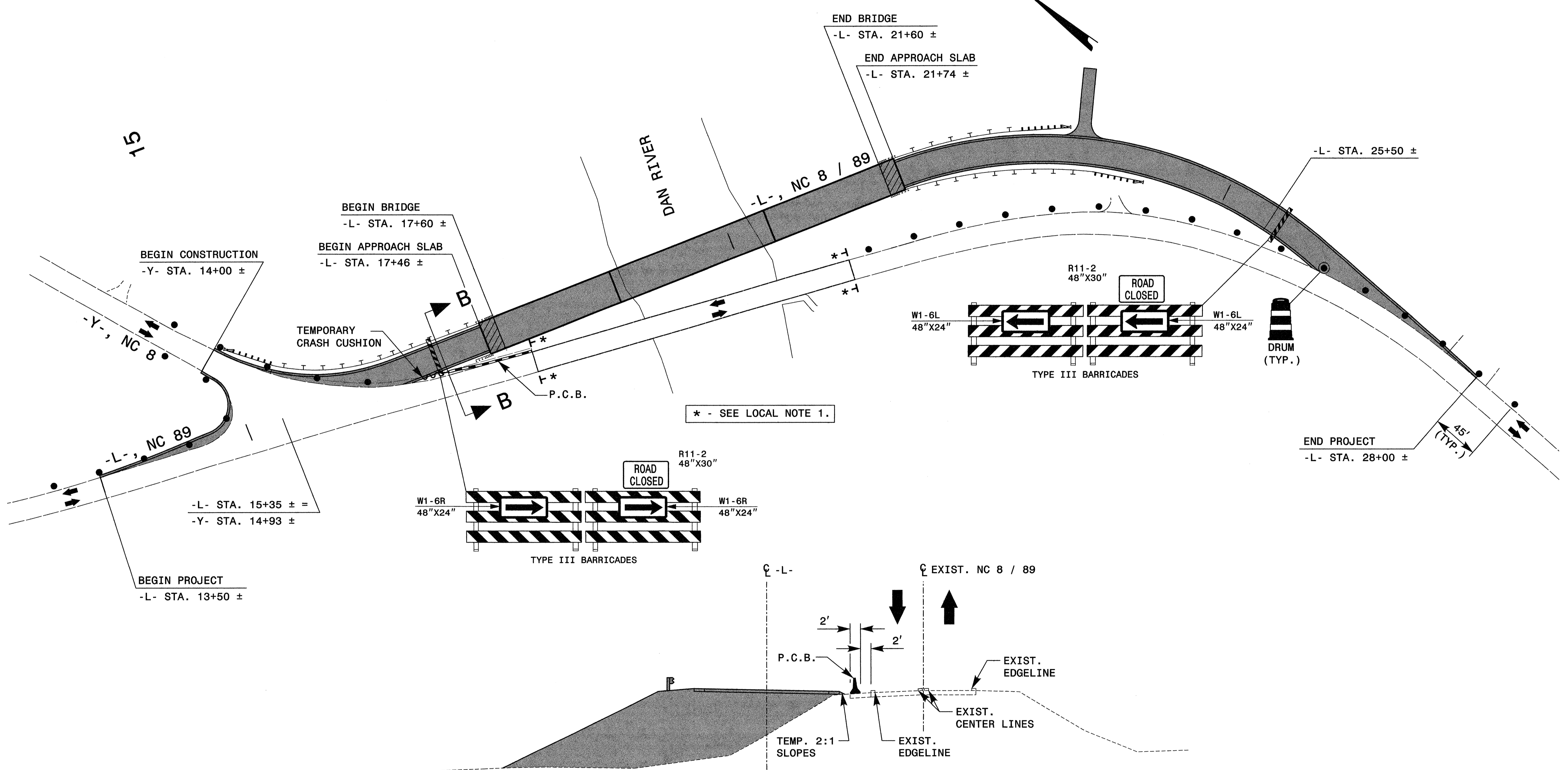
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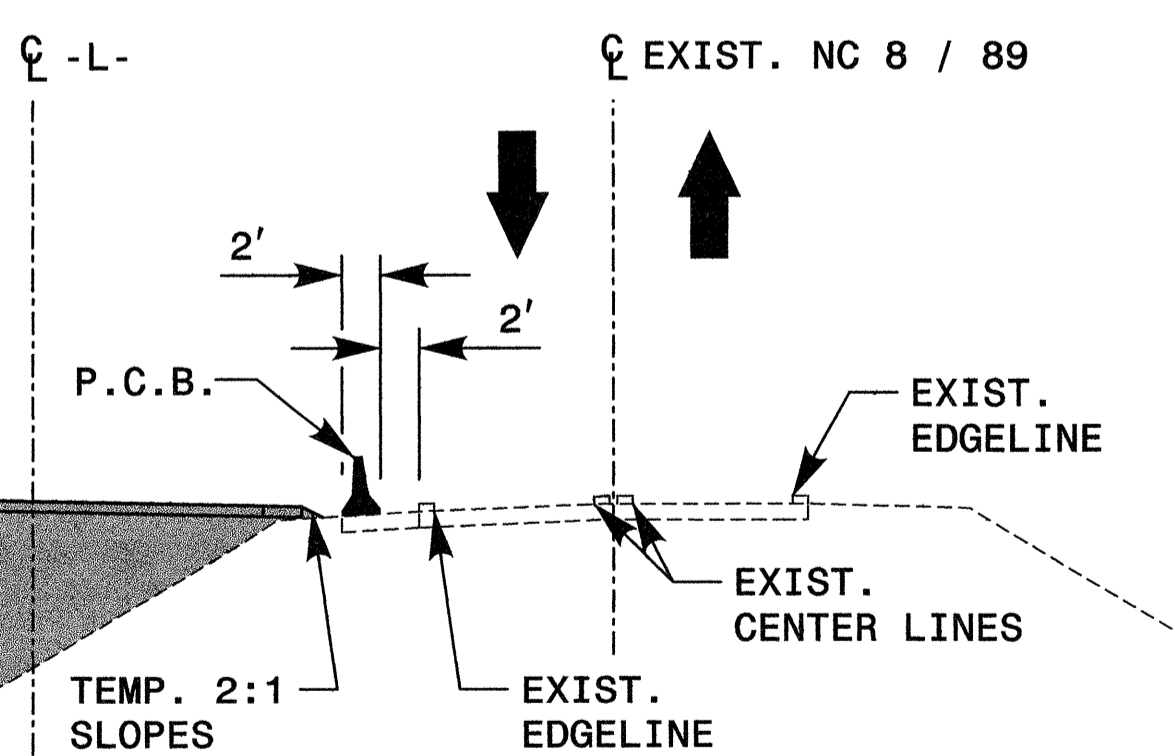
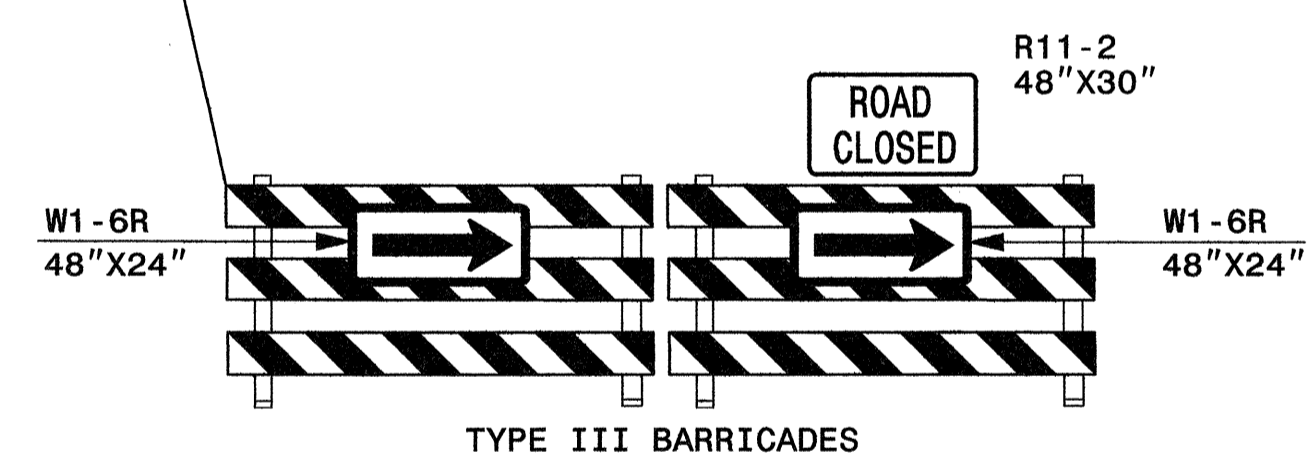


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02



\* - SEE LOCAL NOTE 1.



**SECTION B-B**  
 (-L- STA. 17+00 ±)

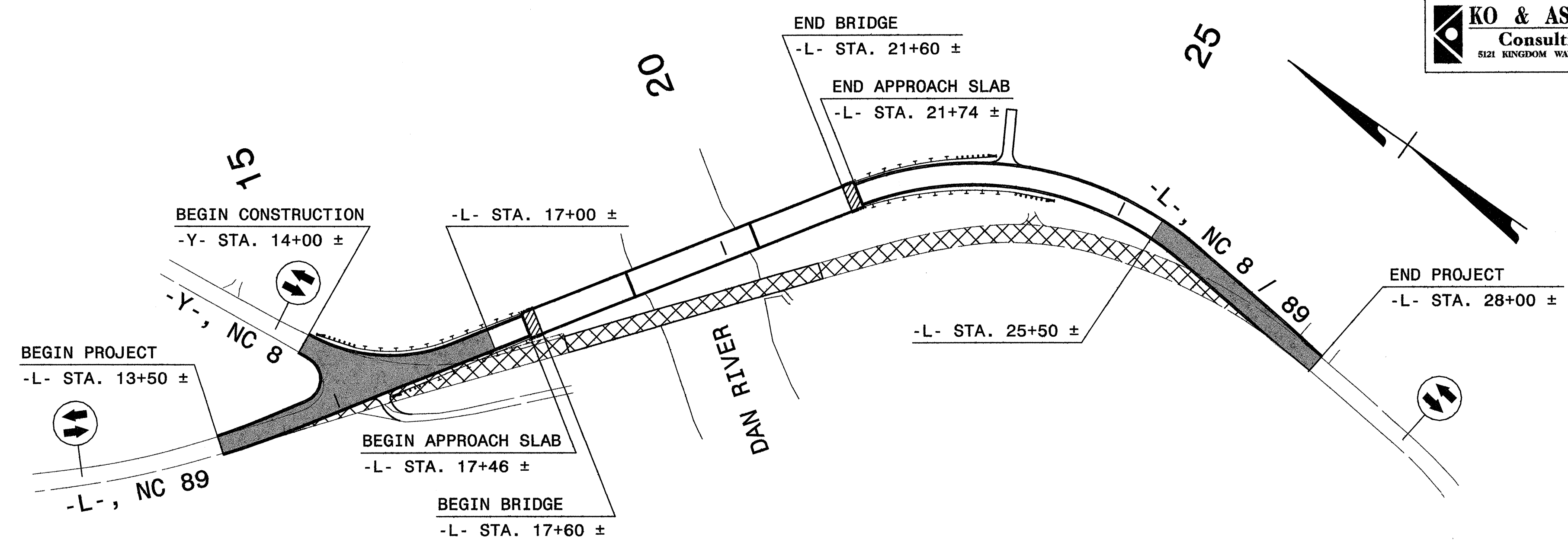
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	PROPOSED CONSTRUCTION

APPROVED: *Michael Rzepka* DATE: 10-22-07

SEAL

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 KO & Associates, P.C.



## PHASE II

COMPLETE THE FOLLOWING WORK IN PHASE II, STEP 1, USING ROADWAY STANDARD DRAWING NUMBER 1101.02, SHEET 1 OF 9.

WORKING IN A CONTINUOUS MANNER COMPLETE THE FOLLOWING WORK ON PROPOSED -L- IN PHASE II, STEP 1.

- STEP 1: - PLACE TRAFFIC IN A ONE-LANE TWO-WAY PATTERN IN THE EXISTING SOUTHBOUND LANE OF NC 8 / 89 FROM -L- STA. 13+50 ± TO -L- STA. 28+00 ±.
- PAVE/WEDGE THE PROPOSED NORTHBOUND LANE OF -L- UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AT THE FOLLOWING LOCATIONS (SEE SHEET TCP-7 AND ROADWAY PLANS):
    - L- STA. 13+50 ± TO -L- STA. 17+00 ± - (INCLUDING -Y-, NC 8)
    - L- STA. 25+50 ± TO -L- STA. 28+00 ±
    - Y- STA. 14+00 ± UP TO NORTHBOUND PROPOSED -L-
  - PLACE WHITE EDGELINE AND YELLOW DOUBLE CENTER LINE (PAINT) AND PAVEMENT MARKERS (TEMPORARY RAISED) IN THE PROPOSED NORTHBOUND LANE FROM -L- STA. 13+50 ± TO -L- STA. 28+00 ±. PLACE WHITE EDGELINE, YELLOW DOUBLE CENTER LINE AND WHITE STOP BAR (PAINT) AND PAVEMENT MARKERS (TEMPORARY RAISED) ON -Y- FROM -Y- STA. 14+00 ± TO -Y- STA. 14+70 ± (SEE SHEET TCP-7).
  - REMOVE TEMPORARY CONCRETE BARRIER AND RESET TEMPORARY CRASH CUSHION AT GUARDRAIL ANCHOR UNIT ON SOUTHBOUND APPROACH OF PROPOSED STRUCTURE.
  - PLACE TRAFFIC IN A ONE-LANE TWO-WAY PATTERN IN NORTHBOUND LANE OF PROPOSED -L- FROM -L- STA. 13+50 ± TO -L- STA. 28+00 ±
  - PAVE/WEDGE THE PROPOSED SOUTHBOUND LANE OF -L- UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AT THE FOLLOWING LOCATIONS (SEE SHEET TCP-7 AND ROADWAY PLANS):
    - L- STA. 13+50 ± TO -L- STA. 17+00 ±
    - L- STA. 25+50 ± TO -L- STA. 28+00 ±
  - PLACE WHITE EDGELINE (PAINT) IN THE PROPOSED SOUTHBOUND LANE FROM -L- STA. 13+50 ± TO -L- STA. 28+00 ± (SEE SHEET TCP-7).
  - PLACE TRAFFIC IN THE PROPOSED TWO-LANE TWO-WAY PATTERN ON PROPOSED -L- FROM -L- STA. 13+50 ± TO -L- STA. 28+00 ± (SEE SHEET TCP-7).

STEP 2: - AWAY FROM TRAFFIC BEGIN REMOVAL OF EXISTING STRUCTURE. (SEE SHEET TCP-8).

USING ROADWAY STANDARD DRAWING NUMBER 1101.02, SHEET 1 OF 9, COMPLETE THE FOLLOWING WORK IN PHASE II, STEPS 3 AND 4.

- STEP 3: - REMOVE THE ORIGINAL NORTH APPROACH ON NC 89 TO THE ORIGINAL STRUCTURE (SEE SHEET TCP-8 AND ROADWAY PLANS).
- CONSTRUCT PROPOSED SHOULDER WORK AND PROPOSED GUARDRAIL RIGHT OF -L- FROM -L- STA. 13+50 ± TO -L- STA. 17+60 ± (SEE SHEET TCP-8 AND ROADWAY PLANS).
- STEP 4: - REMOVE THE ORIGINAL SOUTH APPROACH ON NC 89 TO THE ORIGINAL STRUCTURE (SEE SHEET TCP-8 AND ROADWAY PLANS).
- CONSTRUCT PROPOSED SHOULDER WORK RIGHT OF -L- FROM -L- STA. 25+50 ± TO -L- STA. 28+00 ± (SEE SHEET TCP-8 AND ROADWAY PLANS).
- STEP 5: - AWAY FROM TRAFFIC COMPLETE REMOVAL OF ORIGINAL STRUCTURE.

USING ROADWAY STANDARD DRAWING NUMBER 1101.02, SHEET 1 OF 9, COMPLETE THE FOLLOWING WORK IN PHASE II, STEP 6.

- STEP 6: - PLACE THE FINAL LAYER OF SURFACE COURSE, FINAL PAVEMENT MARKINGS (THERMOPLASTIC) AND PAVEMENT MARKERS (SNOWPLOWABLE) IN THE FINAL PATTERN AT THE FOLLOWING LOCATIONS (SEE SHEET PM-2 AND ROADWAY PLANS):
- L- STA. 13+50 ± TO -L- STA. 17+46 ±
  - L- STA. 21+74 ± TO -L- STA. 28+00 ±
  - Y- STA. 14+00 ± TO -Y- STA. 14+93 ±
- PLACE FINAL PAVEMENT MARKINGS (COLD APPLIED PLASTIC TYPE III) AND MARKERS (PERMANENT RAISED) ON -L- FROM -L- STA. 17+46 ± TO -L- STA. 21+74 ± (SEE SHEET PM-2).
  - PLACE TRAFFIC IN THE FINAL PATTERN (SEE SHEET PM-2).

STEP 7: - REMOVE ALL TRAFFIC CONTROL DEVICES.

LEGEND	
	PROPOSED CONSTRUCTION
	REMOVAL OF EXISTING ROAD AND BRIDGE

APPROVED: *Michael T. Keppel* DATE: 5-19-08

SEAL

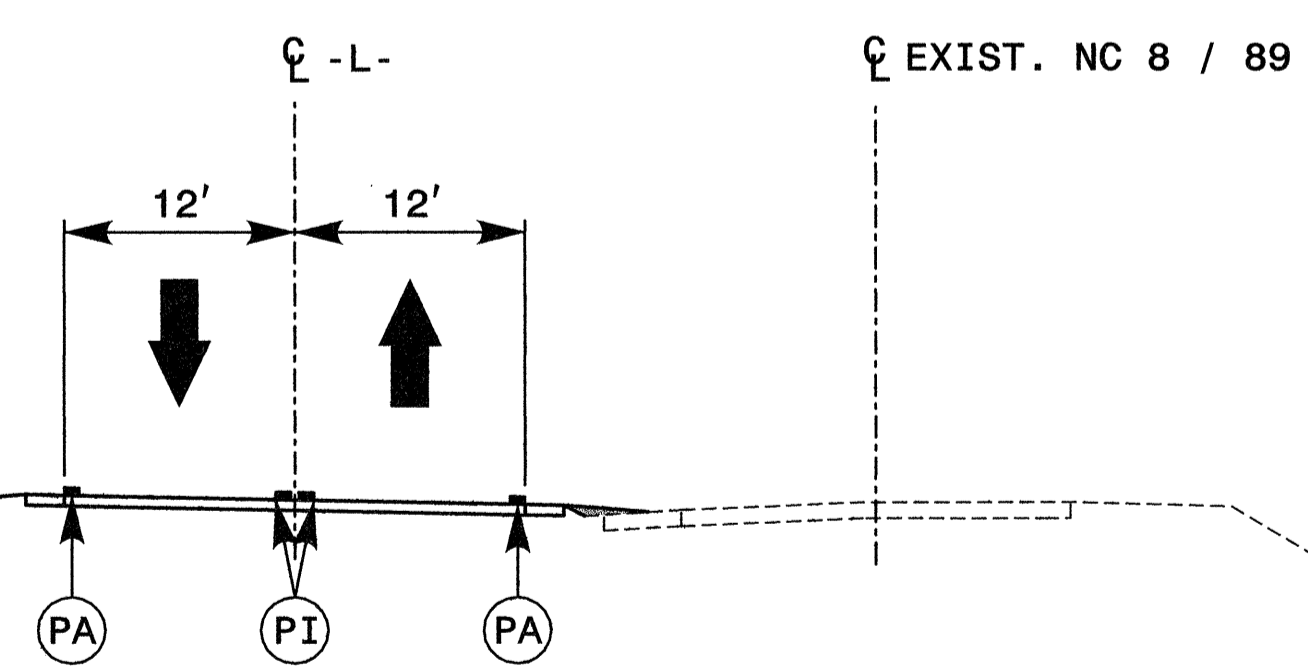
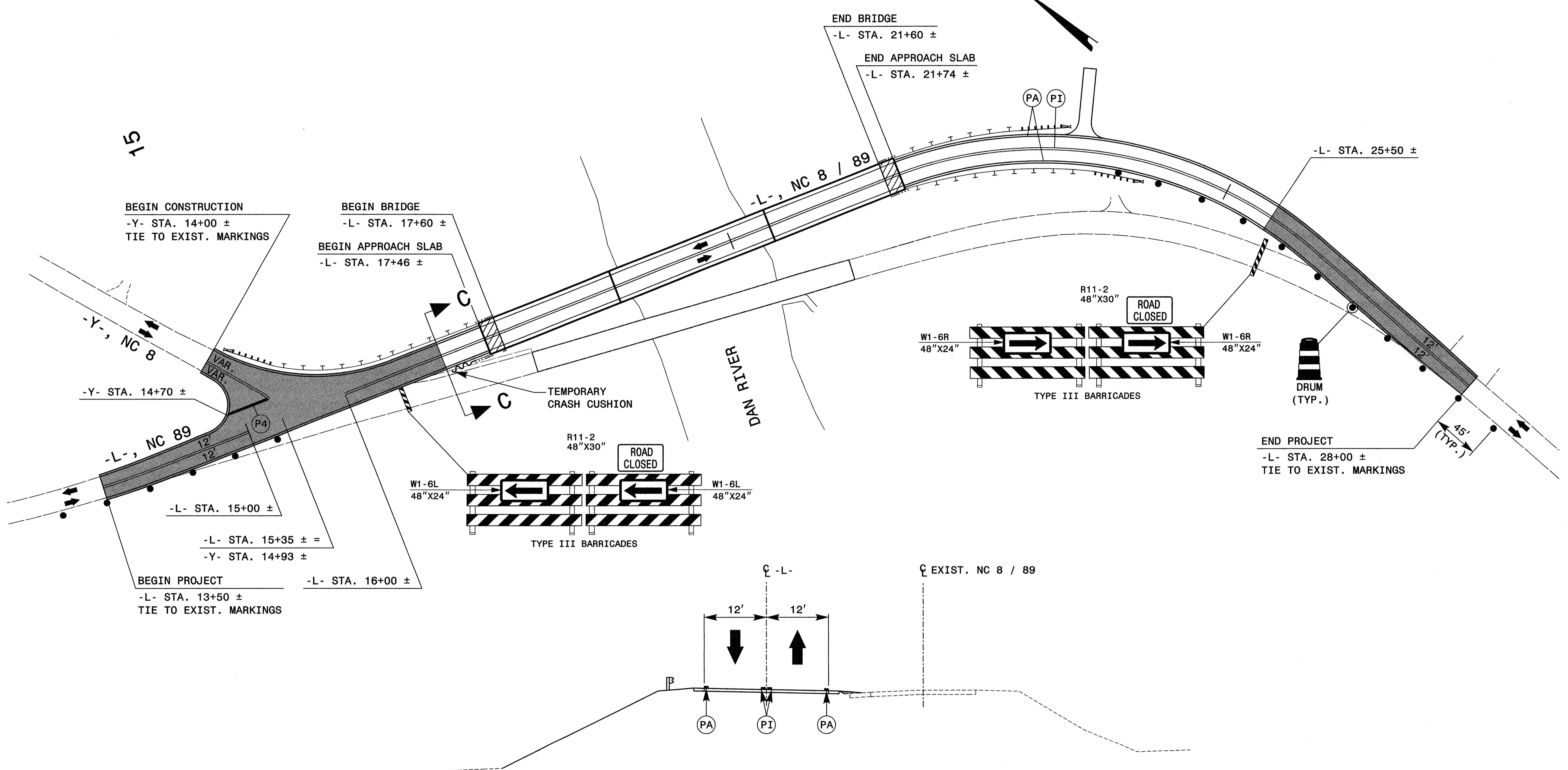
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DESIGN BY: BLM	
REVIEWED BY: MTR	

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02



**SECTION C-C**  
 (-L- STA. 17+00 ±)

**LEGEND**

PROPOSED CONSTRUCTION

APPROVED: *Michael T. Rzepa* DATE: 10-22-07

SEAL

**PHASE II DETAILS**

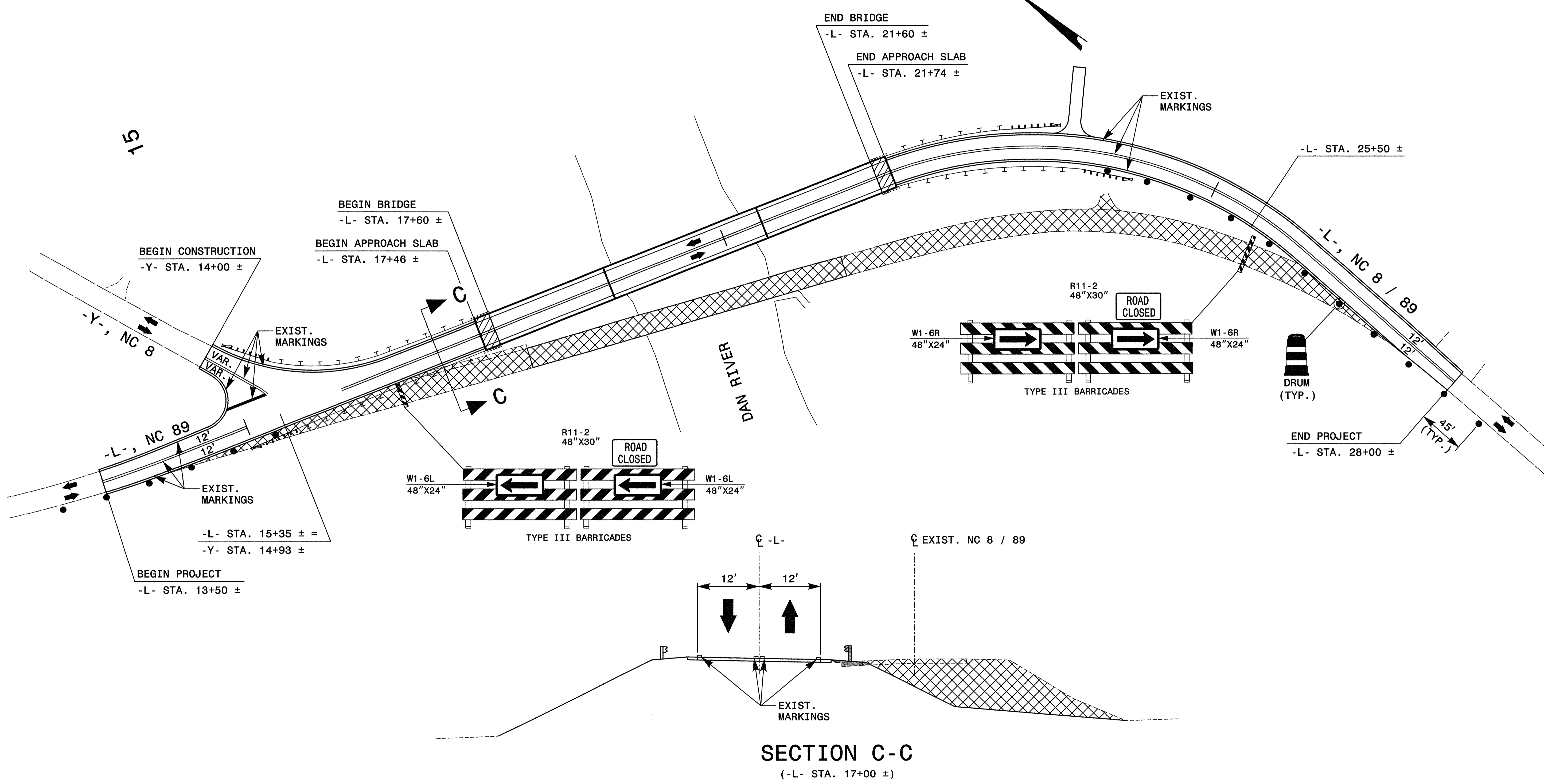
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 KO & Associates, P.C.



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02

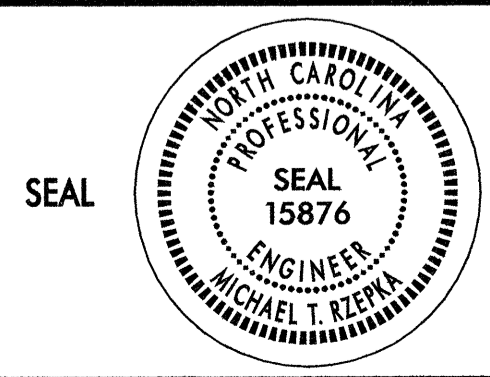


**SECTION C-C**  
 (-L- STA. 17+00 ±)

**LEGEND**

	PROPOSED CONSTRUCTION
	REMOVAL OF EXISTING ROAD AND BRIDGE

APPROVED: *Michael Rzepka* DATE: 10-22-07



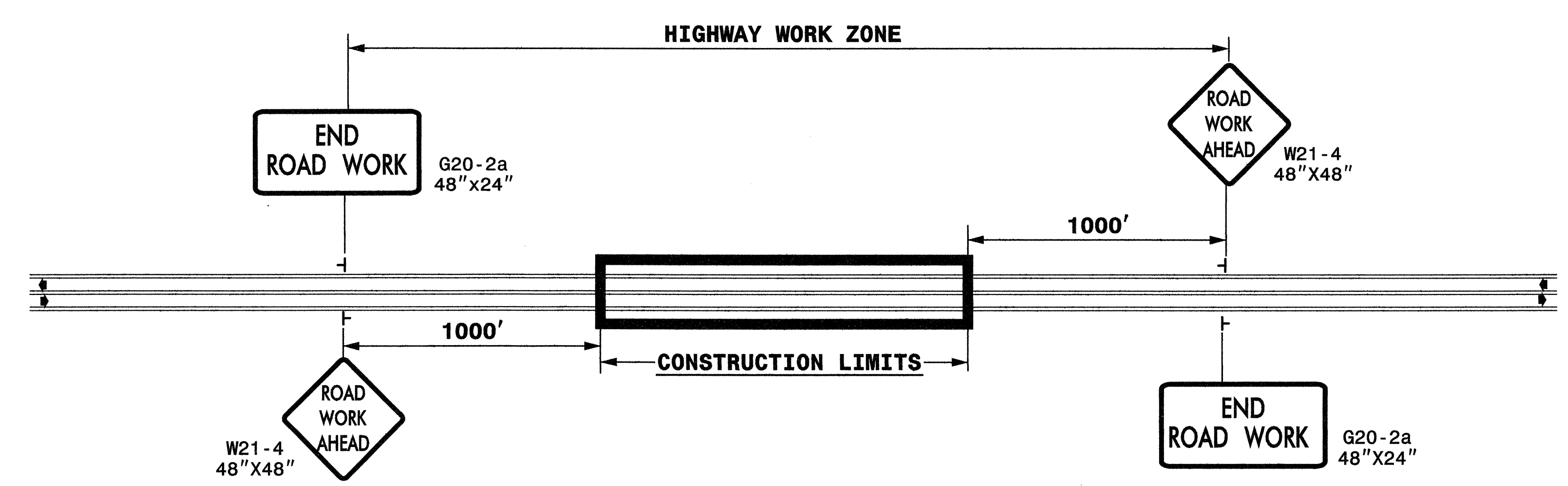
**PHASE II DETAILS**

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 KO & Associates, P.C.

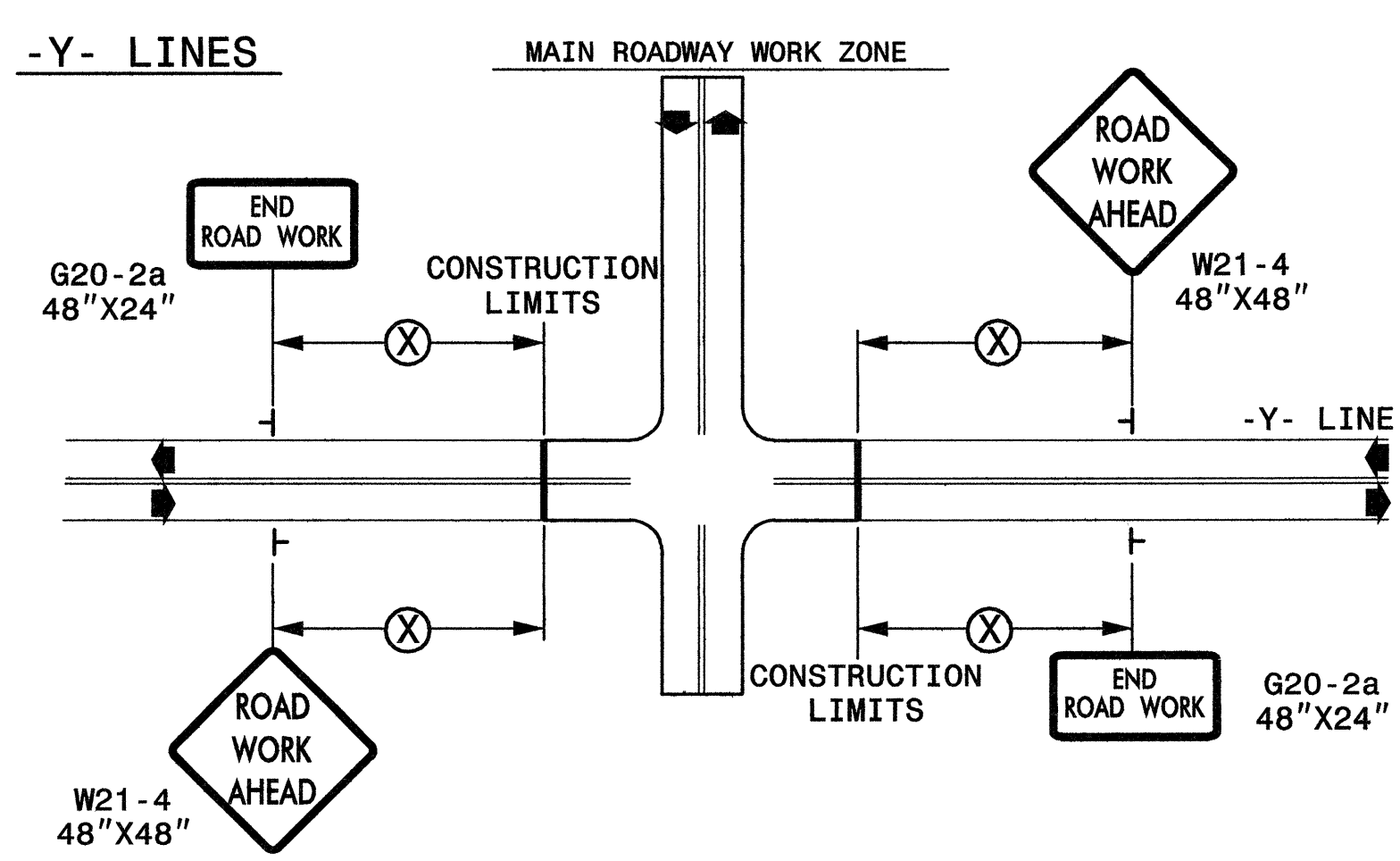
Plans prepared by:  
**KO & ASSOCIATES, P.C.**  
 Consulting Engineers  
 101 SCHAUB DR., SUITE #202  
 RALEIGH, N.C. 27606  
 For Division of Highways

**TWO-WAY UNDIVIDED \*\* (L-LINES)**



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

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



**DETAIL DRAWING FOR  
 TWO-WAY UNDIVIDED  
 WORK ZONE WARNING SIGNS**

**GENERAL NOTES**

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

**LEGEND**

┆ STATIONARY SIGN

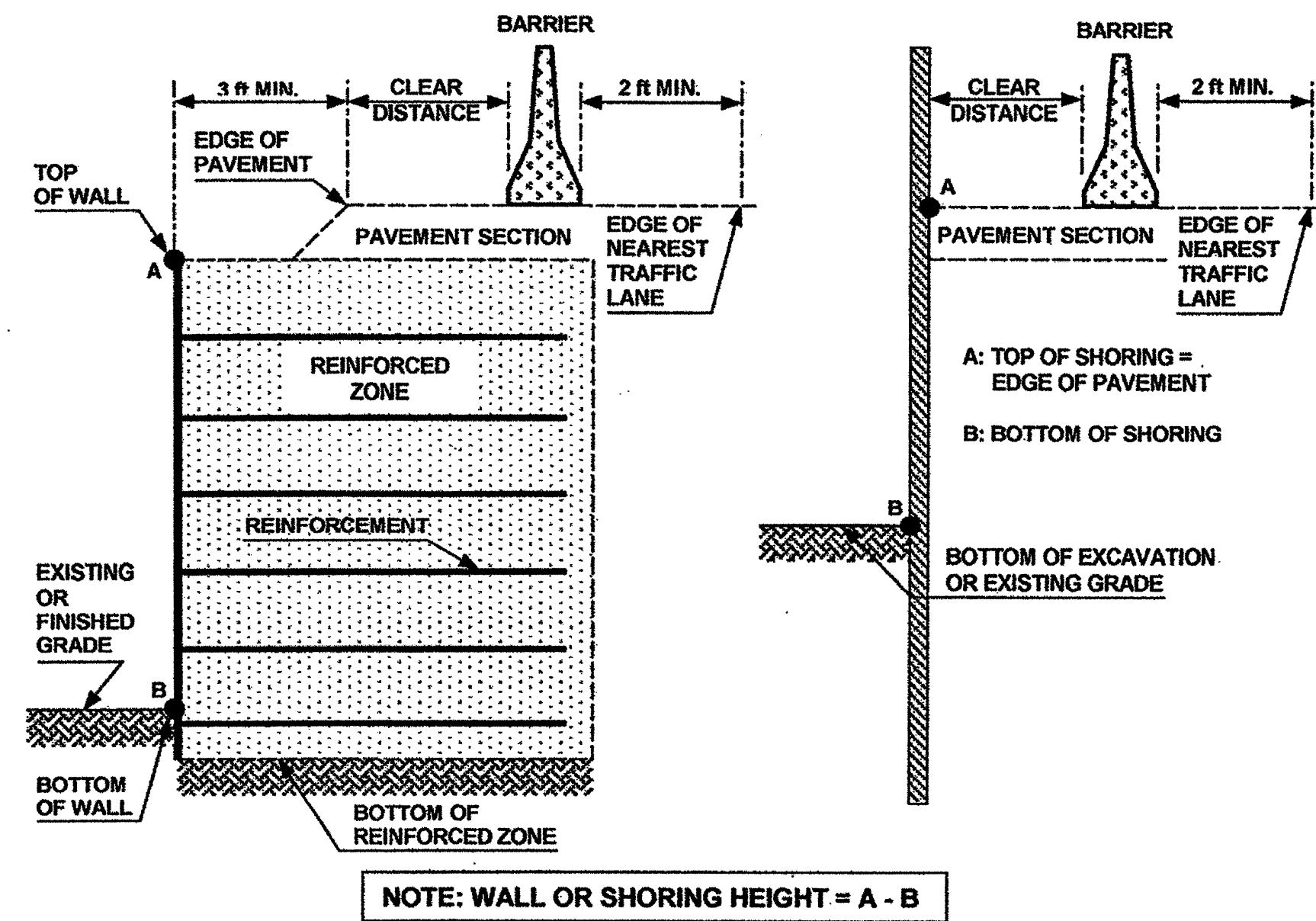
◀ DIRECTION OF TRAFFIC FLOW

SHEET 1 OF 1

APPROVED: <i>Michael T. Klappa</i> DATE: 10-22-07	DETAIL DRAWING FOR TWO-WAY UNDIVIDED AND URBAN FREEWAYS ADVANCED WORK ZONE WARNING SIGNS	
	SCALE: NONE	
	DATE: 10-07	
	DWG. BY: BLM	
	DESIGN BY: BLM	
REVIEWED BY: MTR	REVISIONS	

10/11/2007  
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 KO & ASSOCIATES, P.C.





**FIGURE A**

**NOTES**

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

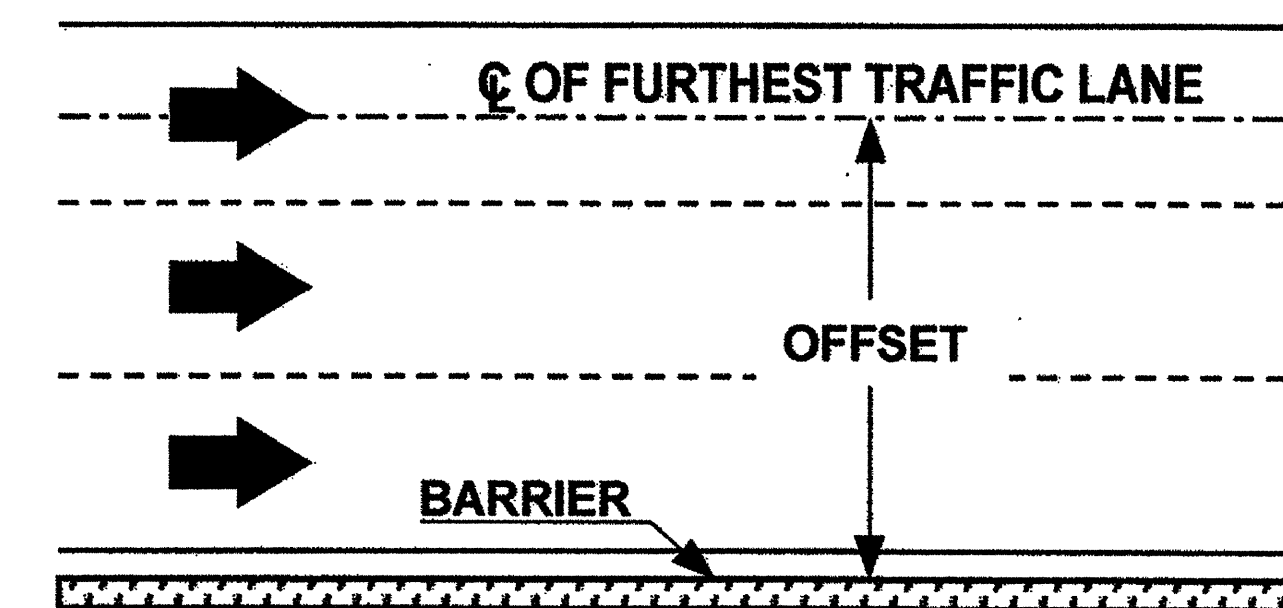
CLEAR DISTANCE - HORIZONTAL DISTANCE FROM THE BACK FACE OF THE BARRIER TO THE EDGE OF PAVEMENT FOR TEMPORARY MSE WALL OR TO THE FACE OF NON-ANCHORED TEMPORARY SHORING AS SHOWN IN FIGURE A.

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

**MINIMUM REQUIRED CLEAR DISTANCE, inches**

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

\* See Figure Below



**FIGURE B**

APPROVED: <i>[Signature]</i>	DATE: 3/07	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS	
	SCALE: NONE		REVISIONS
	DATE: 3/07		
	AWG. BY: JI		
	DESIGN BY: JI		
REVIEWED BY: JI			

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