# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

STATE PROJECT REFERENCE NO. SHEET NO. B-3661 TCP-1

# PLAN FOR PROPOSED TRAFFIC CONTROL, MARKING & DELINEATION

# HAYWOOD COUNTY

# 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.	<u>TITLE</u>
1101.02	TEMPORARY LANE 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
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL & BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL & BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

## INDEX OF SHEETS

SHEET NO.	TITLE
TCP - 1	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, INDEX OF SHEETS, AND FINAL PAVEMENT MARKING SCHEDULE
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TCP-6	PHASE II, STEPS 3-6 DETAIL AND TEMPORARY PAVEMENT MARKING SCHEDULE
TCP-7	DETAIL DRAWING FOR TWO-WAY UNDIVIDED ADVANCE WORK ZONE SIGNS

### FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAY ITEM/ QUANTITY BREAKDOWN	TOTAL QUANTITY
	PAVEMENT MARKING PAINT (4")	LINES	
PA	WHITE EDGE LINE (2X)	3600 LF	

TOTAL = 7200 LF

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

PI YELLOW DOUBLE CENTER (2X) 3600 LF

# **LEGEND**

### **GENERAL**

DIRECTION OF TRAFFIC FLOW

NORTH ARROW

PROPOSED PVMT. ----- EXIST. PVMT.

**WORK AREA** 

REMOVAL OF EXISTING PAVEMENT

### TRAFFIC CONTROL DEVICES

T TYPE I BARRICADE

TYPE III BARRICADE

CONE

FLASHING ARROW PANEL (TYPE C)

TYPE 'B' WARNING LIGHT

— STATIONARY SIGN

PORTABLE SIGN

STATIONARY OR PORTABLE SIGN

WARNING FLAGS

→ CRASH CUSHION

CHANGEABLE MESSAGE SIGN

TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)

POLICE

\_**\_** FLAGGER

#### PAVEMENT MARKINGS

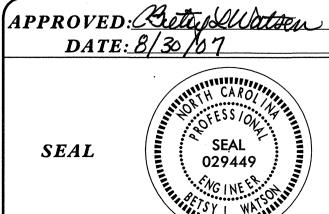
CRYSTAL/CRYSTAL PAVEMENT MARKER

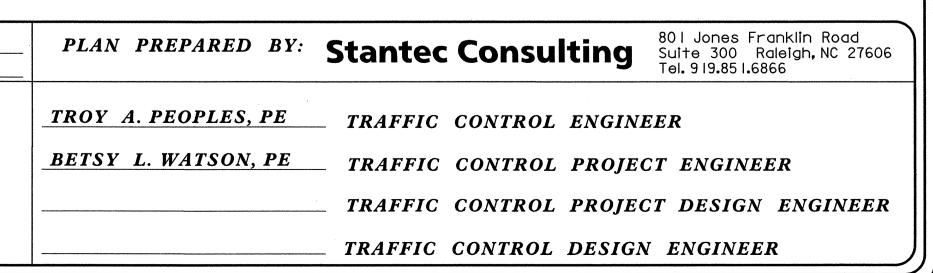
YELLOW/YELLOW PAVEMENT MARKER

CRYSTAL/RED PAVEMENT MARKER

PAVEMENT MARKING SYMBOLS







PROJ. REFERENCE NO.	SHEET NO.
B-3661	TCD O
	TCP-2

## 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 AS DIRECTED BY THE ENGINEER.

#### LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED, OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT. OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT. OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT. ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED BY BARRIER OR GUARDRAIL.
- F) DO NOT INSTALL MORE THAN ONE LANE CLOSURE, IN ANY DIRECTION, ON UPPER CRABTREE ROAD.

#### PAVEMENT EDGE DROP OFF REQUIREMENTS

G) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPEN TRAVEL LANE THAT HAS A 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.

H) 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 ONCE EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

#### TRAFFIC PATTERN ALTERATIONS

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

#### SIGNING

- J) 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.
- K) STATE FORCES WILL BE RESPONSIBLE FOR PERMANENT SIGNING.
- L) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- M) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 300 FT. IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

#### TRAFFIC CONTROL DEVICES

- N) SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH), EXCEPT 10 FT. ON-CENTER IN RADII, AND 3 FT. OFF THE EDGE OF AN OPEN TRAVELWAY, WHEN LANE CLOSURES ARE NOT IN EFFECT. WHEN SKINNY DRUMS ARE ALLOWED, REFER TO SECTION 1180 OF STANDARD SPECIFICATIONS FOR ROAD AND STRUCTURES OR AS SHOWN IN THE PLANS.
- O) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN (R11-2) ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

#### PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
1. UPPER CRABTREE RD	PAINT	NONE
2. BRIDGE STRUCTURE	PAINT	NONE

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

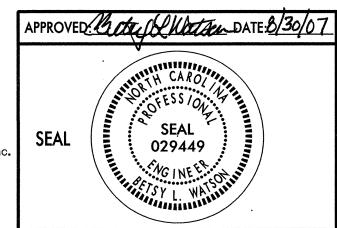
ROAD NAME	MARKING	MARKER
1. UPPER CRABTREE	RD PAINT	NONE

- R) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.
- S) 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.
- T) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- U) REMOVE/ REPLACE ANY CONFLICTING/ DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.



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# PROJECT NOTES

SCALE: NONE

DATE: JULY 2007

DWG. BY: CJK

DESIGN BY: BLW

REVIEWED BY: BLW

# PROJECT PHASING

MAINTAIN ACCESS TO AND FROM PRIVATE DRIVEWAY AT ALL TIMES DURING CONSTRUCTION.

### PHASE I

FOR THE WORK REQUIRED IN PHASE I, MAINTAIN TRAFFIC ON EXISTING UPPER CRABTREE ROAD IN ITS CURRENT TWO-LANE, TWO-WAY PATTERN. USE RSD 1101.02, SHEET 1 OF 9, AS NECESSARY FOR THIS WORK (SEE NOTES C AND D ON SHEET TCP-2). RETURN TRAFFIC TO TWO-LANE, TWO-WAY PATTERN AT THE END OF EACH WORK PERIOD.

- STEP 1: INSTALL WORK ZONE ADVANCE WARNING SIGNS (SEE SHEET TCP-7).
- STEP 2: CONSTRUCT THE PROPOSED PRIVATE DRIVEWAY FROM STA. 9+72 TO 12+00 AND TIE IN TEMPORARILY TO EXISTING UPPER CRABTREE ROAD AT STA. 9+72
  -PRIVATE DRIVEWAY- (STA. 14+80 -L-). REMOVE ACCESS FROM EXISTING (PREVIOUS ALIGNMENT) DRIVEWAY TO UPPER CRABTREE ROAD. INSTALL GUARDRAIL ON LEFT SIDE OF PRIVATE DRIVEWAY. BEGIN REMOVAL OF EXISTING DRIVEWAY AS SHOWN ON ROADWAY PLANS.
- STEP 3: AWAY FROM TRAFFIC, CONSTRUCT THE PROPOSED ROADWAY UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE FROM -L- STA. 14+60 TO STA. 17+29. THIS INCLUDES CONSTRUCTION OF THE STRUCTURE AND APPROACHES, AS WELL AS THE NEW GUARDRAIL ON BOTH SIDES OF -L- FROM STA. 15+13 TO THE BRIDGE ON THE RIGHT SIDE, AND STA. 15+18 TO THE BRIDGE ON THE LEFT SIDE.
- STEP 4: AWAY FROM TRAFFIC, BEGIN CONSTRUCTION OF PROPOSED ROADWAY UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE FROM -L- STA. 11+50 TO 14+60, AND STA. 17+29 TO STA. 19+85. IF CONTRACTOR CHOOSES TO BUILD PROPOSED ROADWAY UP TO EDGE OF EXISTING ROADWAY, TEMPORARY 1.5:1 SLOPES MAY BE USED SO AS NOT TO IMPACT EXISTING UPPER CRABTREE ROAD. USE APPROPRIATE EROSION CONTROL MEASURES, SUCH AS BARRIER RAIL, WHERE TEMPORARY SLOPES ARE USED. TEMPORARY CONSTRUCTION SLOPES ARE SHOWN ON ROADWAY CROSS SECTIONS.

BEGIN CONSTRUCTION OF EXPRESSWAY GUTTER ON RIGHT SIDE OF -L- (STA. 12+00 TO STA. 14+68).

## PHASE II

STEP 1: INSTALL "BUMP" SIGNS (W8-1) WITH SUPPLEMENTAL PLAQUES ON EXISTING UPPER CRABTREE ROAD AS SHOWN ON SHEET TCP-5.

FOR THE WORK REQUIRED IN PHASE II STEP 2, USE FLAGGERS (RSD 1101.02, SHEET 1 OF 9) TO ALTERNATE TRAFFIC BETWEEN THE EASTBOUND AND WESTBOUND LANES OF EXISTING UPPER CRABTREE ROAD. RETURN TRAFFIC TO TWO-LANE, TWO-WAY PATTERN ON EXISTING UPPER CRABTREE ROAD AT THE END OF EACH WORK PERIOD.

STEP 2: GRADUALLY BUILD UP EXISTING UPPER CRABTREE ROAD TO FINAL GRADE AT TIE-IN AREAS (APPROX. -L- STA. 11+50 TO STA. 14+00, AND STA. 17+29 TO 19+85) WHILE STILL MAINTAINING TRAFFIC ON EXISTING UPPER CRABTREE ROAD. IN ORDER TO DO THIS, TEMPORARY ASPHALT WILL HAVE TO BE TAPERED BACK DOWN FROM THE NEW GRADE TO THE EXISTING GRADE. SEE SHEET TCP-5. ADHERE TO NOTE G ON SHEET TCP-2 REGARDING ALLOWABLE ELEVATION DIFFERENCE BETWEEN OPEN LANES OF TRAVEL. REPLACE EXISTING PAVEMENT MARKINGS AT THE END OF EACH WORK PERIOD. BUILD UP A SUFFICIENT AMOUNT SUCH THAT STEPS 3 AND 4 CAN BE DONE IN ONE CONTINUOUS WORK PERIOD AS SPECIFIED.

### PHASE II CONTINUED

WORK IN A CONTINUOUS MANNER TO COMPLETE THE WORK REQUIRED IN STEPS 3 AND 4 IN ONE DAY.

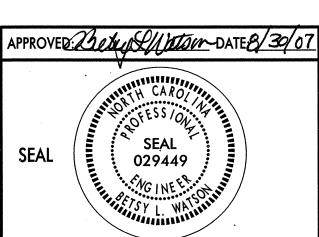
- STEP 3: USING FLAGGERS (RSD 1101.02 SHEET 1 OF 9), SHIFT TRAFFIC TO ONE LANE, TWO-WAY PATTERN ON THE WESTBOUND LANE OF EXISTING UPPER CRABTREE ROAD. COMPLETE CONSTRUCTION OF THE EASTBOUND LANE OF -L- (REALIGNED UPPER CRABTREE ROAD), UP TO BUT NOT INCLUDING THE FINAL SURFACE COURSE. COMPLETE CONSTRUCTION OF ALL EXPRESSWAY GUTTER AND GUARDRAIL ON THE RIGHT SIDE OF -L-. PLACE TEMPORARY MARKINGS ON REALIGNED UPPER CRABTREE ROAD (WHITE EDGE LINE ON RIGHT SIDE AND DOUBLE YELLOW CENTER LINE) FROM STA. 11+50 TO STA. 19+85 -L-, AS SHOWN ON SHEET TCP-6.
- STEP 4: USING FLAGGERS (RSD 1101.02 SHEET 1 OF 9), SHIFT TRAFFIC TO ONE LANE, TWO-WAY PATTERN ON THE NEWLY COMPLETED EASTBOUND LANE OF -L- (REALIGNED UPPER CRABTREE ROAD). COMPLETE CONSTRUCTION OF THE WESTBOUND LANE OF -L-, UP TO BUT NOT INCLUDING THE FINAL SURFACE COURSE. COMPLETE CONSTRUCTION OF ALL GUARDRAIL ON THE LEFT SIDE OF -L-. PLACE ALL REMAINING TEMPORARY PAVEMENT MARKINGS ON REALIGNED UPPER CRABTREE ROAD (WHITE EDGE LINE ON LEFT SIDE), FROM STA. 11+50 TO STA. 19+85 -L-, AS SHOWN ON SHEET TCP-6.

SHIFT TRAFFIC INTO TWO LANE, TWO-WAY PATTERN ON REALIGNED UPPER CRABTREE ROAD. PLACE TYPE III BARRICADES TO CLOSE OFF OLD ALIGNMENT OF UPPER CRABTREE ROAD AS SHOWN ON SHEET TCP-6.

- STEP 5: REMOVE EXISTING BRIDGE STRUCTURE AND PORTION OF EXISTING UPPER CRABTREE ROAD AS SHOWN IN ROADWAY PLANS. THIS WILL INCLUDE THE REMOVAL OF THE TEMPORARY ASPHALT PLACED IN STEP 2. COMPLETE REMOVAL OF OLD ALIGNMENT OF PRIVATE DRIVEWAY. COMPLETE ALL REMAINING CONSTRUCTION.
- STEP 6: USING FLAGGERS (RSD 1101.02 SHEET 1 OF 9), PLACE THE FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS ON NEW UPPER CRABTREE ROAD (STA. 11+50 TO 19+85 -L-). RETURN TRAFFIC TO TWO LANE, TWO-WAY PATTERN ON FINAL ALIGNMENT AT THE END OF EACH WORKDAY.

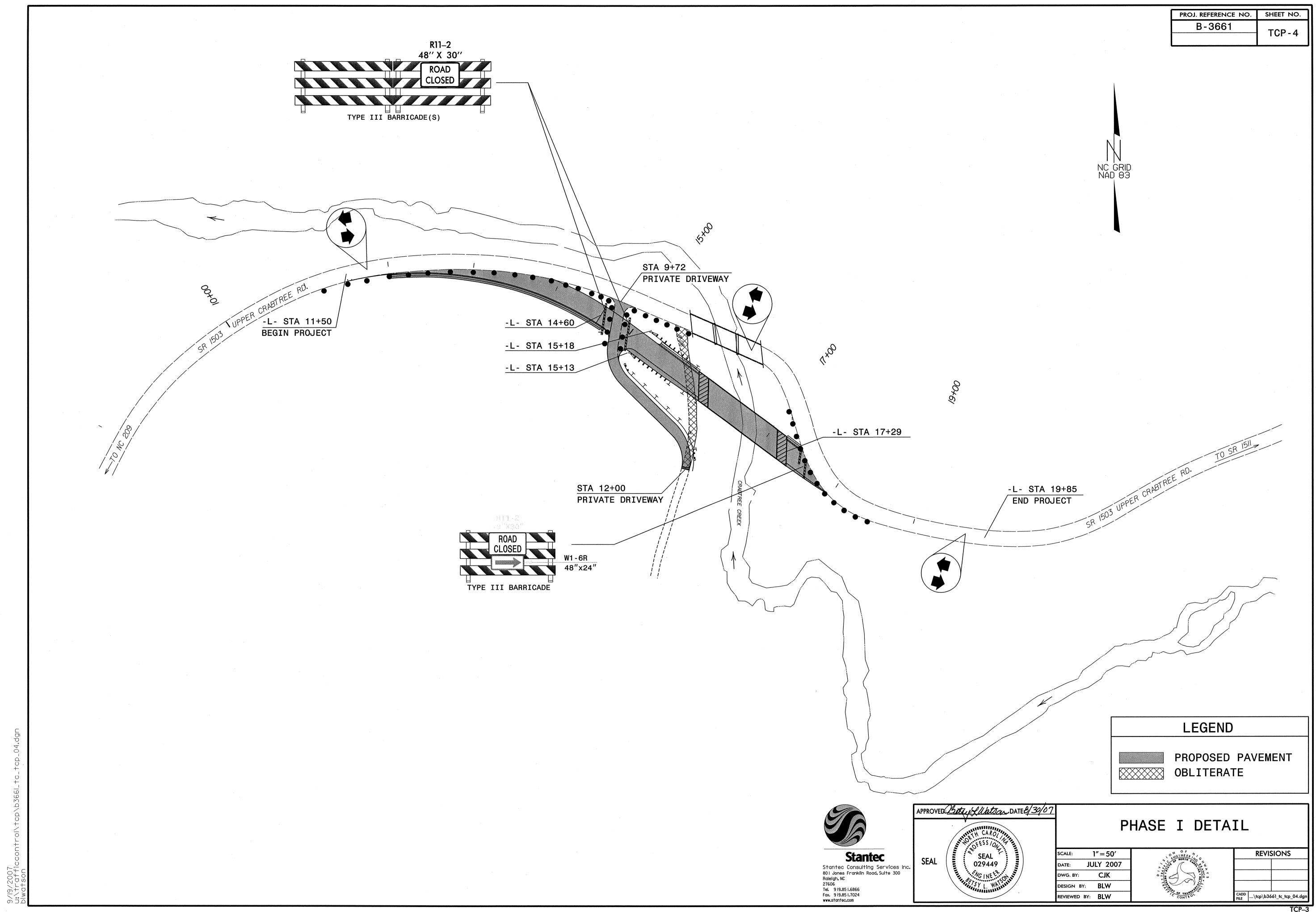
REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES.

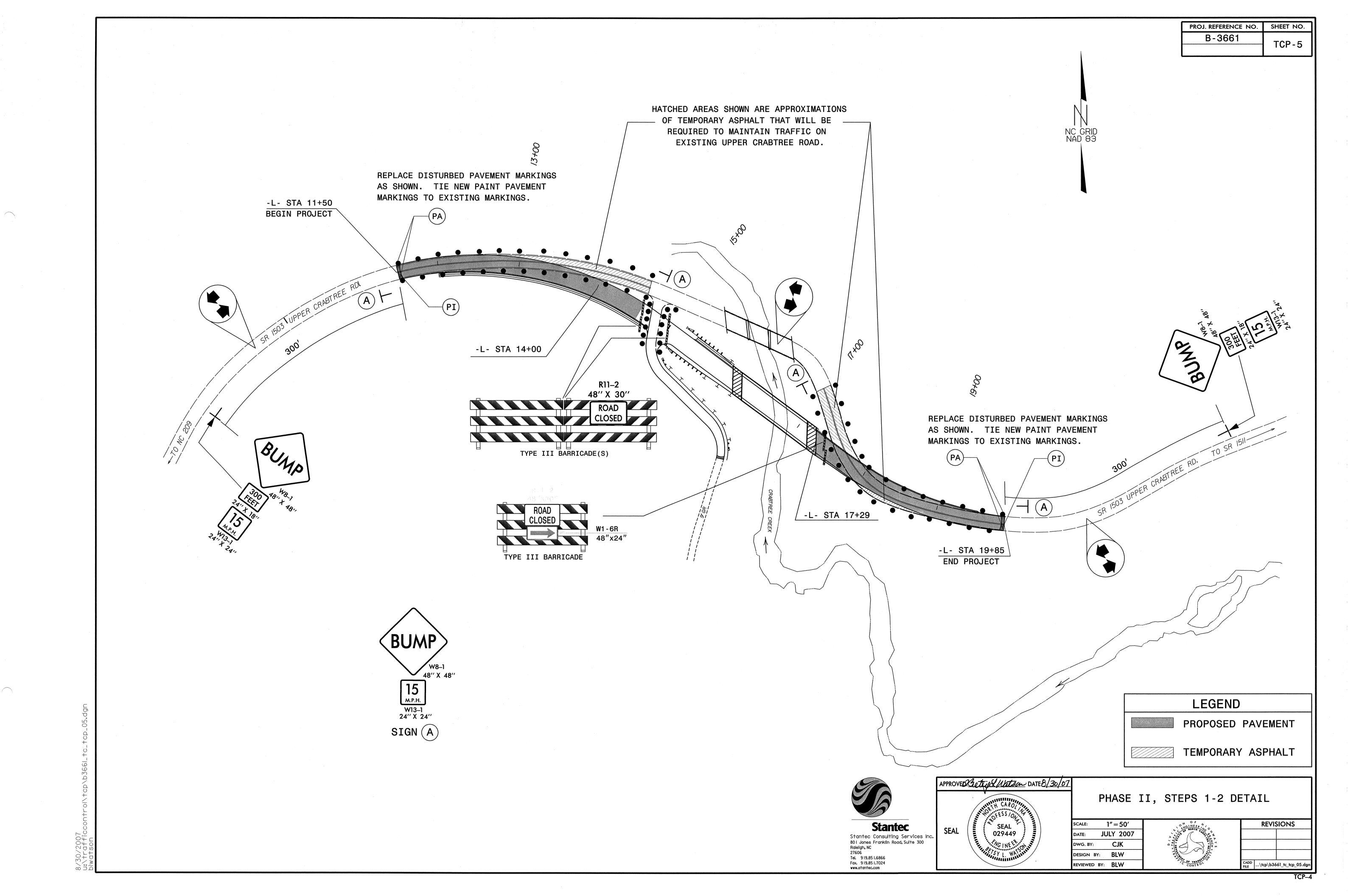


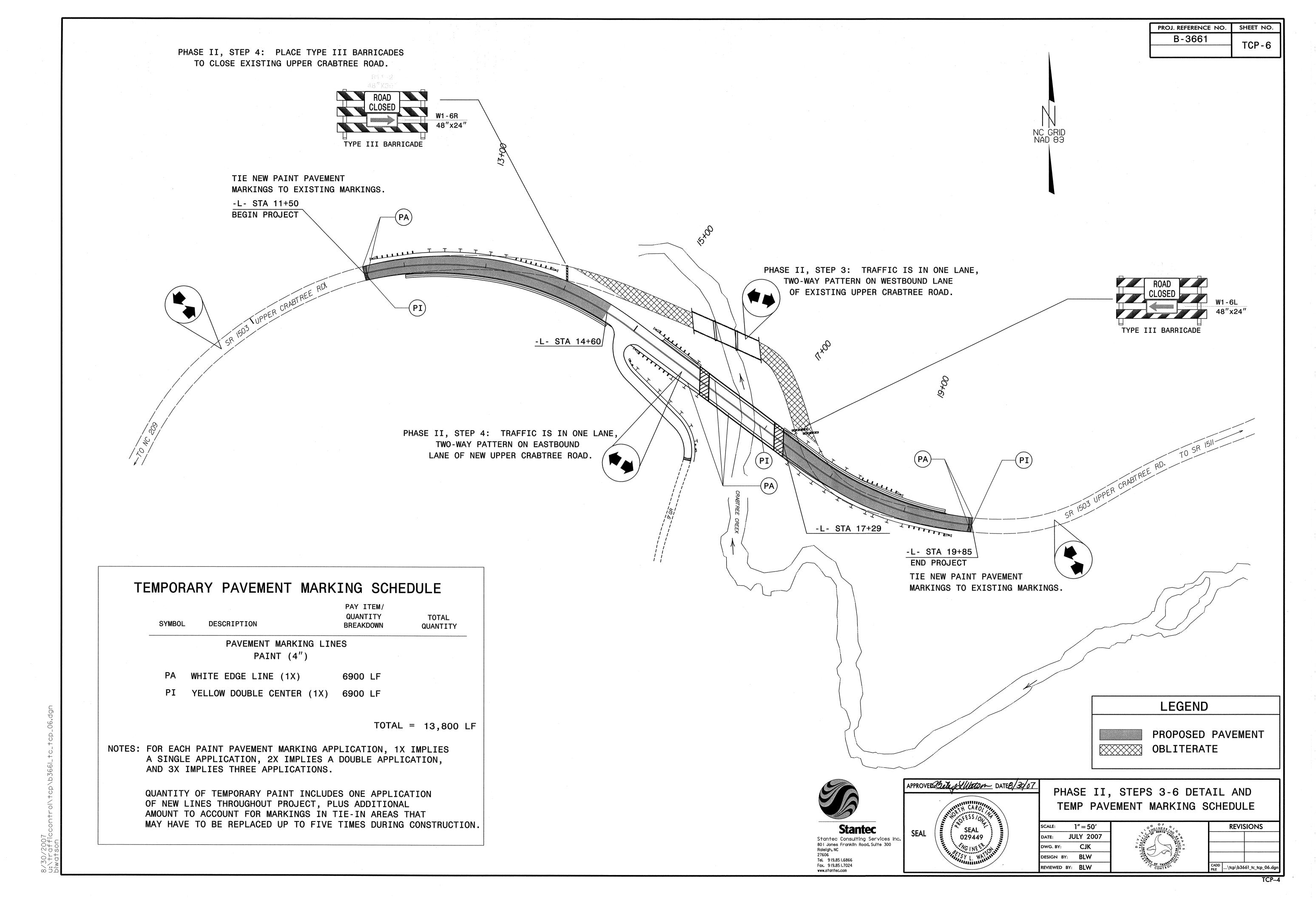


# PHASING

ALE:	NONE	
TE: JU	ILY 2007	
/G. BY:	CJK	
SIGN BY:	BLW	
/IEWED BY:	BLW	

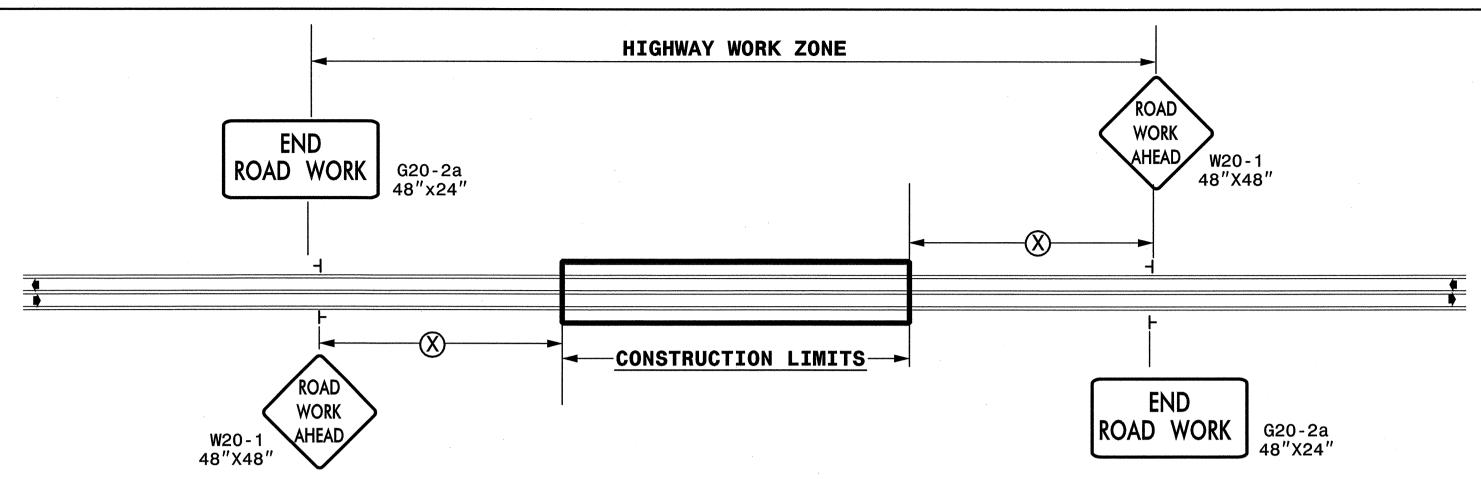






PROJ. REFERENCE NO. SHEET NO. TCP-7

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

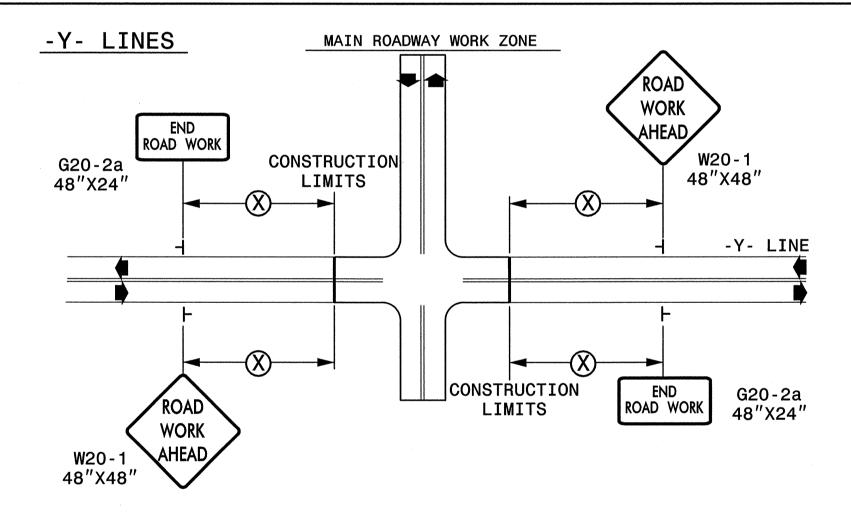


	RECOMMENDED MINIMUM SIGN SPACING
POSTED SPEED LIMIT (M.P.H.)	$\otimes$
≤ 50	500′
≥ 55	1000′

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

RALEIGH

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



### **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.

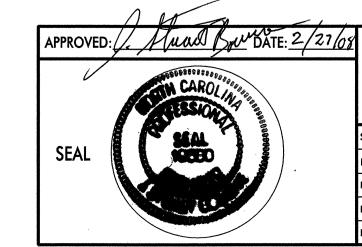
### **LEGEND**

├ STATIONARY SIGN

■ DIRECTION OF TRAFFIC FLOW

SHEET 1 OF 1

DET/ TWO K Z



DETAIL	DRAWIN	IG FOR	TWO - V	VAY
UNDIVIDE	D AND	URBAN	FREE'	WAYS
ADVANCED V	WORK ZO	ONE WAF	RNING	SIGNS

NONE	ONGINEER WORTH
	CONTROL OF HORTH CAN
	2 X X
BY:	
BY:	CONTROL

REVISIONS		
7–98		10/01
10–98		03/04
01/01		11/04
CADD FILE		