

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS



STATE PROJECT REFERENCE NO.	SHEET NO.
R-2414B	TCP-1

**PLAN FOR TEMPORARY  
TRAFFIC CONTROL, MARKING & DELINEATION**

**CAMDEN COUNTY**

**R-2414B**

**ROADWAY STANDARD DRAWINGS**

**INDEX OF SHEETS**

**LEGEND**

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS"-  
PROJECT SERVICES 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
1101.03	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
1115.01	FLASHING ARROW PANELS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	TRUCK MOUNTED IMPACT ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - THRU LANE DROPS
1205.08	PAVEMENT MARKINGS - SYMBOLS & WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.11	PAVEMENT MARKINGS - RAILROAD CROSSINGS
1250.01	PAVEMENT MARKER SPACING
1251.01	RAISED PAVEMENT MARKERS (TEMPORARY & PERMANENT)

SHEET NO.	TITLE
TCP-1	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND AND INDEX OF SHEETS
TCP-2 THRU TCP-2B	PROJECT NOTES/PAVEMENT MARKING SCHEDULE
TCP-3	PHASE I PHASING
TCP-4 THRU TCP-6	PHASE I OVERVIEW
TCP-7 THRU TCP-9	PHASE I DETAILS
TCP-10	PHASE II PHASING
TCP-11 THRU TCP-13	PHASE II OVERVIEW
TCP-14 THRU TCP-18A	PHASE II DETAILS
TCP-19	PHASE III PHASING
TCP-20 THRU TCP-22	PHASE III OVERVIEW
TCP-23 THRU TCP-30	PHASE III DETAILS
TCP-31	DETAIL FOR PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TCP-31A	TEMPORARY SHORING RECOMMENDATIONS
TCP-32	DETAIL FOR WORK ZONE WARNING SIGNS

- GENERAL**
- DIRECTION OF TRAFFIC FLOW
  - NORTH ARROW
  - PROPOSED PVMT. EXIST. PVMT.
  - WORK AREA
  - REMOVAL OF EXISTING PAVEMENT
- TRAFFIC CONTROL DEVICES**
- TYPE I BARRICADE
  - TYPE II BARRICADE
  - TYPE III BARRICADE
  - CONE
  - DRUM SKINNY DRUM
  - FLASHING ARROW PANEL (TYPE C)
  - STATIONARY SIGN
  - PORTABLE SIGN
  - STATIONARY OR PORTABLE SIGN
  - 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

**TIP PROJECT:**

N.C.D.O.T. TRAFFIC CONTROL, MARKING & DELINEATION SECTION  
LIST OF CONTACTS

<u>STUART BOURNE, P.E.</u>	TRAFFIC CONTROL ENGINEER
<u>G. L. GETTIER, P.E.</u>	TRAFFIC CONTROL PROJECT ENGINEER
<u>JAY W. WOOLARD, P.E.</u>	TRAFFIC CONTROL PROJECT DESIGN ENGINEER
	TRAFFIC CONTROL DESIGN ENGINEER / TECHNICIAN

*B.A. May* 9/7/10 APPROVED: \_\_\_\_\_  
DATE: \_\_\_\_\_

SEAL

PLAN PREPARED FOR NCDOT BY:

<u>B.A. MAY, P.E.</u>	PROJECT ENGINEER
<u>C.L. MULLEN</u>	DESIGN ENGINEER
<u>J.C. PENDERGRAFT</u>	DESIGN TECHNICIAN



PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-2

# PROJECT NOTES

## 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 UNDESIRABLE OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

### TIME RESTRICTIONS

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

ROAD NAME	DAY AND TIME RESTRICTIONS
1. US 158	7:00 AM TO 9:00 AM AND 4:00 PM TO 7:00 PM (MON-FRI)
2. NC 34	7:00 AM TO 9:00 AM AND 4:00 PM TO 7:00 PM (MON-FRI)

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

ROAD NAME
1. US 158
2. NC 34

### HOLIDAY

- FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- FOR NEW YEAR'S, BETWEEN THE HOURS OF 9:00 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 9:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
- FOR MEMORIAL DAY, BETWEEN THE HOURS OF 9:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
- FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 9:00 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 9:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.

- FOR LABOR DAY, BETWEEN THE HOURS OF 9:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.
- FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 9:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.
- FOR CHRISTMAS, BETWEEN THE HOURS OF 9:00 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 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

- D) 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.
- E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 5 M 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.
- F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 1.5 M 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 3 M 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.

- G) 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.
- H) DO NOT WORK SIMULTANEOUSLY WITHIN 5 M ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.
- I) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

### 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:

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *[Signature]* DATE: 11/27/11

SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 SEAL 21116  
 BOB A. MAY

**PROJECT NOTES**

SCALE: NONE		REVISIONS
DATE: 609		
DWG. BY: CLM		
DESIGN BY: CLM		
REVIEWED BY: BAM		

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# PROJECT NOTES (CONT'D)



PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-2A

## GENERAL NOTES

BACKFILL DROP-OFFS THAT EXCEED 50 MM ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 75 MM 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 50 MM IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 40 MM. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

### TRAFFIC PATTERN ALTERATIONS

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

### SIGNING

- M) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 12 M FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- N) PROVIDE PERMANENT SIGNING.
- O) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

- P) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

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

- R) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 500 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

### TRAFFIC BARRIER

- S) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRAFFIC CONTROL 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 TRAFFIC CONTROL 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 TRAFFIC CONTROL 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.

- T) 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 IMPACT 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:

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	4.6 M
45 - 50	6 M
55	7.6 M
60 MPH or HIGHER	9 M

### TRAFFIC CONTROL DEVICES

- U) SPACE CHANNELIZING DEVICES IN WORK AREAS EQUAL IN METERS TO 2/3rds THE POSTED SPEED LIMIT (MPH), EXCEPT 3 M ON-CENTER IN RADII, AND 1 M 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 ROADS AND STRUCTURES OR AS SHOWN IN THE PLANS.
- V) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.
- W) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 150 M CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

### PAVEMENT MARKINGS AND MARKERS

- X) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS SHOWN IN THE PAVEMENT MARKING PLAN.
- Y) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
1. US 158	PAINT	TEMPORARY RAISED
2. -Y- LINES	PAINT	TEMPORARY RAISED

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *[Signature]* DATE: 1/27/11

SEAL

**PROJECT NOTES**

SCALE: NONE		REVISIONS
DATE: 609		
DWG. BY: CLM		
DESIGN BY: CLM		
REVIEWED BY: BAA		

# PROJECT NOTES (CONT'D)

## GENERAL NOTES

- Z) 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.
  - AA) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
  - BB) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.
  - CC) TRACE THE PROPOSED MONOLITHIC ISLAND LOCATIONS WITH PROPER COLOR PAVEMENT MARKINGS PRIOR TO INSTALLATION. PLACE DRUMS TO DELINEATE ANY PROPOSED MONOLITHIC ISLANDS BEFORE INSTALLATION.
- TEMPORARY / FINAL SIGNALS
- DD) SHIFT AND REVISE ALL SIGNAL HEADS AS SHOWN ON THE SIGNAL PLANS.
- MISCELLANEOUS
- EE) POLICE MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.
  - FF) 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) 1000 FT AND 500 FT RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.
  - GG) ALL WHEELCHAIR RAMP LOCATIONS SHALL BE DERIVED FROM STATIONING SHOWN ON PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER IN COORDINATION WITH THE SIGNING AND DELINEATION UNIT.

## LOCAL NOTES

- 1) REFER TO SHEET TCP-31 "PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS" FOR MINIMUM CLEAR DISTANCES AND OFFSETS WHEN INSTALLING PORTABLE CONCRETE BARRIER FOR PROTECTION OF TEMPORARY SHORING.
- 2) COORDINATE WITH THE ENGINEER AND RAILROAD FOR SCHEDULING A WEEKEND ROAD CLOSURE ON US 158 FOR PROPOSED TRACK CROSSING REPLACEMENT AT -L- STA. 52+40+/- (SEE TCP-18A).




PROJ. REFERENCE NO. R-2414B	SHEET NO. TCP-2B
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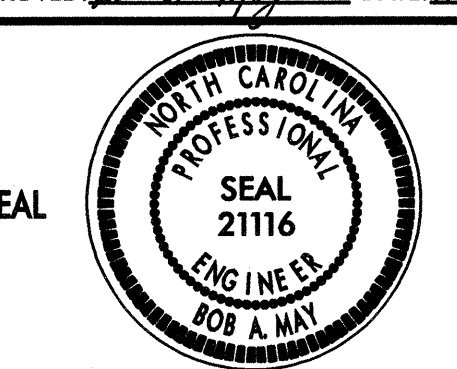
# PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAY ITEM
TEMPORARY PAVEMENT MARKINGS		
CH	YELLOW SINGLE CENTER	COLD APPLIED PLASTIC (100MM) TYPE 4 REMOVABLE TAPE
PA	WHITE EDGELINE (2X)	PAINT(100MM)
PD	0.5 M. WHITE MINISKIP (2X)	
PE	WHITE SOLID LANE LINE (2X)	
PF	3 M. YELLOW SKIP (2X)	
PH	YELLOW SINGLE CENTER (2X)	
PI	YELLOW DOUBLE CENTER (2X)	
PS	WHITE DIAGONAL (2X)	PAINT(200MM)
PV	YELLOW DIAGONAL (2X)	
P1	WHITE GORELINE (2X)	PAINT(300MM)
P3	WHITE LINE, RR X (2X)	PAINT(400MM)
P4	WHITE STOPBAR (2X)	PAINT(600MM)
QI	ALPHANUMERIC CHAR. (1X)	PAINT MARKING CHARACTERS
QA	LEFT TURN ARROW (1X)	PAINT MARKING SYMBOLS
QB	RIGHT TURN ARROW (1X)	
QC	STRAIGHT ARROW (1X)	
QF	COMBO.STRAIGHT/RIGHT (1X)	
QH	COMBO.LEFT/RIGHT (1X)	
MARKERS		
MH	YELLOW & YELLOW	TEMPORARY RAISED PAVEMENT MARKERS


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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *M. G. May* DATE: 1/27/11  


**PROJECT NOTES AND PAVEMENT MARKING SCHEDULE**

SCALE: NONE		REVISIONS
DATE: 609		
DWG. BY: CLM		
DESIGN BY: CLM		
REVIEWED BY: BAM		





PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-3

**PHASE I**

STEP 1. INSTALL ADVANCED WORK ZONE WARNING SIGNING ON US 158, AND ALL -Y- LINES ACCORDING TO TCP-32.

COORDINATE WITH THE CONTRACTOR ON ADJACENT PROJECT R-2414A FOR ANY OVERLAPPING ADVANCE WORK ZONE SIGNING UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

STEP 2. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, PERFORM PROPOSED UNDERCUT EXCAVATION ALONG PROPOSED -L- WIDENING AREAS ACCORDING TO THE CONSTRUCTION PLANS EXCEPT AT THE THREE PROPOSED BOX CULVERT LOCATIONS (SEE STEP 3).

EXCAVATE ONLY AS FAR AS CAN BE BACKFILLED BY THE END OF EACH WORKDAY AND RETURN TRAFFIC TO THE EXISTING PATTERN.

STEP 3. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, BEGIN PROPOSED -L- CONSTRUCTION AND -Y- LINES AS SHOWN ON TCP-4, 5, AND 6. CONSTRUCT PROPOSED WIDENING/WEDGING UP TO, BUT NOT INCLUDING, THE FINAL LAYER OF SURFACE COURSE AND PLACE BACK MARKINGS IN THE EXISTING TRAFFIC PATTERNS.

USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, CONSTRUCT 1.0 M OF TEMPORARY PAVEMENT UP TO THE PAVEMENT ELEVATION AT EACH PROPOSED BOX CULVERT LOCATION AS SHOWN ON TCP-7, 8, AND 9.

WORK IN A CONTINUOUS MANNER TO COMPLETE THE FOLLOWING WORK IN PHASE I, STEPS 4 AND 5:

STEP 4. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, SHIFT US 158 TRAFFIC ONTO THE 1.0 M TEMPORARY PAVEMENT CONSTRUCTED IN STEP 3 AND AS SHOWN ON TCP-7, 8, AND 9.

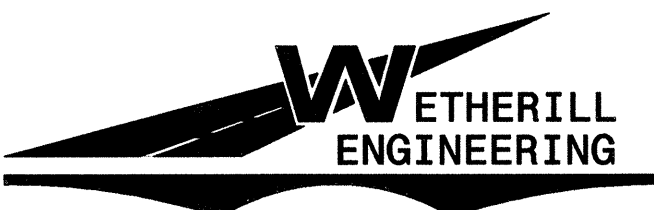
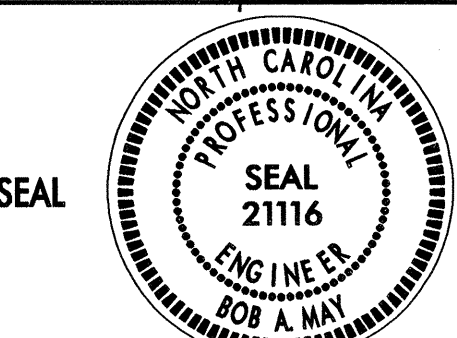



STEP 5. OPEN US 158 TO THE TEMPORARY TWO-LANE, TWO-WAY SHIFTED TRAFFIC PATTERNS AT EACH BOX CULVERT AREA.

STEP 6. INSTALL TEMPORARY CONCRETE BARRIER FOR BOX CULVERT WORK ON EXISTING US 158 PAVEMENT AND AS SHOWN ON TCP-7, 8, AND 9.

INSTALL TEMPORARY SHORING BEHIND TEMPORARY CONCRETE BARRIER AND CONSTRUCT PROPOSED STAGE I BOX CULVERT CONSTRUCTION, UNDERCUT EXCAVATION, AND TEMPORARY/PROPOSED -L- PAVEMENT WIDENING AS SHOWN ON TCP-7, 8, AND 9.

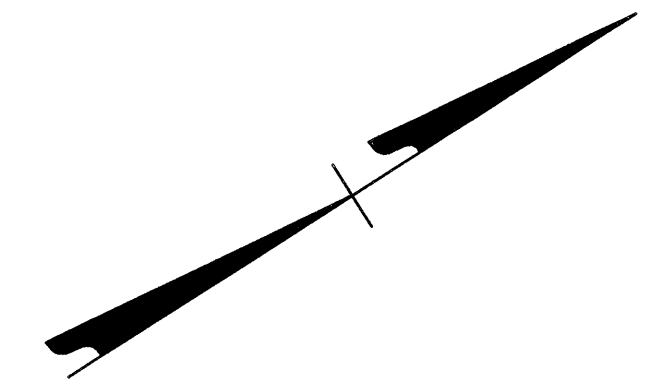
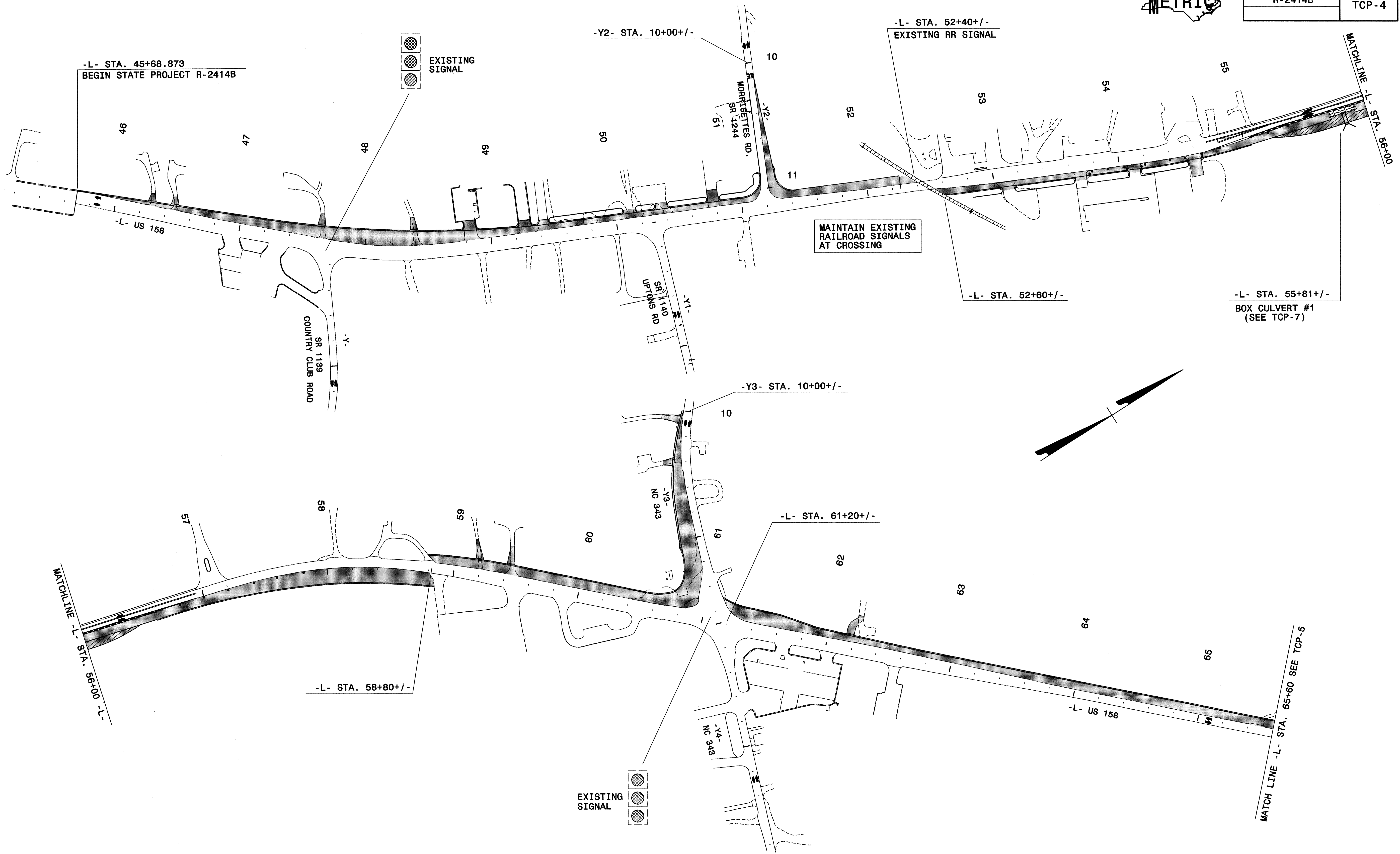
PROPOSED -L- UNDERCUT EXCAVATION AND BACKFILL MAY CONTINUE INTO PHASE II WORK.

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 <p>559 Jones Franklin Rd. Suite 164 Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 License: F-0377</p> <p>TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION</p>	APPROVED: <i>[Signature]</i> DATE: 9/1/10	<h2>PHASE I PHASING</h2>																	
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PROJ. REFERENCE NO. R-2414B	SHEET NO. TCP-4
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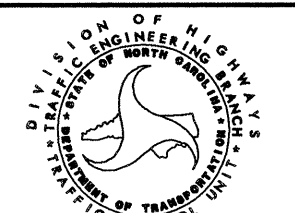


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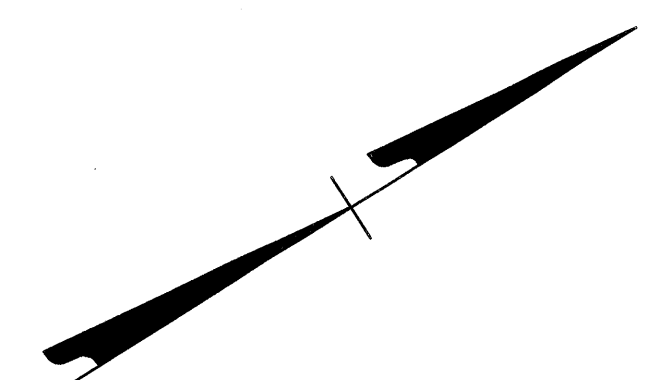
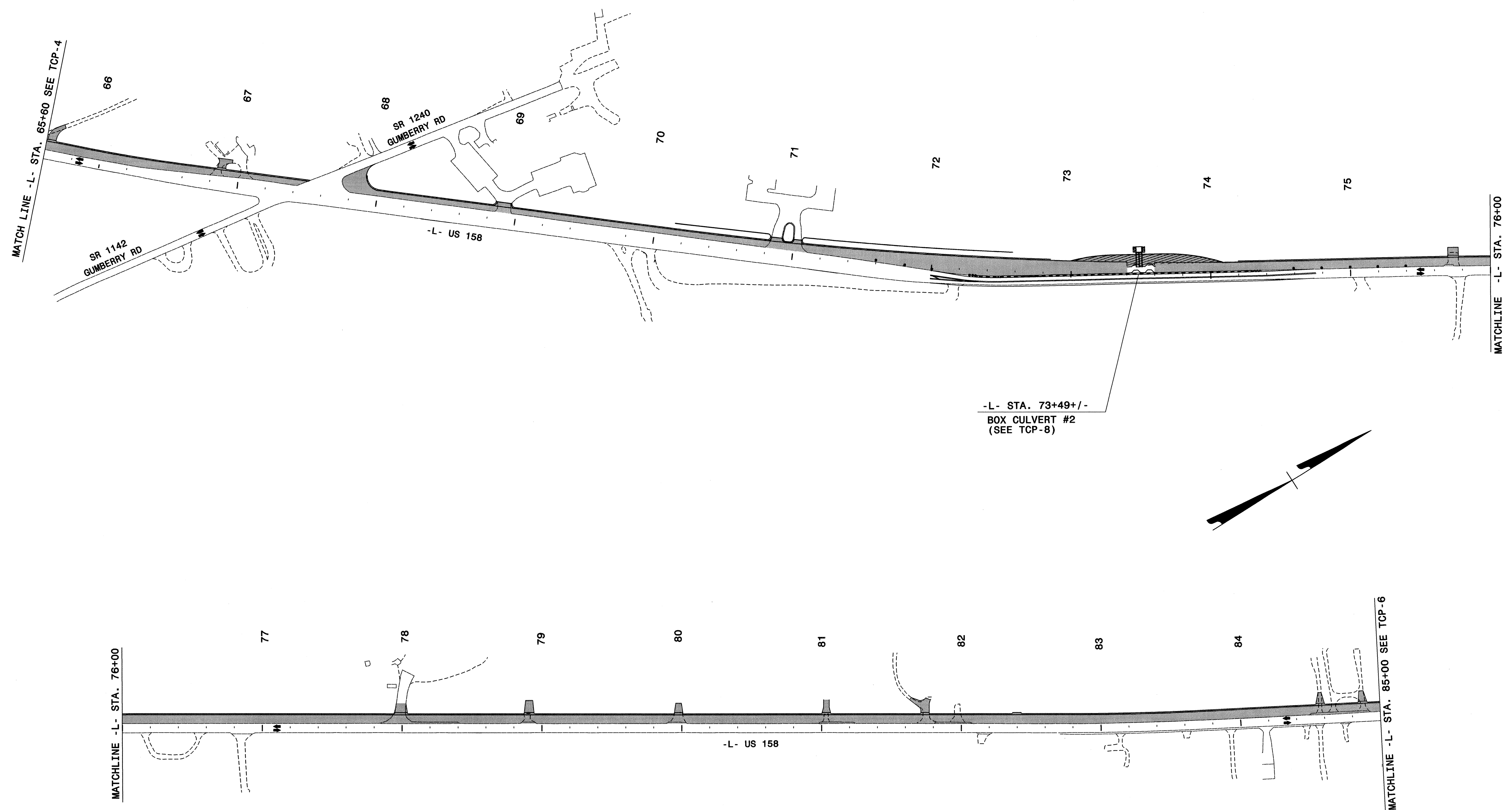
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PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-5



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APPROVED: *[Signature]* DATE: 9/7/10

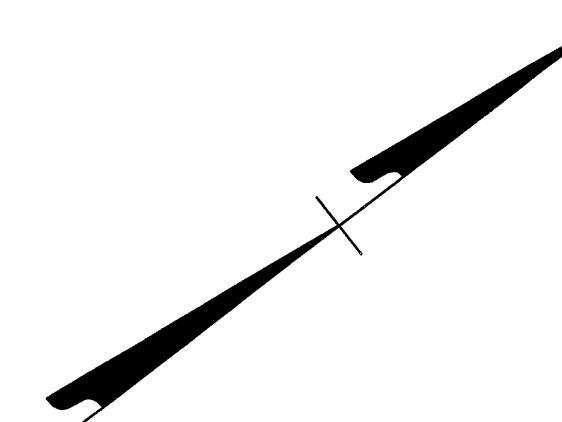
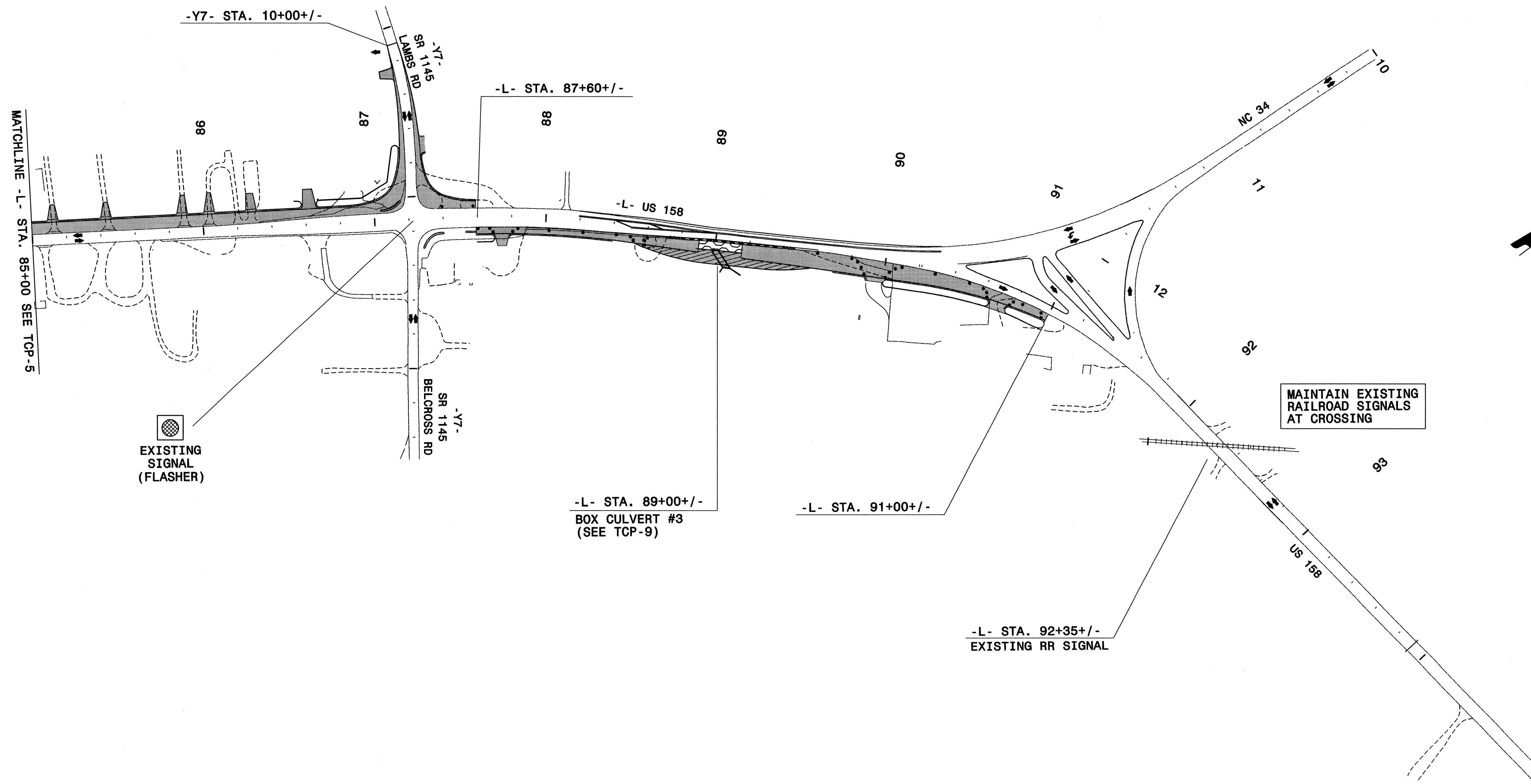
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### PHASE I OVERVIEW

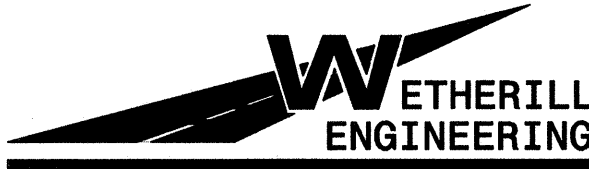
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R-2414B	TCP-6



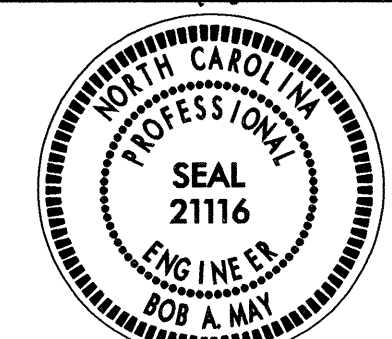
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APPROVED: *John A. May* DATE: 9/7/10

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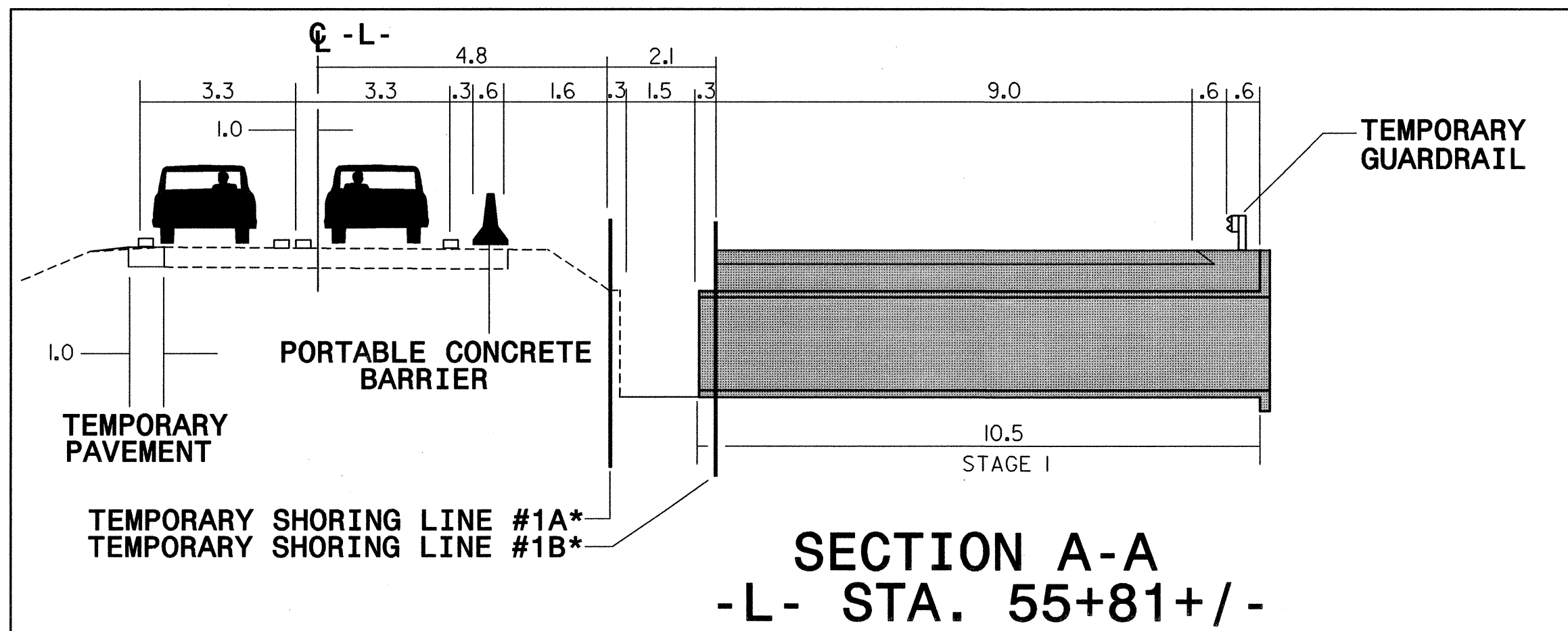
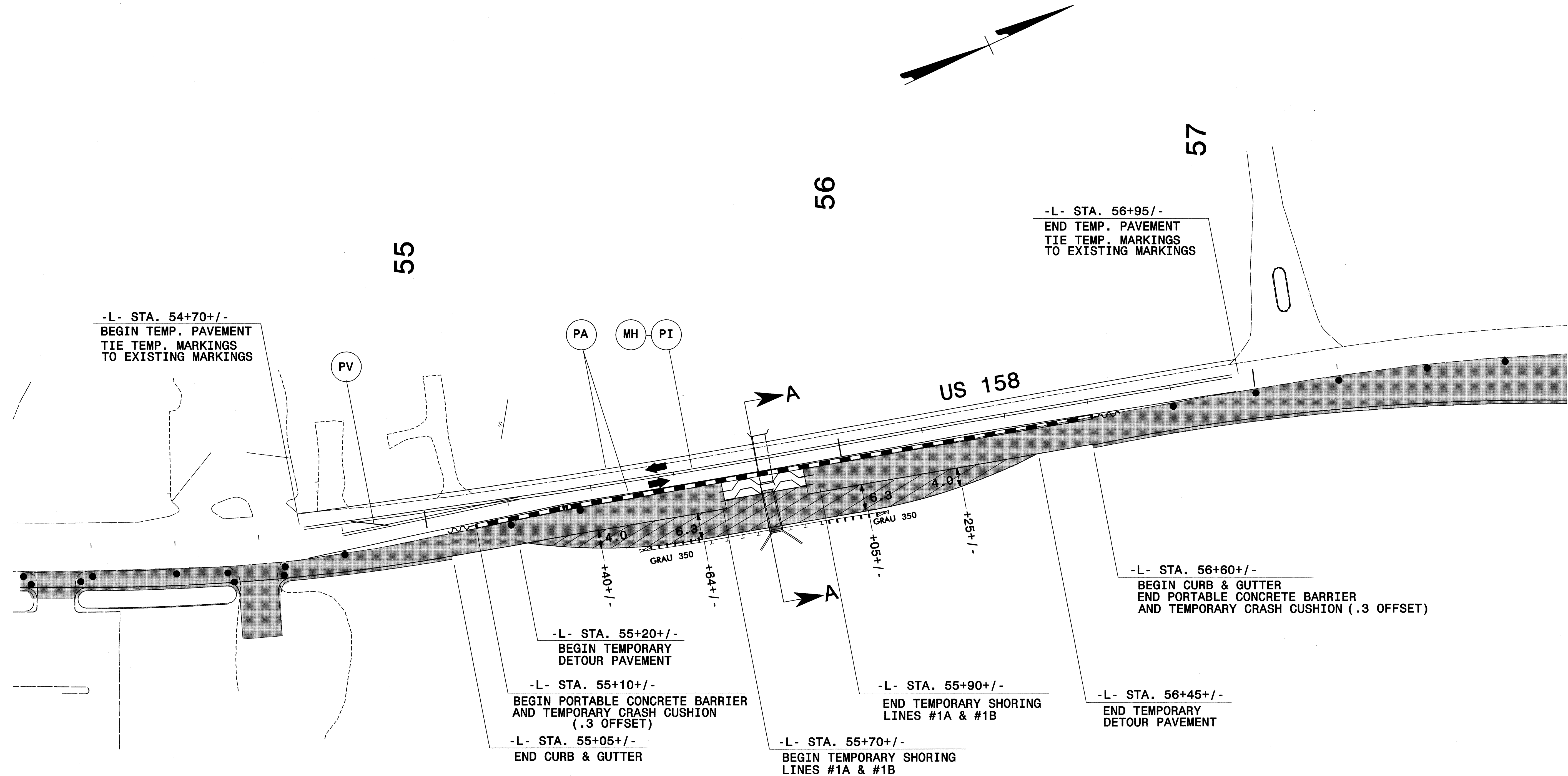
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PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-7



- \* TEMPORARY SHORING (LINE #1A) = EST. 41 SM
- \* TEMPORARY SHORING (LINE #1B) = EST. 41 SM

- SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE
- SEE STRUCTURE PLANS FOR STAGE I BOX CULVERT
- USE TOP-MOUNTED DELINEATORS ON PORTABLE CONCRETE BARRIER

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 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *[Signature]* DATE: 12/1/10

**PHASE I - DETAIL A**

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 DESIGN BY: CLM  
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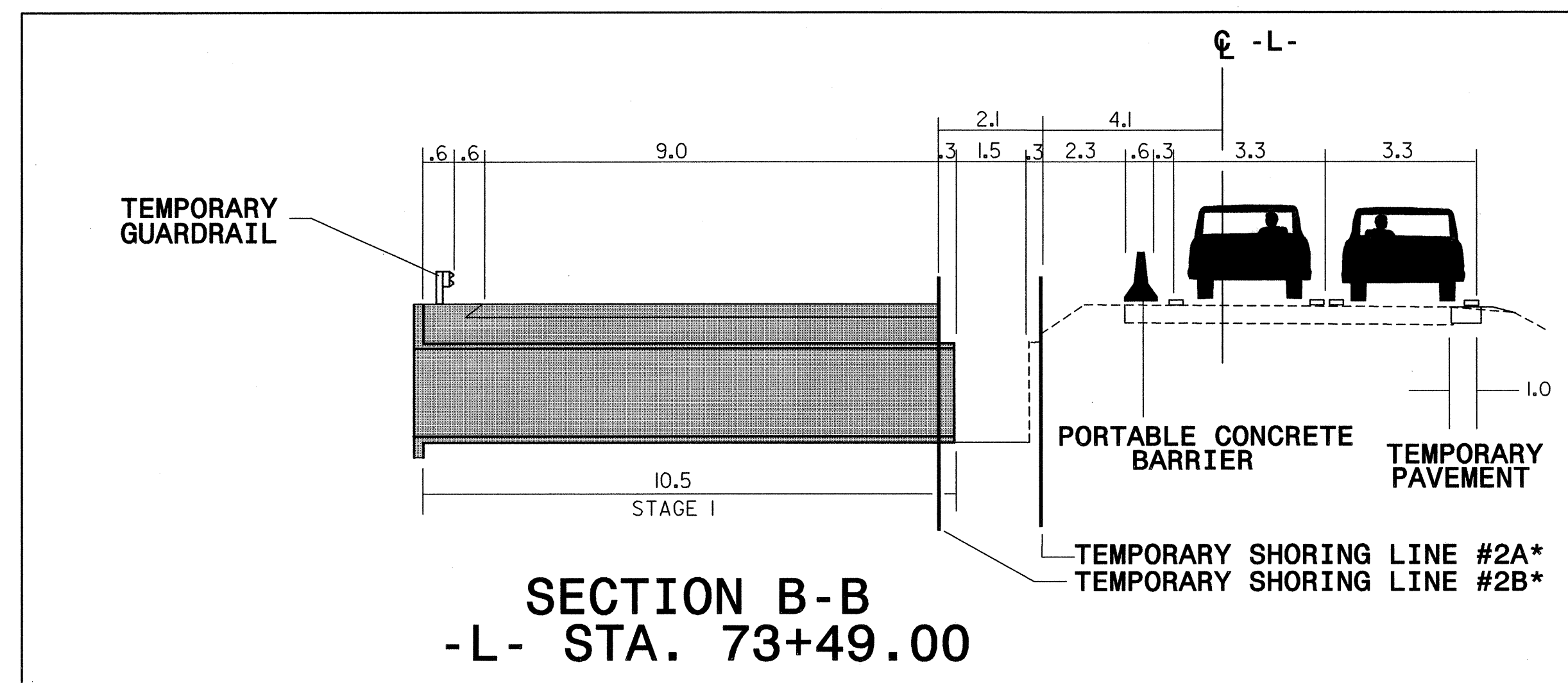
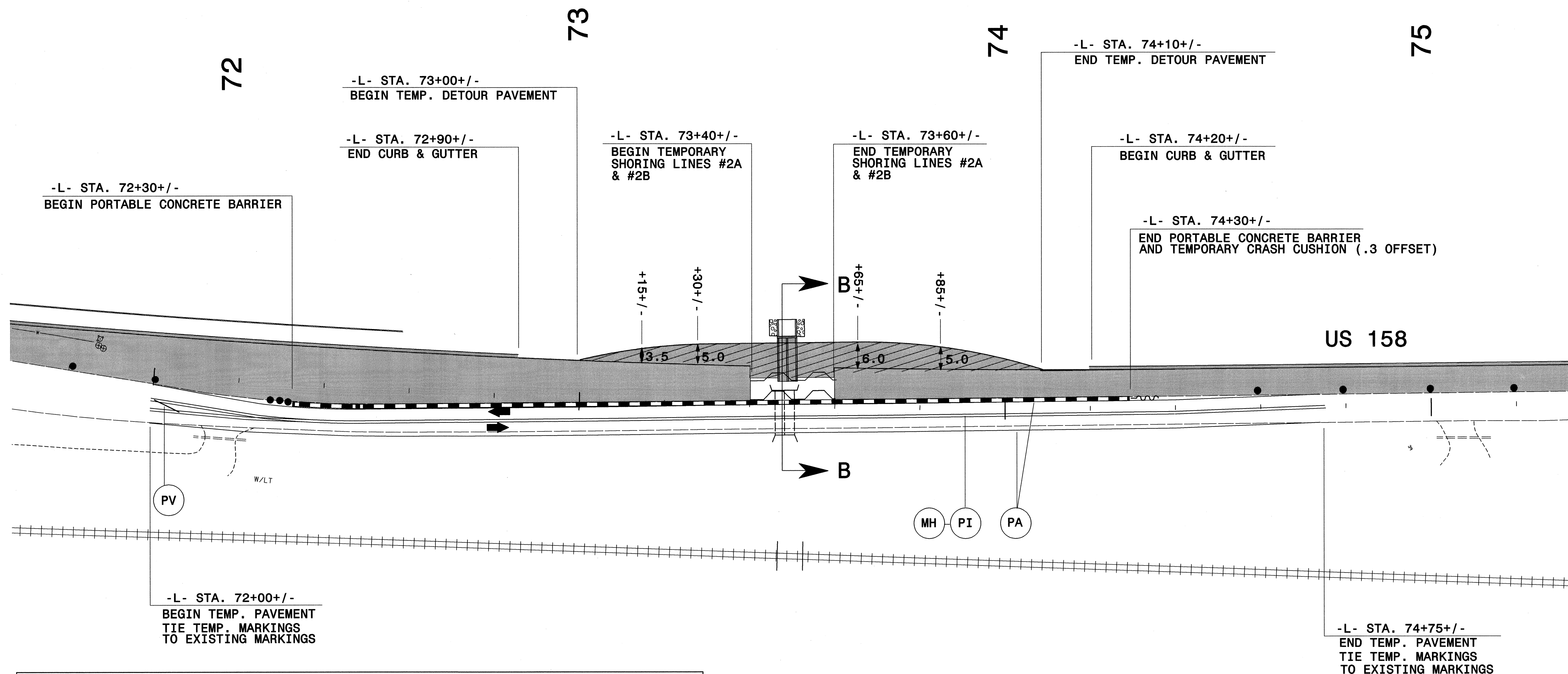
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PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-8



- \* TEMPORARY SHORING (LINE #2A) = EST. 44 SM
- \* TEMPORARY SHORING (LINE #2B) = EST. 44 SM

- SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE
- SEE STRUCTURE PLANS FOR STAGE I BOX CULVERT
- USE TOP-MOUNTED DELINEATORS ON PORTABLE CONCRETE BARRIER

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
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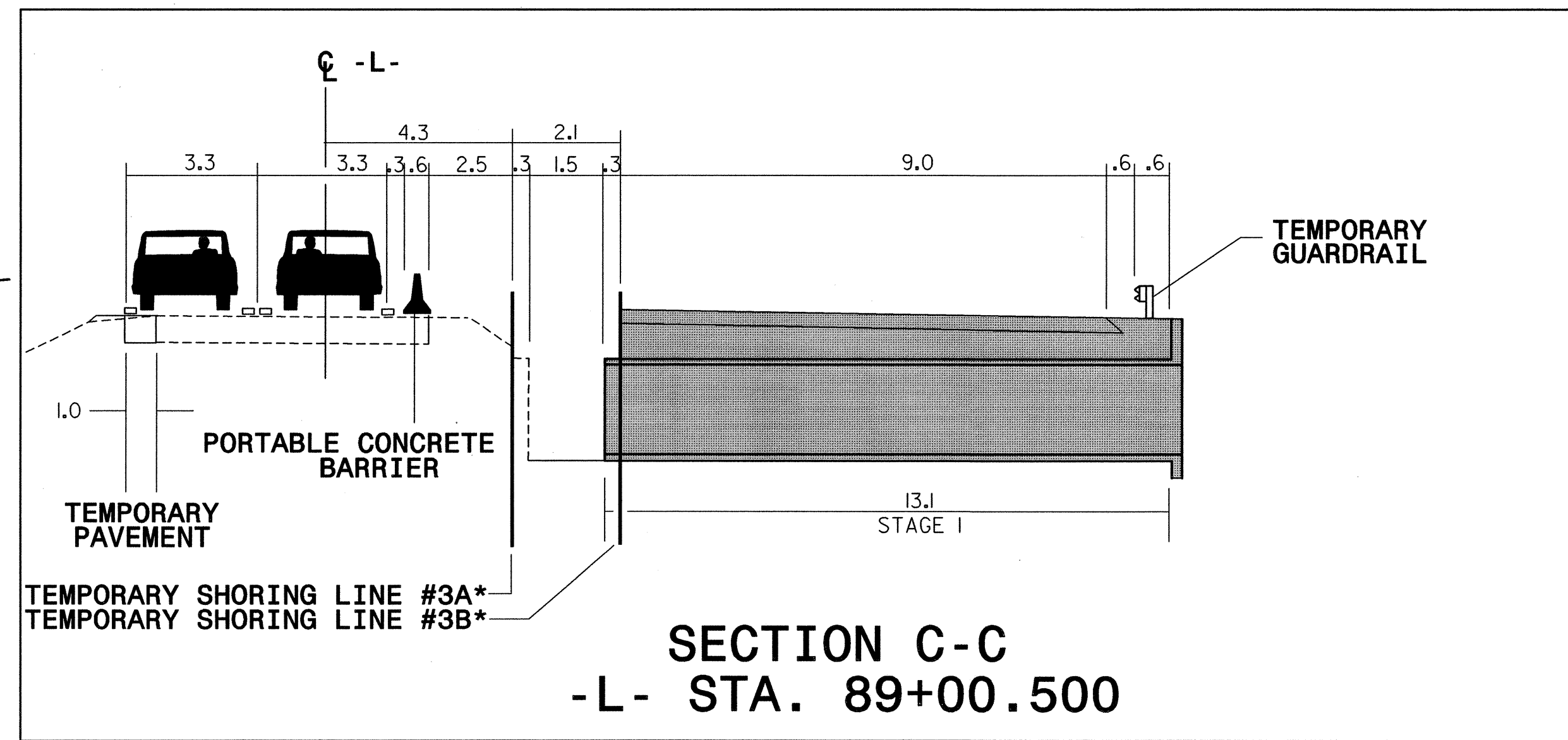
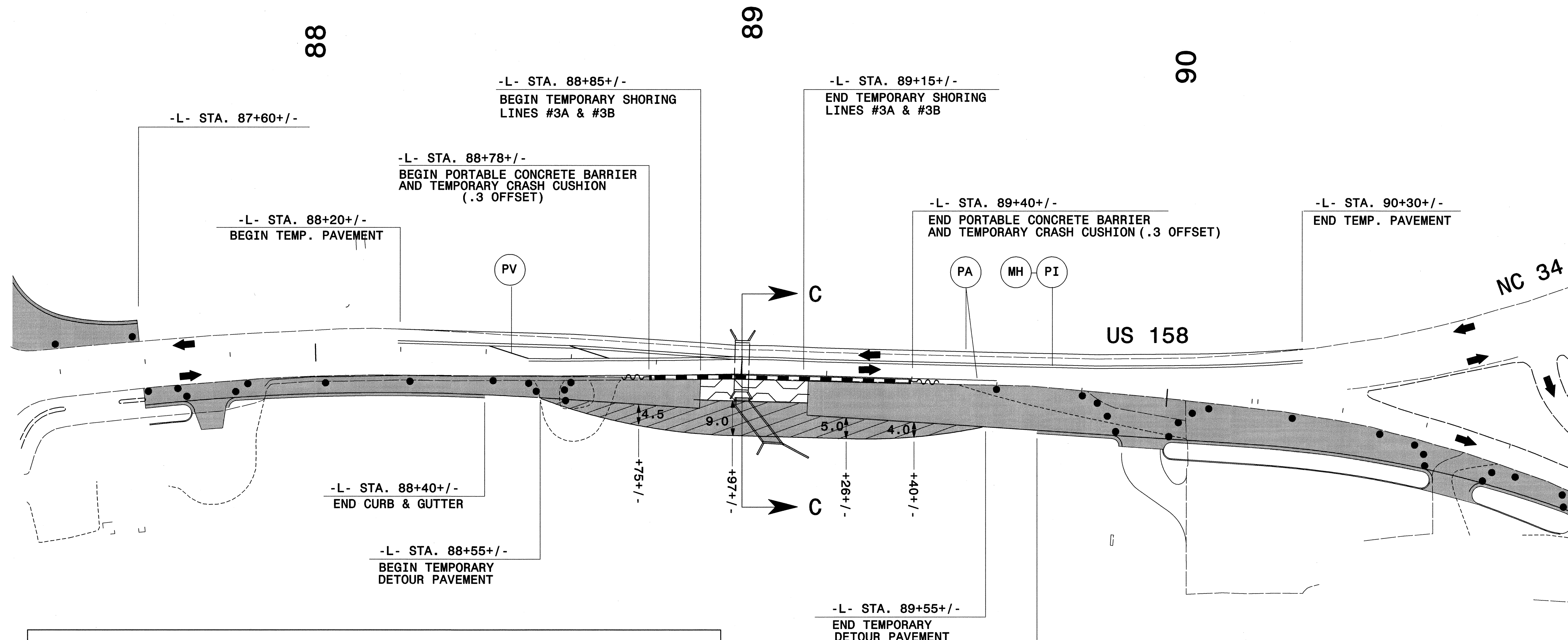
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**PHASE I - DETAIL B**

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DESIGN BY: CLM		
REVIEWED BY: BAM		

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- \* TEMPORARY SHORING (LINE #3A) = EST. 67 SM
- \* TEMPORARY SHORING (LINE #3B) = EST. 67 SM

- SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE
- SEE STRUCTURE PLANS FOR STAGE I BOX CULVERT
- USE TOP-MOUNTED DELINEATORS ON PORTABLE CONCRETE BARRIER

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<b>PHASE I - DETAIL C</b>							
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PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-10

**PHASE II**

STEP 1. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, COMPLETE ALL PROPOSED UNDERCUT EXCAVATION ALONG PROPOSED -L- WIDENING AREAS ACCORDING TO THE CONSTRUCTION PLANS. EXCAVATE ONLY AS FAR AS CAN BE BACKFILLED BY THE END OF EACH WORKDAY AND RETURN TRAFFIC TO THE EXISTING PATTERN.

PROPOSED -L- WIDENING MAY CONTINUE WHERE UNDERCUT EXCAVATION AND BACKFILL HAS BEEN COMPLETED ACCORDING TO PHASE II, STEP 2.

INSTALL AND COVER TEMPORARY TRAFFIC SIGNAL #2 AT SR 1139 (COUNTRY CLUB ROAD) AS SHOWN ON TCP-14 AND THE SIGNAL PLANS.

STEP 2. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, BEGIN PHASE II -L- WIDENING AND -Y- LINES AS SHOWN ON TCP-11, 12, AND 13. MAINTAIN EXISTING TRAFFIC SIGNAL OPERATIONS AT THE FOLLOWING INTERSECTION:

NC 343  
SR 1145 (BELCROSS ROAD/LAMBS ROAD)

PLACE PAVEMENT MARKINGS AND MARKERS AS MUCH AS POSSIBLE FOR THE TEMPORARY TRAFFIC PATTERN FROM -L- STA. 47+20+/- TO STA. 49+00+/- AS SHOWN ON TCP-14.

WORK IN A CONTINUOUS MANNER TO COMPLETE PHASE II, STEPS 3 AND 4 ON A WEEKEND FROM SATURDAY NIGHT AT 9:00PM UNTIL MONDAY MORNING AT 7:00AM (SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES):

STEP 3. USING POLICE AND ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, PLACE EXISTING SIGNAL IN FLASH MODE AT THE INTERSECTION OF US 158 AND SR 1139 (COUNTRY CLUB ROAD).

STEP 4. SHIFT US 158 AND SR 1139 (COUNTRY CLUB ROAD) TRAFFIC TO THE TEMPORARY TRAFFIC PATTERN IN A TWO-LANE, TWO-WAY PATTERN AS SHOWN ON TCP-14.

ACTIVATE TEMPORARY TRAFFIC SIGNAL #2 AND OPEN US 158 AND SR 1139 (COUNTRY CLUB ROAD).

STEP 5. USING ROADWAY STANDARD DRAWING 1101.03, SHT. 1 AND 2 OF 9, AND LOCAL NOTE #2, CLOSE US 158 AND PLACE TRAFFIC ON THE TEMPORARY OFF-SITE DETOUR AS SHOWN ON TCP-18A (PROPOSED TRACK CROSSING WORK AT -L- STA. 52+40+/- WILL BE PERFORMED BY OTHERS AS SHOWN ON TPC-15).

(PARTIAL TRACK CROSSING WORK LOCATED AT -L- STA. 92+35+/- WILL BE PERFORMED BY OTHERS AS PART OF PROPOSED -L- LEFT SIDE WIDENING AND AS SHOWN ON TCP-13).

STEP 6. PLACE PAVEMENT MARKINGS AND MARKERS AS MUCH AS POSSIBLE AT EACH OF THE THREE BOX CULVERT DETOUR LOCATIONS AND AS SHOWN ON TCP-16, 17, AND 18.

INSTALL TEMPORARY CONCRETE BARRIER AS MUCH AS POSSIBLE AT EACH OF THE THREE BOX CULVERT TEMPORARY DETOURS AND AS SHOWN ON TCP-16, 17, AND 18.

WORK IN A CONTINUOUS MANNER TO COMPLETE THE FOLLOWING WORK IN PHASE II, STEPS 7 AND 8:






STEP 7. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, SHIFT US 158 TRAFFIC ONTO THE TEMPORARY DETOURS AT EACH OF THE THREE BOX CULVERT LOCATIONS AS SHOWN ON TCP-16, 17, AND 18.

INSTALL REMAINING TEMPORARY CONCRETE BARRIER FOR BOX CULVERT WORK AT EACH OF THE THREE BOX CULVERT DETOURS.

STEP 8. OPEN US 158 TO THE TEMPORARY TWO-LANE, TWO-WAY SHIFTED TRAFFIC PATTERNS AT EACH AT EACH OF THE THREE BOX CULVERT LOCATIONS.

STEP 9. CONSTRUCT PROPOSED STAGE II BOX CULVERT CONSTRUCTION, UNDERCUT EXCAVATION, AND PROPOSED -L- WIDENING AS SHOWN ON TCP-16, 17, AND 18.

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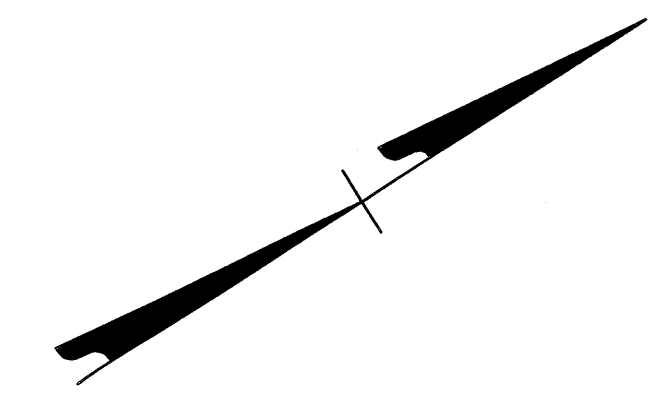
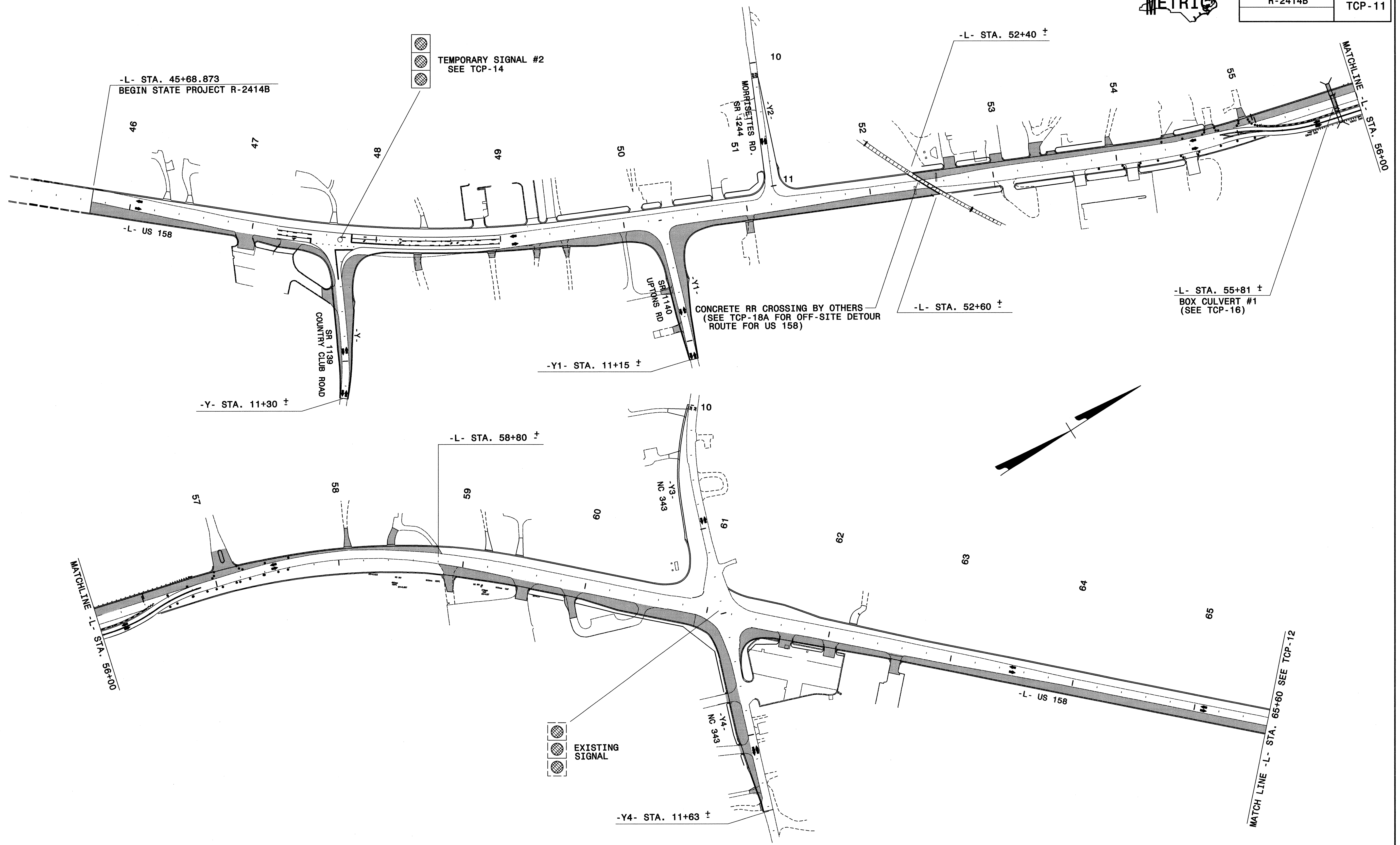
 <p>559 Jones Franklin Rd. Suite 164 Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 License: F-0377</p>	APPROVED: <i>Mc C. Mey</i> DATE: <i>9/27/10</i>	<h2>PHASE II PHASING</h2>																				
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R-2414B	TCP-11



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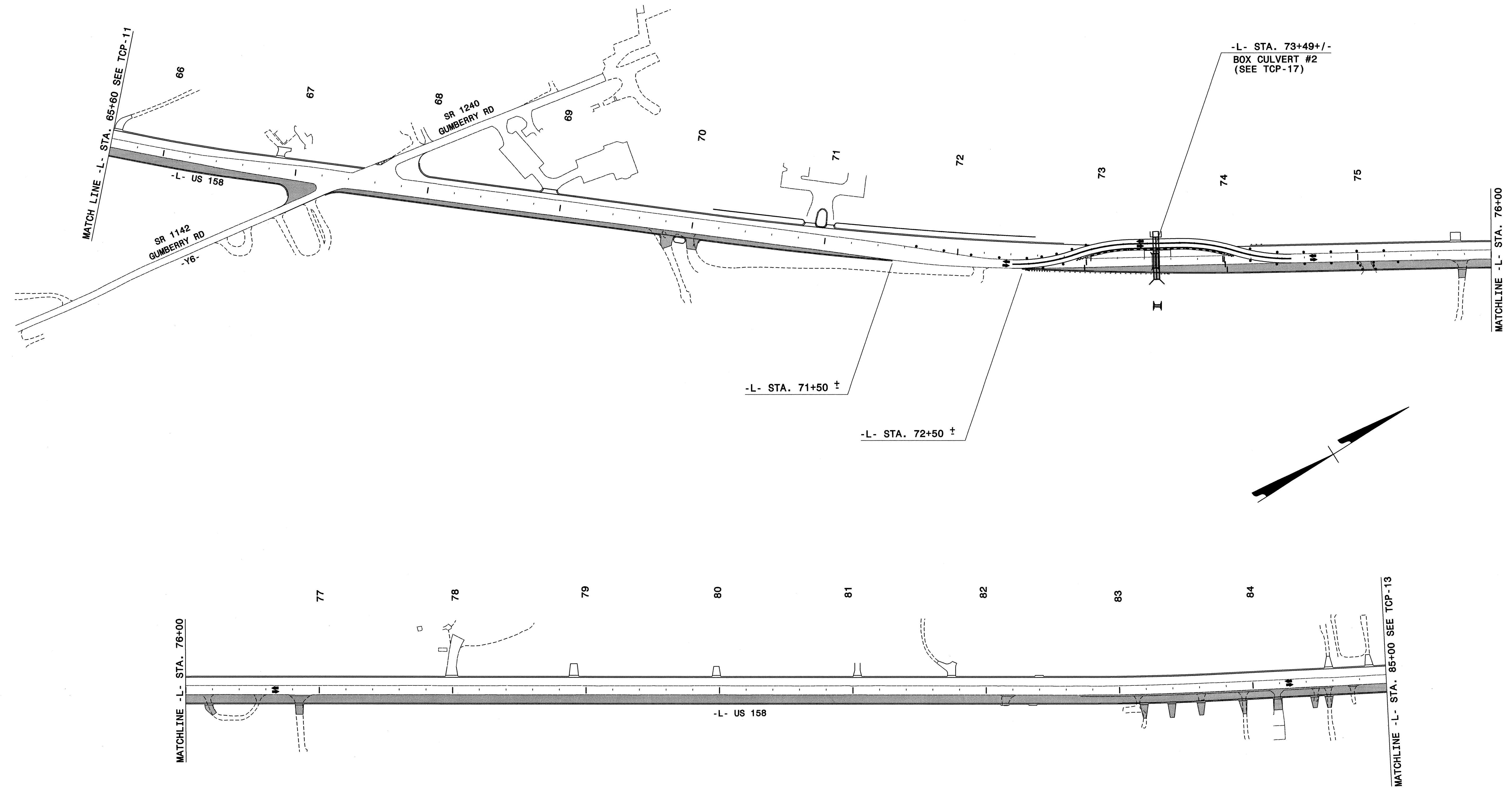
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### PHASE II OVERVIEW


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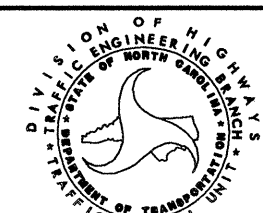
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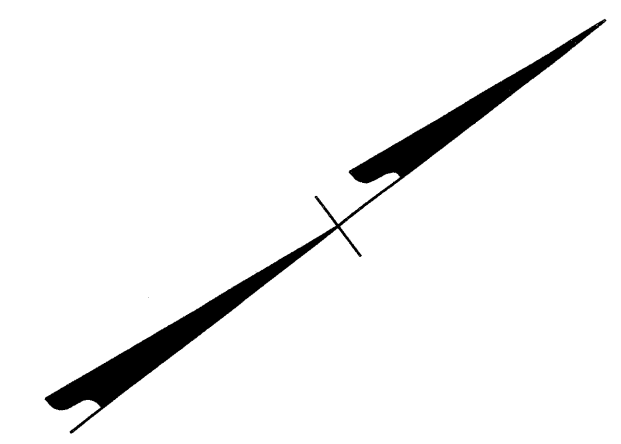
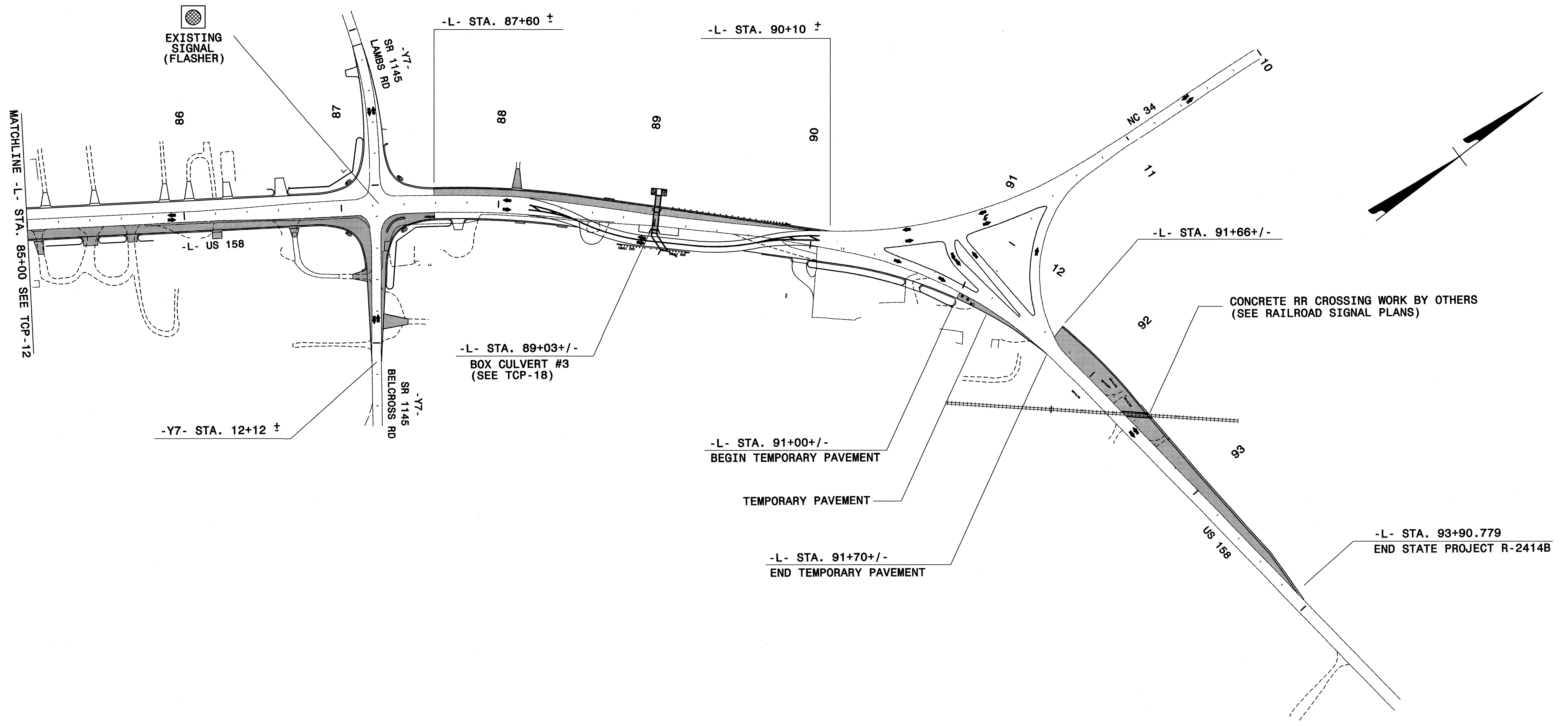
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### PHASE II OVERVIEW

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PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-13



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### PHASE II OVERVIEW

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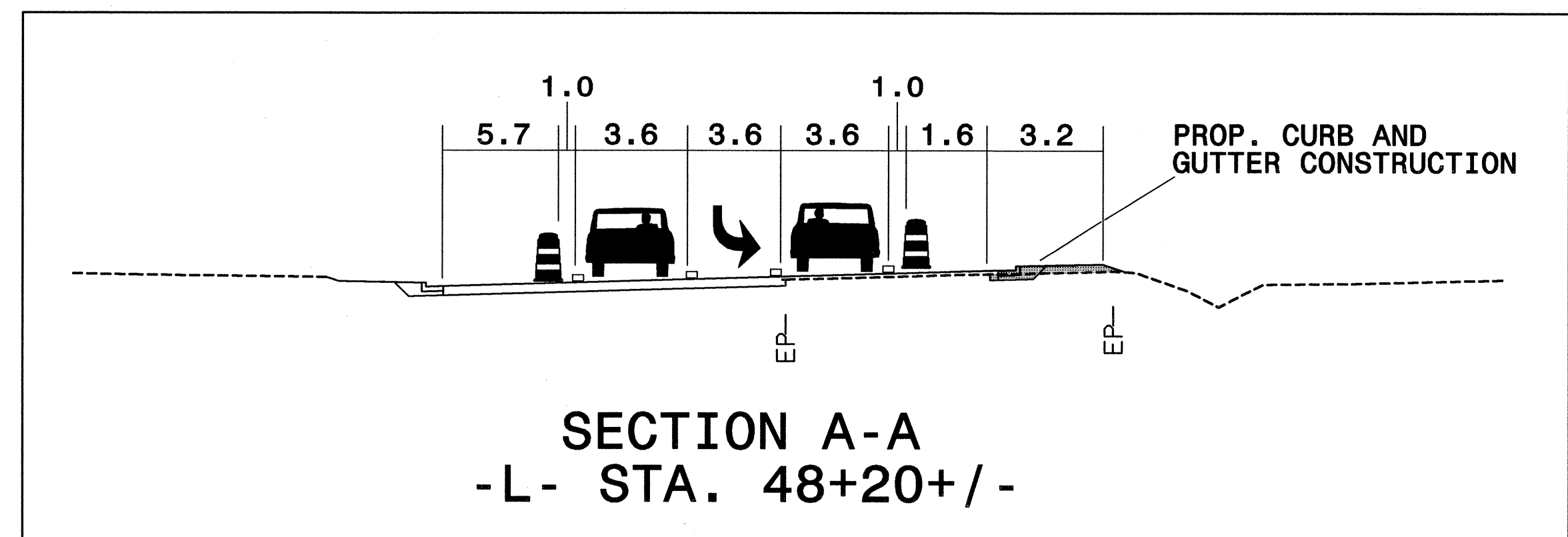
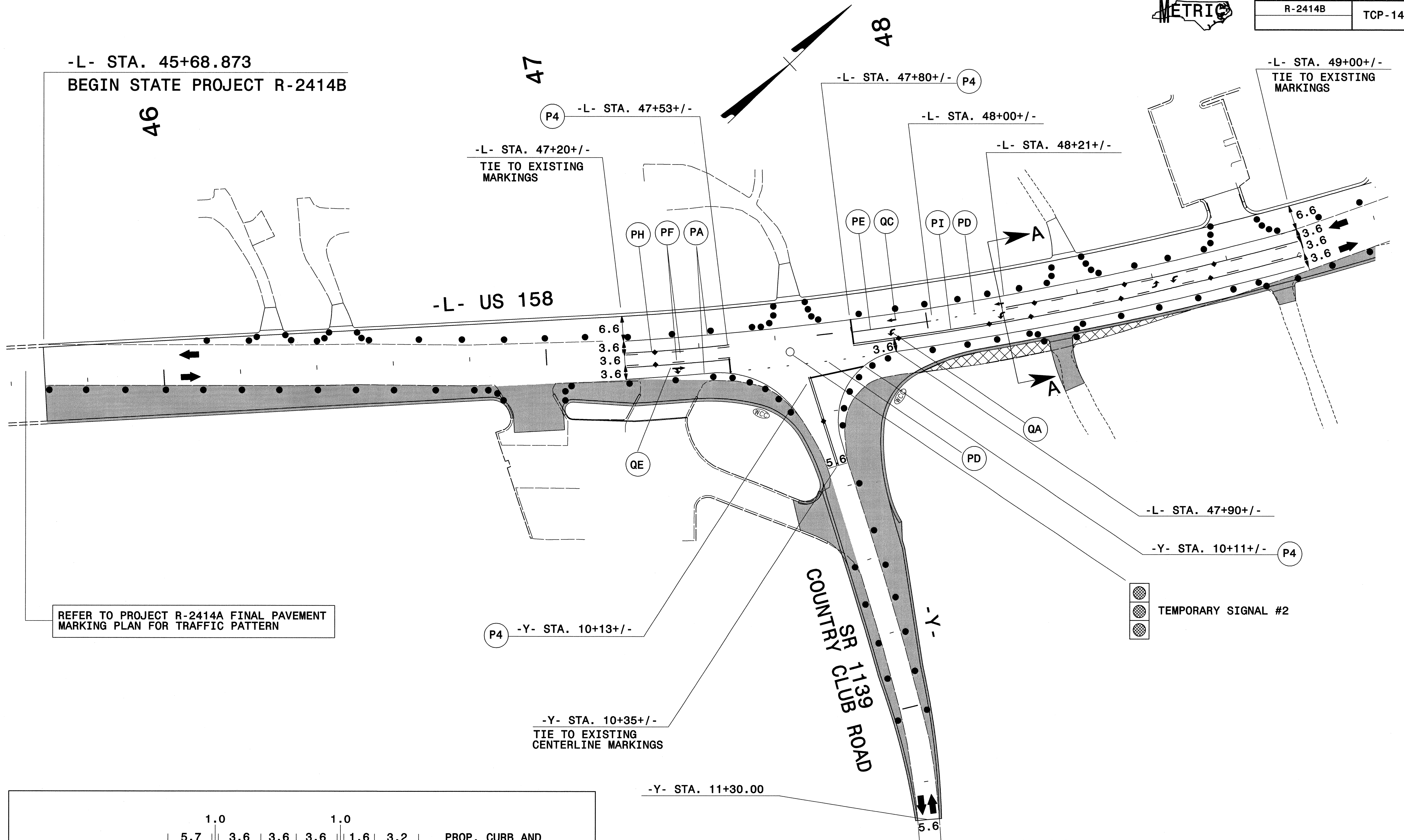
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PROJ. REFERENCE NO. R-2414B	SHEET NO. TCP-14
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-L- STA. 45+68.873  
BEGIN STATE PROJECT R-2414B



-SEE SIGNAL PLANS FOR TEMPORARY SIGNAL #2 DESIGN  
-SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *Bob A. May* DATE: 9/2/10

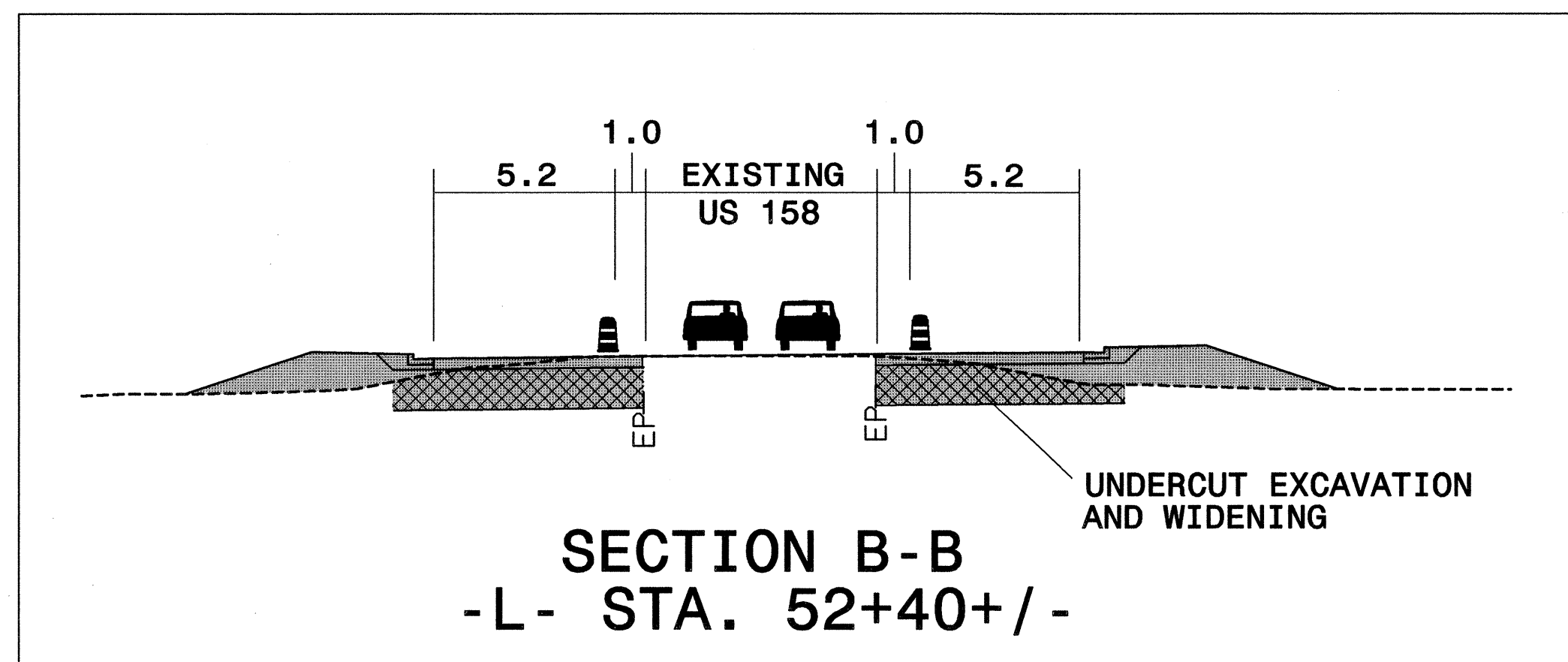
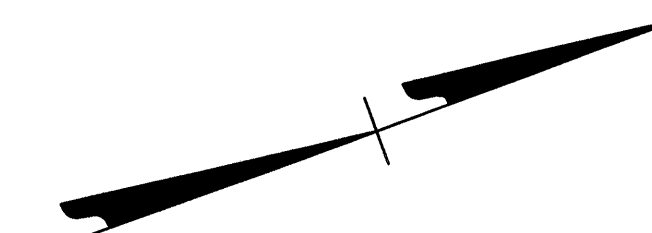
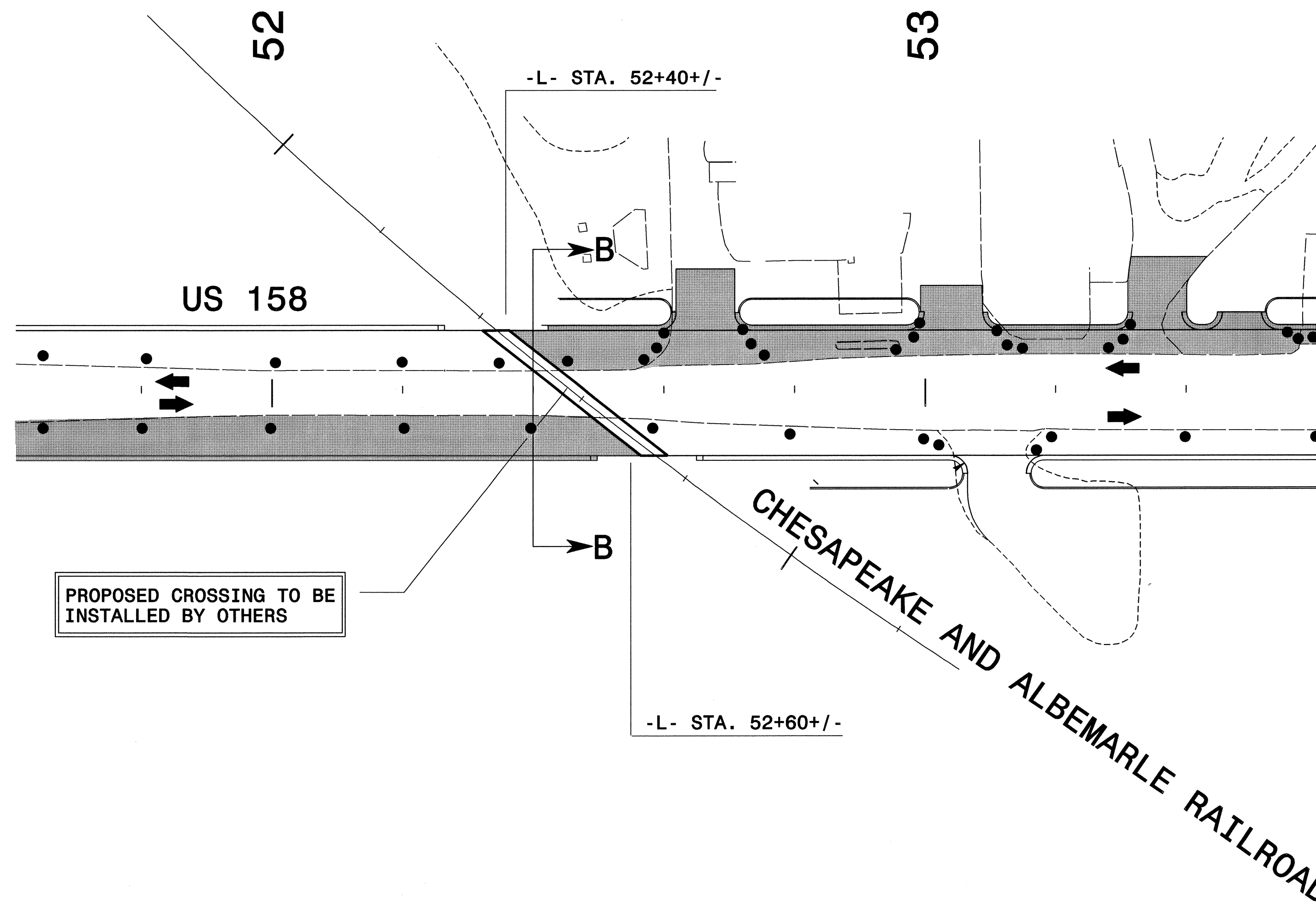
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**PHASE II - DETAIL A**

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REVIEWED BY: BAM		




PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-15

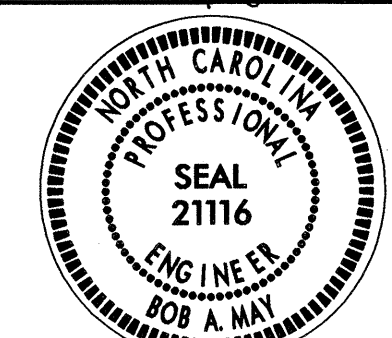


- SEE TCP-18A FOR TEMPORARY OFF-SITE DETOUR ROUTE FOR US 158 WHILE PROPOSED CONCRETE TRACK CROSSING IS INSTALLED BY OTHERS.
- SEE SIGNAL PLANS FOR WORK SEQUENCE AT EXISTING RAILROAD CROSSING BY OTHERS.

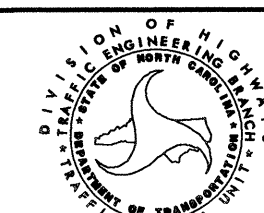
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 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *Be. G. May* DATE: *6/10*  


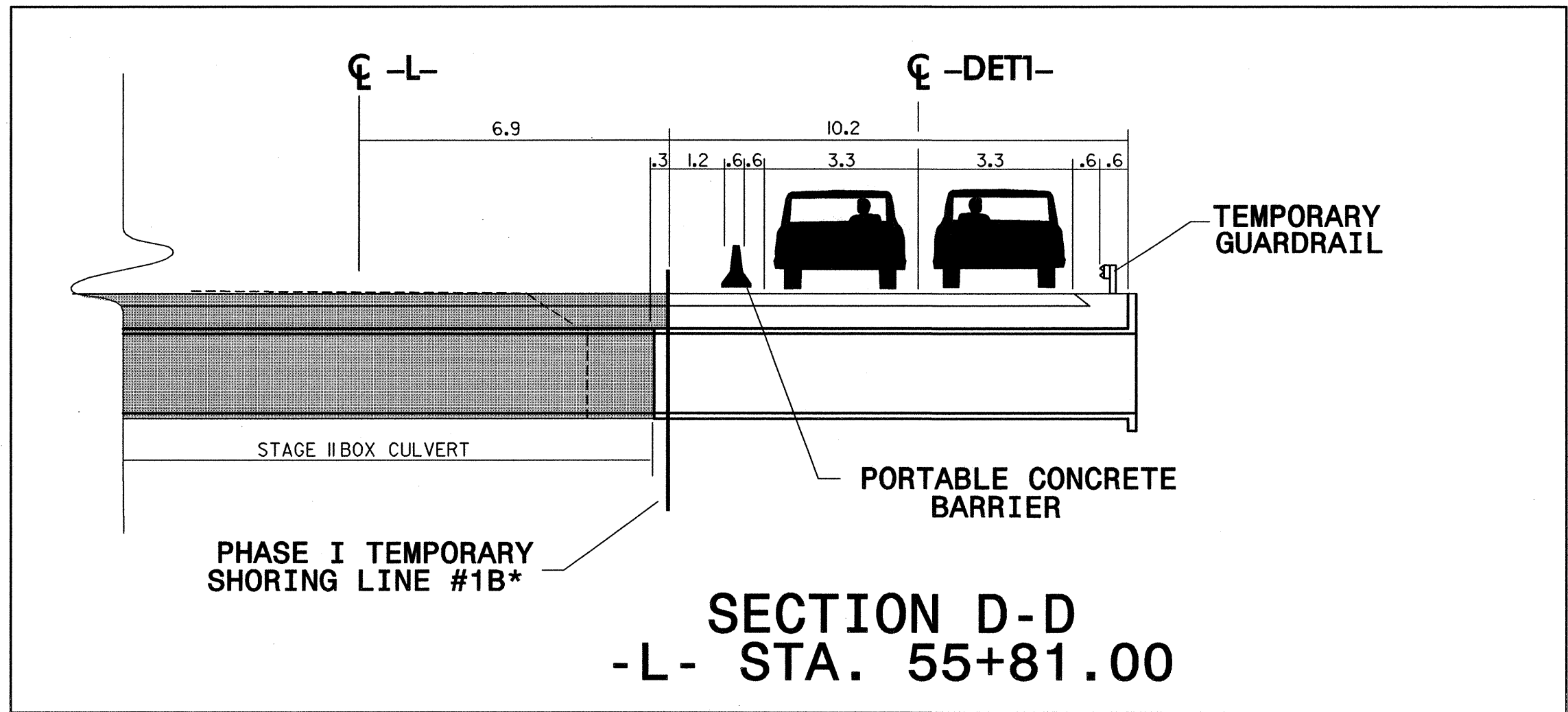
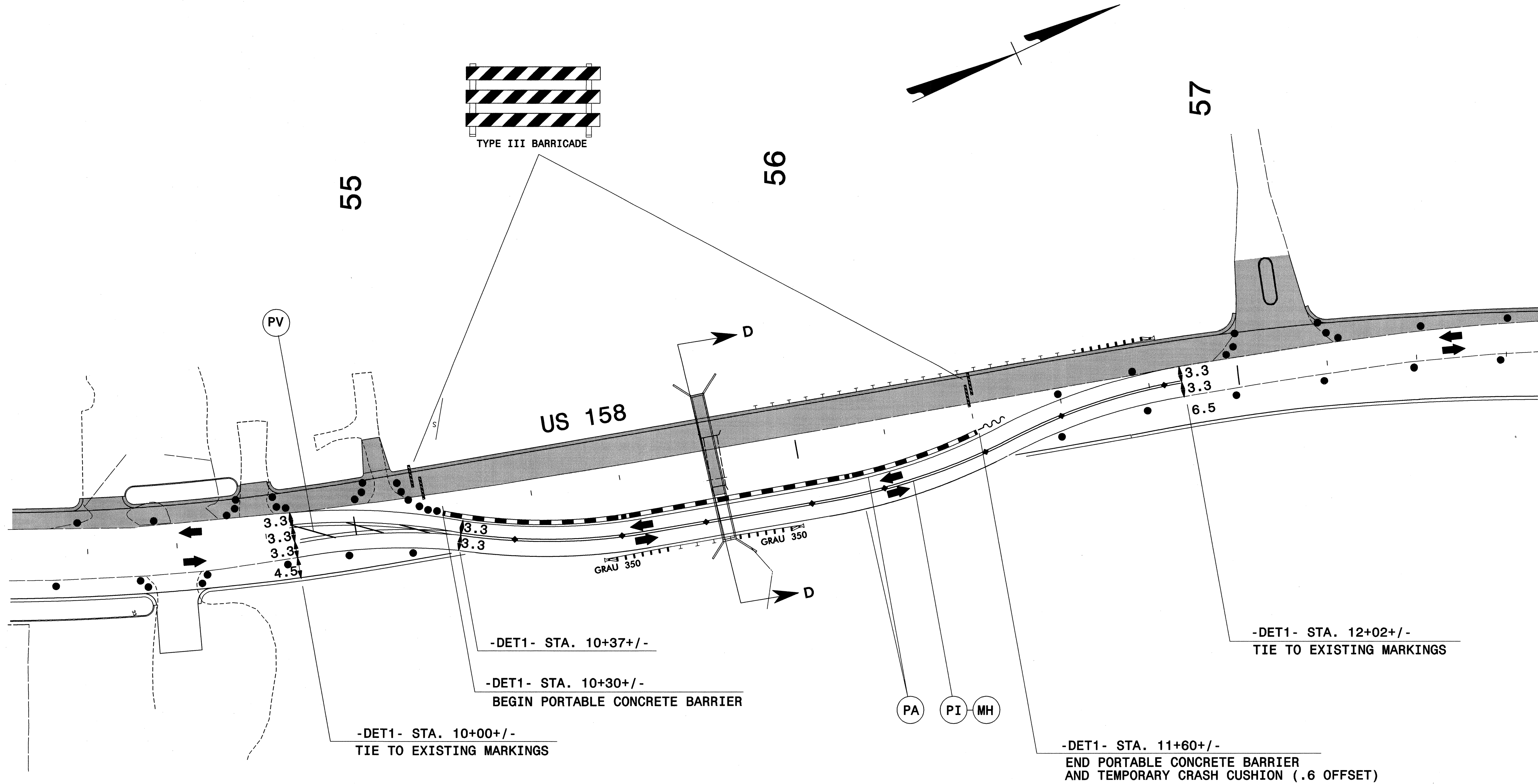
**PHASE II - DETAIL B**

SCALE: NONE		REVISIONS
DATE: 6/09		
DESIGN BY: CLM		
REVIEWED BY: BAM		





PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-16



\* TEMPORARY SHORING (LINE #1B) = EST. 41 SM

- SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE
- SEE RSD 1101.03 (SHT. 3 OF 9) FOR TEMPORARY ONSITE DETOUR SIGNING
- SEE STRUCTURE PLANS FOR STAGE II BOX CULVERT
- USE TOP-MOUNTED DELINEATORS ON PORTABLE CONCRETE BARRIER

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Bus: 919 851 8077  
Fax: 919 851 8107  
License: F-0377

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *Bob A. May* DATE: 12/6/10

SEAL:

**PHASE II - DETAIL C**

SCALE: NONE		REVISIONS
DATE: 6/09		
DWG. BY: JCP		
DESIGN BY: CLM		
REVIEWED BY: BAM		



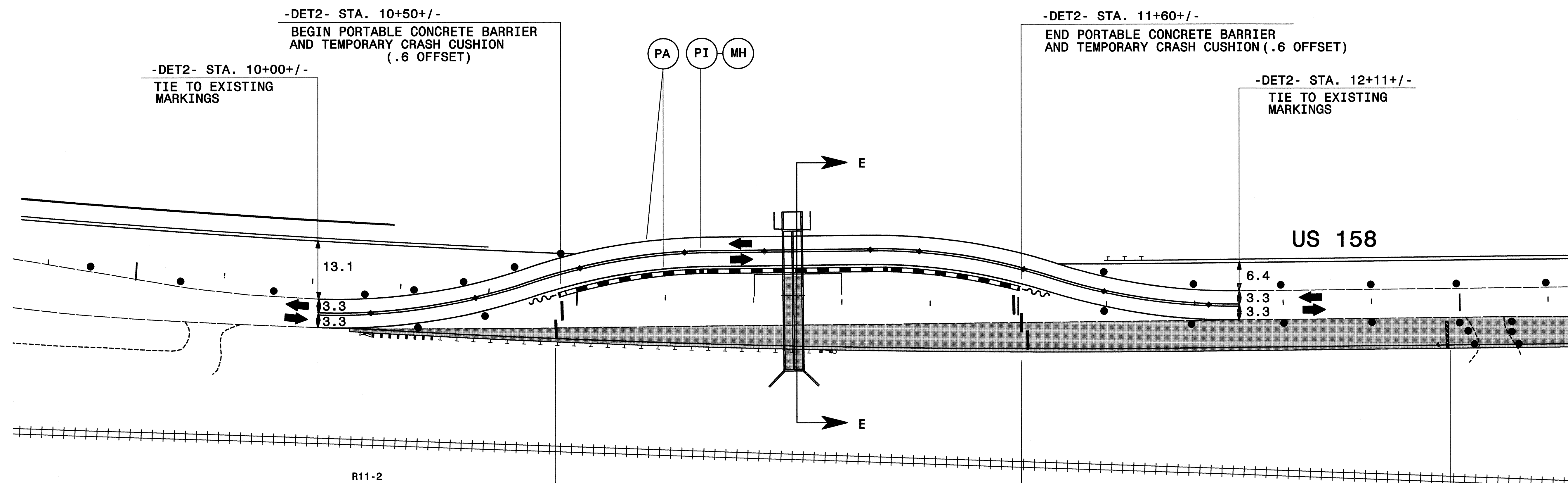


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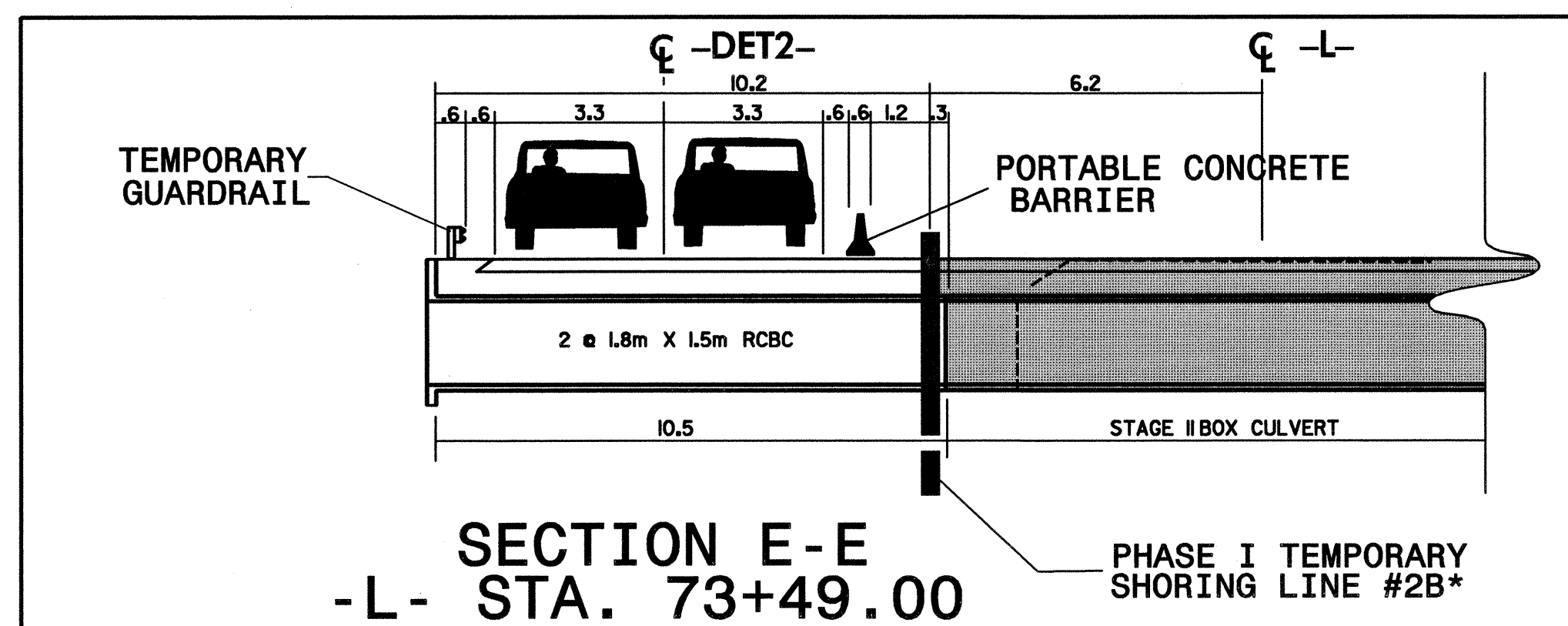
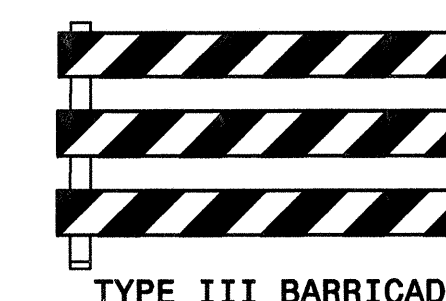
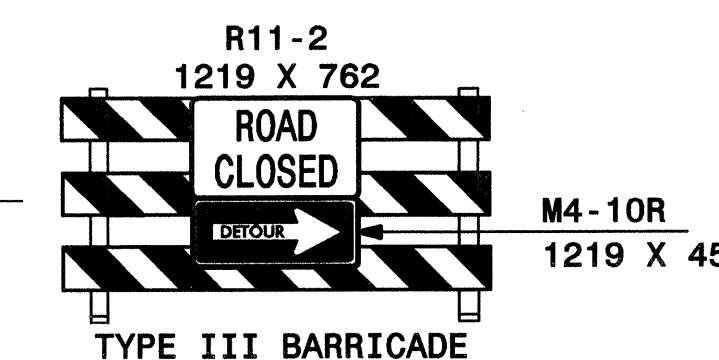
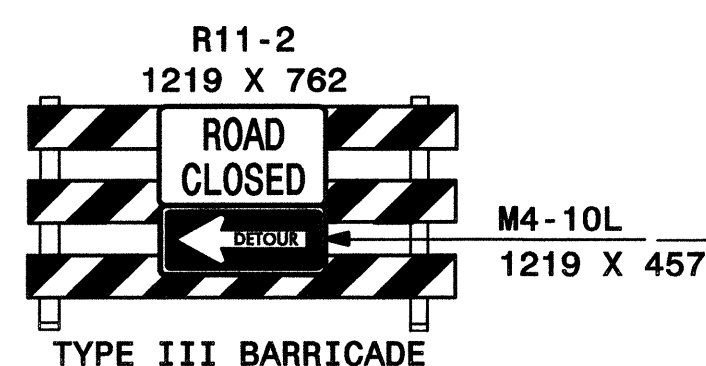
-DET2- STA. 10+00+/-  
TIE TO EXISTING  
MARKINGS

-DET2- STA. 10+50+/-  
BEGIN PORTABLE CONCRETE BARRIER  
AND TEMPORARY CRASH CUSHION  
(.6 OFFSET)

-DET2- STA. 11+60+/-  
END PORTABLE CONCRETE BARRIER  
AND TEMPORARY CRASH CUSHION (.6 OFFSET)

-DET2- STA. 12+11+/-  
TIE TO EXISTING  
MARKINGS

US 158



\* TEMPORARY SHORING (LINE #2B) = EST. 44 SM

- SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE
- SEE RSD 1101.03 (SHT. 3 OF 9) FOR TEMPORARY ONSITE DETOUR SIGNING
- SEE STRUCTURE PLANS FOR STAGE II BOX CULVERT
- USE TOP-MOUNTED DELINEATORS ON PORTABLE CONCRETE BARRIER

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *[Signature]* DATE: 6/7/09

SEAL: *[Professional Engineer Seal]*

**PHASE II - DETAIL D**

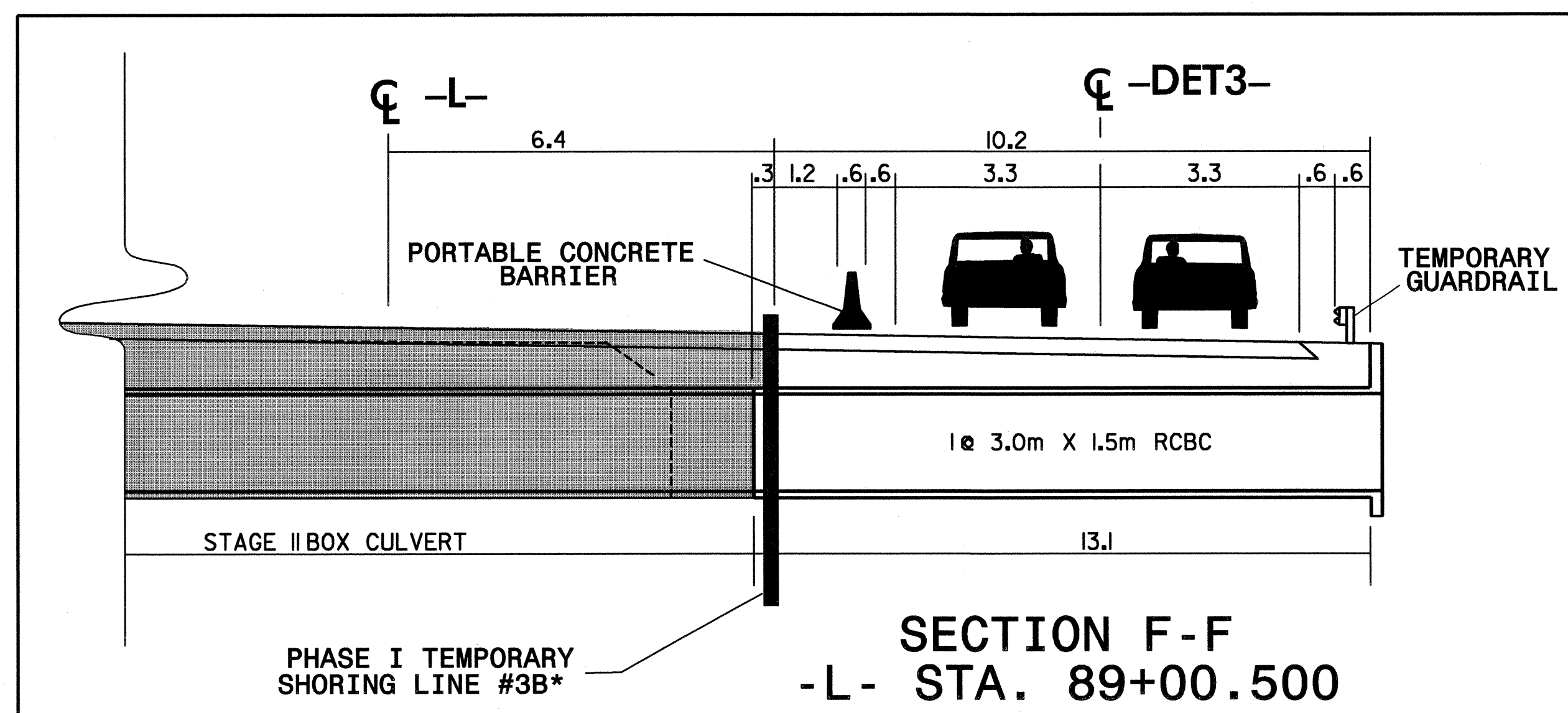
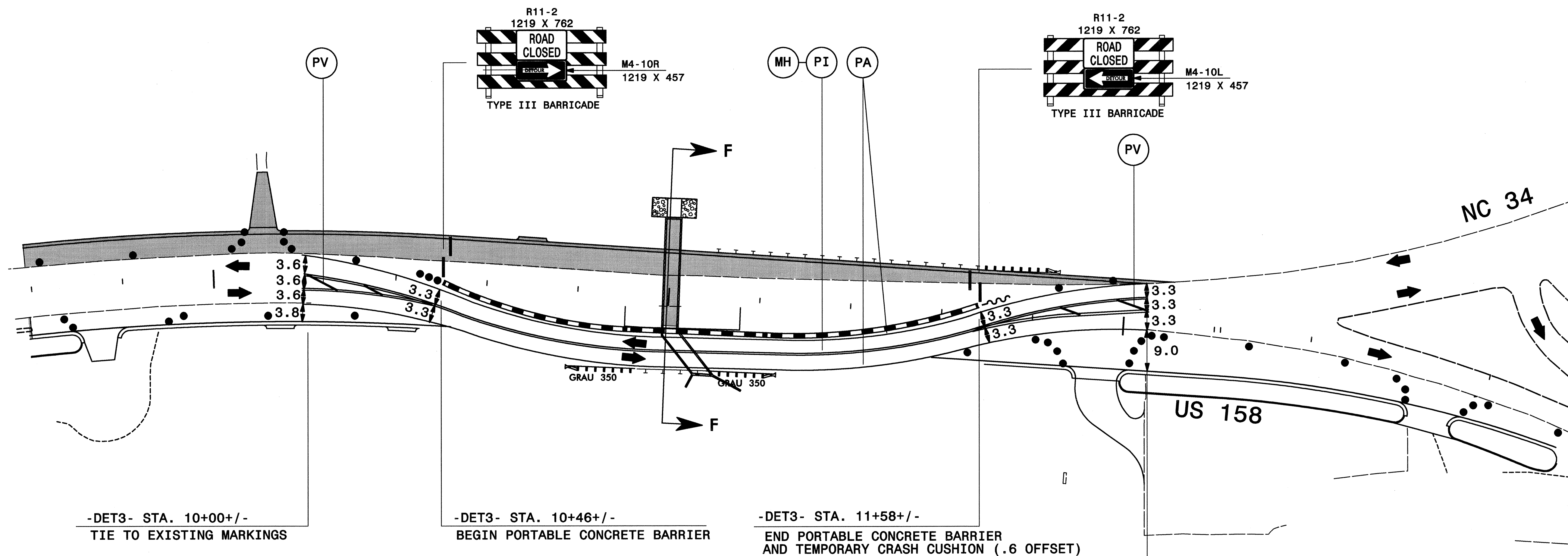
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DWG. BY: JCP	
DESIGN BY: CLM	
REVIEWED BY: BAM	

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88

89

90



\* TEMPORARY SHORING (LINE #3B) = EST. 67 SM

- SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE
- SEE RSD 1101.03 (SHT. 3 OF 9) FOR TEMPORARY ONSITE DETOUR SIGNING
- SEE STRUCTURE PLANS FOR STAGE II BOX CULVERT
- USE TOP-MOUNTED DELINEATORS ON PORTABLE CONCRETE BARRIER

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

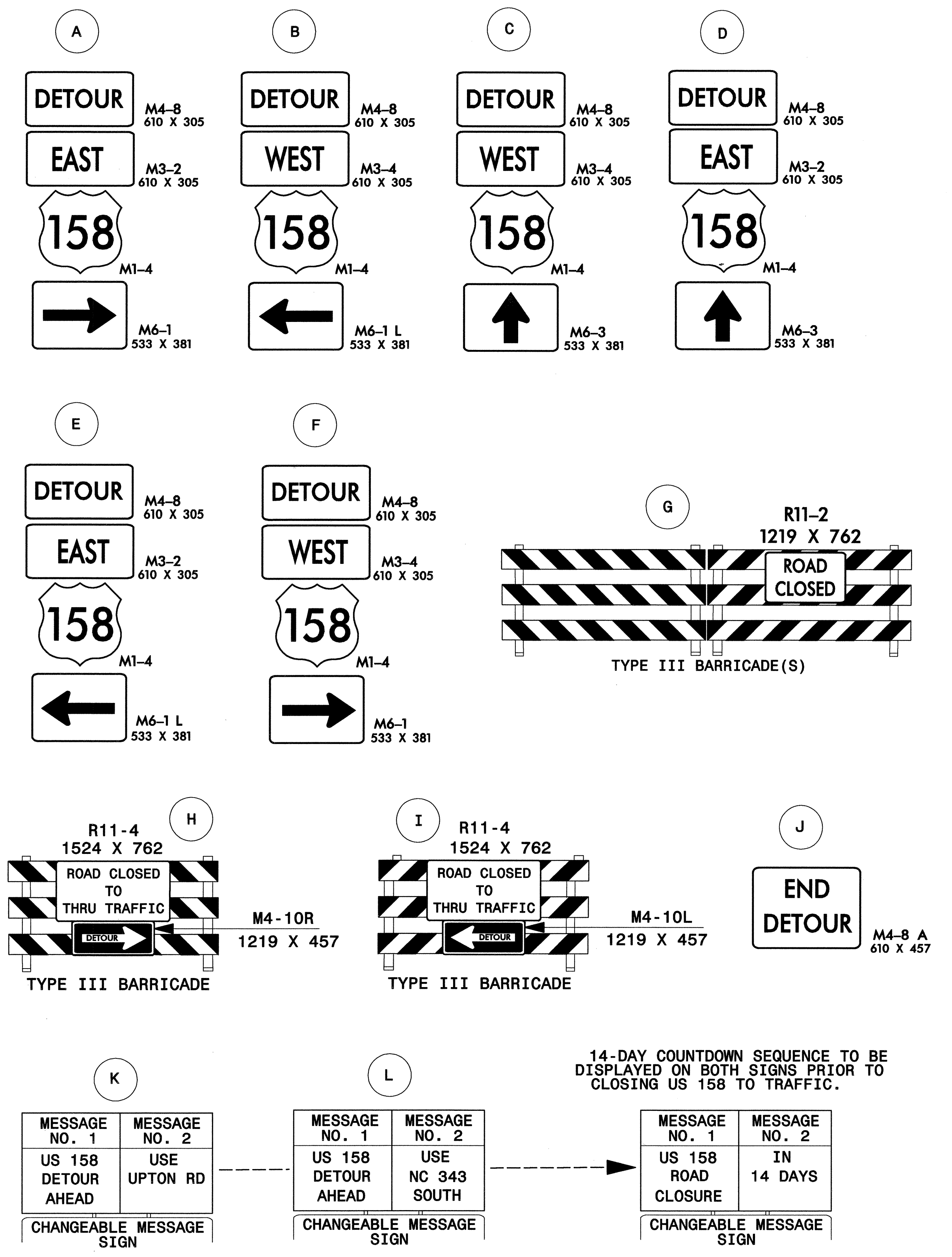
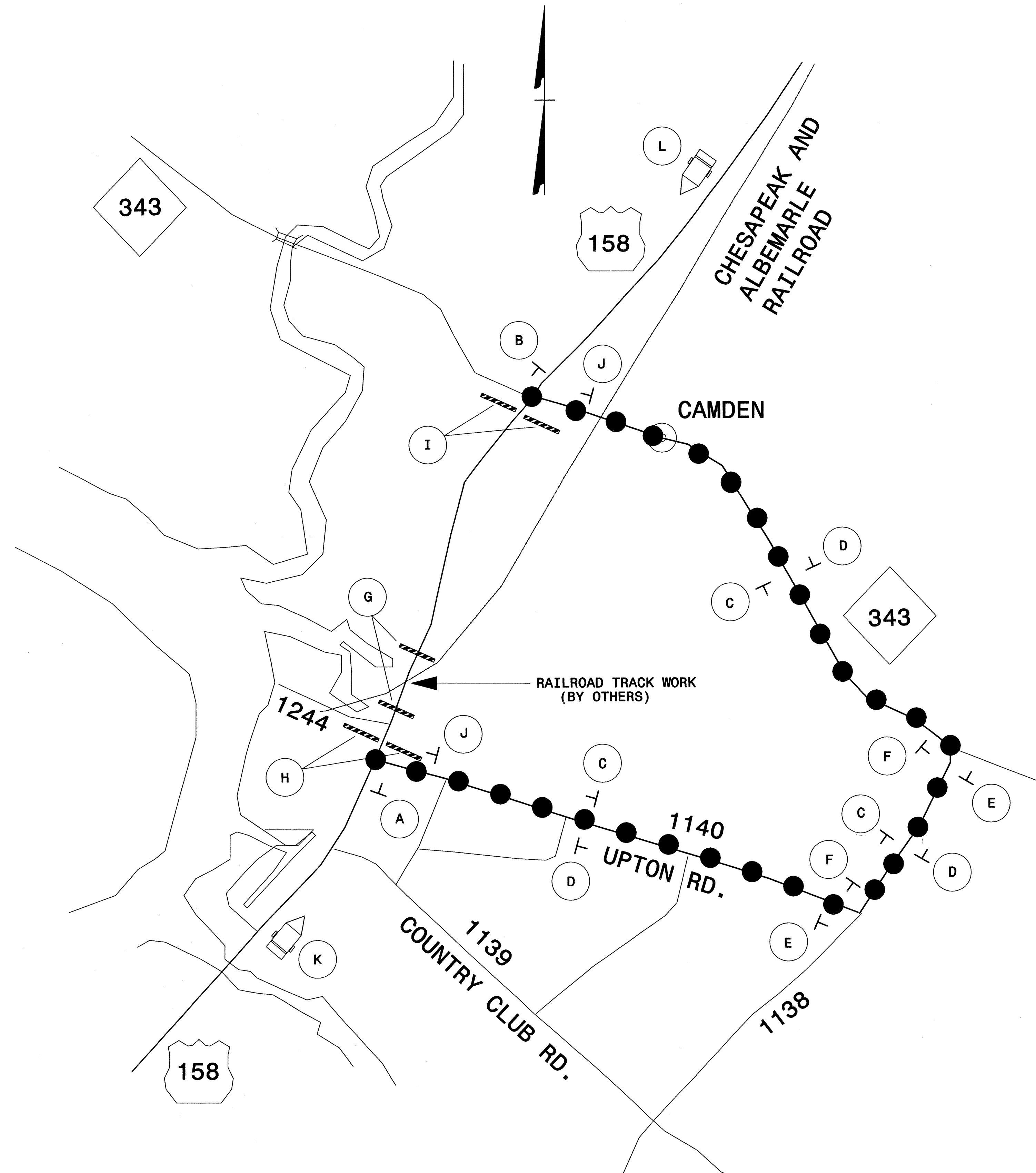
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SEAL

PHASE II - DETAIL E	
SCALE: NONE	REVISIONS
DATE: 6/09	
DWG. BY: JCP	
DESIGN BY: CLM	
REVIEWED BY: BAM	

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- LOCATE CMS APPROX. 1 MILE IN ADVANCE OF EACH DETOUR POINT ON US 158.
- TEMPORARY SIGNING TO BE PAID FOR AS "STATIONARY WORK ZONE SIGNS".
- SEE ROADWAY STANDARD DRAWING 1101.03, SHEET 1 AND 2 OF 9, FOR ADDITIONAL TEMPORARY OFF-SITE DETOUR SIGNING REQUIREMENTS.

9/29/2010  
 10:18:09 AM  
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	559 Jones Franklin Rd. Suite 164 Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 License: F-0377	APPROVED: <i>[Signature]</i> DATE: 9/29/10	<h3>US 158 ROAD CLOSURE AND OFF-SITE DETOUR</h3>									
	TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION			<table border="1"> <tr> <td>SCALE:</td> <td>NONE</td> </tr> <tr> <td>DATE:</td> <td>10/09</td> </tr> <tr> <td>DWG. BY:</td> <td>CLM</td> </tr> <tr> <td>DESIGN BY:</td> <td>CLM</td> </tr> <tr> <td>REVIEWED BY:</td> <td>BAM</td> </tr> </table>	SCALE:	NONE	DATE:	10/09	DWG. BY:	CLM	DESIGN BY:	CLM
SCALE:	NONE											
DATE:	10/09											
DWG. BY:	CLM											
DESIGN BY:	CLM											
REVIEWED BY:	BAM											

REVISIONS	





PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-19

**PHASE III**

STEP 1. INSTALL AND COVER TEMPORARY TRAFFIC SIGNAL #3 AT -Y3- (NC 343) AS SHOWN ON THE SIGNAL PLANS AND AS SHOWN ON TCP-24.

USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, REMOVE PHASE II TEMPORARY CONCRETE BARRIER AT EACH OF THE THREE BOX CULVERT LOCATIONS AND REPLACE WITH DRUMS.

WORK IN A CONTINUOUS MANNER TO COMPLETE THE FOLLOWING WORK IN PHASE III, STEP 2:

STEP 2. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, SHIFT US 158 TRAFFIC TO THE TRAFFIC PATTERNS SHOWN AT EACH OF THE THREE BOX CULVERT LOCATIONS ON TCP-23, 27, AND 28.

USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, COMPLETE -L- RIGHT SIDE CURB & GUTTER AND DRIVEWAY WORK AS SHOWN ON TCP-27.

STEP 3. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, REMOVE TEMPORARY DETOUR PAVEMENT AT EACH OF THE THREE BOX CULVERT LOCATIONS AND CONSTRUCT -L- PAVEMENT AND CURB & GUTTER, AND GUARDRAIL AS SHOWN ON TCP-23, 27, AND 28.

WORK IN A CONTINUOUS MANNER TO COMPLETE PHASE III, STEP 4 ON A WEEKEND FROM SATURDAY NIGHT AT 9:00PM UNTIL MONDAY MORNING AT 7:00AM (SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES):

STEP 4. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, PERFORM WORK AT THE EXISTING INTERSECTION OF US 158 AND NC 343 ACCORDING TO THE FOLLOWING WORK SEQUENCE AND TCP-24 & TCP-25:

- A) PLACE PAVEMENT MARKINGS AND MARKERS AS MUCH AS POSSIBLE FOR THE -Y3- (NC 343) TEMPORARY TRAFFIC PATTERN
- B) SHIFT -Y3- (NC 343) TRAFFIC TO THE TEMPORARY PATTERN
- C) ACTIVATE TEMPORARY TRAFFIC SIGNAL #3 AS SHOWN IN THE SIGNAL PLANS
- D) PLACE REMAINING PAVEMENT MARKINGS AND MARKERS FOR THE TEMPORARY -Y3- (NC 343) TRAFFIC PATTERN

STEP 5. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, COMPLETE -Y3- & -Y4- (NC 343) LEFT SIDE SHOULDER AND CURB & GUTTER WORK AS SHOWN ON TCP-24 AND 25.

WORK IN A CONTINUOUS MANNER TO COMPLETE THE FOLLOWING WORK IN PHASE III, STEP 6:

STEP 6. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, PERFORM WORK AT THE EXISTING INTERSECTION OF US 158 AND GUMBERRY ROAD ACCORDING TO THE FOLLOWING WORK SEQUENCE AND AS SHOWN ON TCP-26:

- A) PLACE PAVEMENT MARKINGS AND MARKERS AS MUCH AS POSSIBLE FOR THE US 158 TEMPORARY TRAFFIC PATTERN
- B) SHIFT US 158 TRAFFIC TO THE TEMPORARY PATTERN AND PLACE REMAINING PAVEMENT MARKINGS AND MARKERS FOR THE SR 1240 & SR 1142 (GUMBERRY ROAD) FINAL TRAFFIC PATTERNS
- C) COMPLETE SR 1240 (GUMBERRY ROAD) INTERSECTION WORK

STEP 7. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, CONSTRUCT TEMPORARY PAVEMENT AT THE EXISTING US 158 AND NC 34 INTERSECTION AS SHOWN ON TCP-22 AND AS SHOWN ON THE CONSTRUCTION PLANS.

PLACE PAVEMENT MARKINGS AND MARKERS AS MUCH AS POSSIBLE FOR THE TEMPORARY TRAFFIC PATTERN AT THE US 158 AND NC 34 INTERSECTION AS SHOWN ON TCP-29.

PLACE CHANGEABLE MESSAGE SIGNS ON US 158 AND NC 34 FOR -Y8- INTERSECTION WORK AS SHOWN ON TCP-28 AND 29.

STEP 8. USING POLICE AND ROADWAY STANDARD DRAWINGS 1101.02, SHT. 1 OF 9, AND 1101.03, SHT 8 OF 9, PERFORM WORK AT THE INTERSECTION OF US 158 AND NC 34 ACCORDING TO THE FOLLOWING WORK SEQUENCE AND AS SHOWN ON TCP-29:

- A) PLACE PAVEMENT MARKINGS FOR THE RELOCATED TEMPORARY INTERSECTION FOR US 158 AND NC 34. PLACE TYPE III BARRICADES TO CLOSE THE EXISTING INTERSECTION AND SIMULTANEOUSLY OPEN THE TEMPORARY INTERSECTION TO TRAFFIC. PLACE REMAINING PAVEMENT MARKINGS AND SYMBOLS FOR THE TEMPORARY INTERSECTION PATTERN.
- B) RELOCATE/ADJUST EXISTING INTERSECTION SIGNING AS REQUIRED.

STEP 9. INSTALL TEMPORARY CONCRETE BARRIER ON THE EXISTING NC 34 NORTHBOUND RAMP AND ALONG THE RIGHT SIDE OF EXISTING NC 34 AS SHOWN ON TCP-29.

STEP 10. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, CONSTRUCT PROPOSED -Y8- INTERSECTION AS MUCH AS POSSIBLE AS SHOWN ON TCP-29.

INSTALL AND COVER TEMPORARY TRAFFIC SIGNAL #1 AT US 158 AND NC 34 AS SHOWN ON TCP-30 AND THE SIGNAL PLANS.

STEP 11. INSTALL TYPE III BARRICADES AND CLOSE THE EXISTING NC 34 NORTHBOUND RAMP.

STEP 12. USING ROADWAY STANDARD DRAWINGS 1101.02, SHT. 1 OF 9, CONSTRUCT PROPOSED -L- LEFT SIDE WIDENING SECTION FROM STA. 91+47+/- TO STA. 91+67+/-, AND THE -Y8- LEFT SIDE WIDENING FROM -Y8- STA. 11+00+/- TO STA. 11+90+/- UP TO, BUT NOT INCLUDING, THE FINAL LAYER OF SURFACE COURSE AS SHOWN ON TCP-29A.

WORK IN A CONTINUOUS MANNER TO COMPLETE PHASE III, STEPS 13 & 14 ON A WEEKEND FROM SATURDAY NIGHT AT 9:00PM UNTIL MONDAY MORNING AT 7:00AM (SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES):

STEP 13. USING POLICE AND ROADWAY STANDARD DRAWINGS 1101.02, SHT. 1 OF 9, SIMULTANEOUSLY SHIFT US 158 EASTBOUND AND NC 34 TRAFFIC ONTO -Y8- IN A ONE-LANE, TWO-WAY PATTERN.

WEDGE AND CONSTRUCT -Y8- RIGHT SIDE WIDENING FROM -Y8- STA. 11+00+/- TO STA. 11+90+/- UP TO, BUT NOT INCLUDING, THE FINAL LAYER OF SURFACE COURSE AS SHOWN ON TCP-29B.

PLACE PAVEMENT MARKINGS AND MARKERS AS MUCH AS POSSIBLE FOR THE TEMPORARY SIGNALIZED US 158 AND NC 34 INTERSECTION AS SHOWN ON TCP-30.

STEP 14. OPEN THE TEMPORARY SIGNALIZED US 158 AND NC 34 INTERSECTION AS SHOWN ON TCP-30. PLACE TYPE III BARRICADES TO CLOSE OFF THE EXISTING NC 34 UNUSED ROADWAY SECTION TO TRAFFIC.

STEP 15. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, OBLITERATE REMAINING NC 34 PAVEMENT AS SHOWN ON TCP-30 AND THE CONSTRUCTION PLANS.

CONSTRUCT -L- RIGHT SIDE WIDENING AND CURB & GUTTER ON US 158 EASTBOUND FROM STA. 91+00+/- TO STA. 93+90+/- AS SHOWN ON TCP-30 AND IN THE CONSTRUCTION PLANS.

INSTALL & COVER PERMANENT TRAFFIC SIGNALS FOR -L- AND -Y-, -Y3/-Y4-, AND -Y8- INTERSECTIONS AS SHOWN ON PMP-3, 7, AND 10 OF THE PAVEMENT MARKING PLAN, AND ON THE SIGNAL PLANS.

INSTALL PERMANENT GROUND MOUNTED SIGNING FOR THE PROJECT AS SHOWN IN THE SIGNING PLANS.

STEP 16. USING ROADWAY STANDARD DRAWING 1101.02, SHT. 1 OF 9, PLACE FINAL LAYER AND FINAL PAVEMENT MARKINGS AND MARKERS IN THE FINAL TRAFFIC PATTERN ON -L- AND ALL -Y- LINES AS SHOWN ON PMP-1 THRU PMP-11 OF THE PAVEMENT MARKING PLAN. CONSTRUCT PROPOSED MONOLITHIC CONCRETE ISLANDS AT LOCATIONS AS SHOWN IN THE CONSTRUCTION PLANS. ACTIVATE PERMANENT SIGNALS AT -Y-, -Y3/-Y4- ( NC 343), AND -Y8- INTERSECTIONS WITH -L- (US 158/NC 34).

REFER TO PMP-2 OF THE PAVEMENT MARKING PLAN FOR TRANSITION DETAIL WHEN TIEING FINAL 5-LANE PATTERN TO 2-LANE TRAFFIC PATTERN AT THE END OF THE WORKDAY.

STEP 17. REMOVE ALL TRAFFIC CONTROL DEVICES FROM THE PROJECT.

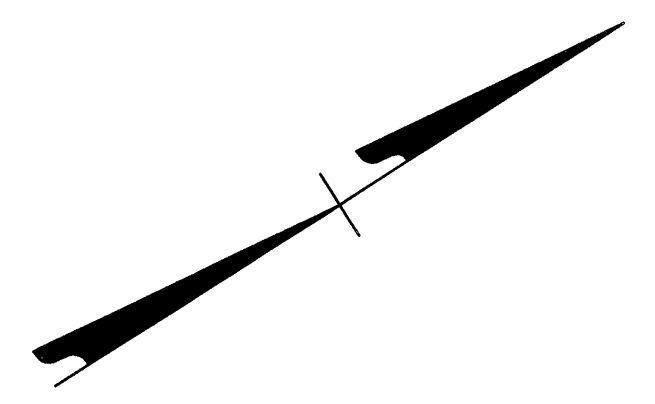
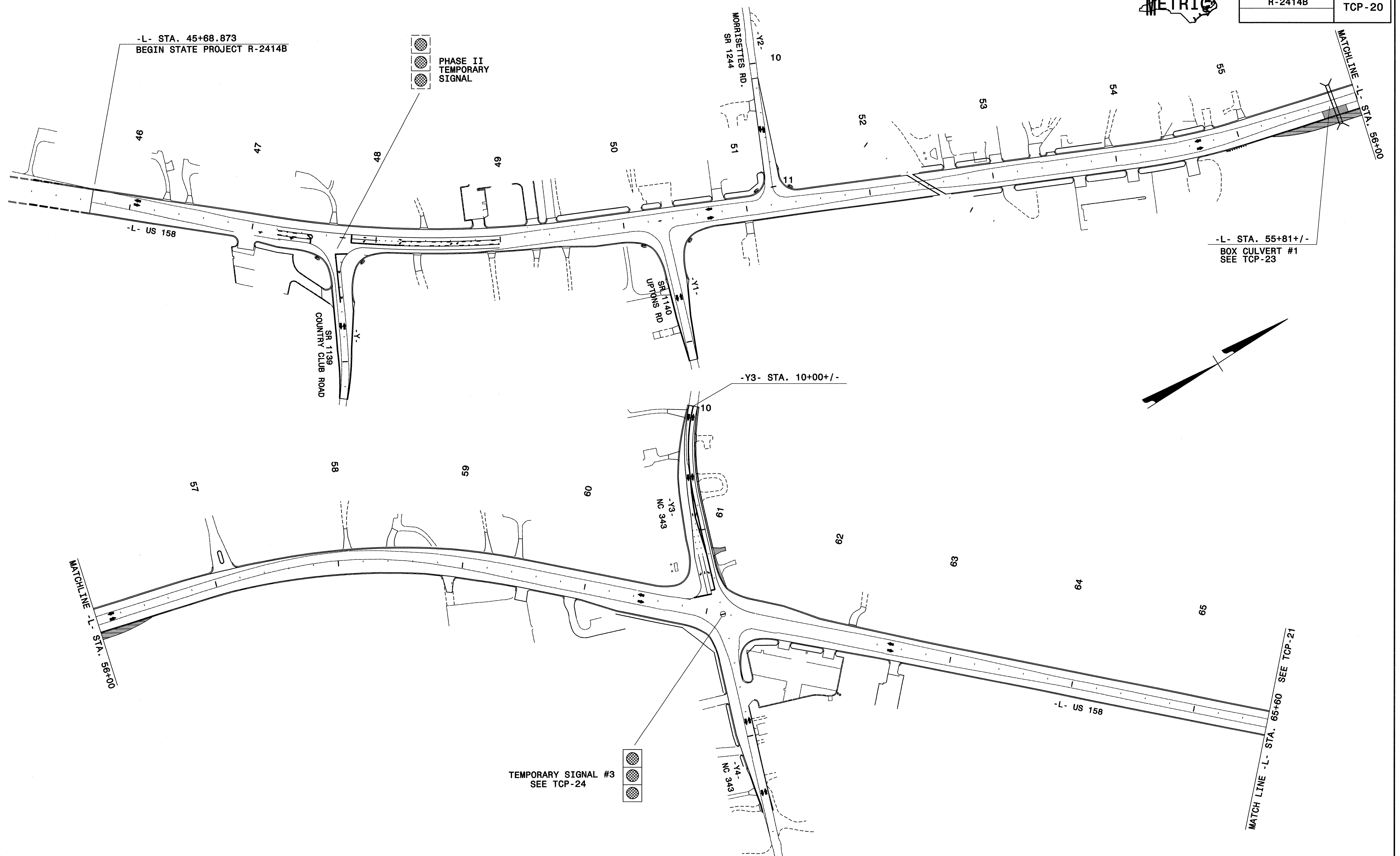
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 559 Jones Franklin Rd. Suite 164 Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 License: F-0377	APPROVED: <i>Bob A. May</i> DATE: 9/7/10	<b>PHASE III PHASING</b>																					
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
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R-2414B	TCP-20



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 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *Bob A. May* DATE: *9/10*

SEAL

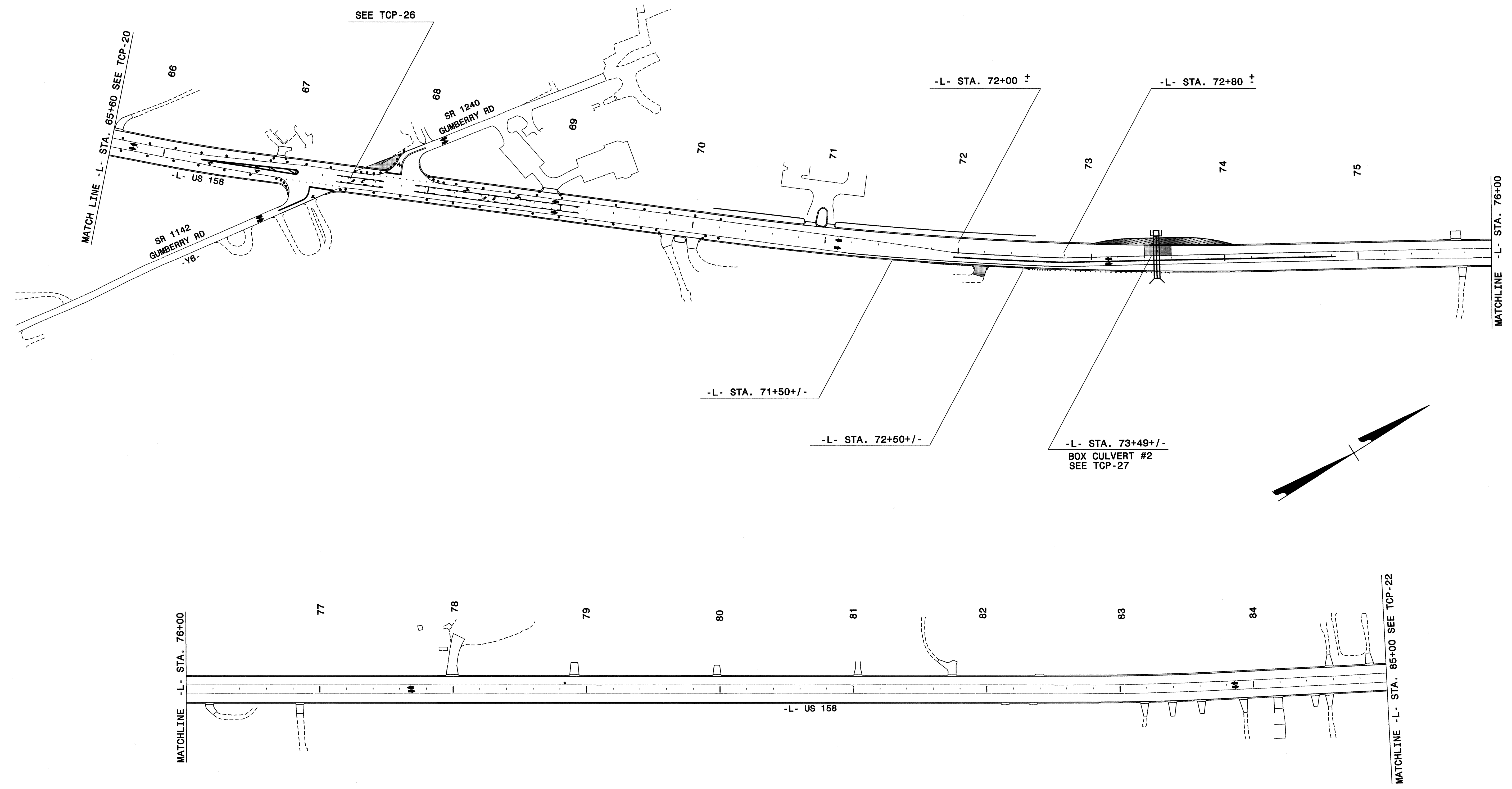
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PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-21



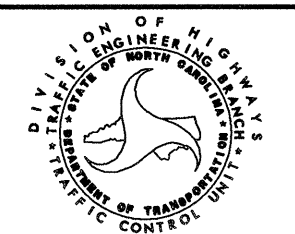
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 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *[Signature]* DATE: 9/7/10  


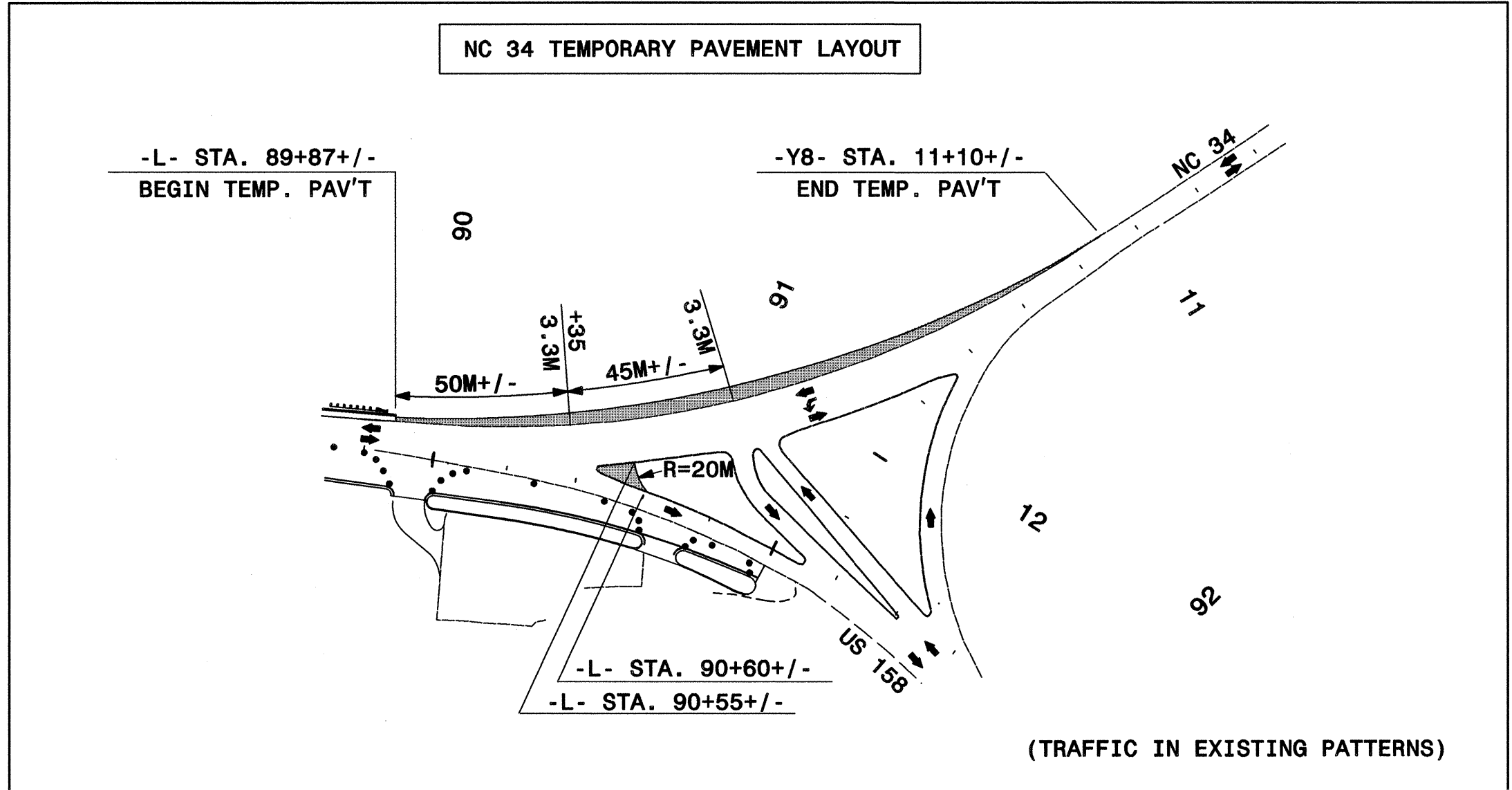
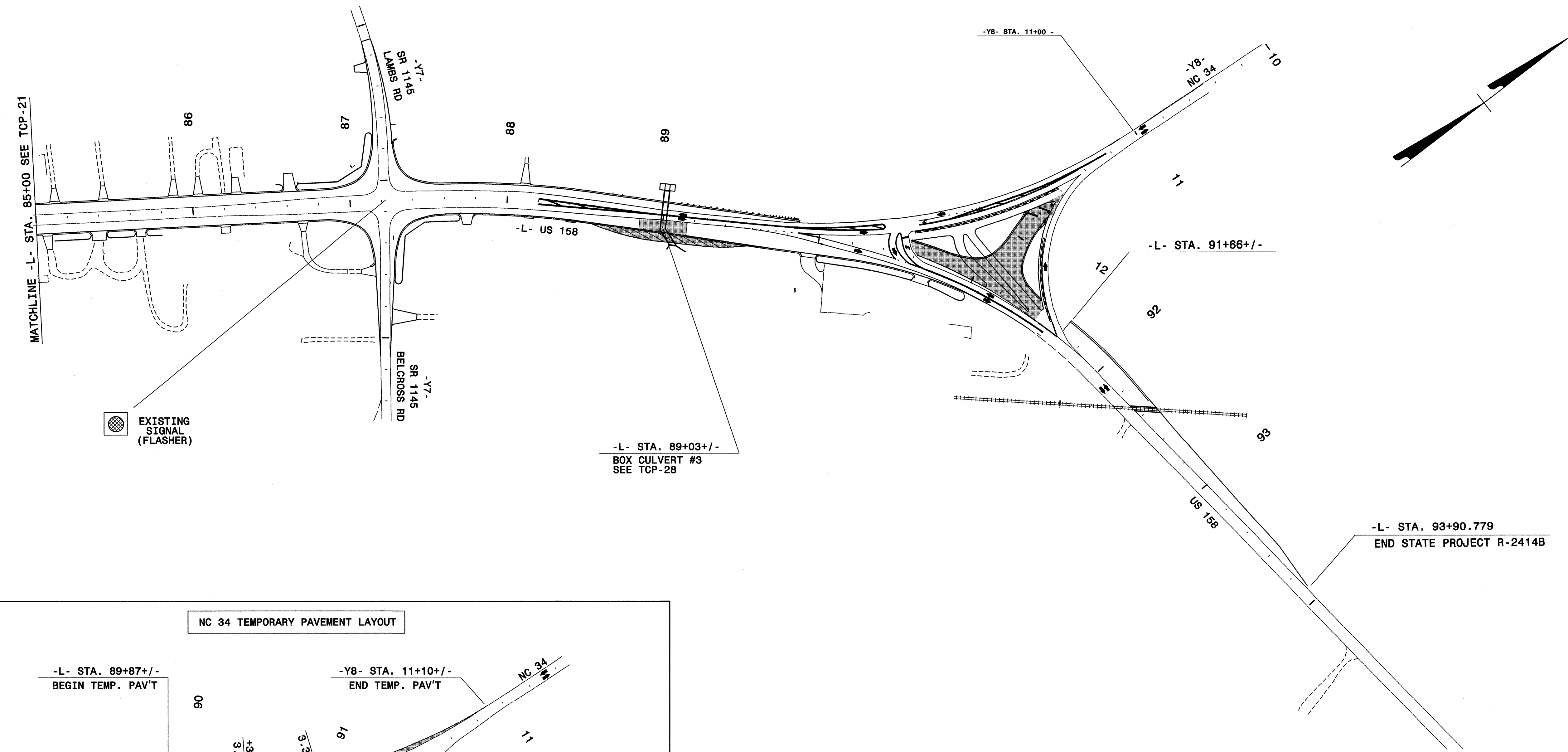
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PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-22



-L- STA. 93+90.779  
END STATE PROJECT R-2414B

- SEE TCP-29 FOR PAVEMENT MARKINGS FOR TEMPORARY INTERSECTION SHOWN ABOVE.

9/7/2010 9:44:22 AM P:\R-2414B\TrafficControl\TCP\2414b\_TCP\_psh22.dgn

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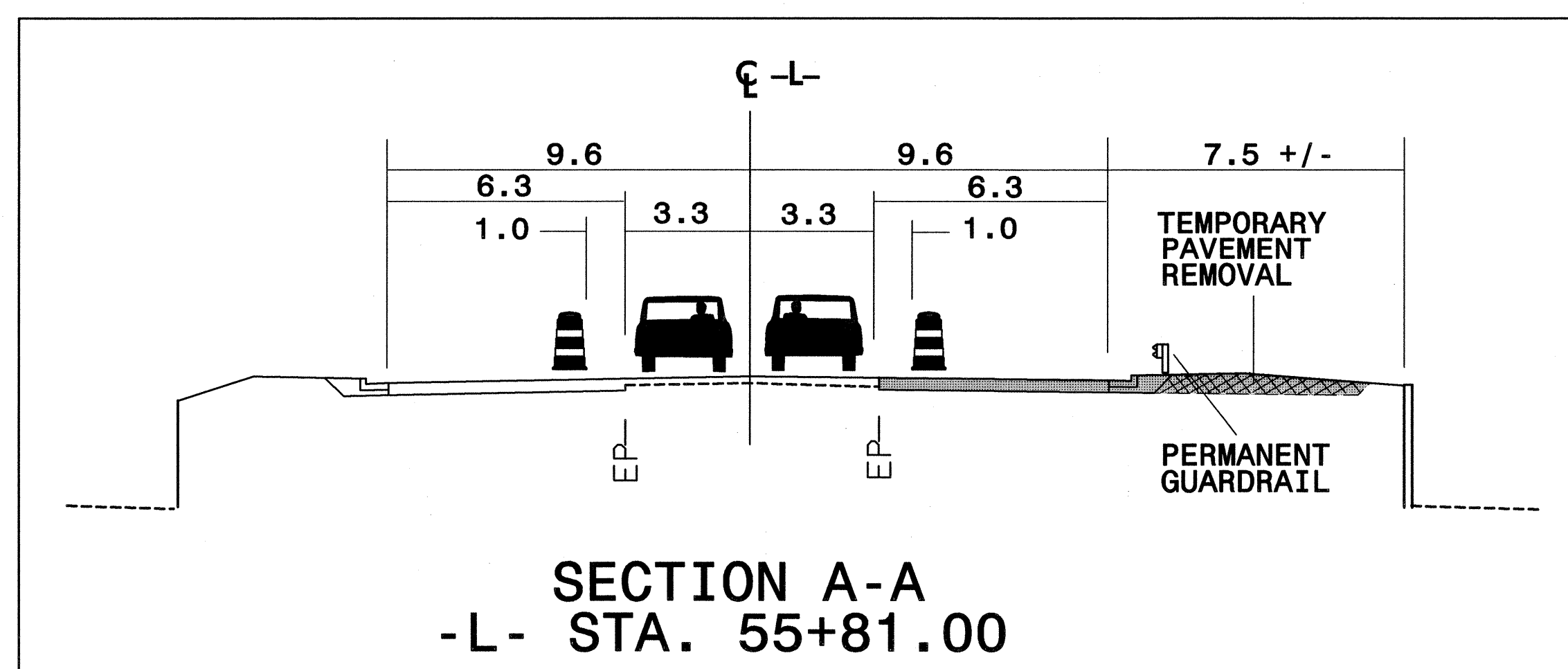
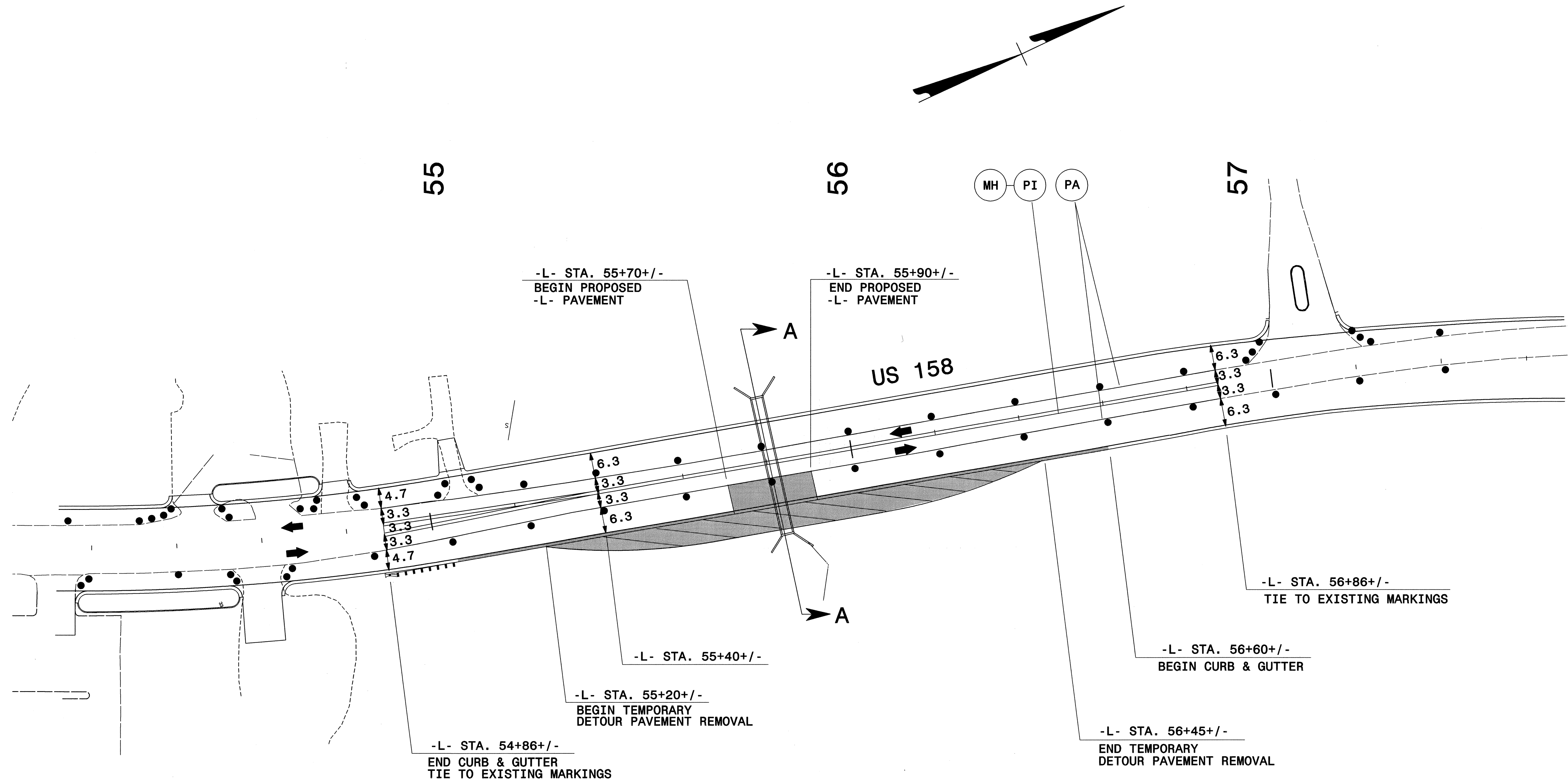
SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 SEAL 21116  
 DOB: A. MAY

**PHASE III OVERVIEW**

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PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-23



- SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *[Signature]* DATE: 6/9/09

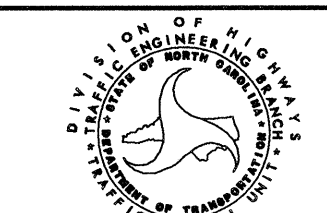
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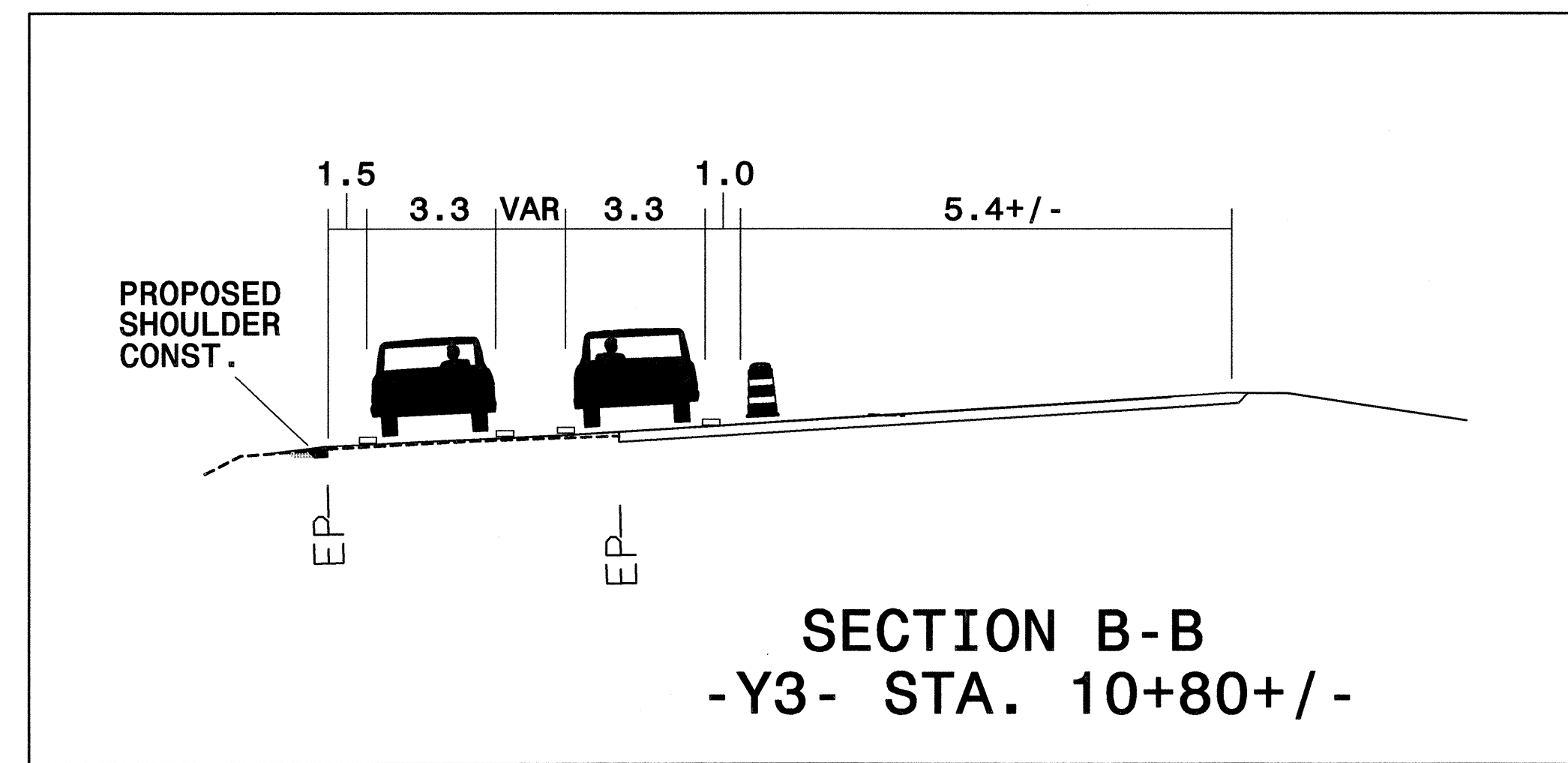
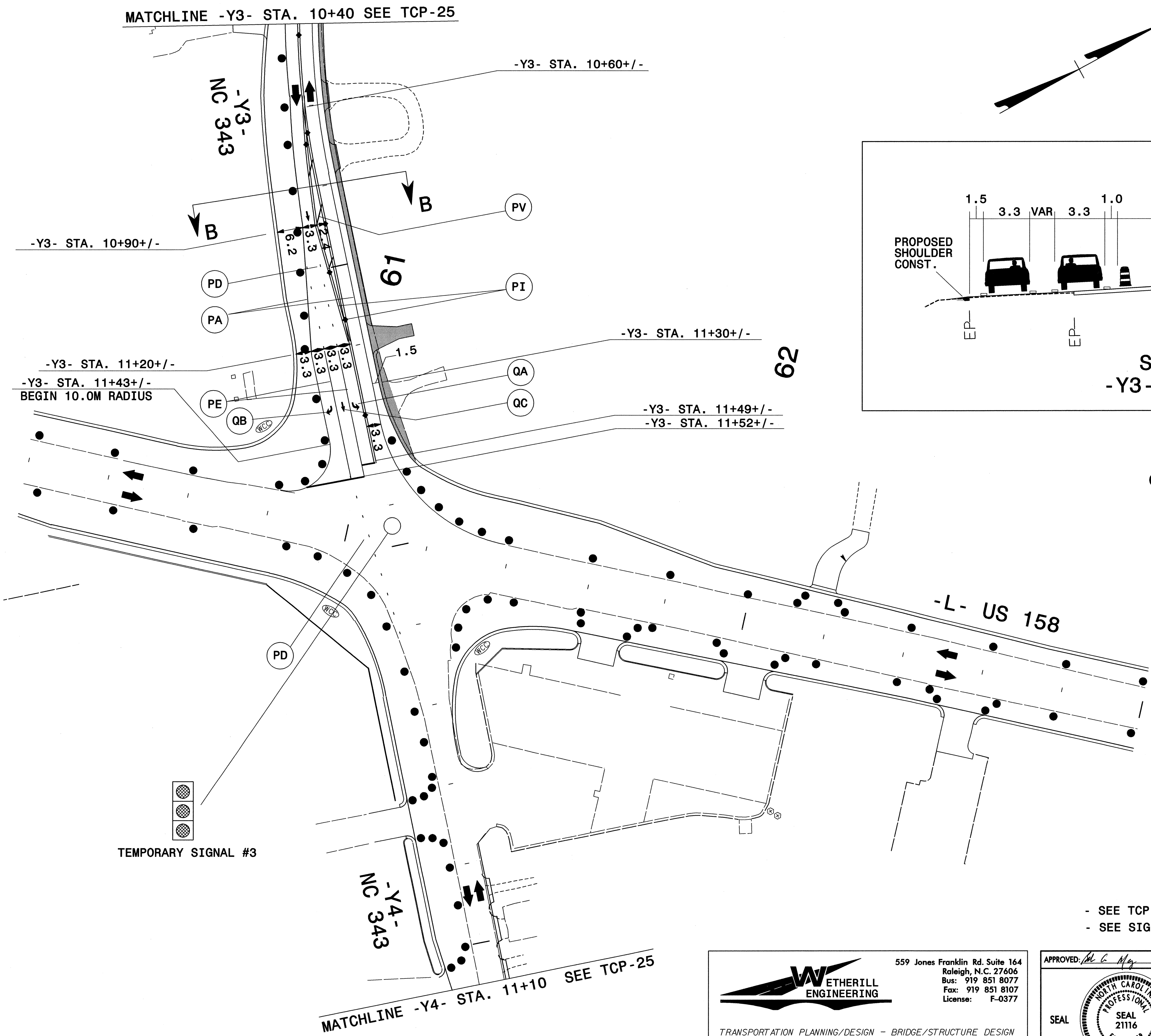
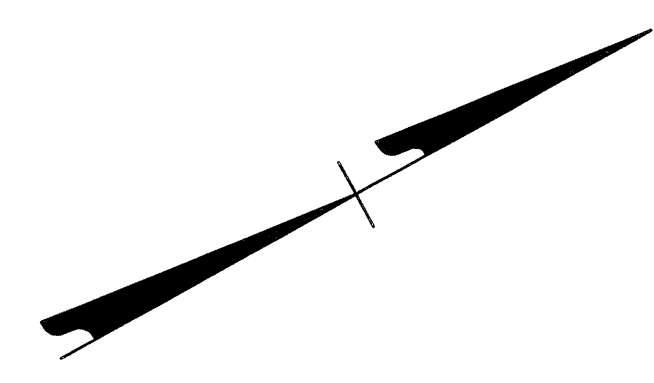
**PHASE III - DETAIL A**

SCALE: NONE  
DATE: 6/09  
DWG. BY: JCP  
DESIGN BY: CLM  
REVIEWED BY: BAM

REVISIONS


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63

- SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE  
 - SEE SIGNAL PLANS FOR TEMPORARY SIGNAL #3 DESIGN

9/7/2010 9:43:04 AM P:\R-2414B\TrafficControl\TCP\2414b\_TCP\_psh24.dgn

559 Jones Franklin Rd. Suite 164  
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 Fax: 919 851 8107  
 License: F-0377

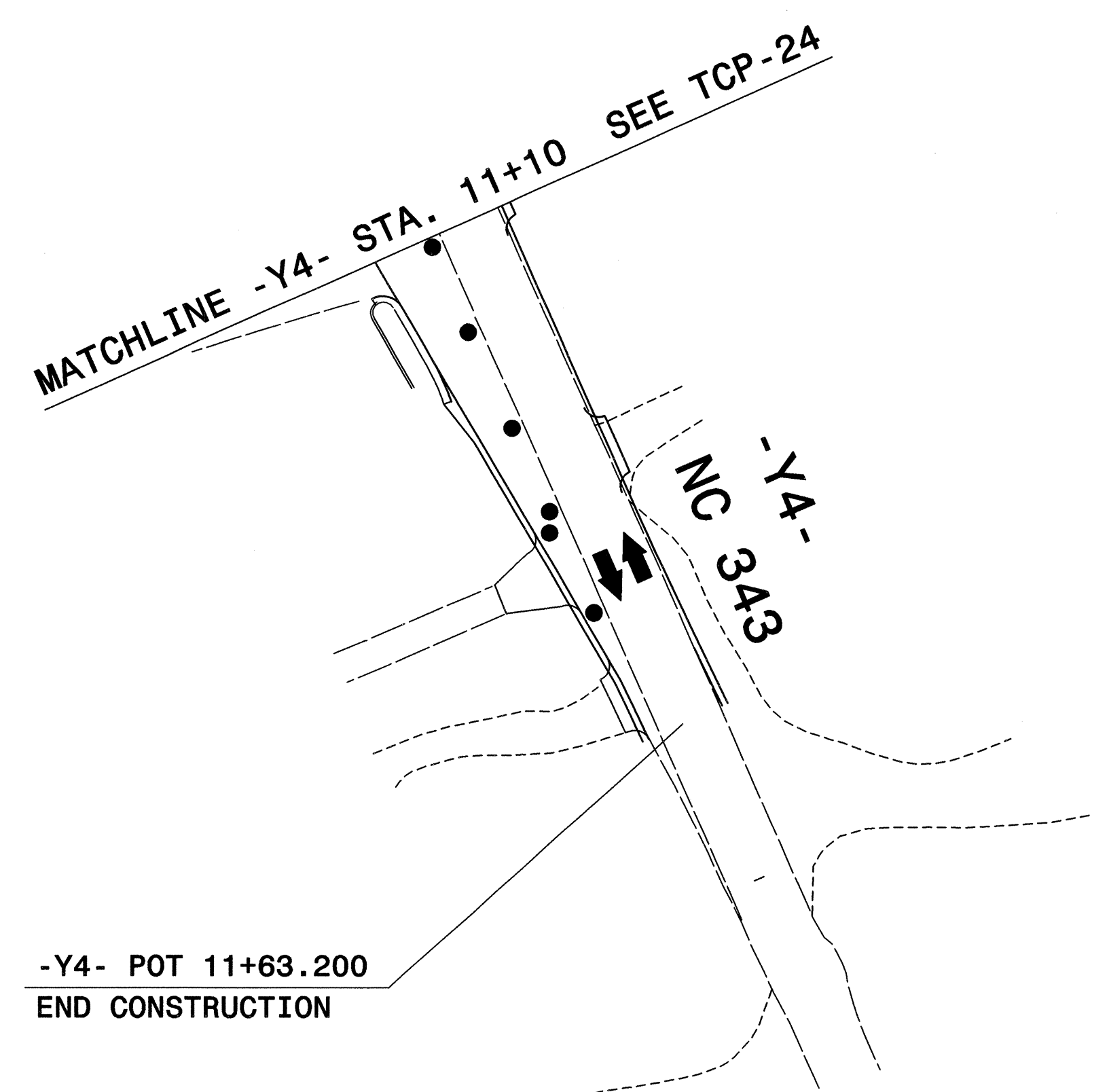
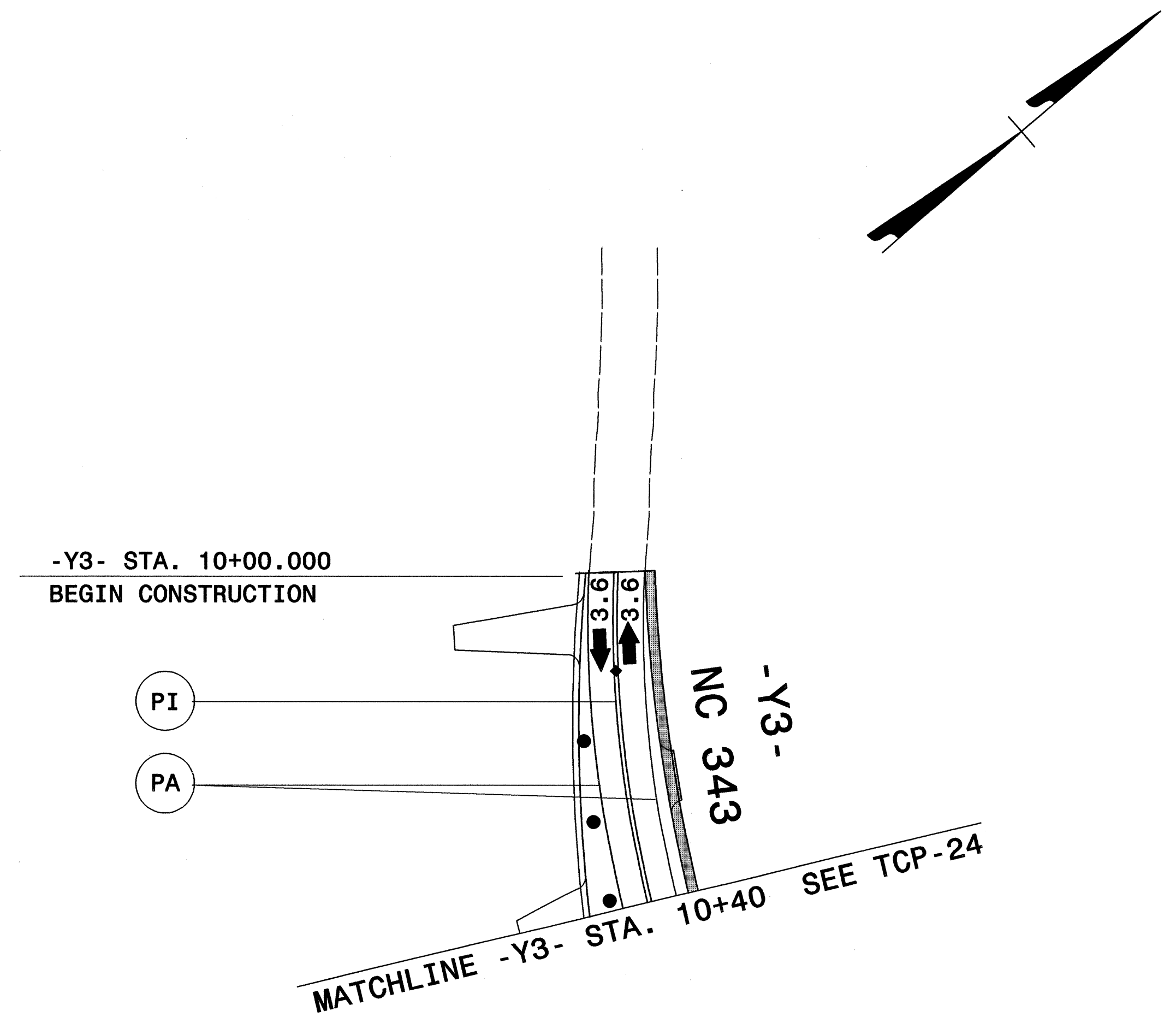
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: <i>[Signature]</i> DATE: 9/7/10		<b>PHASE III - DETAIL B</b>																			
SEAL		<table border="1"> <tr> <td>SCALE: NONE</td> <td rowspan="4"> </td> <td colspan="2" style="text-align: center;">REVISIONS</td> </tr> <tr> <td>DATE: 6/09</td> <td></td> <td></td> <td></td> </tr> <tr> <td>DWG. BY: JCP</td> <td></td> <td></td> <td></td> </tr> <tr> <td>DESIGN BY: CLM</td> <td></td> <td></td> <td></td> </tr> <tr> <td>REVIEWED BY: BAM</td> <td></td> <td></td> <td></td> </tr> </table>	SCALE: NONE		REVISIONS		DATE: 6/09				DWG. BY: JCP				DESIGN BY: CLM				REVIEWED BY: BAM		
SCALE: NONE		REVISIONS																			
DATE: 6/09																					
DWG. BY: JCP																					
DESIGN BY: CLM																					
REVIEWED BY: BAM																					





PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-25



- SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE

9/7/2010 9:43:58 AM P:\R-2414B\TrafficControl\TCP\2414b\_TCP\_psh25.dgn

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *[Signature]* DATE: 6/10/09

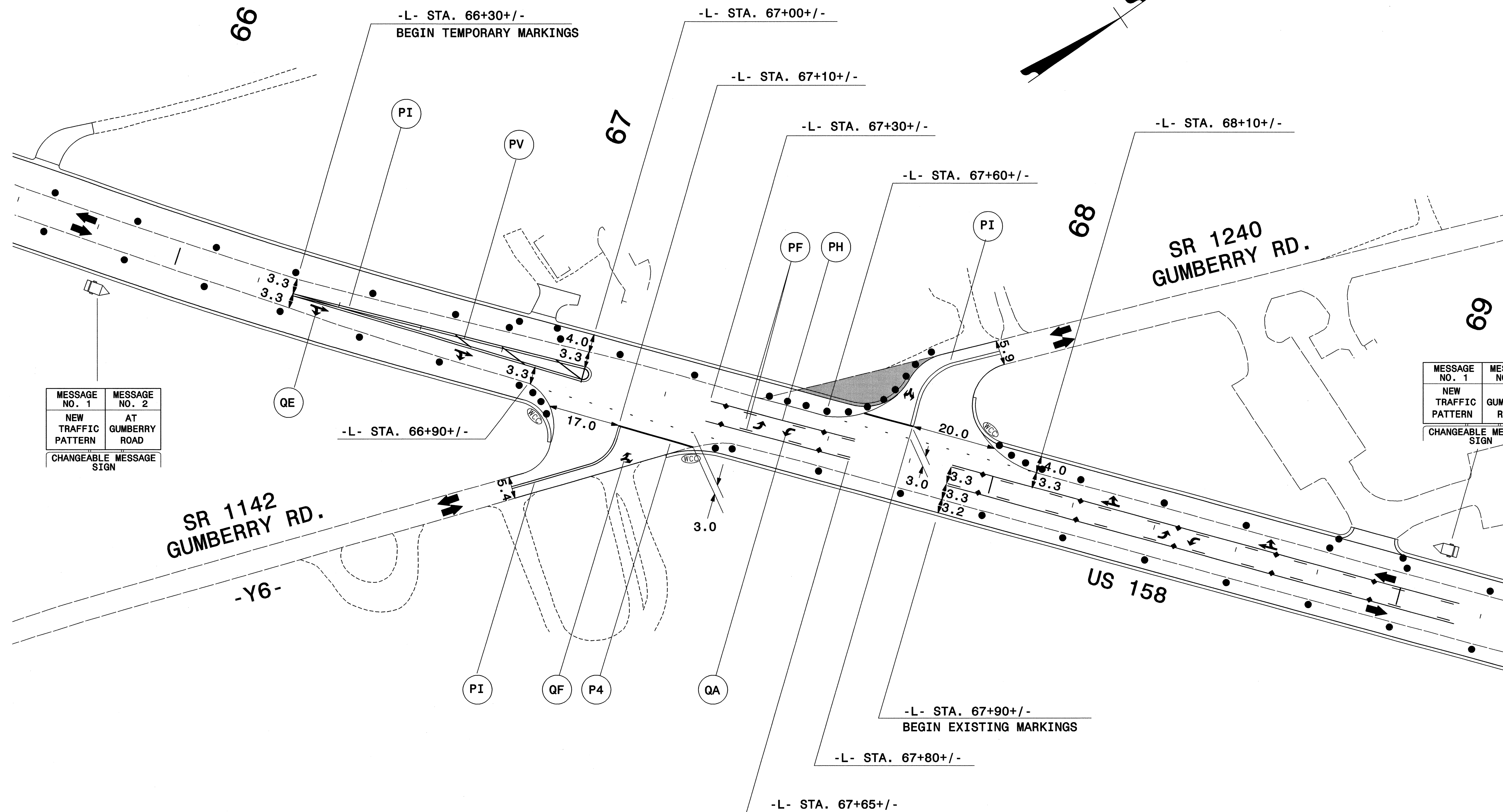
SEAL

**PHASE III - DETAIL C**

SCALE: NONE		REVISIONS
DATE: 6/09		
DWG. BY: JCP		
DESIGN BY: CLM		
REVIEWED BY: BAM		



PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-26




MESSAGE NO. 1	MESSAGE NO. 2
NEW TRAFFIC PATTERN	AT GUMBERRY ROAD
CHANGEABLE MESSAGE SIGN	


MESSAGE NO. 1	MESSAGE NO. 2
NEW TRAFFIC PATTERN	AT GUMBERRY ROAD
CHANGEABLE MESSAGE SIGN	

- LOCATE CHANGEABLE MESSAGE SIGNS APPROX. 1/2 MILE IN ADVANCE OF INTERSECTION.
- SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE

9/7/2010 9:44:48 AM P:\R-2414B\TrafficControl\TCP\2414b-TCP\_psh26.dgn

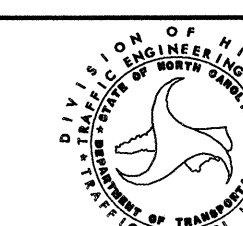

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *MLG* DATE: 6/9/10  


**PHASE III - DETAIL D**

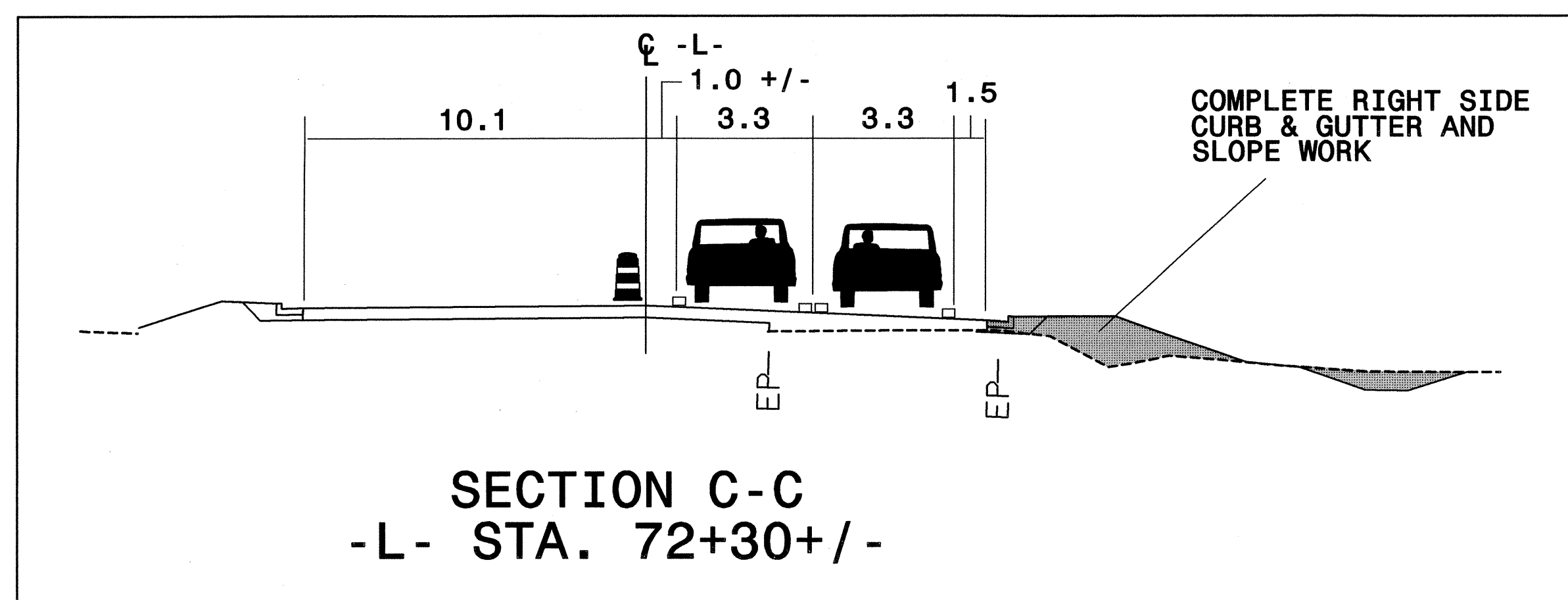
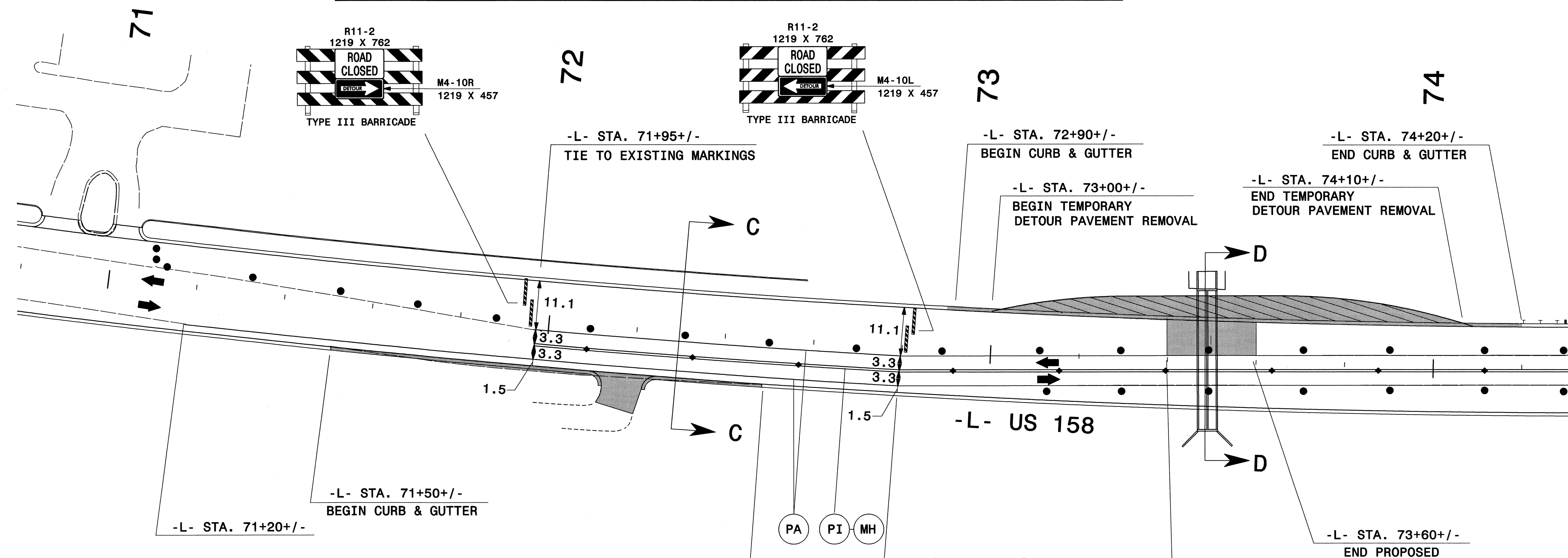
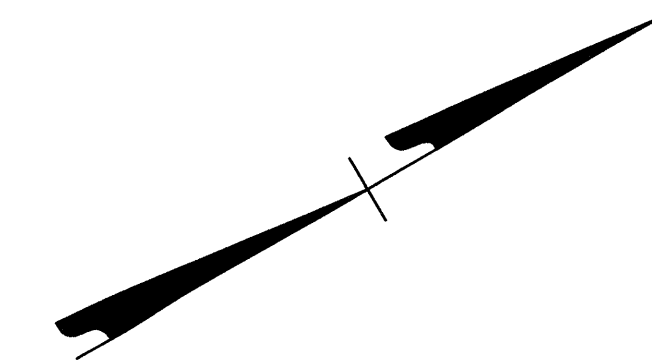
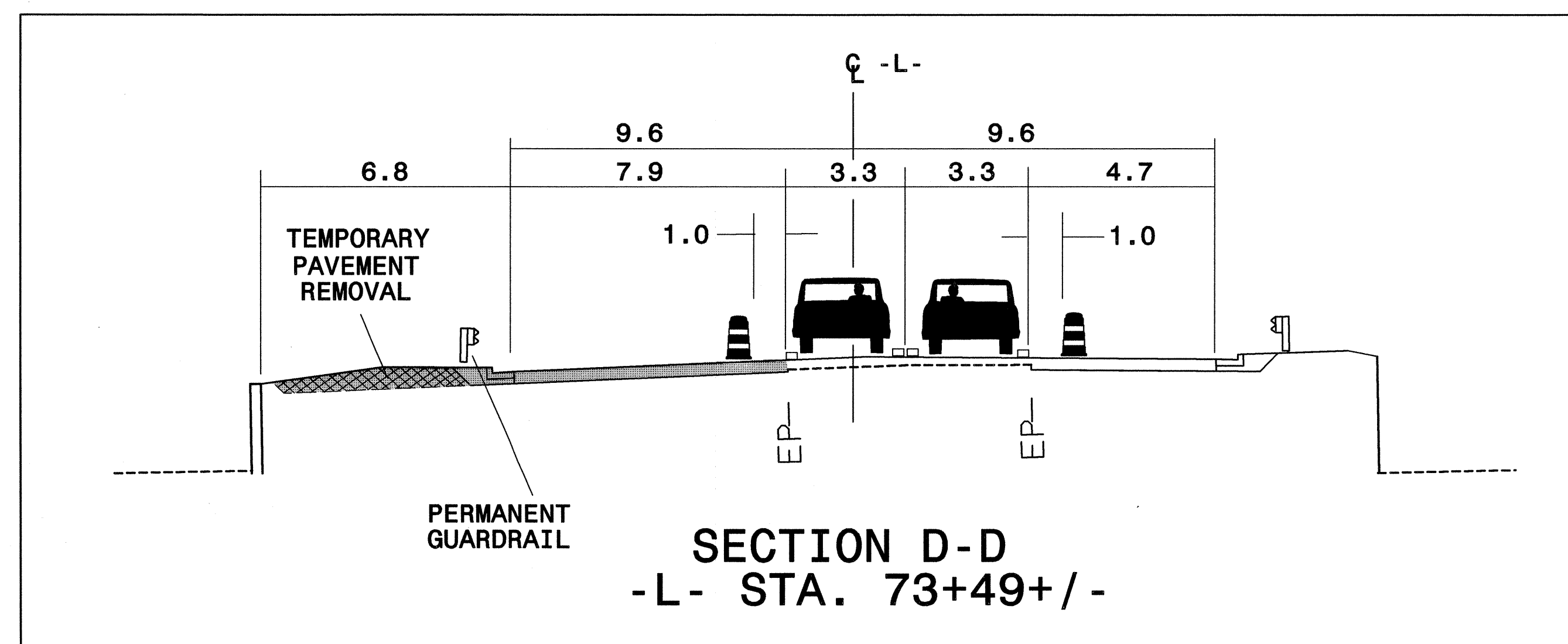
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DWG. BY:	JCP
DESIGN BY:	CLM
REVIEWED BY:	BAM



REVISIONS	



PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-27



- SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE

9/7/2000 9:45:49 AM  
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CML/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *Bob A. May* DATE: 9/7/00

SEAL

**SEAL 21116**

PROFESSIONAL ENGINEER  
 BOB A. MAY

**PHASE III - DETAIL E**

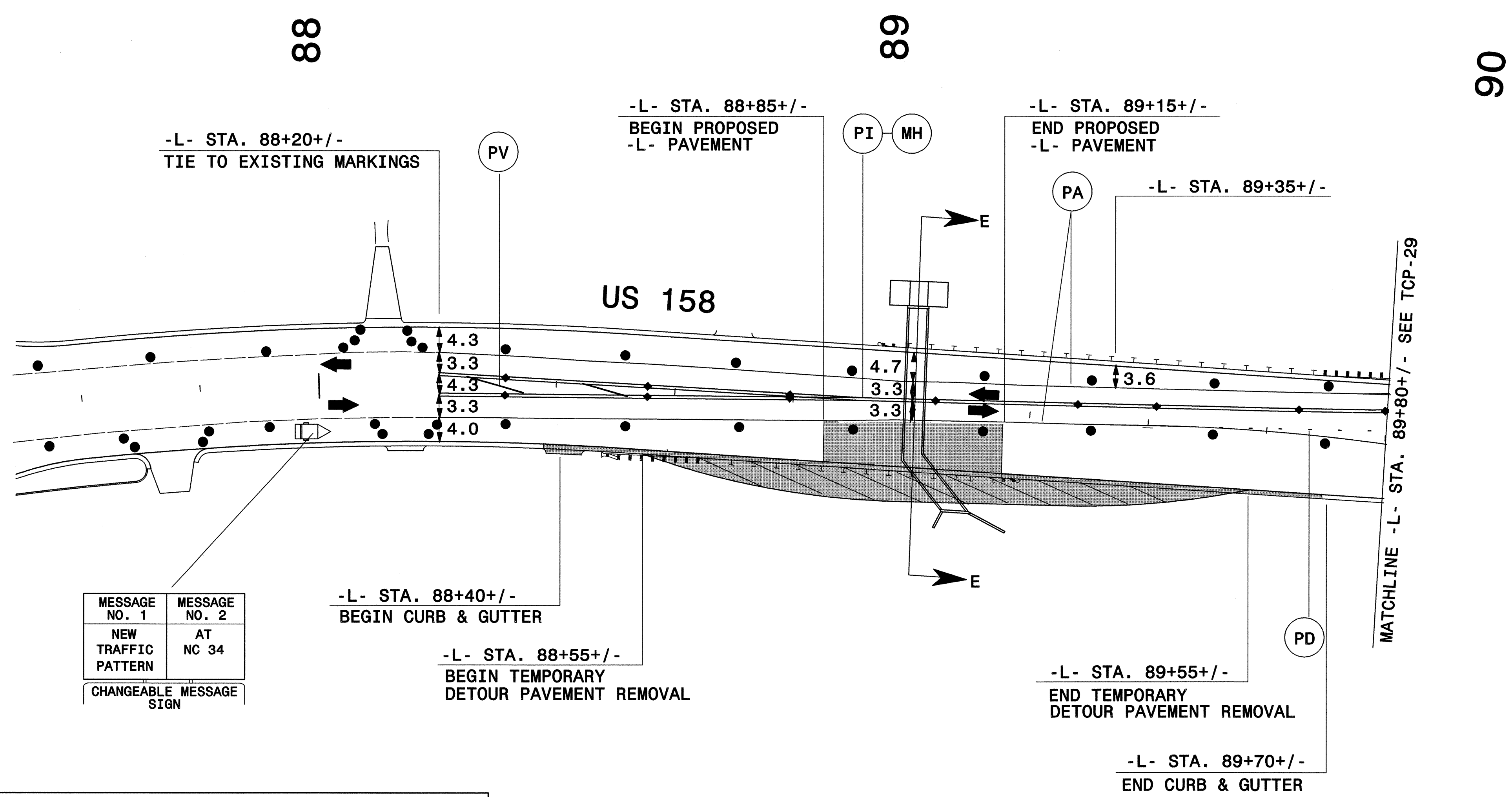
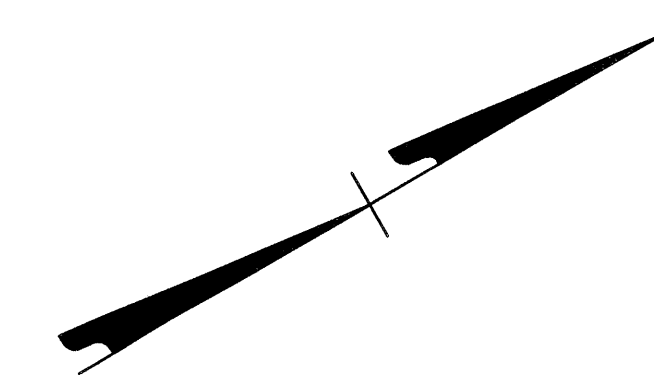
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DATE: 6/09		
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DESIGN BY: CLM		
REVIEWED BY: BAM		

CARD FILE

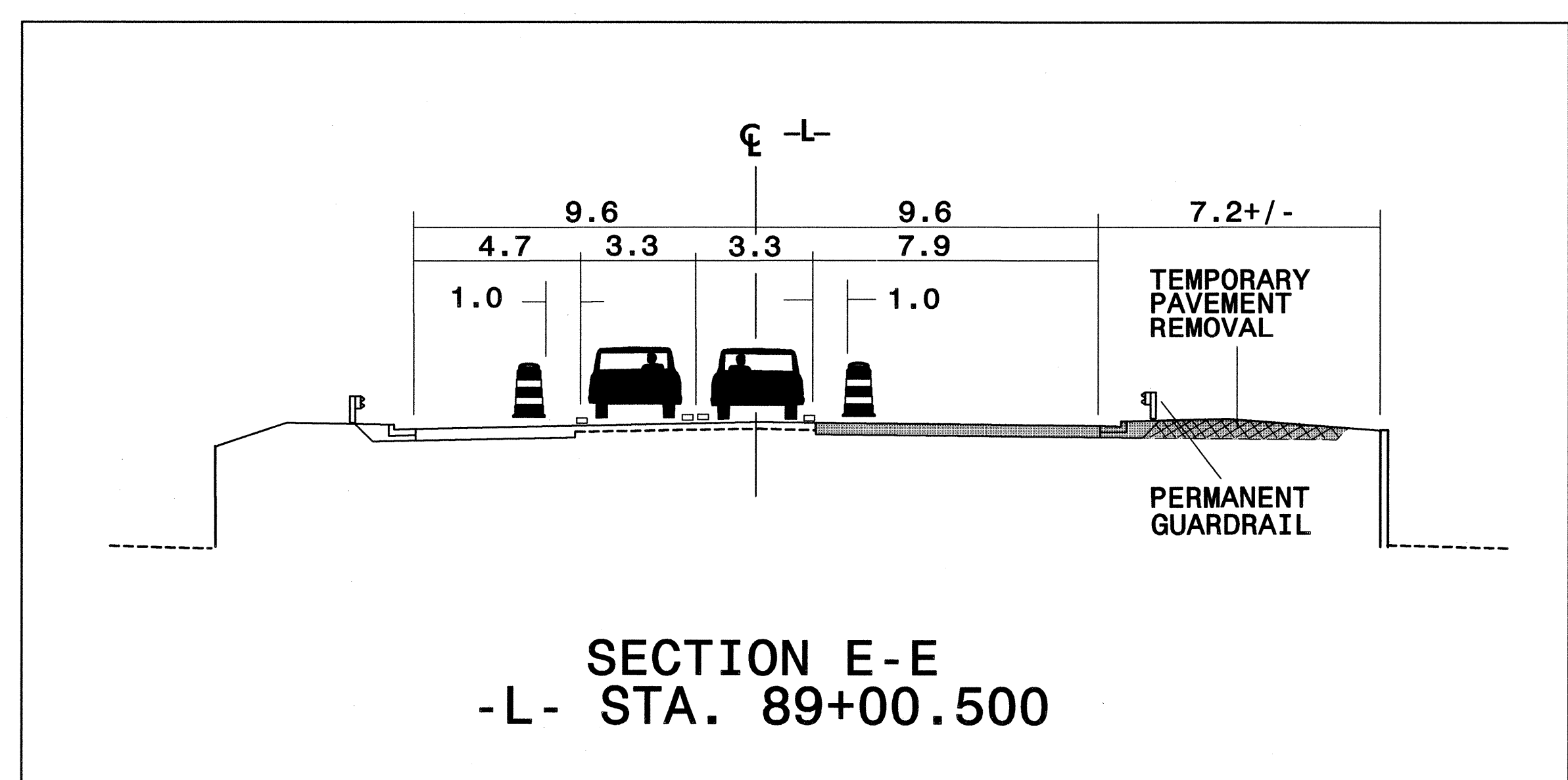




PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-28



MESSAGE NO. 1	MESSAGE NO. 2
NEW TRAFFIC PATTERN	AT NC 34
CHANGEABLE MESSAGE SIGN	



- SEE TCP-2B FOR PAVEMENT MARKING SCHEDULE

9/7/2010 9:46:50 AM P:\R-2414B\TrafficControl\TCP-2414b\_TCP\_psh28.dgn

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *[Signature]* DATE: 9/2/10

SEAL

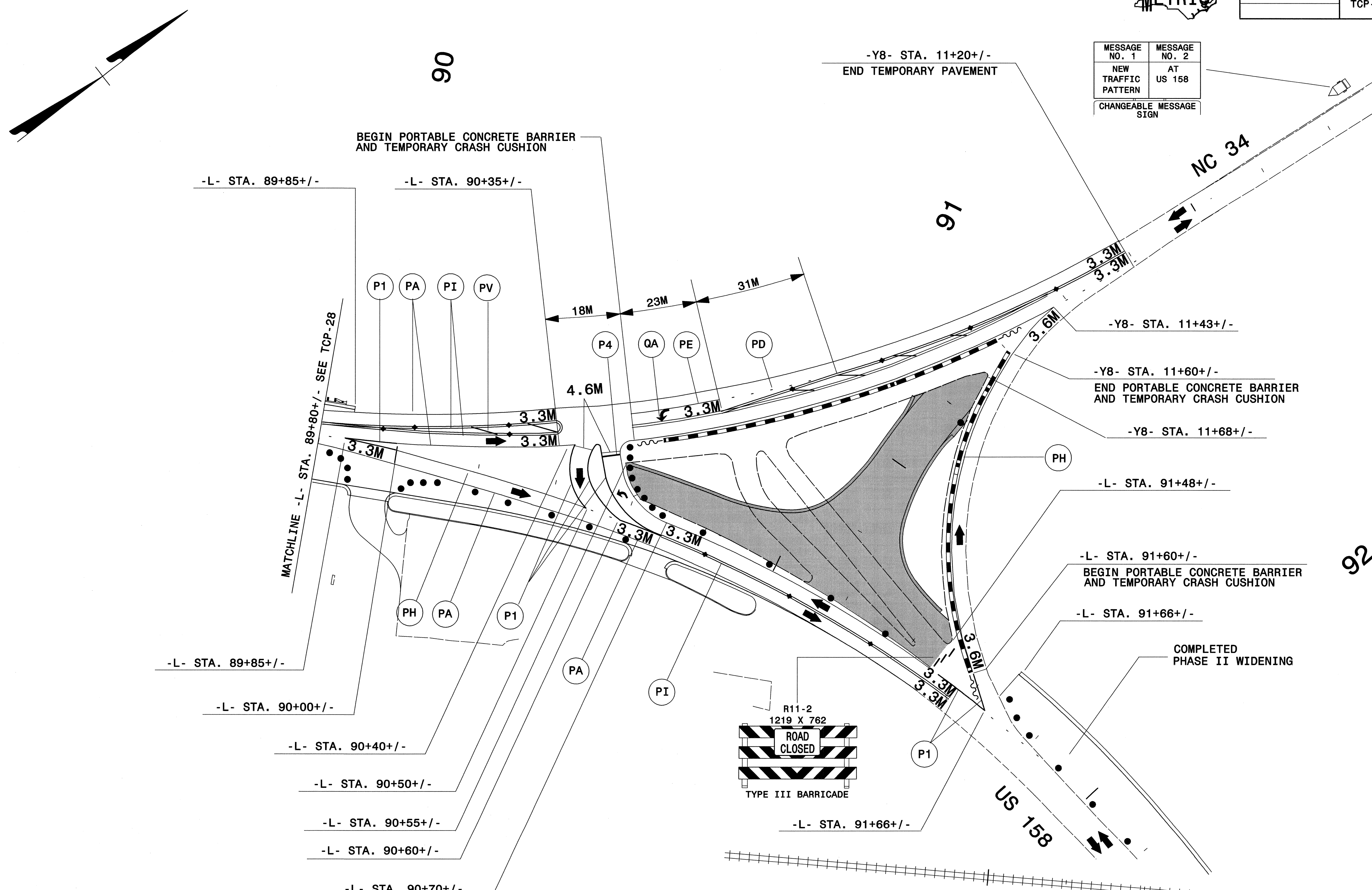
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REVISIONS											
DATE:	6/09										
DWG. BY:	JCP										
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REVIEWED BY:	BAM	CADD FILE									



PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-29

MESSAGE NO. 1	MESSAGE NO. 2
NEW TRAFFIC PATTERN	AT US 158
CHANGEABLE MESSAGE SIGN	



- SEE TCP-22 FOR NC 34 TEMPORARY PAVEMENT LAYOUT ON NC 34
- RELOCATE EXISTING INTERSECTION TYPE "D", "E", AND "F" SIGNING AS DIRECTED BY THE ENGINEER
- USE TOP-MOUNTED DELINEATORS ON PORTABLE CONCRETE BARRIER

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *[Signature]* DATE: 8/2/10

SEAL

**PHASE III - DETAIL G**

SCALE: NONE

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

DWG. BY: \_\_\_\_\_

DESIGN BY: \_\_\_\_\_

REVIEWED BY: \_\_\_\_\_

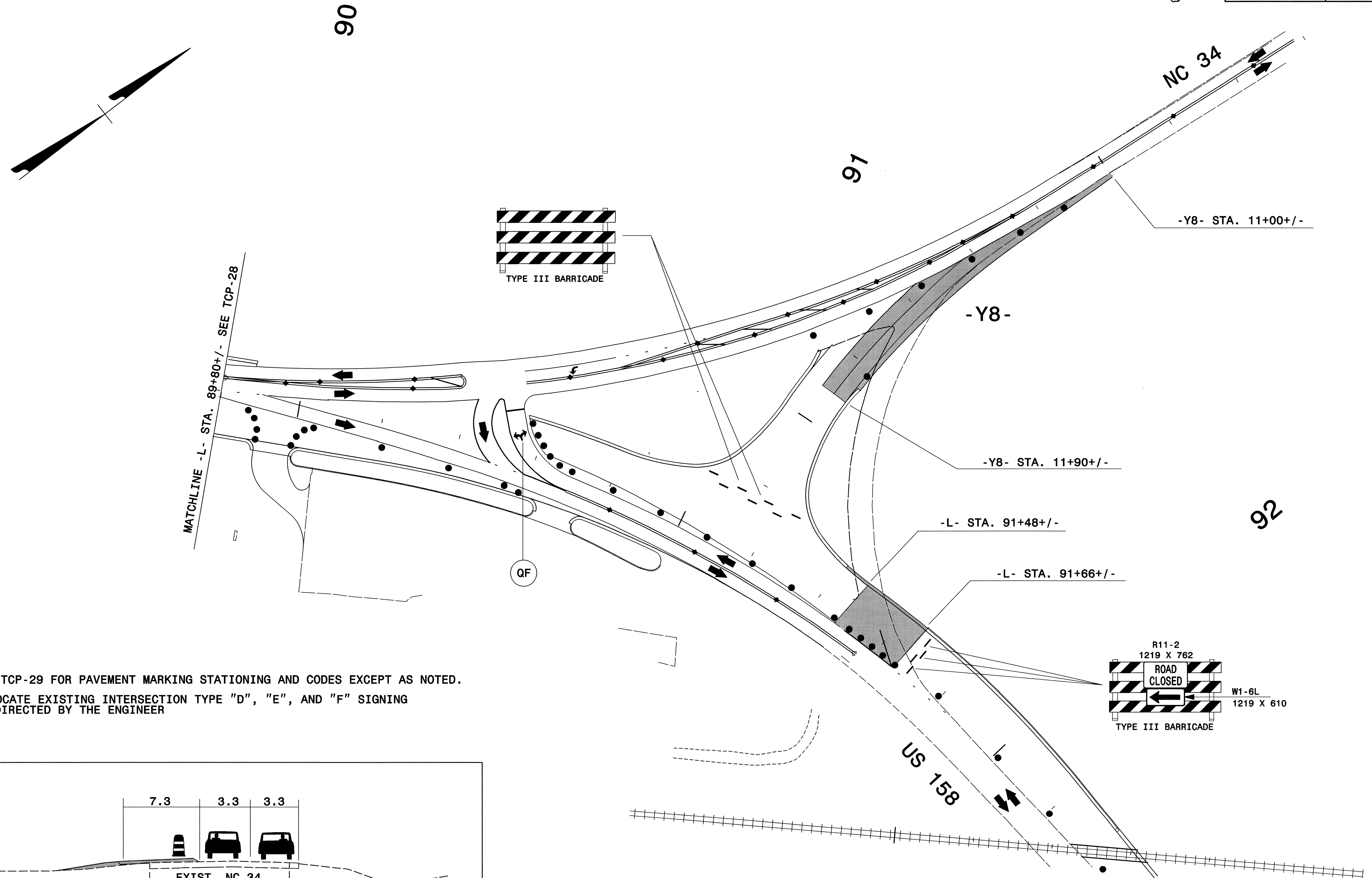
REVISIONS


CADD FILE

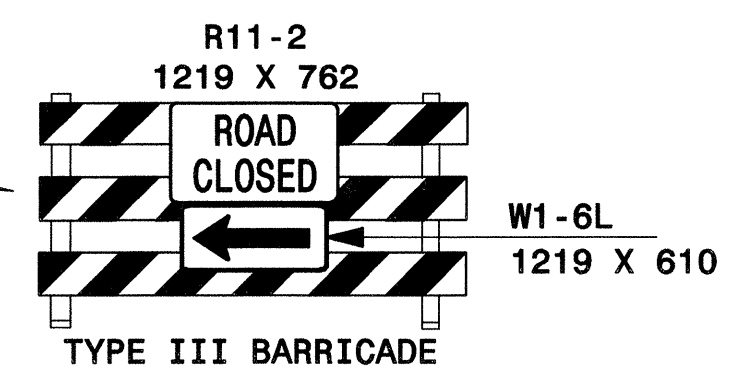
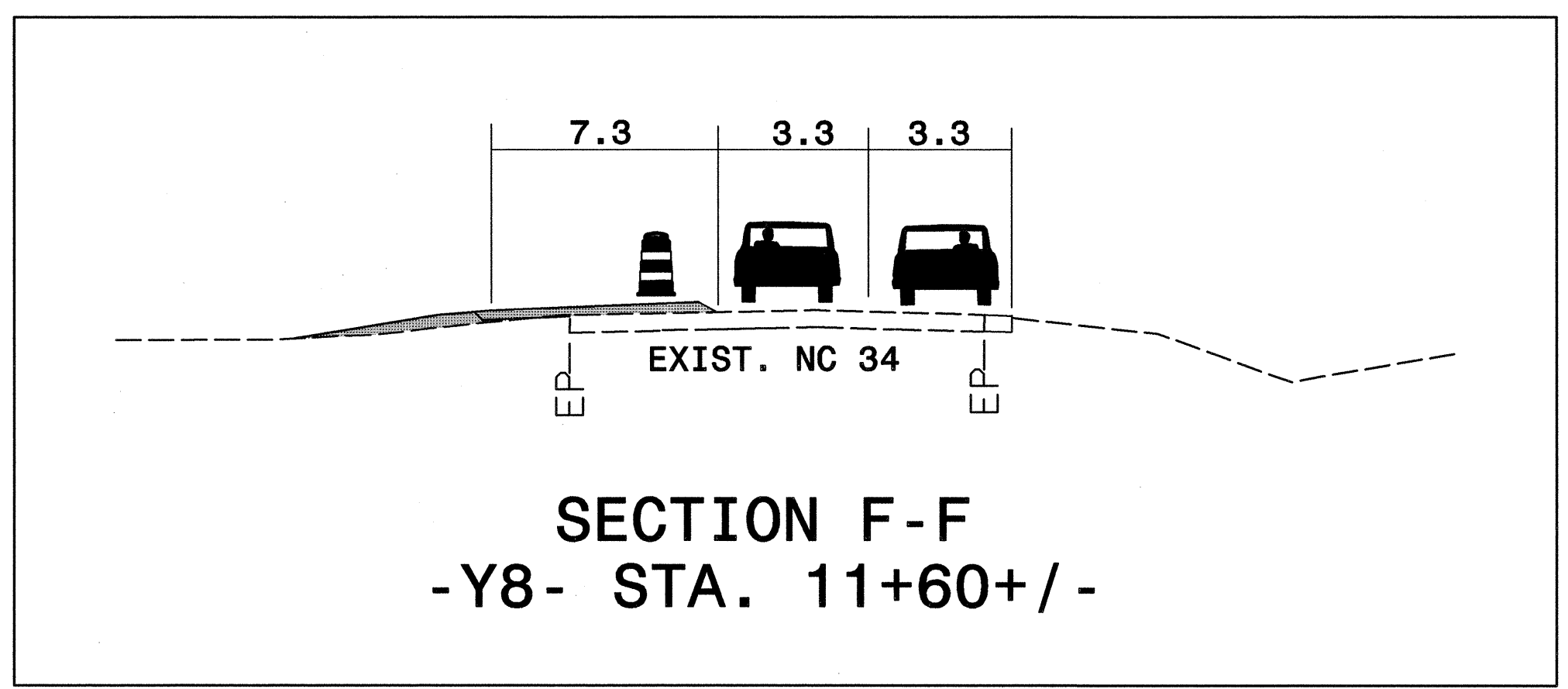
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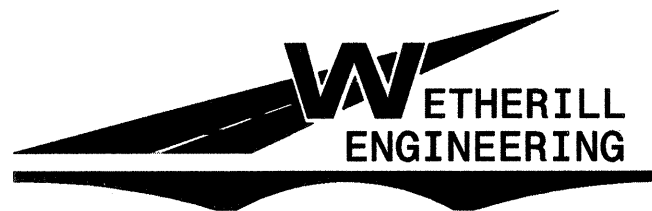
PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-29A




- SEE TCP-29 FOR PAVEMENT MARKING STATIONING AND CODES EXCEPT AS NOTED.
- RELOCATE EXISTING INTERSECTION TYPE "D", "E", AND "F" SIGNING AS DIRECTED BY THE ENGINEER



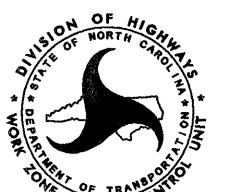
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *[Signature]* DATE: 9/7/10  


**PHASE III - DETAIL H**

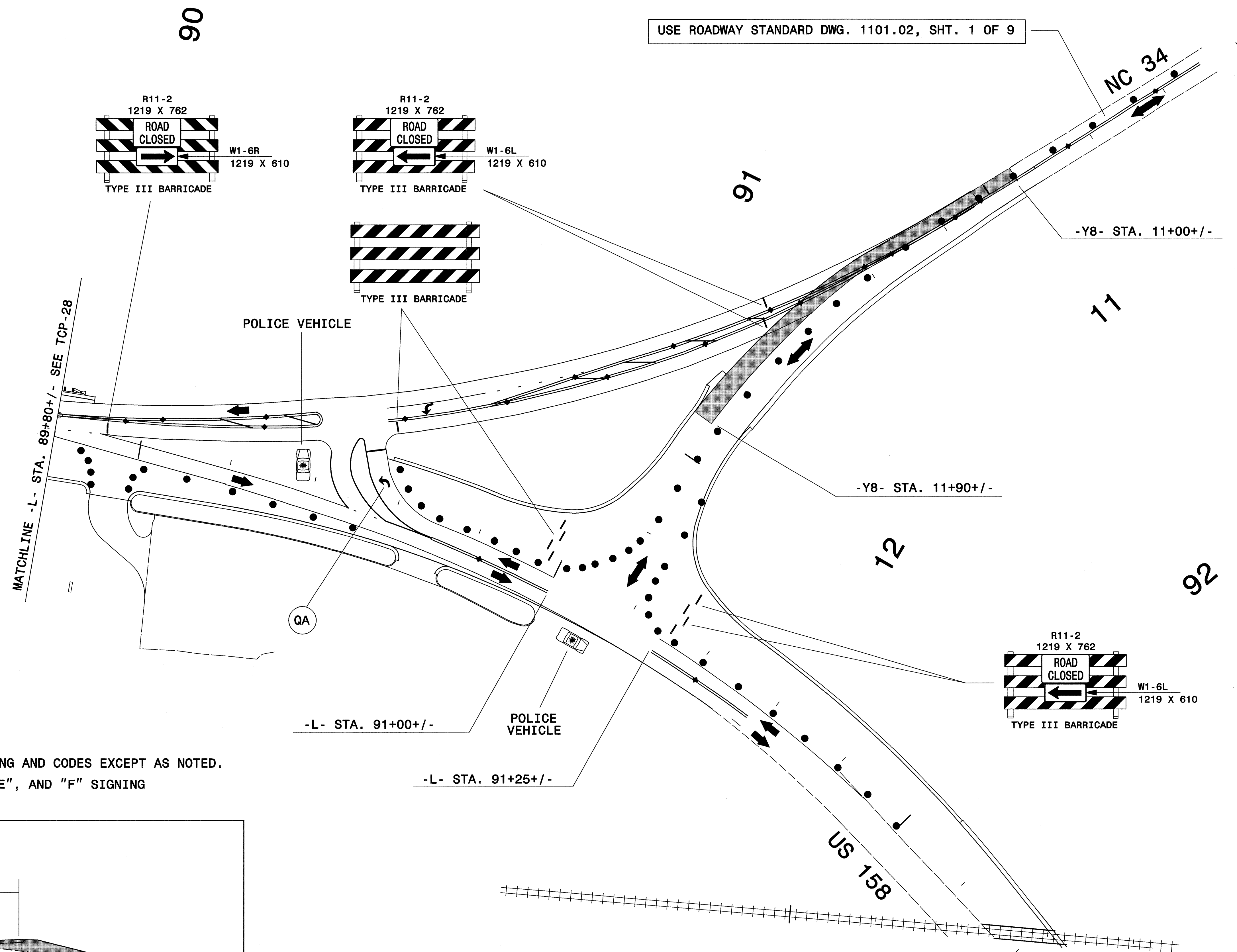
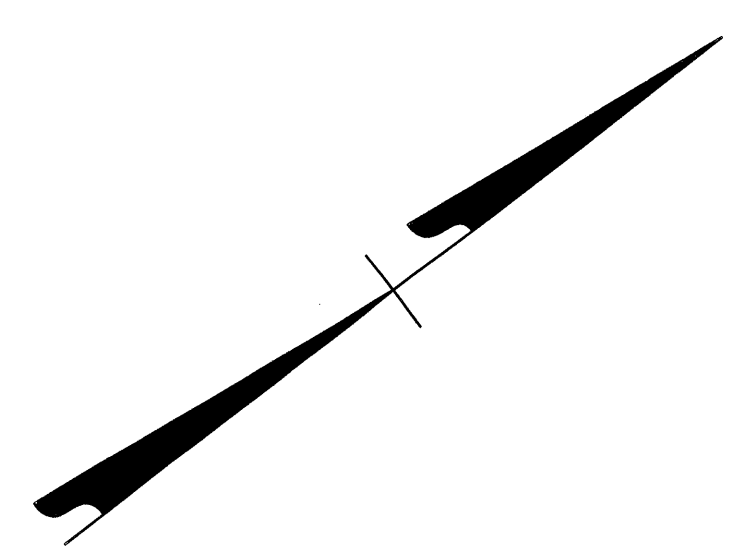
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DATE:		
DWG. BY:		
DESIGN BY:		
REVIEWED BY:		



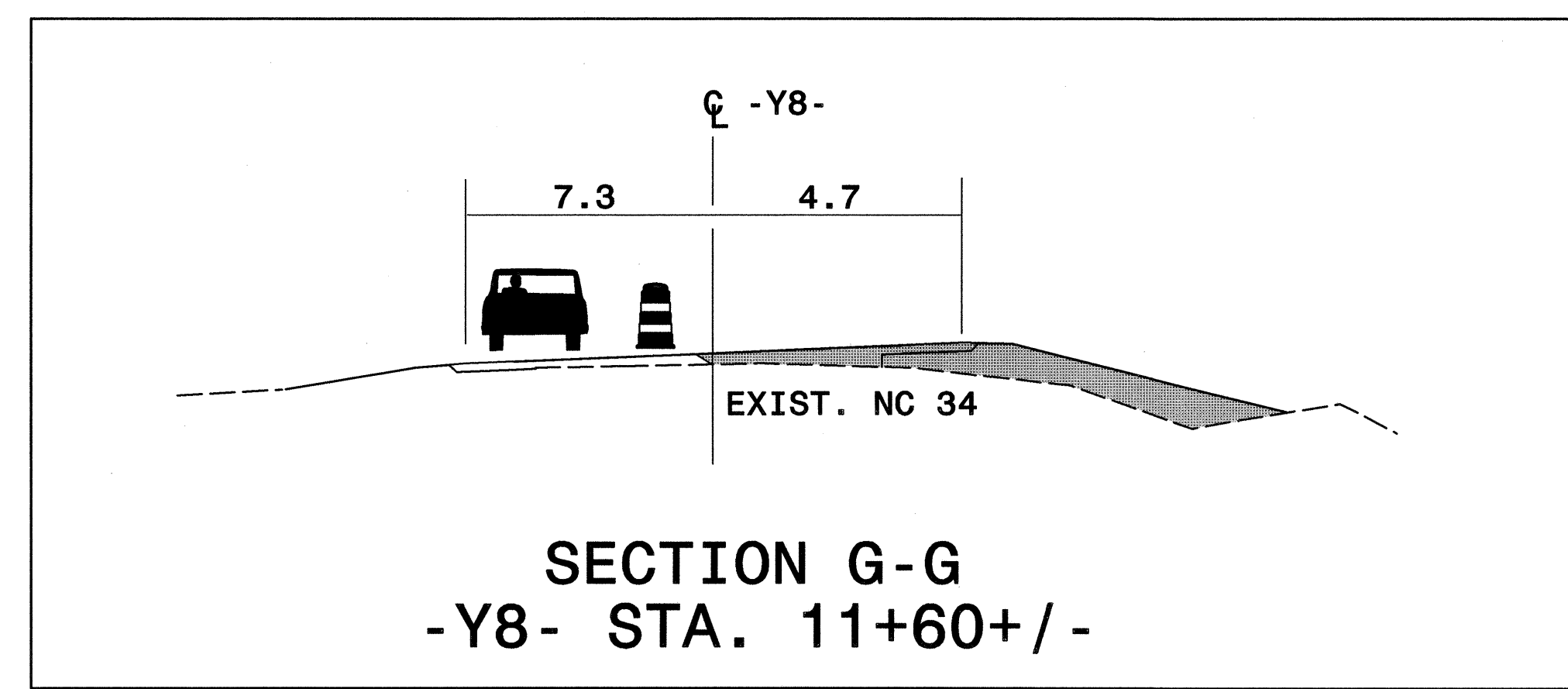


PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-29B

USE ROADWAY STANDARD DWG. 1101.02, SHT. 1 OF 9



- SEE TCP-29 FOR PAVEMENT MARKING STATIONING AND CODES EXCEPT AS NOTED.
- ADJUST EXISTING INTERSECTION TYPE "D", "E", AND "F" SIGNING AS DIRECTED BY THE ENGINEER



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 Fax: 919 851 8107  
 License: F-0377

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: *M. C. May* DATE: 5/2/09

SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 SEAL 21116  
 ENGINE EX. 2008 A MAY

**PHASE III - DETAIL I**

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DESIGN BY: CLM										
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PROJ. REFERENCE NO.	SHEET NO.
R-2414B	TCP-31A

Temporary Shoring No. 1A

FOR TEMPORARY SHORING, SEE TEMPORARY SHORING PROVISION.

DO NOT USE STANDARD SHORING FROM STA. 55+70 +/- -L- TO STA. 55+90 +/- -L- 4.8 M +/- -RIGHT.

WHEN USING CONTRACTOR DESIGNED SHORING FROM STA. 55+70 +/- -L- TO STA. 55+90 +/- -L- 4.8 m +/- -RIGHT, DESIGN SHORING FOR THE FOLLOWING SOIL PARAMETERS:

UNIT WEIGHT OF EMBANKMENT SOIL ABOVE WATER TABLE,  $y = 18.8 \text{ kN/m}^3$   
 UNIT WEIGHT OF EMBANKMENT SOIL BELOW WATER TABLE,  $y' = 9.4 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 30$   
 COHESION,  $c = 0 \text{ kPa}$

UNIT WEIGHT OF MUCK ABOVE WATER TABLE,  $y = 14.1 \text{ kN/m}^3$   
 UNIT WEIGHT OF MUCK BELOW WATER TABLE,  $y' = 4.7 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 0$   
 COHESION,  $c = 15 \text{ kPa}$

UNIT WEIGHT OF MASS MIXED SOIL ABOVE WATER TABLE,  $y = 17.2 \text{ kN/m}^3$   
 UNIT WEIGHT OF MASS MIXED SOIL BELOW WATER TABLE,  $y' = 7.8 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 0$   
 COHESION,  $c = 83 \text{ kPa}$

IT MAY BE PREFERRED OR NECESSARY TO ANCHOR TEMPORARY SHORING FROM STA. 55+70 +/- -L- TO STA. 55+90 +/- -L- 4.8 m +/- -RIGHT. THE TEMPORARY SHORING PROVISION DOES NOT APPLY TO ANCHORED TEMPORARY SHORING. IF ANCHORED SHORING IS PROPOSED, SUBMIT WORKING DRAWINGS, DESIGN CALCULATIONS AND AN ANCHORED TEMPORARY SHORING PROVISION FOR REVIEW AND ACCEPTANCE IN ACCORDANCE WITH ARTICLE 105-2 OF THE STANDARD SPECIFICATIONS.

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.

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STA. 55+70 +/- -L- TO STA. 55+90 +/- -L- 4.8 m +/- -RIGHT. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

Temporary Shoring No. 1B

FOR TEMPORARY SHORING, SEE TEMPORARY SHORING PROVISION.

DO NOT USE STANDARD SHORING FROM STA. 55+70 +/- -L- TO STA. 55+90 +/- -L- 6.9 M +/- -RIGHT.

WHEN USING CONTRACTOR DESIGNED SHORING FROM STA. 55+70 +/- -L- TO STA. 55+90 +/- -L- 6.9 m +/- -RIGHT, DESIGN SHORING FOR THE FOLLOWING SOIL PARAMETERS:

UNIT WEIGHT OF EMBANKMENT SOIL ABOVE WATER TABLE,  $y = 18.8 \text{ kN/m}^3$   
 UNIT WEIGHT OF EMBANKMENT SOIL BELOW WATER TABLE,  $y' = 9.4 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 30$   
 COHESION,  $c = 0 \text{ kPa}$

UNIT WEIGHT OF MUCK ABOVE WATER TABLE,  $y = 14.1 \text{ kN/m}^3$   
 UNIT WEIGHT OF MUCK BELOW WATER TABLE,  $y' = 4.7 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 0$   
 COHESION,  $c = 15 \text{ kPa}$

UNIT WEIGHT OF MASS MIXED SOIL ABOVE WATER TABLE,  $y = 17.2 \text{ kN/m}^3$   
 UNIT WEIGHT OF MASS MIXED SOIL BELOW WATER TABLE,  $y' = 7.8 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 0$   
 COHESION,  $c = 83 \text{ kPa}$

IT MAY BE PREFERRED OR NECESSARY TO ANCHOR TEMPORARY SHORING FROM STA. 55+70 +/- -L- TO STA. 55+90 +/- -L- 6.9 m +/- -RIGHT. THE TEMPORARY SHORING PROVISION DOES NOT APPLY TO ANCHORED TEMPORARY SHORING. IF ANCHORED SHORING IS PROPOSED, SUBMIT WORKING DRAWINGS, DESIGN CALCULATIONS AND AN ANCHORED TEMPORARY SHORING PROVISION FOR REVIEW AND ACCEPTANCE IN ACCORDANCE WITH ARTICLE 105-2 OF THE STANDARD SPECIFICATIONS.

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.

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STA. 55+70 +/- -L- TO STA. 55+90 +/- -L- 6.9 m +/- -RIGHT. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

NOTE: THE TEMPORARY SHORING NOTES SHOWN ON THIS SHEET WERE PROVIDED THROUGH A SEALED DOCUMENT FROM THE GEOTECHNICAL ENGINEERING UNIT. THE DOCUMENT WAS SUBMITTED TO THE WZTC SECTION ON AUGUST 26, 2010 AND SEALED BY A PROFESSIONAL ENGINEER, JINYOUNG PARK, LICENSE #32171.

Temporary Shoring No. 2A

FOR TEMPORARY SHORING, SEE TEMPORARY SHORING PROVISION.

DO NOT USE STANDARD SHORING FROM STA. 73+40 +/- -L- TO STA. 73+60 +/- -L- 4.1M +/- -LEFT.

WHEN USING CONTRACTOR DESIGNED SHORING FROM STA. 73+40 +/- -L- TO STA. 73+60 +/- -L- 4.1 m +/- -LEFT, DESIGN SHORING FOR THE FOLLOWING SOIL PARAMETERS:

UNIT WEIGHT OF EMBANKMENT SOIL ABOVE WATER TABLE,  $y = 18.8 \text{ kN/m}^3$   
 UNIT WEIGHT OF EMBANKMENT SOIL BELOW WATER TABLE,  $y' = 9.4 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 30$   
 COHESION,  $c = 0 \text{ kPa}$

UNIT WEIGHT OF MUCK ABOVE WATER TABLE,  $y = 14.1 \text{ kN/m}^3$   
 UNIT WEIGHT OF MUCK BELOW WATER TABLE,  $y' = 4.7 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 0$   
 COHESION,  $c = 15 \text{ kPa}$

UNIT WEIGHT OF MASS MIXED SOIL ABOVE WATER TABLE,  $y = 17.2 \text{ kN/m}^3$   
 UNIT WEIGHT OF MASS MIXED SOIL BELOW WATER TABLE,  $y' = 7.8 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 0$   
 COHESION,  $c = 83 \text{ kPa}$

IT MAY BE PREFERRED OR NECESSARY TO ANCHOR TEMPORARY SHORING FROM STA. 73+40 +/- -L- TO STA. 73+60 +/- -L- 4.1 m +/- -LEFT. THE TEMPORARY SHORING PROVISION DOES NOT APPLY TO ANCHORED TEMPORARY SHORING. IF ANCHORED SHORING IS PROPOSED, SUBMIT WORKING DRAWINGS, DESIGN CALCULATIONS AND AN ANCHORED TEMPORARY SHORING PROVISION FOR REVIEW AND ACCEPTANCE IN ACCORDANCE WITH ARTICLE 105-2 OF THE STANDARD SPECIFICATIONS.

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.

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STA. 73+40 +/- -L- TO STA. 73+60 +/- -L- 4.1 M +/- -LEFT. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

Temporary Shoring No. 2B

FOR TEMPORARY SHORING, SEE TEMPORARY SHORING PROVISION.

DO NOT USE STANDARD SHORING FROM STA. 73+40 +/- -L- TO STA. 73+60 +/- -L- 6.2 M +/- -LEFT.

WHEN USING CONTRACTOR DESIGNED SHORING FROM STA. 73+40 +/- -L- TO STA. 73+60 +/- -L- 6.2 m +/- -LEFT, DESIGN SHORING FOR THE FOLLOWING SOIL PARAMETERS:

UNIT WEIGHT OF EMBANKMENT SOIL ABOVE WATER TABLE,  $y = 18.8 \text{ kN/m}^3$   
 UNIT WEIGHT OF EMBANKMENT SOIL BELOW WATER TABLE,  $y' = 9.4 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 30$   
 COHESION,  $c = 0 \text{ kPa}$

UNIT WEIGHT OF MUCK ABOVE WATER TABLE,  $y = 14.1 \text{ kN/m}^3$   
 UNIT WEIGHT OF MUCK BELOW WATER TABLE,  $y' = 4.7 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 0$   
 COHESION,  $c = 15 \text{ kPa}$

UNIT WEIGHT OF MASS MIXED SOIL ABOVE WATER TABLE,  $y = 17.2 \text{ kN/m}^3$   
 UNIT WEIGHT OF MASS MIXED SOIL BELOW WATER TABLE,  $y' = 7.8 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 0$   
 COHESION,  $c = 83 \text{ kPa}$

IT MAY BE PREFERRED OR NECESSARY TO ANCHOR TEMPORARY SHORING FROM STA. 73+40 +/- -L- TO STA. 73+60 +/- -L- 6.2 m +/- -LEFT. THE TEMPORARY SHORING PROVISION DOES NOT APPLY TO ANCHORED TEMPORARY SHORING. IF ANCHORED SHORING IS PROPOSED, SUBMIT WORKING DRAWINGS, DESIGN CALCULATIONS AND AN ANCHORED TEMPORARY SHORING PROVISION FOR REVIEW AND ACCEPTANCE IN ACCORDANCE WITH ARTICLE 105-2 OF THE STANDARD SPECIFICATIONS.

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.

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STA. 73+40 +/- -L- TO STA. 73+60 +/- -L- 6.2 m +/- -LEFT. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

Temporary Shoring No. 3A

FOR TEMPORARY SHORING, SEE TEMPORARY SHORING PROVISION.

DO NOT USE STANDARD SHORING FROM STA. 88+85 +/- -L- TO STA. 89+15 +/- -L- 4.3 +/- -RIGHT.

WHEN USING CONTRACTOR DESIGNED SHORING FROM STA. 88+85 +/- -L- TO STA. 89+15 +/- -L- 4.3 m +/- -RIGHT, DESIGN SHORING FOR THE FOLLOWING SOIL PARAMETERS:

UNIT WEIGHT OF EMBANKMENT SOIL ABOVE WATER TABLE,  $y = 18.8 \text{ kN/m}^3$   
 UNIT WEIGHT OF EMBANKMENT SOIL BELOW WATER TABLE,  $y' = 9.4 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 30$   
 COHESION,  $c = 0 \text{ kPa}$

UNIT WEIGHT OF MUCK ABOVE WATER TABLE,  $y = 14.1 \text{ kN/m}^3$   
 UNIT WEIGHT OF MUCK BELOW WATER TABLE,  $y' = 4.7 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 0$   
 COHESION,  $c = 15 \text{ kPa}$

UNIT WEIGHT OF MASS MIXED SOIL ABOVE WATER TABLE,  $y = 17.2 \text{ kN/m}^3$   
 UNIT WEIGHT OF MASS MIXED SOIL BELOW WATER TABLE,  $y' = 7.8 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 0$   
 COHESION,  $c = 83 \text{ kPa}$

IT MAY BE PREFERRED OR NECESSARY TO ANCHOR TEMPORARY SHORING FROM STA. 88+85 +/- -L- TO STA. 89+15 +/- -L- 4.3 m +/- -RIGHT. THE TEMPORARY SHORING PROVISION DOES NOT APPLY TO ANCHORED TEMPORARY SHORING. IF ANCHORED SHORING IS PROPOSED, SUBMIT WORKING DRAWINGS, DESIGN CALCULATIONS AND AN ANCHORED TEMPORARY SHORING PROVISION FOR REVIEW AND ACCEPTANCE IN ACCORDANCE WITH ARTICLE 105-2 OF THE STANDARD SPECIFICATIONS.

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.

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN VICINITY OF THE TEMPORARY SHORING FROM STA. 88+85 +/- -L- TO STA. 89+15 +/- -L- 4.3 m +/- -RIGHT. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

Temporary Shoring No. 3B

FOR TEMPORARY SHORING, SEE TEMPORARY SHORING PROVISION.

DO NOT USE STANDARD SHORING FROM STA. 88+85 +/- -L- TO STA. 89+15 +/- -L- 6.4 m +/- -RIGHT.

WHEN USING CONTRACTOR DESIGNED SHORING FROM STA. 88+85 +/- -L- TO STA. 89+15 +/- -L- 6.4 m +/- -RIGHT, DESIGN SHORING FOR THE FOLLOWING SOIL PARAMETERS:

UNIT WEIGHT OF EMBANKMENT SOIL ABOVE WATER TABLE,  $y = 18.8 \text{ kN/m}^3$   
 UNIT WEIGHT OF EMBANKMENT SOIL BELOW WATER TABLE,  $y' = 9.4 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 30$   
 COHESION,  $c = 0 \text{ kPa}$

UNIT WEIGHT OF MUCK ABOVE WATER TABLE,  $y = 14.1 \text{ kN/m}^3$   
 UNIT WEIGHT OF MUCK BELOW WATER TABLE,  $y' = 4.7 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 0$   
 COHESION,  $c = 15 \text{ kPa}$

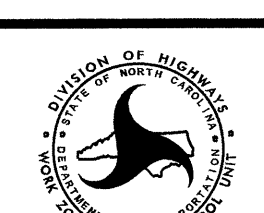
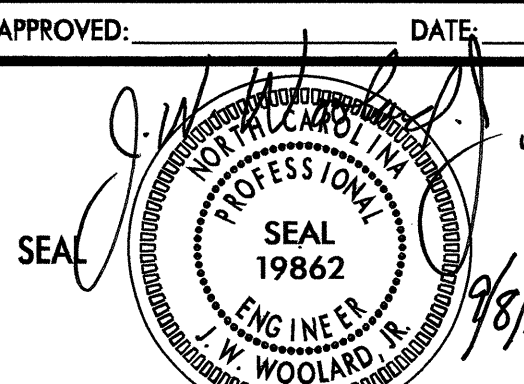
UNIT WEIGHT OF MASS MIXED SOIL ABOVE WATER TABLE,  $y = 17.2 \text{ kN/m}^3$   
 UNIT WEIGHT OF MASS MIXED SOIL BELOW WATER TABLE,  $y' = 7.8 \text{ kN/m}^3$   
 FRICTION ANGLE,  $\phi = 0$   
 COHESION,  $c = 83 \text{ kPa}$

IT MAY BE PREFERRED OR NECESSARY TO ANCHOR TEMPORARY SHORING FROM STA. 88+85 +/- -L- TO STA. 89+15 +/- -L- 6.4 m +/- -RIGHT. THE TEMPORARY SHORING PROVISION DOES NOT APPLY TO ANCHORED TEMPORARY SHORING. IF ANCHORED SHORING IS PROPOSED, SUBMIT WORKING DRAWINGS, DESIGN CALCULATIONS AND AN ANCHORED TEMPORARY SHORING PROVISION FOR REVIEW AND ACCEPTANCE IN ACCORDANCE WITH ARTICLE 105-2 OF THE STANDARD SPECIFICATIONS.

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

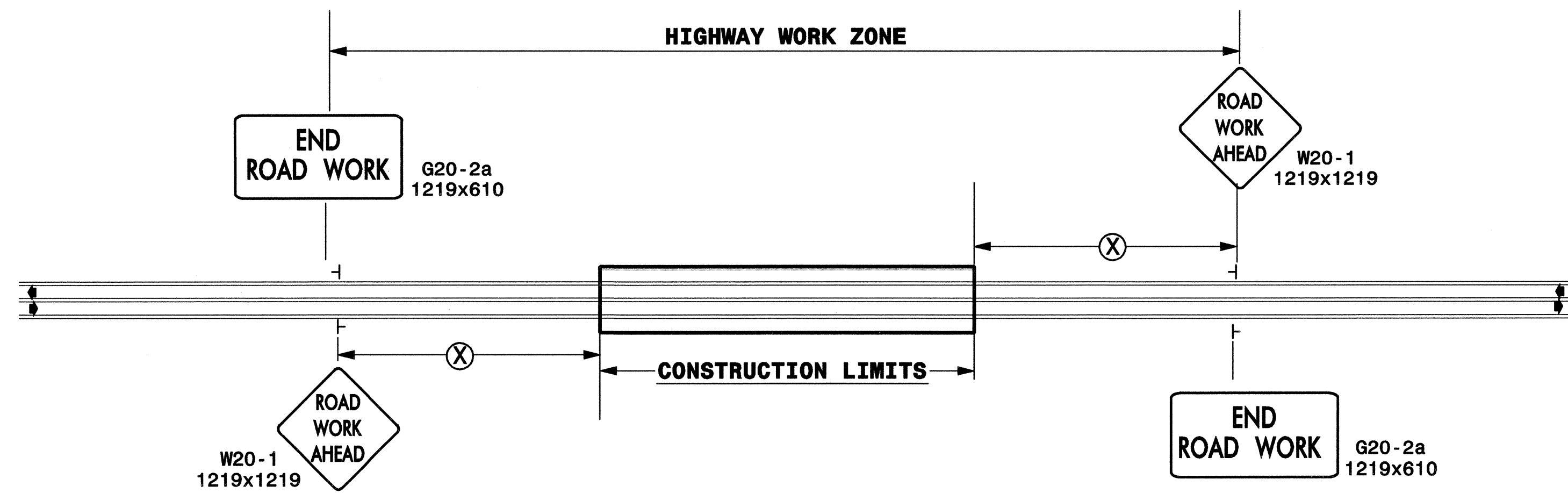
FOR PORTABLE CONCRETE BARRIERS ABOVE AND BEHIND TEMPORARY SHORING, USE AN NCDOT PORTABLE CONCRETE BARRIER (UNANCHORED OR ANCHORED) OR AN OREGON TALL F-SHAPE CONCRETE BARRIER IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS.

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STA. 88+85 +/- -L- TO STA. 89+15 +/- -L- 6.4 m +/- -RIGHT. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

APPROVED: _____ DATE: _____	<h2 style="text-align: center;">TEMPORARY SHORING RECOMMENDATIONS</h2>	SCALE: _____		REVISIONS
		DATE: _____		_____
		DWG. BY: _____		_____
		DESIGN BY: _____		_____
		REVIEWED BY: _____		_____

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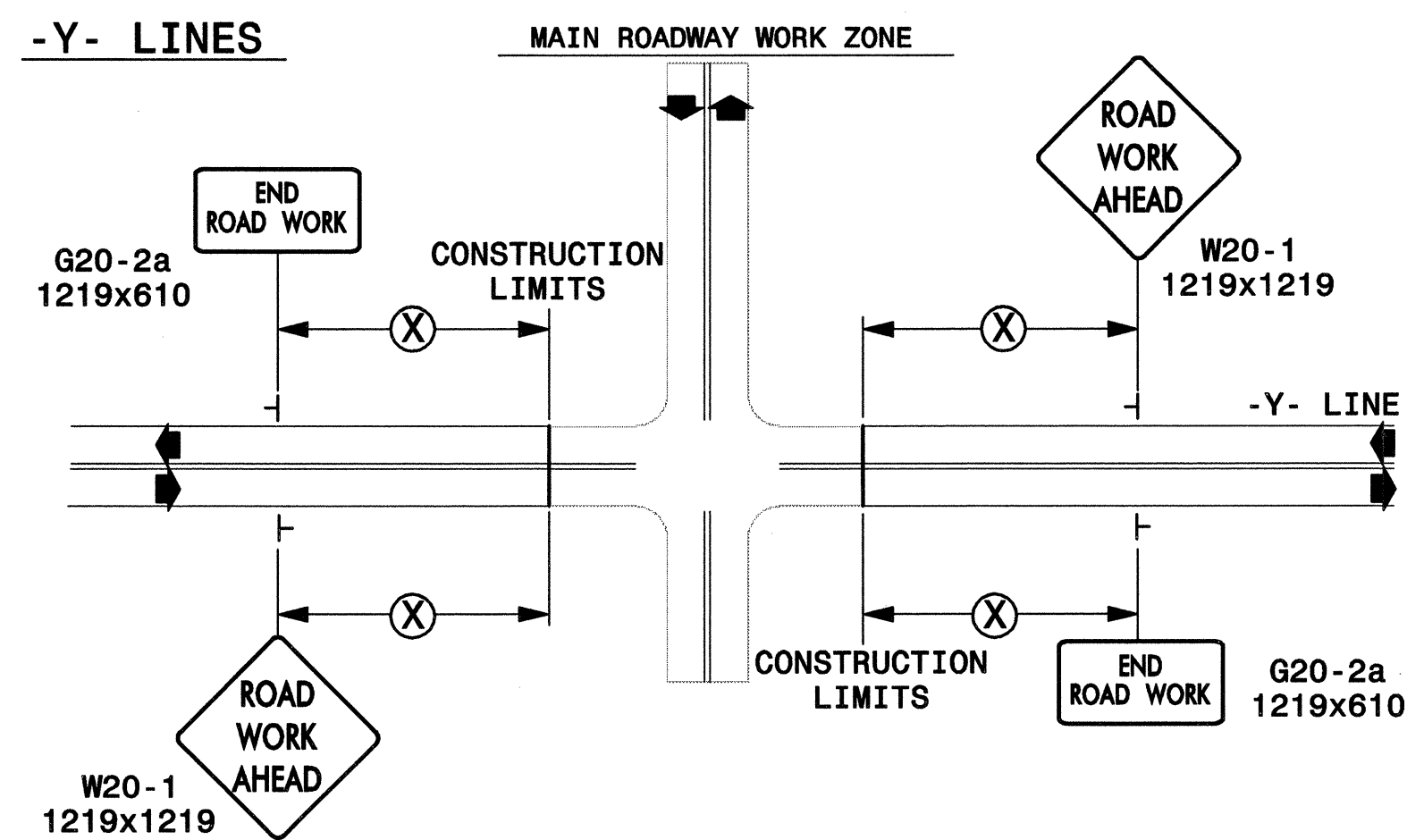
**TWO-WAY UNDIVIDED \*\* (L-LINES)**



POSTED SPEED LIMIT (M.P.H.)	RECOMMENDED MINIMUM SIGN SPACING
≤ 50	152m
≥ 55	305m

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 1.4Kg STEEL U-CHANNEL POST OR 90mm X 90mm WOOD POST FOR ALL WORK ZONE SIGNS. 1.4Kg 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 1.4Kg STEEL U-CHANNEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 1.4Kg 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>[Signature]</i> DATE: <i>11/04</i>	DETAIL DRAWING FOR TWO-WAY UNDIVIDED AND URBAN FREEWAYS ADVANCED WORK ZONE WARNING SIGNS									
	SCALE: NONE	<table border="1"> <thead> <tr> <th colspan="2">REVISIONS</th> </tr> </thead> <tbody> <tr> <td>7-98</td> <td>10/01</td> </tr> <tr> <td>10-98</td> <td>03/04</td> </tr> <tr> <td>01/01</td> <td>11/04</td> </tr> </tbody> </table>	REVISIONS		7-98	10/01	10-98	03/04	01/01	11/04
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