

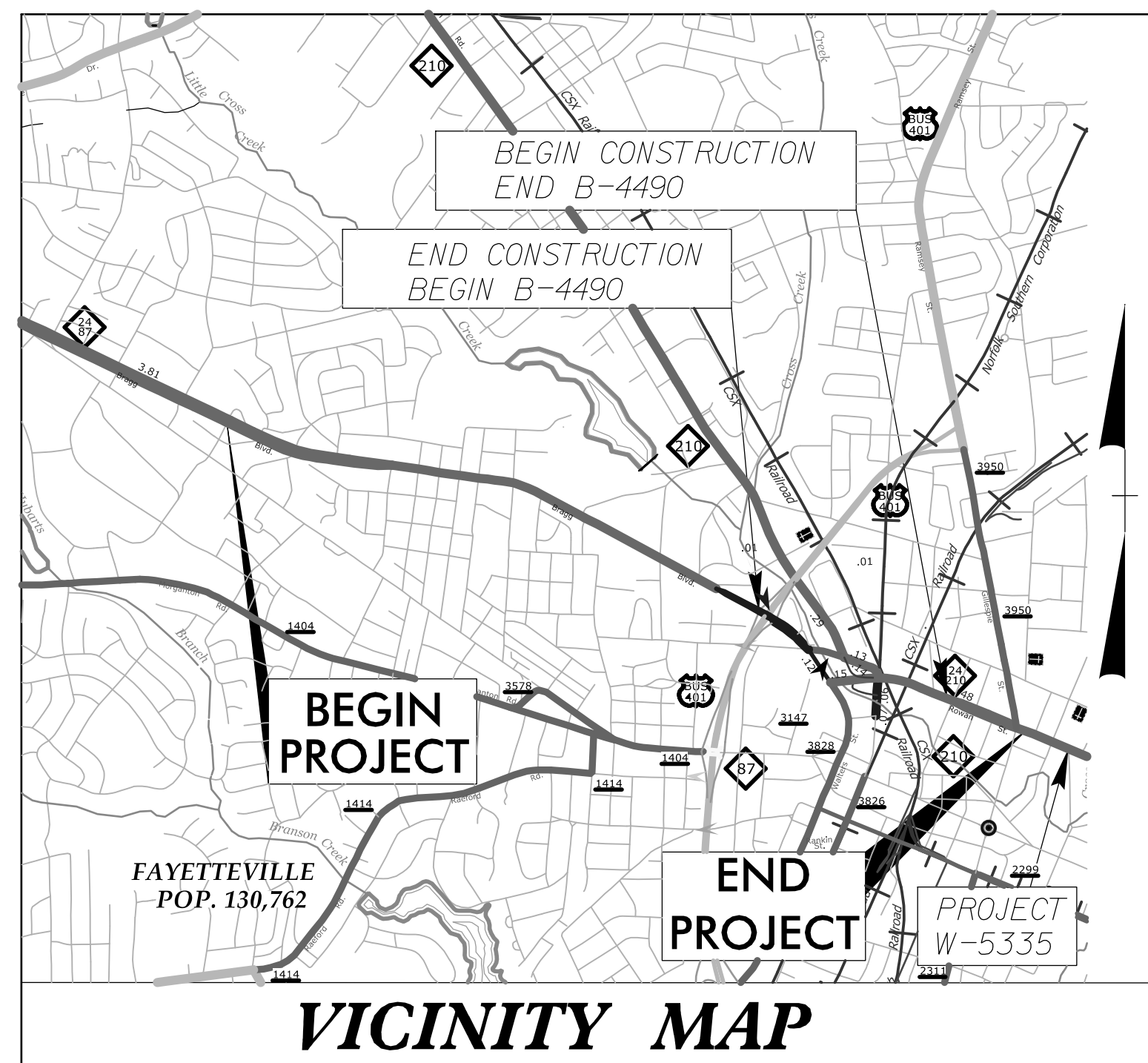
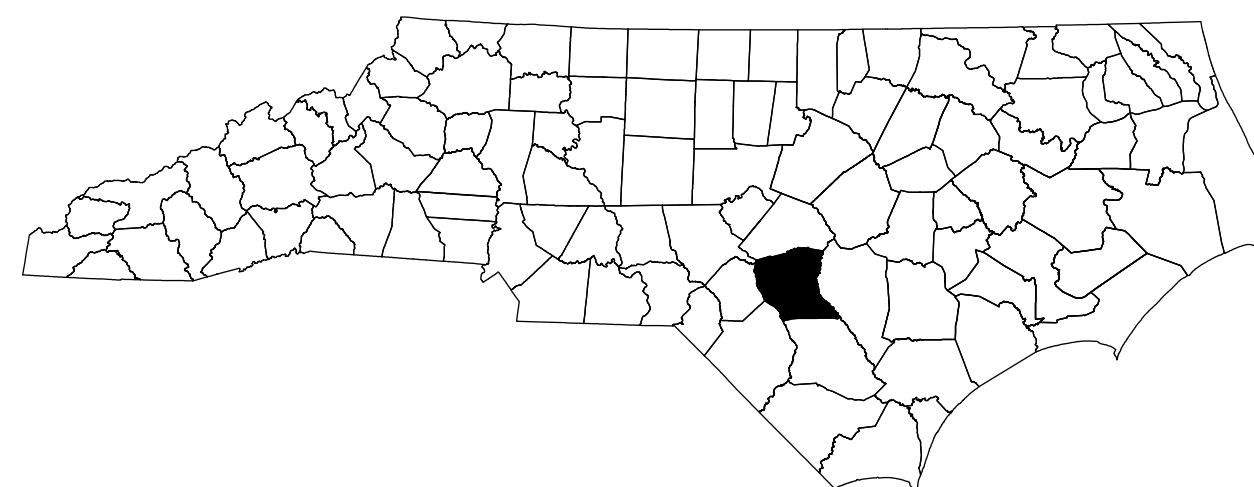
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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**  
**CUMBERLAND COUNTY**



**LOCATION:** NC 24/NC 87 FROM BARRINGTON CROSS STREET TO EAST OF MARTIN LUTHER KING WESTBOUND RAMPS; AND NC 24/NC 210 (ROWAN STREET) BETWEEN RAY AVENUE AND RAMSEY STREET

**TYPE OF WORK:** GRADING, PAVING, DRAINAGE, SIGNING, PAVEMENT MARKINGS, & SIGNALS

**INDEX OF SHEETS**

| SHEET NO. | TITLE   |
|-----------|---|
| TMP-1     | TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS                      |
| TMP-1A    | LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND             |
| TMP-1B    | TRANSPORTATION OPERATIONS PLAN: (GENERAL NOTES)                     |
| TMP-1C    | TRANSPORTATION OPERATIONS PLAN: (PHASING AND MANAGEMENT STRATEGIES) |
| TMP-2     | SIGNAL LOOP TYPICAL   |
| TMP-3-6   | STEP 2 DETAILS  |
| TMP-7-15  | STEP 4 DETAILS  |

SHEET NO.

TMP-1

**W-5206AM**

**TIP PROJECT:**

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**N.C.D.O.T. WORK ZONE TRAFFIC CONTROL**  
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S. B. JENNINGS TRAFFIC CONTROL DESIGN ENGINEER



DocuSigned by:  
**Steve Miller**  
#8F8C9C15CE2E8496

APPROVED: \_\_\_\_\_  
DATE: 9/25/2015

SEAL

# ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

| STD. NO. | TITLE   |
|----------|---|
| 1101.01  | WORK ZONE ADVANCE WARNING SIGNS                     |
| 1101.02  | TEMPORARY LANE 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 BOARDS                               |
| 1130.01  | DRUM  |
| 1135.01  | CONES   |
| 1145.01  | BARRICADES - TYPE III                               |
| 1150.01  | FLAGGING DEVICES                                    |
| 1165.01  | WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION   |
| 1180.01  | SKINNY - DRUM                                       |
| 1205.01  | PAVEMENT MARKINGS - LINE TYPES AND OFFSETS          |
| 1205.02  | PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS |
| 1205.03  | PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMP         |
| 1205.04  | PAVEMENT MARKINGS - INTERSECTIONS                   |
| 1205.05  | PAVEMENT MARKINGS - TURN LANES                      |
| 1205.07  | PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS           |
| 1205.09  | PAVEMENT MARKINGS - PAINTED ISLANDS                 |
| 1205.12  | PAVEMENT MARKINGS - BRIDGES                         |
| 1250.01  | RAISED PAVEMENT MARKERS - INSTALLATION SPACING      |
| 1251.01  | RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY   |

# LEGEND

## GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)

- WORK AREA
- REMOVAL
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

## SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

## PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

## TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

## TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

## PAVEMENT MARKERS

- CRYSTAL / CRYSTAL
- CRYSTAL / RED
- YELLOW / YELLOW

## PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

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DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD DRAWINGS & LEGEND

# GENERAL NOTES

|                                 |                     |
|---------------------------------|---------------------|
| PROJ. REFERENCE NO.<br>W-5206AM | SHEET NO.<br>TMP-1B |
|---------------------------------|---------------------|

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

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

**TIME RESTRICTIONS**

A) DO NOT CLOSE OR NARROW ONE TRAVEL LANE AS FOLLOWS:

| ROAD NAME         | DAY AND TIME RESTRICTIONS  |
|-------------------|--|
| NC 24/BRAGG BLVD. | MONDAY THROUGH FRIDAY 6:00 A.M. TO 9:00 A.M.<br>4:00 P.M. TO 7:00 P.M. |

B) DO NOT CLOSE OR NARROW TWO TRAVEL LANES AS FOLLOWS:

| ROAD NAME         | DAY AND TIME RESTRICTIONS                    |
|-------------------|--|
| NC 24/BRAGG BLVD. | MONDAY THROUGH FRIDAY 6:00 A.M. TO 9:00 P.M. |

C) DO NOT CLOSE OR NARROW A LANE OF TRAFFIC AS FOLLOWS:

| ROAD NAME    | DAY AND TIME RESTRICTIONS                    |
|--------------|--|
| ROWAN STREET | MONDAY THROUGH FRIDAY 6:00 A.M. TO 9:00 P.M. |

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

ROAD NAME  
NC 24/BRAGG BLVD. AND ROWAN STREET

**HOLIDAY**

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31ST TO 9:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 9:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 9:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 9:00 P.M. THE DAY AFTER INDEPENDENCE DAY.  
  
IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 9:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 9:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 9:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.
9. FOR THE DOGWOOD FESTIVAL, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY OF THE DOGWOOD FESTIVAL AND 9:00 P.M. THE FOLLOWING SUNDAY AFTER THE DOGWOOD FESTIVAL.
10. FOR THE INTERNATIONAL FOLK FESTIVAL, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY OF THE INTERNATIONAL FOLK FESTIVAL AND 9:00 P.M. THE FOLLOWING SUNDAY AFTER THE INTERNATIONAL FOLK FESTIVAL.

**LANE AND SHOULDER CLOSURE REQUIREMENTS**

E) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

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 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

I) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY ONE DIRECTION ON NC 24 BRAGG BOULEVARD OR ROWAN STREET.

**PAVEMENT EDGE DROP OFF REQUIREMENTS**

J) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

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

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

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

K) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 350 FEET 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 NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

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

O) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 350 FEET IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

**TRAFFIC CONTROL DEVICES**

P) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES), AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

Q) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES (DRUMS) PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

**PAVEMENT MARKINGS AND MARKERS**

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

| ROAD NAME       | MARKING | MARKER           |
|-----------------|---------|------------------|
| BRAGG BOULEVARD | PAINT   | TEMPORARY RAISED |
| ROWAN STREET    | PAINT   | TEMPORARY RAISED |

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.

V) TRACE THE PROPOSED MONOLITHIC ISLAND LOCATIONS WITH PROPER COLOR PAVEMENT MARKINGS PRIOR TO INSTALLATION. PLACE DRUMS TO DELINEATE ANY PROPOSED MONOLITHIC ISLANDS.

**MISCELLANEOUS**

W) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.

X) ALL CURB 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.

Y) CONTRACTOR SHALL MAINTAIN SIDEWALK ACCESS AT ALL TIMES AS STATED IN THE PHASING. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY SIDEWALKS (CONCRETE, ASPHALT, OR OTHER SUITABLE MATERIAL AS APPROVED BY THE ENGINEER) AT ALL LOCATIONS WHERE THE OPEN PEDESTRIAN TRAVELWAY HAS BEEN REMOVED FOR CONSTRUCTION OPERATIONS (UTILITIES, DRAINAGE, ETC.).

Z) THE FOLLOWING OPTIONS ARE AVAILABLE DURING RESURFACING AND MILLING OPERATIONS ON MULTI-LANE FACILITIES WHEN ALL LANES OR A SINGLE LANE IN ONE DIRECTION ARE TO BE MILLED:

- (A) MILL A SINGLE LANE AND PAVE BACK BY THE END OF EACH WORK DAY.
- (B) MILL THE ENTIRE WIDTH OF PAVEMENT FOR ALL LANES TO BE MILLED IN ANY DIRECTION DAILY AND PAVE BACK WITHIN 72 HOURS.

SLOPE THE PAVEMENT AT THE BEGINNING AND ENDING OF THE DAILY MILLING OPERATION AS DIRECTED BY THE ENGINEER. SWEEP AND REMOVE ALL MILLED MATERIAL FROM THE ROADWAY AS SOON AS THE DAILY MILLING OPERATION IS COMPLETED. CONTINUE MILLING OPERATIONS UNTIL THE PARTICULAR SECTION OF ROADWAY BEING MILLED IS COMPLETE. REMOVE ANY EXISTING PAVEMENT ADJACENT TO THE MILLED AREA THAT HAS BEEN DAMAGED AND REPLACE WITH PATCH MATERIAL AS DIRECTED BY THE ENGINEER.

OPERATE EQUIPMENT AND CONDUCT OPERATIONS IN THE SAME DIRECTION AS THE FLOW OF TRAFFIC. MAINTAIN VEHICULAR ACCESS IN ACCORDANCE WITH ARTICLE 1101-05 OF THE 2012 STANDARD SPECIFICATIONS USING SUITABLE BACKFILL MATERIAL APPROVED BY THE ENGINEER.

PROVIDE APPROPRIATE LIGHTING IN ACCORDANCE WITH SECTION 1413 OF THE 2012 STANDARD SPECIFICATIONS.

AA) NOTIFY THE ENGINEER 48 HOURS BEFORE MILLING OR RESURFACING WILL INTERFERE WITH THE EXISTING SIGNAL LOOPS. LOOPS MAY NEED TO BE PLACED IN MILLED SURFACE BEFORE RESURFACING OCCURS. COORDINATE ALL SIGNAL LOOP OPERATIONS WITH THE ENGINEER.

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DATE: 10/22/2015

SEAL

## TRANSPORTATION OPERATIONS PLAN

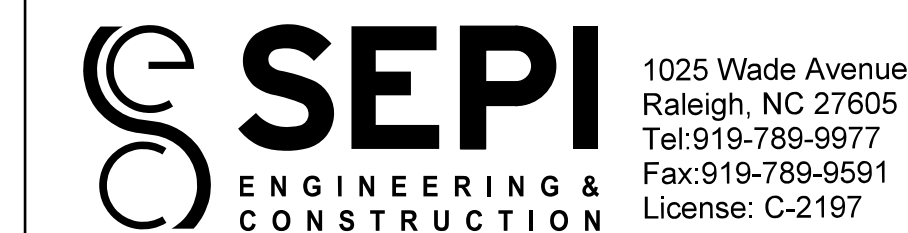
## PHASING

- STEP 1: USING ROADWAY STANDARD DRAWING (RSD) 1101.01 SHEETS 2 AND 3 OF 3, INSTALL ADVANCE WARNING SIGNS ON NC 24/NC 87 (BRAGG BLVD), NC 24/NC 210 (ROWAN STREET), AND -Y- LINES.
- STEP 2: USING RSD 1101.02 SHEETS 1, 3, 7, AND 8 OF 15, BEGIN CONSTRUCTION FROM BEGIN PROJECT -L- 10+50 TO END PROJECT -L- 154+25 UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE. SEE TMP-3 THROUGH TMP-6.
- STEP 3: USING RSD 1101.02 SHEET 3 OF 15, COMPLETE THE FOLLOWING UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE:  
 - LEFT SIDE OF -L- (BULB OUT) FROM STA 40+57 TO 41+68  
 - RIGHT SIDE OF -L- (BULB OUT) FROM STA 75+00 TO 76+22
- STEP 4: CLOSE THE LEFT TURN LANE ON -Y6- (WESTMONT DRIVE) AND REMOVE FLASHING SIGNAL. USING RSD 1101.02 SHEETS 1, 3, 7, AND 8 OF 15, COMPLETE -L- AND -Y- LINES FROM -L- STA 10+50 TO -L- 108+88 UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE. SEE TMP-7 THROUGH TMP-15. PLACE TEMPORARY PAVEMENT MARKINGS IN THE SAME LOCATION AS THE FINAL PAVEMENT MARKINGS. ACTIVATE FINAL SIGNALS. COMPLETE -L- AND -Y- LINES FROM -L- STATION 143+61 TO -L- 154+25 INCLUDING THE FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS.
- STEP 5: USING RSD 1101.02 SHEETS 1, 3, 7, AND 8 OF 15, PLACE THE FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS THROUGHOUT THE REMAINDER OF THE PROJECT.
- STEP 6: REMOVE ALL WORK ZONE TRAFFIC CONTROL DEVICES.

## MANAGEMENT STRATEGIES

- MAINTAIN ACCESS TO PROPERTIES DURING CONSTRUCTION
- MAINTAIN TRAFFIC THROUGH LANE CLOSURES
- MAINTAIN ACCESS TO BUS STOPS; CLOSE THE BUS STOP NEAR STATION -L- 90+00 TO CONSTRUCT THE SIDEWALK IN THAT LOCATION
- REPLACE DAMAGED SIGNAL LOOPS WITHIN 24 HOURS

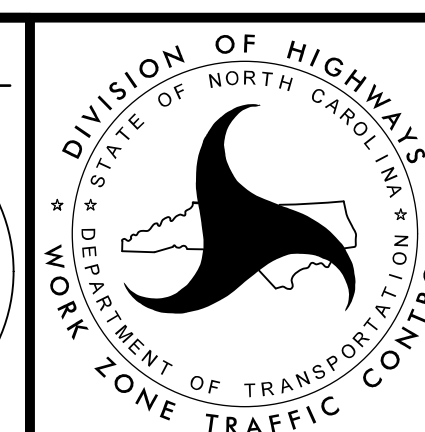
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APPROVED: Steve Miller  
SP5C/C15CCE848

DATE: 9/25/2015

SEAL



**TRANSPORTATION  
OPERATIONS  
PLAN**

### High Speed Detection ( $\geq 40$ mph)

OR

| Speed Limit mph | D ft |
|-----------------|------|
| 40              | 250  |
| 45              | 300  |
| 50              | 355  |
| 55              | 420  |

L = 6ft X 6ft  
Wired in series for TS1  
Controllers  
Wired separately for TS2,  
170, and 2070L Controllers

Volume Density Operation

| Speed Limit mph | D1 ft | D2 ft |
|-----------------|-------|-------|
| 40              | 250   | 80    |
| 45              | 300   | 90    |
| 50              | 355   | 100   |
| 55              | 420   | 110   |

L1 = 6ft X 6ft  
Wired in series  
L2 = 6ft X 6ft  
Wired in series

"Stretch" Operation

### Low Speed Detection ( $\leq 35$ mph)

OR

L = 6ft X 6ft  
Wired in series

L = 6ft X 40ft  
Quadrupole loop, wired separately

### Left Turn Lane Detection

OR

L = 6ft X 40ft Quadrupole Loop

Presence Loop Detection

L1 = 6ft X 15ft Queue detector  
L2 = 6ft X 40ft Quadrupole loop

Queue Loop Detection

### Right Turn Lane Detection

L1 = 6ft X 40ft Quadrupole loop  
L2 = 6ft X 6ft [Minimum] Presence loop  
Wired separately

Shared Lane/  
Wide Radius Turn

Standard Turn

Wide Radius Turn

Channelized Turn

### Side Street Detection

L = 6ft X 40ft  
Quadrupole loop  
Wired to separate  
detectors/channels

### Presence Loop Placement at Stop Lines

Locate loop slightly  
behind leading  
edge of stop line

Inductive Loop

Note:  
Loop may be located in advance  
of stop line under any of the  
following conditions:  
1) stop line is greater than 15'  
from edge of intersecting  
roadway  
2) loop detects a permissive or  
protected/permissive left turn  
3) for an exclusive right turn  
lane

### Recommended Number of Turns

Single 6' X 6' loop  
(when wired separately):

| Length of Lead-in ft | Number of Turns |
|----------------------|-----------------|
| < 250                | 3               |
| 250-375              | 4               |
| 375-525              | 5               |
| > 525                | 6               |

Quadrupole loops: Use 2-4-2 turns  
6' X 15' Loops:  
Lead-in < 150', use 2 turns  
Lead-in > 150', use 3 turns

| SCALE | REVISIONS | INIT. | DATE |
|-------|-----------|-------|------|
| N/A   |           |       |      |

Typical Signal Loop Locations

Prepared in the Offices of:  
750 N. Greenfield Pkwy, Garner, NC 27529

PLAN DATE: January 2015  
REVIEWED BY: JPG

PREPARED BY: PLA  
REVIEWED BY:

SEAL  
NORTH CAROLINA PROFESSIONAL ENGINEER  
SEAL 23489  
PAUL A. L. ALEXANDER  
3/30/2015  
DATE

9/18/2015 10:32 AM S:\transportation\TR14\_011\_00 W-5206AM Traffic Management Plans\W-5206AM TMP-2.dgn Miller

APPROVED: Steve Miller  
DATE: 9/25/2015

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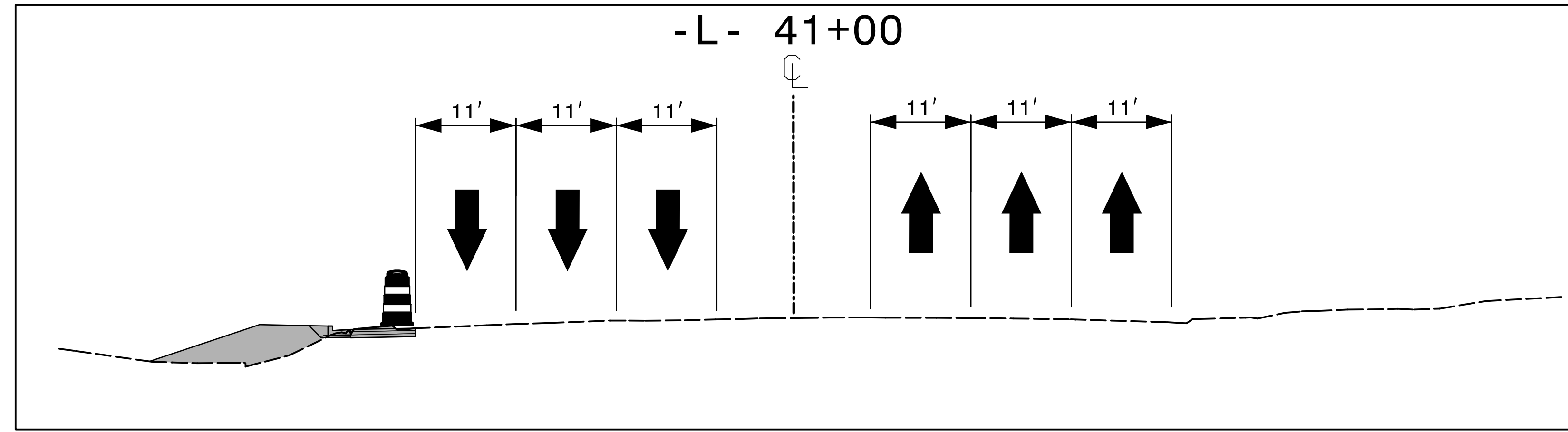
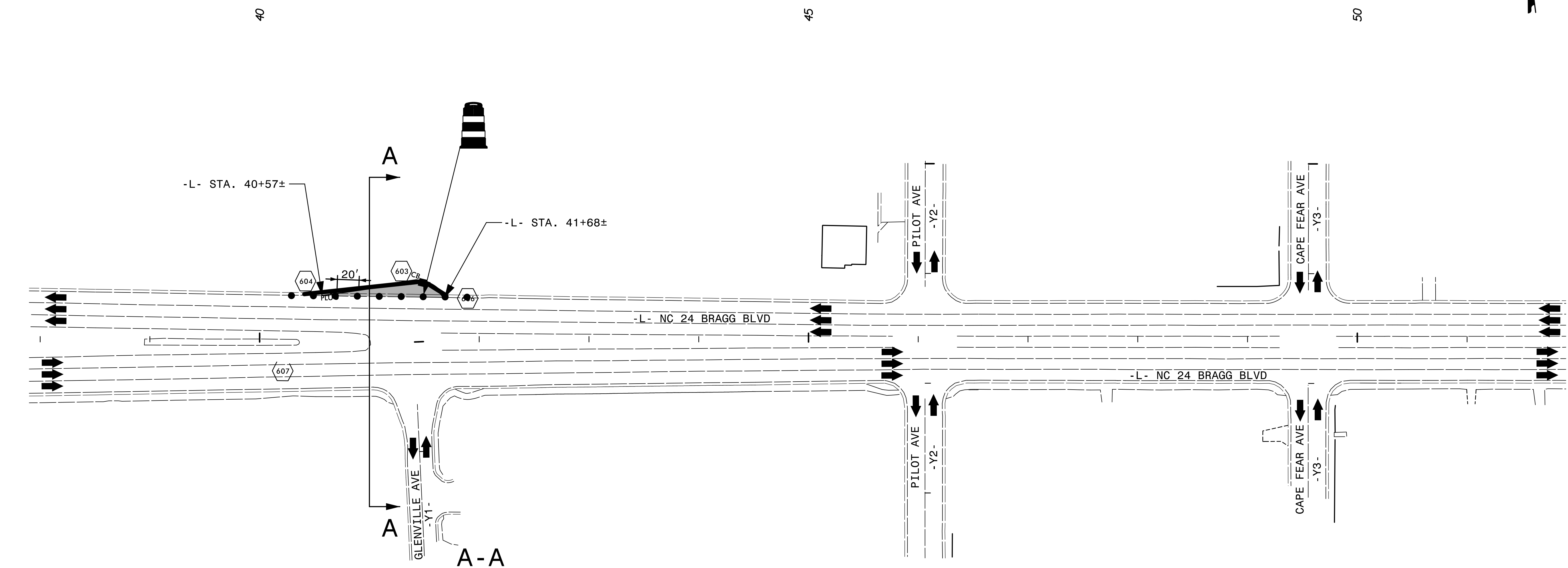
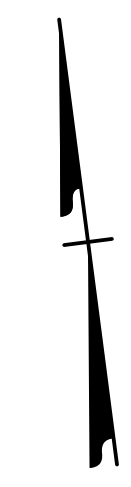
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DATE: 9/25/2015

SEAL

SEAL  
NORTH CAROLINA PROFESSIONAL ENGINEER  
SEAL 037026  
STEVEN D. MILLER  
3/30/2015  
DATE

DIVISION OF HIGHWAYS  
DEPARTMENT OF TRANSPORTATION  
WORK ZONE TRAFFIC CONTROL

SIGNAL LOOP TYPICAL



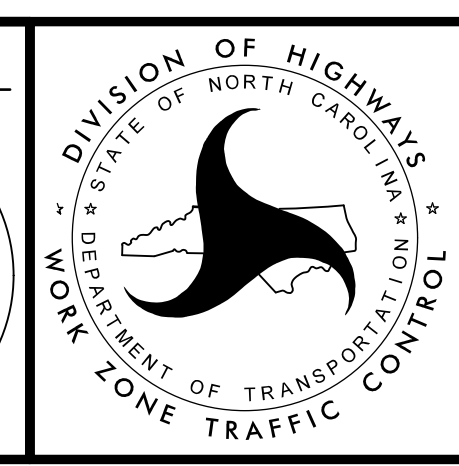
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**SEPI**  
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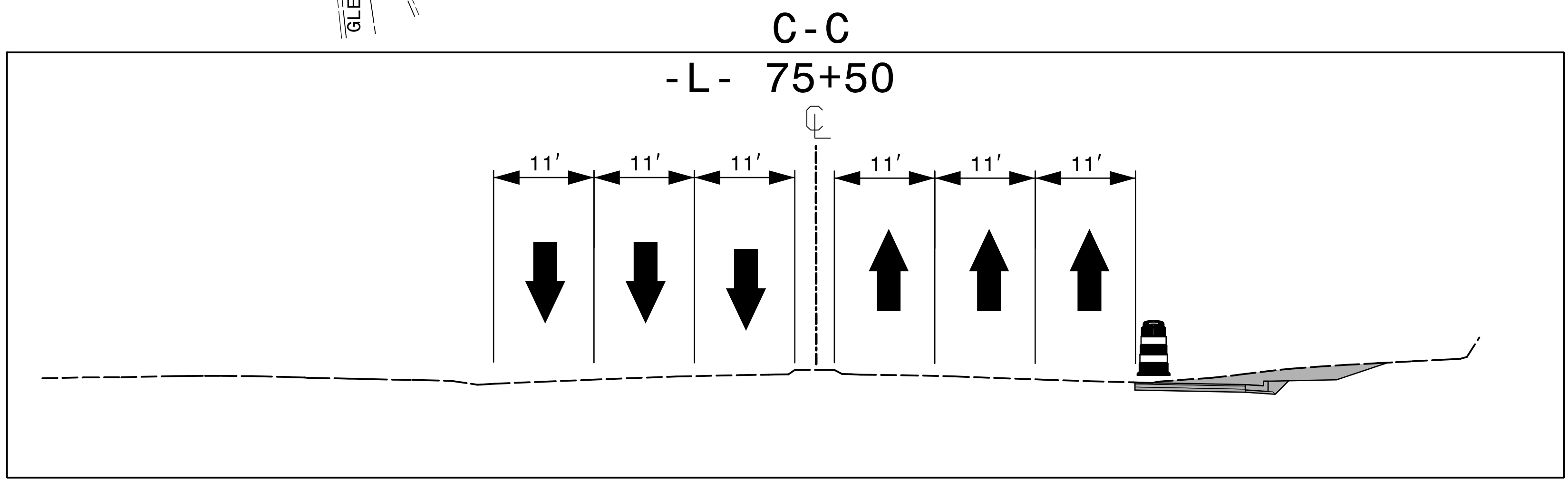
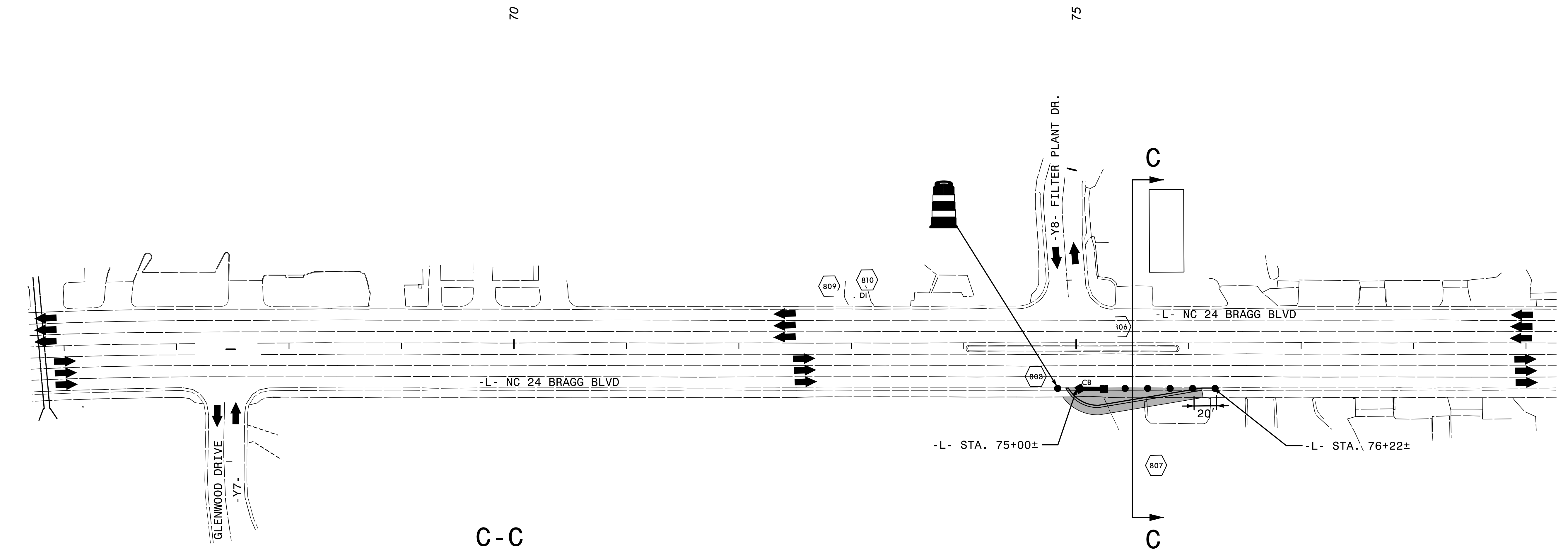
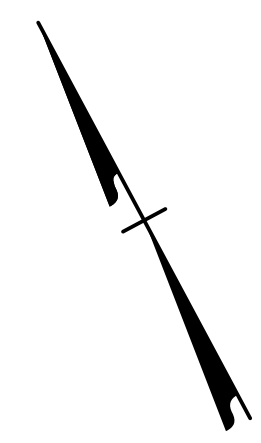
1025 Wade Avenue  
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DATE: 9/25/2015

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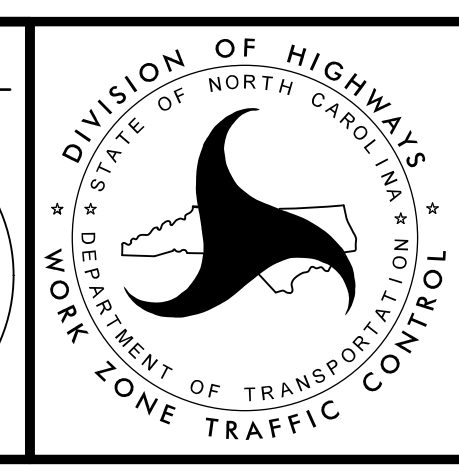
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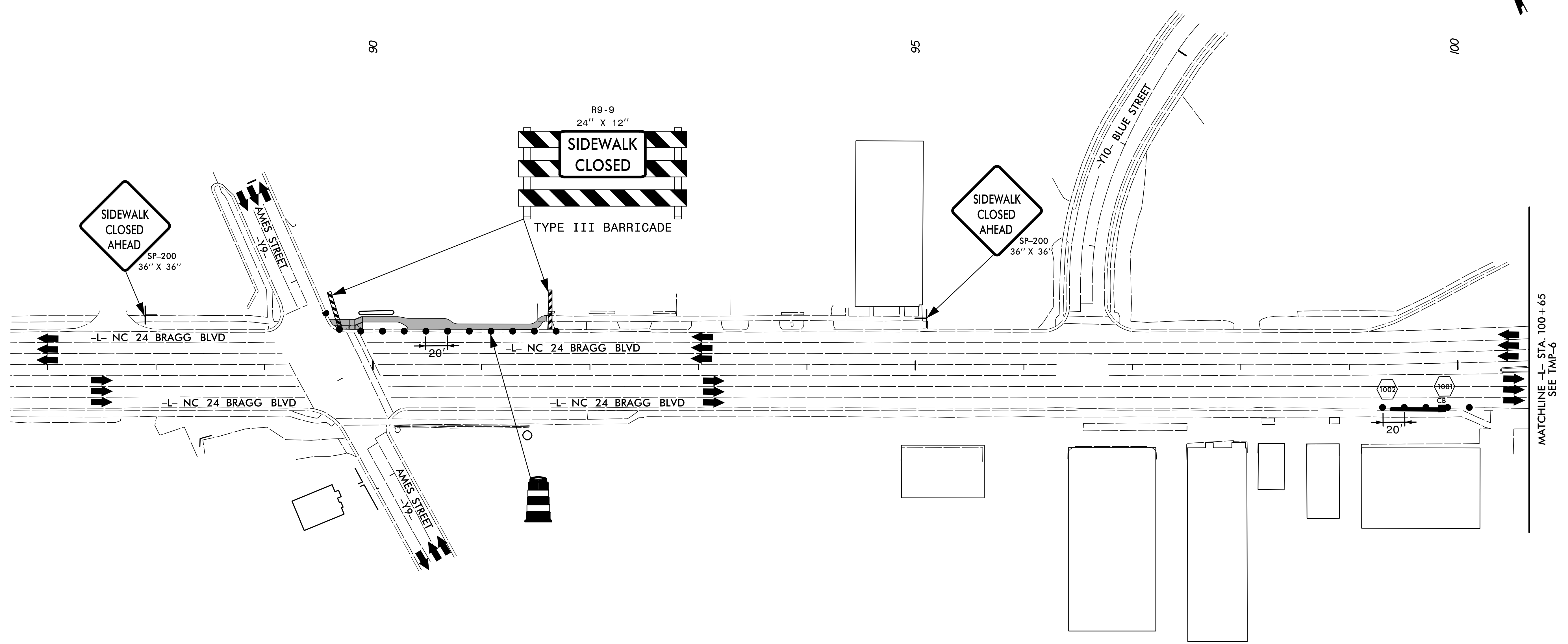
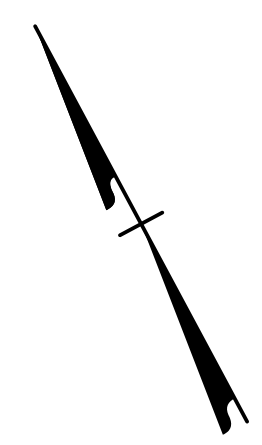
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**STEP 2**

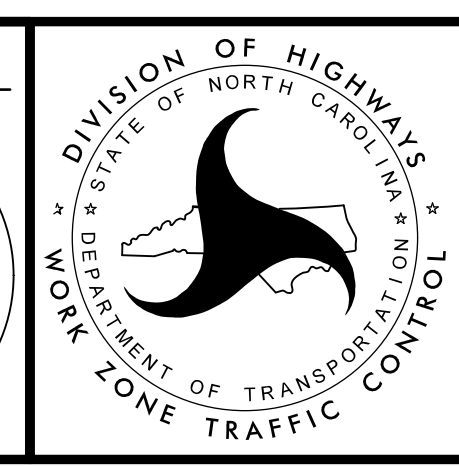




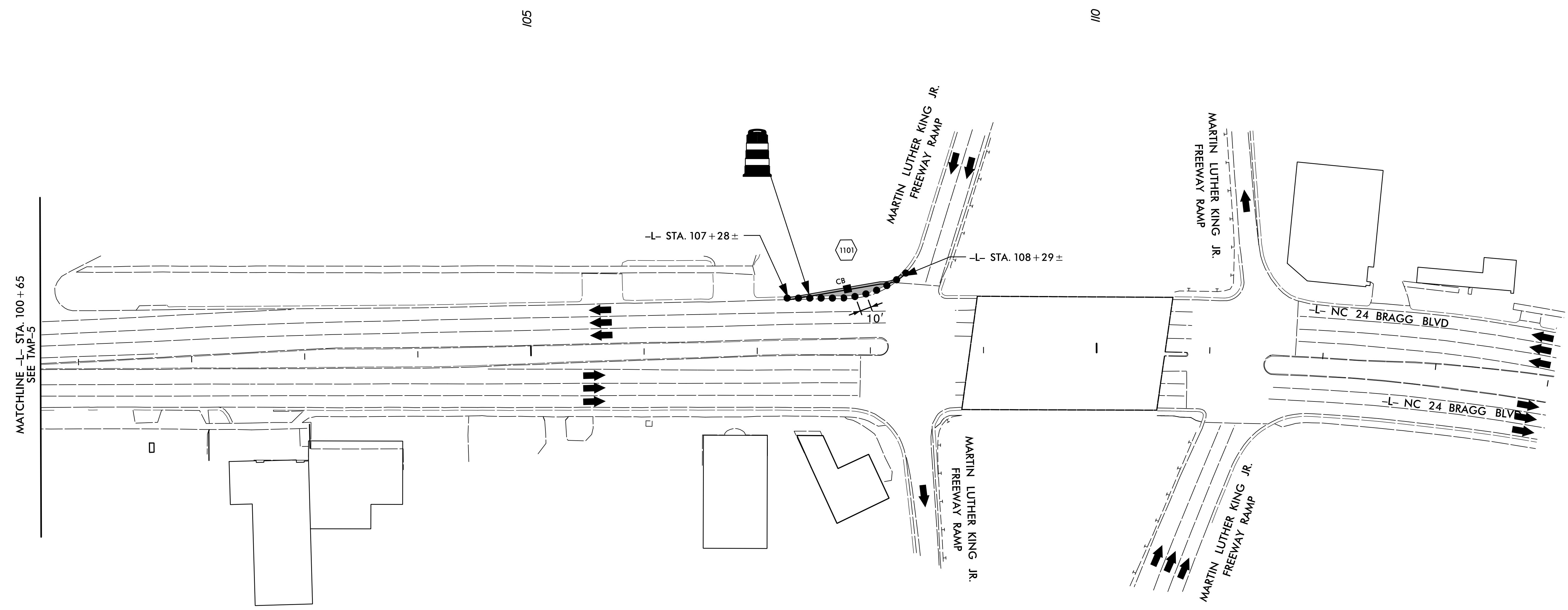
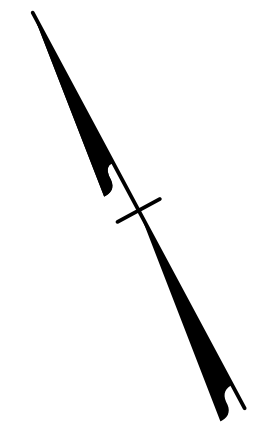
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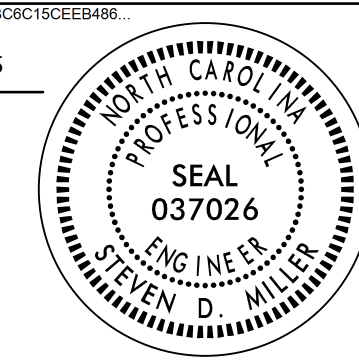
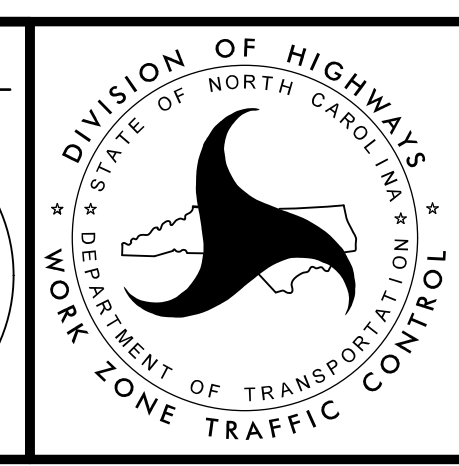
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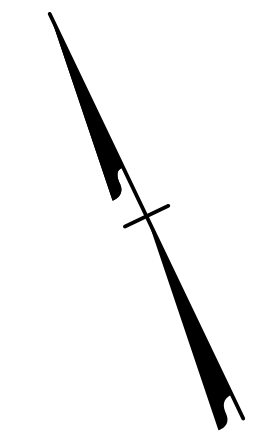
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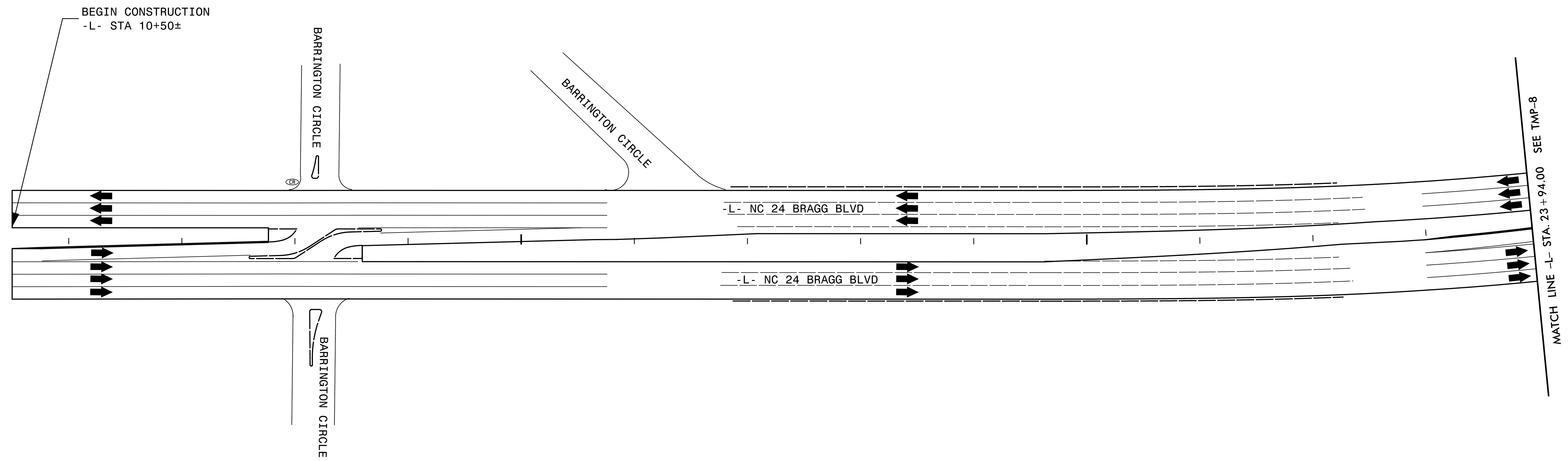
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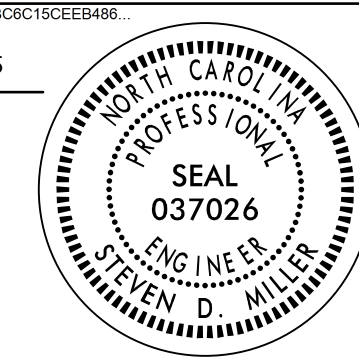
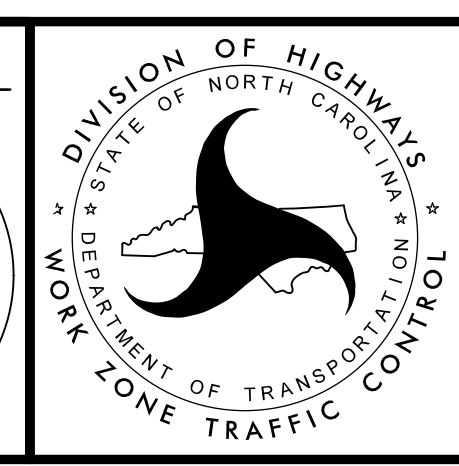
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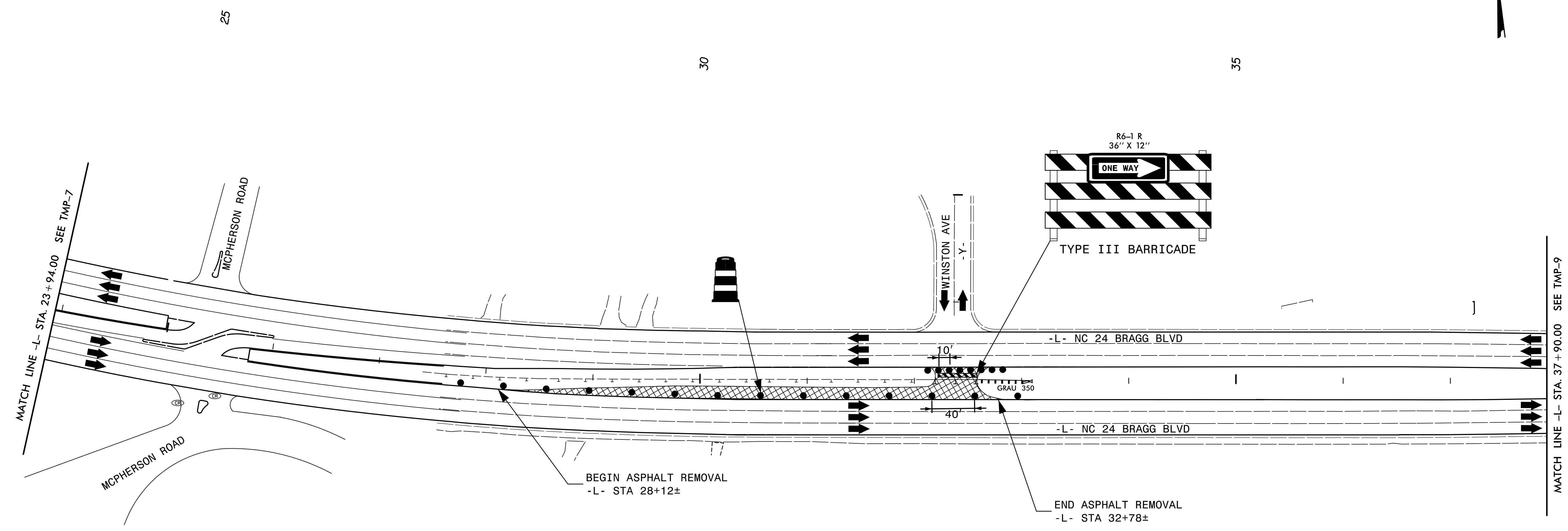
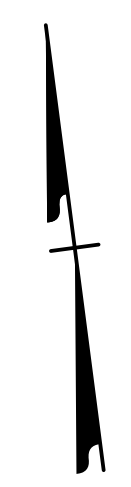
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STEP 4



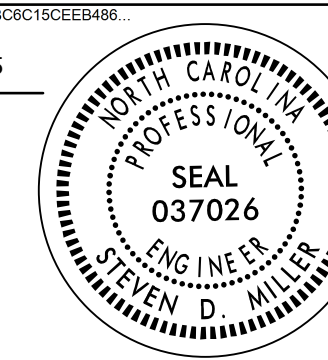
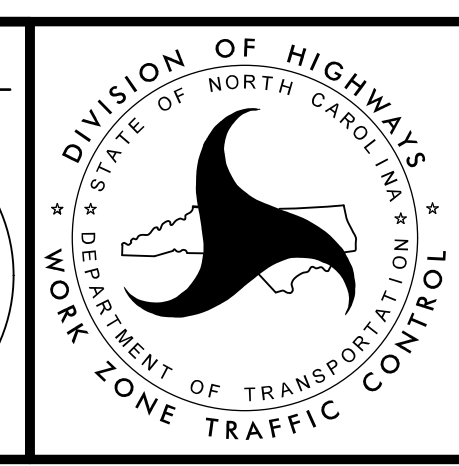
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 S.Miller

BEGIN ASPHALT REMOVAL  
-L- STA 28+12±

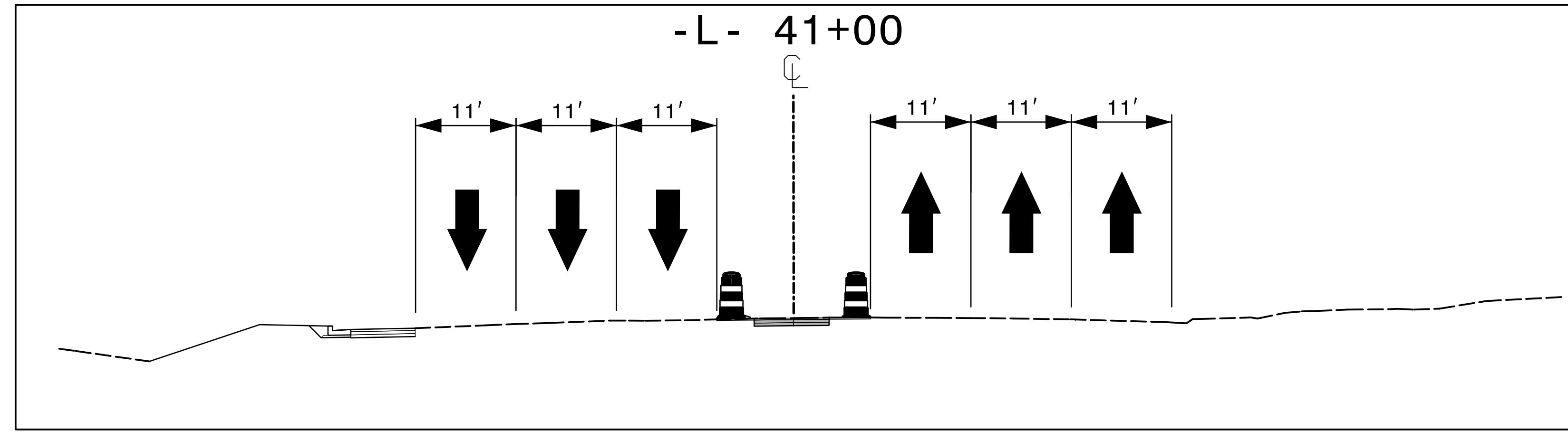
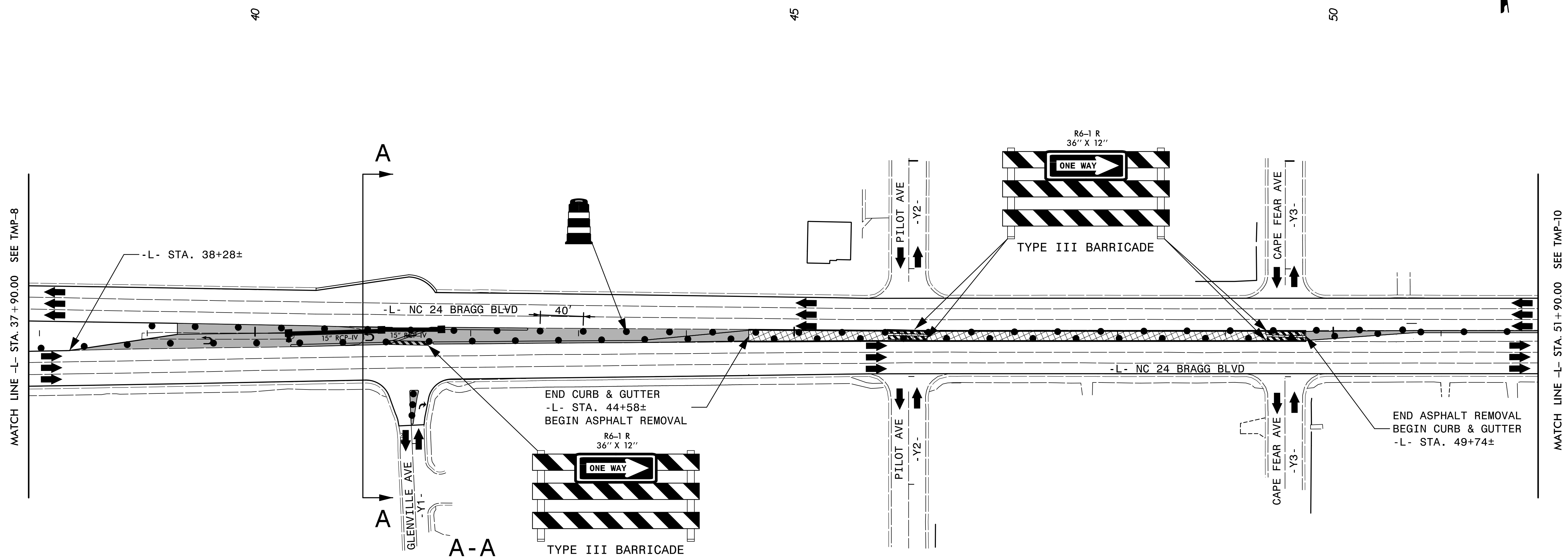
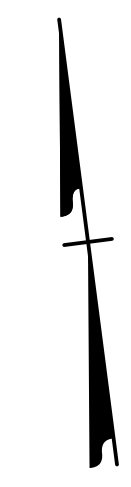
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STEP 4



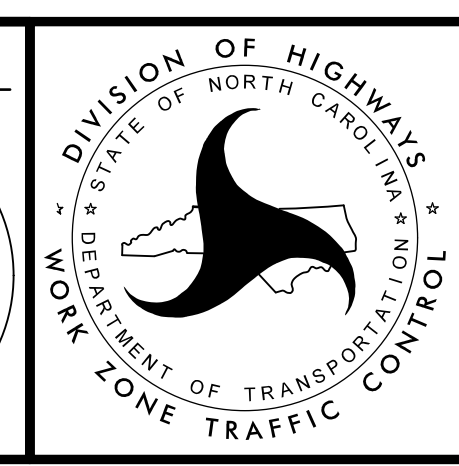
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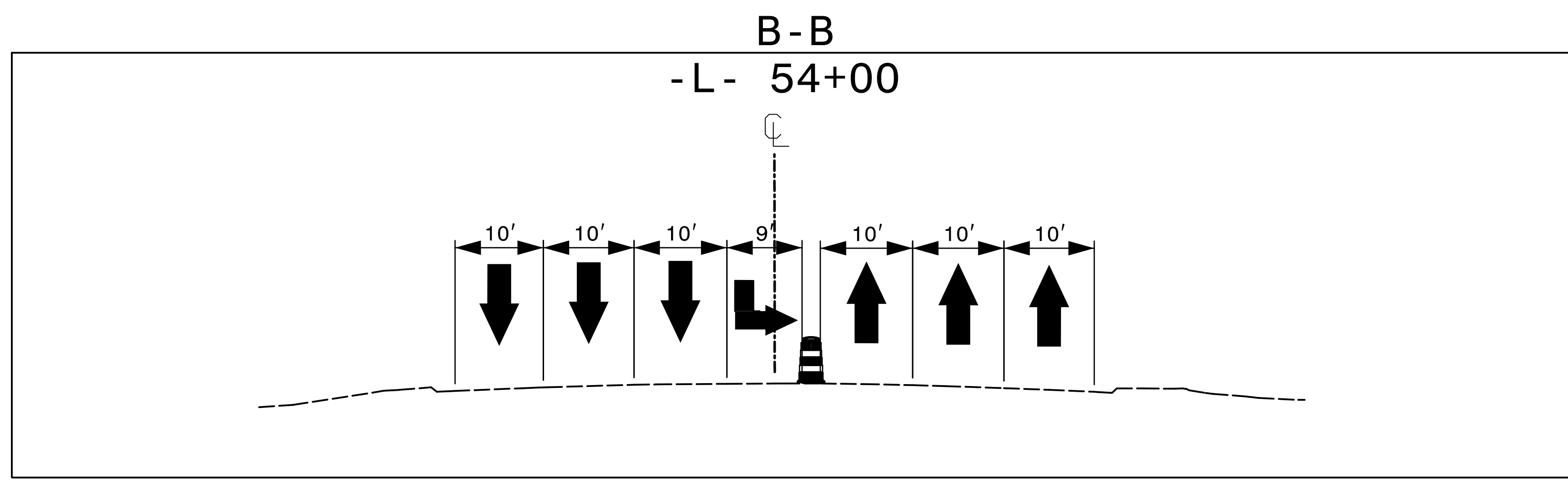
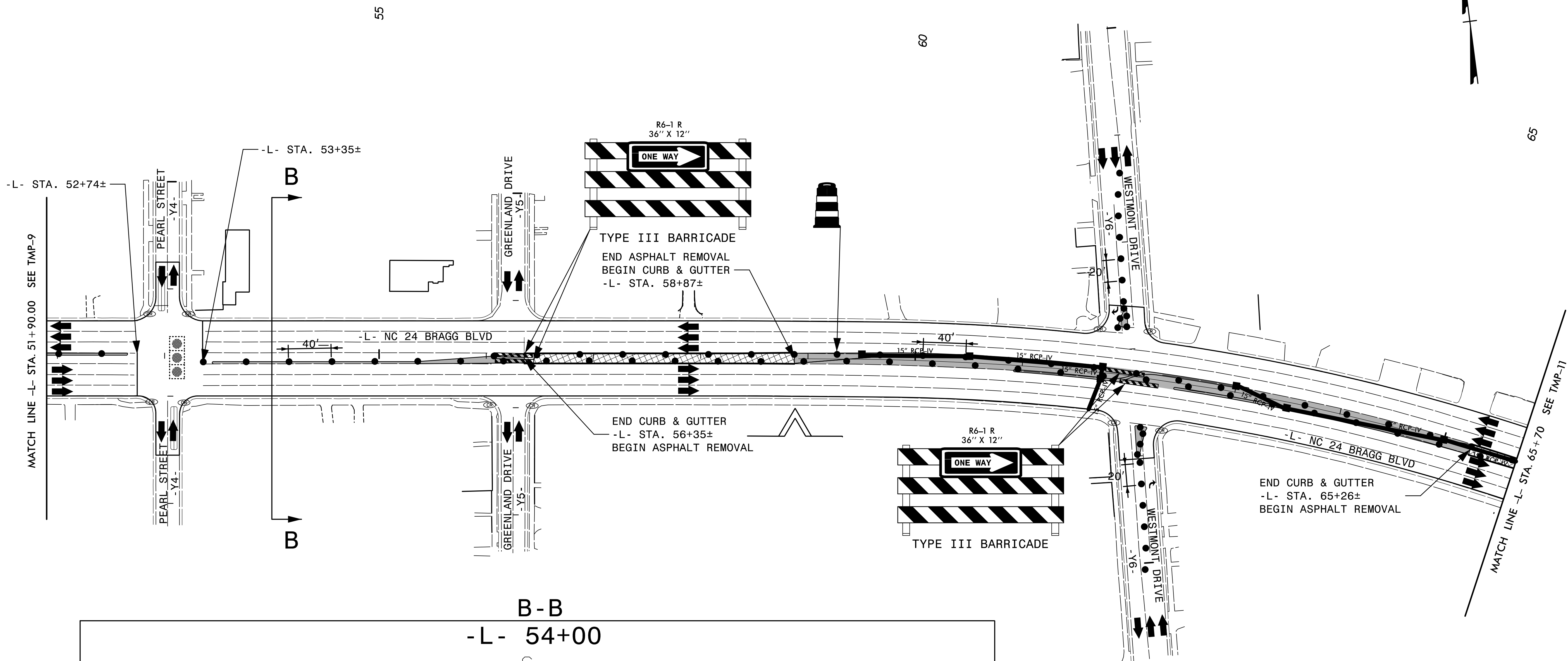
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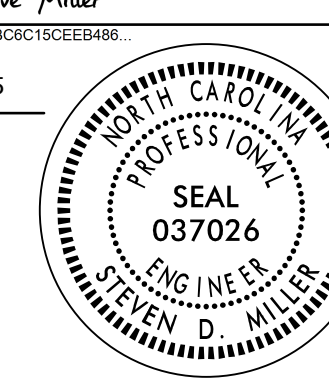

**STEP 4**



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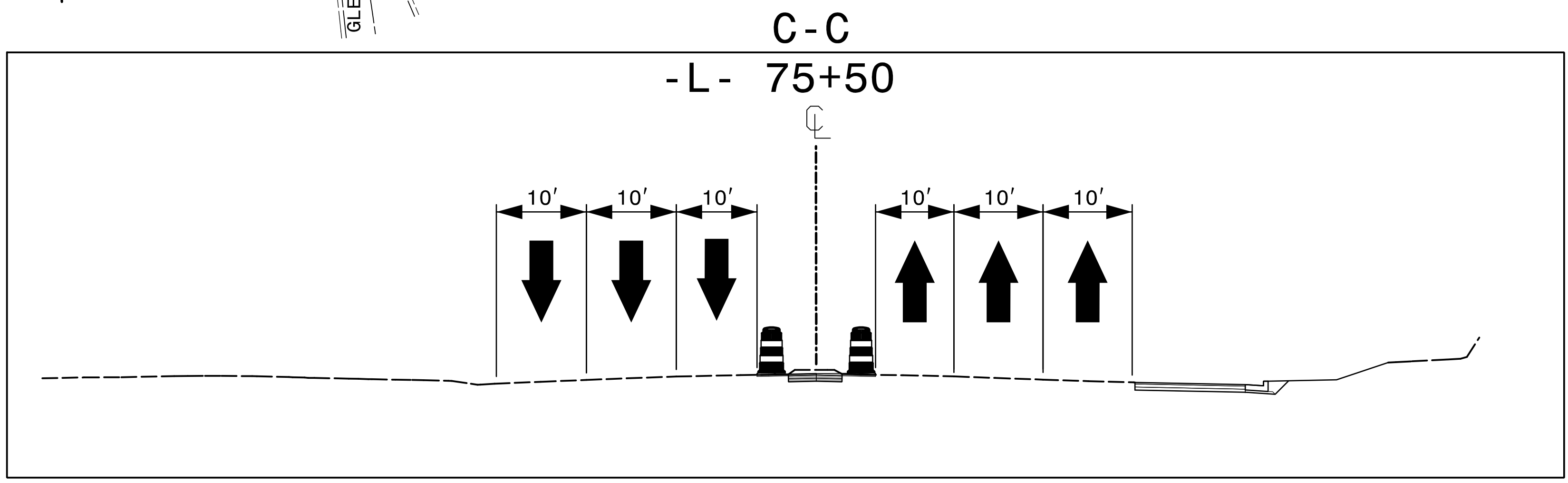
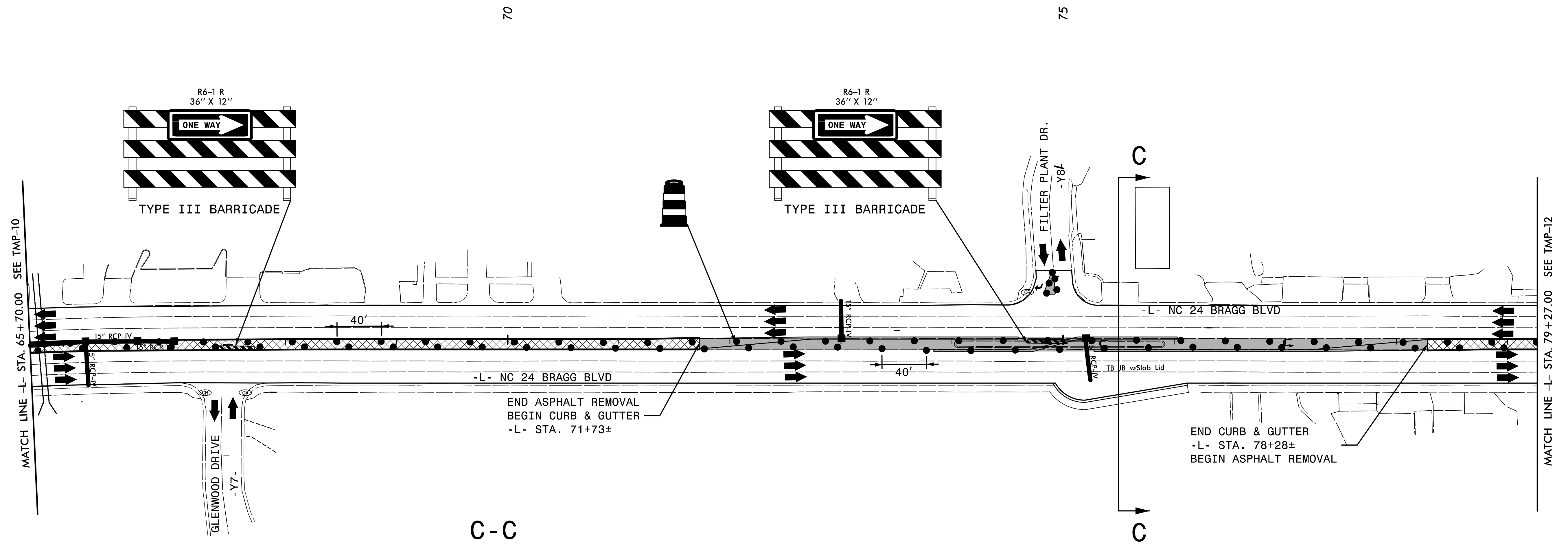
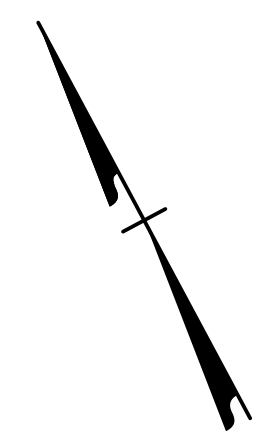

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 DATE: 9/25/2015  
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DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 WORK ZONE TRAFFIC CONTROL

STEP 4



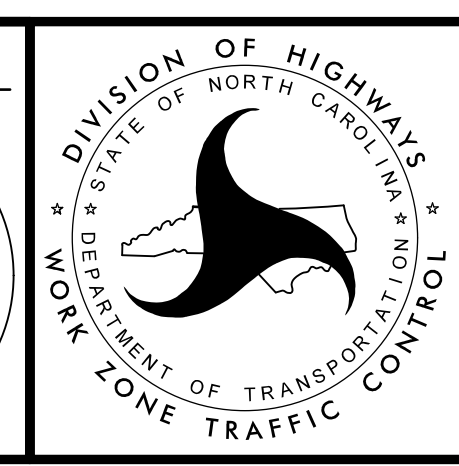
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ENGINEERING & CONSTRUCTION

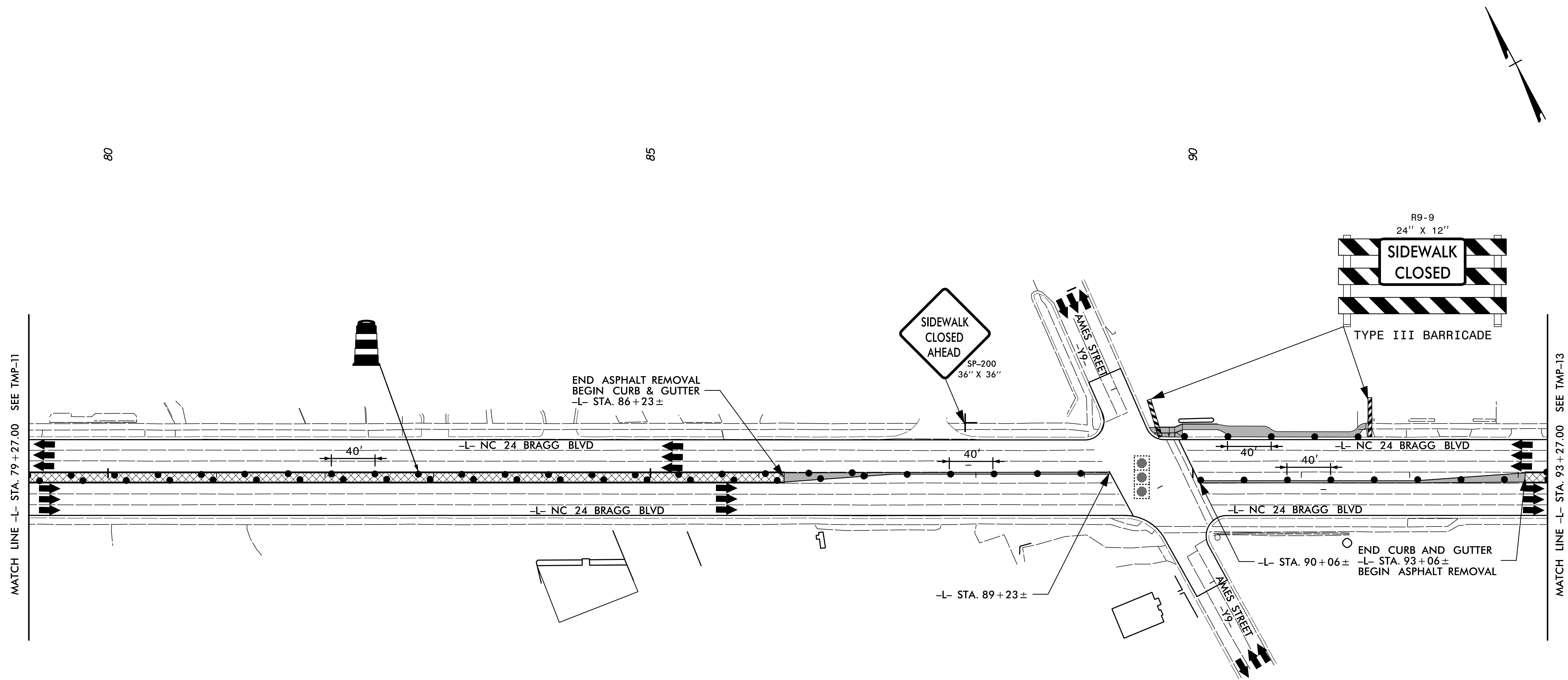
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DATE: 9/25/2015

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**STEP 4**



MATCH LINE -L- STA. 79+27.00 SEE TMP-11

MATCH LINE -L- STA. 93+27.00 SEE TMP-13

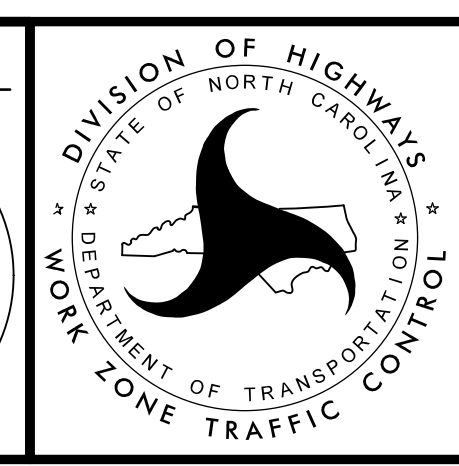
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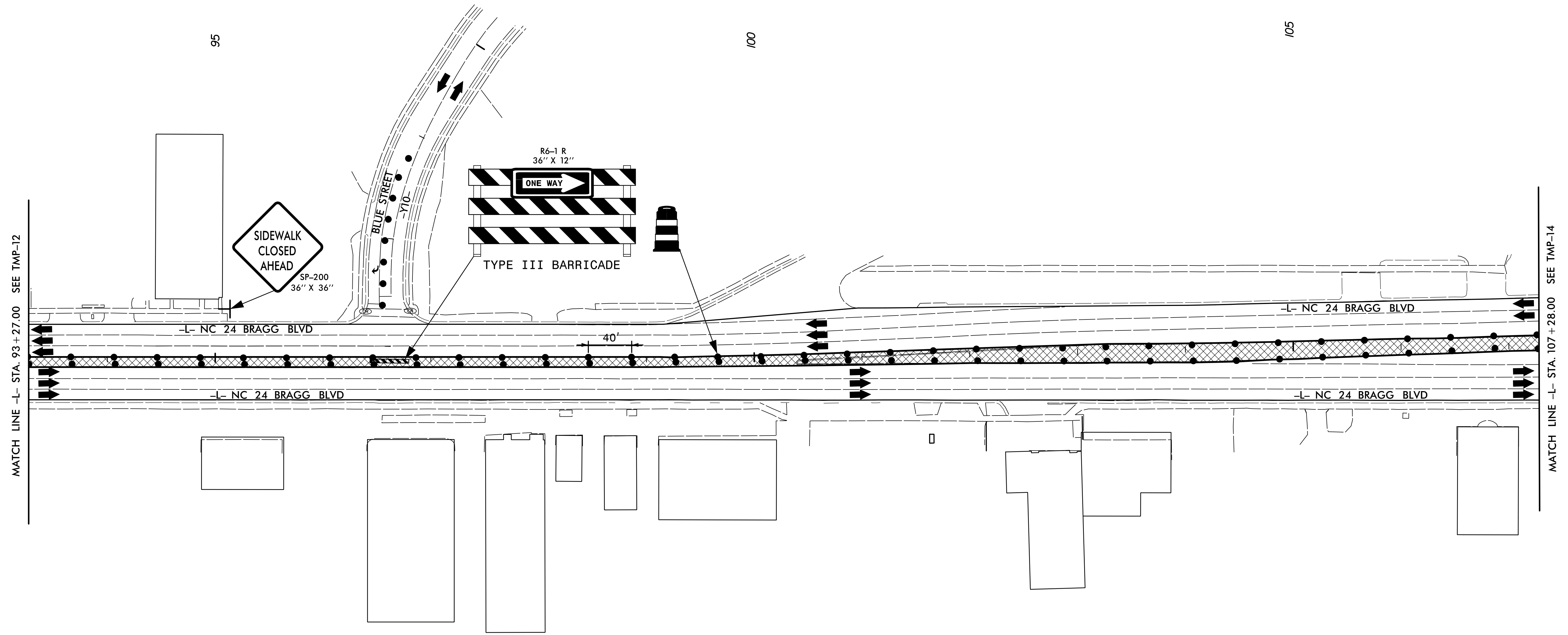
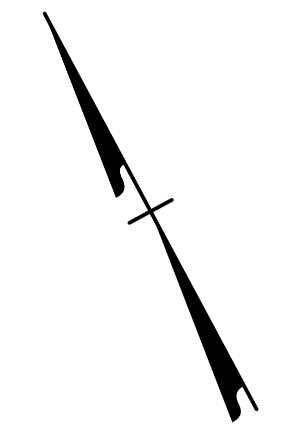
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STEP 4

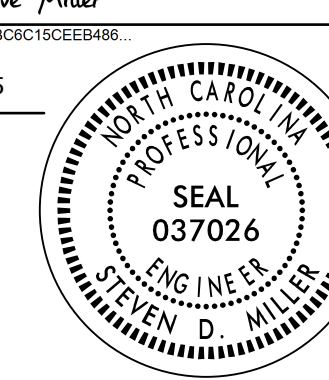
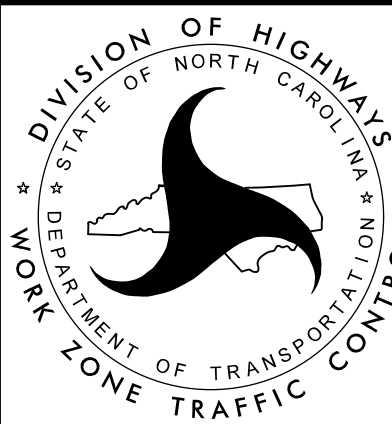




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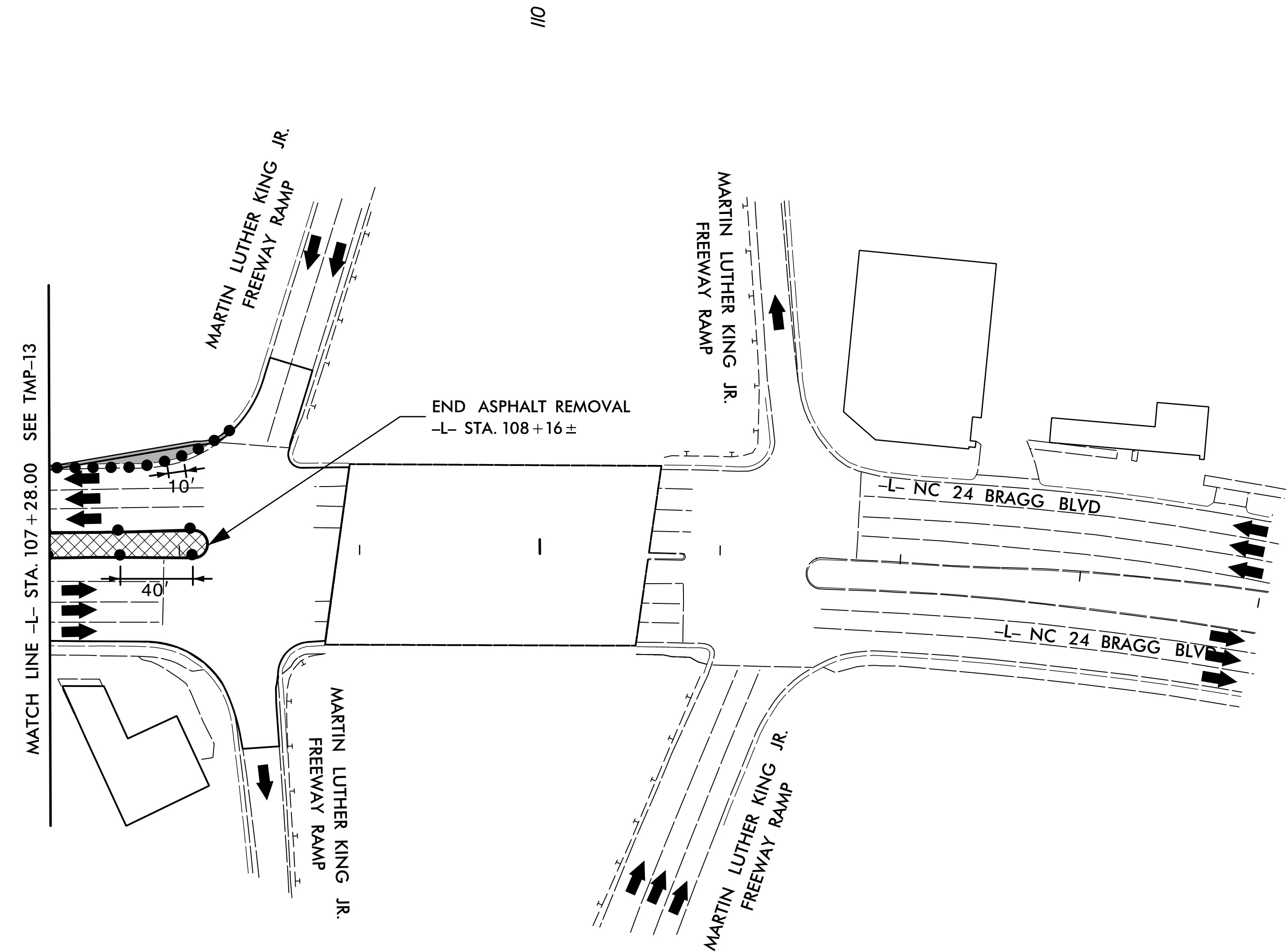
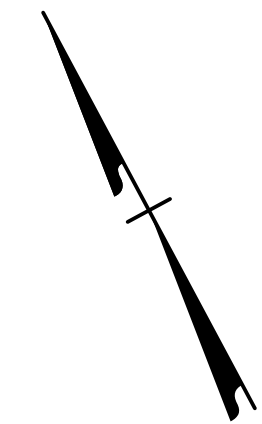

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DIVISION OF HIGHWAYS  
 NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 WORK ZONE TRAFFIC CONTROL

STEP 4




110

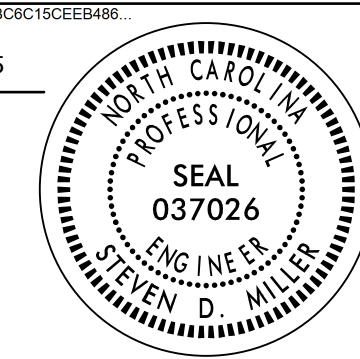
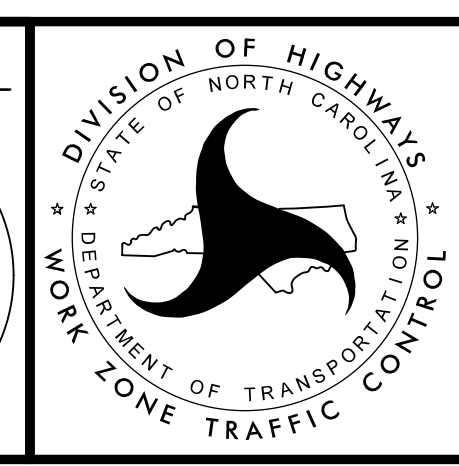
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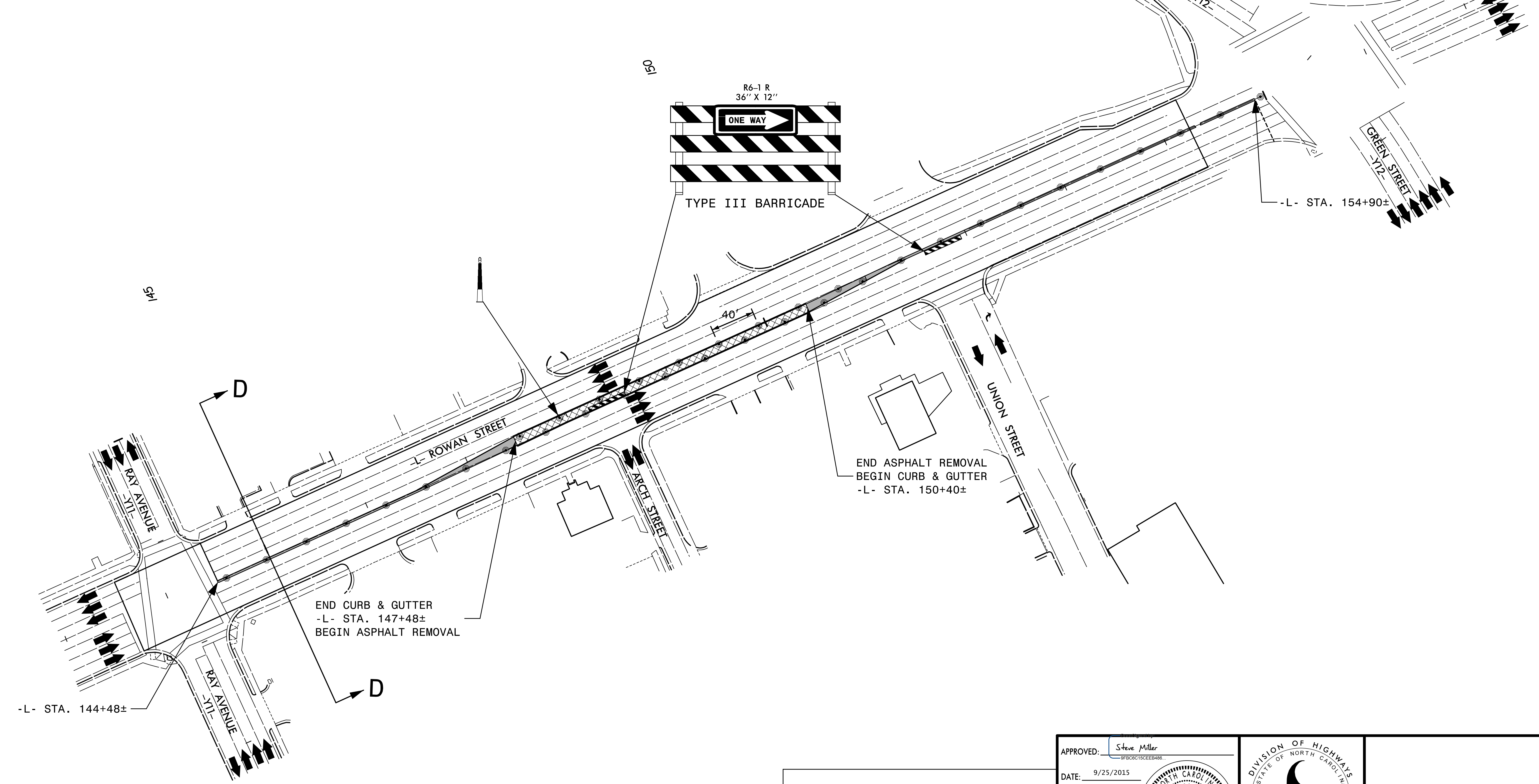
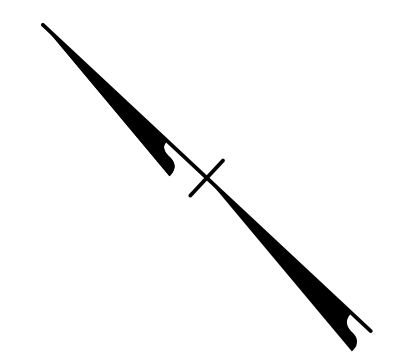
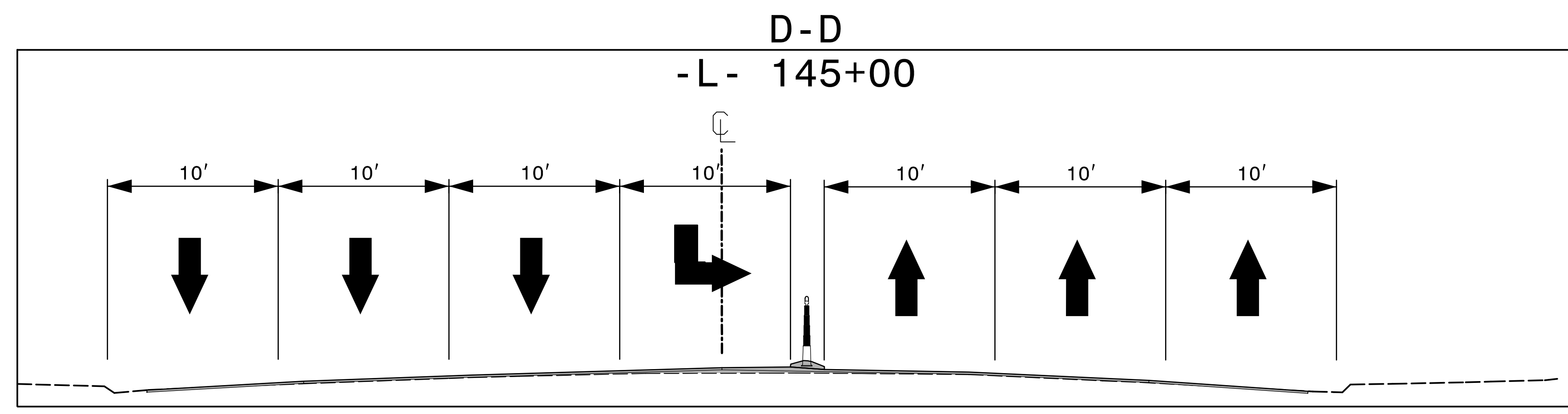
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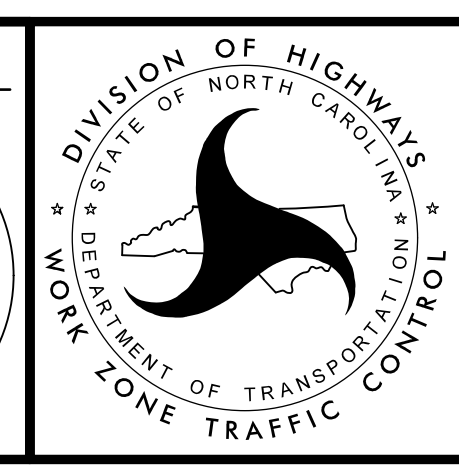
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**STEP 4**