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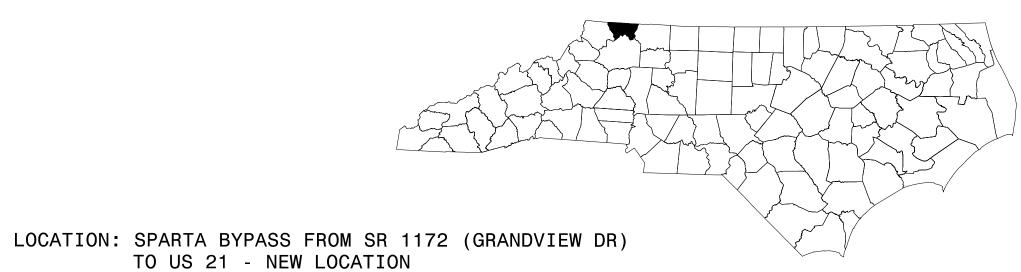
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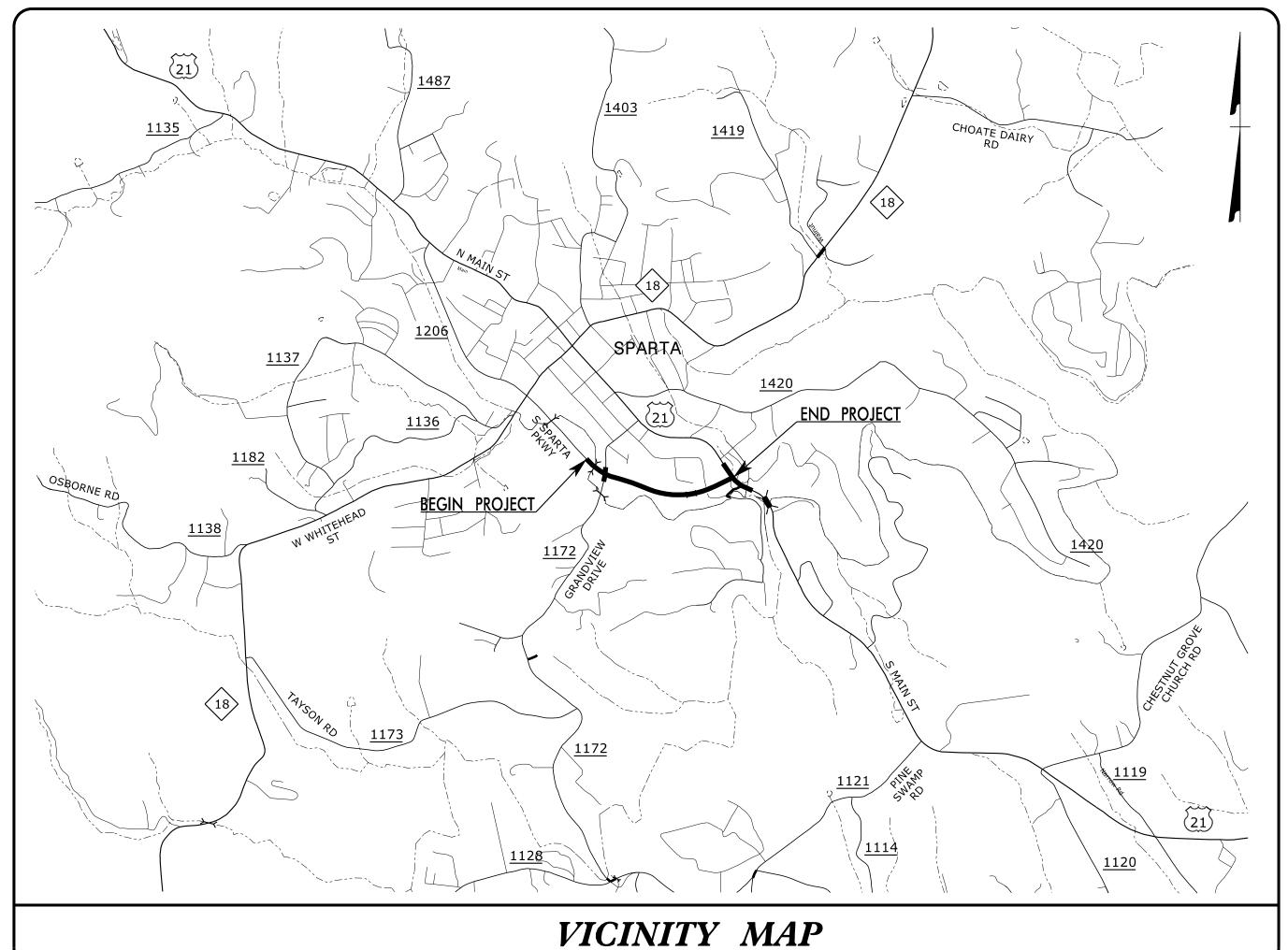
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### STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## TRANSPORTATION MANAGEMENT PLAN

# ALLEGHANY COUNTY





# WORK ZONE SAFETY & MOBILITY "from the MOUNTAINS to the COAST"

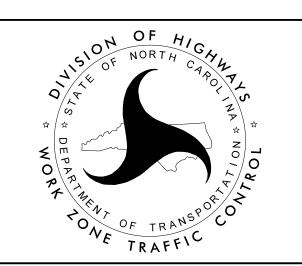
N.C.D.O.T. WORK ZONE TRAFFIC CONTROL 1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. S. BOURNE, P.E. J. W. WOOLARD, P.E.

R. M. GARRETT

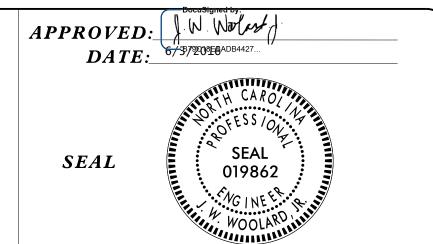
KEN BROADWELL

STATE TRAFFIC MANAGEMENT ENGINEER TRAFFIC CONTROL PROJECT ENGINEER TRAFFIC CONTROL PROJECT DESIGN ENGINEER TRAFFIC CONTROL DESIGN ENGINEER



#### INDEX OF SHEETS

SHEET NO.	<u>TITLE</u>
TMP - 1	TITLE SHEET, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING SCHEDUL
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES AND LOCAL NOTES)
TMP-2	TEMPORARY SHORING NOTES
TMP-2A	PHASING
TMP-3	PHASE I DETAILS
TMP-4	PHASE I DETAILS
TMP-5	PHASE I DETAILS
TMP-6	PHASE I DETAILS
TMP-7	PHASE II DETAILS
TMP-8	PHASE II TEMPORARY TRAFFIC CONTROL ACCESSIBILITY NARRATIVE



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ACCESSIBILITY NAKKALIAF

#### 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
1101.03	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
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1170.01	POSITIVE PROTECTION
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

PROJ. REFERENCE NO. SHEET NO. TMP - 1A

#### **LEGEND**

#### **GENERAL**

DIRECTION OF TRAFFIC FLOW

----- EXIST. PVMT.

NORTH ARROW

PROPOSED PVMT.

WORK AREA

#### PAVEMENT MARKINGS

——EXISTING LINES
——TEMPORARY LINES

#### TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

CONE

SKINNY DRUM

FLAGGER

#### TEMPORARY SIGNING

O PORTABLE SIGN

├─ STATIONARY SIGN

STATIONARY OR PORTABLE SIGN

#### PAVEMENT MARKERS

CRYSTAL/CRYSTAL

CRYSTAL/RED

◆ YELLOW/YELLOW

#### TEMPORARY PAVEMENT MARKING

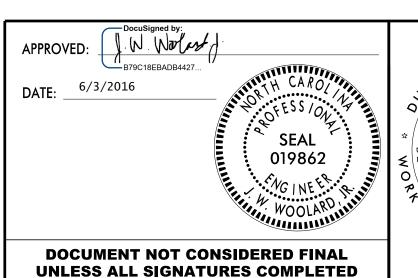
A" PAINT WHITE EDGELINE

PI 4" PAINT DOUBLE YELLOW CENTERLINE

P8 4" PAINT 2'-6' SP MINI-SKIP

#### TEMPORARY PAVEMENT MARKERS

MA) YELLOW/YELLOW TEMPORARY RAISED PAVEMENT MARKER



NORTH CAPOLON OF TRANSPOROLON TRAFFIC

ROADWAY STANDARD DRAWINGS & LEGEND

#### MANAGEMENT STRATEGIES

THE MAJORITY OF THIS PROJECT WILL BE CONSTRUCTED AWAY FROM TRAFFIC.

FLAGGING OPERATIONS WILL BE USED TO CLOSE LANES WITH WORK TO OCCUR BEHIND DRUMS. TRAFFIC TO RETURN TO NORMAL PATTERN AT THE END OF EACH WORK DAY.

-Y2- TRAFFIC WILL BE PLACED IN A 1 LANE X 2 WAY PATTERN USING PORTABLE SIGNALS WITH CONSTRUCTION OF RETAINING WALLS 3 AND 4 OCCURING BEHIND PORTABLE CONCRETE BARRIER.

BALLPARK ROAD WILL BE PERMANENTLY SEVERED WITH REMAINING ACCESS FROM EACH END OF THE ROAD. TYPE III BARRICADES AND WARNING SIGNS WILL USED TO NOTIFY TRAFFIC. A SIGNED DETOUR WILL NOT BE PROVIDED DUE TO THE CLOSURE BEING PERMANENT.

#### GENERAL NOTES / LOCAL NOTES

TRAFFIC PATTERN ALTERATIONS

H) NOTIFY THE ENGINEER TWE

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

PROJ. REFERENCE NO.

R-4060

MARKER

SHEET NO.

TMP-1B

#### SIGNING

- INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- J) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

#### TRAFFIC CONTROL DEVICES

- K) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.
- L) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

#### PAVEMENT MARKINGS AND MARKERS

ROAD NAME

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

MARKING

<del></del>		
ALL ROADS	PAINT	TEMPORARY RAISED

- N) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
- O) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- P) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

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

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

ENGINEER.

A) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS	DURATION AND OPERATION
US-21 (-Y2-)	MONDAY THRU FRIDAY	15 MINUTES FOR TRAFFIC
	6:00 A.M 9:00 A.M.	SHIFTS, PAVEMENT TIE-INS,
	4:00 P.M 6:00 P.M.	PAVEMENT MARKING TIE-INS

#### LANE AND SHOULDER CLOSURE REQUIREMENTS

- B) 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.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- D) 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.

E) 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.

#### PAVEMENT EDGE DROP OFF REQUIREMENTS

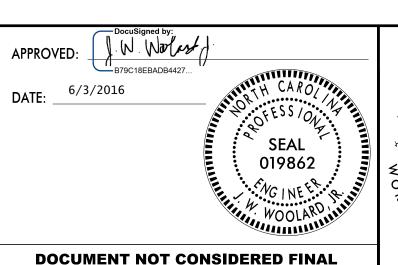
F) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

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

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

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

G) 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) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.



**UNLESS ALL SIGNATURES COMPLETED** 



TRANSPORTATION
OPERATIONS
PLAN

er:kbroadwell

PROJ. REFERENCE NO.	SHEET NO.
R-4060	TMP-2

Shoring Location No. 1

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

EXISTING UNDERGROUND UTILITIES MAY BE LOCATED IN THE EXISITNG ROADWAY IN THE VICINITY OF THE TEMPORARY SHORING FROM STATION 15+19 -Y2-, 27.2 FT (LT), TO STATION 17+20 -Y2-, 30.0 FT (LT) AND SHOULD IDENTIFIED PRIOR TO DESIGN.

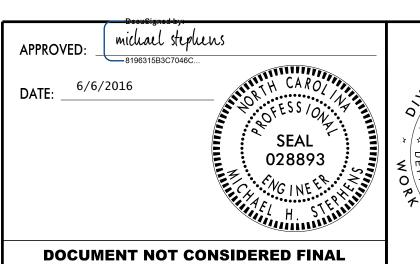
DESIGN TEMPORARY SHORING FROM STATION 15+19 -Y2-, 27.2 FT (LT), TO STATION 17+20 -Y2-, 30.0 FT (LT), FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT  $(\gamma)$  = 120 LB/CF FRICTION ANGLE  $(\phi)$  = 30 DEGREES GROUNDWATER ELEVATION = 2,761.0 FT

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 15+19 -Y2-, 27.2 FT (LT), TO STATION 17+20 -Y2-, 30.0 FT (LT). THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 15+19 -Y2-, 27.2 FT (LT), TO STATION 17+20 -Y2-, 30.0 FT (LT) MAY NOT PENETRATE BELOW ELEVATION 2,770 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION 15+19 -Y2-, 27.2 FT (LT), TO STATION 17+20 -Y2-, 30.0 FT (LT). FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.



**UNLESS ALL SIGNATURES COMPLETED** 



TEMPORARY SHORING NOTES

OJ. REFERENCE NO.	SHEET NO.
R-4060	TMP-2A

#### PHASE I

STEP 1: INSTALL ADVANCE WORK ZONE WARNING SIGNS ALONG -L- (SOUTH SPARTA PARKWAY), -Y- (GRANDVIEW DRIVE), -Y1- (BALLPARK ROAD) AND -Y2- (US-21) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1101.01 SHEET 3 OF 3.

#### STEP 2:

A. USING FLAGGING OPERATIONS PER ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 15:

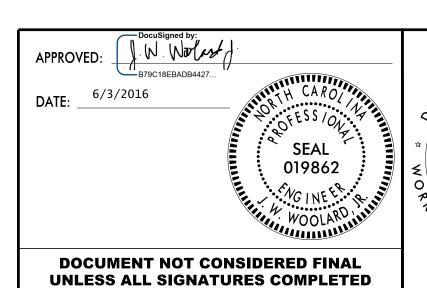
- CONSTRUCT NCDOT SERVICE ROAD TIE IN TO GRANDVIEW DRIVE (-Y-) AS SHOWN ON SHEET TMP-4 AND AWAY FROM TRAFFIC CONSTRUCT THE NCDOT SERVICE ROADS AS SHOWN ON SHEETS TMP-4 AND TMP-5 THEN OPEN TO TRAFFIC.
- CONSTRUCT TURN AROUNDS AT -Y1- (BALLPARK ROAD) UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE THEN CLOSE -Y1 (BALLPARK ROAD). SEE SHEETS TMP-5 AND TMP-6.
- CONSTRUCT -L- MODIFICATIONS FROM STA. 10+00 -L- (SOUTH SPARTA PARKWAY) TO -Y- (GRANDVIEW DRIVE) UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE. SEE SHEET TMP-3.
- CONSTRUCT -Y- (GRANDVIEW DRIVE) MODIFICATIONS UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE FROM STA. 13+00 -Y- TO STA. 15+15 -Y-. SEE SHEET TMP-3.
- CONSTRUCT WEST SIDE WIDENING -Y2- (US-21) AND RESURFACING UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE FROM STA. 13+00 -Y2-TO STA. 22+00 -Y2- (SEE SHEET TMP-6) AND INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY RAISED PAVEMENT MARKERS TO THE PATTERN SHOWN ON SHEET TMP-7.

ENSURE TURN AROUNDS AT -Y1- (BALLPARK ROAD) HAVE BEEN CONSTRUCTED PRIOR TO ANY WORK BEGINNING ON -L- FROM STA. 37+50 -L- TO STA. 39+50 -L-.

B. AWAY FROM TRAFFIC BEGIN CONSTRUCTION OF -L- (SOUTH SPARTA PARKWAY) FROM -Y- (GRANDVIEW DRIVE) TO -Y2- (US-21) UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

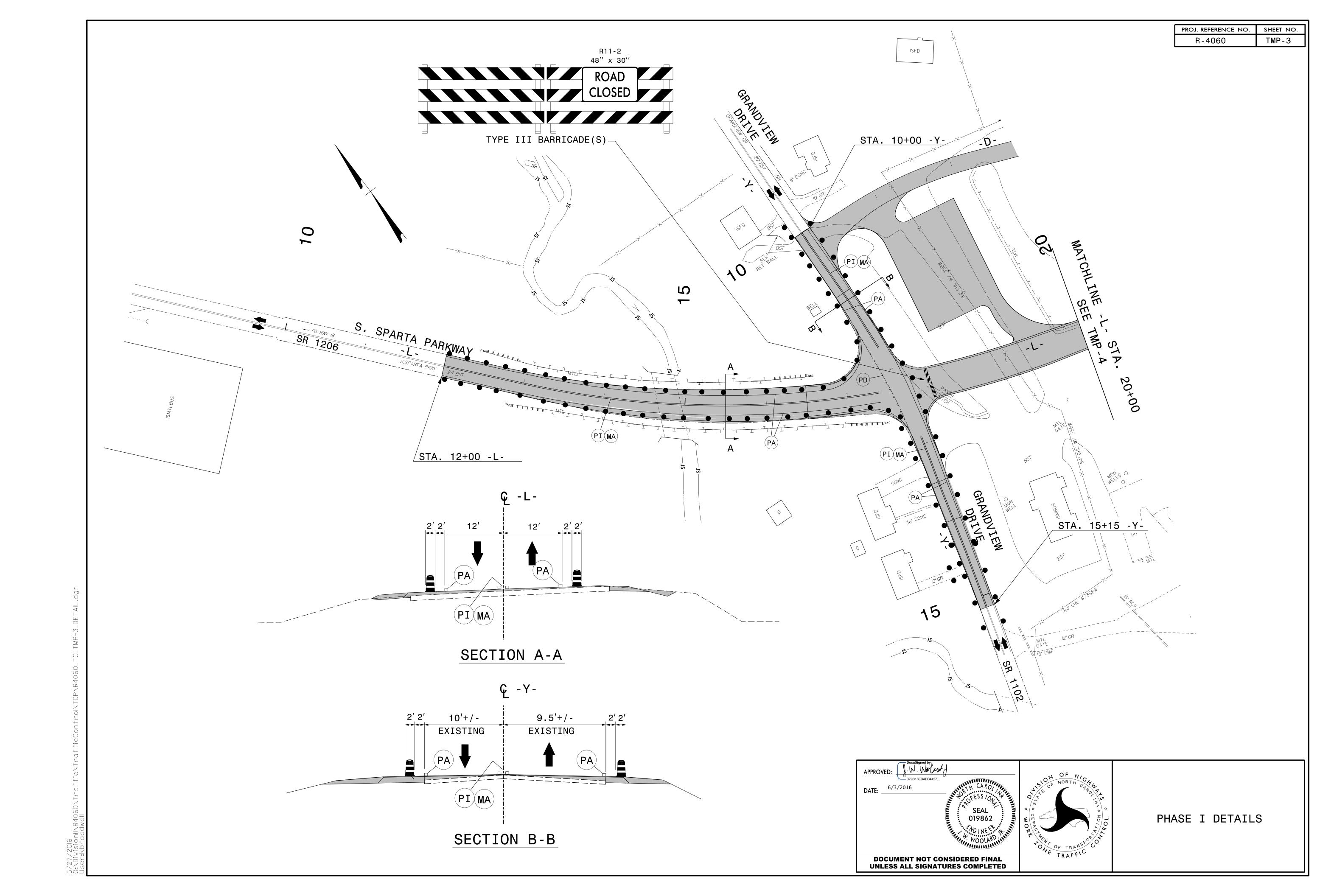
#### PHASE II

- STEP 1: USING FLAGGING OPERATIONS PER ROADWAY STANDARD DRAWING NUMBER 1101.02, SHEET 1 OF 15 INSTALL PORTABLE CONCRETE BARRIER, TEMPORARY PAVEMENT MARKINGS AND TEMPORARY RAISED PAVEMENT MARKERS ON -Y2-. INSTALL/ACTIVATE TEMPORARY SIGNALS AND PLACE -Y2- TRAFFIC INTO A 1 LANE X 2 WAY PATTERN. INSTALL CMS, TYPE III BARRICADES AS SHOWN ON SHEETS TMP-7 AND TMP-8.
- STEP 2: AWAY FROM TRAFFIC BEHIND PORTABLE CONCRETE BARRIER AND SHEET TMP-7
  CONSTRUCT -Y2- (US-21) TEMPORARY SHORING, RETAINING WALLS # 3 AND #4,
  -Y2- EAST SIDE WIDENING AND ANY OTHER APPURTENANCES NECESSARY TO OPEN
  US-21 TO THE FINAL PATTERN.
- STEP 3: USING FLAGGING OPERATIONS PER ROADWAY STANDARD DRAWING 1101.02
  SHEET 1 OF 15 REMOVE THE PORTABLE CONCRETE BARRIER ON US-21(-Y2-),
  DEACTIVATE/REMOVE PORTABLE SIGNALS AND OPEN US-21 TO 2 LANE, 2 WAY
  PATTERN.
- STEP 4: USING FLAGGING OPERATIONS PER ROADWAY STANDARD DRAWING NO. 1101.02
  SHEET 1 OF 15 INSTALL THE FINAL LAYER OF SURFACE COURSE, FINAL PAVEMENT
  MARKINGS AND FINAL PAVEMENT MARKERS ON -L- (SOUTH SPARTA PARKWAY) FROM
  STA. 10+00 -L- TO -Y2- (US-21), ON GRANDVIEW DRIVE (-Y-) AND ON -Y2(US-21) AND OPEN PROJECT TO THE FINAL PATTERN (SEE FINAL PAVEMENT
  MARKING PLANS).
- STEP 5: REMOVE ANY REMAINING TRAFFIC CONTROL DEVICES.

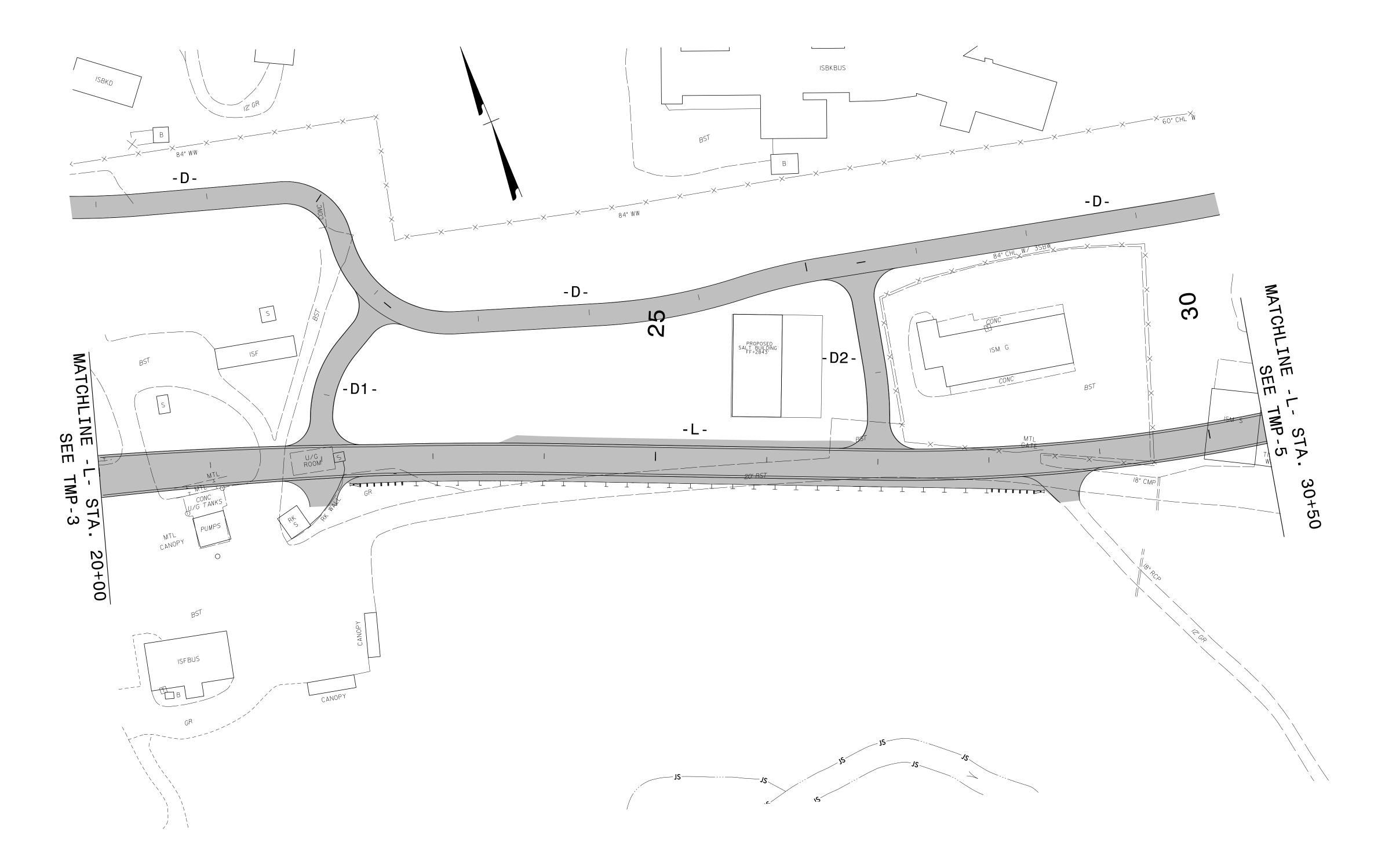


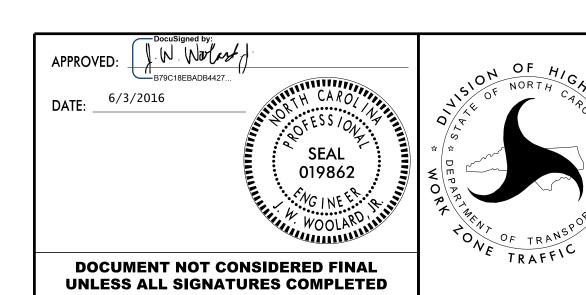
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PHASING



PROJ. REFERENCE NO. SHEET NO. TMP - 4

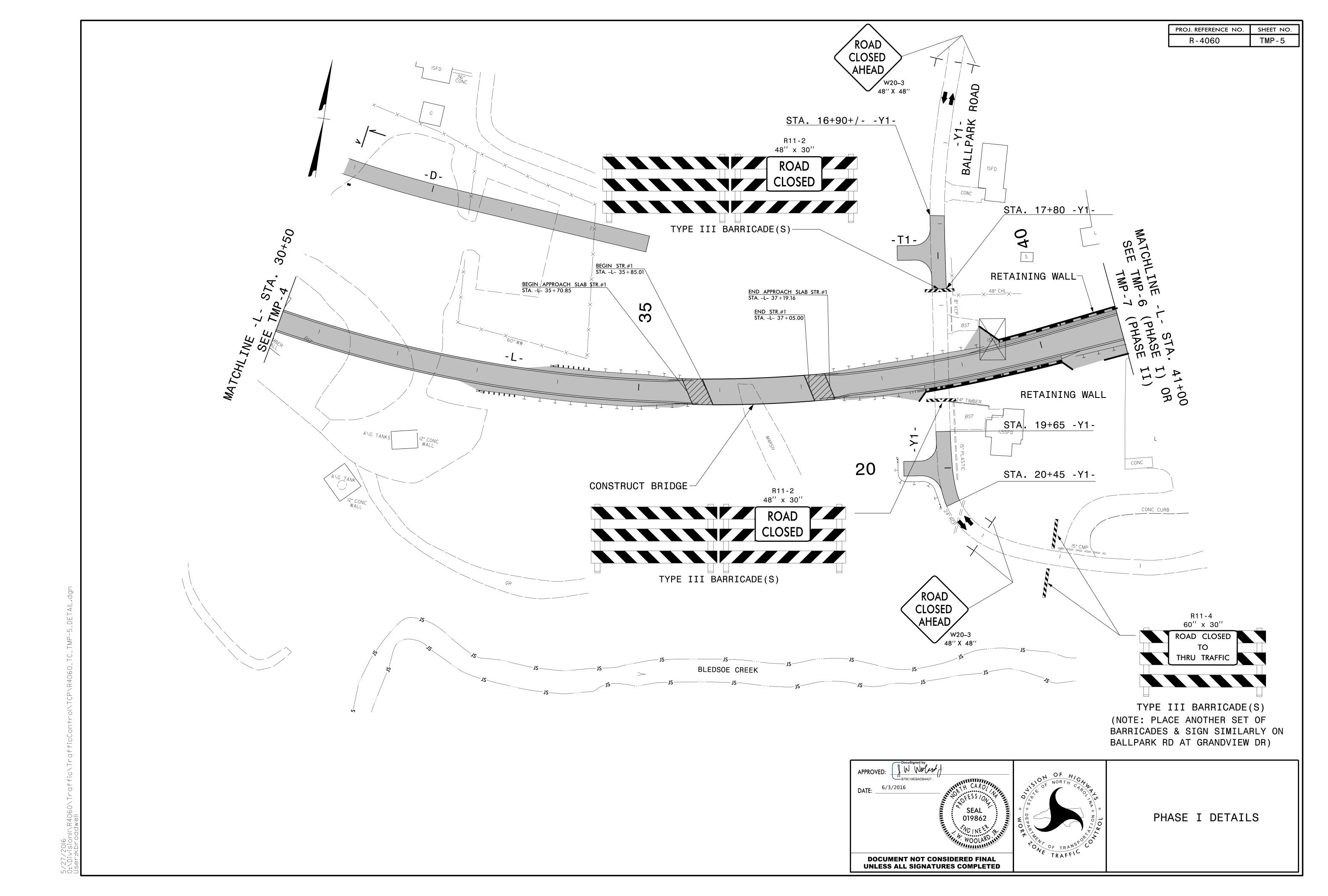


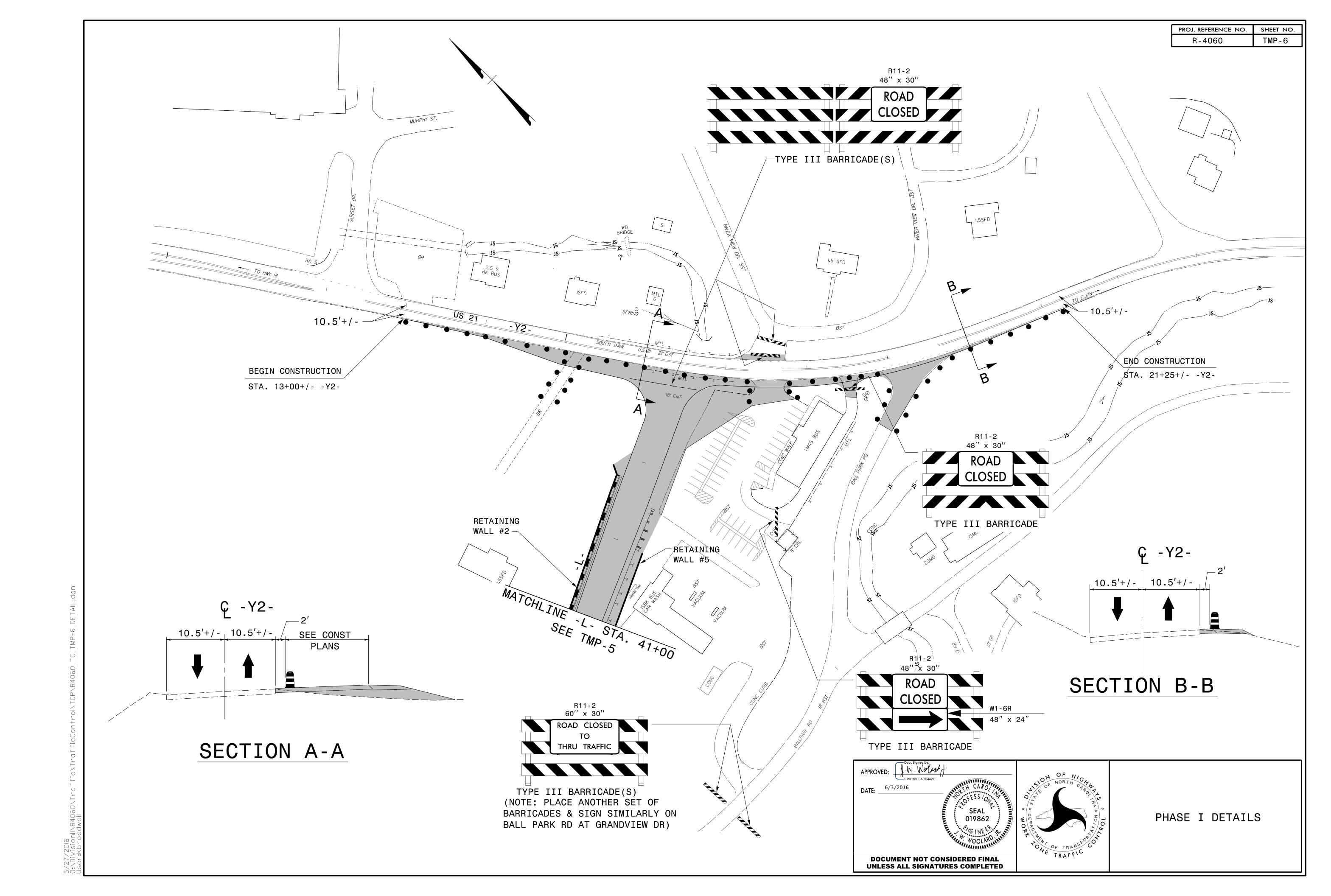


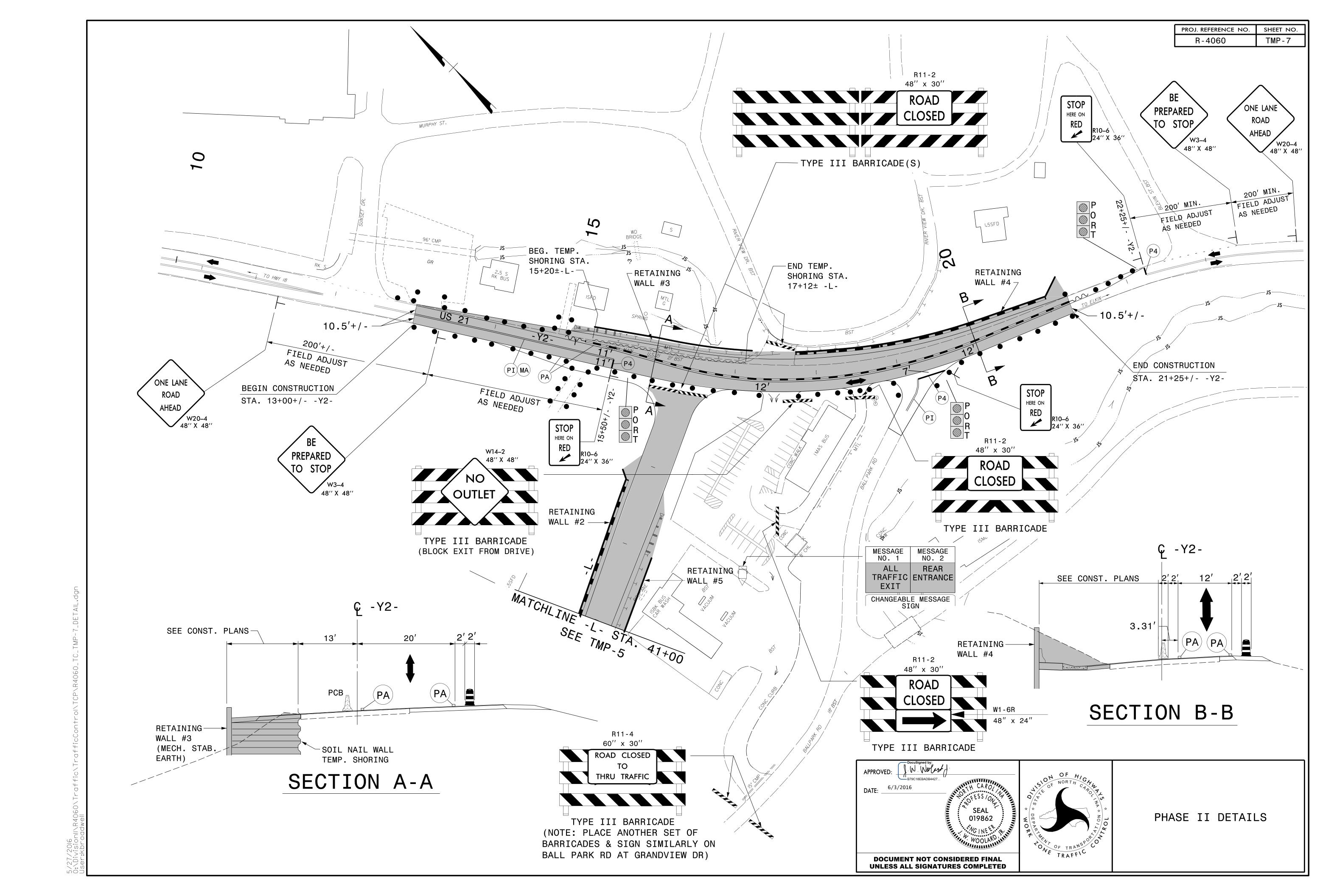
PHASE I DETAILS

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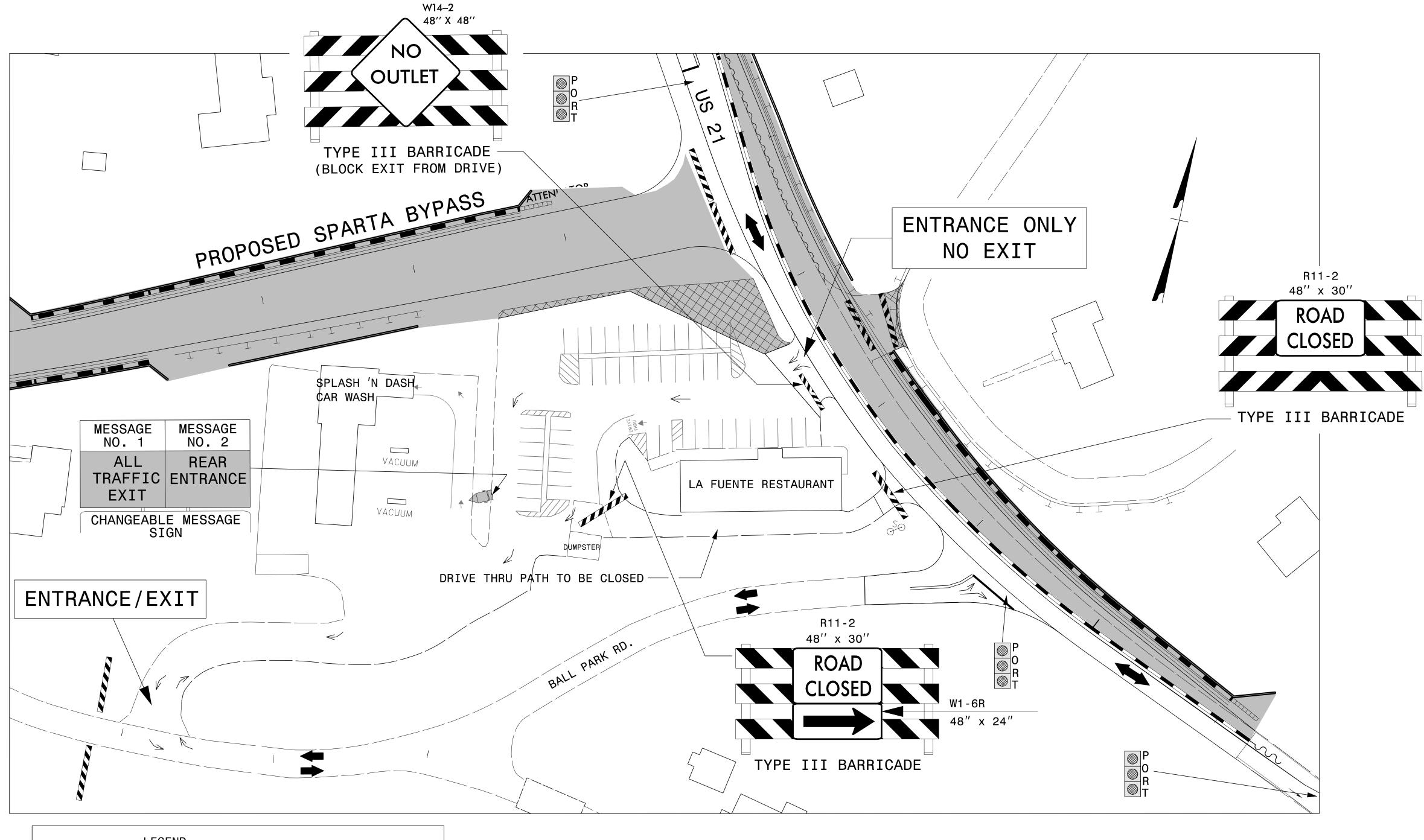
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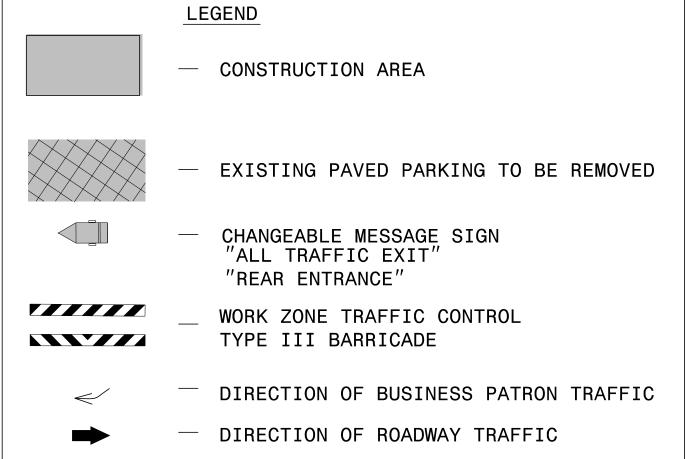






PROJ. REFERENCE NO. SHEET NO. TMP-8





#### NOTES

THE PURPOSE OF THIS DRAWING IS TO SHOW HOW TRAFFIC WILL BE HANDLED (IN PARKING AREAS) AT THE LA FUENTE RESTAURANT AND THE SPLASH 'N DASH CARWASH DURING PHASE II OF THE PROJECT WHEN US-21 TRAFFIC WILL BE PLACED IN A TEMPORARY ONE LANE X TWO WAY TRAFFIC PATTERN USING PORTABLE SIGNALS.



PHASE II
TEMPORARY TRAFFIC CONTROL
ACCESSIBILITY NARRATIVE