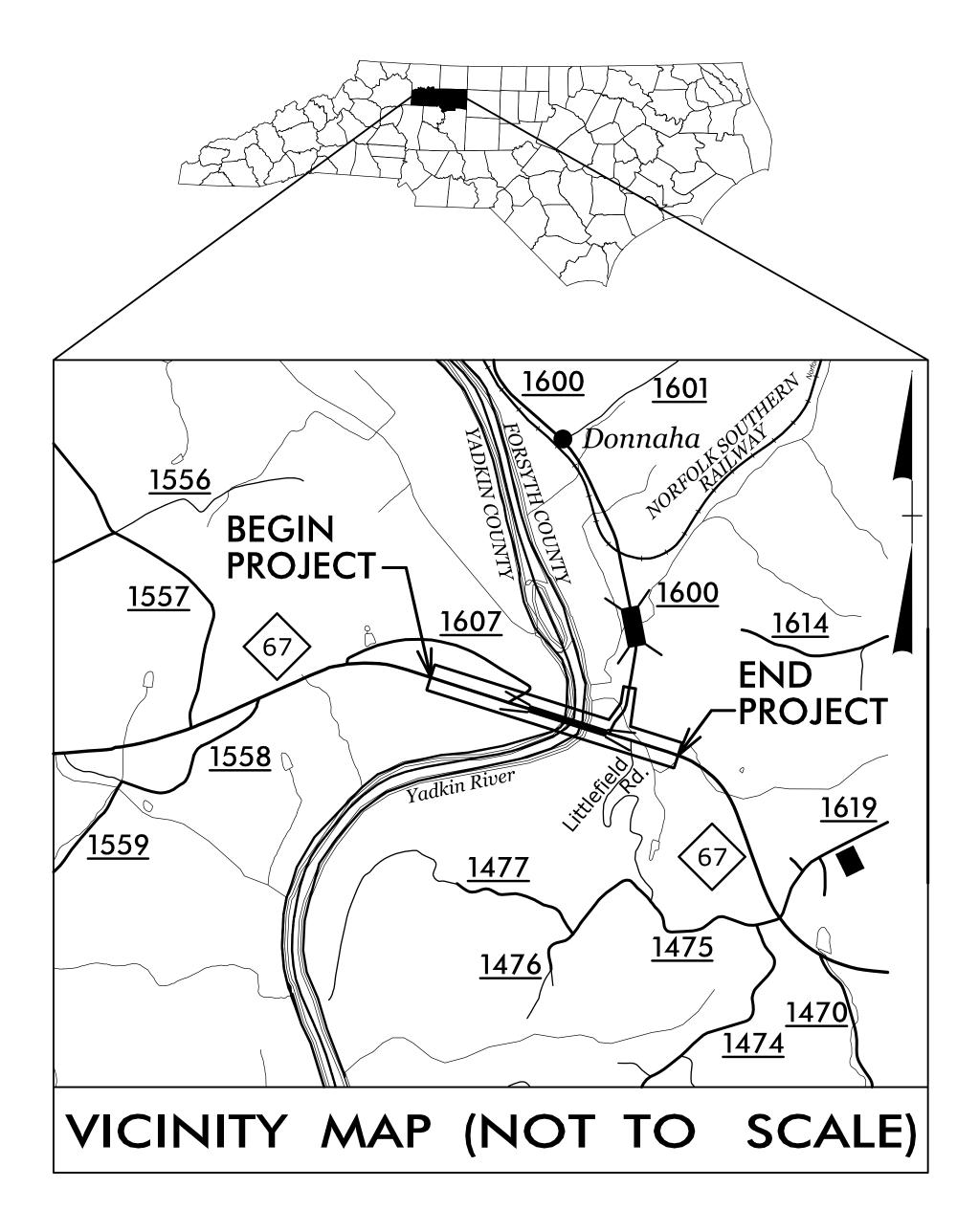
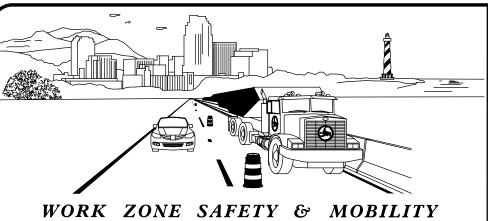
# TRANSPORTATION MANAGEMENT PLAN

# YADKIN & FORSYTH COUNTY

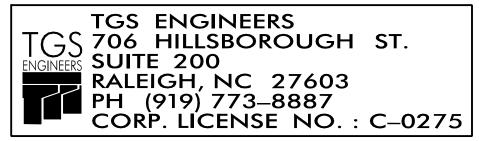


NCDOT CONTACT INFORMATION: (919) 707-6442 DAVID STUTTS, PE Structures Management Project Engineer

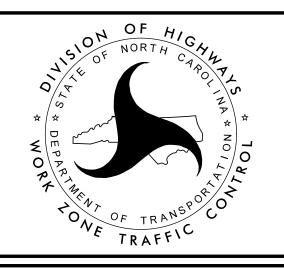


"from the MOUNTAINS to the COAST"

PLAN PREPARED FOR N.C.D.O.T. BY:



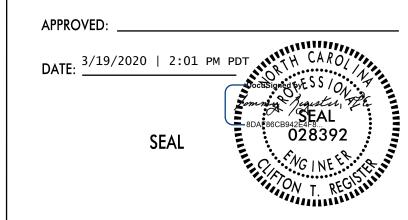
TOMMY REGISTER, PE \_ PROJECT ENGINEER DAVID WHITTINGTON, PE DESIGN ENGINEER



## INDEX OF SHEETS

SHEET NO.	<u>TITLE</u>
TMP - 1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING SCHEDULE
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (GENERAL NOTES)
TMP-1C	TRANSPORTATION OPERATIONS PLAN: (GENERAL NOTES, LOCAL NOTES, MANAGEMENT STRATEGIES, & PHASING)
TMP-1D	SPECIAL SIGN DESIGN
TMP-2	OFFSITE DETOUR ROUTE AND BARRICADE PLACEMENT
TMP-2A	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS DETAIL
TMP-2B	TEMPORARY SHORING NOTES
TMP-3-7	PHASE I DETAILS
TMP-8-11	PHASE II DETAILS

UNLESS ALL SIGNATURES COMPLETED



DOCUMENT NOT CONSIDERED FINAL

82

## 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 2018 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	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGERS
1165.01	TRUCK MOUNTED ATTENUATOR
1180.01	SKINNY DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
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

## **LEGEND**

PROJ. REFERENCE NO. SHEET NO.

B-5825 TMP-1A

TGS TGS ENGINEERS

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

### GENERAL

DIRECTION OF TRAFFIC FLOW

DIRECTION OF PEDESTRIAN TRAFFIC FLOW

——— EXIST. PVMT.

NORTH ARROW

PROPOSED PVMT.

WORK AREA

PAVEMENT REMOVAL

## SIGNALS

EXISTING PROPOSED

## 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

## TEMPORARY PAVEMENT MARKING

SYMBOL DESCRIPTION

PAINT (4")

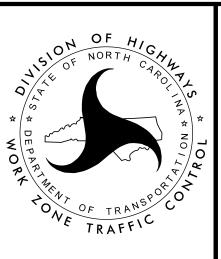
P1-E WHITE EDGELINE
P13-E YELLOW DOUBLE CENTER

PAINT (24")

P61-E WHITE STOPBAR

DATE:

| 3/19/2020 | 2:01 PM PDT | CARO
| COUNTY | CARO
| CARO
| COUNTY | CARO
| CARO
| COUNTY | CARO
|



ROADWAY STANDARD
DRAWINGS, LEGEND, &
TEMPORARY PAVEMENT
MARKING SCHEDULE

## GENERAL NOTES

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

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

#### TIME RESTRICTIONS

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

ROAD NAME

DAY AND TIME RESTRICTIONS

MONDAY-FRIDAY - 7:00 A.M.-9:00 A.M. & 4:00 P.M.-7:00 P.M. -L- (NC 67) -Y2- (SR 1600) MONDAY-FRIDAY - 7:00 A.M.-9:00 A.M. & 4:00 P.M.-7:00 P.M.

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

ROAD NAME

-L- (NC 67) -Y2- (SR 1600)

#### 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 7:00 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.
- 3. FOR EASTER, BETWEEN THE HOURS OF 7:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
- 4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 7:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
- 5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 7:00 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 7:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.

- 6. FOR LABOR DAY, BETWEEN THE HOURS OF 7:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.
- 7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 7:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.
- 8. FOR CHRISTMAS, BETWEEN THE HOURS OF 7:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.
- 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 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.
- 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 -L- AND ALL -Y- LINES.

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 S) 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.

TRAFFIC PATTERN ALTERATIONS

J) NOTIFY THE ENGINEER 30 CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

TGS ENGINEERS 706 HILLSBOROUGH ST. SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275

SHEET NO.

TMP-1B

PROJ. REFERENCE NO.

B-5825

INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN

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.

40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE

(3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

- COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION. COVER AND REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.
- P) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- 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

R) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT 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 TRANSPORTATION MANAGEMENT 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 TRANSPORTATION MANAGEMENT PLANS. TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

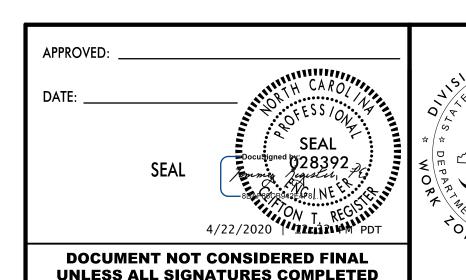
INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

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.

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 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: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM	OFFSE
40 OR LESS	15	FT
45 - 50	20	FT
55	25	FT
60 MPH or HIGHER	30	FT



TRANSPORTATION **OPERATIONS** PLAN

## GENERAL NOTES (CONT.)

#### TRAFFIC CONTROL DEVICES

- R) 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) FOR ADDITIONAL REQUIREMENTS.
- S) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.
- T) 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

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

ROAD NAME	MARKING	MARKER
-L- (NC 67)	PAINT	NONE
-Y1- (SR 1607)	PAINT	NONE
-Y2- (SR 1600)	PAINT	NONE

- V) 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.
- W) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

#### MISCELLANEOUS

Y) 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) 500 FT AND 500 FT RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

## LOCAL NOTES

ACCESS TO ALL DRIVEWAYS MUST BE PROVIDED AT ALL TIMES WITHIN THE PROJECT LIMITS.

UTILITY SERVICES SHALL BE MAINTAINED TO ALL FACILITIES DURING CONSTRUCTION.

PROVIDE ONE MONTH NOTICE TO THE ENGINEER, YADKIN/FORSYTH COUNTY EMERGENCY SERVICES, AND YADKIN/FORSYTH COUNTY SCHOOL OFFICIALS PRIOR TO CONSTRUCTION.

## **MANAGEMENT STRATEGIES**

THE CONSTRUCTION OF NC 67 (-L-) AND -Y- LINES WILL BE PERFORMED USING FLAGGERS, TEMPORARY LANE CLOSURES, AND A TEMPORARY LANE SHIFT.

## **PHASING**

## TGS ENGINEERS 706 HILLSBOROUGH ST. SUITE 200 RALEIGH, NC 27603

SHEET NO.

TMP-1C

PROJ. REFERENCE NO.

B-5825

# PH (919) 773-8887 CORP. LICENSE NO.: C-0275

## PHASE I

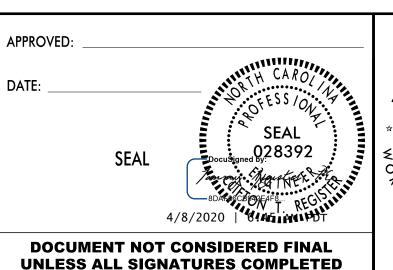
- STEP 1: USING ROADWAY STANDARD DRAWING (RSD) 1101.01, SHEETS 1 AND 3, INSTALL ALL ADVANCE WARNING SIGNING.
- STEP 2: AWAY FROM TRAFFIC AND USING RSD 1101.02 AND RSD 1101.04, CONSTRUCT -DRW2-. ONCE -DRW2- HAS BEEN CONSTRUCTED, SHIFT -Y1- TRAFFIC TO DETOUR AND CLOSE -Y1- AND -DRW2- TO TRAFFIC. SEE SHEET TMP-2 & TMP-4.
- STEP 3: USING RSD 1101.04, INSTALL THE TEMPORARY SHOULDER CLOSURE TO BE SET UP WITH STATIONARY SIGNS (SINCE LONG-TERM OPERATION). INSTALL PORTABLE CONCRETE BARRIER AS SHOWN ON SHEETS TMP-4 AND TMP-5. CONSTRUCT THE BRIDGE AND APPROACH WORK. INCLUDING PLACING TEMPORARY PAVEMENT MARKINGS. FROM -L-STA. 14+00(+/-) TO 41+00(+/-) AND -L- STA. 42+80(+/-) TO 54+00(+/-) UP TO BUT NOT INCLUDING THE FINAL LIFT OF SURFACE COURSE. ADDITIONALLY, USING RSD 1101.02 AND RSD 1101.04, CONSTRUCT -Y1-, -Y2-, AND -DRW1-; ACCESS MUST BE MAINTAINED AT ALL TIMES.

NOTE: DURING CONSTRUCTION OF -L- STA. 43+07 +/- TO 44+37 +/-, CONSTRUCT SUCH THAT TRANSITION CAN BE MADE TO EXISTING NC 67 DURING STEP 4. SEE SHEET TMP-7 AND TMP-1B, NOTES J, K, & O.

STEP 4: USING RSD 1101.02, CONSTRUCT TEMPORARY PAVEMENT ALONG THE SHOULDER OF EXISTING WESTBOUND -L- IN THE LOCATIONS SHOWN ON SHEET TMP-7. PLACE TEMPORARY PAVEMENT MARKINGS. SHIFT TRAFFIC TO NEWLY CONSTRUCTED PORTION OF -Y2- THEN CONSTRUCT THE REMAINING PORTION OF -L- FROM STA. 41+00(+/-) TO 42+80(+/-) UP TO BUT NOT INCLUDING THE FINAL LIFT OF SURFACE COURSE.

## PHASE II

- STEP 1: REMOVE -Y1- DETOUR AND SHIFT TRAFFIC TO NEWLY CONSTRUCTED PORTION OF -L-AND -Y1-. USING RSD 1101.02 AND 1101.04 AND SHIFTING TRAFFIC AS NECESSARY, PERFORM THE WEDGING AND MILLING WORK FROM -L- STA. 14+00 TO 21+87 AND STA. 47+60 TO 54+00, -Y1- STA. 10+00 TO 11+18.76, AND -Y2- STA. 12+00 TO 17+31.54 UP TO BUT NOT INCLUDING THE FINAL LIFT OF SURFACE COURSE. PLACE TEMPORARY PAVEMENT MARKINGS.
- STEP 2: USING RSD 1101.04, INSTALL THE TEMPORARY SHOULDER CLOSURE TO REMOVE THE EXISTING BRIDGE & APPROACHES AND PERFORM THE REMAINING GRADING AND DRAINAGE WORK SOUTH OF THE NEW -L- ALIGNMENT.
- STEP 3: USING RSD 1101.02, INSTALL THE FINAL LIFT OF SURFACE COURSE (EXCLUDING THE BRIDGE AND APPROACH SLABS) AND FINAL PAVEMENT MARKINGS FROM -L- STA. 14+00 TO 54+00, -Y1- STA. 10+25 TO 11+75.97, AND -Y2- STA. 12+00 TO 21+46.68. REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES AND SIGNS AND OPEN -L- AND ALL -Y- LINES TO THE FINAL TRAFFIC PATTERN.





TRANSPORTATION **OPERATIONS** PLAN

DocuSign Envelope ID: 602844A5-490D-4B28-B64D-7DF233858EEE

PROJ. REFERENCE NO. SHEET NO. B-5825 TMP-1D

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

BACKG COLOR: Orange SIGN NUMBER: DET-1 COPY COLOR: Black TYPE: D QUANTITY: SEE PLANS SYMBOL WID HT SIGN WIDTH: 3'-6" **HEIGHT: 2'-6"** TOTAL AREA: 8.8 Sq.Ft. **BORDER TYPE: FLUSH RECESS:** 0.375" WIDTH: 0.625" RADII: 1.5" MAT'L: 0.063" (1.6 mm) ALUMINUM NO. Z BARS: 0.080" (2.0 mm) ALUMINUM 0.125" (3.2 mm) ALUMINUM LENGTH:

**USE NOTES:** 

- 1. Legend and border(except those that are colored black) shall be direct applied Grade C sheeting.
- 2. Background shall be Grade B reflective sheeting.

DESIGN BY: PAS CHECKED BY: May 31, 2019 **LOCATION:** DIV: 9 & 11 PROJECT ID: B-5825



TH=0.63"

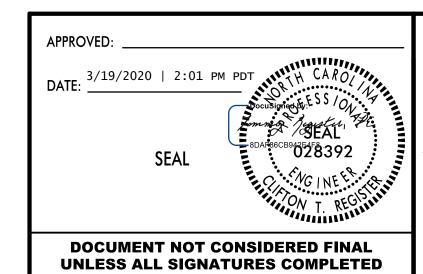
IN=0.38" Panel Style: Traffic Control.ssi M.U.T.C.D.: 2009 Edition

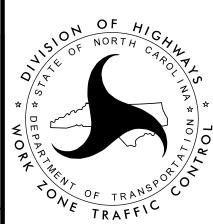
Spacing Factor is 1 unless specified otherwise

## LETTER POSITIONS

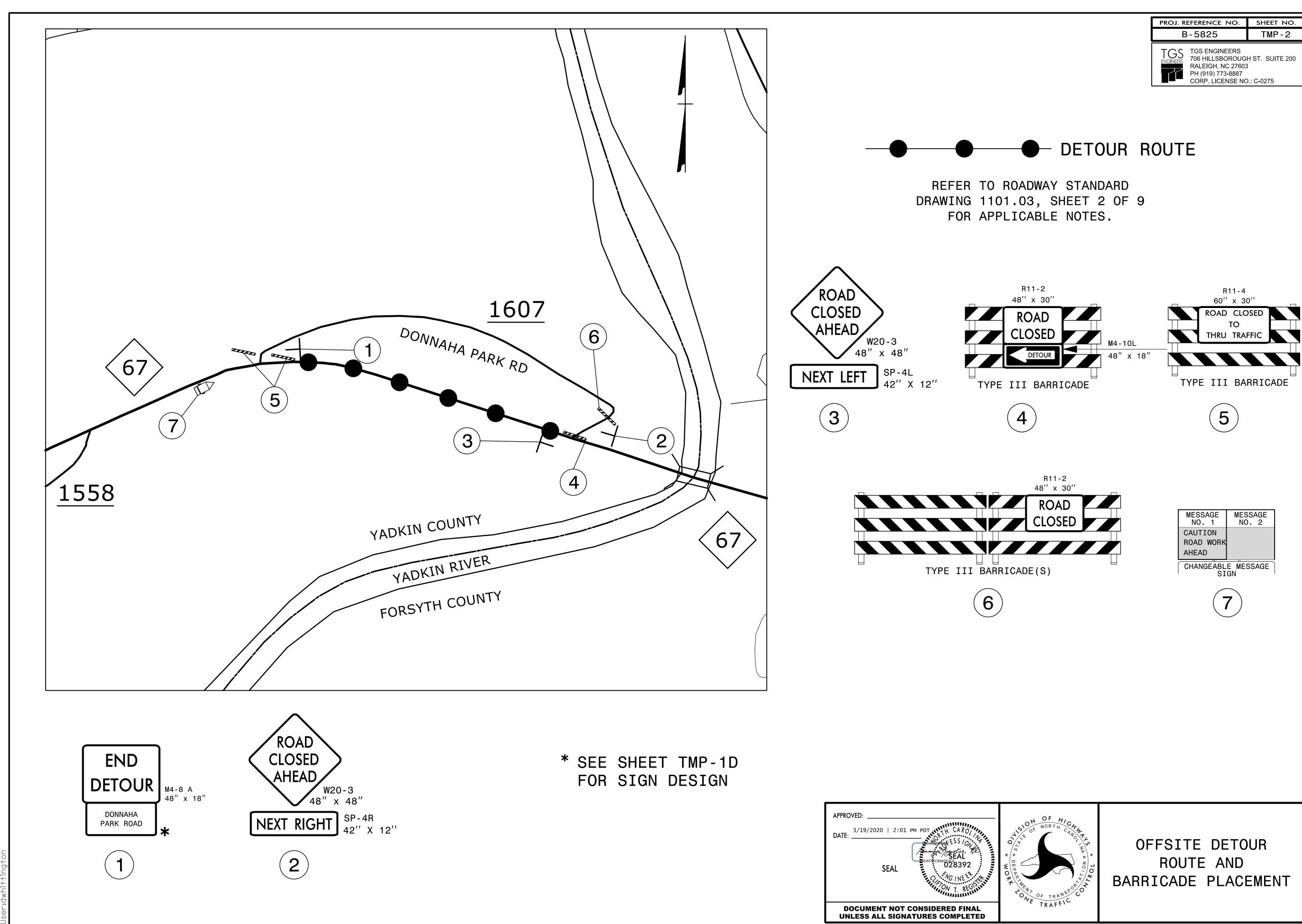
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5.6	10.1	14.8	19.5	23.7	28.4	32.6											30
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1.5	5.6	10.2	14.6	18	24	28.2	32.5	37.2									39
			1														

FILENAME: B-5825\_TC\_TMP\_01D(SD) NORTH CAROLINA D.O.T. SIGN DETAIL





SPECIAL SIGN DESIGN



SHEET NO.

TMP-2

R11-4 60" x 30"

(5)

MESSAGE NO. 2

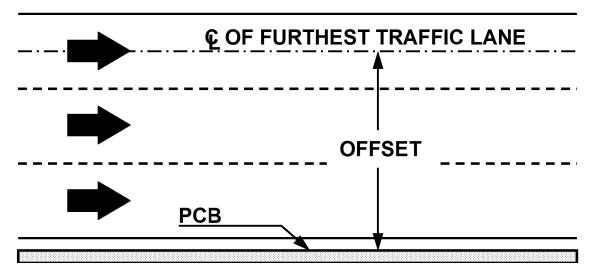
# FIGURE A

## **NOTES**

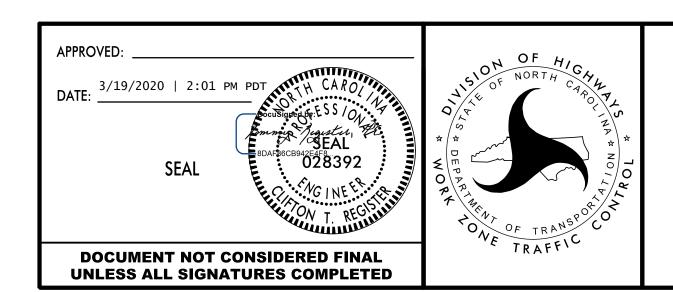
- 1- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.
- 2- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).
- 3- PCB IS REQUIRED IF TEMPORARY SHORING IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT UNIT FOR APPLICABLE PAVEMENT DESIGN).
- 4- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.
- 5- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.
- 6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.
- 7- PCB REQUIREMENTS FOR TEMPORARY WALLS APPLY TO TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS AND TEMPORARY SOIL NAIL WALLS.
- 8- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS AND OR AS APPROVED BY THE ENGINEER.
- 9- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THESE MINIMUM REQUIRED DISTANCES ARE NOT AVAILABLE, CONTACT THE ENGINEER.
- 10- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS. BARRIER DEFLECTIONS AND RESULTING MINIMUM REQUIRED CLEAR DISTANCES MIGHT VARY SIGNIFICANTLY FOR LARGER HEAVIER VEHICLES, RUNS OF BARRIER LESS THAN 200 FT IN LENGTH AND WET OR DRY PAVEMENT.

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

<sup>\*</sup> See Figure Below



## FIGURE B



PORTABLE CONCRETE BARRIER TEMPORARY SHORING LOCATIONS

## TEMPORARY SHORING NOTES

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.

DESIGN TEMPORARY SHORING FROM STATION 29+00, 25 FT RIGHT, TO STATION 29+55, 25 FT RIGHT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT  $(\gamma)$  = 120 PCF FRICTION ANGLE  $(\varphi)$  = 30 DEGREES COHESION (c) = 0 PSF GROUNDWATER ELEVATION = 743.8 FT

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 29+00, 25 FT RIGHT, TO STATION 29+55, 25 FT RIGHT. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 29+00, 25 FT RIGHT, TO STATION 29+55, 25 FT RIGHT MAY NOT PENETRATE BELOW ELEVATION 720.5 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

SHORING LOCATION NO. 2

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.

DESIGN TEMPORARY SHORING FROM STATION 39+65, 25 FT RIGHT, TO STATION 40+25, 25 FT RIGHT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT  $(\gamma)$  = 120 PCF FRICTION ANGLE  $(\varphi)$  = 30 DEGREES COHESION (c) = 0 PSF GROUNDWATER ELEVATION = 737.6 FT

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 39+65, 25 FT RIGHT, TO STATION 40+25, 25 FT RIGHT. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 39+65, 25 FT RIGHT, TO STATION 40+25, 25 FT RIGHT MAY NOT PENETRATE BELOW ELEVATION 728.5 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

SHORING LOCATION NO. 3

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.

DESIGN TEMPORARY SHORING FROM STATION 29+00, 24 FT RIGHT, TO STATION 29+55, 24 FT RIGHT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT  $(\gamma)$  = 120 PCF FRICTION ANGLE  $(\varphi)$  = 30 DEGREES COHESION (c) = 0 PSF GROUNDWATER ELEVATION = 743.8 FT

AT THE CONTRACTOR\*S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 29+00, 24 FT RIGHT, TO STATION 29+55, 24 FT RIGHT. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

WHEN BACKFILL FOR BRIDGE APPROACH FILLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR BRIDGE APPROACH FILLS, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

SHORING LOCATION NO. 4

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

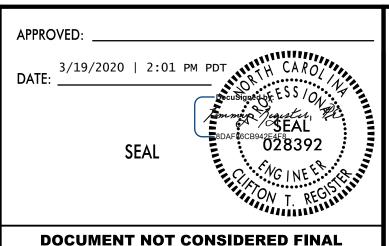
BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING FROM STATION 39+65, 24 FT RIGHT, TO STATION 40+25, 24 FT RIGHT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

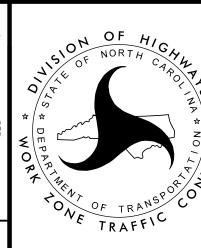
UNIT WEIGHT  $(\gamma)$  = 120 PCF FRICTION ANGLE  $(\phi)$  = 30 DEGREES COHESION (c) = 0 PSF GROUNDWATER ELEVATION = 737.6 FT

AT THE CONTRACTOR\*S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 39+65, 24 FT RIGHT, TO STATION 40+25, 24 FT RIGHT. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

WHEN BACKFILL FOR BRIDGE APPROACH FILLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR BRIDGE APPROACH FILLS, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

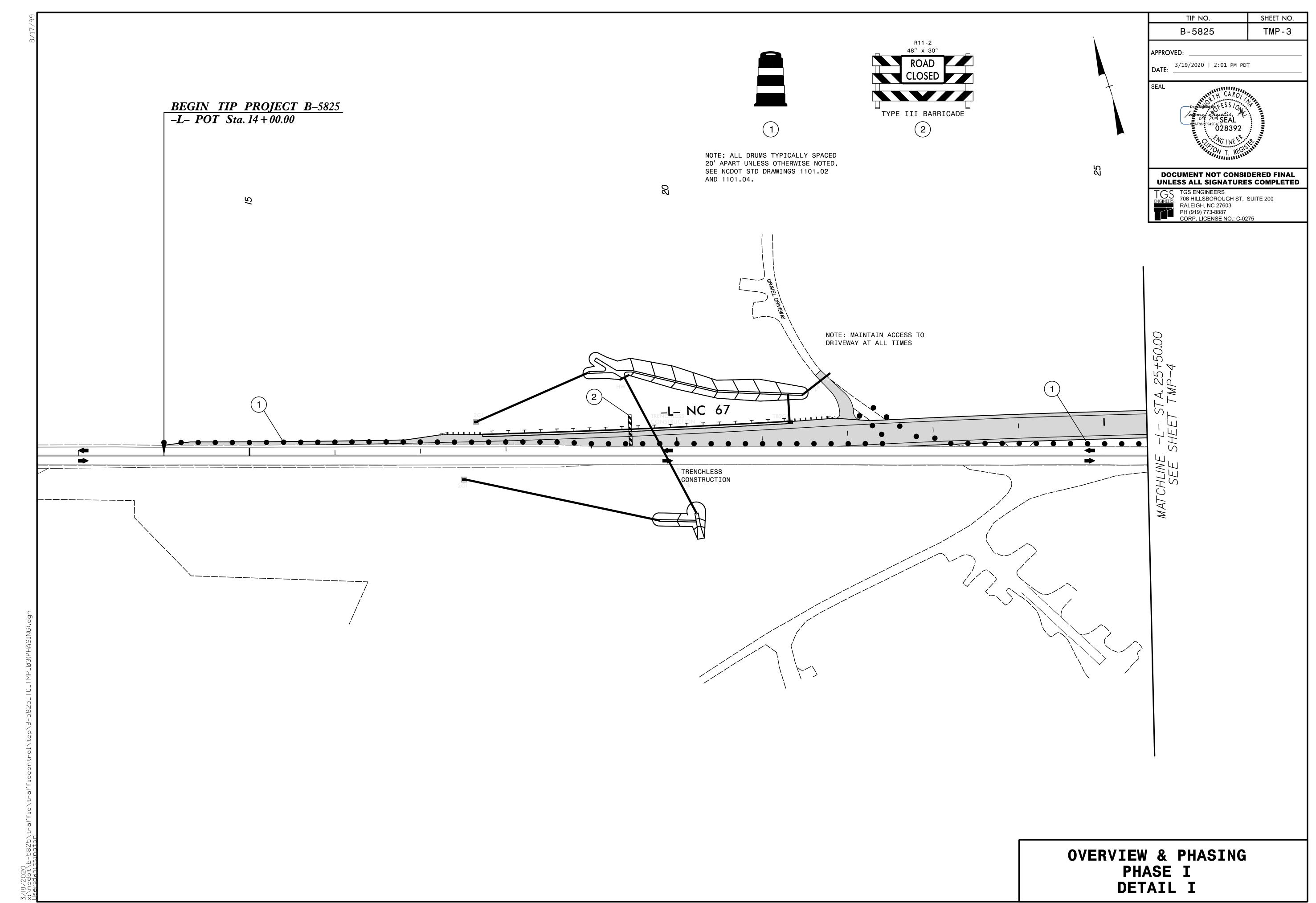


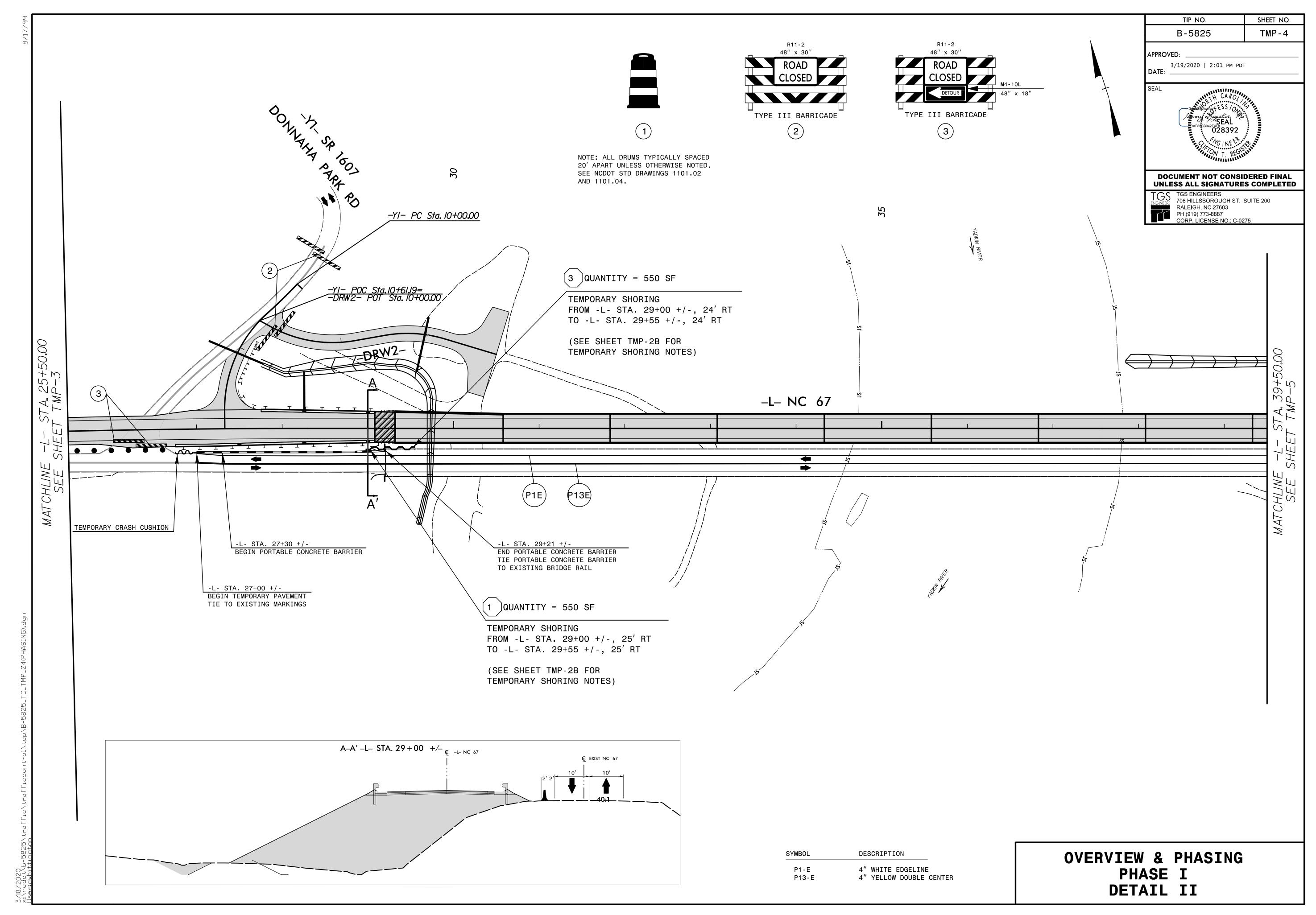
**UNLESS ALL SIGNATURES COMPLETED** 

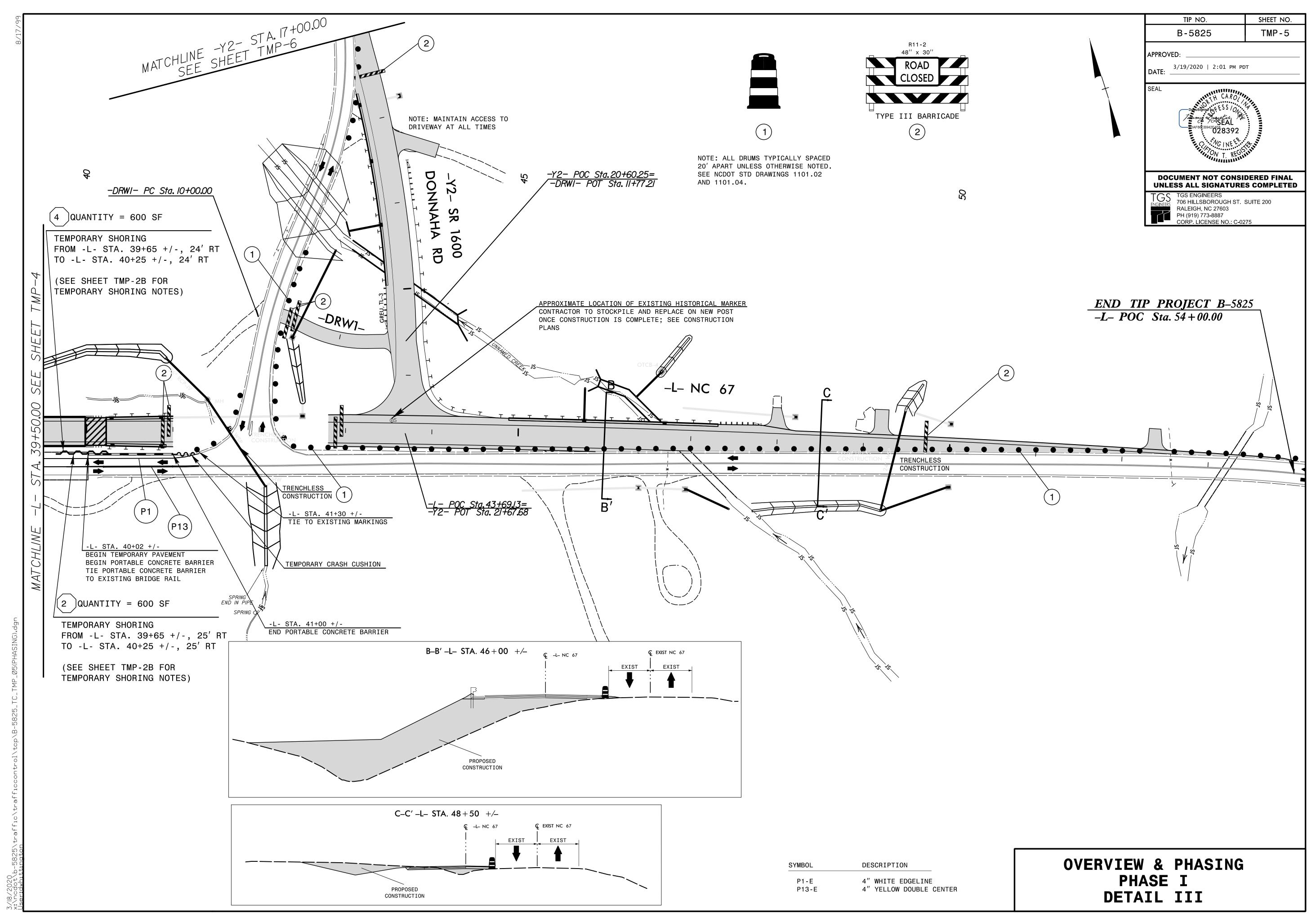


TEMPORARY SHORING NOTES

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NOTE: ALL DRUMS TYPICALLY SPACED 20' APART UNLESS OTHERWISE NOTED. SEE NCDOT STD DRAWINGS 1101.02 AND 1101.04.

TIP NO. SHEET NO. TMP-6 B-5825

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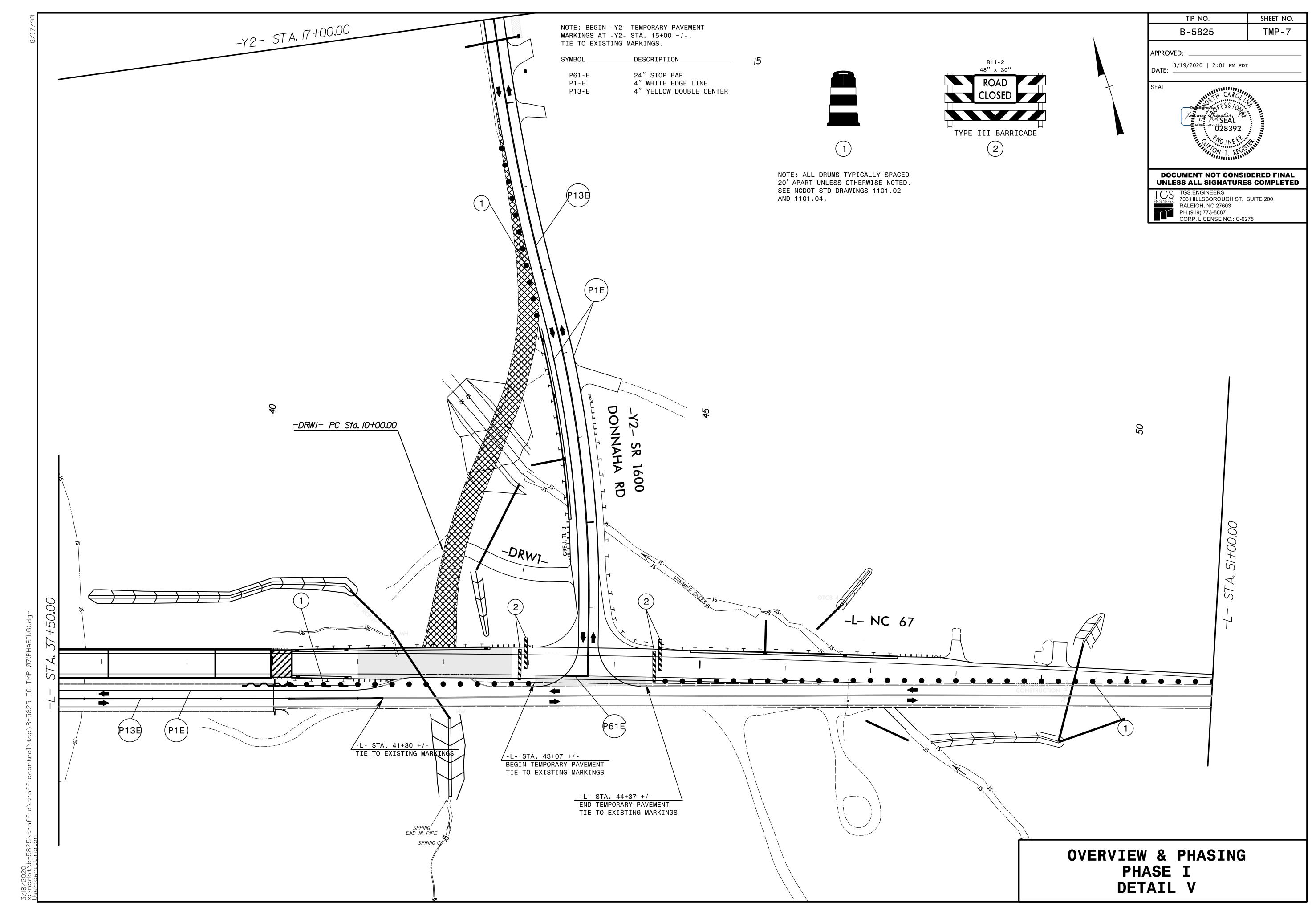
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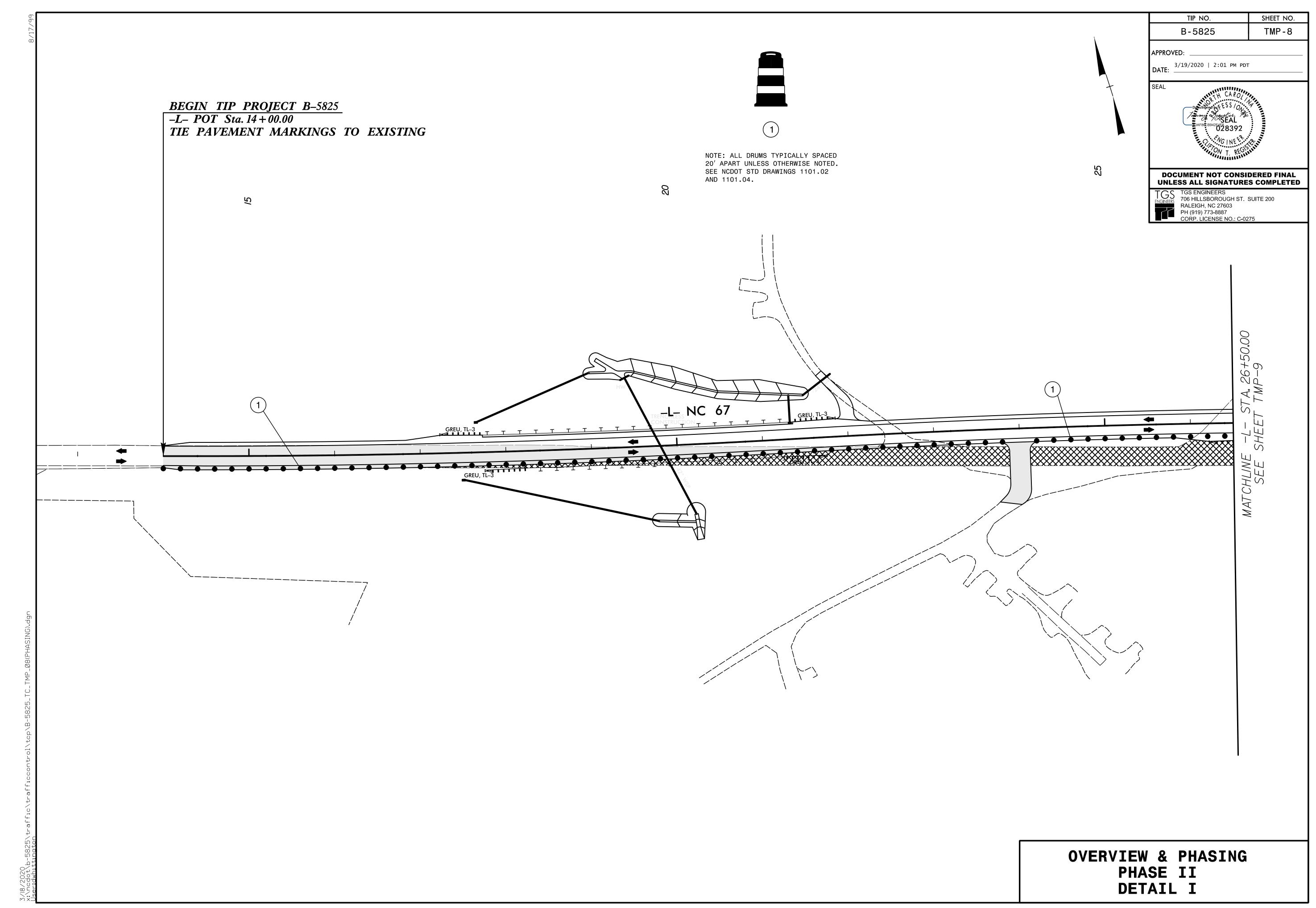
TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

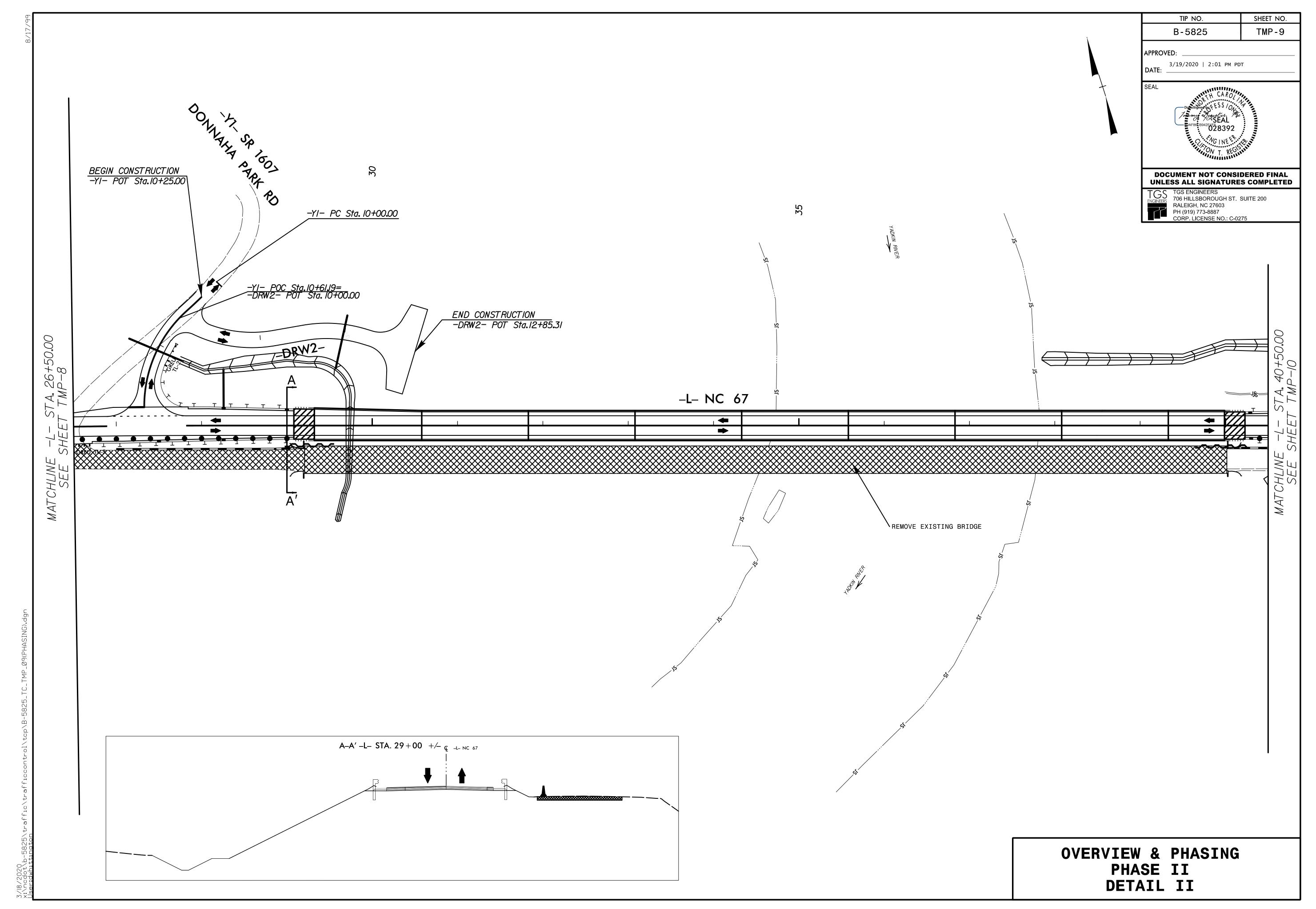
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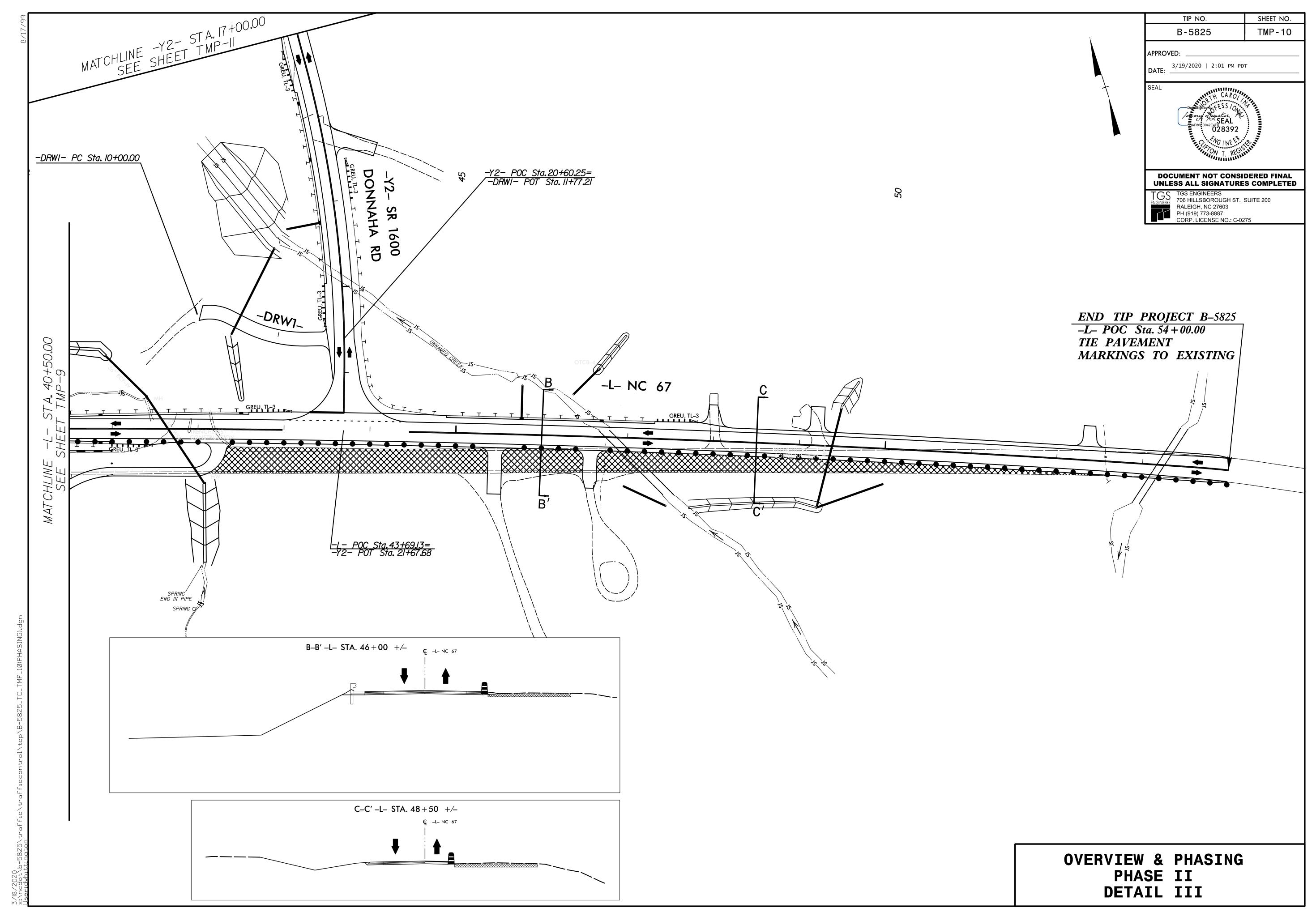
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OVERVIEW & PHASING PHASE I DETAIL IV









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706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275 BEGIN CONSTRUCTION

-Y2- POT Sta.12+00.00

TIE PAVEMENT MARKINGS TO EXISTING -Y2- SR 1600 DONNAHA RD OVERVIEW & PHASING PHASE II DETAIL IV