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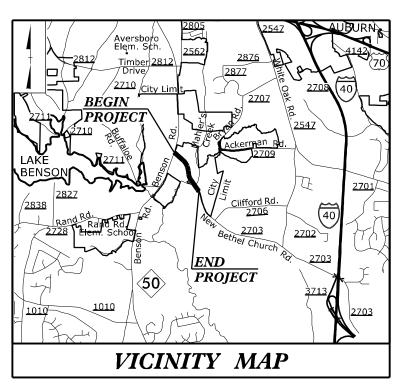
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STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

WAKE COUNTY





LOCATION: BRIDGE NO. 248 OVER MAHLER'S CREEK
ON SR 2703 (NEW BETHEL CHURCH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27569-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

 $\underline{\texttt{JOSEPH E. HUMMER, P.}} \\ \textbf{\textit{ESTATE TRAFFIC MANAGEMENT ENGINEER}}$

TEVE KITE, P.E. TRAFFIC CONTROL PROJECT ENGINEER

MICHAEL STEELMAN TRAFFIC CONTROL PROJECT DESIGN ENGINEER

RASAY ABADILLA, P.E. TRAFFIC CONTROL DESIGN ENGINEER

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEET
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT SCHEDULE
TMP-2	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES AND GENERAL NOTES)
TMP-2A	TEMPORARY SHORING NOTES
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP - 4	TEMPORARY TRAFFIC CONTROL PHASE I DETAIL
TMP-5	TEMPORARY TRAFFIC CONTROL PHASE II DETAIL
TMP-6	TEMPORARY TRAFFIC CONTROL PHASE III DETAIL

TMP-1

APPROVED:

1/19/2018 E27CE30E1DFC442.

DATE:

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SEAL

12/20/2017 \\dot\dfsroot0\\Proj\TIF

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.	<u>TITLE</u>
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
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
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

GUARDRAIL END DELINEATION

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







PAVEMENT MARKINGS

----EXISTING LINES ----TEMPORARY LINES

TRUCK MOUNTED ATTENUATOR (TMA) CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

FLAGGER

LAW ENFORCEMENT

PORTABLE SIGN

STATIONARY SIGN

STATIONARY OR PORTABLE SIGN

TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

TEMPORARY CRASH CUSHION FLASHING ARROW BOARD

DRUM

SKINNY DRUM

TUBULAR MARKER

PAVEMENT MARKERS

CRYSTAL/CRYSTAL

CRYSTAL/RED ◆ YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS ↑ ↑ ↑ PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL DESCRIPTION

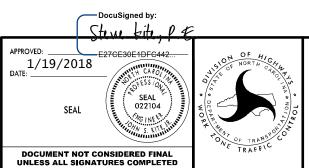
PAINT (4")

WHITE EDGELINE PA

DOUBLE YELLOW CENTERLINE

TEMPORARY RAISED MARKERS

YELLOW & YELLOW



ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING SCHEDULE

1262.01

OJ. REFERENCE NO.	SHEET NO.
B-5237	TMP-2

GENERAL NOTES

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

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

TIME RESTRICTIONS

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

ROAD NAME

DAY AND TIME RESTRICTIONS

SR 2703

MONDAY THRU FRIDAY 6:30 A.M. TO 7:45 A.M. 1:30 P.M TO 3:30 P.M. ONLY WHEN SCHOOL IS IN SESSION

B) DO NOT CONDUCT MULTI-VEHICLE HAULING AS FOLLOWS:

ROAD NAME

DAY AND TIME RESTRICTIONS

SR 2703

MONDAY THRU FRIDAY 6:30 A.M. TO 7:45 A.M. 1:30 P.M TO 3:30 P.M. ONLY WHEN SCHOOL IS IN SESSION

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 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.

PAVEMENT EDGE DROP OFF REQUIREMENTS

I) 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.

J) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

K) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- L) 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.
- M) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- N) 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 CONTROL DEVICES

- O) 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.
- P) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2
 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME MARKING MARKER

SR 2703 PAINT TEMPORARY RAISED

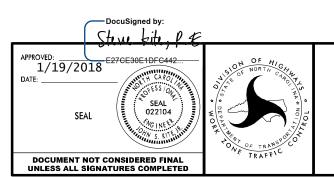
- PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
-) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
-) REMOVE/REPLACE ANY CONFLICTING/DAMAGED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

MANAGEMENT STRATEGIES

THE PROJECT CONSISTS OF REPLACING BRIDGE NO. 248 ON SR 2703 (NEW BETHEL CHURCH ROAD). DURING CONSTRUCTION, SR 2703 TRAFFIC WILL BE MAINTAINED IN A TWO-LANE, TWO-WAY PATTERN ON A TEMPORARY ON-SITE DETOUR.

THE TIE-IN CONSTRUCTION, TRAFFIC SHIFTS, AND PLACEMENT OF FINAL SURFACE COURSE AND PAVEMENT MARKINGS WILL BE PERFORMED USING TEMPORARY SHOULDER CLOSURES, TEMPORARY LANE CLOSURES, AND FLAGGER OPERATIONS.

ACCESS FOR LOCAL TRAFFIC, INCLUDING DRIVEWAYS, MUST BE PROVIDED AT ALL TIMES WITHIN THE PROJECT LIMITS.



TRANSPORTATION OPERATIONS PLAN

J. REFERENCE NO.	SHEET NO.
B-5237	TMP-2A

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 -L- 38+87±, 29 FT RIGHT, TO STATION -L- 39+31±, 29 FT RIGHT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 120 PCF FRICTION ANGLE (ϕ) = 30 DEGREES COHESION (c) = 0 PSF GROUNDWATER ELEVATION = 221 FT \pm

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION -L- $38+87\pm$, 29 FT RIGHT, TO STATION -L- $39+31\pm$, 29 FT WILL NOT PENETRATE BELOW ELEVATION 213 FT \pm DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

AT THE CONTRACTOR'S OPTION, USE STANDARD SHORING FOR TEMPORARY SHORING FROM STATION -L- 38+87±, 29 FT RIGHT, TO STATION 39+31±, 29 FT RIGHT. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

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 11/27/2017 AND SEALED BY A PROFESSIONAL ENGINEER, THEIN TUN ZAN, LICENSE # 030943.



TEMPORARY SHORING NOTES

PHASING

PHASE I

STEP 1

PRIOR TO CONSTRUCTION, USING RSD 1101.01, SHEET 3 OF 3,INSTALL WORK ZONE ADVANCE WARNING SIGNS ALONG EXISTING SR 2703 (NEW BETHEL CHURCH ROAD).

STEP 2

AWAY FROM TRAFFIC, AND USING RSD 1101.02 (SHEET 1 OF 14) AND RSD 1101.04 AS NECESSARY, COMPLETE THE FOLLOWING UP THROUGH THE FINAL LAYER OF SURFACE COURSE (SEE SHEET TMP-4, ROADWAY PLANS, AND STRUCTURE PLANS):

- CONSTRUCT TEMPORARY DETOUR BRIDGE.
- CONSTRUCT -DET- FROM STA $34+00\pm$ TO STA $43+10\pm$, TYING INTO THE EDGE AND ELEVATION OF EXISTING SR 2703 (NEW BETHEL CHURCH ROAD).
- INSTALL TEMPORARY GUARDRAIL.

PHASE II

STEP 1

USING RSD 1101.02 (SHEET 1 OF 14) AND RSD 1101.03 (SHEET 3 OF 9), COMPLETE THE FOLLOWING (SEE SHEET TMP-5):

- A) REMOVE CONFLICTING PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKINGS AND MARKERS ON -DET- AND TIE TO EXISTING MARKINGS.
- B) SHIFT TRAFFIC ONTO -DET- IN A TWO-LANE , TWO-WAY PATTERN.
- C) CLOSE EXISTING SR 2703 (NEW BETHEL CHURCH ROAD) BETWEEN -DET- LIMITS.

STEP 2

AWAY FROM TRAFFIC, AND USING RSD 1101.02 (SHEET 1 OF 14), COMPLETE THE FOLLOWING (SEE SHEET TMP-5):

- REMOVE EXISTING BRIDGE AND APPROACH SLABS.
- CONSTRUCT -L- INCLUDING THE PROPOSED STRUCTURE UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM STA 34+54± TO STA 42+50±. INSTALL TEMPORARY SHORING PRIOR TO CONSTRUCTING END BENT # 2.
- INSTALL PROPOSED GUARDRAIL.

PHASE III

STEP 1

USING RSD 1101.02 (SHEET 1 OF 14) AS NEEDED, COMPLETE THE FOLLOWING (SEE SHEET TMP-6 AND FINAL PAVEMENT MARKING PLANS):

CONSTRUCT PROPOSED TIE-INS OF -L- TO SAFELY SWITCH TRAFFIC TO -L-, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE. PLACE TEMPORARY PAVEMENT MARKINGS ON -L- IN THE FINAL PATTERN. PRIOR TO PLACING TRAFFIC IN THE FINAL PATTERN ON -L-, REMOVE TEMPORARY GUARDRAIL ALONG NORTH SIDE OF -DET- TO ELIMINATE HAZARD FOR -L- TRAFFIC. THEN, PLACE TRAFFIC IN THE FINAL PATTERN ON -L-.

STEP 2

USING RSD 1101.02 (SHEET 1 OF 14) AS NEEDED, REMOVE TEMPORARY DETOUR BRIDGE AND -DET-. CONSTRUCT ANY REMAINING SECTIONS OF -L- UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE. GRADE TO FINAL CONDITION (SEE SHEET TMP-6 AND ROADWAY PLANS).

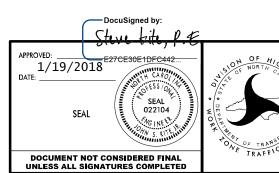
STEP 3

USING RSD 1101.02 (SHEET 1 OF 14), COMPLETE THE FOLLOWING (SEE SHEET TMP-6, FINAL PAVEMENT MARKING PLANS, AND ROADWAY PLANS):

- A) RESURFACE FROM -L- STA 10+50± TO STA 34+50± AND PLACE FINAL LAYER OF SURFACE COURSE FROM -L- STA 34+50± TO STA 43+00±.
- B) PLACE FINAL PAVEMENT MARKINGS AND MARKERS FROM -L-STA 10+50± TO STA 43+00± (SEE FINAL PAVEMENT MARKING PLANS).

STEP 4

REMOVE ALL REMAINING WORK ZONE TRAFFIC CONTROL DEVICES AND OPEN -L- TO FINAL TRAFFIC PATTERN.



TEMPORARY TRAFFIC CONTROL PHASING

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