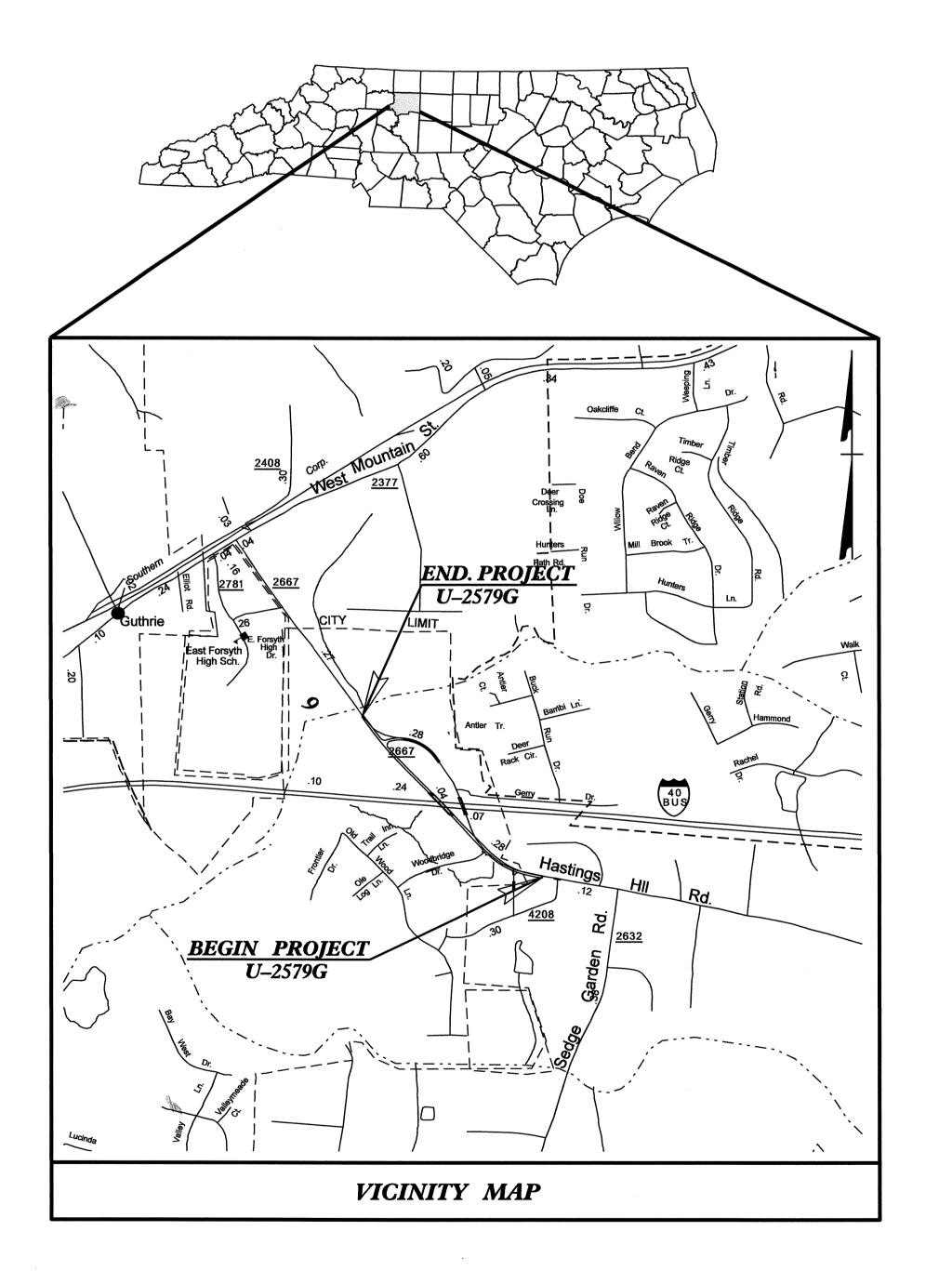
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

FORSYTH COUNTY



INDEX OF SHEETS

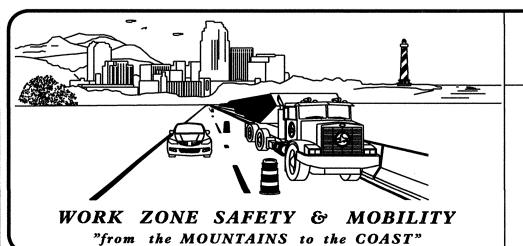
SHEET NO. TITLE TITLE SHEET, AND INDEX OF SHEETS TMP - 1 LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING TMP-1A **GENERAL NOTES** TMP-1B **GENERAL NOTES** TMP-1C PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING TMP-2A LOCATIONS TEMPORARY SHORING DATA TMP-2B MANAGEMENT STRATEGIES AND PHASING TMP-3 DETAIL 1 TMP-4 CUT SECTIONS DETAIL 2 TMP-6

OFF-SITE DETOUR ROUTES

SPECIAL SIGN DESIGN

TMP-7

IP PROJECT:



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

TRAFFIC CONTROL DESIGN ENGINEER

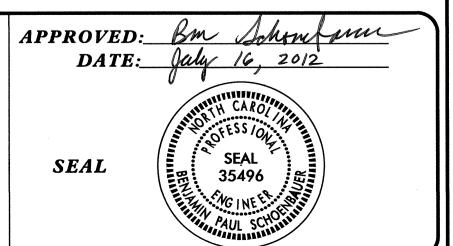
J. S. BOURNE, P.E. STATE TRAFFIC MANAGEMENT ENGINEER

J. ISHAK, P.E. TRAFFIC CONTROL PROJECT ENGINEER

ALLA LYUDMIRSKAYA

BEN SCHOENBAUER, P.E. TRAFFIC CONTROL PROJECT DESIGN ENGINEER





2-JUL-2012 16:27

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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 JANAUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE 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
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE 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
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

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

TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

DRUM

SKINNY DRUM

TUBULAR MARKER

TEMPORARY CRASH CUSHION

FLASHING ARROW BOARD

FLAGGER

LAW ENFORCEMENT

TRUCK MOUNTED ATTENUATOR (TMA)

CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

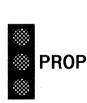
PORTABLE SIGN

— STATIONARY SIGN

STATIONARY OR PORTABLE SIGN

SIGNALS

EXISTING PROPOSED EMPORARY





PAVEMENT MARKINGS

----EXISTING LINES

----TEMPORARY LINES

PAVEMENT MARKERS

CRYSTAL/CRYSTAL

CRYSTAL/RED YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

PAINT (6")

P6 - WHITE EDGELINE (X1)

P7 - YELLOW EDGELINE (X1)

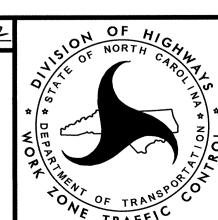
PK - 10 FT. WHITE SKIP (X1)

PAINT (4")

PA - WHITE EDGELINE (X1)

PI - YELLOW DOUBLE CENTER (X1)

APPROVED: Bu Solymbaur DATE: 7/16/12



ROADWAY STANDARD DRAWINGS & LEGEND

[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

I-40 BUS / US 421

6:00 A.M. - 8:00 P.M.

SATURDAY AND SUNDAY

MONDAY THROUGH FRIDAY

11:00 A.M. - 8:00 P.M.

SR 2667 HASTINGS HILL RD ALL OTHER ROADS

MONDAY THROUGH FRIDAY

7:00 A.M. - 9:00 A.M.

4:00 P.M. - 6:00 P.M.

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

ROAD NAME

I-40 BUS / US 421

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 8:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 8:00 P.M. THE FOLLOWING TUESDAY.
- 3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 8:00 P.M. MONDAY.
- 4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 8:00 P.M. TUESDAY.
- 5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 8:00 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 8:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
- 6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 8:00 P.M. TUESDAY.
- 7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 8:00 P.M. MONDAY.
- 8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 8:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.
- 9. FOR WAKE FOREST UNIVERSITY FOOTBALL GAMES, OCCURRING AT GROVES STADIUM BETWEEN FOUR (4) HOURS BEFORE THE START AND FOUR (4) HOURS AFTER THE END OF THE WAKE FOREST UNIVERSITY FOOTBALL GAMES.
- 10. FOR THE NCAA TOURNAMENT, OCCURRING AT GREENSBORO COLISEUM COMPLEX, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE THE START OF THE NCAA TOURNAMENT AND 8:00 P.M. THE FOLLOWING DAY AFTER THE END OF THE NCAA TOURNAMENT.
- 11. FOR THE ACC TOURNAMENT, OCCURRING AT GREENSBORO COLISEUM COMPLEX, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE THE START OF THE ACC TOURNAMENT AND 8:00 P.M. THE FOLLOWING DAY AFTER THE WEEK OF THE ACC TOURNAMENT.
- 12. FOR THE DIXIE CLASSIC FAIR IN WINSTON-SALEM BETWEEN THE HOURS OF 6:00 A.M.
 THE DAY BEFORE THE START OF THE DIXIE CLASSIC FAIR AND 8:00 P.M. THE FOLLOWING
 DAY AFTER THE END OF THE DIXIE CLASSIC FAIR.
- 13. FOR THE FURNITURE MARKETS BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE START OF THE FURNITURE MARKETS AND 8:00 P.M. THE FRIDAY AFTER THE END OF THE FURNITURE MARKETS.

C) DO NOT STOP TRAFFIC AS FOLLOWS:

DAY AND TIME RESTRICTIONS

DURATION AND OPERATION

I-40 BUS / US 421

ROAD NAME

SUNDAY THROUGH SATURDAY 5:00 A.M. - 12:00 A.M.

30 MINUTES
FOR GIRDER REMOVAL
AND INSTALLATION

(MIDNIGHT) AND

D) 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

- 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 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.
- G) 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.

- H) 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.
- I) 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.
- J) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY ONE DIRECTION ON I-40 BUS/US 421.
- K) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

PAVEMENT EDGE DROP OFF REQUIREMENTS

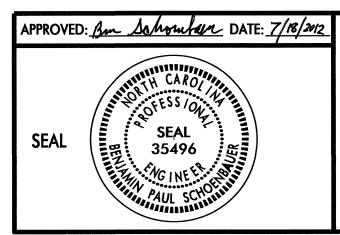
L) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

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.

M) 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.





GENERAL NOTES

JÍSTOOTOINPROJNIPPROJECTS-UNU2579GNIRAFFICNIRAFFICCONTROINICPNU-2579G_071012NU-2579G_TC_TMP_01B & 1

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GENERAL NOTES

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

T) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRAFFIC CONTROL PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRAFFIC CONTROL PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE/RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRAFFIC CONTROL PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

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

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

U) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED IMPACT ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS:

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

TRAFFIC CONTROL DEVICES

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

Y) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FORLLOWS:

ROAD NAME	MARKINGS	MARKERS
I-40 BUS/US 421	PAINT	N/A
SR 2667 HASTINGS HILL RD	PAINT	N/A

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

MISCELLANEOUS

- CC) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.
- DD) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO 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 1000 FT RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.
- EE) 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.).
- FF) WHEN REPLACING MEDIAN GUARDRAIL, EACH SECTION OF GUARDRAIL SHALL BE INSTALLED WITH THE FLOW OF TRAFFIC SUCH THAT NO BLUNT ENDS WILL FACE TRAFFIC AND POSITIVE MEDIAN CROSS-OVER PROTECTION SHALL BE MAINTAINED AT THE END OF EACH WORK PERIOD.



GENERAL NOTES

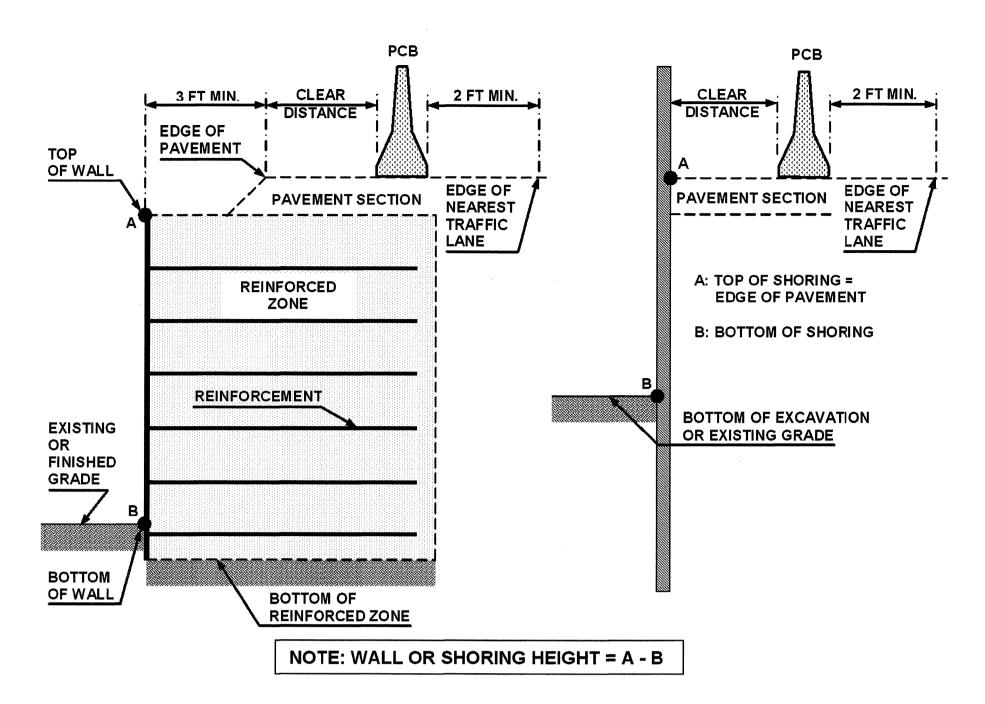


FIGURE A

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.

PROJ. REFERENCE NO.	SHEET NO.
U-2579G	TMP-2A

MINIMUM REQUIRED CLEAR DISTANCE, inches

Donnion			Offset * Design Speed, mph					
Barrier	Pavement	Offset *	100					# 1 00
Type	Type	<u>ft</u>	<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
		32-38	30	34	38	41	43	46
PCB		38-44	31	34	41	43	45	48
P (44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
ıre		>56	32	36	42	45	47	51
Unanchored		<8	17	18	21	22	25	26
nc		8-14	19	20	23	25	26	29
R II		14-20	22	22	24	26	28	31
D		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					

^{*} See Figure Below

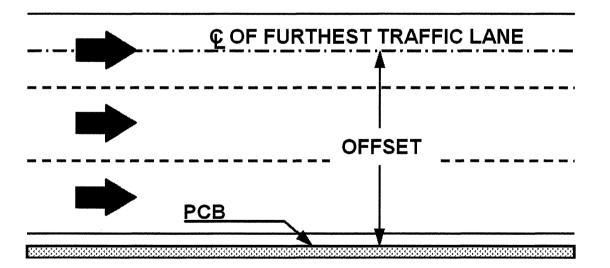
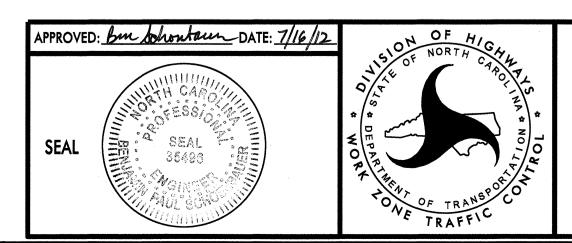


FIGURE B



PORTABLE CONCRETE BARRIER
AT
TEMPORARY SHORING LOCATIONS

TEMPORARY SHORING No.1

TEMPORARY SHORING 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 ELEVATION IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING FROM STATION 129+24.93+/- -Y4-, 6 FT RIGHT, TO STATION 129+98.93+/- -Y4-, 6 FT RIGHT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 120 LB/CF FRICTION ANGLE (ϕ) = 30 DEGREES COHESION (c) = 0 LB/SF GROUNDWATER ELEVATION = 860 FT

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 129+24.93+/- -Y4-, 6 FT RIGHT, TO STATION 129+98.93+/- -Y4-, 6 FT RIGHT. 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 STA.129+24.93+/- -Y4-, 6 FT RIGHT, TO STATION 129+98.93+/- -Y4-, 6 FT RIGHT MAY NOT PENETRATE BELOW ELEVATION 825 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 129+24.93+/- -Y4-, 6 FT RIGHT, TO STATION 129+98.93+/- -Y4-, 6 FT RIGHT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 129+24.93+/- -Y4-, 6 FT RIGHT, TO STATION 129+98.93+/- -Y4-, 6 FT RIGHT. SEE STANDARD DRAWING NO.1801.01 FOR STANDARD TEMPORARY SHORING.

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 ELEVATION IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING FROM STATION 129+24.93+/- -Y4-, 6 FT LEFT, TO STATION 129+98.93+/- -Y4-, 6 FT LEFT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 120 LB/CF FRICTION ANGLE (ϕ) = 30 DEGREES COHESION (c) = 0 LB/SF GROUNDWATER ELEVATION = 860 FT

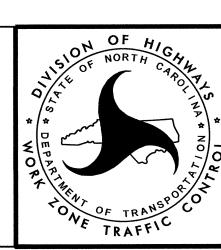
LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 129+24.93+/- -Y4-, 6 FT LEFT, TO STATION 129+98.93+/- -Y4-, 6 FT LEFT. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DRIVEN PILING FOR TEMPORARY SHORING FROM STA.129+24.93+/- -Y4-, 6 FT LEFT, TO STATION 129+98.93+/- -Y4-, 6 FT LEFT MAY NOT PENETRATE BELOW ELEVATION 825 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 129+24.93+/- -Y4-, 6 FT LEFT, TO STATION 129+98.93+/- -Y4-, 6 FT LEFT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION 129+24.93+/- -Y4-, 6 FT LEFT, TO STATION 129+98.93+/- -Y4-, 6 FT LEFT. SEE STANDARD DRAWING No.1801.01 FOR STANDARD TEMPORARY SHORING.

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THE FOLLOWING LISTED STRATEGIES DERIVE FROM DETAILED DESIGN LEVEL ASSESSMENTS OF THE WORK ZONE IMPACTS CONDUCTED DURING THE DEVELOPMENTAL STAGES OF THIS TRANSPORTATION MANAGEMENT PLAN (TMP).

RECOMMENDED MANAGEMENT STRATEGIES RELATIVE TO THIS TMP ARE AS FOLLOWS:

-ONE-LANE TWO-WAY TRAFFIC:

TRAFFIC TO BE MAINTAINED ON SR 2667 (HASTINGS HILL RD) UTILIZING FLAGGERS AS NECESSARY.

-ONE-LANE IN EACH DIRECTION TRAFFIC:

TRAFFIC TO BE MAINTAINED ON US 421 / I-40 BUS UTILIZING LANE CLOSURES IN EITHER DIRECTION.

-FULL ROAD CLOSURE:

TRAFFIC ON SR 2667 (HASTINGS HILL RD) TO BE MAINTAINED ON THE FOLLOWING OFF-SITE DETOUR ROUTE DURING THE INTERMEDIATE CONTRACT TIME: SEDGE GARDEN RD. TO KERNERSVILLE RD. TO LINVILLE RD. TO W. MOUNTAIN ST. BACK TO HASTINGS HILL RD.

DURING TIE IN CONSTRUCTION OF PROPOSED -Y5A-, THE LOCAL TRAFFIC WILL BE MAINTAINED THE FOLLOWING DETOUR ROUTES:

- WOODBRIDGE DR. TRAFFIC VIA BEN SMITH RD. TO OLD WOOD LN. BACK TO WOODBRIDGE RD.
- GERRY DR. TRAFFIC VIA W.MOUNTAIN ST. TO DOE RUN DR. BACK TO GERRY DR.
- -TEMPORARY ROAD CLOSURES/STOP TRAFFIC ON I-40 BUS/US 421 FOR OVERHEAD GIRDER REMOVAL AND PLACEMENT.

PHASING

MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES UNLESS OTHERWISE NOTED IN PHASING

PHASE I STEP 1:

USING RSD 1101.01 SHEETS 1 AND 3 OF 3, INSTALL WORK ZONE ADVANCED WARNING SIGNS ON I-40BUS/US 421, HASTINGS HILL RD., GERRY DR., BEN SMITH RD. AND WOODBRIDGE DR.

STEP 2:

- AWAY FROM TRAFFIC, BEGIN CONSTRUCTION OF THE PROPOSED -Y5A- AND -Y6- UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE FROM -Y5A- STA.63+50+/- TO -Y5A- STA.79+00+/- AND FROM -Y6- STA.10+00+/- TO -Y6- STA.11+50+/- (SEE SHEETS TMP-4 AND TMP-6)
- USING LANE CLOSURES (RSD 1101.02, SHEET 4 OF 15), REMOVE EXISTING OUTSIDE GUARDRAIL ALONG OUTSIDE WB LANE OF I-40BUS/US 421 FROM -Y4- STA.127+65+/- TO -Y4- STA.133+00+/- AND CONSTRUCT A MINIMUM 8' OF PROPOSED WIDENING FROM -Y4- STA.126+50+/- TO -Y4- STA.127+65+/- AND MINIMUM 18' OF PROPOSED WIDENING FROM -Y4- STA.127+65+/- TO -Y4- STA.133+00+/- (SHEET TMP-4).

STEP 3:

USING LANE CLOSURES (RSD 1101.02, SHEETS 4, 5 AND 6 OF 15), PERFORM THE FOLLOWING: (SEE SHEET TMP-4)

- PLACE TEMPORARY PAVEMENT MARKING ON THE PROPOSED WIDENING, CONSTRUCTED IN PHASE I, STEP 2, FROM -Y4- STA.125+95+/- TO -Y4- STA.133+30+/-
- INSTALL TEMPORARY PCB AND CRASH CUSHIONS ALONG OUTSIDE LANES OF I-40BUS/US 421 IN BOTH DIRECTIONS AS FOLLOW:
- * WB FROM -Y4- STA.127.+97+/- TO -Y4- STA.131+89+/-
- * EB FROM -Y4- STA.126+80+/- TO -Y4- STA.132+64+/-
- SHIFT WB TRAFFIC ONTO THE PROPOSED OUTSIDE WIDENING IN NEW TEMPORARY TRAFFIC PATTERN
 INSTALL TEMPORARY PCB AND CRASH CUSHIONS ALONG INSIDE LANES OF I-40BUS/US 421
 IN BOTH DIRECTIONS AS FOLLOW:
- * WB FROM -Y4- STA.127+76+/- TO -Y4- STA.130+00+/-
- * EB FROM -Y4- STA.127+40+/- TO -Y4- STA.131+80+/-

STEP 4:

AWAY FROM TRAFFIC AND BEHIND TEMPORARY PCB, PERFORM THE FOLLOWING: (SEE ROADWAY AND STRUCTURE PLANS, SHEET TMP-4)

- PLACE TEMPORARY SHORING AT THE FOLLOWING LOCATIONS:
- * FROM -Y4- STA.129+24.93 6' RT TO -Y4- STA.129+98.93 6' RT * FROM -Y4- STA.129+24.93 6' LT TO -Y4- STA.129+98.93 6' LT
- CONSTRUCT INTERIOR BENT OF PROPOSED STRUCTURE
- BEGIN CONSTRUCTION OF EXTERIOR BENTS.

PHASE II

STEP 1:

- USING LANE CLOSURES (RSD 1101.02, SHEETS 4, 5 AND 6 OF 15), PERFORM THE FOLLOWING:
- INSTALL PROPOSED GUARDRAIL ALONG INSIDE LANES ON BOTH DIRECTIONS OF I-40BUS/US 421
 REMOVE TEMPORARY PCB AND CRASH CUSHION ALONG INSIDE LANES OF I-40BUS/US 421 IN BOTH DIRECTIONS, INSTALLED IN PHASE I, STEP 3,
- RESTRIPE WB LANES AND SHIFT TRAFFIC BACK TO EXISTING PATTERN ON WB I-40BUS/US 421.

STEP2:

- AWAY FROM TRAFFIC AND BEHIND TEMPORARY PCB, COMPLETE CONSTRUCTION OF EXTERIOR BENTS
- USING TEMPORARY ROAD CLOSURES (RSD 1101.03, SHEET 9 OF 9), INSTALL GIRDERS AND STRUCTURE OVER TRAFFIC (AS NECESSARY)
- COMPLETE PROPOSED STRUCTURE
- INSTALL AND COVER OFF-SITE DETOUR SIGNS NECESSARY FOR DETOUR OF TRAFFIC FROM HASTINGS HILL RD, SEE RSD 1101.03, SHEETS 1 AND 2 OF 9 AND SHEET TMP-7.

COMPLETE THE WORK OF PHASE II, STEP 3 FOR A PERIOD NO MORE THAN THIRTY (30) CUMULATIVE INDIVIDUAL CALENDAR DAYS. NO ROAD CLOSURES SHALL BE ALLOWED AND TRAFFIC SHALL BE MAINTAINED ON HASTINGS HILL RD. WHEN EAST FORSYTH HIGH SCHOOL CONDUCTES REGULAR CLASSES ON THE SAME DAY. (SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES).

STEP 3:

- A) UNCOVER OFF-SITE DETOUR SIGNS, INSTALLED IN PHASE II, STEP 2, PLACE TYPE III BARRICADES AND CLOSE HASTINGS HILL RD. TO THROUGH TRAFFIC
- B) USING FLAGGERS (RSD 1101.02, SHEET 1 OF 15) (AS NECESSARY), PERFORM THE FOLLOWING:
 - * COMPLETE PROPOSED WIDENING/WEDGING FROM -Y5A- STA.54+00+/- TO
 - -Y5A- STA.57+50+/- AND FROM -Y5A- STA.79+00+/- TO 81+50+/* COMPLETE PROPOSED WEDGING FROM -Y6- STA.11+50+/- TO -Y6- STA.17+25+/-,
 AND TIE IN WITH THE EXISTING AT -Y6- STA.11+50+/-
 - AWAY FROM TRAFFIC, COMPLETE TIE IN CONSTRUCTION OF PROPOSED -Y5A- WITH THE EXISTING AT -Y5A- STA.57+50+/- AND -Y5A- STA.79+00+/-
- C) USING FLAGGERS (RSD 1101.02, SHEET 1 OF 15), AS NECESSARY, PLACE TEMPORARY PAVEMENT MARKINGS AND MARKERS ON -Y5A- FROM STA.54+00+/- TO -Y5A- STA.81+50+/- AND ON -Y6- FROM STA.10+00+/- TO -Y6- STA.17+25+/-
- D) COVER OFF-SITE DETOUR SIGNS, REMOVE TYPE III BARRICADES, AND PLACE TRAFFIC IN 2L2W PATTERN ON PROPOSED -Y5A-, INCLUDING PROPOSED STRUCTURE, AND -Y6-.

PHASE III

- STEP 1:
- USING TEMPORARY ROAD CLOSURES (RSD 1101.03, SHEET 9 OF 9), REMOVE EXISTING SUPERSTRUCTURE
- USING LANE CLOSURES (RSD 1101.02, SHEETS 4, 5 AND 6 OF 15), REMOVE EXISTING INTERIOR BENT
- AWAY FROM TRAFFIC, REMOVE EXISTING PAVEMENT AND INSTALL OBJECT MARKERS ON EXISTING -Y5A- AT REMOVED BRIDGE (SEE ROADWAY PLANS)

STEP 2:

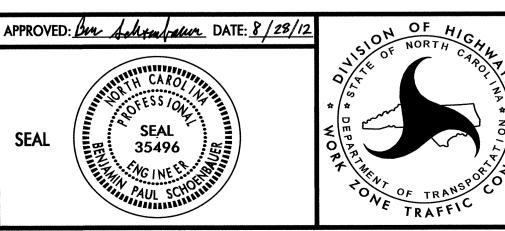
- USING LANE CLOSURES (RSD 1101.02, SHEETS 4, 5 AND 6 OF 15), PERFORM THE FOLLOWING: (SEE ROADWAY PLANS)
- REMOVE ALL REMAINING TEMPORARY PCB AND CRASH CUSHIONS ALONG I-40BUS/US 421
- IN BOTH DIRECTIONS, AS PLACED IN PHASE I, STEP 3.
 COMPLETE PROPOSED WIDENING, INSTALL FINAL LAYER OF SURFACE COURSE, AND PLACE FINAL PAVEMENT MARKINGS AND MARKERS ON -Y4- (I-40BUS/US 421).

STEP 3:

USING FLAGGERS (RSD 1101.02, SHEET 1 OF 15), PLACE FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS AND MARKERS ON -Y5A- FROM STA.54+00+/- TO STA.81+50+/- AND ON -Y6- FROM STA.10+00+/- TO STA.17+25+/-

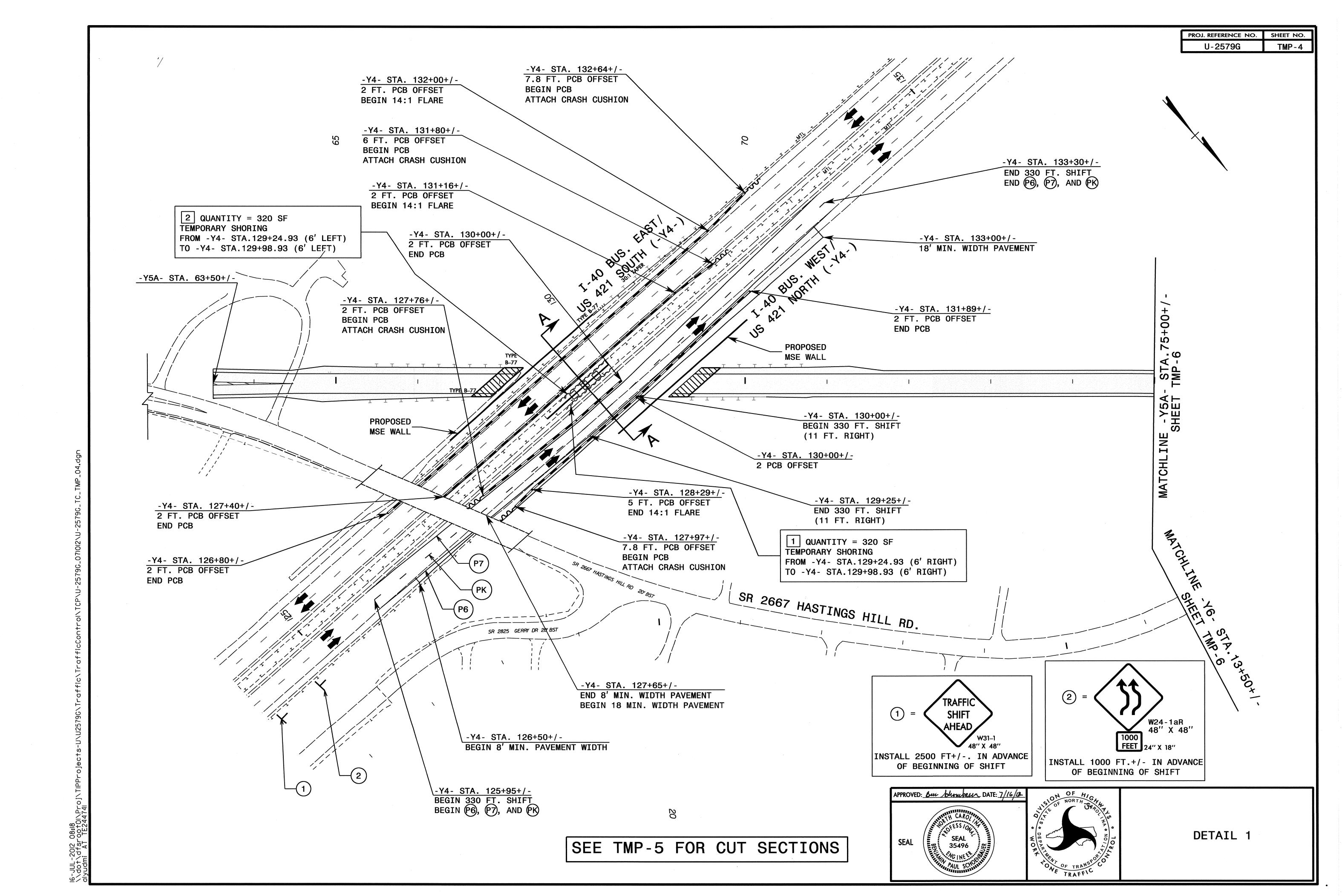
STEP 4:

REMOVE ALL TEMPORARY WORK ZONE SIGNS AND TRAFFIC CONTROL DEVICES.

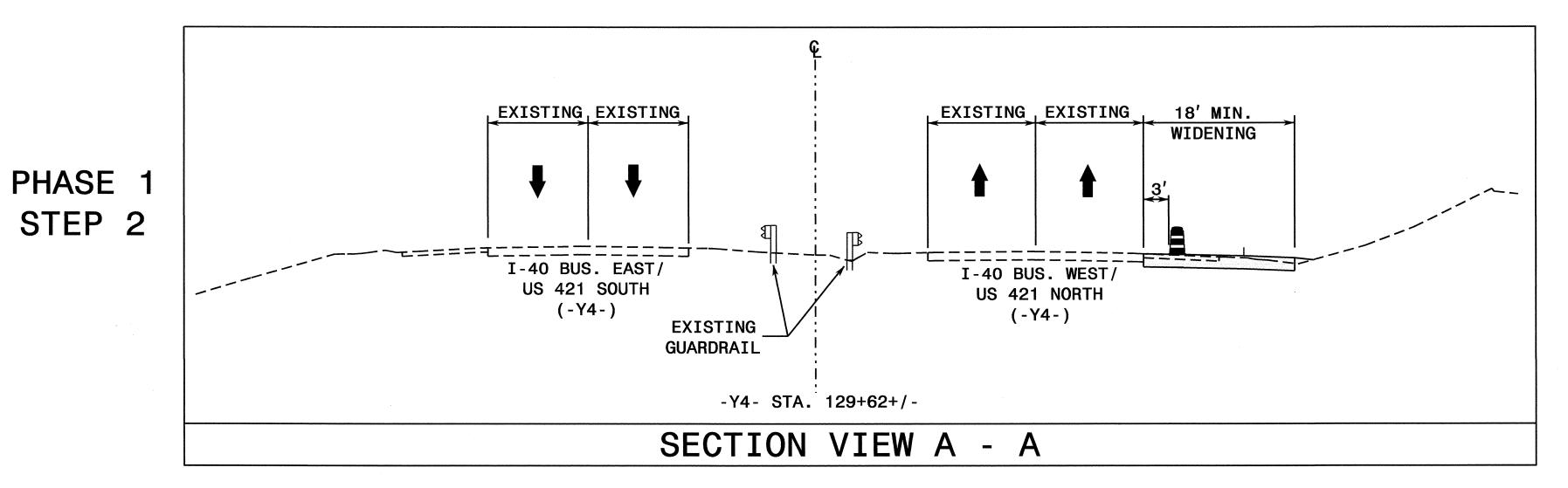


MANAGEMENT STRATEGIES
AND PHASING

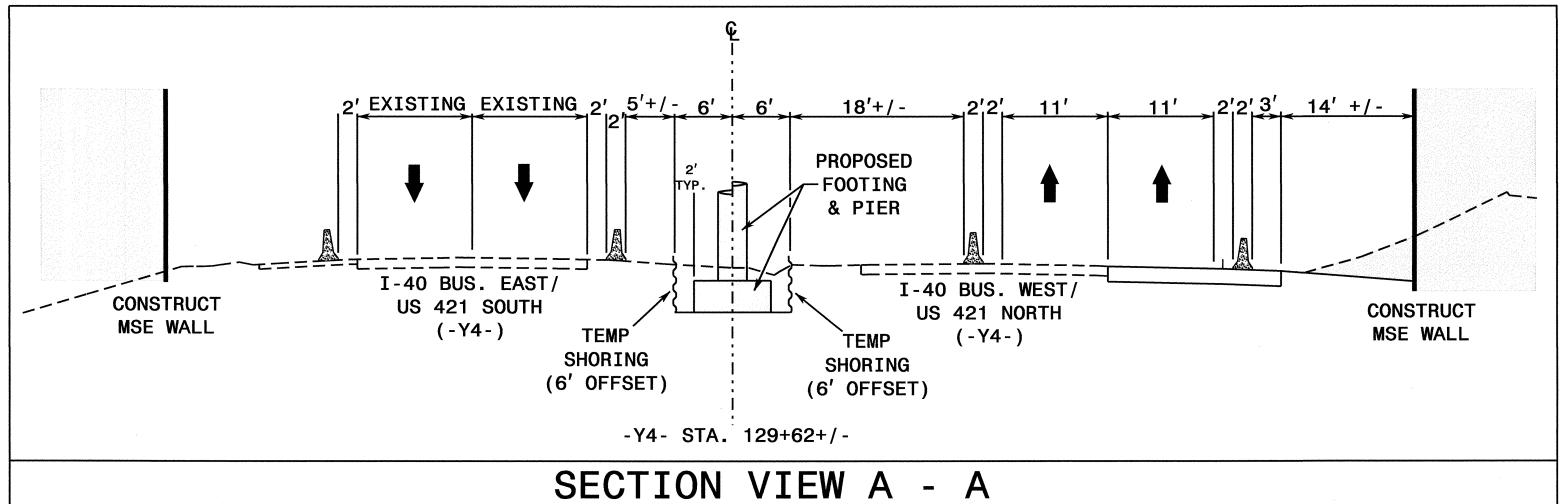
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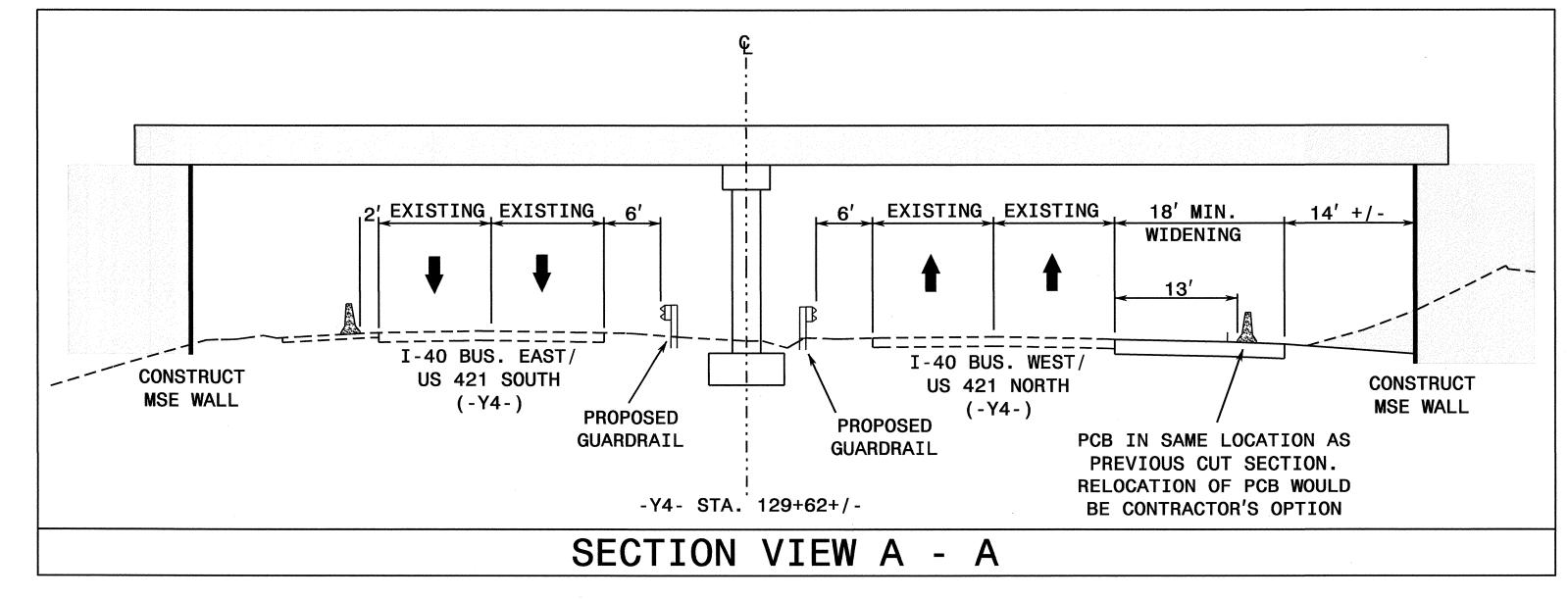
PROJ. REFERENCE NO. SHEET NO. U-2579G TMP-5



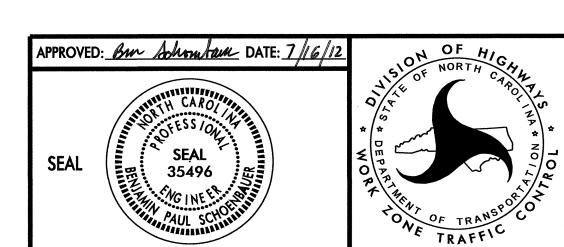
PHASE I STEP 3 & 4



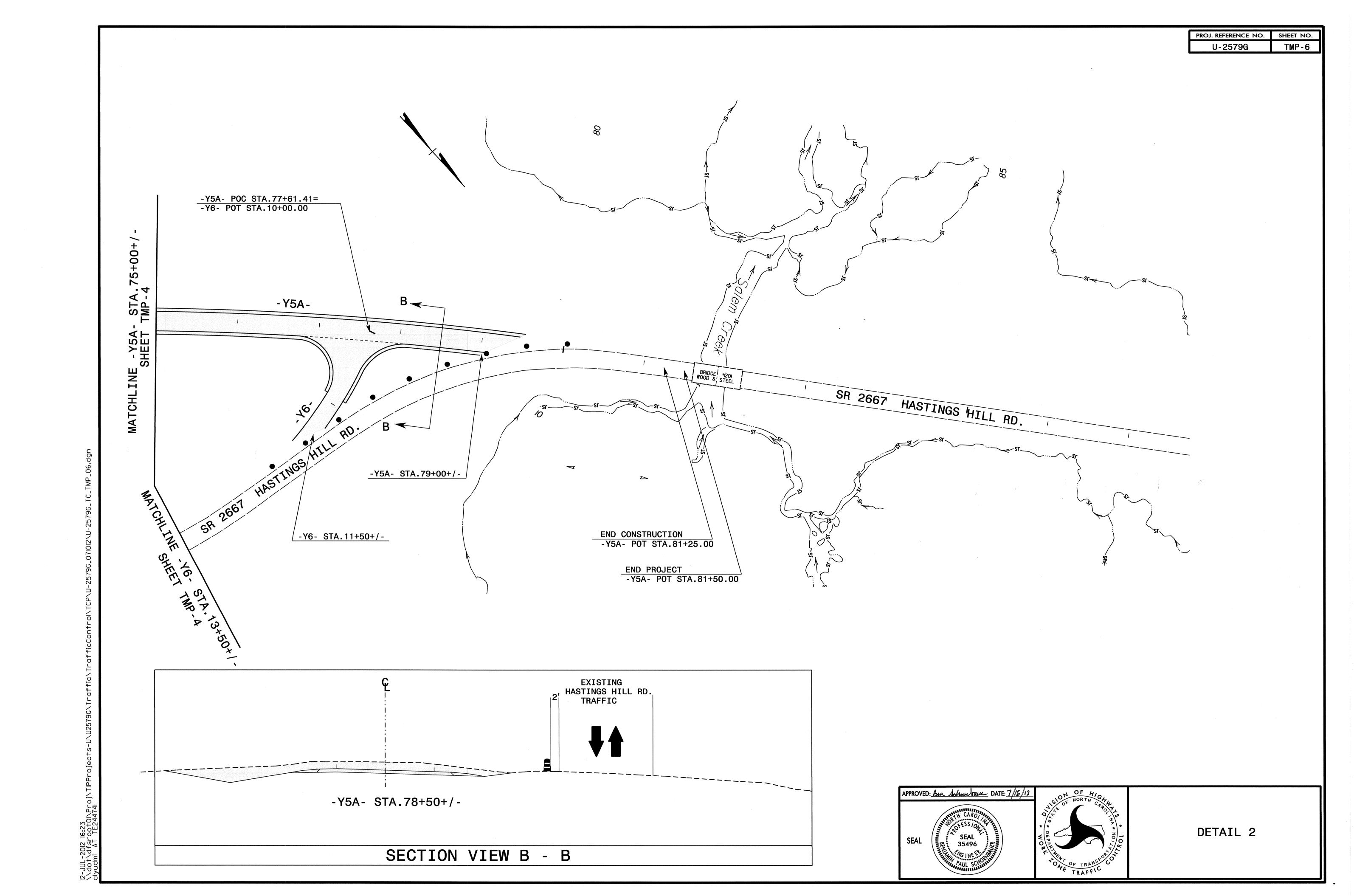
PHASE II



THE CUT SECTIONS ON THIS SHEET REFER BACK TO SHEET TMP-4



CUT SECTIONS



DISTANCES.

2. SEE SHEET SD-1 FOR SPECIAL SIGN DESIGN.

3. ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.

OFF-SITE DETOUR ROUTE FOR GERRY DR.

OFF-SITE DETOUR ROUTE FOR WOODBRIDGE DR.

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