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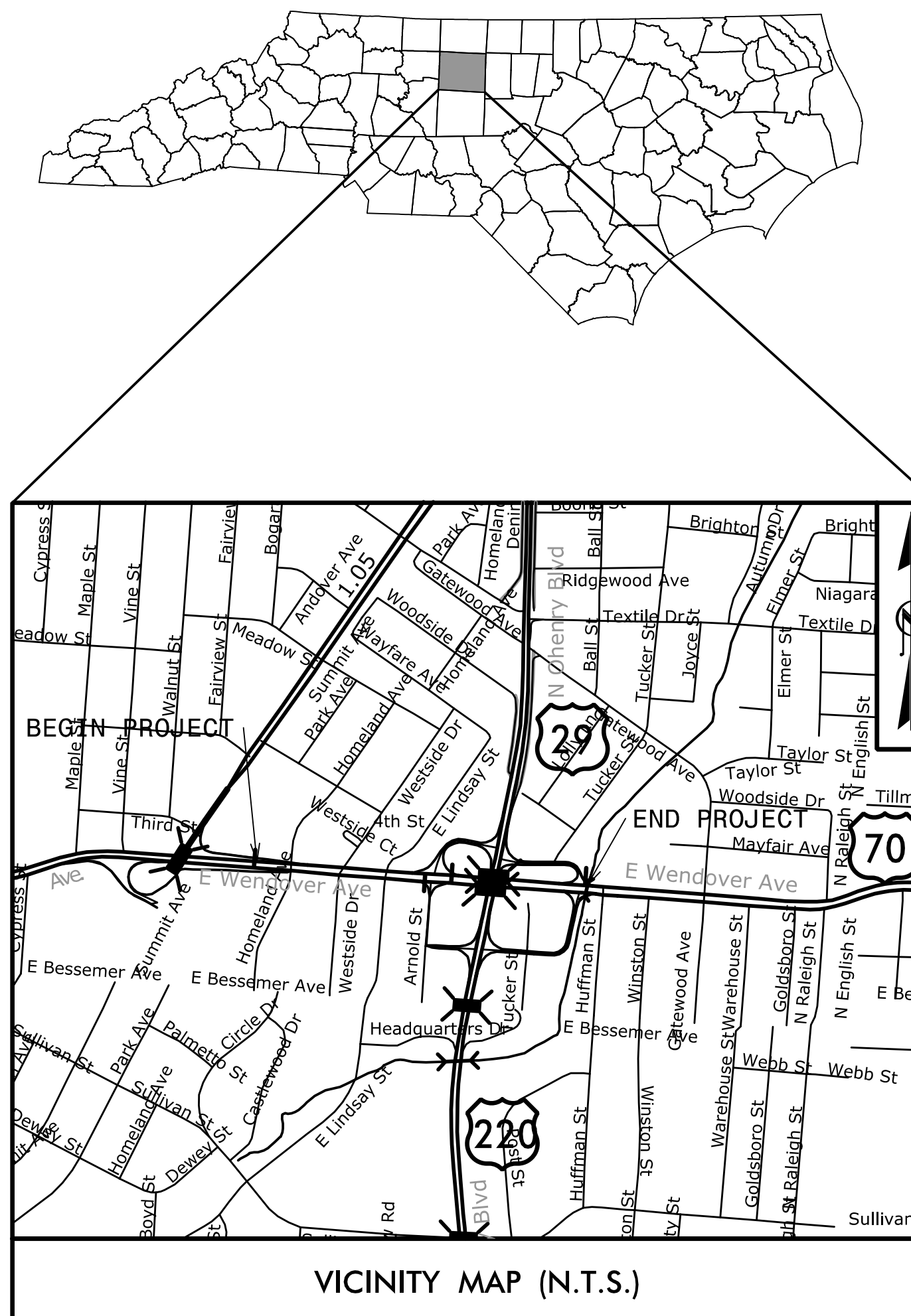
SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	ROUTE	DESCRIPTION	3001000000-N	3030000000-E	3045000000-E	3060000000-E	3150000000-N	3210000000-N	3287000000-N	3360000000-E	4025000000-E	4057000000-E	4130000000-N					4149000000-N	4152000000-N	7060000000-E	7120000000-E	7636000000-N	4400000000-E	4405000000-E	4410000000-E	4415000000-N	4420000000-N	4430000000-N	4435000000-N	4445000000-E	4480000000-N	4510000000-N	4516000000-N
				EA	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
U-2525CA	Guilford	US-70	REPLACE OVERHEAD SIGN STRUCTURES, OVERHEAD SIGNS AND GUARDRAIL ON US 70 WENDOVER AVE) AT US 29	4	1,050	225	100	10	2	1	1,550	1,184	67	1	1	1	1	1	4	1	390	6	1	999	449	138	2	9	211	100	216	5	100	100
TOTAL FOR PROJ NO. U-2525CA				4	1,050	225	100	10	2	1	1,550	1,184	67	1	1	1	1	1	4	1	390	6	1	999	449	138	2	9	211	100	216	5	100	100
GRAND TOTAL				4	1,050	225	100	10	2	1	1,550	1,184	67	1	1	1	1	1	4	1	390	6	1	999	449	138	2	9	211	100	216	5	100	100

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

GUILFORD COUNTY



LOCATION: US 70 (WENDOVER AVE) AT US 29
TYPE OF WORK: REPLACE OVERHEAD SIGN STRUCTURES, OVERHEAD SIGNS, AND GUARDRAIL

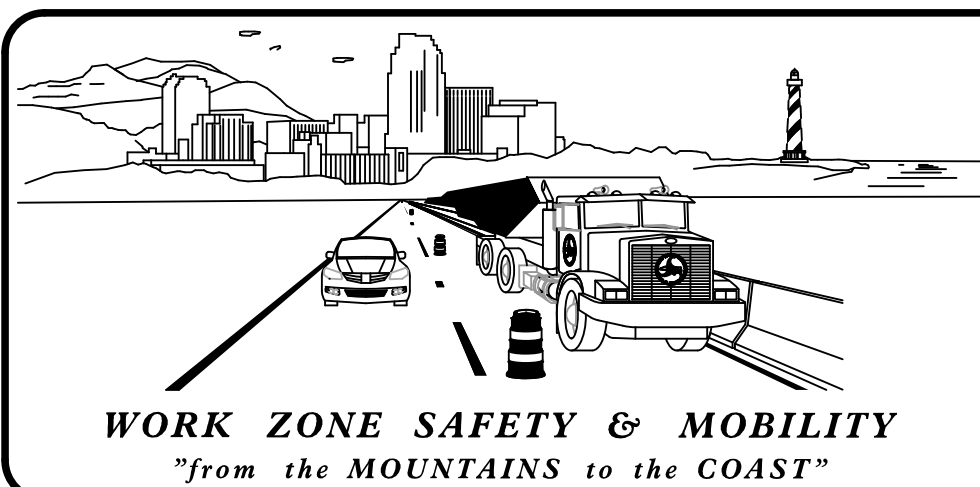
SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES AND GENERAL NOTES)
TMP-2	WESTSIDE DR DETOUR
TMP-2A	WENDOVER AVENUE WB TO US 29 SOUTH DETOUR
TMP-2B	ARNOLD STREET AND US 29 SOUTH DETOUR
TMP-2C	WENDOVER AVENUE WB TO US 29 NORTH DETOUR
TMP-2D	WENDOVER AVENUE EB TO US 29 NORTH DETOUR
TMP-2E	SUMMIT AVENUE NB RAMP DETOUR
TMP-2F	SUMMIT AVENUE SB LOOP DETOUR
TMP-2G	WENDOVER AVE NB TO EAST LINDSAY STREET SB
TMP-2H	TEMPORARY SIGN DESIGN
TMP-3	PHASING
TMP-4 THRU 4B	INSIDE LANE CLOSURES FOR MEDIAN WORK
TMP-5	STRUCTURE 'E' SIGN 9 LANE CLOSURE
TMP-6	STRUCTURE 'E' SIGN 10 LANE CLOSURE
TMP-7 AND 7A	STRUCTURE 'A' SIGN 1 LANE CLOSURE
TMP-8 AND 8A	STRUCTURE 'A' SIGN 2 LANE CLOSURE
TMP-9 AND 10	OMIT
TMP-11	STRUCTURE 'D' SIGN 7 LANE CLOSURE

SHEET NO.
TMP-1

U-2525CA

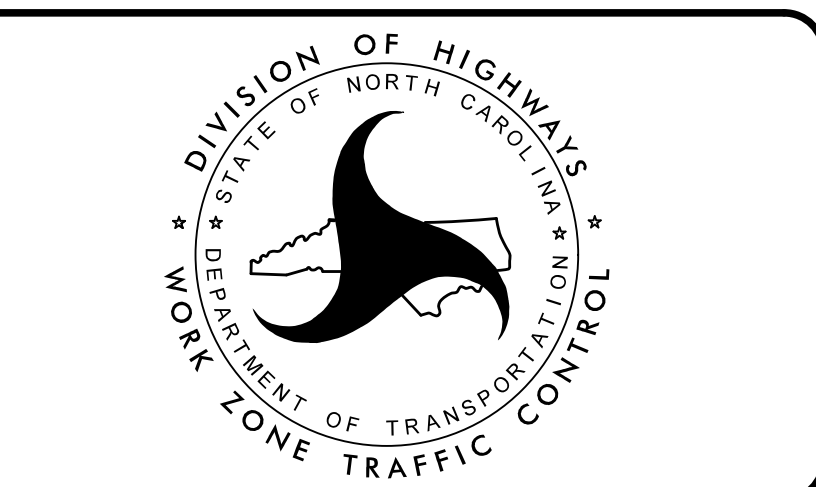
TIP PROJECT:

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PLANS PREPARED BY:
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PROJECT ENGINEER
GABRIEL RODRIGUEZ, E.I.
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:
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DATE: 3/21/2024
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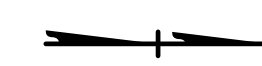

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:







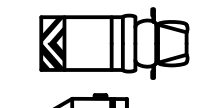

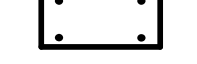
<u>STD. NO.</u>	<u>TITLE</u>
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1165.01	TRUCK MOUNTED ATTENUATOR
1180.01	SKINNY DRUMS
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND


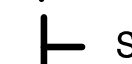

GENERAL

-  DIRECTION OF TRAFFIC FLOW
-  EXIST. PVMT.
-  NORTH ARROW
-  WORK AREA


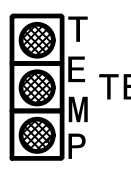
TRAFFIC CONTROL DEVICES

-  BARRICADE (TYPE III)
-  CONE
-  DRUM  SKINNY DRUM
-  FLASHING ARROW BOARD (TYPE C)
-  LAW ENFORCEMENT
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  CHANGEABLE MESSAGE SIGN
-  FLASHING ARROW BOARD IN 'CAUTION MODE'

TEMPORARY SIGNING


-  PORTABLE SIGN
-  STATIONARY SIGN
-  STATIONARY OR PORTABLE SIGN

SIGNALS

-  EXISTING
-  TEMPORARY


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TRANSPORTATION
MANAGEMENT PLAN

ROADWAY STANDARD
DRAWINGS AND LEGEND

MANAGEMENT STRATEGIES

REMOVE EXISTING OVERHEAD SIGNS:
- PLACE TRAILBLAZERS OR TEMP SIGNS.
- USING ROLLING ROADBLOCK (AND RAMP CLOSURE IF NEEDED), REMOVE EXISTING OVERHEAD SIGNS AND SPAN TRUSSES.
- MAY INSTALL FOUNDATIONS THAT ARE NOT IN MEDIAN.

INSTALL PROPOSED FOUNDATION IN MEDIAN:
- ACTIVATE TEMP SIGNAL. DETOUR SOME LEFT TURNS.
- USING WEEKEND LANE CLOSURE (ICT), CONSTRUCT PROPOSED FOUNDATION IN MEDIAN, REMOVE EXISTING POLES AND FOUNDATION IN MEDIAN, AND INSTALL PROPOSED GUARDRAIL.
- ONCE FOUNDATION IS CURED, USE ANOTHER WEEKEND LANE CLOSURE (ICT) TO INSTALL PROPOSED OVERHEAD SIGN POLES.

INSTALL PROPOSED OVERHEAD SIGNS:
- USE ROLLING ROADBLOCK TO HANG CANTILEVER TRUSSES.
- USE LANE CLOSURES (AND RAMP CLOSURE IF NEEDED), TO INSTALL SIGNS.

HOLIDAY

- FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 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.
- FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
- FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
- FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 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 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
- FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
- FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.
- FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.
- FOR NC A&T STATE UNIVERSITY FOOTBALL GAMES AT THE TRUIST STADIUM, FROM SIX (6) HOURS BEFORE THE GAME TO FOUR (4) HOURS AFTER THE GAME.

C) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS	DURATION AND OPERATION
E WENDOVER AVE	MONDAY THRU SUNDAY 5:00 AM TO 12:00 AM (MIDNIGHT)	30 MINUTES FOR TRAFFIC SHIFTS AND OVERHEAD SIGNS
US 29 / 220 ON-RAMPS, SUMMIT AVE OFF-RAMPS, WESTSIDE DR, E LINDSAY ST, HOMELAND AVE, AND ARNOLD ST	MONDAY THRU SUNDAY 6:00 AM TO 7:00 PM	AS NEEDED FOR STEPS 2 THRU 4 AND 7 THRU 11

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

- 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.
- 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.

- 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.
- 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.

TRAFFIC PATTERN ALTERATIONS

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

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.
- 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.

SIGNING

L) 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.

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

TRAFFIC CONTROL DEVICES

- 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 RADIUS 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.
- PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.
- PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES (DRUMS, CONES, OR SKINNY DRUMS) PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

MISCELLANEOUS

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

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
E WENDOVER AVE	MONDAY THRU SUNDAY 6:00 AM - 7:00 PM

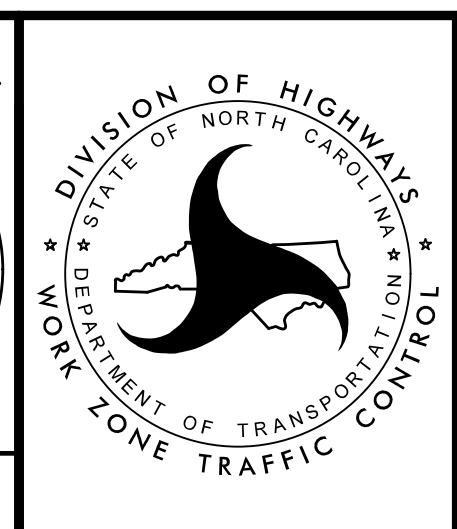
B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME
ANY ROAD

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8/6/2024



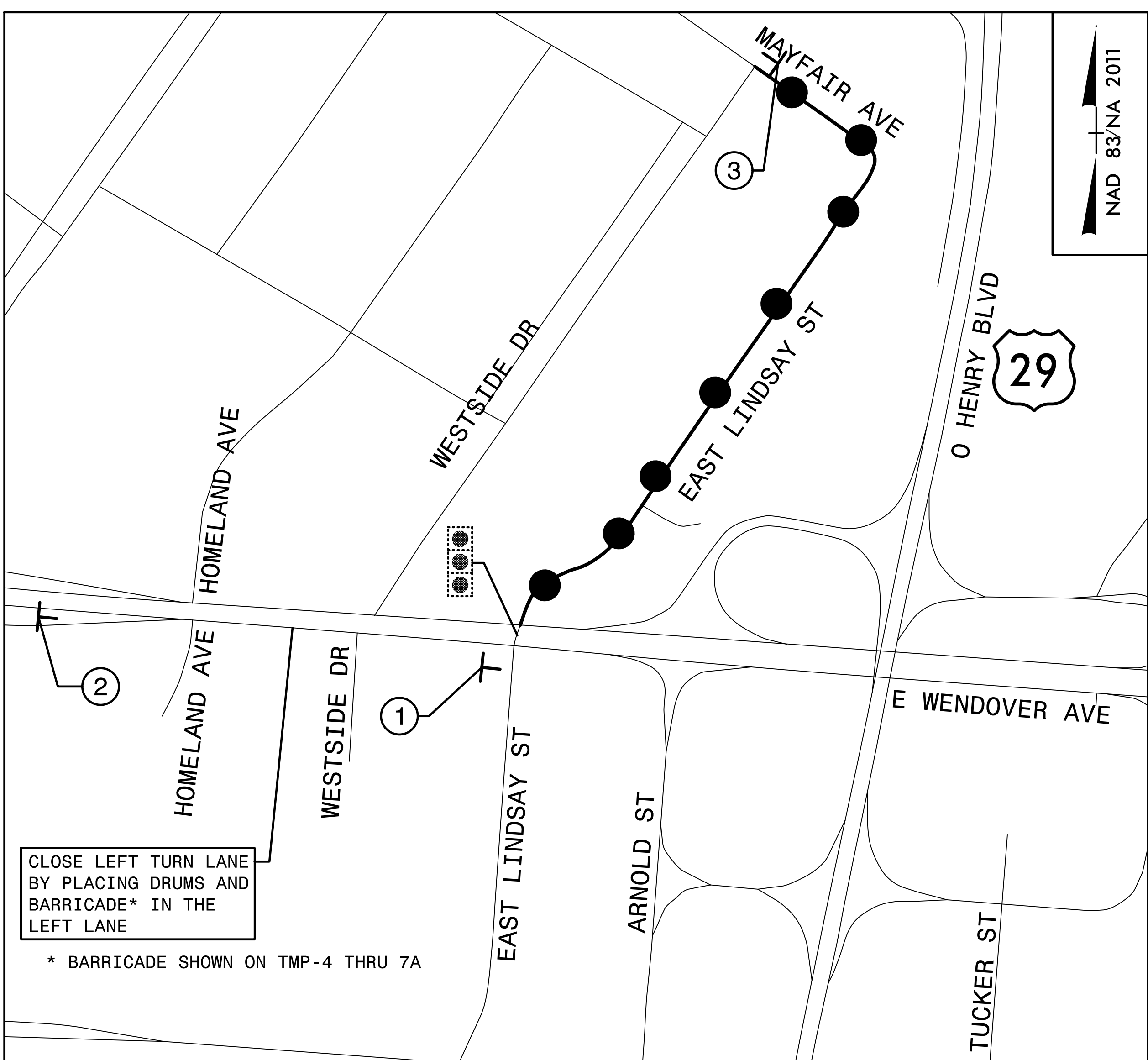
APPROVED: *Helen Shyu*
DATE: 8/6/2024
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
HELEN SHYU
042517



TRANSPORTATION MANAGEMENT PLAN

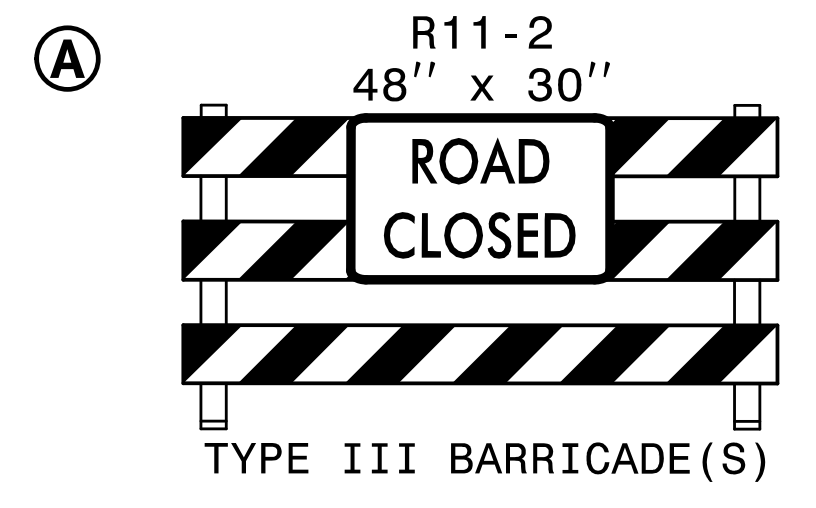
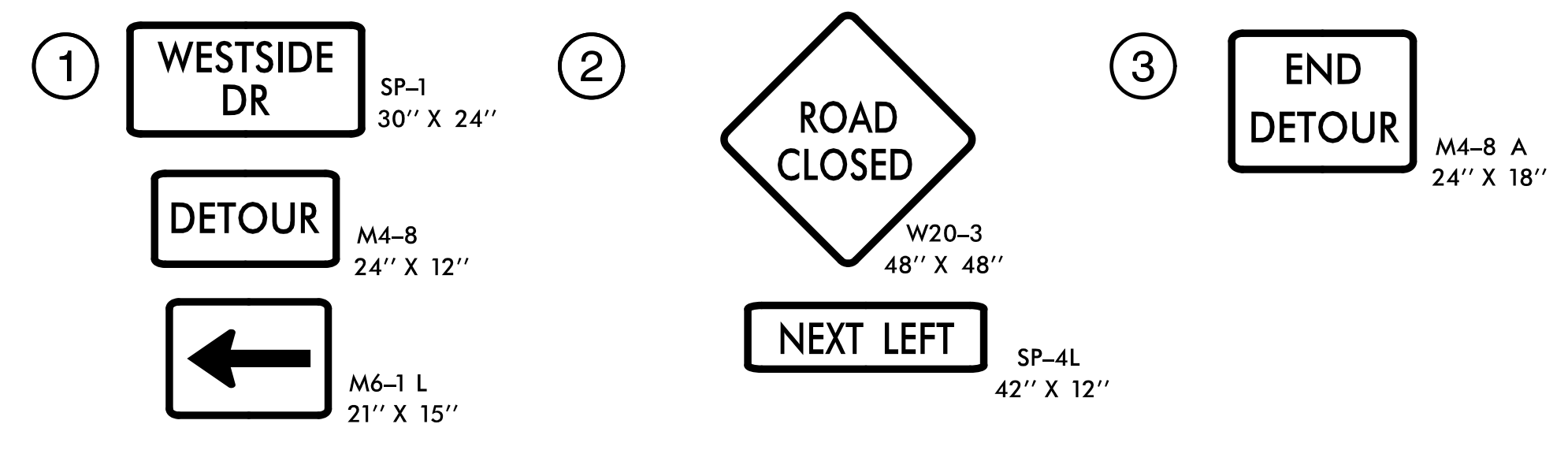
MANAGEMENT STRATEGIES AND GENERAL NOTES

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CLOSE LEFT TURN LANE BY PLACING DRUMS AND BARRICADE* IN THE LEFT LANE

* BARRICADE SHOWN ON TMP-4 THRU 7A



NOTE: DETOUR USED DURING LANE CLOSURES SHOWN ON TMP-4 THROUGH TMP-4B, OVERHEAD STRUCTURE 'E' SIGN 9 AND 10 INSTALLATION (TMP-5 AND TMP-6), AND OVERHEAD STRUCTURE 'A' SIGN 1 INSTALLATION (TMP-7 AND TMP-7A).

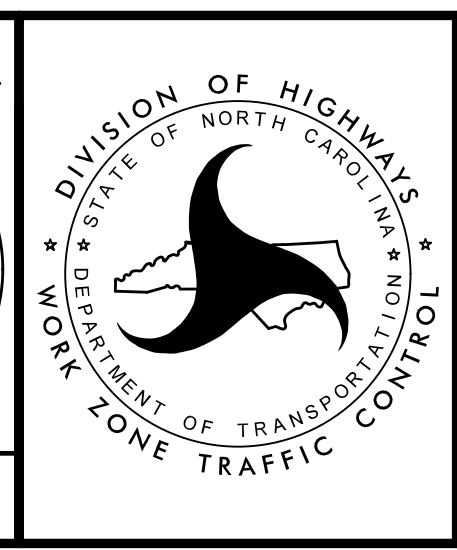
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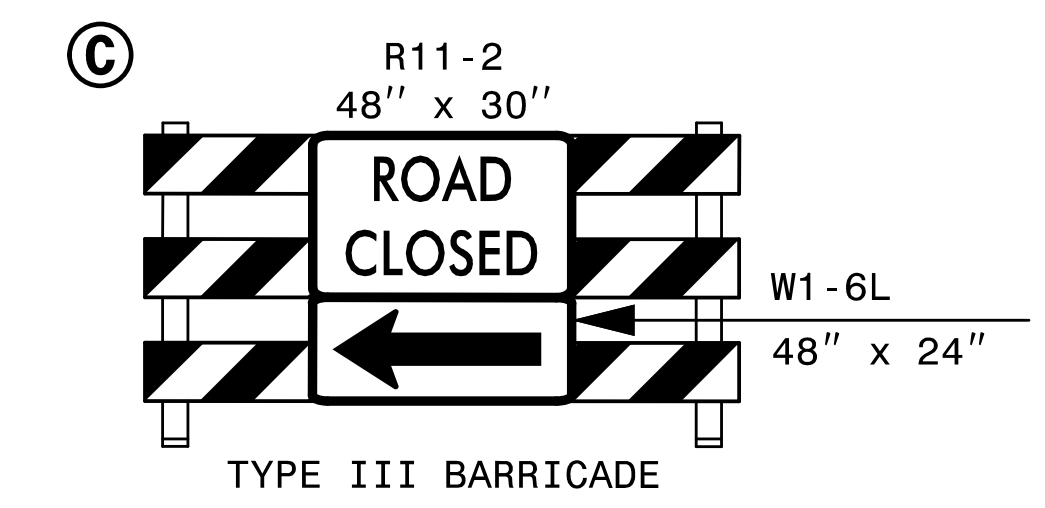
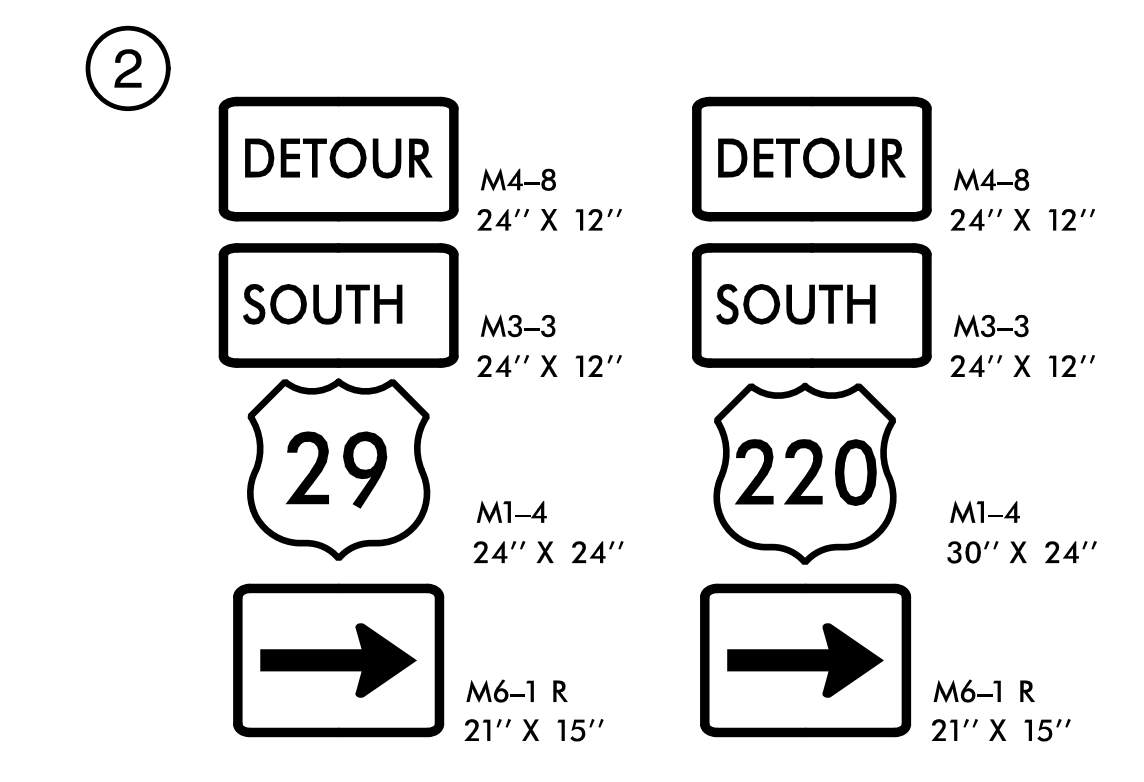
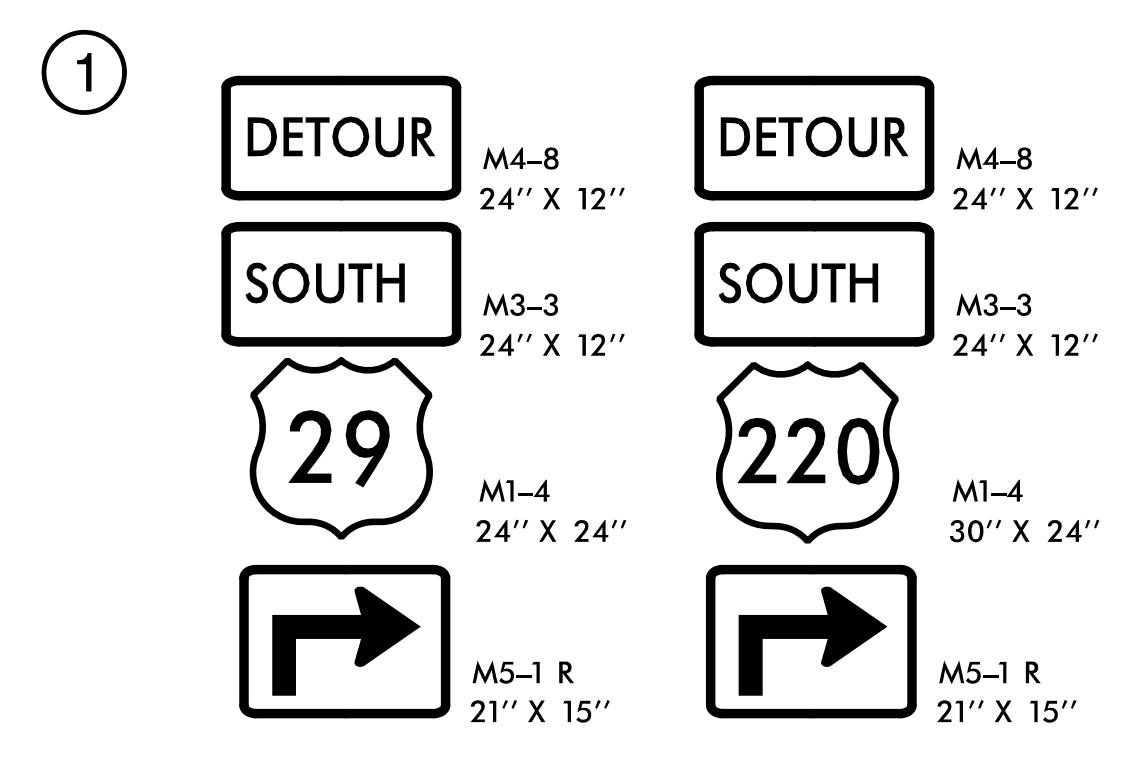
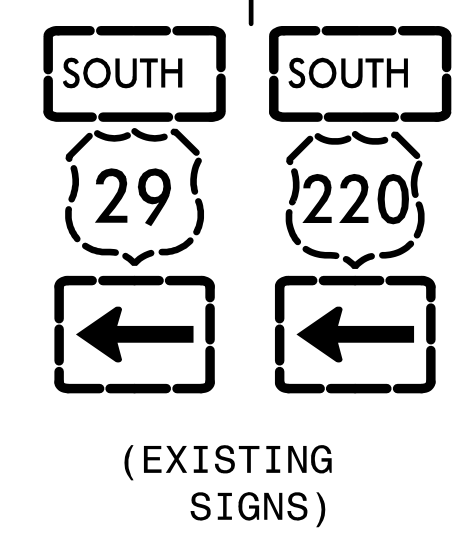
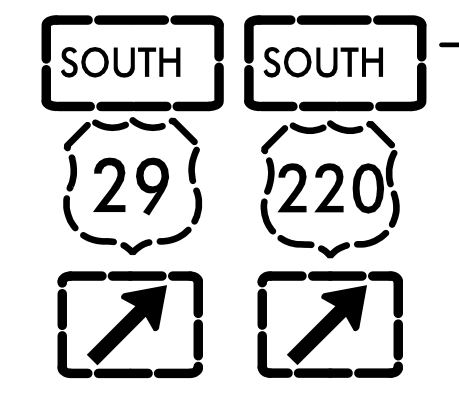
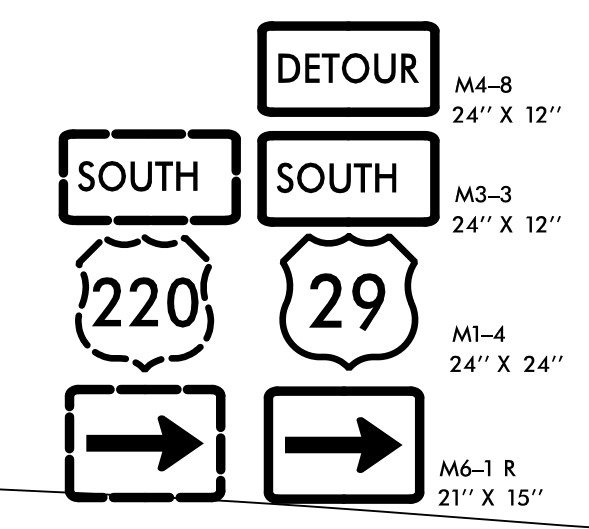
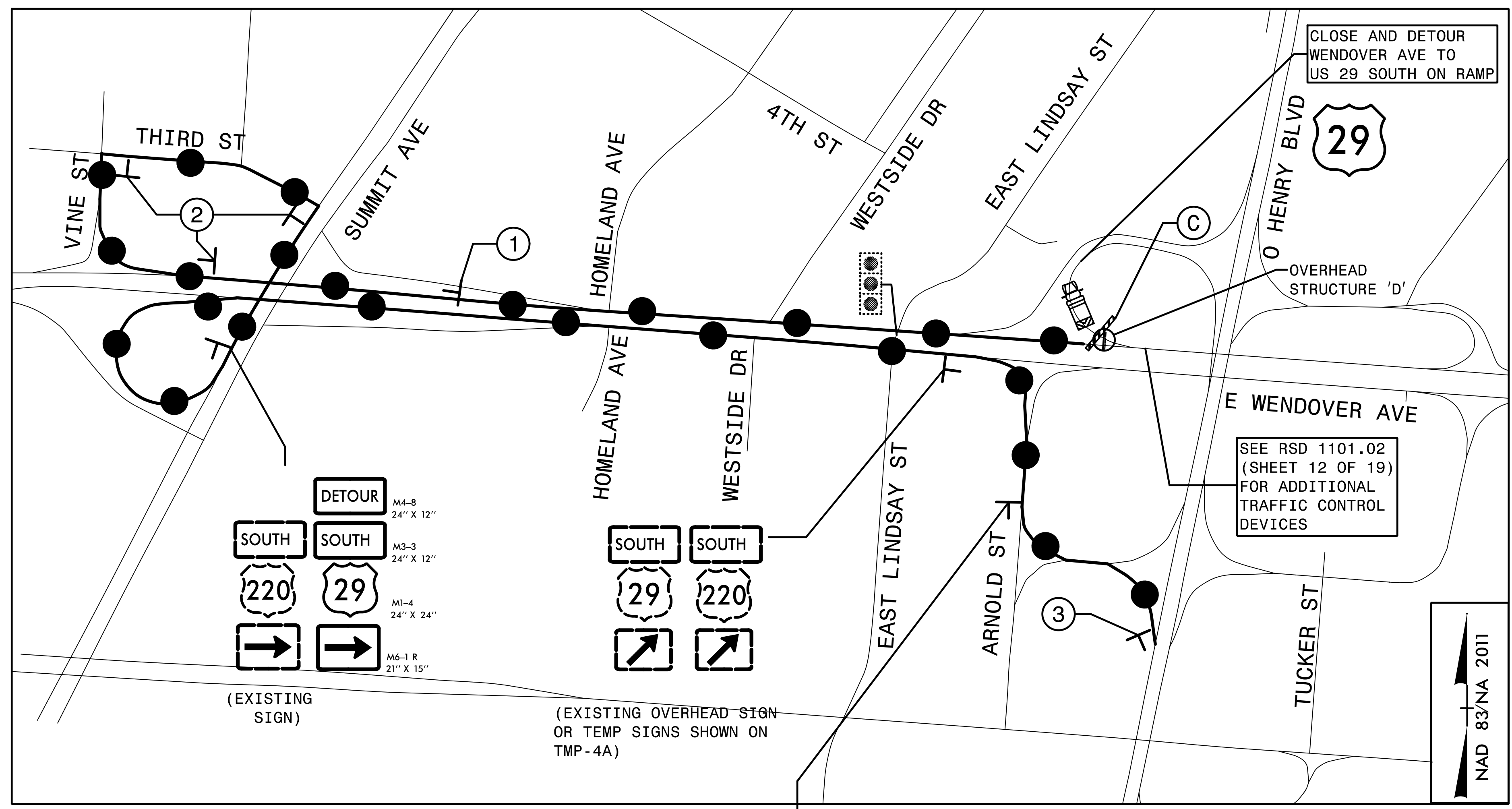
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TRANSPORTATION
MANAGEMENT PLAN

WESTSIDE DR
DETOUR



NOTE: DETOUR USED DURING EXISTING OVERHEAD SIGNS AND ARMS AS WELL AS OVERHEAD STRUCTURE 'D' SIGNS 6, 7 AND 8 INSTALLATION (TMP-11 AND 11A).

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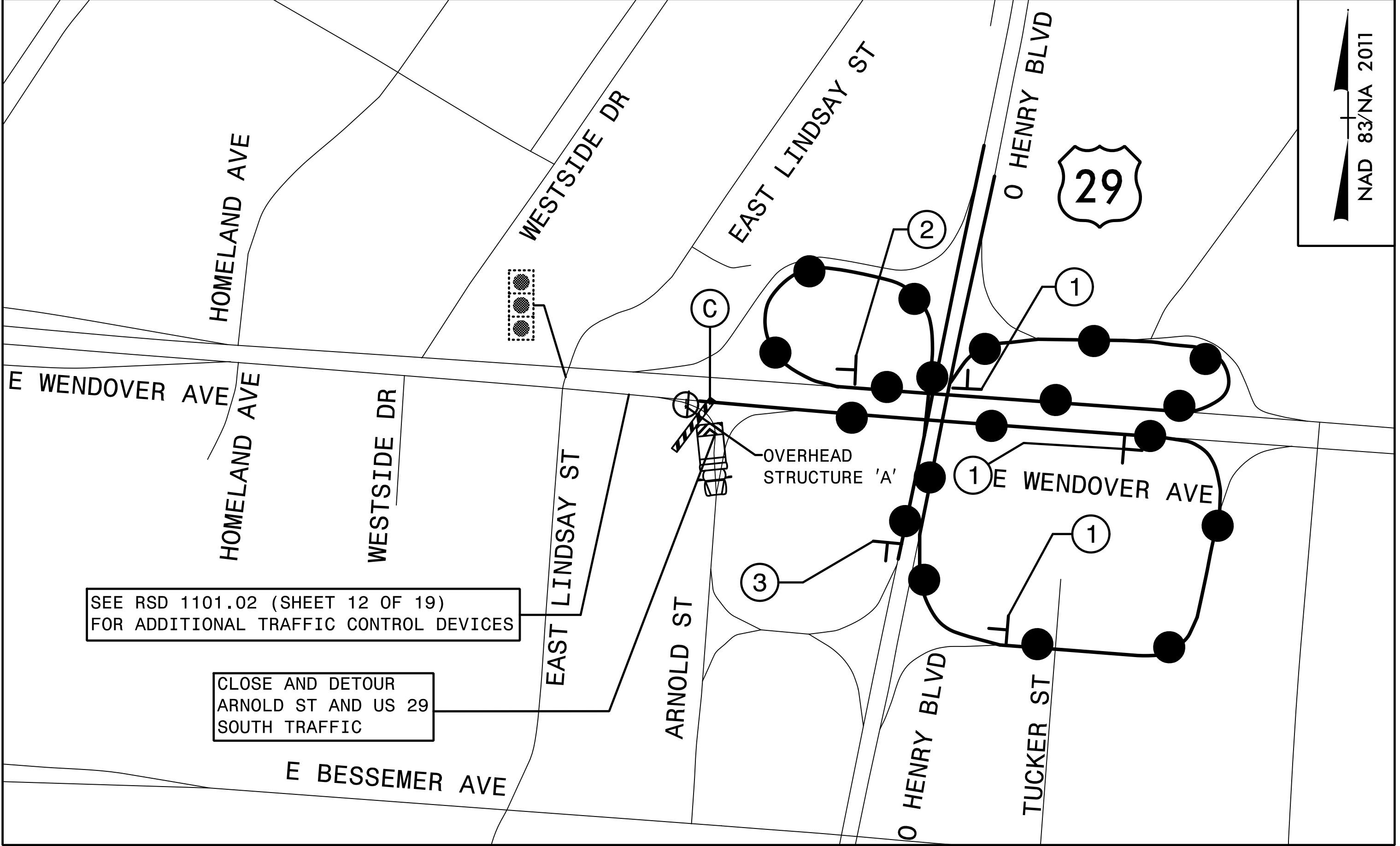
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 DATE: 3/21/2024
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TRANSPORTATION
 MANAGEMENT PLAN
 WENDOVER AVENUE WB
 TO US 29 SOUTH
 DETOUR

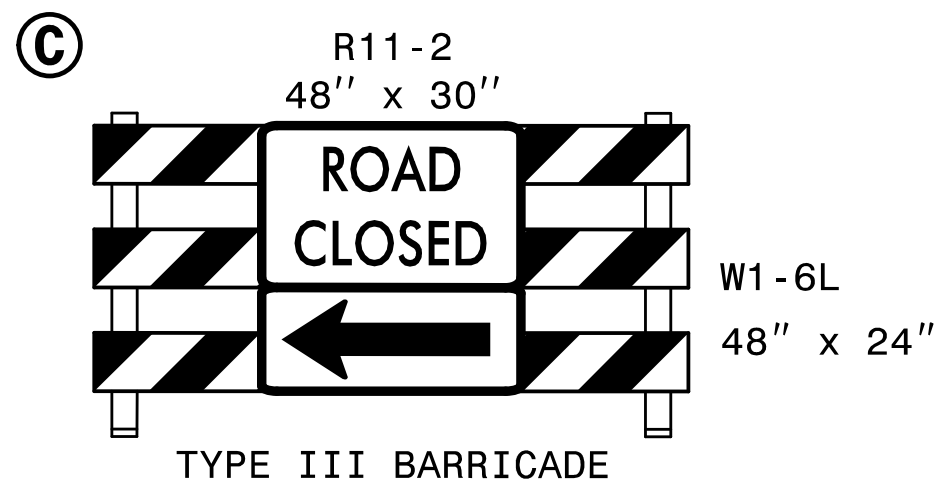
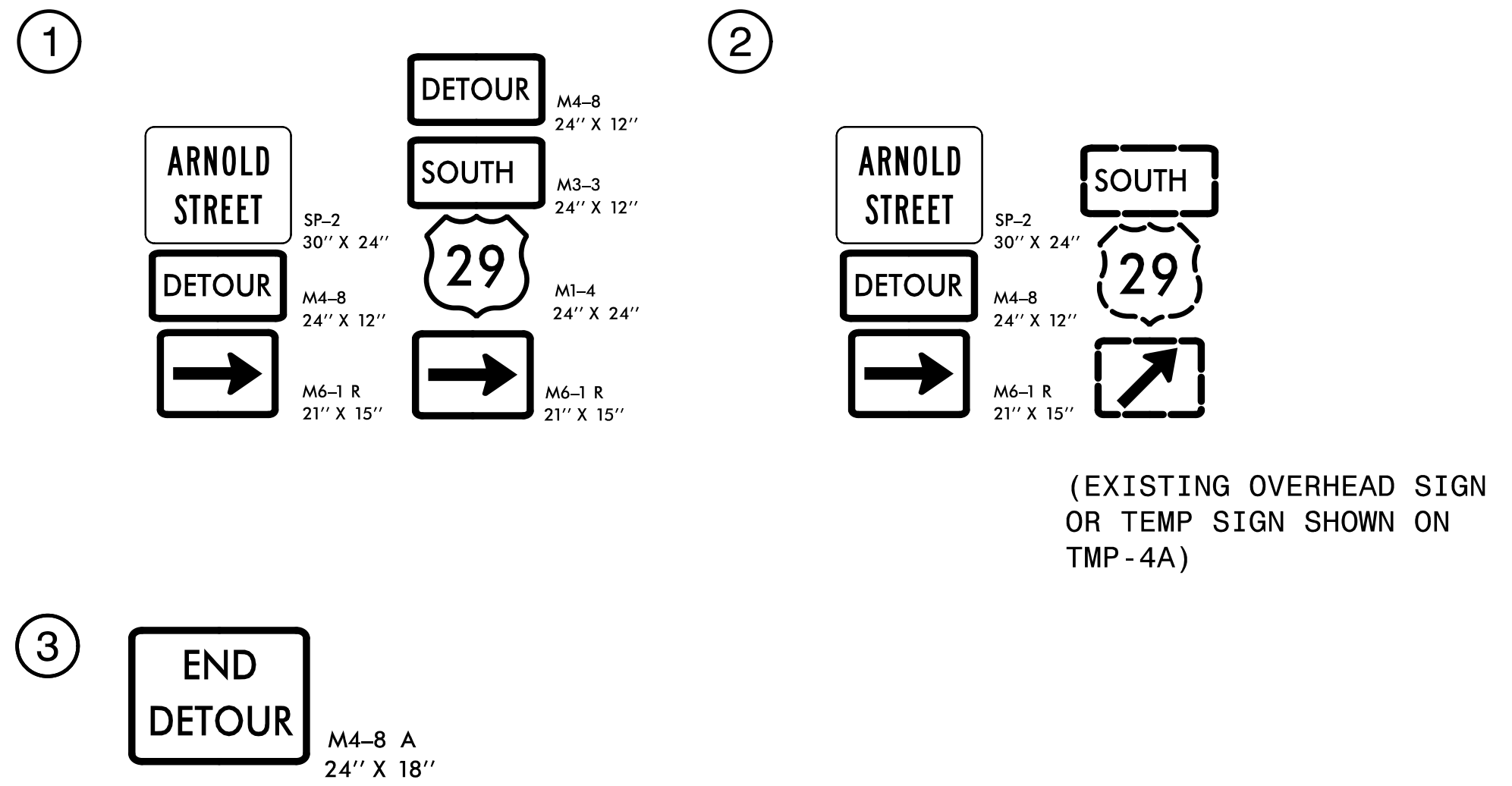
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SEE RSD 1101.02 (SHEET 12 OF 19)
FOR ADDITIONAL TRAFFIC CONTROL DEVICES

CLOSE AND DETOUR
ARNOLD ST AND US 29
SOUTH TRAFFIC

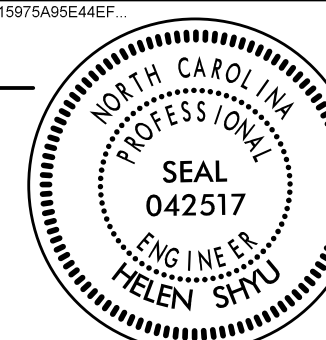
NOTE: DETOUR USED DURING EXISTING OVERHEAD
SIGNS AND ARMS AS WELL AS OVERHEAD
STRUCTURE 'A' SIGN 2 INSTALLATION (TMP-8 AND 8A).



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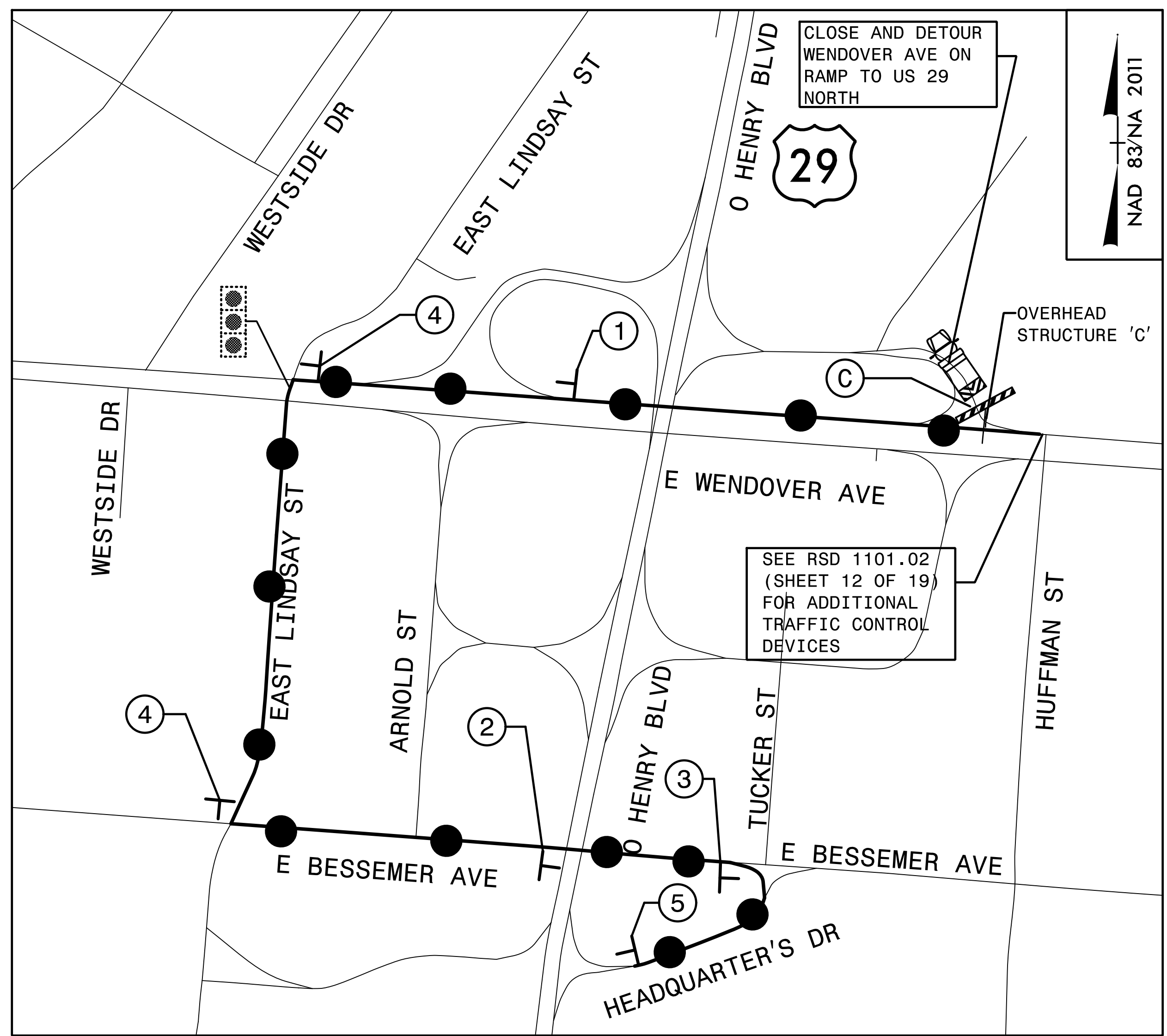
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TRANSPORTATION
MANAGEMENT PLAN

ARNOLD STREET
AND US 29 SOUTH
DETOUR

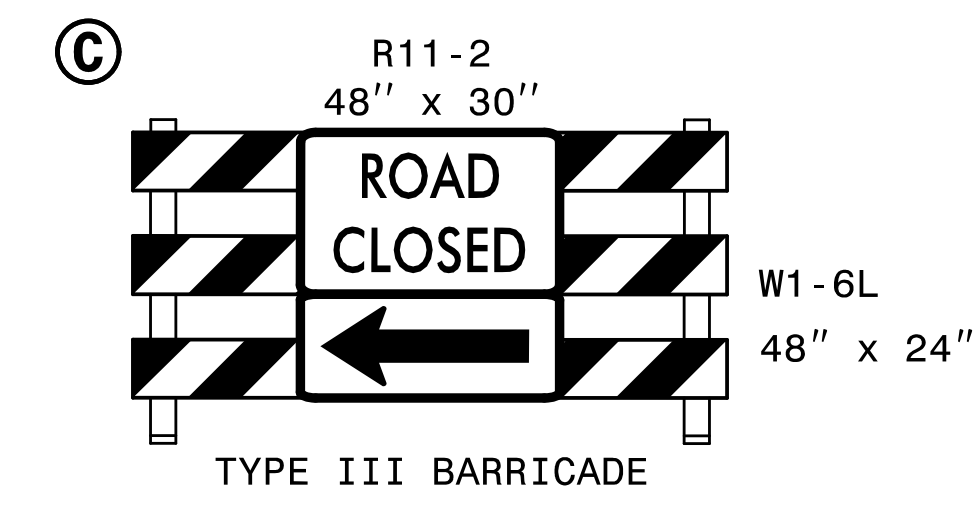
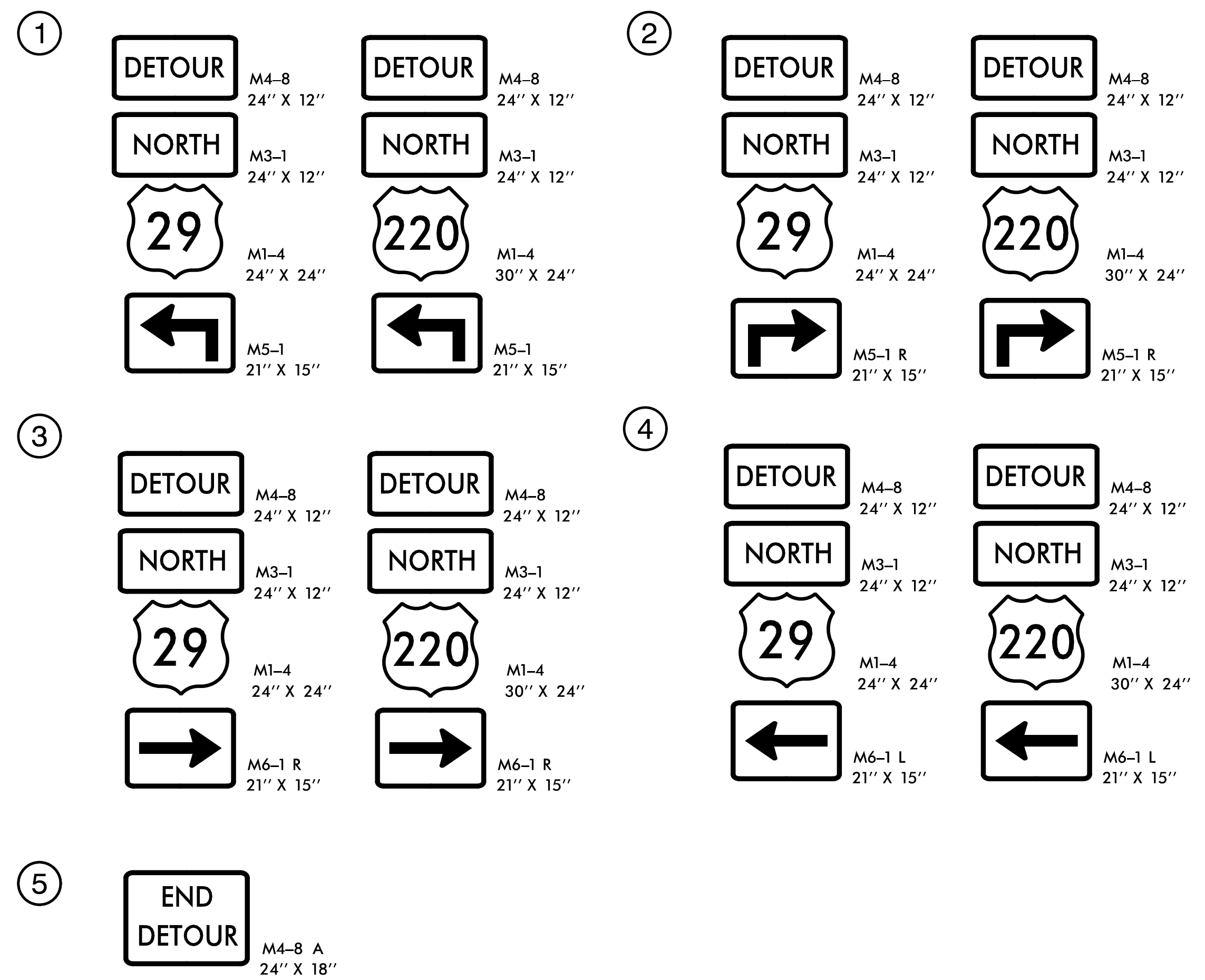
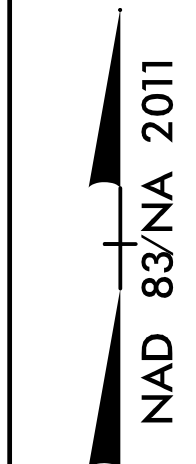
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CLOSE AND DETOUR
WENDOOVER AVE ON
RAMP TO US 29
NORTH

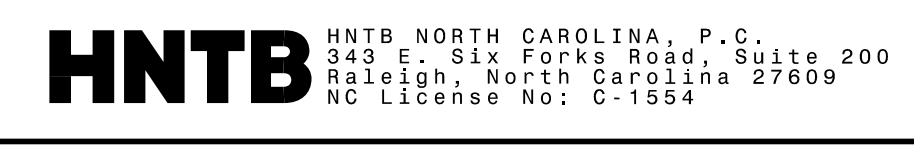


SEE RSD 1101.02
(SHEET 12 OF 19)
FOR ADDITIONAL
TRAFFIC CONTROL
DEVICES

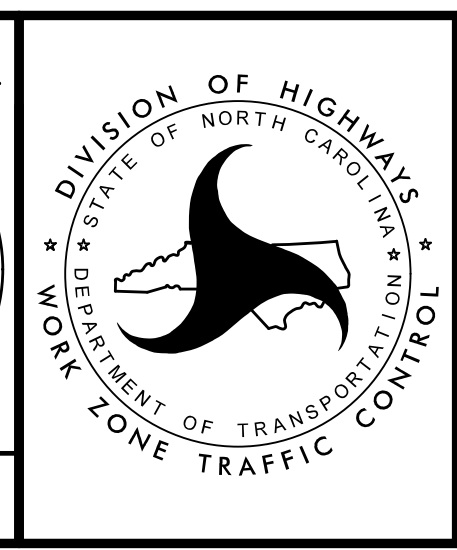


NOTE: DETOUR USED DURING EXISTING OVERHEAD
SIGNS AND ARM, PROPOSED GUARDRAIL, AND
OVERHEAD STRUCTURE 'C' SIGNS 4 AND 5
INSTALLATION.

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U-2525CA-TC TMP-2C-Structure C Detour.dgn
3/21/2024



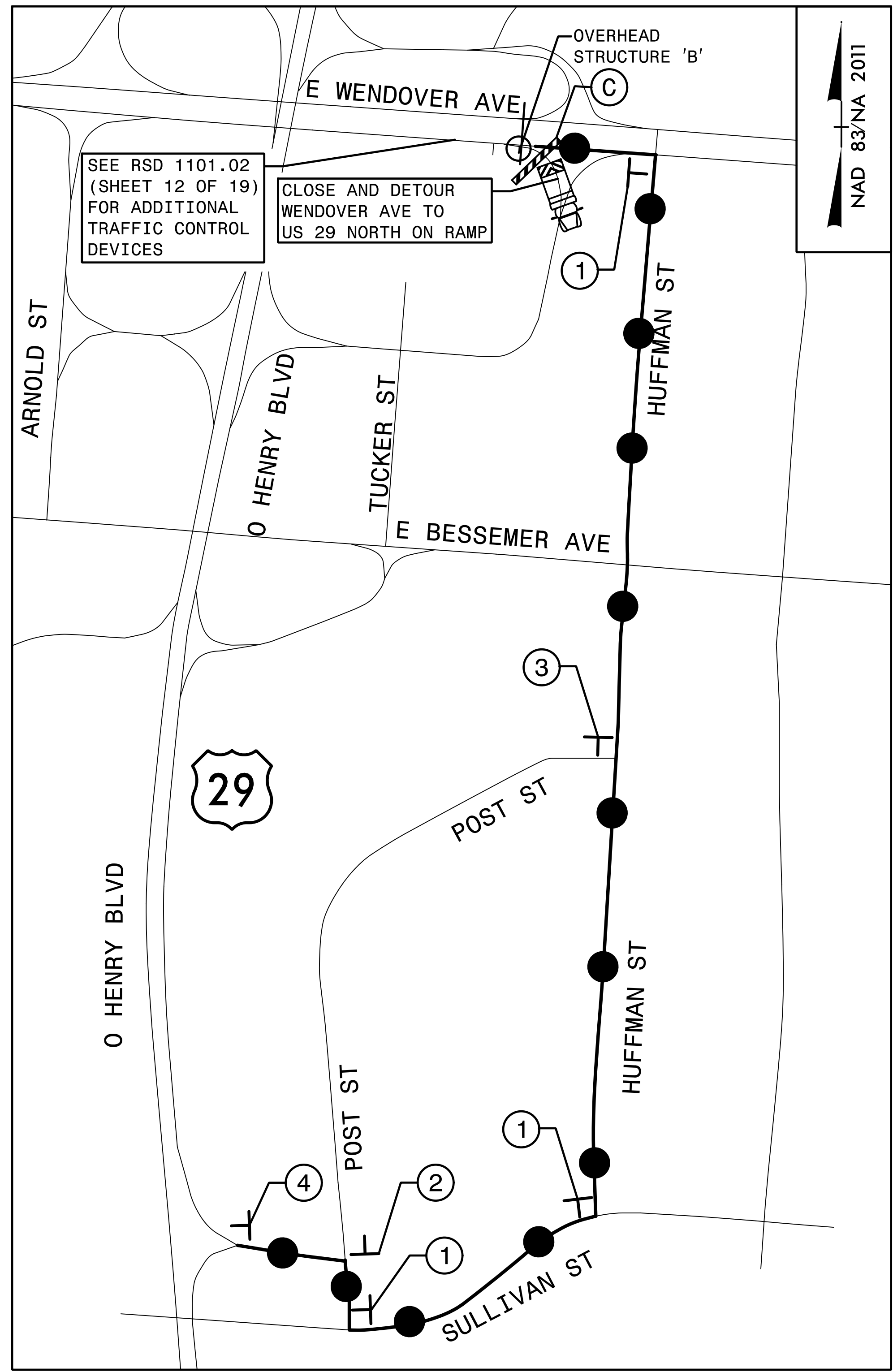
APPROVED: Helen Shyu
DATE: 3/21/2024
SEAL



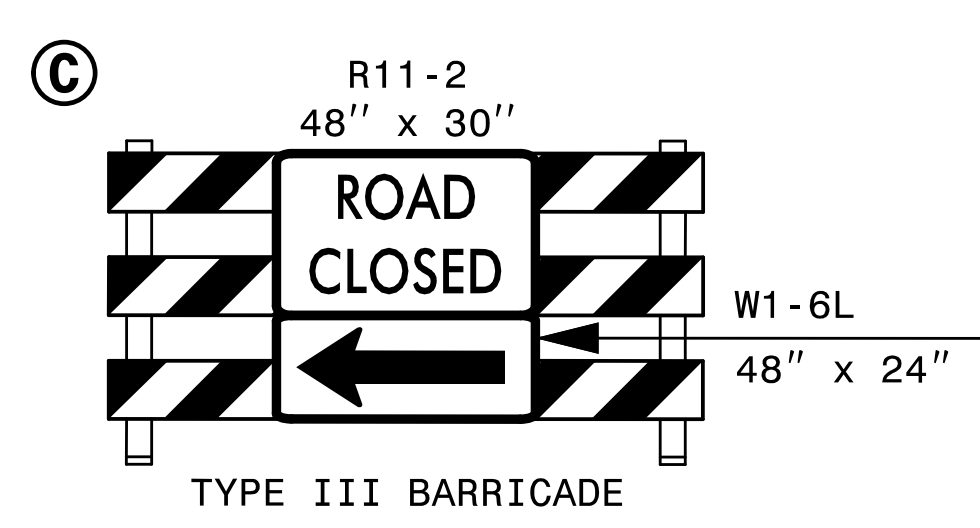
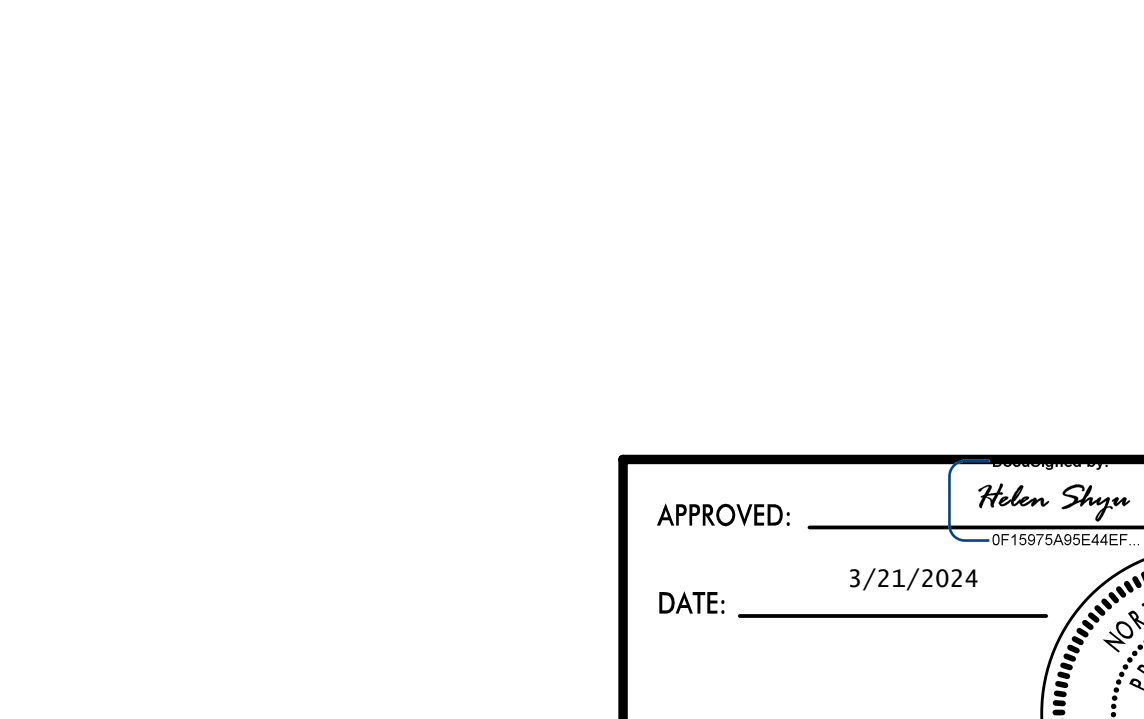
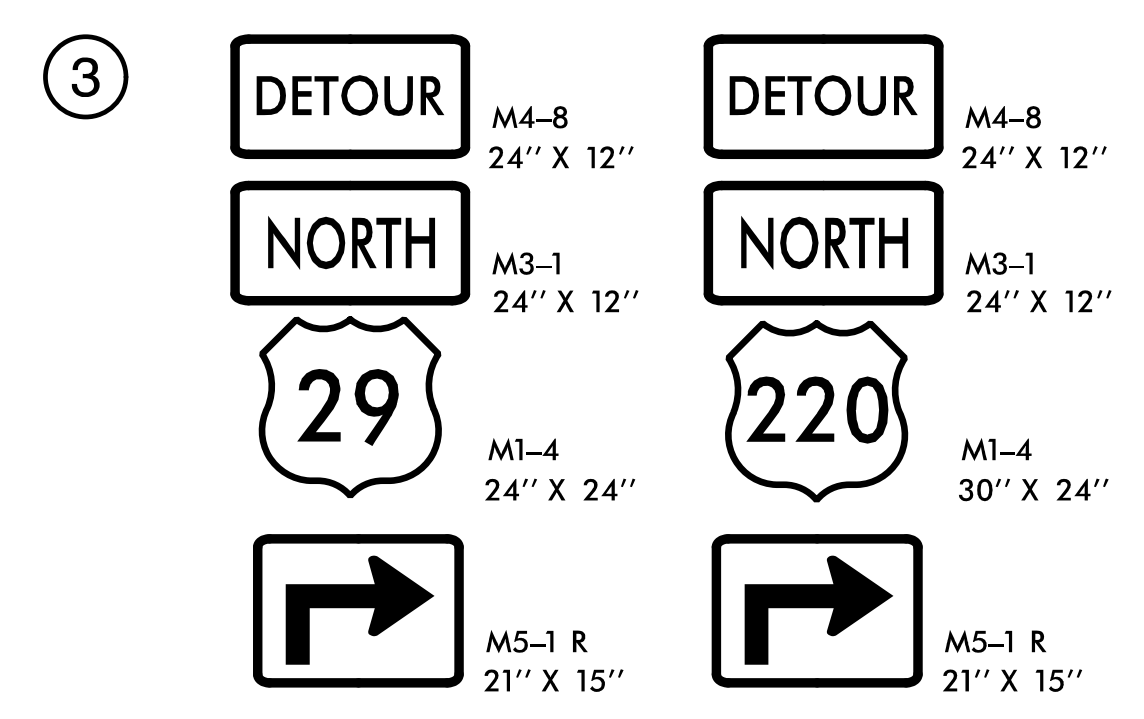
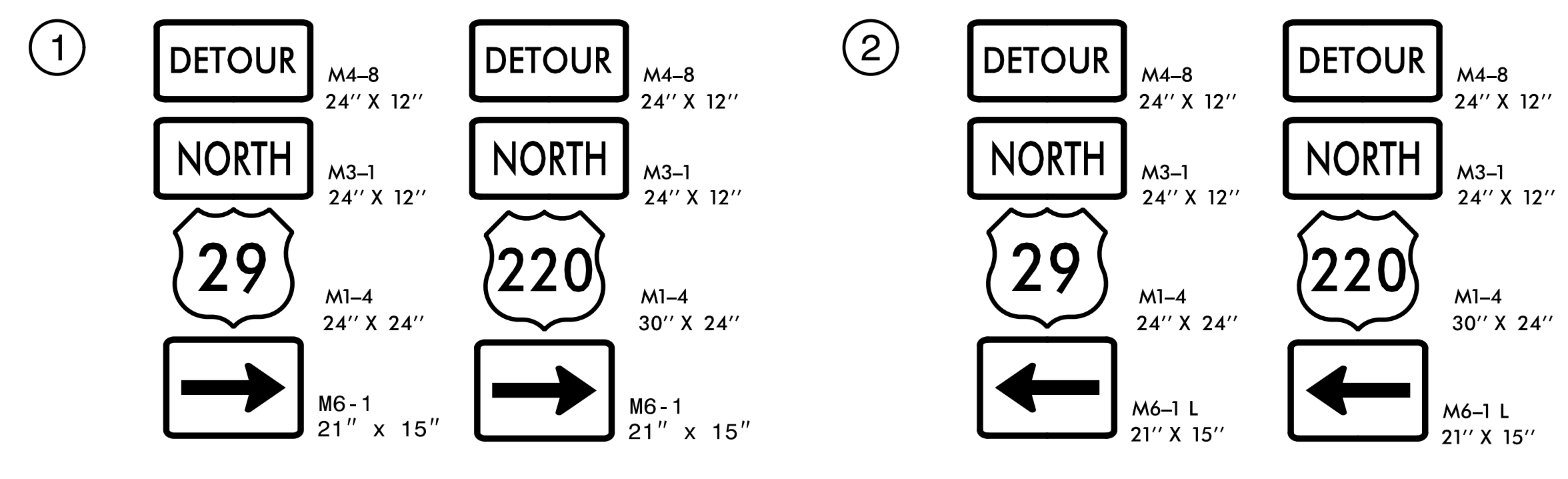
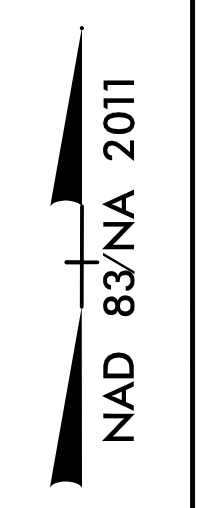
TRANSPORTATION
MANAGEMENT PLAN

WENDOOVER AVENUE WB
TO US 29 NORTH
DETOUR

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



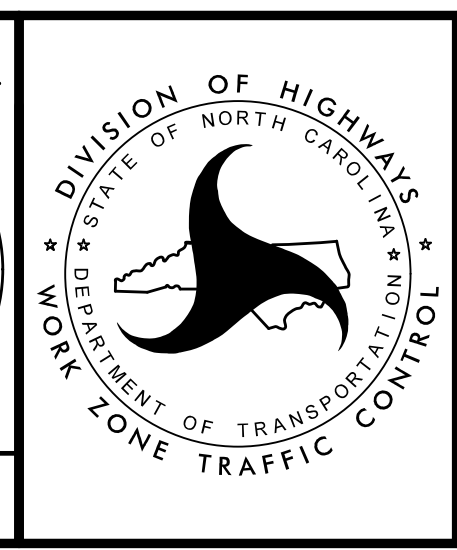
NOTE: DETOUR USED DURING PROPOSED OVERHEAD STRUCTURE 'B' SIGN 3 INSTALLATION.



3:35:14 PM U-2525CA.tc TMP-2D_Structure B Detour.dgn 3/21/2024

HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

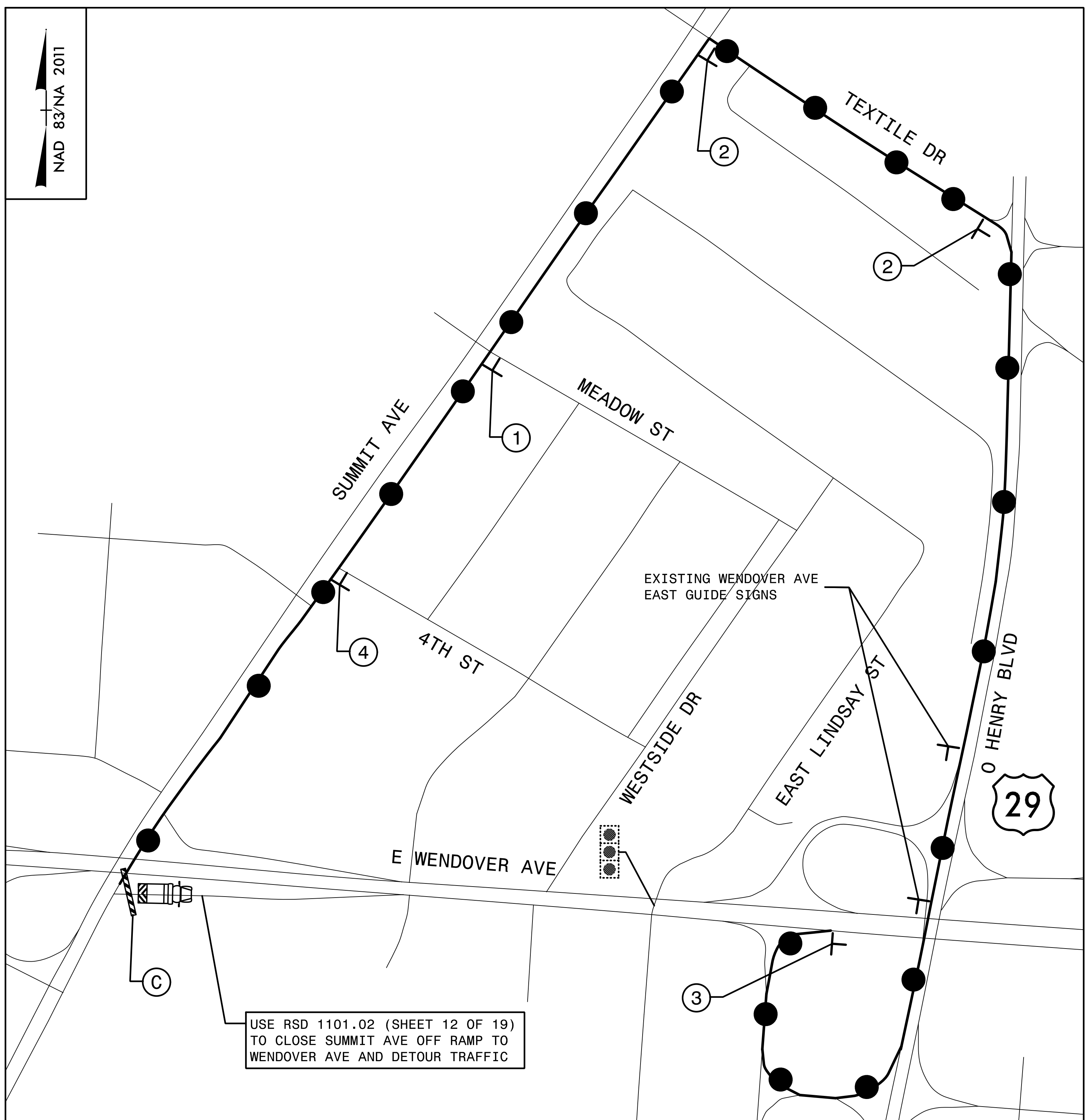
APPROVED: Helen Shyu
DATE: 3/21/2024
SEAL



TRANSPORTATION
MANAGEMENT PLAN

WENDOVER AVENUE EB
TO US 29 NORTH
DETOUR

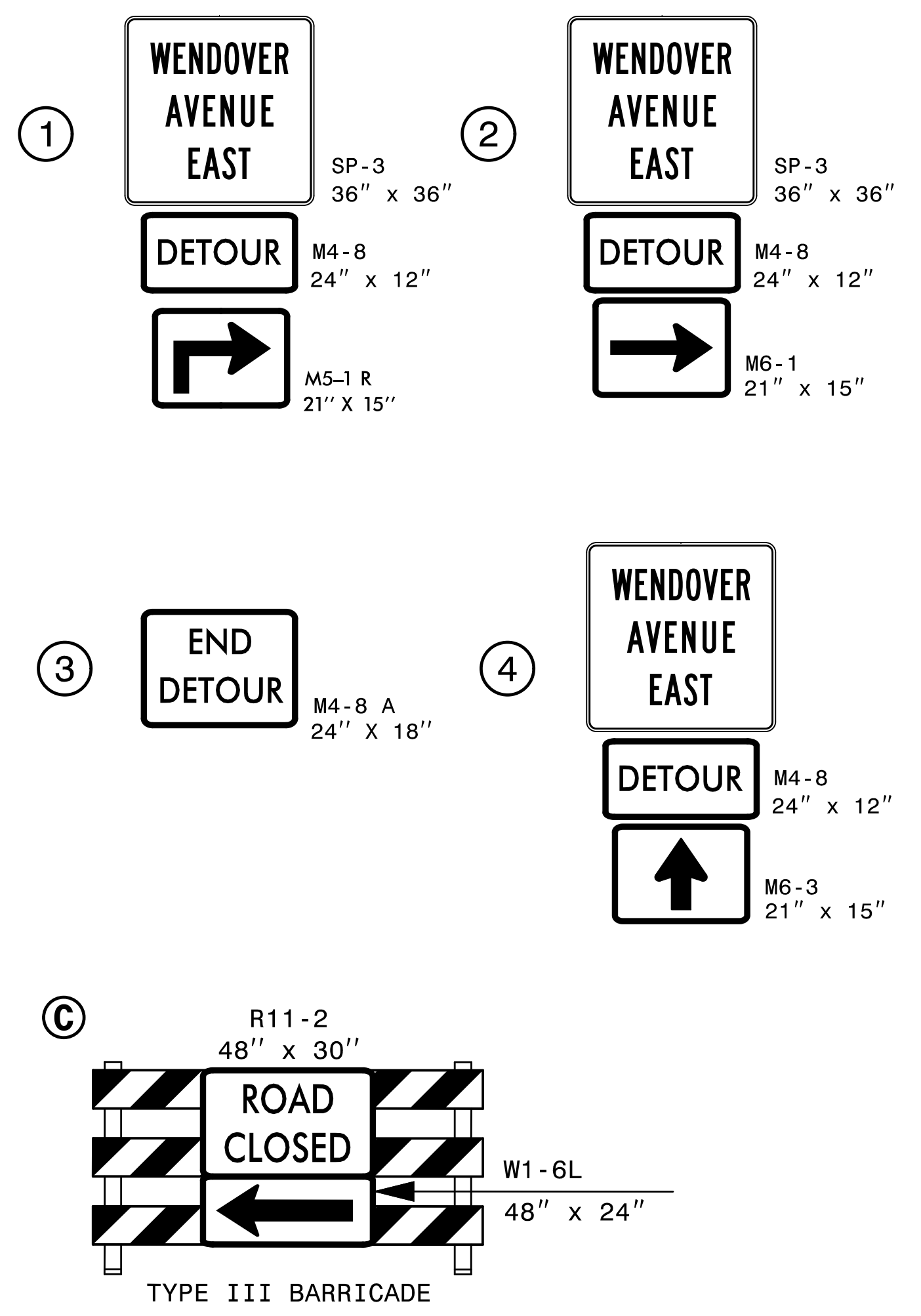
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



NAD 83/NA 2011

USE RSD 1101.02 (SHEET 12 OF 19) TO CLOSE SUMMIT AVE OFF RAMP TO WENDOVER AVE AND DETOUR TRAFFIC

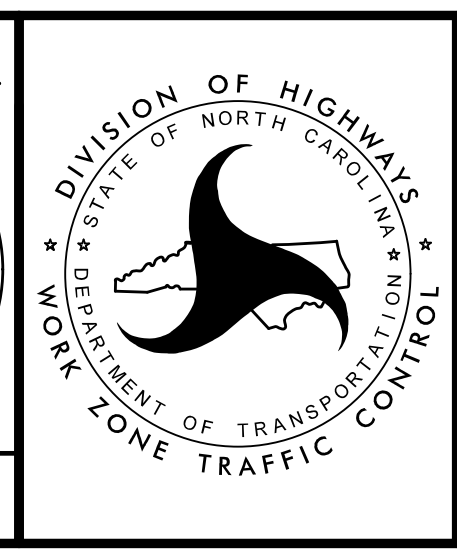
NOTE: DETOUR USED DURING LANE CLOSURE TO INSTALL OVERHEAD STRUCTURE 'A' SIGNS (TMP-7, TMP-7A, TMP-8, AND TMP-8A).



3:35:16 PM U-2525CA-TC TMP-2E-Summit Ave NB Ramp Detour .dgn 3/21/2024

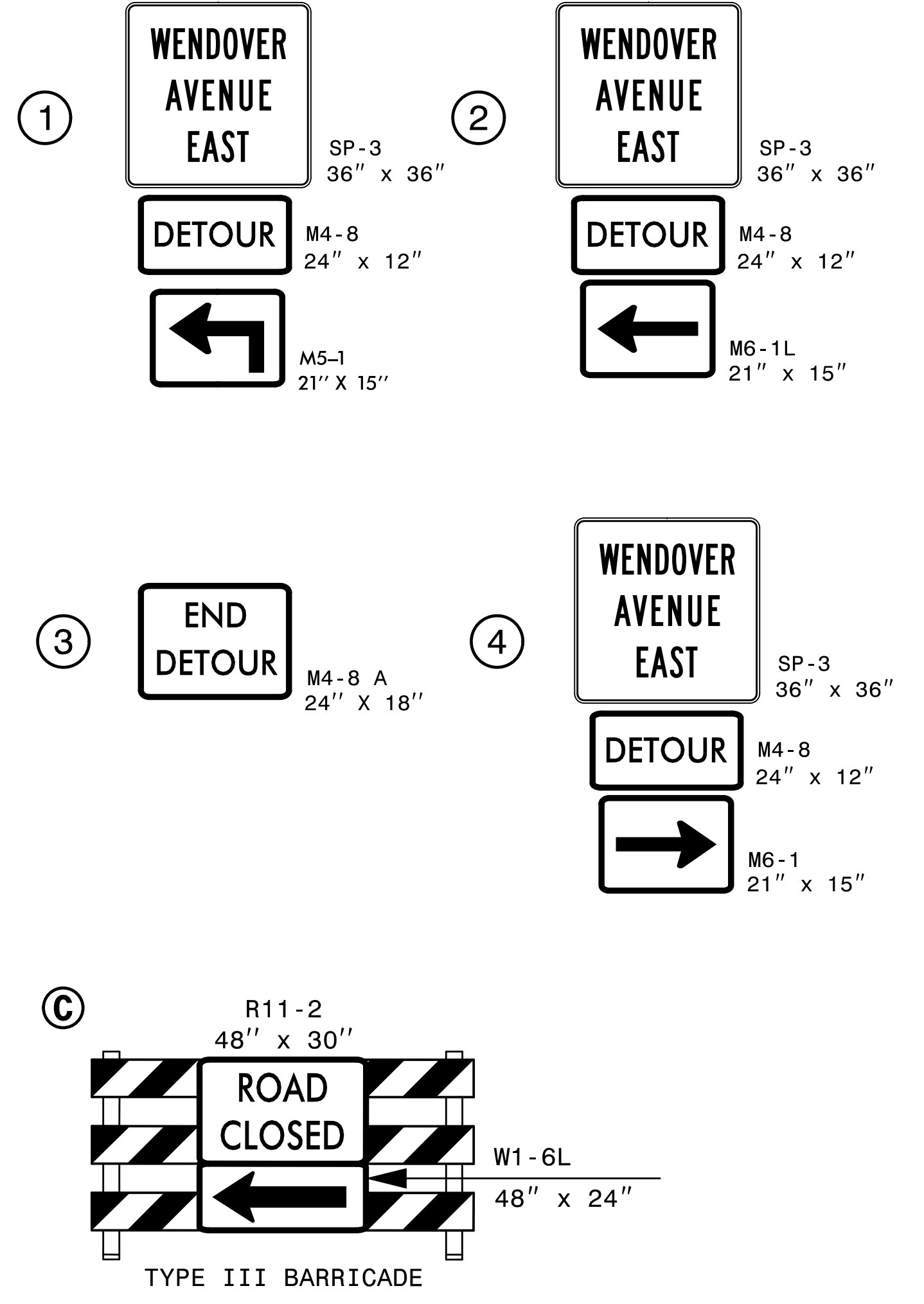
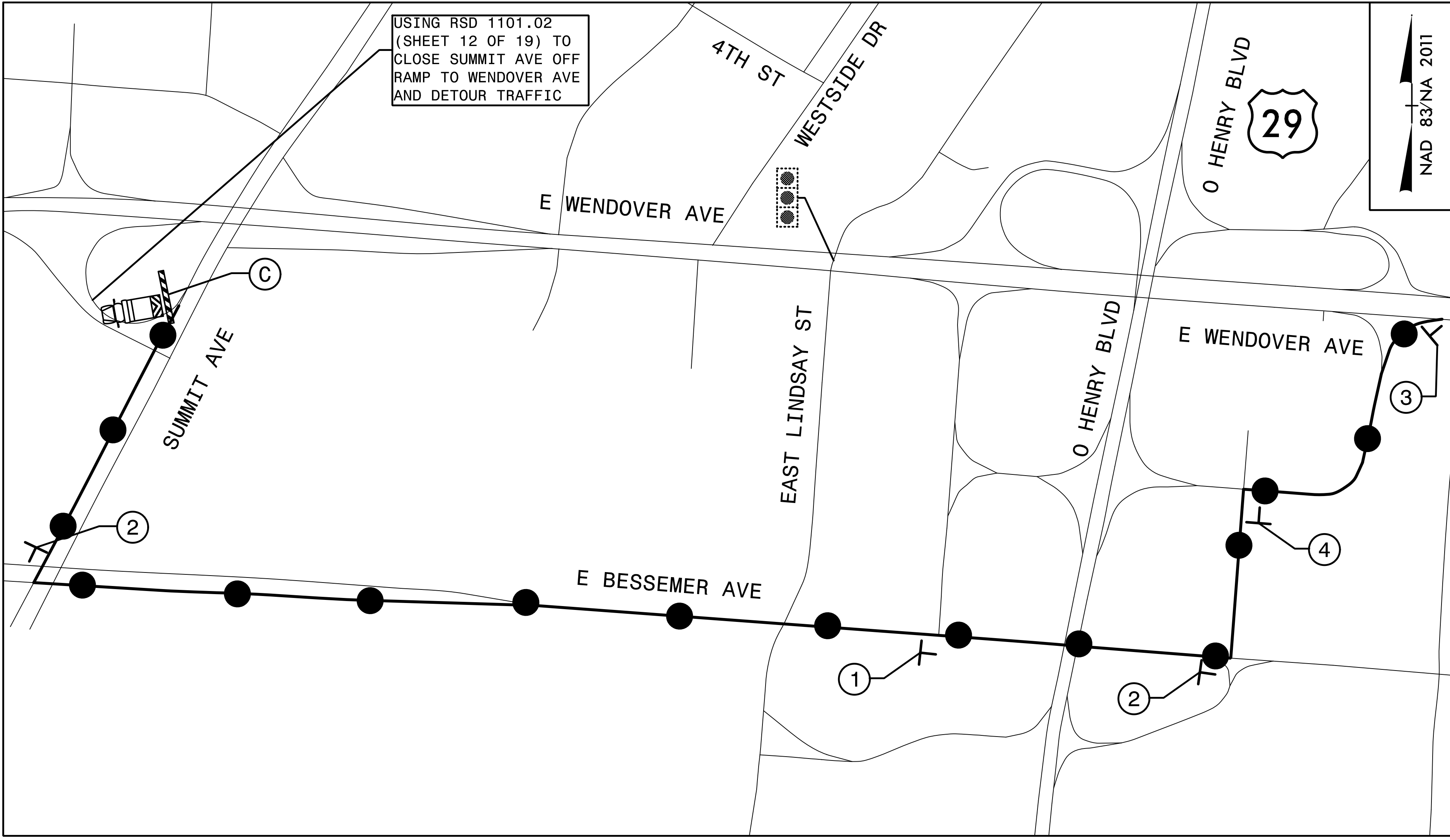
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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

APPROVED: *Helen Shyu*
DATE: 3/21/2024
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 042517
ENGINEER HELEN SHYU



TRANSPORTATION MANAGEMENT PLAN
SUMMIT AVENUE NB RAMP DETOUR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTE: DETOUR USED DURING LANE CLOSURE TO CONSTRUCT MEDIAN FOUNDATIONS AND POLES, AS WELL AS TO INSTALL OVERHEAD STRUCTURE 'A' SIGNS (TMP-4, TMP-7, TMP-7A, TMP-8, TMP-8A).

3:35:17 PM U-2525CA.tc TMP-2F-Summit Ave NB Loop Detour .dgn 3/21/2024

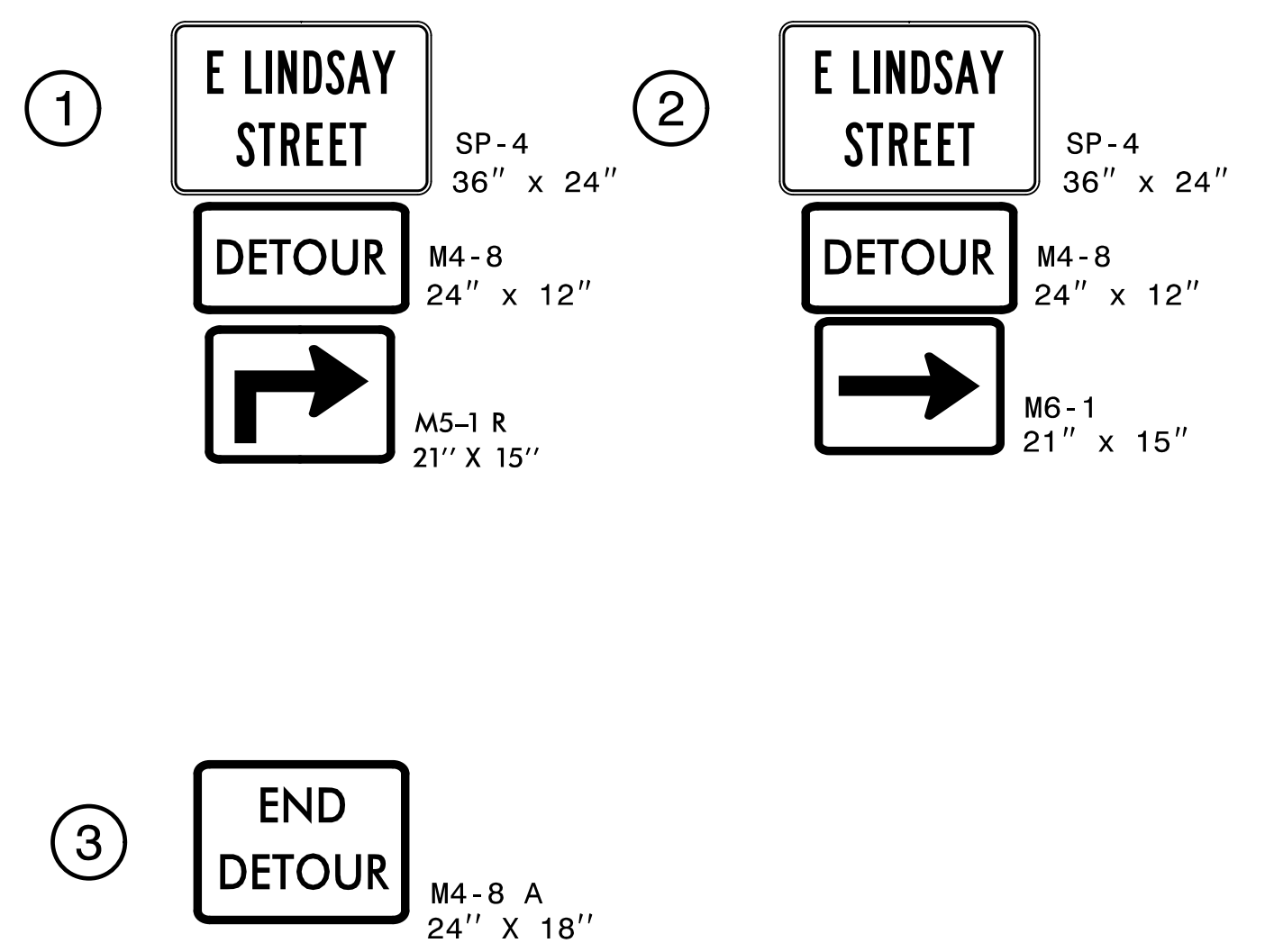
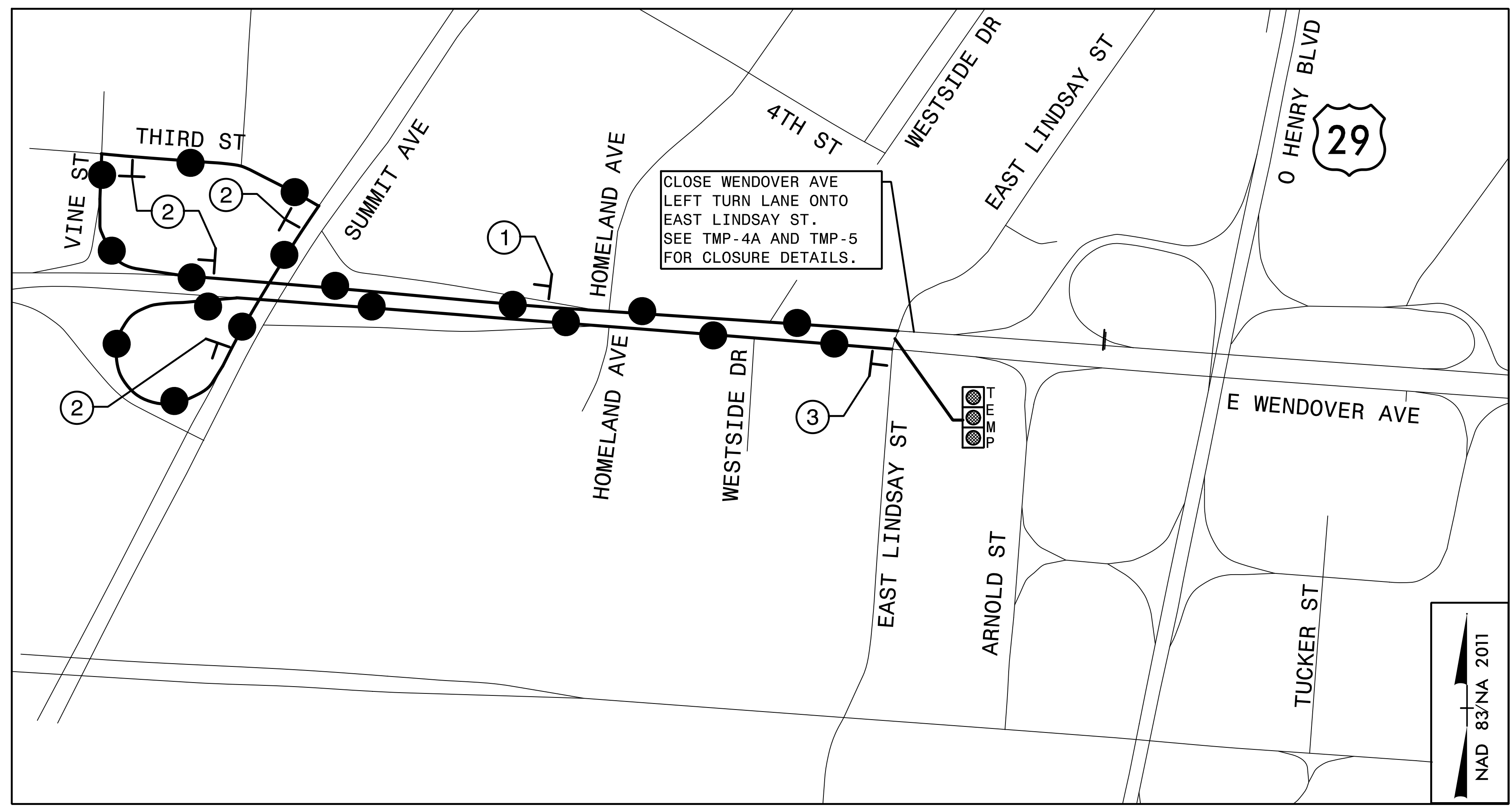
HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

APPROVED: Helen Shyu
DATE: 3/21/2024
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 042517
HELEN SHYU



TRANSPORTATION MANAGEMENT PLAN
SUMMIT AVENUE SB LOOP DETOUR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

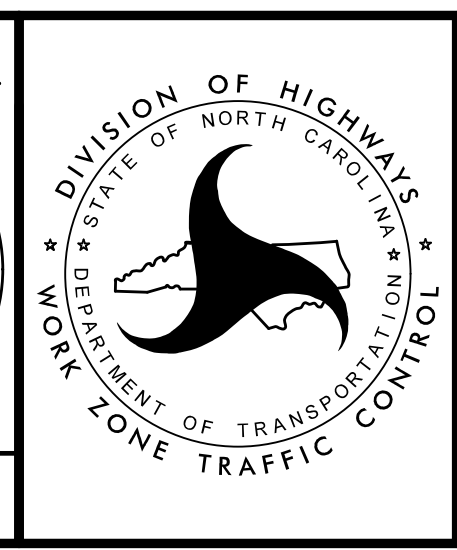


NOTE: DETOUR USED DURING LANE CLOSURE TO CONSTRUCT MEDIAN FOUNDATION AND POLES , AS WELL AS TO INSTALL OVERHEAD STRUCTURE 'E' SIGN 9 (TMP-4 THRU 4B AND TMP-5).

3:35:19 PM U-2525CA.tc TMP-2G.Lindsay St Detour.dgn 3/21/2024

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 HNTB NORTH CAROLINA, P.C.
 343 E. Six Forks Road, Suite 200
 Raleigh, North Carolina 27609
 NC License No: C-1554

APPROVED: Helen Shyu
0F15975AB9E44EF
 DATE: 3/21/2024
 SEAL



TRANSPORTATION MANAGEMENT PLAN
 WENDOVER AVENUE WB TO EAST LINDSAY ST SB DETOUR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGN NUMBER: SP-1 BACKG COLOR: Fluorescent Orange COPY COLOR: Black
 TYPE: D QUANTITY: 2
 SIGN WIDTH: 2'-6" HEIGHT: 2'-0" TOTAL AREA: 5.0 Sq.Ft.
 BORDER TYPE: RECESSED RECESS: 0.38" WIDTH: 0.38" RADIUS: 1.5"
 NO. Z BARS: N/A LENGTH: N/A
 DESIGN BY: TRT PROJECT ID: U-2525AC CHECKED BY: ADK DIV: 07 DATE: November 2023

LETTER POSITIONS

Letter	W	E	S	T	S	I	D	E
Series/Size	3.4	4.4	2.7	2.9	2.8	3.3	1.7	3.4
Text Length	B 2000							
	23.3							
	B 2000							
	14.8							

SIGN NUMBER: SP-2 BACKG COLOR: Fluorescent Orange COPY COLOR: Black
 TYPE: D QUANTITY: 4
 SIGN WIDTH: 2'-6" HEIGHT: 2'-0" TOTAL AREA: 5.0 Sq.Ft.
 BORDER TYPE: RECESSED RECESS: 0.38" WIDTH: 0.38" RADIUS: 1.5"
 NO. Z BARS: N/A LENGTH: N/A
 DESIGN BY: TRT PROJECT ID: U-2525AC CHECKED BY: ADK DIV: 07 DATE: November 2023

LETTER POSITIONS

Letter	A	R	N	O	L	D
Series/Size	4.5	4.1	3.5	3.7	3.9	3.1
Text Length	B 2000					
	20.9					
	B 2000					
	18					

SIGN NUMBER: SP-3 BACKG COLOR: Fluorescent Orange COPY COLOR: Black
 TYPE: D QUANTITY: 8
 SIGN WIDTH: 3'-0" HEIGHT: 3'-0" TOTAL AREA: 9.0 Sq.Ft.
 BORDER TYPE: RECESSED RECESS: 0.38" WIDTH: 0.38" RADIUS: 1.5"
 NO. Z BARS: N/A LENGTH: N/A
 DESIGN BY: TRT PROJECT ID: U-2525AC CHECKED BY: ADK DIV: 07 DATE: November 2023

LETTER POSITIONS

Letter	W	E	N	D	O	V	E	R
Series/Size	4.9	4.4	3	3.5	3.3	3.2	3.4	3
Text Length	B 2000							
	26.3							
	B 2000							
	20.6							
	B 2000							
	11.8							

SIGN NUMBER: SP-4 BACKG COLOR: Fluorescent Orange COPY COLOR: Black
 TYPE: D QUANTITY: 5
 SIGN WIDTH: 3'-0" HEIGHT: 2'-0" TOTAL AREA: 6.0 Sq.Ft.
 BORDER TYPE: RECESSED RECESS: 0.38" WIDTH: 0.38" RADIUS: 1.5"
 NO. Z BARS: N/A LENGTH: N/A
 DESIGN BY: TRT PROJECT ID: U-2525AC CHECKED BY: ADK DIV: 07 DATE: November 2023

LETTER POSITIONS

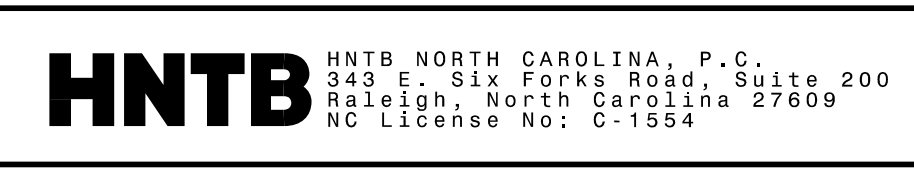
Letter	E	L	I	N	D	S	A	Y
Series/Size	4.9	2.3	3	2.9	1.7	3.5	3.1	2.9
Text Length	B 2000							
	26.1							
	B 2000							
	18							

SIGN NUMBER: SP-5 BACKG COLOR: Fluorescent Orange COPY COLOR: Black
 TYPE: D QUANTITY: 2
 SIGN WIDTH: 2'-6" HEIGHT: 2'-0" TOTAL AREA: 5.0 Sq.Ft.
 BORDER TYPE: RECESSED RECESS: 0.38" WIDTH: 0.38" RADIUS: 1.5"
 NO. Z BARS: N/A LENGTH: N/A
 DESIGN BY: TRT PROJECT ID: U-2525AC CHECKED BY: ADK DIV: 07 DATE: November 2023

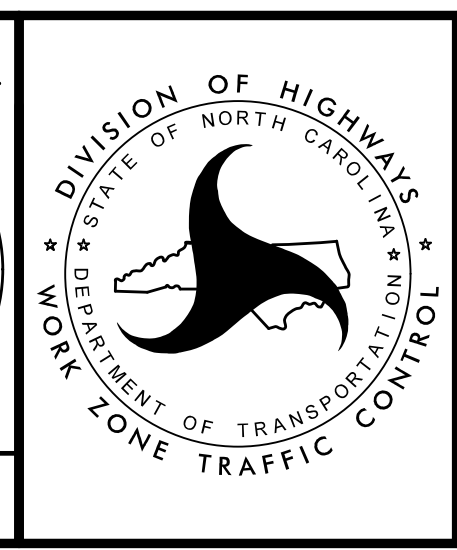
LETTER POSITIONS

Letter	S	U	M	M	I	T
Series/Size	5.1	3.5	3.9	4.3	4.3	3.1
Text Length	B 2000					
	19.9					
	B 2000					
	20.6					

3:35:20 PM
U-2525CA - to TMP-2H_Detour Signs.dgn
3/21/2024



APPROVED: *Helen Shyu*
 DATE: 3/21/2024
 SEAL



TRANSPORTATION MANAGEMENT PLAN
TEMPORARY SIGN DESIGN

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PHASING

PROJ. REFERENCE NO. U-2525CA	SHEET NO. TMP-3
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NOTES:

RETURN TRAFFIC TO THE CURRENT TRAFFIC PATTERN AT THE END OF EACH WORK PERIOD UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER.

MAINTAIN VEHICULAR ACCESS TO ALL RESIDENCES AND BUSINESSES DURING THE LIFE OF THE CONTRACT UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER.

THE TERM RSD DENOTES "ROADWAY STANDARD DRAWINGS".

NOTE: COMPLETE STEPS 1 THROUGH 5 BEFORE STARTING MEDIAN WORK IN STEP 6.

STEP 1: USING RSD 1101.01 (SHEET 2 OF 3), PLACE ADVANCED WARNING SIGNS ON E WENDOVER AVE. INSTALL AND COVER DETOUR SIGNS ON TMP-2A, 2B, AND 2C.

NOTE: STEPS 2 THRU 5 MAY BE DONE SIMULTANEOUSLY AND IN ANY ORDER, EXCEPT RAMP CLOSURES FROM STEPS 3 AND 4.

STEP 2: WENDOVER AVE WB AT US 29/220 NORTH ON RAMP (STRUCTURE C): PLACE "US 29 NORTH", "US 29 SOUTH", AND "US 220 SOUTH" TRAILBLAZERS ON E WENDOVER AVE WESTBOUND AS SHOWN ON TMP-4A. THEN USING RSD 1101.03 (SHEET 9 OF 9) NIGHT TIME ROLLING ROADBLOCK AND TMP-2C TO CLOSE ON RAMP TO US 29 NORTH, REMOVE EXISTING OVERHEAD SIGNS, SPAN TRUSS, AND NORTH SIDE POLE AND FOUNDATION FOR EXISTING OVERHEAD SIGN STRUCTURE ON WENDOVER AVE WB AT US 29 NORTH ON RAMP. (SOUTH SIDE POLE AND FOUNDATION TO BE REMOVED IN STEP 6 DURING WEEKEND LANE CLOSURE.) THEN USING TMP-2C AS NEEDED, CONSTRUCT FOUNDATION FOR PROPOSED OVERHEAD SIGN STRUCTURE 'C'.

STEP 3: WENDOVER AVE WB AT US 29/220 SOUTH ON RAMP (STRUCTURE D): AWAY FROM TRAFFIC (BEHIND GUARDRAIL), CONSTRUCT FOUNDATION AND POLE FOR PROPOSED SIGN STRUCTURE 'D'. USING RSD 1101.03 (SHEET 9 OF 9) NIGHT TIME ROLLING ROADBLOCK AND TMP-2A TO CLOSE ON RAMP TO US 29 SOUTH AND HANG CANTILEVER TRUSS FOR OVERHEAD SIGN STRUCTURE 'D'. PLACE "US 29 SOUTH" AND "US 220 SOUTH" TRAILBLAZERS ON E WENDOVER AVE WESTBOUND AS SHOWN ON TMP-4A. THEN USING RSD 1101.03 (SHEET 9 OF 9) NIGHT TIME ROLLING ROADBLOCK AND TMP-2A TO CLOSE ON RAMP TO US-29 SOUTH, REMOVE EXISTING OVERHEAD SIGNS, SPAN TRUSS, AND NORTH SIDE POLE AND FOUNDATION FOR EXISTING OVERHEAD SIGN STRUCTURE. (SOUTH SIDE POLE AND FOUNDATION TO BE REMOVED IN STEP 6 DURING WEEKEND LANE CLOSURE.)

STEP 4: WENDOVER AVE EB AT ARNOLD STREET (STRUCTURE A): PLACE "US 29 NORTH", "US 29 SOUTH", AND "US 220 SOUTH" TRAILBLAZERS ON E WENDOVER AVE EASTBOUND AS SHOWN ON TMP-4A. USING RSD 1101.03 (SHEET 9 OF 9) NIGHT TIME ROLLING ROADBLOCK AND TMP-2B TO CLOSE ARNOLD STREET, REMOVE EXISTING OVERHEAD SIGNS, SPAN TRUSS, AND SOUTH SIDE POLE AND FOUNDATION FOR EXISTING OVERHEAD SIGN STRUCTURE. (EXISTING NORTH SIDE POLE AND FOUNDATION TO BE REMOVED IN STEP 6 DURING LONG TERM LANE CLOSURE.) (PROPOSED OVERHEAD SIGN STRUCTURE 'A' TO BE CONSTRUCTED IN STEP 6 DURING WEEKEND LANE CLOSURE.)

STEP 5: WENDOVER AVE WB AT SUMMIT AVENUE (STRUCTURE E): PLACE "SUMMIT AVE NORTH" AND "SUMMIT AVE SOUTH" TEMP SIGNS ON E WENDOVER AVE WESTBOUND AS SHOWN ON TMP-4A. THEN USING RSD 1101.02 (SHEET 11 OF 19) AND RSD 1101.03 (SHEET 9 OF 9) NIGHT TIME ROLLING ROADBLOCK, REMOVE EXISTING OVERHEAD SIGNS, SPAN TRUSS, AND NORTH SIDE POLE AND FOUNDATION FOR EXISTING OVERHEAD SIGN STRUCTURE. (EXISTING SOUTH SIDE POLE AND FOUNDATION TO BE REMOVED IN STEP 6 DURING LONG TERM LANE CLOSURE.) (PROPOSED OVERHEAD SIGN STRUCTURE 'E' TO BE CONSTRUCTED IN STEP 6 DURING WEEKEND LANE CLOSURE.)

STEP 6: INSTALL AND COVER DETOUR SIGNS ON TMP-2, 2D, 2E, 2F, AND 2G. INSTALL TEMP SIGNAL AND COMPLETE STEPS 6A AND 6B.

COMPLETE THE REQUIREMENTS OF STEP 6A IN ANY ONE (1) WEEKEND, FROM FRIDAY 8:00 PM TO THE FOLLOWING MONDAY 6:00 AM. (SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES)

6A: UNCOVER DETOUR SIGNS ON TMP-2F AND TMP-2G. USING RSD 1101.02 (SHEET 12 OF 19), CLOSE SUMMIT AVE SB OFF RAMP. ACTIVATE TEMP SIGNAL AND USING RSD 1101.02 (SHEET 3 OF 19), CLOSE E WENDOVER AVE INSIDE LANES AS SHOWN ON TMP-4 THRU 4B TO CONSTRUCT PROPOSED FOUNDATIONS IN MEDIAN FOR STRUCTURES 'A', 'B', AND 'E'. REMOVE POLE AND FOUNDATION OF EXISTING OVERHEAD SIGN STRUCTURES FROM MEDIAN. PLACE PROPOSED GUARDRAIL. RESTORE SIGNAL TO ORIGINAL PHASING AND OPEN TRAFFIC TO ORIGINAL PATTERN.

COMPLETE THE REQUIREMENTS OF STEP 6B IN ANY ONE (1) WEEKEND, FROM FRIDAY 8:00 PM TO THE FOLLOWING MONDAY 6:00 AM. (SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES)

6B: ONCE PROPOSED FOUNDATIONS HAVE CURED TO DESIRED STRENGTH, UNCOVER DETOUR SIGNS ON TMP-2F AND TMP-2G. USING RSD 1101.02 (SHEET 12 OF 19), CLOSE SUMMIT AVE SB OFF RAMP. ACTIVATE TEMP SIGNAL AND USING RSD 1101.02 (SHEET 3 OF 19), CLOSE E WENDOVER AVE INSIDE LANES AS SHOWN ON TMP-4 THRU 4B TO CONSTRUCT PROPOSED POLES IN MEDIAN FOR STRUCTURES 'A', 'B', AND 'E'. REMOVE POLE AND FOUNDATION OF ANY REMAINING EXISTING SIGN STRUCTURES FROM STEPS 2 THRU 5. COMPLETE GUARDRAIL WORK. ONCE COMPLETE, RESTORE SIGNAL TO ORIGINAL PHASING AND OPEN TRAFFIC TO ORIGINAL PATTERN.

NOTE: STEP 6 DOES NOT NEED TO BE COMPLETE BEFORE STEPS 7 AND 8, BUT STEPS 7 AND 8 CANNOT BE DONE AT THE SAME TIME AS STEP 6A OR 6B.

STEP 7: WENDOVER AVE WB AT US 29/220 NORTH ON RAMP (STRUCTURE C): USING RSD 1101.02 (SHEET 3 OF 19) AND TMP-2C, INSTALL PROPOSED GUARDRAIL AND POLE FOR OVERHEAD SIGN STRUCTURE 'C'. USING RSD 1101.03 (SHEET 9 OF 9) NIGHT TIME ROLLING ROADBLOCK AND TMP-2C, HANG CANTILEVER TRUSS FOR OVERHEAD SIGN STRUCTURE 'C' AND INSTALL OVERHEAD SIGN 5.

USING RSD 1101.02 (SHEET 8 OF 19) AND TMP-2C, CLOSE 2 WESTBOUND OUTSIDE LANES AND INSTALL OVERHEAD SIGN 4. ONCE OVERHEAD SIGNS ARE INSTALLED, REMOVE TRAILBLAZERS INSTALLED IN STEP 2.

STEP 8: WENDOVER AVE WB AT US 29/220 SOUTH ON RAMP (STRUCTURE D): USING RSD 1101.02 (SHEET 3 OF 19) AND TMP-2A, INSTALL PROPOSED GUARDRAIL FOR OVERHEAD SIGN STRUCTURE 'D'. THEN USING RSD 1101.03 (SHEET 9 OF 9) NIGHT TIME ROLLING ROADBLOCK AND TMP-2A, HANG CANTILEVER TRUSS FOR OVERHEAD SIGN STRUCTURE 'D' AND INSTALL OVERHEAD SIGN 8.

USING TMP-11 AND TMP-2A, CLOSE 2 OUTSIDE WESTBOUND LANES AND INSTALL OVERHEAD SIGN 7.

USING RSD 1101.02 (SHEET 8 OF 19), CLOSE TWO WESTBOUND INSIDE LANES AND INSTALL OVERHEAD SIGN 6.

ONCE STRUCTURE D OVERHEAD SIGNS ARE INSTALLED, REMOVE TRAILBLAZERS INSTALLED IN STEP 3.

NOTE: COMPLETE STEP 6 BEFORE STARTING STEPS 9 THRU 11. STEPS 7 THRU 11 MAY BE DONE IN ANY ORDER, BUT NOT SIMULTANEOUSLY UNLESS APPROVED BY THE ENGINEER.

STEP 9: WENDOVER AVE WB AT SUMMIT AVENUE (STRUCTURE E): USING RSD 1101.03 (SHEET 9 OF 9) NIGHT TIME ROLLING ROADBLOCK, HANG CANTILEVER TRUSS FOR OVERHEAD SIGN STRUCTURE 'E'. ACTIVATE TEMPORARY SIGNAL, THEN USING TMP-5, TMP-2G, AND WESTSIDE DR ROAD CLOSURE (TMP-2), CLOSE 2 INSIDE WESTBOUND LANES AND INSTALL OVERHEAD SIGN 9.

USING TMP-6 AND WESTSIDE DR ROAD CLOSURE (TMP-2), CLOSE WESTBOUND OUSIDE LANE TO INSTALL OVERHEAD SIGN 10. ONCE OVERHEAD SIGNS ARE INSTALLED, REMOVE TEMPORARY SIGNS INSTALLED IN STEP 5.

STEP 10: WENDOVER AVE EB AT ARNOLD STREET (STRUCTURE A): USING RSD 1101.03 (SHEET 9 OF 9) NIGHT TIME ROLLING ROADBLOCK, HANG CANTILEVER TRUSS FOR OVERHEAD SIGN STRUCTURE 'A'. USING RSD 1101.02 (SHEET 12 OF 19) AND TMP-2E AND 2F, CLOSE SUMMIT AVE RAMPS. ACTIVATE TEMPORARY SIGNAL, THEN USING TMP-7 AND 7A CLOSE 2 INSIDE EASTBOUND LANES AND INSTALL OVERHEAD SIGN 1 ON OVERHEAD STRUCTURE 'A'.


USING RSD 1101.02 (SHEET 12 OF 19) AND TMP-2E AND 2F, CLOSE SUMMIT AVE RAMPS. THEN USING TMP-8 AND TMP-2B, CLOSE 2 OUTSIDE LANES AND INSTALL OVERHEAD SIGN 2 ON OVERHEAD STRUCTURE 'A'. ONCE OVERHEAD SIGNS ARE INSTALLED, REMOVE TRAILBLAZERS INSTALLED IN STEP 4.

STEP 11: WENDOVER AVE EB AT US 29/220 NORTH ON RAMP (STRUCTURE B): USING RSD 1101.03 (SHEET 9 OF 9) NIGHT TIME ROLLING ROADBLOCK, HANG CANTILEVER TRUSS FOR OVERHEAD SIGN STRUCTURE 'B'. USING RSD 1101.02 (SHEET 3 AND 10 OF 19) AND TMP-2D, CLOSE EASTBOUND OUTSIDE LANE AND INSTALL OVERHEAD SIGN 3. THEN REMOVE EXISTING "US 29 NORTH" GROUND MOUNTED SIGN.

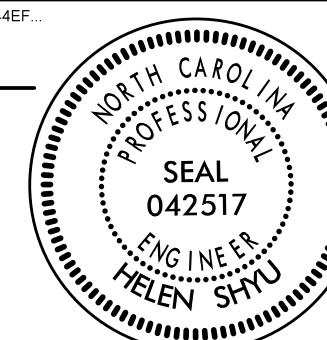
STEP 12: COMPLETE ALL REMAINING WORK. REMOVE ALL TRAFFIC CONTROL DEVICES.

3:56:08 PM
U-2525CA-fo-TMP-3-phasings.dgn
3/22/2024

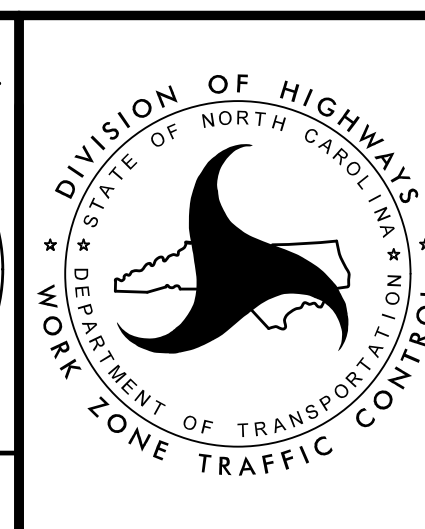
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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

APPROVED: 
DATE: 3/22/2024

SEAL

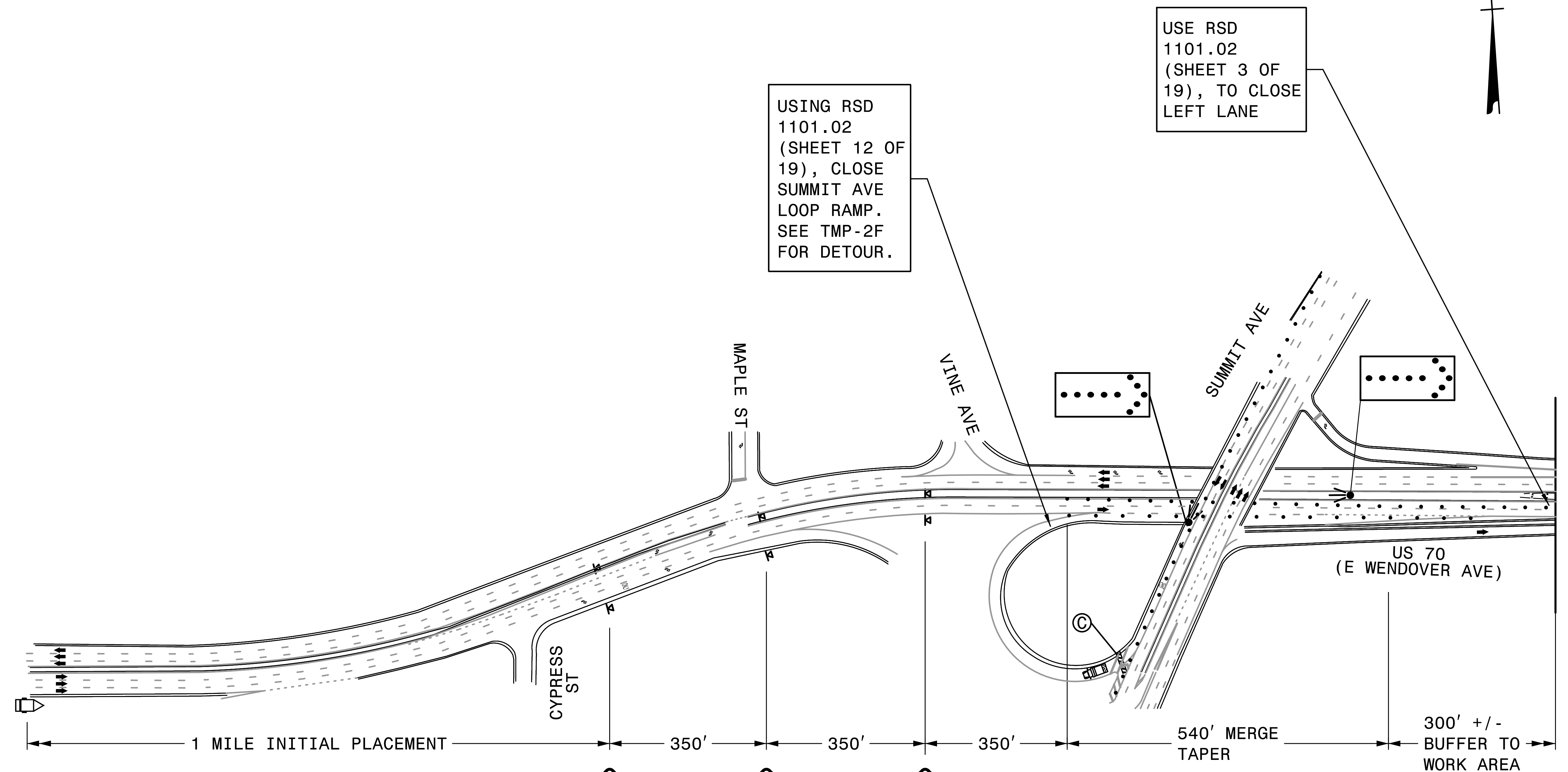
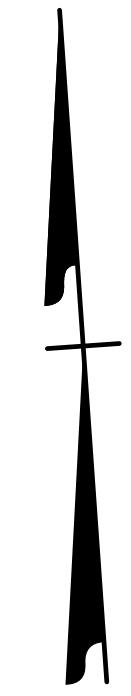


**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



TRANSPORTATION
MANAGEMENT PLAN

PHASING

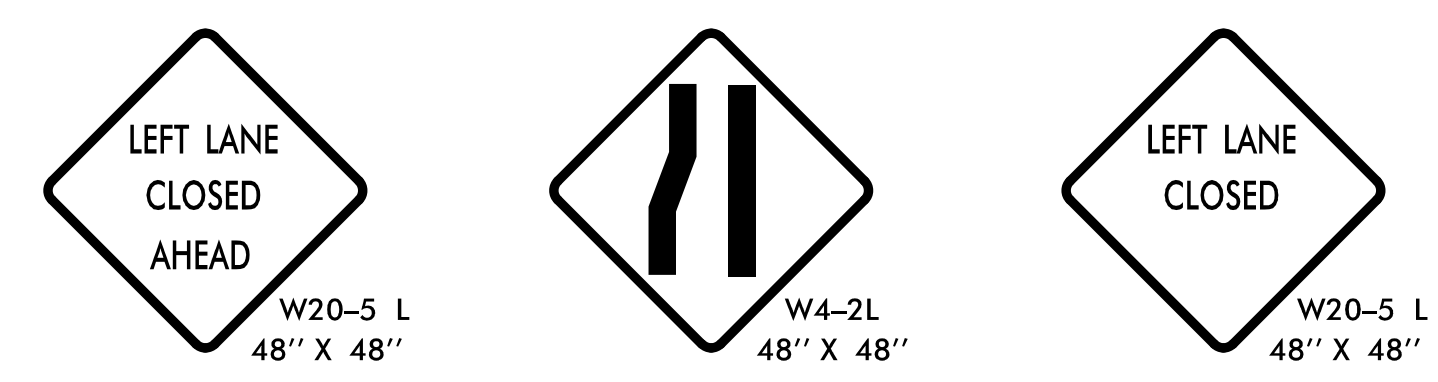
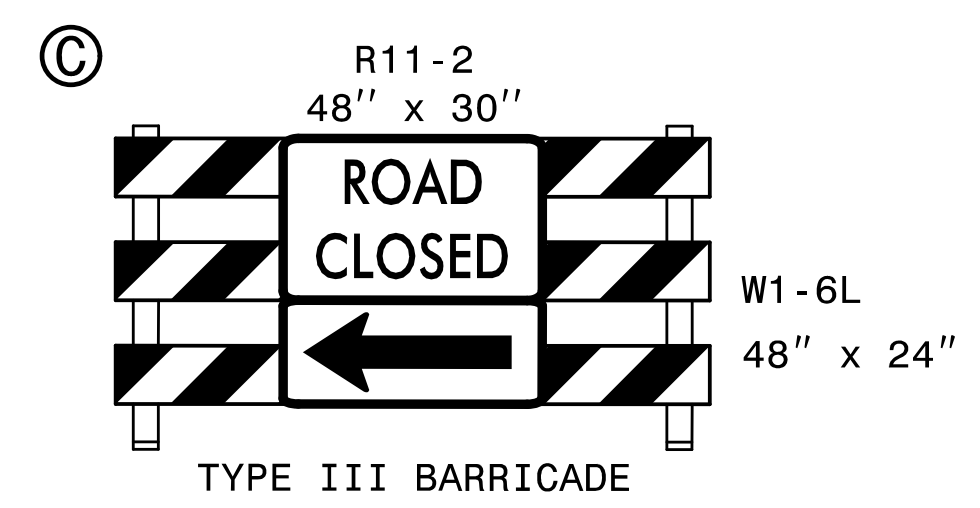


USING RSD 1101.02 (SHEET 12 OF 19), CLOSE SUMMIT AVE LOOP RAMP. SEE TMP-2F FOR DETOUR.

USE RSD 1101.02 (SHEET 3 OF 19), TO CLOSE LEFT LANE

MATCHLINE SEE TMP-4A

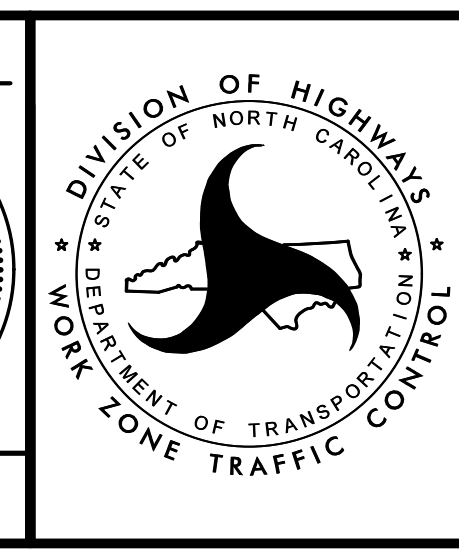
MESSAGE NO. 1	MESSAGE NO. 2
LEFT LANE CLOSED	MERGE RIGHT
CHANGEABLE MESSAGE SIGN	



NOTE: SIGN PLACEMENT ON PLAN IS NOT TO SCALE.

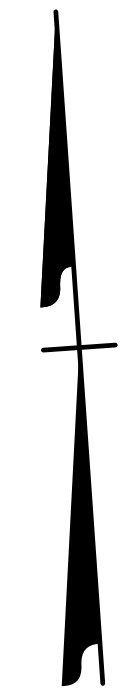
HNTB
 HNTB NORTH CAROLINA, P.C.
 343 E. Six Forks Road, Suite 200
 Raleigh, North Carolina 27609
 NC License No: C-1554

APPROVED: *Helen Shyu*
OF 15975AB6E44EF
 DATE: 3/21/2024
 SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 042517
 HELEN SHYU

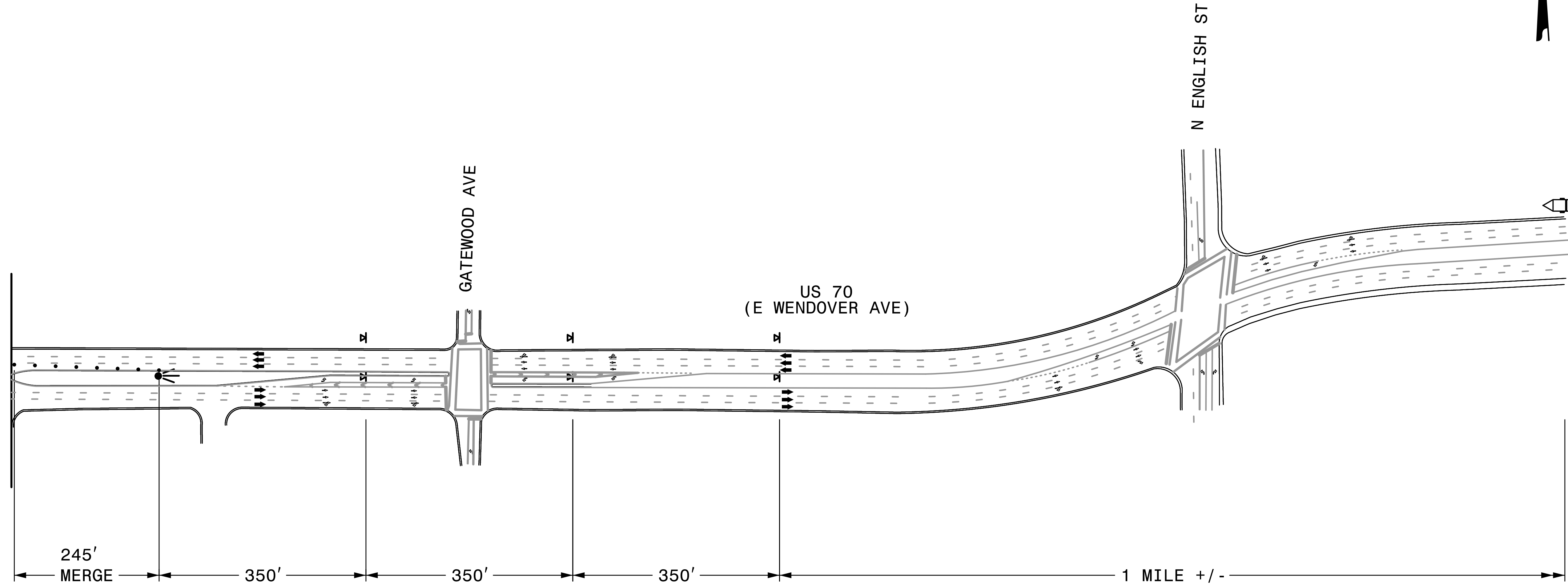


TRANSPORTATION MANAGEMENT PLAN
 INSIDE LANE CLOSURES FOR MEDIAN WORK

3:35:25 PM U-2525C-1c-TMP-4.dgn 3/21/2024



MATCHLINE SEE TMP-4A



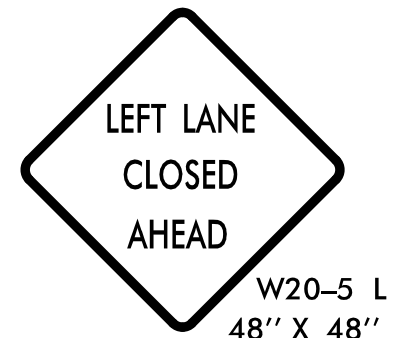
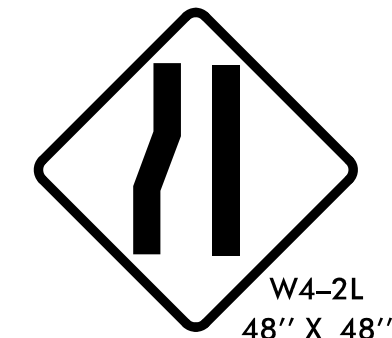
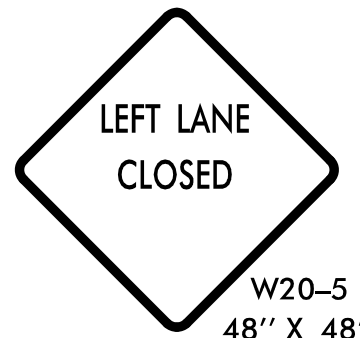
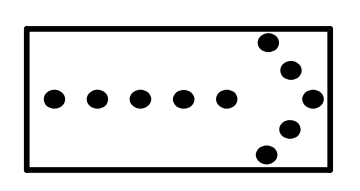
245'
MERGE
TAPER

350'

350'

350'

1 MILE +/-



MESSAGE NO. 1	MESSAGE NO. 2
LEFT LANE CLOSED	MERGE RIGHT
CHANGEABLE MESSAGE SIGN	

NOTE: SIGN PLACEMENT ON PLAN IS NOT TO SCALE.

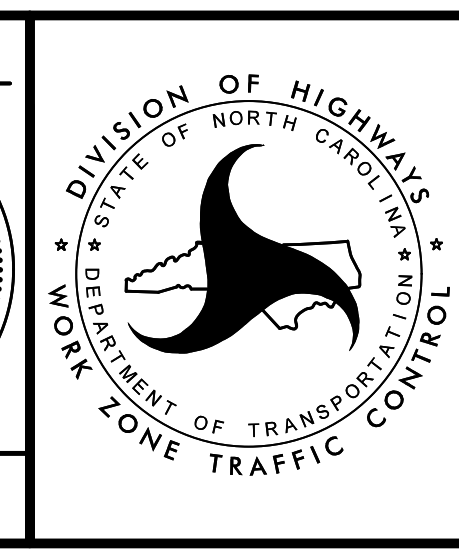
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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

APPROVED: *Helen Shyu*
DATE: 3/21/2024

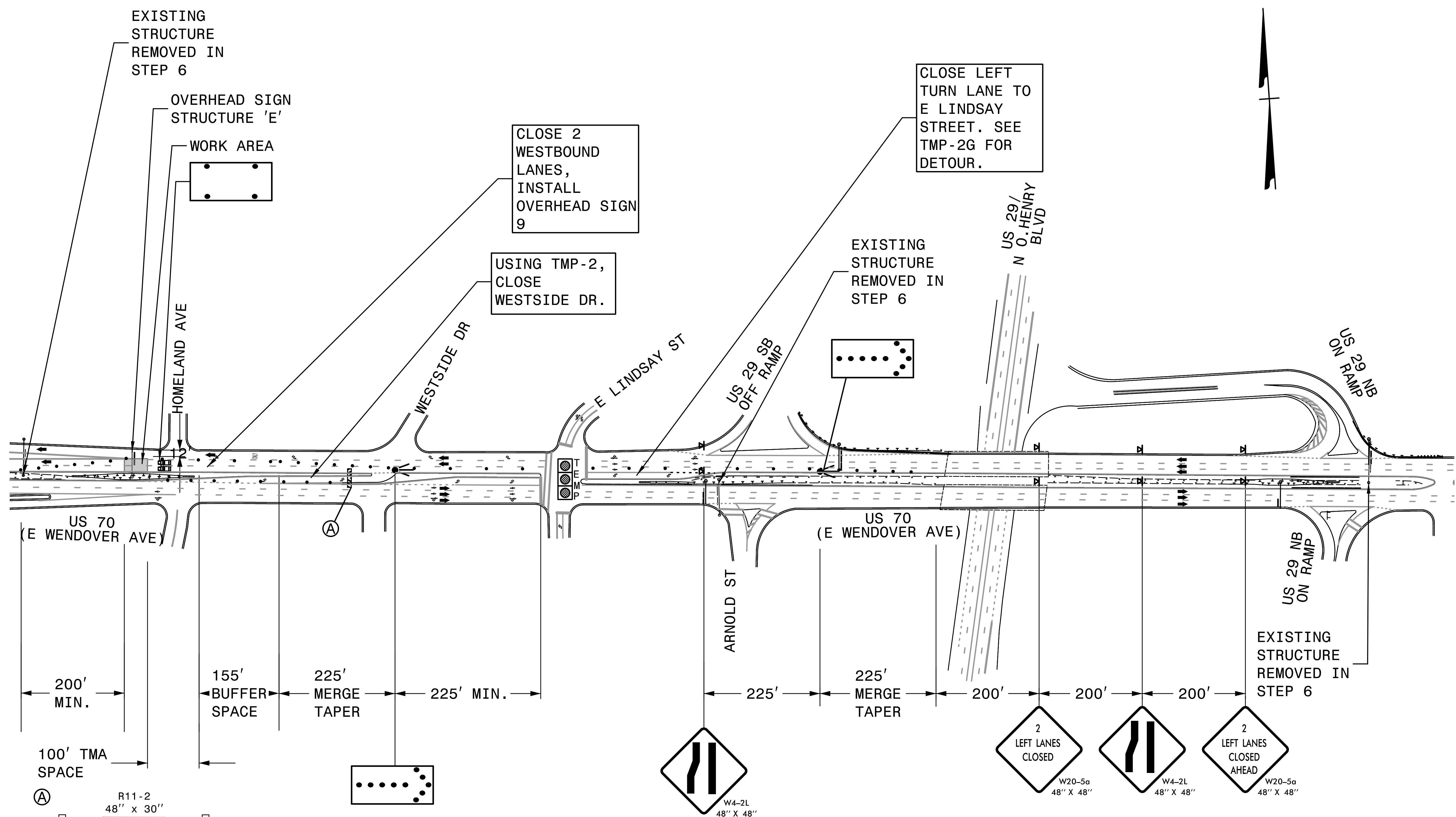
SEAL

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

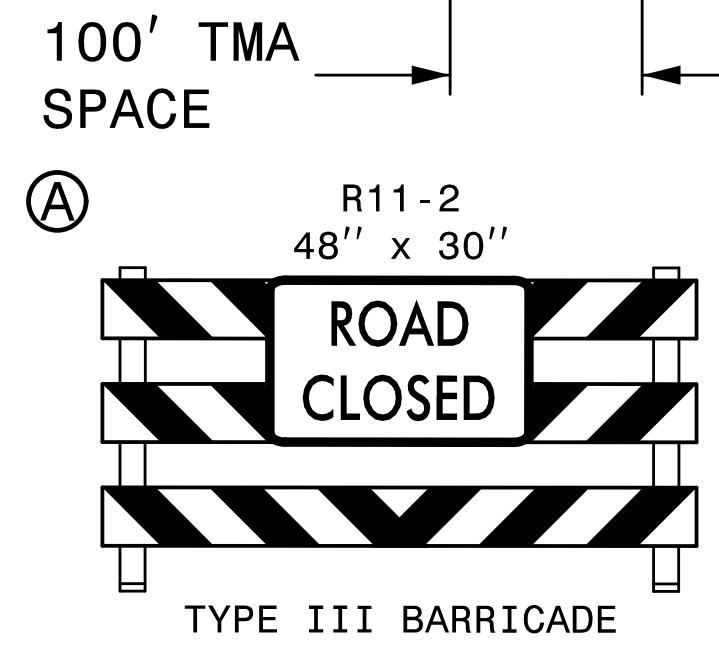


**TRANSPORTATION
MANAGEMENT PLAN**

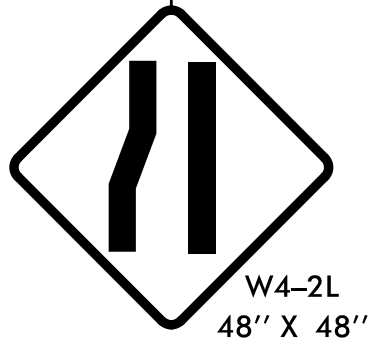
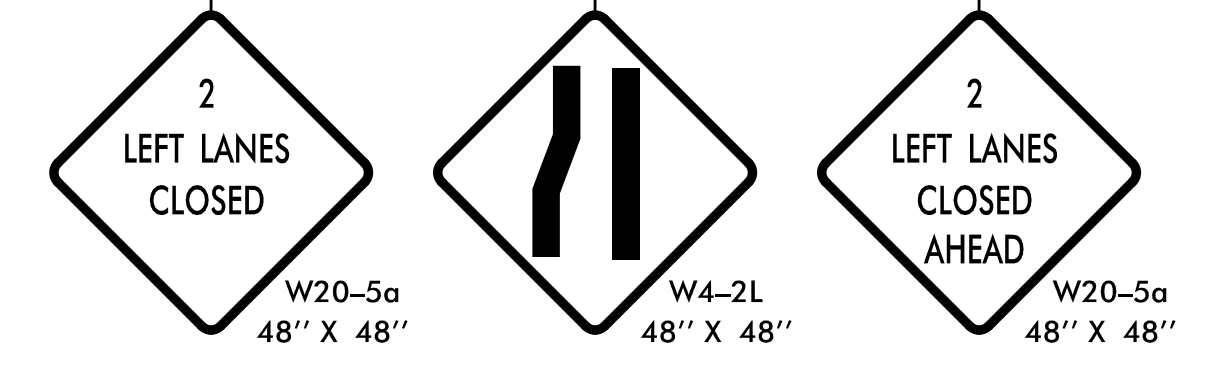
**INSIDE LANE
CLOSURES FOR
MEDIAN WORK**



200' MIN. 155' BUFFER SPACE 225' MERGE TAPER 225' MIN. 225' 225' MERGE TAPER 200' 200' 200'



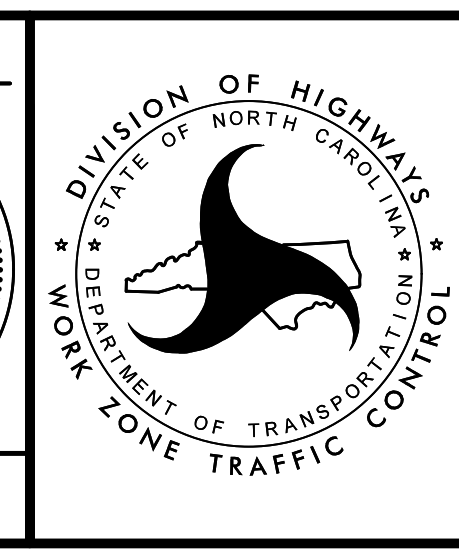
NOTE: SIGN PLACEMENT ON PLAN IS NOT TO SCALE.



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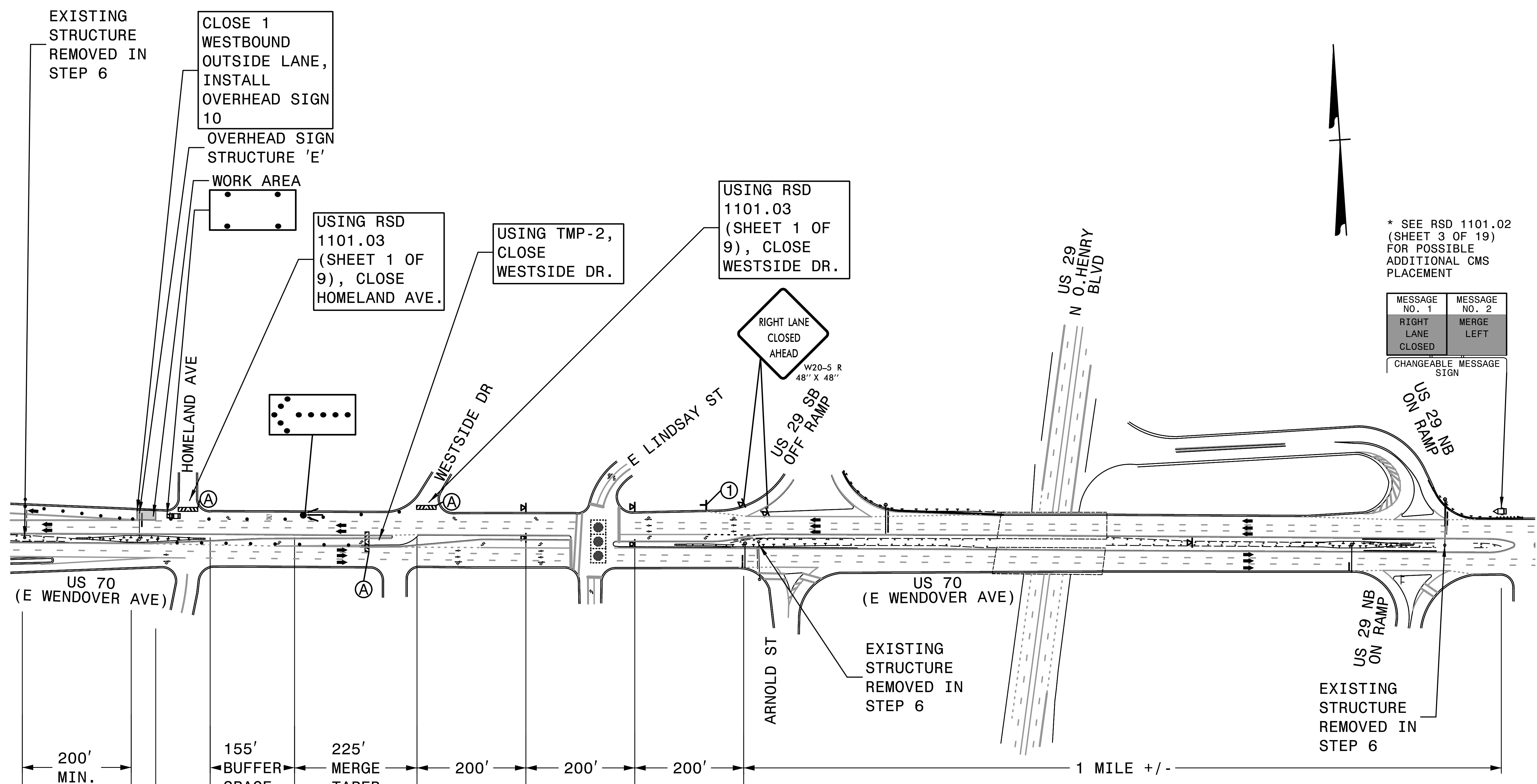
HNTB HNTB NORTH CAROLINA, P.C.
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Raleigh, North Carolina 27609
NC License No: C-1554

APPROVED: *Helen Shyu*
DATE: 3/21/2024
SEAL



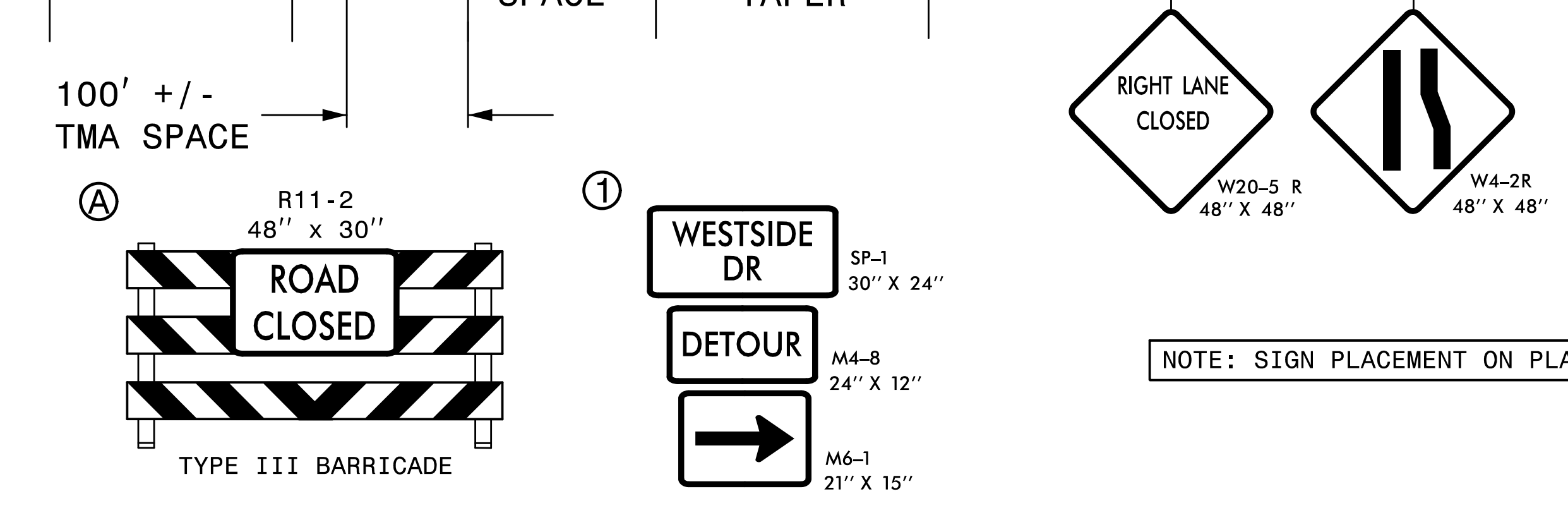
TRANSPORTATION MANAGEMENT PLAN
STRUCTURE 'E'
SIGN 9
LANE CLOSURE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



* SEE RSD 1101.02 (SHEET 3 OF 19) FOR POSSIBLE ADDITIONAL CMS PLACEMENT

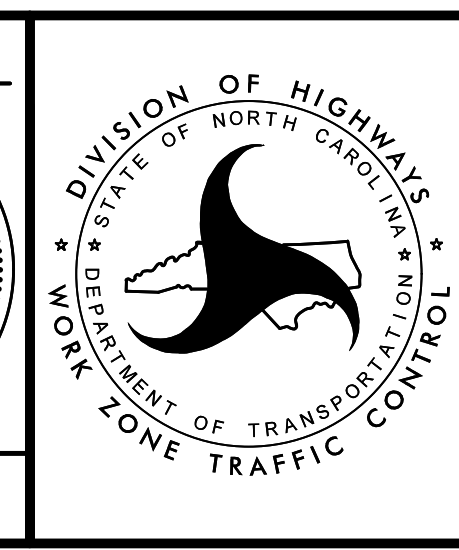
MESSAGE NO. 1	MESSAGE NO. 2
RIGHT LANE CLOSED	MERGE LEFT
CHANGEABLE MESSAGE SIGN	



NOTE: SIGN PLACEMENT ON PLAN IS NOT TO SCALE.

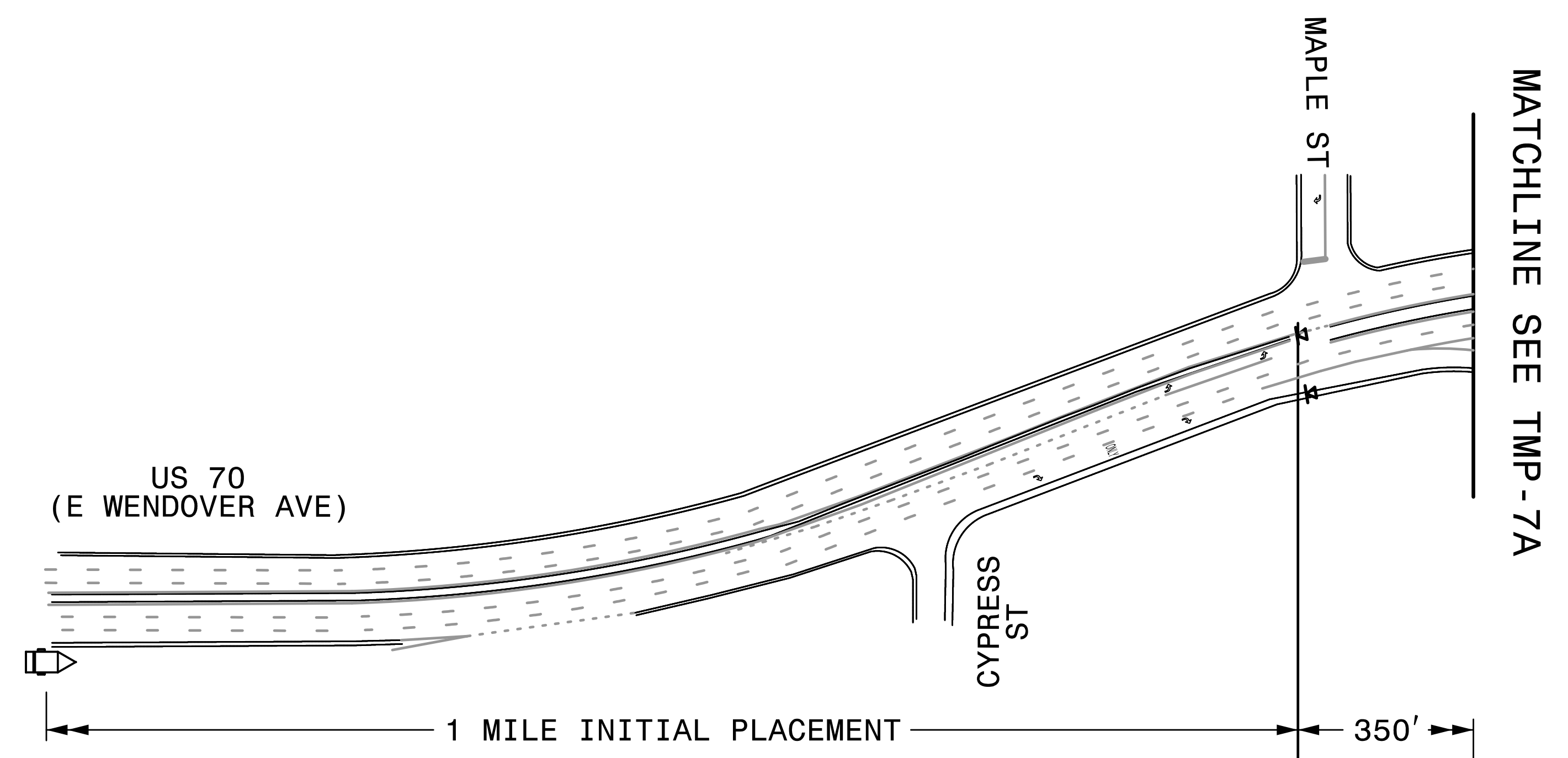
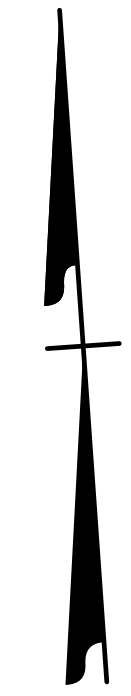
HNTB HNTB NORTH CAROLINA, P.C.
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NC License No: C-1554

APPROVED: *Helen Shyu*
DATE: 3/21/2024
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 042517
HELEN SHYU



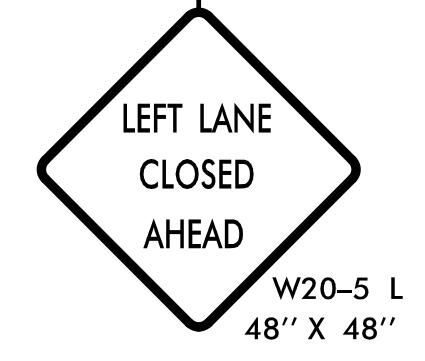
TRANSPORTATION MANAGEMENT PLAN
STRUCTURE 'E'
SIGN 10
LANE CLOSURE

3:35:33 PM U-2525CA-TC-TMP-6.dgn 3/21/2024



MATCHLINE SEE TMP-7A

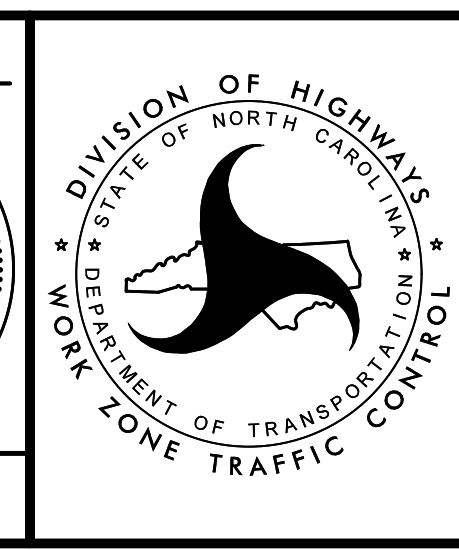
MESSAGE NO. 1	MESSAGE NO. 2
LEFT LANE CLOSED	MERGE RIGHT
CHANGEABLE MESSAGE SIGN	



NOTE: SIGN PLACEMENT ON PLAN IS NOT TO SCALE.

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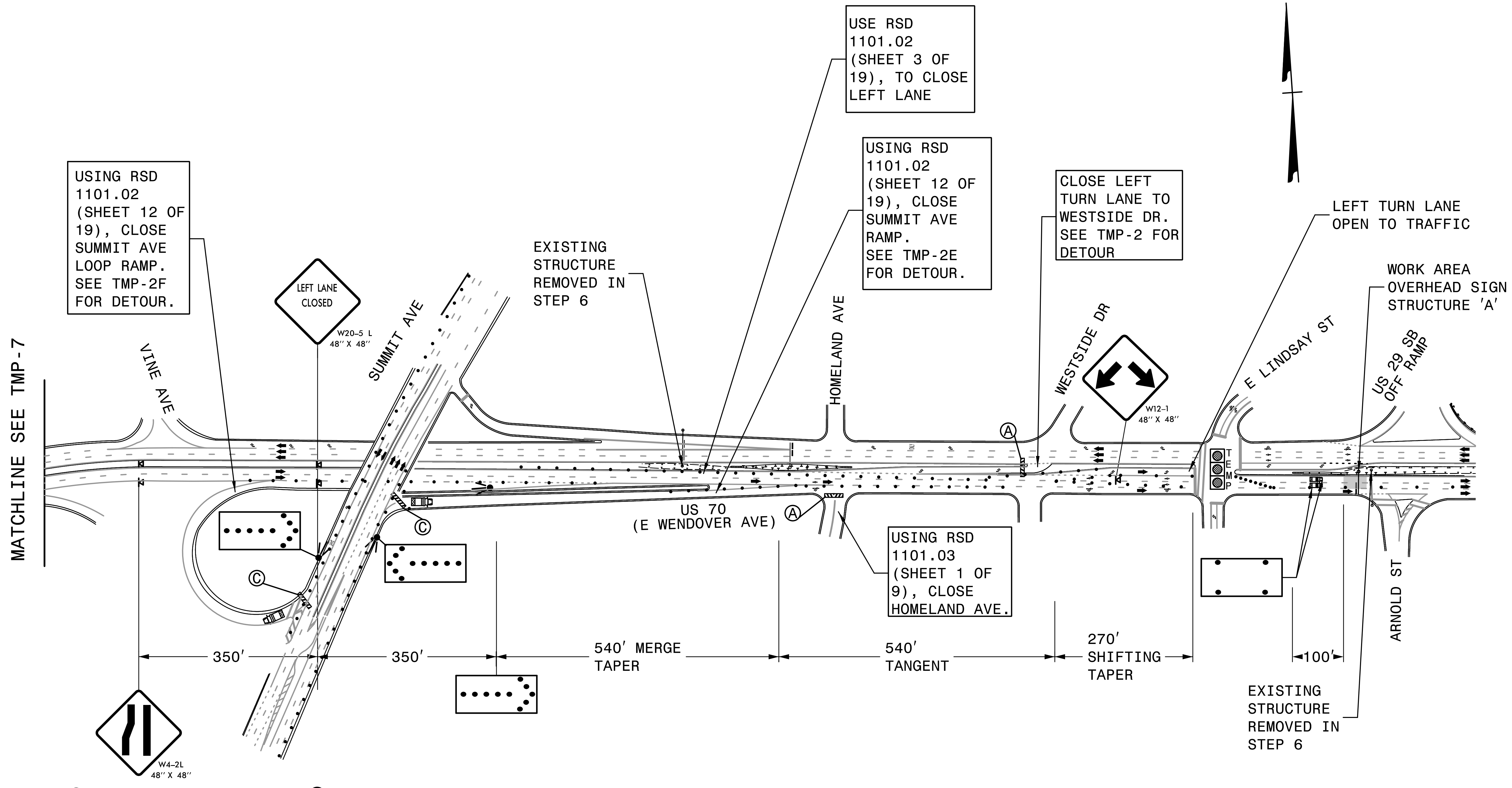
APPROVED: *Helen Shyu*
OF 15975AB6E44EF
 DATE: 3/21/2024
 SEAL



TRANSPORTATION
 MANAGEMENT PLAN
 STRUCTURE 'A'
 SIGN 1
 LANE CLOSURE

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3:35:35 PM
 U-2525CA-1c-TMP-7.dgn
 3/21/2024



USING RSD 1101.02 (SHEET 12 OF 19), CLOSE SUMMIT AVE LOOP RAMP. SEE TMP-2F FOR DETOUR.

USE RSD 1101.02 (SHEET 3 OF 19), TO CLOSE LEFT LANE

USING RSD 1101.02 (SHEET 12 OF 19), CLOSE SUMMIT AVE RAMP. SEE TMP-2E FOR DETOUR.

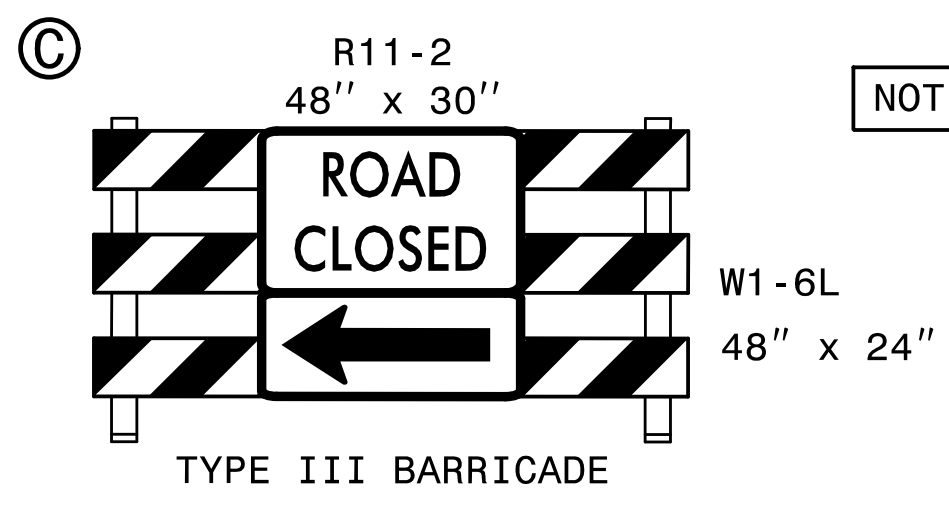
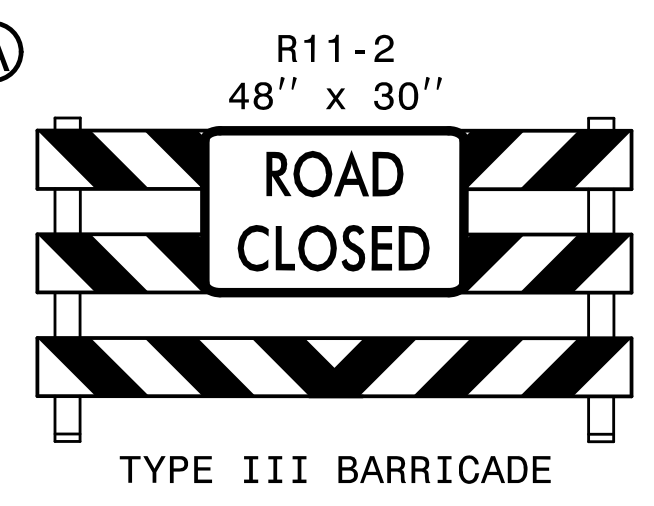
CLOSE LEFT TURN LANE TO WESTSIDE DR. SEE TMP-2 FOR DETOUR

USING RSD 1101.03 (SHEET 1 OF 9), CLOSE HOMELAND AVE.

EXISTING STRUCTURE REMOVED IN STEP 6

EXISTING STRUCTURE REMOVED IN STEP 6

NOTE: SIGN PLACEMENT ON PLAN IS NOT TO SCALE.



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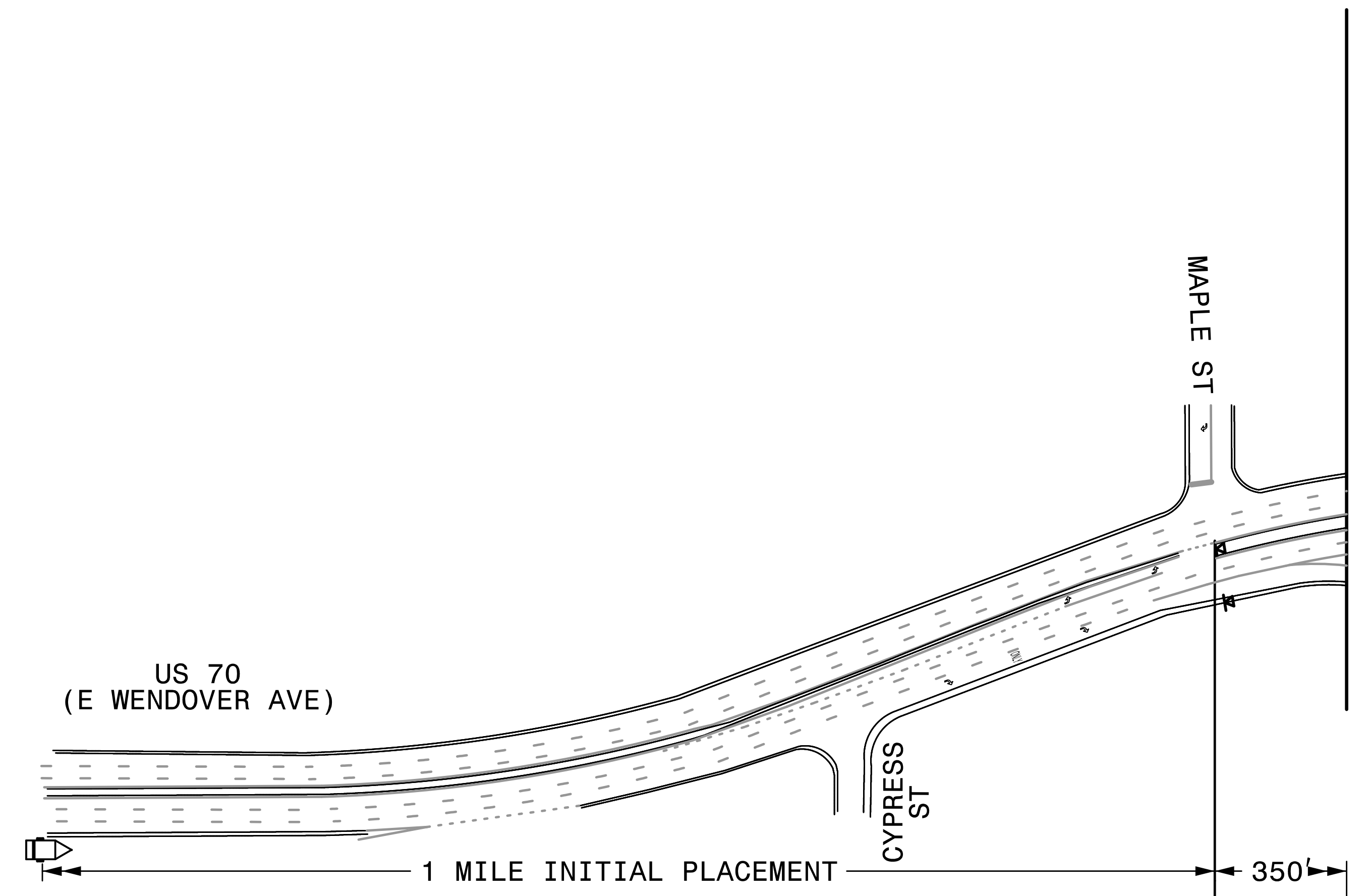
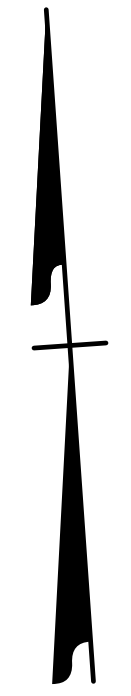
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



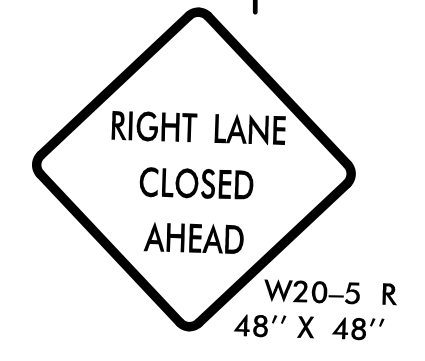
TRANSPORTATION MANAGEMENT PLAN

STRUCTURE 'A' SIGN 1 LANE CLOSURE

3:56:48 PM U:\2525C-TC-TMP-7A.dgn 3/22/2024



MESSAGE NO. 1	MESSAGE NO. 2
RIGHT LANE CLOSED	MERGE LEFT
CHANGEABLE MESSAGE SIGN	



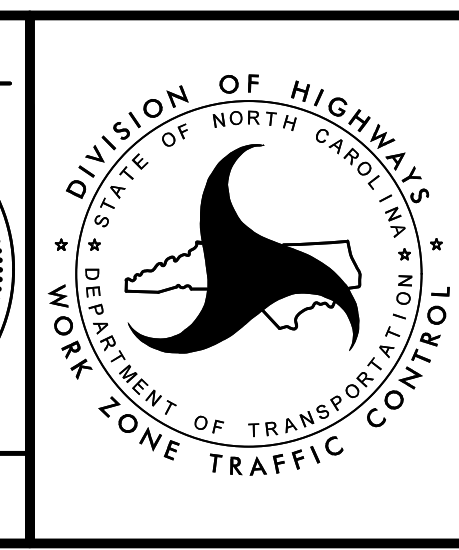
NOTE: SIGN PLACEMENT ON PLAN IS NOT TO SCALE.

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 Raleigh, North Carolina 27609
 NC License No: C-1554

APPROVED: *Helen Shyu*
OF 15975AB6E44EF
 DATE: 3/21/2024

SEAL

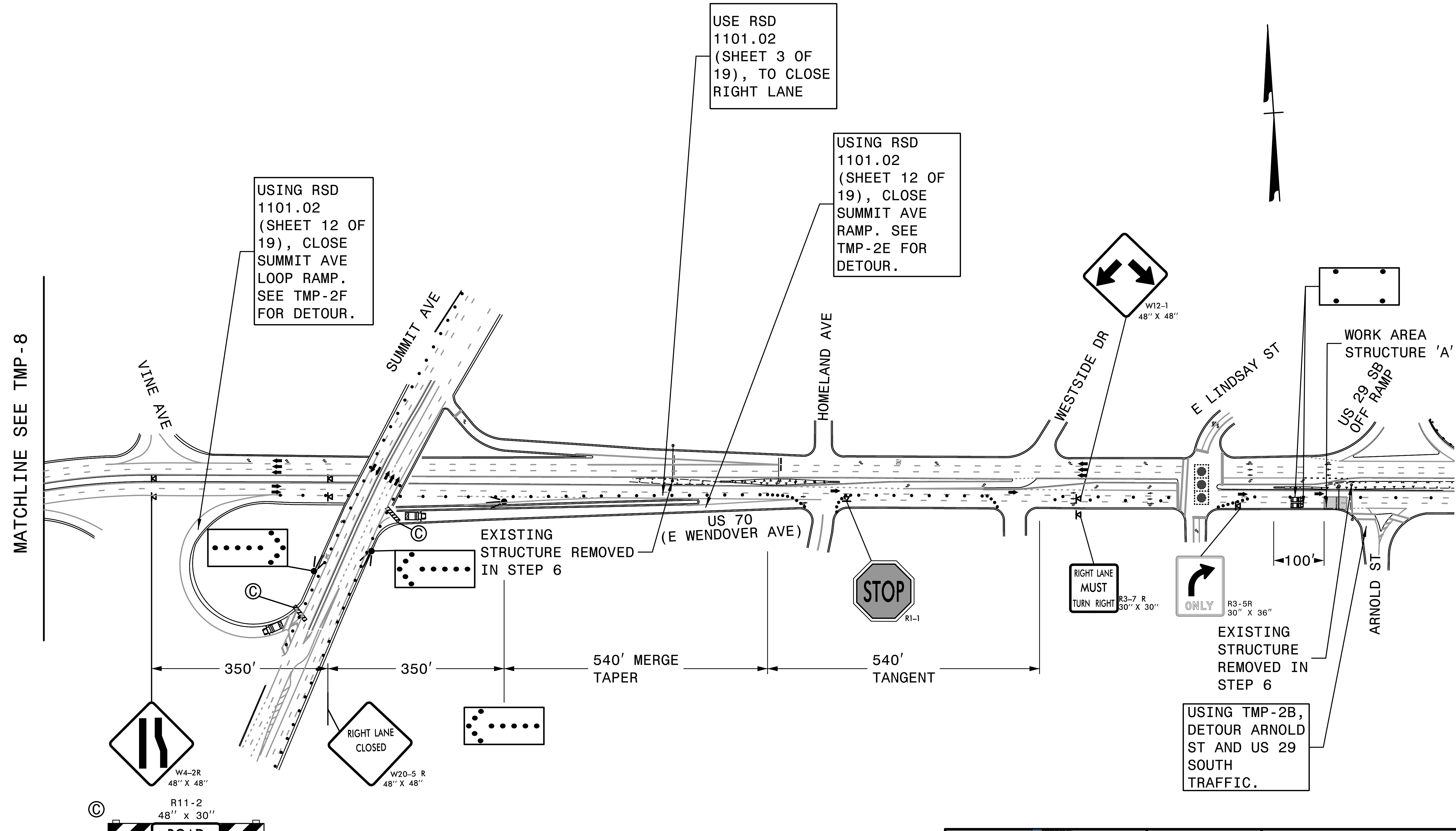
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TRANSPORTATION
 MANAGEMENT PLAN

STRUCTURE 'A'
 SIGN 2
 LANE CLOSURE

3:35:39 PM U-2525C-1c-TMP-8.dgn 3/21/2024



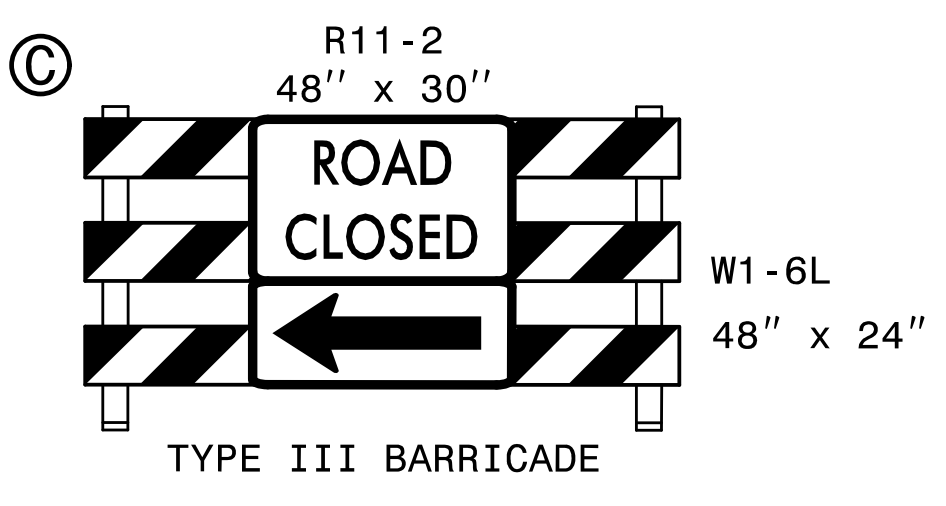
USE RSD
1101.02
(SHEET 3 OF
19), TO CLOSE
RIGHT LANE

USING RSD
1101.02
(SHEET 12 OF
19), CLOSE
SUMMIT AVE
LOOP RAMP. SEE
TMP-2E FOR
DETOUR.

USING RSD
1101.02
(SHEET 12 OF
19), CLOSE
SUMMIT AVE
LOOP RAMP.
SEE TMP-2F
FOR DETOUR.

USING TMP-2B,
DETOUR ARNOLD
ST AND US 29
SOUTH
TRAFFIC.

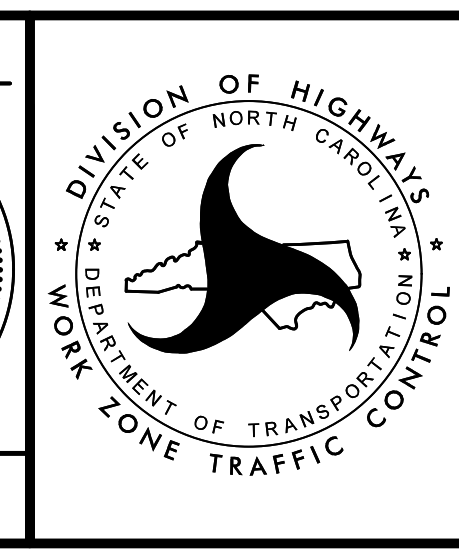
MATCHLINE SEE TMP-8



NOTE: SIGN PLACEMENT ON PLAN IS NOT TO SCALE.

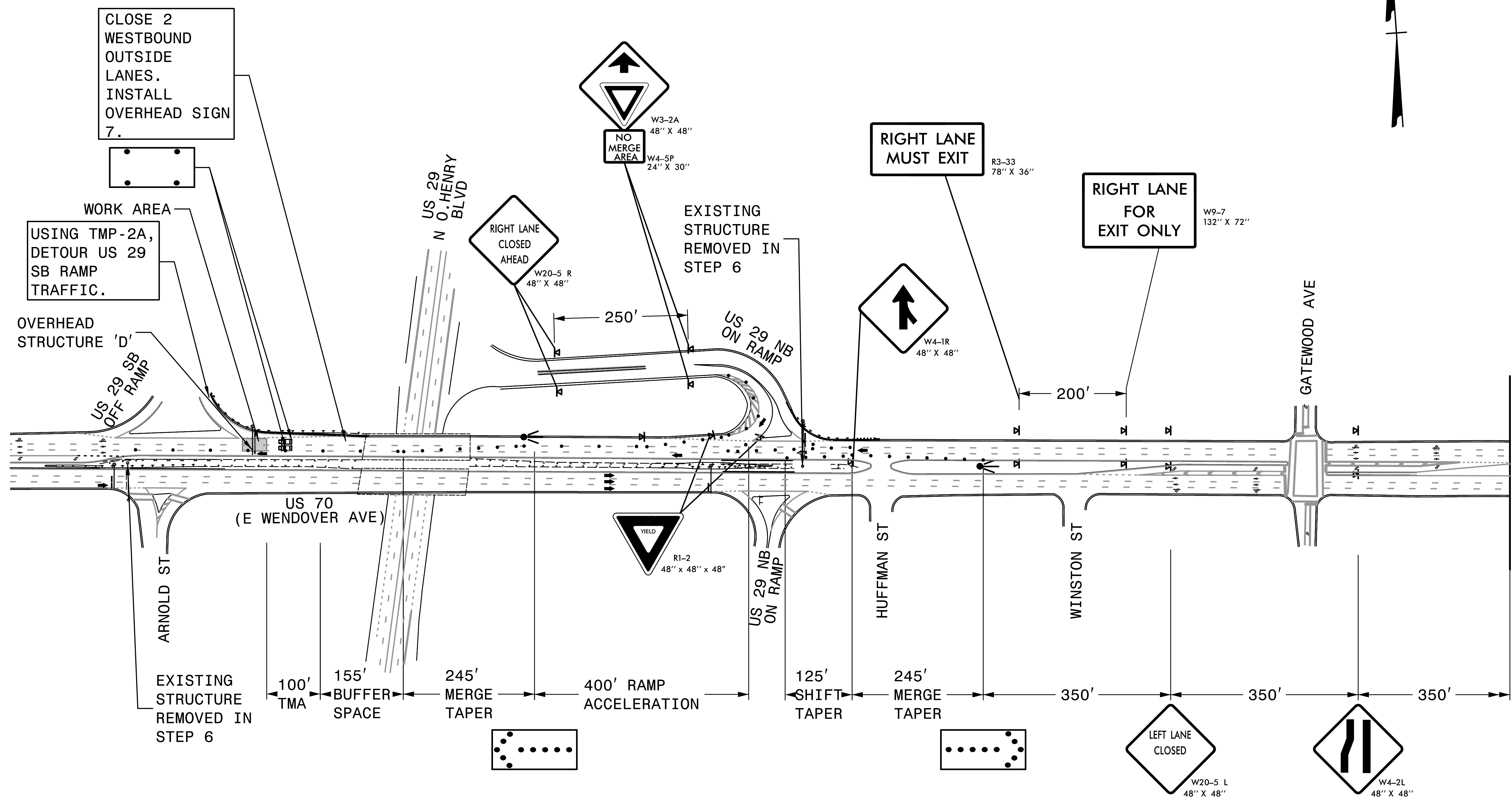
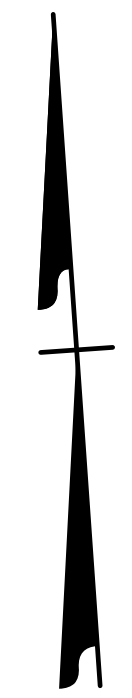
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HNTB NORTH CAROLINA, P.C.
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Raleigh, North Carolina 27609
NC License No: C-1554

APPROVED: *Helen Shyu*
DATE: 3/21/2024
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 042517
HELEN SHYU



TRANSPORTATION
MANAGEMENT PLAN
STRUCTURE 'A'
SIGN 2
LANE CLOSURE

3:35:48 PM
U-2525CA-TMP-8A.dgn
3/21/2024



CLOSE 2 WESTBOUND OUTSIDE LANES. INSTALL OVERHEAD SIGN 7.

WORK AREA USING TMP-2A, DETOUR US 29 SB RAMP TRAFFIC.

OVERHEAD STRUCTURE 'D' US 29 SB OFF RAMP

US 29 N O. HENRY BLVD

EXISTING STRUCTURE REMOVED IN STEP 6

US 29 NB ON RAMP

US 29 NB ON RAMP

US 70 (E WENDOOVER AVE)

ARNOLD ST

HUFFMAN ST

WINSTON ST

GATEWOOD AVE

EXISTING STRUCTURE REMOVED IN STEP 6

100' TMA

155' BUFFER SPACE

245' MERGE TAPER

400' RAMP ACCELERATION

125' SHIFT TAPER

245' MERGE TAPER

350'

350'

350'

NOTE: SIGN PLACEMENT ON PLAN IS NOT TO SCALE.

MATCHLINE SEE TMP-11A

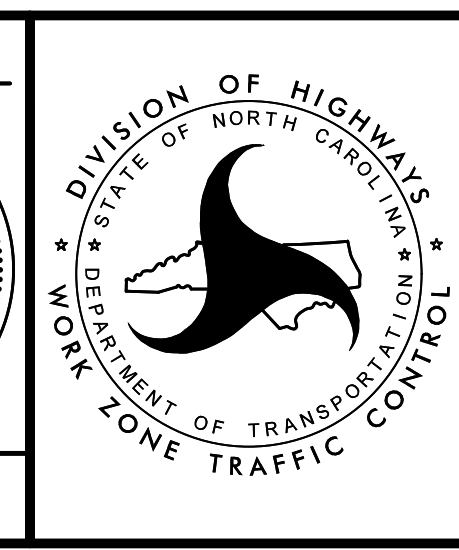
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APPROVED: *Helen Shyu*
OF 15975AB6E44EF
 DATE: 3/21/2024

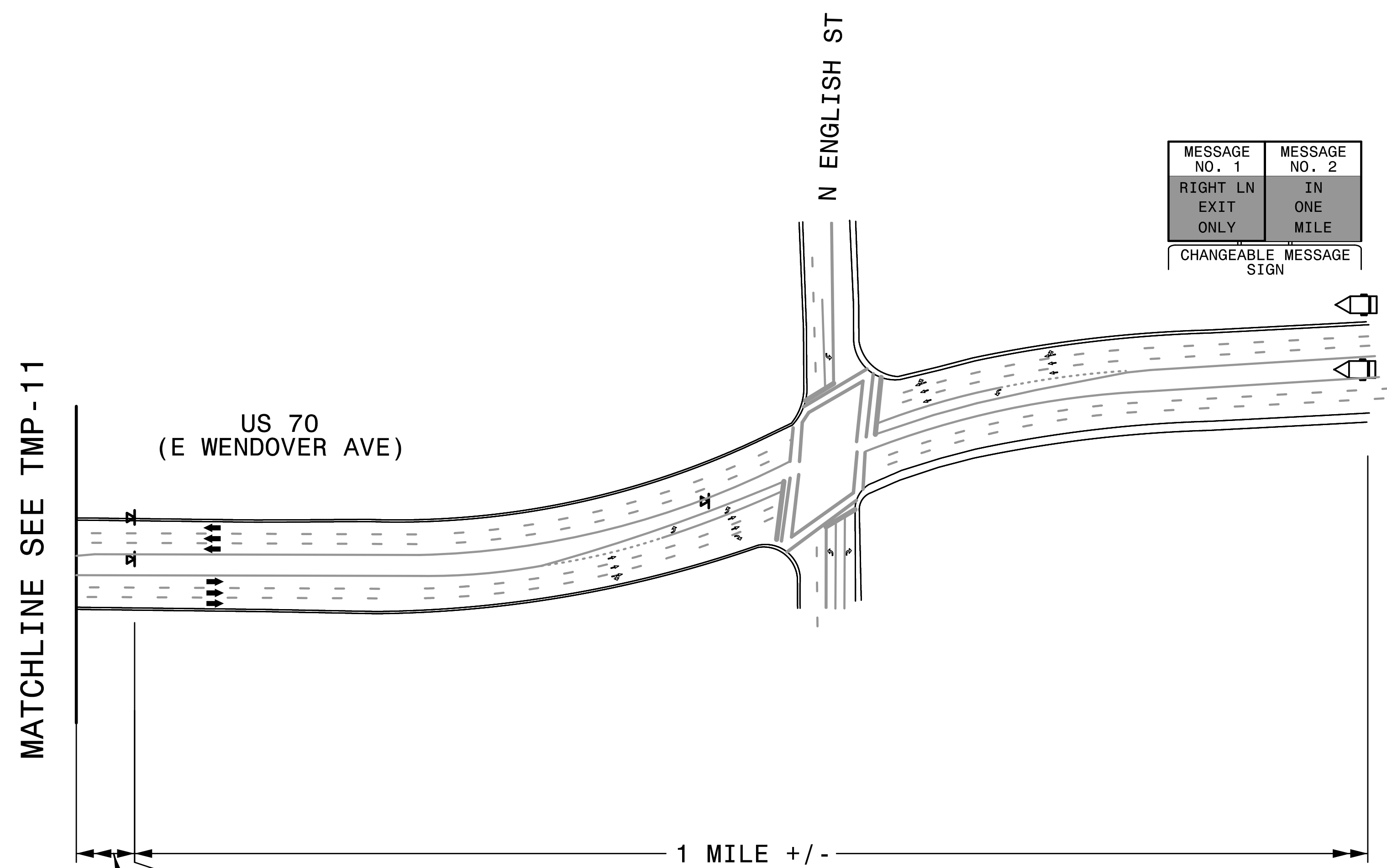
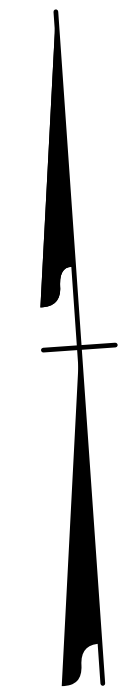
SEAL

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TRANSPORTATION MANAGEMENT PLAN

STRUCTURE 'D'
SIGN 7
LANE CLOSURE



MESSAGE NO. 1	MESSAGE NO. 2
RIGHT LN EXIT ONLY	IN ONE MILE

CHANGEABLE MESSAGE SIGN

MESSAGE NO. 1	MESSAGE NO. 2
LEFT LANE CLOSED	MERGE RIGHT

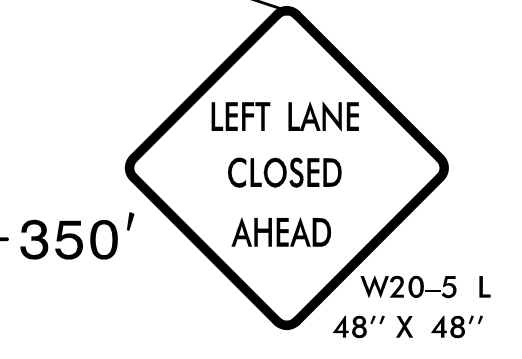
CHANGEABLE MESSAGE SIGN

MATCHLINE SEE TMP-11

US 70
(E WENDOVER AVE)

N ENGLISH ST

1 MILE +/-



NOTE: SIGN PLACEMENT ON PLAN IS NOT TO SCALE.

3:35:45 PM U-2525C-1c-TMP-11A.dgn 3/21/2024

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NC License No: C-1554

APPROVED: Helen Shyu
DATE: 3/21/2024

SEAL

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

TRANSPORTATION
MANAGEMENT PLAN

STRUCTURE 'D'
SIGN 7
LANE CLOSURE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

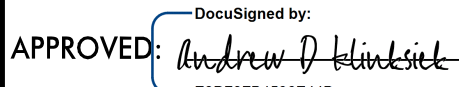

T.I.P.: U-2525CA

CONTRACT: DG00653

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**SIGNING PLAN
GUILFORD COUNTY**

LOCATION: US 70 (WENDOVER AVE) AT US 29

PROJECT REFERENCE NO.	SHEET NO.
U-2525CA	SIGN-1
APPROVED:  <small>DocuSigned by: Andrew D. Klinksiek E3D7FB459E44B</small>	
DATE: 8/7/2024	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - CONTRACT STANDARDS AND DEVELOPMENT UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
901.10	TYPE 'A' SIGNS
901.50	ARROWS AND SHIELDS
901.70	SIGN STRINGERS AND SUPPORT SPACING
901.80	SIGN MOUNTING DETAILS - FOR TYPE A AND TYPE B SIGNS

PAY ITEM NOTES

- 1 DISPOSAL OF SIGN SYSTEM, OVERHEAD
- 2 DISPOSAL OF SIGN SYSTEM, STEEL BEAM

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4025000000	901	CONTRACTOR FURNISHED, TYPE A SIGN	1184	SF
4057000000	SP	OVERHEAD FOOTING	67	CY
4130000000	906	SUPPORTS, OVERHEAD SIGN STRUCTURE 'A'	1	LS
4130000000	906	SUPPORTS, OVERHEAD SIGN STRUCTURE 'B'	1	LS
4130000000	906	SUPPORTS, OVERHEAD SIGN STRUCTURE 'C'	1	LS
4130000000	906	SUPPORTS, OVERHEAD SIGN STRUCTURE 'D'	1	LS
4130000000	906	SUPPORTS, OVERHEAD SIGN STRUCTURE 'E'	1	LS
4149000000	907	DISPOSAL OF SIGN SYSTEM, OVERHEAD	4	EA
4152000000	907	DISPOSAL OF SIGN SYSTEM, STEEL BEAM	1	EA

GENERAL NOTES

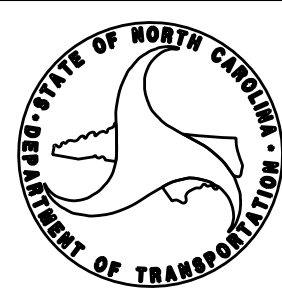
- SIGNS FURNISHED BY CONTRACTOR.
- IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
- FABRICATION FOR TYPE A AND B SIGNS MOUNTED ON OVERHEAD STRUCTURES MAY BEGIN PRIOR TO FIELD VERIFICATIONS OF OVERHEAD SIGN STRUCTURES.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2-2D	OVERHEAD STRUCTURE LINE DRAWINGS
SIGN-3-3A	SIGN DESIGNS
SIGN-4	SIGNING PLAN SHEET
SIGN-5-6	GUARDRAIL SUMMARY AND DETAIL SHEETS

PLANS SUBMITTED TO:

KELVIN JORDAN _____ SIGNING & DELINEATION REGIONAL ENGINEER
ASHLEY MATTHEWS, PE _____ SIGNING & DELINEATION PROJECT DESIGN ENGINEER




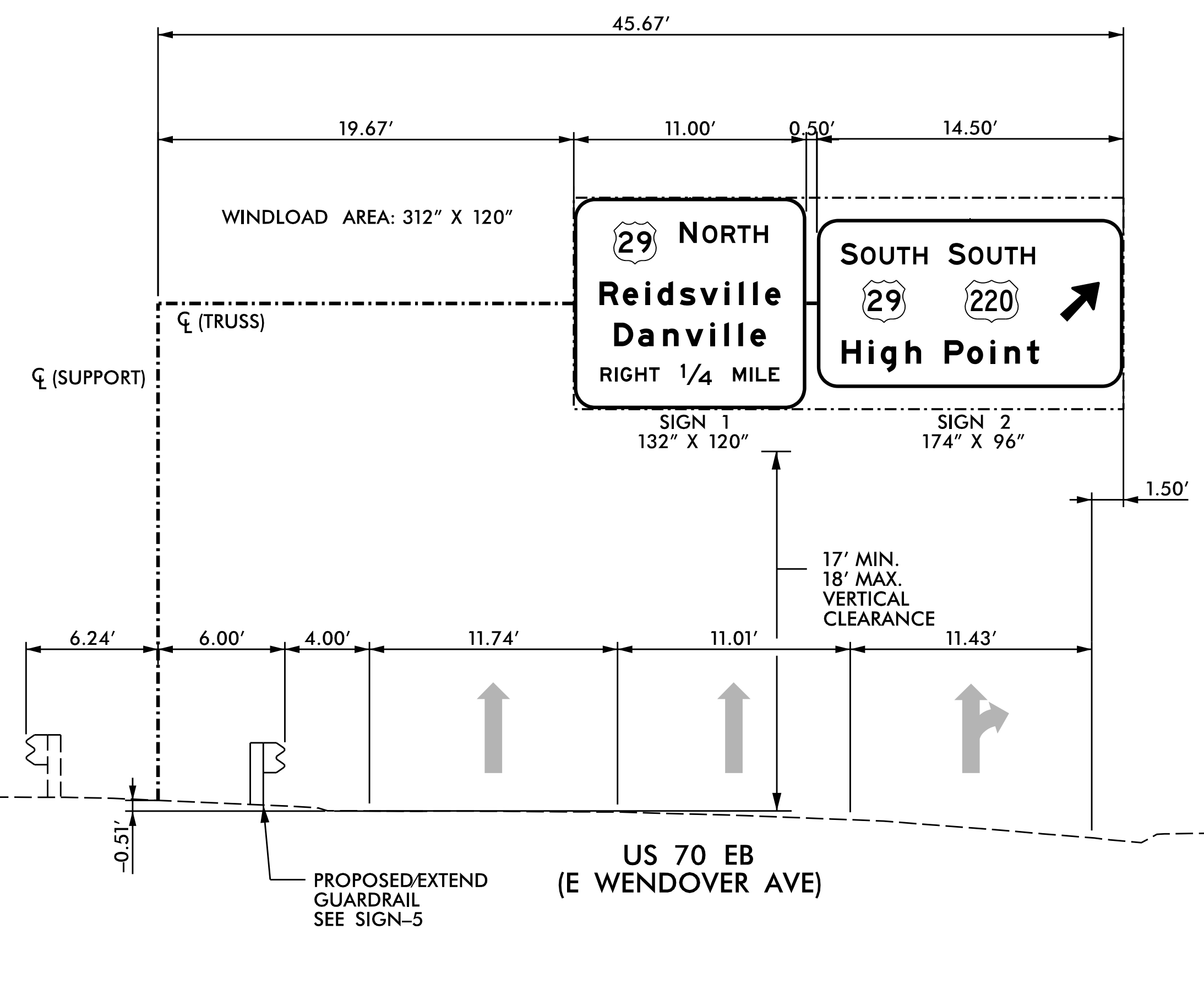
PLANS PREPARED BY: HNTB NORTH CAROLINA, P.C.

A.D. KLINSIEK, PE, PTOE SIGNING PROJECT ENGINEER
J.A. WAGNER, PE SIGNING DESIGN ENGINEER
T.R. TERRELL SIGNING SENIOR DESIGN TECHNICIAN



HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

PROJECT REFERENCE NO.	SHEET NO.
U-2525CA	SIGN-2
APPROVED: <i>Andrew D. Klinck</i>	
DATE: 3/21/2024	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



US 70 WB
(E WENDOOVER AVE)


US 70 EB
(E WENDOOVER AVE)

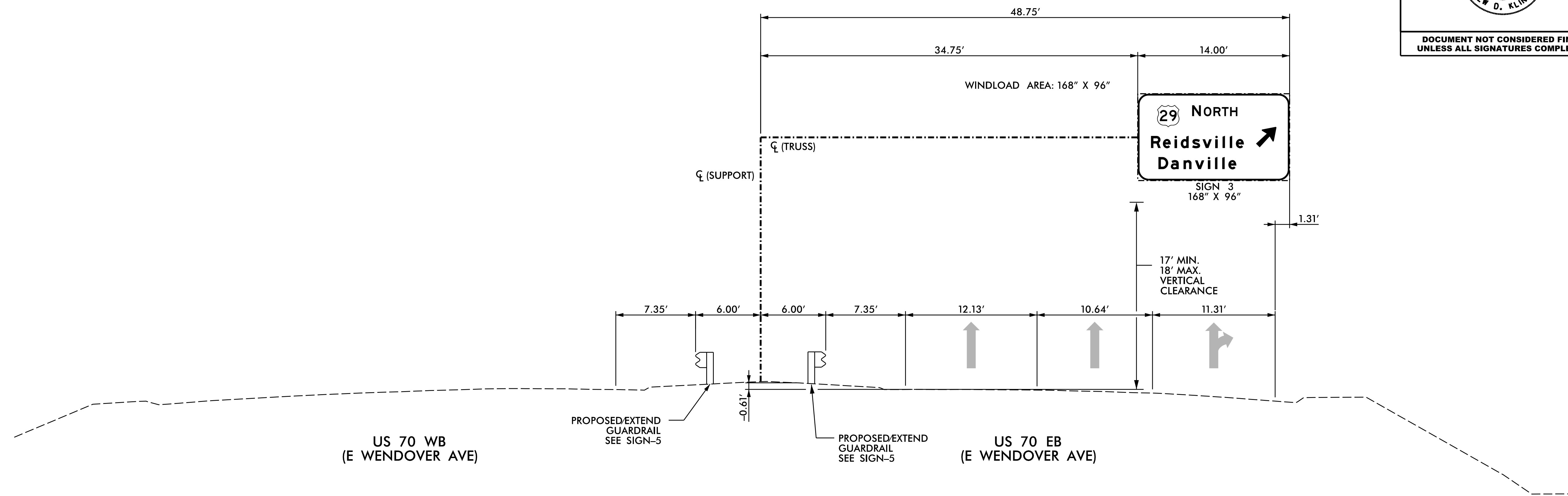
NOTES:

- IF THE CONTRACTOR BIDS ALUMINUM SIGN STRUCTURE, EACH SHALL BE PROVIDED WITH AN APPROVED HIGHWAY TRUSS DAMPER DEVICE IN ACCORDANCE WITH AASHTO SPECIFICATIONS.
- MOUNT SIGNS VERTICALLY CENTERED ON HORIZONTAL MEMBER OF STRUCTURE.
- FIELD VERIFICATION SHALL BE REQUIRED FOR ALL FOOTING ELEVATIONS, PER THE LATEST NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. PROVIDE FIELD VERIFICATION TO THE SIGNING SECTION.
- THE TOP OF THE FOOTING SHALL EXTEND AT LEAST 4 INCHES AND NOT MORE THAN 24 INCHES ABOVE THE HIGHEST POINT OF THE GROUND SURFACE AT THE FOOTING.
- SIGN HANGERS AND ATTACHMENT HARDWARE SHALL BE PROVIDED AND INSTALLED ON THE ASSEMBLY TO ACCOMMODATE ALL SIGNS SHOWN IN THIS PLAN SHEET.
- DESIGN AND CONSTRUCTION REQUIREMENTS FOR SIGN STRUCTURES SHALL ACCOMMODATE WIND VELOCITY OF 90 M.P.H.

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STRUCTURE INVENTORY 401435
OVERHEAD SIGN STRUCTURE 'A'
25' WEST OF EXISTING
EB OVERHEAD SIGN STRUCTURE

PROJECT REFERENCE NO.	SHEET NO.
U-2525CA	SIGN-2A
DESIGNED BY: Andrew D. Klinck	
APPROVED: <i>Andrew D. Klinck</i>	
DATE: 3/21/2024	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	




NOTES:

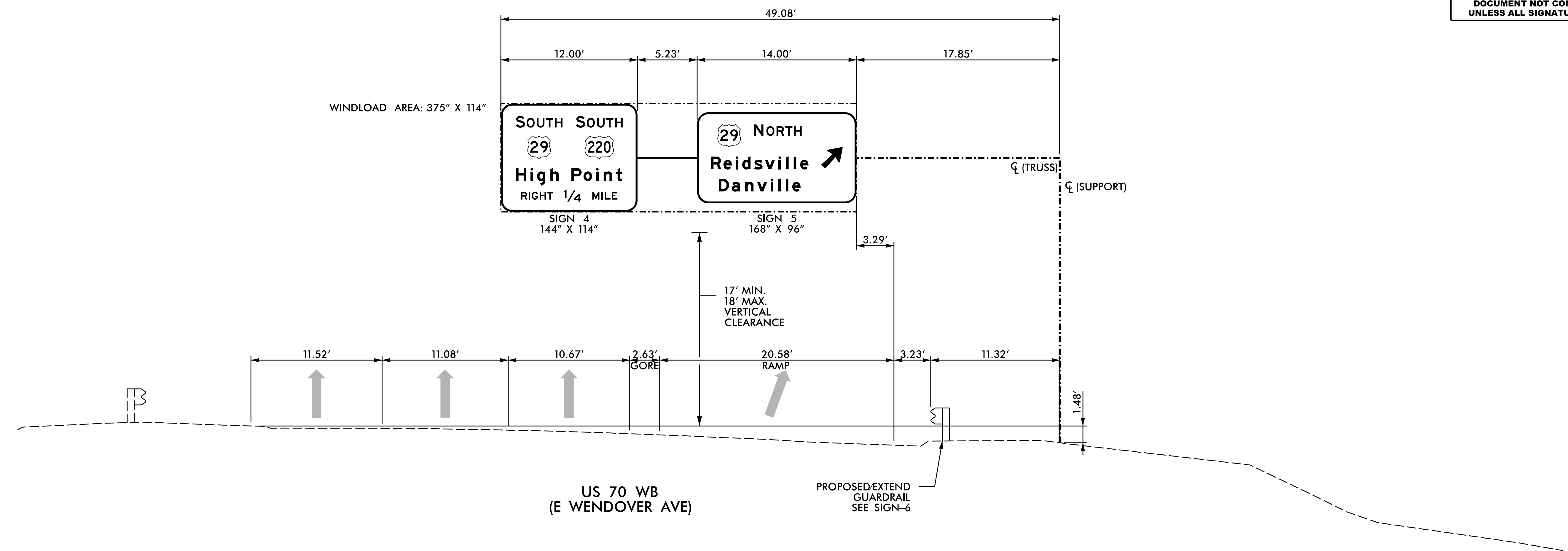
- IF THE CONTRACTOR BIDS ALUMINUM SIGN STRUCTURE, EACH SHALL BE PROVIDED WITH AN APPROVED HIGHWAY TRUSS DAMPER DEVICE IN ACCORDANCE WITH AASHTO SPECIFICATIONS.
- MOUNT SIGNS VERTICALLY CENTERED ON HORIZONTAL MEMBER OF STRUCTURE.
- FIELD VERIFICATION SHALL BE REQUIRED FOR ALL FOOTING ELEVATIONS, PER THE LATEST NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. PROVIDE FIELD VERIFICATION TO THE SIGNING SECTION.
- THE TOP OF THE FOOTING SHALL EXTEND AT LEAST 4 INCHES AND NOT MORE THAN 24 INCHES ABOVE THE HIGHEST POINT OF THE GROUND SURFACE AT THE FOOTING.
- SIGN HANGERS AND ATTACHMENT HARDWARE SHALL BE PROVIDED AND INSTALLED ON THE ASSEMBLY TO ACCOMMODATE ALL SIGNS SHOWN IN THIS PLAN SHEET.
- DESIGN AND CONSTRUCTION REQUIREMENTS FOR SIGN STRUCTURES SHALL ACCOMMODATE WIND VELOCITY OF 90 M.P.H.

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STRUCTURE INVENTORY 401437

OVERHEAD SIGN STRUCTURE 'B'
90' WEST OF EXISTING
EB GROUND MOUNTED SIGN

PROJECT REFERENCE NO.	SHEET NO.
U-2525CA	SIGN-2B
DESIGNED BY: Andrew D. Klinck	
APPROVED: <i>Andrew D. Klinck</i>	
DATE: 3/21/2024	
SEAL	
	
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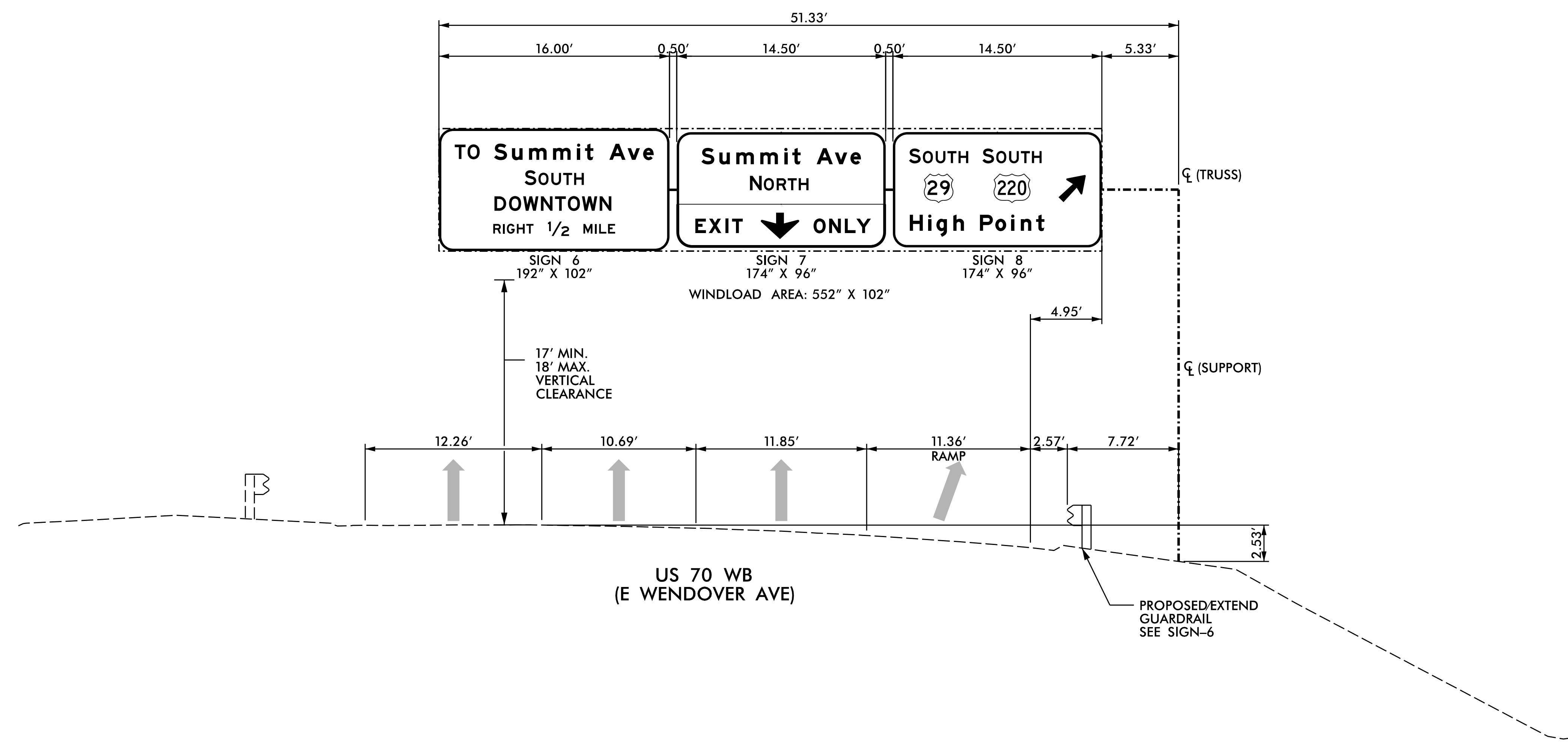
NOTES:

- IF THE CONTRACTOR BIDS ALUMINUM SIGN STRUCTURE, EACH SHALL BE PROVIDED WITH AN APPROVED HIGHWAY TRUSS DAMPER DEVICE IN ACCORDANCE WITH AASHTO SPECIFICATIONS.
- MOUNT SIGNS VERTICALLY CENTERED ON HORIZONTAL MEMBER OF STRUCTURE.
- FIELD VERIFICATION SHALL BE REQUIRED FOR ALL FOOTING ELEVATIONS, PER THE LATEST NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. PROVIDE FIELD VERIFICATION TO THE SIGNING SECTION.
- THE TOP OF THE FOOTING SHALL EXTEND AT LEAST 4 INCHES AND NOT MORE THAN 24 INCHES ABOVE THE HIGHEST POINT OF THE GROUND SURFACE AT THE FOOTING.
- SIGN HANGERS AND ATTACHMENT HARDWARE SHALL BE PROVIDED AND INSTALLED ON THE ASSEMBLY TO ACCOMMODATE ALL SIGNS SHOWN IN THIS PLAN SHEET.
- DESIGN AND CONSTRUCTION REQUIREMENTS FOR SIGN STRUCTURES SHALL ACCOMMODATE WIND VELOCITY OF 90 M.P.H.

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 HNTB NORTH CAROLINA, P.C.
 343 E. Six Forks Road, Suite 200
 Raleigh, North Carolina 27609
 NC License No: C-1554
 (919) 546-8997

STRUCTURE INVENTORY 400069
OVERHEAD SIGN STRUCTURE 'C'
0' EAST OF EXISTING
WB OVERHEAD SIGN STRUCTURE

PROJECT REFERENCE NO.	SHEET NO.
U-2525CA	SIGN-2C
DESIGNED BY: Andrew D. Klinck	
APPROVED: <i>Andrew D. Klinck</i>	
DATE: 3/21/2024	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	




NOTES:

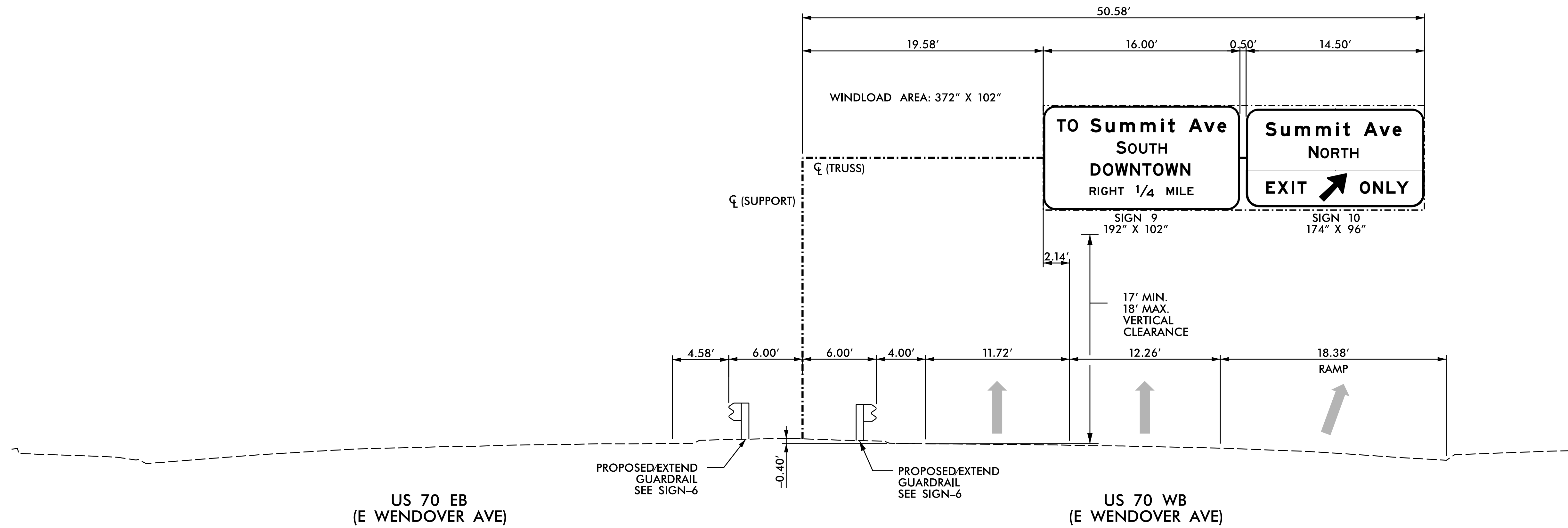
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STRUCTURE INVENTORY 401436

OVERHEAD SIGN STRUCTURE 'D'
25' EAST OF EXISTING
WB OVERHEAD SIGN STRUCTURE

PROJECT REFERENCE NO.	SHEET NO.
U-2525CA	SIGN-2D
DESIGNED BY: Andrew D. Klinck	
APPROVED: <i>Andrew D. Klinck</i>	
DATE: 3/21/2024	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



NOTES:

- IF THE CONTRACTOR BIDS ALUMINUM SIGN STRUCTURE, EACH SHALL BE PROVIDED WITH AN APPROVED HIGHWAY TRUSS DAMPER DEVICE IN ACCORDANCE WITH AASHTO SPECIFICATIONS.
- MOUNT SIGNS VERTICALLY CENTERED ON HORIZONTAL MEMBER OF STRUCTURE.
- FIELD VERIFICATION SHALL BE REQUIRED FOR ALL FOOTING ELEVATIONS, PER THE LATEST NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. PROVIDE FIELD VERIFICATION TO THE SIGNING SECTION.
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STRUCTURE INVENTORY 401434
OVERHEAD SIGN STRUCTURE 'E'
210' EAST OF EXISTING
WB OVERHEAD SIGN STRUCTURE



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGN NUMBER: 1 BACKG COLOR: Green
 TYPE: A (OVHD) COPY COLOR: White
 QUANTITY: 1

SYMBOL	X	Y	WID	HT
M1_4	22.7	82.3	24	24

SIGN WIDTH: 11'-0"
 HEIGHT: 10'-0"
 TOTAL AREA: 110.0 Sq.Ft.

BORDER TYPE: FLUSH
 RECESS: 0"
 WIDTH: 2"
 RADII: 12"

NO. Z BARS: 3
 LENGTH: 124.0

DESIGN BY: EET CHECKED BY: ADK
 PROJECT ID: U-2525C DIV: 07 DATE: September 2023

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

	N	O	R	T	H																Series/Size Text Length
	60.1	9.7	3.2	10.7	9.2	9.2	8.1	21.7													E 2000
																					50.1
	14.6	13.2	12.9	6.8	12.7	11.5	14.1	8	8	6.8	8.8	14.6									EM 2000
																					102.8
	22.9	13.6	14.1	12.7	14.1	8	8	6.8	8.8	22.9											EM 2000
																					86.1
	15.2	8.1	3.3	8.3	7.8	6	12	17.6	12	9.6	3.5	7.4	6	15.2							E 2000
																					101.6

SIGN NUMBER: 2,8 BACKG COLOR: Green
 TYPE: A (OVHD) COPY COLOR: White
 QUANTITY: 2

SYMBOL	X	Y	WID	HT
M1_4	26.1	37.2	24	24
M1_4	84.2	37.2	30	24
Type A Arrow	138	37.7	18.3	28.7

SIGN WIDTH: 14'-6"
 HEIGHT: 8'-0"
 TOTAL AREA: 116.0 Sq.Ft.

BORDER TYPE: FLUSH
 RECESS: 0"
 WIDTH: 2"
 RADII: 12"

NO. Z BARS: 3
 LENGTH: 166.0

DESIGN BY: EET CHECKED BY: ADK
 PROJECT ID: U-2525C DIV: 07 DATE: September 2023

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

	S	O	U	T	H																Series/Size Text Length	
	13.4	9.7	1.8	10.7	9.8	9.2	8.1	111.2														E 2000
																						49.3
	74.6	9.7	1.8	10.7	9.8	9.2	8.1	50.1														E 2000
																						49.3
	14.1	15.3	6.8	14.1	8.8	13.3	12.8	13.2	8	12.8	6.9	47.8										EM 2000
																						112.1

SIGN NUMBER: 3,5 BACKG COLOR: Green
 TYPE: A (OVHD) COPY COLOR: White
 QUANTITY: 2

SYMBOL	X	Y	WID	HT
M1_4	21.7	59.3	24	24
Type A Arrow	130.8	36.7	18.3	28.7

SIGN WIDTH: 14'-0"
 HEIGHT: 8'-0"
 TOTAL AREA: 112.0 Sq.Ft.

BORDER TYPE: FLUSH
 RECESS: 0"
 WIDTH: 2"
 RADII: 12"

NO. Z BARS: 3
 LENGTH: 160.0

DESIGN BY: EET CHECKED BY: ADK
 PROJECT ID: U-2525C DIV: 07 DATE: September 2023

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

	N	O	R	T	H																Series/Size Text Length	
	60.1	9.7	3.2	10.7	9.2	9.2	8.1	57.8														E 2000
																						50.1
	14.6	13.2	12.9	6.8	12.7	11.5	14.1	8	8	6.8	8.8	50.6										EM 2000
																						102.8
	22.9	13.6	14.1	12.7	14.1	8	8	6.8	8.8	59												EM 2000
																						86.1

SIGN NUMBER: 4 BACKG COLOR: Green
 TYPE: A (OVHD) COPY COLOR: White
 QUANTITY: 1

SYMBOL	X	Y	WID	HT
M1_4	28.3	56	24	24
M1_4	88.7	56	30	24

SIGN WIDTH: 12'-0"
 HEIGHT: 9'-6"
 TOTAL AREA: 114.0 Sq.Ft.

BORDER TYPE: FLUSH
 RECESS: 0"
 WIDTH: 2"
 RADII: 12"

NO. Z BARS: 3
 LENGTH: 136.0

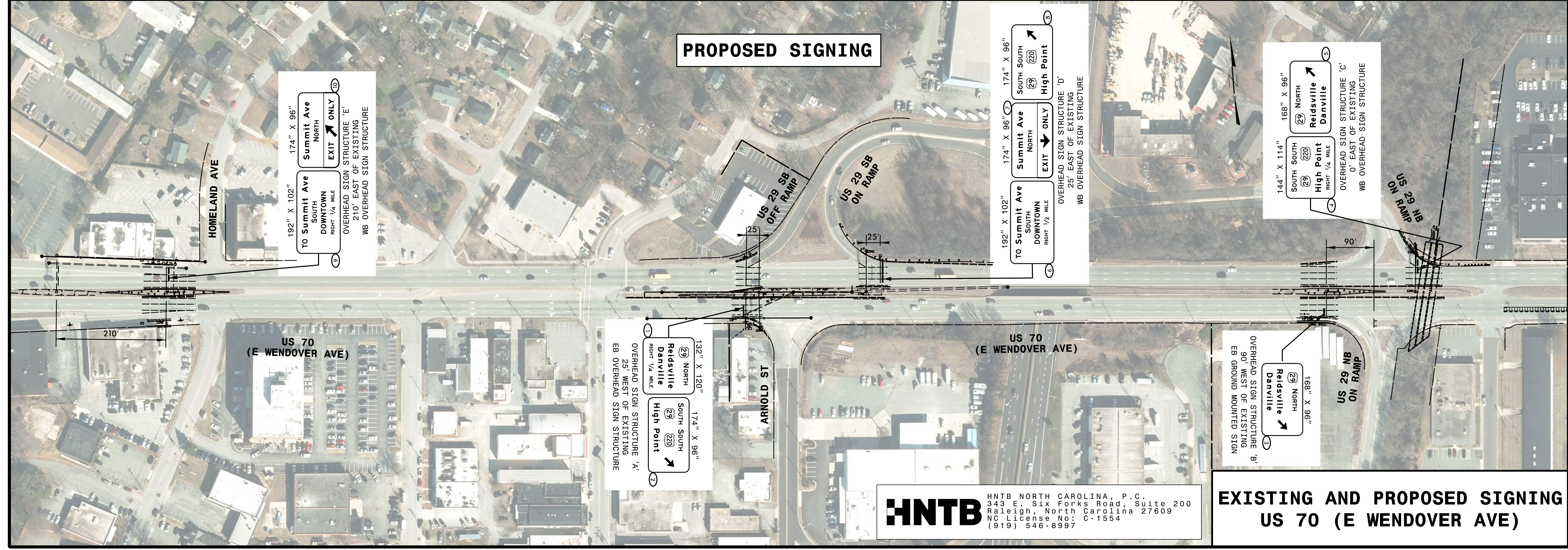
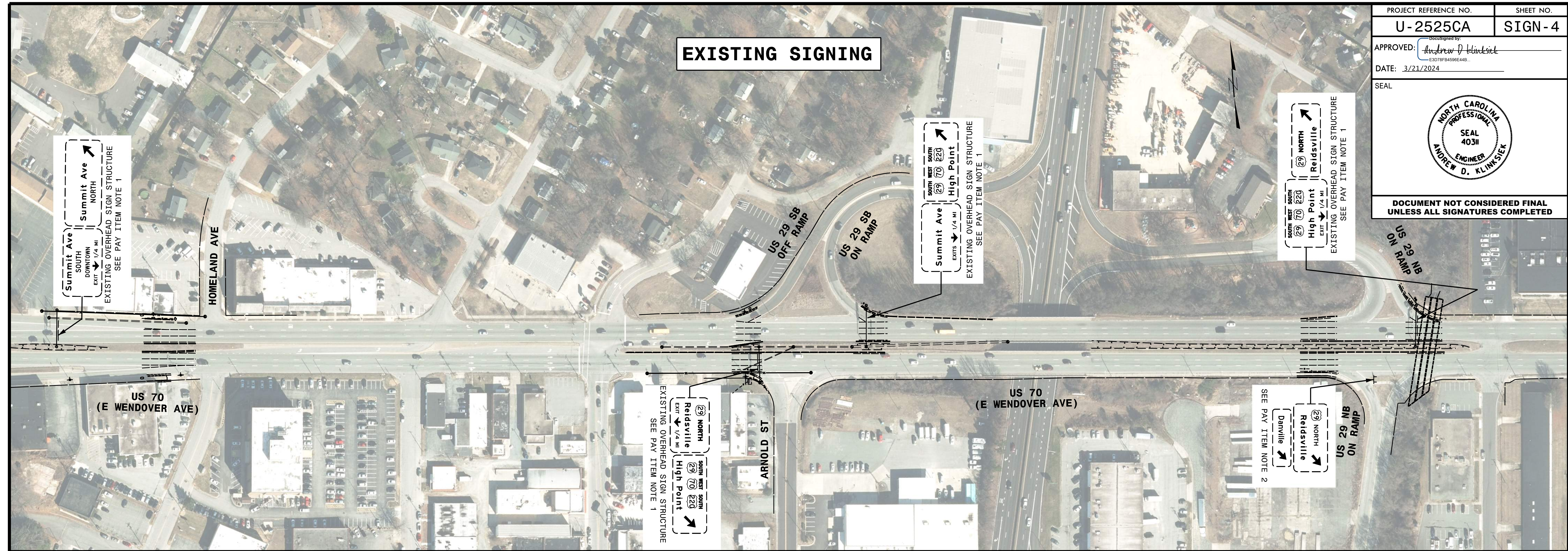
DESIGN BY: EET CHECKED BY: ADK
 PROJECT ID: U-2525C DIV: 07 DATE: September 2023

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

	S	O	U	T	H																Series/Size Text Length	
	15.6	9.7	1.8	10.7	9.8	9.2	8.1	79.1														E 2000
																						49.3
	79	9.7	1.8	10.7	9.8	9.2	8.1	15.6														E 2000
																						49.3
	15.9	15.3	6.8	14.1	8.8	13.3	12.8	13.2	8	12.8	6.9	16										EM 2000
																						112.1
	21.2	8.1	3.3	8.3	7.8	6	12	17.6	12	9.6	3.5	7.4	6	21.2								E 2000
																						101.6



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NC License No. C-1554
(919) 546-8997

**EXISTING AND PROPOSED SIGNING
US 70 (E WENDOVER AVE)**

COMPUTED BY: Z. Burns DATE: 2/27/2023
 CHECKED BY: A. McOmber DATE: 2/28/2023

DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. U-2525CA

STATE OF NORTH CAROLINA
GUARDRAIL SUMMARY

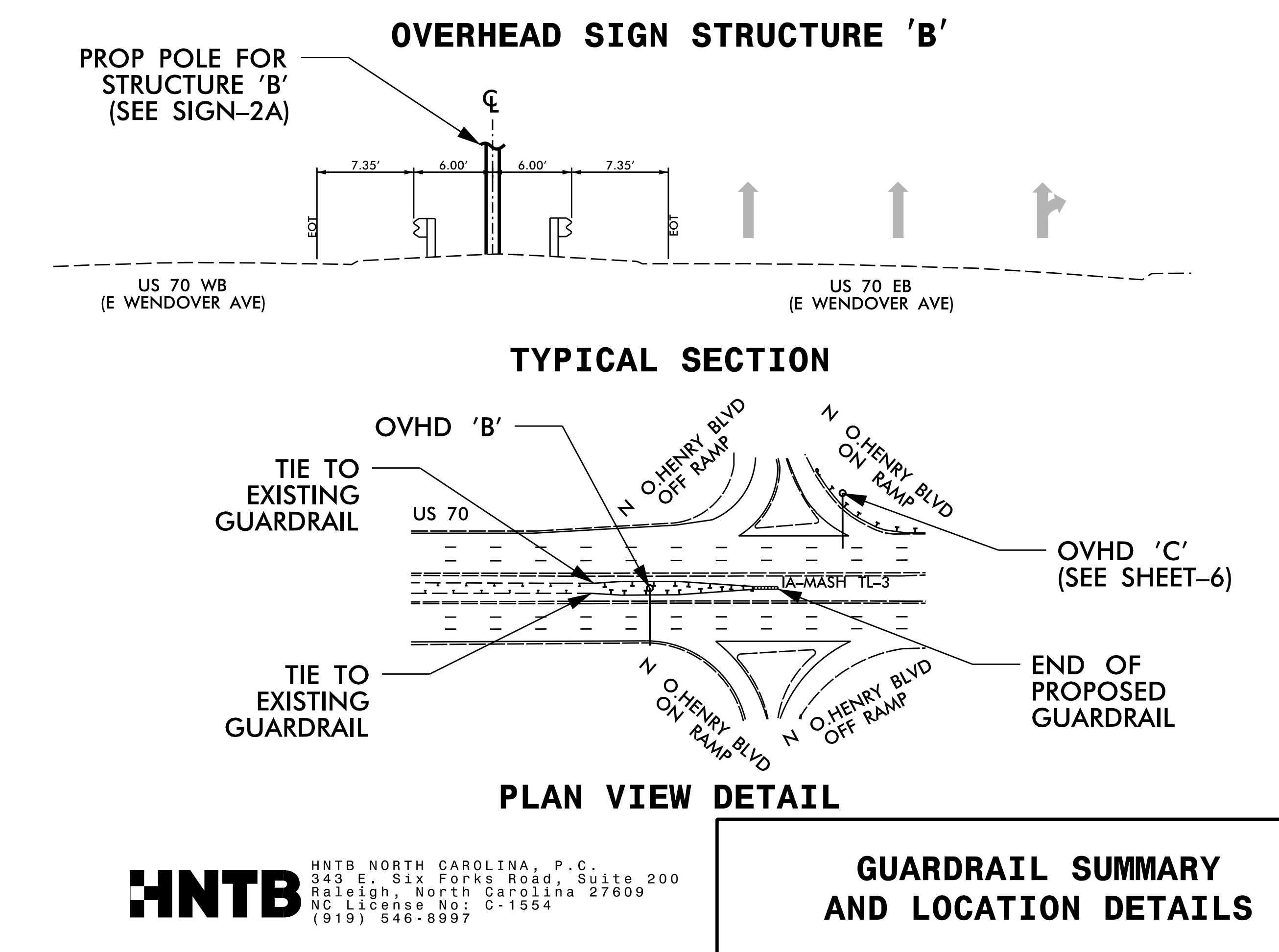
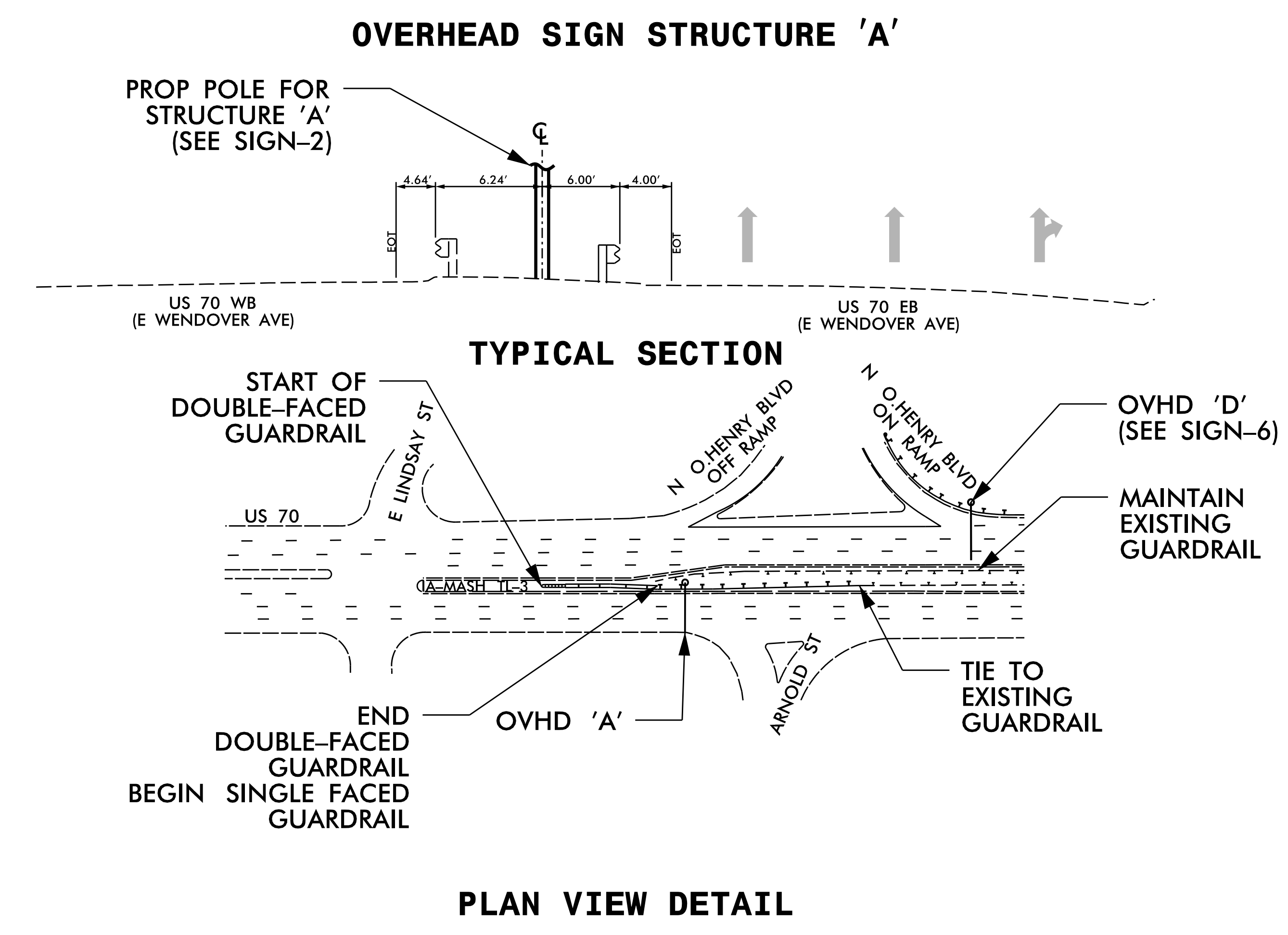
"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL

G = GATING IMPACT ATTENUATOR TYPE TL-3
 NG = NON-GATING IMPACT ATTENUATOR TYPE TL-3

APPROVED: *Jason M. Pickens*
 DATE: 4/4/2024
 SEAL:

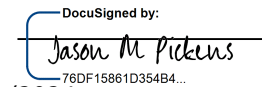
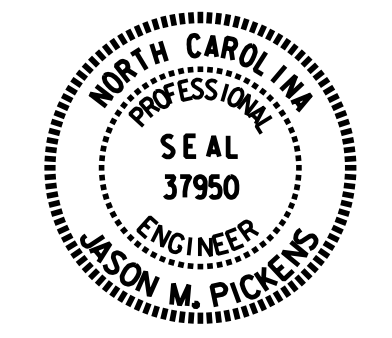
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROAD NAME	SITE	SHEET NUMBER	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS										IMPACT ATTENUATOR TYPE TL-3		REMOVAL OF EXIST. GUARDRAIL	REMARKS	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	Type III	B-77	GREU, TL-3	GREU, TL-2	CAT-1	AT-1	Type III SC	B-77 SC	CABLE GUIDE RAIL ANCHOR	G	NG						
US 220 EB	STRUCTURE 'A'	SIGN-2	MED	203.26		83.26	STRUCTURE 'A'		4	N/A																1	290	Tie to Existing Guardrail	
US 70 EB	STRUCTURE 'B'	SIGN-2A	MED	142.46			STRUCTURE 'B'		7.35	N/A																	300	Tie to Existing Guardrail, 50' of 3'-1.5" Post Spacing	
US 70 WB	STRUCTURE 'B'	SIGN-2A	MED	165.61			STRUCTURE 'B'		7.35	N/A																1	325	Tie to Existing Guardrail, 50' of 3'-1.5" Post Spacing	
US 70 WB	STRUCTURE 'C'	SIGN-2B	LT	116.84	72.36		STRUCTURE 'C'		3.23	N/A	50		1																
US 220 WB	STRUCTURE 'D'	SIGN-2C	LT	127.31	136.89		STRUCTURE 'D'		2.57	N/A																		270	Tie to Existing Guardrail
US 220 EB	STRUCTURE 'E'	SIGN-2D	MED	216.35			STRUCTURE 'E'		4.58	N/A																1	180	50' of 3'-1.5" Post Spacing	
US 220 WB	STRUCTURE 'E'	SIGN-2D	MED	216.25			STRUCTURE 'E'		4	N/A																1	180	50' of 3'-1.5" Post Spacing	
LESS ANCHOR DEDUCTIONS:																													
GREU TL-3:				1 @ 50'	-50.00																								
CAT-1:				2 @ 6.25'	-12.50																								
IA TL-3:				4 @ 21'	-84.00																								
TOTALS:				1,042	209	83																				4	1,545		
SAY:				1,050	225	100																			4	1,550			
ADDITIONAL GUARDRAIL POST:				10																									

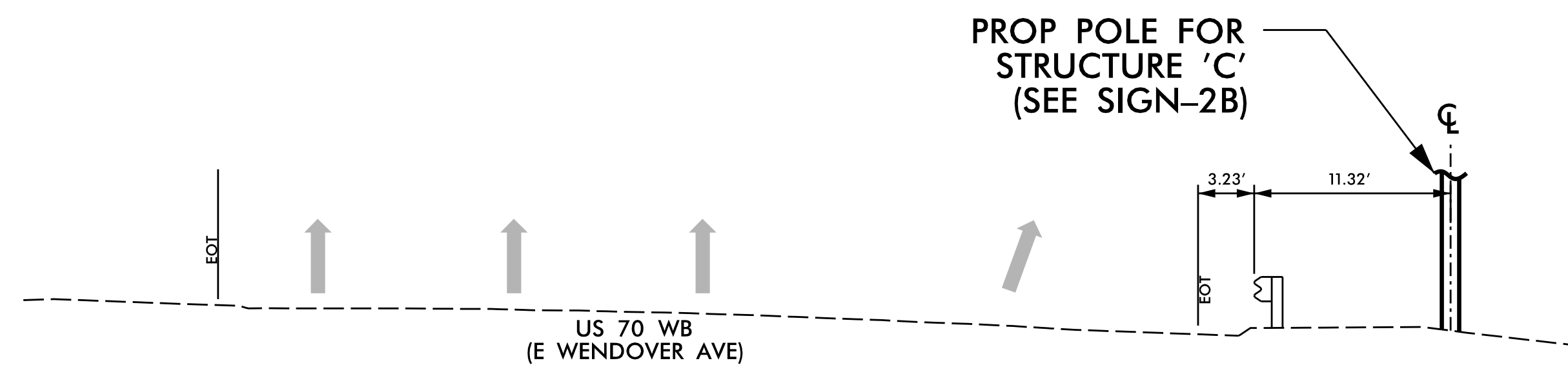


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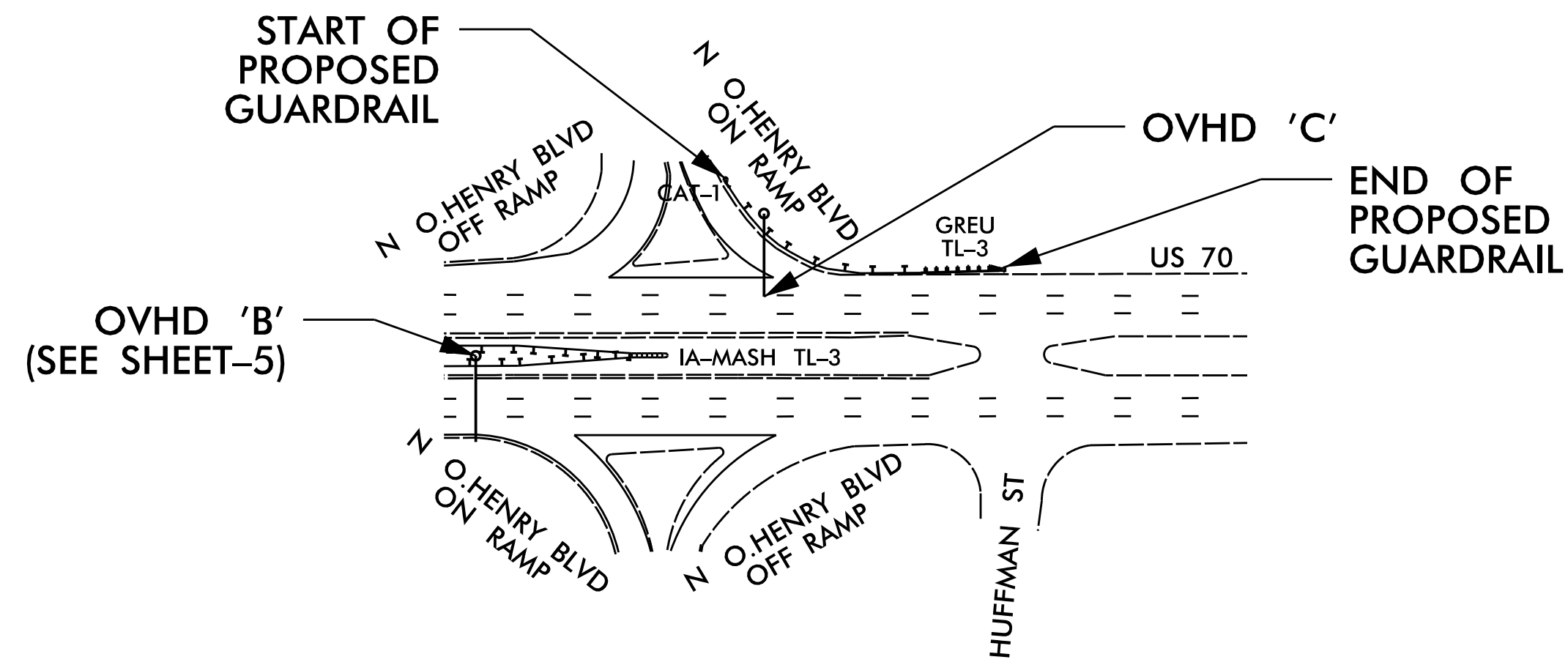
GUARDRAIL SUMMARY AND LOCATION DETAILS

PROJECT REFERENCE NO. U-2525CA	SHEET NO. SIGN-6
APPROVED:  DATE: 3/22/2024	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

OVERHEAD SIGN STRUCTURE 'C'

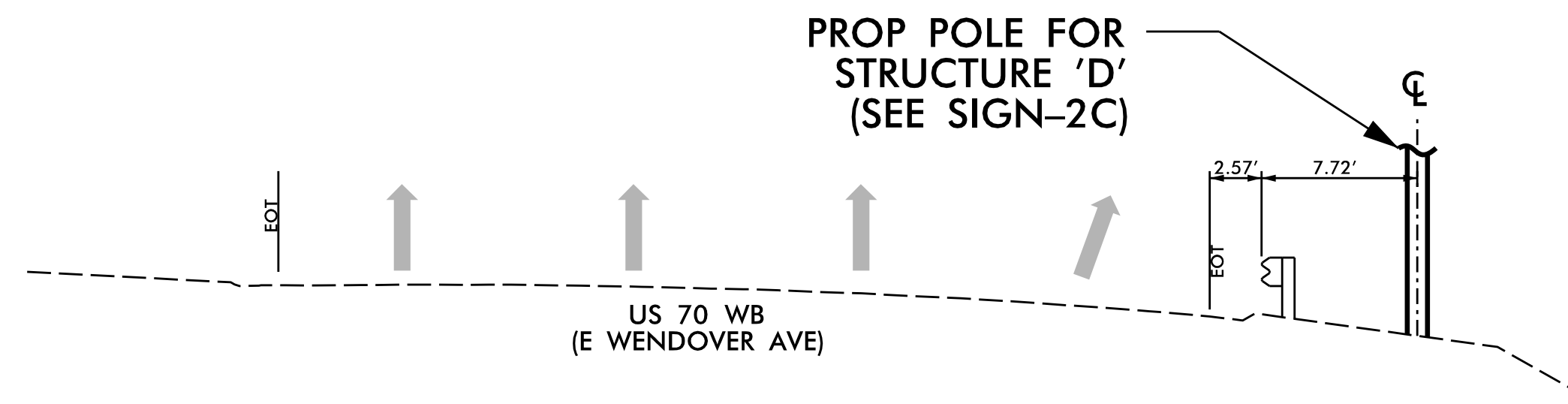


TYPICAL SECTION

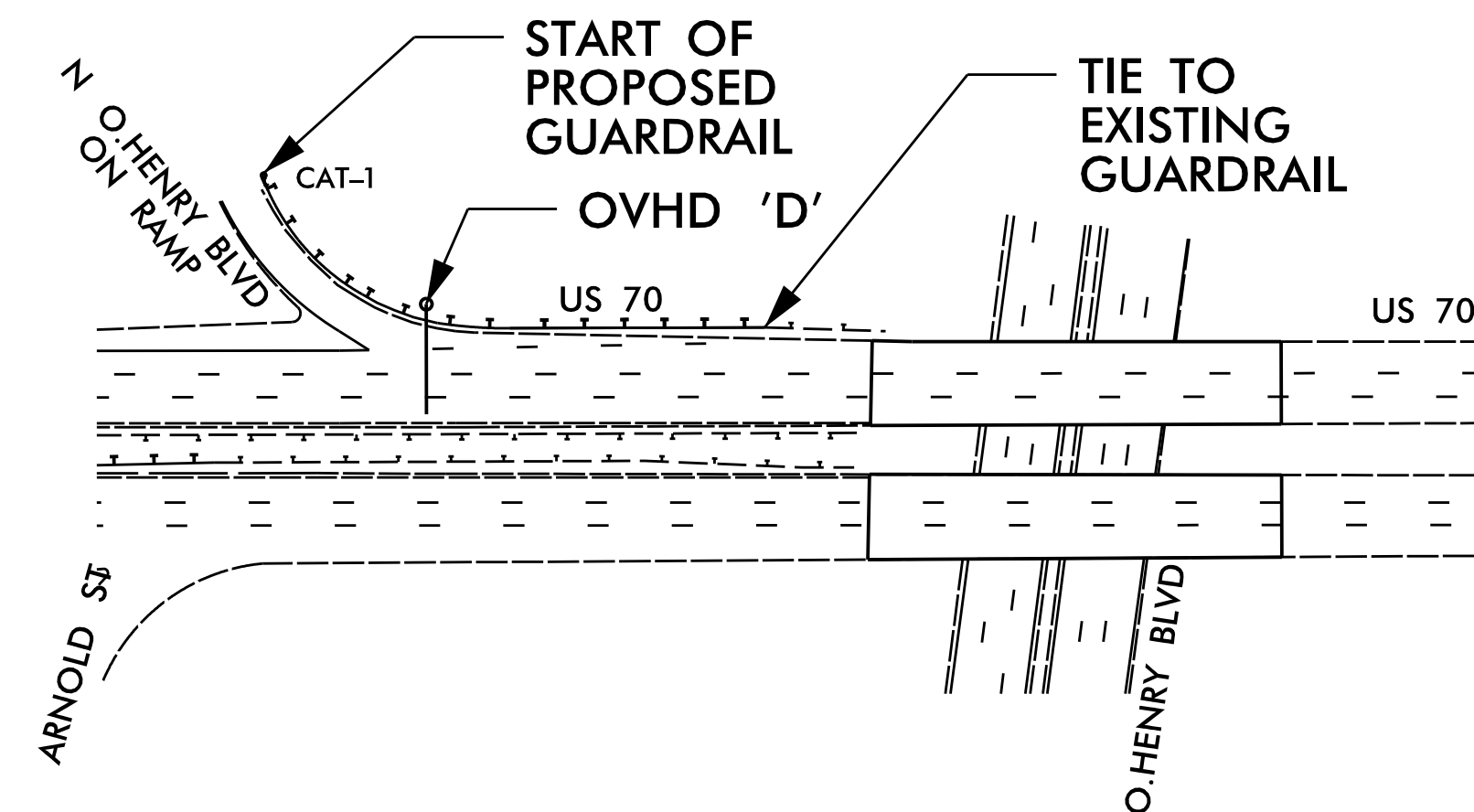


PLAN VIEW DETAIL

OVERHEAD SIGN STRUCTURE 'D'

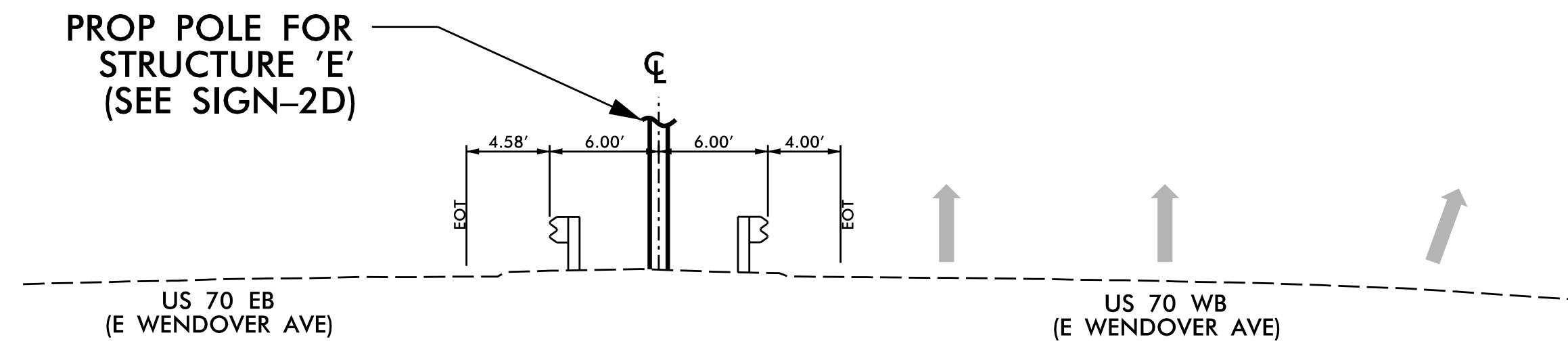


TYPICAL SECTION

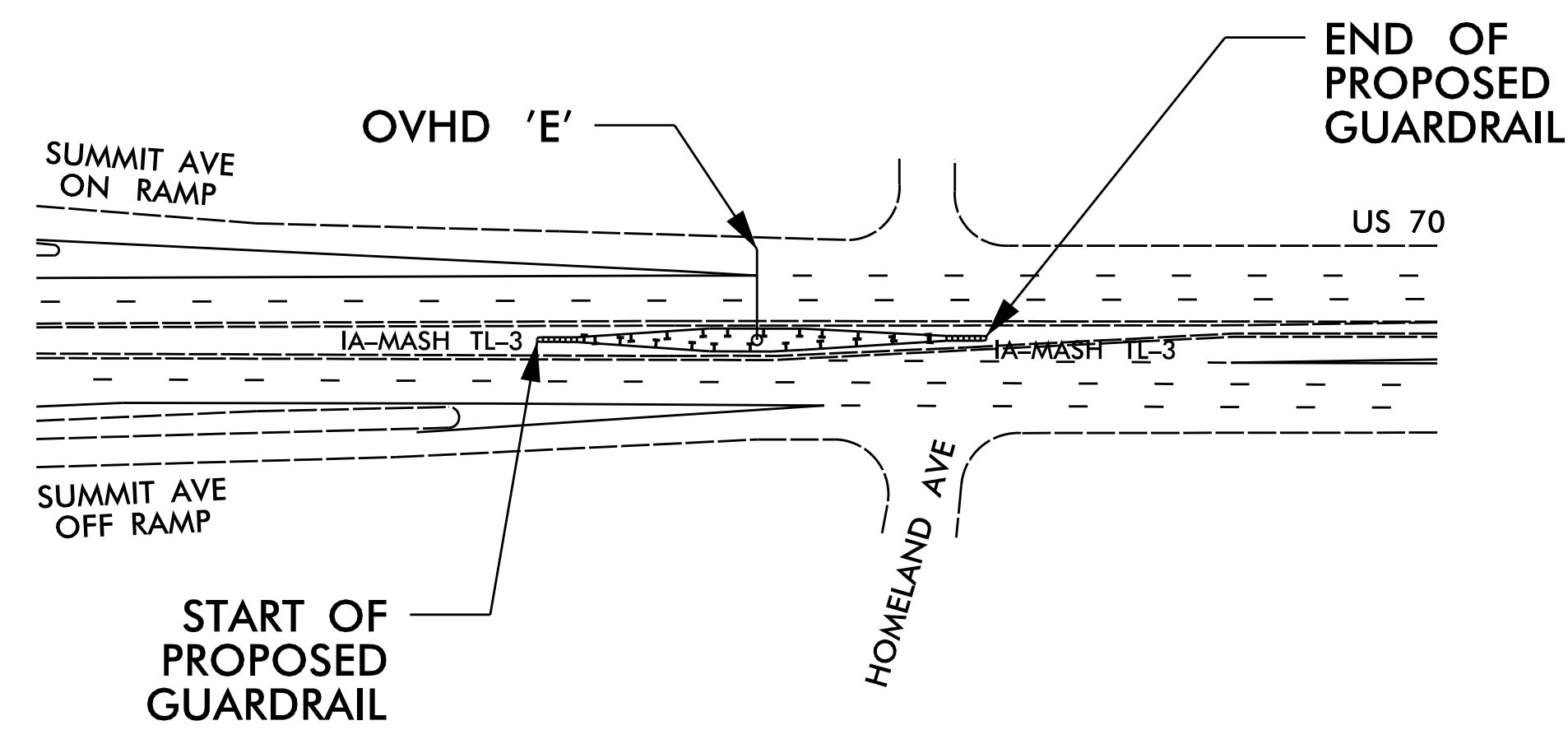


PLAN VIEW DETAIL

OVERHEAD SIGN STRUCTURE 'E'



TYPICAL SECTION



PLAN VIEW DETAIL

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(919) 546-8997

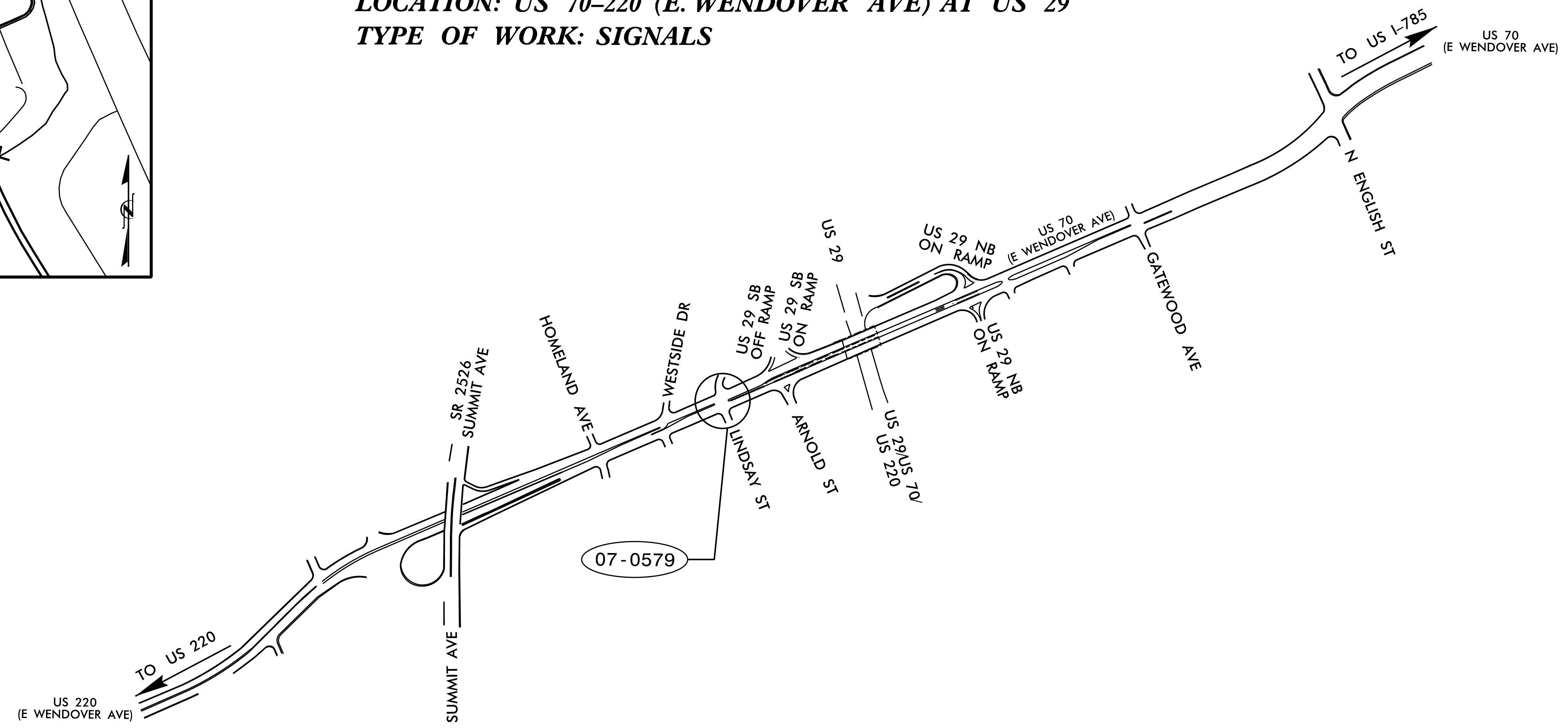
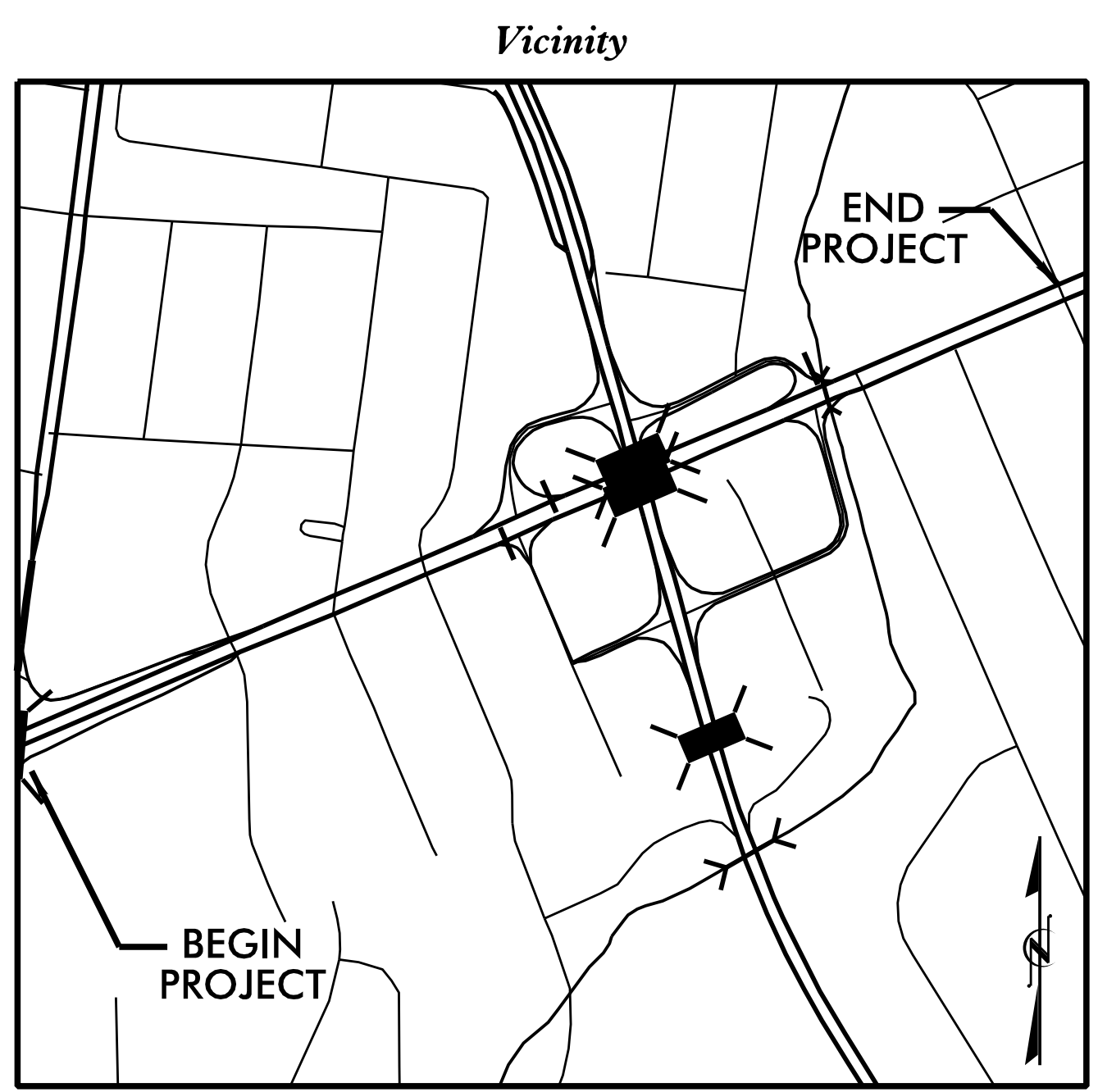
GUARDRAIL LOCATION DETAILS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

LOCATION: US 70-220 (E. WENDOVER AVE) AT US 29
TYPE OF WORK: SIGNALS

Project: U-2525CA



Contract: DG00653

PLANS PREPARED BY:
HNTB
 HNTB NORTH CAROLINA, P.C.
 4000 Center at North Hills St
 Suite 500
 Raleigh, North Carolina 27609
 NC License No: C-1554
 (919) 546-8997

Natasha R. Simmons, P.E., PTOE - Project Engineer
 Nicole K. Vlanich, PE - Design Engineer
 Emily E. Tiller - Design Engineer

Sheet #	Reference #	Location/Description
Sig. 1.0	-----	Title Sheet
Sig. 2.0-5.4	07-0579	US 70-220 (E. Wendover Avenue) at Lindsay Street

LEGEND

07-#### SIGNAL INVENTORY NUMBER

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS UNIT

Contacts:
 Robert J. Ziemba, PE, CPM - Central Region Signals Engineer
 Ryan W. Hough, PE - Signal Equipment Project Engineer

NCDOT - DIVISION 7

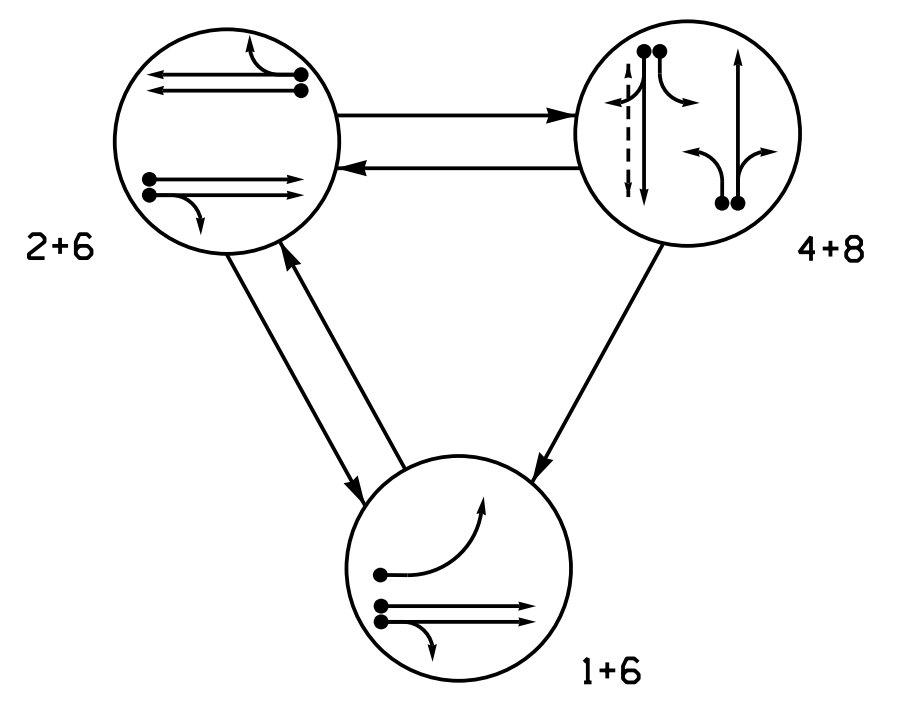
Contacts:
 Dawn McPherson - Division Traffic Engineer
 Brian C. Thomas, PE - Regional Traffic Engineer
 Chris Spencer - City of Greensboro Traffic Engineer

Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.

Prepared In the Office of:
 DIVISION OF HIGHWAYS
 TRANSPORTATION MOBILITY & SAFETY DIVISION

750 N. Greenfield Parkway, Garner, NC 27529

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ⤴ PEDESTRIAN MOVEMENT

EV PREEMPT PHASES
(Medium Priority)

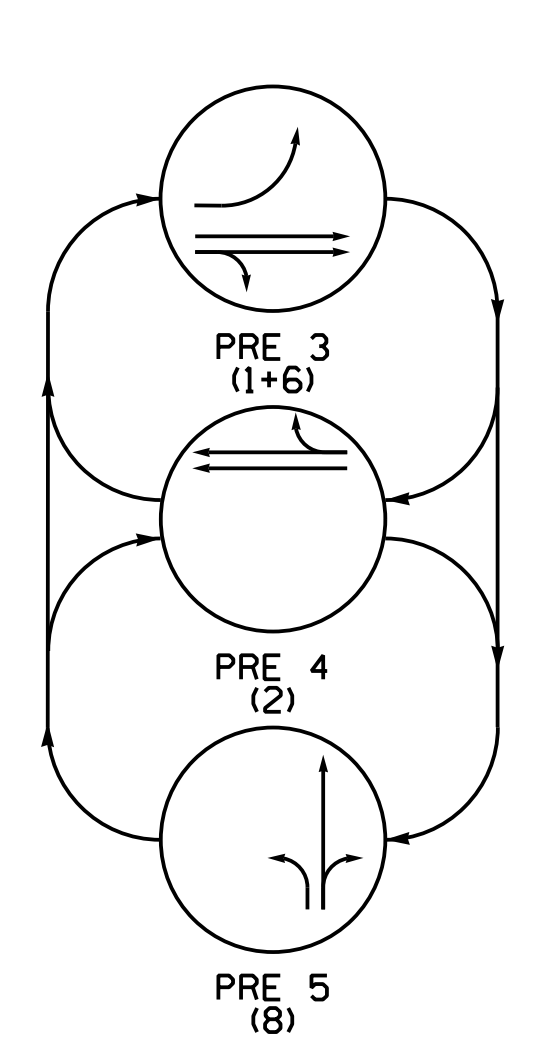
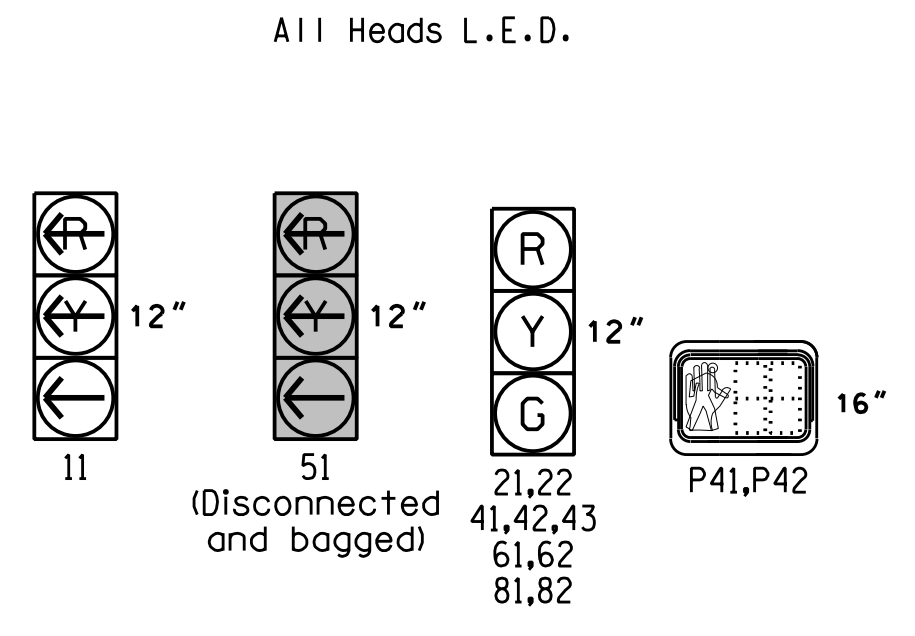


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	1+6	2+6	4+8	PRE 3	PRE 4	PRE 5	FLASH	DRK
11	—	—	—	—	—	—	—	—
21,22	R	G	R	R	G	R	R	R
41,42,43	R	R	G	R	R	R	R	R
61,62	G	G	R	G	R	R	R	R
81,82	R	R	G	R	R	G	R	R
P41,P42	DW	DW	W	DW	DW	DW	DRK	DRK

SIGNAL FACE I.D.



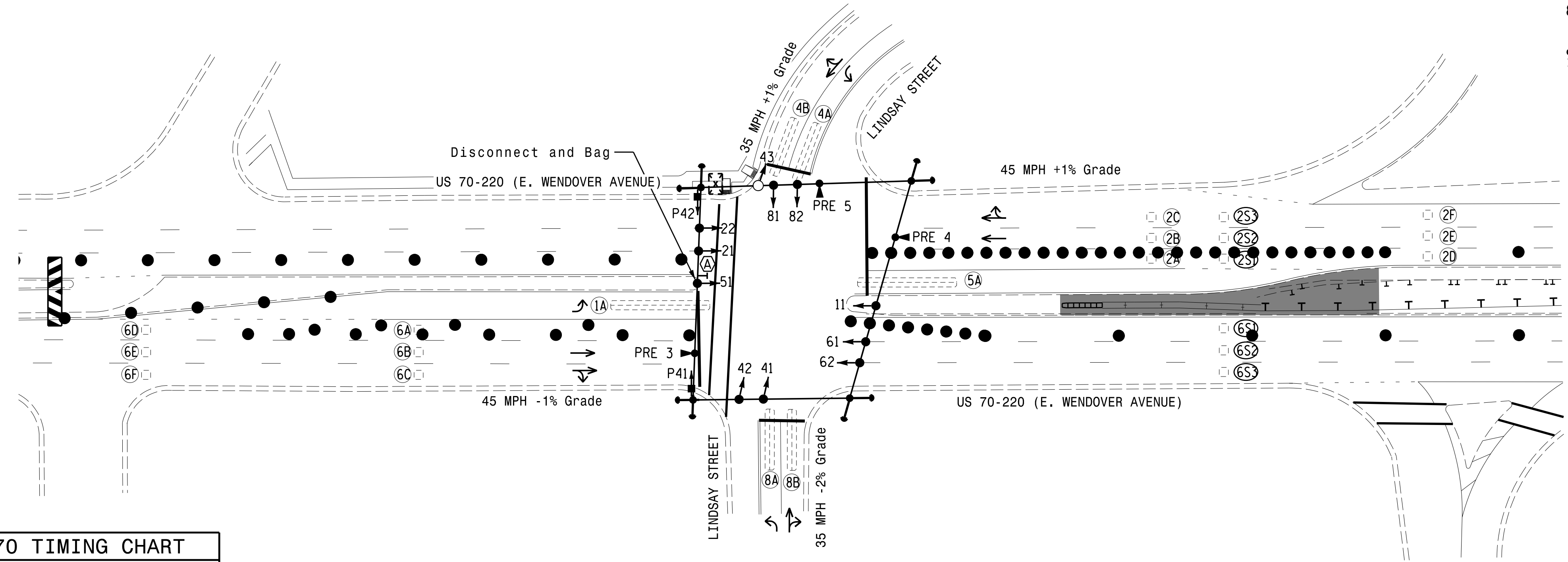
LOOP & DETECTOR UNIT INSTALLATION CHART
TRAFFICWARE APOGEE SOFTWARE 2070 CONTROLLER

LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	SWITCH (PHASE)	DELAY TIME	STRETCH TIME	CALLING	EXTENSION	ADDED INIT.	SYSTEM LOOP
1A	6x50	+5	2-4-2	-	1	-	-	-	X	X	-	-
2A,2B,2C	6x6	147	4	-	2	-	-	-	X	X	-	-
2D,2E,2F	6x6	291	4	-	2	-	-	-	X	X	-	-
4A	6x50	+5	2-4-2	-	4	-	2.0	-	X	X	-	-
4B	6x60	+5	2-4-2	-	4	-	10.0	-	X	X	-	-
5A	6x50	+5	2-4-2	-	5	-	-	-	X	X	-	-
6A,6B,6C	6x6	145	4	-	6	-	-	-	X	X	-	-
6D,6E,6F	6x6	288	4	-	6	-	-	-	X	X	-	-
8A	6x50	+6	2-4-2	-	8	-	2.0	-	X	X	-	-
8B	6x60	+6	2-4-2	-	8	-	10.0	-	X	X	-	-
2S1	6x6	185	4	-	-	-	-	-	-	-	X	-
2S2	6x6	185	4	-	-	-	-	-	-	-	X	-
2S3	6x6	185	4	-	-	-	-	-	-	-	X	-
6S1	6x6	+273	4	-	-	-	-	-	-	-	X	-
6S2	6x6	+273	4	-	-	-	-	-	-	-	X	-
6S3	6x6	+273	4	-	-	-	-	-	-	-	X	-

3 Phase Fully Actuated Greensboro Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications January 2024."
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Disconnect and bag existing signal head 51.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Omit "Walk" and flashing "Don't Walk" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Pavement Markings are existing.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



TRAFFICWARE APOGEE 2070 TIMING CHART

FEATURE	PHASE				
	1	2	4	6	8
Min Green *	6	15	6	15	6
Gap, Extension *	1.0	4.0	1.0	4.0	1.0
Maximum Green 1 *	20	45	20	45	20
Maximum Green 2 *	-	-	-	-	-
Yellow Clear	3.0	4.6	4.0	4.6	4.0
Red Clear	2.9	1.1	2.3	1.1	2.3
Walk *	-	-	7	-	-
Pedestrian Clear	-	-	29	-	-
Advance Walk *	-	-	-	-	-
Added Initial *	-	-	-	-	-
Maximum Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	MIN RECALL	-
Lock Calls	NO	YES	NO	YES	NO
Dual Entry	-	ON	ON	ON	ON
Simultaneous Gap	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

EMERGENCY VEHICLE PREEMPTION

FUNCTION	PRE 3	PRE 4	PRE 5
DELAY BEFORE PREEMPT	0	0	0
MINIMUM DURATION	17	17	16
MIN GREEN BEFORE PREEMPT	5	5	5
MIN WALK BEFORE PREEMPT	1	1	1
PED CLEAR BEFORE PREEMPT	255*	255*	255*
MINIMUM DWELL	5	5	5
EXIT PED CLEAR	0	0	0
EXIT YELLOW CHANGE	0.0*	0.0*	0.0*
EXIT RED CLEAR	0.0*	0.0*	0.0*
ENTER YELLOW CHANGE	25.5*	25.5*	25.5*
ENTER RED CLEAR	25.5*	25.5*	25.5*
ALL-RED B4 DWELL	OFF	OFF	ON
LOCK INPUT	ON	ON	ON
OVERRIDE HIGHER # PREEMPT	OFF	OFF	OFF
EXIT PREEMPT TO	2+6	2+6	4+8

* Time defaults to time used for phase during normal operation.

LEGEND

PROPOSED	EXISTING
○ Traffic Signal Head	● N/A
○ Modified Signal Head	○ N/A
□ Sign	□ N/A
○ Pedestrian Signal Head	○ N/A
□ Signal Pole with Guy	□ N/A
□ Signal Pole with Sidewalk Guy	□ N/A
○ Inductive Loop Detector	○ N/A
○ Out of Pavement Detector	○ N/A
□ Controller & Cabinet	□ N/A
□ Junction Box	□ N/A
— 2-in Underground Conduit	— N/A
— Right of Way	— N/A
→ Directional Arrow	→ N/A
— Guardrail	— N/A
— Construction Zone Barrier	— N/A
● Construction Zone Drums	● N/A
— Curb Ramp	— N/A
Ⓐ No Left Turn Sign (R3-2)	Ⓐ N/A

Signal Upgrade
Temporary Design 1
(Construction Step 6)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	US 70-220 (E. Wendoover Avenue) at Lindsay Street		SEAL
	Division 7 Guilford County Greensboro	PLAN DATE: October 2023 REVIEWED BY: N.R. Simmons	
PREPARED BY: E.E. Tiller	REVIEWED BY: N.K. Simmons	REVIEWED BY: N.K. Simmons	REVIEWED BY: N.K. Simmons
REVISIONS	INITI.	DATE	DATE

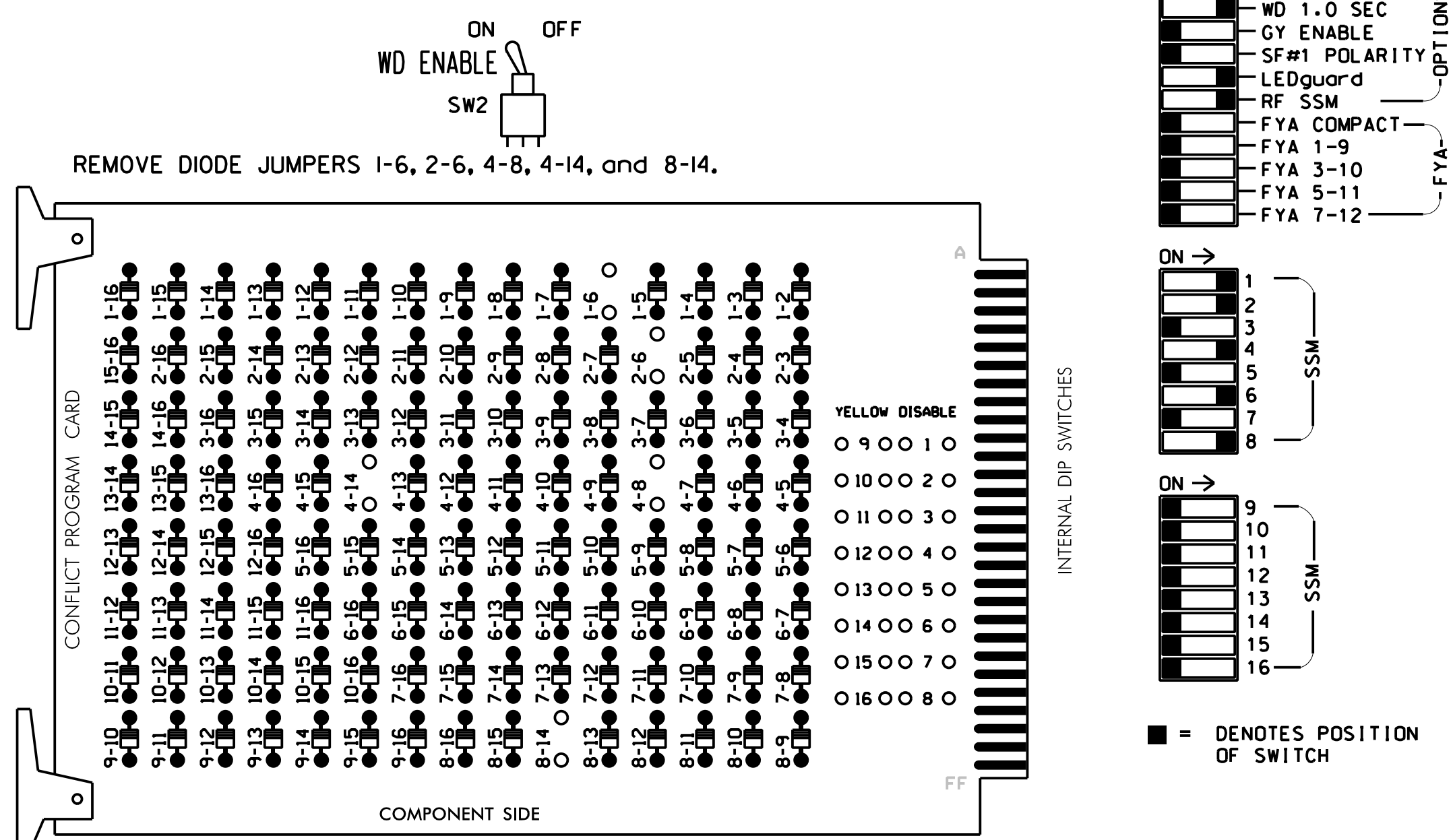
HNTB
HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

750 N. Greenfield Pkwy, Garner, NC 27529

DocuSigned by:
Natalia R. Simmons 6/21/2024
SIGNATURE DATE
SIG. INVENTORY NO. 07-057911

16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
- Initialize database in Trafficware 2070 local software (Apogee) as FULL-CALTRANS. This initialization should be done prior to programming controller.
- Initialize I/O "C1-C11-ABC 10 Mode" to USER (MM 1-8-6). Then set "Init 2A" to MODE 5 (MM 1-8-9-3).
- Program phases 2 and 6 for Startup in Green.
- Program "Start Up Flash" for 0 sec. The conflict monitor will govern start-up flash time.
- Program Start Red Time to 6.0 Sec.
- Ensure "Local Flash Start" feature is set to "Rst" or "Red".
- Ensure "InhFYARedST" feature is set to "ON".
- Ensure "Flash Mode" is set to "channel" (MM 1-4-1).
- Program controller that all channels are programmed to flash Red (MM 1-8-1).
- Program controller to provide a 1 second delay on the Flash Sense/Local Flash input. Use the following logic statement to provide this functionality:
FROM MAIN MENU->1->8->7 (I/O LOGIC) Result Src.Fcn TimeOp Time
1208 = 01208 DLY 1
- Program phases 2, 4, 6, and 8 for Dual Entry.
- The cabinet and controller are part of the Greensboro Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11	21,22	NU	NU	41,42,43	P41, P42	NU	61,62	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125											
YELLOW ARROW	126											
FLASHING YELLOW ARROW												
GREEN ARROW	127						104					
												106

NU = Not Used

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1 1A	∅ 2 2A,2B,2C	S TOP	S TOP	S TOP	∅ 4 4A	S TOP	S TOP	SYS. DET. 2S1	S TOP	S TOP	NOT USED	S TOP	FS ISOLATOR
L	NOT USED	∅ 2 2D,2E,2F	S TOP	S TOP	S TOP	∅ 4 4B	S TOP	S TOP	SYS. DET. 2S2	S TOP	S TOP	∅ 4 PED ISOLATOR	S TOP	ST ISOLATOR
U	S TOP	∅ 6 6A,6B,6C	S TOP	S TOP	S TOP	∅ 8 8A	SYS. DET. 2S3	S TOP	SYS. DET. 6S1	S TOP	S TOP	PRE3 PRE4 *Optical 4 Ch. Card NOT USED	S TOP	S TOP
L	S TOP	∅ 6 6D,6E,6F	S TOP	S TOP	S TOP	∅ 8 8B	SYS. DET. 6S3	S TOP	SYS. DET. 6S2	S TOP	S TOP	PRE5	S TOP	S TOP

EX.: 1A, 2A, ETC. = LOOP NO.'S
* See Optical Field Wire Detail this sheet.

FS = FLASH SENSE
ST = STOP TIME
PRE 3,4,5 = EV PREEMPT

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332
SOFTWARE.....TRAFFICWARE APOGEE
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S4P,S6,S8
PHASES USED.....1,2,4,4 PED,6,8
OVERLAPS.....NONE

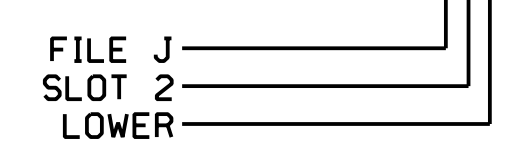
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	CALL PHASE	SWITCH	DELAY TIME	EXTEND TIME	CALL	EXTEND	ADDED INIT.
1A	TB2-1,2	I1U	56	1	1				X	X	
2A,2B,2C	TB2-5,6	I2U	39	2	2				X	X	
2D,2E,2F	TB2-7,8	I2L	43	3	2				X	X	
4A	TB4-9,10	I6U	41	8	4		2.0		X	X	
4B	TB4-11,12	I6L	45	9	4		10.0		X	X	
* 2S1	TB6-9,10	I9U	60	13	SYS						
* 2S2	TB6-11,12	I9L	62	14	SYS						
6A,6B,6C	TB3-5,6	J2U	40	16	6				X	X	
6D,6E,6F	TB3-7,8	J2L	44	17	6				X	X	
8A	TB5-9,10	J6U	42	22	8		2.0		X	X	
8B	TB5-11,12	J6L	46	23	8		10.0		X	X	
* 2S3	TB7-1,2	J7U	66	24	SYS						
* 6S3	TB7-3,4	J7L	79	25	SYS						
* 6S1	TB7-9,10	J9U	59	27	SYS						
* 6S2	TB7-11,12	J9L	61	28	SYS						
PED PUSH BUTTONS											
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED						

NOTE:
INSTALL DC ISOLATOR IN INPUT FILE SLOT 112.

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

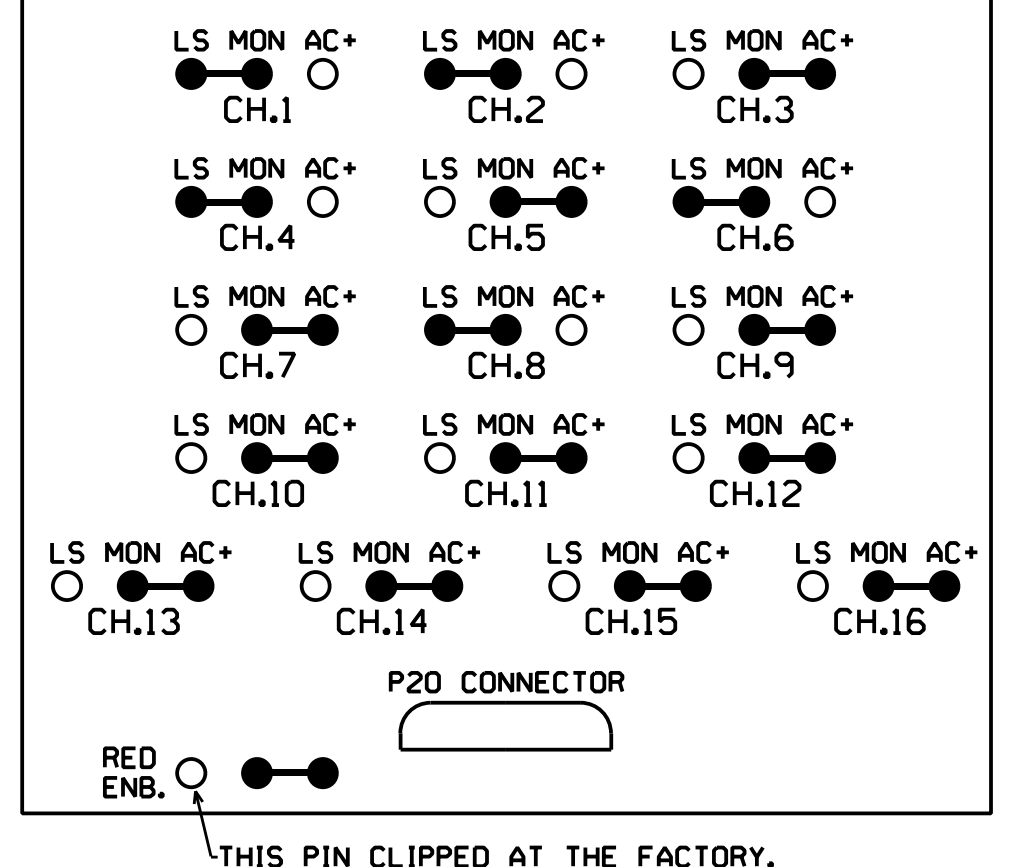
INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0579T1
DESIGNED: October 2023
SEALED: 06/21/2024
REVISED:

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



THIS PIN CLIPPED AT THE FACTORY.

OPTICAL FIELD WIRE DETAIL

Field	Cabinet
+26VDC ORG OR RED	TB9 ①
+26VDC ORG OR RED	TB9 ②
PRE-3 YEL OR WHT	TB9 ③
PRE-5 YEL OR WHT	TB9 ④
I2 COM BLU OR BLK	TB9 ⑤
PRE-4 YEL OR WHT	TB9 ⑥
PRE-6 YEL OR WHT	TB9 ⑦
I3 COM BLU OR BLK	TB9 ⑧

* Assuming TB9-2 & TB9-3 are unused on the J File, move wires on J1-J & J1-K (Twisted Pair) to J2-E & J3-E respectively.



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Signal Upgrade-
Electrical Detail - Sheet 1 of 4
(Construction Step 6)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For: US 70-220 (E. Wendover Avenue) at Lindsay Street

Division 7 Guilford County Greensboro

PLAN DATE: October 2023 REVIEWED BY: N.K. Vlanich
PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

REVISIONS: INIT. DATE

Seal: NORTH CAROLINA PROFESSIONAL SEAL 031464 W.T. SHAW R. SIMMONS ENGINEER

DocuSigned by: Natasha R. Simmons 6/21/2024
SIGNALATURE DATE
SIG. INVENTORY NO. 07-0579T1

EMERGENCY VEHICLE PROGRAMMING DETAIL FOR "PRE 4" (program controller as shown below)

FROM MAIN MENU PRESS "3" PREEMPTS

```

Preemption Menu
1.HiPriority 4.LowPriority
2.Events
3.Sequences
  
```

ENTER PREEMPT #4

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Times : Begin : Other
Delay 0 MinGrn 5 Track Grn 0
MinDura 17 MinWlk 1 Min Dwell 5
MaxPres 0 PedClr 255
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 ---- Preempt Phases ----
Track Veh 0 0 0 0
DwellCyc Veh 2 0 0 0 0 0 0
DwellCyc(more) 0 0 0 0
DwellCyc (Ped) 0 0 0 0 0 0 0
Exit 2 6 0 0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Preempt Options
Lock input ON
Override Auto Flash OFF
Override higher # preempt OFF
Flash in dwell OFF
Link to preempt # 0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Preempt Times+ --- Exit --
PedClr 0
Extend Dwell 0 Yel 0.0
Return Max 0 Red 0.0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 -- Preempt Overlaps+ --
Track 0 0 0 0 0 0 0
(more) 0 0 0 0
DwellCyc 0 0 0 0 0 0 0
(more) 0 0 0 0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Preempt Options +
Enable ON Pattern 0
Type EMERG Skip Track if Override OFF
Output DELAY Coord+Preempt OFF
Vol Mon Flash OFF
Lnk Aft Dwell OFF Return Max/Min MAX
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 AdvTimes
AllRedB4Prmpt OFF EnterYelChg 25.5
ResetExtDwell OFF EnterRedClr 25.5
ReservicePreempt OFF TrackYelChg 25.5
EndDwell OFF TrackRedClr 25.5
DynExitThresh 0 1111111
DsbldDwellCalls OFF 12345678 90123456
+ ExitVehCall .....
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

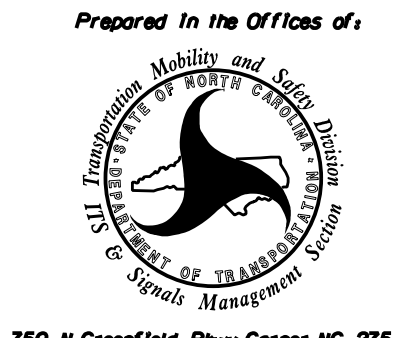
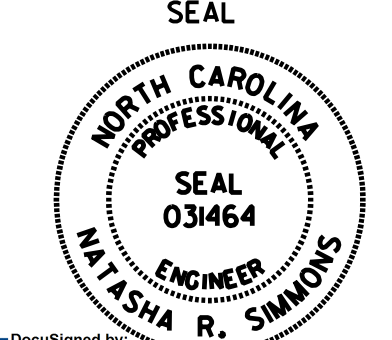
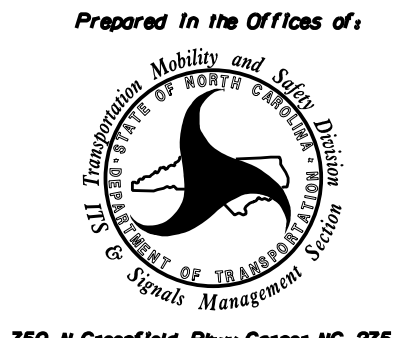
# 4 -- Initial Dwell --
Phases 0 0 0 0
Peds 0 0 0 0
Overlaps 0 0 0 0 0 0 0
(more) 0 0 0 0 0 0 0
  
```

PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0579T1
DESIGNED: October 2023
SEALED: 06/21/2024
REVISED:

Signal Upgrade-
Electrical Detail - Sheet 3 of 4
(Construction Step 6)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	ELECTRICAL AND PROGRAMMING DETAILS FOR: US 70-220 (E. Wendover Avenue) at Lindsay Street		
	Prepared In the Offices of: 	Division 7 Guilford County Greensboro	
PLAN DATE: October 2023 PREPARED BY: E.E. Tiller REVIEWED BY: N.K. Vianich REVIEWED BY: N.R. Simmons		REVISIONS INIT. DATE	DocuSigned by: Natasha R. Simmons 6/21/2024 SIGNATURE DATE SIG. INVENTORY NO. 07-0579T1

HNTB
 HNTB NORTH CAROLINA, P.C.
 4000 Center at North Hills St
 Suite 500
 Raleigh, North Carolina 27609
 NC License No: C-1554
 (919) 546-8997

EMERGENCY VEHICLE PROGRAMMING DETAIL FOR "PRE 5" (program controller as shown below)

FROM MAIN MENU PRESS "3" PREEMPTS

```

Preemption Menu
1.HiPriority 4.LowPriority
2.Events
3.Sequences
  
```

ENTER PREEMPT #5

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 Times : Begin : Other
Delay 0 MinGrn 5 Track Grn 0
MinDura 16 MinWlk 1 Min Dwell 5
MaxPres 0 PedClr 255
  
```

PRESS "ESC"

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 ---- Preempt Phases ----
Track Veh 0 0 0 0
DwellCyc Veh 8 0 0 0 0 0 0
DwellCyc(more) 0 0 0 0
DwellCyc (Ped) 0 0 0 0 0 0 0
Exit 4 8 0 0
  
```

PRESS "ESC"

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 Preempt Options
Lock input ON
Override Auto Flash OFF
Override higher # preempt OFF
Flash in dwell OFF
Link to preempt # 0
  
```

PRESS "ESC"

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 Preempt Times+ --- Exit --
PedClr 0
Extend Dwell 0 Yel 0.0
Return Max 0 Red 0.0
  
```

PRESS "ESC"

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 -- Preempt Overlaps+ --
Track 0 0 0 0 0 0 0
(more) 0 0 0 0
DwellCyc 0 0 0 0 0 0 0
(more) 0 0 0 0
  
```

PRESS "ESC"

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 Preempt Options +
Enable ON Pattern 0
Type EMERG Skip Track if Override OFF
Output DELAY Coord+Preempt OFF
Lnk Aft Dwell OFF Volt Mon Flash OFF
Return Max/Min MAX
  
```

PRESS "ESC"

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 AdvTimes
AllRedB4Prmpt ON EnterYelChg 25.5
ResetExtDwell OFF EnterRedClr 25.5
ReservicePreempt OFF TrackYelChg 25.5
EndDwell OFF TrackRedClr 25.5
DynExitThresh 0 1111111
DsbldDwellCalls OFF 12345678 90123456
+ ExitVehCall .....
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

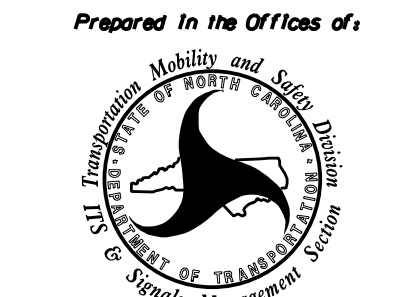
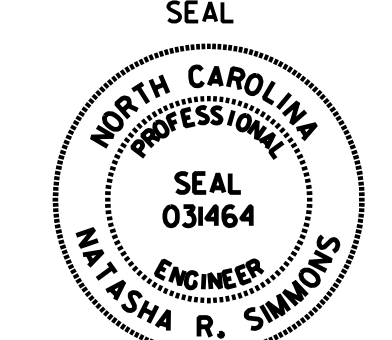
# 5 -- Initial Dwell --
Phases 0 0 0 0
Peds 0 0 0 0
Overlaps 0 0 0 0 0 0 0
(more) 0 0 0 0 0 0 0
  
```

PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0579T1
DESIGNED: October 2023
SEALED: 06/21/2024
REVISED:

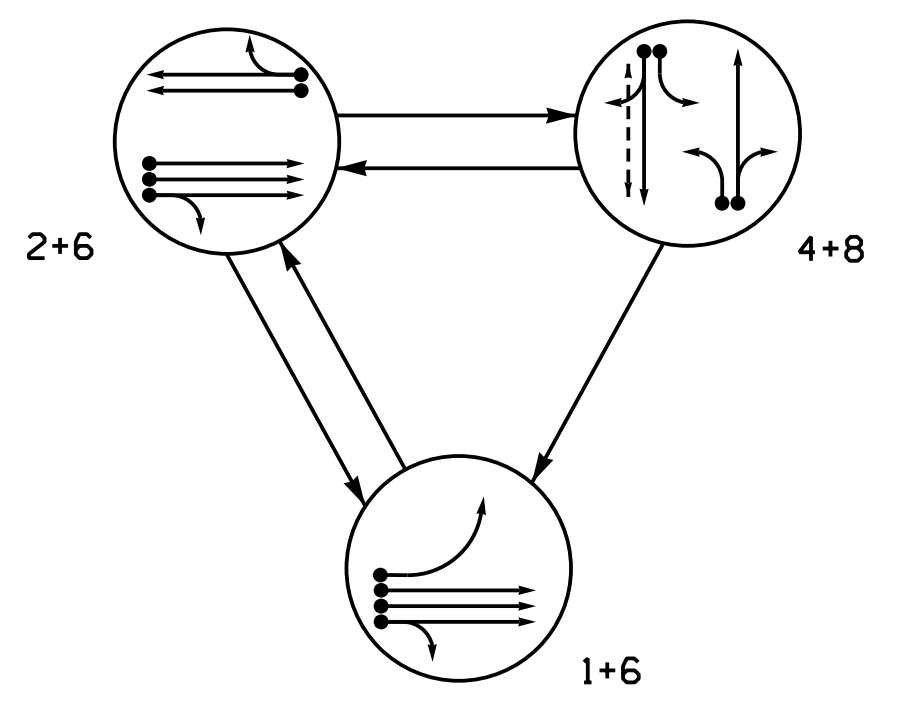
Signal Upgrade-
Electrical Detail - Sheet 4 of 4
(Construction Step 6)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

 <p>Prepared in the Office of: North Carolina Department of Transportation Signal Management</p>	US 70-220 (E. Wendover Avenue) at Lindsay Street		
	Division 7 Guilford County Greensboro	PLAN DATE: October 2023 PREPARED BY: E.E. Tiller REVIEWED BY: N.K. Vianich	
HNTB NORTH CAROLINA, P.C. 4000 Center at North Hills St Suite 500 Raleigh, North Carolina 27609 NC License No: C-1554 (919) 546-8997		REVISIONS: INIT. DATE _____ _____ _____	

DocuSigned by:
Natasha R. Simmons 6/21/2024
SIGNATURE DATE
SIG. INVENTORY NO. 07-0579T1

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- → DETECTED MOVEMENT
- → UNDETECTED MOVEMENT (OVERLAP)
- → UNSIGNALIZED MOVEMENT
- → PEDESTRIAN MOVEMENT

EV PREEMPT PHASES
(Medium Priority)

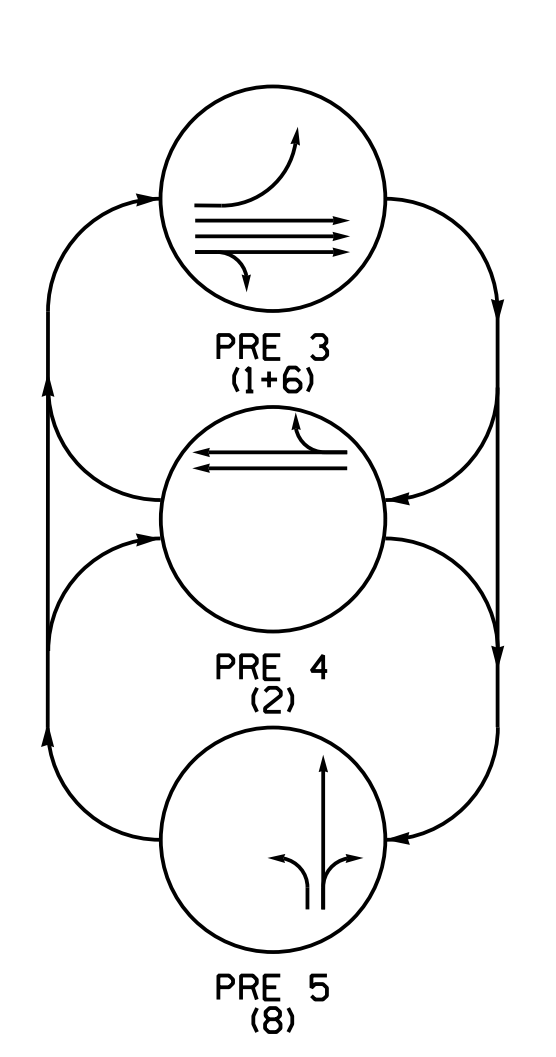
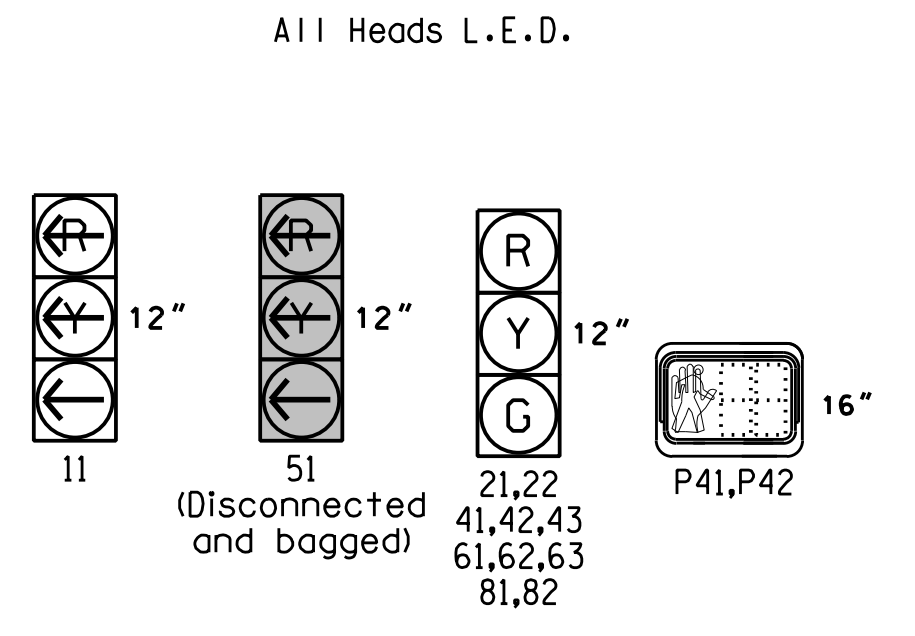


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	1+6	2+6	4+8	PRE 3	PRE 4	PRE 5	FLASH	DRK
11	---	---	---	---	---	---	---	---
21,22	R	G	R	R	G	R	R	
41,42,43	R	R	G	R	R	R	R	
61,62,63	G	G	R	G	R	R	R	
81,82	R	R	G	R	R	G	R	
P41,P42	DW	DW	W	DW	DW	DW	DRK	

SIGNAL FACE I.D.



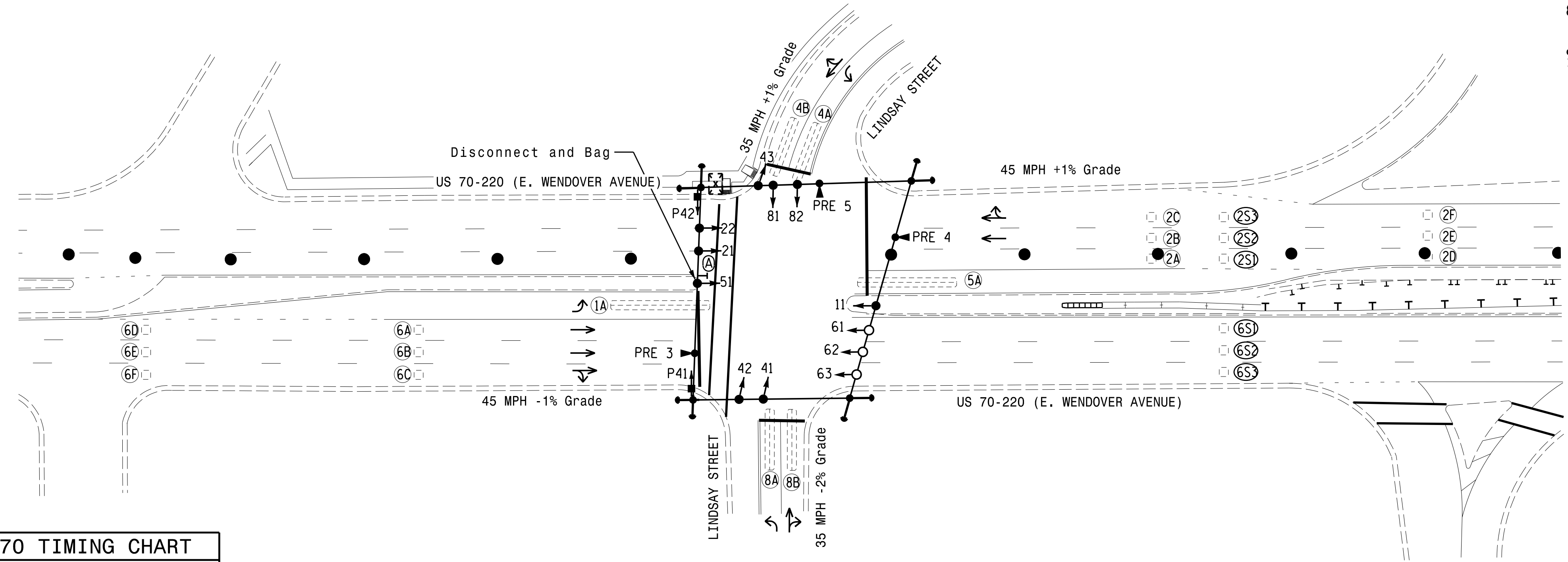
LOOP & DETECTOR UNIT INSTALLATION CHART
TRAFFICWARE APOGEE SOFTWARE 2070 CONTROLLER

LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	SWITCH (PHASE)	DELAY TIME	STRETCH TIME	CALLING	EXTENSION	ADDED INIT.	SYSTEM LOOP
1A	6x50	+5	2-4-2	-	1	-	-	-	X	X	-	-
2A,2B,2C	6x6	147	4	-	2	-	-	-	X	X	-	-
2D,2E,2F	6x6	291	4	-	2	-	-	-	X	X	-	-
4A	6x50	+5	2-4-2	-	4	-	2.0	-	X	X	-	-
4B	6x60	+5	2-4-2	-	4	-	10.0	-	X	X	-	-
5A	6x50	+5	2-4-2	-	5	-	-	-	X	X	-	-
6A,6B,6C	6x6	145	4	-	6	-	-	-	X	X	-	-
6D,6E,6F	6x6	288	4	-	6	-	-	-	X	X	-	-
8A	6x50	+6	2-4-2	-	8	-	2.0	-	X	X	-	-
8B	6x60	+6	2-4-2	-	8	-	10.0	-	X	X	-	-
2S1	6x6	185	4	-	-	-	-	-	-	-	X	-
2S2	6x6	185	4	-	-	-	-	-	-	-	X	-
2S3	6x6	185	4	-	-	-	-	-	-	-	X	-
6S1	6x6	+273	4	-	-	-	-	-	-	-	X	-
6S2	6x6	+273	4	-	-	-	-	-	-	-	X	-
6S3	6x6	+273	4	-	-	-	-	-	-	-	X	-

3 Phase Fully Actuated Greensboro Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications January 2024."
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Disconnect and bag existing signal head 51.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Omit "Walk" and flashing "Don't Walk" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Pavement Markings are existing.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



TRAFFICWARE APOGEE 2070 TIMING CHART

FEATURE	PHASE				
	1	2	4	6	8
Min Green *	6	15	6	15	6
Gap, Extension *	1.0	4.0	1.0	4.0	1.0
Maximum Green 1 *	20	45	20	45	20
Maximum Green 2 *	-	-	-	-	-
Yellow Clear	3.0	4.6	4.0	4.6	4.0
Red Clear	2.9	1.1	2.3	1.1	2.3
Walk *	-	-	7	-	-
Pedestrian Clear	-	-	29	-	-
Advance Walk *	-	-	-	-	-
Added Initial *	-	-	-	-	-
Maximum Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	MIN RECALL	-
Lock Calls	NO	YES	NO	YES	NO
Dual Entry	-	ON	ON	ON	ON
Simultaneous Gap	ON	ON	ON	ON	ON

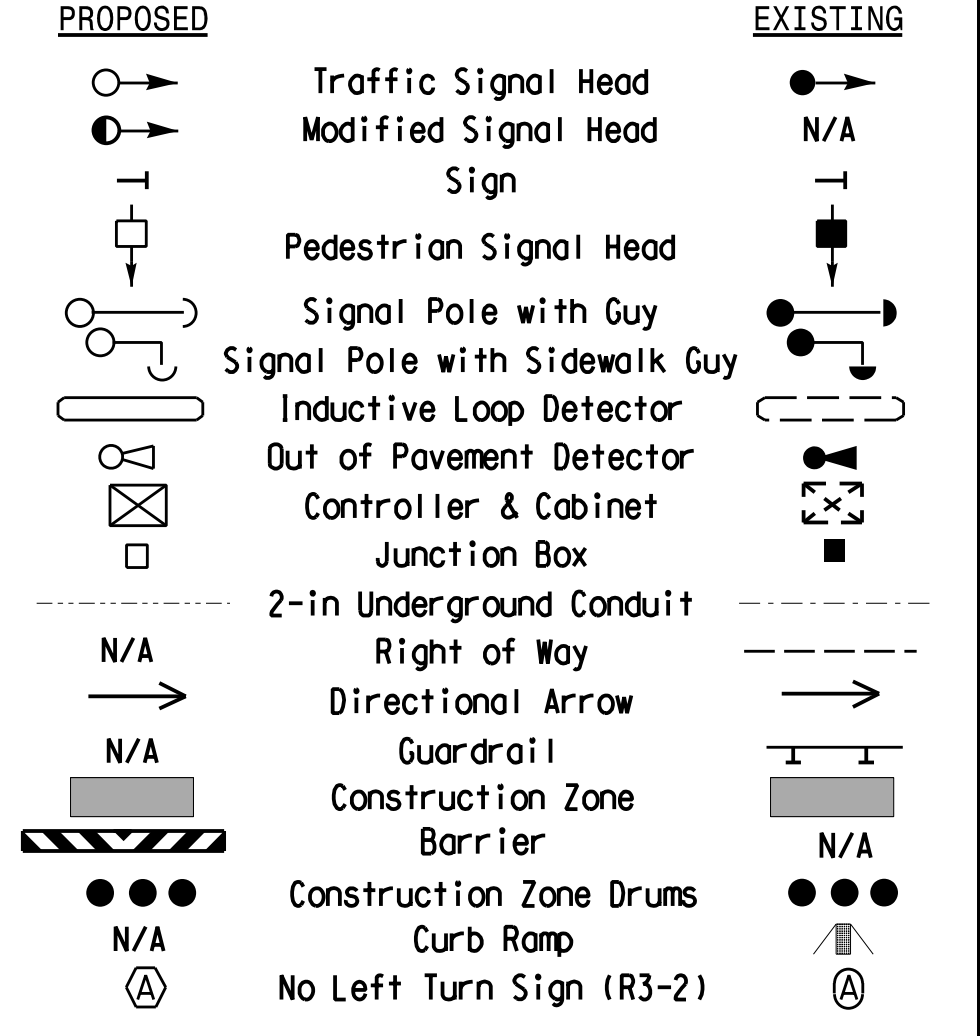
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

EMERGENCY VEHICLE PREEMPTION

FUNCTION	PRE 3	PRE 4	PRE 5
DELAY BEFORE PREEMPT	0	0	0
MINIMUM DURATION	17	17	16
MIN GREEN BEFORE PREEMPT	5	5	5
MIN WALK BEFORE PREEMPT	1	1	1
PED CLEAR BEFORE PREEMPT	255'	255'	255'
MINIMUM DWELL	5	5	5
EXIT PED CLEAR	0	0	0
EXIT YELLOW CHANGE	0.0 *	0.0 *	0.0 *
EXIT RED CLEAR	0.0 *	0.0 *	0.0 *
ENTER YELLOW CHANGE	25.5 *	25.5 *	25.5 *
ENTER RED CLEAR	25.5 *	25.5 *	25.5 *
ALL-RED B4 DWELL	OFF	OFF	ON
LOCK INPUT	ON	ON	ON
OVERRIDE HIGHER # PREEMPT	OFF	OFF	OFF
EXIT PREEMPT TO	2+6	2+6	4+8

* Time defaults to time used for phase during normal operation.

LEGEND



Signal Upgrade
Temporary Design 2
(Construction Step 9)

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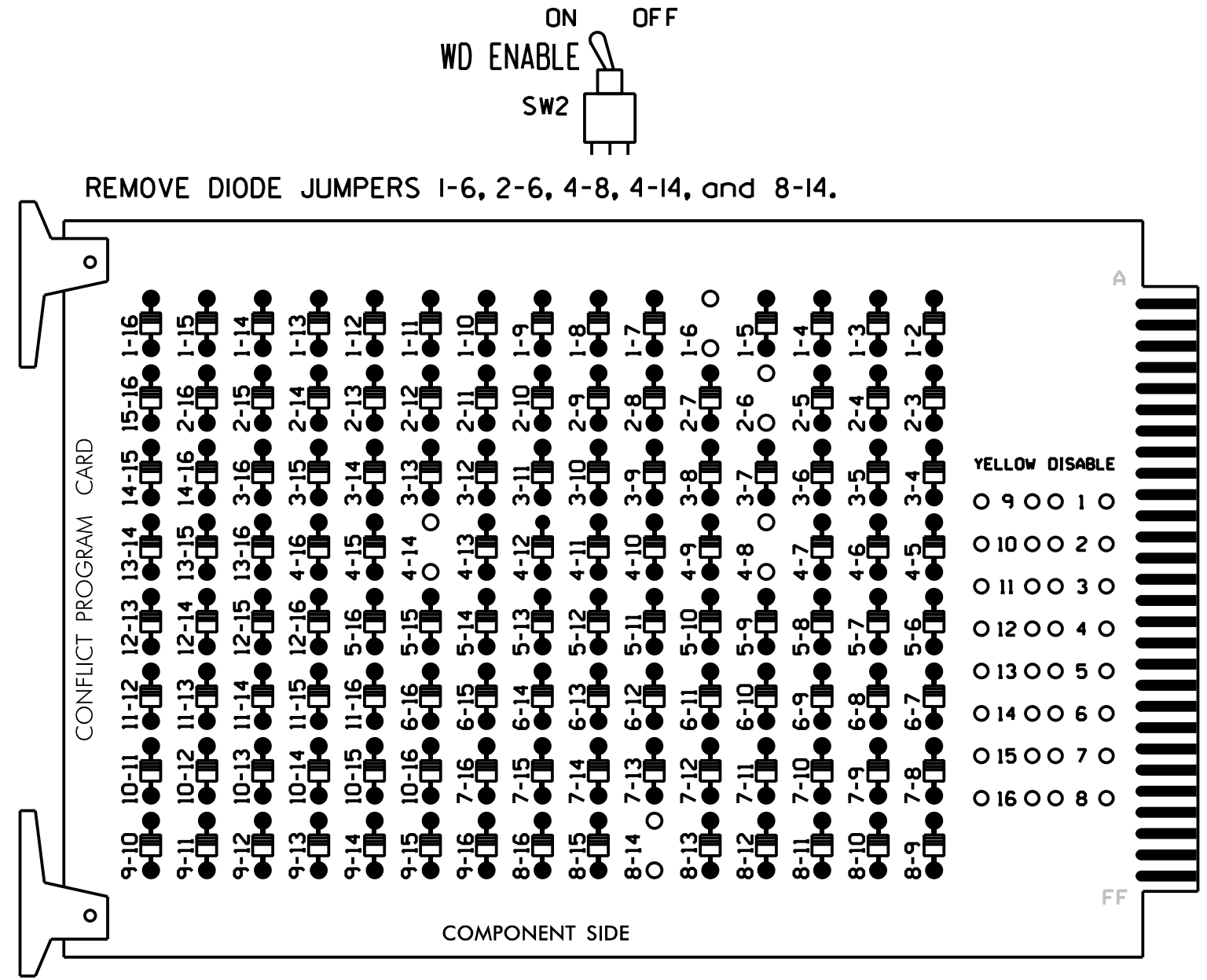
<p>HNTB NORTH CAROLINA, P.C. 4000 Center at North Hills St Suite 500 Raleigh, North Carolina 27609 NC License No: C-1554 (919) 546-8997</p>	<p>US 70-220 (E. Wendover Avenue) at Lindsay Street</p>	<p>SEAL NORTH CAROLINA PROFESSIONAL ENGINEER W.T.SHA R. SIMMONS</p>					
	<p>Division 7 Guilford County Greensboro</p> <p>PLAN DATE: October 2023 REVIEWED BY: N.R. Simmons</p> <p>PREPARED BY: E.E. Tiller REVIEWED BY: N.K. Vlanich</p>	<p>REVISIONS</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	NO.	INIT.	DATE		
NO.	INIT.	DATE					



DocuSigned by:
Natalia R. Simmons 6/21/2024
SIGNATURE DATE
SIG. INVENTORY NO. 07-057912

16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
- Initialize database in Trafficware 2070 local software (Apogee) as FULL-CALTRANS. This initialization should be done prior to programming controller.
- Initialize I/O "C1-C11-ABC 10 Mode" to USER (MM 1-8-6). Then set "Init 2A" to MODE 5 (MM 1-8-9-3).
- Program phases 2 and 6 for Startup in Green.
- Program "Start Up Flash" for 0 sec. The conflict monitor will govern start-up flash time.
- Program Start Red Time to 6.0 Sec.
- Ensure "Local Flash Start" feature is set to "Rst" or "Red".
- Ensure "InhFYARedST" feature is set to "ON".
- Ensure "Flash Mode" is set to "channel" (MM 1-4-1).
- Program controller that all channels are programmed to flash Red (MM 1-8-1).
- Program controller to provide a 1 second delay on the Flash Sense/Local Flash input. Use the following logic statement to provide this functionality:

```
FROM MAIN MENU->1->8->7 (I/O LOGIC) Result Src.Fcn TimeOp Time
1208 = 01208 DLY 1
```
- Program phases 2, 4, 6, and 8 for Dual Entry.
- The cabinet and controller are part of the Greensboro Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11	21,22	NU	NU	41,42,43	P41, P42	NU	61,62,63	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125											
YELLOW ARROW	126											
GREEN ARROW	127											
Hand icon							104					
Walking person icon							106					

NU = Not Used

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

INPUT FILE POSITION LAYOUT

(front view)

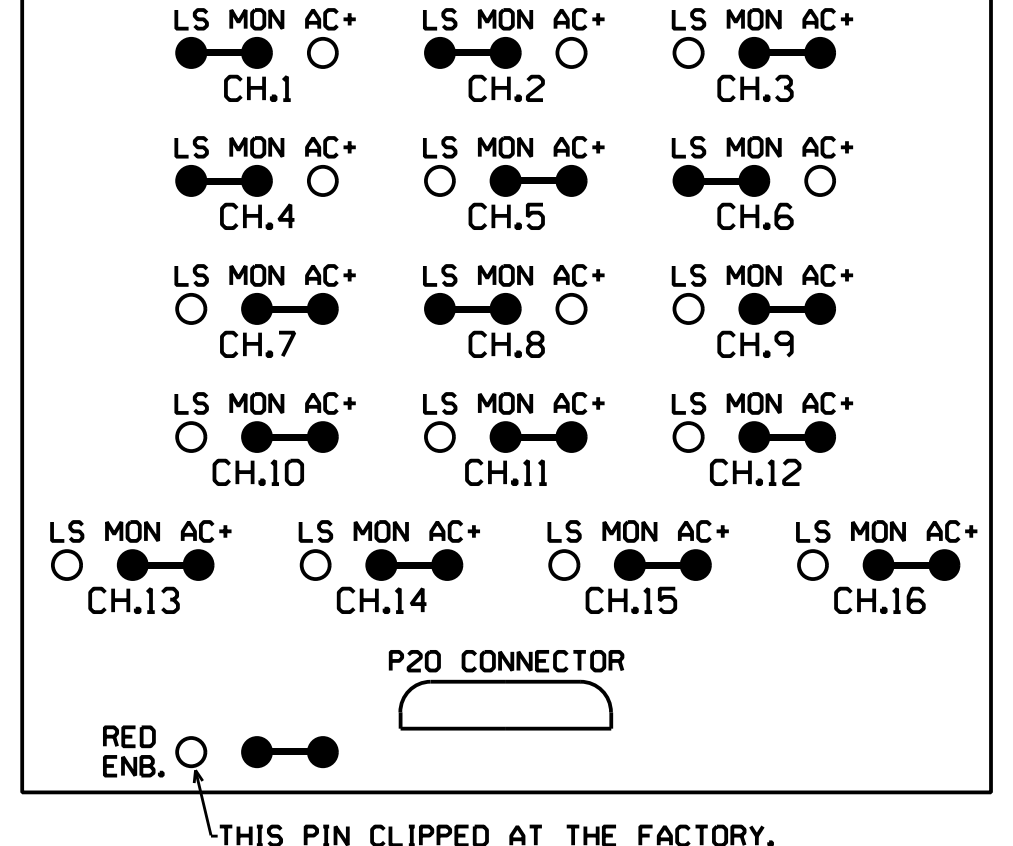
FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1 1A	∅ 2 2A,2B,2C	S TOP	S TOP	S TOP	∅ 4 4A	S TOP	S TOP	SYS. DET. 2S1	S TOP	S TOP	NOT USED	S TOP	FS ISOLATOR
L	NOT USED	∅ 2 2D,2E,2F	S TOP	S TOP	S TOP	∅ 4 4B	S TOP	S TOP	SYS. DET. 2S2	S TOP	S TOP	∅ 4 PED ISOLATOR	S TOP	ST ISOLATOR
U	S TOP	∅ 6 6A,6B,6C	S TOP	S TOP	S TOP	∅ 8 8A	SYS. DET. 2S3	S TOP	SYS. DET. 6S1	S TOP	S TOP	PRE3 PRE4 *Optical 4 Ch. Cord NOT USED	S TOP	S TOP
L	S TOP	∅ 6 6D,6E,6F	S TOP	S TOP	S TOP	∅ 8 8B	SYS. DET. 6S3	S TOP	SYS. DET. 6S2	S TOP	S TOP	PRE5	S TOP	S TOP

EX.: 1A, 2A, ETC. = LOOP NO.'S

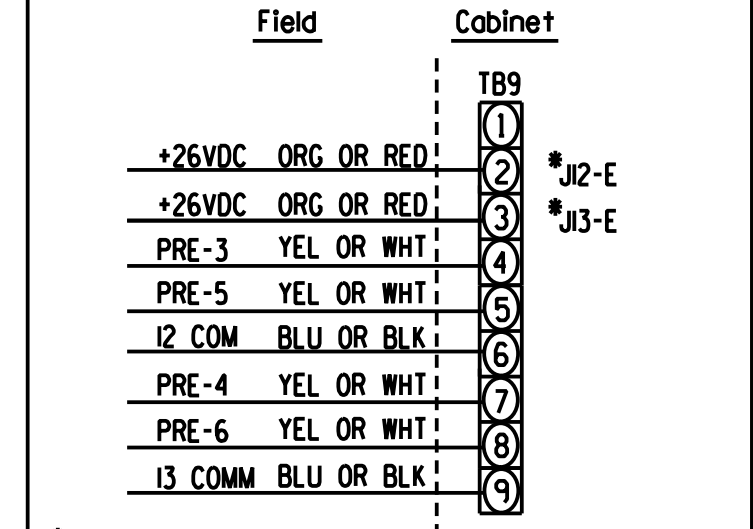
FS = FLASH SENSE
ST = STOP TIME
PRE 3,4,5 = EV PREEMPT

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



OPTICAL FIELD WIRE DETAIL



* Assuming TB9-2 & TB9-3 are unused on the J File, move wires on J1-J & J1-K (Twisted Pair) to J2-E & J3-E respectively.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....TRAFFICWARE APOGEE
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S4,S4P,S6,S8
 PHASES USED.....1,2,4,4 PED,6,8
 OVERLAPS.....NONE

INPUT FILE CONNECTION & PROGRAMMING CHART

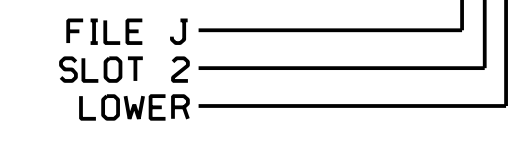
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	CALL PHASE	SWITCH	DELAY TIME	EXTEND TIME	CALL	EXTEND	ADDED INIT.
1A	TB2-1,2	I1U	56	1	1				X	X	
2A,2B,2C	TB2-5,6	I2U	39	2	2				X	X	
2D,2E,2F	TB2-7,8	I2L	43	3	2				X	X	
4A	TB4-9,10	I6U	41	8	4		2.0		X	X	
4B	TB4-11,12	I6L	45	9	4		10.0		X	X	
* 2S1	TB6-9,10	I9U	60	13	SYS						
* 2S2	TB6-11,12	I9L	62	14	SYS						
6A,6B,6C	TB3-5,6	J2U	40	16	6				X	X	
6D,6E,6F	TB3-7,8	J2L	44	17	6				X	X	
8A	TB5-9,10	J6U	42	22	8		2.0		X	X	
8B	TB5-11,12	J6L	46	23	8		10.0		X	X	
* 2S3	TB7-1,2	J7U	66	24	SYS						
* 6S3	TB7-3,4	J7L	79	25	SYS						
* 6S1	TB7-9,10	J9U	59	27	SYS						
* 6S2	TB7-11,12	J9L	61	28	SYS						
PED PUSH BUTTONS											
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED						

NOTE:

INSTALL DC ISOLATOR IN INPUT FILE SLOT 112.

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L



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Signal Upgrade-
 Electrical Detail - Sheet 1 of 4
 (Construction Step 9)

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0579T2
 DESIGNED: October 2023
 SEALED: 06/21/2024
 REVISED:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Office of: 	US 70-220 (E. Wendover Avenue)		SEAL
	at Lindsay Street		
Division 7	Guilford County	Greensboro	
PLAN DATE: October 2023	REVIEWED BY: N.K. Vianich		
PREPARED BY: E.E. Tiller	REVIEWED BY: N.R. Simmons		
REVISIONS			DATE
INIT.			DATE
DocuSigned by: Natasha R. Simmons 6/21/2024 SIGNATURE DATE			
SIG. INVENTORY NO. 07-0579T2			

EMERGENCY VEHICLE PROGRAMMING DETAIL FOR "PRE 3" (program controller as shown below)

FROM MAIN MENU PRESS "3" PREEMPTS
Preemption Menu
1.HiPriority 4.LowPriority
2.Events
3.Sequences
ENTER PREEMPT #3

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 Times : Begin : Other
Delay 0 MinGrn 5 Track Grn 0
MinDura 17 MinWlk 1 Min Dwell 5
MaxPres 0 PedClr 255
PRESS "ESC"
```

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3      ---- Preempt Phases ----
Track Veh  0 0 0 0
DwellCyc Veh 1 6 0 0 0 0 0 0
DwellCyc(more) 0 0 0 0
DwellCyc (Ped) 0 0 0 0 0 0 0 0
Exit 2 6 0 0
PRESS "ESC"
```

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3      Preempt Options
          Lock input ON
          Override Auto Flash OFF
          Override higher # preempt OFF
          Flash in dwell OFF
          Link to preempt # 0
PRESS "ESC"
```

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 Preempt Times+ --- Exit --
Extend Dwell 0 PedClr 0
Return Max 0 Yel 0.0
Red 0.0
PRESS "ESC"
```

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3      -- Preempt Overlaps+ --
Track 0 0 0 0 0 0 0 0
(more) 0 0 0 0
DwellCyc 0 0 0 0 0 0 0 0
(more) 0 0 0 0
PRESS "ESC"
```

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3      Preempt Options +
Enable ON Pattern 0
Type EMERG Skip Track if Override OFF
Output DELAY Coord+Preempt OFF
          Volt Mon Flash OFF
Lnk Aft Dwell OFF Return Max/Min MAX
PRESS "ESC"
```

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 AdvTimes
AllRedB4Prmpt OFF EnterYelChg 25.5
ResetExtDwell OFF EnterRedClr 25.5
ReservicePreempt OFF TrackYelChg 25.5
EndDwell OFF TrackRedClr 25.5
DynExitThresh 0 1111111
DsbldDwellCalls OFF 12345678 90123456
+ ExitVehCall .....
PRESS "ESC"
```

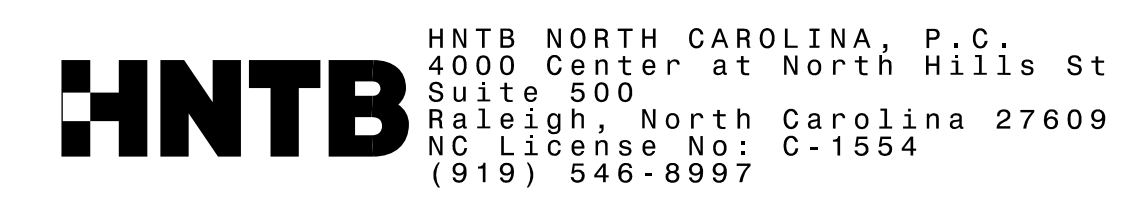
```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3      -- Initial Dwell --
Phases 0 0 0 0
Peds 0 0 0 0
Overlaps 0 0 0 0 0 0 0 0
(more) 0 0 0 0 0 0 0 0
PROGRAMMING COMPLETE
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0579T2
DESIGNED: October 2023
SEALED: 06/21/2024
REVISED:

Signal Upgrade-
Electrical Detail - Sheet 2 of 4
(Construction Step 9)

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ELECTRICAL AND PROGRAMMING DETAILS FOR: US 70-220 (E. Wendover Avenue) at Lindsay Street
Division 7 Guilford County Greensboro
PLAN DATE: October 2023 REVIEWED BY: N.K. Vianich
PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons
REVISIONS: INIT. DATE
Seal: NORTH CAROLINA PROFESSIONAL SEAL 031464
NATASHA R. SIMMONS
6/21/2024
SIG. INVENTORY NO. 07-0579T2

EMERGENCY VEHICLE PROGRAMMING DETAIL FOR "PRE 4" (program controller as shown below)

FROM MAIN MENU PRESS "3" PREEMPTS

```

Preemption Menu
1.HiPriority 4.LowPriority
2.Events
3.Sequences
  
```

ENTER PREEMPT #4

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Times : Begin : Other
Delay 0 MinGrn 5 Track Grn 0
MinDura 17 MinWik 1 Min Dwell 5
MaxPres 0 PedClr 255
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 ---- Preempt Phases ----
Track Veh 0 0 0 0
DwellCyc Veh 2 0 0 0 0 0 0
DwellCyc(more) 0 0 0 0
DwellCyc (Ped) 0 0 0 0 0 0 0
Exit 2 6 0 0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Preempt Options
Lock input ON
Override Auto Flash OFF
Override higher # preempt OFF
Flash in dwell OFF
Link to preempt # 0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Preempt Times+ --- Exit --
PedClr 0
Extend Dwell 0 Yel 0.0
Return Max 0 Red 0.0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 -- Preempt Overlaps+ --
Track 0 0 0 0 0 0 0
(more) 0 0 0 0
DwellCyc 0 0 0 0 0 0 0
(more) 0 0 0 0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Preempt Options +
Enable ON Pattern 0
Type EMERG Skip Track if Override OFF
Output DELAY Coord+Preempt OFF
Vol Mon Flash OFF
Lnk Aft Dwell OFF Return Max/Min MAX
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 AdvTimes
AllRedB4Prmpt OFF EnterYelChg 25.5
ResetExtDwell OFF EnterRedClr 25.5
ReservicePreempt OFF TrackYelChg 25.5
EndDwell OFF TrackRedClr 25.5
DynExitThresh 0 1111111
DsbldDwellCalls OFF 12345678 90123456
+ ExitVehCall .....
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 -- Initial Dwell --
Phases 0 0 0 0
Peds 0 0 0 0
Overlaps 0 0 0 0 0 0 0
(more) 0 0 0 0 0 0 0
  
```

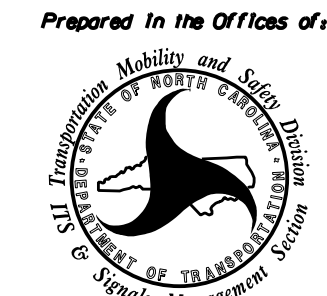
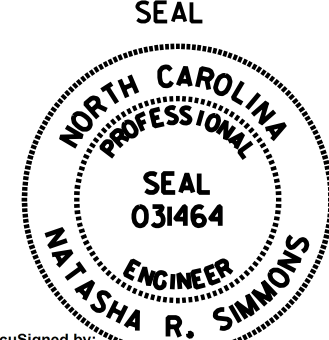
PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0579T2
DESIGNED: October 2023
SEALED: 06/21/2024
REVISED:

Signal Upgrade-
Electrical Detail - Sheet 3 of 4
(Construction Step 9)

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 Prepared in the Offices of: North Carolina Department of Transportation Signal Management	US 70-220 (E. Wendover Avenue) at Lindsay Street		 SEAL 031464 NATASHA R. SIMMONS ENGINEER
	Division 7 Guilford County Greensboro	PLAN DATE: October 2023 PREPARED BY: E.E. Tiller	
REVISIONS			DocuSigned by: Natasha R. Simmons 6/21/2024 SIGNATURE DATE SIG. INVENTORY NO. 07-0579T2

EMERGENCY VEHICLE PROGRAMMING DETAIL FOR "PRE 5" (program controller as shown below)

FROM MAIN MENU PRESS "3" PREEMPTS
Preemption Menu
1.HiPriority 4.LowPriority
2.Events
3.Sequences
ENTER PREEMPT #5

```
# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 5 Times : Begin : Other
Delay 0 MinGrn 5 Track Grn 0
MinDura 16 MinWik 1 Min Dwell 5
MaxPres 0 PedClr 255
PRESS "ESC"
```

```
# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 5 ---- Preempt Phases ----
Track Veh 0 0 0 0
DwellCyc Veh 8 0 0 0 0 0 0
DwellCyc(more) 0 0 0 0
DwellCyc (Ped) 0 0 0 0 0 0 0
Exit 4 8 0 0
PRESS "ESC"
```

```
# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 5 Preempt Options
Lock input ON
Override Auto Flash OFF
Override higher # preempt OFF
Flash in dwell OFF
Link to preempt # 0
PRESS "ESC"
```

```
# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 5 Preempt Times+ --- Exit --
PedClr 0
Extend Dwell 0 Yel 0.0
Return Max 0 Red 0.0
PRESS "ESC"
```

```
# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 5 -- Preempt Overlaps+ --
Track 0 0 0 0 0 0 0
(more) 0 0 0 0
DwellCyc 0 0 0 0 0 0 0
(more) 0 0 0 0
PRESS "ESC"
```

```
# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 5 Preempt Options +
Enable ON Pattern 0
Type EMERG Skip Track if Override OFF
Output DELAY Coord+Preempt OFF
Vol Mon Flash OFF
Lnk Aft Dwell OFF Return Max/Min MAX
PRESS "ESC"
```

```
# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 5 AdvTimes
AllRedB4Prmpt ON EnterYelChg 25.5
ResetExtDwell OFF EnterRedClr 25.5
ReservicePreempt OFF TrackYelChg 25.5
EndDwell OFF TrackRedClr 25.5
DynExitThresh 0 1111111
DsbldDwellCalls OFF 12345678 90123456
+ ExitVehCall .....
PRESS "ESC"
```

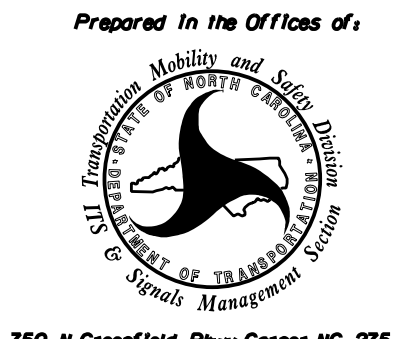
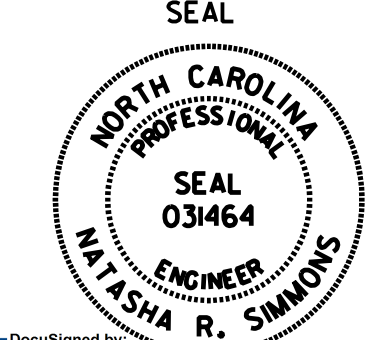
```
# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 5 -- Initial Dwell --
Phases 0 0 0 0
Peds 0 0 0 0
Overlaps 0 0 0 0 0 0 0
(more) 0 0 0 0 0 0 0
PROGRAMMING COMPLETE
```

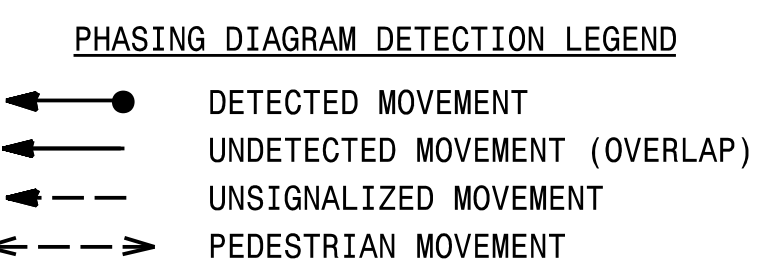
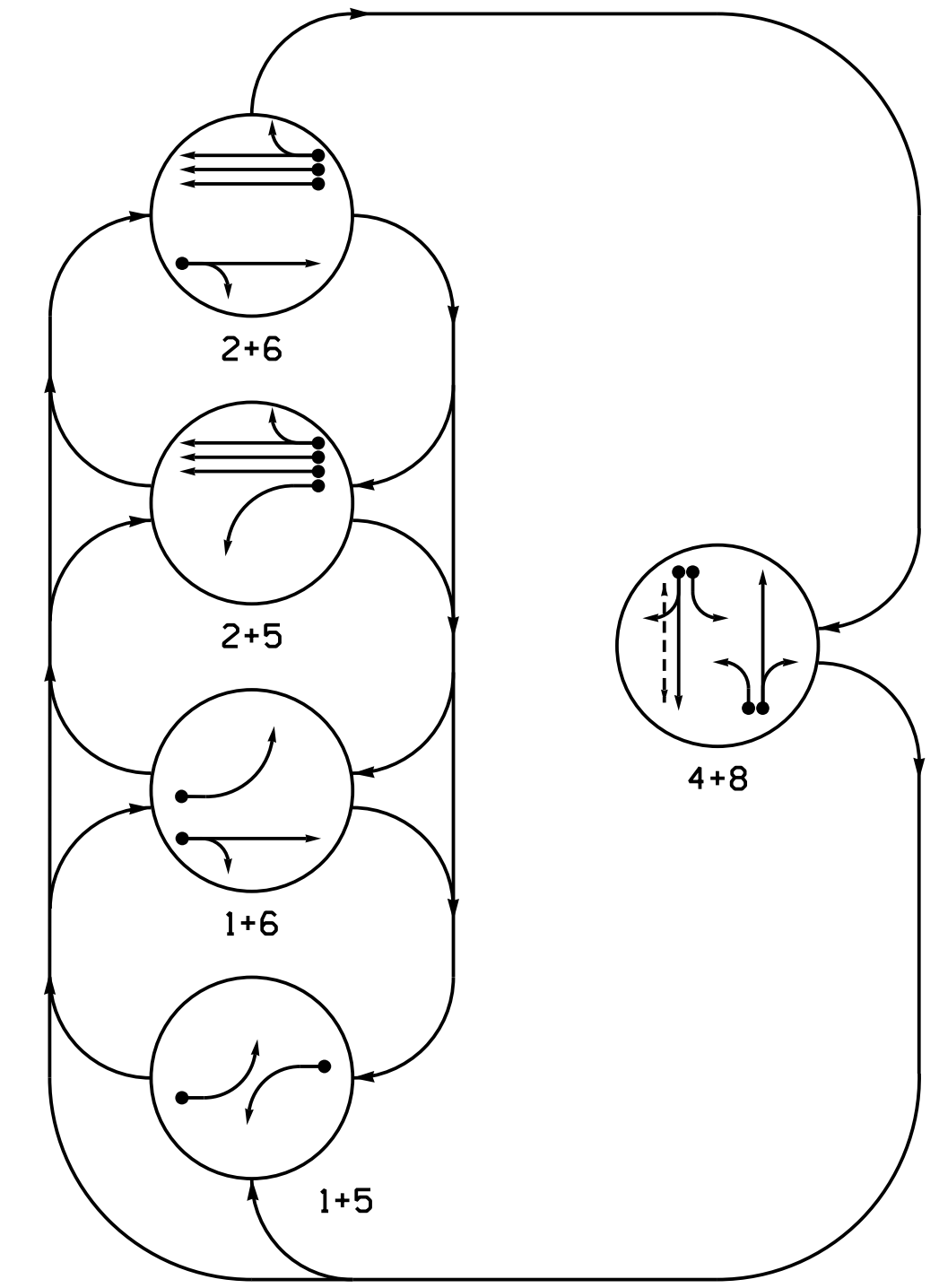
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0579T2
DESIGNED: October 2023
SEALED: 06/21/2024
REVISED:

Signal Upgrade-
Electrical Detail - Sheet 4 of 4
(Construction Step 9)

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

	ELECTRICAL AND PROGRAMMING DETAILS FOR: US 70-220 (E. Wendover Avenue) at Lindsay Street		
	Prepared In the Offices of:		
PLAN DATE: October 2023		REVIEWED BY: N.K. Vianich	REVISIONS INIT. DATE
PREPARED BY: E.E. Tiller		REVIEWED BY: N.R. Simmons	
750 N. Greenfield Pkwy, Garner, NC 27529		HNTB NORTH CAROLINA, P.C. 4000 Center at North Hills St Suite 500 Raleigh, North Carolina 27609 NC License No: C-1554 (919) 546-8997	SIGNATURE: <i>Notasha R. Simmons</i> DATE: 6/21/2024 SIG. INVENTORY NO. 07-0579T2

PHASING DIAGRAM



EV PREEMPT PHASES
(Medium Priority)

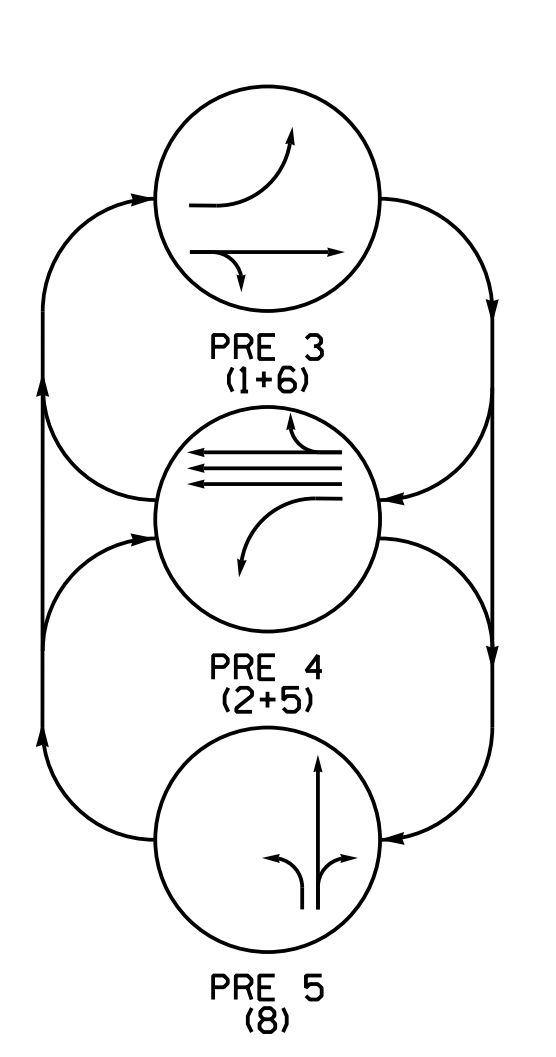


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	1+5	1+6	2+5	2+6	PRE 3	PRE 4	PRE 5	FL
11	---	---	---	---	---	---	---	---
21,22,23	R	R	G	G	R	R	G	R
41,42,43	R	R	R	R	G	R	R	R
51	---	---	---	---	---	---	---	---
61,62,63	R	G	R	G	R	R	R	R
81,82	R	R	R	R	G	R	R	G
P41,P42	DW	DW	DW	DW	W	DW	DW	DRK

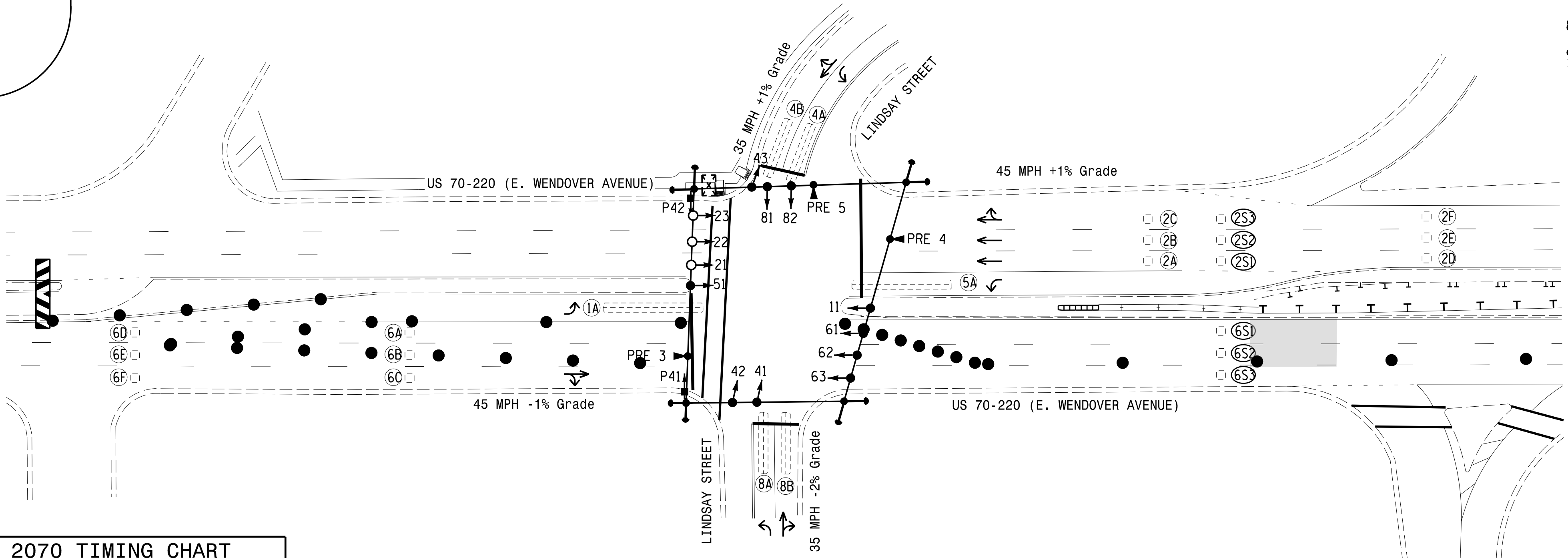
LOOP & DETECTOR UNIT INSTALLATION CHART
TRAFFICWARE APOGEE SOFTWARE 2070 CONTROLLER

LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING									
					PHASE	SWITCH (PHASE)	DELAY TIME	STRETCH TIME	CALLING	EXTENSION	ADDED INIT.	SYSTEM LOOP	NEW CARD	
1A	6x50	+5	2-4-2	-	1	-	-	-	-	X	X	-	-	-
2A,2B,2C	6x6	147	4	-	2	-	-	-	-	X	X	-	-	-
2D,2E,2F	6x6	291	4	-	2	-	-	-	-	X	X	-	-	-
4A	6x50	+5	2-4-2	-	4	-	2.0	-	-	X	X	-	-	-
4B	6x60	+5	2-4-2	-	4	-	10.0	-	-	X	X	-	-	-
5A	6x50	+5	2-4-2	-	5	-	-	-	-	X	X	-	-	-
6A,6B,6C	6x6	145	4	-	6	-	-	-	-	X	X	-	-	-
6D,6E,6F	6x6	288	4	-	6	-	-	-	-	X	X	-	-	-
8A	6x50	+6	2-4-2	-	8	-	2.0	-	-	X	X	-	-	-
8B	6x60	+6	2-4-2	-	8	-	10.0	-	-	X	X	-	-	-
2S1	6x6	185	4	-	-	-	-	-	-	-	-	X	-	-
2S2	6x6	185	4	-	-	-	-	-	-	-	-	X	-	-
2S3	6x6	185	4	-	-	-	-	-	-	-	-	X	-	-
6S1	6x6	+273	4	-	-	-	-	-	-	-	-	X	-	-
6S2	6x6	+273	4	-	-	-	-	-	-	-	-	X	-	-
6S3	6x6	+273	4	-	-	-	-	-	-	-	-	X	-	-

5 Phase Fully Actuated Greensboro Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications January 2024."
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Omit "Walk" and flashing "Don't Walk" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Remove existing "No Left Turn Sign" (R3-2).
- Pavement Markings are existing. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



TRAFFICWARE APOGEE 2070 TIMING CHART

FEATURE	PHASE						
	1	2	4	5	6	8	
Min Green *	6	15	6	6	15	6	
Gap, Extension *	1.0	4.0	1.0	1.0	4.0	1.0	
Maximum Green 1 *	20	45	20	20	45	20	
Maximum Green 2 *	-	-	-	-	-	-	
Yellow Clear	3.0	4.6	4.0	3.0	4.6	4.0	
Red Clear	2.9	1.1	2.3	2.9	1.1	2.3	
Walk *	-	-	7	-	-	-	
Pedestrian Clear	-	-	29	-	-	-	
Advance Walk *	-	-	-	-	-	-	
Added Initial *	-	-	-	-	-	-	
Maximum Initial *	-	-	-	-	-	-	
Time Before Reduction *	-	-	-	-	-	-	
Time To Reduce *	-	-	-	-	-	-	
Minimum Gap	-	-	-	-	-	-	
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-	
Lock Calls	NO	YES	NO	NO	YES	NO	
Dual Entry	-	ON	ON	-	ON	ON	
Simultaneous Gap	ON	ON	ON	ON	ON	ON	

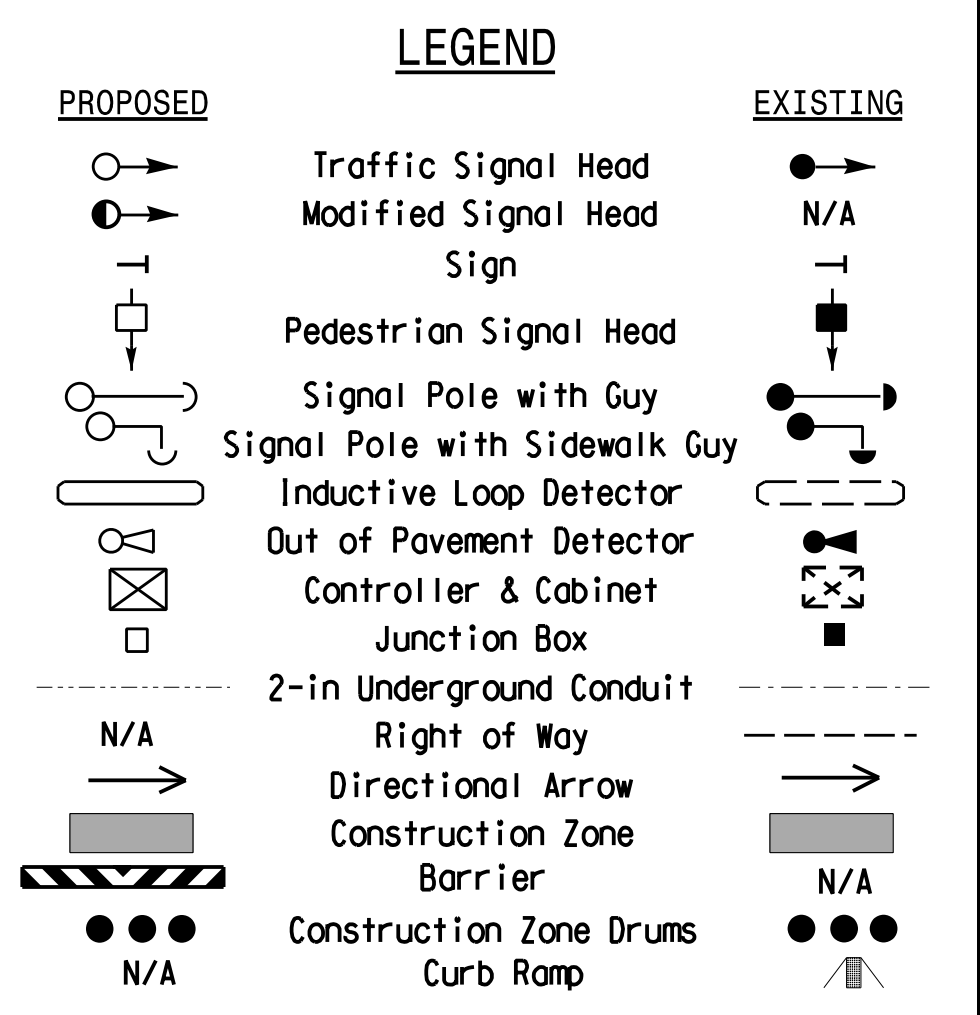
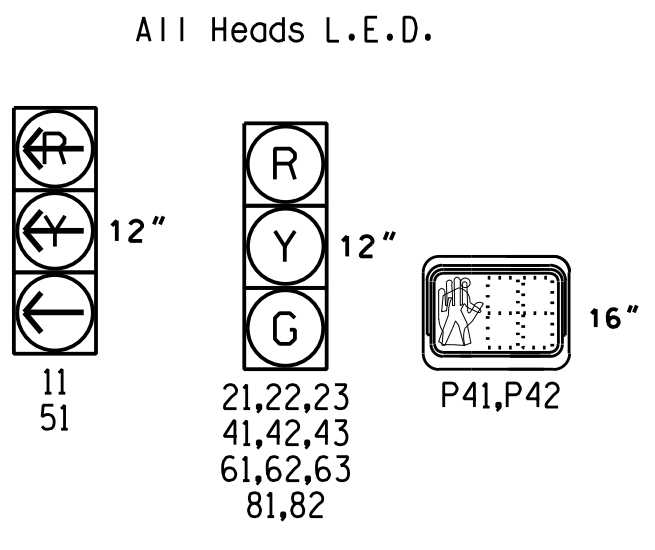
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

EMERGENCY VEHICLE PREEMPTION

FUNCTION	PRE 3	PRE 4	PRE 5
DELAY BEFORE PREEMPT	0	0	0
MINIMUM DURATION	17	17	16
MIN GREEN BEFORE PREEMPT	5	5	5
MIN WALK BEFORE PREEMPT	1	1	1
PED CLEAR BEFORE PREEMPT	255'	255'	255'
MINIMUM DWELL	5	5	5
EXIT PED CLEAR	0	0	0
EXIT YELLOW CHANGE	0.0'	0.0'	0.0'
EXIT RED CLEAR	0.0'	0.0'	0.0'
ENTER YELLOW CHANGE	25.5'	25.5'	25.5'
ENTER RED CLEAR	25.5'	25.5'	25.5'
ALL-RED B4 DWELL	OFF	OFF	ON
LOCK INPUT	ON	ON	ON
OVERRIDE HIGHER # PREEMPT	OFF	OFF	OFF
EXIT PREEMPT TO	2+6	2+6	4+8

* Time defaults to time used for phase during normal operation.

SIGNAL FACE I.D.



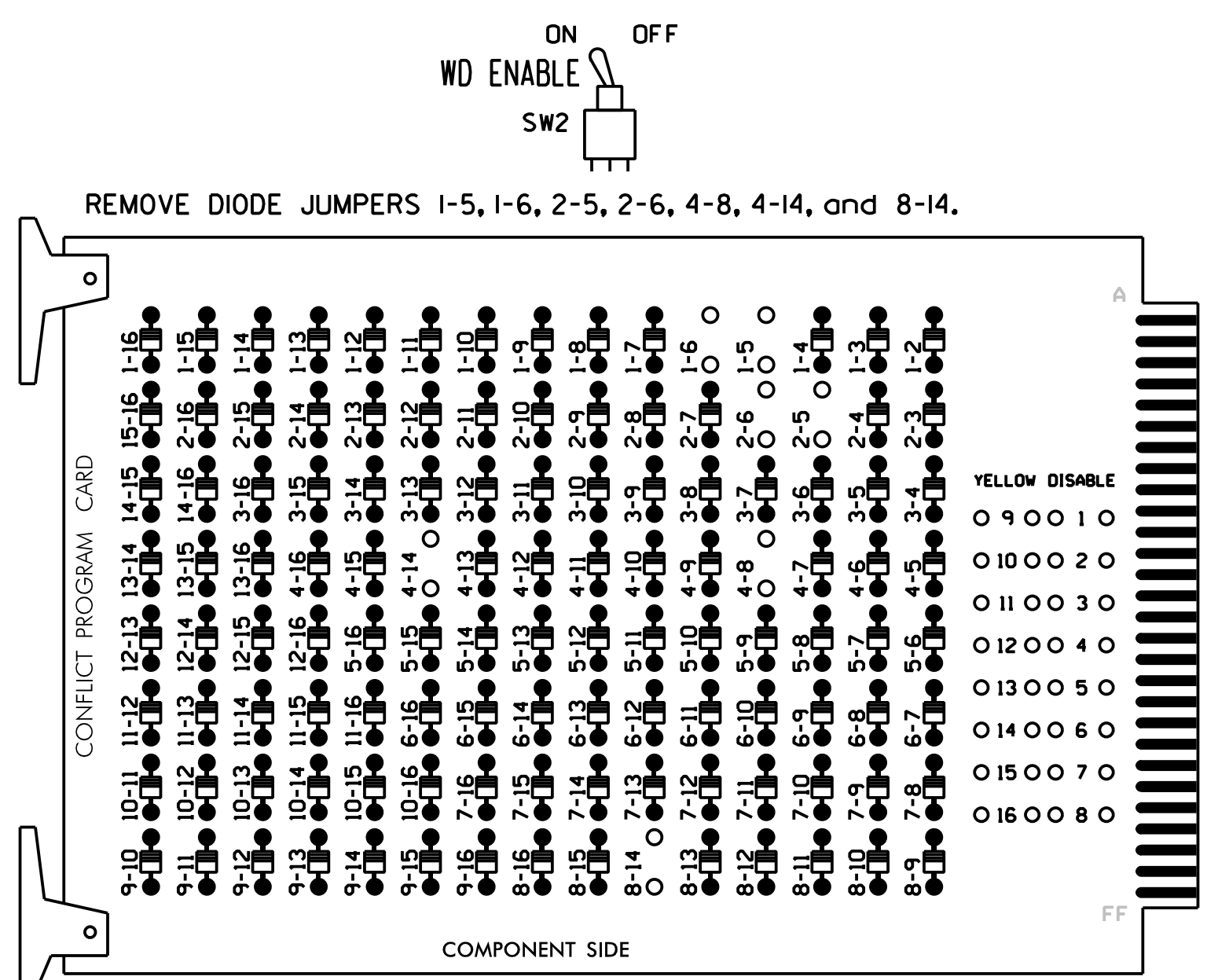
Signal Upgrade
Temporary Design 3
(Construction Step 10)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

 HNTB NORTH CAROLINA, P.C. 4000 Center at North Hills St Suite 500 Raleigh, North Carolina 27609 NC License No: C-1554 (919) 546-8997	US 70-220 (E. Wendover Avenue) at Lindsay Street	SEAL N.K. SIMMONS ENGINEER 031464
	Division 7 Guilford County Greensboro PLAN DATE: October 2023 REVIEWED BY: N.R. Simmons PREPARED BY: E.E. Tiller REVIEWED BY: N.K. Vlanich	REVISIONS INITI. DATE

16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
- Initialize database in Trafficware 2070 local software (Apogee) as FULL-CALTRANS. This initialization should be done prior to programming controller.
- Initialize L/D "C1-C11-ABC 10 Mode" to USER (MM 1-8-6). Then set "Init 2A" to MODE 5 (MM 1-8-9-3).
- Program phases 2 and 6 for Startup in Green.
- Program "Start Up Flash" for 0 sec. The conflict monitor will govern start-up flash time.
- Program Start Red Time to 6.0 Sec.
- Ensure "Local Flash Start" feature is set to "Rst" or "Red".
- Ensure "InhFYARedST" feature is set to "ON".
- Ensure "Flash Mode" is set to "channel" (MM 1-4-1).
- Program controller that all channels are programmed to flash Red (MM 1-8-1).
- Program controller to provide a 1 second delay on the Flash Sense/Local Flash input. Use the following logic statement to provide this functionality:
FROM MAIN MENU->1->8->7 (I/O LOGIC)

Result	Src.Fcn	TimeOp	Time
1208	= 01208	DLY	1
- Program phases 2, 4, 6, and 8 for Dual Entry.
- The cabinet and controller are part of the Greensboro Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11	21,22,23	NU	NU	41,42,43	P41, P42	51	61,62,63	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125						131					
YELLOW ARROW	126						132					
GREEN ARROW	127						133					
Hand icon							104					
Person icon							106					

NU = Not Used

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1 1A	∅ 2 2A,2B,2C	S TOP	S TOP	S TOP	∅ 4 4A	S TOP	S TOP	SYS. DET. 2S1	S TOP	S TOP	NOT USED	S TOP	FS ISOLATOR
L	NOT USED	∅ 2 2D,2E,2F	S TOP	S TOP	S TOP	∅ 4 4B	S TOP	S TOP	SYS. DET. 2S2	S TOP	S TOP	∅ 4 PED ISOLATOR	S TOP	ST ISOLATOR
U	∅ 5 5A	∅ 6 6A,6B,6C	S TOP	S TOP	S TOP	∅ 8 8A	SYS. DET. 2S3	S TOP	SYS. DET. 6S1	S TOP	S TOP	PRE3 PRE4 *Optical 4 Ch. Cord NOT USED	S TOP	S TOP
L	NOT USED	∅ 6 6D,6E,6F	S TOP	S TOP	S TOP	∅ 8 8B	SYS. DET. 6S3	S TOP	SYS. DET. 6S2	S TOP	S TOP	PRE5	S TOP	S TOP

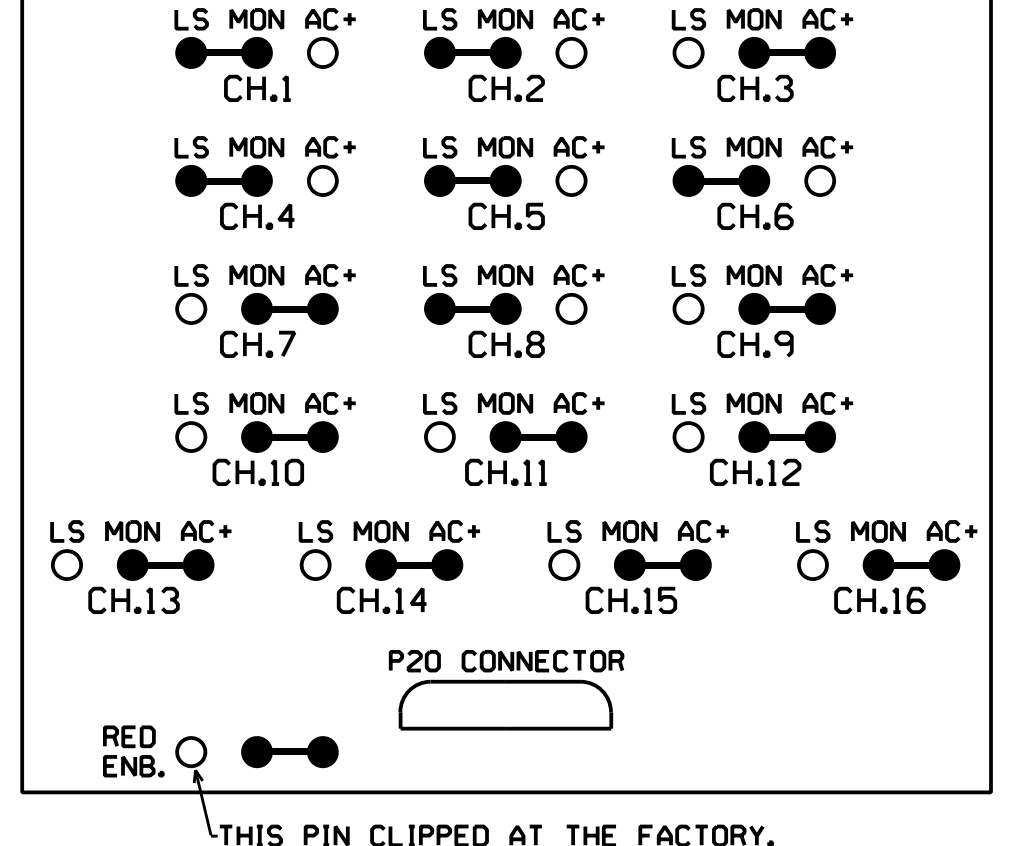
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME
PRE 3,4,5 = EV PREEMPT

* See Optical Field Wire Detail this sheet.

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



OPTICAL FIELD WIRE DETAIL

Field	Cabinet
+26VDC ORG OR RED	TB9 ①
+26VDC ORG OR RED	TB9 ②
PRE-3 YEL OR WHI	TB9 ③
PRE-5 YEL OR WHI	TB9 ④
I2 COM BLU OR BLK	TB9 ⑤
PRE-4 YEL OR WHI	TB9 ⑥
PRE-6 YEL OR WHI	TB9 ⑦
I3 COM BLU OR BLK	TB9 ⑧

* Assuming TB9-2 & TB9-3 are unused on the J File, move wires on J1-J & J1-K (Twisted Pair) to J2-E & J3-E respectively.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....TRAFFICWARE APOGEE
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S4,S4P,S5,S6,S8
 PHASES USED.....1,2,4,4 PED,5,6,8
 OVERLAPSNONE

INPUT FILE CONNECTION & PROGRAMMING CHART

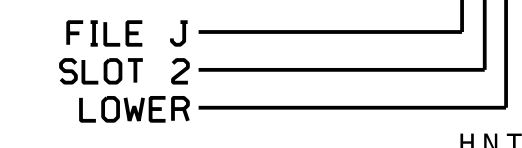
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	CALL PHASE	SWITCH	DELAY TIME	EXTEND TIME	CALL	EXTEND	ADDED INIT.
1A	TB2-1,2	I1U	56	1	1				X	X	
2A,2B,2C	TB2-5,6	I2U	39	2	2				X	X	
2D,2E,2F	TB2-7,8	I2L	43	3	2				X	X	
4A	TB4-9,10	I6U	41	8	4		2.0		X	X	
4B	TB4-11,12	I6L	45	9	4		10.0		X	X	
* 2S1	TB6-9,10	I9U	60	13	SYS						
* 2S2	TB6-11,12	I9L	62	14	SYS						
5A	TB3-1,2	J1U	55	15	5				X	X	
6A,6B,6C	TB3-5,6	J2U	40	16	6				X	X	
6D,6E,6F	TB3-7,8	J2L	44	17	6				X	X	
8A	TB5-9,10	J6U	42	22	8		2.0		X	X	
8B	TB5-11,12	J6L	46	23	8		10.0		X	X	
* 2S3	TB7-1,2	J7U	66	24	SYS						
* 6S3	TB7-3,4	J7L	79	25	SYS						
* 6S1	TB7-9,10	J9U	59	27	SYS						
* 6S2	TB7-11,12	J9L	61	28	SYS						
PED PUSH BUTTONS											
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED						

NOTE:

INSTALL DC ISOLATOR IN INPUT FILE SLOT I12.

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L



HNTB
 HNTB NORTH CAROLINA, P.C.
 4000 Center at North Hills St
 Suite 500
 Raleigh, North Carolina 27609
 NC License No. C-1554
 (919) 546-8997

Signal Upgrade -
Electrical Detail - Sheet 1 of 4
(Construction Step 10)

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0579T3
DESIGNED: October 2023
SEALED: 06/21/2024
REVISED:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 70-220 (E. Wendover Avenue) at Lindsay Street

Division 7 Guilford County Greensboro

PLAN DATE: October 2023 REVIEWED BY: N.K. Vlanich
 PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

REVISIONS: INIT. DATE

Seal: NORTH CAROLINA PROFESSIONAL SEAL 031464 W. T. SHAW R. SIMMONS ENGINEER

DocuSigned by: *Notisha R. Simmons* 6/21/2024
 SIGNATURE DATE
 SIG. INVENTORY NO. 07-0579T3

EMERGENCY VEHICLE PROGRAMMING DETAIL FOR "PRE 3" (program controller as shown below)

FROM MAIN MENU PRESS "3" PREEMPTS
Preemption Menu
1.HiPriority 4.LowPriority
2.Events
3.Sequences
ENTER PREEMPT #3

```
# 3 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 Times : Begin : Other
Delay 0 MinGrn 5 Track Grn 0
MinDura 17 MinWlk 1 Min Dwell 5
MaxPres 0 PedClr 255
PRESS "ESC"
```

```
# 3 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 ---- Preempt Phases ----
Track Veh 0 0 0 0
DwellCyc Veh 1 6 0 0 0 0 0 0
DwellCyc(more) 0 0 0 0
DwellCyc (Ped) 0 0 0 0 0 0 0 0
Exit 2 6 0 0
PRESS "ESC"
```

```
# 3 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 Preempt Options
Lock input ON
Override Auto Flash OFF
Override higher # preempt OFF
Flash in dwell OFF
Link to preempt # 0
PRESS "ESC"
```

```
# 3 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 Preempt Times+ --- Exit --
PedClr 0
Extend Dwell 0 Yel 0.0
Return Max 0 Red 0.0
PRESS "ESC"
```

```
# 3 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 -- Preempt Overlaps+ --
Track 0 0 0 0 0 0 0 0
(more) 0 0 0 0
DwellCyc 0 0 0 0 0 0 0 0
(more) 0 0 0 0
PRESS "ESC"
```

```
# 3 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 Preempt Options +
Enable ON Pattern 0
Type EMERG Skip Track if Override OFF
Output DELAY Coord+Preempt OFF
Vol Mon Flash OFF
Lnk Aft Dwell OFF Return Max/Min MAX
PRESS "ESC"
```

```
# 3 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 AdvTimes
AllRedB4Prmpt OFF EnterYelChg 25.5
ResetExtDwell OFF EnterRedClr 25.5
ReservicePreempt OFF TrackYelChg 25.5
EndDwell OFF TrackRedClr 25.5
DynExitThresh 0 1111111
DsbldDwellCalls OFF 12345678 90123456
+ ExitVehCall .....
PRESS "ESC"
```

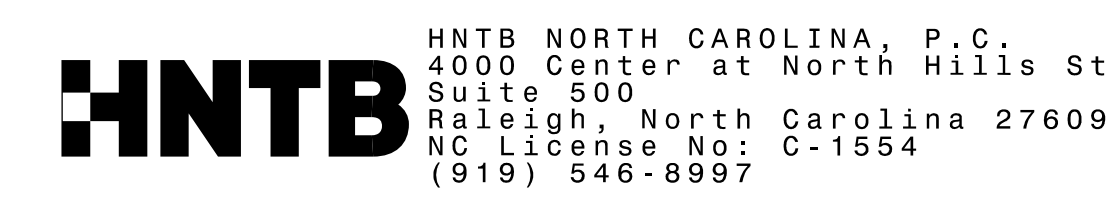
```
# 3 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 -- Initial Dwell --
Phases 0 0 0 0
Peds 0 0 0 0
Overlaps 0 0 0 0 0 0 0 0
(more) 0 0 0 0 0 0 0 0
PROGRAMMING COMPLETE
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0579T3
DESIGNED: October 2023
SEALED: 06/21/2024
REVISED:

Signal Upgrade -
Electrical Detail - Sheet 2 of 4
(Construction Step 10)

DOCUMENT NOT CONSIDERED FINAL
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ELECTRICAL AND PROGRAMMING DETAILS FOR: US 70-220 (E. Wendover Avenue) at Lindsay Street
Division 7 Guilford County Greensboro
PLAN DATE: October 2023 REVIEWED BY: N.K. Vlanich
PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons
REVISIONS: INIT. DATE
Signature: Natasha R. Simmons
DATE: 6/21/2024
SIG. INVENTORY NO. 07-0579T3

EMERGENCY VEHICLE PROGRAMMING DETAIL FOR "PRE 4" (program controller as shown below)

FROM MAIN MENU PRESS "3" PREEMPTS

```

Preemption Menu
1.HiPriority 4.LowPriority
2.Events
3.Sequences
  
```

ENTER PREEMPT #4

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Times : Begin : Other
Delay 0 MinGrn 5 Track Grn 0
MinDura 17 MinWlk 1 Min Dwell 5
MaxPres 0 PedClr 255
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 ---- Preempt Phases ----
Track Veh 0 0 0 0
DwellCyc Veh 2 5 0 0 0 0 0 0
DwellCyc(more) 0 0 0 0
DwellCyc (Ped) 0 0 0 0 0 0 0 0
Exit 2 6 0 0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Preempt Options
Lock input ON
Override Auto Flash OFF
Override higher # preempt OFF
Flash in dwell OFF
Link to preempt # 0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Preempt Times+ --- Exit --
PedClr 0
Extend Dwell 0 Yel 0.0
Return Max 0 Red 0.0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 -- Preempt Overlaps+ --
Track 0 0 0 0 0 0 0 0
(more) 0 0 0 0
DwellCyc 0 0 0 0 0 0 0 0
(more) 0 0 0 0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Preempt Options +
Enable ON Pattern 0
Type EMERG Skip Track if Override OFF
Output DELAY Coord+Preempt OFF
Lnk Aft Dwell OFF Volt Mon Flash OFF
Return Max/Min MAX
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 AdvTimes
AllRedB4Prmpt OFF EnterYelChg 25.5
ResetExtDwell OFF EnterRedClr 25.5
ReservicePreempt OFF TrackYelChg 25.5
EndDwell OFF TrackRedClr 25.5
DynExitThresh 0 1111111
DsbldWllCalls OFF 12345678 90123456
+ ExitVehCall .....
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

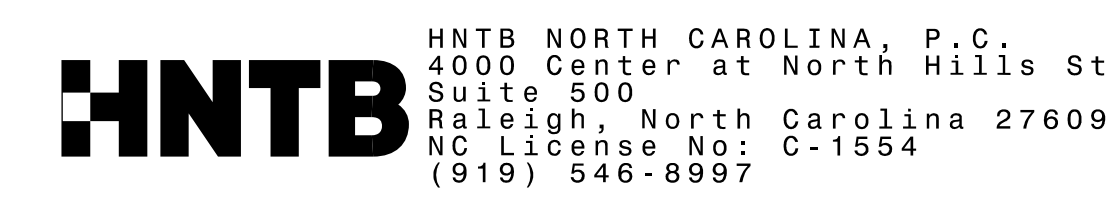
# 4 -- Initial Dwell --
Phases 0 0 0 0
Peds 0 0 0 0
Overlaps 0 0 0 0 0 0 0 0
(more) 0 0 0 0 0 0 0 0
  
```

PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0579T3
DESIGNED: October 2023
SEALED: 06/21/2024
REVISED:

Signal Upgrade -
Electrical Detail - Sheet 3 of 4
(Construction Step 10)

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



ELECTRICAL AND PROGRAMMING DETAILS FOR: US 70-220 (E. Wendover Avenue) at Lindsay Street

Division 7 Guilford County Greensboro

PLAN DATE: October 2023 REVIEWED BY: N.K. Vlanich

PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

REVISIONS: INIT. DATE

Signature: *Notasha R. Simmons* DATE: 6/21/2024

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031464

SIG. INVENTORY NO. 07-0579T3

EMERGENCY VEHICLE PROGRAMMING DETAIL FOR "PRE 5" (program controller as shown below)

FROM MAIN MENU PRESS "3" PREEMPTS

```

Preemption Menu
1.HiPriority 4.LowPriority
2.Events
3.Sequences
  
```

ENTER PREEMPT #5

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 Times : Begin : Other
Delay 0 MinGrn 5 Track Grn 0
MinDura 16 MinWlk 1 Min Dwell 5
MaxPres 0 PedClr 255
  
```

PRESS "ESC"

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 ---- Preempt Phases ----
Track Veh 0 0 0 0
DwellCyc Veh 8 0 0 0 0 0 0
DwellCyc(more) 0 0 0 0
DwellCyc (Ped) 0 0 0 0 0 0 0
Exit 4 8 0 0
  
```

PRESS "ESC"

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 Preempt Options
Lock input ON
Override Auto Flash OFF
Override higher # preempt OFF
Flash in dwell OFF
Link to preempt # 0
  
```

PRESS "ESC"

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 Preempt Times+ --- Exit --
Extend Dwell 0 PedClr 0
Return Max 0 Red 0.0
  
```

PRESS "ESC"

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 -- Preempt Overlaps+ --
Track 0 0 0 0 0 0 0
(more) 0 0 0 0
DwellCyc 0 0 0 0 0 0 0
(more) 0 0 0 0
  
```

PRESS "ESC"

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 Preempt Options +
Enable ON Pattern 0
Type EMERG Skip Track if Override OFF
Output DELAY Coord+Preempt OFF
Lnk Aft Dwell OFF Volt Mon Flash OFF
Return Max/Min MAX
  
```

PRESS "ESC"

```

# 5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 5 AdvTimes
AllRedB4Prmpt ON EnterYelChg 25.5
ResetExtDwell OFF EnterRedClr 25.5
ReservicePreempt OFF TrackYelChg 25.5
EndDwell OFF TrackRedClr 25.5
DynExitThresh 0 1111111
DsbldDwellCalls OFF 12345678 90123456
+ ExitVehCall .....
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

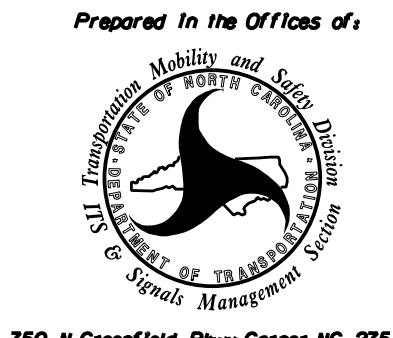
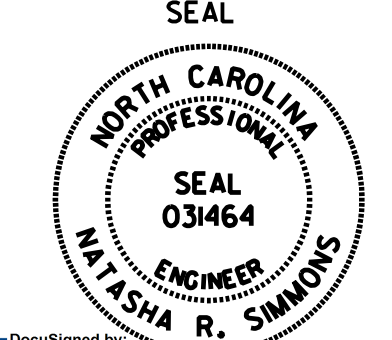
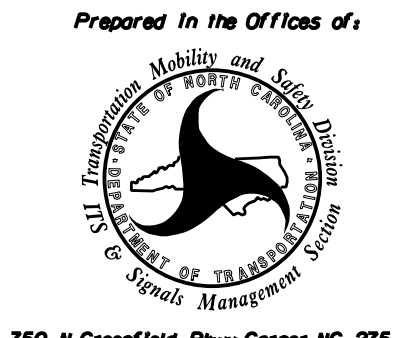
# 5 -- Initial Dwell --
Phases 0 0 0 0
Peds 0 0 0 0
Overlaps 0 0 0 0 0 0 0
(more) 0 0 0 0 0 0 0
  
```

PROGRAMMING COMPLETE

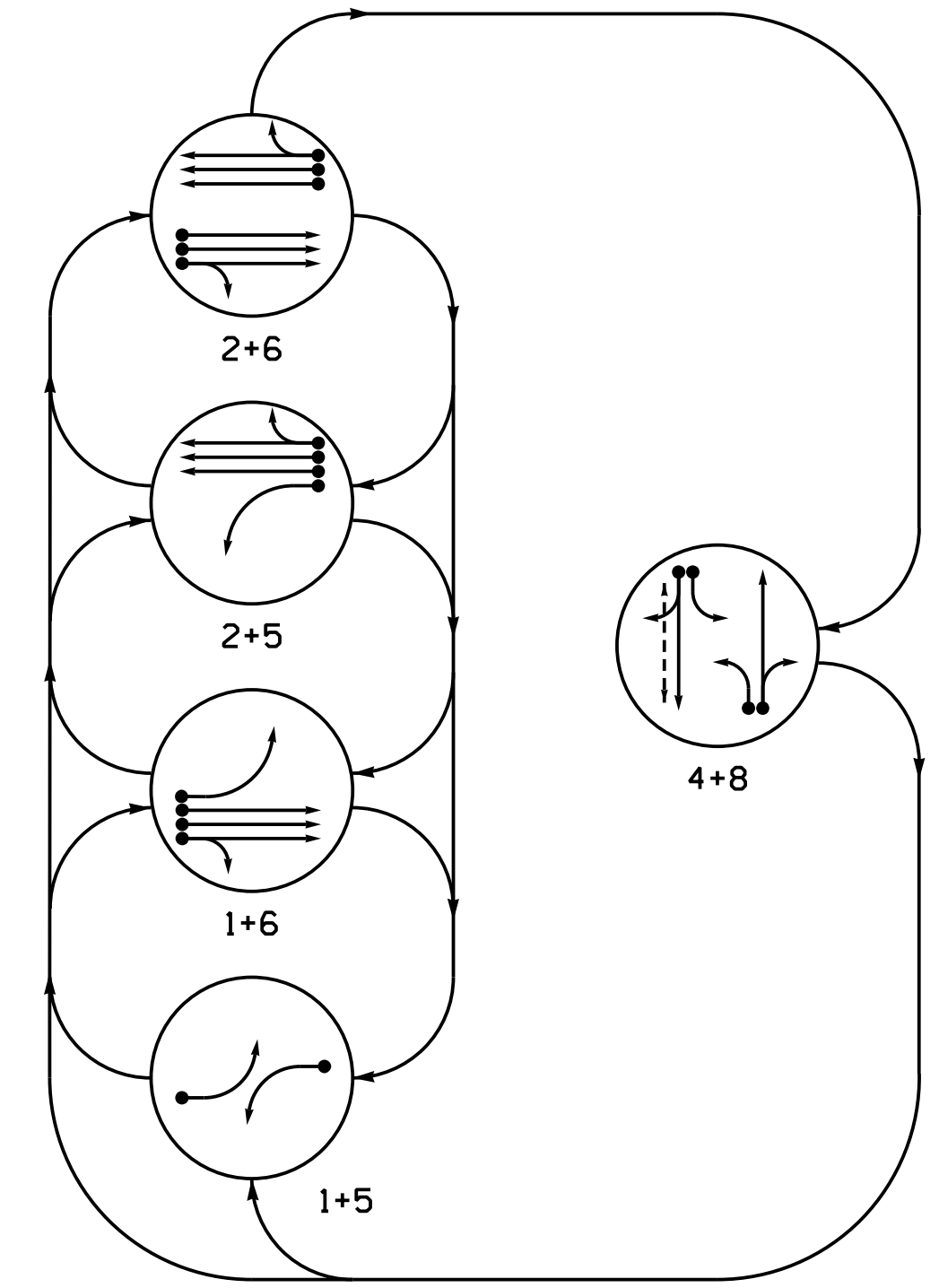
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0579T3
DESIGNED: October 2023
SEALED: 06/21/2024
REVISED:

Signal Upgrade -
Electrical Detail - Sheet 4 of 4
(Construction Step 10)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	ELECTRICAL AND PROGRAMMING DETAILS FOR: US 70-220 (E. Wendover Avenue) at Lindsay Street		
	Prepared In the Offices of: 	Division 7 Guilford County Greensboro	
PLAN DATE: October 2023		REVIEWED BY: N.K. Vlanich	REVISIONS: INIT. DATE
PREPARED BY: E.E. Tiller		REVIEWED BY: N.R. Simmons	
HNTB NORTH CAROLINA, P.C. 4000 Center at North Hills St Suite 500 Raleigh, North Carolina 27609 NC License No: C-1554 (919) 546-8997		750 N. Greenfield Pkwy, Garner, NC 27529	Signature: <i>Natasha R. Simmons</i> DATE: 6/21/2024 SIG. INVENTORY NO. 07-0579T3

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- ← ● DETECTED MOVEMENT
- ← ○ UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ← → PEDESTRIAN MOVEMENT

EV PREEMPT PHASES
(Medium Priority)

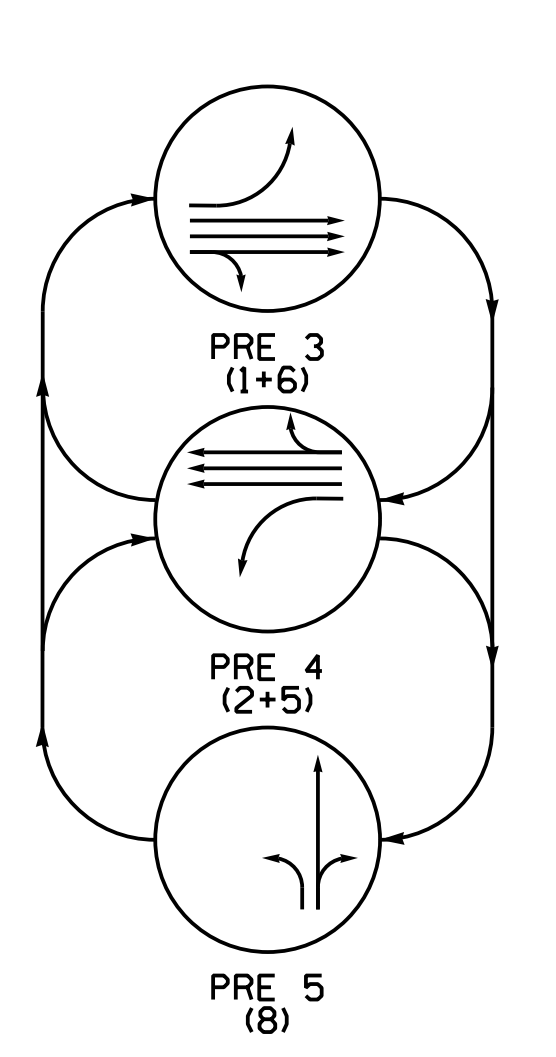


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	1+5	1+6	2+5	2+6	PRE 3	PRE 4	PRE 5	FL
11	---	---	---	---	---	---	---	---
21,22,23	R	R	G	G	R	R	G	R
41,42,43	R	R	R	R	G	R	R	R
51	---	---	---	---	---	---	---	---
61,62,63	R	G	R	G	R	G	R	R
81,82	R	R	R	R	G	R	R	G
P41,P42	DW	DW	DW	DW	W	DW	DW	DRK

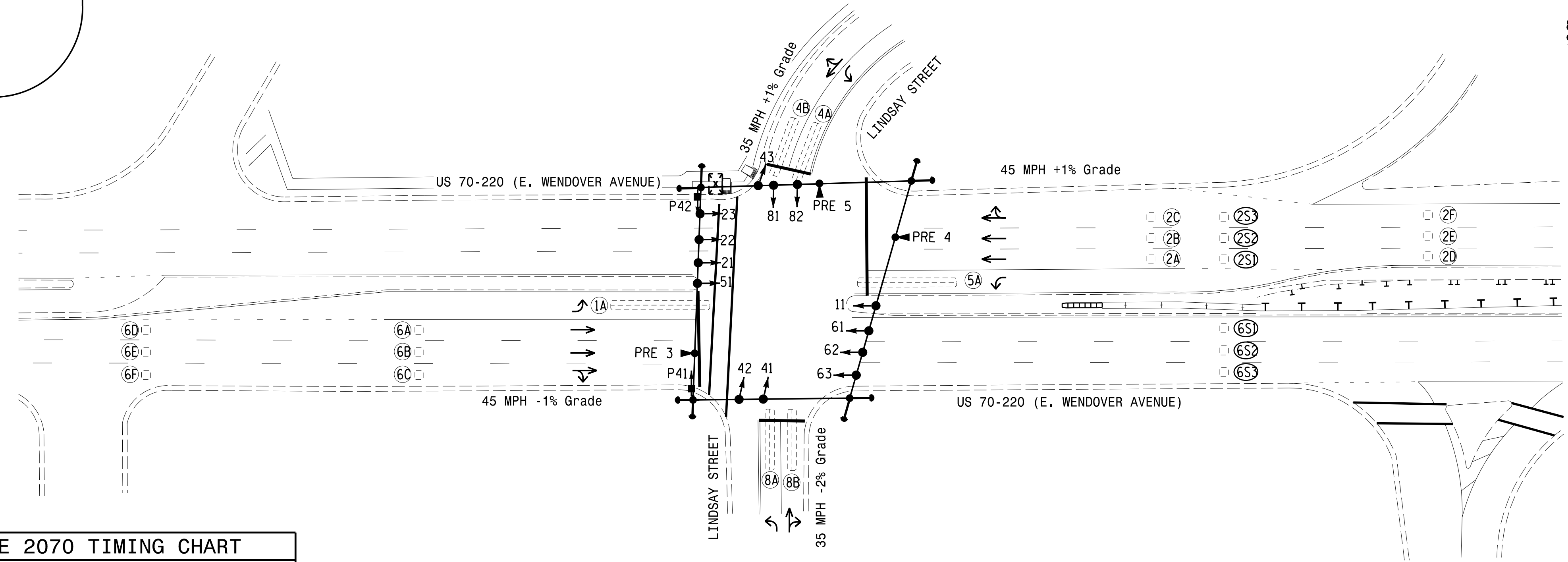
LOOP & DETECTOR UNIT INSTALLATION CHART
TRAFFICWARE APOGEE SOFTWARE 2070 CONTROLLER

LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING									
					PHASE	SWITCH (PHASE)	DELAY TIME	STRETCH TIME	CALLING	EXTENSION	ADDED INIT.	SYSTEM LOOP	NEW CARD	
1A	6x50	+5	2-4-2	-	1	-	-	-	-	X	X	-	-	-
2A,2B,2C	6x6	147	4	-	2	-	-	-	-	X	X	-	-	-
2D,2E,2F	6x6	291	4	-	2	-	-	-	-	X	X	-	-	-
4A	6x50	+5	2-4-2	-	4	-	2.0	-	-	X	X	-	-	-
4B	6x60	+5	2-4-2	-	4	-	10.0	-	-	X	X	-	-	-
5A	6x50	+5	2-4-2	-	5	-	-	-	-	X	X	-	-	-
6A,6B,6C	6x6	145	4	-	6	-	-	-	-	X	X	-	-	-
6D,6E,6F	6x6	288	4	-	6	-	-	-	-	X	X	-	-	-
8A	6x50	+6	2-4-2	-	8	-	2.0	-	-	X	X	-	-	-
8B	6x60	+6	2-4-2	-	8	-	10.0	-	-	X	X	-	-	-
2S1	6x6	185	4	-	-	-	-	-	-	-	-	X	-	-
2S2	6x6	185	4	-	-	-	-	-	-	-	-	X	-	-
2S3	6x6	185	4	-	-	-	-	-	-	-	-	X	-	-
6S1	6x6	+273	4	-	-	-	-	-	-	-	-	X	-	-
6S2	6x6	+273	4	-	-	-	-	-	-	-	-	X	-	-
6S3	6x6	+273	4	-	-	-	-	-	-	-	-	X	-	-

5 Phase Fully Actuated Greensboro Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications January 2024."
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
6. Omit "Walk" and flashing "Don't Walk" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Pavement Markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



LEGEND

- | PROPOSED | EXISTING |
|------------------------------|-----------------------------------|
| ○ → Traffic Signal Head | ● → N/A |
| ○ → Modified Signal Head | ○ → Sign |
| ○ → Pedestrian Signal Head | ○ → Signal Pole with Guy |
| ○ → Signal Pole with Guy | ○ → Signal Pole with Sidewalk Guy |
| ○ → Inductive Loop Detector | ○ → Out of Pavement Detector |
| ○ → Out of Pavement Detector | ○ → Controller & Cabinet |
| ○ → Controller & Cabinet | ○ → Junction Box |
| ○ → Junction Box | ○ → 2-in Underground Conduit |
| ○ → 2-in Underground Conduit | ○ → Right of Way |
| ○ → Right of Way | ○ → Directional Arrow |
| ○ → Directional Arrow | ○ → Curb Ramp |
| ○ → Curb Ramp | ○ → |

TRAFFICWARE APOGEE 2070 TIMING CHART

FEATURE	PHASE					
	1	2	4	5	6	8
Min Green *	6	15	6	6	15	6
Gap, Extension *	1.0	4.0	1.0	1.0	4.0	1.0
Maximum Green 1 *	20	45	20	20	45	20
Maximum Green 2 *	-	-	-	-	-	-
Yellow Clear	3.0	4.6	4.0	3.0	4.6	4.0
Red Clear	2.9	1.1	2.3	2.9	1.1	2.3
Walk *	-	-	7	-	-	-
Pedestrian Clear	-	-	29	-	-	-
Advance Walk *	-	-	-	-	-	-
Added Initial *	-	-	-	-	-	-
Maximum Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Lock Calls	NO	YES	NO	NO	YES	NO
Dual Entry	-	ON	ON	-	ON	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON

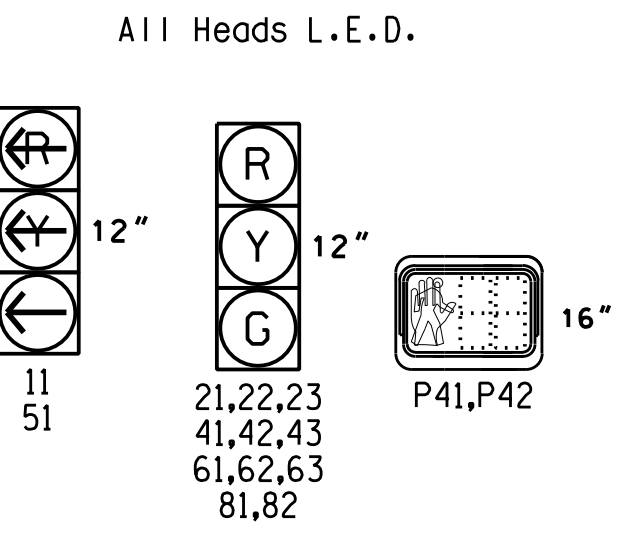
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

EMERGENCY VEHICLE PREEMPTION

FUNCTION	PRE 3	PRE 4	PRE 5
DELAY BEFORE PREEMPT	0	0	0
MINIMUM DURATION	17	17	16
MIN GREEN BEFORE PREEMPT	5	5	5
MIN WALK BEFORE PREEMPT	1	1	1
PED CLEAR BEFORE PREEMPT	255'	255'	255'
MINIMUM DWELL	5	5	5
EXIT PED CLEAR	0	0	0
EXIT YELLOW CHANGE	0.0'	0.0'	0.0'
EXIT RED CLEAR	0.0'	0.0'	0.0'
ENTER YELLOW CHANGE	25.5'	25.5'	25.5'
ENTER RED CLEAR	25.5'	25.5'	25.5'
ALL-RED B4 DWELL	OFF	OFF	ON
LOCK INPUT	ON	ON	ON
OVERRIDE HIGHER # PREEMPT	OFF	OFF	OFF
EXIT PREEMPT TO	2+6	2+6	4+8

* Time defaults to time used for phase during normal operation.

SIGNAL FACE I.D.



Signal Upgrade - Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:

 TRANSPORTATION MOBILITY AND SAFETY DIVISION
 STATE OF NORTH CAROLINA
 SIGNAL DESIGN SECTION
 750 N. Greenfield Pkwy, Garner, NC 27529

US 70-220 (E. Wendover Avenue) at Lindsay Street

Division 7 Guilford County Greensboro

PLAN DATE: October 2023 REVIEWED BY: N.R. Simmons

PREPARED BY: E.E. Tiller REVIEWED BY: N.K. Vlanich

REVISIONS: INITI. DATE

Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031464 W.T. SHAW R. SIMMONS

DocuSigned by: *Notisha R. Simmons* 6/21/2024

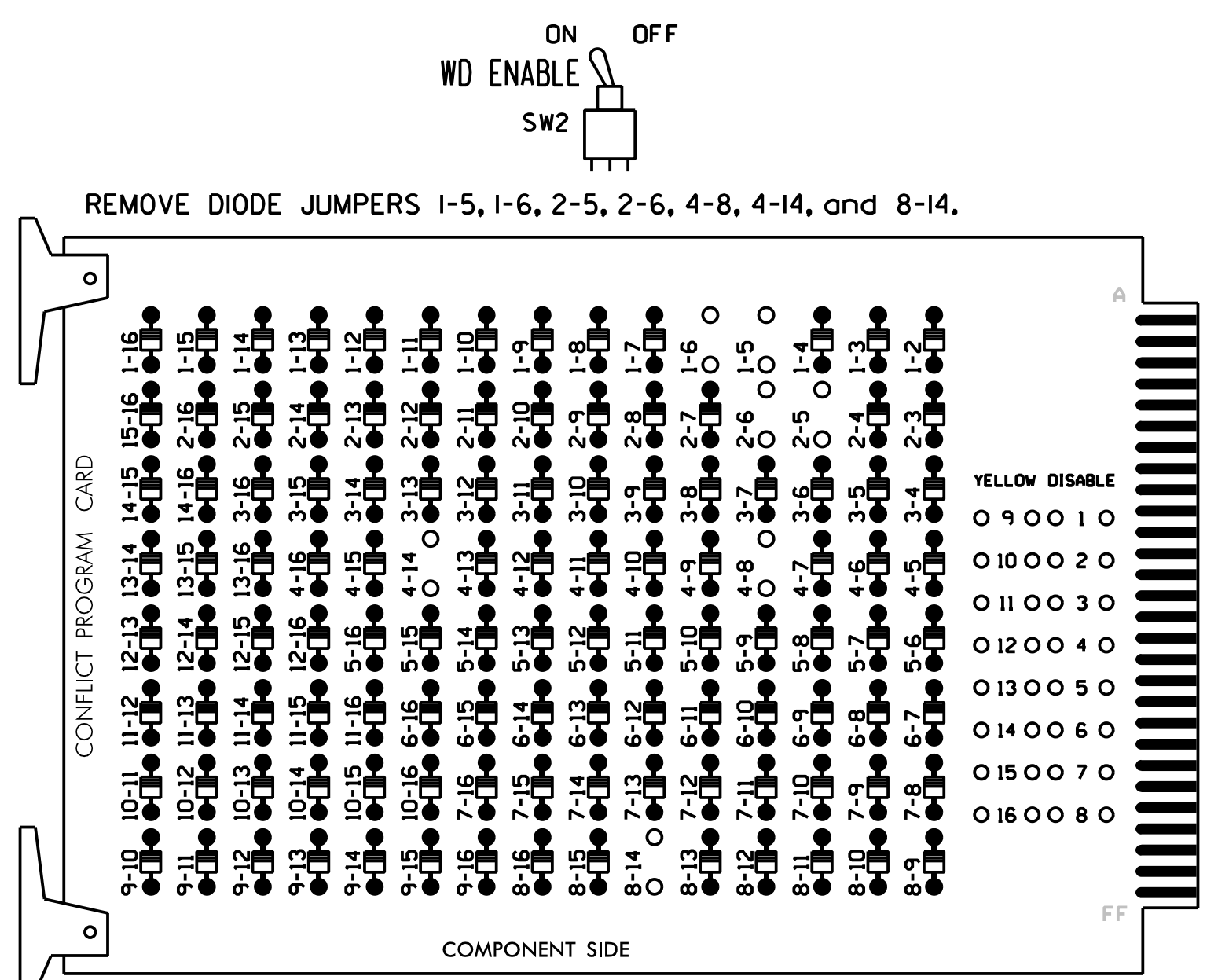
SIGNATURE DATE

SIG. INVENTORY NO. 07-0579

HNTB HNTB NORTH CAROLINA, P.C.
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16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

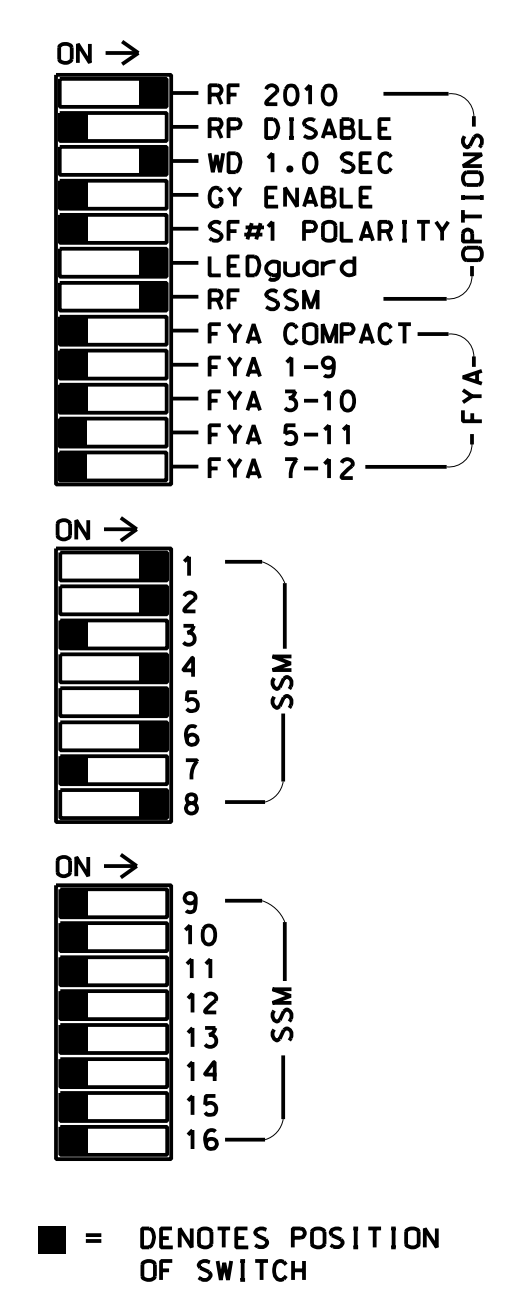


REMOVE DIODE JUMPERS 1-5, 1-6, 2-5, 2-6, 4-8, 4-14, and 8-14.

REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.



■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
- Initialize database in Trafficware 2070 local software (Apogee) as FULL-CALTRANS. This initialization should be done prior to programming controller.
- Initialize I/O "C1-C11-ABC 10 Mode" to USER (MM 1-8-6). Then set "Init 2A" to MODE 5 (MM 1-8-9-3).
- Program phases 2 and 6 for Startup in Green.
- Program "Start Up Flash" for 0 sec. The conflict monitor will govern start-up flash time.
- Program Start Red Time to 6.0 Sec.
- Ensure "Local Flash Start" feature is set to "Rst" or "Red".
- Ensure "InhFYARedST" feature is set to "ON".
- Ensure "Flash Mode" is set to "channel" (MM 1-4-1).
- Program controller that all channels are programmed to flash Red (MM 1-8-1).
- Program controller to provide a 1 second delay on the Flash Sense/Local Flash input. Use the following logic statement to provide this functionality:

```
FROM MAIN MENU->1->8->7 (I/O LOGIC) Result Src.Fcn TimeOp Time
1208 = 01208 DLY 1
```
- Program phases 2, 4, 6, and 8 for Dual Entry.
- The cabinet and controller are part of the Greensboro Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11	21,22,23	NU	NU	41,42,43	P41, P42	51	61,62,63	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125						131					
YELLOW ARROW	126						132					
GREEN ARROW	127						133					
Hand icon							104					
Person icon							106					

NU = Not Used

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1 1A	∅ 2 2A,2B,2C	S TOP	S TOP	S TOP	∅ 4 4A	S TOP	S TOP	SYS. DET. 2S1	S TOP	S TOP	NOT USED	S TOP	FS ISOLATOR
L	NOT USED	∅ 2 2D,2E,2F	S TOP	S TOP	S TOP	∅ 4 4B	S TOP	S TOP	SYS. DET. 2S2	S TOP	S TOP	∅ 4 PED ISOLATOR	S TOP	ST ISOLATOR
U	∅ 5 5A	∅ 6 6A,6B,6C	S TOP	S TOP	S TOP	∅ 8 8A	SYS. DET. 2S3	S TOP	SYS. DET. 6S1	S TOP	S TOP	PRE 3 PRE 4	S TOP	S TOP
L	NOT USED	∅ 6 6D,6E,6F	S TOP	S TOP	S TOP	∅ 8 8B	SYS. DET. 6S3	S TOP	SYS. DET. 6S2	S TOP	S TOP	*Optical 4 Ch. Cord NOT USED	S TOP	S TOP

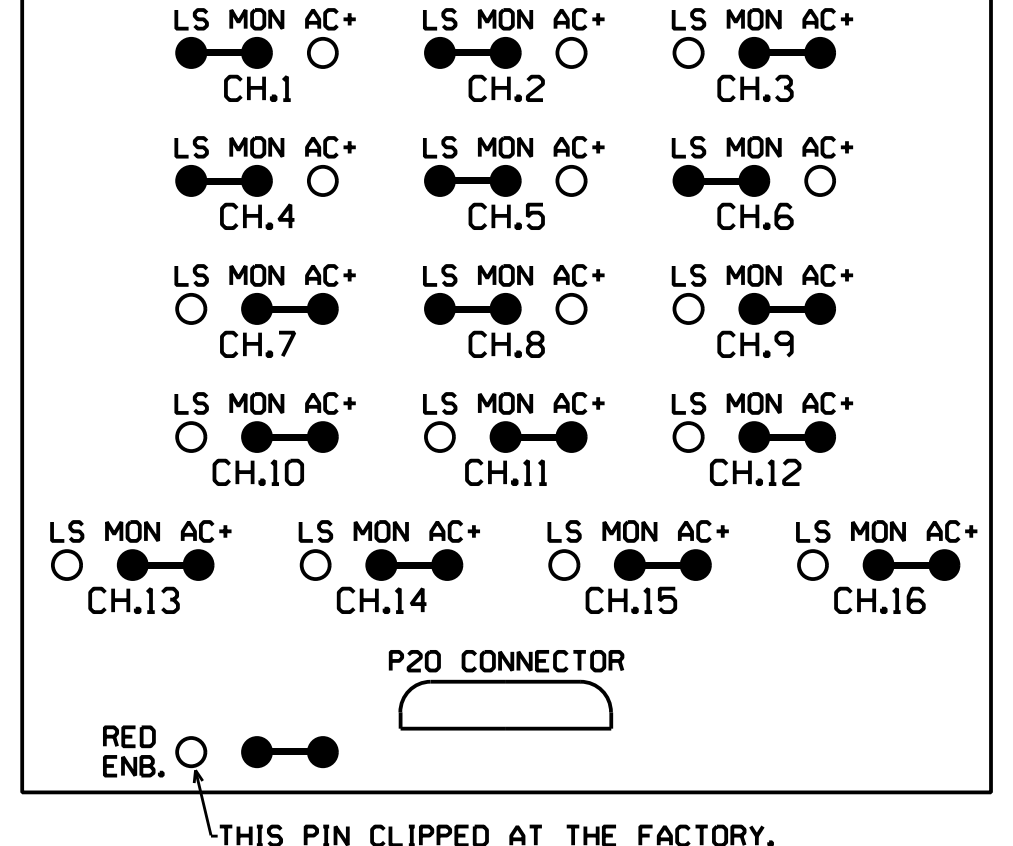
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME
PRE 3,4,5 = EV PREEMPT

* See Optical Field Wire Detail this sheet.

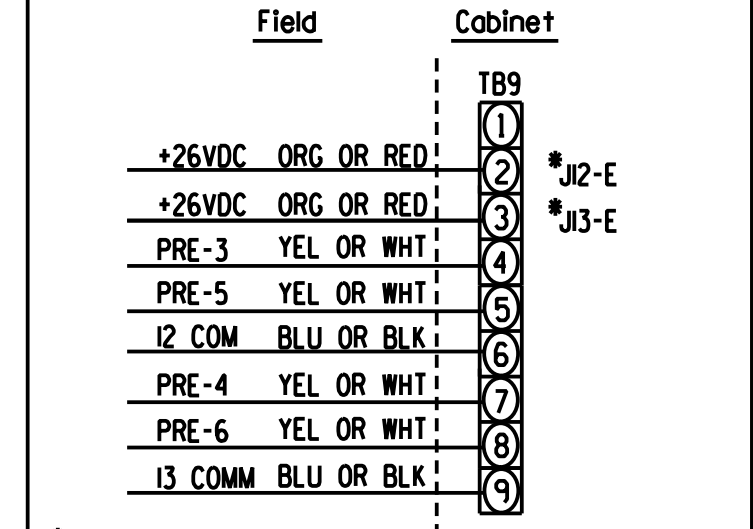
RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



THIS PIN CLIPPED AT THE FACTORY.

OPTICAL FIELD WIRE DETAIL



* Assuming TB9-2 & TB9-3 are unused on the J File, move wires on J1-J & J1-K (Twisted Pair) to J2-E & J3-E respectively.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....TRAFFICWARE APOGEE
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S4,S4P,S5,S6,S8
 PHASES USED.....1,2,4,4 PED,5,6,8
 OVERLAPSNONE

INPUT FILE CONNECTION & PROGRAMMING CHART

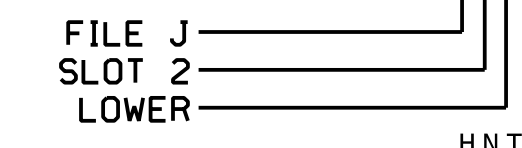
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	CALL PHASE	SWITCH	DELAY TIME	EXTEND TIME	CALL	EXTEND	ADDED INIT.
1A	TB2-1,2	I1U	56	1	1				X	X	
2A,2B,2C	TB2-5,6	I2U	39	2	2				X	X	
2D,2E,2F	TB2-7,8	I2L	43	3	2				X	X	
4A	TB4-9,10	I6U	41	8	4		2.0		X	X	
4B	TB4-11,12	I6L	45	9	4		10.0		X	X	
* 2S1	TB6-9,10	I9U	60	13	SYS						
* 2S2	TB6-11,12	I9L	62	14	SYS						
5A	TB3-1,2	J1U	55	15	5				X	X	
6A,6B,6C	TB3-5,6	J2U	40	16	6				X	X	
6D,6E,6F	TB3-7,8	J2L	44	17	6				X	X	
8A	TB5-9,10	J6U	42	22	8		2.0		X	X	
8B	TB5-11,12	J6L	46	23	8		10.0		X	X	
* 2S3	TB7-1,2	J7U	66	24	SYS						
* 6S3	TB7-3,4	J7L	79	25	SYS						
* 6S1	TB7-9,10	J9U	59	27	SYS						
* 6S2	TB7-11,12	J9L	61	28	SYS						
PED PUSH BUTTONS											
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED						

NOTE:

INSTALL DC ISOLATOR IN INPUT FILE SLOT 112.

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L



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Signal Upgrade - Final Design
 Electrical Detail - Sheet 1 of 4

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0579
 DESIGNED: October 2023
 SEALED: 06/21/2024
 REVISED:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 70-220 (E. Wendover Avenue) at Lindsay Street

Division 7 Guilford County Greensboro

PLAN DATE: October 2023 REVIEWED BY: N.K. Vlanich
 PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

REVISIONS: INIT. DATE

Seal: NORTH CAROLINA PROFESSIONAL SEAL 031464 W.T. SIMMONS ENGINEER

DocuSigned by: *Notisha R. Simmons* 6/21/2024
 SIGNATURE DATE
 SIG. INVENTORY NO. 07-0579

EMERGENCY VEHICLE PROGRAMMING DETAIL FOR "PRE 3" (program controller as shown below)

FROM MAIN MENU PRESS "3" PREEMPTS
Preemption Menu
1.HiPriority 4.LowPriority
2.Events
3.Sequences
ENTER PREEMPT #3

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 Times : Begin : Other
Delay 0 MinGrn 5 Track Grn 0
MinDura 17 MinWlk 1 Min Dwell 5
MaxPres 0 PedClr 255
PRESS "ESC"
```

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3      ---- Preempt Phases ----
Track Veh  0 0 0 0
DwellCyc Veh 1 6 0 0 0 0 0 0
DwellCyc(more) 0 0 0 0
DwellCyc (Ped) 0 0 0 0 0 0 0 0
Exit 2 6 0 0
PRESS "ESC"
```

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3      Preempt Options
Lock input ON
Override Auto Flash OFF
Override higher # preempt OFF
Flash in dwell OFF
Link to preempt # 0
PRESS "ESC"
```

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 Preempt Times+ --- Exit --
Extend Dwell 0 PedClr 0
Return Max 0 Red 0.0
PRESS "ESC"
```

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3      -- Preempt Overlaps+ --
Track 0 0 0 0 0 0 0 0
(more) 0 0 0 0
DwellCyc 0 0 0 0 0 0 0 0
(more) 0 0 0 0
PRESS "ESC"
```

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3      Preempt Options +
Enable ON Pattern 0
Type EMERG Skip Track if Override OFF
Output DELAY Coord+Preempt OFF
Lnk Aft Dwell OFF Volt Mon Flash OFF
Return Max/Min MAX
PRESS "ESC"
```

```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3 AdvTimes
AllRedB4Prmpt OFF EnterYelChg 25.5
ResetExtDwell OFF EnterRedClr 25.5
ReservicePreempt OFF TrackYelChg 25.5
EndDwell OFF TrackRedClr 25.5
DynExitThresh 0 1111111
DsbldDwellCalls OFF 12345678 90123456
+ ExitVehCall .....
PRESS "ESC"
```

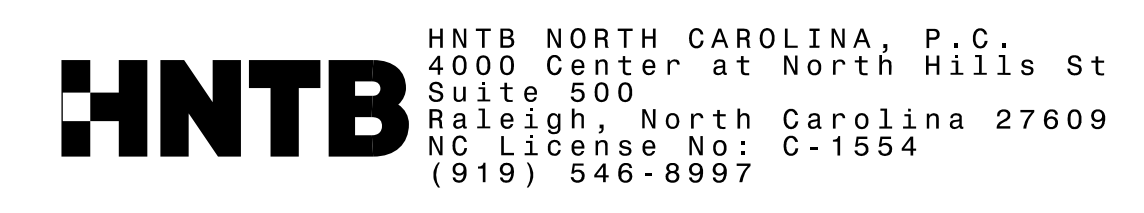
```
# 3      Preemption
1.Times  4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
```

```
# 3      -- Initial Dwell --
Phases 0 0 0 0
Peds 0 0 0 0
Overlaps 0 0 0 0 0 0 0 0
(more) 0 0 0 0 0 0 0 0
PROGRAMMING COMPLETE
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0579
DESIGNED: October 2023
SEALED: 06/21/2024
REVISED:

Signal Upgrade - Final Design
Electrical Detail - Sheet 2 of 4

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US 70-220 (E. Wendover Avenue) at Lindsay Street
Division 7 Guilford County Greensboro
PLAN DATE: October 2023 REVIEWED BY: N.K. Vianich
PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons
Signature: Natasha R. Simmons, 6/21/2024
SIG. INVENTORY NO. 07-0579

EMERGENCY VEHICLE PROGRAMMING DETAIL FOR "PRE 4" (program controller as shown below)

FROM MAIN MENU PRESS "3" PREEMPTS

```

Preemption Menu
1.HiPriority 4.LowPriority
2.Events
3.Sequences
  
```

ENTER PREEMPT #4

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Times : Begin : Other
Delay 0 MinGrn 5 Track Grn 0
MinDura 17 MinWlk 1 Min Dwell 5
MaxPres 0 PedClr 255
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 ---- Preempt Phases ----
Track Veh 0 0 0 0
DwellCyc Veh 2 5 0 0 0 0 0 0
DwellCyc(more) 0 0 0 0
DwellCyc (Ped) 0 0 0 0 0 0 0 0
Exit 2 6 0 0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Preempt Options
Lock input ON
Override Auto Flash OFF
Override higher # preempt OFF
Flash in dwell OFF
Link to preempt # 0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Preempt Times+ --- Exit --
PedClr 0
Extend Dwell 0 Yel 0.0
Return Max 0 Red 0.0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 -- Preempt Overlaps+ --
Track 0 0 0 0 0 0 0 0
(more) 0 0 0 0
DwellCyc 0 0 0 0 0 0 0 0
(more) 0 0 0 0
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 Preempt Options +
Enable ON Pattern 0
Type EMERG Skip Track if Override OFF
Output DELAY Coord+Preempt OFF
Lnk Aft Dwell OFF Volt Mon Flash OFF
Return Max/Min MAX
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 AdvTimes
AllRedB4Prmpt OFF EnterYelChg 25.5
ResetExtDwell OFF EnterRedClr 25.5
ReservicePreempt OFF TrackYelChg 25.5
EndDwell OFF TrackRedClr 25.5
DynExitThresh 0 1111111
DsbldDwellCalls OFF 12345678 90123456
+ ExitVehCall .....
  
```

PRESS "ESC"

```

# 4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell
  
```

```

# 4 -- Initial Dwell --
Phases 0 0 0 0
Peds 0 0 0 0
Overlaps 0 0 0 0 0 0 0 0
(more) 0 0 0 0 0 0 0 0
  
```

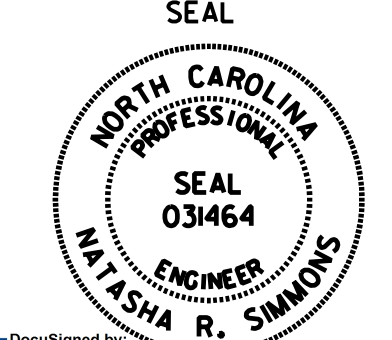
PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0579
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Signal Upgrade - Final Design
Electrical Detail - Sheet 3 of 4

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	US 70-220 (E. Wendover Avenue) at Lindsay Street	
	Division 7 Guilford County Greensboro	PLAN DATE: October 2023 PREPARED BY: E.E. Tiller
REVIEWED BY: N.K. Vianich REVIEWED BY: N.R. Simmons	REVISIONS INIT. DATE	DOCUMENT SIGNED BY: <i>Natasha R. Simmons</i> DATE: 6/21/2024 SIGNATURE DATE SIG. INVENTORY NO. 07-0579

EMERGENCY VEHICLE PROGRAMMING DETAIL FOR "PRE 5"
(program controller as shown below)

FROM MAIN MENU PRESS "3" PREEMPTS

Preemption Menu
1.HiPriority 4.LowPriority
2.Events
3.Sequences

ENTER PREEMPT #5

5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell

5 Times : Begin : Other
Delay 0 MinGrn 5 Track Grn 0
MinDura 16 MinWlk 1 Min Dwell 5
MaxPres 0 PedClr 255

PRESS "ESC"

5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell

5 Preempt Times+ --- Exit --
PedClr 0
Extend Dwell 0 Yel 0.0
Return Max 0 Red 0.0

PRESS "ESC"

5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell

5 AdvTimes
AllRedB4Prmpt ON EnterYelChg 25.5
ResetExtDwell OFF EnterRedClr 25.5
ReservicePreempt OFF TrackYelChg 25.5
EndDwell OFF TrackRedClr 25.5
DynExitThresh 0 1111111
DsbldDwellCalls OFF 12345678 90123456
+ ExitVehCall

PRESS "ESC"

CONTROLLER FLASH PROGRAMMING
(program controller as shown below)

FROM MAIN MENU PRESS '1' (CONTROLLER)
THEN '4' (FLASH)
THEN '1' (PARAMETERS)

Auto Flash Parameters
Flash Mode :CHANNEL
Input Source (Type 2):D-CONN

FROM MAIN MENU PRESS '1' (CONTROLLER)
THEN '8' (CHANNEL I/O)
THEN '1' (CHANNEL I-16)

Table with columns: Chan, P/Olp#, Type, Flash, Alt Hz, Dim Grn, Dim Yel, Dim Red+ and rows for channels 1-8.

FROM MAIN MENU PRESS '1' (CONTROLLER)
THEN '2' (UNIT, RING)
THEN '1' (PARAMETERS)

Unit Parameters
Screen Size 8 Metric OFF
Startup Flash(s) 8 Red Revert 3.0
MCE Timeout 8 Auto PEd Clr OFF
Local Flash Start RSt Display Time 10
Allow *3 sec Yel OFF Tone Disable OFF
Allow Skip Yel OFF AudioPedTime 0
Start Red Time 6.0 Phase Mode STD8

FROM MAIN MENU PRESS '1' (CONTROLLER)
THEN '1' (PHASES)
THEN '4' (RING, START, CONCUR)

Table with columns: P Ring, Startup, Concurrent Ps and rows for phases 1-7.

5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell

5 ---- Preempt Phases ----
Track Veh 0 0 0 0
DwellCyc Veh 8 0 0 0 0 0 0
DwellCyc(more) 0 0 0 0
DwellCyc (Ped) 0 0 0 0 0 0 0
Exit 4 8 0 0

PRESS "ESC"

5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell

5 -- Preempt Overlaps+ --
Track 0 0 0 0 0 0 0
(more) 0 0 0 0
DwellCyc 0 0 0 0 0 0 0
(more) 0 0 0 0

PRESS "ESC"

4 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell

5 -- Initial Dwell --
Phases 0 0 0 0
Peds 0 0 0 0
Overlaps 0 0 0 0 0 0 0
(more) 0 0 0 0 0 0 0

PROGRAMMING COMPLETE

5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell

5 Preempt Options
Lock input ON
Override Auto Flash OFF
Override higher # preempt OFF
Flash in dwell OFF
Link to preempt # 0

PRESS "ESC"

5 Preemption
1.Times 4.Times+
2.Phases 5.Overlaps+ 8.AdvTimes
3.Options 6.Options+ 9.Init'Dwell

5 Preempt Options +
Enable ON Pattern 0
Type EMERG Skip Track if Override OFF
Output DELAY Coord+Preempt OFF
Lnk Aft Dwell OFF Volt Mon Flash OFF
Return Max/Min MAX

PRESS "ESC"

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Professional Engineer Seal for N. K. Vianich, State of North Carolina, License No. 031464. Includes project details for US 70-220 and signature of N. R. Simmons.

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