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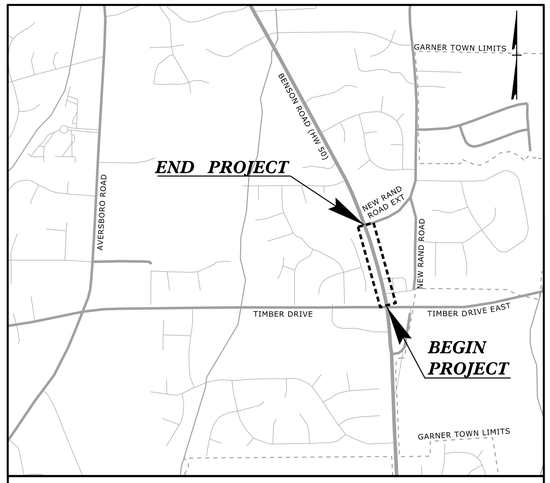
This file or an individual page shall not be considered a certified document.

09/08/99

TIP PROJECT: HL–0008C

CONTRACT: DE00353

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP NTS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL–0008C	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
49367.1.2	N/A	PE
49367.2.2	N/A	R/W & UTIL.
49367.3.16	N/A	CONST.

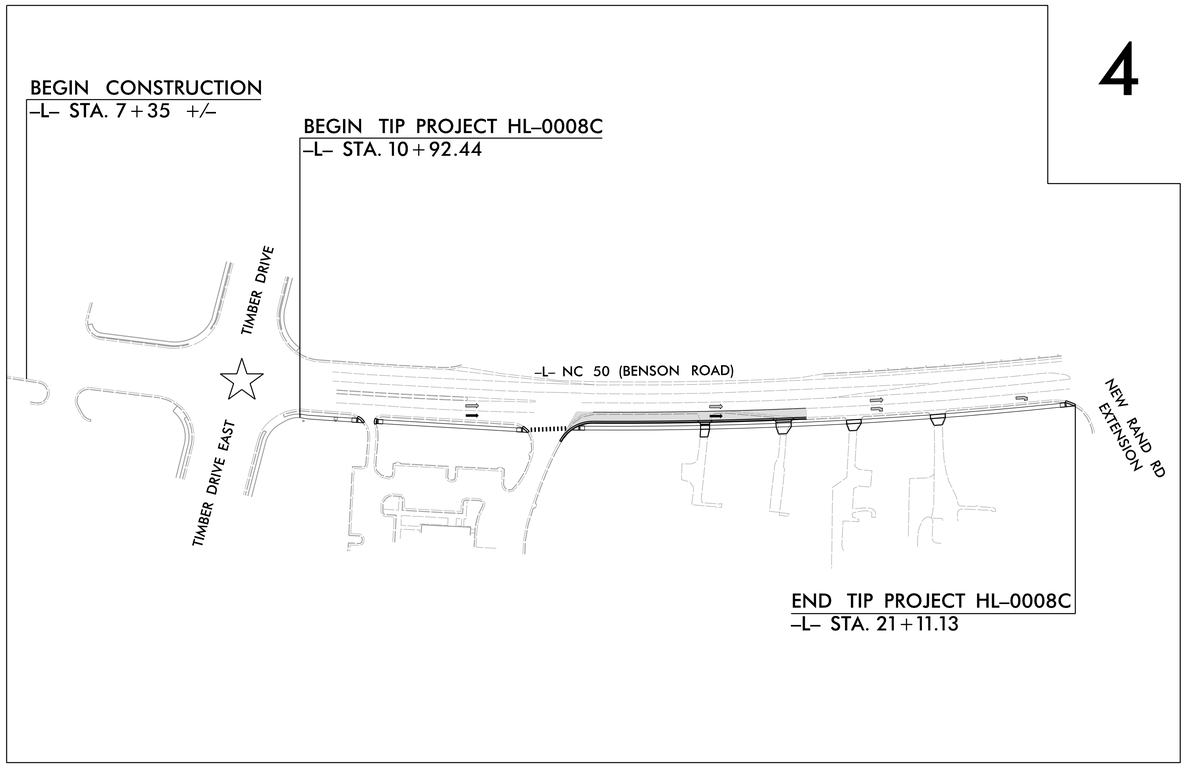
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: NC 50 (BENSON ROAD) FROM STATE EMPLOYEES' CREDIT UNION DRIVEWAY TO NEW RAND ROAD EXTENSION GARNER, NORTH CAROLINA

TYPE OF WORK: GRADING, PAVING, & DRAINAGE

NAD 83/NA 2011

4



☆ MODIFY EXISTING SIGNAL

GRAPHIC SCALES

40 20 0 40 80
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2019 = 15,000
V = 50 MPH
FUNC CLASS = MINOR ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY PROJECT HL–0008C = 0.193 MILES

NCDOT CONTACT: JOHN W. BRAXTON
SENIOR PROJECT ENGINEER
PH: 919–707–6219

Prepared In the Office of:

DRMP
ENGINEERS • SURVEYORS • PLANNERS • SCIENTISTS

DRMP, INC.
5808 FARINGDON PLACE
RALEIGH, NC 27609
PHONE: 919-872-5115
www.drmp.com | NC License No. F-1524

2024 STANDARD SPECIFICATIONS

APRIL 18, 2022
RIGHT OF WAY DATE:
APRIL 23, 2025
LETTING DATE:

KAYLA M. POULOS, PE
PROJECT ENGINEER

MIKAYLA M. LINDSEY, EI
PROJECT DESIGNER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 55416 ENGINEER FORREST N. BROOKS

DocuSigned by: Forrest Brooks 3/11/2025
SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M. POULOS

Signed by: Kayla M. Poulos 3/11/2025
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

3/11/2025
...\Proj\HL0008C_Rdy_tsh.dgn
User: mlindsey

INDEX OF SHEETS, GENERAL NOTES AND 2024 ROADWAY ENGLISH STANDARD DRAWINGS

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER TANYA M. POULOS
2/7/2025

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 55416 ENGINEER FORREST N. BROOKS
2/7/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:

DRMP
DRMP, INC.
5808 FARRINGDON PLACE
RALEIGH, NC 27609
NC LICENSE NO. F-1524 (919) 872-5115

INDEX OF SHEETS

GENERAL NOTES 2024 SPECIFICATIONS EFF. 01–16–2024

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELELVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE–IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES

UTILITY OWNERS ON THIS PROJECT ARE AT&T, CHARTER, DUKE ENERGY, CITY OF RALEIGH, AND NCDOT.
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

CURB RAMPS:

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS IN ACCORDANCE WITH STD. 848.06.

2024 ROADWAY ENGLISH STANDARD DRAWINGS EFF. 01–16–2024

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" CONTRACTS STANDARDS AND DEVELOPEMENT UNIT – N.C. DEPARTMENT OF TRANSPORTATION – RALEIGH, N.C., DATED JANUARY 16, 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
DIVISION 2 – EARTHWORK	
200.03	METHOD OF CLEARING – METHOD III
225.02	GUIDE FOR GRADING SUBGRADE – SECONDARY AND LOCAL
225.04	METHOD OF OBTAINING SUPERELEVATION – TWO LANE PAVEMENT
DIVISION 3 – PIPE CULVERTS	
300.01	METHOD OF PIPE INSTALLATION
310.10	DRIVEWAY PIPE CONSTRUCTION
DIVISION 6 – ASPHALT BASES AND PAVEMENTS	
654.01	PAVEMENT REPAIRS

STD. NO.	TITLE
DIVISION 8 – INCIDENTALS	
840.01	BRICK CATCH BASIN – 12" THRU 54" PIPE
840.02	CONCRETE CATCH BASIN – 12" THRU 54" PIPE
840.03	FRAME, GRATES AND HOOD – FOR USE ON STANDARD CATCH BASIN
840.14	CONCRETE DROP INLET – 12" THRU 30" PIPE
840.15	BRICK DROP INLET – 12" THRU 30" PIPE
840.16	DROP INLET FRAME AND GRATES – FOR USE WITH STD. DWG 840.14 AND 840.15
840.54	MANHOLE FRAME AND COVER
846.01	CONCRETE CURB, GUTTER, AND CURB & GUTTER
848.02	DRIVEWAY TURNOUT – RADIUS TYPE
848.04	STREET TURNOUT
848.06	CURB RAMP

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP)
- Computed Property Corner
- Property Monument (ECM)
- Parcel/Sequence Number (123)
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary (WLB)
- Proposed Wetland Boundary (WLB)
- Existing Endangered Animal Boundary (EAB)
- Existing Endangered Plant Boundary (EPB)
- Existing Historic Property Boundary (HPB)
- Known Contamination Area: Soil (S)
- Potential Contamination Area: Soil (S)
- Known Contamination Area: Water (W)
- Potential Contamination Area: Water (W)
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign (S)
- Well (W)
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream (JS)
- Buffer Zone 1 (BZ 1)
- Buffer Zone 2 (BZ 2)
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch (FLOW)
- False Sump

RAILROADS:

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line (RW)
- New Right of Way Line with Pin and Cap (RW)
- New Right of Way Line with Concrete or Granite R/W Marker (RW)
- New Control of Access Line with Concrete C/A Marker (C/A)
- Existing Control of Access (C/A)
- New Control of Access (C/A)
- Existing Easement Line (E)
- New Temporary Construction Easement (E)
- New Temporary Drainage Easement (TDE)
- New Permanent Drainage Easement (PDE)
- New Permanent Drainage / Utility Easement (DUE)
- New Permanent Utility Easement (PUE)
- New Temporary Utility Easement (TUE)
- New Aerial Utility Easement (AUE)

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut (C)
- Proposed Slope Stakes Fill (F)
- Proposed Curb Ramp (CR)
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert (CONC)
- Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole (S)
- Storm Sewer (S)

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole (P)
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) (P)
- U/G Power Line LOS C (S.U.E.*) (P)
- U/G Power Line LOS D (S.U.E.*) (P)

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole (T)
- Telephone Pedestal (T)
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole (HH)
- U/G Telephone Cable LOS B (S.U.E.*) (T)
- U/G Telephone Cable LOS C (S.U.E.*) (T)
- U/G Telephone Cable LOS D (S.U.E.*) (T)
- U/G Telephone Conduit LOS B (S.U.E.*) (TC)
- U/G Telephone Conduit LOS C (S.U.E.*) (TC)
- U/G Telephone Conduit LOS D (S.U.E.*) (TC)
- U/G Fiber Optics Cable LOS B (S.U.E.*) (T FO)
- U/G Fiber Optics Cable LOS C (S.U.E.*) (T FO)
- U/G Fiber Optics Cable LOS D (S.U.E.*) (T FO)

WATER:

- Water Manhole (W)
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) (W)
- U/G Water Line LOS C (S.U.E*) (W)
- U/G Water Line LOS D (S.U.E*) (W)
- Above Ground Water Line (A/G Water)

TV:

- TV Pedestal (C)
- TV Tower
- U/G TV Cable Hand Hole (HH)
- U/G TV Cable LOS B (S.U.E.*) (TV)
- U/G TV Cable LOS C (S.U.E.*) (TV)
- U/G TV Cable LOS D (S.U.E.*) (TV)
- U/G Fiber Optic Cable LOS B (S.U.E.*) (TV FO)
- U/G Fiber Optic Cable LOS C (S.U.E.*) (TV FO)
- U/G Fiber Optic Cable LOS D (S.U.E.*) (TV FO)

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) (G)
- U/G Gas Line LOS C (S.U.E.*) (G)
- U/G Gas Line LOS D (S.U.E.*) (G)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line (SS)
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- SS Forced Main Line LOS B (S.U.E.*) (FSS)
- SS Forced Main Line LOS C (S.U.E.*) (FSS)
- SS Forced Main Line LOS D (S.U.E.*) (FSS)

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (?UTL)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. (UST)
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records (AATUR)
- End of Information (E.O.I.)

DRMP
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RALEIGH, NC 27609
(919) 872-5115
NC LICENSE NO. F-1524
www.drmp.com

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	2A-1

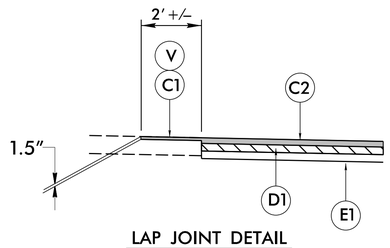
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER FAITH M. POULOS
1/8/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

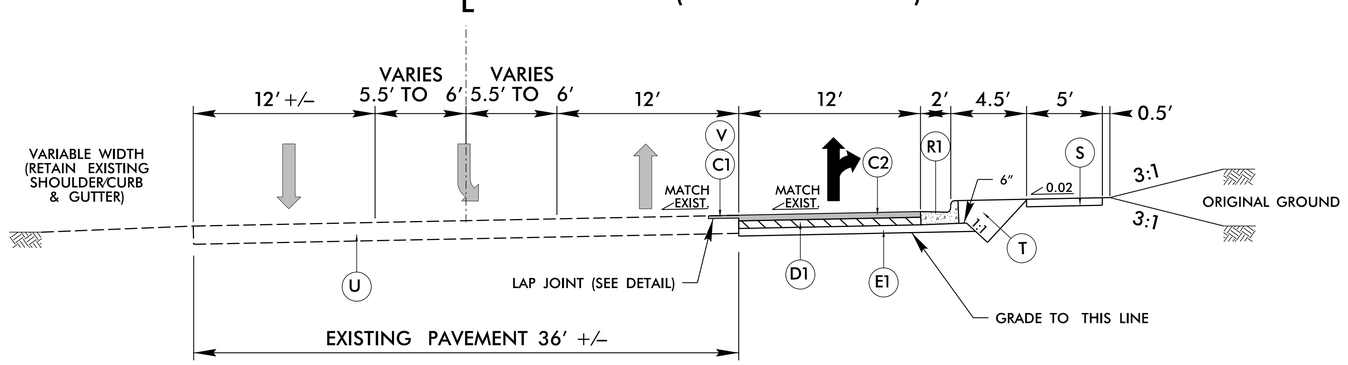
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 4.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R1	2'-6" CURB AND GUTTER
S	4" CONCRETE SIDEWALK
T	COMPACTED EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" DEPTH MILLING

NOTES: 1. ALL PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE SPECIFIED.
2. SEE ROADWAY PLANS FOR LOCATION OF TURN LANES.



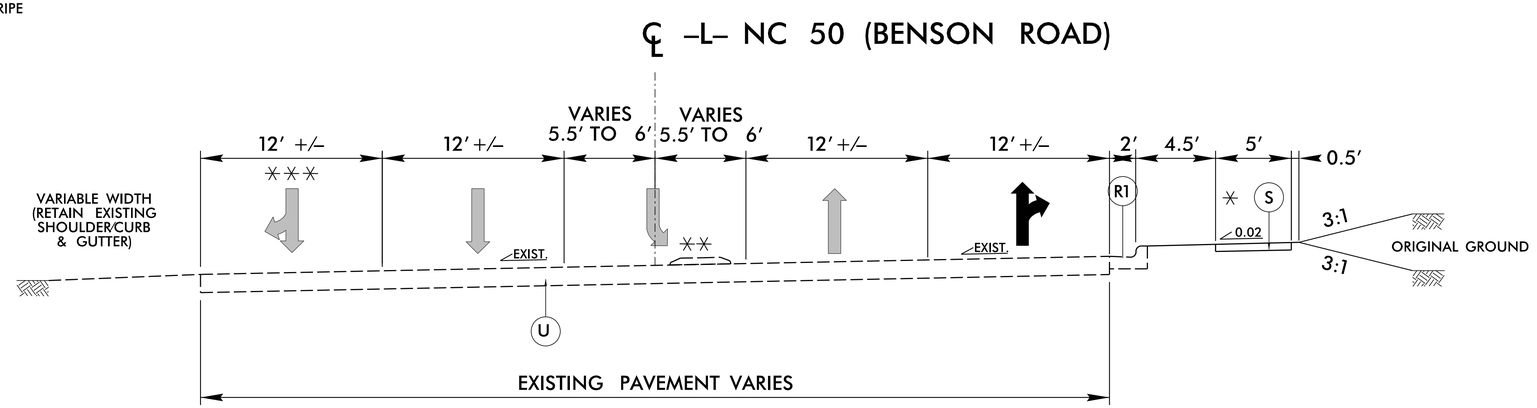
LAP JOINT DETAIL

LAP JOINT SHOULD REMOVE ANY EXISTING EDGE STRIPE



TYPICAL SECTION NO. 1

-L- STA. 14+33.95 TO -L- STA. 17+57.82



TYPICAL SECTION NO. 2

-L- STA. 10+92.44 TO -L- STA. 13+93.75

-L- STA. 17+57.82 TO -L- STA. 21+11.13

⚹ CONSTRUCT NEW SIDEWALK -L- STA. 10+92.44 TO -L- STA. 21+11.13

⚹⚹ EXISTING MONO. CONC. ISLAND FROM -L- STA. 10+72 +/- TO -L- STA. 13+11 +/-

⚹⚹⚹ EXISTING TURN & THRU LANE FROM -L- STA. 10+75 +/- TO -L- STA. 14+83 +/-

1/8/2025
...\Proj\HL_0008C_Rdy_typ.dgn
User: mlindsey

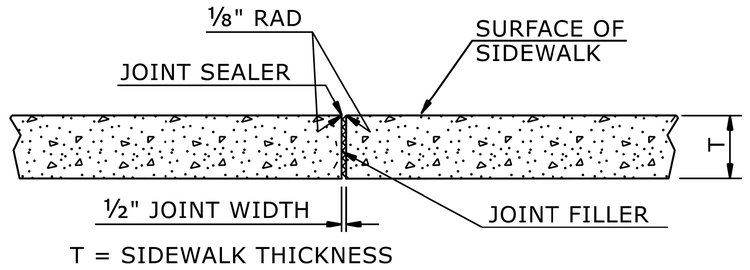
PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	2C-1

NOTES:

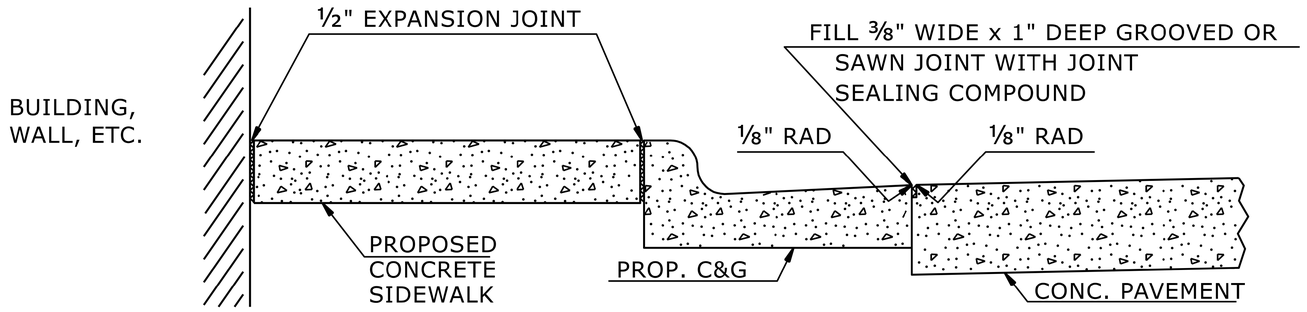
CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

PLACE A GROOVE JOINT 1" DEEP WITH ⅛" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE ½" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A ½" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.06 FOR CURB RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.



TRANSVERSE EXPANSION JOINT IN SIDEWALK



DETAILS SHOWING JOINTS IN CONCRETE SIDEWALK

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

CONCRETE SIDEWALK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER
1/8/2025

SHEET 1 OF 1

848D01

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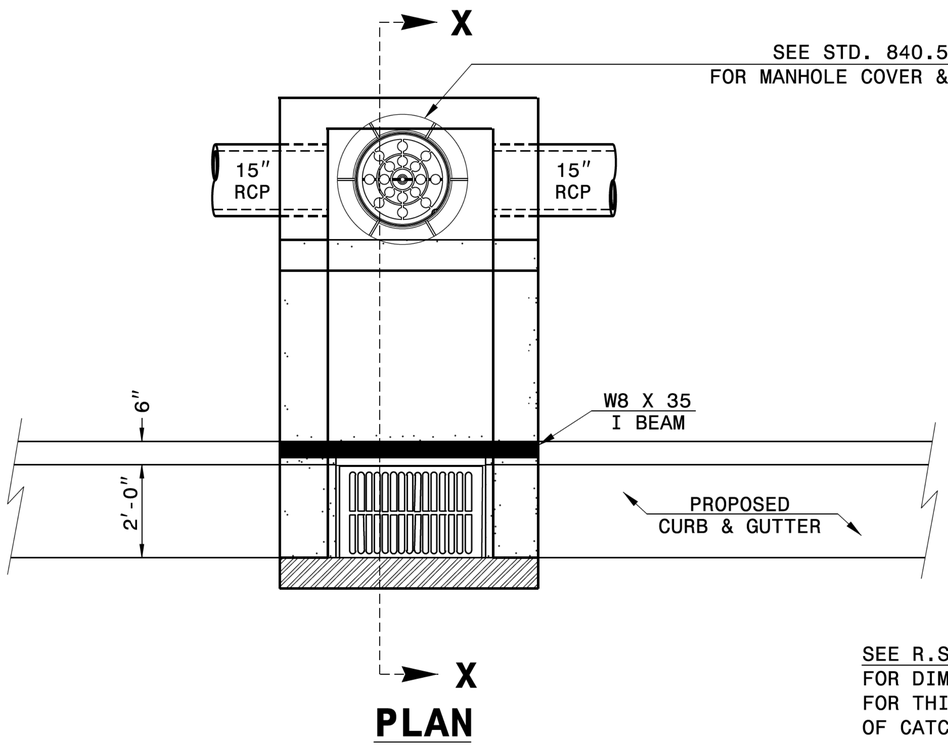
CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

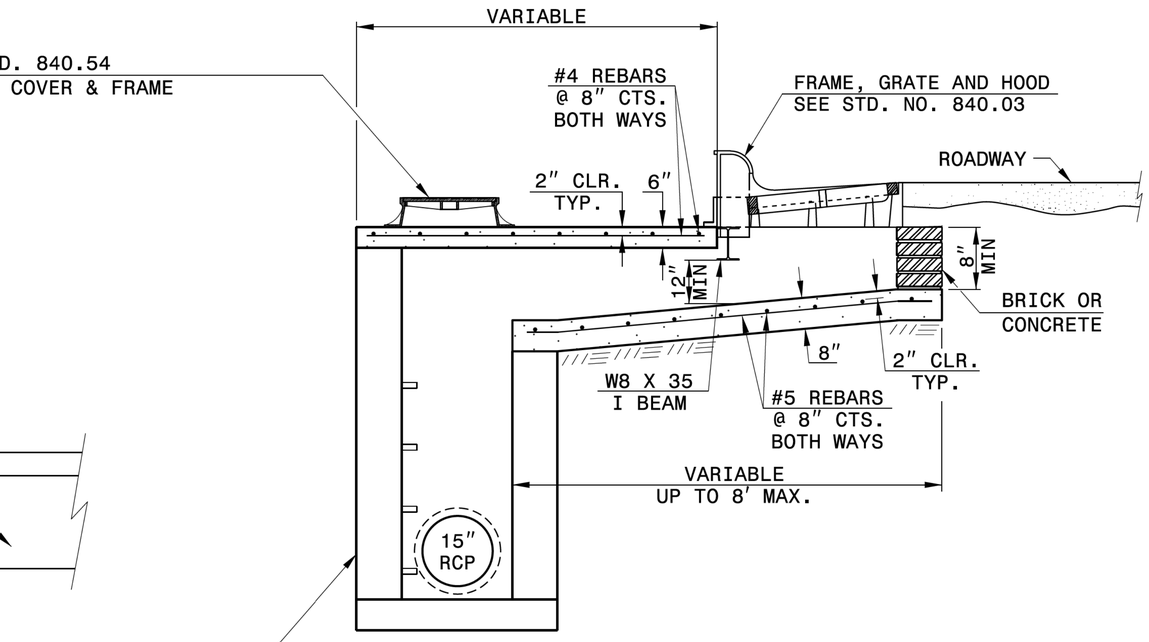
SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	2D-1



PLAN



SECTION X-X

NOTES:

MORTAR JOINTS ½″ TO ¼″ THICK.

USE CLASS "B" CONCRETE THROUGHOUT.

USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

USE BRICK OR CONCRETE BLOCK WHICH COMPLIES WITH THE REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.

CHAMFER ALL EXPOSED CORNERS 1″.

DRAWING NOT TO SCALE.

PROVIDE ALL CATCH BASINS OVER 3′-6″ IN DEPTH WITH STEPS 12″ ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

PROPOSED OFFSET CATCH BASIN

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: K. KEMPF DATE: 11/13/15
CHECKED BY: _____ DATE: _____
FILE SPEC.: nbritt/english/hydro/840d06 offset boxes.dgn

$$$$SYSTIME$$$$
$$$$SNAME$$$$
$$$$USERNAME$$$$

COMPUTED BY:	MML	DATE:	3/24/2022
CHECKED BY:	KMP	DATE:	3/24/2022

PROJECT NO.	SHEET NO.
HL-0008C	3B-1

DRMP

DRMP, INC.
5808 FAIRINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115

NC LICENSE NO. F-1524
www.drmp.com

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

LINE	Station	Station	Uncl. Excav.	Embank.	Borrow	Waste
-L-	10+92.73	21+18.08	357	24	0	333
TOTAL			**357**	**24**	**0**	**333**
ADJUSTMENTS DUE TO						
Est. Loss Due To Clearing And Grubbing			0			0
Rock Waste To Replace Borrow						
Adjust For Rock Swell That Replaces Borrow						
Eliminate Shrinkage For Matl That Is Now Rock						
Earth Waste to Replace Borrow					-45	-45
PROJECT TOTAL			**357**	**69**	**0**	**288**
Est. 5% to Replace Topsoil in Borrow Pits					0	
GRAND TOTAL			**357**		**0**	
SAY			**400**		**0**	

Approximate quantities only. Unclassified excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement, and removal of existing pavement will be paid for at the lump sum price for "Grading".

Approximate quantities only. Unclassified excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement, and removal of existing pavement will be paid for at the lump sum price for "Grading".

CHA-MLINDSEY

COMPUTED BY:	Forrest Brooks	**DATE:**	11/15/2021
CHECKED BY:	Michael Bywaletz	**DATE:**	11/15/2021

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
HL-0008C	3D-1

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".**

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

LINE & STATION SIZE THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48	54	60	66	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY
L 12+02	47	RT	0401	0402		336.6	335.6	0.5			22											
L 11+80	44	RT	0402		338.2																	
L 11+80	44	RT	0402	Out		335.5	335.3	0.5														
L 13+70	35	RT	0403		334.0																	
L 13+70	35	RT	0403	0404		330.4	329.4	0.5			22											
L 13+85	54	RT	0404		332.7																	
L 13+85	54	RT	0404	0405		329.4	328.5	0.5			56											
L 14+44	46	RT	0405		333.7																	
L 14+44	46	RT	0405	0406		328.3	327.8	0.5			38											
L 14+84	46	RT	0406		331.7																	
L 14+84	46	RT	0406	0407		327.6	325.8	0.5			124											
L 16+11	47	RT	0407		329.1																	
L 16+11	47	RT	0407	0408		325.6	324.0	0.5			99											
L 17+12	49	RT	0408		327.0																	
L 17+12	49	RT	0408	EX405		323.8	322.5	0.5			92											
L 13+91	46	RT																				
L 14+78	30	RT																				
SHEET TOTALS											453											
PROJECT TOTALS											453											

LINE & STATION	FROM	TO	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29
L 12+02	0401	0402																									
L 11+80	0402					1		1																			
L 11+80	0402	Out																									
L 13+70	0403		1			1		1																			
L 13+70	0403	0404																									
L 13+85	0404		1												1	1											
L 13+85	0404	0405																									
L 14+44	0405		1	0.2		1			1																		
L 14+44	0405	0406																									
L 14+84	0406		1												1	1											
L 14+84	0406	0407																									
L 16+11	0407		1												1	1											
L 16+11	0407	0408																									
L 17+12	0408		1												1	1											
L 17+12	0408	EX405																									
L 13+91																											
L 14+78																											
SHEET TOTALS			6	0.2		3		2	1						4	4											
PROJECT TOTALS			6	0.2		3		2	1						4	4											

LINE & STATION	FROM	TO	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	##" SPRING BOX PIPE	SPRING BOX STD. 840.41		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54		##" x ##" x ##" PERF. C.S.P. TEE RISER ##" THICK	##" x ##" x ##" PERF. C.S.P. TEE RISER ##" THICK		##" PIPE END SECTION	##" PIPE END SECTION	##" PIPE END SECTION	##" PIPE END SECTION		CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.			FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 12+02	0401	0402																																				
L 11+80	0402																													1								CB STD 840.01 IS A CONTINGENCY ITEM. SEE PLANS.
L 11+80	0402	Out																																				
L 13+70	0403															1																						OFFSET CATCH BASIN; SEE DETAIL ON SHEET 2D-1
L 13+70	0403	0404																																				
L 13+85	0404																																					
L 13+85	0404	0405																																				
L 14+44	0405																																					
L 14+44	0405	0406																																				
L 14+84	0406																																					
L 14+84	0406	0407																																				
L 16+11	0407																																					
L 16+11	0407	0408																																				
L 17+12	0408																																					
L 17+12	0408	EX405																																				
L 13+91																																		4				15" RCP 93LF Flowable Fill
L 14+78																																		22				18" RCP 338 LF Flowable Fill
SHEET TOTALS																1														1				26				
PROJECT TOTALS																1														1				26				

PROJECT NO.	SHEET NO.
HL-0008C	3P-1

DRMP
DRMP, INC.
5808 FARRINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115
NC LICENSE NO. F-1524
www.drmp.com

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX

NOTE: ALL AREAS ARE IN SF

PARCEL NO.	PLAN SHEET NO.	PROPERTY OWNER NAME	R/W AREA TAKEN	TEMP CONST ESMT	PERM DRAIN ESMT
1	4	STATE EMPLOYEES' CREDIT UNION	-	5059	967
2	4	KYLE WHITE ENTERPRISES, LLC	-	1600	471
3	4	PHILIP L. KING AND WIFE, SUE LYNN B. KING	-	1280	383
4	4	RONALD L. THOMPSON AND WIFE, FLORIANNA J. THOMPSON	-	1140	407
5	4	GLENN C. BAREFOOT AND WIFE, SAVON M. BAREFOOT	-	1543	112
6	4	WILLIAM C. MCLAMB AND WIFE, DORIS JEAN ADAMS MCLAMB	-	2703	-

8/17/99

REVISIONS

NOTE:
1. MODIFY EXISTING SIGNAL AT INTERSECTION OF TIMBER DR. EAST AND NC 50. SEE SIGNAL PLANS.

DRMP
DRMP, INC.
5808 FARRINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115
NC LICENSE NO. F-1524
www.drmp.com

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAILA M POLITO
2/7/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 55416 ENGINEER FOREST N BROOKS
2/7/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

BEGIN TIP PROJECT HL-0008C
-L- STA. 10+92.44

10+00 15+00 20+00

TIMBER DRIVE

-L- PC Sta. 11+32.81

N 10° 43' 27.5" W

-L- PT Sta. 21+07.97

N 20° 36' 47.5" W

-L- POT Sta. 21+52.64

-L- NC 50 (BENSON) RD

TIMBER DRIVE EAST

NEW RAND ROAD EXTENSION

BARBARA S. SCHOR DB 9447 PG 533 BM 1986 PG 1999

STEVEN D. TANNER DB 15594 PG 311 BM 1986 PG 1999

ANTHONY M. REYNOLDS ET ALS DB 11473 PG 310 BM 1986 PG 1999

MICHAEL M. BRUMSEY DB 5446 PG 760 BM 1986 PG 1999

SAMUEL HINES DB 11792 PG 1621 BM 1986 PG 1999

RALPH W. LOTT AND WIFE LOTT DIANA M. DB 11796 PG 1772 BM 1986 PG 1999

MARK HORNEY DB 14653 PG 1139 BM 1986 PG 1999

TAMMY L. KINCY DB 11322 PG 701 BM 1986 PG 1999

DAVID H. DIETZ DB 17905 PG 46 BM 1986 PG 1999

JESSE C. PITTARD AND WIFE, CYNTHIA M. PITTARD DB 15605 PG 199 BM 1986 PG 1999

MELVETINE B. MATOKO AND SERGE MATOKO DB 10801 PG 1545 BM 1986 PG 1999

JOSEPH A. LOVEJOY AND PATRICIA A. HENKE DB 18274 PG 1007 BM 1986 PG 1999

VIRGINIA H. DODSON REVOCABLE TRUST DB 14075 PG 1461 BM 1986 PG 1999

NATALIE L. HEATON DB 11475 PG 2457 BM 1986 PG 1999

20' DRAINAGE & UTILITY EASEMENT BM 1986 PG 1999

TIE TO EXIST. +92.44
REMOVE EXISTING 18" RCP
RETAIN 18" RCP
EXISTING 18" RCP
5' SIDEWALK
ADJUST WATER VALVES
RETAIN POLE
+96.22 66.37
+75.00 47.65 56.00
+83.50 63.50
+05.00 47.81 58.00
18" RCP-IV
RETAIN SIGN
RETAIN SECU SIGN
RETAIN HYDRANT
RETAIN
ADJUST WATER VALVE
RELOCATE HAND HOLE
RETAIN POLE
NCDOT TYPE 1 MODIFIED CURB RAMP (TYP.)
18" RCP-IV
FILL EXIST. 15" RCP WITH FLOWABLE FILL
REMOVE EXISTING DI
18" RCP-IV
18" RCP-IV
+75.00 48.31
+85.00 60.00
TIE TO EXISTING +33.95
+97.00 65.25
+45.00 52.50
GRADE TO DRAIN
FILL EXIST. 18" RCP WITH FLOWABLE FILL
REMOVE EXISTING MH
FILL EXIST. 18" RCP WITH FLOWABLE FILL
+85.00 63.00
DO NOT DISTURB UTILITY POLE
RELOCATE HAND HOLE
2'-6" C&G
5' SIDEWALK
SPECIAL CUT DITCH SEE DETAIL A
+26.00 65.00
18" RCP-IV
RELOCATE MAILBOX IN GRASS STRIP
REMOVE EXISTING DI
+50.00 52.50
SPECIAL CUT DITCH SEE DETAIL A
CONCRETE DRIVEWAY TIE IN
CONCRETE DRIVEWAY TIE IN
ADJUST WATER VALVE TO SIDEWALK
RETAIN HYDRANT
18" RCP-IV
FILL EXIST. 18" RCP WITH FLOWABLE FILL
TIE TO EXISTING CURB & GUTTER +57.82
+12.50 49.70 55.00
RETAIN MAILBOX
RETAIN PDE MAILBOX
+92.50 66.00
DO NOT DISTURB TREES
DO NOT DISTURB CONCRETE BENCH & STEPS
+22.00 65.50
CONCRETE DRIVEWAY TIE IN
TIE TO EXISTING DI
RETAIN EXISTING 18" RCP
CONCRETE DRIVEWAY TIE IN
RETAIN EXISTING 24" RCP
RETAIN MAILBOX
+10.00 70.00
RELOCATE HAND HOLES TO GRASS STRIP (TYP.)
DO NOT DISTURB BRICK WALL
+34.75 62.00
+38.00 79.00
DO NOT DISTURB TREES
RETAIN EXISTING 24" RCP
+38.00 63.00
RETAIN SIGNAL POLE
+71.41 82.28
5' SIDEWALK

END TIP PROJECT HL-0008C
-L- STA. 21+11.13

STATE EMPLOYEES' CREDIT UNION
DB 11015 PG 2790
BM 2005 PG 51
1

KYLE WHITE ENTERPRISES, LLC.
DB 18803 PG 2642
BM 1957 PG 85
2

PHILIP L. KING AND WIFE, SUE LYNN B. KING
DB 1569 PG 726
BM 1957 PG 85
3

RONALD L. THOMPSON AND WIFE, FLORIANNA J. THOMPSON
DB 7674 PG 106
BM 1957 PG 85
4

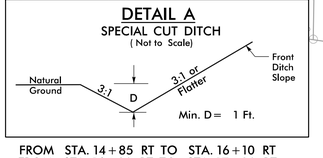
GLENN C. BAREFOOT AND WIFE, SAVON M. BAREFOOT
DB 1583 PG 476
BM 1957 PG 85
5

WILLIAM C. McLAMB AND WIFE, DORIS JEAN ADAMS McLAMB
DB 17152 PG 44
BM 1957 PG 85
6

-L-
PI Sta 16+21.60
△ = 9° 53' 20.0" (LT)
D = 1° 00' 50.7"
L = 975.15'
T = 488.79'
R = 5,650.00'
e = EXISTING
Runoff = EXISTING

BM1 ELEVATION = 345.58'
N 705413 E 2,117680
BL STATION 8+49
OFFSET 167' RIGHT
RRSPIKE IN 12" PINE

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 14+85 RT TO STA. 16+10 RT
FROM STA. 16+30 RT TO STA. 17+20 RT

MODIFY EXISTING SIGNAL

FOR -L- PROFILE, SEE SHEET NO. 5

2/7/2025
...\P_ro...\HL0008C_Rdy_psh04.dgn
User: mlindsey

5/14/99

DRMP
DRMP, INC.
5808 FARRINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115
NC LICENSE NO. F-1524
www.drmp.com

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	5

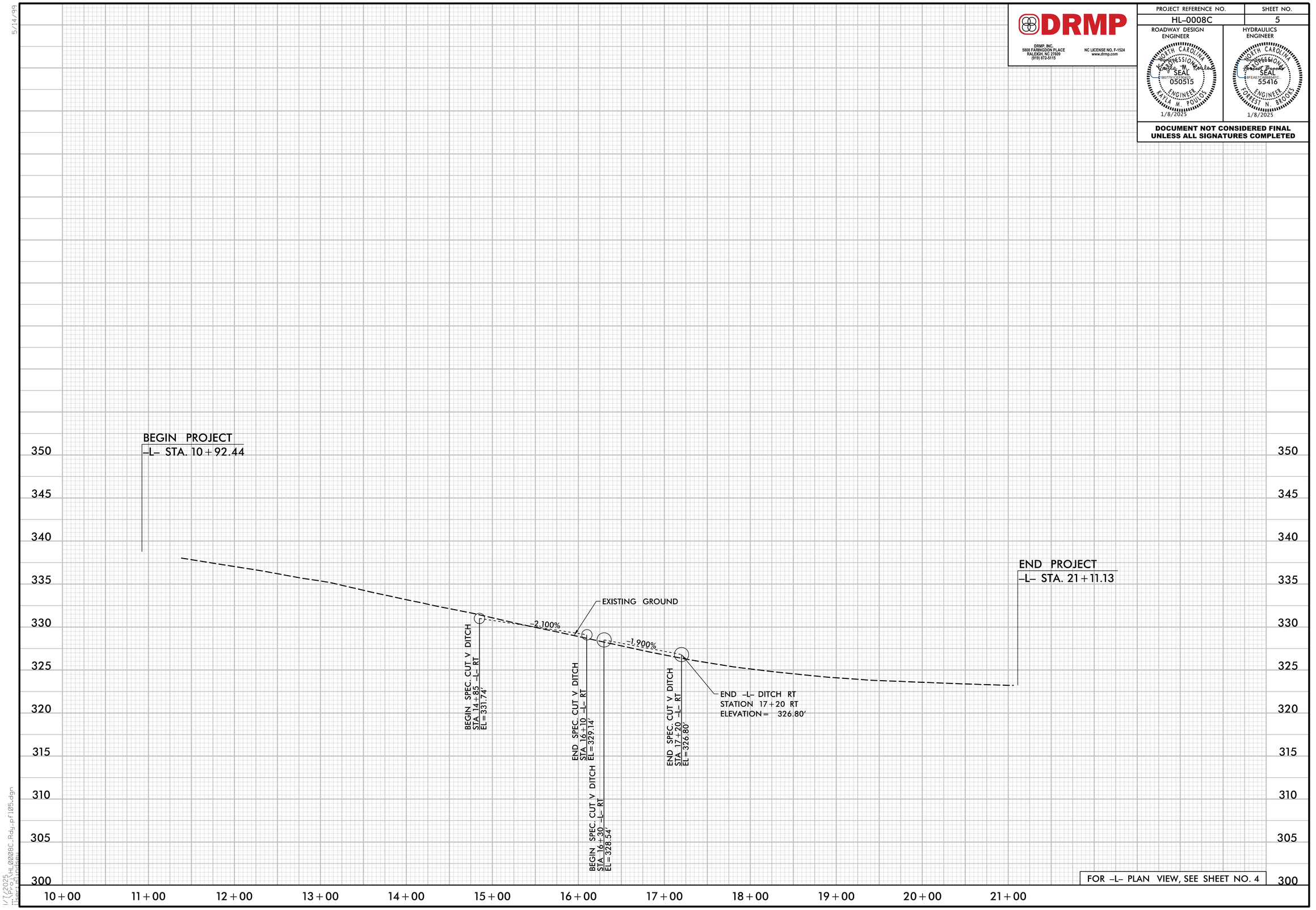
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 050515 ENGINEER KEVIN M. POULOS
1/8/2025

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 55416 ENGINEER FORREST N. BROOKS
1/8/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FOR -L- PLAN VIEW, SEE SHEET NO. 4

1/7/2025
\\Drmp\Projects\HL0008C_Rdy_pf105.dgn
User: mlinder

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
HL-0008-C	RW02C-1

Location and Surveys

NV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
P: 919.851.1912 www.NV5.com
NC License # F-1333
formerly CALYX Engineers & Consultants

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR C. ANDREW HEATH SEAL L-3281

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, C. Andrew Heath, Jr., PLS, certify that the GPS Project Control was provided by NCDOT and the following information was used to perform the survey:

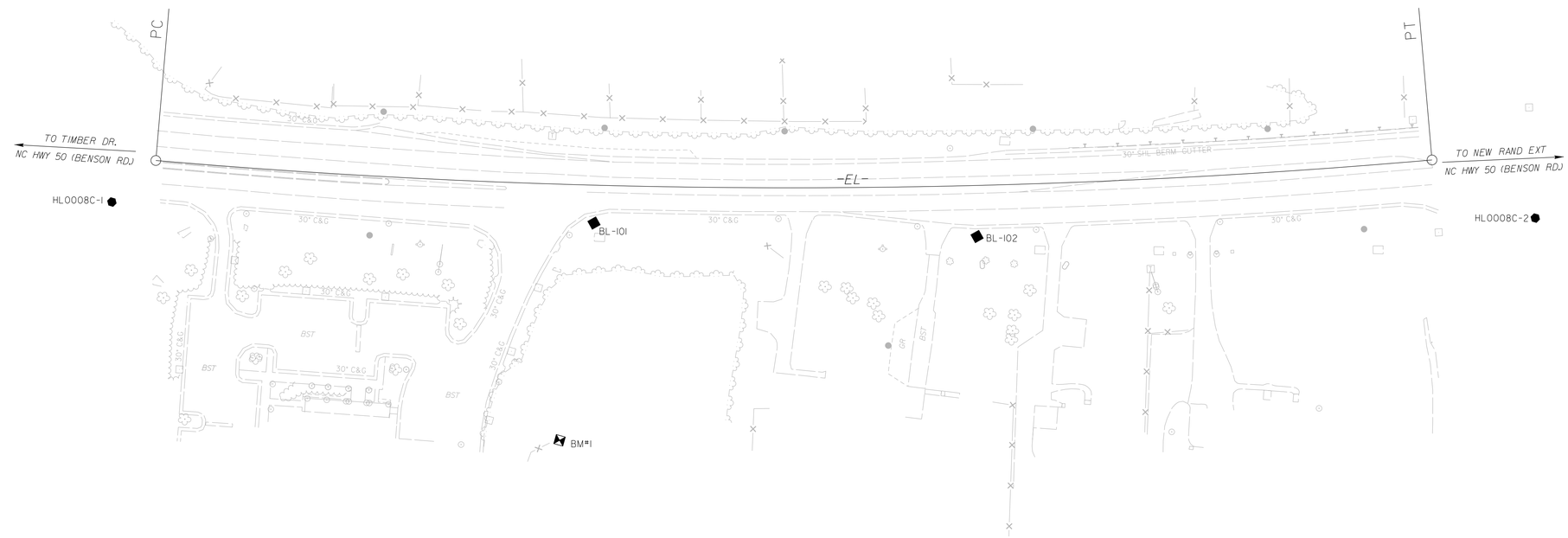
Class of survey: ***AA***
Type of GPS field procedure: RTN
Dates of survey: 2/17/2021
Datum/Epoch: NAD 1983 / NA 2011
Published/Fixed-control use: N/A
Localized around: HL-0008C AZ-1
Northing: 705,035.122
Easting: 2,117,597.336
Combined grid factor: 0.999890304
Geoid model: GEOID 12B
Units:US Survey Feet

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 2/16/2021 to 2/23/2021 , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 18th day of December, 2024.

DocuSigned by:
C. Andrew Heath Jr.
2CC016B39297477...
Professional Land Surveyor L-3281

NAD 83 NC GRID NA 2011



SEE SHEETS RW02C-2 THRU RW02C-3 FOR FURTHER ALIGNMENT DETAILS

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS 6/2/99

18-DEC-2024 14:31
C:\Projects\2021\713021-2021014.10\SUR\SUBMITTAL\Submittal 12-18-2024\hl0008c_ls_rw02c-1_210304.dgn
Andy.Heath AT NCCAR-HEATAII

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
HL-0008-C	RW02C-2

Location and Surveys

NV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
P: 919.851.1912 www.NV5.com
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NORTH CAROLINA PROFESSIONAL LAND SURVEYOR C. ANDREW HEATH SEAL L-3281

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Easting: 2,117,597.336
Combined grid factor: 0.999890304
Geoid model: GEOID 12B
Units:US Survey Feet

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This 18th day of December, 2024.

DocuSigned by:
C. Andrew Heath Jr.
2CC014B39297 47F...

Professional Land Surveyor L-3281

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	HL0008C - AZ1	705035.1220	2117597.3360	339.13
101	BL-101	705393.7480	2117513.5380	332.90
102	BL-102	705678.0330	2117444.6000	327.06
2	HL0008C - AZ2	706084.4830	2117316.1760	324.52

```
.........................................
BM1       ELEVATION = 345.58
N 705413      E 2117680
RRSPIKE IN 12" PINE
.........................................
```

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

18-DEC-2024 14:31
C:\Projects\2021\713021-20210414.10\SUR\SUBMITTAL\Submittal 12-18-2024\hl0008c_ls_rw02c-2_210304.dgn
Andy.Heath AT NCCAR-HEATA11

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
HL-0008-C	RW02C-3

Location and Surveys

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3300 REGENCY PARKWAY, SUITE 100
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NC License # F-1333
formerly CALYX Engineers & Consultants

NORTH CAROLINA PROFESSIONAL L.S. SEAL L-3281 ANDREW HEATH

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This 18th day of December, 2024.

DocuSigned by:
C. Andrew Heath Jr.
2CC014B3929747F...

Professional Land Surveyor L-3281

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R	EL
PC	705058.879	2117557.780								
CURVE			N 15°40'07.5" W	973.94	09°53'30.4"(LT)	01°00'51.8"	975.16	488.79	5648.36	
PT	705996.631	2117294.742								

NOTES:

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18-DEC-2024 11:31
C:\Projects\2021\713021-2021014.10\SUR\SUBMITTAL\Submittal 12-18-2024\hl0008c_ls_rw02c-3_210304.dgn
Andy.Heath AT NCCAR-HEATA11

09/08/99

TIP PROJECT: HL-0008C

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL-0008C	RW01	02

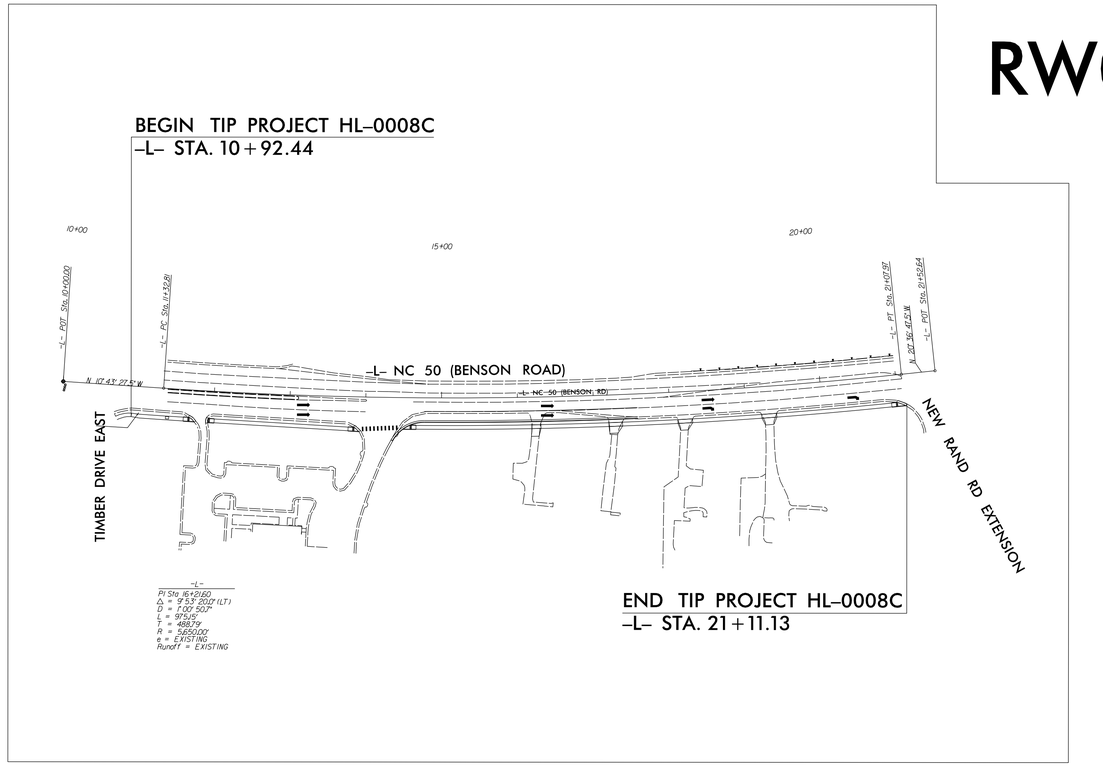
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

WAKE COUNTY

NAD 83/NA 2011

RW04



REVISIONS:
1/3/2025 – REVISED STANDARD SPECIFICATIONS DATE
1/3/2025 – REVISED LETTING DATE

GRAPHIC SCALE

40 20 0 40 80

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "HL-0008C AZ-1" WITH NAD 83/2011 STATE PLANE GRID COORDINATES OF NORTHING: 705,035.122(ft) EASTING: 2,117,597.336(ft) ELEVATION: 339.135(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999890304 (1/X=1.000109708) THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "HL-0008C AZ1" TO -L- STATION 10+00.00 IS S07-54'58.1" W 107.76(ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88-GEOID 12B

Prepared in the Office of:

NV5

NV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
P: 919.851.1912 www.NV5.com
NC License # F-1333
formerly CALYX Engineers & Consultants

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	*LETTING DATE:*
06/14/2022	*03/26/2025*

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3281 LAND SURVEYOR C. ANDREW HEATH, JR.

DocuSigned by: C. Andrew Heath Jr. 2CC014B3929747F... 1/13/2025

SIGNATURE: *Date:*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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Andy.Heath AT NCCAR-HEATAll

PROPOSED ALIGNMENT CONTROL SHEET

L

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	704928.386	2117582.495							
LINE			N 10°43'27.5" W	132.81					
PC	705058.879	2117557.780							
CURVE			N 15°40'07.5" W	973.94	09°53'20.0"(LT)	01°00'50.7"	975.15	488.79	5650.00
PT	705996.631	2117294.742							
LINE			N 20°36'47.5" W	44.68					
POT	706038.448	2117279.013							

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	RW02D-1

Location and Surveys

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PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3281 LAND SURVEYOR C. ANDREW HEATH, JR.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, C. Andrew Heath, Jr., PLS, certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

This 13 day of September, 2022.

DocuSigned by:
C. Andrew Heath Jr.
2CC014B3929747F...

Professional Land Surveyor L-3281

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS

6/2/99

13-SEP-2022 14:22
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andy.heath
AT NCCAR-CRANS10V

6/2/99

REVISIONS

RIGHT OF WAY CONTROL SHEET

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+75.00	56.25	705111.1796	2117604.9631
L	11+75.00	47.65	705109.5157	2117596.5226
L	12+04.99	47.81	705139.2029	2117590.7503
L	12+05.00	57.50	705141.1387	2117600.2491
L	13+75.00	48.31	705306.8140	2117554.6678
L	13+85.00	60.00	705319.3168	2117563.7342
L	14+45.00	52.50	705376.4565	2117542.2097
L	16+50.00	52.50	705576.3659	2117488.9073
L	18+12.50	49.70	705732.5298	2117438.8584
L	18+12.50	55.00	705734.1329	2117443.9069

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	RW02E

Location and Surveys

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PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3281 LAND SURVEYOR C. ANDREW HEATH, JR.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , C. Andrew Heath, Jr. , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 9/7/22 to 9/8/22, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 13th day of September, 2022.

Digitally signed by C. Andrew Heath Jr.
Date: 2022.09.13 09:57:37 -04'00'

Professional Land Surveyor L-3281

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED _____ TO _____ .

13-SEP-2022 14:57
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andy.heath
AT NCCAR-CRANS10V

6/2/99

REVISIONS

NAD 83 NC GRID 2011

I , C. Andrew Heath, Jr. , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on September 8th, 2022, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This Document was originally signed and sealed on September 13th, 2022 and Revised as shown below on January 22nd, 2025.

DocuSigned by:
C. Andrew Heath Jr.
2CC01483929742F...
Professional Land Surveyor L-3281

Revisions:
Revised PDE at -L- Sta. 11+75.00 - 56.00' RT
Revised PDE at -L- Sta. 12+05.00 - 58.00' RT

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	RW04

Location and Surveys

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PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3281 LAND SURVEYOR C. ANDREW HEATH, JR.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BEGIN TIP PROJECT HL-0008C
-L- STA. 10+92.44

10+00 15+00 20+00

-L- POT Sta. 10+00.00

-L- PC Sta. 11+38.52

-L- PT Sta. 21+07.97

-L- POT Sta. 21+52.64

N 10° 43' 27.5" W

N 20° 36' 47.5" W

S 00°53'59" E 94.63'

-L- NC 50 (BENSON RD)

NC 50 BENSON RD - 36' BST

TO TIMBER DR

TO NEW RAND EXT

EXISTING R/W

BARBARA S. SCHOR
DB 9441 PG 533
BM 1986 PG 1999

STEVEN D. TANNER
DB 15894 PG 311
BM 1986 PG 1999

ANTHONY M. REYNOLDS ETALS
DB 17473 PG 310
BM 1986 PG 1999

MICHAEL M. BRUMSEY
DB 5416 PG 760
BM 1986 PG 1999

SAMUEL HINES
DB 17192 PG 1621
BM 1986 PG 1999

RALPH W. LOTT AND WIFE, DIANA M. LOTT
DB 11796 PG 1772
BM 1986 PG 1999

MARK HORNEY
DB 14653 PG 1139
BM 1986 PG 1999

TAMMY L. KINCY
DB 11322 PG 701
BM 1986 PG 1999

DAVID H. DIETZ
DB 7905 PG 46
BM 1986 PG 1999

JESSE C. PITTARD AND WIFE, CYNTHIA M. PITTARD
DB 15605 PG 199
BM 1986 PG 1999

MELVETINE B. MATOKO AND SERGE MATOKO
DB 10808 PG 546
BM 1986 PG 1999

JOSEPH A. LOVEJOY AND PATRICIA A. HENKE
DB 18274 PG 1007
BM 1986 PG 1999

VIRGINIA H. DODSON REVOCABLE TRUST
DB 14075 PG 1461
BM 1986 PG 1999

NATALIE L. HEATON
DB 11475 PG 1557
BM 1986 PG 1999

20' DRAINAGE & UTILITY EASEMENT BM 1986 PG 1999

1/2 OF 10' UTILITY EASEMENT BM 2005 PG 51

STATE EMPLOYEES' CREDIT UNION
DB 11015 PG 2790
BM 2005 PG 51

BOBBY C. RAYNOR
DB 17236 PG 475
BM 1957 PG 85

KYLE WHITE ENTERPRISES, LLC
DB 18803 PG 2642
BM 2022 PG 1256

PHILIP L. KING AND WIFE, SUE LYNN B. KING
DB 1569 PG 726
BM 1957 PG 85

RONALD L. THOMPSON AND WIFE, FLORIANNA J. THOMPSON
DB 7674 PG 106
BM 1957 PG 85

GLENN C. BAREFOOT AND WIFE, SAVON M. BAREFOOT
DB 1583 PG 476
BM 1957 PG 85

WILLIAM C. McLAMB AND WIFE, DORIS JEAN ADAMS McLAMB
DB 17152 PG 44
BM 1957 PG 85

-L-
PI Sta 16+21.60
Δ = 9° 53' 20.0" (LT)
D = 1° 00' 50.7"
L = 975.15'
T = 488.79'
R = 5,650.00'
e = EXISTING
Runoff = EXISTING

END TIP PROJECT HL-0008C
-L- STA. 21+11.13

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED ON SEPTEMBER 8th, 2022.

22-JAN-2025 10:17
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Andy.Heath AT NCCAR-HEATA11

PROJ. REFERENCE NO.	SHEET NO.
HL-0008C	TMP-1

DRMP
DRMP, INC.
5808 FARINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115
NC LICENSE NO. F-1524
www.drmp.com

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
NC 50 (BENSON ROAD)	MONDAY THRU FRIDAY 6AM TO 9AM; 4PM TO 7PM (SEE ICT FOR DETAILS)

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.

2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 7:00 P.M. DECEMBER 31st TO 6:00 A.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY,SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 6:00 A.M. THE FOLLOWING TUESDAY.

3. FOR EASTER, BETWEEN THE HOURS OF 7:00 P.M. THURSDAY AND 6:00 A.M. MONDAY.

4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 7:00 P.M. FRIDAY TO 6:00 A.M. TUESDAY.

5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 7:00 P.M. THE DAY BEFORE INDEPENDENCE DAY AND 6:00 A.M. THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 7:00 P.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 6:00 A.M. THE TUESDAY AFTER INDEPENDENCE DAY.

6. FOR LABOR DAY, BETWEEN THE HOURS OF 7:00 P.M. FRIDAY TO 6:00 A.M. TUESDAY.

7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 7:00 P.M. TUESDAY AND 6:00 A.M. MONDAY.

8. FOR CHRISTMAS, BETWEEN THE HOURS OF 7:00 P.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 6:00 A.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

9. FOR CHRISTMAS PARADE, BETWEEN THE HOURS OF 7:00 P.M. THE (DAY) OF THE WEEK OF THE CHRISTMAS PARADE AND 6:00 A.M. THE FOLLOWING (DAY) AFTER THE WEEK OF THE CHRISTMAS PARADE.

LANE AND SHOULDER CLOSURE REQUIREMENTS

B) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

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

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 5 FT OF AN OPEN TRAVEL LANE ON AN UNDIVIDED FACILITY, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRANSPORTATION MANAGEMENT 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.

F) 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.

G) DO NOT INSTALL MORE THAN ONE SIMULTANEOUS LANE CLOSURE IN ANY ONE DIRECTION ON ALL ROADS.

PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

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

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

I) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 200 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: Signed by: Kayla M Poulos 1807791CEF90423...

DATE: 2/7/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M. POULOS

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

TRANSPORTATION OPERATIONS PLAN: GENERAL NOTES

2/7/2025
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User: mlindsey

GENERAL NOTES CONT.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

K) 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.

L) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

M) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

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

TRAFFIC CONTROL DEVICES

O) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

P) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
-L- NC 50 (BENSON ROAD)	THERMOPLASTIC	NONE

R) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

S) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

T) TRACE THE EXISTING AND PROPOSED MONOLITHIC ISLAND LOCATIONS WITH PROPER COLOR PAVEMENT MARKINGS PRIOR TO REMOVAL AND INSTALLATION. PLACE CONES TO DELINEATE ANY EXISTING AND PROPOSED MONOLITHIC ISLANDS AFTER REMOVAL AND BEFORE INSTALLATION.

U) ALL CURB RAMP LOCATIONS SHALL BE DERIVED FROM STATIONING SHOWN ON PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER IN COORDINATION WITH THE SIGNING AND DELINEATION UNIT.

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:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1150.01	FLAGGERS

PROJ. REFERENCE NO.	SHEET NO.
HL-0008C	TMP-2

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NC LICENSE NO. F-1524
www.drmp.com

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APPROVED Signed by: Kayla M. Poulos 1807791CEF90423...

DATE: 2/7/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M. POULOS

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

TRANSPORTATION OPERATIONS PLAN: GENERAL NOTES CONTINUED

2/7/2025
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User: mlindsey

PROJ. REFERENCE NO.	SHEET NO.
HL-0008C	TMP-3

DRMP, INC.
5808 FARINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115

NC LICENSE NO. F-1524
www.drmp.com

PHASING PLAN

IN A CONTINUOUS MANNER, COMPLETE THE FOLLOWING WORK OF PHASE I AND PHASE II. CONSTRUCTION SHALL INCLUDE ROADWAY AND DRAINAGE IMPROVEMENTS ALONG NC 50 (BENSON ROAD). CONTRACTOR SHALL COORDINATE ROADWAY CONSTRUCTION WITH PROPERTY OWNER(S) AND MUST MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES. THE CONTRACTOR SHALL NOT CLOSE OR NARROW A LANE OF TRAFFIC ON NC 50 (BENSON ROAD) DURING THE FOLLOWING TIME RESTRICTIONS:

MONDAY THRU FRIDAY 6AM TO 9AM; 4PM TO 7PM

SEE ICT FOR MORE DETAILS.

PHASE I

STEP 1 -- INSTALL WORK ZONE ADVANCE WARNING SIGNS

STEP 2 -- AWAY FROM TRAFFIC, USING LANE CLOSURES AND FLAGGERS AS NEEDED, CLOSE NORTHBOUND LANE AND COMPLETE CONSTRUCTION OF ROAD WIDENING, CURB AND GUTTER, AND DRAINAGE IMPROVEMENTS ALONG -L- NC 50 (BENSON ROAD) FROM -L- STA. 10+95 +/- TO 18+61 +/- UP TO BUT NOT INCLUDING THE FINAL SURFACE COURSE.

STEP 3 -- APPLY TEMPORARY PAVEMENT MARKINGS AS NEEDED.

PHASE II

STEP 1 -- INSTALL WORK ZONE ADVANCE WARNING SIGNS

STEP 2 -- USING FLAGGERS, AS NECESSARY, PLACE FINAL SURFACE COURSE AND INSTALL FINAL PAVEMENT MARKINGS AND MARKERS ALONG -L- NC 50 (BENSON ROAD).

STEP 3 -- REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES AND WORK ZONE SIGNS. OPEN ALL LANES ON -L- NC 50 (BENSON ROAD) TO TRAFFIC.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: Signed by: Kayla M. Poulos 1807791CEF90423...

DATE: 2/7/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M. POULOS

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

TRANSPORTATION OPERATIONS PLAN: PHASING NOTES & PLAN

2/7/2025
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User: mlindsey

T.I.P.: HL-0008C

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PROJECT NO.	SHEET NO.
HL-0008C	PMP-1

APPROVED: Signed by: Kayla M. Poulos 1B07791CEF90423...

DATE: 1/27/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M. POULOS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT MARKING AND SIGNING PLAN
WAKE COUNTY

LOCATION: NC 50 (BENSON ROAD) FROM STATE EMPLOYEES' CREDIT UNION DRIVEWAY TO NEW RAND ROAD EXTENSION GARNER, NORTH CAROLINA

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES 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
901.50	ARROWS AND SHIELDS
903.10	GROUND MOUNTED SIGN SUPPORTS
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL SUPPORTS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

SIGNING 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.
. WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER.
. ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
. THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4025000000	901	CONTRACTOR FURNISHED, TYPE E SIGN	35	S.F.
4025000000	901	CONTRACTOR FURNISHED, TYPE F SIGN	6	S.F.
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	75	L.F.
4102000000	904	SIGN ERECTION, TYPE E	4	EA.
4108000000	904	SIGN ERECTION, TYPE F	2	EA.
4155000000	904	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	5	EA.
4685000000	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	150	L.F.
4695000000	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	1150	L.F.
4709000000	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MILS)	150	L.F.
4720000000	1205	THERMOPLASTIC PAVEMENT MARKING CHARACTER (90 MILS)	8	EA.
4725000000	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	8	EA.
4850000000	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	520	L.F.
4860000000	1205	REMOVAL OF PAVEMENT MARKING LINES (8")	760	L.F.
4870000000	1205	REMOVAL OF PAVEMENT MARKING LINES (24")	60	L.F.
4875000000	1205	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS	14	EA.
4895000000	SP	POLYCARBONATE H-SHAPED MARKERS	40	EA.

GENERAL NOTES

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.

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
ALL ROADS	THERMOPLASTIC	SNOWPLOWABLE

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

D) STOP BAR LOCATION AT NON-SIGNALIZED INTERSECTIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
THERMOPLASTIC(4", 90 MILS)	
T2	WHITE SOLID LANE LINE
T3	10 FT. WHITE SKIP
THERMOPLASTIC(8", 90 MILS)	
T43	WHITE SOLID LANE LINE
T44	3 FT. - 9 FT./SP WHITE MINISKIP
T46	WHITE CROSSWALK
THERMOPLASTIC(24", 90 MILS)	
T61	WHITE STOPBAR
T62	WHITE CROSSWALK
THERMOPLASTIC PAVEMENT MARKING SYMBOLS (90 MILS)	
T70	LEFT TURN ARROW
T71	RIGHT TURN ARROW
T74	COMBO. STRAIGHT/RIGHT ARROW
T100	ALPHANUMERIC CHAR.
PAVEMENT MARKERS	
MB	SNOWPLOWABLE DELINEATION

INDEX

PLANS PREPARED BY: DRMP, INC.

KAYLA M. POULOS, P.E. — PROJECT MANAGER

KAYLEIGH A. FORBES, E.I. — PROJECT ENGINEER

DRMP

DRMP, INC.
5808 FARINGDON PLACE
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NC LICENSE NO. F-1524
www.drmp.com

(401) QUANTITY REQ'D 2

36" X 36"
R3-7R

ONE "U" POST PER SIGN

(402) QUANTITY REQ'D 1

30" X 36"
R2-1

ONE "U" POST PER SIGN

(403) QUANTITY REQ'D 1

36" X 36"
R1-1

ONE "U" POST PER SIGN

(404) (405) QUANTITY REQ'D 1 EA

24" X 12"
M3-1P

24" X 24"
M1-5

ONE "U" POST PER SIGN

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PROJECT NO.	SHEET NO.
HL-0008C	PMP-2

APPROVED: Signed by: Kayla M. Poulos 1B27791CEF90423...

DATE: 1/27/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M. POULOS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TYPE E AND F SIGNS

SYMBOL LEGEND		
	T70	LEFT TURN ARROW
	T71	RIGHT TURN ARROW
	T74	STRAIGHT/RIGHT ARROW
ONLY	T100	ALPHANUMERIC CHAR.

PROJECT NOTES

1 RETAIN SIGN SYSTEM, U-CHANNEL
2 DISPOSAL OF SIGN SYSTEM, U-CHANNEL
3 SIGN ERECTION, TYPE D, E, AND F

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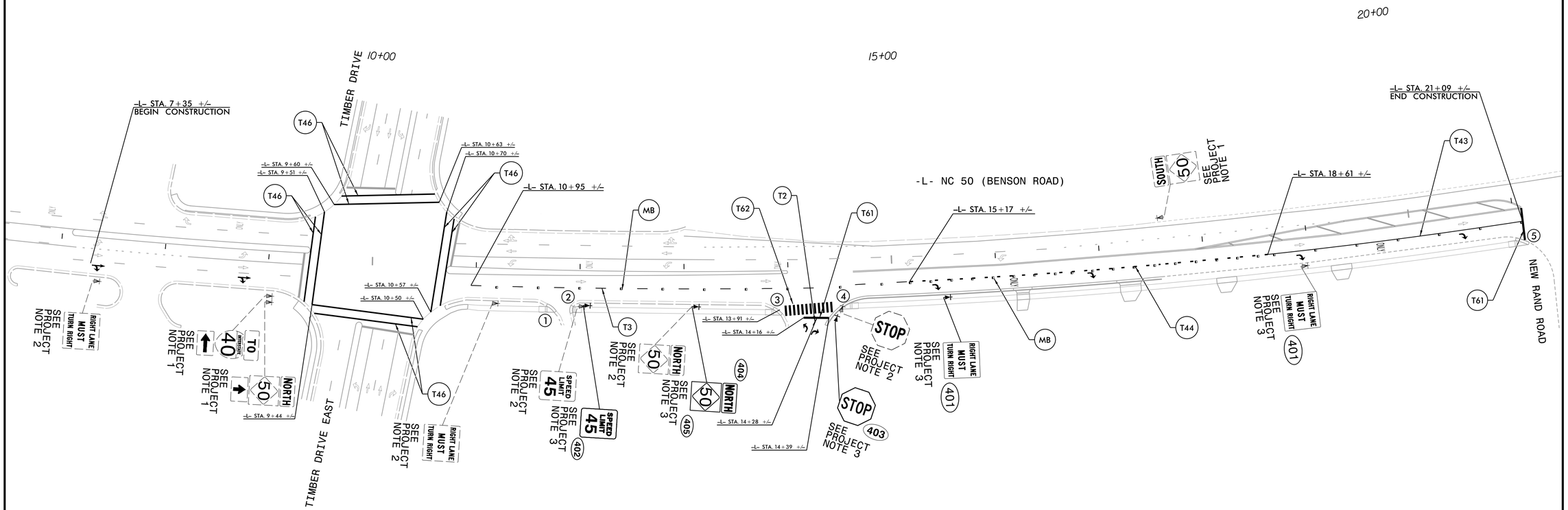
PROJECT NO.	SHEET NO.
HL-0008C	PMP-3

APPROVED: Signed by: Kayla M. Poulos 1B27791CEF90423...
DATE: 1/27/2025

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M. POULOS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011



CURB RAMP LOCATIONS (CENTER OF RAMP AT FACE OF CURB)
① –L– STA. 11+72, 38′ RT (TYPE 1 MOD)
② –L– STA. 11+93, 39′ RT (TYPE 1 MOD)
③ –L– STA. 13+88, 43′ RT (TYPE 1 MOD)
④ –L– STA. 14+53, 39′ RT (TYPE 1 MOD)
⑤ –L– STA. 21+04, 39′ RT (TYPE 1 MOD)

PAVEMENT MARKING AND SIGNING DETAIL

1/27/2025
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User: mlindsey

09/08/99

TIP PROJECT: HL–0008C

CONTRACT: DE00353

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL–0008C	1	

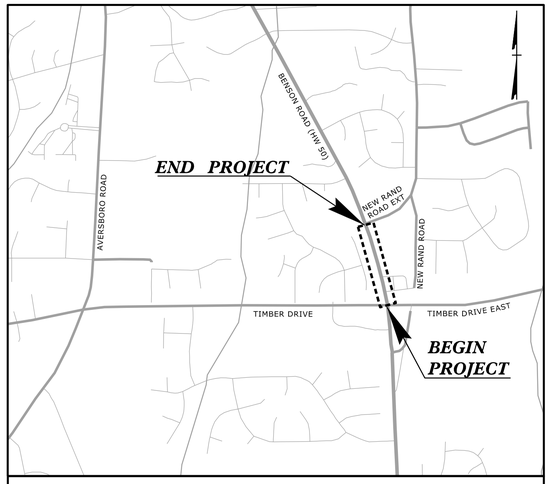
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
49367.1.2	N/A	PE
49367.2.2	N/A	R/W & UTL.
49367.3.16	N/A	CONST.

NAD 83/NA 2011

WAKE COUNTY

LOCATION: NC 50 (BENSON ROAD) FROM STATE EMPLOYEE'S CREDIT UNION DRIVEWAY TO NEW RAND ROAD EXTENSION GARNER, NORTH CAROLINA

TYPE OF WORK: GRADING, PAVING, DRAINAGE, & EROSION CONTROL

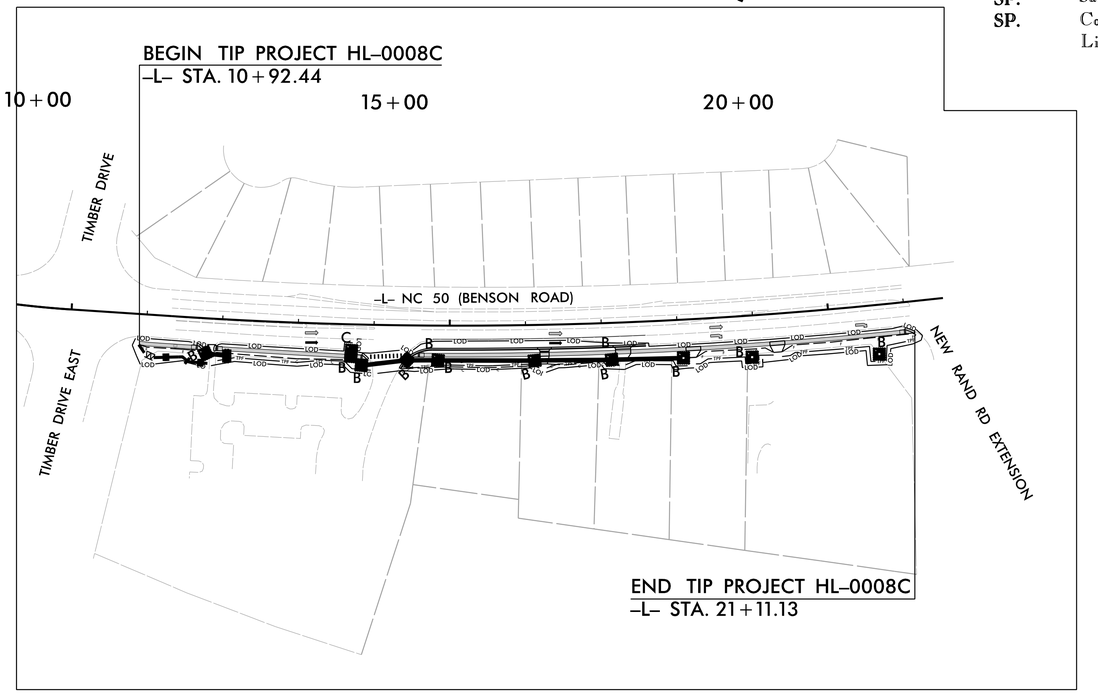


VICINITY MAP NTS

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1607.01	Gravel Construction Entrance	
1632.02	Rock Inlet Sediment Trap Type B, C:	
1633.01	Temporary Rock Silt Check Type-A	
SP.	Safety Fence	TPF
SP.	Concrete Washout	
	Limits of Disturbance	LOD

EC–4, EC–5



TO BENSON

TO GARNER

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

RECEIVING WATERS:
SWIFT CREEK
CLASS: C;NSW

NEUSE RIVER BASIN

DISTURBED AREA = 0.5 AC.

BEFORE YOU DIG:
1–800–632–4949

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

GRAPHIC SCALES

40 20 0 40 80
PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG–010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

Prepared in the Office of:

DRMP

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NC LICENSE NO. F-1524
www.drmp.com

Designed by:
SEAN V. MCCARTHY

Reviewed by:
FORREST N. BROOKS, P.E. — *4039*
NAME — *LEVEL III CERTIFICATION NO.*

Reviewed in the Office of:
ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington Street, Raleigh, NC 27611
2024 STANDARD SPECIFICATIONS

Reviewed by:
Wesley Chandler, P.E.

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2024 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1605.01	Temporary Silt Fence
1606.01	Special Sediment Control Fence
1607.01	Gravel Construction Entrance
1631.01	Matting Installation
1632.02	Rock Inlet Sediment Trap Type B
1632.03	Rock Inlet Sediment Trap Type C
1633.01	Tempoorary Rock Silt Check Type A
Spec.	Concrete Washout
Spec.	Safety Fence

2/26/2025
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8/17/99

REVISIONS

GENERAL NOTES

ANY STAGING, MATERIAL LAY DOWN, DIRT OR WASTE PILES WILL BE LOCATED WITHIN THE LIMITS OF DISTURBANCE. IF ANY ADDITIONAL STAGING AREAS, DIRT OR WASTE PILES, BORROW AREAS, ETC, ARE REQUIRED BY THE CONTRACTOR, ANY ADDITIONAL EASEMENTS, AND REGULATORY PERMITS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

ALL MATERIALS WILL BE CONTAINED WITHIN LIMITS OF DISTURBANCE AND WILL BE LOCATED A MINIMUM OF 50' FROM ANY WATERCOURSE OR DRAINAGE STRUCTURES.

ALL CONSTRUCTION TRAFFIC LEAVING THE SITE AND ENTERING ANY PUBLIC ROADWAY MUST UTILIZE A GRAVEL CONSTRUCTION ENTRANCE.

BEFORE DEPOSITION OF ANY EXCAVATED MATERIALS ON PAVED SURFACES, A LAYER OF SAND, FINES, OR SCREENING SHOULD BE PLACED.

THESE EROSION & SEDIMENT CONTROL PLANS SHOW DEVICES REQUIRED DURING THE CLEARING AND GRUBBING AND FINAL PHASE OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL SEDIMENT LADEN RUNOFF
IS TREATED BEFORE LEAVING THE LIMITS OF DISTURBANCE. THERE MAY BE INTERMEDIATE GRADES IN WHICH ADDITIONAL TEMPORARY DIVERSIONS, NOT SHOWN ON THE PLANS, ARE REQUIRED TO DIRECT RUNOFF TO BASINS OR ADDITIONAL SILT
FENCE TO KEEP SEDIMENT WITHIN THE LIMITS OF DISTURBANCE.

THE DEVELOPER IS RESPONSIBLE FOR THE CONTROL OF SEDIMENT ON–SITE. IF THE APPROVED EROSION AND SEDIMENTATION CONTROL MEASURES PROVE INSUFFICIENT,
THE DEVELOPER MUST TAKE THOSE ADDITIONAL STEPS NECESSARY TO STOP SEDIMENT FROM LEAVING THIS SITE. (NCGS 113A–57(3))

ANY BORROW MATERIAL BROUGHT ONTO THIS SITE MUST BE FROM A LEGALLY OPERATED MINE OR OTHER APPROVED SOURCE, ANY SOILWASTE THAT LEAVES THIS SITE CAN BE TRANSPORTED TO A MINE OR SEPARATELY PERMITTED CONSTRUCTION SITES WITHOUT ADDITIONAL PERMITS UNDER NCGS 74–49(7)(D).

PROJECT NOTES

1. EXISTING SURVEY INFORMATION TAKEN FROM SURVEY PROVIDED TO RAMEY KEMP ASSOCIATES (NOW DRMP, INC.) BY NCDOT.
2. ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE APPROVAL BY ENGINEER.
3. ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.
4. ALL EROSION CONTROL SHOULD FOLLOW NCDOT STANDARDS & SPECIFICATIONS.
5. INSTALL INLET PROTECTION DEVICES ON ALL EXISTING AND PROPOSED INLETS WITHIN THE PROJECT LIMITS.
6. SEEDING & MULCHING SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 1660 OF THE NCDOT STANDARD SPECIFICATIONS AND VEGETATIVE COVER SUFFICIENT TO RESTRAIN EROSION SHALL BE INSTALLED IMMEDIATELY FOLLOWING GRADE ESTABLISHMENT.
7. SEEDING & MULCHING SHALL BE PERFORMED ON THE AREAS DISTURBED BY CONSTRUCTION IMMEDIATELY FOLLOWING FINAL GRADE ESTABLISHMENT TO MATCH EXISTING CONDITIONS. GRASS SEED SHOULD MATCH EXISTING SITE GRASS.

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PROJECT REFERENCE NO.	SHEET NO.
HL–0008C	EC–2A
R/W SHEET NO.	

FORREST N. BROOKS, P.E.
LEVEL III NAME

4039
LEVEL III CERTIFICATION NO.

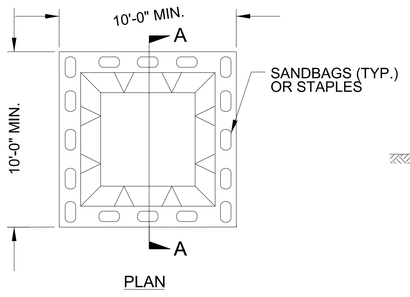
MAINTENANCE REQUIREMENTS

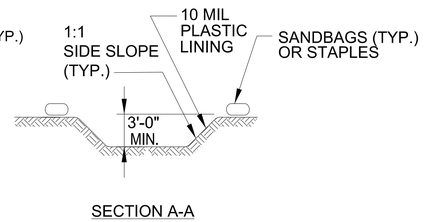
1. EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF–PRODUCING RAINFALL OR AT A MINIMUM ONCE A WEEK. IF REPAIRS ARE NEEDED THEY WILL BE DONE SO IMMEDIATELY.

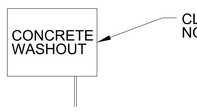
2. MAINTAIN GRAVEL PAD INSTALLED AT NON–PAVED DRIVEWAYS TO PREVENT MUD OR SEDIMENT FROM LEAVING OR ENTERING THE CONSTRUCTION SITE. AFTER EACH RAINFALL, INSPECT THE AREA AND REMOVE ANY DEBRIS OR SEDIMENT BUILDUP.

3. ALL SEEDED AREAS WILL BE FERTILIZED, RESEEDED AS NECESSARY, AND MULCHED ACCORDING TO THE SPECIAL PROVISIONS IN ORDER TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER.

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER







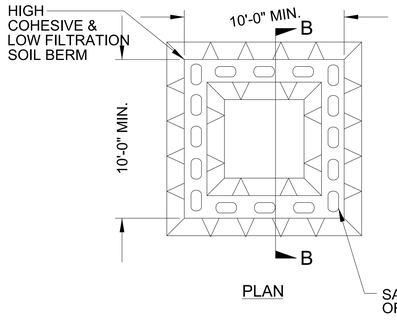
CLEARLY MARKED SIGNAGE NOTING DEVICE (18"X24" MIN.)

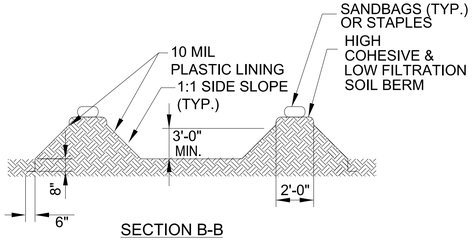
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE
NOT TO SCALE





CLEARLY MARKED SIGNAGE NOTING DEVICE (18"X24" MIN.)

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

MAINTENANCE NOTES

CONCRETE WASHOUT

REGULARLY INSPECT THE PERIMETER BARRIER FOR DAMAGE BUT WEEKLY AS A MINIMUM. REPLACE SANDBAG ANCHORS OR WOOD FRAME IF DAMAGED. REPLACE PLASTIC LINING IF DAMAGED AND NO LONGER WATERTIGHT. REMOVE CONCRETE AND REPAIR ANY DAMAGE TO LINER OR FRAME WHEN VOLUME HAS BEEN REDUCED BY HALF OF THE ORIGINAL VOLUME.

1/6/2025
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8/17/99

REVISIONS

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

DRMP

DRMP, INC.
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NC LICENSE NO. F-1524
www.drmp.com

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	EC-3A
R/W SHEET NO.	

FORREST N. BROOKS, P.E.
LEVEL III NAME

4039
LEVEL III CERTIFICATION NO.

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	14+85	16+10	RT	90
4	-L-	16+30	17+20	RT	65
		SUBTOTAL MATTING			155
MISCELLANEOUS STRAW TO BE INSTALLED AS DIRECTED BY THE ENGINEER					7500
				TOTAL	7655
				SAY	7700

EXCELSIOR FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

1/6/2025
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User: mlindsey

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R/W SHEET NO.	

FORREST N. BROOKS, P.E.
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SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

11/6/2025
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User:mlindsey

8/17/99

REVISIONS

CLEARING & GRUBBING PHASE

NOTES:
1. CONTRACTOR TO INSTALL EROSION CONTROL MEASURES BEFORE CONSTRUCTION BEGINS AND MAINTAIN THROUGHOUT CONSTRUCTION
2. CONTRACTOR IS TO KEEP ALL DEBRIS WITHIN THE WORK AREA AND OUTSIDE OF THE THROUGH LANES ON BENSON ROAD.
3. CONTRACTOR TO COORDINATE WITH ENGINEER IF FIELD CONDITIONS VARY FROM PLANS OR CONFLICTING EROSION CONTROL MEASURES ARE INSTALLED WITH THE ADJACENT SITE CONSTRUCTION.
4. FABRIC INSERT INLET PROTECTION DEVICES TO BE USED IN LIEU OF ROCK INLET SEDIMENT TRAPS– TYPE C, AT THE DISCRETION OF THE ENGINEER

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PROJECT REFERENCE NO.	SHEET NO.
HL–0008C	EC–4
R/W SHEET NO.	

FORREST N. BROOKS, P.E.
LEVEL III NAME

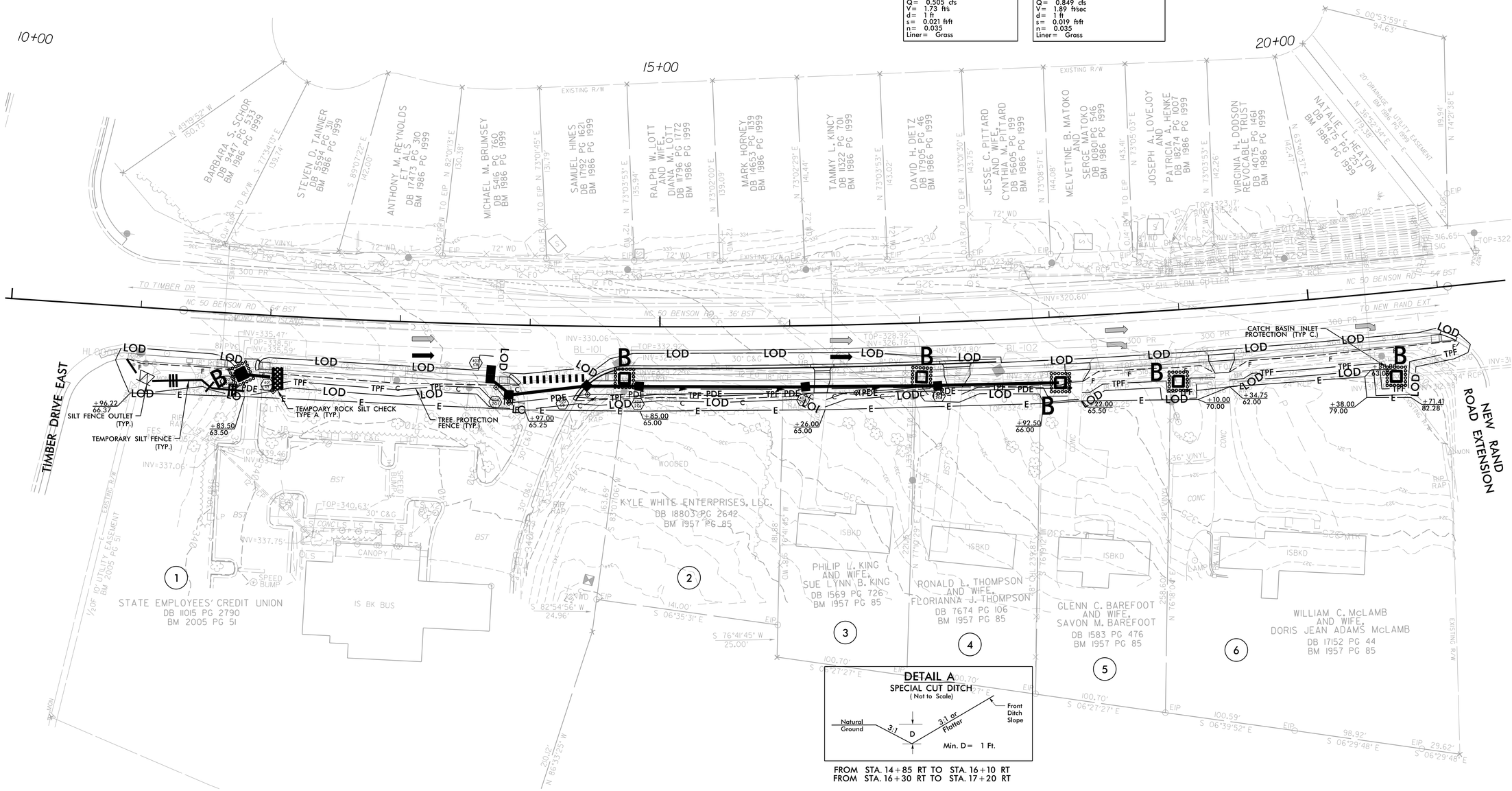
4039
LEVEL III CERTIFICATION NO.

GRAPHIC SCALE
40 20 0 40 80
PLANS

NAD 83 NC GRID 2011

Sta. = 14+85 RT to 16+10 RT
Q = 0.505 cfs
V = 1.73 fps
d = 1 ft
s = 0.021 ft/ft
n = 0.035
Liner = Grass

Sta. = 16+30 RT to Sta. 17+20 RT
Q = 0.849 cfs
V = 1.89 ft/sec
d = 1 ft
s = 0.019 ft/ft
n = 0.035
Liner = Grass



DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 14+85 RT TO STA. 16+10 RT
FROM STA. 16+30 RT TO STA. 17+20 RT

8/17/99

REVISIONS

FINAL PHASE

NOTES:
1. CONTRACTOR TO SHIFT EROSION CONTROL MEASURES DURING CONSTRUCTION TO MAINTAIN INLET PROTECTION AROUND THE EXISTING AND PROPOSED INLETS. WATTLES SHALL BE SHIFTED TO THE NEW DITCHLINE UNTIL EARTH IS STABILIZED
2. CONTRACTOR IS TO KEEP ALL DEBRIS WITHIN THE WORK AREA AND OUTSIDE OF THE THROUGH LANES ON BENSON ROAD.
3. CONTRACTOR TO COORDINATE WITH ENGINEER IF FIELD CONDITIONS VARY FROM PLANS OR CONFLICTING EROSION CONTROL MEASURES ARE INSTALLED WITH THE ADJACENT SITE CONSTRUCTION.
4. FABRIC INSERT INLET PROTECTION DEVICES TO BE USED IN LIEU OF ROCK INLET SEDIMENT TRAPS– TYPE C, AT THE DISCRETION OF THE ENGINEER

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PROJECT REFERENCE NO.	SHEET NO.
HL–0008C	EC–5
R/W SHEET NO.	

FORREST N. BROOKS, P.E.
LEVEL III NAME

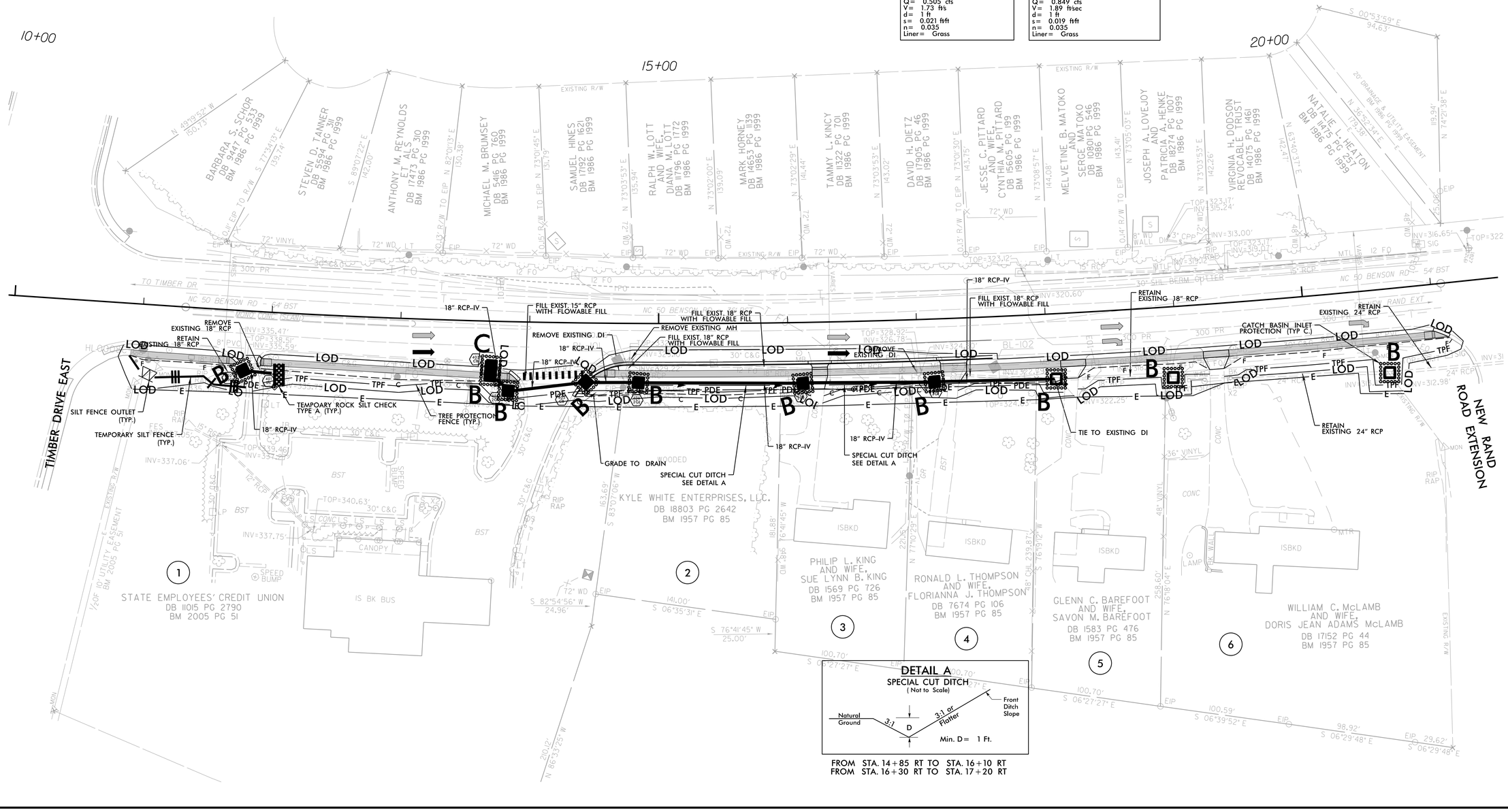
4039
LEVEL III CERTIFICATION NO.

GRAPHIC SCALE
40 20 0 40 80
PLANS

NAD 83 NC GRID 2011

Sta. = 14+85 RT to 16+10 RT
Q = 0.505 cfs
V = 1.73 fps
d = 1 ft
s = 0.021 ft/ft
n = 0.035
Liner = Grass

Sta. = 16+30 RT to Sta. 17+20 RT
Q = 0.849 cfs
V = 1.89 ft/sec
d = 1 ft
s = 0.019 ft/ft
n = 0.035
Liner = Grass



DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 14+85 RT TO STA. 16+10 RT
FROM STA. 16+30 RT TO STA. 17+20 RT

1/28/2025
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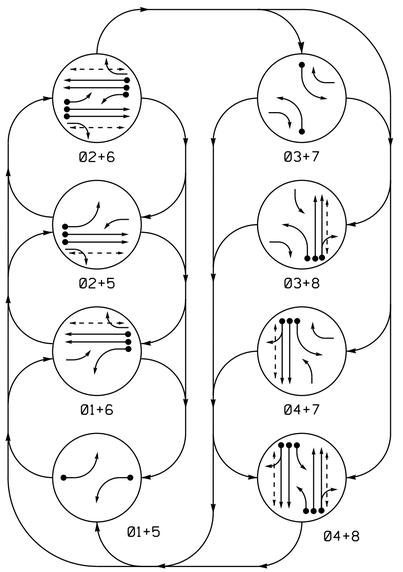
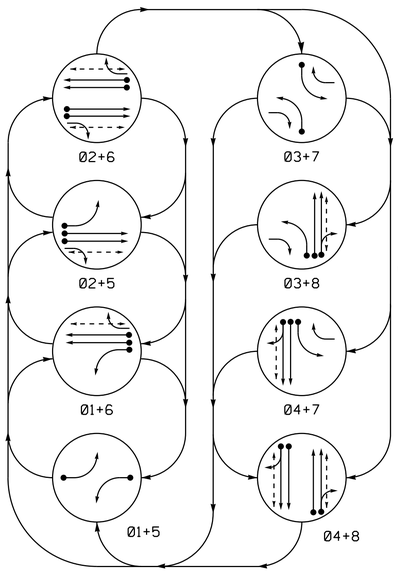
User:mlindsey

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	Sig 1.0

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

DEFAULT PHASING TABLE OF OPERATION

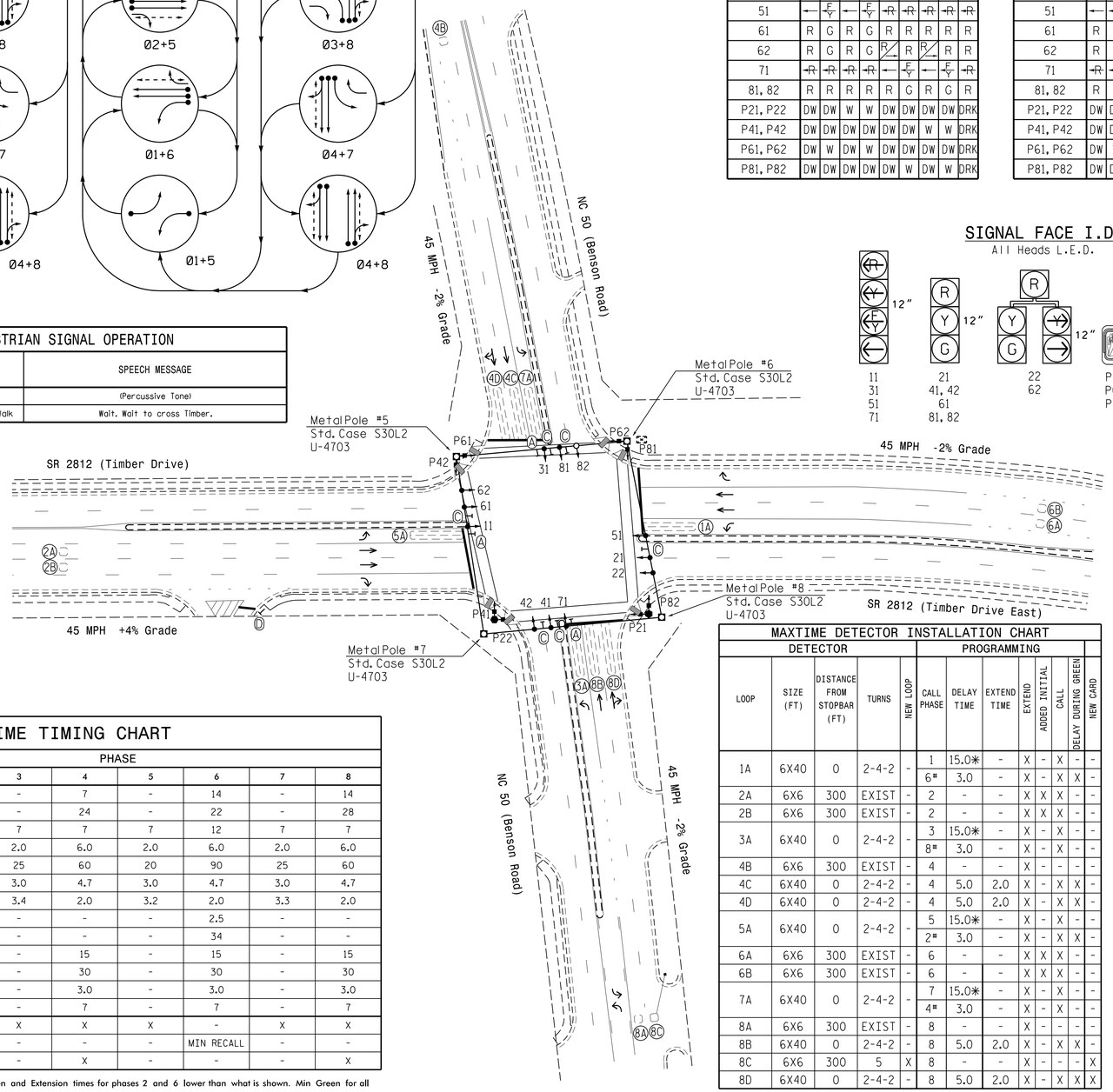
SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	←-	←-	F	F	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21	R	R	G	G	R	R	R	R	R
22	R	R	G	G	R→	R→	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←-	←-	F	F	~~R~~
41, 42	R	R	R	R	R	R	G	G	R
51	←-	F	←-	F	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61	R	G	R	G	R	R	R	R	R
62	R	G	R	G	R→	R	R→	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←-	F	←-	F	~~R~~
81, 82	R	R	R	R	R	G	R	G	R
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	W	DRK

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	←-	←-	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21	R	R	G	G	R	R	R	R	R
22	R	R	G	G	R→	R→	R	R	R
31	~~R~~	~~R~~	~~R~~	~~R~~	←-	←-	~~R~~	~~R~~	~~R~~
41, 42	R	R	R	R	R	R	G	G	R
51	←-	~~R~~	←-	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61	R	G	R	G	R	R	R	R	R
62	R	G	R	G	R→	R	R	R	R
71	~~R~~	~~R~~	~~R~~	~~R~~	←-	←-	~~R~~	~~R~~	~~R~~
81, 82	R	R	R	R	R	G	R	G	R
P21, P22	DW	DW	W	W	DW	DW	DW	DRK	
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	W	DRK

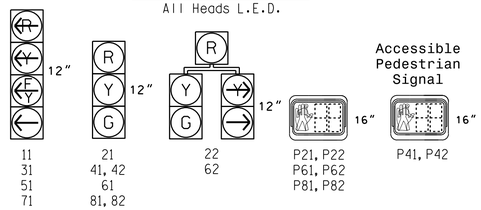
ACCESSIBLE PEDESTRIAN SIGNAL OPERATION

SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P41, P42	-	X	Walk	(Percussive Tone)
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Timber.



SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	-	14	-	7	-	14	-	14
Ped Clear	-	21	-	24	-	22	-	28
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	6.0	2.0	6.0	2.0	6.0	2.0	6.0
Max 1 *	25	90	25	60	20	90	25	60
Yellow Change	3.0	4.7	3.0	4.7	3.0	4.7	3.0	4.7
Red Clear	3.2	2.0	3.4	2.0	3.2	2.0	3.3	2.0
Added Initial *	-	2.5	-	-	-	2.5	-	-
Maximum Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	15	-	15	-	15
Time To Reduce *	-	30	-	30	-	30	-	30
Minimum Gap	-	3.0	-	3.0	-	3.0	-	3.0
Advance Walk	-	7	-	7	-	7	-	7
Non Lock Detector	X	-	X	X	X	-	X	X
Vehicle Recall	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Dual Entry	-	-	-	X	-	-	-	X

* 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.

MAXTIME DETECTOR INSTALLATION CHART

DETECTOR LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
1A	6X40	0	2-4-2	-	1	15.0*	-	X	-	X	-	-
					6#	3.0	-	X	-	X	X	-
2A	6X6	300	EXIST	-	2	-	-	X	X	X	-	-
2B	6X6	300	EXIST	-	2	-	-	X	X	X	-	-
3A	6X40	0	2-4-2	-	3	15.0*	-	X	-	X	-	-
					8#	3.0	-	X	-	X	-	-
4B	6X6	300	EXIST	-	4	-	-	X	-	-	-	-
4C	6X40	0	2-4-2	-	4	5.0	2.0	X	-	X	X	-
4D	6X40	0	2-4-2	-	4	5.0	2.0	X	-	X	X	-
5A	6X40	0	2-4-2	-	5	15.0*	-	X	-	X	-	-
					2#	3.0	-	X	-	X	X	-
6A	6X6	300	EXIST	-	6	-	-	X	X	X	-	-
6B	6X6	300	EXIST	-	6	-	-	X	X	X	-	-
7A	6X40	0	2-4-2	-	7	15.0*	-	X	-	X	-	-
					4#	3.0	-	X	-	X	-	-
8A	6X6	300	EXIST	-	8	-	-	X	-	-	-	-
8B	6X40	0	2-4-2	-	8	5.0	2.0	X	-	X	X	-
8C	6X6	300	5	X	8	-	-	X	-	-	-	X
8D	6X40	0	2-4-2	-	8	5.0	2.0	X	-	X	X	X

* Disable Delay During Alternate Phasing Operation.
\# Disable Phase Call For Loop(s) During Alternate Phasing Operation.

8 Plase
Fully Actuated
(Timber Drive (Garner System B) CLS)
Signal System #: D05-11_Garner

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated 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. Phase 3 and/or phase 7 may be lagged.
5. Renumber existing loop 1B to 8D.
6. Remove existing Right Arrow "ONLY" sign (R3-5R).
7. Set all detector units to presence mode.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. This intersection features accessible pedestrian signals utilizing percussive tone walk indications and/or speech messages.
11. Pavement markings are existing.
12. The Division Traffic Engineer will determine the hours of use for each phasing plan.
13. 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	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□↓	Pedestrian Signal Head With Push Button & Sign	■↓
○	Signal Pole with Guy	●
○	Signal Pole with Sidewalk Guy	●
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
·····	2-in Underground Conduit	·····
N/A	Right of Way	– – –
→	Directional Arrow	→
◎	Metal Strain Pole	■
⬡	Type II Signal Pedestal	⬢
N/A	Curb Ramp	◢
Ⓐ	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	Ⓐ
Ⓒ	Street Name Sign By Others (D3-1)	Ⓒ
Ⓓ	"STOP" Sign (R1-1)	Ⓓ

This plan supersedes the plan signed and sealed on 9/28/21 and 10/24/23.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

NC 50 (Benson Road) at SR 2812 (Timber Drive)

Division 5 Wake County Garner

PLAN DATE: December 2024 REVIEWED BY:

PREPARED BY: J.A. Lohr REVIEWED BY:

REVISIONS	INIT.	DATE

SCALE 0 50 1"=50'

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZIEMBA
DocuSigned by: Robert J Ziemba 12/04/2024
DATE

SIG. INVENTORY NO. 05-1301

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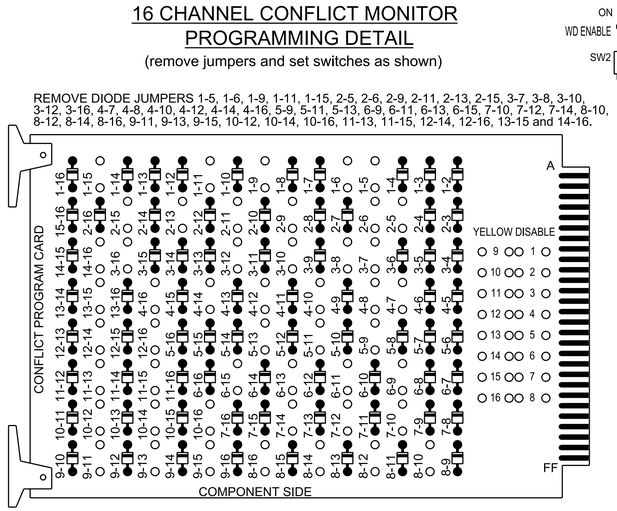
rziemba

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	Sig. 1.1

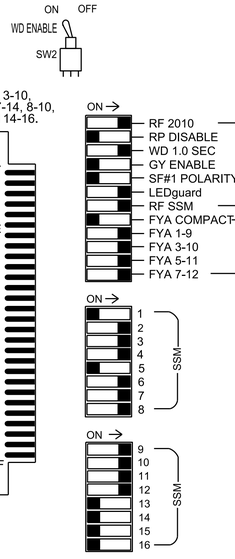
16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 7-10, 7-12, 7-14, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15 and 14-16.



REMOVE JUMPERS AS SHOWN



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

NOTES

1. 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 plan.
2. Ensure that Red Enable is active at all times during normal operation. To prevent red failures on unused monitor channels, tie unused red monitor inputs 1,5,13,14,15 & 16 to AC+ per the cabinet manufacturer's instructions.
3. Program phases 4 and 8 for Dual Entry.
4. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
5. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
6. The cabinet and controller are part of the Timber Drive (Garner System B) CLS Signal System #: D05-11_Garner.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S1, S2, S2P, S3, S4, S4P, S5, S6, S6P, S7, S8, S8P, S9, S10, S12, S13
Phases Used.....1, 2, 2PED, 3, 4, 4PED, 5, 6, 6PED, 7, 8, 8PED
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

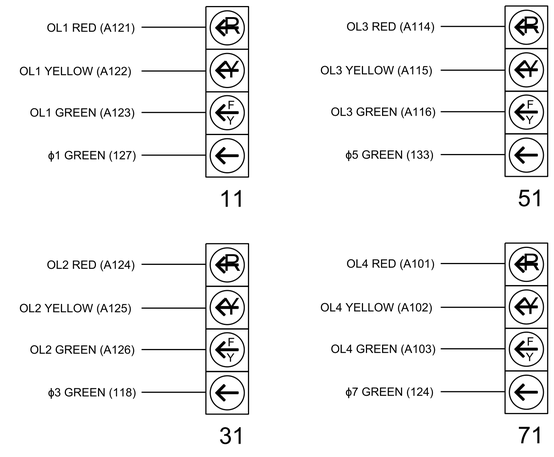
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3		S4	S4P	S5	S6	S6P	S7		S8	S8P	S9	S10	S11	S12	S13	S14
CMU CHANNEL NO.	1	2	13	3		4	14	5	6	15	7		8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3		4	4 PED	5	6	6 PED	7		8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11 ★	21,22	P21, P22	31 ★	22	41,42	P41, P42	51 ★	61,62	P61, P62	71 ★	62	81,82	P81, P82	11 ★	31 ★	NU	51 ★	71 ★	NU
RED		128		*		101			134		*		107							
YELLOW	*	129				102		*	135				108							
GREEN		130				103			136				109							
RED ARROW															A121	A124		A114	A101	
YELLOW ARROW					117							123			A122	A125		A115	A102	
FLASHING YELLOW ARROW															A123	A126		A116	A103	
GREEN ARROW	127			118	118			133			124	124								
✋			113				104			119				110						
🚶			115				106			121				112						

NU = Not Used
★Denotes install load resistor. See load resistor installation detail this sheet.
★See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	ø 1 1A	ø 2 2A	SLOT EMPTY	SLOT EMPTY	ø 3 3A	NOT USED	ø 4 4C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø 2 PED DC ISOLATOR	ø 6 PED DC ISOLATOR	FS DC ISOLATOR
	L	NOT USED	ø 2 2B			NOT USED	ø 4 4B	ø 4 4D					ø 4 PED DC ISOLATOR	ø 8 PED DC ISOLATOR	ST DC ISOLATOR
FILE "J"	U	ø 5 5A	ø 6 6A	SLOT EMPTY	SLOT EMPTY	ø 7 7A	ø 8 8A	ø 8 8C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	ø 6 6B			NOT USED	ø 8 8B	ø 8 8D							

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1 ★	1	15.0		X		X	
				-	29 ★	6	3.0		X		X	X
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2			X	X	X	
3A	TB4-5,6	I5U	58	20	7 ★	3	15.0		X		X	
				-	30 ★	8	3.0		X		X	
4B	TB4-11,12	I6L	45	7	9	4			X			
4C	TB6-1,2	I7U	65	31	10	4	5.0	2.0	X		X	X
4D	TB6-3,4	I7L	78	44	11	4	5.0	2.0	X		X	X
5A	TB3-1,2	J1U	55	17	15 ★	5	15.0		X		X	
				-	31 ★	2	3.0		X		X	X
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6			X	X	X	
7A	TB5-5,6	J5U	57	19	21 ★	7	15.0		X		X	
				-	32 ★	4	3.0		X		X	
8A	TB5-9,10	J6U	42	4	22	8			X			
8B	TB5-11,12	J6L	46	8	23	8	5.0	2.0	X		X	X
8C	TB7-1,2	J7U	66	32	24	8			X			
8D	TB7-3,4	J7L	79	45	25	8	5.0	2.0	X		X	X
PED PUSH BUTTONS												
P21,P22	TB8-4,6	I12U	67	33	2	PED 2						
P41,P42	TB8-5,6	I12L	69	35	4	PED 4						
P61,P62	TB8-7,9	I13U	68	34	6	PED 6						
P81,P82	TB8-8,9	I13L	70	36	8	PED 8						

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

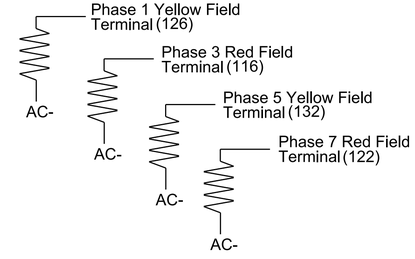
★ For the detectors to work as shown on the signal plan see the Detector Programming Detail for Alternate Phasing on Sheet 2 of this plan.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



This plan supersedes the plan signed and sealed on 09/29/2021 and 10/25/2023.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-1301
DESIGNED: December 2024
SEALED: 12/04/2024
REVISED: N/A

Electrical Detail - Sheet 1 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Signal & Signage Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 50 (Benson Road)
at
SR 2812 (Timber Drive)

Division 5 | Wake County | Garner

PLAN DATE: December 2024 | REVIEWED BY:
PREPARED BY: S.Kirkpatrick | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

Signed by: Ryan W. Hough 12/04/2024
430320FAA2654C3 DATE

SIG. INVENTORY NO. 05-1301

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skirkpatrick

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	Sig. 1.2

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

ACCESSIBLE PEDESTRIAN SIGNAL (APS) INSTALLATION NOTES

1. Install push buttons and APS equipment per manufacturer's instructions.
2. Provide a dedicated cable to each push button per manufacturer's instructions.
3. If APS equipment is mounted in cabinet, use filtered power (i.e., Controller Receptacle) to power APS equipment. Do not use Equipment Receptacle, which is a GFCI outlet.
4. Never attempt to operate a standard contact closure push button with the APS system unless cabinet is re-wired for standard button operation or unless explicitly allowed by the manufacturer.
5. Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.
6. An APS push button station that is designed to work without the need for interfacing with a pedestrian signal head shall be installed for applications where a push button is installed in a median without a pedestrian signal head.
7. A push button with a single tactile arrow that points in both directions of travel shall be installed if the median separates two parallel crosswalks.

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.

MAXTIME OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	3	4
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
Modifier Phases	1	3	5	7
Modifier Overlaps	-	-	-	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0

MAXTIME DETECTOR PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A, 3A, 5A & 7A

Front Panel
Main Menu >Controller >Detector >Veh Det Plans

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

In the table view of web interface right click on "Detector" in the top left corner of the table. Copy the entire contents of Detector Plan 1. Paste Detector Plan 1 into Detector Plan 2. Modify Detector Plan 2 as shown below and save changes.

Plan 2

1A

Detector	Call Phase	Delay
1	1	0.0
29	0	3.0

3A

Detector	Call Phase	Delay
7	3	0.0
30	0	3.0

5A

Detector	Call Phase	Delay
15	5	0.0
31	0	3.0

7A

Detector	Call Phase	Delay
21	7	0.0
32	0	3.0

MAXTIME OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

In the table view of the web interface, right click on "Overlap" in the top left corner of the table. Copy the entire contents of Overlap Plan 1. Paste Overlap Plan 1 into Overlap Plan 2. Modify Overlap Plan 2 as shown below and save changes.

Overlap Plan 2

Overlap	1	2	3	4
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	-	-	-	-
Modifier Phases	1	3	5	7
Modifier Overlaps	-	-	-	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0

← NOTICE INCLUDED PHASE

This plan supersedes the plan signed and sealed on 09/29/2021 and 10/25/2023.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-1301
DESIGNED: December 2024
SEALED: 12/04/2024
REVISED: N/A

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared in the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 50 (Benson Road)
at
SR 2812 (Timber Drive)

Division 5 | Wake County | Garner

PLAN DATE: December 2024 | REVIEWED BY:
PREPARED BY: S.Kirkpatrick | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
036833
ENGINEER
RYAN W. HOUGH

Signed by: Ryan W. Hough 12/04/2024
DATE
SIG. INVENTORY NO. 05-1301

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	Sig. 1.3

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

To run alternate phasing, select a Pattern that is programmed to run Overlap Plan 2 and Detector Plan 2.
A Pattern can be selected through the scheduler or manually by changing the Operational Mode.

PHASING	OVERLAP PLAN	VEH DET PLAN
ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING	2	2

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN OVERLAP PLAN 2 AND VEHICLE DETECTOR PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAP PLAN 2: Modifies overlap included phases for heads 11, 31, 51, and 71 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

Disables phase 8 call on loop 3A and reduces delay time for phase 3 call on loop 3A to 0 seconds.

Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 0 seconds.

Disables phase 4 call on loop 7A and reduces delay time for phase 7 call on loop 7A to 0 seconds.

MAXTIME ALTERNATE PHASING PATTERN PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Coordination >Patterns

Web Interface
Home >Controller >Coordination >Patterns

Pattern Parameters

Pattern	Veh Det Plan	Overlap Plan
*	2	2

* The Pattern number(s) are to be determined by the Division and/or City Traffic Engineer.

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

This plan supersedes the plan signed and sealed on 09/29/2021 and 10/25/2023.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-1301
DESIGNED: December 2024
SEALED: 12/04/2024
REVISED: N/A

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

NC 50 (Benson Road)
at
SR 2812 (Timber Drive)

Division 5 | Wake County | Garner

PLAN DATE: December 2024 | REVIEWED BY:
PREPARED BY: S.Kirkpatrick | REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

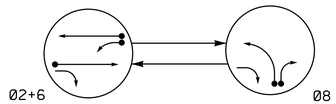
Signed by: Ryan W. Hough 12/04/2024
A80300EAA2654C3 DATE

SIG. INVENTORY NO. 05-1301

04-DEC-2024 13:33
S:\Traffic Signals\Workgroups\Sig Mgmt\Projects From Signal Design\Active Projects\Kirkpatrick\05-1301 & 05-2376 (HL-0008C)\05130l_sm.ele_20241204.dgn
sgkirkpatrick

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	Sig 2.0

PHASING DIAGRAM



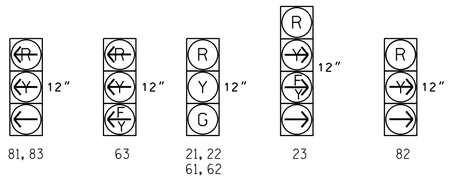
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION			
SIGNAL FACE	PHASE 02+6	PHASE 08	FLASH
21, 22	G	R	R
23	~~FY~~	→	R
61, 62	G	R	R
63	~~FY~~	~~R~~	~~R~~
81, 83	~~R~~	←	~~R~~
82	R	→	R

SIGNAL FACE I.D.

All Heads L.E.D.

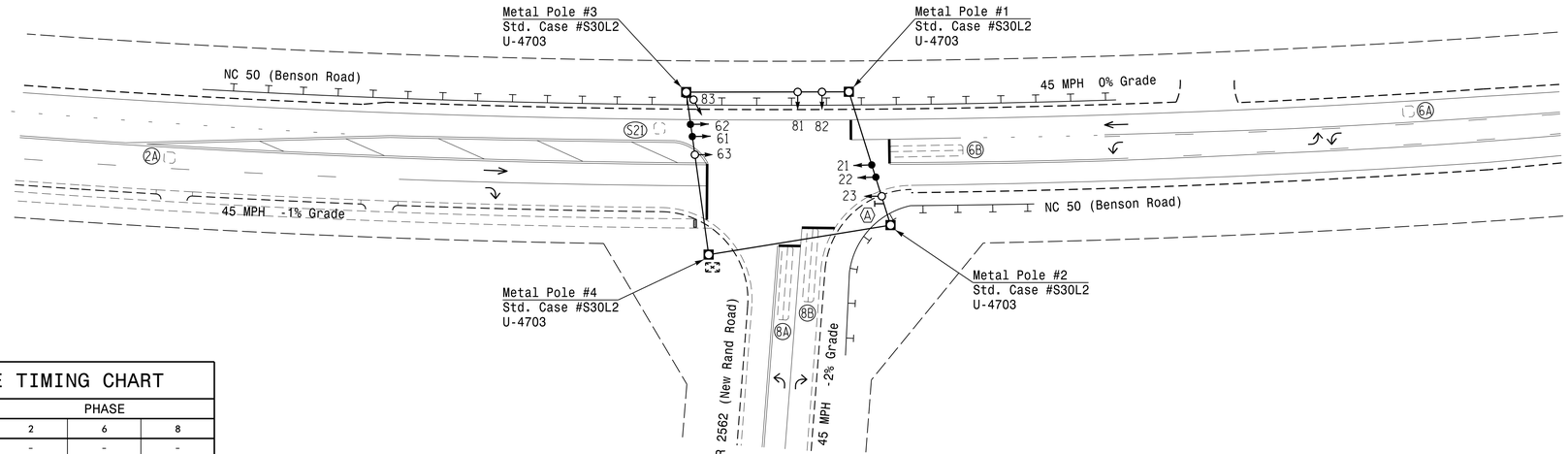


MAXTIME DETECTOR INSTALLATION CHART											
DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
2A	6x6	300	EXIST	-	2	-	-	X	X	X	-	-
6A	6x6	300	EXIST	-	6	-	-	X	X	X	-	-
6B	6x40	0	2-4-2	-	6	3	-	X	-	X	X	-
8A	6x40	0	2-4-2	-	8	3	-	X	-	X	-	-
8B	6x40	0	2-4-2	-	8	15	-	X	-	X	-	-
S21	6x6	+100	EXIST	-	-	-	-	-	-	-	-	-

2 Phase
Fully Actuated
Timber Drive (Garner System B) CLS
Signal System #: DO5-11_Garner

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Remove existing lane control (R3-5R and R3-5L) signs unless otherwise shown.
5. Pavement markings are existing.
6. 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	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
⊣□↓	Pedestrian Signal Head With Push Button & Sign	⊣■↓
○	Signal Pole with Guy	●
○~	Signal Pole with Sidewalk Guy	●~
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⛶
□	Junction Box	■
·-·-·	2-in Underground Conduit	·-·-·
N/A	Right of Way	- - -
→	Directional Arrow	→
⊥⊥	Guardrail	⊥⊥
◎	Metal Strain Pole	◘
(A)	Right Arrow "ONLY" Sign (R3-5R)	(A)

MAXTIME TIMING CHART			
FEATURE	PHASE 2	PHASE 6	PHASE 8
Walk *	-	-	-
Ped Clear	-	-	-
Min Green *	12	12	7
Passage *	6.0	6.0	2.0
Max 1 *	60	60	30
Yellow Change	4.6	4.6	3.0
Red Clear	1.1	1.1	2.3
Added Initial *	2.5	2.5	-
Maximum Initial *	34	34	-
Time Before Reduction *	15	15	-
Time To Reduce *	30	30	-
Minimum Gap	3.0	3.0	-
Advance Walk	-	-	-
Non Lock Detector	-	-	X
Vehicle Recall	MIN RECALL	MIN RECALL	-
Dual Entry	-	-	-

* 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.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

NC 50 (Benson Road)
at
SR 2562 (New Rand Road)

Division 5 Wake County Garner

PLAN DATE: December 2024 REVIEWED BY:
PREPARED BY: J.A. Lohr REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZIEMBA
Documents not considered final unless sealed
12/04/2024
DATE
SIG. INVENTORY NO. 05-2376

04-DEC-2024 10:58
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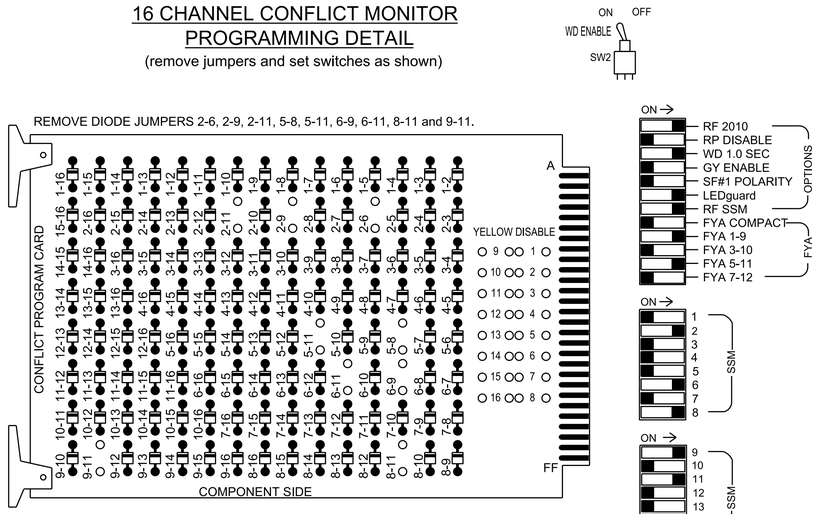
jalohr

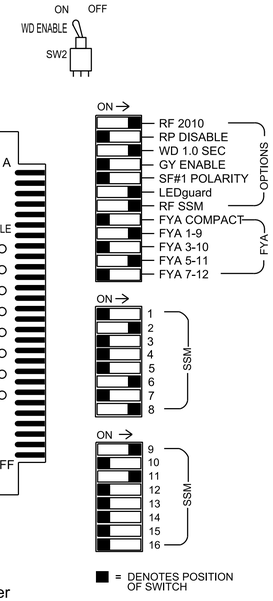
PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	Sig.2.1

16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN



NOTES:

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

NOTES

1. 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 plan.
2. Ensure that Red Enable is active at all times during normal operation. To prevent red failures on unused monitor channels, tie unused red monitor inputs 1, 3, 4, 5, 7, 10, 12, 13, 14, 15 & 16 to AC+ per the cabinet manufacturer's instructions.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
5. The cabinet and controller are part of the Timber Drive (Garner System B) CLS. Signal System #: D05-11_Garner

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S2, S5, S6, S8, S9, S12
Phases Used.....2, 6, 8
Overlap "1".....*
Overlap "2".....Not Used
Overlap "3".....*
Overlap "4".....Not Used

*See overlap programming detail on sheet 2

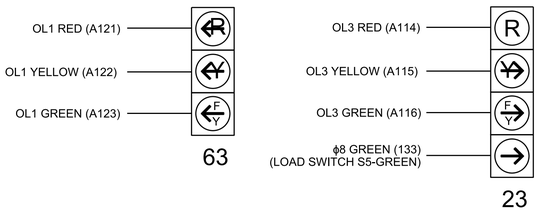
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8		S8P	S9	S10	S11	S12	S13	S14
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8		16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	8	6	6 PED	7	8		8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	NU	NU	23 ★	61,62	NU	NU	81,83	82	NU	63 ★	NU	NU	23 ★	NU	NU
RED		128						134				107					A114		
YELLOW		129					*	135											
GREEN		130						136											
RED ARROW											107			A121					
YELLOW ARROW											108	108		A122			A115		
FLASHING YELLOW ARROW														A123			A116		
GREEN ARROW							133				109	109							
✋																			
🚶																			

NU = Not Used
*Denotes install load resistor. See load resistor installation detail this sheet.
★See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	ϕ 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SYS. DET. S21	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		NOT USED							NOT USED					ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	ϕ 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ϕ 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		ϕ 6 6B				ϕ 8 8B								

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
*S21	TB6-9,10	I9U	60	22	13	SYS						
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
6B	TB3-7,8	J2L	44	6	17	6	3.0		X		X	X
8A	TB5-9,10	J6U	42	4	22	8	3.0		X		X	
8B	TB5-11,12	J6L	46	8	23	8	15.0		X		X	

*System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-2376
DESIGNED: December 2024
SEALED: 12/04/2024
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 50 (Benson Road)
at
SR 2562 (New Rand Road)

Division 5 | Wake County | Garner

PLAN DATE: December 2024 | REVIEWED BY:
PREPARED BY: Sarah Kirkpatrick | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

Signed by: Ryan W. Hough 12/04/2024
AUTHORIZED SIGNATURE DATE

SIG. INVENTORY NO. 05-2376

04-DEC-2024 13:39
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sgkirkpatrick

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	Sig.2.2

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
NOTE PHASE 8 → 5	Phase Vehicle	8		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	8				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	3
Type	FYA 4 - Section	FYA 4 - Section
Included Phases	2	6
Modifier Phases	-	8
Modifier Overlaps	-	-
Trail Green	0	0
Trail Yellow	0.0	0.0
Trail Red	0.0	0.0

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-2376
DESIGNED: December 2024
SEALED: 12/04/2024
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

NC 50 (Benson Road)
at
SR 2562 (New Rand Road)

Division 5 | Wake County | Garner

PLAN DATE: December 2024 | REVIEWED BY:
PREPARED BY: Sarah Kirkpatrick | REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Signal & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

Signed by: Ryan W. Hough 12/04/2024
430320FAA2654C3 DATE

SIG. INVENTORY NO. 05-2376

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Settings=Signals\Workgroups\Sig Mgmt\Projects From Signal Design\Active Projects\Kirkpatrick\05-1301 & 05-2376 (HL-0008C)\052376_smcele_20241204.dgn
sgkirkpatrick

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	SCP-1

1. INSTALL COAX CABLE
2. INSTALL ETHERNET CABLE
3. EXISTING ETHERNET (OR COAX) CABLE
4. INSTALL SMFO CABLE
5. EXISTING SMFO CABLE
6. INSTALL FIBER OPTIC DROP CABLE
7. INSTALL TRACER WIRE
8. TRENCH
9. INSTALL PVC CONDUIT
10. INSTALL RIGID, GALVANIZED STEEL CONDUIT
11. INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
12. INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL
13. INSTALL OUTER-DUCT POLYETHYLENE CONDUIT
14. INSTALL POLYETHYLENE CONDUIT
15. DIRECTIONAL DRILL CONDUIT
16. BORE AND JACK CONDUIT
17. INSTALL CABLE(S) IN EXISTING CONDUIT
18. INSTALL CABLE(S) IN NEW CONDUIT
19. INSTALL CABLE(S) IN EXISTING RISER
20. INSTALL CABLE(S) IN NEW RISER
21. INSTALL CABLE(S) IN EXISTING CONDUIT STUB-OUTS
22. INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
23. INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
24. INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET
25. INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
26. INSTALL NEW ETHERNET EDGE SWITCH
27. INSTALL NEW FIBER OPTIC TRANSCEIVER
28. INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPLICE CABLE IN CABINET
29. INSTALL UNDERGROUND SPLICE ENCLOSURE
30. INSTALL AERIAL SPLICE ENCLOSURE
31. MODIFY EXISTING INTERCONNECT CENTER / SPLICE ENCLOSURE
32. INSTALL POLE MOUNTED SPLICE CABINET
33. INSTALL BASE MOUNTED SPLICE CABINET
34. INSTALL CABINET FOUNDATION
35. INSTALL CCTV CAMERA POLE MOUNTED CABINET
36. INSTALL CCTV CAMERA ASSEMBLY
37. INSTALL CCTV CAMERA WOOD POLE
38. INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
39. INSTALL JUNCTION BOX
40A. INSTALL OVERSIZED JUNCTION BOX
40B. INSTALL SPECIAL OVERSIZED JUNCTION BOX (36" x 24" x 24")
41. REMOVE EXISTING JUNCTION BOX
42. INSTALL WOOD POLE
43. REMOVE EXISTING WOOD POLE
44. INSTALL AERIAL GUY ASSEMBLY
45. INSTALL STANDARD GUY ASSEMBLY
46. INSTALL SIDEWALK GUY ASSEMBLY
47. INSTALL MESSENGER CABLE
48A. REMOVE EXISTING COMMUNICATIONS AND MESSENGER CABLE
48B. REMOVE EXISTING COMMUNICATIONS CABLE
49. BACK PULL EXISTING COMMUNICATIONS CABLE
50. INSTALL CELL MODEM AND ANTENNA
51. INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
52A. INSTALL DELINEATOR MARKER
52B. INSTALL JUNCTION BOX MARKER
53A. STORE 20 FEET OF COMMUNICATIONS CABLE
53B. STORE 50 FEET OF EACH COMMUNICATIONS CABLE
54. LASH CABLE(S) TO EXISTING COMMUNICATIONS CABLE
55. LASH CABLE(S) TO EXISTING MESSENGER CABLE
56. LASH CABLE(S) TO NEW MESSENGER CABLE
57. MODIFY EXISTING ELECTRICAL SERVICE
58. INSTALL NEW ELECTRICAL SERVICE
59. INSTALL NEW EQUIPMENT CABINET DISCONNECT
60. BOND TRACER WIRE TO EQUIPMENT GROUND BUS
61. DO NOT BOND TRACER WIRE TO EQUIPMENT GROUND BUS
62. BOND RISER AND MESSENGER CABLE TO POLE GROUND
63. BOND RISER TO POLE GROUND
64. BOND MESSENGER CABLE TO POLE GROUND
65. INSTALL HEAT SHRINK TUBING RETROFIT KIT
66. INSTALL MOLDABLE DUCT SEAL
67. SLACK SPAN

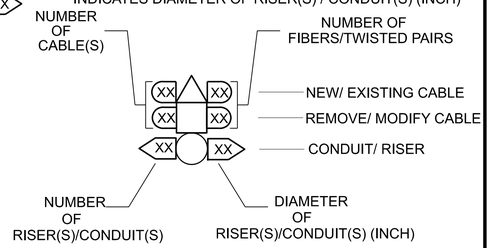
LEGEND

- FO — NEW FIBER OPTIC COMMUNICATIONS CABLE
- EXI — EXISTING COMMUNICATIONS CABLE
- REM — EXISTING COMMUNICATIONS CABLE TO BE REMOVED
- NEW AERIAL GUY ASSEMBLY
- NEW CONDUIT
- EXISTING CONDUIT
- DD — NEW DIRECTIONAL DRILLED CONDUIT

NEW		EXISTING
	OVERSIZED JUNCTION BOX	
	WOOD POLE	
S	AERIAL SPLICE ENCLOSURE	S
S	UNDERGROUND SPLICE ENCLOSURE	S
	METAL POLE	
	CCTV ASSEMBLY	
	STANDARD GUY ASSEMBLY	
	SIDEWALK GUY ASSEMBLY	
	CABLE STORAGE RACKS (SNOW SHOES)	
	SIGNAL/EQUIPMENT CABINET	
S	SPLICE CABINET	S
	FLAT PANEL ANTENNA (SINGLE)	
	YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION	
	YAGI ANTENNA (SINGLE)	
	OMNI ANTENNA	
SP	SIGNAL POLE	SP
XX-XXXX	SIGNAL INVENTORY NUMBER	XX-XXXX

CONSTRUCTION NOTE SYMBOLOGY KEY

- XX — INDICATES NUMBER OF CABLES, LOOPS, ETC.
- XX — INDICATES NUMBER OF FIBERS PER CABLE, TWISTED PAIRS PER CABLE, ETC.
- XX — INDICATES NUMBER OF RISER(S) / CONDUIT(S)
- XX — INDICATES DIAMETER OF RISER(S) / CONDUIT(S) (INCH)



ATTACHMENT POINT:

- XX"/SS / YYY — DISTANCE ABOVE (IN)/ATTACHMENT POINT REFERENCE POINT
- YYY / XX"/SS — REFERENCE POINT DISTANCE BELOW (IN)/ATTACHMENT POINT

"SS" REFERENCE LOCATION
FS = FRONT SIDE OF POLE
BS = BACK SIDE OF POLE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:

Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Intelligent Transportation Systems Section
750 N. Greenfield Pkwy. , Garner, NC 27529

CONSTRUCTION NOTES

DIVISION 5 | WAKE COUNTY | GARNER

PLAN DATE: JANUARY 2025 | REVIEWED BY: DocuSigned by: Greg Grin

PREPARED BY: M. DIAZ

REVISIONS | INIT. | DATE

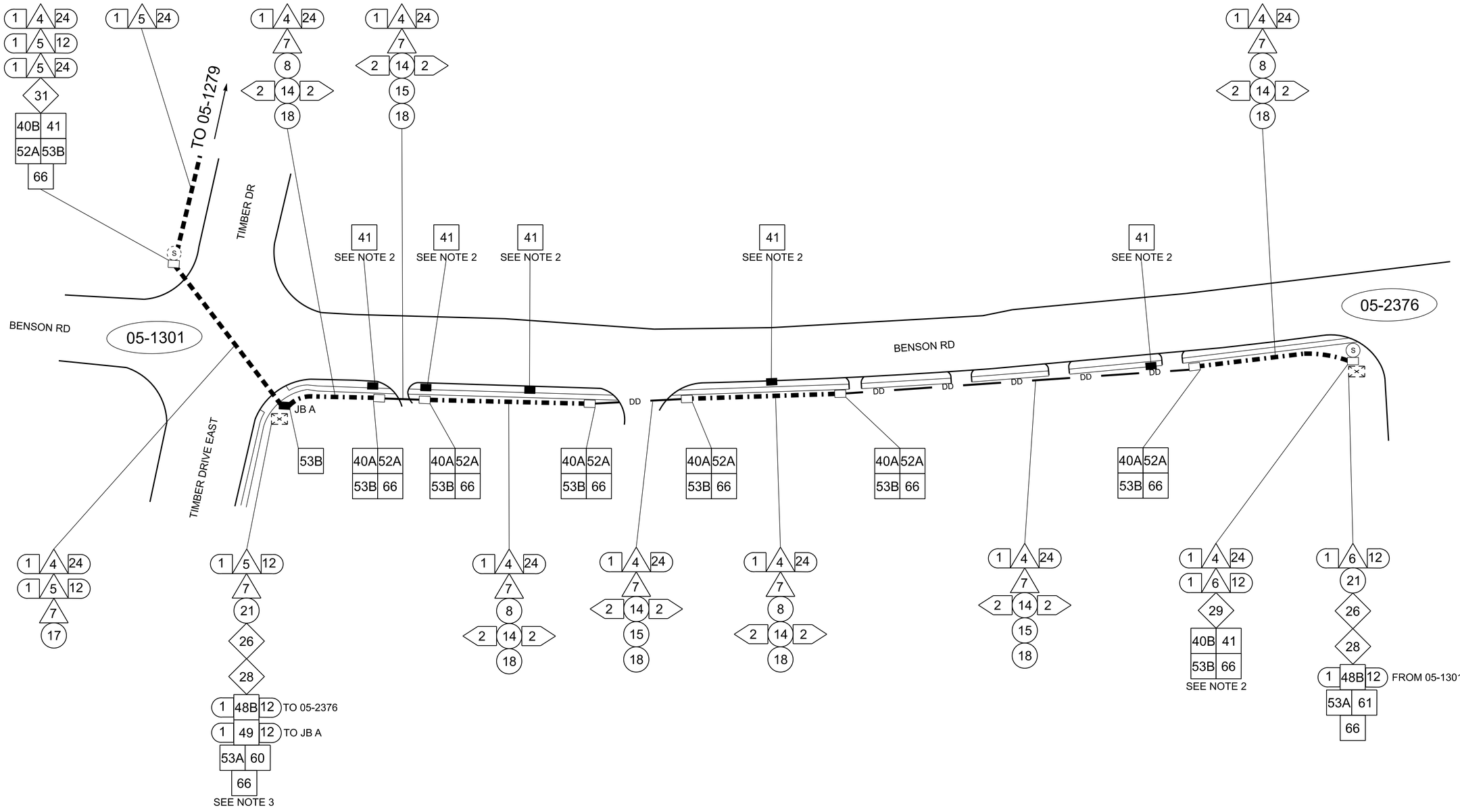
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 046152 ENGINEER ALEX D. STEWART

SIGNATURE: DocuSigned by: Alex D. Stewart

DATE: 01/21/2025

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	SCP-2



1. NOTIFY THE DIVISION 5 TRAFFIC ENGINEER AT 919-536-4000 FIVE (5) DAYS PRIOR TO BEGINNING WORK ON SIGNAL SYSTEM COMMUNICATIONS CABLE. NOTIFY THE DIVISION TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. ALL WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.

2. REMOVE AND DISPOSE OF EXISTING FIBER OPTIC CABLE AND EXISTING JUNCTION BOXES. CUT AND ABANDON CONDUITS AT 30" BELOW GRADE. FILL WITH APPROVED MATERIALS.

3. BACK PULL EXISTING 12-FIBER DROP CABLE FROM THE EXISTING SIGNAL CABINET AT 05-1301 TO JB A AND REROUTE TO THE NEW SIGNAL CABINET.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:
North Carolina Department of Transportation Traffic Engineering Branch
750 N. Greenfield Pkwy. , Garner, NC 27529

COMMUNICATIONS CABLE ROUTING PLANS D05-11 GARNER SIGNAL SYSTEM

DIVISION 5 | WAKE COUNTY | GARNER

PLAN DATE: JANUARY 2025 | REVIEWED BY: DocuSigned by: Greg Green
PREPARED BY: M. DIAZ

SCALE 0 N/A

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 046152 ENGINEER ALEX D. STEWART
SIGNATURE: DocuSigned by: Alex D. Stewart
DATE: 01/21/2025

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	SCP-3

MODIFY EXISTING UNDERGROUND SPLICE ENCLOSURE

NC 50 (BENSON RD) AT SR 2812 (TIMBER DR)

SIG. INV. # 05-1301

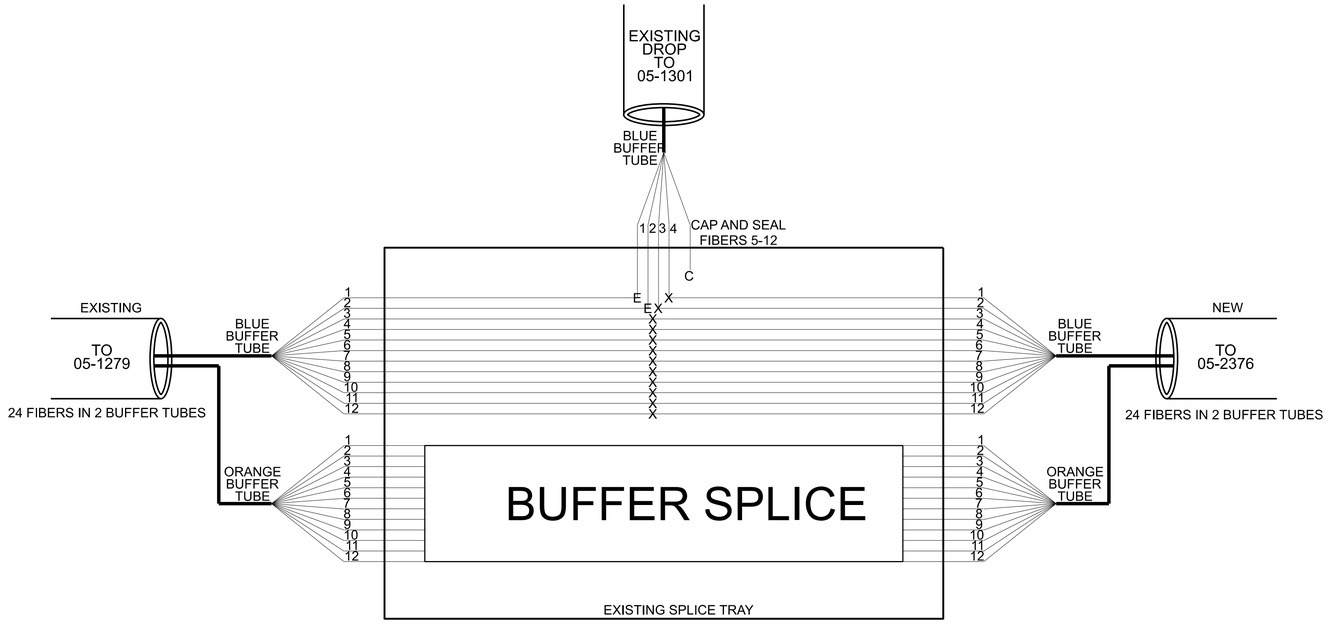
Notes:
Unused fibers left coiled and stored in splice tray.
Unused Buffer Tubes left coiled and stored in splice tray.

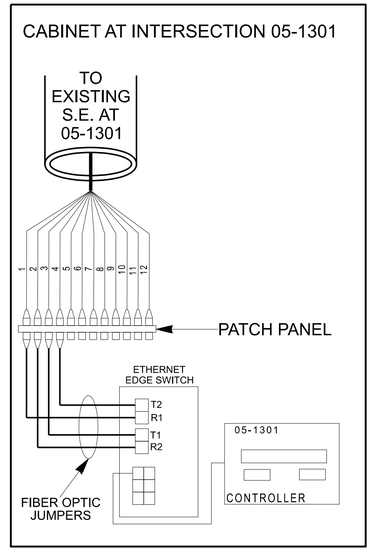
LEGEND
X = FUSION SPLICE
E = EXISTING SPLICE
C = CAP IN TRAY

EXPRESS = EXPRESS ALL FIBERS/ BUFFER TUBES

BUFFER SPLICE = SPLICE ALL FIBERS/ BUFFER TUBES

COLOR CODE TIA/EIA 598-A	
(1) BLUE	(7) RED
(2) ORANGE	(8) BLACK
(3) GREEN	(9) YELLOW
(4) BROWN	(10) VIOLET
(5) SLATE	(11) ROSE
(6) WHITE	(12) AQUA





1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 5 TRAFFIC ENGINEER AT 919-536-4000 TO ARRANGE FOR THE TOWN TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL

2. CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.

3. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \\ ENSURING PROPER TERMINATIONS.

4. INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING:
REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"

1) SPLICE LOCATION
2) DATE
3) COMPANY NAME
4) NAME OF INDIVIDUAL PERFORMING THE SPLICING

PRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1-4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch - Traffic Signal Section
750 N. Greenfield Pkwy. , Garner, NC 27529

D05-11 GARNER SIGNAL SYSTEM
SPLICING DETAIL

DIVISION 5 WAKE COUNTY GARNER

PLAN DATE: JANUARY 2025
PREPARED BY: M. DIAZ
REVIEWED BY: Greg Green (DocuSigned by:)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 046152 ENGINEER ALEX D. STEWART
SIGNATURE: Alex D. Stewart (DocuSigned by:)
DATE: 01/21/2025

PROJECT REFERENCE NO.	SHEET NO.
HL-0008C	SCP-4

UNDERGROUND SPLICE ENCLOSURE

NC 50 (BENSON RD) at SR 2562 (NEW RAND RD)

SIG. INV. # 05-2376

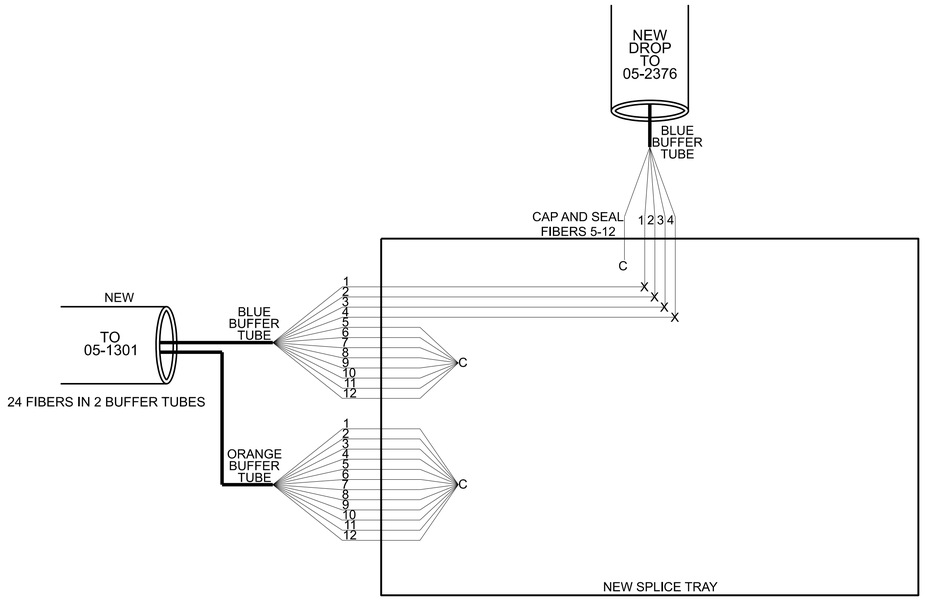
Notes:
Unused fibers left coiled and stored in splice tray.
Unused Buffer Tubes left coiled and stored in splice tray.

LEGEND
X = FUSION SPLICE
E = EXISTING SPLICE
C = CAP IN TRAY

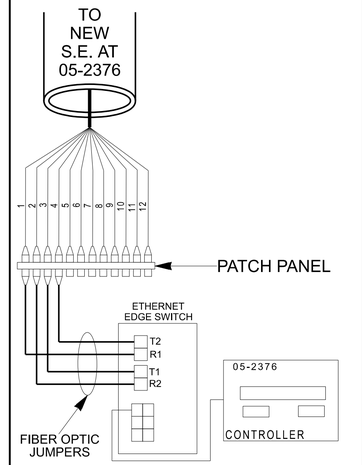
EXPRESS = EXPRESS ALL FIBERS/ BUFFER TUBES

BUFFER SPLICE = SPLICE ALL FIBERS/ BUFFER TUBES

COLOR CODE TIA/EIA 598-A	
(1) BLUE	(7) RED
(2) ORANGE	(8) BLACK
(3) GREEN	(9) YELLOW
(4) BROWN	(10) VIOLET
(5) SLATE	(11) ROSE
(6) WHITE	(12) AQUA



CABINET AT INTERSECTION 05-2376



1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 5 TRAFFIC ENGINEER AT 919-536-4000 TO ARRANGE FOR THE TOWN TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL

2. CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.

3. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \\ ENSURING PROPER TERMINATIONS.

4. INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING:
REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"

1) SPLICE LOCATION
2) DATE
3) COMPANY NAME
4) NAME OF INDIVIDUAL PERFORMING THE SPLICING

PRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1-4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:
750 N. Greenfield Pkwy., Garner, NC 27529

D05-11 GARNER SIGNAL SYSTEM
SPLICING DETAIL

DIVISION 5 WAKE COUNTY GARNER

PLAN DATE: JANUARY 2025
PREPARED BY: M. DIAZ
REVIEWED BY: Docusigned by: Greg Green 05E5BBEC7054AEA

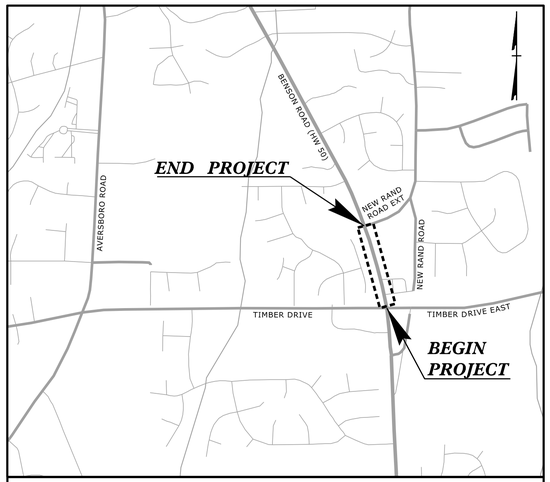
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 046152 ENGINEER ALEXD STEWART
SIGNATURE: Docusigned by: Alex D Stewart 5E7F0E5E1E3A4A6...
DATE: 01/21/2025

09/08/99

TIP PROJECT: HL–0008C

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP NTS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
WAKE COUNTY

STATE PROJECT REFERENCE NO.	SHEET NO.
HL–0008C	UO–1

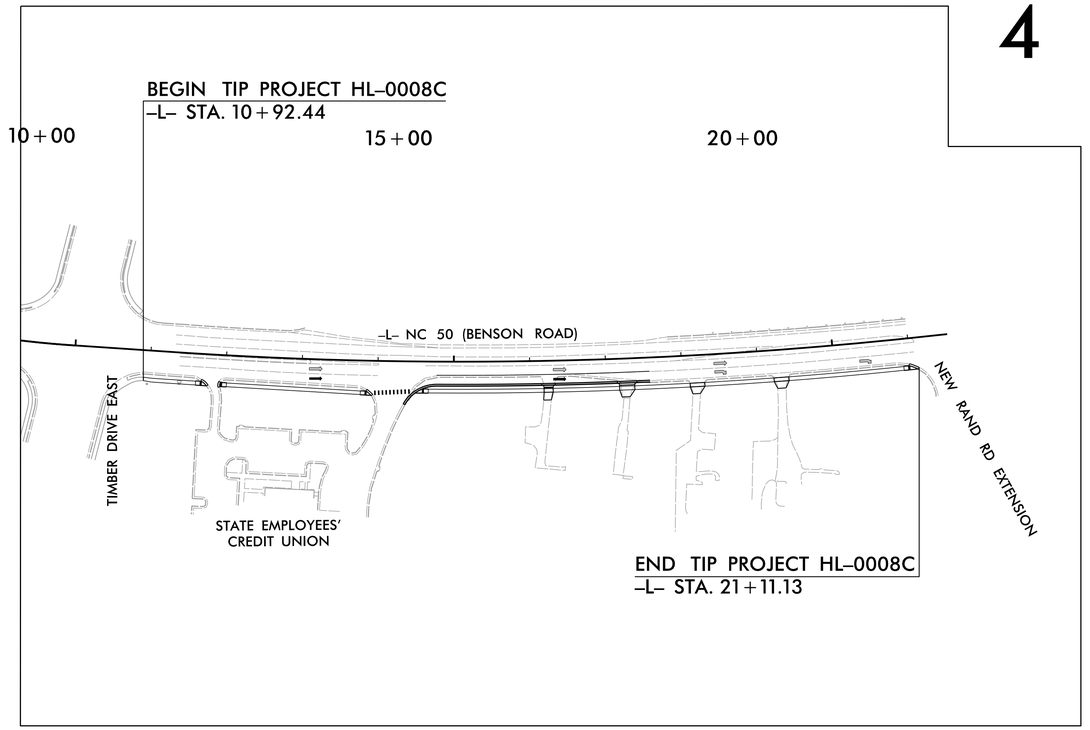
NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

LOCATION: NC 50 (BENSON ROAD) FROM STATE EMPLOYEES' CREDIT UNION DRIVEWAY TO NEW RAND ROAD EXTENSION GARNER, NORTH CAROLINA

TYPE OF WORK: UTILITY RELOCATION

NAD 83/NA 2011

4



TO BENSON

TO GARNER

GRAPHIC SCALES

PLANS: 40 20 0 40 80

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

INDEX OF SHEETS

UTILITY OWNERS WITH CONFLICTS

(A) FIBER – CHARTER
(B) FIBER – AT&T
(C) FIBER/SIGNAL COMMUNICATIONS – NCDOT
(D) POWER – DUKE ENERGY

Prepared in the Office of:

DRMP
ENGINEERS • SURVEYORS • PLANNERS • SCIENTISTS
DRMP, INC.
5808 FARINGDON PLACE
RALEIGH, NC 27609
PHONE: 919-872-5115
www.drmp.com | NC License No. F-1524

UTILITIES PROJECT ENGINEER:

MIKAYLA M. LINDSEY, EI

DIVISION OF HIGHWAYS – DIVISION 5

PROJECT DELIVERY UNIT
2612 N. DUKE STREET
DURHAM, NC 27704

SUSAN C. LANCASTER, PE	*TEAM LEAD*
JOHN W. BRAXTON	*PROJECT MANAGER*
DONALD W. PROPER	*DIV. 5 UTILITIES ENGINEER*
JAMES E. SWINSON	*DIV. 5 UTILITY COORDINATOR*

1/6/2025
...\UBO\Proj\HL0008C_utl_tsh.dgn
User: mlindsey

8/17/99

NOTE: REFER TO ROADWAY PLAN SHEET 4 FOR FIRE HYDRANT AND WATER VALVE ADJUSTMENTS. NO UC WORK ON THIS SHEET UO–2.

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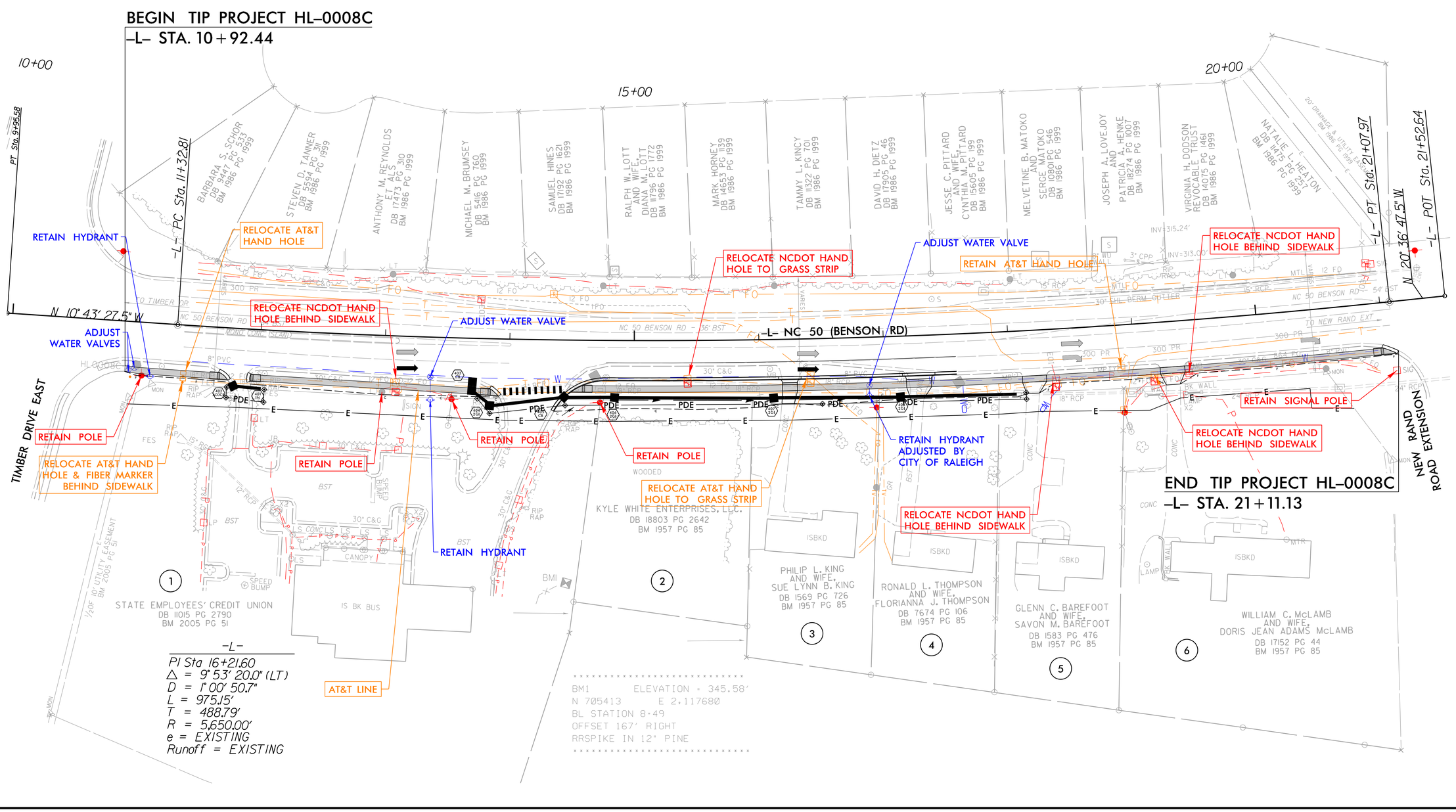
RALEIGH, NC 27609
(919) 872-5115
NC LICENSE NO. F-1524
www.drmp.com

PROJECT REFERENCE NO.	SHEET NO.
HL–0008C	UO–2
THIS SHEET CORRESPONDS TO	4

UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

NAD 83/2011



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

PROJ. REFERENCE NO.	SHEET NO.
HL-0008C	X-1A

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RALEIGH, NC 27609
(919) 872-5115

NC LICENSE NO. F-1524
www.drmp.com

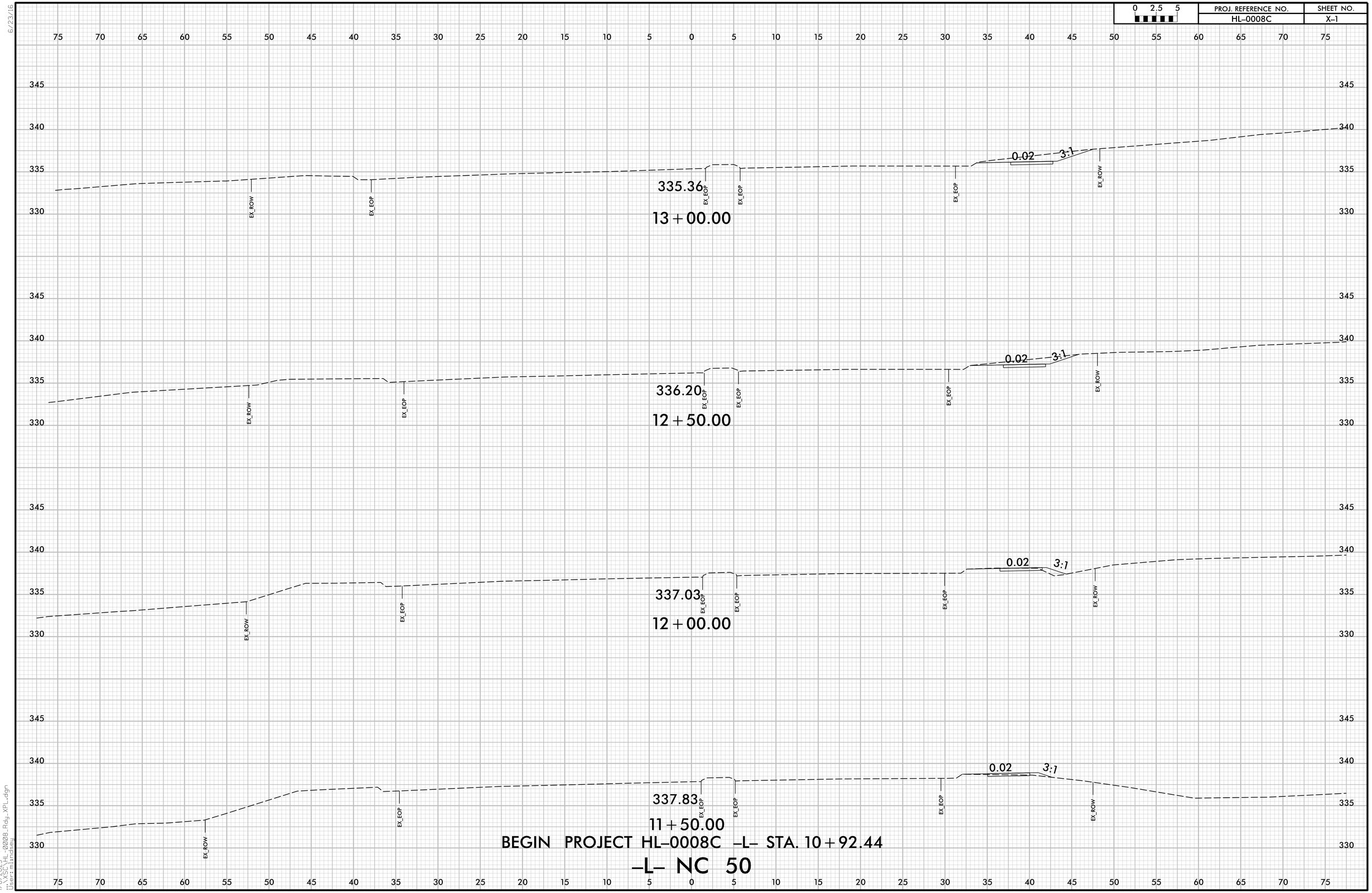
NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+92.44	1	1
11+50.00	1	1
12+00.00	2	0
12+50.00	7	0
13+00.00	9	0
13+50.00	4	0
14+00.00	0	0
14+50.00	0	0
15+00.00	30	0
15+50.00	34	0
16+00.00	34	0
16+50.00	40	0
17+00.00	23	0
17+50.00	7	0
18+00.00	0	1
18+50.00	0	1
19+00.00	0	3
19+50.00	1	1
20+00.00	1	1
20+50.00	1	0
21+00.00	1	0
21+11.13	1	0

Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008C	X-1



BEGIN PROJECT HL-0008C -L- STA. 10+92.44

-L- NC 50

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008C	X-2

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

340 335 330 325

EX_ROW EX_EOP EX_EOP

331.08
15+00.00

EXIST. SE 331.73 0.02 3:1 3:1 331.43 EX_ROW

340 335 330 325

EX_ROW EX_EOP EX_EOP EX_ROW

332.14
14+50.00

DRIVEWAY

340 335 330 325

EX_ROW EX_EOP EX_ROW

333.18
14+00.00

DRIVEWAY

345 340 335 330

EX_ROW EX_EOP EX_EOP EX_ROW

334.28
13+50.00

0.02 3:1

–L– NC 50

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

1/6/2025
i:\XSC\HL-0008_Rdy_XPL.dgn
User:mlindsey

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008C	X-3

6/23/16

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

335 330 325 320

EX_ROW

EX_EOP

326.76
17+00.00

EX_EOP

EXIST. SE

327.51

0.02

3:1

3:1

327.19

EX_ROW

335 330 325 320

EX_ROW

EX_EOP

327.81
16+50.00

EX_EOP

EXIST. SE

328.47

0.02

3:1

3:1

328.16

EX_ROW

335 330 325

EX_ROW

EX_EOP

328.90
16+00.00

EX_EOP

EXIST. SE

329.66

0.02

3:1

3:1

329.35

EX_ROW

340 335 330 325

EX_ROW

EX_EOP

329.96
15+50.00

EX_EOP

EXIST. SE

330.70

0.02

3:1

3:1

330.39

EX_ROW

–L– NC 50

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

1/6/2025
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User:mlindsey

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008C	X-4

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

330 325 320 315 310

EX_ROW EX_EOP 324.10 EX_EOP EX_ROW 0.02 3:1

19+00.00

330 325 320

EX_ROW EX_EOP 324.57 EX_EOP EX_ROW 0.02 3:1

18+50.00

330 325 320

EX_ROW EX_EOP 325.13 EX_EOP EX_ROW 0.02 3:1

18+00.00

335 330 325 320

EX_ROW EX_EOP 325.86 EX_EOP EXIST. SE 326.48 EX_ROW 0.02 3:1

17+50.00

–L– NC 50

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

1/6/2025
I:\VSC\HL-0008_Rdy_XPL.dgn
User:mlindsey

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008C	X-5

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

330
325
320
315
310
305

EX_ROW
EX_EOP
323.58
EX_EOP
0.02
3:1
EX_ROW

20+00.00

330
325
320
315
310
305

EX_ROW
EX_EOP
323.78
EX_EOP
0.02
3:1
EX_ROW

19+50.00

–L– NC 50

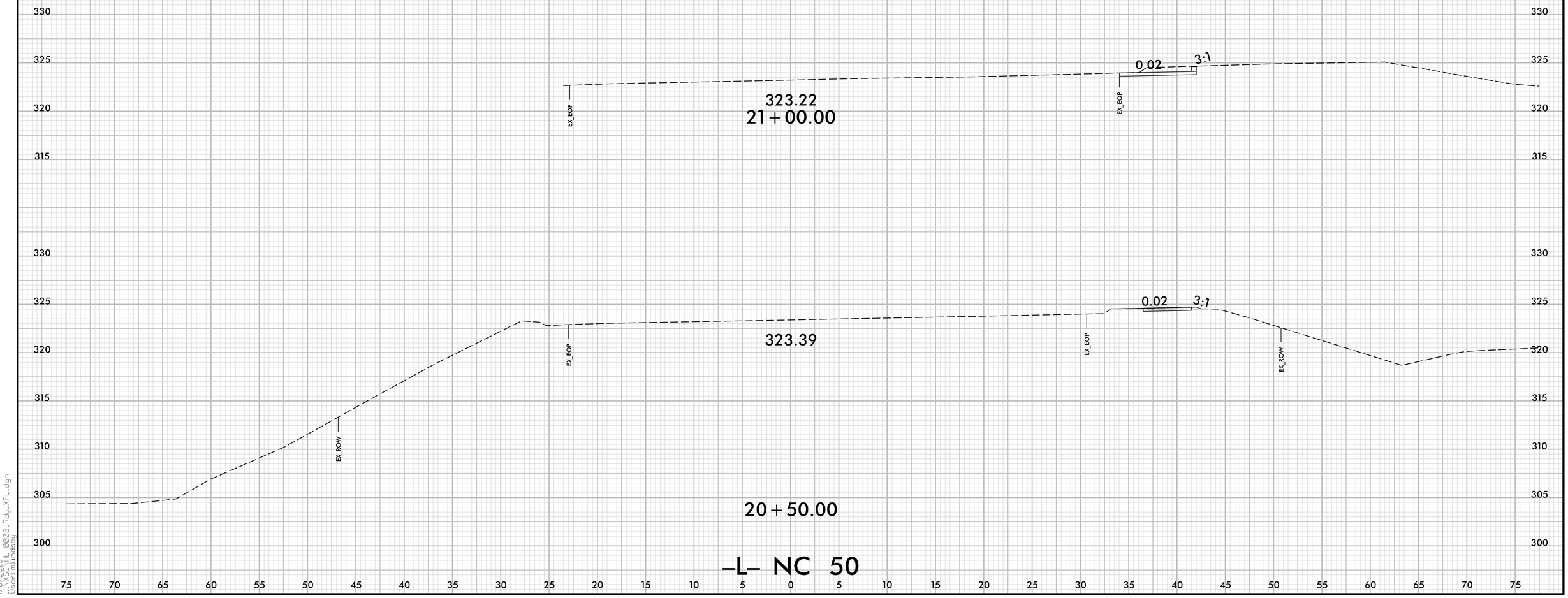
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

6/23/16

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
HL-0008C	X-6

END PROJECT HL-0008C
-L- STA. 21+11.13

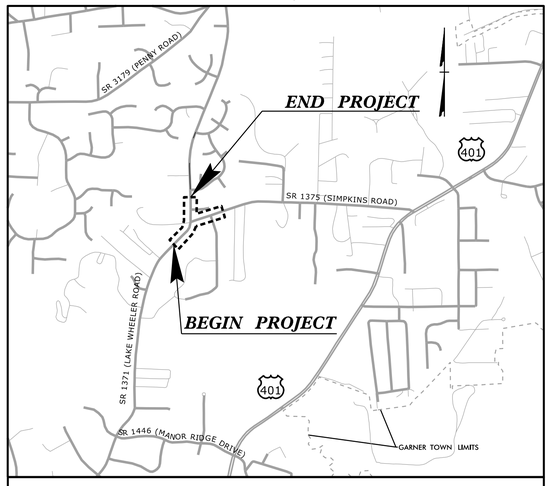


09/08/99

TIP PROJECT: HL–0008H

CONTRACT: DE00353

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP NTS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

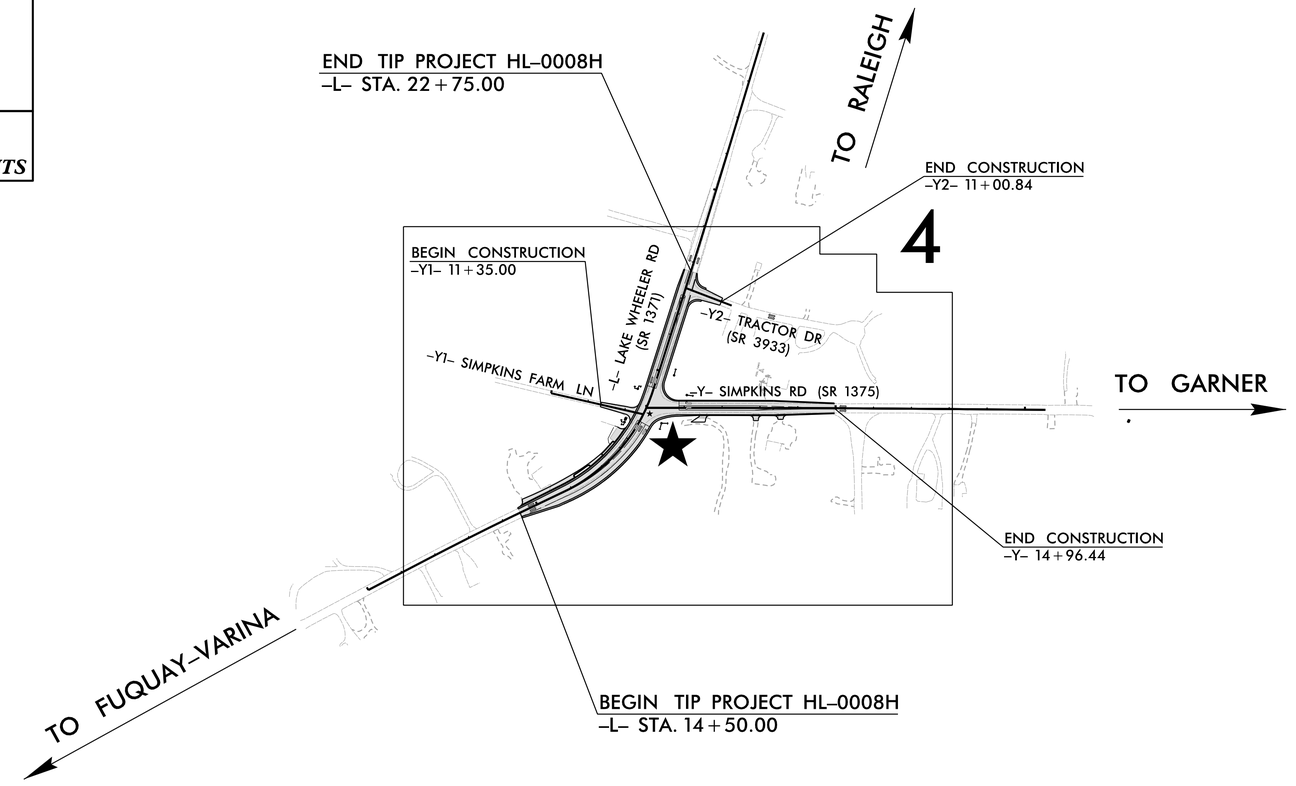
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL–0008H	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
49367.1.4		PE
49367.2.4	1371003	ROW
49367.2.19	1371003	UTL
49367.3.4		CON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: SR 1371 (LAKE WHEELER ROAD) & SR 1375 (SIMPKINS ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE & SIGNALS



★ PROPOSED SIGNAL MODIFICATION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

ADT 2019 = 13,000

V = 40 MPH (SOUTH OF INTERSECTION)

V = 50 MPH (NORTH OF INTERSECTION)

FUNCTIONAL CLASS: MAJOR COLLECTOR

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT HL–0008H = 0.156 MILES

NCDOT CONTACT:

JOHN W. BRAXTON, PE
SENIOR PROJECT ENGINEER
PH: 919–707–6219

Prepared In the Office of:

DRMP
ENGINEERS • SURVEYORS • PLANNERS • SCIENTISTS

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5808 FARINGDON PLACE
RALEIGH, NC 27609
PHONE: 919-872-5115
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2024 STANDARD SPECIFICATIONS

AUGUST 22, 2022
RIGHT OF WAY DATE:
APRIL 23, 2025
LETTING DATE:

KAYLA M. POULOS, PE
PROJECT ENGINEER

MIKAYLA M. LINDSEY, EI
PROJECT DESIGNER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 55416 ENGINEER FORREST N. BROOKS

DocuSigned by: Forrest Brooks 3/11/2025
SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M. POULOS

Signed by: Kayla M. Poulos 3/11/2025
SIGNATURE:

STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

3/11/2025
...\Proj\HL0008H_Rdy_tsh.dgn
User: mlindsey

DRMP
DRMP INC.
5808 FARRINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115
NC LICENSE NO. F-1524
www.drmp.com

PROJECT REFERENCE NO.	SHEET NO.
HL–0008H	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KATIA M. POULIOT
1/24/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS, GENERAL NOTES AND 2024 ROADWAY ENGLISH STANDARD DRAWINGS

INDEX OF SHEETS

GENERAL NOTES 2024 SPECIFICATIONS EFF. 01–16–2024

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELELVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACE. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE–IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

UTILITIES

UTILITY OWNERS ON THIS PROJECT ARE AT&T, VERIZON, CHARTER, TING, NCDOT, AND DUKE ENERGY. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT–OF–WAY MARKERS:

ALL RIGHT–OF–WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

2024 ROADWAY ENGLISH STANDARD DRAWINGS EFF. 01–16–2024

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" HIGHWAY DESIGN BRANCH – 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
DIVISION 2 – EARTHWORK	
200.03	METHOD OF CLEARING – METHOD III
225.02	GUIDE FOR GRADING SUBGRADE – SECONDARY AND LOCAL
225.03	DECELARATION AND ACCELERATION LANES
225.04	METHOD OF OBTAINING SUPERELEVATION – TWO LANE PAVEMENT
225.06	METHOD OF GRADING SIGHT DISTANCE AT INTERSECTIONS
DIVISION 3 – PIPE CULVERTS	
300.01	METHOD OF PIPE INSTALLATION
310.10	DRIVEWAY PIPE CONSTRUCTION
DIVISION 5 – SUBRADE, BASES, AND SHOULDERS	
560.01	METHOD OF SHOULDER CONSTRUCTION – HIGH SIDE OF SUPERELEVATED CURVE – METHOD I
DIVISION 6 – ASPHALT BASES AND PAVEMENTS	
654.01	PAVEMENT REPAIRS

STD. NO.	TITLE
DIVISION 8 – INCIDENTALS	
806.02	GRANITE RIGHT–OF–WAY MARKER
840.72	PIPE COLLAR
846.01	CONCRETE CURB, GUTTER, AND CURB & GUTTER
848.02	DRIVEWAY TURNOUT – RADIUS TYPE
848.04	STREET TURNOUT
876.01	RIP RAP IN CHANNELS AND DITCHES
876.02	GUIDE FOR RIP RAP AT PIPE OUTLETS
876.04	DRAINAGE DITCHES WITH CLASS 'B' RIP RAP

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP) — EIP
- Computed Property Corner
- Existing Concrete Monument (ECM) — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Secondary Horiz and Vert Control Point
- Vertical Benchmark
- Existing Right of Way Monument
- Proposed Right of Way Monument (Rebar and Cap)
- Proposed Right of Way Monument (Concrete)
- Existing Permanent Easement Monument
- Proposed Permanent Easement Monument (Rebar and Cap)
- Existing C/A Monument
- Proposed C/A Monument (Rebar and Cap)
- Proposed C/A Monument (Concrete)
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Existing Control of Access Line — CA
- Proposed Control of Access Line — CA
- Proposed ROW and CA Line — RW CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage/Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

** SUE – Subsurface Utility Engineering*
LOS – Level of Service – A,B,C or D (Accuracy)

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H–Frame Pole
- U/G Power Line Test Hole (SUE – LOS A)*
- U/G Power Line (SUE – LOS B)* — P
- U/G Power Line (SUE – LOS C)* — P
- U/G Power Line (SUE – LOS D)* — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Test Hole (SUE – LOS A)*
- U/G Telephone Cable (SUE – LOS B)* — T
- U/G Telephone Cable (SUE – LOS C)* — T
- U/G Telephone Cable (SUE – LOS D)* — T
- U/G Telephone Conduit (SUE – LOS B)* — TC
- U/G Telephone Conduit (SUE – LOS C)* — TC
- U/G Telephone Conduit (SUE – LOS D)* — TC
- U/G Fiber Optics Cable (SUE – LOS B)* — T FO
- U/G Fiber Optics Cable (SUE – LOS C)* — T FO
- U/G Fiber Optics Cable (SUE – LOS D)* — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line Test Hole (SUE – LOS A)*
- U/G Water Line (SUE – LOS B)* — W
- U/G Water Line (SUE – LOS C)* — W
- U/G Water Line (SUE – LOS D)* — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Test Hole (SUE – LOS A)*
- U/G TV Cable (SUE – LOS B)* — TV
- U/G TV Cable (SUE – LOS C)* — TV
- U/G TV Cable (SUE – LOS D)* — TV
- U/G Fiber Optic Cable (SUE – LOS B)* — TV FO
- U/G Fiber Optic Cable (SUE – LOS C)* — TV FO
- U/G Fiber Optic Cable (SUE – LOS D)* — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line Test Hole (SUE – LOS A)*
- U/G Gas Line (SUE – LOS B)* — G
- U/G Gas Line (SUE – LOS C)* — G
- U/G Gas Line (SUE – LOS D)* — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

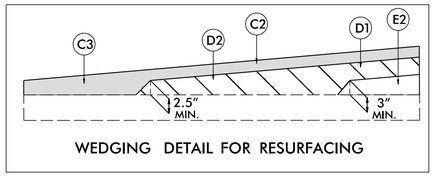
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Force Main Line Test Hole (SUE – LOS A)*
- SS Force Main Line (SUE – LOS B)* — FSS
- SS Force Main Line (SUE – LOS C)* — FSS
- SS Force Main Line (SUE – LOS D)* — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line (SUE – LOS B)* — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2.0" IN DEPTH.
C4	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 280 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NO LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NO LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
J1	PROP. 6" AGGREGATE BASE COURSE
R1	1'-6" CURB AND GUTTER
R2	VALLEY GUTTER
T	COMPACTED EARTH MATERIAL
U	EXISTING PAVEMENT
V1	VARIABLE DEPTH MILLING
W	WEDGING

NOTES: 1. ALL PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE SPECIFIED.
2. SEE ROADWAY PLANS FOR LOCATION OF INTERSECTION TURNOUTS AND TURN LANES.

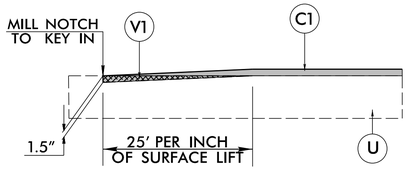


WEDGING DETAIL FOR RESURFACING

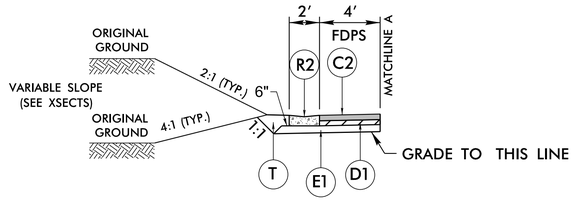
NOTES:
FOR SURFACE MIX OVER 1" IN THICKNESS, MILL THE EXISTING PAVEMENT IN ACCORDANCE WITH THE FOLLOWING SKETCH AS DIRECTED BY THE ENGINEER

LOCATIONS SHALL INCLUDE TIES INTO EXISTING PAVEMENT.

PERFORM THE WORK IN ACCORDANCE WITH SECTION 607 OF THE JANUARY 2024 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
RESURFACING WILL BE ACCOMPLISHED AT THE SAME TIME AS THE MILLING OPERATION.

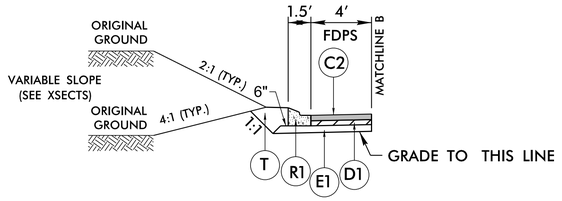


INCIDENTAL MILLING DETAIL
AS DIRECTED BY THE ENGINEER



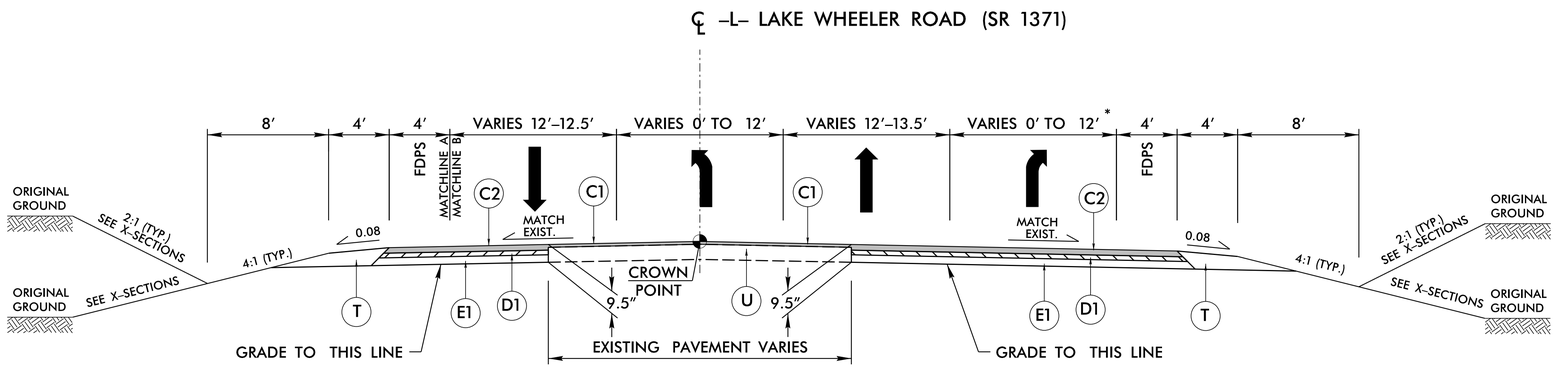
TYPICAL SECTION NO. 1A

–L– STA. 14+62.60 TO –L– STA. 16+21.24
–L– STA. 16+76.54 TO –L– STA. 17+15.36
–L– STA. 17+70.81 TO –L– STA. 18+20.97
NOTE: TIE TO EXIST. C&G, SEE PLAN VIEW



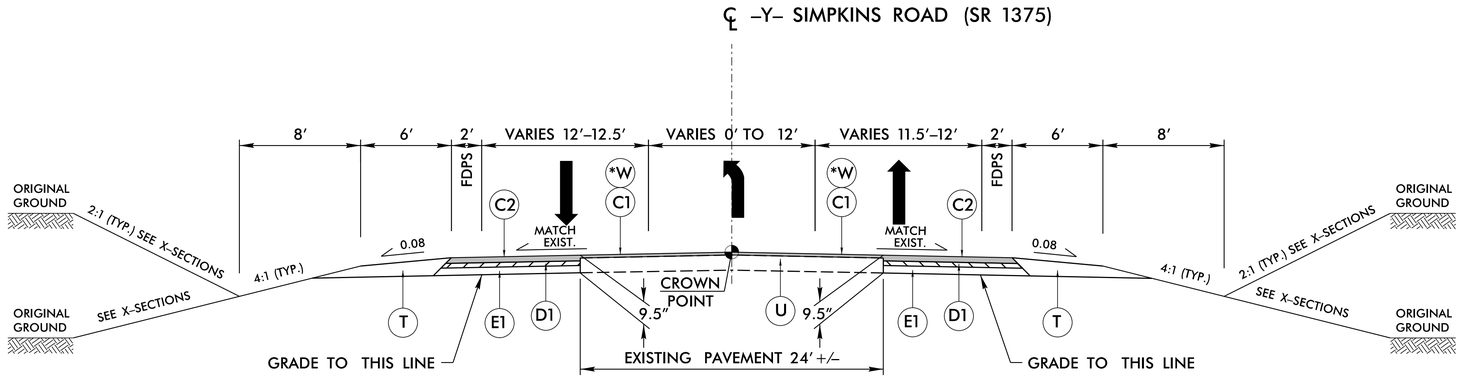
TYPICAL SECTION NO. 1B

–L– STA. 16+21.24 TO –L– STA. 16+76.54
–L– 17+15.36 TO –L– STA. 17+70.81



TYPICAL SECTION NO. 1

–L– STA. 14+50.00 TO –L– STA. 22+75.00
* –L– STA. 14+50.00 TO –L– STA. 18+56.35



TYPICAL SECTION NO. 2

–Y– STA. 11+30.14 TO –Y– STA. 14+96.44
*NOTE: SOME WEDGING WILL BE REQUIRED –Y– STA. 10+50.00 TO –Y– STA. 11+50.00

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PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	2A-1

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 050515 KAYLA M. POWLOS
1/24/2025

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 018204 VICTOR M. CHAVEZ
1/24/2025

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PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
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D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
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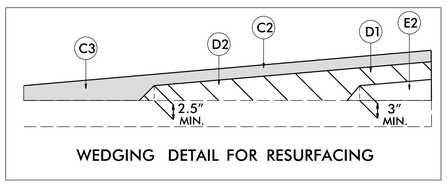
T	COMPACTED EARTH MATERIAL
U	EXISTING PAVEMENT
V1	VARIABLE DEPTH MILLING
W	WEDGING

NOTES: 1. ALL PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE SPECIFIED.
2. SEE ROADWAY PLANS FOR LOCATION OF INTERSECTION TURNOUTS AND TURN LANES.

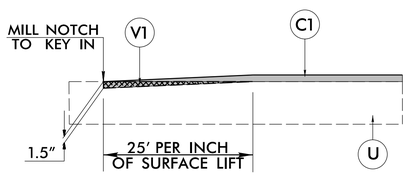


WEDGING DETAIL FOR RESURFACING

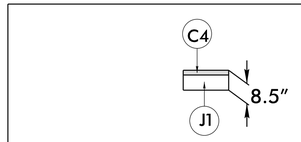
NOTES:
FOR SURFACE MIX OVER 1" IN THICKNESS, MILL THE EXISTING PAVEMENT IN ACCORDANCE WITH THE FOLLOWING SKETCH AS DIRECTED BY THE ENGINEER

LOCATIONS SHALL INCLUDE TIES INTO EXISTING PAVEMENT.

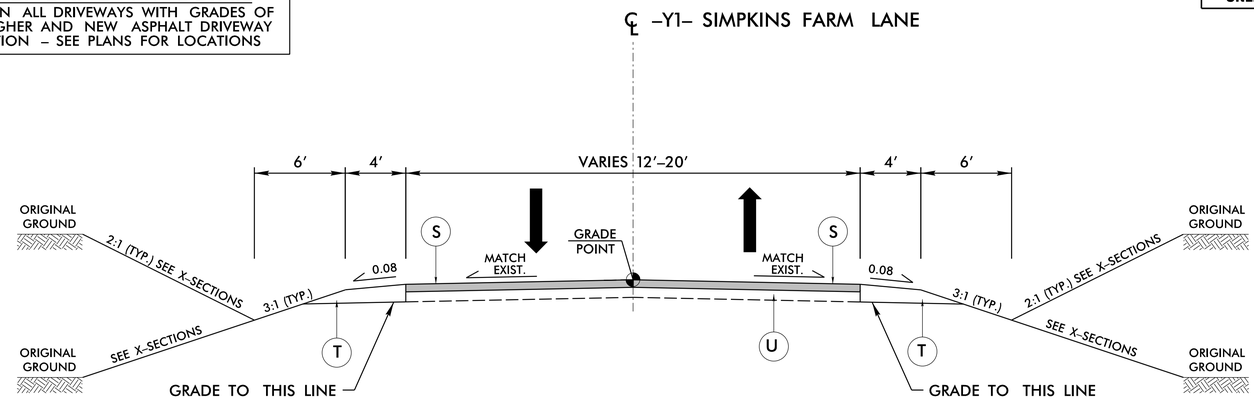
PERFORM THE WORK IN ACCORDANCE WITH SECTION 607 OF THE JANUARY 2024 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. RESURFACING WILL BE ACCOMPLISHED AT THE SAME TIME AS THE MILLING OPERATION.



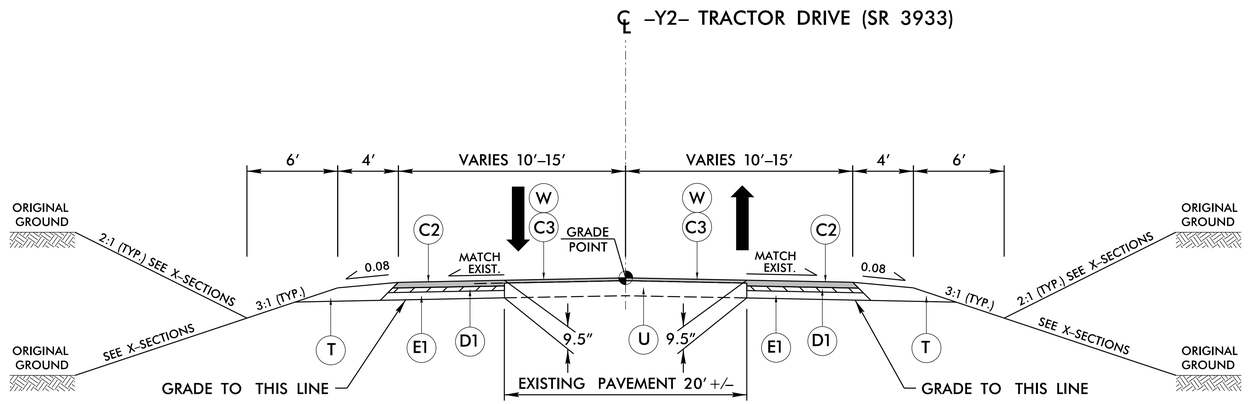
INCIDENTAL MILLING DETAIL
AS DIRECTED BY THE ENGINEER



ASPHALT DRIVEWAY DETAIL
FOR USE ON ALL DRIVEWAYS WITH GRADES OF 7% OR HIGHER AND NEW ASPHALT DRIVEWAY INSTALLATION – SEE PLANS FOR LOCATIONS



TYPICAL SECTION NO. 3
–Y1– STA. 11+35.00 TO –Y1– STA. 12+10.54



TYPICAL SECTION NO. 4
–Y2– STA. 10+50.78 TO –Y2– STA. 11+00.84

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PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	2A-2

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 050515 KAYLA M. POULOS
1/28/2025

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 018204 VICTOR M. CHINEY
1/28/2025

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8/17/99

★ PROPOSED SIGNAL MODIFICATION

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NC LICENSE NO. F-1524
www.drmp.com

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M POLITO

Kayla M. Polito

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20 10 0 20 40
SCALE

NAD 83 NA 2011

20+00

13+00

16+00

-L- LAKE WHEELER RD. (SR 1371)

4" FDPS

12' 12' 12'

EX.

-L- POC Sta. 18+95.56=
-Y- POT Sta. 10+00.00

-Y- SIMPKINS RD. (SR 1375)

2' FDPS

R 40'
+75.93

+82.30
+86.44

200' LT
STORAGE & DECEL.

.032
.011
.00
.01
.018
.020
.03
.036

18'

-Y1- SIMPKINS FARM LN.

+99.65
+13.52
R 20'
R 20'
20'

50' LT
STORAGE

+05.15
+38.43
R 15'
+20.97
+06.35

6' O.S.

23'

27' (TYP.)

ASPHALT DRIVEWAY

13'

ASPHALT DRIVEWAY

DRIVEWAY REPLACEMENT LIMITS

36'

12' 12' 12' 12'

R 50'
+56.35

+86.44

R 150'
+86.21

100' TAPER

SEE ISLAND DETAIL THIS SHEET

+06.35

4.75'

1'-6" C&G

2' VALLEY GUTTER

6" CONC. DRIVE

ASPHALT DRIVEWAY

+73.15
27.10

42'

+65.65
28.19

R 21.5'

6'

R 4'

+26.15
27.40

+26.34
18.40

1'-6" C&G

+71.88
19.31

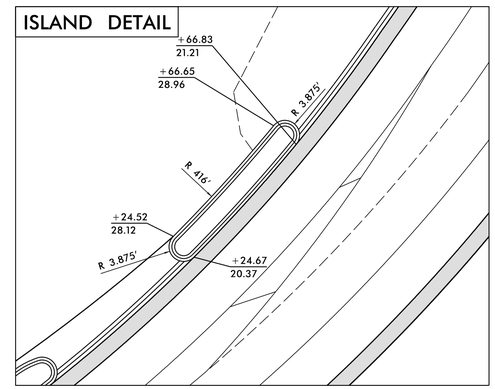
12'

R 4.5'

2' VALLEY GUTTER

2' VALLEY GUTTER

ISLAND DETAIL



INTERSECTION DETAIL

FOR -L-, -Y-, AND -Y1- PLANS, SEE SHEET NO. 4

1/6/2025
...\Proj\HL0008H_Rdy_2B-1.dgn
User:kforbes

COMPUTED BY:	GEOPAK & MML	DATE:	6/21/2023
CHECKED BY:	KMP	DATE:	6/21/2023

PROJECT NO.	SHEET NO.
HL-0008H	3B-1

DRMP

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5808 FARINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115

NC LICENSE NO. F-1524
www.drmp.com

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

LINE	Station	Station	Uncl. Excv.	Embank.	Borrow	Waste
-L-	14+50.00	22+50.00	688	882	194	0
-Y-	10+50.00	14+50.00	638	164	0	474
-Y1-	11+35.00	11+75.00	171	1	0	170
-Y2-	10+25.00	11+00.00	43	13	0	30
TOTAL			**1540**	**1060**	**194**	**674**
ADJUSTMENTS DUE TO						
Est. Loss Due To Clearing And Grubbing			0	0	0	0
Shoulder Material			0	0	0	0
Rock Waste To Replace Borrow						
Adjust For Rock Swell That Replaces Borrow						
Eliminate Shrinkage For Mat'l That Is Now Rock						
Earth Waste to Replace Borrow					-194	-194
PROJECT TOTAL			**1540**	**1060**	**0**	**480**
Est. 5% to Replace Topsoil in Borrow Pits						
GRAND TOTAL			**1540**	**0**	**0**	**0**
SAY			**1600**		**0**	
Est. Shoulder Borrow	**500 CY**		CONTIGENCY			
Geotextile For Soil Stab.	**300 SY**		CONTIGENCY			
Estimate Shallow Undercut	**100 CY**		CONTIGENCY			
Class IV Subgrade Stab.	**200 TONS**		CONTIGENCY			

Approximate quantities only. Unclassified excavation, shoulder borrow, fine grading, and clearing and grubbing will be paid for at the contract lump sum price for "Grading".

Earthwork quantities are calculated by the roadway designer. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

SUMMARY OF INCIDENTAL MILLING

LINE	Station	Station	Length	Avg. Width	Area (yd^2)
-L-	14+50.00	15+25.00	75	26.00	216.67
-L-	22+00.00	22+75.00	75	36.00	300.00
-Y-	14+21.44	14+96.44	75	24.00	200.00
				TOTAL:	**716.67**
				SAY:	**800**

RAL-KFORBES

COMPUTED BY:	Tyler Doolittle	DATE:	12/10/2021
CHECKED BY:	Michael Bywaletz	DATE:	12/10/2021

PROJECT NO.	SHEET NO.
HL-0008H	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION SIZE THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	R. C. PIPE CLASS IV														
		FROM	TO	FT.	FT.	FT.	%	12	15	18	24	30	36	42	48	54	60	66	72	78	84	
-L- 21+38	20 RT	0400	0401		385.3	385.0	0.5			20												
-L- 21+38	20 LT	0402	0403		384.1	383.8	0.5			20												
-Y- 13+55	25 RT	0406							28													
-L- 22+15	40 RT	0404	0405		388.7	387.7				64												
SHEET TOTALS									28	104												
PROJECT TOTALS									28	104												

LINE & STATION	CONCRETE TRANSITIONAL SECTION		OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.2	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.2	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.2	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.2	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.3	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAG	##" SPRING BOX PIPE	SPRING BOX STD. 840.41		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54
	D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																													
-L- 21+38																															
-L- 21+38																															
-Y- 13+55																															
-L- 22+15																															
SHEET TOTALS																															
PROJECT TOTALS																															

LINE & STATION		##" x ##" x ##" PERF. C.S.P. TEE RISER ##" THICK	##" x ##" x ##" PERF. C.S.P. TEE RISER ##" THICK		##" PIPE END SECTION	##" PIPE END SECTION	##" PIPE END SECTION	##" PIPE END SECTION		CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.		##" SIDE DRAIN PIPE ELBOW	##" SIDE DRAIN PIPE ELBOW	##" SIDE DRAIN PIPE ELBOW	##" R.C. ELBOW		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	##" C.S. ELBOW		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.7 CY	PIPE REMOVAL LIN. FT.	REMARKS
-L- 21+38																														0.4465			collar and extend 18" RCP
-L- 21+38																														0.4465			collar and extend 18" RCP
-Y- 13+55																																21	15" RCP Driveway Pipe
-L- 22+15																																40	drive pipe
SHEET TOTALS																														0.8930		61	
PROJECT TOTALS																														0.8930		61	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: N. Roberson DATE: 3/24/2022
CHECKED BY: _____ DATE: _____

(5-15-18)

PROJECT NO.	SHEET NO.
49367 (HL-0008H)	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY					
				TOTAL LF:	0

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	Geotextile for Pavement Stabilization SY	Class IV Subgrade Stabilization TONS
CONTINGENCY				
	TOTAL SY/TONS:		0	0*

*Total tons of "Class IV Subgrade Stabilization" is only the estimated quantity for pavement stabilization and may only represent a portion of the subgrade stabilization quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU 1	12"	100	200	300		
			TOTAL CY/TONS/SY:		100	200**	300**	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Subgrade Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
							TOTAL SY:	0

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
					TOTAL SY:	0	0	0*	0**

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
**Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

SUMMARY OF PRE-SPLITTING OF ROCK

LINE	Beginning Rock Cut Slope (H:V)	Approx. Station	Ending Rock Cut Slope (H:V)	Approx. Station	Location LT/RT	Pre-splitting of Rock SY
					TOTAL SY:	0

SUMMARY OF SURCHARGES AND SURCHARGE WAITING PERIODS

LINE	Station	Station	Surcharge Height FT	MONTHS

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
	TOTAL GAUGES (EACH):		

SUMMARY OF EMBANKMENT WAITING PERIODS

LINE	Station	Station	MONTHS

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS

COMPUTED BY: MML DATE: 10/24/2022
CHECKED BY: KMP DATE: 10/24/2022

PROJECT NO.	SHEET NO.
HL-0008H	3P-1

DRMP
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RALEIGH, NC 27609
(919) 872-5115
NC LICENSE NO. F-1524
www.drmp.com

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX

PARCEL NO.	PLAN SHEET NO.	PROPERTY OWNER NAME	R/W AREA TAKEN	TEMP CONST ESMT	PERM DRAIN ESMT	PERM UTIL ESMT
1	4	LAILA FARZANA	-	1420	-	-
2	4	JOSIE MATTHEWS	-	501	-	-
3	4	RICHARD ABERNATHY	15081	3079	-	2976
4	4	RICKY R. COATES	250	1429	-	-
5	4	H. MARVIN SIMPKINS	1095	3236	-	-
6	4	STEVEN BROOKS HARRIS	3553	2298	525	993
7	4	CARLTON NICHOLS	6967	1806	150	968
8	4	BORIS NENADIC	-	393	-	-
9	4	MARY ALLISON SHELTON	568	-	-	-
10	4	RONALD WORRELLS	1000	1000	-	-
11	4	MARGARET GAPPENS	2302	2422	-	-
12	4	RICHARD ABERNATHY	1000	1000	-	-
13	4	WILLIAM LESTER SMITH	671	804	-	-

8/17/99

NOTES:
1. ALL DIMENSIONS ARE TO EDGE OF TRAVEL UNLESS OTHERWISE SPECIFIED.
2. MAINTAIN ACCESS TO ALL MAILBOXES WITHIN THE PROJECT LIMITS. CONTRACTOR TO RELOCATE AS NECESSARY.

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(919) 872-5115

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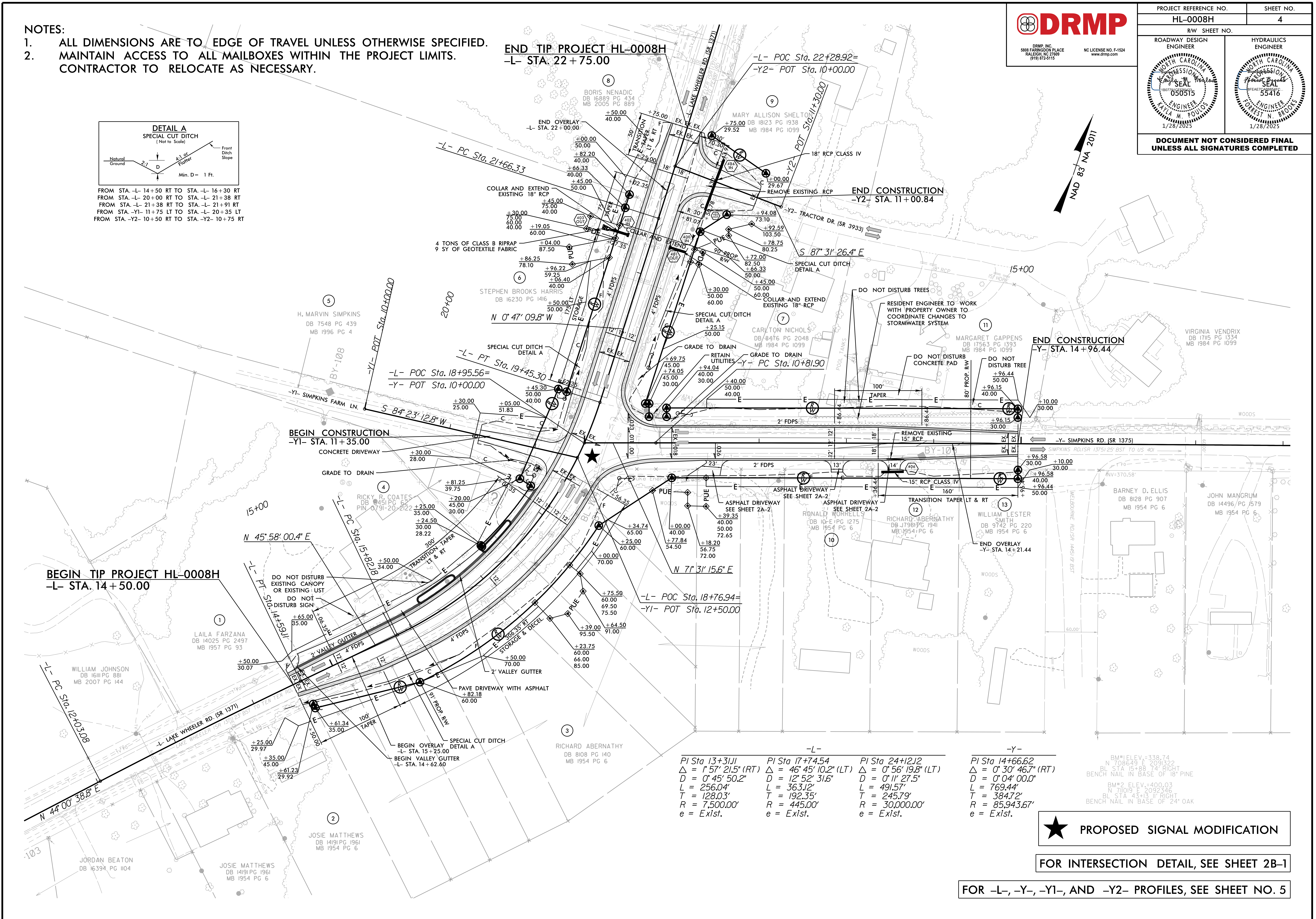
PROJECT REFERENCE NO.	SHEET NO.
HL–0008H	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Signed by: Kayla M. Poulos 1B07791CEF90423... SEAL 050515 KAYLA M. POULOS 1/28/2025	DocuSigned by: Forrest Brooks 8FEAE7CA6B854FC... SEAL 55416 FORREST N. BROOKS 1/28/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FROM STA. –L– 14+50 RT TO STA. –L– 16+30 RT
FROM STA. –L– 20+00 RT TO STA. –L– 21+38 RT
FROM STA. –L– 21+38 RT TO STA. –L– 21+91 RT
FROM STA. –Y1– 11+75 LT TO STA. –L– 20+35 LT
FROM STA. –Y2– 10+50 RT TO STA. –Y2– 10+75 RT

–L–

PI Sta 13+31.11
△ = 1° 57′ 21.5″ (RT)
D = 0° 45′ 50.2″
L = 256.04′
T = 128.03′
R = 7,500.00′
e = Exist.

PI Sta 17+74.54
△ = 46° 45′ 10.2″ (LT)
D = 12° 52′ 31.6″
L = 363.12′
T = 192.35′
R = 445.00′
e = Exist.

PI Sta 24+12.12
△ = 0° 56′ 19.8″ (LT)
D = 0° 11′ 27.5″
L = 491.57′
T = 245.79′
R = 30,000.00′
e = Exist.

–Y–

PI Sta 14+66.62
△ = 0° 30′ 46.7″ (RT)
D = 0° 04′ 00.0″
L = 769.44′
T = 384.72′
R = 85,943.67′
e = Exist.

BM#1 ELEV.=338.74
N 708649 E 2091322
BL STA 15+88 74′ RIGHT
BENCH NAIL IN BASE OF 18″ PINE

BM#2 ELEV.=400.03
N 711019 E 2092346
BL STA 43+13 11′ RIGHT
BENCH NAIL IN BASE OF 24″ OAK

★ PROPOSED SIGNAL MODIFICATION

FOR INTERSECTION DETAIL, SEE SHEET 2B–1

FOR –L–, –Y–, –Y1–, AND –Y2– PROFILES, SEE SHEET NO. 5

1/28/2025
..:\Proj\HL0008H_Rdy-psh04.dgn
User: mlindsey

5/28/99

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(919) 872-5115

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PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	5

ROADWAY DESIGN ENGINEER

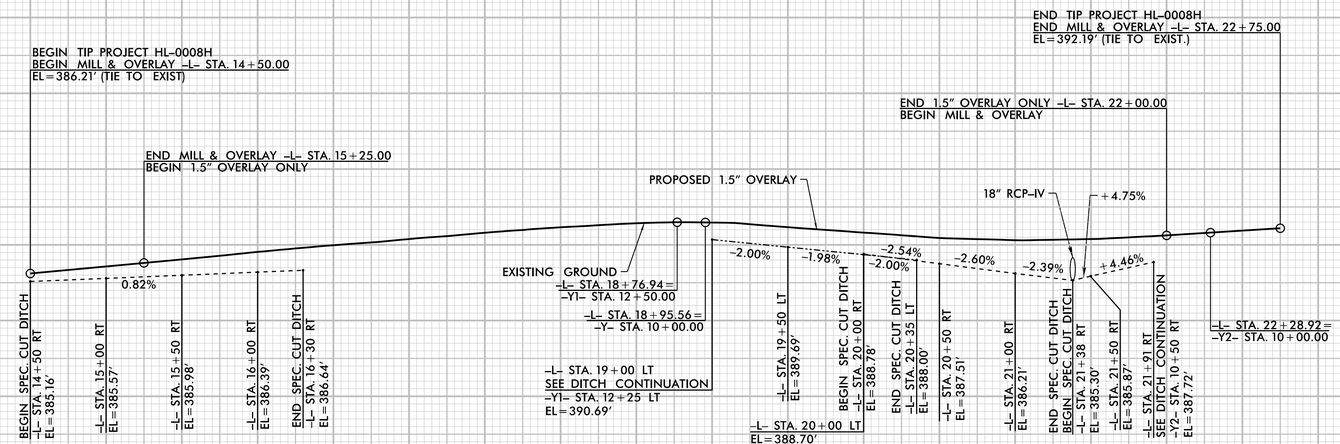
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 050515 KATHY M. POULOS
1/24/2025

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 55416 FOREST N. BROOKS
1/24/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–L– LAKE WHEELER RD. (SR 1371)



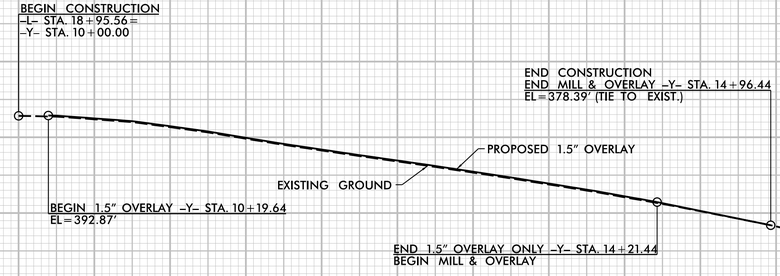
DITCH RIGHT
DITCH LEFT

PIPE HYDRAULIC DATA
18" RCP-IV @ –L– 21+38

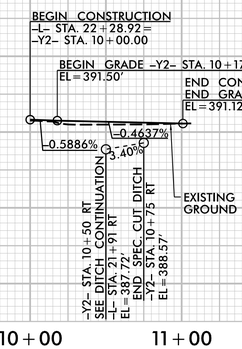
DRAINAGE AREA	=	1.61 AC
DESIGN FREQUENCY	=	25 YR
DESIGN DISCHARGE	=	5 CFS
DESIGN HW ELEVATION	=	386.50 FT
100 YEAR DISCHARGE	=	6 CFS
100 YEAR HW ELEVATION	=	386.60 FT
OVERTOPPING FREQUENCY	=	500+ YR
OVERTOPPING DISCHARGE	=	20 CFS
OVERTOPPING ELEVATION	=	389.75 FT

FOR –L–, –Y–, –Y1–, AND –Y2– PLAN VIEW, SEE SHEET NO. 4

–Y– SIMPKINS RD. (SR 1375)



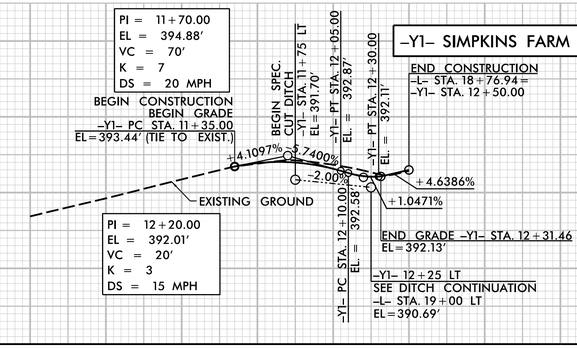
–Y2– TRACTOR DR. (SR 3933)



PIPE HYDRAULIC DATA
18" RCP-IV @ –Y2– 10+50

DRAINAGE AREA	=	0.80 AC
DESIGN FREQUENCY	=	25 YR
DESIGN DISCHARGE	=	2 CFS
DESIGN HW ELEVATION	=	391.00 FT
100 YEAR DISCHARGE	=	3 CFS
100 YEAR HW ELEVATION	=	388.60 FT
OVERTOPPING FREQUENCY	=	500+ YR
OVERTOPPING DISCHARGE	=	11 CFS
OVERTOPPING ELEVATION	=	391.00 FT

–Y1– SIMPKINS FARM LN.



6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	RW02C-1

Location and Surveys

GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

NORTH CAROLINA GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR, JR.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Parks H. Icenhour JR., PLS, certify that the Project Control was (performed/verified) under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: AA
Type of GPS field procedure: RTN
Dates of survey:June 14th
Datum/Epoch:nad 83/ 2011 (CONUS)
Published/Fixed-control used: (Control Utilized)
Localized around:NCGS MON " CARL"
Northing: 719352.4210
Easting: 2103842.6060
Combined grid factor:0 .99989622
Geoid model: GEOID12B
Units: US SURVEY FEET

"I also certify that the baseline control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and vertical accuracy to Class A. Field work was performed from June 14th to June 28th, and all coordinates are based on NAD 83 /2011 and all elevations are based on NAVD 88; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of July, 2021.

2021.07.16 13:16:19 -04'00'

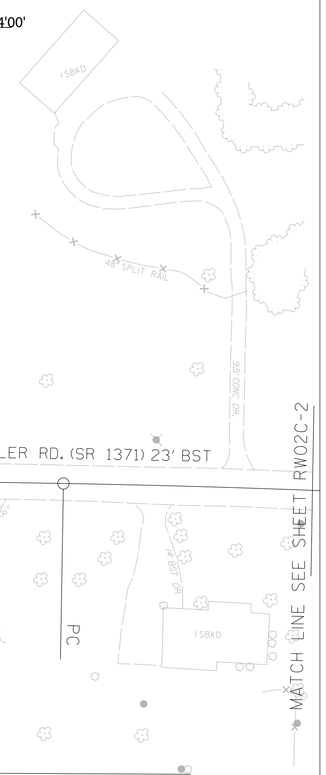
Professional Land Surveyor L-3996

NC GRID NAD 83 NA 2011

BL-102

BM#1

SEE RW02C-4
FOR FUTHER DETAILS



NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

16-JUL-2021 12:57
C:\GEL\projects\hl0008_survey\fieldwork\FINAL\redline files\hl0008h_ls-rw02c-1_210716.dgn
Jason Prevotte AT DESKTOP-EPRVSVF

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	RW02C-2

Location and Surveys

GEL Engineering of NC, Inc. C-1938

GEL SOLUTIONS

an Affiliate of THE GEL GROUP, INC.

2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

NORTH CAROLINA — GEL ENGINEERING OF NC, INC. — NO. C-1938 — CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA — PROFESSIONAL — SEAL L-3996 — LAND SURVEYOR — PARKS H. ICENHOUR JR.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Parks H. Icenhour Jr., PLS, certify that the Project Control was (performed/verified) under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: AA
Type of GPS field procedure: (Static, OPUS, RTN)
Dates of survey:June 14th
Datum/Epoch:nad 83/ 2011 (CONUS)
Published/Fixed-control used: (Control Utilized)
Localized around:NCGS MON " CARL"
Northing: 719352.4210
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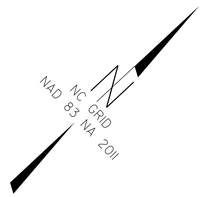
Geoid model: GEOID12B
Units: US SURVEY FEET

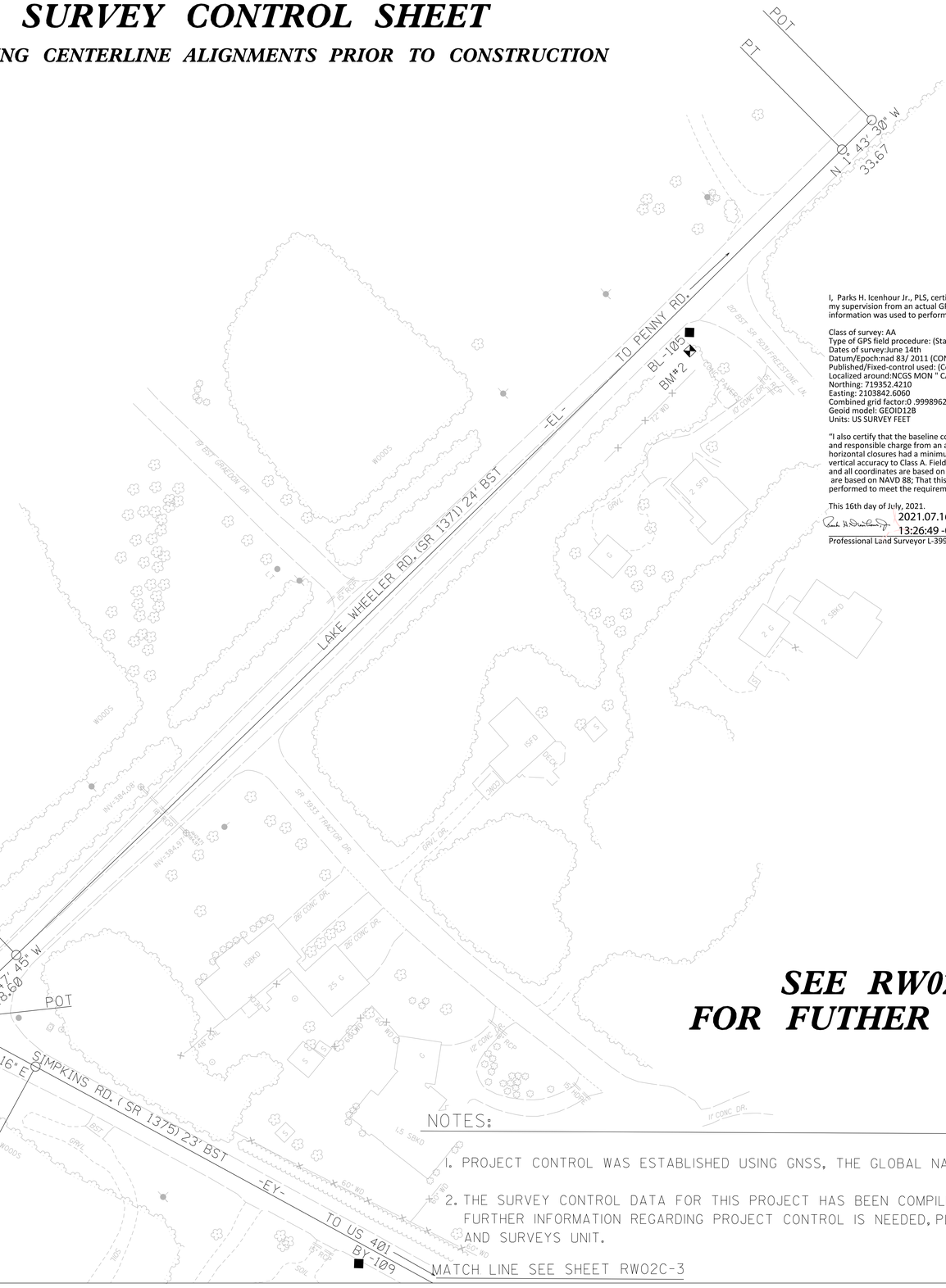
"I also certify that the baseline control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and vertical accuracy to Class A. Field work was performed from June 14th to June 28th, and all coordinates are based on NAD 83 /2011 and all elevations are based on NAVD 88; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of July, 2021.

2021.07.16 13:26:49 -04'00'

Professional Land Surveyor L-3996





16-JUL-2021 13:00
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Jason Prevatte AT DESKTOP-EPRVSVF

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	RW02C-3

Location and Surveys

GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR SEAL L-3996 PARKS H. ICENHOUR JR.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Parks H. Icenhour Jr., PLS, certify that the Project Control was (performed/verified) under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: AA
Type of GPS field procedure: (Static, OPUS, RTN)
Dates of survey:June 14th
Datum/Epoch:nad 83/ 2011 (CONUS)
Published/Fixed-control used: (Control Utilized)
Localized around:NCGS MON " CARL"
Northing: 719352.4210
Easting: 2103842.6060
Combined grid factor:0 .99989622
Geoid model: GEOID12B
Units: US SURVEY FEET

"I also certify that the baseline control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and vertical accuracy to Class A. Field work was performed from June 14th to June 28th, and all coordinates are based on NAD 83 /2011 and all elevations are based on NAVD 88; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of July, 2021.

2021.07.16 13:27:39 -04'00'

Professional Land Surveyor L-3996

NC GRID NAD 83 NA 2011

LAKE WHEELER RD. (SR 1371) 24' BST

SR 3933 TRACTOR DR.

SIMPKINS RD. (SR 1375) 25' BST

TO US 401

PC
PT
POT
N 0° 47' 45" W 48.60
N 71° 31' 16" E 80.50
N 13° 02' 06" E 24.85
N 72° 02' 02" E 202.94
BL-104
BY-109
BY-110
-EY-

SEE SHEET RW02C-4
FOR FUTHER DETAILS

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

6/2/99

REVISIONS

16-JUL-2021 13:05
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Jason Prevatte AT DESKTOP-EPRVSVF

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	RW02C-4

Location and Surveys

GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

NORTH CAROLINA GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR JR.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BL

POINT	DESC.	NORTH	EAST	ELEVATION
2	HL-0008H-2	707621.720	2090990.137	275.55
101	BL-101	708200.488	2091085.686	312.49
102	BL-102	709002.561	2091368.808	355.63
103	BL-103	709575.108	2091862.460	382.81
104	BL-104	710161.021	2092349.075	391.99
105	BL-105	711029.114	2092335.362	396.55
3	HL-0008H-3	711904.547	2092281.995	400.67

BY

POINT	DESC.	NORTH	EAST	ELEVATION
108	BY-108	710177.630	2092035.546	384.81
104	BL-104	710161.021	2092349.075	391.99
109	BY-109	710322.486	2092701.802	381.46
110	BY-110	710519.090	2093313.146	348.09

* *

BM1 ELEVATION = 338.74
N 708649 E 2091322
BL STATION 15+88.00 74 RIGHT
BENCHNAIL IN BASE OF 18" PINE

* *

* *

BM2 ELEVATION = 400.03
N 711019 E 2092346
BL STATION 43+13.00 11 RIGHT
BENCHNAIL IN BASE OF 24" OAK

* *

I, Parks H. Icenhour Jr., PLS, certify that the Project Control was (performed/verified) under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: AA
Type of GPS field procedure: (Static, OPUS, RTN)
Dates of survey:June 14th
Datum/Epoch:nad 83/ 2011 (CONUS)
Published/Fixed-control used: (Control Utilized)
Localized around:NCGS MON " CARL"
Northing: 719352.4210
Easting: 2103842.6060
Combined grid factor:0 .99989622
Geoid model: GEOID12B
Units: US SURVEY FEET

"I also certify that the baseline control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and vertical accuracy to Class A. Field work was performed from June 14th to June 28th, and all coordinates are based on NAD 83 /2011 and all elevations are based on NAVD 88; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of July, 2021.

2021.07.16 13:28:42 -04'00'

Professional Land Surveyor L-3996

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	709525.637	2091786.389							
LINE			N 44°00'38.8" E	203.08					
PC	709671.692	2091927.486							
CURVE			N 44°58'15.3" E	256.03	01°55'13.0"(RT)	00°45'00.0"	256.04	128.03	7639.44
PT	709852.822	2092108.432							
LINE			N 45°55'51.8" E	86.82					
PC	709913.208	2092170.813							
CURVE			N 41°01'38.4" E	139.94	09°48'27.0"(LT)	07°00'00.0"	140.11	70.23	818.51
PCC	710018.775	2092262.670							
CURVE			N 24°34'45.6" E	135.04	23°05'18.6"(LT)	16°58'55.8"	135.96	68.91	337.39
PT	710141.578	2092318.840							
LINE			N 13°02'06.2" E	24.85					
PC	710165.792	2092324.446							
CURVE			N 06°07'10.6" E	76.65	13°49'51.3"(LT)	18°00'00.0"	76.84	38.61	318.31
PT	710242.007	2092332.617							
LINE			N 00°47'45.1" W	48.60					
PC	710290.603	2092331.942							
CURVE			N 01°15'37.4" W	929.03	00°55'44.6"(LT)	00°06'00.0"	929.04	464.53	57295.78
PT	711219.411	2092311.507							
LINE			N 01°43'29.6" W	33.67					
POT	711253.061	2092310.494							

EY

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	710215.115	2092331.854							
LINE			N 71°31'15.6" E	80.50					
PC	710240.628	2092408.199							
CURVE			N 71°46'39.0" E	769.44	00°30'46.7"(RT)	00°04'00.0"	769.44	384.72	85943.67
PT	710481.237	2093139.047							
LINE			N 72°02'02.3" E	202.94					
POT	710543.836	2093332.096							

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

16-JUL-2021 13:03
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Jason Prevatte AT DESKTOP-EPRVSVF

09/08/99

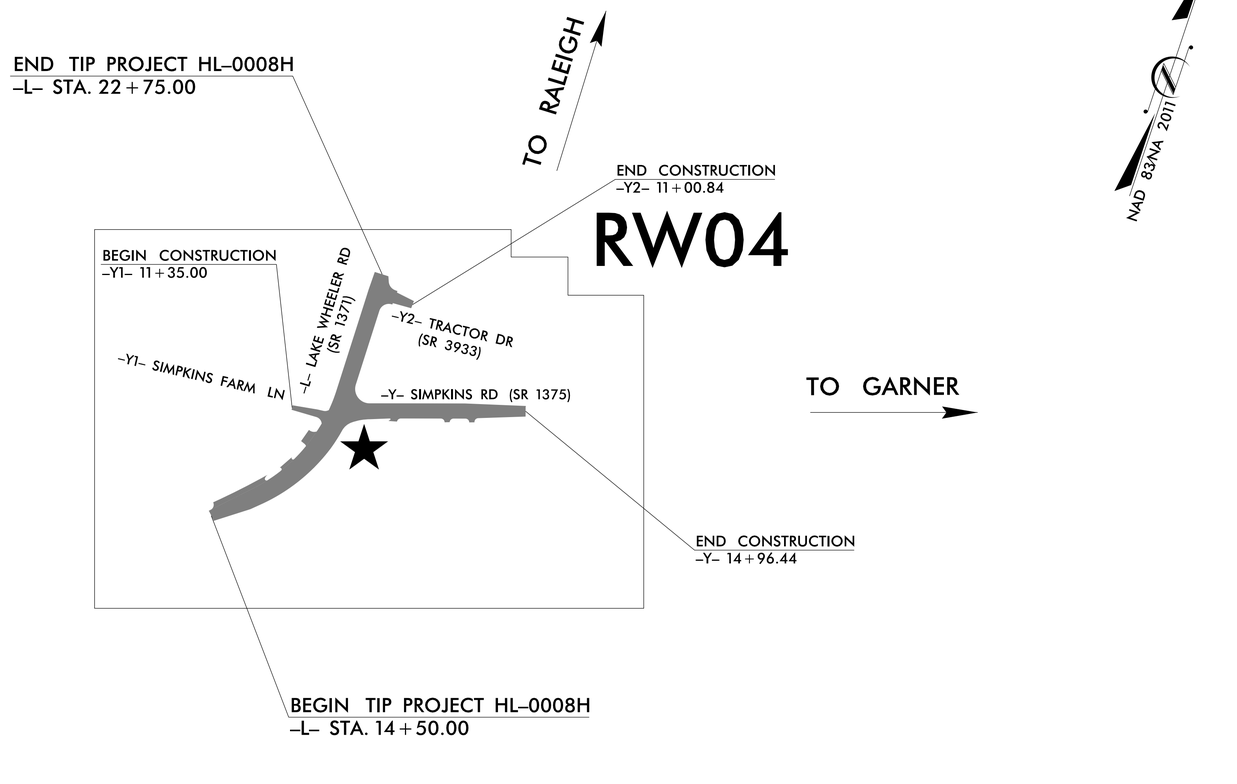
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL-0008H	RW01	08

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

WAKE COUNTY

TIP PROJECT: HL-0008H



GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CARL"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 719,352.421(ft) EASTING: 2,103,842.606(ft)
ELEVATION: 361.70(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989622
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "NCGS CARL" TO -L- STATION 10+00.00 IS S 50-49'01.9" W 15,553.71(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared In the Office of:

GEL Engineering of NC, Inc. DBA
GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	*LETTING DATE:*
09/22/2022	*03/26/2025*

NORTH CAROLINA GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR, JR.

Parks H. Icenhour, Jr.
Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.01.08 16:18:39 -05'00'

SIGNATURE: *Date:*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

08-JAN-2025 13:36
C:\Projects\NCDOT\HL0008H\h0008h_ls_rw01_221005.dgn
Jason Prevatte AT PREVATTEJ

6/2/99

REVISIONS

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	RW02D-1

Location and Surveys

GEL Engineering of NC, Inc. DBA
GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL SEAL L-3996 LAND SURVEYOR PARKS H. ICENHOUR JR.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Parks H. Icenhour Jr., PLS, certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

This 5th day of October, 2022.

Date: 2022.10.05 16:31:15 -04'00'

Professional Land Surveyor L-3996

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	709525.6370	2091786.3890
PC	12+03.08	709671.6919	2091927.4857
PT	14+59.11	709852.7647	2092108.4875
PC	15+82.18	709938.3069	2092196.9664
PT	19+45.30	710264.3387	2092332.6159
PC	21+66.33	710485.3475	2092329.5836
PT	26+57.90	710976.7977	2092318.8131
POT	29+34.29	711253.0613	2092310.4936

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	710214.6691	2092330.5202
PC	10+81.90	710240.6284	2092408.1992
PT	18+51.34	710481.2373	2093139.0474
POT	20+54.29	710543.8362	2093332.0964

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	710171.7284	2092079.5088
POT	12+50.00	710196.1810	2092328.3101

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	710547.9316	2092328.6596
POT	11+30.00	710542.3155	2092458.5382

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

04-OCT-2022 11:56
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User:Prevatte AT DESKTOP-EPRVSVF

6/2/99

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	RW03E-1

Location and Surveys

GEL Engineering of NC, Inc. DBA

GEL SOLUTIONS

an Affiliate of THE GEL GROUP, INC.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

NORTH CAROLINA — GEL ENGINEERING OF NC, INC. NO. C-1938 — CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA — PROFESSIONAL — SEAL L-3996 — LAND SURVEYOR — PARKS H. ICENHOUR JR.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , Parks H. Icenhour Jr. , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 9/19/2022 to 9/23/2022, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 5th day of October, 2022.

Date: 2022.10.05 16:31:43 -04'00'

Professional Land Surveyor L-3996

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	14+61.23	29.92	709832.7251	2092130.8041
L	14+61.34	35.00	709829.1475	2092134.4139
L	15+82.18	60.00	709895.1707	2092238.6709
L	17+24.50	-30.00	710065.6904	2092255.2881
L	17+24.50	-28.22	710064.8668	2092256.8607
L	18+20.00	-30.00	710148.3991	2092287.8594
L	18+20.00	-45.00	710152.3690	2092273.3943
L	18+25.00	60.00	710130.0596	2092376.1211
L	19+45.30	-50.00	710263.6528	2092282.6206
L	19+45.30	-40.00	710263.7900	2092292.6197
L	21+66.33	-40.00	710484.7988	2092289.5873
L	21+66.33	50.00	710486.0335	2092379.5789
L	21+82.20	-40.00	710500.6495	2092289.3657
L	21+94.08	73.10	710514.1636	2092402.2826
L	22+75.00	29.52	710594.5168	2092357.4125

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y	10+69.75	-45.00	710279.4579	2092382.4132
Y	10+74.05	-45.00	710280.8198	2092386.4890
Y	10+74.05	-30.00	710266.5916	2092391.2396
Y	10+94.04	-40.00	710282.4145	2092407.0396
Y	10+94.04	-30.00	710272.9299	2092410.2087
Y	11+00.00	40.00	710208.4227	2092438.0351
Y	14+96.15	-40.00	710408.9783	2092788.9090
Y	14+96.15	-30.00	710399.4788	2092792.0328
Y	14+96.58	40.00	710333.1156	2092814.3066
Y	14+96.58	30.00	710342.6152	2092811.1828

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	11+00.00	-29.67	710573.2497	2092429.8478

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y	10+77.84	54.50	710187.6522	2092421.6245
Y	11+18.20	56.75	710198.2945	2092460.5928
Y	11+18.20	72.00	710183.8288	2092465.4203
Y	11+39.35	72.65	710189.8988	2092485.6724
Y	11+39.35	40.00	710220.8727	2092475.3443

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	17+21.75	60.00	710021.1740	2092333.5587
L	17+21.75	71.00	710016.0103	2092343.2714
L	17+39.50	82.50	710029.3823	2092362.9295
L	17+63.25	78.00	710056.7950	2092370.3082
L	17+74.00	69.50	710071.5956	2092367.1121
L	17+74.00	60.00	710075.0418	2092358.2592
L	21+30.00	-75.00	710447.9925	2092255.0890
L	21+30.00	50.00	710449.7074	2092380.0773
L	21+30.00	60.00	710449.8446	2092390.0763
L	21+30.00	-40.00	710448.4727	2092290.0858
L	21+45.00	-75.00	710462.9911	2092254.8833
L	21+45.00	-40.00	710463.4713	2092289.8800
L	21+45.00	60.00	710464.8432	2092389.8706
L	21+45.00	50.00	710464.7060	2092379.8715
L	21+78.75	80.25	710498.9010	2092409.6526
L	21+92.59	103.50	710513.1159	2092432.7008

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 9/5/2022 TO 9/14/2022 .

05-OCT-2022 08:53
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Jason Privette AT DESKTOP-EPRVSVF

4/4/24

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	RW03E-1A

Location and Surveys

LOCATION & SURVEYS
DIVISION 5
3301 JONES SAUSAGE RD.
GARNER, NC 27529
984-920-8940

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4363 LAND SURVEYOR MICHAEL R. JACKSON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Michael R. Jackson, certify that the right of way and permanent easement monumentation for this project shown in bold hereon and on sheet RW04a for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on May 22nd, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 21th day of January, 2025.

DocuSigned by: Michael Jackson 1AB7677107514670... 01/21/2025

Professional Land Surveyor L-4363

PERMANENT EASEMENT MARKER - IRON PIN AND CAP
UNLESS OTHERWISE NOTED, L

ALIGN	STATION	OFFSET	NORTH	EAST	
L	17+23.75	85.00	710011.5441	2092356.7465	
L	17+23.75	60.00	710023.2906	2092334.6776	
L	17+39.00	95.50	710023.1953	2092374.3786	
L	17+64.50	91.00	710053.1782	2092382.8832	
L	17+75.50	60.00	710076.6291	2092358.8740	
L	17+75.50	75.50	710071.0551	2092373.3371	
L	20+86.25	-78.10	710404.2041	2092252.5895	(+86.25 SET BRIDGE SPIKE)
L	21+04.00	-87.50	710421.8235	2092242.9469	(+04.00 NOT SET / INACCESSIBLE)
L	21+06.40	-40.00	710424.9027	2092290.4036	
L	21+30.00	-40.00	710448.3227	2092290.0878	
L	21+72.00	82.50	710492.1649	2092411.9973	

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED ON MAY 2024 .

PROJECT REFERENCE NO.	SHEET NO.
HL0008H	RW04

Location and Surveys

GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
2700 SUMNER BLVD.
SUITE 106
RALEIGH,NC 27616
(919) 544-1100
WWW.GEL-SOLUTIONS.COM

GEL ENGINEERING OF NC, INC. NO. C-1938 — NORTH CAROLINA BOARD OF EXAMINERS FOR ENGINEERING AND SURVEYING CERTIFICATE OF AUTHORIZATION

SEAL L-3996 — NORTH CAROLINA PROFESSIONAL LAND SURVEYOR PARKER H. ICENHOUR JR.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , Parks H. Icenhour Jr. , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 9/5/2022to 9/14/2022and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 5th day of October, 2022.

Parks H. Icenhour Jr.

Date: 2022.10.05 16:32:16 -04'00'

Professional Land Surveyor L-3996

NAD 83 NA 2011

REVISIONS

6/2/99

05-OCT-2022 09:06
C:\GEL Projects\2022\hl0008h-rw\sheets\HL0008H_1s_rw04.dgn
Jason Preslate
AT DESKTOP-EPRVSVF

PI Sta 13+31.11
△ = 1° 57′ 21.5″ (RT)
D = 0° 45′ 50.2″
L = 256.04′
T = 128.03′
R = 7,500.00′
e = Exist.

PI Sta 17+74.54
△ = 46° 45′ 10.2″ (LT)
D = 12° 52′ 31.6″
L = 363.12′
T = 192.35′
R = 445.00′
e = Exist.

PI Sta 24+12.12
△ = 0° 56′ 19.8″ (LT)
D = 0° 11′ 27.5″
L = 491.57′
T = 245.79′
R = 30,000.00′
e = Exist.

PI Sta 14+66.62
△ = 0° 30′ 46.7″ (RT)
D = 0° 04′ 00.0″
L = 769.44′
T = 384.72′
R = 85,943.67′
e = Exist.

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 9/5/2022 TO 9/14/2022.

4/4/24

REVISIONS

I, Michael R. Jackson, certify that the right of way and permanent easement monumentation for this project shown hereon and on sheet rw03-1a for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on May 22nd, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 21st day of January, 2025.

DocuSigned by:
Michael Jackson
1AB7677710751467...
01/21/2025

Professional Land Surveyor L-4363

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED ON MAY 2024 .

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	RW04A

Location and Surveys

LOCATION & SURVEYS
DIVISION 5
3301 JONES SAUSAGE RD.
GARNER, NC 27529
984-920-8940

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4363 LAND SURVEYOR MICHAEL R. JACKSON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJ. REFERENCE NO.	SHEET NO.
HL-0008H	TMP-1A

DRMP

DRMP, INC.
5808 FARINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115

NC LICENSE NO. F-1524
www.drmp.com

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
LAKE WHEELER ROAD	MONDAY-FRIDAY 6AM-9AM AND 4PM-6PM
SIMPKINS ROAD	MONDAY-FRIDAY 6AM-9AM AND 4PM-6PM

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

ROAD NAME
LAKE WHEELER ROAD
SIMPKINS ROAD

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.

2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 6:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 6:00 P.M. THE FOLLOWING TUESDAY.

3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 6:00 P.M. MONDAY.

4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 6:00 P.M. TUESDAY.

5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 6:00 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 6:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.

6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 6:00 P.M. TUESDAY.

7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 6:00 P.M. MONDAY.

8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 6:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

C) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

D) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

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

F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

H) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

I) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY ONE DIRECTION ON LAKE WHEELER ROAD AND/OR SIMPKINS ROAD.

PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

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

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

K) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 350FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

APPROVED: DocuSigned by: Zachary M. Esposito 5E47DD7E04884E8...
DATE: 5/28/2024

NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TRAFFIC CONTROL GENERAL NOTES

PROJ. REFERENCE NO.	SHEET NO.
HL-0008H	TMP-1B

DRMP

DRMP, INC.
5808 FARINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115

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GENERAL NOTES (CONT.)

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

M) 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.

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

O) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 350FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

P) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
LAKE WHEELER ROAD	PAINT	NONE
SIMPKINS ROAD	PAINT	NONE

R) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

S) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MISCELLANEOUS

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

APPROVED: DocuSigned by: Zachary M Esposito
5647DD76D4884E8...
DATE: 5/28/2024

NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

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

TRAFFIC CONTROL GENERAL NOTES

PROJ. REFERENCE NO.	SHEET NO.
HL-0008H	TMP-2

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ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR 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:

STD.NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1150.01	FLAGGERS
1180.01	SKINNY - DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS

TRANSPORTATION MANAGEMENT STRATEGIES

BEFORE BEGINNING ANY CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS AND TRAFFIC CONTROL DEVICES (RSD 1101.01). FIELD VERIFY LOCATIONS WITH THE ENGINEER PRIOR TO INSTALLATION.

MAINTAIN VEHICULAR ACCESS TO ALL RESIDENCES, SCHOOLS, BUS STOPS, EMERGENCY SERVICES, AND BUSINESSES DURING THE LIFE OF THE CONTRACT, PRIOR TO INCORPORATION, OBTAIN WRITTEN APPROVAL FROM THE ENGINEER ON METHOD TO MAINTAIN ACCESS.

COMPLETE ANY PROPOSED OR TEMPORARY WIDENING IN SUCH A MANNER THAT NO PONDING OF WATER WILL OCCUR WITHIN THE TRAVEL LANE.

WHEN USING LANE CLOSURES (RSD 1101.02), RETURN TRAFFIC TO EXISTING AND/OR TEMPORARY TRAFFIC PATTERN UPON ACTIVITIES COMPLETION, UNLESS OTHERWISE NOTED IN THE PHASING PLANS.

WHEN PHASING STATES TO USE LANE CLOSURES, REFER TO THE FOLLOWING FOR ALL EXISTING AND PROPOSED ROADS:

-ALL TWO-LANE/TWO-WAY FACILITIES SEE RSD 1101.02 SHEET 1 OF 19

COMPLETE PAVING UP TO, BUT NOT INCLUDING, THE FINAL LAYER OF SURFACE COURSE UNTIL STATED TO PLACE FINAL LAYER IN THE PHASING PLANS.

WHEN WEDGING OVER EXISTING PAVEMENT, WEDGE TO PROPOSED ELEVATION (LESS THE FINAL LAYER OF SURFACE COURSE), OR WEDGE AS NEEDED TO MAINTAIN TRAFFIC. MAINTAIN POSITIVE DRAINAGE AND MAINTAIN A MAXIMUM 0.04 ROLLOVER IN BOTH EXISTING AND/OR TEMPORARY TRAVEL LANES.

REPLACE MARKINGS AND 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.

TRAFFIC CONTROL NOTE #1:
FOR THE DURATION OF CONSTRUCTION, ENSURE ALL DRIVEWAY ACCESS IS MAINTAINED.

TRAFFIC CONTROL NOTE #2:
SIGNAL SHALL BE PUT INTO FLASH AND FLAGGERS SHALL BE UTILIZED TO GUIDE TRAFFIC SAFELY THROUGH THE INTERSECTION DURING PHASE I, PHASE II AND PHASE III CONSTRUCTION.

TRAFFIC CONTROL NOTE #3
CONTRACTOR SHALL COORDINATE WITH SIGNAL CONTRACTOR THROUGHOUT PHASING TO ENSURE FINAL SIGNAL EQUIPMENT IS INSTALLED AND SIGNAL IS FULLY OPERATIONAL PER FINAL SIGNAL DESIGN PRIOR TO COMPLETING PHASE III.

TRAFFIC CONTROL NOTE #4:
THE ORDER OF PHASE II AND PHASE III CONSTRUCTION CAN BE ADJUSTED, AS NEEDED. ONCE A PHASE HAS BEGUN, THE CONTRACTOR MUST COMPLETE THE CONSTRUCTION PHASE PRIOR TO MOVING ONTO THE NEXT PHASE. AT THE END OF EACH WORK DAY, CONTRACTOR SHALL REMOVE ALL EXISTING TRAFFIC CONTROL DEVICES FROM THE EXISTING TRAVEL LANE AND RETURN TRAFFIC TO NORMAL OPERATION.

PHASING PLAN

PHASE I

STEP 1:
INSTALL WORK ZONE ADVANCE WARNING SIGNS (RSD 1101.01).

USING LANE CLOSURES AND FLAGGERS AS NEEDED, SHIFT TRAFFIC TO THE PHASE I FLAGGING OPERATION. PHASE I FLAGGING OPERATION ENTAILS CLOSING THE NORTHBOUND LANE ALONG LAKE WHEELER ROAD FROM WARD STREET TO THE INTERSECTION OF LAKE WHEELER ROAD AT SIMPKINS ROAD AND THE EASTBOUND LANE ALONG SIMPKINS ROAD FROM THE INTERSECTION OF LAKE WHEELER ROAD AND SIMPKINS ROAD TO HORSESHOE DRIVE. TRAFFIC WILL BE MAINTAINED BY SHIFTING INTO THE SOUTHBOUND LANE ALONG LAKE WHEELER ROAD AND THE WESTBOUND LANE ALONG SIMPKINS ROAD. FLAGGERS WILL BE POSTED PRIOR TO LANE CLOSURES AND WILL SAFELY GUIDE TRAFFIC ALONG THE PROJECT LIMITS.

ONCE SHIFTED INTO THE PHASE I FLAGGING OPERATION, COMPLETE ROADWAY IMPROVEMENTS ALONG THE SOUTHEASTERN CORNER OF HL-0008H.

SIGNAL CONTRACTOR NOTE:
SIGNAL CONTRACTOR SHALL INSTALL ALL NECESSARY SIGNAL EQUIPMENT TO MATCH TEMPORARY SIGNAL DESIGN PRIOR TO BEGINNING PHASE II CONSTRUCTION.

PHASE II

STEP 1:
MAINTAIN ALL NECESSARY WORK ZONE ADVANCE WARNING SIGNS (RSD 1101.01).

ACTIVATE TEMPORARY SIGNAL IN PREPERATION OF PHASE II FLAGGING OPERATION.

WITH TEMPORARY SIGNAL ACTIVE, USING LANE CLOSURES AND FLAGGERS AS NEEDED, SHIFT TRAFFIC TO THE PHASE II FLAGGING OPERATION. PHASE II FLAGGING OPERATION ENTAILS CLOSING THE NORTHBOUND LANE ALONG LAKE WHEELER ROAD FROM THE INTERSECTION OF LAKE WHEELER ROAD AT SIMPKINS ROAD TO FREESTONE LANE AND THE WESTBOUND LANE ALONG SIMPKINS ROAD FROM HORSESHOE DRIVE TO THE INTERSECTION OF LAKE WHEELER ROAD AT SIMPKINS ROAD. TRAFFIC WILL BE MAINTAINED BY SHIFTING INTO THE SOUTHBOUND LANE ALONG LAKE WHEELER ROAD AND THE EASTBOUND LANE ALONG SIMPKINS ROAD. FLAGGERS WILL BE POSTED PRIOR TO LANE CLOSURES AND WILL SAFELY GUIDE TRAFFIC ALONG THE PROJECT LIMITS.

ONCE SHIFTED INTO THE PHASE II FLAGGING OPERATION, COMPLETE ROADWAY AND DRAINAGE IMPROVEMENTS ASSOCIATED ALONG THE NORTHEASTERN CORNER OF HL-0008H.

PHASE III

STEP 1:
MAINTAIN ALL NECESSARY WORK ZONE ADVANCE WARNING SIGNS (RSD 1101.01).

MAINTAIN TEMPORARY TRAFFIC SIGNAL DESIGN FROM PHASE II.

WITH TEMPORARY SIGNAL ACTIVE, USING LANE CLOSURES AND FLAGGERS AS NEEDED, SHIFT TRAFFIC TO THE PHASE III FLAGGING OPERATION. PHASE III TRAFFIC FLAGGING OPERATION ENTAILS CLOSING THE SOUTHBOUND LANE ALONG LAKE WHEELER ROAD FROM WARD STREET TO FREESTONE LANE. TRAFFIC WILL BE MAINTAINED BY SHIFTING INTO THE NORTHBOUND LANE ALONG LAKE WHEELER ROAD. FLAGGERS WILL BE POSTED PRIOR TO LANE CLOSURES AND WILL SAFELY GUIDE TRAFFIC ALONG THE PROJECT LIMITS.

ONCE SHIFTED INTO THE PHASE III FLAGGING OPERATION, COMPLETE ROADWAY AND DRAINAGE IMPROVEMENTS ASSOCIATED ALONG SOUTHBOUND LAKE WHEELER ROAD.

NOTE:
CONTRACTOR SHALL ENSURE THAT SIMPKINS FARM LANE TRAFFIC OPERATION IS NOT IMPACTED DURING THIS PHASE.

PHASE IV

STEP 1:
MAINTAIN ALL NECESSARY WORK ZONE ADVANCE WARNING SIGNS (RSD 1101.01).

USING LANE CLOSURES AND FLAGGERS AS NEEDED, COMPLETE REMAINING PAVING, INCLUDING FINAL SURFACE COURSE AND INSTALL FINAL PAVEMENT MARKINGS AND MARKERS.

REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES AND ALLOW NORMAL TRAFFIC OPERATION.

APPROVED: DocuSigned by: Zachary M. Esposito 0647DD76D4884E8...
DATE: 5/28/2024

NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TRANSPORTATION MANAGEMENT STRATEGIES AND PHASING PLAN

TIP PROJECT: HL-0008H

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING AND SIGNING PLAN
WAKE COUNTY
LOCATION: SR 1371 (LAKE WHEELER ROAD) AT SR 1375 (SIMPKINS ROAD)

TIP NO.	SHEET NO.
HL-0008H	PMP-1

APPROVED: Signed by: Kayla M. Poulos 180731CEF90423... 1/28/2025

DATE:

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M. POULOS

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ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES 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
903.10	GROUND MOUNTED SIGN SUPPORTS
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
THERMOPLASTIC(4", 90 MILS)	
T1	WHITE EDGELINE
T2	WHITE SOLID LANE LINE
T4	3FT. - 9FT./SP WHITE MINISKIP
T5	2FT. - 6FT./SP WHITE MINISKIP
T11	YELLOW SINGLE CENTER
T12	10FT. YELLOW SKIP
T13	YELLOW DOUBLE CENTER
THERMOPLASTIC(8", 90 MILS)	
T42	YELLOW DIAGONAL
THERMOPLASTIC(12", 90 MILS)	
T52	YELLOW DIAGONAL
THERMOPLASTIC(24", 90 MILS)	
T61	WHITE STOPBAR
THERMOPLASTIC PAVEMENT MARKINGS SYMBOLS (90 MILS)	
T70	LEFT TURN ARROW
T71	RIGHT TURN ARROW
T72	STRAIGHT ARROW
T74	COMBO. RIGHT/STRAIGHT ARROW

PAVEMENT MARKING NOTES

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.

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS (SEE PMP-2):

ROAD NAME	MARKING	MARKER
ALL ROADS	THERMOPLASTIC	RAISED

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

D) STOP BAR LOCATION AT NON-SIGNALIZED INTERSECTIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.

E) REFER TO APPROVED SIGNAL PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS.

SIGNING 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.
. WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER.
. ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
. WHEN EXISTING SIGNS ARE REMOVED AND ISNTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
. THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
. ALL SIGNS WITHIN THE CLEAR ZONE SHALL BE ON BREAKAWAY SUPPORTS THAT COMPLY WITH THE LATEST EDITION OF AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) AND NCHRP REPORT 350.

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4025000000	901	CONTRACTOR FURNISHED, TYPE E SIGN	50	S.F.
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	105	L.F.
4102000000	904	SIGN ERECTION, TYPE E	10	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	7	EA.
4685000000	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	7800	L.F.
4695000000	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	50	L.F.
4700000000	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	90	L.F.
4709000000	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MILS)	125	L.F.
4725000000	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOLS (90 MILS)	14	EA.
4900000000	1251	PERMANENT RAISED PAVEMENT MARKERS	40	EA.

INDEX

PLANS PREPARED BY: DRMP, INC.

KAYLA M. POULOS, PE — PROJECT MANAGER

MIKAYLA M. LINDSEY, EI — PROJECT ENGINEER

DRMP

DRMP, INC.
5808 FARINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115

NC LICENSE NO. F-1524
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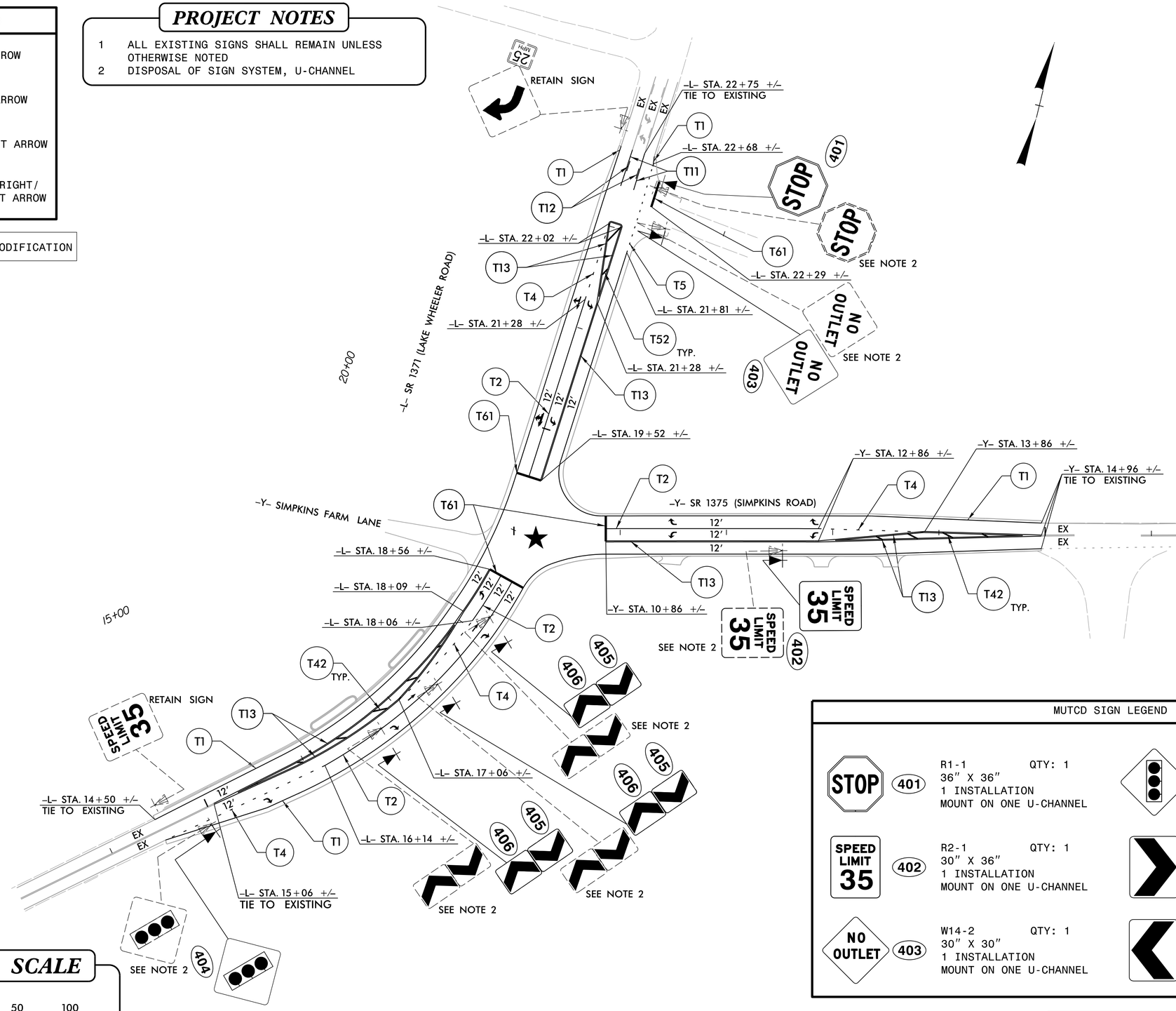
SYMBOL LEGEND	
T70	LEFT ARROW
T71	RIGHT ARROW
T72	STRAIGHT ARROW
T74	COMBO. RIGHT/ STRAIGHT ARROW
★	PROPOSED SIGNAL MODIFICATION

PROJECT NOTES

1 ALL EXISTING SIGNS SHALL REMAIN UNLESS OTHERWISE NOTED
2 DISPOSAL OF SIGN SYSTEM, U-CHANNEL



GRAPHIC SCALE

50 25 0 50 100
PLANS

MUTCD SIGN LEGEND					
STOP	401	R1-1 QTY: 1 36″ X 36″ 1 INSTALLATION MOUNT ON ONE U-CHANNEL		404	W3-3 QTY: 1 30″ X 30″ 1 INSTALLATION MOUNT ON ONE U-CHANNEL
SPEED LIMIT 35	402	R2-1 QTY: 1 30″ X 36″ 1 INSTALLATION MOUNT ON ONE U-CHANNEL		405	W1-8R QTY: 3 18″ X 24″ 3 INSTALLATIONS MOUNT ON ONE U-CHANNEL
NO OUTLET	403	W14-2 QTY: 1 30″ X 30″ 1 INSTALLATION MOUNT ON ONE U-CHANNEL		406	W1-8L QTY: 3 18″ X 24″ 3 INSTALLATIONS MOUNT ON ONE U-CHANNEL

PAVEMENT MARKING AND SIGNING DETAIL

PROJECT NO.	SHEET NO.
HL-0008H	PMP-2

APPROVED: Signed by: Kayla M Poules 1B07791CEF90423...
DATE: 1/15/2025

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M POULOS

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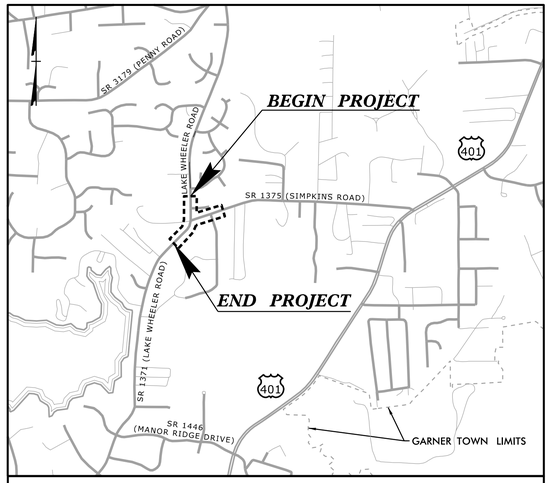
09/08/25

TIP PROJECT: HL–0008H

CONTRACT: DE00353

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP NTS

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

RECEIVING WATERS:
SWIFT CREEK/LAKE WHEELER
CLASS: WS–III, NSW

NEUSE RIVER BASIN

DISTURBED AREA = 2.0 AC.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

WAKE COUNTY

LOCATION: *LAKE WHEELER ROAD (SR 1371) & SIMPKINS ROAD (SR 1375)*
RALEIGH, NORTH CAROLINA

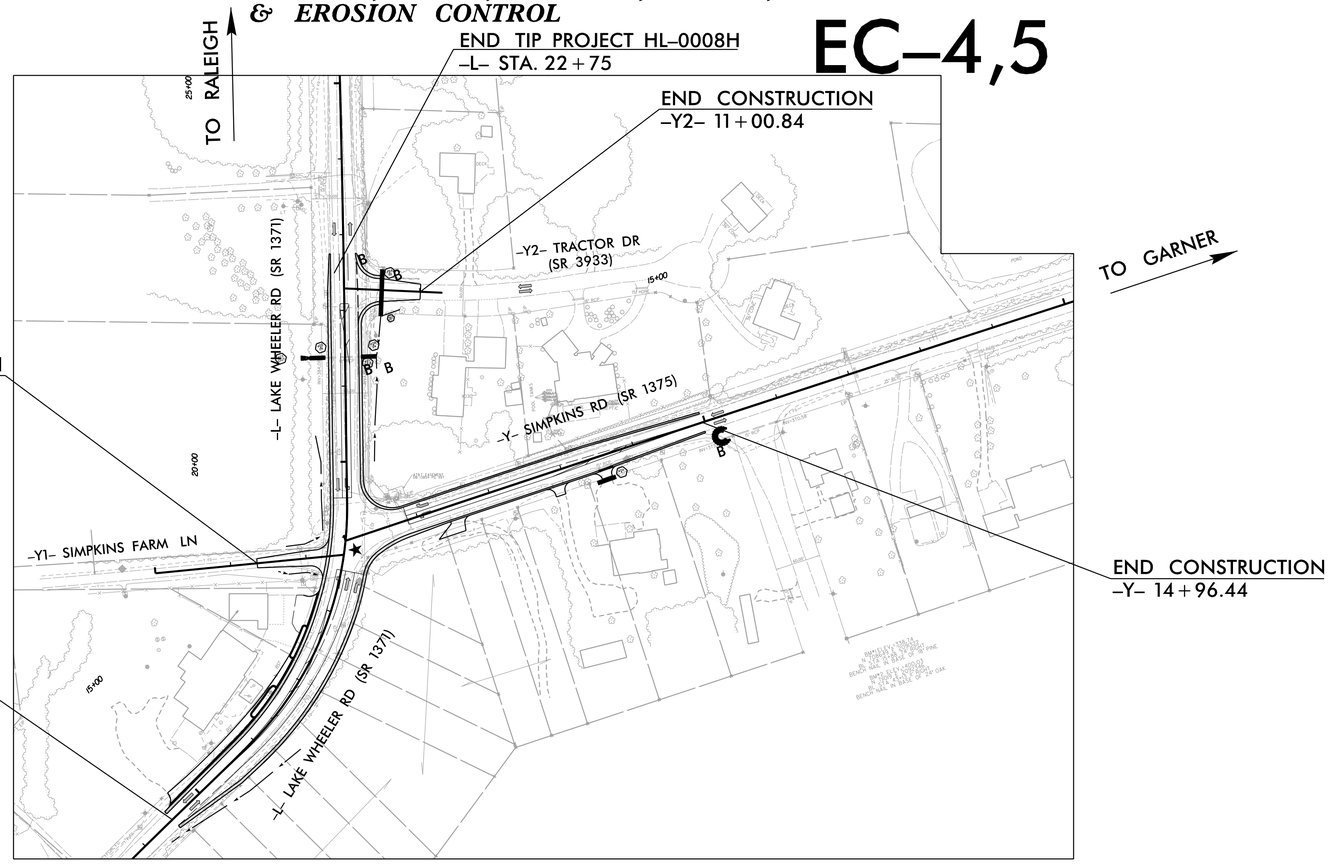
TYPE OF WORK: *GRADING, PAVING, DRAINAGE, SIGNALS, & EROSION CONTROL*

NAD 83/NA 2011

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL–0008H	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
49367.1.4		PE
49367.2.4	1371003	ROW
49367.2.19	1371003	UTL
49367.3.4		CON

EC–4,5



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

GRAPHIC SCALES

50 25 0 50 100
PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG–010000 GENERAL STORMWATER CONSTRUCTION PERMIT ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES.

Prepared in the Office of:

DRMP
ENGINEERS • SURVEYORS • PLANNERS • SCIENTISTS

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Prepared for:

ROADSIDE ENVIRONMENTAL UNIT

1 South Wilmington Street, Raleigh, NC 27611

2024 STANDARD SPECIFICATIONS

Designed by:

Forrest Brooks, PE *4039*
NAME *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

The roadway english standards as appear in "Roadway Standard Drawings" – Roadway Design Unit – N.C. Department of Transportation – Raleigh, N.C., dated January 2024 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1605.01	TEMPORARY SILT FENCE
1606.01	SPECIAL SEDIMENT CONTROL FENCE
1607.01	GRAVEL CONSTRUCTION ENTRANCE
1622.01	GUIDE FOR TEMPORARY BERMS AND SLOPE DRAINS
1631.01	MATTING INSTALLATION
1633.01	TEMPORARY ROCK SILT CHECK TYPE 'A'
1635.02	ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'

1/28/2025
::\HL0008H_EC_tsh.dgn
User: mindsey

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	EC-2
R/W SHEET NO.	

FORREST N. BROOKS, P.E.
LEVEL III NAME

4039
LEVEL III CERTIFICATION NO.

EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	TSD
1630.04	Stilling Basin	
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1630.07	Skimmer Basin	
1630.08	Tiered Skimmer Basin	
1630.09	Earthen Dam with Skimmer	
	Infiltration Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet Sediment Trap Type A	A
1635.02	Rock Pipe Inlet Sediment Trap Type B	B
1636.01	Excelsior Wattle Check	
1636.01	Excelsior Wattle Check with Flocculant	
1636.01	Coir Fiber Wattle Check	
1636.01	Coir Fiber Wattle Check with Flocculant	
1636.02	Silt Fence Excelsior Wattle Break	EW
	Silt Fence Coir Fiber Wattle Break	CFW
1636.03	Excelsior Wattle Barrier	—EW—EW—EW—
1636.03	Coir Fiber Wattle Barrier	—CFW—CFW—CFW—

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	EC-3A

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	20+00	21+38	RT	100
4	-Y-	11+00	15+00	LT	280
4	-Y-	13+00	15+00	RT	140
4	-Y1-	11+75	20+25	LT	595
4	-L-	21+38	21+92	RT	50
				SUBTOTAL	1165
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					7500
				TOTAL	8665
				SAY	9000

PSRM FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
			SUBTOTAL		
				TOTAL	
				SAY	

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	EC-3B
R/W SHEET NO.	

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DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

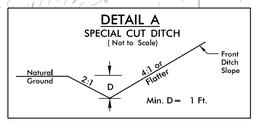
SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES

CLEARING AND GRUBBING PHASE

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. –L– 14+50 RT TO STA. –L– 16+30 RT
FROM STA. –L– 20+00 RT TO STA. –L– 21+38 RT
FROM STA. –L– 21+38 RT TO STA. –L– 21+91 RT
FROM STA. –Y1– 11+75 LT TO STA. –L– 20+35 LT
FROM STA. –Y2– 10+50 RT TO STA. –Y2– 10+75 RT

END TIP PROJECT HL-0008H
–L– STA. 22+75.00

END CONSTRUCTION
–Y2– STA. 11+00.84

END CONSTRUCTION
–Y– STA. 14+96.44

BEGIN CONSTRUCTION
–Y1– STA. 11+35.00

BEGIN TIP PROJECT HL-0008H
–L– STA. 14+50.00

–L– LAKE WHEELER RD. (SR 1371)

–Y– SIMPKINS RD. (SR 1375)

8 BORIS NENADIC
DB 16889 PG 434
MB 2005 PG 889

9 MARY ALLISON SHELTON
DB 18123 PG 1938
MB 1984 PG 1099

6 STEPHEN BROOKS HARRIS
DB 16230 PG 1416

5 H. MARVIN SIMPKINS
DB 7548 PG 439
MB 1996 PG 4

7 CARLTON NICHOLS
DB 8476 PG 2048
MB 1984 PG 1099

11 MARGARET GAPPENS
DB 17563 PG 1393
MB 1984 PG 1099

VIRGINIA VENDRIX
DB 1715 PG 1334
MB 1984 PG 1099

4 RICKY R. COATES
DB 9451 PG 62
PIN 0791-20-2122

1 LAILA FARZANA
DB 14025 PG 2497
MB 1957 PG 93

WILLIAM JOHNSON
DB 16111 PG 881
MB 2007 PG 144

3 RICHARD ABERNATHY
DB 8108 PG 140
MB 1954 PG 6

2 JOSIE MATTHEWS
DB 14191 PG 1961
MB 1954 PG 6

JORDAN BEATON
DB 16394 PG 1104

JOSIE MATTHEWS
DB 14191 PG 1961
MB 1954 PG 6

10 RONALD WORRELLS
DB 10615 PG 1275
MB 1954 PG 6

12 RICHARD ABERNATHY
DB 17961 PG 1941
MB 1954 PG 6

13 WILLIAM LESTER SMITH
DB 9742 PG 220
MB 1954 PG 6

BARNEY D. ELLIS
DB 8128 PG 907
MB 1954 PG 6

JOHN MANGRUM
DB 14496 PG 1579
MB 1954 PG 6

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20+00

15+00

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PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	EC-4/CONST.4
R/W SHEET NO.	

GRAPHIC SCALES

50 25 0 50 100
PLANS

REVISIONS

8/17/99

8/10/2025
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FINAL PHASE

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	EC-5/CONST.4
R/W SHEET NO.	

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GRAPHIC SCALES

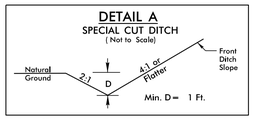
50 25 0 50 100

PLANS

8/17/99

REVISIONS

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. –L– 14+50 RT TO STA. –L– 16+30 RT
FROM STA. –L– 20+00 RT TO STA. –L– 21+38 RT
FROM STA. –L– 21+38 RT TO STA. –L– 21+91 RT
FROM STA. –Y1– 11+75 LT TO STA. –L– 20+35 LT
FROM STA. –Y2– 10+50 RT TO STA. –Y2– 10+75 RT

END TIP PROJECT HL-0008H
–L– STA. 22+75.00

BEGIN CONSTRUCTION
–Y1– STA. 11+35.00

BEGIN TIP PROJECT HL-0008H
–L– STA. 14+50.00

END CONSTRUCTION
–Y2– STA. 11+00.84

END CONSTRUCTION
–Y– STA. 14+96.44

NAD 83 NA 2011

COLLAR AND EXTEND EXISTING 18" RCP

4 TONS OF CLASS B RIPRAP
9 SY OF GEOTEXTILE FABRIC

SPECIAL CUT DITCH DETAIL A

GRADE TO DRAIN

18" RCP CLASS IV

REMOVE EXISTING RCP

REMOVE EXISTING 15" RCP

–Y– SIMPKINS RD. (SR 1375)

–L– LAKE WHEELER RD. (SR 1371)

1 LAILA FARZANA
DB 14025 PG 2497
MB 1957 PG 93

2 JOSIE MATTHEWS
DB 14191 PG 1961
MB 1954 PG 6

JORDAN BEATON
DB 16394 PG 1104

JOSIE MATTHEWS
DB 14191 PG 1961
MB 1954 PG 6

3 RICHARD ABERNATHY
DB 8108 PG 140
MB 1954 PG 6

4 RICKY R. COATES
DB 8451 PG 62
PIN 0791-20-2122

5 H. MARVIN SIMPKINS
DB 7548 PG 439
MB 1996 PG 4

6 STEPHEN BROOKS HARRIS
DB 16230 PG 1416

7 CARLTON NICHOLS
DB 8476 PG 2048
MB 1984 PG 1099

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MB 2005 PG 889

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MB 1984 PG 1099

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DB 10-E PG 1275
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DB 9742 PG 220
MB 1954 PG 6

VIRGINIA VENDRIX
DB 17115 PG 1334
MB 1984 PG 1099

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DB 8128 PG 907
MB 1954 PG 6

JOHN MANGRUM
DB 14496/PG 1579
MB 1954 PG 6

WILLIAM JOHNSON
DB 16111 PG 881
MB 2007 PG 144

1/10/2025
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User:kforbes

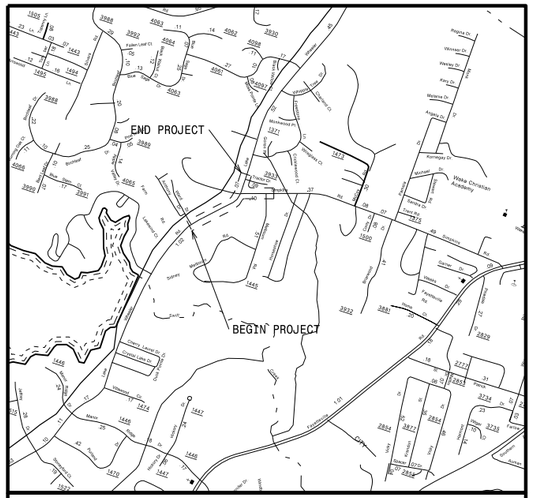
Project No.	Sheet No.
HL–0008H	Sig. 1.0

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

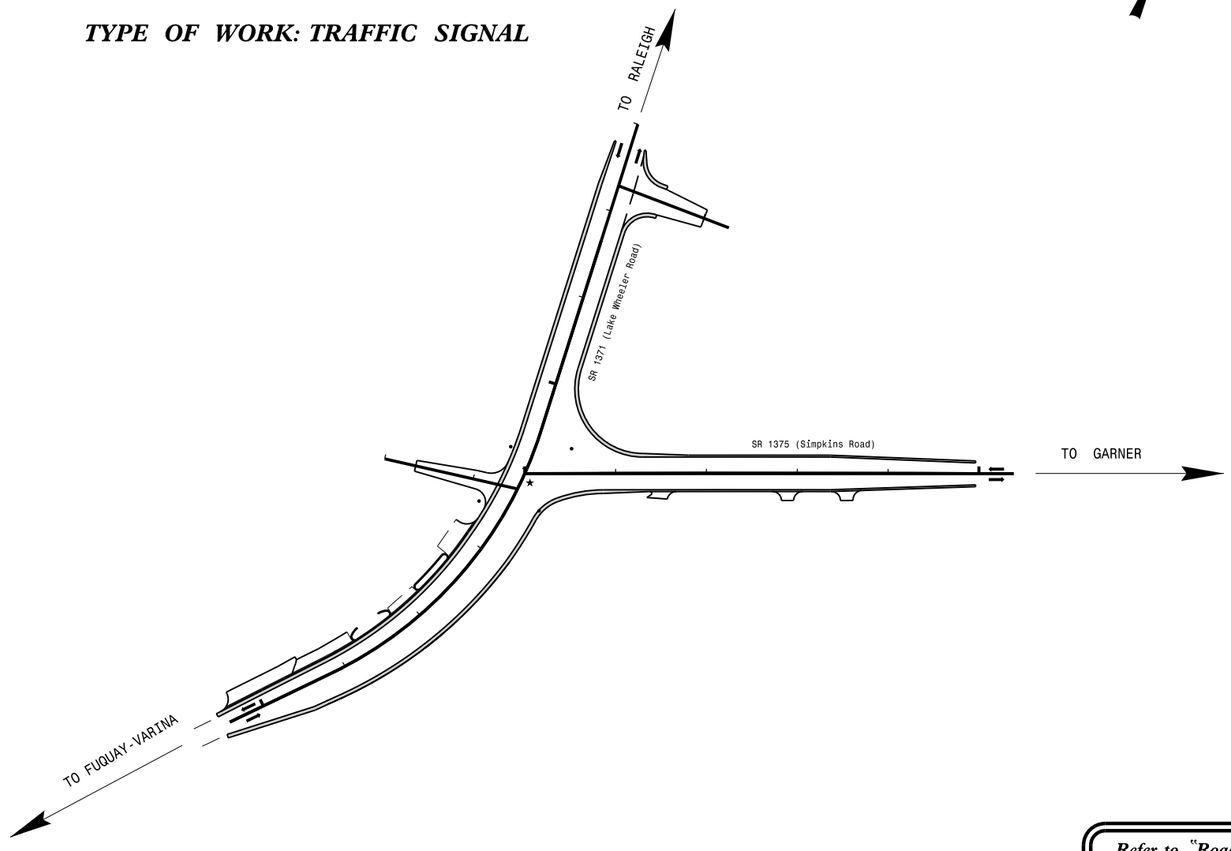
WAKE COUNTY

LOCATION: SR 1371 (LAKE WHEELER ROAD) AT SR 1375 (SIMPKINS ROAD)

TYPE OF WORK: TRAFFIC SIGNAL



VICINITY MAP NTS



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

Index of Plans

Sheet #	Reference #	Location/Description
Sig. 1.0	N/A	Title Sheet
Sig. 2.0 – 3.2	05–1360	SR 1371/SR 1375 (Lake Wheeler Road) at SR 1375 (Simpkins Road)

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS

Contacts:

Robert J. Ziemba, PE, CPM – Central Region Signals Engineer

Ryan W. Hough, PE – Signal Equipment Design Engineer

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

TSMO UNIT

750 N. Greenfield Parkway, Garner, NC 27529

Project: HL–0008H

CONTRACT: DE00353

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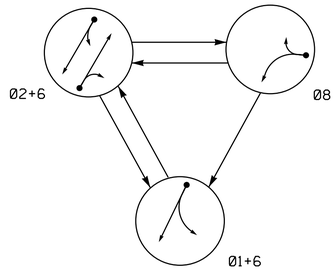
jdmcguire

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	Sig.2.0

PHASING DIAGRAM



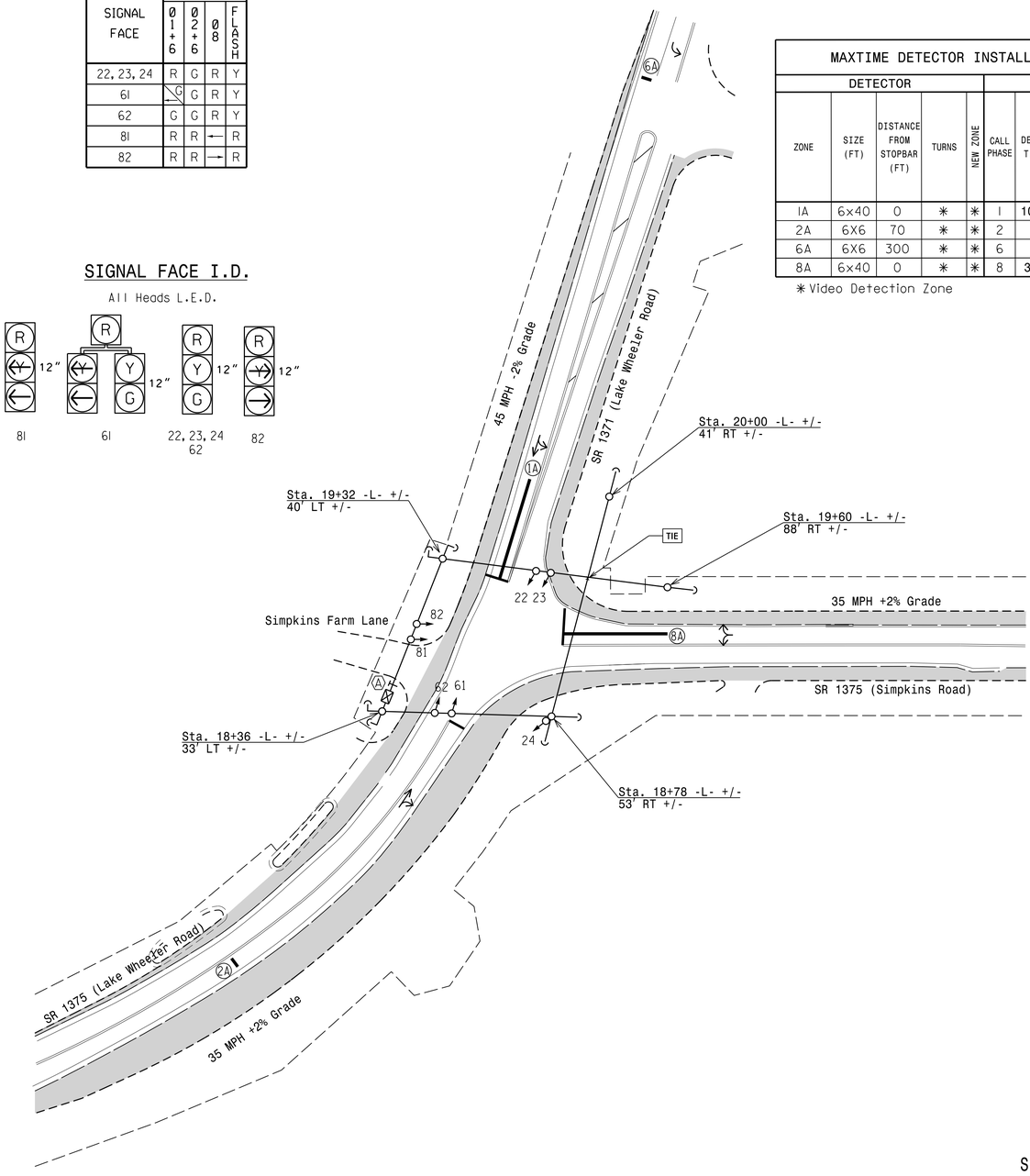
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION				
SIGNAL FACE	PHASE			
	Ø1+6	Ø2+6	Ø8	FLASH
22, 23, 24	R	G	R	Y
61	G	G	R	Y
62	G	G	R	Y
81	R	R	←	R
82	R	R	→	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW ZONE	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
1A	6x40	0	*	*	1	10.0	-	X	-	X	-	*
2A	6X6	70	*	*	2	-	-	X	X	X	-	*
6A	6X6	300	*	*	6	-	-	X	X	X	-	*
8A	6x40	0	*	*	8	3.0	-	X	-	X	-	*

* Video Detection Zone

3 Phase
Fully Actuated
(Isolated)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 2 to allow the controller to clear from phase 2+6 to phase 1+6 by progressing through an all red display.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing, unless otherwise shown.
7. This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Video Detection	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Construction Zone	
A	"STOP" Sign (R1-1)	A

MAXTIME TIMING CHART

FEATURE	PHASE			
	1	2	6	8
Walk *	–	–	–	–
Ped Clear	–	–	–	–
Min Green *	7	10	12	7
Passage *	2.0	5.0	6.0	2.0
Max 1 *	30	90	90	30
Yellow Change	3.0	4.1	4.1	3.0
Red Clear	1.6	1.9	1.9	2.4
Red Revert	2.0	5.0	2.0	2.0
Added Initial *	–	–	–	–
Maximum Initial *	–	–	–	–
Time Before Reduction *	–	–	–	–
Time To Reduce *	–	–	–	–
Minimum Gap	–	–	–	–
Advance Walk	–	–	–	–
Non Lock Detector	X	–	–	X
Vehicle Recall	–	MIN RECALL	MIN RECALL	–
Dual Entry	–	–	–	–

* 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.

Signal Upgrade - Temporary Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SR 1371/SR 1375 (Lake Wheeler Road)
at
SR 1375 (Simpkins Road)

Division 5 Wake County Garner

PLAN DATE: February 2024 REVIEWED BY:
PREPARED BY: I.O. Umozurike REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZIEMBA

Documents not considered final unless signed and sealed
SIGNATURE DATE 04/25/2024

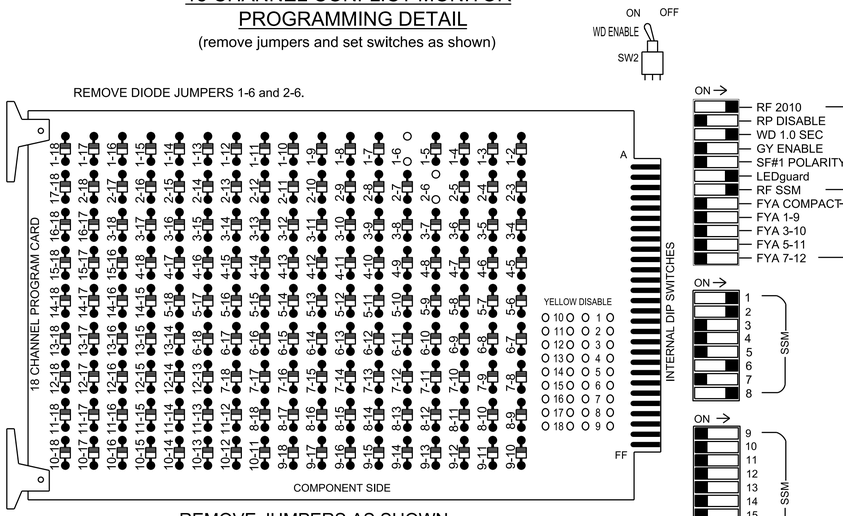
SIG. INVENTORY NO. 05-1360T

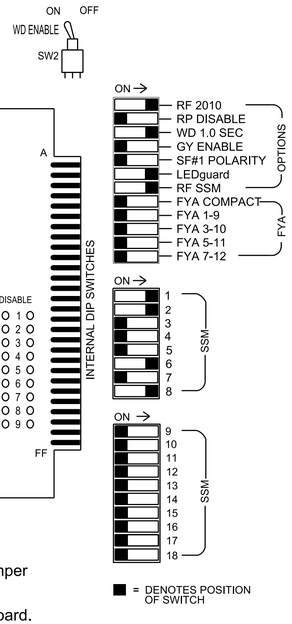
15-MAY-2024 11:45
S:\Traffic\Projects\TS Signals\Signal Design Section\Central Region\Div 5\05-1360\05136OT_sig_dsn_20240425.dgn

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	Sig.2.1

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)





REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that the Red Enable is active at all times during normal operation.
4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

NOTES

1. 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 plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S1, S2, S8, S11
Phases Used.....1, 2, 6, 8
Overlap "1".....Not Used
Overlap "2".....Not Used
Overlap "3".....Not Used
Overlap "4".....Not Used

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	61	22,23 24	NU	NU	NU	NU	NU	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED	*	128						134			107							
YELLOW		129						135										
GREEN		130						136										
RED ARROW																		
YELLOW ARROW	126										108							
GREEN ARROW	127										109							

NU = Not Used
* Denotes install load resistor. See load resistor installation detail this sheet.

BACKUP PREVENTION PROGRAMMING

Front Panel
Main Menu >Controller >Sequence & Phs Config >Backup Prevention >
Backup Protection Plan

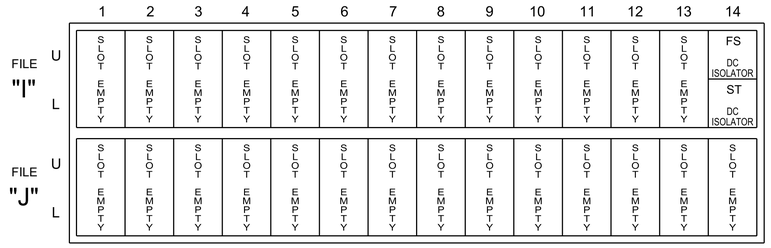
Web Interface
Home >Controller> Backup Prevention >Backup Protection Plan

Sequence 1

No Backup Phase	1	2	3	4	5	6	7	8
Serve Phase 1	-	-	-	-	-	-	-	-
Serve Phase 2	X	-	-	-	-	-	-	-
Serve Phase 3	-	-	-	-	-	-	-	-
Serve Phase 4	-	-	-	-	-	-	-	-
Serve Phase 5	-	-	-	-	-	-	-	-
Serve Phase 6	-	-	-	-	-	-	-	-
Serve Phase 7	-	-	-	-	-	-	-	-
Serve Phase 8	-	-	-	-	-	-	-	-

INPUT FILE POSITION LAYOUT

(front view)



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

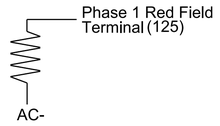
FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTOR NOTE

Install a video detection system for vehicle detection.
Perform installation according to manufacturer's directions and NCDOT engineer -approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)

ALL RED BACKUP PROGRAMMING

Front Panel
Main Menu >Controller >Sequence & Phs Config>Backup Prevention >
Backup Through Red

Web Interface
Home >Controller >Backup Prevention >Backup Calls Phase Plans >
(scroll down) to Backup Through Red

Backup Through All Red

Sequence	Backup Through All Red
1	YES

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-1360T
DESIGNED: February 2024
SEALED: 04/25/2024
REVISED: N/A

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1371/SR 1375 (Lake Wheeler Road) at SR 1375 (Simpkins Road)

Prepared in the Offices of:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Transportation Mobility and Safety Division Traffic Engineering Branch Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

Division 5 | Wake County | Garner

PLAN DATE: April 2024 | REVIEWED BY:
PREPARED BY: Sarah Kirkpatrick | REVIEWED BY:

REVISIONS	INIT.	DATE

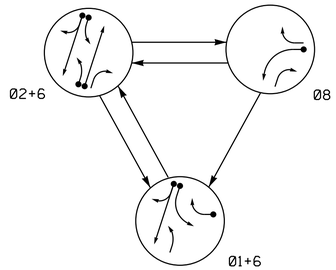
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 04/25/2024
DATE

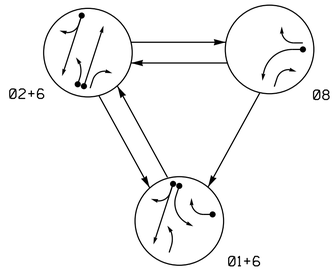
SIG. INVENTORY NO. 05-1306T

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	Sig.3.0

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM

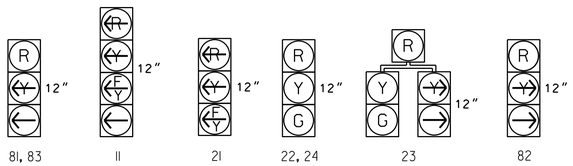


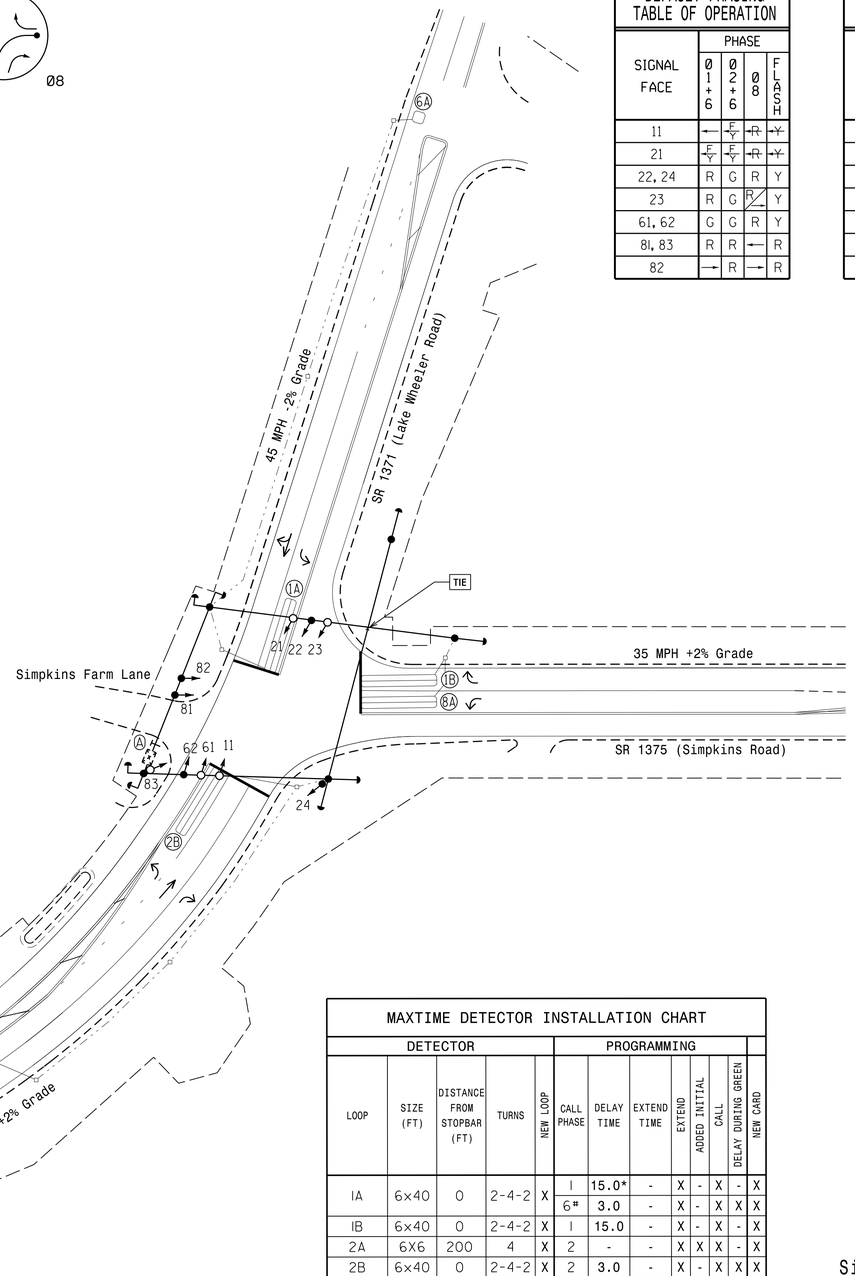
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.





DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 01+6	PHASE 02+6	PHASE 08	FLASH
11	←	~~F Y~~	~~R~~	~~Y~~
21	~~F Y~~	~~F Y~~	~~R~~	~~Y~~
22, 24	R	G	R	Y
23	R	G	R/←	Y
61, 62	G	G	R	Y
81, 83	R	R	←	R
82	→	R	→	R

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 01+6	PHASE 02+6	PHASE 08	FLASH
11	←	~~R~~	~~R~~	~~Y~~
21	~~F Y~~	~~F Y~~	~~R~~	~~Y~~
22, 24	R	G	R	Y
23	R	G	R/←	Y
61, 62	G	G	R	Y
81, 83	R	R	←	R
82	→	R	→	R

3 Phase
Fully Actuated
(Isolated)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Disable Backup Protect for phase 2.
4. Phase 1 may be lagged.
5. Set all detector units to presence mode.
6. The Division Traffic Engineer will determine the hours of use for each phasing plan.

MAXTIME TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 6	PHASE 8
Walk *	–	–	–	–
Ped Clear	–	–	–	–
Min Green *	7	10	12	7
Passage *	2.0	5.0	6.0	2.0
Max 1 *	30	90	90	30
Yellow Change	3.0	4.1	4.1	3.0
Red Clear	1.2	1.5	1.5	2.8
Red Revert	2.0	2.0	2.0	2.0
Added Initial *	–	–	–	–
Maximum Initial *	–	–	–	–
Time Before Reduction *	–	–	–	–
Time To Reduce *	–	–	–	–
Minimum Gap	–	–	–	–
Advance Walk	–	–	–	–
Non Lock Detector	X	–	–	X
Vehicle Recall	–	MIN RECALL	MIN RECALL	–
Dual Entry	–	–	–	–

* 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.

MAXTIME DETECTOR INSTALLATION CHART

DETECTOR LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
1A	6x40	0	2-4-2	X	1	15.0*	-	X	-	X	-	X
					6#	3.0	-	X	-	X	X	X
1B	6x40	0	2-4-2	X	1	15.0	-	X	-	X	-	X
2A	6X6	200	4	X	2	-	-	X	X	X	-	X
2B	6x40	0	2-4-2	X	2	3.0	-	X	-	X	X	X
6A	6X6	300	4	X	6	-	-	X	X	X	-	X
8A	6x40	0	2-4-2	X	8	3.0	-	X	-	X	-	X

* Reduce Delay to 3 seconds during Alternate Phasing Operation.
# Disable phase call for loop during Alternate Phasing Operation.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□	Pedestrian Signal Head With Push Button & Sign	■
○	Signal Pole with Guy	●
○	Signal Pole with Sidewalk Guy	●
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
·····	2-in Underground Conduit	·····
N/A	Right of Way	– – – –
→	Directional Arrow	→
Ⓐ	"STOP" Sign (R1-1)	Ⓐ

Signal Upgrade - Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1371/SR 1375 (Lake Wheeler Road) at SR 1375 (Simpkins Road)

Division 5 Wake County Garner

PLAN DATE: February 2024 REVIEWED BY:

PREPARED BY: I.O. Umozurike REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026486 ROBERT J. ZYLMORA

DocuSigned by: Robert J. Zylmora 04/25/2024
SIGNATURE DATE

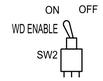
SIG. INVENTORY NO. 05-1360

15-MAY-2024 11:50
S:\TPB\TMS\Signals\Signal Design Section\Central Region\Div 5\05-1360\05360_sig.dsn_20240425.dgn
Samozurike

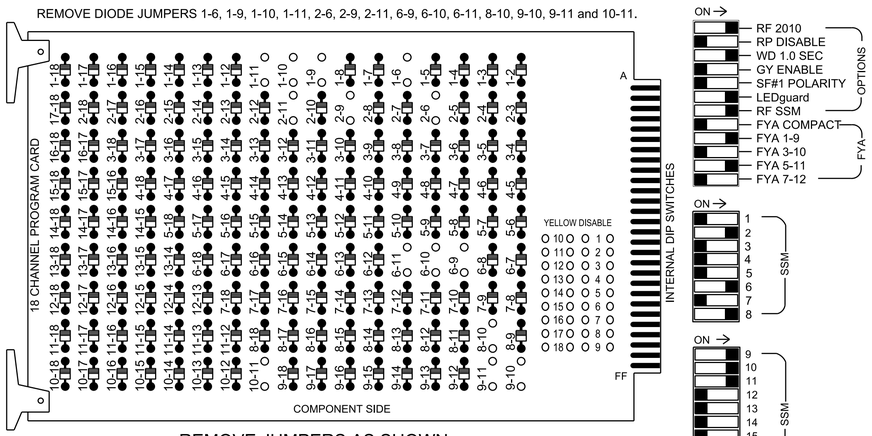
PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	Sig.3.1

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-6, 1-9, 1-10, 1-11, 2-6, 2-9, 2-11, 6-9, 6-10, 6-11, 8-10, 9-10, 9-11 and 10-11.



REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that the Red Enable is active at all times during normal operation.
4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

NOTES

1. 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 plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S1, S2, S8, S11, AUX S1, AUX S2, AUX S4
Phases Used.....1, 2, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....Not Used

*See overlap programming detail on sheet 2

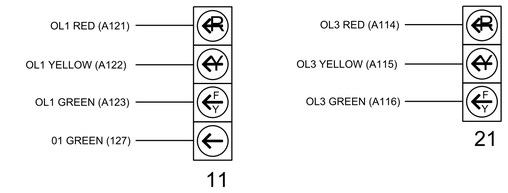
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11 ★	22,23, 24	NU	NU	NU	NU	NU	61,62	NU	NU	81,83	23	NU	11 ★	82	NU	21 ★	NU	NU
RED		128						134			107				A124				
YELLOW	*	129						135											
GREEN		130						136											
RED ARROW													A121			A114		
YELLOW ARROW											108	108		A122	A125		A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW	127										109	109			A126				

NU = Not Used
* Denotes install load resistor. See load resistor installation detail this sheet.
★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	ø 1 1A	ø 2 2A	ø 1 1B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	ø 2 2B	NOT USED											ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		NOT USED	SLOT EMPTY			NOT USED	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
1A	TB2-1,2	I1U	56	18	1 ★	1	15.0		X		X	
				-	29 ★	6	3.0		X		X	X
1B	TB2-9,10	I3U	63	29	4	1	15.0		X		X	
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
2B	TB2-7,8	I2L	43	5	3	2	3.0		X		X	X
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
8A	TB5-9,10	J6U	42	4	22	8	3.0		X		X	

★ For the detectors to work as shown on the signal plan see the Detector Programming Detail for Alternate Phasing on Sheet 2 of this plan.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

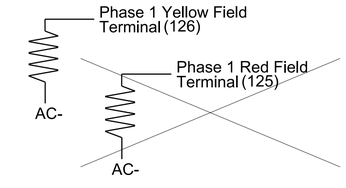
1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



! If present, remove load resistor from Phase 1 Red.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-1360
DESIGNED: February 2024
SEALED: 04/25/2024
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For: SR 1371/SR 1375 (Lake Wheeler Road) at SR 1375 (Simpkins Road)

Division 5 | Wake County | Near Garner

PLAN DATE: April 2024 | REVIEWED BY:

PREPARED BY: Sarah Kirkpatrick | REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Traffic & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 04/25/2024
430320FAA2654C3... DATE

SIG. INVENTORY NO. 05-1360

25-APR-2024 12:42
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sgkirkpatrick

PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	Sig.3.2

MAXTIME OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	3
Type	FYA 4 - Section	Normal	FYA 4 - Section
Included Phases	2	1,8	6
Modifier Phases	1	-	-
Modifier Overlaps	-	-	-
Trail Green	0	0	0
Trail Yellow	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0

MAXTIME OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

In the table view of the web interface, right click on "Overlap" in the top left corner of the table. Copy the entire contents of Overlap Plan 1. Paste Overlap Plan 1 into Overlap Plan 2. Modify Overlap Plan 2 as shown below and save changes.

Overlap Plan 2

Overlap	1	2	3
Type	FYA 4 - Section	Normal	FYA 4 - Section
Included Phases	-	1,8	6
Modifier Phases	1	-	-
Modifier Overlaps	-	-	-
Trail Green	0	0	0
Trail Yellow	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0

← NOTICE INCLUDED PHASE

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

To run alternate phasing, select a Pattern that is programmed to run Overlap Plan 2 and Detector Plan 2.
A Pattern can be selected through the scheduler or manually by changing the Operational Mode.

PHASING	OVERLAP PLAN	VEH DET PLAN
ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING	2	2

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN OVERLAP PLAN 2 AND VEHICLE DETECTOR PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAP PLAN 2: Modifies overlap included phases for head 11 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.

MAXTIME ALTERNATE PHASING PATTERN PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Coordination >Patterns

Web Interface
Home >Controller >Coordination >Patterns

Pattern Parameters

Pattern	Veh Det Plan	Overlap Plan
*	2	2

* The Pattern number(s) are to be determined by the Division and/or City Traffic Engineer.

MAXTIME DETECTOR PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOP 1A

Front Panel
Main Menu >Controller >Detector >Veh Det Plans

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

In the table view of web interface right click on "Detector" in the top left corner of the table. Copy the entire contents of Detector Plan 1. Paste Detector Plan 1 into Detector Plan 2. Modify Detector Plan 2 as shown below and save changes.

Plan 2

1A

Detector	Call Phase	Delay
1	1	3.0
29	0	3.0

BACKUP PREVENTION PROGRAMMING

Front Panel
Main Menu >Controller >Sequence & Phs Config >Backup Prevention > Backup Protection Plan

Web Interface
Home >Controller> Backup Prevention >Backup Protection Plan

Sequence 1

No Backup Phase	1	2	3	4	5	6	7	8
Serve Phase 1	-	-	-	-	-	-	-	-
Serve Phase 2	X	-	-	-	-	-	-	-
Serve Phase 3	-	-	-	-	-	-	-	-
Serve Phase 4	-	-	-	-	-	-	-	-
Serve Phase 5	-	-	-	-	-	-	-	-
Serve Phase 6	-	-	-	-	-	-	-	-
Serve Phase 7	-	-	-	-	-	-	-	-
Serve Phase 8	-	-	-	-	-	-	-	-

! If present, remove backup prevention programming.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-1360
DESIGNED: February 2024
SEALED: 04/25/2024
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1371/SR 1375 (Lake Wheeler Road) at SR 1375 (Simpkins Road)

Division 5 | Wake County | Near Garner

PLAN DATE: April 2024 | REVIEWED BY:

PREPARED BY: Sarah Kirkpatrick | REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
NC Department of Transportation Mobility and Safety Division Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 04/25/2024
DATE

SIG. INVENTORY NO. 05-1360

25-APR-2024 12:46
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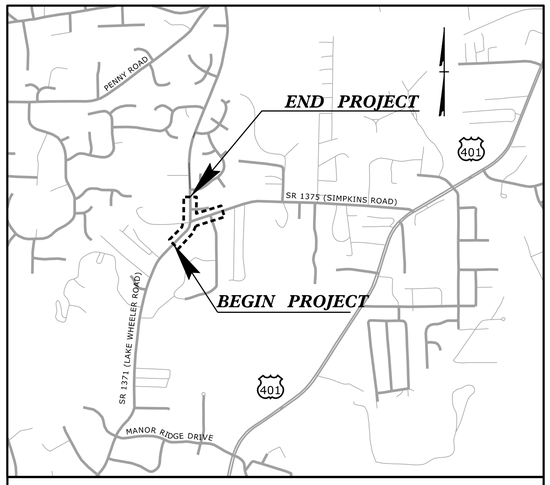
sgkirkpatrick

09/08/99

TIP PROJECT: HL–0008H

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP NTS

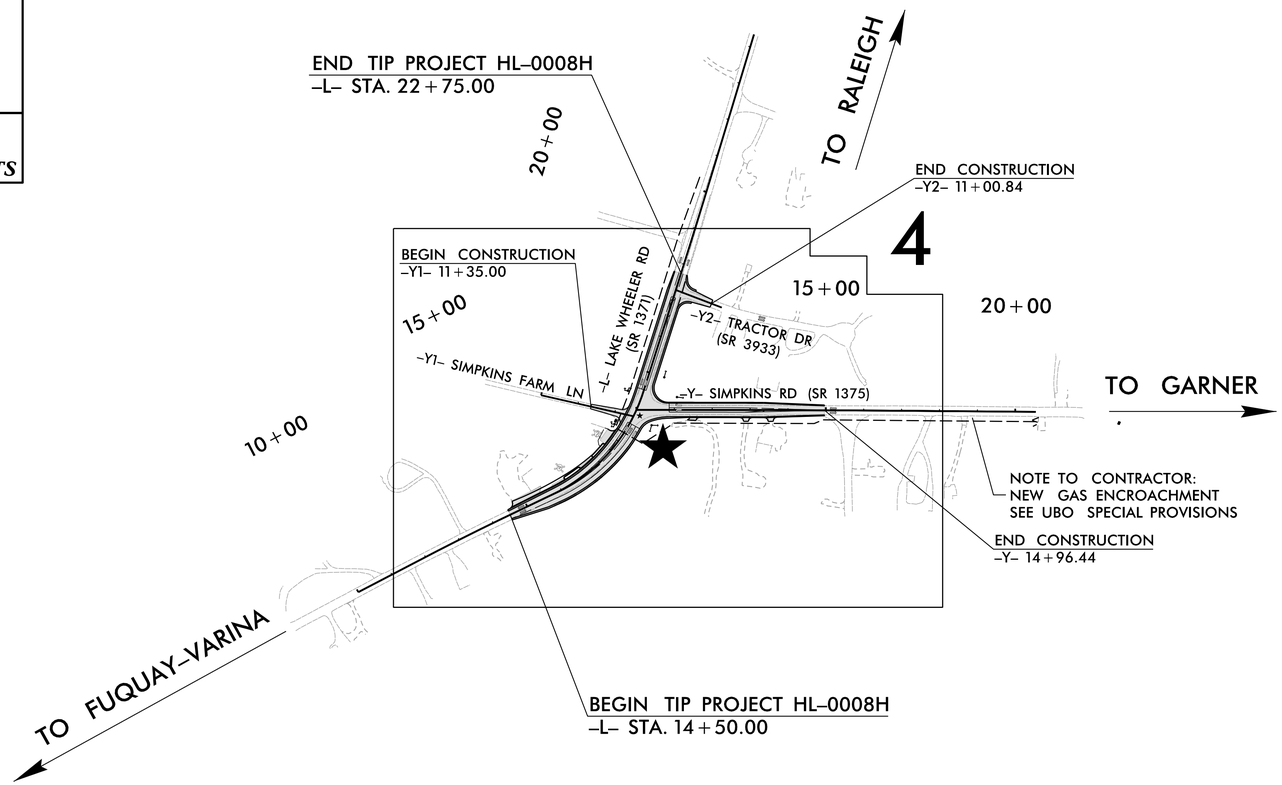
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
WAKE COUNTY

STATE PROJECT REFERENCE NO.	SHEET NO.
HL–0008H	UO–1

NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

LOCATION: SR 1371 (LAKE WHEELER ROAD) & SR 1375 (SIMPKINS ROAD)
TYPE OF WORK: UTILITY RELOCATION



★ PROPOSED SIGNAL MODIFICATION

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

INDEX OF SHEETS

UTILITY OWNERS WITH CONFLICTS

(A) POWER – DUKE ENERGY
(B) COMMUNICATIONS – CHARTER
(C) COMMUNICATIONS – AT&T
(D) COMMUNICATIONS – VERIZON
(E) COMMUNICATIONS – TING
(F) SIGNAL COMMUNICATIONS – NCDOT
(G) GAS – ENBRIDGE GAS

Prepared in the Office of:
DRMP
ENGINEERS SURVEYORS PLANNERS SCIENTISTS
DRMP, INC.
5808 FARINGDON PLACE RALEIGH, NC 27609
PHONE: 919-872-5115 | www.drmp.com | NC License No. F-1524

UTILITY PROJECT ENGINEER
KAYLA M. POULOS, PE
SIGNATURE:
MIKAYLA M. LINDSEY, EI
SIGNATURE:

DIVISION OF HIGHWAYS
DIVISION 5
PROJECT DELIVERY UNIT
2612 N. DUKE STREET
DURHAM, NC 27704
PHONE: (919) 317–4700
FAX: (919) 317–4710

BETH A. QUINN, PE — *TEAM LEAD*
JOHN W. BRAXTON — *DM–STIP ENGINEER*
DONALD W. PROPER — *DIV. UTILITES ENGINEER*
JAMES SWINSON — *SENIOR UTILITES ENGINEER*

1/16/2025
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User: kforbes

8/17/99

DRMP

DRMP INC.
5808 FARRINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115

NC LICENSE NO. F-1524
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PROJECT REFERENCE NO.	SHEET NO.
HL-0008H	UO-2
THIS SHEET CORRESPONDS TO	RDY 4

UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

PROPOSED CHARTER HAND HOLE

END TIP PROJECT HL-0008H
-L- STA. 22+75.00 (8)

RETAIN ENBRIDGE UG GAS LINE

AT&T PROP. UG FACILITIES

ADJUST TING HAND HOLE

CHARTER PROP. UG FACILITIES

END CONSTRUCTION
-Y2- STA. 11+00.84

RELOCATE DOT HAND HOLE

ADJUST AT&T HAND HOLE

EXIST. AT&T LINES TO BE ABANDONED

AT&T PROP. UG FACILITIES

CHARTER PROP. OH FACILITIES

RELOCATE DOT HAND HOLE

EXIST. AT&T LINES TO BE ABANDONED (6)

REPLACE DUKE POLE

EXIST. AT&T HAND HOLE TO BE ABANDONED

RELOCATE COMMUNICATIONS BOX

RELOCATE SIGNAL POLE

RETAIN SIGNAL BOX

ADJUST AT&T HAND HOLE

CHARTER PROP. OH FACILITIES

REPLACE DUKE POLE

BEGIN CONSTRUCTION
-Y1- STA. 11+35.00

RETAIN AT&T MARKER

RETAIN SIGNAL POLE

REPLACE POLE

EXIST. AT&T LINES TO BE ABANDONED

RELOCATE POLE

BEGIN TIP PROJECT HL-0008H
-L- STA. 14+50.00

RETAIN POLE

AT&T PROP. UG FACILITIES

RETAIN ENBRIDGE UG GAS LINE

PROPOSED TING HAND HOLE

CHARTER PROP. OH FACILITIES

TING PROP. UG FACILITIES

RELOCATE POLE

TING TELEPHONE LINE TO BE ABANDONED

VERIZON TELEPHONE LINE

EXIST. AT&T LINES TO BE ABANDONED

PROPOSED TING HANDHOLE

RETAIN POLE

RETAIN AT&T FACILITIES

EXIST. AT&T HAND HOLE TO BE ABANDONED

EXIST. AT&T LINES TO BE ABANDONED

EXIST. TING LINE TO BE ABANDONED

RELOCATE DUKE/SIGNAL POLE

RELOCATED TING HAND HOLE

RELOCATED VERIZON HAND HOLE

RELOCATE DOT HAND HOLE

AT&T POLE TO BE REMOVED

PROP. DUKE AERIAL ROUTE
PROP. CHARTER AERIAL ROUTE
PROP. AT&T AERIAL ROUTE
ON NEW POWER POLES

CHARTER PROP. OH FACILITIES

RONALD WORRELLS
DB 10-E PG 176
MB 1954 PG 6

AT&T PROP. AERIAL FACILITIES

EXIST. AT&T HAND HOLE TO BE ABANDONED

RETAIN POLE

RICHARD ABERNATHY
DB J7961 PG 1941
MB 1954 PG 6

EXIST. AT&T LINES TO BE ABANDONED

WILLIAM LESTER SMITH
DB 9742 PG 220
MB 1954 PG 6

AT&T PROP. UG FACILITIES

EXIST. AT&T HAND HOLE TO BE ABANDONED

BARNEY D. ELLIS
DB 6128 PG 907
MB 1954 PG 6

JOHN MANGRUM
DB 14496/PG 579
MB 1954 PG 6

NOTE TO CONTRACTOR:
PROPOSED GAS ENCROACHMENT
REFER TO UBO SPECIAL PROVISIONS

15+00

NC GRID
NAD 83 NA 2011

BM#1 ELEV.=338.74
N 708649 E 2091322
BL STA 15+88.74' RIGHT
BENCH NAIL IN BASE OF 18" PINE

BM#2 ELEV.=400.03
N 711019 E 2092346
BL STA 143+13.11' RIGHT
BENCH NAIL IN BASE OF 24" OAK

-L- LAKE WHEELER RD. (SR 1371)

-Y1- SIMPKINS FARM LN.

-Y- SIMPKINS RD. (SR 1375)

-Y2- TRACTOR DR. (SR 3933)

SIMPKINS RD.(SR 1375) 25' BST TO US 401

BORIS NENADIC
DB 16889 PG 434
MB 2005 PG 889

MARY ALLISON SHELTON
DB 18123 PG 1938
MB 1984 PG 1099

CARLTON NICHOLS
DB 8476 PG 2048
MB 1984 PG 1099

MARGARET GAPPENS
DB 17563 PG 1393
MB 1984 PG 1099

VIRGINIA VENDRIX
DB 17115 PG 1334
MB 1984 PG 1099

STEPHEN BROOKS HARRIS
DB 16230 PG 1416

H. MARVIN SIMPKINS
DB 7548 PG 439
MB 1984 PG 1099

RICKY R. COATES
DB 6451 PG 62
PIN 0791-20-2122

LAILA FARZANA
DB 14025 PG 2497
MB 1957 PG 93

WILLIAM JOHNSON
DB 16111 PG 881
MB 2007 PG 144

JORDAN BEATON
DB 16394 PG 1104

JOSIE MATTHEWS
DB 14191 PG 1961
MB 1954 PG 6

RICHARD ABERNATHY
DB 8108 PG 140
MB 1954 PG 6

PROJECT NO.	SHEET NO.
HL-0008H	X-1

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INDEX OF CROSS SECTION SHEETS

Earthwork quantities are calculated by the roadway designer. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, fine grading, and clearing and grubbing will be paid for at the contract lump sum price for "Grading".

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

PROJ. REFERENCE NO.	SHEET NO.
HL-0008H	X-1A

DRMP
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5808 FARINGDON PLACE
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Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
14+00.00	0	0
14+50.00	17	8
15+00.00	32	19
15+50.00	27	15
16+00.00	17	24
16+50.00	18	62
17+00.00	28	87
17+50.00	42	98
18+00.00	70	93
18+50.00	68	61
19+00.00	90	2352
19+50.00	107	0
20+00.00	75	0
20+50.00	38	11
21+00.00	9	52
21+50.00	8	78
22+00.00	12	59
22+50.00	13	34

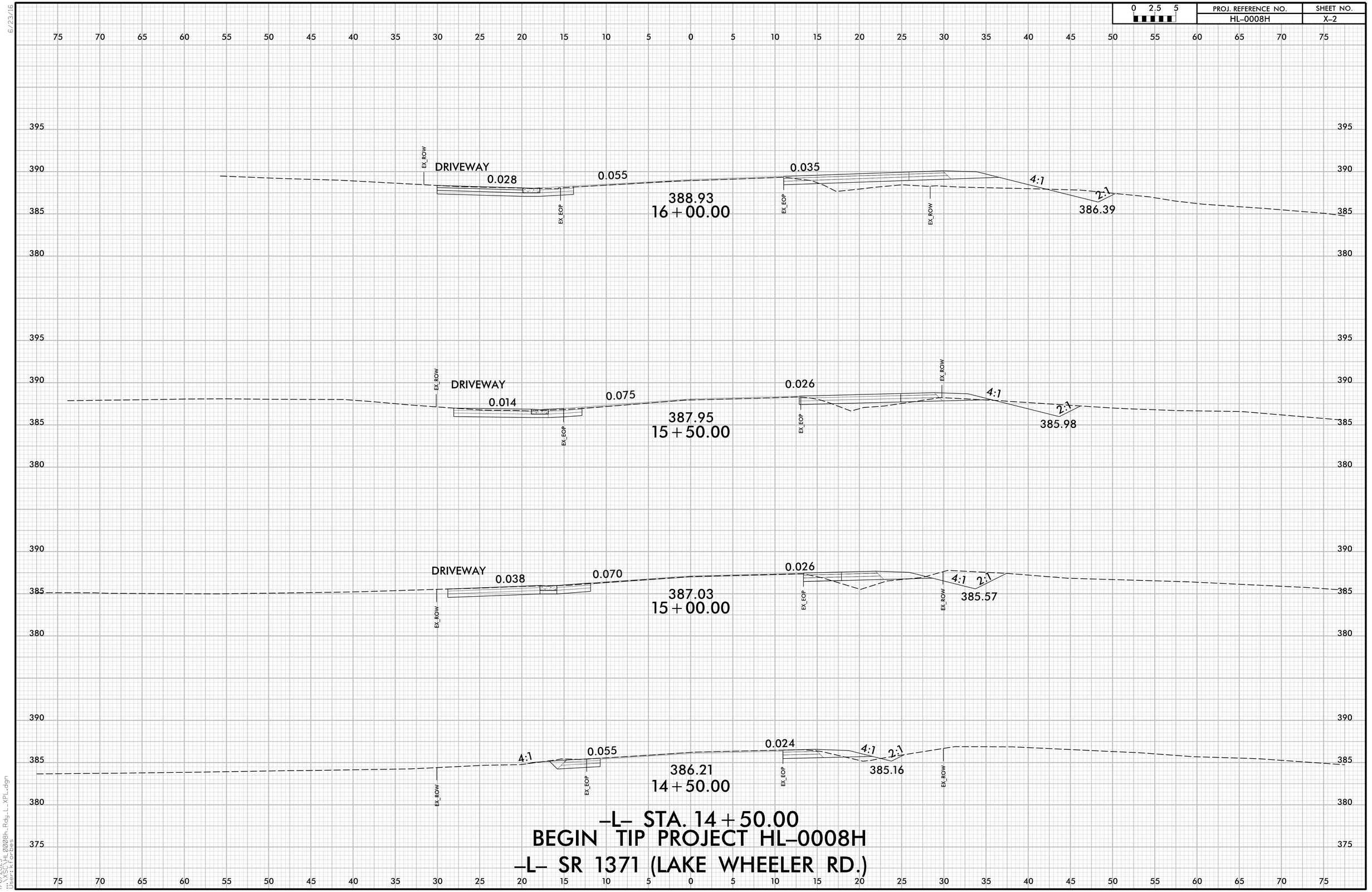
Station Y	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+50.00	0	**0**
11+00.00	41	29
11+50.00	43	26
12+00.00	32	28
12+50.00	43	29
13+00.00	94	11
13+50.00	133	2
14+00.00	149	4
14+50.00	134	7

Station Y1	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
11+50.00	0	**0**
11+75.00	42	0
12+00.00	62	0

Station Y2	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+25.00	0	**0**
10+50.00	12	6
10+75.00	16	6
11+00.00	11	1

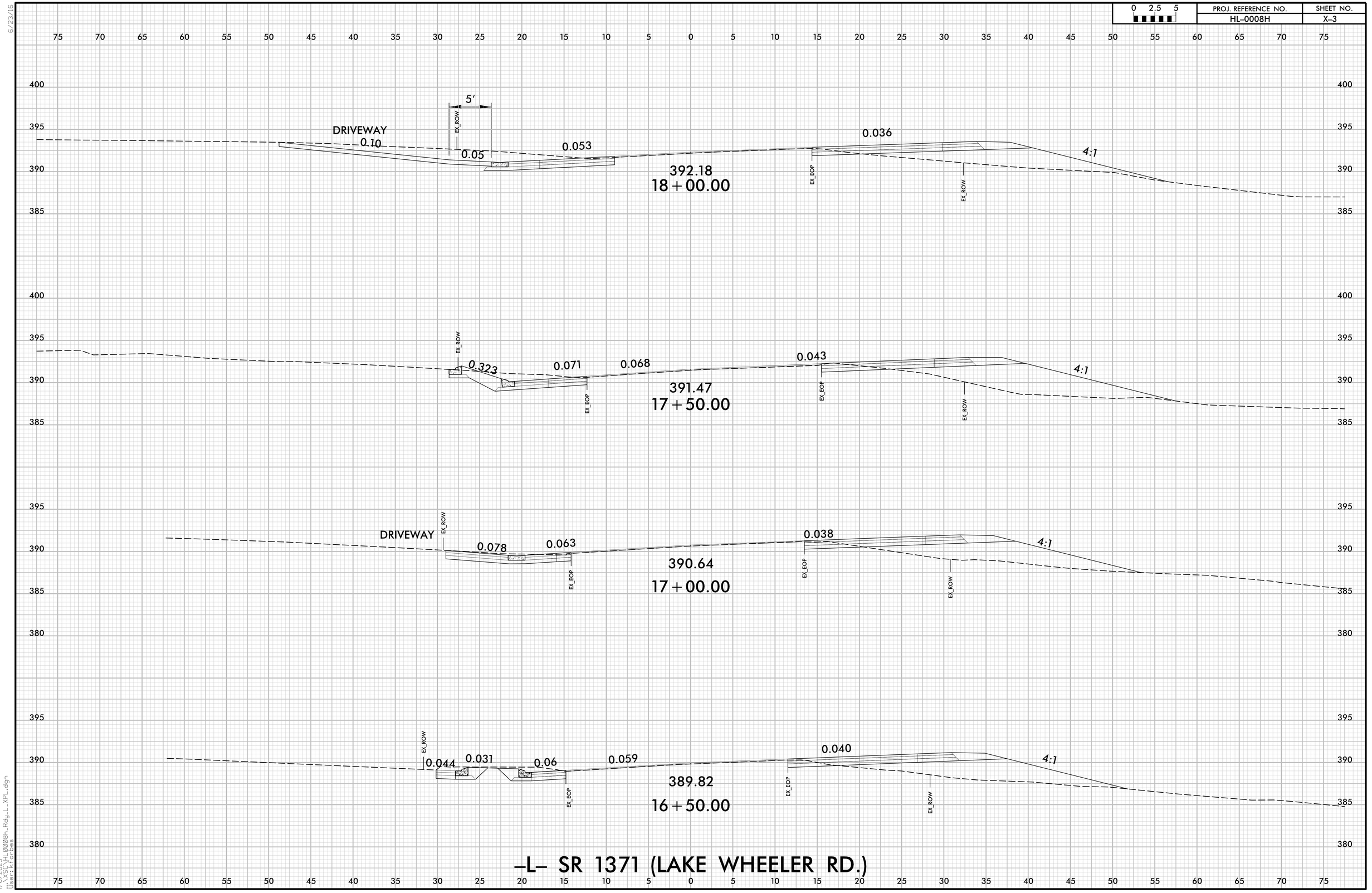
0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
HL-0008H	X-2



–L– STA. 14+50.00
BEGIN TIP PROJECT HL-0008H
–L– SR 1371 (LAKE WHEELER RD.)

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008H	X-3



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11/6/2025
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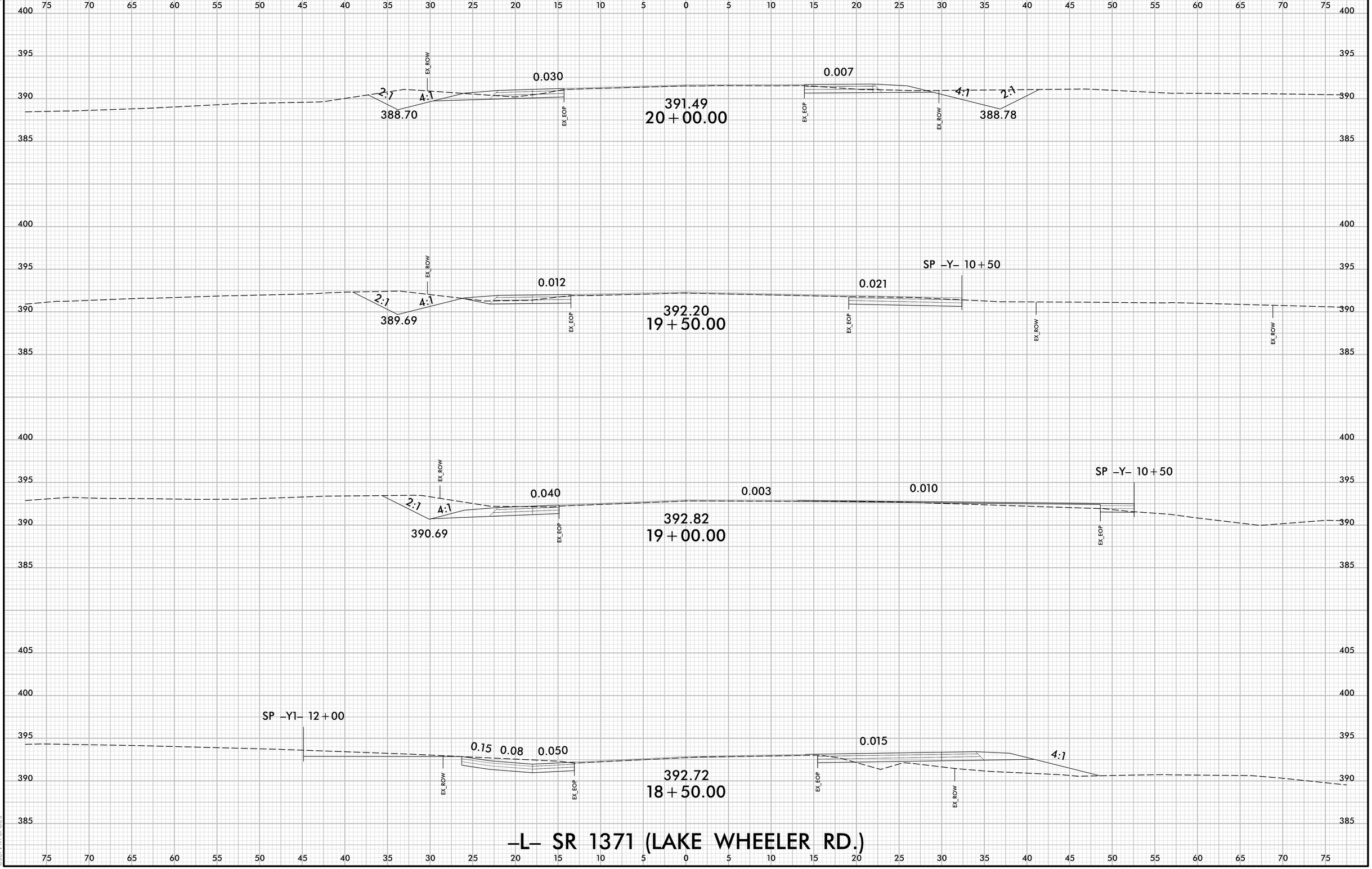

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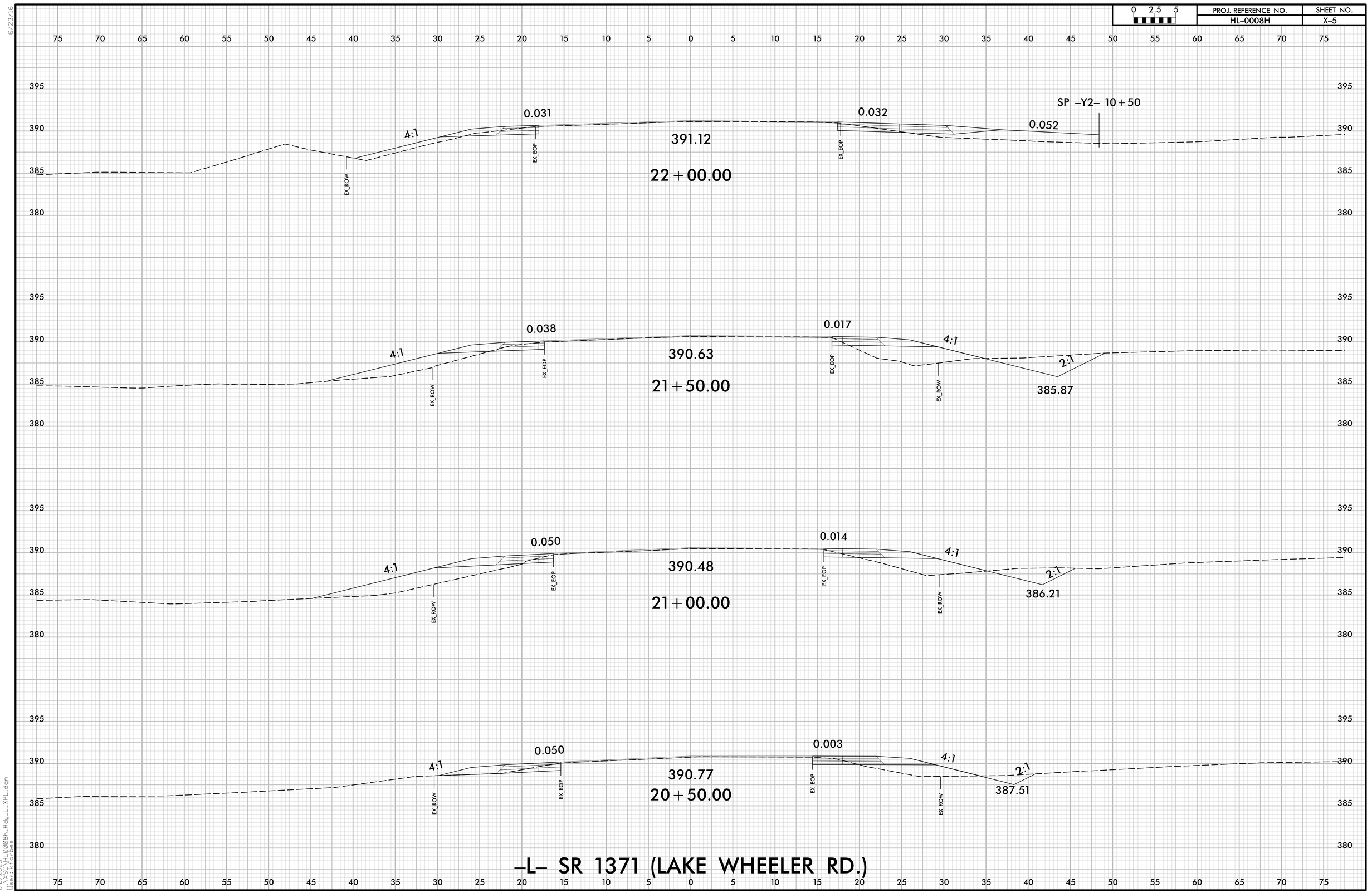
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008H	X-5



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User:kfoster

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008H	X-6

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

395
390
385

EX_ROW
EX_EOP
EX_EOP
393.69
23+50.00
EX_EOP
EX_ROW

395
390
385

EX_ROW
EX_EOP
392.69
23+00.00
EX_EOP
EX_ROW

–L– STA. 22+75.00
END TIP PROJECT HL-0008H

395
390
385

EX_ROW
0.033
0.010
EX_EOP
392.19
22+75.00
EX_EOP
EX_ROW

395
390
385

EX_ROW
4:1
0.034
EX_EOP
391.82
22+50.00
0.028
EX_EOP
SP –Y2– 10+50

380

–L– SR 1371 (LAKE WHEELER RD.)

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

1/6/2025
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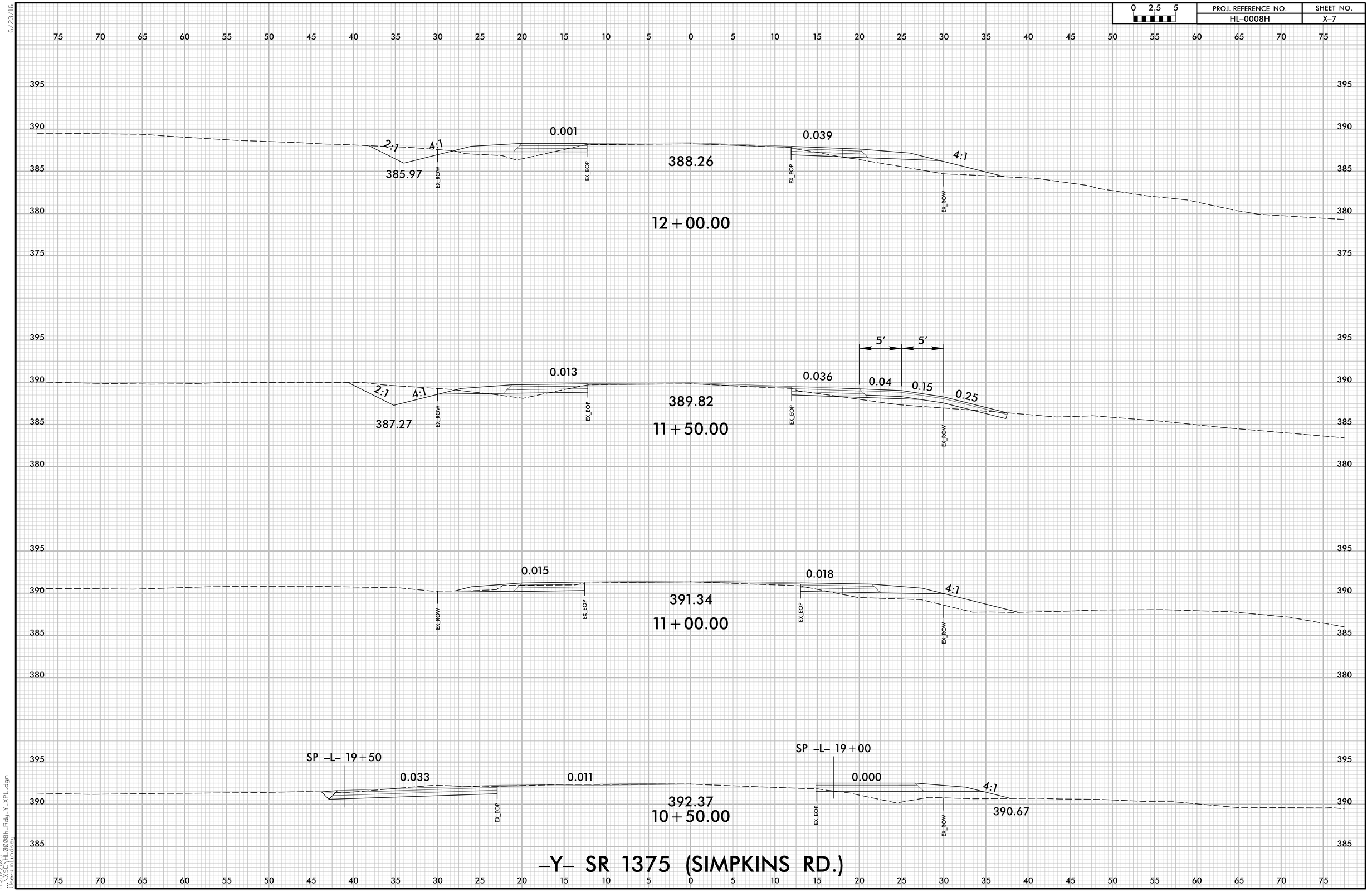
User:kforbes

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008H	X-7



6/23/16

1/28/2025
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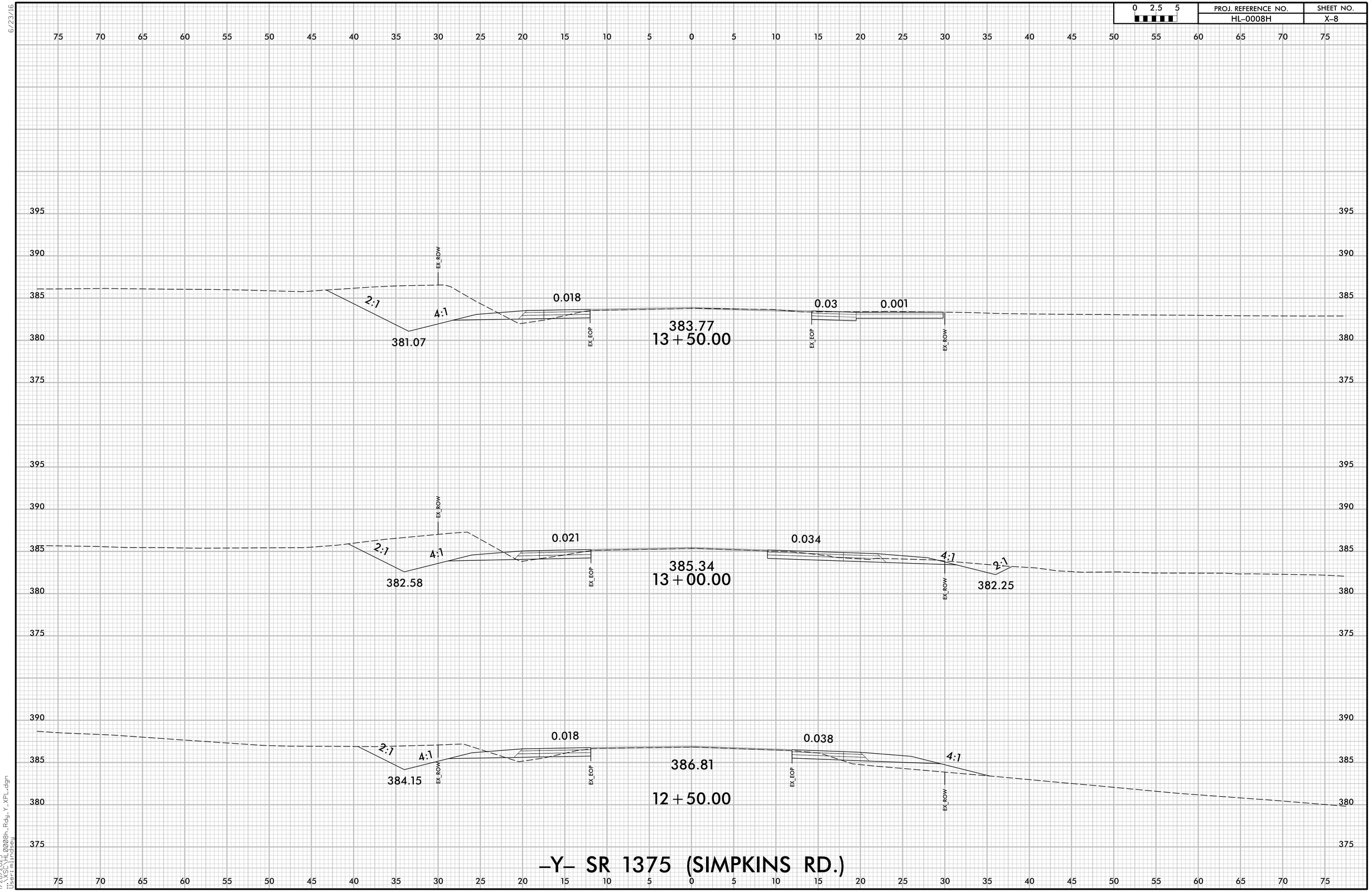
User:mlindsey

6/23/16

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
HL-0008H	X-8



1/28/2025
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User:mlindsey

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008H	X-9

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

385 380 375 370

EX_ROW 378.23 EX_EOP EX_EOP EX_EOP EX_ROW

15+00.00

-Y- STA. 14+96.44
END CONSTRUCTION

385 380 375

EX_ROW 2:1 4:1 376.20 EX_EOP 0.020 0.041 378.39 EX_EOP 4:1 2:1 EX_ROW 375.41

14+96.44

370 390 385 380 375

EX_ROW 2:1 4:1 377.73 EX_EOP 0.009 380.24 0.043 EX_EOP 4:1 2:1 EX_ROW 377.21

14+50.00

390 385 380 375

2:1 EX_ROW 4:1 379.50 EX_EOP 0.017 382.09 0.043 EX_EOP 4:1 2:1 EX_ROW 379.13

14+00.00

-Y- SR 1375 (SIMPKINS RD.)

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

1/6/2025
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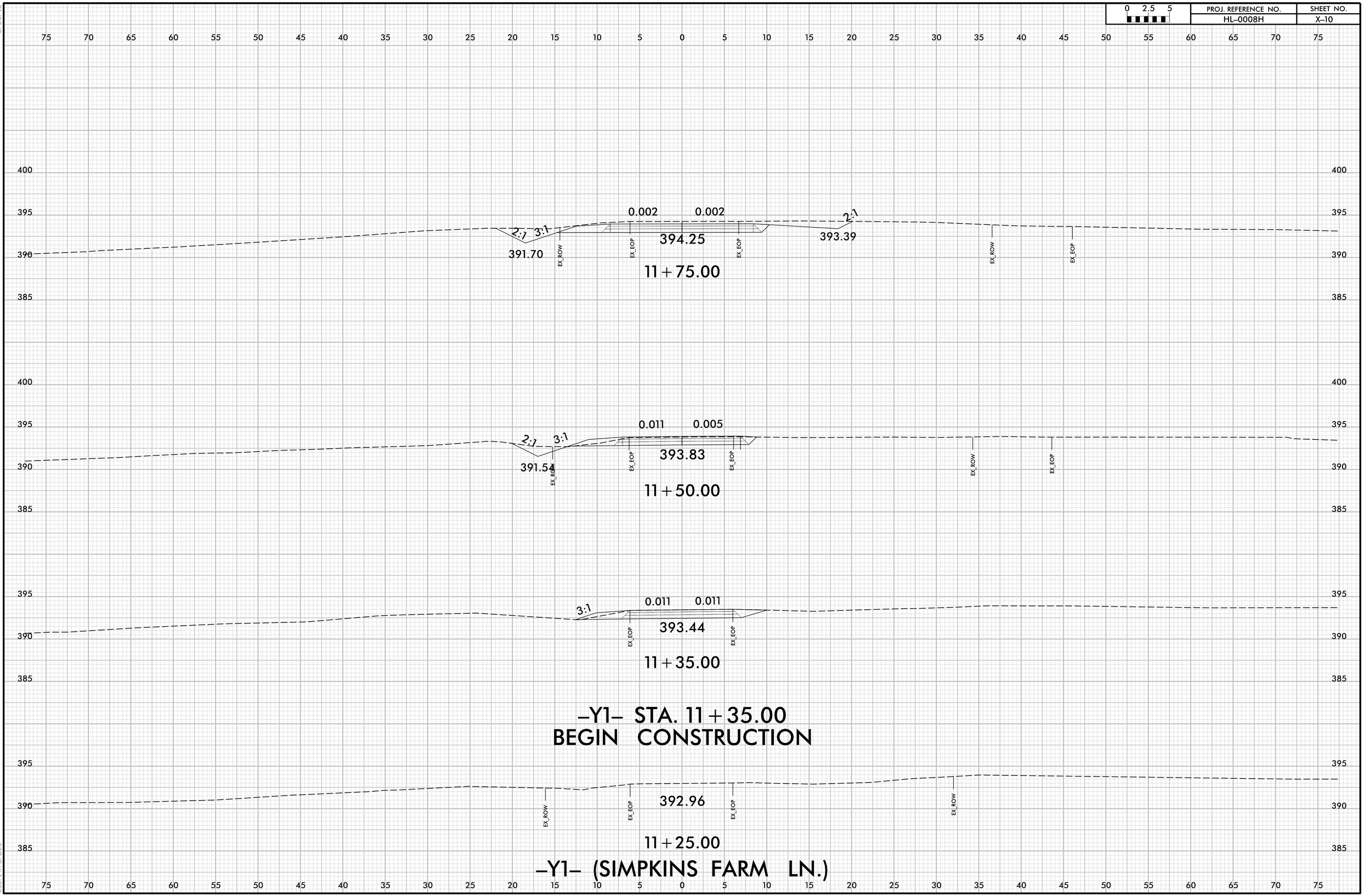
User:kforbes

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008H	X-10

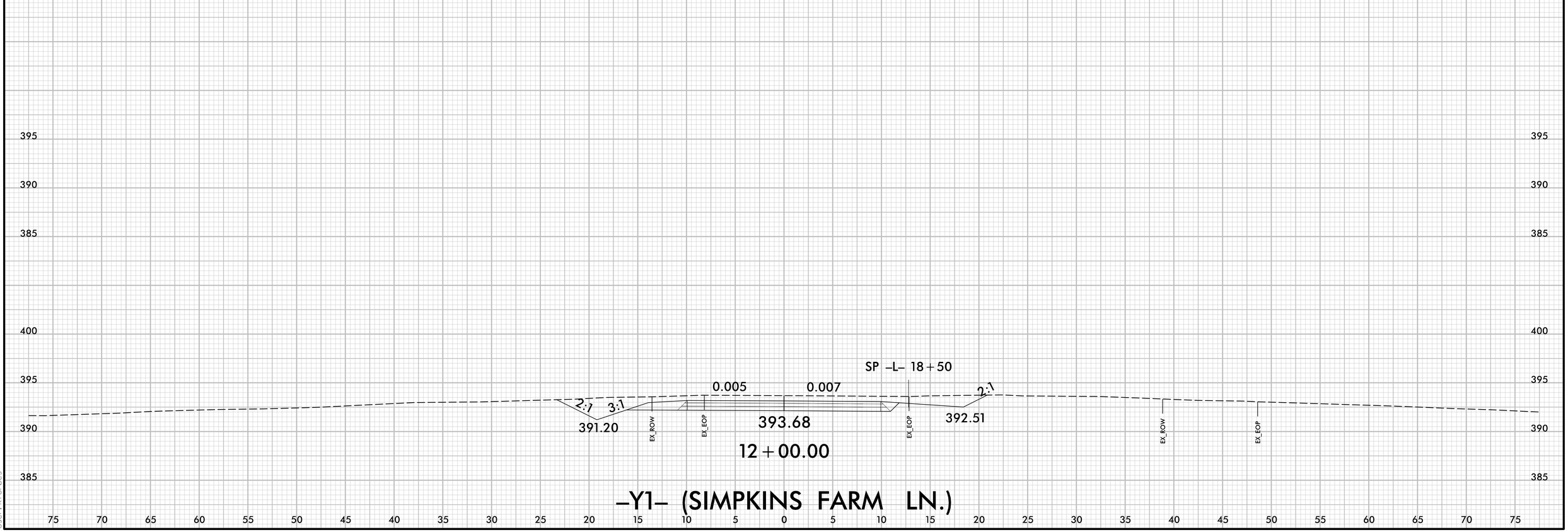


–Y1– STA. 11+35.00
BEGIN CONSTRUCTION

–Y1– (SIMPKINS FARM LN.)

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008H	X-11



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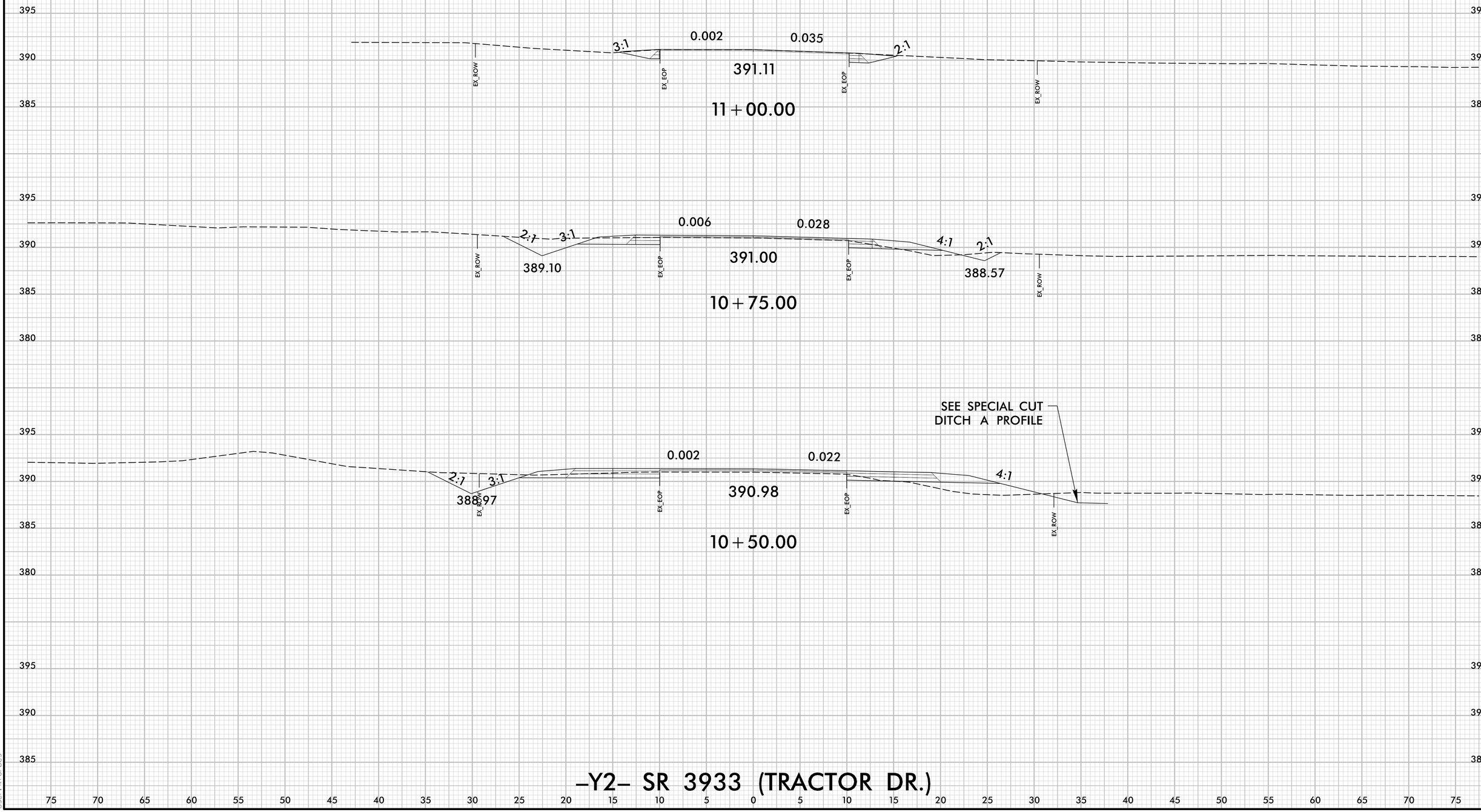
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008H	X-12

-Y2- STA. 11+00.84
END CONSTRUCTION



-Y2- SR 3933 (TRACTOR DR.)