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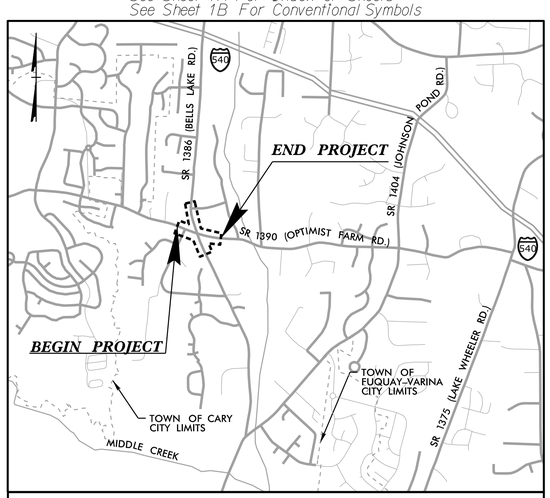
09/08/99

CONTRACT: DE00396 TIP PROJECT: HL–0008Q

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

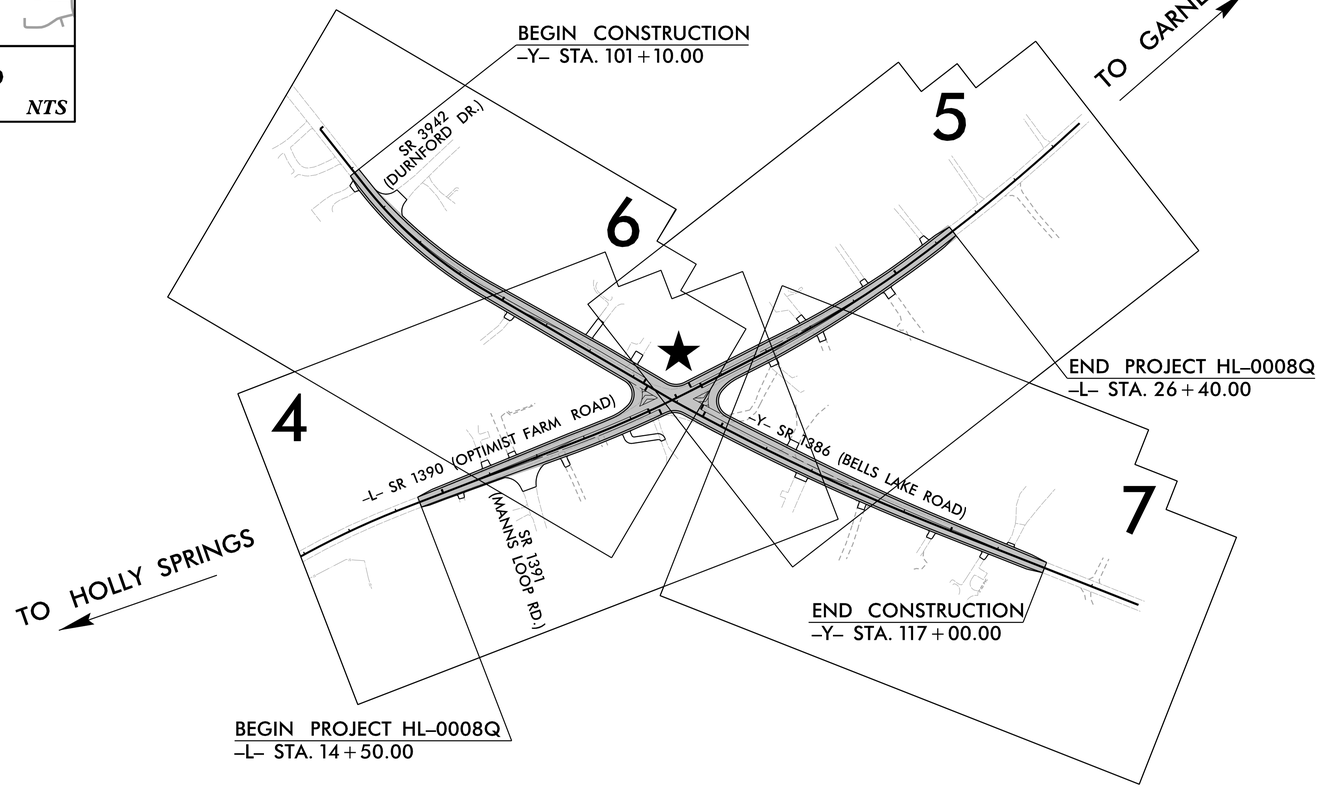
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL–0008Q	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
49367.1.11	N/A	PE
49367.2.12	4936712	R/W
49367.2.22	N/A	UTIL
49367.3.11	N/A	CONST

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: SR 1390 (OPTIMIST FARM ROAD) & SR 1386 (BELLS LAKE ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, & SIGNALS



★ PROPOSED SIGNAL

GRAPHIC SCALES

30 15 0 30 60
PLANS

30 15 0 30 60
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

–L– OPTIMIST FARM ROAD
ADT 2025 = 7,800
ADT 2045 = 10,500
V = 50 MPH

–Y– BELLS LAKE ROAD
ADT 2025 = 12,000
ADT 2045 = 18,000
V = 50 MPH

FUNCTIONAL CLASS:
MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY PROJECT HL–0008Q = 0.225 MILES

NCDOT CONTACT: ANDY MUSSELMAN, PE
NCDOT DIVISION 5 PROJECT DELIVERY

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

OCTOBER 3, 2023
RIGHT OF WAY DATE:
APRIL 8, 2026
LETTING DATE:

KAYLA M. POULOS, PE
PROJECT ENGINEER

MIKAYLA M. LINDSEY, PE
PROJECT DESIGNER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044113 ENGINEER RYAN P. MITCHELL

Signed by: Ryan P. Mitchell
2/26/2026
SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M. POULOS

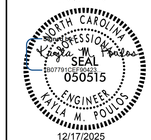
Signed by: Kayla M. Poulos
2/26/2026
SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2/26/2026
...\Proj\HL00080_Rdy_tsh.dgn
User: mlindsey

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

ROADWAY DESIGN ENGINEER



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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 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 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 II.

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.

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.

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

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.

UTILITIES

UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY, AT&T, SPECTRUM, PSNC, AND AQUA ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT–OF–WAY MARKERS:

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" 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	
200.02	METHOD OF CLEARING – METHOD II
225.02	GUIDE FOR GRADING SUBGRADE – SECONDARY AND LOCAL
225.04	METHOD OF OBTAINING SUPERELEVATION – TWO LANE PAVEMENT
225.06	METHOD OF GRADING SIGHT DISTANCE AT INTERSECTIONS
DIVISION 3 – PIPE CULVERTS	
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
DIVISION 8 – INCIDENTALS	
806.01	CONCRETE RIGHT–OF–WAY MARKER
806.02	GRANITE RIGHT–OF–WAY MARKER
815.02	SUBSURFACE DRAIN
840.34	TRAFFIC BEARING JUNCTION BOX – FOR USE WITH PIPES 42" AND UNDER
840.54	MANHOLE FRAME AND COVER
840.71	CONCRETE AND BRICK PIPE PLUG
840.72	PIPE COLLAR
848.02	DRIVEWAY TURNOUT – RADIUS TYPE
848.04	STREET TURNOUT
876.02	GUIDE FOR RIP RAP AT PIPE OUTLETS

9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	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.

FINAL PAVEMENT SCHEDULE

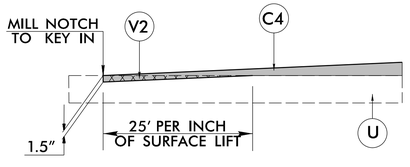
C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. APPROX. 2.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1.5″ IN DEPTH.
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 NOT LESS THAN 2.5″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 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 NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5.5″ IN DEPTH.
J1	PROP. APPROX. 8″ AGGREGATE BASE COURSE.
P1	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
T	COMPACTED EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	0-1.5″ MILLING.
V2	VARIABLE DEPTH MILLING.
W	WEDGING (SEE WEDGING DETAIL ON THIS SHEET).

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

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

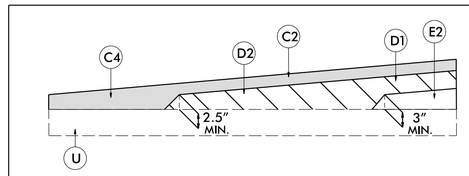
LOCATIONS SHALL INCLUDE TIES INTO EXISTING PAVEMENT.

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.

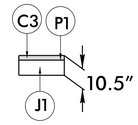


INCIDENTAL MILLING DETAIL

–L– STA. 15+00.00 TO –L– STA. 15+75.00
–L– STA. 25+25.00 TO –L– STA. 26+00.00
–Y– STA. 101+50.00 TO –Y– STA. 102+25.00
–Y– STA. 114+25.00 TO –Y– STA. 115+00.00



WEDGING DETAIL FOR RESURFACING



ASPHALT DRIVEWAY DETAIL

FOR USE ON ALL DRIVEWAYS WITH GRADES OF 7% OR HIGHER – SEE PLANS FOR LOCATIONS

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

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

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER TANIA M. POULOS
12/18/2025

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 039819 ENGINEER LEONIA T. HEWARD
12/18/2025

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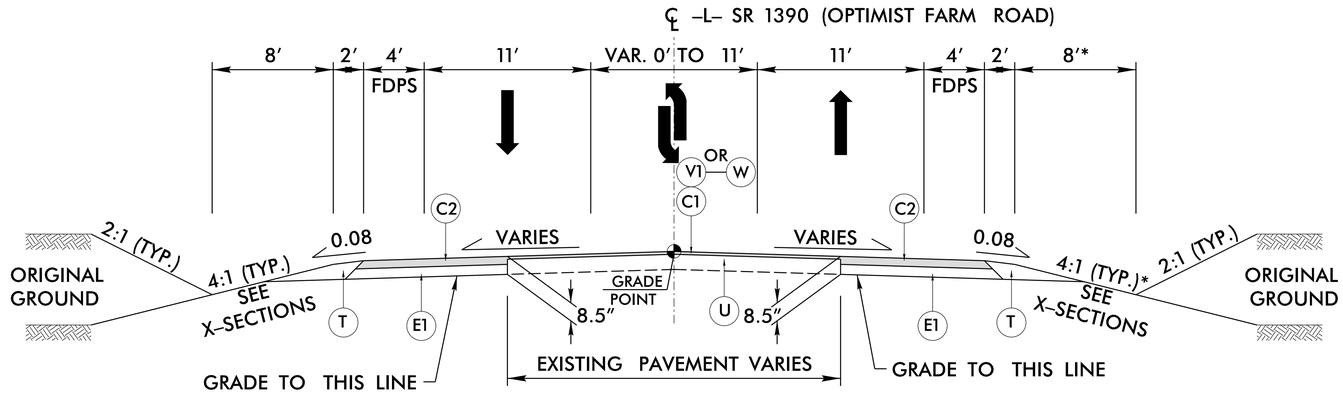
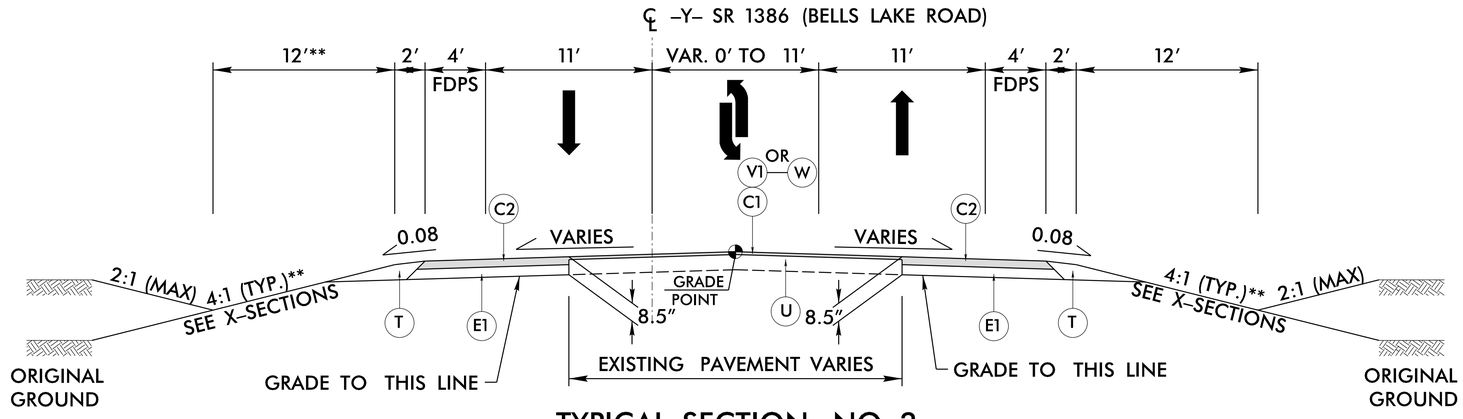


TYPICAL SECTION NO. 1

–L– STA. 14+50.00 TO –L– STA. 26+40.00

✱ –L– STA. 14+50.00 TO –L– STA. 18+00
3:1 FRONT SLOPE FOR 6′



TYPICAL SECTION NO. 2

–Y– STA. 101+10.00 TO –Y– STA. 117+00.00

✱✱ –Y– STA. 114+00.00 TO –Y– STA. 116+00.00
4:1 FRONT SLOPE. WIDTH VARIES. SEE XSCS.

–Y– STA. 103+50.00 TO –Y– STA. 105+00.00 AND
–Y– STA. 116+00.00 TO –Y– STA. 117+00.00
3:1 MAX FRONT SLOPE. SEE XSCS.

INTERSECTION DETAIL

FOR –L– & –Y– PLAN VIEW,
SEE SHEETS NO. 4 THRU 7

REVISIONS 8/17/99

GRAPHIC SCALE 20 10 0 20 40

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(919) 872-5115
NC LICENSE NO. F-1524
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PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M POLITO
12/3/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044113 ENGINEER RYAN P MITCHELL
12/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

2
SOPHIA PLEASANTS
DB 16737 PG 1258

STEPHEN ANTHONY
JOANNE ANTHONY
DB 16242PG 2495
MB 1985 PG 382

3
ROBERT FRYMAN
MARGARET FRYMAN
DB 4888 PG 264
MB 1988 PG 1697

7
HOLLIS FOWLER
DB 6345 PG 215
MB 1993 PG 1607

5
JULIA DAVIS
DB 12320 PG 867
MB 1997 PG 242

–L– PC Sta. 17+95.52
–L– 20+00
–L– PC Sta. 22+05.94
–Y– PC Sta. 108+87.10
–L– PT Sta. 20+29.36

–Y– SR 1386 (BELLS LAKE RD.)
S 16° 43' 46.9" E
–L– SR 1390 (OPTIMIST FARM RD.)
S 74° 16' 15.1" E

75' PROPOSED R/W
80' PROPOSED R/W
4' FDPS
PDE
PUE
SIGNAL POLE WITH GUY WIRE
SIGNAL POLE WITH GUY WIRES
SPECIAL DITCH DETAIL A
DO NOT DISTURB TREE
DRIVEWAY TO MATCH EXISTING YARD SLOPE MIN. 1% CROSS SLOPE
–L– Sta.19+89.78
–Y– Sta.108+90.22

400 TBJB w/MH
402 COLLAR
403
404
405
407
410
411
412
413
501

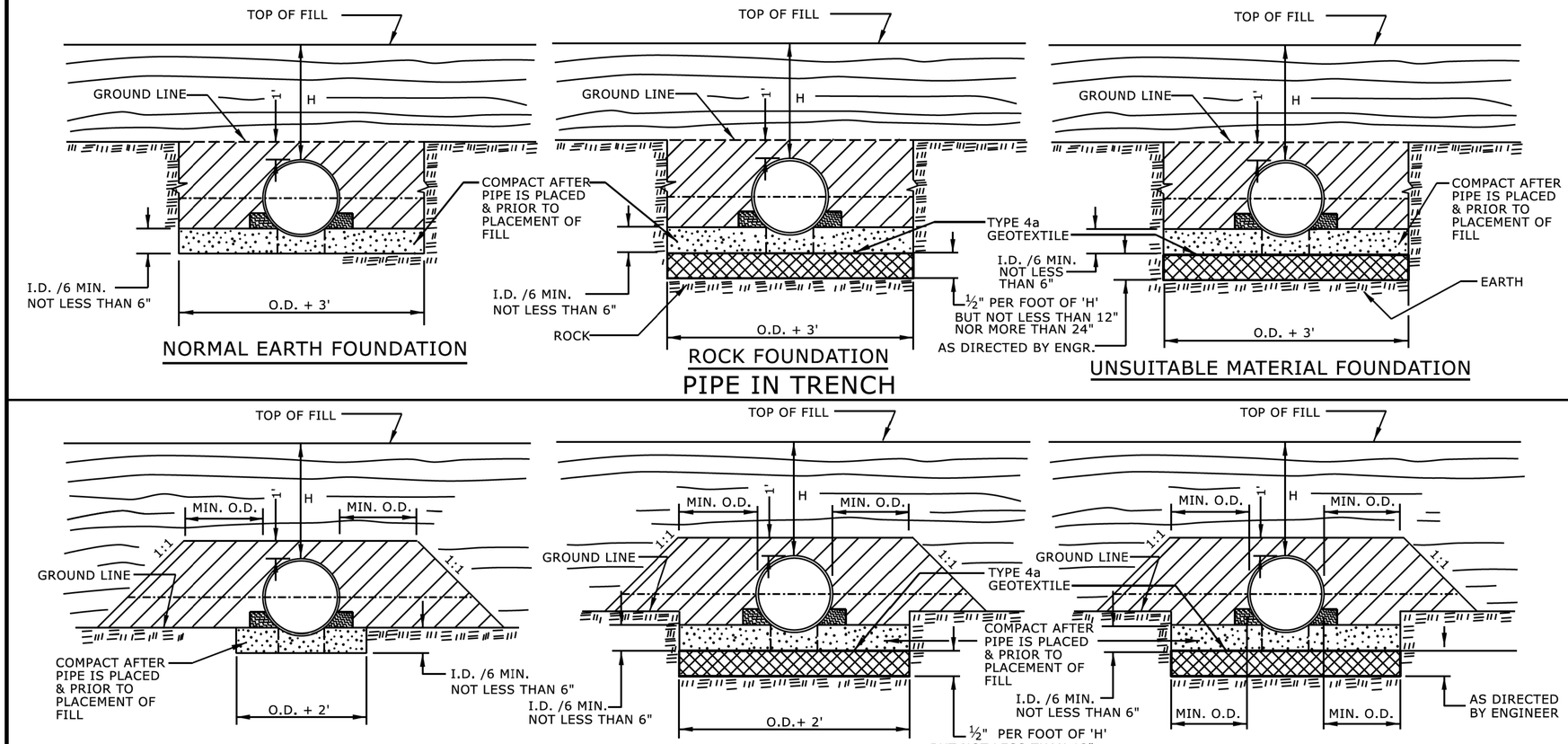
+20.86 381.48'
+06.89
R 35'
+89.24
+66.49
R 100'
381.69'
382.05'
+00.00
+43.91
R 15'
R 5'
+67.61
+23.13
R 40'
+63.07
+27.44
+60.00
+15.00
+68.07 381.44'
381.66'
+99.73
R 35'
+84.32
+24.58
R 100'
17'
16'
11'
.01
.02
.03
.04
.05
.00

PROPOSED SIGNAL

FULL DEPTH PAVEMENT PATCHING

12/2/2025
\Proj\HL0008Q_Rdy_2B.dgn
User:mlindsey

PROJECT REFERENCE NO.	SHEET NO.
HL–0008Q	2C–1



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 2

300.01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKER

12/3/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

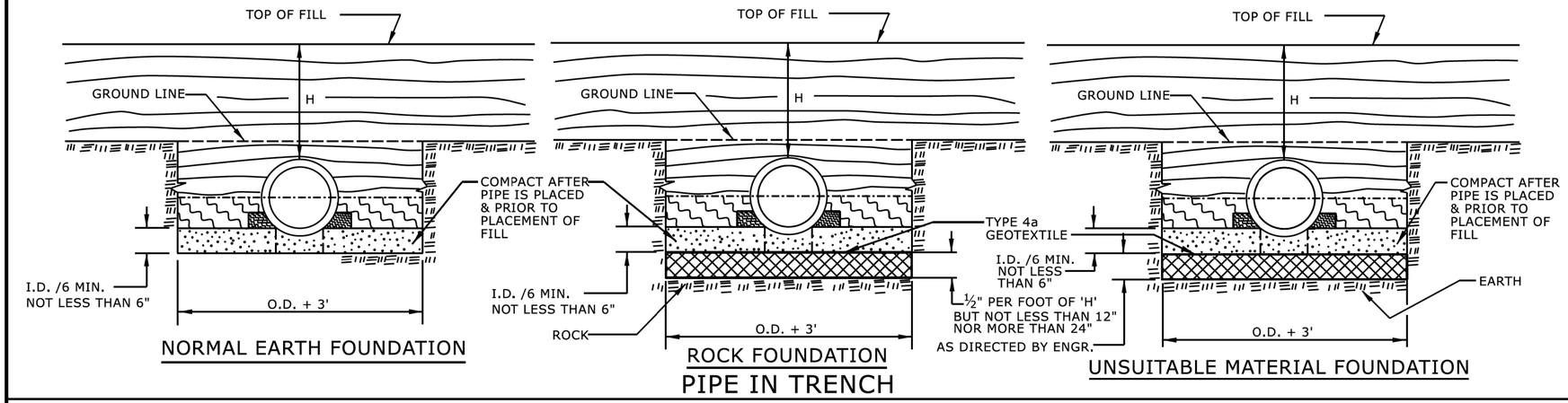
CONTRACTS STANDARDS AND DEVELOPMENT UNIT

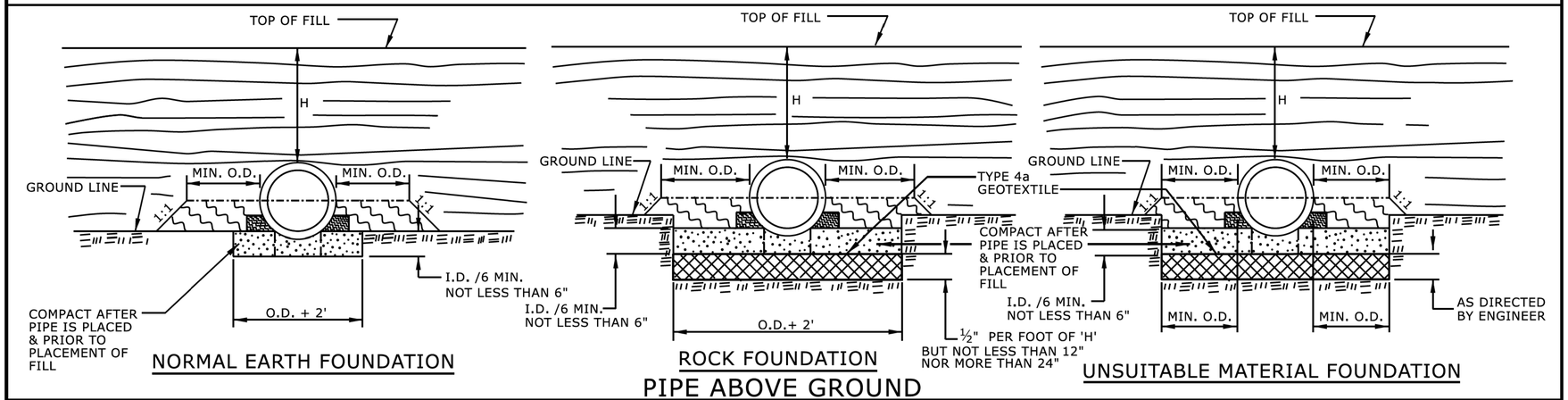
Office 919-707-6950 FAX 919-250-4119

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–0008Q	2C–2





GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 2

300.01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

12/3/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.:

COMPUTED BY:	MML	DATE:	3/19/2024
CHECKED BY:	KMP	DATE:	3/19/2024

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

DRMP

DRMP, INC.
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. Excav.	Embank. +%	Borrow	Waste
-L-	14+50.00	26+40.00	620	594	574	600
-Y-	101+10.00	117+00.00	427	2082	2055	400
TOTAL			**1047**	**2676**	**2629**	**1000**
ADJUSTMENTS DUE TO						
Est. Loss Due To Clearing And Grubbing			-300		300	0
Shoulder Material			0	480	480	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					0	0
PROJECT TOTAL			**747**	**3156**	**3409**	**1000**
Est. 5% to Replace Topsoil in Borrow Pits					170	
GRAND TOTAL			**747**		**3579**	
SAY			**800**		**3600**	

Estimate Undercut Excavation	**100 CY**	CONTINGENCY			
Select Granular Material	**100 CY**	CONTINGENCY			
Geotextile For Soil Stab.	**100 SY**	CONTINGENCY			
Estimate Shallow Undercut	**1000 CY**				
Class IV Subgrade Stab.	**2500 TONS**				
Geotextile For Sugrade Stab.	**4000 SY**				

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, fine grading, and clearing and grubbing will be paid for at the contract lump sum price for grading.

SUMMARY OF INCIDENTAL MILLING

LINE	Station	Station	Length	Average Width	Area (yd^2)
-L-	15+00.00	15+75.00	75.00	15.50	174.70
-L-	25+25.00	26+00.00	75.00	14.50	172.33
-Y-	101+50.00	102+25.00	75.00	20.00	178.62
-Y-	114+25.00	115+00.00	75.00	11.00	182.74
SR 1931 (MANNS LOOP RD)					202
SR 3942 (DURNFORD DR)					146.26
				TOTAL:	**1056.65**
				SAY:	**1100**

CHA-SMCCARTHY

COMPUTED BY: Sean McCarthy DATE: 10/07/2025

CHECKED BY: Ryan Mitchell, PE DATE: 10/07/2025

PROJECT NO.	SHEET NO.
HL-0008Q	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 FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) 12	15	18	24	30	36	42	48	54	60	66	72	78	84	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	DO NOT USE PP PIPE
Y 106+61.00	23	LT	0400		378.6																							
			0400	0603		371.0	370.4																					
Y 106+63.42	22	RT	0403	0402		374.2	374.0																					
Y 109+45.02	27	RT	0405	0404		380.3	377.9																					
L 16+60.46	30	RT	0407	0406		377.5	375.9																					
L 15+29.86	22	RT	0408			372.5	369.8				40														X	X			
L 15+98.92	26	LT	0409			376.0	374.4																					
L 16+54.44	25	LT	0410			376.2	374.7																					
L 17+46.32	33	RT	0411			381.7	378.8																					
Y 106+83.93	56	LT	0412			372.0	371.0																					
Y 107+81.05	42	LT	0413			375.8	374.0																					
L 22+02.10	28	RT	0501			375.2	374.0																					
L 22+91.50	28	LT	0502			369.8	368.3			32															X	X			
L 23+09.75	30	RT	0503			371.0	369.4																					
L 24+36.50	25	LT	0504			362.3	360.5			32															X	X			
L 24+68.66	25	RT	0505			362.3	360.0																					
L 25+83.59	23	LT	0506			354.4	351.2			32														X			X	X	X
Y 102+07.62	24	LT	0601	0600		381.0	380.3																					
Y 105+34.00	20	LT	0603		379.1																							
			0603	0602		370.3	370.0																					
Y 111+44.57	37	LT	0701			380.8	380.7																					
Y 113+19.73	25	RT	0702			381.7	381.2																					
Y 114+66.36	25	RT	0703			378.9	378.2																					
Y 115+78.67	25	RT	0704			376.2	375.8			32															X	X			
L 18+31.60	16	RT																										
L 19+44.54	22	RT																										
SHEET TOTALS										128	40																	
PROJECT TOTALS										128	40																	

LINE & STATION	FROM	TO	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	R. C. PIPE CLASS V 12	15	18	24	30	36	42
Y 106+61.00	0400															
	0400	0603			128											
Y 106+63.42	0403	0402			8											
Y 109+45.02	0405	0404			112											
L 16+60.46	0407	0406			92											
L 15+29.86	0408															
L 15+98.92	0409											40				
L 16+54.44	0410											36				
L 17+46.32	0411										32					
Y 106+83.93	0412										32					
Y 107+81.05	0413										48					
L 22+02.10	0501											40				
L 22+91.50	0502															
L 23+09.75	0503											36				
L 24+36.50	0504															
L 24+68.66	0505											40				
L 25+83.59	0506															
Y 102+07.62	0601	0600			80											
Y 105+34.00	0603															
	0603	0602			28											
Y 111+44.57	0701										44					
Y 113+19.73	0702										32					
Y 114+66.36	0703										32					
Y 115+78.67	0704															
L 18+31.60																
L 19+44.54																
SHEET TOTALS					448						220	192				
PROJECT TOTALS					448						220	192				

LINE & STATION	FROM	TO	DRAINAGE STRUCTURE MASONRY CY	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	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	MODIFIED CONC. FLUME	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	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
Y 106+61.00	0400			1	2.6								1								1								
	0400	0603																											
Y 106+63.42	0403	0402																								0.4500			
Y 109+45.02	0405	0404																							4		0.900		FILL EXISTING 15" RCP WITH FLOWABLE FILL
L 16+60.46	0407	0406																										65	REMOVE 65 LF OF 18" RCP
L 15+29.86	0408																											21	REMOVE 21 LF OF 15" RCP
L 15+98.92	0409																												
L 16+54.44	0410																											30	REMOVE 30 LF OF 18" RCP
L 17+46.32	0411																											22	REMOVE 22 LF OF 15" RCP
Y 106+83.93	0412																											25	REMOVE 25 LF OF 15" RCP
Y 107+81.05	0413																											21	REMOVE 21 LF OF 15" RCP
L 22+02.10	0501																											21	REMOVE 21 LF OF 15" HDPE
L 22+91.50	0502																											21	REMOVE 21 LF OF 15" RCP
L 23+09.75	0503																											21	REMOVE 21 LF OF 18" CMP
L 24+36.50	0504																											22	REMOVE 22 LF OF 15" RCP
L 24+68.66	0505																											22	REMOVE 22 LF OF 15" RCP
L 25+83.59	0506																											25	REMOVE 25 LF OF 15" RCP
Y 102+07.62	0601	0600																										77	REMOVE 77 LF OF 18" RCP
Y 105+34.00	0603			1	3.8								1								1								
	0603	0602																											
Y 111+44.57	0701																											40	REMOVE 40 LF OF 18" RCP
Y 113+19.73	0702																											21	REMOVE 21 LF OF 15" RCP
Y 114+66.36	0703																											20	REMOVE 20 LF OF 15" RCP
Y 115+78.67	0704																											21	REMOVE 21 LF OF 15" RCP
L 18+31.60																												18	REMOVE 18 LF OF 15" RCP
L 19+44.54																												21	REMOVE 21 LF OF 15" RCP
SHEET TOTALS				2	6.4								2								2				4	0.4500	0.900	534	
PROJECT TOTALS				2	6.4								2								2				4	0.4500	0.900	534	

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: Jamie Love DATE: 3/1/24
CHECKED BY: Jinyoung Park DATE: 3/5/24

(2-3-23)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
HL-0008Q	3G-1

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	500
				TOTAL LF:	500

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

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
-L-	14+75	26+40	1	12"	500	1400	2300		
-Y-	102+60	103+90	1	12"	50	100	100		
-Y-	109+00	117+00	1	12"	450	1000	1600		
CONTINGENCY					0	0	0		
			TOTAL CY/TONS/SY:		1000	2500**	4000**	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.

COMPUTED BY: MML DATE: 10/9/2025
CHECKED BY: KMP DATE: 10/9/2025

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

DRMP
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5808 FARINGDON PLACE
RALEIGH, NC 27609
(919) 872-5115
NC LICENSE NO. F-1524
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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 UTL ESMT
1	4	MICHAEL SHERER, CAROLYN SHERER	926	375	-	-
2	4, 6	SOPHIA PLEASANTS	2221	1950	-	718
3	4, 5	ROBERT FRYMAN, MARGARET FRYMAN	6262	763	-	2952
4	4	MARTHY ROWLAND	-	47	-	-
5	4	JULIA DAVIS	250	303	-	-
6	4	DUPRE PROPERTIES	326	1622	-	-
7	4, 5, 7	HOLLIS FOWLER	5906	2144	-	573
7A	5	HOLLIS FOWLER	1815	-	-	-
7B	7	HOLLIS FOWLER, MARY FOWLER	2855	-	-	-
8	5	MICKEY MARTIN, YVONNE MARTIN	698	-	-	-
9	5	CONER MARTIN	697	-	-	-
10	5	GAIL JOHNSON	-	560	-	-
11	6	TARICK WAHDAN	-	-	-	-
12	6	KENNETH HYGH, LANA HYGH	1725	1017	-	-
13	4, 6	STEPHEN ANTHONY, JOANNE ANTHONY	2660	3518	1940	-
14	6	DANIEL GLUCKIN	-	438	-	-
15	6	CHERIE HUBBARD, WILLIAM HUBBARD	-	4061	-	-
16	7	KELLEY CARROLL, RUSSELL CARROLL	-	421	-	-
17	7	CHARLES RHODES	-	-	-	-
18	7	CONNIE CARROLL	-	96	-	-
19	7	TODD ANDREWS	-	109	-	-

8/17/99

REVISIONS

NOTES:
1. ALL DIMENSIONS ARE TO EDGE OF TRAVEL UNLESS OTHERWISE SPECIFIED.
2. CONTRACTORS TO MAINTAIN ACCESS TO ALL MAILBOXES WITHIN PROJECT LIMITS. CONTRACTOR TO RELOCATE AS NECESSARY.
3. ALL DRIVEWAY WIDTHS ARE 12' UNLESS OTHERWISE NOTED.

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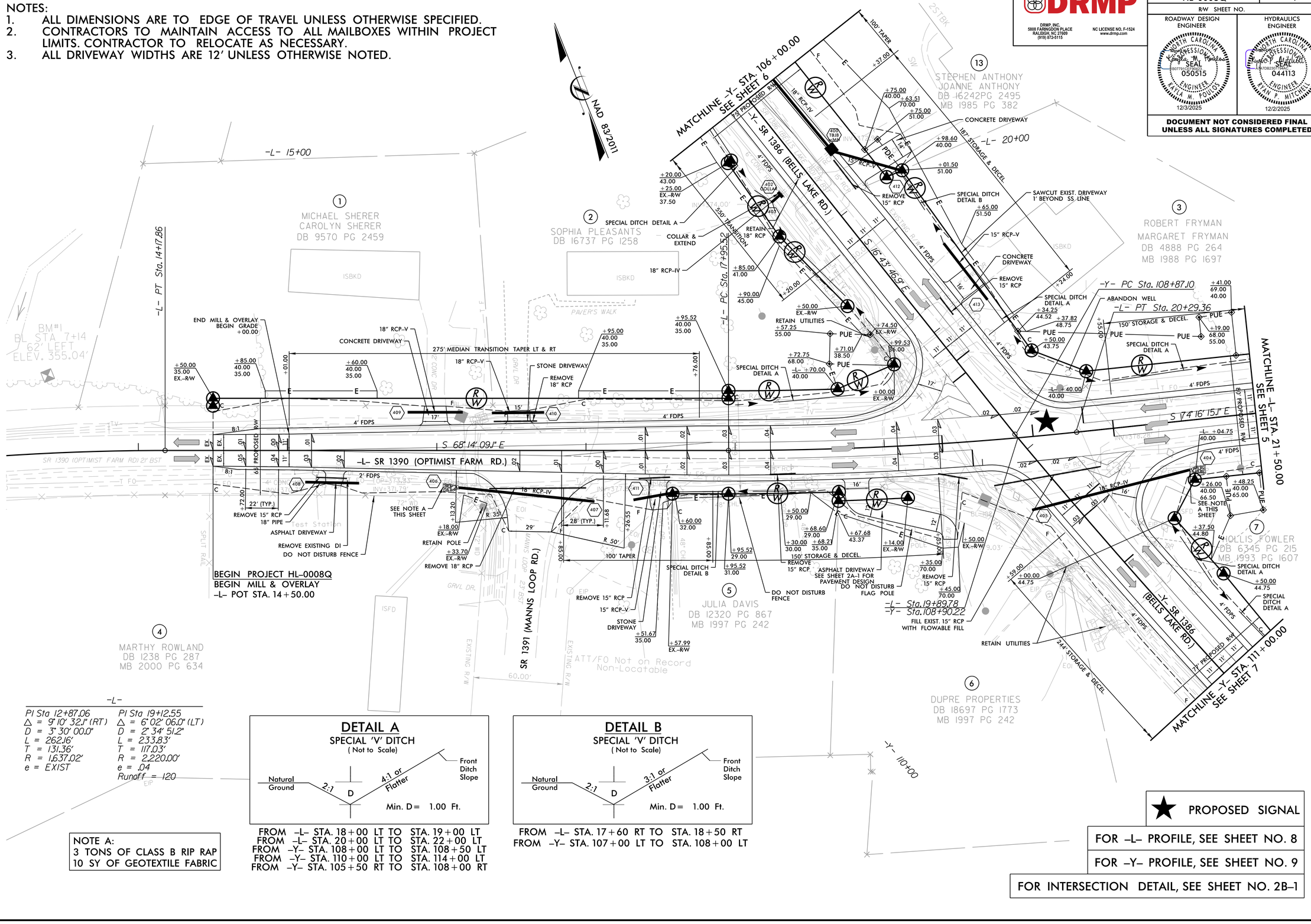
PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 050515 KAYLA M POLITO
12/3/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044113 RYAN T MITCHELL
12/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



12/2/2025
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User: mlindsey

8/17/99

REVISIONS

NOTES:
1. ALL DIMENSIONS ARE TO EDGE OF TRAVEL UNLESS OTHERWISE SPECIFIED.
2. CONTRACTORS TO MAINTAIN ACCESS TO ALL MAILBOXES WITHIN PROJECT LIMITS. CONTRACTOR TO RELOCATE AS NECESSARY.
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PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M POULOS
12/3/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044113 ENGINEER RYAN P MITCHELL
12/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

3 ROBERT FRYMAN, MARGARET FRYMAN, DB 4888 PG 264, MB 1988 PG 1697
8 MICKEY MARTIN, YVONNE MARTIN, DB 15209 PG 2659, MB 1985 PG 382
9 CONER MARTIN, DB 18266 PG 536, MB 1985 PG 382
10 GAIL JOHNSON, DB 7944 PG 617, MB 1985 PG 382
JOHN HOBBS, CHRISTINA HOBBS, DB 6140 PG 621, MB 1985 PG 382
7 HOLLIS FOWLER, DB 6345 PG 215, MB 1993 PG 1607
7A HOLLIS FOWLER, DB 2172 PG 9, MB 1993 PG 1607
JONATHAN JACKSON, DB 15787 PG 2312, MB 2014 PG 1201
TRAVIS CARROLL, MARY CARROLL, DB 16374 PG 1544, MB 2016 PG 585

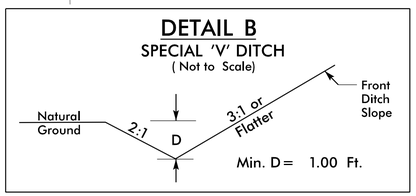
-L- 25+00
-L- PC Sta. 22+05.94
MATCHLINE -L- STA. 21+50.00 SEE SHEET 4
-L- PT Sta. 25+97.57
-L- PC Sta. 26+49.72
-L- PT Sta. 29+21.25
-L- POT Sta. 29+70.17
NAD 83'2011
-L- SR 1390 (OPTIMIST FARM RD.)
S 89° 30' 13.5" E
TO RHODES RD
END PROJECT HL-0008Q
END MILL & OVERLAY
-L- POT STA. 26+40.00
S 85° 03' 32.1" E

150' STORAGE & DECEL.
100' TAPER
SPECIAL DITCH DETAIL A
28' (TYP.)
DO NOT DISTURB FLAG POLE
CONCRETE DRIVEWAY
REMOVE 15" RCP
EXISTING RIGHT-OF-WAY
15" PIPE
CONCRETE DRIVEWAY
REMOVE 15" RCP
SPECIAL DITCH DETAIL B
4' FDPS
REMOVE 18" CMP
18" RCP-V
ASPHALT DRIVEWAY SEE SHEET 2A-1 FOR PAVEMENT DESIGN
REMOVE 15" HDPE WITH CONCRETE HEADWALLS
STONE DRIVEWAY
275' MEDIAN TRANSITION TAPER
REMOVE 15" RCP
ASPHALT DRIVEWAY SEE SHEET 2A-1 FOR PAVEMENT DESIGN
EXISTING RIGHT-OF-WAY
BEGIN MILL & OVERLAY +00.00
END MILL & OVERLAY +40.00
RETAIN 15" RCP
22' (TYP.)
60' PROPOSED R/W
EXISTING R/W
TREE AND VEGITATION PROTECTIVE ZONE MB 2014 PG 1201
10' WATER EASEMENT MB 1993 PG 607
20' SEWER EASEMENT MB 1993 PG 607
TREE AND VEGITATION PROTECTIVE ZONE

-L-

PI Sta 24+02.34	PI Sta 27+85.55
△ = 10° 47' 16.9" (LT)	△ = 4° 26' 41.5" (LT)
D = 2° 45' 16.6"	D = 1° 38' 13.3"
L = 391.64'	L = 271.52'
T = 196.40'	T = 135.83'
R = 2,080.00'	R = 3,500.00'
e = .05	e = EXIST.
Runoff = 150	

DETAIL B
SPECIAL 'V' DITCH
(Not to Scale)



FROM -L- STA. 25+00 LT TO STA. 26+40 LT

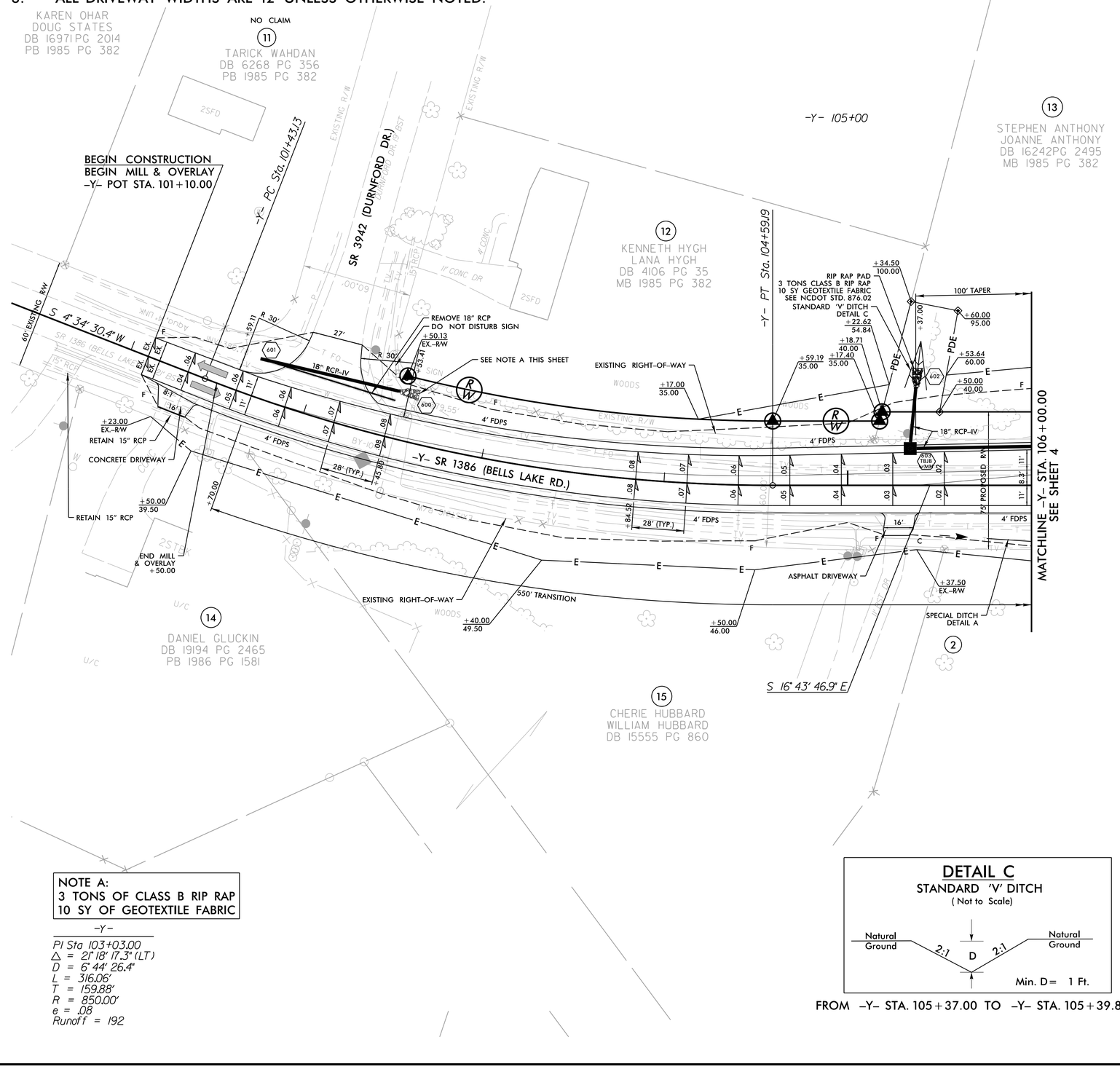
FOR -L- PROFILE, SEE SHEET NO. 8

10/9/2025
...\Proj\HL_00080_Rdy.psh05.dgn
User: rtorbes

8/17/99

REVISIONS

NOTES:
1. ALL DIMENSIONS ARE TO EDGE OF TRAVEL UNLESS OTHERWISE SPECIFIED.
2. CONTRACTORS TO MAINTAIN ACCESS TO ALL MAILBOXES WITHIN PROJECT LIMITS. CONTRACTOR TO RELOCATE AS NECESSARY.
3. ALL DRIVEWAY WIDTHS ARE 12' UNLESS OTHERWISE NOTED.



NOTE A:
3 TONS OF CLASS B RIP RAP
10 SY OF GEOTEXTILE FABRIC

–Y–
PI Sta 103+03.00
△ = 21° 18' 17.3" (LT)
D = 6° 44' 26.4"
L = 316.06'
T = 159.88'
R = 850.00'
e = .08
Runoff = 192

DETAIL C
STANDARD 'V' DITCH
(Not to Scale)

FROM –Y– STA. 105+37.00 TO –Y– STA. 105+39.87

FOR –Y– PROFILE, SEE SHEET NO. 9

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

PROJECT REFERENCE NO.	SHEET NO.
HL–0008Q	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 050515 KAYLA M POLITO
12/3/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044113 RYAN P MITCHELL
12/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

12/2/2025
...\Proj\HL_0008Q_Rdy_psh06.dgn
User: mlindsey

8/17/99

REVISIONS

NOTES:
1. ALL DIMENSIONS ARE TO EDGE OF TRAVEL UNLESS OTHERWISE SPECIFIED.
2. CONTRACTORS TO MAINTAIN ACCESS TO ALL MAILBOXES WITHIN PROJECT LIMITS. CONTRACTOR TO RELOCATE AS NECESSARY.
3. ALL DRIVEWAY WIDTHS ARE 12' UNLESS OTHERWISE NOTED.

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

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M POULOS
12/3/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044113 ENGINEER RYAN P MITCHELL
12/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

-Y- 115+00

16
KELLEY CARROLL
RUSSELL CARROLL
DB 18262 PG 1347

7
HOLLIS FOWLER
DB 6345 PG 215
MB 1993 PG 1607

7B
HOLLIS FOWLER
MARY FOWLER
DB 6345 PG 215
MB 1993 PG 1607

60' SEWER EASEMENT MB 1993 PG 607

-Y- PT Sta. 114+83.92

END CONSTRUCTION
END MILL & OVERLAY
-Y- POT 117+00.00

-Y- POT Sta. 119+00.00

+15.00 45.00 41.50
+20.00
15" RCP-V
+40.00 40.00
REMOVE 18" RCP
ASPHALT DRIVEWAY SEE SHEET 2A-1 FOR PAVEMENT DESIGN
550' MEDIAN TRANSITION TAPER
+75.00 45.00 40.00
SPECIAL DITCH DETAIL A
EXISTING RIGHT-OF-WAY
+83.92 40.00
+65.53 40.00
ASPHALT DRIVEWAY
RETAIN 15" RCP
DO NOT DISTURB EXISTING WATER LINE
+62.30 EX.-RW
+70.00
+46.46 EX.-RW
28' TYP.
4' FDPS
-Y- SR 1386 (BELLS LAKE RD.)
S 25° 39' 21.2" E
8:1
EXISTING R/W
END MILL & OVERLAY +00.00
RETAIN 15" RCP
CHARLES RHODES
WILL 18E PG 1833
17
NO CLAIM
HTR
GRVL DR
15" RCP
SR 1386 (BELLS LAKE RD) 21' BST
TO SR 1404 (JOHNSON POND RD)
60' EXISTN R/W
RETAIN 15" RCP

MATCHLINE -Y- STA. 111+00.00
SEE SHEET 4

24' PROPOSED R/W
24'
4' FDPS
SPECIAL DITCH DETAIL A
244' STORAGE & DECEL
100' TAPER
+03.00
CONCRETE DRIVEWAY
15" RCP-V
REMOVE 15" RCP
14'
ASPHALT DRIVEWAY SEE SHEET 2A-1 FOR PAVEMENT DESIGN
EXISTING RIGHT-OF-WAY
15" RCP-V
CONCRETE DRIVEWAY
REMOVE 15" RCP
BEGIN MILL & OVERLAY +00.00
+17.52 EX.-RW
REMOVE 15" RCP
CONCRETE DRIVEWAY
SPECIAL DITCH DETAIL A
15" PIPE
2" OD PVC
DO NOT DISTURB EXISTING WATER LINE
+50.00 32.25
+00.00 EX.-RW
DO NOT DISTURB FENCE
60' WD
EXISTING R/W
RETAIN 15" RCP

TH 1
N 694482.56'
E 2075572.06'
Top Utility Elv. 375.00'
2" OD PVC

ARDIE WATKINS
DONNA WATKINS
DB 2598 PG 54

MOZELLE CARROLL
DONNA WATKINS
WILL 10 E PG 560

18
CONNIE CARROLL
DB 2699 PG 904

19
TODD ANDREWS
DB 17169 PG 2340
MB 1996 PG 529

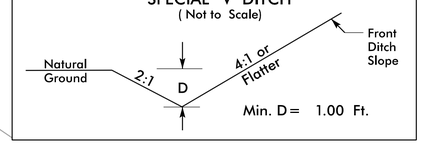
AMANDA MILLER
ELAINE MILLER
NICHOLAS KANE
DB 15545 PG 2189
MB 1996 PG 529

WELL HOUSE

LOS C LINE DEPICTED PER OWNER TESTIMONY

-Y-
PI Sta 111+85.95
△ = 1° 35' 56.6" (LT)
D = 1° 16' 23.7"
L = 596.83'
T = 298.85'
R = 4,500.00'
e = .03
Runoff = 84

DETAIL A
SPECIAL 'V' DITCH
(Not to Scale)



FROM -Y- STA. 110+00 LT TO STA. 114+00 LT
FROM -Y- STA. 112+00 RT TO STA. 112+50 RT
FROM -Y- STA. 114+50 RT TO STA. 115+65 RT

FOR -Y- PROFILE, SEE SHEET NO. 9

10/9/2025
...\Proj\HL_00080_Rdy_psh07.dgn
User: RTorbes

REVISIONS

–L– SR 1390 (OPTIMIST FARM RD.)

LEFT DITCH
RIGHT DITCH

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–0008Q	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M POLITO
12/3/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044113 ENGINEER RYAN P MITCHELL
12/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BM#1
BL STA 7+14
62′ LEFT
ELEV. 355.04′

BEGIN PROJECT HL–0008Q
BEGIN MILL & OVERLAY
–L– STA. 14+50.00

PI = 16+10.00
EL = 379.82′
VC = 200′
K = 36
DS = 35 MPH

PI = 18+50.00
EL = 384.55′
VC = 250′
K = 63
DS = 45 MPH

PI = 21+50.00
EL = 378.60′
VC = 220′
K = 90

–L– PC STA. 15+10.00
EL. = 372.32′

–L– PT STA. 17+10.00
EL. = 381.79′

–L– PC STA. 17+25.00
EL. = 382.09′

–L– PT STA. 19+75.00
EL. = 382.07′

–L– STA. 19+89.78 = –Y– STA. 108+90.22
EL. = 381.78′

–L– STA. PC 20+40.00
EL. = 380.78′

PROPOSED GRADE
EXISTING GROUND

+7.5000%
+1.9687%
+1.9687%
–1.9823%
1.00%
1.48%
1.12%
0.7000%
3.5000%
1.4200%
–1.9823%
–4.4247%

BEGIN GRADE –L– STA. 15+00.00
END MILL & OVERLAY
EL. = 371.57′

BEGIN SPECIAL LAT V DITCH
–L– STA. 17+60.00 RT
EL. = 381.67′

BEGIN SPECIAL LAT V DITCH
–L– STA. 18+00.00 LT
EL. = 380.30′

–L– STA. 18+50.00 LT
EL = 379.56′

END SPECIAL LAT V DITCH
–L– STA. 18+50.00 RT
EL = 382.57′

END SPECIAL LAT V DITCH
–L– STA. 19+00.00 LT
EL. = 379.00′

BEGIN SPECIAL LAT V DITCH
–L– STA. 20+00.00 LT
EL. = 377.95′

–L– STA. 20+50.00 LT
EL = 377.60′

–L– STA. 21+50.00 LT
EL. = 374.10′

END SPECIAL LAT V DITCH
–L– STA. 22+00.00 LT
EL. = 373.39′

FOR –L– PLAN VIEW, SEE SHEETS NO. 4–5

400 390 380 370 360
14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00

–L– SR 1390 (OPTIMIST FARM RD.)

LEFT DITCH
RIGHT DITCH

PI = 23+50.00
EL = 369.75′
VC = 180′
K = 101

–L– PT/PC STA. 22+60.00
EL. = 373.73′

–L– PT STA. 24+40.00
EL. = 364.17′

–4.4247%
–6.2000%
6.20%
6.52%
3.73%

EXISTING GROUND
PROPOSED GRADE

END GRADE –L– STA. 26+00.00
BEGIN MILL & OVERLAY
EL. = 354.25′

END PROJECT HL–0008Q
END MILL & OVERLAY
–L– STA. 26+40.00

END SPECIAL LAT V DITCH
–L– STA. 26+40.00 LT
EL. = 349.69′

BEGIN SPECIAL LAT V DITCH
–L– STA. 25+00.00 LT
EL. = 357.54′

–L– STA. 25+50.00 LT
EL = 354.44′

–L– STA. 26+00.00 LT
EL = 351.18′

FOR –L– PLAN VIEW, SEE SHEETS NO. 4–5

380 370 360 350 340
22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00

10/9/2025
P:\...\HL0008O_Rdy_prf108.dgn
User: kforbes

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

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 050515 ENGINEER KAYLA M POLITO
12/3/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044113 ENGINEER RYAN P MITCHELL
12/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

LEFT DITCH
RIGHT DITCH

–Y– SR 1386 (BELLS LAKE RD.)

PIPE HYDRAULIC DATA
18" RCP–IV @ –Y– 106+50

DRAINAGE AREA	=	1.00 AC
DESIGN FREQUENCY	=	25 YR
DESIGN DISCHARGE	=	3 CFS
DESIGN HW ELEVATION	=	375.1 FT
100 YEAR DISCHARGE	=	3 CFS
100 YEAR HW ELEVATION	=	375.1 FT
OVERTOPPING FREQUENCY	=	500+ YR
OVERTOPPING DISCHARGE	=	18.6 CFS
OVERTOPPING ELEVATION	=	378.8 FT

PI = 102+00.00
EL = 384.54'
VC = 100'
K = 139

PI = 105+75.00
EL = 378.85'
VC = 200'
K = 99

PI = 107+40.00
EL = 379.67'
VC = 130'
K = 143

–Y– PC STA. 101+50.00
EL. = 384.94'

–Y– PT STA. 102+50.00
EL. = 383.78'

–Y– PC STA. 104+75.00
EL. = 380.37'

–Y– PC/PT STA. 106+75.00
EL. = 379.35'

–Y– PI STA. 108+90.22 = –L– STA. 19+89.78
EL. = 381.78'

–Y– PT STA. 108+05.00
EL. = 380.58'

–Y– STA. 107+00.00 RT
EL. = 374.80'

–Y– STA. 107+50.00 LT
EL. = 373.70'

–Y– STA. 107+50.00 RT
EL. = 376.75'

BEGIN SPECIAL LAT V DITCH
–Y– STA. 107+00.00 LT
EL. = 372.00'

END SPECIAL LAT V DITCH
–Y– STA. 108+00.00 RT
EL. = 377.92'

–0.8000%
–1.5169%
+0.4951%
+1.4045%
+1.3144%
2.20%
2.29%
4.00%
3.90%
2.34%
3.80%
3.40%
3.80%

BEGIN CONSTRUCTION
BEGIN MILL & OVERLAY
–Y– STA. 101+10.00

BEGIN GRADE –Y– STA. 101+50.00
END MILL & OVERLAY
EL. = 384.94'

PROPOSED GRADE
EXISTING GROUND
EXIST. 18" PIPE

BEGIN SPECIAL LAT V DITCH
–Y– STA. 105+50.00 RT
EL. = 377.20'

–Y– STA. 106+50.00 RT
EL. = 375.00'

–Y– STA. 106+85.00 RT
EL. = 374.20'

END SPECIAL LAT V DITCH
BEGIN SPECIAL LAT V DITCH

END SPECIAL LAT V DITCH
–Y– STA. 108+50.00 LT
EL. = 377.50'

FOR –Y– PLAN VIEW, SEE SHEETS NO. 6–7

410 400 390 380 370

101+00 102+00 103+00 104+00 105+00 106+00 107+00 108+00 109+00

LEFT DITCH
RIGHT DITCH

–Y– SR 1386 (BELLS LAKE RD.)

PIPE HYDRAULIC DATA
18" RCP–IV @ –Y– 109+25

DRAINAGE AREA	=	1.35 AC
DESIGN FREQUENCY	=	25 YR
DESIGN DISCHARGE	=	3 CFS
DESIGN HW ELEVATION	=	380.0 FT
100 YEAR DISCHARGE	=	3 CFS
100 YEAR HW ELEVATION	=	380.0 FT
OVERTOPPING FREQUENCY	=	200+ YR
OVERTOPPING DISCHARGE	=	7.6 CFS
OVERTOPPING ELEVATION	=	381.3 FT

PI = 112+15.00
EL = 386.05'
VC = 510'
K = 143

BM#2
BY STA 17+85
S 49^ 46' 25.30" W
DIST 55.55
ELEV. 382.87

–Y– PC STA. 109+60.00
EL. = 382.70'

–Y– PT STA. 114+70.00
EL. = 380.30'

+1.3144%
–2.2532%
4.00%
0.30%
0.26%
0.70%
1.92%
2.68%
2.56%
1.80%

EXISTING GROUND
PROPOSED GRADE
PROP. 18" RCP

BEGIN SPECIAL LAT V DITCH
–Y– STA. 110+00.00 LT
EL. = 379.00'

–Y– STA. 110+50.00 LT
EL. = 381.00'

BEGIN SPECIAL LAT V DITCH
–Y– STA. 112+00.00 RT
EL. = 382.23'

END SPECIAL LAT V DITCH
–Y– STA. 112+50.00 RT
EL. = 382.10'

–Y– STA. 113+00.00 LT
EL = 380.25'

–Y– STA. 113+50.00 LT
EL. = 379.90'

BEGIN SPECIAL LAT V DITCH
–Y– STA. 114+50.00 RT
EL. = 379.09'

END SPECIAL LAT V DITCH
–L– STA. 114+00.00 LT
EL. = 378.94'

–Y– STA. 115+50.00 RT
EL. = 376.47'

END GRADE –Y– STA. 115+00.00
BEGIN MILL & OVERLAY
EL. = 379.63'

–Y– STA. 115+00.00 RT
EL. = 377.75'

END SPECIAL LAT V DITCH
–Y– STA. 115+65.00 RT
EL. = 376.20'

END CONSTRUCTION
END MILL & OVERLAY
–Y– STA. 117+00.00

FOR –Y– PLAN VIEW, SEE SHEETS NO. 6–7

400 390 380 370 360

109+00 110+00 111+00 112+00 113+00 114+00 115+00 116+00 117+00

10/9/2025
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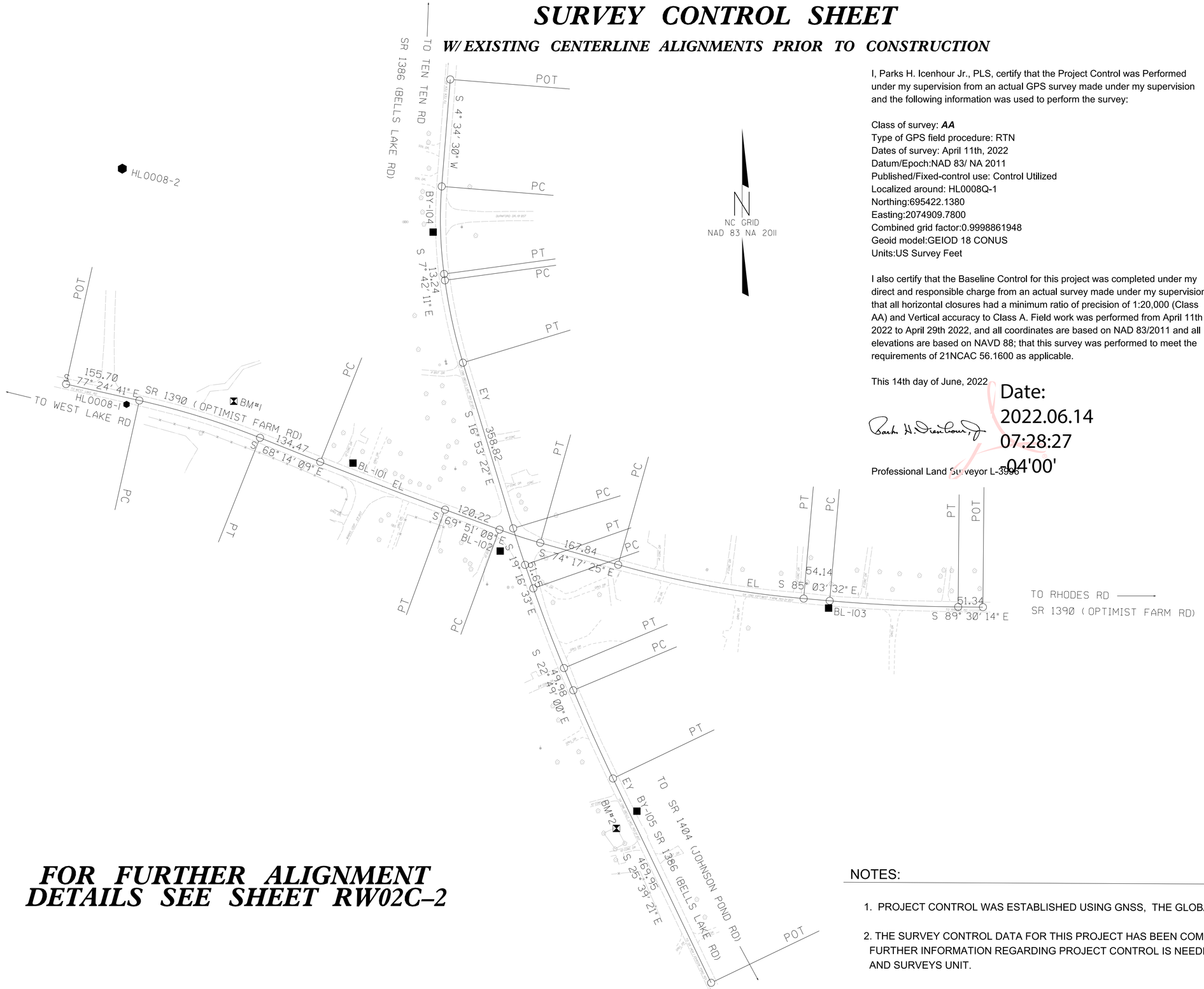
User: krorbes

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



FOR FURTHER ALIGNMENT DETAILS SEE SHEET RW02C–2

I, Parks H. Icenhour Jr., PLS, certify that the Project Control was Performed 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: April 11th, 2022
Datum/Epoch:NAD 83/ NA 2011
Published/Fixed-control use: Control Utilized
Localized around: HL0008Q-1
Northing:695422.1380
Easting:2074909.7800
Combined grid factor:0.9998861948
Geoid model:GEIOD 18 CONUS
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 April 11th 2022 to April 29th 2022, 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 14th day of June, 2022

Parks H. Icenhour, Jr.

Date: 2022.06.14 07:28:27 -04'00'

Professional Land Surveyor L-3996

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.

PROJECT REFERENCE NO.	SHEET NO.
HL0008Q	RW02C–1

Location and Surveys

NSPE Engineering of NC, Inc. D&H
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 PROFESSIONAL ENGINEERING CORPORATION — GEL ENGINEERING OF NC, INC. — NO. C-1938 — CERTIFICATE OF AUTHORIZATION

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

13-JUN-2022 14:43
C:\GEL Projects\2022\hl0008q\fieldwork\Final\attestation\hl0008q_ls_rw02c-1_220523.dgn
Jason Prevatte AT DESKTOP-EPRVSVF

09/08/99

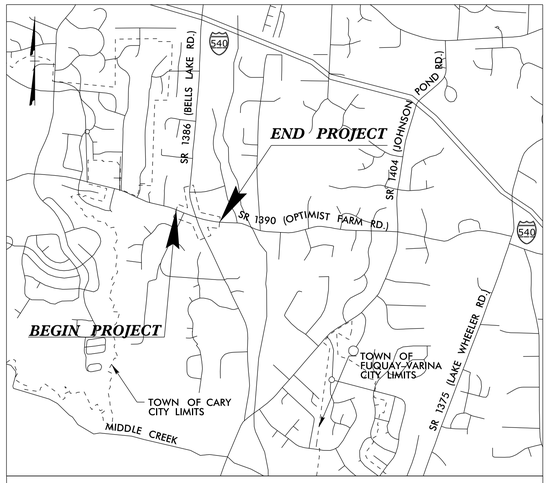
TIP PROJECT: HL-0008Q

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL-0008Q	RW01	09

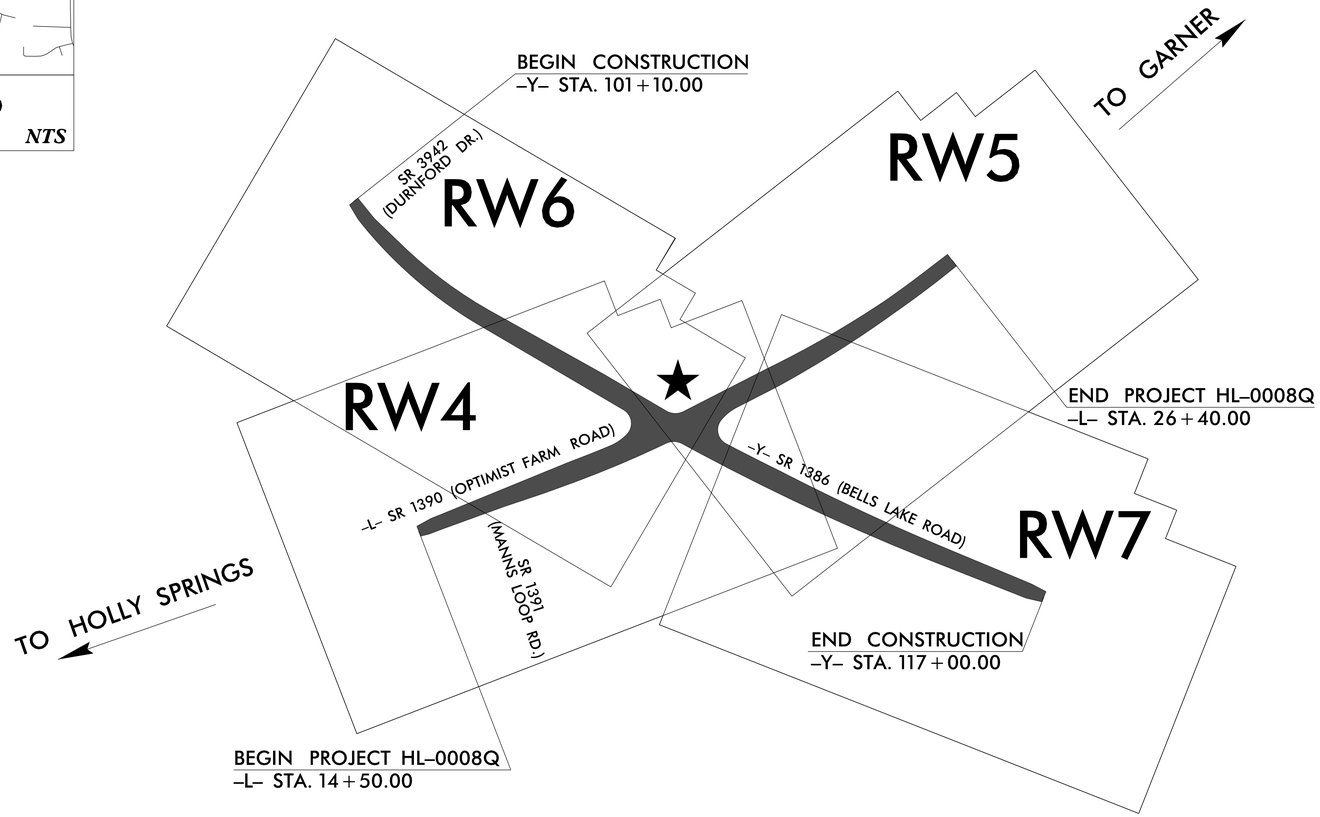
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

WAKE COUNTY



VICINITY MAP NTS



GRAPHIC SCALE

50 25 0 50 100
PLANS

NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "HL0008Q-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 695422.1308(ft) EASTING: 2074909.7800(ft) ELEVATION: 353.52(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998861948
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "HL0008Q-1" TO -L- STATION 10+00.00 IS N 71-28'27.6" W 132.25(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

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.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.11.17 14:40:54 -05'00'

SIGNATURE: *Date:*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

17-NOV-2025 08:48
C:\Projects\NCDOT\HL0008Q\RIGHTOFWAY\TRY\HL0008Q_LS_RWL_GEL-2_25li04.dgn
jason.prevatte AT PREVATTEJ

6/2/99

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
HL0008Q	RW02C-2

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
1	HL0008Q-1	695422.1380	2074909.7800	353.52
101	HL0008Q BL-101	695300.6690	2075379.4300	378.01
102	HL0008Q BL-102	695118.2410	2075684.5150	382.74
103	HL0008Q BL-103	694999.7700	2076365.2690	351.25

BY

POINT	DESC.	NORTH	EAST	ELEVATION
104	HL0008Q BY-104	695779.3790	2075545.3340	383.52
202	HL0008Q BL-102	695118.2410	2075684.5150	382.74
105	HL0008Q BY-105	694579.2010	2075967.9400	378.61

****
BM1 ELEVATION = 355.04
N 695429 E 2075132
BL STATION 7+14.00 62 LEFT
BENCH NAIL IN BASE OF 24" OAK
****

****
BM2 ELEVATION = 382.87
N 694543 E 2075926
BY STATION 17+85.00
S 49°46'25.3" W DIST 55.55
BANCH NAIL IN BASE OF 18" PINE
****

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	695464.159	2074784.379							
LINE			S 77°24'41.2" E	155.70					
PC	695430.225	2074936.335							
CURVE			S 72°49'25.2" E	261.88	09°10'32.1"(RT)	03°30'00.0"	262.16	131.36	1637.02
PT	695352.888	2075186.535							
LINE			S 68°14'09.1" E	134.47					
PC	695303.027	2075311.424							
CURVE			S 69°02'38.5" E	277.07	01°36'58.7"(LT)	00°35'00.0"	277.08	138.55	9822.13
PT	695203.932	2075570.170							
LINE			S 69°51'07.8" E	120.22					
PC	695162.524	2075683.029							
CURVE			S 72°04'16.2" E	88.74	04°26'16.7"(LT)	05°00'00.0"	88.76	44.40	1145.92
PT	695135.208	2075767.458							
LINE			S 74°17'24.5" E	167.84					
PC	695089.761	2075929.032							
CURVE			S 79°40'28.3" E	391.02	10°46'07.5"(LT)	02°45'00.0"	391.59	196.37	2083.48
PT	695019.676	2076313.715							
LINE			S 85°03'32.1" E	54.14					
PC	695015.013	2076367.651							
CURVE			S 87°16'52.8" E	266.62	04°26'41.5"(LT)	01°40'00.0"	266.69	133.41	3437.75
PT	695002.366	2076633.975							
LINE			S 89°30'13.5" E	51.34					
POT	695001.922	2076685.316							

EY

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	696095.696	2075580.927							
LINE			S 04°34'30.4" W	222.48					
PC	695873.928	2075563.181							
CURVE			S 01°33'50.3" E	181.55	12°16'41.4"(LT)	06°45'00.0"	181.90	91.30	848.83
PT	695692.444	2075568.136							
LINE			S 07°42'11.0" E	13.24					
PC	695679.323	2075569.910							
CURVE			S 12°17'46.4" E	174.79	09°11'10.7"(LT)	05°15'00.0"	174.98	87.68	1091.35
PT	695508.542	2075607.135							
LINE			S 16°53'21.7" E	358.82					
PC	695165.199	2075711.381							
CURVE			S 18°04'57.3" E	79.54	02°23'11.2"(LT)	03°00'00.0"	79.55	39.78	1909.86
PT	695089.586	2075736.070							
LINE			S 19°16'32.9" E	51.65					
PC	695040.829	2075753.121							
CURVE			S 21°02'46.4" E	177.01	03°32'26.9"(LT)	02°00'00.0"	177.04	88.55	2864.79
PT	694875.625	2075816.690							
LINE			S 22°48'59.9" E	49.98					
PC	694829.555	2075836.072							
CURVE			S 24°14'10.5" E	200.40	02°50'21.3"(LT)	01°25'00.0"	200.42	100.23	4044.41
PT	694646.821	2075918.335							
LINE			S 25°39'21.2" E	469.95					
POT	694223.202	2076121.807							

I, Parks H. Icenhour Jr., PLS, certify that the Project Control was Performed 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: April 11th, 2022
Datum/Epoch:NAD 83/ NA 2011
Published/Fixed-control use: Control Utilized
Localized around: HL0008Q-1
Northing:695422.1380
Easting:2074909.7800
Combined grid factor:0.9998861948
Geoid model:GEIOD 18 CONUS
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 April 11th 2022 to April 29th 2022, 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 14th day of June, 2022.

Parks H. Icenhour Jr.

Date: 2022.06.14 07:29:06 -04'00'

Professional Land Surveyor L-3996

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.

13-JUN-2022 14:15
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Jason Prevatte AT DESKTOP-EPRVSVF

6/2/99

REVISIONS

PROPOSED ALIGNMENT CONTROL SHEET

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

Location and Surveys

GEL Engineering of NC, Inc. 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 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 17th day of November, 2025.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.11.17 14:38:34 -05'00'

Professional Land Surveyor L-3996

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	695464.1592	2074784.3786
PC	11+55.70	695430.2247	2074936.3353
PT	14+17.86	695352.8881	2075186.5352
PC	17+95.52	695212.8561	2075537.2767
PT	20+29.36	695137.7402	2075758.6037
PC	22+05.94	695089.8705	2075928.5741
PT	25+97.57	695019.7127	2076313.2874
PC	26+49.72	695015.2209	2076365.2437
PT	29+21.25	695002.3454	2076636.3906
POT	29+70.17	695001.9217	2076685.3162

Y

TYPE	STATION	NORTH	EAST
POT	100+00.00	696016.7235	2075574.6072
PC	101+43.13	695874.0534	2075563.1907
PT	104+59.19	695561.5739	2075596.4599
PC	108+87.10	695151.7800	2075719.6356
PT	114+83.92	694598.2581	2075941.6603
POT	119+00.00	694223.2017	2076121.8072

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 10/20/2025 TO 10/27/2025.

17-NOV-2025 08:52
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jason.revette AT PRECISION

6/2/99

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	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

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 10/20/2025 to 10/27/2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3rd day of December, 2025.

Parks H. Icenhour, Jr.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.12.03 07:30:03 -05'00'

Professional Land Surveyor L-3996

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

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L	14+50.00	-35.00	695373.4759	2075229.3623	
L	14+50.00	-30.00	695368.8323	2075227.5084	
L	17+57.99	29.00	695199.8379	2075491.6715	
L	17+95.52	-35.00	695245.3612	2075550.2543	
L	17+95.52	-40.00	695250.0048	2075552.1082	
L	17+95.52	29.00	695185.9233	2075526.5239	
L	18+68.21	35.00	695154.1002	2075593.3103	
L	18+68.60	29.00	695159.6088	2075595.7206	
L	18+70.00	-40.00	695224.0311	2075620.4737	
L	19+14.00	35.00	695138.7321	2075637.2014	
L	20+40.00	-40.00	695173.3569	2075779.6929	
L	20+40.00	-40.00	695173.3569	2075779.6929	
L	21+04.75	40.00	695078.8005	2075820.3274	
L	22+05.94	-40.00	695128.3726	2075939.4177	
L	22+05.94	40.00	695051.3683	2075917.7305	PK NAIL
L	22+46.34	-40.00	695118.0022	2075977.6592	
L	22+46.81	-35.00	695113.0468	2075976.8471	
L	23+54.82	40.00	695015.4914	2076065.1436	
L	23+64.72	39.97	695013.5070	2076075.0357	
L	25+31.70	-30.01	695056.2281	2076251.2886	
L	25+31.92	-35.00	695061.1561	2076252.0921	

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST	
Y	102+50.13	-35.00	695768.7426	2075596.3459	
Y	104+59.19	-35.00	695571.6489	2075629.9784	
Y	105+17.40	-35.00	695515.9052	2075646.7339	NOT SET IN TREE
Y	105+18.71	-40.00	695516.0842	2075651.9011	
Y	106+25.00	37.50	695391.9869	2075608.2769	
Y	106+25.00	34.73	695392.7841	2075610.9291	
Y	106+85.00	41.00	695333.5190	2075622.1964	
Y	106+98.60	-40.00	695343.8071	2075703.6840	
Y	107+01.50	-51.00	695344.2025	2075715.0514	
Y	107+50.00	34.38	695273.1752	2075647.2449	
Y	108+00.00	34.24	695225.3317	2075661.7711	
Y	108+50.00	-43.75	695199.8988	2075750.8557	
Y	110+00.00	-44.75	695059.8198	2075798.1591	NOT SET IN HOUSE
Y	110+50.00	-44.75	695013.2475	2075814.9378	
Y	111+40.00	-40.00	694928.1747	2075842.0132	
Y	114+83.92	-40.00	694615.5767	2075977.7167	
Y	115+62.30	-30.00	694540.5995	2076002.6360	
Y	115+65.53	-40.00	694542.0187	2076013.0481	

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	21+19.00	-68.00	695178.8923	2075863.3252
L	21+19.00	-55.00	695166.3791	2075859.8010
L	21+26.00	40.00	695073.0388	2075840.7853
L	21+26.00	66.50	695047.5311	2075833.6015
L	21+41.00	-69.00	695173.8909	2075884.7724
L	21+41.00	-40.00	695145.9768	2075876.9108
L	21+48.25	65.00	695042.9432	2075855.4249
L	21+48.25	40.00	695067.0071	2075862.2022

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y	105+34.50	-100.00	695518.2321	2075713.9073
Y	105+50.00	-40.00	695486.1214	2075660.9073
Y	105+60.00	-95.00	695492.3768	2075716.4579
Y	106+75.00	-51.00	695369.5786	2075707.4238
Y	106+75.00	-40.00	695366.4122	2075696.8894
Y	107+57.25	55.00	695260.2971	2075629.5867
Y	107+74.50	34.31	695249.7319	2075654.3627
Y	107+99.53	36.00	695225.2744	2075659.9535
Y	108+34.25	-44.52	695215.2035	2075747.0583

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 10/20/2025 TO 10/27/2025 .

02-DEC-2025 08:35
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jasonprevatte
AT PREVATTEJ

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

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

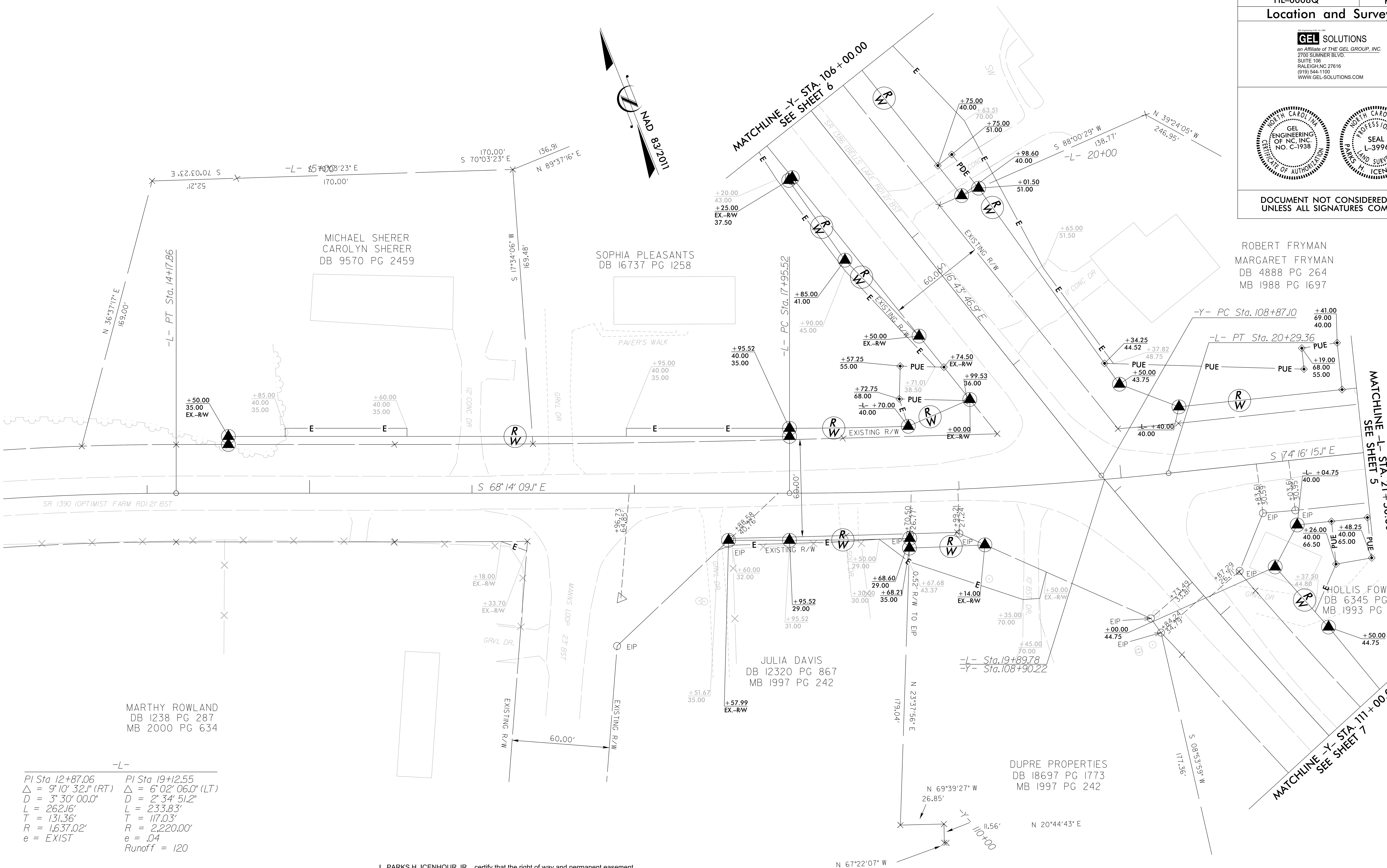
NORTH CAROLINA GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

6/2/99



-L-	
PI Sta 12+87.06	PI Sta 19+12.55
Δ = 9° 10' 32.1" (RT)	Δ = 6° 02' 06.0" (LT)
D = 3° 30' 00.0"	D = 2° 34' 51.2"
L = 262.16'	L = 233.83'
T = 131.36'	T = 117.03'
R = 1,637.02'	R = 2,220.00'
e = EXIST	e = .04
	Runoff = 120

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 10/20/2025 to 10/27/2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3rd day of December, 2025.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.12.03 07:29:30 -05'00'

Professional Land Surveyor L-3996

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 10/20/2025 TO 10/27/2025.

03-DEC-2025 07:13
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jason.prevatte AT PREVATTEJ

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	RW05

Location and Surveys

GEL Engineering of NC Inc. CBA

GEL SOLUTIONS

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

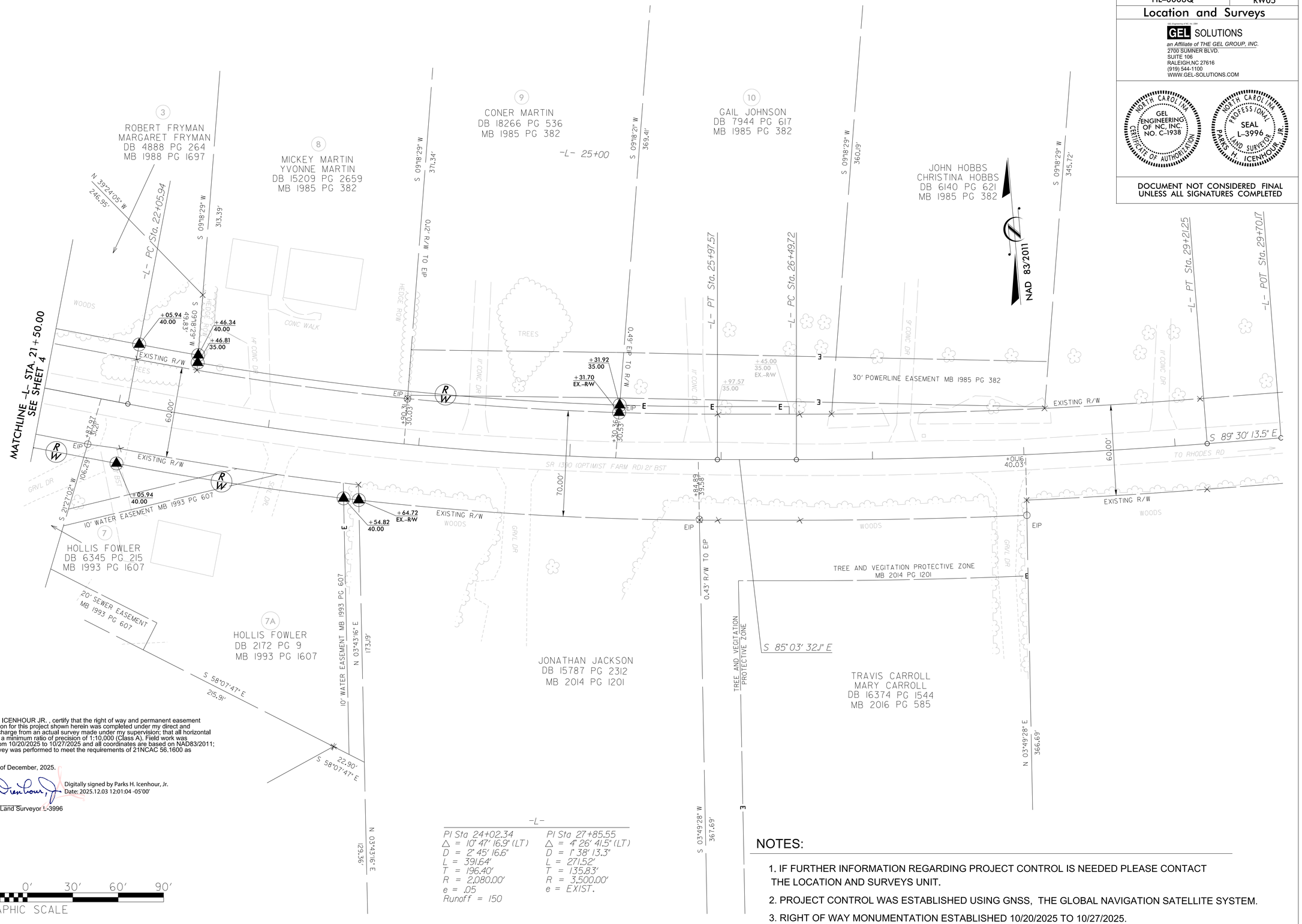
NORTH CAROLINA GEL ENGINEERING OF NC, INC. NO. C-1938 CERTIFICATE OF AUTHORIZATION

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

6/2/99



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 10/20/2025 to 10/27/2025 and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3rd day of December, 2025.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.12.03 12:01:04 -05'00'

Professional Land Surveyor L-3996

-L-

PI Sta 24+02.34	PI Sta 27+85.55
△ = 10° 47' 16.9" (LT)	△ = 4° 26' 41.5" (LT)
D = 2° 45' 16.6"	D = 1° 38' 13.3"
L = 391.64'	L = 271.52'
T = 196.40'	T = 135.83'
R = 2,080.00'	R = 3,500.00'
e = .05	e = EXIST.
Runoff = 150	

30' 0' 30' 60' 90'
GRAPHIC SCALE

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 10/20/2025 TO 10/27/2025.

03-DEC-2025 10:46
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jasonprevatte
AT PREVATTEJ

6/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	RW06

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

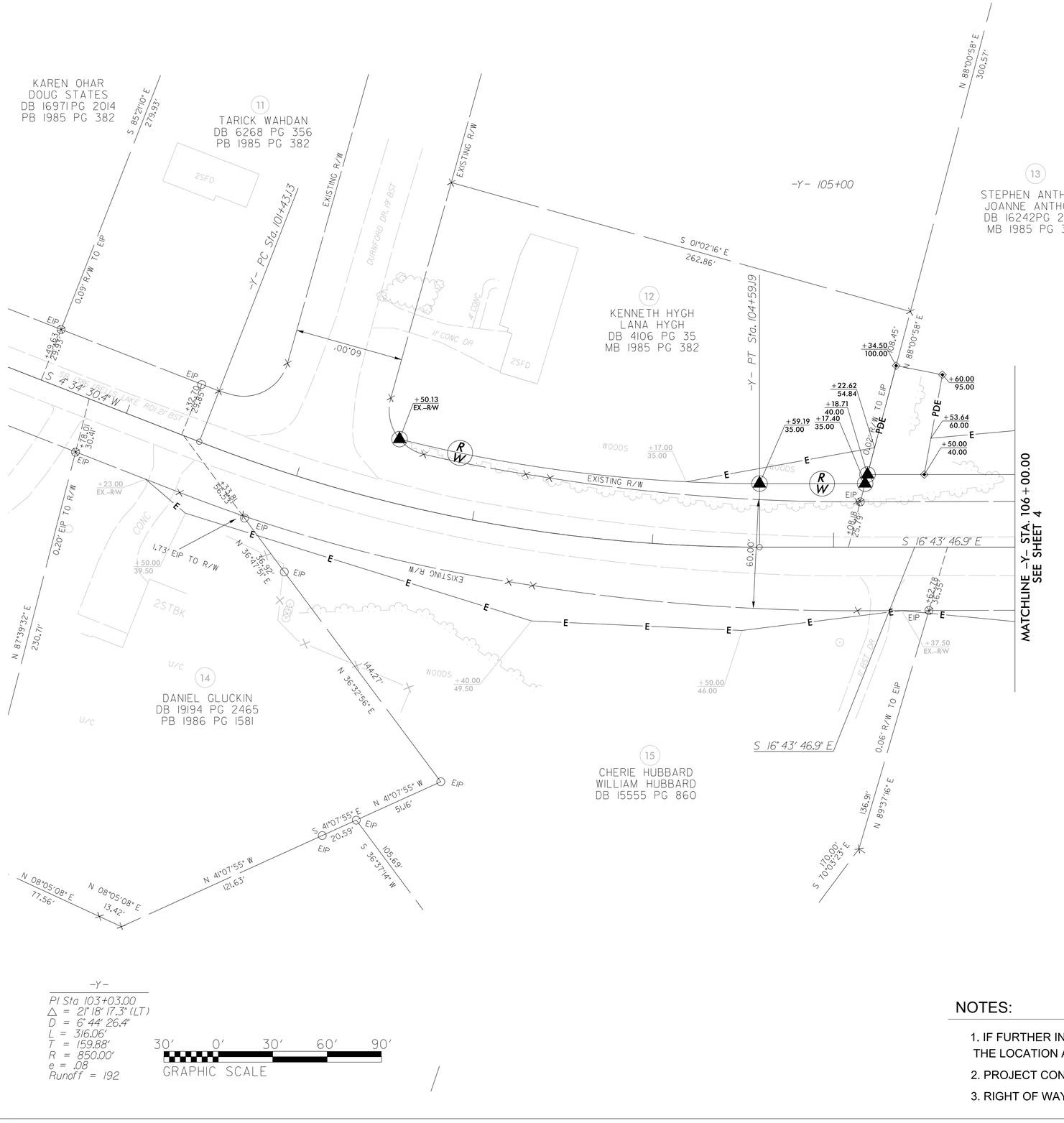
NAD 83/2011

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 10/20/2025 to 10/27/2025 and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3rd day of December, 2025.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.12.03 07:29:03 -05'00'

Professional Land Surveyor L-3996



-Y-
PI Sta 103+03.00
△ = 21° 18' 17.3" (LT)
D = 6° 44' 26.4"
L = 316.06'
T = 159.88'
R = 850.00'
e = .08
Runoff = 192

30' 0' 30' 60' 90'
GRAPHIC SCALE

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 10/20/2025 TO 10/27/2025.

02-DEC-2025 16:36
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jsongervaise
AT PREVAILED J

6/2/99

REVISIONS

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 10/20/2025 to 10/27/2025 and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3rd day of December, 2025.

Parks H. Icenhour, Jr.

Digitally signed by Parks H. Icenhour, Jr.
Date: 2025.12.03 12:01:38 -05'00'

Professional Land Surveyor L-3996

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	RW07

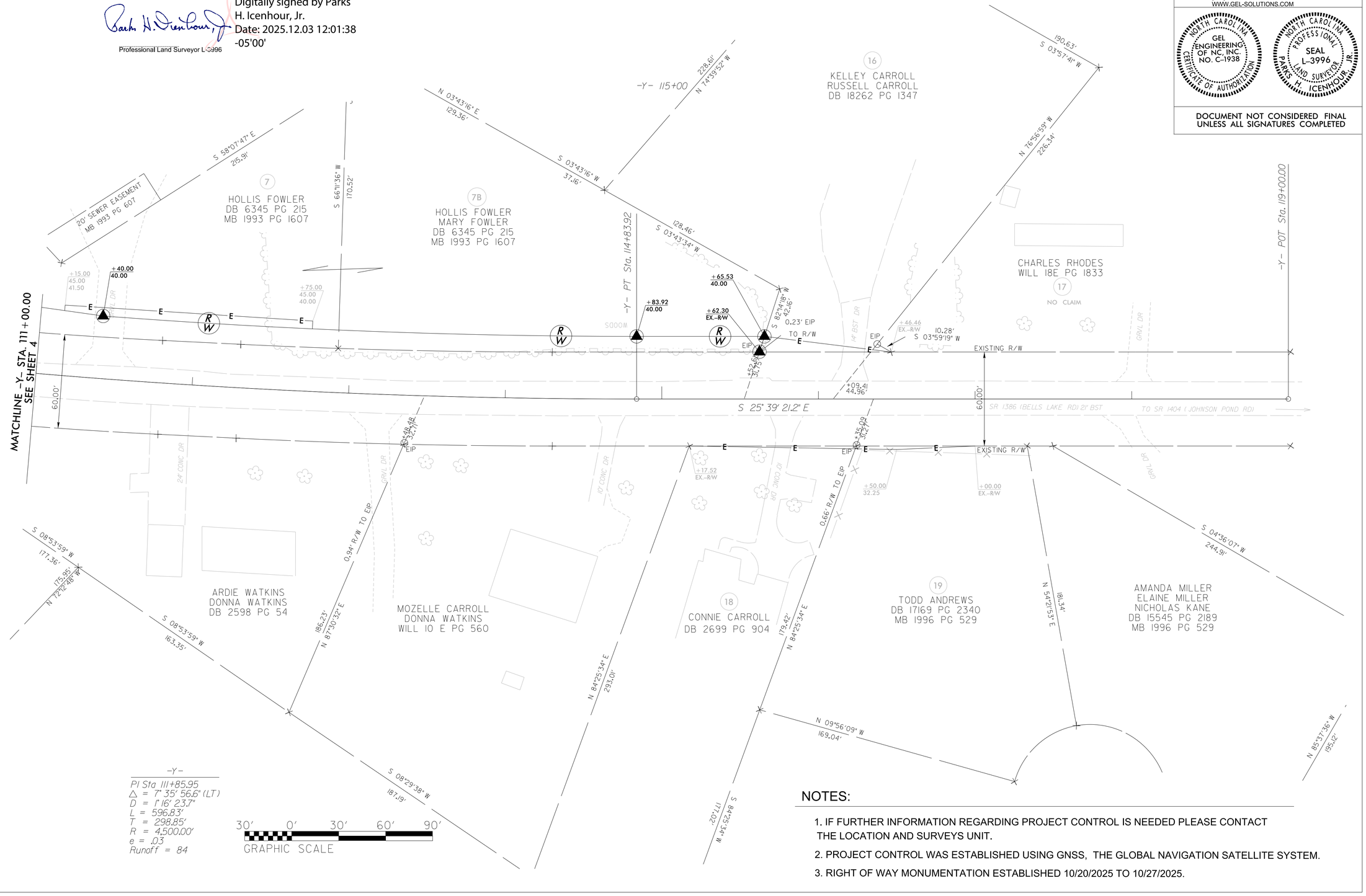
Location and Surveys

GEL SOLUTIONS
an Affiliate of THE GEL GROUP, INC.
2760 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



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 10/20/2025 TO 10/27/2025.

03-DEC-2025 10:51
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jason.revatte
AT PREVATTE\J

T.I.P.: HL-0008Q

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING AND SIGNING PLAN
WAKE COUNTY
LOCATION: SR 1390 (OPTIMIST FARM ROAD) AND SR 1386 (BELLS LAKE ROAD)

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	PMP-1

APPROVED: Signed by: Zachary M. Esposito 5647DD76D4884E8...

DATE: 12/4/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NOTES

1 REMOVE EXISTING STOP SIGNS AT INTERSECTION.
2 REMOVE "STOP AHEAD" PAVEMENT MARKINGS AND SIGNAGE PRIOR TO INTERSECTION OF OPTIMIST FARM ROAD AND BELLS LAKE ROAD ON ALL APPROACHES.
3 RETAIN EXISTIN SIGN.
4 DISPOSE EXISTING SIGN ASSEMBLY, U-CHANNEL.

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
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
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	150	S.F.
4072000000	904	SUPPORTS, 3 LB STEEL U-CHANNEL	280	L.F.
4102000000	904	SIGN ERECTION, TYPE E	26	EA.
4155000000	904	DISPOSAL SIGN SYSTEM, U-CHANNEL	22	EA.
4685000000	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	14200	L.F.
4695000000	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	250	L.F.
4700000000	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	350	L.F.
4710000000	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MILS)	100	L.F.
4725000000	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	7	EA.
4875000000	1205	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS	36	EA.
4890000000	SP	YIELD LINE THERMOPLASTIC PAVEMENT MARKING (24", 90 MILS)	40	LF.
4895000000	SP	POLYCARBONATE H-SHAPED MARKERS	70	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	POLYCARBONATE H-SHAPED MARKERS

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)	
T1	WHITE EDGELINE
T2	WHITE SOLID LANE LINE
T4	3 FT. - 9 FT./SP WHITE MINISKIP
T5	2 FT. - 6 FT./SP WHITE MINISKIP
T13	YELLOW DOUBLE CENTER
THERMOPLASTIC (8", 90 MILS)	
T40	WHITE GORELINE
THERMOPLASTIC (12", 90 MILS)	
T51	WHITE DIAGONAL
T52	YELLOW DIAGONAL
THERMOPLASTIC (24", 90 MILS)	
T61	WHITE STOPBAR
THERMOPLASTIC PAVEMENT MARKING SYMBOLS (90 MILS)	
T70	LEFT TURN ARROW
T103	24" YIELD LINE TRIANGLE

INDEX

PLANS PREPARED BY: DRMP, INC.

ZACHARY M. ESPOSITO, PE, TCDS — 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
www.drmp.com

(401) QUANTITY REQ'D 4

30" x 36"
R2-1

ONE "U" POST PER SIGN

(406) QUANTITY REQ'D 8

24" x 12"
W16-15P

MOUNT ABOVE SIGN 405

(402) QUANTITY REQ'D 2

36" x 36"
R1-2

ONE "U" POST PER SIGN

(407) QUANTITY REQ'D 2

30" x 30"
R1-2

ONE "U" POST PER SIGN

(403) QUANTITY REQ'D 1

30" x 30"
W2-2

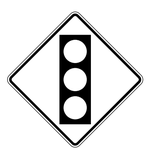
ONE "U" POST PER SIGN

(404) QUANTITY REQ'D 1

24" x 30"
R10-7

ONE "U" POST PER SIGN

(405) QUANTITY REQ'D 8



30" x 30"
W3-3

ONE "U" POST PER SIGN

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	PMP-2

APPROVED: Signed by: Zachary M. Esposito 5647DD76D4884E8...

DATE: 12/3/2025

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TYPE E SIGNS

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	PMP-3

APPROVED: Signed by: Zachary M. Esposito 5647D07ED4884E8...

DATE: 12/4/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

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SYMBOL LEGEND

T70 LEFT TURN ARROW

GRAPHIC SCALE

30 15 0 30 60

PLANS

PROJECT NOTES

1 REMOVE EXISTING STOP SIGNS AT INTERSECTION.
2 REMOVE "STOP AHEAD" PAVEMENT MARKINGS AND SIGNAGE PRIOR TO INTERSECTION OF OPTIMIST FARM ROAD AND BELLS LAKE ROAD ON ALL APPROACHES.
3 RETAIN EXISTING SIGN.
4 DISPOSE EXISTING SIGN ASSEMBLY, U-CHANNEL.
5 SEE INSET BELOW FOR MORE DETAILS ON PAVEMENT MARKING CALLOUTS FOR THE INTERSECTION OF BELLS LAKE ROAD AND OPTIMIST FARM ROAD.

-L- 15+00

MATCHLINE -Y- STA. 106+00
SEE SHEET PMP-5

NAD 83/2011

-L- 20+00

T52 TYP. -Y- STA. 107+20 +/-

T13 T1 T4 T2

SPEED LIMIT 45 401

-Y- SR 1386 (BELLS LAKE RD.)

402 YIELD

-Y- STA. 107+89 +/-

-Y- STA. 108+24 +/-
-Y- STA. 108+27 +/-
-Y- STA. 108+44 +/-
-Y- STA. 108+63 +/-

NEW 406 405

403

SEE PROJECT NOTE 4

-L- STA. 14+50 +/-
TIE TO EXISTING

-L- STA. 15+01 +/-

-L- STA. 16+24 +/-

-L- STA. 17+96 +/-

-L- STA. 19+30 +/-

-L- STA. 19+11 +/-

-L- STA. 19+26 +/-

-L- STA. 20+34 +/-
-L- STA. 20+54 +/-
-L- STA. 20+62 +/-
-L- STA. 20+67 +/-

MATCHLINE -L- STA. 21+50
SEE SHEET PMP-4

T13 T1 T52 TYP.

T52 TYP. T4 T13

-L- SR 1390 (OPTIMIST FARM RD.)

SEE PROJECT NOTE 2

SEE PROJECT NOTE 4

DO NOT BLOCK INTERSECTION

404

-L- STA. 16+25 +/-

T5

SR 1391 (MANNS LOOP RD.)

T1 T2

-L- STA. 17+07 +/-
-L- STA. 16+85 +/-

-L- STA. 18+66 +/-
-L- STA. 19+39 +/-
-L- STA. 19+59 +/-
-Y- STA. 109+26 +/-
-Y- STA. 109+39 +/-
-Y- STA. 109+59 +/-
-Y- STA. 109+62 +/-
-Y- STA. 110+00 +/-

-Y- STA. 120+80 +/-

YIELD 402

-Y- SR 1386 (BELLS LAKE RD.)

T2 T1 T13

STOP 407

SEE PROJECT NOTE 4

SEE PROJECT NOTE 4

401 SPEED LIMIT 45

MATCHLINE -Y- STA. 111+00
SEE SHEET PMP-6

-Y- 110+00

INSET

T61 T40 T5 T61 T51 TYP. T103 T5 T13 T5 T13

T61 T40 -L- STA. 21+25 +/-

T61 T61 T2

T103 T51 TYP. T5

PAVEMENT MARKING AND SIGNING DETAIL

SYMBOL LEGEND	
T70	LEFT TURN ARROW

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	PMP-4

APPROVED: Signed by: Zachary M. Esposito 564TDD76D4884E8...

DATE: 12/3/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

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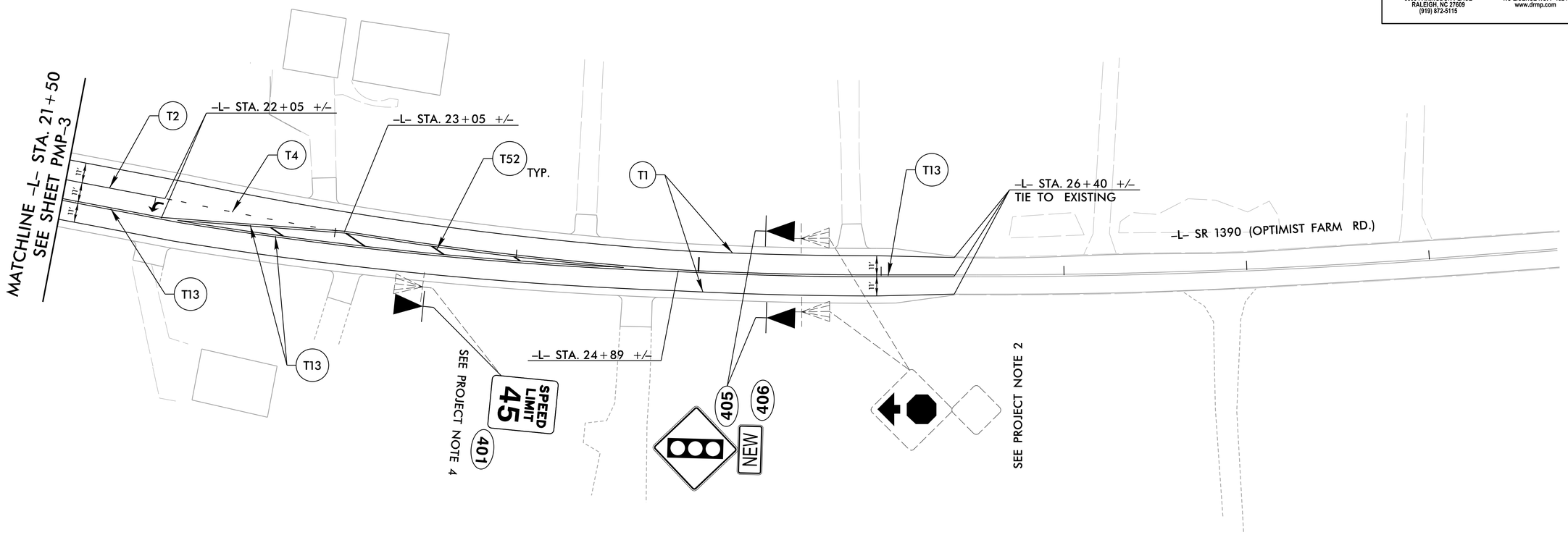
NAD 83/2011



GRAPHIC SCALE

30 15 0 30 60

PLANS

PROJECT NOTES

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PAVEMENT MARKING AND SIGNING DETAIL

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	PMP-5

APPROVED: Signed by: Zachary M. Esposito 0647DD76D4884E8...

DATE: 12/3/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

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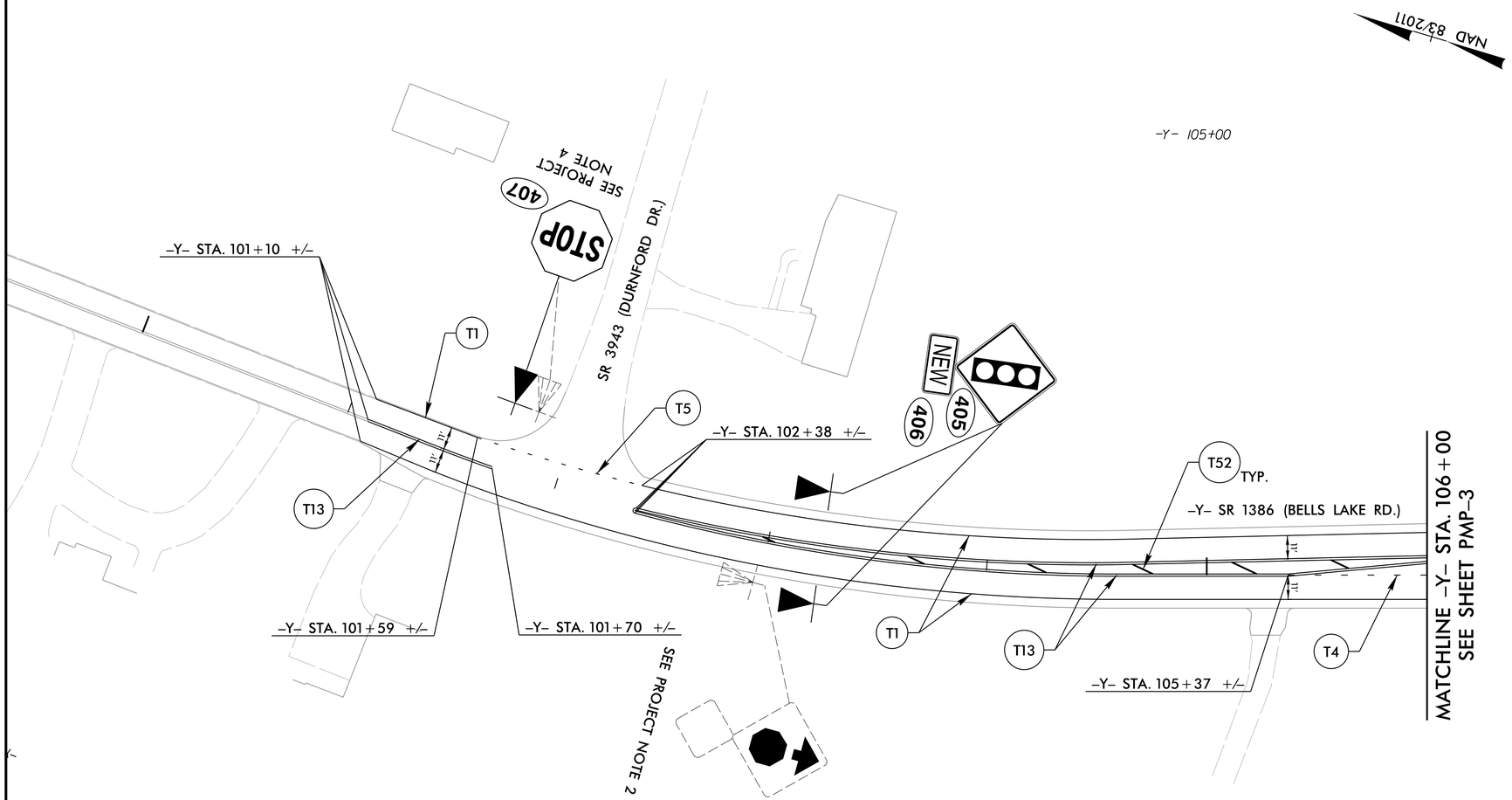

GRAPHIC SCALE

30 15 0 30 60

PLANS

PROJECT NOTES

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PAVEMENT MARKING AND SIGNING DETAIL

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	PMP-6

APPROVED: Zachary M. Esposito (Signed by: 5647D0760488E8...)

DATE: 12/3/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

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(919) 872-5115

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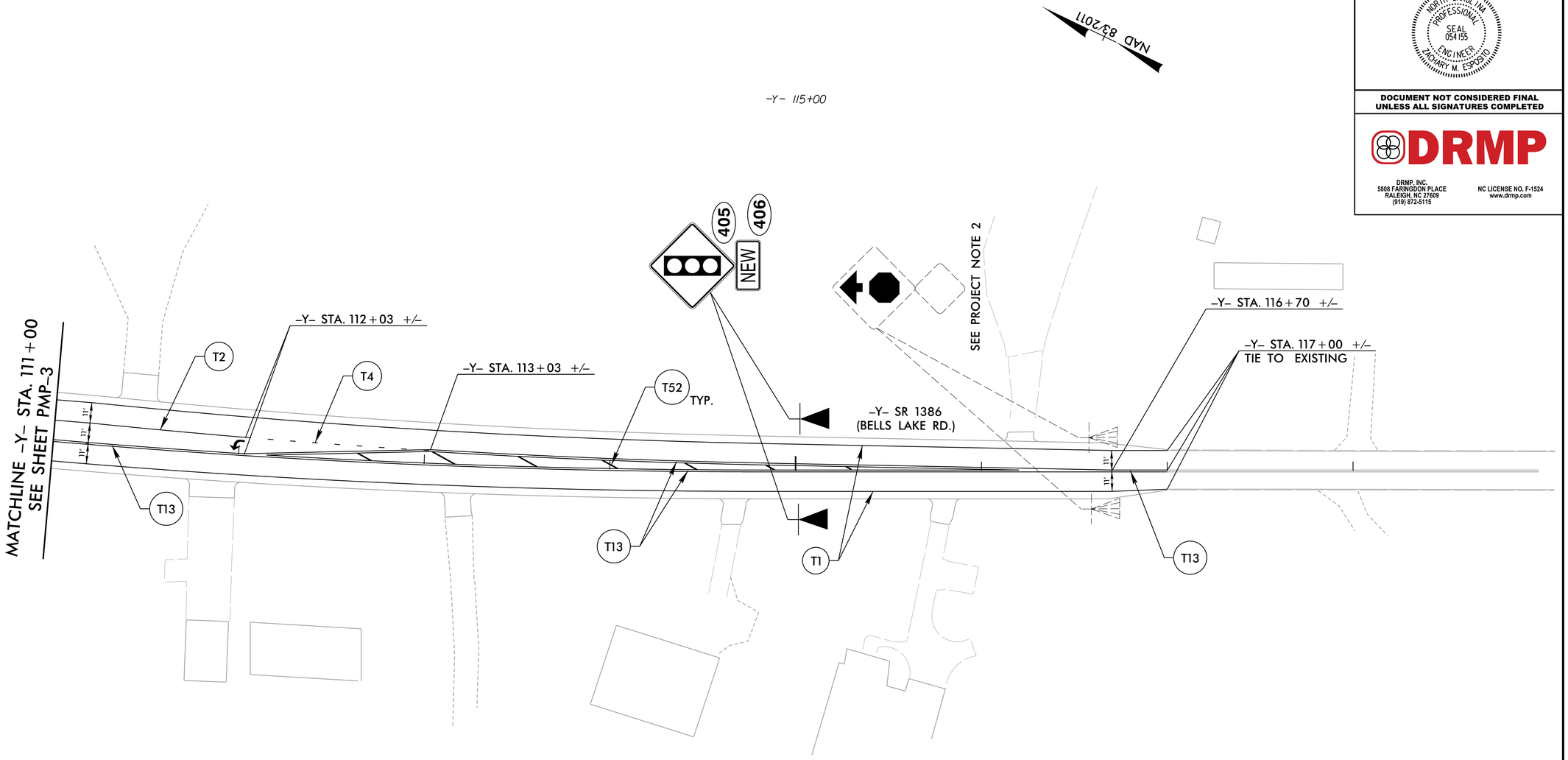
SYMBOL LEGEND	
T70	LEFT TURN ARROW



GRAPHIC SCALE

30 15 0 30 60

PLANS

PROJECT NOTES

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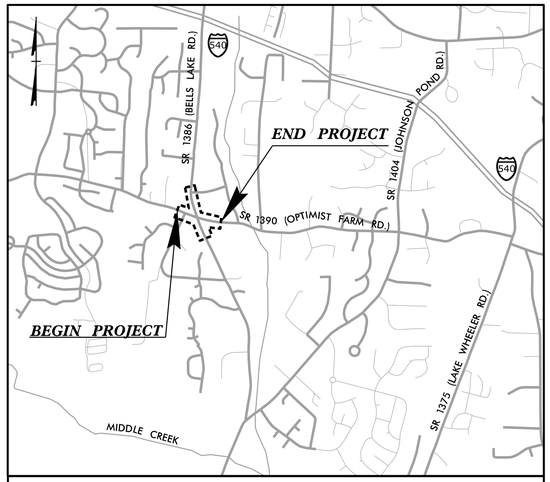
PAVEMENT MARKING AND SIGNING DETAIL

09/08/99

TIP PROJECT: HL-0008Q



VICINITY MAP NTS

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

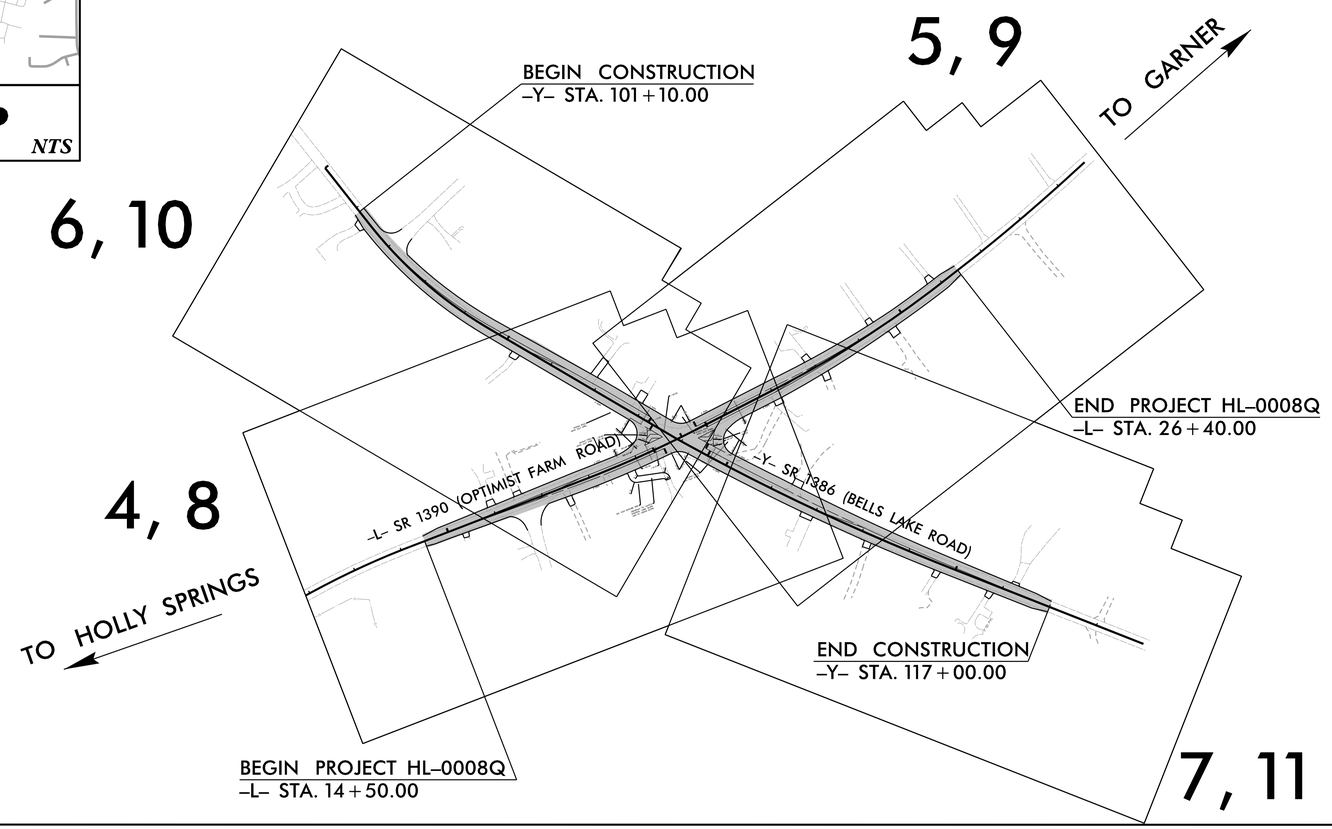
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

LOCATION: SR 1390 (OPTIMIST FARM ROAD) & SR 1386 (BELLS LAKE ROAD)
TYPE OF WORK: GRADING, PAVING, DRAINAGE & SIGNALS

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL-0008Q	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION



GRAPHIC SCALE

30 15 0 30 60
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.

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

Prepared in the Office of:

DRMP, INC.

5808 Faringdon Place Raleigh, NC 27609

2024 STANDARD SPECIFICATIONS

Designed by:

SEAN V. MCCARTHY — *4773*
NAME — *LEVEL III CERTIFICATION NO.*

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.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

12/5/2025
::\HL0008Q_EC_tsh.dgn
User: SMcCarthy

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

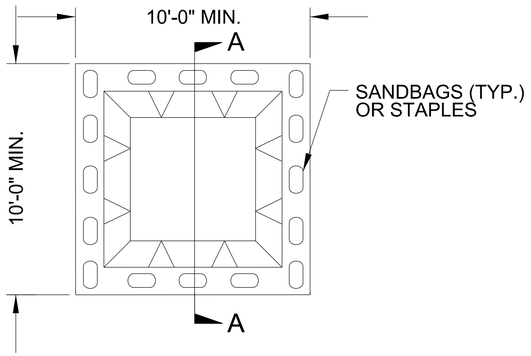
EROSION & SEDIMENT CONTROL LEGEND

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

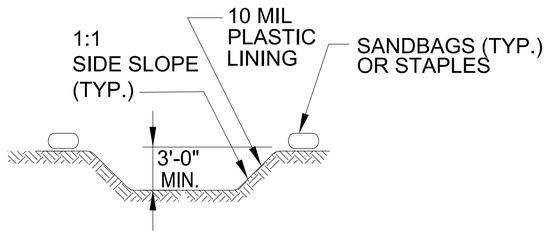
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet 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-0008Q	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A

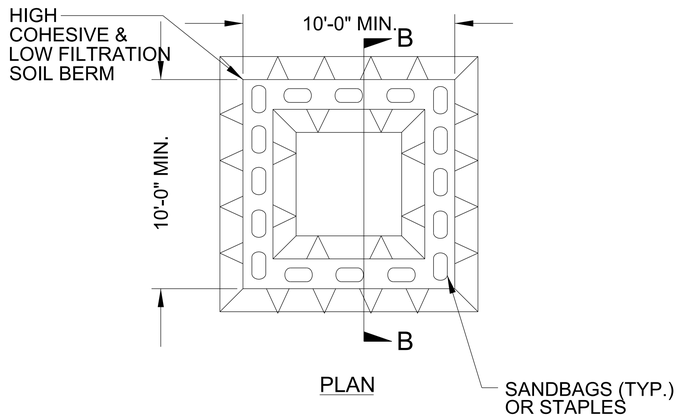
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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.

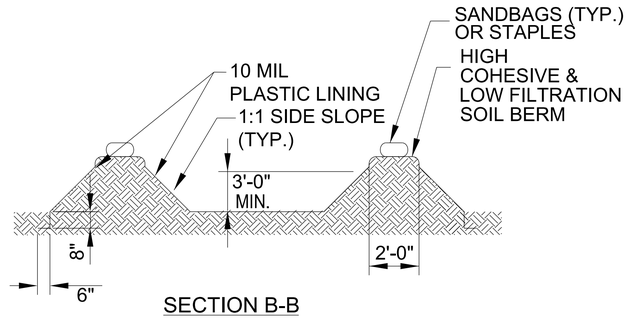
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

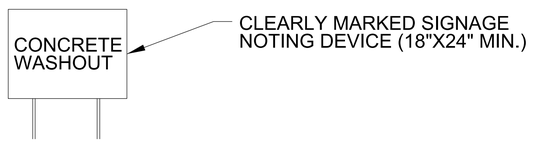
NOT TO SCALE



PLAN



SECTION B-B



NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

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

ABOVE GRADE WASHOUT STRUCTURE

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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)
7	-Y-	111+85	117+00	RT	570
6	-Y-	101+10	104+00	LT	300
4	-L-	14+50	17+40	LT	210
6	-Y-	101+00	102+00	RT	90
4	-Y-	106+60	108+90	RT	175
4	-Y-	106+60	108+90	LT	160
7	-Y-	109+00	112+00	RT	265
4	-Y-	109+00	111+50	LT	200
4	-L-	18+90	19+80	RT	70
7	-L-	18+00	19+00	LT	80
5	-L-	20+50	21+50	LT	70
4	-Y-	108+00	108+50	LT	35
4	-Y-	107+00	108+00	LT	65
4	-Y-	106+85	107+50	RT	50
6	-Y-	105+50	106+50	RT	70
4	-Y-	110+00	111+00	LT	80
		SUBTOTAL MATTING			2490
		SUBTOTAL EXCELSIOR			1490
MISCELLANEOUS STRAW TO BE INSTALLED AS DIRECTED BY THE ENGINEER					10,750
				TOTAL	14,730
				SAY	14,800

EXCELSIOR FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	14+50	18+35	RT	260
5	-L-	18+90	26+40	RT	670
5	-L-	20+50	26+40	LT	490
4	-L-	17+00	18+00	RT	70

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	EC-3B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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 EROSION CONTROL FOR CONSTRUCTION SHEET 4

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE–B AND TEMPORARY ROCK SILT CHECKS TYPE–A AT DRAINAGE OUTLETS.

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

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

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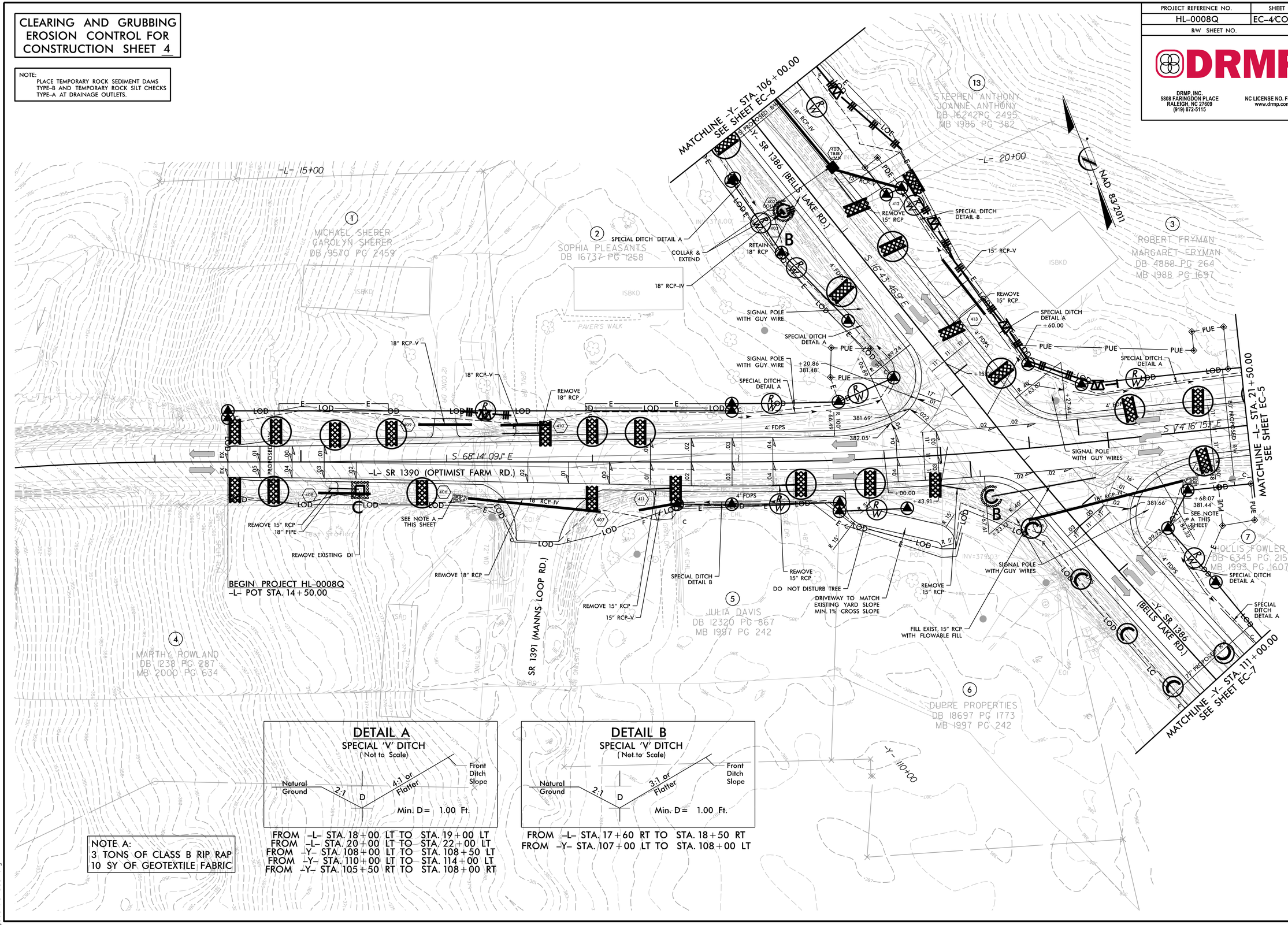

DETAIL A
SPECIAL 'V' DITCH
(Not to Scale)

Min. D= 1.00 Ft.

FROM –L– STA. 18+00 LT TO STA. 19+00 LT
FROM –L– STA. 20+00 LT TO STA. 22+00 LT
FROM –Y– STA. 108+00 LT TO STA. 108+50 LT
FROM –Y– STA. 110+00 LT TO STA. 114+00 LT
FROM –Y– STA. 105+50 RT TO STA. 108+00 RT

DETAIL B
SPECIAL 'V' DITCH
(Not to Scale)

Min. D= 1.00 Ft.

FROM –L– STA. 17+60 RT TO STA. 18+50 RT
FROM –Y– STA. 107+00 LT TO STA. 108+00 LT

NOTE A:
3 TONS OF CLASS B RIP RAP
10 SY OF GEOTEXTILE FABRIC

12/1/2025
HL0008Q_EC_psh04_CG.dgn
User: SMcCarthy

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 5

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE-B AND TEMPORARY ROCK SILT CHECKS TYPE-A AT DRAINAGE OUTLETS.

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	EC-5/CONST-5
R/W SHEET NO.	

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NC LICENSE NO. F-1524
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3 ROBERT FRYMAN
MARGARET FRYMAN
DB 4888 PG 264
MB 1988 PG 1697

8 MICKEY MARTIN
YVONNE MARTIN
DB 15209 PG 2659
MB 1985 PG 382

9 CONER MARTIN
DB 18266 PG 536
MB 1985 PG 382

10 GAIL JOHNSON
DB 7944 PG 617
MB 1985 PG 382

JOHN HOBBS
CHRISTINA HOBBS
DB 6140 PG 621
MB 1985 PG 382

-L- 25+00

NAD 83/2011

MATCHLINE -L- STA. 21+50.00
SEE SHEET EC-4

SPECIAL DITCH DETAIL A

SPECIAL DITCH DETAIL B

REMOVE 15" RCP

EXISTING RIGHT-OF-WAY

15" PIPE

REMOVE 15" RCP

REMOVE 18" CMP

-L- SR 1390 (OPTIMIST FARM RD.)

S 89° 30' 13.5" E

RETAIN 15" RCP

RETAIN 15" RCP

18" RCP-V

REMOVE 15" HDPE WITH CONCRETE HEADWALLS

18" RCP-V

REMOVE 15" RCP

18" RCP-V

EXISTING RIGHT-OF-WAY

RETAIN 15" RCP

END PROJECT HL-0008Q
-L- POT STA. 26+40.00

S 85° 03' 32.1" E

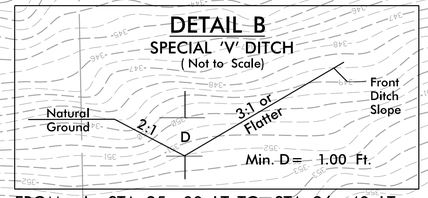
7 HOLLIS FOWLER
DB 6345 PG 215
MB 1993 PG 1607

7A HOLLIS FOWLER
DB 2172 PG 9
MB 1993 PG 1607

JONATHAN JACKSON
DB 15787 PG 2312
MB 2014 PG 1201

TRAVIS CARROLL
MARY CARROLL
DB 16374 PG 1544
MB 2016 PG 585

DETAIL B
SPECIAL 'V' DITCH
(Not to Scale)



Min. D = 1.00 Ft.

FROM -L- STA. 25+00 LT TO STA. 26+40 LT

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User: SMcCarthy

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 6

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE-B AND TEMPORARY ROCK SILT CHECKS TYPE-A AT DRAINAGE OUTLETS.

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	EC-6/CONST-6
R/W SHEET NO.	

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NAD 83/2011

BEGIN CONSTRUCTION
-Y- POT STA. 101+10.00

NO CLAIM
11
TARICK WAHDAN
DB 6268 PG 356
PB 1985/PG 382
DB 16971/PG 2014
PB 1985 PG 382

SR 3942 (DURNFORD DR.)

-Y- 105+00

12
KENNETH HYGH
LANA HYGH
DB 14106/PG 35
MB 1985/PG 382

13
STEPHEN ANTHONY
JOANNE ANTHONY
DB 16242PG 2495
MB 1985 PG 382

60' EXISTING R/W

S 4° 34' 30.4" W

REMOVE 18" RCP

SEE NOTE A THIS SHEET

EXISTING RIGHT-OF-WAY

18" RCP-IV

RIP RAP PAD
3 TONS CLASS B RIP RAP
10 SY GEOTEXTILE FABRIC
SEE NCDOT STD. 876.02
STANDARD 'V' DITCH
DETAIL C
+22.62
54.84

+53.64
60.00

RETAIN 15" RCP

RETAIN 15" RCP

EXISTING RIGHT-OF-WAY

75' PROPOSED R/W

MATCHLINE -Y- STA. 106+00.00
SEE SHEET EC-4

SPECIAL DITCH
DETAIL A

2

S 16° 43' 46.9" E

14
DANIEL IGLUCKIN
DB 19194/PG 2465
PB 1986 PG 1581

15
CHERIE HUBBARD
WILLIAM HUBBARD
DB 15555 PG 860

NOTE A:
3 TONS OF CLASS B RIP RAP
10 SY OF GEOTEXTILE FABRIC

12/1/2025
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User: SMcCarthy

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 7

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE–B AND TEMPORARY ROCK SILT CHECKS TYPE–A AT DRAINAGE OUTLETS.

PROJECT REFERENCE NO.	SHEET NO.
HL–0008Q	EC–7/CONST–7
R/W SHEET NO.	

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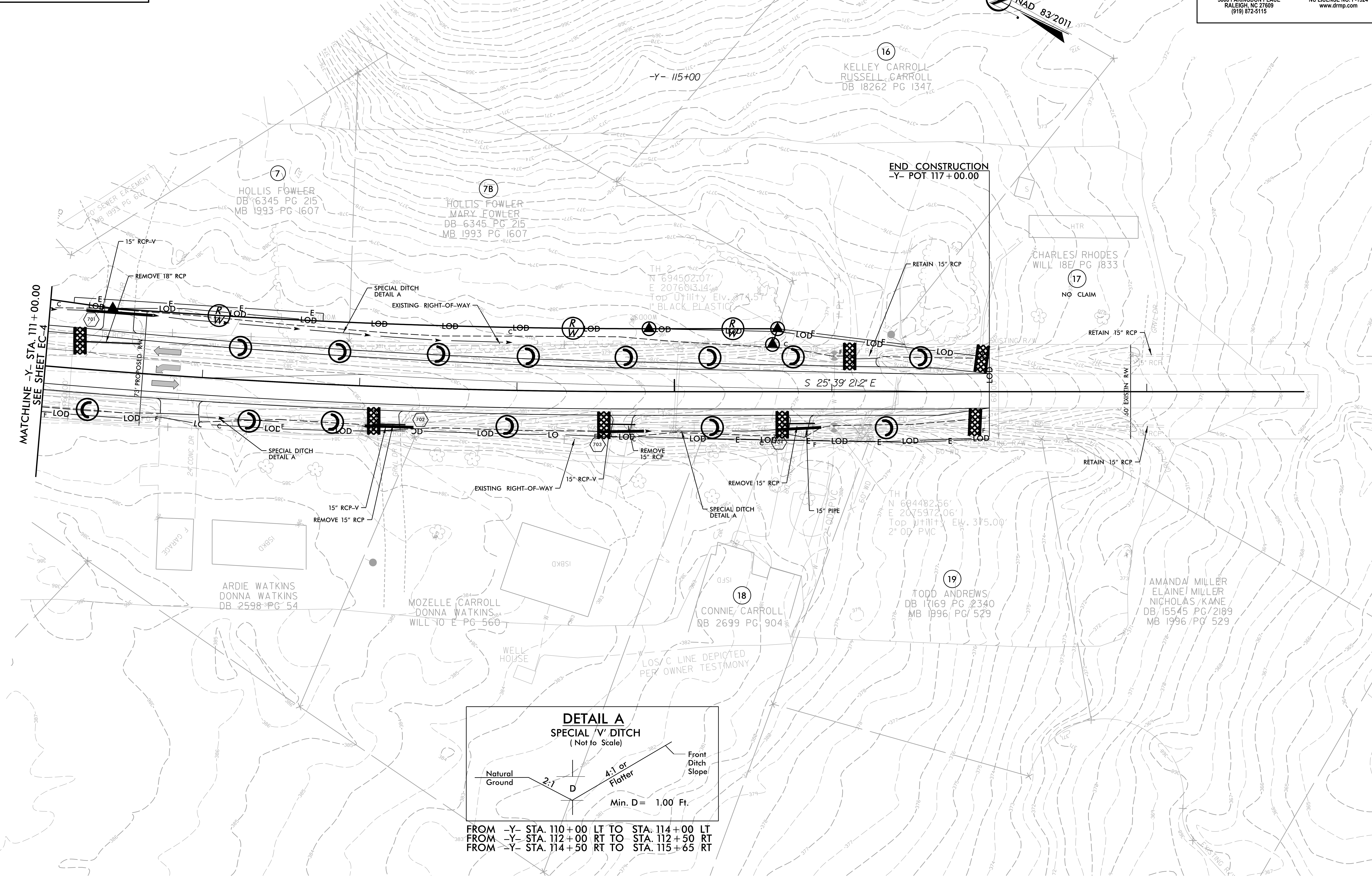

NAD 83/2011
MATCHLINE –Y– STA. 111+00.00
SEE SHEET EC–4
–Y– 115+00
S 25° 39′ 21.2″ E
END CONSTRUCTION
–Y– POT 117+00.00
15" RCP–V
REMOVE 18" RCP
SPECIAL DITCH DETAIL A
EXISTING RIGHT–OF–WAY
RETAIN 15" RCP
REMOVE 15" RCP
15" PIPE
73′ PROPOSED R/W
60′ EXISTIN R/W
7
HOLLIS FOWLER
DB 6345 PG 215
MB 1993 PG 1607
7B
HOLLIS FOWLER
MARY FOWLER
DB 6345 PG 215
MB 1993 PG 1607
20′ SEWER EASEMENT
MB 1993 PG 607
16
KELLEY CARROLL
RUSSELL CARROLL
DB 18262 PG 1347
17
CHARLES RHODES
WILL 18E PG 1833
NO CLAIM
TH 2
N 694502.07′
E 2076013.14′
Top Utility Elv. 374.57′
1" BLACK PLASTIC
TH 1
N 694482.56′
E 2075972.06′
Top Utility Elv. 375.00′
2" OD PVC
ARDIE WATKINS
DONNA WATKINS
DB 2598 PG 54
MOZELLE CARROLL
DONNA WATKINS
WILL 10 E PG 560
WELL HOUSE
18
CONNIE CARROLL
DB 2699 PG 904
LOS C LINE DEPICTED
PER OWNER TESTIMONY
19
TODD ANDREWS
DB 17169 PG 2340
MB 1996 PG 529
AMANDA MILLER
ELAINE MILLER
NICHOLAS KANE
DB 15545 PG 2189
MB 1996 PG 529
701
702
703
704
DETAIL A
SPECIAL 'V' DITCH
(Not to Scale)
Natural Ground
2:1
D
4:1 or Flatter
Front Ditch Slope
Min. D = 1.00 Ft.
FROM –Y– STA. 110+00 LT TO STA. 114+00 LT
FROM –Y– STA. 112+00 RT TO STA. 112+50 RT
FROM –Y– STA. 114+50 RT TO STA. 115+65 RT

12/1/2025
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User: SMcCarthy

FINAL PHASE

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	EC-8/CONST-4
R/W SHEET NO.	

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NC LICENSE NO. F-1524
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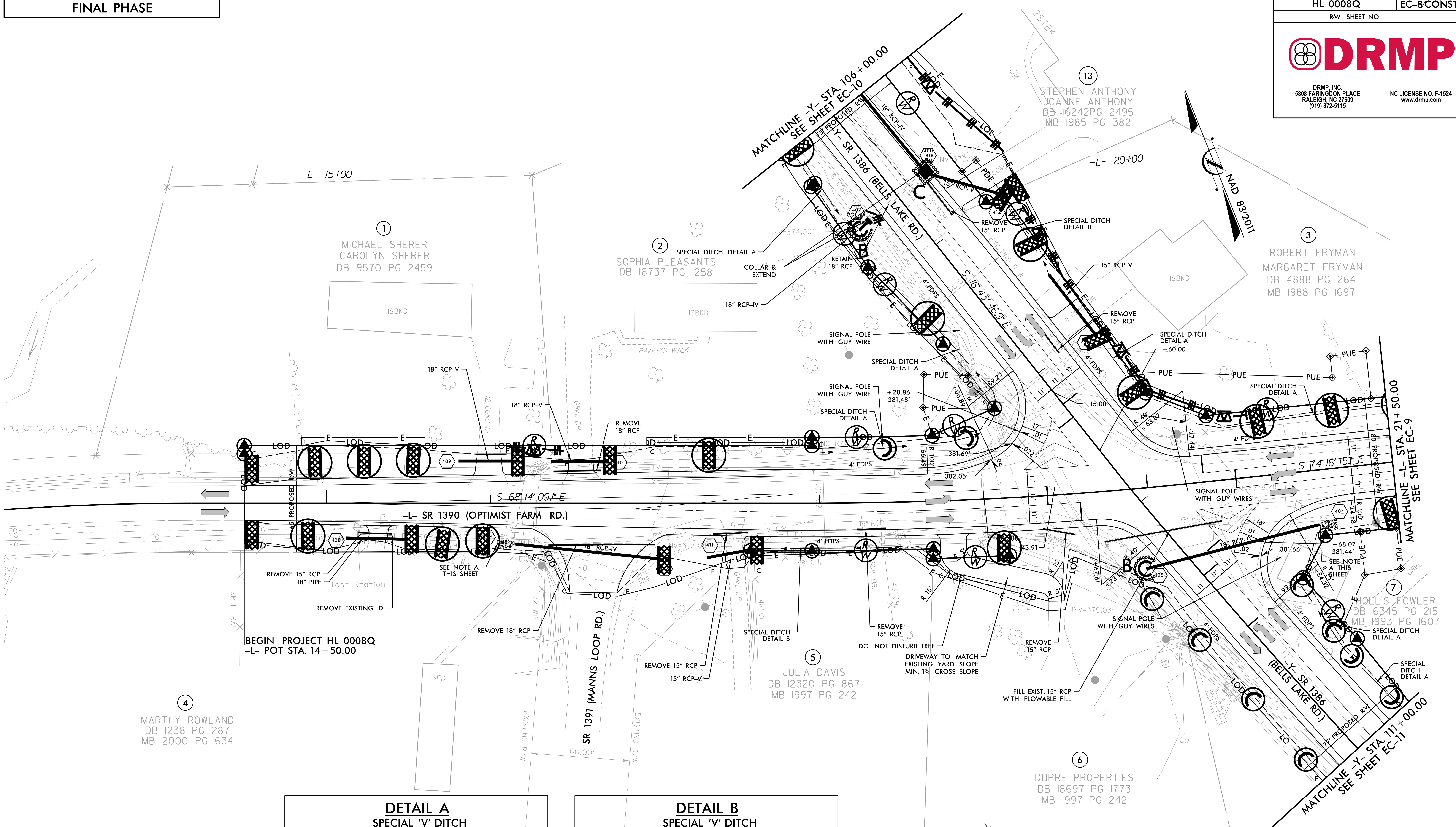
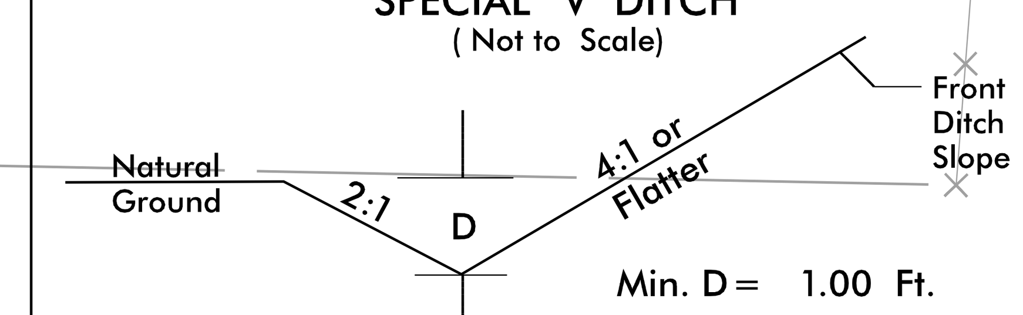


-L- 15+00
-L- 20+00
NAD 83/2011
MATCHLINE -Y- STA. 106+00.00 SEE SHEET EC-10
MATCHLINE -L- STA. 21+50.00 SEE SHEET EC-9
MATCHLINE -Y- STA. 111+00.00 SEE SHEET EC-11
-L- SR 1390 (OPTIMIST FARM RD.)
-Y- SR 1386 (BELLS LAKE RD.)
SR 1391 (MANNS LOOP RD.)
S 68° 14' 09.1" E
S 16° 43' 46.9" E
S 74° 16' 15.1" E
1
MICHAEL SHERER
CAROLYN SHERER
DB 9570 PG 2459
2
SOPHIA PLEASANTS
DB 16737 PG 1258
13
STEPHEN ANTHONY
JOANNE ANTHONY
DB 16242PG 2495
MB 1985 PG 382
3
ROBERT FRYMAN
MARGARET FRYMAN
DB 4888 PG 264
MB 1988 PG 1697
4
MARTHY ROWLAND
DB 1238 PG 287
MB 2000 PG 634
5
JULIA DAVIS
DB 12320 PG 867
MB 1997 PG 242
6
DUPRE PROPERTIES
DB 18697 PG 1773
MB 1997 PG 242
7
HOLLIS FOWLER
DB 6345 PG 215
MB 1993 PG 1607
SPECIAL DITCH DETAIL A
COLLAR & EXTEND
RETAIN 18" RCP
18" RCP-IV
SIGNAL POLE WITH GUY WIRE
SPECIAL DITCH DETAIL B
REMOVE 15" RCP
15" RCP-V
18" RCP-V
REMOVE 18" RCP
SIGNAL POLE WITH GUY WIRES
SEE NOTE A THIS SHEET
REMOVE 15" RCP
18" PIPE
REMOVE EXISTING DI
BEGIN PROJECT HL-0008Q
-L- POT STA. 14+50.00
DO NOT DISTURB TREE
DRIVEWAY TO MATCH EXISTING YARD SLOPE MIN. 1% CROSS SLOPE
FILL EXIST. 15" RCP WITH FLOWABLE FILL
-Y- 110+00

DETAIL A

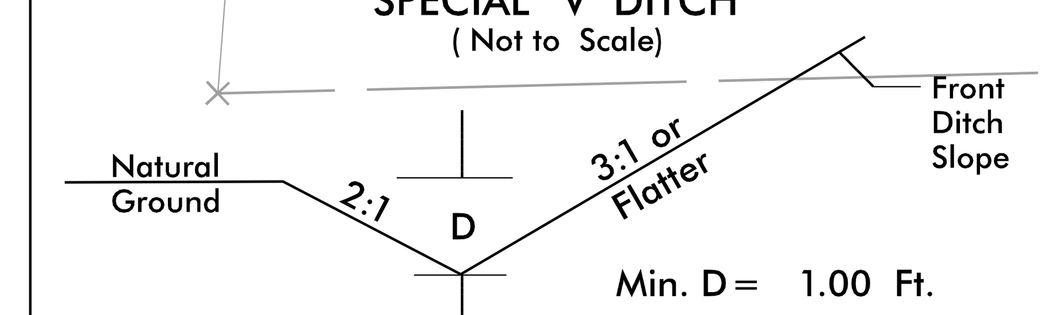
SPECIAL 'V' DITCH
(Not to Scale)



FROM -L- STA. 18+00 LT TO STA. 19+00 LT
FROM -L- STA. 20+00 LT TO STA. 22+00 LT
FROM -Y- STA. 108+00 LT TO STA. 108+50 LT
FROM -Y- STA. 110+00 LT TO STA. 114+00 LT
FROM -Y- STA. 105+50 RT TO STA. 108+00 RT

DETAIL B

SPECIAL 'V' DITCH
(Not to Scale)



FROM -L- STA. 17+60 RT TO STA. 18+50 RT
FROM -Y- STA. 107+00 LT TO STA. 108+00 LT

NOTE A:
3 TONS OF CLASS B RIP RAP
10 SY OF GEOTEXTILE FABRIC

12/1/2025
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User: SMcCarthy

FINAL PHASE

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	EC-9/CONST-5
R/W SHEET NO.	

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3
ROBERT FRYMAN
MARGARET FRYMAN
DB 4888 PG 264
MB 1988 PG 1697

8
MICKEY MARTIN
YVONNE MARTIN
DB 15209 PG 2659
MB 1985 PG 382

9
CONER MARTIN
DB 18266 PG 536
MB 1985 PG 382

-L- 25+00

10
GAIL JOHNSON
DB 7944 PG 617
MB 1985 PG 382

JOHN HOBBS
CHRISTINA HOBBS
DB 6140 PG 621
MB 1985 PG 382

NAD 83/2011

MATCHLINE -L- STA. 21+50.00
SEE SHEET EC-8

SPECIAL DITCH DETAIL A

SPECIAL DITCH DETAIL B

REMOVE 15" RCP

EXISTING RIGHT-OF-WAY

15" PIPE

REMOVE 15" RCP

REMOVE 18" CMP

-L- SR 1390 (OPTIMIST FARM RD.)

S 89° 30' 13.5" E

RETAIN 15" RCP

RETAIN 15" RCP

18" RCP-V

REMOVE 15" HDPE WITH CONCRETE HEADWALLS

18" RCP-V

REMOVE 15" RCP

18" RCP-V

EXISTING RIGHT-OF-WAY

END PROJECT HL-0008Q
-L- POT STA. 26+40.00

S 85°03' 32.1" E

RETAIN 15" RCP

7
HOLLIS FOWLER
DB 6345 PG 215
MB 1993 PG 1607

7A
HOLLIS FOWLER
DB 2172 PG 9
MB 1993 PG 1607

JONATHAN JACKSON
DB 15787 PG 2312
MB 2014 PG 1201

TRAVIS CARROLL
MARY CARROLL
DB 16374 PG 1544
MB 2016 PG 585

30' POWERLINE EASEMENT MB 1985 PG 382

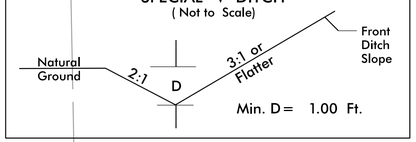
10' WATER EASEMENT MB 1993 PG 607

50' SEWER EASEMENT MB 1993 PG 607

TREE AND VEGITATION PROTECTIVE ZONE MB 2014 PG 1201

TREE AND VEGITATION PROTECTIVE ZONE

DETAIL B
SPECIAL 'V' DITCH
(Not to Scale)



Min. D= 1.00 Ft.

FROM -L- STA. 25+00 LT TO STA. 26+40 LT

12/1/2025
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PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	EC-10/CONST-6
R/W SHEET NO.	

DRMP

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NC LICENSE NO. F-1524
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FINAL PHASE

KAREN OHAR
DOUG STATES
DB 16971PG 2014
PB 1985 PG 382

NO CLAIM
(11)
TARICK WAHDAN
DB 6268 PG 356
PB 1985 PG 382

(13)
STEPHEN ANTHONY
JOANNE ANTHONY
DB 16242PG 2495
MB 1985 PG 382

(12)
KENNETH HYGH
LANA HYGH
DB 4106 PG 35
MB 1985 PG 382

(14)
DANIEL GLUCKIN
DB 19194 PG 2465
PB 1986 PG 1581

(15)
CHERIE HUBBARD
WILLIAM HUBBARD
DB 15555 PG 860

(2)

SR 3942 (DURNFORD DR.)

EXISTING R/W

60' EXISTING R/W

-Y- 105+00

BEGIN CONSTRUCTION
-Y- POT STA. 101+10.00

S 4° 34' 30.4" W

REMOVE 18" RCP

SEE NOTE A THIS SHEET

18" RCP-IV

RETAIN 15" RCP

RETAIN 15" RCP

EXISTING RIGHT-OF-WAY

EXISTING RIGHT-OF-WAY

RIP RAP PAD
3 TONS CLASS B RIP RAP
10 SY GEOTEXTILE FABRIC
SEE NCDOT STD. 876.02

STANDARD 'V' DITCH
DETAIL C

+22.62
54.84

+53.64
60.00

18" RCP-IV

75' PROPOSED R/W

SPECIAL DITCH
DETAIL A

S 16° 43' 46.9" E

MATCHLINE -Y- STA. 106+00.00
SEE SHEET EC-8

NAD 83/2011

LOD
PDE
E
F
C

NOTE A:
3 TONS OF CLASS B RIP RAP
10 SY OF GEOTEXTILE FABRIC

FINAL PHASE

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	EC-11/CONST-7
R/W SHEET NO.	

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NC LICENSE NO. F-1524
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NAD 83/2011

-Y- 115+00

16
KELLEY CARROLL
RUSSELL CARROLL
DB 18262 PG 1347

END CONSTRUCTION
-Y- POT 117+00.00

7
HOLLIS FOWLER
DB 6345 PG 215
MB 1993 PG 1607

7B
HOLLIS FOWLER
MARY FOWLER
DB 6345 PG 215
MB 1993 PG 1607

60' SEWER EASEMENT
MB 1993 PG 607

TH 2
N 694502.07'
E 2076013.14'
Top Utility Elv. 374.57'
1" BLACK PLASTIC

CHARLES RHODES
WILL 18E PG 1833
17
NO CLAIM

MATCHLINE -Y- STA. 111+00.00
SEE SHEET EC-8

15" RCP-V
REMOVE 18" RCP
SPECIAL DITCH DETAIL A
EXISTING RIGHT-OF-WAY
RETAIN 15" RCP
RETAIN 15" RCP
S 25° 39' 21.2" E
73' PROPOSED R/W
EXISTING R/W
60' EXISTIN R/W
SPECIAL DITCH DETAIL A
REMOVE 15" RCP
15" RCP-V
REMOVE 15" RCP
EXISTING RIGHT-OF-WAY
15" RCP-V
REMOVE 15" RCP
SPECIAL DITCH DETAIL A
15" PIPE
RETAIN 15" RCP
24' CONC DR
GRVL DR
GRVL DR
60' WD
2" OD PVC
TH 1
N 694482.56'
E 2075972.06'
Top Utility Elv. 375.00'
2" OD PVC

ARDIE WATKINS
DONNA WATKINS
DB 2598 PG 54

MOZELLE CARROLL
DONNA WATKINS
WILL 10 E PG 560

18
CONNIE CARROLL
DB 2699 PG 904

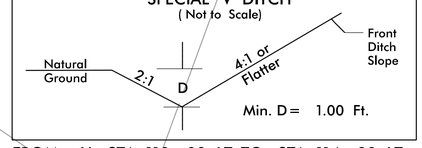
19
TODD ANDREWS
DB 17169 PG 2340
MB 1996 PG 529

AMANDA MILLER
ELAINE MILLER
NICHOLAS KANE
DB 15545 PG 2189
MB 1996 PG 529

WELL HOUSE

LOS C LINE DEPICTED
PER OWNER TESTIMONY

DETAIL A
SPECIAL 'V' DITCH
(Not to Scale)



FROM -Y- STA. 110+00 LT TO STA. 114+00 LT
FROM -Y- STA. 112+00 RT TO STA. 112+50 RT
FROM -Y- STA. 114+50 RT TO STA. 115+65 RT

12/1/2025
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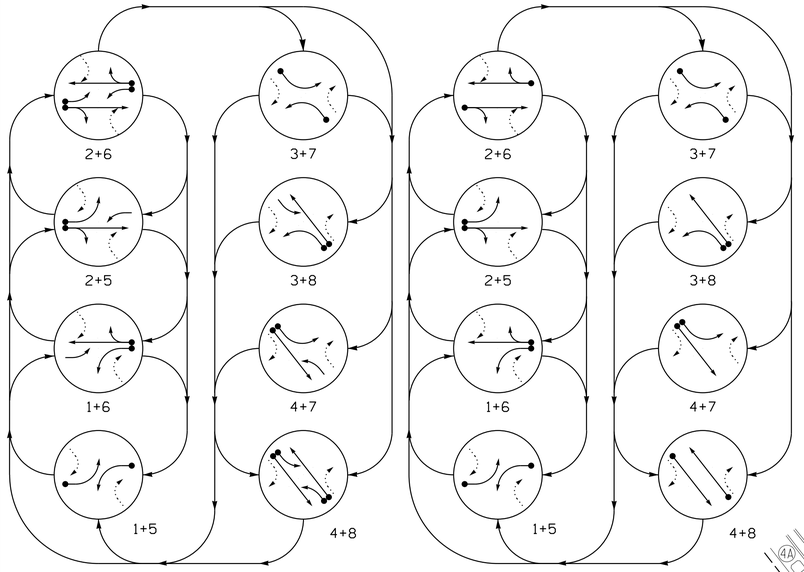
User: SMcCarthy

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	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 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←	←	F Y	F Y	R	R	R	R	R
21, 22	R	R	G	G	R	R	R	R	R
31	R	R	R	R	←	←	F Y	F Y	R
41, 42	R	R	R	R	R	R	G	G	R
51	←	F Y	←	F Y	R	R	R	R	R
61, 62	R	G	R	G	R	R	R	R	R
71	R	R	R	R	←	F Y	←	F Y	R
81, 82	R	R	R	R	R	G	R	G	R

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 1+5	1+6	2+5	2+6	3+7	3+8	4+7	4+8	FLASH
11	←	←	R	R	R	R	R	R	R
21, 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, 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

LOOP & DETECTOR INSTALLATION CHART

ASC/3-2070LXN2 CONTROLLER w/ TS-2 CABINET

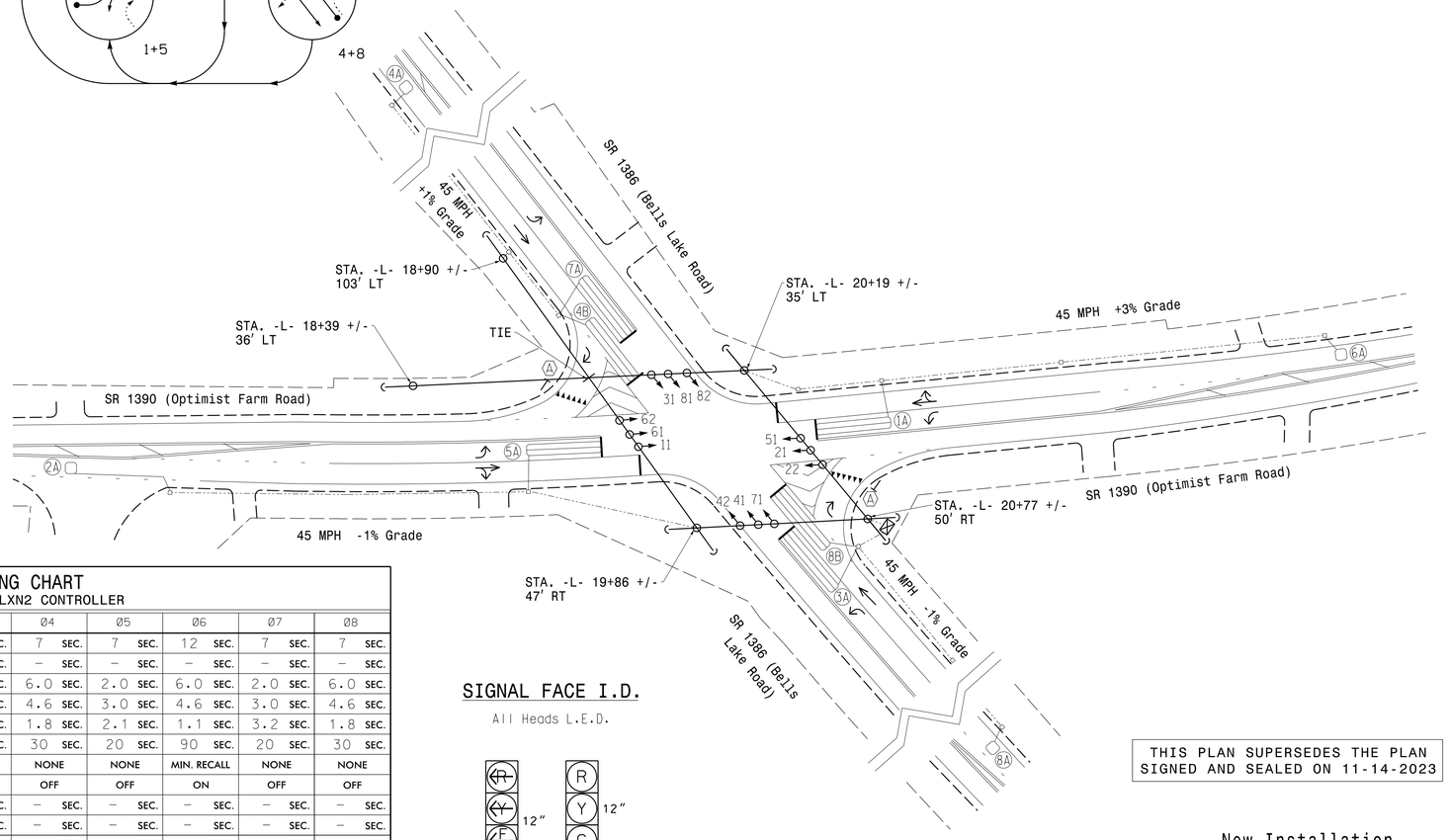
INDUCTIVE LOOPS						DETECTOR UNITS						
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	NEMA PHASE	NEW	EXISTING	TIMING FEATURE	TIMING TIME	ADDED INITIAL	DET. TYPE
1A	6X40	0	2-4-2	X	-	1	X	-	DELAY	15*	–	N
						6#	X	-	DELAY	3	–	G
2A	6X6	300	5	X	-	2	X	-	-	-	X	N
3A	6X40	0	2-4-2	X	-	3	X	-	DELAY	15*	–	N
						8#	X	-	DELAY	3	–	N
4A	6X6	300	5	X	-	4	X	-	-	-	X	N
4B	6X40	0	2-4-2	X	-	4	X	-	DC/EC	5/2	–	N
5A	6X40	0	2-4-2	X	-	5	X	-	DELAY	15*	–	N
						2#	X	-	DELAY	3	–	G
6A	6X6	300	5	X	-	6	X	-	-	-	X	N
7A	6X40	0	2-4-2	X	-	7	X	-	DELAY	15*	–	N
						4#	X	-	DELAY	3	–	N
8A	6X6	300	5	X	-	8	X	-	-	-	X	N
8B	6X40	0	2-4-2	X	-	8	X	-	DC/EC	5/2	–	N

✳ Reduce delay to 3 seconds during Alternate Phasing operation.
Disable phase call during Alternate Phasing operation.

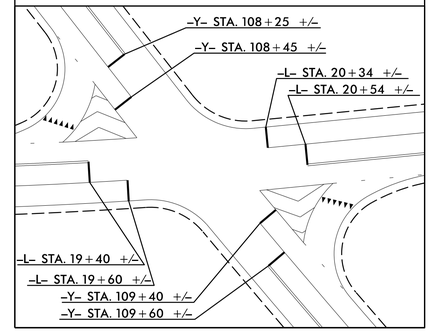
8 Phase Fully Actuated (Cary Signal System)

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. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. The City Traffic Engineer will determine the hours of use for each phasing plan.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



PROPOSED STOP LINE LOCATION DIAGRAM



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	→
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ

TIMING CHART

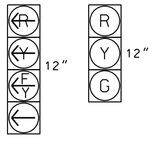
ASC/3-2070LXN2 CONTROLLER

PHASE	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8
MINIMUM GREEN *	7 SEC.	12 SEC.	7 SEC.	7 SEC.	7 SEC.	12 SEC.	7 SEC.	7 SEC.
DELAYED GREEN *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
VEHICLE EXT. *	2.0 SEC.	6.0 SEC.	2.0 SEC.	6.0 SEC.	2.0 SEC.	6.0 SEC.	2.0 SEC.	6.0 SEC.
YELLOW CHANGE INT.	3.0 SEC.	4.6 SEC.	3.0 SEC.	4.6 SEC.	3.0 SEC.	4.6 SEC.	3.0 SEC.	4.6 SEC.
RED CLEARANCE	2.1 SEC.	1.1 SEC.	3.1 SEC.	1.8 SEC.	2.1 SEC.	1.1 SEC.	3.2 SEC.	1.8 SEC.
MAX. 1 *	20 SEC.	90 SEC.	20 SEC.	30 SEC.	20 SEC.	90 SEC.	20 SEC.	30 SEC.
RECALL POSITION	NONE	MIN. RECALL	NONE	NONE	NONE	MIN. RECALL	NONE	NONE
LOCK DET.	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
WALK *	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
PED. CLEAR	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.	– SEC.
ACTUATION B4 ADD *	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.	– VEH.
SEC. PER ACTUATION *	– SEC.	2.5 SEC.	– SEC.	– SEC.	– SEC.	2.5 SEC.	– SEC.	– SEC.
MAX. INITIAL *	– SEC.	34 SEC.	– SEC.	– SEC.	– SEC.	34 SEC.	– SEC.	– SEC.
TIME B4 REDUCTION *	– SEC.	15 SEC.	– SEC.	15 SEC.	– SEC.	15 SEC.	– SEC.	15 SEC.
TIME TO REDUCE *	– SEC.	45 SEC.	– SEC.	45 SEC.	– SEC.	45 SEC.	– SEC.	45 SEC.
MINIMUM GAP	– SEC.	3.0 SEC.	– SEC.	3.0 SEC.	– SEC.	3.0 SEC.	– SEC.	3.0 SEC.
DUAL ENTRY	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
SIMULTANEOUS GAP	ON	ON	ON	ON	ON	ON	ON	ON

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

SIGNAL FACE I.D.

All Heads L.E.D.



11	21, 22
31	41, 42
51	61, 62
71	81, 82

THIS PLAN SUPERSEDES THE PLAN SIGNED AND SEALED ON 11-14-2023

New Installation

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

Prepared for:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SCALE 0 40 1"=40'

SR 1390 (Optimist Farm Road) at SR 1386 (Bells Lake Road)

Division 5 Wake County Cary

PLAN DATE:	March 2025	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	DRMP PROJ. NO.:	22242 (040)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

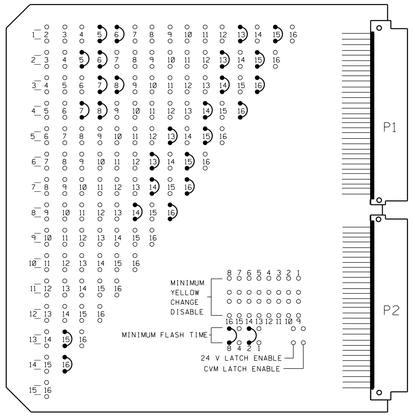
Signed by: Zachary M. Esposito 3/21/2025
054155 SIGNATURE DATE

SIG. INVENTORY NO. 05-0882

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

16 CHANNEL IP MALFUNCTION MANAGEMENT UNIT PROGRAMMING DETAIL

(program card and tables as shown)



MMU PROGRAMMING CARD

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	DISABLE
2	ENABLE
3	DISABLE
4	ENABLE
5	DISABLE
6	ENABLE
7	DISABLE
8	ENABLE
9	DISABLE
10	DISABLE
11	DISABLE
12	DISABLE
13	ENABLE
14	ENABLE
15	ENABLE
16	ENABLE

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDguard	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FLASHING YELLOW ARROW	
CONFIG MODE	8
ENABLE CHANNEL PAIR, FYA	
CH 1-13	ON
CH 3-14	ON
CH 5-15	ON
CH 7-16	ON
RED/YEL INPUT ENABLE	
CH 1	ON
CH 3	ON
CH 5	ON
CH 7	ON
FLASH RATE FAULT	ON
FYA TRAP DETECT	ON

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

NOTES

1. To prevent "flash-conflict" problems, wire all load switches to flash red. Verify that signal heads flash in accordance with the signal plans.
2. To prevent red failures on unused monitor channels, tie unused load switch red outputs 9, 10, 11, and 12 to load switch AC+ by inserting a jumper plug in the unused load switch socket from pin 1 (LS AC+) to pin 3 (RED out). Make sure all flash transfer relays are in place.
3. Disable all phases for start up in Green.
4. Set power-up flash time to 10 seconds and implement on the Malfunction Management Unit. Set controller power-up flash time to 0 seconds.
5. Program detectors in accordance with the manufacturer's instructions to accomplish the detection schemes shown on the signal design plans.
6. Program detector call delay and extension timing on the controller, unless otherwise specified.
7. Set all detector card unit channels to "presence" mode.
8. Program phases 4 and 8 for Dual Entry.
9. The cabinet and controller are a part of the Cary Signal System.

SIGNAL HEAD HOOK-UP CHART

PHASE	1	2	3	4	5	6	7	8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	11★	21,22	31★	41,42	51★	61,62	71★	81,82	NU	NU	NU	NU	11★	31★	51★	71★
RED	✳	2R	✳	4R	✳	6R	✳	8R								
YELLOW	✳	2Y	✳	4Y	✳	6Y	✳	8Y								
GREEN		2G		4G		6G		8G								
RED ARROW													13R	14R	15R	16R
YELLOW ARROW													13Y	14Y	15Y	16Y
FLASHING YELLOW ARROW													13G	14G	15G	16G
GREEN ARROW	1G		3G		5G		7G									

NU = Not Used

✳ Denotes install load resistor. See Load Resistor Installation Detail on sheet 2.

★ See pictorial of head wiring detail this sheet.

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW.
PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

RACK #1	BIU	CH1 L3 ø2	CH1 L1 ø1	CH1 L7 ø4	CH1 L5 ø3	CH1 L11 ø6	CH1 L9 ø5	CH1 L15 ø8	CH1 L13 ø7	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
		CH2 L4 NOT USED	CH2 L2 NOT USED	CH2 L8 ø4	CH2 L6 NOT USED	CH2 L12 NOT USED	CH2 L10 NOT USED	CH2 L16 ø8	CH2 L14 NOT USED			

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS
1A	L1A, L1B
NU	L2A, L2B
2A	L3A, L3B
NU	L4A, L4B
3A	L5A, L5B
NU	L6A, L6B
4A	L7A, L7B
4B	L8A, L8B
5A	L9A, L9B
NU	L10A, L10B
6A	L11A, L11B
NU	L12A, L12B
7A	L13A, L13B
NU	L14A, L14B
8A	L15A, L15B
8B	L16A, L16B

NOTE

BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

EQUIPMENT INFORMATION

CONTROLLER.....2070LXN2
CABINET TS-2 NC-8
SOFTWARE .....ECONOLITE ASC/3-2070
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....1,2,3,4,5,6,7,8,13,14,15,16
PHASES USED.....1,2,3,4,5,6,7,8
OLA.....*
OLB.....*
OLC.....*
OLD.....*

* See overlap programming detail on sheet 2

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

	CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
			FEATURE	TIME(SEC)
★	✳✳ 1	ø1	DELAY	15
	2			
	✳✳ 3	ø2		
	4			
★	✳✳ 5	ø3	DELAY	15
	6			
	✳✳ 7	ø4		
	✳✳ 8	ø4	DC/EC	5/2
★	✳✳ 9	ø5	DELAY	15
	10			
	✳✳ 11	ø6		
	12			
★	✳✳ 13	ø7	DELAY	15
	14			
	✳✳ 15	ø8		
	✳✳ 16	ø8	DC/EC	5/2
★	#✳ 61	ø6	DELAY	3
★	#✳✳ 62	ø8	DELAY	3
★	#✳ 63	ø2	DELAY	3
★	#✳✳ 64	ø4	DELAY	3

NU = NOT USED

✳ Detector type - G

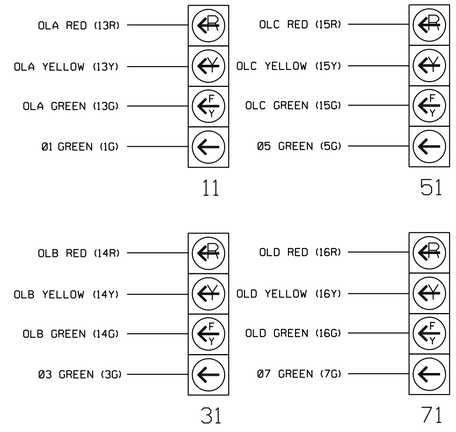
✳✳ Detector type - N

★ See Vehicle Detector Setup Programming Detail for alternate phasing on sheet 3.

See Logical Detector Programming on sheet 5.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	ø1
2	ø2
3	ø3
4	ø4
5	ø5
6	ø6
7	ø7
8	ø8
9	ø2 PED
10	ø4 PED
11	ø6 PED
12	ø8 PED
13	OLA
14	OLB
15	OLC
16	OLD

THIS PLAN SUPERSEDES THE PLAN SIGNED AND SEALED ON 11-14-2023

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-0882
DESIGNED: Mar 2025
SEALED: 3/21/2025
REVISED: N/A

Electrical Detail - Sheet 1 of 5

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ELECTRICAL AND PROGRAMMING DETAILS FOR:

750 N.Greenfield Pkwy, Garner, NC 27529

SR 1390 (Optimist Farm Road)
at
SR 1386 (Bells Lake Road)

Division 5 | Wake County | Cary

PLAN DATE:	March 2025	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	DRMP PROJ. NO.:	22242 (040)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

Signed by: Zachary M. Esposito 3/21/2025
SIGNATURE DATE

SIG. INVENTORY NO. 05-0882

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

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select [2. CONTROLLER]
2. From CONTROLLER Submenu select [2. VEHICLE OVERLAPS]

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

```
TMG VEH OVLP...[A] TYPE: .....[PPLT FYA]

PROTECTED LEFT TURN....   PHASE    1
OPPOSING THROUGH.......   PHASE    2

FLASHING ARROW OUTPUT.....CH13 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE.......... 1   <- NOTICE ACTION PLAN SF BIT "1"
```

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'PPLT FYA'

```
TMG VEH OVLP...[B] TYPE: .....[PPLT FYA]

PROTECTED LEFT TURN....   PHASE    3
OPPOSING THROUGH.......   PHASE    4

FLASHING ARROW OUTPUT.....CH14 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE.......... 3   <- NOTICE ACTION PLAN SF BIT "3"
```

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```
TMG VEH OVLP...[C] TYPE: .....[PPLT FYA]

PROTECTED LEFT TURN....   PHASE    5
OPPOSING THROUGH.......   PHASE    6

FLASHING ARROW OUTPUT.....CH15 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE.......... 5   <- NOTICE ACTION PLAN SF BIT "5"
```

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'PPLT FYA'

```
TMG VEH OVLP...[D] TYPE: .....[PPLT FYA]

PROTECTED LEFT TURN....   PHASE    7
OPPOSING THROUGH.......   PHASE    8

FLASHING ARROW OUTPUT.....CH16 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE.......... 7   <- NOTICE ACTION PLAN SF BIT "7"
```

END PROGRAMMING

ECONOLITE ASC/3-2070 SPECIAL MMU PROGRAMMING

(program controller as shown)

1. From Main Menu select [1. CONFIGURATION]
2. From CONFIGURATION Submenu select [4. PORT 1 (SDLC)]
3. From PORT 1 (SDLC) Submenu select [2. MMU PROGRAM]

CAUTION!

Set intersection to Flash before attempting to enter or change any MMU programming data.

This programming and that of the MMU programming card must match exactly. If they do not, the intersection will be placed into Flash.

```
MMU PROGRAM [     MANUAL]

      CH  6 5 4 3 2 1 0 9 8 7 6 5 4 3 2
       1  . X . X . . . . . X X . . .
       2  . X . X . . . . . X X . .
       3  X . X . . . . . X X . . .
       4  X . X . . . . . X X . .
       5  . X . X . . . . . .
       6  . X . X . . . . . .
       7  X . X . . . . . .
       8  X . X . . . . .
       9  . . . . . . . .
      10  . . . . . .
      11  . . . . .
      12  . . . .
      13  . X .
      14  X .
      15  .
```

END PROGRAMMING

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

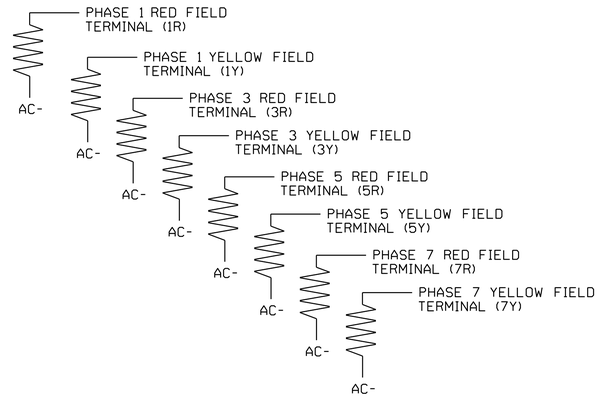
1. From Main Menu select [2. CONTROLLER]
2. From CONTROLLER Submenu select [5. START/FLASH]

```
START/FLASH DATA
------START UP--------------------------
         1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE      R       R
         A B C D E F G H I J K L M N O P
OVERLAP  X X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME..  0 ALL RED...  6
PWR START SEQ..  1 MUTCD> YES   Y- G: NO
```

Scroll down on this screen and set "Exit Fl" to Green "G"

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 11-14-2023

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-0882
DESIGNED: Mar 2025
SEALED: 3/21/2025
REVISED: N/A

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Electrical Detail - Sheet 2 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1390 (Optimist Farm Road)
at
SR 1386 (Bells Lake Road)

Division 5 | Wake County | Cary

PLAN DATE: March 2025	REVIEWED BY: ZM Esposito
PREPARED BY: AW Poole	DRMP PROJ. NO.: 22242 (040)

REVISIONS	INIT.	DATE

NC DEPARTMENT OF TRANSPORTATION Mobility and Safety Division Traffic Engineering & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

Signed by: Zachary M. Esposito 3/21/2025
DATE
SIG. INVENTORY NO. 05-0882

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

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING

LOOPS 1A, 3A, 5A AND 7A

(program controller as shown)

IMPORTANT!

Program detectors per the Detector Rack Programming Detail shown on sheet 1 before proceeding.

1. From Main Menu selet [8. UTILITIES]
2. From UTILITIES Submenu select [1. COPY/CLEAR]
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```
COPY / CLEAR UTILITY
        FROM                TO
PHASE TIMING.... . > PHASE TIMING.... .
TIMING PLAN..... . > TIMING PLAN..... .
PH DET OPT PLAN. . > PH DET OPT PLAN. .
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
  TOGGLE TO SELECT A "FROM" AND A "TO"
          THEN PRESS ENTER
```

4. From Main Menu select [6. DETECTORS]
5. From DETECTOR Submenu select [2. VEHICLE DETECTOR SETUP]
6. Place cursor in VEH DET PLAN [ ] position and enter "2".

- For loop 1A, modify vehicle detectors.
- Place cursor in VEH DETECTOR [ ] position and enter "1".
- Set delay time to "3".

```
VEH DETECTOR [ 1]   VEH DET PLAN [ 2]      <- NOTICE VEH DET PLAN 2
TYPE: N-NTCIP
TS2 DETECTOR..... X ECPI LOG.......   NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 1  1    . . . . . . . . . . . . . . . .
CALL OPTION.... YES DELAY TIME...    3.0   <- ENSURE DELAY IS SET TO '3'
EXT OPTION. PASSAGE EXTENSION TIME.  0.0
USE ADDED INITIAL . CROSS SWITCH PH..  0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
```

- Place cursor in VEH DETECTOR [ ] position and enter "61".
- Set assigned phase to "0".

```
VEH DETECTOR [61]   VEH DET PLAN [ 2]      <- NOTICE VEH DET PLAN 2
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... X ECPI LOG.......   NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 61 0    . . . . . . . . . . . . . . . .
EXTEND TIME...  0.0 DELAY TIME...    3.0
USE ADDED INITIAL . CROSS SWITCH PH..  0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
```

ENSURE PHASE IS SET TO "0" →

- For loop 3A, modify vehicle detectors.
- Place cursor in VEH DETECTOR [ ] position and enter "5".
- Set delay time to "3".

```
VEH DETECTOR [ 5]   VEH DET PLAN [ 2]      <- NOTICE VEH DET PLAN 2
TYPE: N-NTCIP
TS2 DETECTOR..... X ECPI LOG.......   NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 5  3    . . . . . . . . . . . . . . . .
CALL OPTION.... YES DELAY TIME...    3.0   <- ENSURE DELAY IS SET TO '3'
EXT OPTION. PASSAGE EXTENSION TIME.  0.0
USE ADDED INITIAL . CROSS SWITCH PH..  0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
```

- Place cursor in VEH DETECTOR [ ] position and enter "62".
- Set assigned phase to "0".

```
VEH DETECTOR [62]   VEH DET PLAN [ 2]      <- NOTICE VEH DET PLAN 2
TYPE: N-NTCIP
TS2 DETECTOR..... X ECPI LOG.......   NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 62 0    . . . . . . . . . . . . . . . .
CALL OPTION.... YES DELAY TIME...    3.0
EXT OPTION. PASSAGE EXTENSION TIME.  0.0
USE ADDED INITIAL . CROSS SWITCH PH..  0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
```

ENSURE PHASE IS SET TO "0" →

- For loop 5A, modify vehicle detectors.
- Place cursor in VEH DETECTOR [ ] position and enter "9".
- Set delay time to "3".

```
VEH DETECTOR [ 9]   VEH DET PLAN [ 2]      <- NOTICE VEH DET PLAN 2
TYPE: N-NTCIP
TS2 DETECTOR..... X ECPI LOG.......   NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 9  5    . . . . . . . . . . . . . . . .
CALL OPTION.... YES DELAY TIME...    3.0   <- ENSURE DELAY IS SET TO '3'
EXT OPTION. PASSAGE EXTENSION TIME.  0.0
USE ADDED INITIAL . CROSS SWITCH PH..  0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
```

- Place cursor in VEH DETECTOR [ ] position and enter "63".
- Set assigned phase to "3".

```
VEH DETECTOR [63]   VEH DET PLAN [ 2]      <- NOTICE VEH DET PLAN 2
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... X ECPI LOG.......   NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 63 0    . . . . . . . . . . . . . . . .
EXTEND TIME...  0.0 DELAY TIME...    3.0
USE ADDED INITIAL . CROSS SWITCH PH..  0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
```

ENSURE PHASE IS SET TO "0" →

- For loop 7A, modify vehicle detectors.
- Place cursor in VEH DETECTOR [ ] position and enter "13".
- Set delay time to "3".

```
VEH DETECTOR [13]   VEH DET PLAN [ 2]      <- NOTICE VEH DET PLAN 2
TYPE: N-NTCIP
TS2 DETECTOR..... X ECPI LOG.......   NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 13 7    . . . . . . . . . . . . . . . .
CALL OPTION.... YES DELAY TIME...    3.0   <- ENSURE DELAY IS SET TO '3'
EXT OPTION. PASSAGE EXTENSION TIME.  0.0
USE ADDED INITIAL . CROSS SWITCH PH..  0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
```

- Place cursor in VEH DETECTOR [ ] position and enter "64".
- Set assigned phase to "0".

```
VEH DETECTOR [64]   VEH DET PLAN [ 2]      <- NOTICE VEH DET PLAN 2
TYPE: N-NTCIP
TS2 DETECTOR..... X ECPI LOG.......   NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 64 0    . . . . . . . . . . . . . . . .
CALL OPTION.... YES DELAY TIME...    3.0
EXT OPTION. PASSAGE EXTENSION TIME.  0.0
USE ADDED INITIAL . CROSS SWITCH PH..  0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
```

ENSURE PHASE IS SET TO "0" →

END PROGRAMMING

THIS PLAN SUPERSEDES THE PLAN SIGNED AND SEALED ON 11-14-2023

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-0882
DESIGNED: Mar 2025
SEALED: 3/21/2025
REVISED: N/A

Electrical Detail - Sheet 3 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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750 N.Greenfield Pkwy,Garner,NC 27529

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1390 (Optimist Farm Road)
at
SR 1386 (Bells Lake Road)

Division 5 | Wake County | Cary

PLAN DATE:	March 2025	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	DRMP PROJ. NO.:	22242 (040)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

Signed by: Zachary M Esposito 3/21/2025
SIGNATURE DATE

SIG. INVENTORY NO. 05-0882

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	Sig-1.4

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1, 3, 5 AND 7.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1, 3, 5 AND 7.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN DEFAULT PHASING	1	NONE
ACTIONS REQUIRED TO RUN ALTERNATE PHASING	2	1,3,5,7

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BITS 1, 3, 5 AND 7 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BITS 1,3,5,7 — Modifies overlap parent 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 3 seconds.

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

Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 3 seconds.

Disables phase 4 call on loop 7A and reduces delay time for phase 7 call on loop 7A to 3 seconds.

ECONOLITE ASC/3-2070 LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

All channels must be programmed to flash red in controller for red-red flash operation as shown below. Notice "AUT" for all channels is programmed for RED.

1. From Main Menu select [1. CONFIGURATION]
2. From CONFIGURATION Submenu select [3. LOAD SW ASSIGN]

LD SWITCH ASSIGN

	PHASE /OVLP	TYPE	DIMMING R	Y	G	D	---FLASH--- PWR	AUT	TGR
1	1	V	.	.	.	+	A	R	X
2	2	V	.	.	.	+	A	R	.
3	3	V	.	.	.	+	A	R	X
4	4	V	.	.	.	+	A	R	.
5	7	V	.	.	.	-	A	R	.
6	6	V	.	.	.	-	A	R	X
7	7	V	.	.	.	-	A	R	.
8	8	V	.	.	.	-	A	R	X
9	2	P	.	.	.	+	A	.	.
10	4	P	.	.	.	-	A	.	.
11	6	P	.	.	.	+	A	.	.
12	8	P	.	.	.	-	A	.	.
13	1	O	.	.	.	+	A	R	X
14	2	O	.	.	.	+	A	R	X
15	3	O	.	.	.	-	A	R	.
16	4	O	.	.	.	-	A	R	.

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

1. From Main Menu select [5. TIME BASE]
2. From TIME BASE Submenu select [2. ACTION PLAN]

```
ACTION PLAN...[ *]
PATTERN.....AUTO   SYS OVERRIDE.... NO
TIMING PLAN..... 0   SEQUENCE.....  0
VEH DETECTOR PLAN.. 2   DET LOG.....NONE
FLASH.....    --   RED REST..... NO
VEH DET DIAG PLN... 0   PED DET DIAG PLN..0
DIMMING ENABLE..   NO   PRIORITY RETURN. NO
PED PR RETURN..    NO   QUEUE DELAY..... NO
PMT COND DELAY     NO
  PHASE   1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
WALK 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEX 2     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEH RCL   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX RCL   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX 2     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  PHASE   1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
CS INH    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
OMIT      .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
SPC FCT   X  .  X  .  X  .  X  .  (1-8)
AUX FCT   .  .  .  (1-3)
          1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
```

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

THIS PLAN SUPERSEDES THE PLAN SIGNED AND SEALED ON 11-14-2023

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-0882
DESIGNED: Mar 2025
SEALED: 3/21/2025
REVISED: N/A

Electrical Detail - Sheet 4 of 5

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ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC Department of Transportation Mobility and Safety Division Traffic Engineering Branch Signals Management Section

750 N.Greenfield Pkwy,Garner,NC 27529

SR 1390 (Optimist Farm Road)
at
SR 1386 (Bells Lake Road)

Division 5 | Wake County | Cary

PLAN DATE: March 2025	REVIEWED BY: ZM Esposito
PREPARED BY: AW Poole	DRMP PROJ. NO.: 22242 (040)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

Signed by: Zachary M. Esposito 3/21/2025
DRMP ENGINEER SIGNATURE DATE

SIG. INVENTORY NO. 05-0882

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	Sig-1.5

ECONOLITE ASC/3-2070 LOGIC PROCESSOR PROGRAMMING FOR LOGICAL DETECTORS

(program controller as shown)

1. From Main Menu select [1. CONFIGURATION]
2. From CONFIGURATION Submenu select [8. LOGIC PROCESSOR]
3. From the LOGIC PROCESSOR Submenu select [2. LOGIC STATEMENTS]

ENTER A "1" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```
LP#:   1  COPY FROM:   1  ACTIVE:  M   (T/F)
IF    DET                   1     IS   ON

THEN  DET SET VEH 49-64     61         ON

ELSE
```

LOGIC FOR LOOP 1A (DETECTOR 1/LOGICAL DETECTOR 61) "ON".

ENTER A "2" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```
LP#:   2  COPY FROM:   2  ACTIVE:  M   (T/F)
IF    DET                   1     IS   OFF

THEN  DET SET VEH 49-64     61         OFF

ELSE
```

LOGIC FOR LOOP 1A (DETECTOR 1/LOGICAL DETECTOR 61) "OFF".

ENTER A "3" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```
LP#:   3  COPY FROM:   3  ACTIVE:  M   (T/F)
IF    DET                   5     IS   ON

THEN  DET SET VEH 49-64     62         ON

ELSE
```

LOGIC FOR LOOP 3A (DETECTOR 5/LOGICAL DETECTOR 62) "ON".

ENTER A "4" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```
LP#:   4  COPY FROM:   4  ACTIVE:  M   (T/F)
IF    DET                   5     IS   OFF

THEN  DET SET VEH 49-64     62         OFF

ELSE
```

LOGIC FOR LOOP 3A (DETECTOR 5/LOGICAL DETECTOR 62) "OFF".

ENTER A "5" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```
LP#:   5  COPY FROM:   5  ACTIVE:  M   (T/F)
IF    DET                   9     IS   ON

THEN  DET SET VEH 49-64     63         ON

ELSE
```

LOGIC FOR LOOP 5A (DETECTOR 9/LOGICAL DETECTOR 63) "ON".

ENTER A "6" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```
LP#:   6  COPY FROM:   6  ACTIVE:  M   (T/F)
IF    DET                   9     IS   OFF

THEN  DET SET VEH 49-64     63         OFF

ELSE
```

LOGIC FOR LOOP 5A (DETECTOR 9/LOGICAL DETECTOR 63) "OFF".

ENTER A "7" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```
LP#:   7  COPY FROM:   7  ACTIVE:  M   (T/F)
IF    DET                   13    IS   ON

THEN  DET SET VEH 49-64     64         ON

ELSE
```

LOGIC FOR LOOP 7A (DETECTOR 13/LOGICAL DETECTOR 64) "ON".

ENTER A "8" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```
LP#:   8  COPY FROM:   8  ACTIVE:  M   (T/F)
IF    DET                   13    IS   OFF

THEN  DET SET VEH 49-64     64         OFF

ELSE
```

LOGIC FOR LOOP 7A (DETECTOR 13/LOGICAL DETECTOR 64) "OFF".

1. From Main Menu select [1. CONFIGURATION]
2. From CONFIGURATION Submenu select [8. LOGIC PROCESSOR]
3. From the LOGIC PROCESSOR Submenu select [1. LOGIC STATEMENT CONTROL]

ENABLE LOGIC PROCESSOR STATEMENTS 1-8 BY POSITIONING THE CURSOR OVER THE FIELD SHOWN BELOW AND USING THE TOGGLE KEY TO ENABLE IT.

```
LOGIC STATEMENT CONTROL
          1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
LP 1-15   E E E E E E E E . . . . . . . .
LP 16-30  . . . . . . . . . . . . . . . .
LP 31-45  . . . . . . . . . . . . . . . .
LP 46-60  . . . . . . . . . . . . . . . .
LP 61-75  . . . . . . . . . . . . . . . .
LP 76-90  . . . . . . . . . . . . . . . .
```

END PROGRAMMING

THIS PLAN SUPERSEDES THE PLAN SIGNED AND SEALED ON 11-14-2023

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-0882
DESIGNED: Mar 2025
SEALED: 3/21/2025
REVISED: N/A

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Electrical Detail - Sheet 5 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1390 (Optimist Farm Road)
at
SR 1386 (Bells Lake Road)

Division 5 | Wake County | Cary

PLAN DATE:	March 2025	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	DRMP PROJ. NO.:	22242 (040)

REVISIONS	INIT.	DATE

750 N.Greenfield Pkwy,Garner,NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

Signed by: Zachary M Esposito 3/21/2025
SIGNATURE DATE

SIG. INVENTORY NO. 05-0882

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	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

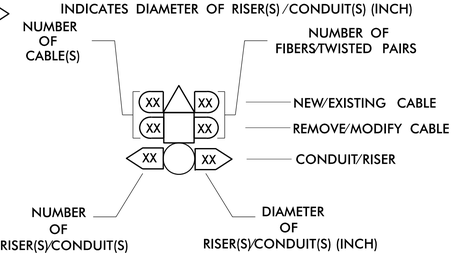
CONSTRUCTION NOTE SYMBOLOGY KEY

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)



THIS PLAN SUPERSEDES THE PLAN SIGNED AND SEALED ON 11-14-2023

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Prepared For:

North Carolina Department of Transportation Integrated Mobility and Safety Division

750 N. Greenfield Pkwy., Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

Signed by: Zachary M. Esposito 1/5/2026
DOCUMENTS ONLY SIGNATURE DATE

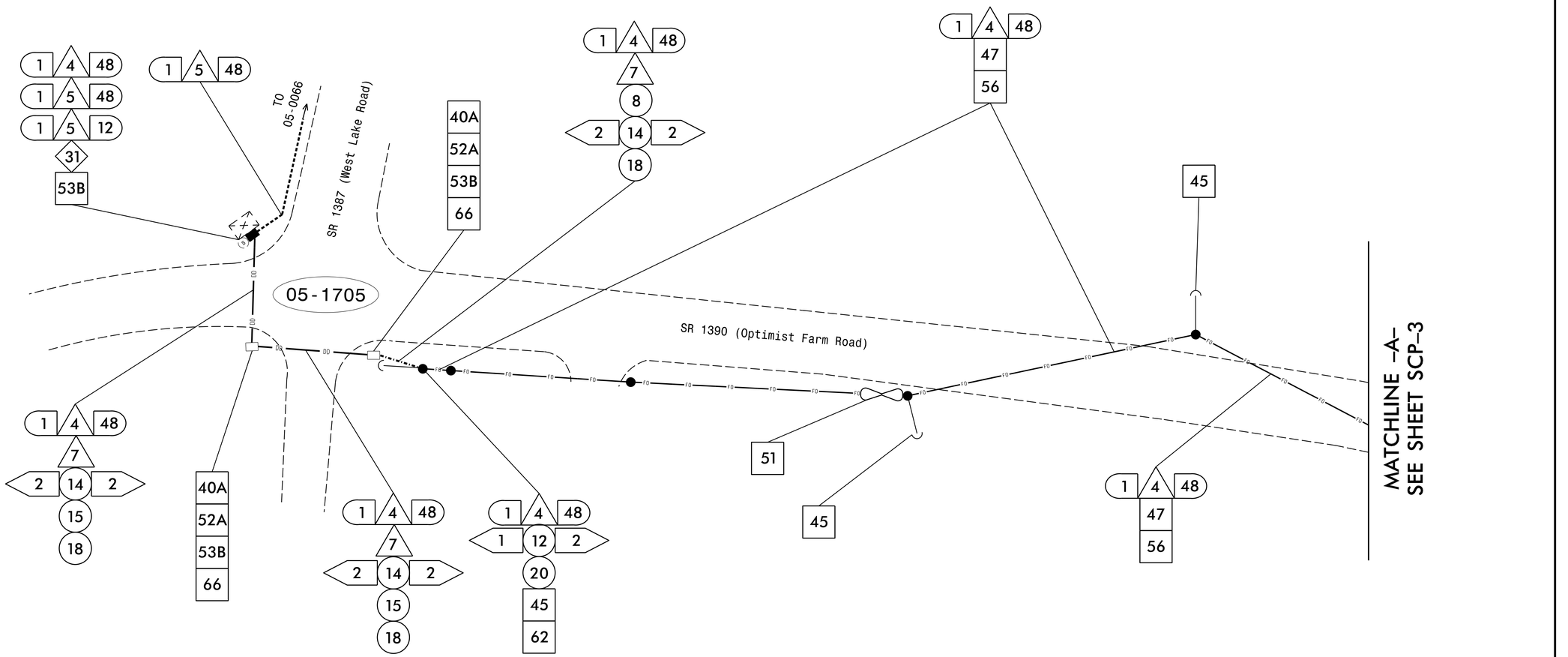
CONSTRUCTION NOTES

Division 8 | Wake County | Cary

PLAN DATE:	January 2026	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	DRMP PROJ. NO.:	22242 (041)

REVISIONS	INIT.	DATE

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



NOTES:

1. NOTIFY THE TOWN OF CARY TRAFFIC ENGINEERING SUPERVISOR AT (919) 462–3833 FIVE (5) DAYS PRIOR TO BEGINNING WORK ON SIGNAL SYSTEM COMMUNICATIONS CABLE. NOTIFY THE TOWN OF CARY TRAFFIC ENGINEERING SUPERVISOR 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. 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. ALL NCDOT FIBER ATTACHMENT POINTS ARE 40" BELOW POWER, FRONT SIDE OF POLE, UNLESS NOTED OTHERWISE.

THIS PLAN SUPERSEDES THE PLAN SIGNED AND SEALED ON 11-14-2023

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Prepared For:

750 N. Greenfield Pkwy., Garner, NC 27529

SCALE N/A

Cary Signal System Cable Routing Plan

Division 5 Wake County Cary

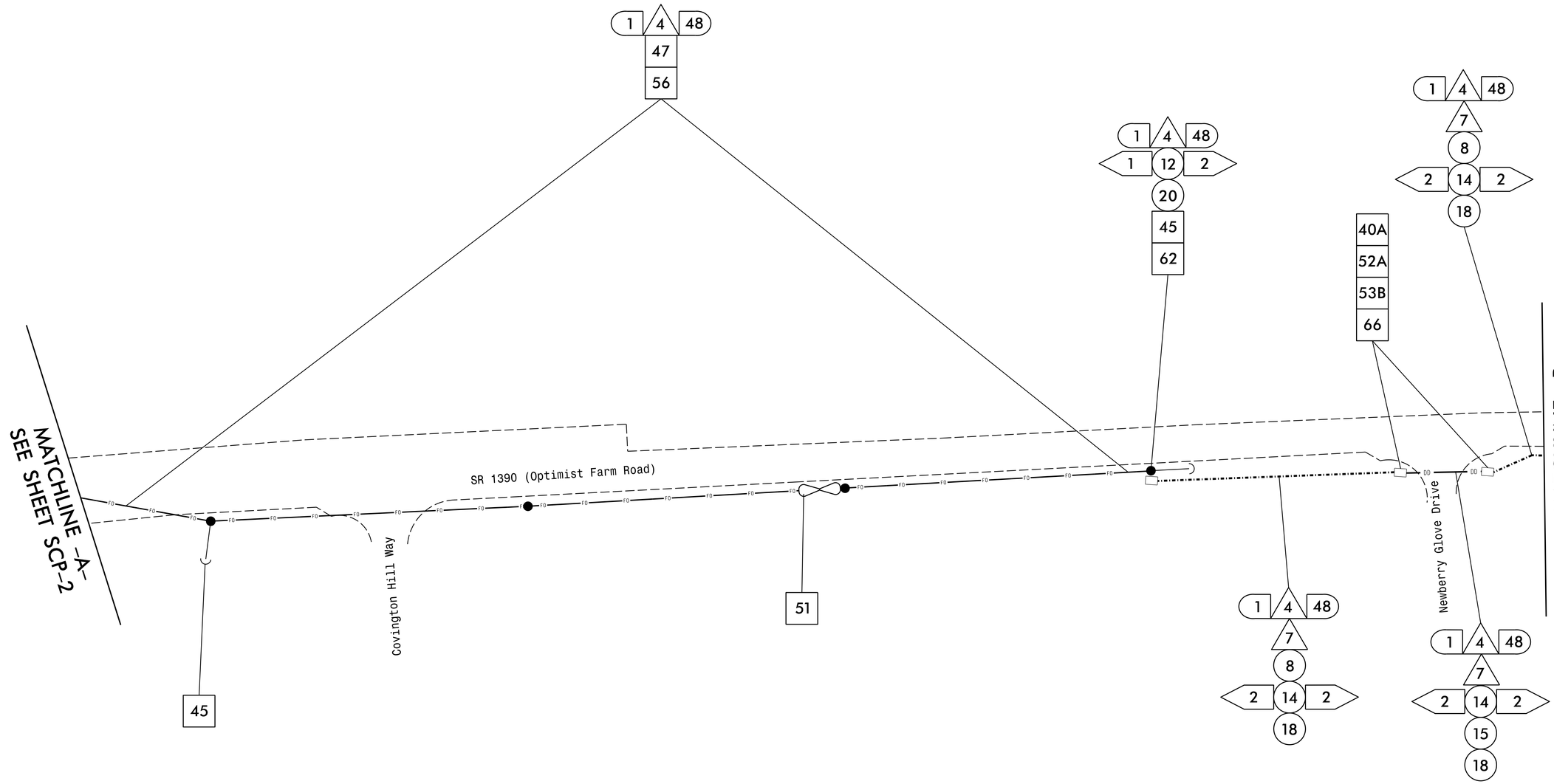
PLAN DATE:	January 2026	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	DRMP PROJ. NO.:	22242 (041)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

Signed by: Zachary M. Esposito 12/5/2026
SIGNATURE DATE

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



NOTES:

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3. ALL NCDOT FIBER ATTACHMENT POINTS ARE 40" BELOW POWER, FRONT SIDE OF POLE, UNLESS NOTED OTHERWISE.

THIS PLAN SUPERSEDES THE PLAN SIGNED AND SEALED ON 11-14-2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRMP
DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR. SUITE 220
CHARLOTTE, NC 28262
PHONE: 704-549-4260
NC LICENSE NO. F-1524
www.drmp.com

Prepared For:
North Carolina Department of Transportation
Integrated Mobility Division
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE
N/A

Cary Signal System Cable Routing Plan

Division 5 Wake County Cary

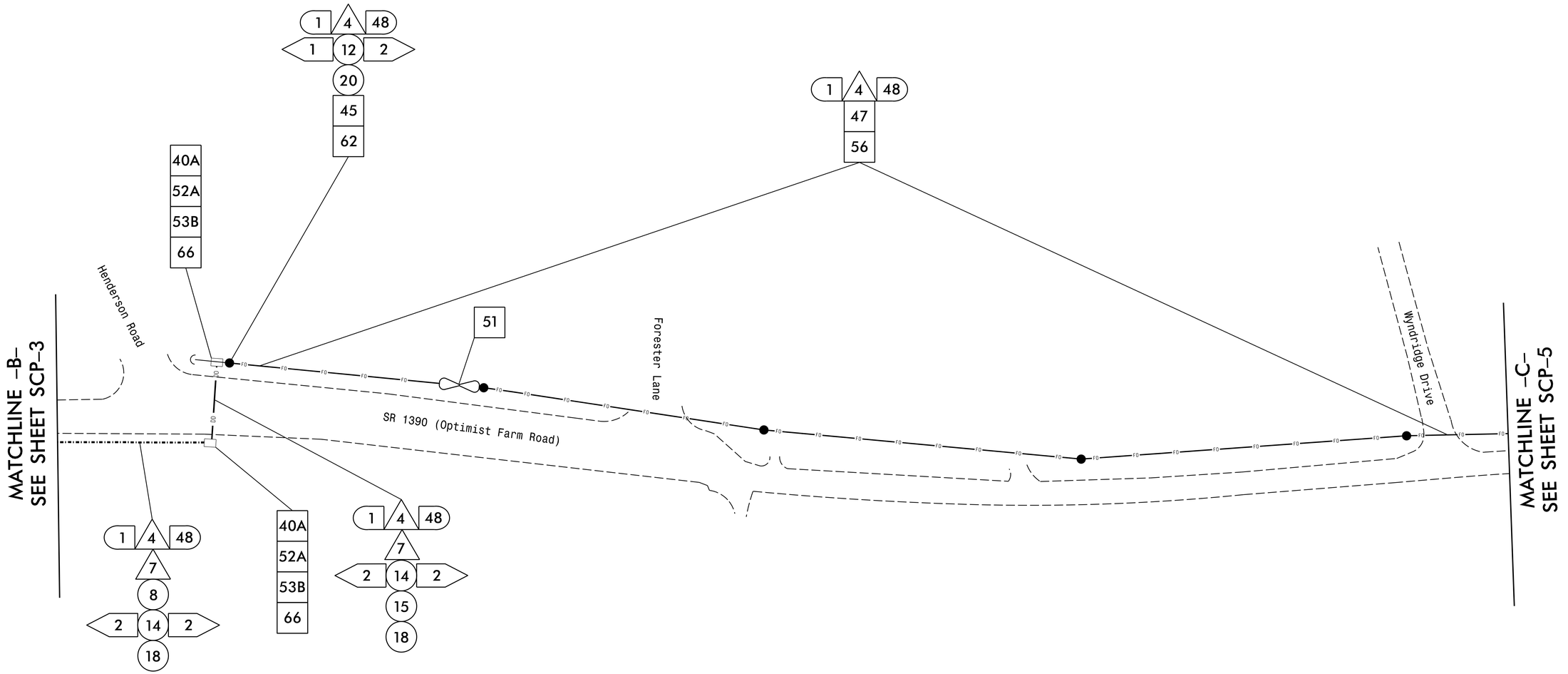
PLAN DATE:	January 2026	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	DRMP PROJ. NO.:	22242 (041)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

Signed by: Zachary M. Esposito
SIGNATURE
1/5/2026
DATE

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



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Prepared For:

750 N. Greenfield Pkwy., Garner, NC 27529

SCALE N/A

Cary Signal System Cable Routing Plan

Division 5 Wake County Cary

PLAN DATE:	January 2026	REVIEWED BY:	ZM Esposito
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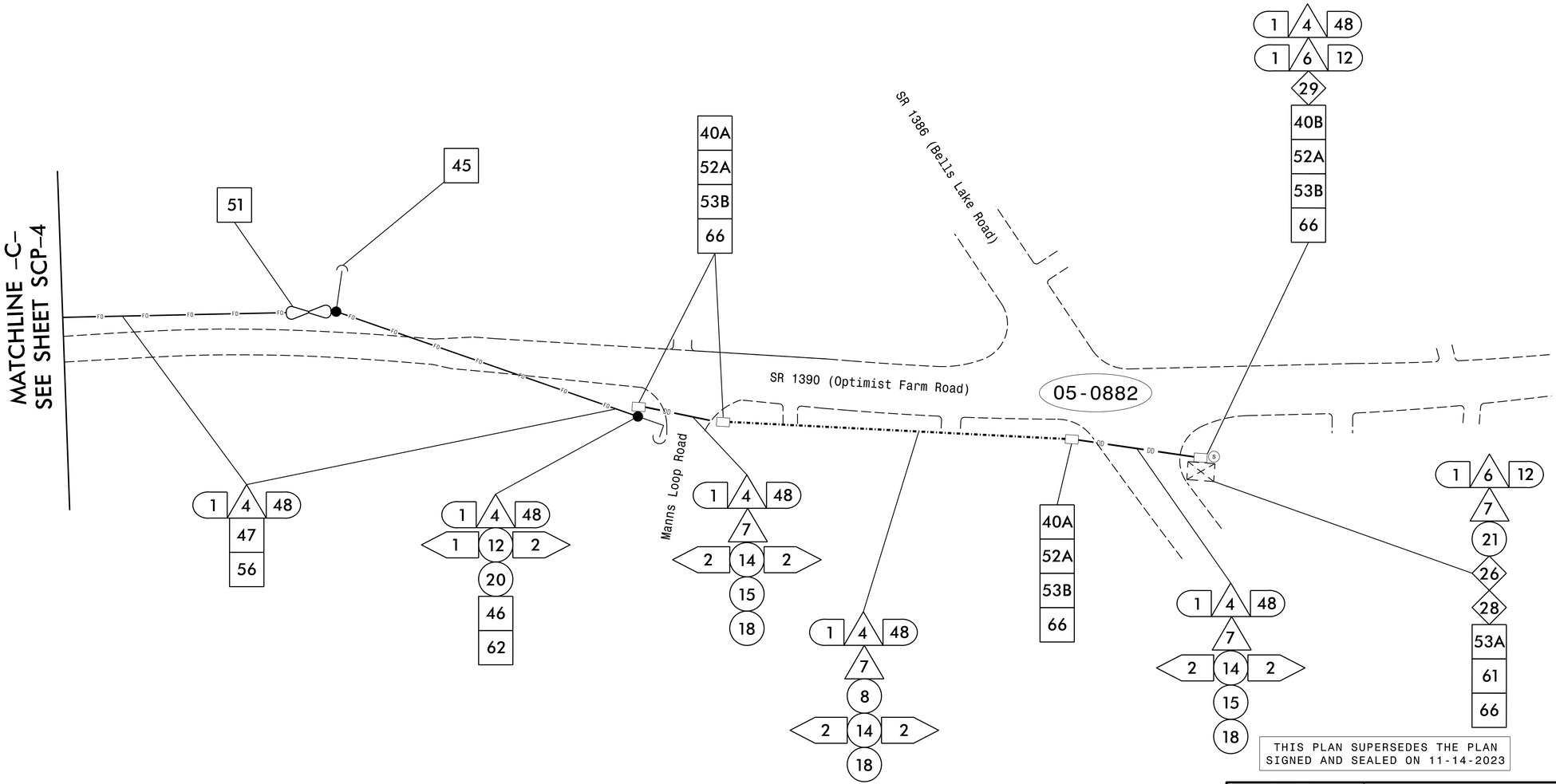
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

Signed by: Zachary M. Esposito 1/5/2026
SIGNATURE DATE

Docusign Envelope ID: 41057DB3-04D7-492C-85C6-2EF005854316

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	SCP-5



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PHONE: 704-549-4260

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

Prepared For:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Integrated Mobility and Safety Division Intelligent Transportation Systems Section

750 N. Greenfield Pkwy., Garner, NC 27529

SCALE

N

N/A

Cary Signal System Cable Routing Plan

Division 5 | Wake County | Cary

PLAN DATE:	January 2026	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	DRMP PROJ. NO.:	22242 (041)

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

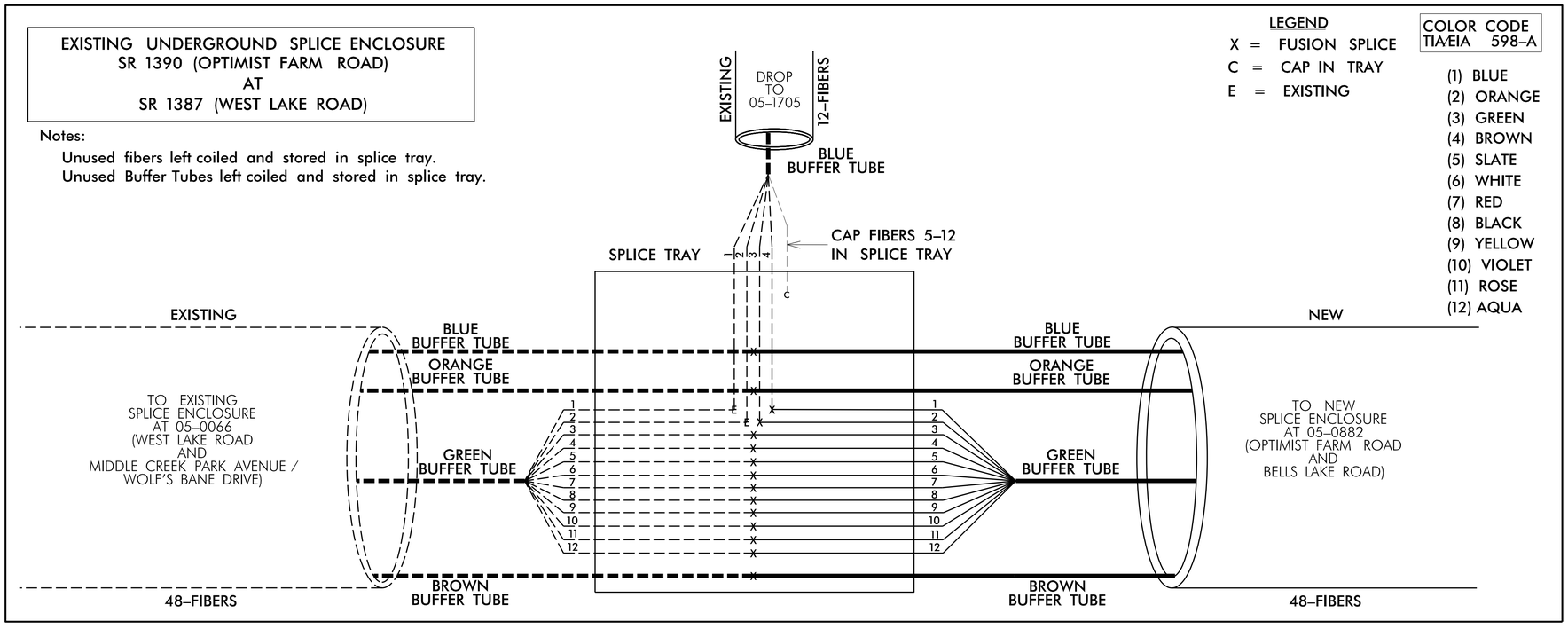
Signed by: Zachary M. Esposito 1/5/2026

SIGNATURE DATE

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	SCP-6

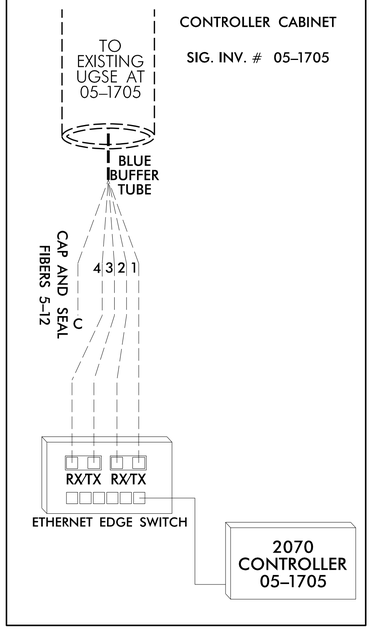
EXISTING UNDERGROUND SPLICE ENCLOSURE
SR 1390 (OPTIMIST FARM ROAD)
AT
SR 1387 (WEST LAKE ROAD)

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



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

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



1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE TOWN OF CARY TRAFFIC ENGINEERING SUPERVISOR AT (919) 462–3833 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 TOWN TRAFFIC ENGINEERING SUPERVISOR 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.

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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.

THIS PLAN SUPERSEDES THE PLAN SIGNED AND SEALED ON 11-14-2023

DRMP
DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR, SUITE 220
CHARLOTTE, NC 28262
PHONE: 704-549-6200
NC LICENSE NO. F-1524
www.drmp.com

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared For:
750 N. Greenfield Pkwy., Garner, NC 27529

Cary Signal System
Splice Details

Division 5 Wake County Cary

PLAN DATE:	January 2026	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	DRMP PROJ NO:	22242 (041)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

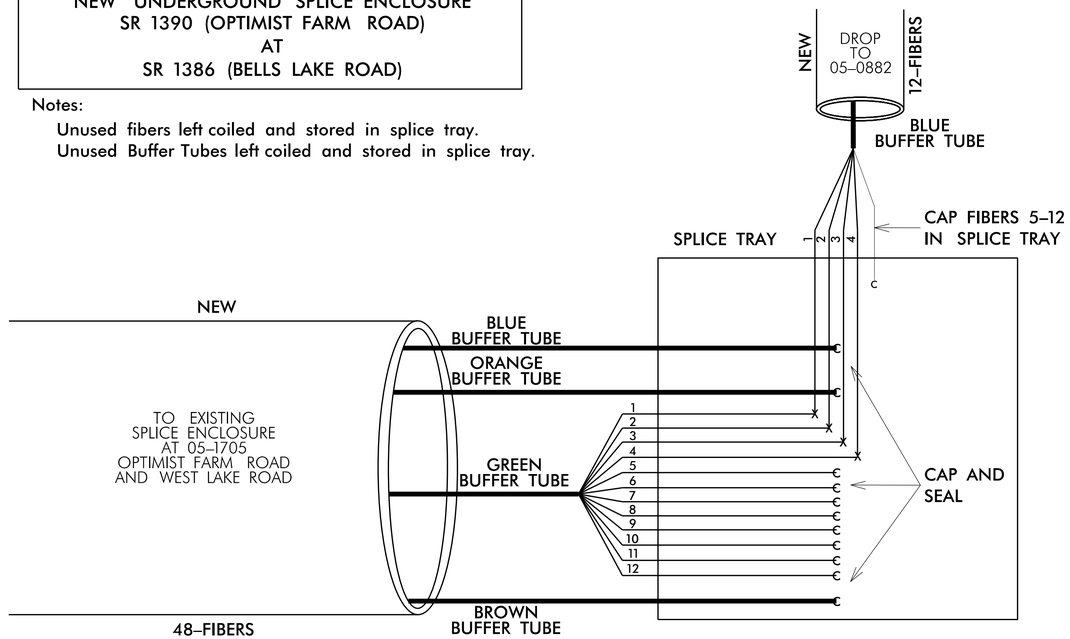
Signed by: Zachary M. Esposito 1/5/2026
DIGITALLY SIGNED BY ZACHARY MICHAEL ESPOSITO
SIGNATURE DATE

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	SCP-7

NEW UNDERGROUND SPLICE ENCLOSURE
SR 1390 (OPTIMIST FARM ROAD)
AT
SR 1386 (BELLS LAKE ROAD)

Notes:

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



LEGEND

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(1) BLUE
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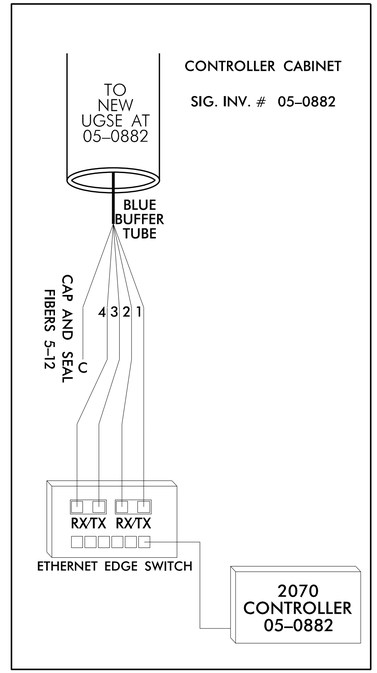

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Prepared For:
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Cary Signal System
Splice Details

Division 5 | Wake County | Cary

PLAN DATE: January 2026 | REVIEWED BY: ZM Esposito
PREPARED BY: AW Poole | DRMP PROJ NO: 22242 (041)

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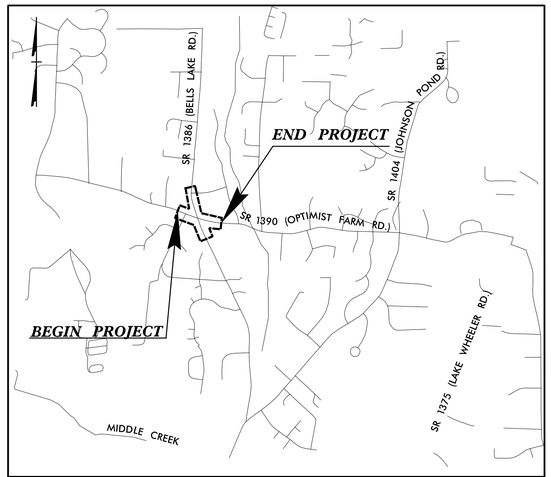
NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO

Signed by: Zachary M. Esposito
SIGNATURE
1/5/2026
DATE

CONTRACT: TIP PROJECT: HL–0008Q



VICINITY MAP NTS

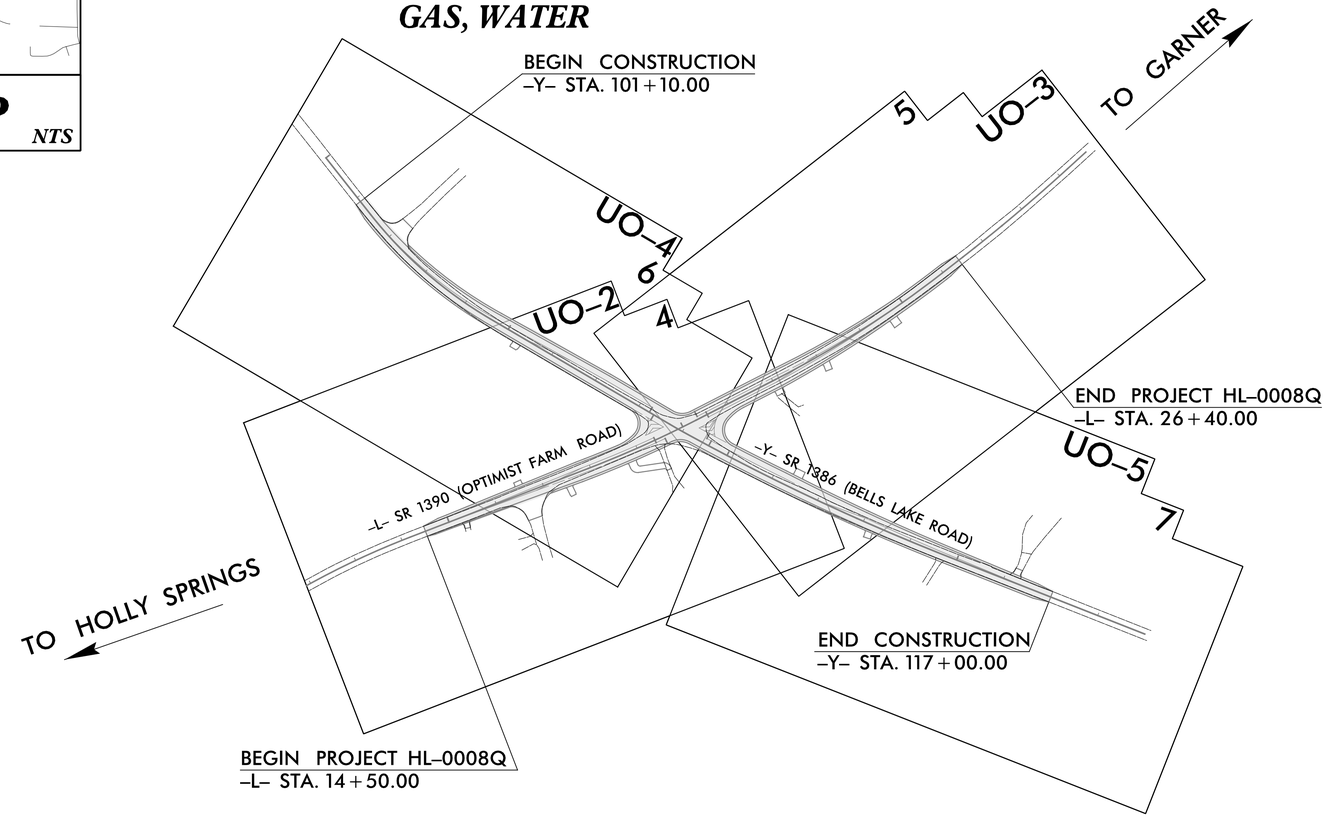
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
WAKE COUNTY

T.I.P. NO.	SHEET NO.
HL–0008Q	UO–1

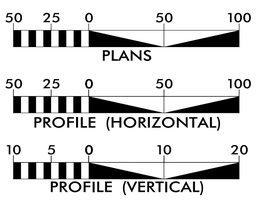
NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

LOCATION: SR 1390 (OPTIMIST FARM ROAD) & SR 1386 (BELLS LAKE ROAD)
TYPE OF WORK: RELOCATION OF POWER, TELEPHONE, CATV, GAS, WATER



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



INDEX OF SHEETS

UTILITY OWNERS WITH CONFLICTS

(A) POWER – DUKE ENERGY
(B) TELEPHONE – AT&T
(C) CATV – SPECTRUM
(D) GAS – DOMINION ENERGY
(E) WATER – AQUA

PREPARED IN THE OFFICE OF:
Wooten
120 North Boylan Avenue • Raleigh, NC 27603-1423
(919) 828-0531 • thewootencompany.com
License Number: F-0115

WEBB WHITE — UTILITY PROJECT MANAGER
TOMMY MARTIN — PROJECT UTILITY COORDINATOR

DIVISION OF HIGHWAYS
DIVISION 5
PROJECT DELIVERY UNIT
2612 N. DUKE STREET
DURHAM, NC 27704
PHONE (919) 317–4700
FAX (919) 317–4710

SUSAN LANCASTER, PE — TEAM LEAD
JOHN BRAXTON — PROJECT MANAGER
DONALD W. PROPER — DIVISION UTILITY ENGINEER
JAMES SWINSON — UTILITY ENGINEER

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	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.

NAD 83/2011

SPECTRUM U/G COMM. CABLES 2' INSIDE R/W

SPECTRUM U/G COMM. CABLES 2' INSIDE R/W

MATCHLINE -Y- STA. 106+00.00 SEE SHEET UO-4

ABANDONED

ABANDONED

ABANDONED

-L- 15+00

-L- 20+00

AT&T U/G TELEPHONE CABLES

1 MICHAEL SHERER CAROLYN SHERER

2 SOPHIA PLEASANTS

13 STEPHEN ANTHONY JOANNE ANTHONY

DUKE ENERGY, AT&T & SPECTRUM JOINT OVERHEAD

DUKE ENERGY, AT&T & SPECTRUM JOINT OVERHEAD

3 ROBERT FRYMAN MARGARET FRYMAN

SPECTRUM U/G COMM. CABLES 2' INSIDE R/W

AT&T U/G FIBER OPTIC & TELEPHONE CABLES

ABANDONED

ABANDONED

REM

ABANDONED

ABANDONED

ABANDONED

ABANDONED

MATCHLINE -L- STA. 21+50.00 SEE SHEET UO-3

DOMINION ENERGY 8" PVC GAS LINE

AT&T U/G FIBER OPTIC CABLES

4 MARTHY ROWLAND

5 JULIA DAVIS

AT&T U/G COMM. CABLES

AT&T U/G FIBER OPTIC & TELEPHONE CABLES

ATT/FO Not on Record Non-Locatable

6 DUPRE PROPERTIES

SPECTRUM U/G COMM. CABLES 2' INSIDE R/W

AT&T U/G COMM. CABLES 1' INSIDE R/W

7 HOLLIS FOWLER

ABANDONED

MATCHLINE -Y- STA. 111+00.00 SEE SHEET UO-5

-Y- 110+00

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	UO-3
THIS SHEET CORRESPONDS TO RDY- 5	

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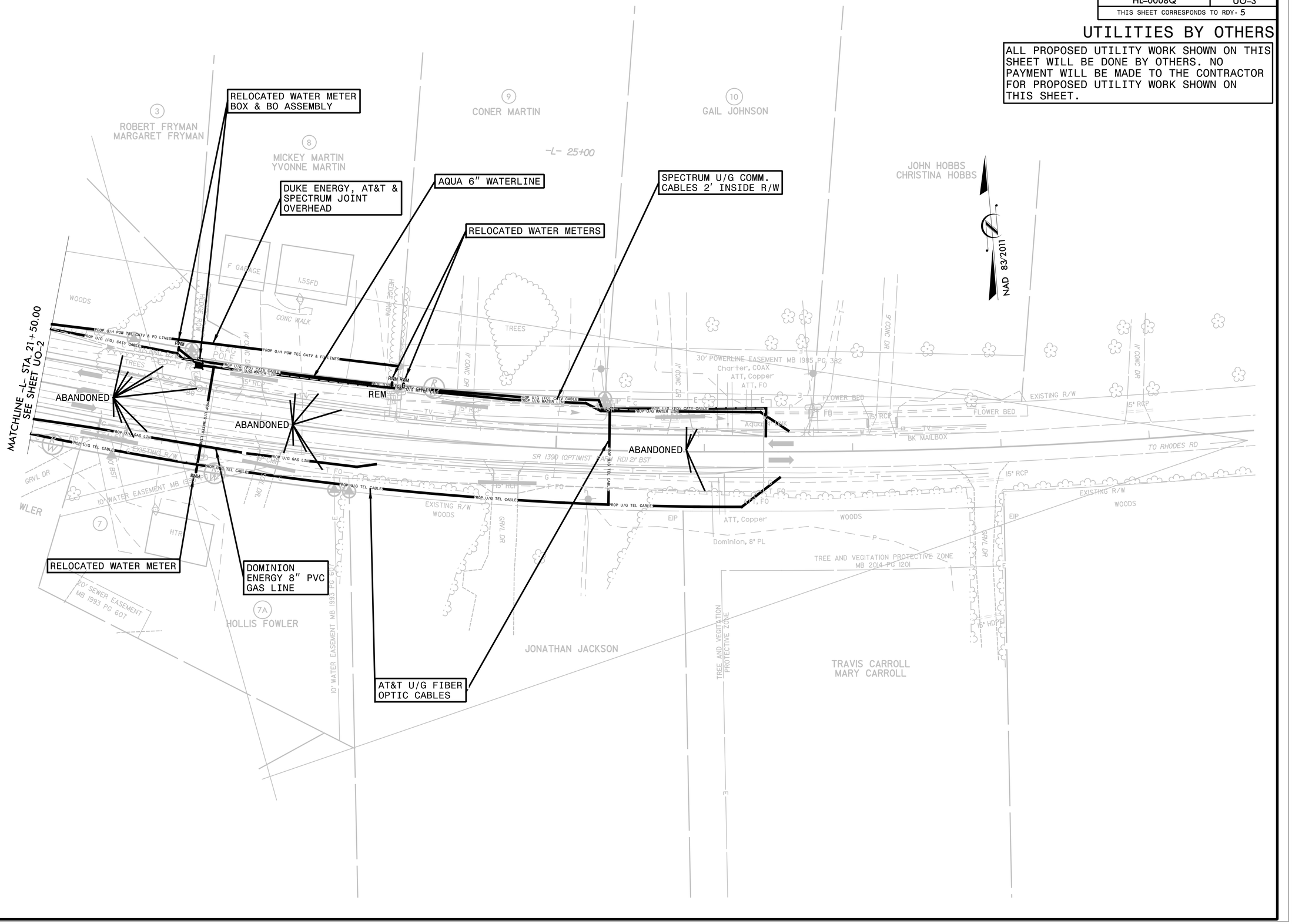

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	UO-4
THIS SHEET CORRESPONDS TO RDY- 6	

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NAD 83/2011

KAREN OHAR
DOUG STATES

NO CLAIM
11
TARICK WAHDAN

2SFD

EXISTING R/W

-Y- 105+00

13
STEPHEN ANTHONY
JOANNE ANTHONY

AQUA 6" WATERLINE

SPECTRUM U/G COMM. CABLES 2' INSIDE R/W

Duke Energy Progress
ATT, FO
ATT, Copper
Charter, COAX

PROP U/G (FO) CATV CABLE

ABANDONED

RELOCATED BO ASSEMBLY AND METER CONNECTION

AT&T FIBER TO REMAIN IN PLACE

12
KENNETH HYGH
LANA HYGH

11' CONC DR

2SFD

15" RCP

10" RCP

PROP U/G WATER LINE

PROP U/G (FD) CATV CABLE

PROP U/G (FO) CATV CABLE

EXISTING R/W

REM

PROP U/G (FO) CATV CABLES

PROP O/H POW & TEL LINE

MATCHLINE -Y- STA. 106+00.00
SEE SHEET UO-2

2STBK

14
DANIEL GLUCKIN

15
CHERIE HUBBARD
WILLIAM HUBBARD

11' BST DR

2

DUKE ENERGY & AT&T
JOINT OVERHEAD LINES

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
HL-0008Q	UO-5
THIS SHEET CORRESPONDS TO RDY- 7	

UTILITIES BY OTHERS

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NAD 83/2011

MATCHLINE -Y- STA. 111+00.00
SEE SHEET UO-2

-Y- 115+00

7
HOLLIS FOWLER

7B
HOLLIS FOWLER
MARY FOWLER

16
KELLEY CARROLL
RUSSELL CARROLL

17
NO CLAIM
CHARLES RHODES

18
CONNIE CARROLL

19
TODD ANDREWS

ARDIE WATKINS
DONNA WATKINS

MOZELLE CARROLL
DONNA WATKINS

AMANDA MILLER
ELAINE MILLER
NICHOLAS KANE

20' SEWER EASEMENT
MB 1993 PG 607

DOMINION ENERGY 4" GAS LINE TO REMAIN IN PLACE

ABANDONED

ABANDONED

ABANDONED

ABANDONED

AT&T U/G COMM. CABLES
1' INSIDE R/W

AT&T U/G COMM. CABLES
1' INSIDE R/W

SPECTRUM U/G COMM.
CABLES 2' INSIDE R/W

SPECTRUM U/G COMM.
CABLES 2' INSIDE R/W

AT&T U/G FIBER OPTIC
AND TELEPHONE CABLES

AT&T U/G FIBER OPTIC
AND TELEPHONE CABLES

EXISTING R/W

PROP U/G CATV CABLES

PROP U/G TEL CABLES

ATT, Copper
Charter, COAX
Dominion, 4" PL

ATT, FO

60" WD

2" OD PVC

24" CONC DR

GRVL DR

HTR

ISBKD

GARAGE

WELL HOUSE

PROJECT NO.	SHEET NO.
HL-0008Q	X-1

DRMP

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

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

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, fine grading, and clearing and grubbing will be paid for at the contract lump sum price for grading.

Quantities are approximate only. The Resident Engineer will recross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

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, 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-0008Q	X-1A

DRMP

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

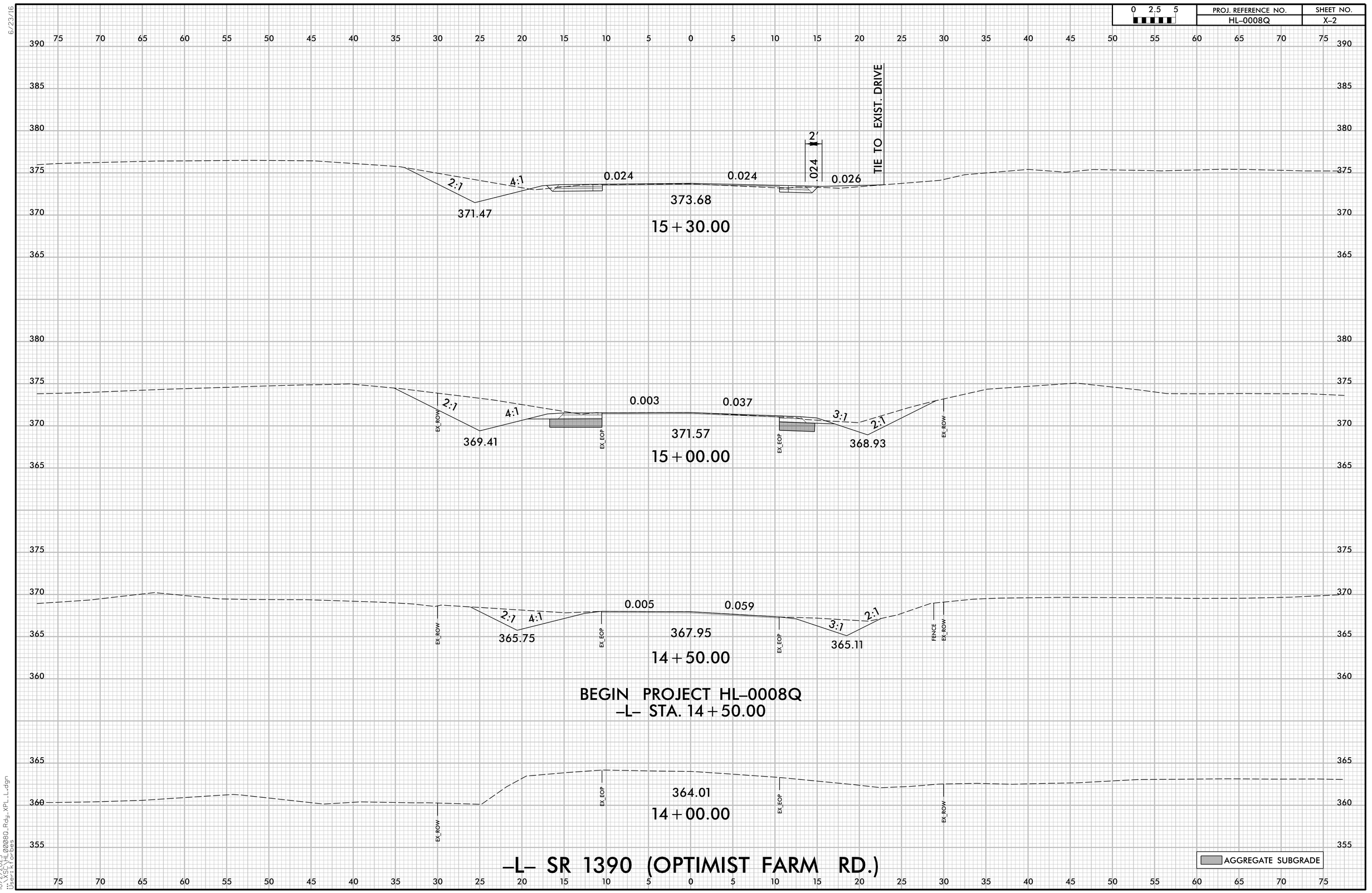
NC LICENSE NO. F-1524
www.drmp.com

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
14+50.00	24	0
15+00.00	78	0
15+50.00	85	0
16+00.00	39	0
16+50.00	11	0
17+00.00	22	11
17+50.00	35	11
18+00.00	30	18
18+30.00	14	15
18+50.00	10	11
18+80.00	17	25
19+00.00	12	19
19+40.00	22	25
19+50.00	3	2
20+00.00	8	12
20+50.00	6	24
21+00.00	14	39
21+50.00	26	52
22+00.00	18	43
22+50.00	20	31
22+90.00	20	21
23+00.00	6	3
23+10.00	6	3
23+50.00	20	13
24+00.00	22	25
24+35.00	6	16
24+50.00	2	6
24+65.00	4	4
25+00.00	8	12
25+50.00	10	28
25+85.00	6	16
26+00.00	5	5
26+40.00	11	6

Station Y	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
101+30.00	1	0
101+50.00	2	3
102+00.00	3	15
102+50.00	6	31
103+00.00	6	60
103+50.00	1	77
104+00.00	1	71
104+50.00	2	69
105+00.00	4	79
105+25.00	2	49
105+50.00	3	66
106+00.00	8	183
106+50.00	9	237
106+85.00	15	156
107+00.00	10	50
107+50.00	25	135
107+80.00	9	57
108+00.00	7	29
108+50.00	14	57
109+50.00	9	42
110+00.00	23	5
110+50.00	27	7
111+00.00	8	20
111+50.00	2	20
111+85.00	5	13
112+00.00	6	9
112+50.00	18	30
113+00.00	10	30
113+20.00	4	10
113+50.00	7	15
114+00.00	16	32
114+50.00	23	34
114+65.00	8	6
115+00.00	20	11
115+50.00	32	16
115+75.00	17	4
116+00.00	15	3
116+20.00	10	2
116+50.00	17	1
117+00.00	23	2

6/23/16

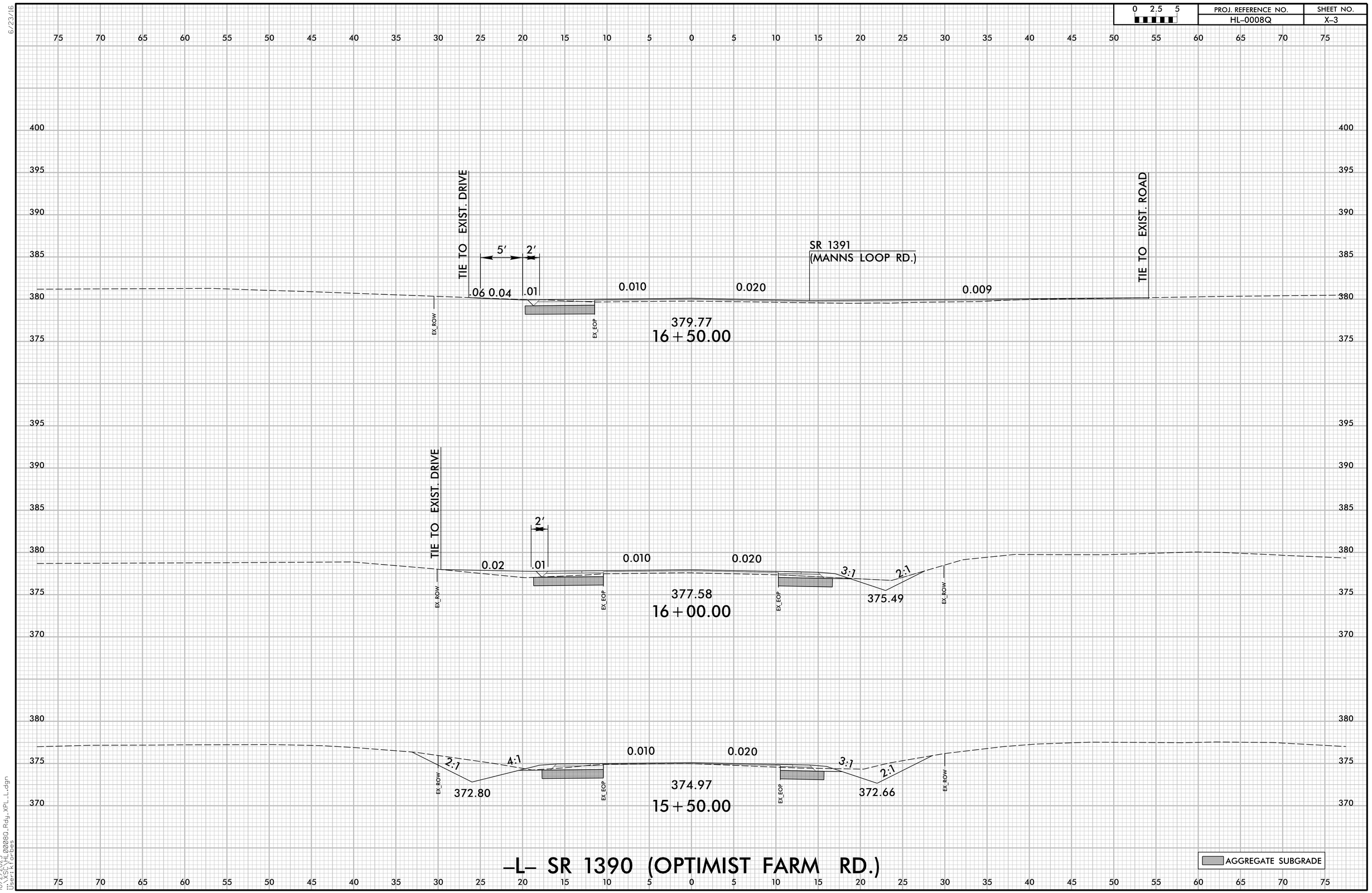
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-2



10/2/2025
...\XSC_HL_0008Q_Rdy_XPL_L.dgn
User:kforbes

6/23/16

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

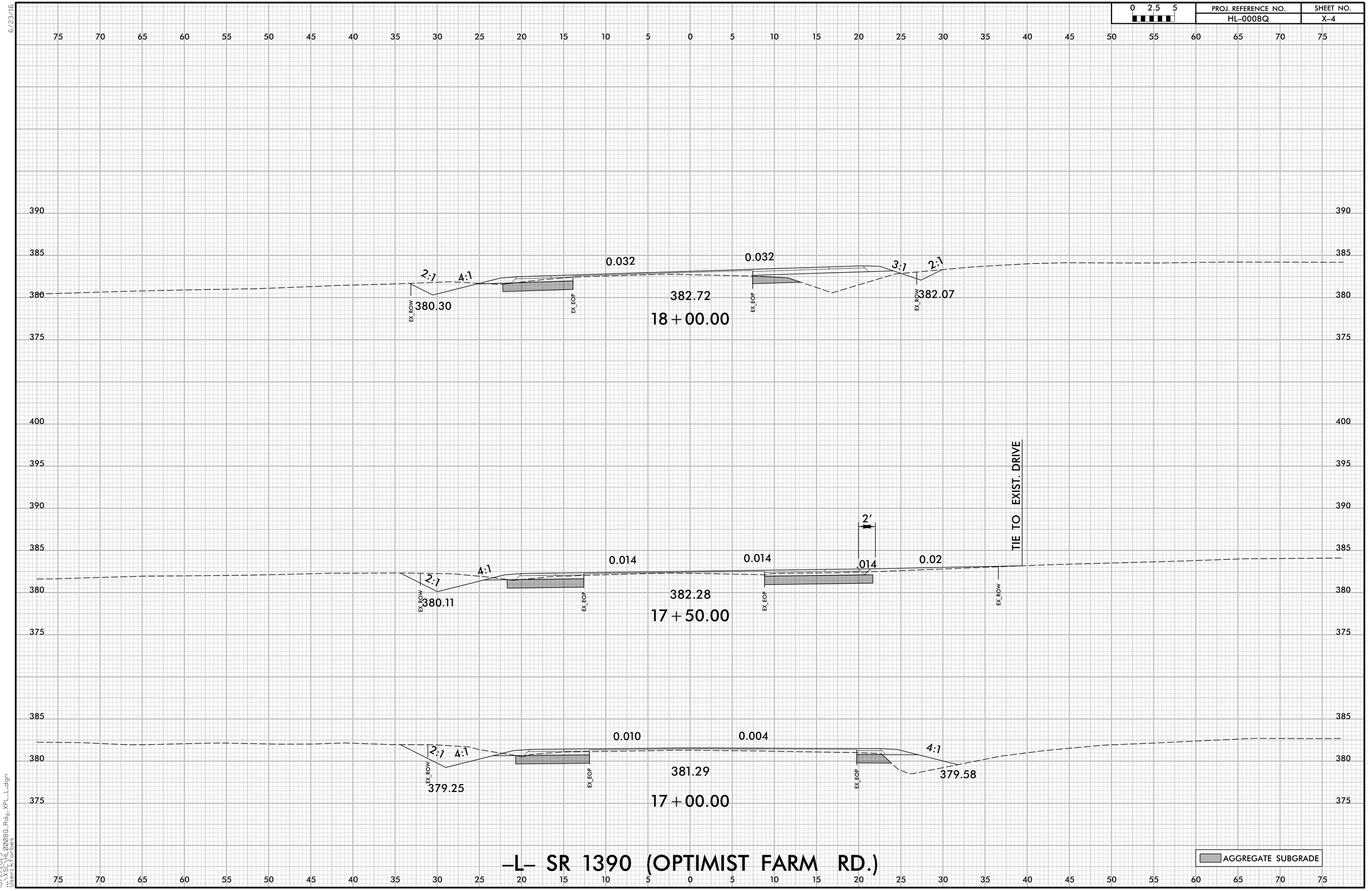


–L– SR 1390 (OPTIMIST FARM RD.)

10/2/2025
...\XSC\HL_0008Q_Rdy_XPL_L.dgn
User: kforbes

6/23/16

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

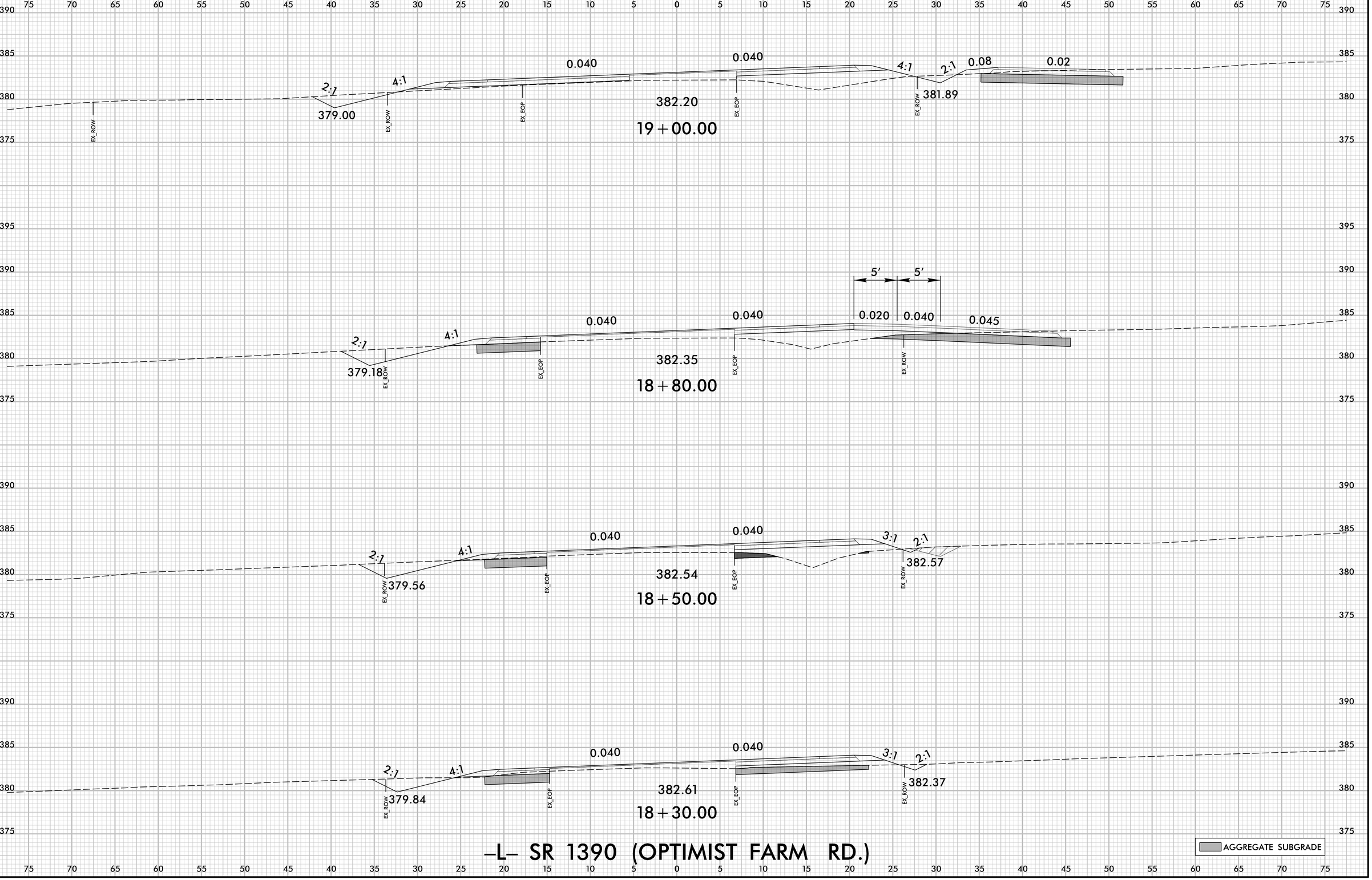


–L– SR 1390 (OPTIMIST FARM RD.)

10/2/2025
...\XSC\HL0008Q_Rdy_XPL_L.dgn
User: kforbes

6/23/16

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



10/2/2025
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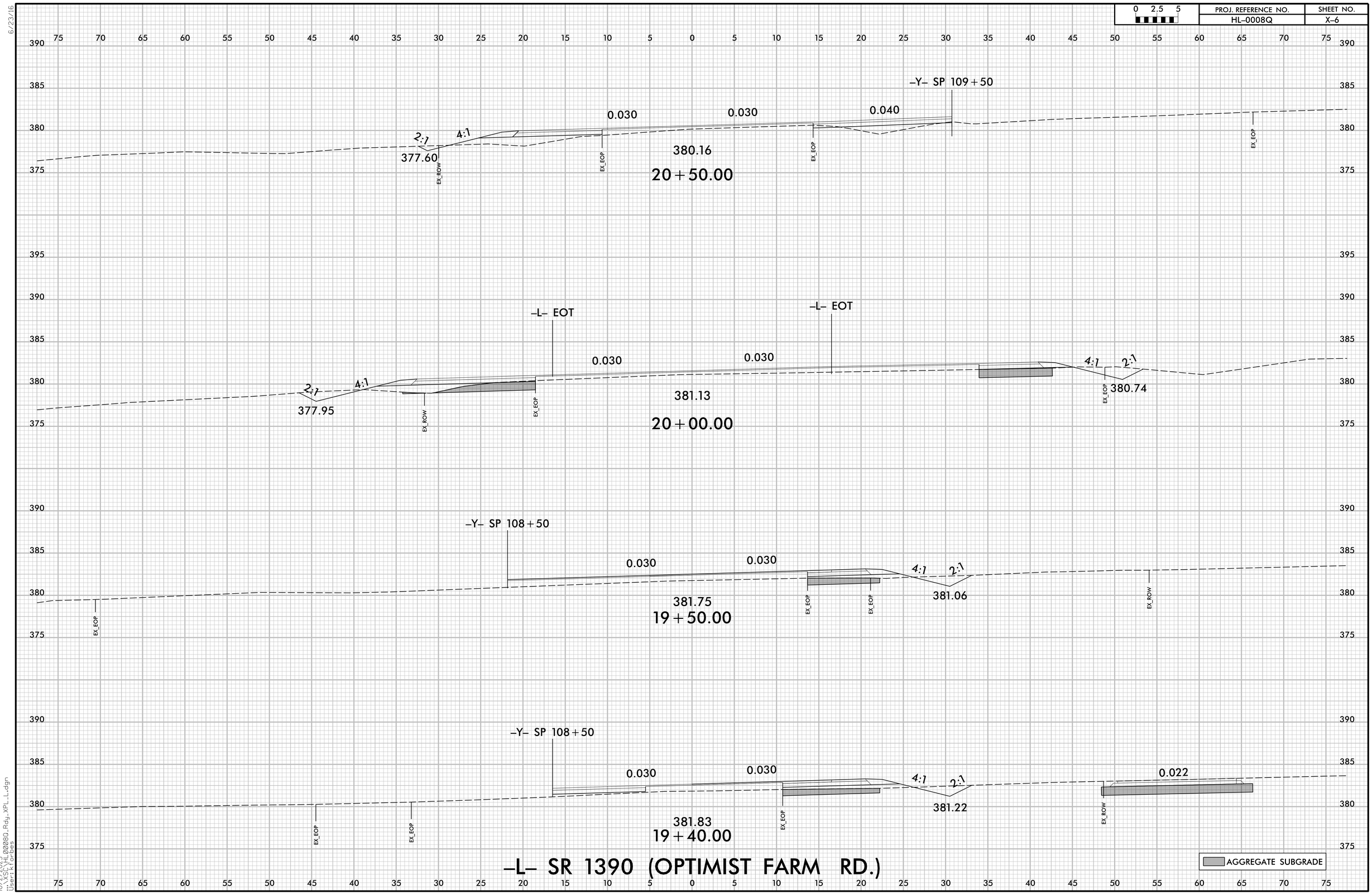
User:kforbes

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-6



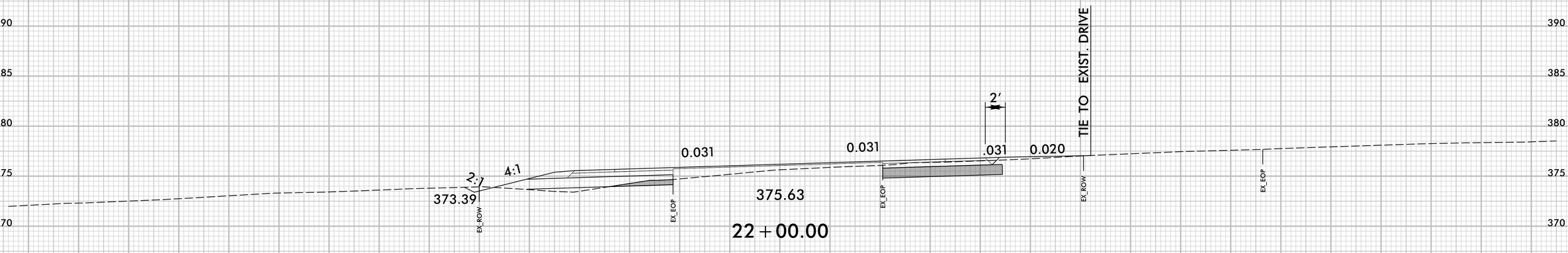
–L– SR 1390 (OPTIMIST FARM RD.)

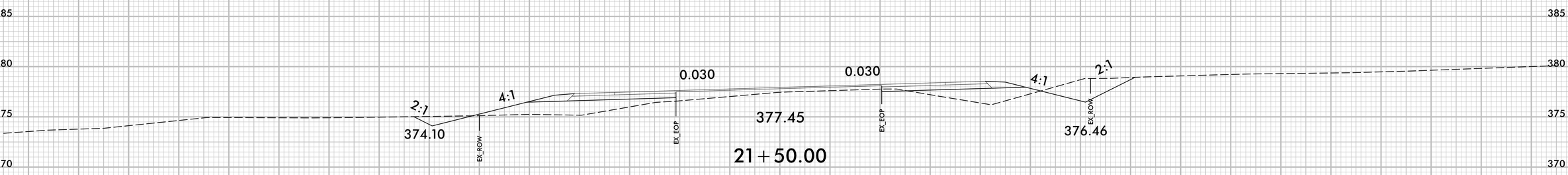
6/23/16

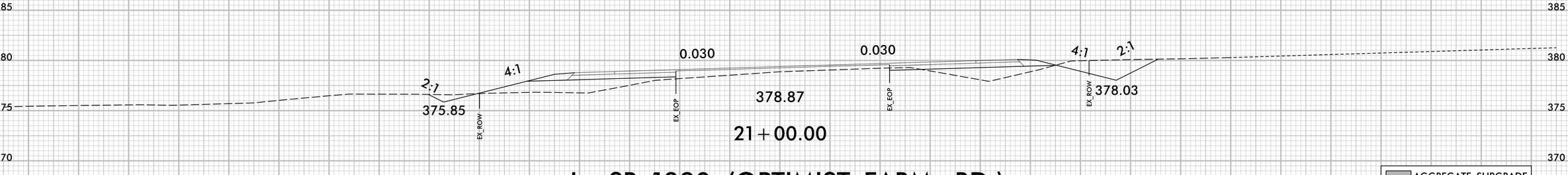
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-7

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

395 390 385 380 375 370







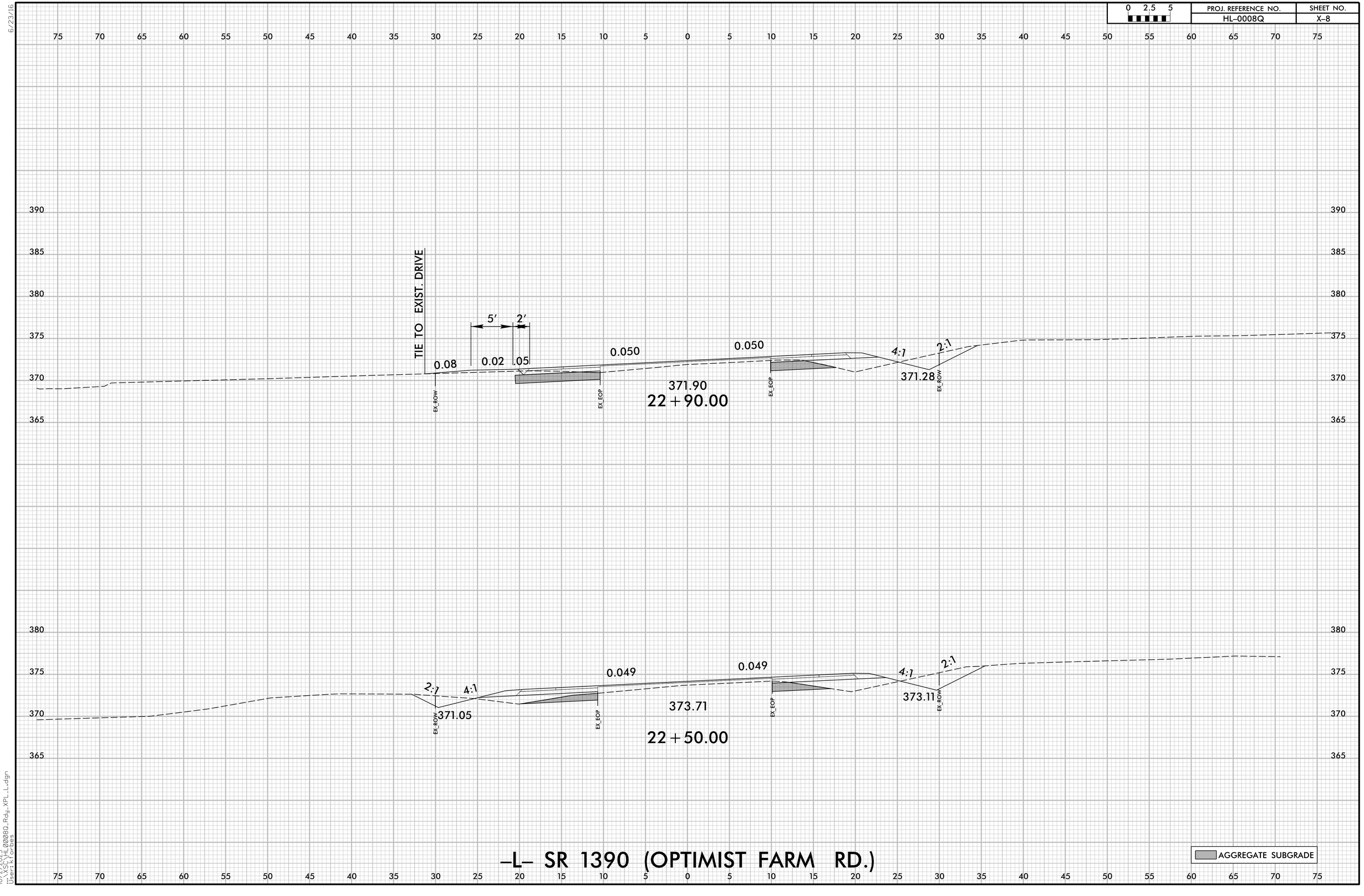
–L– SR 1390 (OPTIMIST FARM RD.)

AGGREGATE SUBGRADE

10/2/2025
...\XSC\HL0008Q_Rdy_XPL_L.dgn
User: kforbes

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-8

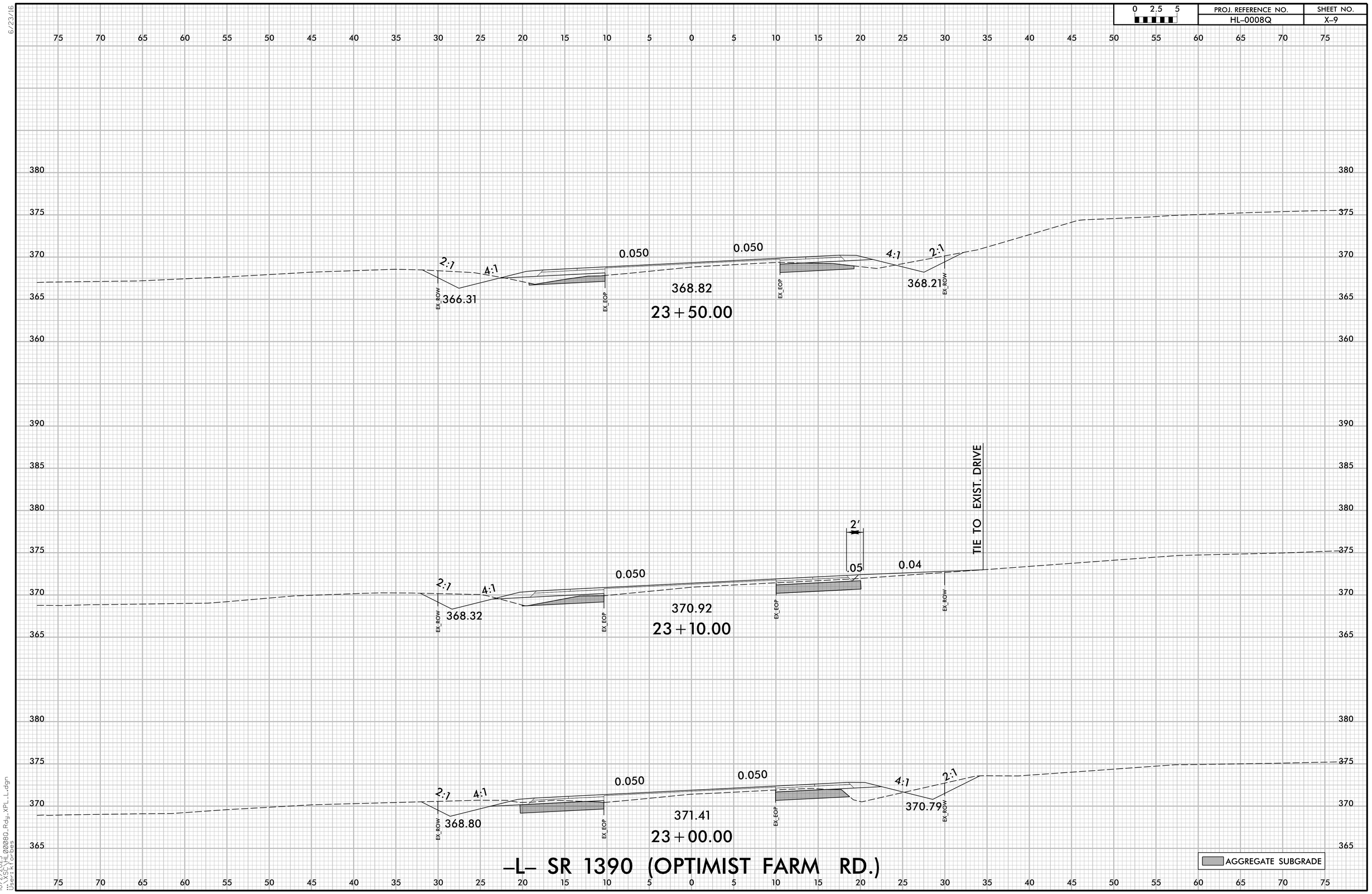


–L– SR 1390 (OPTIMIST FARM RD.)

10/2/2025
...\XSC\HL_0008Q_Rdy_XPL_L.dgn
User: kforbes

6/23/16

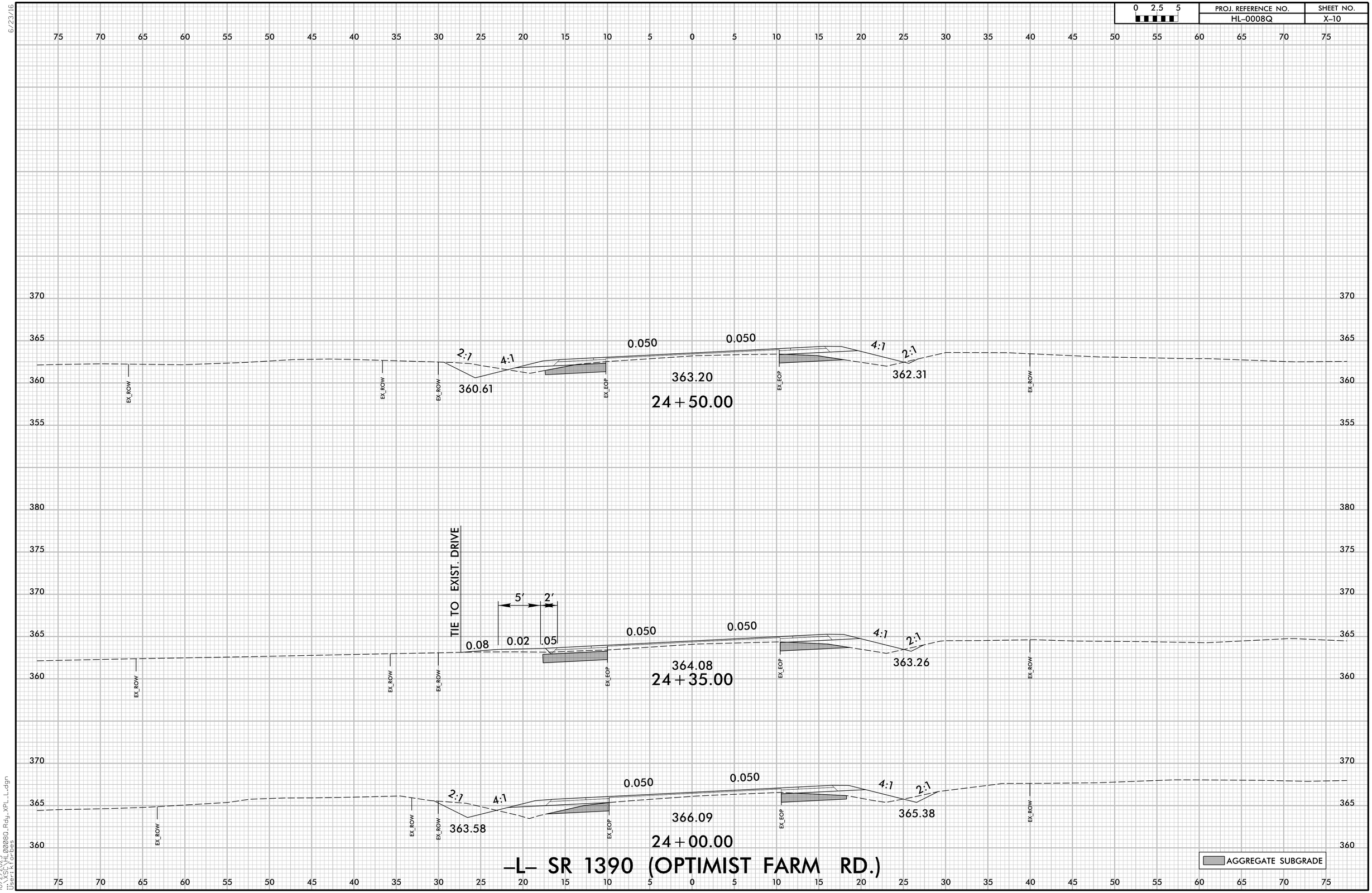
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-9



10/2/2025
...\XSC\HL0008Q_Rdy_XPL_L.dgn
User:kforbes

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-10



–L– SR 1390 (OPTIMIST FARM RD.)

10/2/2025
...\XSC\HL0008Q_Rdy_XPL_L.dgn
User:kforbes

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-11

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

365
360
355
350

EX_ROW | EX_ROW | EX_ROW | EX_EOP | EX_EOP | EX_ROW

2:1 3:1 0.050 0.050 4:1 2:1

354.44 357.19 356.08

25+50.00

365
360
355

EX_ROW | EX_ROW | EX_ROW | EX_EOP | EX_EOP | EX_ROW

2:1 4:1 0.050 0.050 4:1

357.54 360.20

25+00.00

380
375
370
365
360
355

EX_ROW | EX_ROW | EX_ROW | EX_EOP | EX_EOP | EX_ROW

2:1 4:1 0.050 0.050

2′ 5′ 5′

.05 0.020 0.080 0.150

TIE TO EXIST. DRIVE

359.69 362.31

24+65.00

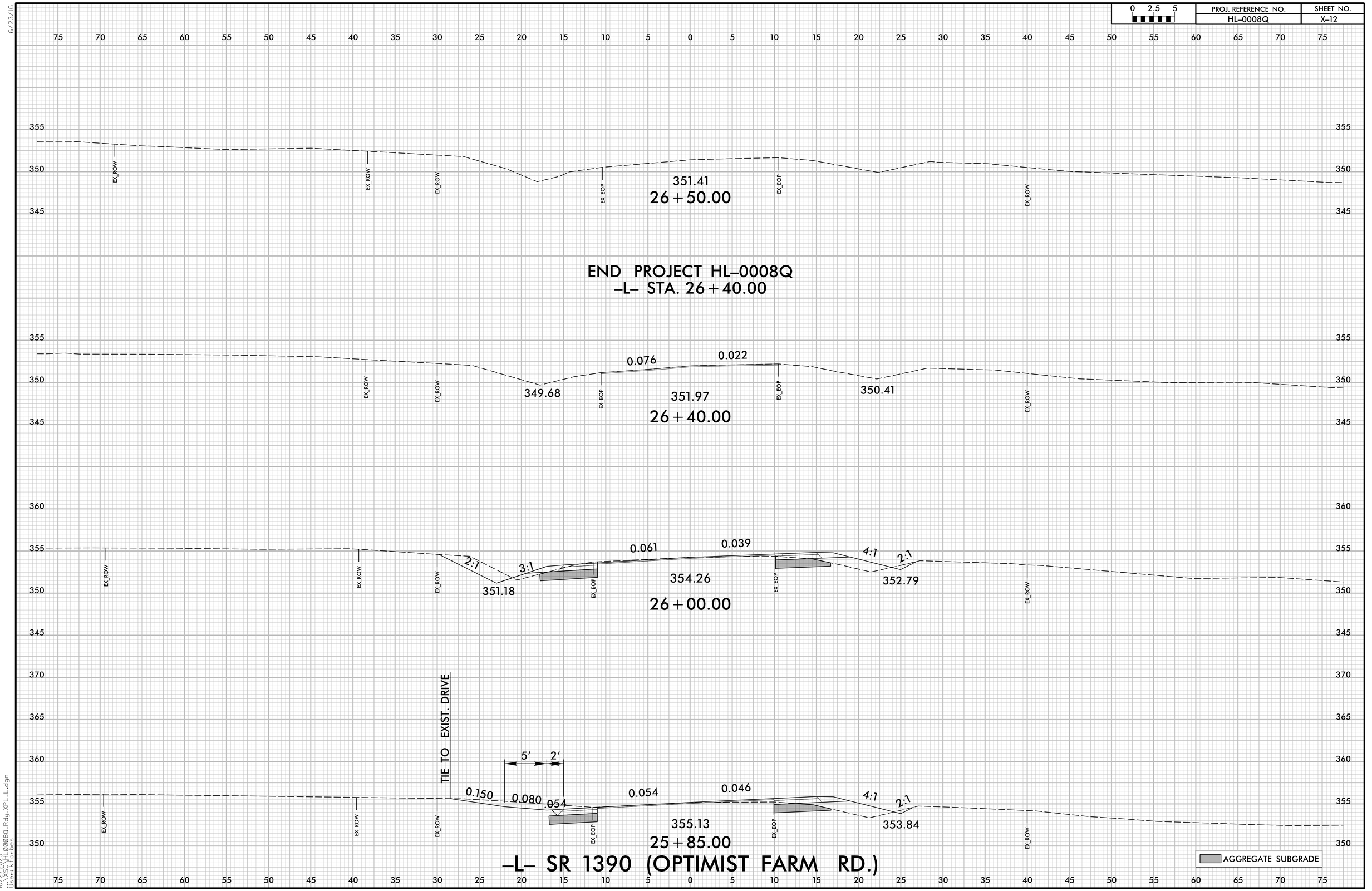
–L– SR 1390 (OPTIMIST FARM RD.)

AGGREGATE SUBGRADE

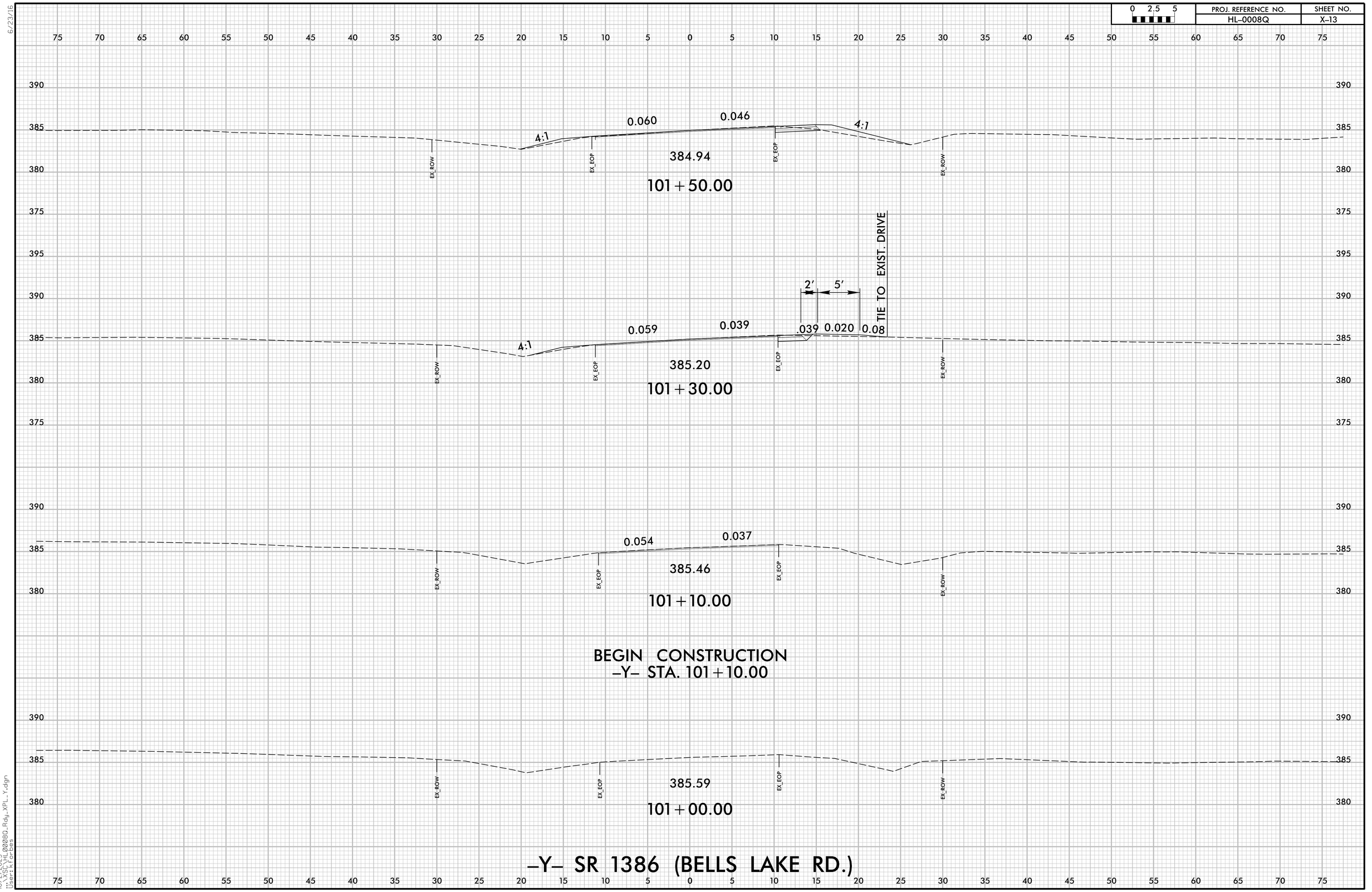
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

10/2/2025
...\XSC\HL0008Q_Rdy_XPL_L.dgn
User:kforbes

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-12



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-13



6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-14

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

390
385
380
375

3:1 0.080 0.080 4:1

EX_ROW EX_EOP EX_EOP EX_ROW

382.70

103+00.00

390
385
380
375

2:1 4:1 0.080 0.080 4:1

EX_ROW EX_EOP EX_EOP EX_ROW

380.29 383.48

102+50.00

400
395
390
385
380
375

TIE TO EXIST. ROAD

SR 3942
(DURNFORD DR.)

0.016 0.064 0.064 4:1

EX_EOP EX_ROW

384.23

102+00.00

-Y- SR 1386 (BELLS LAKE RD.)

AGGREGATE SUBGRADE

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

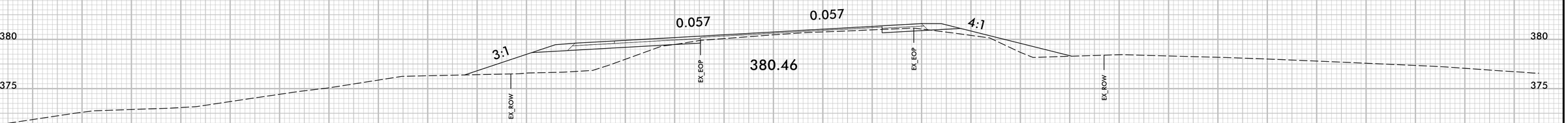
10/2/2025
...\XSC\HL0008Q_Rdy_XPL_Y.dgn
User:kforbes

6/23/16

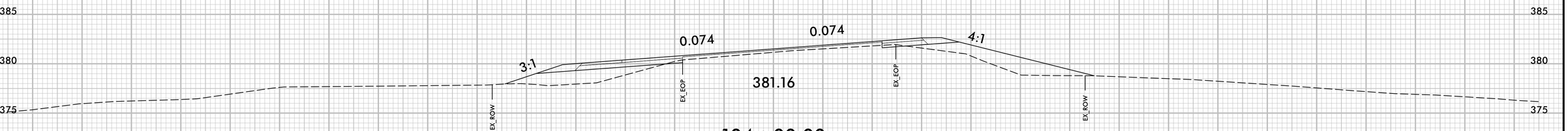
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-15

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

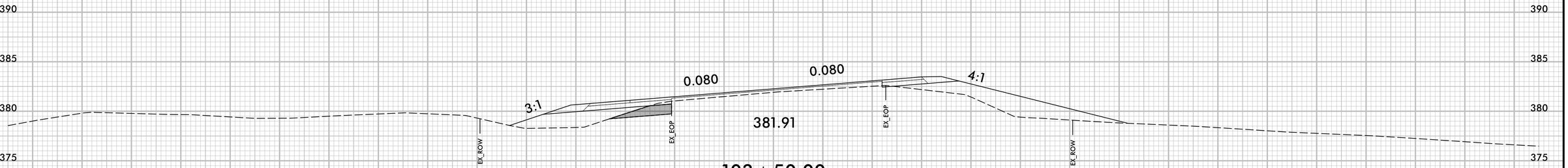
385 380 375 370 365



104+50.00



104+00.00



103+50.00

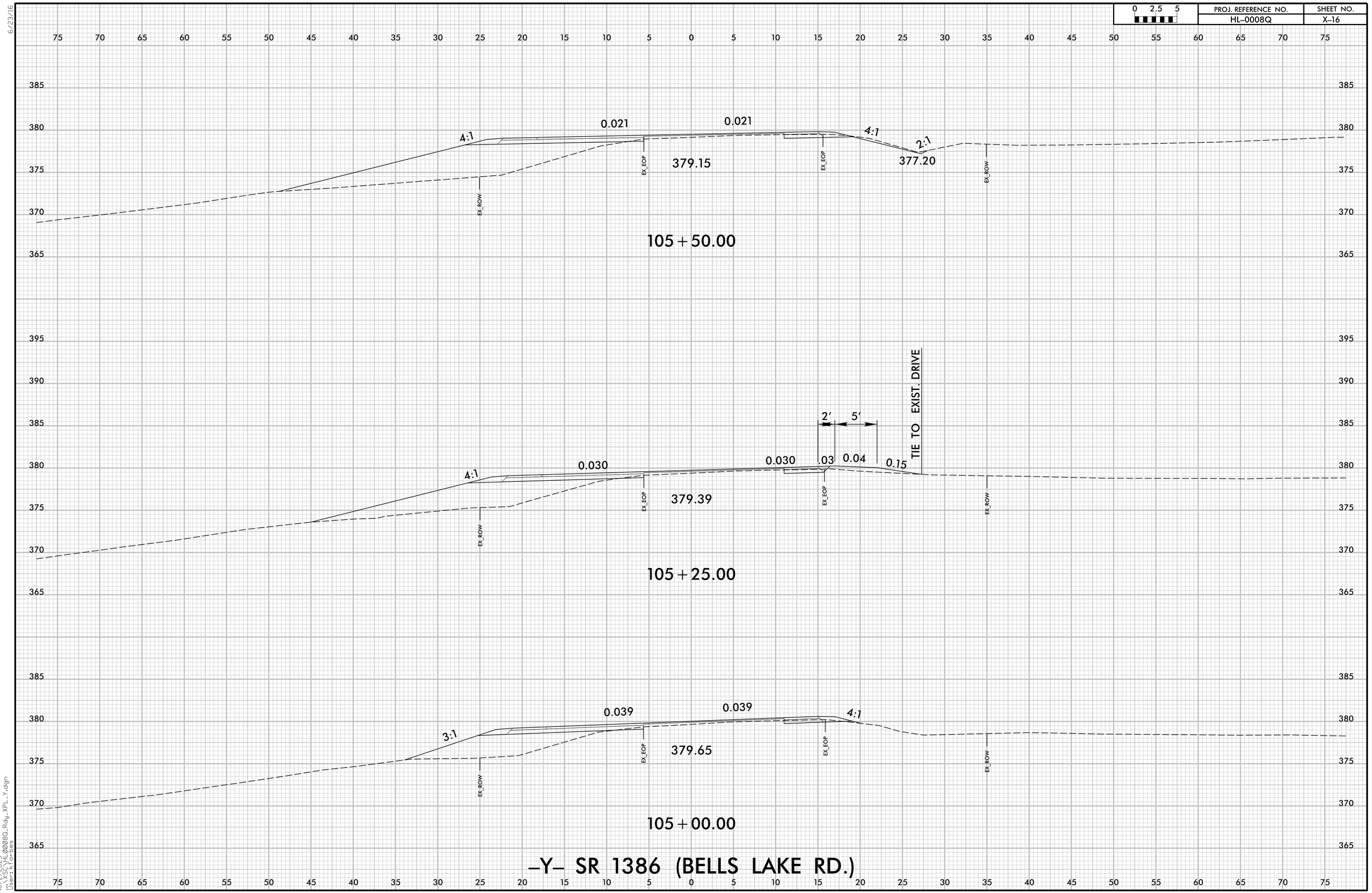
–Y– SR 1386 (BELLS LAKE RD.)

AGGREGATE SUBGRADE

10/2/2025
...\XSC\HL0008Q_Rdy_XPL_Y.dgn
User:kforbes

6/23/16

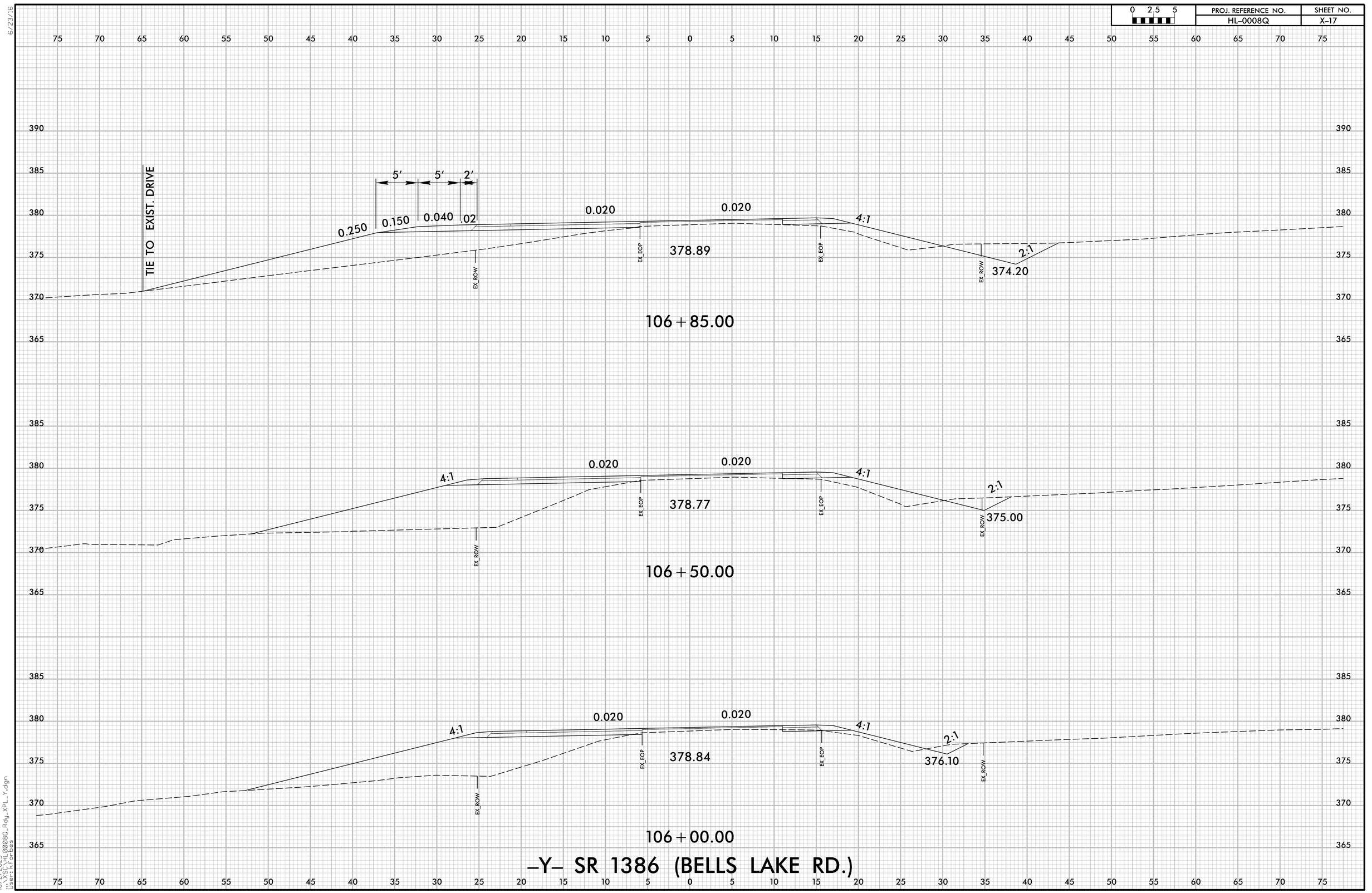
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-16



10/2/2025
I:\XSC\HL0008Q_Rdy_XPL_Y.dgn
User:krforbes

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-17



10/2/2025
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User: kforbes

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-18

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

395 390 385 380 375 370

TIE TO EXIST. DRIVE

5′ 5′ 2′

0.221 0.150 0.040 .02 0.02 0.02 4:1 2:1

EX_ROW EX_EOP EX_EOP EX_ROW

379.59 377.45

107+80.00

385 380 375 370

2:1 3:1 0.020 0.020 4:1 2:1

373.70 379.35 376.75

EX_ROW EX_EOP EX_EOP EX_ROW

107+50.00

385 380 375 370

2:1 3:1 0.020 0.020 4:1 2:1

372.00 378.96 374.80

EX_ROW EX_EOP EX_EOP EX_ROW

107+00.00

385 380 375 370 365

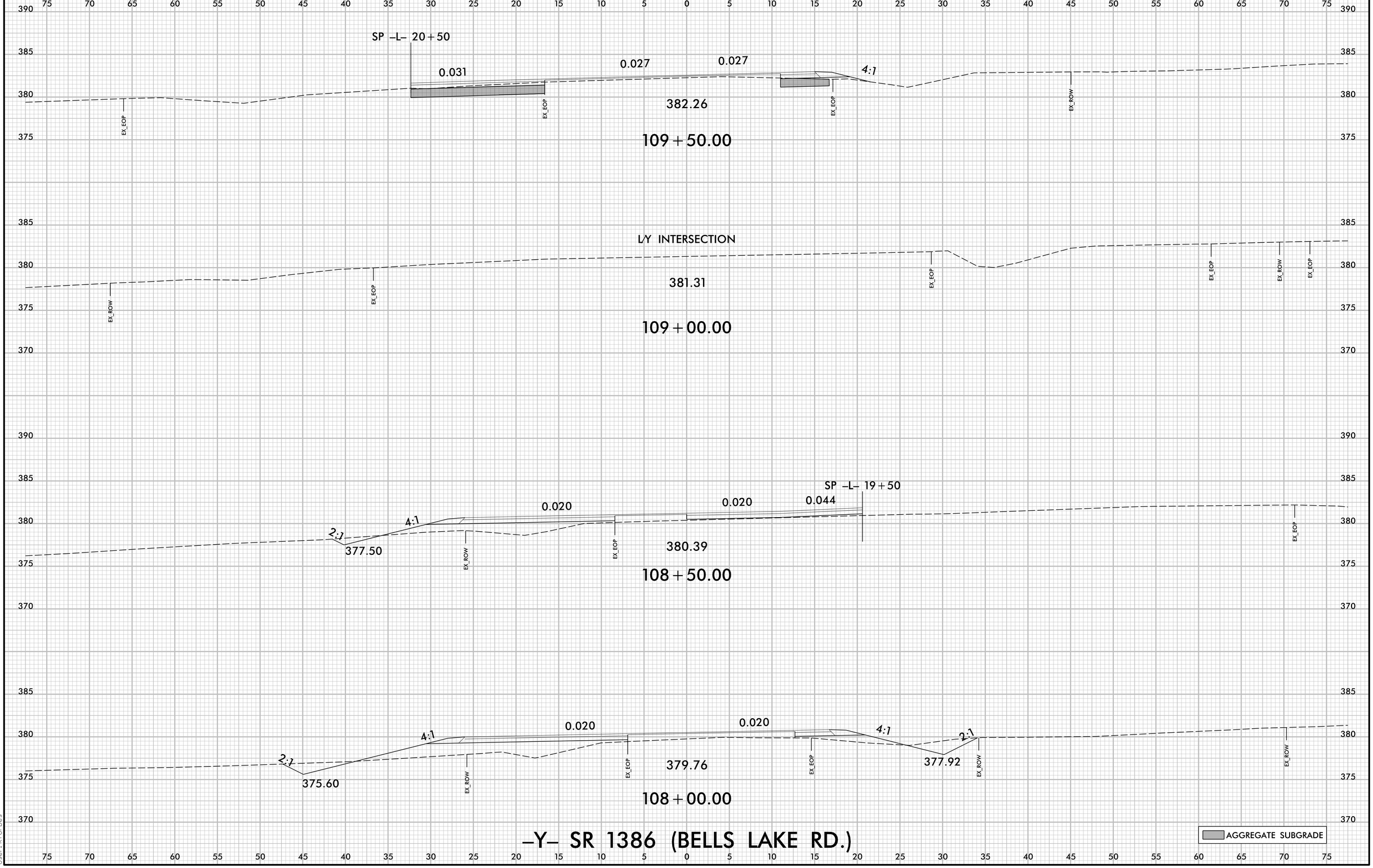
–Y– SR 1386 (BELLS LAKE RD.)

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

10/2/2025
...\XSC\HL0008Q_Rdy_XPL_Y.dgn
User: kforbes

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-19



10/2/2025
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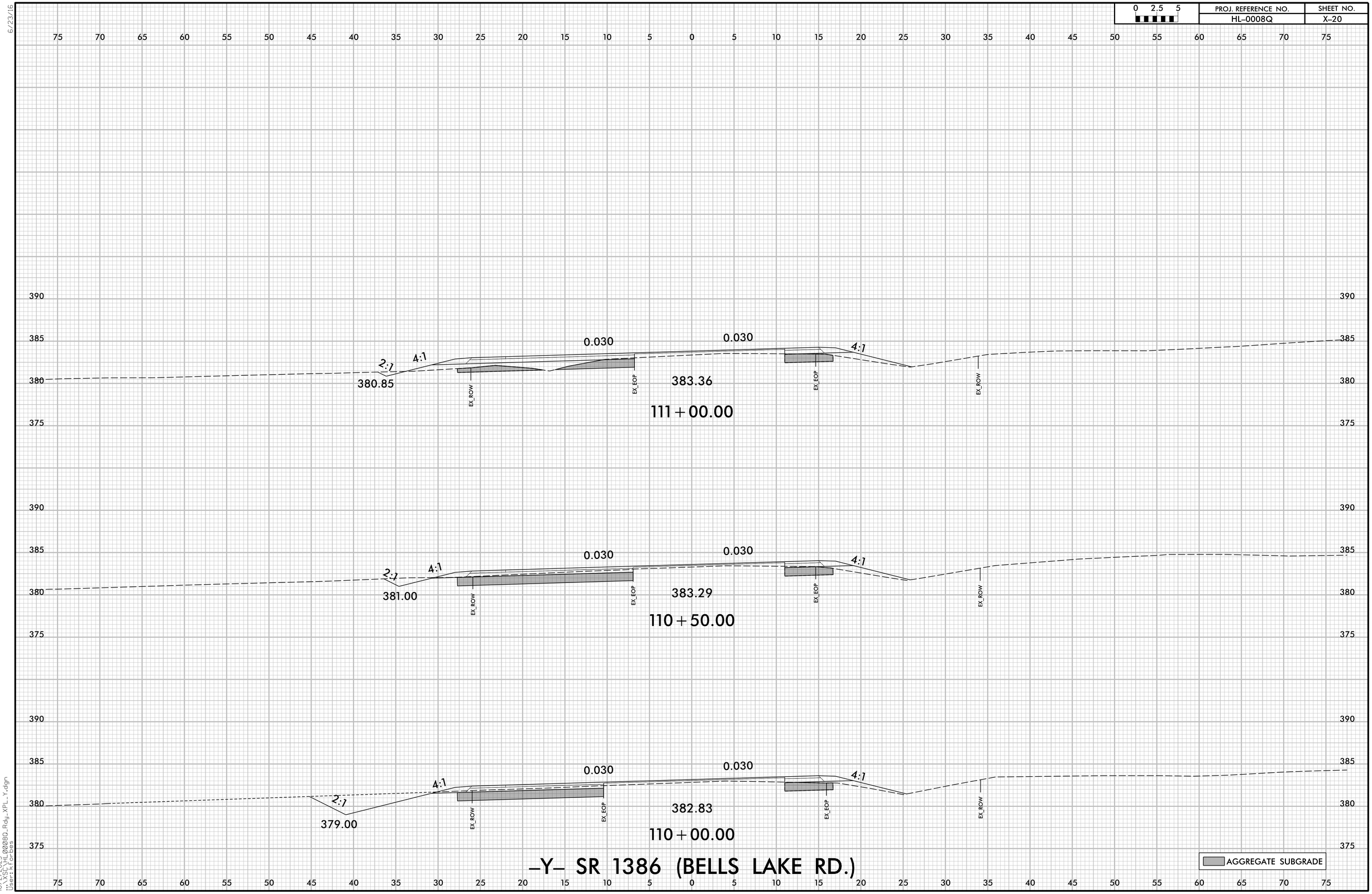
User: kforbes

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-20



10/2/2025
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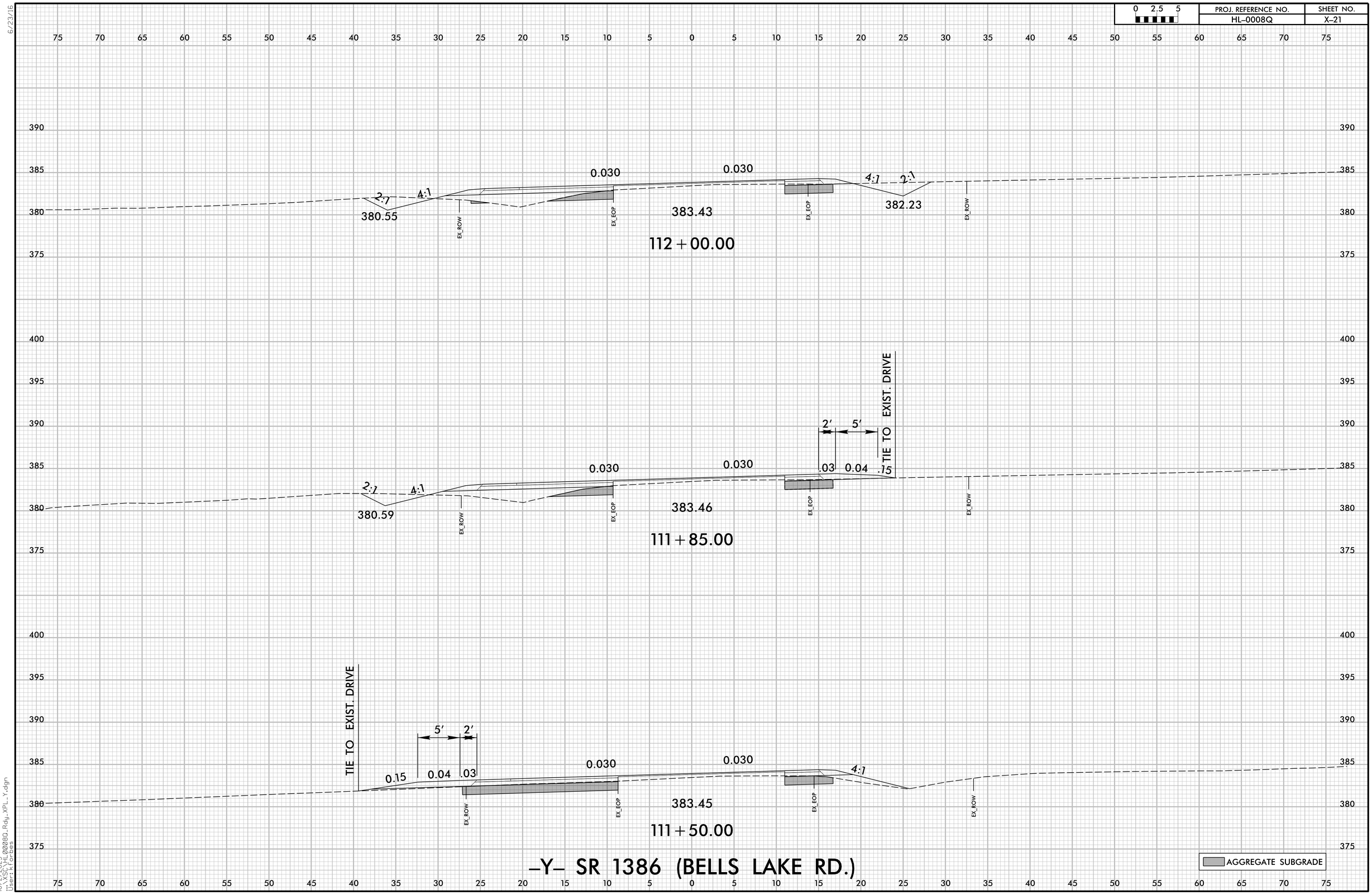
User: kTorbes

6/23/16

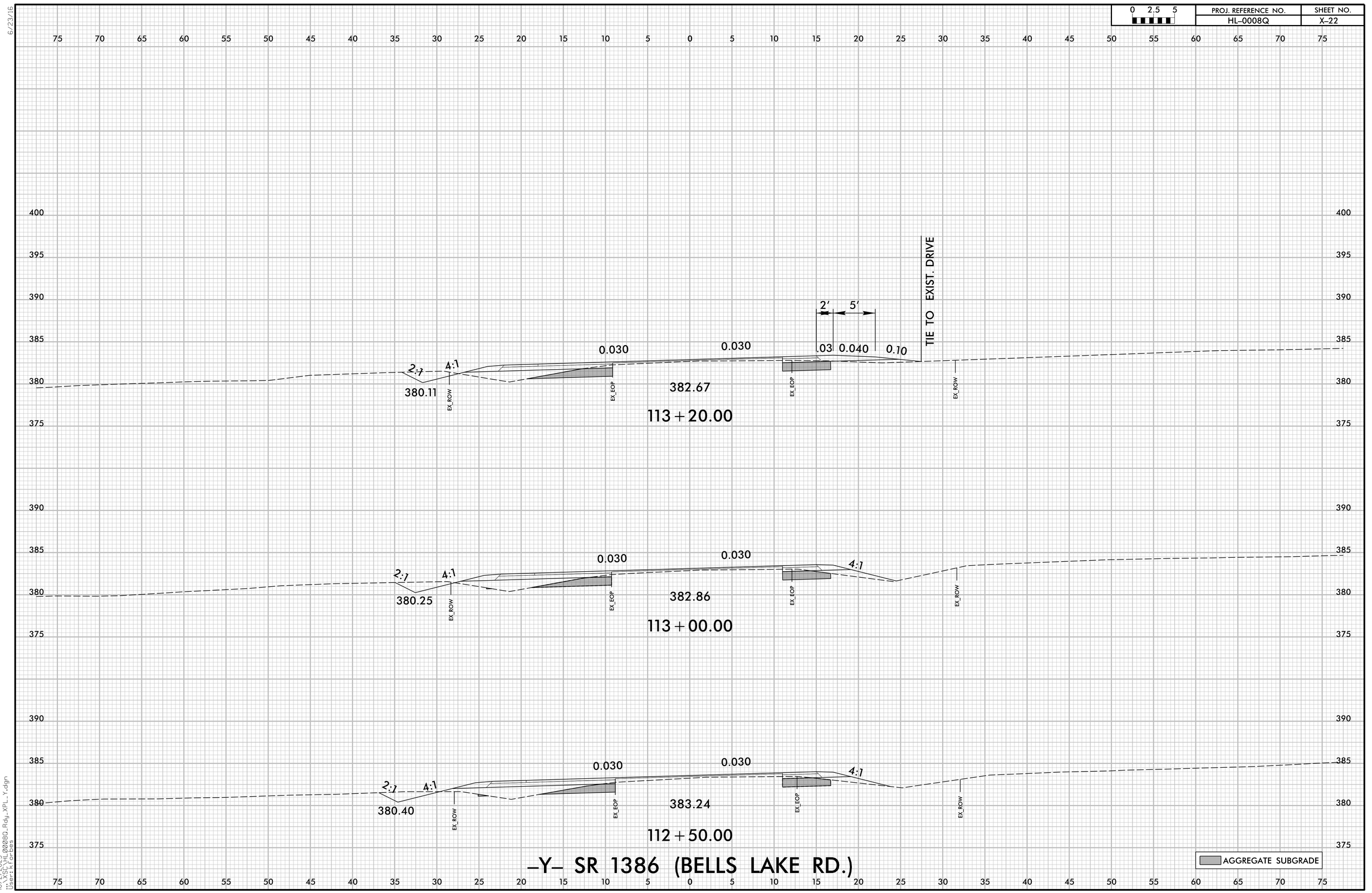
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-21



10/2/2025
I:\SC\HL0008Q_Rdy_XPL_Y.dgn
User:kforbes

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-22



10/2/2025
...\XSC\HL0008Q_Rdy_XPL_Y.dgn
User: kforbes

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-23

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

400 395 390 385 380 375

TIE TO EXIST. DRIVE

2'

2:1 4:1 0.027 0.027 .027 0.04

EX_ROW 377.74 EX_EOP EX_EOP EX_ROW EX_EOP

380.33

114+65.00

385 380 375

2:1 4:1 0.030 0.030 4:1

EX_ROW 378.00 EX_EOP EX_EOP EX_ROW

380.63

114+50.00

385 380 375

2:1 4:1 0.030 0.030 4:1

EX_ROW 378.94 EX_EOP EX_EOP EX_ROW

381.50

114+00.00

390 385 380 375

2:1 4:1 0.030 0.030 4:1

EX_ROW 379.90 EX_EOP EX_EOP EX_ROW

382.28

113+50.00

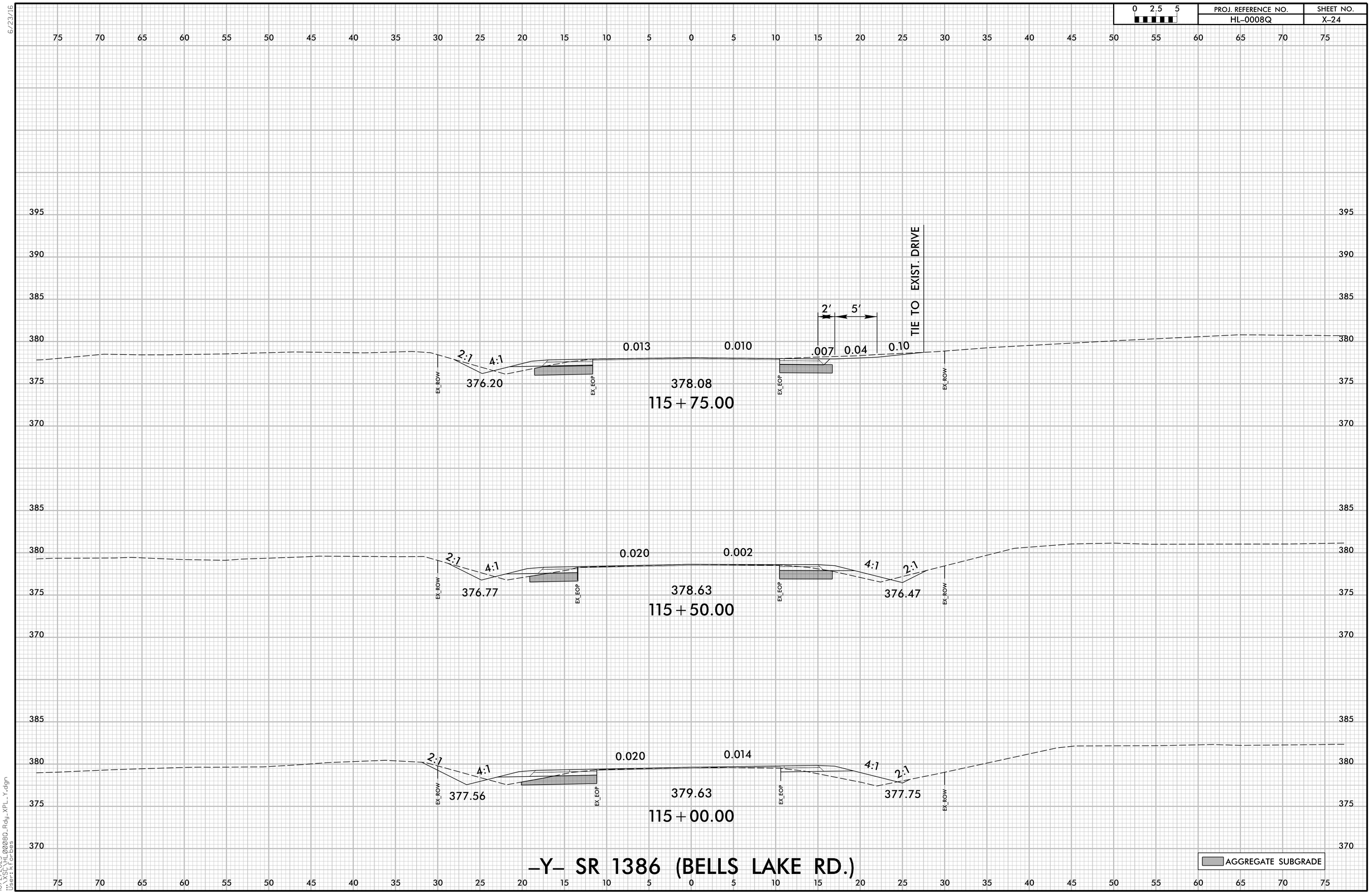
-Y- SR 1386 (BELLS LAKE RD.)

AGGREGATE SUBGRADE

10/2/2025
I:\VSC\HL\0008Q_Rdy_XPL_Y.dgn
User:kforbes

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-24



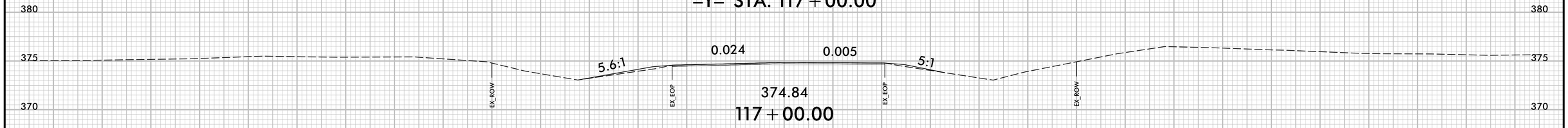
–Y– SR 1386 (BELLS LAKE RD.)

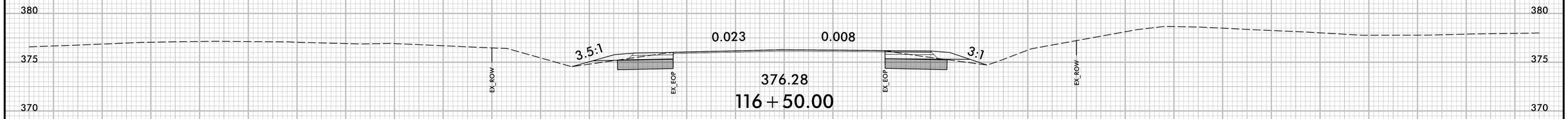
10/2/2025
...\XSC\HL0008Q_Rdy_XPL_Y.dgn
User: kforbes

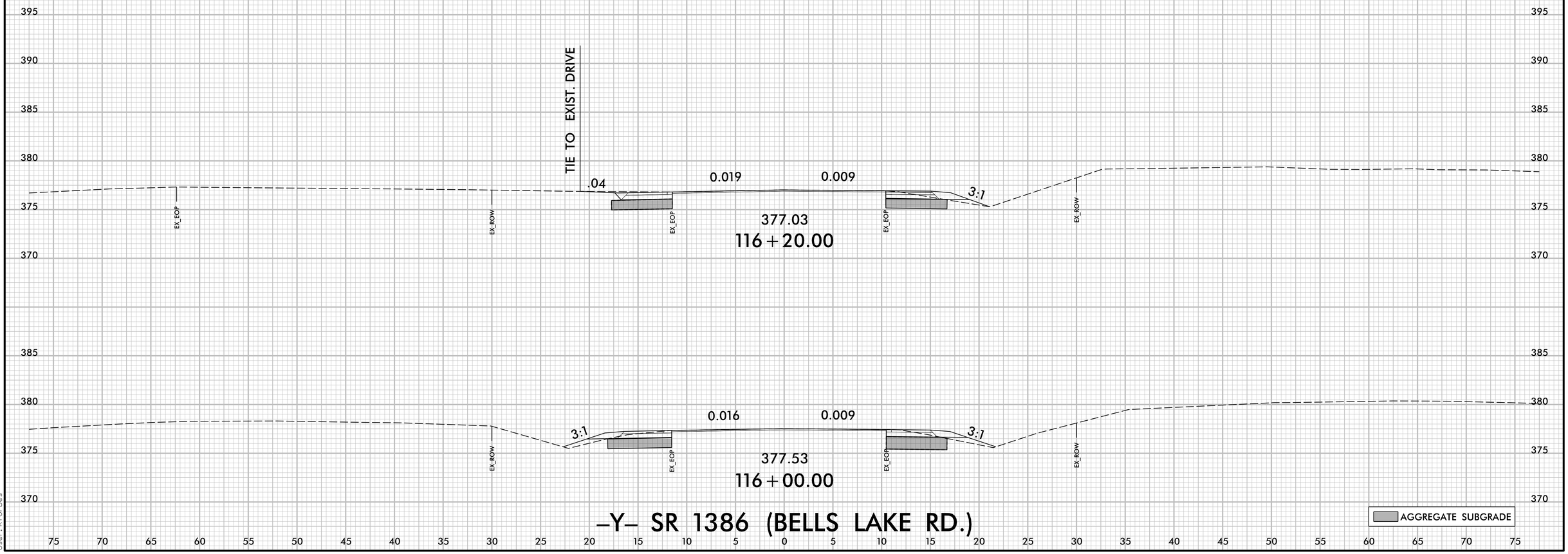
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	HL-0008Q	X-25

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

END CONSTRUCTION
–Y– STA. 117+00.00







–Y– SR 1386 (BELLS LAKE RD.)

AGGREGATE SUBGRADE

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