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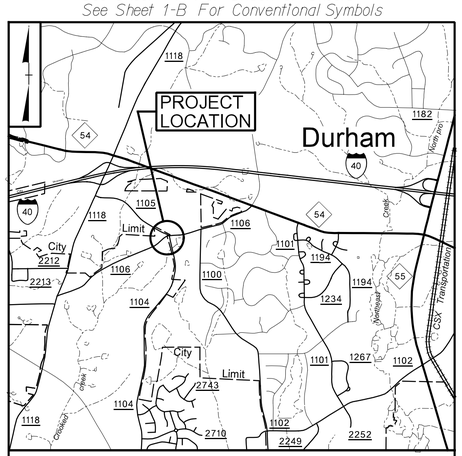
09/08/99

PROJECT: W-5205V

CONTRACT: DE00173

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

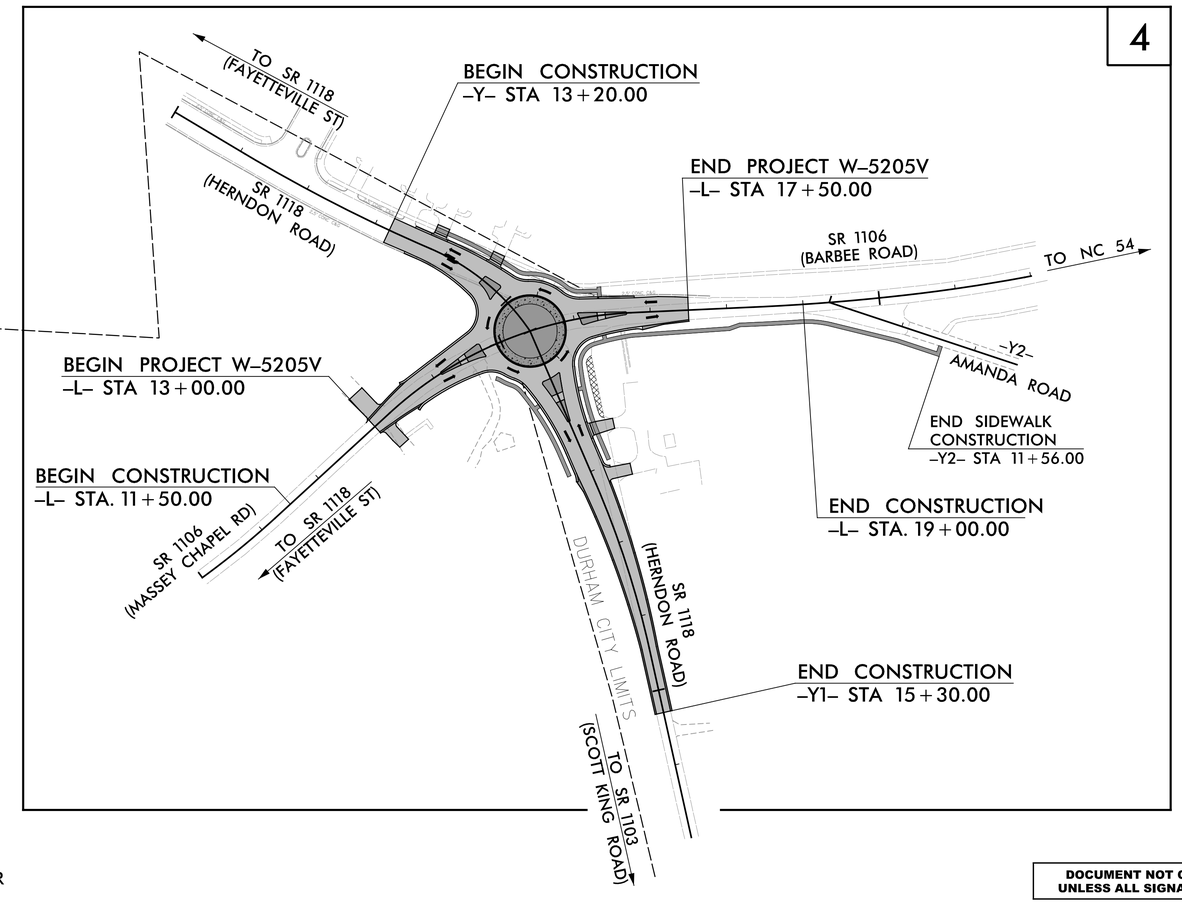
DURHAM COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5205V	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
41731		PE, RW
45335.3.23	HSIP-1104(19)	CONST

LOCATION: INTERSECTION OF SR 1106 (BARBEE RD), SR 1105 (HERNDON RD), AND SR 1104 (HERNDON RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, PAVEMENT MARKINGS, AND SIGNING.



NAD 83

NCDOT CONTACT: BEN UPSHAW, P.E.
DIVISION 5 – DIVISION DESIGN ENGINEER

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GRAPHIC SCALES

50 0 50 100
PLANS

50 0 50 100
PROFILE (HORIZONTAL)

10 0 10 20
PROFILE (VERTICAL)

DESIGN SPEED: 35 MPH
(15 MPH CAUTIONARY)

PROJECT LENGTH

LENGTH ROADWAY PROJECT 41731 = 0.085 MI

TOTAL = 0.085 MI

Prepared In the Office of:

ICA Engineering
5121 Kingdom Way,
Suite 100
Raleigh, NC 27607
NC License No: F-0258

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 13, 2014

LETTING DATE:

DENA C. SNEAD, PE
PROJECT ENGINEER

HENRY BARE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

STACEY H. BAILEY
DocuSigned by: 8/17/2016
Stacey H. Bailey P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 24451 ENGINEER STACEY H. BAILEY

ROADWAY DESIGN ENGINEER

DENA C. SNEAD
DocuSigned by: 8/17/2016
Dena C. Snead P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

8/17/2016
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ICA ENGINEERING, INC.

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8/17/99

ICA Engineering
5121 Kingdom Way,
Suite 100
Raleigh, NC 27607
NC License No: F-0258

PROJECT REFERENCE NO.	SHEET NO.
W-5205V	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

DocuSigned by:
Dena C. Snead 5/13/2016

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INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
2 THRU 2-B	PAVEMENT SCHEDULE, TYPICAL SECTIONS AND WEDGING DETAILS
2-C	PAVEMENT SLOPE TRANSITION DETAIL
2-D	INTERSECTION DETAIL
2-E	VARIABLE DEPTH MILLING DETAIL
3-A	SUMMARY OF EARTHWORK
3-B	DRAINAGE SUMMARY
3-C	RIGHT OF WAY AREA DATA
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-17	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
UC-1 THRU UC-3	UTILITIES PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1 THRU X-18	CROSS-SECTIONS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED 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

SUBSURFACE DRAINS:

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

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 900 MM RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

SUBSURFACE PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY, CITY OF DURHAM,

FRONTIER COMMUNICATIONS, TIME WARNER CABLE & PSNC ENERGY.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS.
CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

EFF. 01-17-2012
REV. 02-29-2016

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C.. Dated January, 2012 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	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, 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
816.04	Markers for Drainage Structure and Concrete Pad
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.54	Manhole Frame and Cover
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.05	Curb Ramp - Proposed Curb & Gutter
852.01	Concrete Islands
852.02	Concrete Mountable Median - for Use with Rigid or Flexible Pavement
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

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ICA ENGINEERING, INC.

PROJECT REFERENCE NO.	SHEET NO.
W-5205V	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — 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
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

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ICA Engineering
5121 Kingdom Way,
Suite 100
Raleigh, NC 27607
NC License No: F-0258

PROJECT REFERENCE NO.	SHEET NO.
W-5205V	2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

DocuSigned by: Dena C. Snead 5/13/2016
2A6838

PAVEMENT DESIGN ENGINEER

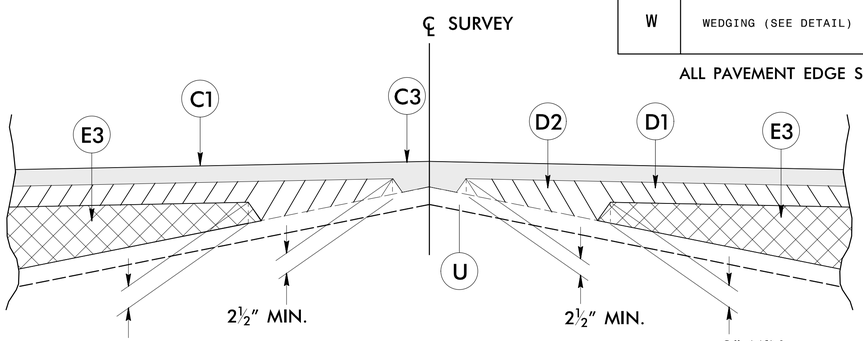
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

6/2/99

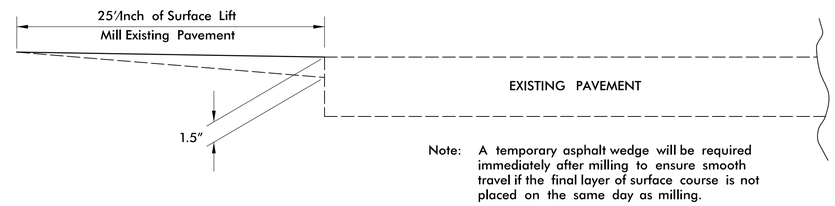
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½″ ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R1	2′-6″ CONCRETE CURB AND GUTTER.
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	1′-6″ CONCRETE CURB AND GUTTER.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS GREATER THAN 2″ IN DEPTH.	R3	8″X18″ CONCRETE CURB
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R4	5: MONOLITHIC CONCRETE ISLAND
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.	R5	8″ CONCRETE TRUCK APRON
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	S	4″ CONCRETE SIDEWALK.
E2	PROP. APPROX. 5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	T	EARTH MATERIAL
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, 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 5½″ IN DEPTH.	U	EXISTING PAVEMENT
		W	WEDGING (SEE DETAIL)

ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

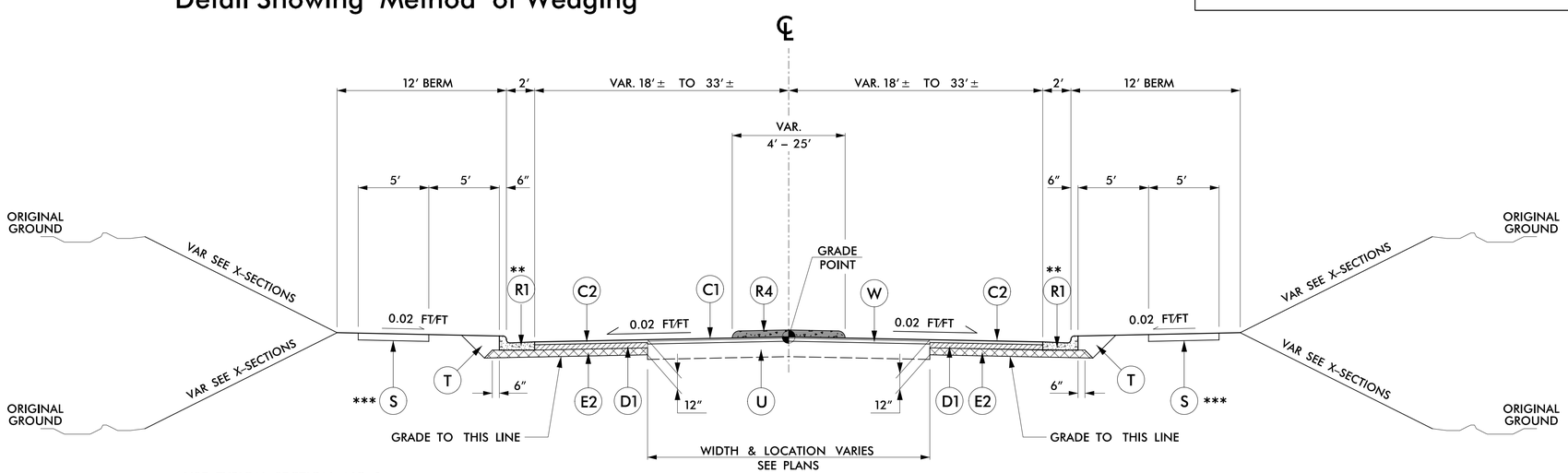


Detail Showing Method of Wedging



Note: A temporary asphalt wedge will be required immediately after milling to ensure smooth travel if the final layer of surface course is not placed on the same day as milling.

Incidental Milling Pavement Key–In Detail (Tie–In)



USE TYPICAL SECTION NO. 1
–L– STA. 13+70.00 TO STA. 14+75.35
–L– STA. 16+05.44 TO STA. 16+80.00
–Y– STA. 13+20.00 TO STA. 14+85.17
–Y1– STA. 10+65.00 TO STA. 11+94.86

TYPICAL SECTION NO. 1

** FROM –Y– 13+20.00 TO 13+50 LT & RT TIE TO EXISTING CURB & GUTTER.

*** SEE PLANS FOR SIDEWALK LOCATION

5/13/2016
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6/2/99

PAVEMENT SCHEDULE	
C1	1½" S9.5B
C2	3"S9.5B
C3	VAR.
D1	4"I19.0B
D2	VAR.
E1	4"B25.0B
E2	5"B25.0B
E3	VAR.
R1	2'-6" C&G
R2	1'-6" C&G
R3	8"x18" CURB
R4	5" MCI
R5	8" TRUCK APRON
S	4" SIDEWALK
T	EARTH MATERIAL
U	EX. PAVEMENT
W	WEDGING

ICA Engineering
5121 Kingdom Way,
Suite 100
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NC License No: F-0258

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W-5205V	2-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

DocuSigned by: Dena C. Snead 5/13/2016
2A6838

PAVEMENT DESIGN ENGINEER

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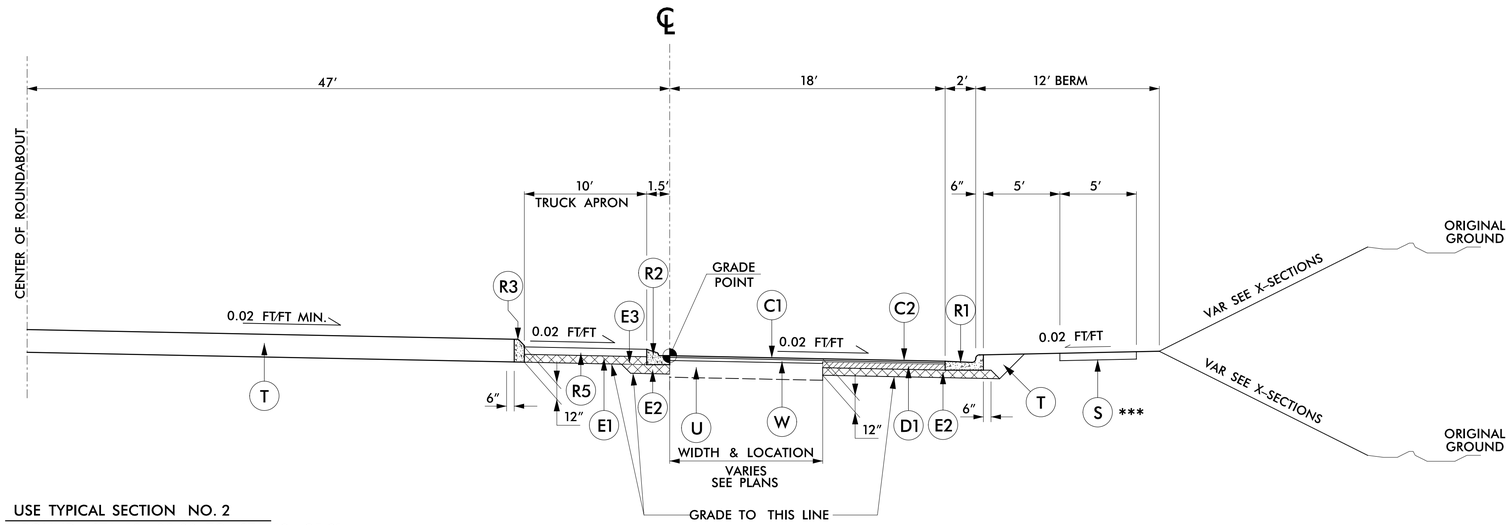
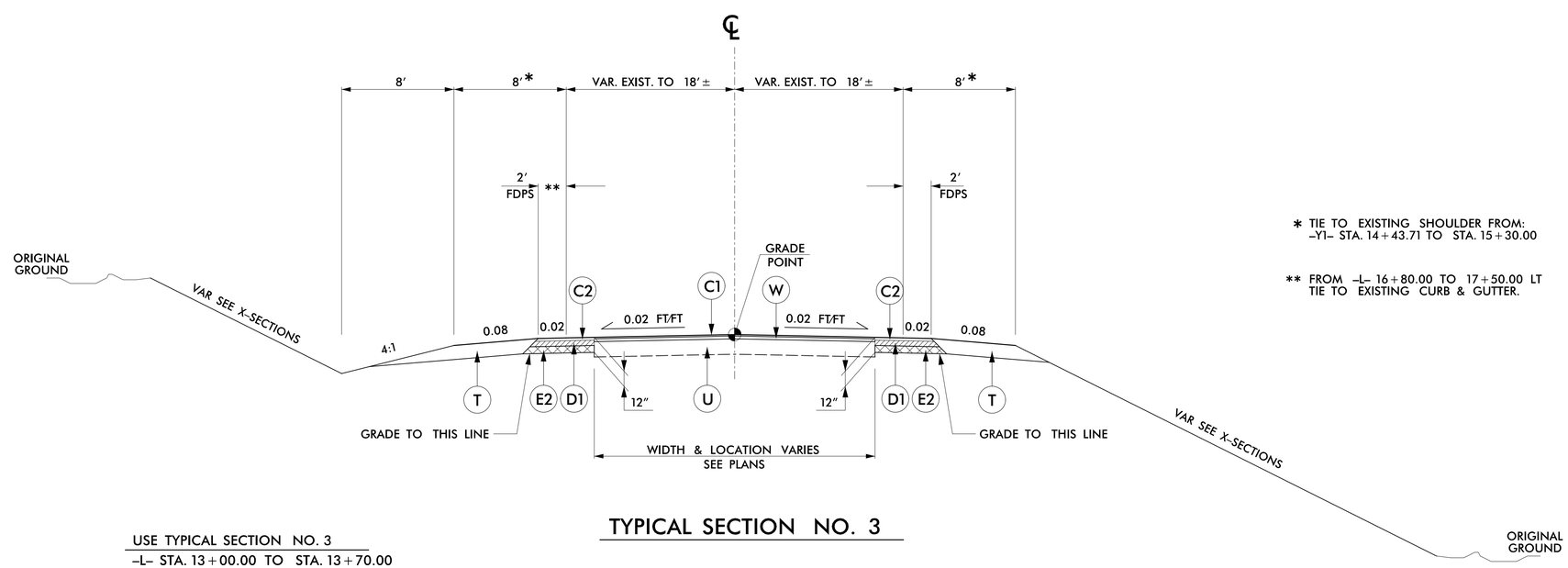


USE TYPICAL SECTION NO. 2
–ROUND– STA. 10+00.00 TO STA. 12+95.31

*** SEE PLANS FOR SIDEWALK LOCATION

TYPICAL SECTION NO. 2
ROUNDABOUT



* TIE TO EXISTING SHOULDER FROM:
–Y1– STA. 14+43.71 TO STA. 15+30.00

** FROM –L– 16+80.00 TO 17+50.00 LT
TIE TO EXISTING CURB & GUTTER.

TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
–L– STA. 13+00.00 TO STA. 13+70.00
–L– STA. 16+80.00 TO STA. 17+50.00
–Y1– STA. 11+94.86 TO STA. 15+30.00

5/13/2016
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6/2/99

PAVEMENT SCHEDULE	
C1	1½" S9.5B
C2	3"S9.5B
C3	VAR.
D1	4"I19.0B
D2	VAR.
E1	4"B25.0B
E2	5"B25.0B
E3	VAR.
R1	2'-6" C&G
R2	1'-6" C&G
R3	8"x18" CURB
R4	5" MCI
R5	8" TRUCK APRON
S	4" SIDEWALK
T	EARTH MATERIAL
U	EX. PAVEMENT
W	WEDGING

ICA Engineering
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NC License No: F-0258

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W-5205V	2-B

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

DocuSigned by: Dena C. Snead 5/13/2016
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PAVEMENT DESIGN ENGINEER

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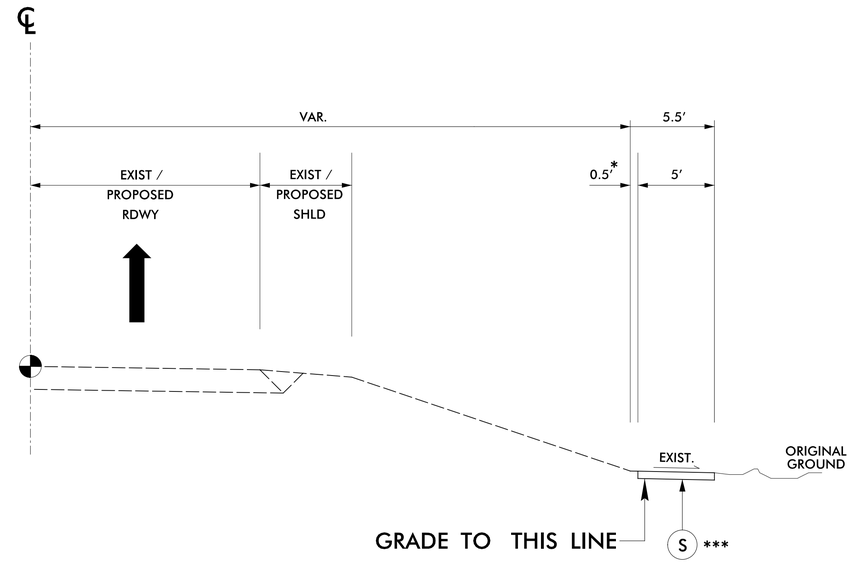


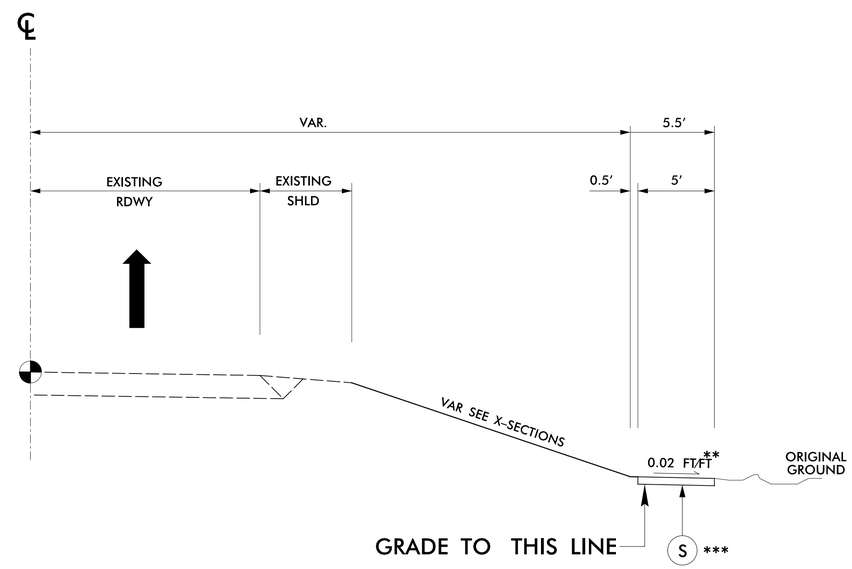
* OFFSET BETWEEN FILL SLOPE AND SIDEWALK VARIES FROM:
–L– STA. 17+00.00 TO STA. 19+00.00

*** SEE PSH 4 FOR SIDEWALK LOCATION

TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 FOR:

–L– STA 17+00.00 TO STA 19+00.00



** SIDEWALK SLOPE WILL MATCH EXISTING GROUND FROM:
–Y2– STA. 10+00 TO STA. 10+75

*** SEE PSH 4 FOR SIDEWALK LOCATION

TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 FOR:

–Y2– STA 10+00.00 TO STA 11+56.00

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5121 Kingdom Way,
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NC License No: F-0258

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PROJECT REFERENCE NO.	SHEET NO.
W-5205V	2-C
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD
DocuSigned by: Dena C. Snead 5/13/2016
2A683BDED87449E...

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 24451 ENGINEER STACEY H. BAILEY
DocuSigned by: Stacey H. Bailey 5/13/2016
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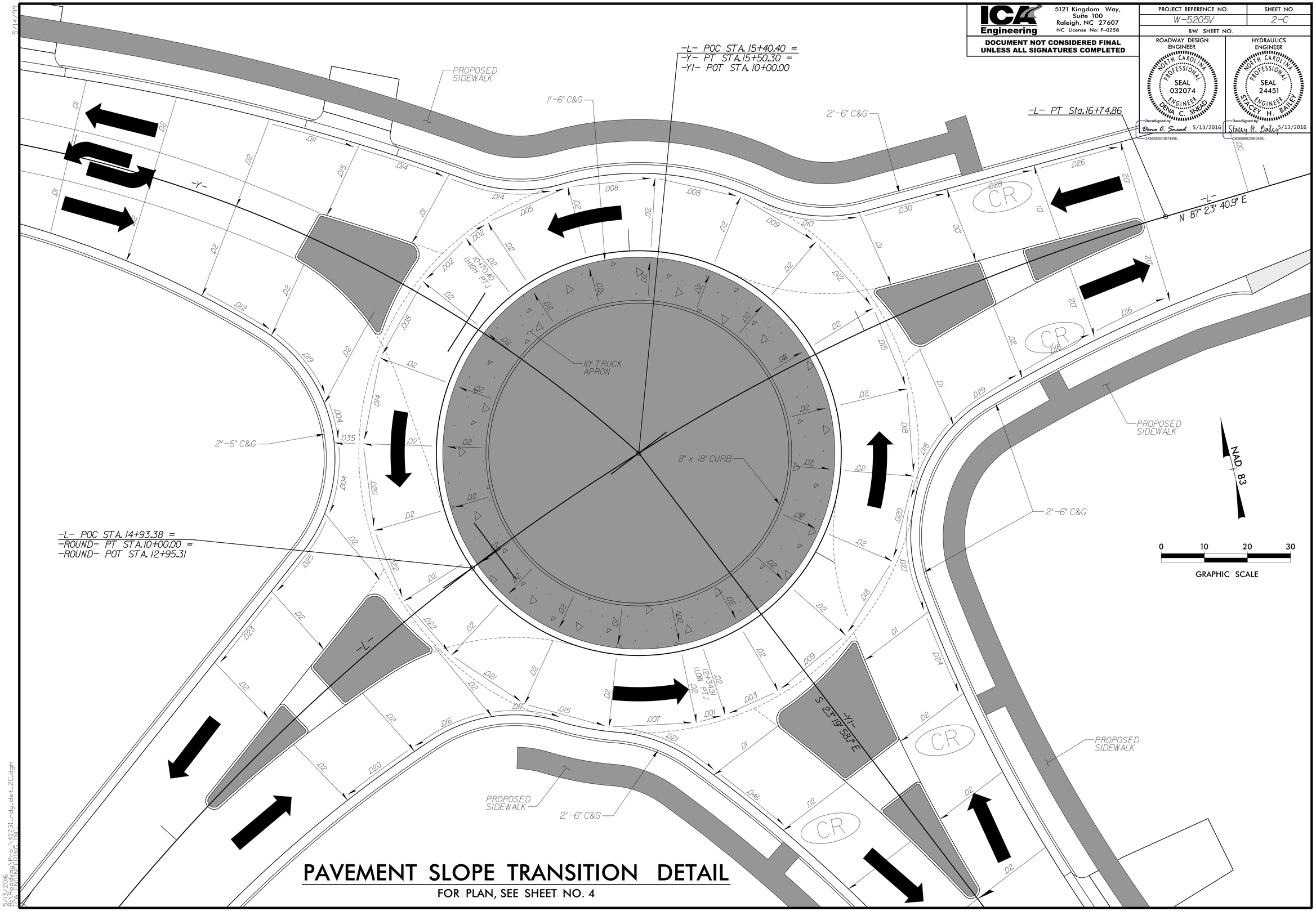

PAVEMENT SLOPE TRANSITION DETAIL

FOR PLAN, SEE SHEET NO. 4

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PROJECT REFERENCE NO.	SHEET NO.
W-5205V	2-D
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD
DocuSigned by: Dena C. Snead 5/13/2016
2A683B

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 24451 ENGINEER STACEY H. BAILEY
DocuSigned by: Stacey H. Bailey 5/13/2016

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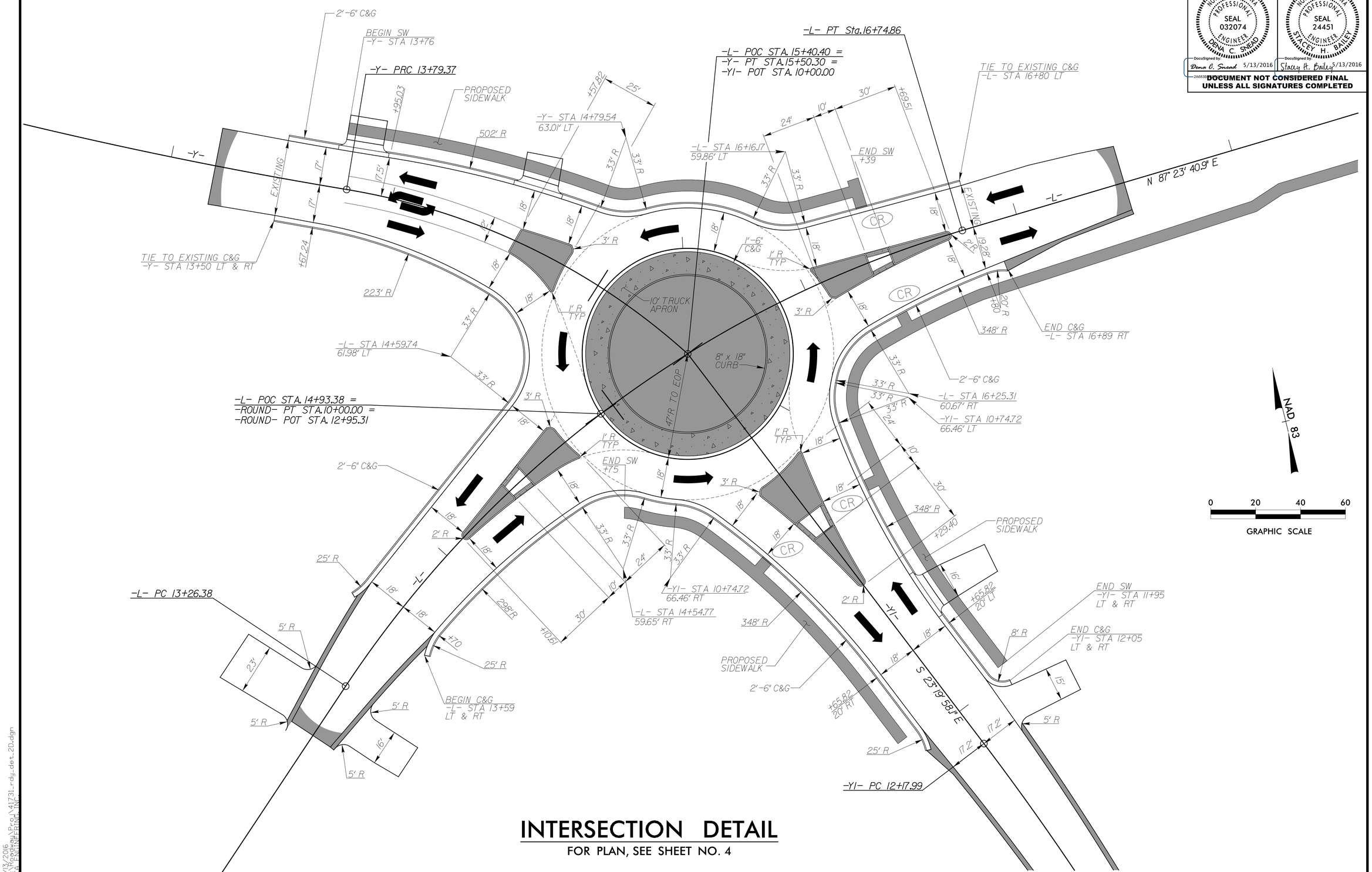

INTERSECTION DETAIL

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W-5205V	2-E
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD
DocuSigned by: Dena C. Snead 5/13/2016
2A6B58

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 24451 ENGINEER STACEY H. BAILEY
DocuSigned by: Stacey H. Bailey 5/13/2016

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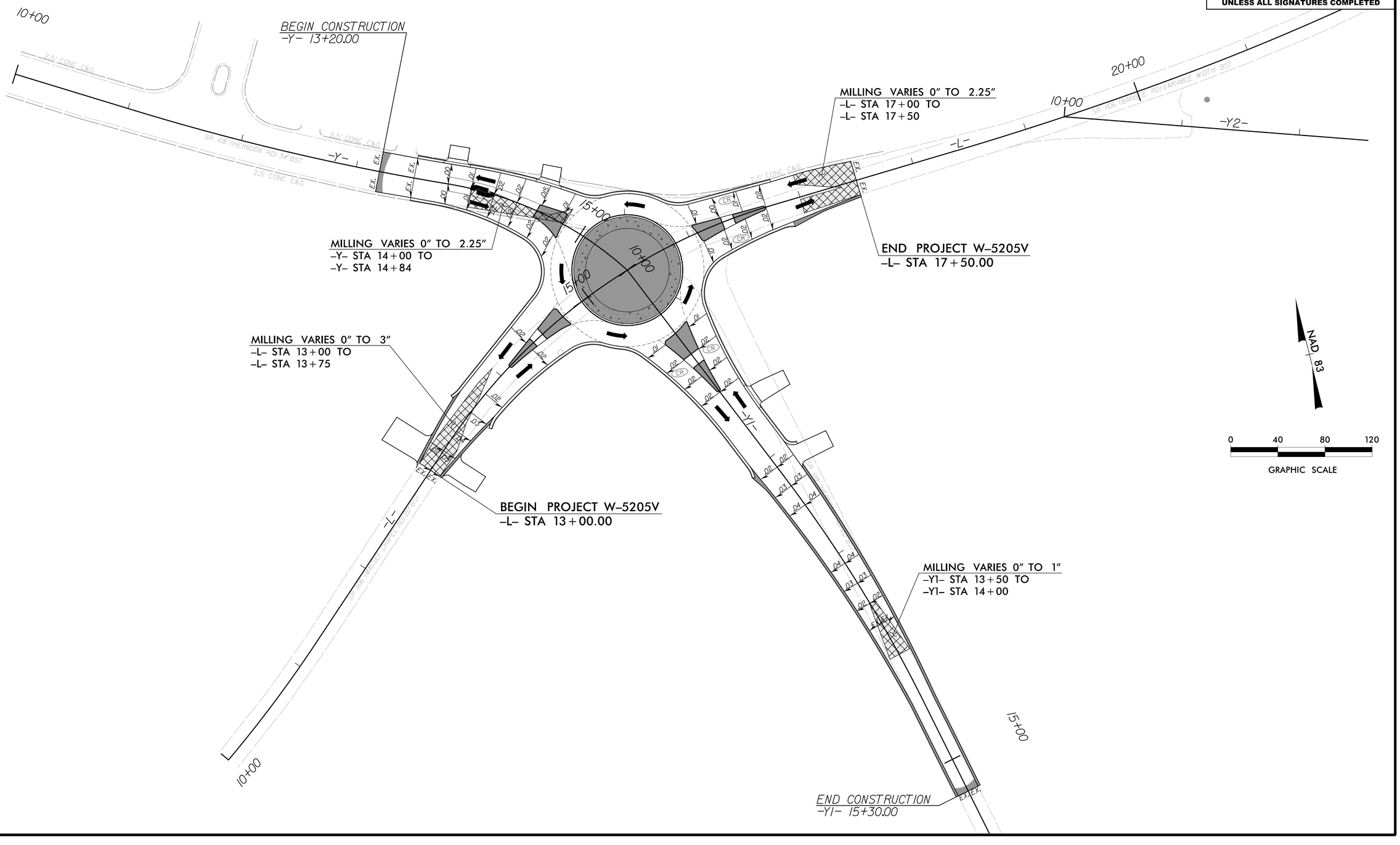
VARIABLE DEPTH MILLING DETAIL

FOR PLAN, SEE SHEET NO. 4



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MATTHEW.BRIDGE

COMPUTED BY: DCS DATE: 4/18/16
CHECKED BY: JCB DATE: 4/18/16

PROJECT REFERENCE NO.	SHEET NO.
W-5205V	3-A

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L– 11+50.00 TO 14+75.00	84		438	354	
–L– 16+05.00 TO 17+50.00	21		124	103	
–Y– 13+20.00 TO 14+84.00	75		77	2	
–Y1– 10+64.50 TO 15+30.00	464		1439	975	
–ROUND– 10+00.00 TO 12+95.31	18		2066	2048	
–Y2– 10+75.00 TO 11+65.00	5		5	0	
PROJECT SUB–TOTALS	667		4149	3482	
MATERIAL FOR SHOULDER CONSTRUCTION					
WASTE IN LIEU OF BORROW					
TOTALS	667		4149	3482	
MATERIAL FOR SHOULDER CONSTRUCTION			132	132	
PROJECT TOTALS	667			3614	
EST. 5% TO REPLACE TOPSOIL ON BORROW PITS				181	
GRAND TOTALS	667			3794	
SAY	670			3800	

DDE = 80 CY

Note: Approximate quantities only. Unclassified Excavation, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

6/4/99
5/13/2016
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NC12220

COMPUTED BY:	SHB	DATE:	4/15/2016
CHECKED BY:	JCB	DATE:	4/15/2016

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
W-5205V	3-B

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, or PVC) 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | 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 | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | DRIVEWAY D.I. STD. 840.30 | FRAME W/ GRATE FOR DRIVEWAY STD. 840.30 | J.B. STD. 840.31 OR STD. 840.32 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | 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 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING C.B. TO D.I. | CONVERT EXISTING D.I. TO J.B. | CONVERT EXISTING J.B. TO D.I. | 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 |
|---|---|---|---

COMPUTED BY: DCW DATE: 9-23-13
CHECKED BY: DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. W-5205V
SHEET NO. 3-C

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	TEMP. DRAINAGE EASE.	CONST. EASE.	PERM. UTILITY EASE.	AERIAL UTILITY EASE.
1	EDNA HERNDON SMITH		608.8 sf						
2	ALPHUS & SHERRI HERNDON		2173.9 sf				2136.5 sf	1552.6 SF	
3	SANDERS HERNDON		14,936.4 sf				5715.3 sf	535.6 SF	
4	CARL & CAROL ATKINS		2524.0 sf				1267.2 sf	3040.5 SF	
5	EDNA HERNDON SMITH		523.4 sf			9162.5 sf	916.7 sf		
6	STEVEN & KENNETH HERNDON		74.7 sf				4797.1 sf	681.4 SF	1481.2 SF
7	WELLINGTON FOREST COMMUNITY		1628.6 sf				776.8 sf	2272.0 SF	
8	ASHALLA FREEMAN							502.5 SF	
9	CHUN KANG						539.1 sf		
10	NORMAN & ANGELA AUTRY						547.3 sf		
11	BEJAR HERNANDEZ						50.5 sf		
12	WELLINGTON FOREST COMMUNITY						692.7 sf	6.4 SF	

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PROJECT REFERENCE NO.	SHEET NO.
W-5205V	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD — DocuSigned by: Dena C. Snead 5/13/2016

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 24451 ENGINEER STACEY H. BAILEY — DocuSigned by: Stacey H. Bailey 5/13/2016

GRAPHIC SCALE 0 50 100

CONTROL POINTS

POINT	NORTHING	EASTING	ELEVATION	ALIGN/STATION	OFFSET
BL-1	782,759.2580	2,021,590.6140	333.01	OUT OF PROJECT LIMITS	
BL-2	783,446.3490	2,021,439.5740	353.06	-L- 16+14.76	45.79' LT
BL-3	783,650.8950	2,020,888.9700	351.39	OUT OF PROJECT LIMITS	
BY-4	782,945.3800	2,020,763.7370	334.65	OUT OF PROJECT LIMITS	
BY-5	783,456.2520	2,021,783.2300	350.66	-L- 19+54.54	33.79' LT
BY-6	783,469.4320	2,022,026.6460	347.22	-L- 22+00.02	14.36' LT
BL-7	784,035.7340	2,020,381.4420	333.36	OUT OF PROJECT LIMITS	

-Y-

PI Sta 12+43.04
△ = 7° 32' 23.3" (LT)
D = 2° 45' 40.5"
L = 273.06'
T = 136.73'
R = 2,075.00'

PI Sta 14+67.23
△ = 32° 38' 38.3" (RT)
D = 19° 05' 54.9"
L = 170.92'
T = 87.85'
R = 300.00'

-L-

PI Sta 10+61.36
△ = 6° 28' 26.7" (LT)
D = 5° 16' 50.6"
L = 122.60'
T = 61.36'
R = 1,085.00'

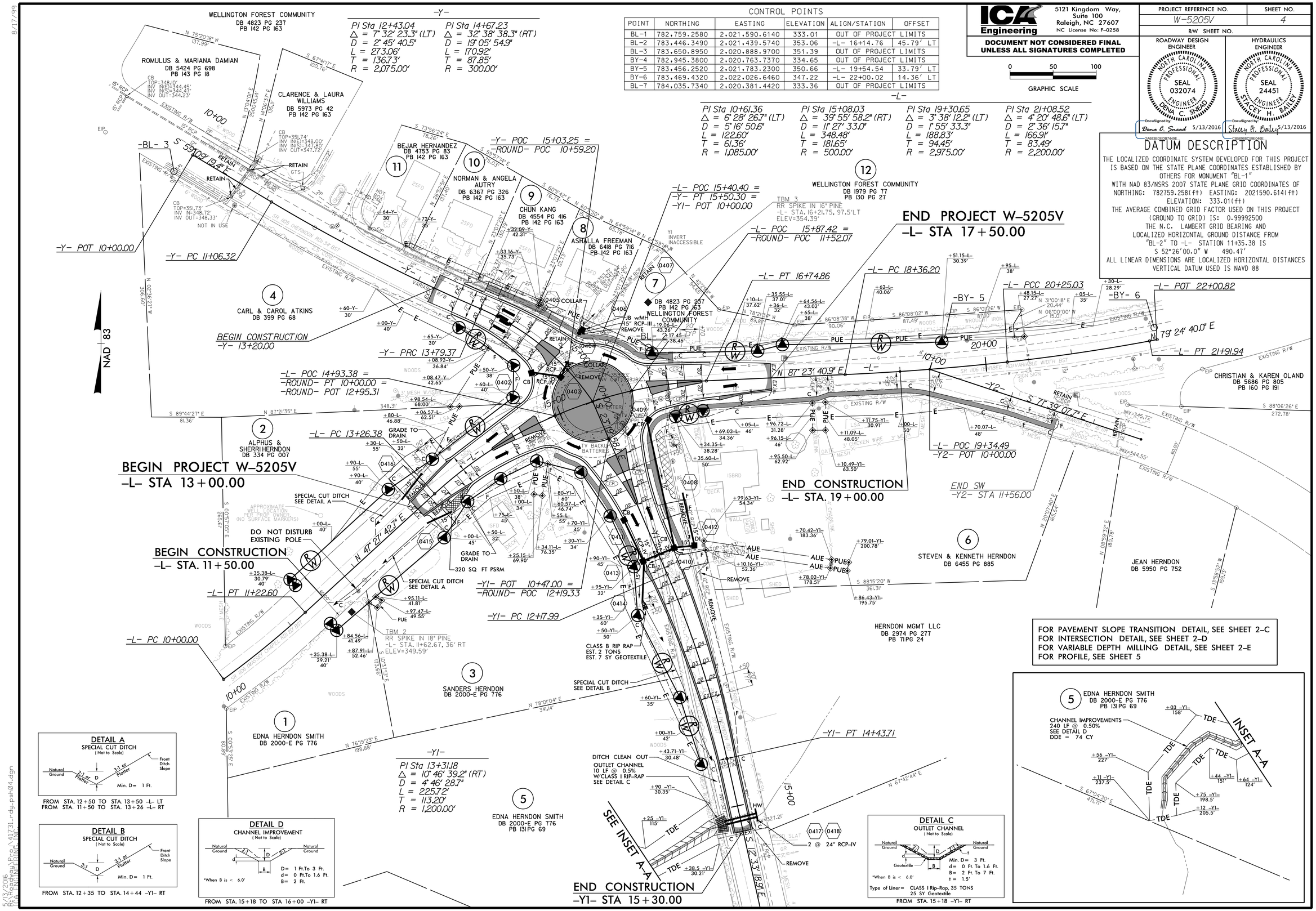
PI Sta 15+08.03
△ = 39° 55' 58.2" (RT)
D = 11° 27' 33.0"
L = 348.48'
T = 181.65'
R = 500.00'

PI Sta 19+30.65
△ = 3° 38' 12.2" (LT)
D = 1° 55' 33.3"
L = 188.83'
T = 94.45'
R = 2,975.00'

PI Sta 21+08.52
△ = 4° 20' 48.6" (LT)
D = 2° 36' 15.7"
L = 166.91'
T = 83.49'
R = 2,200.00'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "BL-1"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 782759.258(ft) EASTING: 2021590.614(ft)
ELEVATION: 333.01(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99992500
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-2" TO -L- STATION 11+35.38 IS
S 52°26'00.0" W 490.47'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88



DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1 Ft.
FROM STA. 12+50 TO STA. 13+50 -L- LT
FROM STA. 11+50 TO STA. 13+26 -L- RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1 Ft.
FROM STA. 12+35 TO STA. 14+44 -Y1- RT

DETAIL D
CHANNEL IMPROVEMENT
(Not to Scale)
D= 1 Ft.To 3 Ft.
d= 0 Ft.To 1.6 Ft.
B= 2 Ft.
*When B is < 6.0'
FROM STA. 15+18 TO STA 16+00 -Y1- RT

DETAIL C
OUTLET CHANNEL
(Not to Scale)
Min. D= 3 Ft.
d= 0 Ft. To 1.6 Ft.
B= 2 Ft. To 7 Ft.
t = 1.5'
*When B is < 6.0'
Type of Liner= CLASS I Rip-Rap, 35 TONS
25 SY Geotextile
FROM STA. 15+18 -Y1- RT

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ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD
DocuSigned by: Dena C. Snead 5/13/2016

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 24451 ENGINEER STACEY H. BAILEY
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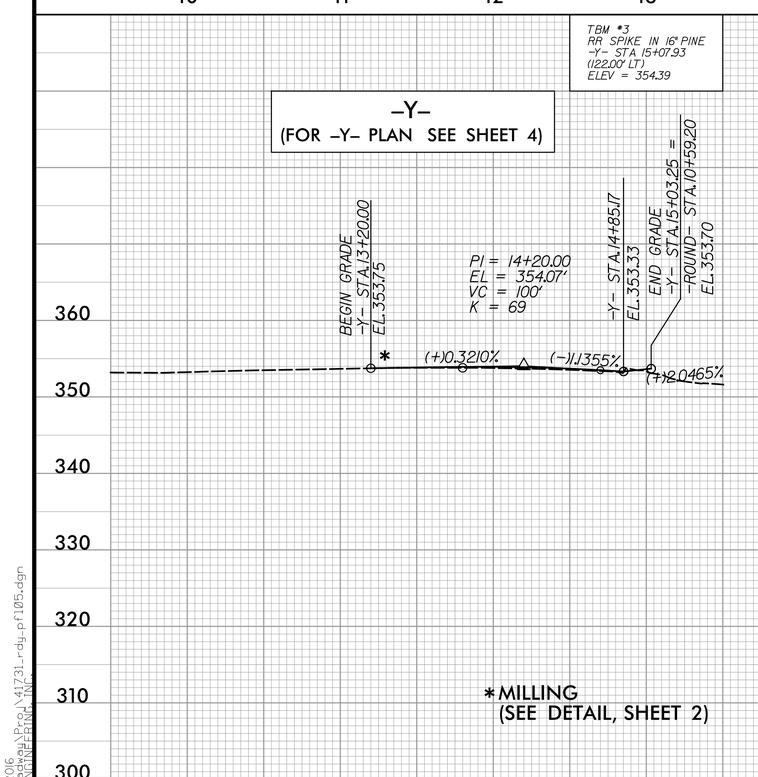

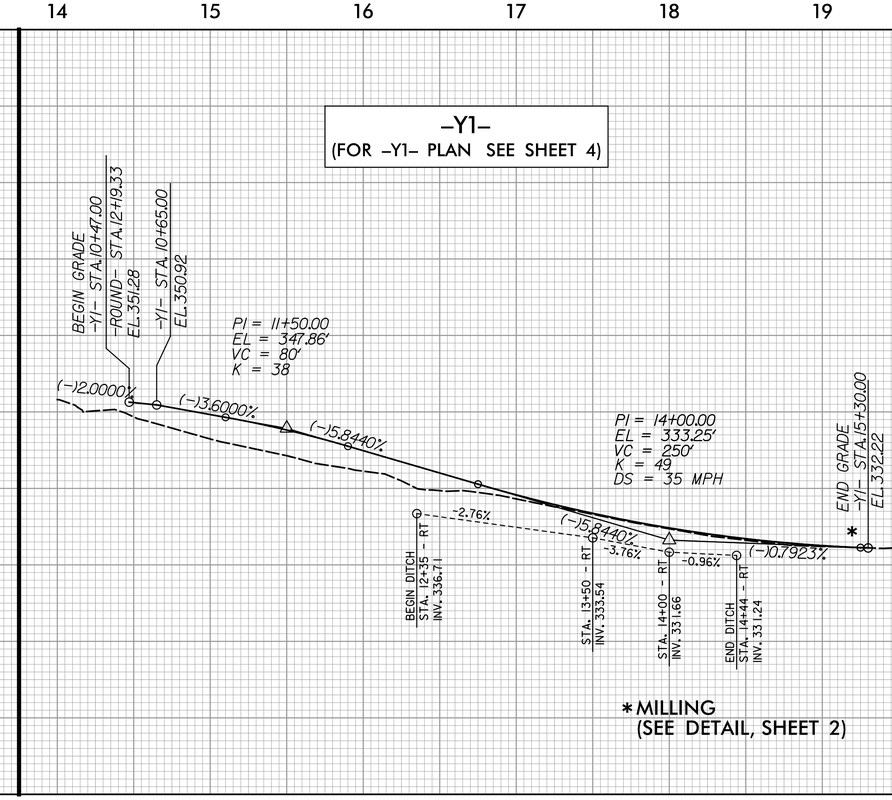

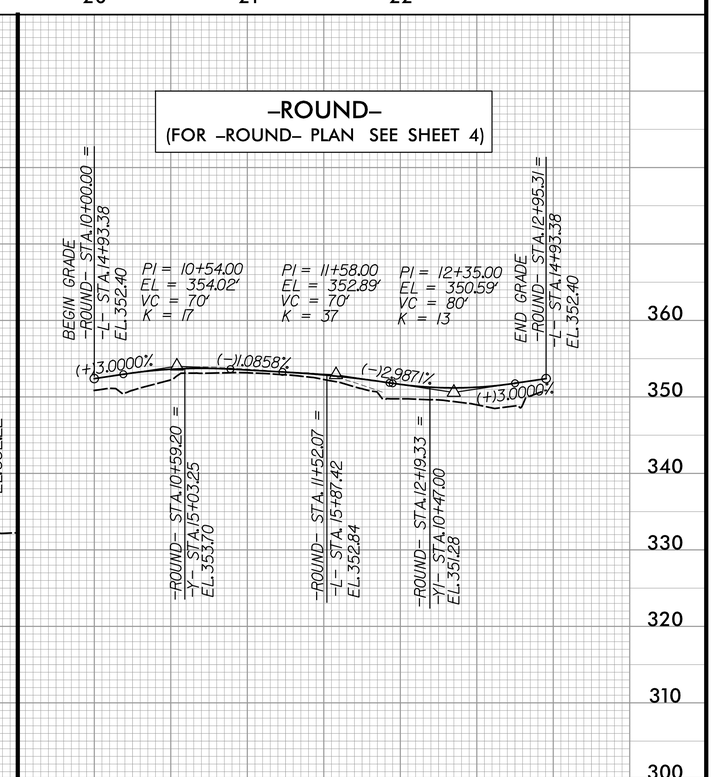

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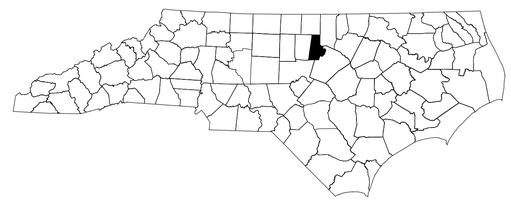
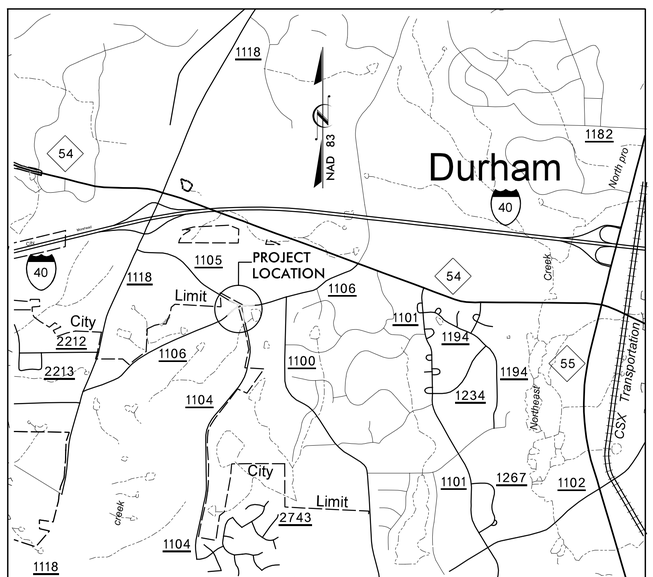
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

DURHAM COUNTY





SKETCH MAP SHOWING THE VICINITY OF STATE PROJECT 41731

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND & TEMPORARY PAVEMENT MARKING SCHEDULE
TMP-2	TRANSPORTATION OPERATIONS PLAN: GENERAL NOTES
TMP-3	PHASING
TMP-4	PHASE I DETAIL
TMP-5	PHASE II DETAIL
TMP-6	PHASE III DETAIL
TMP-7	DETOUR FOR HERNDON RD. CLOSURE (SOUTH LEG)

SHEET NO.
TMP-1

W-5205V

PROJECT:

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WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. S. BOURNE, P.E. — STATE TRAFFIC MANAGEMENT ENGINEER
D. BISSETTE, P.E. — TRAFFIC CONTROL PROJECT ENGINEER
TRAFFIC CONTROL PROJECT DESIGN ENGINEER
TRAFFIC CONTROL DESIGN ENGINEER

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

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

APPROVED: DocuSigned by: Michael T. Rzepka 018C3480C260490...
DATE: 5/17/2016

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ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- CONTINUING CONSTRUCTION
- WEDGING
- REMOVAL

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM — SKINNY DRUM — TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW PANEL (TYPE C)
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION
	PAINT (4")
PA	WHITE EDGELINE
PB	YELLOW EDGELINE
PI	DOUBLE YELLOW CENTERLINE
P8	2 FT.-6FT./SP WHITE MINISKIP
	PAINT (12")
P10	3 FT.-3FT./SP WHITE MINISKIP
	PAINT (24")
P2	WHITE STOP BAR
	PAINT SYMBOL
QN	24" YIELD LINE TRIANGLE
	TEMPORARY RAISED MARKERS
MH	YELLOW & YELLOW

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APPROVED: DocuSigned by: Michael T. Rzepka DATE: 5/17/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 15876 ENGINEER MICHAEL T. RZEPKA

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

ROADWAY STANDARD DRAWINGS, LEGEND & TEMPORARY PAVEMENT MARKING SCHEDULE

5/17/2016
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ICA Engineering

DocuSign Envelope ID: D613EDD2-0BF9-43B9-B472-EDE2A9879BFB

GENERAL NOTES

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: P-0258

PROJ. REFERENCE NO.	SHEET NO.
W-5205V	TMP-2

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

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

TIME RESTRICTIONS

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

ROAD NAME	DAY AND TIME RESTRICTIONS
HERNDON RD.	MONDAY - FRIDAY 6:00AM TO 9:00AM AND 4:00PM TO 7:00PM
BARBEE RD.	MONDAY - FRIDAY 6:00AM TO 9:00AM AND 4:00PM TO 7:00PM
MASSEY CHAPEL RD.	MONDAY - FRIDAY 6:00AM TO 9:00AM AND 4:00PM TO 7:00PM

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

ROAD NAME

HERNDON RD.
MASSEY CHAPEL RD./BARBEE RD.

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00AM DECEMBER 31st TO 7:00PM JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00PM THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00AM THURSDAY AND 7:00PM MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00AM FRIDAY TO 7:00PM TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00AM THE DAY BEFORE INDEPENDENCE DAY AND 7:00PM THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00AM THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00PM THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00AM FRIDAY AND 7:00PM TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00AM TUESDAY TO 7:00PM MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00PM THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00PM THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

C) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS	DURATION AND OPERATION
HERNDON RD.	MONDAY - FRIDAY 6:00AM TO 9:00AM 4:00AM TO 7:00PM	15 MIN., TRAFFIC SHIFTS
BARBEE RD.	MONDAY - FRIDAY 6:00AM TO 9:00AM 4:00AM TO 7:00PM	15 MIN., TRAFFIC SHIFTS
MASSEY CHAPEL RD.	MONDAY - FRIDAY 6:00AM TO 9:00AM 4:00AM TO 7:00PM	15 MIN., TRAFFIC SHIFTS

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

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

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

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

   WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

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

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

J) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY ONE DIRECTION ON HERNDON RD. AND MASSEY CHAPEL RD./BARBEE RD.

PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

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

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

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

N) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

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

   PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

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

   COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

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

TRAFFIC CONTROL DEVICES

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

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

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

ROAD NAME	MARKING	MARKER
ALL ROADS	PAINT	TEMPORARY RAISED

U) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

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

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

X) TRACE THE PROPOSED MONOLITHIC ISLAND LOCATIONS WITH PROPER COLOR PAVEMENT MARKINGS PRIOR TO INSTALLATION. PLACE DRUMS TO DELINEATE ANY EXISTING AND PROPOSED MONOLITHIC ISLANDS BEFORE INSTALLATION.

MISCELLANEOUS

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: DocuSigned by: Michael T. Rzepka 9F8C3480C2B4BD... DATE: 5/17/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 15876 ENGINEER MICHAEL T. RZEPKA

TRANSPORTATION OPERATIONS PLAN

SCALE:	NONE
DATE:	MAY '16
DWG. BY:	CW
DESIGN BY:	MTR
REVIEWED BY:	MTR

DIVISION OF HIGHWAYS ENGINEERING DIVISION TRAFFIC ENGINEERING BRANCH STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

REVISIONS

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NC License No: P-0258

PROJ. REFERENCE NO.	SHEET NO.
W-5205V	TMP-3

PHASING

PHASE I

NOTES: - IN PHASING BELOW "RSD" REFERS TO NCDOT ROADWAY STANDARD DRAWING.
- IN PHASES I THROUGH III, PAVING TO BE DONE UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.

STEP 1

INSTALL ADVANCE WARNING SIGNS ON HERNDON RD. AND MASSEY CHAPEL RD./BARBEE RD. (SEE ROADWAY STANDARD DRAWING NUMBER 1101.01).

STEP 2

USING RSD 1101.02 (SHEETS 1 OF 15), BEGIN UTILITY AND DRAINAGE CONSTRUCTION. CONSTRUCT DRAINAGE STRUCTURE 0404 PRIOR TO SHIFTING -Y- TRAFFIC TO NARROW PATTERN IN THIS STEP.

USING RSD 1101.02 (SHEET 1 OF 15), COMPLETE THE FOLLOWING (SEE SHEET TMP-4):

- REMOVE EXISTING DOUBLE YELLOW CENTERLINE AND PLACE TEMPORARY DOUBLE YELLOW CENTERLINE -Y- FROM STA 12+20± TO EXISTING STOP BAR.
- PLACE TEMPORARY WHITE EDGELINE FROM -Y- STA 12+20± TO BARBEE RD. AND TIE TO EXISTING.
- SHIFT -Y- TRAFFIC TO NARROWED PATTERN (11' LANES).

USING RSD 1101.02 (SHEET 1 OF 15), BEGIN CONSTRUCTION AT THE FOLLOWING LOCATIONS. MILL AND WEDGE EXISTING PAVEMENT AS NECESSARY (SEE SHEET TMP-4 AND ROADWAY PLANS):

-L- STA 13+00± TO STA 16+80± (WIDENING LEFT)
-L- STA 13+00± TO STA 15+40± (WIDENING RIGHT)
-L- STA 16+50± TO STA 19+50± (WIDENING RIGHT)
-Y- STA 13+50± TO -L- STA 16+00± (WIDENING LEFT)
-Y- STA 13+50± TO EXISTING -L- (WIDENING RIGHT)
-Y1- STA 10+15± TO STA 12+05± (RIGHT)

NOTE: WORK IN PHASE II, STEPS 1 & 2 CAN BE PERFORMED SIMULTANEOUSLY WITH THE WORK IN PHASE I, STEP 2.

PHASE II

COMPLETE THE WORK REQUIRED OF PHASE II, STEPS 1 THRU 3 IN 45 CONSECUTIVE DAYS (SEE SPECIAL PROVISIONS AND LIQUIDATED DAMAGES)

STEP 1

INSTALL OFFSITE DETOUR SIGNING AND USING RSD 1101.03 (SHEET 1 OF 9) CLOSE -Y1- (HERNDON RD.) FROM EXISTING BARBEE RD. TO -Y1- STA 14+50± (SEE SHEET TMP-7 FOR DETOUR SIGNING AND ROUTE).

AWAY FROM TRAFFIC AND USING RSD 1101.03 (SHEET 1 OF 9), CONSTRUCT -Y1- FROM -Y1- STA 10+15± TO STA 15+30± AND TIE TO EXISTING BARBEE RD. (SEE SHEET TMP-5).

STEP 2

COMPLETE CONSTRUCTION BEGUN IN PHASE I:

-L- STA 13+00± TO STA 16+80± (WIDENING LEFT)
-L- STA 13+00± TO STA 11+35± (WIDENING RIGHT)
-L- STA 16+50± TO STA 19+50± (WIDENING RIGHT)
-Y- STA 13+50± TO -L- STA 16+00± (WIDENING LEFT)
-Y- STA 13+50± TO EXISTING -L- (WIDENING RIGHT)
-Y1- STA 10+15± TO STA 12+05± (RIGHT)

STEP 3

PLACE TEMPORARY PAVEMENT MARKINGS AND MARKERS ON -Y1-. USING RSD 1101.02 (SHEET 1 OF 15), RESTRIPE -L- AND -Y- FOR ROUNDABOUT PATTERN AND SHIFT TRAFFIC. OPEN TO TRAFFIC ON -Y1- IN ROUNDABOUT PATTERN. (SEE TMP-6, FINAL PAVEMENT MARKING PLAN AND SIGNING PLAN FOR LAYOUT).

PHASE III

USING RSD 1101.02 (SHEET 1 OF 15) AND FLAGGING, CONSTRUCT ROUNDABOUT CIRCLE ISLAND AND APRON (SEE SHEET TMP-6).

COMPLETE UTILITY AND DRAINAGE CONSTRUCTION.

PHASE IV

USING RSD 1101.02 (SHEET 1 OF 15), CONSTRUCT APPROACH ISLANDS ON -L-, -Y- AND -Y1-, PLACE FINAL LAYER OF SURFACE COURSE, AND PLACE FINAL PAVEMENT MARKINGS AND MARKERS.

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SEAL — NORTH CAROLINA PROFESSIONAL SEAL 15876 ENGINEER MICHAEL T. RZEPKA

PHASING

SCALE:	NONE
DATE:	MAY '16
DWG. BY:	CW
DESIGN BY:	MTR
REVIEWED BY:	MTR

DIVISION OF HIGHWAYS — TRANSPORTATION MANAGEMENT UNIT — STATE OF NORTH CAROLINA — DEPARTMENT OF TRANSPORTATION — TRAFFIC CONTROL

REVISIONS

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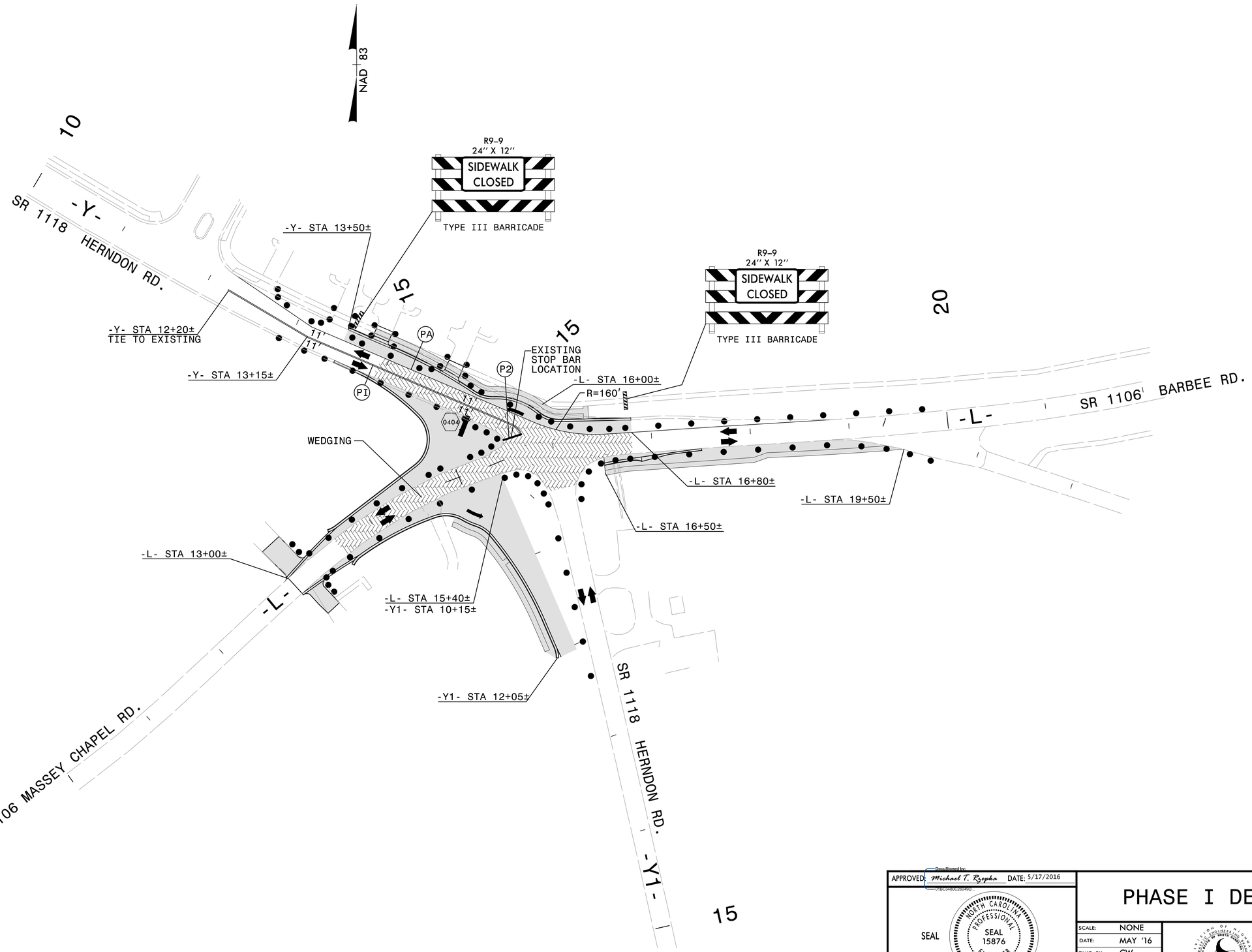
NC License No: F-0258

PROJ. REFERENCE NO.	SHEET NO.
W-5205V	TMP-4



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APPROVED: DocuSigned by: Michael T. Rzepka DATE: 5/17/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 15876 ENGINEER MICHAEL T. RZEPKA

PHASE I DETAIL

SCALE:	NONE
DATE:	MAY '16
DWG. BY:	CW
DESIGN BY:	MTR
REVIEWED BY:	MTR

REVISIONS

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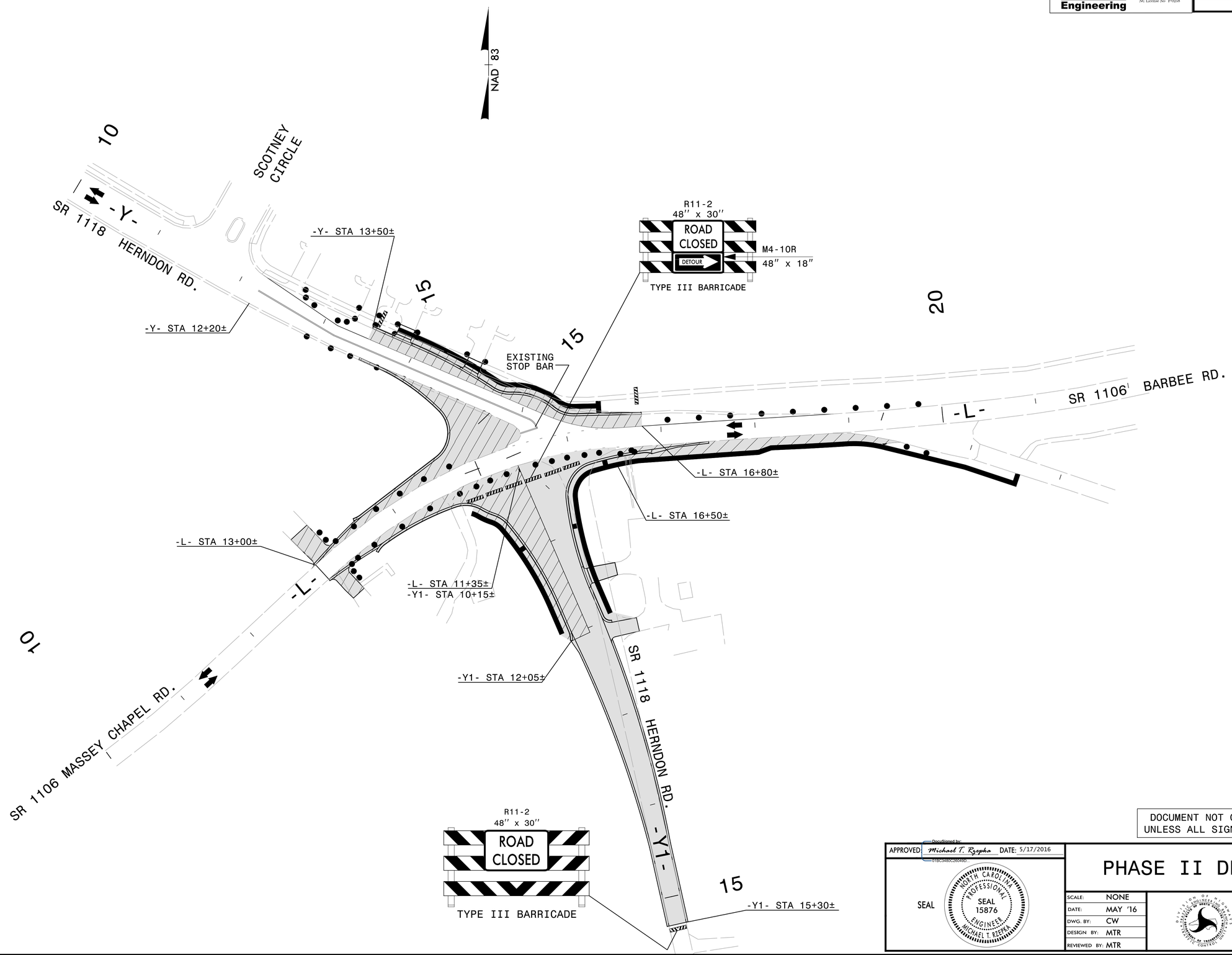
PROJ. REFERENCE NO.	SHEET NO.
W-5205V	TMP-5



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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 15876 ENGINEER MICHAEL T. RZEPKA

PHASE II DETAIL

SCALE:	NONE
DATE:	MAY '16
DWG. BY:	CW
DESIGN BY:	MTR
REVIEWED BY:	MTR

REVISIONS

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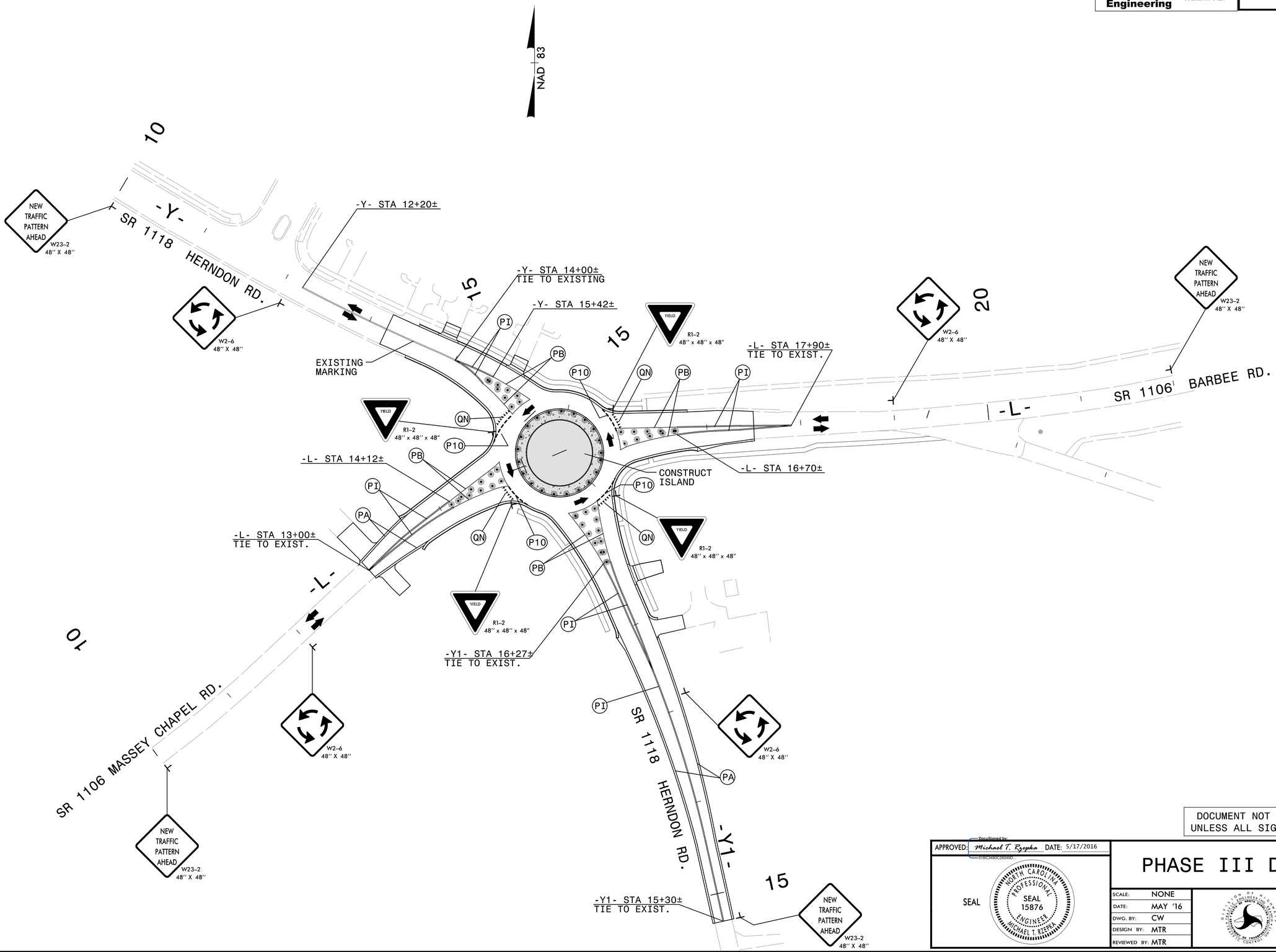
Raleigh, NC 27607
NC License No: F-0258

PROJ. REFERENCE NO.	SHEET NO.
W-5205V	TMP-6



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APPROVED: Michael T. Rzepka DATE: 5/17/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 15876 ENGINEER MICHAEL T. RZEPKA

PHASE III DETAIL

SCALE:	NONE
DATE:	MAY '16
DWG. BY:	CW
DESIGN BY:	MTR
REVIEWED BY:	MTR

REVISIONS

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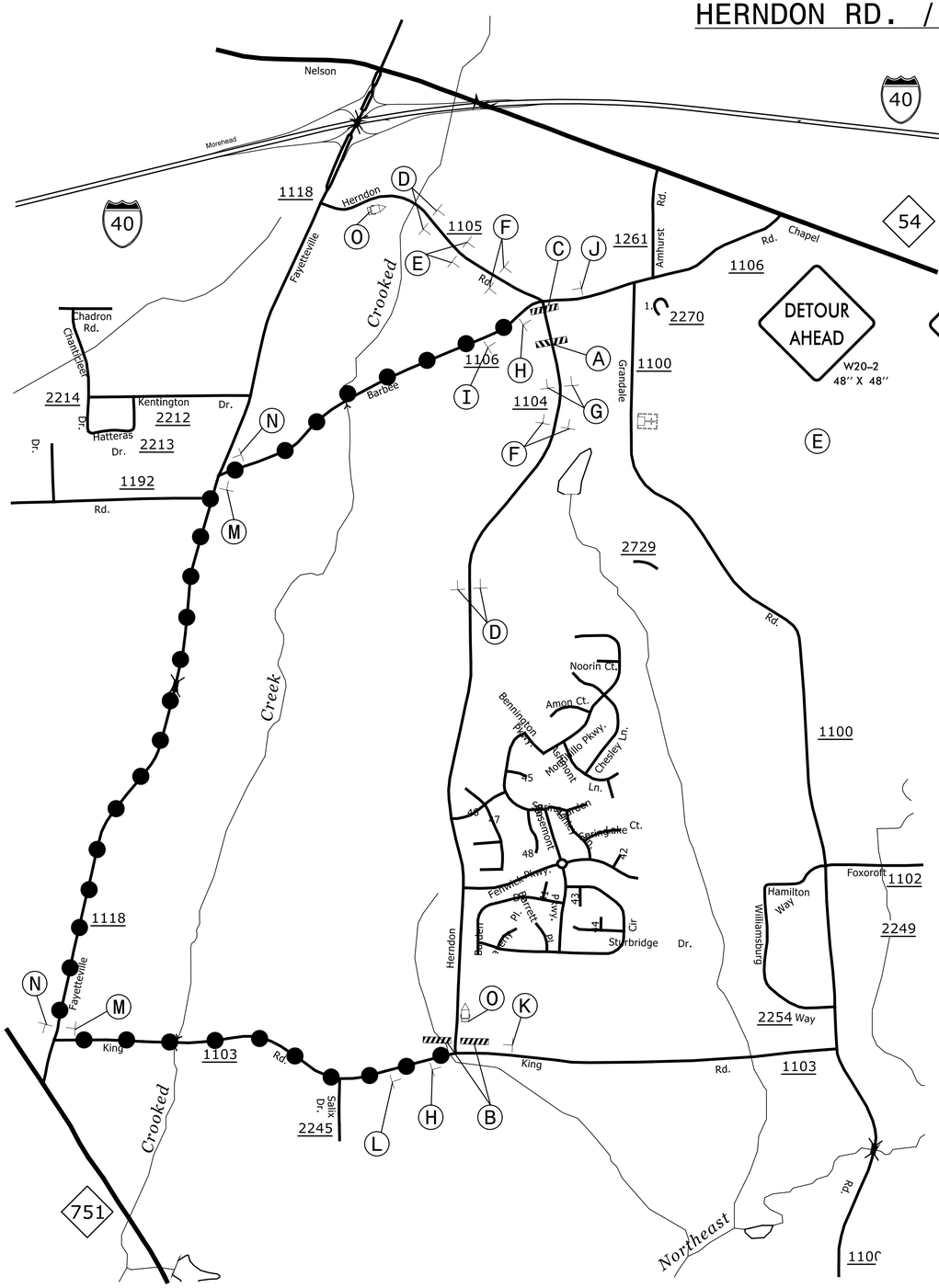
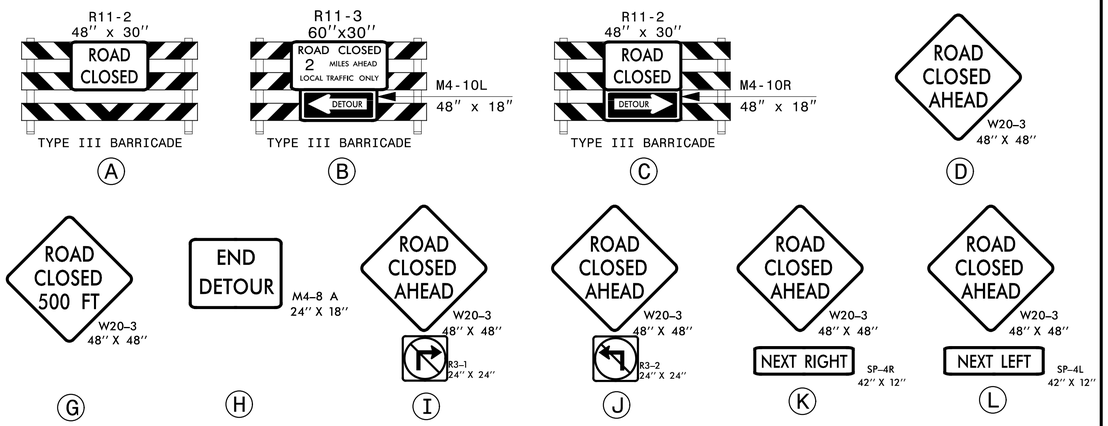
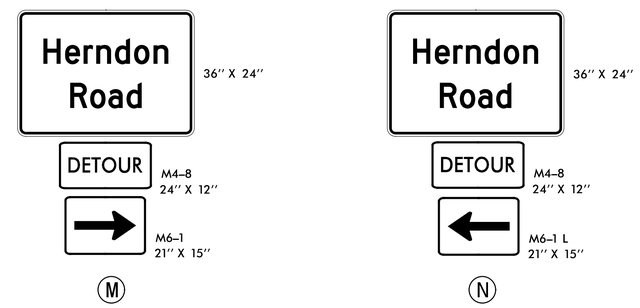
HERNDON RD. / BARBEE RD. INTERSECTION

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: P-0258

PROJ. REFERENCE NO.	SHEET NO.
W-5205V	TMP-7







MESSAGE NO. 1	MESSAGE NO. 2
HERNDON ROAD TO CLOSE	(*DATE*) TO (*DATE*)

CHANGEABLE MESSAGE SIGN

O

ACTIVATE CMS 14 DAYS PRIOR TO ROAD CLOSURE

MESSAGE AS SHOWN OR AS DIRECTED BY THE ENGINEER

SIGN NUMBER: name
TYPE: STATIONARY
QUANTITY: SEE PLANS
SIGN WIDTH: 3'-0"
HEIGHT: 2'-0"
TOTAL AREA: 6.0 Sq.Ft.
BORDER TYPE: INSET
RECESS: 0.47"
WIDTH: 0.63"
RADII: 1.5"
NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

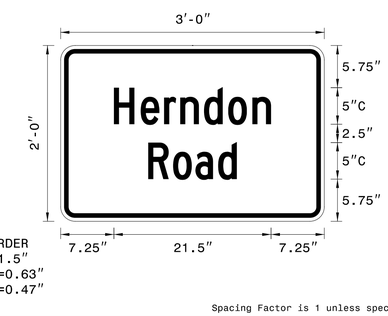
SYMBOL	X	Y	WID	HT

MAT'L: 0.080" (2.0 mm) ALUMINUM

USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluoresent orange retroreflective sheeting.

DESIGN BY: MTR
PROJECT ID: W-5205V
CHECKED BY: ICA ENG.
DIV: 5
DATE: Jun 09, 2015



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

																										Series/Size Text Length
		H	e	r	n	d	o	n																		C 2000
	7.3	3.7	3.2	2.2	3.3	3.3	3.3	2.6	7.3																	21.5
		R	o	a	d																					C 2000
	12	3.4	3.1	3.1	2.6	11.9																				12.1

LEGEND

DETOUR ROUTE

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APPROVED: DocuSigned by: Michael T. Rzepka 5/17/2016 DATE: 5/17/2016
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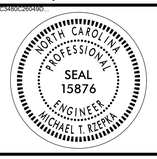
SEAL



DETOUR FOR HERNDON RD. CLOSURE (SOUTH LEG)

SCALE:	NONE
DATE:	MAY '16
DWG. BY:	CW
DESIGN BY:	MTR
REVIEWED BY:	MTR

REVISIONS

CADD FILE

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5/17/2016 10:17:47 AM

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CONTRACT: PROJECT: W-5205V

ICA Engineering	5121 Kingdom Way, Suite 100 Raleigh, NC 27607 NC License No: F-0258	PROJ. REFERENCE NO. W-5205V	SHEET NO. PMP-1

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
DURHAM COUNTY

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN COVER SHEET
PMP-2	PAVEMENT MARKING SCHEDULE & DETAIL

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - TEMPORARY AND PERMANENT

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	THERMOPLASTIC	PERMANENT RAISED

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

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

D) ON ASPHALT SURFACES, USE HEATED-IN-PLACE THERMOPLASTIC OR EXTRUDED THERMOPLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS.

E) MARKERS SHALL BE INSTALLED ACCORDING TO THE NCDOT ROADWAY STANDARD DRAWING 1250.01.

PLAN REVIEWED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

_____ SIGNING & DELINEATION STANDARDS ENGINEER

_____ SIGNING & DELINEATION PROJECT DESIGN ENGINEER

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: DocuSigned by: Michael T. Rzepka 018C3480C260490 DATE: 5/17/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 15876 ENGINEER MICHAEL T. RZEPKA

PAVEMENT MARKING PLAN COVER SHEET

SCALE:	NONE
DATE:	MAY '16
DWG. BY:	CW
DESIGN BY:	MTR
REVIEWED BY:	MTR

REVISIONS

CADD FILE

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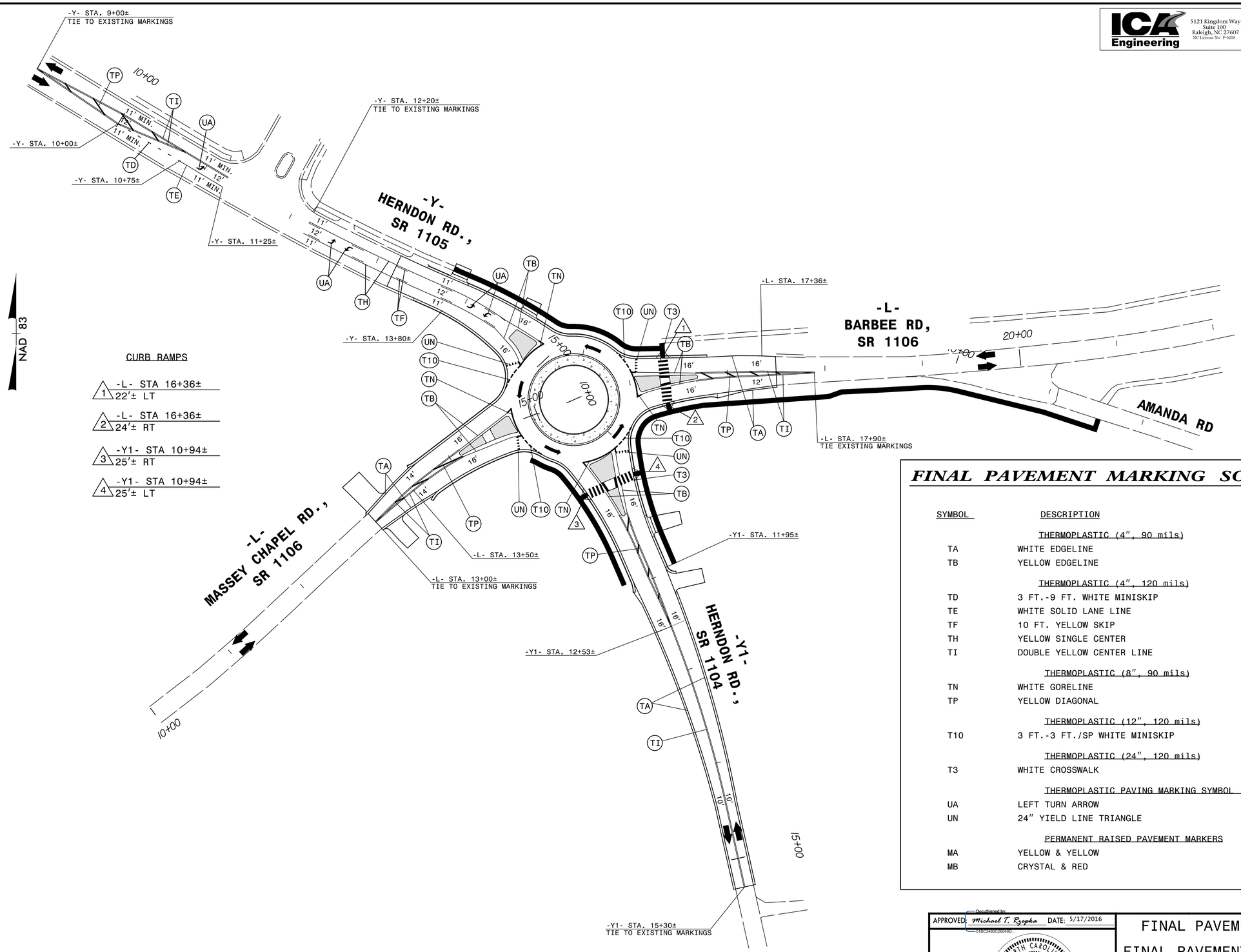
ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

PROJ. REFERENCE NO.	SHEET NO.
W-5205V	PMP-2



CURB RAMPS

1 -L- STA 16+36± 22'± LT

2 -L- STA 16+36± 24'± RT

3 -Y1- STA 10+94± 25'± RT

4 -Y1- STA 10+94± 25'± LT

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
	THERMOPLASTIC (4", 90 mils)
TA	WHITE EDGELINE
TB	YELLOW EDGELINE
	THERMOPLASTIC (4", 120 mils)
TD	3 FT.-9 FT. WHITE MINISKIP
TE	WHITE SOLID LANE LINE
TF	10 FT. YELLOW SKIP
TH	YELLOW SINGLE CENTER
TI	DOUBLE YELLOW CENTER LINE
	THERMOPLASTIC (8", 90 mils)
TN	WHITE GORELINE
TP	YELLOW DIAGONAL
	THERMOPLASTIC (12", 120 mils)
T10	3 FT.-3 FT./SP WHITE MINISKIP
	THERMOPLASTIC (24", 120 mils)
T3	WHITE CROSSWALK
	THERMOPLASTIC PAVING MARKING SYMBOL (90 mils)
UA	LEFT TURN ARROW
UN	24" YIELD LINE TRIANGLE
	PERMANENT RAISED PAVEMENT MARKERS
MA	YELLOW & YELLOW
MB	CRYSTAL & RED

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APPROVED: DocuSigned by: Michael T. Rzepka DATE: 5/17/2016
018C3480C260490

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 15876 ENGINEER MICHAEL T. RZEPKA

FINAL PAVEMENT MARKING PLAN & FINAL PAVEMENT MARKING SCHEDULE

SCALE:	NONE
DATE:	MAY '16
DWG. BY:	CW
DESIGN BY:	MTR
REVIEWED BY:	MTR

REVISIONS

CADD FILE

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5205V	EC-1	

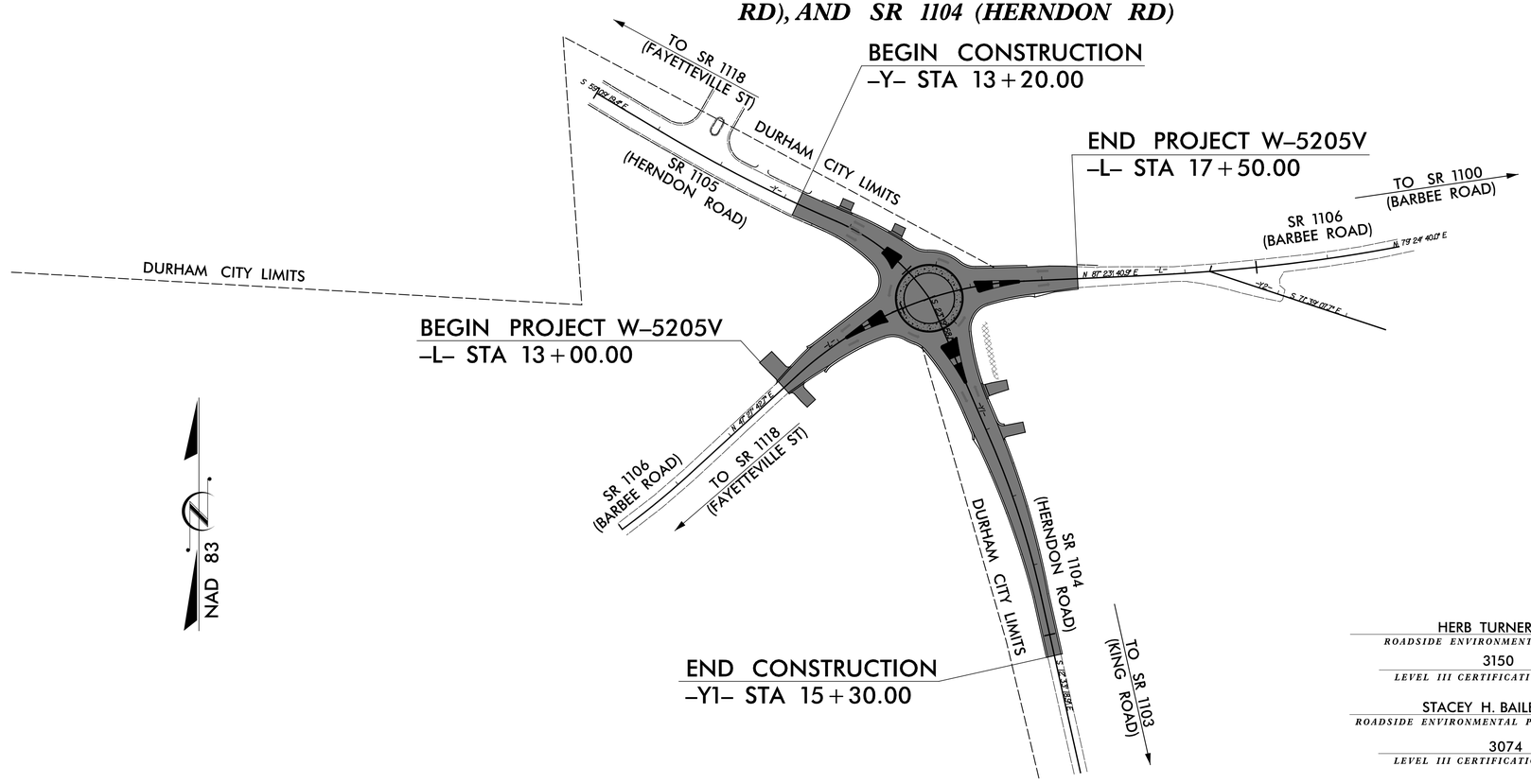
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
41731		PE,R/W
45335.3.23	HSIP-1104(19)	CONST

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

DURHAM COUNTY

LOCATION: INTERSECTION OF SR 1106 (BARBEE RD), SR 1105 (HERNDON RD), AND SR 1104 (HERNDON RD)



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
	Temporary Rock Silt Check Type-B	
	Wattle/ Coir Fiber Wattle	
	Wattle/ Coir Fiber Wattle with Polyacrylamide (PAM)	
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	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

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

HERB TURNER, P.E.
ROADSIDE ENVIRONMENTAL ENGINEER
3150
LEVEL III CERTIFICATION NUMBER

STACEY H. BAILEY, P.E.
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER
3074
LEVEL III CERTIFICATION NUMBER

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

WBS: TIP PROJECT: W-5205V

GRAPHIC SCALE

25 0 50
PLANS

25 0 50
PROFILE (HORIZONTAL)

5 0 10
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

LEVEL III CERTIFIED BY:
STACEY H. BAILEY, PE
CERTIFICATION NUMBER: 3074
ISSUED: MAY 10, 2016

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared in the Office of:

ICA ENGINEERING
5121 KINGDOM WAY, SUITE 100
RALEIGH NC 27607
NC License No: F-0258

2012 STANDARD SPECIFICATIONS

Roadway Standard Drawings

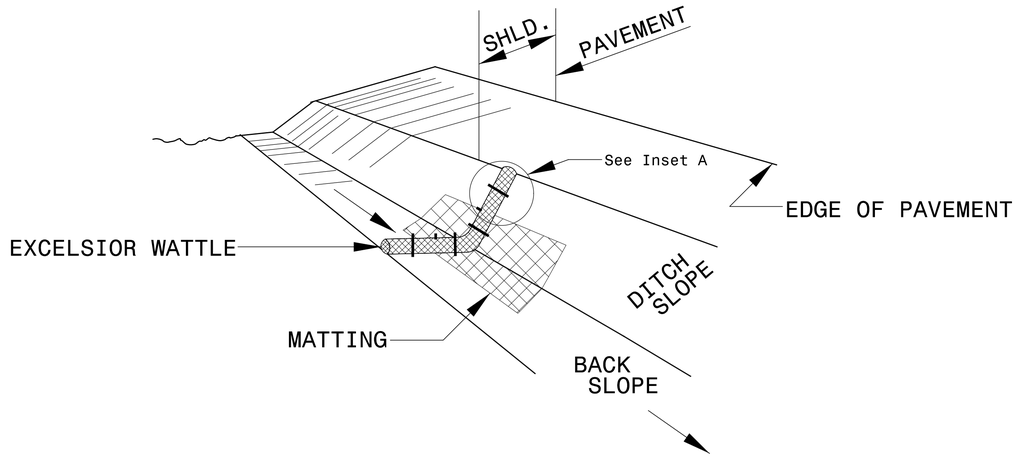
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated July 18, 2006 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

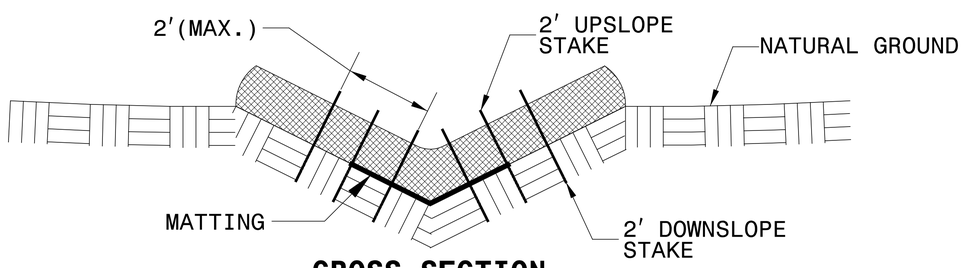
5/10/2016
ICA ENGINEERING, INC.

PROJECT REFERENCE NO.	SHEET NO.
W-5205V	EC-2
R/W SHEET NO.	

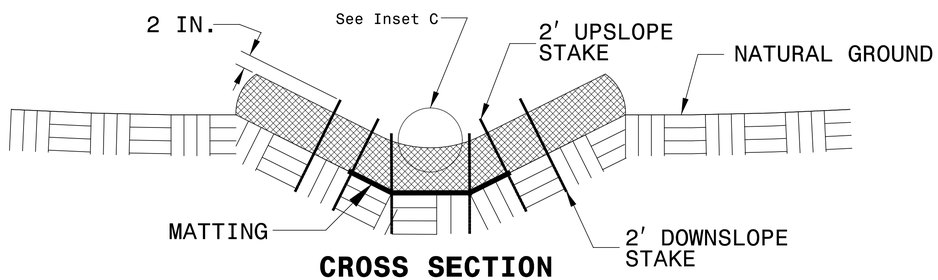
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

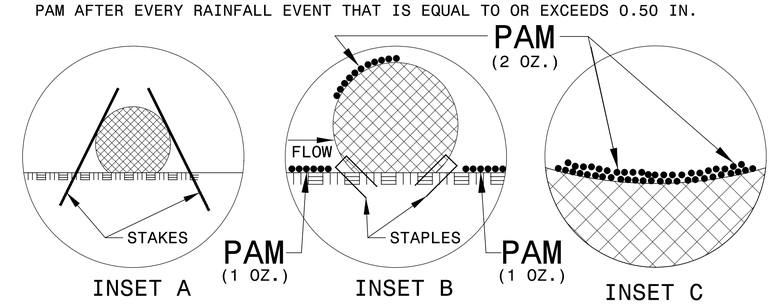
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

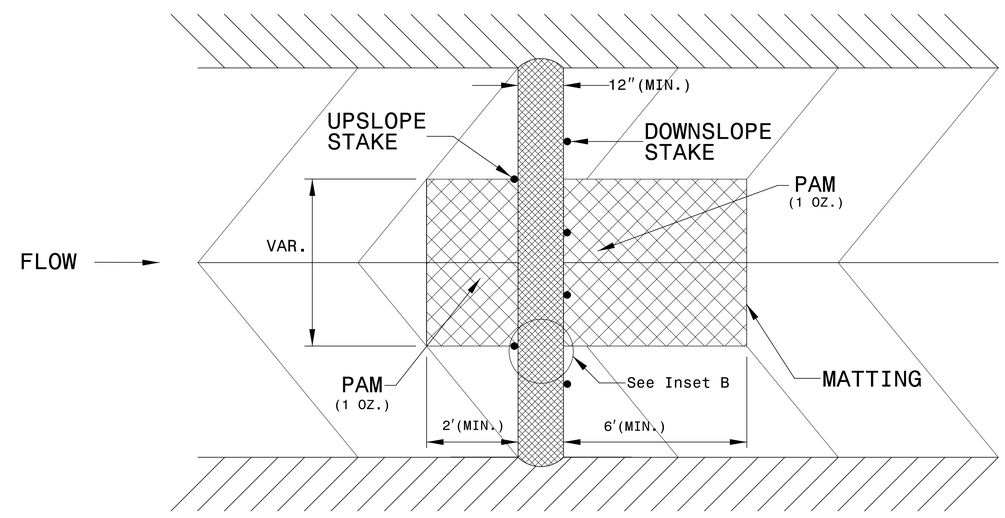
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.

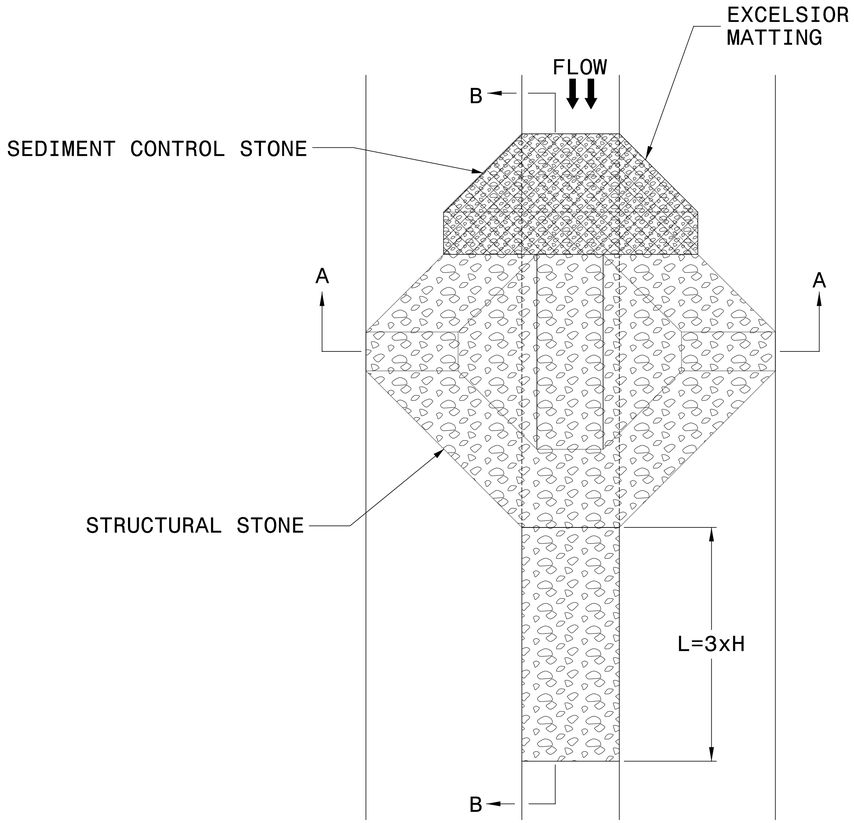




TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
W-5205V	EC-2A
R/W SHEET NO.	

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



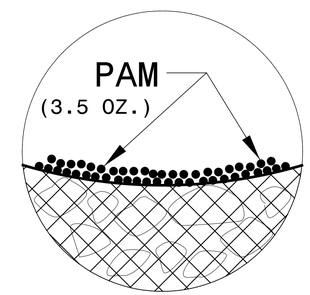
PLAN

NOTES

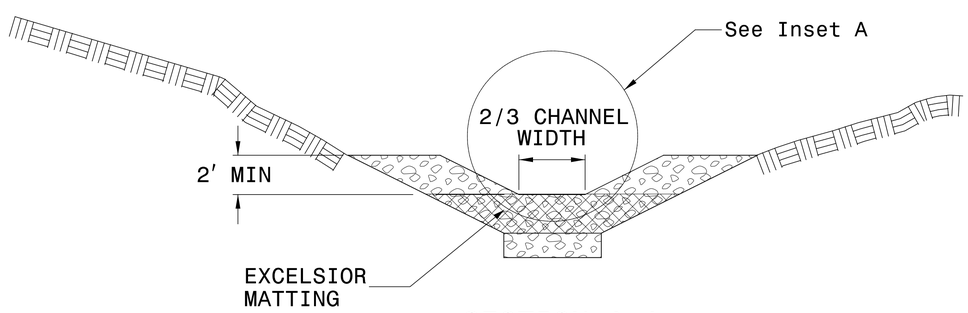
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

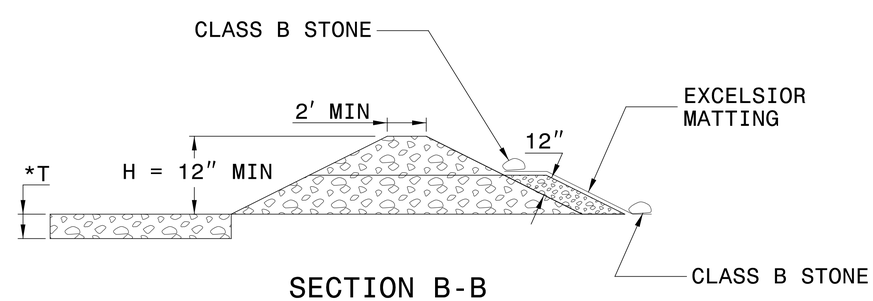
INITIALLY APPLY 3.5 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

*T = 12" MIN., 18" MAX.

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
W-5205V	EC-3

ROADSIDE ENVIRONMENTAL PROJECT ENGINEER

LEVEL III CERTIFIED BY:
STACEY H. BAILEY, PE
CERTIFICATION NUMBER: 3074
ISSUED: MAY 10, 2016

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	12+50	13+50	LT	70
4	-Y1-	11+50	13+26	RT	150
				SUBTOTAL	220
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					2000
				TOTAL	2220
				SAY	2220

MATTING FOR EROSION CONTROL

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

PROJECT REFERENCE NO.	SHEET NO.
W-5205V	EC-3A

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 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

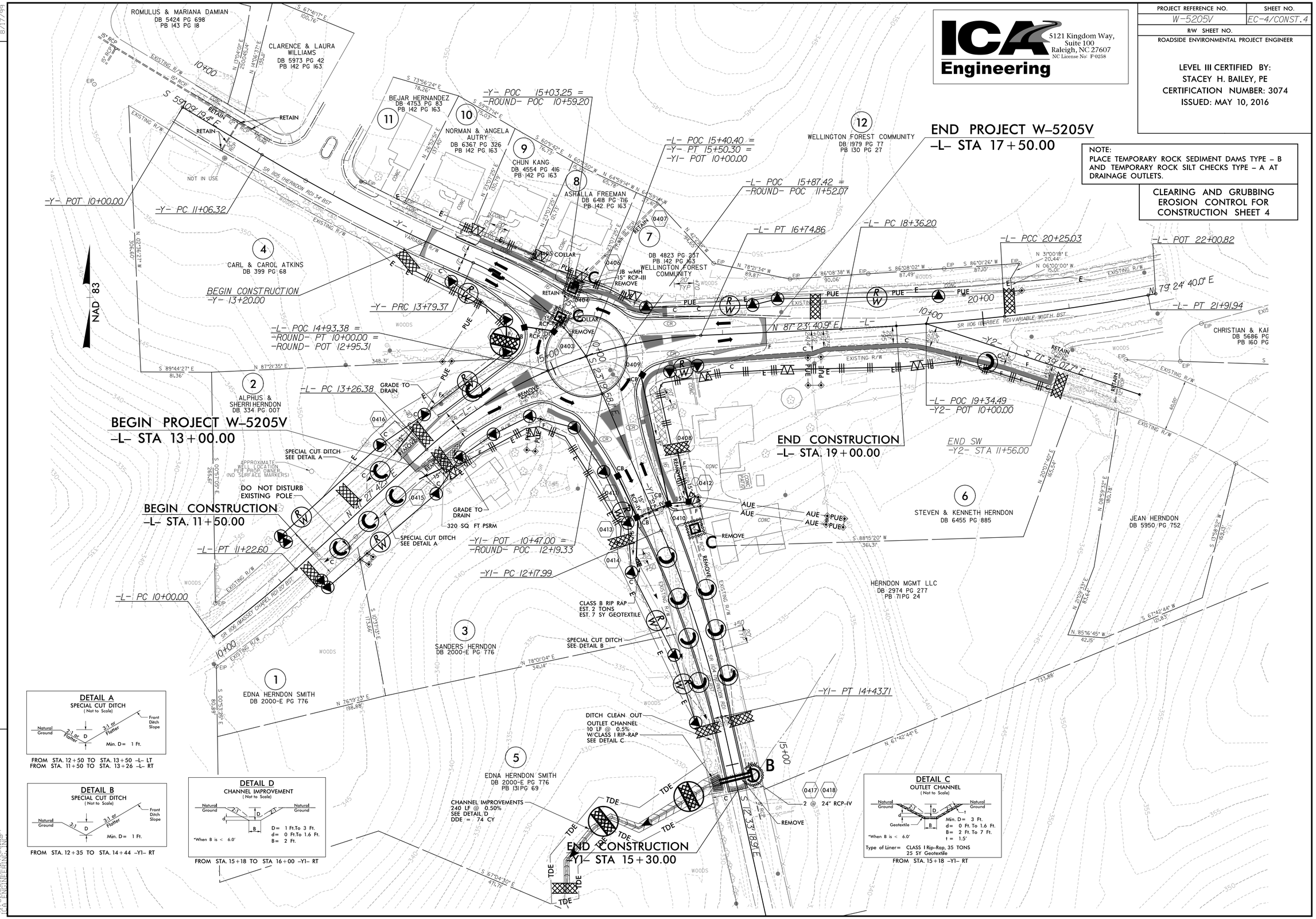
PROJECT REFERENCE NO.	SHEET NO.
W-5205V	EC-4/CONST.4
R/W SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

LEVEL III CERTIFIED BY:
STACEY H. BAILEY, PE
CERTIFICATION NUMBER: 3074
ISSUED: MAY 10, 2016

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

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4



REVISIONS

8/17/99

5/12/2016
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ICA ENGINEERING, INC.

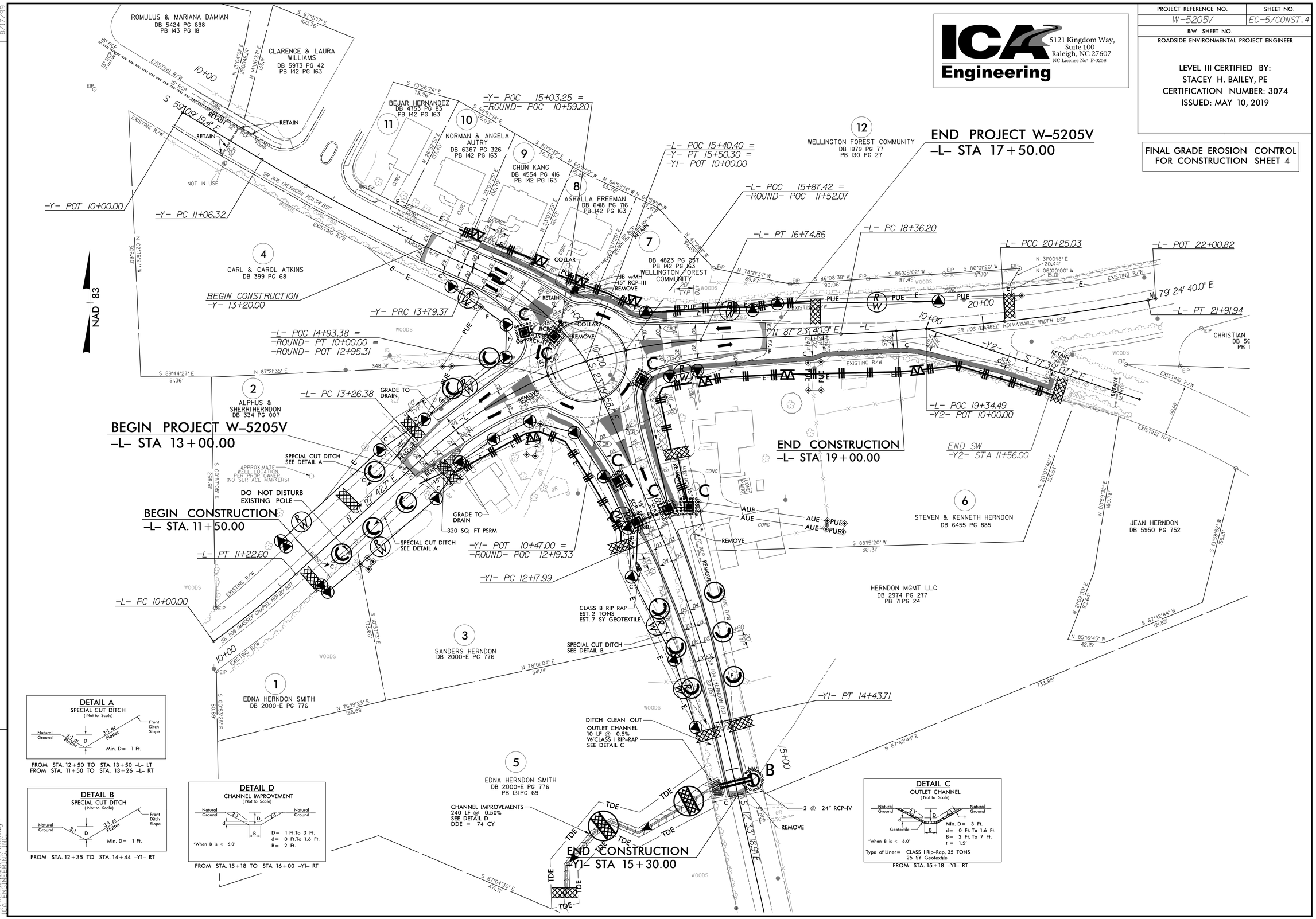
PROJECT REFERENCE NO.	SHEET NO.
W-5205V	EC-5/CONST.4
R/W SHEET NO.	

ROADSIDE ENVIRONMENTAL PROJECT ENGINEER

LEVEL III CERTIFIED BY:
STACEY H. BAILEY, PE
CERTIFICATION NUMBER: 3074
ISSUED: MAY 10, 2019

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: P-0258

FINAL GRADE EROSION CONTROL FOR CONSTRUCTION SHEET 4



REVISIONS

8/17/99

5/12/2016
21/31/2016 esh04_final.dgn
ICA ENGINEERING, INC.

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PROJECT: W-5205V

CONTRACT:

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

PROJ. REFERENCE NO.	SHEET NO.
W-5205V	SIGN-1

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN

DURHAM COUNTY

LOCATION: INTERSECTION OF SR 1106 (BARBEE RD), SR 1105 (HERNDON RD), AND SR 1104 (HERNDON RD)

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	236	L.F.
4102000000	904	SIGN ERECTION, TYPE E	18	EA.
4129000000	906	RELOCATE SIGN, TYPE E	2	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	12	EA.
4192000000	907	DISPOSAL OF SUPPORT, U-CHANNEL	2	EA.

GENERAL NOTES

- SIGNS FURNISHED BY THE STATE
- CONFIRM IN WRITING AT LEAST 4 MONTHS IN ADVANCE, THE ACTUAL DATE THE DEPARTMENT FURNISHED SIGNS WILL BE REQUIRED.
- ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.
- IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
- WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
- ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

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 2012 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

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2	E SHEET
SIGN-3	SIGN DETAIL (EXISTING SIGNS) SHEET
SIGN-4	SIGN DETAIL (PROPOSED SIGNS) SHEET

PAY ITEM NOTES

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL
2. RELOCATE SIGN, TYPE E
3. DISPOSAL OF SUPPORT, U-CHANNEL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLAN PREPARED BY: FLORENCE & HUTCHESON

M. T. RZEPKA, P.E. — SIGNING ENGINEER
A. K. PILZ, P.E. — SIGNING PROJECT ENGINEER
C. WOLFE — SIGNING PROJECT DESIGN ENGINEER
SIGNING DESIGN ENGINEER
SIGNING DESIGNER

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 15876 ENGINEER MICHAEL T. RZEPKA

5/17/2016

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NC License No: F-0258

PROJ. REFERENCE NO.	SHEET NO.
W-5205V	SIGN-2

401 QUANTITY REQ'D 4

36 X 36
W2-6

ONE "U" POST PER SIGN

404 QUANTITY REQ'D 4

30 X 24
R6-4

ONE "U" POST PER SIGN

403 QUANTITY REQ'D 4

12 X 36
R1-6

ONE "U" POST PER SIGN

405 QUANTITY REQ'D 1

24 X 30
R2-1

ONE "U" POST PER SIGN

402 QUANTITY REQ'D 4

36 X 36 X 36
R1-2

ONE "U" POST PER SIGN

406 QUANTITY REQ'D 1

24 X 30
R2-1

ONE "U" POST PER SIGN

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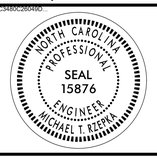
APPROVED: DocuSigned by: Michael T. Rzepka 01BC3480C260490 DATE: 5/17/2016

SEAL



E SIGNS

SCALE:	NONE
DATE:	MAY '16
DWG. BY:	CW
DESIGN BY:	MTR
REVIEWED BY:	MTR

REVISIONS

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Raleigh, NC 27607
NC License No: P-0258

PROJ. REFERENCE NO.	SHEET NO.
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APPROVED: DocuSigned by: Michael T. Rzepka DATE: 5/17/2016
018C3480C26049D

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 15876 ENGINEER MICHAEL T. RZEPKA

EXISTING SIGNS SIGNING PLANS

SCALE:	NONE
DATE:	MAY '16
DWG. BY:	CW
DESIGN BY:	MTR
REVIEWED BY:	MTR

DIVISION OF HIGHWAYS ENGINEERING DIVISION TRAFFIC ENGINEERING BRANCH TRAFFIC CONTROL

REVISIONS	
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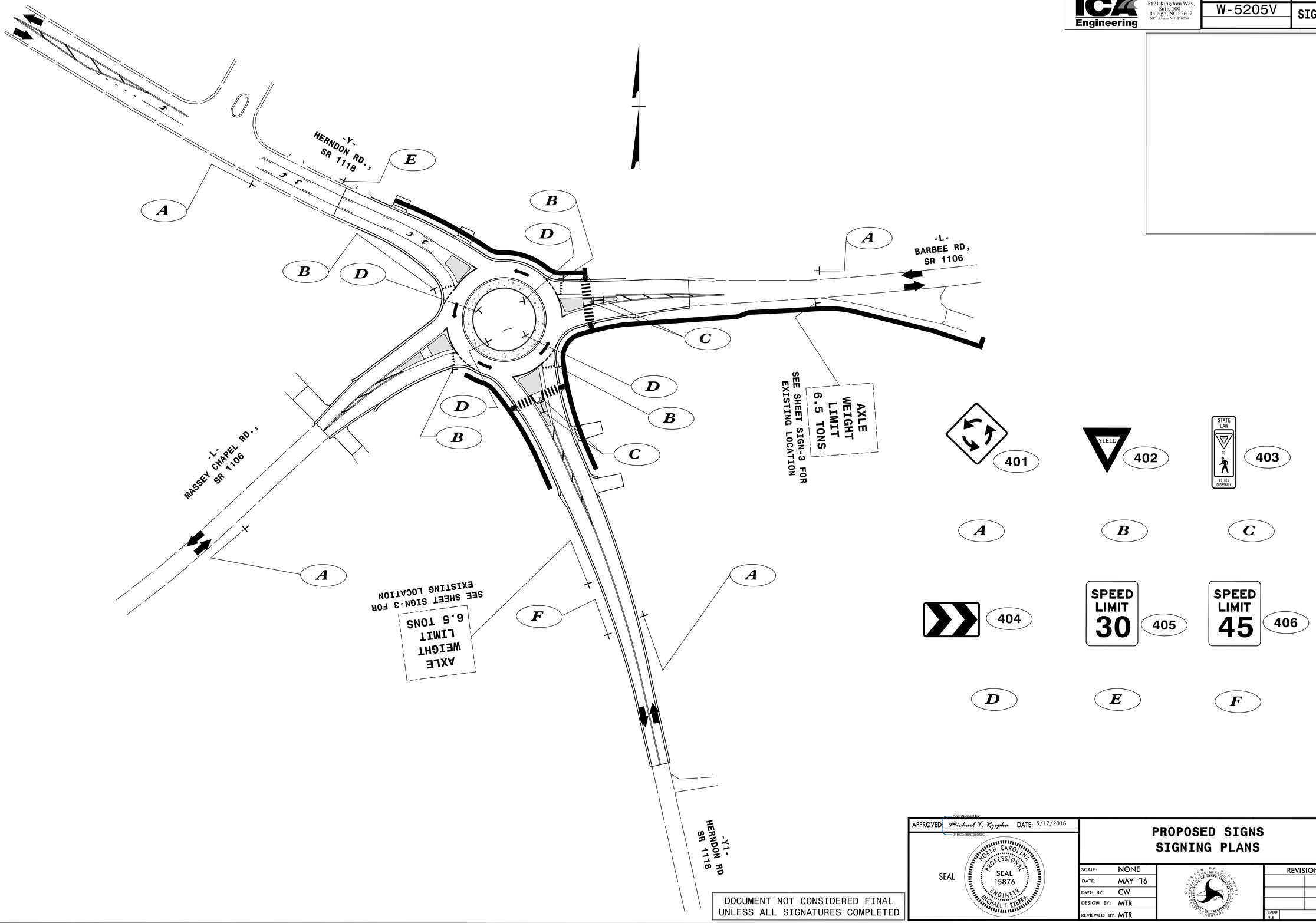

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APPROVED DocuSigned by: Michael T. Rzepka DATE: 5/17/2016
0180C3480C260490

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 15876 ENGINEER MICHAEL T. RZEPKA

PROPOSED SIGNS
SIGNING PLANS

SCALE:	NONE
DATE:	MAY '16
DWG. BY:	CW
DESIGN BY:	MTR
REVIEWED BY:	MTR

REVISIONS

CADD FILE

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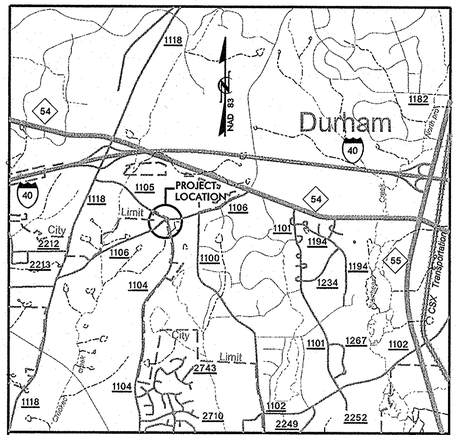
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	41731	UC-1	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

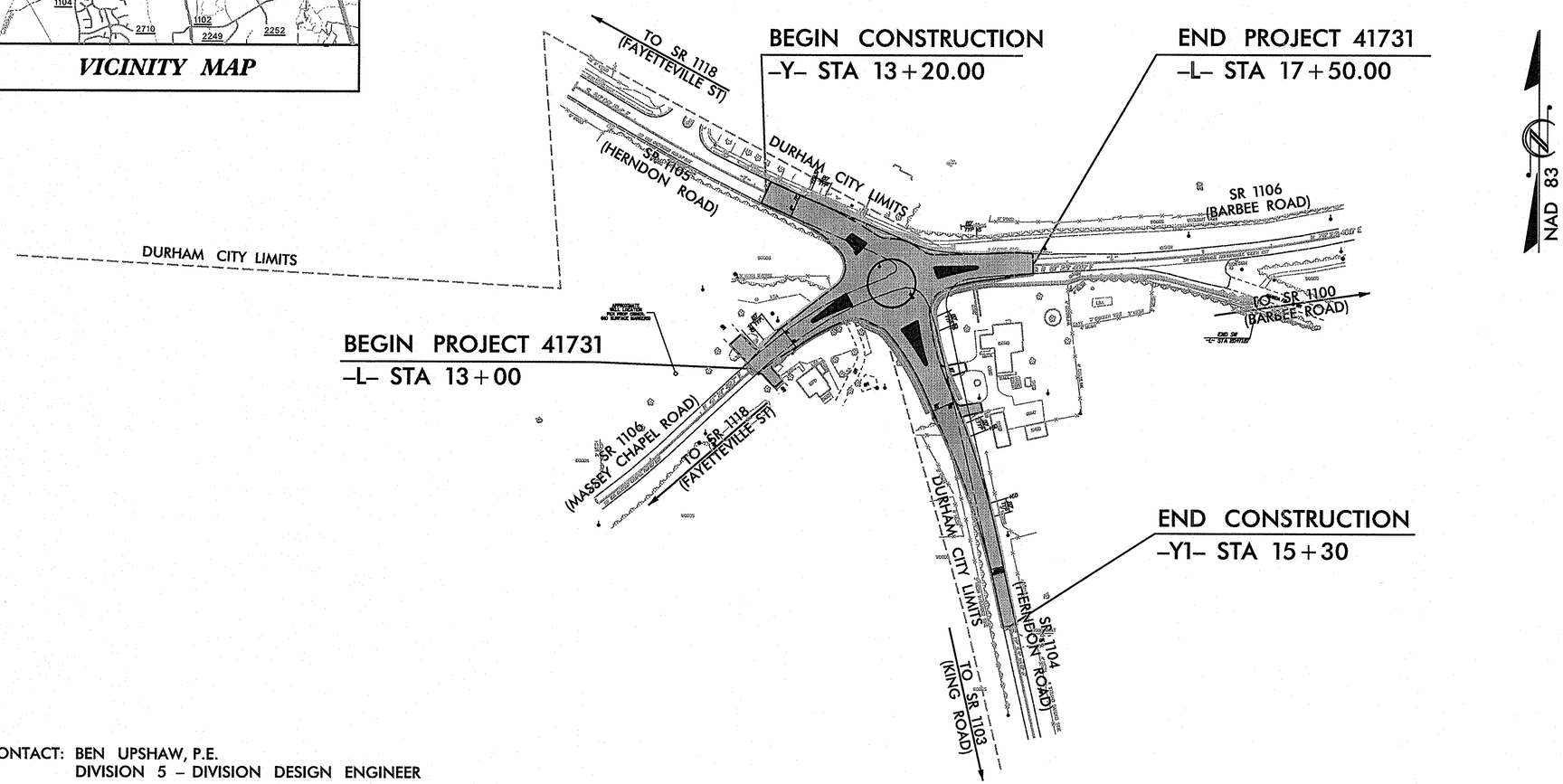
DURHAM COUNTY

LOCATION: INTERSECTION OF SR 1106 (BARBEE RD), SR 1105 (HERNDON RD), AND SR 1104 (HERNDON RD)

TYPE OF WORK: WATER LINE RELOCATION



VICINITY MAP



NCDOT CONTACT: BEN UPSHAW, P.E.
DIVISION 5 – DIVISION DESIGN ENGINEER

GRAPHIC SCALES

50 0 50 100
PLANS

50 0 50 100
PROFILE (HORIZONTAL)

5 0 5 10
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET No.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	PLAN & PROFILE SHEET
UC-3	DETAIL SHEET

UTILITY OWNERS ON PROJECT

1. WATER	CITY OF DURHAM

Prepared By:

KCI ASSOCIATES OF N.C.
CIVIL ENGINEERS
ENVIRONMENTAL - CEI
LAND SURVEYING
SUBSURFACE UTILITY ENGINEERING
SUITE 220, LANDMARK CENTER II,
4601 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27609
(919) 783-9214
WWW.KCI.COM

NORTH CAROLINA PROFESSIONAL SEAL 040474 ENGINEER CHRISTOPHER L. OVERCASH

SIGNATURE: 5-9-2016 P.E.

PROJECT: 41731

CONTRACT:

09/08/99

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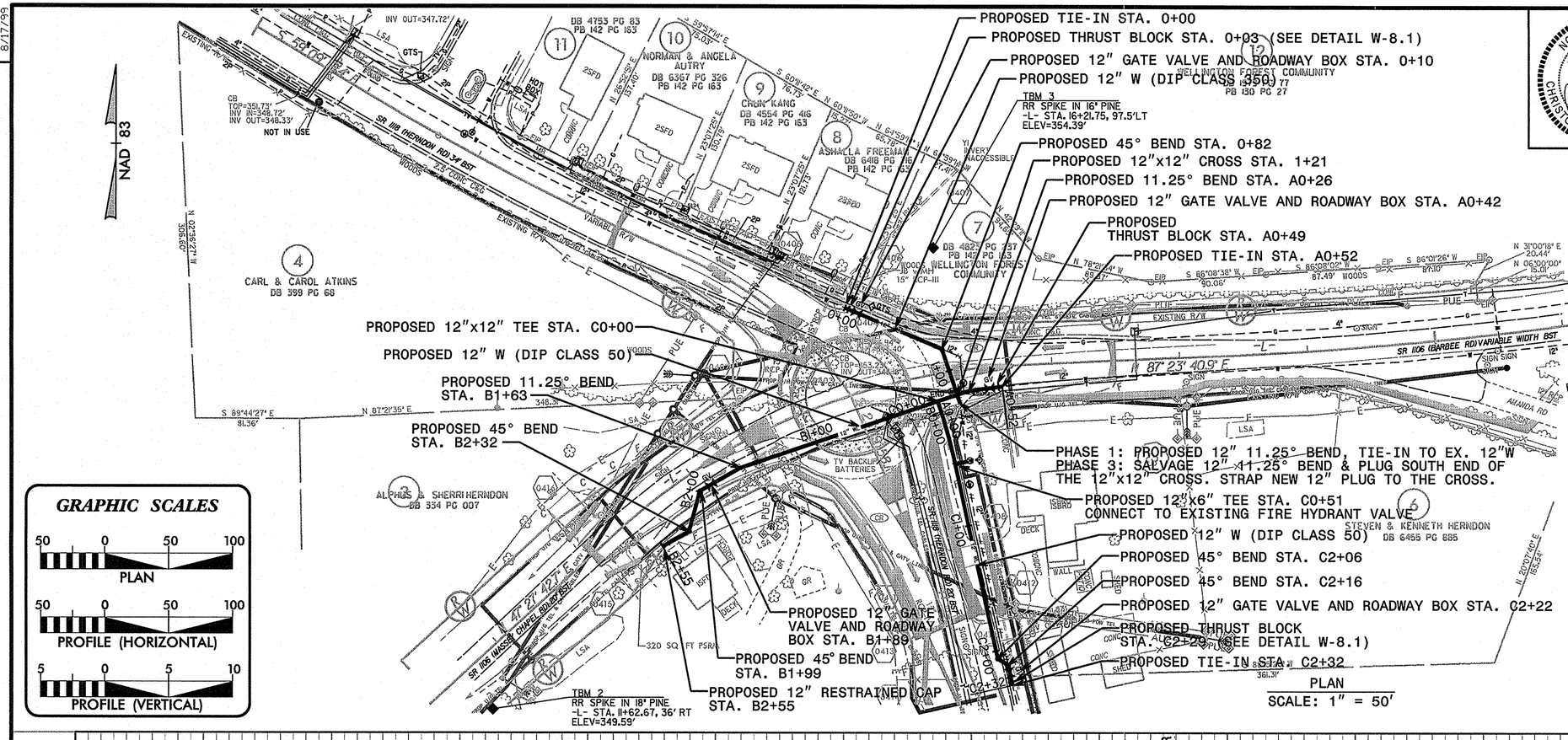
Waterline Sheet1.dgn
Joshua Barbour Division: P007 Utility Services Emp

PROJECT REFERENCE NO.	SHEET NO.
41731	UC-2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 040474 ENGINEER CHRISTOPHER L. OVERCASH 5-9-2016

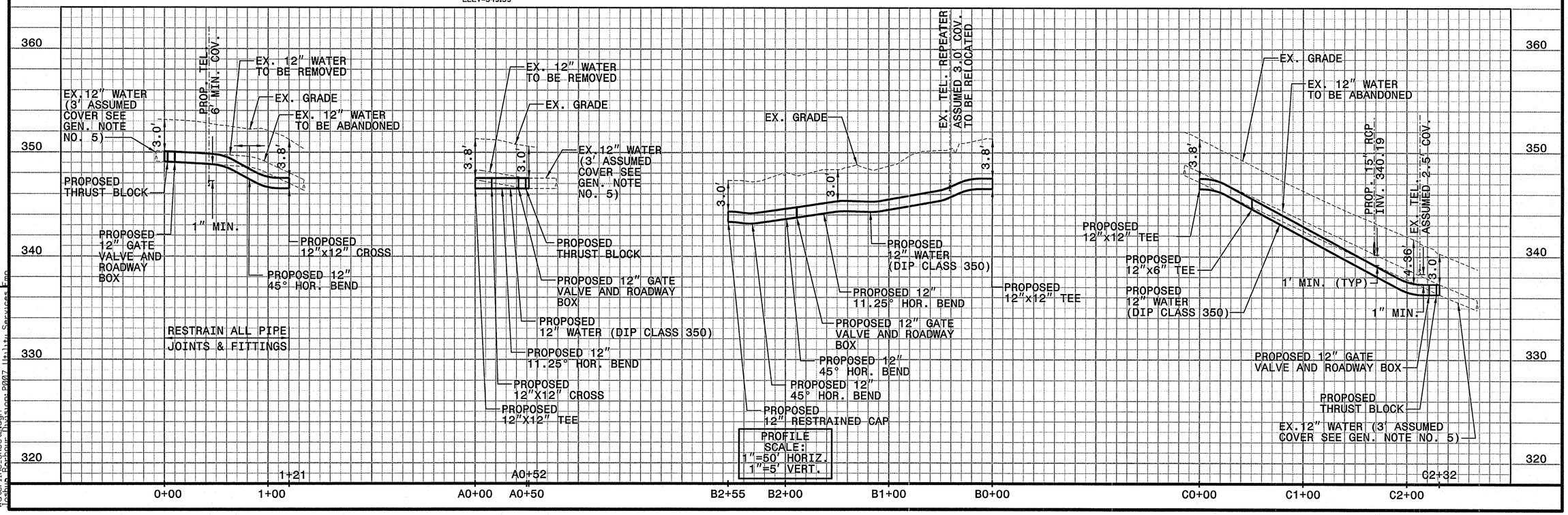
KCI ASSOCIATES OF N.C.
CIVIL ENGINEERS
ENVIRONMENTAL - CEI
LAND SURVEYING
SUBSURFACE UTILITY ENGINEERING
SUITE 220, LANDMARK CENTER II, 4601 EXC FORBES ROAD
RALEIGH, NORTH CAROLINA 27609
(919) 783-9214
WWW.KCI.COM



PLAN
SCALE: 1" = 50'

GENERAL NOTES

1. ALL MATERIALS REQUIRED UNDER THIS CONTRACT SHALL BE FURNISHED BY THE APPLICANT'S CONTRACTOR IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS.
3. STAKEOUT FOR THE PROPOSED RELOCATIONS SHALL BE PROVIDED BY THE CONTRACTOR.
4. RESTRAIN ALL PIPE JOINTS AND FITTINGS BETWEEN STA. 0+00 AND STA. 1+21.
5. THE CONTRACTOR SHALL TEST PIT THE EXISTING WATER MAINS AT THE PROPOSED TIE-INS.
6. ALL FITTINGS SHALL BE BLOCKED. SEE DETAILS (SHEET UC-3)



REVISIONS

8/17/99

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Joshua Perkins: Division: 2007 Utility Services Eng

PROJECT REFERENCE NO.	SHEET NO.
41731	UC-3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 040474 ENGINEER CHRISTOPHER L. OVERCASH 5-7-2016

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CIVIL ENGINEERS
ENVIRONMENTAL - CEI
LAND SURVEYING
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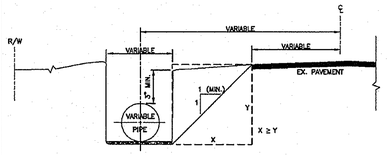
SUITE 220, LANDMARK CENTER II,
4601 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27609
(919) 783-9214
WWW.KCI.COM

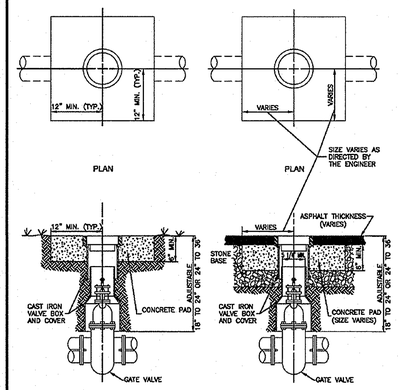


TYPICAL SECTION

(FOR TRENCH EXCAVATION SHOWING MAXIMUM SLOPE RELATIONSHIP FOR PARALLEL INSTALLATION)

DURHAM 1869 CITY OF MEDICINE

REVISION DATE: 12/07/2009	ROADSIDE PIPE TRENCH EXCAVATION CITY OF DURHAM, NORTH CAROLINA DEPARTMENT OF PUBLIC WORKS	SCALE: NTS DETAIL NO. P-1.0



PROVIDE HOPE INSERTS IN ALL VALVE BOXES BASED ON SPECIFICATIONS DESCRIBED IN DETAIL P-8.0

DURHAM 1869 CITY OF MEDICINE

REVISION DATE: 09/24/2010	WATER VALVE BOX INSTALLATION FOR 4", 6", 8", AND 12" GATE VALVES CITY OF DURHAM, NORTH CAROLINA DEPARTMENT OF PUBLIC WORKS	SCALE: NTS DETAIL NO. W-6.0

VALVE PREFERENCE TABLE

THE FOLLOWING TABLE SUMMARIZES VALVE TYPES AND ACCESS ALLOWED FOR DIFFERENT SIZED VALVES:

VALVE SIZE (INCHES)	VALVE TYPE	TYPE OF ACCESS	SIZE OF ACCESS (FEET)
12 AND UNDER	RESILIENT WEDGE GATE	VALVE BOX, 2-PIECE SCREW TYPE	STANDARD
14	BUTTERFLY	MANHOLE	4
16	BUTTERFLY	MANHOLE	4
18	BUTTERFLY	MANHOLE	5
20	BUTTERFLY	MANHOLE	5
24	BUTTERFLY	MANHOLE	5
30	BUTTERFLY	MANHOLE	6
36	BUTTERFLY	MANHOLE	6
42	BUTTERFLY	MANHOLE	6

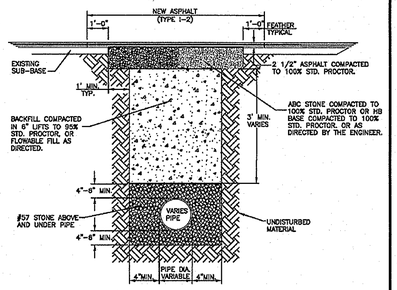
GATE VALVES MAY BE DEEMED NECESSARY BY THE ENGINEERING DIVISION.

DURHAM 1869 CITY OF MEDICINE

REVISION DATE: 12/07/2009	VALVE PREFERENCE TABLE CITY OF DURHAM, NORTH CAROLINA DEPARTMENT OF PUBLIC WORKS	SCALE: NTS DETAIL NO. W-6.1

NOTE:

SEE CITY OF DURHAM STANDARD CONSTRUCTION DETAILS FOR TRENCHES AND PIPE BEDDING.



FLOWABLE FILL TRENCH-CUT STREET, WATER, SEWER AND STORMWATER

DURHAM 1869 CITY OF MEDICINE

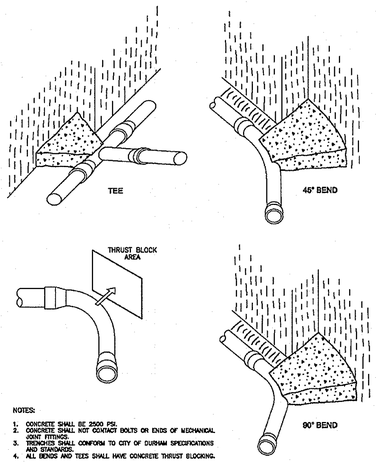
REVISION DATE: 12/07/2009	TRENCH CUT INSTALLATION CITY OF DURHAM, NORTH CAROLINA DEPARTMENT OF PUBLIC WORKS	SCALE: NTS DETAIL NO. SS-8.0

NOTES

1. IN ALL MANHOLES, SEWER AND WATER, REGARDLESS OF LOCATION, ULTRA HOPE INSERTS, WITH POLYPROPYLENE HANDLES, ARE TO BE INSTALLED. ADDITIONALLY, ALL CC BOXES AT WATER VALVES, HOPE INSERTS ARE TO BE INSTALLED.
2. THE INSERTS SHALL BE MANUFACTURED OF HOPE, MEETING THE STANDARDS OF ASTM D-1248, CLASS A, CATEGORY 5, TYPE III. THE MINIMUM UNIFORM THICKNESS SHALL BE ¼". THERE SHALL BE A POLYETHYLENE OR POLYPROPYLENE REMOVAL STRAP, RIVETED TO THE STRAP. VENTILATION CAN BE BY EITHER A VENT HOLE OR A VALVE, LOCATED ON THE SIDE OF THE BOWL. THE VENT WILL LIMIT 24 HOUR INFLOW TO 3 GALLONS. PROPER DIMENSIONS OF THE MANHOLE FRAME AND COVER MUST BE SUPPLIED TO THE INSERT MANUFACTURERS. TO DETERMINE THE EXACT MODEL OF INSERT NEEDED. ACCEPTABLE MANUFACTURERS/STYLES SHALL BE: (1) PARSONS ENVIRONMENTAL PRODUCTS, INC., WWW.PARSONSENVIRONMENTAL.COM, READING, PA. (2) NOTLOW INFLOW, DOUG MEADOWS CO., WWW.NOFLOWINFLOW.COM, ABILENE, TX.

DURHAM 1869 CITY OF MEDICINE

REVISION DATE: 9/24/2010	MANHOLE AND VALVE BOX INSERTS CITY OF DURHAM, NORTH CAROLINA DEPARTMENT OF PUBLIC WORKS	SCALE: NTS DETAIL NO. P-8.0

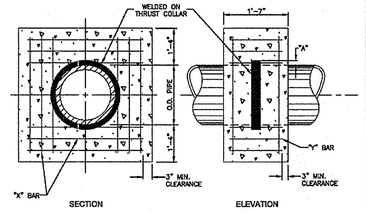


NOTES:

1. CONCRETE SHALL BE 2500 PSI.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
3. TRENCHES SHALL CONFORM TO CITY OF DURHAM SPECIFICATIONS AND STANDARDS.
4. ALL BENDS AND TEES SHALL HAVE CONCRETE THRUST BLOCKING.

DURHAM 1869 CITY OF MEDICINE

REVISION DATE: 12/07/2009	HORIZONTAL THRUST BLOCKING ISOMETRIC VIEWS CITY OF DURHAM, NORTH CAROLINA DEPARTMENT OF PUBLIC WORKS	SCALE: NONE DETAIL NO. W-8.0



WELDED ON THRUST COLLAR	
I.D. PIPE	"A"
6"-16"	2"
20"-24"	3"
30"-36"	4"

THRUST COLLAR REINFORCING		
	"X" BAR	"Y" BAR
BAR LENGTH	2'-2" + O.D. PIPE	1'-1"
REBAR SIZE	#5	#5
NUMBER REQ'D	24	12

NOTES:

1. CONCRETE SHALL BE 3000 P.S.I
2. REINFORCING BARS SHALL BE DEFORMED, AND TIED TOGETHER.
3. BACKFILL TAMPED IN 8" LAYERS
4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK(S) INSTALLATION SHALL BE THE MINIMUM WIDTH AS DESCRIBED BY THE ENGINEER.

DURHAM 1869 CITY OF MEDICINE

REVISION DATE: 12/07/2009	CONCRETE THRUST BLOCK CITY OF DURHAM, NORTH CAROLINA DEPARTMENT OF PUBLIC WORKS	SCALE: NTS DETAIL NO. W-8.1

SIZE AND EXPOSED AREA OF BAND	STRAIGHT THRUST IN POUNDS	FOUR THRUST TIES FOR 1/2" DIA. RODS EACH TIE	FOUR THRUST TIES FOR 5/8" DIA. RODS EACH TIE	FOUR THRUST TIES FOR 3/4" DIA. RODS EACH TIE	FOUR THRUST TIES FOR 7/8" DIA. RODS EACH TIE	FOUR THRUST TIES FOR 1" DIA. RODS EACH TIE	FOUR THRUST TIES FOR 1 1/8" DIA. RODS EACH TIE	FOUR THRUST TIES FOR 1 1/4" DIA. RODS EACH TIE
6" PIPE								
11 1/4"	1,168	1	1	1	1	1	2	1
22 1/2"	2,207	1	2	2	1	1	3	1
45°	4,328	2	3	3	1	1	5	1
90°	7,998	2	4	5	1	1	8	1
PLUG OR TEE	5,655	2	3	4	1	1	6	1
8" PIPE								
11 1/4"	1,970	1	1	2	1	1	1	2
22 1/2"	3,922	1	2	3	1	1	4	1
45°	7,694	2	4	5	1	1	8	1
90°	14,215	4	8	9	2	2	15	2
PLUG OR TEE	10,053	3	5	6	2	2	3	10
12" PIPE								
11 1/4"	4,433	2	3	3	1	1	2	5
22 1/2"	8,828	3	5	6	2	2	3	9
45°	17,312	5	9	11	3	3	5	18
90°	31,983	8	16	19	4	4	8	32
PLUG OR TEE	22,619	6	12	14	3	3	6	23
16" PIPE								
11 1/4"	7,881	2	4	5	1	1	2	8
22 1/2"	15,691	4	8	10	2	2	4	16
45°	7,694	8	16	19	4	4	8	31
90°	56,891	15	29	35	8	8	15	57
PLUG OR TEE	40,213	10	21	25	5	5	10	41
20" PIPE								
11 1/4"	12,315	3	7	8	2	2	3	13
22 1/2"	24,017	7	13	15	4	4	7	25
45°	48,091	12	24	29	6	6	12	48
90°	88,844	23	45	53	12	12	23	89
PLUG OR TEE	62,832	16	32	38	8	8	16	63
24" PIPE								
11 1/4"	17,734	5	9	11	3	3	5	18
22 1/2"	35,305	9	18	22	5	5	9	36
45°	69,252	18	35	42	9	9	18	70
90°	127,936	32	64	77	16	16	32	128
PLUG OR TEE	90,478	23	46	55	12	12	23	91
30" PIPE								
11 1/4"	27,709	7	14	17	4	4	7	2
22 1/2"	55,163	14	28	34	7	7	14	56
45°	108,208	28	55	65	14	14	28	109
90°	199,930	50	100	120	25	25	50	200
PLUG OR TEE	141,372	36	71	85	18	18	36	142
36" PIPE								
11 1/4"	39,901	10	20	24	5	5	10	40
22 1/2"	79,435	20	40	48	10	10	20	30
45°	155,816	39	78	94	20	20	39	156
90°	247,655	72	144	172	38	38	72	288
PLUG OR TEE	203,575	51	102	122	26	26	51	204

GENERAL NOTES:

1. BASED ON TEST PRESSURE OF 200 P.S.I. FILL MEDIUM IN PUDDLE, ETC.
2. THE PRESSURE OF THE THRUST BLOCKING SHALL BE THE SAME AS THE PRESSURE USED WHEN PERFORMING THE HYDROSTATIC TEST FACTORS.
3. SEE STANDARD WATER LINE DETAILS FOR ALTERNATE THRUST BLOCKING.

DURHAM 1869 CITY OF MEDICINE

REVISION DATE: 12/07/2009	HORIZONTAL THRUST BLOCKING SCHEDULE CITY OF DURHAM, NORTH CAROLINA DEPARTMENT OF PUBLIC WORKS	SCALE: NTS DETAIL NO. W-8.2

WATER RELOCATION DETAILS
NOT TO SCALE

REVISIONS

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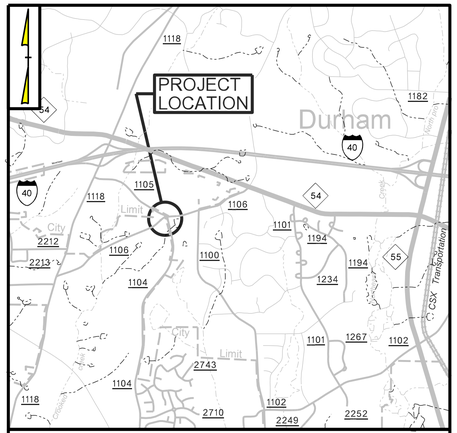
Jackie Rochester/DOT Utilities/P007 Utility Services Eng

09/08/99

PROJECT: W-5205V

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

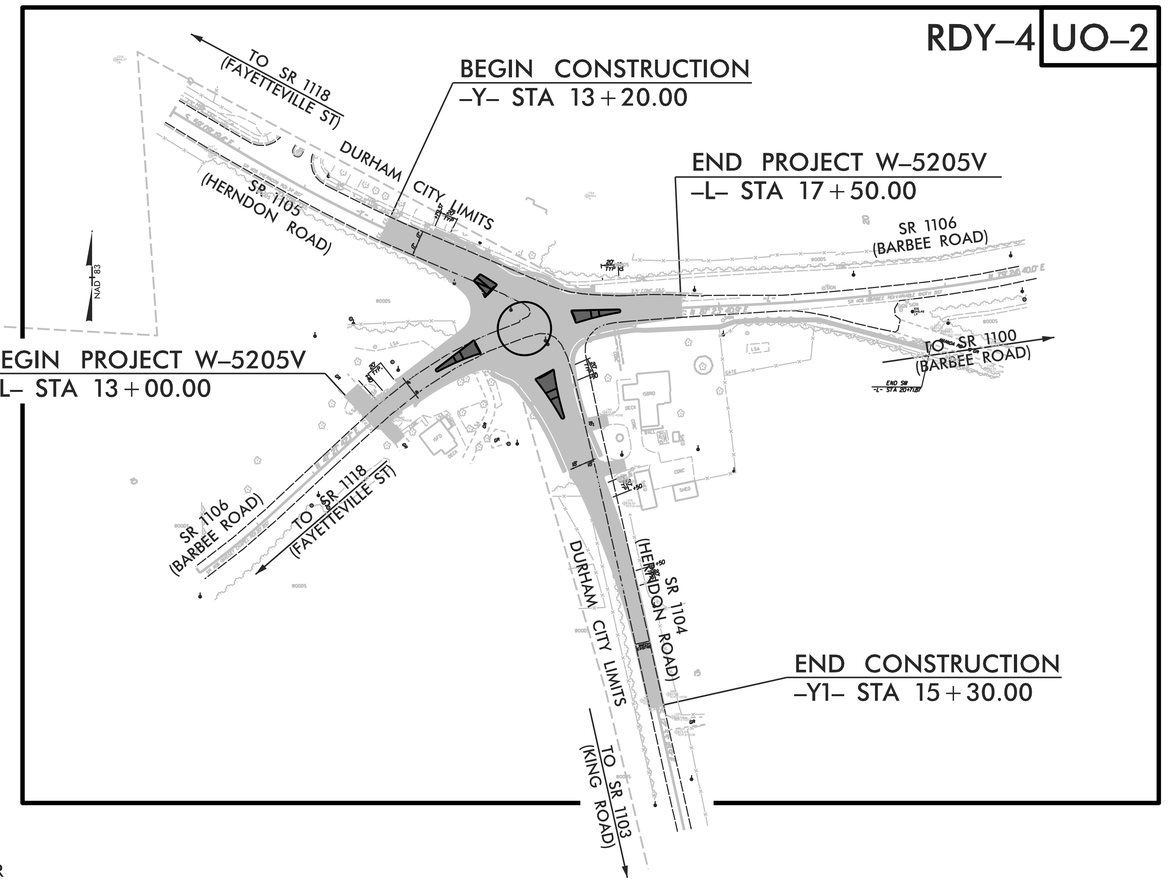
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
W-5205V	UO-1

UTILITIES BY OTHERS
DURHAM COUNTY

LOCATION: INTERSECTION OF SR 1106 (BARBEE RD), SR 1105 (HERNDON RD), AND SR 1104 (HERNDON RD)

TYPE OF WORK: OVERHEAD POWER & COMMUNICATIONS, UNDERGROUND COMMUNICATIONS AND GAS RELOCATIONS.



NCDOT CONTACT: BEN UPSHAW, P.E.
DIVISION 5 – DIVISION DESIGN ENGINEER

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2	UTILITIES BY OTHERS PLAN SHEET

UTILITY OWNERS ON PROJECT

(A) DUKE ENERGY – POWER (DISTRIBUTION)
(B) PIEDMONT NATURAL GAS – GAS
(C) TIME WARNER CABLE – COMMUNICATIONS
(D) AT&T – COMMUNICATIONS
(E) FRONTIER – COMMUNICATIONS

Prepared In the Office of:
KCI ASSOCIATES OF N.C.
CIVIL ENGINEERS
ENVIRONMENTAL - CEI
LAND SURVEYING
SUBSURFACE UTILITY ENGINEERING
SUITE 220, LANDMARK CENTER II,
4601 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27609
(919) 783-9214
WWW.KCI.COM

JOHN FAISON
UTILITY COORDINATOR

JOSH BARBOUR
UTILITY DESIGNER

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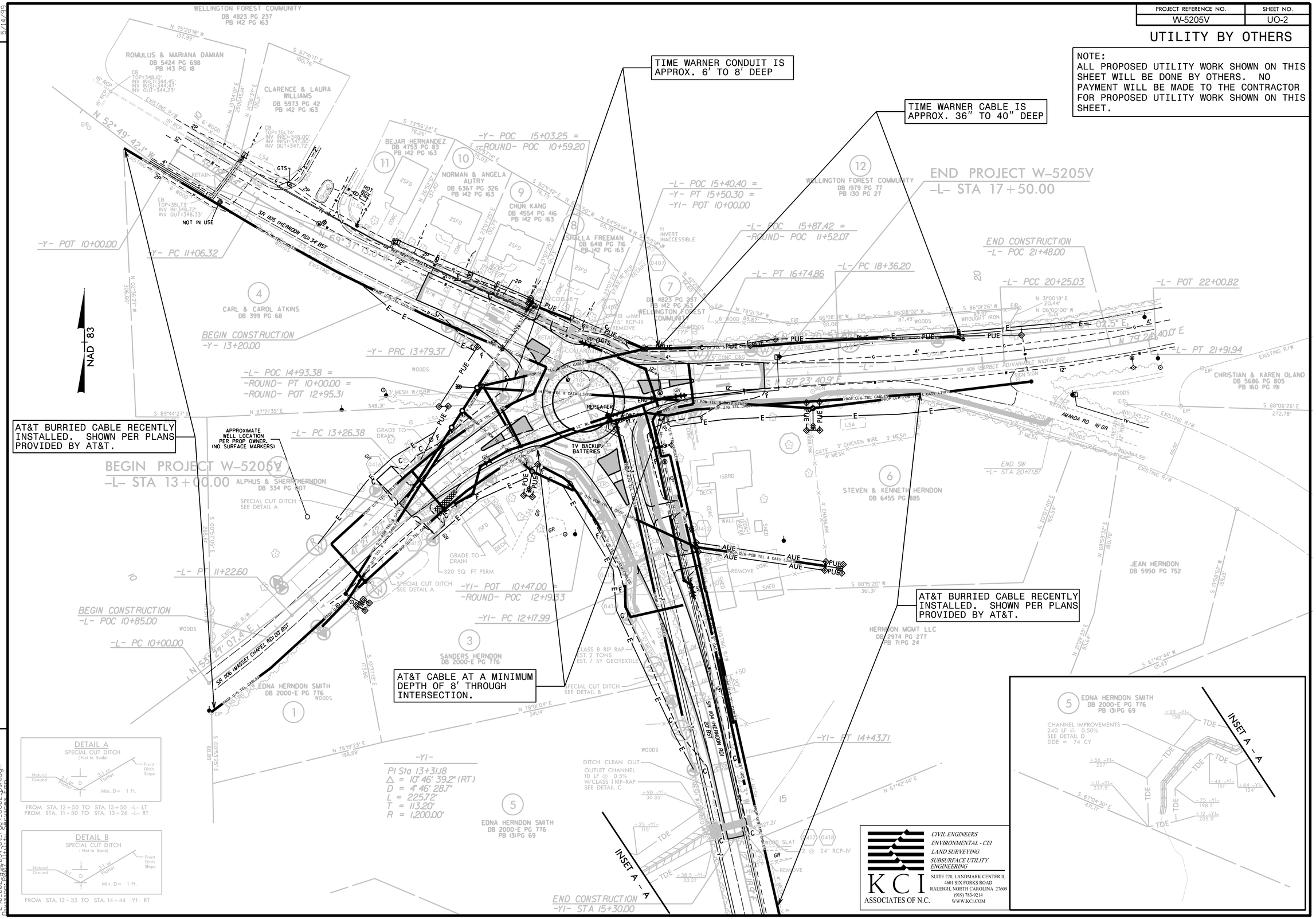
Joshua Barbour Division: P007 Utility Services Emp

PROJECT REFERENCE NO.	SHEET NO.
W-5205V	UO-2

UTILITY BY OTHERS

NOTE:
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.



DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1 or Flatter
D
3:1 or Flatter
Front Ditch Slope
Min. D= 1 Ft.
FROM STA. 12+50 TO STA. 13+50 -L- LT
FROM STA. 11+50 TO STA. 13+26 -L- RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1 or Flatter
Front Ditch Slope
Min. D= 1 Ft.
FROM STA. 12+35 TO STA. 14+44 -Y1- RT

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ENVIRONMENTAL - CEI
LAND SURVEYING
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SUITE 220, LANDMARK CENTER II,
4601 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27609
(919) 783-9214
WWW.KCI.COM

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Division 09 Utility Services Emp

W-5205V INDEX OF CROSS-SECTIONS

LINE	PAGES
-L-	X- 2 TO X- 6
-ROUND-	X- 7 TO X-11
-Y-	X-12 TO X-13
-Y1-	X-14 TO X-16
-Y2-	X-17 TO X-18

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ICA ENGINEERING, INC.

PROJ. REFERENCE NO.	SHEET NO.
W-5205V	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
11+50.00	0	0
11+84.64	0	0
12+00.00	0	0
12+50.00	0	0
13+00.00	0	0
13+26.38	0	0
13+50.39	0	0
13+75.00	0	0
14+00.00	0	0
14+12.44	0	0
14+50.00	0	0
14+75.00	0	0

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
16+05.00	0	0
16+35.00	0	0
16+67.59	0	0
16+74.86	0	0
17+00.00	0	0
17+36.15	0	0
17+50.00	0	0

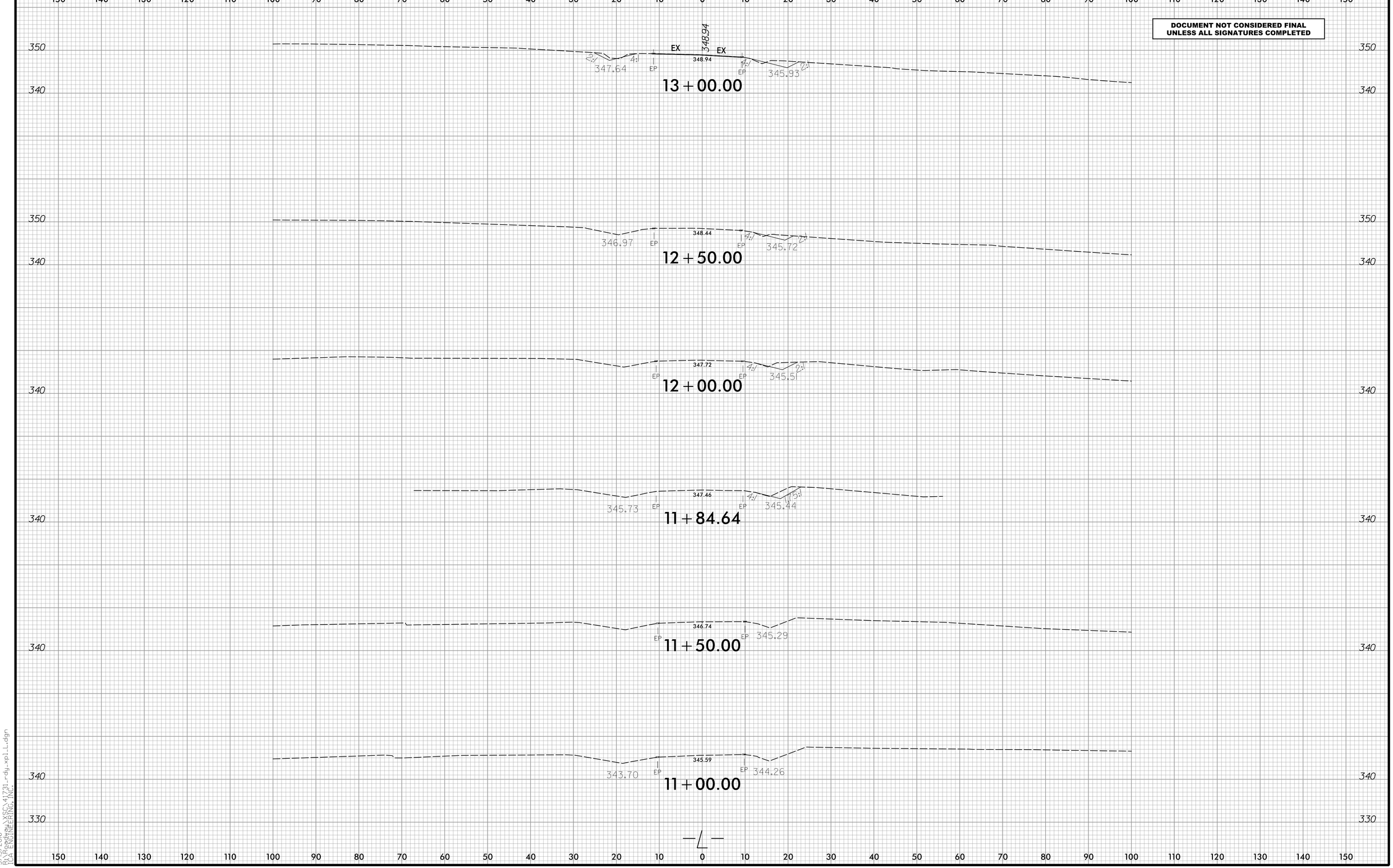
Station Round	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+00.00	0	0
10+10.00	0	0
10+22.00	0	0
10+30.00	0	0
10+38.00	0	0
10+50.00	0	0
10+70.00	0	0
10+90.00	0	0
11+05.00	0	0
11+20.00	0	0
11+40.00	0	0
11+60.00	0	0
11+75.00	0	0
11+85.00	0	0
11+95.00	0	0
12+10.00	0	0
12+35.00	0	0
12+50.00	0	0
12+60.00	0	0
12+70.00	0	0
12+85.00	0	0
12+95.31	0	0

Station Y	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+20.00	0	0
13+50.00	0	0
13+79.37	0	0
14+00.00	0	0
14+25.00	0	0
14+57.33	0	0
14+70.00	0	0
14+84.00	0	0

Station Y1	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+64.50	0	0
10+95.00	0	0
11+27.60	0	0
11+65.82	0	0
11+94.86	0	0
12+17.99	0	0
12+50.00	0	0
13+00.00	0	0
13+50.00	0	0
14+00.00	0	0
14+43.71	0	0
14+50.00	0	0
15+00.00	0	0
15+30.00	0	0

Station Y2	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+75.00	0	0
11+00.00	0	0
11+25.00	0	0
11+50.00	0	0
11+56.00	0	0

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



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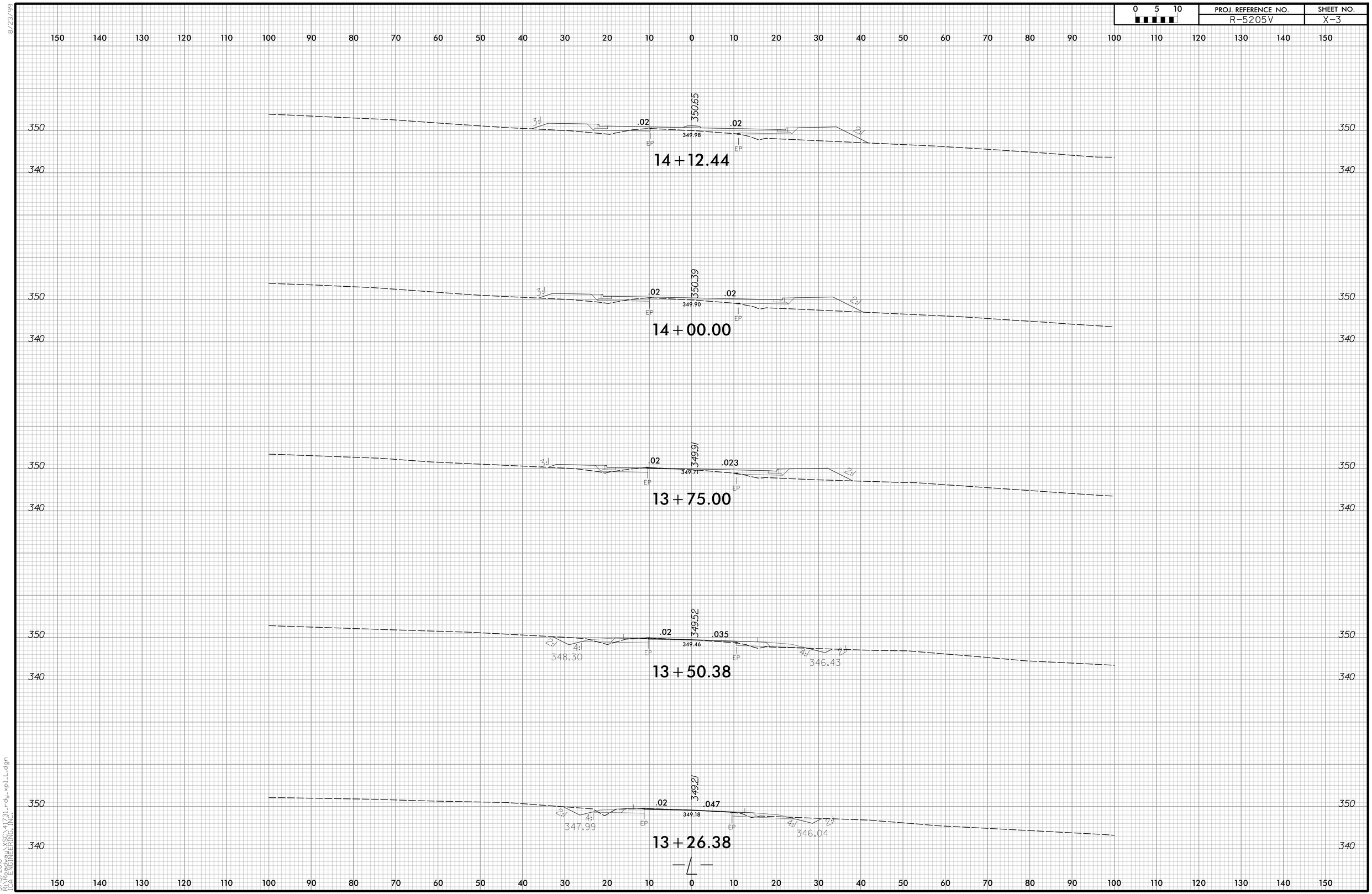
ICA ENGINEERING, INC.



8/23/99

5/13/2016
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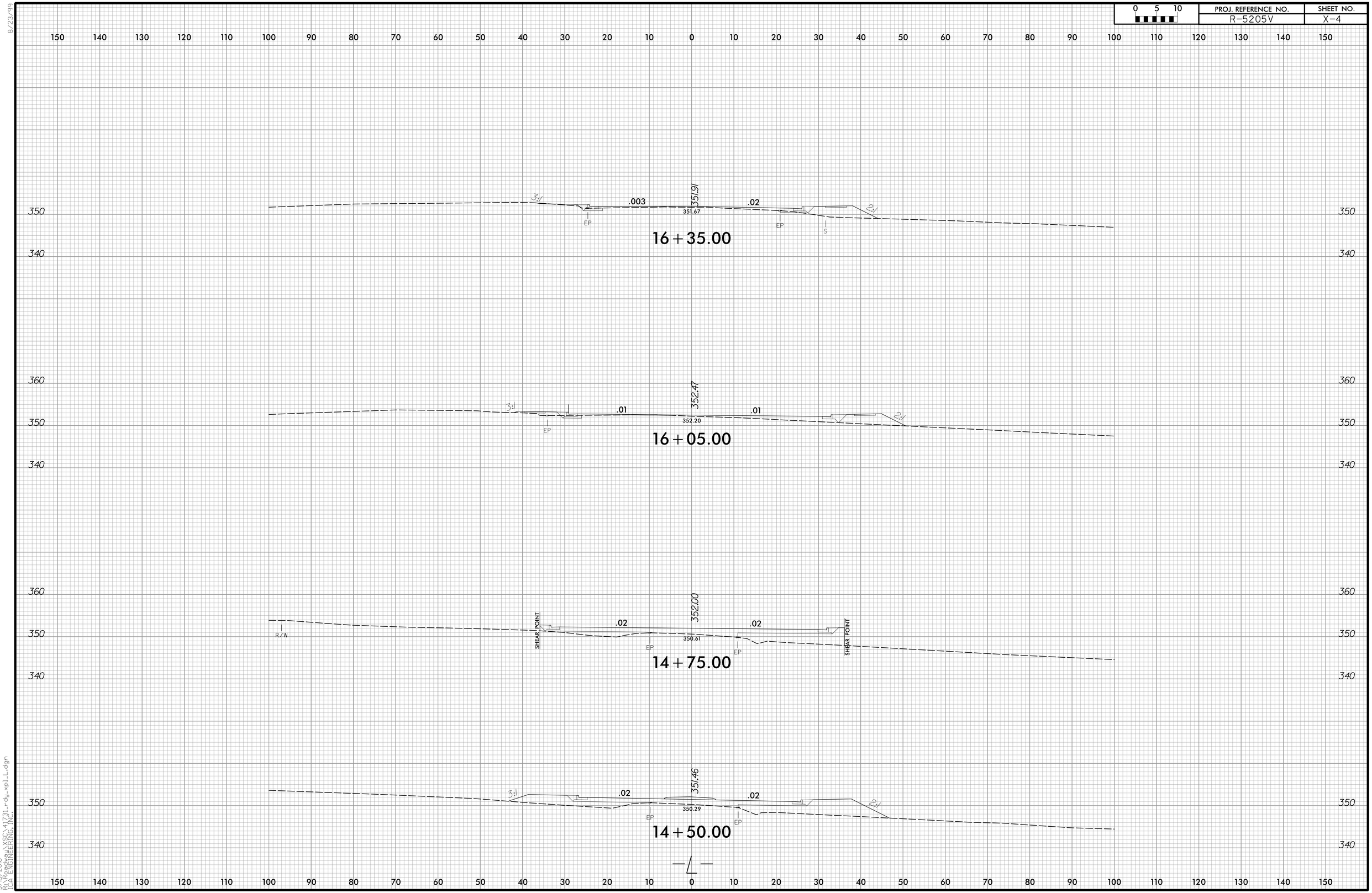
ICA ENGINEERING, INC.



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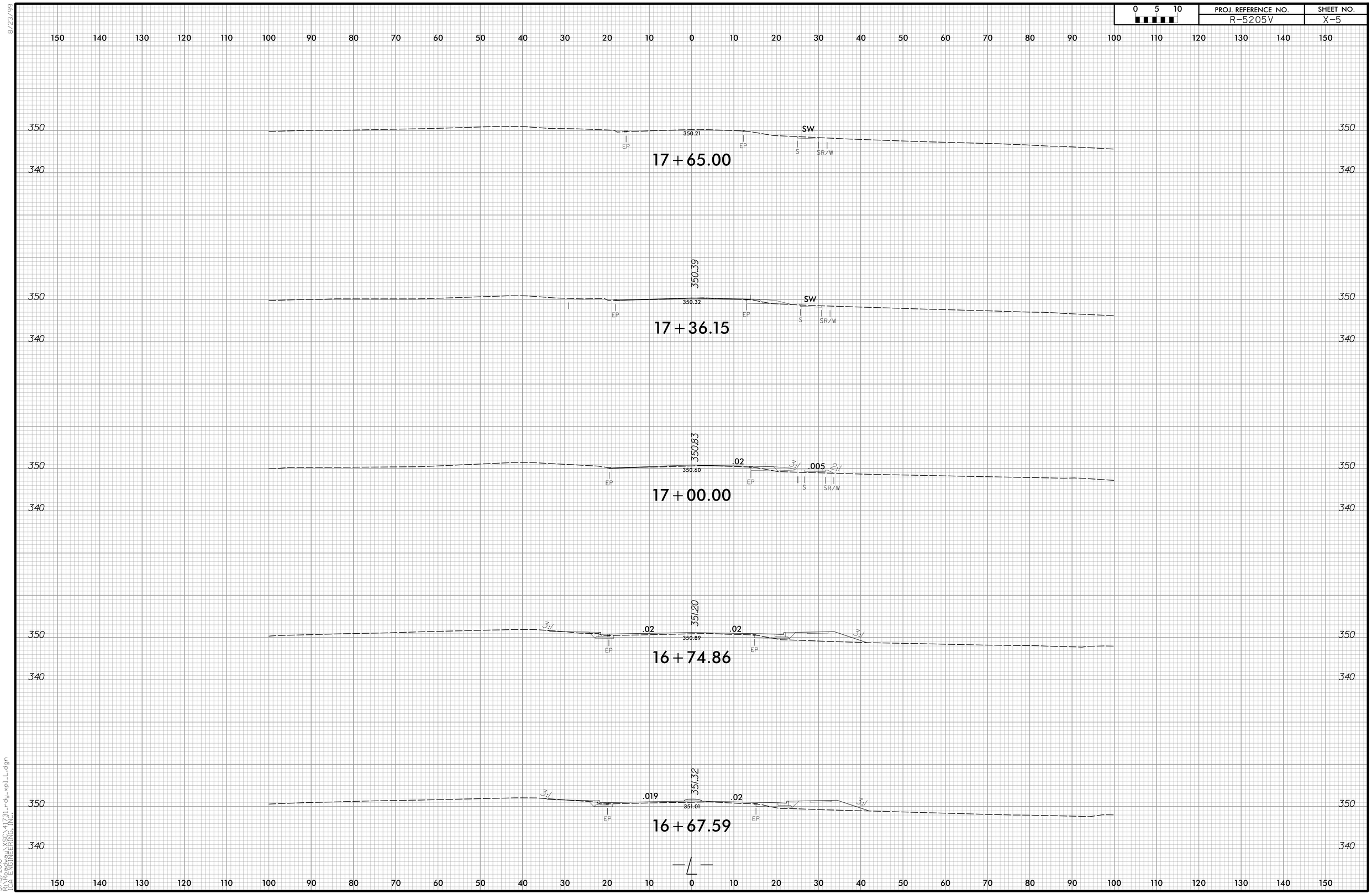

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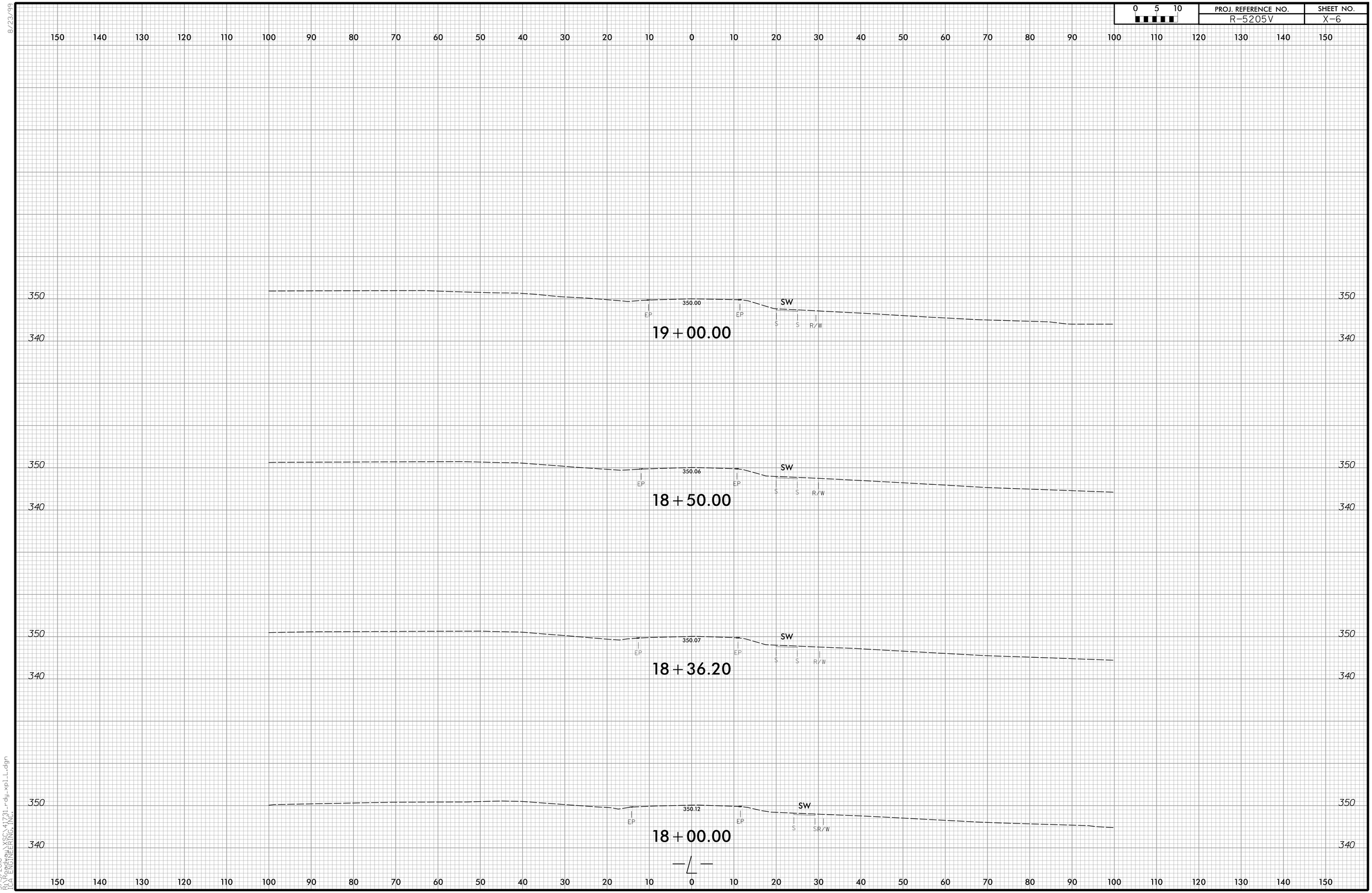

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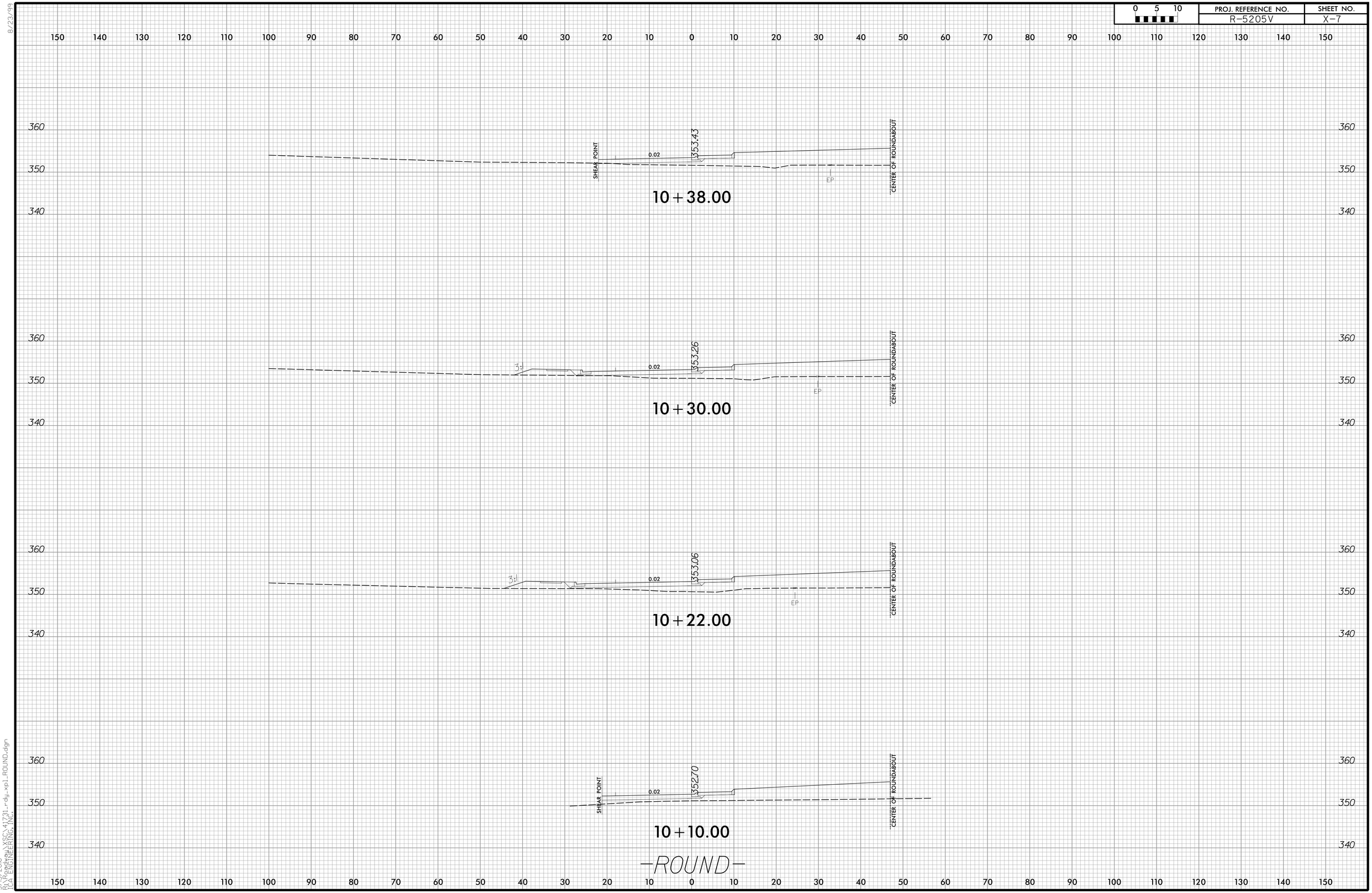

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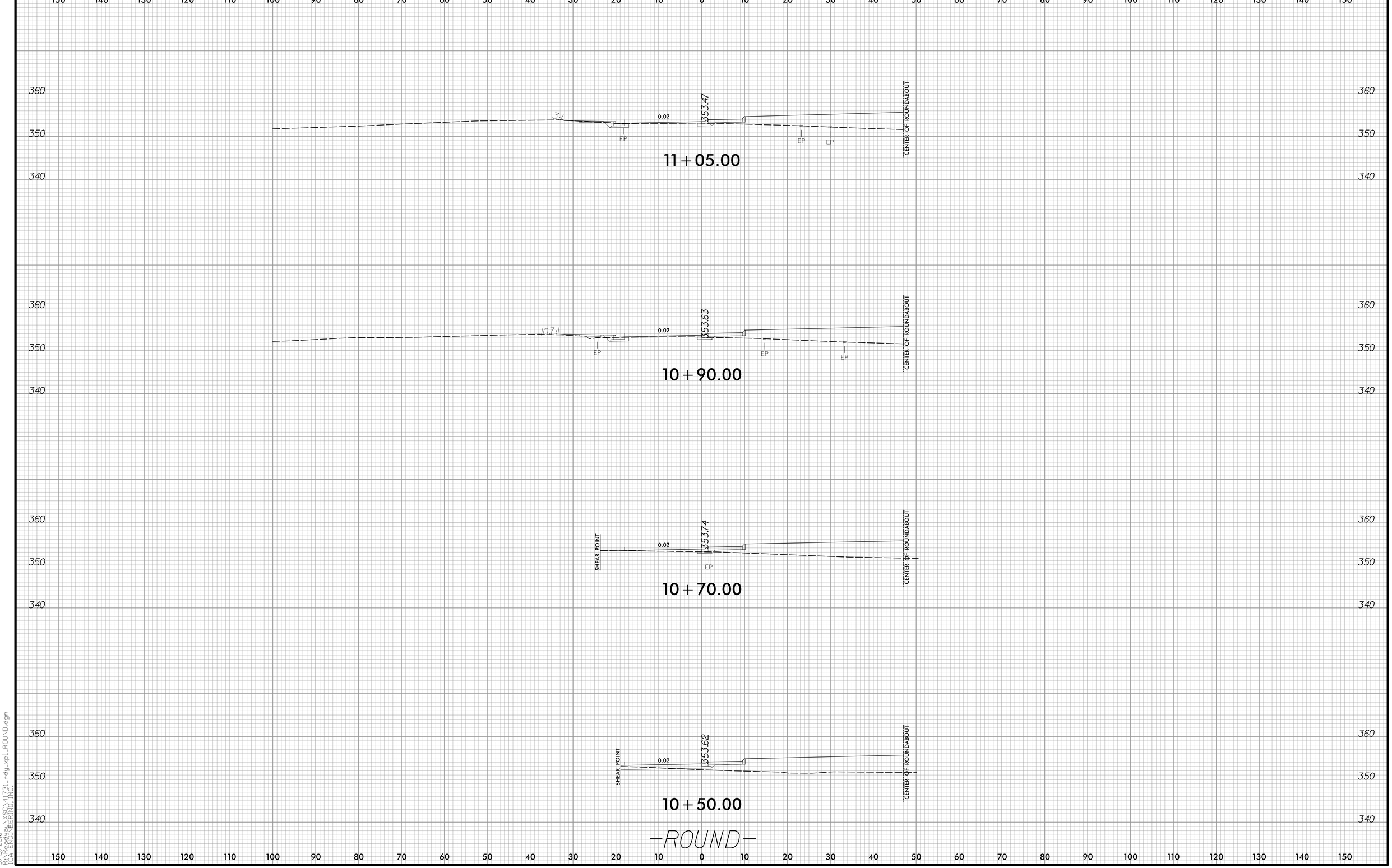

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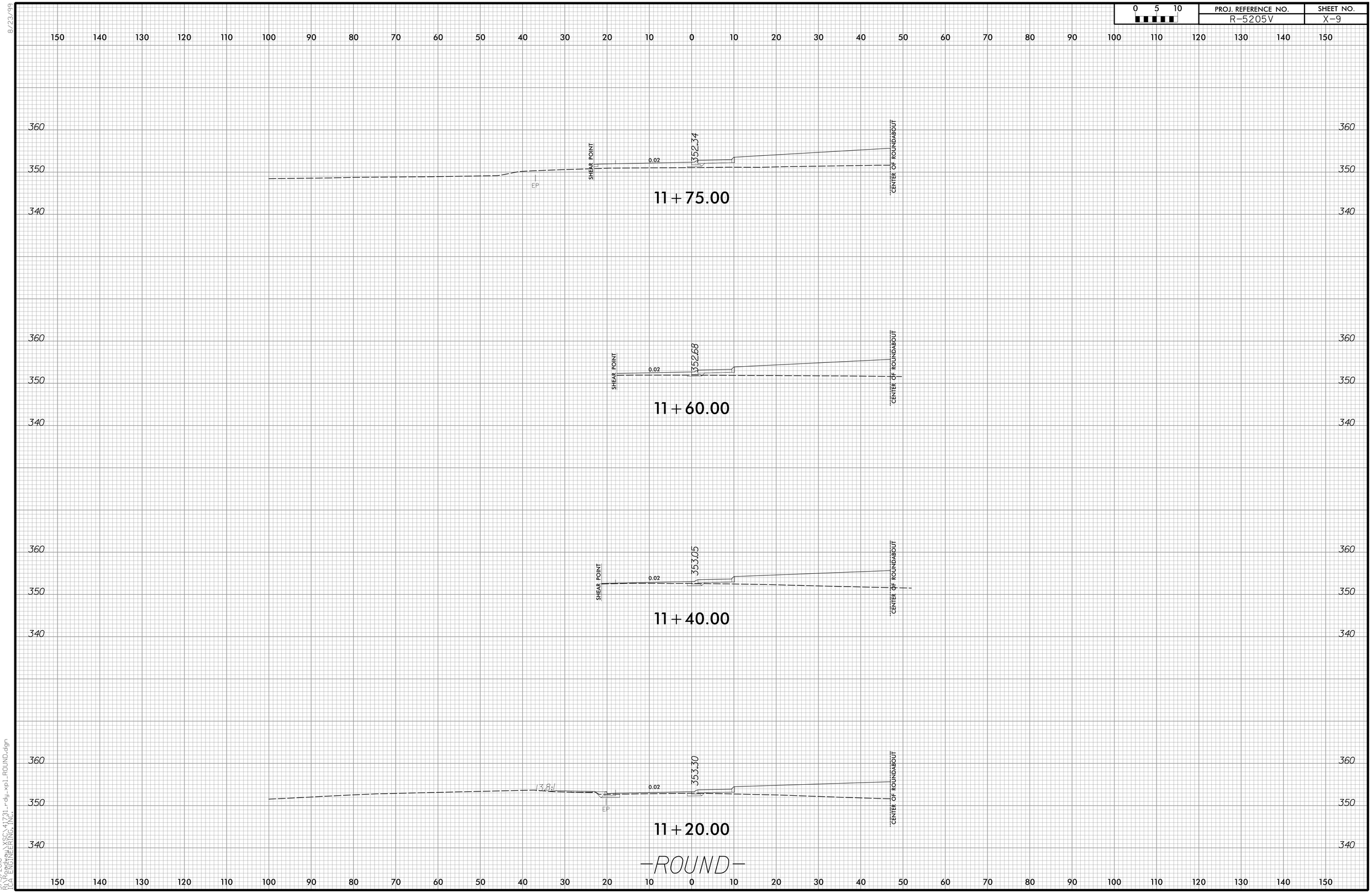

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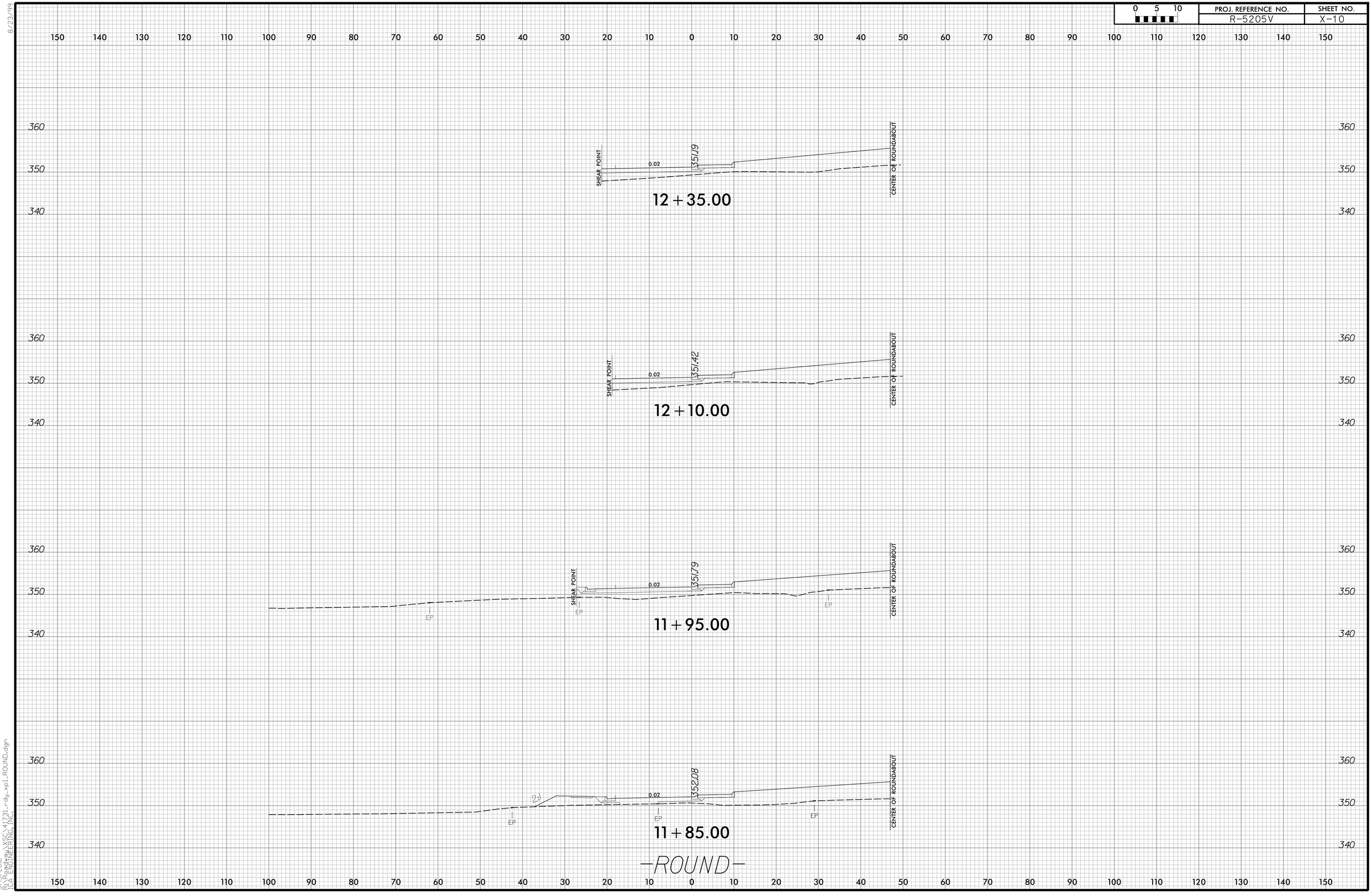

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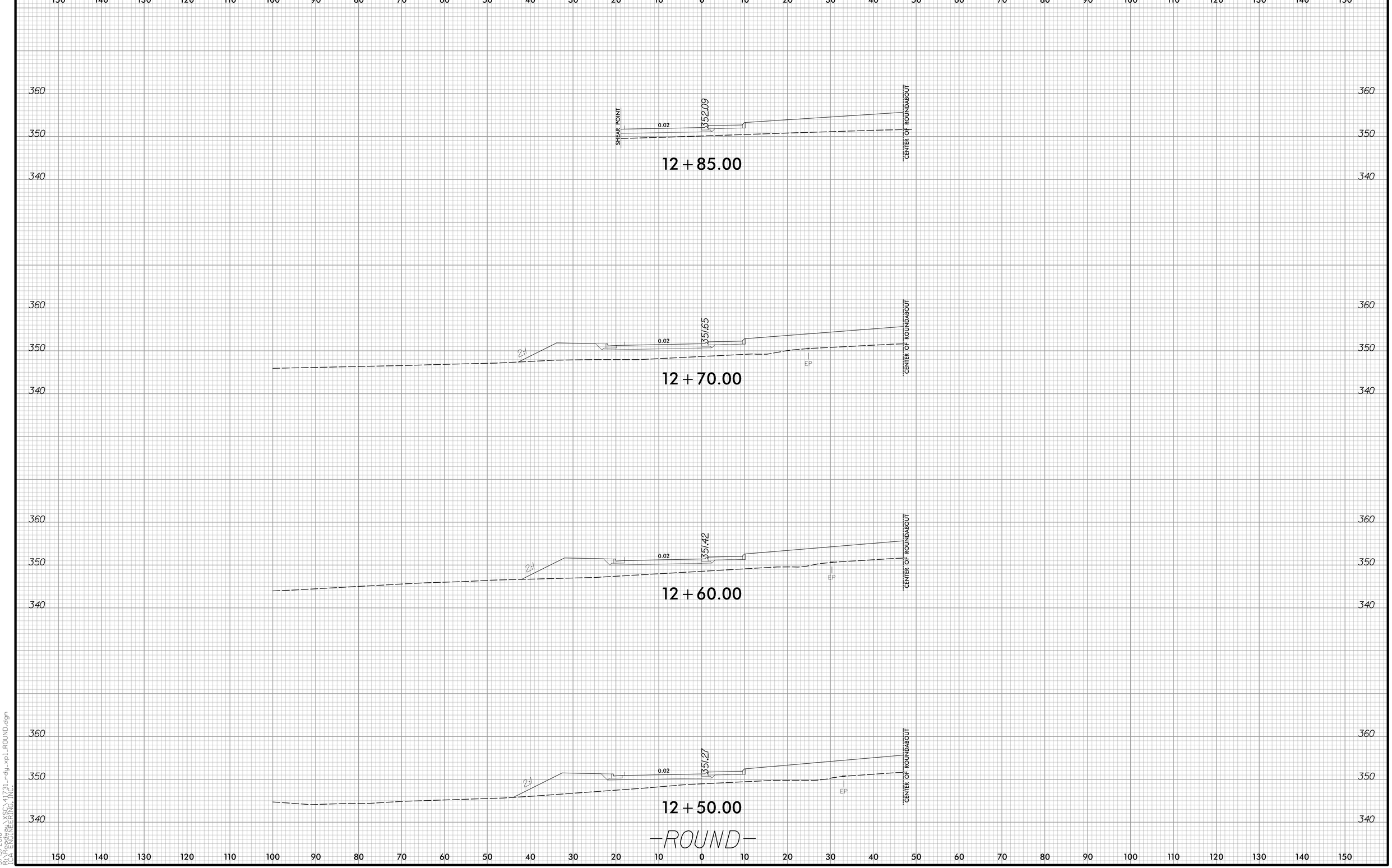

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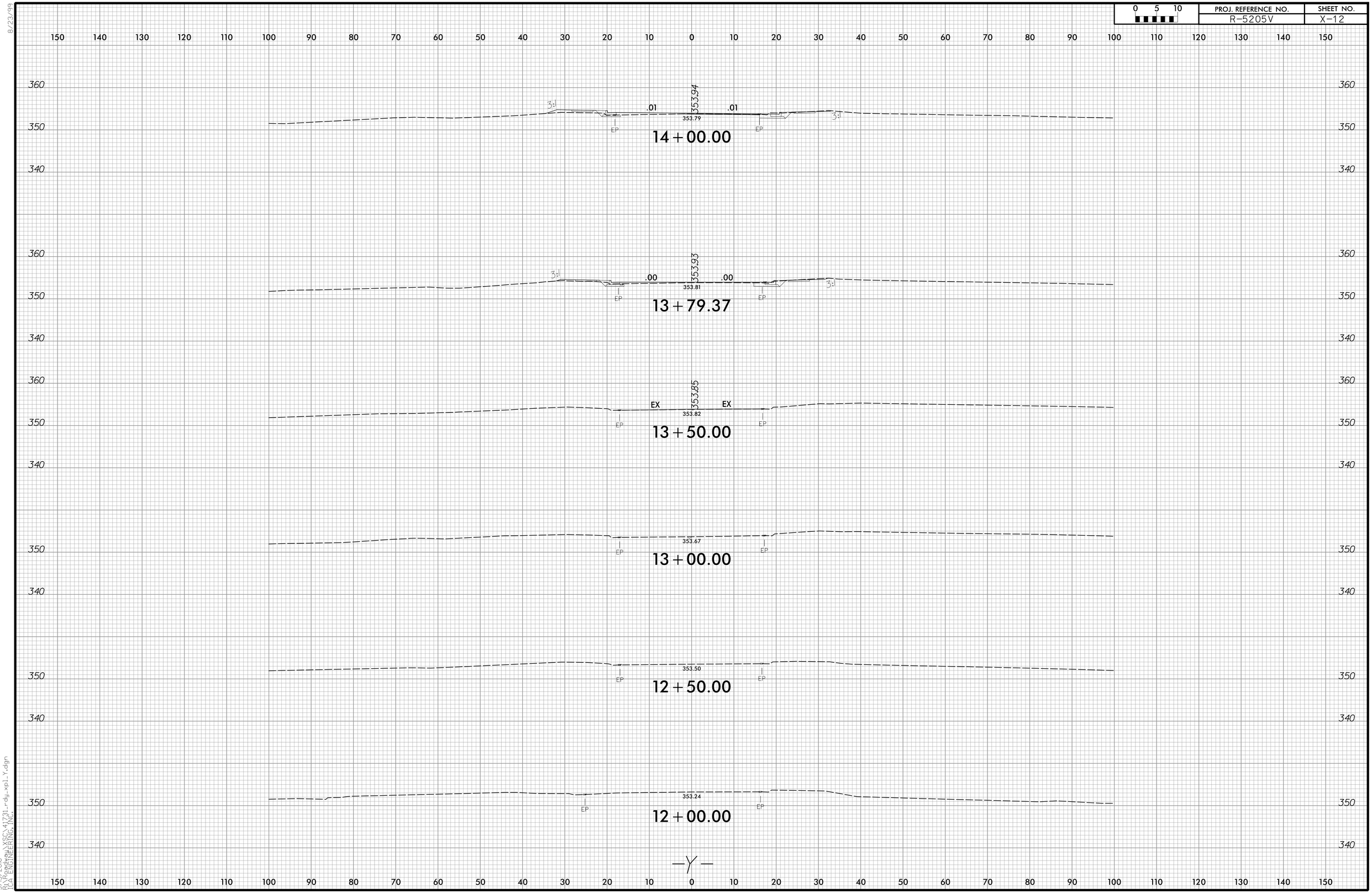

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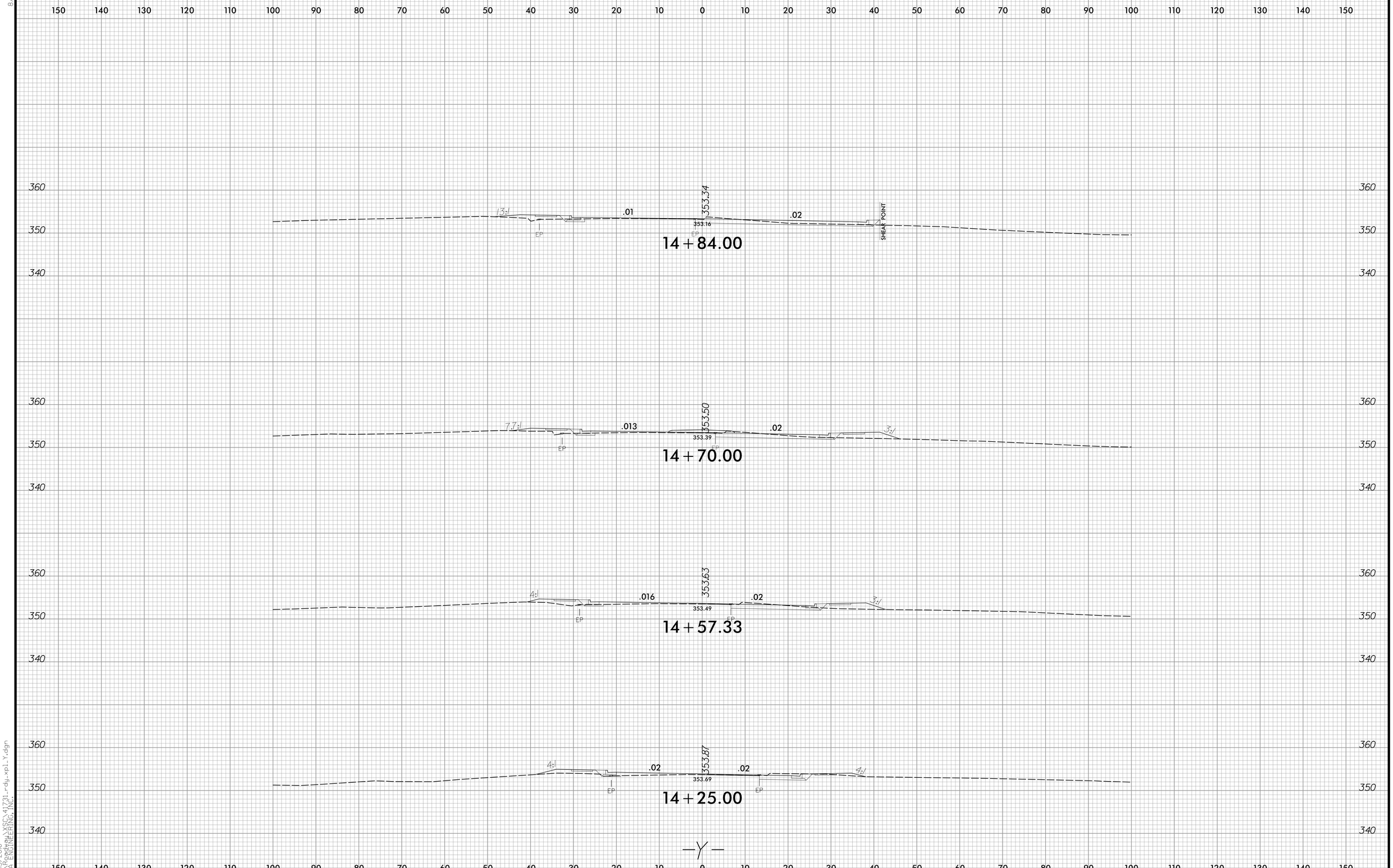

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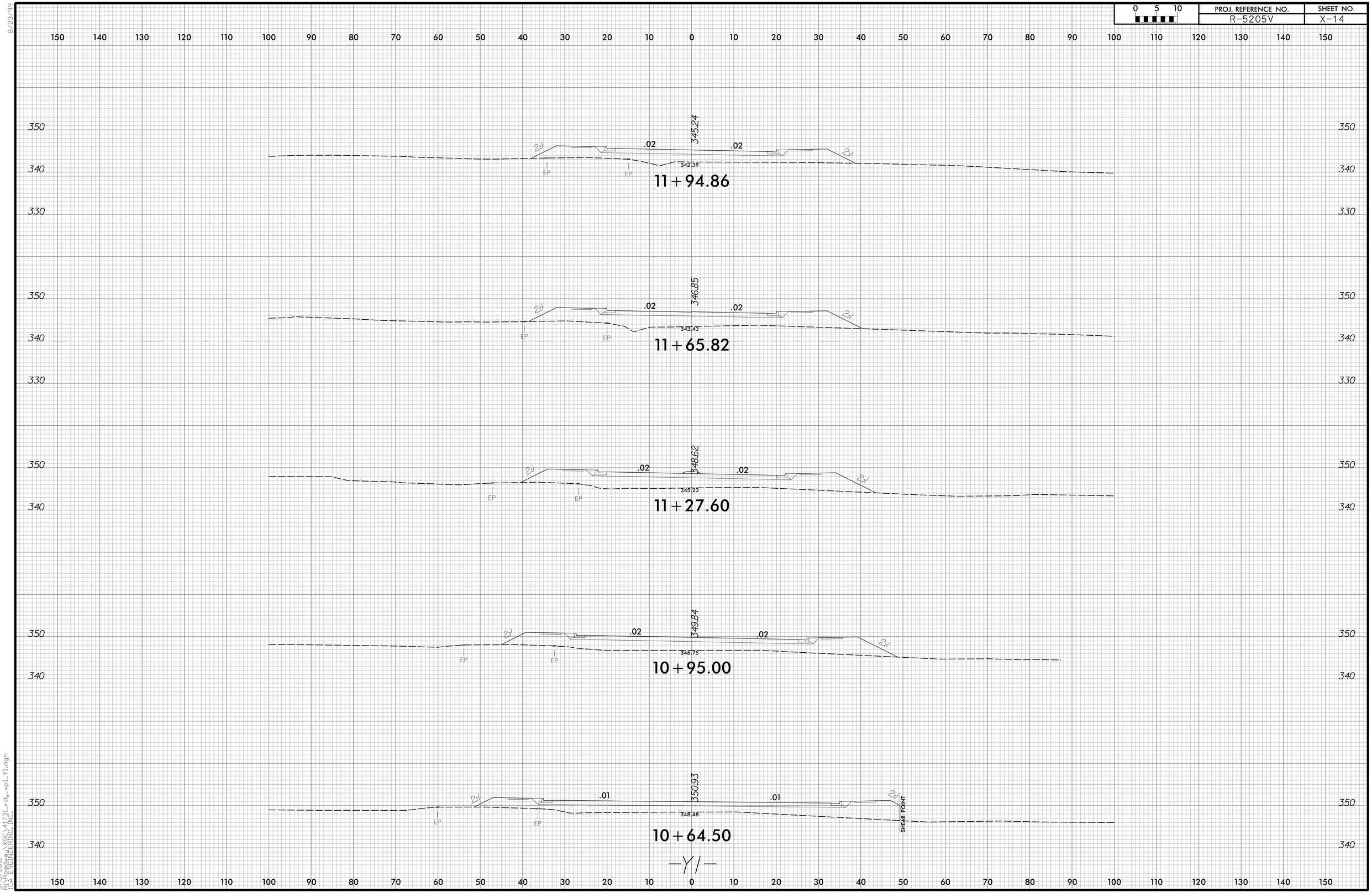

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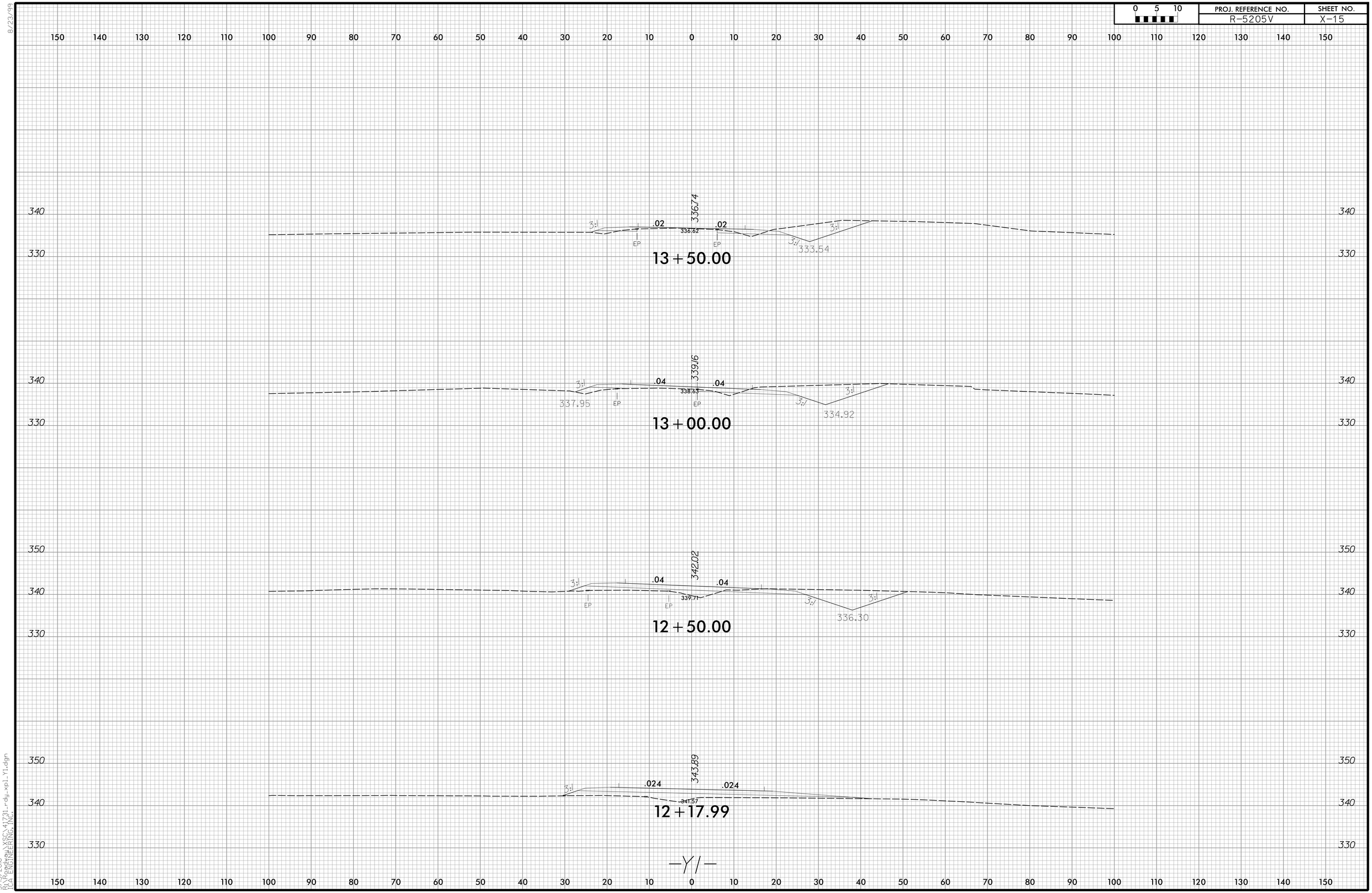

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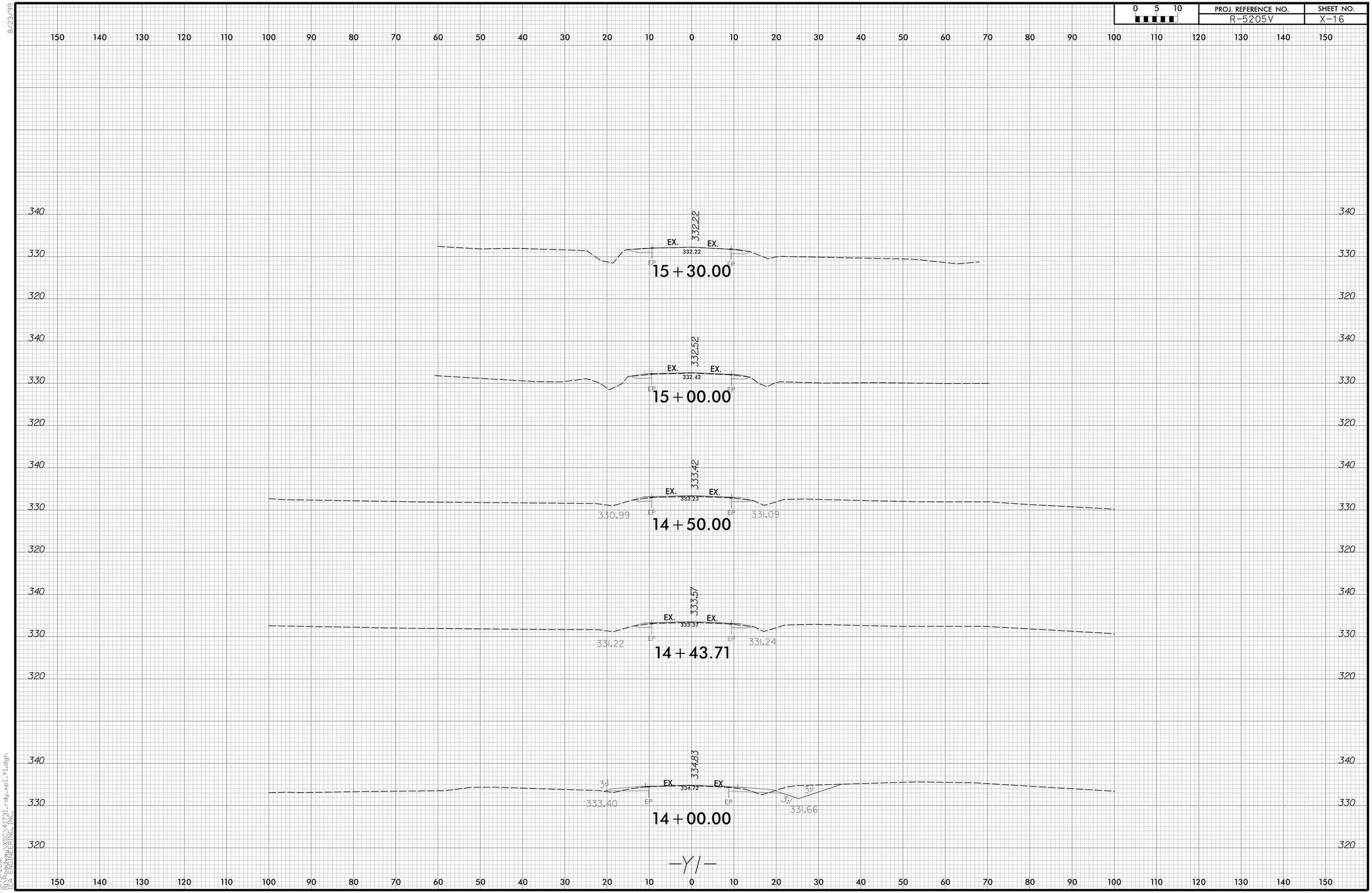

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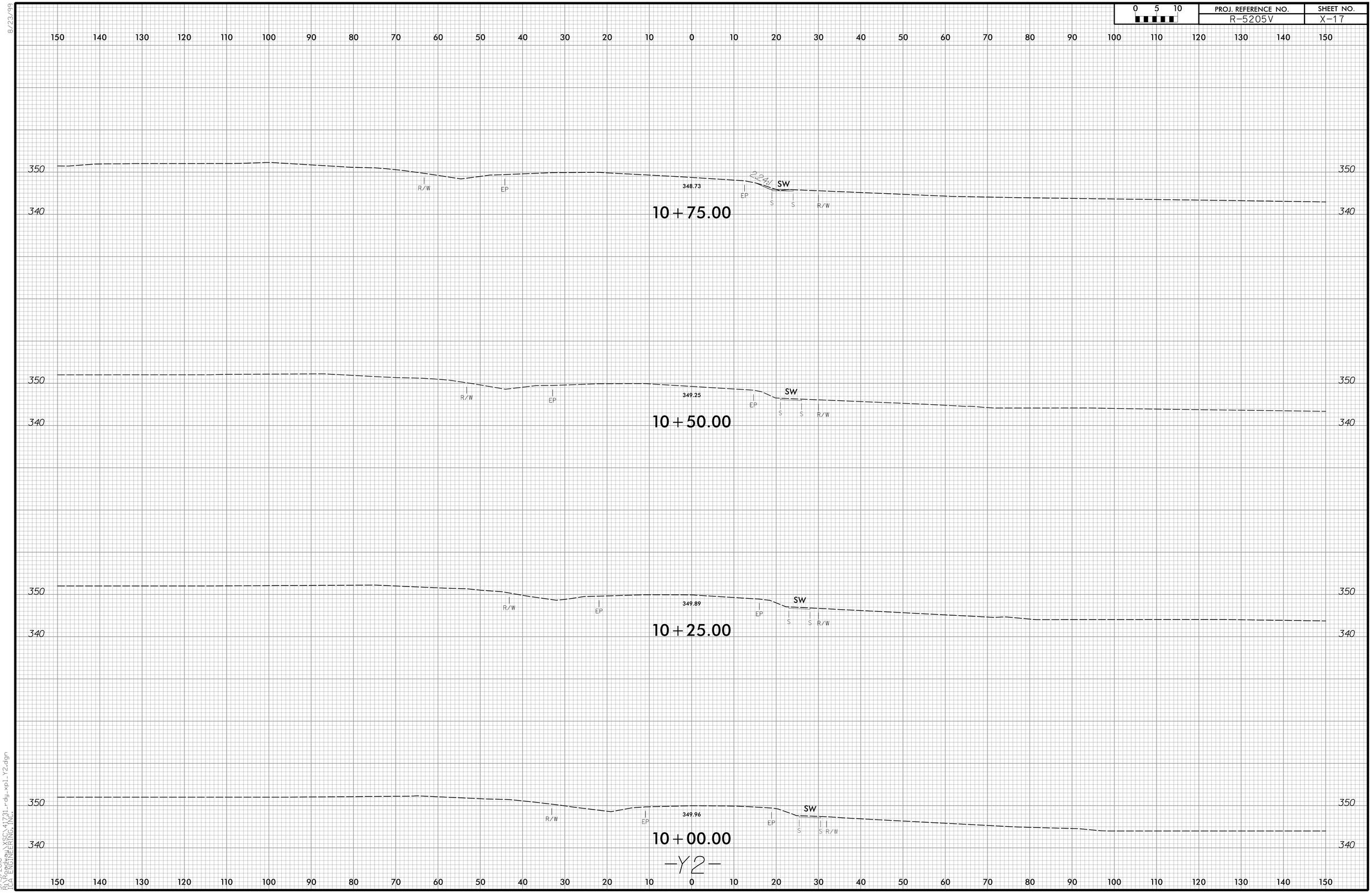

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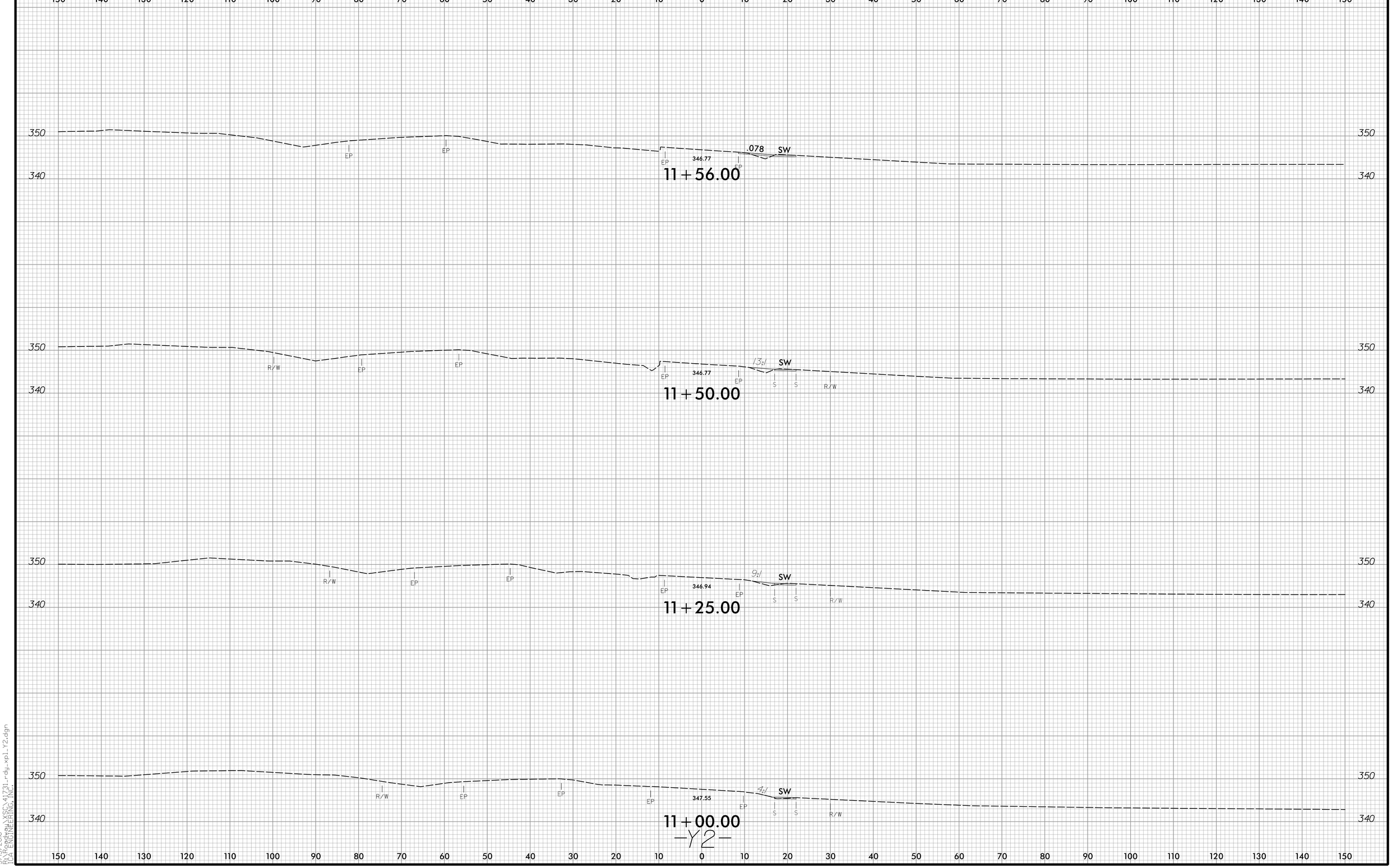

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