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SUMMIT
DESIGN AND ENGINEERING SERVICES

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TIP PROJECT: C–5184

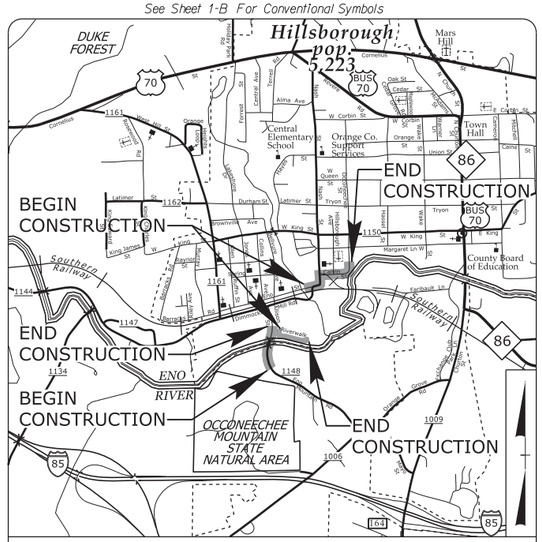
CONTRACT:

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	C–5184	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
CMS–0172 (14)	46243.3.F1	

Prepared in the Office of: ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

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



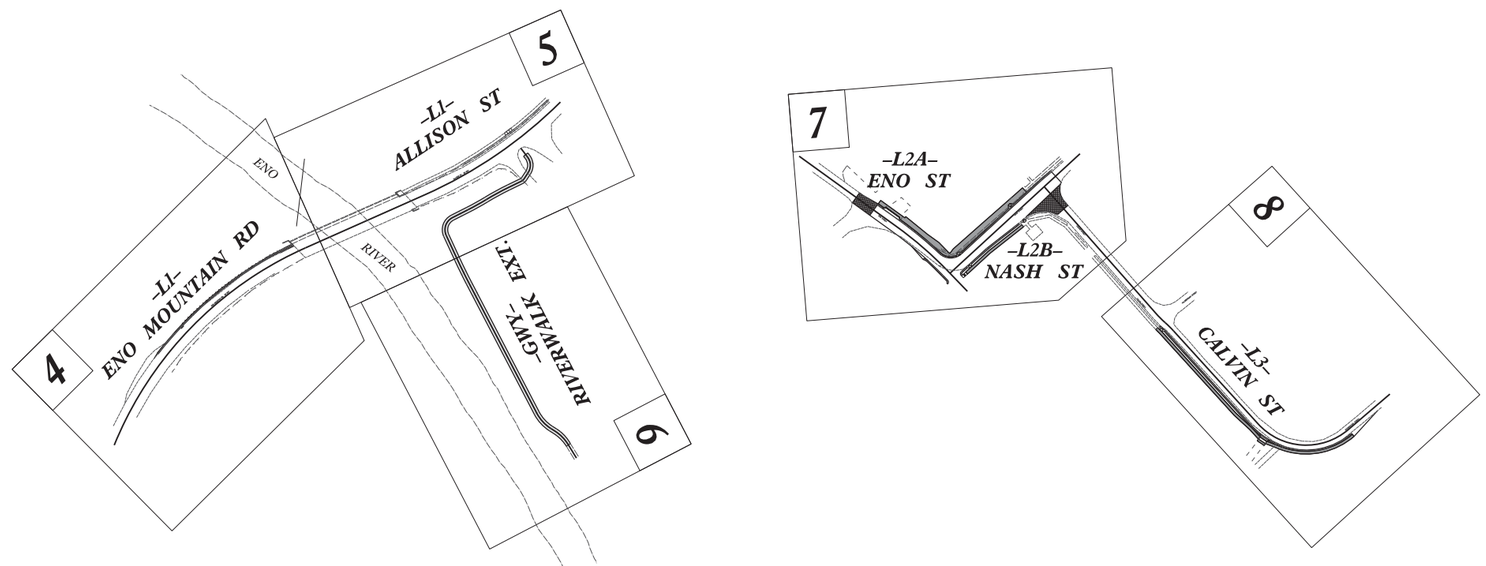
VICINITY MAP

STATE OF NORTH CAROLINA
ORANGE COUNTY

TOWN OF HILLSBOROUGH

LOCATION: RIVERWALK GREENWAY, ENO MOUNTAIN RD, ENO ST / NASH ST & CALVIN ST., IN THE TOWN OF HILLSBOROUGH.

TYPE OF WORK: GRADING, DRAINAGE, PAVING, GUARDRAIL, SIDEWALKS & GREENWAY.



GRAPHIC SCALES

20 10 0 20 40
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

PROJECT LENGTH

LENGTH TOWN OF HILLSBOROUGH SIDEWALK PROJECT C–5184 = 0.36 MILES

STEPHANIE TRUEBLOOD
TOWN OF HILLSBOROUGH CONTACT

DONALD HUFFINES
NCDOT CONTACT

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P–0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732–3883
(919) 732–6676 (FAX)

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

TRACY N. PARROTT, PE
PROJECT ENGINEER

BRANDON W. JOHNSON, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
11/16/2016
DocuSigned by: Frank F. Fleming P.E.
SEAL 20147 NORTH CAROLINA PROFESSIONAL ENGINEER FRANK F. FLEMING

ROADWAY DESIGN ENGINEER
11/16/2016
DocuSigned by: Brandon W. Johnson P.E.
SEAL 034371 NORTH CAROLINA PROFESSIONAL ENGINEER BRANDON W. JOHNSON

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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PROJECT REFERENCE NO.	SHEET NO.
C-5184	1A

ROADWAY DESIGN ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON
DocuSigned by:
Brandon W. Johnson
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Prepared in the Office of:
SUMMIT DESIGN AND ENGINEERING SERVICES
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

REVISIONS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-3	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-2	CURB RAMP DETAILS
2G-1	STANDARD SEGMENTAL GRAVITY RETAINING WALL DETAIL
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
4 THRU 8	PLAN SHEETS
9 THRU 10	PROFILE SHEETS
TMP-1 THRU TMP-1A	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING AND SIGNING PLANS
EC-1 THRU EC-8	EROSION CONTROL PLANS
X-1 THRU X-14	CROSS-SECTIONS

GENERAL NOTES:

2012 NCDOT STANDARD SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 07-30-2012

GRADING AND SURFACING OR RESURFACING AND WIDENING:
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION 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 AND/OR STD. NO. 225.05 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 AND/OR STD. NO. 560.02

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

DRIVEWAYS:
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.02 USING 3' 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 ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

GUARDRAIL:
THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:
SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

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 TOWN OF HILLSBOROUGH, DUKE ENERGY PROGRESS, TIME WARNER CABLE, CENTURY LINK, PSNC
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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

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. 10-30-2012

2012 NCDOT 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
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	
840.00	Concrete Base Pad for Drainage Structures
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
840.16	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
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
848.06	Curb Ramp - Existing Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
866.01	Chain Link Fence - 4', 5' and 6' High Fence
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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PROJECT REFERENCE NO.	SHEET NO.
C-5184	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- 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 (National Register) — HPB
- Existing Historic Property Boundary (Study List) — HPB
- Existing Historic Property Boundary (Local Landmark/District) — HISTORIC DISTRICT
- 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 — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

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PROJECT REFERENCE NO.	SHEET NO.
C-5184	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

11/16/2016

NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON

Brandon W. Johnson

Prepare in Office of: SUMMIT DESIGN AND ENGINEERING SERVICES

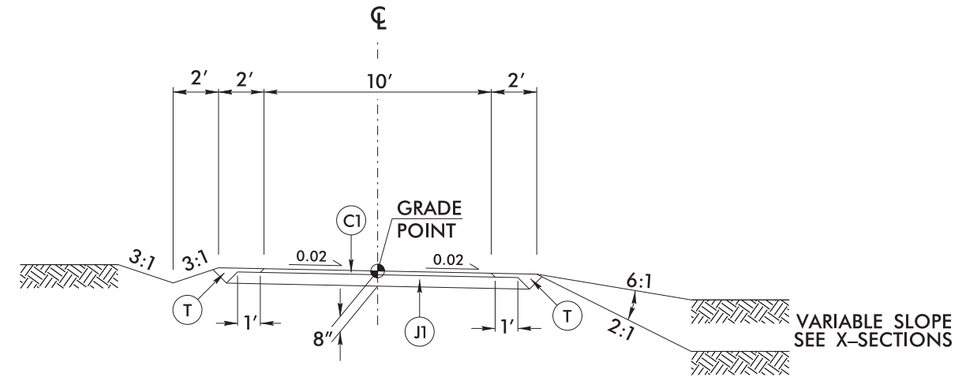
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

REVISIONS

PAVEMENT SCHEDULE

C1	PROP. APPROX. 2″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT 112 LBS. PER SQ. YD. IN ONE LAYER.
D1	PROP. APPROX. 5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
J1	PROP. 6″ AGGREGATE BASE COURSE.
R1	2′-6″ CONCRETE CURB AND GUTTER
R2	2′-6″ CONCRETE CURB AND SPILL GUTTER
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U1	EXISTING PAVEMENT
U2	EXISTING SIDEWALK
V1	MILLING

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



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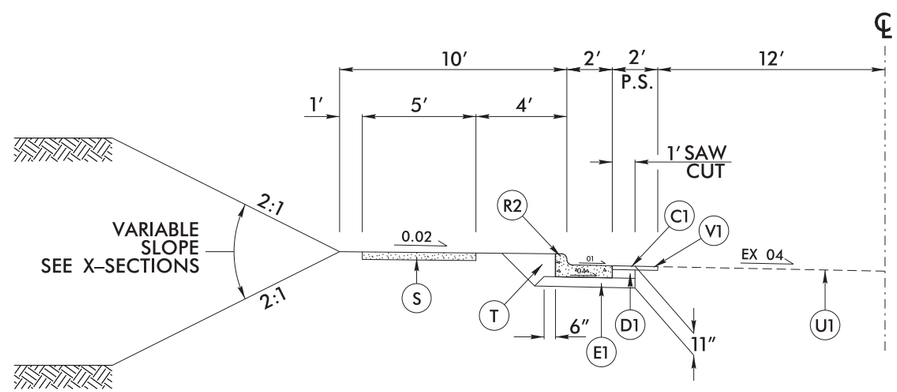

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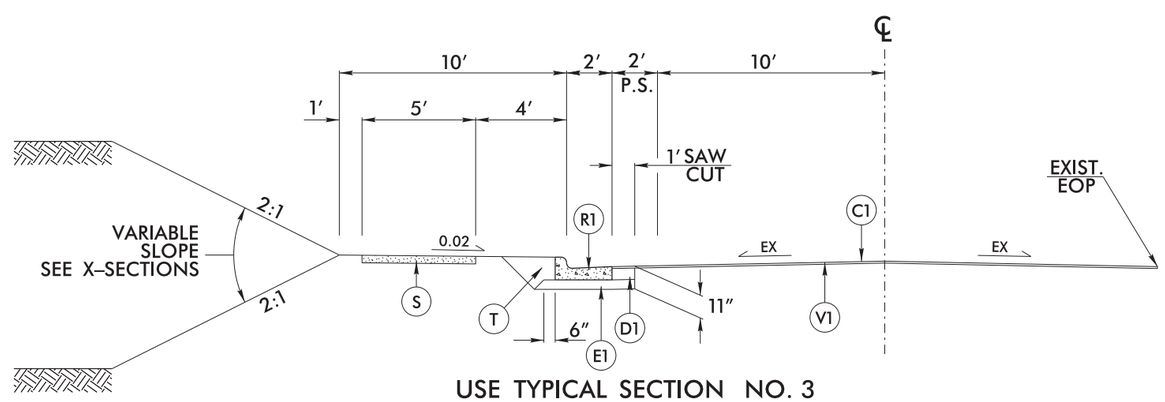

USE TYPICAL SECTION NO. 3

–L2A– STA 11+70.00 TO STA 12+25.00

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PROJECT REFERENCE NO.	SHEET NO.
C-5184	2A-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

11/16/2016

NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON

DocuSigned by: Brandon W. Johnson

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

PAVEMENT SCHEDULE

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E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
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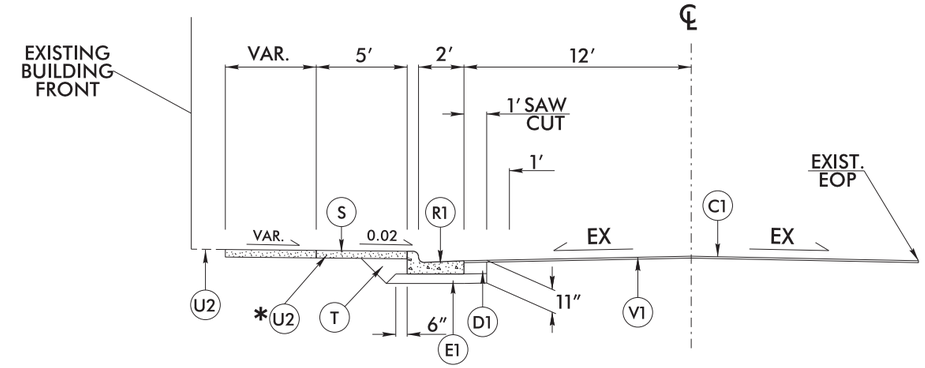
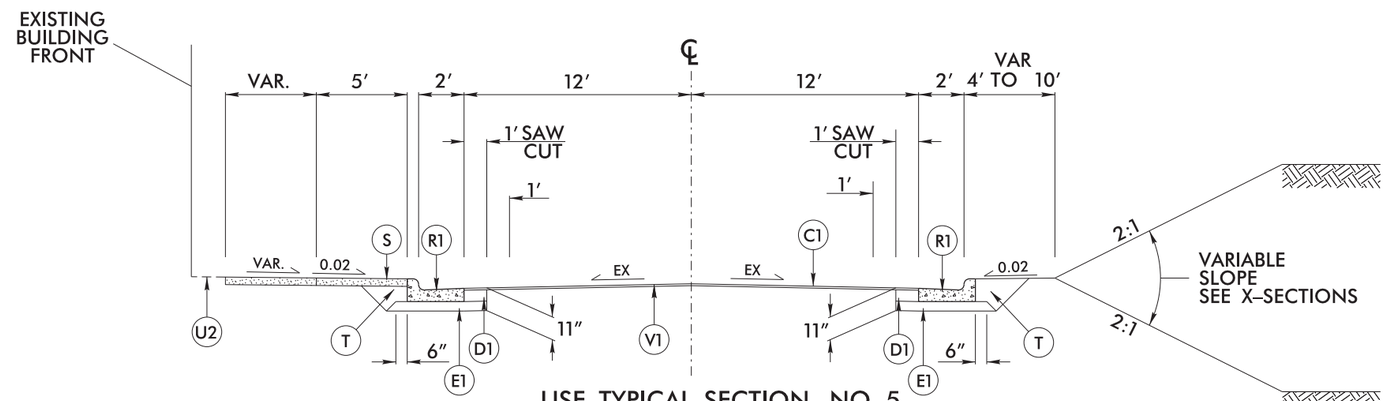
R1	2'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND SPILL GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U1	EXISTING PAVEMENT
U2	EXISTING SIDEWALK
V1	MILLING

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



USE TYPICAL SECTION NO. 4

–L2A– STA 12+25.00 TO STA 13+00.00
–L2B– STA 11+58.26 TO STA 12+05.32
*–L2B– STA 12+05.32 TO STA 12+65.00



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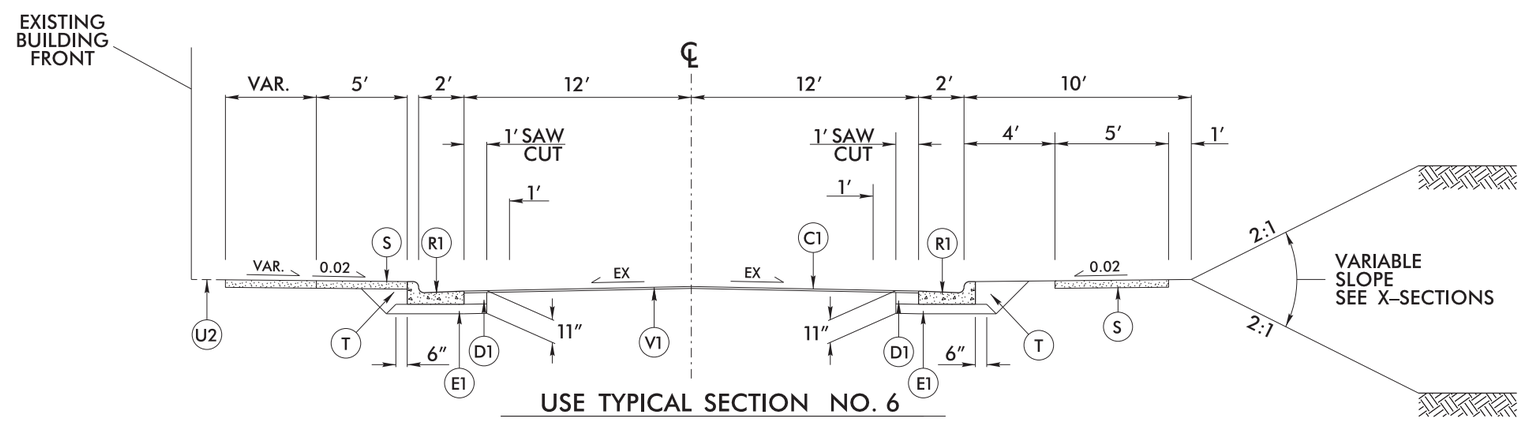

USE TYPICAL SECTION NO. 6

–L2B– STA 10+13.50 TO STA 11+58.26

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
C-5184	2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON
DocuSigned by: Brandon W. Johnson

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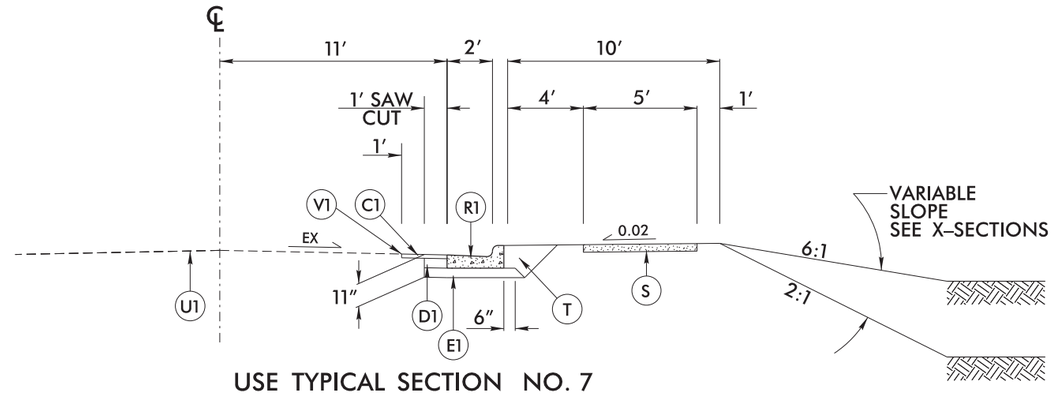
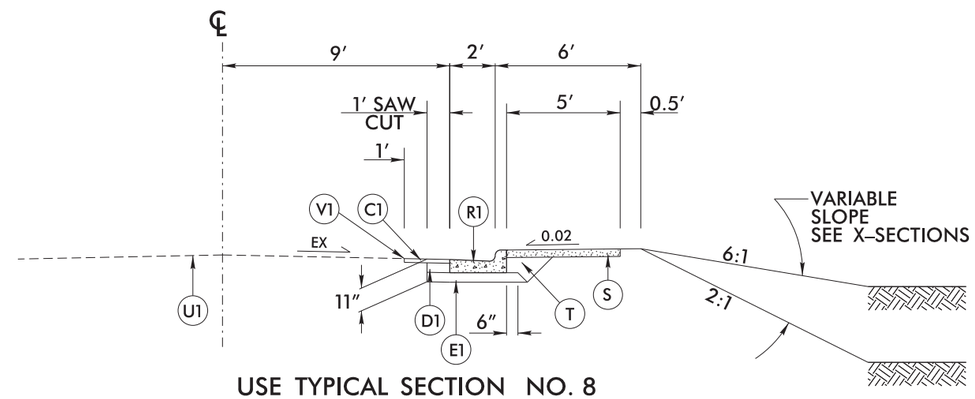


USE TYPICAL SECTION NO. 7

–L3– STA 13+32.32 TO STA 16+20.00

TRANSITION FROM TYP 7 TO 8

*–L3– STA 16+20.00 TO STA 16+60.00



USE TYPICAL SECTION NO. 8

–L3– STA 16+60.00 TO STA 17+75.17

REVISIONS

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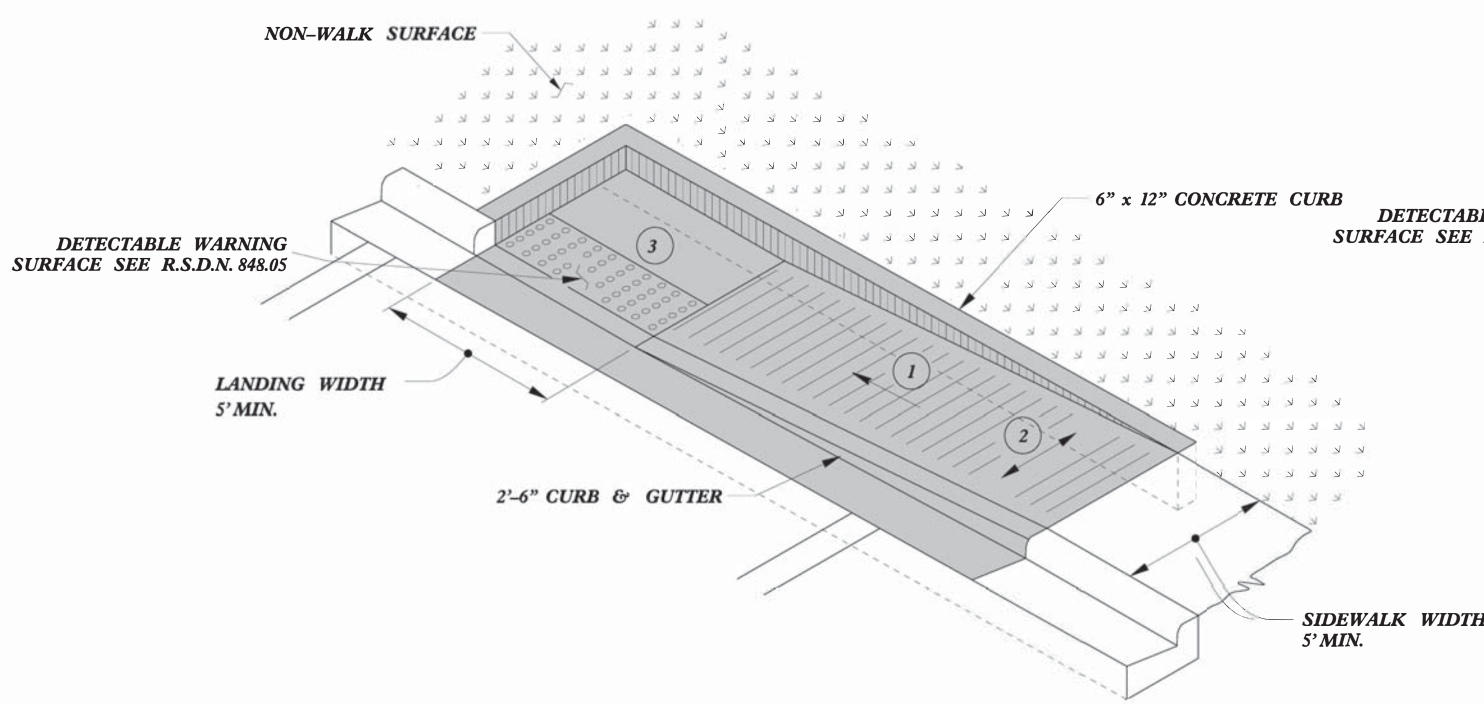
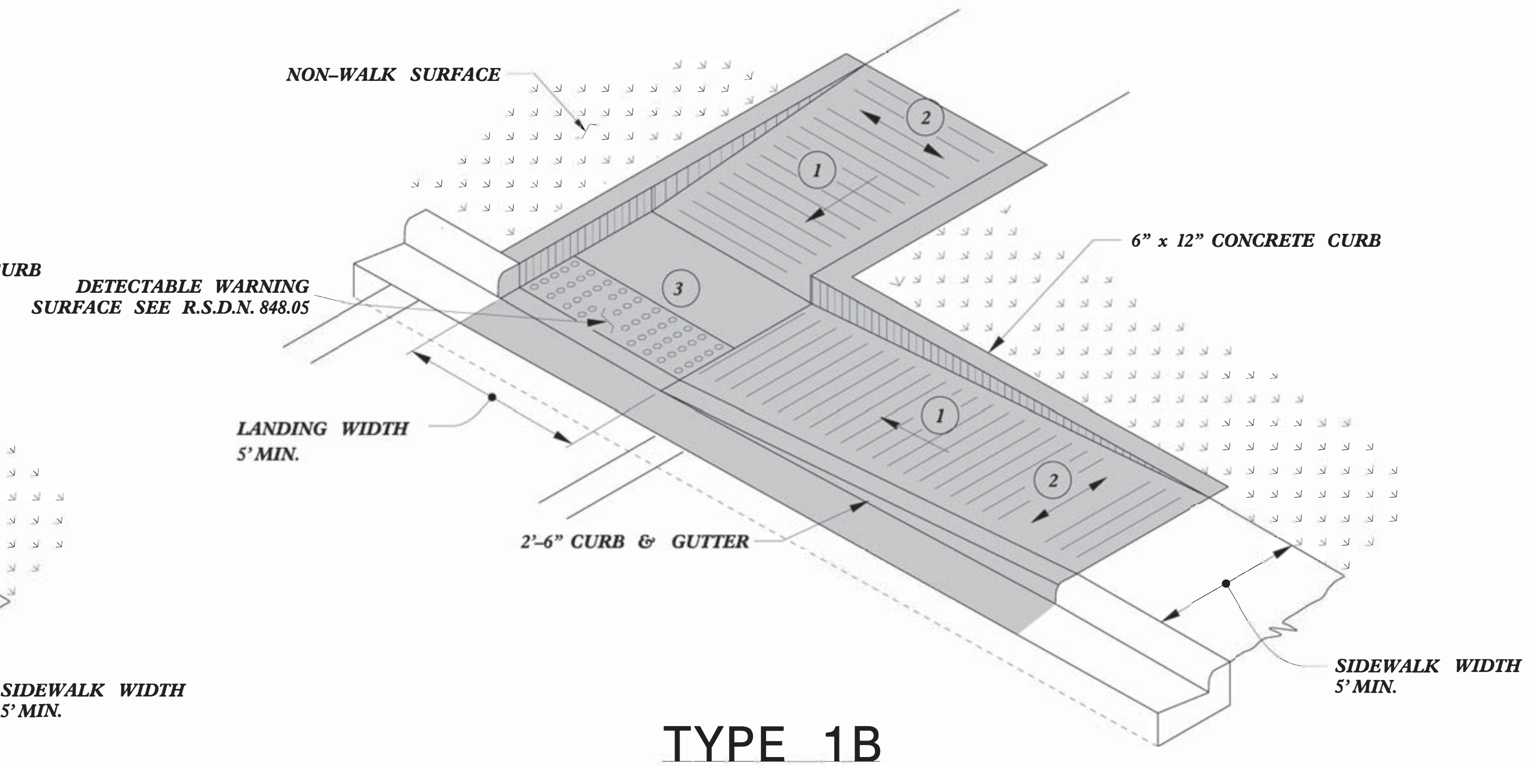
5/14/99

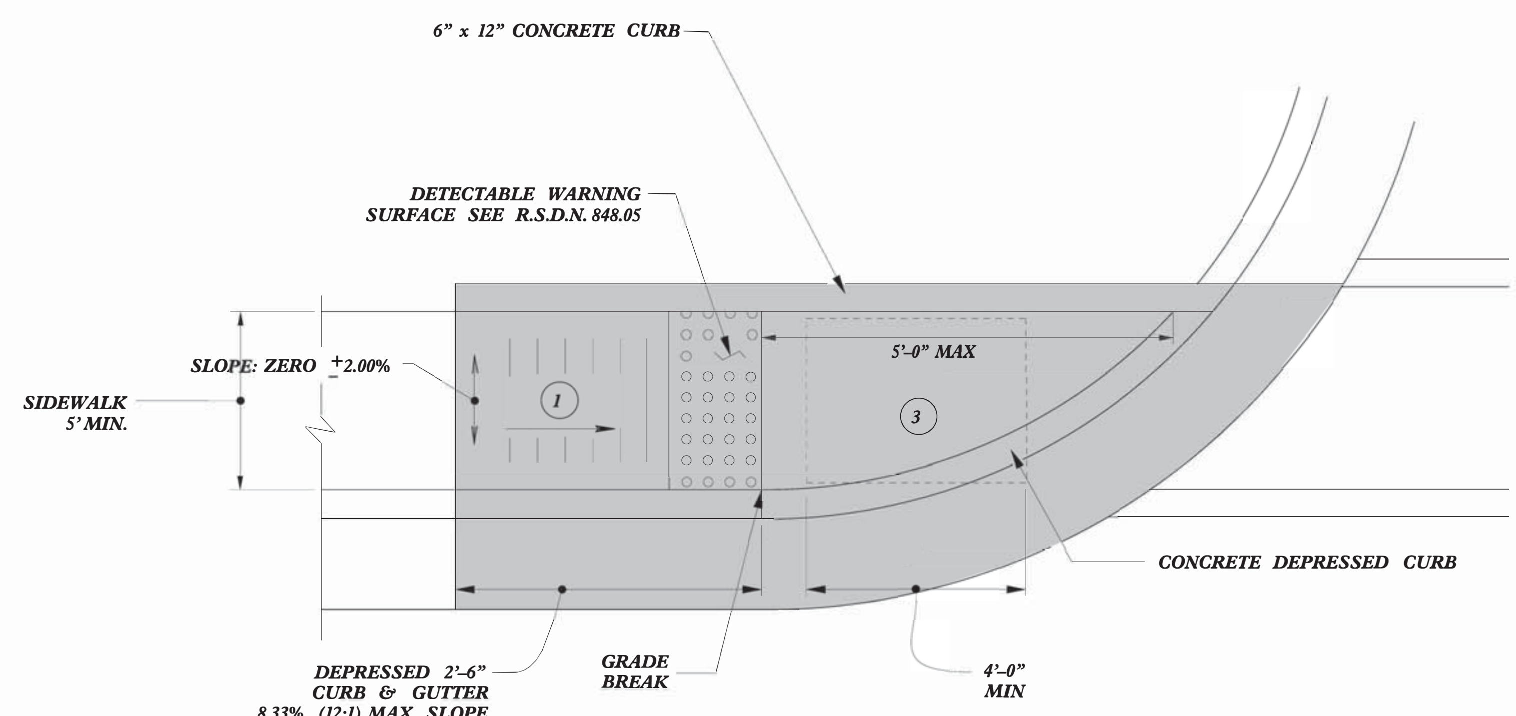
PROJECT REFERENCE NO.	SHEET NO.
C-5184	2B-1



TYPE 1A



TYPE 1B



TYPE 1

PAY LIMITS FOR 1 CURB RAMP

1. *8.33% (12:1) MAX RAMP SLOPE*
2. *CROSS SLOPE: 2.00%*
3. *CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.*

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

11/17/2016

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

CURB RAMPS

Directional Ramps

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC. :stds/2012CurbRamp/CurbRampDetails.dgn

$$$$$$SYSTIME$$$$$ $$$$$$$$$$DGN$$$$$$$$$$$$$$$$ $$$$USERNAME$$$$

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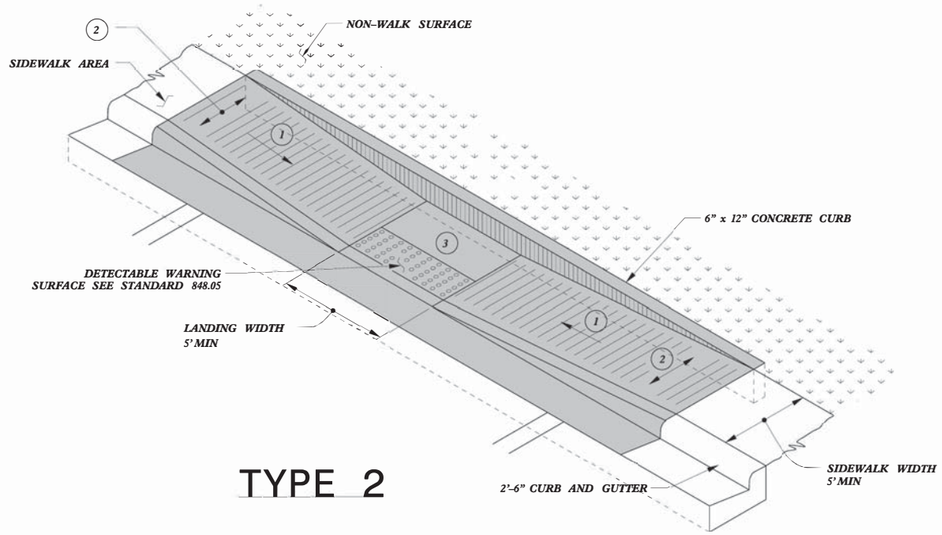
5/14/99

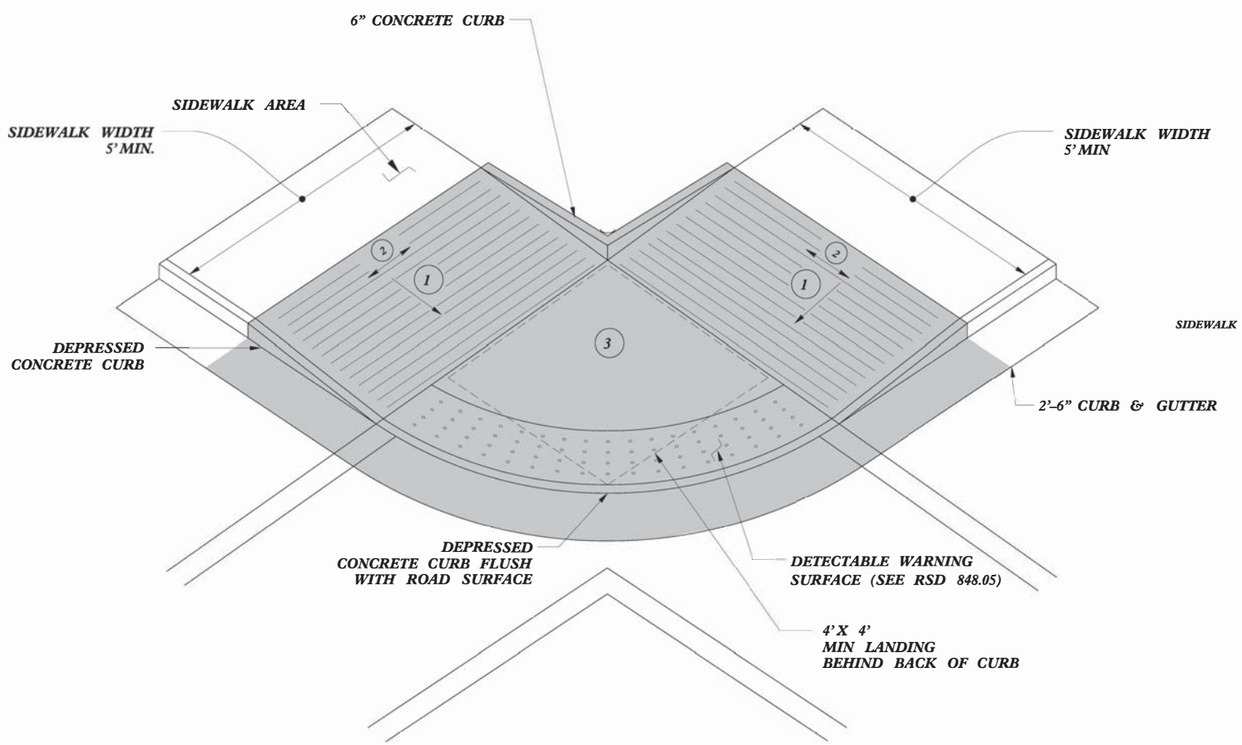
PROJECT REFERENCE NO.	SHEET NO.
C-5184	2B-2



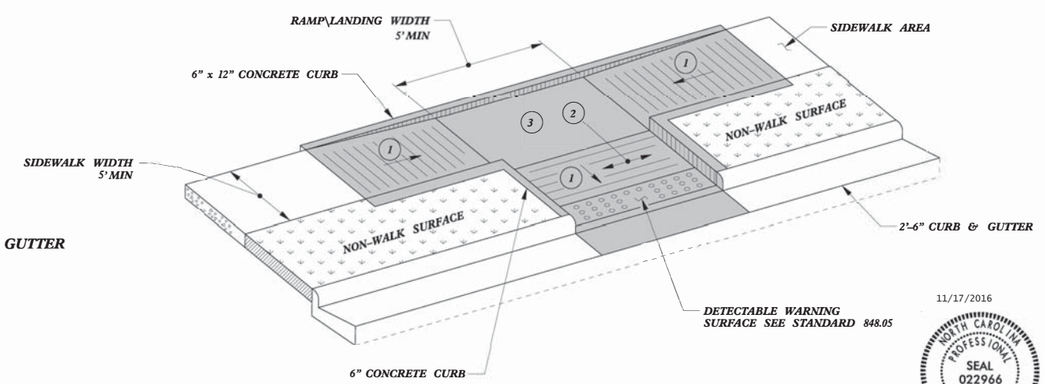
TYPE 2

PAY LIMITS FOR 1 CURB RAMP

1. 8.33% (12:1) MAX RAMP SLOPE
2. CROSS SLOPE: 2.00%
3. CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



TYPE 2A



TYPE 3

11/17/2016

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

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

CURB RAMPS

Parallel Ramps

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

$$$$SYSTIME$$$$
$$$$DGNFILE$$$$
$$$$USERNAME$$$$

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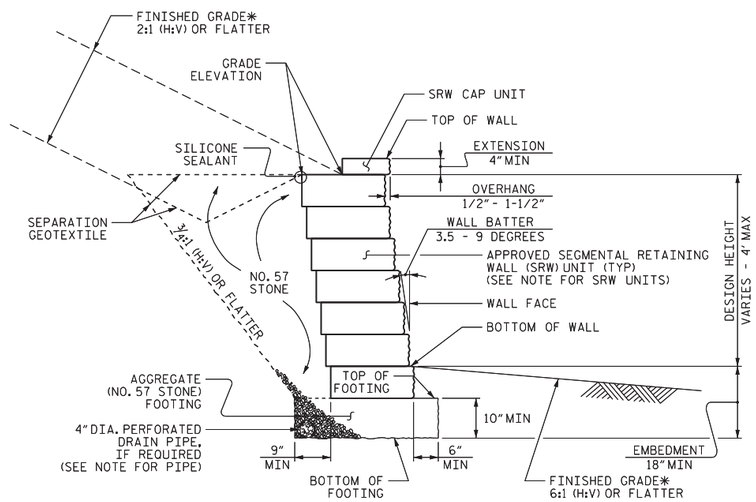
PROJECT REFERENCE NO.	SHEET NO.
C-5184	2G-1

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883 - (919) 732-6676 (FAX)

ROADWAY ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON
DocuSigned by: Brandon W. Johnson
6A2A4A14E9E34EN

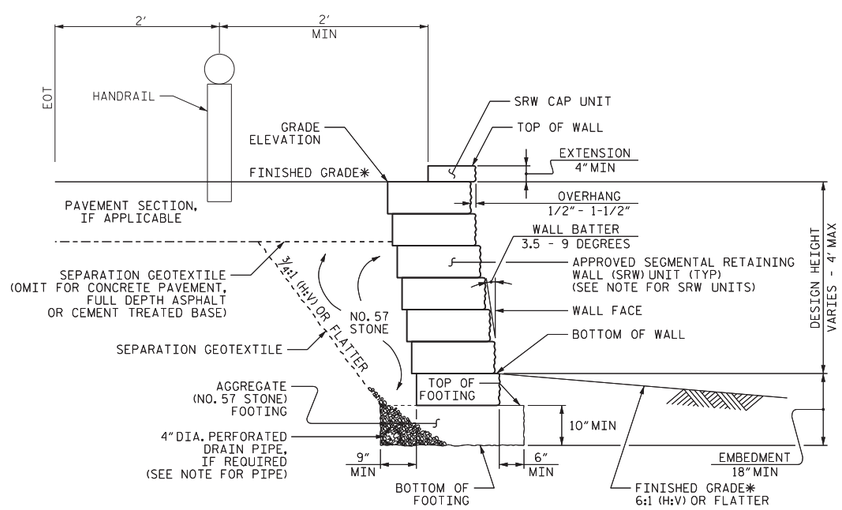
ENGINEER

SIGNATURE DATE



STANDARD SEGMENTAL GRAVITY WALL WITH SLOPE

*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.



STANDARD SEGMENTAL GRAVITY WALL WITHOUT SLOPE

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

NOTES:

FOR STANDARD SEGMENTAL GRAVITY RETAINING WALLS, SEE SEGMENTAL GRAVITY RETAINING WALLS PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

DO NOT ATTACH FENCES OR HANDRAILS TO STANDARD SEGMENTAL GRAVITY WALLS.

DO NOT USE STANDARD SEGMENTAL GRAVITY WALLS FOR INTERSTATE HIGHWAY OR RAILROAD PROJECTS.

DO NOT USE STANDARD SEGMENTAL GRAVITY WALLS WHEN SURCHARGE LOADS WILL BE WITHIN 5'-6" OF THE BACK OF SRW CAP UNITS.

DO NOT USE STANDARD SEGMENTAL GRAVITY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW WALLS.

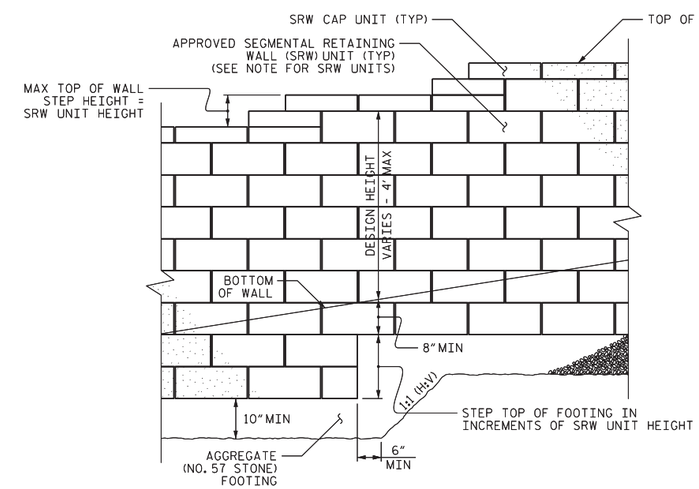
SEGMENTAL RETAINING WALL (SRW) UNITS ARE APPROVED FOR EITHER 2' OR 4' MAXIMUM DESIGN HEIGHTS. FOR DETAILS AND DIMENSIONS OF APPROVED SRW UNITS AND MAXIMUM DESIGN HEIGHTS, SEE www.ncdot.org/doh/preconstruct/highway/geotech/seggravwalls

DO NOT MIX APPROVED SRW UNITS FROM DIFFERENT VENDORS ON THE SAME STANDARD SEGMENTAL GRAVITY WALL. USE THE SAME SIZE APPROVED SRW UNITS FOR EACH WALL SECTION.

BEFORE BEGINNING STANDARD SEGMENTAL GRAVITY WALL CONSTRUCTION, SURVEY WALL LOCATIONS AND SUBMIT WALL PROFILE VIEWS (WALL ENVELOPES) FOR REVIEW. FOR WALL ENVELOPES, INCLUDE BOTTOM OF WALL, EXISTING GROUND AND GRADE ELEVATIONS AND OTHER ELEVATIONS AS NEEDED AT INTERVALS OF 25' OR LESS ALONG WALLS. DO NOT START WALL CONSTRUCTION UNTIL WALL ENVELOPES ARE ACCEPTED.

A DRAIN PIPE IS REQUIRED IF GROUNDWATER IS ABOVE BOTTOM OF FOOTINGS.

DO NOT PLACE NO. 57 STONE FOR FOOTINGS UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.



STANDARD SEGMENTAL GRAVITY WALL - PARTIAL ELEVATION

PROJECT NO.: C-5184
ORANGE COUNTY
STATION:
SHEET OF

GEOTECHNICAL ENGINEERING UNIT
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 453.02

STANDARD SEGMENTAL GRAVITY RETAINING WALL

DATE: 1-17-12

SHEET NO.
TOTAL SHEETS

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PROJECT REFERENCE NO.	SHEET NO.
C-5184	3B-1

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883 - (919) 732-6676 (FAX)

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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".

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE AND RESET EXISTING GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	TEMP	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	TYPE-III	GRAU 350 TL-3	TEMP	XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L1-	12+00.00	14+75.00	LT	237.5			12+00.00	14+75.00				50'		1'			1												264	
-L1-	18+94.03	20+19.66	LT				19+45.07	19+68.63			50'	50'	1'	1'			2												123	
TOTALS				237.5													3												387	

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+20%	BORROW	WASTE
-GWY- STA. 10+00.00 TO 16+91.92	136		581	445	
-L1- STA. 11+85.00 TO 20+67.03	33		398	365	
-L2A- STA. 11+70.00 TO 13+64.64	60		18		50
-L2B- STA. 10+00.00 TO 12+65.00	41		26		15
-L3- STA. 10+00.00 TO 17+75.17	66		230	164	
TOTAL	344		1253	974	65
ESTIMATED SHOULDER CONSTRUCTION			208	208	
LOSS DUE TO CLEARING & GRUBBING			260		
WASTE IN LIEU OF BORROW				-65	-65
PROJECT TOTALS	344		1721	1117	
5% TO REPLACE TOP SOIL				56	
GRAND TOTALS	344		1721	1173	
SAY	350			1200	

PARCEL INDEX

PARCEL NO.	OWNER	TYPE	AREA (SF)	AREA (AC)
2	VOUTHAUS, LLC DB. 6093, PG. 161	PDE	505.71	0.012
2	VOUTHAUS, LLC DB. 6093, PG. 161	TCE	136.01	0.003
3	WEST END GROUP, LLC. DB. 4754, PG. 116	TCE	740.68	0.017
4	NORTH CAROLINA RAIL ROAD P.B. 94 PG. 116	TCE	375.96	0.009
4	NORTH CAROLINA RAIL ROAD P.B. 94 PG. 116	PDE	267.83	0.006

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PROJECT REFERENCE NO.	SHEET NO.
C-5184	3D-1

Prepared in the Office of: SUMMIT — NC FIRM LICENSE No. P-0339, 504 Meadowlands Drive, Hillsborough, NC 27278, (919) 732-3883 · (919) 732-6676 (FAX)

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".

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 8"	12"	15"	18"	24"	30"	36"	42"	C.S. PIPE (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	36" .079	36"	42" .109	42"	48" .109	48"
GWY 12+27	CL		501		511.25	510.75																						
GWY 16+19	CL		601		506.1	504.8																						
		701	OUT		519.60	516.32																						
L2A 12+30	LT	701		522.85	519.60																							
		702	701		525.15	519.60																						
L2A 13+09	LT	702		528.40	525.15																							
		703	702		527.60	525.15																						
L2B 10+20	RT	703		530.29	527.60																							
		704	703		528.00	527.85																						
L2B 10+20	RT	704		530.25	528.00																							
		705	704		529.25	528.00																						
L2B 11+25	RT	705		531.5	529.25																							
		706	705		529.43	529.25																						
L2B 11+25	RT	706		531.35	529.43																							
L3 16+82	RT	802		537.34	534.34																							
		802	801		534.34	534.23																						
L3 16+50	RT	801		537.36	534.23																							
		801	803		534.23	532.35												12										
L3 16+50	RT	803		536.0	530.5																							
		803	OUT		530.5	527.5													20									
TOTALS																	12	20										

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	CLASS III R.C. PIPE 12"	15"	18"	24"	CLASS IV R.C. PIPE 12"	15"	18"	24"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	
GWY 12+27		501							32														
GWY 16+19		601			36																		
	701	OUT							144														
L2A 12+30	701															1			1		1		
	702	701							80														
L2A 13+09	702															1			1		1		
	703	702							56														
L2B 10+20	703															1			1		1		
	704	703		12																			
L2B 10+20	704															1							
	705	704						104															
L2B 11+25	705															1							
	706	705		12																			
L2B 11+25	706															1							
L3 16+82	802															1			1	1			
	802	801						32															
L3 16+50	801															1			1			1	
	801	803																					
L3 16+50	803															1							
	803	OUT																					
TOTALS				24	36			136	312							9			5	1	3	1	

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	G.D.I STD. 840.35 AND 340.20	MANHOLE STD. 840.54	G.D.I. (N.S. FLAT) FRAME W/2 GRATES STD. 840.29					CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
GWY 12+27		501																						
GWY 16+19		601																						
	701	OUT																						TIE TO EXISTING SYSTEM
L2A 12+30	701																							
	702	701																						
L2A 13+09	702																							
	703	702																						
L2B 10+20	703																							MIN. DEPTH REDUCED DUE TO WATERLINE
	704	703																						
L2B 10+20	704		1	1																				
	705	704																						
L2B 11+25	705		1	1																				
	706	705																						
L2B 11+25	706						1								1									
L3 16+82	802																							
	802	801																						
L3 16+50	801																							
	801	803																						
L3 16+50	803											1		1										
	803	OUT																					24	
TOTALS			2	2			1					1		1	1								24	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

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PROJECT REFERENCE NO.	SHEET NO.
C-5184	4

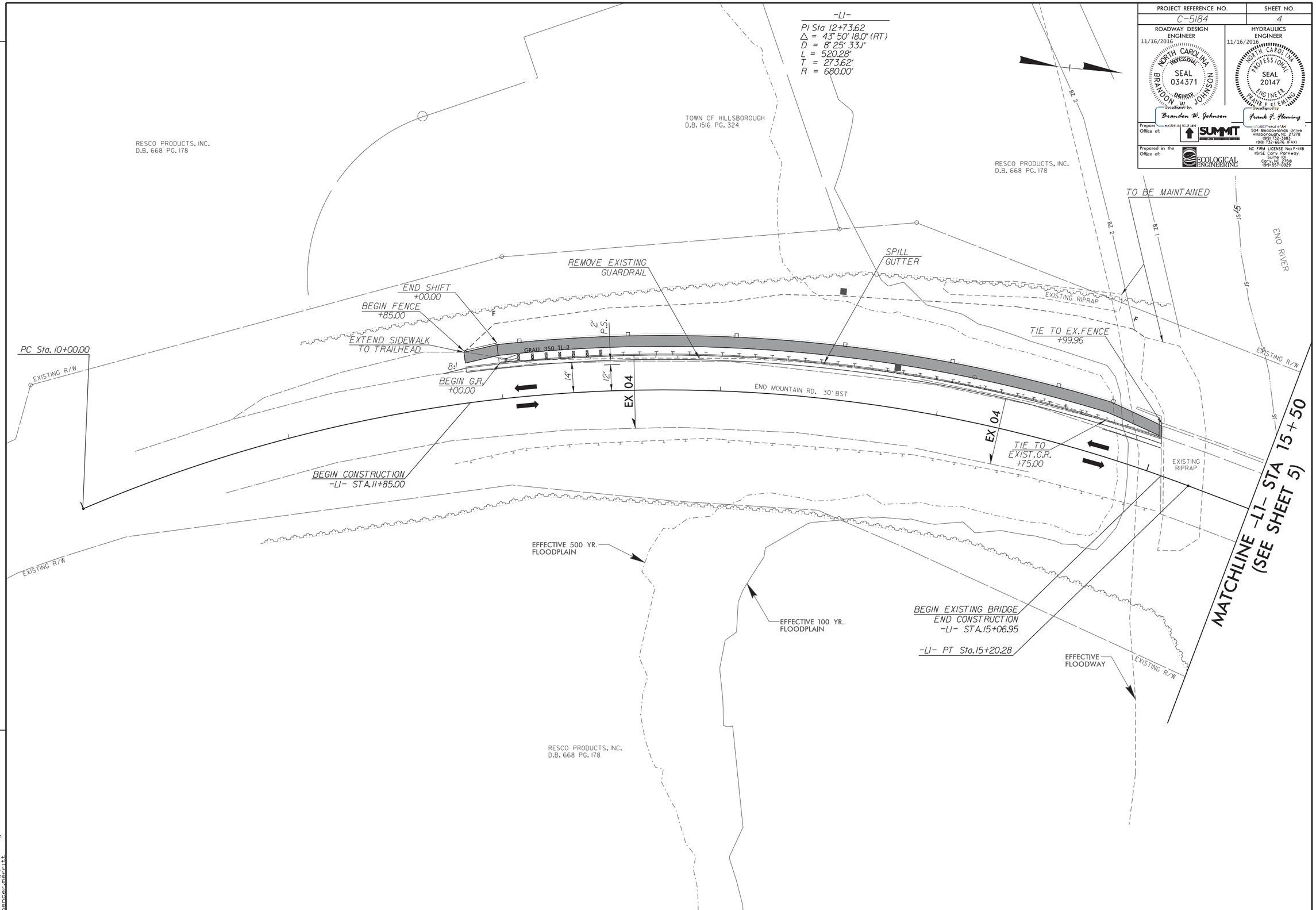
ROADWAY DESIGN ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON
DocuSigned by: Brandon W. Johnson

HYDRAULICS ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 20147 ENGINEER FRANK F. FLEMING
DocuSigned by: Frank F. Fleming

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
CORPORATE FIRM LICENSE: C-0554
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

Prepared in the Office of: ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-948
1515 E Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

REVISIONS



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PROJECT REFERENCE NO.	SHEET NO.
C-5184	5

ROADWAY DESIGN ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON
DocuSigned by: Brandon W. Johnson

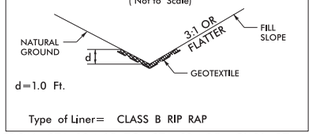
HYDRAULICS ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 20147 ENGINEER FRANK F. FLEMING
DocuSigned by: Frank F. Fleming

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)
NC FIRM LICENSE No: F-948

Prepared in the Office of: ECOLOGICAL ENGINEERING
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

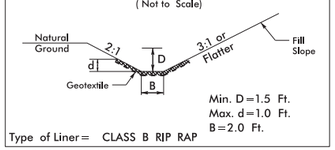
REVISIONS

DETAIL 1
TOE PROTECTION
(Not to Scale)



FROM STA. 10+65 TO STA. 12+25 -GWY- RT

DETAIL 2
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 11+48 TO STA. 12+25 -GWY- LT

DETAIL 3
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 12+25 TO STA. 12+85 -GWY- LT

-LI-

PI Sta 19+16.20
△ = 20° 48' 25.1" (LT)
D = 6° 49' 15.3"
L = 305.05'
T = 154.22'
R = 840.00'

-GWY-

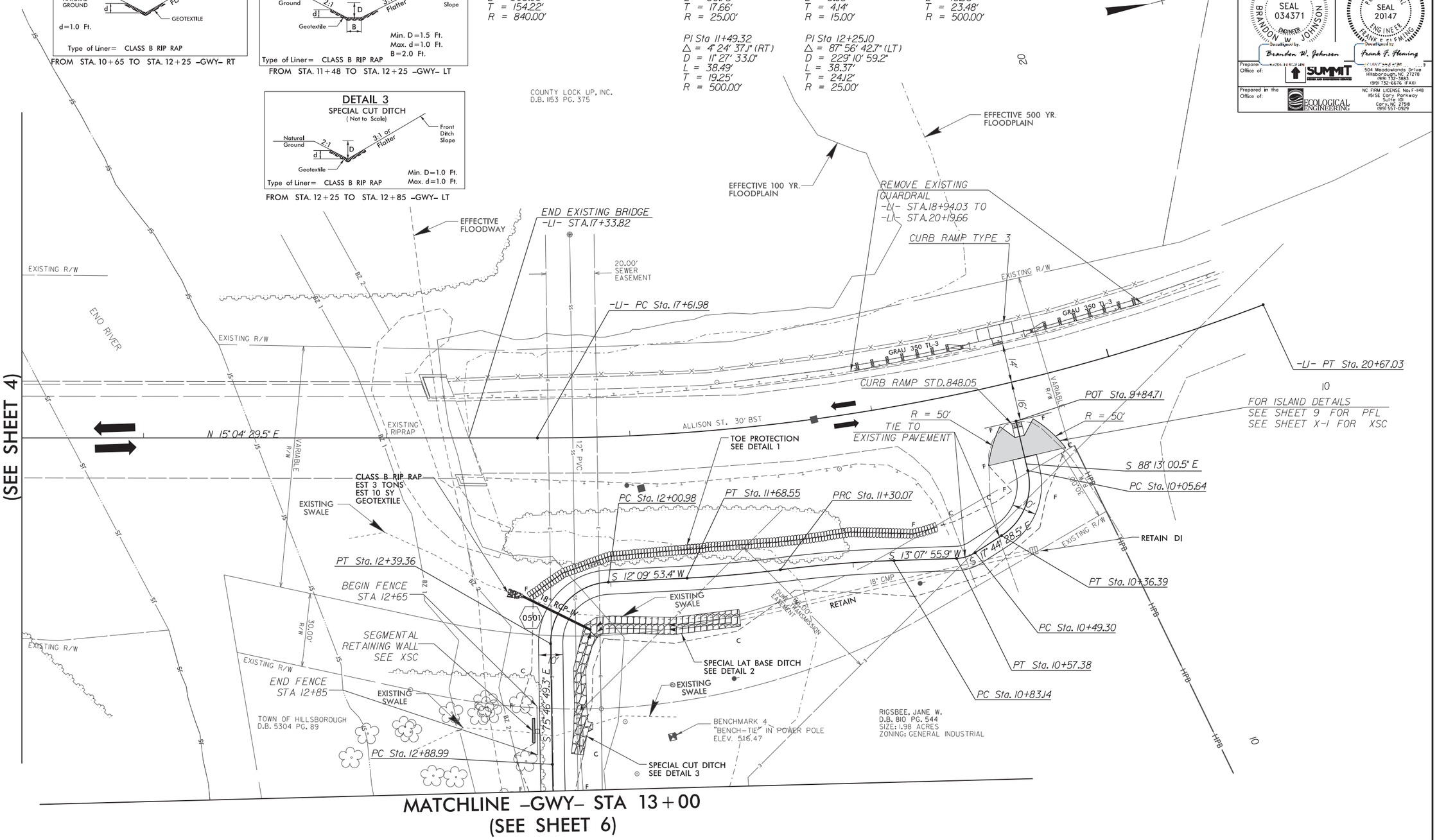
PI Sta 10+23.30
△ = 70° 28' 32.0" (RT)
D = 229° 10' 59.2"
L = 30.75'
T = 17.66'
R = 25.00'

PI Sta 10+53.44
△ = 30° 52' 24.4" (RT)
D = 38° 58' 18.7"
L = 8.08'
T = 4.14'
R = 15.00'

PI Sta 11+06.62
△ = 5° 22' 39.6" (LT)
D = 11° 27' 33.0"
L = 46.93'
T = 23.48'
R = 500.00'

PI Sta 11+49.32
△ = 4° 24' 37.1" (RT)
D = 11° 27' 33.0"
L = 38.49'
T = 19.25'
R = 500.00'

PI Sta 12+25.10
△ = 87° 56' 42.7" (LT)
D = 229° 10' 59.2"
L = 38.37'
T = 24.12'
R = 25.00'



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PROJECT REFERENCE NO.	SHEET NO.
C-5184	6

ROADWAY DESIGN ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON
Brandon W. Johnson
Prepared by Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

HYDRAULICS ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 20147 ENGINEER FRANK E. EMERING
Frank E. Emering
Prepared in the Office of: ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-948
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

REVISIONS

MATCHLINE -GWY- STA 13+00 (SEE SHEET 5)

-GWY-

PI Sta 13+12.68
Δ = 2° 42' 47.9" (LT)
D = 5° 43' 46.5"
L = 47.36'
T = 23.68'
R = 1,000.00'

PI Sta 16+27.93
Δ = 29° 55' 44.9" (LT)
D = 76° 23' 39.7"
L = 39.18'
T = 20.05'
R = 75.00'

PI Sta 16+73.75
Δ = 25° 52' 49.9" (RT)
D = 76° 23' 39.7"
L = 33.88'
T = 17.23'
R = 75.00'

DETAIL 4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
2:1
D
2:1 or Flatter
Fill Slope
Min. D=1.0 Ft.
FROM STA. 15+00 TO STA. 16+10 -GWY- LT

OR 1300
ENO COTTON MILL 2011
(NATIONAL REGISTER)

EFFECTIVE 100 YR. FLOODPLAIN
EFFECTIVE 500 YR. FLOODPLAIN

1
RIGSBEE, JANE W.
D.B. 810 PG. 544

15

END CONSTRUCTION
-GWY- STA.16+91.92
TIE TO EXISTING GREENWAY

25' TRANSITION TO EXISTING

POT Sta. 17+20.36

PT Sta. 13+36.35

20.00' SEWER EASEMENT
20.00' SEWER EASEMENT
68.00' DUKE TRANSMISSION EASEMENT

SPECIAL LAT V DITCH
SEE DETAIL 4

S 82° 32' 32.2" E
N 78° 34' 37.9" E
S 78° 29' 37.2" E
18" RCP-III
0601
HEADWALL
RETAIN

EXISTING SWALE
PT Sta. 16+90.39
PC Sta. 16+56.52
PT Sta. 16+47.06
EXISTING SWALE
CLASS B RIP RAP
EST 3 TONS
EST 10 SY
GEOTEXTILE
PC Sta. 16+07.88

EFFECTIVE FLOODWAY

TOWN OF HILLSBOROUGH
D.B. 5304 PG. 89

TOWN OF HILLSBOROUGH
D.B. 1419 PG. 96

TOWN OF HILLSBOROUGH
D.B. 5304 PG. 89
SIZE: 1.27 ACRES
ZONING: GENERAL INDUSTRIAL

ENO RIVER

RESCO PRODUCTS, INC.
D.B. 668 PG. 178

EFFECTIVE FLOODWAY

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PROJECT REFERENCE NO.	SHEET NO.
C-5184	7

ROADWAY DESIGN ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON
DocuSigned by: Brandon W. Johnson

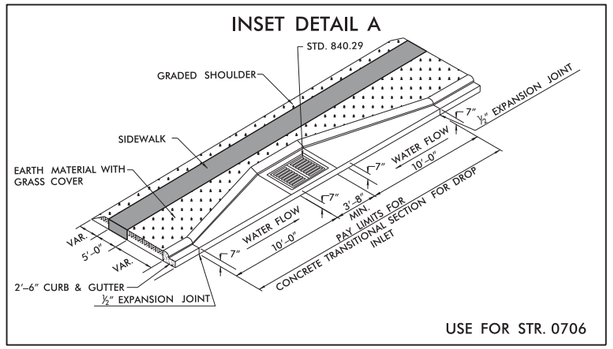
HYDRAULICS ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 20147 ENGINEER FRANK E. FLEMING
DocuSigned by: Frank E. Fleming

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
CORPORATE LICENSE NO. F-1312
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

Prepared in the Office of: ECOLOGICAL ENGINEERING
NC FIRM LICENSE No. F-948
1511 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

REVISIONS

INSET DETAIL A



USE FOR STR. 0706

-L2A-
PI Sta 12+84.89
Δ = 10° 10' 24.7" (RT)
D = 8° 11' 06.4"
L = 124.29'
T = 62.31'
R = 700.00'

-L2A- POT Sta. 10+00.00

OR 1275
BEILEVUE MANUFACTURING COMPANY 2003
(NATIONAL REGISTER)

OR 1274
BEILEVUE MANUFACTURING CO. MILL, HOUSES, AND COMMERCIAL DISTRICT 2002
(STUDY LIST)

BELLEVUE DEVELOPMENT, LLC.
DB. 3849, PG. 555

-L2B- POT Sta. 13+26.32

VOUTHAUS, LLC
DB. 6093, PG. 161

HILLSBOROUGH OWNERS COMPANY
DB. 1609, PG. 27

STORM DRAINAGE DESIGN ACCOUNTS FOR THE LOCATION AND ELEVATION OF EXISTING GAS MAIN (6") BASED ON BEST AVAILABLE SUE DATA. CONTRACTOR SHOULD EXPOSE EXISTING GAS MAIN, WATER, AND SEWER SERVICE TO VERIFY LOCATIONS AND ELEVATIONS PRIOR TO BEGINNING PROPOSED STORM DRAINAGE INSTALLATION. NOTIFY TOWN OF ADJUSTMENTS. REQUIRED TO WATER AND SEWER SERVICES.

+80.00 -L2A-
32.00 LT
EX R/W

+62.00 -L2A-
24.00 LT
EX R/W

+74.00 -L2A-
28.00 LT

+80.00 -L2A-
26.00 LT

+25.80 -L2A-
EX R/W

+64.00 -L2B-
36.00 RT
EX R/W

+66.00 -L2B-
36.00 RT

+42.00 -L2B-
EX R/W

BEGIN CONSTRUCTION
-L2A- STA.11+30.00

N 74° 53' 08.5" E

END STREET

15" PVC

12" VC

18" RCP-IV

PDE

6" PVC

WEST END GROUP, LLC.
DB. 4754, PG. 116

CURB RAMP STD.848.05

DOWN SPOUT

6" DI

25' TAPER TO EXISTING

TIE TO EXISTING C&G

RETAIN

END CONSTRUCTION
-L2B- STA.12+65.00

-L3- POT Sta. 10+00.00
-L2B- Sta.12+36.46

FUQUA, LEONARD T. & KATHRYN L., TRUSTEES
DB. 4642, PG. 377

NEW LIFE BAPTIST CHURCH
DB. 359, PG. 289

HISTORIC DISTRICT

EXISTING R/W

40.00'

GRAVEL

200' RAILROAD RIGHT OF WAY

DOWN SPOUTS

FFE= 532.45'

FFE= 532.723'

FFE= 532.017'

FFE= 531.356'

FFE= 531.086'

FFE= 531.559'

PLANTERS

BEGIN C&G
-L2A- +70.00

DIMMOCKS MILL ROAD

-L2B- PT Sta. 10+00.00
-L2A- Sta.13+53.33

MILL & RESURFACE 1"
TIE TO PREVIOUS RESURFACING

N 3° 32' 12.8" W

NASH STREET

0701

CB

0706

TB 2GI-D

15" RCP-IV

0705

DI

TIE TO EXISTING C&G
END FENCE
+55.55

-L2A- PC Sta. 12+22.58

PLUG & ABANDON SYSTEM

12" VC OUTLET UNKNOWN

0702

CB

18" RCP-IV

R=30'

R=5'

R=17.5'

0703

CB

DI

0704

15" RCP-III

R=5'

BEGIN C&G
-L2A- +00.00

-L2A- PT Sta. 13+46.87

END C&G
-L2A- +64.64

BEGIN C&G
-L2B- +71.69

-L2A- POT Sta. 13+99.68

CURB RAMP TYPE I

BEGIN FENCE
+38.96

CURB RAMP STD.848.05

CONC.

CALVIN STREET

N 87° 38' 28.3" E

60.00'

FUQUA, LEONARD T. & KATHRYN L., TRUSTEES
DB. 4642, PG. 377

-L3-
(SEE SHEET 8)

EFFECTIVE 500 YR. FLOODPLAIN

200.00'

STORM DRAINAGE DESIGN ACCOUNTS FOR THE LOCATION AND ELEVATION OF EXISTING WATER MAINS (8" AND 16") AND GAS MAIN (6") BASED ON BEST AVAILABLE SUE DATA. CONTRACTOR SHOULD EXPOSE EXISTING UTILITIES TO VERIFY LOCATIONS AND ELEVATIONS PRIOR TO BEGINNING INSTALLATION OF PROPOSED STORM DRAINAGE. POSITION STR. 0706 BETWEEN EXISTING WATER MAINS. USE INSET DETAIL A FOR GUTTER TRANSITION SECTION, AS NEED TO ACCOMODATE STRUCTURE LOCATION.

NORTH CAROLINA RAIL ROAD
P.B. 94 PG. 116

MILLING AND RESURFACING

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PROJECT REFERENCE NO.	SHEET NO.
C-5184	8

ROADWAY DESIGN ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON
Brandon W. Johnson

HYDRAULICS ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 20147 ENGINEER FRANK F. FLEMING
Frank F. Fleming

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

Prepared in the Office of: ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-648
1515E Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

REVISIONS

-L3-
(SEE SHEET 7)

-L3-

PI Sta 13+24.12	PI Sta 13+47.35	PI Sta 13+47.35
Δ = 7° 05' 38.3" (LT)	Δ = 6° 13' 12.5" (RT)	Δ = 88° 13' 05.4" (LT)
D = 28° 38' 52.4"	D = 28° 38' 52.4"	D = 47° 44' 47.3"
L = 24.76'	L = 21.71'	L = 184.76'
T = 12.40'	T = 10.87'	T = 116.32'
R = 200.00'	R = 200.00'	R = 120.00'

TOWN OF HILLSBOROUGH
DB. 606, PG. 599

SHUTTLES, JR., JOHN T
& KELLY M.
DB. 5182, PG. 369

MERRICK, PIPSISEWA
DB. 640, PG. 326

RHODES, MARK
DB. 2625, PG. 436

POPE, SUE W.
DB. 1955, PG. 104

HALL, WILLIAM L. &
ROBIN TAYLOR
DB. 5733, PG. 447

WHITE, JOHN D.
DB. 4469, PG. 120

RAYNOR, DAVID G.
& ARTHUR J.
W.B. 99-E-319

KELLIS, JERRY A., ETAL
DB. 1909, PG. 485

TRUEBLOOD, BENJAMIN &
STEPHANIE
DB. 4751, PG. 67

STABLEY, TODD C.
DB. 5535, PG. 44

STABLEY, TODD C.
DB. 5535, PG. 44

EXISTING R/W
90.00'
60.00'
160.00'
70.00'
60.00'
11'
8" VC
15" VC
12" VC
12" RCP
15" RCP
18" CSP
15" CSP
CB
0801
0802
0803
F
SS
RETAIN
N 86° 46' 02.6" E
CALVIN STREET
HILLSBOROUGH STREET
OCCONEECHEE STREET
N 1° 27' 02.9" W
-L3- POT Sta. 18+76.21
END CONSTRUCTION
-L3- PT Sta. 17+75.17
-L3- PC Sta. 13+11.72
-L3- PRC Sta. 13+36.49
-L3- PT Sta. 13+58.20
-L3- PC Sta. 15+90.41
BEGIN CONSTRUCTION
-L3- STA. 13+32.32
TIE TO
EXISTING C&G
CURB RAMP STD.848.05
NORTH CAROLINA RAIL ROAD
P.B. 94 PG. 116
+48.40
40'
TRANSITION
GRAVEL
& SOIL
EXIST
GWY
TIE GWY TO
PROPOSED
SIDEWALK
+69.00 -L3-
EX R/W
REMOVE
+/- 20' OF
15" VCP
PDE
+75.00 -L3-
44.00 RT
CLASS B RIP RAP
EST 3 TONS
EST 10 SY
GEOTEXTILE
+53.00 -L3-
EX R/W
JB W/MH
+68.00 -L3-
53.00 RT
4
EFFECTIVE 100 YR.
FLOODPLAIN
EFFECTIVE 500 YR.
FLOODPLAIN
HISTORIC
DISTRICT
EFFECTIVE
FLOODWAY
HPB

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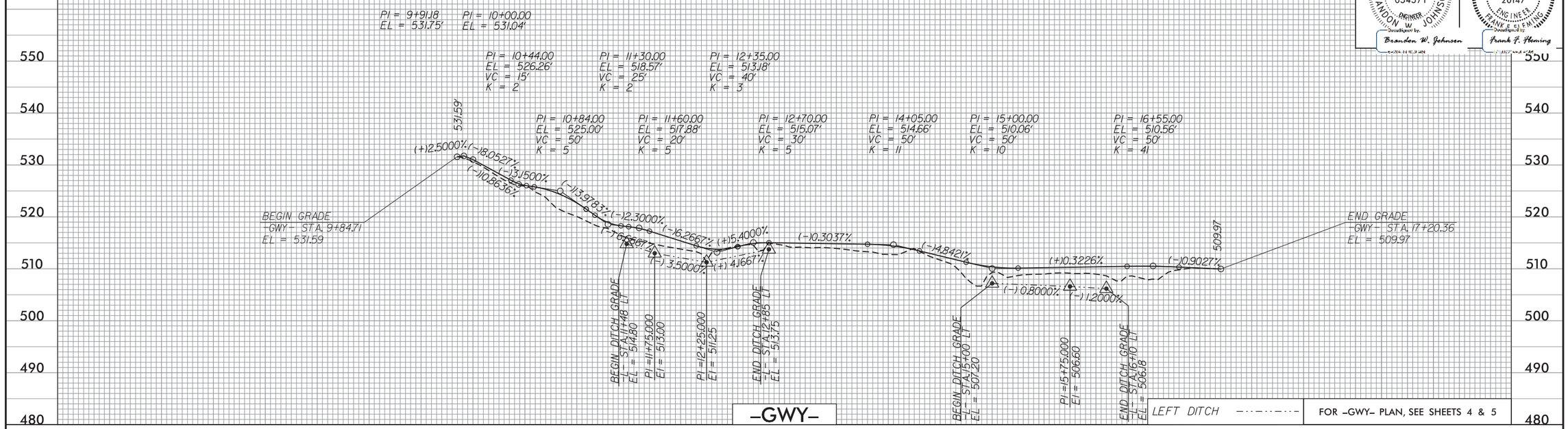
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

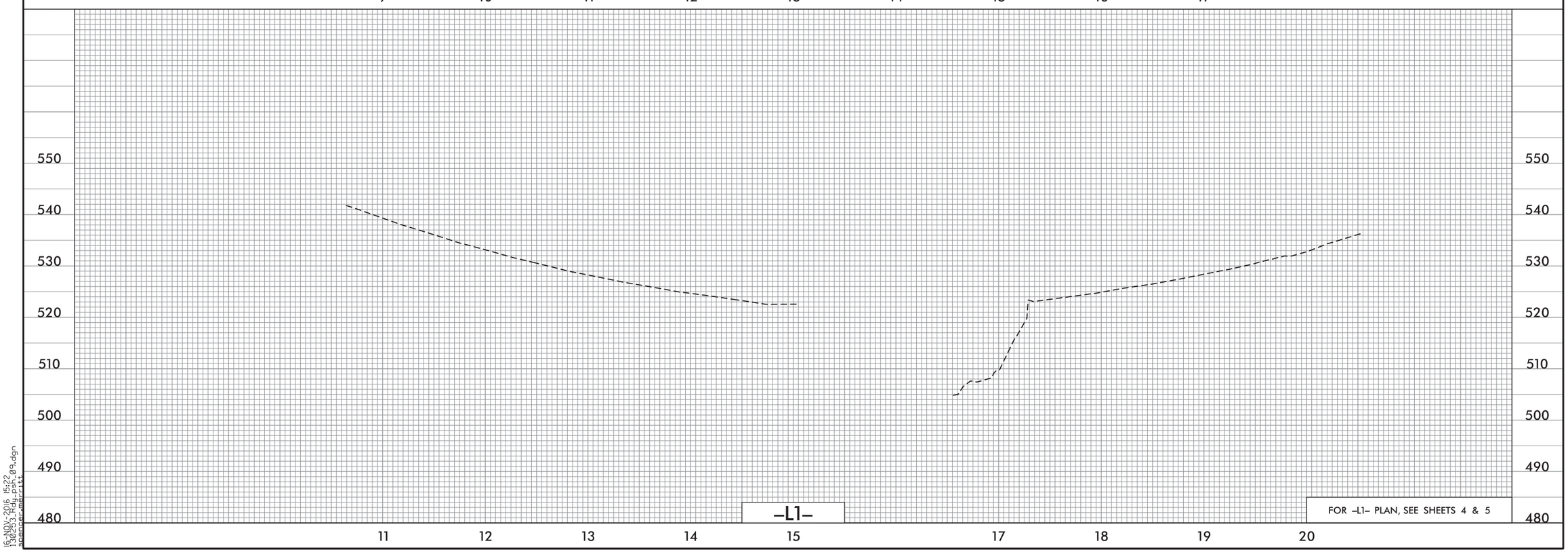
Prepared in the Office of: ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 112
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
C-5184	9

ROADWAY DESIGN ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON
Brandon W. Johnson

HYDRAULICS ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 20147 ENGINEER FRANK F. FLEMING
Frank F. Fleming





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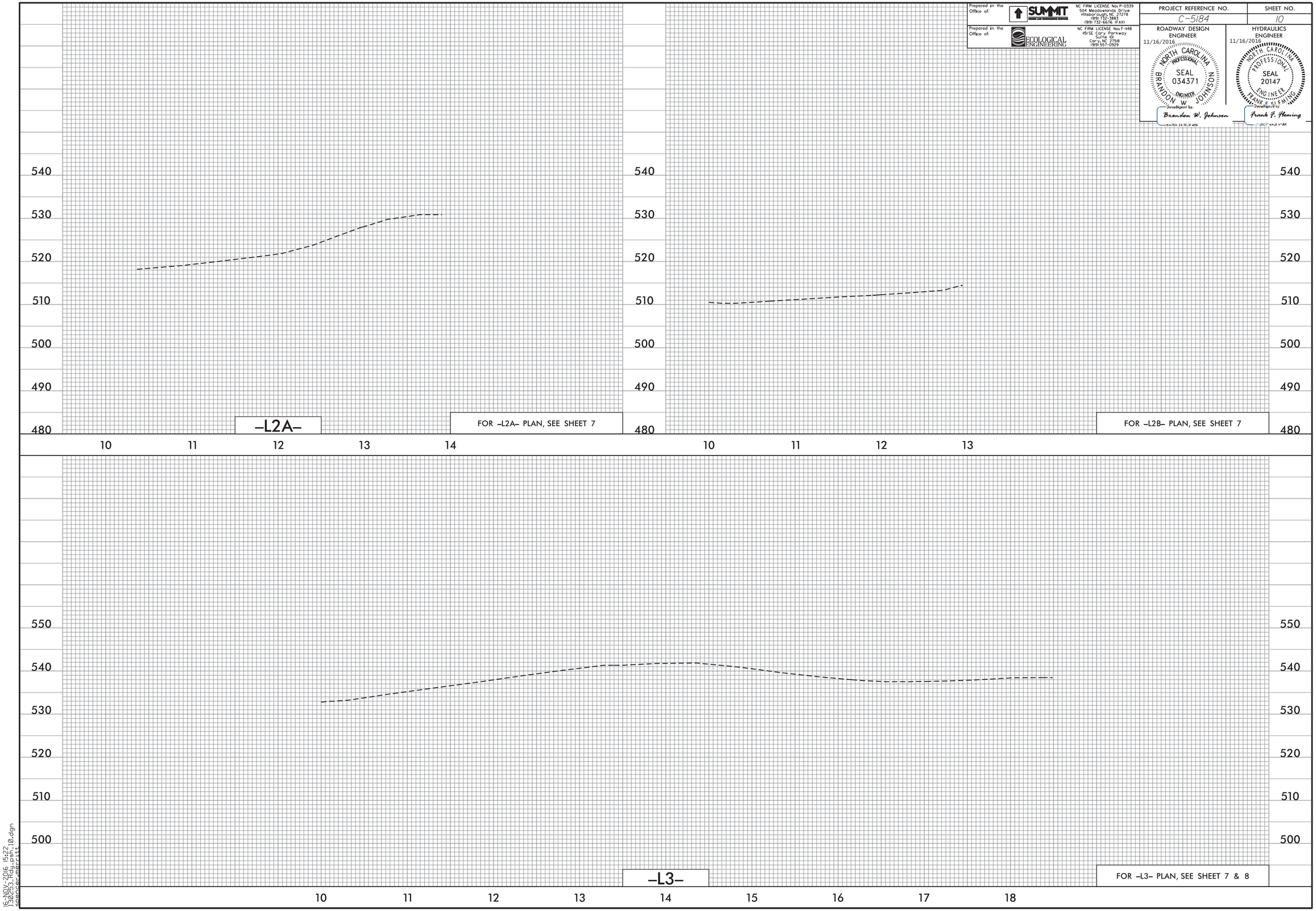
Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

Prepared in the Office of: ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

PROJECT REFERENCE NO.	SHEET NO.
C-5184	10

ROADWAY DESIGN ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON
Brandon W. Johnson

HYDRAULICS ENGINEER
11/16/2016
NORTH CAROLINA PROFESSIONAL SEAL 20147 ENGINEER FRANK F. FLEMING
Frank F. Fleming



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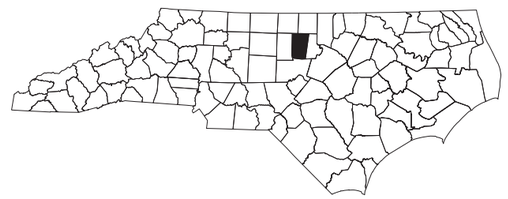
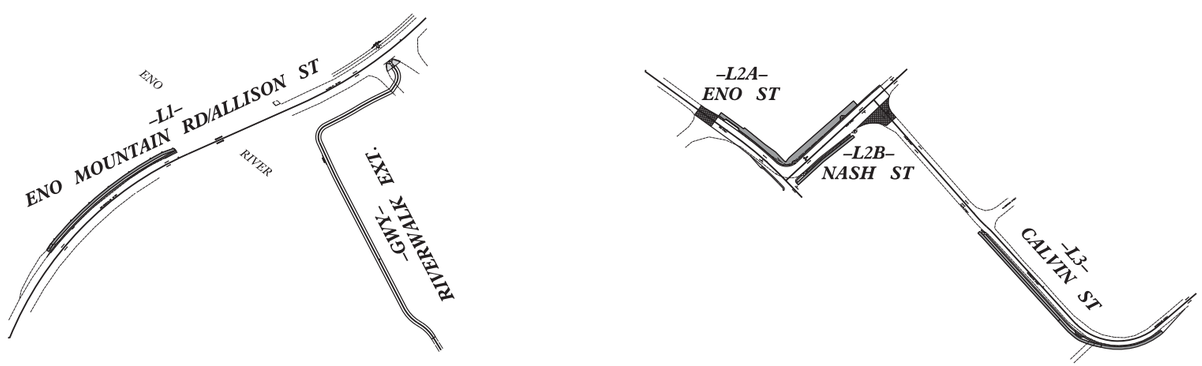
STATE OF NORTH CAROLINA
TOWN OF HILLSBOROUGH

TRANSPORTATION MANAGEMENT PLAN

ORANGE COUNTY





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
T. N. PARROT, P.E. — TRAFFIC CONTROL PROJECT ENGINEER
B. W. JOHNSON, P.E. — TRAFFIC CONTROL PROJECT DESIGN ENGINEER
J. A. CROUSE, P.E. — TRAFFIC CONTROL DESIGN ENGINEER

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

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP AND INDEX OF SHEETS
TMP-1A	TRANSPORTATION OPERATIONS PLAN:MANAGEMENT STRATEGIES, GENERAL NOTES AND PHASING

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMPS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.11	PAVEMENT MARKINGS - RAILROAD CROSSINGS
1205.12	PAVEMENT MARKINGS - BRIDGES
1205.13	PAVEMENT MARKINGS - LANE REDUCTIONS
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

APPROVED: DocuSigned by: Tracy N. Parrott
DATE: 4/8/2016 5:45:41 PM EDT

SEAL — NORTH CAROLINA PROFESSIONAL SEAL 23100 ENGINEER TRACY NEAL PARROTT

SHEET NO.
TMP-1

C-5184

TIP PROJECT:

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PROJ. REFERENCE NO.	SHEET NO.
C-5184	TMP-1A

TRAFFIC CONTROL DETAILS & NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSION 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 MONDAY THROUGH FRIDAY FROM 7 A.M. TO 9 A.M., AND 4 P.M. TO 6 P.M.
B) DO NOT CLOSE TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS.

HOLIDAY
1. FOR ANY UNEXPECTED OCCURANCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S BETWEEN THE HOURS OF 4:00 P.M. DECEMBER 31ST TO 9:00 A.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9:00 A.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 4:00 P.M. THURSDAY AND 9:00 A.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 4:00 P.M. FRIDAY TO 9:00 A.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 4:00 P.M. THE DAY BEFORE INDEPENDENCE DAY, AND 9:00 A.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 4:00 P.M. FRIDAY AND 9:00 A.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 4:00 P.M. TUESDAY TO 9:00 A.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 4:00 P.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 A.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

LANE CLOSURE AND SHOULDER REQUIREMENTS

A) 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.
B) 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.
C) 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.

PAVEMENT EDGE DROP OFF REQUIREMENTS

A) BACKFILL, AT A SLOPE OF 6:1, 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:
   1. BACKFILL DROP–OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.
   2. BACKFILL DROP–OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.
   3. BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.
B) 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) 1000 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

SIGNING

A) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
B) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERNS.

PAVEMENT MARKINGS

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL ROADWAY SURFACES.
B) INSTALL TEMPORARY PAVEMENT MARKINGS ON INTERIM LAYERS OF PAVEMENT.
C) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
D) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS BY THE END OF EACH DAY'S OPERATION.

TRAFFIC PATTERN ALTERATIONS

A) NOTIFY THE ENGINEER TWENTY ONE CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATIONS.

NOTIFICATION AND COORDINATION OF OPERATIONS

A) PROVIDE THE TOWN A MINIMUM OF 48 HOUR NOTICE PRIOR TO BEGINNING WORK ON THE PROJECT INITIALLY AND PRIOR TO BEGINNING EACH PHASE OF CONSTRUCTION.
B) THE TOWN OR ITS REPRESENTATIVE WILL PROVIDE PRIMARY COORDINATION WITH ADJACENT BUSINESSES AND PROPERTY OWNERS.
C) COMPLETE AN ACTIVE PHASE PRIOR TO BEGINNING A SUBSEQUENT PHASE.
D) CONDUCT ALL OPERATIONS IN A MANNER TO MINIMIZE IMPACTS TO BUSINESSES AND PROPERTIES.

PHASING

PHASE I

STEP 1:
ERECT ADVANCED WORK ZONE SIGNS IN ACCORDANCE WITH ROADWAY STANDARD (RDWY STD) 1101.01 SHEET 2 ON THE FOLLOWING ROADWAYS:
* –L1– ENO MOUNTAIN RD/ALLISON ST
* –L2A– ENO ST
* –L2B– NASH ST
* –L3– CALVIN ST

STEP 2:
PLACE DRUMS ALONG CONSTRUCTION LIMITS, SPACED ACCORDING TO 2012 NCDOT STANDARD SPECIFICATIONS (STD SPEC) 1130–3. PERMIT ACCESS TO BUSINESSES AND INTERSECTING ROADS.

STEP 3:
INSTALL TEMPORARY LANE CLOSURES AS NEEDED FOR CONSTRUCTION IN ACCORDANCE WITH ROADWAY STANDARD (RDWY STD) 1101.02

PHASE II

CONSTRUCT SIDEWALKS AND CURB RAMPS ALONG ENO MOUNTAIN RD./ALLISON ST. CONSTRUCT GREENWAY FROM ALLISON ST. TO GOLD PARK. MAINTAIN ACCESS TO BUSINESSES.

PHASE III

CONSTRUCT SIDEWALKS, CURB RAMPS, AND NEW DRAINAGE STRUCTURES ALONG ENO ST. AND NASH ST. MAINTAIN ACCESS TO BUSINESSES.

PHASE IV

CONSTRUCT SIDEWALKS, CURB RAMPS, AND NEW DRAINAGE STRUCTURES ALONG CALVIN ST. MAINTAIN ACCESS TO GREENWAY.

PHASE V

COMPLETE FINAL MILLING AND PAVING. REMOVE ALL CONFLICTING EXISTING PAVEMENT MARKINGS. COMPLETE PROPOSED PAVEMENT MARKINGS, CROSSWALKS, AND GREENWAY IN ACCORDANCE WITH PLANS.

APPROVED DocuSigned by: Tracy N. Parrott 4/6/2016 DATE: 4/6/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 23100 ENGINEER TRACY NEAL PARROTT

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

TRAFFIC CONTROL DETAILS, NOTES, AND PHASING

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TIP PROJECT: C-5184

CONTRACT:

STATE OF NORTH CAROLINA
TOWN OF HILLSBOROUGH

ORANGE COUNTY

TIP NO.	SHEET NO.
C-5184	PMP-1

APPROVED: DocuSigned by: Brandon W. Johnson
DATE: 5/13/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON

LOCATION: ***RIVERWALK GREENWAY, ENO MOUNTAIN RD, ENO ST/NASH ST & CALVIN ST., IN THE TOWN OF HILLSBOROUGH.***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, GUARDRAIL, SIDEWALKS & GREENWAY.***

GENERAL PAVEMENT MARKING NOTES

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

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

ROAD NAME	MARKING
-L1-	THERMO
-L2A-	PAINT
-L2B-	PAINT

TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

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

SUMMARY OF PAVEMENT QUANTITIES

SYMBOL	DESCRIPTION	QUANTITY
	THERMO (24")	
T3	WHITE CROSSWALK LINE (24", 120 MIL)	435 LF
	THERMO (8")	
TQ	WHITE CROSSWALK LINE (8", 120 MIL)	350 LF
	PAINT (24")	
P2	WHITE STOPBAR	80 LF
	PAINT (4")	
P8	2 FT - 6 FT/SP WHITE MINI SKIP	95 LF
PA	WHITE EDGE LINE	630 LF
PI	YELLOW DOUBLE CENTER LINE	1020 LF
	PAINT (24")	
QD	COMBO. LEFT/STRAIGHT ARROW	1 EA
QF	COMBO. LEFT/RIGHT ARROW	1 EA

GENERAL SIGNING NOTES

WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER.

WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.

THE BACKGROUND FOR TYPE E SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

SUMMARY OF SIGNING QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4025000000	901	CONTRACTOR FURNISHED, TYPE E SIGN	55	SF
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL (X-BRACING)	70	LF
4102000000	904	SIGN ERECTION, TYPE E	7	EA

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
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS

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SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)
TRACY N. PARROTT, PE — PROJECT ENGINEER
BRANDON W. JOHNSON, PE — PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

INDEX

PMP-1 PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
PMP-2-3 PAVEMENT MARKING DETAIL SHEETS

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TIP NO.	SHEET NO.
C-5184	PMP-2

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DATE: 4/6/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON

Prepared in the Office of:

SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

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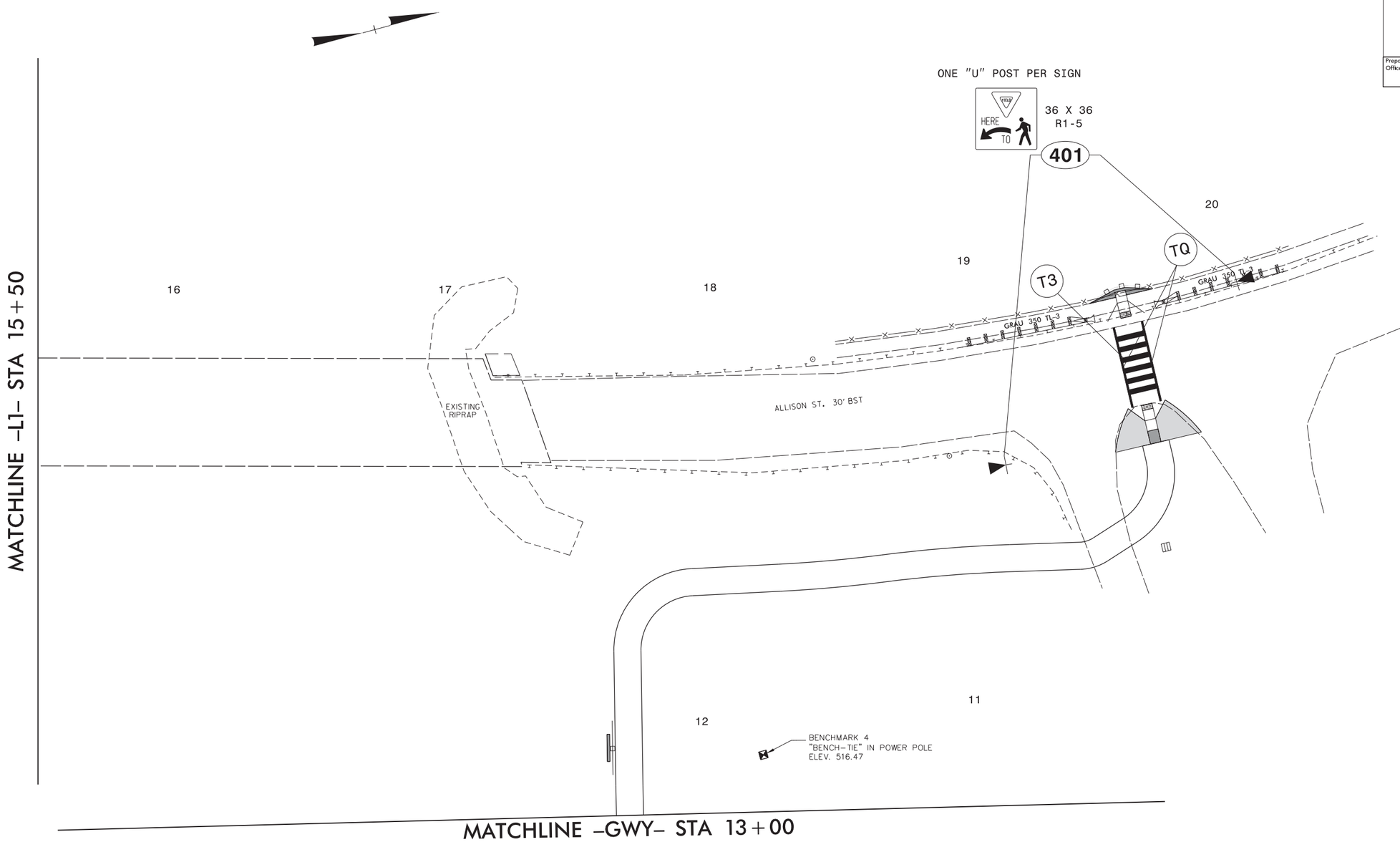

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504 Meadowlands Drive
Hillsborough, NC 27278
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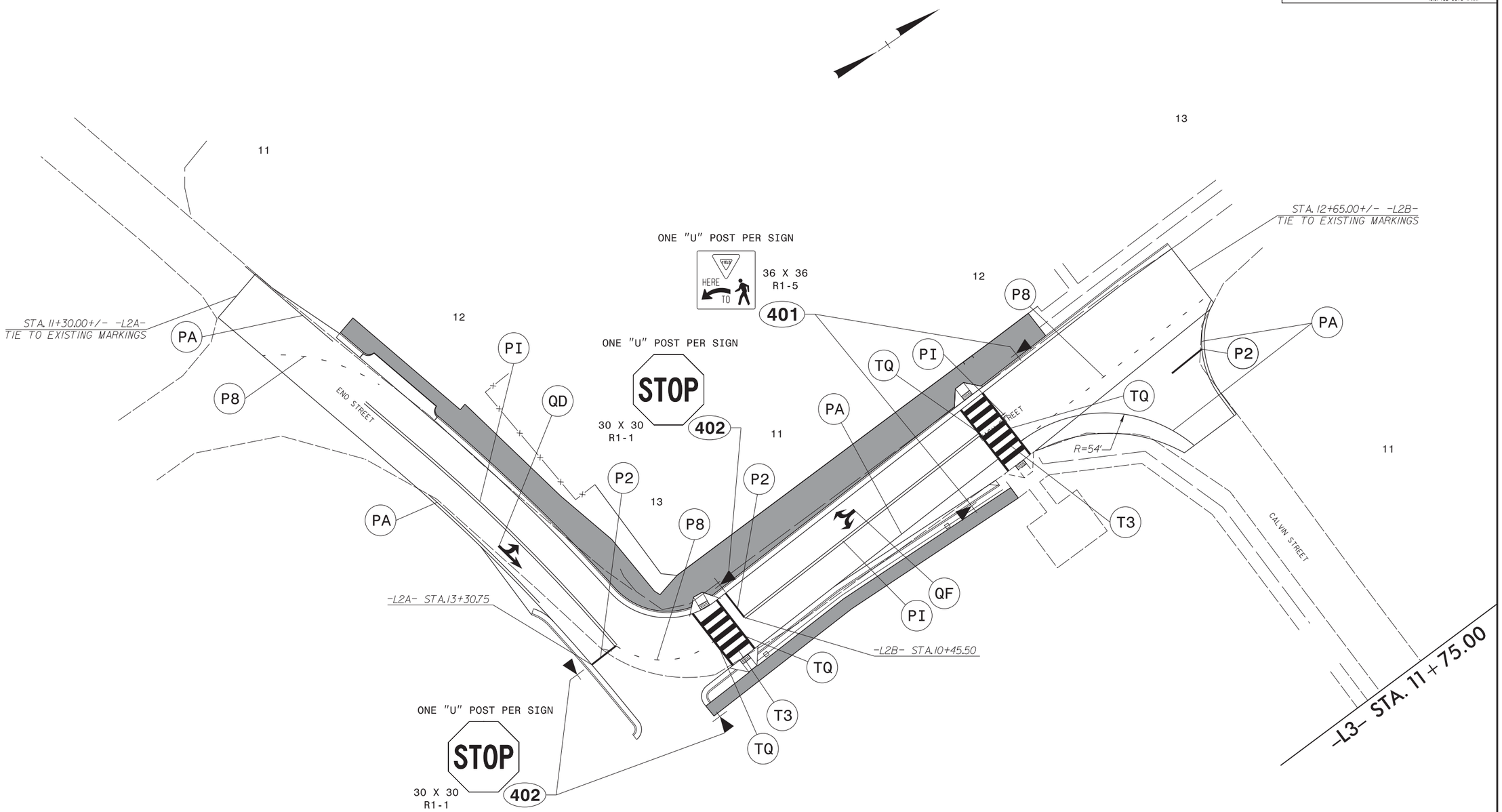

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CONTRACT: SUMMIT PROJECT: 13–0253

STATE	SUMMIT PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	13-0253	EC-1	EC-8

TOWN OF HILLSBOROUGH
NORTH CAROLINA

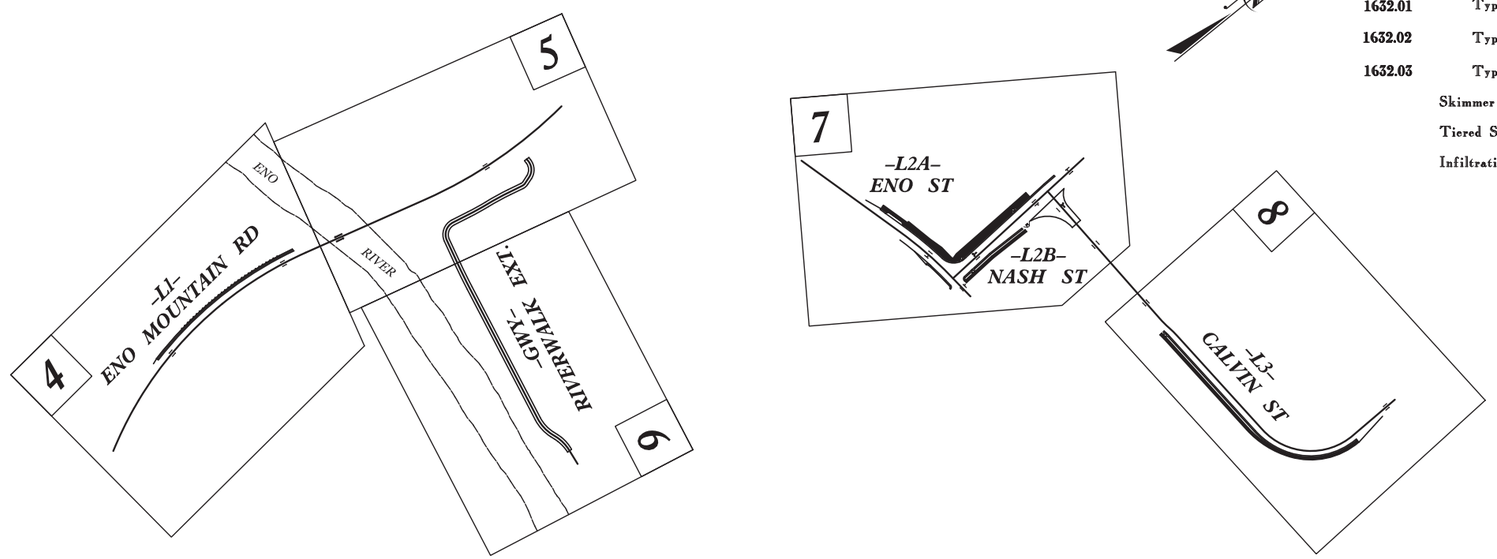
ORANGE COUNTY

LOCATION: RIVERWALK GREENWAY EXTENSION, ENO MOUNTAIN RD, ENO ST / NASH ST & CALVIN ST., IN THE TOWN OF HILLSBOROUGH.

TYPE OF WORK: GRADING, DRAINAGE, PAVING, GUARDRAIL & SIDEWALKS.

Index of Sheets

SHEET NUMBER	SHEET
EC–1	TITLE SHEET
EC–2	DETAILS (NONE APPLICABLE)
EC–3	SOIL STABILIZATION TIMEFRAME
EC–4 THRU EC–8	EROSION CONTROL PLANS



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	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	EW CFW
	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 HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

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

GRAPHIC SCALE

20 10 0 20 40
PLANS

50 25 0 25 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

Prepared in accordance with standards set by:
ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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:

ECOLOGICAL ENGINEERING
NC FIRM LICENSE No: F-1148
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929

2012 STANDARD SPECIFICATIONS

Designed by:

REID ROBOL, EI — *3409*
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 2012 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*		

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PROJECT REFERENCE NO.	SHEET NO.
13-0253	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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.
13-0253	EC-04/CONST.04
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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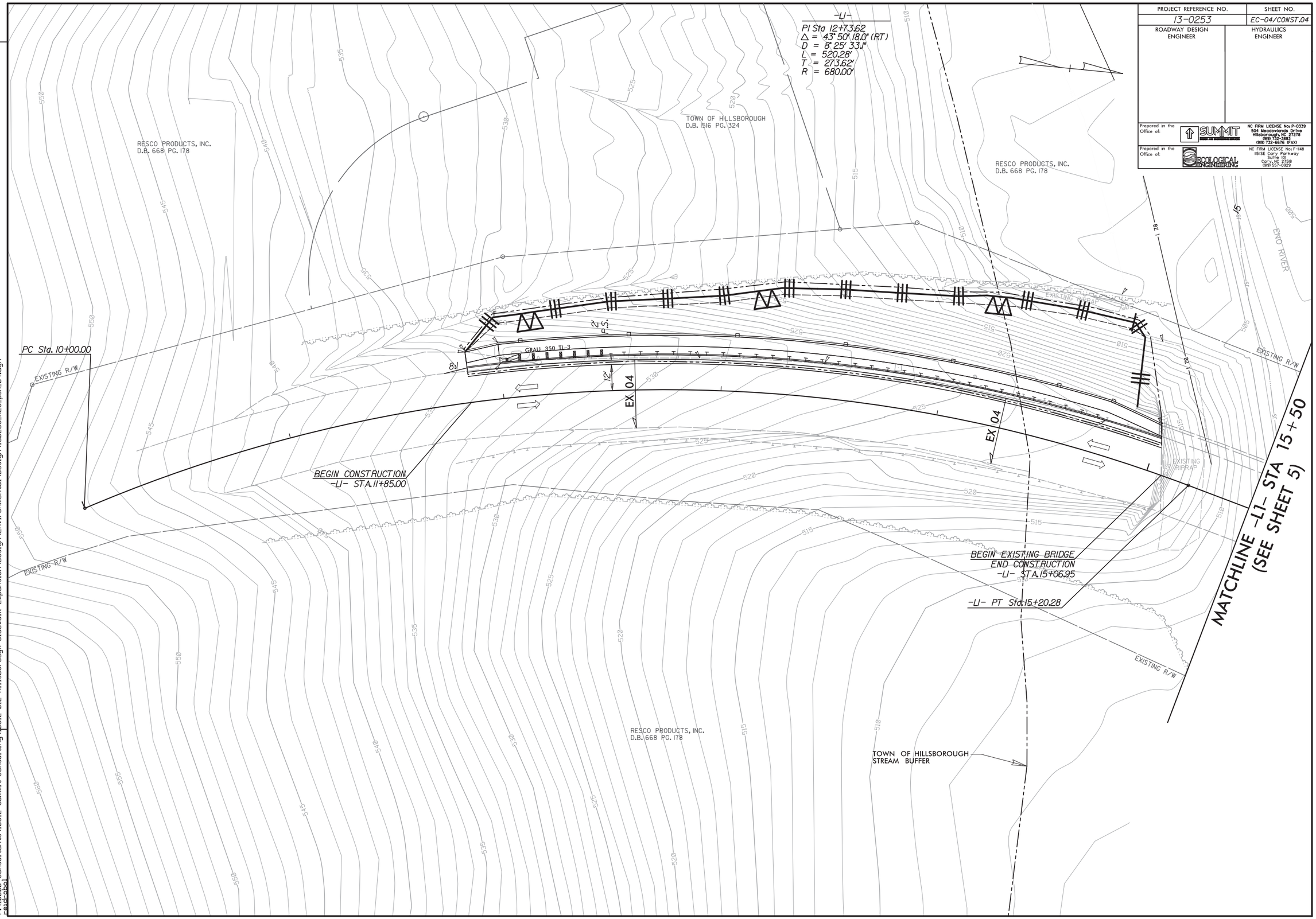

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Suite 101
Cary, NC 27518
(919) 557-0929

DETAIL 1
TOE PROTECTION
(Not to Scale)

d = 1.0 Ft.

Type of Liner = CLASS B RIP RAP

FROM STA. 10 + 65 TO STA. 12 + 25 –GWY– RT

DETAIL 2
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Min. D = 1.5 Ft.
Max. d = 1.0 Ft.
B = 2.0 Ft.

Type of Liner = CLASS B RIP RAP

FROM STA. 11 + 48 TO STA. 12 + 25 –GWY– LT

DETAIL 3
SPECIAL CUT DITCH
(Not to Scale)

Min. D = 1.0 Ft.
Max. d = 1.0 Ft.

Type of Liner = CLASS B RIP RAP

FROM STA. 12 + 25 TO STA. 12 + 85 –GWY– LT

–L1–

PI Sta 19+16.20
Δ = 20° 48' 25.1" (LT)
D = 6° 49' 15.3"
L = 305.05'
T = 154.22'
R = 840.00'

–GWY–

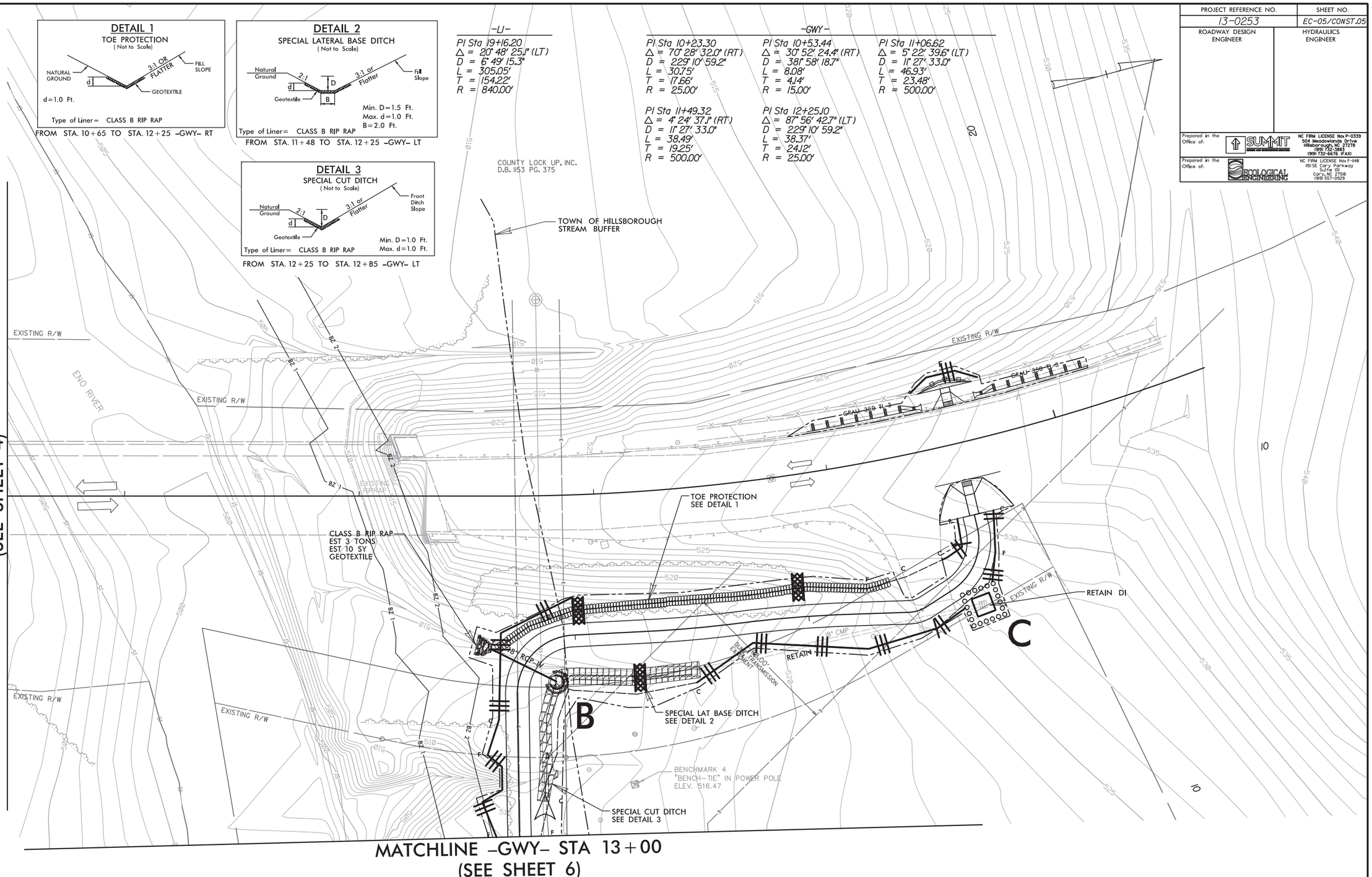
PI Sta 10+23.30
Δ = 70° 28' 32.0" (RT)
D = 229° 10' 59.2"
L = 30.75'
T = 17.66'
R = 25.00'

PI Sta 10+53.44
Δ = 30° 52' 24.4" (RT)
D = 381° 58' 18.7"
L = 8.08'
T = 4.14'
R = 15.00'

PI Sta 11+06.62
Δ = 5° 22' 39.6" (LT)
D = 11° 27' 33.0"
L = 46.93'
T = 23.48'
R = 500.00'

PI Sta 11+49.32
Δ = 4° 24' 37.1" (RT)
D = 11° 27' 33.0"
L = 38.49'
T = 19.25'
R = 500.00'

PI Sta 12+25.10
Δ = 87° 56' 42.7" (LT)
D = 229° 10' 59.2"
L = 38.37'
T = 24.12'
R = 25.00'



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13-0253	EC-06/CONST.06
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

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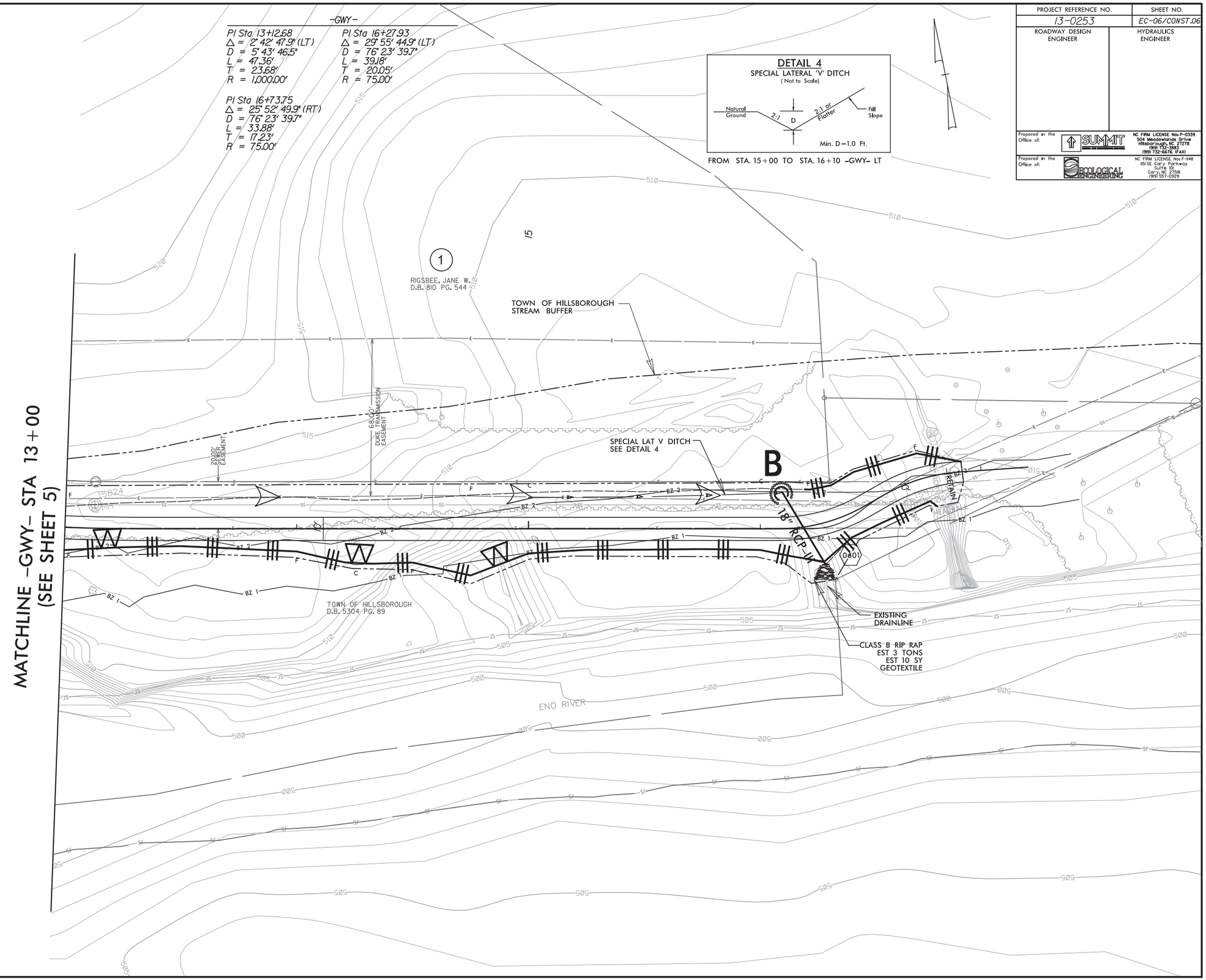
1151 SE Cary Parkway
Suite 101
Cary, NC 27518
(919) 557-0929



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13-0253	EC-07/CONST.07
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Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

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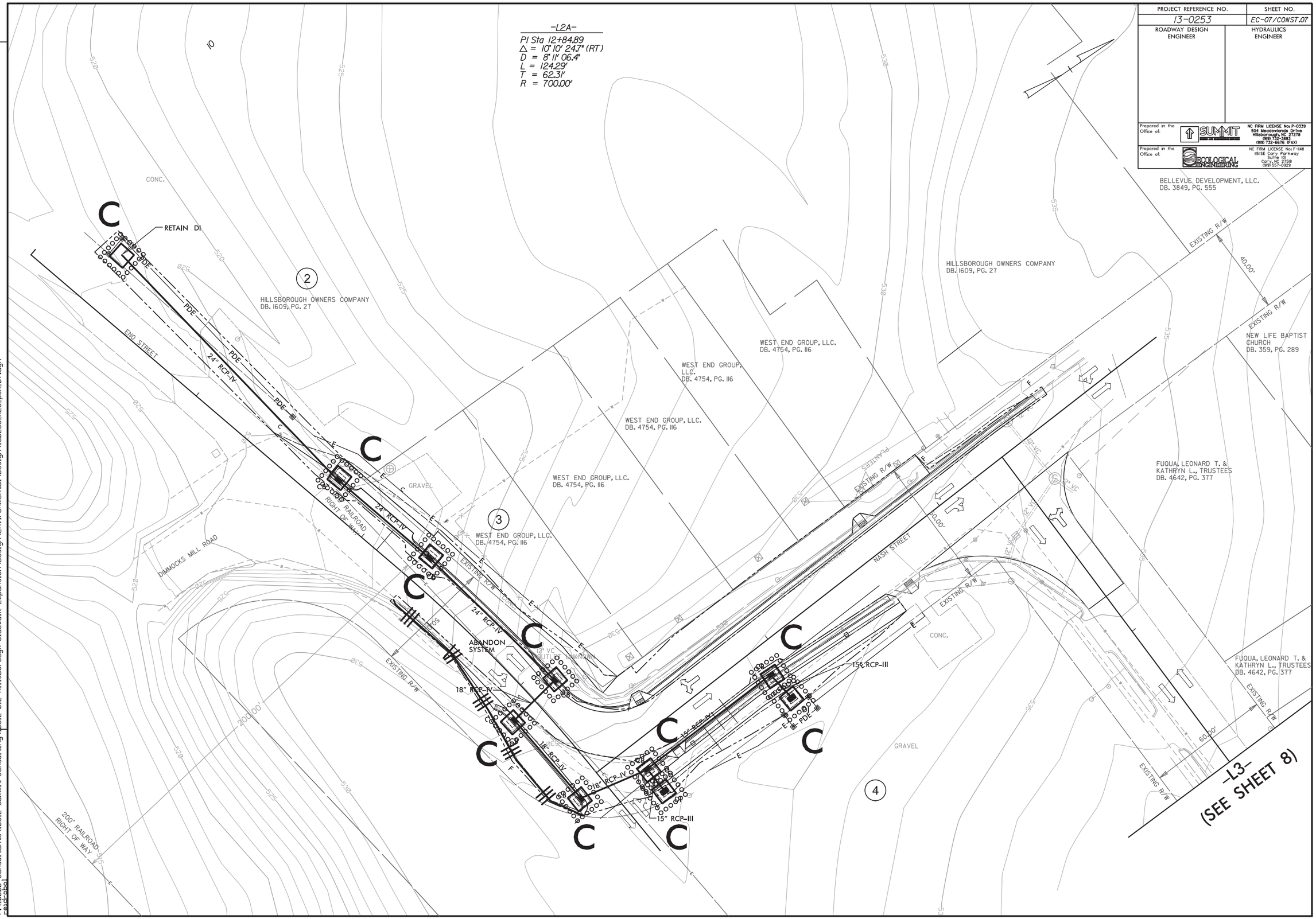
Suite 101
Cary, NC 27518
(919) 557-0929



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13-0253	EC-08/CONST.08
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

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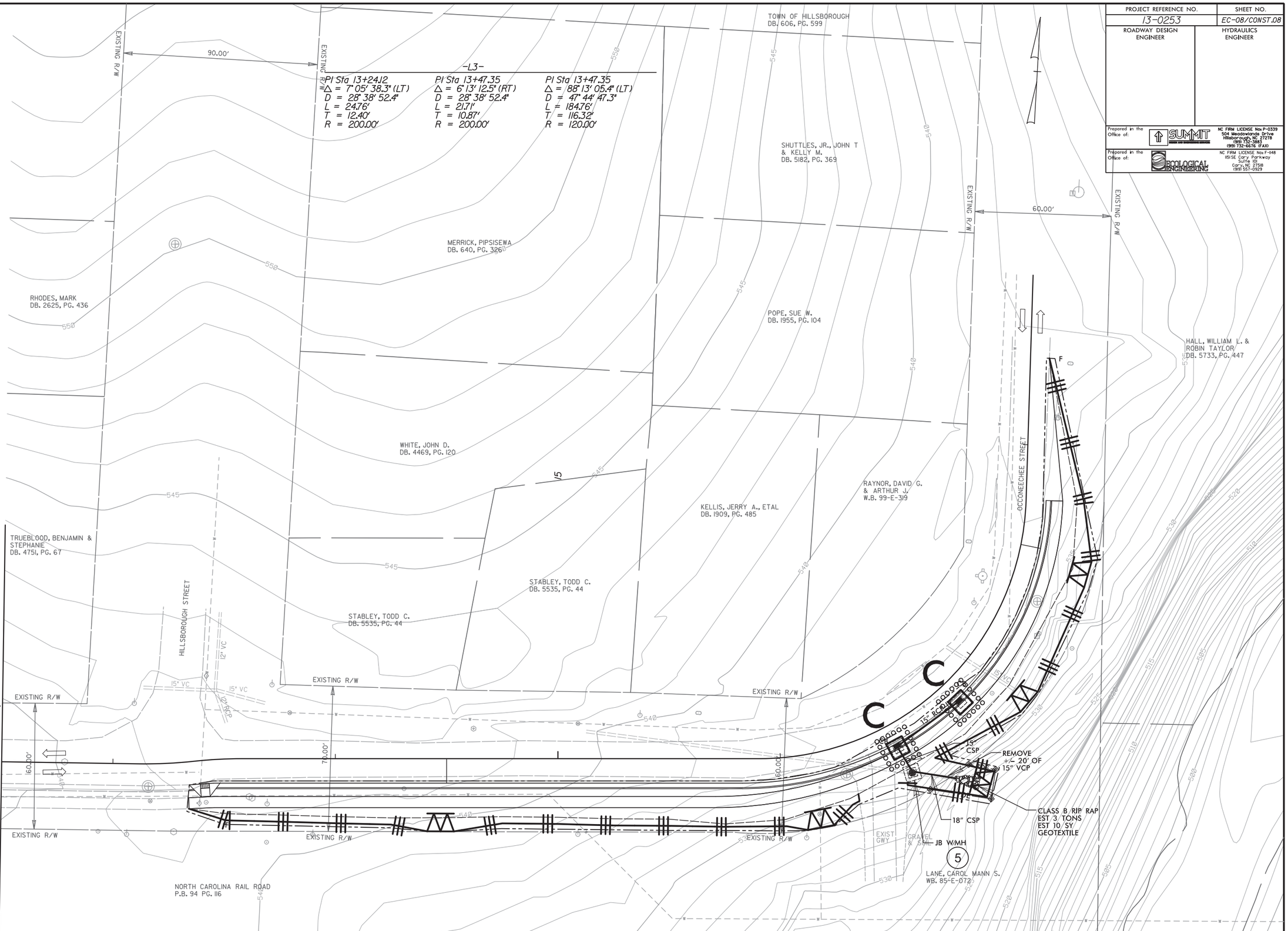

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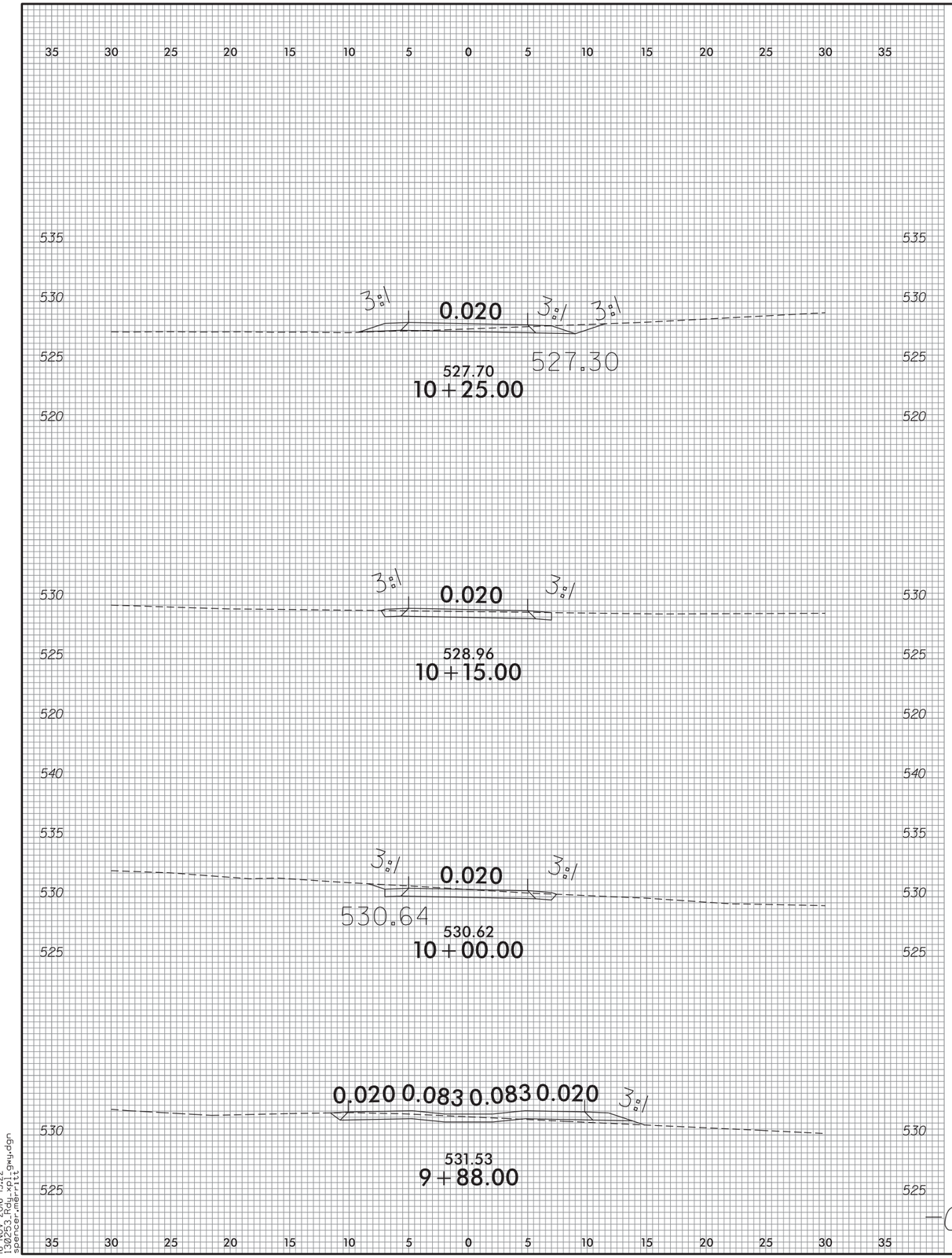

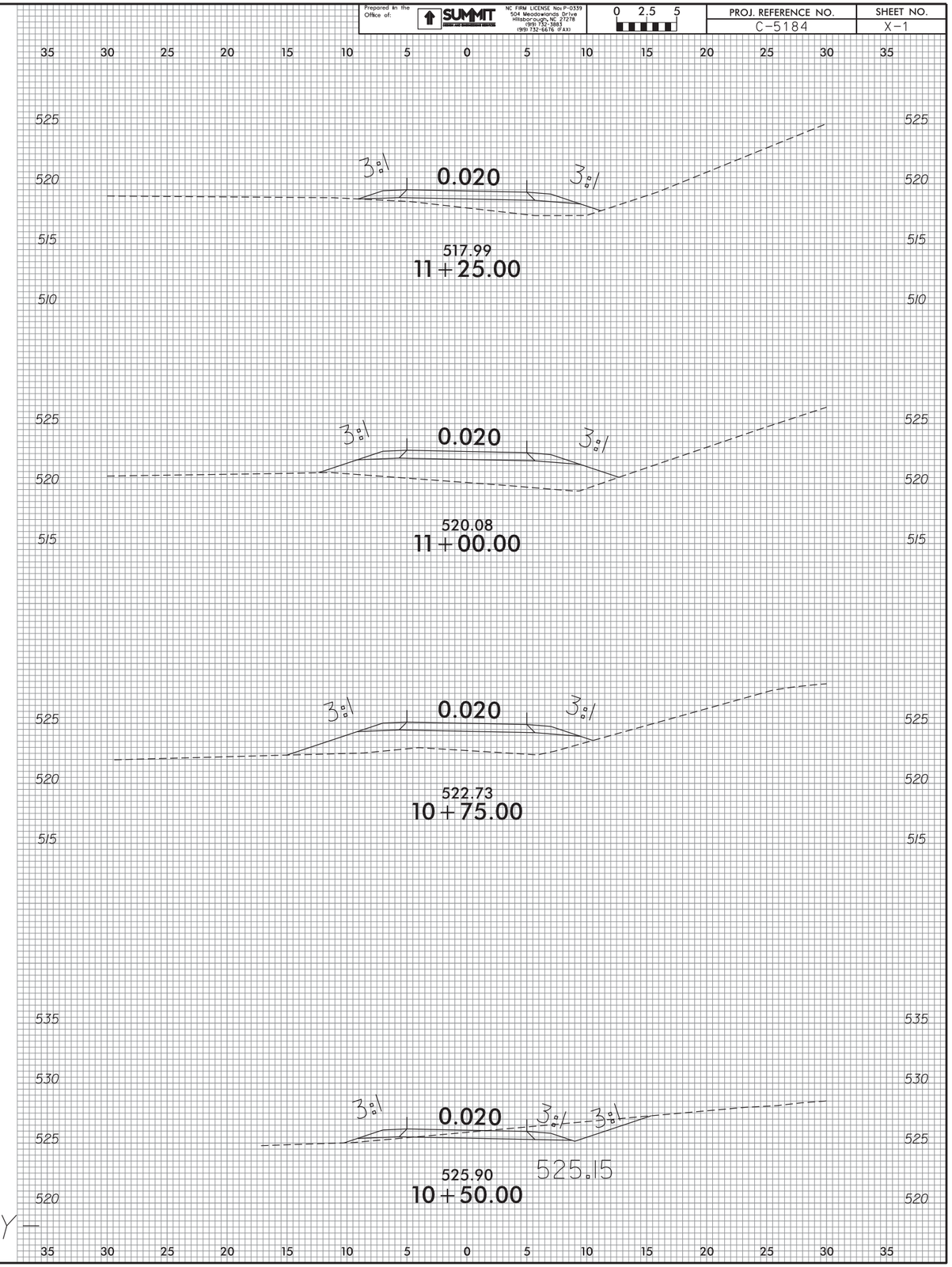

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Hillsborough, NC 27278
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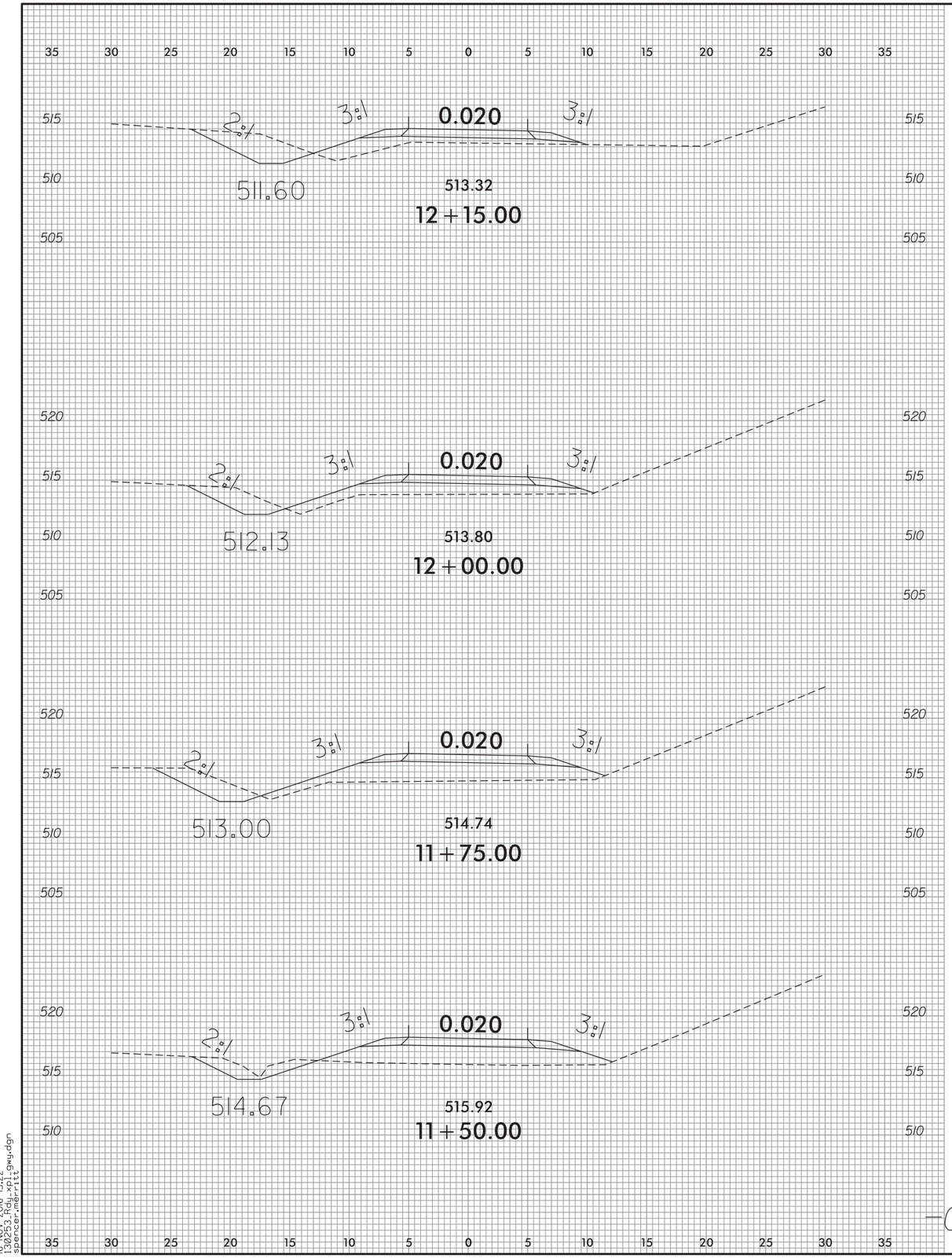
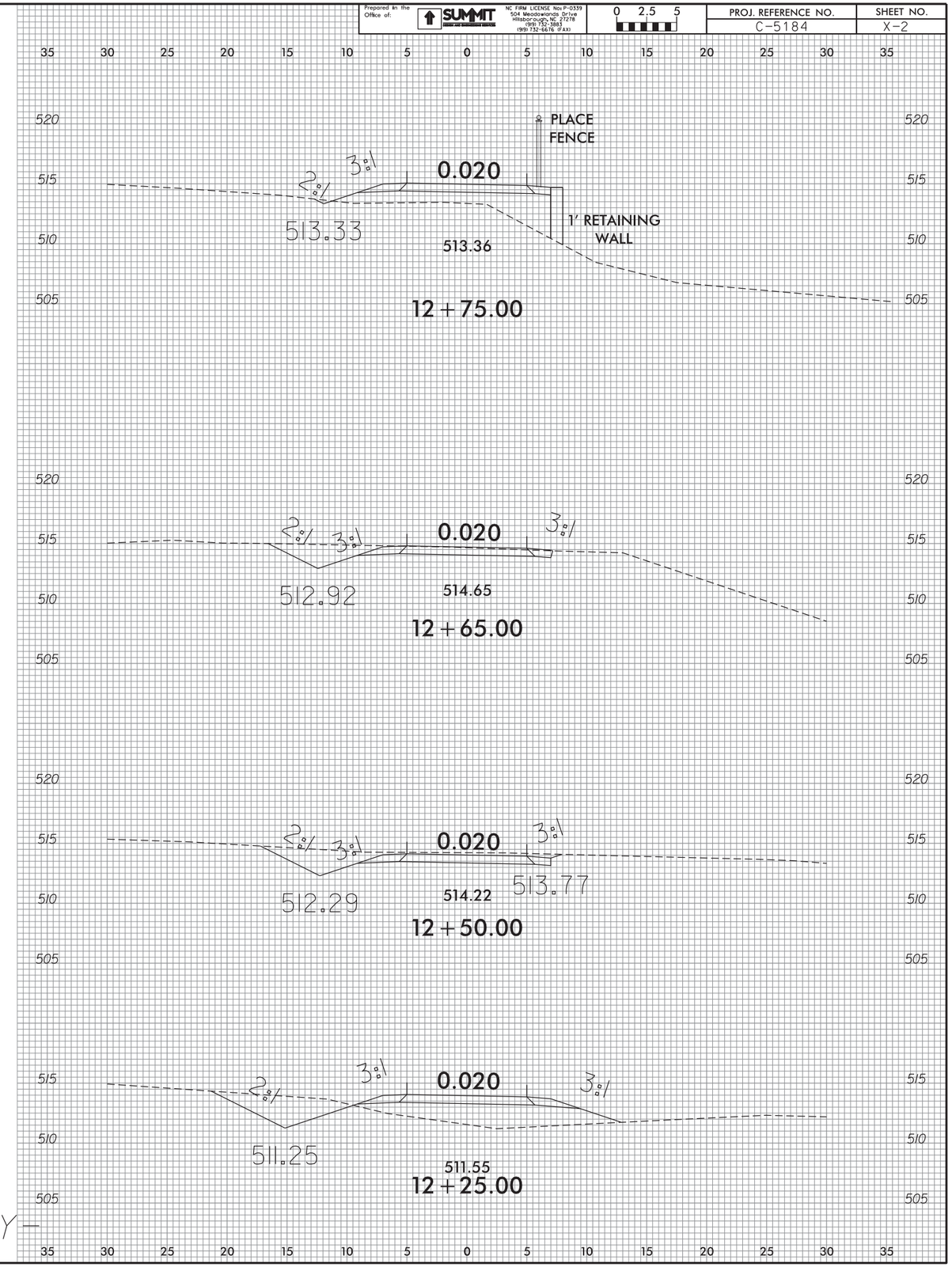
C-5184	X-2





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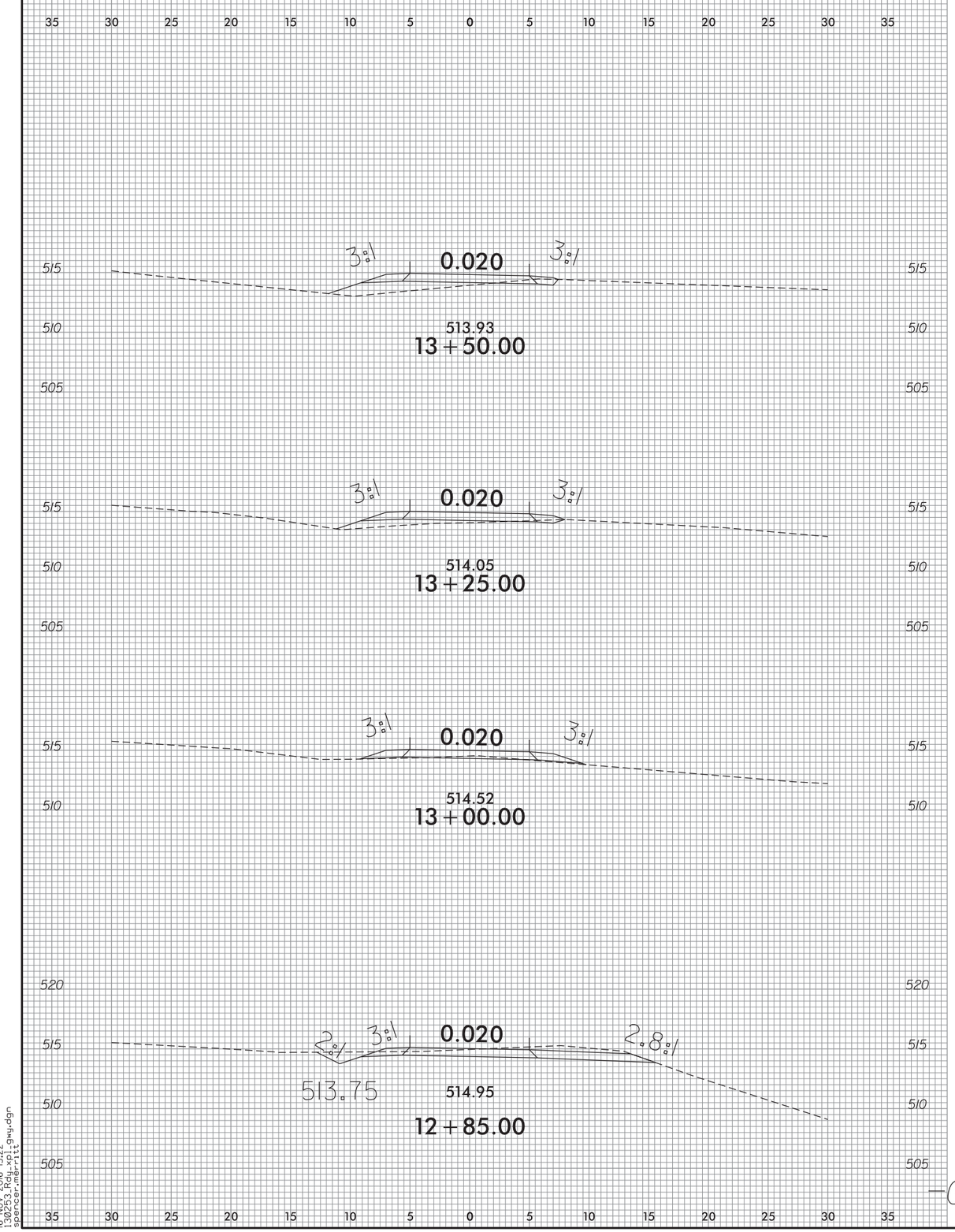
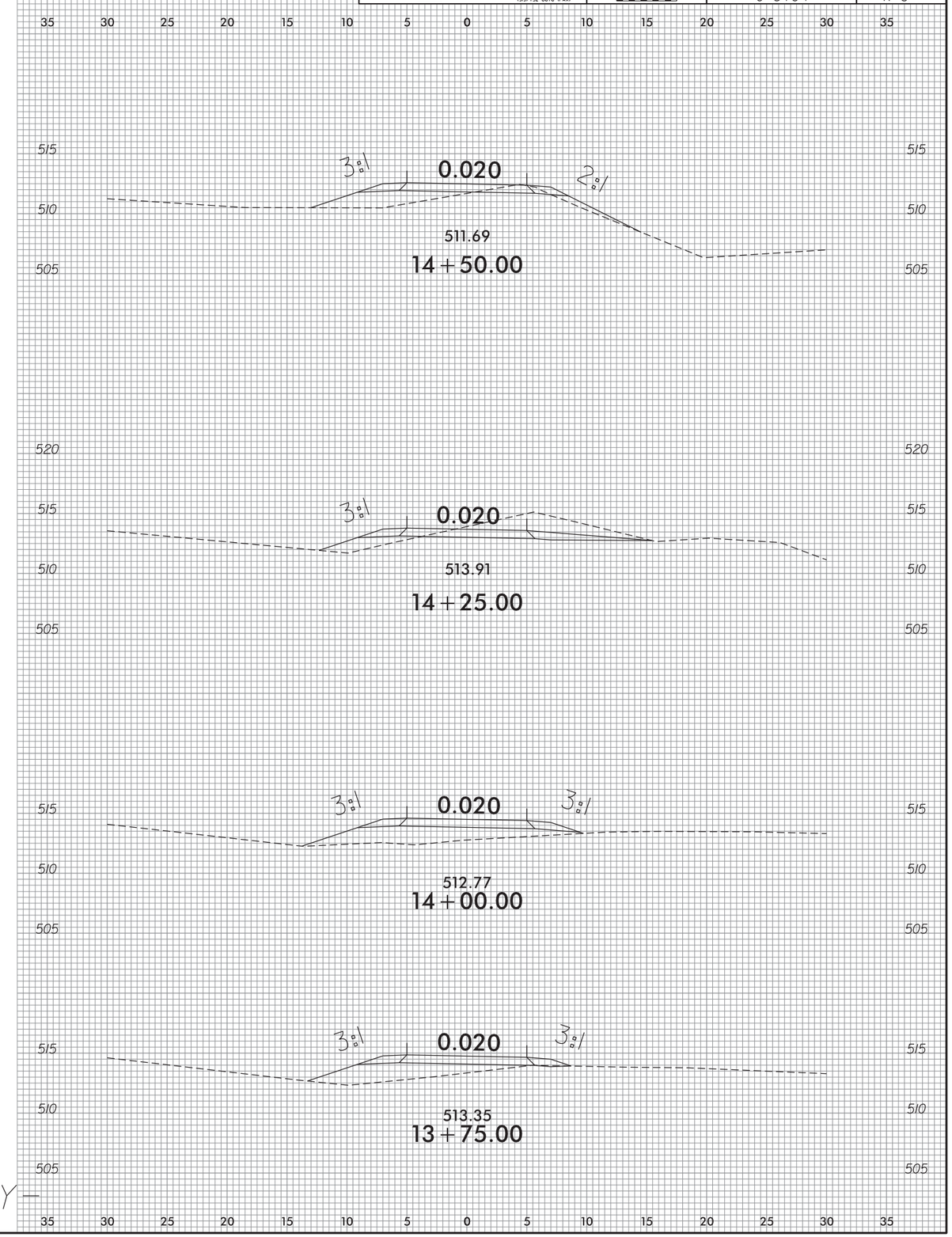
PROJ. REFERENCE NO.	SHEET NO.
C-5184	X-3





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PROJ. REFERENCE NO.	SHEET NO.
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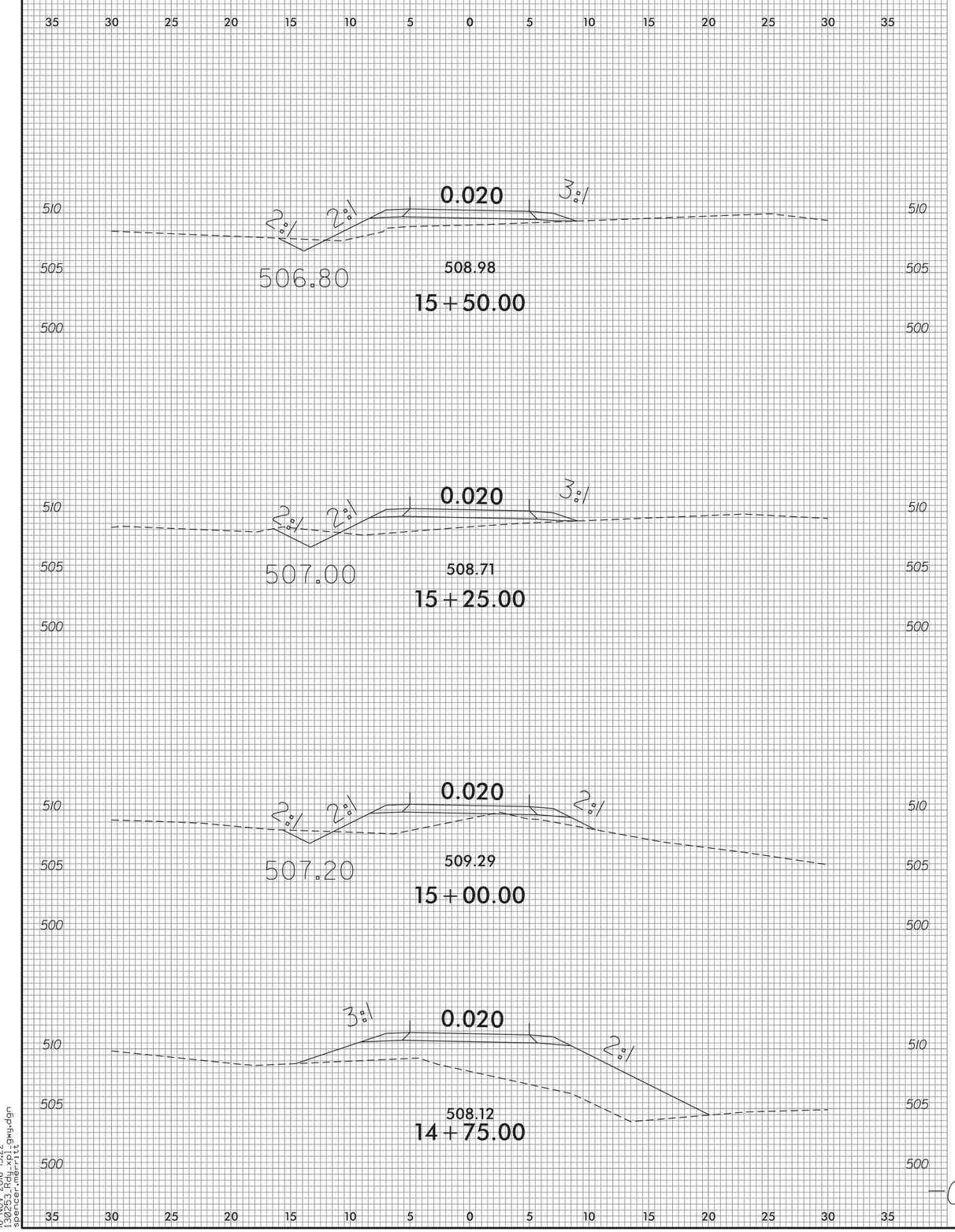

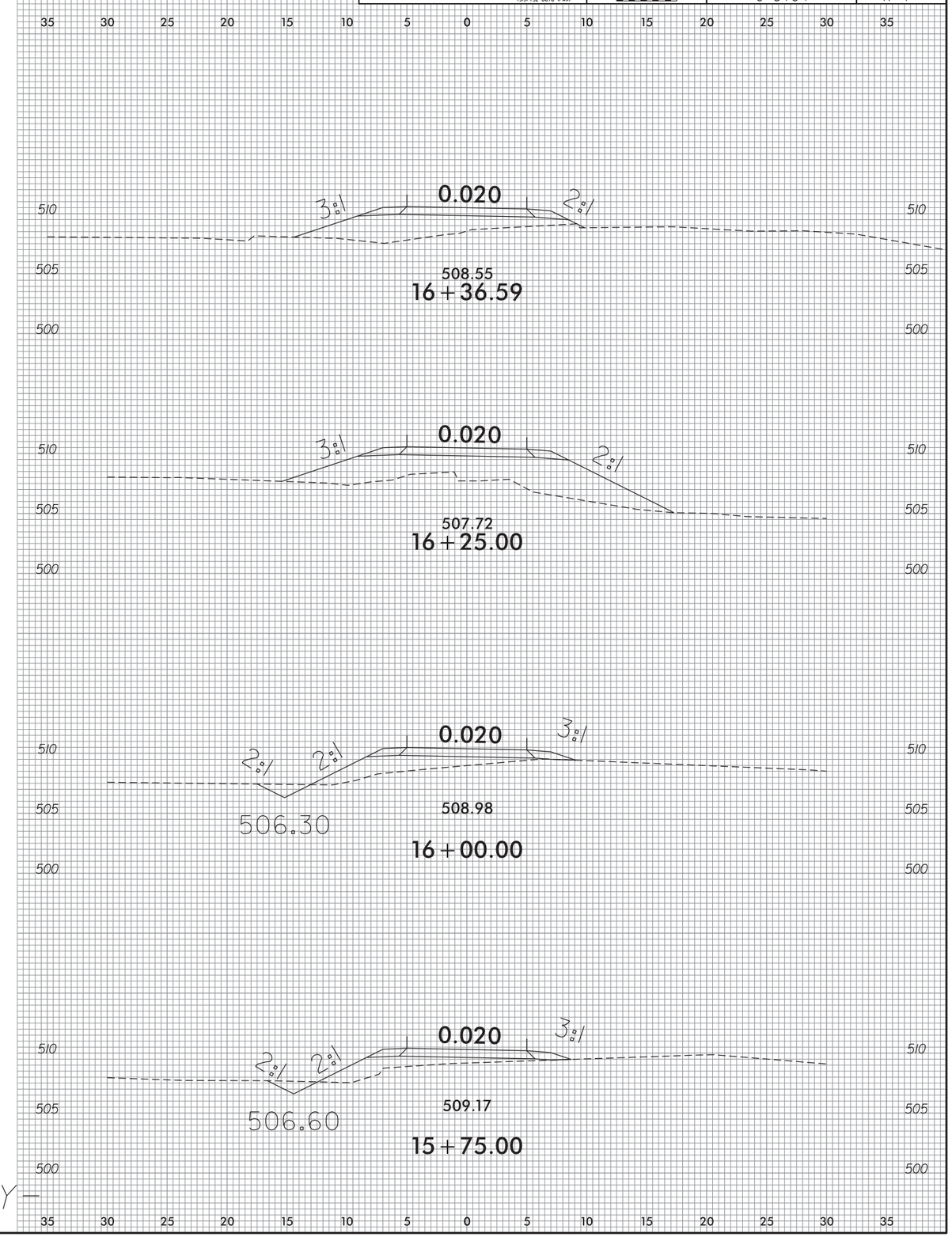

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PROJ. REFERENCE NO.	SHEET NO.
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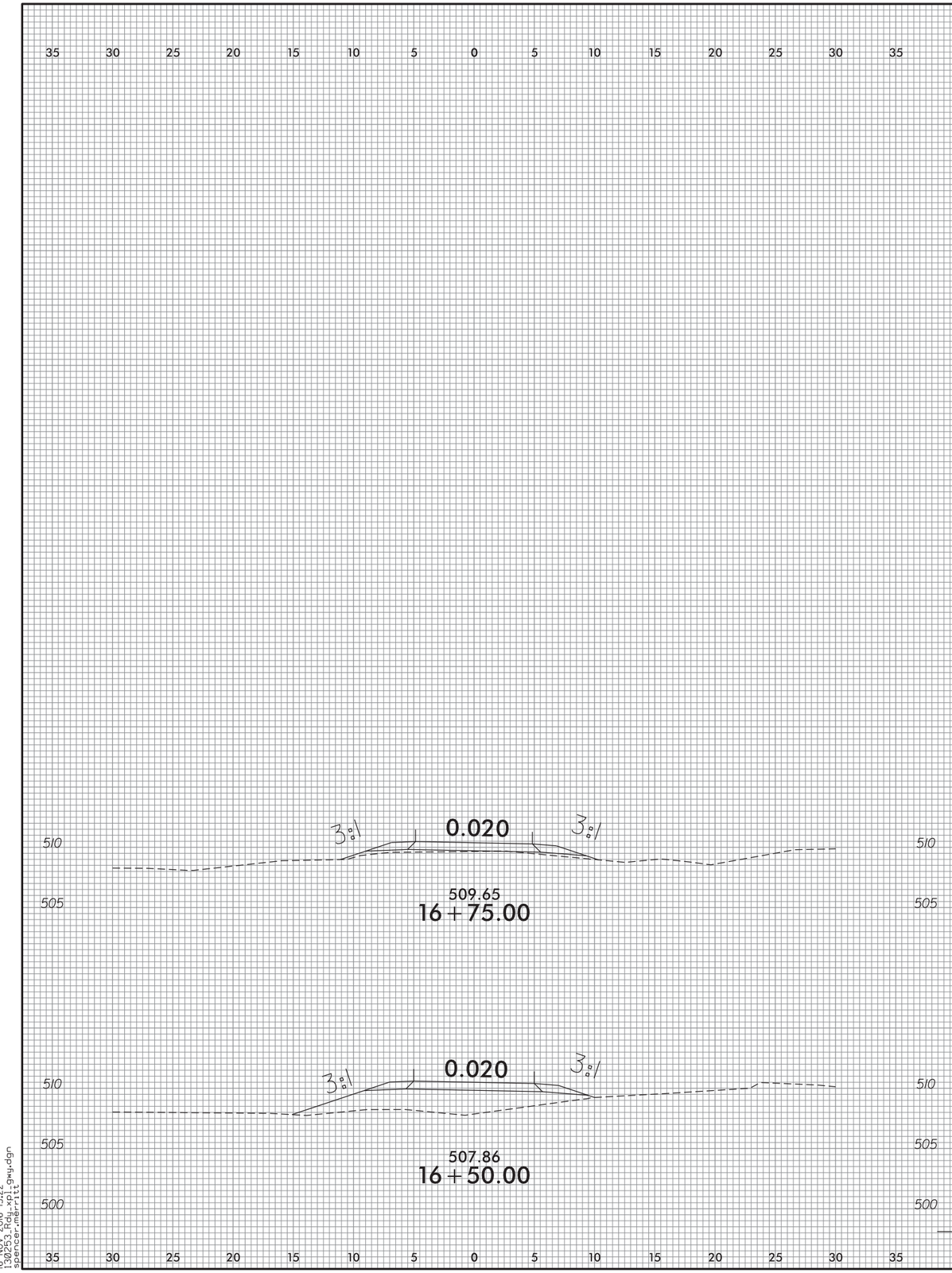

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PROJ. REFERENCE NO.	SHEET NO.
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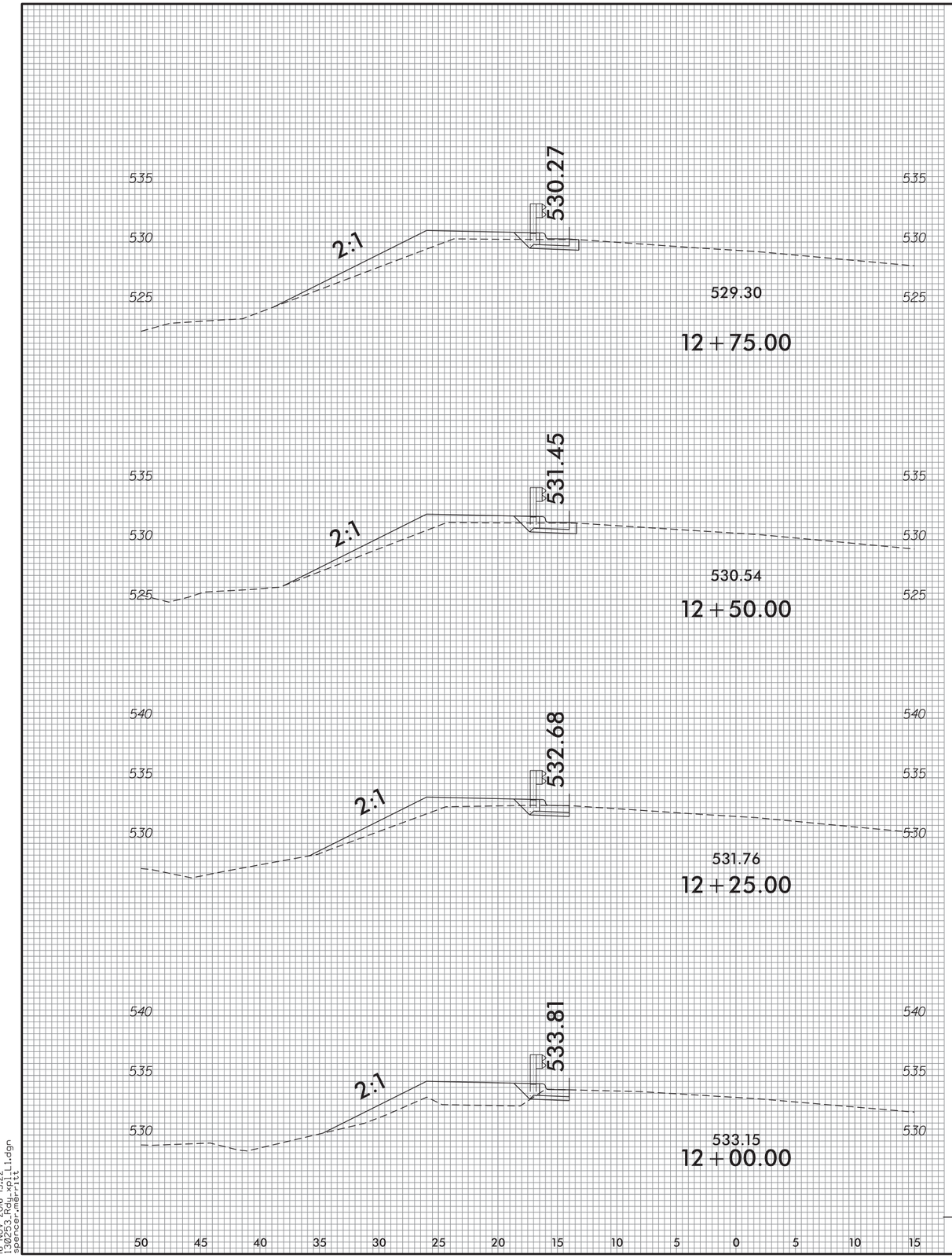

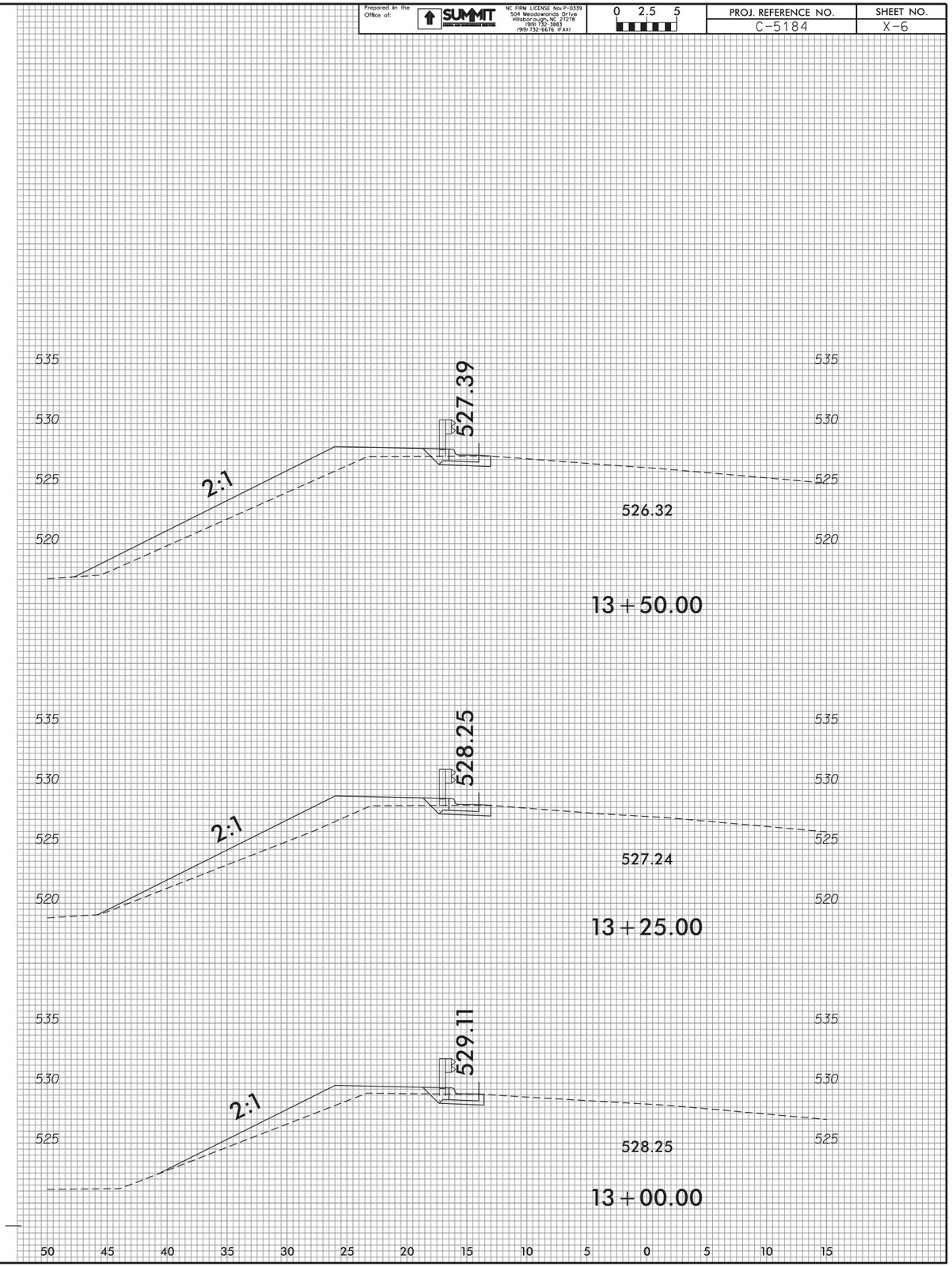

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spencer.merritt

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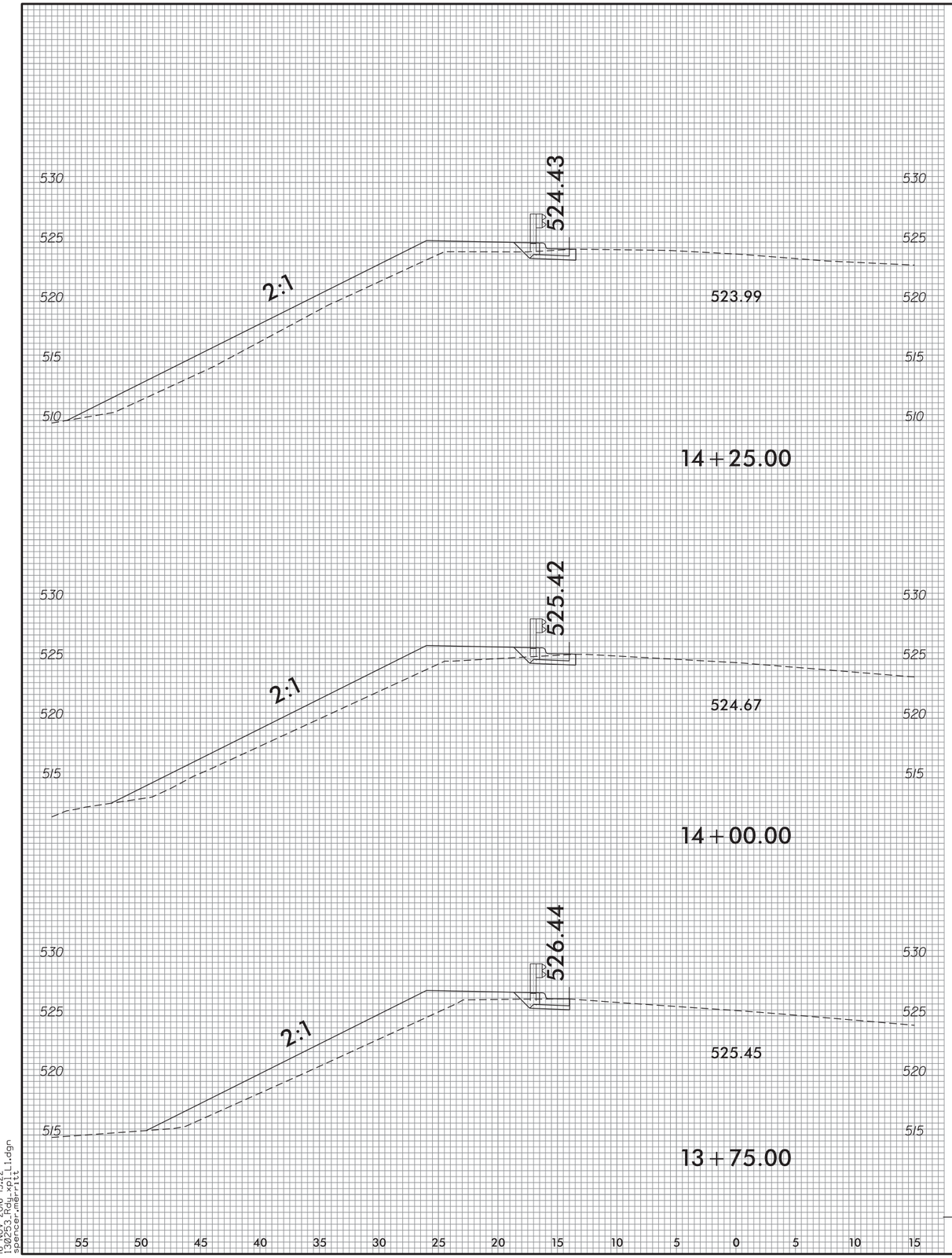

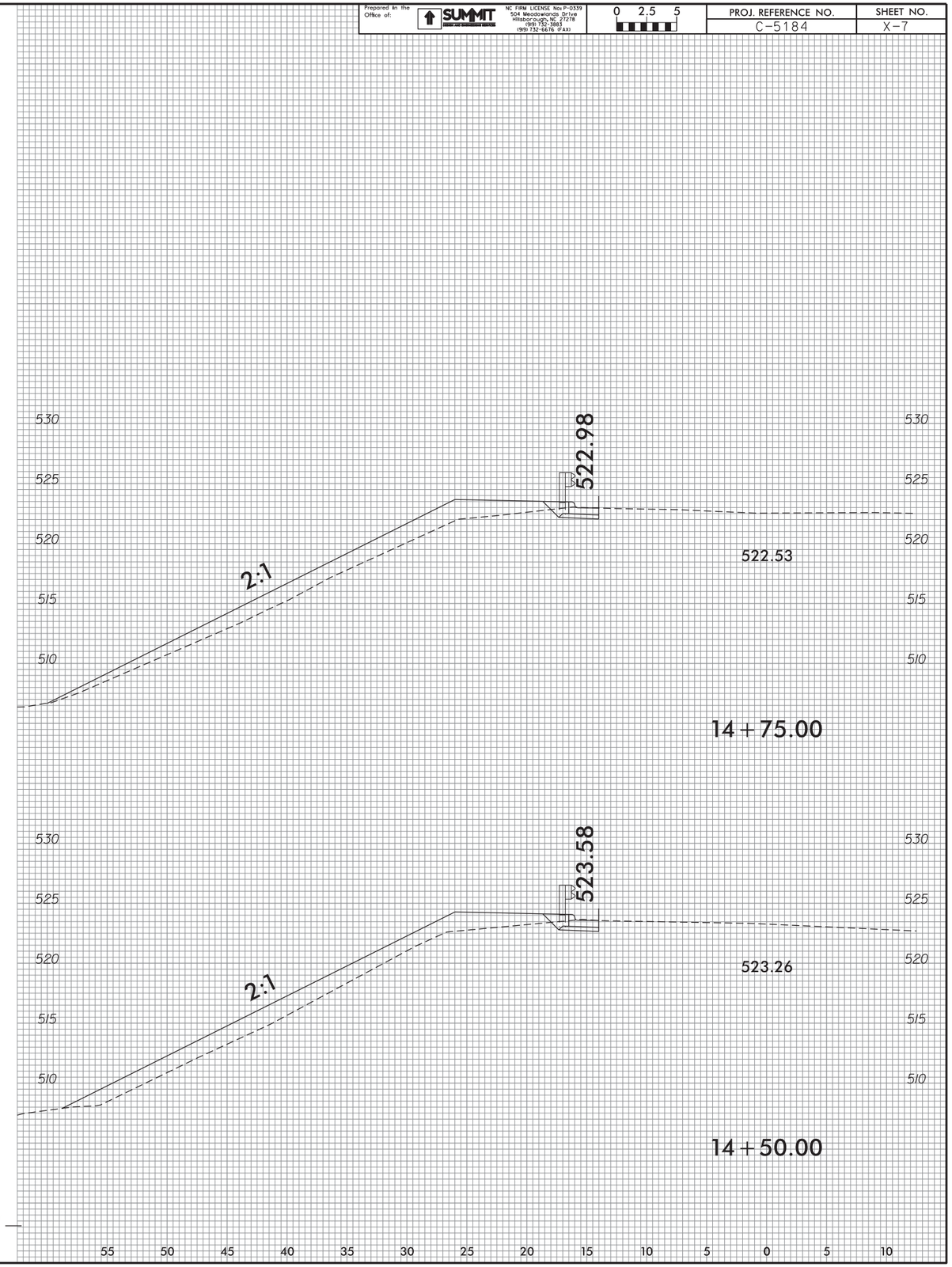

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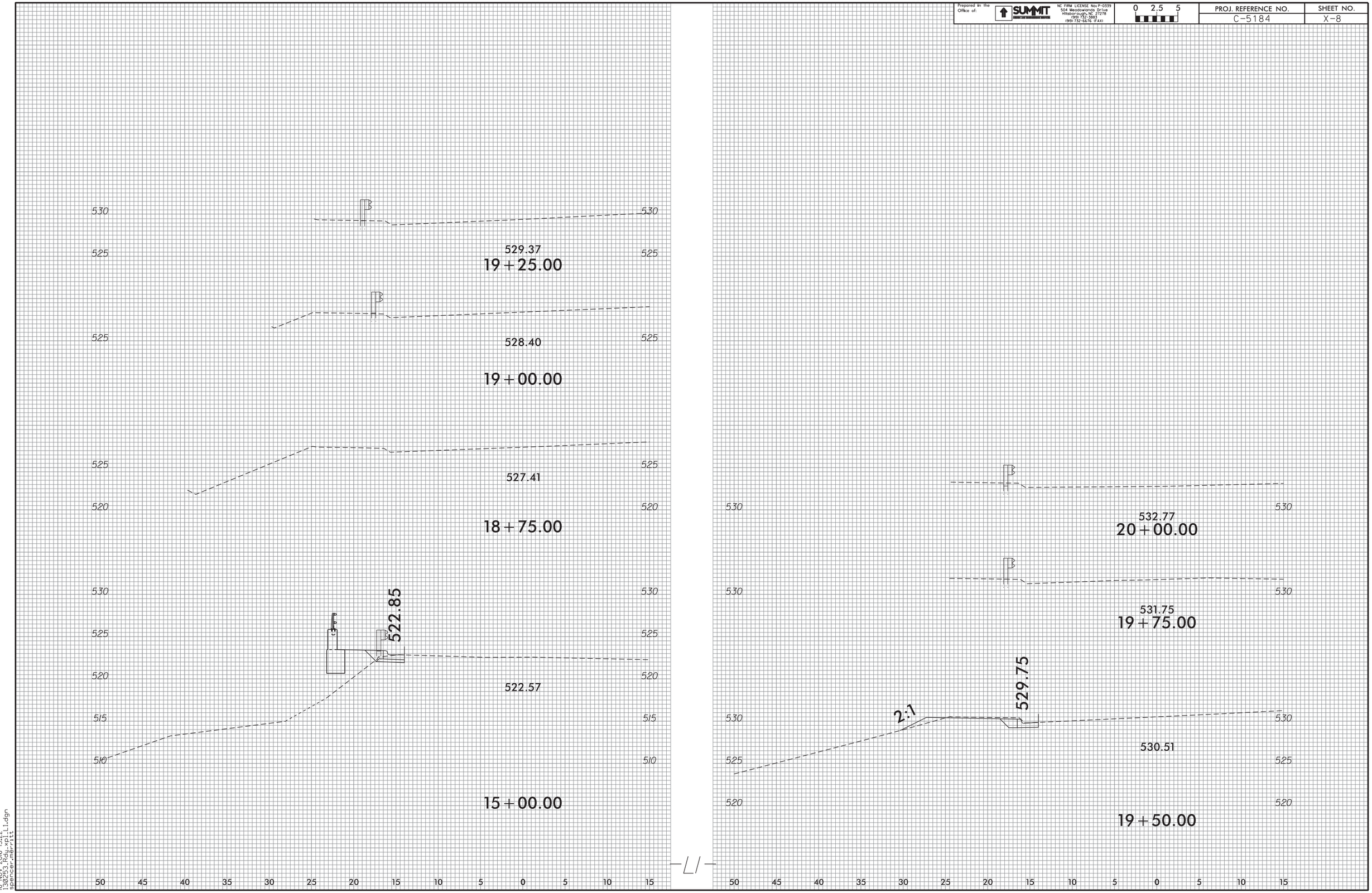

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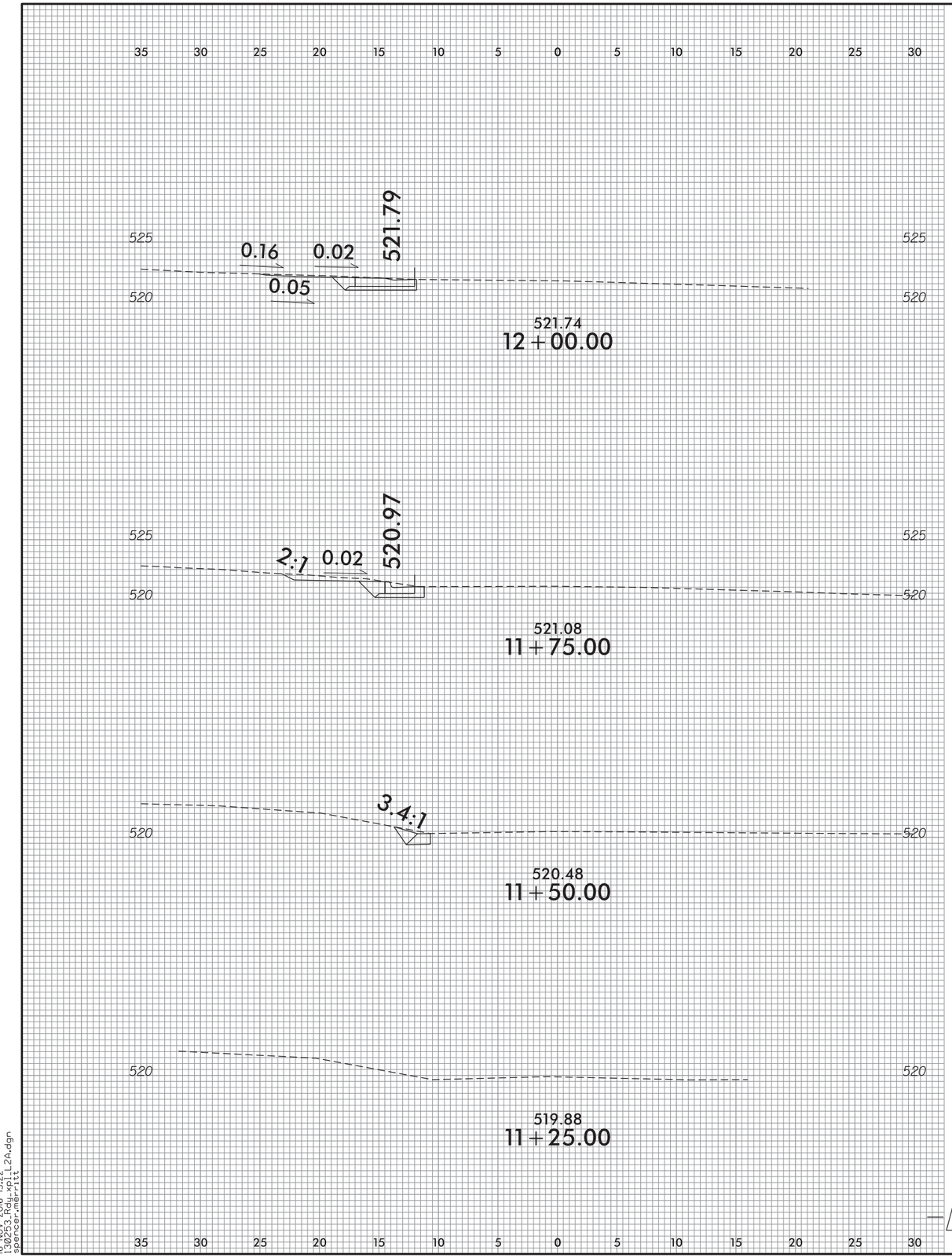

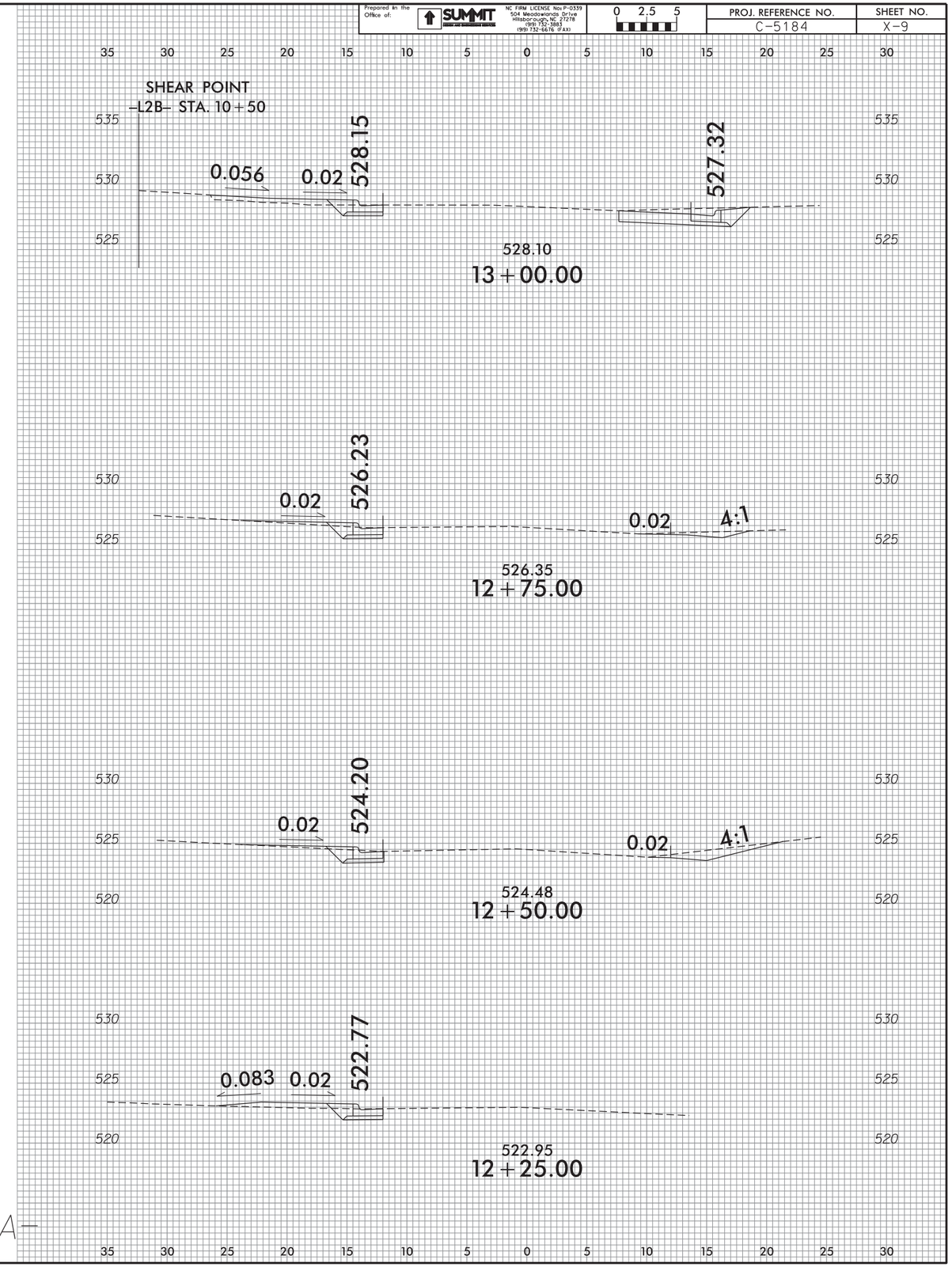

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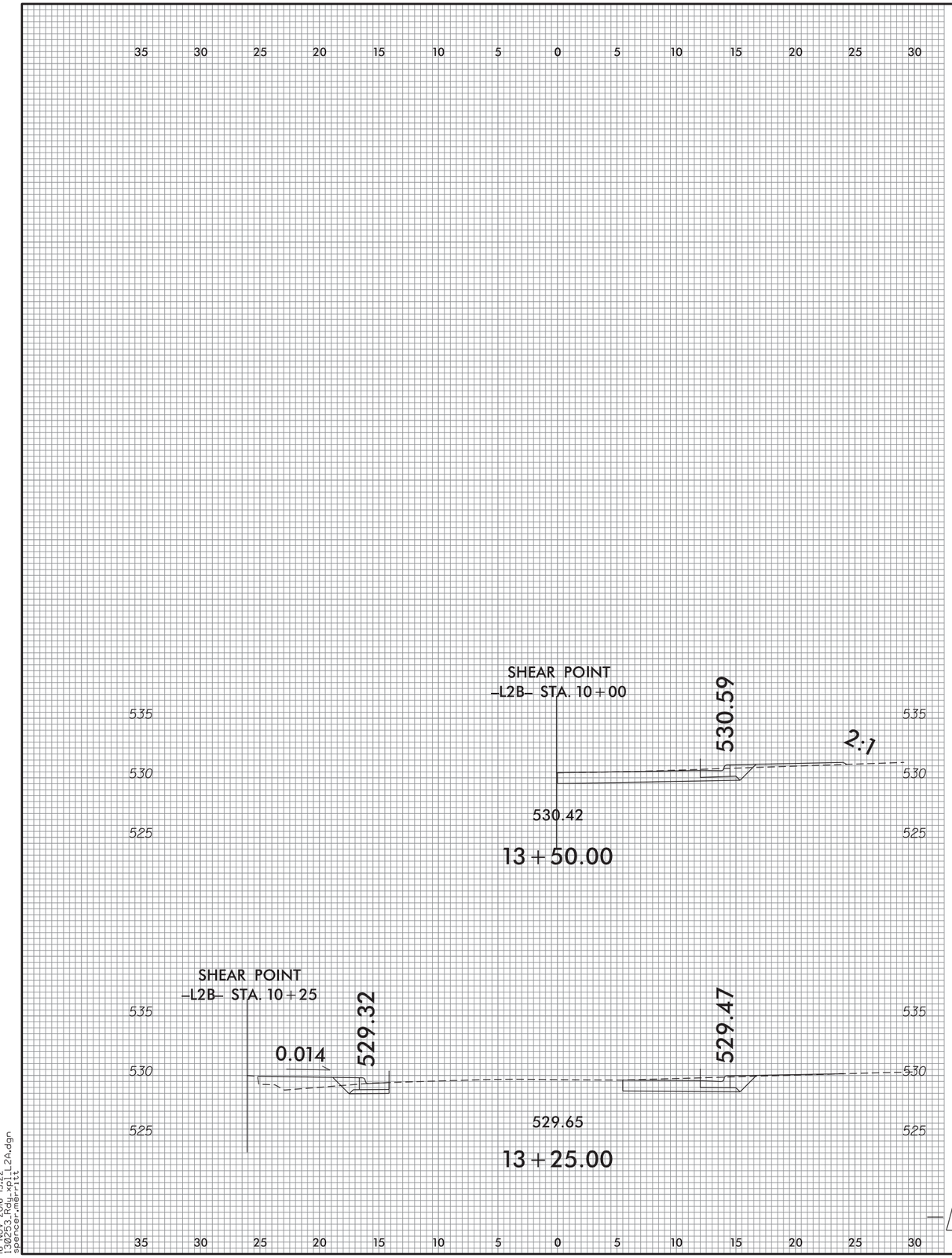

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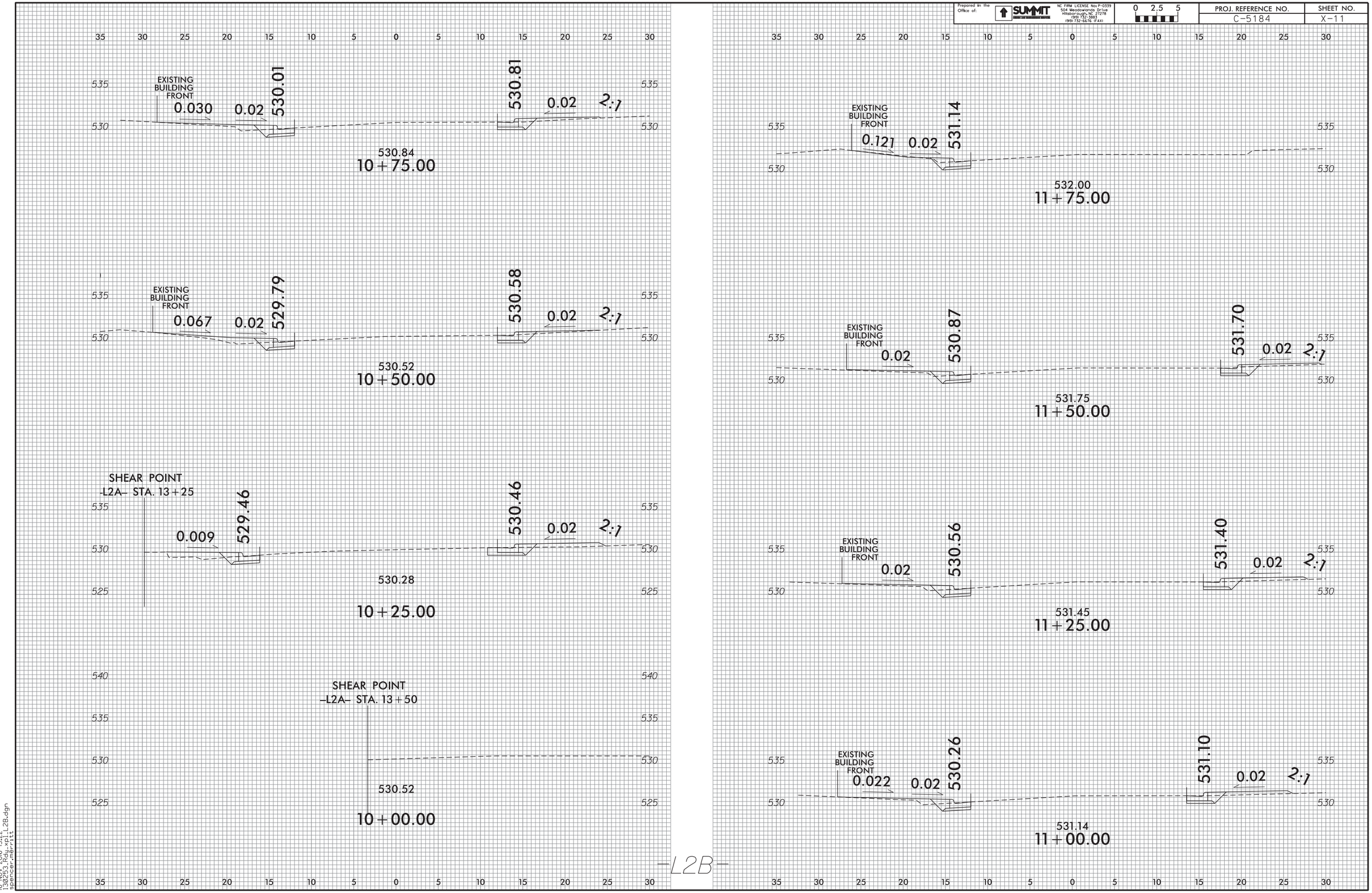

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PROJ. REFERENCE NO.	SHEET NO.
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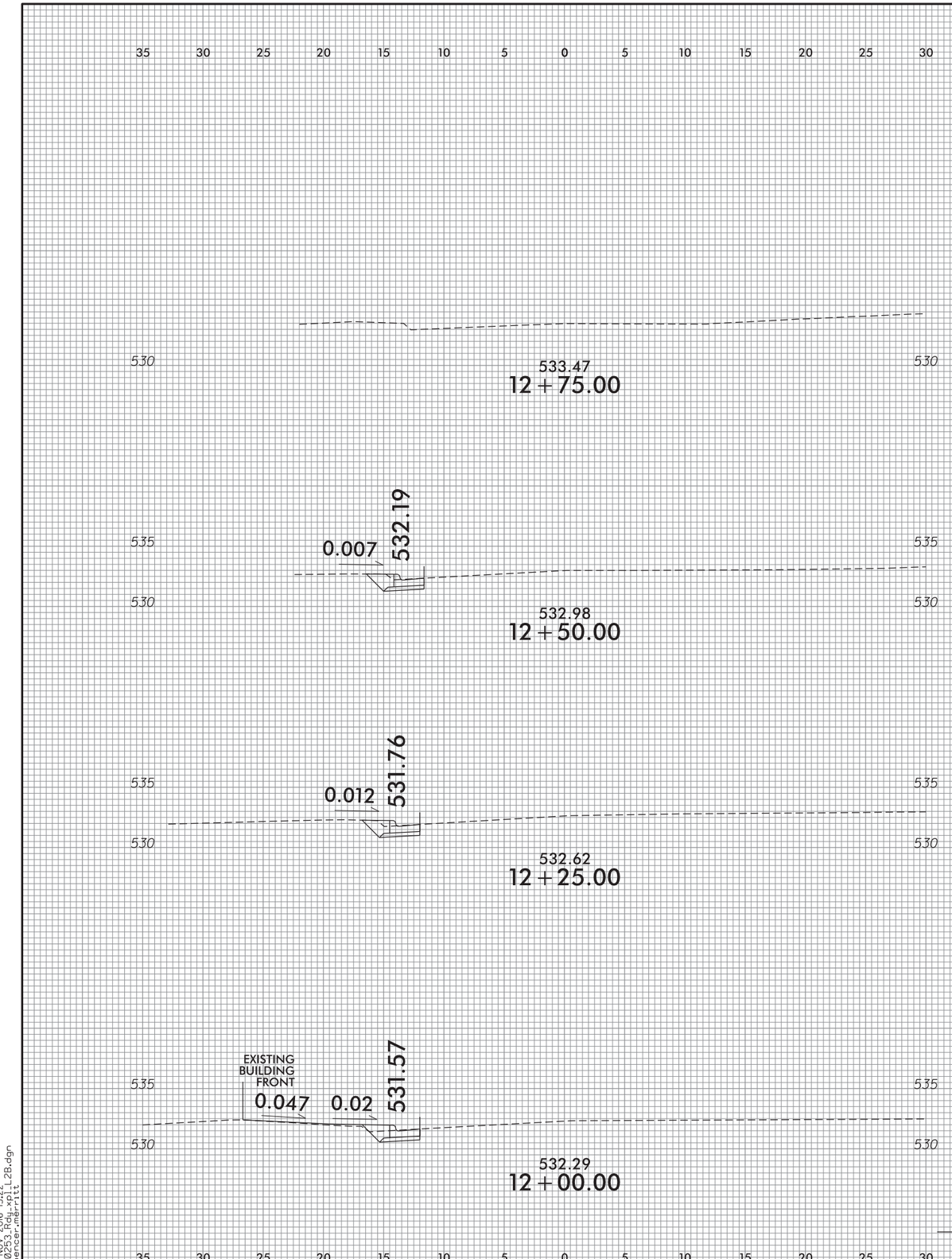

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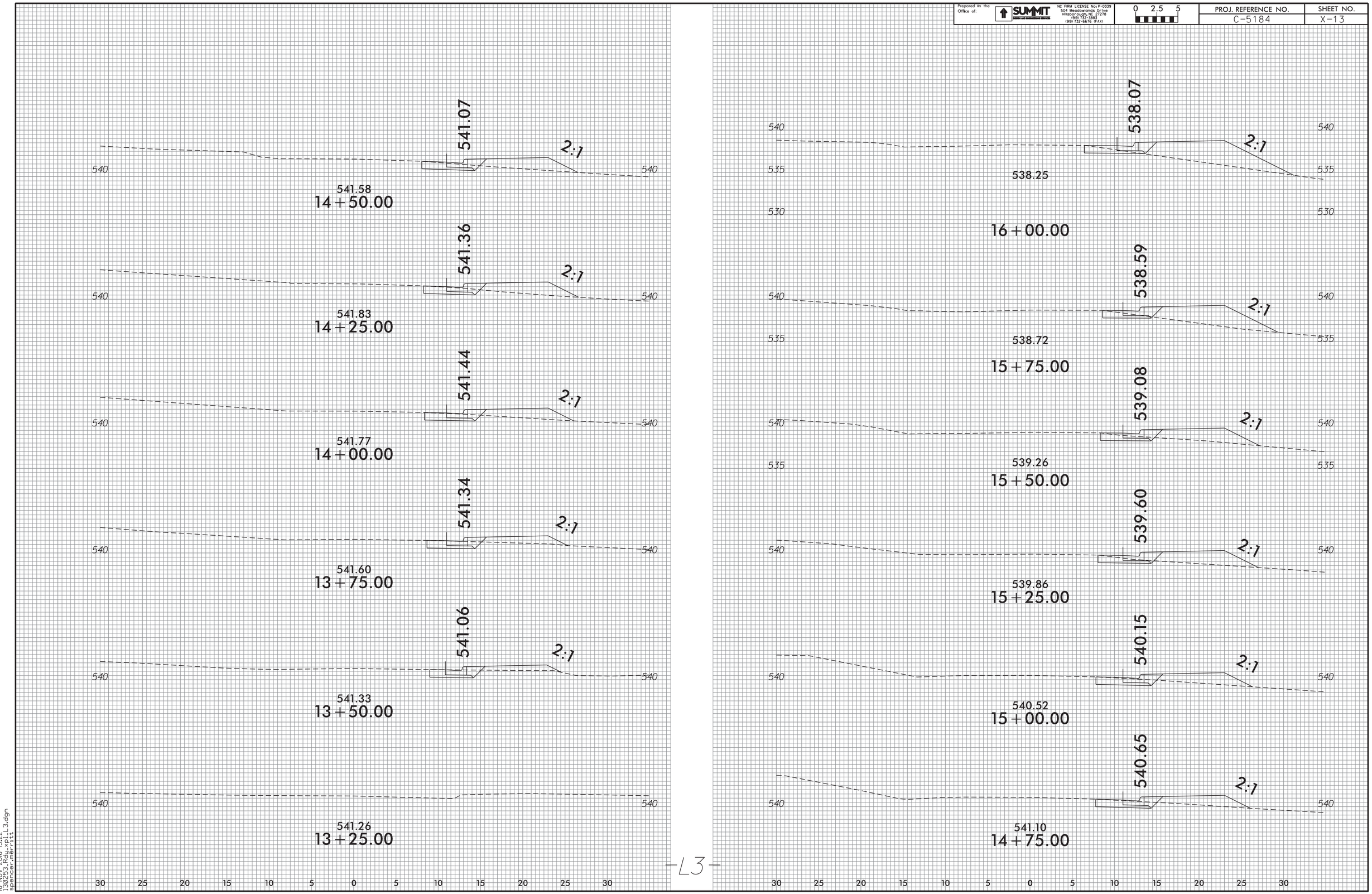

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PROJ. REFERENCE NO.	SHEET NO.
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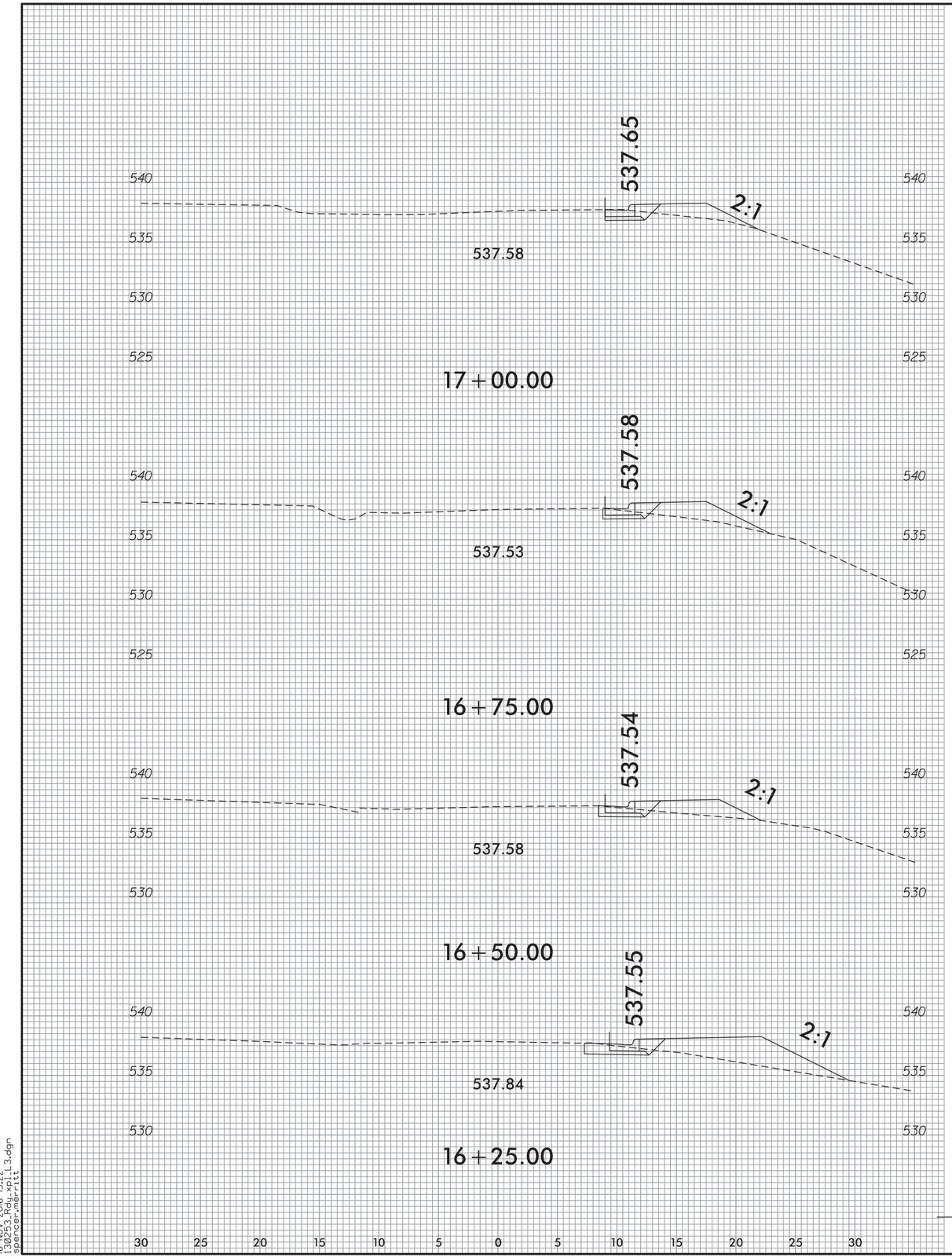

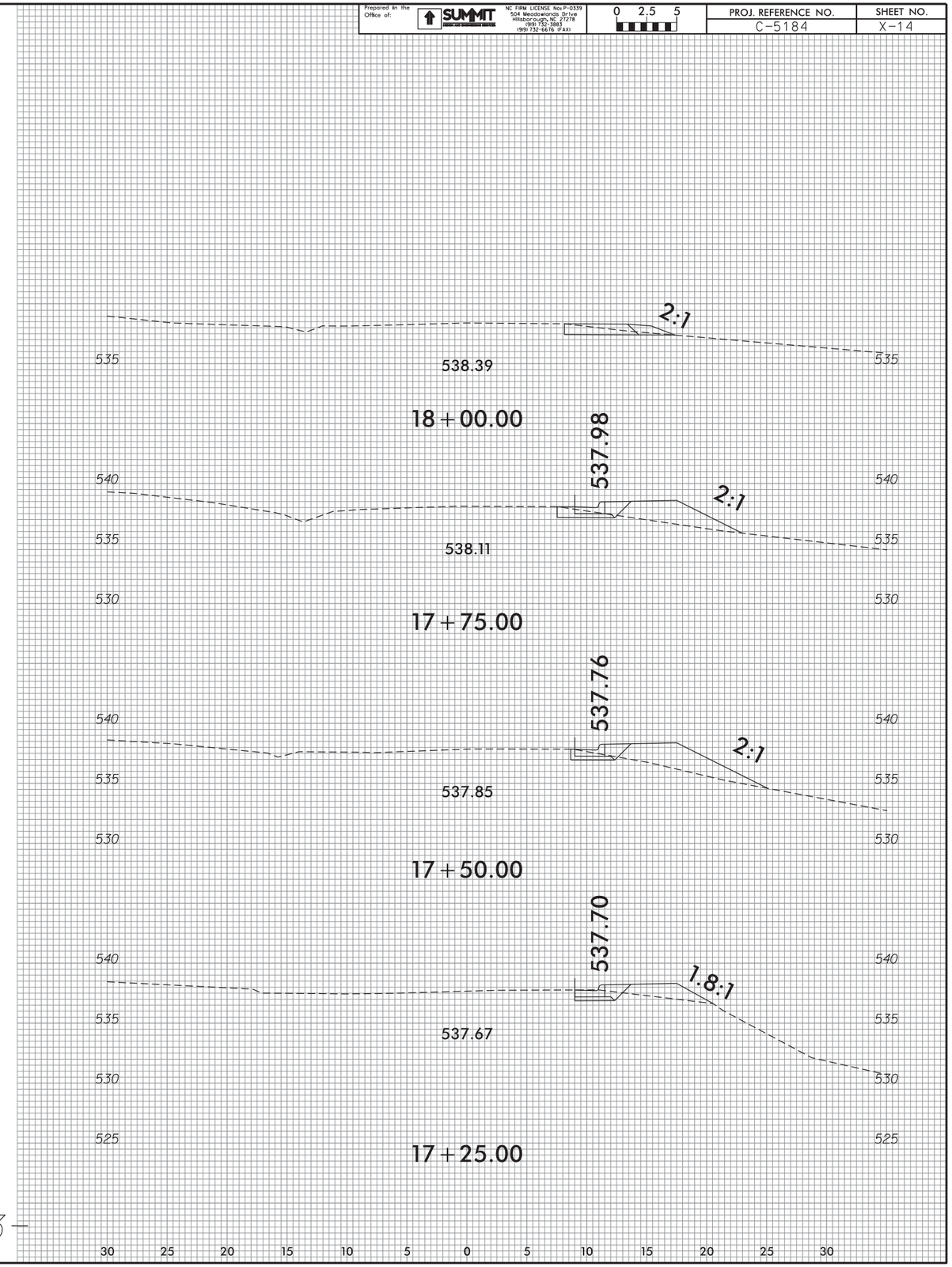

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