"Excited to see this project happening. I will be able to safely switch to 100% bike commuting when the bikeway is complete."

- Comment on Project Website

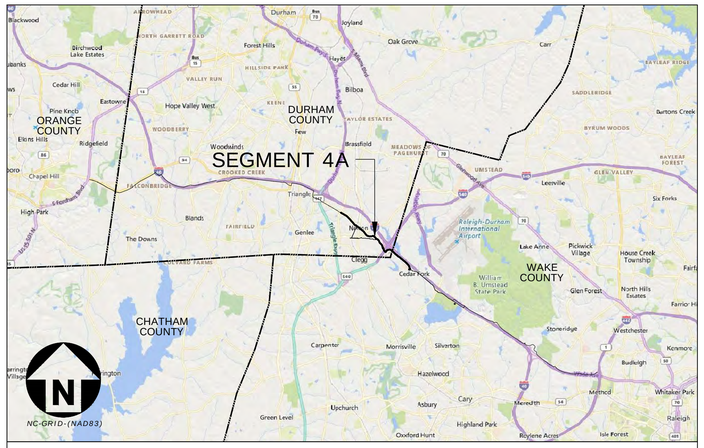


APPENDIX B

CONCEPT PLANS

DURHAM & WAKE COUNTY
NORTH CAROLINA

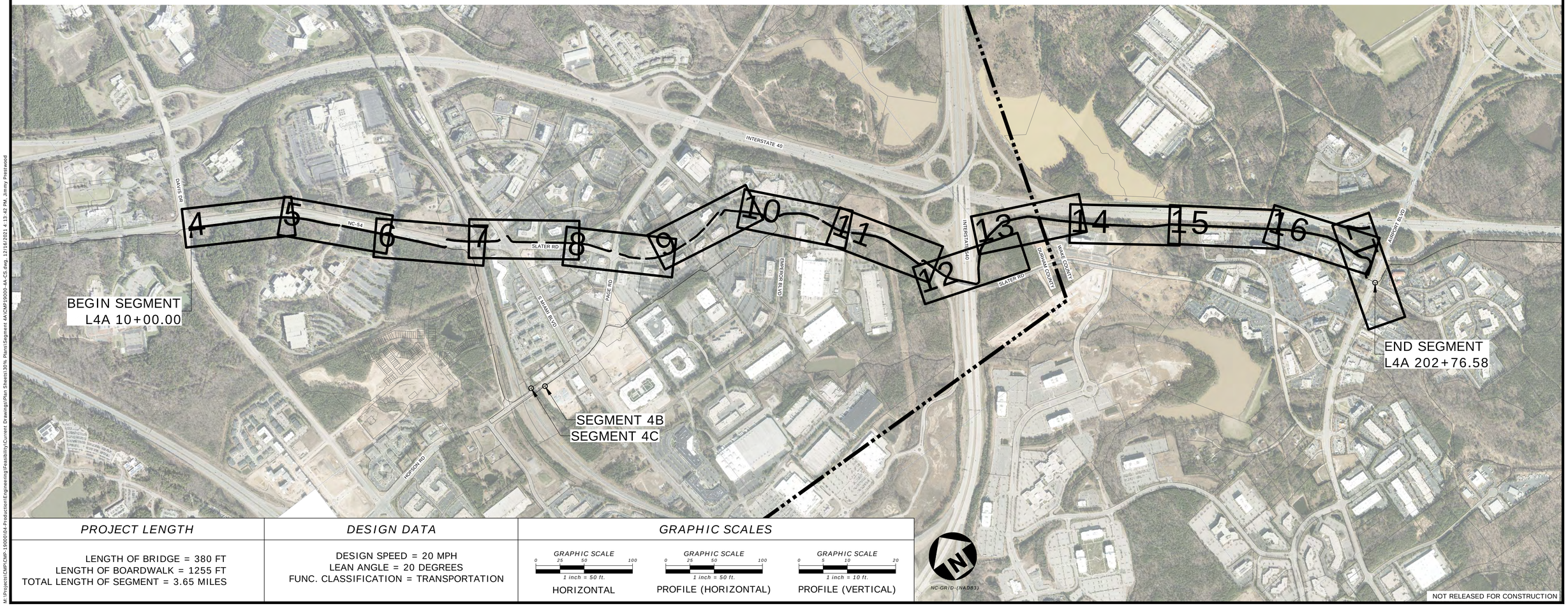
TRIANGLE BIKEWAY STUDY
SEGMENT 4A - DAVIS DR TO AIRPORT BLVD



VICINITY MAP

INDEX OF SHEETS

SHEET NO.	SHEET TITLE
1	COVER SHEET
1B	CONVENTIONAL SYMBOLS
4 THRU 17	PLAN & PROFILE SHEETS



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PROJECT LENGTH	*DESIGN DATA*	*GRAPHIC SCALES*
LENGTH OF BRIDGE = 380 FT LENGTH OF BOARDWALK = 1255 FT TOTAL LENGTH OF SEGMENT = 3.65 MILES	DESIGN SPEED = 20 MPH LEAN ANGLE = 20 DEGREES FUNC. CLASSIFICATION = TRANSPORTATION	GRAPHIC SCALE 0 25 50 100 — 1 inch = 50 ft. — HORIZONTAL GRAPHIC SCALE 0 25 50 100 — 1 inch = 50 ft. — PROFILE (HORIZONTAL) GRAPHIC SCALE 0 5 10 20 — 1 inch = 10 ft. — PROFILE (VERTICAL)

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TRIANGLE BIKEWAY STUDY
SEGMENT 4A
DAVIS DR TO AIRPORT BLVD

TRIANGLE BIKEWAY

PLAN INFORMATION

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SCALE	NTS
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STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (TU/TL)
- 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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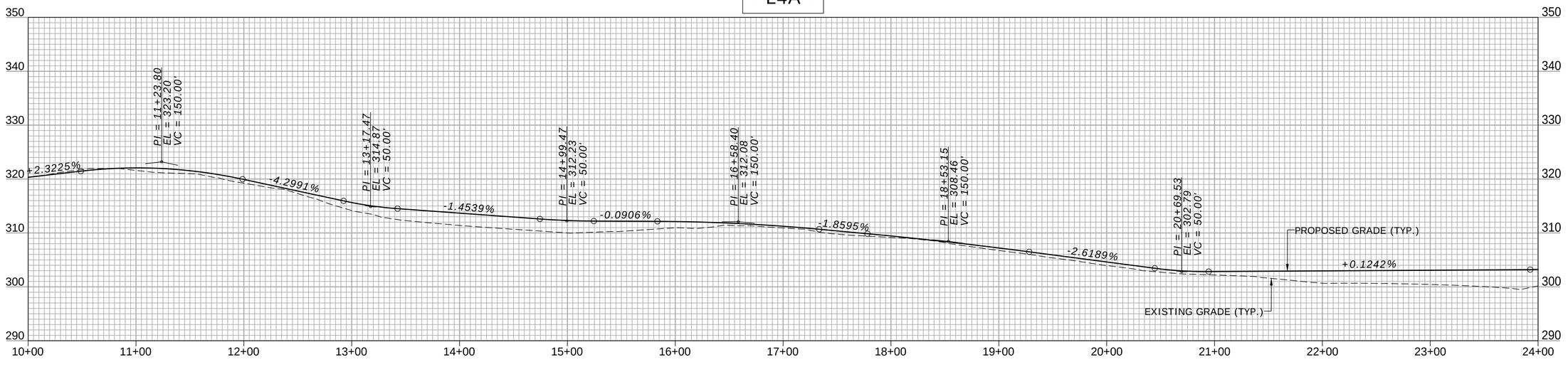
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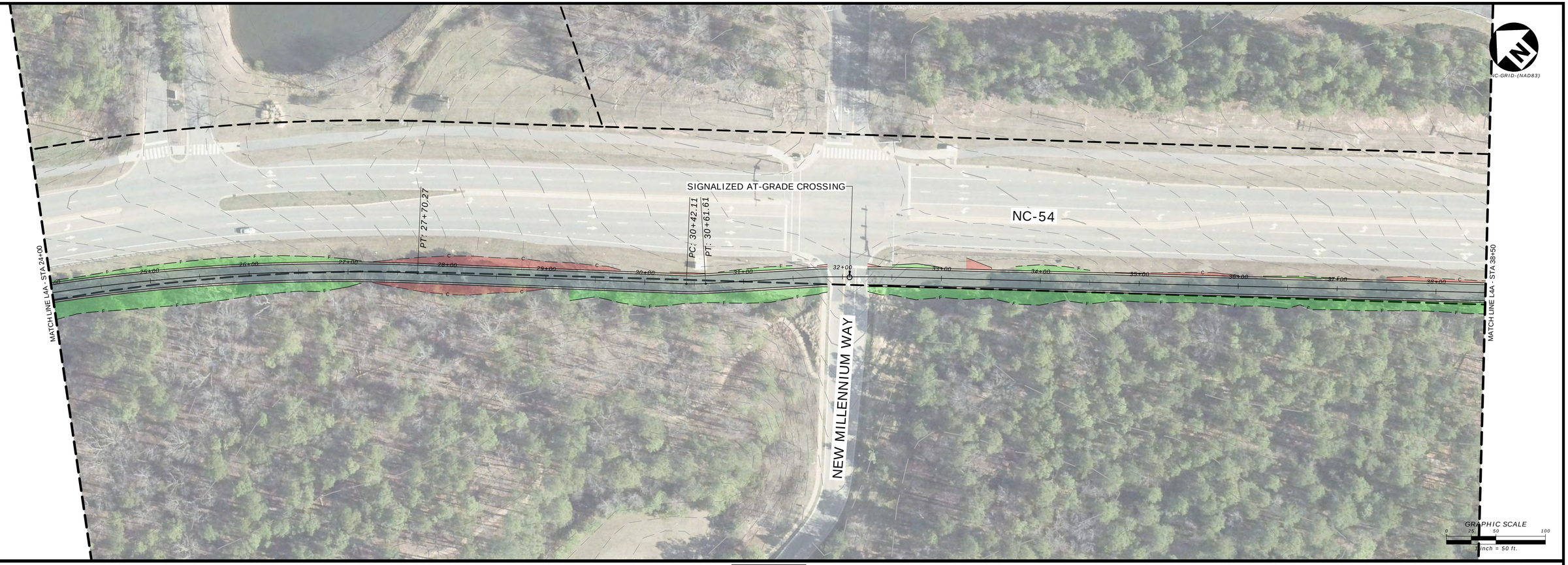
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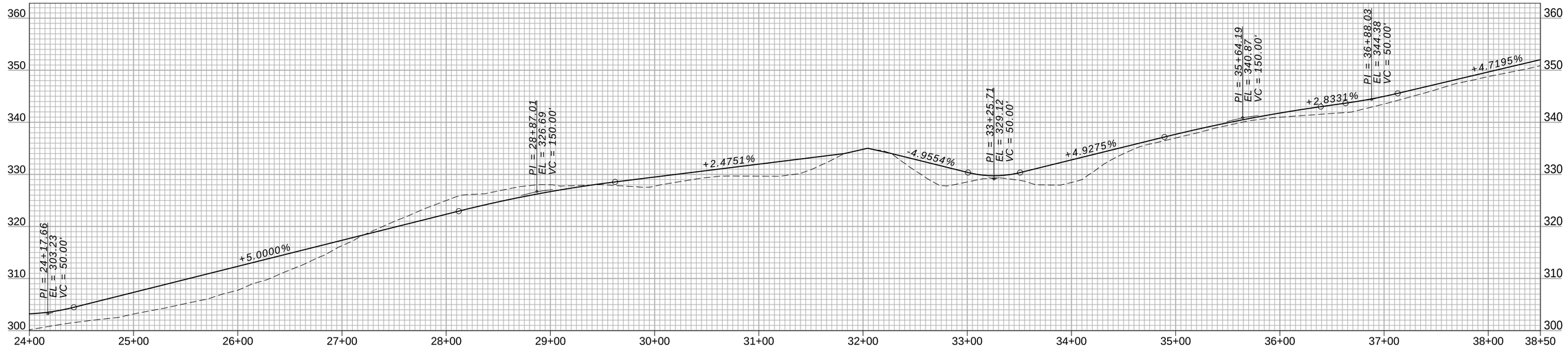
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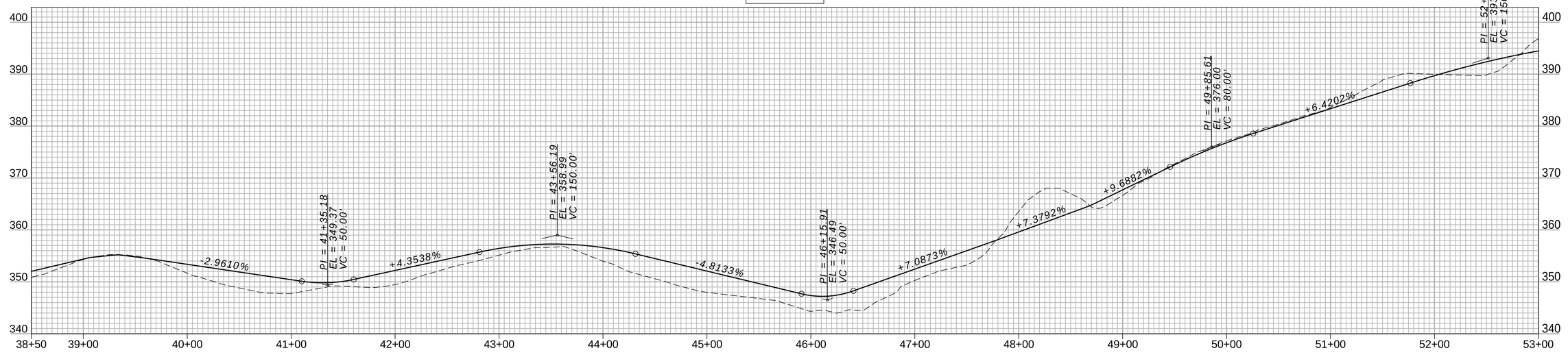
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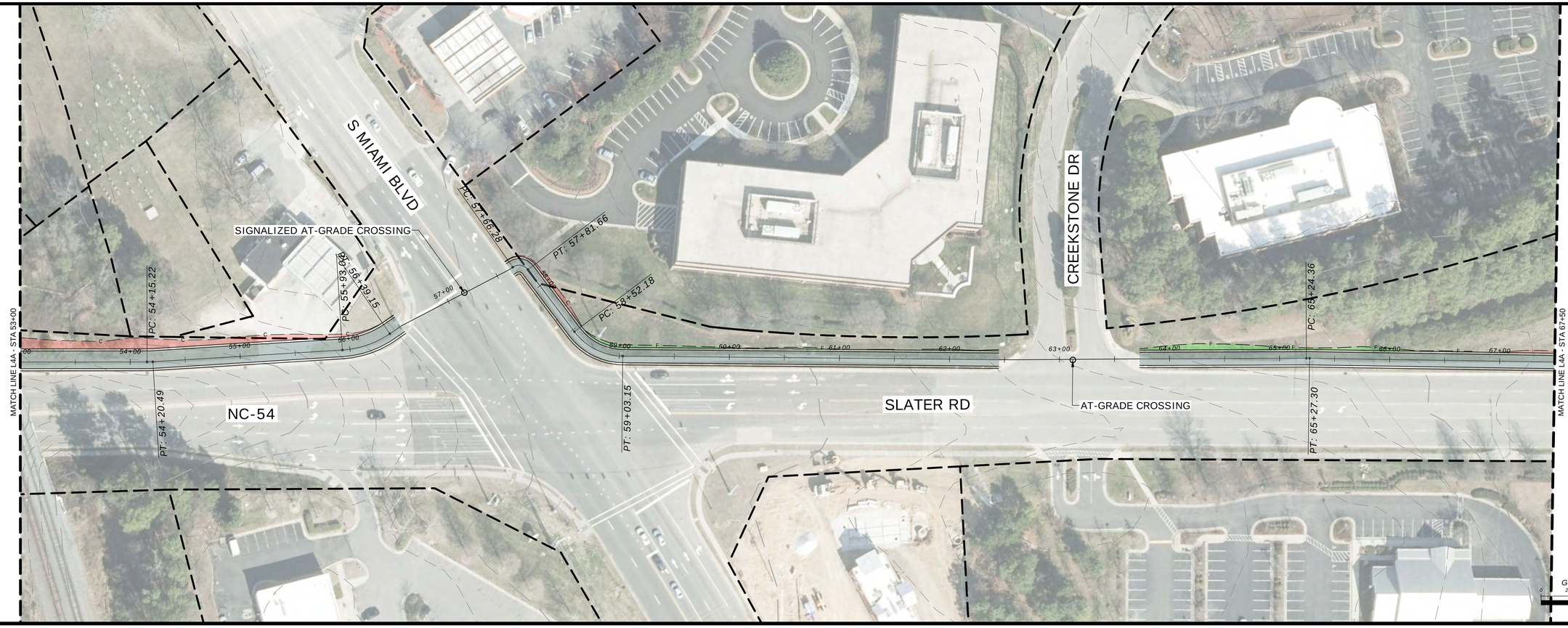
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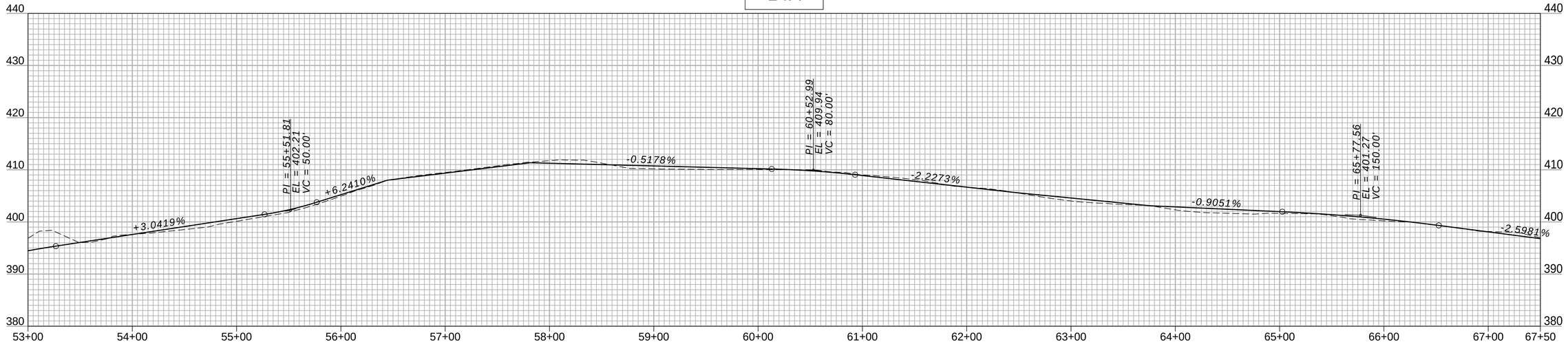
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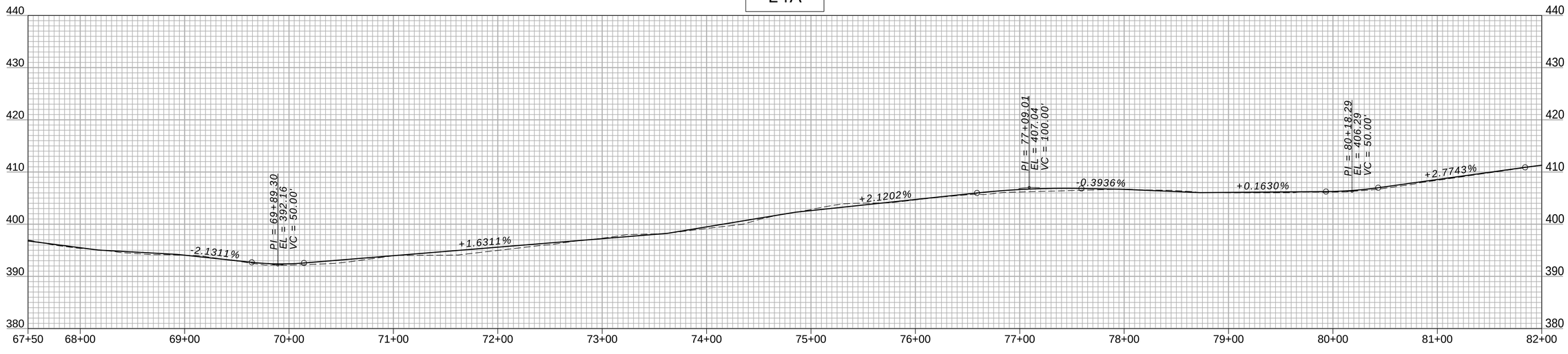
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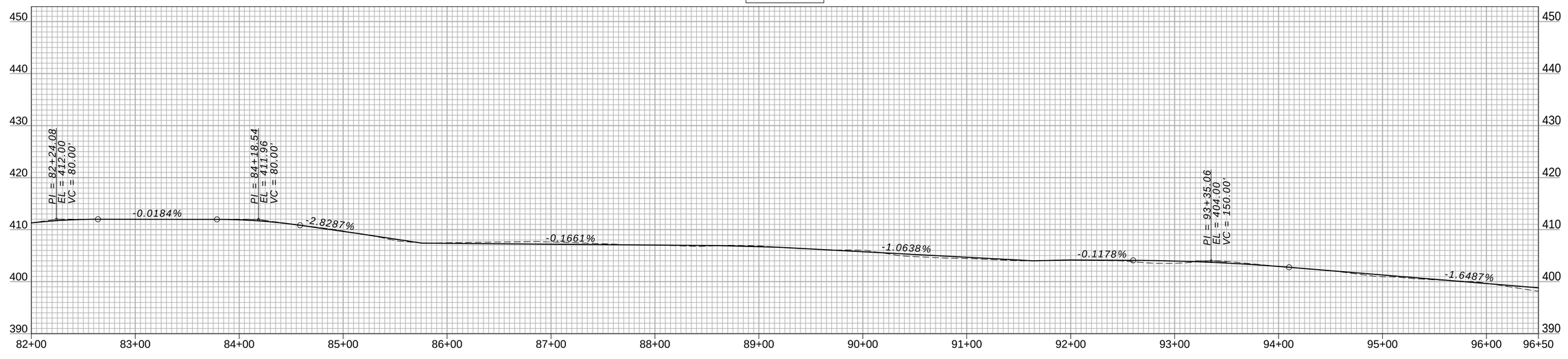
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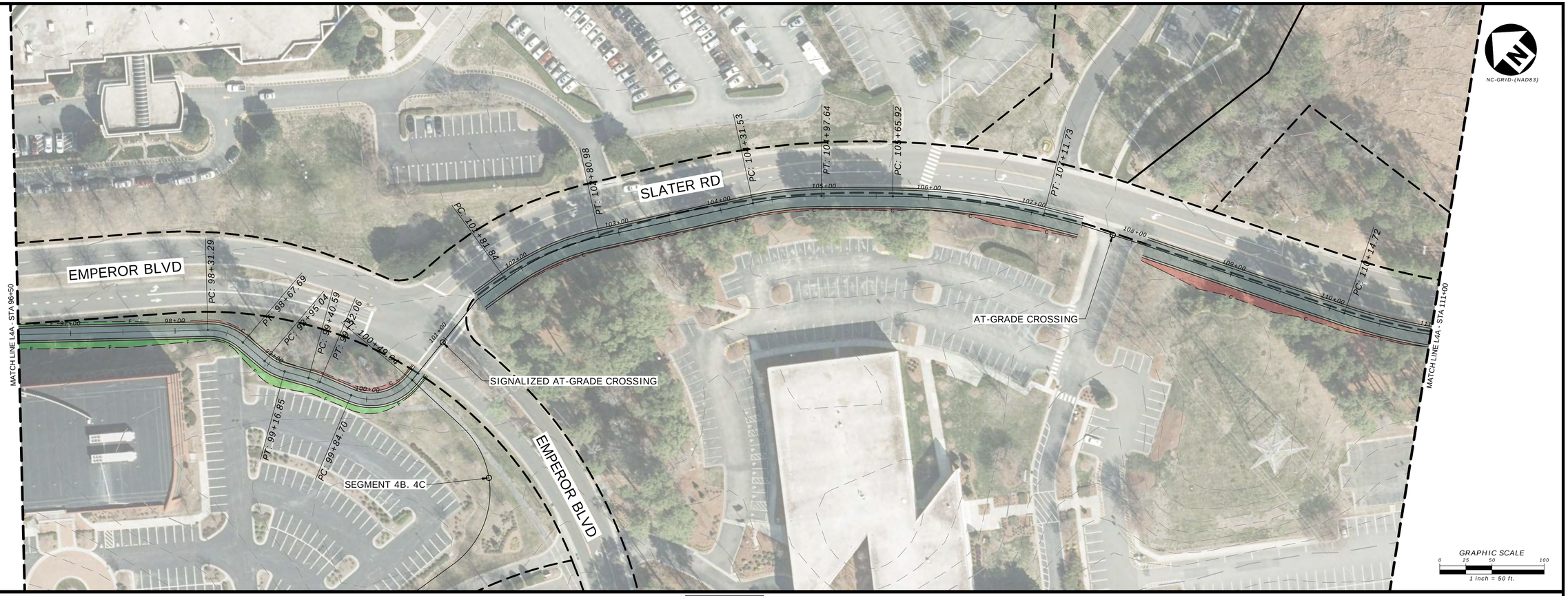
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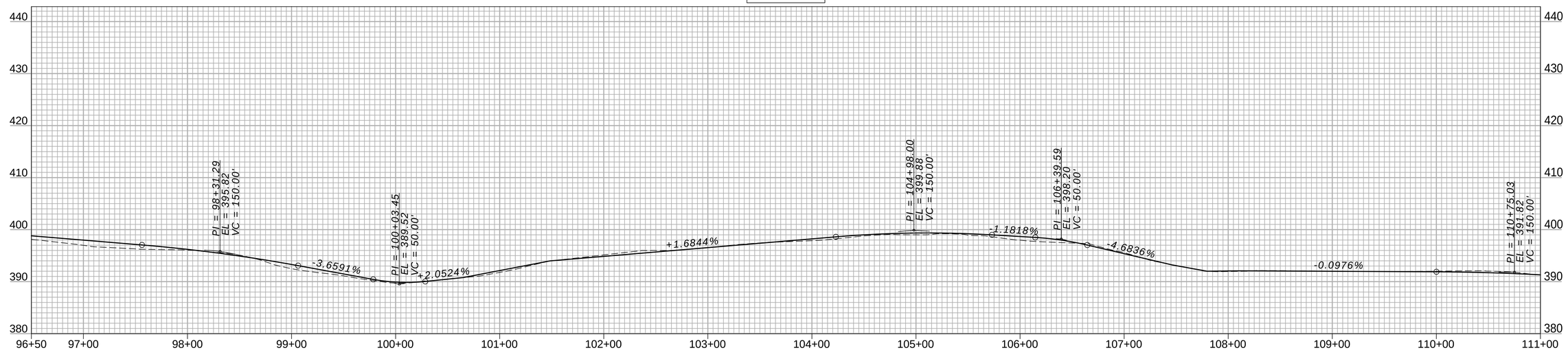
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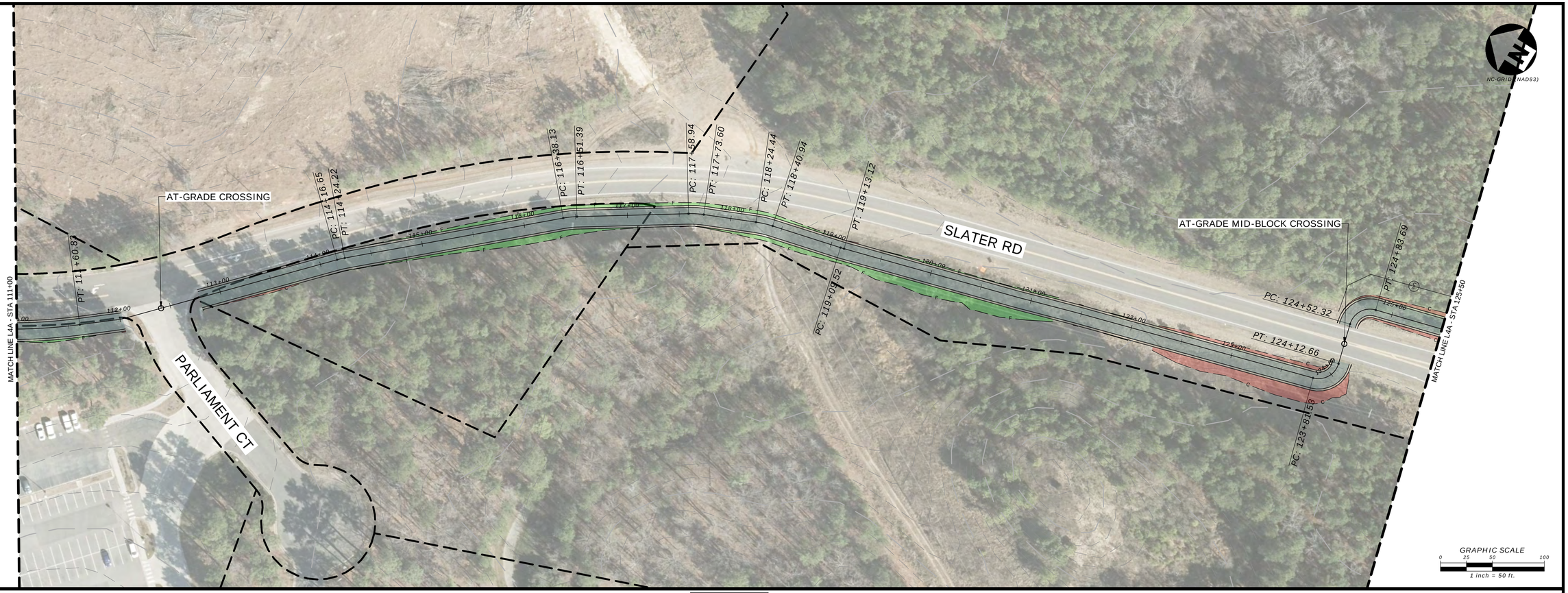
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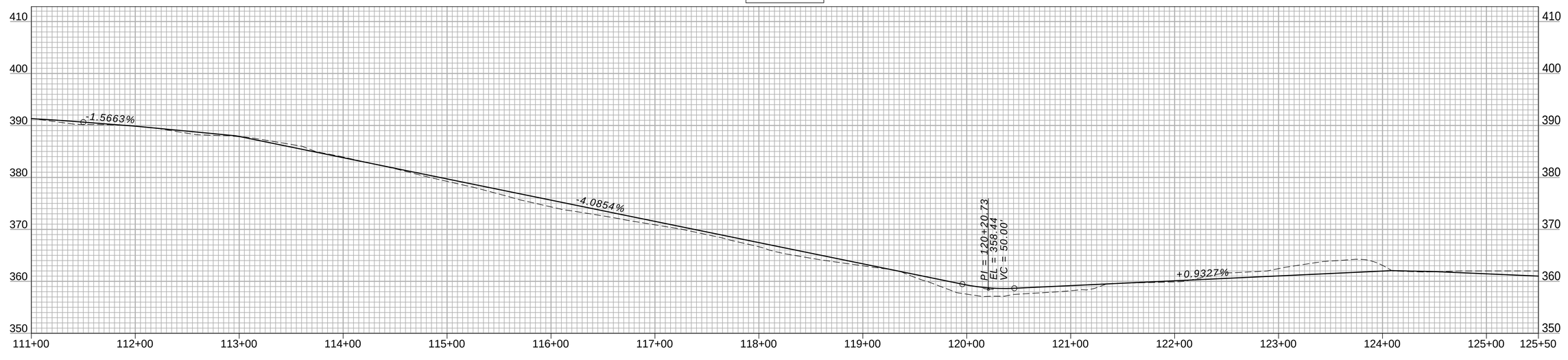
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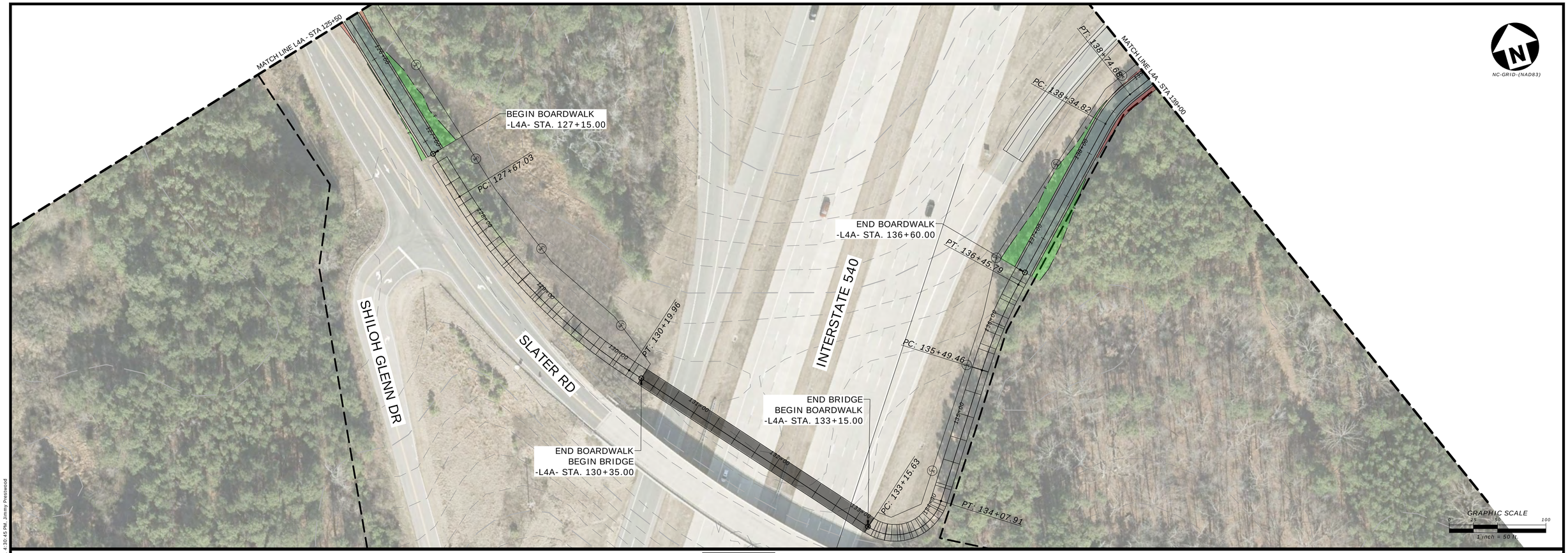
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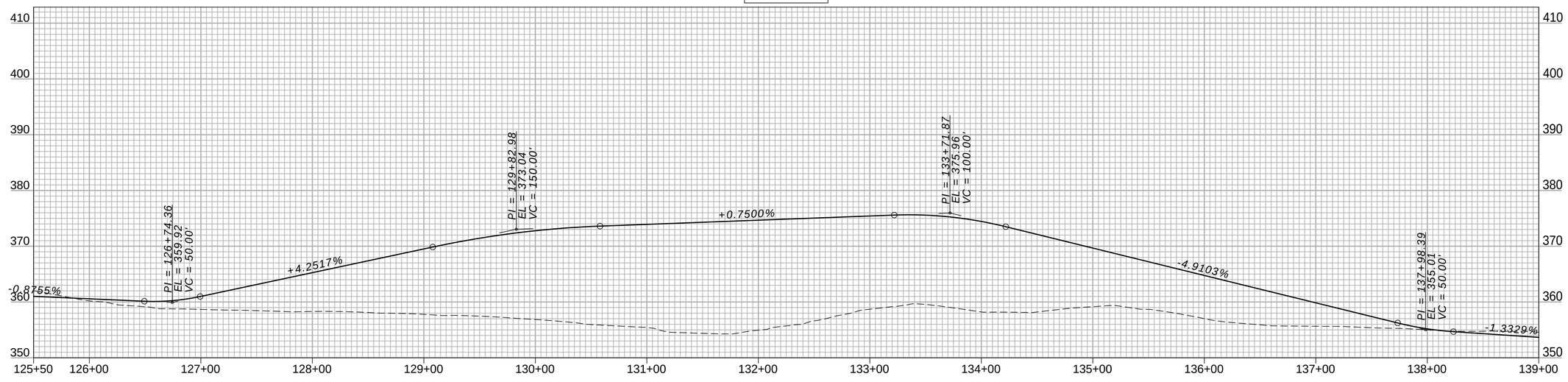
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NO. DATE

GREENWAY ENGINEER

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HYDRAULICS ENGINEER

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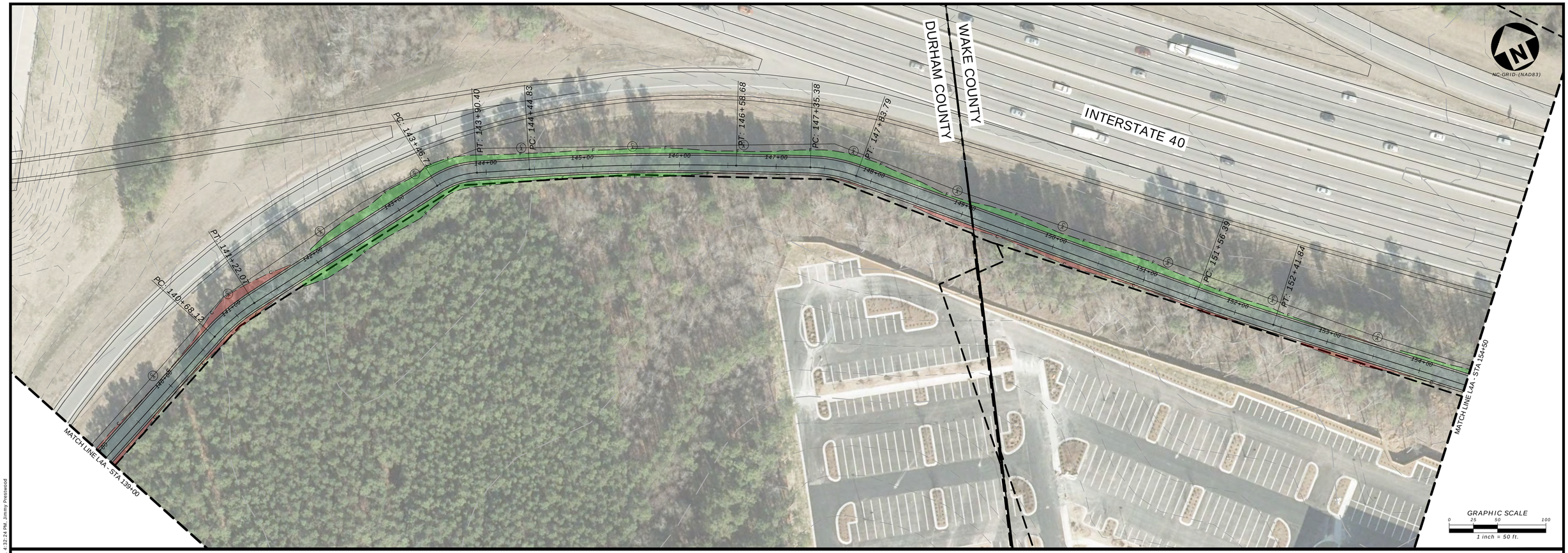
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SEGMENT 4A
DAVIS DR TO AIRPORT BLVD

TRIANGLE BIKEWAY

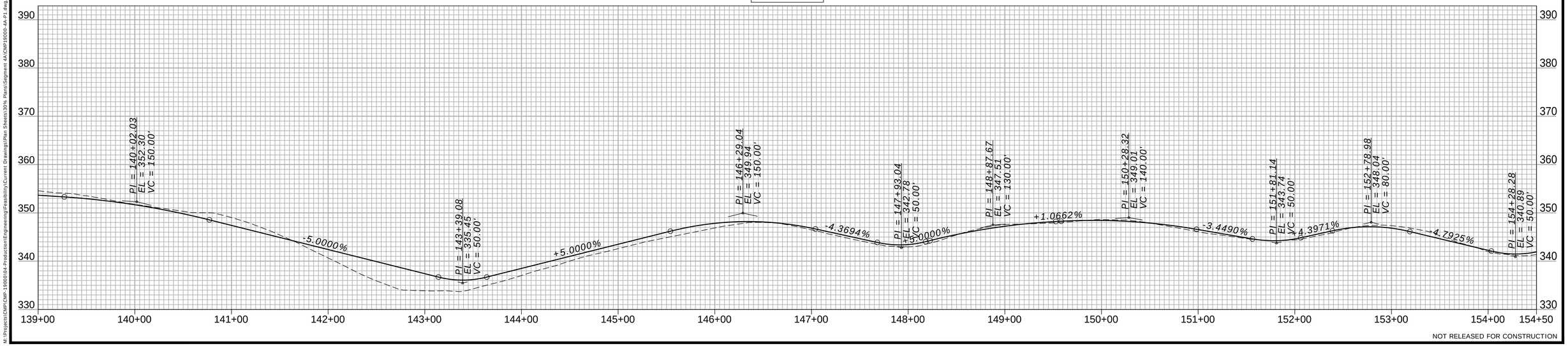
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DATE	DECEMBER 2021

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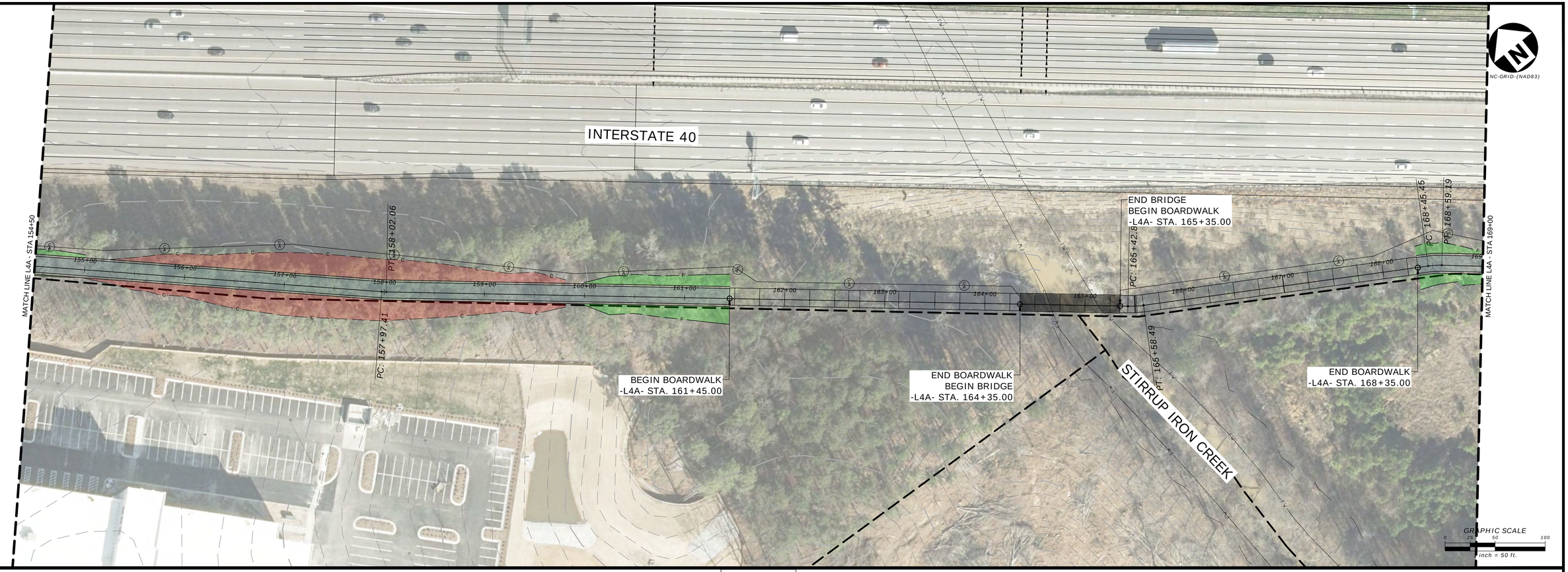
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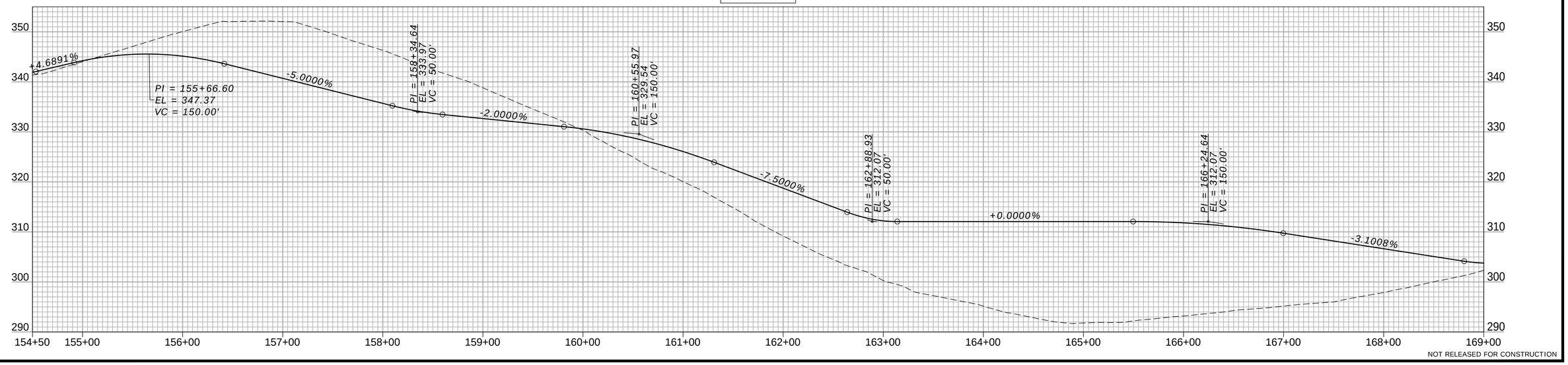
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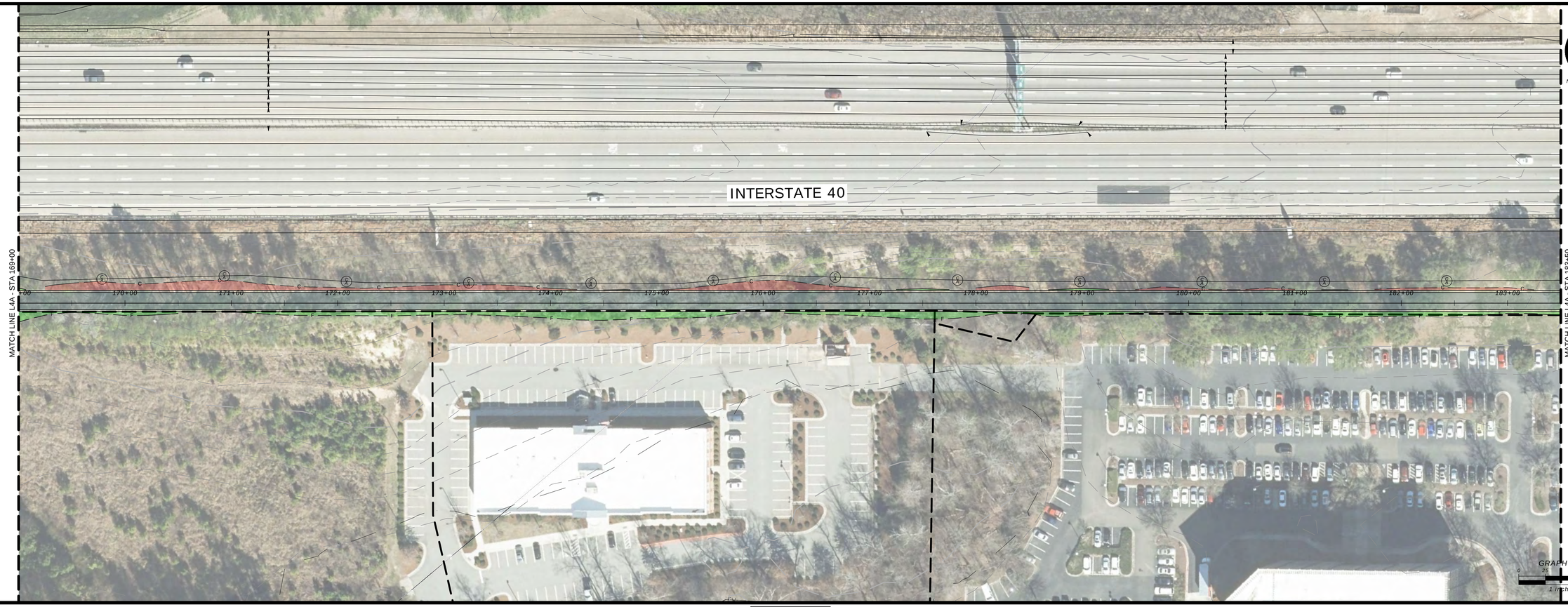
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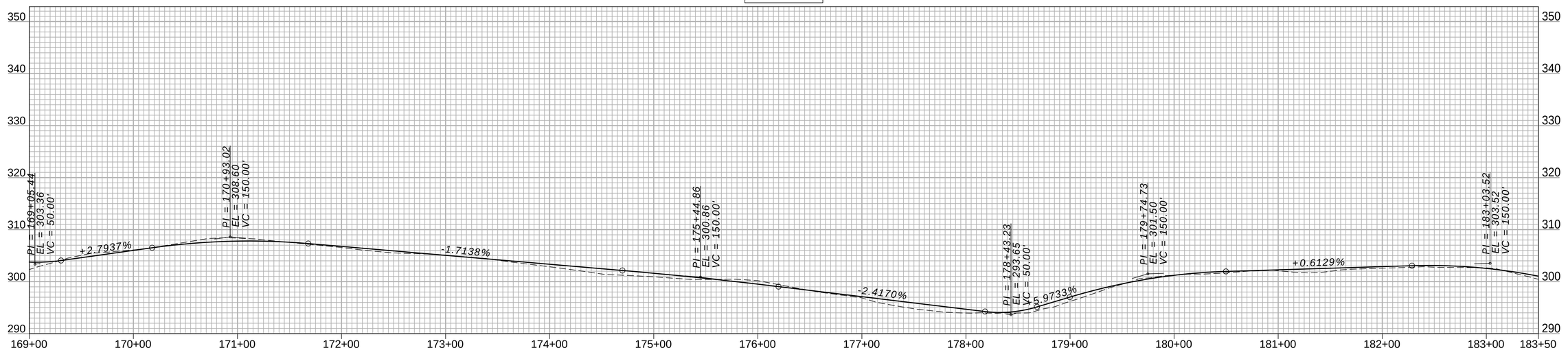
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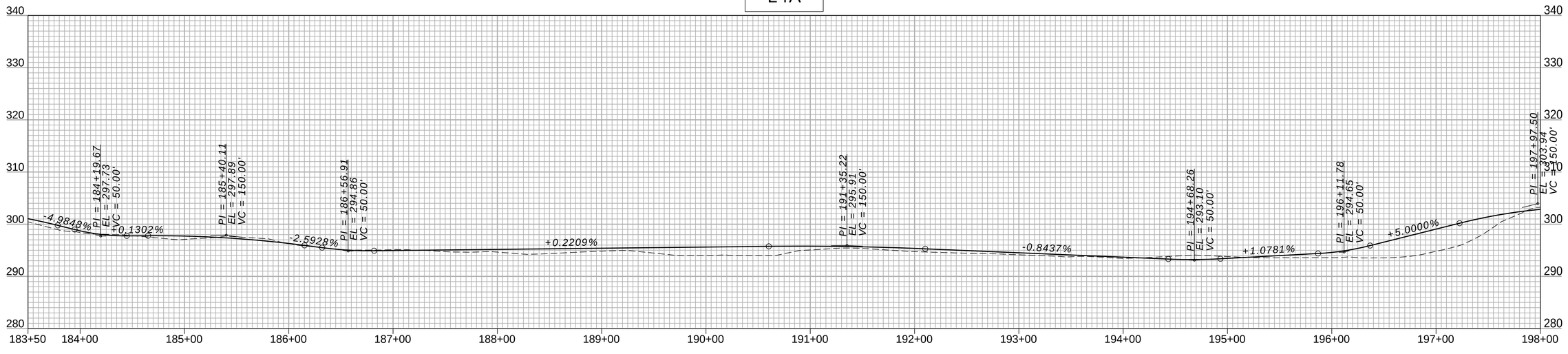
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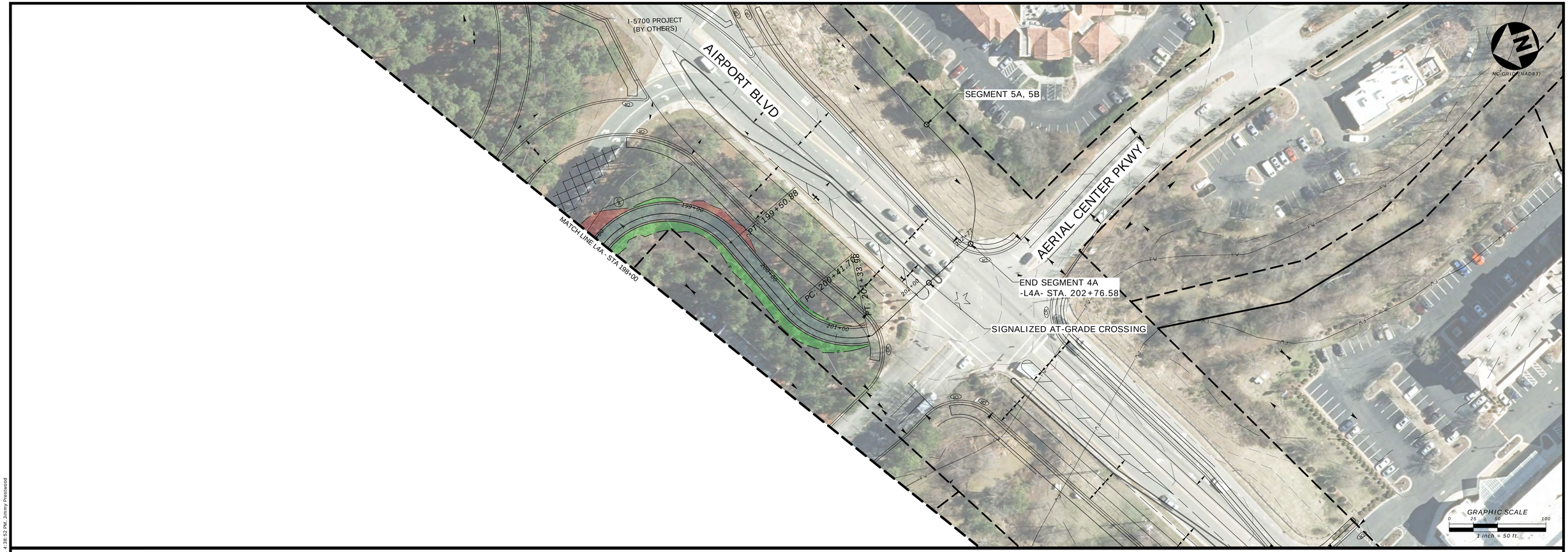
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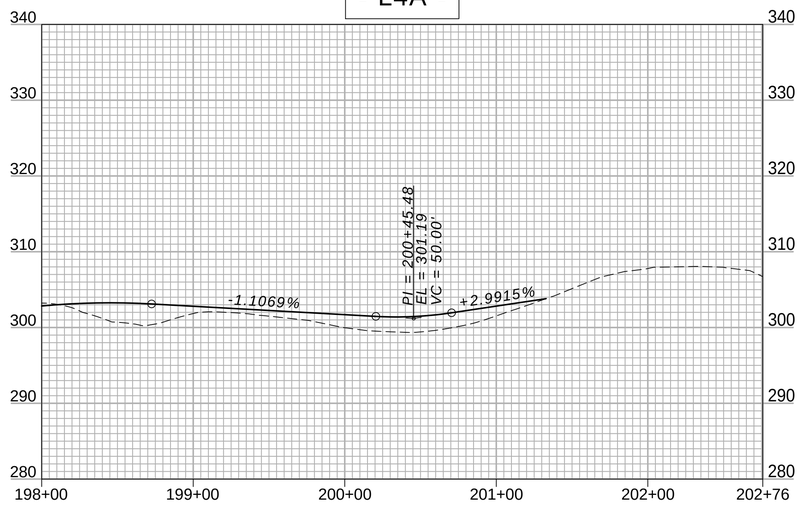
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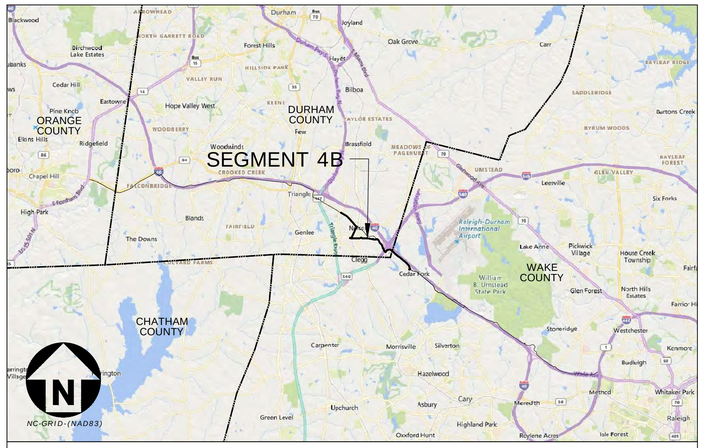
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DURHAM & WAKE COUNTY
NORTH CAROLINA

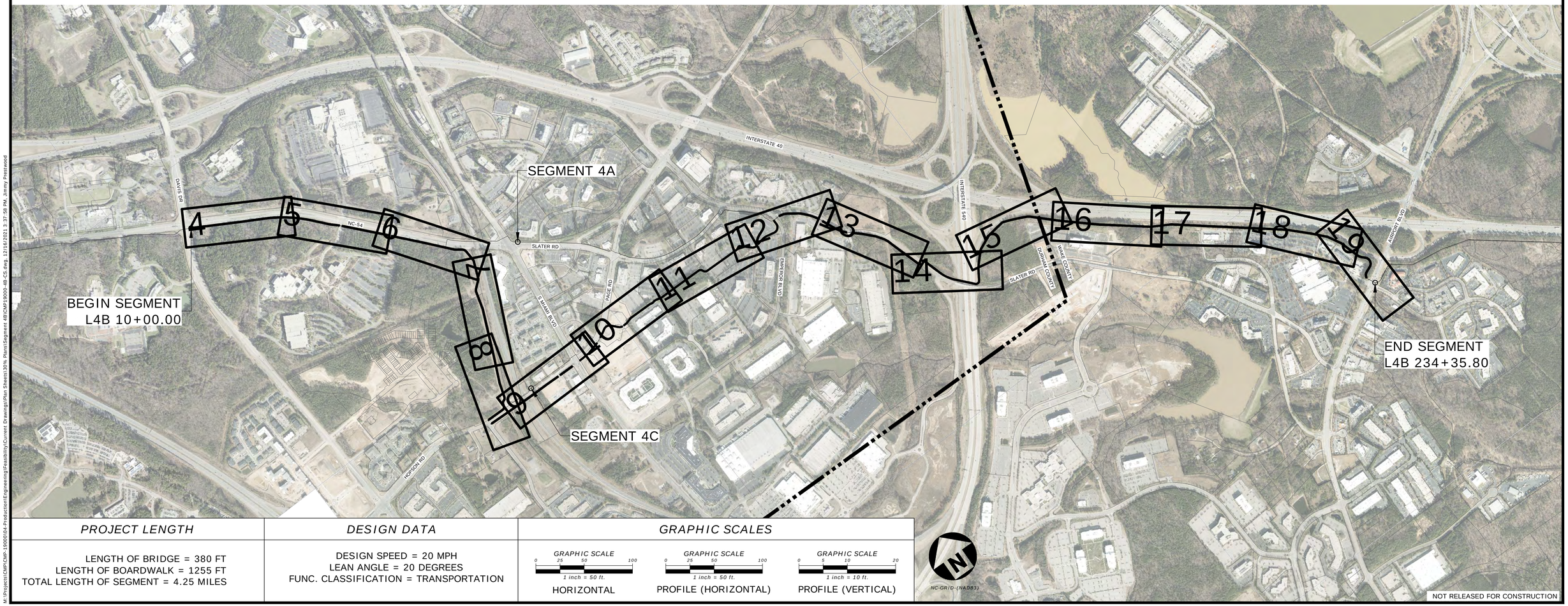
TRIANGLE BIKEWAY STUDY
SEGMENT 4B - DAVIS DR TO AIRPORT BLVD



VICINITY MAP

INDEX OF SHEETS

SHEET NO.	SHEET TITLE
1	COVER SHEET
1B	CONVENTIONAL SYMBOLS
4 THRU 19	PLAN & PROFILE SHEETS



PROJECT LENGTH	*DESIGN DATA*	*GRAPHIC SCALES*
LENGTH OF BRIDGE = 380 FT LENGTH OF BOARDWALK = 1255 FT TOTAL LENGTH OF SEGMENT = 4.25 MILES	DESIGN SPEED = 20 MPH LEAN ANGLE = 20 DEGREES FUNC. CLASSIFICATION = TRANSPORTATION	GRAPHIC SCALE 0 25 50 100 — 1 inch = 50 ft. HORIZONTAL GRAPHIC SCALE 0 25 50 100 — 1 inch = 50 ft. PROFILE (HORIZONTAL) GRAPHIC SCALE 0 5 10 20 — 1 inch = 10 ft. PROFILE (VERTICAL)

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TRIANGLE BIKEWAY

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STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (TUTL)
- 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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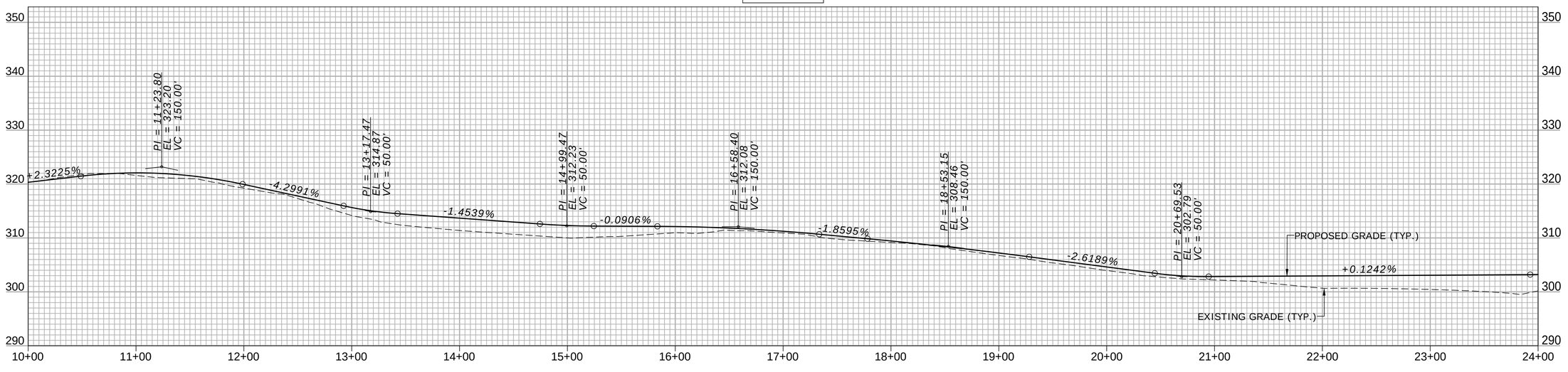
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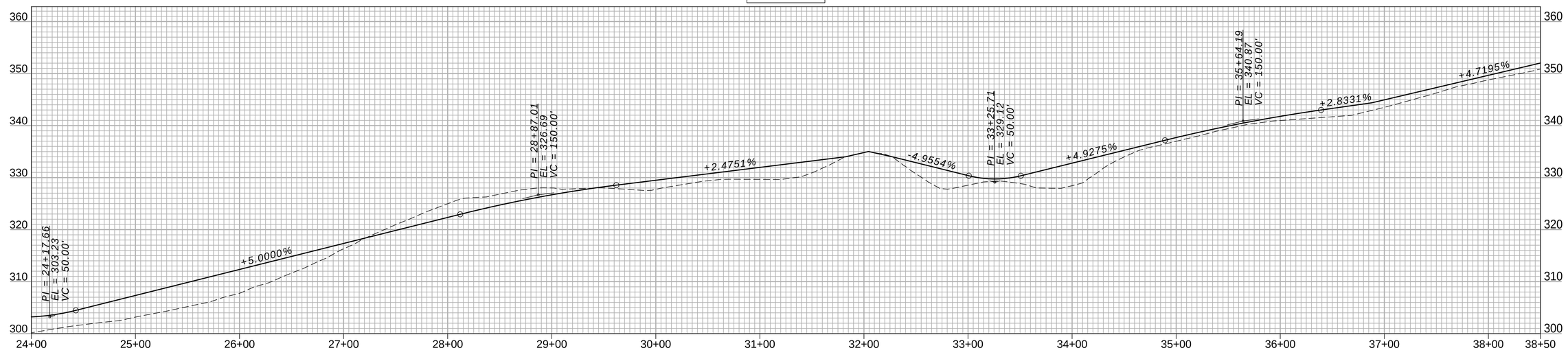
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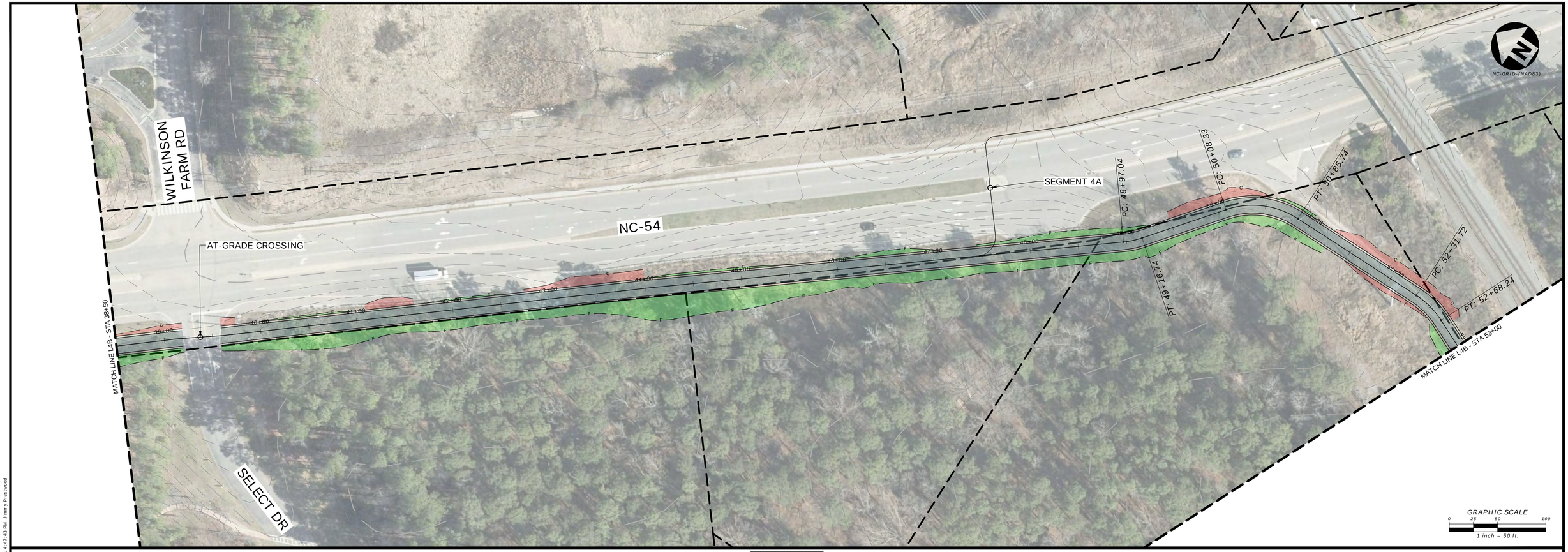
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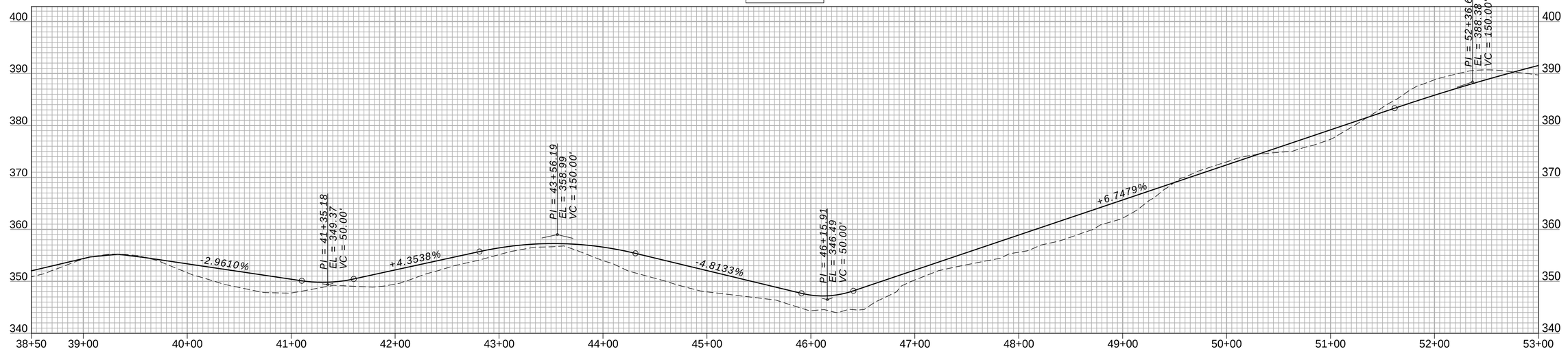
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TRIANGLE BIKEWAY STUDY

SEGMENT 4B

DAVIS DR TO AIRPORT BLVD

TRIANGLE BIKEWAY

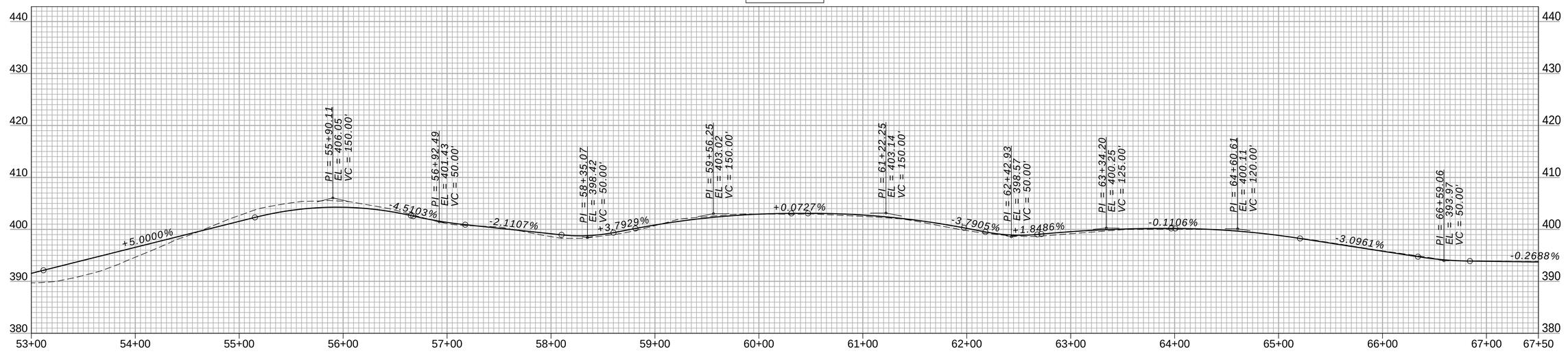
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HYDRAULICS ENGINEER
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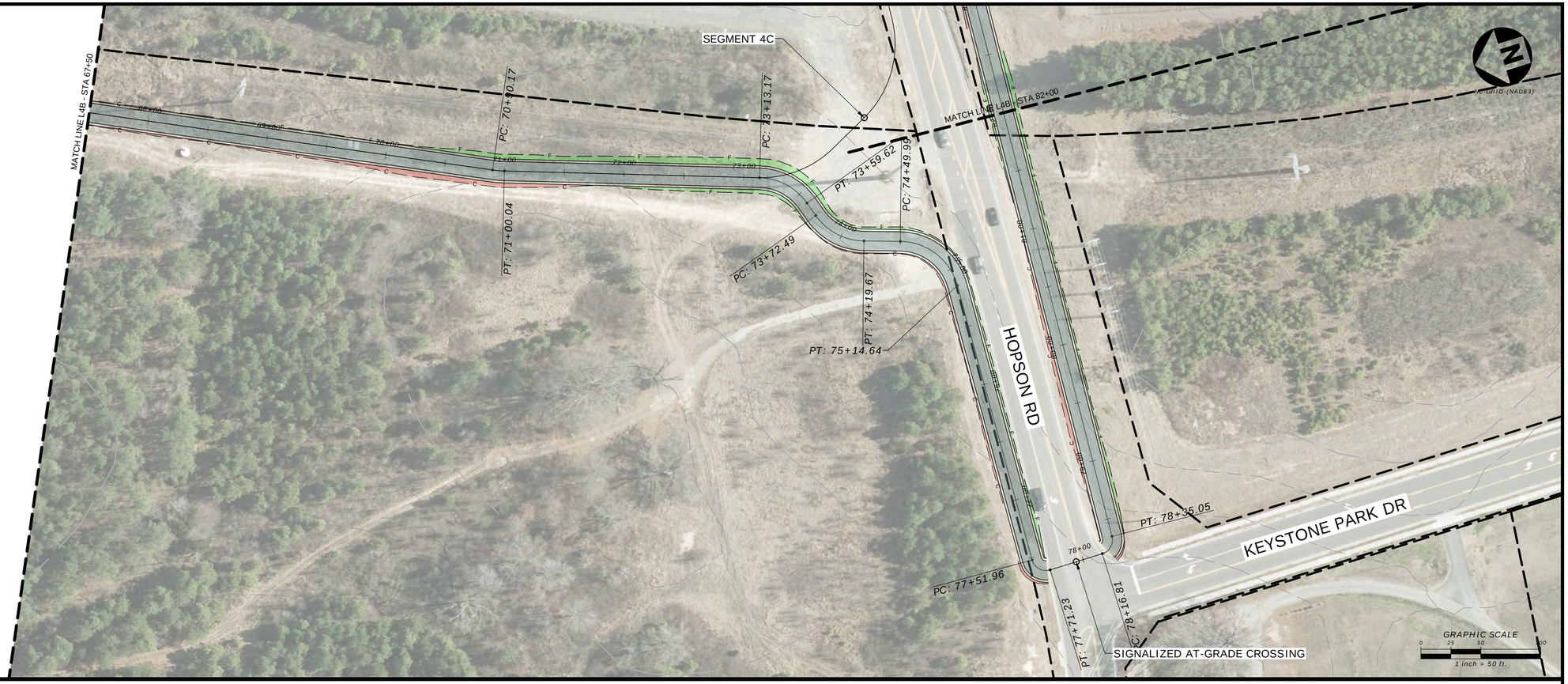
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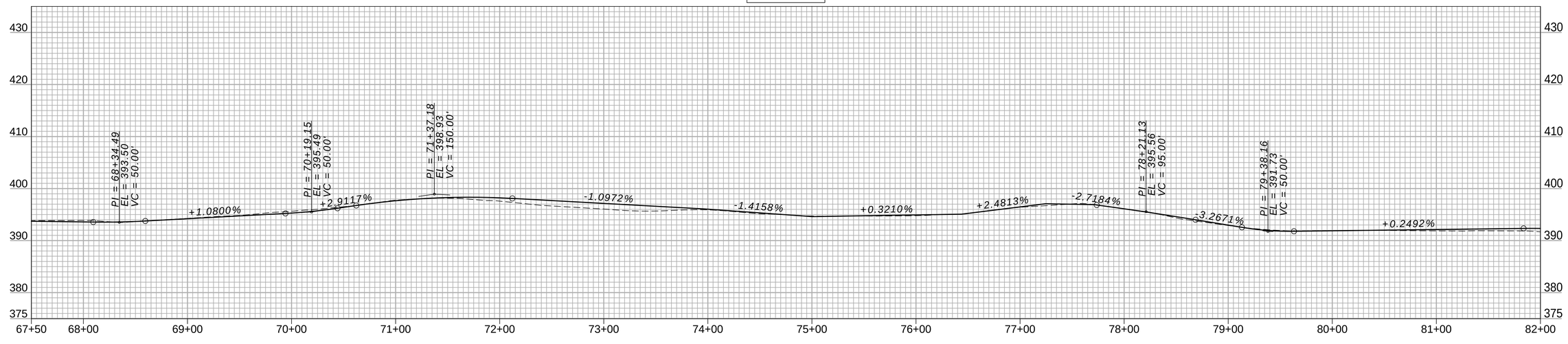
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TRIANGLE BIKEWAY STUDY
SEGMENT 4B
DAVIS DR TO AIRPORT BLVD

TRIANGLE BIKEWAY

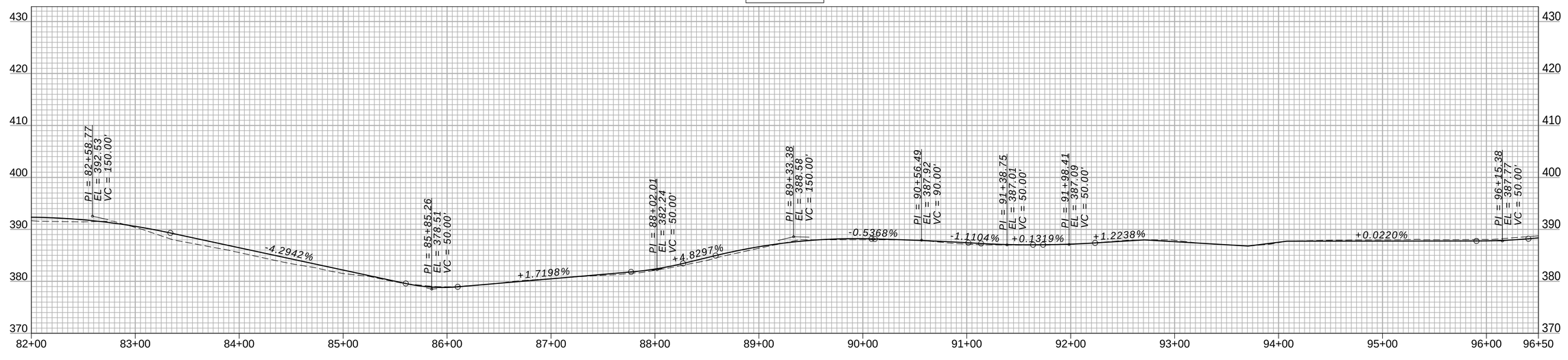
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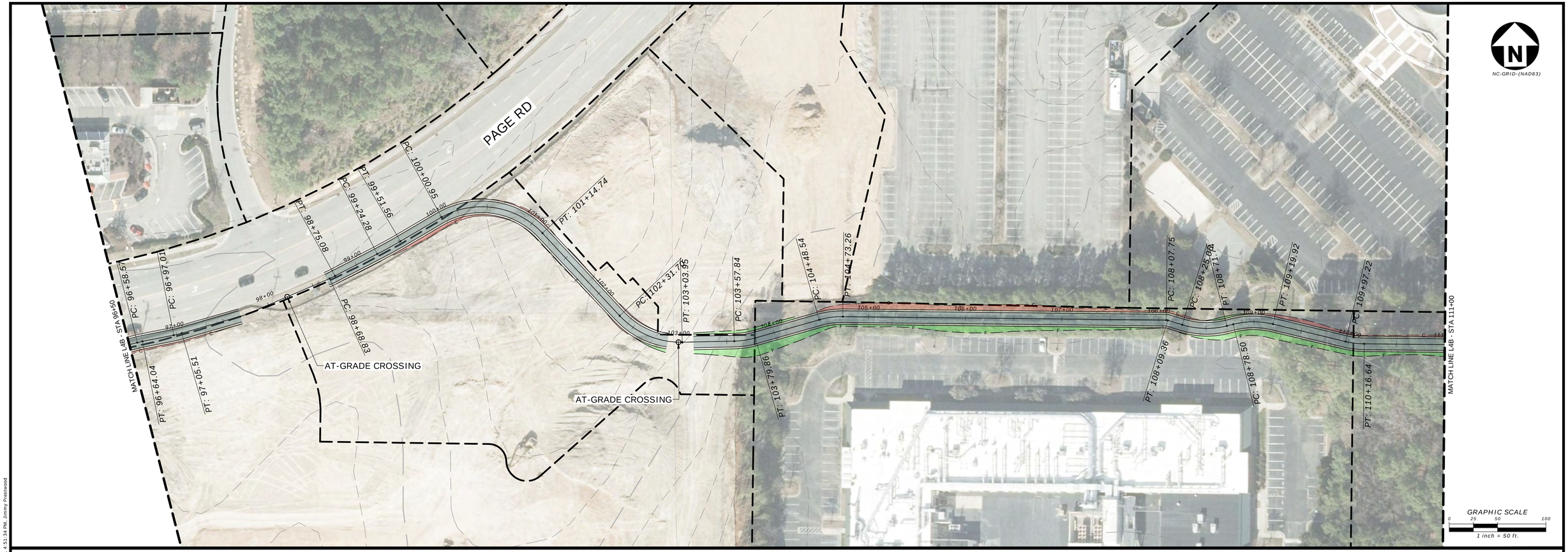
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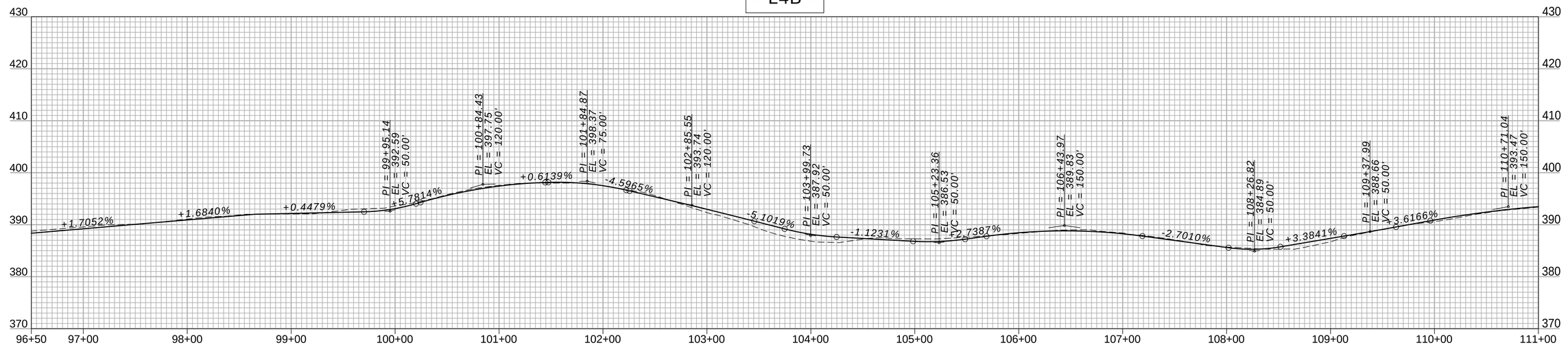
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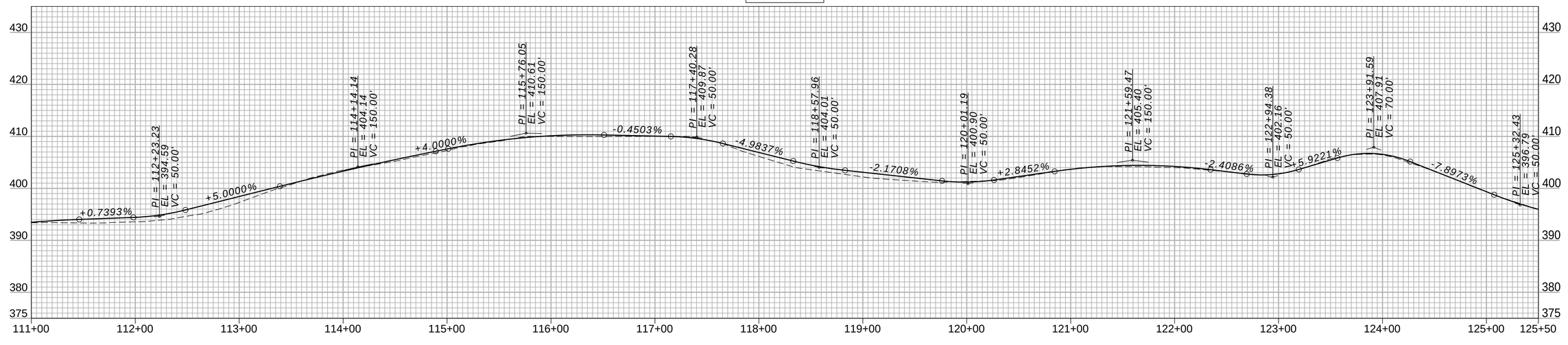
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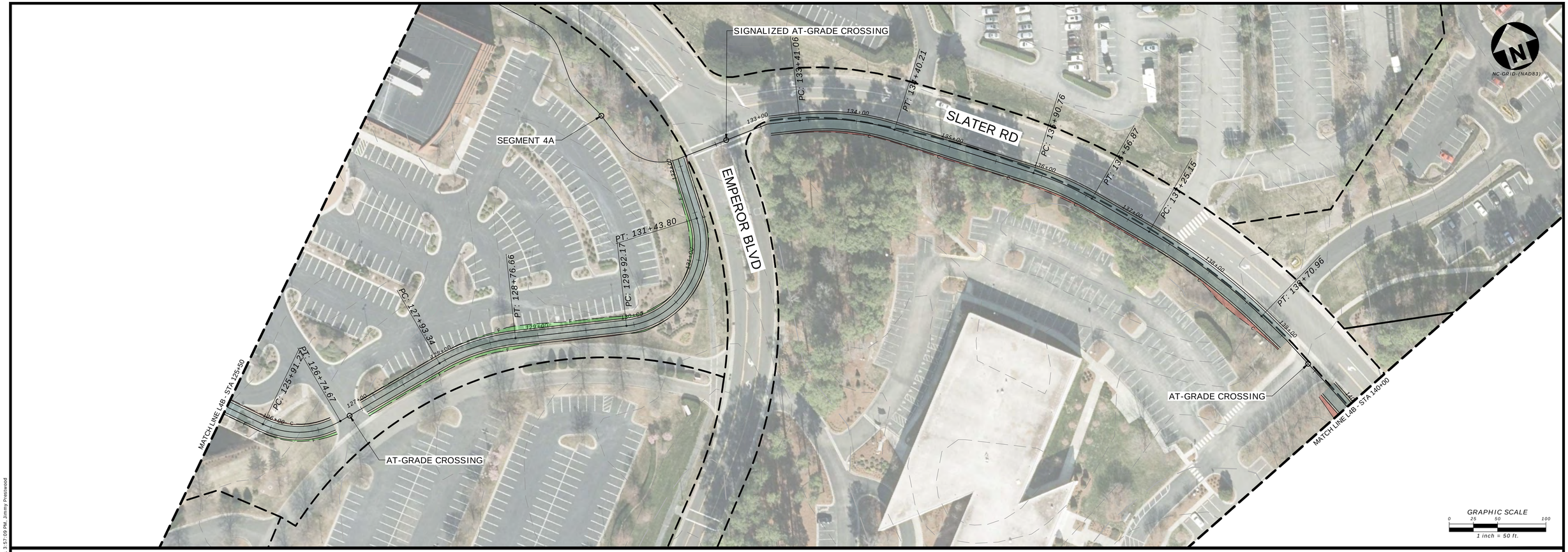
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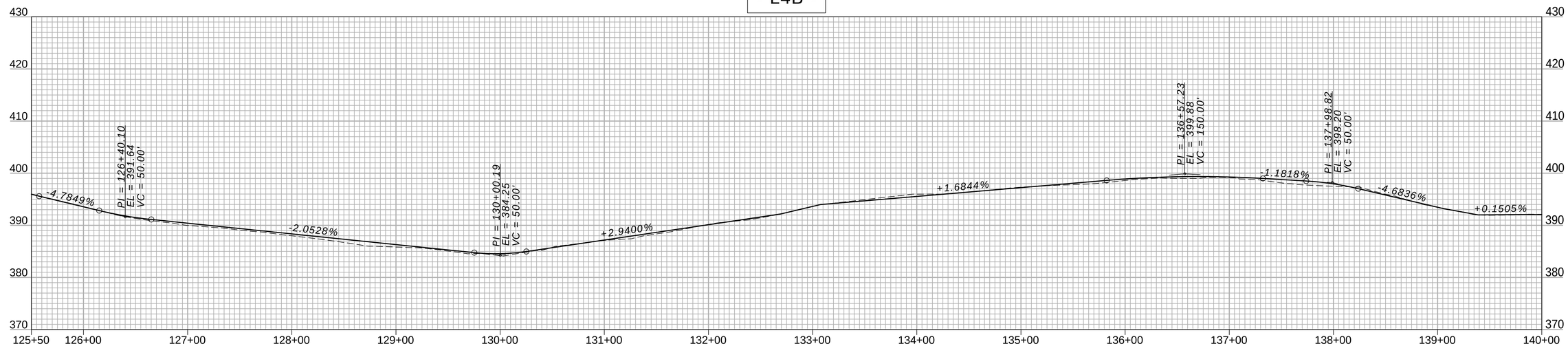
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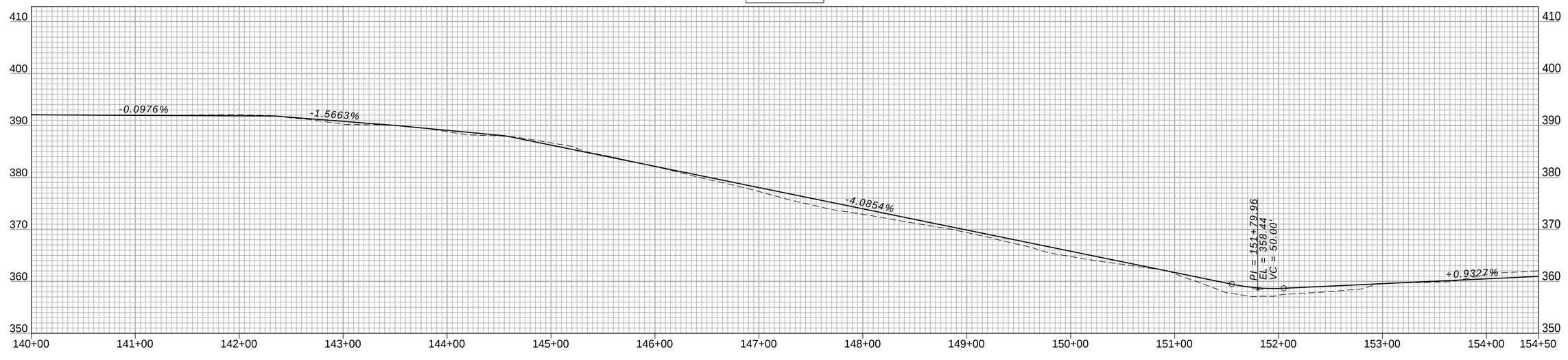
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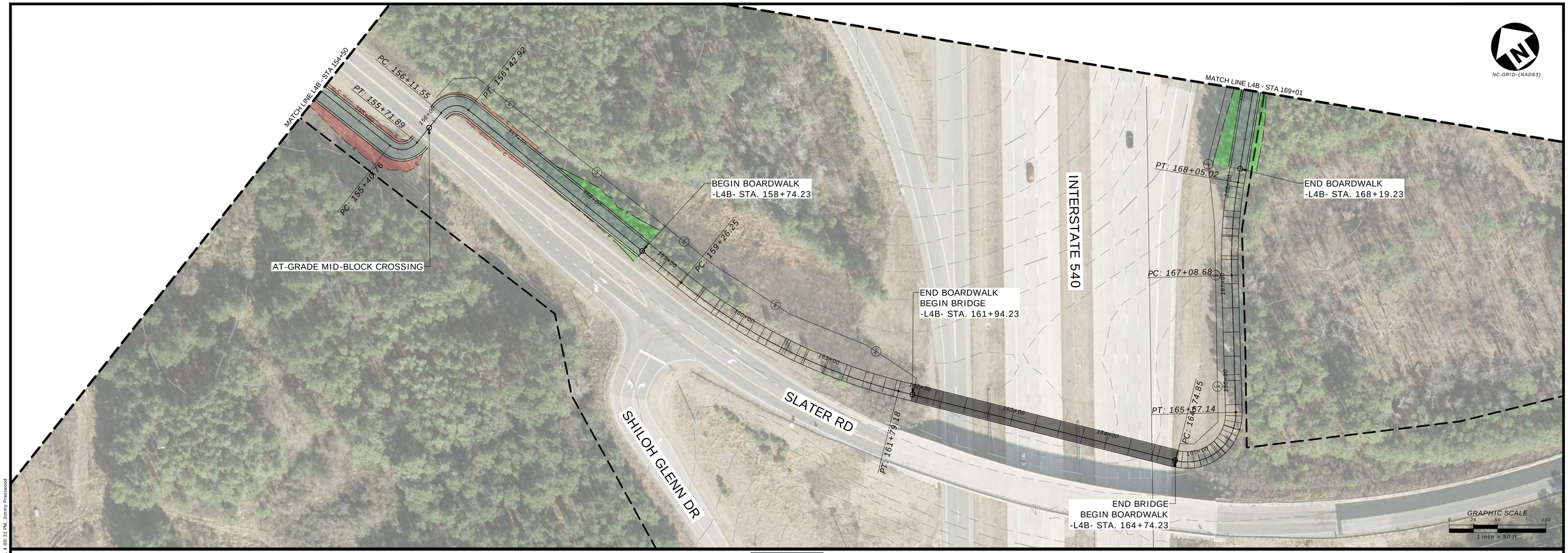
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TRIANGLE BIKEWAY STUDY
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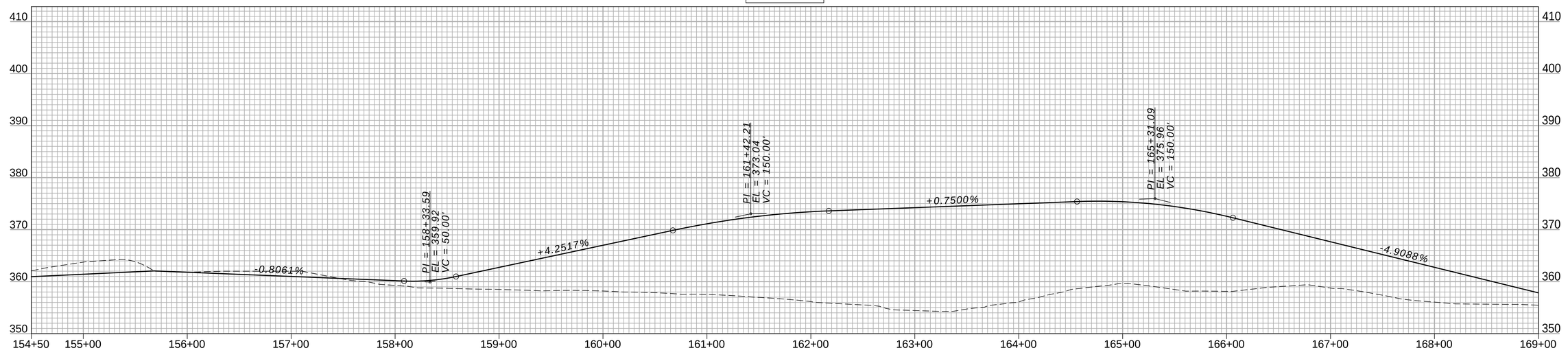
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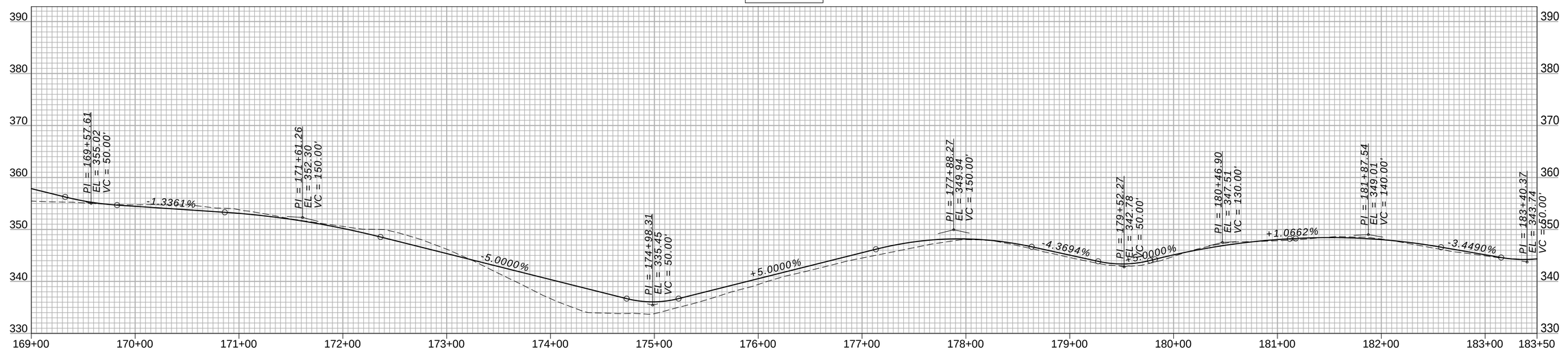
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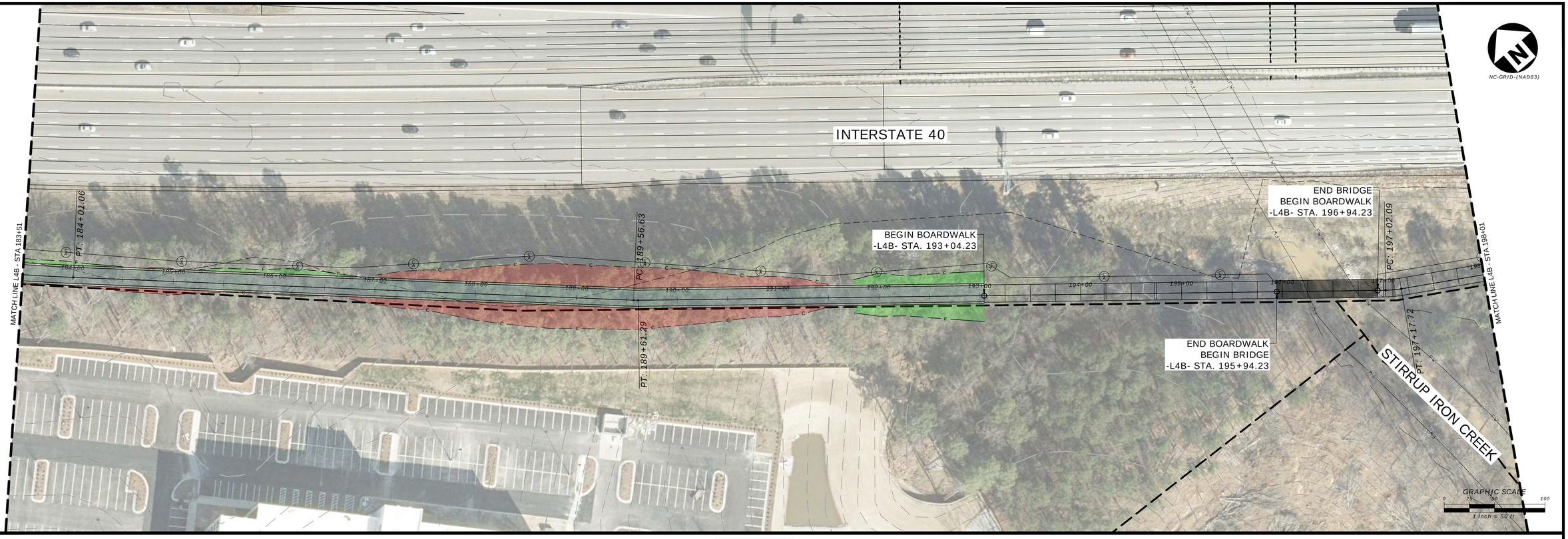
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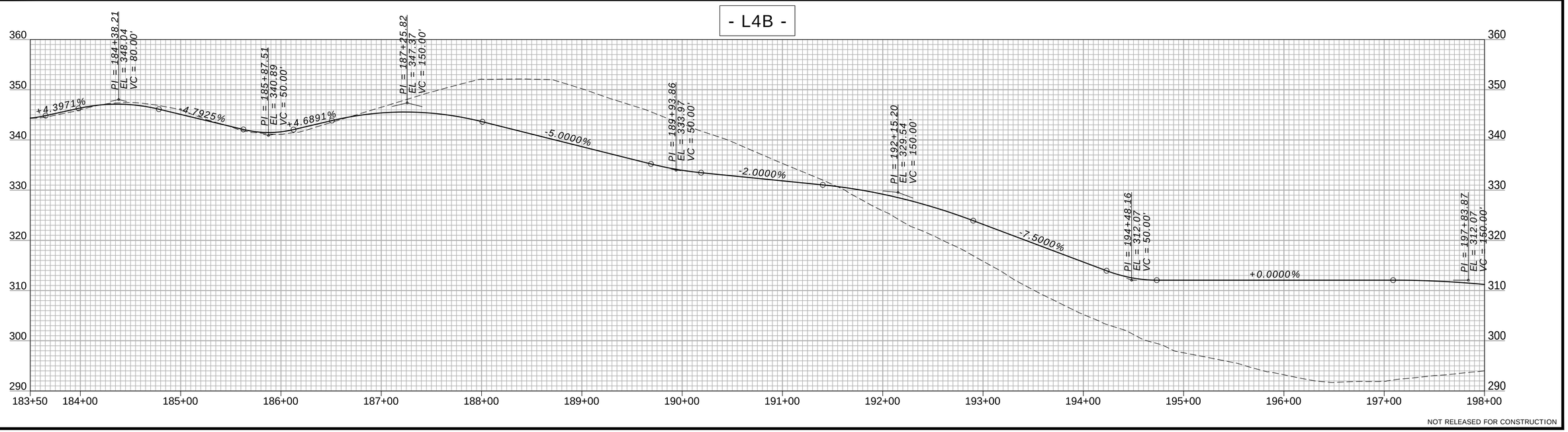
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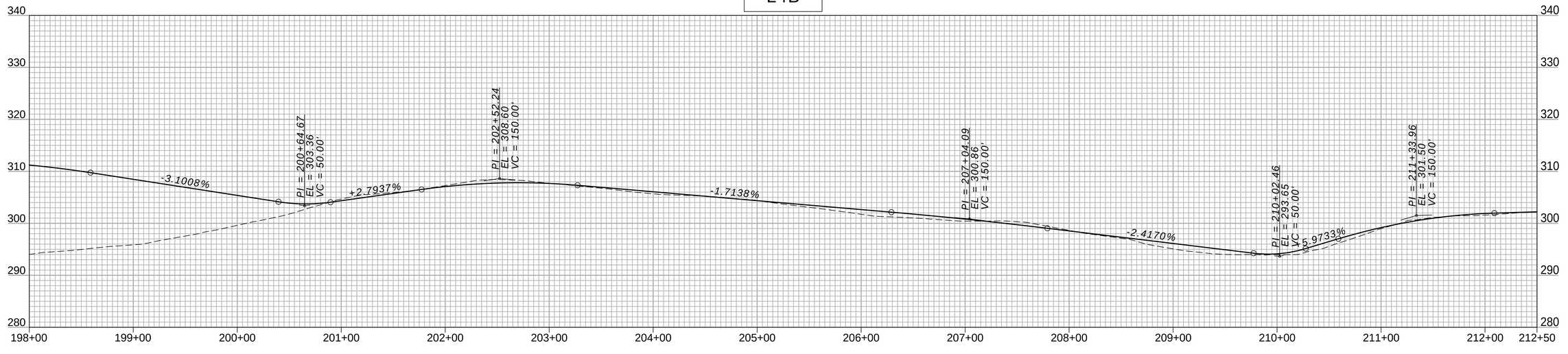
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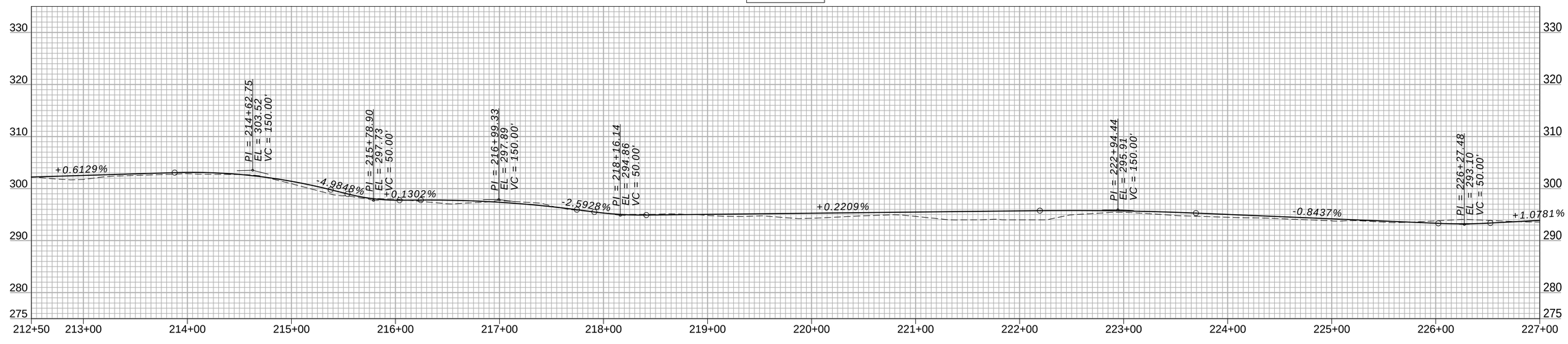
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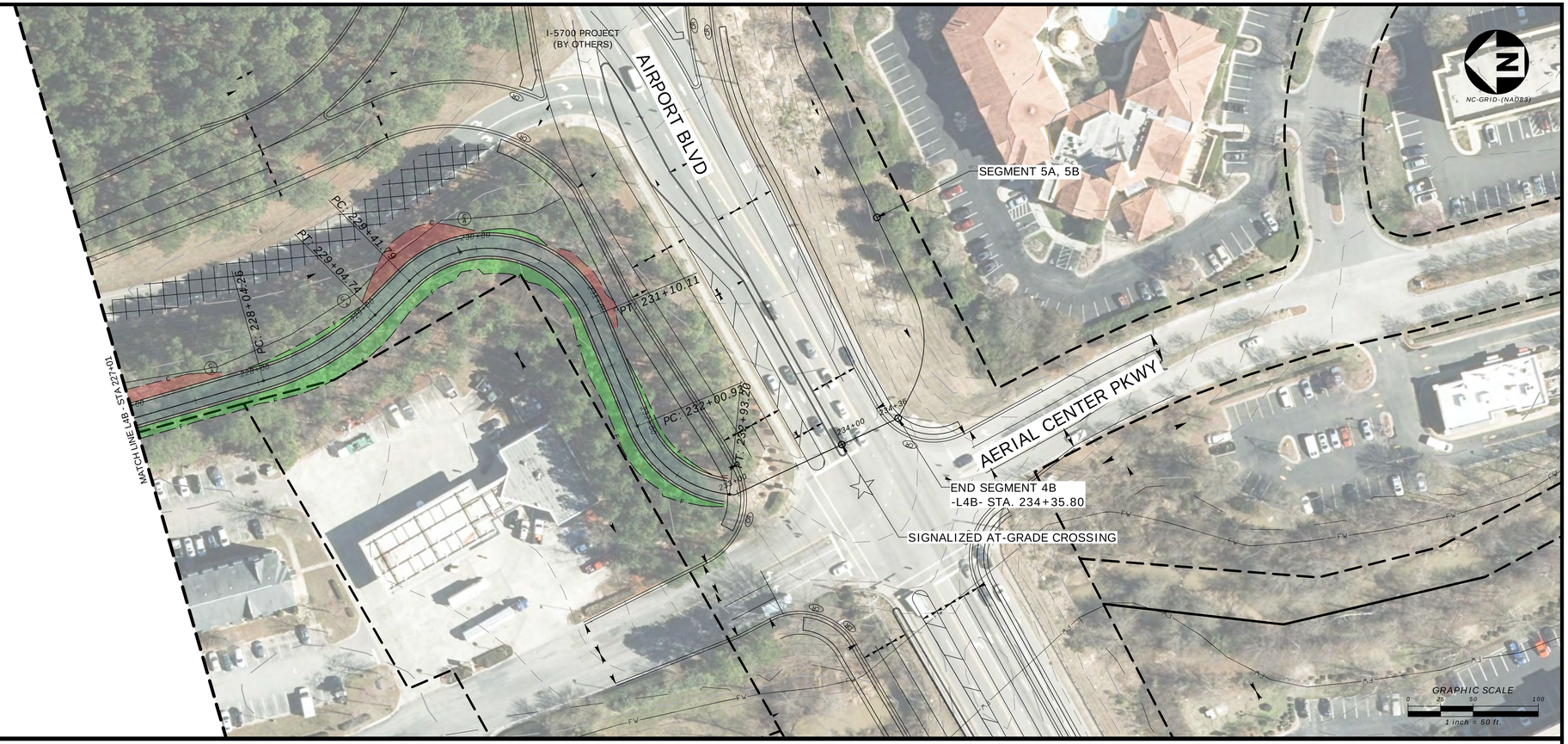
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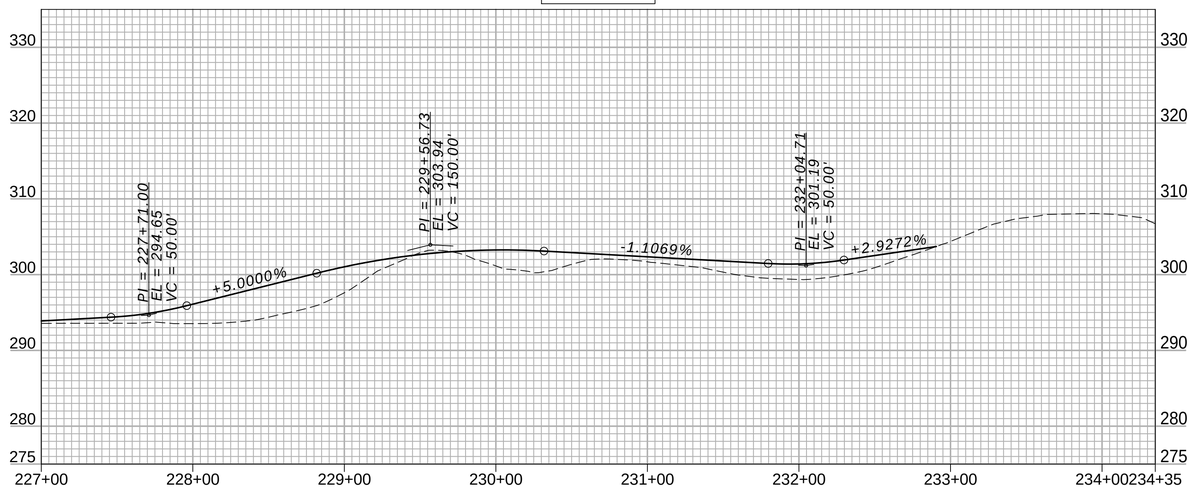
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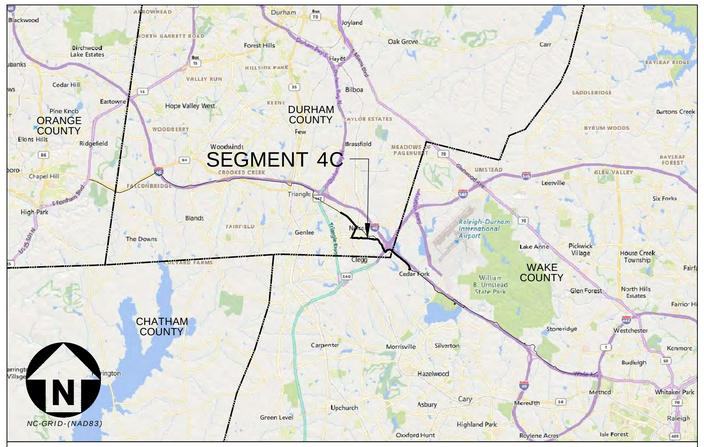
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DURHAM & WAKE COUNTY
NORTH CAROLINA

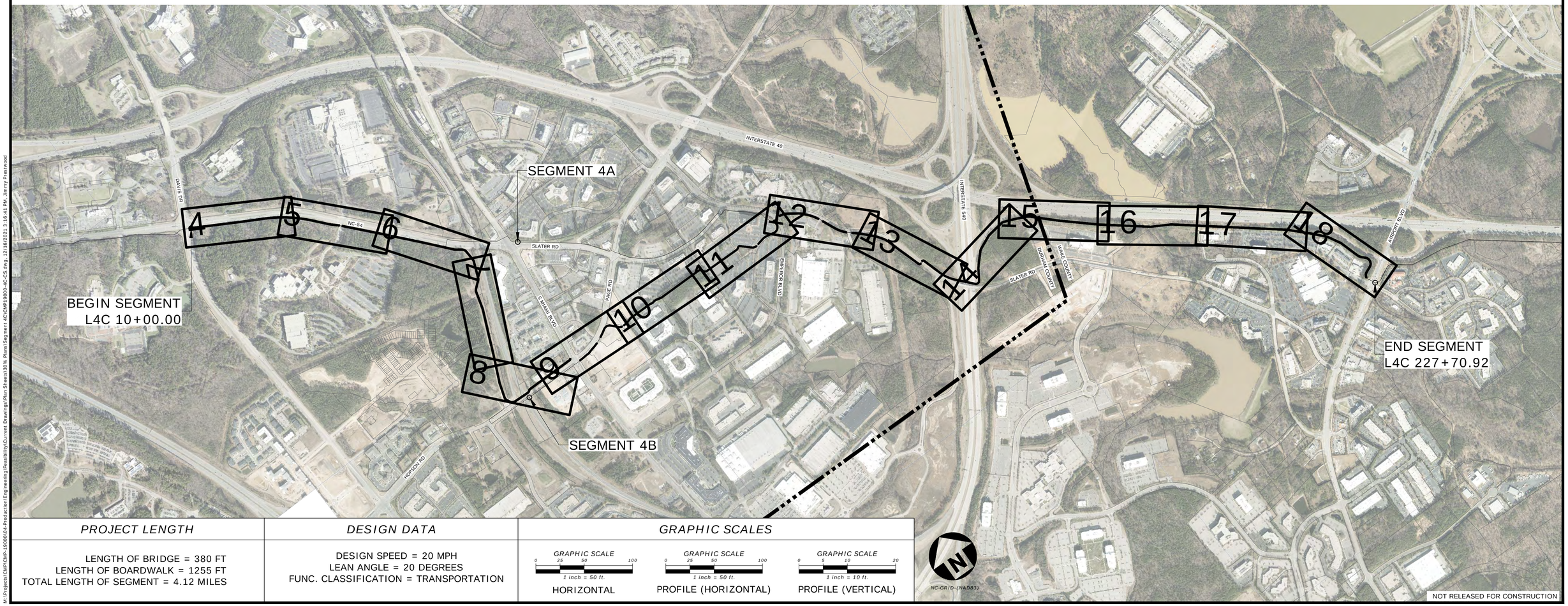
TRIANGLE BIKEWAY STUDY
SEGMENT 4C - DAVIS DR TO AIRPORT BLVD



VICINITY MAP

INDEX OF SHEETS

SHEET NO.	SHEET TITLE
1	COVER SHEET
1B	CONVENTIONAL SYMBOLS
4 THRU 18	PLAN & PROFILE SHEETS



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STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (TU/L)
- 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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SEGMENT 4C
DAVIS DR TO AIRPORT BLVD

TRIANGLE BIKEWAY

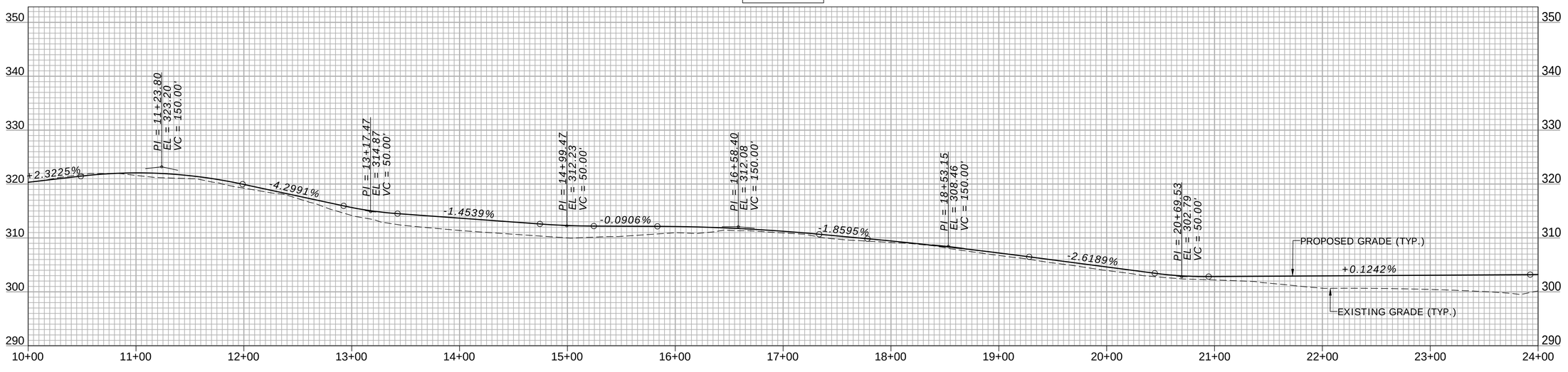
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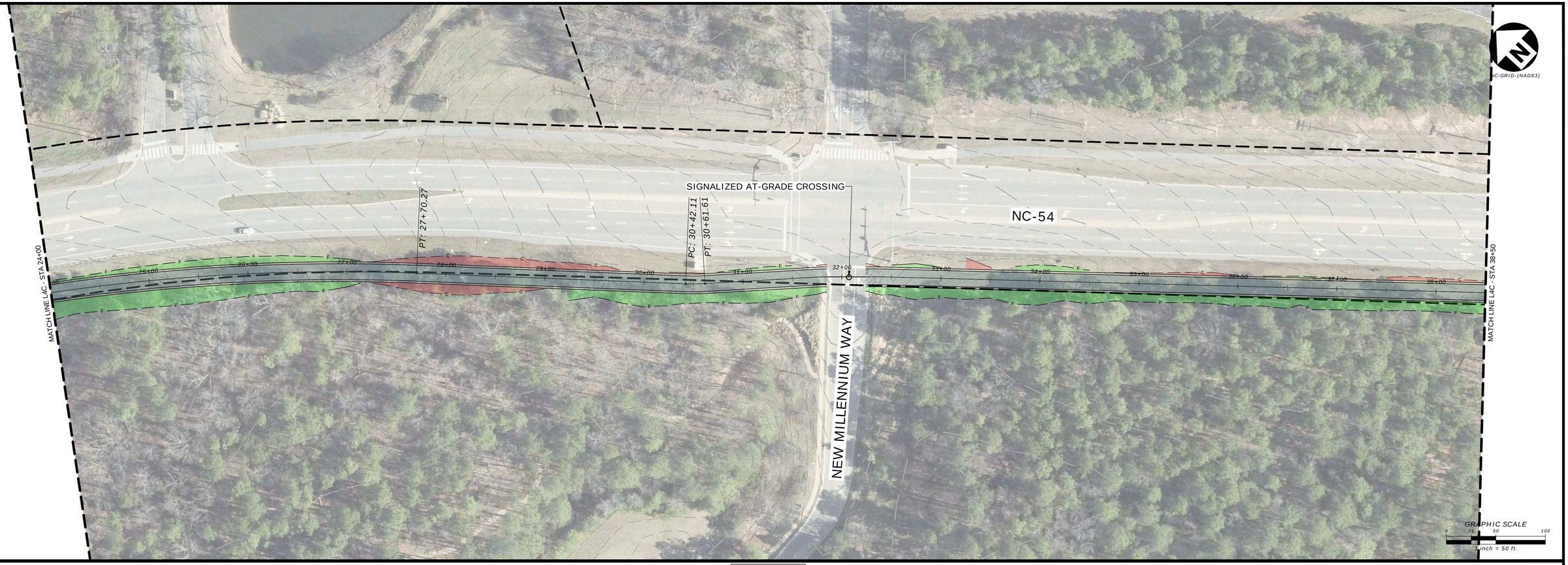
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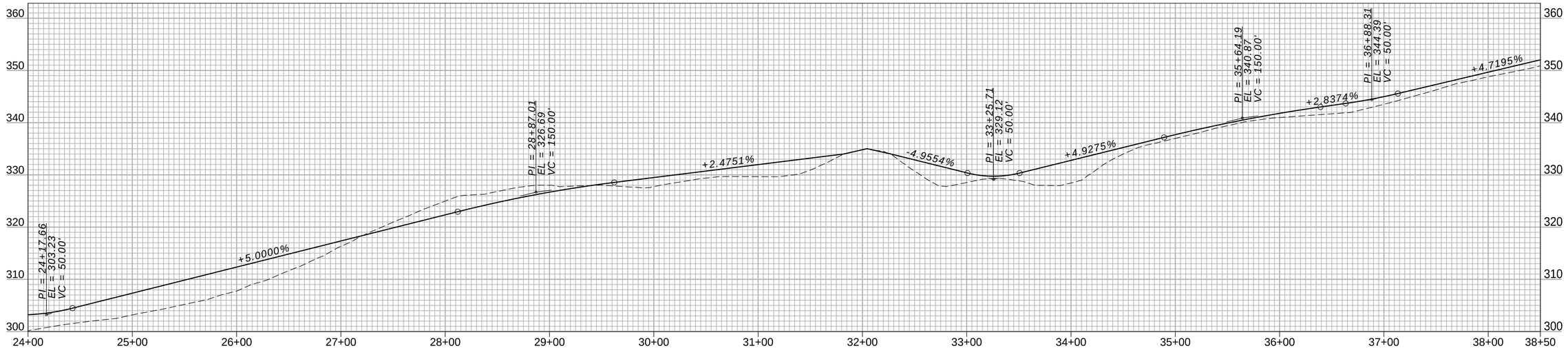
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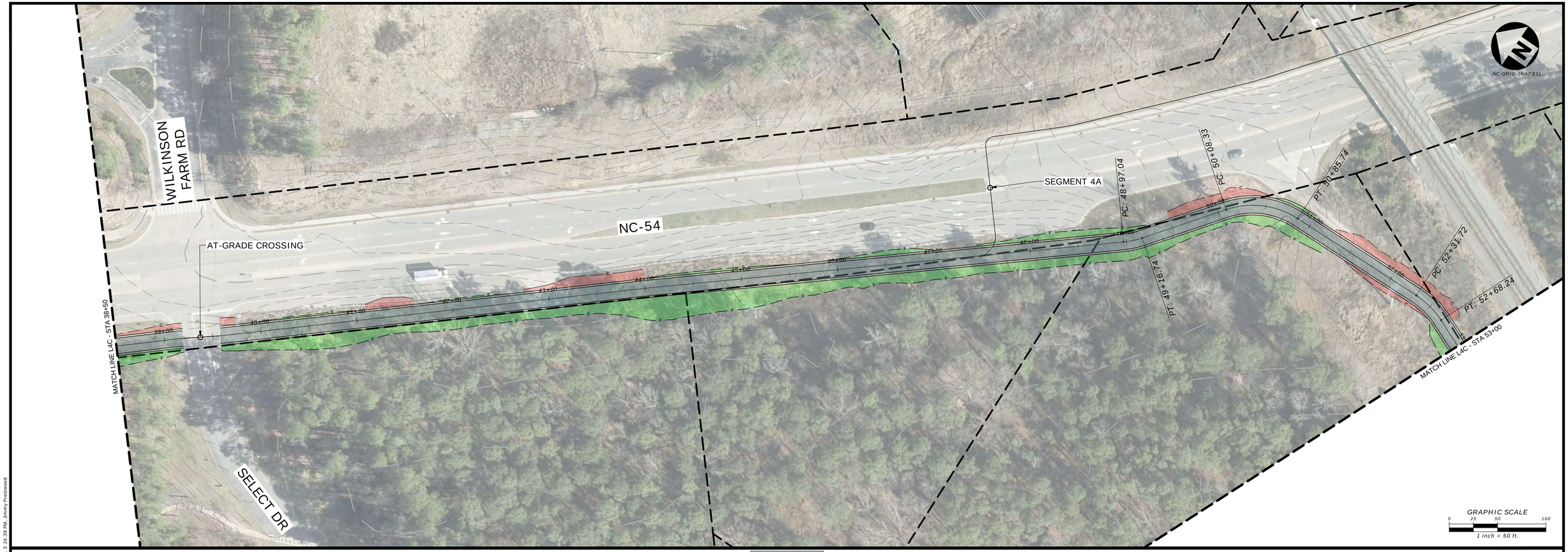
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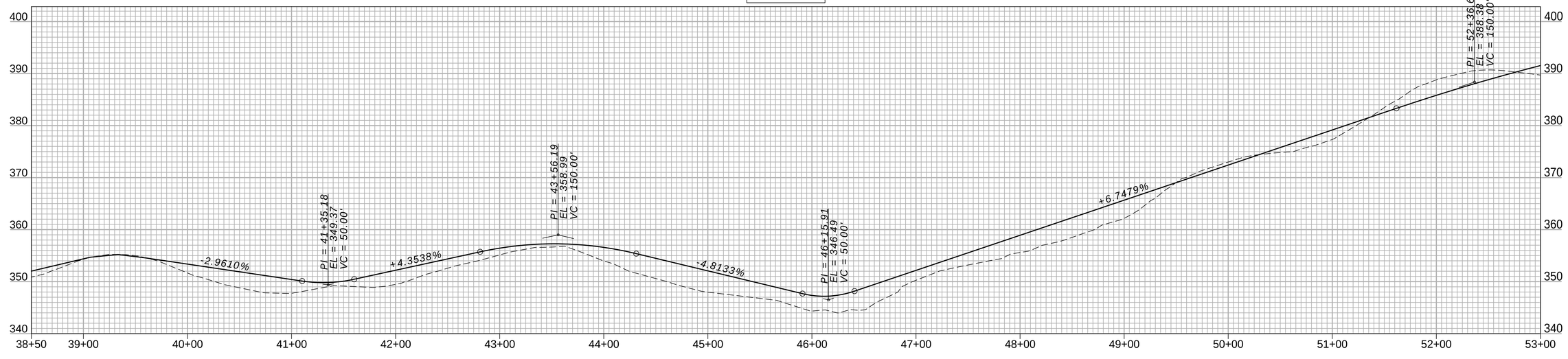
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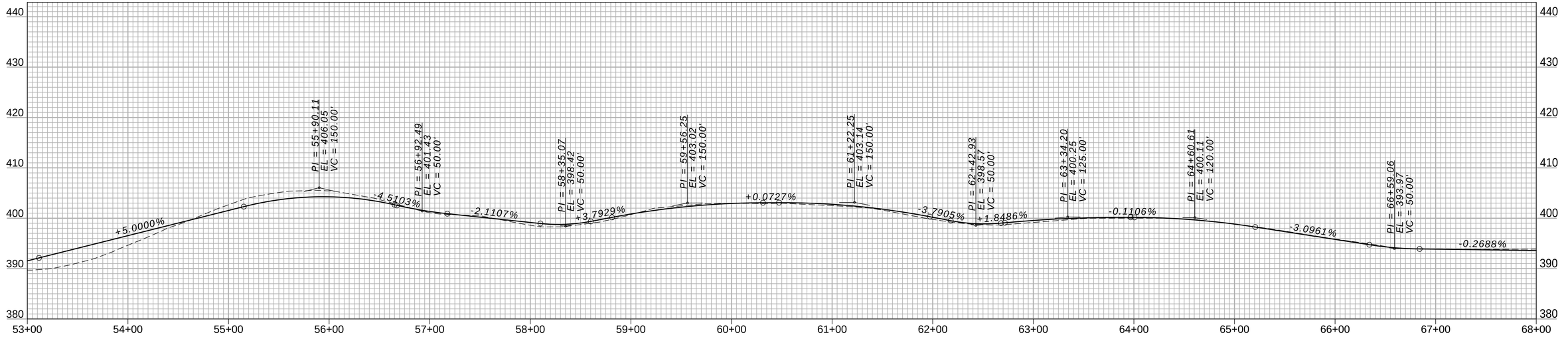
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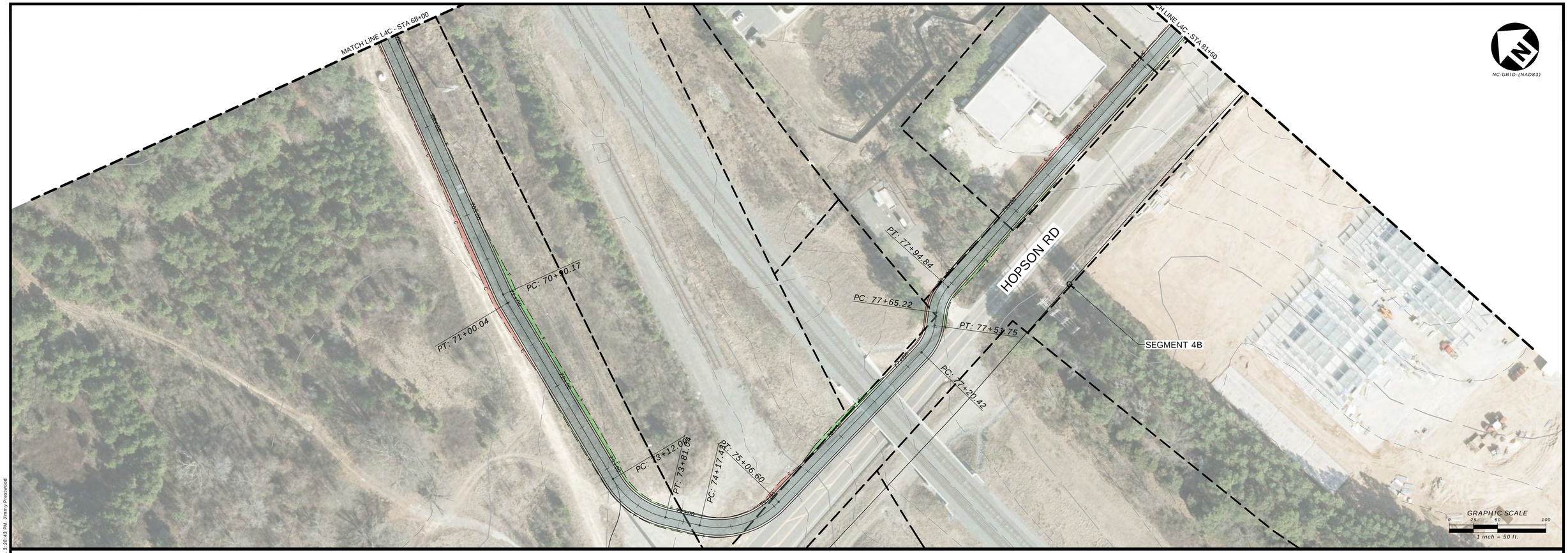
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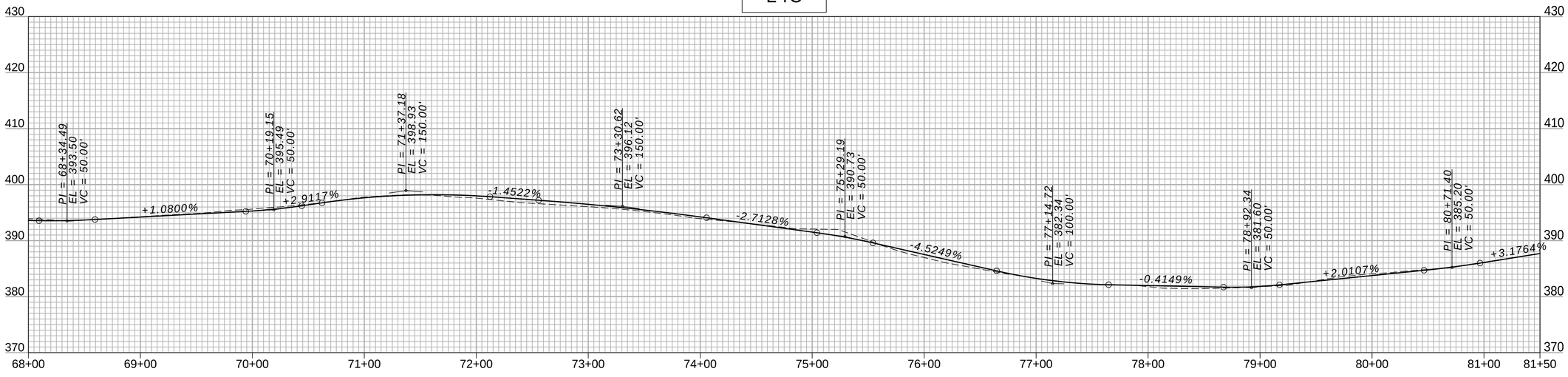
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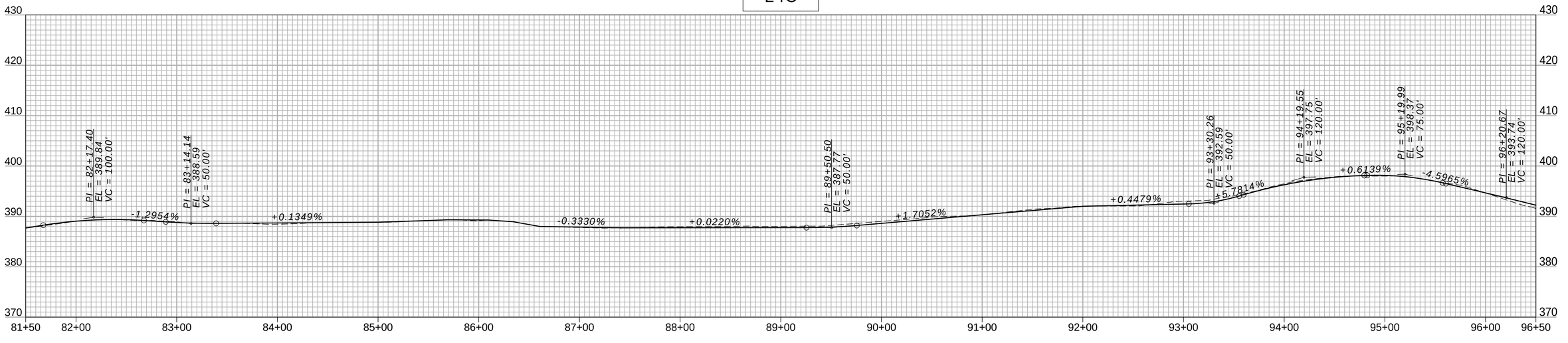
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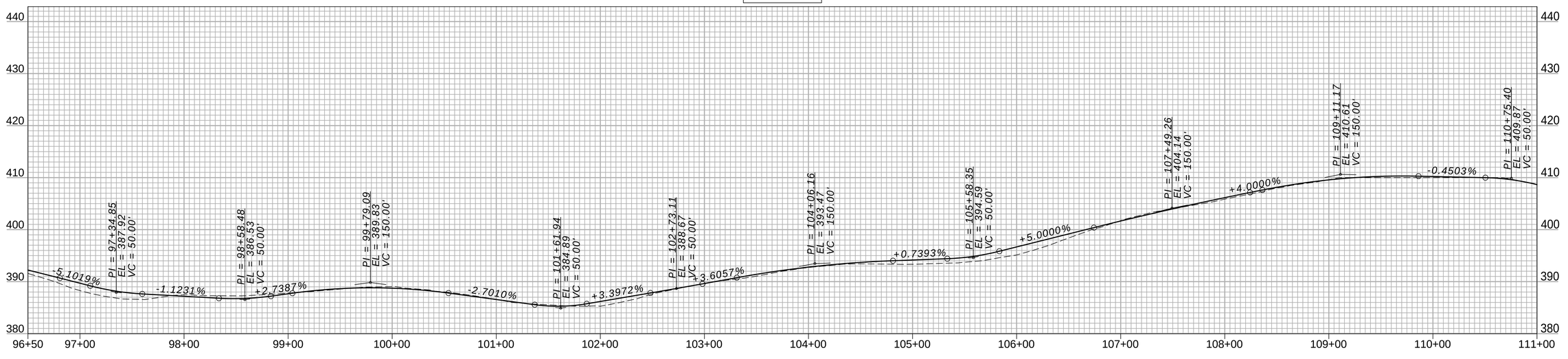
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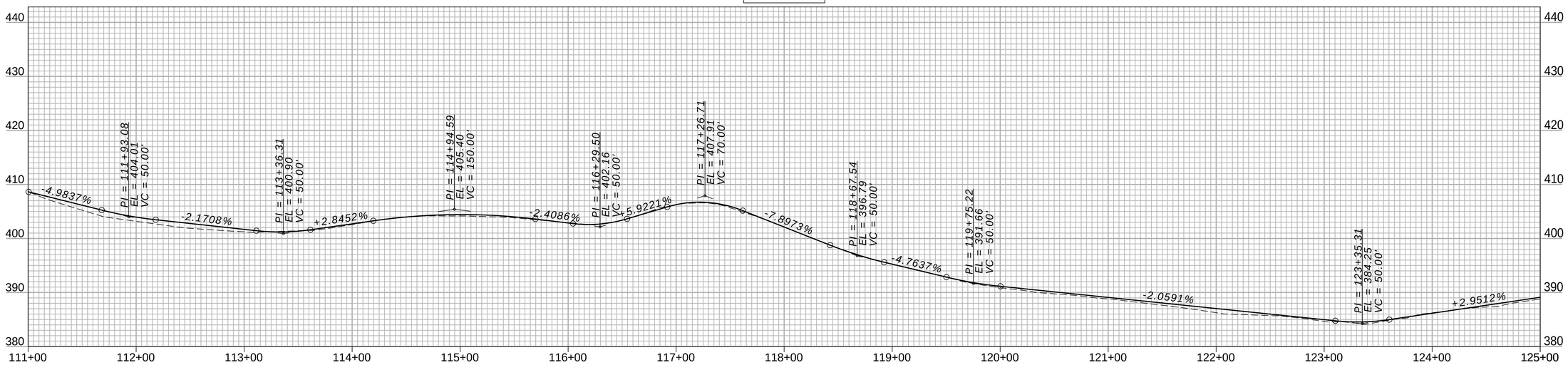
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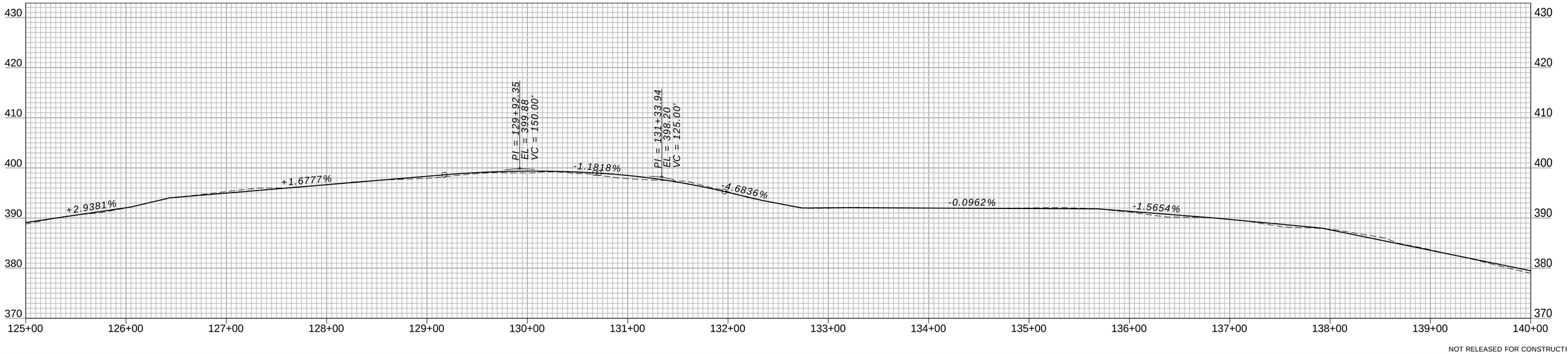
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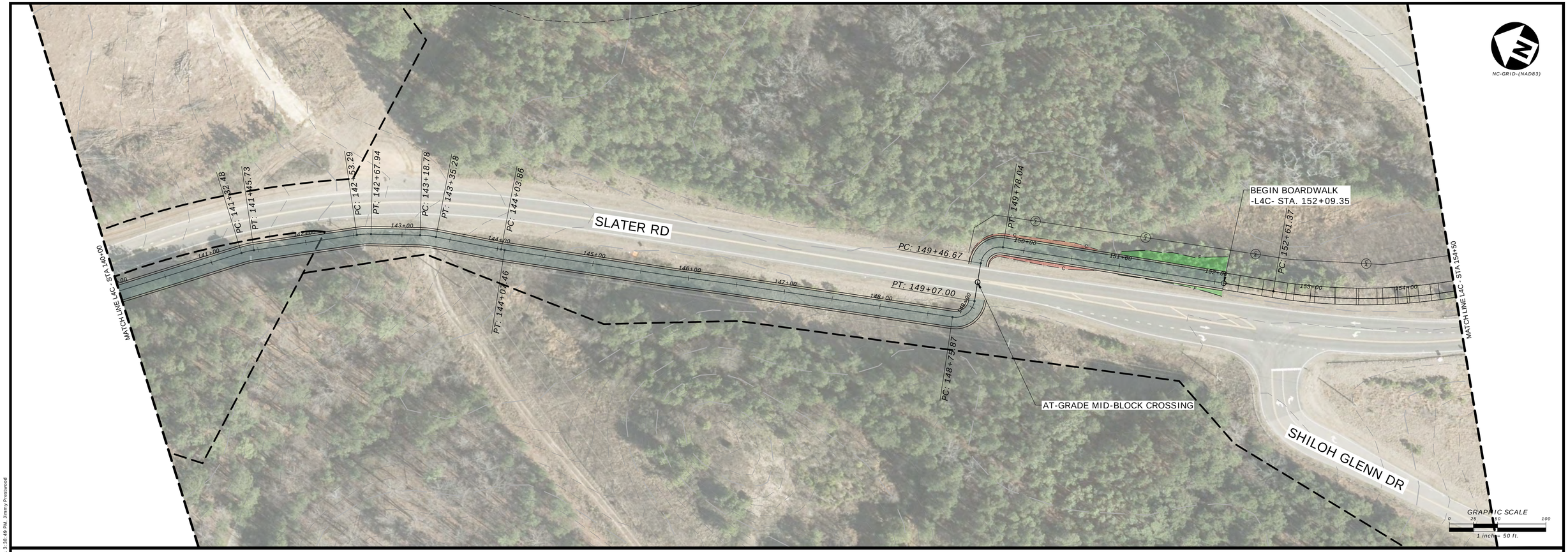
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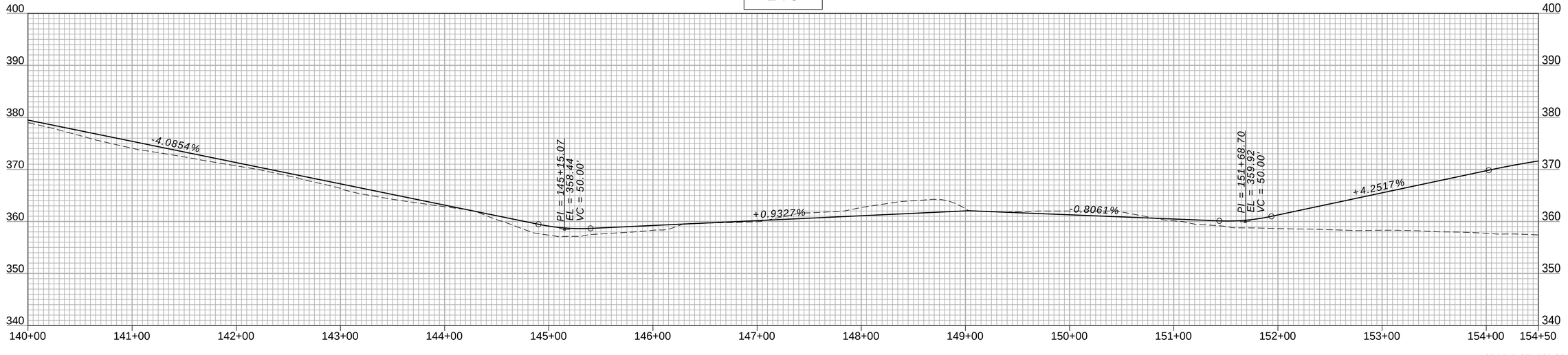
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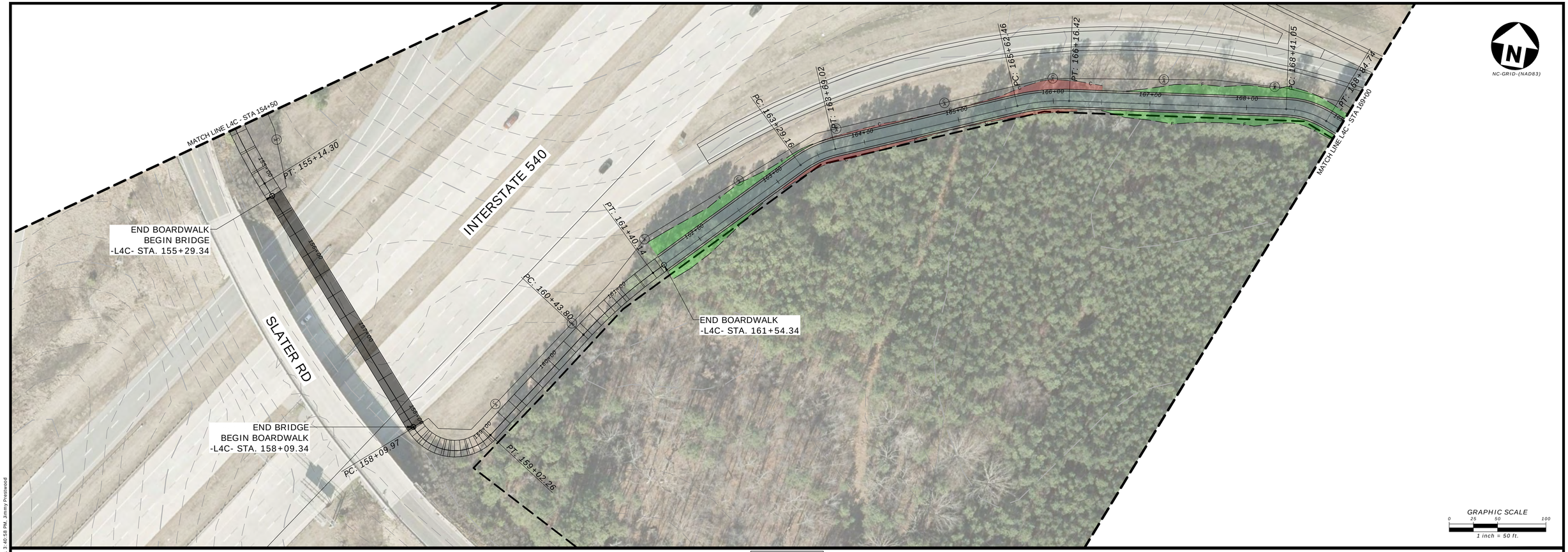
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DAVIS DR TO AIRPORT BLVD

TRIANGLE BIKEWAY

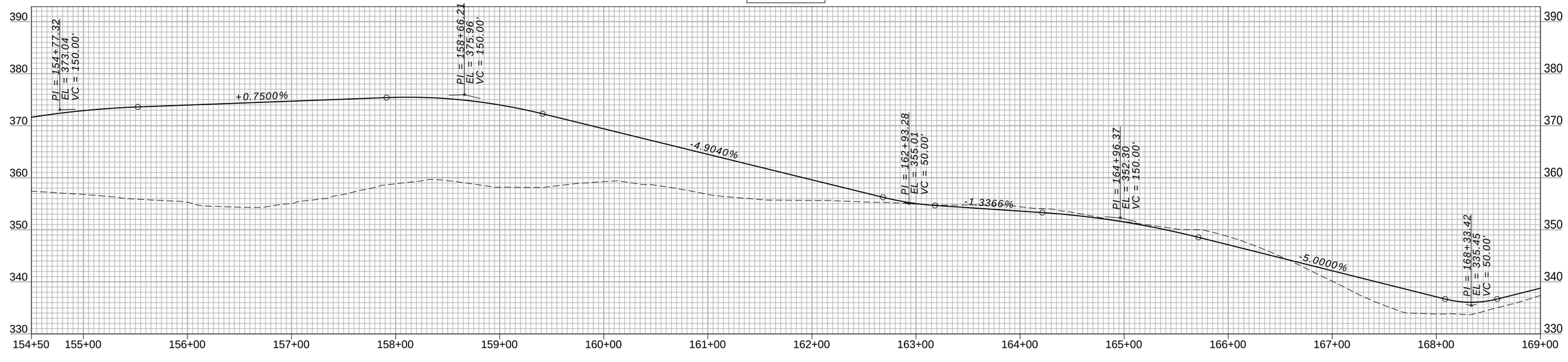
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DATE	DECEMBER 2021

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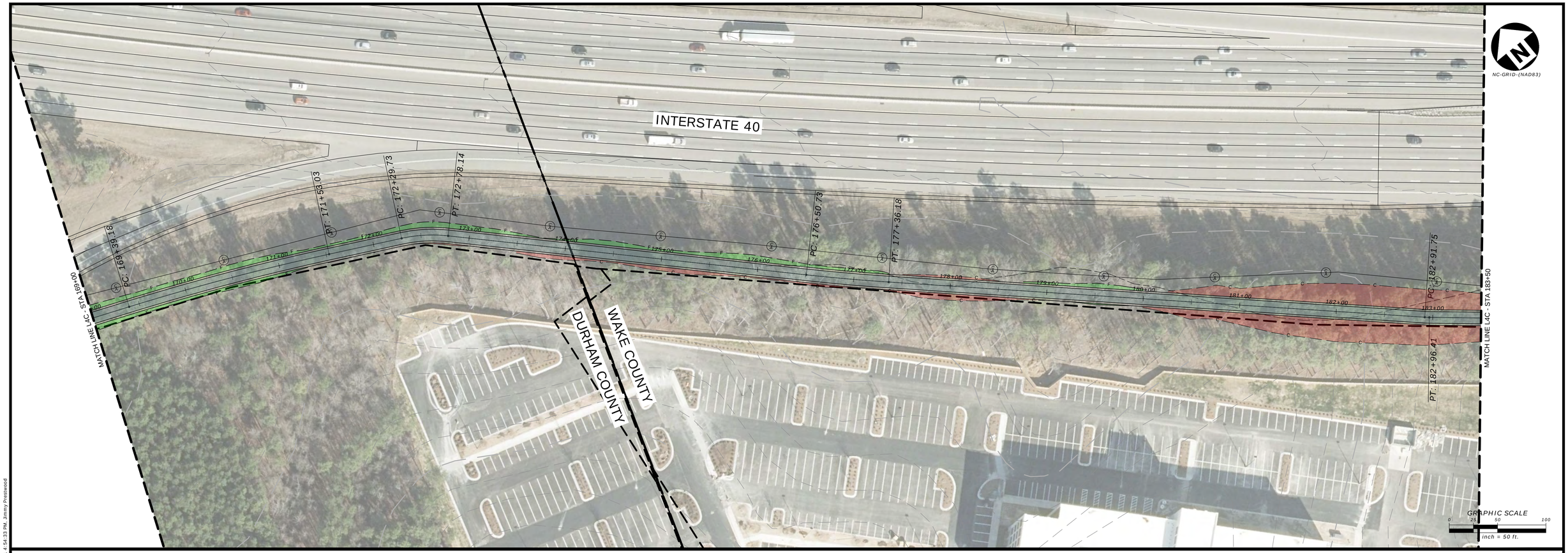
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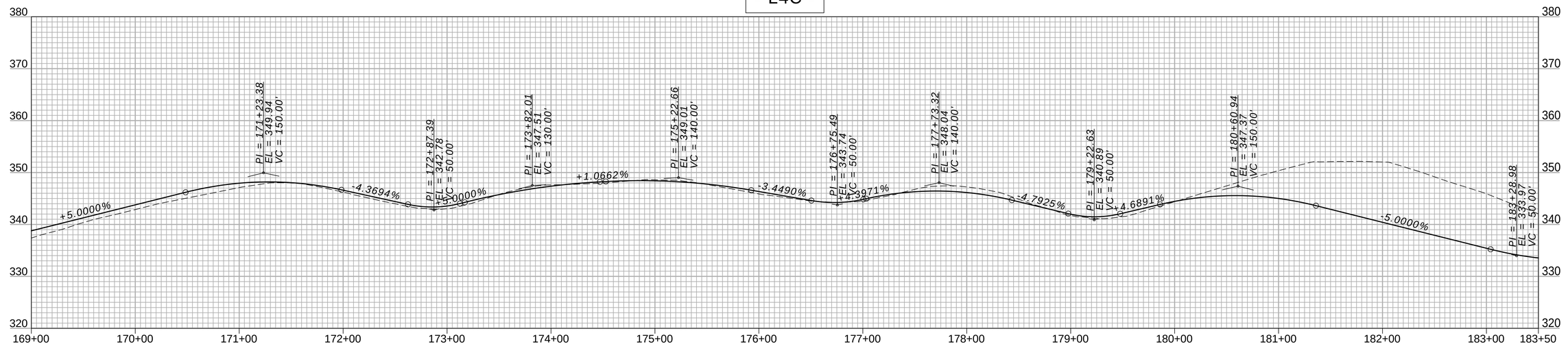
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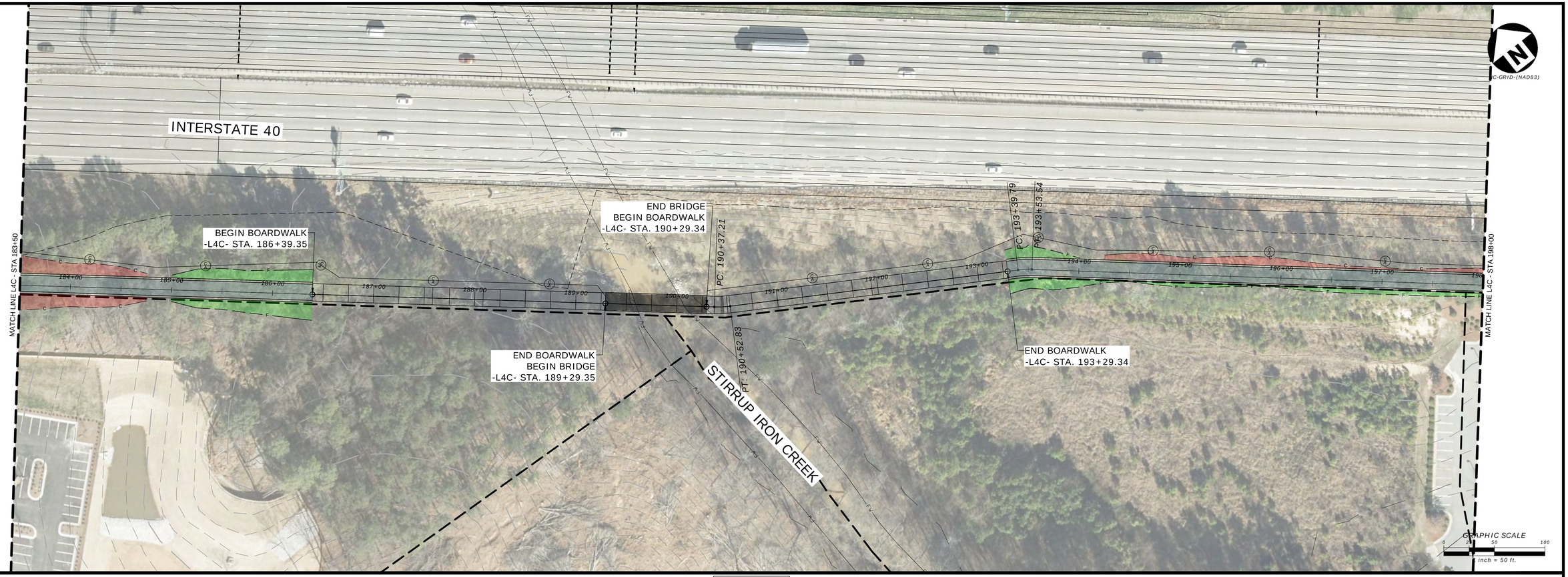
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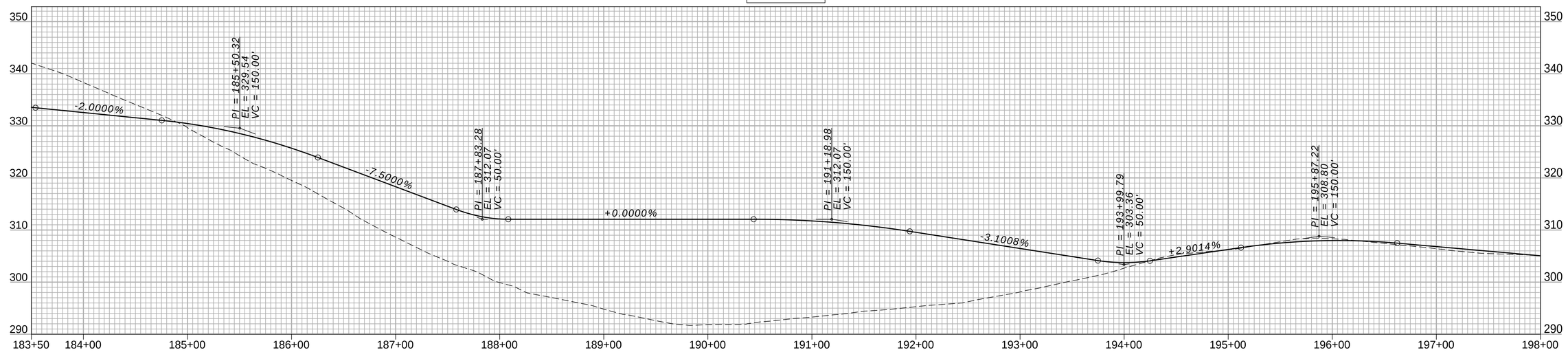
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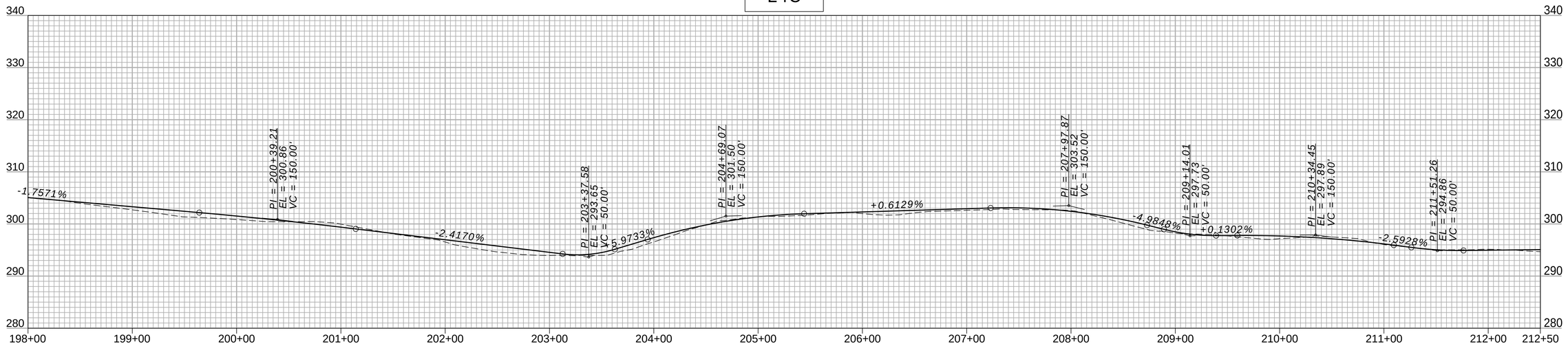
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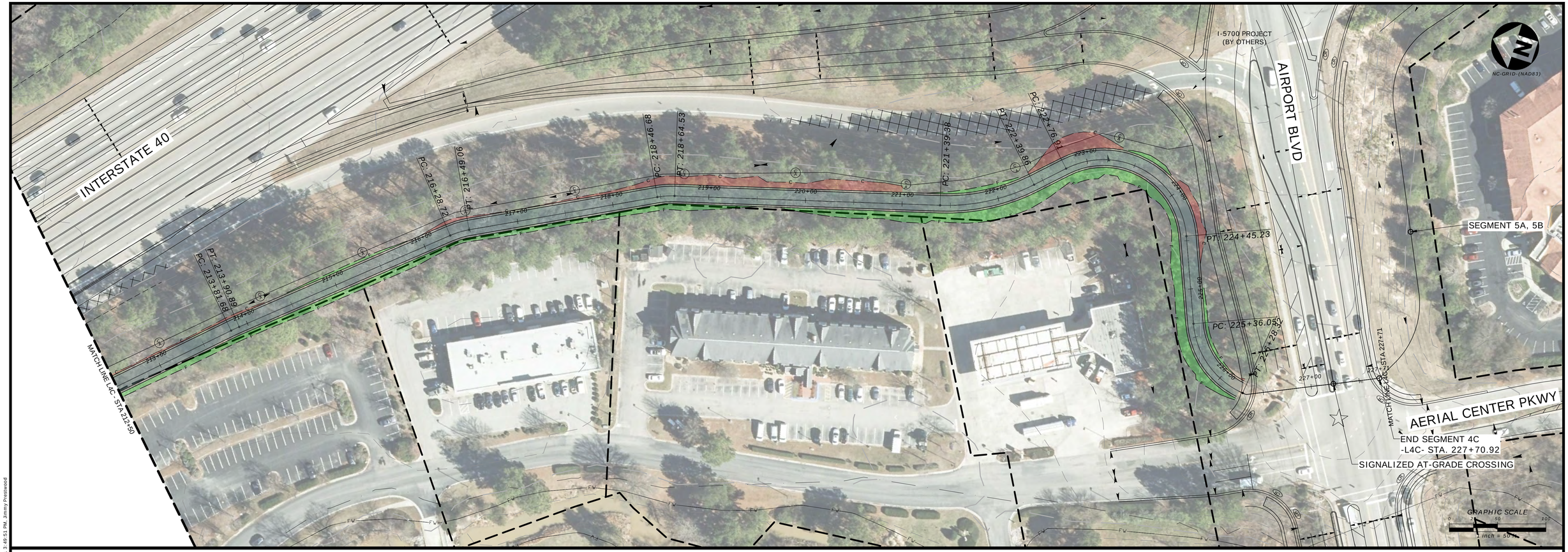
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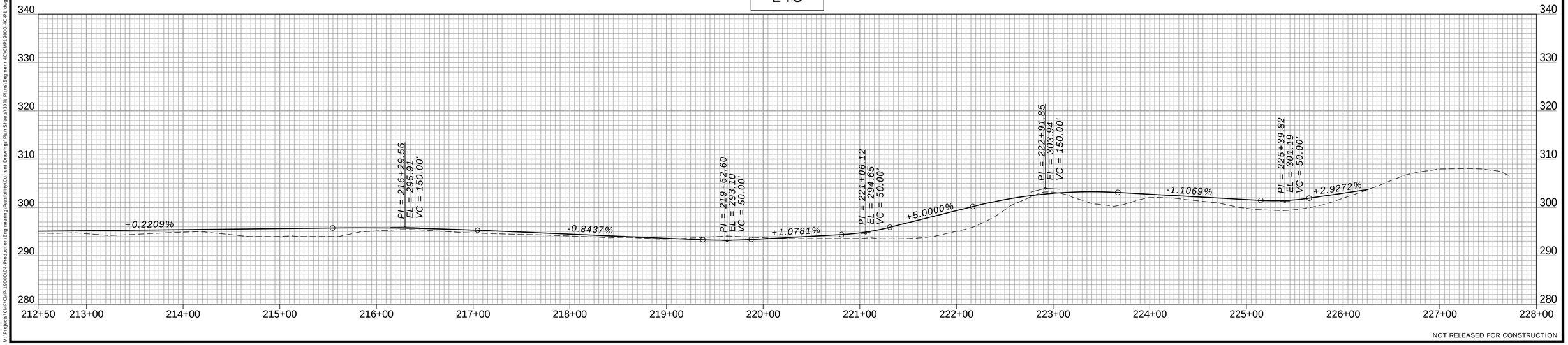
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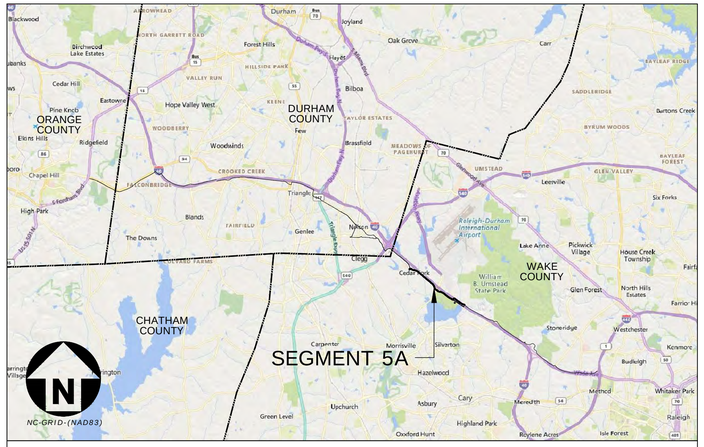
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WAKE COUNTY
NORTH CAROLINA

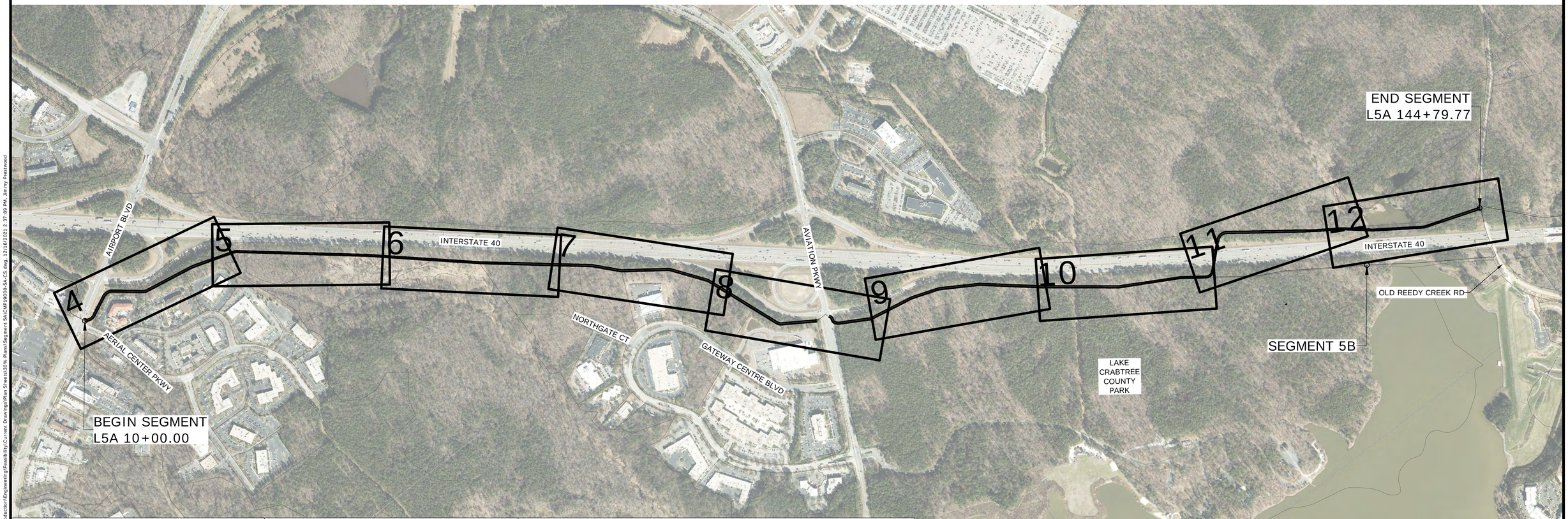
TRIANGLE BIKEWAY STUDY
SEGMENT 5A - AIRPORT BLVD TO OLD REEDY CREEK RD

INDEX OF SHEETS

SHEET NO.	SHEET TITLE
1	COVER SHEET
1B	CONVENTIONAL SYMBOLS
4 THRU 12	PLAN & PROFILE SHEETS



VICINITY MAP



PROJECT LENGTH	*DESIGN DATA*	*GRAPHIC SCALES*
LENGTH OF BRIDGE = 350 FT LENGTH OF BOARDWALK = 4590 FT TOTAL LENGTH OF SEGMENT = 2.55 MILES	DESIGN SPEED = 20 MPH LEAN ANGLE = 20 DEGREES FUNC. CLASSIFICATION = TRANSPORTATION	GRAPHIC SCALE 0 25 50 100 — 1 inch = 50 ft. — HORIZONTAL GRAPHIC SCALE 0 25 50 100 — 1 inch = 50 ft. — PROFILE (HORIZONTAL) GRAPHIC SCALE 0 5 10 20 — 1 inch = 10 ft. — PROFILE (VERTICAL)

NC-GRID-(NADB3)

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TRIANGLE BIKEWAY STUDY
SEGMENT 5A
AIRPORT BLVD TO OLD REEDY CREEK RD

TRIANGLE BIKEWAY

PLAN INFORMATION

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STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (TU/TL)
- 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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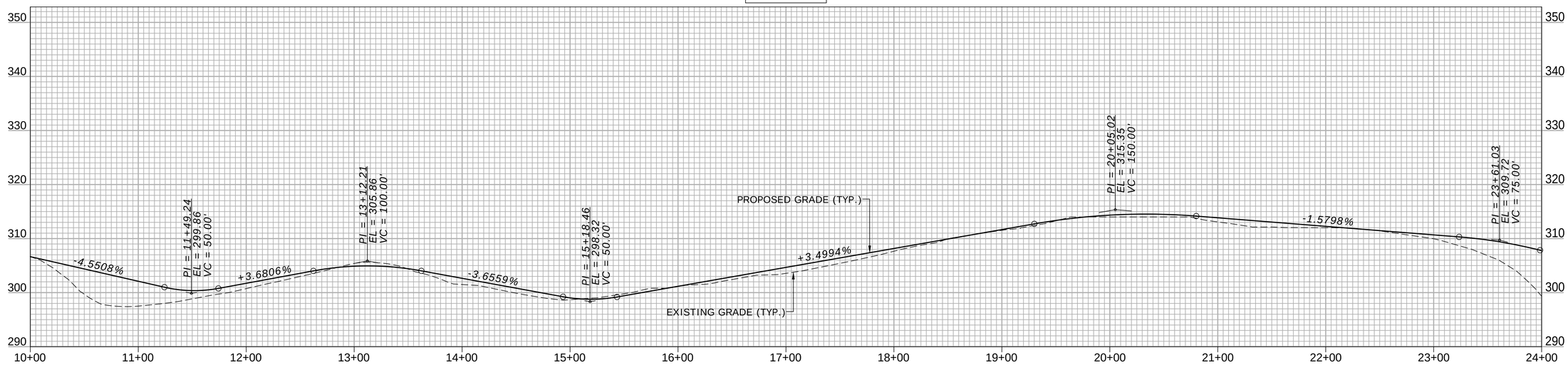
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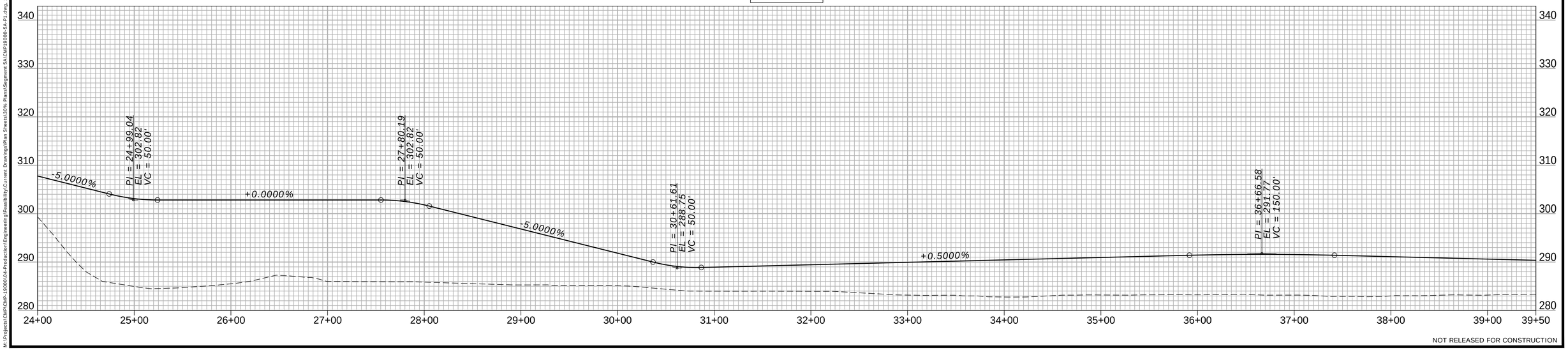
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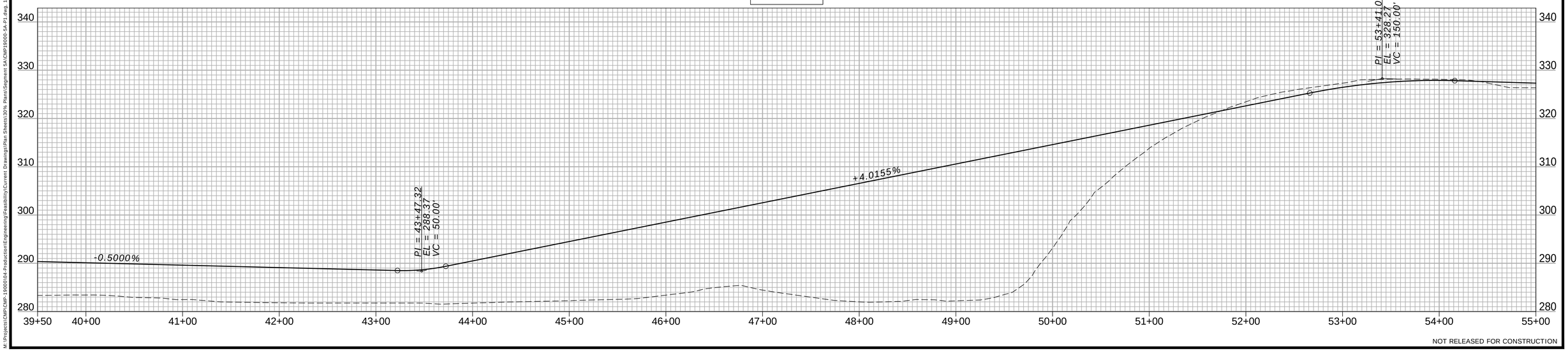
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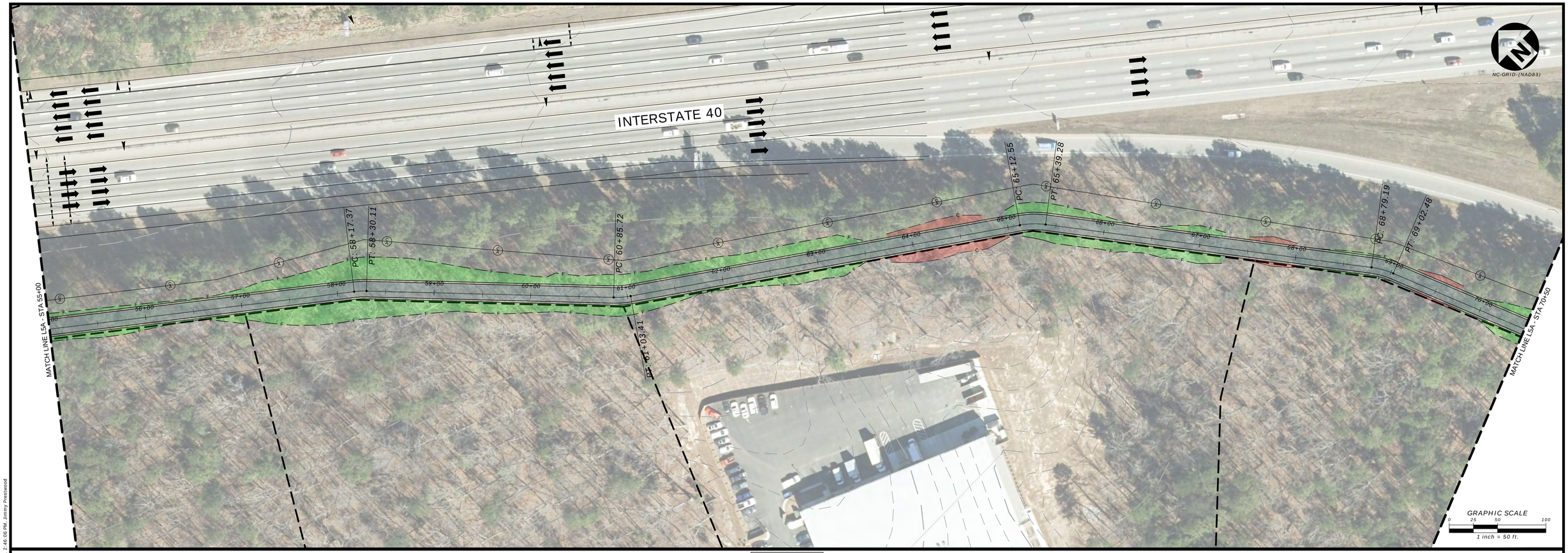
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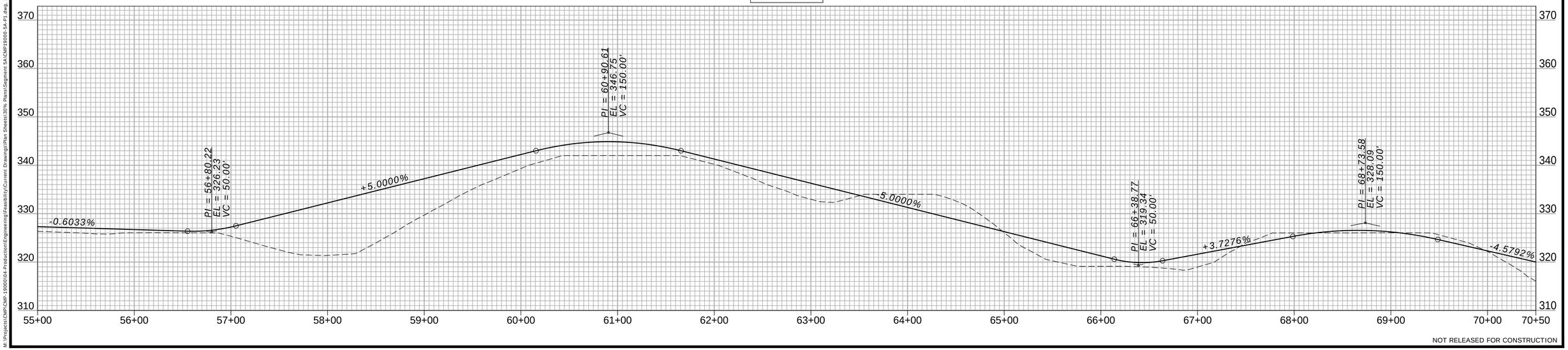
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HYDRAULICS ENGINEER
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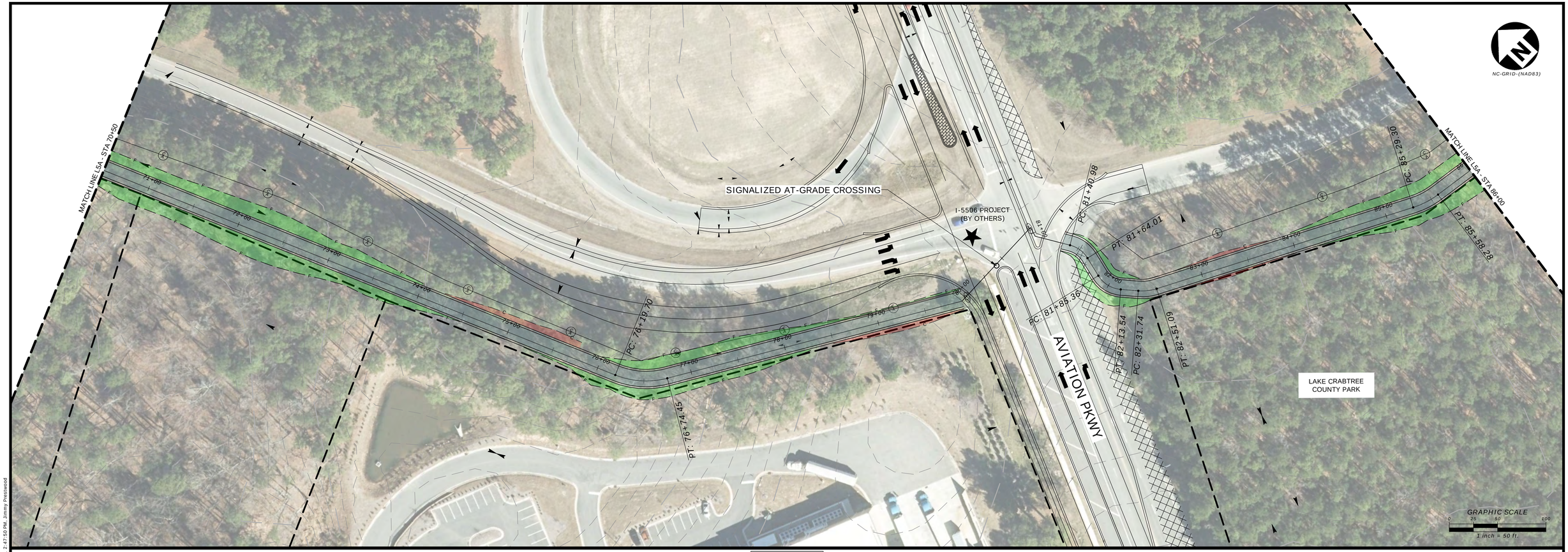
TRIANGLE BIKEWAY STUDY
SEGMENT 5A
AIRPORT BLVD TO OLD REEDY CREEK RD

TRIANGLE BIKEWAY

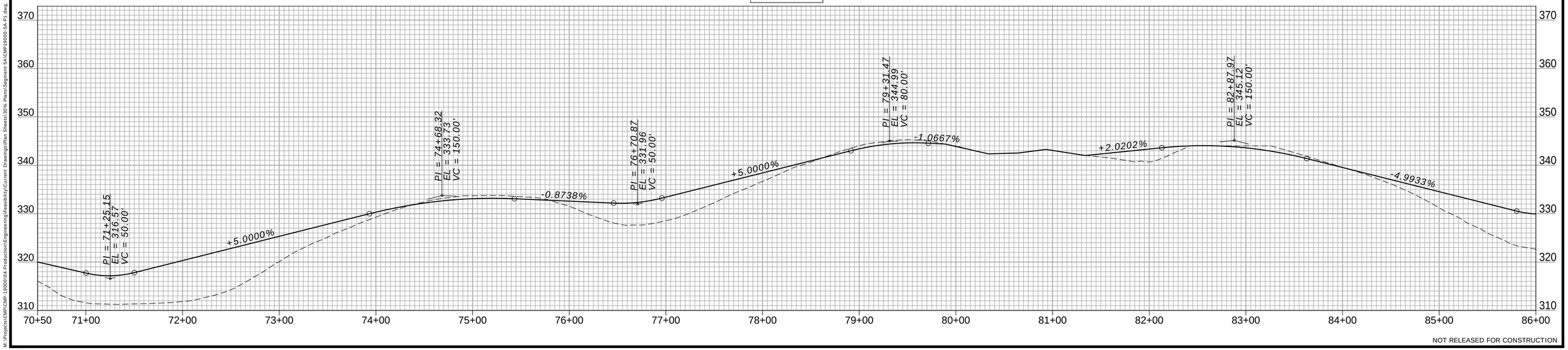
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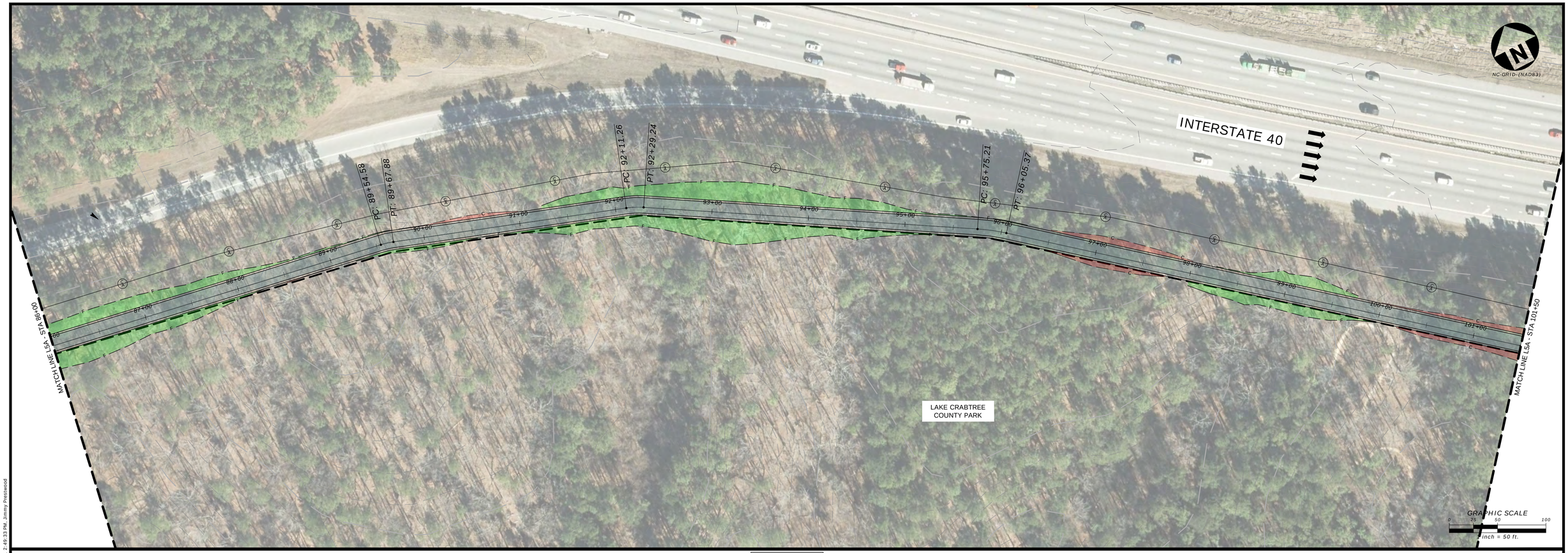
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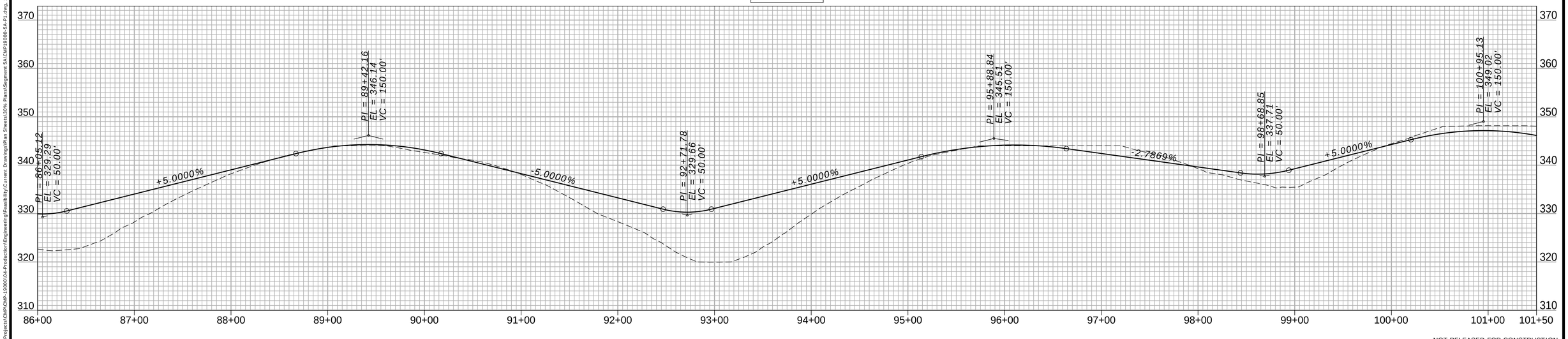
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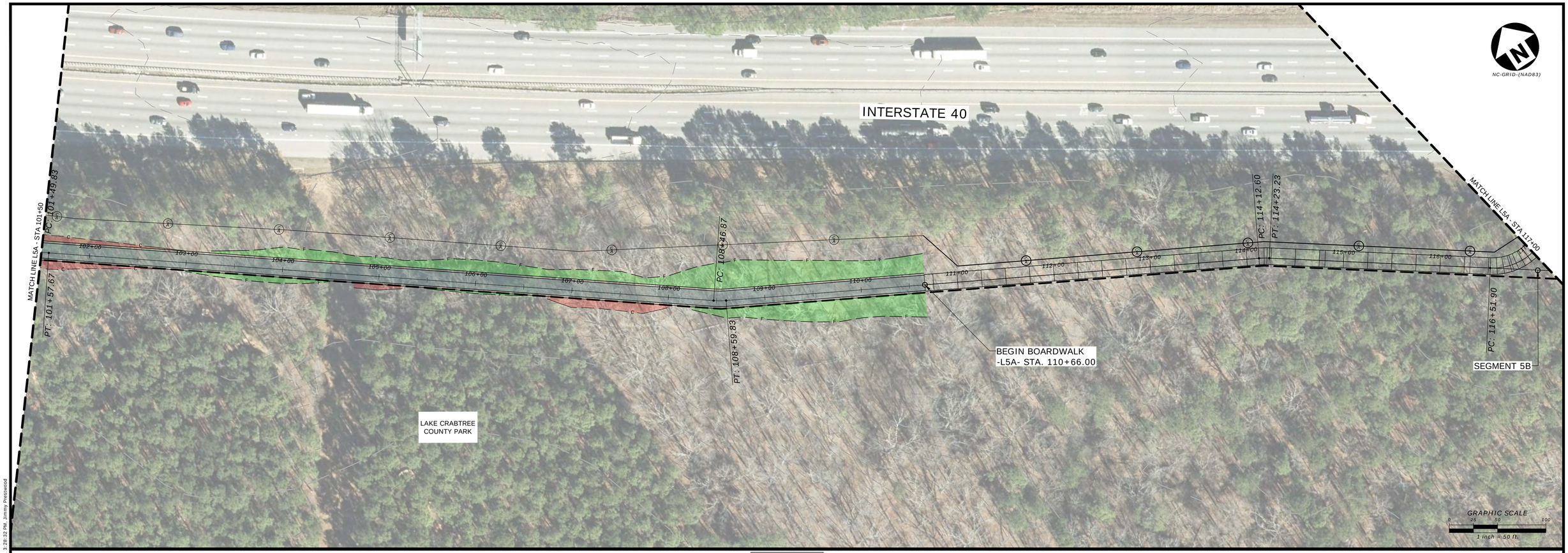
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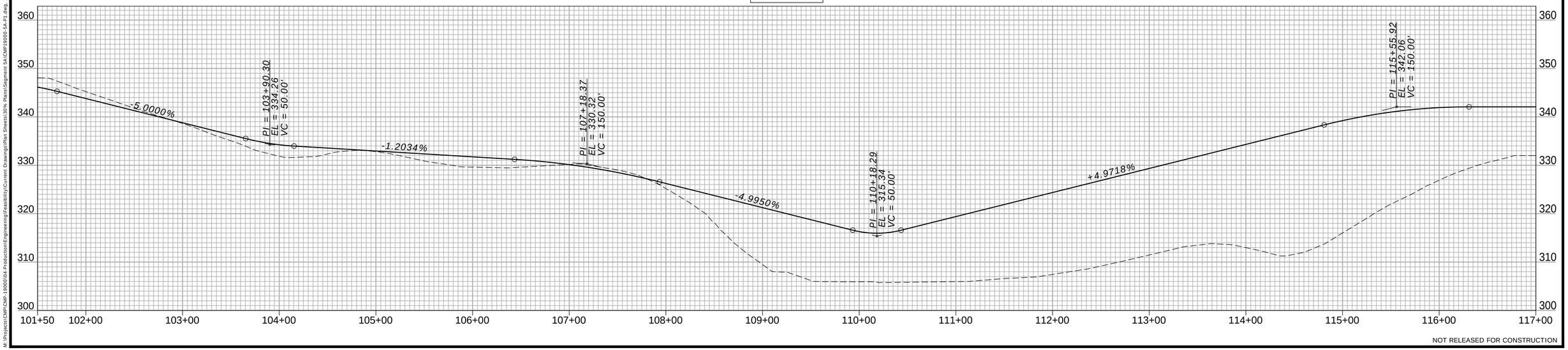
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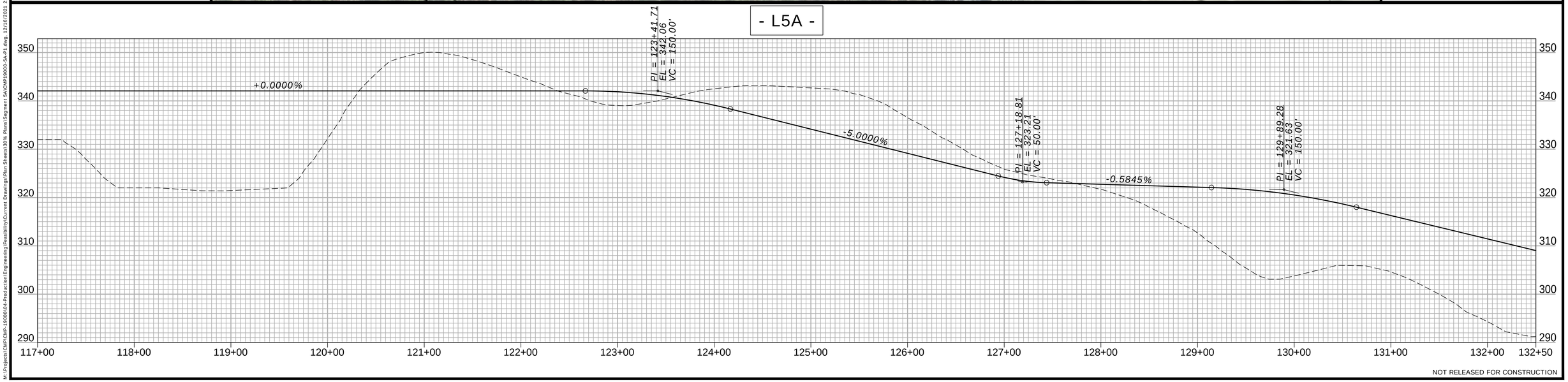
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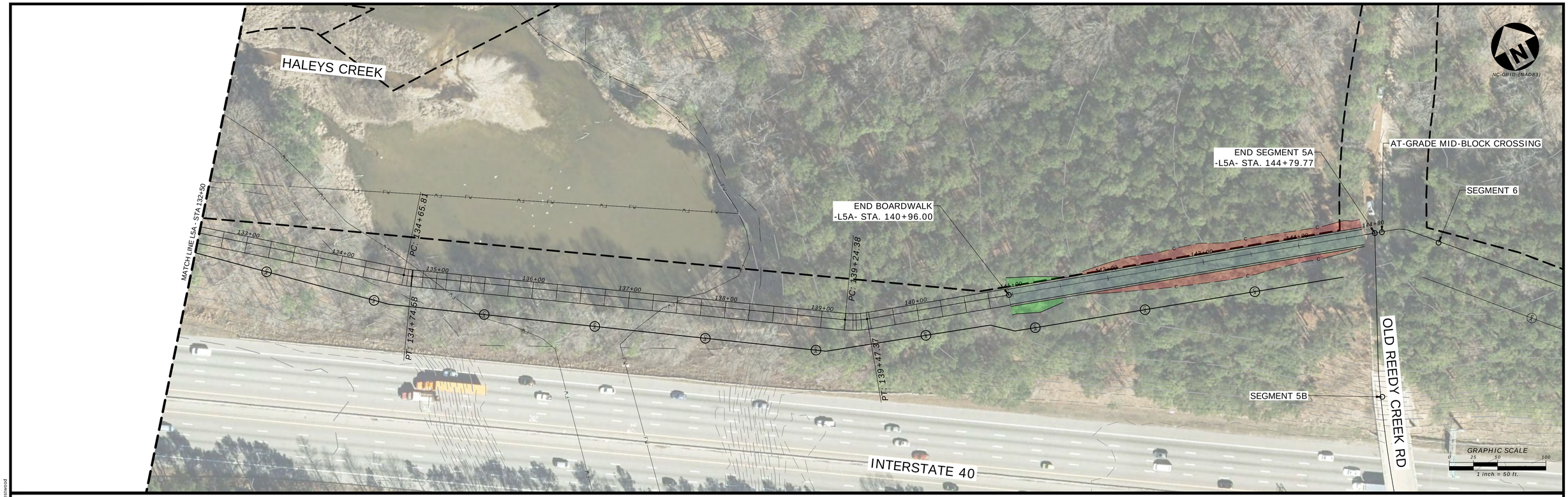
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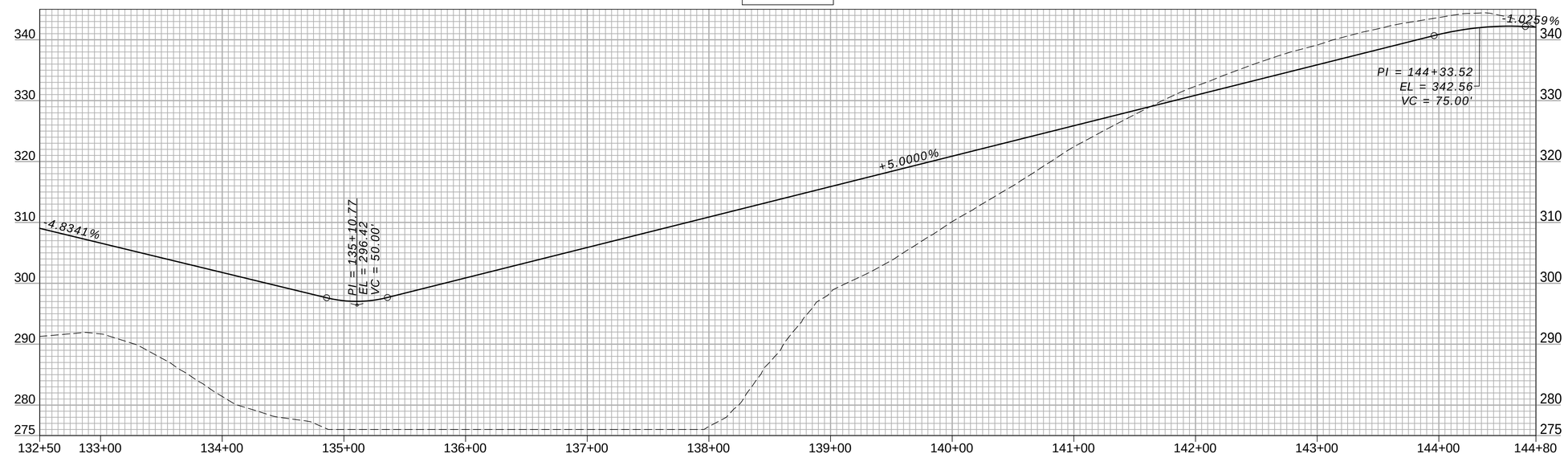
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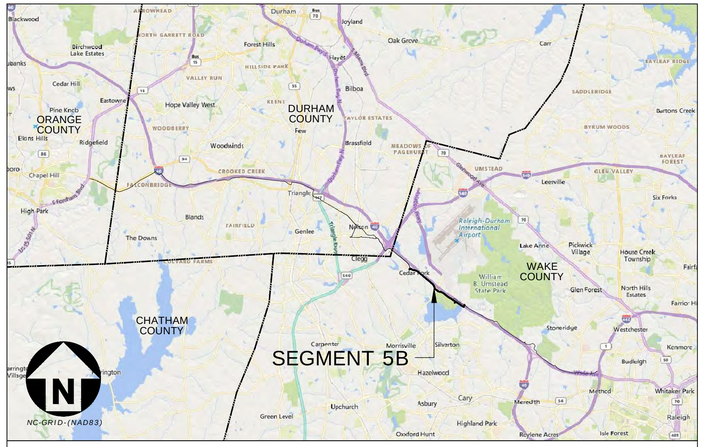
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WAKE COUNTY
NORTH CAROLINA

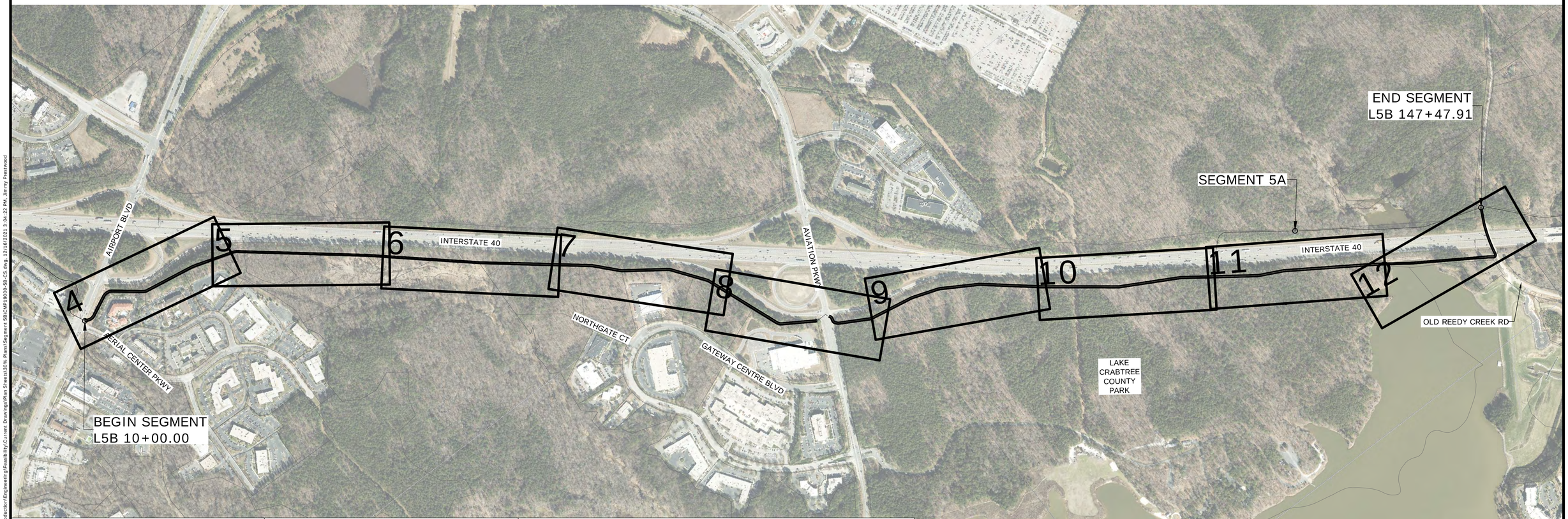
TRIANGLE BIKEWAY STUDY
SEGMENT 5B - AIRPORT BLVD TO OLD REEDY CREEK RD



VICINITY MAP

INDEX OF SHEETS

SHEET NO.	SHEET TITLE
1	COVER SHEET
1B	CONVENTIONAL SYMBOLS
4 THRU 12	PLAN & PROFILE SHEETS



PROJECT LENGTH	DESIGN DATA	GRAPHIC SCALES
LENGTH OF BRIDGE = 70 FT LENGTH OF BOARDWALK = 3590 FT TOTAL LENGTH OF SEGMENT = 2.60 MILES	DESIGN SPEED = 20 MPH LEAN ANGLE = 20 DEGREES FUNC. CLASSIFICATION = TRANSPORTATION	GRAPHIC SCALE 0 25 50 100 — 1 inch = 50 ft. — HORIZONTAL GRAPHIC SCALE 0 25 50 100 — 1 inch = 50 ft. — PROFILE (HORIZONTAL) GRAPHIC SCALE 0 5 10 20 — 1 inch = 10 ft. — PROFILE (VERTICAL)

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SEGMENT 5B
AIRPORT BLVD TO OLD REEDY CREEK RD

TRIANGLE BIKEWAY

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STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (TVTL)
- 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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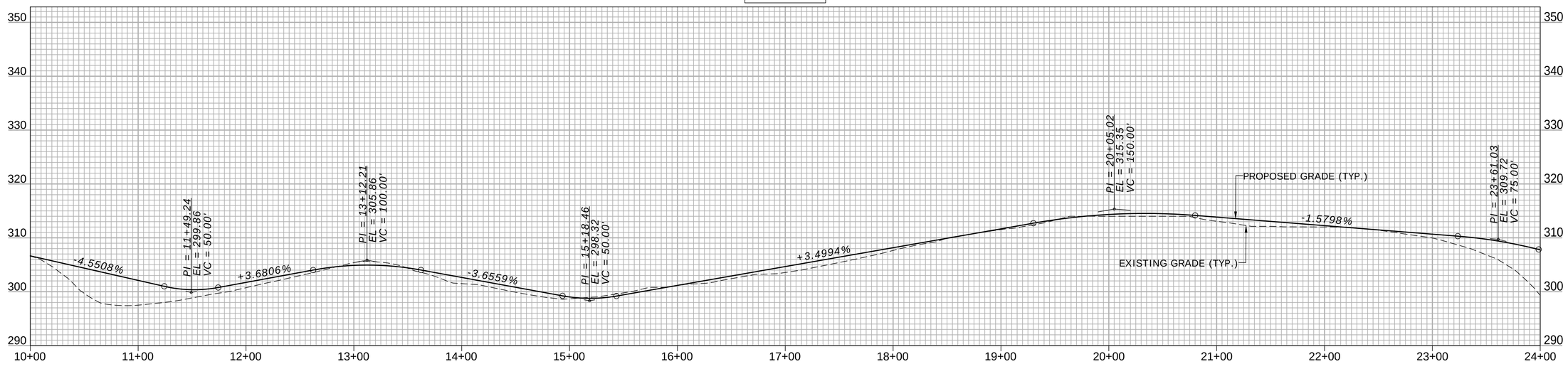
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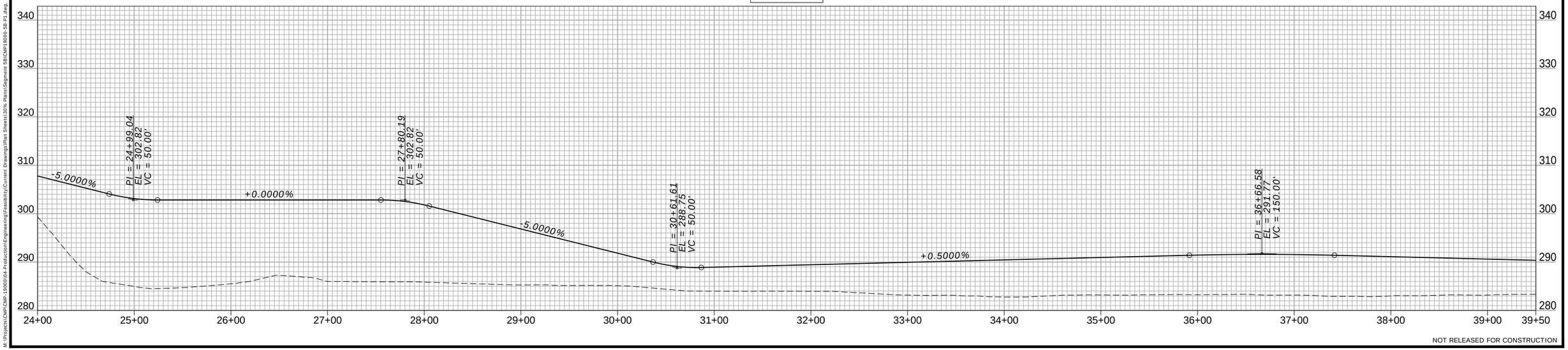
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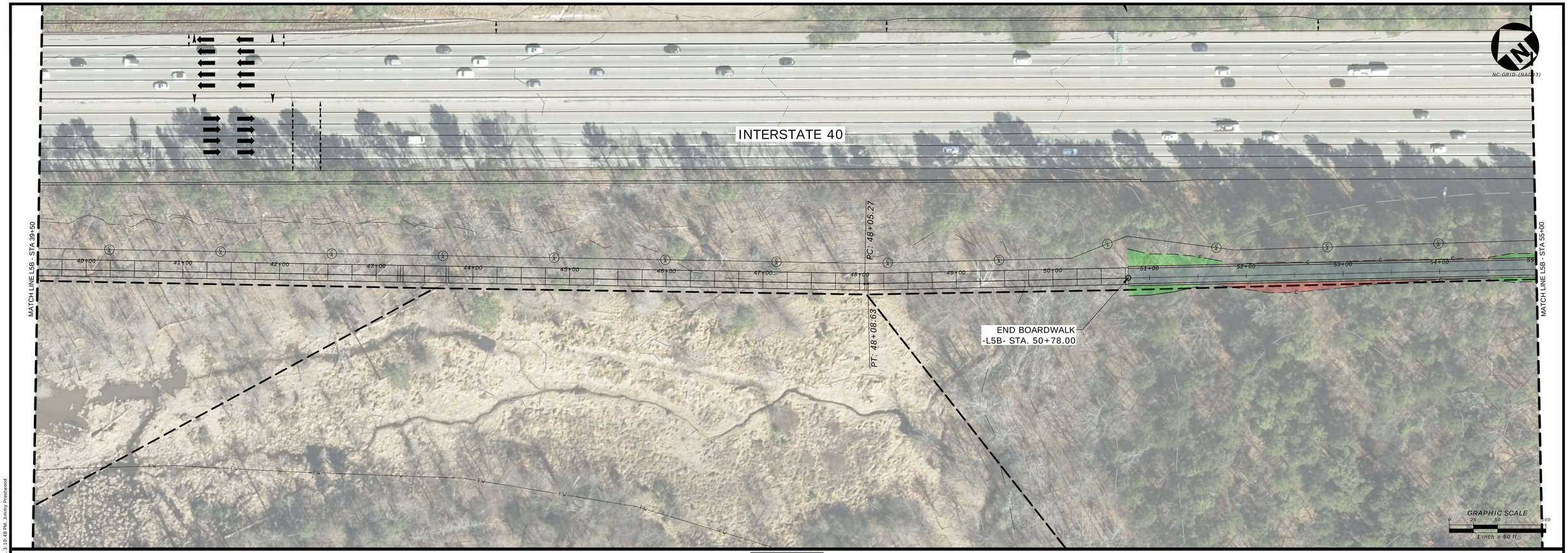
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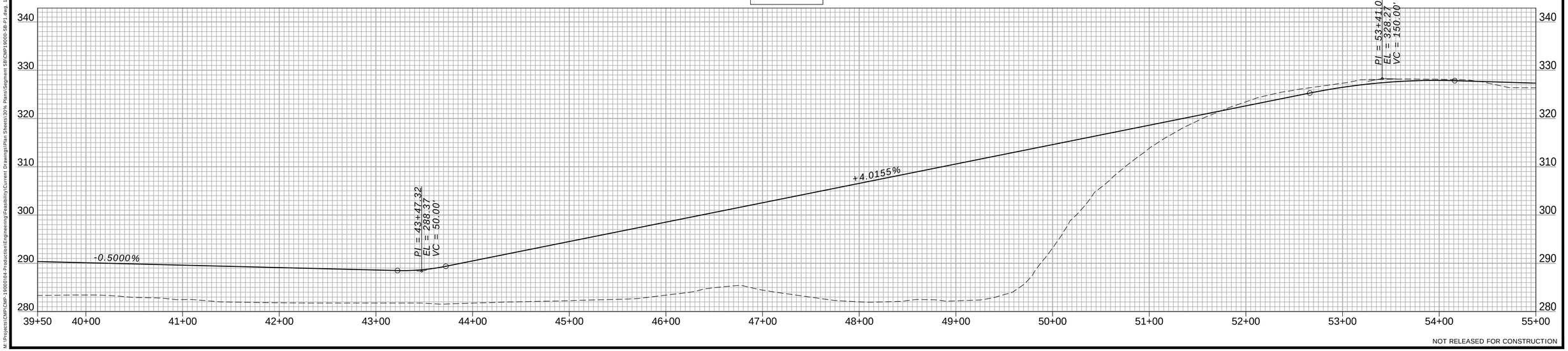
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GREENWAY ENGINEER
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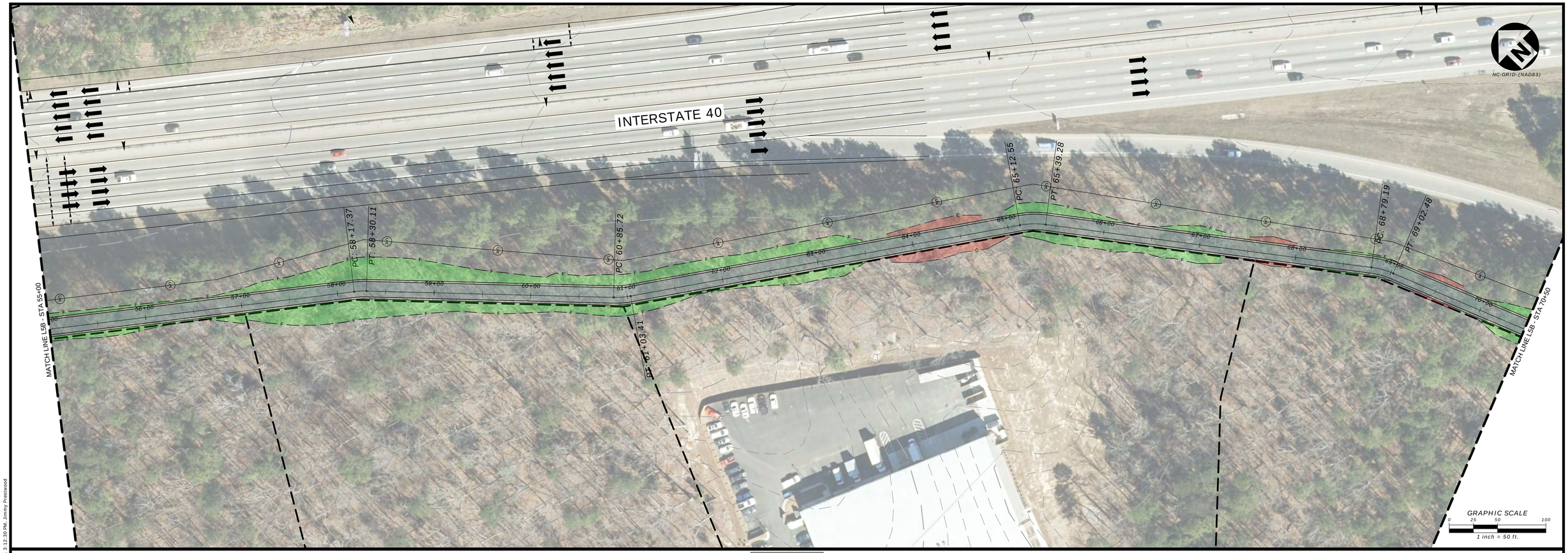
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SEGMENT 5B
AIRPORT BLVD TO OLD REEDY CREEK RD

TRIANGLE BIKEWAY

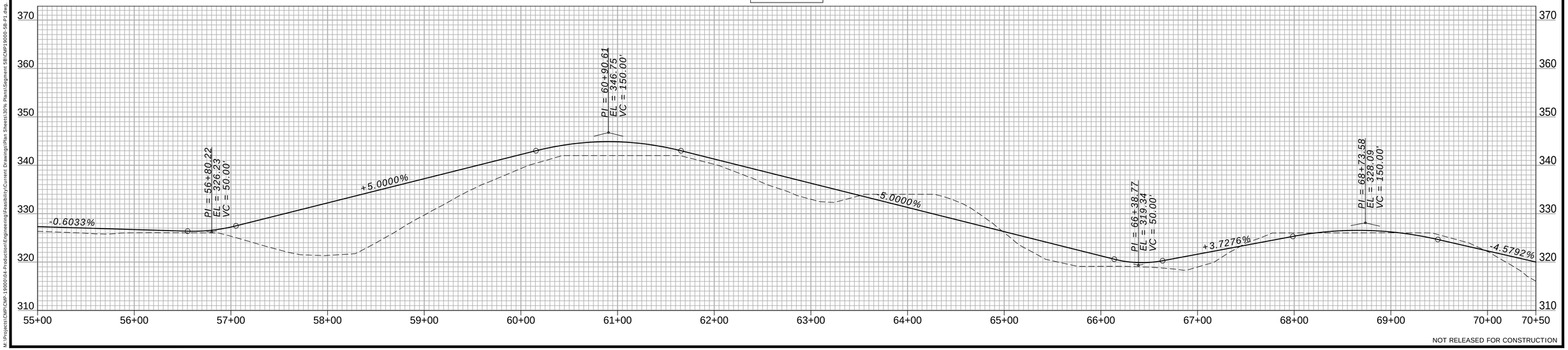
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DATE	DECEMBER 2021

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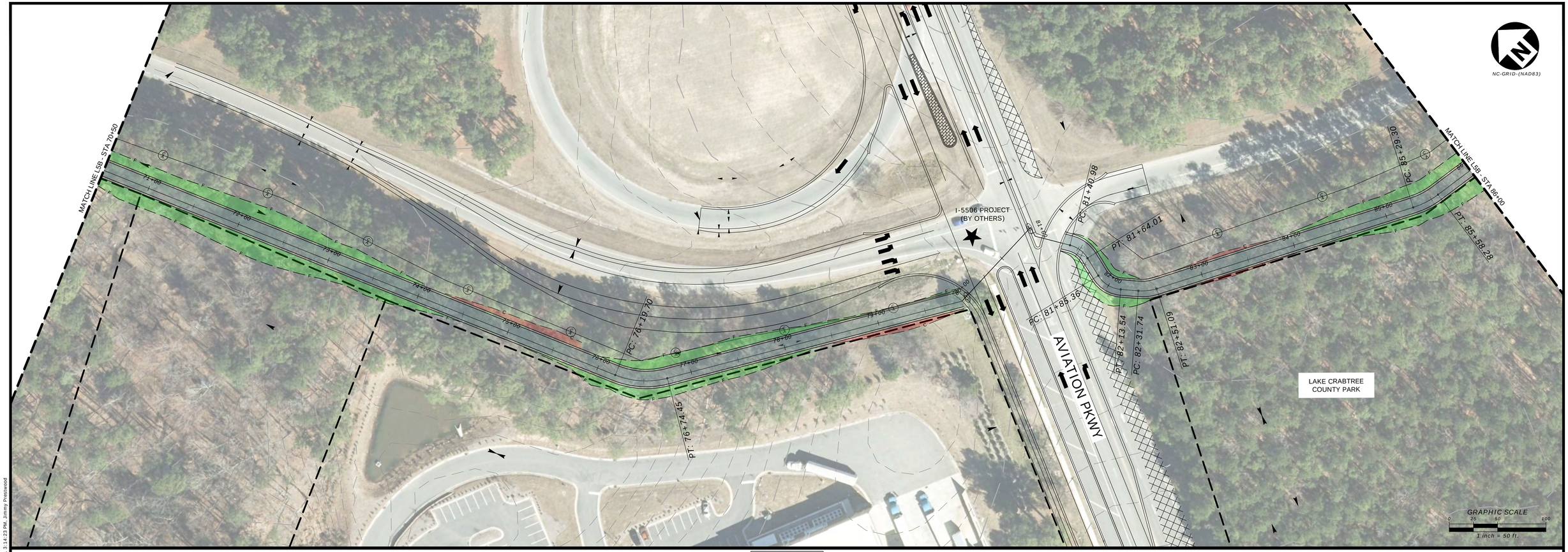
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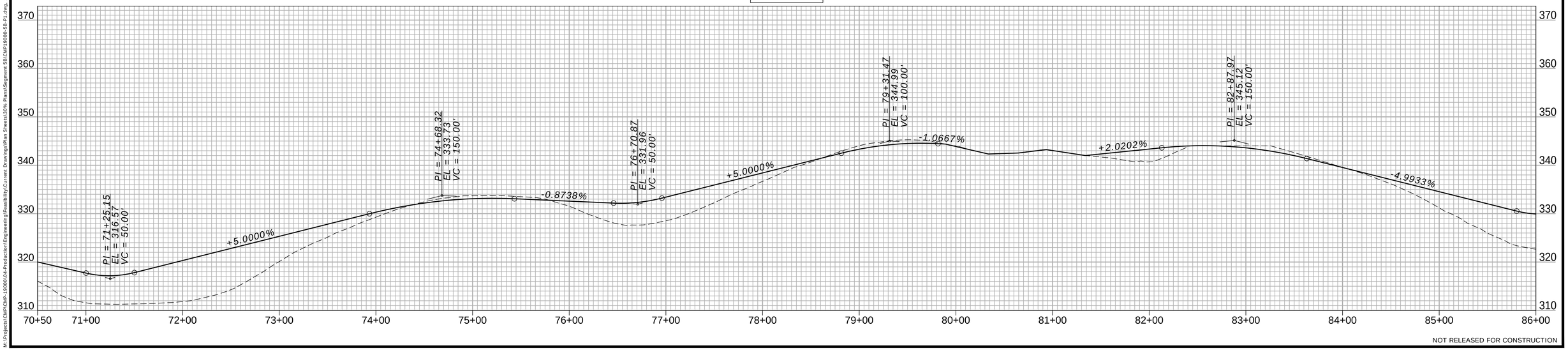
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TRIANGLE BIKEWAY STUDY

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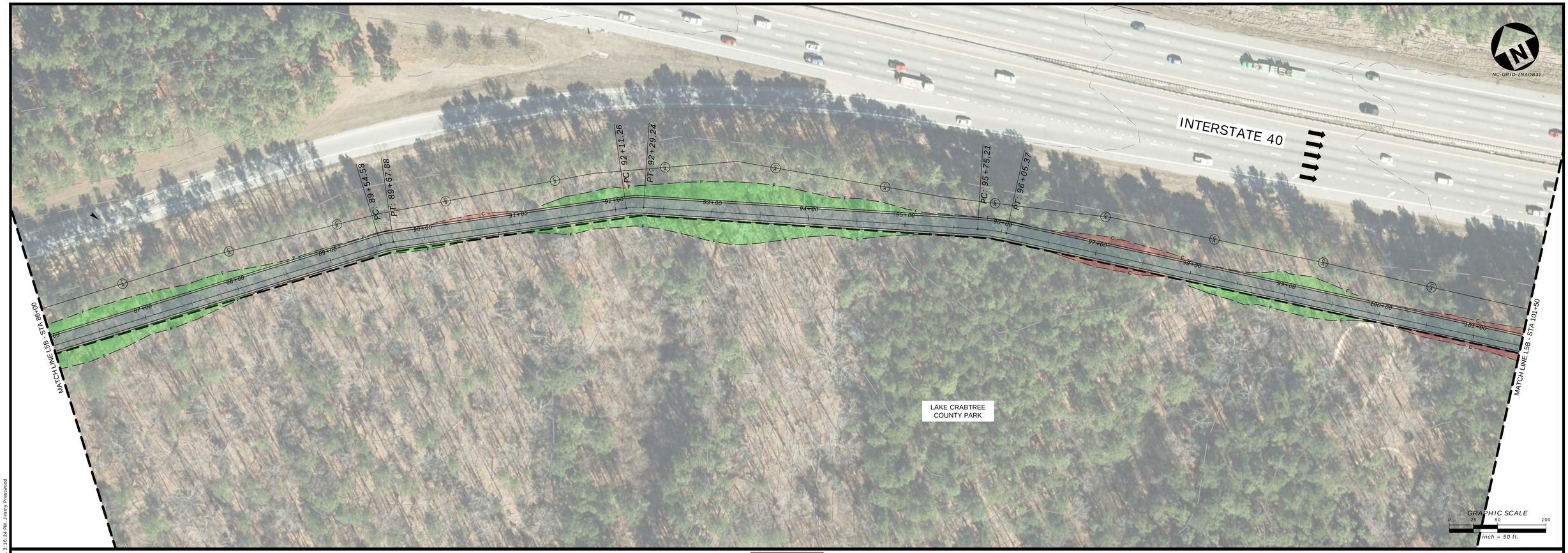
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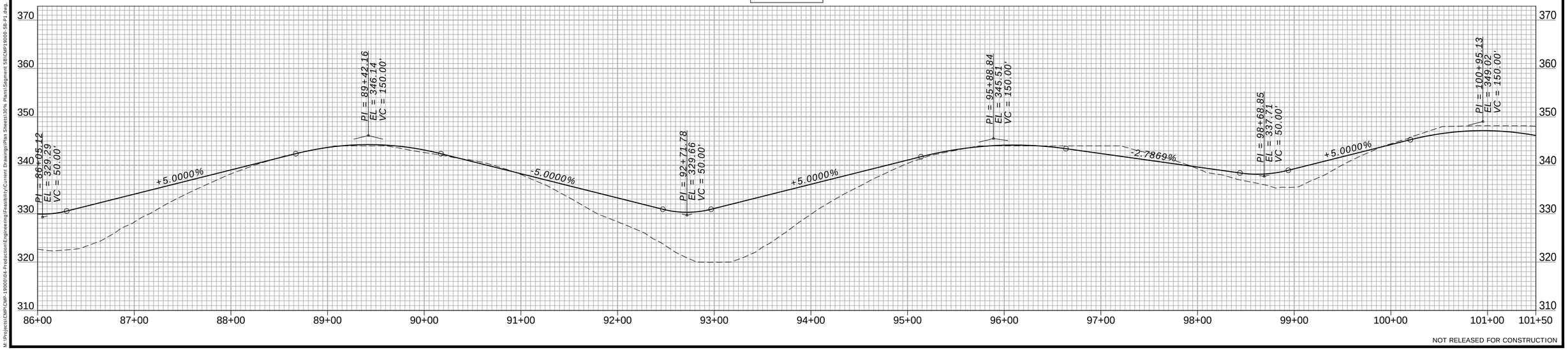
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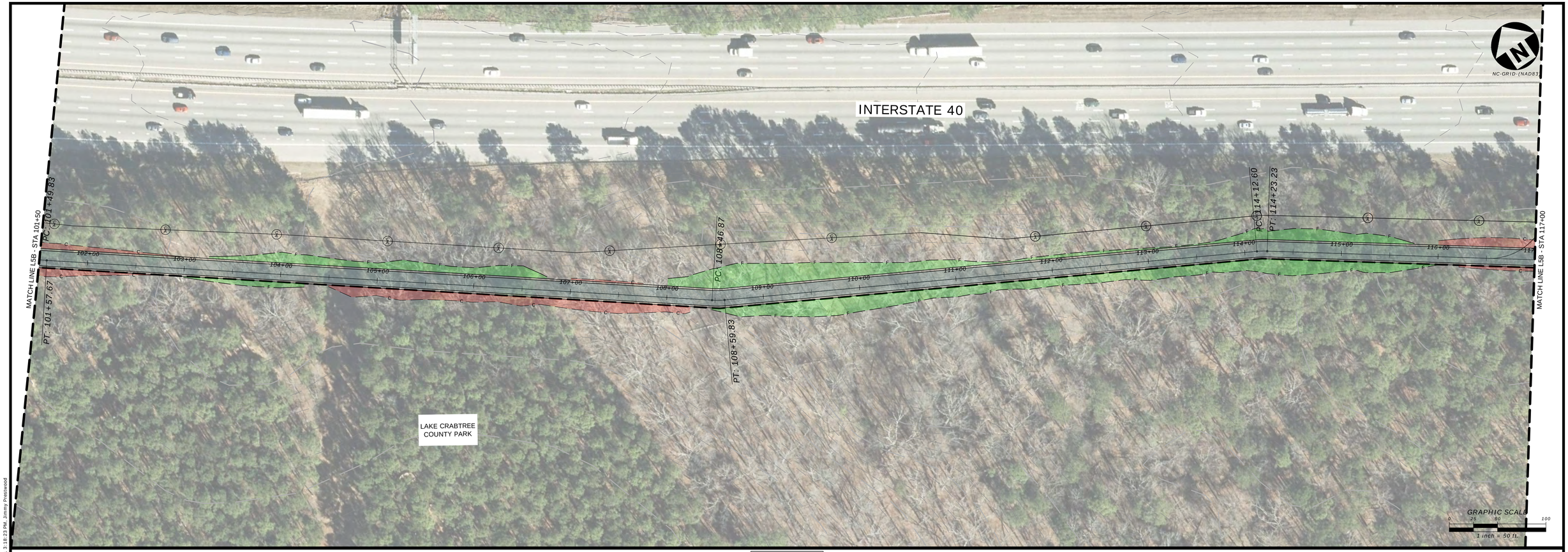
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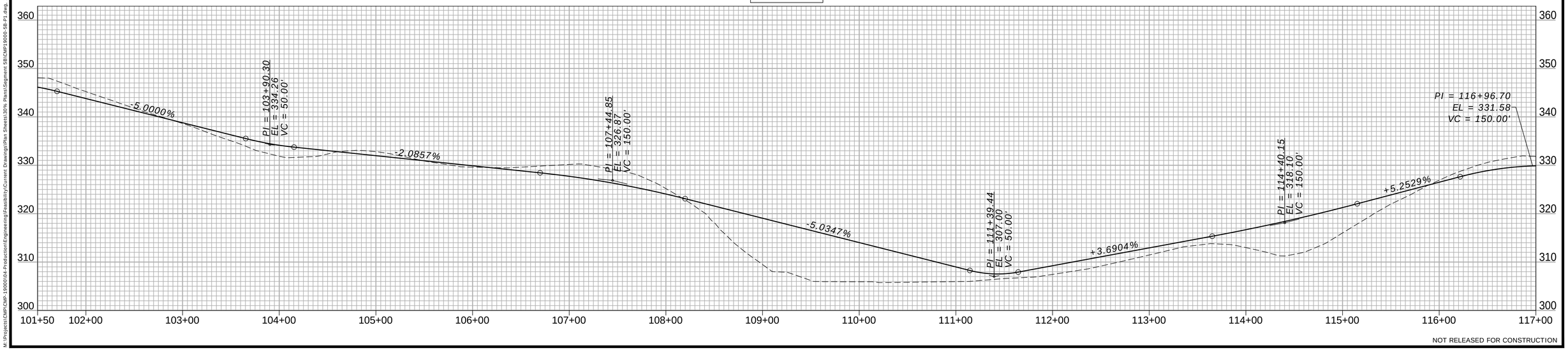
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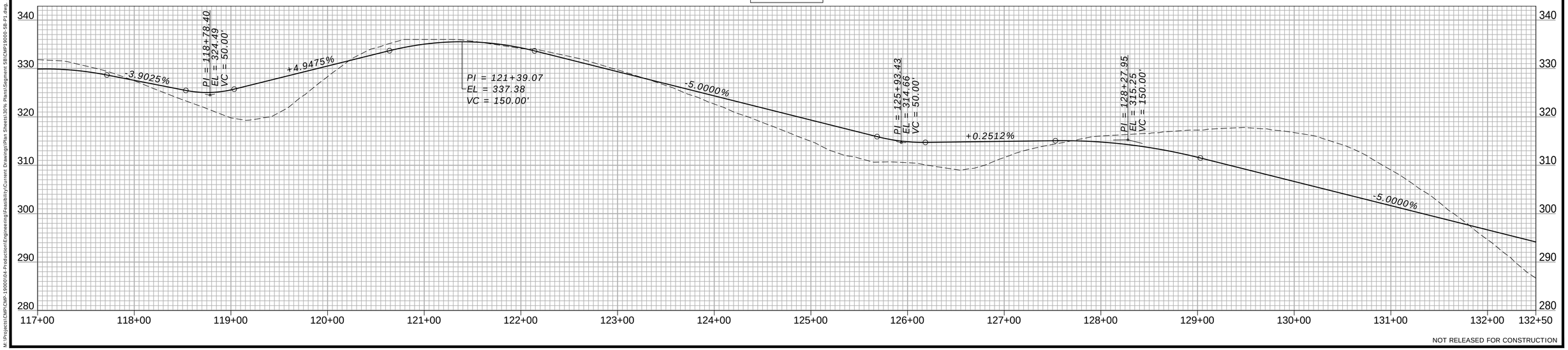
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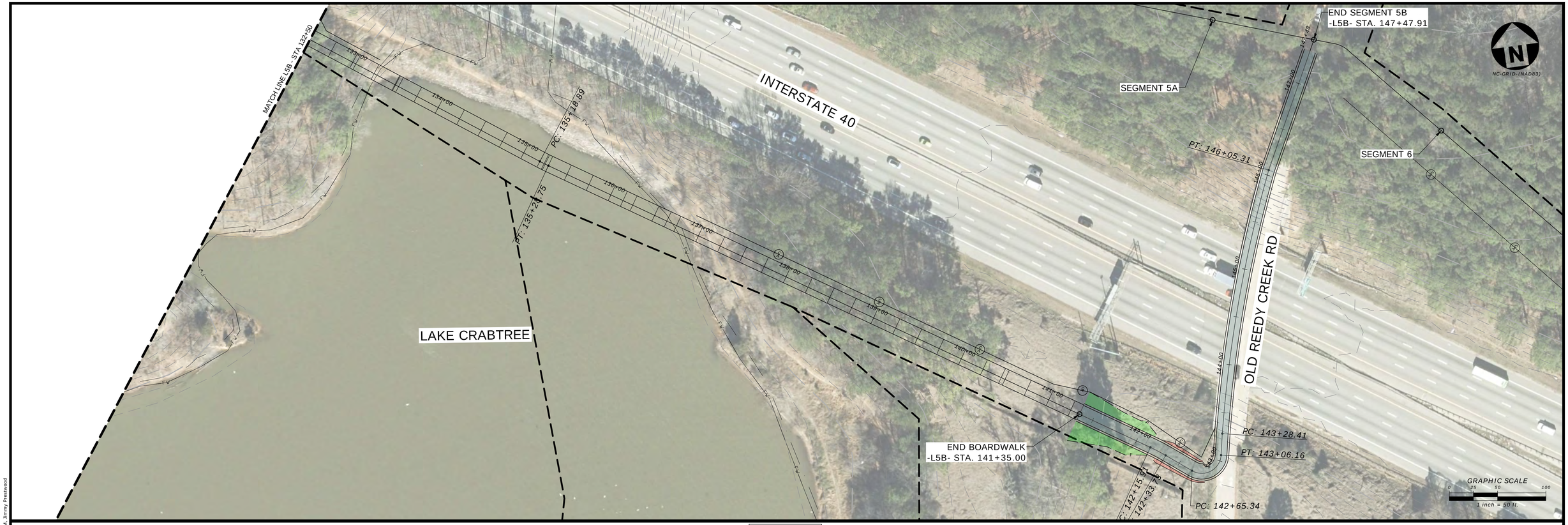
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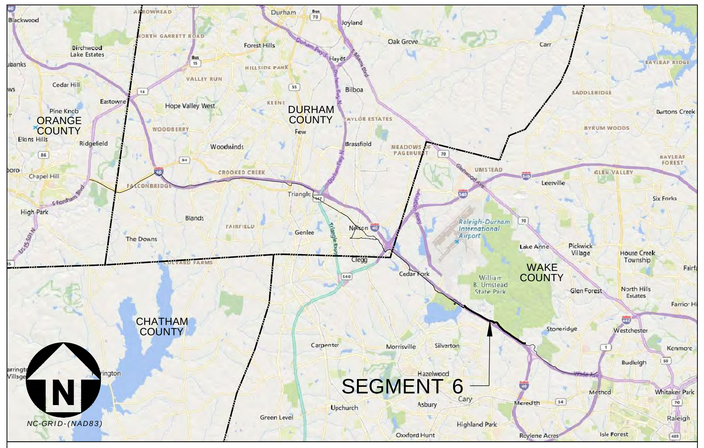
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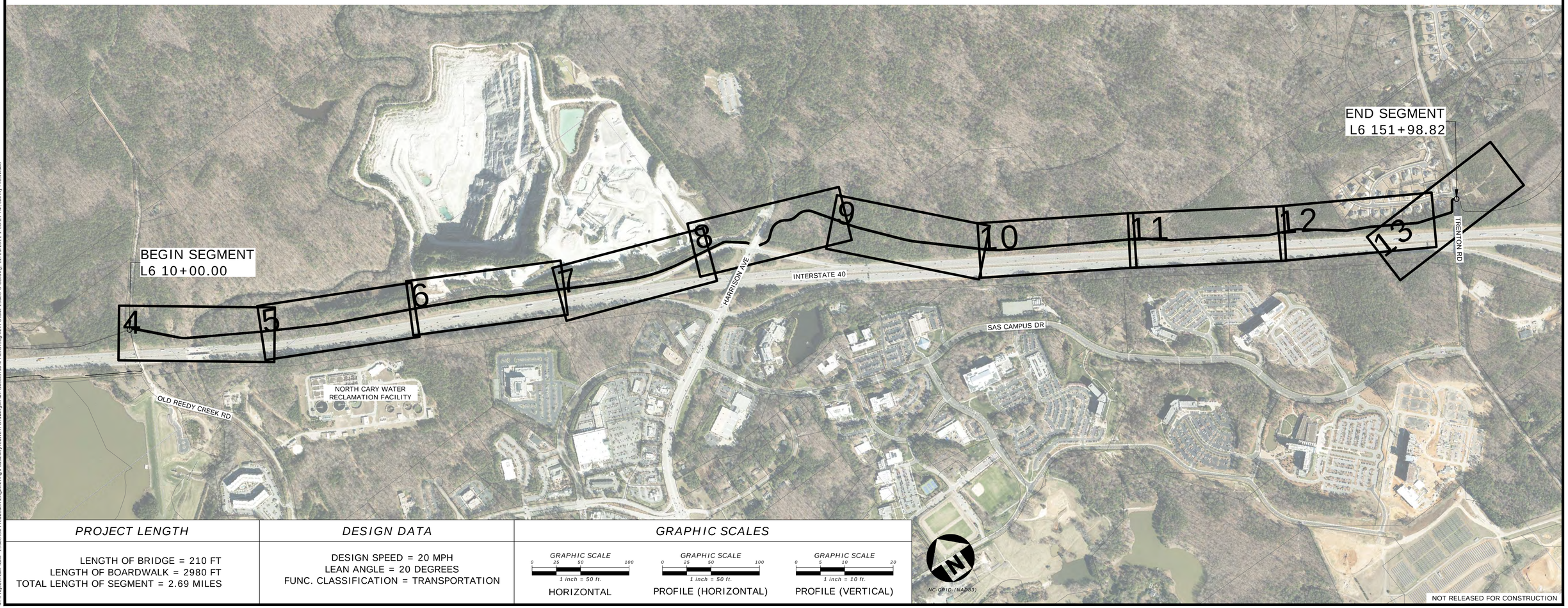
VICINITY MAP

WAKE COUNTY
NORTH CAROLINA

TRIANGLE BIKEWAY STUDY
SEGMENT 6 - OLD REEDY CREEK RD TO TRENTON RD

INDEX OF SHEETS

SHEET NO.	SHEET TITLE
1	COVER SHEET
1B	CONVENTIONAL SYMBOLS
4 THRU 13	PLAN & PROFILE SHEETS



PROJECT LENGTH	*DESIGN DATA*	*GRAPHIC SCALES*
LENGTH OF BRIDGE = 210 FT LENGTH OF BOARDWALK = 2980 FT TOTAL LENGTH OF SEGMENT = 2.69 MILES	DESIGN SPEED = 20 MPH LEAN ANGLE = 20 DEGREES FUNC. CLASSIFICATION = TRANSPORTATION	GRAPHIC SCALE 0 25 50 100 — 1 inch = 50 ft. — HORIZONTAL GRAPHIC SCALE 0 25 50 100 — 1 inch = 50 ft. — PROFILE (HORIZONTAL) GRAPHIC SCALE 0 5 10 20 — 1 inch = 10 ft. — PROFILE (VERTICAL)

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TRIANGLE BIKEWAY STUDY
SEGMENT 6
OLD REEDY CREEK RD TO TRENTON RD

TRIANGLE BIKEWAY

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STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (TU/TL)
- 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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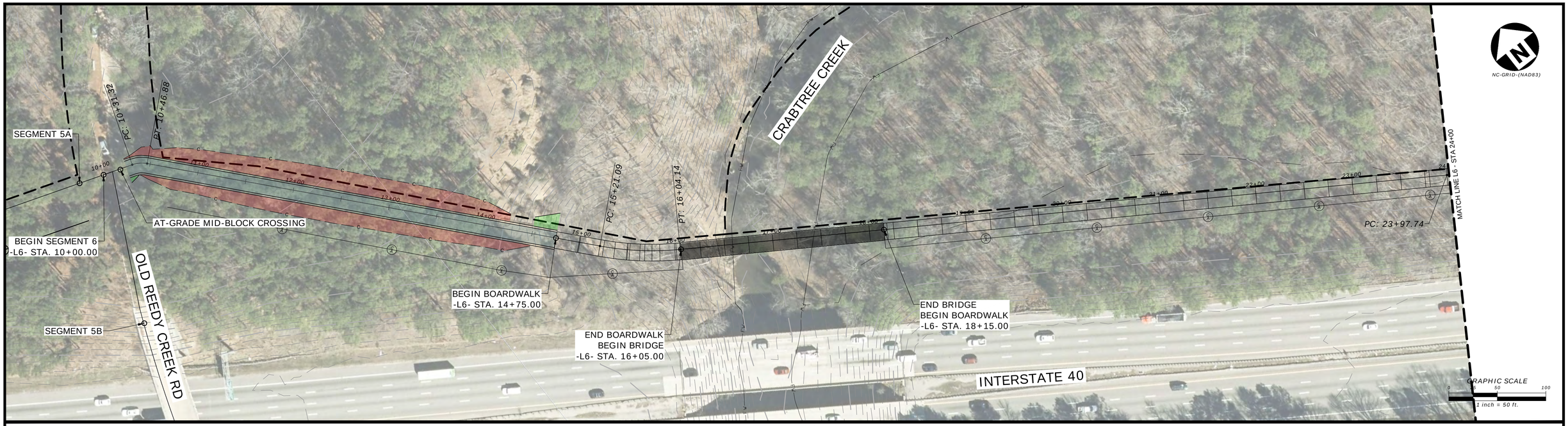
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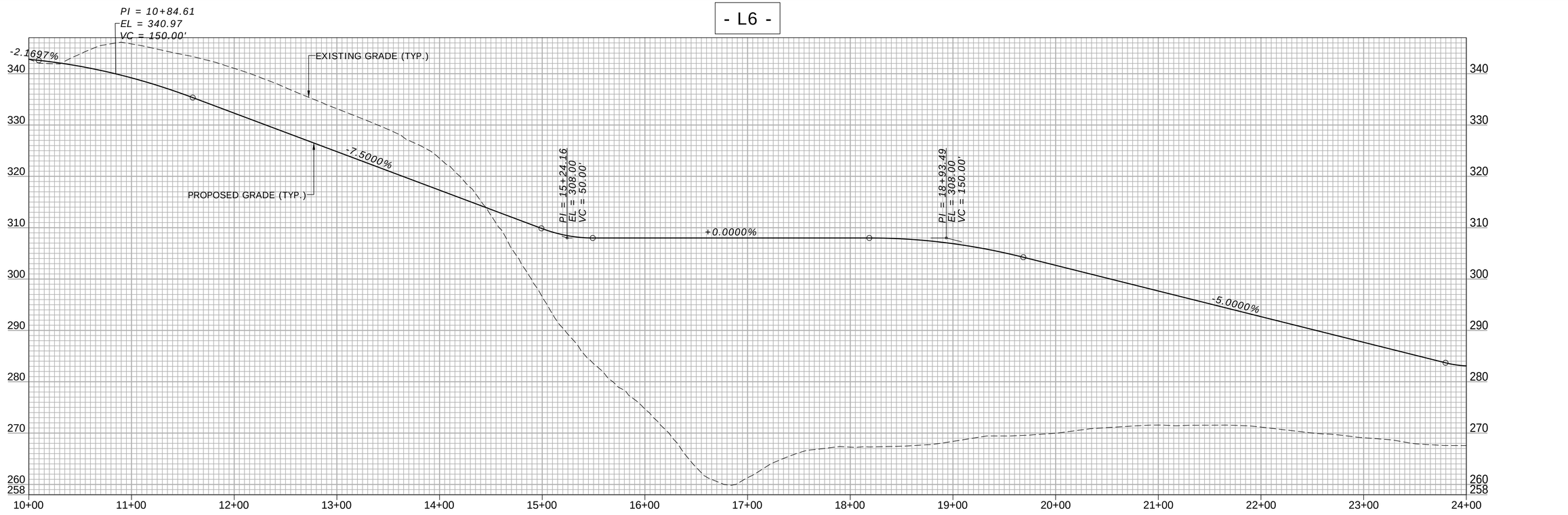
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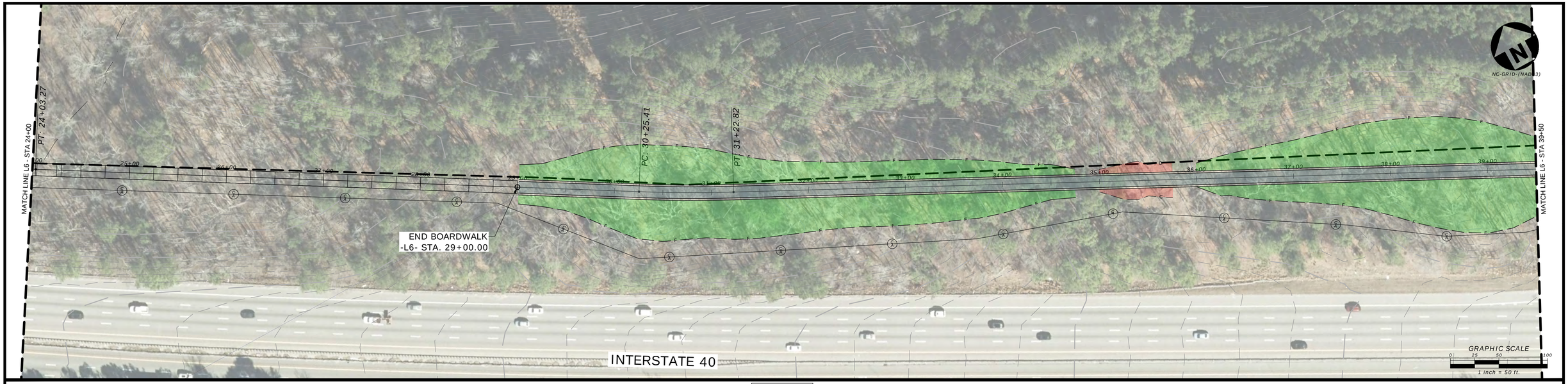
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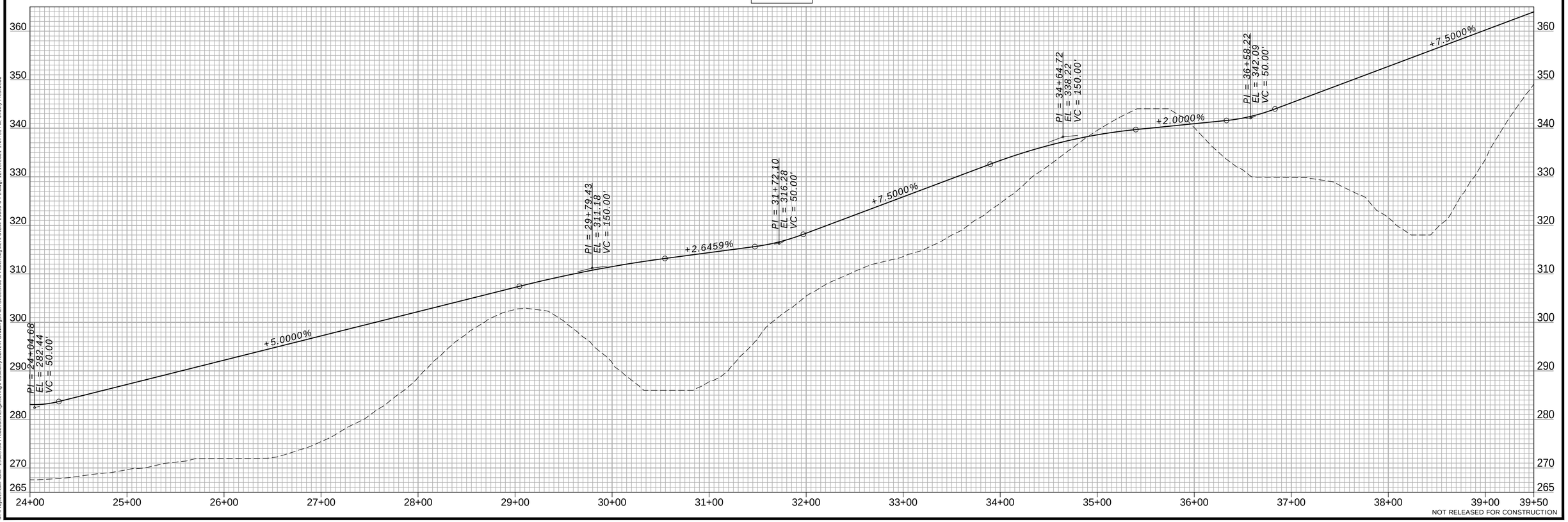
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fax 919. 361. 2269
license number: C-0293, C-187

www.mcadamsco.com

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NC Capital Area Metropolitan Planning Organization

REVISIONS
NO. DATE

GREENWAY ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

HYDRAULICS ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

TRIANGLE BIKEWAY STUDY

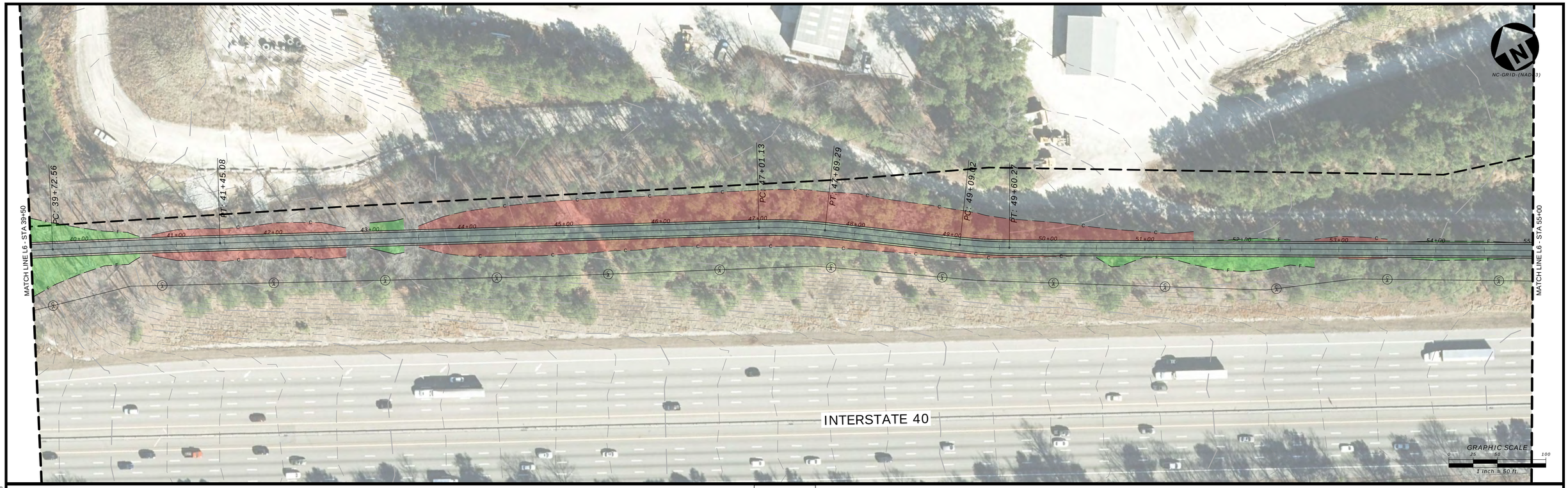
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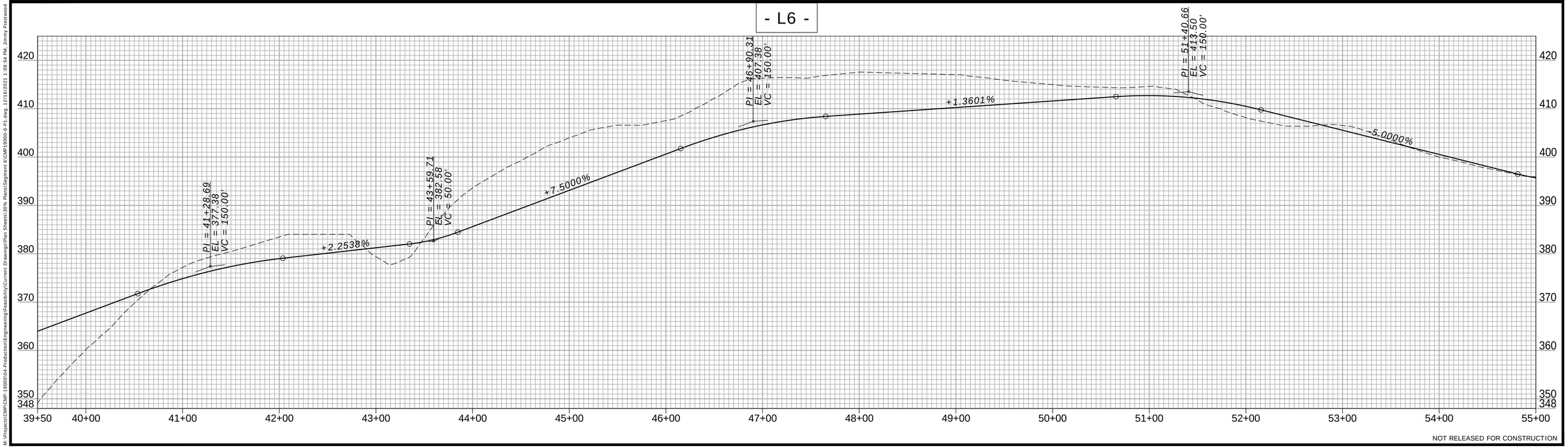
TRIANGLE BIKEWAY

PLAN INFORMATION

PROJECT NO.	CMP-19000
FILENAME	CMP19000-6-P1.dwg
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DRAWN BY	----
SCALE	1" = 50' / 1"=10'
DATE	DECEMBER 2021



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TRIANGLE BIKEWAY STUDY
SEGMENT 6
OLD REEDY CREEK RD TO TRENTON RD

TRIANGLE BIKEWAY

PLAN INFORMATION

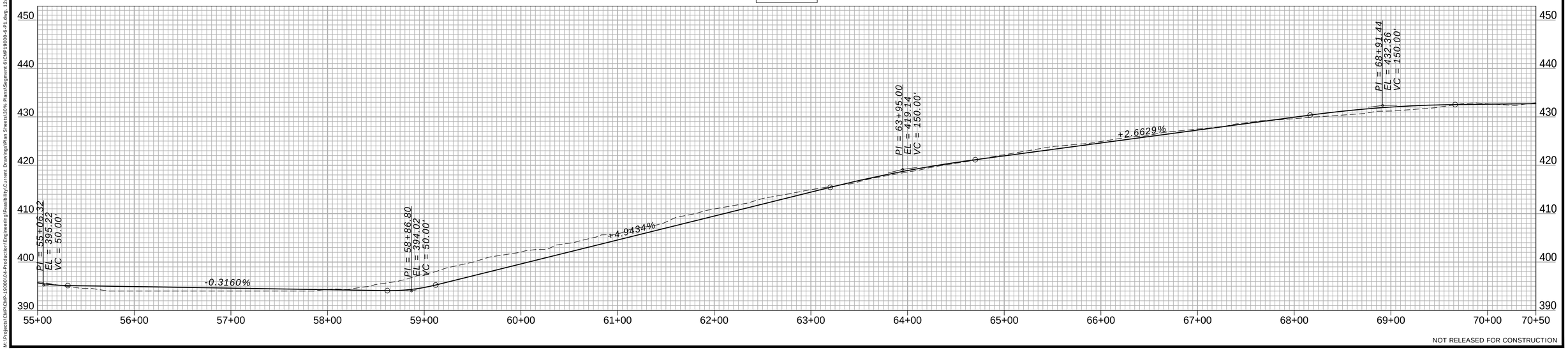
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DATE	DECEMBER 2021

6

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PRELIMINARY
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HYDRAULICS ENGINEER

PRELIMINARY
NOT FOR CONSTRUCTION

TRIANGLE BIKEWAY STUDY

SEGMENT 6

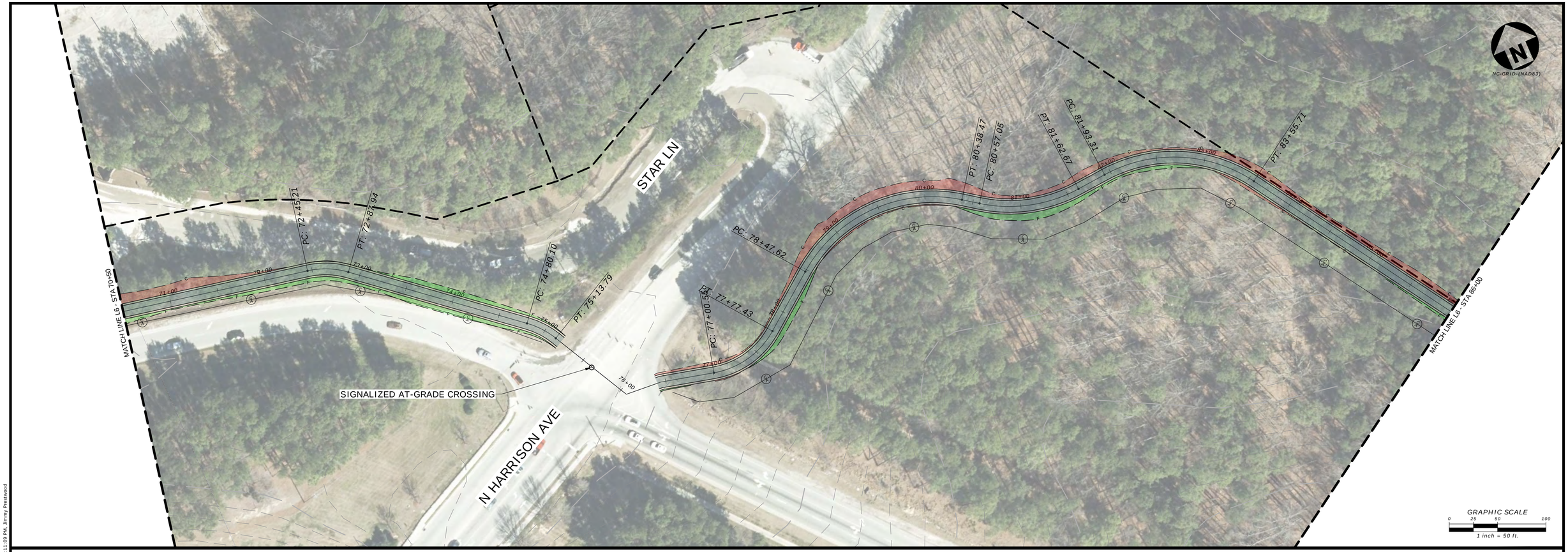
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TRIANGLE BIKEWAY

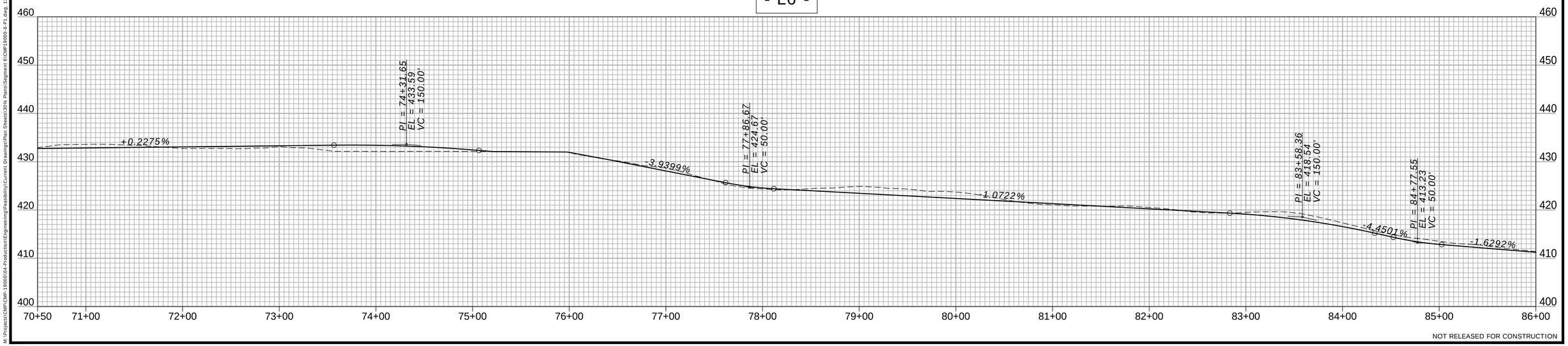
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DATE	DECEMBER 2021

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HYDRAULICS ENGINEER
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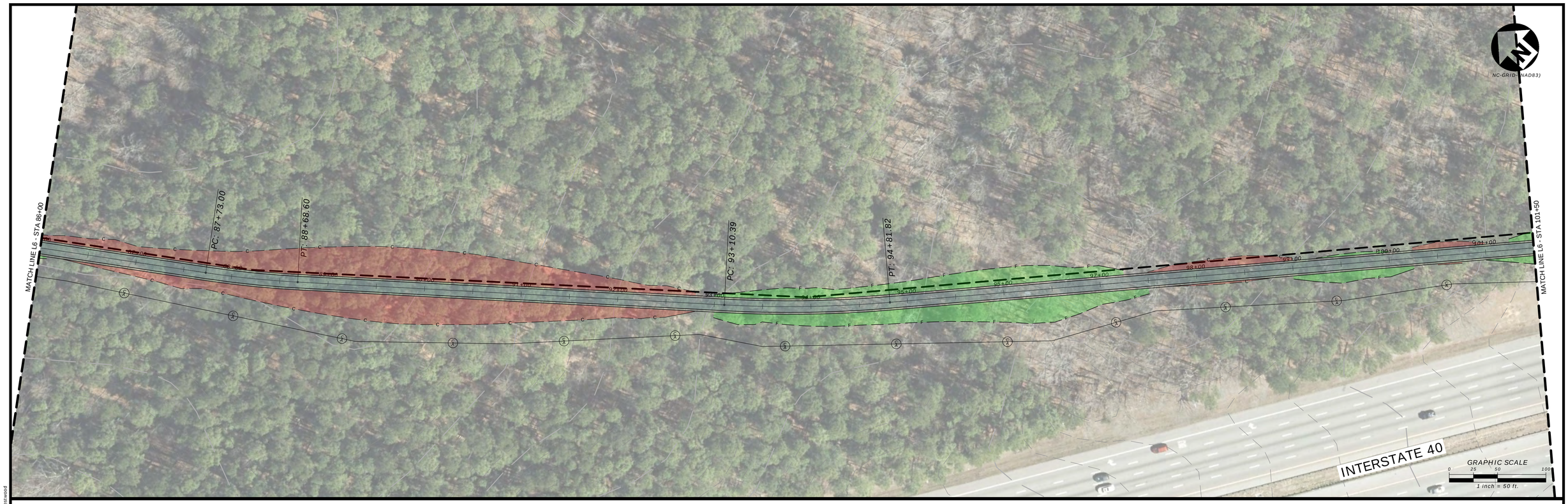
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SEGMENT 6
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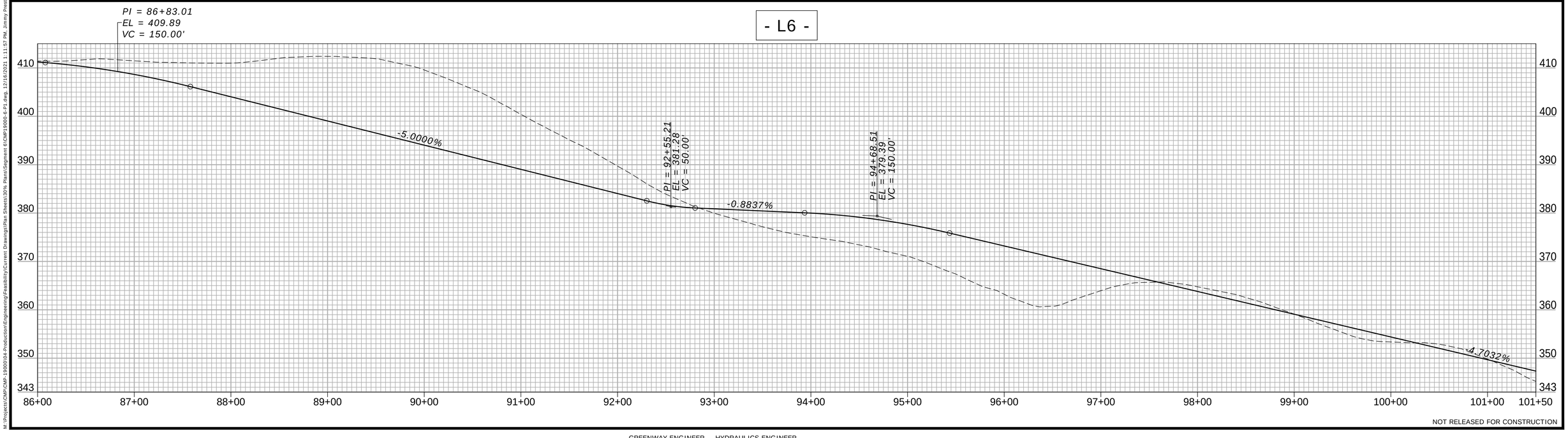
TRIANGLE BIKEWAY

PLAN INFORMATION

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TRIANGLE BIKEWAY STUDY
SEGMENT 6
OLD REEDY CREEK RD TO TRENTON RD

TRIANGLE BIKEWAY

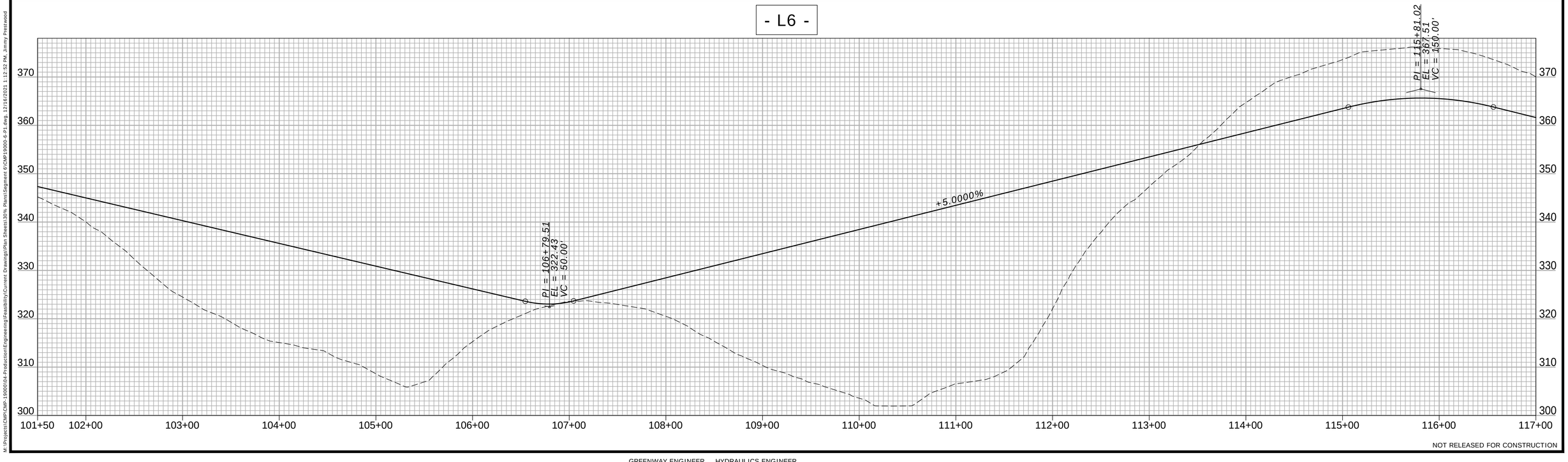
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- L6 -



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GREENWAY ENGINEER

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HYDRAULICS ENGINEER

PRELIMINARY
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TRIANGLE BIKEWAY STUDY

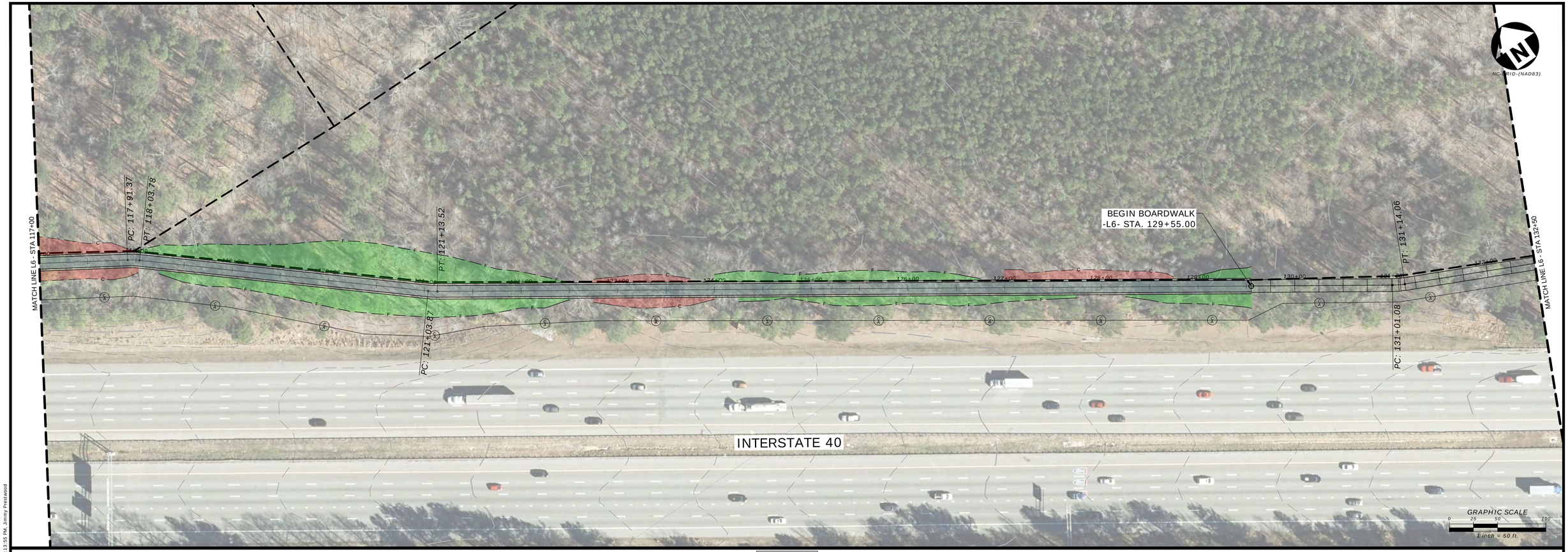
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OLD REEDY CREEK RD TO TRENTON RD

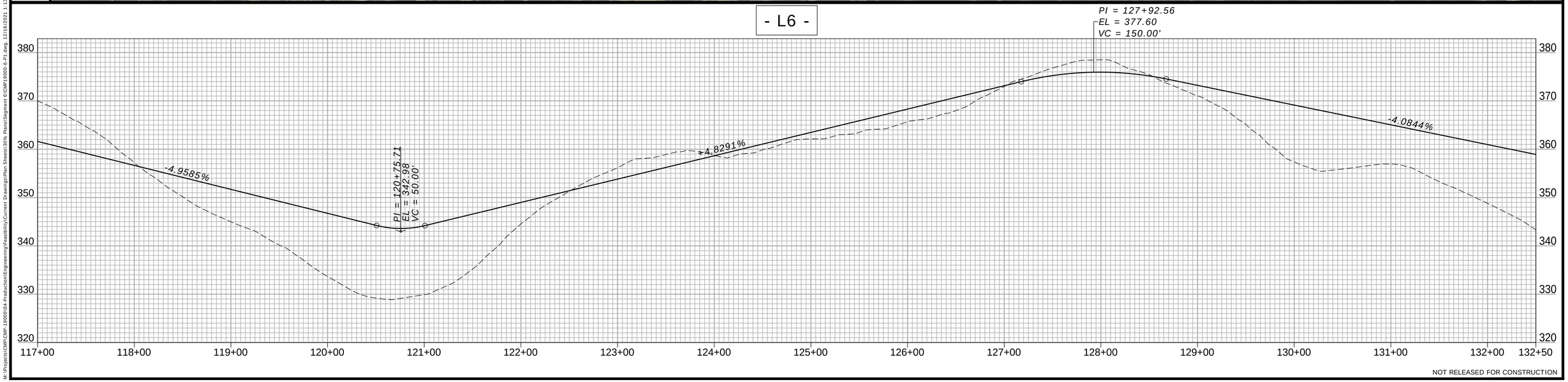
TRIANGLE BIKEWAY

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TRIANGLE BIKEWAY STUDY

SEGMENT 6

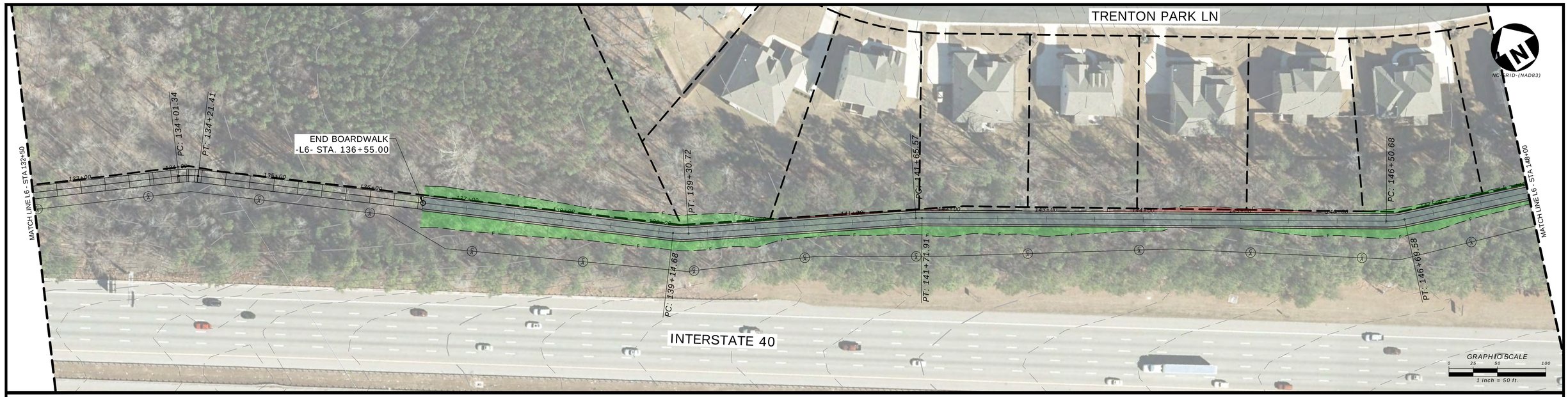
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TRIANGLE BIKEWAY

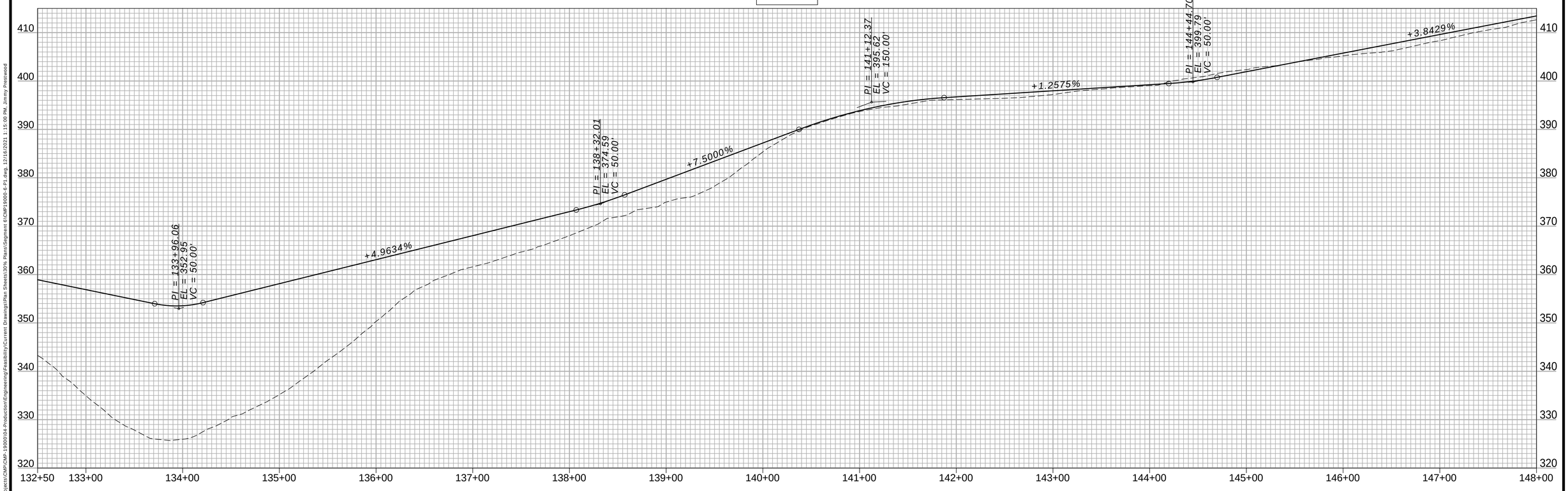
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HYDRAULICS ENGINEER

PRELIMINARY
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TRIANGLE BIKEWAY STUDY

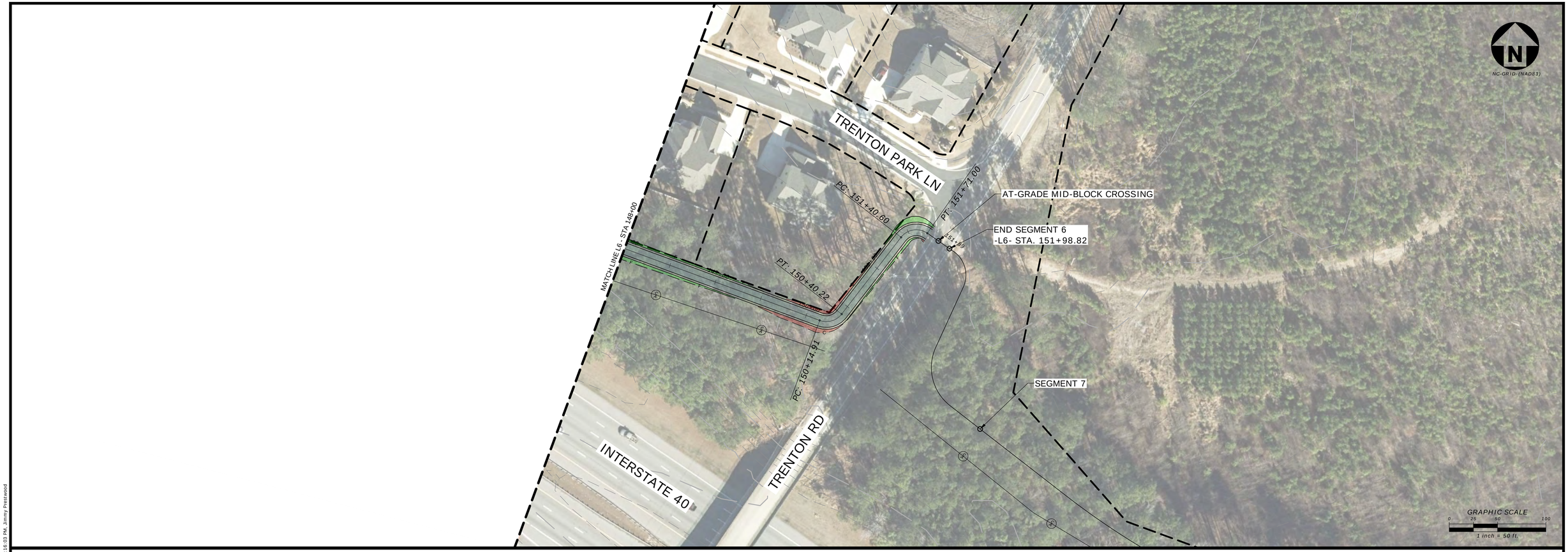
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OLD REEDY CREEK RD TO TRENTON RD

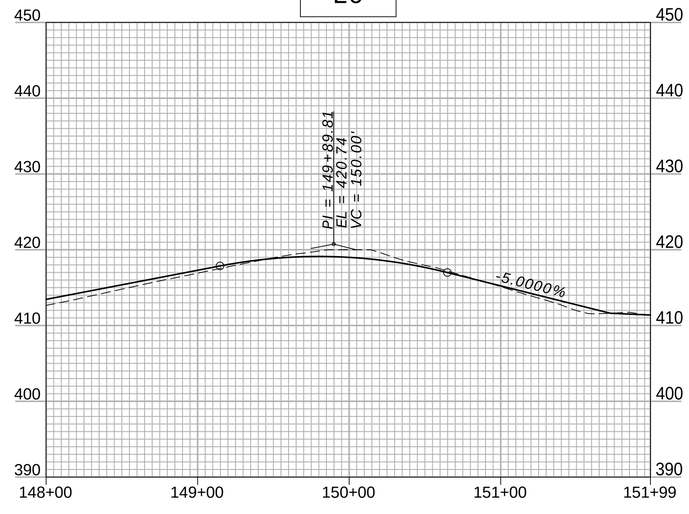
TRIANGLE BIKEWAY

PLAN INFORMATION

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TRIANGLE BIKEWAY STUDY
SEGMENT 6
OLD REEDY CREEK RD TO TRENTON RD

TRIANGLE BIKEWAY

PLAN INFORMATION

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SCALE	1" = 50' / 1"=10'
DATE	DECEMBER 2021

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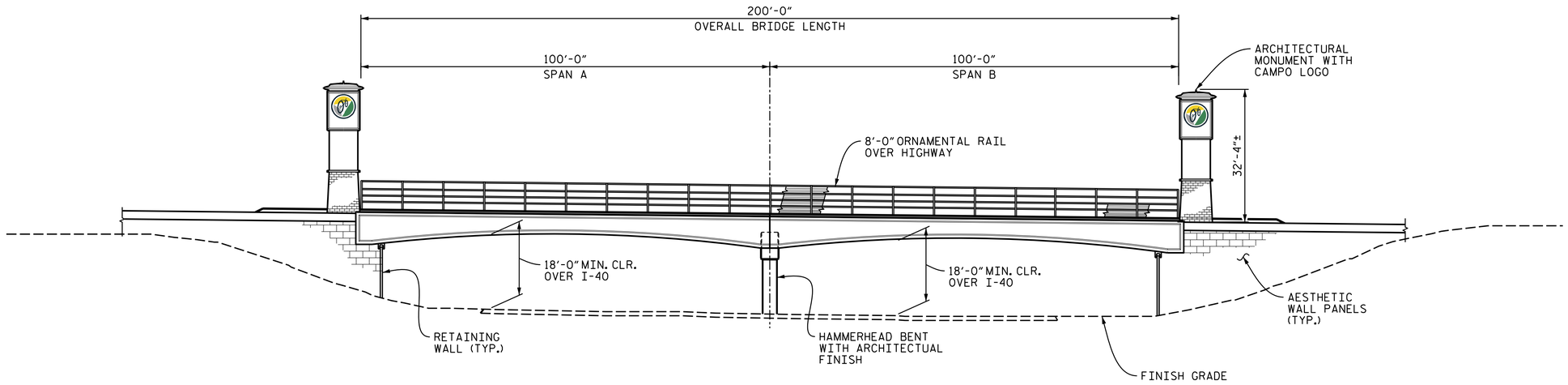
CAMPO TRIANGLE BIKEWAY

STRUCTURES DECISION MATRIX

STRUCTURE LOCATION	TYPE	EXISTING OR PROPOSED	PROPOSED BRIDGE TYPE & COST (HIGH END IF APPLICABLE) *	PROPOSED BRIDGE TYPE & COST (LOW END IF APPLICABLE) *	BRIDGE LENGTH (FT)	CLEAR WIDTH (FT)	DECK TYPE	STRUCTURE DEPTH (FT)	VERTICAL CLEARANCE (FT)	DESIGN LOADING	LIGHTING CONSIDERATIONS	RAILING CONSIDERATIONS	MAINTENANCE CONSIDERATIONS	STAKEHOLDER CONSIDERATIONS	OTHER CONSIDERATIONS
over I-40 (near NC 54 exit)	Bridge	Proposed	Tied Arch: $4,070,000	Prestressed Concrete Box Beam: $1,540,000	200	16	Concrete	Tied Arch: 2ft-4ft Prestressed Concrete Box Beam: 4ft-5ft	18	H10	Decorative Bridge Lighting	Ornamental Fence and Railing	NBIS Biannual Inspection Required. Fracture Critical Inspection may be applicable for tied arch.		-no center bent improves MOT -constructabilty over Interstate -consider future widening (similar to ATT)
under NC 751	Tunnel	Proposed	Bored Tunnel: $4,393,125	Precast Concrete Box (Cut & Cover): $1,564,875	225	16	n/a	n/a	n/a	HL-93	Tunnel lighting	n/a	n/a		-constructabilty (tunneling vs. cut & cover) -NFPA-502
under Fayetteville Road	Tunnel	Proposed	Bored Tunnel: $3,725,000	Precast Concrete Box (Cut & Cover): $1,363,650	190	16	n/a	n/a	n/a	HL-93	Tunnel lighting	n/a	n/a		-constructabilty (tunneling vs. cut & cover) -NFPA-502
over CSX RR	Bridge	Proposed	n/a	Proprietary Steel Truss: $1,046,500	120	16	Concrete	1.5ft-2.5ft	23	H10	n/a	Fence and Railing	NBIS Biannual Inspection Required	Future CSX track, Maintenance road per CSX, Exceed clearance of existing highway bridges	
on NC 54 over Triangle Expressway	Retrofit	Existing	n/a	Retrofit: $176,461	451	16	Concrete	n/a	17.17	H10	n/a	2 Bar Metal Rail (54" Tall)	NBIS Biannual Inspection Required		
over I-540	Bridge	Proposed	Curved Steel Beam: $3,445,000	Prestressed Concrete Box Beam: $1,712,500	Box Beam: 300 Curved Steel Beam: 500	16	Concrete	Curved Steel Beam: 8ft-10ft Prestressed Concrete Box Beam: 4ft-5ft	18	H10	Decorative Bridge Lighting	Ornamental Fence and Railing	NBIS Biannual Inspection Required		
over I-40 (near RDU airport)	Bridge	Proposed	Tied Arch: $4,070,000	Prestressed Concrete Box Beam: $1,540,000	200	16	Concrete	Tied Arch: 2ft-4ft Prestressed Concrete Box Beam: 4ft-5ft	18	H10	Decorative Bridge Lighting	Ornamental Fence and Railing	NBIS Biannual Inspection Required. Fracture Critical Inspection Appliance	-FAA height restructions during construction	-no center bent improves MOT -constructabilty over Interstate -consider future widening (similar to ATT)

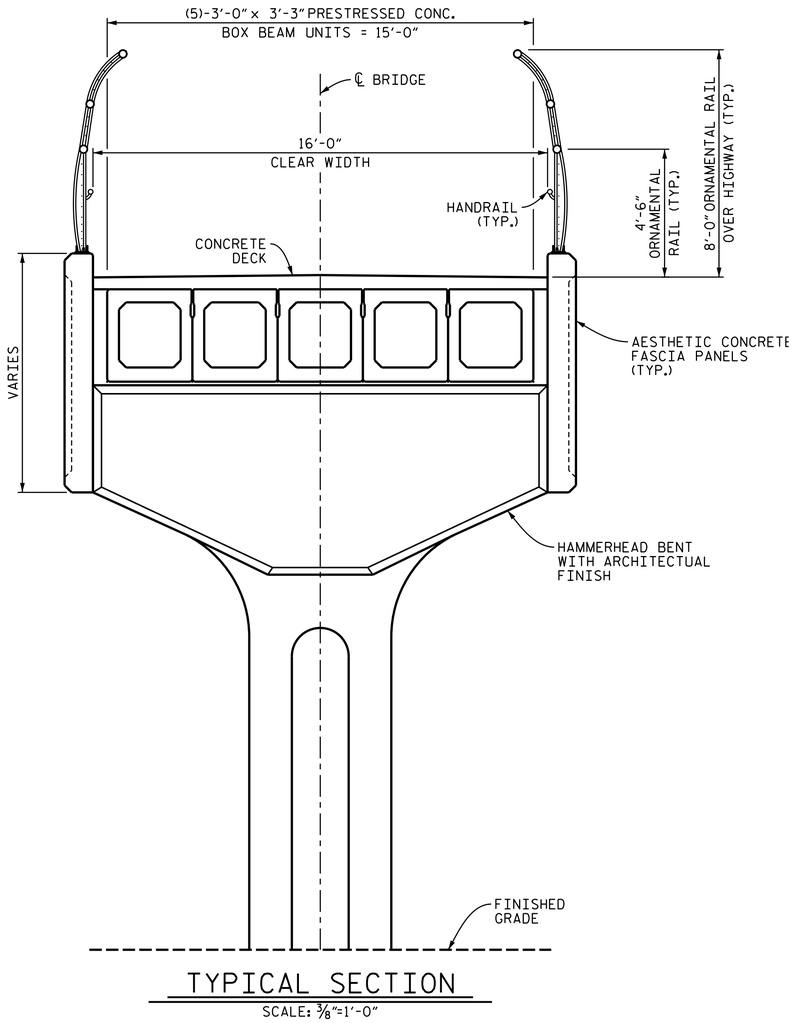
Notes:

*** These cost estimates excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage, mobilization, contruction traffic control, design and construction management costs.**



ELEVATION

SCALE: 1"=15'



TYPICAL SECTION

SCALE: 3/8"=1'-0"

WSP USA Inc.
1001 MOREHEAD SQUARE DRIVE
SUITE 610
CHARLOTTE, NC 28203
TEL: 1.704.342.5601
LICENSE NO. F-0165

PRELIMINARY NOT RELEASED FOR CONSTRUCTION

CAMPO TRIANGLE BIKEWAY
CONCEPTUAL BRIDGE OPTIONS

CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION
DURHAM-CHAPEL HILL-CARRBORO, NORTH CAROLINA

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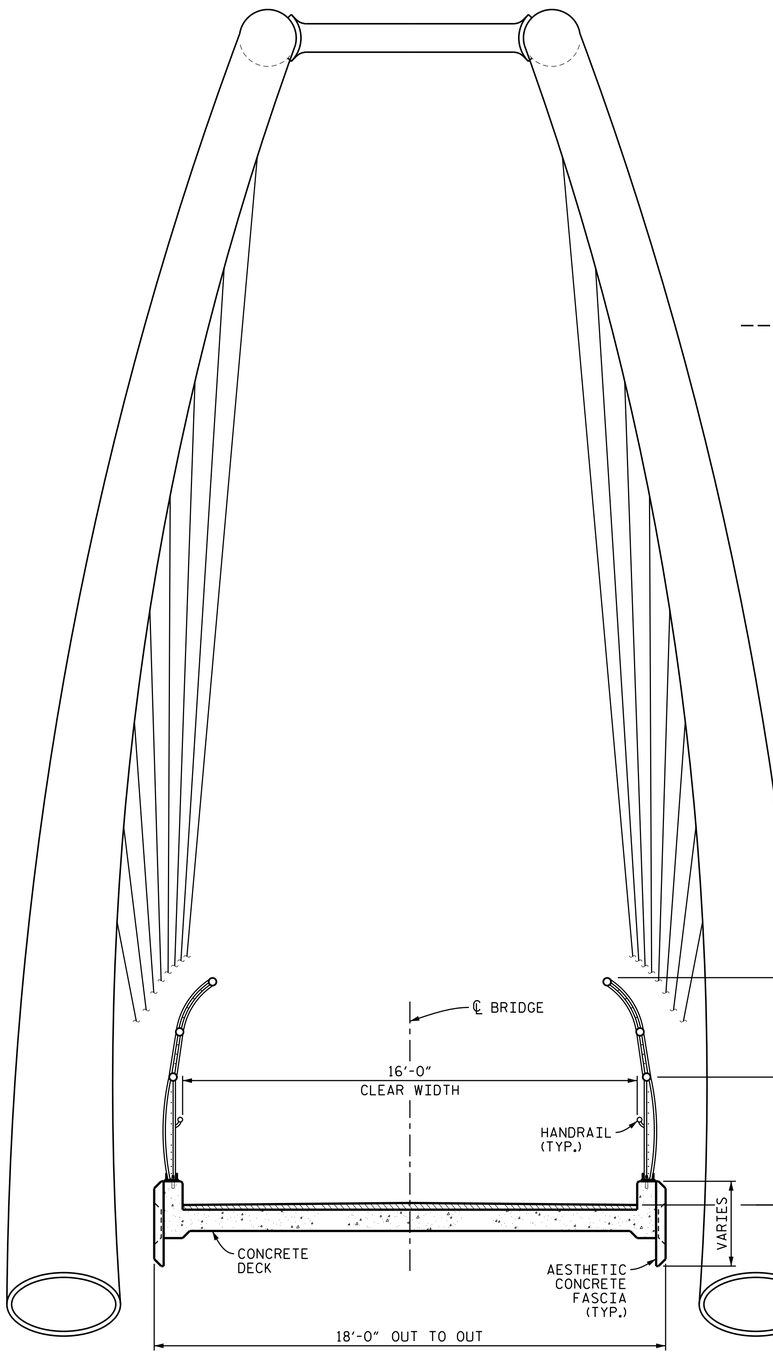
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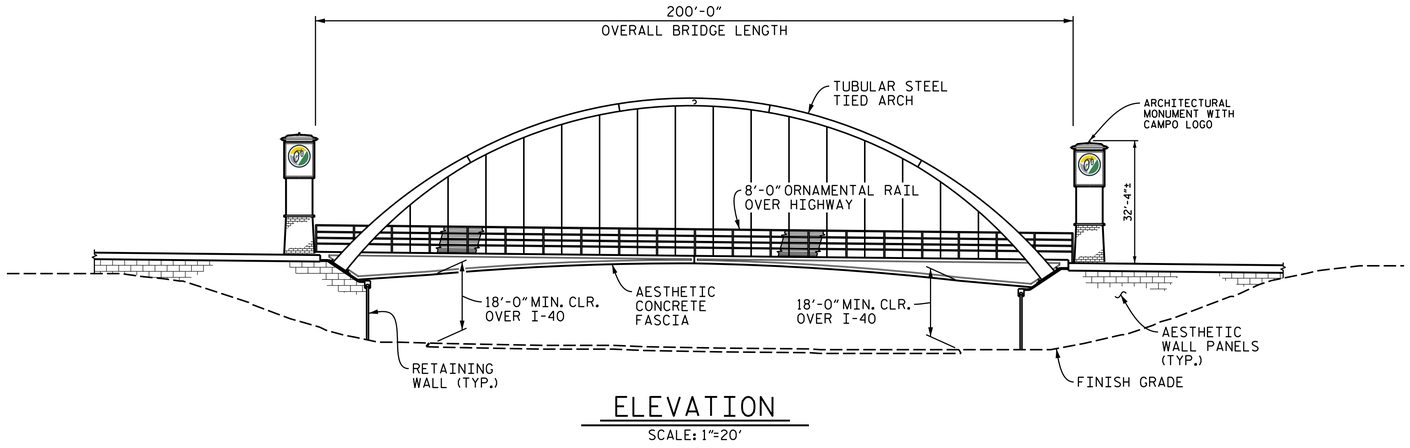
DRAWN BY: M. HOBBS CHKD BY: A. D'ARUTO

TITLE
BOX BEAM
BRIDGE OPTION

SHEET

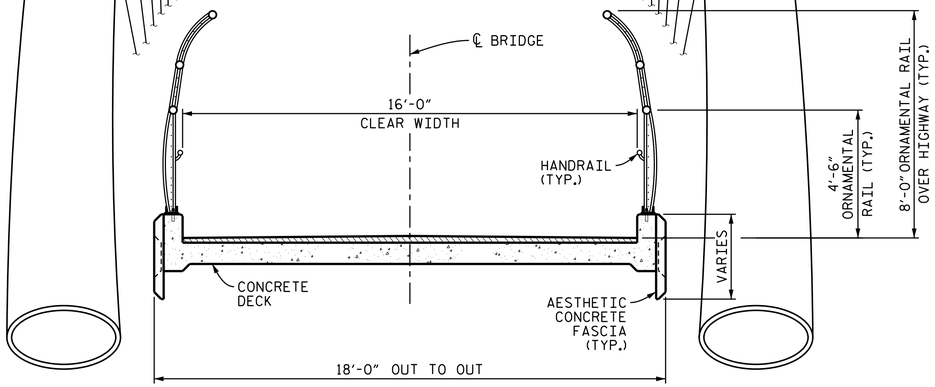
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PLOT DRV: $PLTDRVS$
DATE/TIME:8/19/2021 12:47:05 PM





ELEVATION

SCALE: 1"=20'



TYPICAL SECTION

SCALE: 3/8"=1'-0"

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MODEL: $MODELNAME$
PLOT DRV: $PLTDRVS$
DATE/TIME: 8/19/2021 12:46:40 PM

WSP USA Inc.
1001 MOREHEAD SQUARE DRIVE
SUITE 610
CHARLOTTE, NC 28203
TEL: 1.704.342.5601
LICENSE NO. F-0165

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CAMPO TRIANGLE BIKEWAY CONCEPTUAL BRIDGE OPTIONS

CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION
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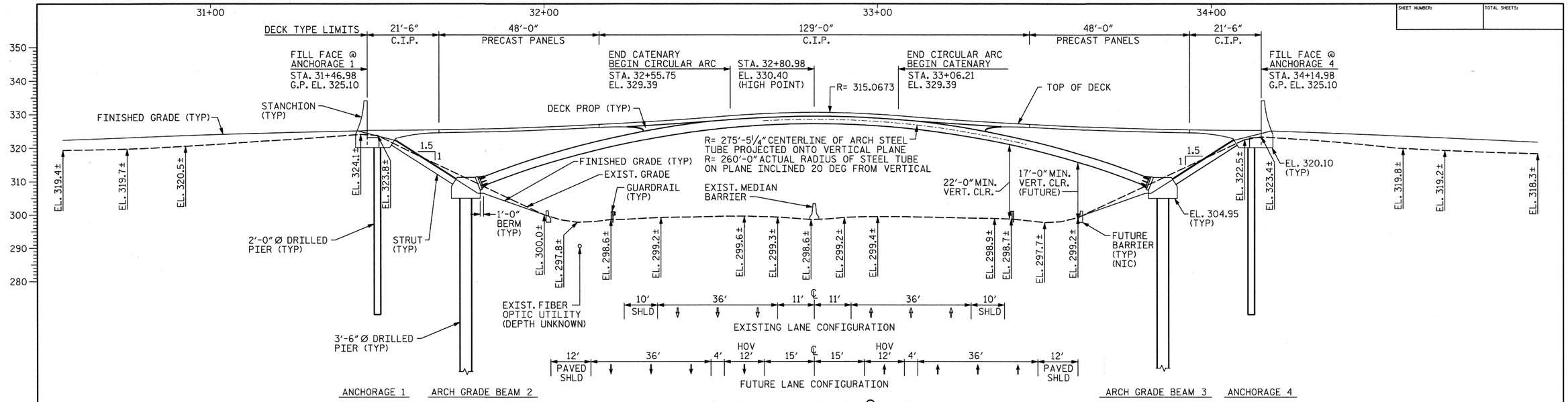
PROJECT #: 194378 DATE: JULY 2021

DRAWN BY: M. HOBBS CHKD BY: A. D'AMUTO

TITLE
TIED ARCH
BRIDGE OPTION

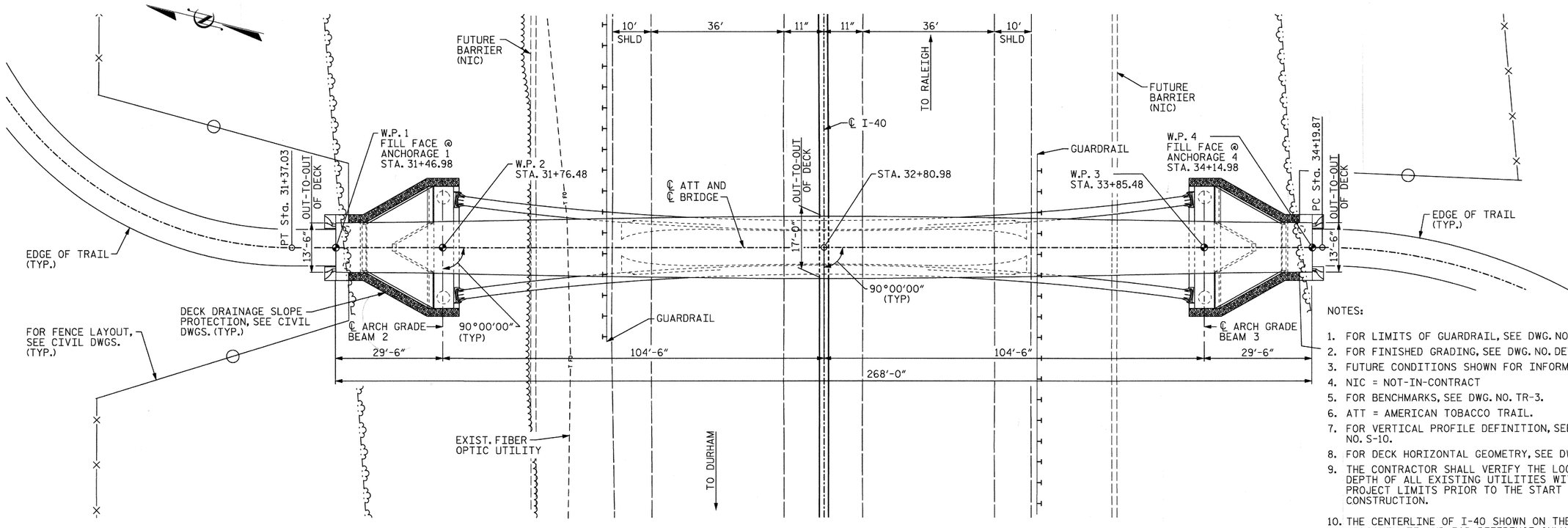
SHEET

SHEET NUMBER: | TOTAL SHEETS:



SECTION ALONG ℄ ATT

NOTE: BRIDGE RAILING AND FENCE NOT SHOWN FOR CLARITY



PLAN

NOTES:

1. FOR LIMITS OF GUARDRAIL, SEE DWG. NO. DT-7.
2. FOR FINISHED GRADING, SEE DWG. NO. DET-10.
3. FUTURE CONDITIONS SHOWN FOR INFORMATION ONLY.
4. NIC = NOT-IN-CONTRACT
5. FOR BENCHMARKS, SEE DWG. NO. TR-3.
6. ATT = AMERICAN TOBACCO TRAIL.
7. FOR VERTICAL PROFILE DEFINITION, SEE DWG. NO. S-10.
8. FOR DECK HORIZONTAL GEOMETRY, SEE DWG. NO. S-11.
9. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL EXISTING UTILITIES WITHIN THE PROJECT LIMITS PRIOR TO THE START OF CONSTRUCTION.
10. THE CENTERLINE OF I-40 SHOWN ON THE PLANS IS APPROXIMATE AND FOR REFERENCE ONLY. NO BRIDGE LAYOUT WORK SHALL BE BASED OFF OF THE CENTERLINE OF I-40 SHOWN ON THE PLANS.

REV. No.:	REVISION DESCRIPTION:	BY:	DATE:

DESGN	JRD	DATE	07/09
DRWN	KEW	DATE	07/09
CHCK	PDV	DATE	05/10
APPR	DAC	DATE	08/10

PLANS PREPARED BY:
PB PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

DURHAM 1869 CITY OF MEDICINE

American Tobacco Trail

AMERICAN TOBACCO TRAIL
PHASE E

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037080 8-10-10 PRESTON D. VINEYARD

SHEET NAME:
GENERAL PLAN AND ELEVATION

PROJECT NUMBER: | DRAWING NUMBER: S-1

T.I.P. PROJECT: U-4763B

CONTRACT: C201994

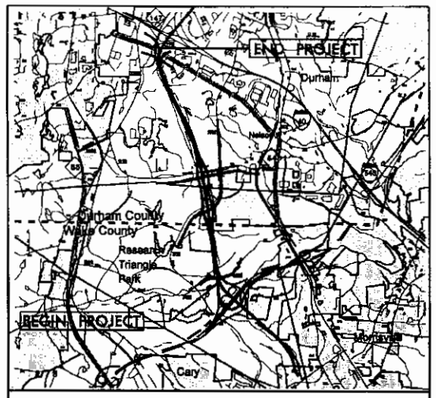
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4763B	1	62

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
39942.1.TA1	NHS-54(7)	

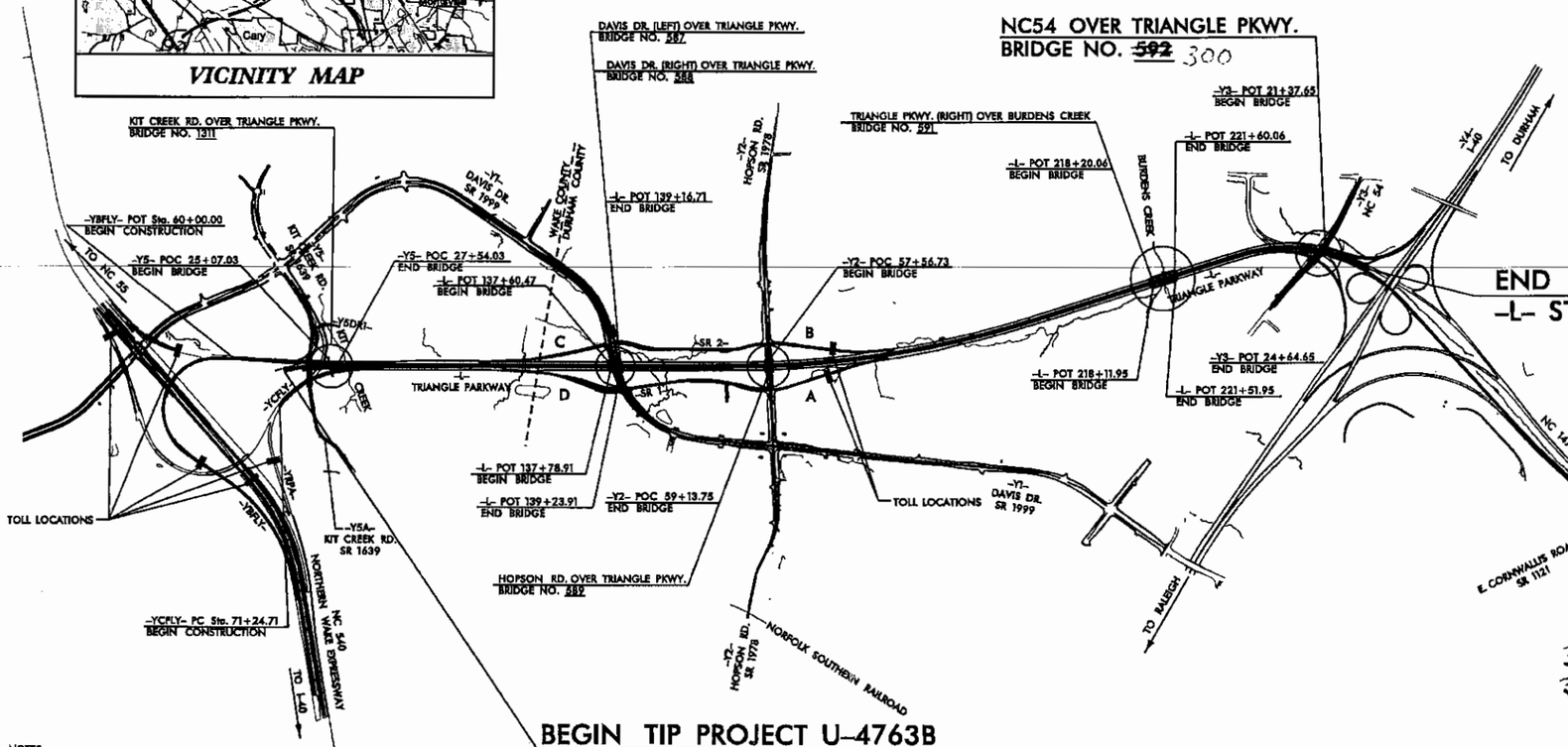
WAKE /DURHAM COUNTIES

LOCATION: *TRIANGLE PARKWAY – EXTENSION OF NC 147 BETWEEN NC 540 IN WAKE COUNTY AND I-40 IN DURHAM COUNTY*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, UTILITIES, STRUCTURES, CULVERTS, SOUND BARRIERWALLS, ITS COMMUNICATIONS, SIGNING, SIGNALS*



VICINITY MAP



NAD 83/95

RFC

RELEASED FOR CONSTRUCTION

END TIP PROJECT U-4763B
-L- STA. 250+50.00

SUBMITTAL NO. S-097
DATE: MARCH 29, 2010

BEGIN TIP PROJECT U-4763B
-L- STA. 90+20.00

NOTES:
1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
2. THIS IS A FULLY CONTROLLED ACCESS PROJECT.

310300
39942.5.TA1
U-4763B
6-23-2011

GRAPHIC SCALES

PLANS: 50 0 50 100

PROFILE (HORIZONTAL): 50 0 50 100

PROFILE (VERTICAL): 10 0 10 20

DESIGN DATA

ADT 2011 = 37,00
ADT 2030 = 111,200
DHV = 10%
D = 55%
T = 9%
V = 70 mph

*(TTST = 3%,DUAL= 6%)
Functional Class.: Freeway

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4763B..... 2.944 mi
LENGTH STRUCTURE TIP PROJECT U-4763B..... *0.092 mi
TOTAL LENGTH TIP PROJECT U-4763B..... 3.036 mi

* LENGTH OF STRUCTURES BASED ON NB LANES

DESIGN - BUILD TEAM

PLANS PREPARED BY :

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3590

FOR
THE NORTH CAROLINA TURNPIKE AUTHORITY

2006 STANDARD SPECIFICATIONS

LETTING DATE:
AUGUST 5, 2008

J. T. Peacock, Jr., P.E.
PROJECT ENGINEER

Stephen E. Roberts, P.E.
PROJECT DESIGN ENGINEER

CONTRACTOR :

S. T. Wooten Corporation

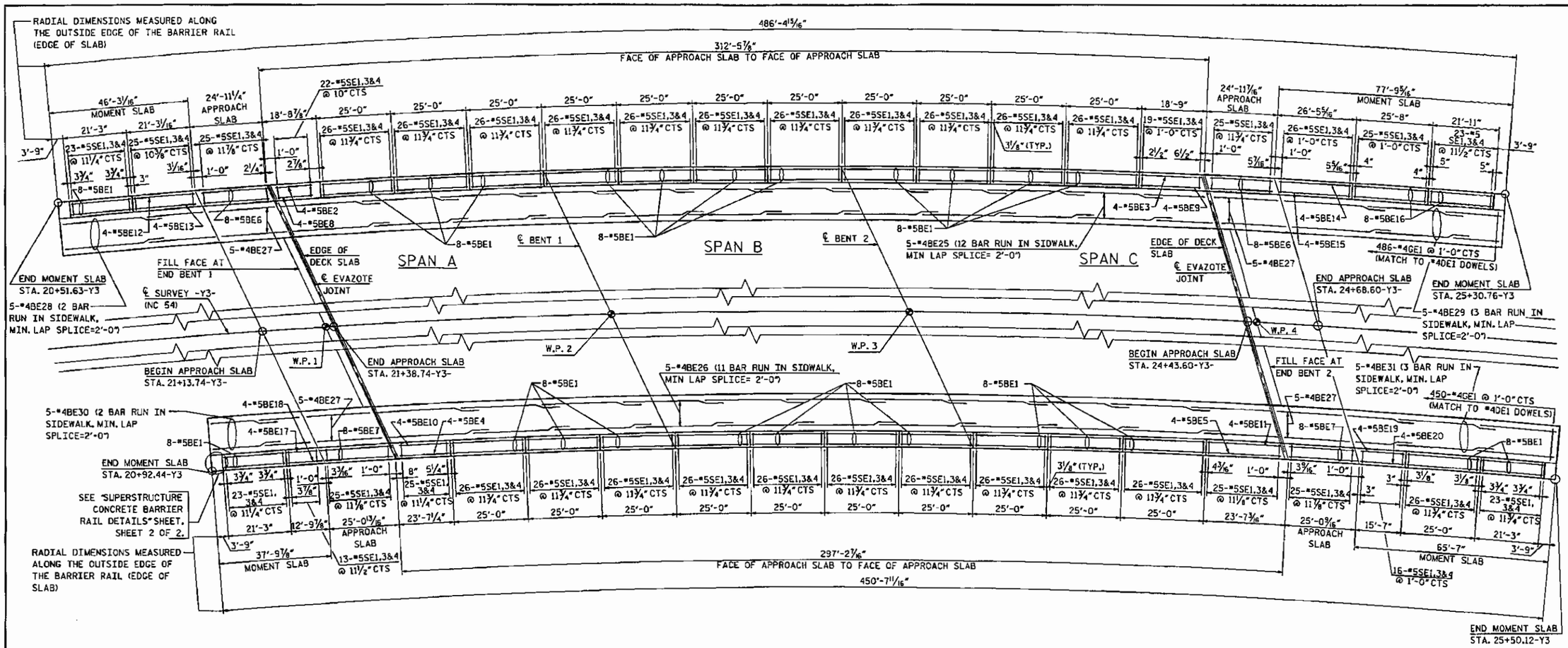
S.T.WOOTEN CORPORATION
P.O. BOX 2408
3801 BLACK CREEK ROAD
WILSON, NORTH CAROLINA 27894

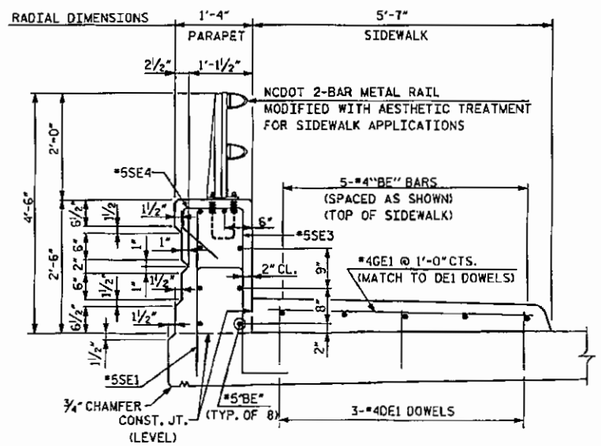
STRUCTURE DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029641 STUART A. MONTGOMERY

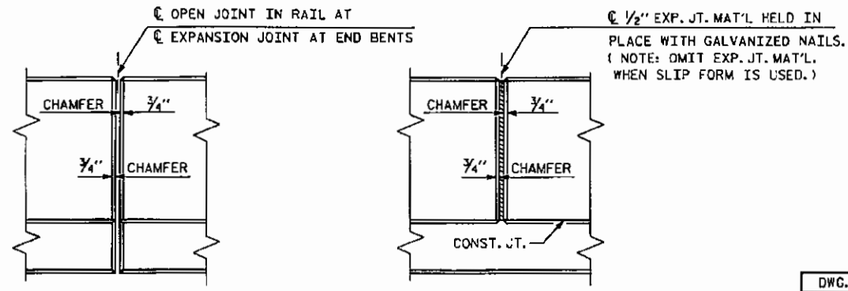
06/29/10

3/29/2010
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$$$$USERNAME$$$$





SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

PROJECT NO. U-4763B
DURHAM COUNTY
STATION: 243+27.85 -L- P.O.C. = 22+30.65 -Y3- P.O.C.
SHEET 1 OF 2

NORTH CAROLINA Turnpike Authority

SUPERSTRUCTURE CONCRETE BARRIER RAIL AND SIDEWALK

DWG. NO. 26

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	26
1			3			TOTAL SHEETS
2			4			62

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NUMBER: F-0112

06/29/10

DRAWN BY : E.M. THOMPSON DATE : FEB. 10
CHECKED BY : D.S. TUSTING DATE : FEB. 10

3/24/2010
\\Rkkm\v2008\2008\08103.U-4763B\cadd\STRUCT\U4763_sd_cbr1_08.dgn

NOTES:

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

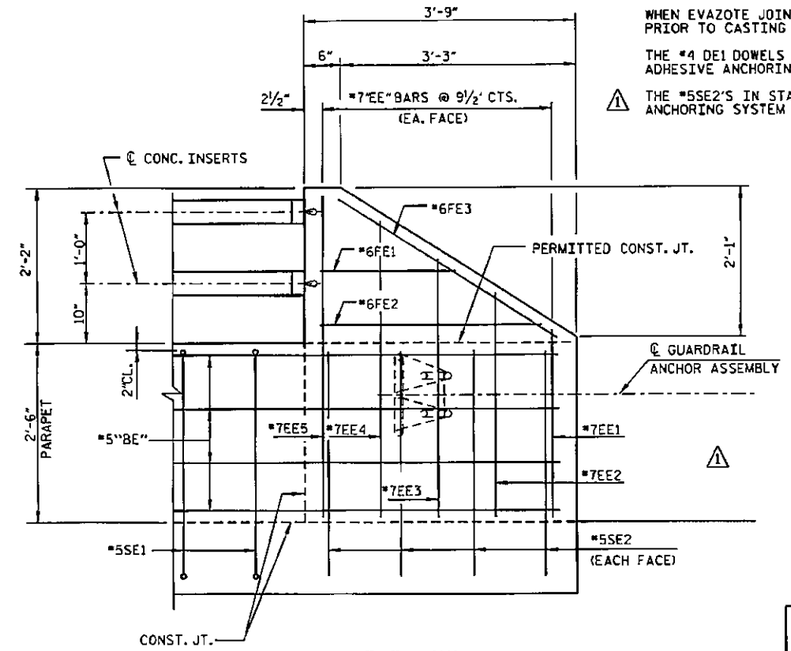
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

VERTICAL GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

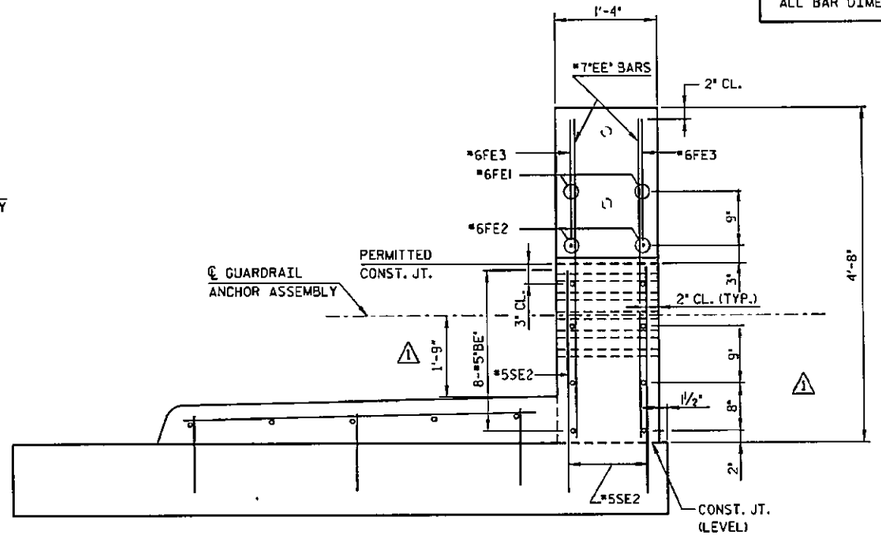
WHEN EVAZOTE JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO CASTING OF BARRIER RAIL.

THE #4 DE1 DOWELS SHALL BE INSTALLED FOR THE SIDEWALKS USING AN ADHESIVE ANCHORING SYSTEM DURING THE STAGE 3 CONSTRUCTION.

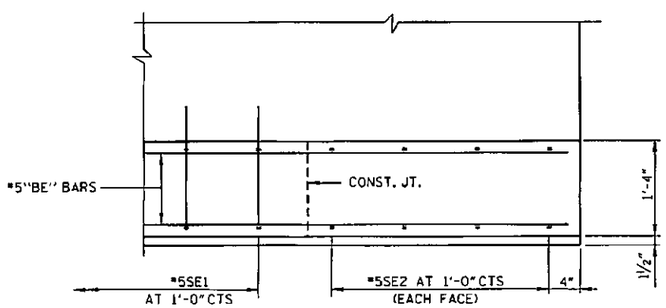
⚠1 THE "5SE2'S IN STAGE I CONSTRUCTION SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM TO FACILITATE SAWING THE JOINT.



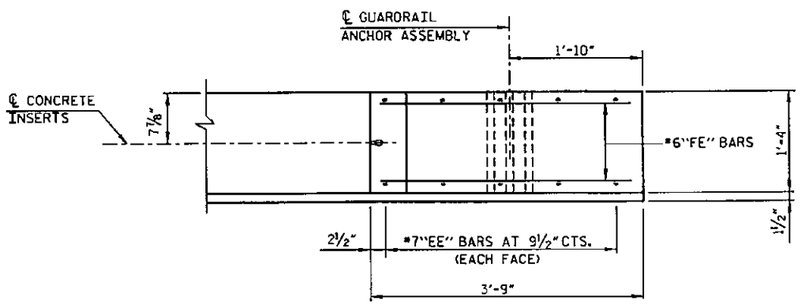
ELEVATION



SECTION



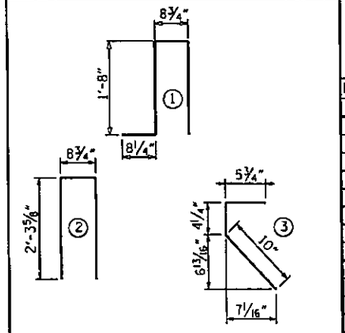
PLAN OF PARAPET



PLAN OF END POST

PARAPET AND END POST FOR TWO BAR METAL RAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL AND SIDEWALK

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
BE1	200	#5	STR.	24'-8"	5,145
BE2	4	#5	STR.	17'-11"	75
BE3	4	#5	STR.	18'-2"	76
BE4	4	#5	STR.	23'-2"	97
BE5	4	#5	STR.	22'-10"	95
BE6	16	#5	STR.	24'-7"	410
BE7	16	#5	STR.	24'-8"	412
BE8	4	#5	STR.	17'-7"	73
BE9	4	#5	STR.	18'-8"	78
BE10	4	#5	STR.	23'-6"	98
BE11	4	#5	STR.	22'-6"	94
BE12	4	#5	STR.	21'-1"	88
BE13	4	#5	STR.	21'-5"	89
BE14	4	#5	STR.	26'-0"	108
BE15	4	#5	STR.	25'-7"	107
BE16	16	#5	STR.	25'-4"	423
BE17	4	#5	STR.	11'-10"	49
BE18	4	#5	STR.	12'-3"	51
BE19	4	#5	STR.	15'-8"	65
BE20	4	#5	STR.	15'-5"	64
BE25	60	#4	STR.	28'-1"	1,126
BE26	55	#4	STR.	29'-1"	1,069
BE27	20	#4	STR.	24'-7"	328
BE28	10	#4	STR.	26'-0"	174
BE29	15	#4	STR.	28'-0"	281
BE30	10	#4	STR.	20'-0"	134
BE31	15	#4	STR.	24'-0"	240
EE1	8	#7	STR.	2'-6"	41
EE2	8	#7	STR.	3'-0"	49
EE3	8	#7	STR.	3'-6"	57
EE4	8	#7	STR.	4'-0"	65
EE5	8	#7	STR.	4'-4"	71
FE1	8	#6	STR.	1'-9"	21
FE2	8	#6	STR.	2'-11"	35
FE3	8	#6	STR.	3'-3"	39
GE1	936	#4	STR.	5'-0"	3,126
SE1	960	#5	1	4'-9"	4,756
SE2	32	#5	STR.	3'-0"	100
SE3	960	#5	2	5'-4"	5,340
SE4	960	#5	3	1'-8"	1,669

EPOXY COATED REINFORCING STEEL	26,418 LBS.
CLASS AA CONCRETE (BARRIER)	111 CY
CLASS AA CONCRETE (SIDEWALK)	107 CY
CONCRETE BARRIER RAIL	937 LIN. FT.

PROJECT NO. U-4763B

DURHAM COUNTY

STATION: 243+27.85 -L- P.O.C. =
22+30.65 -Y3- P.O.C.

SHEET 2 OF 2

NORTH CAROLINA Turnpike Authority

S-097R4

DWG. NO. 27

SUPERSTRUCTURE
CONCRETE
BARRIER RAIL
DETAILS

⚠1 REVISED DETAILS

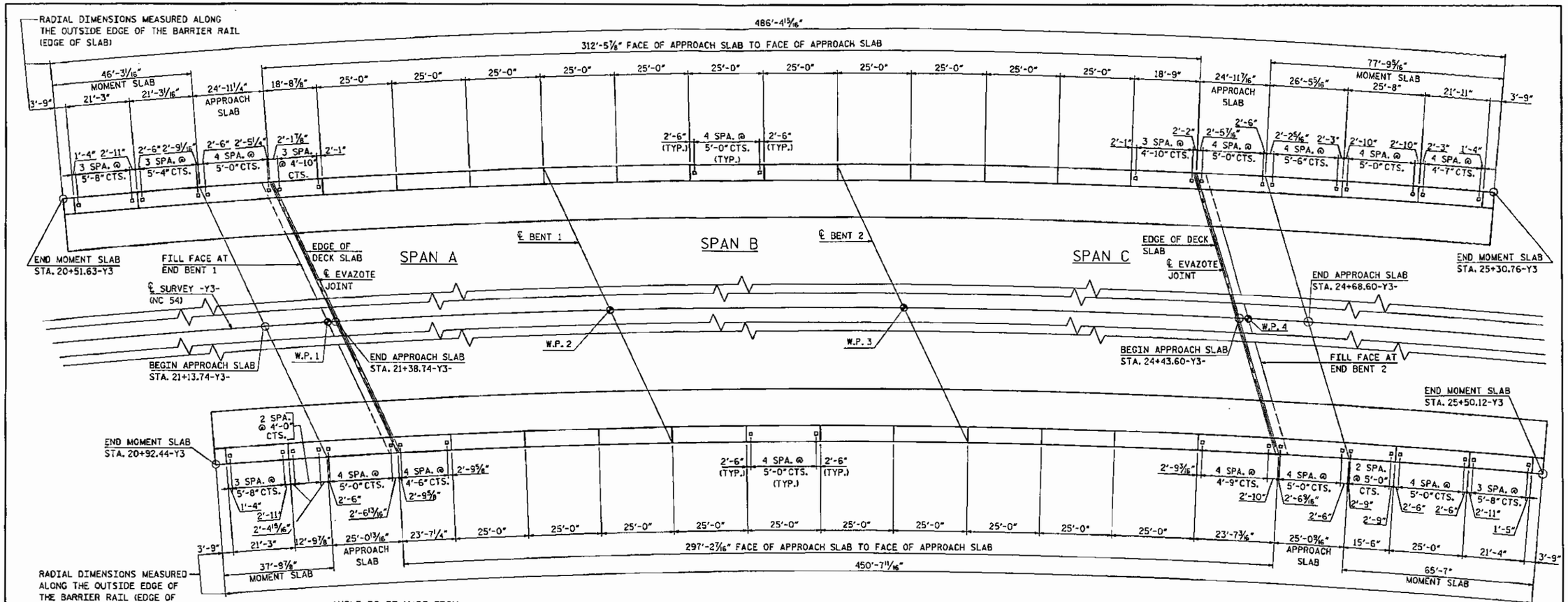
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NUMBER: F-0112

NORTH CAROLINA SEAL 032442 ENGINEER STUART A. MONTGOMERY
06/29/10

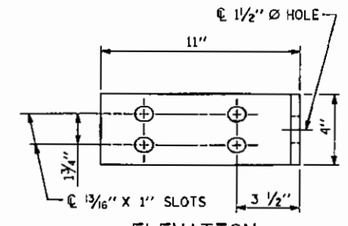
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	27
1	DST	6/25/10	3			TOTAL SHEETS
2			4			62

DRAWN BY : E.M. THOMPSON DATE : FEB. 10
CHECKED BY : D.S. TUSING DATE : FEB. 10

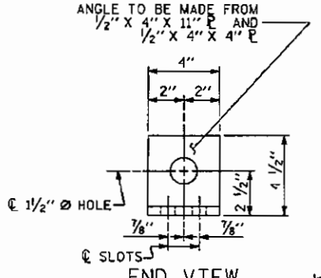
6/22/2010
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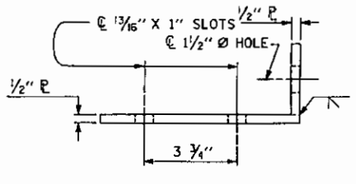
PLAN OF RAIL POST SPACING



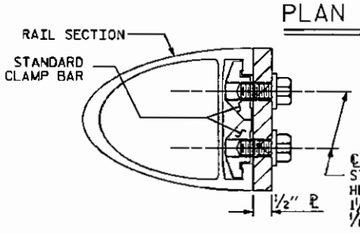
ELEVATION



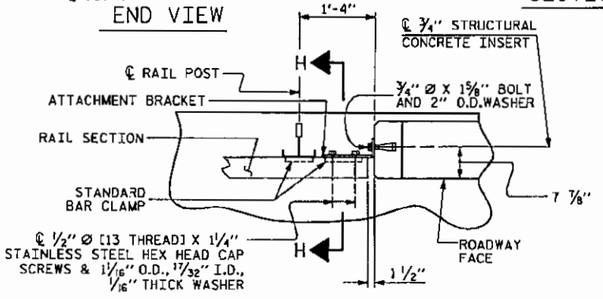
END VIEW



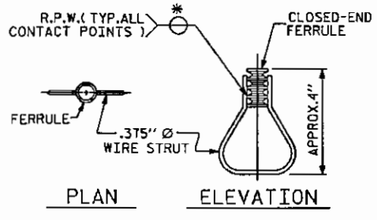
TOP VIEW



SECTION H-H



PLAN - RAIL AND END POST



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

*EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

DETAILS FOR ATTACHING METAL RAIL TO END POST

PROJECT NO. U-4763B

DURHAM COUNTY

STATION: 243+27.85 -L- P.O.C. = 22+30.65 -Y3- P.O.C.

SHEET 1 OF 1

NORTH CAROLINA Turnpike Authority

DWG. NO. 28

SUPERSTRUCTURE

RAIL POST SPACINGS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	28
1			3			TOTAL SHEETS
2			4			62

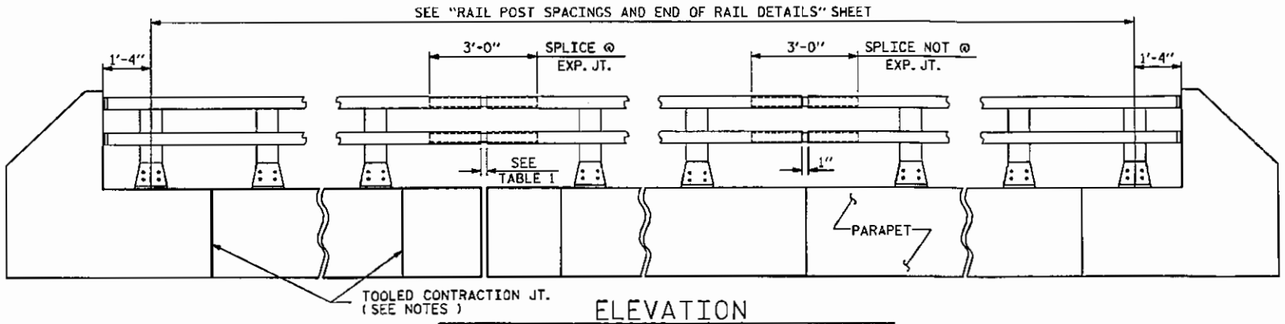
DRAWN BY : E.M. THOMPSON DATE : FEB. 10
CHECKED BY : D.S. TUSING DATE : FEB. 10

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NUMBER: F-0112

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036121 ENGINEER STUART A. MONTGOMERY

06/29/10

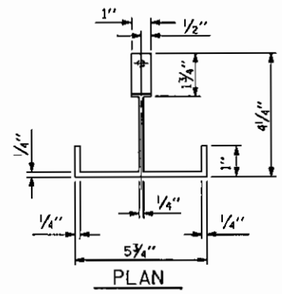
3/24/2010
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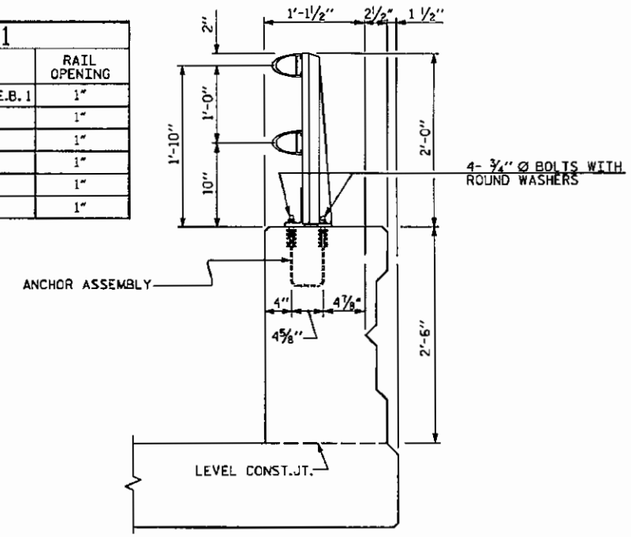
ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

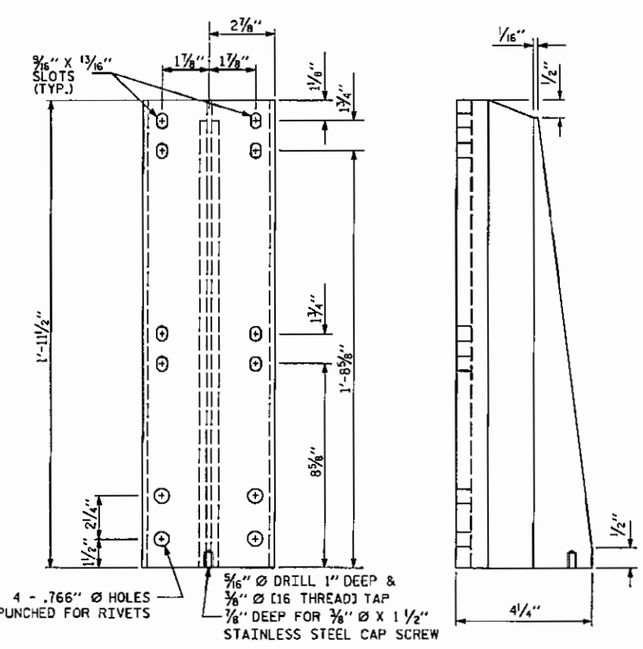
TABLE 1	
℄ EXP. JT. @	RAIL OPENING
BEGINNING OF APP. SLAB @ E.B. 1	1"
END BENT No. 1	1"
BENT No. 1	1"
BENT No. 2	1"
END BENT No. 2	1"
END OF APP. SLAB @ E.B. 2	1"



PLAN

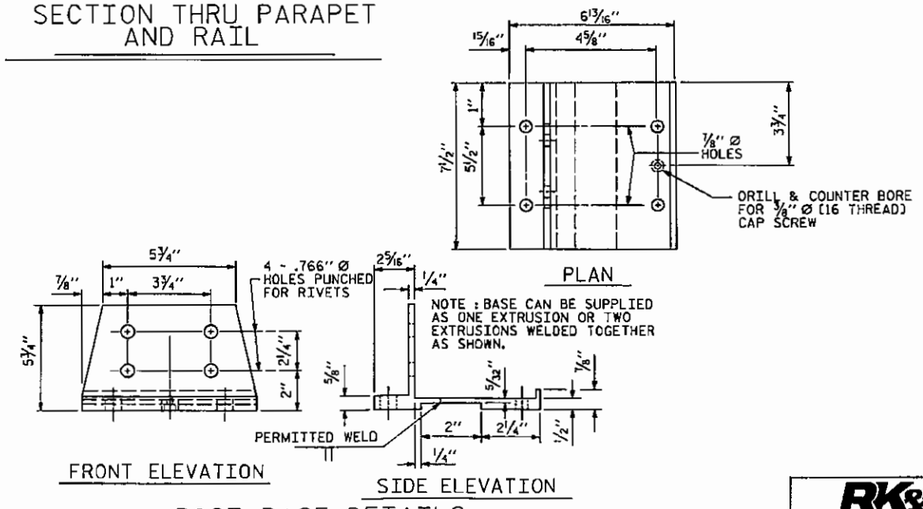


SECTION THRU PARAPET AND RAIL



FRONT ELEVATION SIDE ELEVATION

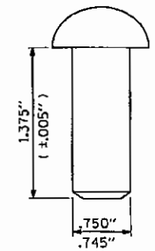
DETAILS OF POST



FRONT ELEVATION SIDE ELEVATION

POST BASE DETAILS

PLAN



RIVET DETAIL

NOTES

METAL RAIL SHALL BE ALUMINUM IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE MATERIAL.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8FT. TO 10FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 922.05 LIN. FT.

PROJECT NO. U-4763B

DURHAM COUNTY

STATION: 243+27.85 -L- P.O.C. =
22+30.65 -Y3- P.O.C.

SHEET 1 OF 2

NORTH CAROLINA Turnpike Authority

STANDARD
2 BAR METAL RAIL

DWG. NO. 29

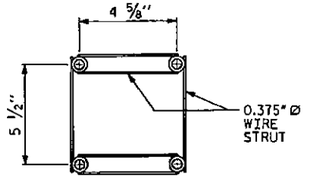
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	29
1			3			TOTAL SHEETS
2			4			62

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NUMBER: F-0112

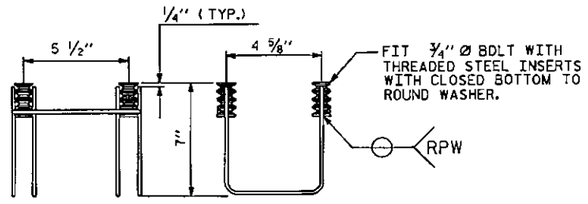
06/29/10

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CHECKED BY : RGW 6/94	REV. 5/17/03R	RWW/JTE	
	REV. 5/1/06	TLA/GM	
DRAWN BY : E.M. THOMPSON	DATE :	FEB. 10	
CHECKED BY : O.S. TUSING	DATE :	FEB. 10	

3/24/2010
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PLAN



SIDE VIEW ELEVATION

MINIMUM LENGTH OF THREADS IN INSERT (FERRULE): 1 3/4"

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(185 ASSEMBLIES REQUIRED)

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".

B. 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4"Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4"Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.

C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).

E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4"Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4"Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.

B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

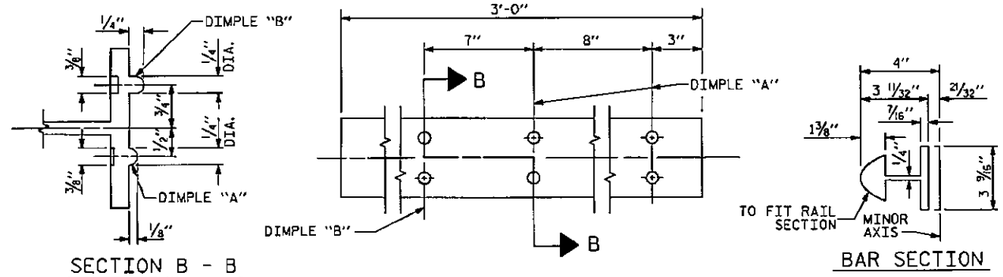
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.

F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

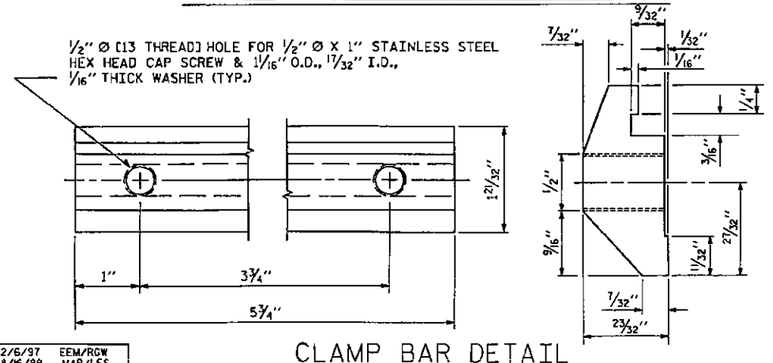
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



SECTION B - B

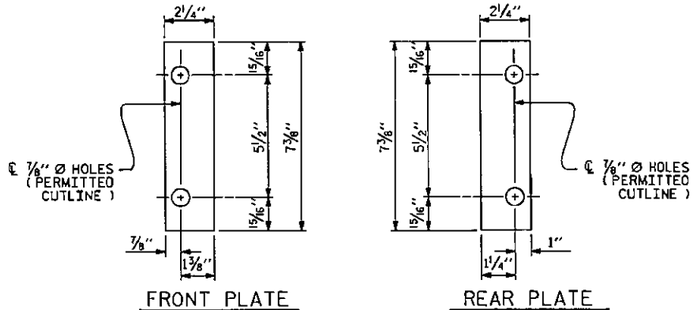
BAR SECTION

EXPANSION BAR DETAILS



CLAMP BAR DETAIL

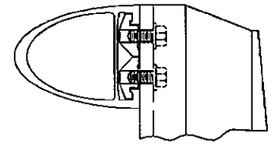
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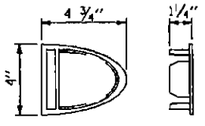
FRONT PLATE REAR PLATE

SHIM DETAILS

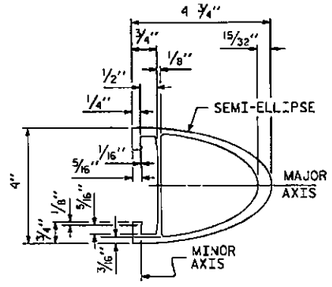
NOTE:
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



CLAMP ASSEMBLY



RAIL CAP



RAIL SECTION

PROJECT NO. U-4763B

DURHAM COUNTY

STATION: 243+27.85 -L- P.O.C. = 22+30.65 -Y3- P.O.C.

SHEET 2 OF 2

NORTH CAROLINA Turnpike Authority

STANDARD

2 BAR METAL RAIL

DWG. NO. 30

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	30
1			3			TOTAL SHEETS
2			4			62

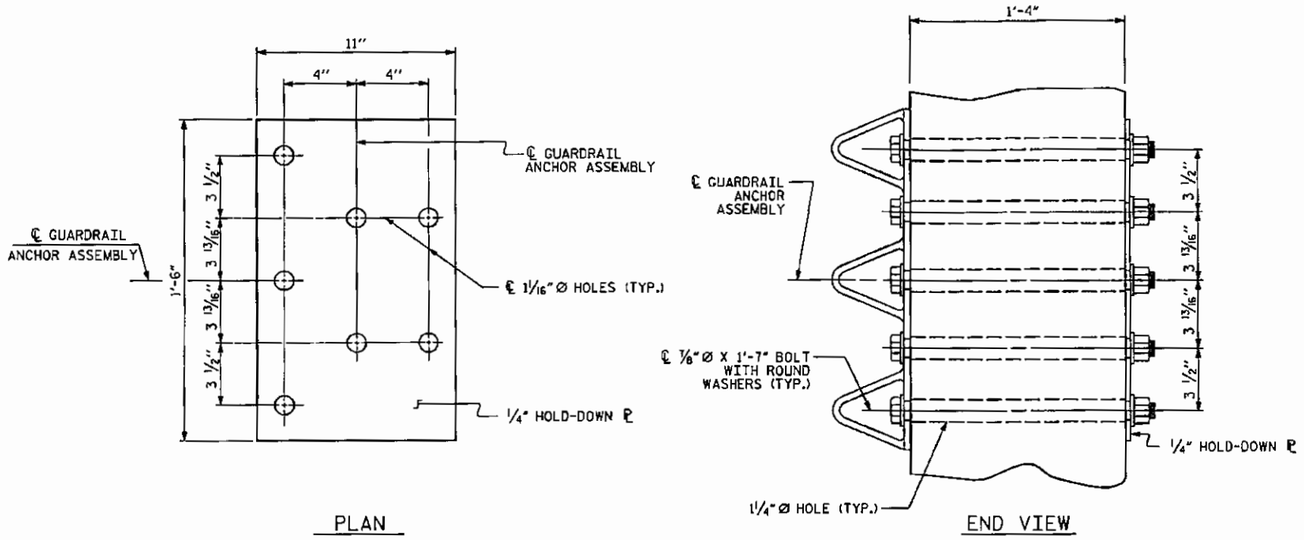
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CHECKED BY : RGW 6/94	REV. 8/16/99	MAB/LES
	REV. 5/1/06R	KMM/GN
DRAWN BY : E.M. THOMPSON	DATE : FEB. 10	
CHECKED BY : D.S. TUSING	DATE : FEB. 10	

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NUMBER: P-0112

NORTH CAROLINA ENGINEER SEAL 036911 ENGINEER

06/29/10

3/24/2010
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GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

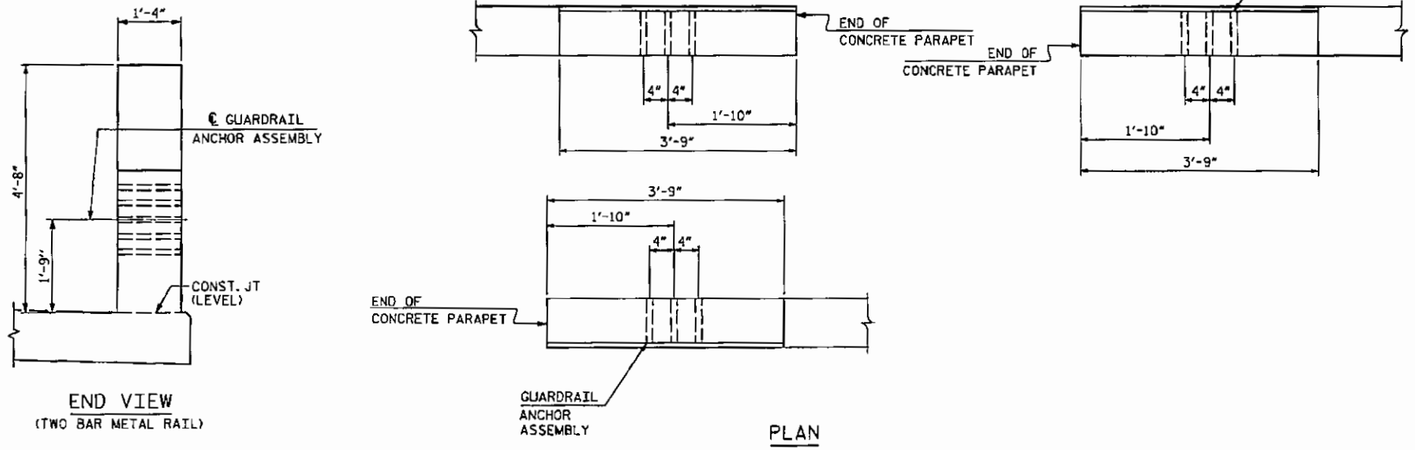
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. U-4763B

DURHAM COUNTY

STATION: 243+27.85 -L- P.O.C. = 22+30.65 -Y3- P.O.C.

SHEET 1 OF 1

NORTH CAROLINA Turnpike Authority

STANDARD GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

DWG. NO. 31

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	31
1			3			TOTAL SHEETS
2			4			62

DRAWN BY : EEM 6/94	REV. 10/17/00	RWW/LES
CHECKED BY : RGH 6/94	REV. 5/7/03	RWW/JTE
	REV. 8/1/06	TLA/GM
DRAWN BY : E.M. THOMPSON	DATE : FEB. 10	
CHECKED BY : D.S. TUSING	DATE : FEB. 10	

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NUMBER: F-0112

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032447 JEFFREY A. MONTGOMERY

06/29/10

3/24/2010
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Appendix B

Application of Crossing Treatments

This section explains the relationship between existing conditions at proposed crossing locations and recommended treatments to implement with construction of the trail to make crossings safer and more comfortable for all trail users.

Existing Conditions of Proposed Trail Crossing Locations

Each of the crossing locations of the proposed Triangle Bikeway route were assessed in terms of the following design elements: number of lanes, speed limit, traffic control, crosswalks, medians, and pedestrian signals. These elements can increase or decrease risk associated with trail users crossing the roadway. Based on existing conditions, crossings are categorized into six existing crossing types. Recommended crossing treatments are provided for each existing crossing type. Crossing types and corresponding treatments may need adjustment as the proposed route is refined.

The table below depicts the existing characteristics associated with each existing crossing type. Following the table, an overview of each type is provided including example locations along the proposed Triangle Bikeway route. Preliminary concept designs for select intersections are also provided in Chapter 4 of the study report.

Existing Crossing Types

Type	Lane Count	Speed Limit	Traffic Control	Crosswalk Type	Median Type	Pedestrian Signal
A	1-2	25-45 MPH	None	Standard, High-visibility, or None	Yes or No	No
B	3-7	25-45 MPH	None	Standard, High-visibility, or None	Yes or No	No
C	2-4	25-45 MPH	Traffic Signal or Stop Sign	Standard, High-visibility, or None	Yes or No	Yes or No
D	5+	25-45 MPH	Traffic Signal or Stop Sign	Standard, High-visibility, or None	Yes or No	Yes or No
E	Any (Interstate, freeway, or expressway)	≥55 MPH	None	None	No	No
F	Any (commercial driveway)	N/A	None or Stop Sign	N/A	Yes or None	No

Type A

Existing conditions at crossings that fall under Type A are best summarized as mid-block crossings over one- and two-lane roads or at uncontrolled highway ramps. An example of where this occurs on the proposed route is at NC-54 near Boulder Rd (shown below).

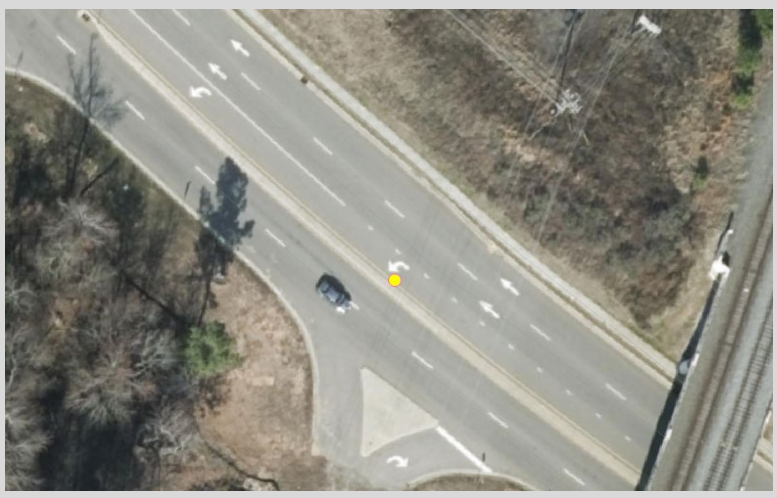


Other locations include, but are not limited to:

- Triangle Expressway and Park Center Loop
- Barbee Rd at I-40
- S Alston Ave at I-40
- N Harrison and I-40
- Trenton Rd and Trenton Park Ln

Type B

Existing conditions at crossing locations within Type B are best summarized as mid-block crossings over roads with three or more lanes. An example of where this occurs on the proposed route is at Slater Rd west of S Miami Blvd and the railroad (shown below).



Other locations include, but are not limited to:

- Hopson Rd and Keystone Park Dr
- Edward Mills Rd and Wade Ave
- Edward Mills Rd and Richland Creek Trail

Type C

Existing conditions at crossings that fit within Type C are best summarized as intersection crossings over 2-4 lane roads. An example of where this occurs on the proposed route is at Park Dr and Park Center Loop (shown below).

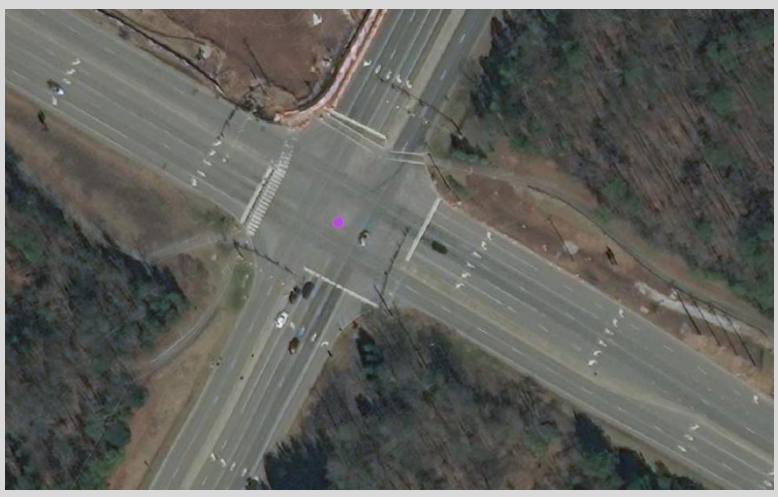


Other locations include, but are not limited to:

- Slater Rd and Emperor Blvd
- Blue Ridge Rd and Westchase Blvd
- NC-54 and S Alston Ave

Type D

Existing conditions at locations that align with Type D are best summarized as intersection crossings over 5+ lanes. An example of where this occurs on the proposed route is at NC-54 and Davis Dr (shown below).



Other locations include, but are not limited to:

- NC-55 and Park Forty Plaza
- S Miami Blvd and Page Rd
- Airport Blvd and Aerial Center Pwky

Type E

Existing conditions at locations that fall under Type E are best summarized as interstates, freeways, and expressways without any pedestrian infrastructure. An example of where this occurs on the proposed route is I-40 between Aviation Pkwy and Old Reedy Creek Rd (shown below).



Other locations include, but are not limited to:

- I-40 southwest of NC-54
- NC-147 south of I-40
- I-540 south of I-40

Type F

Existing conditions at locations within Type F are best summarized as unsignalized commercial driveways. An example of where this occurs on the proposed route are commercial driveways along NC-54 east of NC-55 (shown below).



Other locations include, but are not limited to:

- Commercial driveways along Hopson Rd
- Commercial driveways along NC-54
- Commercial driveways along Blue Ridge Rd

Proposed Treatments

The following pages present recommended typical treatments by existing crossing type. Example images are included for several of the recommended treatments. Recommendations are not a comprehensive list of best practices. Rather, recommendations respond to existing conditions along the proposed route. Grade-separated crossings, which are recommended as standard treatments for interstate, freeway, and expressway crossings (Type E), may also be appropriate at certain other crossings. As images are collected from across the United States, details and specific design features will vary from proposed treatments for the Triangle Bikeway.

Type A		
Summary: 1-2 lane mid-block or uncontrolled highway ramp		
Existing Characteristics		**Recommended Treatments**
• Lane Count: 1-2	• Crosswalk Type: Standard, High-visibility, or None	• High-visibility crosswalk with advance stop bar/yield lines
• Speed Limit: 25-45 MPH	• Yes or No	• Narrowed travel lanes and median/refuge, where possible
• Traffic Control: None	• Pedestrian Signal: No	• Trail crossing warning sign

Image 1: High-Visibility Crosswalk



Image 2: Trail Crossing Warning Sign



Existing Crossing Type B		
Summary: 3+ lane mid-block		
Existing Characteristics		**Recommended Treatments**
• Lane Count: 3+	• Crosswalk Type: Standard, High-visibility, or None	• High-visibility crosswalk
• Speed Limit: 25-45 MPH	• Median Type: Yes or No	• Rectangular Rapid Flash Beacon (RRFB) or High-Intensity Activated Crosswalk (HAWK)
• Traffic Control: None	• Pedestrian Signal: No	• Narrowed travel lanes and/or median/refuge, where possible

Image 3: High-Visibility Crosswalk with Median

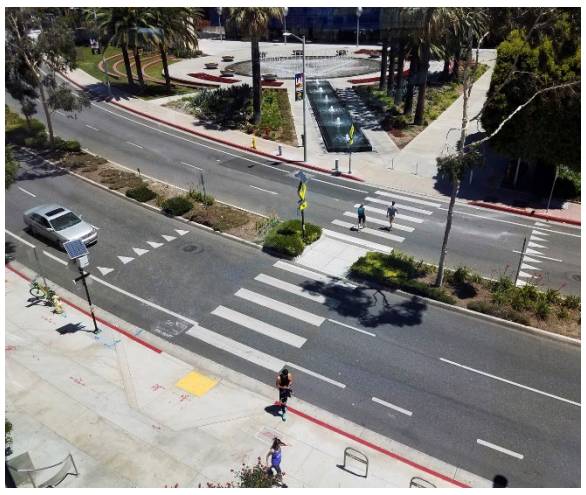


Image 4: HAWK Crossing



Image 5: RRFB



Type C		
Summary: 2-4 lane intersection with traffic control device		
Existing Characteristics		**Recommended Treatments**
• Lane Count: 2-4	• Crosswalk Type: Standard, High-visibility, or None	• High-visibility crosswalk
• Speed Limit: 25-45 MPH	• Median Type: Yes or No	• Pedestrian signal enhancements and vehicle turning restrictions (e.g., no right-on-red)
• Traffic Control: Stop Light or Stop Sign	• Pedestrian Signal: Yes or No	• Median/refuge, where possible
		• Truck aprons and/or tighter corner radii

Image 6: High-Visibility Crosswalk



Image 7: Truck Apron



Type D		
Summary: 5+ lane intersection with traffic control device		
Existing Characteristics		**Recommended Treatments**
• Lane Count: 5+	• Crosswalk Type: Standard, High-visibility, or None	• High-visibility crosswalk
• Speed Limit: 25-45 MPH	• Yes or No	• Pedestrian signal enhancements and vehicle turning restrictions (e.g., no right-on-red)
• Traffic Control: Stop Light or Stop Sign	• Pedestrian Signal: Yes or No	• Lighting
		• Median/refuge, where possible
		• Truck aprons, tighter corner radii, and/or removal of slip lanes

Image 8: High-Visibility Crosswalk with Median and Signal Enhancements



Image 9: Signal Enhancements



Type E		
Summary: Interstate, freeway, and expressways		
Existing Characteristics		**Recommended Treatments**
• Lane Count: Any	• Crosswalk Type: None	• Pedestrian- and bicycle-only bridge
• Speed Limit: ≥55 MPH	• Median Type: No	• Interstate overpass
• Traffic Control: None	• Pedestrian Signal: No	• Pedestrian- and bicycle-only underpass
		• Pedestrian- and bicycle-only tunnel

Image 10: Pedestrian- and Bicycle-Only Bridge



Image 11: Interstate Overpass



Image 12: Pedestrian- and Bicycle-Only Underpass



Type F		
Summary: Commercial driveway		
Existing Characteristics		**Recommended Treatments**
• Lane Count: Any	• Crosswalk Type: N/A	• High-visibility conflict markings
• Speed Limit: N/A	• Median Type: Yes or No	• Raised driveway crossing or pedestrian refuge, where possible
• Traffic Control: None or Stop Sign	• Pedestrian Signal: No	• Driveway consolidation and/or narrowing, where possible
		• Truck aprons and/or tighter corner radii

Image 13: High-Visibility Conflict Markings at Driveway



Image 14: Raised Driveway Crossing

