

# **NARCOOSSEE COMMUNITY CONCEPTUAL ROADWAY DESIGN STUDY REPORT**

**PS: 15-04303-RJ**

**Prepared for:**



**Osceola County, Florida  
Department of Transportation and Transit  
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Suite 3100  
Kissimmee, Florida 34741**

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# CONCEPTUAL ROADWAY DESIGN STUDY REPORT

OSCEOLA COUNTY PS NUMBER: 15-04303-RJ

**PROJECT: NARCOOSSEE COMMUNITY CONCEPTUAL ROADWAY DESIGN  
STUDY**

**NARCOOSSEE COMMUNITY**

**OSCEOLA COUNTY, FLORIDA**

This conceptual roadway design study report contains detailed engineering information that fulfills the scope of services for the Narcoossee Community Conceptual Roadway Design Study.

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<http://www.osceola.org/agencies-departments/community-development/offices/planning-office/narcoossee-documents.shtml>

## 1. SUMMARY OF PROJECT

This preliminary engineering report contains detailed engineering information that addresses improvement needs required to accommodate anticipated growth within the Narcoossee Community. This study focuses on the three primary east-west corridors: Jones Road, Jack Brack Road, and Cyrils Drive. Improvements evaluated include extensions of these corridors into the planned Northeast District.

### 1.1. COMMITMENTS AND RECOMMENDATIONS

#### 1.1.1. COMMITMENTS

There are no current commitments for this project which have gone through the Capital Improvements Plan and Budget approval process.

#### 1.1.2. RECOMMENDATIONS

Based on a comparative evaluation of the north, south, and center alignment alternatives' impacts and ability to meet the anticipated needs of the project, as well as public input, the following summarizes recommendations for each study corridor:

##### **Jones Road**

There are two proposed typical sections recommended for Jones Road. For the Urban Centers Segment of Jones Road, from Narcoossee Road to Whitted Drive, the recommended typical section includes a two-lane divided urban roadway (with 11-foot lanes), a 19.5-foot raised median, 9-foot buffered bike lanes, 6.5-foot parking lanes, curb and gutter, and 5-foot sidewalk and 5-foot grassed areas. This typical section requires 96.5 feet of right-of-way. For the remaining segment of Jones Road, from Whitted Drive to the Northeast District, the recommended typical section includes a two-lane divided urban roadway (with 10-foot lanes), a 22-foot raised median, 7-foot buffered bike lanes, curb and gutter, 5-foot sidewalks, and 10-foot grassed areas. This typical section requires 90 feet of right-of-way.

The recommended horizontal alignment for Jones Road is the centered alignment. Additional right-of-way required to construct the recommended typical sections will need to be acquired from both sides along the corridor.

##### **Jack Brack Road**

There are two proposed typical sections recommended for Jack Brack Road. For the Urban Centers Segment of Jones Road, from Narcoossee Road to Underwood Avenue, the recommended typical section includes a two-lane divided urban roadway (with 11-foot lanes), a 19.5-foot raised median, 9-foot buffered bike lanes, 6.5-foot parking lanes, curb and gutter, and 5-foot sidewalk and 5-foot grassed areas. This typical section requires 96.5 feet of right-of-way. For the remaining segment of Jack Brack Road, from Underwood Avenue to the Northeast District, the recommended typical section includes a two-lane divided urban roadway (with 10-foot lanes), a 22-foot raised median, 7-foot buffered bike lanes, curb and gutter, 5-foot sidewalks, and 10-foot grassed areas. This typical section requires 90 feet of right-of-way.

The recommended horizontal alignment for Jack Brack Road is the centered alignment. Additional right-of-way required to construct the recommended typical sections will need to be acquired from both sides along the corridor.

### **Cyrils Drive**

There are four proposed typical sections recommended for Cyrils Drive. The West Segment begins at Narcoossee Road and ends approximately 1,100 feet to the east. This recommended typical section includes a four-lane divided urban roadway (with 10-foot inside and 11-foot outside lanes), a 22-foot raised median, curb and gutter, 10-foot landscape area, a 5-foot sidewalk on the north side, and a 12-foot multi-use trail on the south side. The existing Orlando Utilities Commission (OUC) overhead power poles are outside of the proposed multi-use trail on the south side. This typical section requires 130 feet of right-of-way.

The Bridge Segment begins east of the West Segment and continues to the Transition Segment. This recommended typical section consists of a single-deck four-lane divided concrete bridge (with 10-foot inside and 11-foot outside lanes), 6-foot inside shoulders separated by a concrete traffic barrier, 2.5-foot outside shoulders, a 5-foot sidewalk with a concrete separator on the north side, and a 10-foot multi-use trail with a concrete separator on the south side. While the bridge width is 80 feet, this typical section requires 100 feet of right-of-way to accommodate inspection envelopes on both sides. However, it is recommended to match the required right-of-way width of the adjacent segment to the east which is 119 feet.

The Transition Segment begins east of the Bridge Segment and continues to the East Segment (Franklin Road). This recommended typical section includes a four-lane divided urban roadway (with 10-foot inside and 11-foot outside lanes), a 22-foot raised median, curb and gutter, a 15-foot landscape area and a 5-foot sidewalk on the north side, and 10-foot grassed area and 12-foot multi-use trail on the south side. This typical section requires 119 feet of right-of-way.

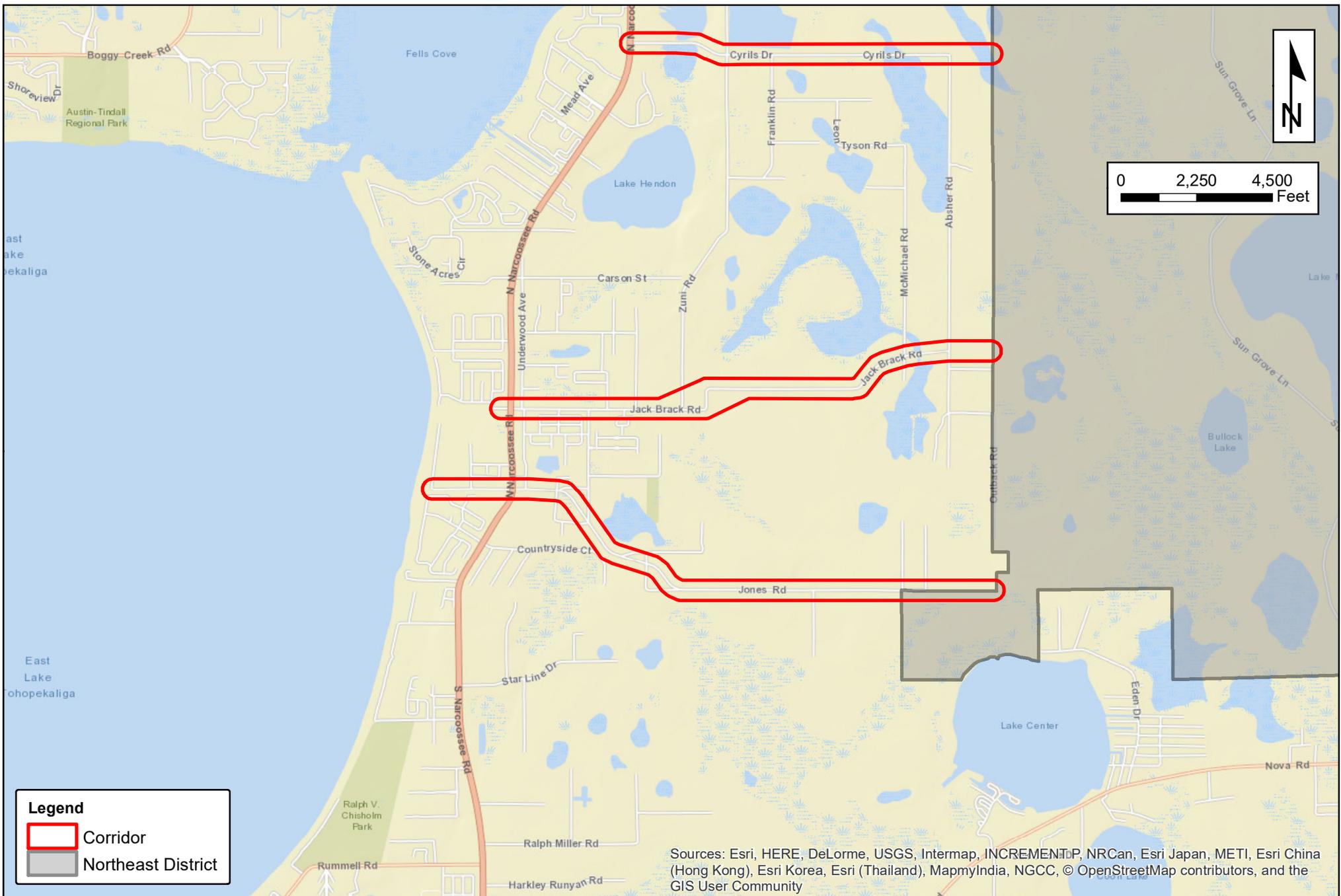
The East Segment begins east of the Transition Segment and continues into the Northeast District. This recommended typical section includes a four-lane divided urban roadway (with 10-foot inside and 11-foot outside lanes), a 22-foot raised median, 7-foot buffered bike lanes on both sides, curb and gutter, a 7-foot landscape area and a 5-foot sidewalk on the north side, and a 7-foot grassed area and 12-foot multi-use trail on the south side. This typical section requires 119 feet of right-of-way. The typical section used for the Bridge Section may be applicable to a portion of the East Segment if required to accommodate wildlife and/or surface water movement. This is to be further evaluated during the design phase.

The recommended horizontal alignment for Cyrils Drive is a combination of all three alignments. For the segment from Narcoossee Road to the curves, additional right-of-way will need to be acquired from the north side (north alignment). Through the reverse curves, additional right-of-way will need to be acquired from both sides (center alignment). From the curves to the Northeast District, additional right-of-way will need to be acquired from the south side (south alignment).

## 1.2. DESCRIPTION OF PROPOSED ACTION

This project proposes improvements to Jones Road, Jack Brack Road, and Cyrils Drive from Narcoossee Road to the Northeast District. The proposed improvements to Jones Road and Jack Brack Road include a two-lane divided roadway, curb and gutter, 5-foot sidewalks, and buffered bike lanes. This typical section requires 90 feet of right-of-way. On-street parking will be provided for a short segment of these corridors. This typical section will require 96.5 feet of right-of-way. The improvements to Cyrils Drive include a four-lane divided roadway, curb and gutter, and a 5-foot sidewalk on the north side, and a 12-foot multi-use trail on the south side (reduced to 10-foot on bridge section). Buffered bike lanes will also be provided on the easternmost segment. This typical section will require right-of-way varying from 119 feet to 130 feet. The posted speed limit for these improvements will be 35 miles per hour (mph).

**Figure 1.1** illustrates the project location.



**Legend**

- Corridor
- Northeast District

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENTP, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

## 2. EXISTING CONDITIONS

### 2.1. TYPICAL SECTION/EXISTING ROADWAY RIGHT-OF-WAY

#### **Jones Road**

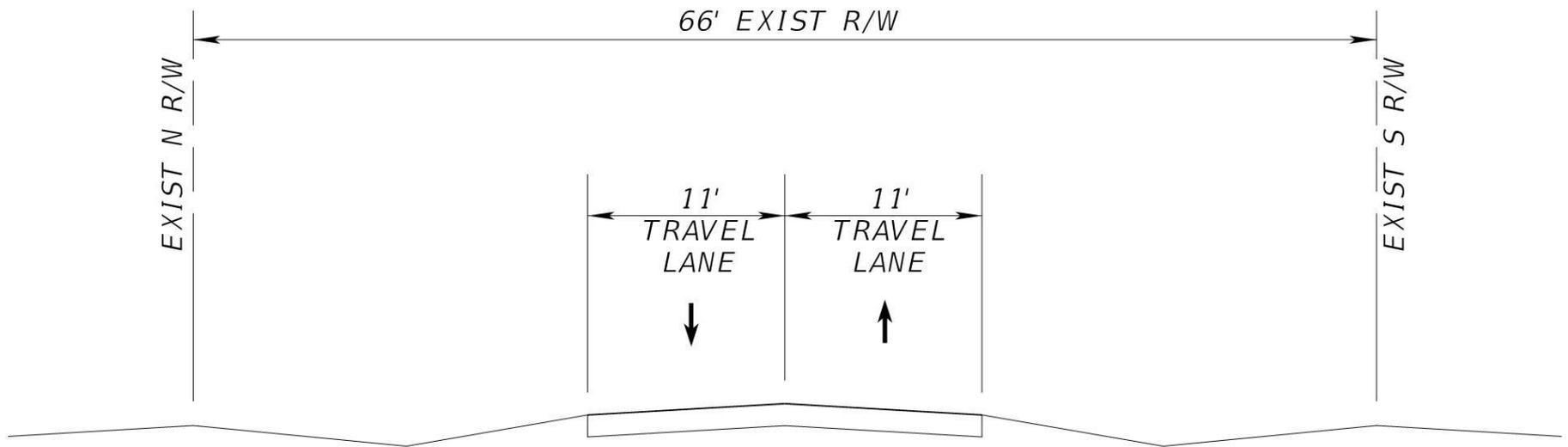
The existing typical section for Jones Road, from Narcoossee Road to east of Eagle Road, includes one westbound 11-foot travel lane and one eastbound 11-foot travel lane. Travel lane widths are reduced to 8-foot lanes from east of Eagle Road to Gerry Court. Narrow grass shoulders and shallow grass swales exist on both sides of the road. This typical section is depicted in **Figures 2.1 and 2.2**. From Narcoossee Road to 3,300 feet east of Eagle Road, there is generally 66 feet of right-of-way. From 3,300 feet east of Eagle Road to the Northeast District boundary, there is generally 16.5 feet of right-of-way.

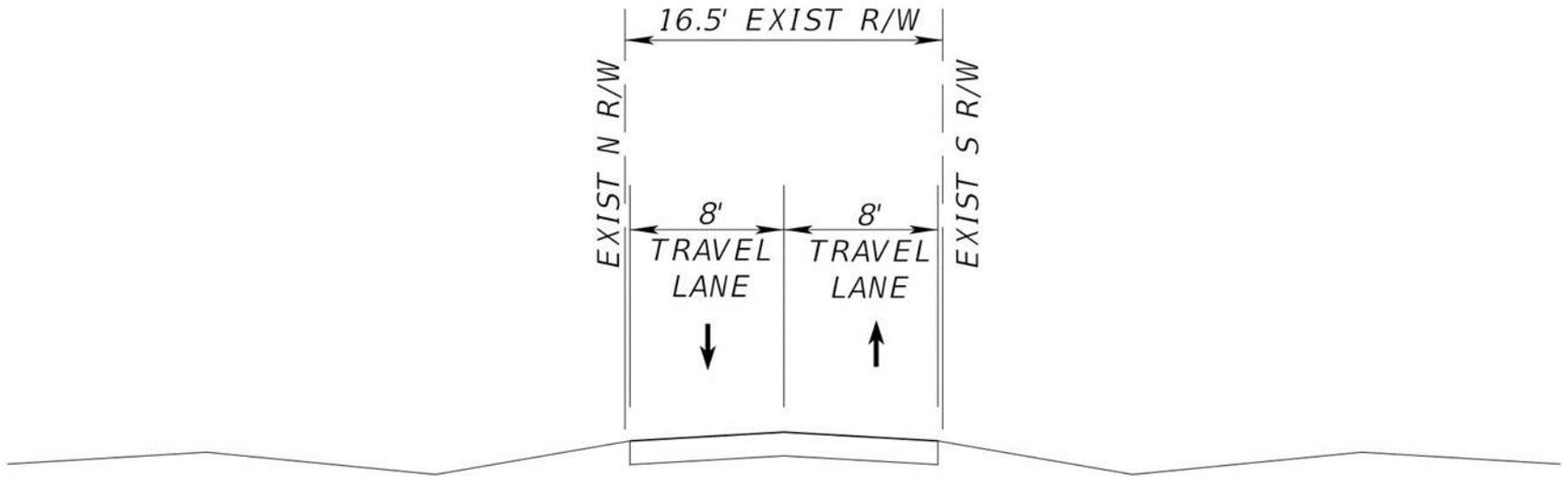
#### **Jack Brack Road**

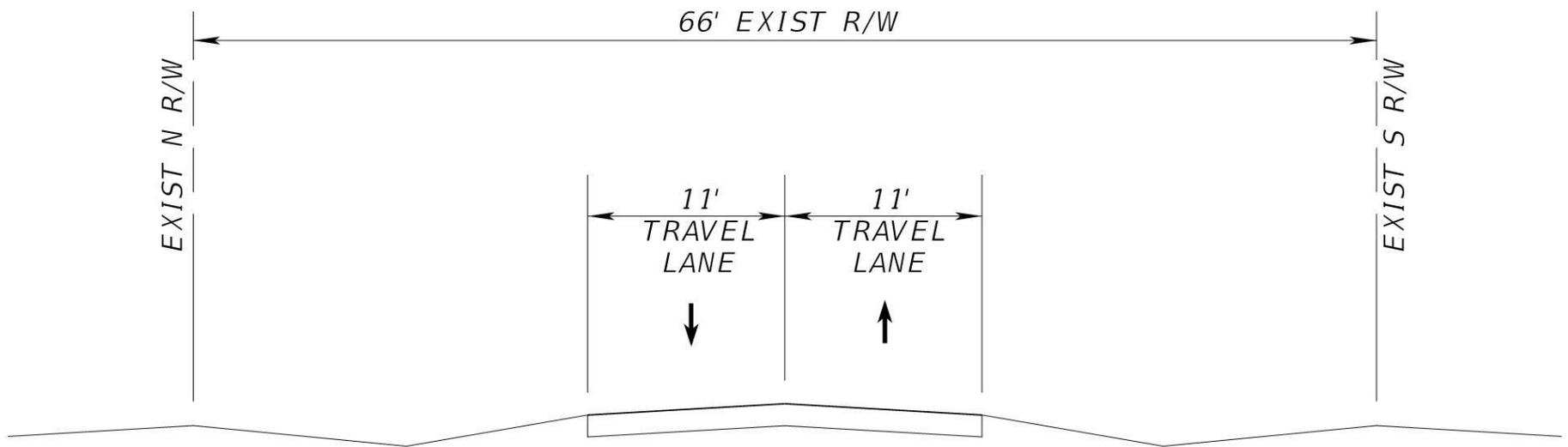
The existing typical section for Jack Brack Road, from Narcoossee Road to Absher Road, includes one westbound 11-foot travel lane and one eastbound 11-foot travel lane. Narrow grass shoulders and shallow grass swales exist on both sides of the road. This typical section is depicted in **Figure 2.3**. From Narcoossee Road to Absher Road, there is generally 66 feet of right-of-way.

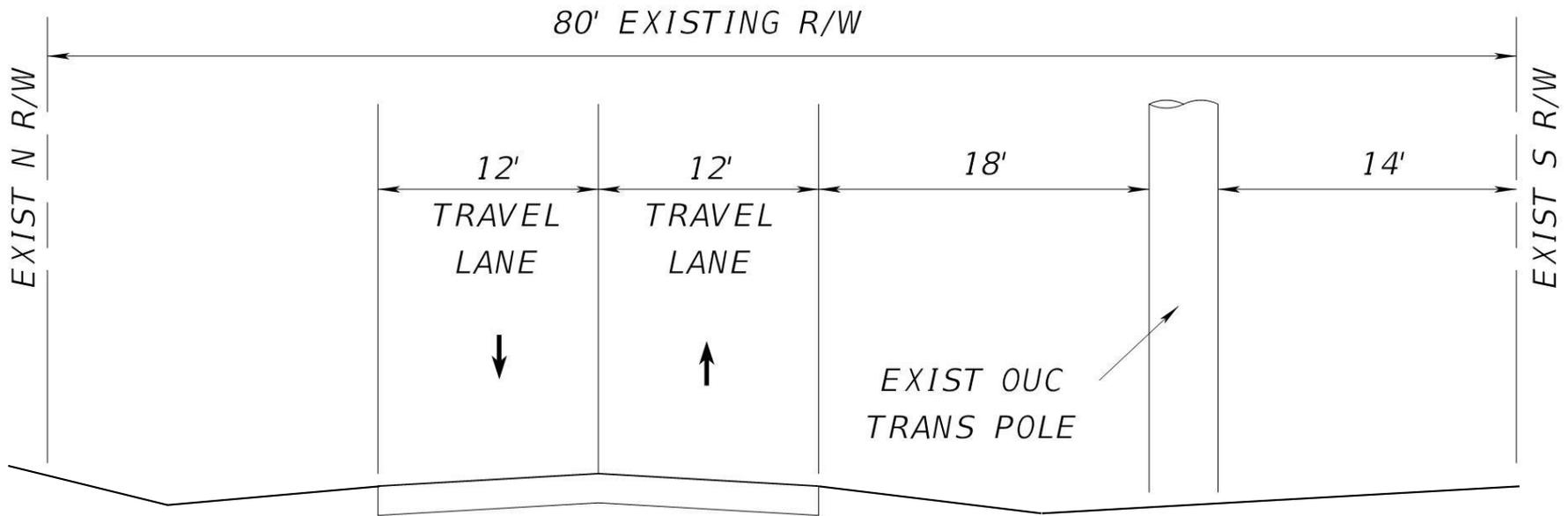
#### **Cyrils Drive**

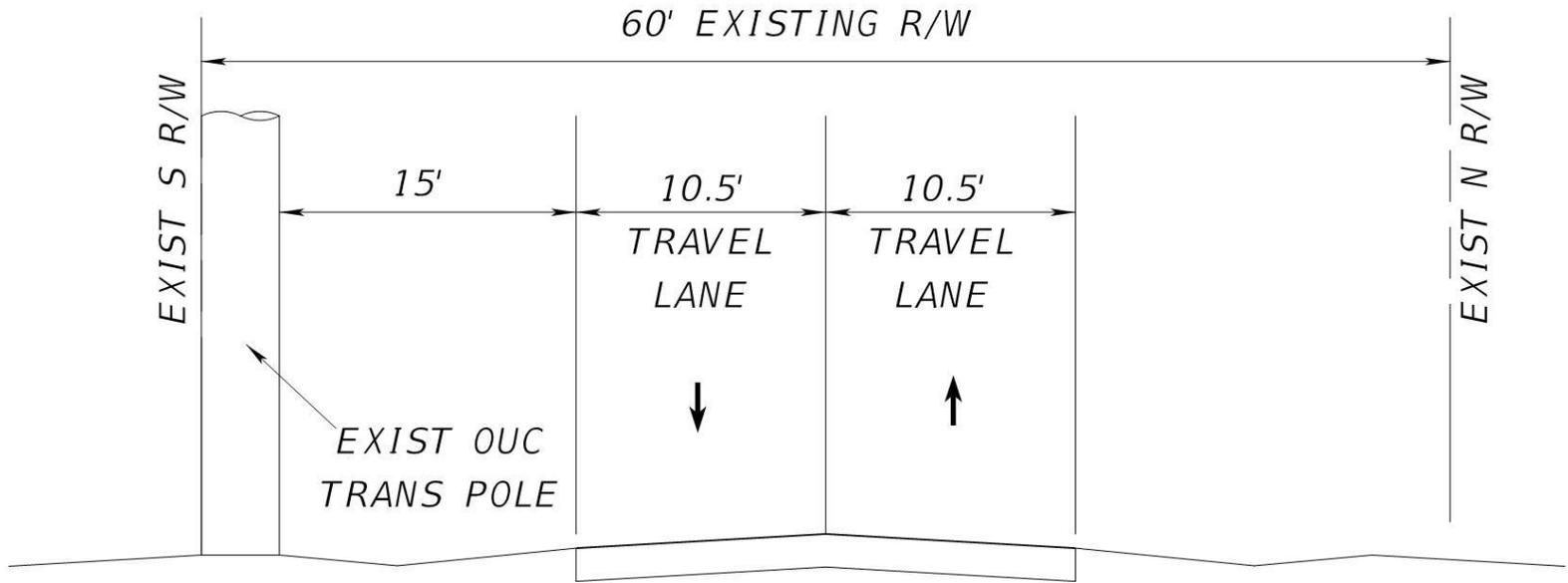
The existing typical section for Cyrils Drive, from Narcoossee Road to Zuni Road, includes one westbound 12-foot travel lane and one eastbound 12-foot travel lane. Travel lane widths are reduced to 10.5-foot lanes from east of Zuni Road to Absher Road. Narrow grass shoulders and shallow grass swales exist on both sides of the road. This typical section is depicted in **Figures 2.4 and 2.5**. From Narcoossee Road to Zuni Road, there is generally 80 feet of right-of-way. From Zuni Road to Absher Road, there is generally 60 feet of right-of-way.











## 2.2. COMPREHENSIVE PLAN FRAMEWORK CLASSIFICATION

### **Jones Road**

From Narcoossee Road to the current east terminus, Jones Road is classified as Roadway Reconstruction as an Avenue Framework Street. The future eastern extension is a Planned Avenue Framework Street.

### **Jack Brack Road**

From Narcoossee Road to the current east terminus, Jack Brack Road is classified as Roadway Reconstruction as an Avenue Framework Street. The future eastern extension is a Planned Avenue Framework Street.

### **Cyrils Drive**

From Narcoossee Road to the Northeast District boundary, Cyrils Drive is classified as a Boulevard and then transitions into a Planned Multimodal Corridor.

## 2.3. HORIZONTAL AND VERTICAL ALIGNMENTS

### **Jones Road**

The existing horizontal alignment consists of a series of tangents with curves and deflection angles from Narcoossee Road to Gerry Court. Of the five horizontal curves, three do not meet the length-of-curve criteria for a 35-mph design speed. The existing vertical geometry is generally flat.

### **Jack Brack Road**

The existing horizontal alignment consists of a series of tangents with curves and deflection angles from Narcoossee Road to Absher Road. Of the six horizontal curves, three do not meet the length-of-curve criteria for a 35-mph design speed. The existing vertical geometry is generally flat.

### **Cyrils Drive**

The existing horizontal alignment consists of essentially two east/west tangents and a set of reverse curves from Narcoossee Road to Absher Road. The existing curves do not meet length-of-curve criteria for a 35-mph design speed. The existing vertical geometry is generally flat.

## 2.4. EXISTING PROPERTY AND LAND USES

Existing and future land uses within the project were obtained from Osceola County.

### **Jones Road**

The Jones Road corridor is currently comprised primarily of single-family residential, pastureland, orchard/grove, and vacant uses with some commercial at the intersection with Narcoossee Road.

The future land use for the Jones Road corridor includes commercial along the segment from Narcoossee Road to Underwood Avenue and low density residential from Underwood Avenue to Gerry Court. From Gerry Court to the Northeast District, the future land use on the north side of Jones Road is low density residential and the on the south side is mixed use.

### **Jack Brack Road**

The Jack Brack Road corridor is currently comprised primarily of single-family residential, pastureland, mobile home, and vacant uses.

The future land use for the Jack Brack Road corridor includes commercial along the segment from Narcoossee Road to Underwood Avenue and low density residential from Underwood Avenue to the Northeast District.

### **Cyrils Drive**

The Cyrils Drive corridor is currently comprised primarily of single-family residential, pastureland, mobile home, County, and vacant uses.

The future land use for the Cyrils Drive corridor includes low density residential from Narcoossee Road to just east of Franklin Road. From just east of Franklin Road to the Northeast District, the future land use is conservation on the north side and low density residential on the south side.

## 2.5. CULTURAL RESOURCES

The following is a summary of existing cultural resources within the study limits. Detailed information on cultural resources can be found in **Appendix A**.

### **Jones Road**

The Florida Master Site File (FMSF) indicates that seven historic structures and three archaeological sites have been recorded within one mile of the Jones Road corridor. Two historic structures are within the corridor. The Narcoossee Schoolhouse at 5026 Yukon Street is the sole resource evaluated by the State Historic Preservation Office (SHPO) as eligible for National Register of Historic Places (NRHP). In addition, there are 30 historic-aged parcels within the Jones Road Area of Potential Effect (APE) that could contain buildings or structures which could possibly be recommended as NRHP-eligible.

### **Jack Brack Road**

FMSF indicates that seven historic structures and four archaeological sites have been recorded within one mile of the Jack Brack Road corridor. One historic structure is within the corridor. The Narcoossee Schoolhouse, also within the Jones Road corridor, at 5026 Yukon Street is the sole resource evaluated by SHPO as eligible for NRHP. In addition, there are eight historic-aged parcels within the Jack Brack Road APE that could contain buildings or structures which could possibly be recommended as NRHP-eligible.

### **Cyrils Drive**

FMSF indicates that one historic structure and five archaeological sites have been recorded within one mile of the Cyrils Drive corridor. All previously recorded resources have been evaluated by SHPO and deemed ineligible for NRHP. In addition, there are two historic-aged parcels within the Cyrils Drive APE that could contain buildings or structures which could possibly be recommended as NRHP-eligible.

## 2.6. WETLANDS

The following is a summary of existing wetlands within the study limits. Detailed information on wetlands can be found in **Appendix B**.

### **Jones Road**

The Jones Road corridor contains twelve wetland/surface water communities. Five are man-made ponds (borrow areas), five are forested wetlands, and two are non-forested wetlands.

### **Jack Brack Road**

The Jack Brack Road corridor contains twelve wetland/surface water communities. Six are man-made ponds (borrow areas), three are forested wetlands, one is a mixture of forested and non-forested wetlands, and two are non-forested wetlands.

### **Cyrils Drive**

The Cyrils Drive corridor contains ten wetland/surface water communities. Two are man-made ponds (borrow areas), two are lakeshore wetlands, four are forested wetlands, and two are non-forested wetlands.

## 2.7. SPECIAL DESIGNATIONS

Urban Centers Concept Plans are planned within the Centers outlined in the Narcoossee Community Plan-Centers Framework for Jones Road, Jack Brack Road, and all other feasible framework connections within a designated Center.

## 2.8. ENDANGERED SPECIES/BIOLOGICAL ASSESSMENT

The study area is comprised of diverse native habitat types, as well as altered lands. There is high potential for occurrence of numerous state- and federally-listed species, with the highest potential being the state-listed gopher tortoise and the federally-listed eastern indigo snake.

Additional information on endangered species/biological assessment can be found in **Appendix C**.

## 2.9. PAVEMENT CONDITIONS

The existing pavement of Jones Road, Jack Brack Road, and Cyrils Drive is generally in fair condition. Additional evaluation should be done during the design phase.

## 2.10. EXISTING DRAINAGE SYSTEM

### **Jones Road**

From Narcoossee Road to Underwood Avenue, stormwater runoff along Jones Road is collected in a series of drainage inlets and conveyed via underground pipes into the Narcoossee Road stormwater pond just south of Jack Brack Road. The remaining existing drainage system for Jones Road primarily consists of shallow grassed swales that collect stormwater runoff from the roadway. Stormwater is stored in these isolated depressions until it percolates into the ground.

### **Jack Brack Road**

The existing drainage system for Jack Brack Road primarily consists of shallow grassed swales that collect stormwater runoff from the roadway. Stormwater is stored in these isolated depressions until it percolates into the ground. For the segment of Jack Brack Road, from McMichael Road to Absher Road, stormwater runoff is conveyed via shallow swales to the creek that runs north/south.

### **Cyrils Drive**

For the segment of Cyrils Drive, from Narcoossee Road to Zuni Road, stormwater runoff generally sheet flows into Lake Ajay. Stormwater runoff from the north side of Cyrils Drive, from Zuni Road to just east of Franklin Road, sheet flows into the unnamed lake/borrow pit to the north. There is a short segment west of Absher Road where stormwater sheet flows into the wetland system on both sides. The remaining existing drainage system for Cyrils Drive primarily consists of shallow grassed swales that collect stormwater runoff from the roadway. Stormwater is stored in these isolated depressions until it percolates into the ground.

## **2.11. SOILS AND GEOTECHNICAL DATA**

A review of the Natural Resources Conservation Service (NRCS) Soil Survey indicated 14 major soil types within the project limits, including:

- Adamsville sand
- Basinger fine sand
- Basinger fine sand, depressional
- Cassia fine sand
- Hontoon muck
- Immokalee fine sand
- Myakka fine sand
- Paola sand
- Placid fine sand
- Pomello fine sand
- Samsula muck
- Smyrna fine sand
- St. Lucie fine sand
- Tavares fine sand

In general, soils within the study area depict upland areas with gently- to moderately-sloping, sandy soils with seasonal high groundwater levels ranging from 0.2 feet to greater than 6 feet below the natural ground surface. Some of the soils are appropriate for use as roadway embankment fill.

Additional information regarding the soils can be found in **Appendix D**.

## 2.12. TRAFFIC DATA

Traffic counts were provided along Narcoossee Road, Jones Road, and Nova Road. A summary of the existing segment traffic data is shown in **Table 2.1**.

**Table 2.1: Existing Year 2015 AADT**

Roadway	AADT
Narcoossee Road	
North of Cyrils Drive	17,200
Jones Road to Rummell Road	16,400
South of Rummell Road	15,600
Jones Road	
East of Narcoossee Road	800
Nova Road	
North of US 192	3,600

Additional information regarding the existing traffic data can be found in **Appendix E**.

## 2.13. UTILITIES

### **Jones Road**

Beginning at Narcoossee Road moving to the east, there is currently overhead electric and buried communication lines on the north side of Jones Road and buried communication lines and a water main on the south side. At Underwood Avenue, a sanitary line begins on the north side. This arrangement of facilities continues to Little Lane, where the sanitary line ends. The remaining facilities continue east, to just west of Fryer Road, where the south side water main ends. The overhead electric and buried communication lines continue to the east for approximately 1,000 feet, where the overhead electric crosses to the south side of Jones Road. This arrangement continues to the east, to approximately 200 feet east of South Eagle Road, where the overhead electric crosses to the north side of Jones Road and the buried communication line on the south side ends. This arrangement continues east for approximately 800 feet to the eastern end of the left curve where the overhead electric and buried communication line crosses to the south side of Jones Road. The overhead electric and buried communication lines continue on the south side of Jones Road to Gerry Court where the buried communication line ends. The overhead electric continues east. All utilities are within the existing roadway right-of-way from Narcoossee Road to the point where the existing right-of-way reduces to 16.5 feet where the utilities are then outside the right-of-way.

### **Jack Brack Road**

Beginning at Narcoossee Road moving to the east, there is currently overhead electric, a water main, and buried communication lines on the south side of Jack Brack Road as well as buried communication lines

on the north side. At Underwood Avenue, a sanitary line begins on the south side and an overhead electric line crosses to the north side. This arrangement of facilities continues to Wiggins Road, where a sanitary force main is added to the north side. The sanitary line on the south side ends at Pile Marsh Loop. This arrangement continues to the east, to Tyson Road, where the water main on the south side ends. The remaining utilities continue to the east, to Zuni Road, where the sanitary force main on the north ends. The remaining utilities continue east, to the first 90-degree curve to the left, where the overhead electric line crosses to the south side of Jack Brack Road and continues on the east side along with a buried communication line. Another buried communication line continues on the west side. Through the second 90-degree curve to the right, the overhead electric line remains on the south side and the buried communications lines remain on the north and south side. This arrangement continues to approximately 1,800 feet east of the 90-degree curve to the right, where the buried communication line on the north side ends. The overhead electric and buried communication lines continue on the south side of Jack Brack Road to the 45-degree curve to the right, where the buried communication line crosses to the north side. This arrangement continues to Absher Road. All utilities are within the existing roadway right-of-way.

### **Cyrils Drive**

Beginning at Narcoossee Road moving to the east, there is currently overhead electric and buried communication lines on the south side of Cyrils Drive and buried communication lines on the north side. At the first curve to the right, all utilities cross to the north side. On the east side of Zuni Road, a buried communication line crosses to the south side of Cyrils Drive. This arrangement continues to approximately 2,000 feet west of Absher Road, where the buried communication line on the south side ends. The remaining utilities continue to the east. At Absher Road, the utilities turn to the south along the east side of Absher Road. From Zuni Road to Absher Road, there is a 15-foot utility easement on the north side of Cyrils Drive. Some of the overhead electric poles are set on the utility easement/roadway right-of-way line. All other utilities are completely within the existing roadway right-of-way.

## **2.14. PEDESTRIAN, BICYCLE, AND MULTI-MODAL FACILITIES**

Other than a few short segments of sidewalk that have been constructed as part of new residential development, there are no designated pedestrian, bicycle, or multi-modal facilities along the Jones Road, Jack Brack Road, or Cyrils Drive corridors.

### 3. DEVELOPMENT OF ALTERNATIVES

The objective of the Jones Road, Jack Brack Road, and Cyrils Drive alternatives is to meet the anticipated future needs for all modes of transportation from Narcoossee Road into the Northeast District.

Several alternative typical sections were developed for each corridor based on results from the Design Traffic Analysis and planned designations of the area roadway network. In addition, the following three roadway alignments were evaluated for each corridor:

1. Left Alignment – additional right-of-way required taken from left (north) side
2. Center Alignment – additional right-of-way required taken from both sides
3. Right Alignment – additional right-of-way required taken from right (south) side

Results of the alignment alternatives are described in the Corridor Analysis section.

## 4. PROJECT DESIGN STANDARDS

Design and construction criteria for the proposed improvements will meet all Osceola County standards for the design of such roadways and will comply with recommended standard practices as set forth in the following documents:

- Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (Florida Greenbook), 2016, State of Florida Department of Transportation
- FDOT Design Manual, 2018

**Table 4.1** displays the design criteria used and its source.

**Table 4.1: Design Criteria Matrix**

Design Element	Urban Section 35 MPH Design Speed	Source
<b>General</b>		
Posted Speed	35 mph	
Design Speed	35 mph	
<b>Roadway Cross Section</b>		
Lane Width	10-11 ft.	Table 3-10 <sup>1</sup>
Clear Zone	4 ft. from face of curb	Table 3-15 <sup>1</sup>
Median Width	15.5 ft. min.	Table 3-14 <sup>1</sup>
Cross Slope	0.02	Ch. 3 C.7.b.2 <sup>1</sup>
Sidewalk Width	5 ft. min.	Ch. 8 B.B.1 <sup>1</sup>
Multi-use Trail Width	10 ft. min.	Ch. 9 C.C.1 <sup>1</sup>
Tie-down Slopes	1:4 desired, 1:2 max.	
<b>Horizontal Alignment</b>		
Minimum Length of Curve	525' desired, 400' min.	Table 210.8.1 <sup>2</sup>
Maximum Curvature @ e=NC	R=1146'	Table 210.9.2 <sup>2</sup>
Maximum Curvature @ e=RC	R=546'	Table 210.9.2 <sup>2</sup>
<b>Vertical Alignment</b>		
Maximum Grade	7%	Table 3.7 <sup>1</sup>
Minimum Distance Between VPI's	250 ft.	210.10.1.1 <sup>2</sup>
Minimum Grade	0.30%	210.10.1.1 <sup>2</sup>
Vertical Curve K Values	K=47 (Crest)	Table 210.10.3 <sup>2</sup>
	K=49 (Sag)	Table 210.10.3 <sup>2</sup>
Minimum Length of Vertical Curves	105 ft. (Crest)	Table 210.10.4 <sup>2</sup>
	105 ft. (Sag)	Table 210.10.4 <sup>2</sup>

Note:

<sup>1</sup> Florida Greenbook, 2016

<sup>2</sup> FDOT Design Manual, 2018

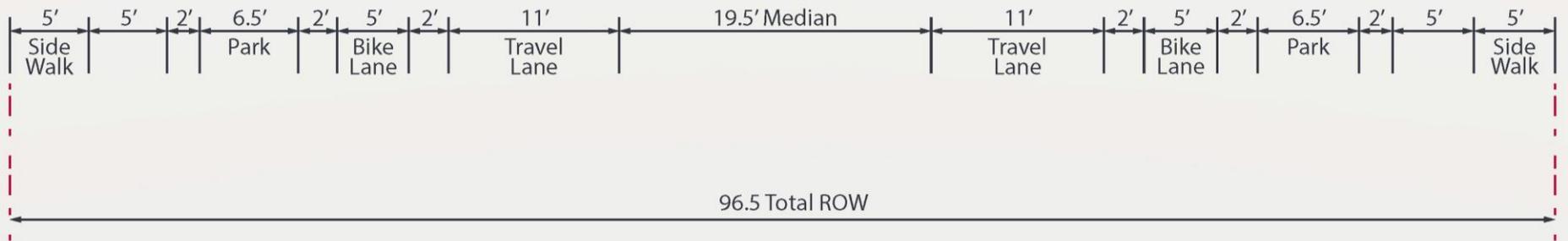
## 5. CORRIDOR ANALYSIS

### 5.1. JONES ROAD

#### 5.1.1. TYPICAL SECTIONS

For the Urban Centers Segment of Jones Road, from Narcoossee Road to Whitted Drive, the proposed typical section includes a two-lane divided urban roadway (with 11-foot lanes), a 19.5-foot raised median, 9-foot buffered bike lanes, 6.5-foot parking lanes, curb and gutter, 5-foot sidewalk, and 5-foot grassed areas. This typical section requires 96.5 feet of right-of-way. The posted speed for this section is 35 mph.

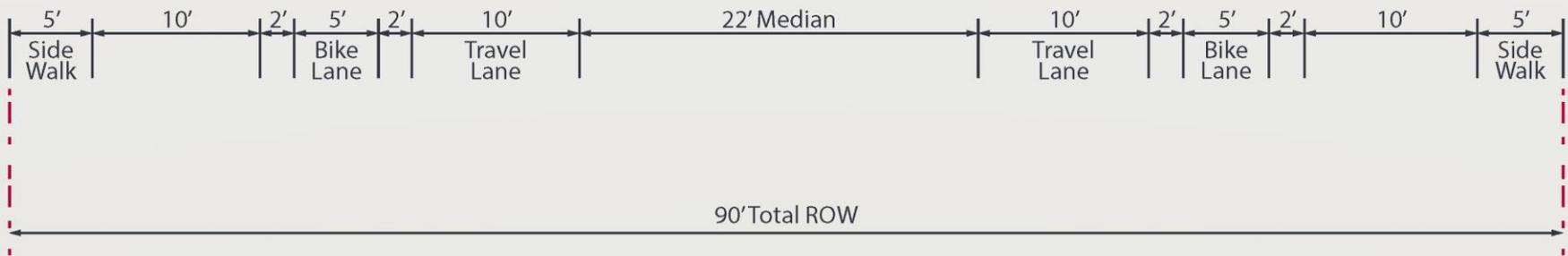
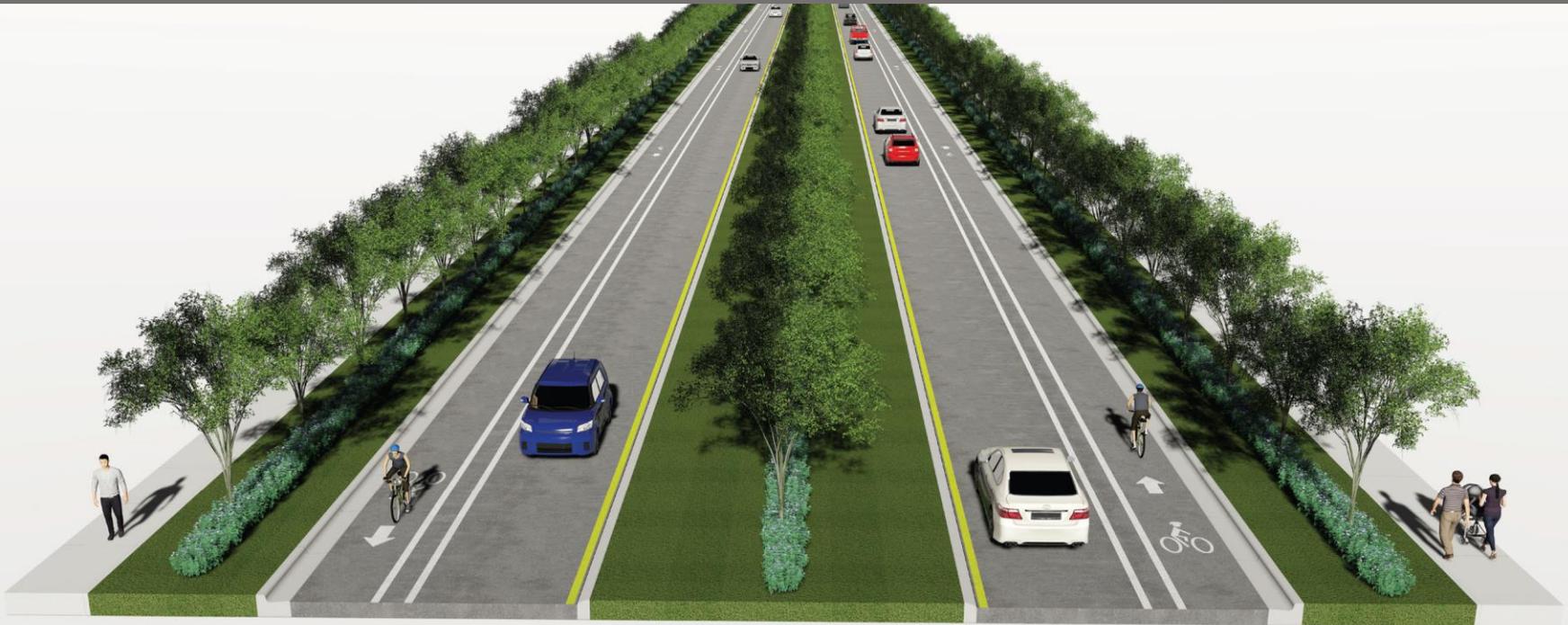
**Figure 5.1** illustrates this typical section.



**TYPICAL SECTION – JONES ROAD FROM NARCOOSSEE ROAD TO WHITTED DRIVE**

**Figure 5.1**

For the remaining segment of Jones Road, from Whitted Drive to the Northeast District, the proposed typical section includes a two-lane divided urban roadway (with 10-foot lanes), a 22-foot raised median, 7-foot buffered bike lanes, curb and gutter, 5-foot sidewalks, and 10-foot grassed areas. This typical section requires 90 feet of right-of-way. The posted speed for this section is 35 mph. **Figure 5.2** illustrates this typical section.



**TYPICAL SECTION – JONES ROAD FROM WHITTED DRIVE TO NORTHEAST DISTRICT**

### 5.1.2. HORIZONTAL AND VERTICAL ALIGNMENT

The proposed horizontal alignment utilizes the same tangents as the existing alignment. The three existing horizontal curves that do not meet minimum length criteria will be lengthened to meet the minimum of 400 feet. The four eastern most curves will require reverse crown cross slopes.

The proposed vertical alignment provides the required minimum 0.30% longitudinal slope with minimum spacing of 250 feet between vertical points of intersection. The high points and low points of the vertical alignment are set to minimize cut and fill requirements while maintaining a minimum of one foot separation between the bottom of the proposed base and the estimated seasonal high groundwater elevation. There are some segments of Jones Road where the estimated seasonal high groundwater is very close to the ground surface elevation. This condition is most prevalent in the section east of Gerry Court. Embankment is required for the proposed roadway profile to meet the minimum base clearance of one foot. This results in back-of-sidewalk fill slopes that extend beyond the proposed typical right-of-way foot print. There are three basic options available to mitigate this condition:

1. Acquire additional right-of-way
2. Construct gravity walls at back of sidewalk
3. Obtain permanent grading/slope easements

The third option is generally most desirable because it is usually lower in costs and least impactful to adjacent properties.

### 5.1.3. CONCEPT PLANS

Conceptual design plans for the Recommended Jones Road Alternative are provided in the following pages.



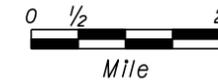
# CONCEPT PLANS JONES ROAD

LENGTH OF PROJECT			
BEGIN PROJECT STA.	LIN. FT.	MILES	END PROJECT STA.
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NOTE: LENGTH OF PROJECT IS BASED ON  $\frac{1}{2}$  CONSTRUCTION.

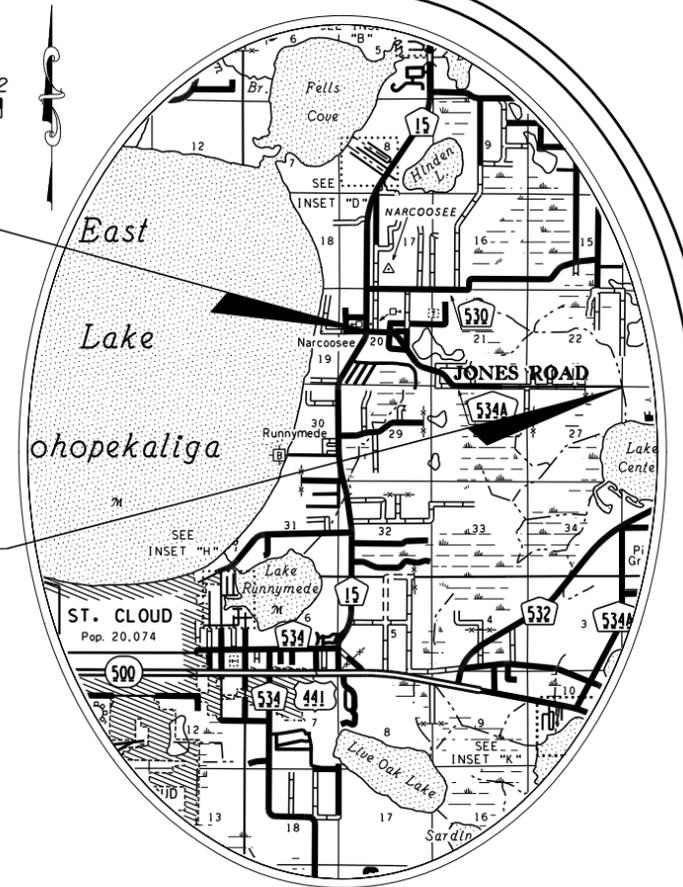
## INDEX OF CONCEPT PLANS

SHEET	DESCRIPTION
1	KEY SHEET
2-3	TYPICAL SECTIONS
4	PROJECT LAYOUT
5-27	ROADWAY PLAN-PROFILES



BEGIN PROJECT  
STA. 10+82.36

END PROJECT  
STA. 165+73.70



## OSCEOLA COUNTY TRANSPORTATION AND TRANSIT DEPARTMENT

FRED HAWKINS, JR.  
CHERYL GRIEB  
PEGGY CHOUDHRY  
VIVIANA JANER  
BRANDON ARRINGTON  
DON FISHER

CHAIRMAN OF THE BOARD OF COUNTY COMMISSIONERS  
VICE CHAIRWOMAN OF THE BOARD OF COUNTY COMMISSIONERS  
COUNTY COMMISSIONER  
COUNTY COMMISSIONER  
COUNTY COMMISSIONER  
COUNTY MANAGER

ROADWAY SHOP DRAWINGS  
TO BE SUBMITTED TO:  
KIMLEY-HORN AND ASSOCIATES, INC.  
L. FREDERICK BURKETT, P.E.  
189 S. ORANGE AVENUE  
SUITE 1000  
ORLANDO, FLORIDA 32801

PLANS PREPARED BY:

**Kimley»Horn**

Kimley-Horn and Associates, Inc.

189 S. ORANGE AVENUE  
SUITE 1000  
ORLANDO, FLORIDA 32801  
TEL: (407) 898-1511  
FAX: (407) 894-4791  
CERTIFICATE OF AUTHORIZATION No. 696

ROADWAY PLANS  
ENGINEER OF RECORD: L. FREDERICK BURKETT, P.E.

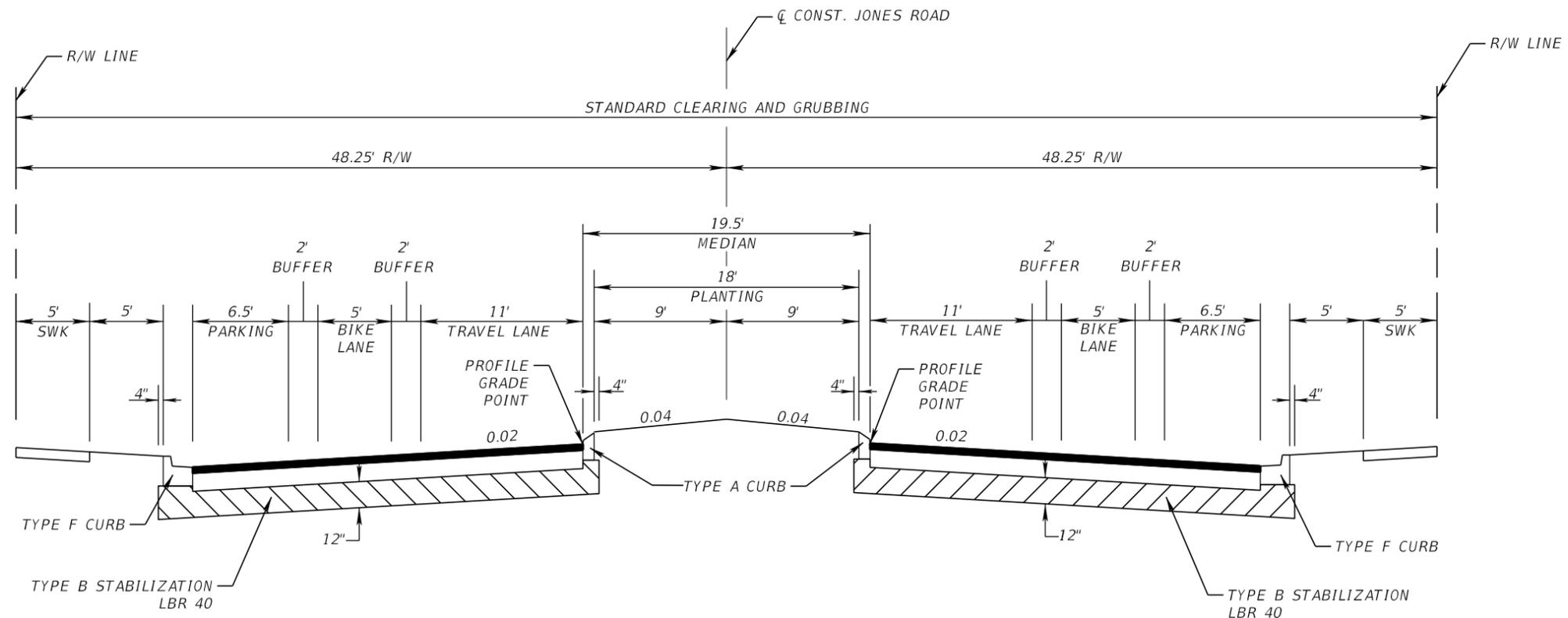
DATE: \_\_\_\_\_

P.E. NO.: 45825

GOVERNING STANDARDS AND SPECIFICATIONS:  
FLORIDA DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS DATED 2018-2019,  
AND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 2017,  
AS AMENDED BY CONTRACT DOCUMENTS.  
APPLICABLE DESIGN STANDARDS MODIFICATIONS:

FOR DESIGN STANDARDS MODIFICATIONS CLICK ON "DESIGN STANDARDS" AT THE  
FOLLOWING WEB SITE:  
[HTTP://WWW.DOT.STATE.FL.US/RDDSIGN/](http://www.dot.state.fl.us/rddesign/)

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.



TYPICAL SECTION  
 JONES ROAD  
 URBAN CENTER  
 STA. 10+82.36 TO STA. 23+40.00  
 DESIGN SPEED = 35 MPH

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

**Kimley»Horn**  
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 P.E. License No. 45825  
 189 South Orange Avenue, Suite 1000  
 Orlando, Florida 32801

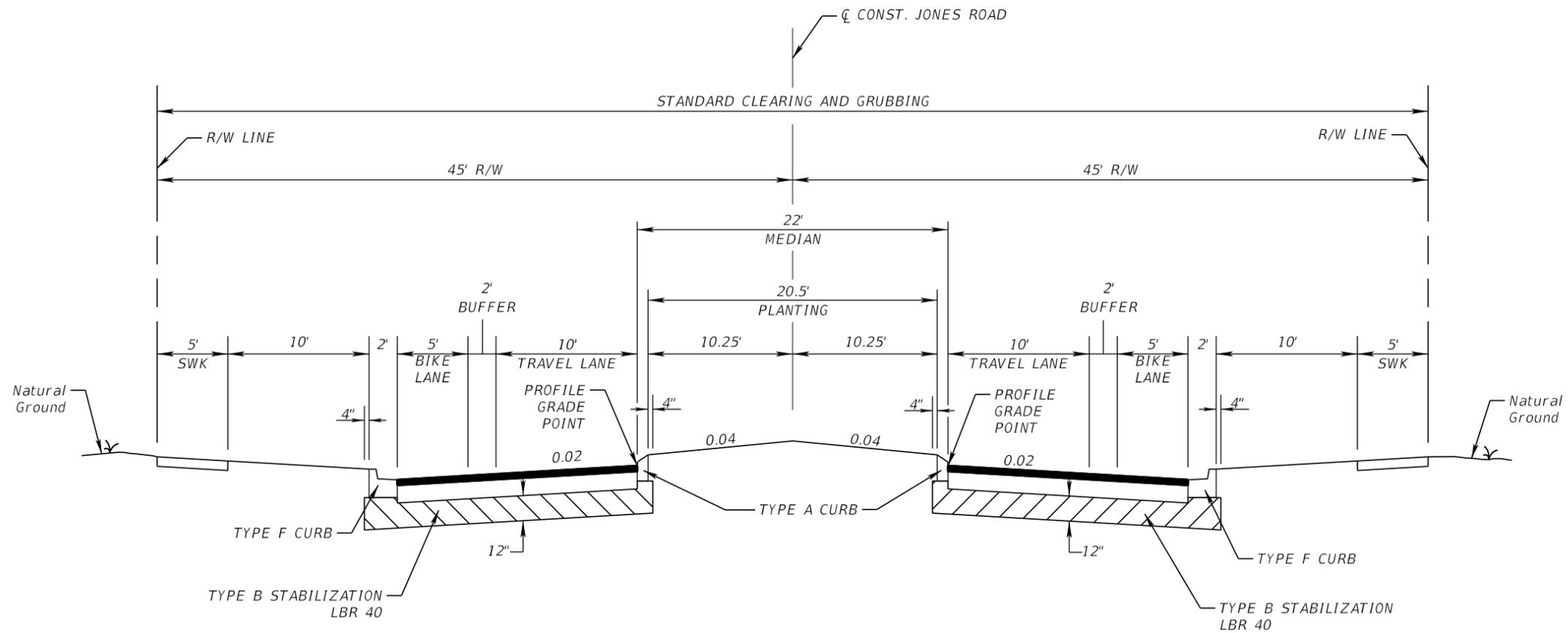


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TYPICAL SECTION (1)

SHEET NO.

2 Page 26



**TYPICAL SECTION**  
**JONES ROAD**  
**STA. 23+40.00 TO STA. 165+73.70**  
**DESIGN SPEED = 35 MPH**

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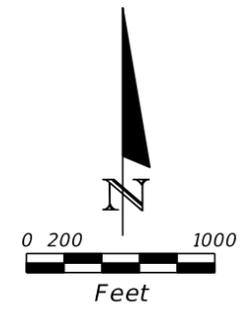


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**TYPICAL SECTION (2)**

SHEET  
NO.

3 Page 27



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CONST. JONES

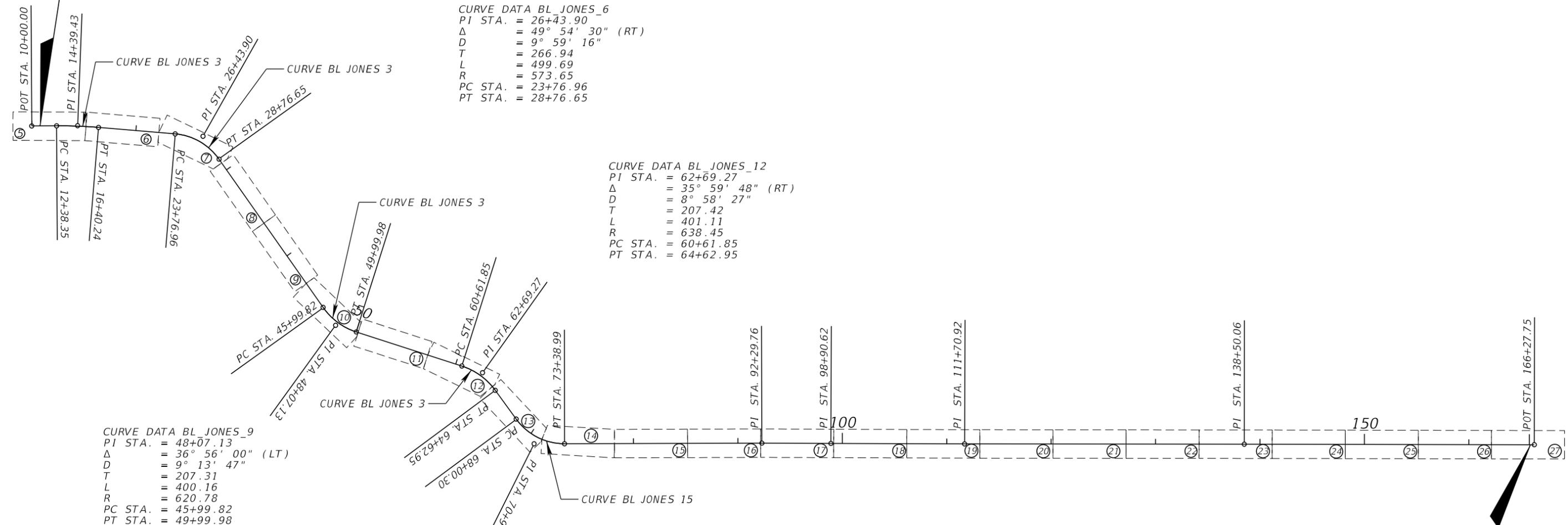
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PC STA. = 23+76.96  
PT STA. = 28+76.65

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R = 638.45  
PC STA. = 60+61.85  
PT STA. = 64+62.95

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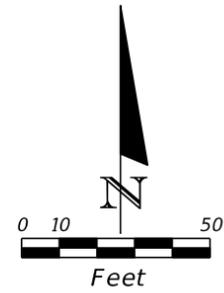
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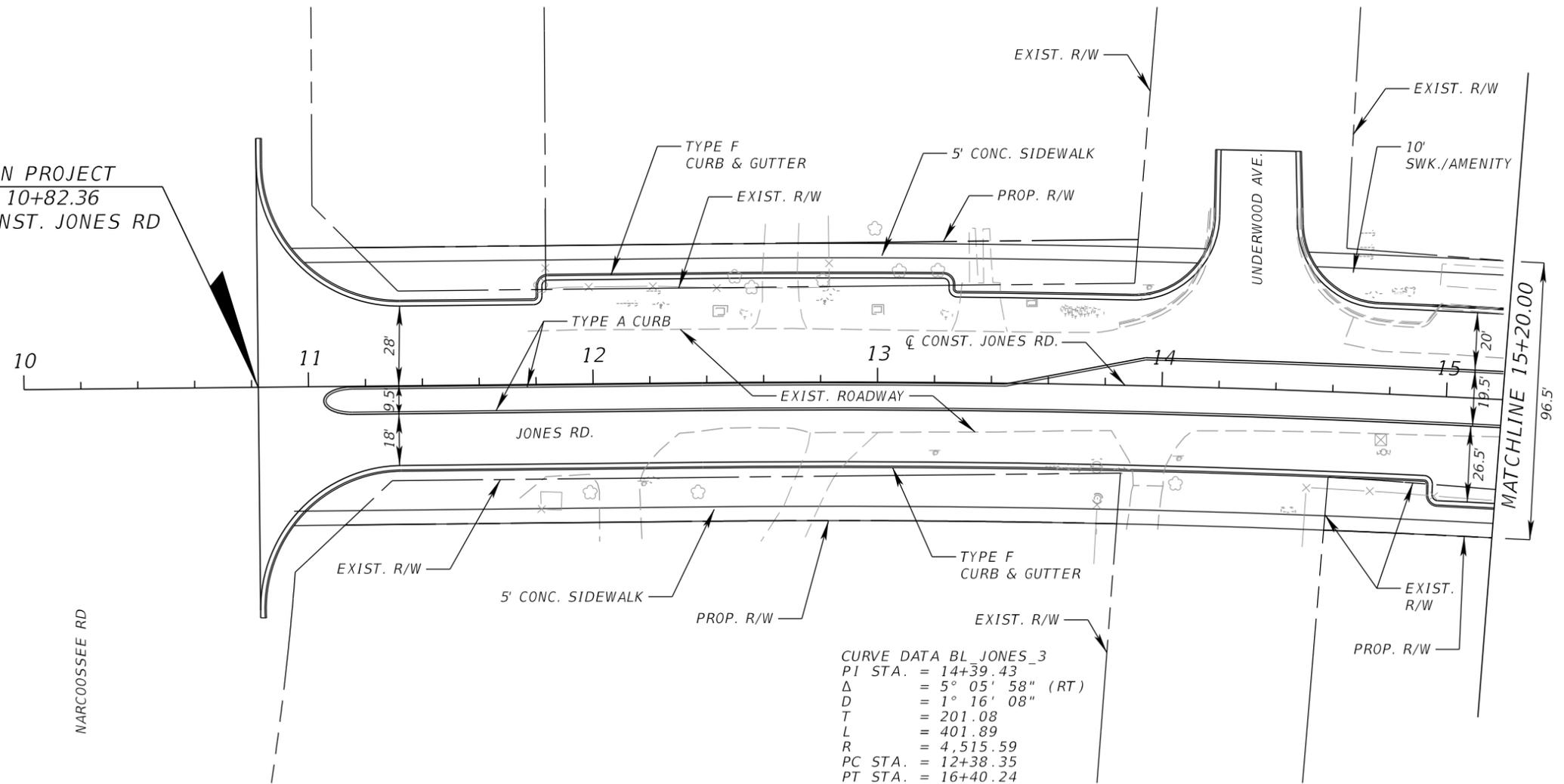
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**PROJECT LAYOUT**

SHEET NO.  
4 Page 28

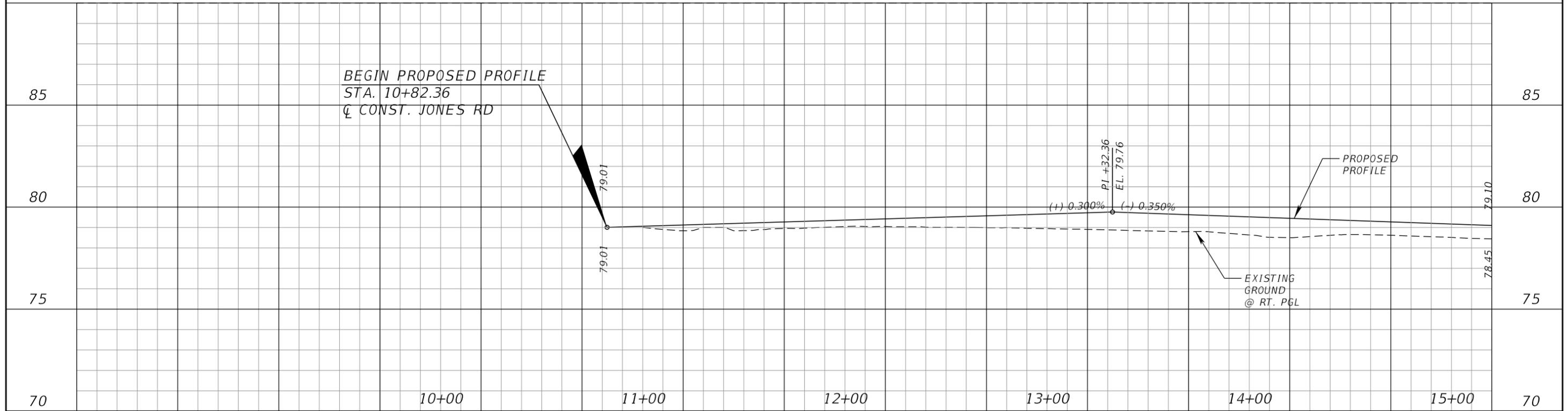


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 PT STA. = 16+40.24

BEGIN PROPOSED PROFILE  
STA. 10+82.36  
☒ CONST. JONES RD



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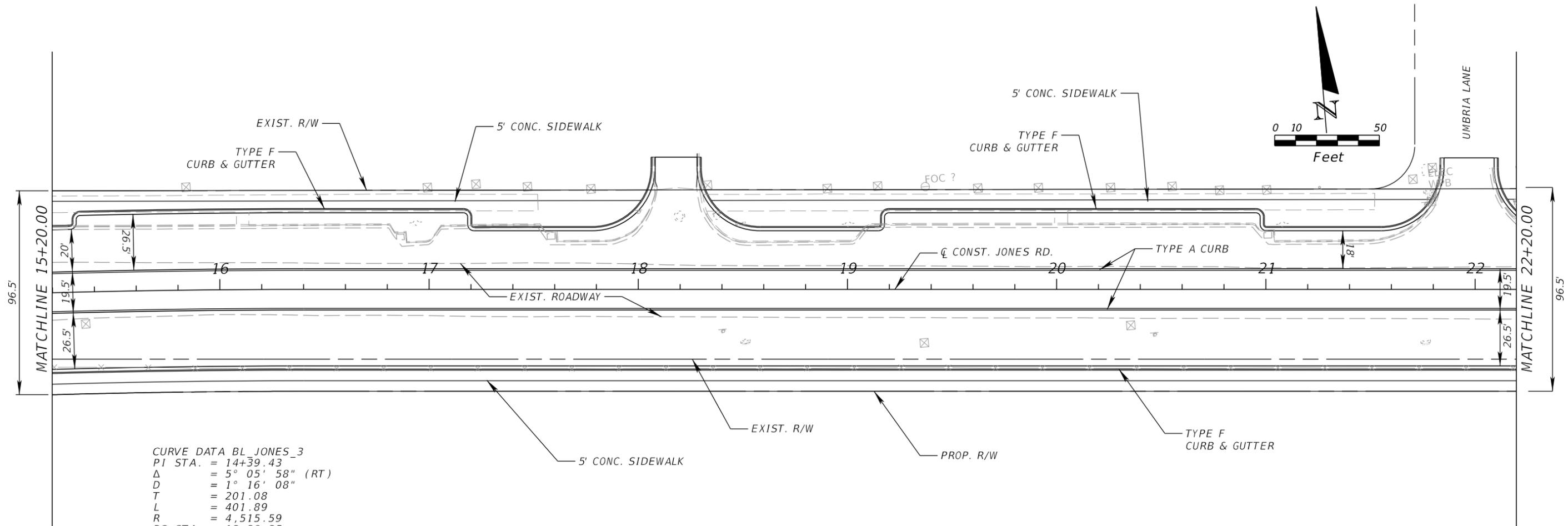


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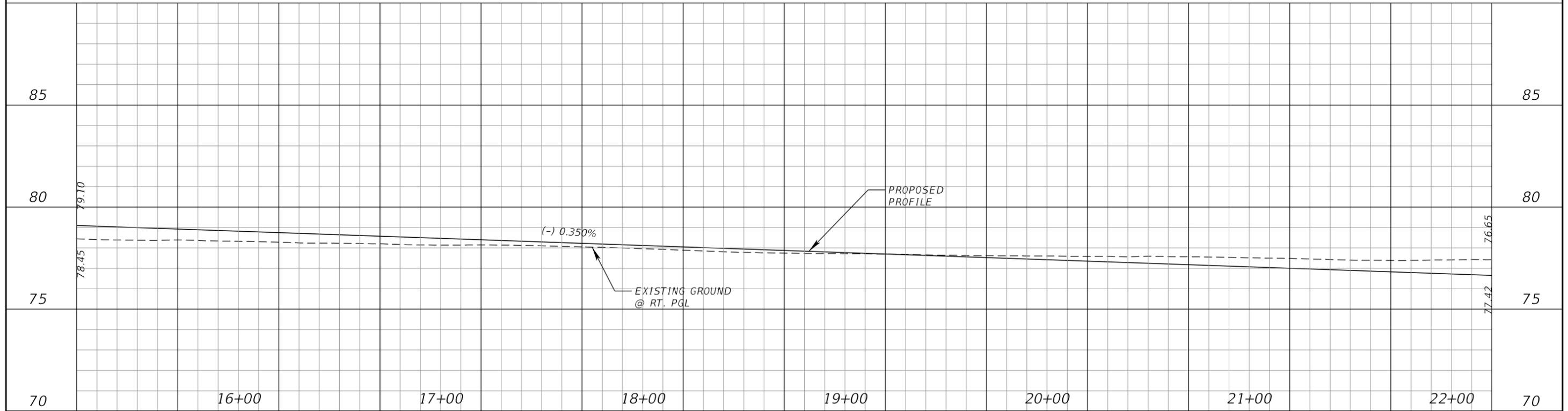
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SHEET NO.

5 Page 29



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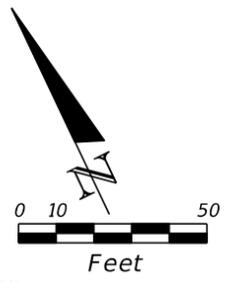
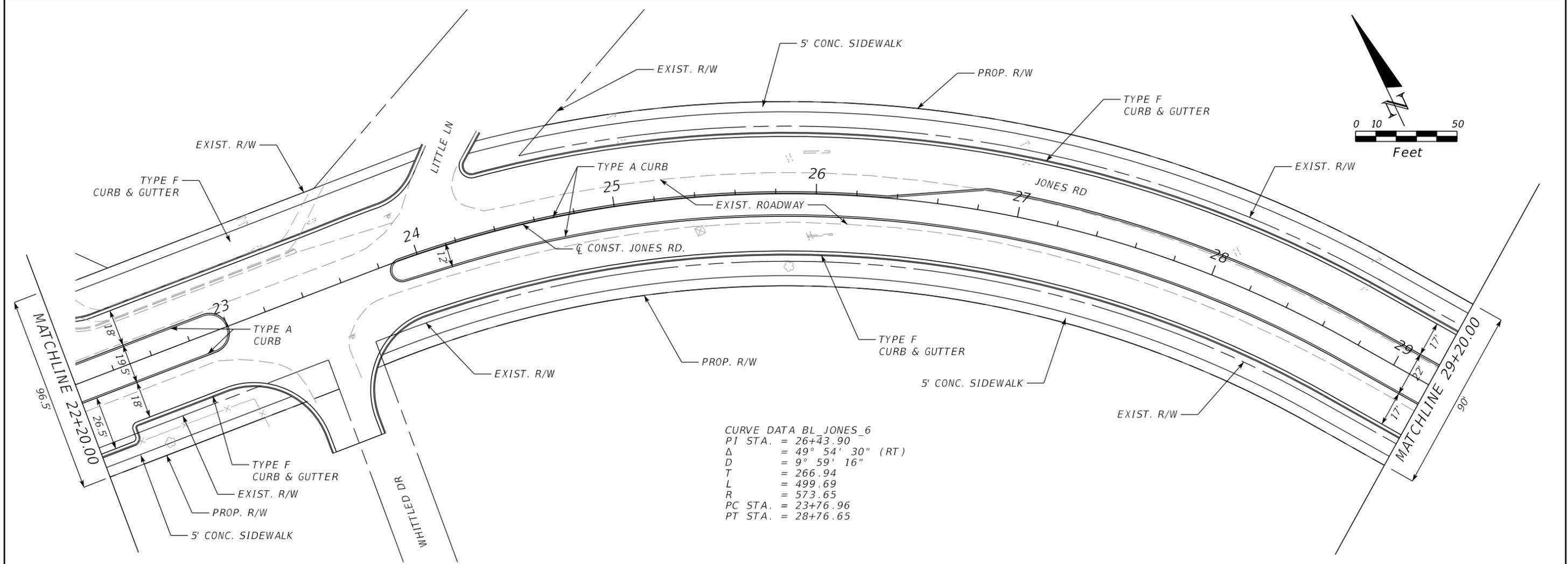
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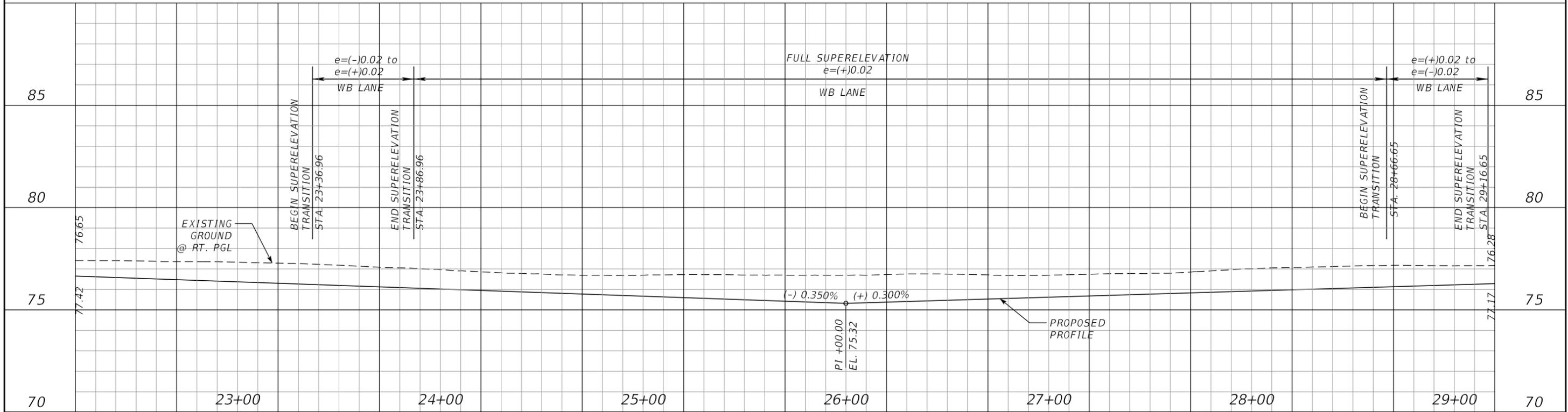
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**PLAN-PROFILE (02)**

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**6** Page 30



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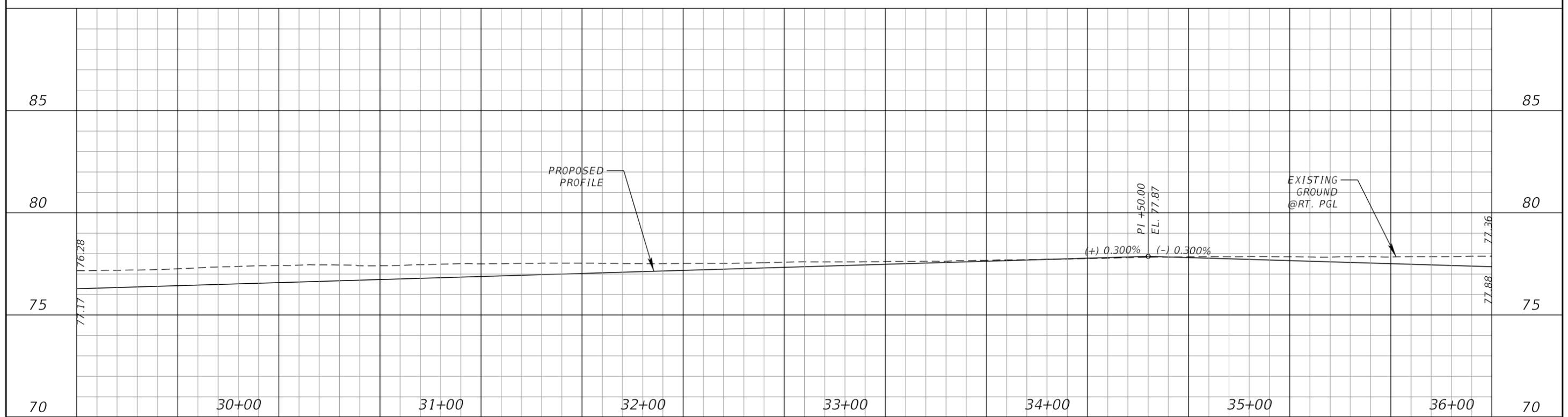
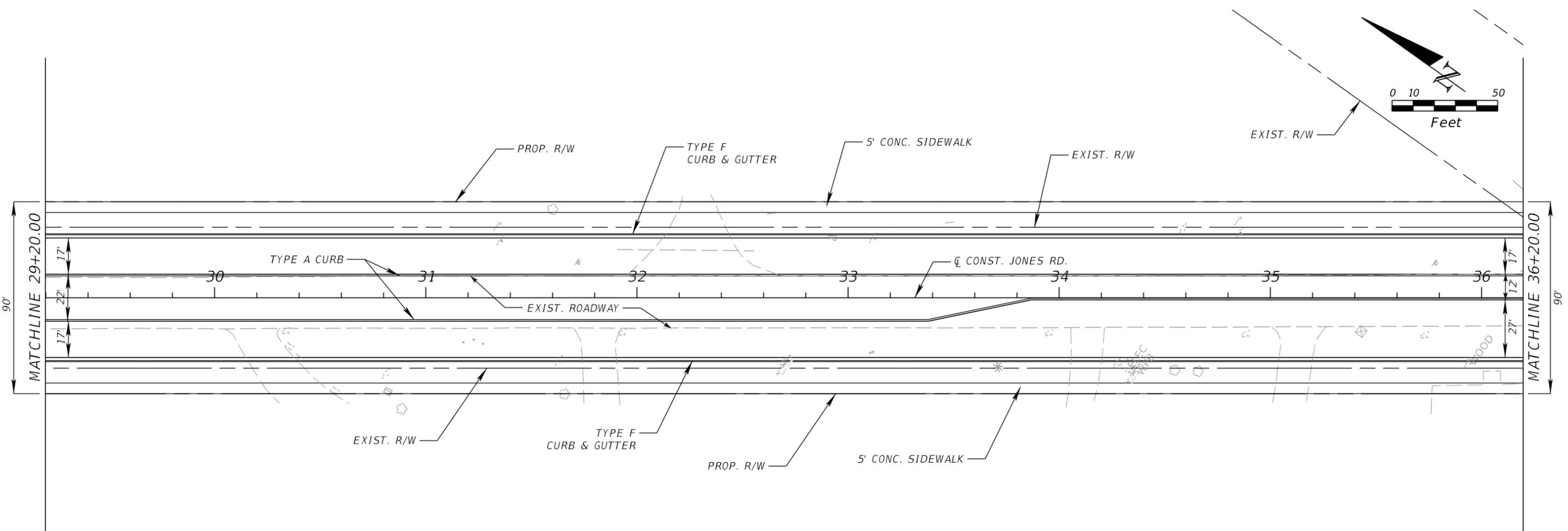
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**PLAN-PROFILE (03)**

SHEET NO. 7 Page 31



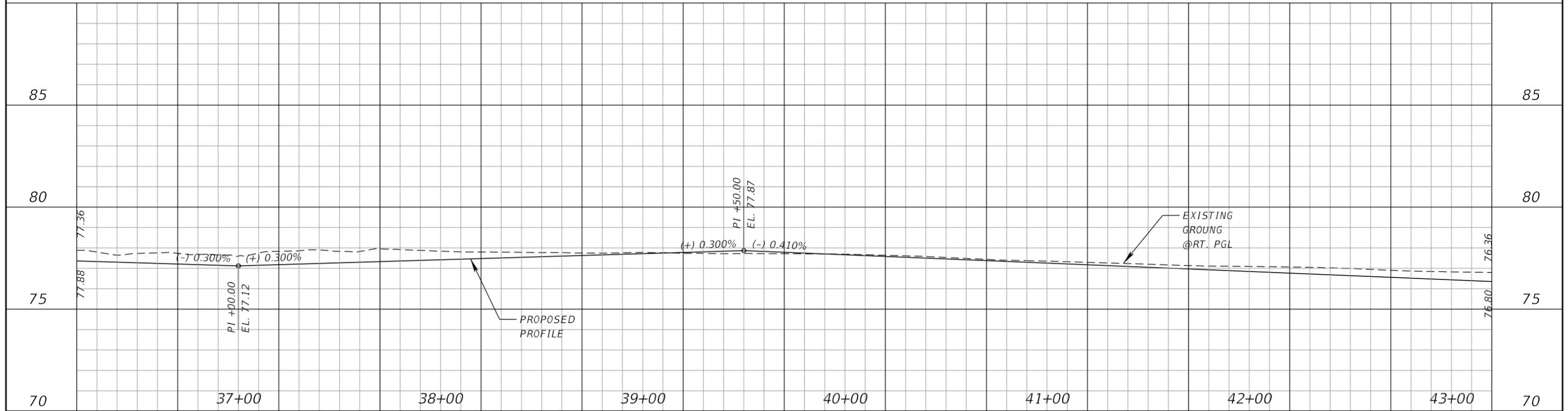
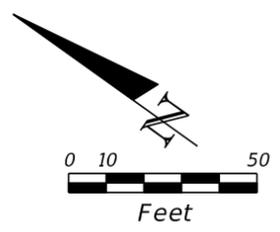
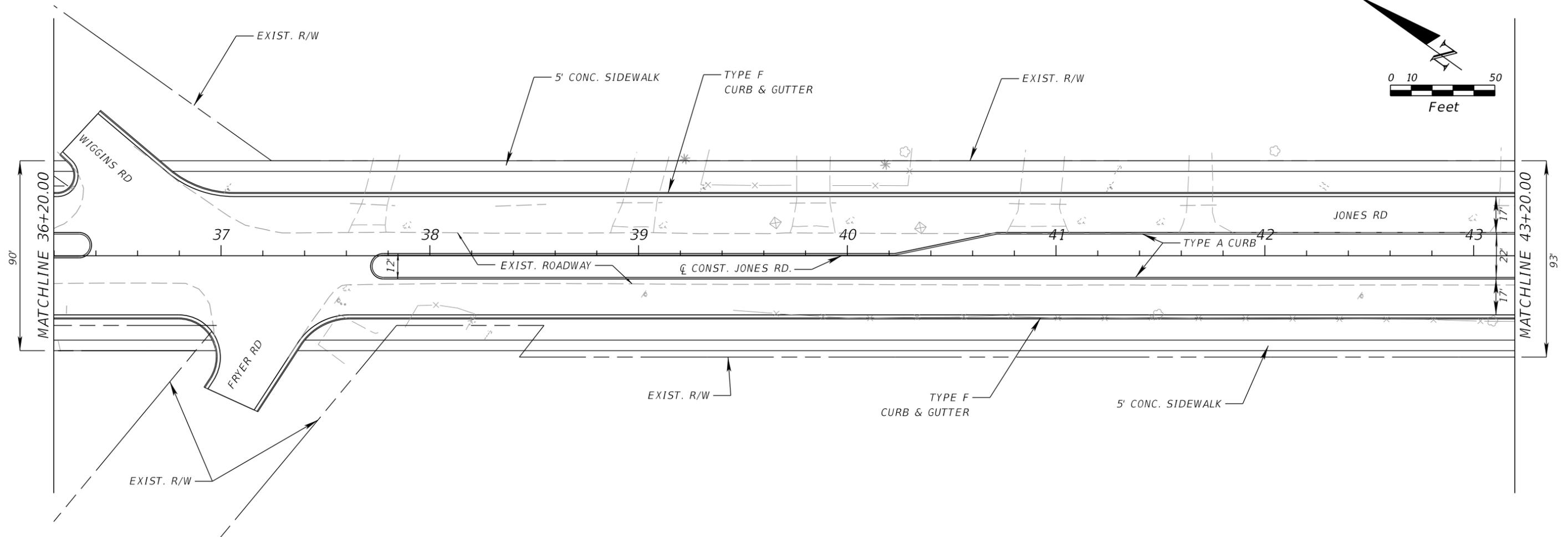
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**PLAN-PROFILE (04)**

SHEET NO.  
**8** Page 32



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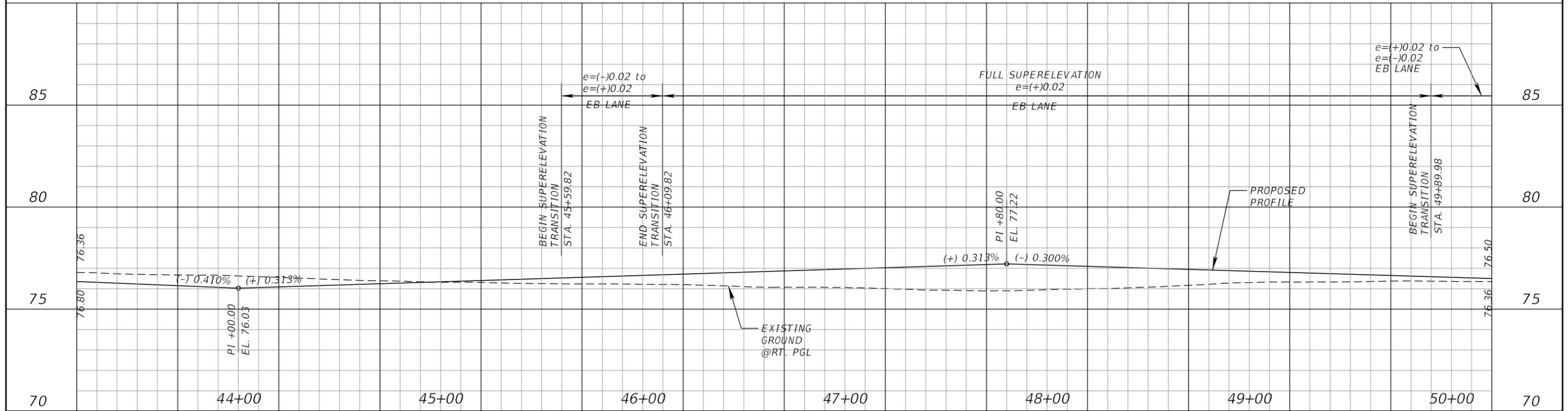
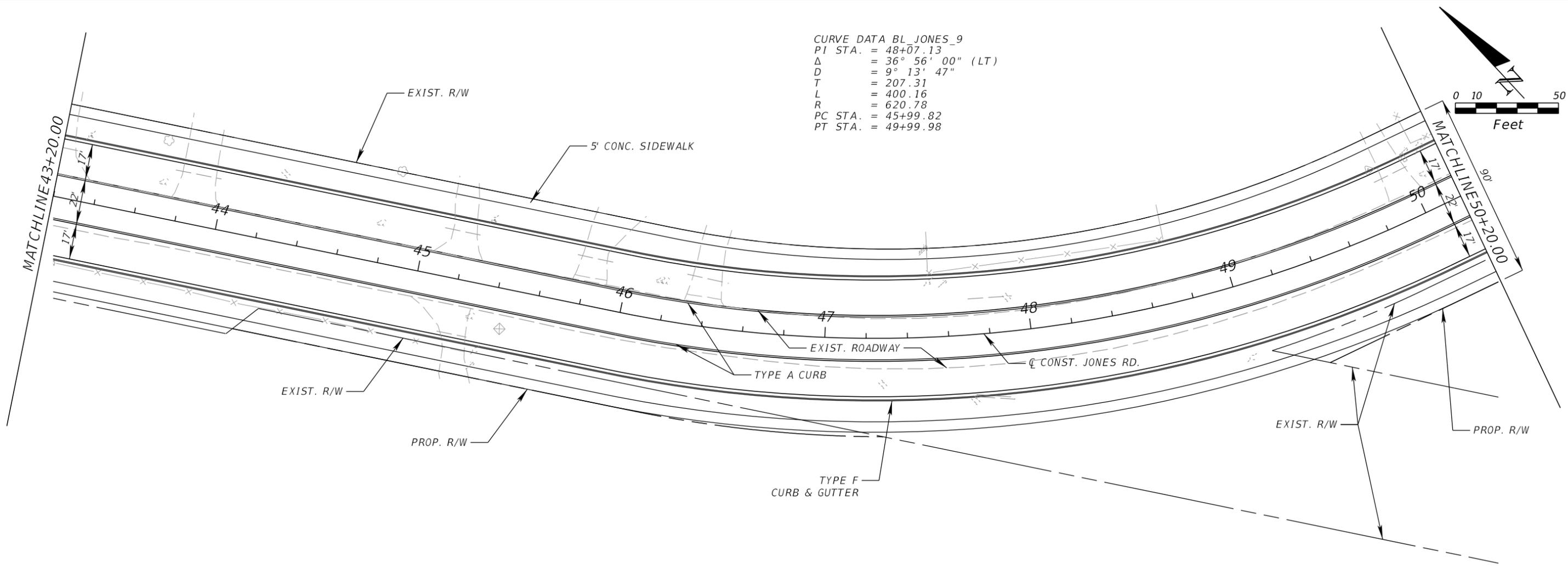
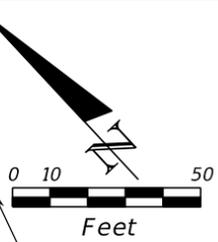
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**PLAN-PROFILE (05)**

SHEET NO.  
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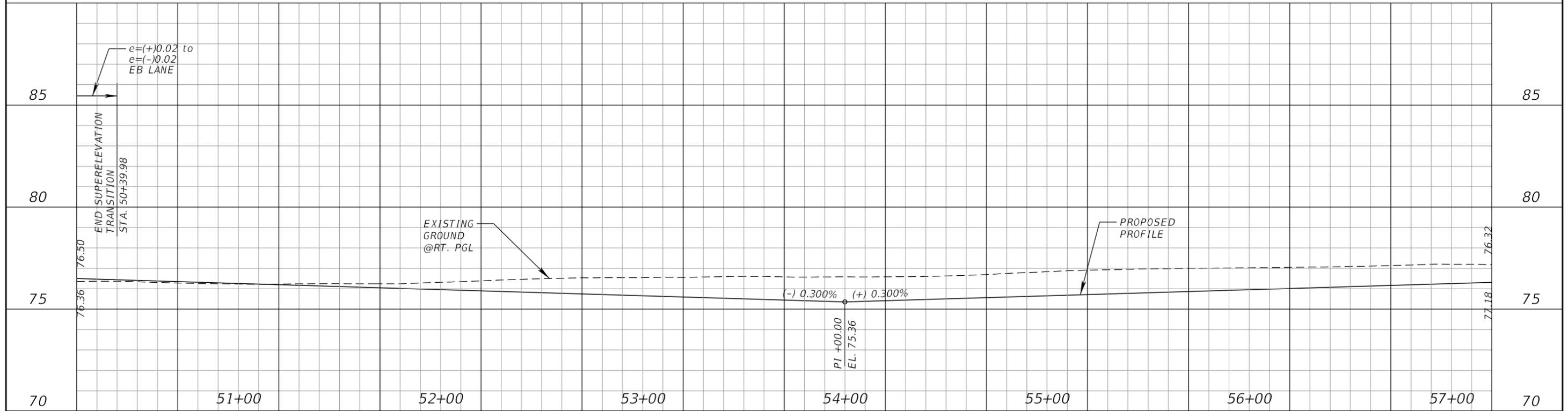
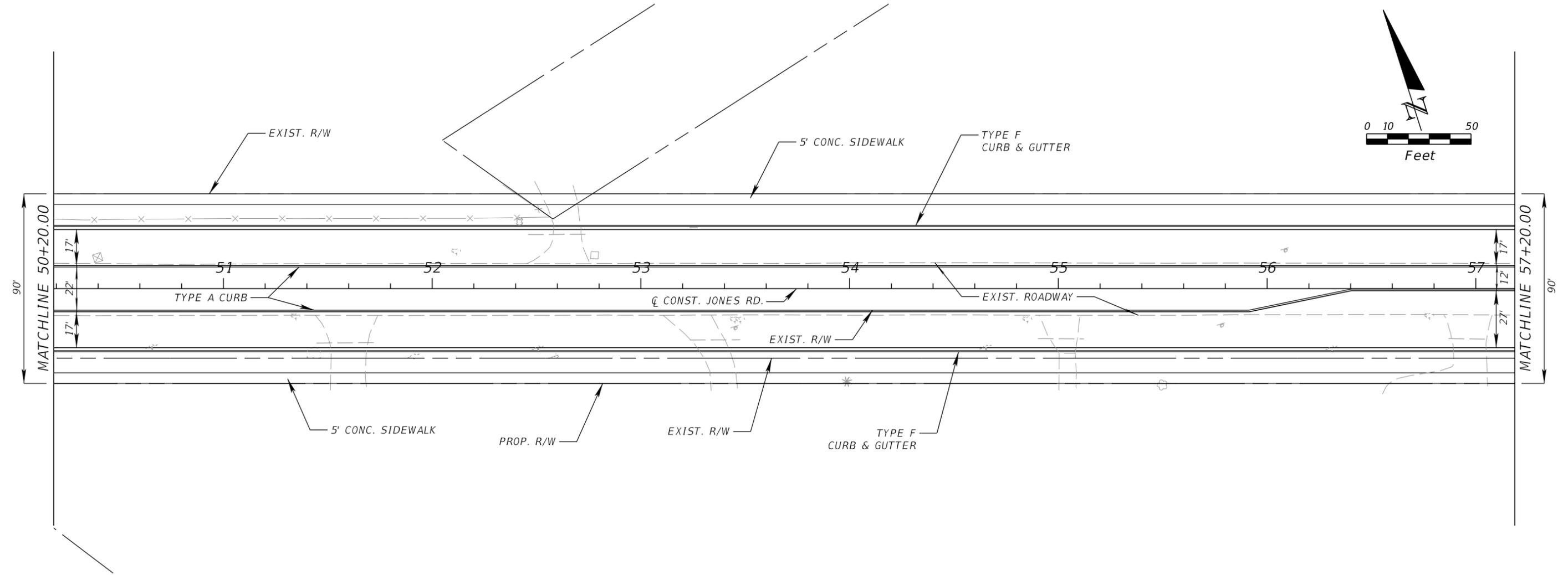
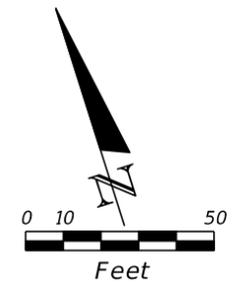
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**PLAN-PROFILE (06)**

SHEET NO.  
**10** Page 34



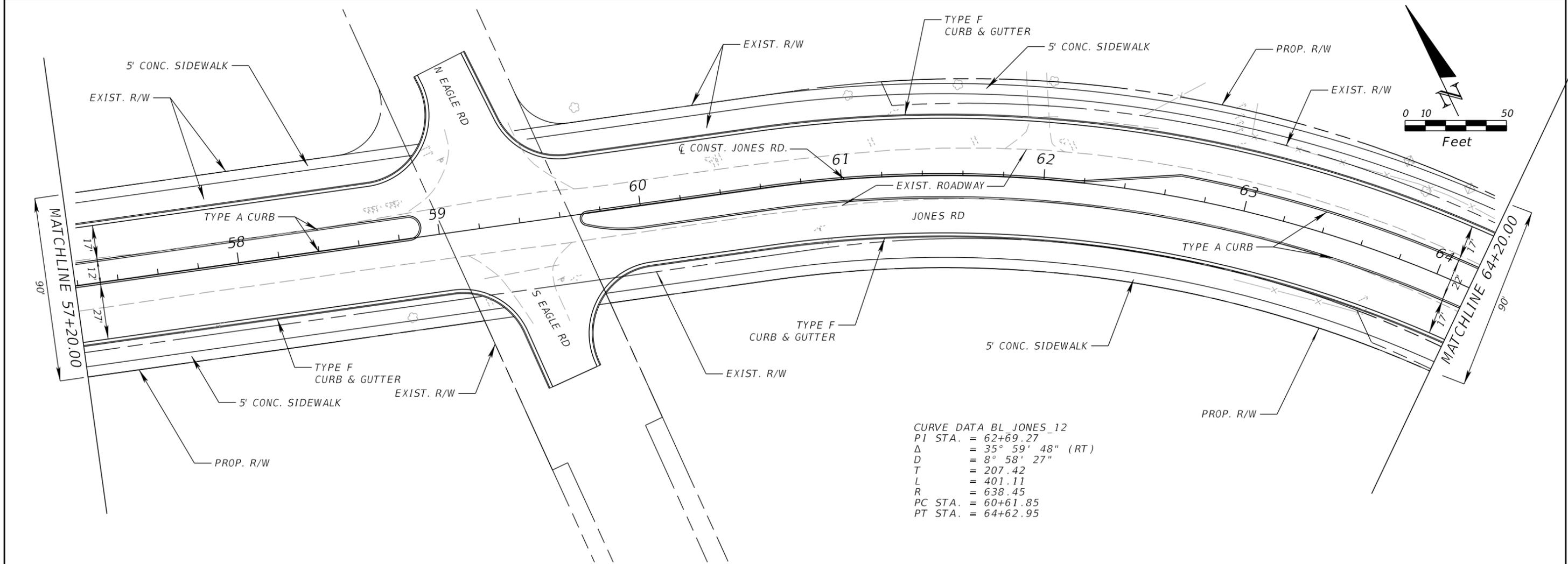
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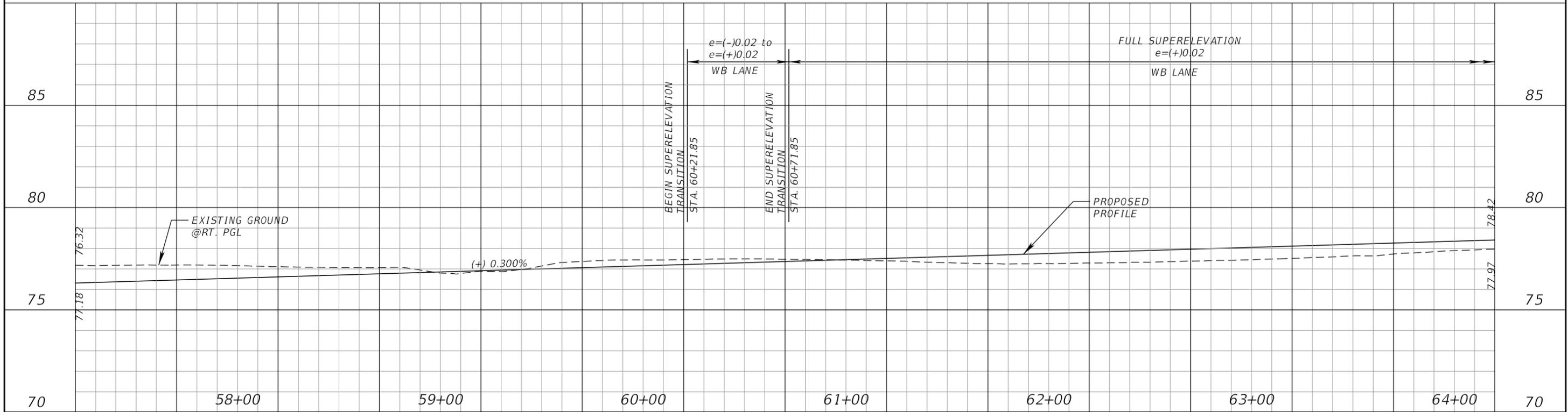
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**PLAN-PROFILE (07)**

SHEET NO.  
**11** Page 35



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 PT STA. = 64+62.95



REVISIONS					
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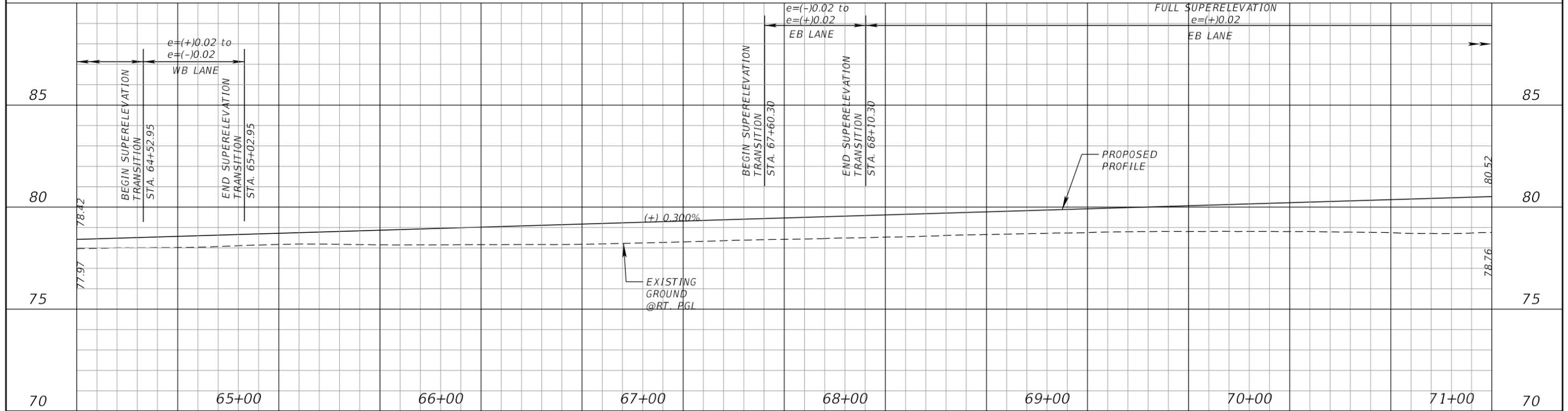
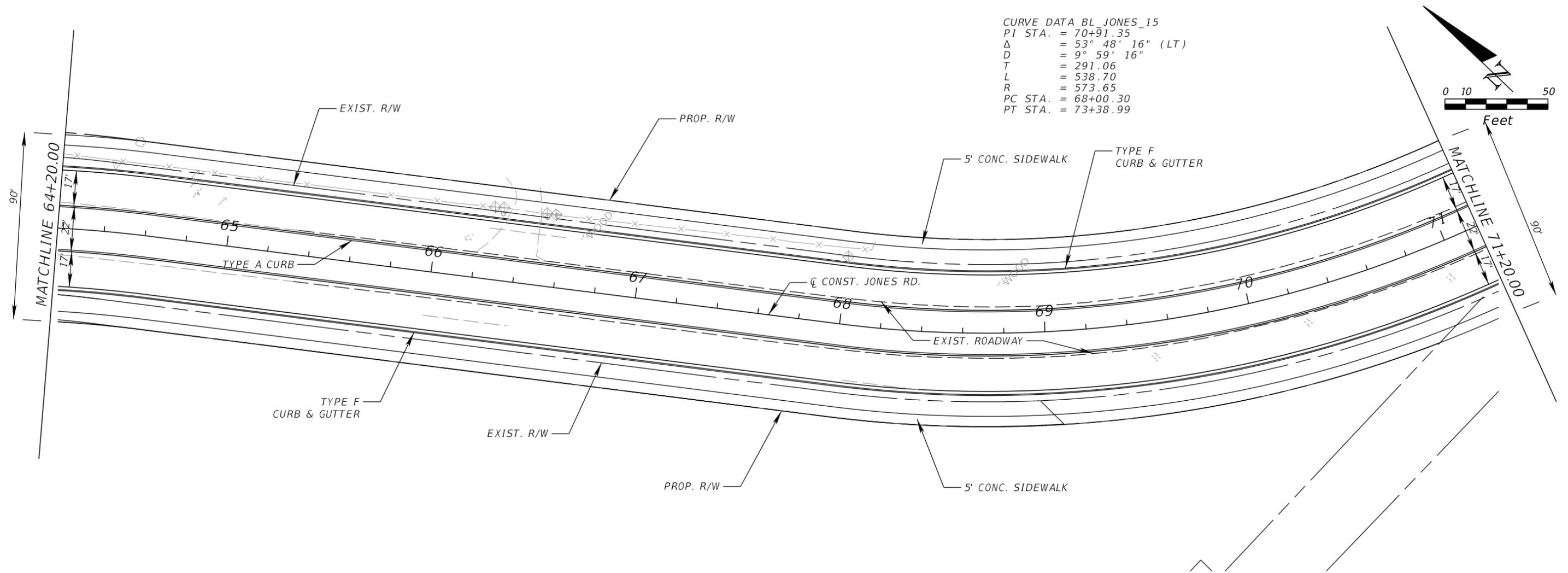
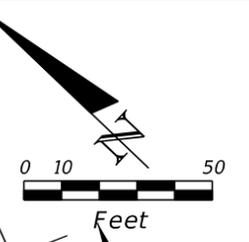
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**PLAN-PROFILE (08)**

SHEET NO.  
12 Page 36

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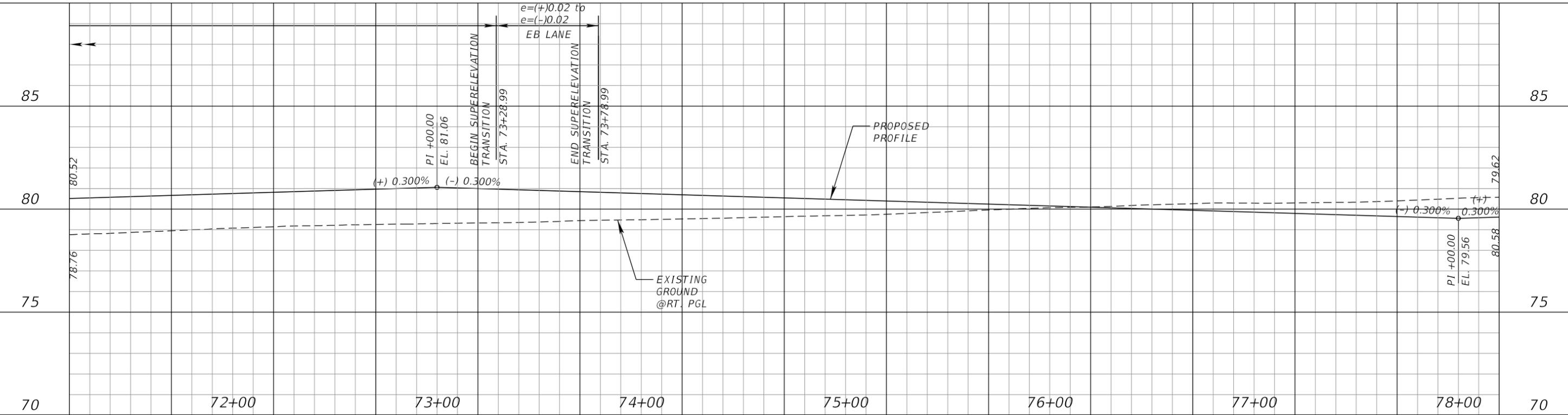
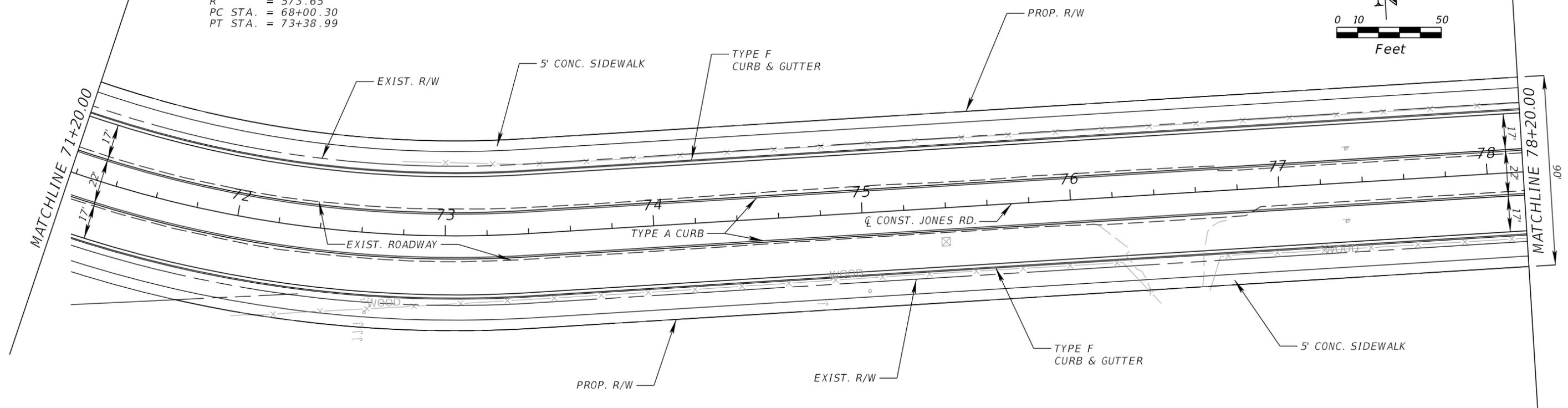
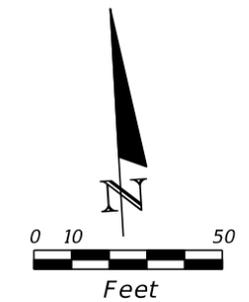
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**PLAN-PROFILE (09)**

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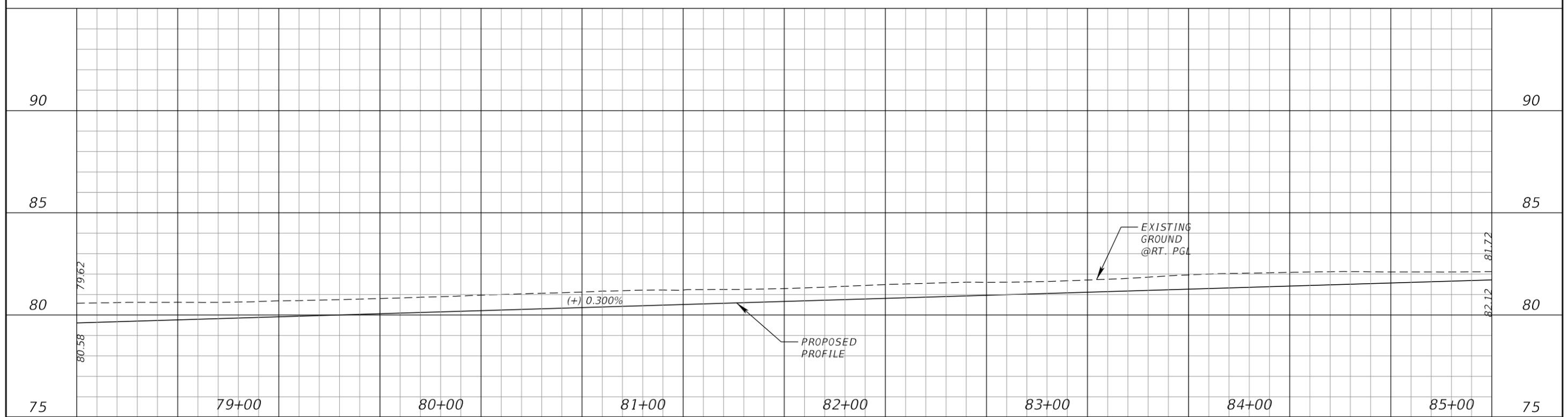
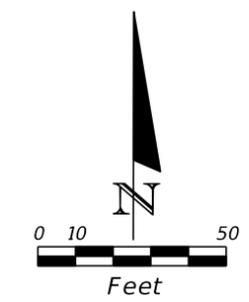
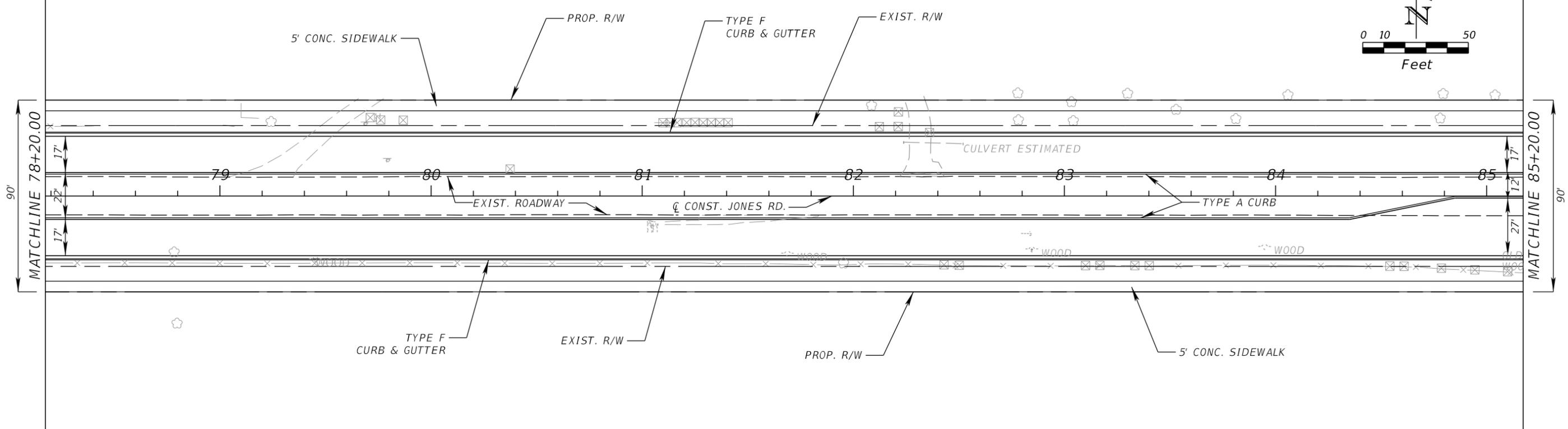
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**PLAN-PROFILE (10)**

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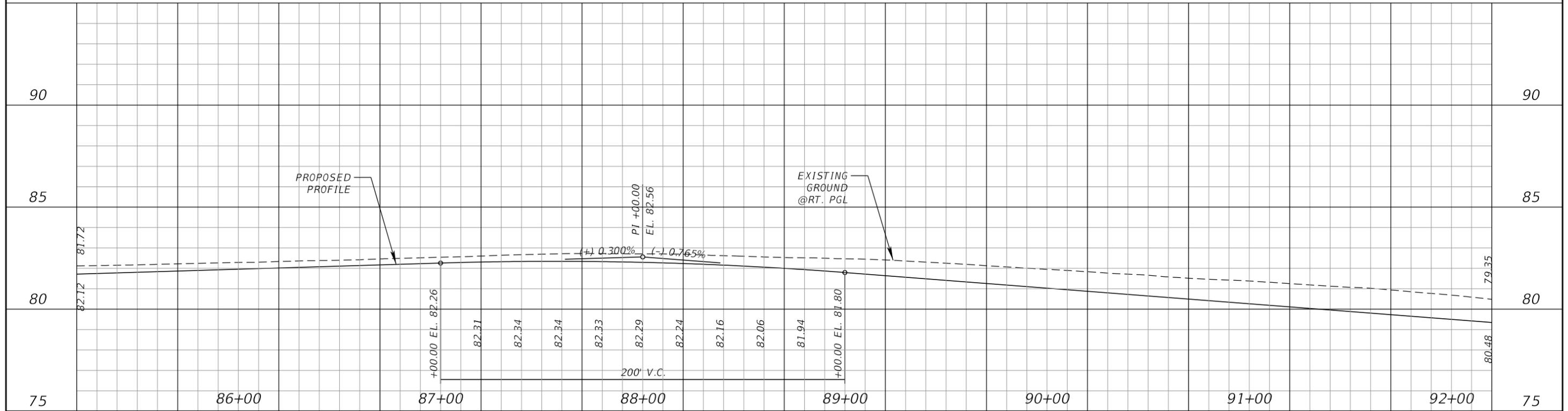
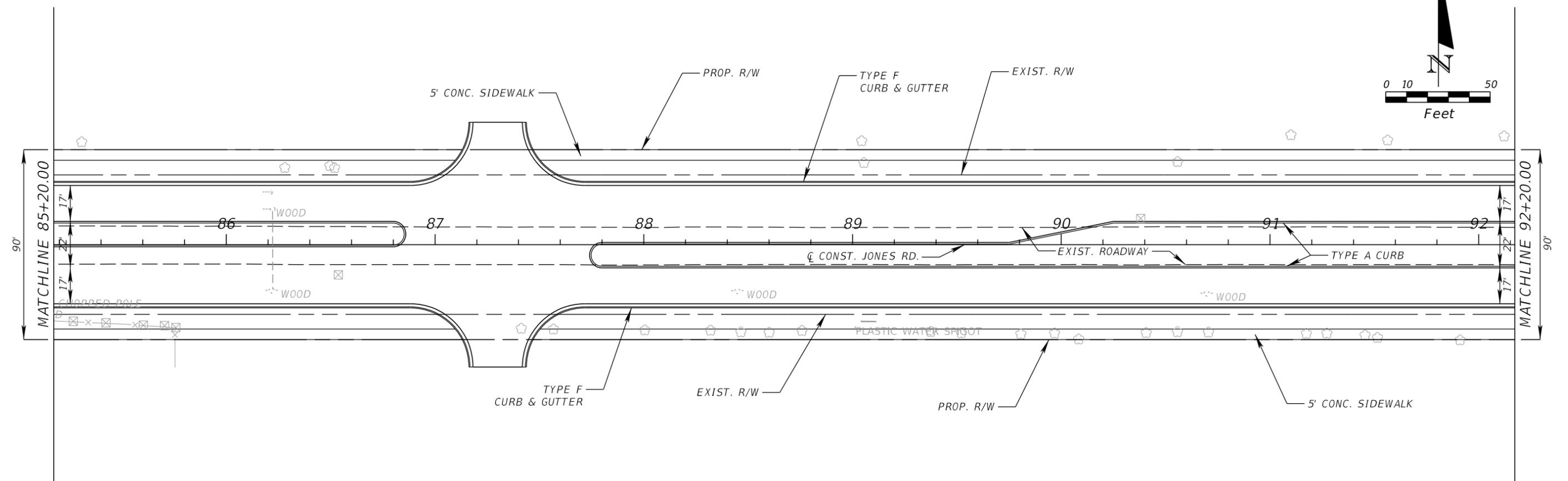
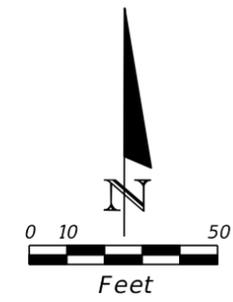
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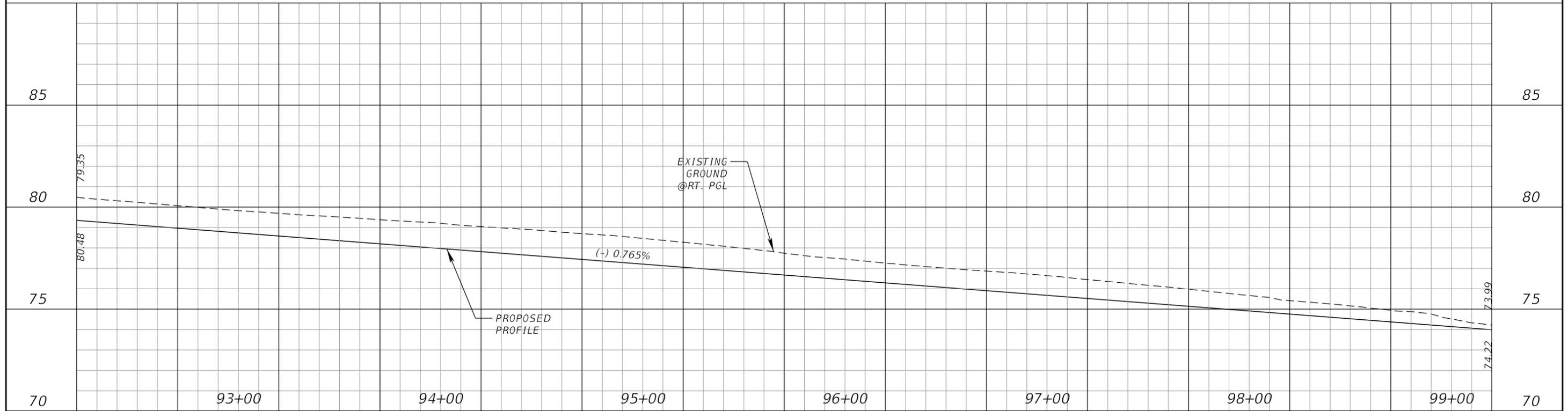
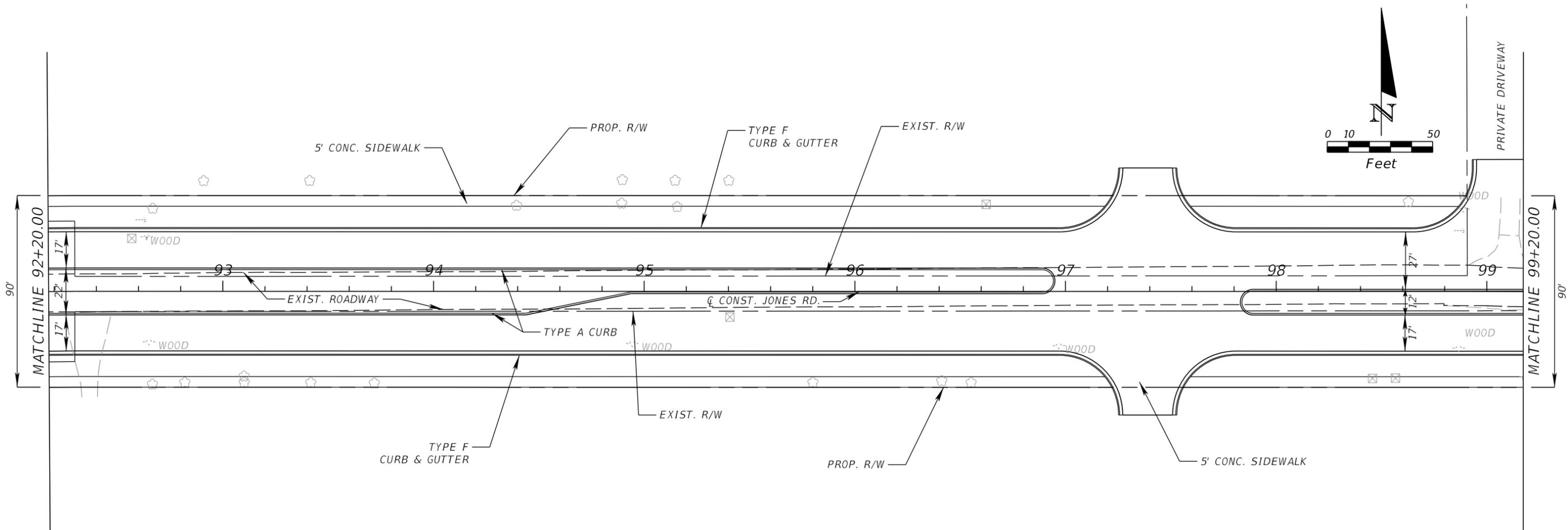
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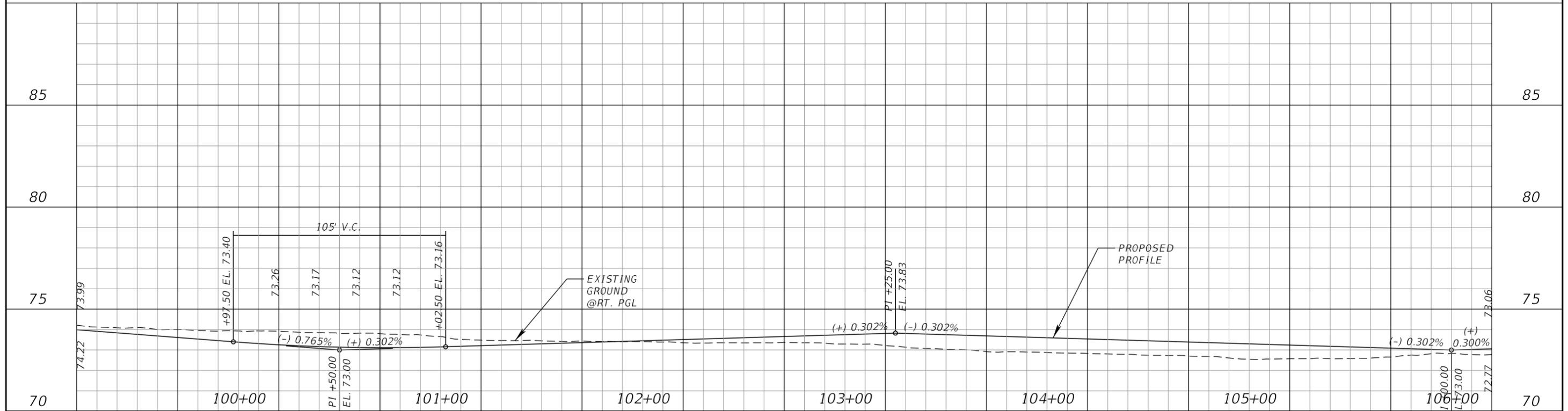
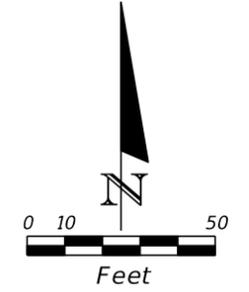
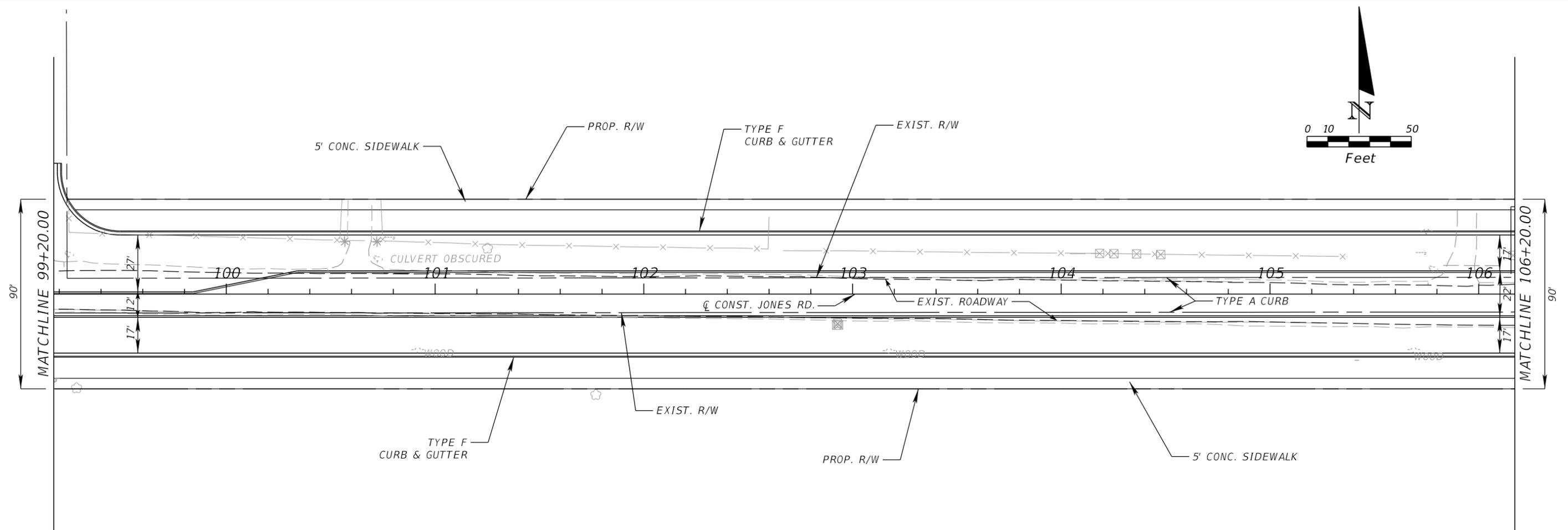
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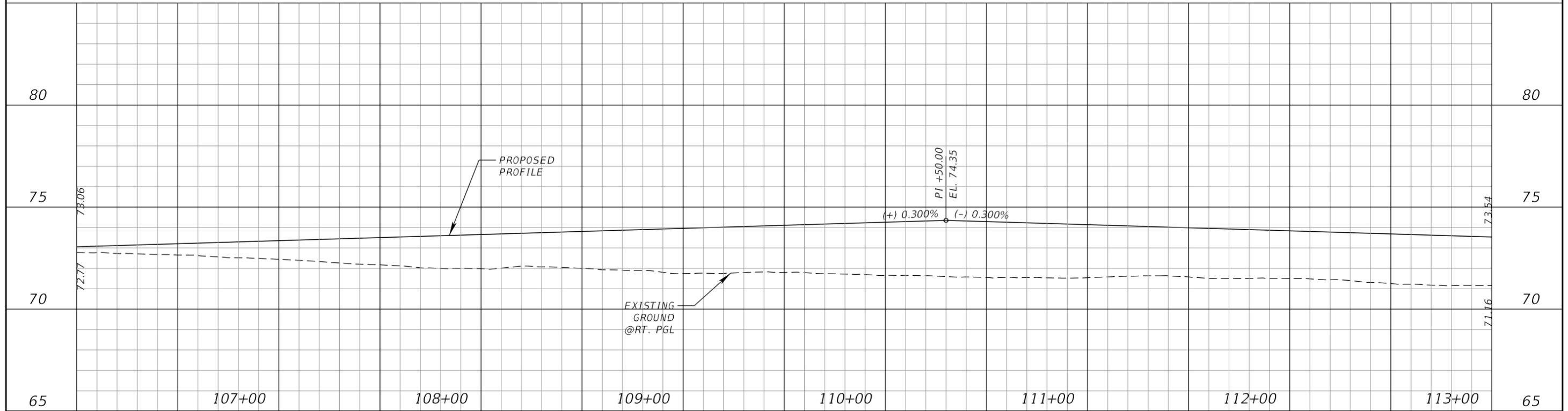
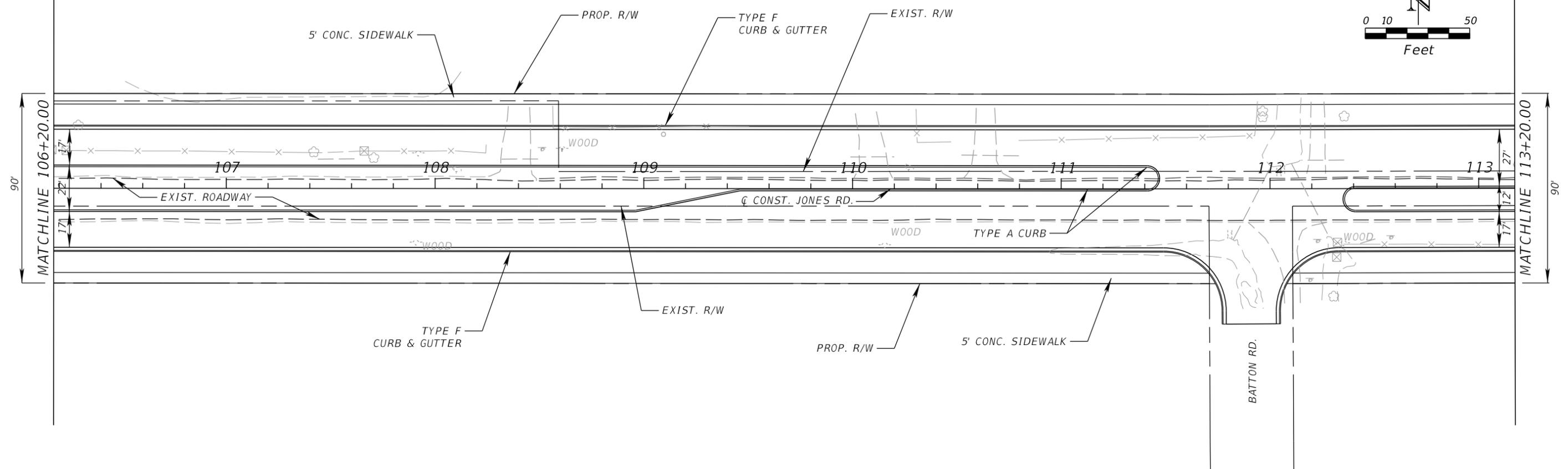
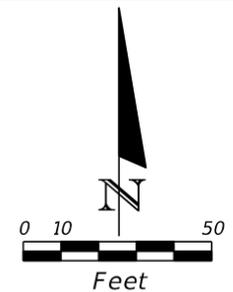
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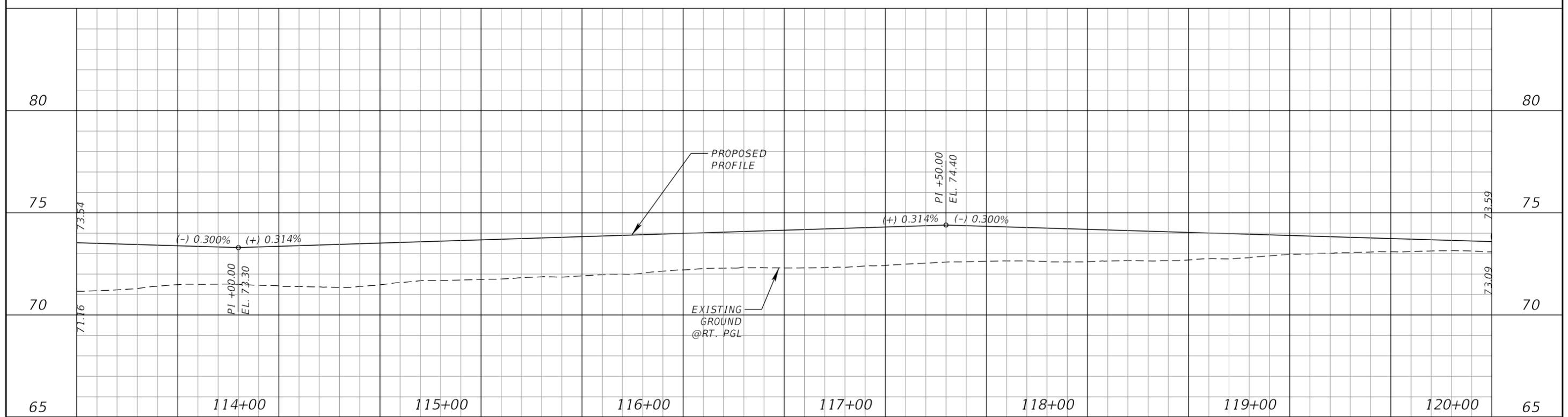
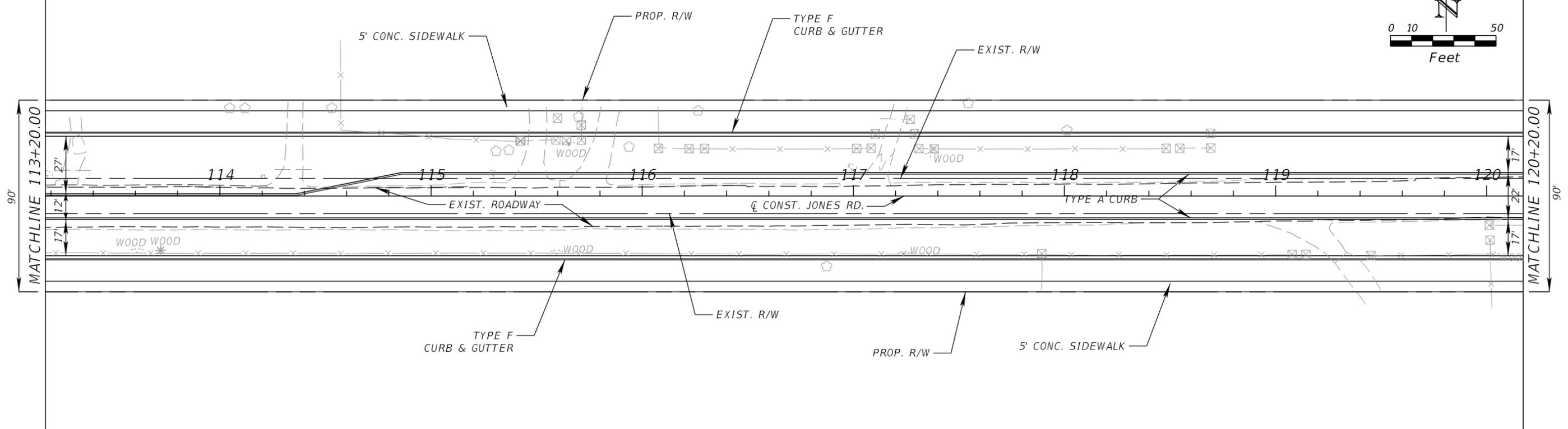
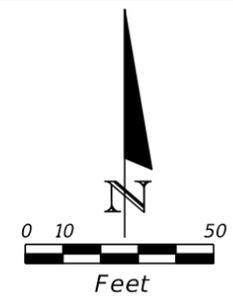
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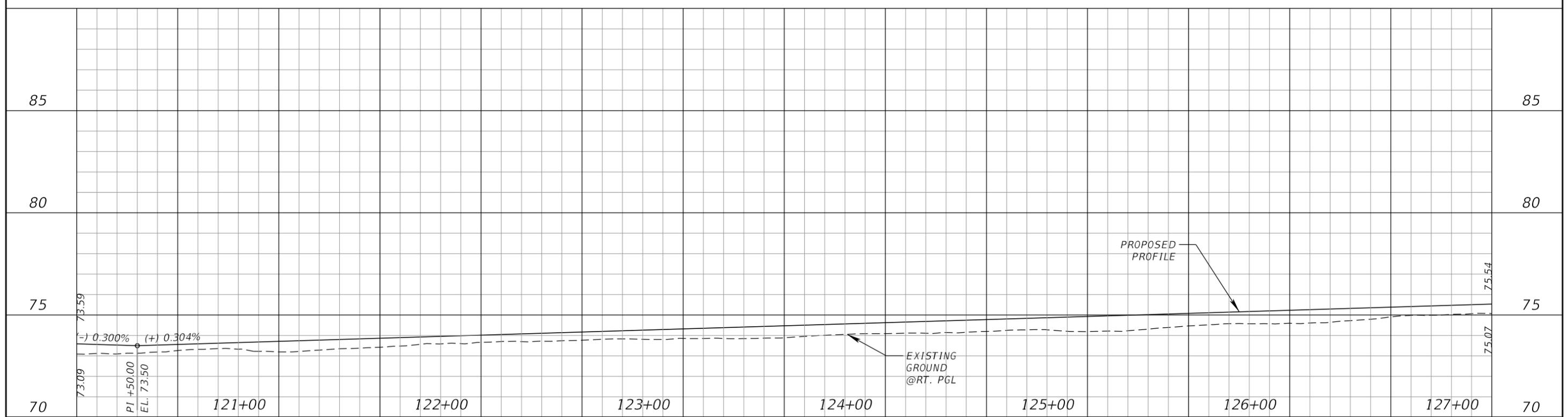
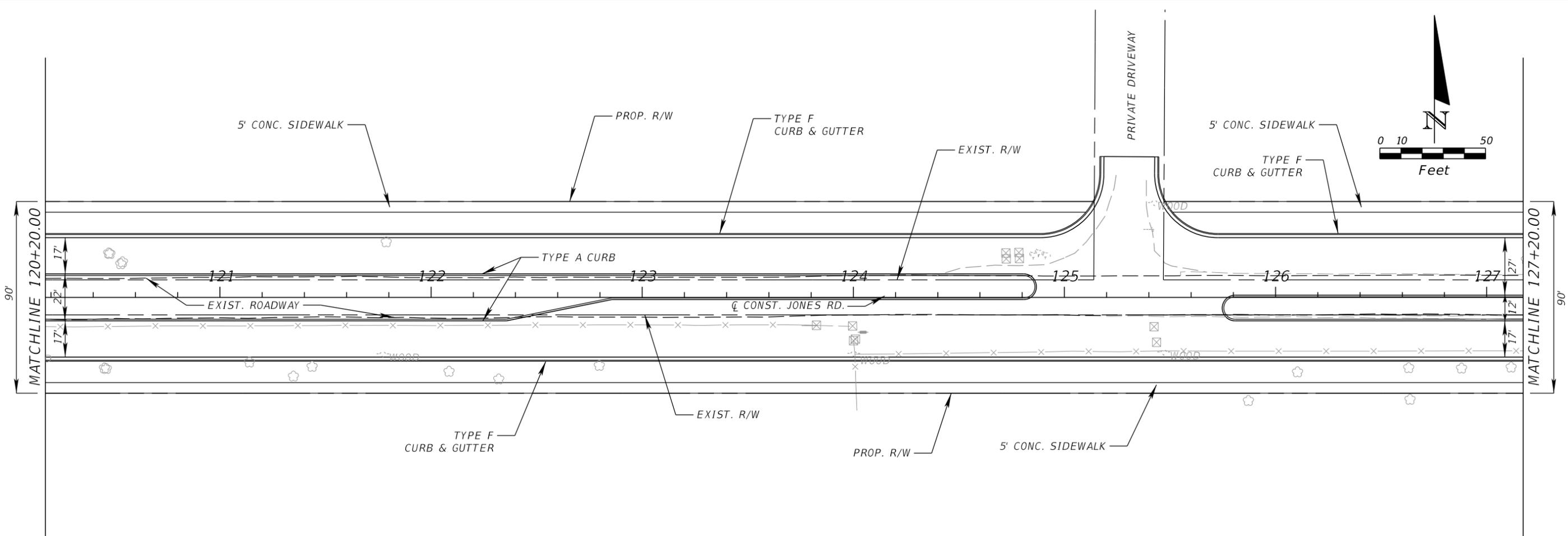
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**PLAN-PROFILE (16)**

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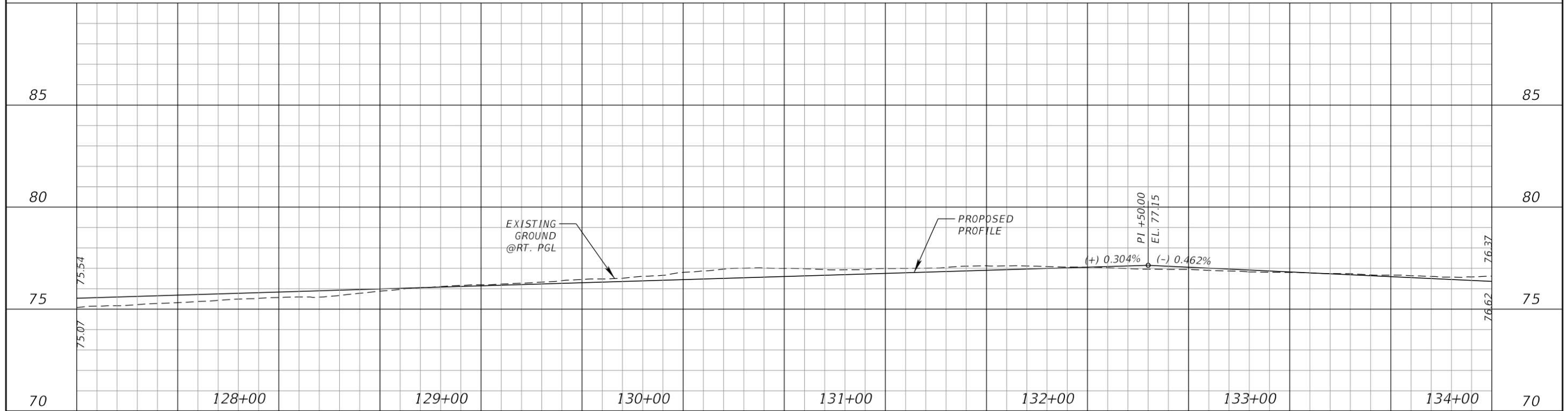
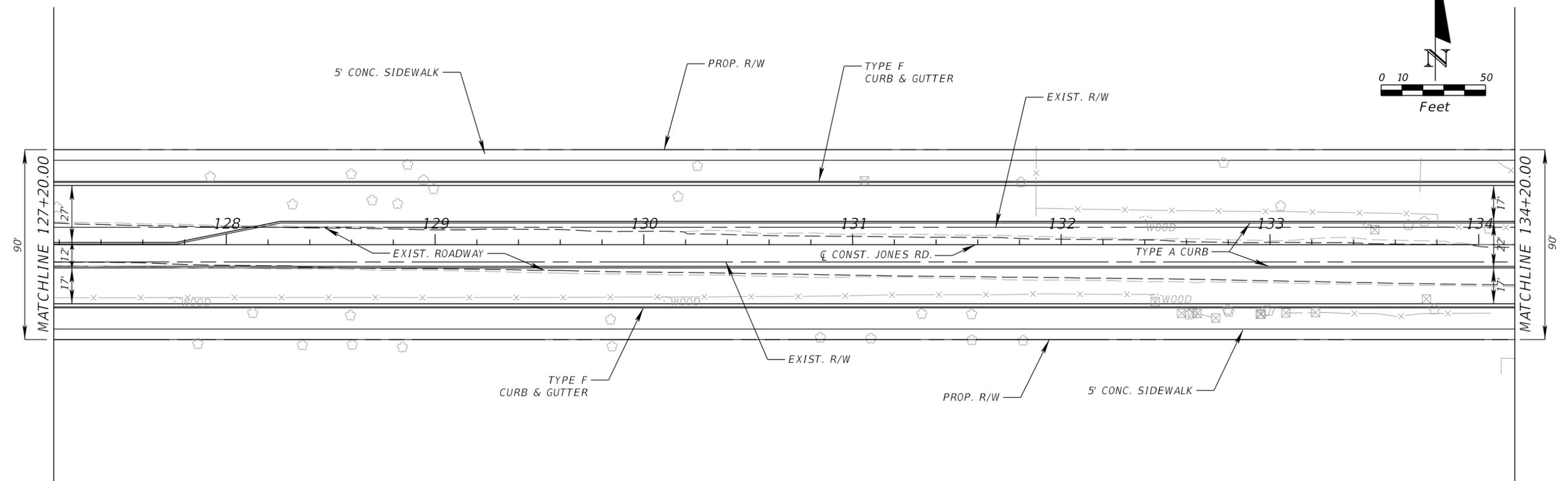
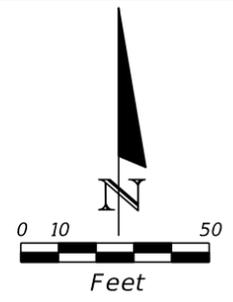
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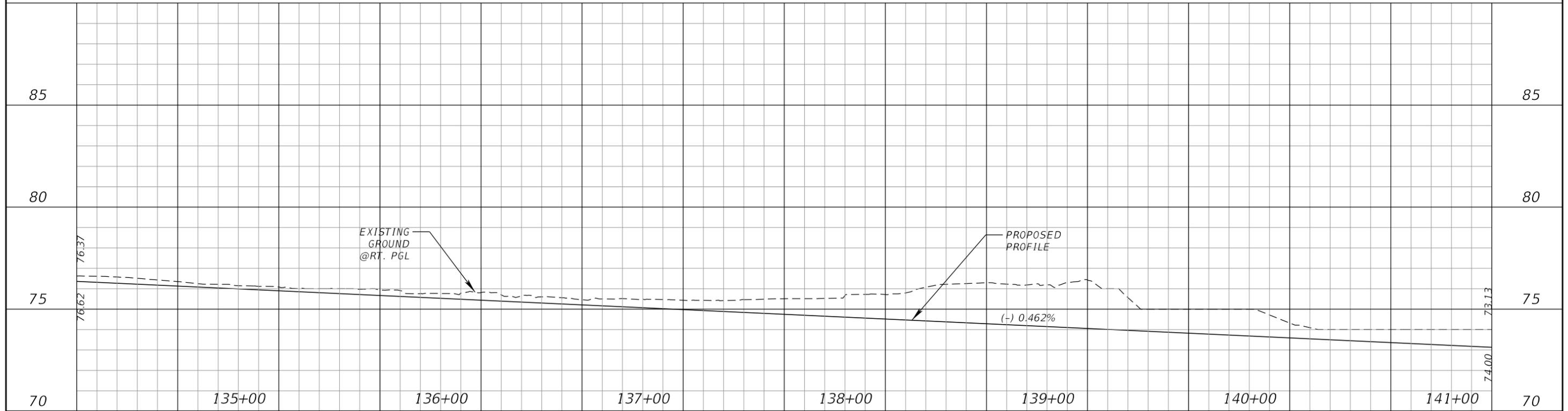
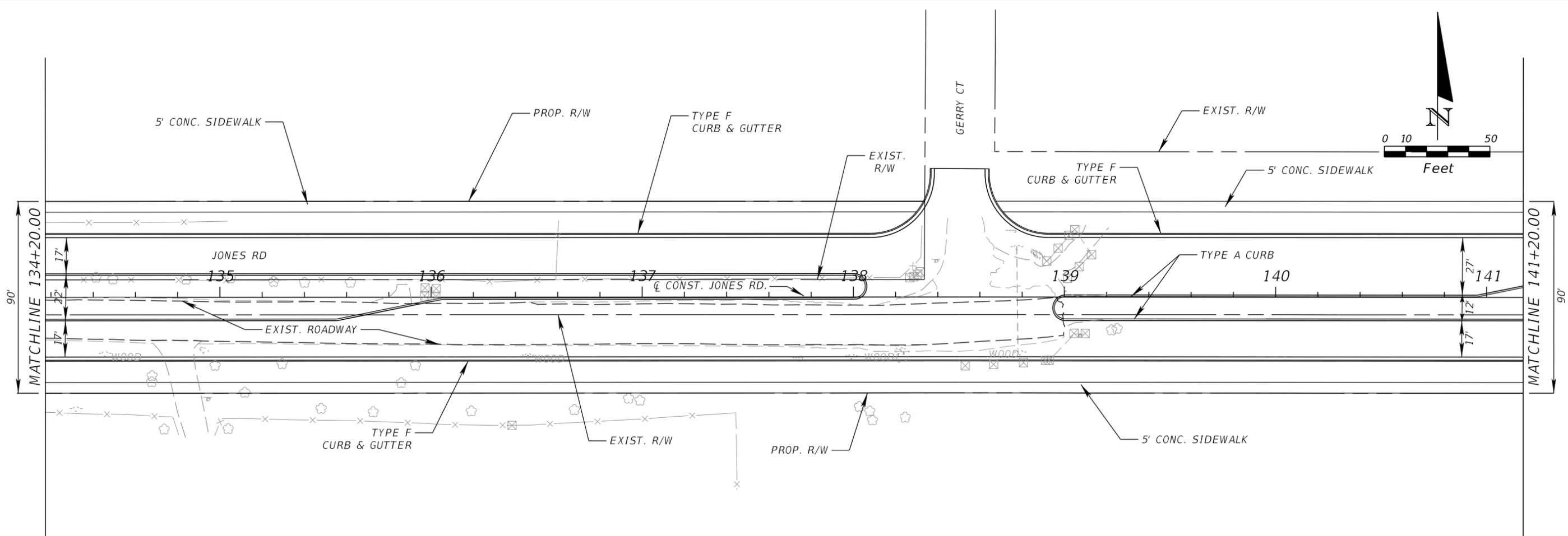
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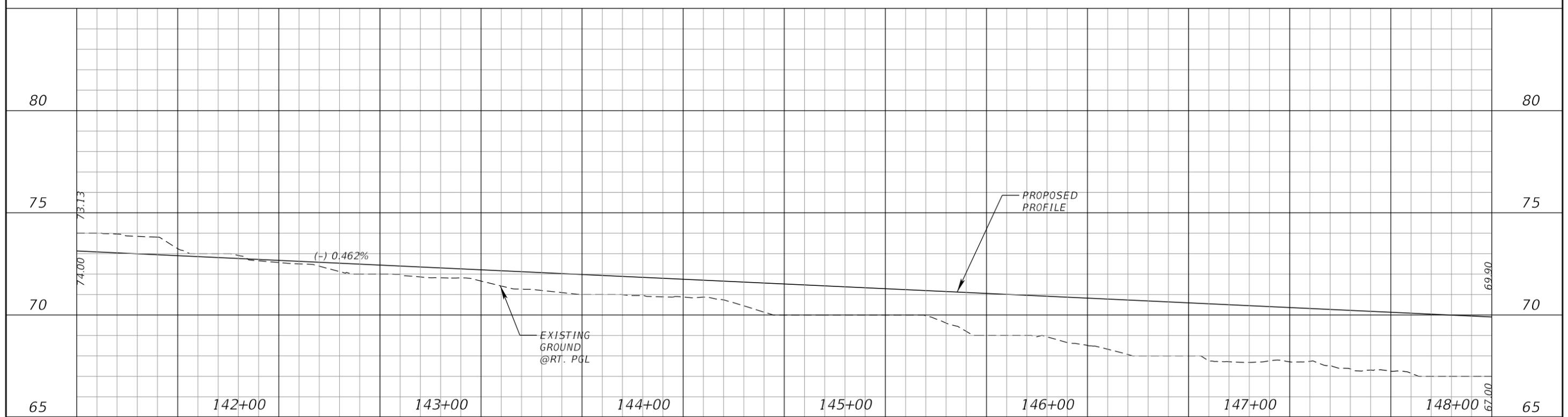
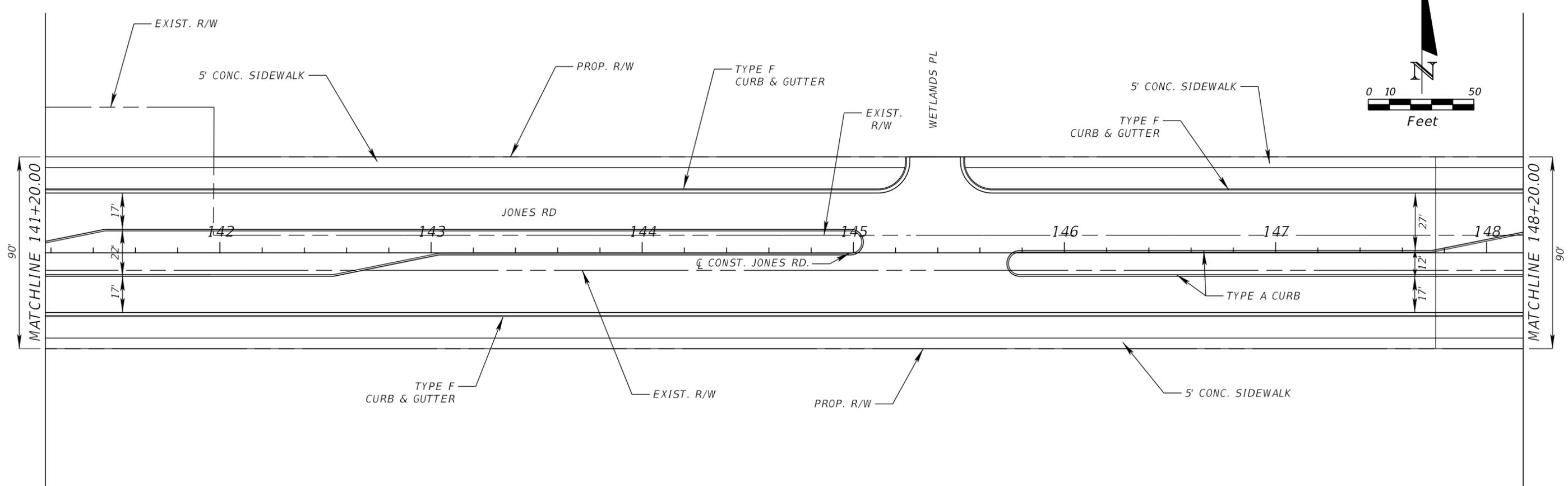
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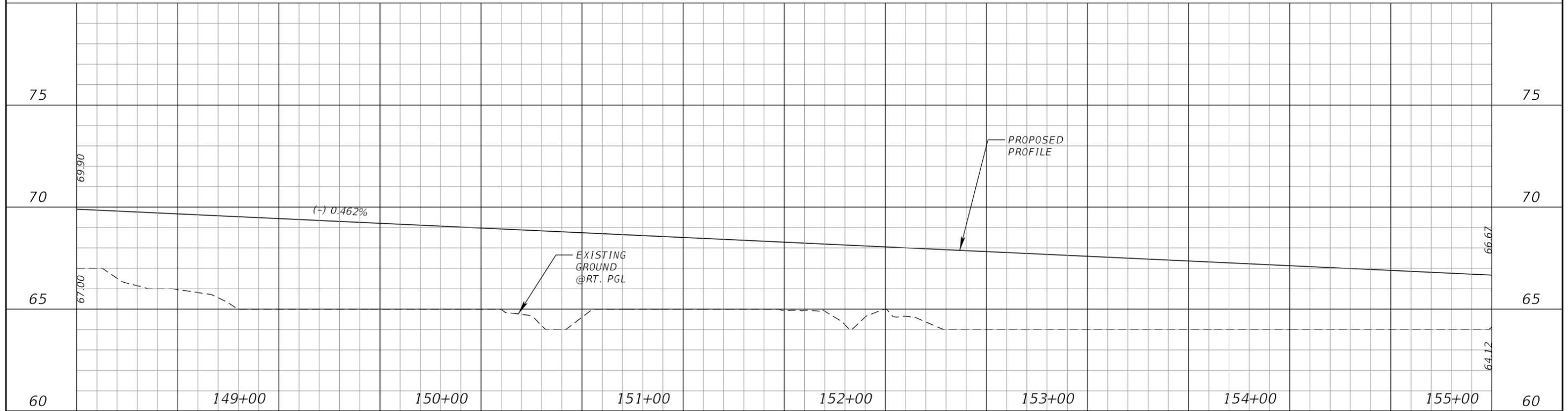
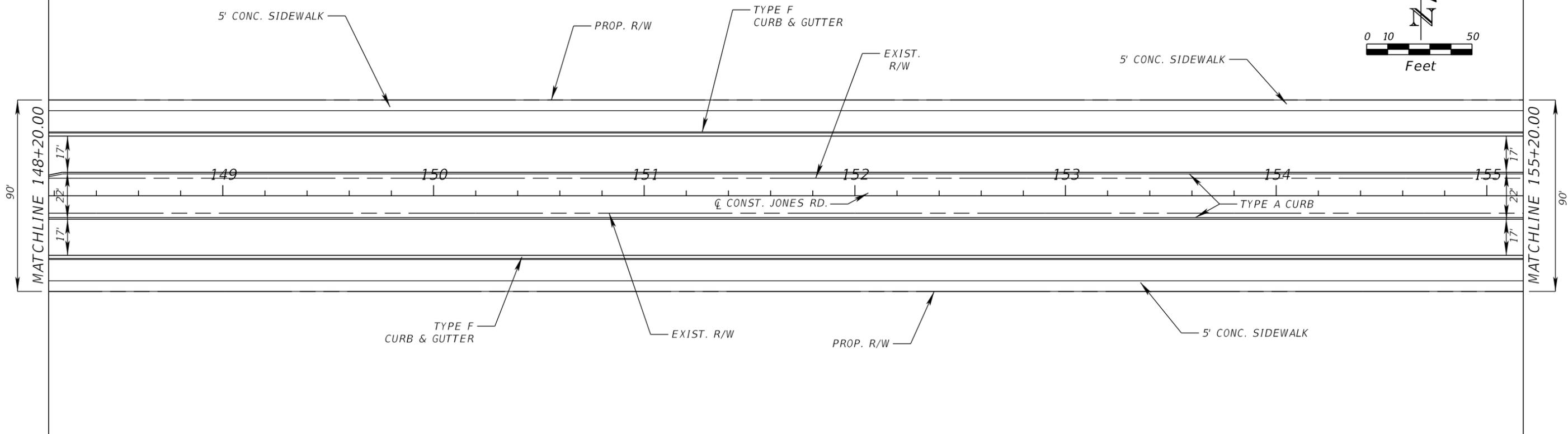
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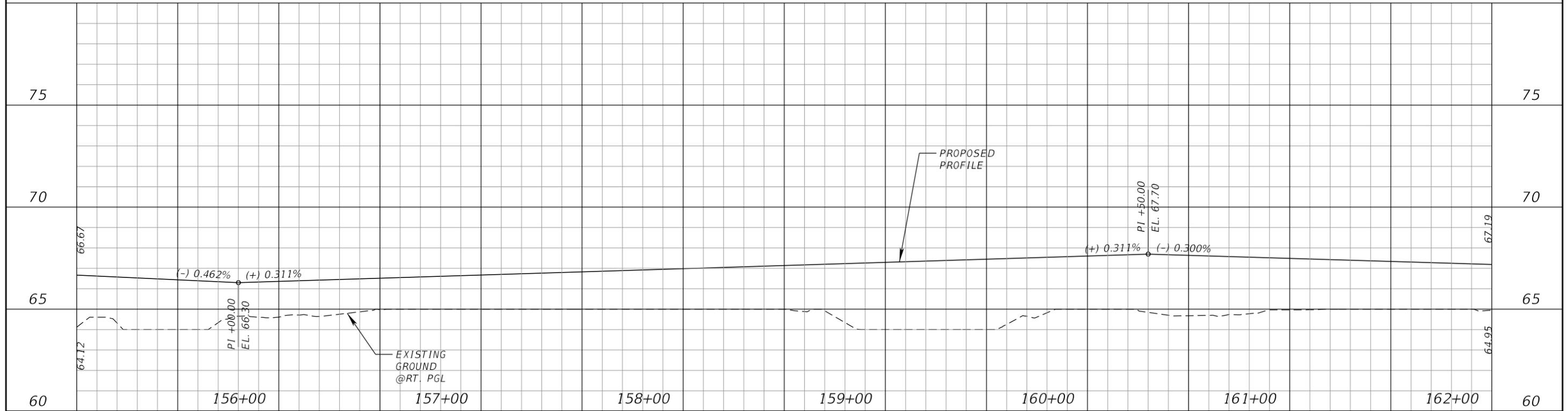
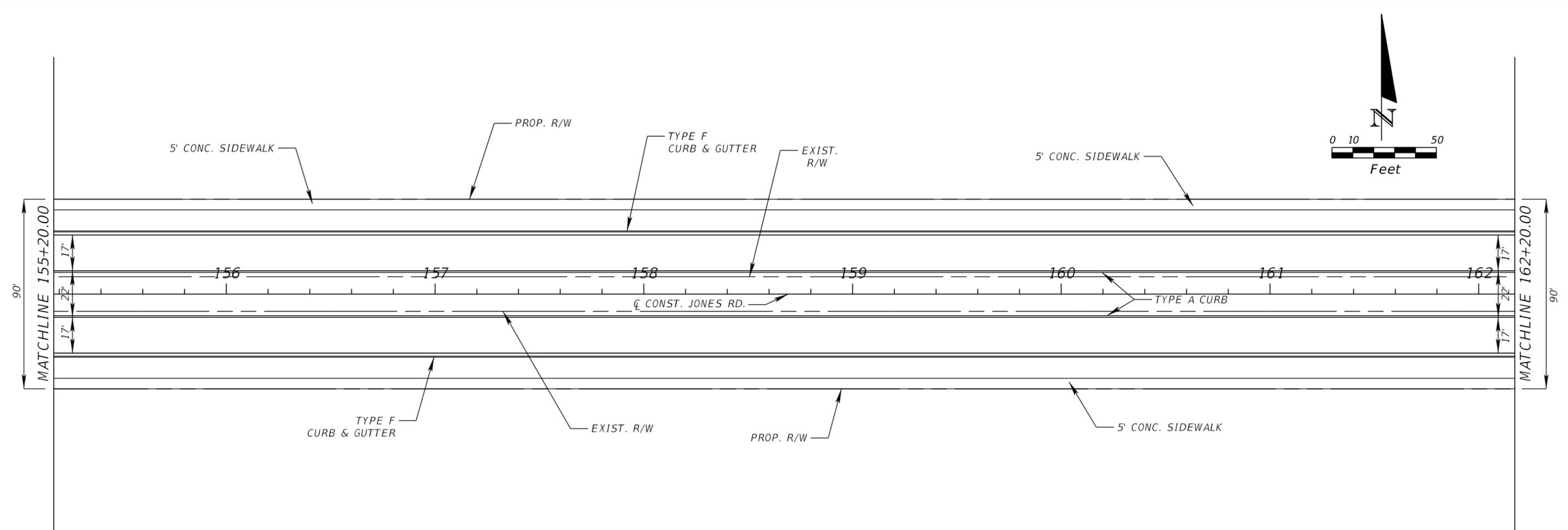
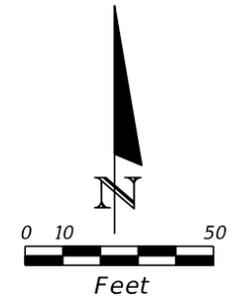
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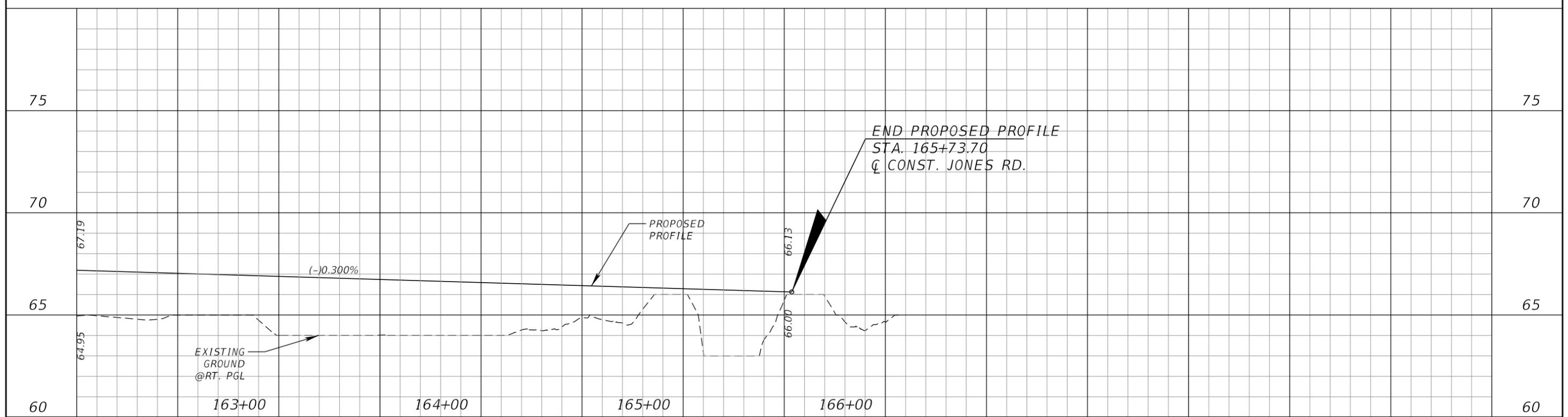
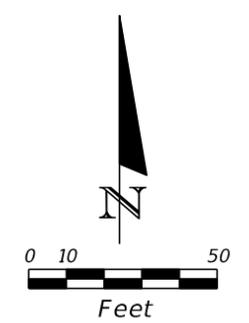
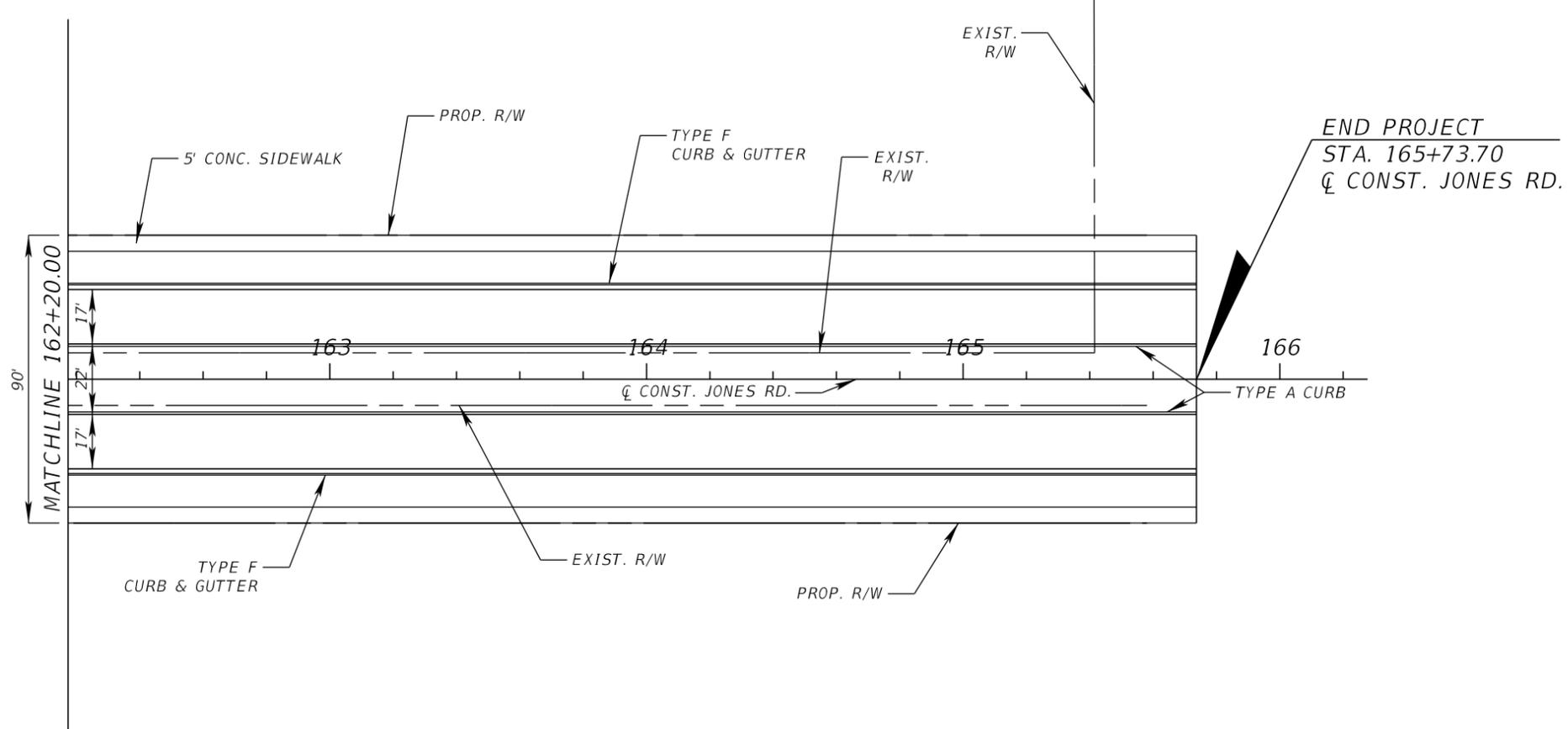
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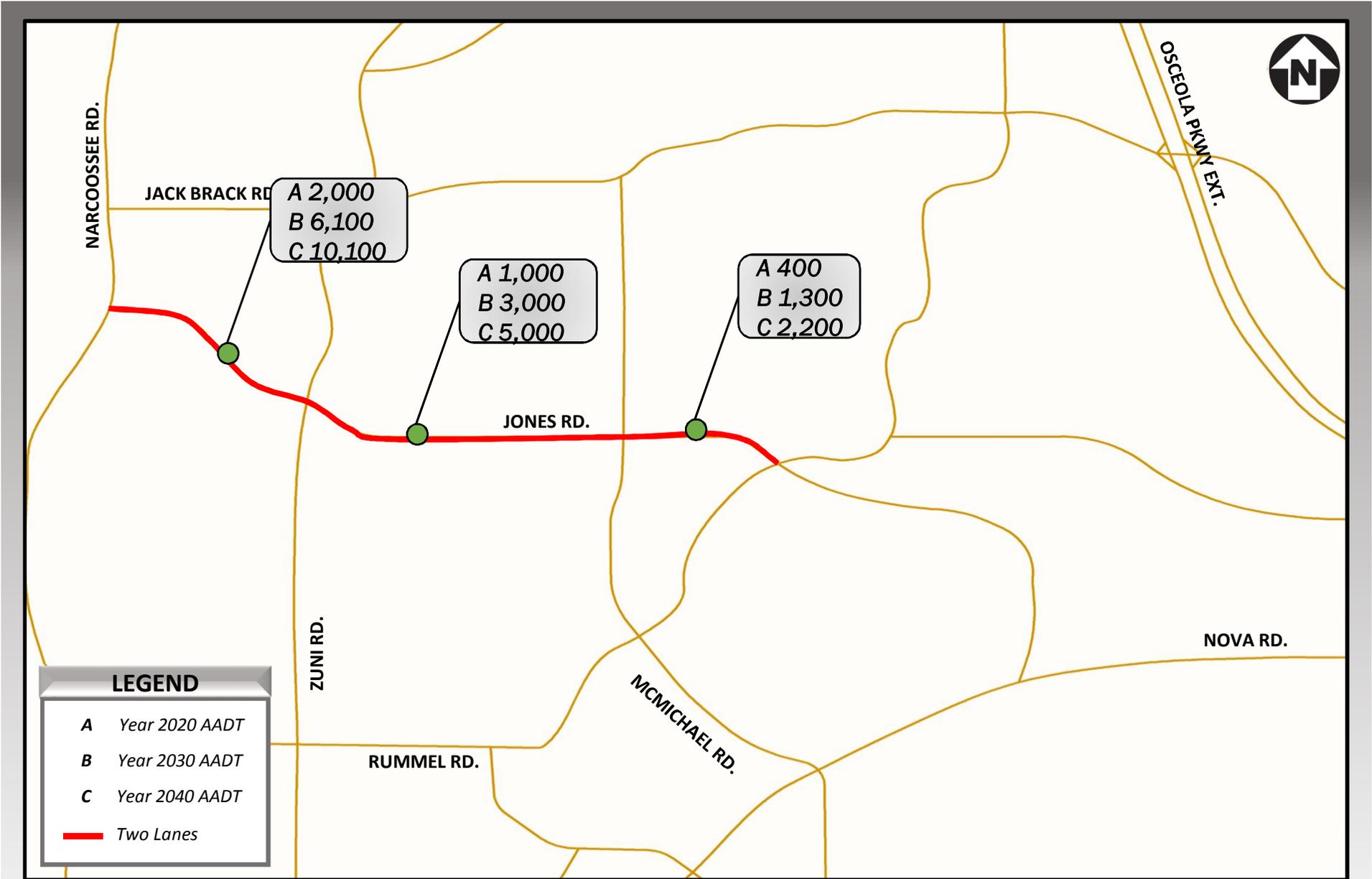
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#### 5.1.4. TRAFFIC ANALYSIS

As part of the Design Traffic Technical Memorandum (**Appendix E**), future AADT volumes and peak hour turning movements were developed for Jones Road. These volumes were used to develop recommended geometry at intersections, as well as queue lengths to be used for turning lanes.

The future AADT volumes for Jones Road were developed based on the travel demands projected by the regional model for 2040. The interim year volumes were estimated as being 20 percent of the 2040 volume in 2020 and 60 percent of the 2040 volume in 2030. The resulting AADT volumes for A 2020, B 2030 and C 2040 and the associated V/C ratios are identified in **Table 5.1** and illustrated in **Figure 5.3**.

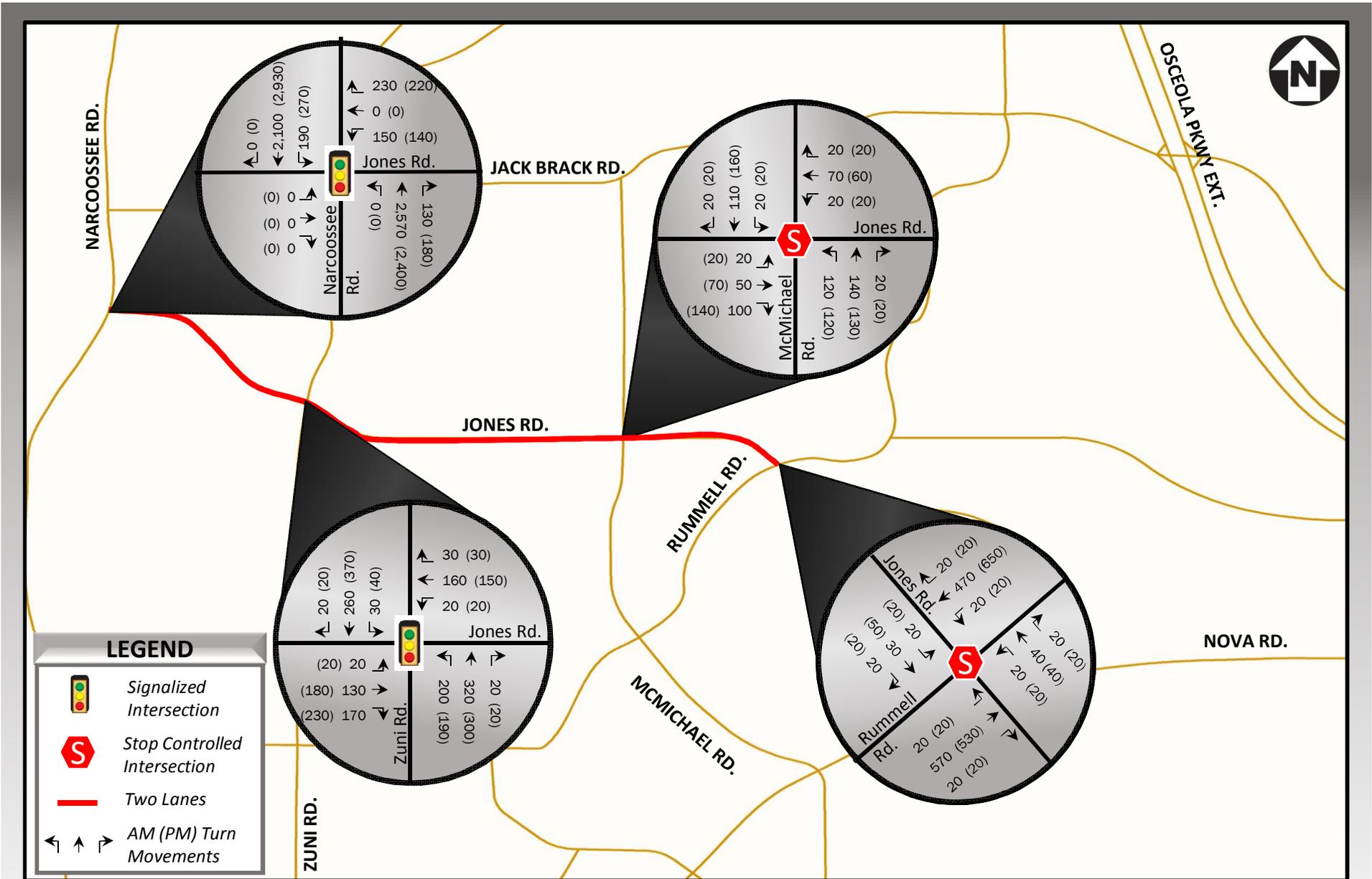


**Table 5.1: Jones Road Drive Future AADT Volumes**

Jones Rd.	Lanes	Capacity	2020		2030		2040	
			AADT	V/C	AADT	V/C	AADT	V/C
Narcoossee Rd. to Zuni Rd.	2	15,600	2,000	0.13	6,100	0.39	10,100	0.65
Zuni Rd. to McMichael Rd.	2	15,600	1,000	0.06	3,000	0.19	5,000	0.32
McMichael Rd. to Rummell Rd.	2	15,600	400	0.03	1,200	0.08	2,100	0.13
East of Rummell Rd.	2	15,600	400	0.03	1,300	0.08	2,200	0.14

All sections of Jones Road are expected to operate with a V/C ratio below 1.0. The highest volume section is from Narcoossee Road to Zuni Road.

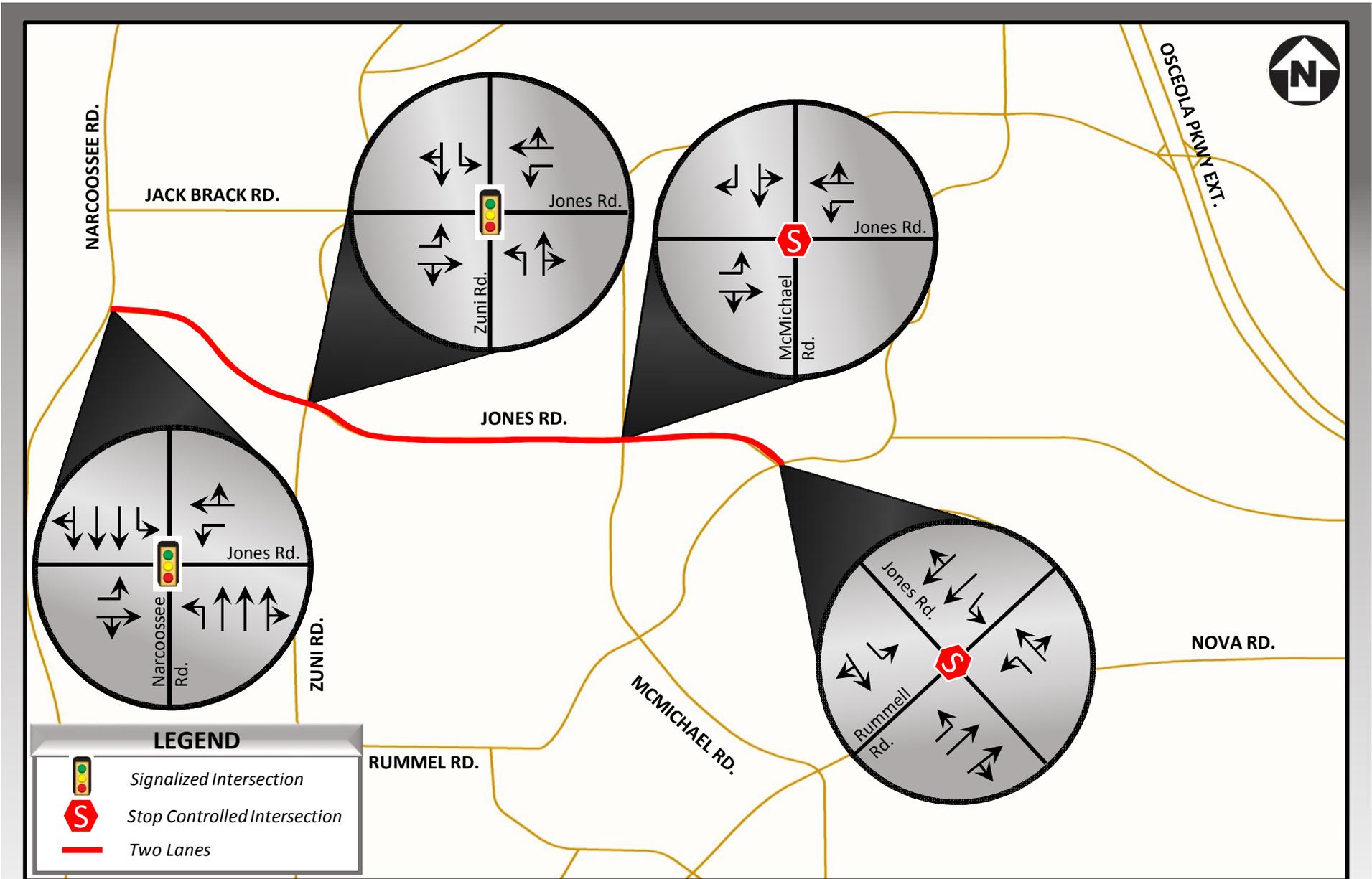
Future design hour turning movement volumes were developed based on the AADTs, in combination with the recommended design characteristics. These values were used as inputs to a spreadsheet which calculates turning movements based on the K and D factors, as well as daily quadrant movements obtained from the travel demand model. Output from the spreadsheet was compared to results from FDOT’s Turns5 spreadsheet and were found to be reasonable. In addition to the design hour (which is the P.M. peak hour), A.M. peak hour turning movements were developed to check operating conditions and lane requirements during the morning peak hour. The 2040 AM and PM design hour volumes are identified in **Figure 5.4**. Turning movement worksheets are included in **Appendix E**.



### JONES ROAD 2040 PEAK HOUR TURNING MOVEMENTS

Figure 5.4

The AM and PM peak hour volumes for 2040 were analyzed using Synchro software. A minimum of a separate left-turn lane was assumed for each intersection. Based on Synchro runs; additional turn lanes were identified when needed to keep the intersection operating with a V/C ratio below 1.0. The results of the analyses are summarized in **Table 5.2** and the recommended geometry at the intersections is illustrated in **Figure 5.5**. Synchro analysis reports are provided in **Appendix E**.



In 2040, the signalized intersections along Jones Road (at Narcoossee Road and at Zuni Road) are expected to operate at LOS C, or better, during the AM and PM peak hours. The intersections of Jones Road at McMichael Road and Jones Road at Rummell Road are not expected to warrant signalization. The Jones Road approaches, under stop control, will operate at LOS E during the PM peak hour and LOS D during the AM peak hour.

**Table 5.2: Jones Road 2040 Intersection LOS Summary**

Jones Rd. at	Traffic Control	Average Delay (sec/veh)	LOS	V/C
<b>PM Peak Hour</b>				
Narcoossee Rd.	Signal	18.7	B	0.902
Zuni Rd.	Signal	11.9	B	0.660
McMichael Rd.	Stop (NB/SB)	15.6/14.8	C/B	n/a
Rummell Rd.	Stop (EB/WB)	42.3/37.8	E/E	n/a
<b>AM Peak Hour</b>				
Narcoossee Rd.	Signal	17.3	B	0.886
Zuni Rd.	Signal	9.4	A	0.545
McMichael Rd.	Stop (NB/SB)	13.9/12.9	B/B	n/a
Rummell Rd.	Stop (EB/WB)	26.9/29.0	D/D	n/a

Recommended queue lengths for the storage area of each turn lane were developed based on the recommended intersection geometry. Queue lengths were derived based on the 2040 Synchro outputs for both the AM and PM peak hours (the longer queue length needed was used). Recommended queue lengths for Jones Road intersections are provided in **Table 5.3**.

**Table 5.3: Recommended Jones Road Queue Lengths**

Jones Rd. at	Turn Lane Queue Length (feet)							
	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Narcoossee Rd.	Std.	n/a	250	n/a	Std.	n/a	275	n/a
Zuni Rd.	50	n/a	50	n/a	125	n/a	50	n/a
McMichael Rd.	Std.	n/a	Std.	n/a	50	n/a	50	n/a
Rummell Rd.	50	n/a	50	n/a	50	n/a	50	n/a

Std. - Use County standard storage. Actual storage to be determined based on development.

Lengths provided in the table do not include the deceleration distance needed for turn lanes. When designing the overall turn lane lengths, the designer should use the most recent FDOT Design Manual.

### 5.1.5. ENVIRONMENTAL ASSESSMENT

An analysis of potential environmental impacts was conducted for the left, center, and right alignments for Jones Road. This included a review of impacts to wetland, wildlife and habitat, archaeological and historic resources, and contaminated sites. A summary of the findings is provided below.

- A wetland evaluation identified no impacts to onsite surface waters for all three alignments. Also with all three alignments, there are impacts to wetlands on both sides of the corridor for the segment of Jones Road from east of Gerry Court to the end of project. Because wetlands are on both sides, wetland impacts are essentially the same for all alignments. Additional information regarding wetlands can be found in **Appendix B**.
- The Jones Road corridor is comprised of diverse habitat types. There is the potential for occurrence of numerous state- and federally-listed species. The potential for occurrence is the same for all three alternatives. Species-specific surveys of the proposed roadway and pond sites will be required as part of the design and permitting phase. Additional information regarding endangered species can be found in **Appendix C**.
- There are no eligible historic structures or archaeological sites that would be impacted by any of the three alignments. Additional information regarding historic structures and archaeological sites can be found in **Appendix A**.
- There is a high-risk factor contamination site in the southeast corner of Jones Road and Narcoossee Road. Although it is outside the proposed right-of-way and has no bearing on evaluating a preferred alignment, a Level 2 Contamination Impact Analysis (CIA) should be conducted for this site during final design and permitting. There is also a medium-risk groundwater plume east of N. Eagle Road that should also be further evaluated during final design. Additional information regarding contamination can be found in **Appendix F**.

### 5.1.6. PRELIMINARY DRAINAGE

The proposed drainage system includes curb inlets to carry runoff from the roadway pavement to proposed stormwater ponds for water quality treatment and peak flow attenuation. The existing Jones Road runoff is currently not treated. The intended permitting approach is to only provide treatment for the additional impervious pavement added as part of the improvement.

Several potential pond sites have been identified and are provided in **Appendix G** (Pond Siting Report). A final determination will be made during final design as to which parcel(s) will be selected.

### 5.1.7. RIGHT-OF-WAY IMPACTS

For the Jones Road corridor, the existing right-of-way width from Narcoossee Road to east of N. Eagle Road is a minimum of 66 feet, generally centered on the existing roadway. There are areas along this segment where the existing right-of-way width widens to one or both sides, providing either 90 feet or 81 feet of available right-of-way. Because of this, the center alignment is the most feasible alternative along

this segment of the Jones Road corridor. To provide for the 90 feet of right-of-way needed to accommodate the proposed typical section, acquisition of up to 15.25 feet is required on either side of Jones Road, where that width does not currently exist.

For the segment from east of N. Eagle Road to the end of the project, the existing right-of-way is 16.5 feet, generally centered on the existing roadway. To provide for the 90 feet of right-of-way needed to accommodate the proposed typical section, acquisition of 73.5 feet is required, or 36.75 feet on both sides for the centered alignment. While no relocations are required for this alternative, there is a property east of Batton Road where the proposed right-of-way line comes to within 23 feet of an existing building. The roadway alignment could be adjusted in this area to provide for a greater setback of this building. This should be evaluated further during final design.

#### 5.1.8. ACCESS MANAGEMENT

Under current conditions, the existing undivided facility provides unrestricted access from the side street and driveway connections. With a proposed raised median, access would become more restrictive and limited to full median openings, directional openings, or right-in/right-out access points. The proposed access management plan would be the same for all three alignment alternatives and should be based on minimum spacing requirements described in the FDOT Design Manual. The access management plan should be further refined during the design phase.

#### 5.1.9. MULTI-MODAL ACCOMMODATIONS

To accommodate pedestrian and bicycle users, the typical sections proposed for Jones Road include 7 to 9-foot buffered bike lanes and 5-foot sidewalks in both directions. There are currently no transit stops in the Jones Road corridor.

#### 5.1.10. MAINTENANCE OF TRAFFIC

Construction for the widening of Jones Road can be accomplished by using a three-phase traffic control plan. Phase 1 will require construction of temporary pavement adjacent to one side of the existing pavement. For Phase 1, traffic will be maintained on the existing and temporary pavements, providing a single eastbound and westbound travel lane. Half of the proposed typical section would be constructed (excluding the median).

For Phase 2, traffic will be shifted to the newly constructed pavement, providing a single eastbound and westbound travel lane. The second half of the proposed typical section would be constructed.

For Phase 3, traffic will be separated and shifted to the outside lanes of the new pavement, providing a single eastbound and westbound travel lane. The median would then be constructed.

Specific maintenance of traffic will be determined during the design phase.

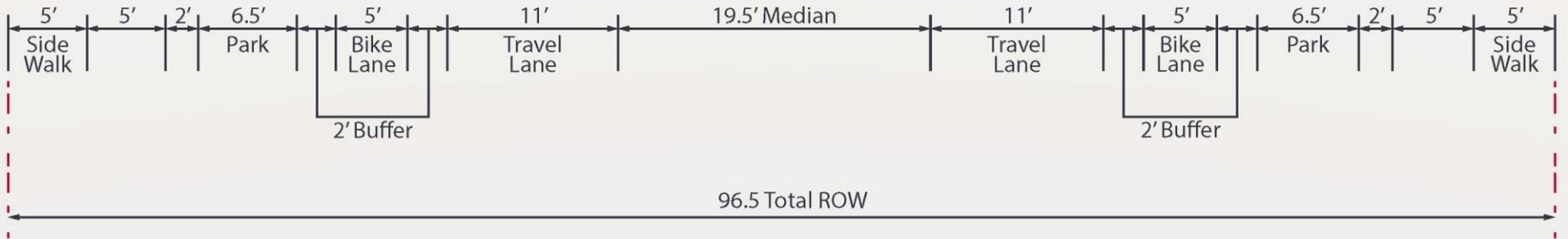
#### 5.1.11. OPINION OF PROBABLE CONSTRUCTION COST

The opinion of probable construction cost for the Jones Road improvement is \$14,000,000. This cost does not include right-of-way or design services.

### 5.2. JACK BRACK ROAD

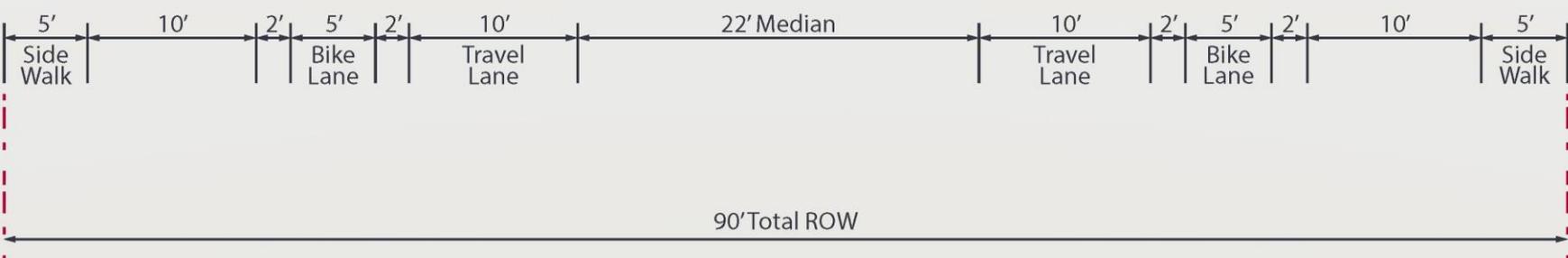
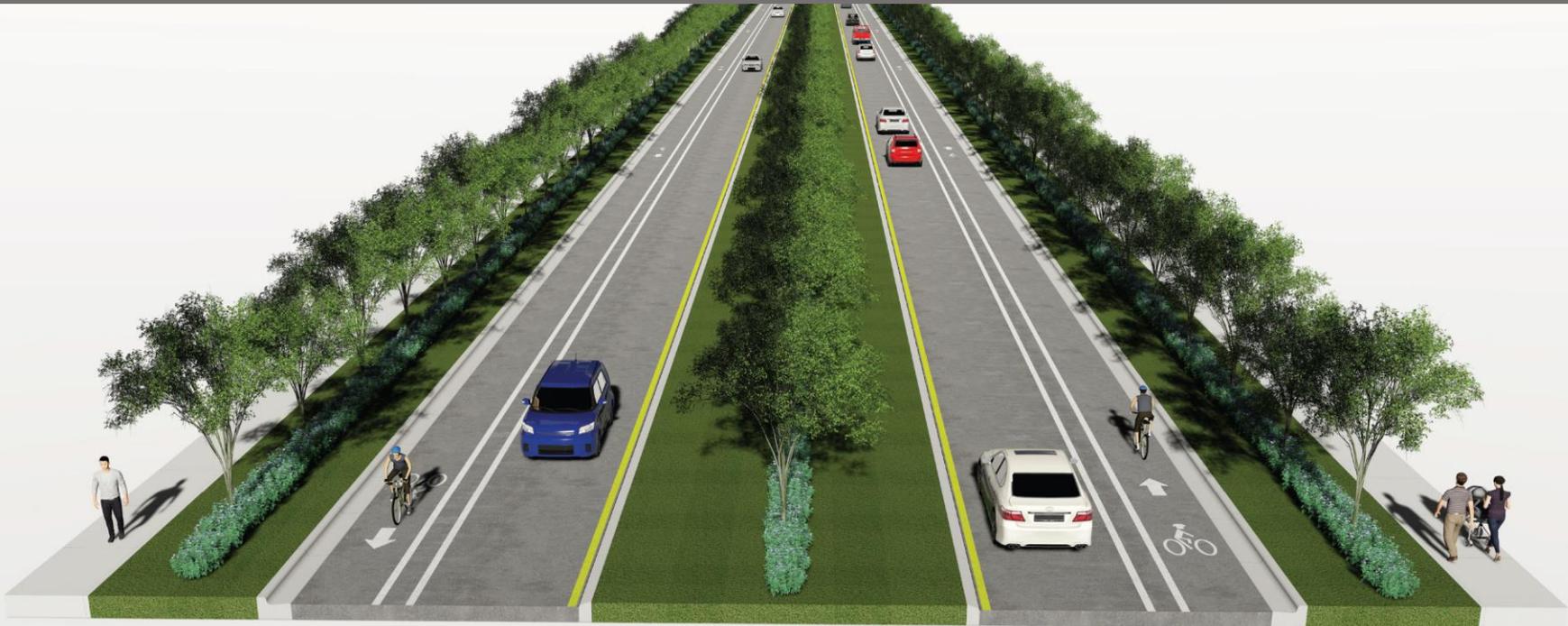
#### 5.2.1. TYPICAL SECTIONS

For the Urban Centers Segment of Jack Brack Road, from Narcoossee Road to Underwood Avenue, the proposed typical section includes a two-lane divided urban roadway (with 11-foot lanes), a 19.5-foot raised median, 9-foot buffered bike lanes, 6.5-foot parking lanes, curb and gutter, 5-foot sidewalk, and 5-foot grassed areas. This typical section requires 96.5 feet of right-of-way. The posted speed for this section is 35 mph. **Figure 5.6** illustrates this typical section.



**TYPICAL SECTION – JACK BRACK ROAD FROM  
NARCOOSSEE ROAD TO UNDERWOOD AVENUE**

For the remaining segment of Jack Brack Road, from Underwood Avenue to the Northeast District, the proposed typical section includes a two-lane divided urban roadway (with 10-foot lanes), a 22-foot raised median, 7-foot buffered bike lanes, curb and gutter, 5-foot sidewalks, and 10-foot grassed areas. This typical section requires 90 feet of right-of-way. The posted speed for this section is 35 mph. **Figure 5.7** illustrates this typical section.



**TYPICAL SECTION – JACK BRACK ROAD FROM UNDERWOOD AVENUE TO NORTHEAST DISTRICT**

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 Orlando, FL 32801

**Figure 5.7**

### 5.2.2. HORIZONTAL AND VERTICAL ALIGNMENT

The proposed horizontal alignment utilizes the same tangents as the existing alignment except for the north/south tangent between the double 90-degree curves. None of the existing horizontal curves meet minimum length criteria. All proposed curves will be lengthened to meet the minimum of 400 feet. The four westernmost curves will require reverse crown cross slopes.

The proposed vertical alignment provides the required minimum 0.30% longitudinal slope with minimum spacing of 250 feet between vertical points of intersection. The high points and low points of the vertical alignment are set to minimize cut and fill requirements while maintaining a minimum of one foot separation between the bottom of the proposed base and the estimated seasonal high groundwater elevation. There are some segments of Jack Brack Road where the estimated seasonal high water is very close to the ground surface elevation. This condition is most prevalent in the section east of the double 90-degree curves. Embankment is required for the proposed roadway profile to meet the minimum base clearance of one foot. This results in back-of-sidewalk fill slopes that extend beyond the proposed typical right-of-way foot print. There are three basic options available to mitigate this condition:

1. Acquire additional right-of-way
2. Construct gravity walls at back of sidewalk
3. Obtain permanent grading/slope easements

The third option is generally most desirable because it is usually lower in costs and least impactful to adjacent properties.

### 5.2.3. CONCEPT PLANS

Conceptual design plans for the Recommended Jack Brack Road Alternative A are provided in the following pages. There is a Jack Brack Road Alternative B plan set included in **Appendix H**. This secondary alternative differs from the Recommended Alternative in the area of the existing double 90-degree curves. For Alternative B, the proposed reverse curves are further east than in the Recommended Alternative A.

# CONCEPT PLANS

## JACK BRACK ROAD

### ALTERNATIVE A

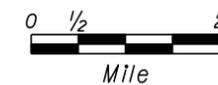
LENGTH OF PROJECT

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NOTE: LENGTH OF PROJECT IS BASED ON  $\varnothing$  CONSTRUCTION.

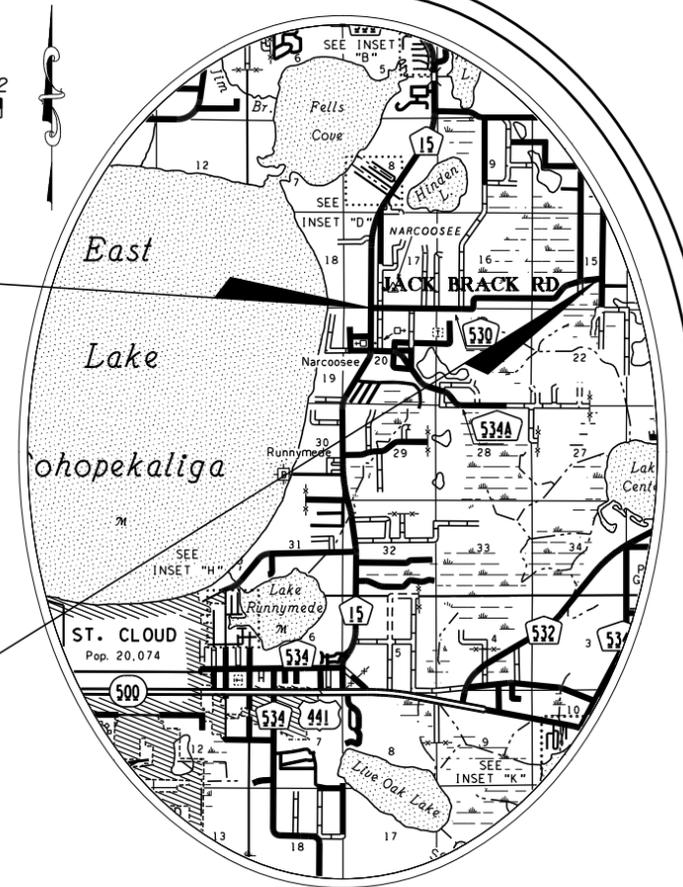
#### INDEX OF CONCEPT PLANS

SHEET	DESCRIPTION
1	KEY SHEET
2-3	TYPICAL SECTIONS
4	PROJECT LAYOUT
5-26	ROADWAY PLAN-PROFILES



BEGIN PROJECT  
STA. 10+33.71

END PROJECT  
STA. 159+79.56



## OSCEOLA COUNTY TRANSPORTATION AND TRANSIT DEPARTMENT

FRED HAWKINS, JR.  
CHERYL GRIEB  
PEGGY CHOUDHRY  
VIVIANA JANER  
BRANDON ARRINGTON  
DON FISHER

CHAIRMAN OF THE BOARD OF COUNTY COMMISSIONERS  
VICE CHAIRWOMAN OF THE BOARD OF COUNTY COMMISSIONERS  
COUNTY COMMISSIONER  
COUNTY COMMISSIONER  
COUNTY COMMISSIONER  
COUNTY MANAGER

ROADWAY SHOP DRAWINGS  
TO BE SUBMITTED TO:  
KIMLEY-HORN AND ASSOCIATES, INC.  
L. FREDERICK BURKETT, P.E.  
189 S. ORANGE AVENUE  
SUITE 1000  
ORLANDO, FLORIDA 32801

PLANS PREPARED BY:

**Kimley»Horn**

Kimley-Horn and Associates, Inc.

189 S. ORANGE AVENUE  
SUITE 1000  
ORLANDO, FLORIDA 32801  
TEL: (407) 898-1511  
FAX: (407) 894-4791  
CERTIFICATE OF AUTHORIZATION No. 696

ROADWAY PLANS  
ENGINEER OF RECORD: L. FREDERICK BURKETT, P.E.

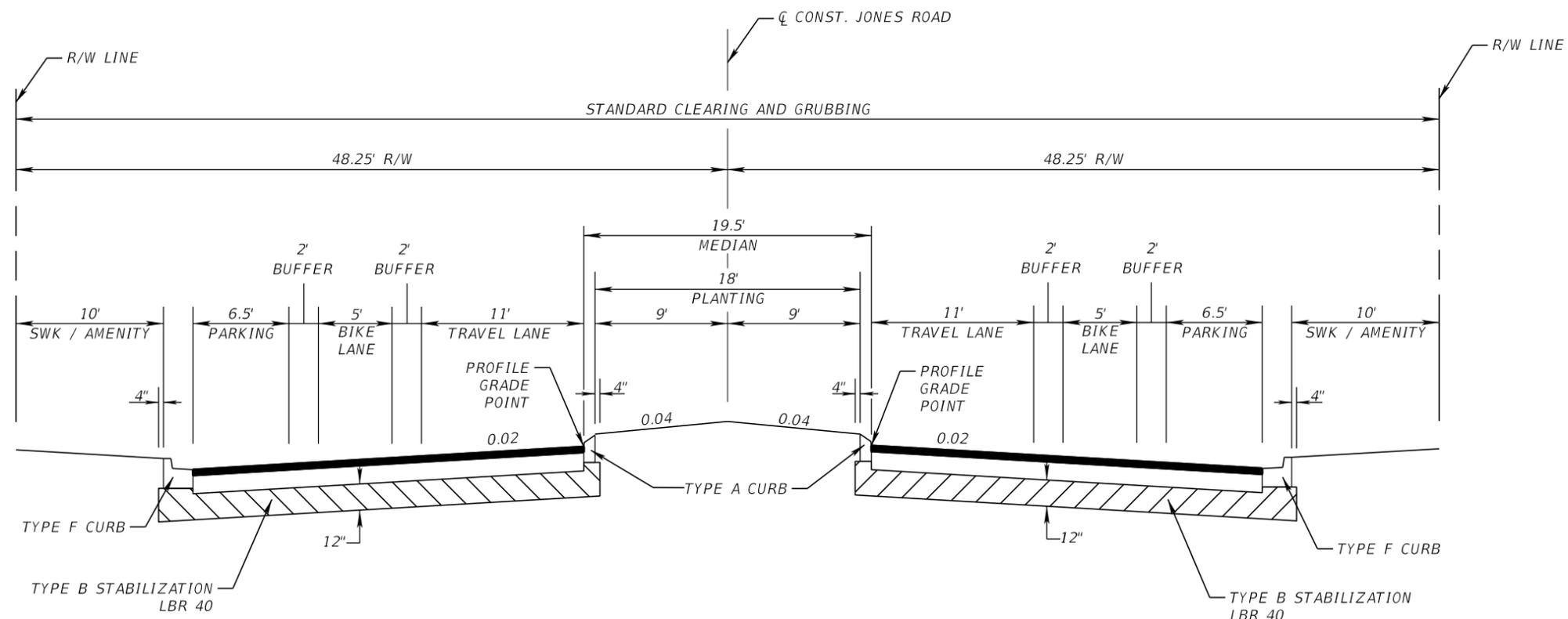
DATE: \_\_\_\_\_

P.E. NO.: 45825

GOVERNING STANDARDS AND SPECIFICATIONS:  
FLORIDA DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS DATED 2018-2019,  
AND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 2017,  
AS AMENDED BY CONTRACT DOCUMENTS.  
APPLICABLE DESIGN STANDARDS MODIFICATIONS:

FOR DESIGN STANDARDS MODIFICATIONS CLICK ON "DESIGN STANDARDS" AT THE  
FOLLOWING WEB SITE:  
[HTTP://WWW.DOT.STATE.FL.US/RDDSIGN/](http://www.dot.state.fl.us/rddesign/)

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.



TYPICAL SECTION  
 JACK BRACK ROAD  
 STA. 10+33.71 TO STA. 13+50.00

DESIGN SPEED = 35 MPH

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

**Kimley»Horn**

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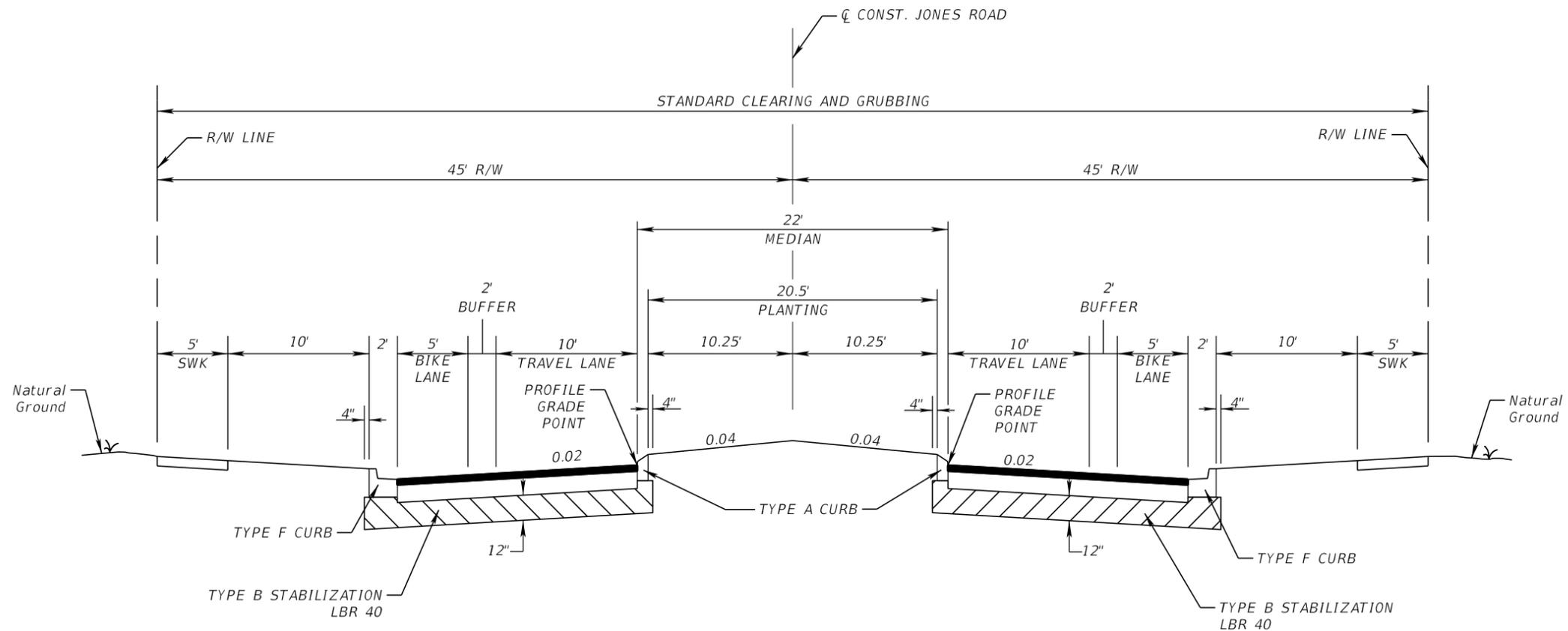


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TYPICAL SECTION (1)  
 (ALTERNATIVE A)

SHEET  
 NO.

2 Page 67



TYPICAL SECTION  
 JACK BRACK ROAD  
 STA. 13+50.00 TO STA. 159+79.56  
 DESIGN SPEED = 35 MPH

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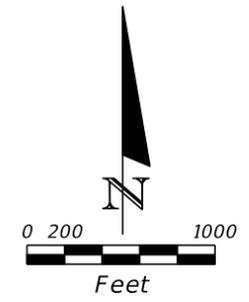


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TYPICAL SECTION (2)  
 (ALTERNATIVE A)

SHEET  
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3 Page 68

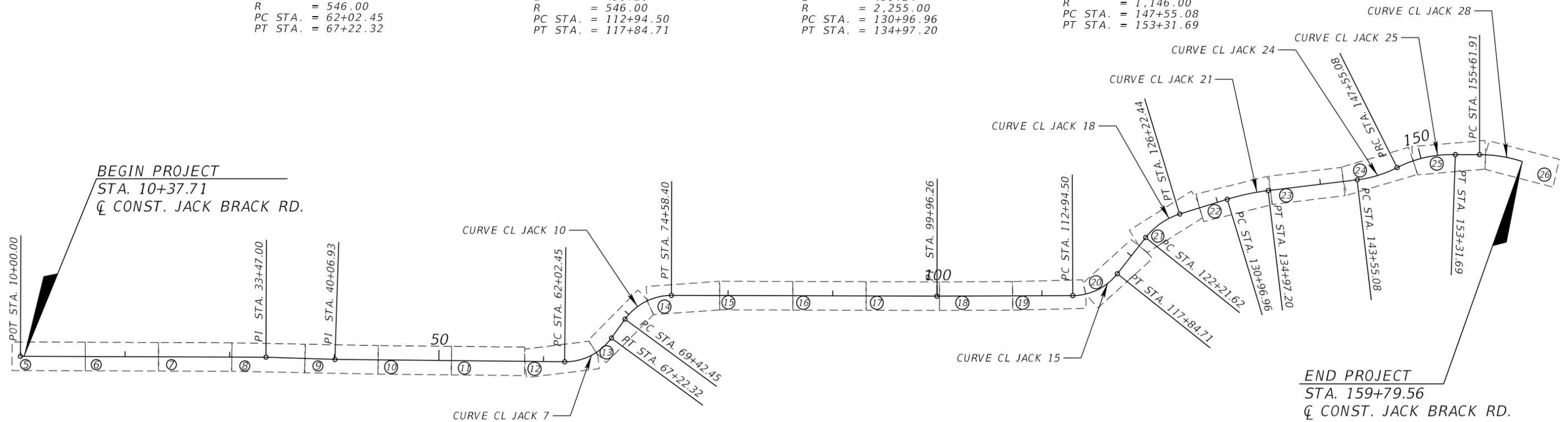


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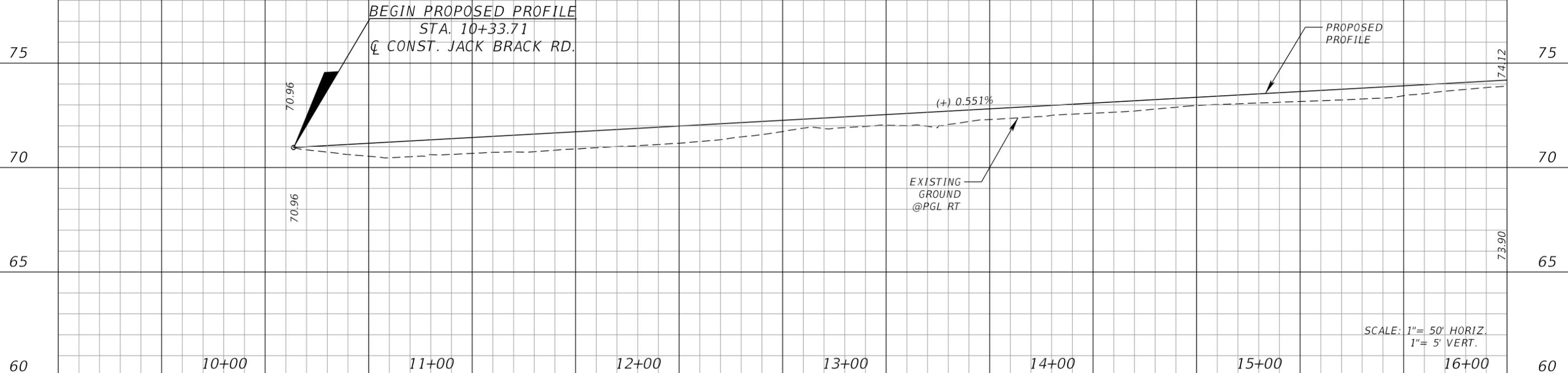
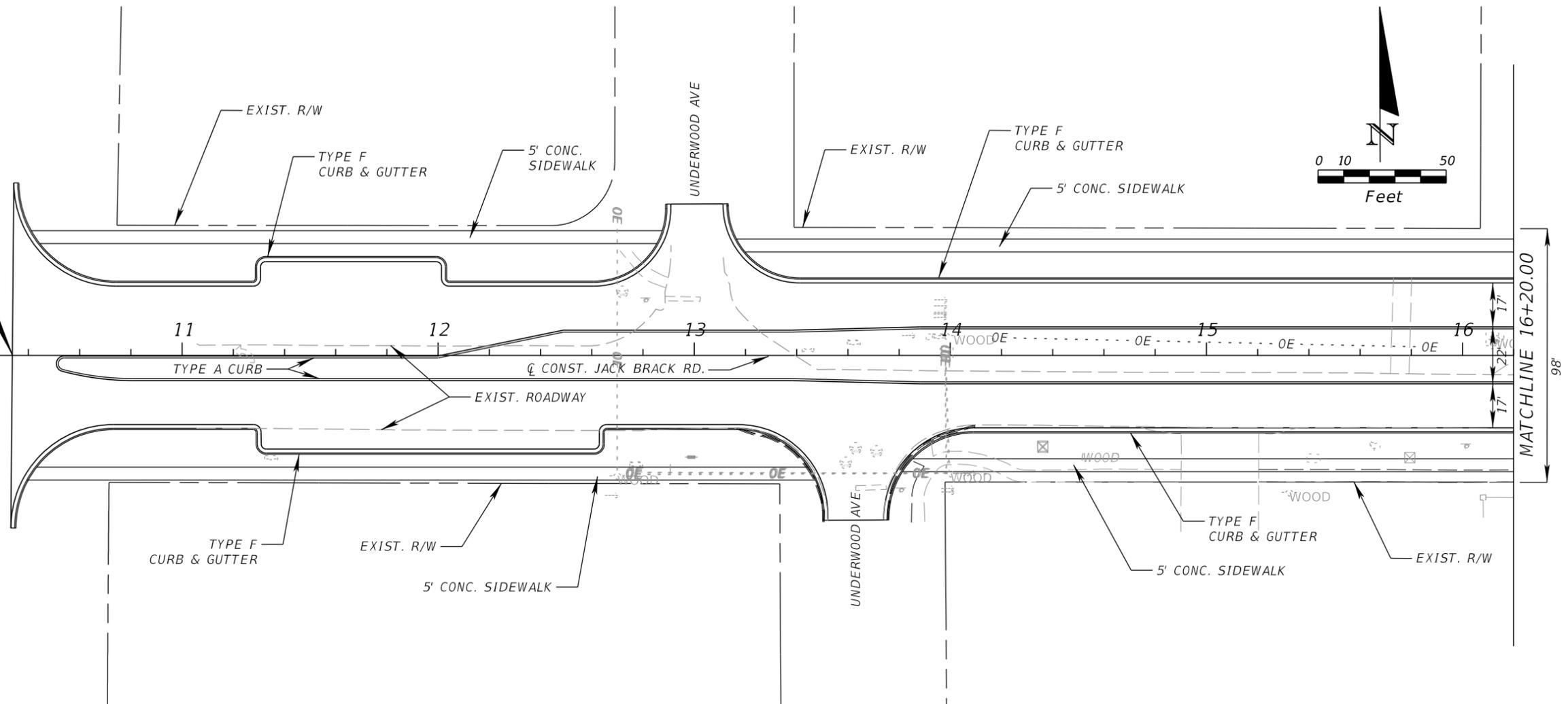
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 (ALTERNATIVE A)**

SHEET NO.

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RQT STA. 10+00.00



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1" = 5' VERT.

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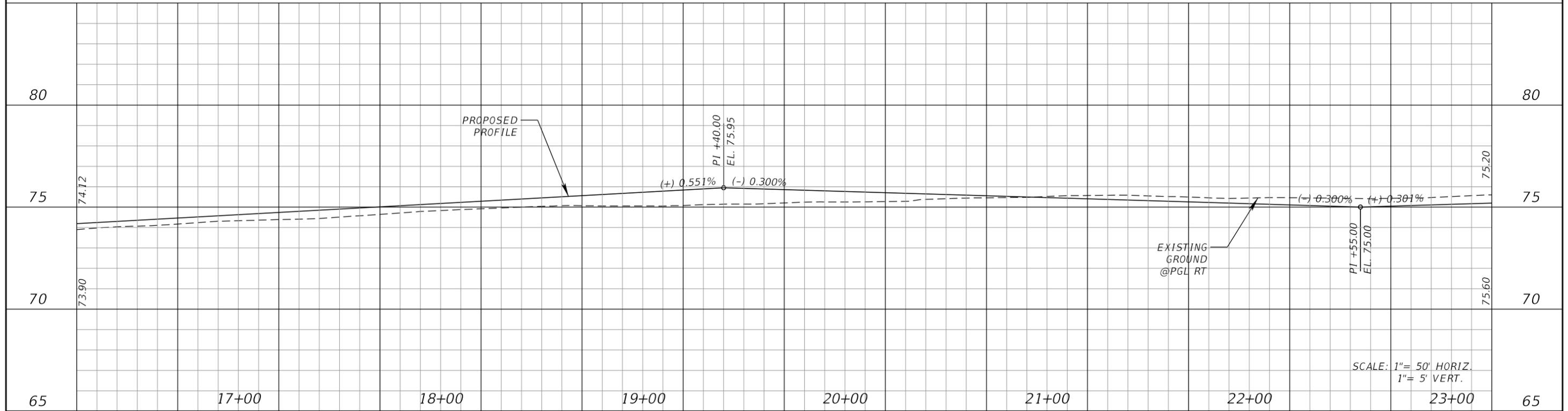
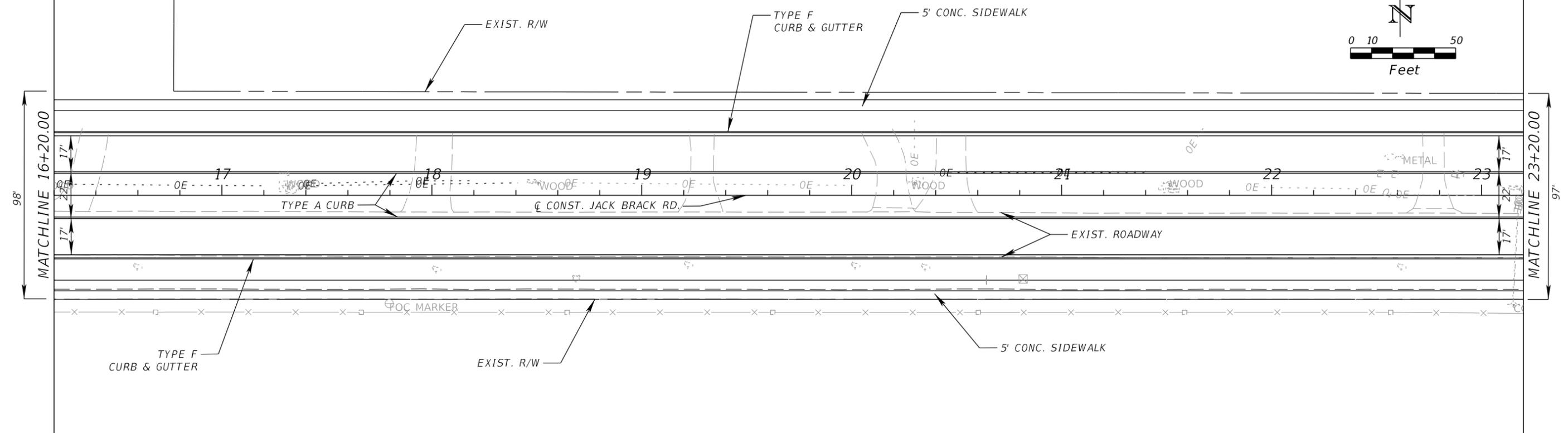
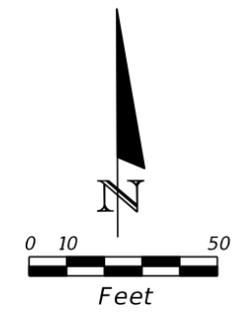
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**PLAN PROFILE  
(ALTERNATIVE A)**

SHEET NO.  
**5**  
Page 70



SCALE: 1" = 50' HORIZ.  
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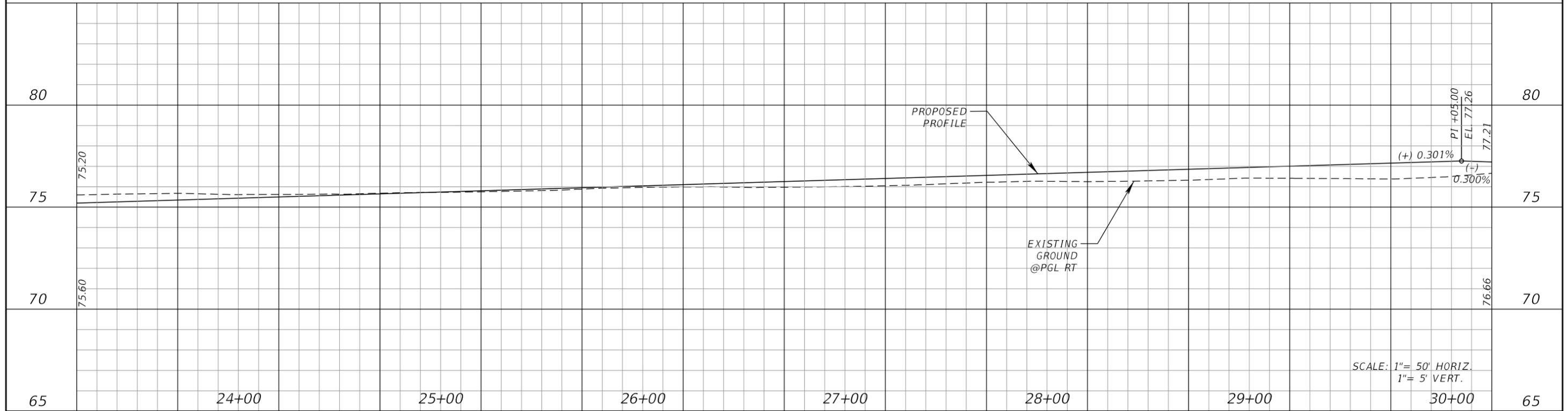
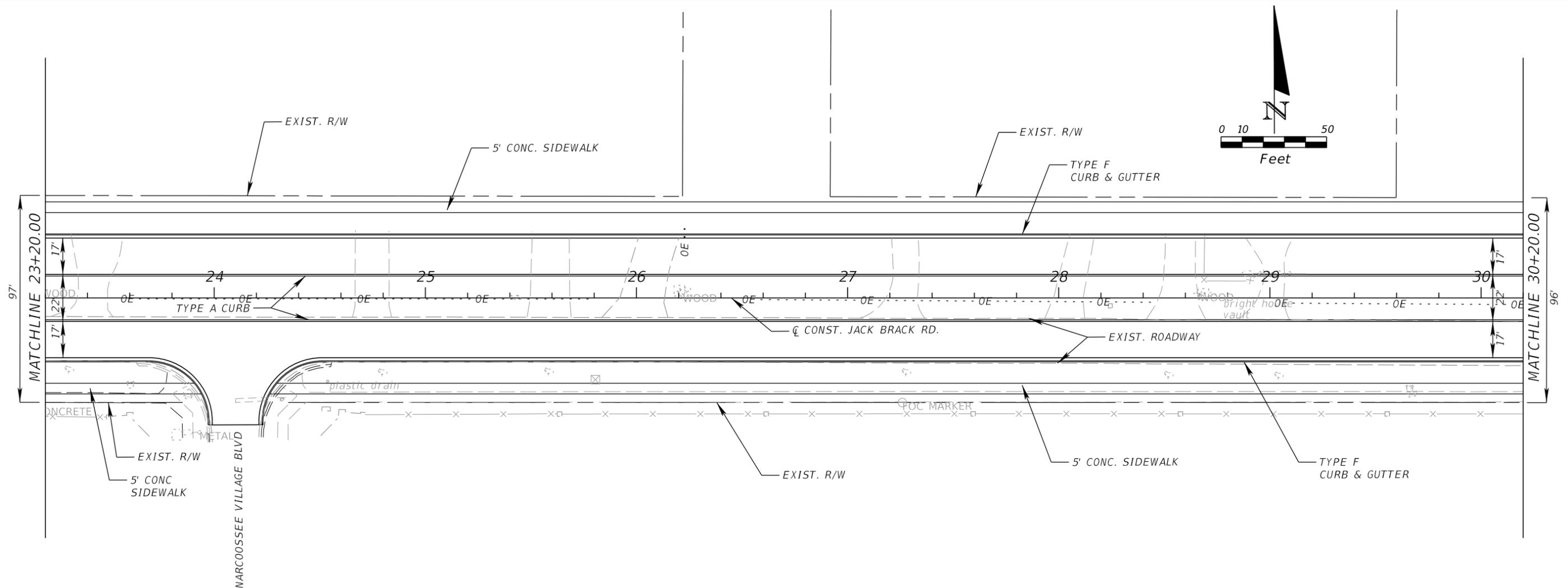
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**PLAN PROFILE  
 (ALTERNATIVE A)**

SHEET NO.  
**6** Page 71



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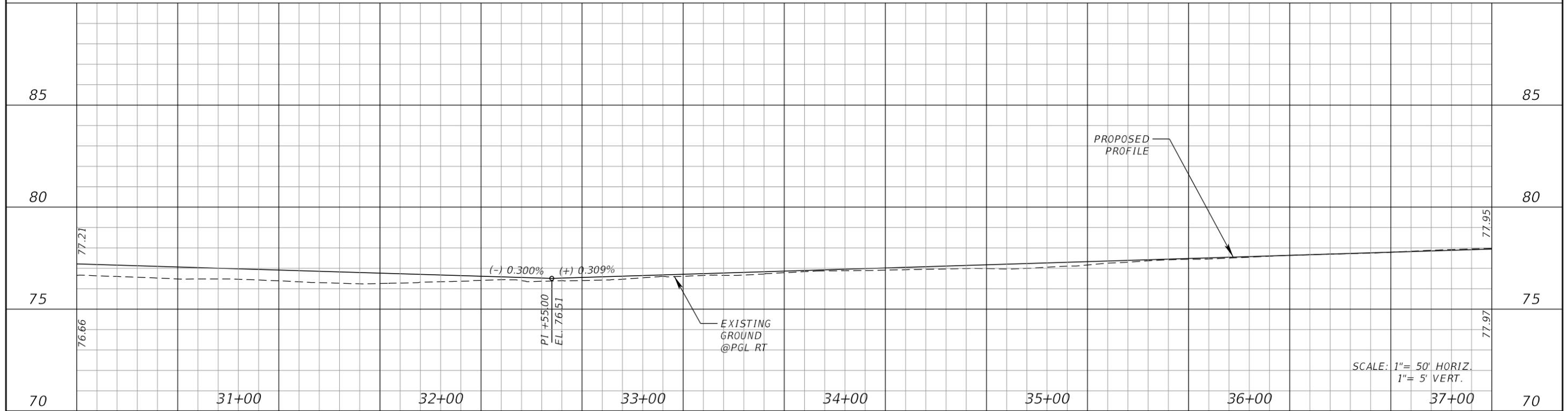
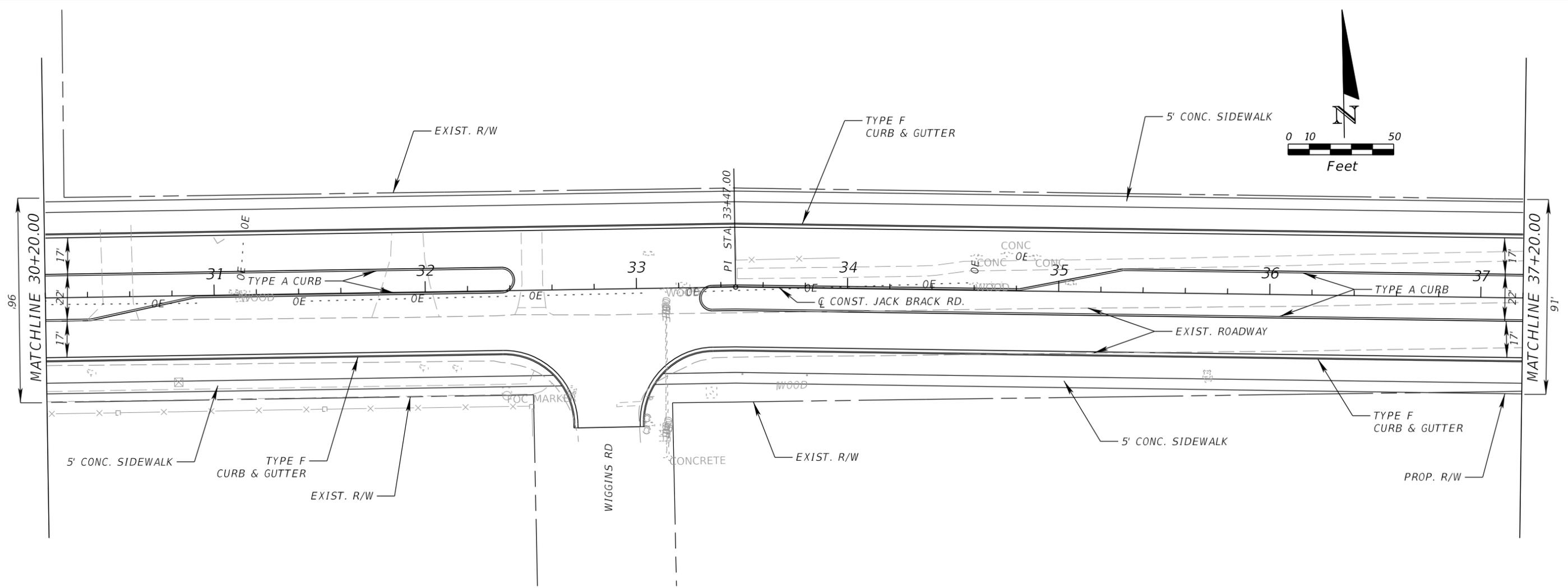
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SHEET NO.  
**7** Page 72



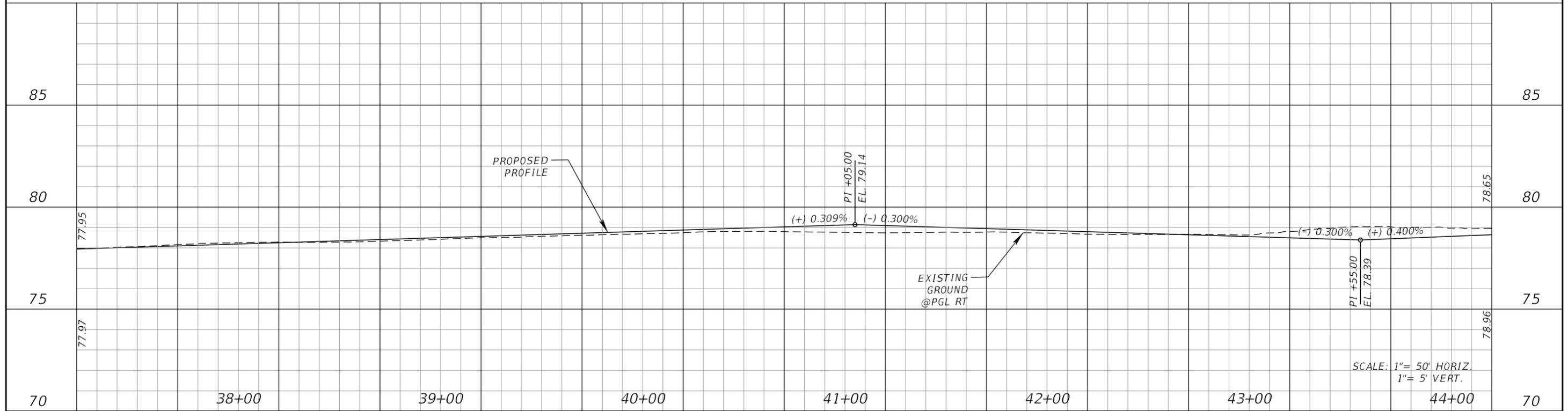
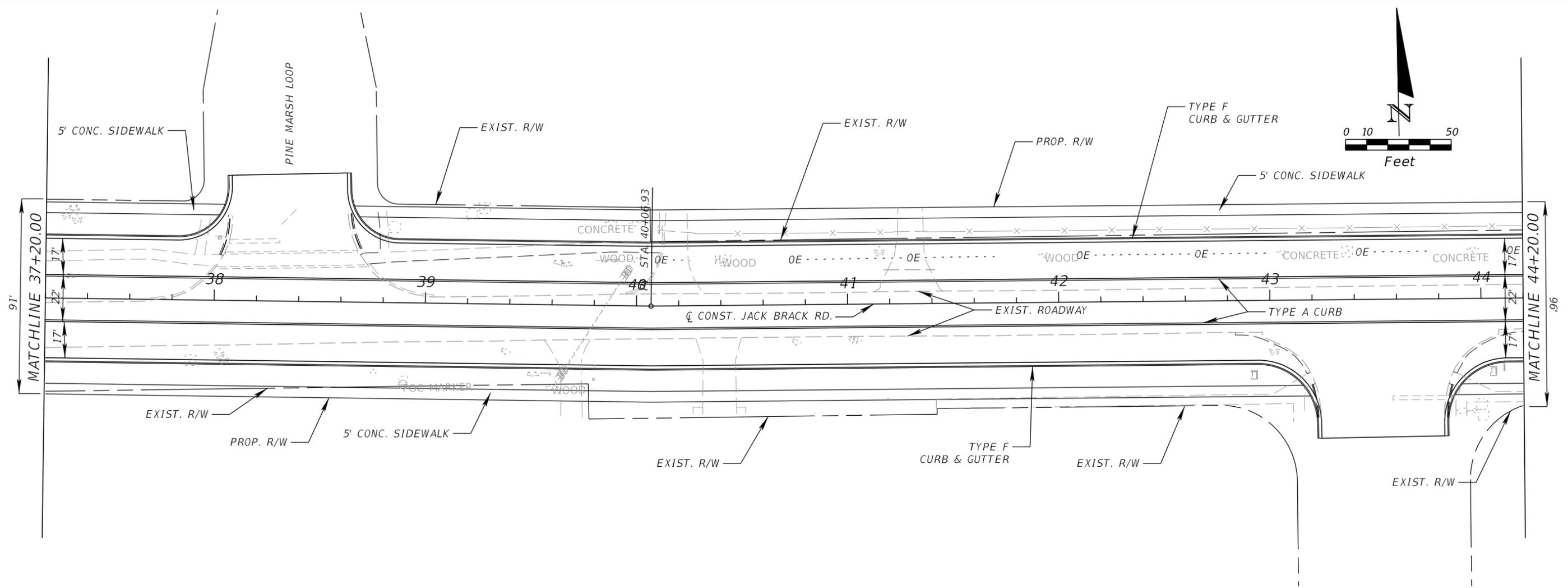
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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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**PLAN PROFILE  
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SHEET NO.  
**8** Page 73



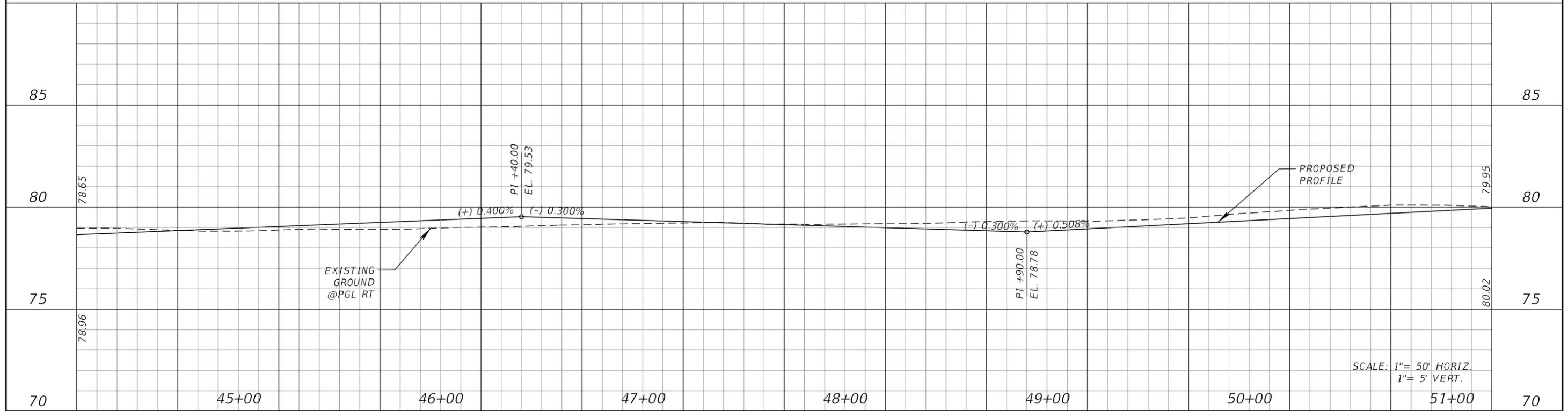
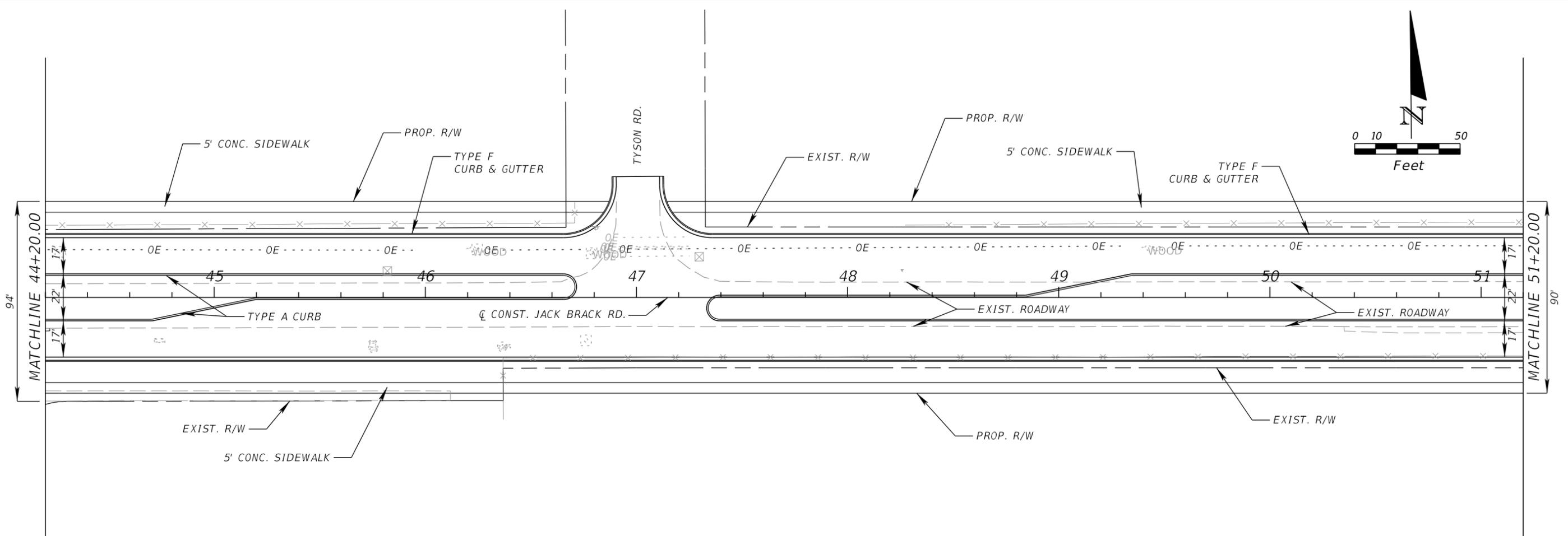
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**PLAN PROFILE  
 (ALTERNATIVE A)**

SHEET NO.  
 9 Page 74



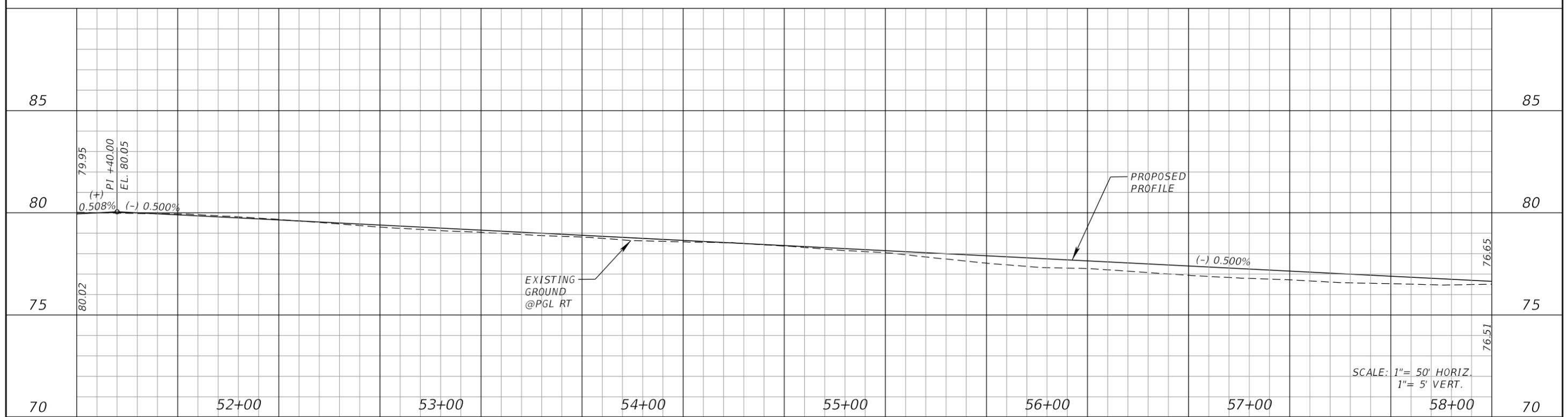
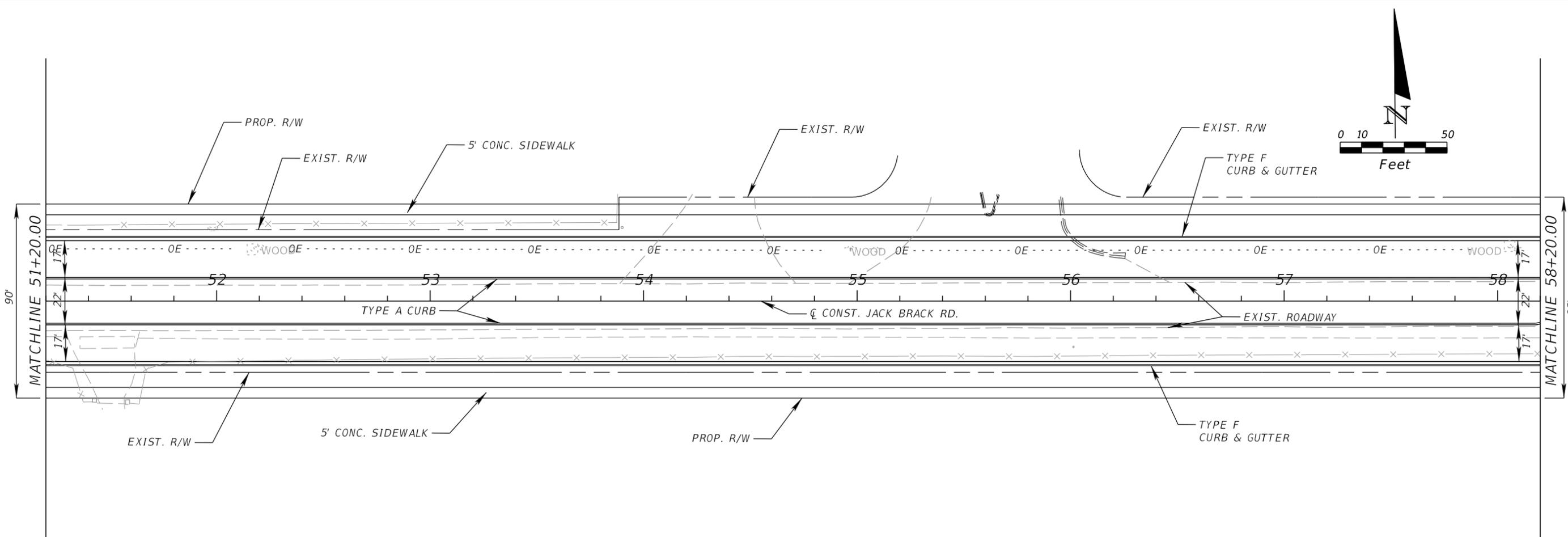
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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**PLAN PROFILE  
 (ALTERNATIVE A)**

SHEET NO.  
**10** Page 75



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

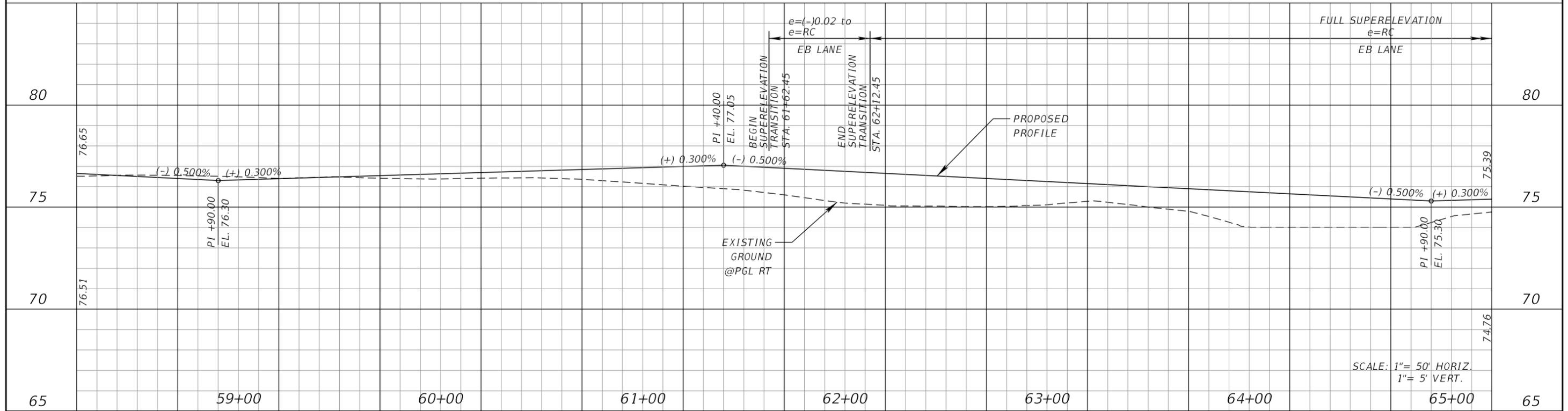
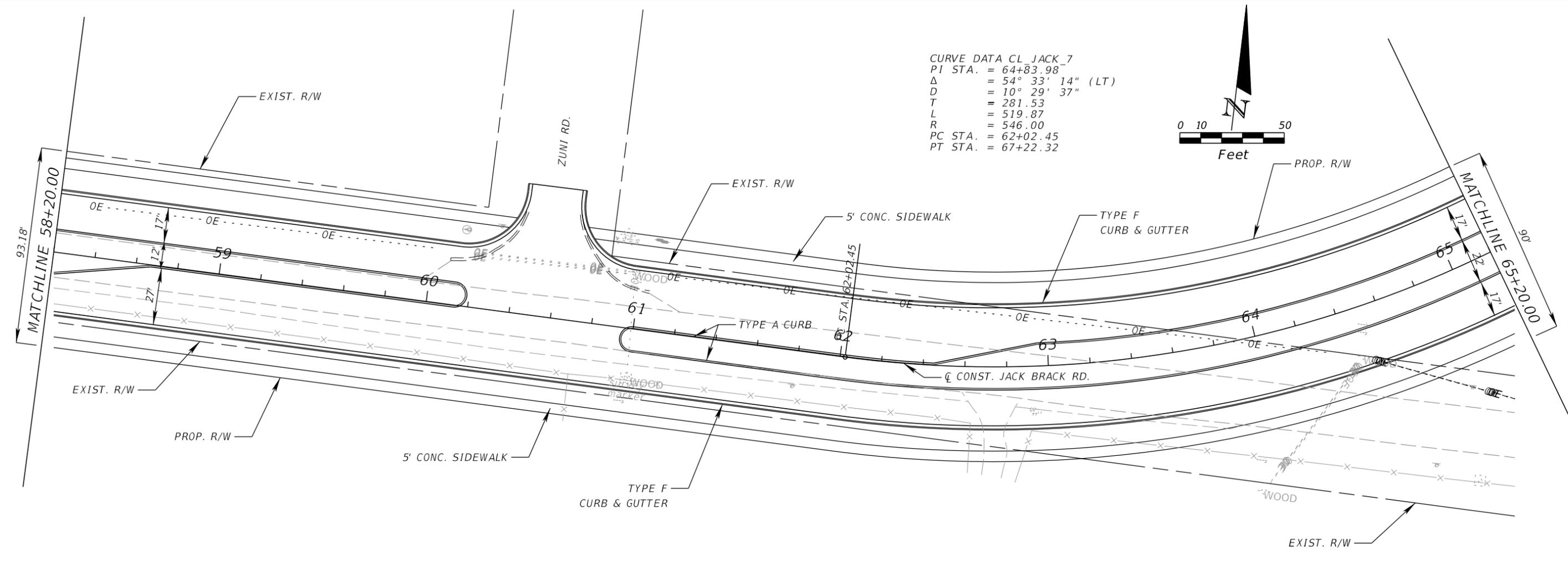
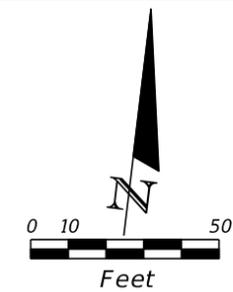
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**PLAN PROFILE  
 (ALTERNATIVE A)**

SHEET NO.  
**11** Page 76

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 PC STA. = 62+02.45  
 PT STA. = 67+22.32



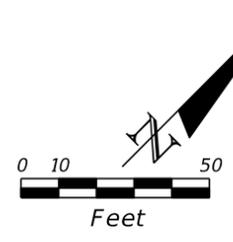
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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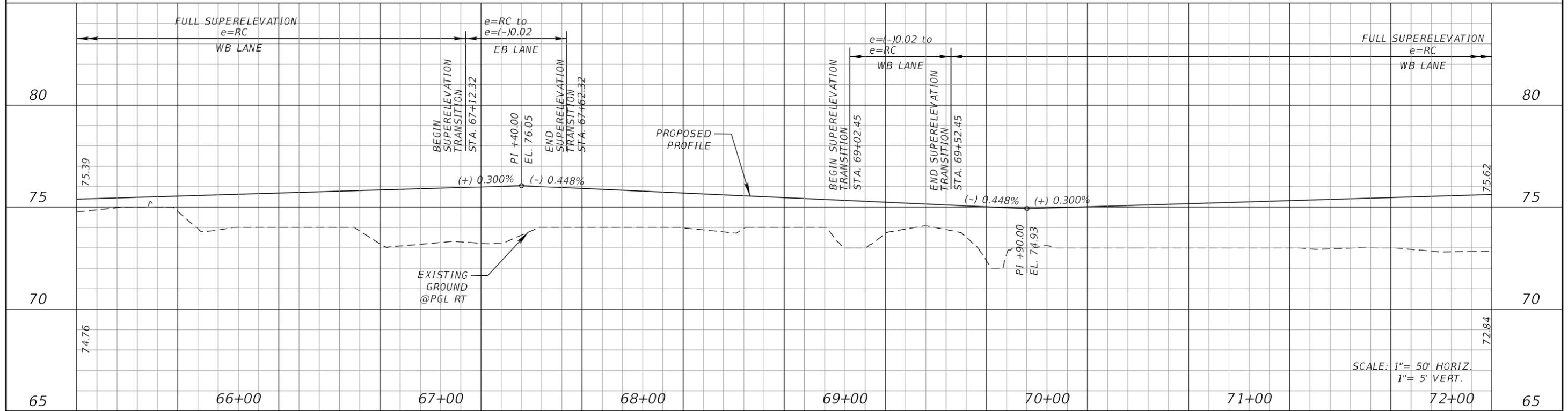
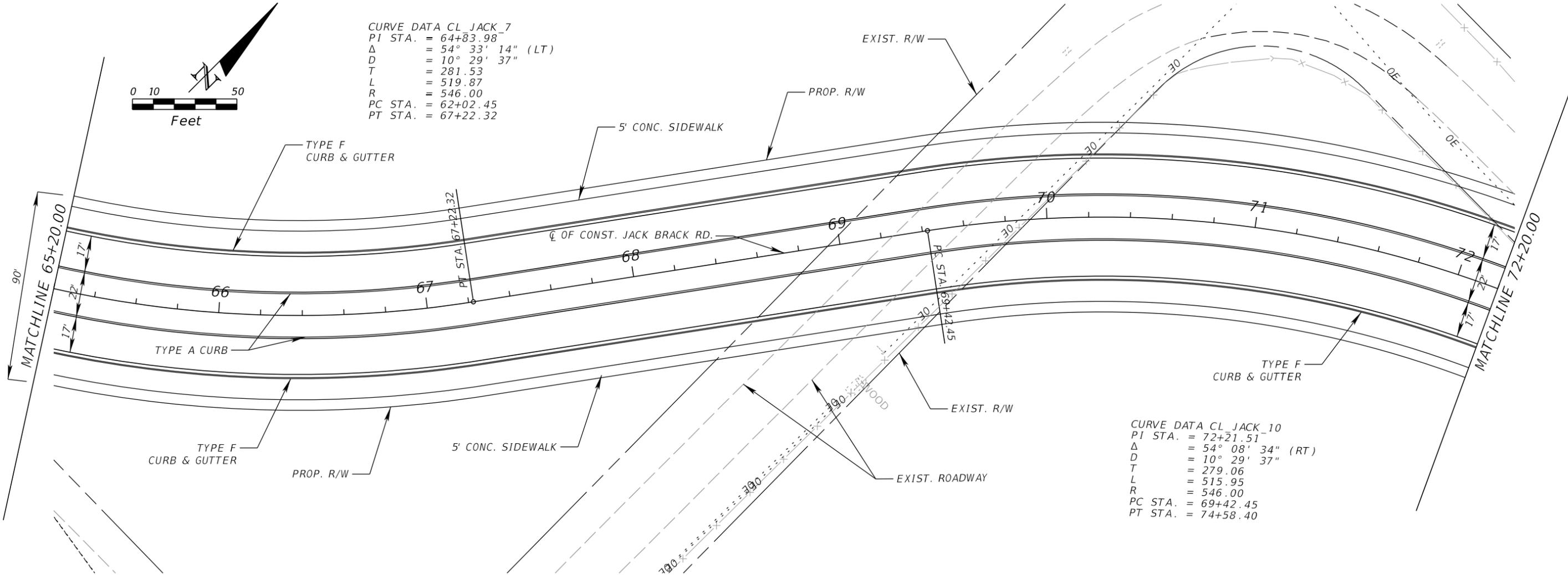
**PLAN PROFILE  
 (ALTERNATIVE A)**

SHEET NO.  
 12 Page 77



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 PT STA. = 67+22.32

CURVE DATA CL JACK\_10  
 PI STA. = 72+21.51  
 $\Delta$  = 54° 08' 34" (RT)  
 D = 10° 29' 37"  
 T = 279.06  
 L = 515.95  
 R = 546.00  
 PC STA. = 69+42.45  
 PT STA. = 74+58.40



SCALE: 1" = 50' HORIZ.  
 1" = 5' VERT.

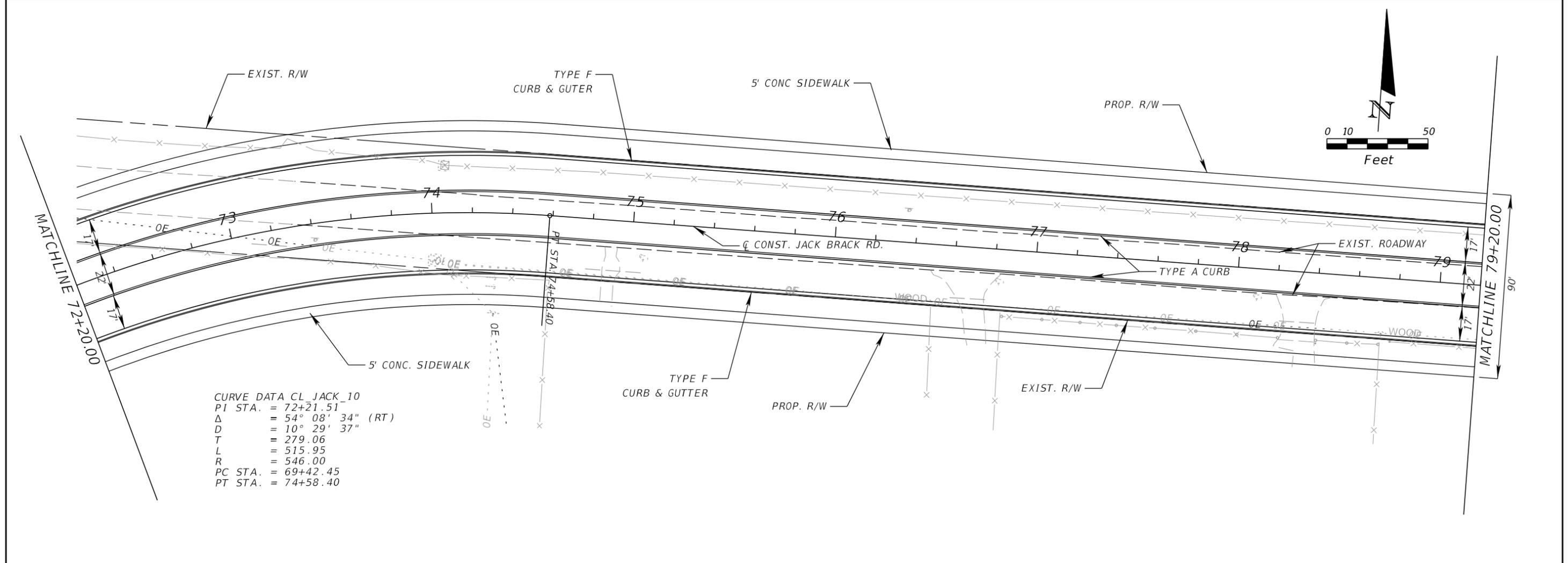
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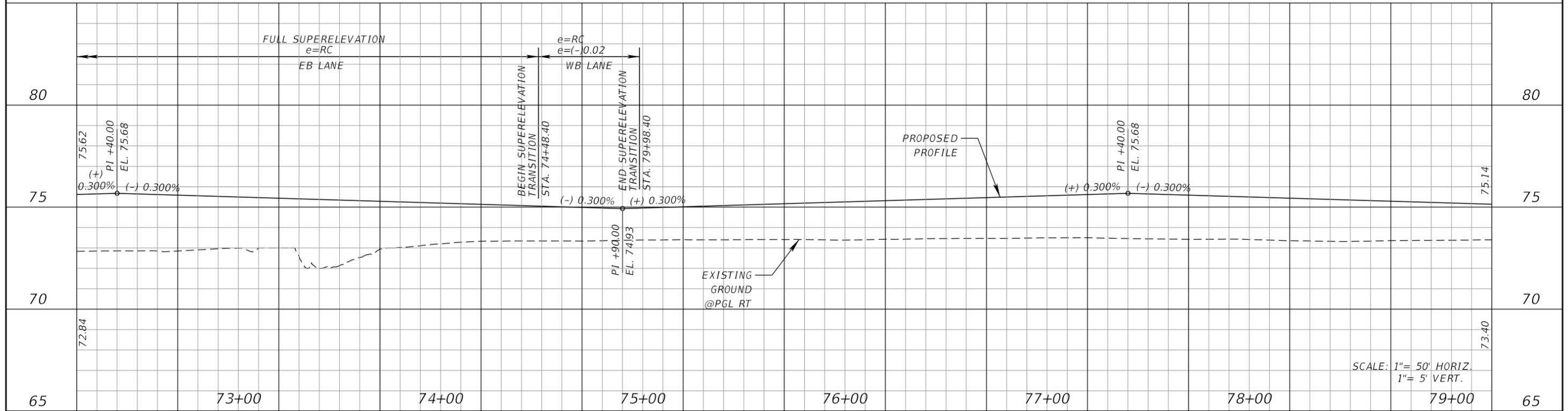
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**(ALTERNATIVE A)**

SHEET NO. 13 Page 78



CURVE DATA CL JACK 10  
 PI STA. = 72+21.51  
 $\Delta$  = 54° 08' 34" (RT)  
 D = 10° 29' 37"  
 T = 279.06  
 L = 515.95  
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 PC STA. = 69+42.45  
 PT STA. = 74+58.40



SCALE: 1" = 50' HORIZ.  
 1" = 5' VERT.

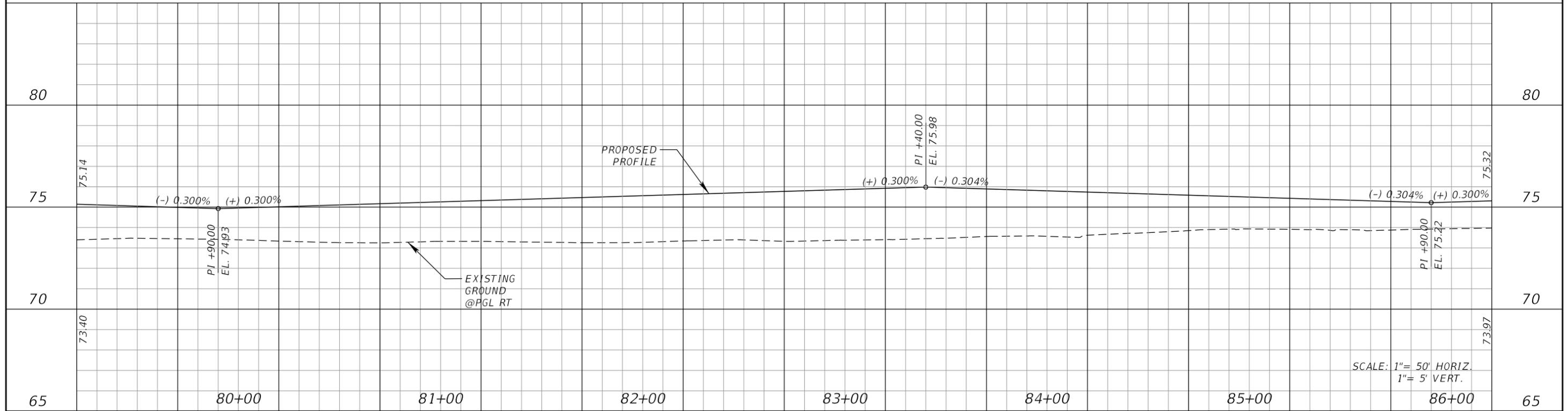
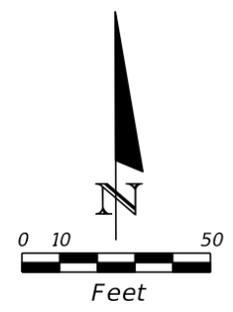
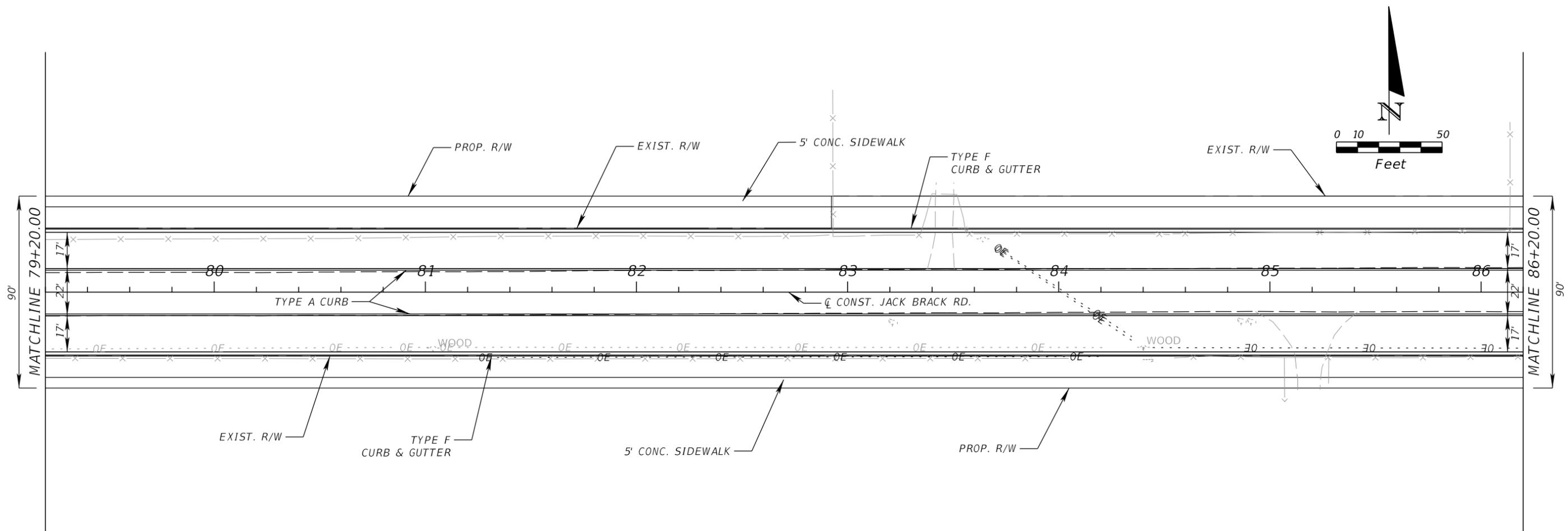
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SHEET NO. 14 Page 79



SCALE: 1" = 50' HORIZ.  
1" = 5' VERT.

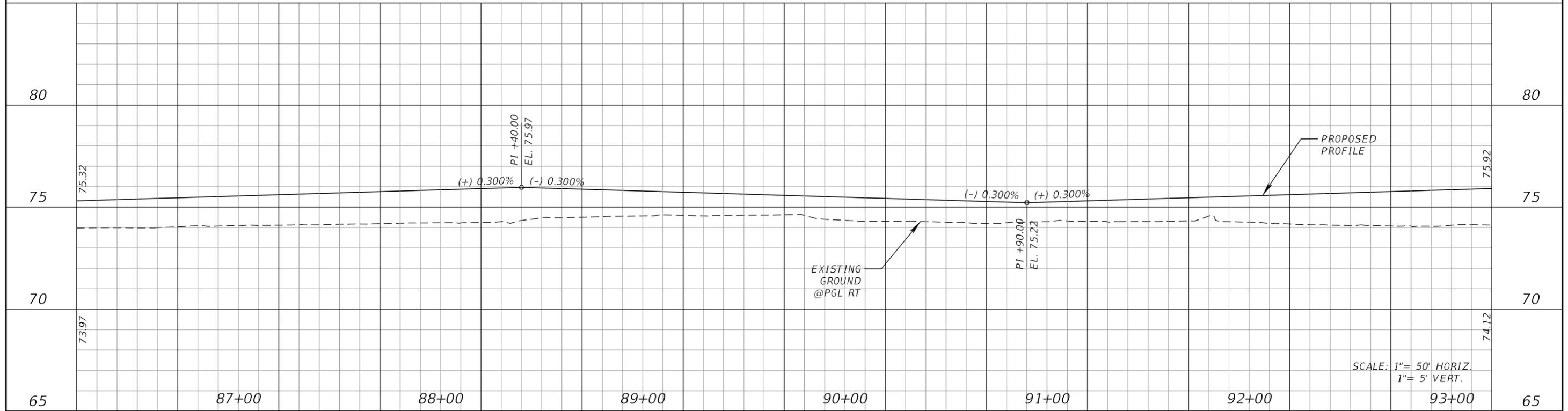
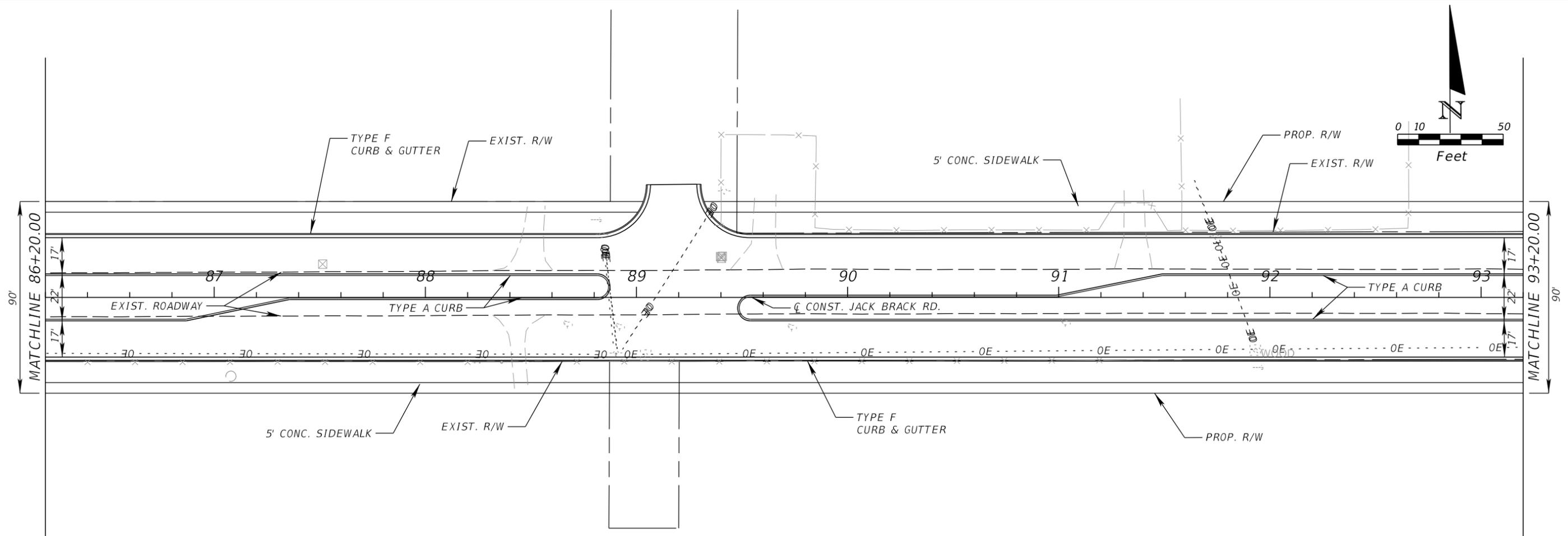
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**PLAN PROFILE  
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SHEET NO.  
**15** Page 80



SCALE: 1" = 50' HORIZ.  
1" = 5' VERT.

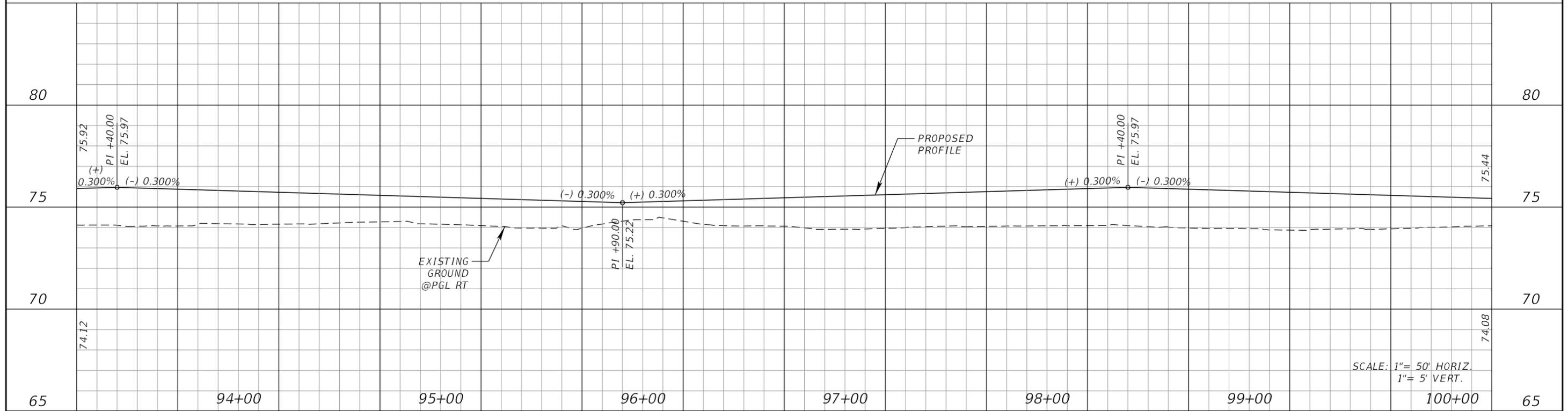
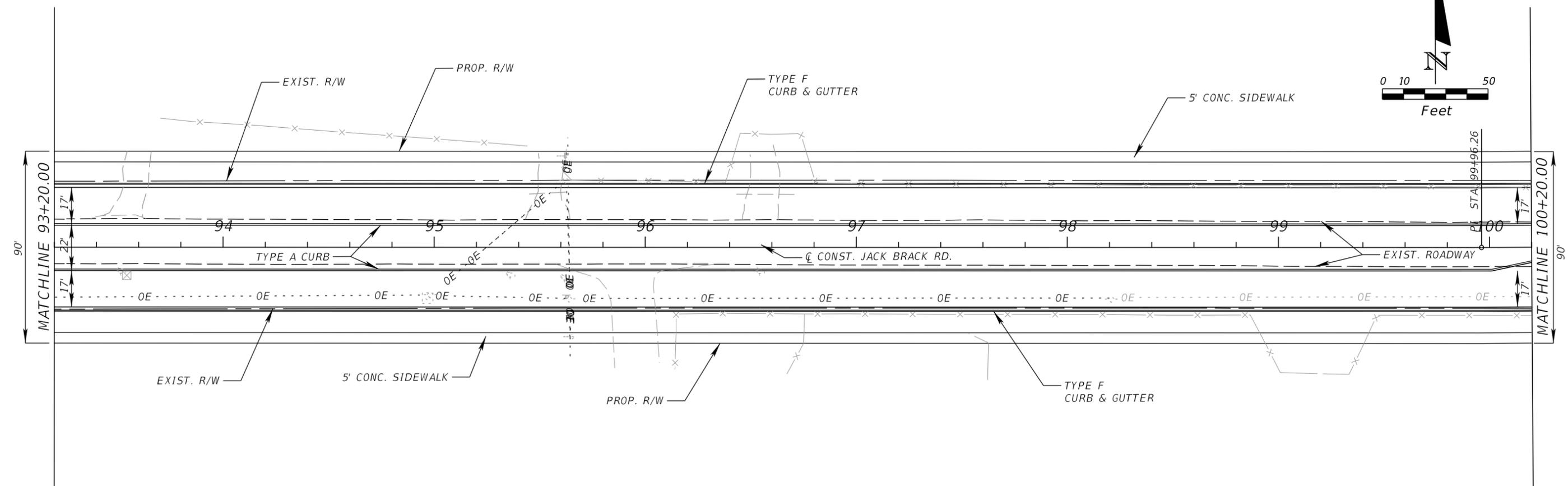
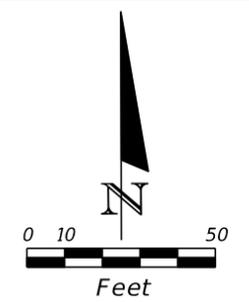
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SHEET NO.  
**16** Page 81



SCALE: 1" = 50' HORIZ.  
1" = 5' VERT.

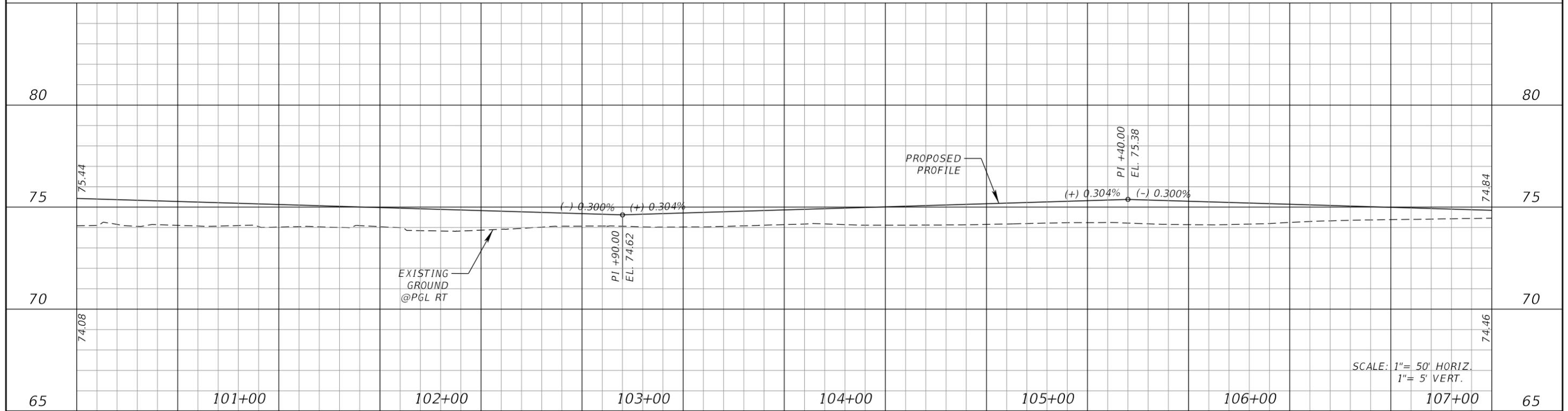
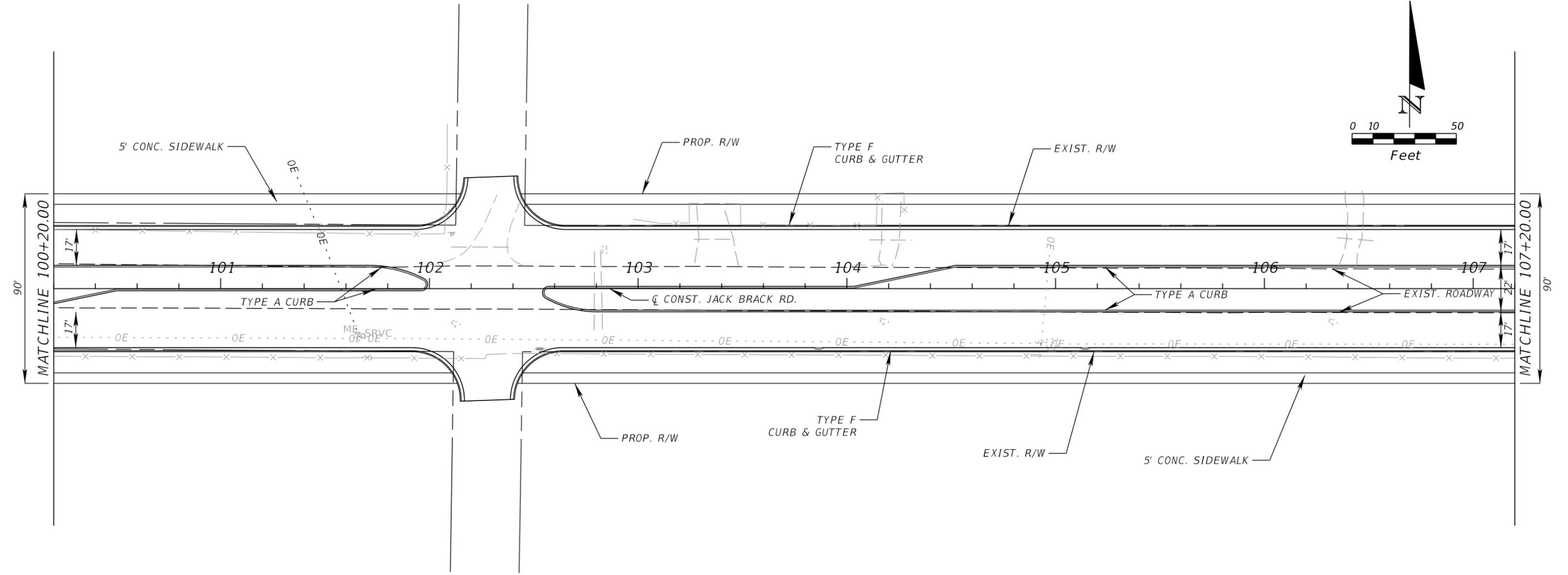
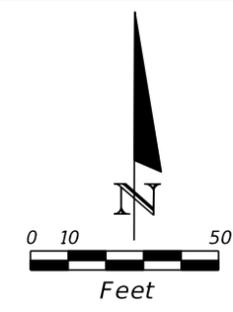
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**PLAN PROFILE  
 (ALTERNATIVE A)**

SHEET NO.  
 17 Page 82



SCALE: 1" = 50' HORIZ.  
1" = 5' VERT.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

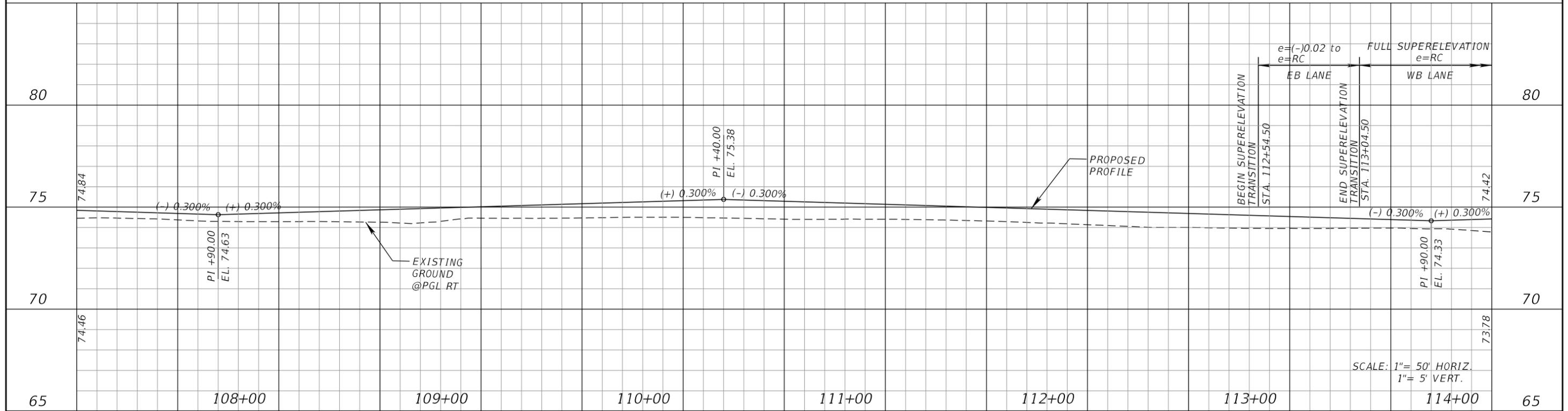
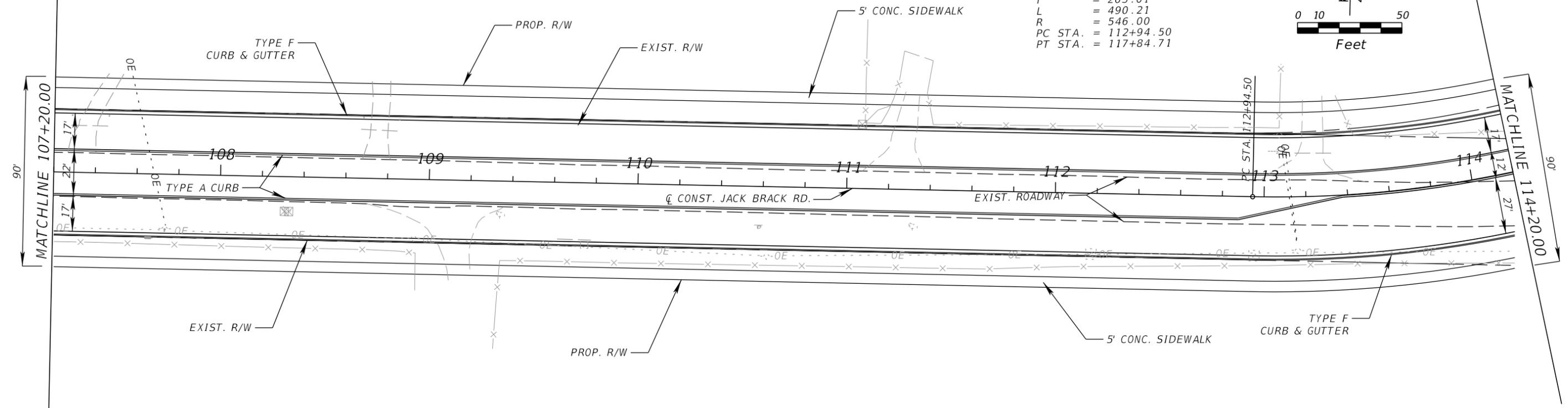
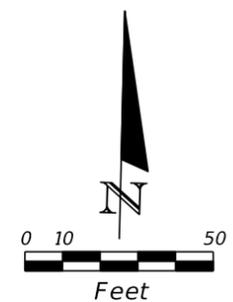
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**PLAN PROFILE  
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SHEET NO.  
**18** Page 83

CURVE DATA CL JACK 15  
 PI STA. = 115+57.52  
 $\Delta$  = 51° 26' 28" (LT)  
 D = 10° 29' 37"  
 T = 263.01  
 L = 490.21  
 R = 546.00  
 PC STA. = 112+94.50  
 PT STA. = 117+84.71



SCALE: 1" = 50' HORIZ.  
 1" = 5' VERT.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

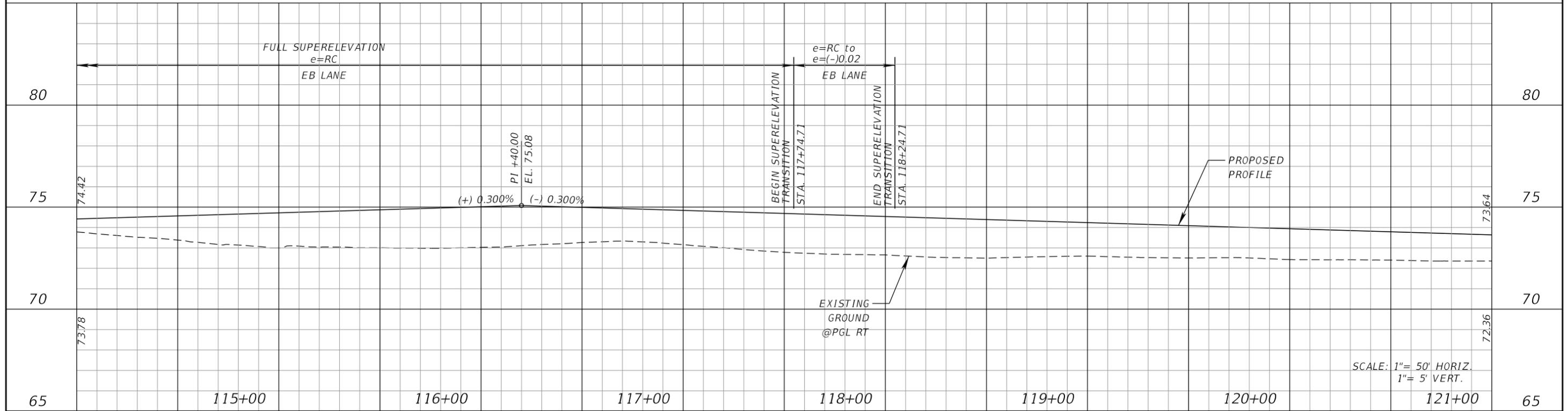
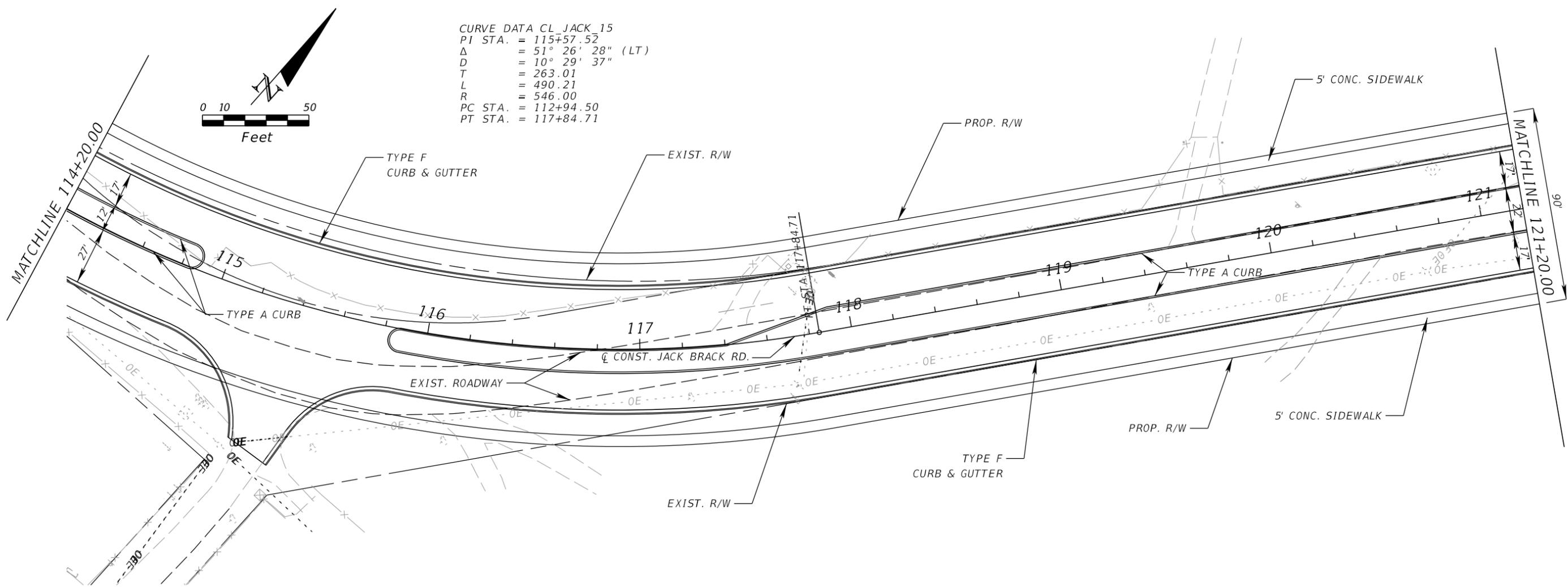
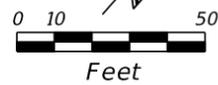
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**PLAN PROFILE  
 (ALTERNATIVE A)**

SHEET NO. 19 Page 84

CURVE DATA CL JACK 15  
 PI STA. = 115+57.52  
 $\Delta$  = 51° 26' 28" (LT)  
 D = 10° 29' 37"  
 T = 263.01  
 L = 490.21  
 R = 546.00  
 PC STA. = 112+94.50  
 PT STA. = 117+84.71



SCALE: 1" = 50' HORIZ.  
 1" = 5' VERT.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

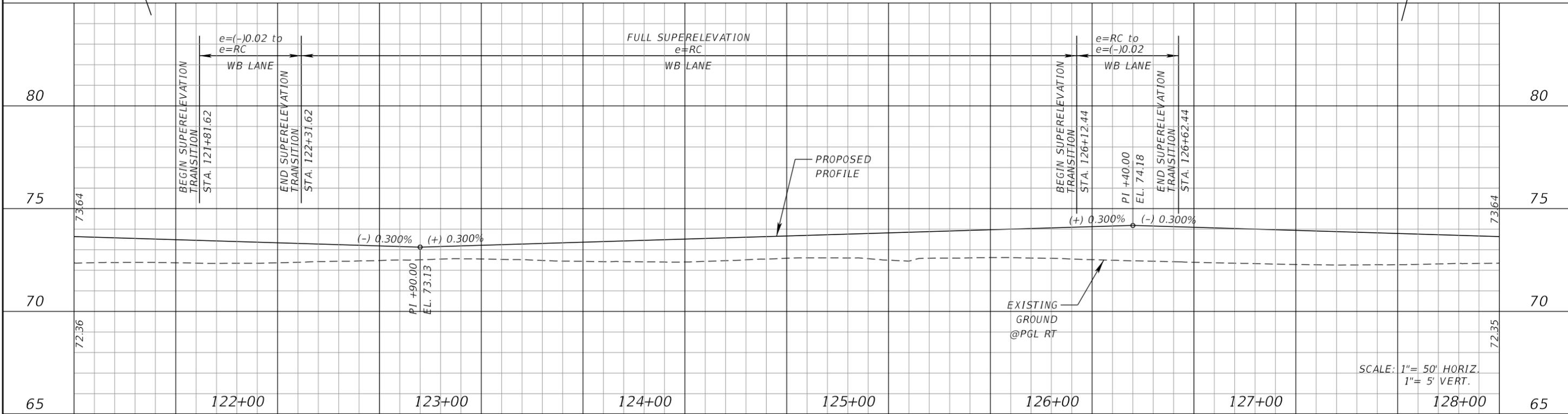
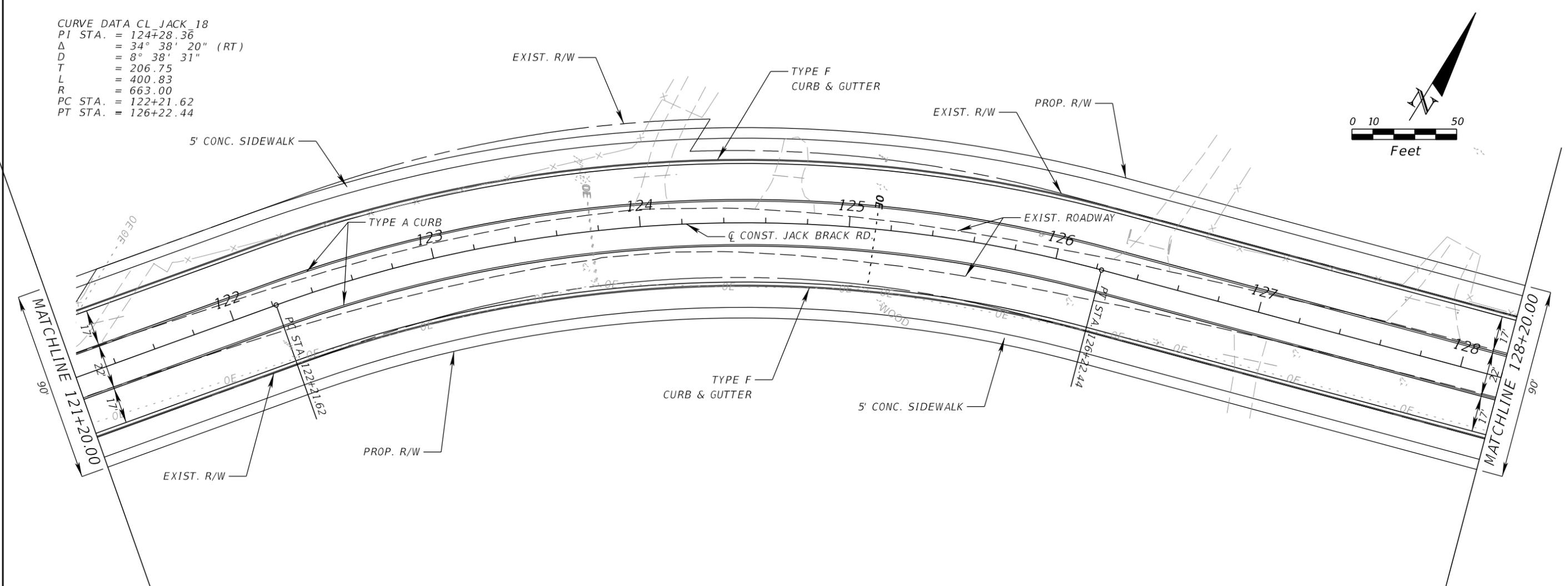
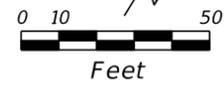
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SHEET NO.  
 20 Page 85

CURVE DATA CL JACK 18  
 PI STA. = 124+28.36  
 $\Delta$  = 34° 38' 20" (RT)  
 D = 8° 38' 31"  
 T = 206.75  
 L = 400.83  
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 PT STA. = 126+22.44



REVISIONS					
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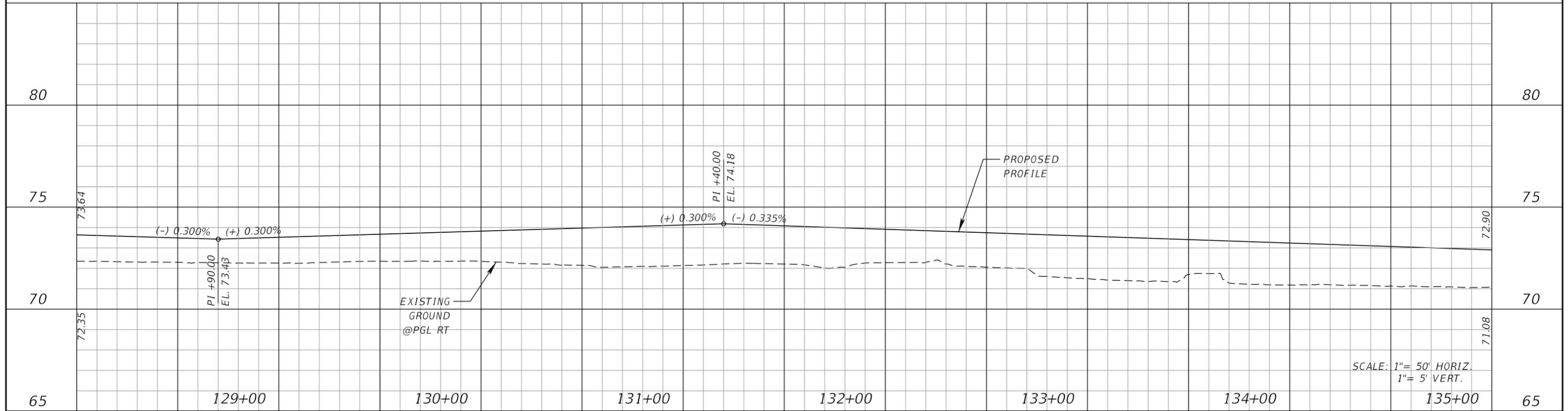
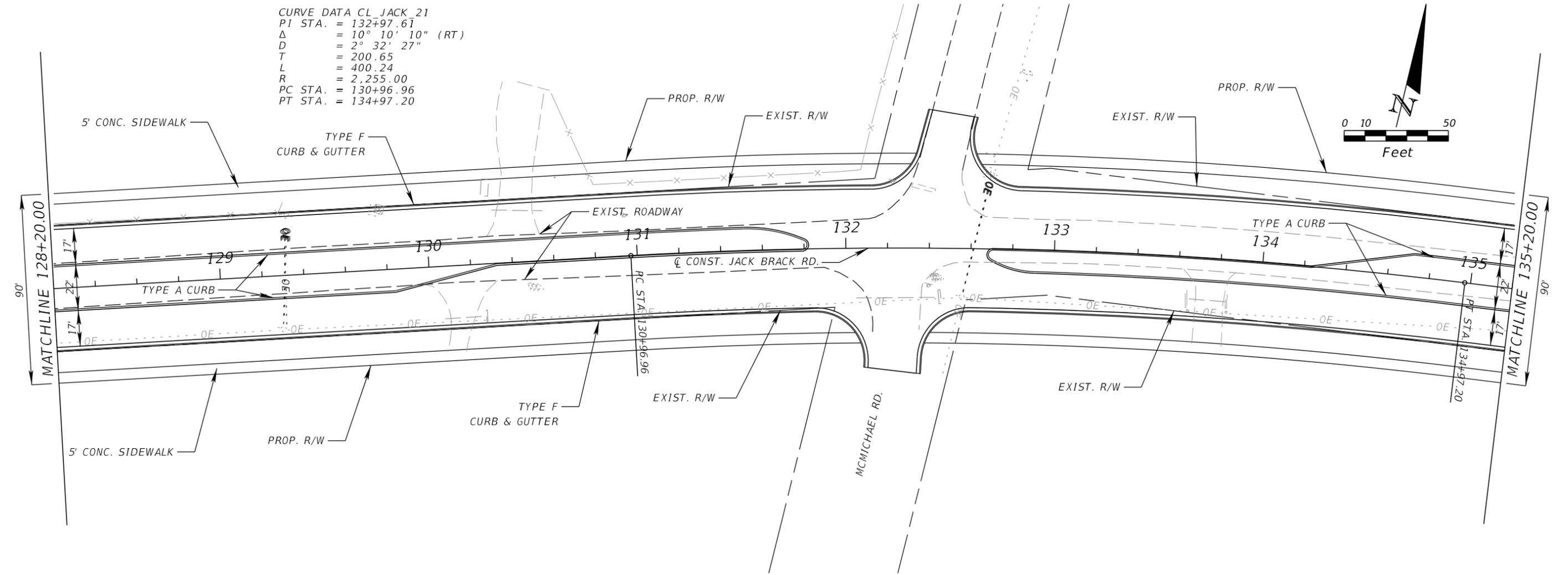
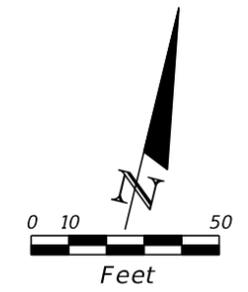
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**(ALTERNATIVE A)**

SHEET NO. 21 Page 86

CURVE DATA CL JACK\_21  
 PI STA. = 132+97.61  
 $\Delta$  = 10° 10' 10" (RT)  
 D = 2° 32' 27"  
 T = 200.65  
 L = 400.24  
 R = 2,255.00  
 PC STA. = 130+96.96  
 PT STA. = 134+97.20



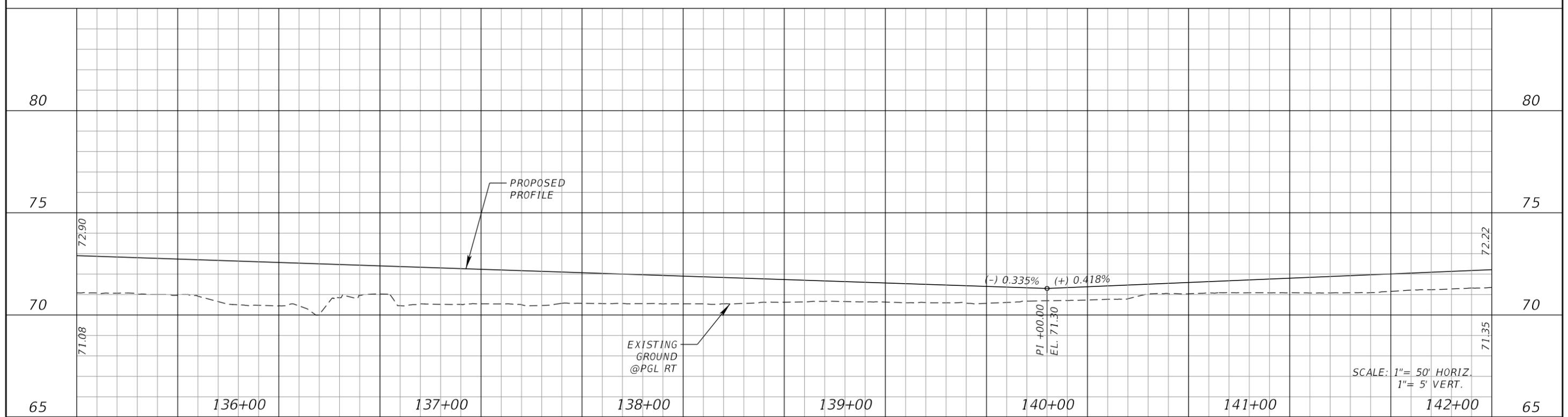
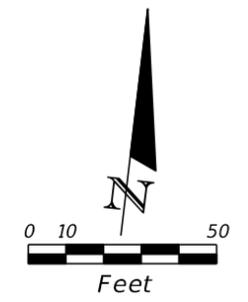
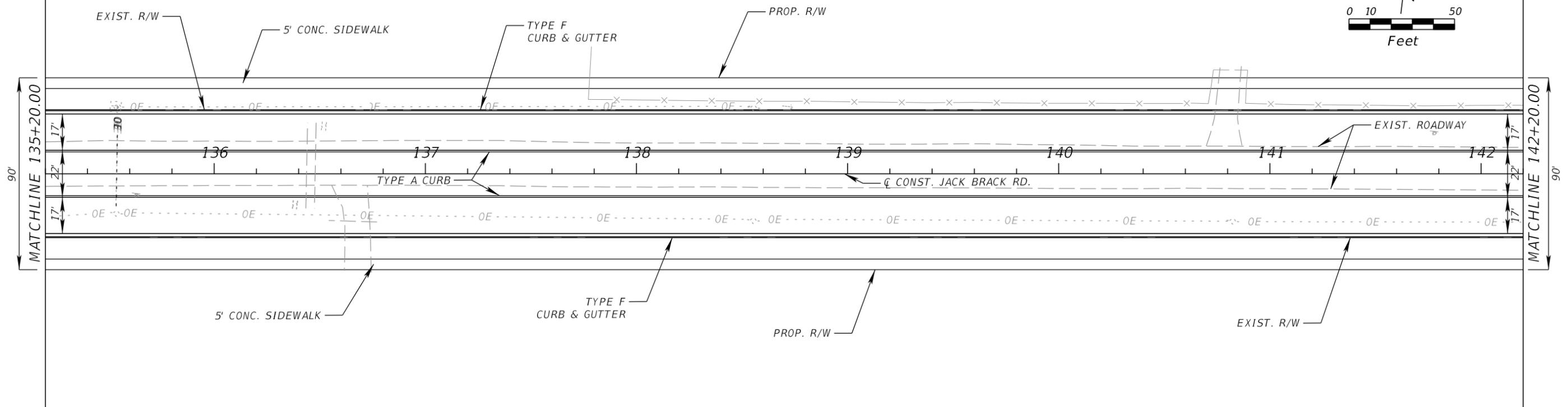
REVISIONS					
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SHEET NO. 22 Page 87



SCALE: 1" = 50' HORIZ.  
1" = 5' VERT.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

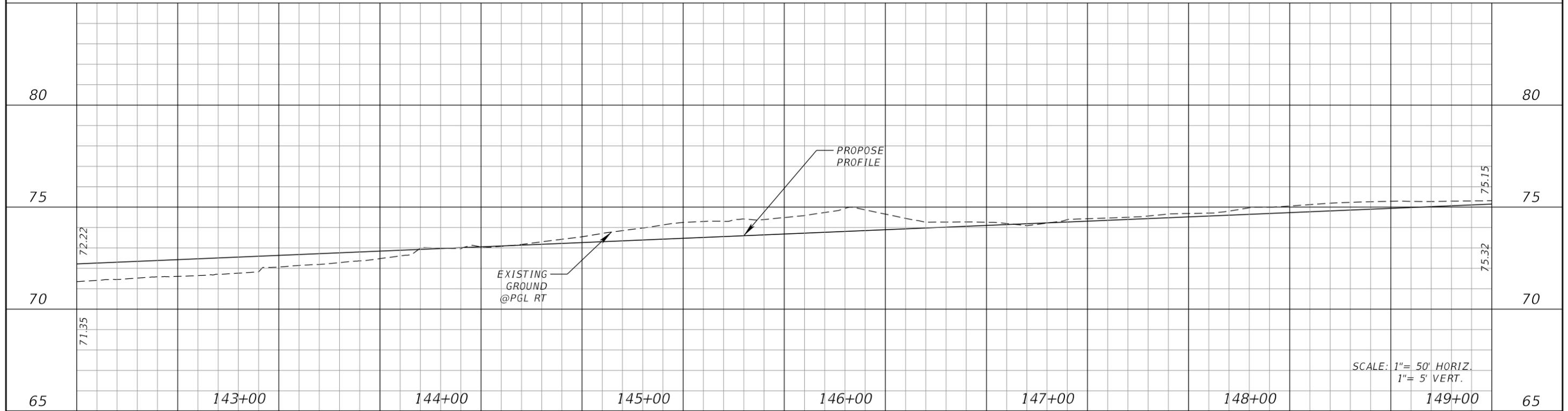
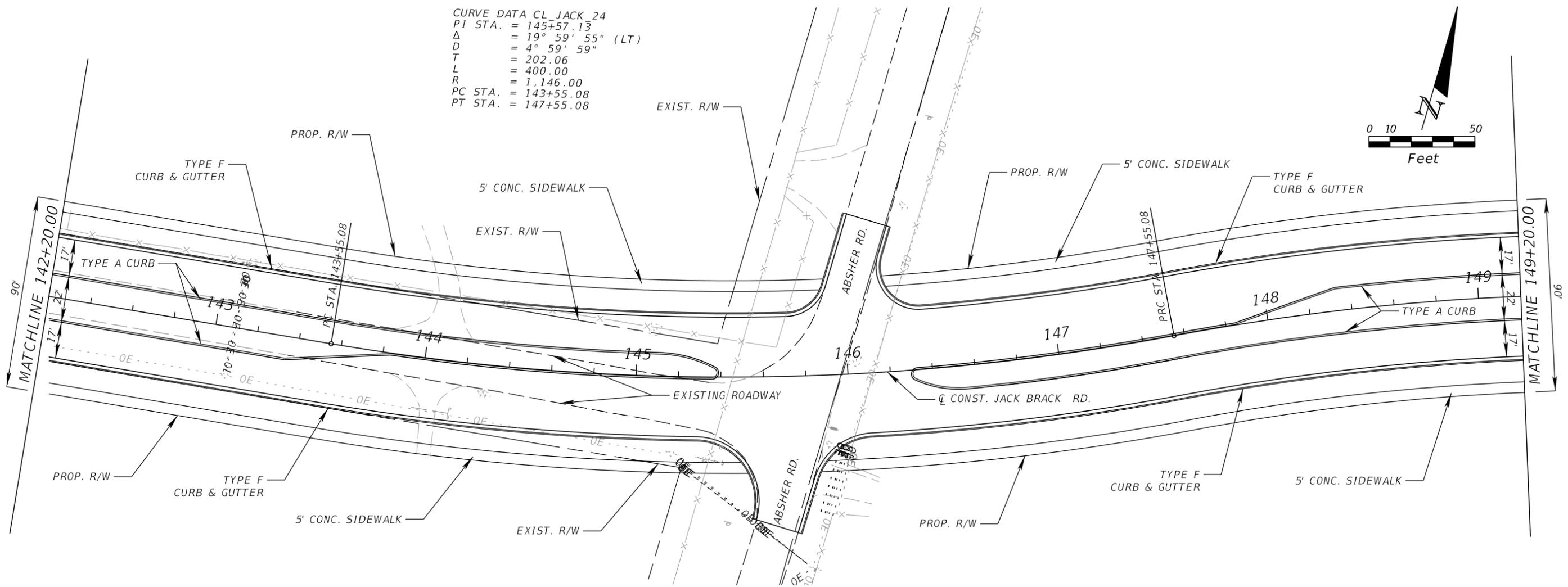
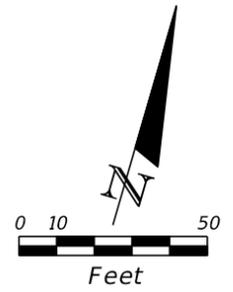
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 (ALTERNATIVE A)**

SHEET NO.  
23 Page 88

CURVE DATA CL JACK 24  
 PI STA. = 145+57.13  
 $\Delta$  = 19° 59' 55" (LT)  
 D = 4° 59' 59"  
 T = 202.06  
 L = 400.00  
 R = 1,146.00  
 PC STA. = 143+55.08  
 PT STA. = 147+55.08



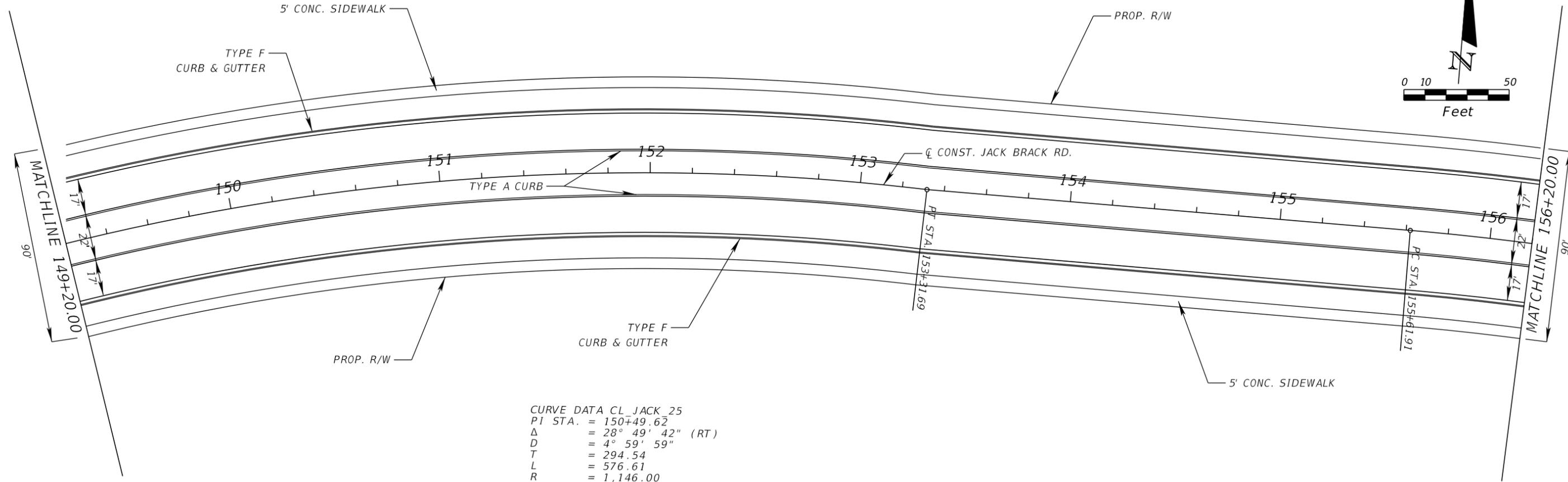
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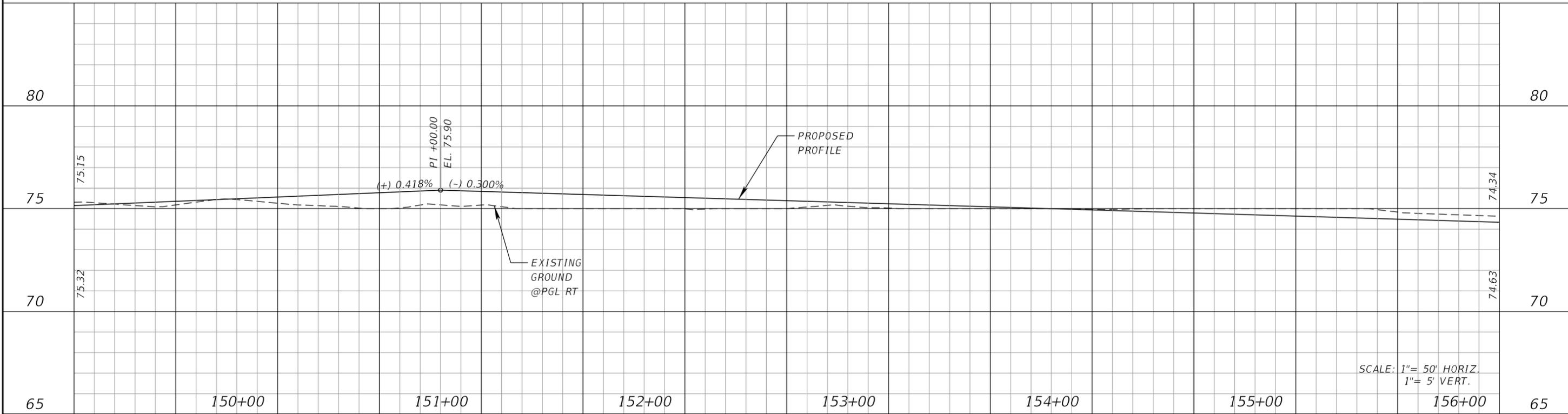
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 (ALTERNATIVE A)**

SHEET NO. 24 Page 89



CURVE DATA CL JACK 25  
 PI STA. = 150+49.62  
 $\Delta$  = 28° 49' 42" (RT)  
 D = 4° 59' 59"  
 T = 294.54  
 L = 576.61  
 R = 1,146.00  
 PC STA. = 147+55.08  
 PT STA. = 153+31.69



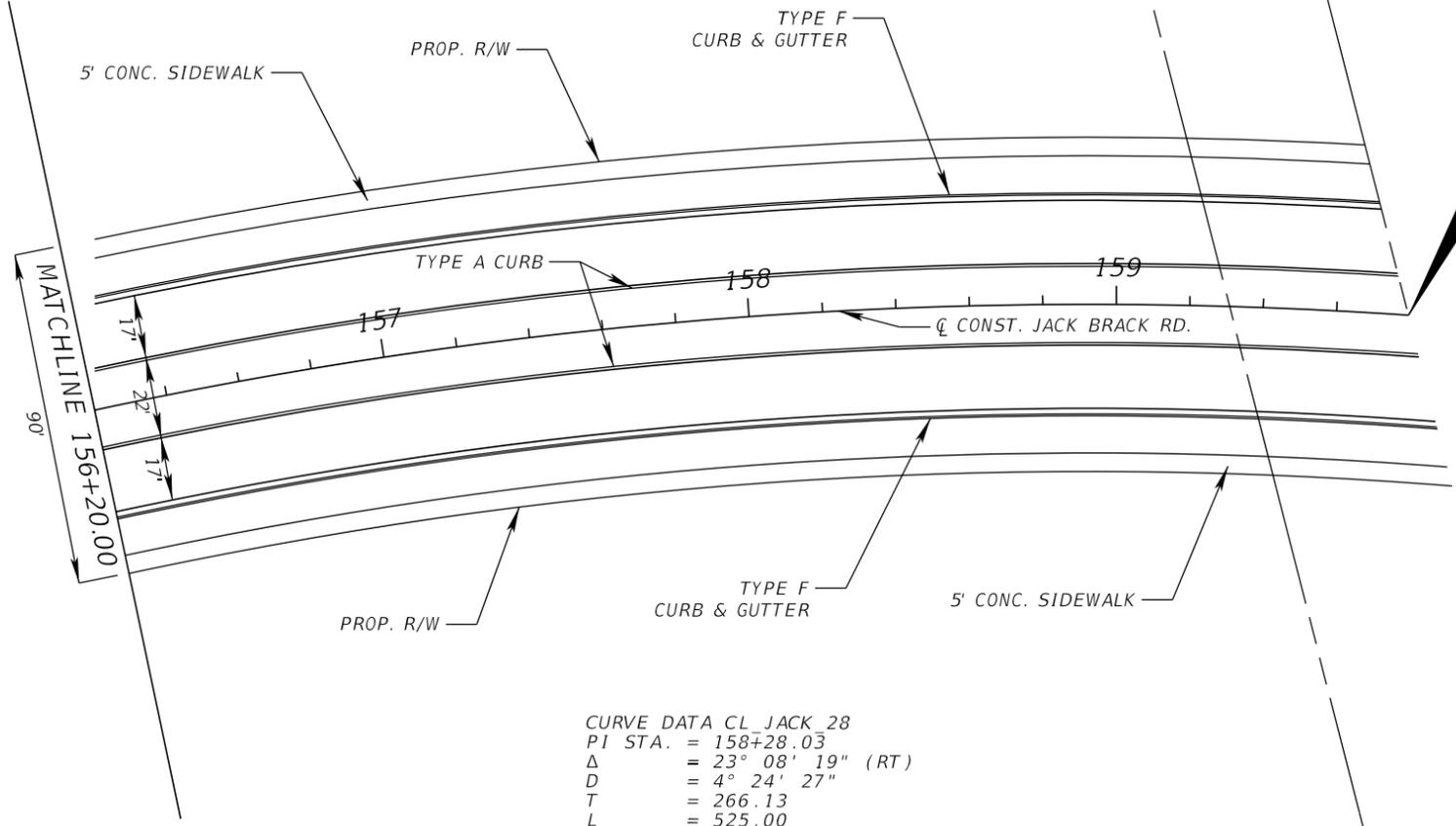
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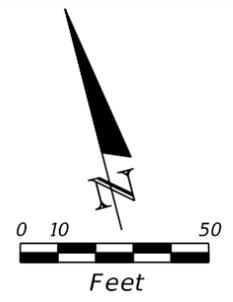
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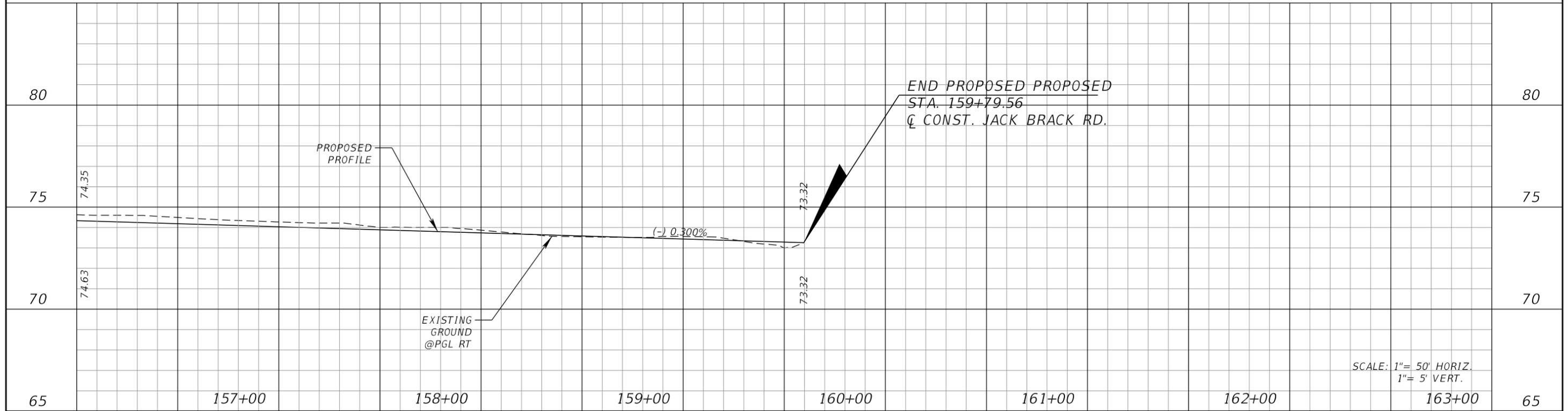
SHEET NO.  
 25 Page 90



END PROJECT  
 STA. 159+79.56  
 CL CONST. JACK BRACK RD.



CURVE DATA CL JACK 28  
 PI STA. = 158+28.03  
 $\Delta$  = 23° 08' 19" (RT)  
 D = 4° 24' 27"  
 T = 266.13  
 L = 525.00  
 R = 1,300.00  
 PC STA. = 155+61.91  
 PT STA. = 160+86.91



SCALE: 1" = 50' HORIZ.  
 1" = 5' VERT.

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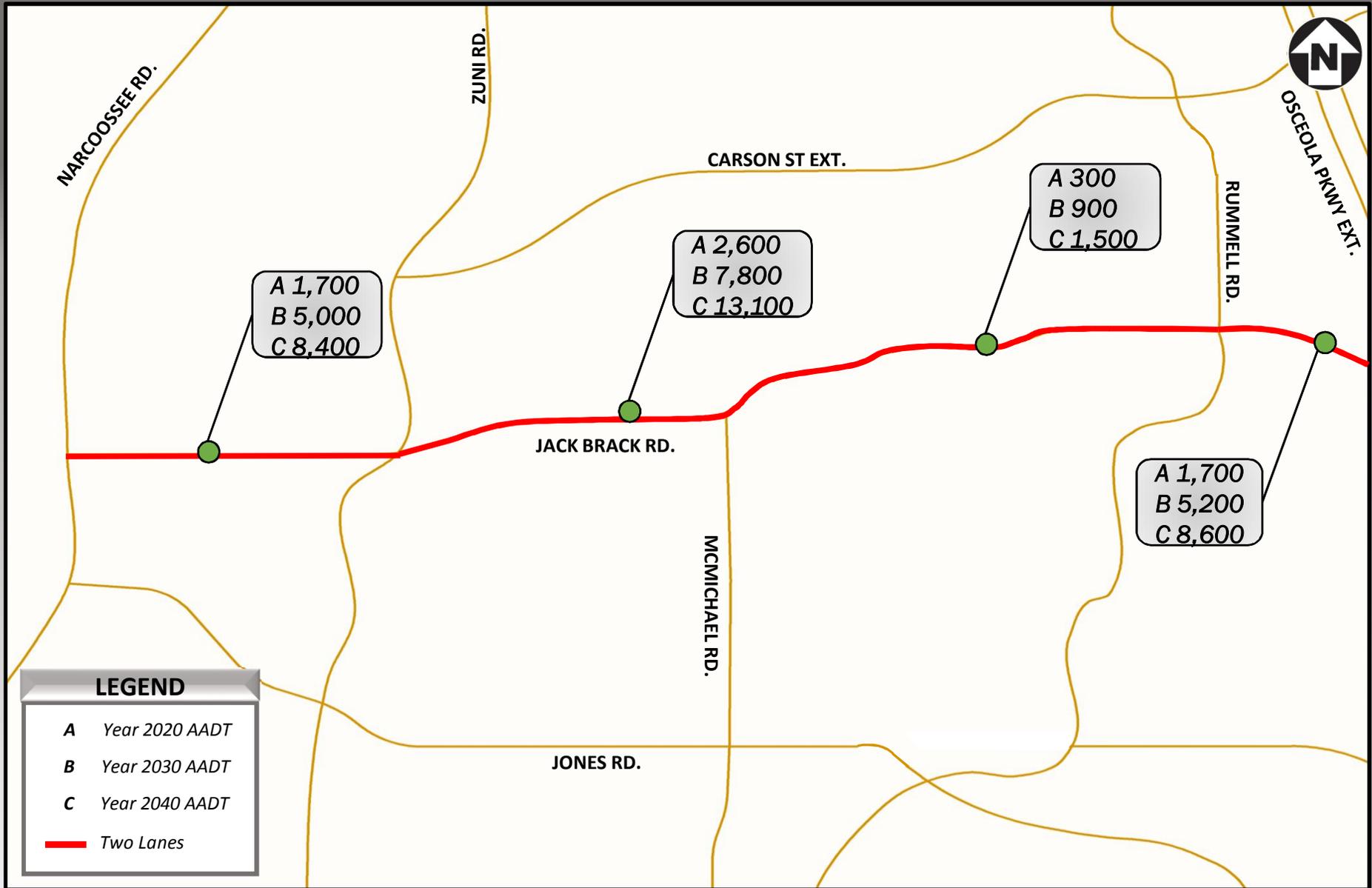
**PLAN PROFILE  
 (ALTERNATIVE A)**

SHEET NO.  
 26 Page 91

#### 5.2.4. TRAFFIC ANALYSIS

As part of the Design Traffic Technical Memorandum (**Appendix E**), future AADT volumes and peak hour turning movements were developed for Jack Brack Road. These volumes were used to develop recommended geometry at intersections, as well as queue lengths to be used for turning lanes.

The future AADT volumes for Jack Brack Road were developed based on the travel demands projected by the regional model for 2040. The interim year volumes were estimated as being 20 percent of the 2040 volume in 2020 and 60 percent of the 2040 volume in 2030. The resulting AADT volumes for A 2020, B 2030, and C 2040, and the associated V/C ratios are identified in **Table 5.4** and illustrated in **Figure 5.8**.



**JACK BRACK ROAD FUTURE YEAR AADT VOLUMES**

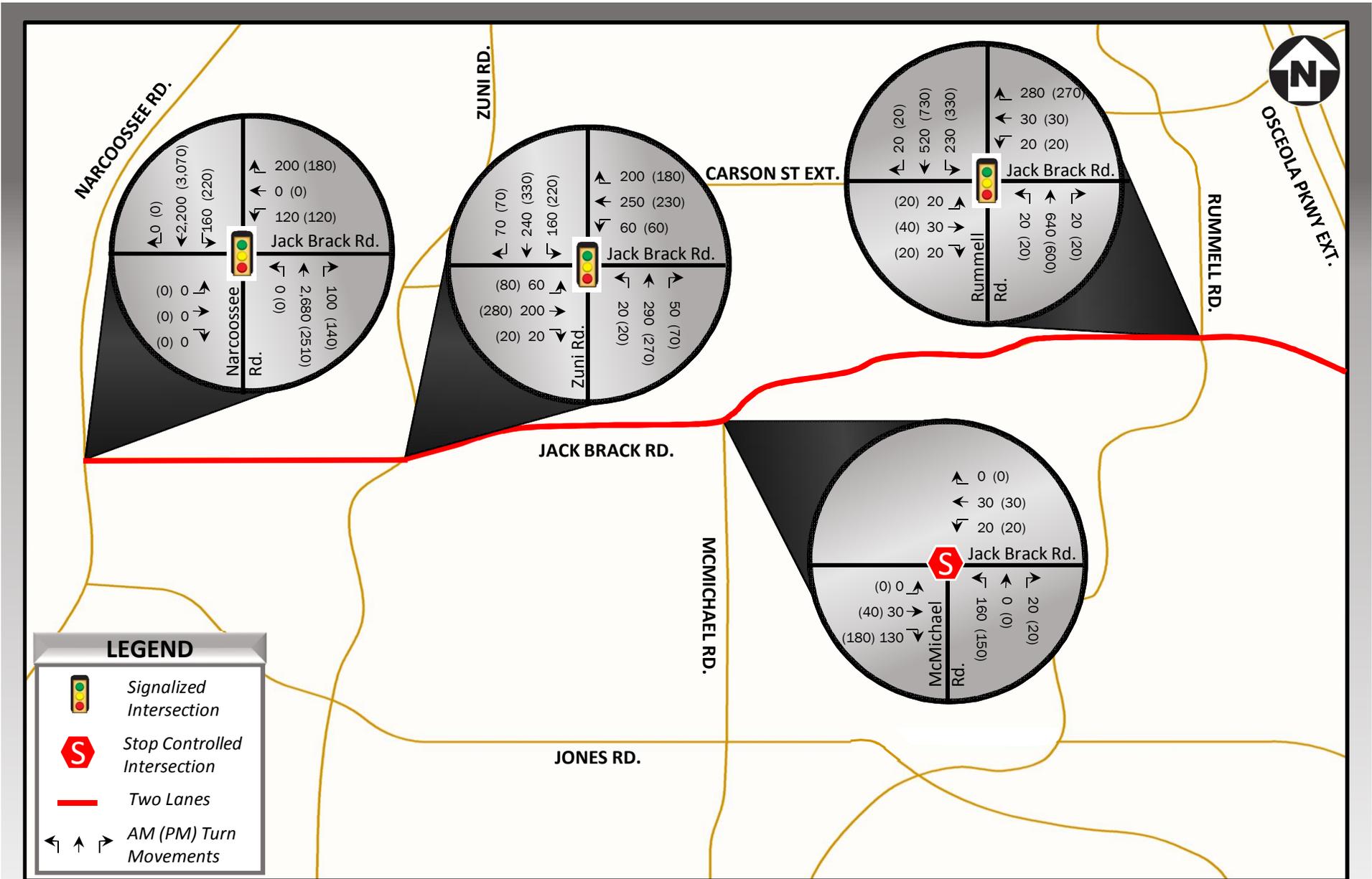
**Figure 5.8**

**Table 5.4: Jack Brack Road Drive Future AADT Volumes**

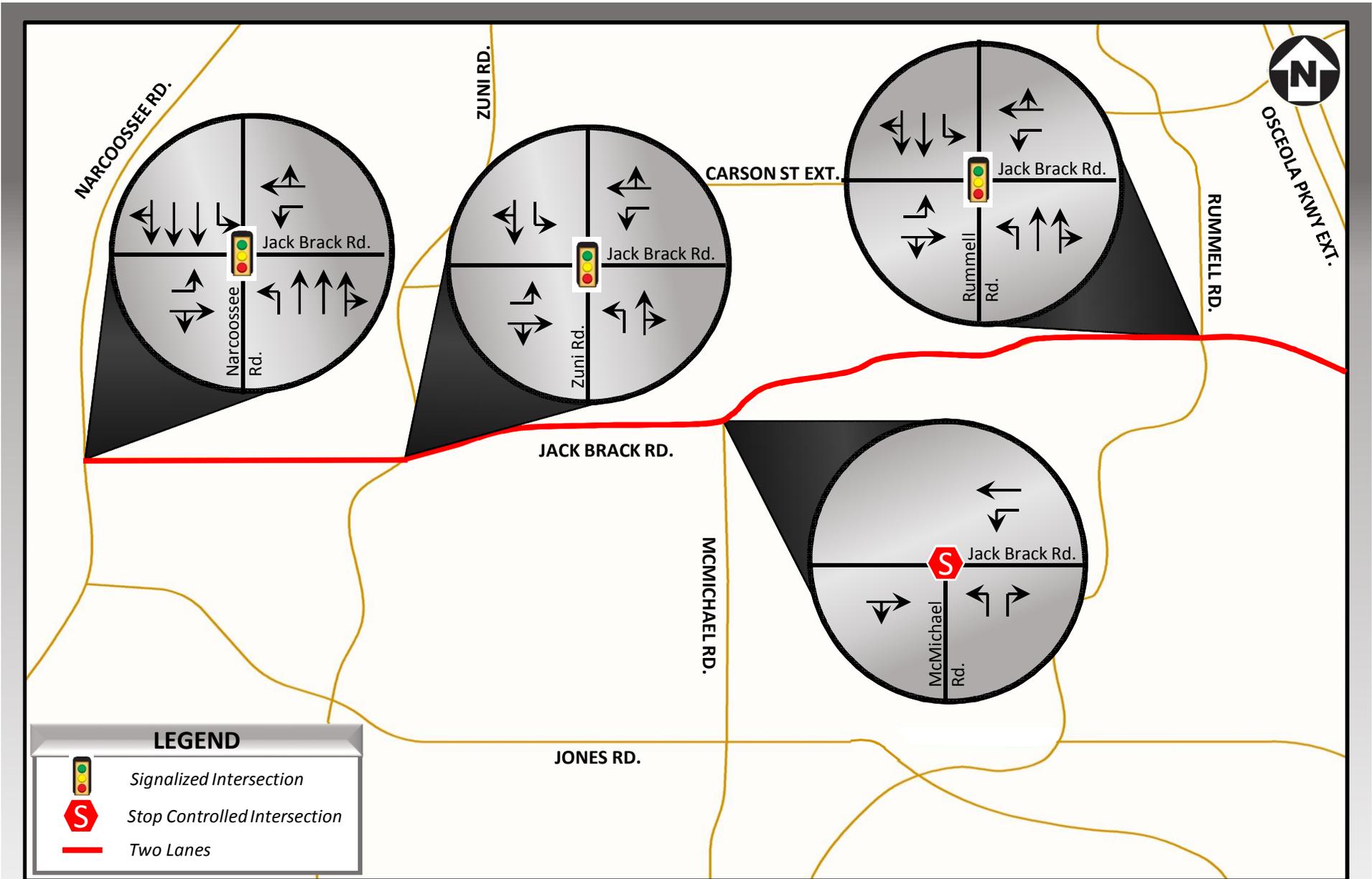
Jack Brack Rd.	Lanes	Capacity	2020		2030		2040	
			AADT	V/C	AADT	V/C	AADT	V/C
Narcoossee Rd. to Zuni Rd.	2	15,600	1,700	0.11	5,000	0.32	8,400	0.54
Zuni Rd. to McMichael Rd.	2	15,600	2,600	0.17	7,800	0.50	13,100	0.84
McMichael Rd. to Rummell Rd.	2	15,600	300	0.02	900	0.06	1,500	0.10
East of Rummell Rd.	2	15,600	1,700	0.11	5,200	0.33	8,600	0.55

All sections of Jack Brack Road are expected to operate with a V/C ratio below 1.0. The highest volume section is from Zuni Road to McMichael Road.

Future design hour turning movement volumes were developed using the previously described methodology for Jones Road. The 2040 AM and PM design hour volumes are identified in **Figure 5.9**. Turning movement worksheets are included in **Appendix E**.



The AM and PM peak hour volumes for 2040 were analyzed using Synchro software. A minimum of a separate left-turn lane was assumed for each intersection. Based on Synchro runs, additional turn lanes were identified when needed to keep the intersection operating with a V/C ratio below 1.0. The results of the analyses are summarized in **Table 5.5** and the recommended geometry at the intersections is illustrated in **Figure 5.10**. Synchro analysis reports are provided in **Appendix E**.



In 2040, the signalized intersections along Jack Brack Road (at Narcoossee Road, Zuni Road, and Rummell Road) are expected to operate at LOS C, or better, during the AM and PM peak hours. The intersections of Jones Road at McMichael Road and Jones Road at Rummell Road are not expected to warrant signalization. The Jack Brack Road approaches, under stop control, will operate at LOS B during the AM and PM peak hours.

**Table 5.5: Jack Brack Road 2040 Intersection LOS Summary**

Jack Brack Rd. at	Traffic Control	Average Delay (sec/veh)	LOS	V/C
<b>PM Peak Hour</b>				
Narcoossee Rd.	Signal	34.0	C	0.860
Zuni Rd.	Signal	13.4	B	0.732
McMichael Rd.	Stop (NB)	11.0	B	n/a
Rummell Rd.	Signal	15.4	B	0.650
<b>AM Peak Hour</b>				
Narcoossee Rd.	Signal	34.2	C	0.865
Zuni Rd.	Signal	12.8	B	0.717
McMichael Rd.	Stop (NB)	10.8	B	n/a
Rummell Rd.	Signal	12.0	B	0.612

Recommended queue lengths for the storage area of each turn lane were developed based on the recommended intersection geometry. Queue lengths were derived based on the 2040 Synchro outputs for both the AM and PM peak hours (the longer queue length needed was used). Recommended queue lengths for Jack Brack Road intersections are provided in **Table 5.6**.

**Table 5.6: Recommended Jack Brack Road Queue Lengths**

Jack Brack Rd. at	Turn Lane Queue Length (feet)							
	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Narcoossee Rd.	Std.	n/a	275	n/a	Std.	n/a	400	n/a
Zuni Rd.	50	n/a	50	n/a	50	n/a	150	n/a
McMichael Rd.	Std.	n/a	50	n/a	50	n/a	n/a	n/a
Rummell Rd.	50	n/a	50	n/a	50	n/a	250	n/a

Std. - Use County standard storage. Actual storage to be determined based on development.

Lengths provided in the table do not include the deceleration distance needed for turn lanes. When designing the overall turn lane lengths, the designer should use the lengths defined in the most recent FDOT Design Manual.

### 5.2.5. ENVIRONMENTAL ASSESSMENT

An analysis of potential environmental impacts was conducted for the left, center, and right alignments for Jack Brack Road. This included a review of impacts to wetland, wildlife and habitat, archaeological and historic resources, and contaminated sites. A summary of the findings is provided below.

- A wetland evaluation identified no impacts to onsite surface waters for all three alignments. There are the following impacts to wetlands within the corridor:
  - For the wetland on north side of Jack Brack Road just east of Wiggins Road, there are impacts with the left alignment.
  - For the wetlands on the north side of Jack Brack Road between McMichael Road and Absher Lane, there are impacts with the north and center alignments.
  - For the wetlands on the south side of Jack Brack Road between McMichael Road and Absher Lane, there are impacts with the south and center alignments.
- The Jack Brack Road corridor is comprised of diverse habitat types. There is the potential for occurrence of numerous state- and federally-listed species. The potential for occurrence is the same for all three alternatives. Species-specific surveys of the proposed roadway and pond sites will be required as part of the design and permitting phase. Additional information regarding endangered species can be found in **Appendix C**.
- There are no eligible historic structures or archaeological sites that would be impacted by any of the three alignments. Additional information regarding historic structures and archaeological sites can be found in **Appendix A**.
- There are six low-risk factor and three high-risk factor contamination sites along the Jack Brack Road corridor. Although these sites have no bearing on evaluating a preferred alignment, a Level 2 Contamination Impact Analysis (CIA) should be conducted for these sites during final design and permitting. Additional information regarding contamination can be found in **Appendix F**.

### 5.2.6. PRELIMINARY DRAINAGE

The proposed drainage system includes curb inlets to carry runoff from the roadway pavement to proposed stormwater ponds for water quality treatment and peak flow attenuation. The existing Jack Brack Road runoff is currently not treated. The intended permitting approach is to only provide treatment for the additional impervious pavement added as part of the improvement.

Several potential pond sites have been identified and are provided in **Appendix G** (Pond Siting Report). A final determination will be made during final design as to which parcel(s) will be selected.

### 5.2.7. RIGHT-OF-WAY IMPACTS

For the Jack Brack Road corridor, the existing right-of-way width from Narcoossee Road to the Northeast District varies from 60 feet to 98 feet. For the Urban Center segment from Narcoossee Road to Underwood Avenue, the existing right-of-way width of 98 feet is sufficient to accommodate the proposed typical section. For the segment from Underwood Avenue to Absher Lane, an additional 12 to 15 feet of right-of-way is required from both sides to accommodate the proposed typical section. The segment from Absher Lane to the Northeast District is new alignment. Therefore, 90 feet of new right-of-way is required.

### 5.2.8. ACCESS MANAGEMENT

Under current conditions, the existing undivided facility provides unrestricted access from the side street and driveway connections. With a proposed raised median, access would become more restrictive and limited to full median openings, directional openings, or right-in/right-out access points. The proposed access management plan would be the same for all three alignment alternatives and should be based on minimum spacing requirements described in the FDOT Design Manual. The access management plan should be further refined during the design phase.

### 5.2.9. MULTI-MODAL ACCOMMODATIONS

To accommodate pedestrian and bicycle users, the typical sections proposed for Jack Brack Road include 7 to 9-foot buffered bike lanes and 5-foot sidewalks in both directions. There are currently no transit stops in the Jack Brack Road corridor.

### 5.2.10. MAINTENANCE OF TRAFFIC

Construction for the widening of Jack Brack Road can be accomplished by using a three-phase traffic control plan. Phase 1 will require construction of temporary pavement adjacent to one side of the existing pavement. For Phase 1, traffic will be maintained on the existing and temporary pavements, providing a single eastbound and westbound travel lane. Half of the proposed typical section would be constructed (excluding the median).

For Phase 2, traffic will be shifted to the newly constructed pavement, providing a single eastbound and westbound travel lane. The second half of the proposed typical section would be constructed.

For Phase 3, traffic will be separated and shifted to the outside lanes of the new pavement, providing a single eastbound and westbound travel lane. The median would then be constructed.

Specific maintenance of traffic will be determined during the design phase.

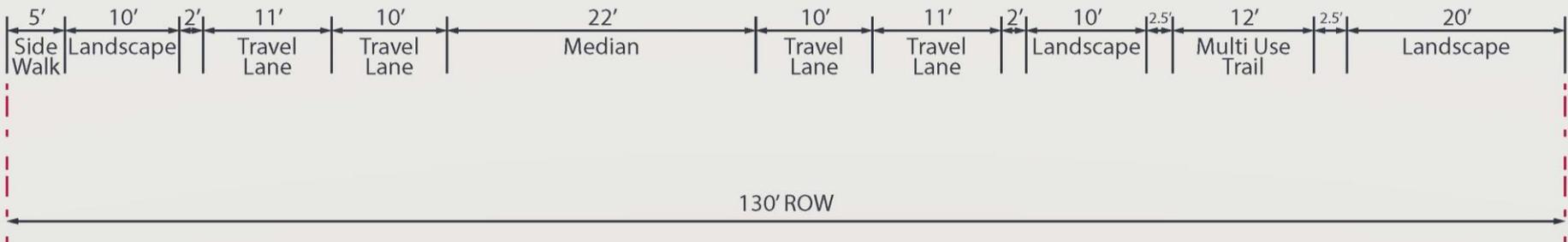
### 5.2.11. OPINION OF PROBABLE CONSTRUCTION COST

The opinion of probable construction cost for the Jack Brack Road improvement is \$13,500,000. This cost does not include right-of-way or design services.

## 5.3. CYRILS DRIVE

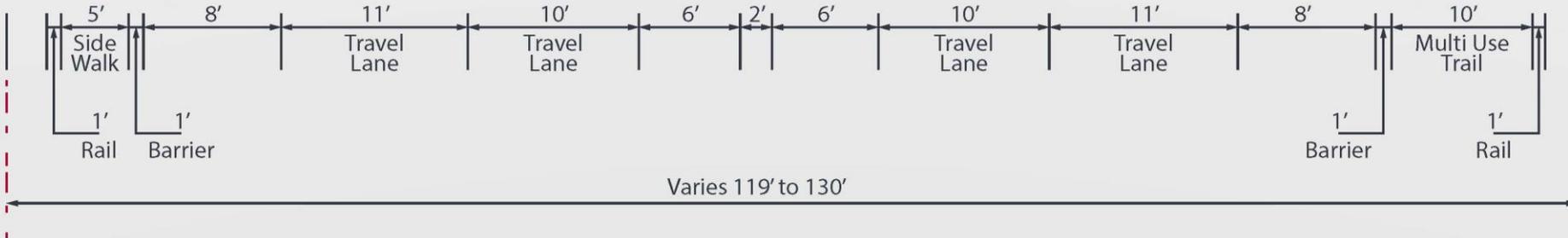
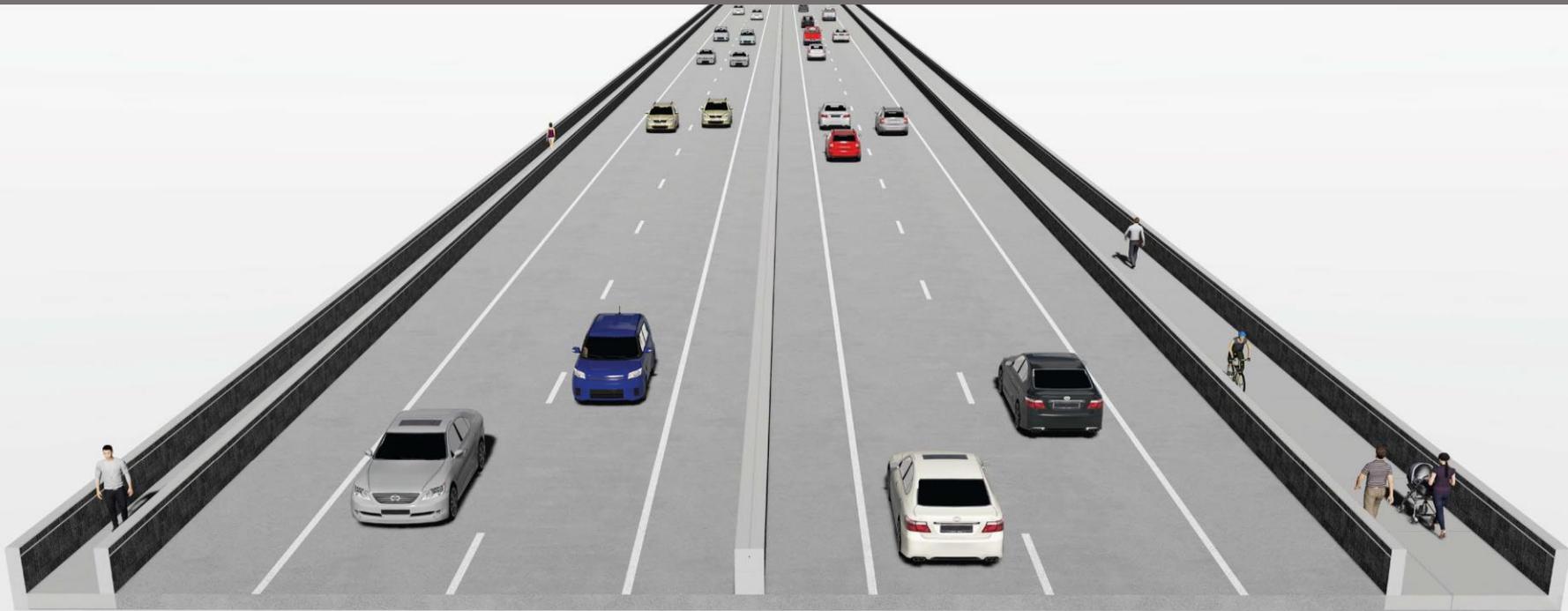
### 5.3.1. TYPICAL SECTIONS

The Cyrils Drive corridor consists of four segments: West, Bridge, Transition, and East. The West Segment begins at Narcoossee Road and ends approximately 1,100 feet to the east. This proposed typical section includes a four-lane divided urban roadway (with 10-foot inside and 11-foot outside lanes), a 22-foot raised median, curb and gutter, 10-foot landscape area, a 5-foot sidewalk on the north side, and a 12-foot multi-use trail on the south side. The existing OUC overhead power poles are south of the proposed multi-use trail on the south side. This typical section requires 130 feet of right-of-way. The posted speed for this section is 35 mph. **Figure 5.11** illustrates this typical section.



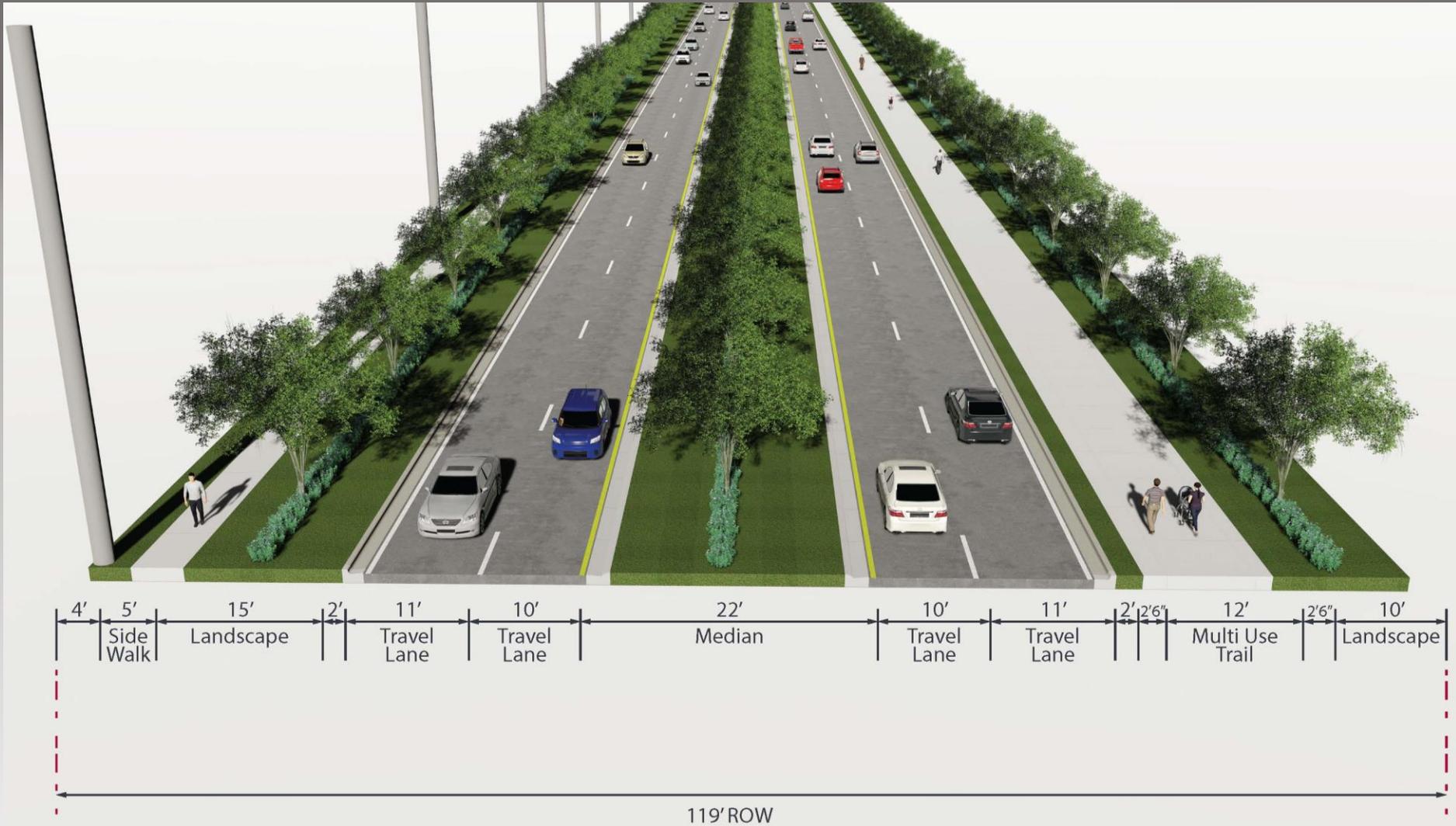
**TYPICAL SECTION – CYRILS DRIVE WEST SEGMENT  
FROM NARCOOSSEE ROAD TO BRIDGE SEGMENT**

The Bridge Segment begins east of the West Segment and continues to the Transition Segment. This proposed typical section consists of a single-deck four-lane divided concrete bridge (with 10-foot inside and 11-foot outside lanes), 6-foot inside shoulders separated by a concrete traffic barrier, 8-foot outside shoulders, a 5-foot sidewalk with a concrete separator on the north side, and a 10-foot multi-use trail with a concrete separator on the south side. While the bridge width is 91 feet, this typical section requires 111 feet of right-of-way to accommodate inspection envelopes on both sides. However, it is recommended to match the required right-of-way width of the adjacent segment to the west (130 feet) and transition through to curves to match the segment to the east (119 feet). This continuous deck bridge provides the narrowest section that produces the least amount of impact to the underlying wetland/surface water. As an alternate, this bridge could be constructed using parallel bridge structures that have an open separation (20 feet) between the two bridges. Parallel structures provide a better inspection/maintenance window and slightly reduced construction costs, but do create larger impacts. A reduced-width embankment section was initially considered, but eliminated from further consideration because of potential impacts to Lake Ajay. The posted speed for this section is 35 mph. **Figure 5.12** illustrates this typical section.



**TYPICAL SECTION – CYRILS DRIVE BRIDGE SEGMENT  
FROM WEST SEGMENT TO TRANSITION SEGMENT**

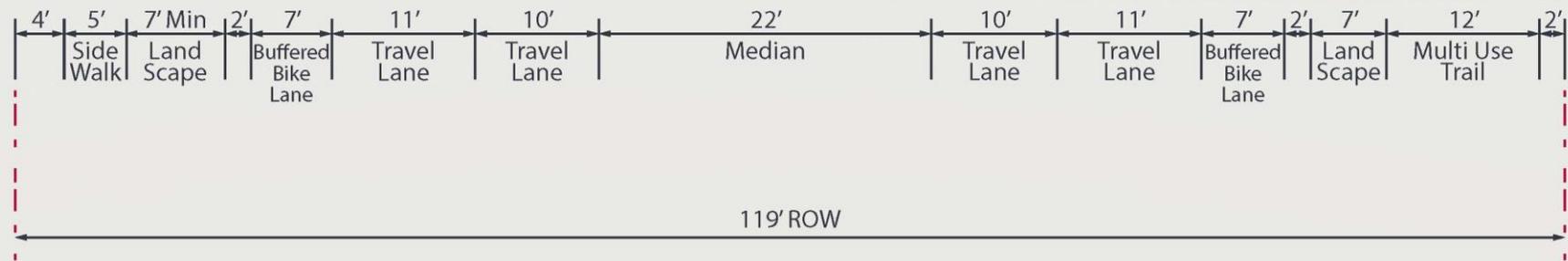
The Transition Segment begins east of the Bridge Segment and continues to the East Segment (Franklin Road). This proposed typical section includes a four-lane divided urban roadway (with 10-foot inside and 11-foot outside lanes), a 22-foot raised median, curb and gutter, a 15-foot landscape area and 5-foot sidewalk on the north side, and a 12-foot multi-use trail and 10-foot landscape area on the south side. The existing OUC overhead power poles are north of the proposed 5-foot sidewalk on the north side. This typical section requires 119 feet of right-of-way. The posted speed for this section is 35 mph. **Figure 5.13** illustrates this typical section.



**TYPICAL SECTION – CYRILS DRIVE TRANSITION  
SEGMENT FROM BRIDGE SEGMENT TO EAST SEGMENT**

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Orlando, FL 32801

The East Segment begins east of the Transition Segment and continues into the Northeast District. This proposed typical section includes a four-lane divided urban roadway (with 10-foot inside and 11-foot outside lanes), a 22-foot raised median, 7-foot buffered bike lanes on both sides, curb and gutter, a 7-foot landscape area and 5-foot sidewalk on the north side, and a 7-foot grassed area and 12-foot multi-use trail on the south side. The existing OUC overhead power poles are north of the proposed 5-foot sidewalk on the north side. This typical section requires 119 feet of right-of-way. The posted speed for this section is 35 mph. **Figure 5.14** illustrates this typical section. It should be noted that the bridge typical section could be substituted to provide for wildlife crossing and/or to reduce wetland impacts. This determination should be made during subsequent phases.



**TYPICAL SECTION – CYRILS DRIVE EAST SEGMENT  
FROM TRANSITION SEGMENT TO NORTHEAST DISTRICT**

**Kimley-Horn**  
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Orlando, FL 32801

### 5.3.2. HORIZONTAL AND VERTICAL ALIGNMENT

The presence of the existing OUC overhead transmission power line had a significant affect in the selection of the recommended horizontal alignment. For the segment of Cyrils Drive, from Narcoossee Road to the beginning of the first curve, the transmission line is on the south side of Cyrils Drive. Through the reverse curves and to Absher Road, the transmission line is on the north side of Cyrils Drive. Due to the cost associated with relocation of this utility, it was decided that the proposed alignment would be set so that the transmission line was not impacted. For the West and Bridge Segments (from Narcoossee Road to the first curve to the right), the existing south right-of-way line is held and the proposed centerline of construction (center of proposed median) is set 81 feet to the north. Reverse curves are used within the Transition Segment to shift the alignment to the south. These curves require reverse cross slopes. For the Transition and East Segments (from the end of the second curve to the Northeast District), the existing north right-of-way line is held and the proposed centerline of construction is set 57 feet to the south.

The proposed vertical alignment provides the required minimum 0.30% longitudinal slope with minimum spacing of 250 feet between vertical points of intersection. The high points and low points of the vertical alignment are set to minimize cut and fill requirements while maintaining a minimum of one foot separation between the bottom of the proposed base and the estimated seasonal high groundwater elevation. There are some segments of Cyrils Drive where the estimated seasonal high water is very close to the ground surface elevation. Embankment is required for the proposed roadway profile to meet the minimum base clearance of one foot. This results in back-of-sidewalk fill slopes that extend beyond the proposed typical right-of-way foot print. There are three basic options available to mitigate this condition:

1. Acquire additional right-of-way
2. Construct gravity walls at back of sidewalk
3. Obtain permanent grading/slope easements

The third option is generally most desirable because it is usually lower in costs and least impactive to adjacent properties.

### 5.3.3. CONCEPT PLANS

Conceptual design plans for the Recommended Cyrils Drive Alternative are provided in the following pages.



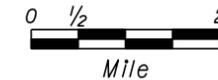
# CONCEPT PLANS CYRILS DRIVE

LENGTH OF PROJECT			
BEGIN PROJECT STA.	LIN. FT.	MILES	END PROJECT STA.
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NOTE: LENGTH OF PROJECT IS BASED ON  $\varnothing$  CONSTRUCTION.

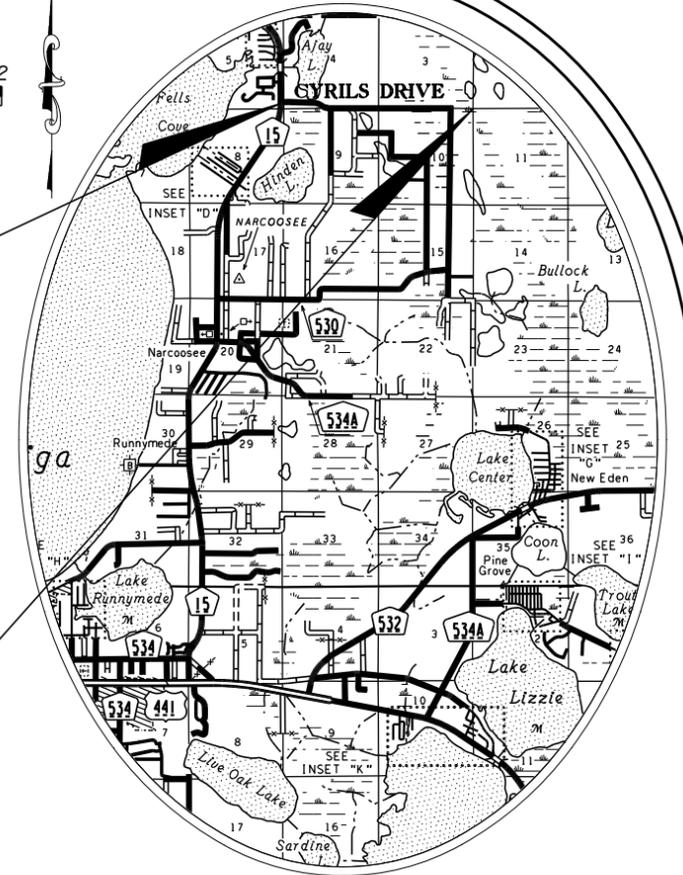
## INDEX OF CONCEPT PLANS

SHEET	DESCRIPTION
1	KEY SHEET
2-5	TYPICAL SECTIONS
6	PROJECT LAYOUT
7-22	ROADWAY PLAN-PROFILES



BEGIN PROJECT  
STA. 10+27.58

END PROJECT  
STA. 118+58.07



## OSCEOLA COUNTY TRANSPORTATION AND TRANSIT DEPARTMENT

FRED HAWKINS, JR.  
CHERYL GRIEB  
PEGGY CHOUDHRY  
VIVIANA JANER  
BRANDON ARRINGTON  
DON FISHER

CHAIRMAN OF THE BOARD OF COUNTY COMMISSIONERS  
VICE CHAIRWOMAN OF THE BOARD OF COUNTY COMMISSIONERS  
COUNTY COMMISSIONER  
COUNTY COMMISSIONER  
COUNTY COMMISSIONER  
COUNTY MANAGER

ROADWAY SHOP DRAWINGS  
TO BE SUBMITTED TO:  
KIMLEY-HORN AND ASSOCIATES, INC.  
L. FREDERICK BURKETT, P.E.  
189 S. ORANGE AVENUE  
SUITE 1000  
ORLANDO, FLORIDA 32801

PLANS PREPARED BY:

**Kimley»Horn**

Kimley-Horn and Associates, Inc.

189 S. ORANGE AVENUE  
SUITE 1000  
ORLANDO, FLORIDA 32801  
TEL: (407) 898-1511  
FAX: (407) 894-4791  
CERTIFICATE OF AUTHORIZATION No. 696

ROADWAY PLANS  
ENGINEER OF RECORD: L. FREDERICK BURKETT, P.E.

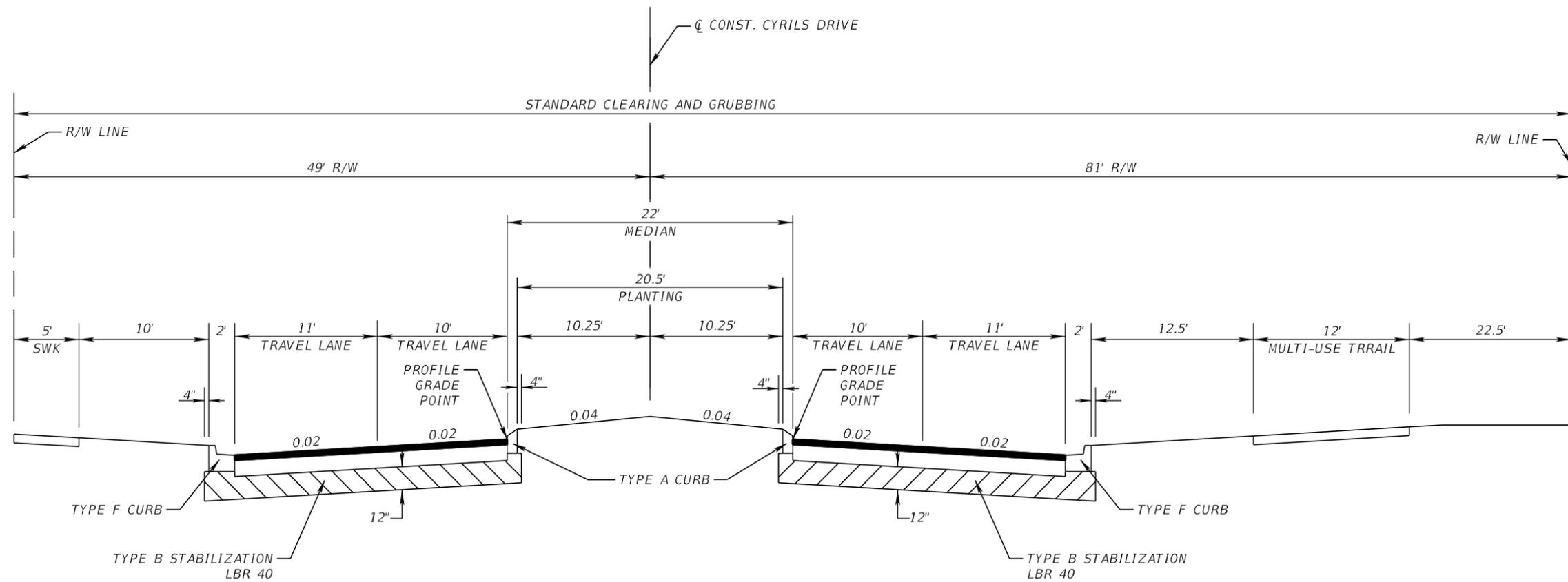
DATE: \_\_\_\_\_

P.E. NO.: 45825

GOVERNING STANDARDS AND SPECIFICATIONS:  
FLORIDA DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS DATED 2018-2019,  
AND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 2017,  
AS AMENDED BY CONTRACT DOCUMENTS.  
APPLICABLE DESIGN STANDARDS MODIFICATIONS:

FOR DESIGN STANDARDS MODIFICATIONS CLICK ON "DESIGN STANDARDS" AT THE  
FOLLOWING WEB SITE:  
[HTTP://WWW.DOT.STATE.FL.US/RDDSIGN/](http://www.dot.state.fl.us/rddesign/)

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.



TYPICAL SECTION  
 CYRILS DRIVE - WEST SEGMENT  
 STA. 10+27.58 TO STA. 20+81.37

DESIGN SPEED = 35 MPH

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

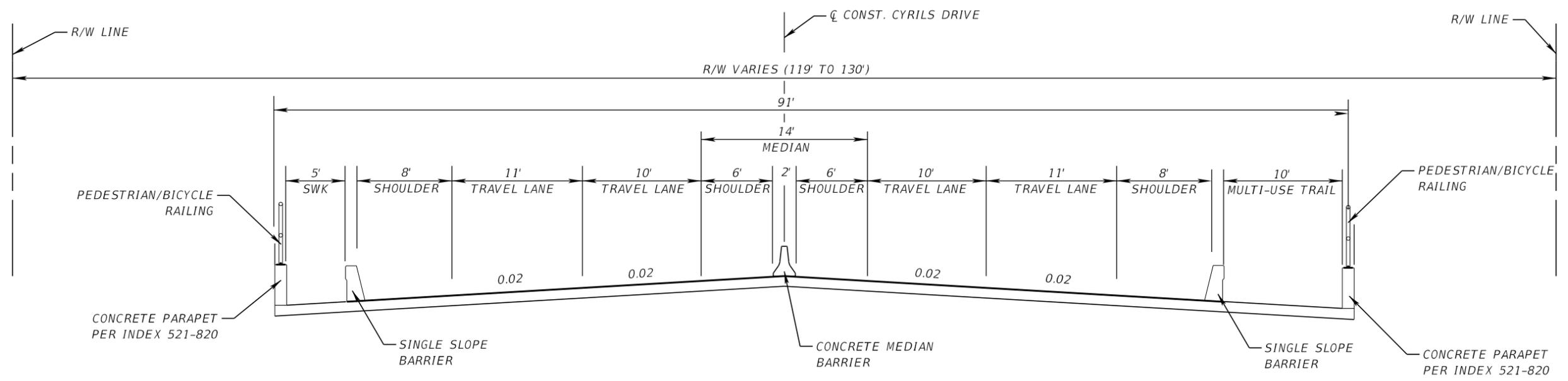
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TYPICAL SECTION (1)

SHEET NO.



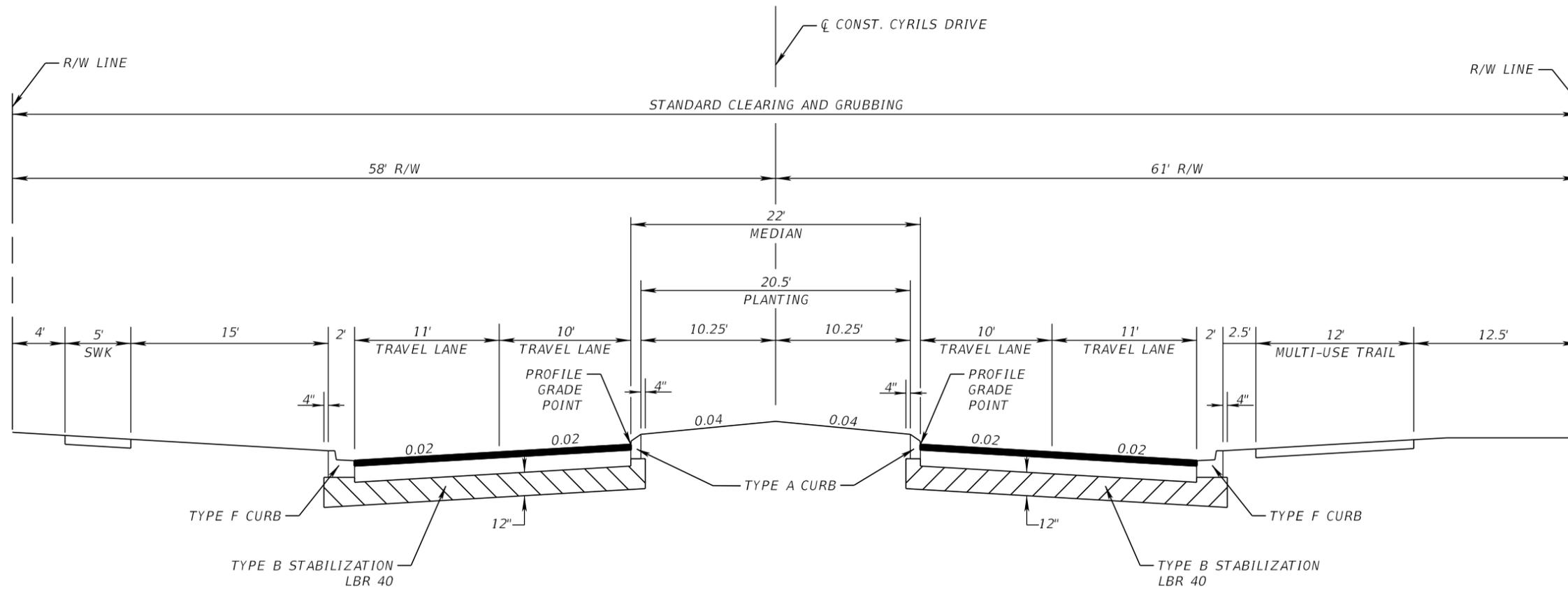
**TYPICAL SECTION**  
**CYRILS DRIVE - BRIDGE SEGMENT**  
**STA. 20+81.37 TO STA. 29+82.65**  
**DESIGN SPEED = 35 MPH**

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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**TYPICAL SECTION (2)**



**TYPICAL SECTION  
CYRILS DRIVE - TRANSITION SEGMENT  
STA. 29+82.65 TO STA. 53+13.31**

DESIGN SPEED = 35 MPH

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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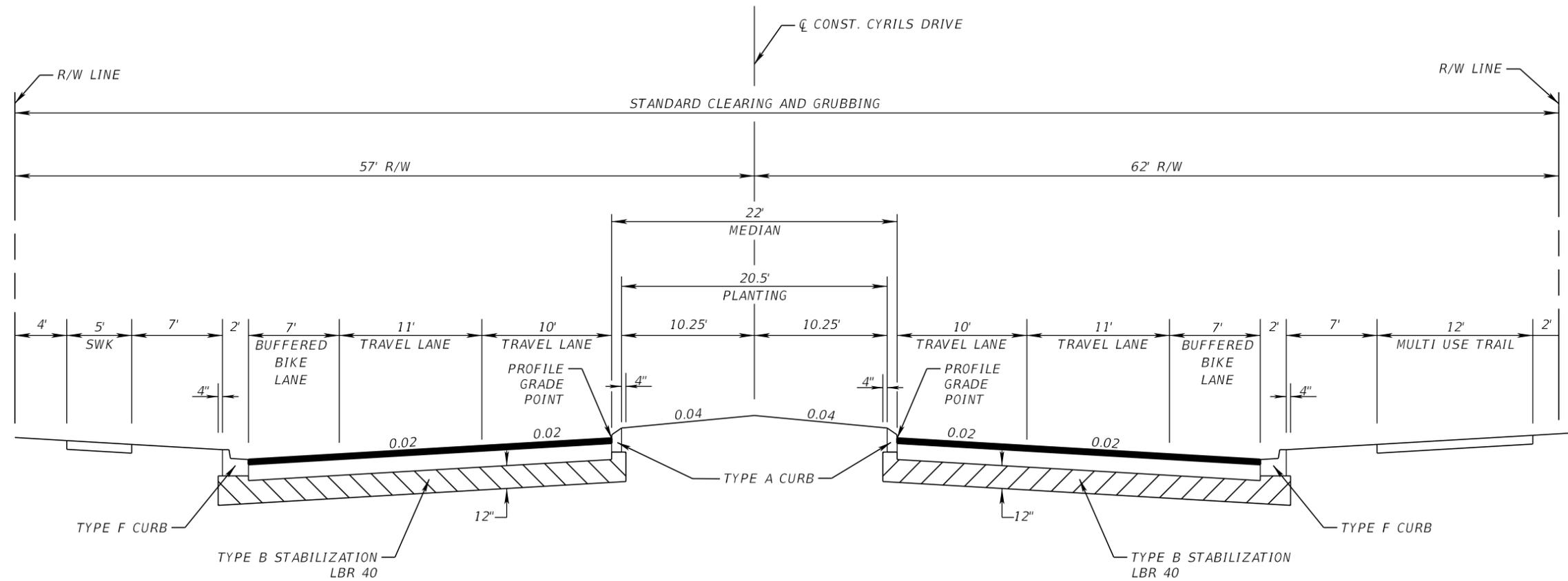


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**TYPICAL SECTION (3)**

SHEET NO.



TYPICAL SECTION  
 CYRILS DRIVE - EAST SEGMENT  
 STA. 53+13.31 TO STA. 118+58.07

DESIGN SPEED = 35 MPH

REVISIONS

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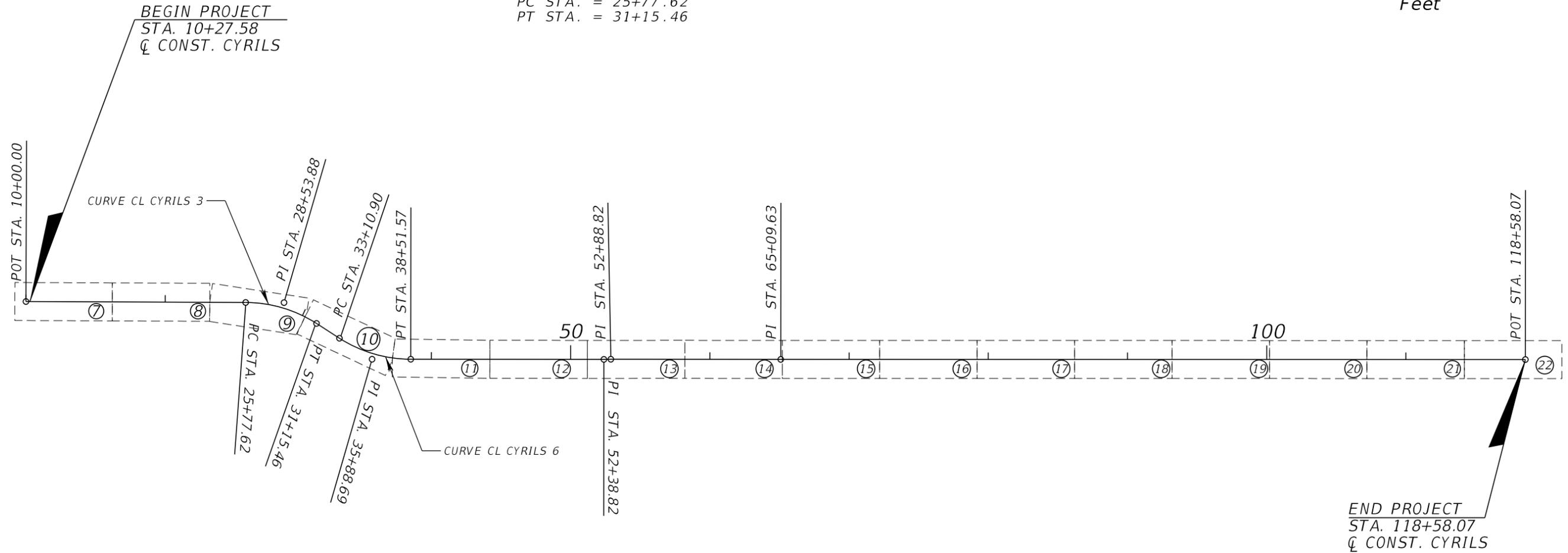
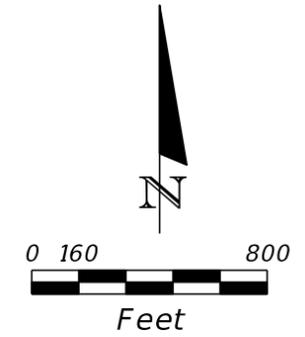
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TYPICAL SECTION (4)

SHEET NO.

5 Page 114

CURVE DATA CL CYRILS\_3  
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 PC STA. = 25+77.62  
 PT STA. = 31+15.46



CURVE DATA CL CYRILS\_6  
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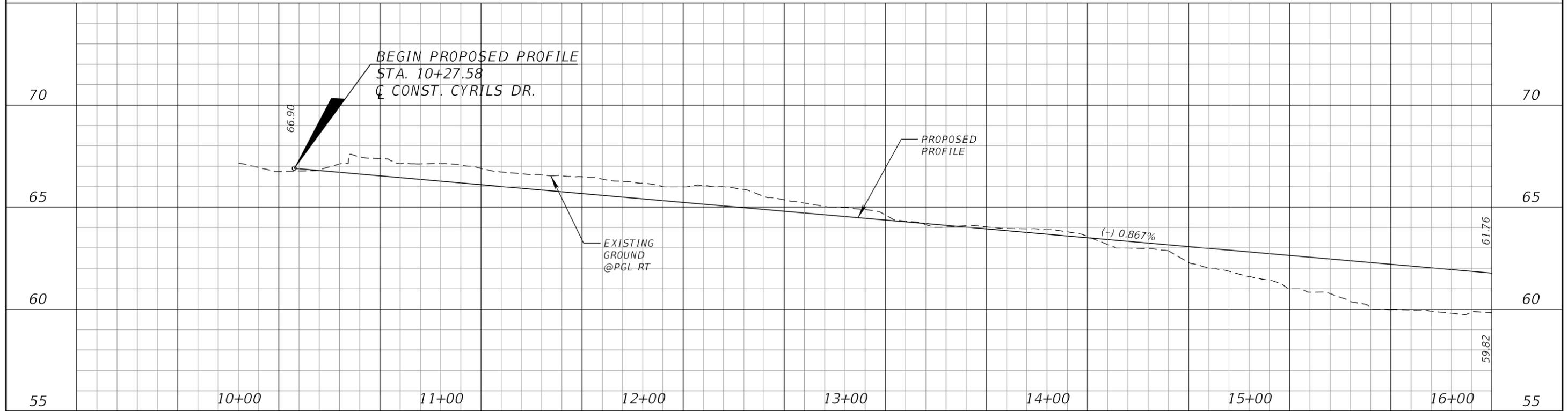
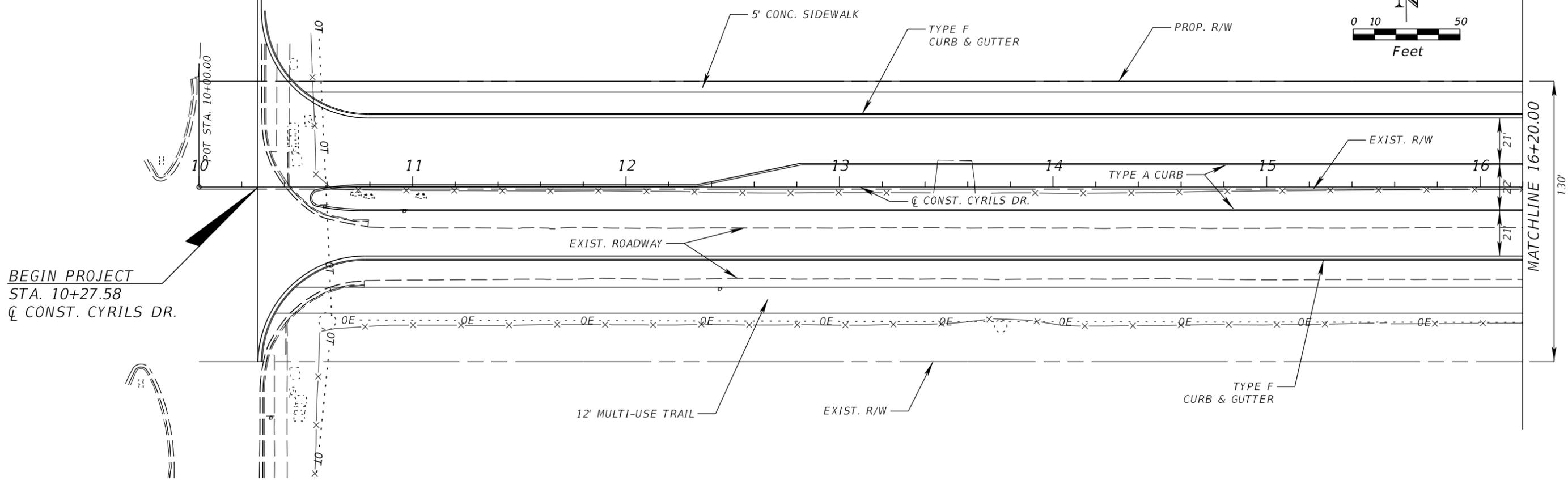
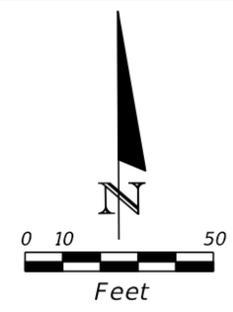
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**PROJECT LAYOUT**

SHEET NO.



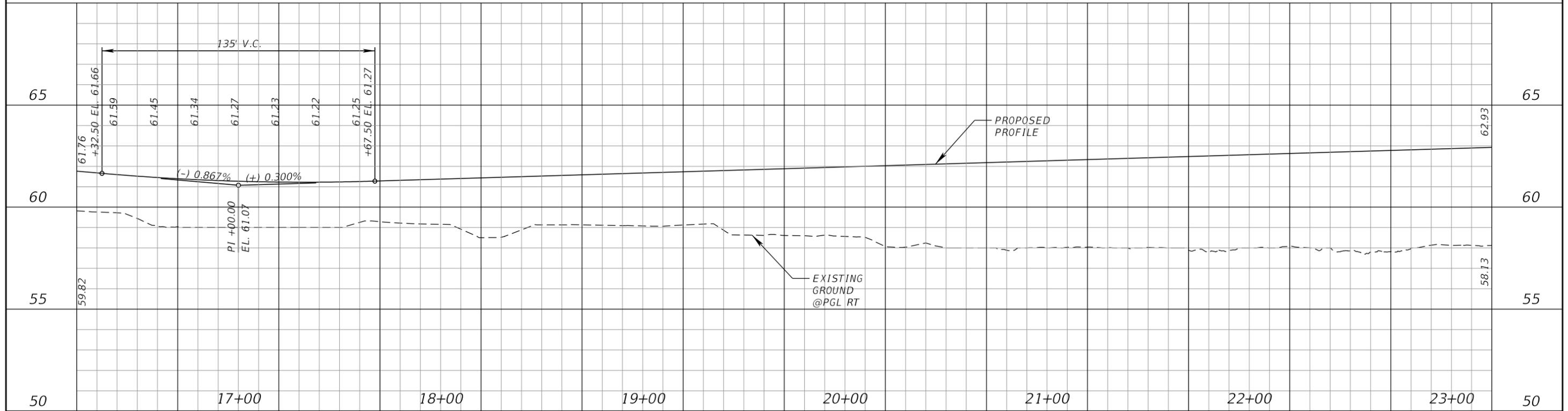
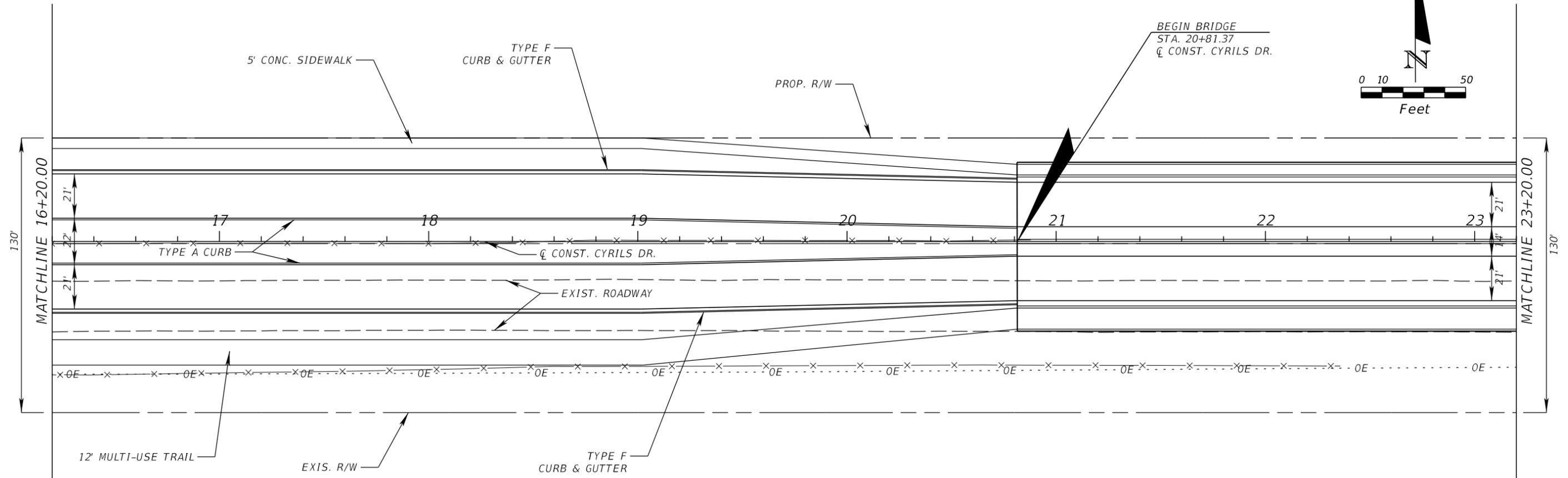
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**PLAN PROFILE**

SHEET NO.  
7 Page 116



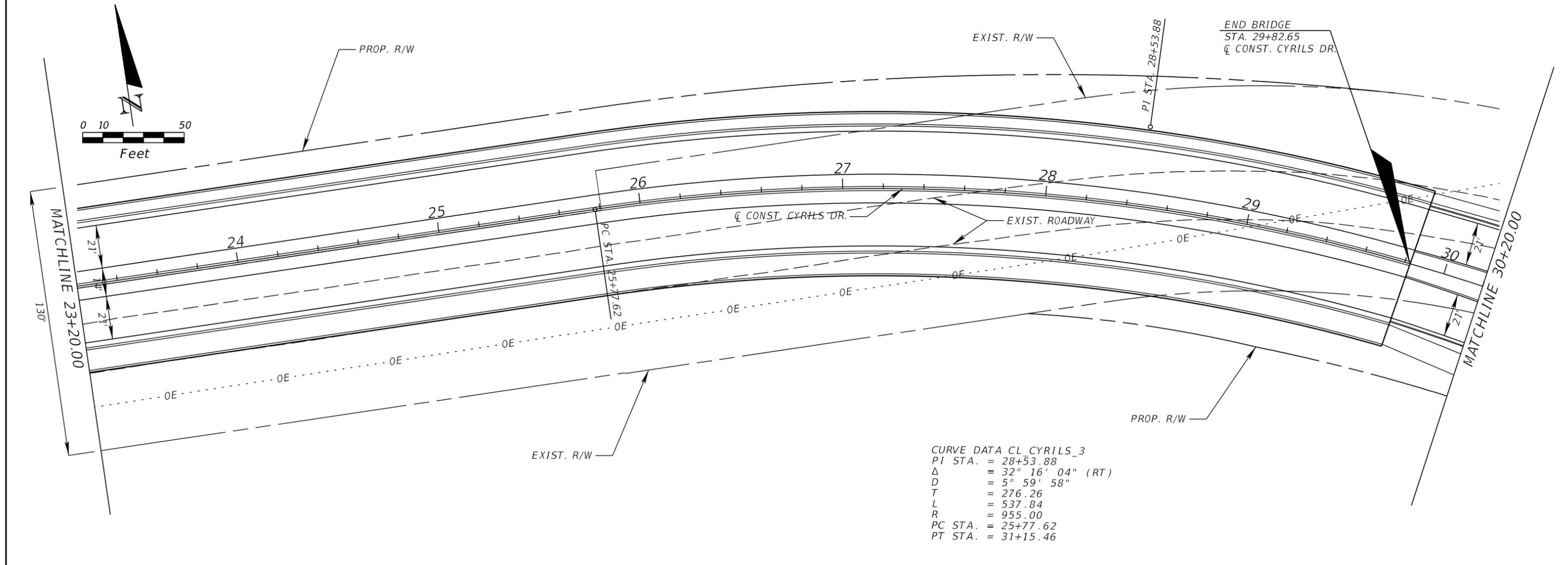
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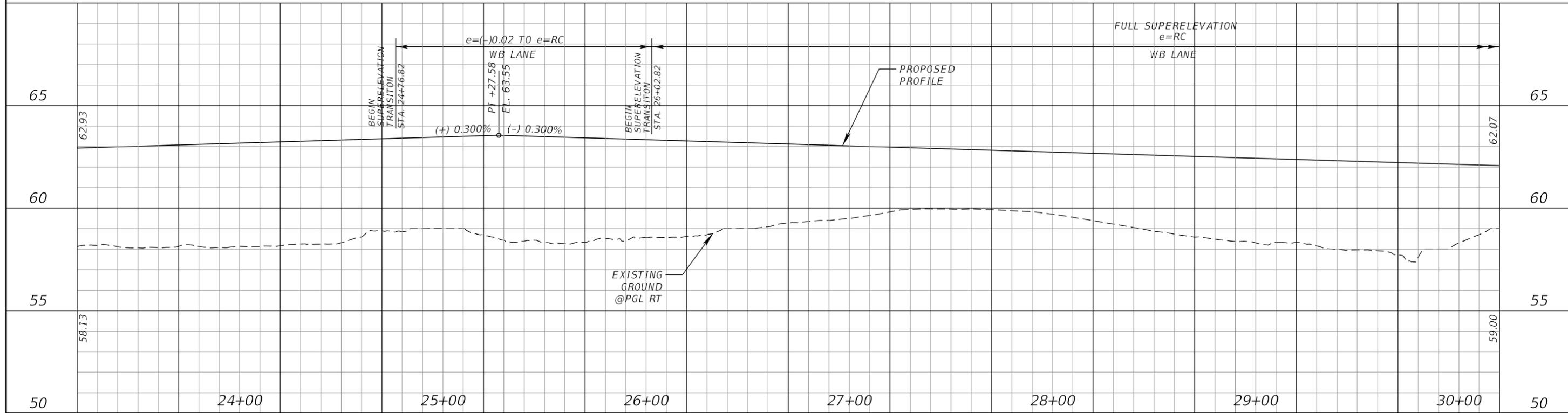
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**PLAN PROFILE**

SHEET NO. 8 Page 117



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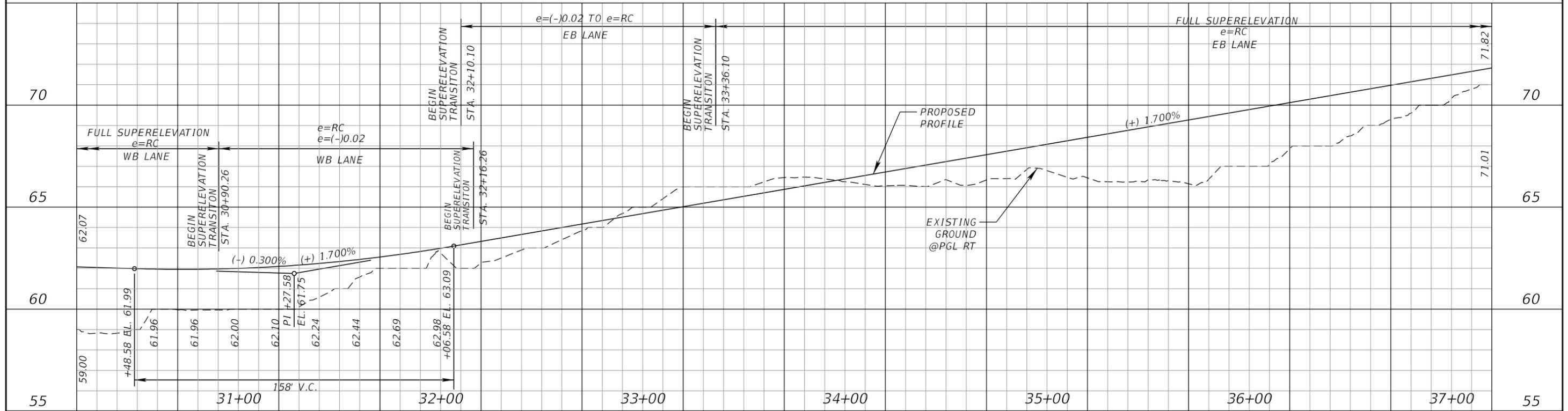
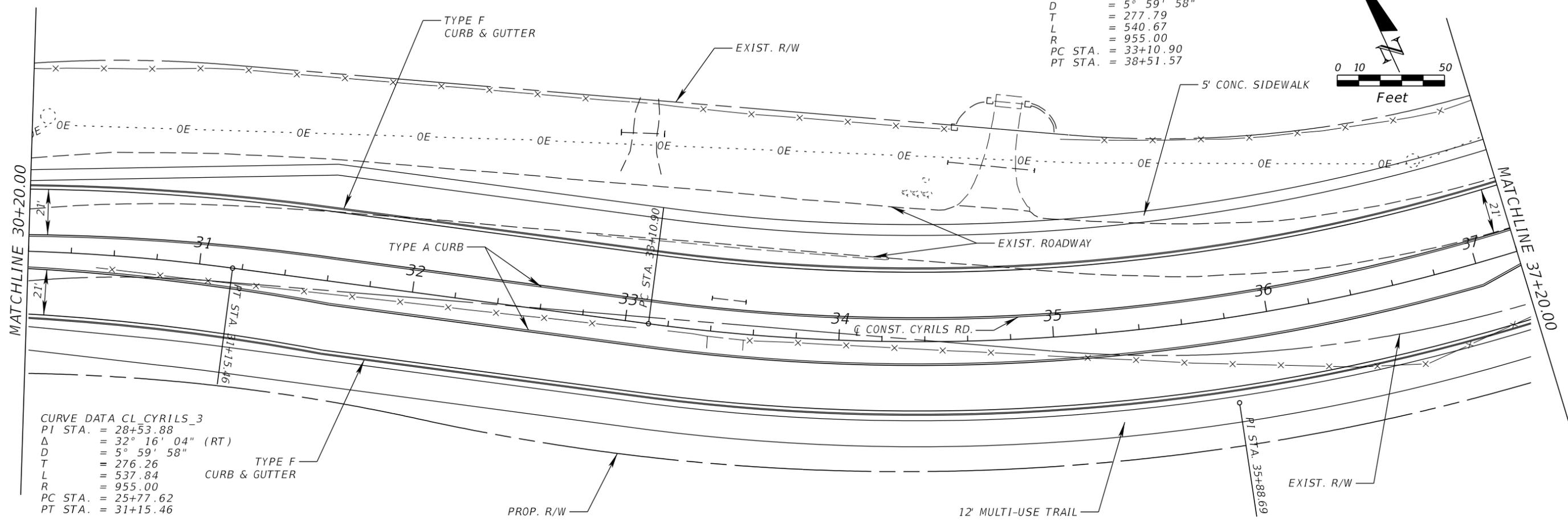
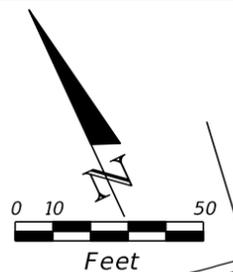
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**PLAN PROFILE**

SHEET NO. 9  
 Page 118

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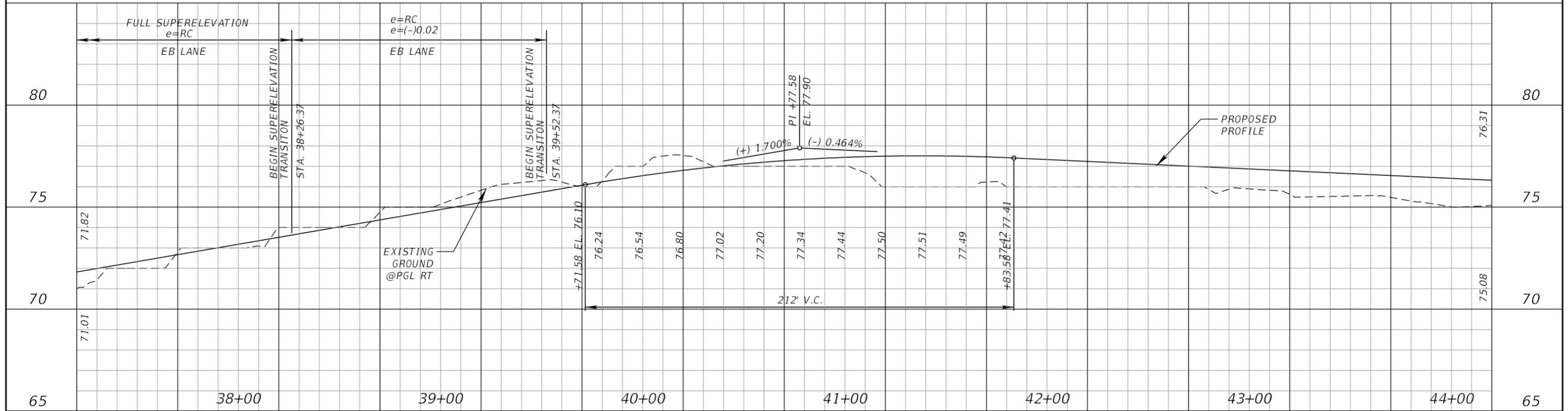
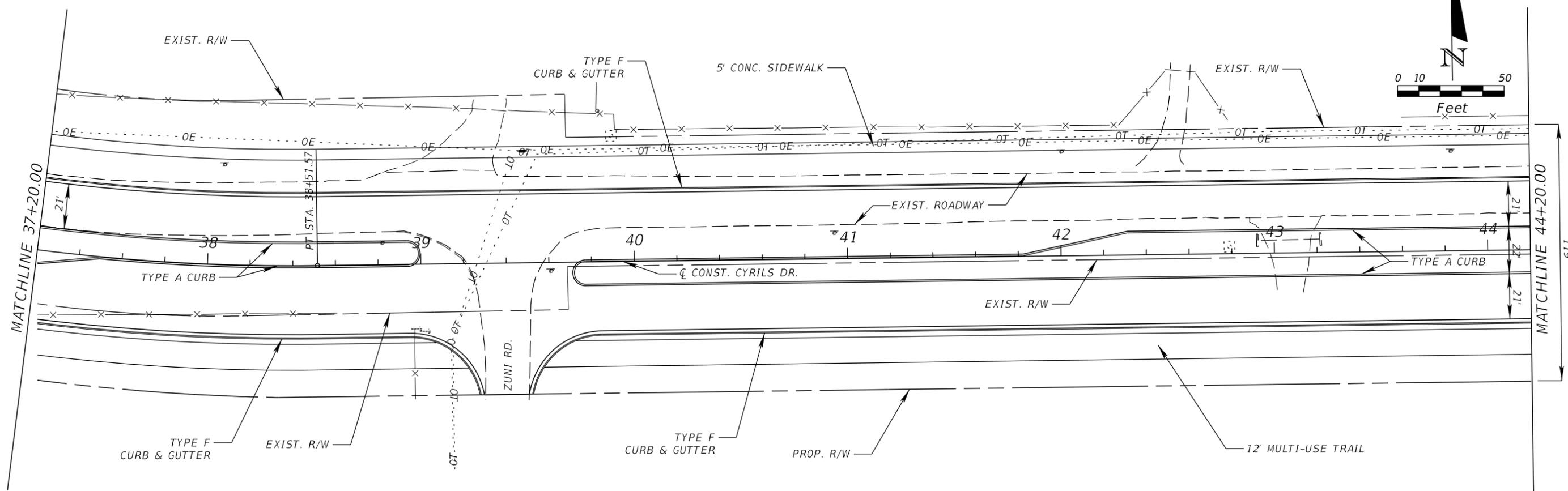
REVISIONS					
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**PLAN PROFILE**

SHEET NO. 10 Page 119



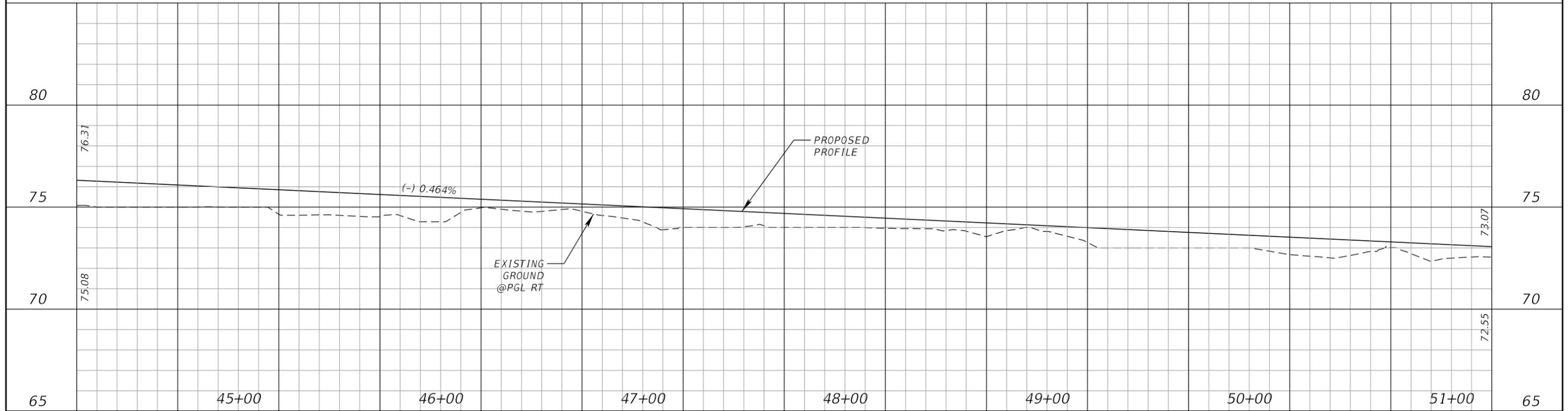
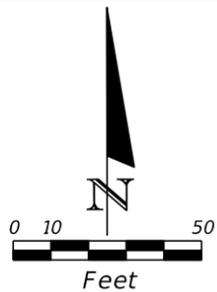
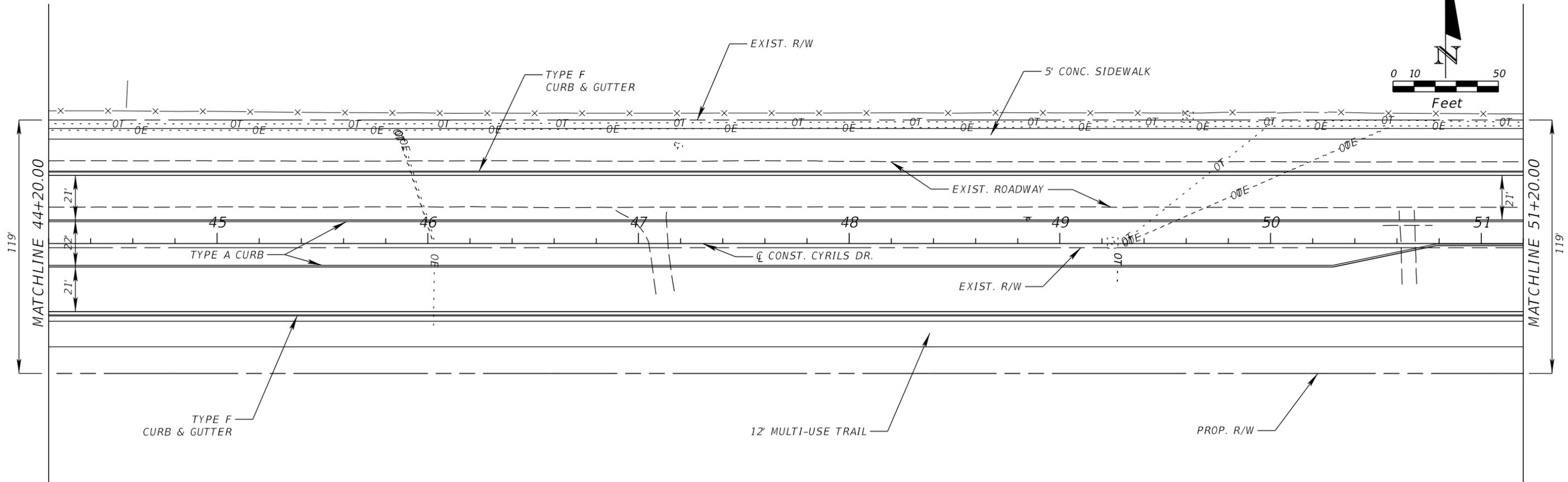
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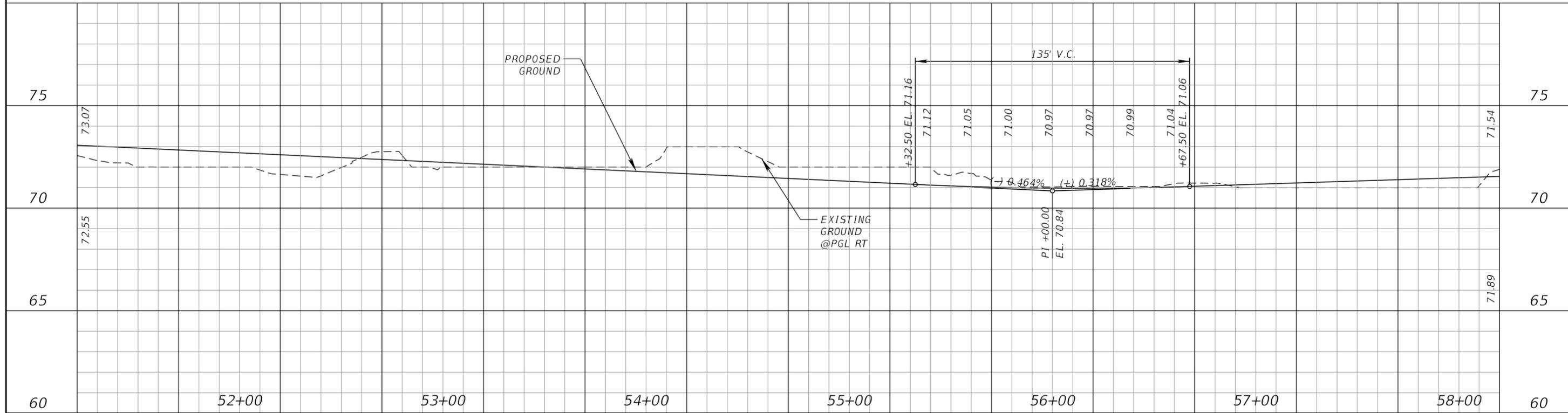
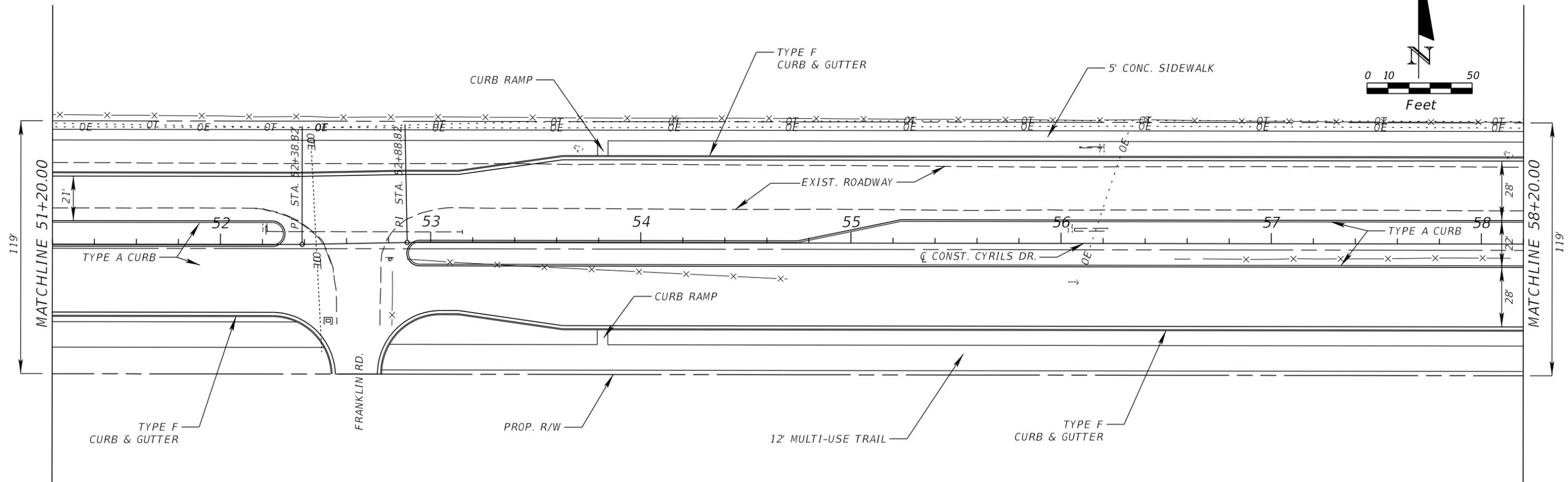
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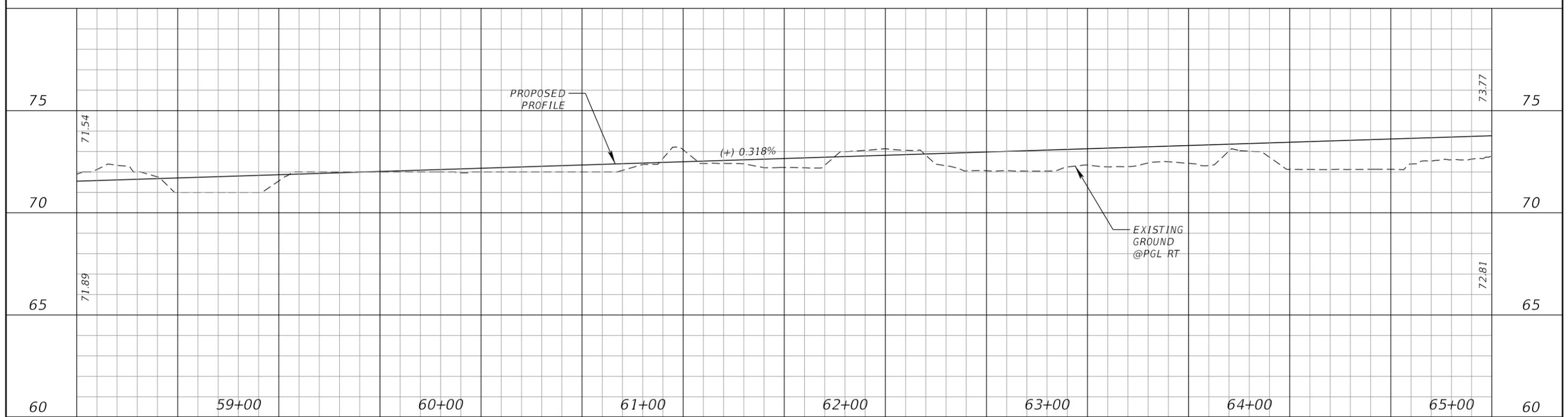
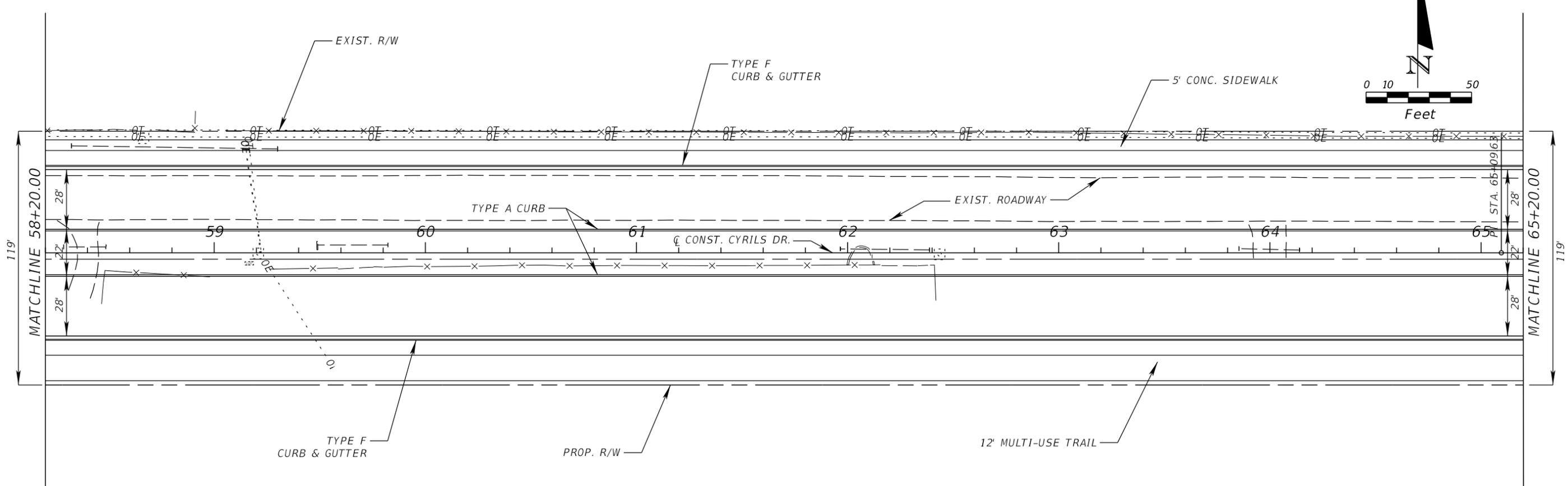
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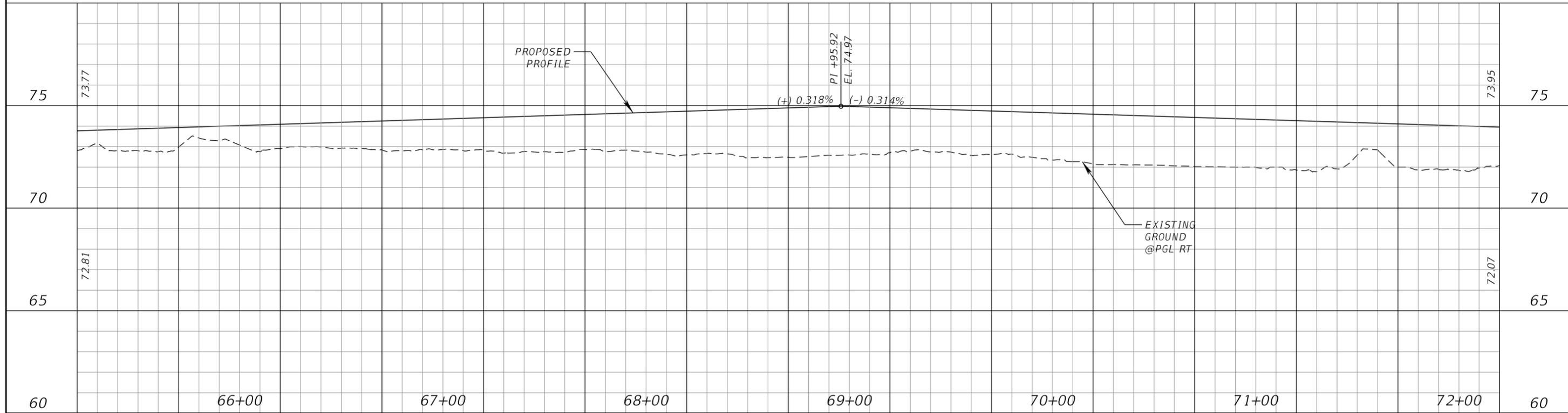
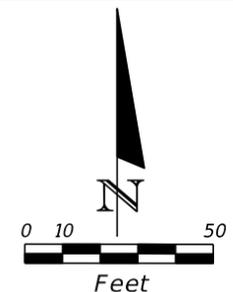
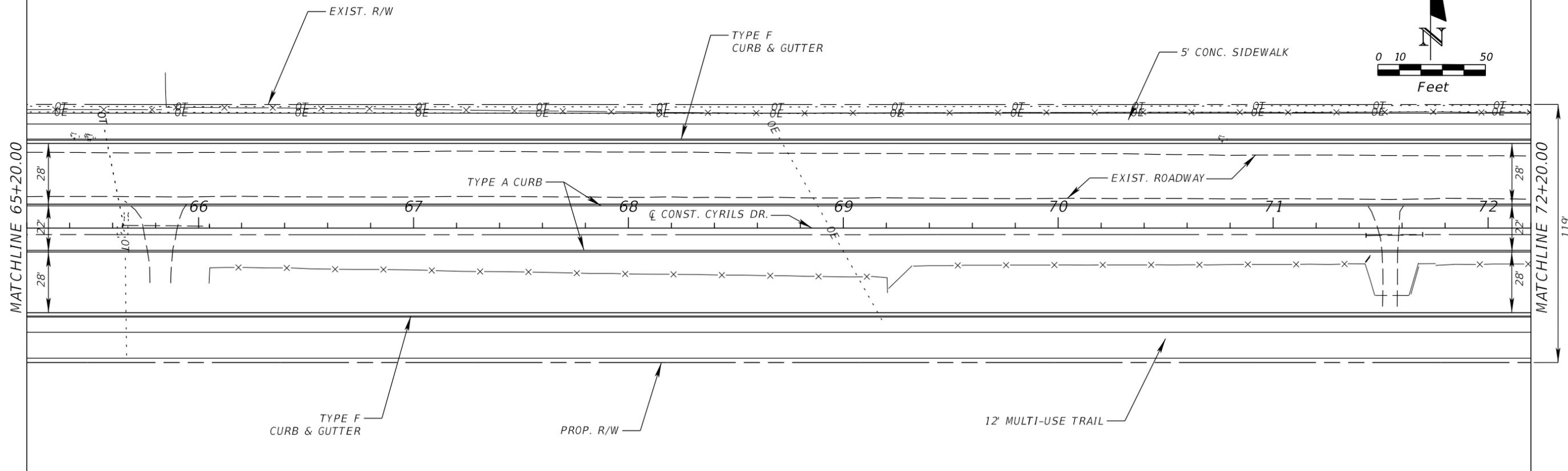
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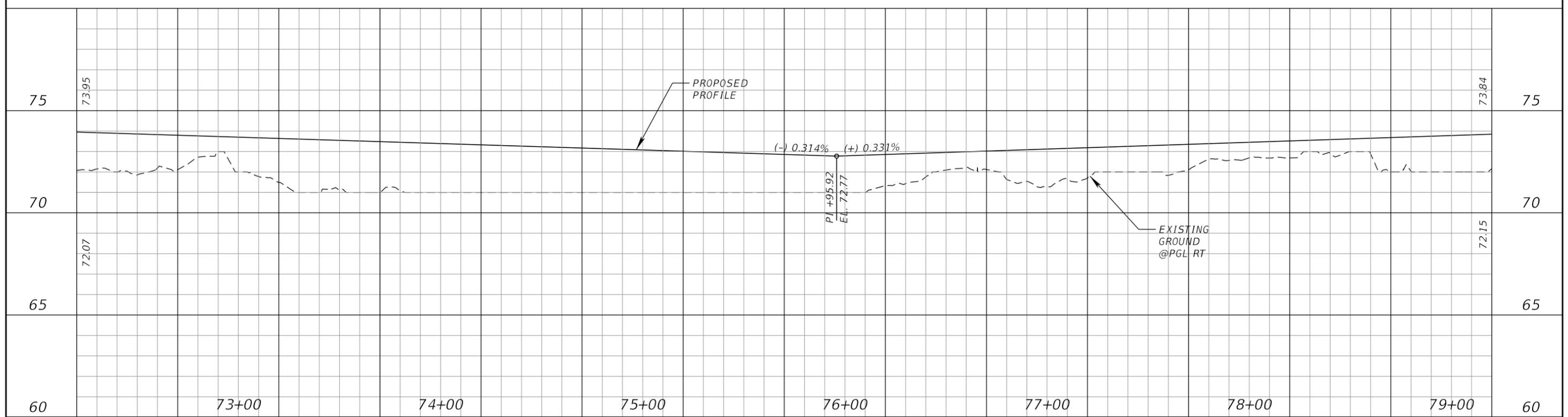
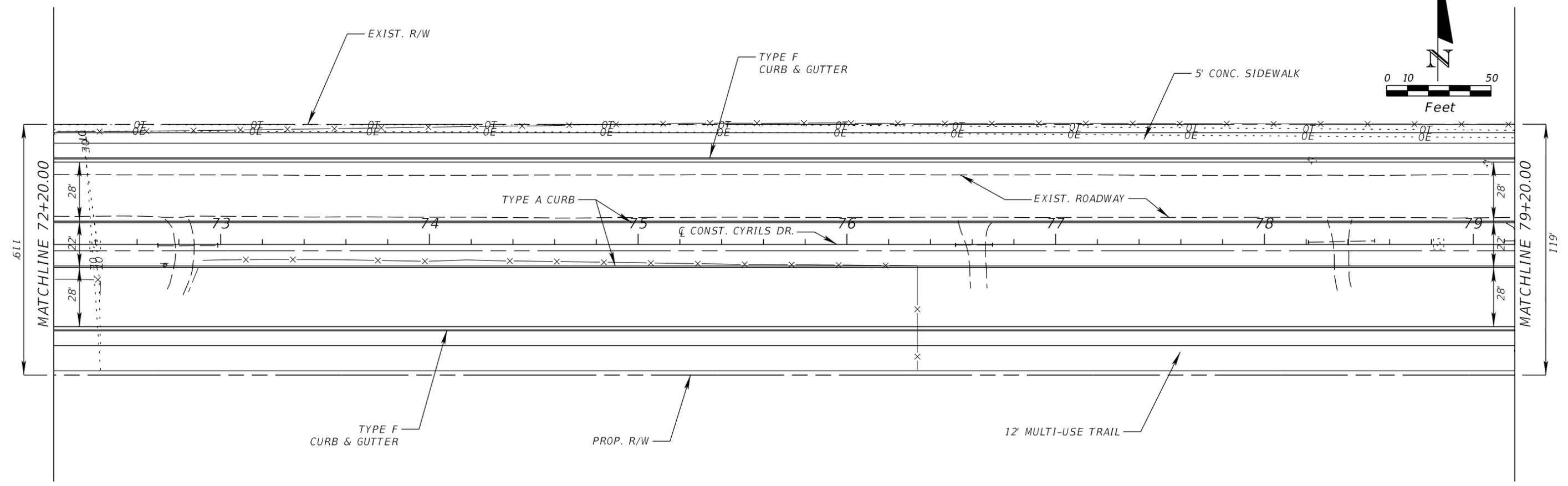
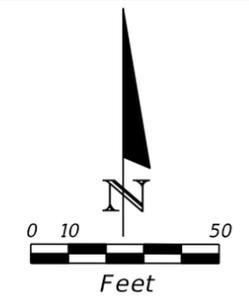
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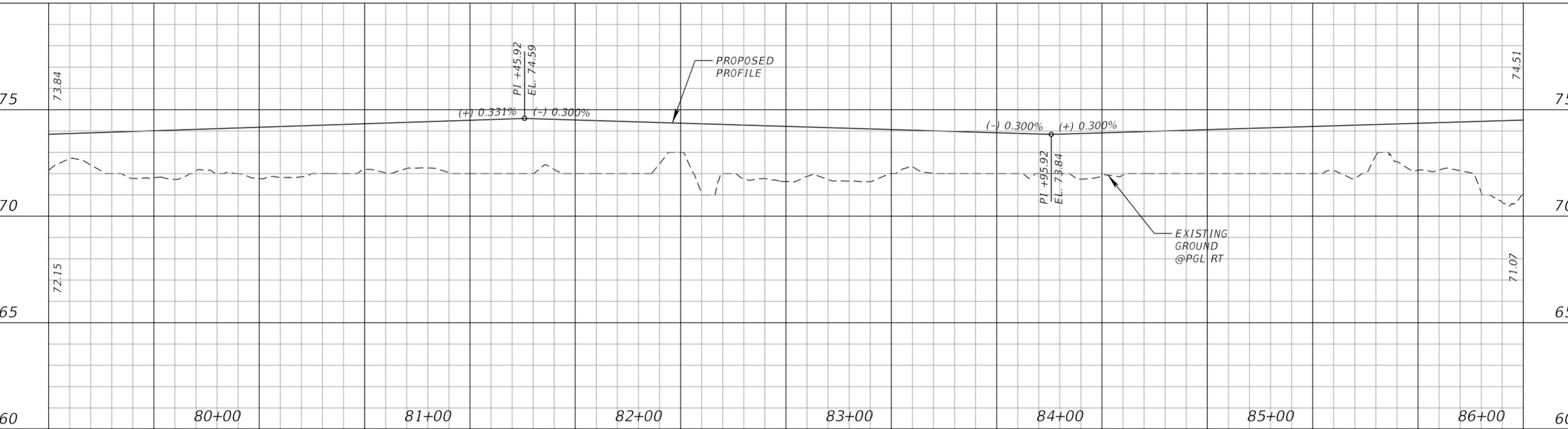
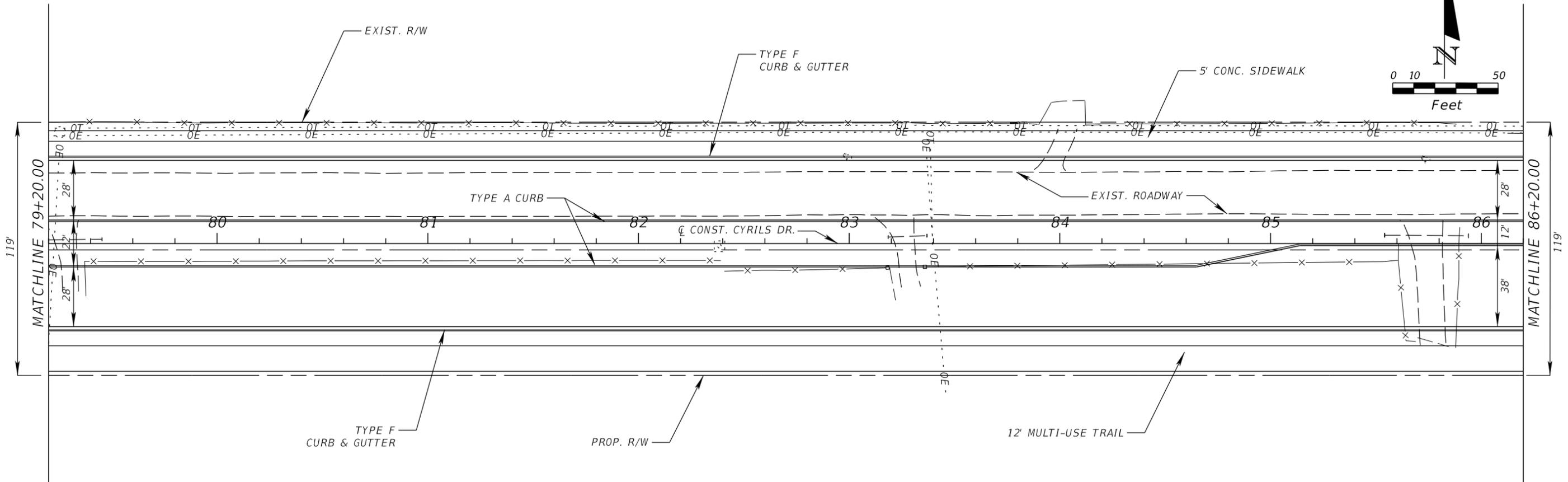
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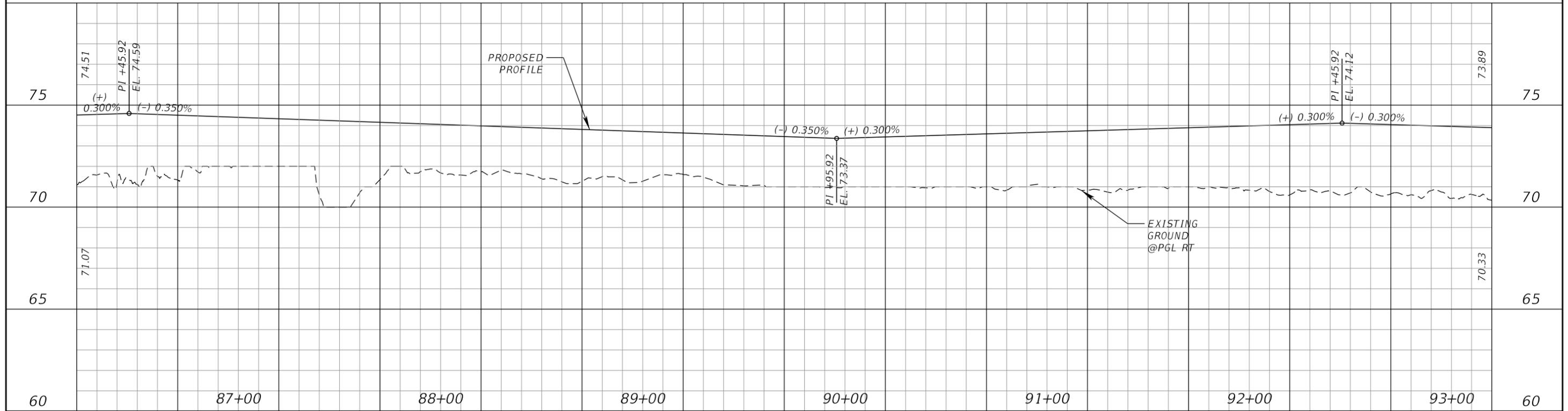
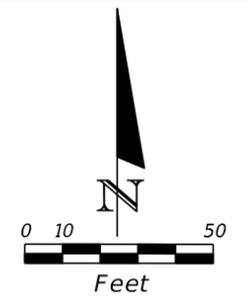
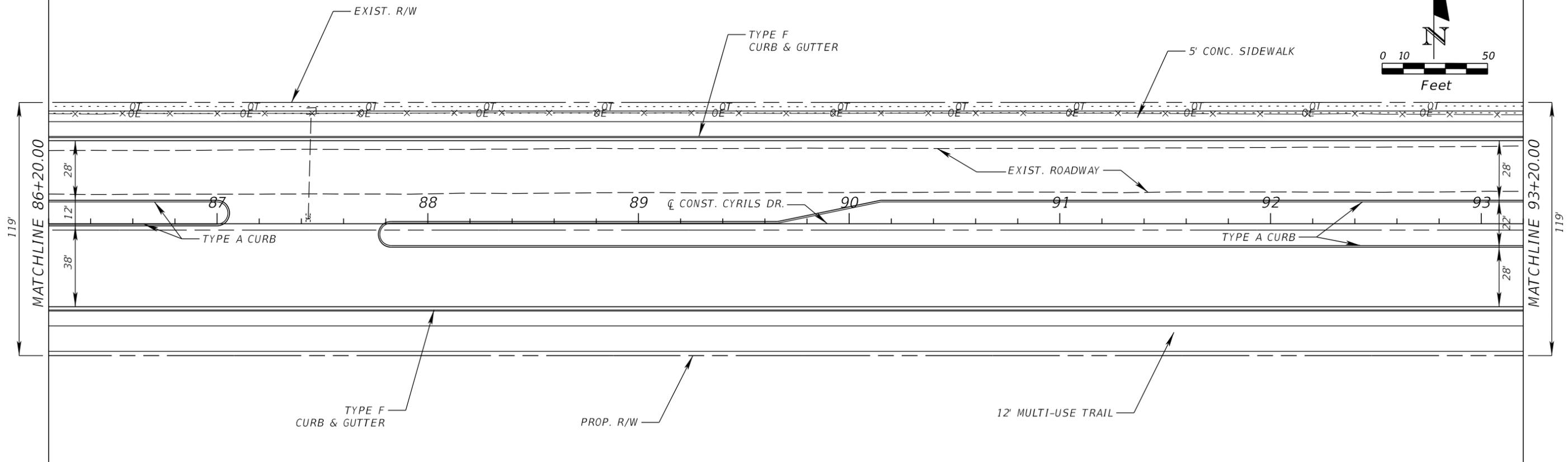
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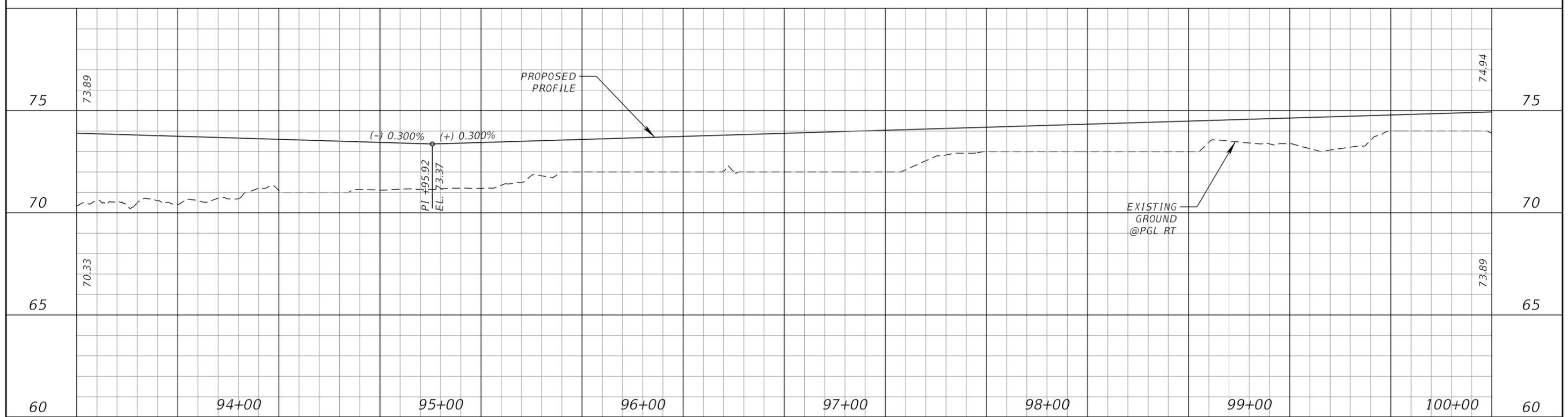
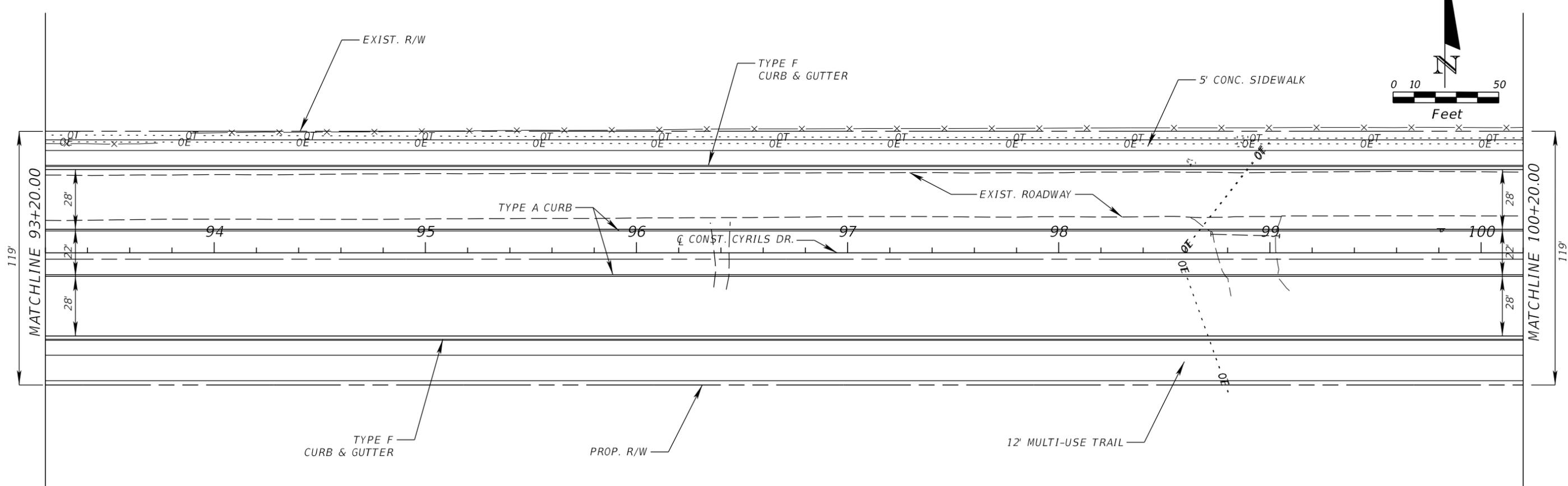
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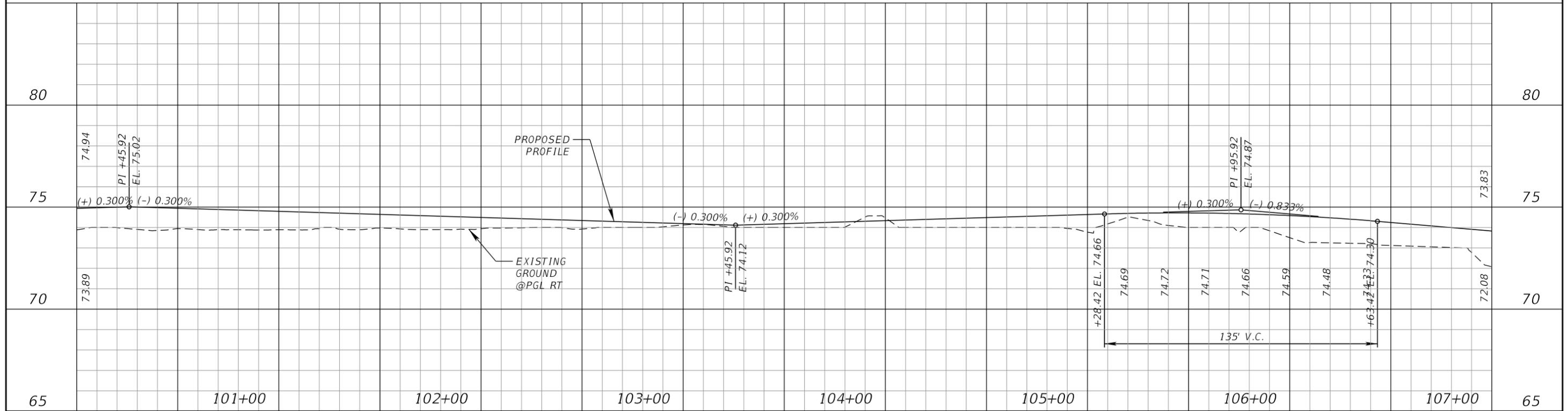
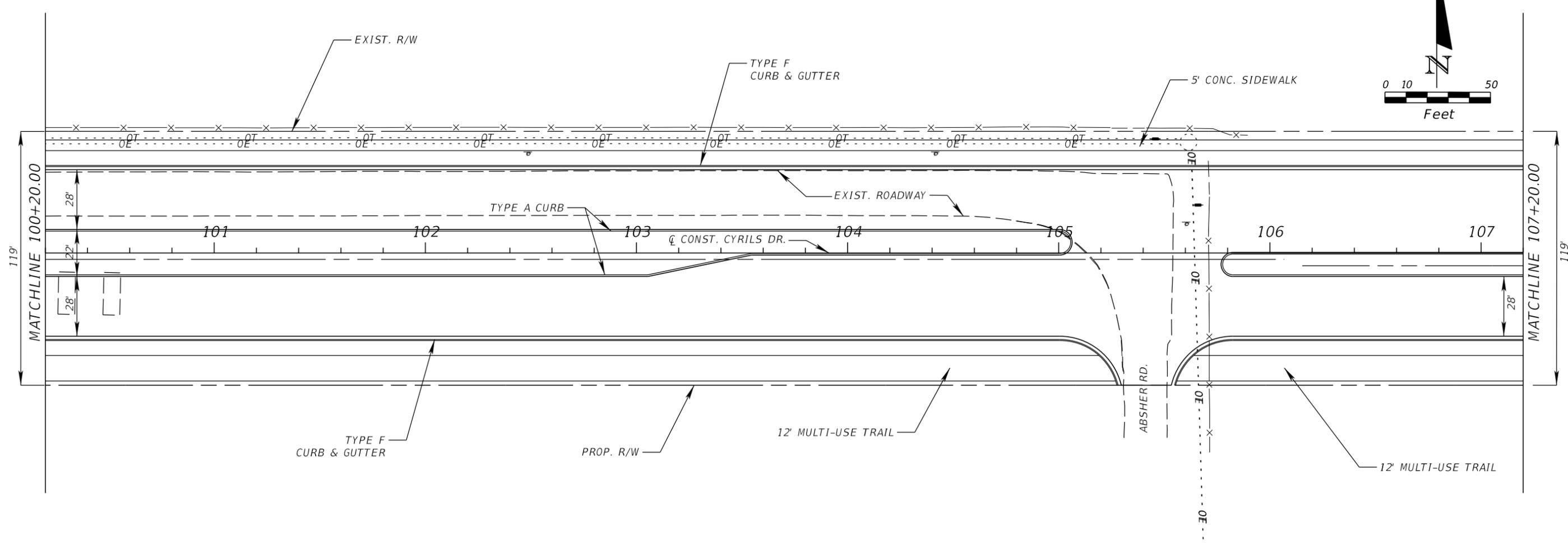
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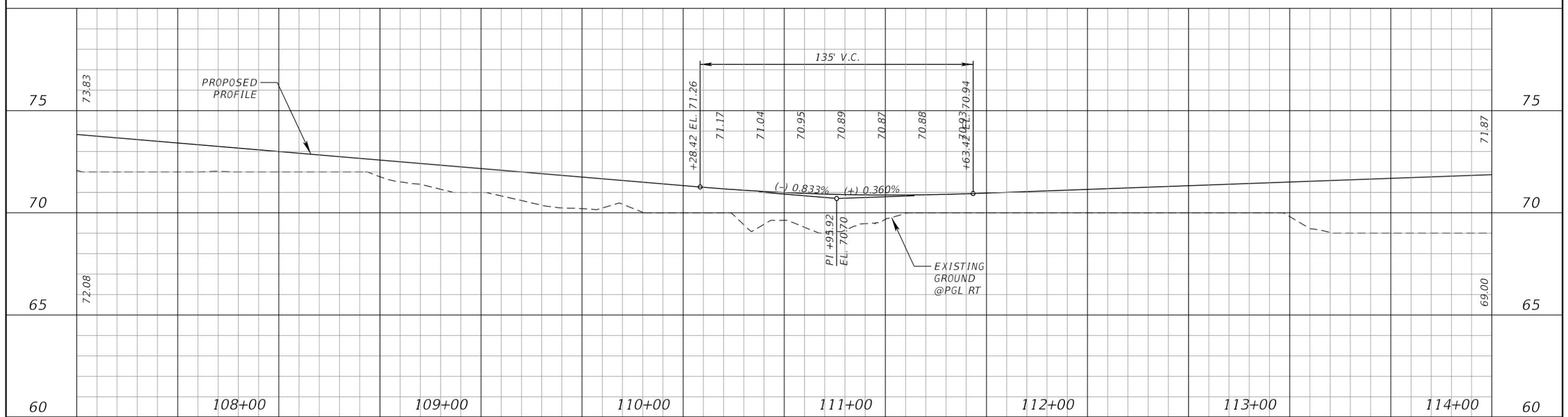
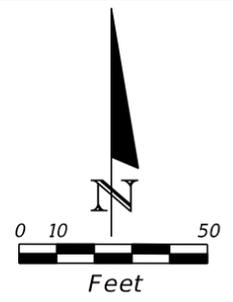
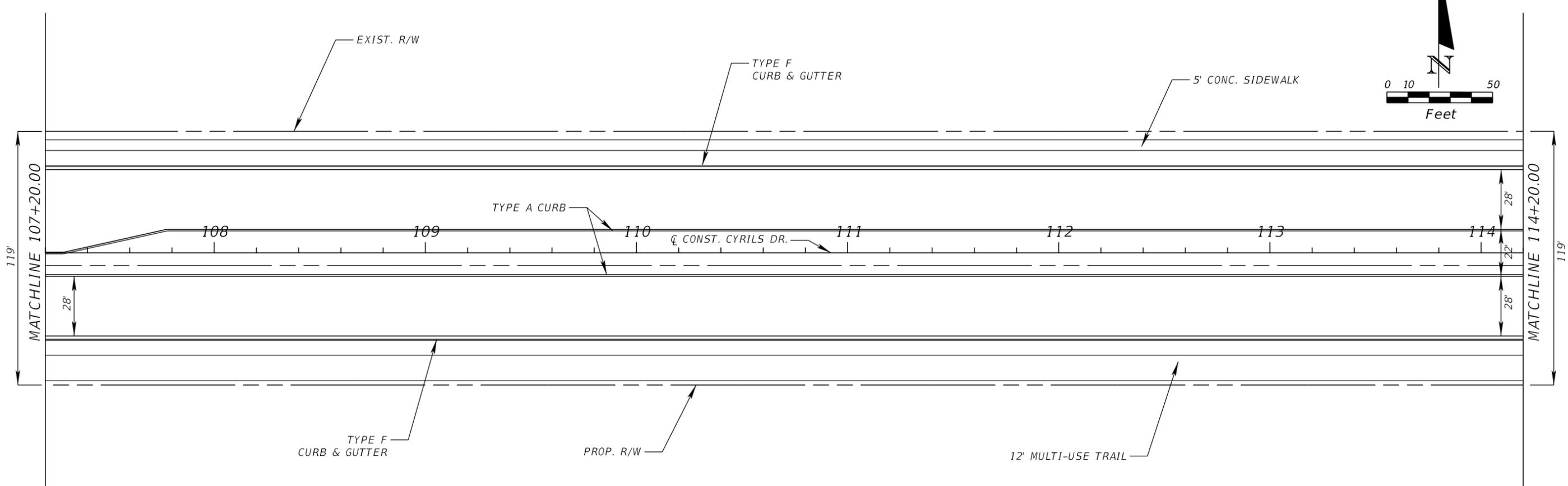
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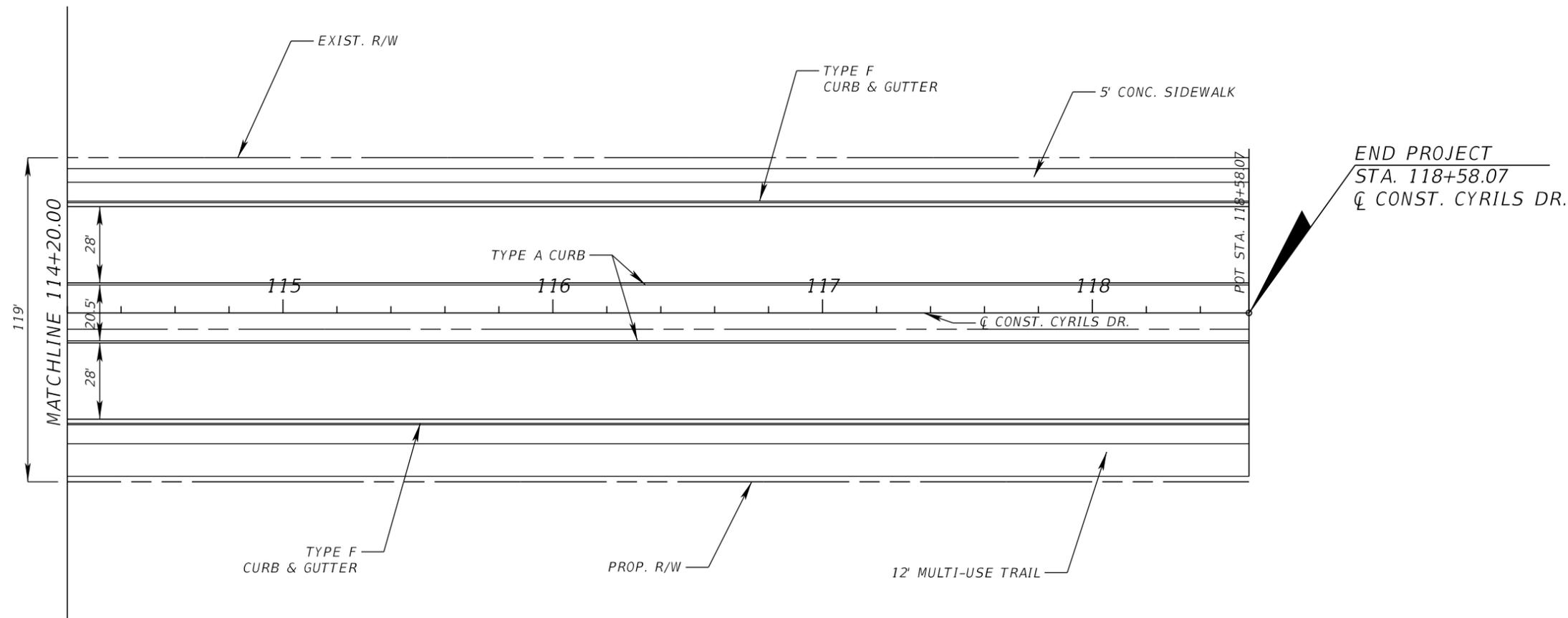
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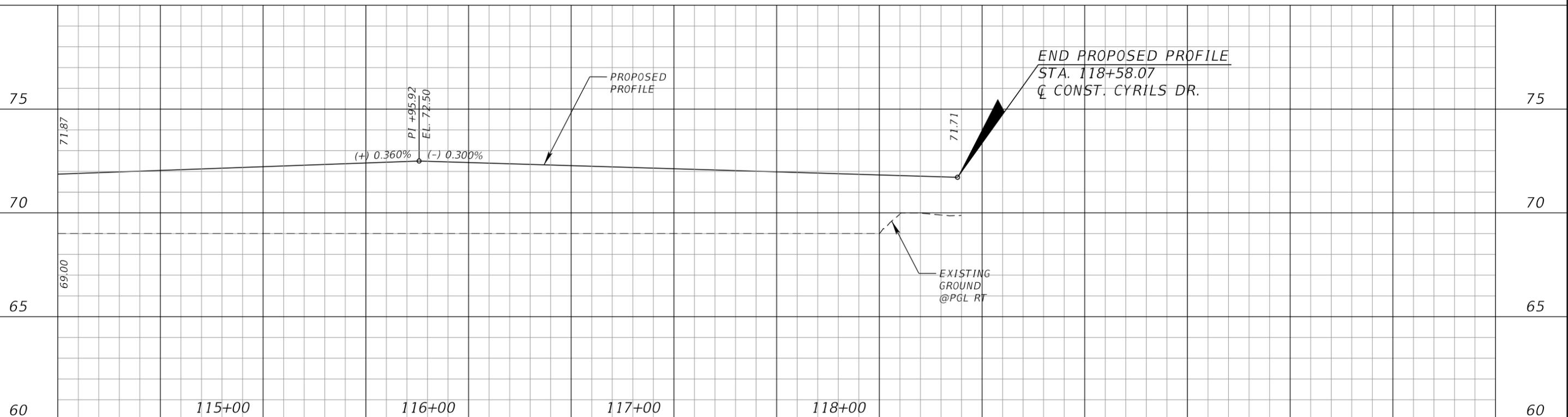
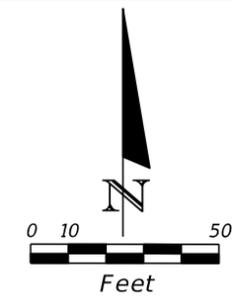
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END PROPOSED PROFILE  
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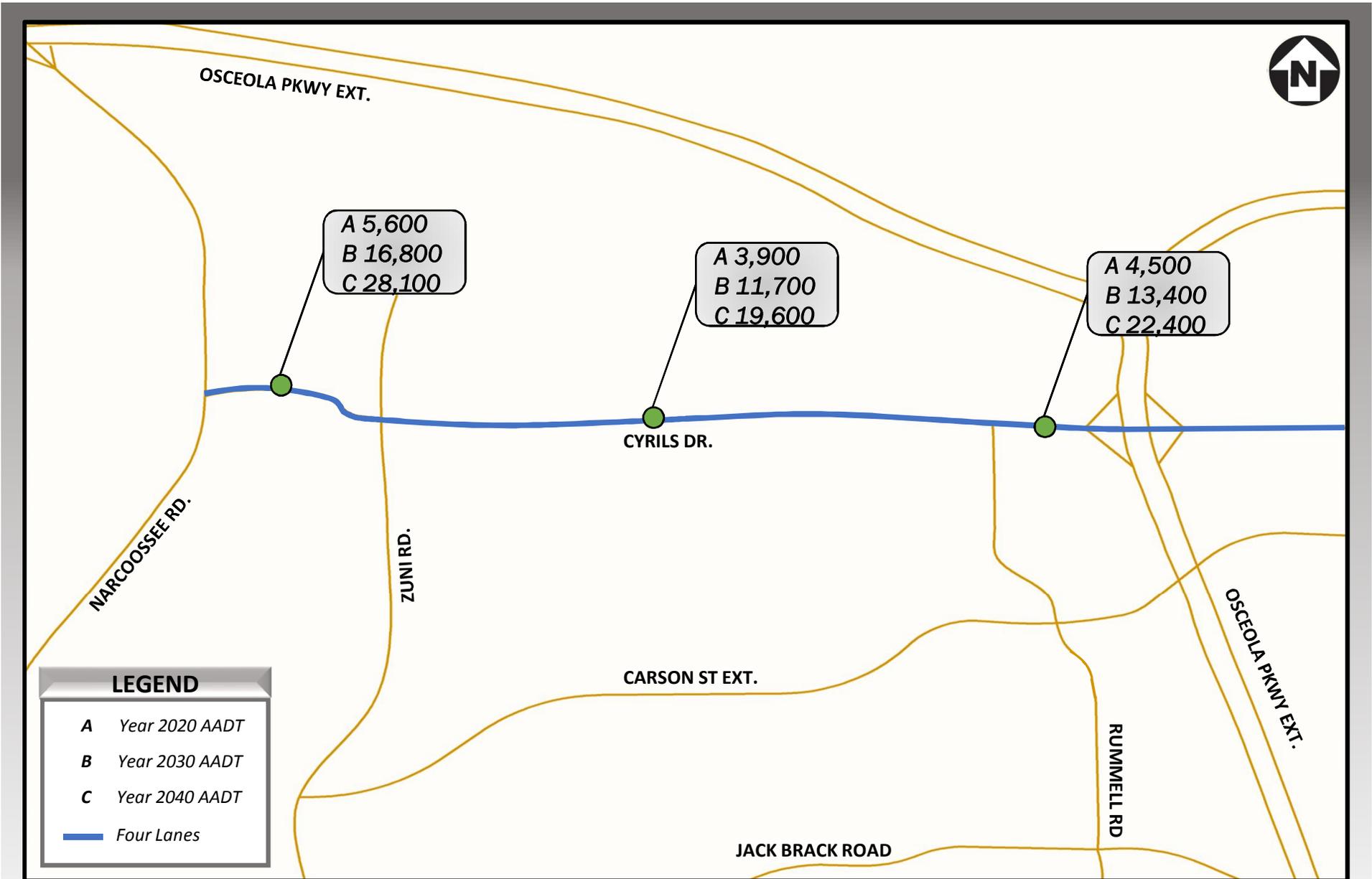
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#### 5.3.4. TRAFFIC ANALYSIS

As part of the Design Traffic Technical Memorandum (**Appendix E**), future AADT volumes and peak hour turning movements were developed for Cyrils Drive. These volumes were used to develop recommended geometry at intersections, as well as queue lengths to be used for turning lanes.

The future AADT volumes for Cyrils Drive were developed based on the travel demands projected by the regional model for 2040. The interim year volumes were estimated as being 20 percent of the 2040 volume in 2020 and 60 percent of the 2040 volume in 2030. The resulting AADT volumes for A 2020, B 2030, and C 2040, and the associated V/C ratios are identified in **Table 5.7** and illustrated in **Figure 5.15**.



**Table 5.7: Cyrils Drive Future AADT Volumes**

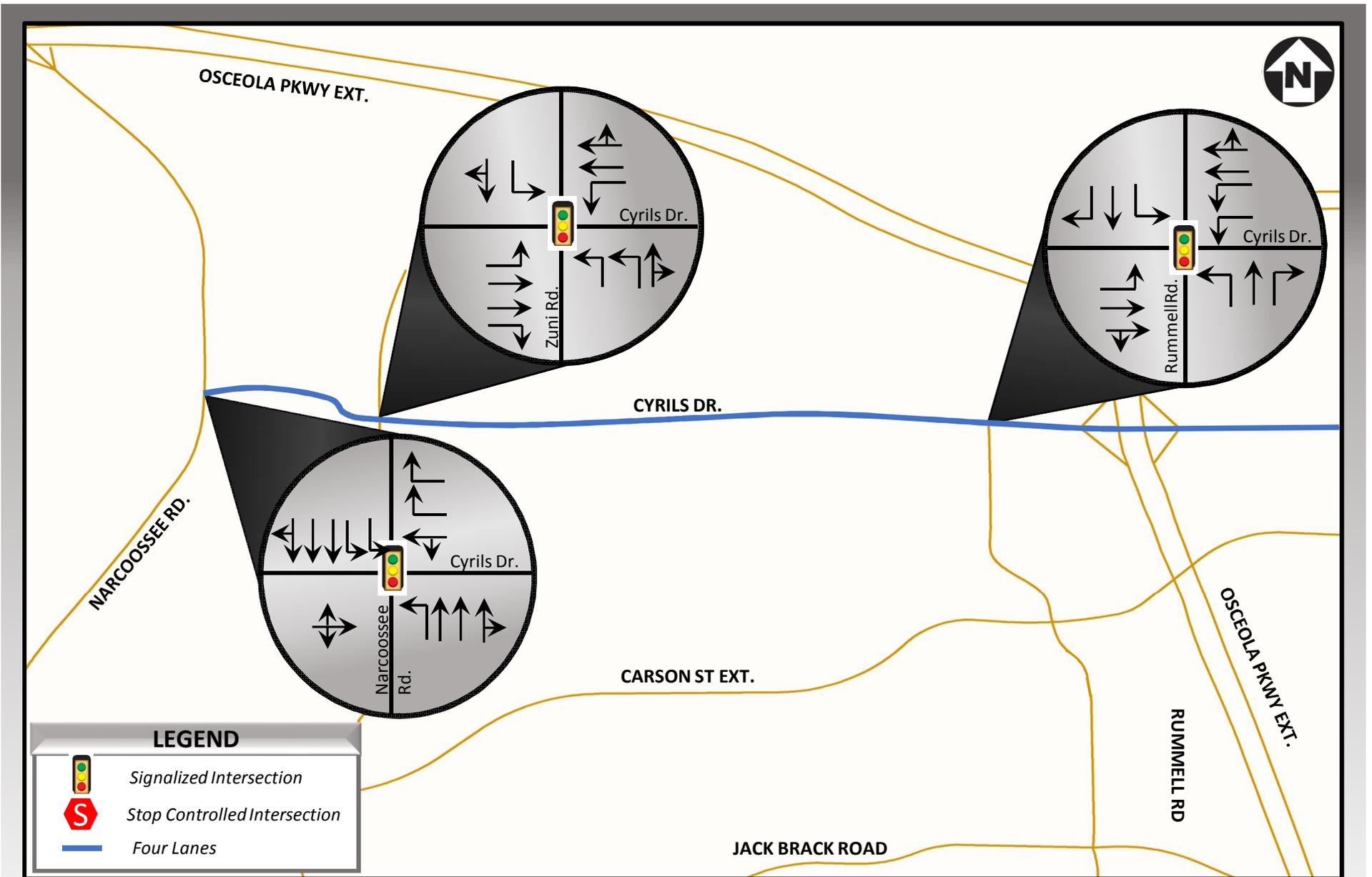
Cyrils Dr.	Lanes	Capacity	2020		2030		2040	
			AADT	V/C	AADT	V/C	AADT	V/C
Narcoossee Rd. to Zuni Rd.	4	33,800	5,600	0.17	16,800	0.50	28,100	0.83
Zuni Rd. to Rummell Rd.	4	33,800	3,900	0.12	11,700	0.35	19,600	0.58
East of Rummell Rd.	4	33,800	4,500	0.13	13,400	0.40	22,400	0.66

All sections of Cyrils Drive are expected to operate with a V/C ratio below 1.0. The highest volume section is from Narcoossee Road to Zuni Road.

Future design hour turning movement volumes were developed using the previously described methodology for Jones Road. The 2040 AM and PM design hour volumes are identified in **Figure 5.16**. Turning movement worksheets are included in **Appendix E**.



The AM and PM peak hour volumes for 2040 were analyzed using Synchro software. A minimum of a separate left-turn lane was assumed for each intersection. Based on Synchro runs, additional turn lanes were identified when needed to keep the intersection operating with a V/C ratio below 1.0. The results of the analyses are summarized in **Table 5.8** and the recommended geometry at the intersections is illustrated in **Figure 5.17**. Synchro analysis reports are provided in **Appendix E**.



In 2040, the signalized intersections of Cyrils Drive and Narcoossee Road are expected to operate at LOS E during the AM and PM peak hours. The intersections of Cyrils Drive at Zuni Road and Rummell Road are expected to operate at LOS C during the AM and PM peak hours. At Cyrils Drive and Narcoossee Road, dual southbound left-turn lanes and dual westbound right-turn lanes will be needed. The intersection of Cyrils Drive and Zuni Road will need dual northbound left-turn lanes and the intersection of Cyrils Drive at Rummell Road will need dual westbound left-turn lanes.

**Table 5.8: Cyrils Drive 2040 Intersection LOS Summary**

Cyrils Dr. at	Traffic Control	Average Delay (sec/veh)	LOS	V/C
<b>PM Peak Hour</b>				
Narcoossee Rd.	Signal	64.0	E	1.046
Zuni Rd.	Signal	21.3	C	0.484
Rummell Rd.	Signal	26.2	C	0.693
<b>AM Peak Hour</b>				
Narcoossee Rd.	Signal	59.3	E	1.024
Zuni Rd.	Signal	21.7	C	0.456
Rummell Rd.	Signal	20.1	C	0.598

Recommended queue lengths for the storage area of each turn lane were developed based on the recommended intersection geometry. Queue lengths were derived based on the 2040 Synchro outputs for both the AM and PM peak hours (the longer queue length needed was used). Recommended queue lengths for Cyrils Drive intersections are provided in **Table 5.9**.

**Table 5.9: Recommended Cyrils Drive Queue Lengths**

Cyrils Dr. at	Turn Lane Queue Length (feet)							
	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Narcoossee Rd.	n/a	n/a	n/a	800*	n/a	n/a	1,150*	n/a
Zuni Rd.	Std.	75	75	n/a	225*	n/a	n/a	n/a
Rummell Rd.	100	n/a	225*	n/a	125	100	350	50

\* Denotes dual turn lanes. Queue length reported is recommended for each turn lane.

Std. - Use County standard storage. Actual storage to be determined based on development.

Lengths provided in the table do not include the deceleration distance needed for turn lanes. When designing the overall turn lane lengths, the designer should use the lengths defined in the most recent FDOT Design Manual.

### 5.3.5. ENVIRONMENTAL ASSESSMENT

An analysis of potential environmental impacts was conducted for the left, center, and right alignments for Cyrils Drive. This included a review of impacts to wetland, wildlife and habitat, archaeological and historic resources, and contaminated sites. A summary of the findings is provided below.

- A wetland evaluation identified no impacts to onsite surface waters for all three alignments. There are the following impacts to wetlands within the corridor:
  - For the freshwater marsh on north side, and the emergent aquatic vegetation areas on the north and south side of Cyrils Drive just west of the reverse curves, there are impacts with all three alignments.
  - For the wetland on the south side of Cyrils Drive east of Franklin Road, there are impacts with the south and center alignments.
  - For the freshwater marshes on the north and south side of Cyrils Drive west of Absher Road, there are impacts with all three alignments.
  - For the wetland east of Absher Road, there are impacts with all three alignments.
- The Cyrils Drive corridor is comprised of diverse habitat types. There is the potential for occurrence of numerous state- and federally-listed species. The potential for occurrence is the same for all three alternatives. Species-specific surveys of the proposed roadway and pond sites will be required as part of the design and permitting phase. Additional information regarding endangered species can be found in **Appendix C**.
- There are no eligible historic structures or archaeological sites that would be impacted by any of the three alignments. Additional information regarding historic structures and archaeological sites can be found in **Appendix A**.
- There are three low-risk factor contamination sites along the Cyrils Drive corridor. Although these sites have no bearing on evaluating a preferred alignment, a Level 2 Contamination Impact Analysis (CIA) should be conducted for these sites during final design and permitting. Additional information regarding contamination can be found in **Appendix F**.

### 5.3.6. PRELIMINARY DRAINAGE

The proposed drainage system includes curb inlets to carry runoff from the roadway pavement to proposed stormwater ponds for water quality treatment and peak flow attenuation. The existing Cyrils Drive runoff is currently not treated. The intended permitting approach is to only provide treatment for the additional impervious pavement added as part of the improvement.

Several potential pond sites have been identified and are provided in **Appendix G** (Pond Siting Report). A final determination will be made during final design as to which parcel(s) will be selected.

### 5.3.7. RIGHT-OF-WAY IMPACTS

For the Cyrils Drive corridor, the existing right-of-way width from Narcoossee Road to the reverse curves is 80 feet. An additional 50 feet of right-of-way is required on the north side to accommodate the proposed West Segment typical section and an additional 39 feet is required on the north side to accommodate the proposed Bridge Segment typical section. The existing right-of-way through the reverse curves is 100 feet and decreases to 60 feet from the reverse curves to Absher Road. An additional 19 feet of right-of-way is required through the reverse curves and an additional 59 feet of right-of-way is required on the south side to accommodate the proposed Transition and East typical sections. For the segment east of Absher Road, the existing right-of-way width is 63 feet and an additional 56 feet of right-of-way is required.

### 5.3.8. ACCESS MANAGEMENT

Under current conditions, the existing undivided facility provides unrestricted access from the side street and driveway connections. With a proposed raised median, access would become more restrictive and limited to full median openings, directional openings, or right-in/right-out access points. The proposed access management plan would be the same for all three alignment alternatives and should be based on minimum spacing requirements described in the FDOT Design Manual. The access management plan should be further refined during the design phase.

### 5.3.9. MULTI-MODAL ACCOMMODATIONS

To accommodate pedestrian and bicycle users, the typical sections proposed for Cyrils Drive include:

- West Segment – a 5-foot sidewalk on the north side and a 12-foot multi-use path on the south side.
- Bridge Segment – a 5-foot sidewalk on the north side and a 10-foot multi-use path on the south side.
- Transition Segment – a 5-foot sidewalk on the north side and a 12-foot multi-use path on the south side.
- East Segment – a 5-foot sidewalk on the north side, a 12-foot multi-use path on the south side, and 7-foot buffered bike lanes on both sides.

There are currently no transit stops in the Cyrils Drive corridor.

### 5.3.10. MAINTENANCE OF TRAFFIC

Construction for the widening of Cyrils Drive can be accomplished by using a three-phase traffic control plan. For Phase 1, traffic will be maintained on the existing pavement, providing a single eastbound and westbound travel lane. Half of the proposed typical section would be constructed (excluding the median).

For Phase 2, traffic will be shifted to the newly constructed pavement, providing a single eastbound and westbound travel lane. The second half of the proposed typical section would be constructed.

For Phase 3, traffic will be separated and shifted to the outside lanes of the new pavement, providing a single eastbound and westbound travel lane. The median would then be constructed.

Specific maintenance of traffic will be determined during the design phase.

#### 5.3.11. OPINION OF PROBABLE CONSTRUCTION COST

The opinion of probable construction cost for the Cyrils Drive improvement is \$10,500,000. This cost does not include right-of-way or design services.