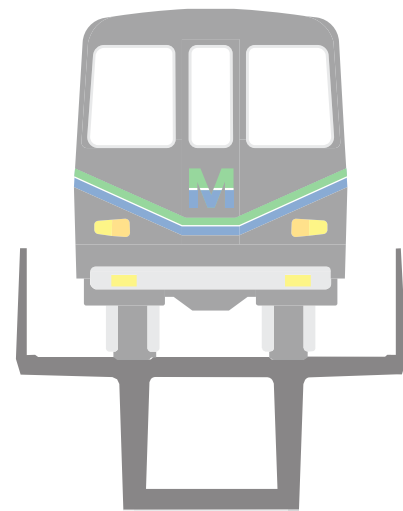
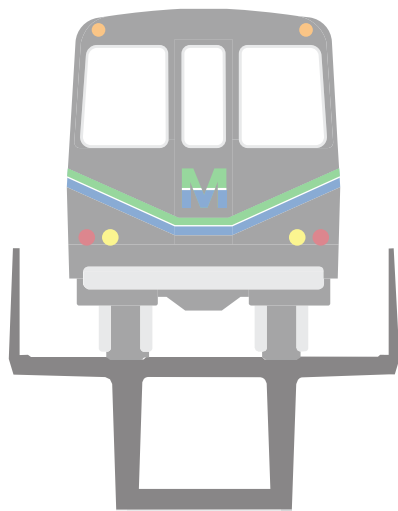




# Non-Motorized Overpass at SR 5/US1 And SR 976/SW 40<sup>th</sup> Street (Bird Road) Executive Summary



March 9, 2017

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**Non-Motorized Overpass at SR 5/US1 and SR 976/SW 40<sup>th</sup> Street (Bird Road)**  
**(FM No. 421053-3-12-01)**

**EXECUTIVE SUMMARY**

**Project Description:** Concept and Feasibility Analysis for a non-motorized overpass for pedestrian and bicycles to support the Underline adjacent to US-1 at SW 40<sup>th</sup> Street (Bird Road).

**Purpose:** The Department requested a conceptual and feasibility analysis to identify, evaluate, and recommend potential alignments for a non-motorized overpass.

This conceptual analysis consisted of:

- Typical Section Analysis
- Horizontal and Vertical Geometric Analysis
- Traffic Control Analysis

**Background:** The study was conducted at US 1 at 40<sup>th</sup> Street adjacent to the Underline, a proposed 10 mile signature linear park and urban trail. The Underline will serve as a gateway to the adjacent communities, by improving physical access from north to south running from underneath the Metrorail line and parallel to US1.

**Need:** At this specific location, the traffic congestion is impacting the safety of pedestrians and bicyclists crossing SW 40<sup>th</sup> Street.

**Methodology:** The feasibility study included the following tasks;

- Field review of existing conditions
- Analyze existing Right of Way Maps and Survey (topography)
- Obtain aerial images of the proposed study area
- Performed horizontal and vertical geometric analysis
- Coordination with local companies that manufacture pre-fabricated bridges to obtain preliminary cost estimates and engineering specifications
- Performed a conceptual Right of Way cost analysis of the adjacent properties within the study area
- Development of design criteria
- Development of concept alternatives including typical section, plan and profile.

**Existing Conditions:** US 1 at SW 40<sup>th</sup> Street is a skewed intersection approximately 0.60 miles southwest of the Coconut Grove Metrorail station. There are pedestrian signals and high visibility pedestrian crossings on the south approach of US-1, and on the west approach on SW 40<sup>th</sup> Street. There is also a pedestrian crossing on Hibiscus St. adjacent to the intersection. There are no bicycle lanes on the streets and arterials.

**Proposed Improvements:**

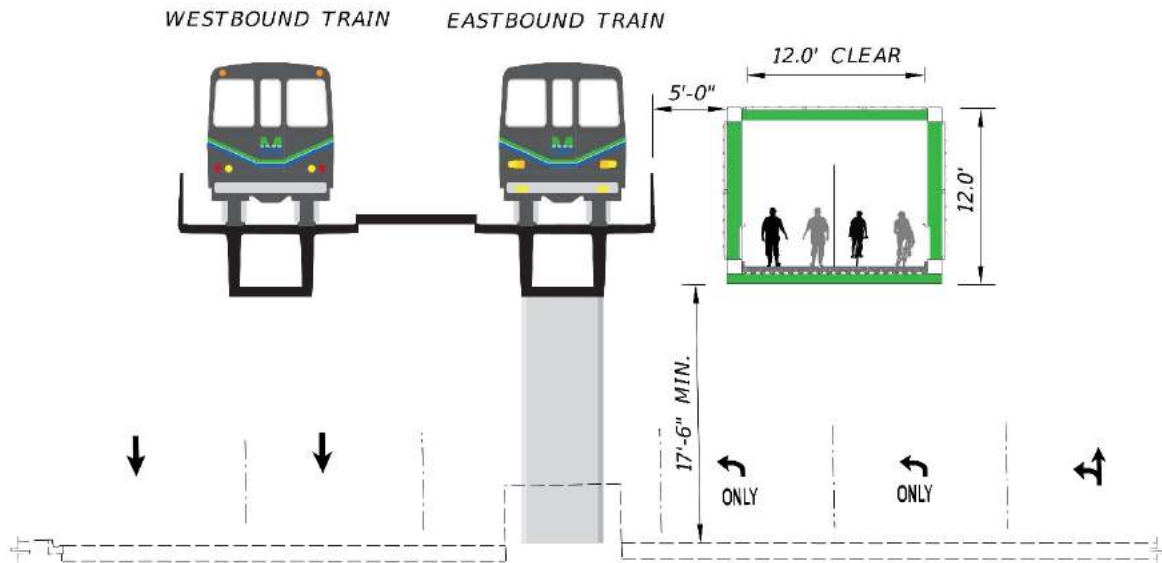
## Non-Motorized Overpass at SR 5/US1 and SR 976/SW 40<sup>th</sup> Street (Bird Road) (FM No. 421053-3-12-01)

The proposed alternative is a non-motorized overpass for pedestrians and bicyclists, with grades not exceeding 3%, that will require a 764 foot long prefabricated bridge consisting of 6 spans ranging from 115 feet to 140 feet in length (**See Appendix A, Sheets 1 thru 4**). The abutment located at the begin bridge location will be placed on the south side of SW 40<sup>th</sup> Street, at least 16 feet from the edge of pavement. There is a need to provide a bridge pier at the existing Metrorail pier protection between WB and EB on SW 40<sup>th</sup> Street. The remaining bridge piers and the abutment for the end bridge location will be constructed between the Metrorail tracks and US-1. The bridge will extend to just north of the US-1 SB right turn lane due to the lateral constraint between the Metrorail tracks and the existing edge of pavement.



The remainder of the pedestrian overpass will be constructed using retaining walls and gravity walls with bicycle railings on the wall copings. Gravity walls will be used at the approaches to the Underline at the ground level on both sides. The south portion of the overpass will be constructed south of the Metrorail tracks, within the Metrorail right-of-way. The north portion of the overpass will be constructed between the Metrorail tracks and US-1, within the Metrorail right-of-way.

**Non-Motorized Overpass at SR 5/US1 and SR 976/SW 40<sup>th</sup> Street (Bird Road)  
(FM No. 421053-3-12-01)**



SW 40<sup>th</sup> STREET (BIRD RD.)

**Traffic Control:** The construction of the pier located on SW 40th St will be done by closing the inner lanes on each direction on the west leg of the intersection of SW 40th St and SR5/US1 using standard temporary concrete barrier wall to separate the work zone from the travel lanes.

The construction of all the bridge piers on the north leg of the intersection will be done by closing the SB RT lane and/or by closing the outermost SB lane using temporary concrete barrier wall.

For the construction of the bridge pier south of SW 40th St, the construction of the retaining walls, gravity walls and shared-use path, no lane closures are required. Only very short duration closures may be expected to provide access to construction equipment.

Closures on SB US1 will be required in order to erect the bridge superstructure north of SW 40<sup>th</sup> Street and night operations are recommended.

Mounting/assembling of the bridge superstructure over the EB and WB SW 40th St. will require a temporary detour, and closing SW 40th St. NW 37th Ave can be used as a detour route. Also, lane closures on SB US1 will be required, and night operations are preferred.

**Non-Motorized Overpass at SR 5/US1 and SR 976/SW 40<sup>th</sup> Street (Bird Road)**  
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**Right of Way Availability:** Based on our analysis, for proposed improvements an estimated area of approximately 215,428 square feet from the property belonging to Miami Dade County (Metrorail) will have to be transferred to the Department.

**Miami Dade Transit Concerns:**

In consultation with Miami Dade Transit, 5' of clearance from the drip edge of the Metrorail structure to the proposed overpass structure is feasible, however, there are a number of concerns.

- The proximity of the 750 kV electrified third rail which is next to the Metrorail tracks.
- Noise level from the Metrorail will be significant to the pedestrians and bicyclists, therefore, further analysis of the noise will be required.
- The proximity of the existing Metrorail foundations to the proposed overpass foundations. Any construction near their foundations have a time restriction from 1am to 4am.

**Schedule**

PEDESTRIAN OVERPASS AT US 1 AND BIRD ROAD			
No	Activity Description	Design (Working Days)	Construction (Working Days)
1	140'X12' TRUSS (6 Spans)	45	170
2	APPROVAL OF DRAWINGS	30	
3	SUBSTRUCTURE	90	150
4	ROADWAY (WALLS AND PATH)	180	260
Schedule Total Days (Calendar Days)		252	364

**Cost Estimate:** The total estimated construction cost is **\$5,426,308.68**. The estimate is based on the Master Pay Item List (January 2016 to June 2016 – Area 13). The cost estimate for the pre-fabricated bridge was obtained from the manufacturer.

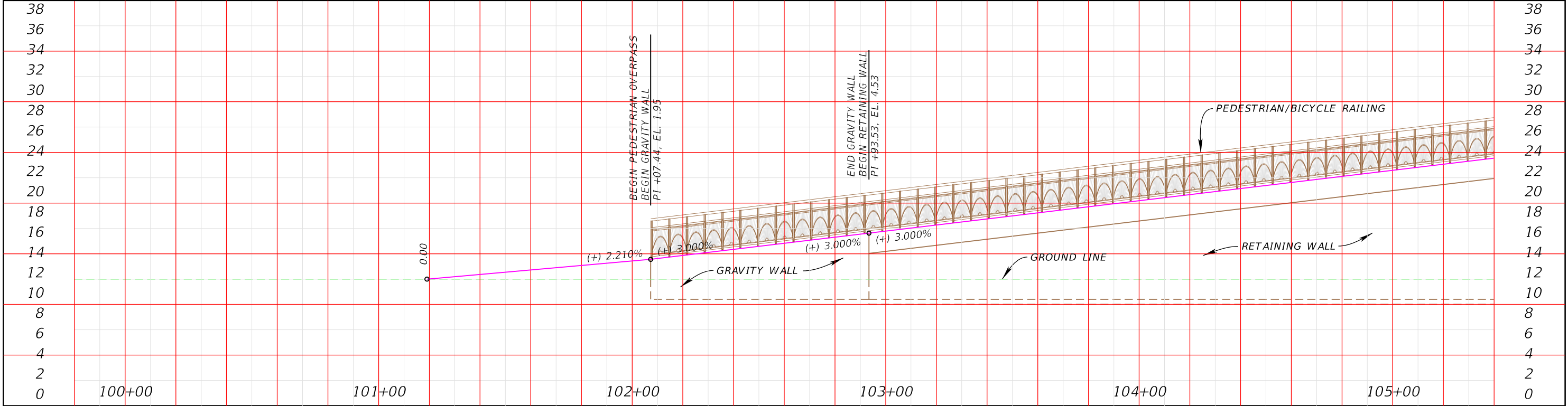
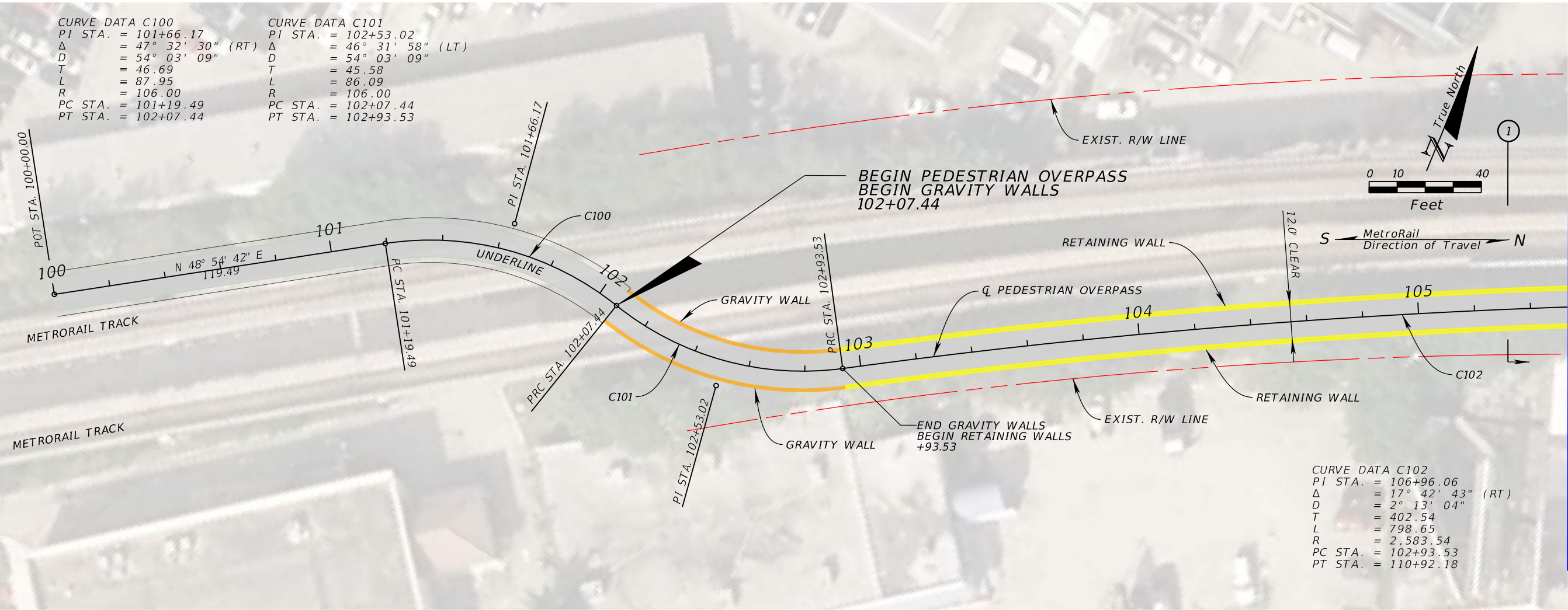
**Fatal Flaws:** No fatal flaws were identified; however, a more detailed analysis is recommended.

**Recommendations:** Based on this study's findings, the non-motorized overpass improvement is recommended for further design development as a safety project under the Highway Safety Program.

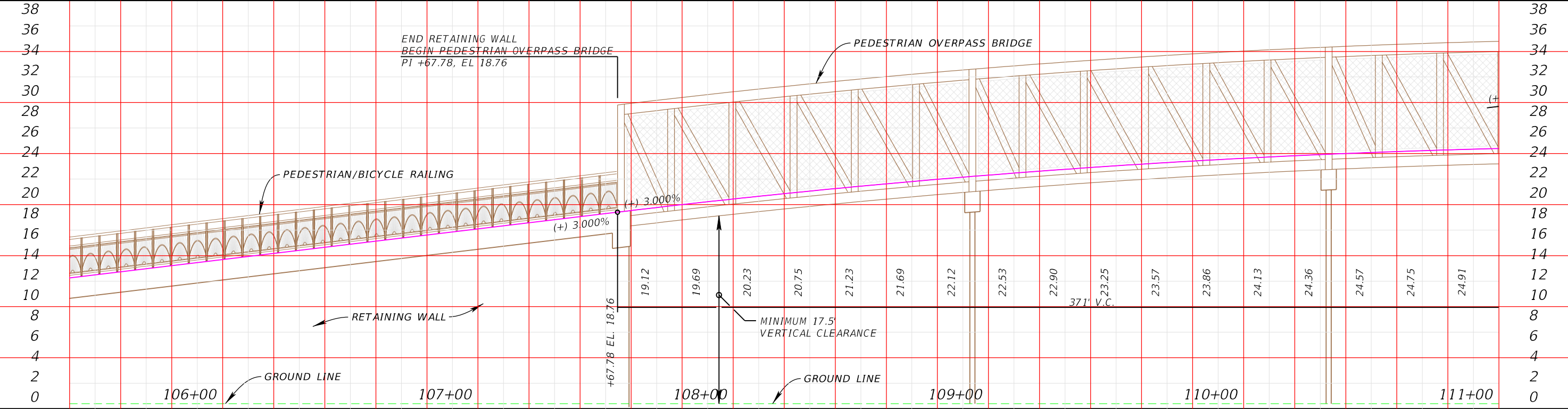
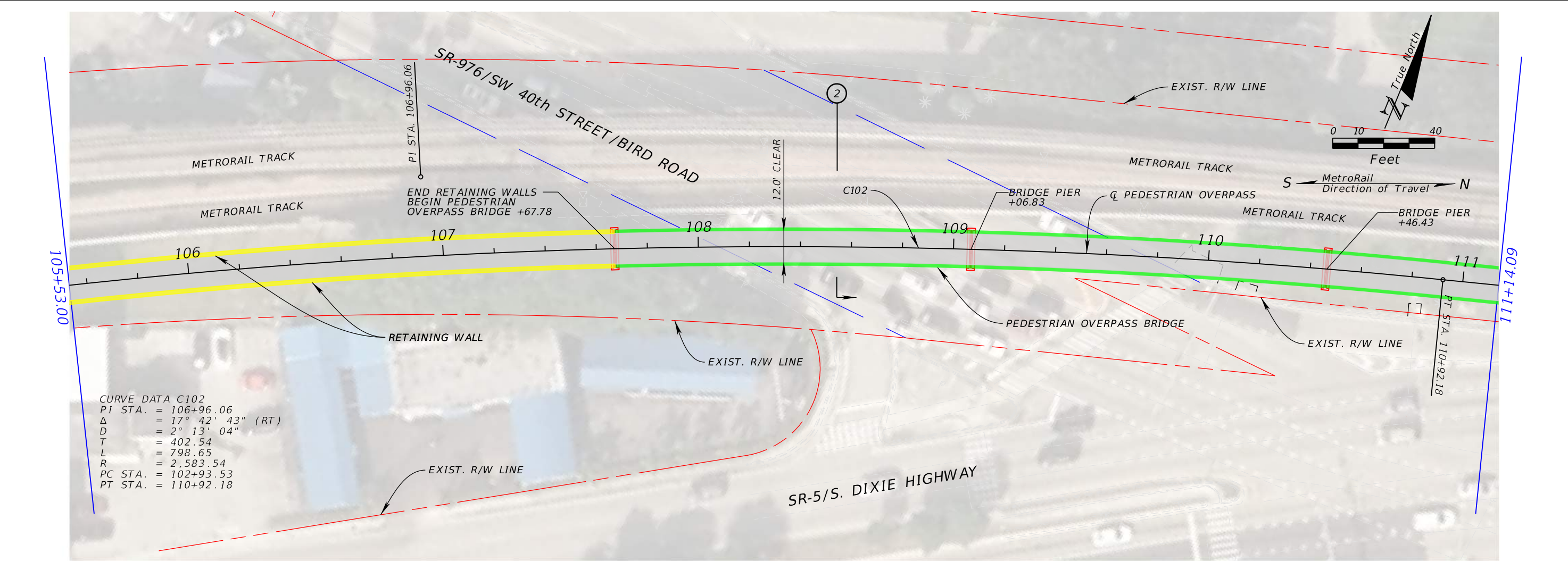
**Non-Motorized Overpass at SR 5/US1 and SR 976/SW 40<sup>th</sup> Street (Bird Road)**  
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## **APPENDIX A**





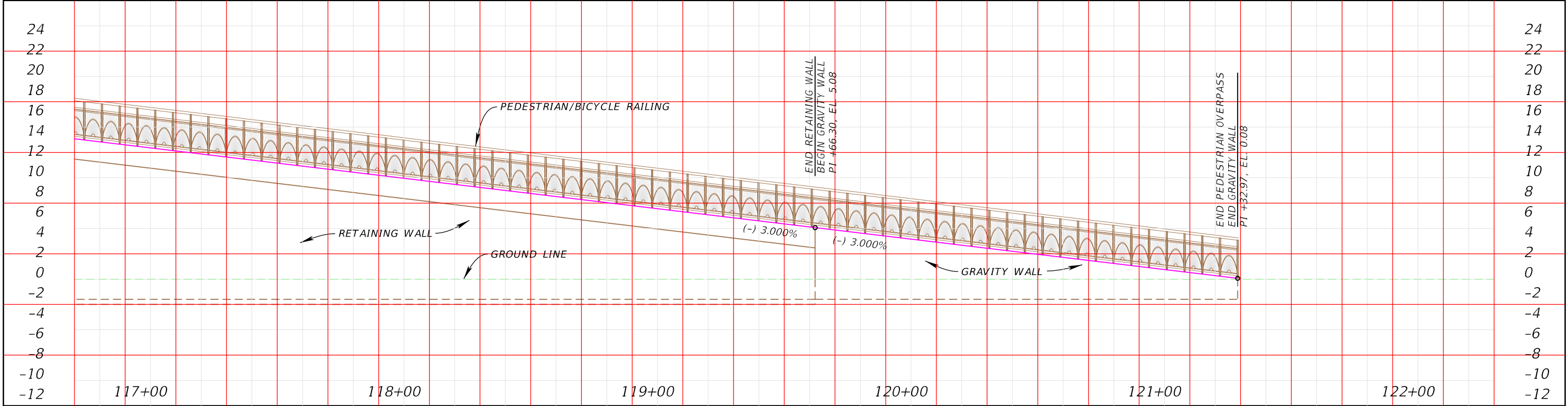
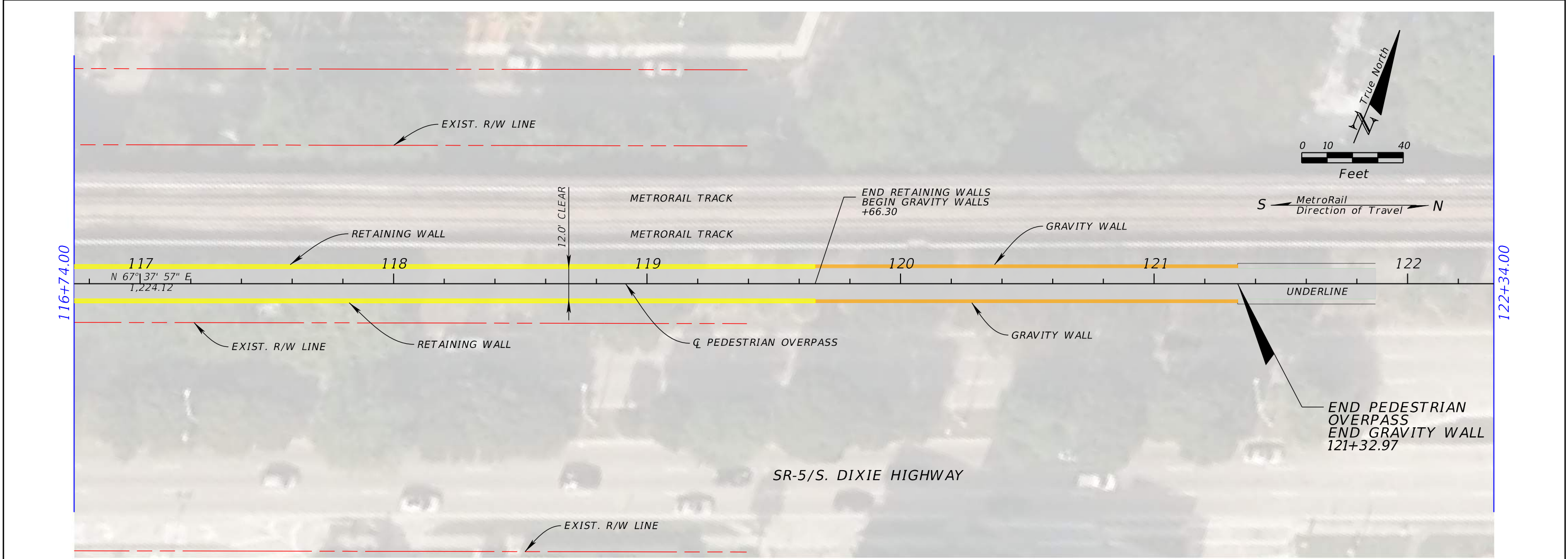
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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR-5	MIAMI-DADE	421053-3-12-03		1



REVISIONS				MARLIN ENGINEERING, INC. 1700 NW 66 Ave., Ste. 106 • Plantation, FL 33313 (305) 477-7575 • C.A. No. 6104	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ROADWAY PLAN & PROFILE BIRD ROAD OVERPASS	SHEET NO. 2
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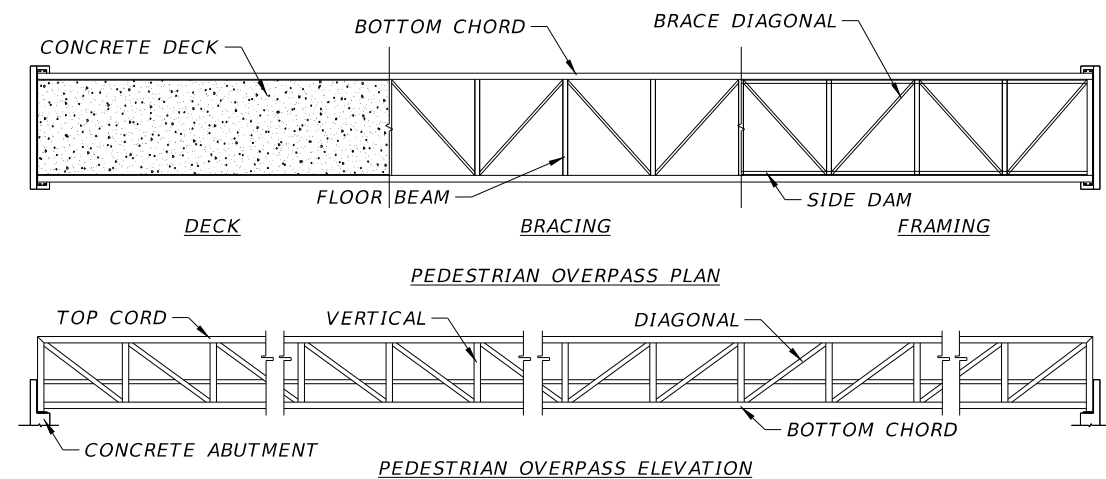
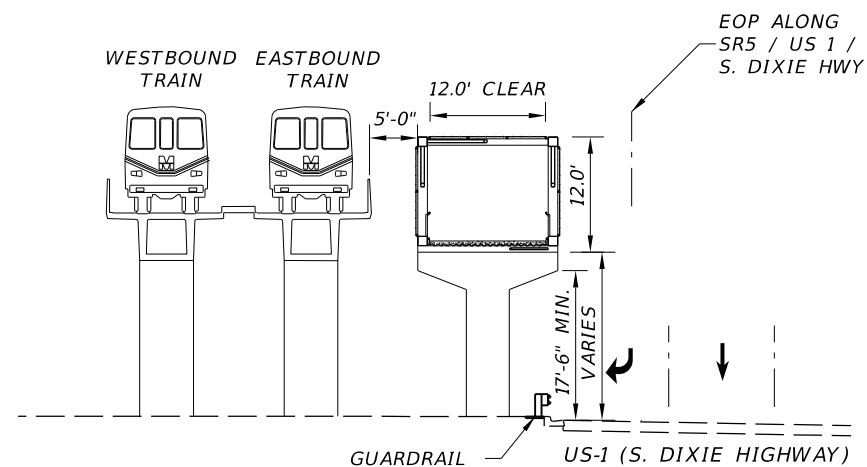
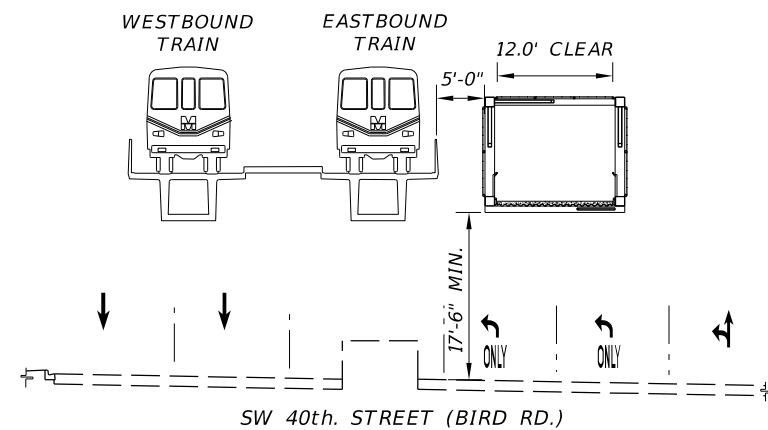
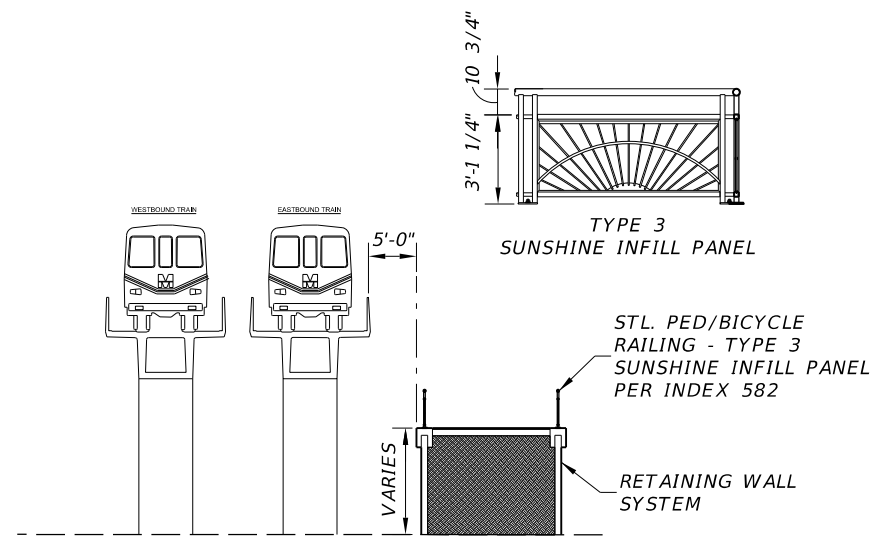






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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
					SR-5	MIAMI-DADE	421053-3-12-03			

SW 40th. STREET (BIRD RD.)



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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
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