

Orlando, FL

November 7-8, 2024



2024 TRANSPORTATION SYMPOSIUM

FDOT Wildlife Crossing Design & Lessons Learned



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FDOT District 1 Drainage & Environmental Permitting



Wildlife Corridor Act

- The legislature unanimously approved the Florida Wildlife Corridor Act in 2021 which aims to protect and enhance the Florida Wildlife Corridor.
- In 2024, the approved budget included **\$100 million** for land conservation.
- The Wildlife Corridor Act (WCA) is intended to prevent **habitat fragmentation**, **safeguard clean water and air**, **preserve agricultural lands** and allow for **continued recreational access to natural areas**.
- FDOT's mission includes providing a transportation system which "**prioritizes Florida's environment and natural resources**"
- Wildlife crossings improve habitat connectivity and support the WCA.

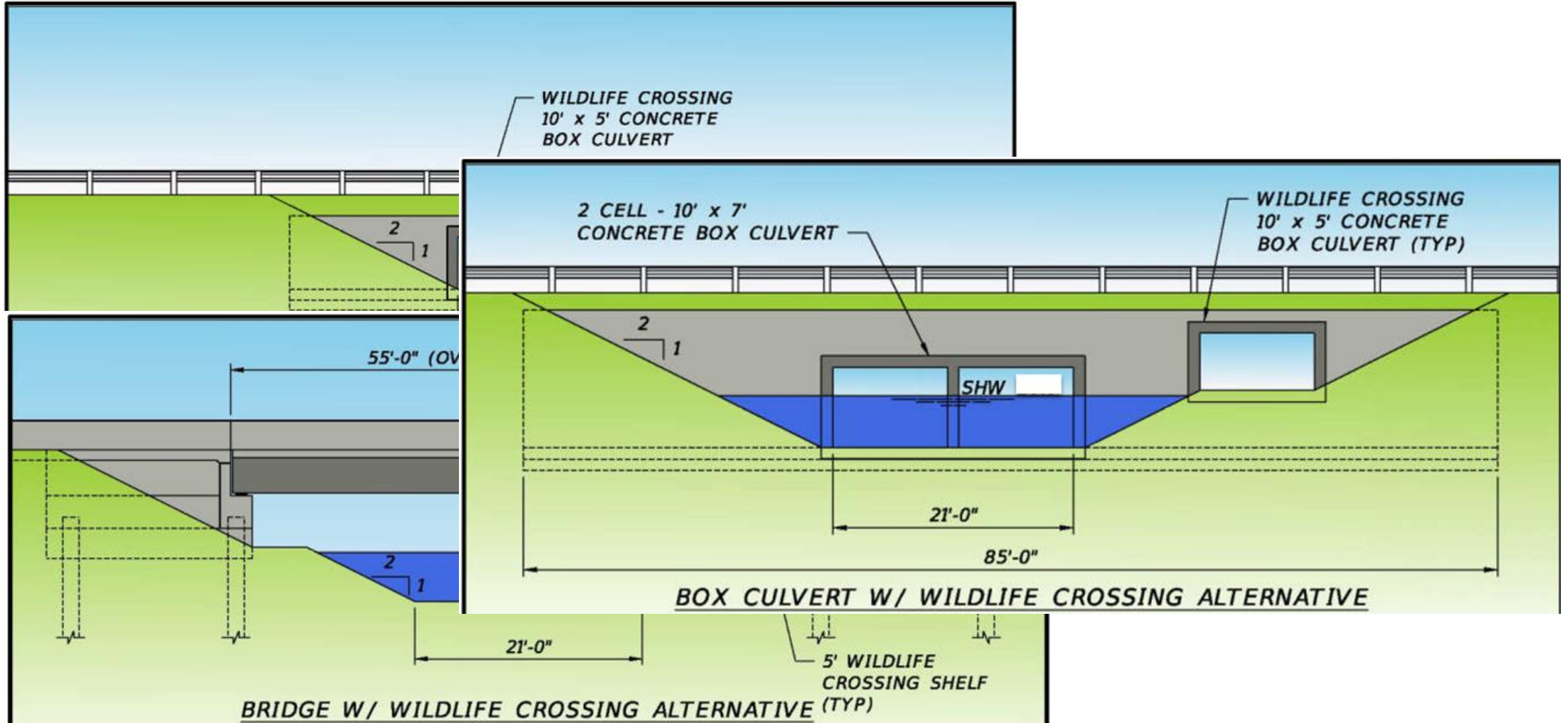


- FWC estimates 120-230 adult Florida panthers in the wild.
- Unfortunately, more than 20 panthers were hit by vehicles **each** year between 2014 and 2022.
- Vehicle Collisions are the leading known cause of death for Florida Panthers and Black Bears

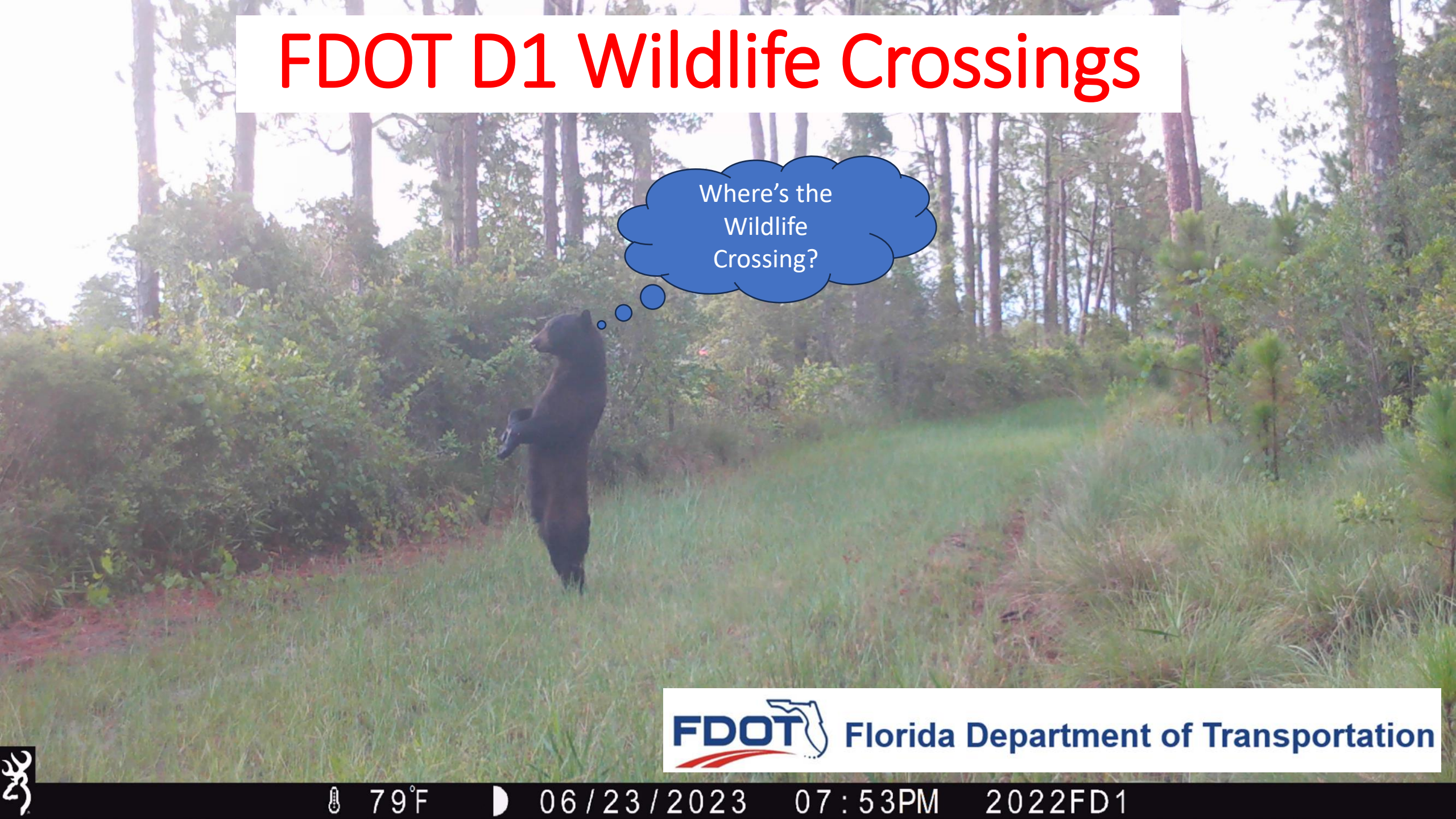


Additionally, FDOT reported more than 17,000 wildlife vehicle collisions including 25 fatalities and nearly 2,400 injuries between 2015 and 2019.

Wildlife Crossing Types



FDOT D1 Wildlife Crossings

A black bear is standing upright on its hind legs in a grassy field. Above the bear is a blue thought bubble containing the text "Where's the Wildlife Crossing?". The background consists of tall pine trees and dense green bushes.

Where's the
Wildlife
Crossing?



Florida Department of Transportation

79°F

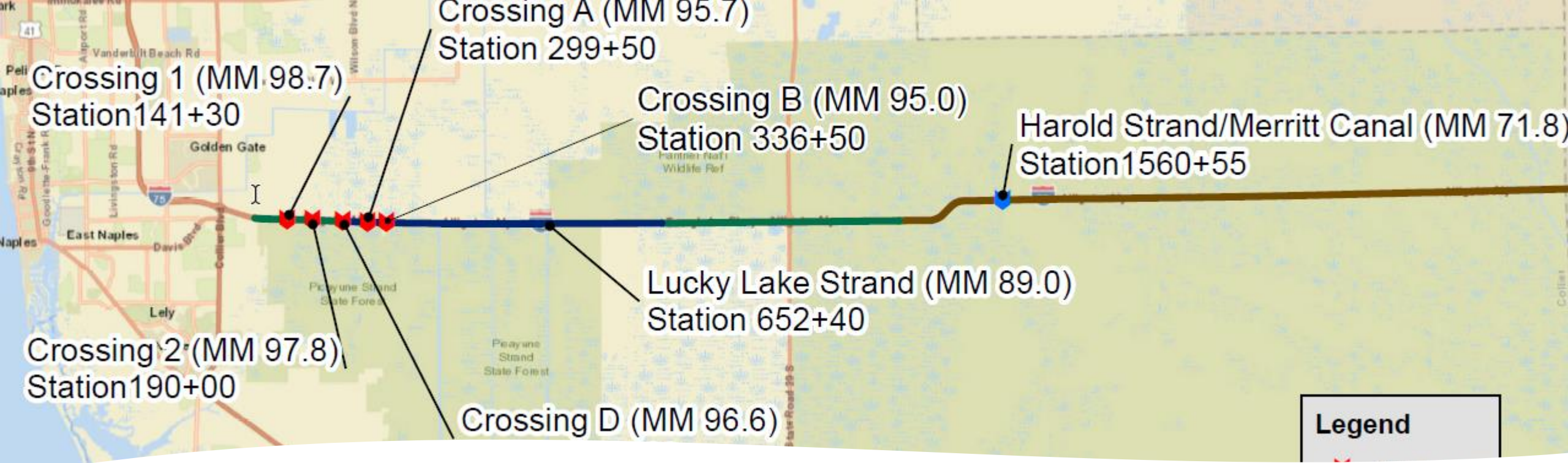


06/23/2023

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2022FD1





I-75 (Alley) Pile Bridge Crossings

- Split into 3 projects:
 - 444008-2, includes pile bridge at Harold Strand – Let 2/17/2022
 - 448008-3 – includes pile bridges at two western box culverts -Let 7/21/2022
 - 448008-4 – includes three pile bridges - Scheduled to Let 7/25/2024

Timber Pile bridge (south side)




Concrete Pile Bridge (north side)



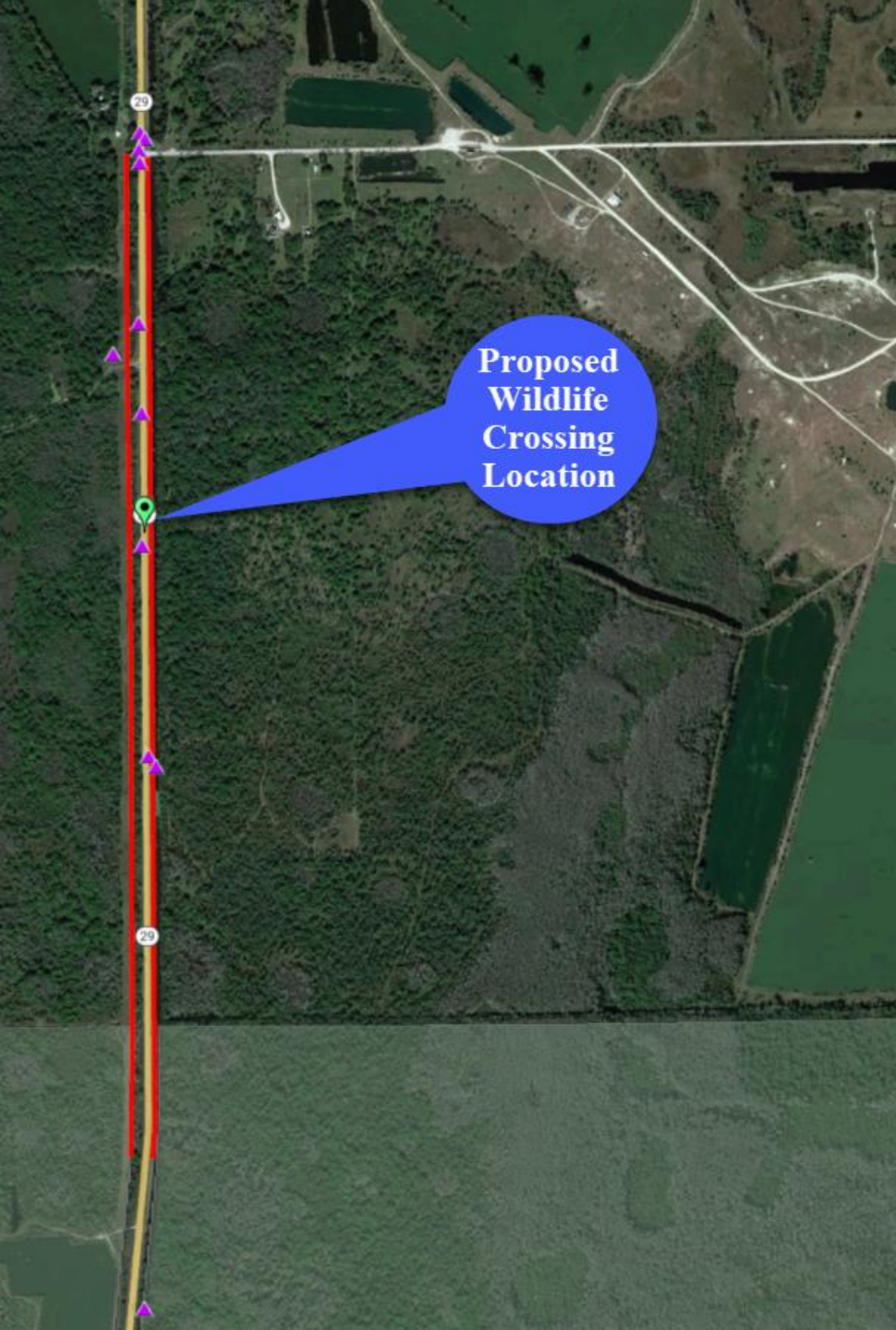


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Pile Bridge Video

- [Shared album - Wildlife Bridges - Google Photos](#)
- [I-75 at MM 98.7](#)
- [I-75 at MM 97.8](#)



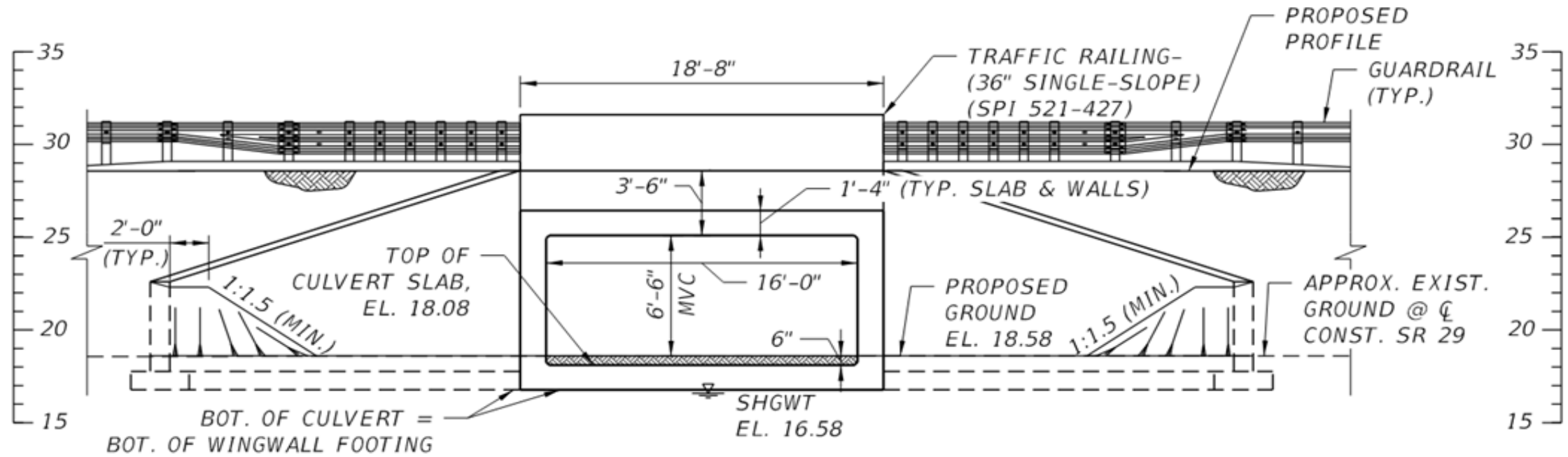
SR 29 North of the Panther Refuge (449143-1)

- New culvert style wildlife crossing proposed
- Includes pile bridge over Barron Canal on east side
- Includes 1.3 miles of wildlife fence from existing Panther Refuge fencing to Vulcan Mine entrance.
- Design underway – **60% plans available**
- ROW required for canal crossing – Funded FY 2025
- Construction Not funded - \$5,800,000 (earliest FY 2027)
- Likely seeking grant(s)
- **Issue: No adjacent conservation lands.**

Crossing Types

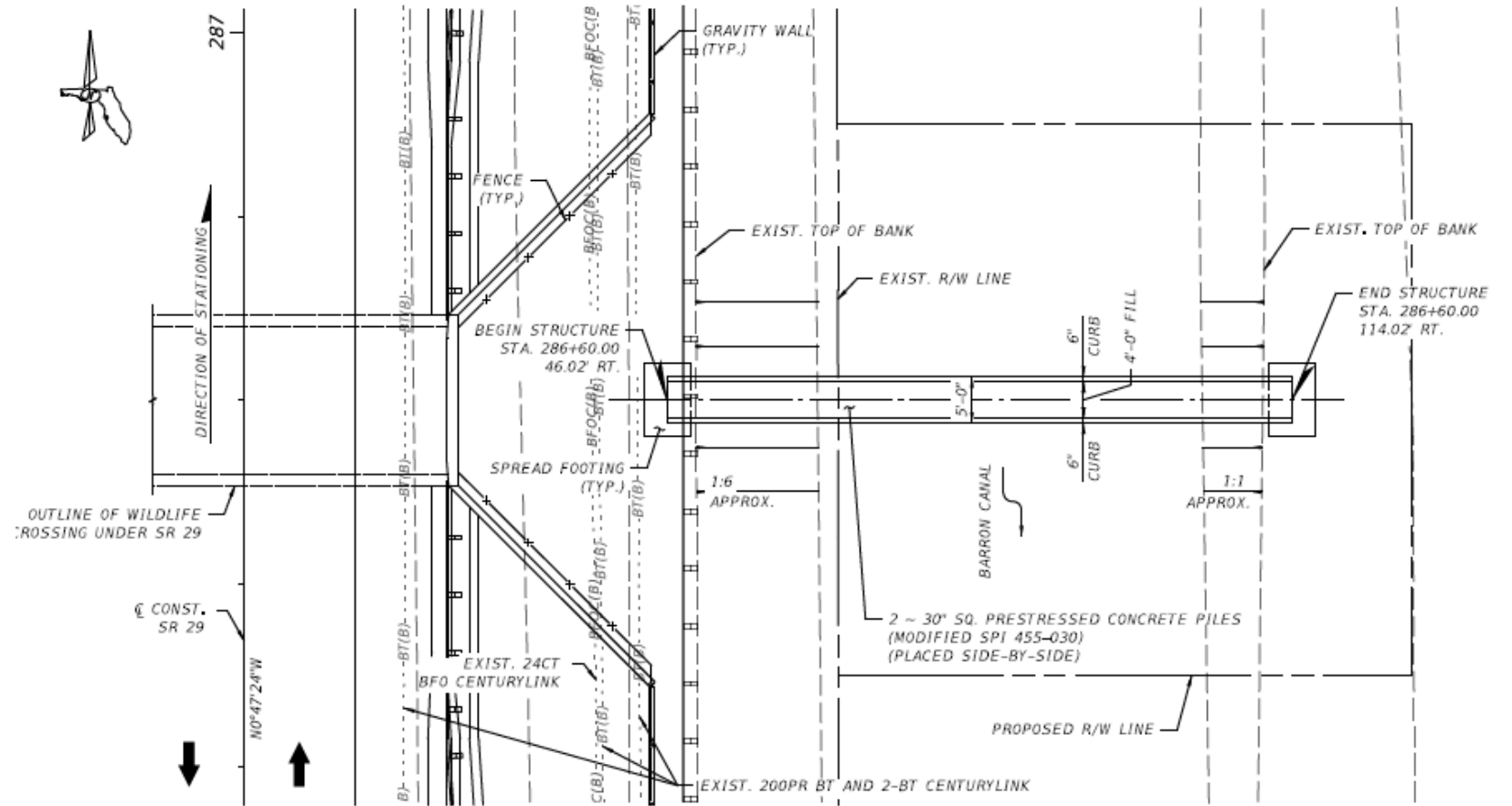


SR 29 Box Culvert

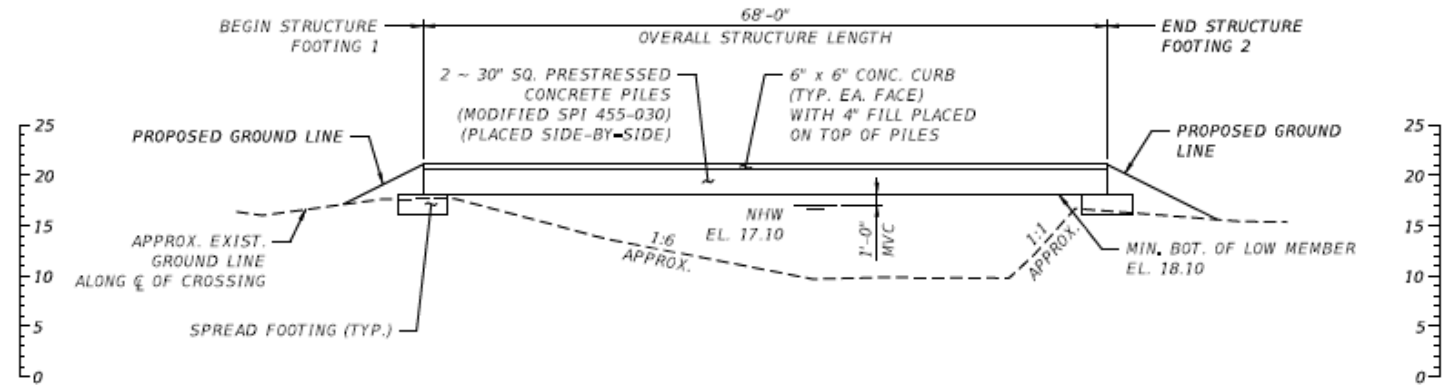


ELEVATION
CONCRETE BOX CULVERT
(STANDARD PLANS 400-289)

SR 29 Culvert and Barron Canal Pile Bridge

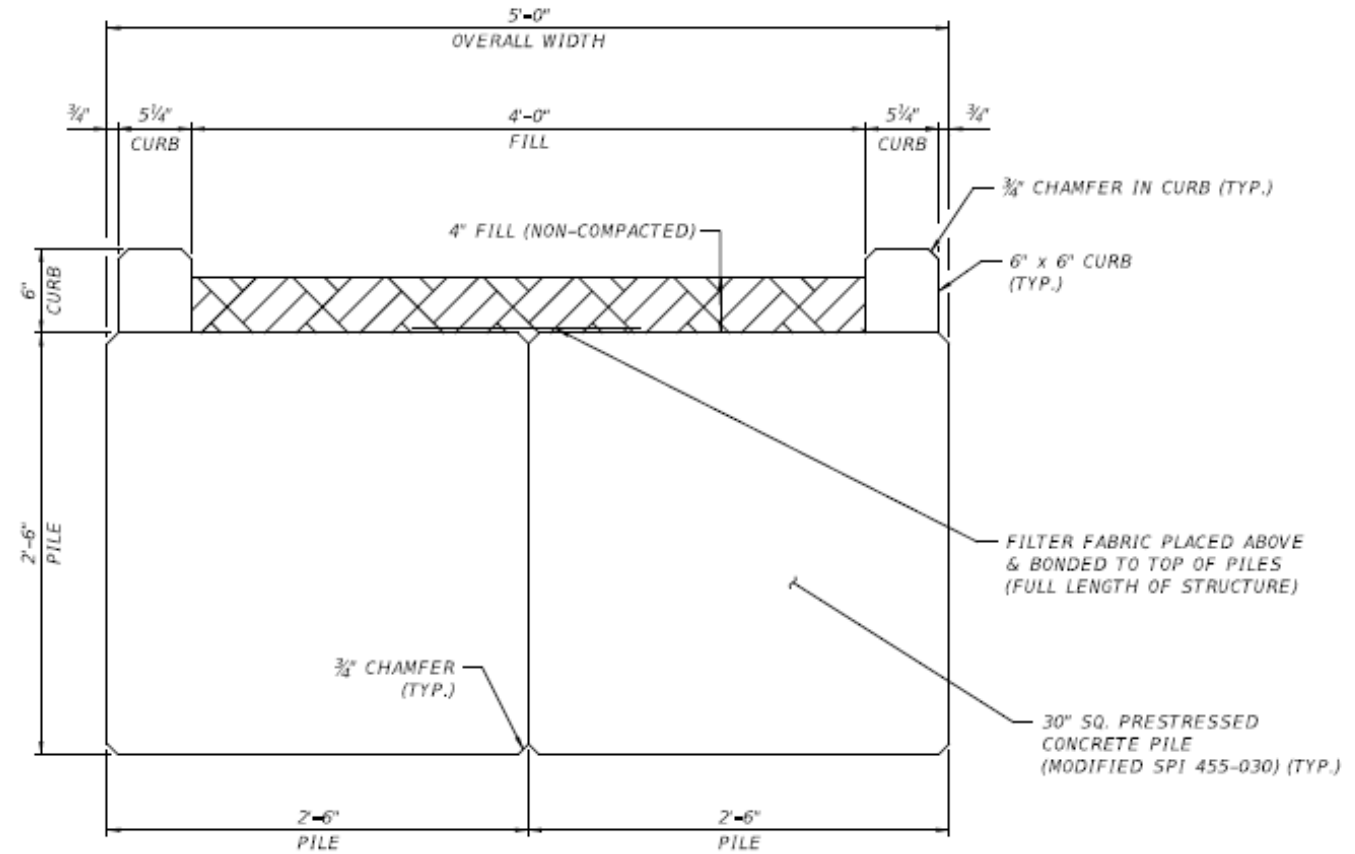


PLAN



ELEVATION

SR 29 Barron Canal Pile Bridge



TYPICAL SECTION

SR 29 Roadside Animal Detection System

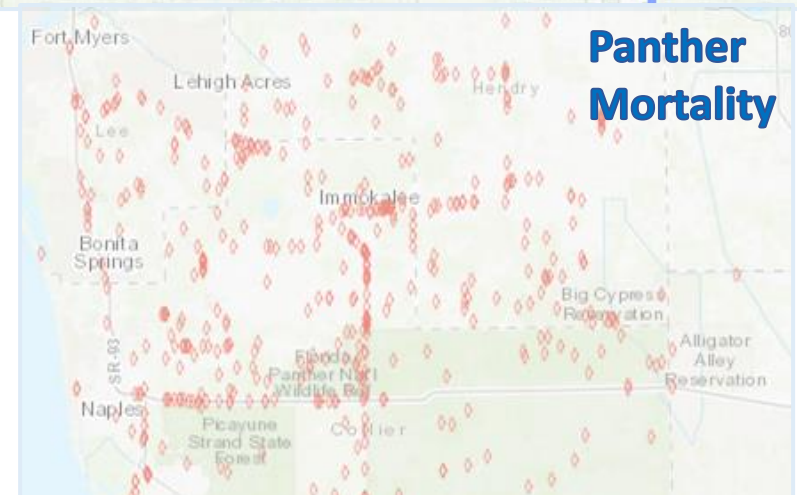
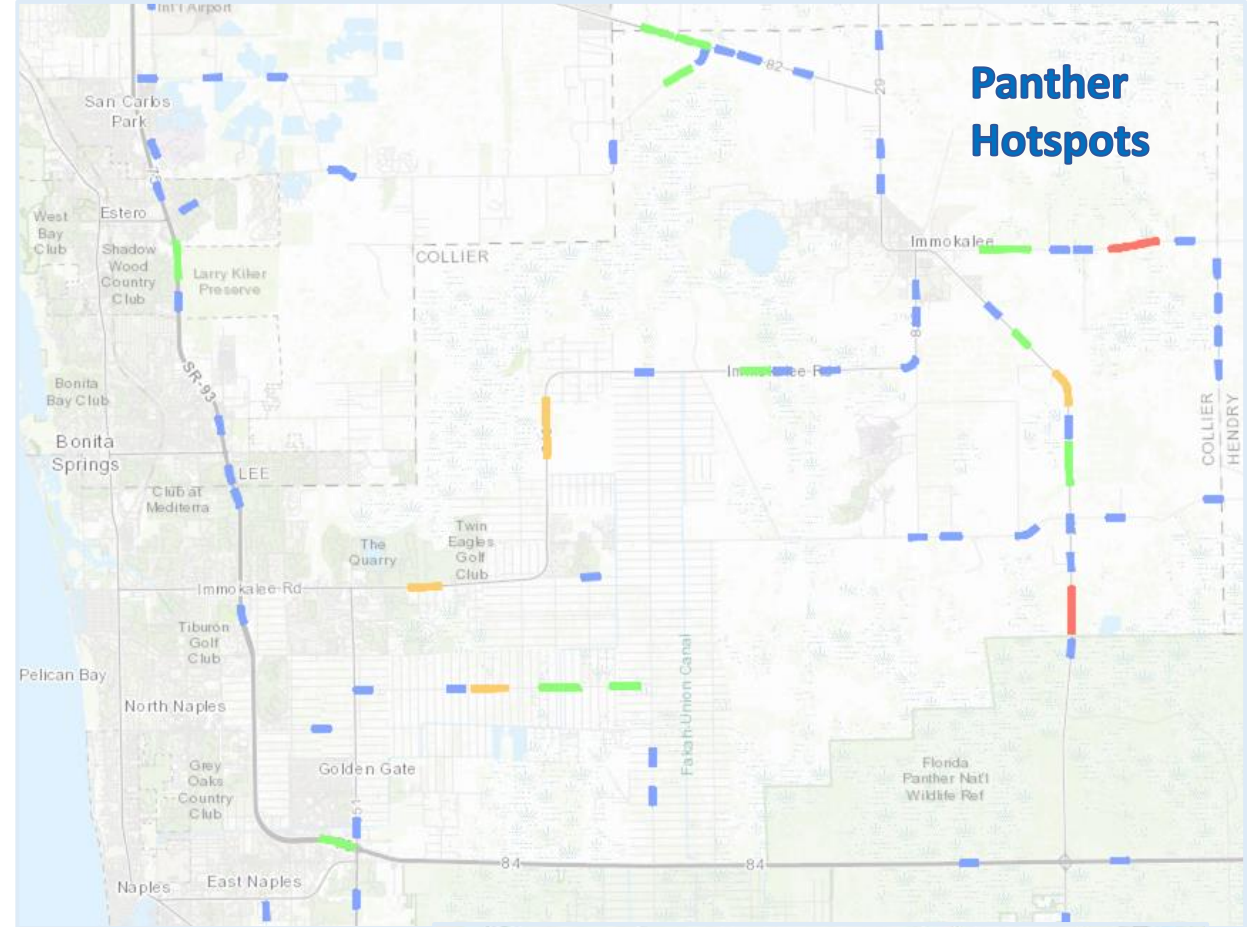
- Pilot project using Radar and thermal imaging cameras
- Includes both signs and in-vehicle warnings
- Construction scheduled **late 2024**
- Cost \$600k



Locating Crossings

FDOT utilizes various tools to identify potential locations for wildlife crossings:

- Florida Panther-vehicle collision hotspots
- Least Cost Pathways (GIS modeling)
- Animal telemetry data
- Conservation lands data
 - Florida Forever
- Future land use maps
- Florida Ecological Greenways Network (FEGN)
- Florida Wildlife Corridor
- Motion Activated Trail Cameras



Data Collection

- FDOT utilizes motion activated trail cameras.
- FDOT places cameras on both sides of potential crossings to better understand the type and abundance of wildlife and to monitoring existing crossings.



Wildlife Crossings Work!

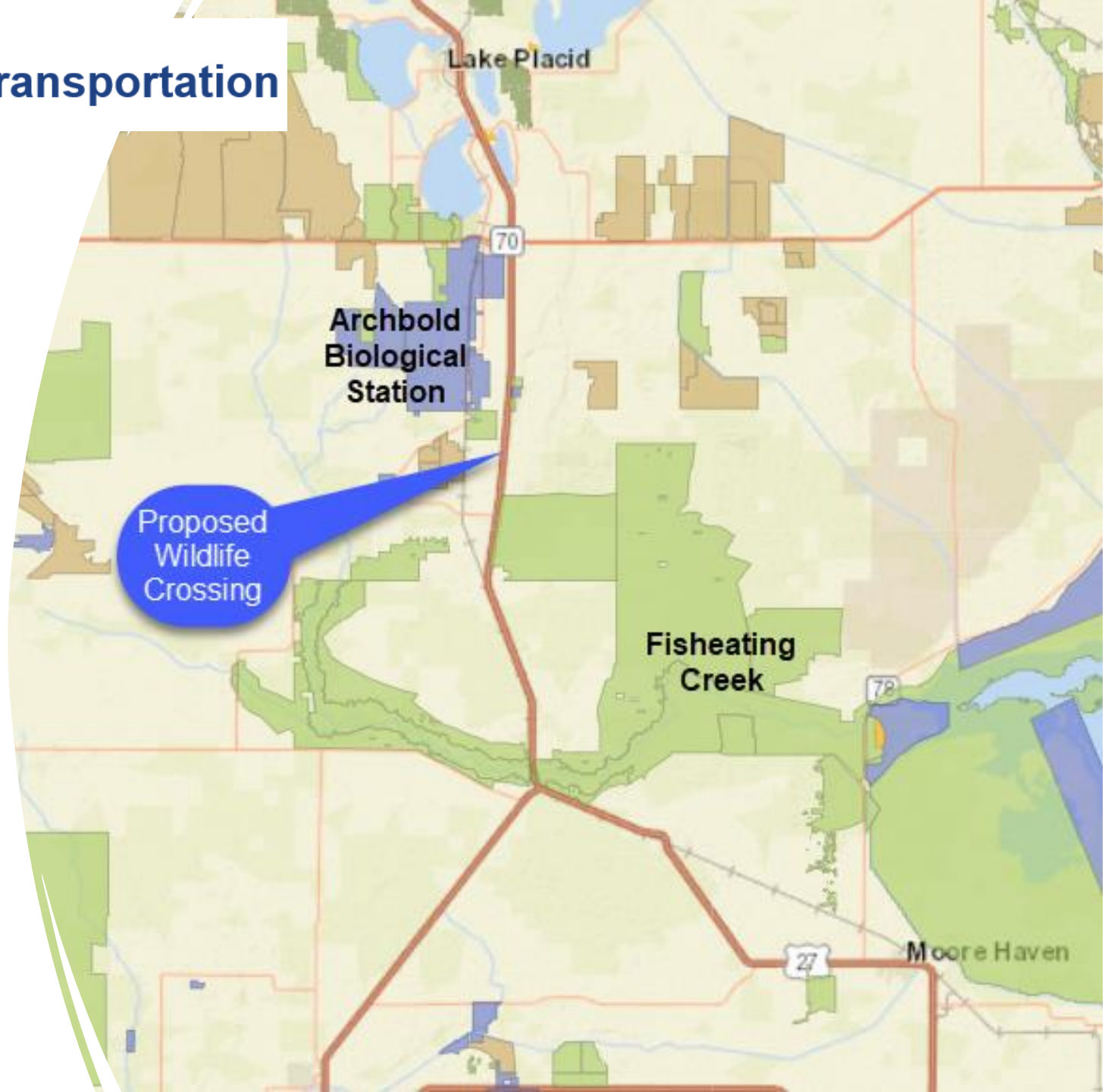
- Literature reviews show wildlife crossings are 80-90% effective at reducing wildlife vehicle collisions, especially when wildlife fencing is included.
- FDOT, Agencies and Non-Governmental Organizations (NGOs) have monitored FL's existing wildlife crossings and collected data showing wildlife use crossings.



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US 27 Venus Wildlife Crossing

- Connecting Archbold Biological Station and Lake Wales Ridge Wildlife and Environmental Area (>40,000 acres) to Fisheating Creek (>50,000 acres)



Archbold
Biological
Station

Proposed Wildlife
Crossing

Venus

Highlands
Glades

Target Rural and Family Lands
Easement Acquisition

County Road 731

US Highway 27 S

US Highway 27 N

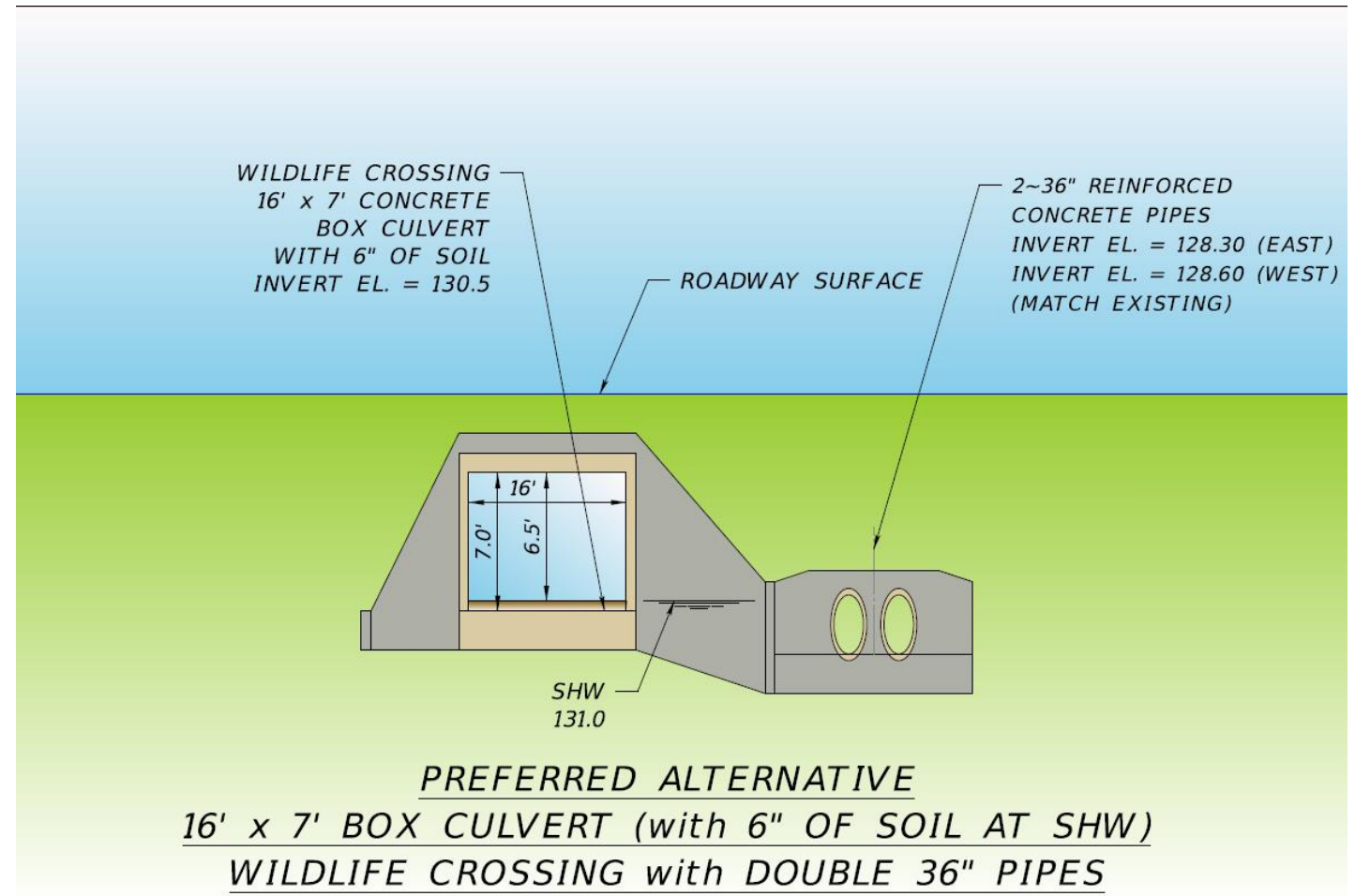
Glades

Fisheating Creek
Wildlife
Management Area

Six mile

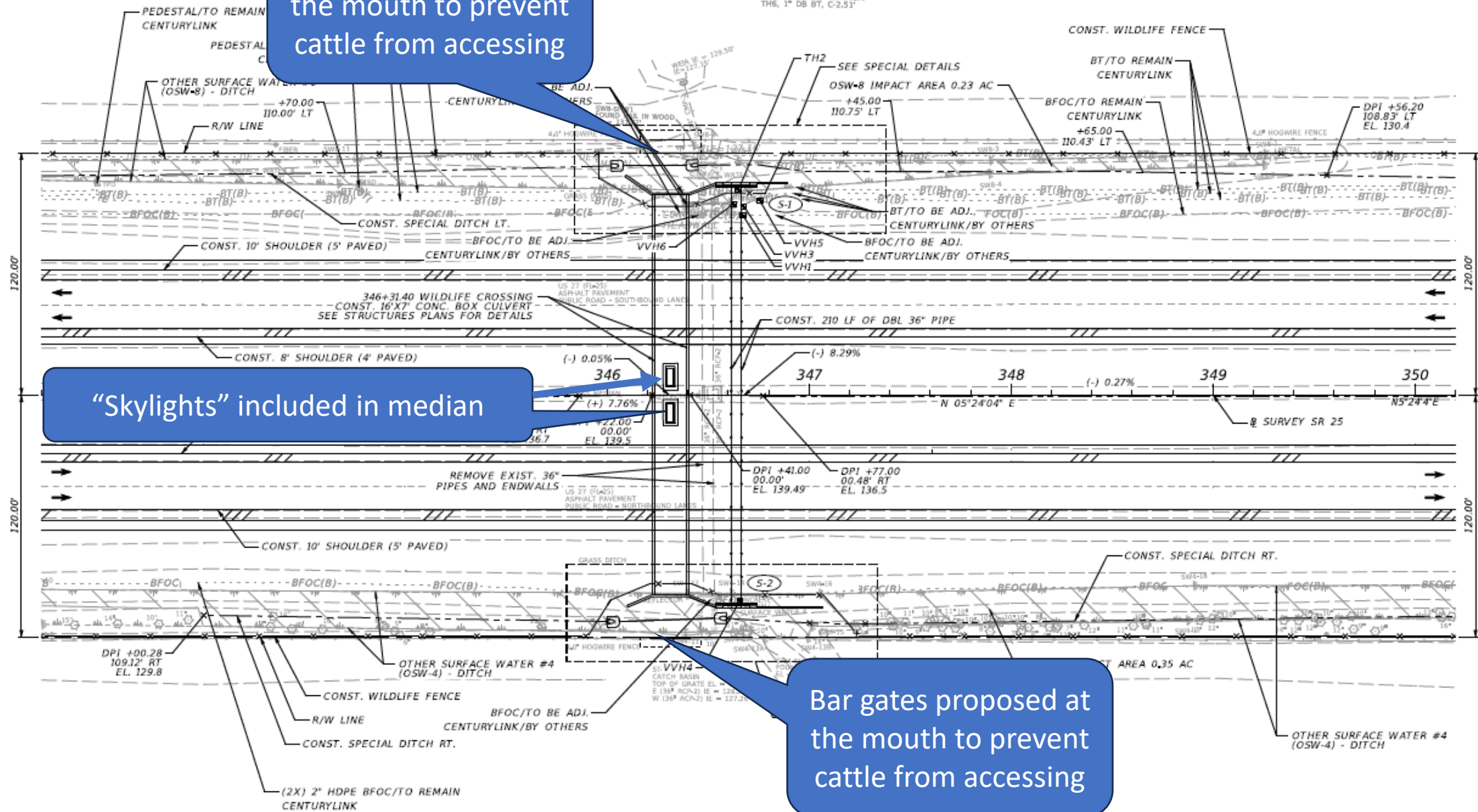
US 27 Venus Wildlife Crossing (449144-2)

- 16'x7' culvert proposed
- Includes 1.0 mile of wildlife fencing on both sides.
- 60% Plans complete
- Permitting underway
- No ROW required
- Construction: Not funded - +\$6,850,000 (earliest August 2025 letting)
- WCPP Grant denied 2023 (reapplied 2024)
- Need conservation lands on both sides (on FL Forever)



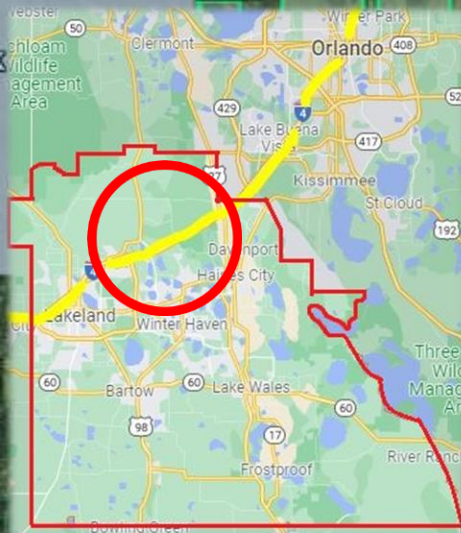
Bar gates proposed at the mouth to prevent cattle from accessing

TH1, N.F.V. SIZE (DUE TO WATER & CAVE-INS) PE FOC, C-6.55'
TH2, 1" DB BT, C-3.13'
TH3, 2" DB BT, C-1.93'
TH4, N.F.V. SIZE & MATERIAL (DUE TO WATER & CAVE-INS) FOC, C-5.93'
TH5, 1.50" DB BT, C-2.53'
TH6, 1" DB BT, C-2.51'



"Skylights" included in median

Bar gates proposed at the mouth to prevent cattle from accessing



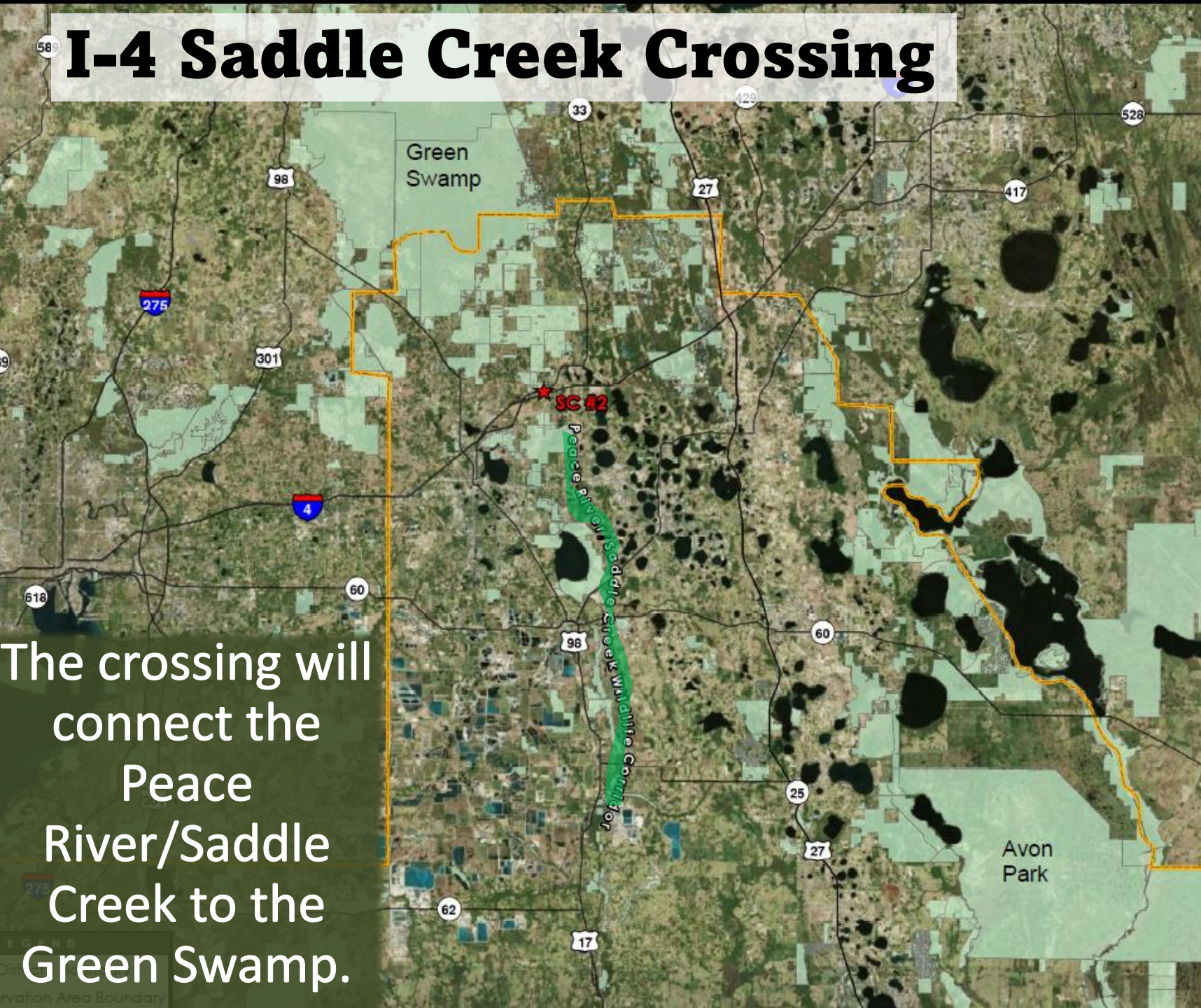
Eastern Green Swamp

Western Green Swamp

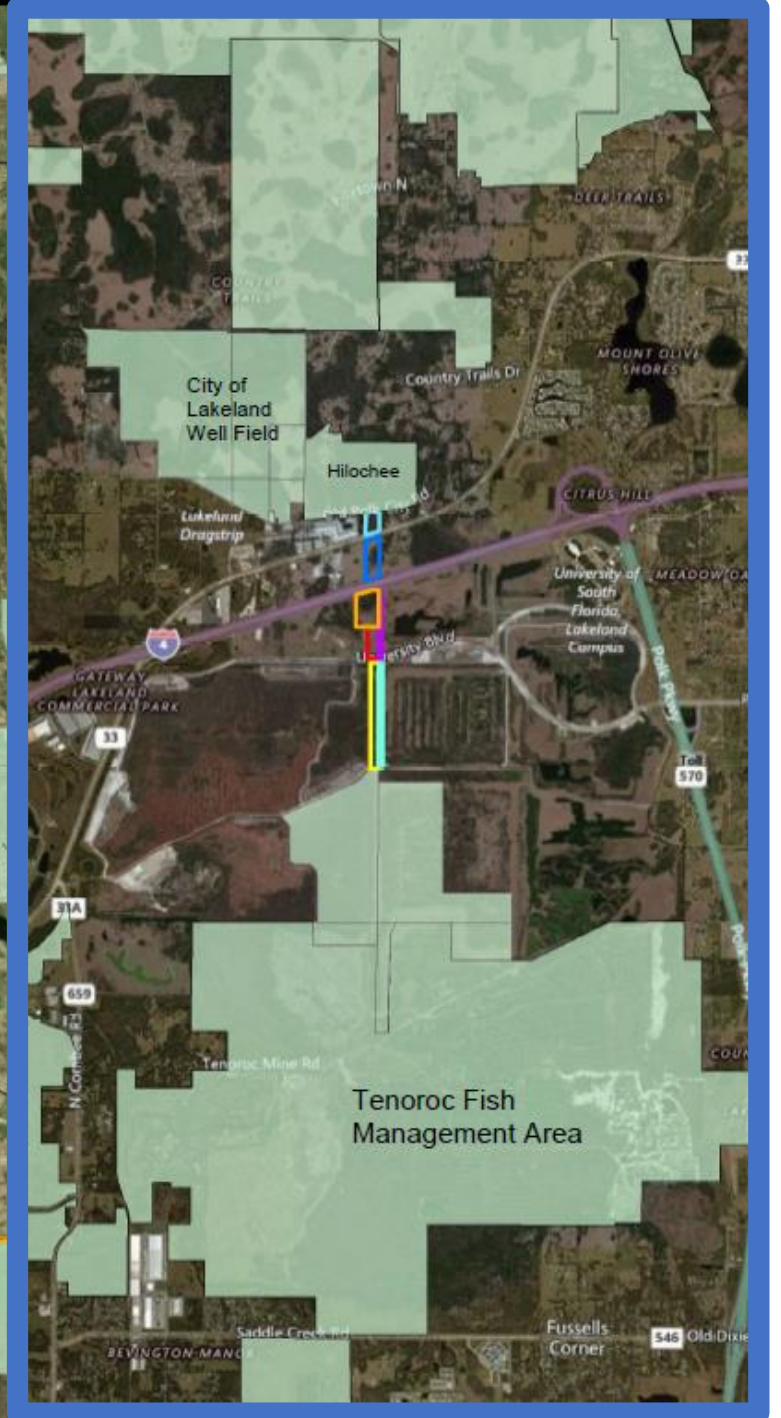
Saddle Creek

**District 1
Polk County**

I-4 Saddle Creek Crossing



The crossing will connect the Peace River/Saddle Creek to the Green Swamp.

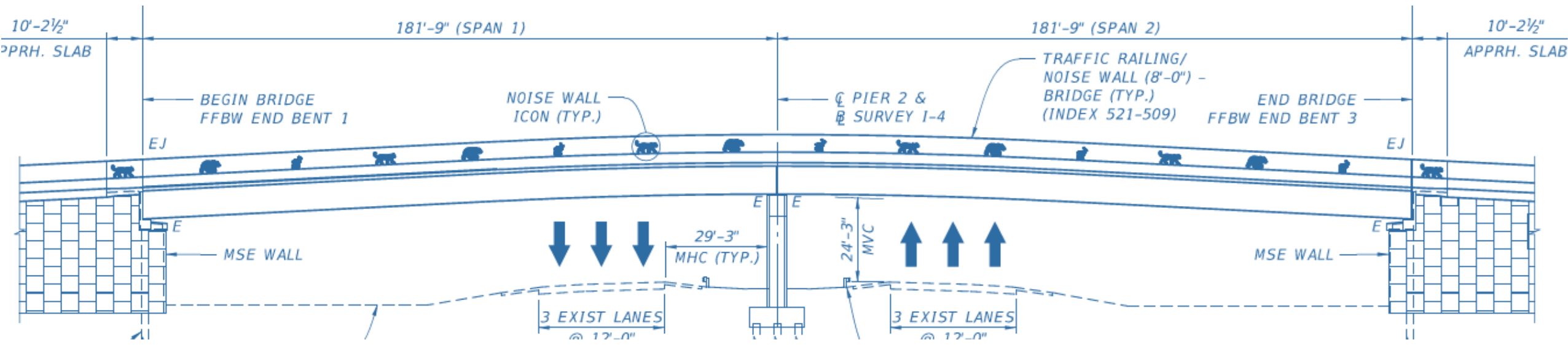


Project Layout

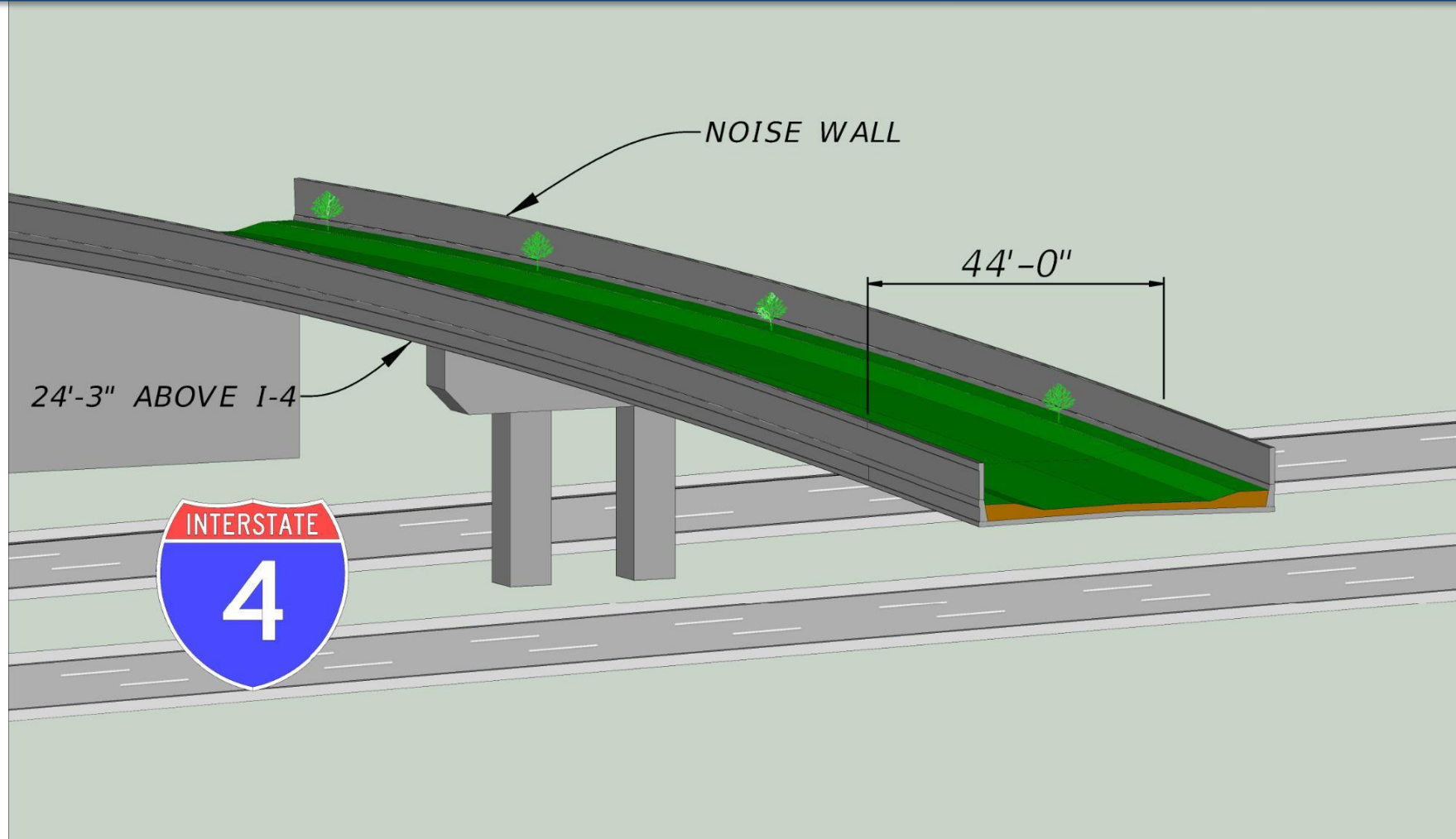


I-4 Saddle Creek Crossing

- Preliminary cost estimates for a wildlife underpass exceeded \$15 million which did not include legacy costs for the ultimate buildout of the Interstate.
- FDOT investigated the potential for an overpass which only required right of way on the north side of I-4 since FDOT already owned property on the south side, and cost +\$8 million and accommodates the ultimate buildout.

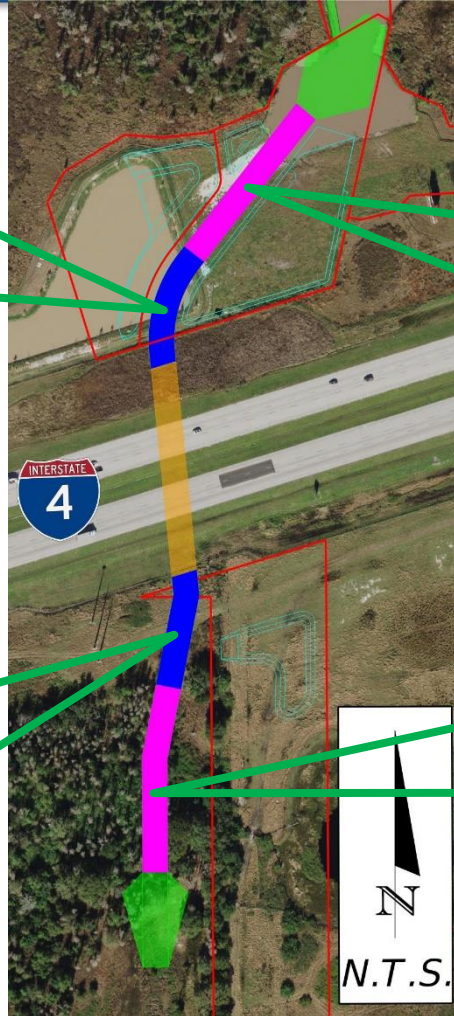
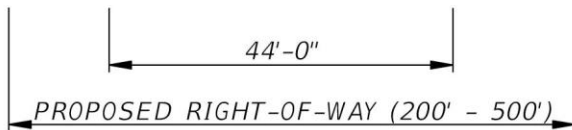
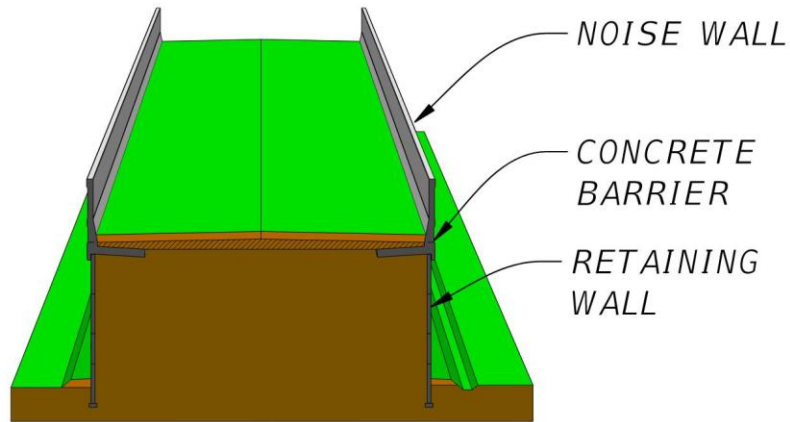


Typical Section At Bridge Crossing

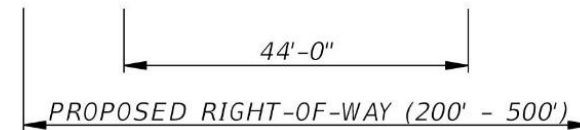
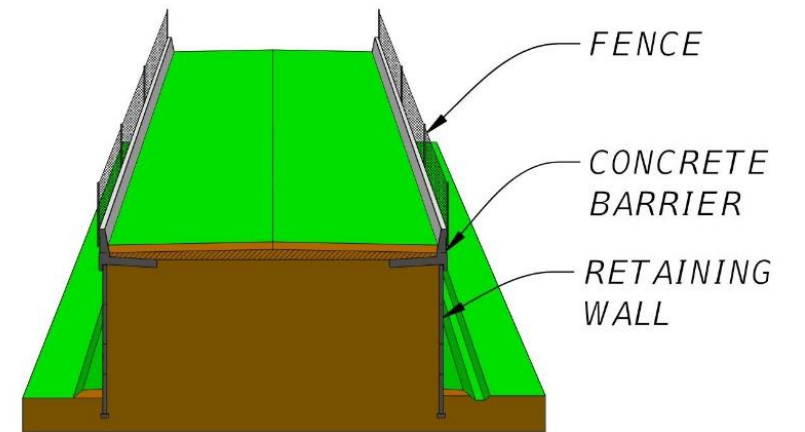


Typical Sections At Bridge Approaches

BRIDGE APPROACH
NOISE WALL OPTION



BRIDGE APPROACH
FENCE OPTION



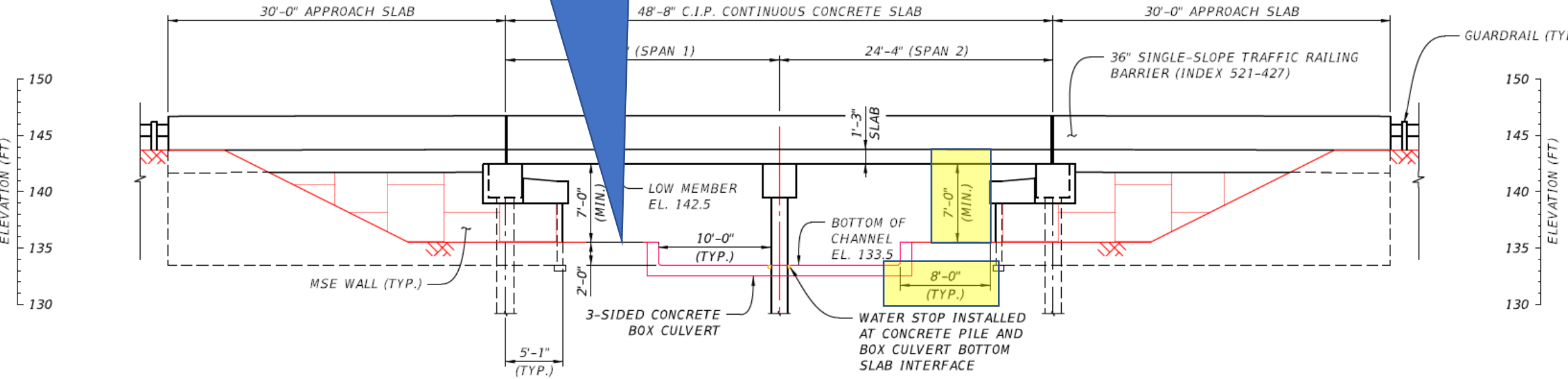
SR 33 Saddle Creek Crossing

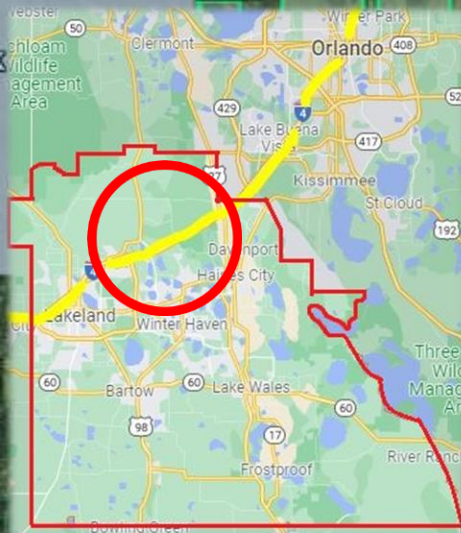
- An underpass crossing is also proposed under SR 33 which parallels I-4 immediately to the north.
- Other local roadways (currently with low traffic volumes) inhibiting wildlife movement will need to be monitored for future retrofits.



SR 33 Saddle Creek Crossing

Wildlife shelves on both sides of channel





Eastern Green Swamp

Western Green Swamp

Currently under construction

Saddle Creek

District 1 Polk County

I-4 Western Green Swamp near SR 557

Project currently under construction

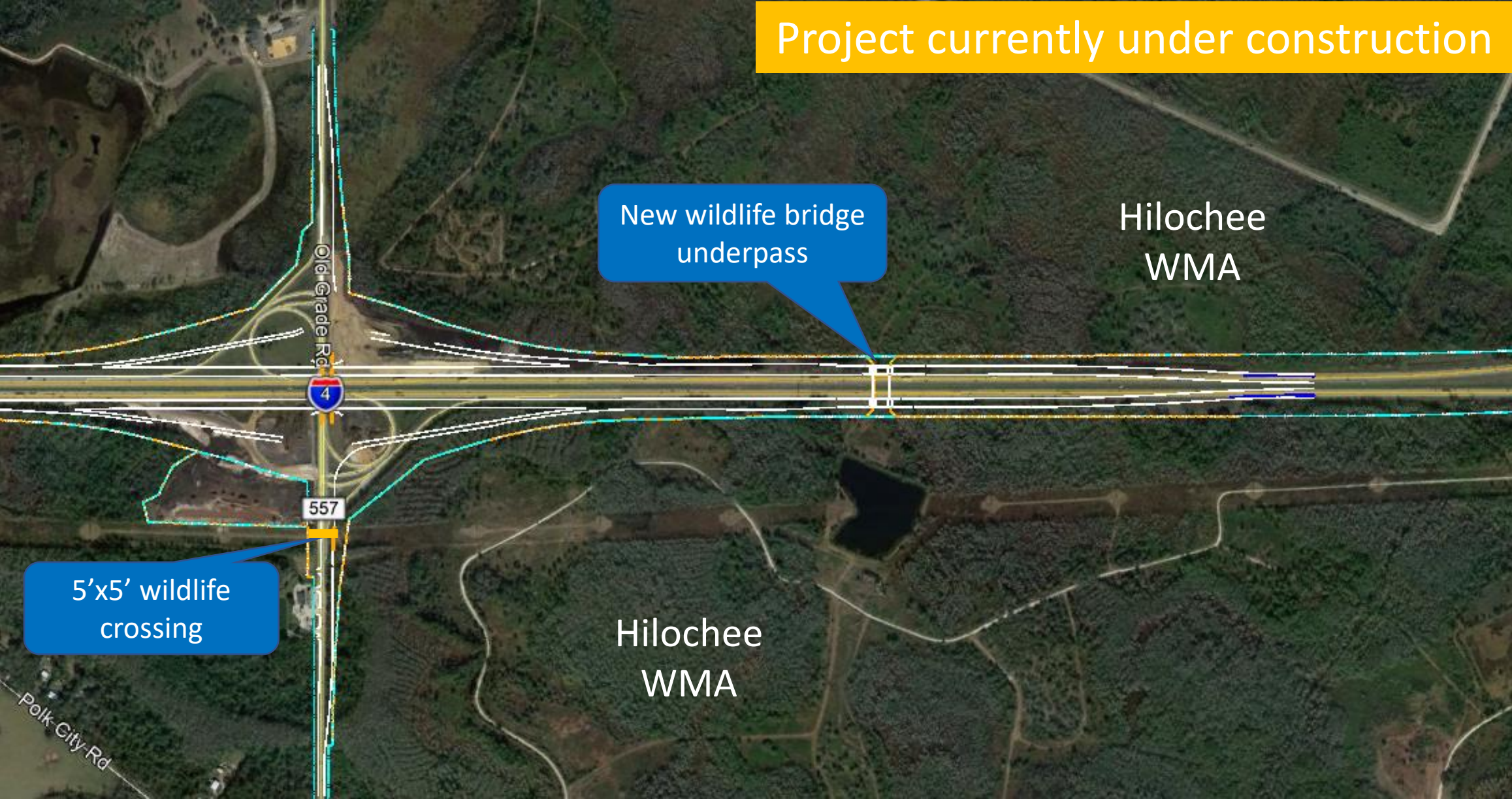
New wildlife bridge underpass

Hilochee WMA

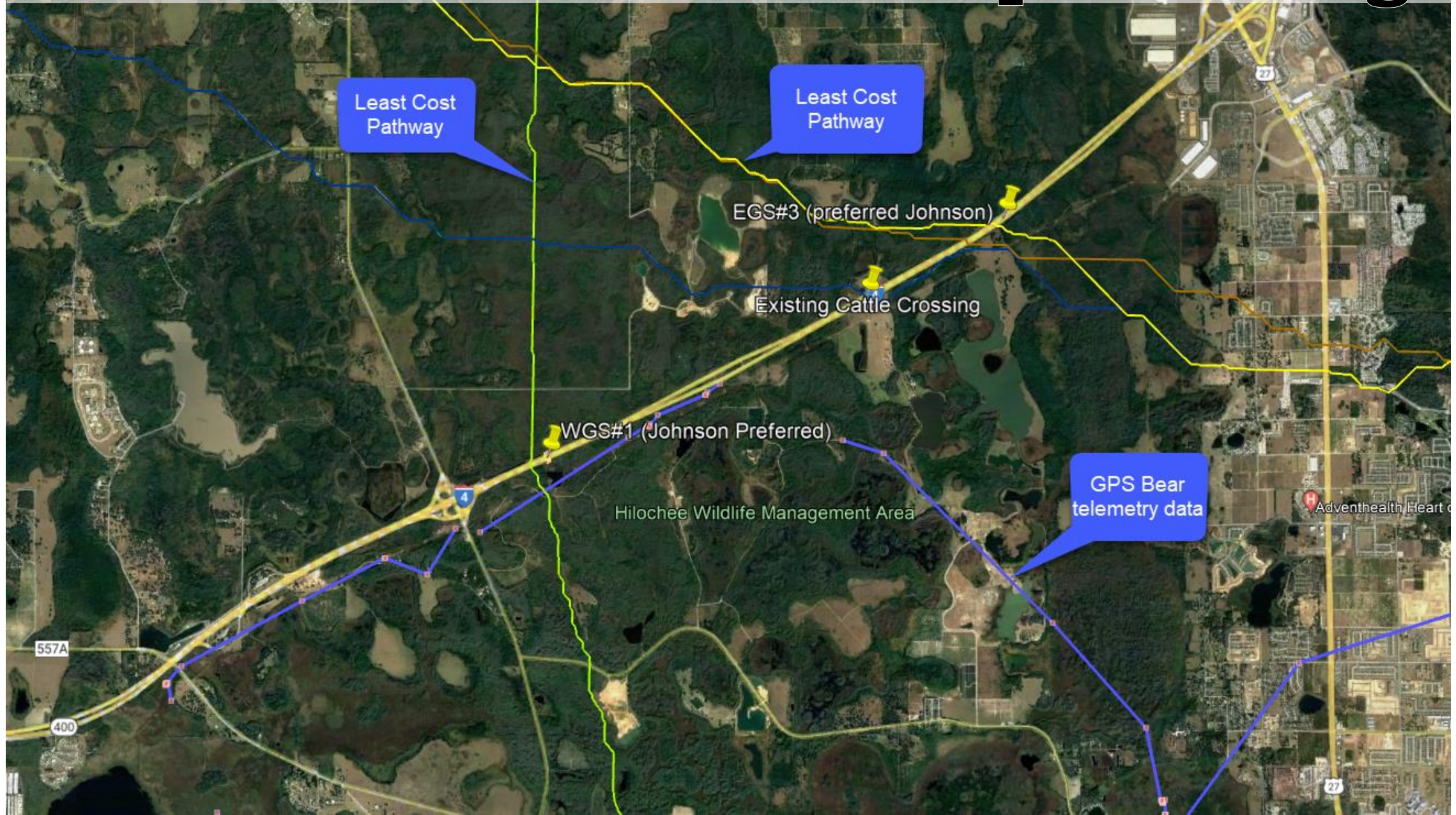
5'x5' wildlife crossing

Hilochee WMA

Polk-City Rd

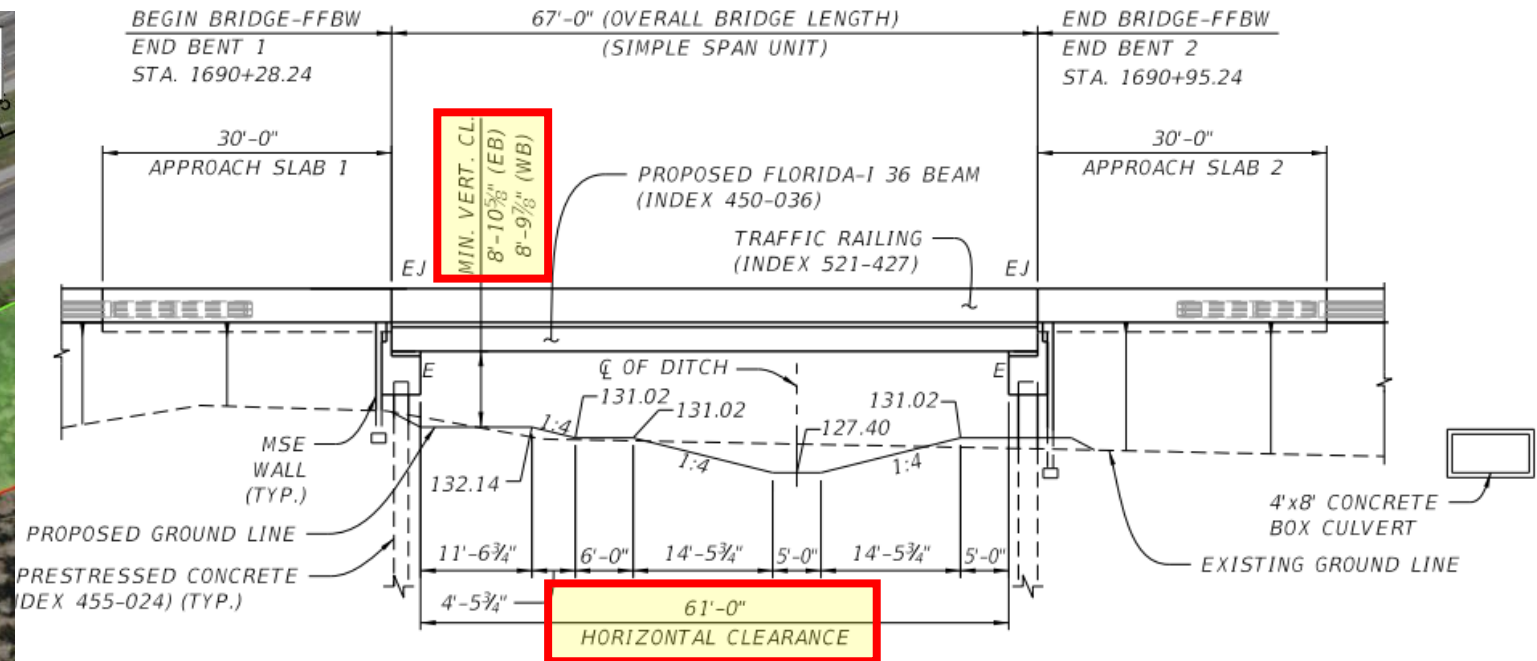
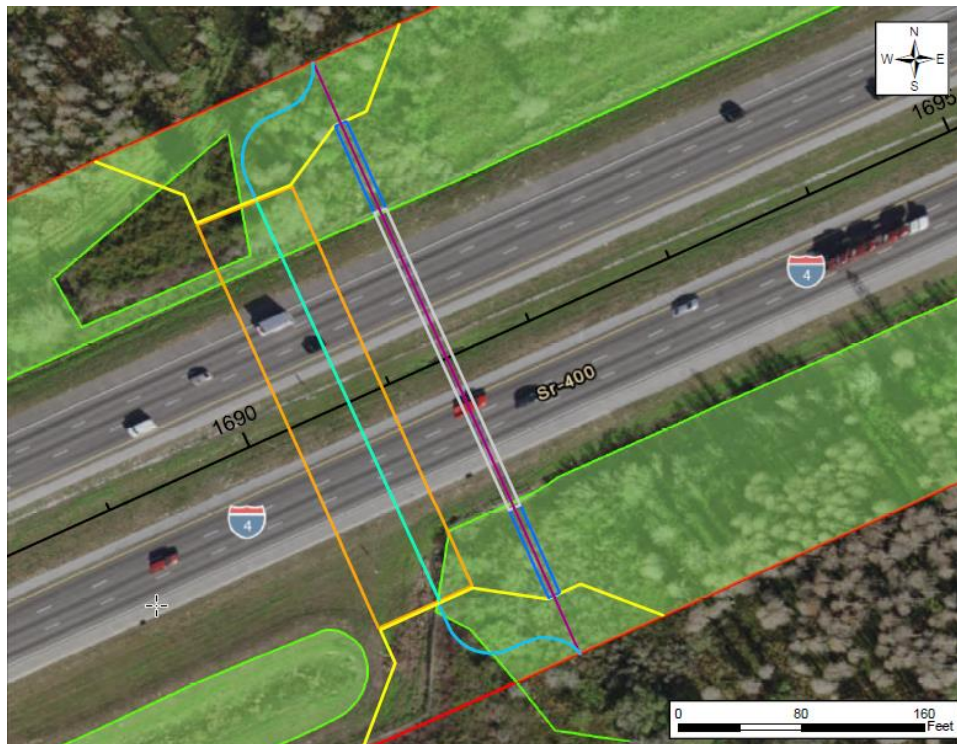


I-4 Western Green Swamp Crossing



I-4 Western Green Swamp Crossing

- The Design-Build contractor selected a design which extended an existing box culvert and provides a separate wildlife crossing bridge structure.



I-4 Western Green Swamp Crossing





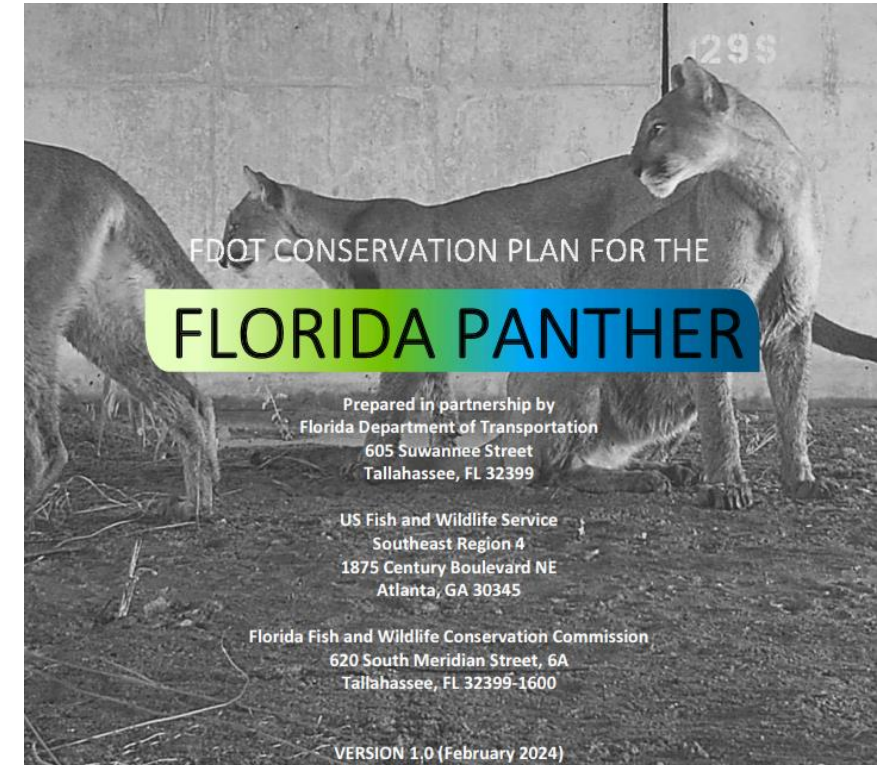
I-4 Western Green Swamp Crossing



5'x5' wildlife crossing under CR 557

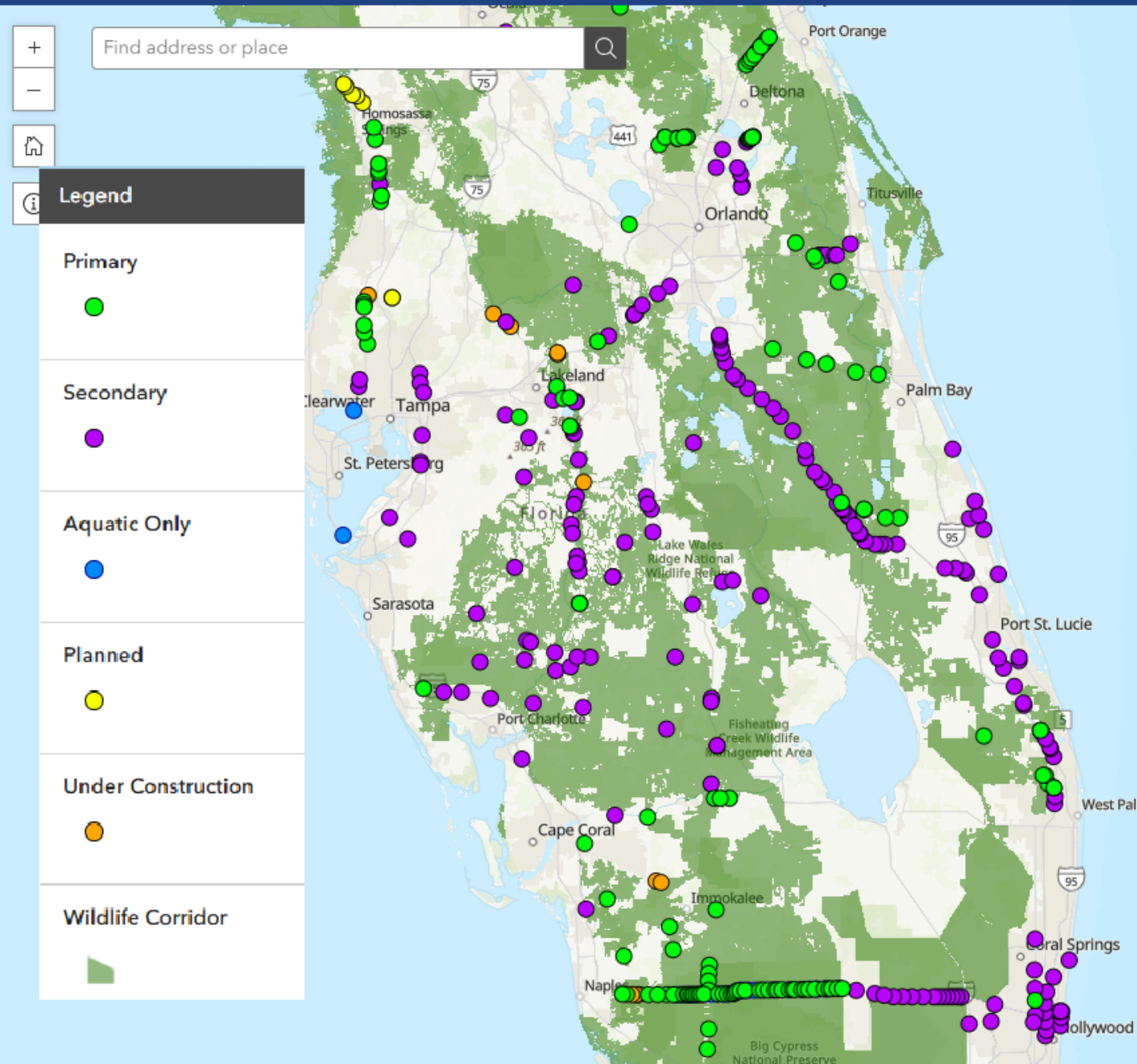
FDOT Panther Conservation Plan

The purpose of this FDOT Conservation Plan for the Florida Panther (Plan) is to provide framework for net conservation benefit through implementation of the Florida Department Of Transportation (FDOT) surface transportation program while supporting the US Fish and Wildlife Service (USFWS) recovery goals for the Florida panther. Achieving these goals will be assisted by **reducing wildlife vehicle collisions (WVCs), providing opportunities for range expansion, public education and outreach, and other innovative conservation measures.** This Plan will provide several tools, a suite of conservation measures, and other processes that can be implemented by FDOT in coordination with the USFWS, Florida Fish and Wildlife Conservation Commission (FWC), and other partners. Under the FDOT National Environmental Policy Act (NEPA) Assignment Program, the Office of Environmental Management (OEM) has been assigned and carries out or oversees Endangered Species Act (ESA) responsibilities for FDOT including those under Section 7(a)(1). This Plan supports FDOT's responsibilities under the ESA.



Other Conservation Measures

- Purchased 33 motion activated trail cameras for several FDOT Districts to start monitoring.
- Created new Statewide GIS Wildlife Crossing website.
- [Statewide Wildlife Crossings Public](#)



FDOT Greenbook 2023 updates

- Draft 2023 version includes considerations for wildlife connectivity with the replacement of any bridges or culverts.
- Should become effective late 2024.

C.4.d Wildlife Crossing Features - Consider the use of wildlife connectivity features (e.g. shelves and wildlife fencing) in accordance with the FDOT Wildlife Crossing Guidelines to enhance wildlife mobility and reduce motor vehicle collisions with wildlife. Wildlife crossing features help maintain habitat connectivity, promote wildlife diversity, and enhance motorist safety. Adding shelves into the bridge abutment design is a low cost technique which allows for better wildlife connectivity and makes bridge inspections safer.

Wildlife crossing feature(s) may include new or modified structures, such as bridges, bridges with shelves, specially designed culverts, enlarged culverts or drainage culverts and/or exclusionary devices such as fencing, walls or other barriers, or some combination of these features. Wildlife refers to listed, protected, or otherwise regulated species that the US Fish and Wildlife Service (USFWS) and/or Florida Fish and Wildlife Conservation Commission (FWC) have jurisdiction over.



Video Production/Public Awareness

- [Connecting with Broketail](#)
- Working on I-4 Wildlife Crossing video
- Starting I-75 Alligator Alley Pile Bridges video

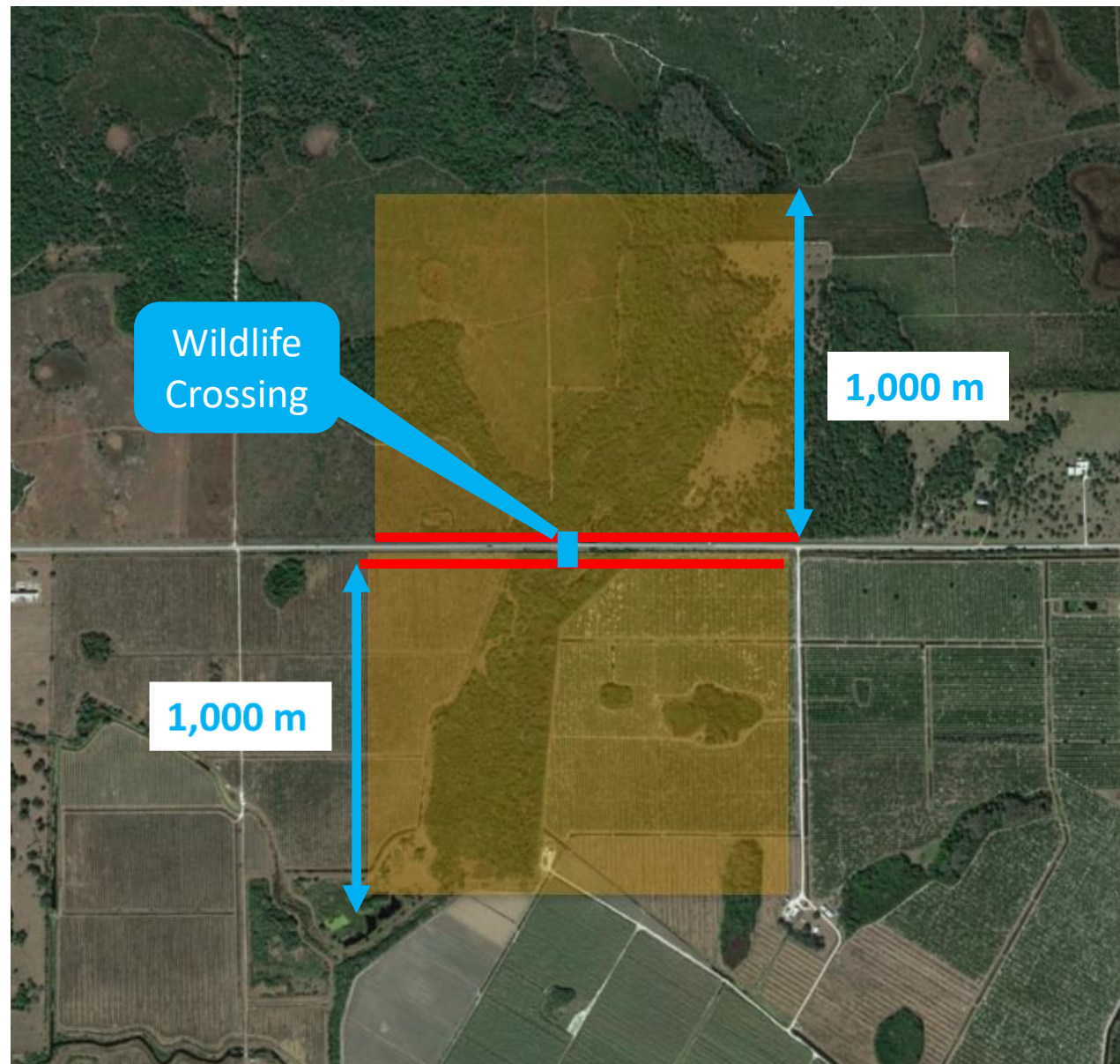


Appendix G of the FDOT Panther Conservation Plan

- Generate PHUs from the construction of new wildlife crossings
 - Must be on existing roadways
 - No credit for new roadways
 - Must improve the connectivity for Florida panther and prey species
- No “banking” of PHUs for future projects

Panther (PHU) Credit from Wildlife Crossings

- Example Assessment Area = 1,000m perpendicular to the crossing by the length of the wildlife fencing with 1,000' (300m) minimum



Panther (PHU) Credit from Wildlife Crossings

- Example: Lands within Assessment Area have a PHU value of 2500
- Multiply by 10% Wildlife Crossing Multiple yields 250 PHUs to be applied to project constructing the wildlife crossing
- Concept approved by FWS
- Incentivizes wildlife crossing construction
- Will offset PHU impacts from wildlife crossing projects
- Considerations:
 - Conservation Lands on both sides?
 - New crossing vs bridge replacement vs bridge retrofit

Summary

- Consider wildlife connectivity in your next project.
 - For transportation projects consider adding culverts or bridges for wildlife
 - Improves motorist safety
 - Fulfills FDOT's mission
 - Increases habitat connectivity
 - Enhances genetic diversity
 - Supported by Floridians!
- Wildlife crossings work!



Safety Message



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