

SR 5 / US 1 at Aviation Boulevard

Project Development and Environment (PD&E) Study

Indian River County, Florida

Financial Project ID: 441693-1-22-02

Efficient Transportation Decision Making (ETDM) Number: 14475

Florida Department of Transportation, District Four
Draft Alternatives Presentation

to

City of Vero Beach
Local Coordination Meeting

February 8, 2023

Agenda

- Long Range Planning and Agency Coordination
- IRC Project - Aviation Blvd Extension
- Transportation Development Process
- Environmental Process
- Project Location
- Existing Typical Sections
- Purpose and Need
- Safety and Traffic Conditions
- Alternatives Considered
- Alternatives Development
- FDOT PD&E Alternatives 1 through 6
- Airport Runway Requirements
- Project Website and Contact Information
- Summary and Future Coordination



US-1 northbound at Aviation Blvd.



FEC Railroad at Aviation Blvd.

Long Range Planning and Agency Coordination

- **Metropolitan Planning Organization (MPO) Project Programming**
 - 2045 Long Range Transportation Plan
 - Listed the SR 5/US-1 at Aviation Blvd project as 6th highest priority project
 - Transportation Improvement Program
 - Funded for the next phase which is Design Phase

- **Local, State and Federal Agency Coordination**
 - Multi-agency screening January 2022
 - FDOT ETDM Summary Screening Report 14475
 - Ongoing coordination with agencies and interested parties



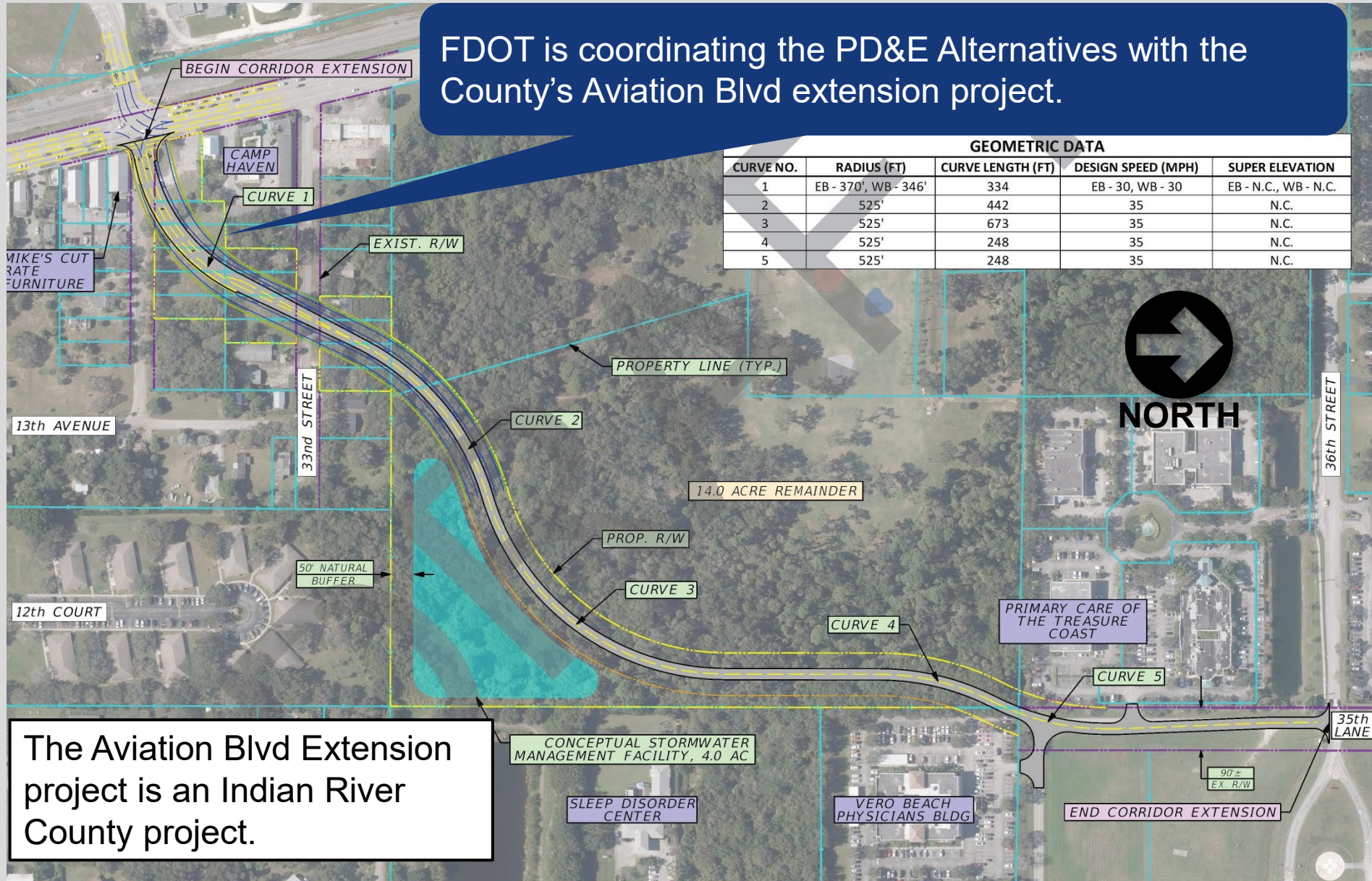


Indian River County

Aviation Blvd Extension Project

FDOT is coordinating the PD&E Alternatives with the County's Aviation Blvd extension project.

GEOMETRIC DATA				
CURVE NO.	RADIUS (FT)	CURVE LENGTH (FT)	DESIGN SPEED (MPH)	SUPER ELEVATION
1	EB - 370', WB - 346'	334	EB - 30, WB - 30	EB - N.C., WB - N.C.
2	525'	442	35	N.C.
3	525'	673	35	N.C.
4	525'	248	35	N.C.
5	525'	248	35	N.C.



The Aviation Blvd Extension project is an Indian River County project.

Transportation Development Process

1 PLANNING

2 PROJECT DEVELOPMENT
AND ENVIRONMENT
(PD&E) STUDY

3 DESIGN

4 RIGHT OF WAY
ACQUISITION
(IF NEEDED)

5 CONSTRUCTION

6 MAINTENANCE

Why is a PD&E Study performed?

- To determine the best alternative to address the purpose and need
- To evaluate the potential environmental and social effects
- To include public participation to help shape the project
- To comply with federal, state, and local laws

During the PD&E Study:

- The community will have several opportunities for input on the project
- Project effects to the environment will be avoided or minimized
- Coordination with federal, state and local agencies will occur
- Project reports and plans will be available for public view

Environmental Process

- Social and Economic



- Cultural

- Historic
- Archeological



1920's Homes



Potential Archeological Zone

- Natural

- Wetlands and species



- Physical

- Traffic noise
- Contamination
- Infrastructure



Project Location | SR 5/US 1 at Aviation Boulevard

- **Project location:**

- Within the City of Vero Beach and Indian River County

- **Project study area encompasses the area**

- Along SR 5/US 1 from 21st Street to 41st St
 - Along Aviation Boulevard from 27th Avenue to 13th Avenue
 - Focus on intersection of SR 5/US 1 at Aviation Blvd.

- **County project on Aviation Boulevard**

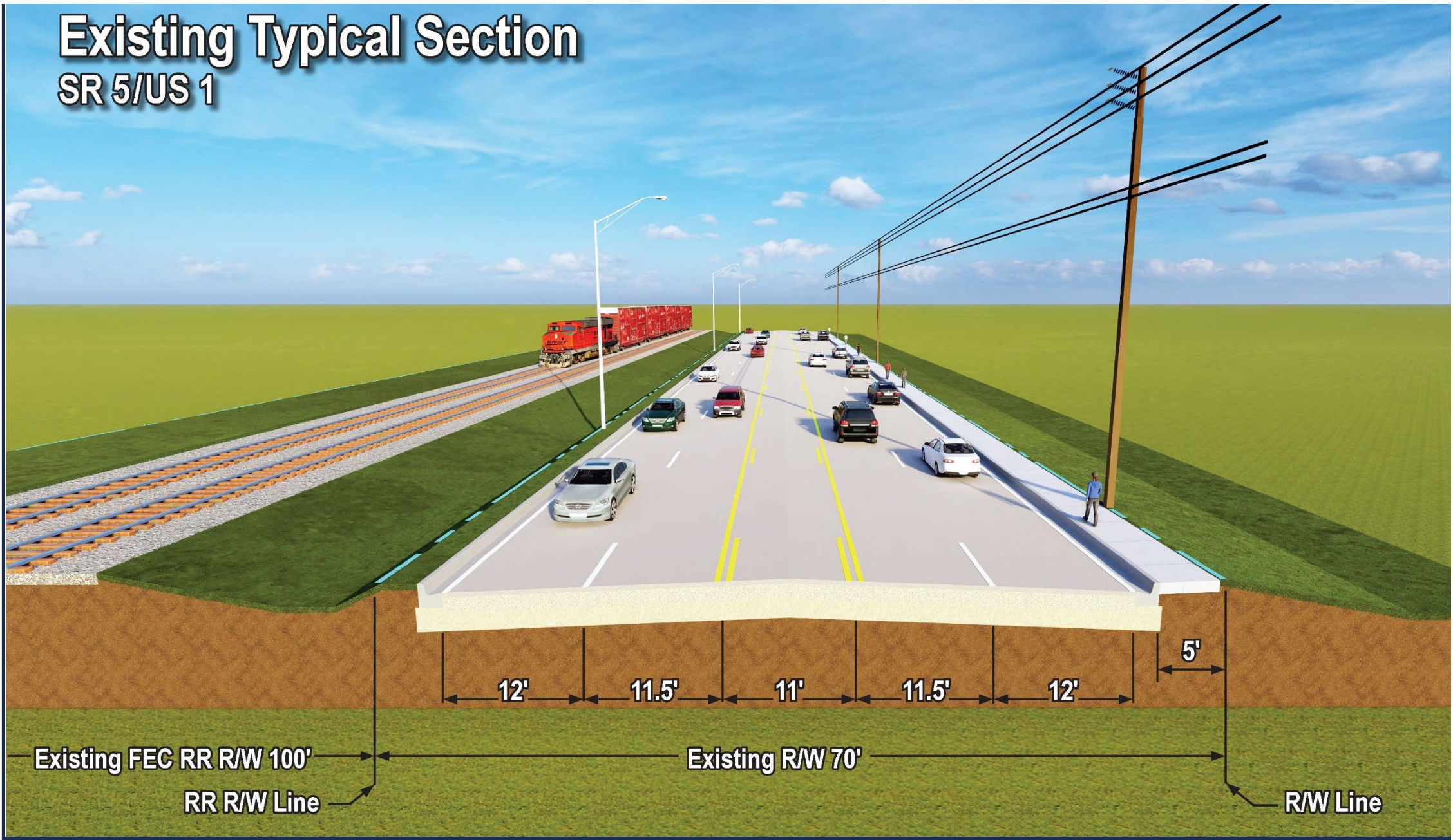
- Extend Aviation Boulevard to the Cleveland Clinic Hospital
 - Future plans to widen Aviation Boulevard to four lanes on the airport property



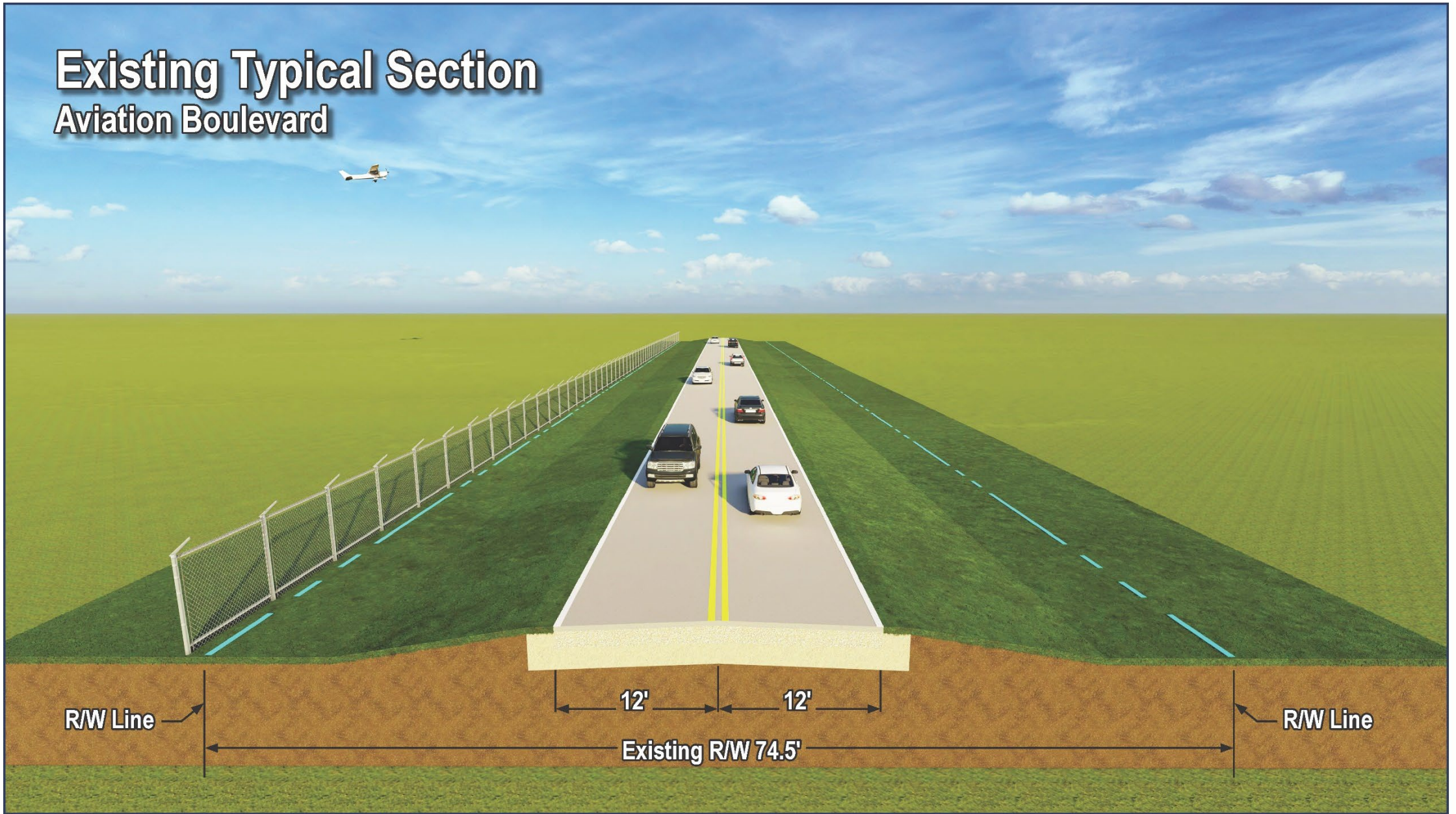
Project Location Map

Existing Typical Section

SR 5/US 1



Existing Typical Section Aviation Boulevard



Purpose and Need

The purpose of this project is to evaluate intersection improvements at SR 5/US 1 and Aviation Boulevard to:

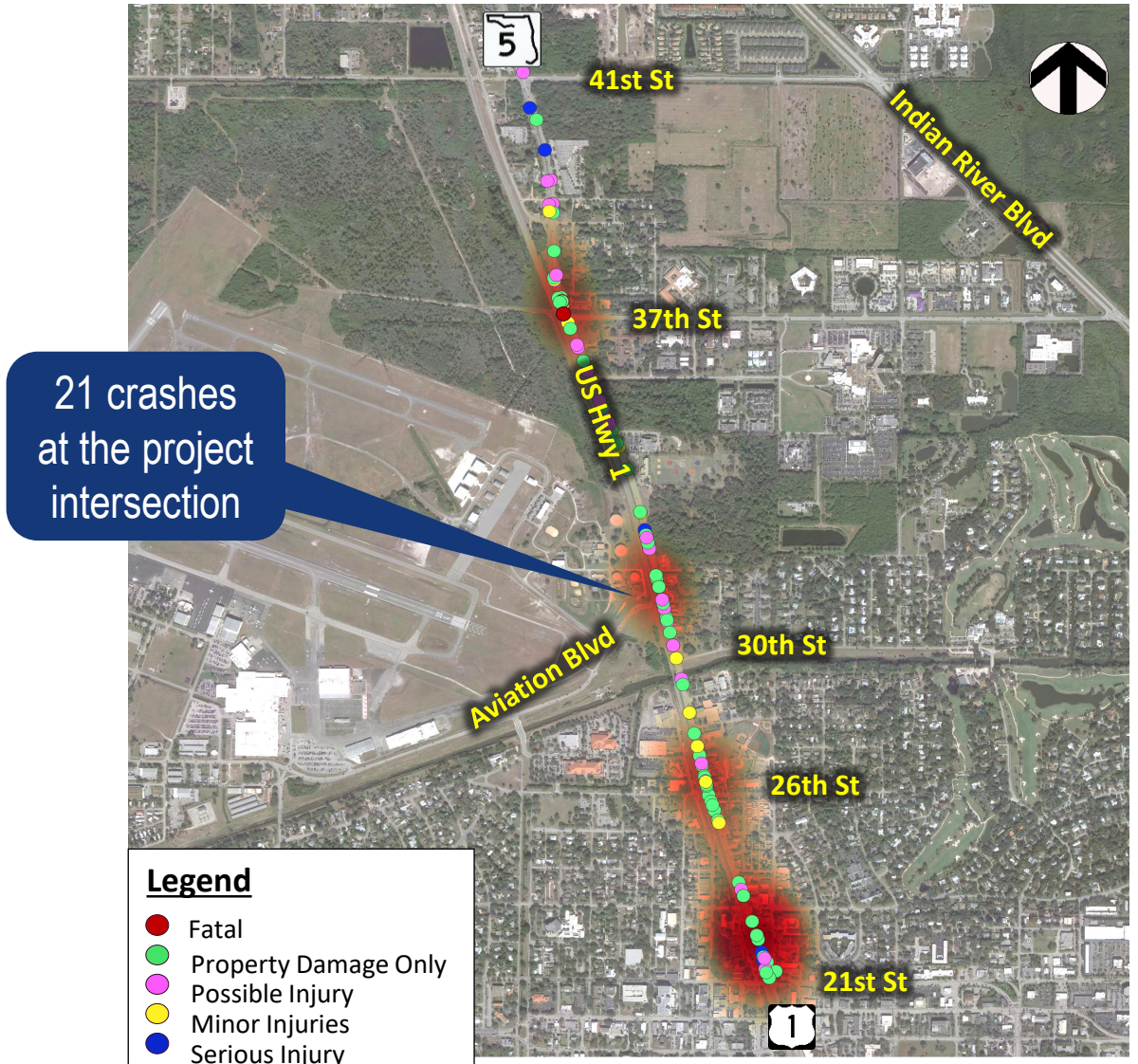
- Improve safety;
- Address existing and projected traffic demand; and
- Enhance the multi-modal features for the railroad, pedestrian, bicycle and transit users

The need for the project:

- Existing intersection operates at the maximum capacity
- Existing vehicle delays exceed 1.5 minutes per vehicle during peak traffic hours
- Forecasted vehicle delays will reach 3.5 minutes per vehicle by year 2045 without improvements
- The existing project area needs pedestrian and bicycle improvements
- Aviation Boulevard improvements are needed to serve regional mobility and airport needs

Existing Safety Conditions

- 137 total crashes for the five years between 2017 and 2021
 - 1 fatal crash (2019)
 - 52 injury crashes
 - 1 pedestrian crashes
 - 1 bicycle crashes
- **Predominant crash types**
 - Rear end 42%
 - Angle 24%
 - Sideswipe 11%
 - Fixed object 8%
- **Contributing causes**
 - Careless/negligence 25%
 - Failure to yield R/W 19%
 - Following too closely 16%
 - Ran Red Light 6%

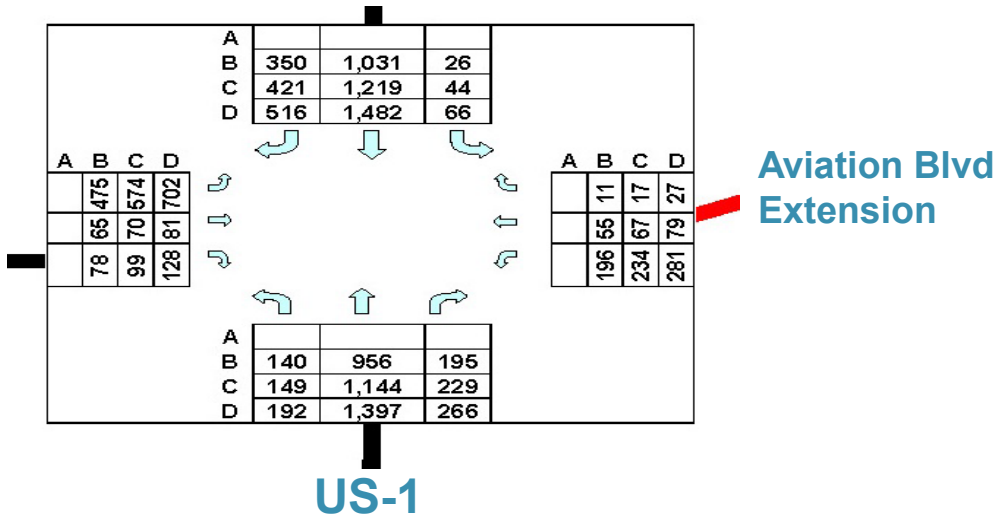


Peak Hour Traffic Volumes at US 1 and Aviation Blvd.

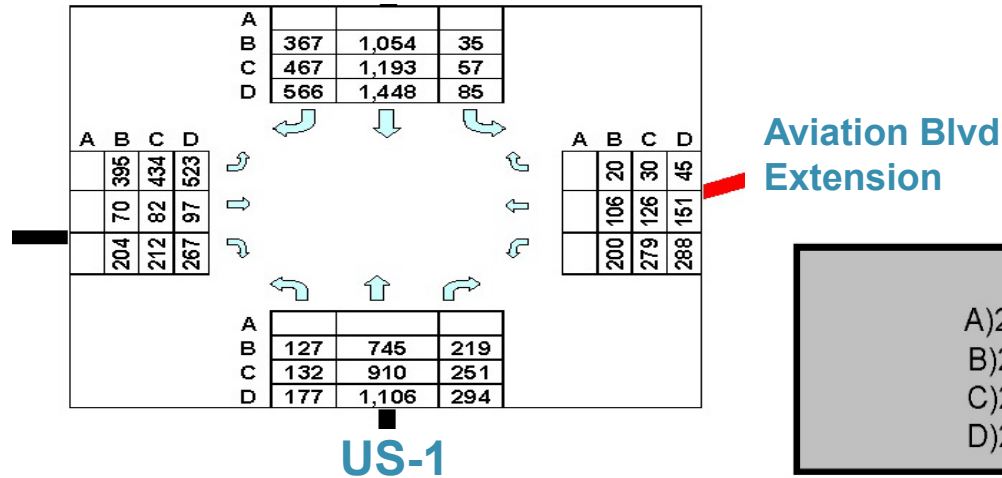


North

AM PEAK HOUR

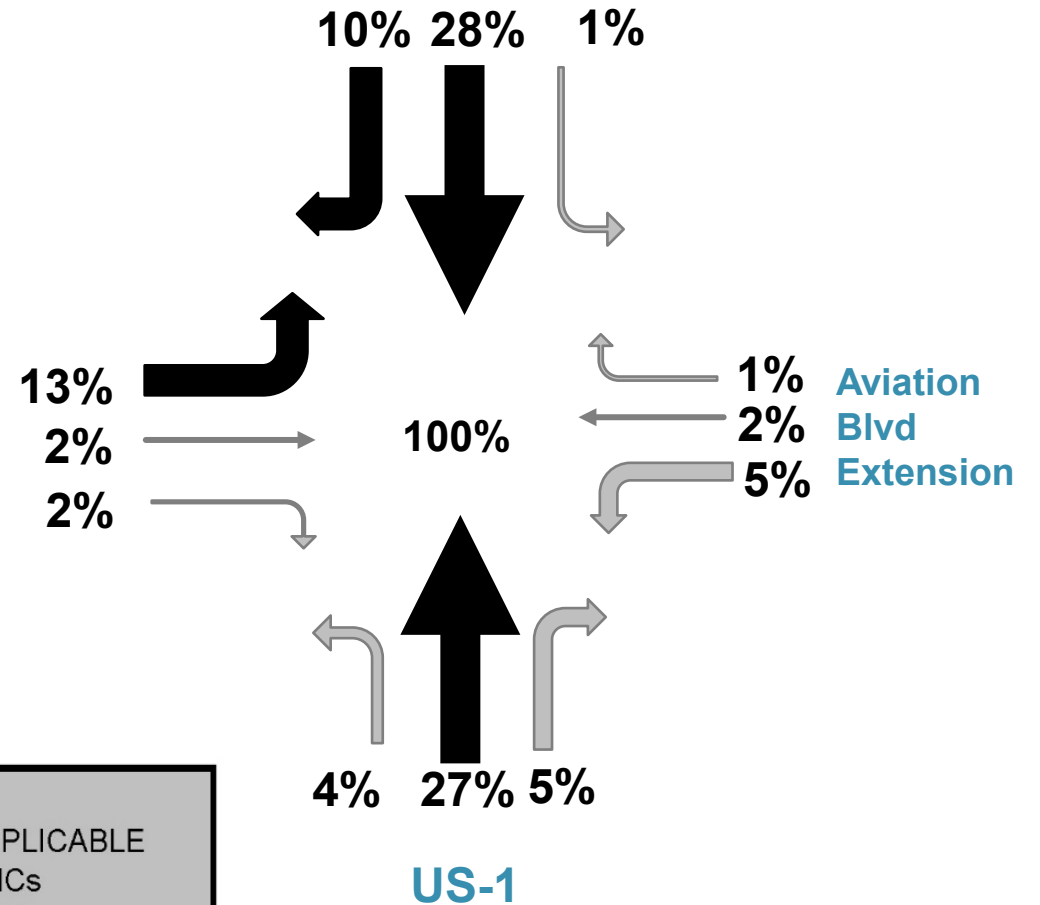


PM PEAK HOUR



Percent (%) of Total Intersection Volume

(2045 AM Peak Hour)

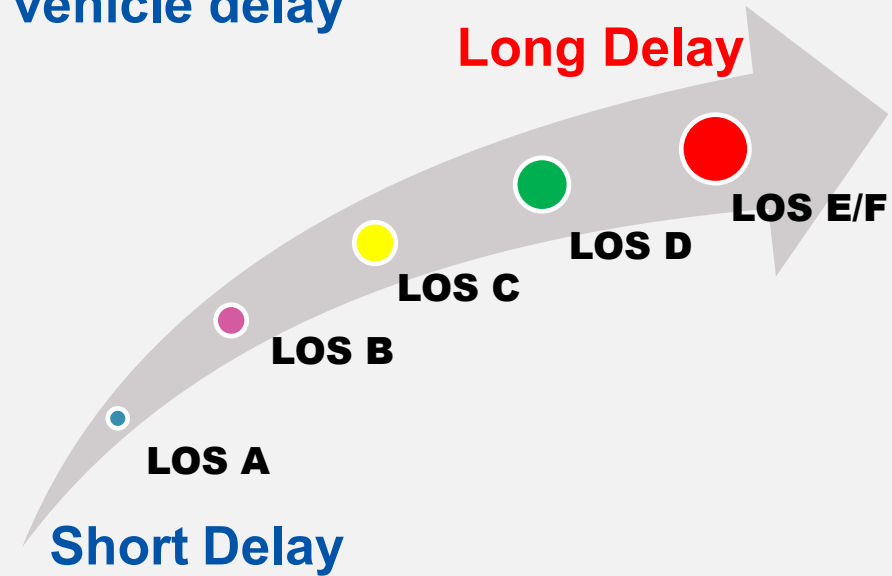


LEGEND
 A)2021 – NOT APPLICABLE
 B)2025 – EST TMCs
 C)2035 – EST TMCs
 D)2045 – EST TMCs

Existing Traffic Conditions

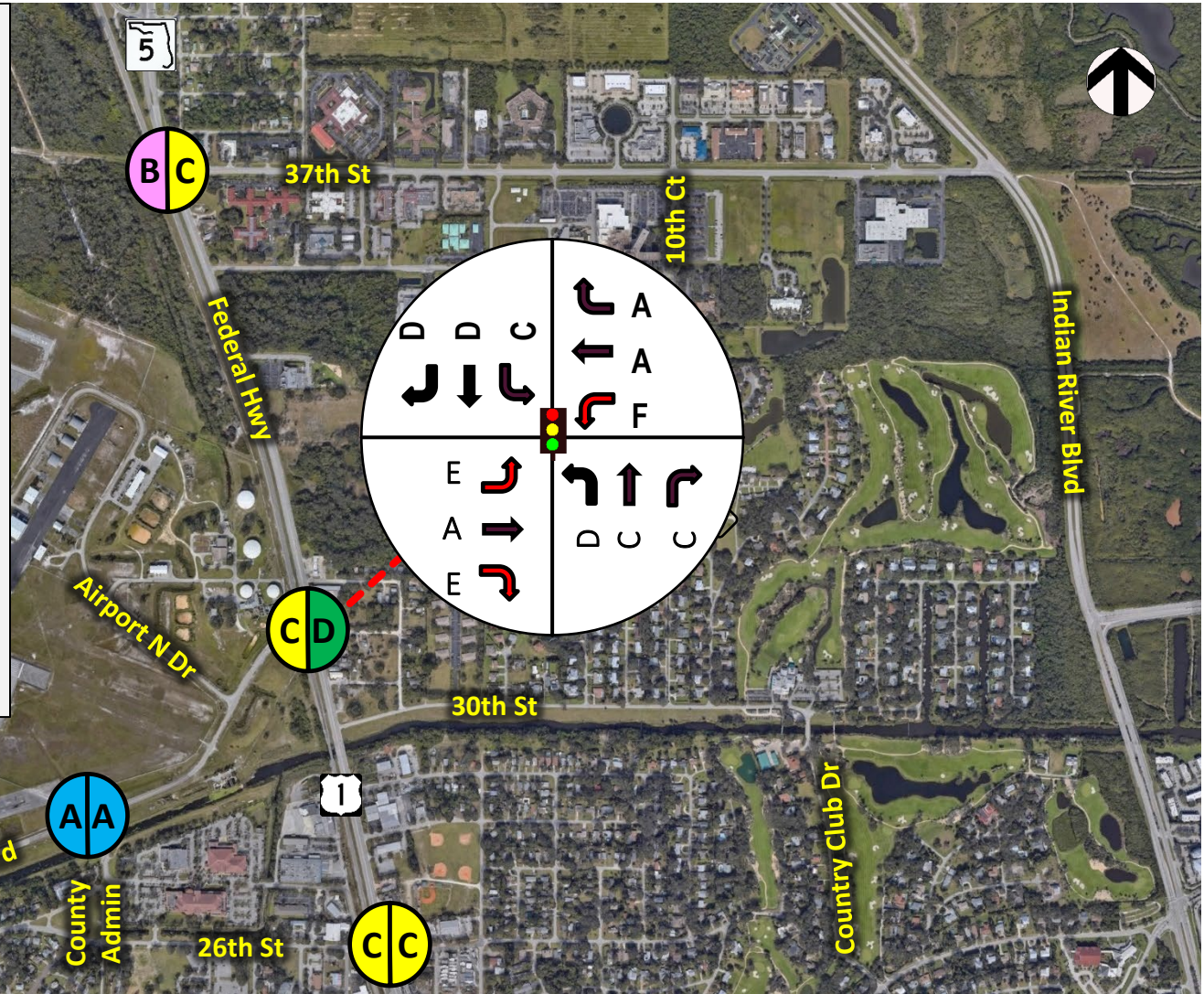
(Year 2021 Level of Service (LOS))

Level of Service (LOS) describes the traffic operations related to vehicle delay



LEGEND

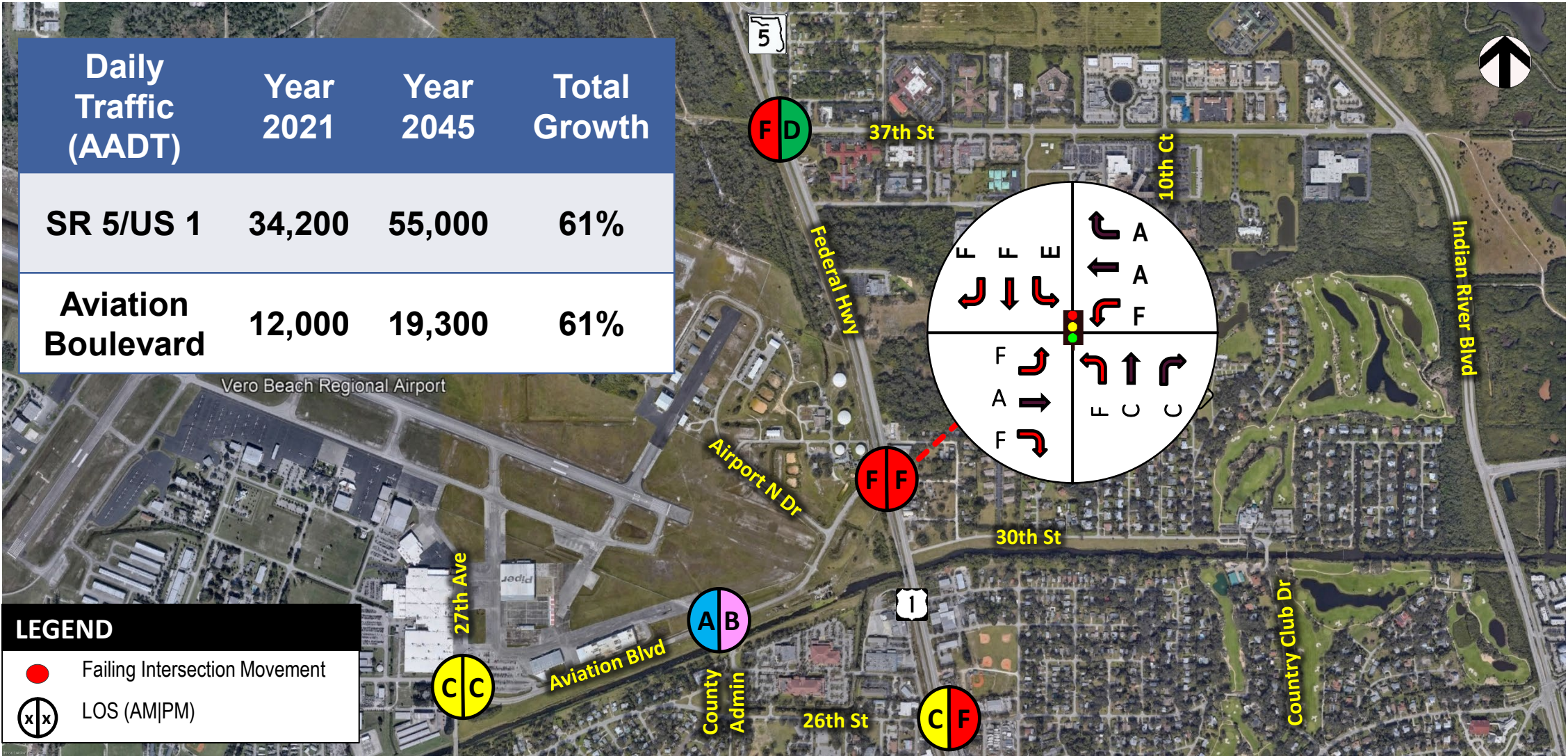
- Failing Intersection Movement
- LOS (AM|PM)



Future Traffic Operations

(Year 2045 LOS without roadway improvements)

Daily Traffic (AADT)	Year 2021	Year 2045	Total Growth
SR 5/US 1	34,200	55,000	61%
Aviation Boulevard	12,000	19,300	61%



Alternatives Considered

■ FDOT PD&E Alternatives

- No Build or No Action Alternative
- Alternative 1 – Conventional Intersection
- Alternative 2 – Twin Intersections
- Alternative 3 – US 1 Overpass
- Alternative 4 – Aviation Blvd Overpass (without railroad crossing)
- Alternative 5 – Aviation Blvd Underpass (without railroad crossing)
- Alternative 6 – Aviation Blvd Overpass (with railroad crossing)

■ FDOT PD&E Alternative features

- Roadway reconstruction
- New drainage, street lighting, signals
- New sidewalks, signalized crosswalks, bike lanes, or shared use pathways
- Potential bus stops or bus bays

■ Coordination

- Several local public meetings
- City, county, state and federal agencies



PD&E Alternatives are Subject to Change

**Further analysis is being conducted on the roadway alignments,
median and side street connections.**

Alternatives Development

■ PD&E alternatives are developed to

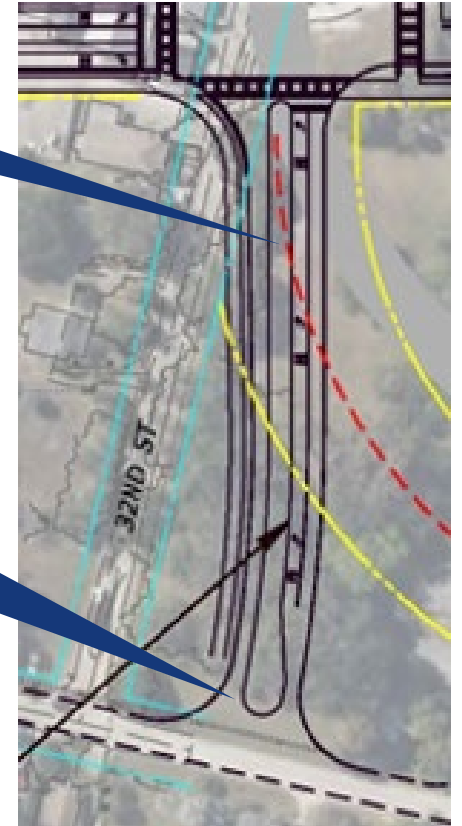
- satisfy the project's purpose and need
- be **compatible with** the County extension of Aviation Blvd
- have **independent utility** which means they will function without the County's extension of Aviation Blvd by connecting to 13th Ave.

■ Major alignment factors

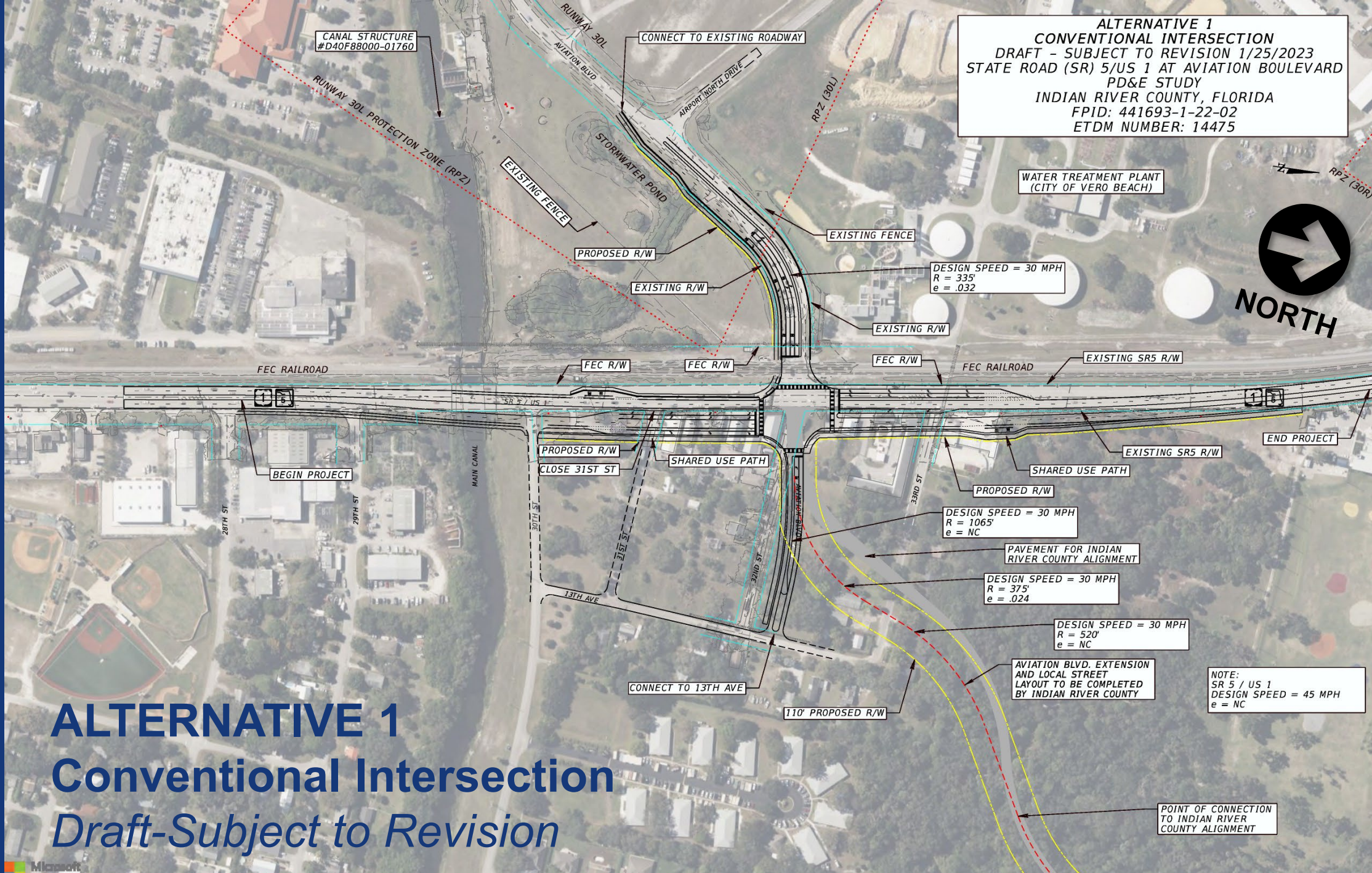
- Homes and businesses
- FEC Railroad – constrains widening US 1
- Vero Beach Regional Airport
 - Runway Protection Zone – ground-based zone
 - Flight Surface – aerial overhead zone (40:1)
- Vero Man Ice Age archeological zone – between Main Canal and Aviation Blvd

Compatibility with IRC extension of Aviation Blvd

Independent Utility with connection to 13th Ave



ALTERNATIVE 1
CONVENTIONAL INTERSECTION
 DRAFT - SUBJECT TO REVISION 1/25/2023
 STATE ROAD (SR) 5/US 1 AT AVIATION BOULEVARD
 PD&E STUDY
 INDIAN RIVER COUNTY, FLORIDA
 FPID: 441693-1-22-02
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ALTERNATIVE 1

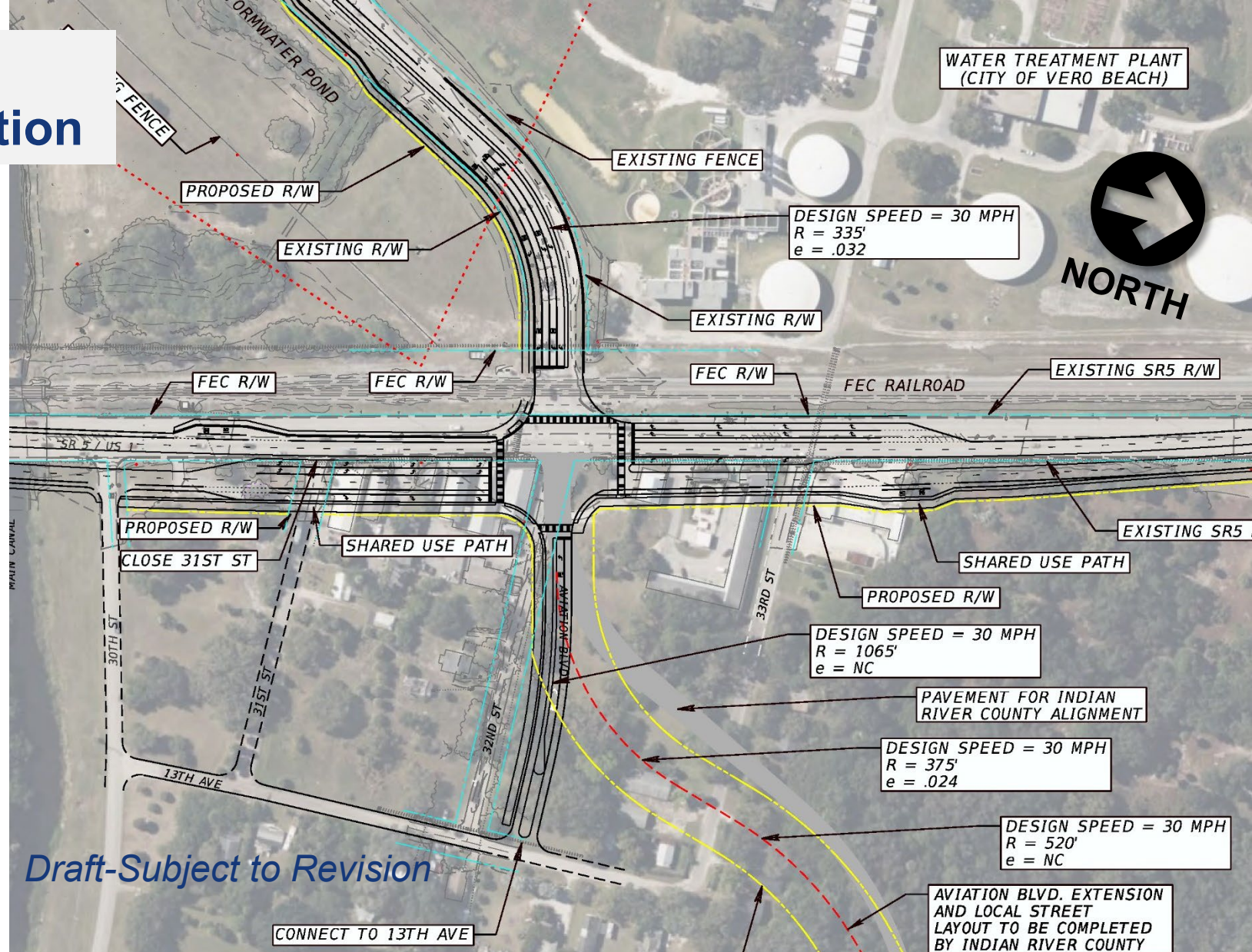
Conventional Intersection

Draft-Subject to Revision

NOTE:
 SR 5 / US 1
 DESIGN SPEED = 45 MPH
 e = NC

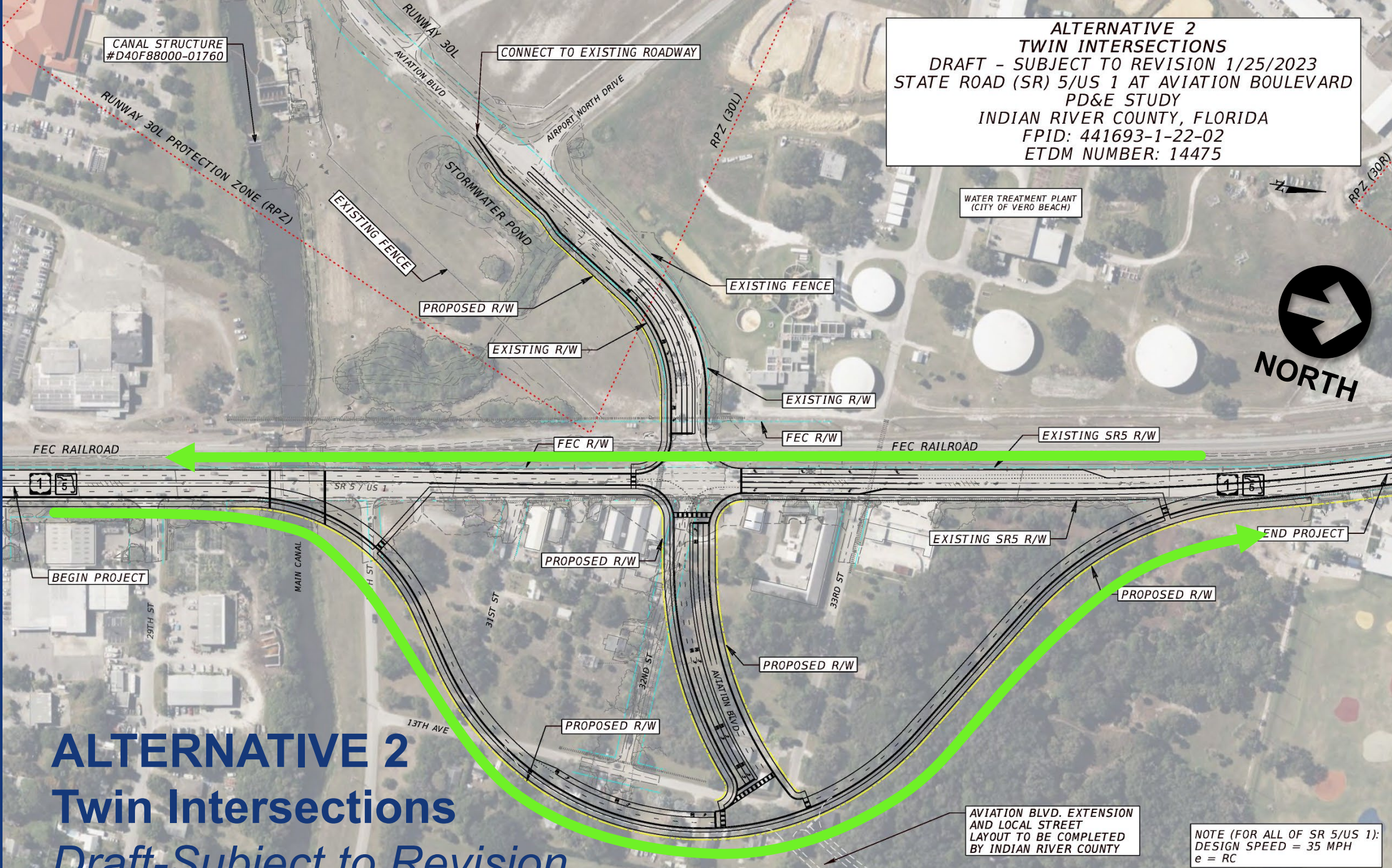
Alternative 1: Conventional Intersection

- Widens US-1 ~85 ft
- Railroad grade crossing remains in place
- Shared use path on US-1 and Aviation Blvd
- Bus bays on US-1
- Full access to Airport N. Drive
- Businesses and residential impacts



2045 LOS (Delay AM/PM)	New Bridges	FEC Railroad	Airport N. Drive	Aviation Blvd (west of SR 5)	Cultural Effects	Aviation Blvd (east of SR 5)	Social Effects	Cost
D (38.3/46.4)	Main Canal Bridge	At grade crossing	Full access provided	Expands R/W	Minor widening to south	Shifts IRC alignment	Residential and business impacts	TBD

ALTERNATIVE 2
TWIN INTERSECTIONS
 DRAFT - SUBJECT TO REVISION 1/25/2023
 STATE ROAD (SR) 5/US 1 AT AVIATION BOULEVARD
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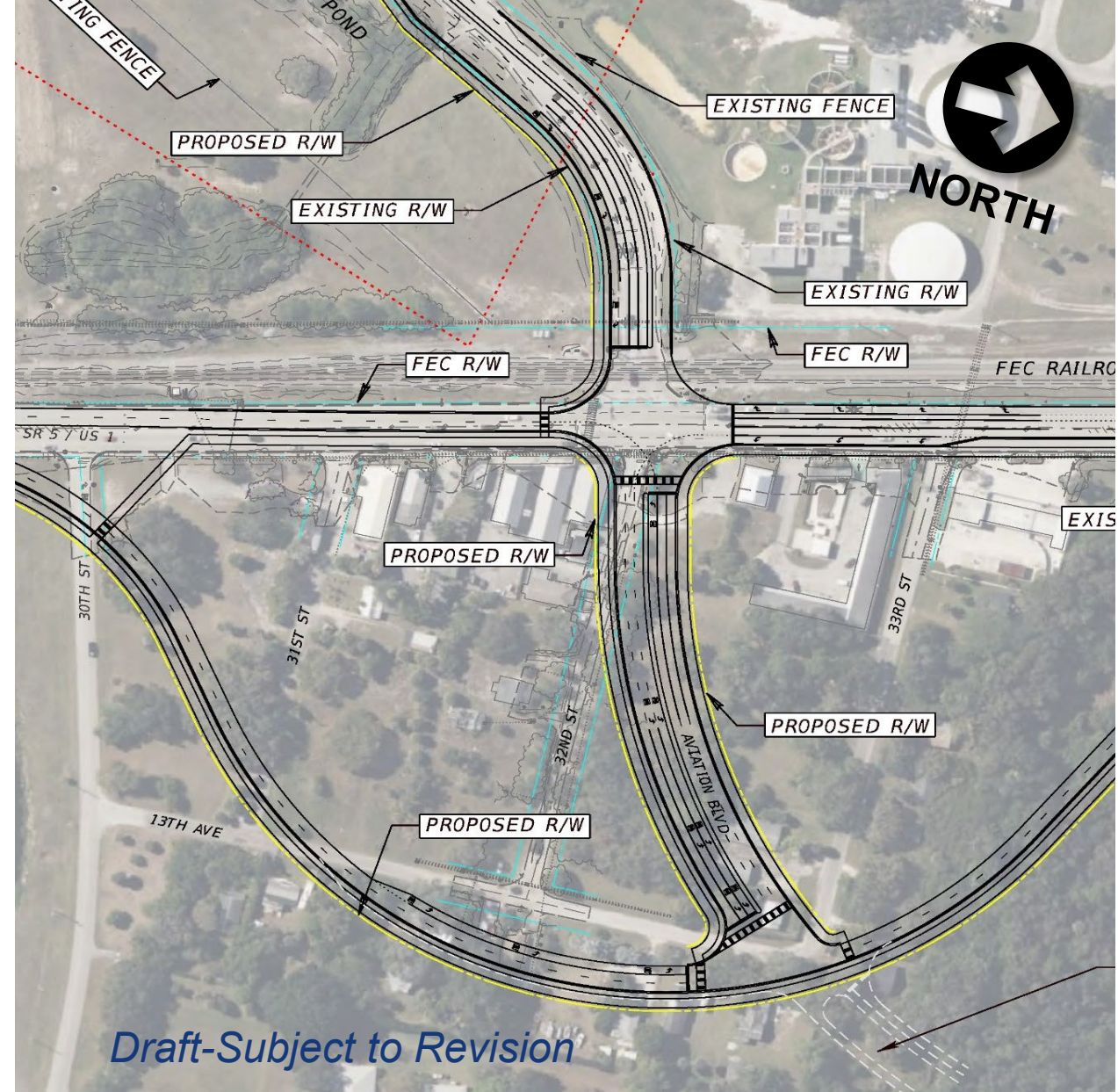
ALTERNATIVE 2
Twin Intersections
Draft-Subject to Revision

AVIATION BLVD. EXTENSION
 AND LOCAL STREET
 LAYOUT TO BE COMPLETED
 BY INDIAN RIVER COUNTY

NOTE (FOR ALL OF SR 5/US 1):
 DESIGN SPEED = 35 MPH
 e = RC

Alternative 2: Twin Intersections

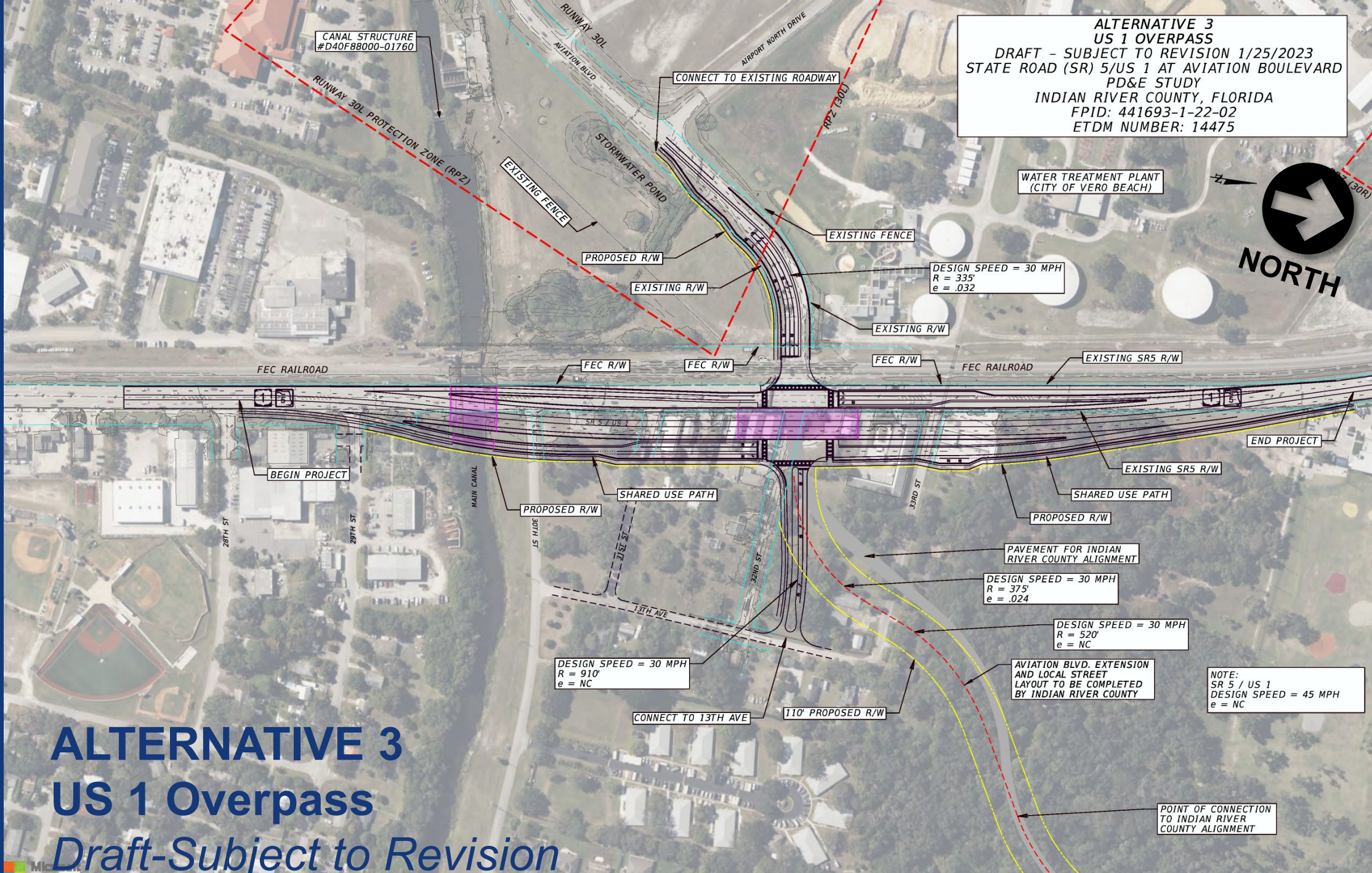
- Railroad grade crossing remains in place
- Existing US-1 becomes southbound (SB)
- New US-1 northbound (NB) alignment
- Eastbound Aviation Blvd left turn lane pushes the NB intersection east to 13th Avenue
- Business and residential impacts



Intersection	2045 LOS (Delay AM/PM)
SB US-1 @ Aviation Blvd	C (34.5/33.8)
NB US-1 @ Aviation Blvd	D (42.3/35.3)

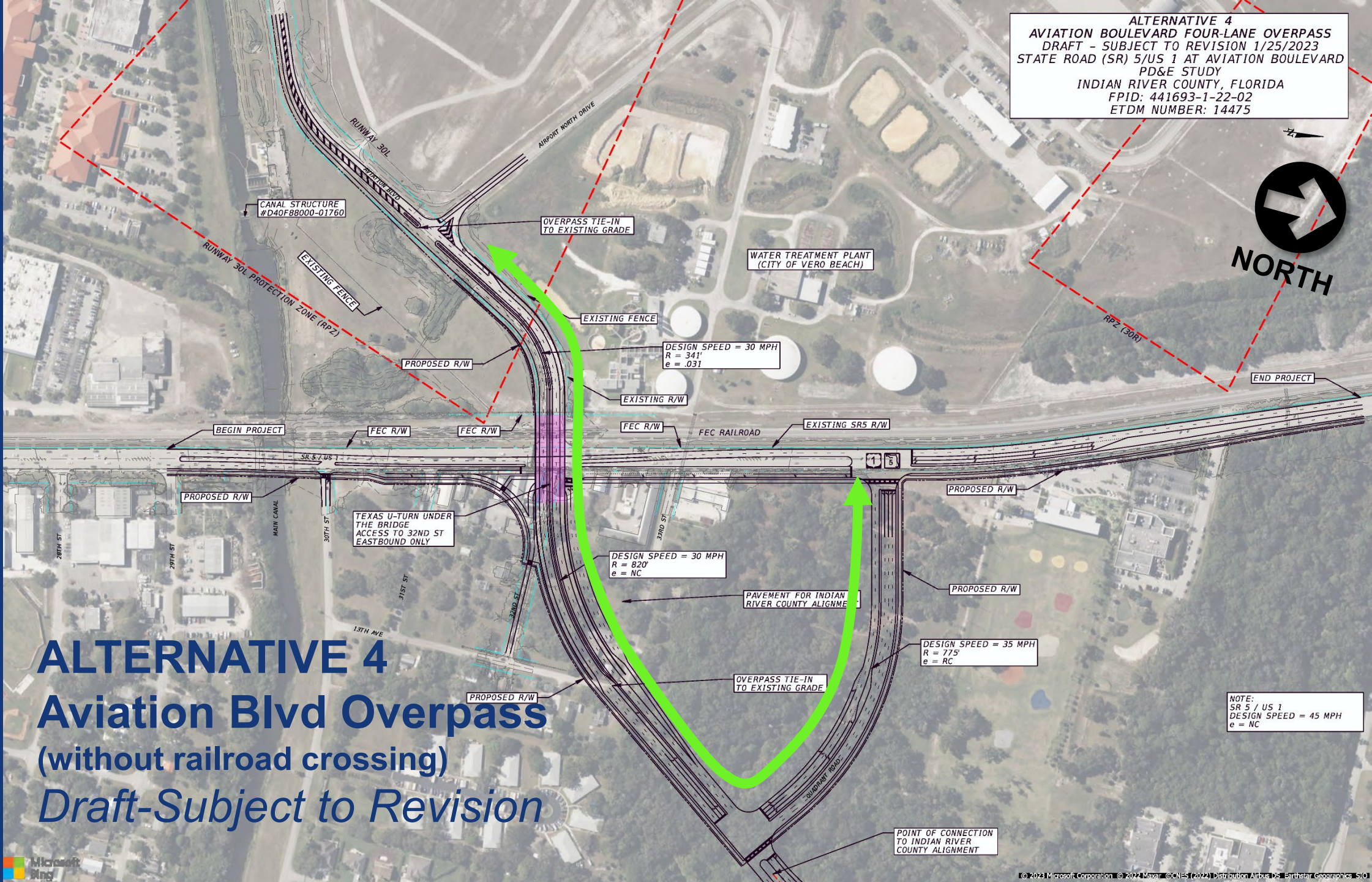
New Bridges	FEC Railroad	Airport N. Drive	Aviation Blvd (west of SR 5)	Cultural Effects	Aviation Blvd (east of SR 5)	Social Effects	Cost
2 @ Main Canal Bridge	At grade crossing	Full access provided	Expands R/W	Minor widening to south	Shifts IRC alignment	Residential and business impacts	TBD

**ALTERNATIVE 3
US 1 OVERPASS**
 DRAFT - SUBJECT TO REVISION 1/25/2023
 STATE ROAD (SR) 5/US 1 AT AVIATION BOULEVARD
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ALTERNATIVE 3 US 1 Overpass Draft-Subject to Revision

ALTERNATIVE 4
 AVIATION BOULEVARD FOUR-LANE OVERPASS
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 STATE ROAD (SR) 5/US 1 AT AVIATION BOULEVARD
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ALTERNATIVE 4

Aviation Blvd Overpass (without railroad crossing)

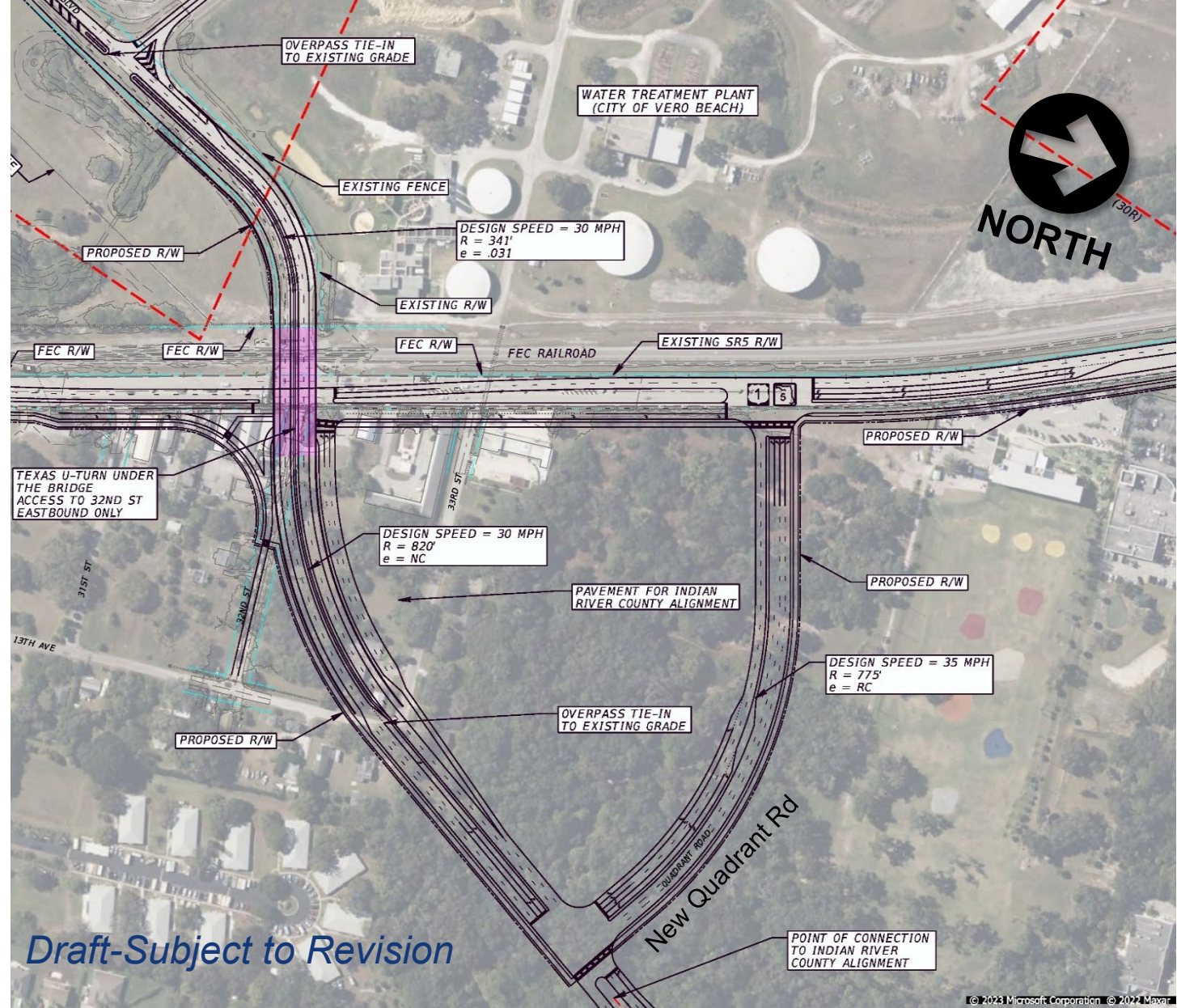
Draft-Subject to Revision

NOTE:
 SR 5 / US 1
 DESIGN SPEED = 45 MPH
 e = NC

Alternative 4 Aviation Blvd Overpass (without railroad crossing)

- Widens US-1 ~50 ft
- 4 lane Aviation Blvd Overpass
 - Serves 33% of traffic volume
- Aviation Blvd connects to US-1 via quadrant road
- Eliminates the railroad crossing
- “T” intersection at US-1 & 32nd St.
- Bicyclists and pedestrians use overpass
- Business and residential impacts

Intersection	2045 LOS (Delay AM/PM)
US-1 at 32 nd Street (below overpass)	B (18.4/13.3)
Aviation Blvd @ Quadrant Rd	C (34.7/34.5)
US-1 @ Quadrant Rd	C (26.2/28.3)



New Bridges	FEC Railroad	Airport N. Drive	Aviation Blvd (west of SR 5)	Cultural Effects	Aviation Blvd (east of SR 5)	Social Effects	Cost
Aviation Blvd Main Canal	Grade separated crossing	Full access provided	Expands R/W	Minor widening to south	Shifts IRC alignment	Residential and business impacts	TBD

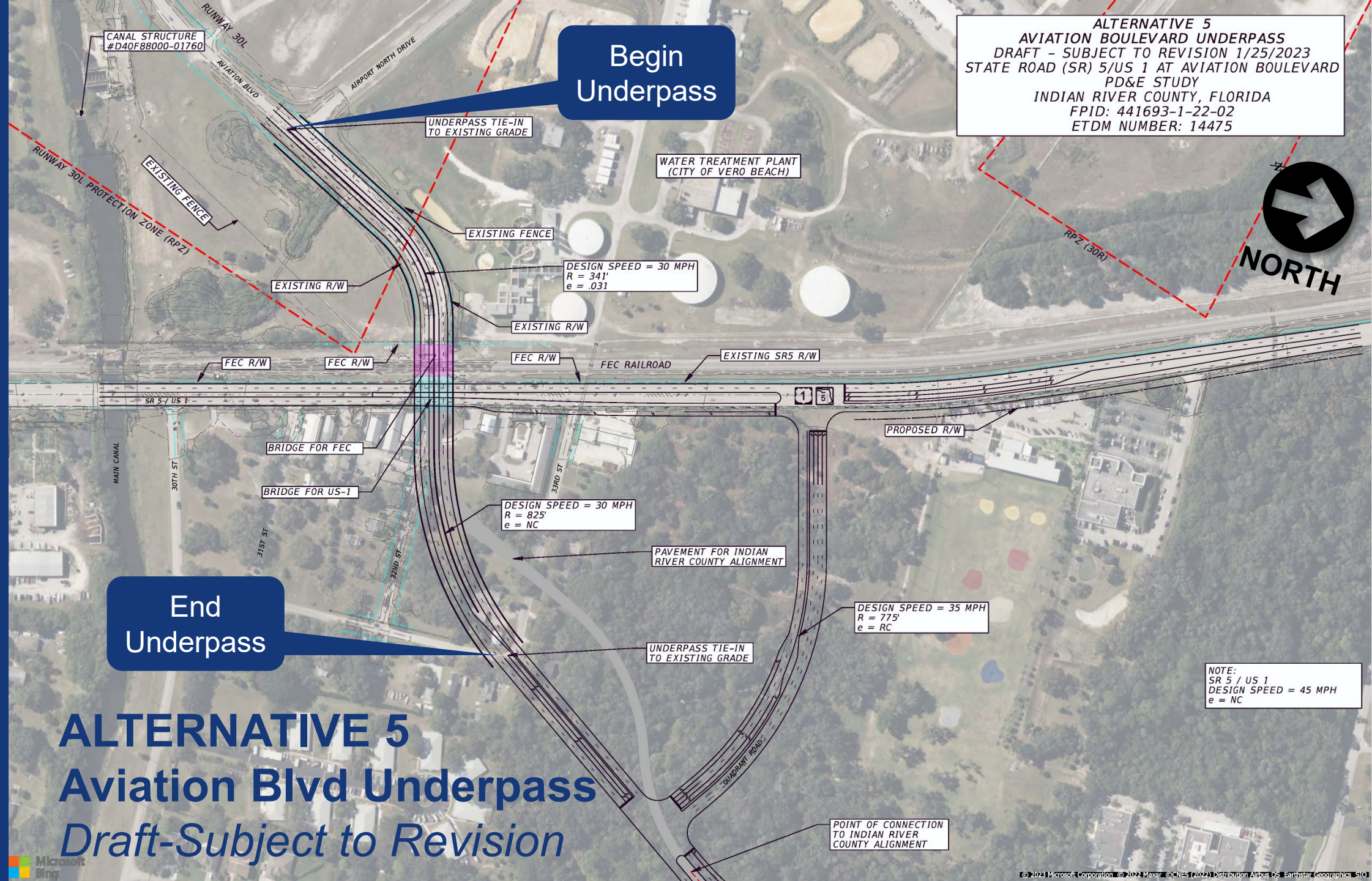
ALTERNATIVE 5
AVIATION BOULEVARD UNDERPASS
 DRAFT - SUBJECT TO REVISION 1/25/2023
 STATE ROAD (SR) 5/US 1 AT AVIATION BOULEVARD
 PD&E STUDY
 INDIAN RIVER COUNTY, FLORIDA
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Begin Underpass



End Underpass

ALTERNATIVE 5
Aviation Blvd Underpass
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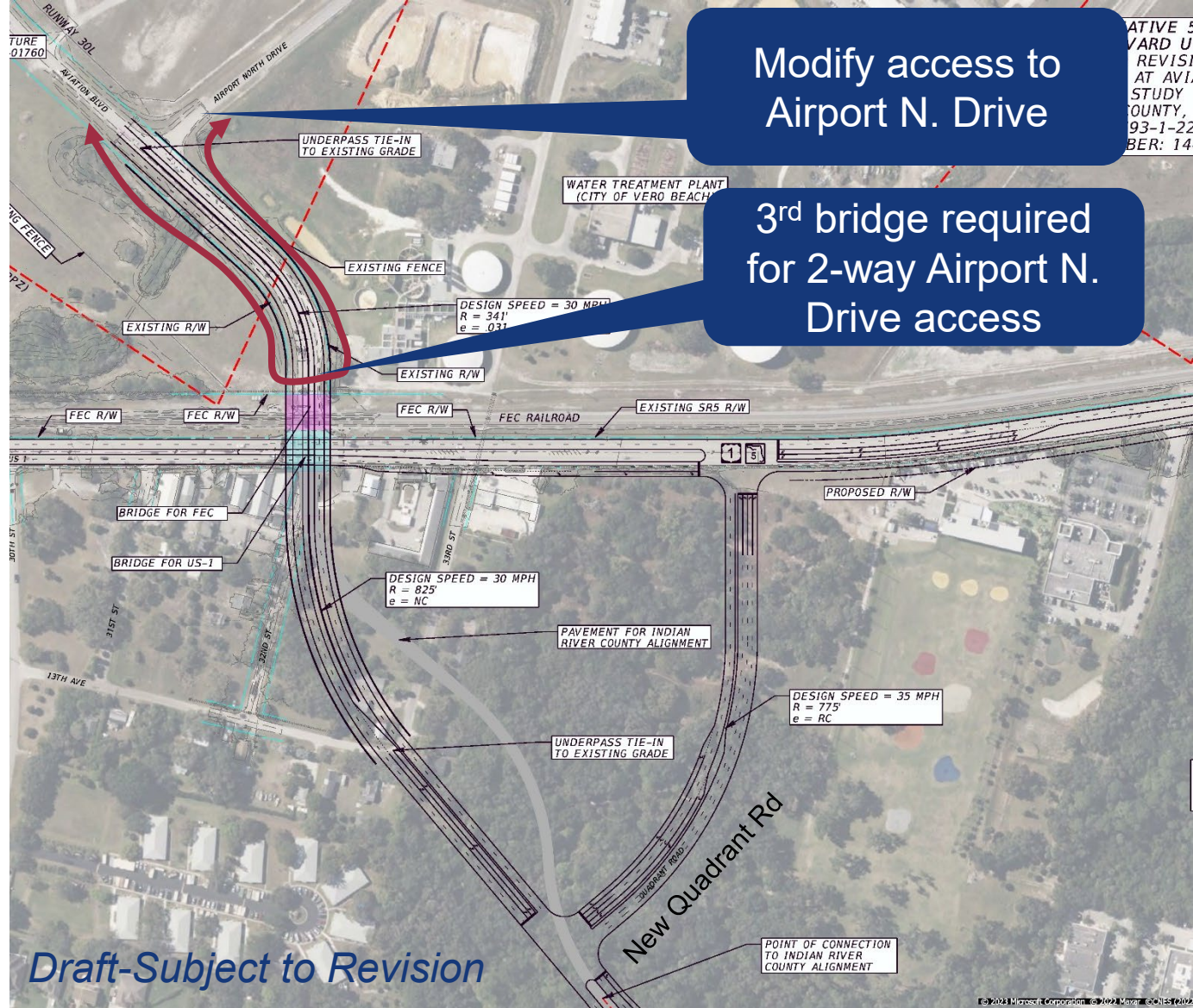


Alternative 5: Aviation Blvd Underpass

- Widens US-1 ~40 ft
- 4 lane Underpass, + 3 bridges (FEC RR, US-1, Airport N. Drive)
- Airport N. Drive access rerouted
- Aviation Blvd connects to US-1 via a new quadrant road
- Eliminates railroad crossing
- Bicyclists and pedestrians use underpass
- Business and residential impacts

Intersection	2045 LOS (Delay AM/PM)
Aviation Blvd @ Quadrant Rd	D (38.3/37.8)
US-1 @ Quadrant Rd	C (33.0/33.8)

New Bridges	FEC Railroad	Airport N. Drive	Aviation Blvd (west of SR 5)	Cultural Effects	Aviation Blvd (east of SR 5)	Social Effects	Cost
1 @ FEC RR 1 @ US-1 1 for Airport N. Drive	Grade separated crossing Requires train stoppage during railroad bridge construction	Access requires separate road with bridge next to FEC above the underpass	Expands R/W	Moderate widening to south with 18-foot depth of excavation	Shifts IRC alignment	Residential / Business Displacements	TBD

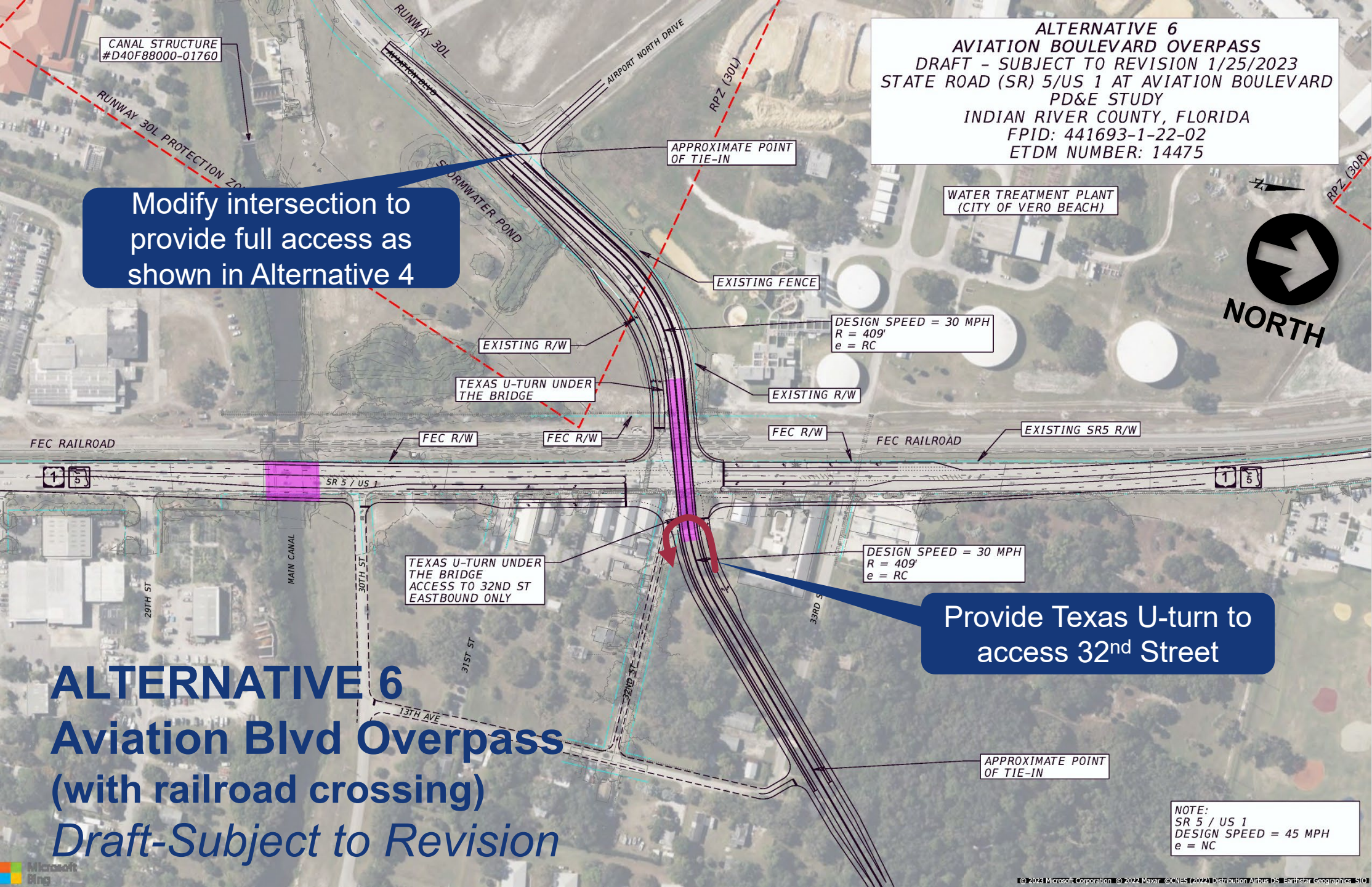


ALTERNATIVE 6
AVIATION BOULEVARD OVERPASS
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 STATE ROAD (SR) 5/US 1 AT AVIATION BOULEVARD
 PD&E STUDY
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 FPID: 441693-1-22-02
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Modify intersection to provide full access as shown in Alternative 4

Provide Texas U-turn to access 32nd Street

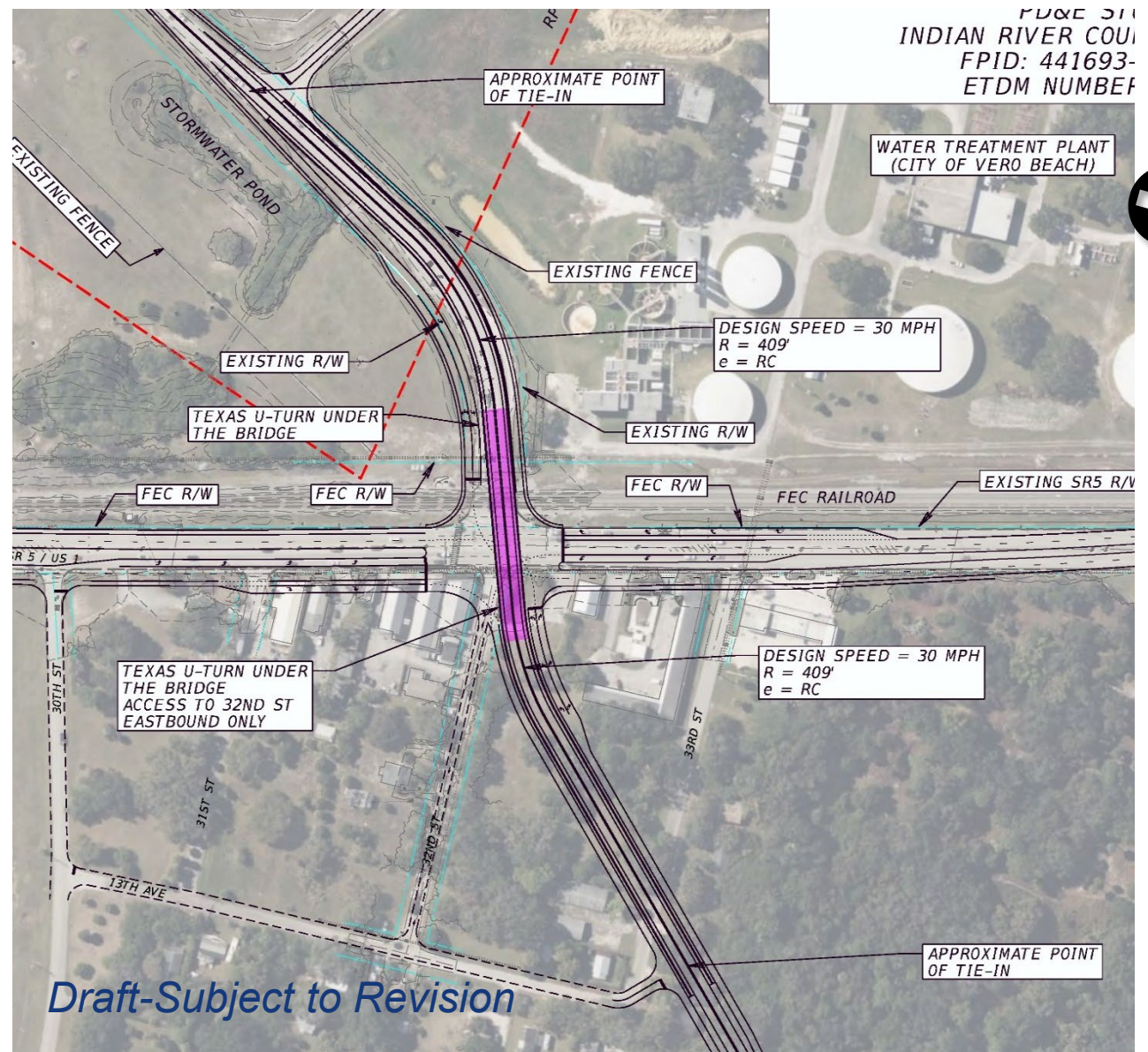
ALTERNATIVE 6
Aviation Blvd Overpass
 (with railroad crossing)
Draft-Subject to Revision



NOTE:
 SR 5 / US 1
 DESIGN SPEED = 45 MPH
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Alternative 6: Aviation Blvd Overpass (with railroad crossing)



- Widens US-1 ~40 ft
- 2 lane overpass
 - Serves 4% of the traffic volume
- Railroad grade crossing remains in place
- Full intersection at US-1 and Aviation Blvd
- Access to Airport N. Dr. with intersection
- Business and residential impacts



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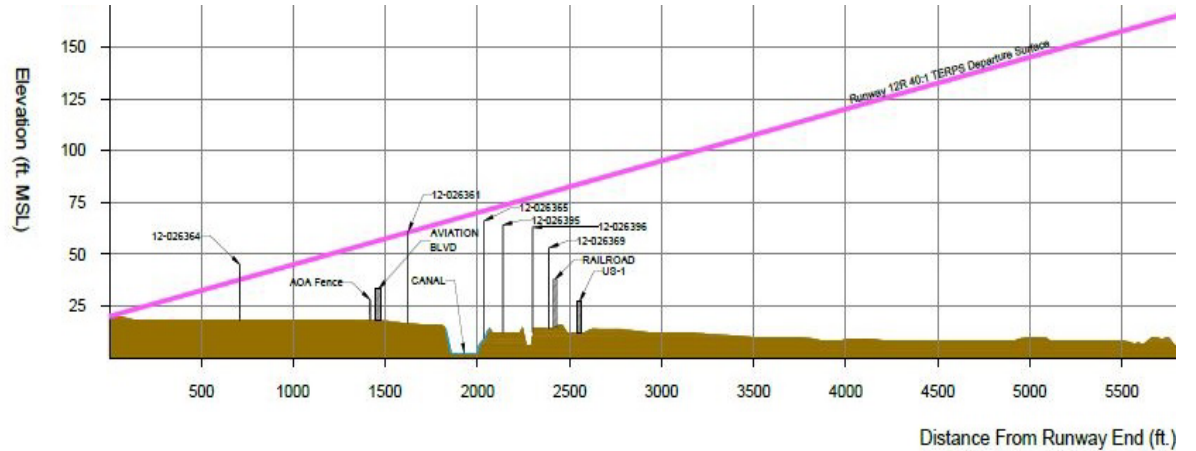
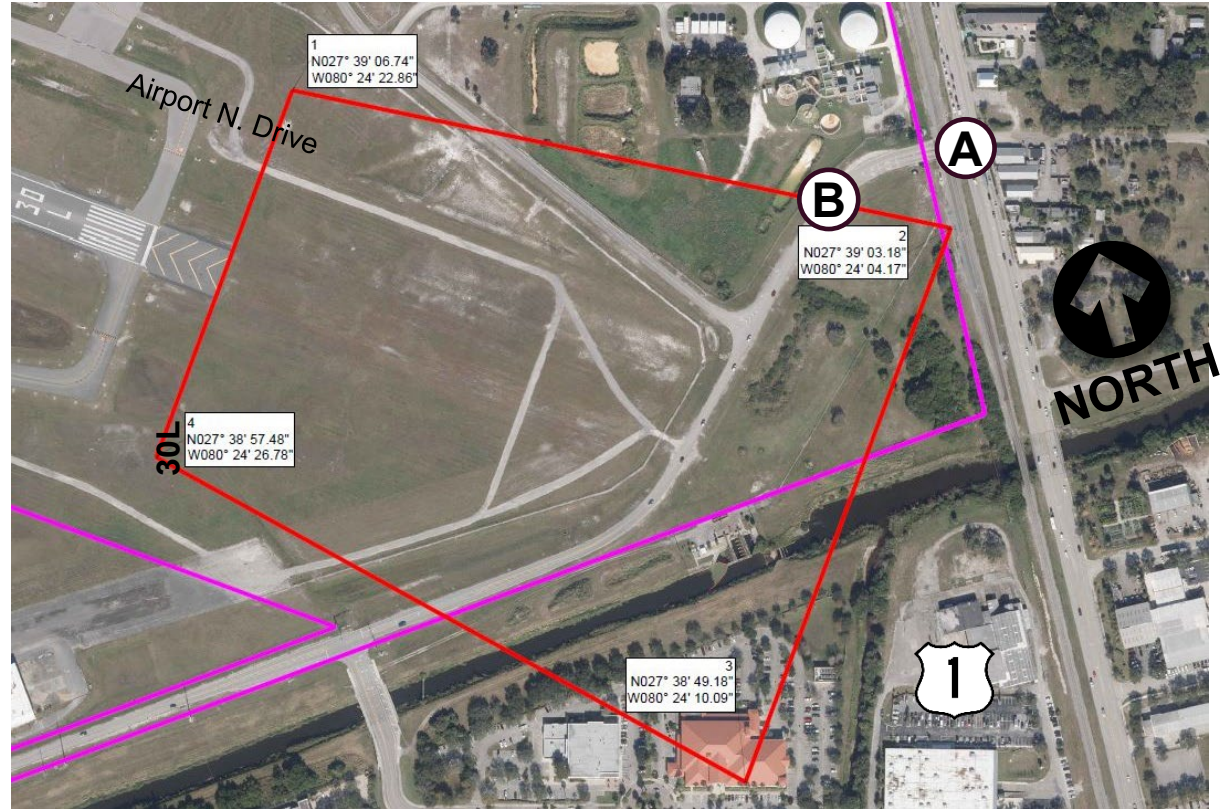
2045 LOS (Delay AM/PM)	New Bridges	FEC Railroad	Airport N. Drive	Aviation Blvd (west of SR 5)	Cultural Effects	Aviation Blvd (east of SR 5)	Social Effects	Cost
C (31.3/24.0)	1 @ US 1 1 @ Main Canal	At grade crossing	Full access capable	Expands R/W	Moderate widening to south	Shifts IRC alignment	Business and residential impacts	TBD

Runway 12R-30L

-  ■ Runway Protection Zone
-  ■ Flight Surface (TERPS)
 - Slope 40:1 from end of runway

Elevation (Approximate feet mean sea level)	Alternative 3 A	Alternatives 4 and 6 B
Flight Surface	66.6'	54.6'
Overpass Deck Elevation	40.8'	36.8
Clearance between overpass deck and flight surface	25.8'	17.8'

- Roadway profile factors
 - 10 ft bridge superstructure depth
 - 6% Alternative 3 (SR 5)
 - 7% Alternatives 4 and 6 (Aviation Blvd)



Public Involvement

GET INVOLVED!

Attend Public Meetings

- Public Alternatives Workshop: Fall 2023 (tentative)
- Public Hearing: May 2024 (tentative)
- **Contact Project Manager:**
 - Vandana Nagole, PE
 - Email: Vandana.Nagole@dot.state.fl.us
 - Project Website:
<https://www.fdot.gov/projects/SR5AviationBlvdPDE>

STAY INFORMED!

Social Media

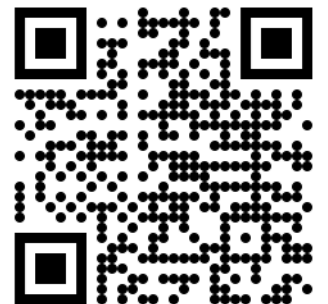


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Twitter: [@MyFDOT_SEFL](#)

Use
telephone
camera to
scan image



Public comments and questions are welcomed at any time.

Summary

- **PD&E Alternatives will undergo further evaluation and discussion**
- **PD&E Alternatives environmental effects analysis to be conducted**
- **FDOT will continue to coordinate with City, County, and property owners**
- **Property owners may contact FDOT at any time**

Upcoming Coordination

- **Federal Aviation Administration**
 - Runway requirements and R/W review process
- **FEC Railroad and Brightline**
- **Continue local meetings**

Major Public Meetings

- **Public Alternatives Meeting Fall 2023**
- **Public Hearing Summer 2024**
- **PD&E study completion December 2024**

MOVE OVER

FLORIDA LAW

MOVE OVER

**FOR STOPPED
EMERGENCY VEHICLES**

FLHSMV



Thank You

SR 5 / US 1 at Aviation Boulevard
Project Development and Environment (PD&E) Study