

PRELIMINARY ENGINEERING REPORT

Intersection Improvements at:

131st Street N at 82nd Avenue N, 131st Street N at 86th Avenue N and
125th Street N at 86th Avenue N

Pinellas County, Florida

PID: 001023A



Prepared for:

Pinellas County

Engineering and Technical Support Division

Prepared by:

Volkert, Inc.

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This preliminary engineering report contains detailed engineering information that fulfills the purpose and need for project the Intersection Improvements within Pinellas County, Florida.

November 2015



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Preliminary Engineering Report
for Intersection Improvements at
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1.0 Executive Summary

This Preliminary Engineering Report was prepared to document the engineering and environmental analysis performed to support the decision related to project alternatives. In addition, it summarizes existing conditions, documents the purpose and need for the project, and documents additional data related to preliminary design concepts. The preliminary design concepts will establish the functional or conceptual requirements that will be used as the starting point of the final design phase.

The purpose of the proposed project is to improve safety and provide for a higher capacity corridor to better meet future transportation demands for all users (vehicles, pedestrians, and bicyclists). This corridor is heavily traveled due to the proximity of four (4) schools; Bauder Elementary School, Seminole Middle School, Seminole High School and Career Academies of Seminole. The study area consists of three intersections and the intersecting roads:

- 131st Street N at 82nd Avenue N,
- 131st Street N at 86th Avenue N, and
- 125th Street N at 86th Avenue N.

A traffic analysis was conducted to determine the necessary improvements for an acceptable level of service (LOS) at the intersections for the existing year (2014) and future year (2035). The four (4) schools in the study area have different start and dismissal times and those varied times had a major impact on the peak hours. The *Design Traffic Memorandum (Appendix C)* which documented this analysis noted the AM and PM peak hours at 7:45 – 8:45 AM and 3:30 – 4:30 PM, respectively.

The No Build LOS intersection analyses were modeled for the 2014 and 2035 AM and PM peak hours using the “Synchro 8” program. It was determined that the intersections of 131st Street N at 82nd Avenue N and 125th Street N at 86th Avenue N were operating at LOS B in year 2035. Based on these findings, modifications to improve capacity were not recommended for these two intersections.

For the intersection of 131st Street N at 86th Avenue N, the operational analysis for the 2035 No Build peak hour for AM was LOS C and a LOS D for the PM peak hour. The *Design Traffic Memorandum* recommended improving the LOS at this intersection by the addition of three items:

- North/south left turn lanes and dedicated left turn traffic signal phasing on 131st Street N,
- An exclusive pedestrian-only phase and reduced speed limit within the school zone during start and dismissal periods, and
- A westbound right turn lane.

Three build alternative configurations were considered for engineering, environmental and economic factors. Social/cultural conditions were also taken into consideration in developing the intersection improvements. It is recommended that the intersection be designed to safely and efficiently accommodate vehicular traffic as well as bicycle and pedestrian traffic. The three design alternatives are depicted in **Appendix A** of the report and a description of each is as follows:

Alternative 1 improves safety and operational capacity at the intersection of 131st Street N at 86th Avenue N by:

- Adding dedicated northbound and southbound left turn lanes along 131st Street N,
- Providing a four (4) foot traffic separator adjacent to the turn lanes,
- New five (5) foot sidewalk throughout the project connecting the existing sidewalks on both sides of 82nd Avenue N,
- A new ten (10) foot sidewalk along the east side of 131st Street N and along the north side of 86th Avenue N,
- Drainage improvements along 131st Street from 82nd Avenue N to 86th Avenue N, and
- Relocation and improvement of the midblock crosswalk along 131st Street N at Seminole High School.

Alternative 2 includes all features from Alternative 1 plus the below additional improvements:

- Eastbound left turn lane into western parent pick-up driveway at Bauder Elementary School,
- Westbound right turn lane into the parent pick-up western driveway at Bauder Elementary School,
- Westbound right turn lane along 86th Avenue N at 131st Street N intersection, and
- Northbound right turn lane for the parent pick-up driveway at Seminole Middle School.

Alternative 3 includes all the items from Alternative 2 plus the below additional improvements:

- Southbound left turn lane for the driveway at Seminole Middle School,
- Eastbound left turn lane into the eastern parent pick-up driveway at Bauder Elementary School,
- Northbound right turn lane into the relocated driveway at Seminole High School,
- Southbound left turn lane at then relocated driveway at Seminole High School,
- Type F curb and gutter on both sides of 131st Street N,
- Additional traffic separators on 131st Street N in front of Seminole High School, and
- A new five (5) foot sidewalk along the west side of 131st Street N.

The Alternatives which included a “No Build” alternative were evaluated on a number of factors including were evaluated on a number of factors including – cost and Engineering Issues. The Engineering issues were evaluated based on safety and natural and social environment factors. A “Low”, “Medium” and “High” ranking was used to evaluate the project impacts. The evaluation matrix comparing the alternatives is as follows:

Evaluation Criteria	No Build	Alternative 1	Alternative 2	Alternative 3
Roadway Construction (LF)	N/A	1,304	2,912	4,572
Additional Left Turn Lanes	0	2	3	6
Additional Right Turn lanes	0	0	3	4
Engineering Issues				
Pedestrian Accommodations	Intermittent	Yes	Yes	Yes
Bicycle Accommodations	None	Yes	Yes	Yes
Utility Impacts	None	Medium	Medium	High
Construction Duration (months)	None	3	6	9
ROW Impacts	None	Medium	Medium	Medium
Estimated Cost (Present Day Cost)				
Construction Costs	\$ -	\$ 570,000	\$ 1,092,000	\$ 2,015,000
Mobilization Costs (7%)	\$ -	\$ 39,900	\$ 76,440	\$ 141,050
MOT Costs (5%)	\$ -	\$ 28,500	\$ 54,600	\$ 100,750
Erosion Control Costs (2.5%)	\$ -	\$ 14,250	\$ 27,300	\$ 50,375
Earthwork/Clearing Costs (2.5%)	\$ -	\$ 14,250	\$ 27,300	\$ 50,375
Project Unknown Costs (15%)	\$ -	\$ 85,500	\$ 163,800	\$ 302,250
Total Cost	\$ -	\$ 752,400	\$ 1,441,440	\$ 2,659,800

An enhanced version of Alternative 2 which adds turn lanes, drainage improvements, midblock crossings and sidewalks to improve safety along the corridor appears to be the most viable alternative and therefore the Preferred Alternative, as shown in **Figure 9**.

The Preferred Alternative addresses the purpose and need of this project in the following areas:

- Most viable alternative analyzed without major disruption to the surrounding community,
- Consistent with the local transportation plan by accommodating cyclists with shared-use lanes, reducing traffic delays and congestion,
- Enhances safety with the additional bicycle and pedestrian facilities, and
- Minimizes/eliminates right of way, floodplain, and wetland impacts to the fullest extent possible.

2.0 Introduction

2.1 Preliminary Engineering Report Purpose

The purpose of this report is to document the engineering and environmental analysis performed to support the decision related to project alternatives. In addition, the report summarizes existing conditions, documents the purpose of and need for the project, and documents other data related to preliminary design concepts. These preliminary design concepts will establish the functional or conceptual requirements that will be the starting point of the final design phase.

2.2 Process

Pinellas County conducted a study which included the documentation necessary to reach a decision on the type, conceptual design and specific location of the improvements identified as being needed. Factors considered included transportation needs, circulation improvements, safety, socioeconomic and environmental impacts, and engineering requirements. In general terms, the process involves the following steps:

- Establishment of project need,
- Gathering and analysis of detailed information regarding the natural and cultural features of the study area,
- Development of a number of alternatives meeting the project need, and
- Selection of the Recommended Alternative.

During the process, communication with the stakeholders was accomplished directly through a public meeting, and indirectly through interaction with elected officials and county representatives.

2.3 Project Description

The Preliminary Engineering Report (PER) considered operational and safety improvements to three (3) intersections and the adjoining streets to address high traffic and pedestrian volumes. These intersections included within the project study area were:

- 131st Street N at 82nd Avenue N,
- 131st Street N at 86th Avenue N, and
- 125th Street N at 86th Avenue N.

The adjoining roads provide access to four (4) schools; Bauder Elementary School, Seminole Middle School, Seminole High School and Career Academies of Seminole, which are located within the Pinellas County School District.

The study area is located in Township 30S, Range 15E, and Section 22 & 23. The project limits are shown in the location map (**Figure 1**) which includes the location of the project, the intersections and proximity to the public schools.



Figure 1: Project Location Map

The proposed improvements include intersection improvements; various operation improvements, bicycle and pedestrian facilities, and construction of stormwater management facilities.

2.4 Purpose and Need for the Project

The purpose of the proposed project is to enhance safety and provide for a higher capacity corridor to better meet future transportation demands for all users (vehicles, pedestrians, and bicyclists). This corridor is heavily traveled due to the proximity of four schools; Bauder Elementary School, Seminole Middle School, Seminole High School and Career Academies of Seminole.

3.0 Existing Conditions

3.1 Roadway Facility Information

The roadway facility information for 131st Street N, 86th Avenue N and 125th Street N are provided in **Table 1**.^{1,2}

Table 1: Existing Roadway Facility Information

Item	131 st Street N	86 th Avenue N	125 th Street N
Government Jurisdiction	Pinellas County	Pinellas County	Pinellas County
Functional Classification	Collector	Collector	Collector
Facility Type (Designation)	Signalized Collector (Major) - SMC	Signalized Collector (Major) - SMC	Signalized Collector - SC
Road Type	2 Lane – Undivided	2 Lane – Undivided	2 Lane – Undivided
Level of Service (LOS) Standard	D	D	D
Level of Service Methodology	FDOT Generalized Tables	FDOT Generalized Tables	FDOT Generalized Tables
Average Annual Daily Traffic (vehicle/day)	9,002	6,867	4,243
Volume/Capacity Ratio	0.822	0.628	0.388
Facility LOS	C	C	B

¹ Pinellas County Metropolitan Planning Organization Report titled “2014 Level of Service Report, Adopted September 10, 2014”.

² Pinellas County Comprehensive Plan, Functional Classification Pinellas County, Figure 3-2.

3.2 Typical Section

Within the study area the existing right of way varies from 66 to 100 feet. The roadway geometry consists of an undivided two-lane section with 11-foot lanes, no paved shoulders, open swales and intermittent sidewalk.

3.3 Pedestrian and Bicycle Facilities

There is a five (5) foot sidewalk on the north side of 86th Avenue N from the intersections of 131st Street N to 125th Street N. There are five (5) foot sidewalks on the east and west side of 131st Street N from the intersections of 125th Street N to 86th Avenue N. There are also intermittent sidewalks on both sides of 125th Street N. There are no existing bicycle lanes on 86th Avenue N, 125th Street N or 131st Street N.

3.4 Horizontal and Vertical Alignment

The study area is relatively flat with no horizontal or vertical curves based on the existing survey and field observations. The review of topographic features and aerial photography, coupled with site investigations, found no sight constraints associated with the horizontal and vertical alignments.

3.5 Crash Data

The County provided crash data for the study area for a three (3) year period from November 29, 2011 through October 17, 2014. Within those years, forty-three (43) crashes occurred in the study area with the most predominant crash types being rear-end (23 crashes) at 53% and angle (12 crashes) with 28% respectively. The total number of vehicular crashes, their type, and the low number of injuries are consistent for an urban area, two-lane collector roadway with moderate speeds (less than 40 mph). The high number of rear-end crashes is influenced by traffic congestion at the two (2) traffic signals along 86th Avenue N during the afternoon dismissal of Bauder Elementary School, Seminole Middle School, and Seminole High School. There were three (3) documented crashes involving pedestrians/bicyclists within the study area. Detailed crash analyses can be found in **Appendix C**.

3.6 Lighting

Street Lighting is provided at the intersections of 131st Street N at 86th Avenue N, 125th Street N at 86th Avenue N and at the recreational fields associated with Seminole High School along 86th Avenue N.

3.7 Planning Consistency

The Pinellas County Metropolitan Planning Organization (MPO) has designated 131st Street N and 86th Avenue N for shared-use bike lanes in the MPOs *Bicycle Pedestrian Master Plan* dated December 2013. This project was not identified in the MPOs 2040 Long Range Transportation Plan dated December 2014.

3.8 Drainage

This project is almost entirely within the northern most sub-basin of the McKay Creek Watershed. The drainage patterns for the project are primarily open ditch that flow north and south along the east side of 131st Street N towards the 86th Avenue N intersection. There are a few curb and ditch bottom inlets at the side street intersections along the west side of 131st Street N. At 86th Avenue N, the surface water flows east by way of a ditch system along the south side of the road. The roadway runoff continues in an open ditch for approximately 2,000 feet. At that location, it is intercepted by a 9' x 5' concrete box culvert under 86th Avenue N located at the eastern edge of the Seminole High School property. This concrete box culvert carries this sub-basin north into the McKay Creek Canal. See **Figure 2** for more detailed information.

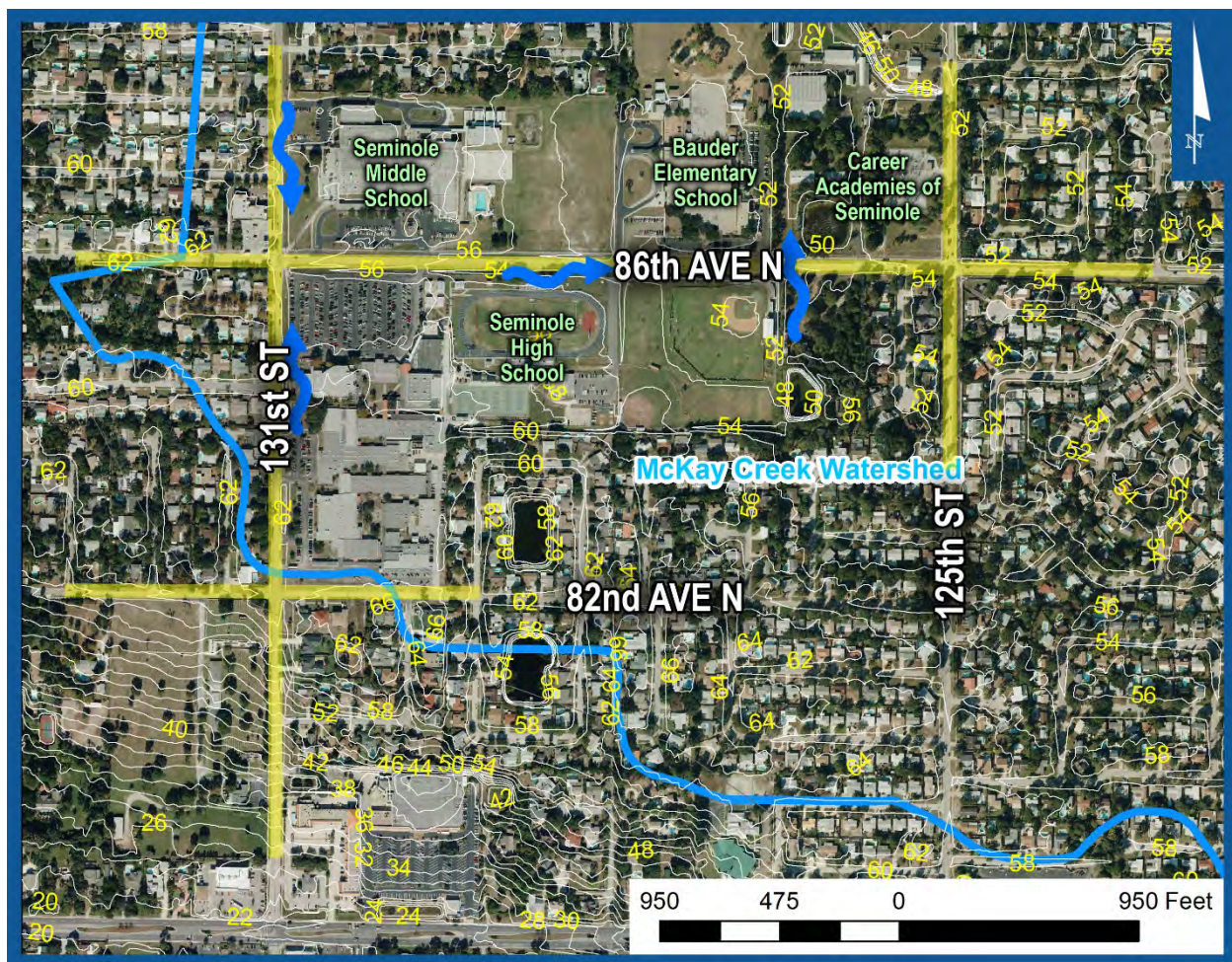


Figure 2: Existing Drainage Map

3.9 Floodplain

The study is located in Federal Emergency Management Agency (FEMA) Flood Zone “X”. The National Flood Insurance Program, Flood Insurance Rate Map (FIRM), describes Zone X as “Areas determined to be outside 500-year floodplain.” This is based on FIRM panel number 12103C0177G, effective date September 3, 2003. Therefore, no impacts to the floodplain are anticipated.

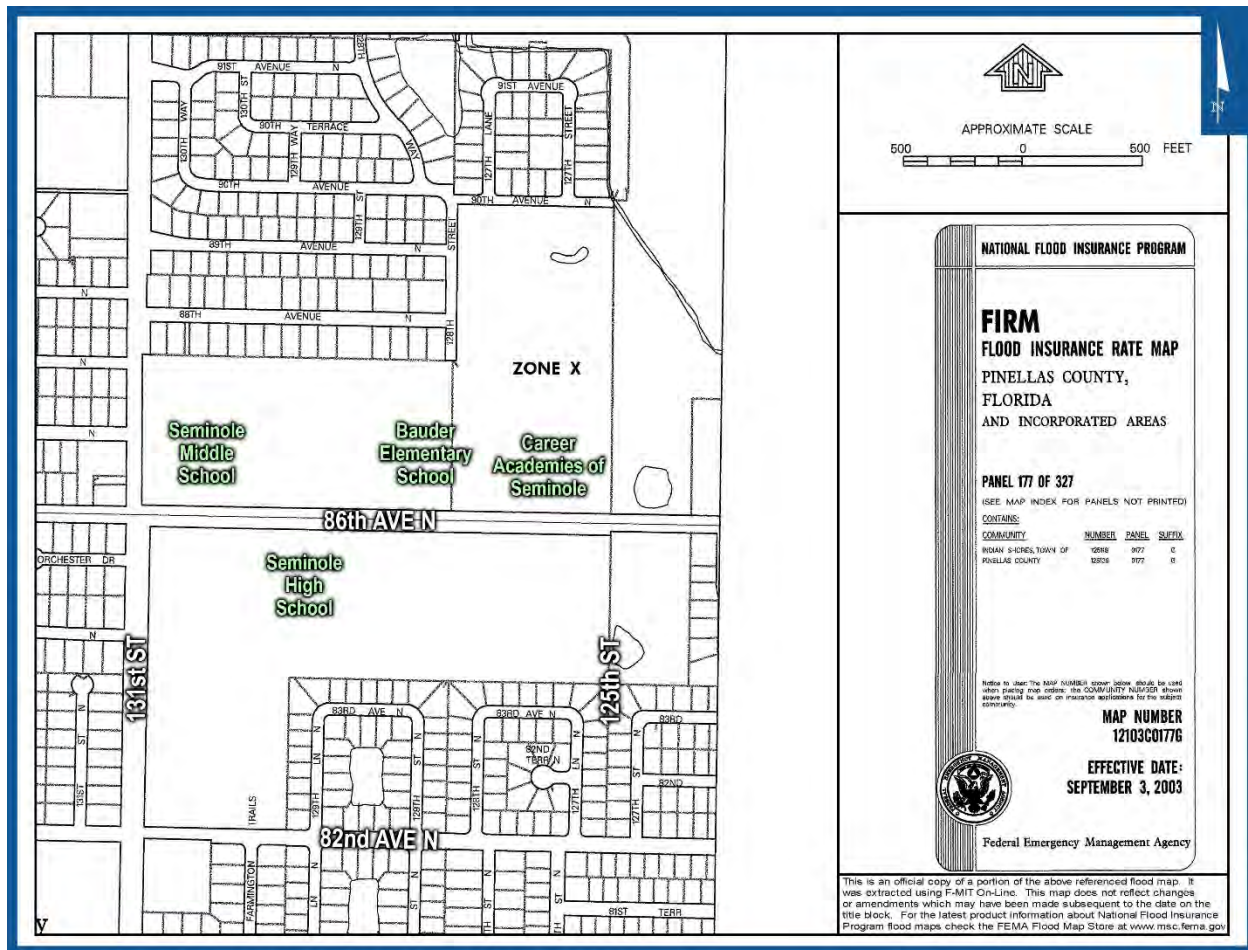


Figure 3: Project Flood Insurance Rate Map

3.10 Geotechnical

The study area consists of twelve (12) soil types per the Natural Resource Conservation Service (NRCS). The majority of the soil type is Myakka with 64% followed by Pomello soils at 20% respectively. See **Figure 4** for more detailed information.



Figure 4: Soils Map

3.11 Intersection and Signalization

131st Street N at 82nd Avenue N: This intersection is stop controlled using standard stop signs; 82nd Avenue N stops east/west at 131st Street N.

131st Street N at 86th Avenue N: This intersection is signalized with a diagonal span (northeast corner to southwest corner) utilizing concrete strain poles. There are no left turn lanes at the intersection. There are pedestrian signals on all four (4) corners of the intersection. Due to the heavy volume of left turning traffic from 131st Street N to 86th Avenue N, the north/south traffic signal phasing is “split phasing”; first northbound traffic receives a green arrow/green ball indication which allows protected left turns from northbound to westbound, then southbound traffic receives a green arrow/green ball indication which allows protected left turns from southbound to eastbound. East/west traffic on 86th Avenue N has no left-turn phasing; all left turns are permissive left turns (must yield to oncoming traffic). During the start and dismissal of Bauder Elementary and Seminole Middle School, there are school crossing guards at the intersection to assist pedestrians crossing the intersection.

125th Street N at 86th Avenue N: This intersection is signalized with a diagonal span (northwest corner to southeast corner) utilizing concrete strain poles. There are no left turn lanes at the intersection. There are pedestrian signals on all four corners of the intersection. Due to the heavy volume of left-turning traffic from eastbound 86th Avenue N to northbound 125th Street N, there is an advanced protected left-turn phase (green arrow/green ball) for eastbound traffic on 86th Avenue N. The other three (3) approaches do not provide left-turn phasing. During the start and dismissal of Bauder Elementary and Seminole Middle School, there are school crossing guards at the intersection to assist pedestrians crossing the intersection.

The existing intersection geometry for the study area is shown on **Figure 5** below.



Figure 5: Existing Intersection Geometry

3.12 Utilities

Utility identification was conducted using both field reconnaissance and Sunshine 811. Numerous utilities are present throughout the length of the project. Shown in **Table 2** are the utilities agency owners by facility along with their corresponding contact information.

Table 2: Existing Utilities

Utilities	Owner	Contact	Phone Number	Address
Communications	Verizon Florida, Inc.	David Wynns	813-978-2164	7701 E Telecom Pkwy Temple Terrace, FL 33637
	WOW!	Jay Young	727-239-0156	3001 Gandy Blvd N Pinellas Park, FL 33785
	Bright House Networks	Donald Anthony	727-329-2000	700 Carillon Parkway, Ste 6 St. Petersburg, FL 33716
Electric	Duke Energy	Sharon Dear	407-905-3321	452 E Crown Pointe Rd Winter Garden, FL 33787
Water/Sewer	Pinellas County Utilities	Jay Perkins	727-464-3536	14 S Fort Harrison Ave Clearwater, FL 33756
ITS	Pinellas County Hwy/Eng	Matt Stalnaker	727-464-8909	22211 US 19 N Clearwater, FL 34625

3.13 Posted Speed Limits

The posted speed limits on 86th Avenue N and 125th Street N are 30 mph. The posted speed limit on 131st Street N is 35 mph.

3.14 Multimodal

The predominant mode of travel on the roads within the study area consists of motorized vehicular traffic and pedestrians/bicycles. The nearest Pinellas Suncoast Transit Authority (PSTA) facility is Route 74 on Park Blvd/78th Avenue N, just south of the study area.

Sidewalks are on both sides of 131st Street N and 125th Street N and on the north side of 86th Avenue N within the study area. There are no existing bike lanes within the study area; however, the MPO Bicycle Pedestrian Master Plan has identified 131st Street N and 86th Avenue N along our study area as proposed bicycle and shared-use lanes.³

³ MPO Bicycle Pedestrian Master Plan-Facilities Element, Pinellas County, December 11, 2013, Page 3.

3.15 Land Use Data

The land use in the study area consists primarily of residential, public/semipublic and commercial uses. The Circle K occupies the northwest corner of 131st Street N at 86th Avenue N and is classified as a commercial land use. The four (4) schools are designated as public/semi-public use and the remaining properties are designated as residential use with single family homes. A map of the planned land usage from the Pinellas County Public GIS is shown in **Figure 6**.

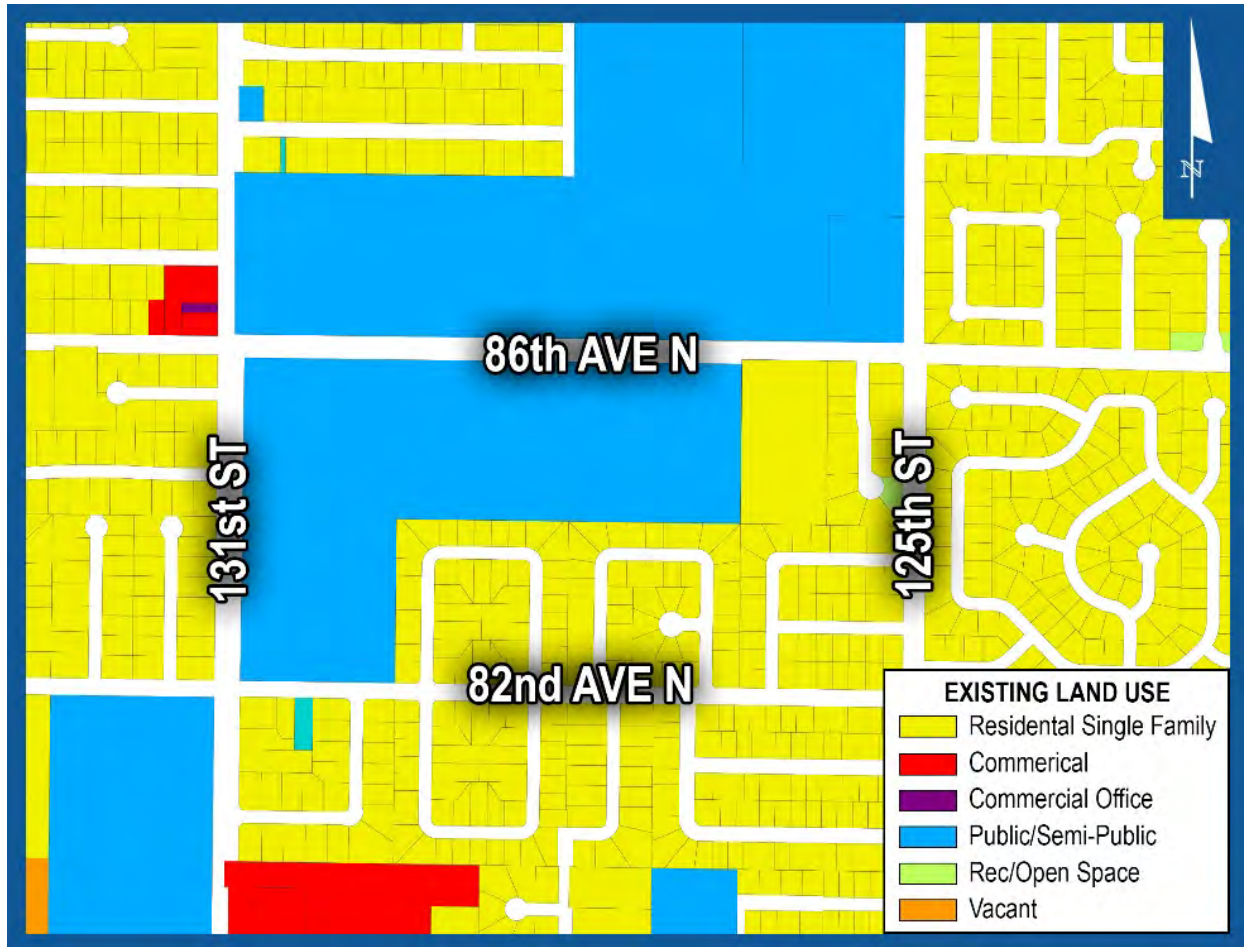


Figure 6: Pinellas County Land Use

3.16 Cultural Features and Community Services

Located within a half (1/2) mile of the study area there are recreational fields, trails, schools, and fire stations. The Fred Marquis Trail and an equestrian trail are within this buffer area. No cultural resources were identified within the project corridor that can be considered significant or eligible for listing on the National Register of Historic Places.

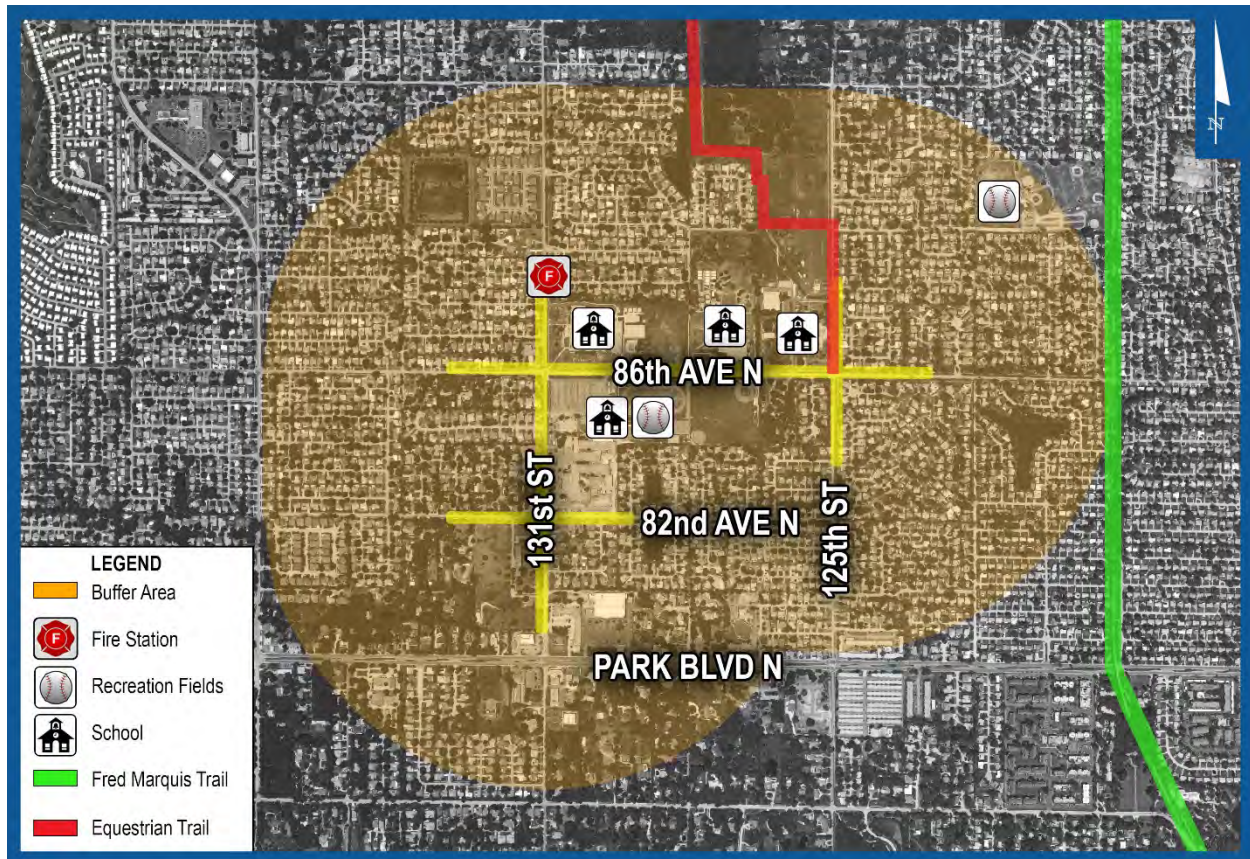


Figure 7: Community Features

4.0 Internal and External School Circulation

During the course of the study, several options on school property and county roads were noted that would address the existing traffic congestion and school safety issues. A brief description of these are listed below with the applicable number shown in **Figure 7**.

1. At the west parent loop driveway at Bauder Elementary School, the inbound travel lane could be widened to two (2) inbound lanes to accommodate additional traffic queuing on school property. This widening would also impact the driveway connection to 86th Avenue N and the drainage ditch.
2. At the parent loop driveway entrance at Seminole Middle School, a right turn lane could be constructed on 131st Street N to keep traffic from parking partially in the northbound travel lane.
3. The student parking lot at Seminole High School is a large facility with driveway access onto both 131st Street N and 86th Avenue N. This facility could be converted to a one-way ingress/egress operation (enter via 131st Street N and exit on 86th Avenue N) with two lanes for entering traffic that is waiting to pick up students in the afternoon. This one-way operation would reduce congestion on 131st Street N. The interior traffic circulation in the facility would remain unchanged, only the points of ingress/egress would be affected.
4. The existing parent loop driveway on 131st Street N at Seminole High School could be expanded to the south into the parking area. This would provide more on-site stacking room. To ensure this option would work, the existing enter driveway at the parent loop would need to be closed.
5. A new proposed connection could provide access and additional storage between Bauder Elementary and Seminole Middle School.



Figure 8: Circulation Improvements

5.0 Design Control and Standards

A summary of the design criteria is provided below with more detailed information found in **Appendix B**. The design criteria for this study is based upon current design standards established in the following documents:

- *Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways*, FHWA, May 2011; (referred to as the Florida Green Book)
- *Plans Preparation Manual*, Volume 1, Design Criteria and Process, FDOT, January 2015; (referred to as the FDOT PPM)
- *Design Standards for Construction Operations on the State Highway System*, FDOT, 2015 Edition (referred to as the FDOT Index)
- *AASHTO Geometric Design and Highways and Streets*, 2004 Edition; (referred to as the AASHTO Green Book)

Table 3: Design Criteria

Design Category	131 st Street N		86 th Avenue N		Source
	Standard	Existing Conditions	Standard	Existing Conditions	
ROADWAY ELEMENTS					
Lane Width (ft.)	11	11+/-	11	11+/-	Florida Green Book
Turn Lane Width (ft.)	11	N/A	11	N/A	FDOT PPM
Shoulder Width (ft.)	Minimum 6	-	Minimum 6	-	Florida Green Book
Border Width (ft.)	33' (No Curb)/12' (With Curb) DS < or = 40 mph	-	33' (No Curb)/10' (With Curb) DS < or = 30 mph	-	FDOT PPM
HORIZONTAL CLEARANCE					
Clear Zone (ft.)	4' Urban (Curbed)/ 10' Rural (shoulder)	-	4' Urban (Curbed)/ 10' Rural (shoulder)	-	Florida Green Book
Light Poles	4' (From Face of Curb) 20' (Edge of Travel Lane) or 14' (From Aux. Lane)	N/A	4 (From Face of Curb)/ 20 (Edge of Travel Lane) or 14' (From Aux. Lane)	12.5' Curbed Section	FDOT PPM
PEDESTRIAN & BICYCLE FACILITIES					
Sidewalk Width (ft.)	5' min (4' With Constraints)/ 6' min (adjacent to curb)	4' West 5' East	5 min(4 With Constraints)/ 6 min (adjacent to curb)	4' North N/A South	Florida Green Book
Bicycle Lanes (ft.)	4' (Urban)	None	4' (Urban)	None	Florida Green Book
Midblock Crosswalks	Midblock crossings should be well signed and marked and: Intersection spacing is > 660'; Must be > 330 ft. from an intersection; Crossing distance < 60'	meets criteria	Midblock crossings should be well signed and marked and: Intersection spacing is > 660'; Must be > 330 ft. from an intersection; Crossing distance < 60'	-	Florida Green Book & FDOT PPM
ACCESS MANAGEMENT					
Left Turn Lane Length	145' + Queue Length from Synchro Analysis (Includes 50' Taper) (305')	-	145' + Queue Length (Includes 50' Taper) (Used 350' for 15 cars)	-	FDOT Index
Right Turn Lane Length	145' + 100' Queue Length (4 cars) (Includes 50' Taper) (245')	-	145' + 100' Queue Length (4 cars) (Includes 50' Taper) (245')	-	FDOT Index & FDOT PPM
Median Opening Spacing (ft.)	660 Directional 1320 Full 1320 Signal Spacing	-	660 Directional 1320 Full 1320 Signal Spacing	-	FDOT PPM

6.0 Traffic

A *Design Traffic Memorandum* has been prepared for the proposed project. Level of Service analysis was performed as part of this study for the existing year (2014) and future year (2035) traffic volumes. Additional information pertaining to traffic analysis can be found in **Appendix C**.

6.1 Peak Hour and 2035 Traffic

The four (4) schools in the study area have different start and dismissal times. The varied times had a major impact on determining what the peak hours were in the study area for the traffic analysis. A comprehensive peak hour study was performed to examine the peak hour issues. Based on this study, the peak hours for the traffic analysis are 7:45 – 8:45 AM and 3:30 – 4:30 PM.

The traffic volumes in the study area consist of two (2) components; school traffic and background traffic. For school traffic, the Pinellas County Schools staff advised that there are no anticipated additions (physical facilities) at the four (4) schools in the study area; therefore, the school traffic will not have a growth component for 2035 traffic. For background traffic, Volkert coordinated with the Pinellas County MPO with respect to what traffic growth factor should be utilized to obtain 2035 background traffic volumes. A 1% per year growth factor was utilized. This growth factor was added to the 2014 traffic to obtain 2035 traffic volumes. The peak hour study and 2035 traffic volumes are detailed in **Appendix C**.

6.2 Intersection Level of Service

Level of service (LOS) is a term used to qualitatively describe the operating conditions of a roadway based on factors such as speed, travel time, maneuverability, delay, and safety. The LOS of a facility is designated with a letter, A to F, with A representing the best operating conditions and F the worst.

The AM and PM peak hour level of service for the three (3) study intersections for 2014 No Build and 2035 No Build (existing intersection geometry) was analyzed by using the Synchro 8 traffic model. More detailed information is available in **Appendix C**.

Table 4: Intersection Level of Service (2014 No Build & 2035 No Build)

Intersection	Traffic Control	2014		2035	
		AM Peak Hour No Build	PM Peak Hour No Build	AM Peak Hour No Build	PM Peak Hour No Build
131 st Street N & 82 nd Avenue N Westbound	Stop Sign	B	B	B	C
131 st Street N & 82 nd Avenue N Eastbound	Stop Sign	B	B	B	B
131 st Street N & 86 th Avenue N	Traffic Signal	C	C	C	D
86 th Avenue N & 125 th Street N	Traffic Signal	B	B	B	B

6.3 Traffic Analysis Recommendations

The 2035 No Build intersection LOS analysis documented that the intersections of 131st Street N at 82nd Avenue N and 125th Street N at 86th Avenue N were operating at LOS B. The intersection of 131st Street N at 82nd Avenue N was documented at LOS C during the 2035 PM peak hour along the westbound approach. Based on these findings, modifications to improve capacity were not recommended for these two intersections.

For the intersection of 131st Street N at 86th Avenue N, the operational analysis for the 2035 No Build for the AM peak hour was LOS C and LOS D for the PM peak hour. Based on this analysis, three (3) options were developed that would improve the level of service, particularly in the PM peak hour and enhance pedestrian safety at the intersection.

The improvements to the intersection of 131st Street N at 86th Avenue N are described as follows per **Appendix C**:

Option 1 Add north/south left turn lanes and left turn traffic signal phasing on 131st Street N.

Option 2 Provide Option 1 plus the addition of exclusive pedestrian-only phase and reduced speed limit.

Option 3 Provide Option 2 (which includes Option 1) plus the addition of a westbound right turn lane.

Options 1, 2 and 3 for the 131st Street N at 86th Avenue N intersection were modeled for the 2014 and 2035 AM and PM peak hours using the Synchro 8 program. The results are shown in **Table 5**. Based on this analysis, Option 3 was the recommended improvement for this intersection.

Table 5: 131st Street & 86th Avenue - Intersection Improvements Level of Service

Intersection	Traffic Control	2014		2035	
		AM Peak Hour No Build	PM Peak Hour No Build	AM Peak Hour No Build	PM Peak Hour No Build
No Build	Traffic Signal	C	C	C	D
Option 1	Traffic Signal	A	B	B	B
Option 2	Traffic Signal	B	B	B	C
Option 3	Traffic Signal	B	B	B	B

7.0 Alternatives Analysis

7.1 No Build Alternative

The No Build Alternative consists postponing improvements and providing routine road maintenance. There are advantages and disadvantages associated with the implementation of the No Build Alternative.

The advantages of the No Build include:

- No new construction, design or right of way costs,
- No disruption due to construction activities, and
- No disturbance to the natural environment.

The disadvantages include:

- Increased maintenance cost,
- Further deterioration of the existing safety deficiencies due to the traffic increases,
- Increased traffic congestion causing increased road user costs due to travel delay,
- Unacceptable LOS on the existing roadway network, and
- Inconsistency with Pinellas MPO's Long Range Transportation Plan.

Postponement of the project may jeopardize future economic feasibility due to escalation of construction and right of way costs. The No Build Alternative will remain under consideration throughout the alternatives evaluation process.

7.2 Build Alternatives

At the beginning of the study, information was collected to document and evaluate the environmental, socioeconomic, land use, archaeological and historical features for the area. This information was then used to develop the conceptual design and alternatives analysis for the study.

The advantages of the Build Alternative include:

- Enhanced safety for all users,
- Acceptable LOS for traffic,
- Improved pedestrian and bicyclist facilities,
- Improved access and circulation within the study area, and
- Consistency with the long range transportation plan.

The disadvantages of the Build Alternative include:

- Minor environmental and floodplain impacts, and
- Temporary construction inconvenience and delays.

The subsections contained within this section of the report describe the proposed improvements to the study area. Further detailed information and graphics pertaining to each alternative may be found in **Appendix A** as well as the proposed typical sections.

The proposed typical sections consist of two (2) eleven (11) foot lanes designated as shared-use for bicyclists. The sidewalks proposed vary from five (5) feet to ten (10) feet in width. The proposed right of way varies from 95 to 102 feet. The proposed improvements require additional right of way along the school property. The improvements needed to increase capacity and enhance safety along the study area listed below.

7.2.1 Alternative 1

- Adding dedicated northbound and southbound left turn lanes at the 131st Street N and 86th Avenue N intersections,
- Providing an additional four (4) foot traffic separator adjacent to the aforementioned turn lanes,
- A new five (5) foot sidewalk throughout the project connecting the existing sidewalks on both sides of 82nd Avenue N,
- A new ten (10) foot sidewalk along the east side of 131st Street N and along the north side of 86th Avenue N,
- Drainage improvements along 131st Street from 82nd Avenue N to 86th Avenue N, and
- Relocate and improve the midblock crosswalk along 131st Street N at Seminole High School.

7.2.2 Alternative 2

Alternative 2 includes all the features from Alternative 1 plus these additional improvements:

- Eastbound left turn lane into western parent pick-up driveway at Bauder Elementary School,
- Westbound right turn lane into western parent pick-up driveway at Bauder Elementary School,
- Westbound right turn lane along 86th Avenue N at 131st Street N Intersection, and
- Northbound right turn lane for the driveway at Seminole Middle School.

7.2.3 Alternative 3

This alternative includes all the items from Alternative 2 plus these additional items:

- Southbound left turn lane for the driveway at Seminole Middle School,
- Westbound left turn lane into the Eastern Driveway at Bauder Elementary School,
- Northbound right turn lane into relocated driveway at Seminole High School,
- Southbound left turn lane at relocated driveway at Seminole High School,
- Type F curb and gutter on both sides of 131st Street N,
- Additional traffic separators on 131st Street in front of Seminole High School, and
- A new five (5) foot sidewalk along the west side of 131st Street N.

7.3 Evaluation Matrix

The Alternatives which included a “No Build” alternative were evaluated on a number of factors including – cost and Engineering Issues. The Engineering issues were evaluated based on safety and natural and social environment factors. A “Low”, “Medium” and “High” ranking was used to evaluate the project impacts. The evaluation matrix comparing the alternatives in **Table 6** is as follows:

Table 6: Evaluation Matrix

Evaluation Criteria	No Build	Alternative 1	Alternative 2	Alternative 3
Roadway Construction (LF)	N/A	1,304	2,912	4,572
Additional Left Turn Lanes	0	2	3	6
Additional Right Turn lanes	0	0	3	4
Engineering Issues				
Pedestrian Accommodations	Intermittent	Yes	Yes	Yes
Bicycle Accommodations	None	Yes	Yes	Yes
Utility Impacts	None	Medium	Medium	High
Construction Duration (months)	None	3	6	9
ROW Impacts	None	Medium	Medium	Medium
Estimated Cost (Present Day Cost)				
Construction Costs	\$ -	\$ 570,000	\$ 1,092,000	\$ 2,015,000
Mobilization Costs (7%)	\$ -	\$ 39,900	\$ 76,440	\$ 141,050
MOT Costs (5%)	\$ -	\$ 28,500	\$ 54,600	\$ 100,750
Erosion Control Costs (2.5%)	\$ -	\$ 14,250	\$ 27,300	\$ 50,375
Earthwork/Clearing Costs (2.5%)	\$ -	\$ 14,250	\$ 27,300	\$ 50,375
Project Unknown Costs (15%)	\$ -	\$ 85,500	\$ 163,800	\$ 302,250
Total Cost	\$ -	\$ 752,400	\$ 1,441,440	\$ 2,659,800

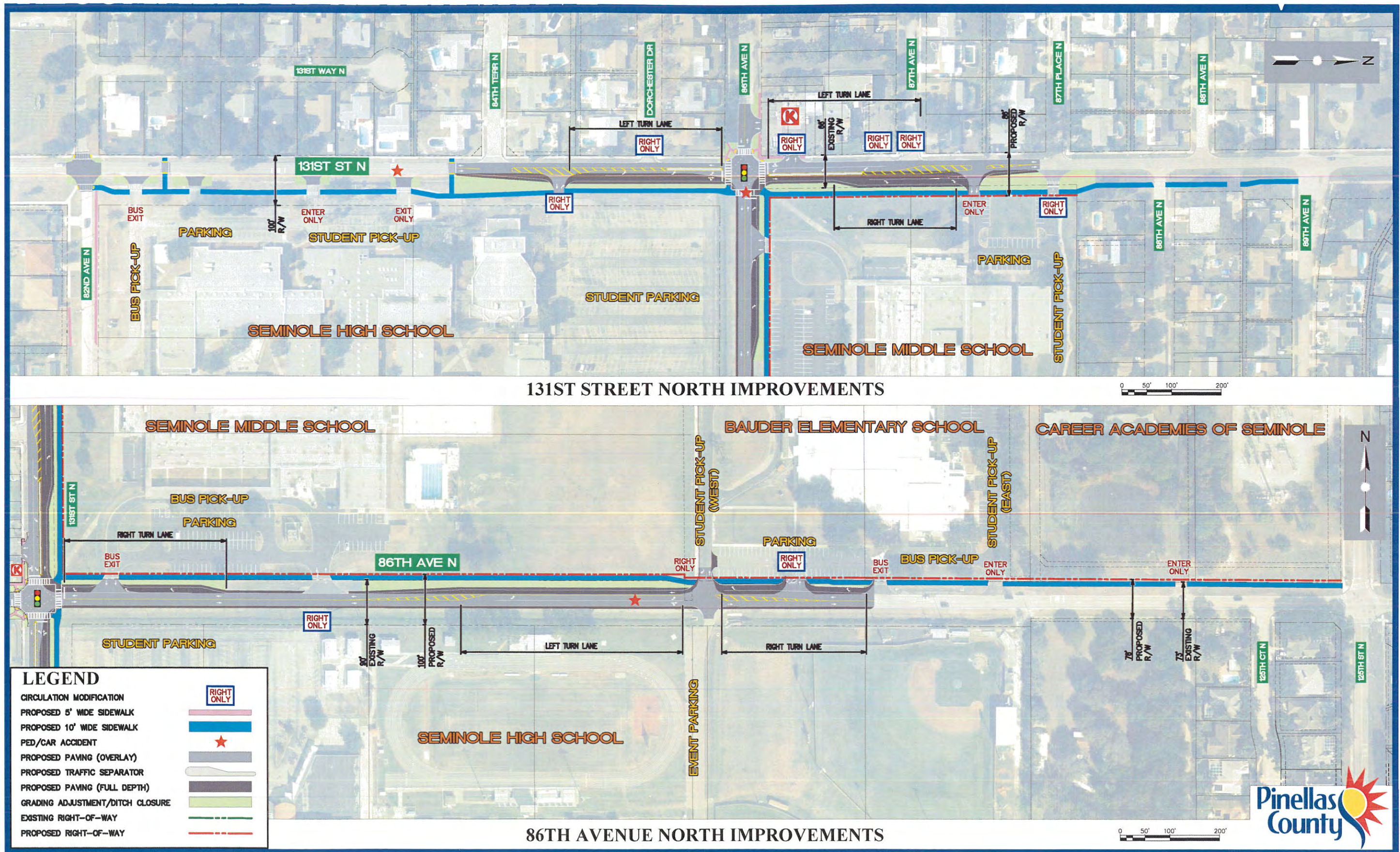
7.4 Preferred Alternative

The Preferred Alternative is an enhanced version of Alternative 2 which included added turn lanes, drainage improvements, midblock crossings and sidewalks to improve safety along the corridor. This enhanced version reduced the concrete traffic separator length from approximately 200 to 70 feet and included restricting left turns at various locations on 131st Street N, as shown in **Figure 9**. This reduction was recommended in several comments from the public and is supported by the Pinellas County Sheriff's Office and Pinellas County School representatives.

The Preferred Alternative addresses the purpose and need of this project in the following areas:

- Most viable alternative analyzed without major disruption to the surrounding community,
- Consistent with the local transportation plan by accommodating cyclists with shared-use lanes, reducing traffic delays and congestion,
- Enhances safety with the additional bicycle and pedestrian facilities, and
- Minimizes/eliminates right of way, floodplain, and wetland impacts to the fullest extent possible.

Figure 9: Preferred Alternative



8.0 Preliminary Design Analysis

8.1 Intersection Improvements

The geometry for the safety enhancement in the Preferred Alternative is shown in **Figure 9**. The proposed turn lane widths for this geometry are based on FDOT Standard Index Number 301. The preferred lane lengths are shown on the conceptual design sheet. These safety improvements will require the signal to be rebuilt. Pedestrian signals and crosswalks will also be included in the improvements.

8.2 Typical Section and Right of Way Needs

The Preferred Alternative Typical Sections, shown in **Figure 10**, widens the existing two-lane roadway to provide turn lanes to the adjacent schools and the intersection. This will improve the operation of 131st Street N and 86th Avenue N.

The proposed right of way requires approximately 34,248 square feet or 0.8 acres from the Pinellas County School Property. Additional coordination will be needed during the design phase.

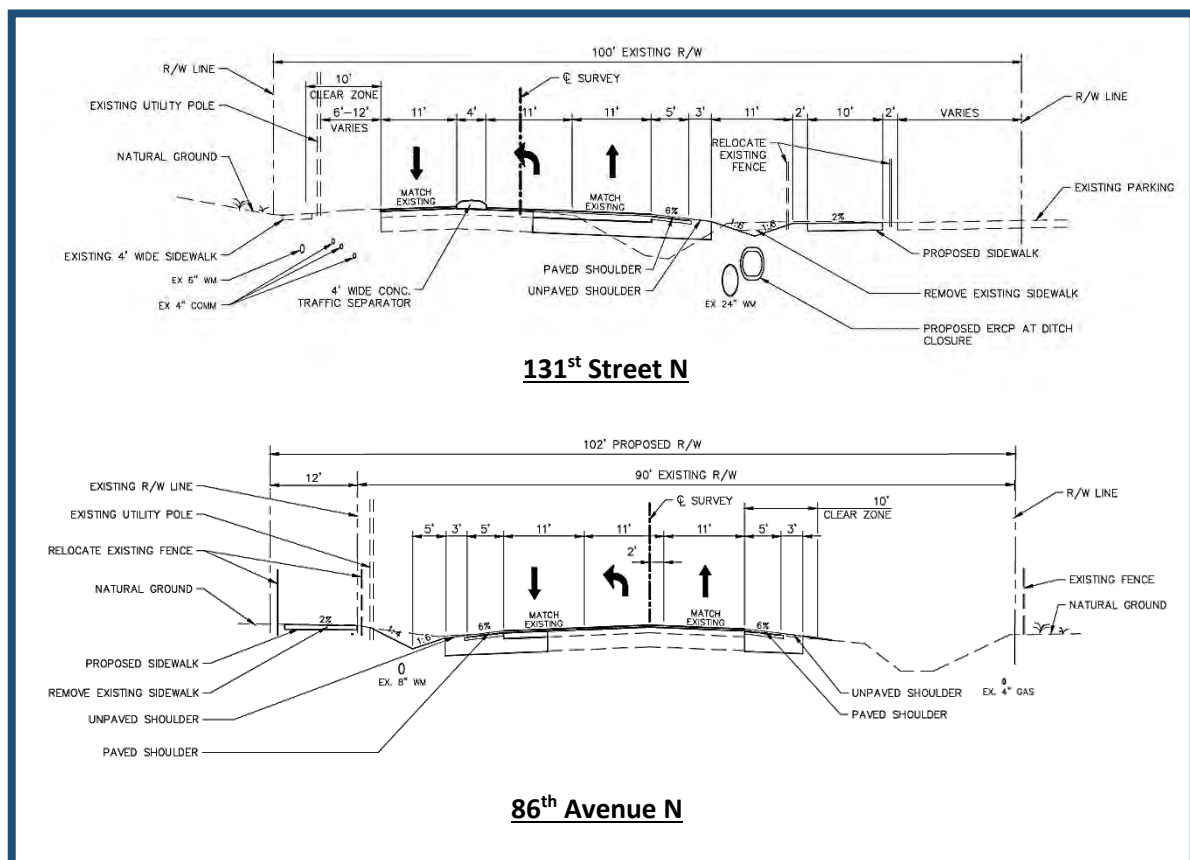


Figure 10: Typical Sections

8.3 Construction Cost

All construction costs were calculated using the current 2014 FDOT's Long Range Estimating method. As shown, estimated construction cost for the Preferred Alternative roadway improvements is \$1.4 million dollars. This does not include any signal or right of way costs associated with the concept.

8.4 Pedestrian and Bicycle Facilities

Pedestrian accommodations include:

- Five (5) foot concrete sidewalk on 82nd Avenue N and at the intersection of 131st Street N at 82nd Avenue N,
- Ten (10) foot asphalt sidewalk along the north side of 86th Avenue N and along the east side of 131st Street N,
- Pedestrian signals at the intersection,
- Additional signage and flashing beacons approaching the midblock crossings, and
- Sharrows along the travel lanes for shared-use designation for cyclists

8.5 Lighting

Existing lighting is found only at the intersections along 86th Avenue N in the study area. The AASHTO Highway Safety Manual (HSM) was used for quantifiable guidance on the benefits of installing roadway or intersection lighting on an arterial roadway. Installing lighting on an unlit facility is expected to reduce nighttime injury roadway crashes by 16-40%. The FDOT Traffic Engineering Manual, 2012 Edition and revised in 2015, Section 3.8.5(5)(c) states that crosswalk illumination shall be provided at all newly constructed midblock or uncontrolled approach crosswalks. Therefore, the corridor is recommended to have continuous roadway lighting on 131st Street N throughout the study limits.

8.6 Drainage Enhancements

The Preferred Alternative will enhance drainage with the removal of stormwater runoff and improved conveyance capacity for the current system. These enhancements will also increase safety for pedestrians and motorists by eliminating potentially hazardous ditch slopes and pipe end treatments. During the final design phase, an analysis will be completed to address the potential loss of wetland habitat and water quality and provide compensation within the existing ditch system.

8.7 Safety and User Benefits

Proposed improvements will upgrade this portion of Seminole to a safer, more efficient transportation facility. Increasing lanes at the intersection is expected to result in less congestion and reduced probability of crashes. This benefits the users by providing savings in travel time, reduced vehicle operating costs, reduced traffic crash related cost, and reduced emergency response times. Access to schools, residences and commercial establishments will be enhanced.

8.8 Utility Impacts

Existing utilities were examined for concurrence with current design criteria. Impacted utilities were also identified using the proposed typical section. Overhead utility lines along the west side of 131st Street N are within ten (10) feet of the travel lane along much of the study area. The clear zone width for a shouldered roadway is ten (10) feet per the Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Street and Highways (Florida Green Book), May 2011 Edition. It recommends that a design exception for lateral clearance is reviewed in the design phase. Utility poles are not impacted by the Preferred Alternative and the crash data does not show a history of crashes associated with these utility poles.

A twenty-four (24) inch water line is located on the east side of 131st Street N and the Preferred Alternative recommends piping approximately 550 feet of the existing ditch. The design phase of this project will quantify the impact to this water line and the need for relocation.

Utility adjustment costs are not included in the total estimated project cost because the cost will be incurred by the utility owners. However, they were considered in the selection of the preferred alternative.

8.9 Traffic Control Plan

131st Street N and 86th Avenue N will remain functional throughout construction as they provide access to residences, schools and businesses. The existing number of lanes should be maintained to the maximum extent possible. Lane closures, if necessary, will occur during off-peak hours.

The following conceptual construction sequence will help maintain traffic operations along the corridor:

1. Relocate existing utilities within the right of way,
2. Construct stormwater facilities, and
3. Construct the new lane while maintaining existing two-lane traffic on a combination of the existing pavement and newly constructed or temporary pavement.

9.0 Public Involvement Summary

A Public Involvement Program (PIP) was developed and carried out as part of the Intersection Improvements study. The purpose of the PIP was to document the tools and techniques used to establish and maintain communication with the project stakeholders. As a result of extensive public involvement, the project team was able to effectively build consensus among the public and affected stakeholders. In an effort to identify and address project-related issues that were raised by the public and local stakeholders, the County conducted extensive coordination with the Pinellas County School Board throughout the process. This section of the document outlines the County's efforts to engage the public during the process and to provide continuous opportunities for discussion of project-related issues throughout the study.

9.1 Public Outreach

Public outreach was a key component of this study. Public outreach activities generally entailed providing information and obtaining input from the public. The ability to build consensus among affected stakeholders and the public was vital to the successful outcome of this study. The overall goal of the public outreach was to ensure that the results of the study reflected the values and needs of the surrounding community.

9.2 Outreach Techniques

The project team employed several outreach techniques geared towards reaching the affected public and community. These techniques included a project newsletter, a public meeting, project website (www.pinellascounty.org/resident/transportation.htm), and presentations to the Pinellas County School Board, a press release, roadside message boards, school marquees, and the school's Parent Connect notification system.

The following individuals were contacted throughout the project development process:

- Those whose property lies at minimum 300 feet from the proposed centerline as well as others who were impacted by the project. This list was generated utilizing the County's GIS and Property Appraiser's Data,
- Local elected and appointed public officials and individuals who have been identified or have requested to be placed on the mailing list for this project, and
- Local businesses/property owners who were affected by changes to access management.

9.3 Stakeholder Coordination

Stakeholder coordination was a critical component of the study process. Throughout the project, the project team met with County staff, Pinellas County School Board representatives and various stakeholders. This included regular project coordination meetings and scheduled updates to various agencies that promoted an open dialogue on key project issues. Key stakeholders identified prior to and throughout the study included:

- Government Entities
 - Pinellas Metropolitan Planning Organization (MPO)
 - City of Seminole
 - Pinellas County School Board
- Neighborhoods/Residential Communities
 - Boca Ciega Ridge
 - Pinetree Village
 - Leona Heights
- Other Parties
 - Local business owners/operators
 - Multiple religious institutions

9.4 Small Group Meetings

To date there have been no small group meetings with residents; however, several project team meetings have been held with representatives from the Pinellas County School Board in attendance to discuss the design alternatives, internal and external circulation and access management.

9.5 Neighborhood Meeting

The Alternatives Public Meeting was held on July 30, 2015 at the Seminole High School gymnasium in Seminole Florida from 5:00 pm to 7:00 pm. The meeting was conducted to present project alternatives, explain the study process and schedule, seek public and agencies' input, and provide interested persons an opportunity to get involved in the study.

The meeting was advertised through several methods, including:

- Direct mail notifications to approximately 1,000 current residents,
- Notification letters and emails to local elected and appointed public officials and other agencies,
- Press release to local media outlets,
- Variable message boards along the corridor prior to the meeting,
- Seminole Middle School's placement of the meeting notification on their school marquee, and
- Announcement on the project website –
www.pinellascounty.org/resident/transportation.htm

Approximately 100 members of the public were in attendance. Also in attendance were staff from Pinellas County Government, Pinellas County Schools, and the Principal and Vice Principal of Seminole High School.

A form was developed to record written comments and questions. A total of thirty-nine (39) comment forms were received during the public comment period which was open until August 13, 2015. The following sections provide an overview of the public input received during the meeting and over the ten (10) day comment period that followed.

The majority of the comments received recommended Alternative 3. However, there were a number of comments expressing concerns related to Alternative 3 without identifying their preferred alternative. The next highly recommended alternative per the comments received and the most viable for this location was Alternative 2. Thus, resulting in the recommendation of selecting Alternative 2 with some minor enhancements as the preferred alternative.

- Additional comments received were:
 - Enhancements
 - Add a dual left lane throughout the corridor
 - Lower speed limit during school hours
 - Signage
 - No parking,
 - School zone flashers, and
 - Yield to pedestrian signs.
 - Add additional midblock crossings and/or crosswalks
 - Pedestrian bridge,
 - Near 131st Street N and 82nd Avenue N, and
 - Along 86th Avenue N near the Seminole Middle School to allow parents to park in the Seminole High School parking lot for student drop-off and pick-up.
- Concerns along the corridor consisted of:
 - Drainage and flooding along the corridor,
 - The proposed concrete separators and the associated access management restrictions, and
 - Lack of sidewalk along the south side of 86th Avenue N.
- Internal school circulation improvements outside the County's right of way:
 - Utilize the green space between the Seminole Middle School and Bauder Elementary School,
 - Repurpose/stripe the Seminole High School parking lot for dual uses, and
 - Create similar drop-off and pick-up concepts used at:
 - Curtis Fundamental Elementary
 - Clearwater Fundamental Middle
 - Madeira Beach Middle

- Morgan Fitzgerald Middle
- Osceola High
- Tampa Airport Arrival and Departures areas
- Remove the existing Seminole Middle School loop and construct new road for connection between Bauder Elementary and Seminole Middle Schools
- Extend the Seminole High School student drop-off through the faculty parking area