SCHOOL ROUTES ANALYSIS

JOHN F. TURNER, SR. ELEMENTARY SCHOOL & SOUTHWEST MIDDLE SCHOOL

ASSESSMENT & IMPLEMENTATION REPORT

JULY 2020

SPACE COAST TPO

KITTELSON & ASSOCIATES

School Routes Analysis

John F. Turner, Sr. Elementary School & Southwest Middle School Palm Bay, FL

Assessment & Implementation Report

July 2020

Prepared for:

Space Coast Transportation Planning Organization (SCTPO)
2725 Judge Fran Jamieson Way,
Bldg. B, Room 105,
Melbourne, FL 32940

Prepared by:

Kittelson and Associates, Inc.
225 E Robinson Street,
Suite 355,
Orlando, FL 32801

The preparation of this report has been financed in part through grant(s) from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

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Executive Summary

Space Coast Transportation Planning Organization (SCTPO) with assistance from Kittelson & Associates, Inc. (KAI) documented existing conditions and developed Safe Routes to School (SRTS) recommendations for nine schools as part of the School Routes Analysis (SRA) project. The nine study schools were selected by the cities of Melbourne and Palm Bay prior to this project. The analysis reviewed the 'study areas' that were identified based on walk zones and attendance boundaries around the nine study schools. This SRA project is intended to serve as a pilot to establish a study methodology that can be replicated at other schools within Brevard County. This report documents the assessment of the existing conditions and lists recommendations for John F. Turner, Sr. Elementary School at 3175 Jupiter Blvd., S.E., Palm Bay, FL 32909, and Southwest Elementary School at 451 Eldron Blvd SE, Palm Bay, FL 32909.

Purpose

The purpose of this project is to create a safe environment for students to walk or bike to school. The goal for the assessment phase of the SRA is to provide the SCTPO with a comprehensive study that will document the observed pedestrian and bicycle circulation routes adjacent to the school site, identify issues associated with student pedestrians and bicyclists within the study area, and make recommendations for improvement. The goal for the implementation phase of this study is to develop recommendations from the assessment phase to create a safer environment for children who live within the walk zone and choose to walk or bicycle to and from the school.

Many local, state, and federal laws require transportation agencies to focus on pedestrian and bicyclist infrastructure as part of the overall transportation network. The Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU) of 2005 established the Safe Routes to School program that explicitly focused on funding projects to enhance pedestrian and bicyclist infrastructure near schools. Fixing America's Surface Transportation Act (FAST) of 2015 reinforces the Safe Routes to School program. The analysis in the report is to identify projects that could be funded by the State of Florida's Safe Routes to School program or other transportation funding.

Study Process

A study area was identified for the school based on the respective school's walk zone and attendance boundary to determine where students walk and bike. As part of stakeholder engagement, a Technical Committee (TC) was established. The TC was comprised of representatives from the City of Melbourne, the City of Palm Bay, Brevard County Planning, Public Works, and Public Schools, and the Florida Department of Transportation (FDOT). The TC functioned as a sounding board for the Project Team and acted as liaisons for their respective agencies throughout the planning process.

As part of the Assessment Phase of the project, existing conditions, crash data, and survey data were analyzed and mapped prior to the school coordination meeting. The school coordination meeting, comprising of relevant TC members and school administration, was conducted a day prior to the field review at the school campus. A field review of the school's study area was conducted to observe current pedestrian and bicyclist behaviors.

As part of the Implementation Phase of the project, a list of draft issues and recommendations were developed. Recommendations were based on the input received at the school coordination meeting and field review observations. The draft list of recommendations was revised and finalized based on feedback received from TC members. Planning-level cost estimates were calculated for the final recommendations. **Figure 1** graphically shows the study process. Recommendations for John F. Turner, Sr. Elementary School and Southwest Middle School are summarized in **Table 1.**

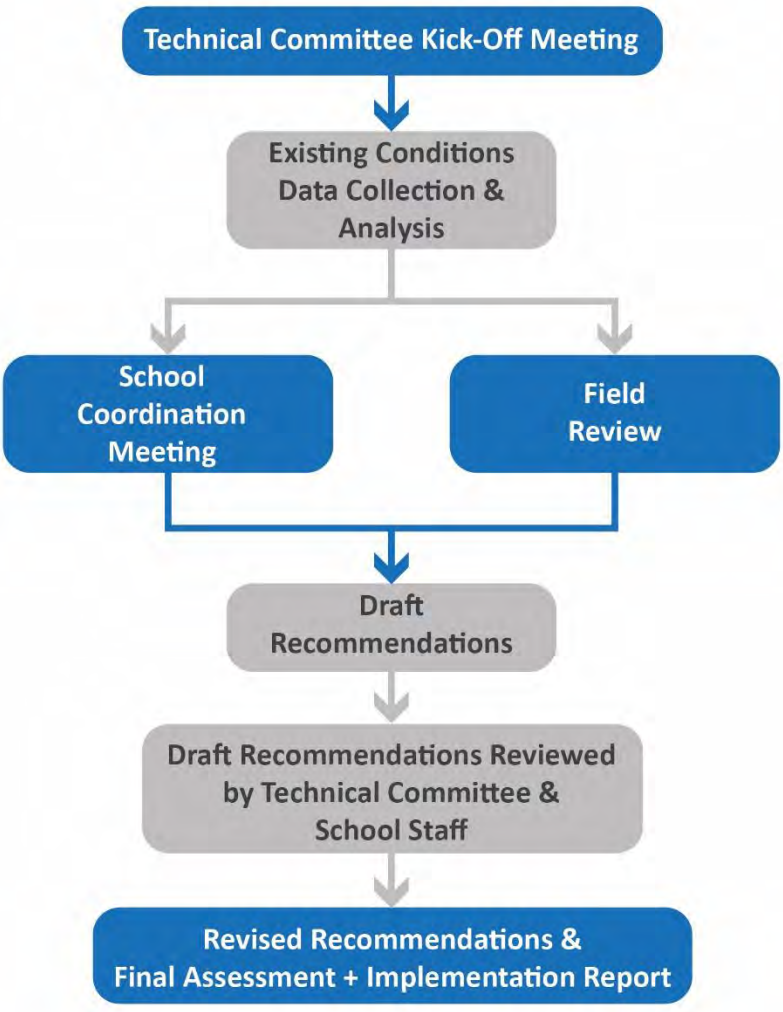


Figure 1: Study Process

Table 1: Recommendations Summary

John F. Turner, Sr. Elementary School					
No.	**Location**	**Recommendation**	**Type**	**Time-Frame**	**Cost Estimate**
1	Turner Elementary School Driveways	Install raised crosswalks or re-stripe high visibility crosswalk markings and upgrade pedestrian ramps to make them ADA compliant.	Crossing	Near-Term	$15,000 to $20,000
2	Northeast Corner of Jupiter Boulevard and Eldron Boulevard Intersection	Expand concrete waiting area for students to wait before crossing Jupiter Boulevard and Eldron Boulevard intersection in the afternoon after school dismissal.	Sidewalk	Near-Term	<$10,000
3	Crosswalk across Drop-Off/Pick-Up Loop	Restripe the crosswalks to be high-visibility crosswalks and upgrade pedestrian ramps to be ADA compliant.	Crossing	Near-Term	<$10,000
4	Bus Loop	Widen driveway and turning radii to accommodate bus turning movement.	School Circulation	Long-Term	$15,000 to $20,000
Southwest Middle School					
5	Between Drop-Off/Pick-Up Loop Exit Driveway and Staff/Visitor Parking Lot Entrance Driveway	Extend the concrete separator between the two driveways and create a 12 foot wide pedestrian refuge island between the two driveways. Add 'Do Not Enter' signs on both sides of Drop-Off/Pick-Up Loop Exit Driveway.	School Circulation	Near-Term	<$10,000

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
6	Between Drop-Off/Pick-Up Loop Entrance Driveway and Bus Loop/Staff Parking Lot Driveway	Extend the concrete separator between the two driveways and create a 12 foot wide pedestrian refuge island between the two driveways.	School Circulation	Near-Term	<$10,000
7	Southwest Middle School Driveways	Install raised crosswalks or re-stripe high visibility crosswalk markings and upgrade pedestrian ramps to make them ADA compliant.	Crossing	Near-Term	$15,000 to $20,000
Study Area Recommendations					
No.	**Location**	**Recommendation**	**Type**	**Time-Frame**	**Cost Estimate**
8	Jupiter Boulevard and Eldron Boulevard Intersection	Conduct an operational study to assess if the existing all-pedestrian phase can be extended to allow more crossing time. The extended all-pedestrian phase can be implemented before school begins in the morning and after school releases in the afternoon. The extended all-pedestrian phase could coincide with the posted school zone times.	Operational Study (Signal)	Near-Term	This estimate should just be labor for the signal tech to update the signal timings, no construction for this type of project
9	Jupiter Boulevard and Eldron Boulevard Intersection	Restripe crosswalks to be high-visibility crosswalks and upgrade pedestrian curb ramps to be ADA compliant.	Crossing	Near-Term	$15,000 to $20,000

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
10	Jupiter Boulevard and Eldron Boulevard Intersection	Add a second crossing guard (previously there were two crossing guards, but currently there is only one).	Crossing	Near-Term	Dependent on how much the School Board/County pays for crossing guards.
11	Eldron Boulevard from Ruffin Circle to just South of Jupiter Boulevard	Build a 5 to 6 foot wide sidewalk path on the west side of the road.	Sidewalk	Long-Term	$535,000 to $625,000
12	Eldron Boulevard from Jupiter Boulevard to Hatcher Street and Hatcher Street from Eldron Boulevard to Cownie Avenue	Install 'No Parking Any Time' signs on both sides of the road.	Sign/Signal	Near-Term	$90,000 to $105,000
13	Mid-Block Crosswalk across Eldron Boulevard just North of Buzby Street	Restripe crosswalks to be high-visibility crosswalks and upgrade pedestrian curb ramps to be ADA compliant. Construct a RRFB at the mid-block crossing.	Crossing	Near-Term	$30,000 to $35,000
14	Emerson Drive from Malabar Road to Forest Street	Build an 8 to 10 foot wide sidewalk/shared use path on the east side of the road.	Sidewalk	Long-Term	$305,000 to $355,000
15	Buzby Street/Dominican Avenue from Eldron Boulevard to Jupiter Boulevard	Build 5 to 6 foot wide sidewalks on both sides of the road.	Sidewalk	Long-Term	$380,000 to $445,000

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
16	Americana Boulevard from Jupiter Boulevard to Emerson Drive	Build a 5 to 6 foot wide sidewalk on the north side of the road.	Sidewalk	Long-Term	$1,145,000 to $1,335,000
17	Degroodt Road from Gamewell Road to Jupiter Boulevard	Build an 8 to 10 foot wide sidewalk/shared use path on the west side of the road.	Sidewalk	Long-Term	$1,595,000 to $1,860,000
18	Brickell Street/Bloke Avenue from Caballero Avenue to Jaslo Street	Add a 4 to 5 foot wide advisory shoulder on both sides of the roadway.	Sidewalk	Near-Term	$70,000 to $85,000
19	Canals	Conduct a feasibility study to add a paved trail along the canals.	Feasibility Study (Trail)	Near-Term	Cost estimates should be developed as part of the feasibility study.
20	Eldron Boulevard from Hatcher Street to Americana Boulevard	Build a 5 to 6 foot wide sidewalk on the east side of the road.	Sidewalk	Long-Term	$415,000 to $485,000

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
21	Jupiter Boulevard from Garvey Road to just East of Saragassa Avenue and from just West of Cheltenham Avenue to San Filippo Drive	Build 5 to 6 foot wide sidewalks to fill the gaps on north side of the road.	Sidewalk	Long-Term	$480,000 to $560,000
22	Signalized Intersections within the Study Area	Restripe crosswalks to be high-visibility crosswalks and upgrade pedestrian curb ramps to be ADA compliant.	Crossing	Near-Term	$125,000 to $145,000
23	School Driveways along Eldron Boulevard	Conduct a feasibility study to add streetlights at the school driveways	Feasibility Study (Streetlights)	Near-Term	Cost estimates should be developed as part of the feasibility study.

Assessment

This section of the report documents the existing conditions within John F. Turner, Sr. Elementary School and Southwest Middle School study area and summarizes the student and parent survey data, crash analysis, school coordination meeting, and observations from the field review.

A study area was developed for each school. The study area is the walk zone defined as the two mile walking radius within the school's attendance boundary around the school where no school bus service is provided. The study area excludes pedestrian hazardous areas within the two mile walking radius. Pedestrian hazardous areas are generally identified as areas that are separated from the school by major physical barriers such as highways or rivers.

Existing Conditions Mapping & Analysis

A series of maps were prepared to show the existing conditions within the John F. Turner, Sr. Elementary School and Southwest Middle School study area including existing and proposed pedestrian and bicycle infrastructure, traffic data, crash data, and school circulation patterns. These maps were developed through GIS data collection, review of previous studies and plans, aerial satellite imagery, input from the TC, and observations from the field visit.

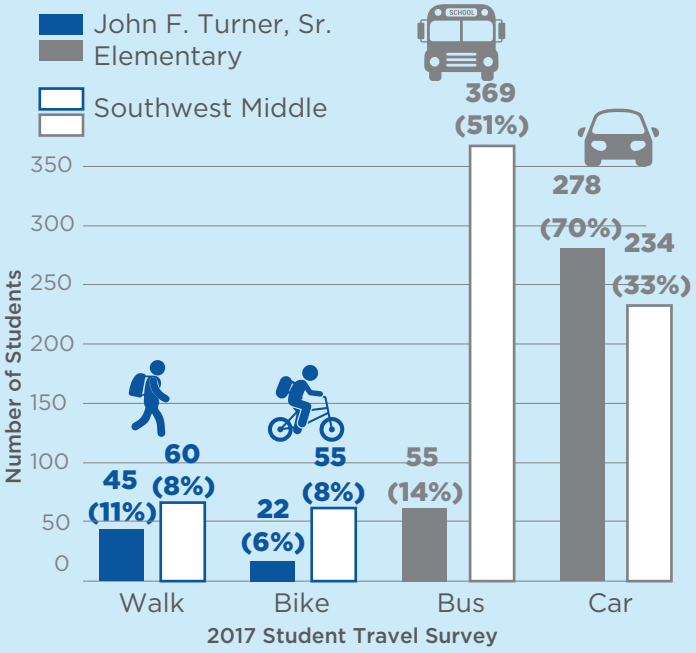
Previous and Ongoing Studies

The Malabar Road Safety Audit (RSA) completed in 2016 recommended maintenance-related, near-term, and long-term recommendations for pedestrian and bicycle facilities along Malabar Road. The ongoing Malabar Road PD&E Study is evaluating widening Malabar Road and adding multimodal features from St Johns Heritage Parkway to Minton Road. Additionally, The City of Palm Bay has planned trail facilities along drainage water canals. In 2019, the SCTPO Bicycle & Pedestrian Master Plan prioritized several bicycle facilities along the following roadways:

- Emerson Drive;
- San Filippo Drive;
- Eldron Boulevard;
- Minton Road; and
- Degroodt Road.

Figure 2 is an info-graphic summarizing the main background information collected as part of the existing conditions analysis.

Student Travel Modes (2017)



Total Bicycle & Pedestrian Crashes within Study Area

28 Pedestrian

57 Bicycle

School Aged Bicycle & Pedestrian Crashes within Study Area

8 Pedestrian

23 Bicycle

8 Injury

2 Property Damage Only

21 Injury

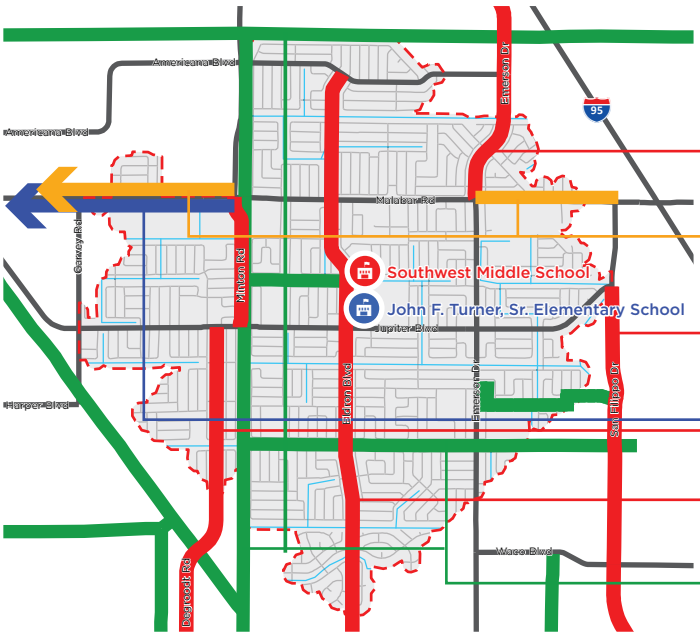
2014 to 2018 Crashes from University of Florida's Signal Four Analytics Database

Signals and Crossings within Study Area

12 Signalized Intersections

7 Unsignalized Marked Crosswalks Across Major Streets

5 Crossing Guards at
Malabar Rd. & Eldron Blvd.
Buzby St. & Eldron Blvd.
Jupiter Blvd. & Eldron Blvd.
Jupiter Blvd. & Emerson Dr.



Previous & Ongoing Plans

Bicycle & Pedestrian Master Plan (2019)

- Bicycle facilities prioritized along Emerson Drive, San Filippo Drive, Eldron Boulevard, Minton Road, Degroodt Road

Malabar Road RSA (Road Safety Audit) (2016)

- This RSA analyzed operational and safety related issues for vehicles, pedestrians, and bicyclists along Malabar Road and recommended maintenance related, near-term, and long-term recommendations.

Malabar Road PD&E Study (Ongoing)

- This study will evaluate the need to widen Malabar Road and the addition of multi-modal features from St. Johns Heritage Parkway to Minton Road

City of Palm Bay - Planned Trails

- Trail facilities planned along drainage water canals

Figure 2: Background Information

School Routes Analysis

John F. Turner, Sr. Elementary & Southwest Middle School

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Existing and Planned Bicycle and Pedestrian Facilities

Existing and planned pedestrian and bicycle facilities including sidewalks, bike lanes, trails, crosswalks, signals, and crossing guard locations were mapped and analyzed. The datasets were mapped using GIS data provided by the City of Palm Bay and SCTPO as well as utilizing aerial satellite imagery and field review observations.

There are existing sidewalks in the study area along the major roads, but some of these have sidewalks gaps. There are existing sidewalks along parts of Eldron Boulevard, Jupiter Boulevard, Emerson Drive, Malabar Road, Minton Road, Degroodt Road, Garvey Road, and Americana Boulevard. There are also prioritized and planned sidewalks along canals in the study area. There are existing bicycle facilities on parts of Minton Road, Malabar Road, Emerson Drive, and San Filippo Drive. Prioritized bicycle facilities are located on parts of Minton Road, Degroodt Road, Eldron Boulevard, Emerson Drive, and San Filippo Drive. Many of the local neighborhood roadways do not have pedestrian facilities.

Signalized intersections and marked crosswalks across major streets were mapped using data from aerial satellite imagery. Crossing guard information was provided by the City of Palm Bay. There are 12 signalized intersections within the study area. Each signalized intersection has a marked crosswalk across major streets.

There are five crossing guards in the study area for John F. Turner, Sr. Elementary School and Southwest Middle School. For John F. Turner, Sr. Elementary School, there is one crossing guard at Jupiter Boulevard and Eldron Boulevard, and one crossing guard at the intersection of Jupiter Boulevard and Emerson Drive. For Southwest Middle School, there is one crossing guard north of the intersection of Buzby Street and Eldron Boulevard, and there are two crossing guards at the intersection of Eldron Boulevard and Malabar Road.

Figure 3 shows the existing and planned bicycle and pedestrian facilities within and around the study area. **Figure 4** shows the existing planned bicycle and pedestrian facilities within the immediate context surrounding the school campus.

John F. Turner, Sr. Elementary School

Southwest Middle School

Existing Sidewalk

Existing Bicycle Facilities*

Proposed Sidewalks (City of Palm Bay) + Prioritized Sidewalk (As per Draft Bicycle & Pedestrian Master Plan)

Prioritized Bicycle Facilities* (As per Draft Bicycle & Pedestrian Master Plan)

Marked Crosswalks across Major Streets

Crossing Guard Location

Traffic Signals within Study Area

City of Palm Bay

Study Area

** Note: Existing Bicycle Facilities include marked bike lanes, buffered bike lanes, 2-way cycle tracks, and ≥5' wide shoulders. Draft Bicycle and Pedestrian Master Plan does not identify specific bicycle facility types for Prioritized Bicycle Facilities.*

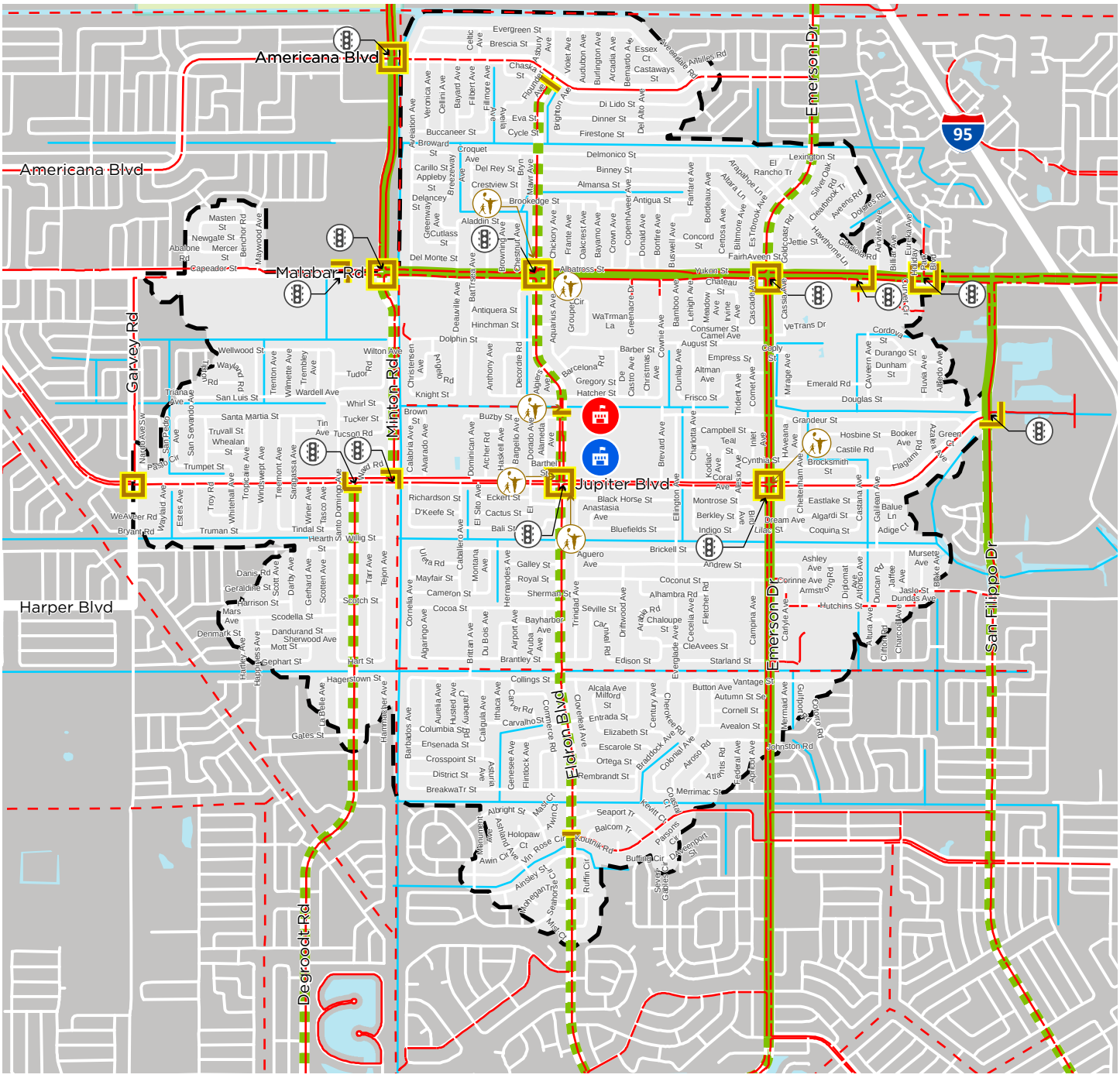

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Figure 3: Existing and Planned Bicycle and Pedestrian Facilities

School Routes Analysis

John F. Turner, Sr. Elementary & Southwest Middle School

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John F. Turner, Sr. Elementary School

Southwest Middle School

Marked Crosswalks across Major Streets

Traffic Signals within Study Area

Existing Sidewalk

Proposed Sidewalks (City of Palm Bay) + Prioritized Sidewalk (As per Draft Bicycle & Pedestrian Master Plan)

Existing Bicycle Facilities*

Prioritized Bicycle Facilities* (As per Draft Bicycle & Pedestrian Master Plan)

Crossing Guard Location

School Advance Warning Area

School Zone

Study Area

** Note: Existing Bicycle Facilities include marked bike lanes, buffered bike lanes, 2-way cycle tracks, and ≥5' wide shoulders. Draft Bicycle and Pedestrian Master Plan does not identify specific bicycle facility types for Prioritized Bicycle Facilities.*

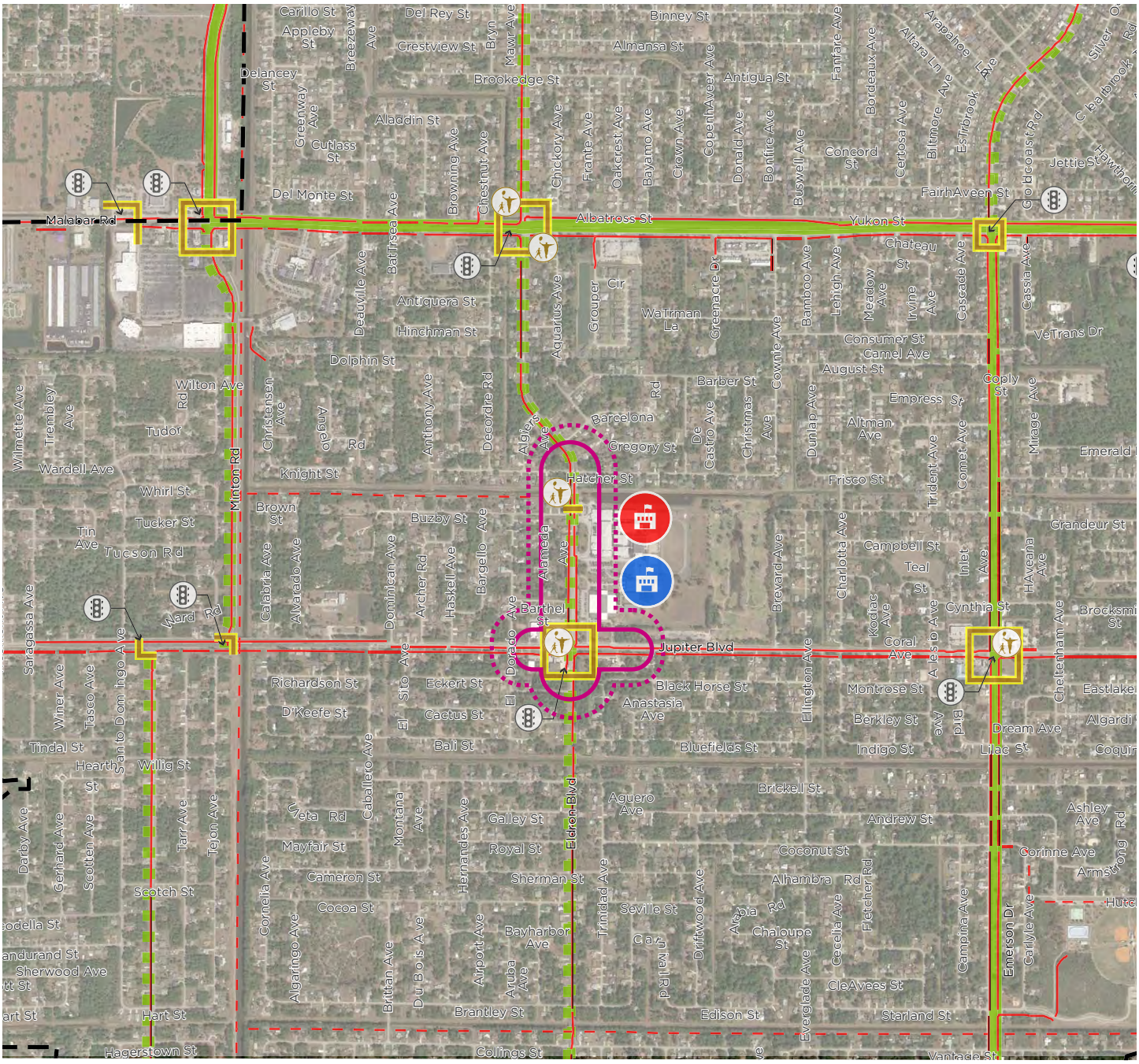

Figure 4: Existing Conditions: School Context Aerial Map

School Routes Analysis

John F. Turner, Sr. Elementary & Southwest Middle School

Existing Conditions Traffic Data

Posted speeds, annual average daily traffic (AADT), and school zones were mapped as part of existing conditions traffic data analysis. Speed limit information was mapped using data from FDOT and Open Streets Map. The speed limit on Eldron Boulevard adjacent to the schools is 35 MPH, and it is 40 to 45 MPH on Jupiter Boulevard, Malabar Road, and Emerson Drive. The local neighborhood roads are 30 MPH or less. The AADT is 10,000 to 20,000 vehicles per day along Jupiter Boulevard and Emerson Drive. The AADT is 20,000 to 40,000 vehicles per day on Malabar Road, Minton Road north of Malabar Road, and on san Filippo Drive north of Jupiter Boulevard.

School zone and school zone advance warning areas were mapped using data from aerial satellite imagery and field review observations. The school zone is on Eldron Boulevard from Barcelona Road to Caribbean Street. The school advanced warning area is approximately the same extents as the school zone, from 200 feet north of Barcelona Road to Bali Street.

Figure 5 shows the existing conditions of traffic data.

School Campus Circulation

John F. Turner, Sr. Elementary School

Circulation patterns were gathered during the school coordination meeting and field review. For John F. Turner, Sr. Elementary School there is one vehicle entrance for student drop-off/pick-up and one vehicle exit. The vehicle entrance for student drop-off/pick-up along Jupiter Boulevard, and there is one vehicle exit on Eldron Boulevard for student drop-off/pick-up. There is one bus entrance and one bus exit on Jupiter Boulevard. Staff and visitors also use the bus entrance to access the parking lot, and they use the bus exit to leave the school campus. There are two pedestrian walkways on Jupiter Boulevard. One located next to the bus loop entrance on Jupiter Boulevard for students walking/biking from the east side of the school. The other is at the intersection of Jupiter Boulevard and Eldron Boulevard next to the student drop-off/pick-up and is where most of the students walk to access the school entrance. Students walking and bicycling to school use the pedestrian entrance on the northeast corner of the Jupiter Boulevard and Eldron Boulevard intersection. There is one bicycle rack located on the northwest corner of campus, next to the walkway students use to access the school building entrance. Another bicycle rack is located on the northeast corner of campus. Buses begin to drop students of around 7:20 AM and arrive on campus at 1:45 PM to pick up students at dismissal. Voluntary Prekindergarten Education Program (VPK) students are dismissed at 2:15 PM, Kindergarten students are dismissed at 2:20 PM, and the rest of the students are dismissed at 2:30 PM.

Southwest Middle School

At Southwest Middle School, there are four vehicle entrances and exits to the school campus and one bus entrance/exit on Eldron Boulevard. The bus entrance/exit is also used by faculty to access two parking lots. The vehicle entrance on Eldron Boulevard next to the bus entrance/exit is for

student drop-off/pick-up. The vehicle exit for the staff and visitor parking lot is the northernmost driveway for Southwest Middle School on Eldron Boulevard. Students walking and bicycling from the south side of the school campus enter the school campus at the entrance driveway for drop-off/pick-up loop. A continuous sidewalk is present on the south and west sides of the drop-off/pick-up loop. A bicycle rack is located along this sidewalk. Students walking and bicycling from the north side of the school campus enter the school campus at the exit driveway for the visitor and staff parking lot. Continuous sidewalk is present on the north and the west side of the drop-off/pick-up loop. Another bicycle rack is located along this sidewalk. At about 8:50 AM, buses begin to arrive on campus to drop students off. The first buses arrive for dismissal around 3:30 PM. For John F. Turner, Sr. Elementary and Southwest Middle Schools, Eldron Boulevard, Jupiter Boulevard, and Malabar Road are the major roadways for students walking/biking to and from school.

Figure 6 shows various circulation patterns within the school campus.

John F. Turner, Sr. Elementary School

Southwest Middle School

Traffic Signal within Study Area

School Advance Warning Area

School Zone

City of Palm Bay

Study Area

Posted Speed (Miles Per Hour) (2018)

- 30 MPH or Less
- 35 MPH
- 40 to 45 MPH
- 50 MPH and Above

Average Annual Daily Traffic (AADT) (2018)

- Less than 10,000 Vehicles Per Day
- 10,001 to 20,000 Vehicles Per Day
- 20,001 to 40,000 Vehicles Per Day
- 40,001 to 80,000 Vehicles Per Day

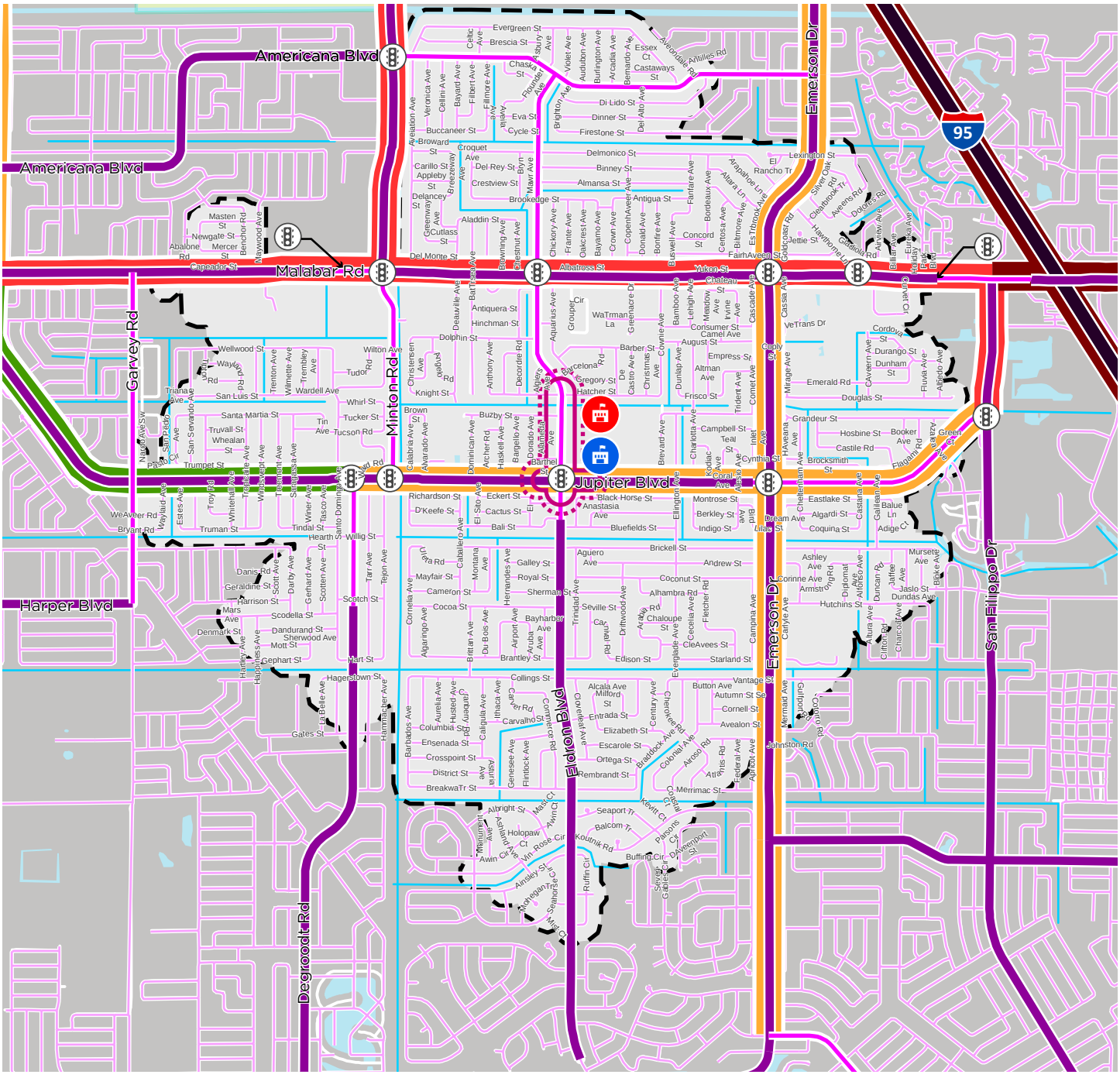

Figure 5: Existing Conditions Traffic Data

School Routes Analysis

John F. Turner, Sr. Elementary & Southwest Middle School

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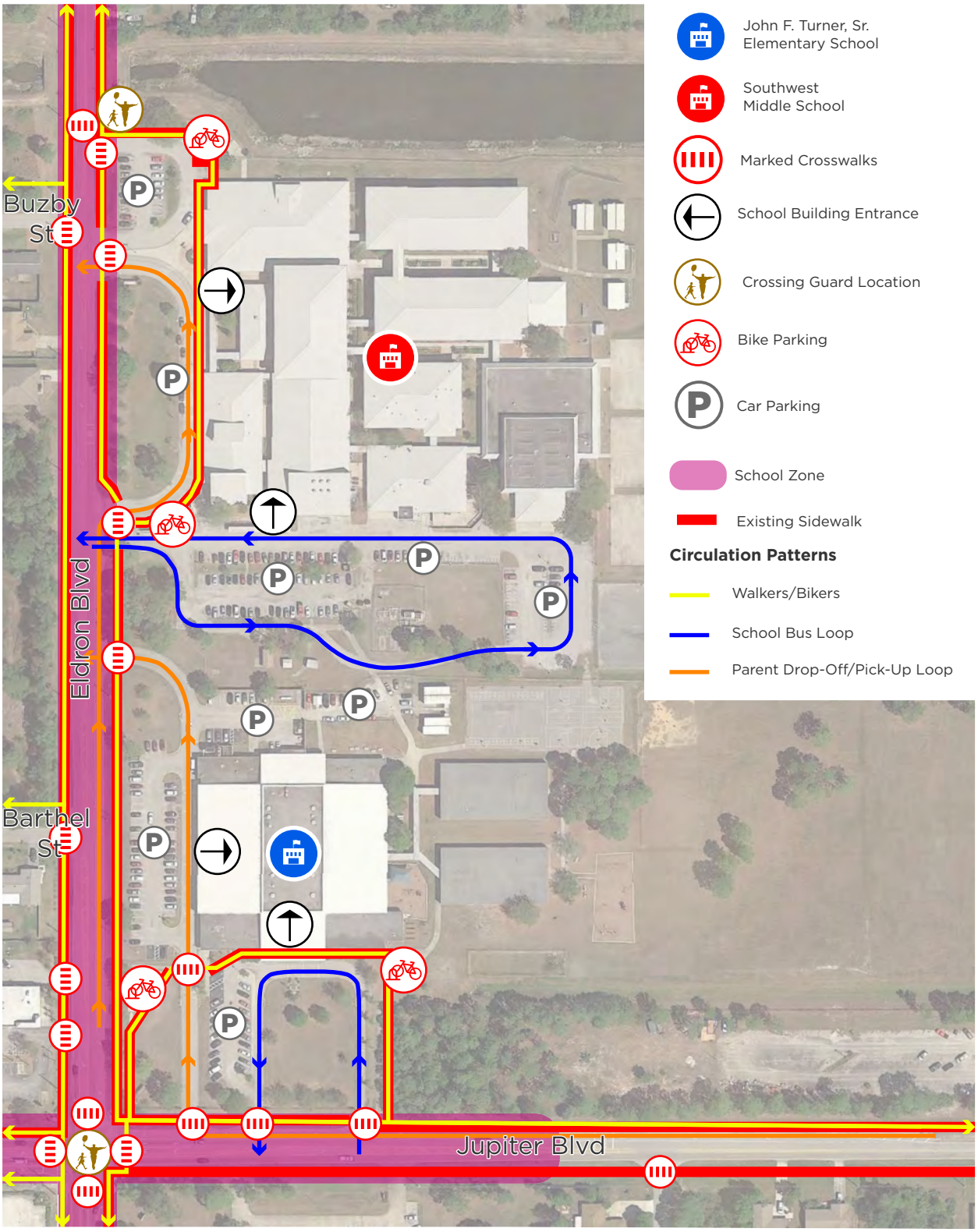


Figure 6: Existing School Circulation Map

School Routes Analysis

John F. Turner, Sr. Elementary & Southwest Middle School

School Student & Parent Survey Summary

The SCTPO conducts student and parent surveys alternating every other year, with the latest Student Travel Mode Survey conducted in 2017 and Parent Survey conducted in 2018, to assess how students get to school and what factors affect parent's decisions to allow or not allow their child to walk or bike to school. This section summarizes the results of these surveys for John F. Turner, Sr. Elementary School and Southwest Middle School. These surveys are conducted once every two years and provide a snapshot of conditions when the respondents fill out the survey. The survey results may not truly represent the daily average. Variables such as weather, day of week, time of year when the survey is taken, all play into the results of these surveys.

Student Travel Mode Survey

Students at John F. Turner, Sr. Elementary School and Southwest Middle School were surveyed asking how they traveled to and from school.

John F. Turner, Sr. Elementary School

Most students at John F. Turner, Sr. Elementary School travel by car to school (70 percent). On average, 11 percent of students travel by walking or by biking (six percent). Fourteen percent of students ride the bus to school, as shown in **Figure 2**. The total number of students seen walking or biking to school has decreased from 2000 to 2017 which is likely due to the total number of students that answered the survey also decreased from 2000 to 2017. On average, more students walk or bike to school in the afternoon than in the morning.

Figure 7 shows the percentage of students walking or biking to school from 2000 to 2017. **Figure 8** shows the total number of students walking or biking to school from 2000 to 2017. **Figure 9** shows the percentage of students walking or biking to school in 2017 in AM and PM. **Figure 10** shows the total number of students walking or biking to school in 2017 in AM and PM.

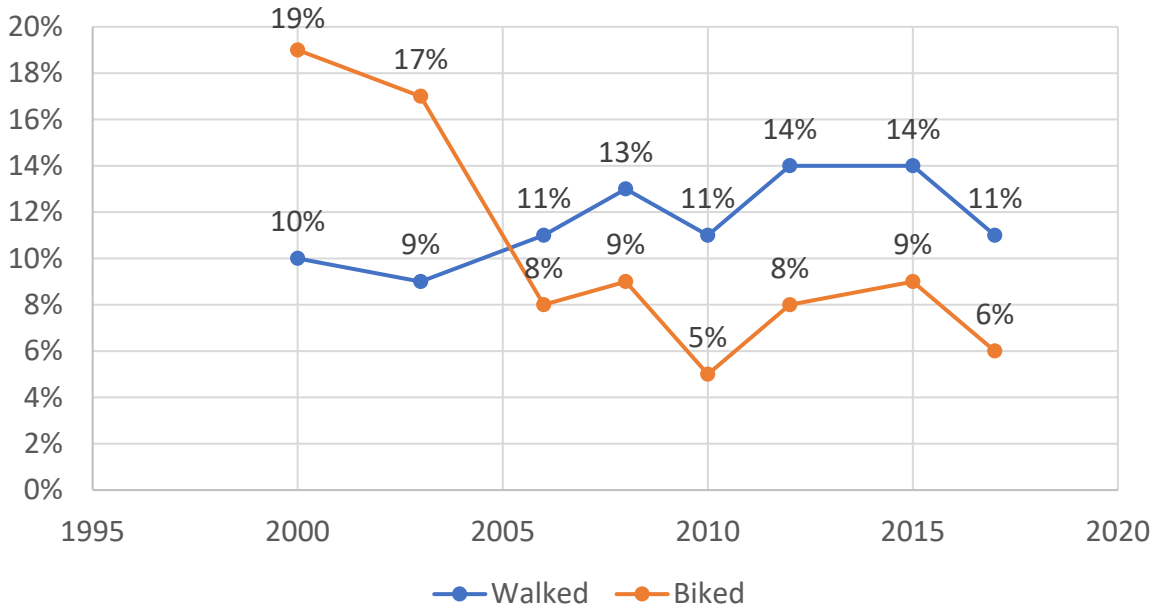


Figure 7: Percentage of Students Walking or Biking to School from 2000 to 2017

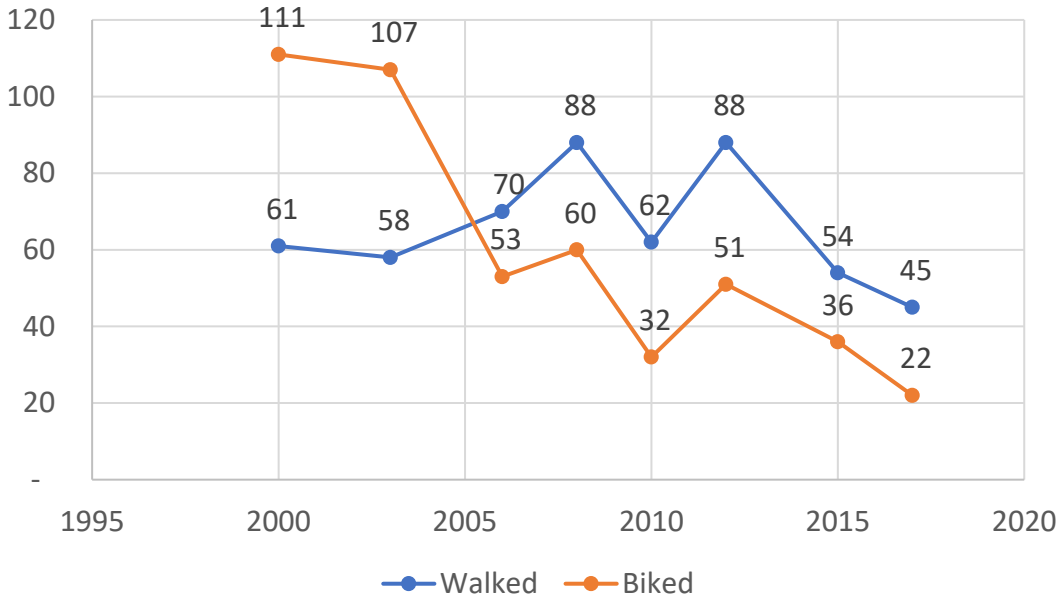


Figure 8: Total Number of Students Walking or Biking to School from 2000 to 2017

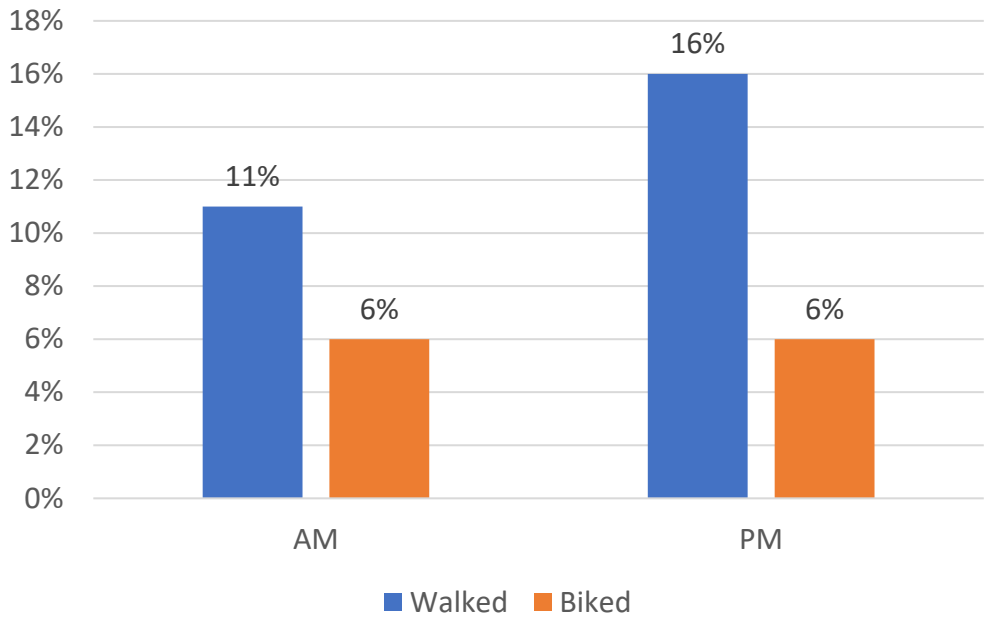


Figure 9: Percentage of Students Walking or Biking to School in 2017 in AM and PM

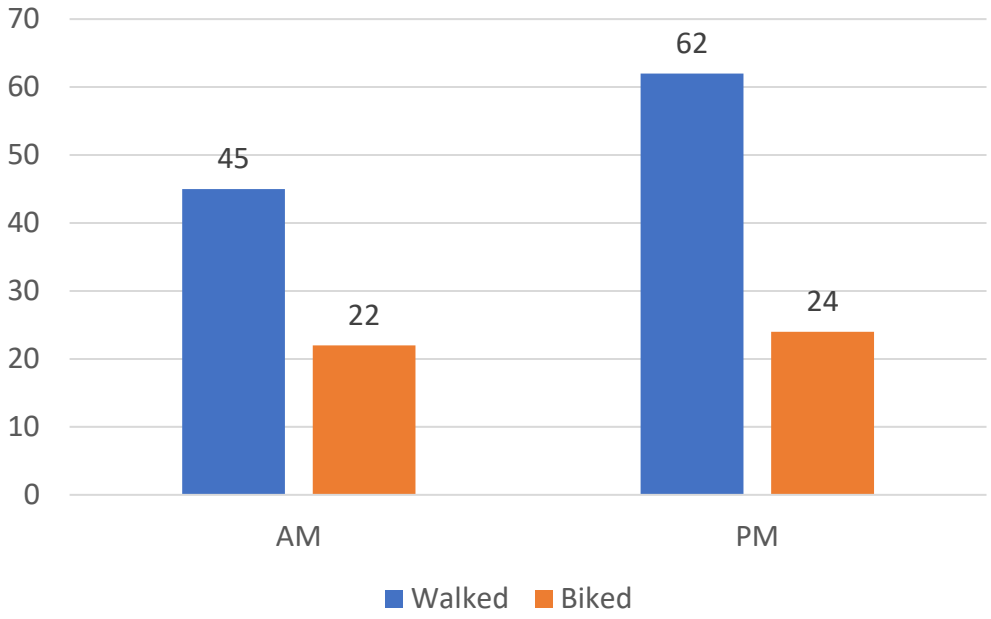


Figure 10: Total Number of Students Walking or Biking to School in 2017 in AM and PM

Southwest Middle School

Most students at Southwest Middle School travel by bus to school (51 percent). On average eight percent of students travel by walking or biking (eight percent), as shown in **Figure 2**. The total number of students seen walking or biking to school has decreased from 2000 to 2017, which is likely due to the total number of students that answered the survey also decreased from 2000 to 2017. On average, more students walk to school in the afternoon than in the morning and an equal number of students bike to school in the afternoon and morning periods.

Figure 11 shows the percentage of students walking or biking to school from 2000 to 2017. **Figure 12** shows the total number of students walking or biking to school from 2000 to 2017. **Figure 13** shows the percentage of students walking or biking to school in 2017 in AM and PM. **Figure 14** shows the total number of students walking or biking to school in 2017 in AM and PM.

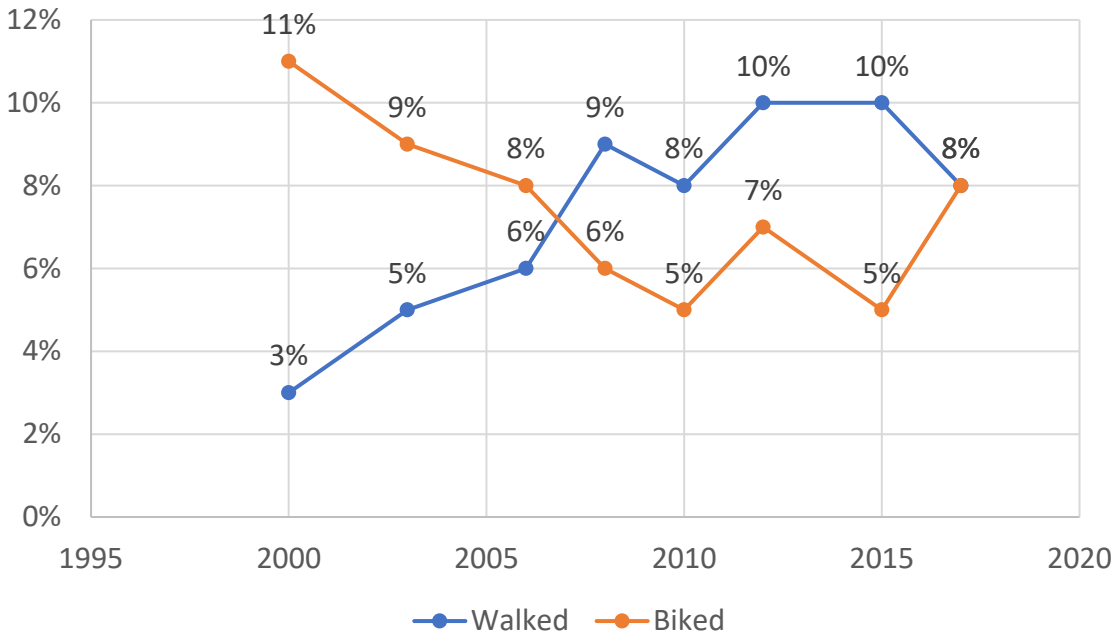


Figure 11: Percentage of Students Walking or Biking to School from 2000 to 2017

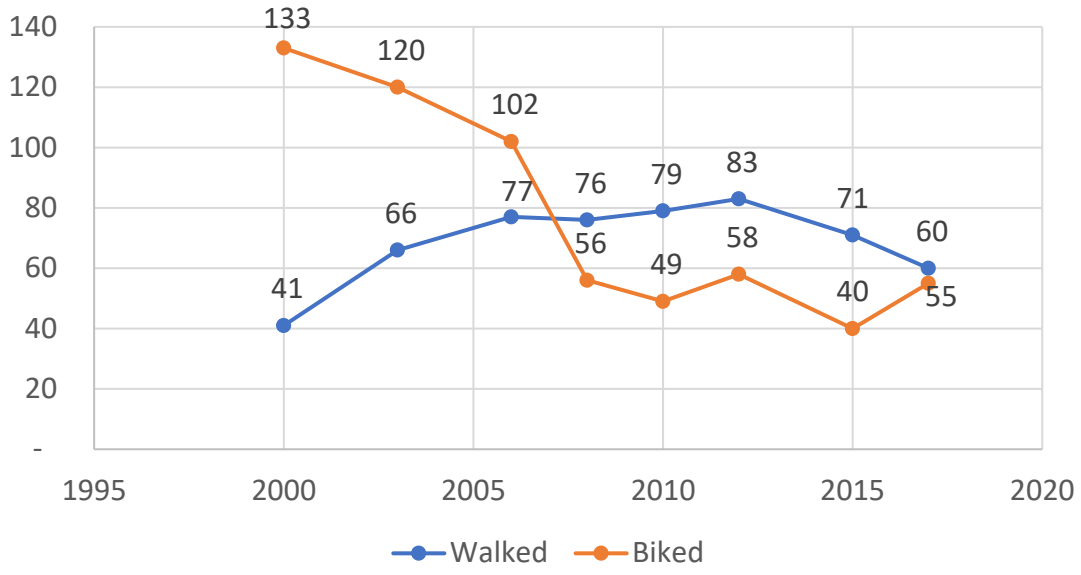


Figure 12: Total Number of Students Walking or Biking to School from 2000 to 2017

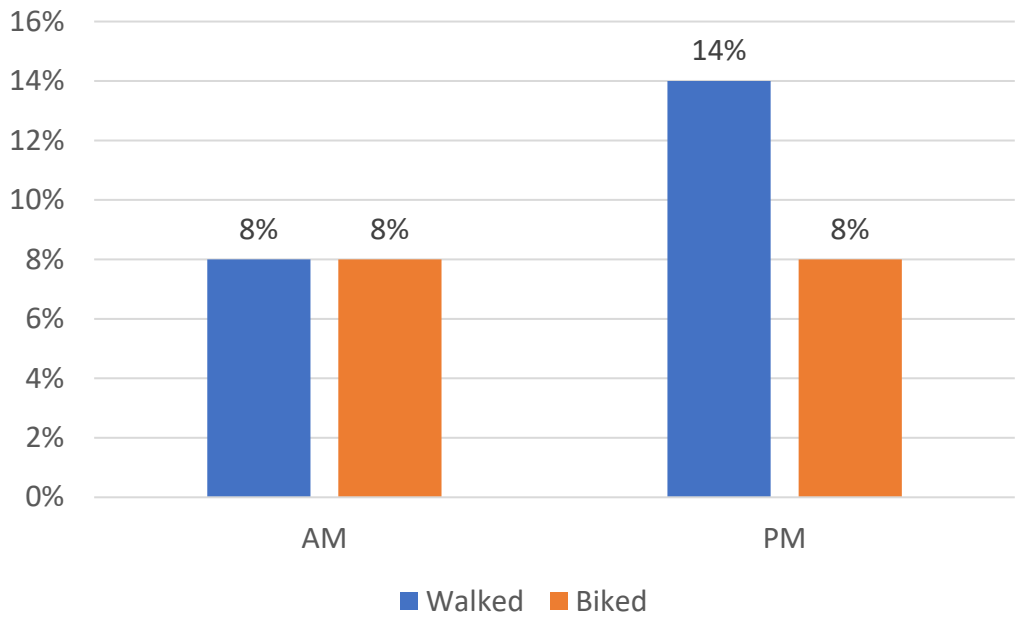


Figure 13: Percentage of Students Walking or Biking to School in 2017 in AM and PM

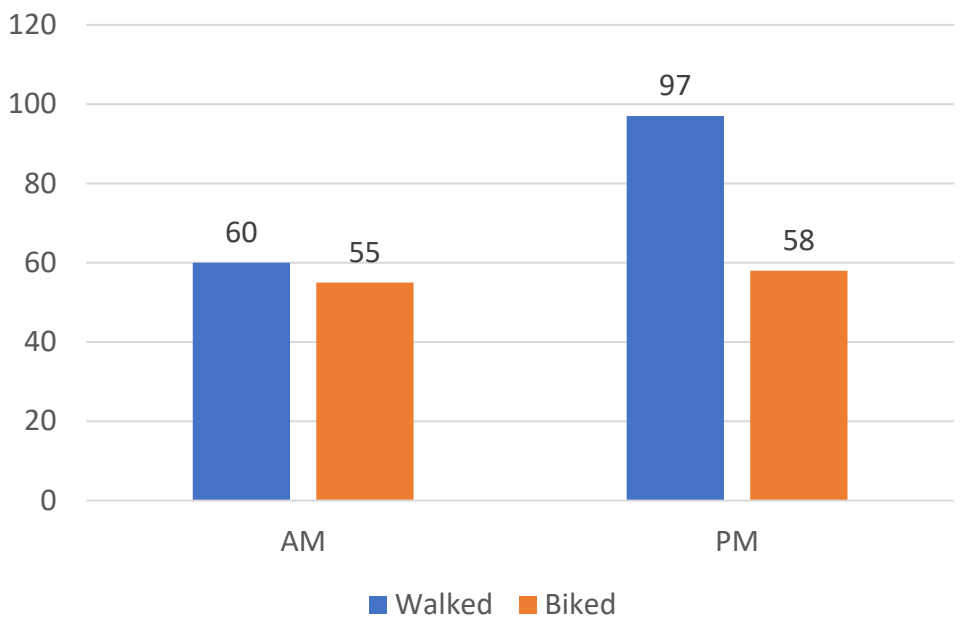


Figure 14: Total Number of Students Walking or Biking to School in 2017 in AM and PM

Parent Survey

The following data shows the results from surveys taken from parents with students attending 86 different schools in the area. Data was used from all the schools in the survey because there was not enough data from each individual school to draw reasonable conclusions.

Figure 15 shows issues reported to affect the decision to allow a child to walk or bike to/from school by parents.

Figure 16 shows the parent's opinions about how healthy walking and biking to/from school is for their child.

Figure 17 parent's opinions about how much their child's school encourages or discourages walking and biking to/from school.

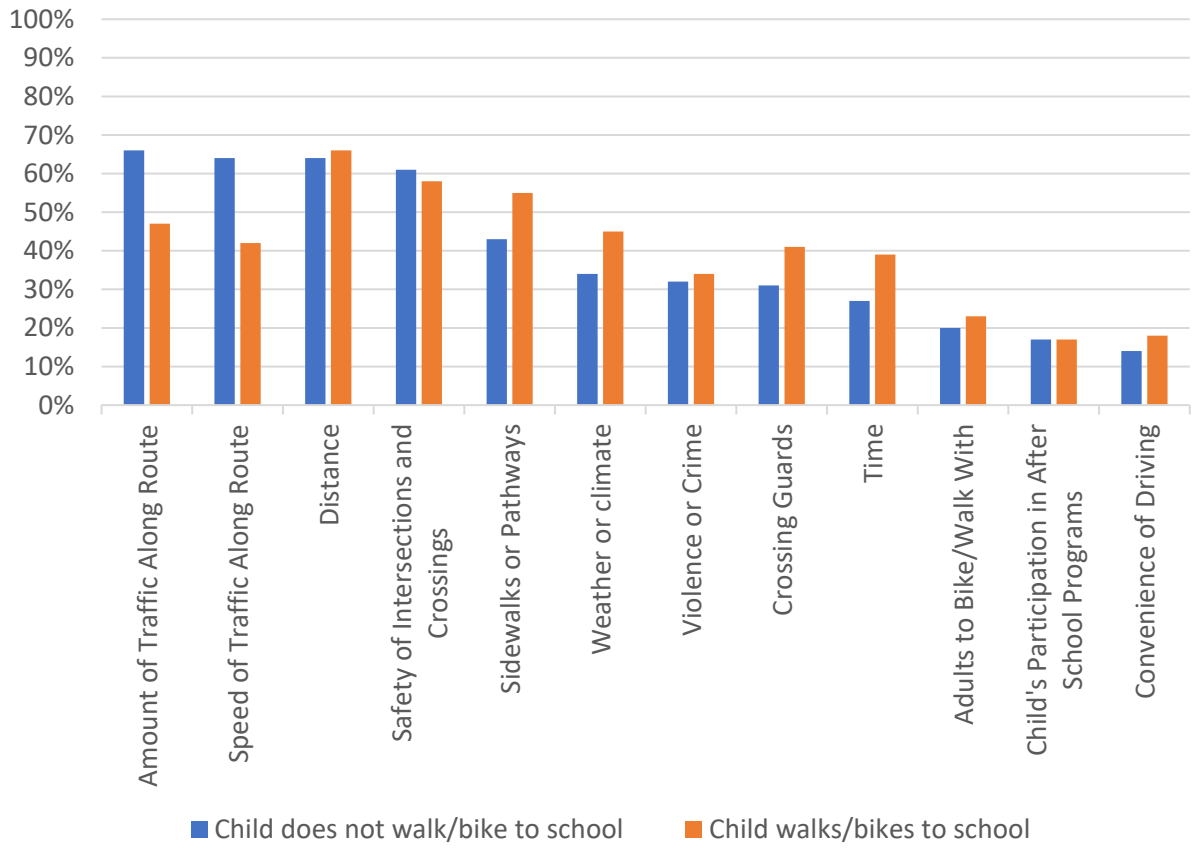


Figure 15: Issues Reported to Affect the Decision to Allow a Child to Walk or Bike to/from School by Parents (Based on 2018 Survey)

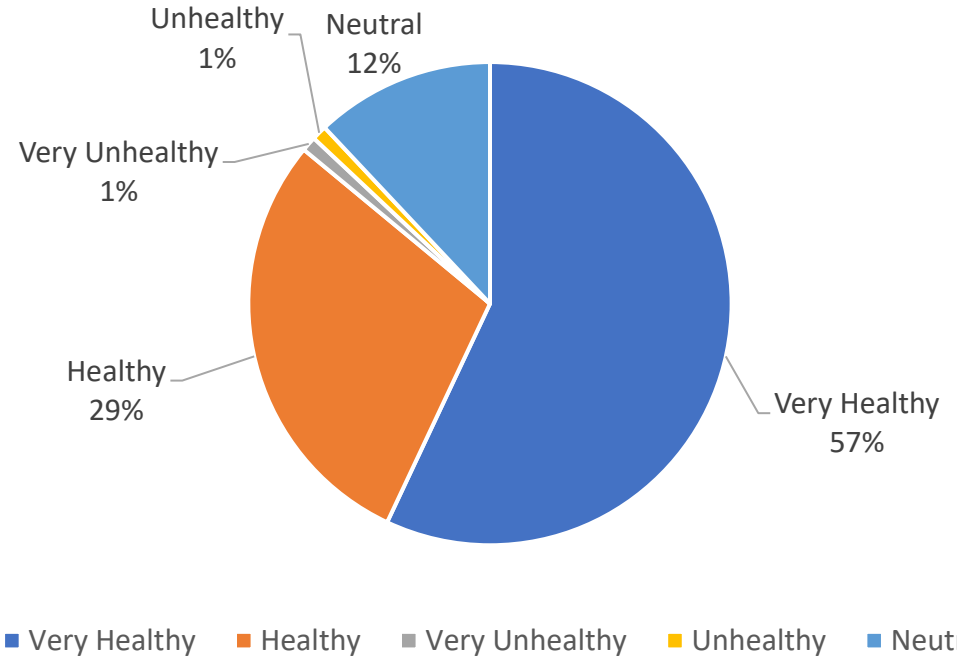


Figure 16: Parent's Opinions about How Healthy Walking and Biking to/from School is for Their Child (Based on 2018 Survey)

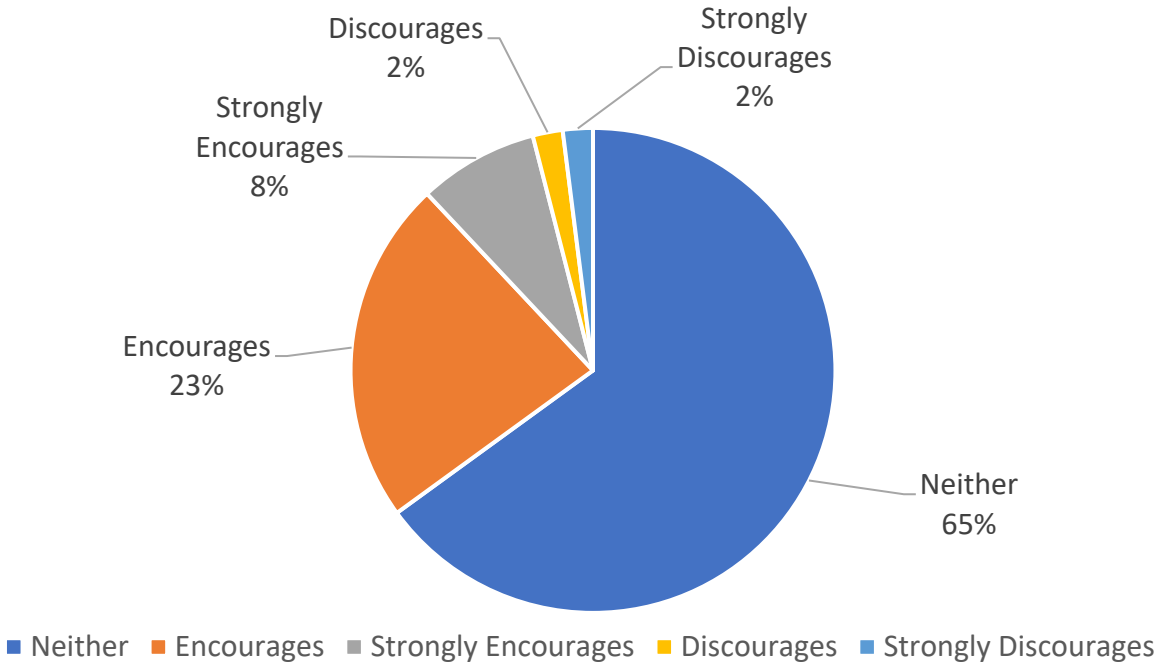


Figure 17: Parent's Opinions about How Much their Child's School Encourages or Discourages Walking and Biking to/from School (Based on 2018 Survey)

Main takeaways from the Parent Survey:

- The most common issues that affect both parents of children who already bike or walk to school and parents' of children that do not currently walk or bike to school decision to allow their child to walk or bike to school are:
    - The amount of traffic along the route
    - The speed of traffic along the route
    - Distance
    - The safety of intersections and crossings
    - Sidewalks or pathways
- Most parents think that walking or biking to school is very healthy for their child but think their child's school neither encourages nor discourages children to walk or bike to school.

For full or updated student or parent surveys please contact SCTPO.

Crash Data Analysis

Crash records were obtained for the John F. Turner, Sr. Elementary School and Southwest Middle School study area for the most recent five-year period on record (2014 through 2018) from the University of Florida's Signal Four Analytics Database. This section summarizes both the school aged and non-school aged pedestrian/bicycle crashes in the John F. Turner, Sr. Elementary School and Southwest Middle School study area.

Pedestrian/Bicycle Crash Statistics

There were 84 total pedestrian and bicycle crashes within the study area (27 pedestrian and 57 bicycle). Fifteen of the crashes were property damage only and 69 of the crashes resulted in injury. There were no reported fatal crashes. Seventy-nine percent of crashes occurred during the day and 88 percent of crashes occurred under dry conditions. The reported crashes are displayed by different measures of time (year, month, day, and hour) in **Figure 18**, **Figure 19**, **Figure 20**, and **Figure 21**.

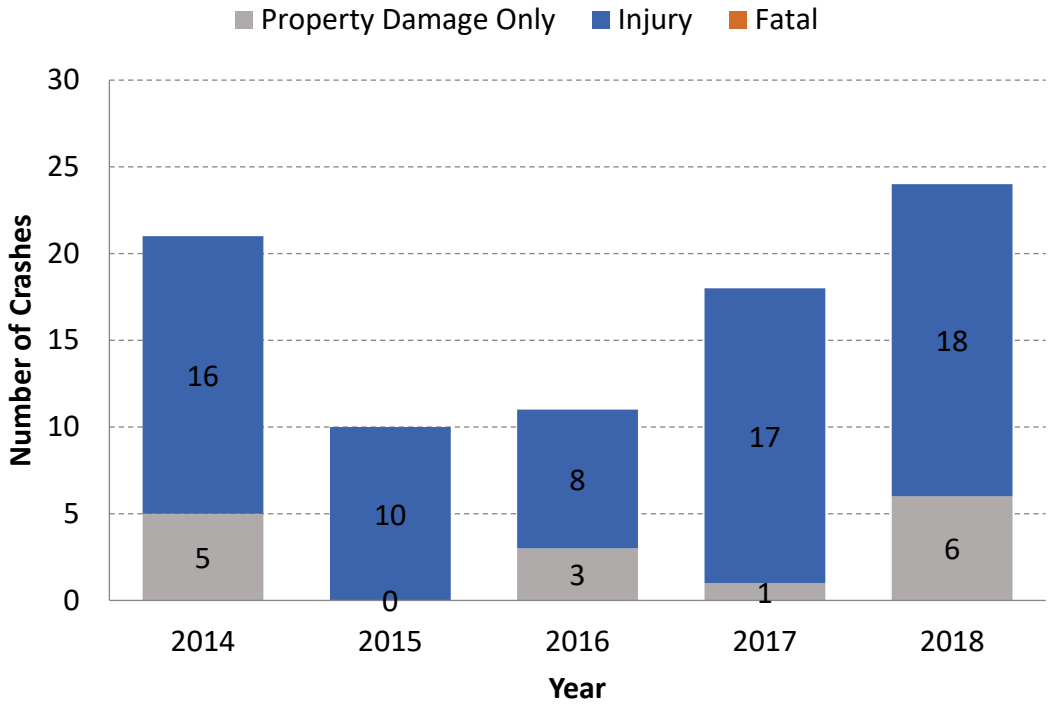


Figure 18: Crashes by Year and Severity

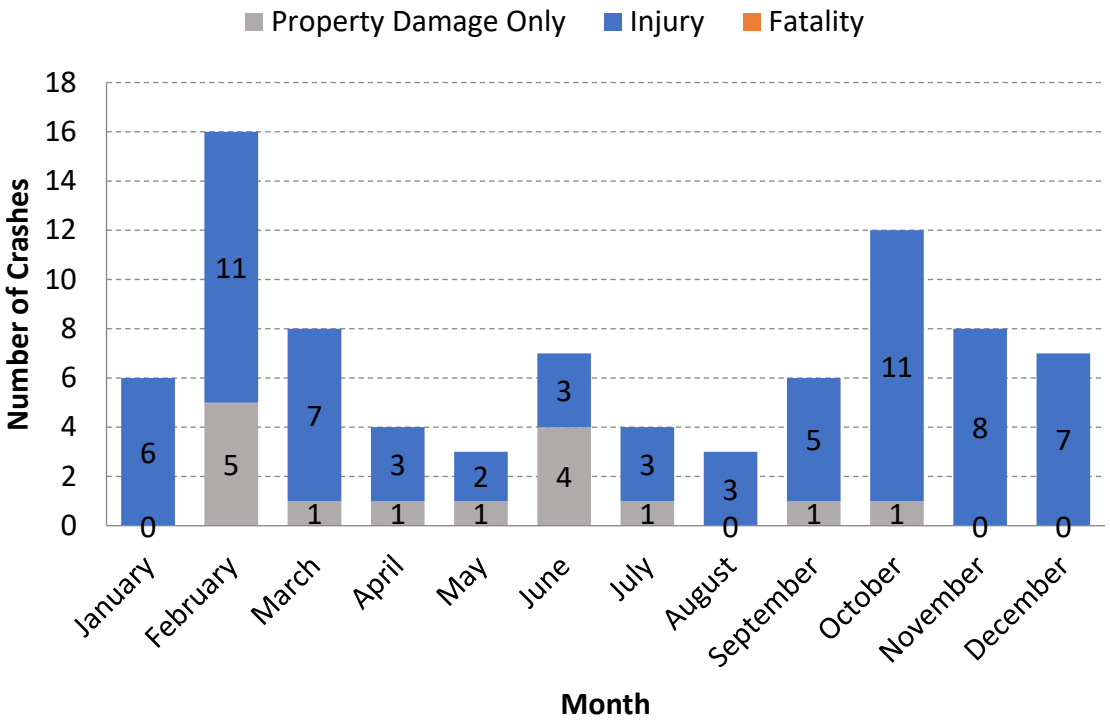


Figure 19: Crashes by Month and Severity

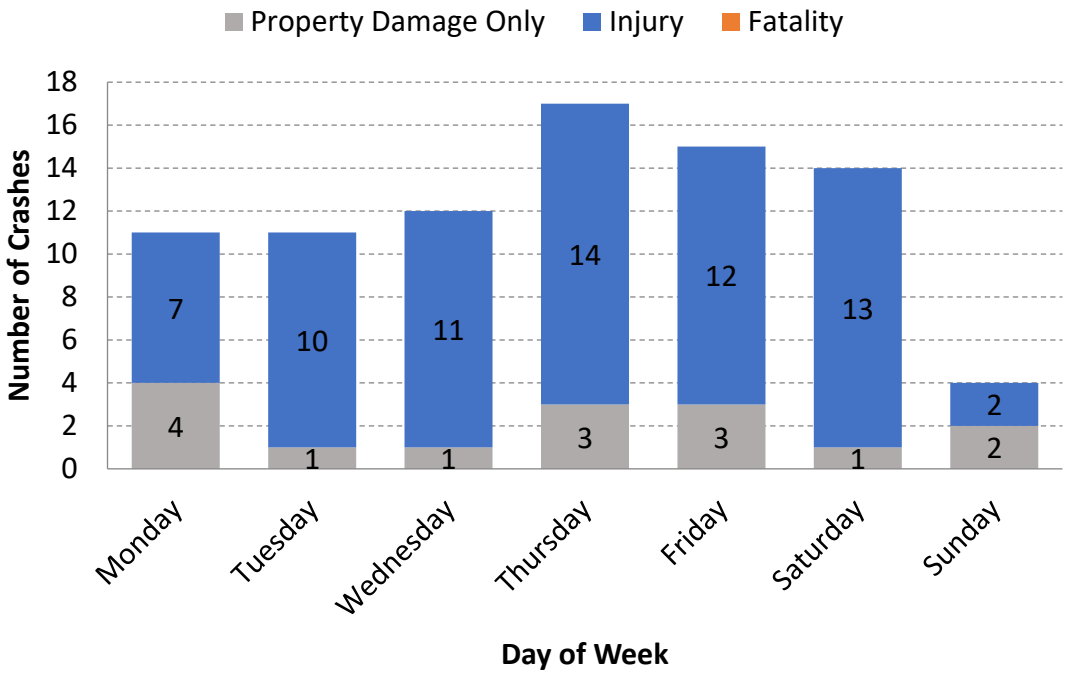


Figure 20 Crashes by Day of Week and Severity

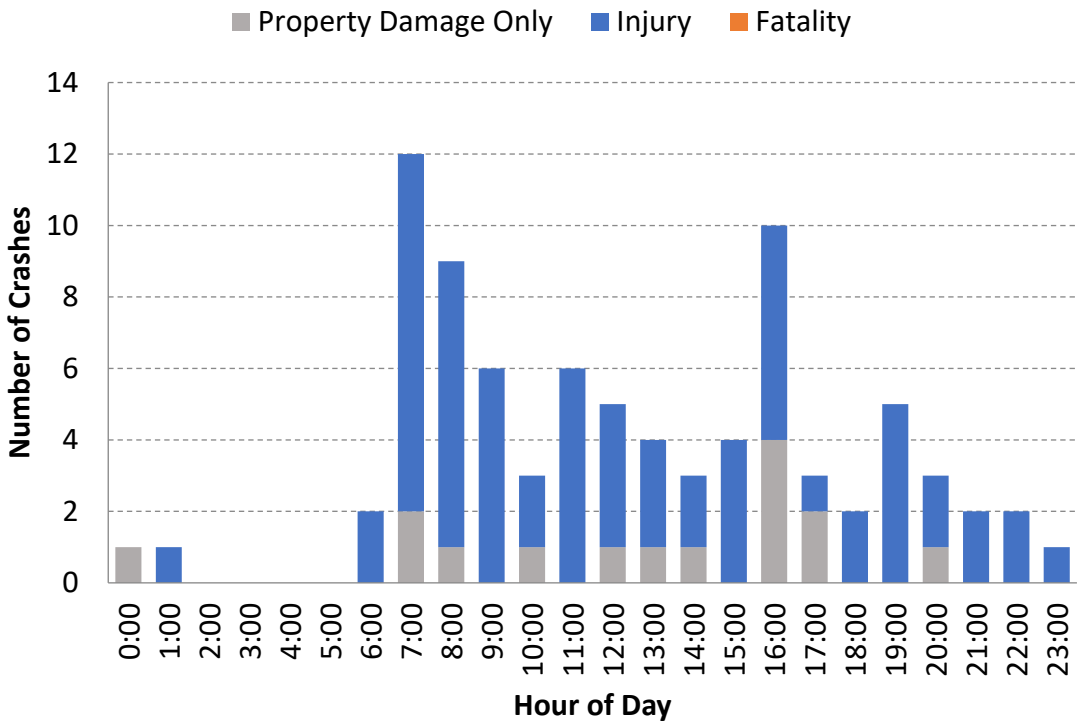


Figure 21: Crashes by Hour of Day and Severity

The two highest crash years occurred in 2014 (21) and 2018 (24). The most crashes occurred in the month of February (16) and Thursday was the most common day when crashes occurred (17). By time of day, the highest crash hour was from 7 AM to 8 AM (12). Alcohol and/or drug involved crashes accounted for two percent of all reported crashes.

School Aged Pedestrian/Bicycle Crash Statistics

There were 31 total school aged pedestrian and bicycle crashes within the study area (seven pedestrian and 24 bicycle). Two of the crashes were property damage only and 29 crashes resulted in injury. Eighty-four percent of crashes occurred during the day and 94 percent of crashes occurred under dry conditions. **Figure 22** and **Figure 23** maps the locations of the school-aged pedestrian and bicycle crashes, respectively. The reported crashes are displayed by different measures of time (year, month, day, and hour) in **Figure 24**, **Figure 25**, **Figure 26,** and **Figure 27**.

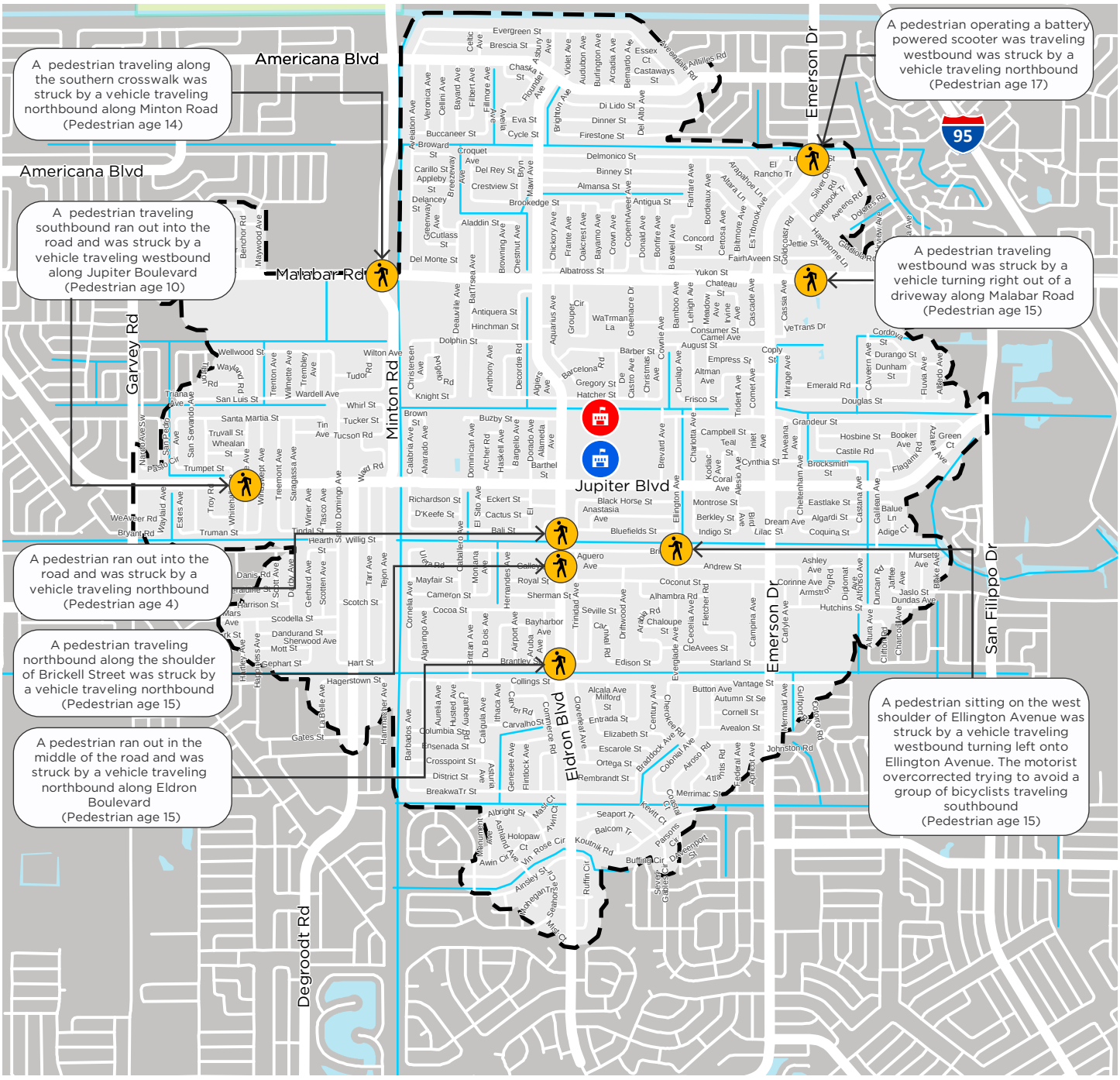
John F. Turner, Sr. Elementary School

Southwest Middle School

Pedestrian Crash - Injury

Study Area

City of Palm Bay



Feet

0 3,000 6,000

N

Figure 22: Pedestrian Crashes (2014 - 2018)

School Routes Analysis

John F. Turner, Sr. Elementary & Southwest Middle School

John F. Turner, Sr. Elementary School

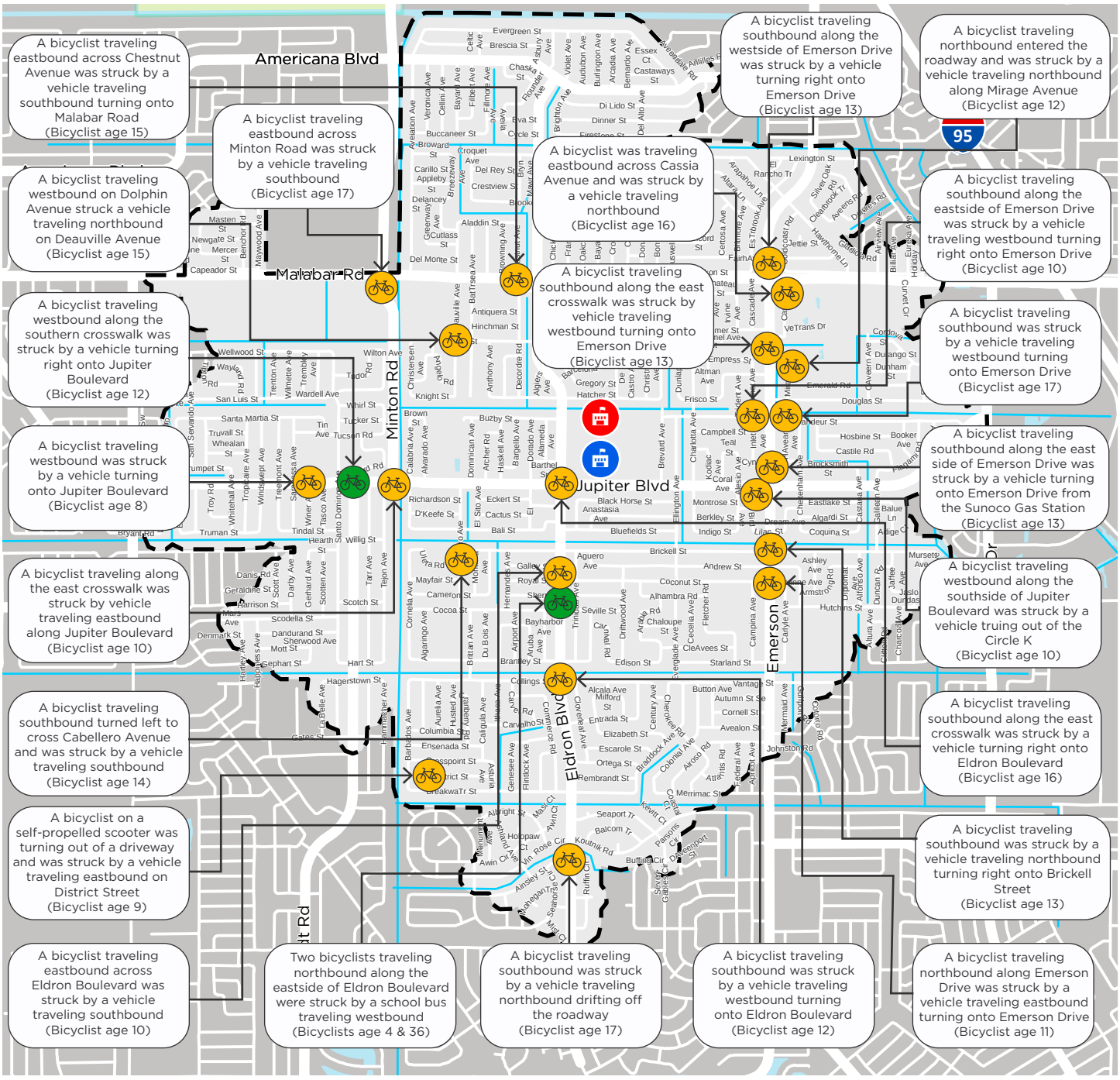
Southwest Middle School

Bicycle Crash - Injury

Bicycle Crash - Property Damage Only

Study Area

City of Palm Bay



Feet

0 3,000 6,000

N

Figure 23: Bicycle Crashes (2014 - 2018)

School Routes Analysis

John F. Turner, Sr. Elementary & Southwest Middle School

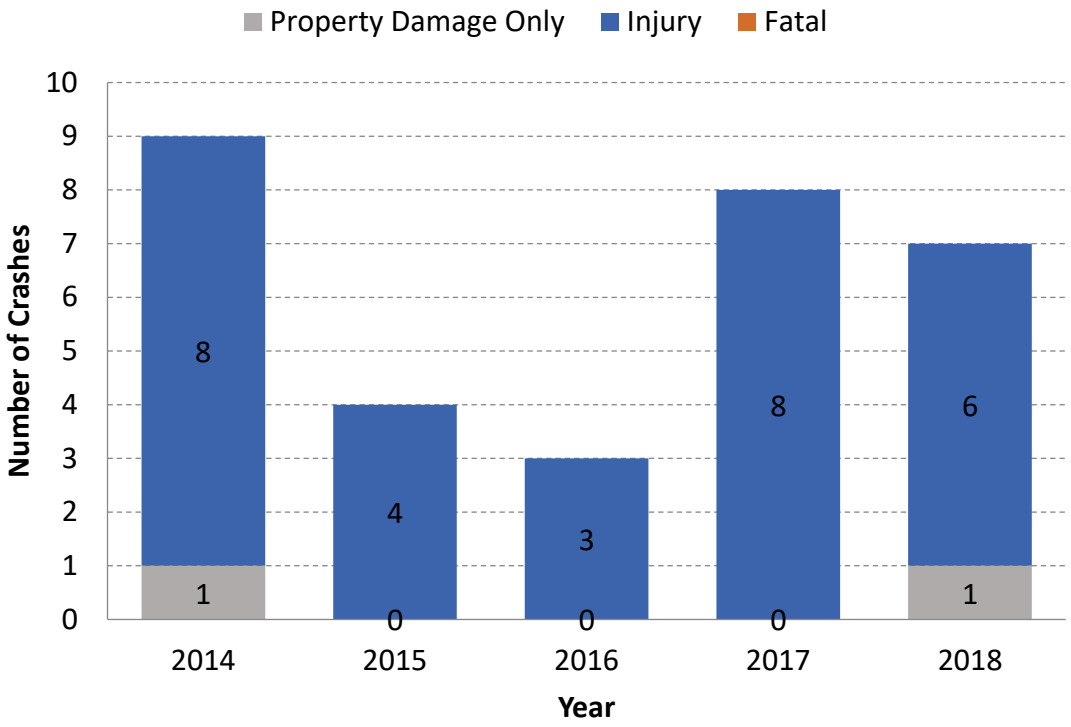


Figure 24: School-Aged Crashes by Year and Severity

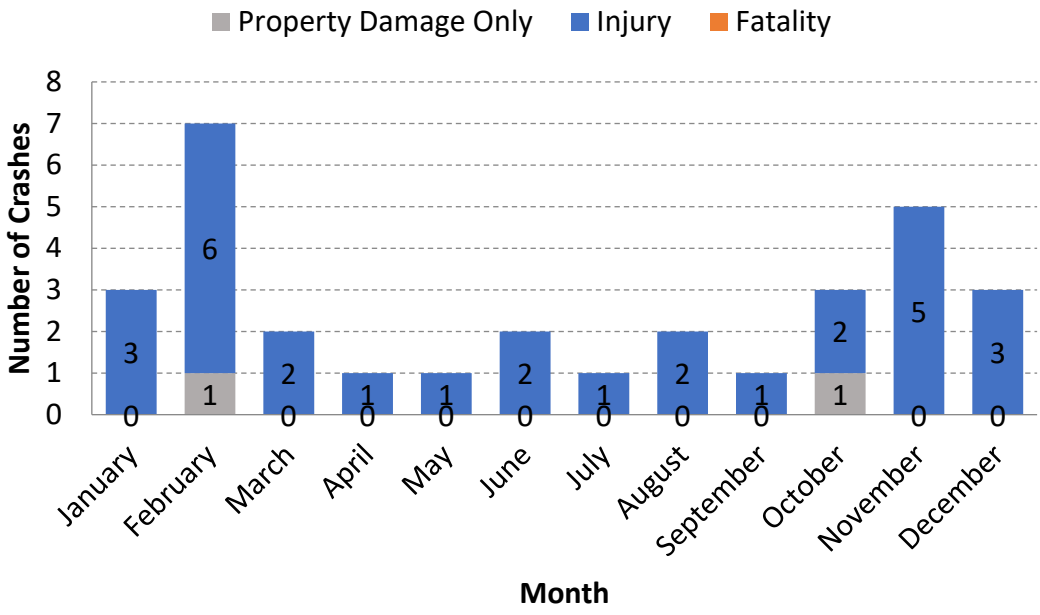


Figure 25: School-Aged Crashes by Month and Severity

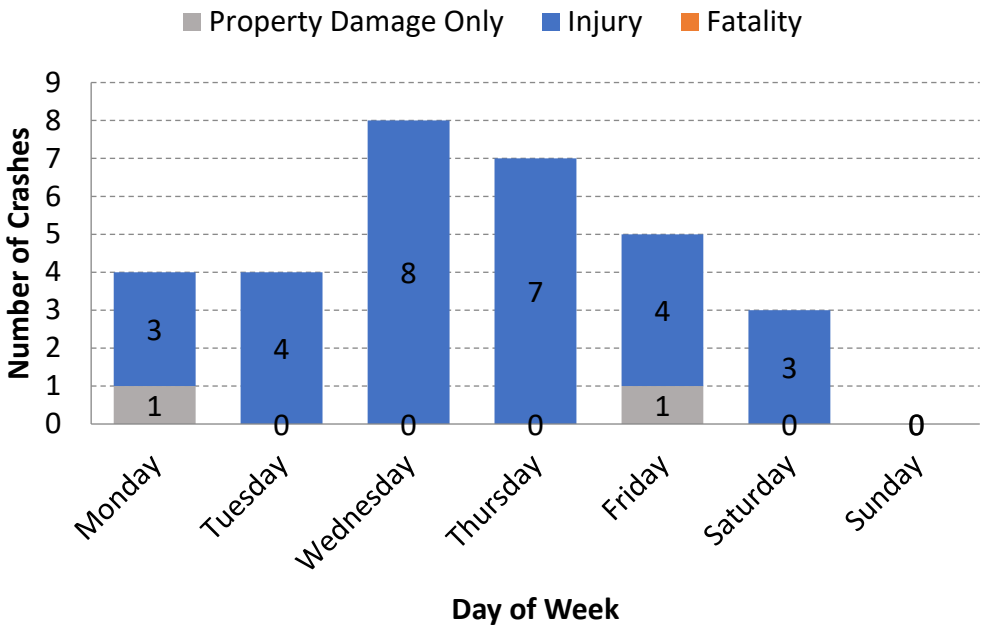


Figure 26: School-Aged Crashes by Day of Week and Severity

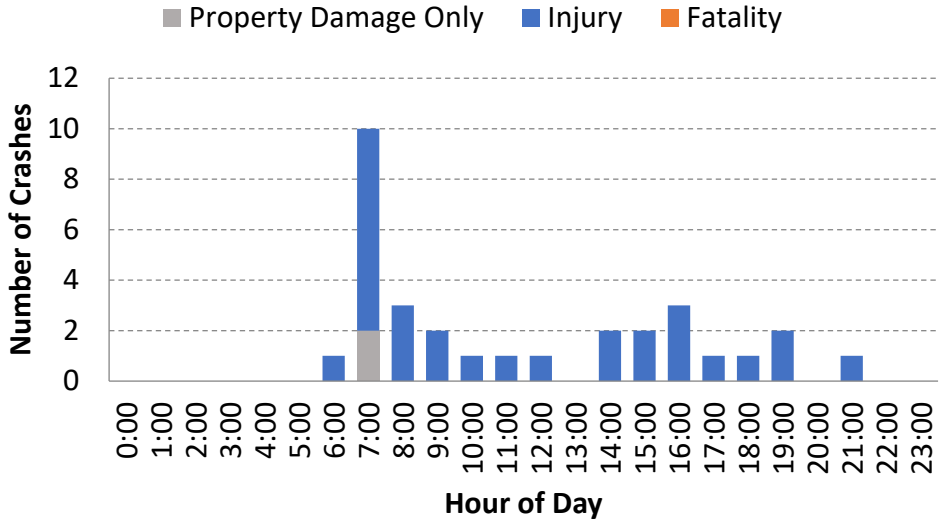


Figure 27: School-Aged Crashes by Hour of Day and Severity

The highest number of crashes occurred in 2014 (nine) and 2017 (eight). The highest crash month was February (seven) and the day of the week that most crashes occurred on was Wednesday (eight). By time of day, the highest crash hour was from 7 AM to 8 AM (10).
A few other crash statistics worthy to note:

- Alcohol and/or drug involved did not account for any of the crashes;
- Two pedestrian and 13 bicycle crashes involved a vehicle making a left or right turn at an intersection (based on the crash reports);
- Three pedestrian and one bicycle crash involved the pedestrian or bicyclist darting out into the roadway (based on the crash reports); and
- Two pedestrian crashes involved pedestrians walking along the shoulder of the roadway (based on the crash reports).

School-Aged Crash Report Summaries

Pedestrian Crashes:

1. Crash Number: 84203837
    - On May 9, 2014 at 2:37 PM, a crash involving a pedestrian occurred along Eldron Boulevard just north of Brickell Street. The pedestrian was traveling southbound along the westside of Eldron Boulevard, darted out into Eldron Street and was struck by a vehicle traveling northbound on Eldron Boulevard. The crash resulted in incapacitating injury. The crash occurred under dry conditions during the day.
2. Crash Number: 84812679
    - On August 16, 2014 at 3:19 PM, a crash involving a pedestrian occurred along Malabar Road just east of Emerson Drive. The pedestrian was traveling westbound on the south side of Malabar Road and was struck by a vehicle turning right out of a driveway along Malabar Road. The crash resulted in incapacitating injury. The crash occurred under dry conditions during the day.
3. Crash Number: 84813475
    - On December 10, 2014 at 6:58 AM, a crash involving a pedestrian occurred at the intersection of Jupiter Boulevard and Tropicare Avenue. The pedestrian was traveling southbound along Tropicare Avenue and darted out into the roadway and was struck by a vehicle traveling westbound along Jupiter Boulevard. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions at dawn.
4. Crash Number: 86756021
    - On February 9, 2017 at 8:00 AM, a crash involving a pedestrian occurred along Brickell Street just west of Eldron Boulevard. The pedestrian was traveling northbound along Brickell Street on the shoulder of the roadway and was struck

by a vehicle traveling northbound along Brickell Street. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions during the day.

5. Crash Number: 86756076
    - On February 17, 2017 at 7:45 AM, a crash involving a pedestrian occurred at the intersection of Brickell Street and Ellington Avenue. The pedestrian was sitting on the west shoulder of Ellington Avenue. There was a group of bicyclists traveling southbound along Ellington Avenue. The pedestrian was struck by a vehicle traveling westbound along Brickell Street turning left onto Ellington Avenue. The vehicle overcorrected when making a left turn to avoid hitting the bicyclists and struck the pedestrian. The crash resulted in possible injury. The crash occurred under dry conditions during the day.
6. Crash Number: 87791482
    - On September 10, 2018 at 8:00 AM, a crash involving a pedestrian occurred at the intersection of Minton Road and Malabar Road. The pedestrian was traveling along the southern crosswalk and was struck by a vehicle traveling northbound along Minton Road. The crash resulted in possible injury. The crash occurred under dry conditions during the day.
7. Crash Number: 88837459
    - On December 6, 2018 at 6:00 PM, a crash involving a pedestrian occurred along Eldron Boulevard just south of Brantley Street. The pedestrian ran out in the middle of Eldron Boulevard and was struck by a vehicle traveling northbound along Eldron Boulevard. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions at night.

Bicycle Crashes:

1. Crash Number: 84203244
    - On February 12, 2014 at 8:35 AM, a crash involving a bicyclist occurred along Emerson Drive at the driveway entering the Sunoco Gas Station just south of Cynthia Street. The bicyclist was traveling southbound on the east side of Emerson Drive and was struck by a vehicle turning onto Emerson Drive from the Sunoco Gas Station. The crash resulted in incapacitating injury. The crash occurred under dry conditions during the day.
2. Crash Number: 84203617
    - On April 8, 2014 at 7:44 AM, a crash involving a bicyclist occurred at the intersection of Eldron Boulevard and Royal Street. The bicyclist was traveling eastbound along Royal Street across the southern leg of the intersection and was struck by a vehicle traveling southbound along Eldron Boulevard. The crash resulted in possible injury. The crash occurred under dry conditions during the day.

3. Crash Number: 84812320
    - On June 25, 2014 at 11:07 AM, a crash involving a bicyclist occurred at the intersection of Cabellero Avenue and Uleta Road. The bicyclist was traveling southbound, began to turn left onto Uleta Road, and was struck by a vehicle traveling southbound on Cabellero Avenue. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions during the day.
4. Crash Number: 84813020
    - On October 6, 2014 at 7:16 AM, a crash involving a bicyclist occurred at the intersection of Degroodt Road and Jupiter Boulevard. The bicyclist was crossing westbound along the southern crosswalk and was struck by a vehicle traveling northbound on Degroodt Road turning right onto Jupiter Boulevard. The crash did not result in any reported injuries. The crash occurred under dry conditions during the day.
5. Crash Number: 84813214
    - On November 6, 2014 at 7:30 AM, a crash involving a bicyclist occurred along Eldron Boulevard just south of Ruffin Circle. A bicyclist was traveling southbound on the east side of Eldron Boulevard and was struck by a vehicle traveling northbound on Eldron Boulevard. The vehicle drifted off the roadway. The crash resulted in possible injury. The crash occurred under dry conditions during the day.
6. Crash Number: 84813333
    - On November 20, 2014 at 9:03 AM, a crash involving a bicyclist occurred at the intersection of Eldron Boulevard and Jupiter Boulevard. The bicyclist was traveling southbound along the east crosswalk and was struck by a vehicle traveling westbound on Jupiter Boulevard turning right onto Eldron Boulevard. The crash resulted in possible injury. The crash occurred under dry conditions during the day.
7. Crash Number: 84813750
    - On January 19, 2015 at 3:02 PM, a crash involving a bicyclist occurred at the intersection of Malabar Road and Chestnut Avenue. The bicyclist was traveling eastbound across the northern leg of the intersection and was struck by a vehicle traveling southbound on Chestnut Avenue turning onto Malabar Road. The crash resulted in possible injury. The crash occurred under dry conditions during the day.
8. Crash Number: 84813935
    - On February 17, 2015 at 9:05 PM, a crash involving a bicyclist occurred at the intersection Emerson Drive and Lexington Street. The bicyclist was operating a battery powered scooter and was traveling westbound across the northern leg of

the intersection. The bicyclist was struck by a vehicle traveling northbound along Emerson Drive. The crash resulted in incapacitating injury. The crash occurred under dry conditions at night.

9. Crash Number: 85881017
    - On October 1, 2015 at 4:35 PM, a crash involving a bicyclist occurred at the intersection of Emerson Drive and Brickell Street. A bicyclist traveling southbound across the eastern leg of the intersection was stuck by a vehicle traveling northbound on Emerson Drive turning right onto Brickell Street. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions during the day.
10. Crash Number: 85881362
    - On November 20, 2015 at 7:15 AM, a crash involving a bicyclist occurred at the intersection of Jupiter Boulevard and Winer Avenue. The bicyclist was traveling westbound across the southern leg of the intersection and was struck by a vehicle traveling northbound on Winer Avenue turning onto Jupiter Boulevard. The crash resulted in possible injury. The crash occurred under wet conditions during the day.
11. Crash Number: 86390049
    - On January 8, 2016 at 4:53 PM, a crash involving a bicyclist on a self-propelled scooter occurred along District Street just east of Barbados Avenue. The bicyclist was turning out a driveway on District Street and was struck by a vehicle traveling eastbound along District Street. The crash resulted in incapacitating injury. The crash occurred under wet conditions during the day.
12. Crash Number: 86390458
    - On March 7, 2016 at 7:16 AM, a crash involving a bicyclist occurred at the intersection of Collings Street and Eldron Boulevard. The bicyclist was traveling southbound across the eastern leg of the intersection and was struck by a vehicle traveling westbound on Collings Street turning onto Eldron Boulevard. The crash resulted in possible injury. The crash occurred under dry conditions during the day.
13. Crash Number: 86755514
    - On December 1, 2016 at 2:45 PM, a crash involving a bicyclist occurred at the intersection of Grandeur Avenue and Emerson Drive. The bicyclist was traveling southbound across the eastern leg of the intersection and was struck by a vehicle traveling westbound on Grandeur Street turning onto Emerson Drive. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions during the day.

14. Crash Number: 86755849
    - On January 17, 2017 at 7:23 PM, a crash involving a bicyclist occurred at the intersection of Minton Road and Jupiter Boulevard. The bicyclist was traveling southbound along the east crosswalk and was struck by a vehicle traveling eastbound on Jupiter Boulevard. The crash resulted in incapacitating injury. The crash occurred under dry conditions during the night.
15. Crash Number: 86756310
    - On March 18, 2017 at 5:55 PM, a crash involving a bicyclist occurred at the intersection of Dolphin Street and Deauville Avenue. The bicyclist was traveling westbound across the northern leg of the intersection and struck a vehicle traveling northbound on Deauville Avenue. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions during the day.
16. Crash Number: 86756941
    - On June 6, 2017 at 12:20 PM, a crash involving a bicyclist occurred along Mirage Avenue near the intersection of Coply Street. The bicyclist was traveling northbound along Mirage Avenue along the fence line, entered the roadway, and was struck by a vehicle traveling northbound along Mirage Avenue. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions during the day.
17. Crash Number: 87367780
    - On August 2, 2017 at 10:15 AM, a crash involving a bicyclist occurred at the intersection of Emerson Drive and Coply Street. The bicyclist was traveling southbound along the east crosswalk and was struck by a vehicle traveling westbound on Coply Street turning onto Emerson Drive. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions during the day.
18. Crash Number: 87368403
    - On October 11, 2017 at 7:30 AM, a crash involving a bicyclist occurred along Jupiter Boulevard just west of Emerson Drive at the driveway of the Circle K. The bicyclist was traveling westbound along the south side of Jupiter Boulevard and was struck by a vehicle turning out of the Circle K onto Jupiter Boulevard. The crash resulted in possible injury. The crash occurred under dry conditions during the day.
19. Crash Number: 87368776
    - On November 25, 2017 at 7:23 PM, a crash involving a bicyclist occurred at the intersection of Fairhaven Street and Emerson Drive. The bicyclist was traveling southbound across the western leg of the intersection and was struck by a vehicle traveling eastbound on Fairhaven Street turning right onto Emerson Drive. The crash resulted in possible injury. The crash occurred under dry conditions at night.

20. Crash Number: 87369316
    - On February 2, 2018 at 7:31 AM, a crash involving two bicyclists occurred at the intersection of Eldron Boulevard and Sherman Street. The bicyclists were traveling northbound across the eastern leg of the intersection and were struck by a school bus traveling westbound on Sherman Street. The crash did not result in injury for either bicyclist. The crash occurred under dry conditions during the day.
21. Crash Number: 87789906
    - On February 14, 2018 at 7:28 AM, a crash involving a bicyclist occurred at the intersection of Emerson Drive and Grandeur Street. The bicyclist was traveling southbound across the eastern leg of the intersection was struck by a vehicle traveling westbound along Grandeur Street turning right onto Emerson Drive. The crash resulted in possible injury. The crash occurred under dry conditions during the day.
22. Crash Number: 87791037
    - On July 11, 2018 at 9:00 AM, a crash involving a bicyclist occurred along Minton Road just south of Malabar Road. The bicyclist was traveling eastbound across Minton Road and was struck by a vehicle traveling southbound along Minton Road. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions during the day.
23. Crash Number: 87790015
    - On February 28, 2018 at 4:47 PM, a crash involving a bicyclist occurred along Cassia Avenue just south of Malabar Road. The bicyclist was traveling eastbound across Cassia Avenue and was struck by a vehicle traveling northbound along Cassia Avenue. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions during the day.
24. Crash Number: 88837167
    - On November 1, 2018 at 7:40 AM, a crash involving a bicyclist occurred at the intersection of Emerson Drive and Coconut Street. The bicyclist was traveling northbound across the western leg of the intersection and was struck by a vehicle traveling eastbound along Coconut Street turning onto Emerson Drive. The crash resulted in possible injury. The crash occurred under dry conditions during the day.

Non-School Aged Pedestrian/Bicycle Crash Statistics

There were 53 total non-school aged pedestrian and bicycle crashes within the study area (20 pedestrian and 33 bicycle). Seventy-six percent of the crashes occurred in daylight conditions, and 85 percent occurred with dry roadway conditions. The reported crashes are displayed by

different measures of time (year, month, day, and hour) in **Figure 28**, **Figure 29**, **Figure 30,** and **Figure 31**.

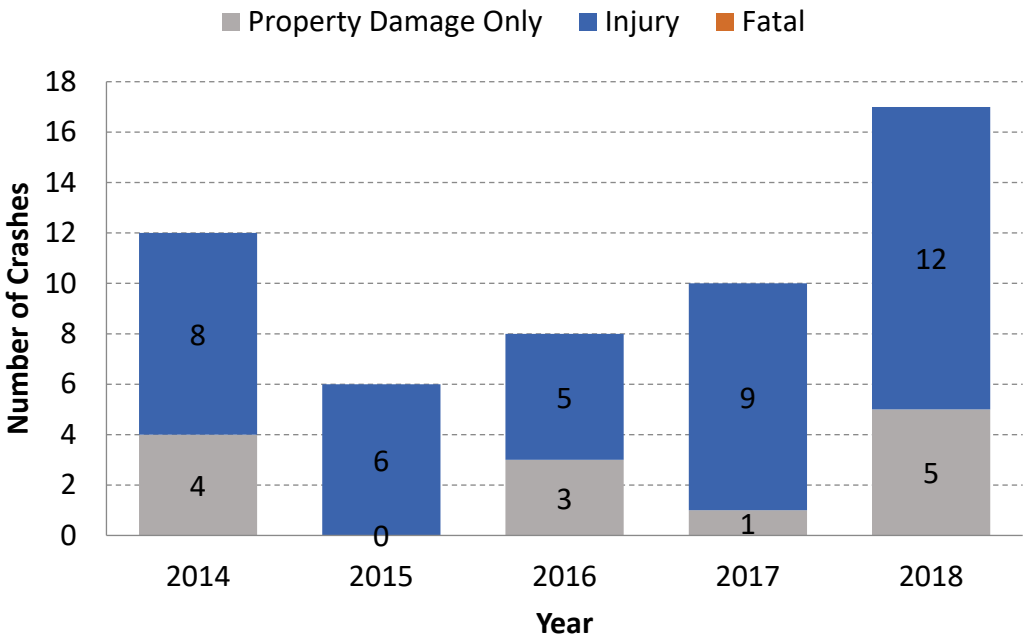


Figure 28: Non-School Aged Crashes by Year and Severity

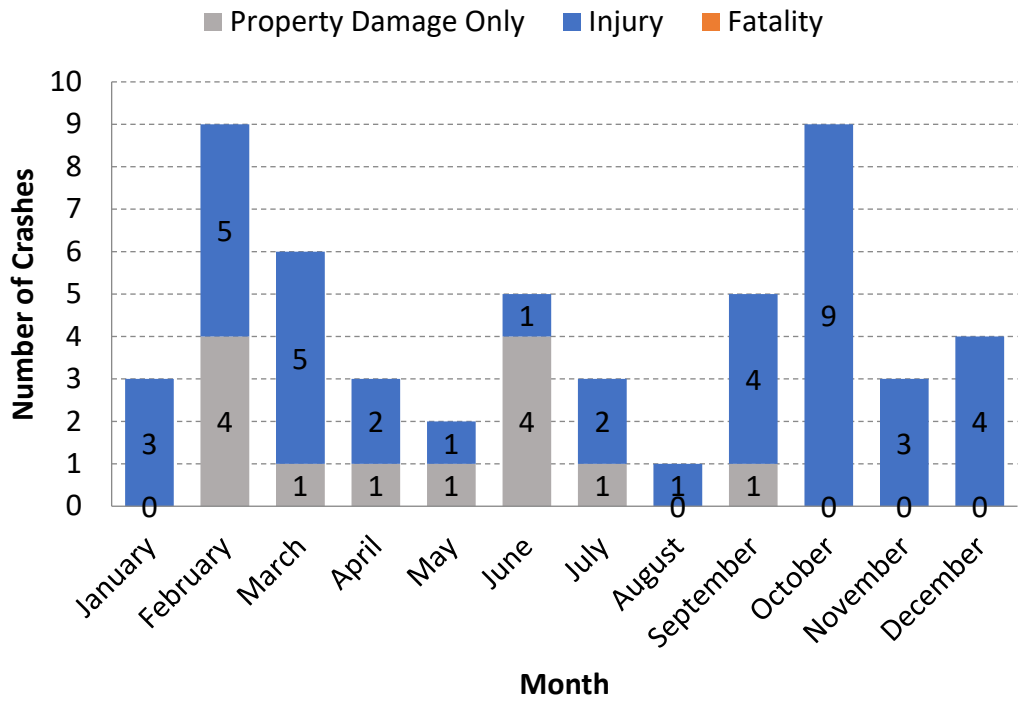


Figure 29: Non-School Aged Crashes by Month and Severity

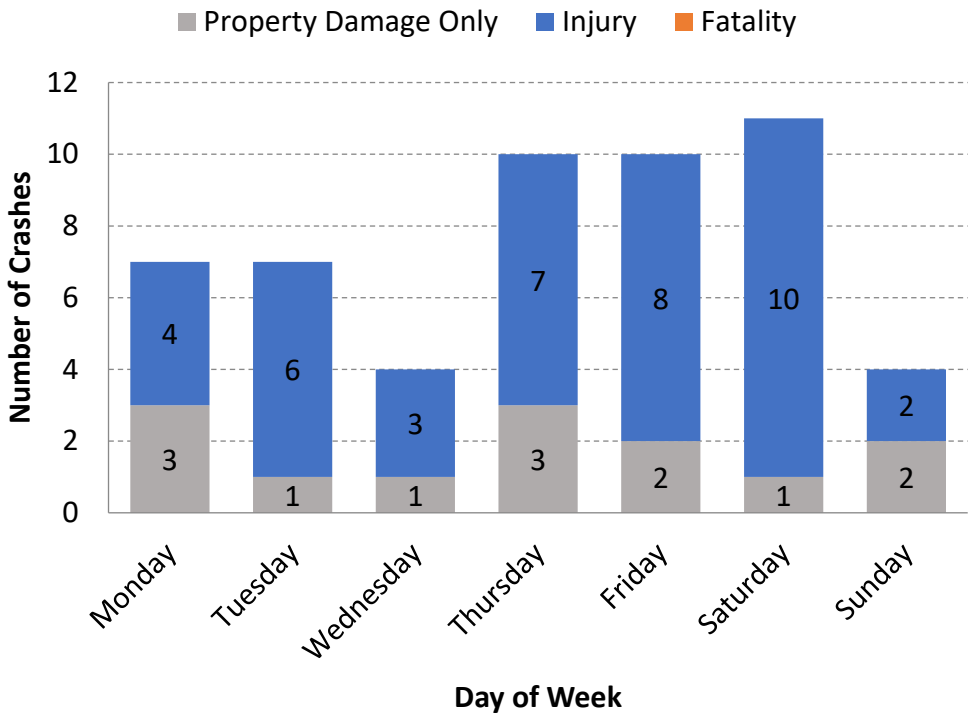


Figure 30: Non-School Aged Crashes by Day of Week and Severity

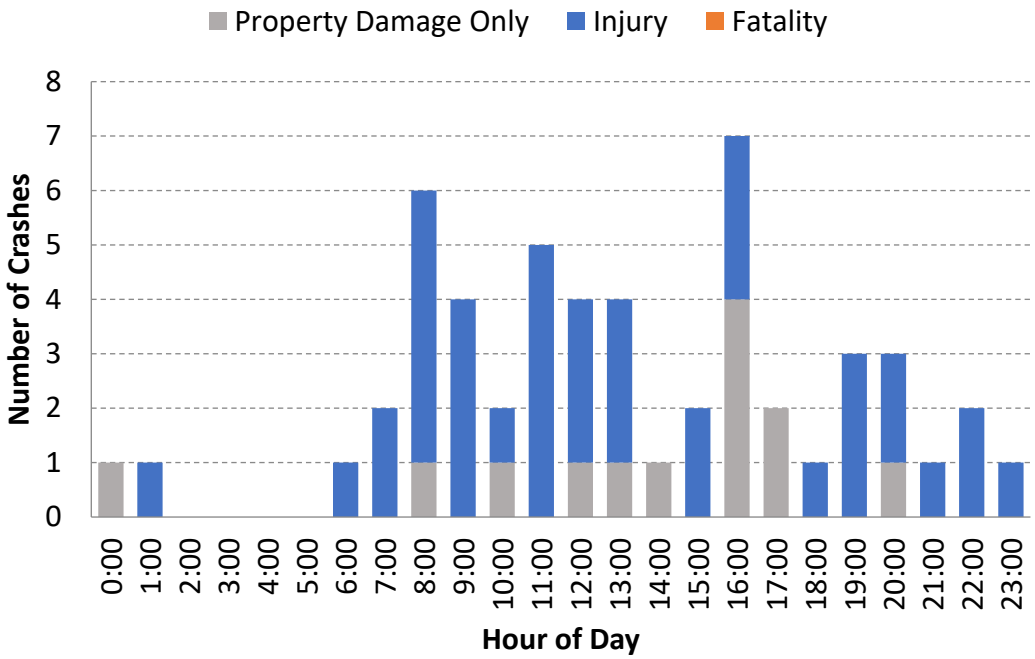


Figure 31: Non-School Aged Crashes by Hour of Day and Severity

The highest crash year was 2018 with 17 crashes. February and October were the highest reported crash months with nine crashes each. Fifty-nine percent of crashes occurred from Thursday to Saturday. By time of day, the highest crash hour was from 4 PM to 5 PM (seven). Alcohol and/or drug involved accounted for four percent of crashes.

Comparison between School Aged and Non-School Aged Pedestrian/Bicycle Crash Statistics

Figure 32, **Figure 33**, **Figure 34**, and **Figure 35** show a comparison of the number of school aged and non-school aged pedestrian and bicycle crashes by different measures (year, month, day, and hour).

Overall, there were more non-school aged crashes than school aged crashes from 2014 to 2018. School aged crashes and non-school aged crashes occurred in February and October the most, with nine crashes in each month. Most school aged crashes occurred on a Wednesday (eight) while most non-school aged crashes occurred on a Saturday (eleven). Most school aged crashes occurred from 7 AM to 8 AM (ten) while most non-school aged crashes occurred from 4 PM to 5 PM (seven).

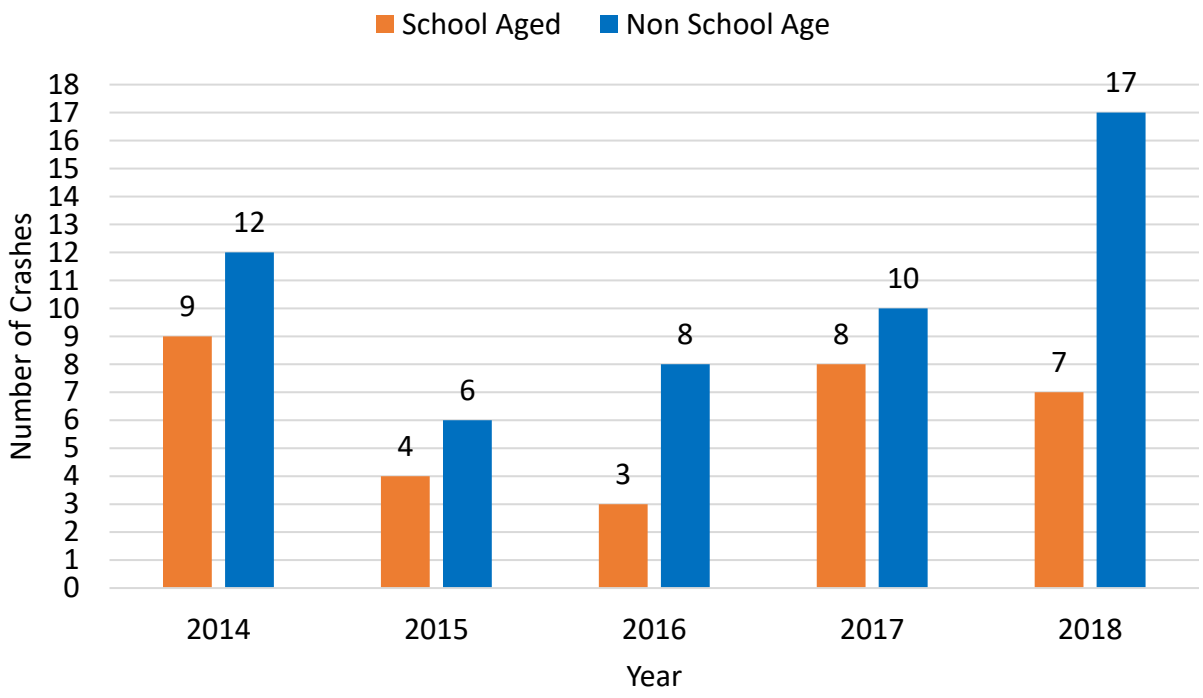


Figure 32: Comparison of School Aged and Non-School Aged Crashes by Year

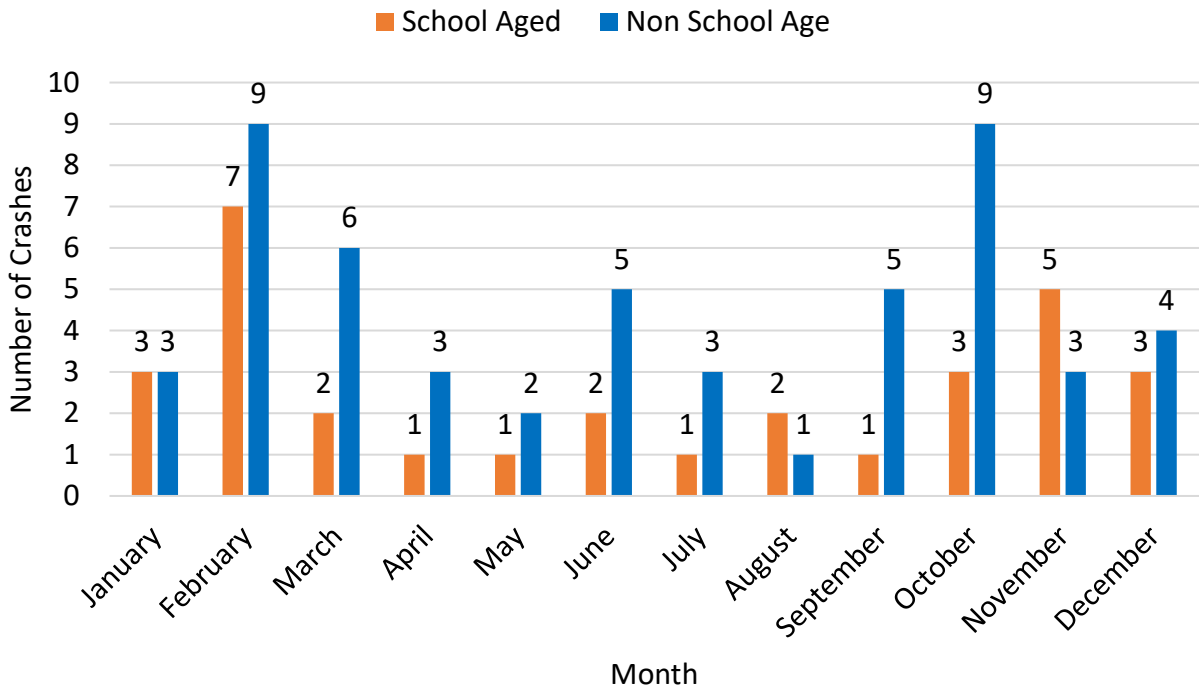


Figure 33: Comparison of School Aged and Non-School Aged Crashes by Month

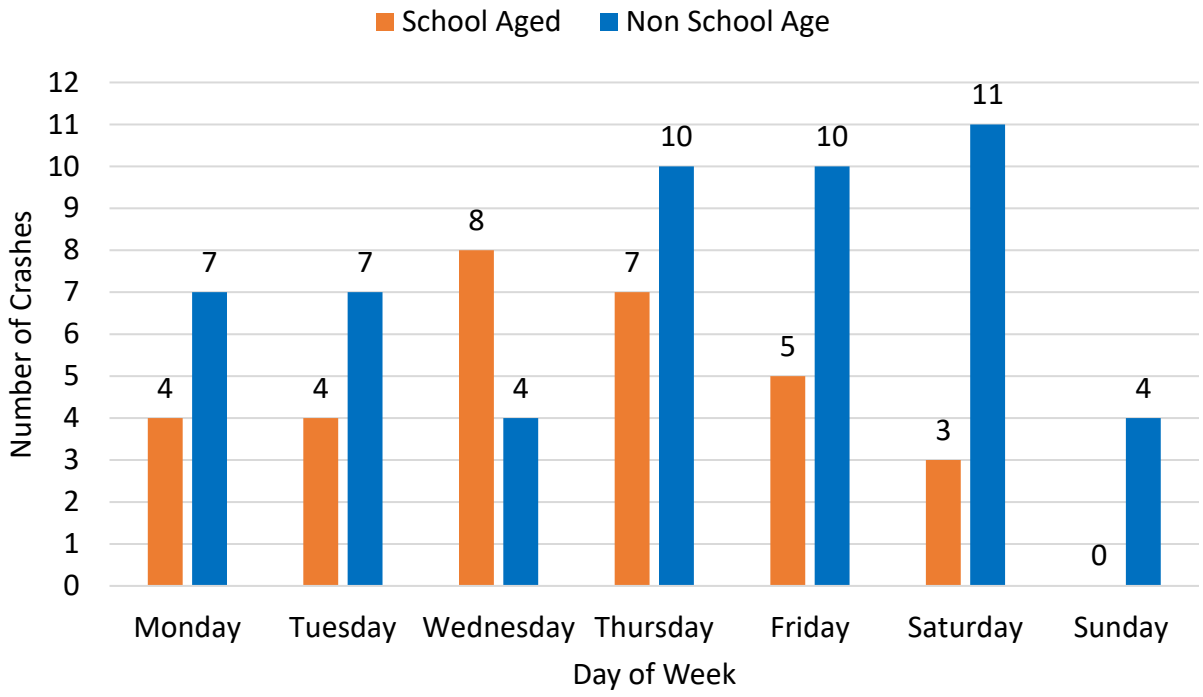


Figure 34: Comparison of School Aged and Non-School Aged Crashes by Day of Week

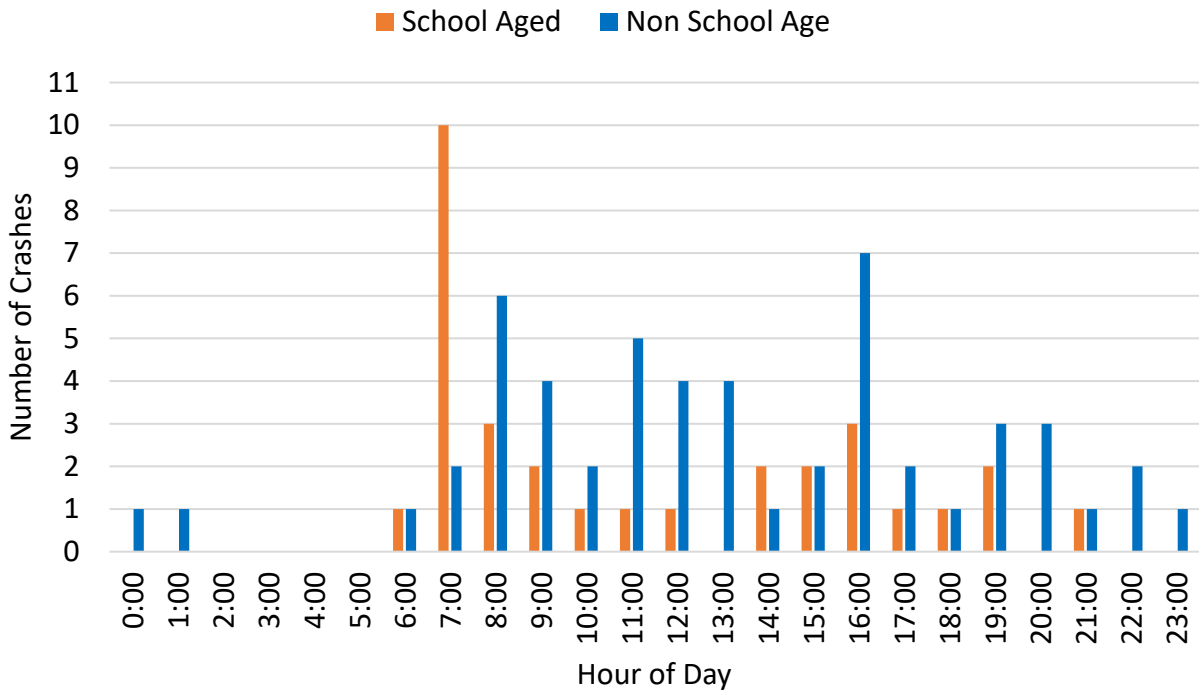


Figure 35: Comparison of School Aged and Non-School Aged Crashes by Hour of Day

School Coordination Meeting

A coordination meeting was held on February 10, 2020 to bring stakeholders together and discuss issues and opportunities related to students walking and biking to the school. Members from Brevard County Schools, SCTPO, KAI, and John F. Turner, Sr. Elementary School and Southwest Middle School were present at this meeting. Notes from this meeting are summarized below.

General Notes

Sarah Kraum began the meeting with a short background about the project and initiated introductions. After brief introductions by the attendees, Aditya Inamdar began the discussion with an overview of the project as well as work conducted to date. He briefly introduced the meeting materials included in the attendee handout package. The materials shared with attendees includes the following documents: Summary Infographic that included:

- Summary Infographic that included:
    - Student travel mode split based on the Student Travel Survey;
    - Pedestrian and bicycle crash summary;
    - Information regarding signals and crossings with the study area; and
    - Summary of previous and ongoing plans within the study area.
- Map showing existing and planned bicycle and pedestrian facilities.
- Map showing existing conditions traffic data.
- Map showing school-aged bicycle and pedestrian crashes (2014 - 2018).
- Two larger plots showing the school context aerial and a school campus aerial.

The following section summarizes the discussions during and after the group discussion.

School Timings

John F. Turner, Sr. Elementary

- The school hours are as follows:
    - 7:55 AM to 2:30 PM - Monday through Thursday
    - 8:00 AM to 1:50 PM - Friday
- The peak period of students arriving in the morning is 7:30 AM to 7:55 AM.
- The peak period for students leaving in the afternoon is 2:15 PM for Pre-Kindergarten, 2:20 PM for Kindergarten, and 2:30 PM for the rest of the elementary school.
- The school gate opens at 2:30 PM for vehicles.

Southwest Middle School

- The school hours are as follows:
  - Study hall starts at 8:00 AM
  - 9:30 AM to 4:15 PM - Monday through Thursday
  - 9:30 AM to 3:30 PM - Friday
- The peak period for students arriving in the morning is 9:00 AM to 9:30 AM.
- All students are dismissed at 4:15 PM.

School Entrances and Circulation

John F. Turner, Sr. Elementary School

- There is one vehicle entrance for student drop-off/pick-up and one vehicle exit. There is one bus entrance and one bus exit. Staff and visitors also use the bus entrance to access the parking lot, and they use the bus exit to leave the school campus.
- There is a bus loop with one entrance and one exit driveway on Jupiter Boulevard.
- The bus loop entrance also serves staff and visitors using the parking lot.
- There is one vehicle entrance for student drop-off/pick-up along Jupiter Boulevard, and there is one vehicle exit on Eldron Boulevard for student drop-off/pick-up.
- The vehicle entrance and exits also serve two parking lots for staff and visitors.
- There are two pedestrian walkways on Jupiter Boulevard. One located next to the bus loop entrance on Jupiter Boulevard for students walking/biking from the east side of the school. The other is at the intersection of Jupiter Boulevard and Eldron Boulevard next to the student drop-off/pick-up and is where most of the students walk to access the school entrance.
- There are two bicycle racks. One is located along the walkway at the intersection of Jupiter Boulevard and Eldron Boulevard. Another bicycle rack is located at the southeast corner of the school building.

Southwest Middle School

- There are four vehicle entrances and exits to the school campus and one bus entrance/exit on Eldron Boulevard.
- The bus entrance/exit on Eldron Boulevard is the southernmost driveway on Eldron Boulevard for Southwest Middle School.
- The bus entrance/exit is also used by faculty to access two parking lots.
- One vehicle entrance is on Eldron Boulevard next to the bus entrance/exit is for student drop-off/pick-up; the vehicle exit is north of the bus entrance/exit.
- There is a bicycle rack at this vehicle entrance for student drop-off/pick-up.

- There is a vehicle entrance on Eldron Boulevard north of the student drop-off/pick-up vehicle exit for staff and visitor parking. The vehicle exit for the staff and visitor parking lot is the northernmost driveway for Southwest Middle School on Eldron Boulevard.
- There is a bicycle rack by the vehicle exit for the staff and visitor parking lot

Main Walking and Biking Routes

- For John F. Turner, Sr. Elementary and Southwest Middle Schools, Eldron Boulevard, Jupiter Boulevard, and Malabar Road are the major routes for students walking/biking to and from school.
- One student lives in Madalyn Landing Apartment complex located at the intersection of Malabar Road and Garvey Road and has to walk along the southside of Malabar Road where there are missing sidewalks in certain areas.
- Students cross Jupiter Boulevard at Eldron Boulevard and must sometimes wait two or more pedestrian cycles to cross the roadway.
- After dismissal, students walk to the Citgo Quik Mart at the southwest corner of Jupiter Boulevard and Eldron Boulevard.

Recent and Planned Projects

- Eldron Boulevard was repaved in October 2019 from Hatcher Street to Malabar Road.

Other Issues

John F. Turner, Sr. Elementary School

- For student pick-up in the PM, vehicles park in the right-turn lane on Jupiter Boulevard and in the sod/drainage area on Eldron Boulevard to avoid queuing in the drop-off/pick-up loop.
- Parents will park along Eldron Boulevard to pick up students that are leaving as walkers.

Southwest Middle School

- The vehicle exit for the drop-off/pick-up loop and the vehicle entrance for the staff and visitor parking are next to each other, potentially making this driveway area confusing for drivers.
- Southwest Middle School also experiences parents parking along Eldron Boulevard to pick up students leaving as walkers.

Field Review

A field review was conducted on February 11, 2020 to review the existing conditions and to observe student drop-off activity and student pick-up activity. The field review team observed the drop-off activity for John F. Turner, Sr. Elementary School from 7:15 to 8:05 AM and pick-up activity from 2:00 to 3:00 PM. The field review team observed the drop-off activity for Southwest Middle School from 8:15 to 9:30 AM and pick-up activity from 3:30 to 4:30 PM. The field review team also interacted with crossing guards and observed/documented conditions within the school's study area.

Members from the Brevard County Schools, SCTPO, and KAI were present at this field review. The field review also included interacting with the crossing guard and observing and documenting conditions within the school's study area. Notes from this field review are summarized below.

Crossing Guards

- There is one crossing guard at the intersection of Eldron Boulevard and Jupiter Boulevard for Turner Elementary School. In the past, two crossing guards served this location until budget cuts removed one crossing guard. The current crossing guard would like to have another crossing guard at this location to assist with crossing students. The crossing guard crosses over 100 students at this intersection. Some of the students cross this intersection and are picked up by waiting parents in nearby parking lots.
- There are no crossing guards at the intersection of Eldron Boulevard and Jupiter Boulevard for Southwest Middle School students.
- There is one crossing guard at the intersection of Jupiter Boulevard and Emerson Drive for Turner Elementary School. On average the crossing guard crosses about 20 to 25 students at this intersection.
- There is one crossing guard north of the intersection of Buzby Street and Eldron Boulevard for Southwest Middle School by the crosswalk across Eldron Boulevard. The crossing guard crosses about 20 to 25 students at this intersection.
- There are two crossing guards at the intersection of Eldron Boulevard and Malabar Road for Southwest Middle School. The crossing guards would like to have signage to stop cars from turning on red when children are present. The crossing guard crosses about 5 to 10 students at this intersection.

School Campus

John F. Turner, Sr. Elementary School

- Students walking and bicycling to school use the pedestrian entrance on the northeast corner of the Jupiter Boulevard and Eldron Boulevard intersection. The bicycle rack is located on the southwest corner of campus, next to the walkway students used to access the school building entrance.
- The bus entrance/exit is narrow and other vehicles cannot enter or exit the driveway if a bus is entering or leaving. The turning radii on the school bus loop are tight. Buses must mount on the curb to make turns.
- Crosswalk markings across the school driveways are faded.

Southwest Middle School

- Students walking and bicycling from the south side of the school campus enter the school campus at the entrance driveway for drop-off/pick-up loop. Continuous sidewalk is present on the south and west sides of the drop-off/pick-up loop. A bicycle rack is located along this sidewalk.
- Students walking and bicycling from the north side of the school campus enter the school campus at the exit driveway for the visitor and staff parking lot. Continuous sidewalk is present on the north and the west side of the drop-off/pick-up loop. Another bicycle rack is located along this sidewalk.
- The concrete median separating the drop-off/pick-up loop exit driveway and staff/visitor parking lot entrance driveway does not extent up to Eldron Boulevard, resulting in one wide driveway.
- The concrete median separating the bus loop driveway and drop-off/pick-up loop entrance driveway does not extend to Eldron Boulevard, resulting in one wide driveway.
- Crosswalk markings across the school driveways are faded.

Study Area

- There is a pedestrian-only signal phase at the Jupiter Boulevard and Eldron Boulevard intersection and at the Eldron Boulevard and Malabar Road intersection. The pedestrian signal timing is not sufficient to allow a diagonal crossing at either of these intersections.
- The crosswalk markings are faded on the four intersection legs of the Jupiter Boulevard and Eldron Boulevard intersection and of the Eldron Boulevard and Malabar Road intersection.

- Pedestrian curb ramps are not ADA compliant on the four intersection legs of the Jupiter Boulevard and Eldron Boulevard intersection and of the Eldron Boulevard and Malabar Road intersection.
- Crosswalk markings are faded at the mid-block crosswalk across Eldron Boulevard just north of Buzby Street.
- There is no sidewalk on west side of Eldron Boulevard from Raleigh Road to just south of Jupiter Boulevard.
- There is no sidewalk on the east side of Emerson Drive from Malabar Road to Forest Street.
- There is no sidewalk on the north side of American Boulevard from Jupiter Boulevard to Emerson Drive.
- There are sidewalks gaps on the south side of Malabar Road from Garvey Road to Minton Road.
- There is no sidewalk on the west side of Degroodt Road from Gamewell Road to Jupiter Boulevard.
- There are no sidewalks on the east side of Eldron Boulevard from Hatcher Street to Americana Boulevard.

Morning Observations

John F. Turner, Sr. Elementary School

- At the crosswalk on the school campus between the pedestrian walkway/bicycle racks and the surface parking lot, a school staff person arrives at 7:30 AM to assist students crossing.
- From 7:40 to 8:00 AM, five students were observed crossing Jupiter Boulevard on Emerson Drive.
- There were 49 bicycles parked in the bicycle rack.
- The first bus dropped off students at 6:50 AM.
- At 6:58 AM, the regional bus that picks up students headed to other schools, picked up one student. More students were picked up by a regional bus at 7:17 AM.
- At 7:20 AM, seven buses began to drop off students.
- Starting at 6:59 AM, 47 vehicles entered the bus loop and dropped off students or parked in the employee parking lot west of the bus loop. Vehicles are not usually permitted in the bus loop when buses are loading/unloading.
- One vehicle entered the bus exit to use the parking lot west of the bus loop.
- Four bicyclists entered the path east of the bus entrance.

Southwest Middle School

- At 8:15 AM, 18 students were waiting outside of the school by the front entrance.
- There were eight students walking and 28 students bicycling to school from the areas north of Eldron Boulevard and Hatcher Street.
- At the mid-block crosswalk north of Buzby Street across Eldron Boulevard, the markings are faded. Seven students crossed Eldron Boulevard near Hatcher Street.
- The crossing guard for the mid-block crosswalk leaves at 9:30 AM.
- The drivers exiting the staff and visitor parking lot loop do not make a complete stop as they approach Eldron Boulevard.
- The bicycle rack on the northwest corner of campus by the staff and visitor parking exit had 33 bicycles parked in it.
- The bicycle rack on the southwest corner of campus by the bus loop entrance/exit had 41 bicycles parked in it.
- From 8:54 AM to 9:21 AM, 19 buses entered the bus loop.

Afternoon Observations

John F. Turner, Sr. Elementary School

- Vehicles began to line up for student pick-up around 1:00 PM.
- Some parents park at Joy Lutheran Church in the afternoon and students cross Jupiter Boulevard at Eldron Boulevard to meet them.
- Vehicles for student pick-up queue on the right-turn lane along Jupiter Boulevard, and on the sod/drainage area along Eldron Boulevard.
- The crossing guard has to often tell parents/guardians queued on Eldron Boulevard for pick-up to not block the crosswalk.
- Voluntary Prekindergarten Education Program (VPK) students are dismissed at 2:15 PM, Kindergarten students are dismissed at 2:20 PM, and the rest of the students are dismissed at 2:30 PM.
- Approximately 112 students were walking and bicycling along Jupiter Boulevard on both sides of the roadway.
- Students walk to the Citgo Quik Mart at the southwest corner of the Jupiter Boulevard and Eldron Boulevard intersection after dismissal.
- The first bus arrived on campus at 1:45 PM, and three other buses arrived at 2:11 PM. The regional buses arrived afterward.
- There are large number of students exiting the school campus and crossing at the Jupiter Boulevard and Eldron Boulevard intersection in the afternoon. The pedestrian

signal timing is not sufficient to allow the student to cross during one cycle. It takes four or five cycles to cross the students in the afternoon.

Southwest Middle School

- The first bus arrived at 3:35 PM and the last bus arrived at 4:14 PM.
- At 4:15 PM, there were over 50 vehicles queued in the outside lane of Eldron Boulevard.
- By 4:26 PM, most of the vehicles for student pick-up had dispersed and by 4:30 PM student pick-up is complete.
- From the pedestrian walkway on the southwest corner of campus by the drop-off/pick-up vehicle entrance, 62 pedestrians and 43 bicyclists were counted leaving campus.
- A police officer stands by the bus exit to direct traffic so that the buses have an opportunity to pull out into Eldron Boulevard.
- There were approximately 50 to 60 students crossing Jupiter Boulevard at Eldron Boulevard after dismissal. Many students were crossing the intersection diagonally because of the pedestrian-only signal phase.
- Some vehicles were blocking the crosswalk at the drop-off/pick-up loop entrance during dismissal.

Opportunities

- Extend the pedestrian-only signal phase at the intersection of Jupiter Boulevard and Eldron Boulevard during Turner Elementary and Southwest Middle Schools dismissal time.
- Install high-visibility crosswalk markings and upgrade pedestrian curb ramps to be ADA compliant at the signalized intersections within the Study Area.
- Have an additional crossing guard at the intersection of Jupiter Boulevard and Eldron Boulevard for school arrival and dismissal times for Turner Elementary School.
- Repave and widen the bus loop for Turner Elementary School to facilitate easier school bus turning movements.
- Extend the concrete median to the roadway between the staff and visitor parking lot entrance and the student drop-off/pick-up exit at Southwest Middle School.
- Add sidewalks on both sides of Buzby Street.
- Install an advisory shoulder on both sides of Brickell Street.
- Add paved trails along the canal Right-Of-Ways (ROW).

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CITGO
STOP
ELDRON
JUPITER
ELDRON

Implementation

This section of the report will build on the analysis and observations documented in the Assessment Section to make recommendations. The purpose of this section is to list and describe the issues and recommendations identified for the John F. Turner, Sr. Elementary School and Southwest Middle School study areas. Planning level cost estimates, implementation time-frames, and responsible agencies were also listed for the recommendations.

List & Maps of Recommendations

A list of issues and recommendations was developed based on the input received at the school coordination meeting and field review observations. Planning level cost estimates, implementation time-frame and responsible agency were identified for the recommendations.

Recommendations on the school campus are listed in **Table 2**. Recommendations in the larger study area are listed in **Table 3**. Maps showing the locations of these recommendations are shown in **Figure 36**, **Figure 37**, and **Figure 38**.

Table 2: School Campus Recommendations

John F. Turner, Sr. Elementary School					
No.	**Location**	**Recommendation**	**Type**	**Time-Frame**	**Cost Estimate**
1	Turner Elementary School Driveways	Install raised crosswalks or re-stripe high visibility crosswalk markings and upgrade pedestrian ramps to make them ADA compliant.	Crossing	Near-Term	$15,000 to $20,000
2	Northeast Corner of Jupiter Boulevard and Eldron Boulevard Intersection	Expand concrete waiting area for students to wait before crossing Jupiter Boulevard and Eldron Boulevard intersection in the afternoon after school dismissal.	Sidewalk	Near-Term	<$10,000
3	Crosswalk across Drop-Off/Pick-Up Loop	Restripe the crosswalks to be high-visibility crosswalks and upgrade pedestrian ramps to be ADA compliant.	Crossing	Near-Term	<$10,000

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
4	Bus Loop	Widen driveway and turning radii to accommodate bus turning movement.	School Circulation	Long-Term	$15,000 to $20,000
Southwest Middle School					
5	Between Drop-Off/Pick-Up Loop Exit Driveway and Staff/Visitor Parking Lot Entrance Driveway	Extend the concrete separator between the two driveways and create a 12 foot wide pedestrian refuge island between the two driveways. Add 'Do Not Enter' signs on both sides of Drop-Off/Pick-Up Loop Exit Driveway.	School Circulation	Near-Term	<$10,000
6	Between Drop-Off/Pick-Up Loop Entrance Driveway and Bus Loop/Staff Parking Lot Driveway	Extend the concrete separator between the two driveways and create a 12 foot wide pedestrian refuge island between the two driveways.	School Circulation	Near-Term	<$10,000
7	Southwest Middle School Driveways	Install raised crosswalks or re-stripe high visibility crosswalk markings and upgrade pedestrian ramps to make them ADA compliant.	Crossing	Near-Term	$15,000 to $20,000

Table 3: Study Area Recommendations

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
8	Jupiter Boulevard and Eldron Boulevard Intersection	Conduct an operational study to assess if the existing all-pedestrian phase can be extended to allow more crossing time. The extended all-pedestrian phase can be implemented before school begins in the morning and after school releases in the afternoon. The extended all-pedestrian phase could coincide with the posted school zone times.	Operational Study (Signal)	Near-Term	This estimate should just be labor for the signal tech to update the signal timings, no construction for this type of project
9	Jupiter Boulevard and Eldron Boulevard Intersection	Restripe crosswalks to be high-visibility crosswalks and upgrade pedestrian curb ramps to be ADA compliant.	Crossing	Near-Term	$15,000 to $20,000
10	Jupiter Boulevard and Eldron Boulevard Intersection	Add a second crossing guard (previously there were two crossing guards, but currently there is only one).	Crossing	Near-Term	The cost would be dependent on how much the School Board/ County pays for crossing guards.

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
11	Eldron Boulevard from Ruffin Circle to just South of Jupiter Boulevard	Build a 5 to 6 foot wide sidewalk path on the west side of the road.	Sidewalk	Long-Term	$535,000 to $625,000
12	Eldron Boulevard from Jupiter Boulevard to Hatcher Street and Hatcher Street from Eldron Boulevard to Cownie Avenue	Install 'No Parking Any Time' signs on both sides of the road.	Sign/Signal	Near-Term	$90,000 to $105,000
13	Mid-Block Crosswalk across Eldron Boulevard just North of Buzby Street	Restripe crosswalks to be high-visibility crosswalks and upgrade pedestrian curb ramps to be ADA compliant. Construct a RRFB at the mid-block crossing.	Crossing	Near-Term	$30,000 to $35,000
14	Emerson Drive from Malabar Road to Forest Street	Build an 8 to 10 foot wide sidewalk/shared use path on the east side of the road.	Sidewalk	Long-Term	$305,000 to $355,000
15	Buzby Street/Dominican Avenue from Eldron Boulevard to Jupiter Boulevard	Build 5 to 6 foot wide sidewalks on both sides of the road.	Sidewalk	Long-Term	$380,000 to $445,000

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
16	Americana Boulevard from Jupiter Boulevard to Emerson Drive	Build a 5 to 6 foot wide sidewalk on the north side of the road.	Sidewalk	Long-Term	$1,145,000 to $1,335,000
17	Degroodt Road from Gamewell Road to Jupiter Boulevard	Build an 8 to 10 foot wide sidewalk/shared use path on the west side of the road.	Sidewalk	Long-Term	$1,595,000 to $1,860,000
18	Brickell Street/Bloke Avenue from Caballero Avenue to Jaslo Street	Add a 4 to 5 foot wide advisory shoulder on both sides of the roadway.	Sidewalk	Near-Term	$70,000 to $85,000
19	Canals	Conduct a feasibility study to add a paved trail along the canals.	Feasibility Study (Trail)	Near-Term	Cost estimates should be developed as part of the feasibility study.
20	Eldron Boulevard from Hatcher Street to Americana Boulevard	Build a 5 to 6 foot wide sidewalk on the east side of the road.	Sidewalk	Long-Term	$415,000 to $485,000

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
21	Jupiter Boulevard from Garvey Road to just East of Saragassa Avenue and from just West of Cheltenham Avenue to San Filippo Drive	Build 5 to 6 foot wide sidewalks to fill the gaps on north side of the road.	Sidewalk	Long-Term	$480,000 to $560,000
22	Signalized Intersections within the Study Area	Restripe crosswalks to be high-visibility crosswalks and upgrade pedestrian curb ramps to be ADA compliant.	Crossing	Near-Term	$125,000 to $145,000
23	School Driveways along Eldron Boulevard	Conduct a feasibility study to add streetlights at the school driveways	Feasibility Study (Streetlights)	Near-Term	Cost estimates should be developed as part of the feasibility study.

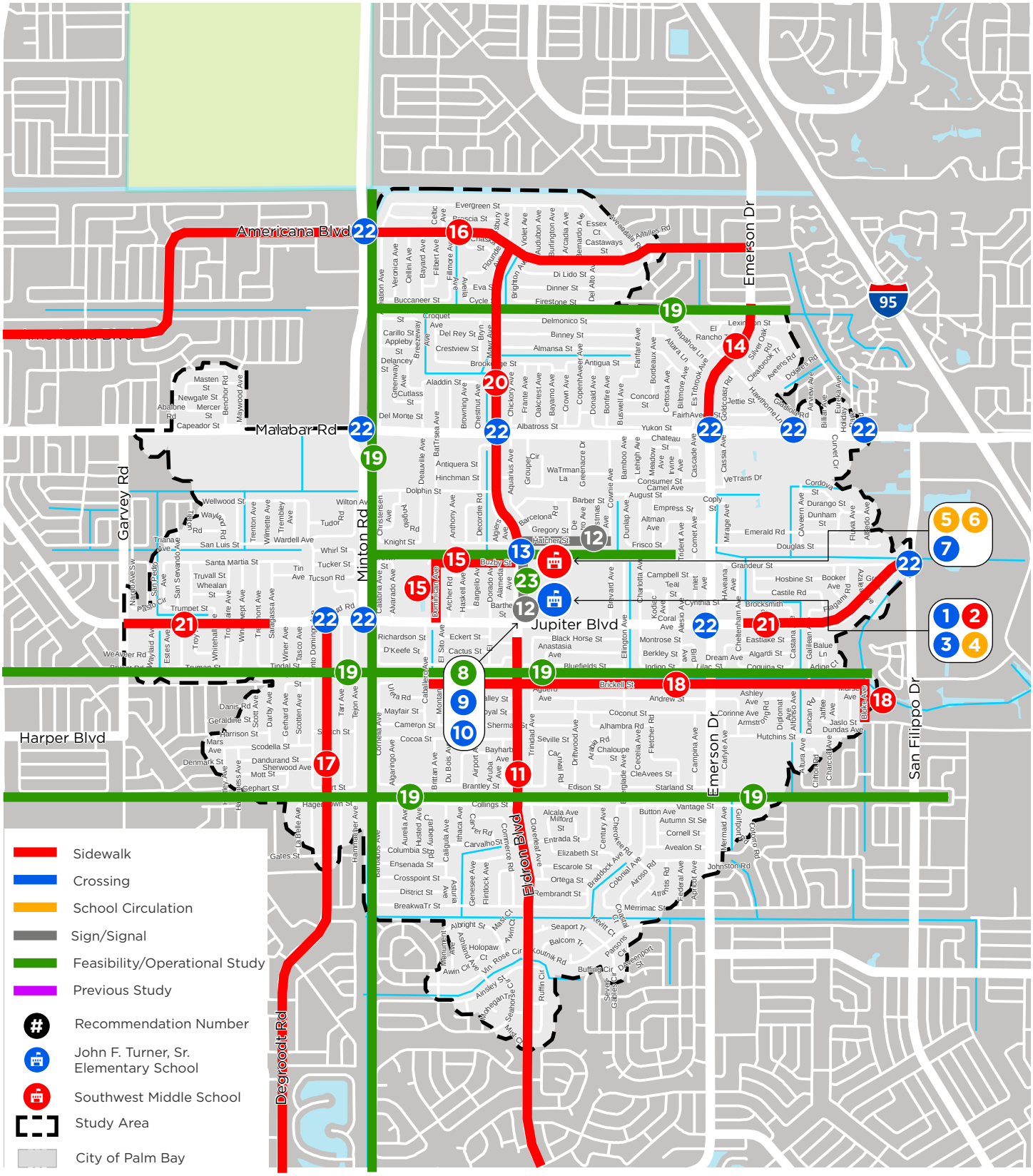


Figure 36: Recommendations

School Routes Analysis

John F. Turner, Sr. Elementary & Southwest Middle School

Sidewalk
Crossing
School Circulation
Sign/Signal
Feasibility/Operational Study
Previous Study

Recommendation Number
John F. Turner, Sr. Elementary School
Southwest Middle School

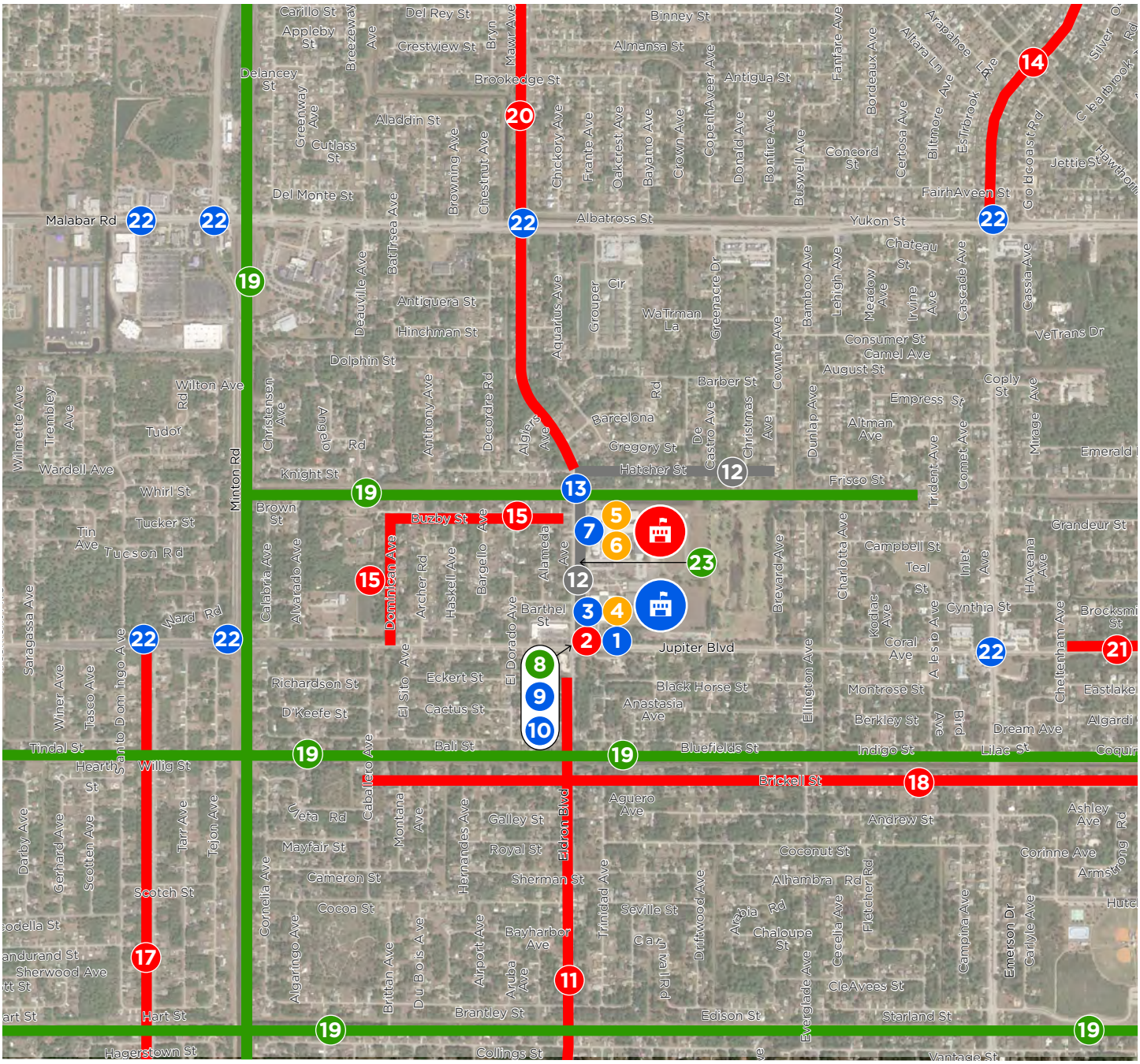


Figure 37: Recommendations: School Context Aerial Map

School Routes Analysis

John F. Turner, Sr. Elementary & Southwest Middle School

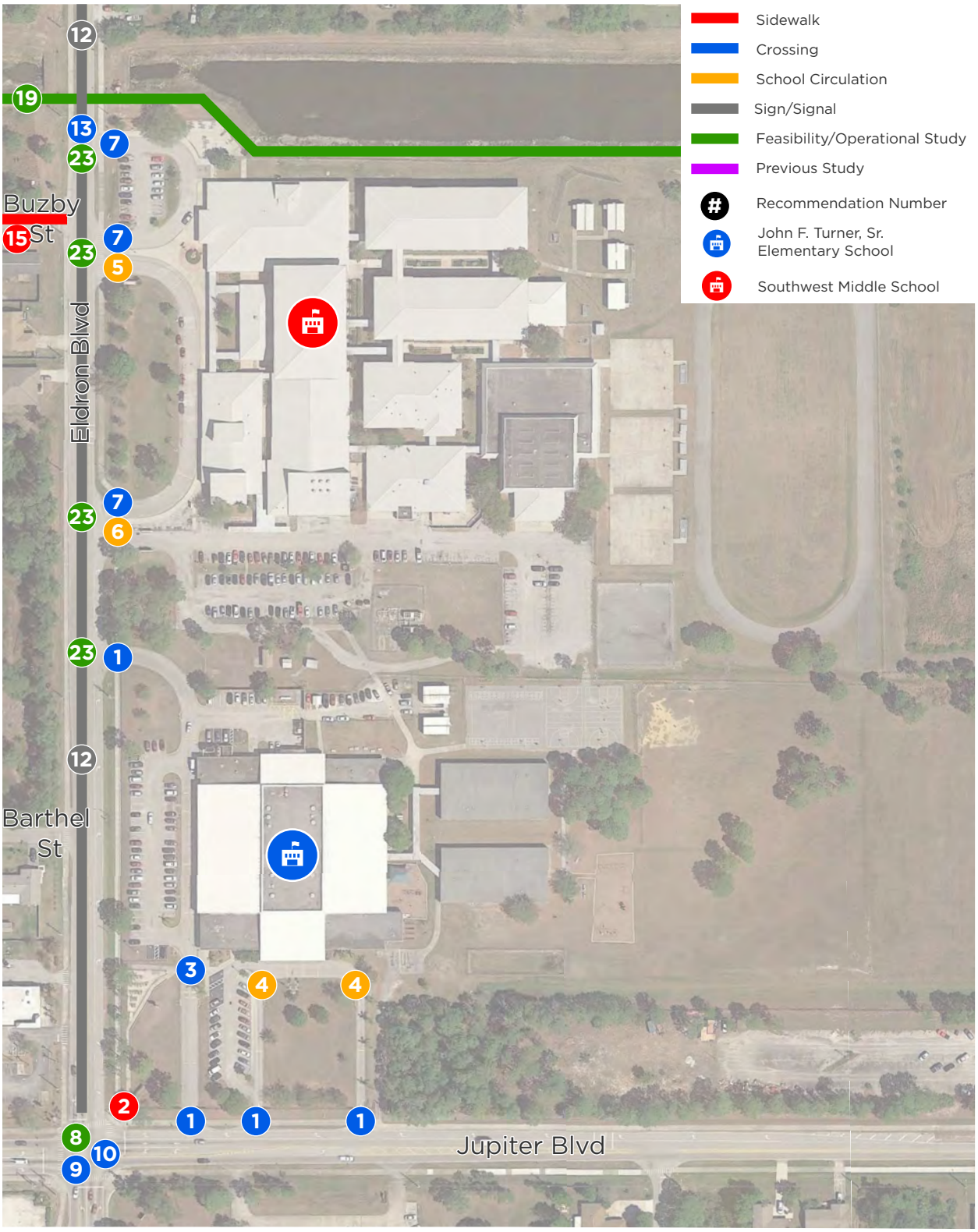


Figure 38: Recommendations: School Campus Aerial Map

School Routes Analysis

John F. Turner, Sr. Elementary & Southwest Middle School

Detailed Recommendations

This section lists details for each recommendation including its location, type, issue, recommendation, implementation time-frame, estimated project cost, if right-of-way is needed, if there is anticipated drainage or utility impact, and the responsible agency. The implementation time-frame is listed as "Maintenance", "Near-Term", or "Long-Term" and describes the amount of time it will take for a project to be complete. The responsible agency is the public agency that will be responsible for the implementation of the recommendation.

Methodology to Calculate Cost Estimates

Cost estimates were calculated for the recommended projects in this section, unless otherwise noted. Cost estimates were not prepared for projects where more information was needed, or further follow up study should be undertaken. The bullets below describe the assumptions made for the cost estimating of the recommended projects:

- Pay items and pay item unit costs were obtained from the FDOT Historical Cost website: *https://www.fdot.gov/programmanagement/estimates/historicalcostinformation/historicalcost.shtm*
    - The most current 12 month (12/01/18 – 11/30/19) moving Statewide and Area 8 (which includes Brevard County) pay item average unit costs were utilized
- Maintenance of traffic was assumed to be 10 percent to 15 percent of the construction cost, depending on the level of impact the recommendation has on adjacent roadway traffic. Maintenance of traffic was assumed to be 0 percent for recommendations on the school campus.
- The mobilization of construction equipment to the work site was assumed to be 15 percent of the construction + maintenance of traffic cost.
- Concepts were not prepared for these recommendations so there is a high degree of unknowns that may affect the project cost once it is designed. To account for these unknowns, a 20 percent and 40 percent "contingency/unknowns" cost was calculated for each project to provide a cost estimate "range" for each project. These contingency/unknown calculations were based on the construction + maintenance of traffic + mobilization cost.
- Design and construction engineering inspection (CEI) were assumed to be 15 percent each. These costs were calculated based on the construction + maintenance of traffic + mobilization + contingency/unknowns (20%) cost and the construction + maintenance of traffic + mobilization + contingency/unknowns (40%) cost.
- The total lower range cost estimate for each recommendation was calculated as construction + maintenance of traffic + mobilization + contingency/unknowns (20%) + design (based on 20% contingency/unknowns) + CEI (based on 20%

contingency/unknowns). The total upper range cost estimate for each recommendation was calculated as construction + maintenance of traffic + mobilization + contingency/unknowns (40%) + design (based on 40% contingency/unknowns) + CEI (based on 40% contingency/unknowns).

- The final lower and upper range were rounded up to the nearest $5K or $10K to provide a conservative estimate of the total project cost.

Figure 39 below shows an example of the cost estimate process described above.

Item No.	Description	Unit	Total Quantity	Weighted Average Unit Price	Total Amount
Roadway Items					
110-1-1	CLEARING & GRUBBING	AC	0.27	$9,219.13	$2,516.82
522-1	SIDEWALK CONCRETE, 4" THICK	SY	570.00	$44.53	$25,382.10
Subtotal					$27,898.92
102-1	MAINTENANCE OF TRAFFIC	LS	15%		$4,184.84
Subtotal					$32,083.76
101-1	MOBILIZATION	LS	15%		$4,812.56
Subtotal					$36,896.32
	CONTINGENCY	LS	20%		$7,379.26
	CONTINGENCY	LS	40%		$14,758.53
Total Construction Cost (20%)					$44,275.58
Total Construction Cost (40%)					$51,654.85
	DESIGN (20%)	LS	15%		$6,641.00
	DESIGN (40%)	LS	15%		$7,748.00
	C.E.I (20%)	LS	15%		$6,641.00
	C.E.I (40%)	LS	15%		$7,748.00
Total Cost (20%)					$57,557.58
Total Cost (40%)					$67,150.85
Total Cost (20%) - Rounded					$60,000.00
Total Cost (40%) - Rounded					$70,000.00

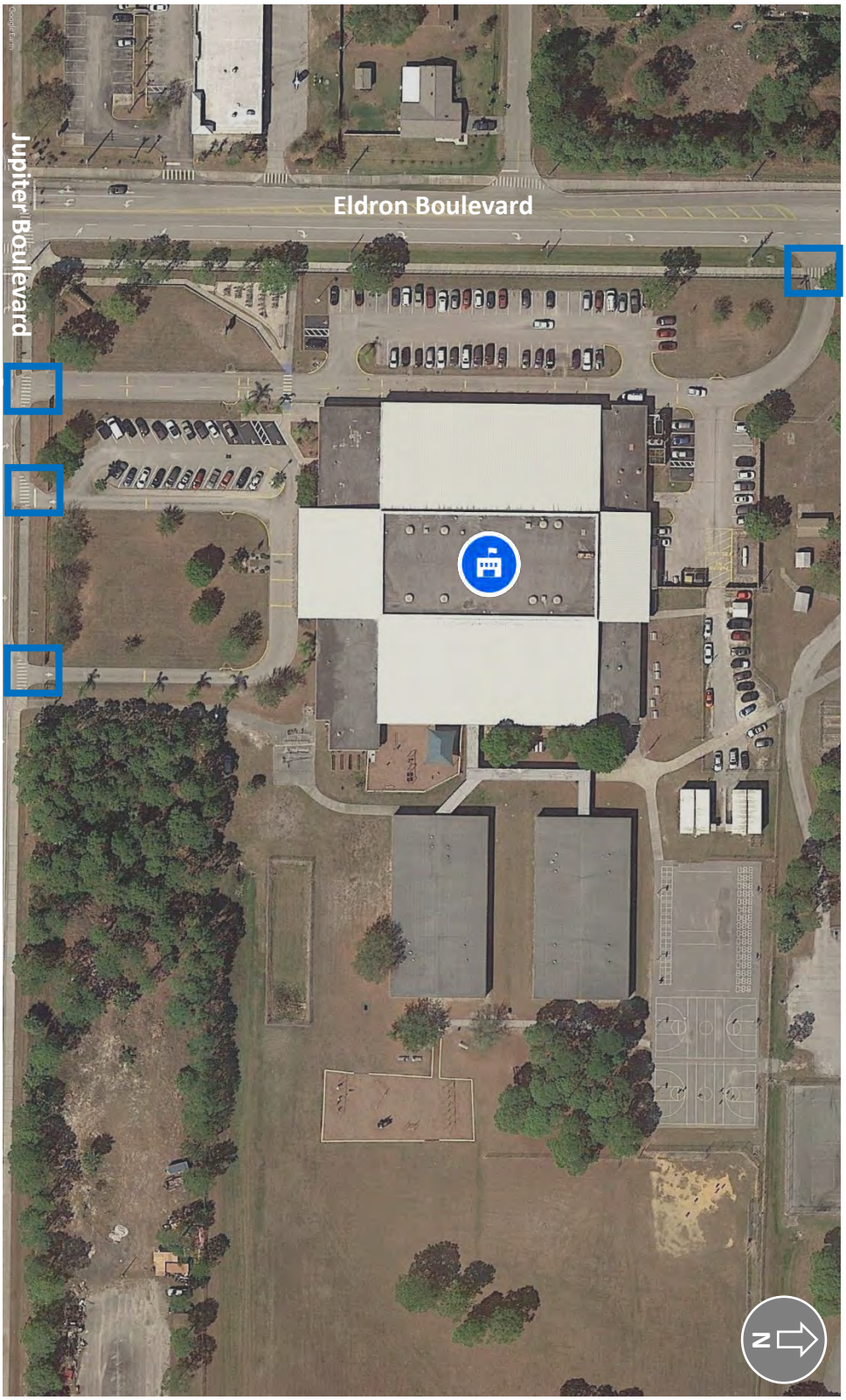
Figure 39: Example Cost Estimate Process

Project 1: John F. Turner, Sr. Elementary School - Install raised crosswalks or install high-visibility crosswalk markings

Location	John F. Turner, Sr. Elementary School Driveways
Type	Crossing
Issue	The crosswalk markings at the school driveway are faded and pedestrian ramps need to be ADA compliant.
Recommendation	Install raised crosswalks or re-stripe high visibility crosswalk markings and upgrade pedestrian ramps to make them ADA compliant.

Crosswalks at Driveway to John F. Turner, Sr. Elementary School

	Implementation Time-Frame	Near-Term
	Estimated Project Cost	$15,000 to $20,000
	Right-of Way Needed?	No
	Drainage or Utility Impact?	No
	Responsible Agency	City of Palm Bay/Brevard County Public Schools



John F. Turner, Sr. Elementary School Driveways in Blue

Examples of ADA Compliant Pedestrian Curb Ramps

Diagonal Pedestrian Ramp

Perpendicular Pedestrian Ramp

Unflared Perpendicular Curb Ramps

Project 2: John F. Turner, Sr. Elementary School - Install concrete waiting area for student crossings

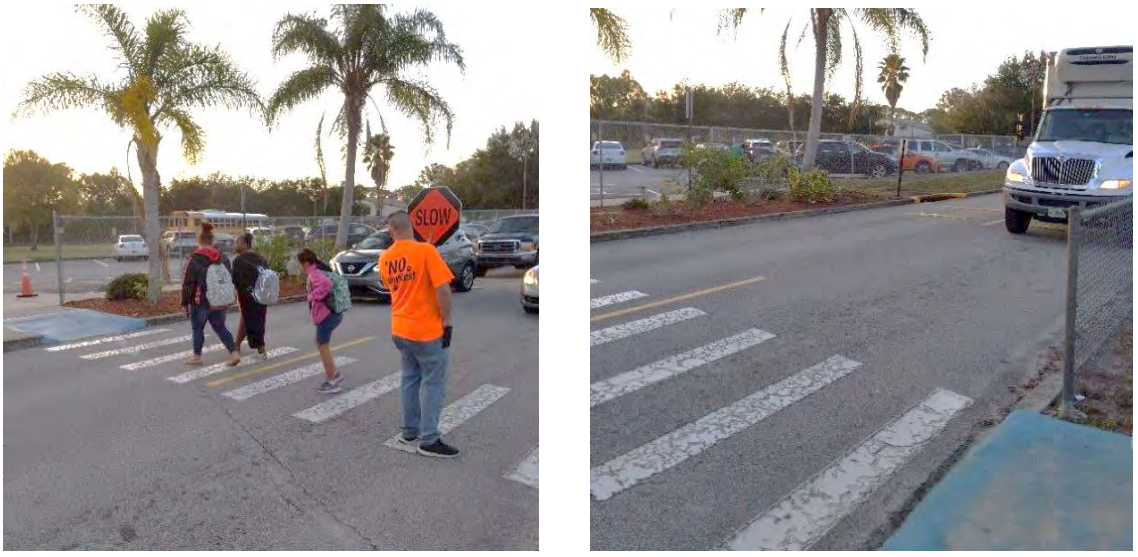
Location	**Northeast Corner of Jupiter Boulevard and Eldron Boulevard Intersection**
Type	**Sidewalk**
Issue	Students need more waiting area at the intersection before crossing the roadway.
Recommendation	Expand concrete waiting area for students to wait before crossing Jupiter Boulevard and Eldron Boulevard intersection in the afternoon after school dismissal.

Waiting Area at the Northeast Corner of Jupiter Boulevard and Eldron Boulevard

	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**Less than $10,000**
	Right-of Way Needed?	**No**
	Drainage or Utility Impact?	**No**
	Responsible Agency	**City of Palm Bay**

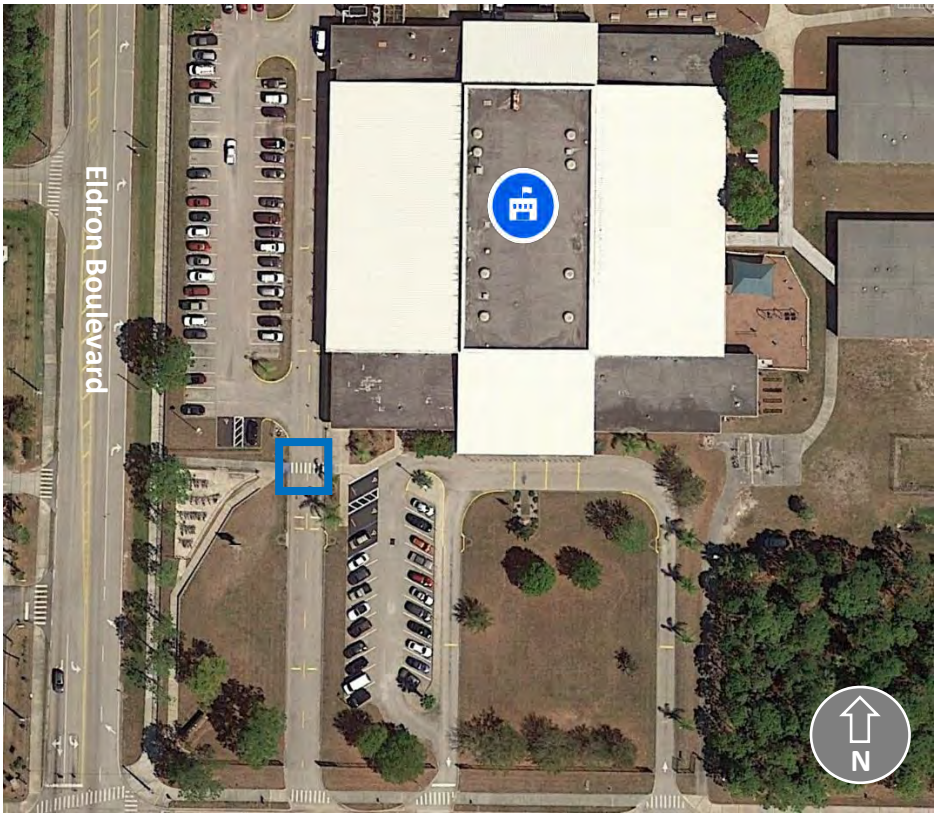
Project 3: John F. Turner, Sr. Elementary School - Install high-visibility crosswalk markings

Location	Crosswalk across Drop-Off/Pick-Up Loop
Type	Crossing
Issue	The crosswalk markings across the drop-off/pick-up loop are faded and pedestrian ramps need to be ADA compliant.
Recommendation	Restripe the crosswalks to be high-visibility crosswalks and upgrade pedestrian ramps to be ADA compliant.



Crosswalk across the Drop-off/Pick-up Loop

	Implementation Time-Frame	Near-Term
	Estimated Project Cost	Less than $10,000
	Right-of Way Needed?	No
	Drainage or Utility Impact?	No
	Responsible Agency	Brevard County Public Schools



John F. Turner, Sr. Elementary School Crosswalk Across the Drop-off/Pick-up Loop in Blue

Project 4: John F. Turner, Sr. Elementary School - Widen bus drop-off/pick-up loop driveway and turning radii

Location	Bus Drop-Off/Pick-Up Loop Exit
Type	School Circulation
Issue	The bus drop-off/pick-up loop is narrow for bus movements and the driveway exit is also narrow.
Recommendation	Widen the bus drop-off/pick-up loop and driveway exit to accommodate bus turning movement.

Drop-Off/Pick-Up Loop

Drop-Off/Pick-Up Loop Exit to Jupiter Boulevard

	Implementation Time-Frame	Long-Term
	Estimated Project Cost	$15,000 to $20,000
	Right-of Way Needed?	No
	Drainage or Utility Impact?	Unknown
	Responsible Agency	Brevard County Public Schools

Project 5: Southwest Middle School - Extend the concrete separator and add signage

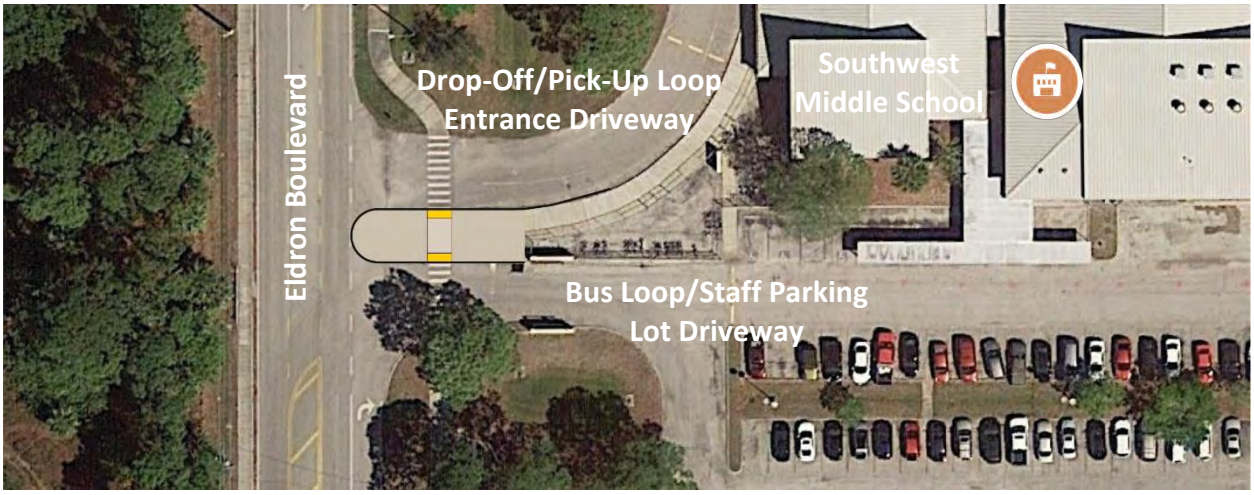
Location	**Between Drop-Off/Pick-Up Loop Exit Driveway and Staff/Visitor Parking Lot Entrance Driveway**
Type	**School Circulation**
Issue	Vehicles are entering the drop-off/pick-up loop exit driveway.
Recommendation	Extend the concrete separator between the two driveways and create a 12 foot wide pedestrian refuge island between the two driveways. Add 'Do Not Enter' signs on both sides of Drop-Off/Pick-Up Loop Exit Driveway.

Extended Concrete Separator in Blue Between Drop-Off/Pick-Up Loop Exit Driveway and Staff/Visitor Parking Lot Entrance Driveway

	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**Less than $10,000**
	Right-of Way Needed?	**No**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**Brevard County Public Schools**

Project 6: Southwest Middle School - Extend the concrete separator

Location	Between Drop-Off/Pick-Up Loop Entrance Driveway and Bus Loop/Staff Parking Lot Driveway
Type	School Circulation
Issue	There is no pedestrian refuge between the two driveways.
Recommendation	Extend the concrete separator between the two driveways and create a 12 foot wide pedestrian refuge island between the two driveways.



Extended Concrete Separator Between Drop-Off/Pick-Up Loop Entrance Driveway and Bus Loop/Staff Parking Lot Driveway

	Implementation Time-Frame	Near-Term
	Estimated Project Cost	Less than $10,000
	Right-of Way Needed?	No
	Drainage or Utility Impact?	Unknown
	Responsible Agency	Brevard County Public Schools

Project 7: Southwest Middle School - Install raised crosswalks or high-visibility crosswalk markings

Location	Southwest Middle School Driveways
Type	Crossing
Issue	Crosswalk markings across driveways are faded.
Recommendation	Install raised crosswalks or re-stripe high visibility crosswalk markings and upgrade pedestrian ramps to make them ADA compliant.

Crosswalk Markings at Southwest Middle School Driveways

	Implementation Time-Frame	Near-Term
	Estimated Project Cost	$15,000 to $20,000
	Right-of Way Needed?	No
	Drainage or Utility Impact?	No
	Responsible Agency	Brevard County Public Schools

Crosswalks Across Driveways at Southwest Middle School

Project 8: Assess all-pedestrian phase extension for more crossing time

Location	**Jupiter Boulevard and Eldron Boulevard Intersection**
Type	**Operational Study (Signal)**
Issue	Students are crossing the intersection of Jupiter Boulevard and Eldron Boulevard diagonally.
Recommendation	Conduct an operational study to assess if the existing all-pedestrian phase can be extended to allow more crossing time. The extended all-pedestrian phase can be implemented before school begins in the morning and after school releases in the afternoon. The extended all-pedestrian phase could coincide with the posted school zone times.

Intersection of Jupiter Bouelvard and Eldron Boulevard

	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**Labor for the signal tech to update the signal timings**
	Right-of Way Needed?	**No**
	Drainage or Utility Impact?	**No**
	Responsible Agency	**City of Palm Bay**

Project 9: Install high-visibility crosswalk markings

Location	**Jupiter Boulevard and Eldron Boulevard Intersection**
Type	**Crossing**
Issue	The crosswalk markings on all four legs of the intersection are faded.
Recommendation	Restripe crosswalks to be high-visibility crosswalks and upgrade pedestrian curb ramps to be ADA compliant.

Faded Crosswalks at the Intersection of Jupiter Boulevard and Eldron Boulevard

	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**$15,000 to $20,000**
	Right-of Way Needed?	**No**
	Drainage or Utility Impact?	**No**
	Responsible Agency	**City of Palm Bay**

Project 10: Add crossing guard

Location	**Jupiter Boulevard and Eldron Boulevard Intersection**
Type	**Crossing**
Issue	There is only one crossing guard at an intersection with heavy student traffic during school peaks.
Recommendation	Add a second crossing guard (previously there were two crossing guards, but currently there is only one).

Crossing Guard at the Intersection of Jupiter Boulevard and Eldon Boulevard

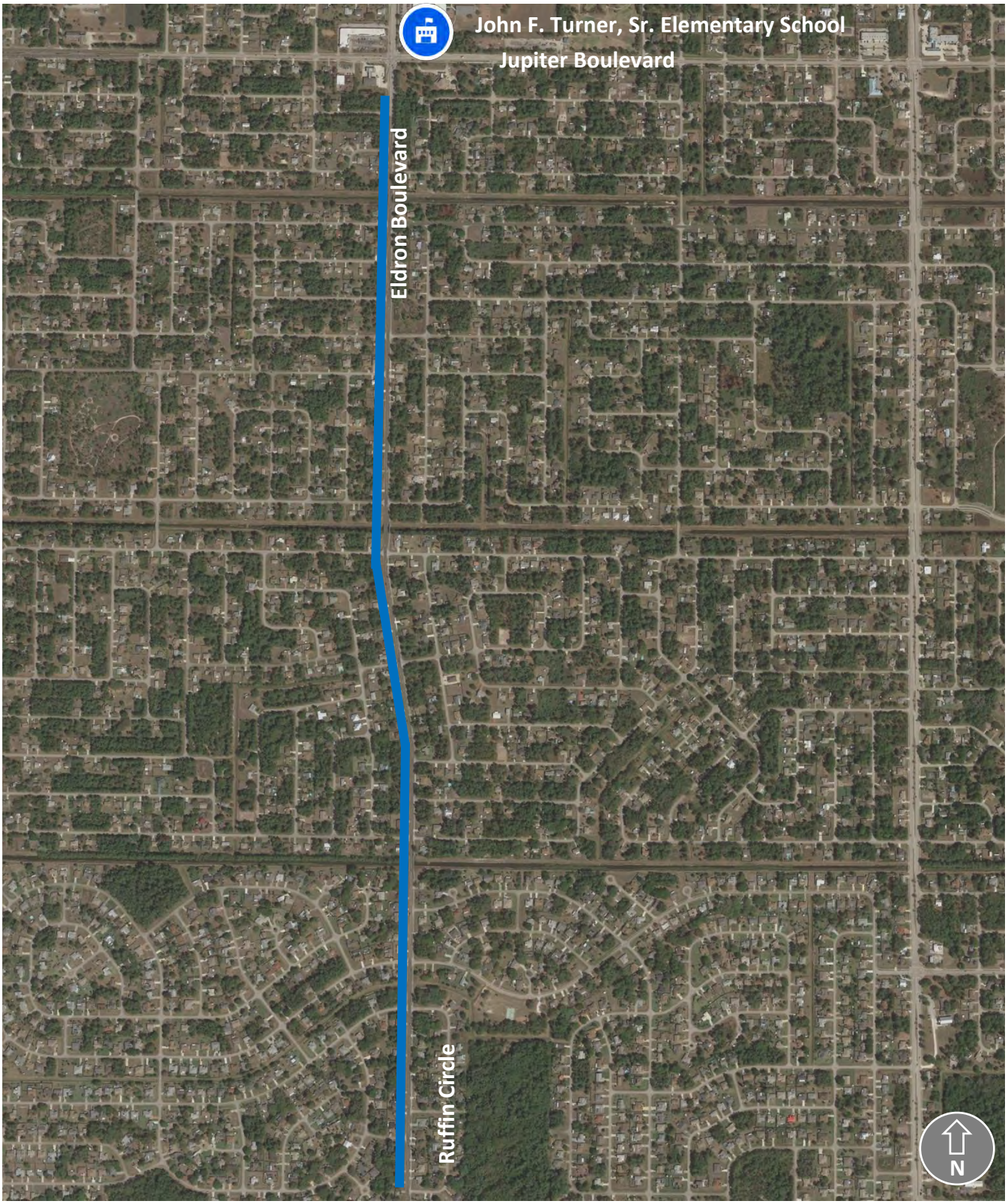
	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**Based on current School Board/County costs**
	Right-of Way Needed?	**No**
	Drainage or Utility Impact?	**No**
	Responsible Agency	**Brevard County Public Schools/City of Palm Bay**

Project 11: Build a 5 to 6 foot sidewalk

Location	**Eldron Boulevard from Ruffin Circle to just South of Jupiter Boulevard**
Type	**Sidewalk**
Issue	There is no sidewalk on the west side of the road on Eldron Boulevard from Ruffin Circle to south of Jupiter Boulevard.
Recommendation	Build a 5 to 6 foot wide sidewalk path on the west side of the road.

Sidewalk Gap Begins on Eldron Boulevard South of Jupiter Boulevard

	Implementation Time-Frame	**Long-Term**
	Estimated Project Cost	**$535,000 to $625,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Palm Bay**



Sidewalk on the West Side of Eldron Boulevard in Blue

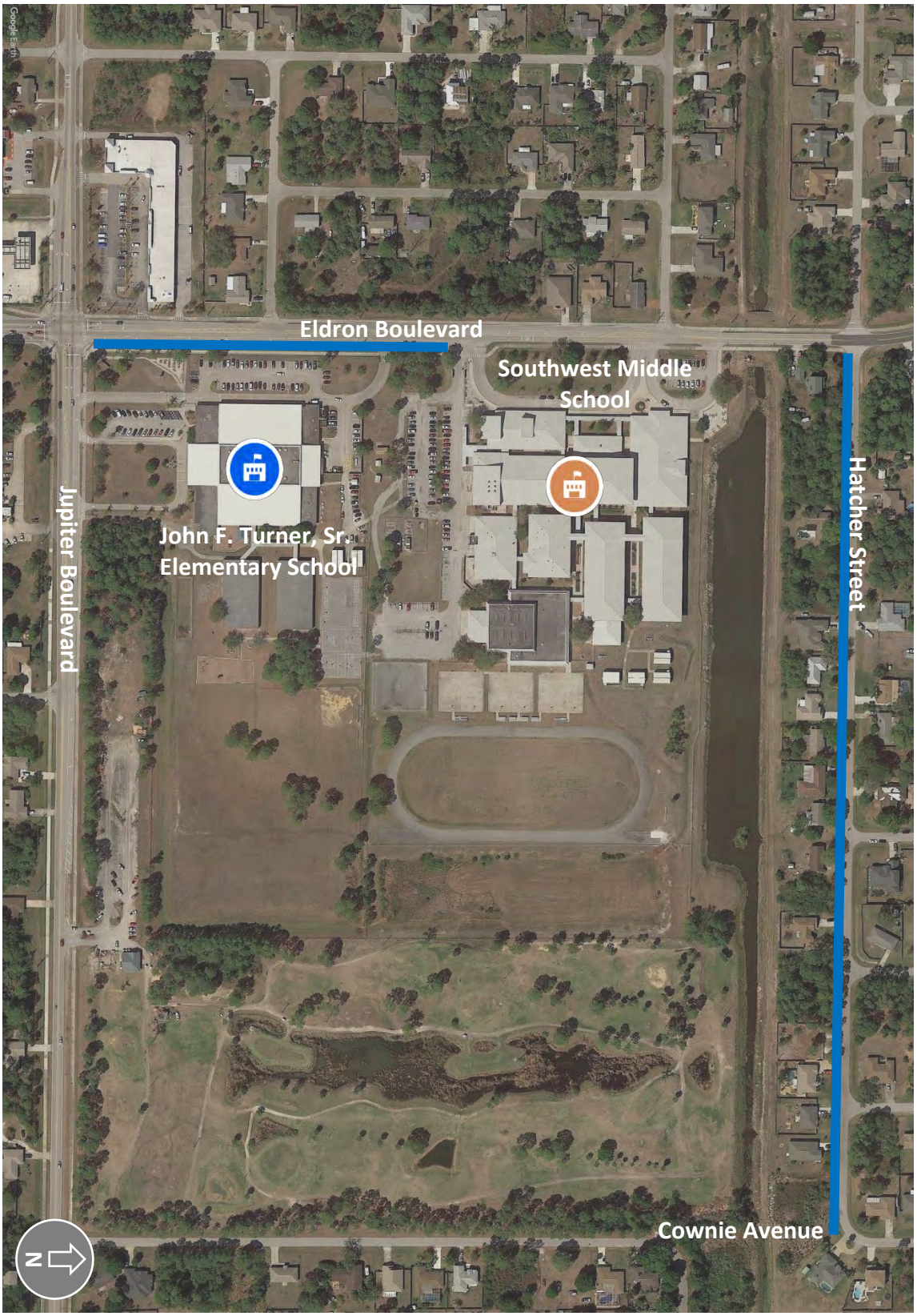
Project 12: Install ‘No Parking Any Time’ signage

Location	Eldron Boulevard from Jupiter Boulevard to Hatcher Street and Hatcher Street from Eldron Boulevard to Cownie Avenue
Type	Sign/Signal
Issue	Vehicles are parking on the side of Eldron Boulevard on the grass.
Recommendation	Install 'No Parking Any Time' signs on both sides of the road.

Grass Area on the East Side of Eldron Boulevard

‘No Parking Any Time’ sign

	Implementation Time-Frame	Near-Term
	Estimated Project Cost	$90,000 to $105,000
	Right-of Way Needed?	No
	Drainage or Utility Impact?	No
	Responsible Agency	City of Palm Bay



Grass Area on the East Side of Eldron Boulevard

Project 13: Install high-visibility crosswalk markings and construct rectangular rapid flashing beacon at mid-block crossing

Location	**Mid-Block Crosswalk across Eldron Boulevard just North of Buzby Street**
Type	**Crossing**
Issue	Crosswalk markings are faded at the intersection of Eldron Boulevard and north of Buzby Street.
Recommendation	Restripe crosswalks to be high-visibility crosswalks and upgrade pedestrian curb ramps to be ADA compliant. Construct a RRFB at the mid-block crossing.

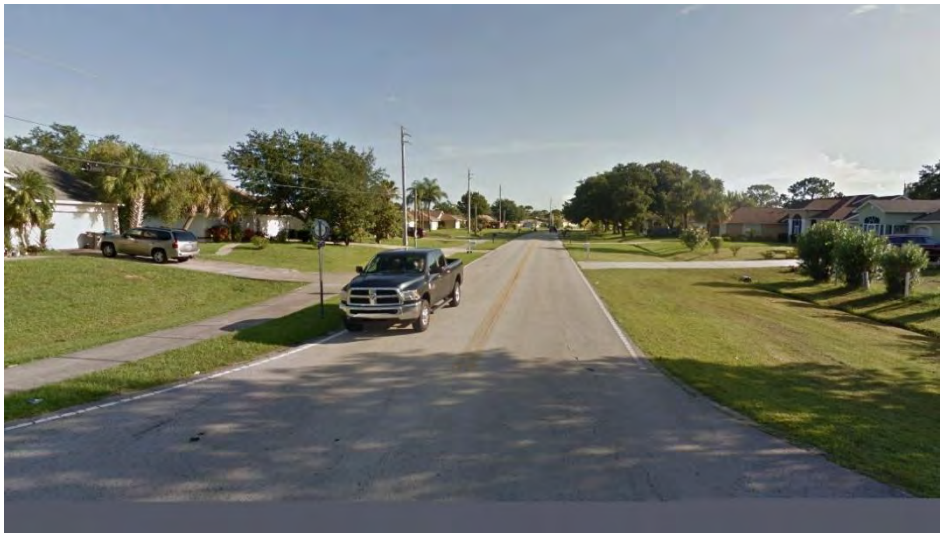
Crosswalk Across Eldron Boulevard at Buzby Street

Typical RRFB Sign

	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**$30,000 to $35,000**
	Right-of Way Needed?	**No**
	Drainage or Utility Impact?	**No**
	Responsible Agency	**City of Palm Bay**

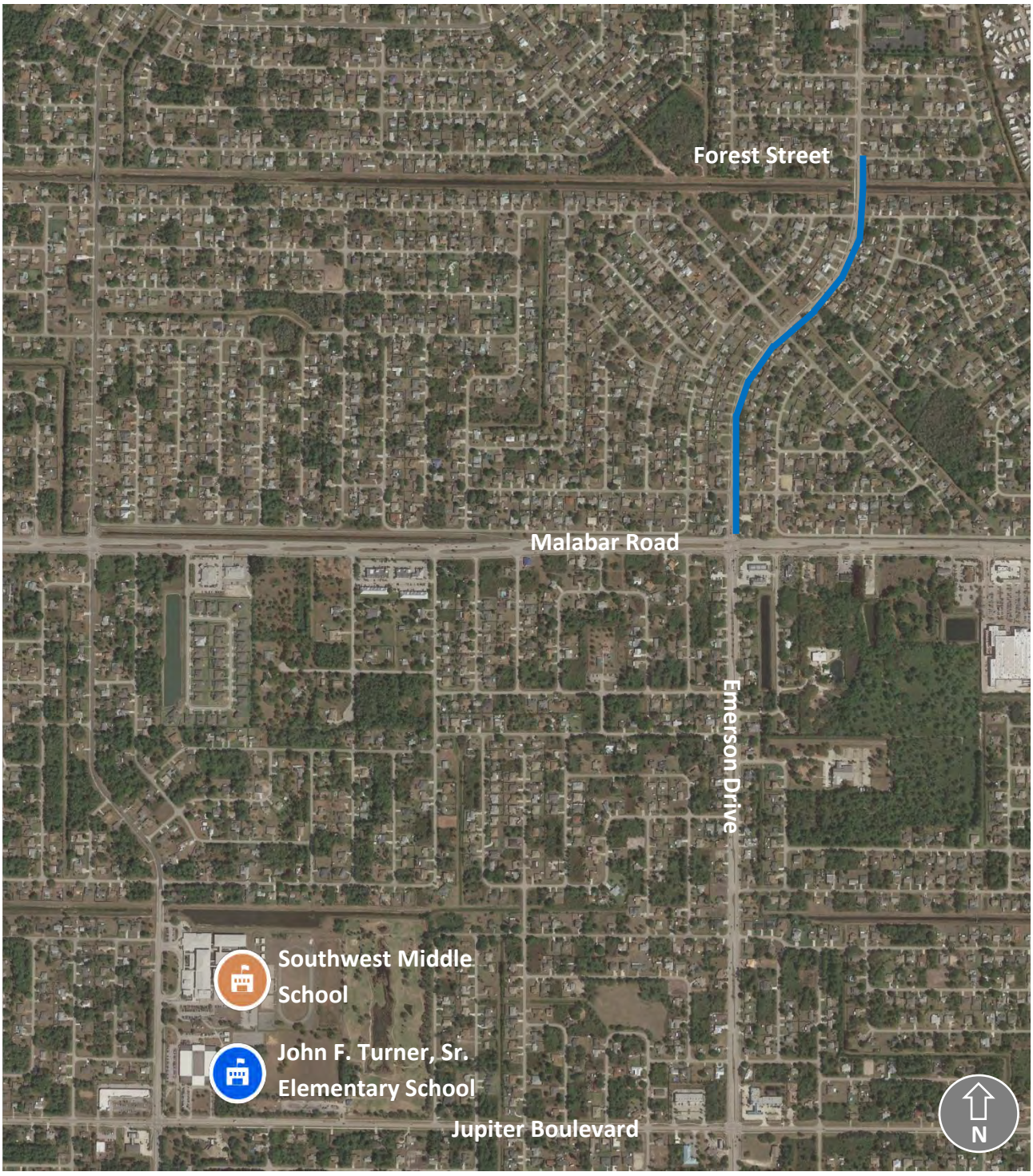
Project 14: Build an 8 to 10 foot wide sidewalk/shared use path

Location	Emerson Drive from Malabar Road to Forest Street
Type	Sidewalk
Issue	There is no sidewalk on the east side of Emerson Drive from Malabar Road to Forest Street is narrow.
Recommendation	Build an 8 to 10 foot wide sidewalk/shared use path on the east side of the road.



Emerson Drive Facing North

	Implementation Time-Frame	Long-Term
	Estimated Project Cost	$305,000 to $355,000
	Right-of Way Needed?	Unknown
	Drainage or Utility Impact?	Unknown
	Responsible Agency	City of Palm Bay

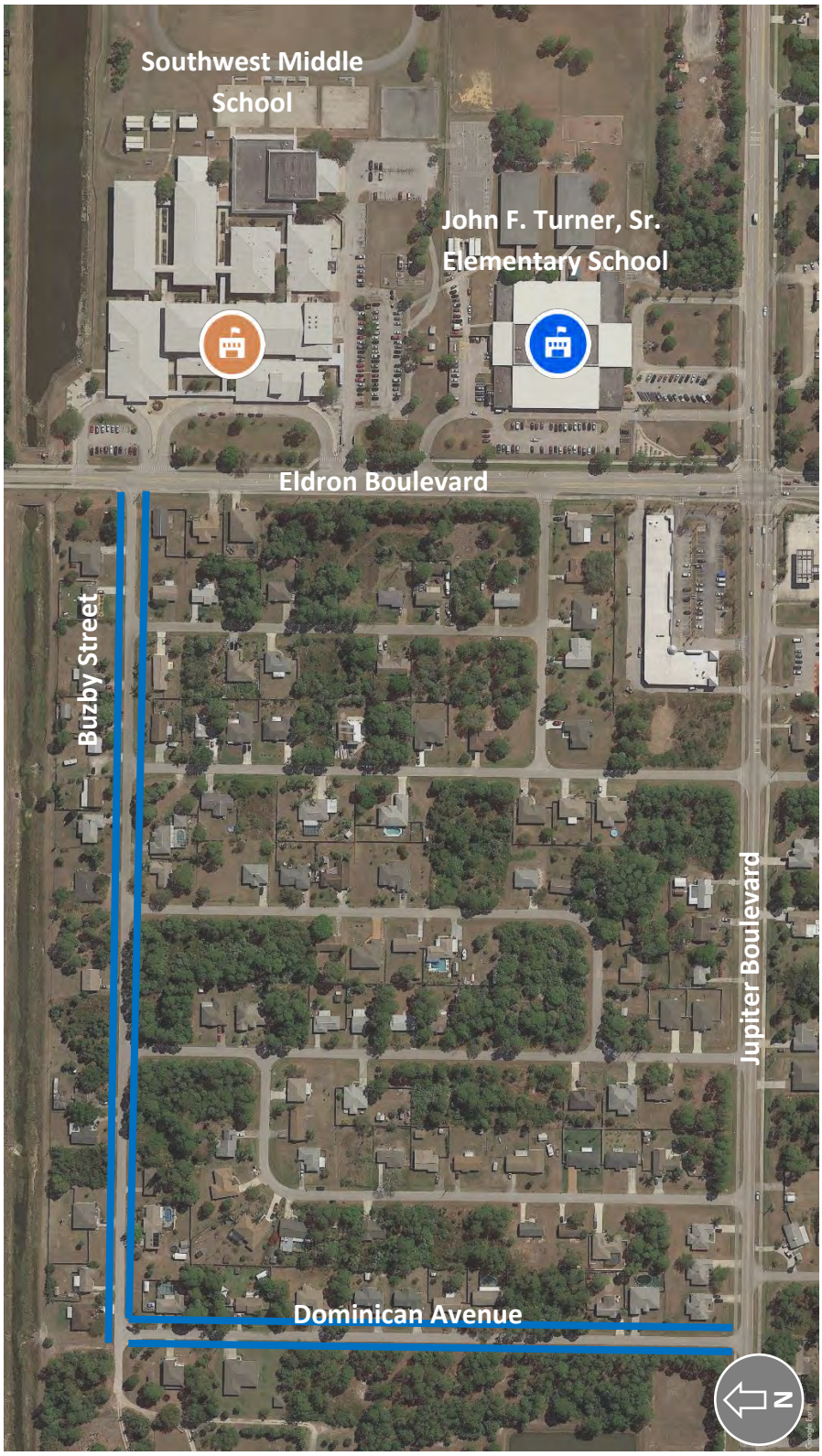

Forest Street
Malabar Road
Emerson Drive
Southwest Middle School
John F. Turner, Sr. Elementary School
Jupiter Boulevard
N

Project 15: Build 5 to 6 foot sidewalks

Location	**Buzby Street/Dominican Avenue from Eldron Boulevard to Jupiter Boulevard**
Type	**Sidewalk**
Issue	There are no sidewalks on either side of Buzby Street/Dominican Avenue from Eldron Boulevard to Jupiter Boulevard.
Recommendation	Build 5 to 6 foot wide sidewalks on both sides of the road.

Buzby Street Facing North

	Implementation Time-Frame	**Long-Term**
	Estimated Project Cost	**$380,000 to $445,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Palm Bay**



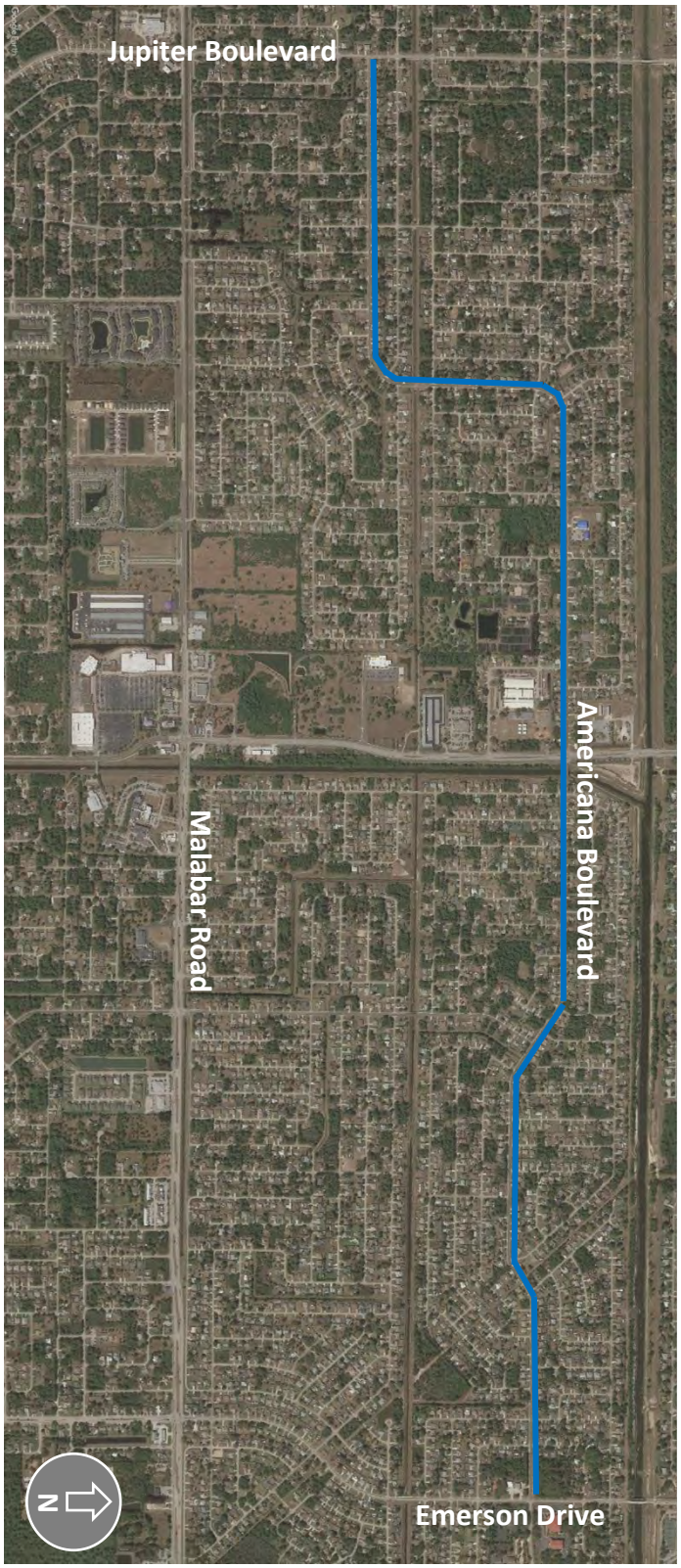
Sidewalk on Both Sides of Buzby Street/Dominican Avenue from Eldron Boulevard to Jupiter Boulevard in Blue

Project 16: Build a 5 to 6 foot wide sidewalk

Location	Americana Boulevard from Jupiter Boulevard to Emerson Drive
Type	Sidewalk
Issue	There is no sidewalk on the north side of Americana Boulevard from Jupiter Boulevard to Emerson Drive.
Recommendation	Build a 5 to 6 foot wide sidewalk on the north side of the road.

Americana Boulevard at Emerson Drive Facing North

	Implementation Time-Frame	Long-Term
	Estimated Project Cost	$1,145,000 to $1,335,000
	Right-of Way Needed?	Unknown
	Drainage or Utility Impact?	Unknown
	Responsible Agency	City of Palm Bay



Sidewalk on the North Side of Americana Boulevard in Blue

Project 17: Add a 4 to 5 foot wide advisory shoulder

Location	**Degroodt Road from Gamewell Road to Jupiter Boulevard**
Type	**Sidewalk**
Issue	There is no sidewalk on Degroodt Road from Gamewell Road to Jupiter Boulevard.
Recommendation	Build an 8 to 10 foot wide sidewalk/shared use path on the west side of the road.

Degroodt Road Facing North

	Implementation Time-Frame	**Long-Term**
	Estimated Project Cost	**$1,595,000 to $1,860,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Palm Bay**

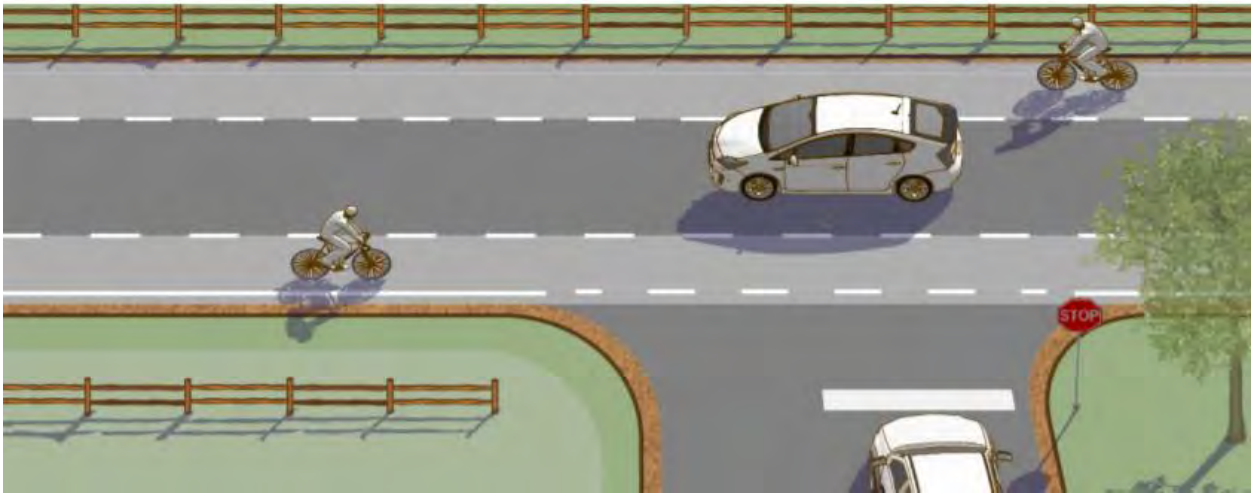
Degroodt Road from Gamewell Road to Jupiter Boulevard in Blue

Project 18: Add a 4 to 5 foot wide advisory shoulder

Location	Brickell Street/Bloke Avenue from Caballero Avenue to Jaslo Street
Type	Sidewalk
Issue	There are no walking paths on Brickell Street/Bloke Avenue from Caballero Avenue to Jaslo Street.
Recommendation	Add a 4 to 5 foot wide advisory shoulder on both sides of the roadway.

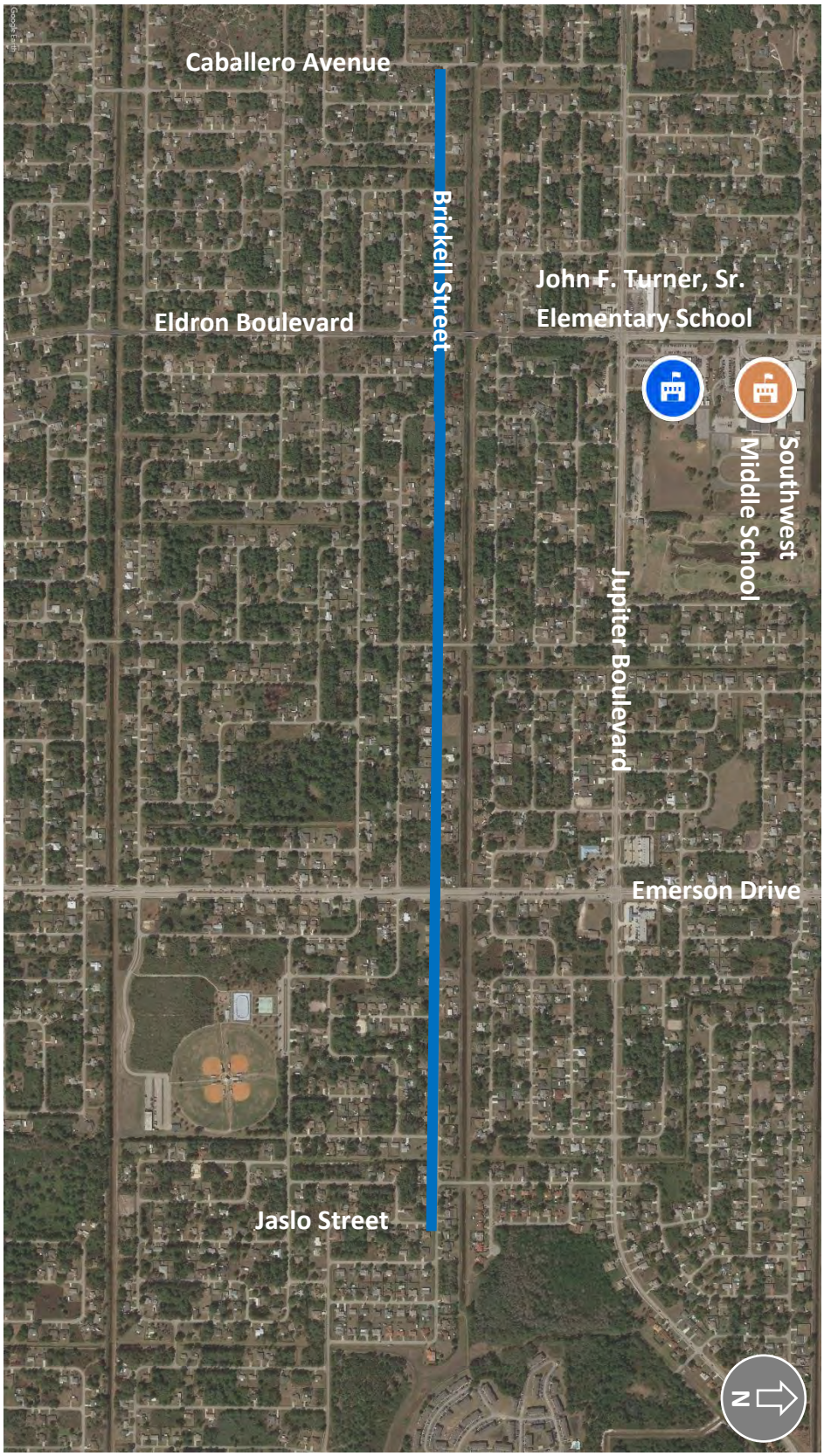
Brickell Street/Bloke Avenue Facing North from Caballero Avenue

	Implementation Time-Frame	Near-Term
	Estimated Project Cost	$70,000 to $85,000
	Right-of Way Needed?	No
	Drainage or Utility Impact?	No
	Responsible Agency	City of Palm Bay



Advisory Shoulder Illustration from FHWA Small Town and Rural Multimodal Networks Report

Advisory Shoulder Example from FHWA Small Town and Rural Multimodal Networks Report



Brickell Street/Bloke Avenue from Caballero Avenue to Jaslo Street in Blue

Project 19: Assess feasibility to add trails along canals

Location	Canals
Type	Feasibility Study (Trail)
Issue	Area along canals can be used to access destinations in the study area.
Recommendation	Conduct a feasibility study to add a paved trail along the canals.

Canals Within the Study Area

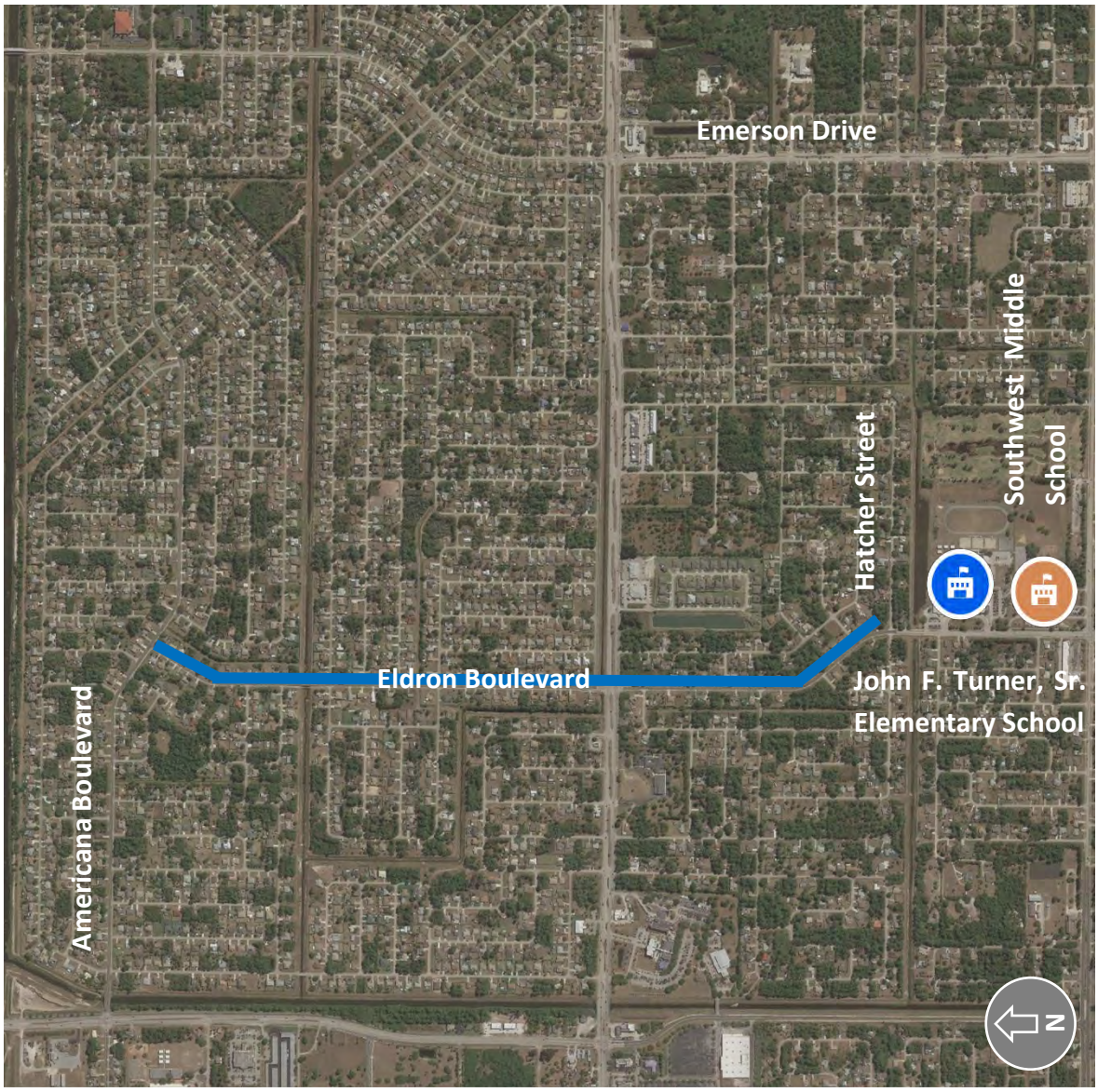
	Implementation Time-Frame	Near-Term
	Estimated Project Cost	Further Study Required
	Right-of Way Needed?	Unknown
	Drainage or Utility Impact?	Unknown
	Responsible Agency	Brevard County/City of Palm Bay

Project 20: Build a 5 to 6 foot wide sidewalk

Location	**Eldron Boulevard from Hatcher Street to Americana Boulevard**
Type	**Sidewalk**
Issue	There is no sidewalk on the east side of Eldron Boulevard from Hatcher Street to Americana Boulevard.
Recommendation	Build a 5 to 6 foot wide sidewalk on the east side of the road.

Eldron Boulevard North of Hatcher Street Facing North

	Implementation Time-Frame	**Long-Term**
	Estimated Project Cost	**$415,000 to $485,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Palm Bay**



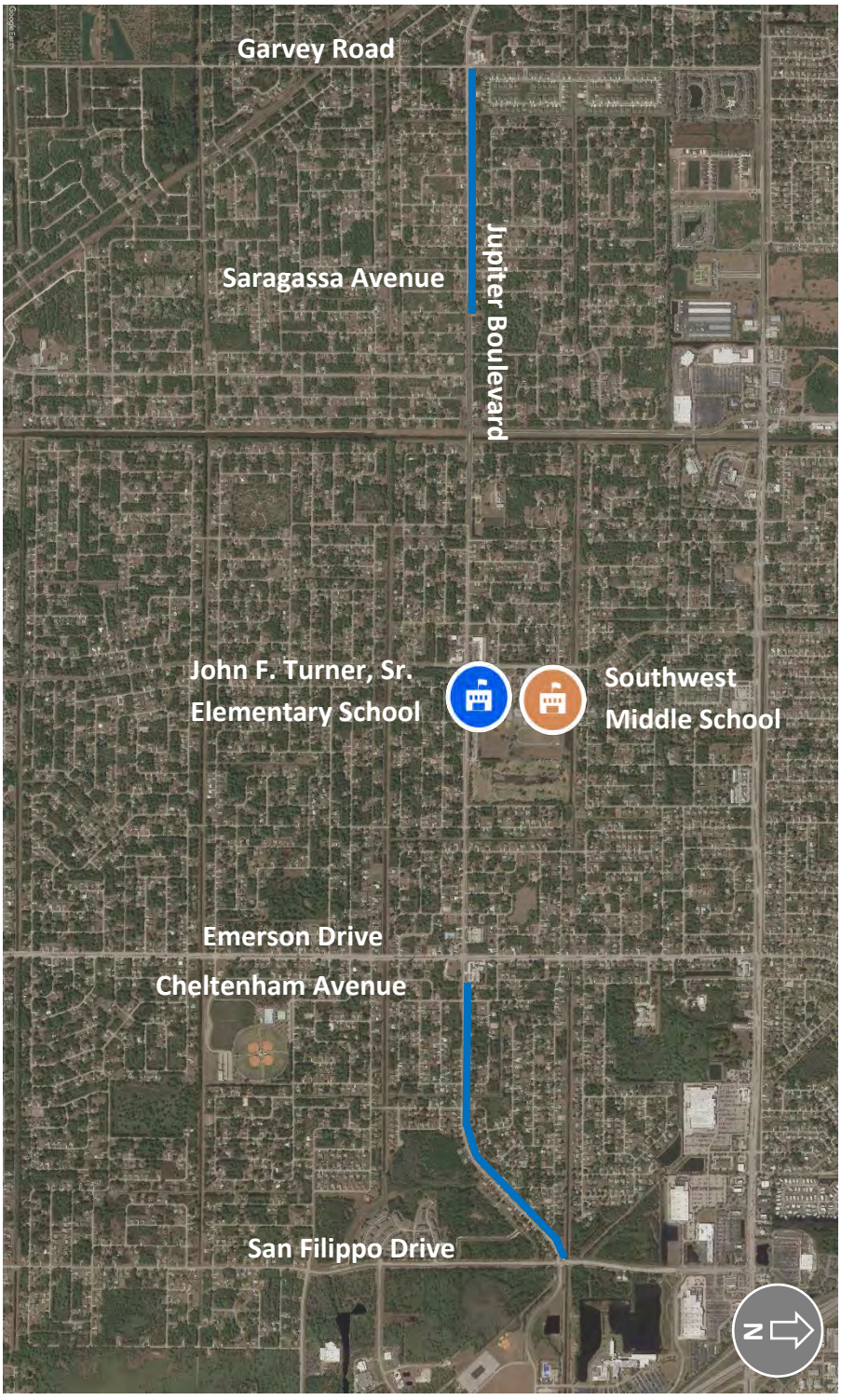
Sidewalk on the East Side of Eldron Boulevard in Blue

Project 21: Build 5 to 6 foot wide sidewalks to fill gaps

Location	**Jupiter Boulevard from Garvey Road to just East of Saragassa Avenue and from just West of Cheltenham Avenue to San Filippo Drive**
Type	**Sidewalk**
Issue	There are sidewalk gaps on Jupiter Boulevard from Garvey Road to just East of Saragassa Avenue and from just West of Cheltenham Avenue to San Filippo Drive.
Recommendation	Build 5 to 6 foot wide sidewalks to fill the gaps on north side of the road.

Jupiter Boulevard East of Cheltenham Avenue Facing West

	Implementation Time-Frame	**Long-Term**
	Estimated Project Cost	**$480,000 to $560,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Palm Bay**



Sidewalk on North Side of Jupiter Boulevard from Garvey Road to just East of Saragassa Avenue and from just West of Cheltenham Avenue to San Filippo Drive Road in Blue

Project 22: Install high-visibility crosswalk markings

Location	**Signalized Intersections within the Study Area**
Type	**Crossing**
Issue	Crosswalk markings at signalized intersections within the Study Area are faded.
Recommendation	Restripe crosswalks to be high-visibility crosswalks and upgrade pedestrian curb ramps to be ADA compliant.

Intersection of Jupiter Boulevard and Eldron Boulevard

	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**$125,000 to $145,000**
	Right-of Way Needed?	**No**
	Drainage or Utility Impact?	**No**
	Responsible Agency	**City of Palm Bay**

Project 23: Conduct a feasibility study to add streetlights

Location	School Driveways along Eldron Boulevard
Type	Feasibility Study (Streetlights)
Issue	Additional lighting will assist parents and students leaving late evening and night-time activities.
Recommendation	Conduct a feasibility study to add additional streetlights at the school driveways along Eldron Boulevard.

School Driveways along Eldron Boulevard

	Implementation Time-Frame	Near-Term
	Estimated Project Cost	Further Study Required
	Right-of Way Needed?	No
	Drainage or Utility Impact?	No
	Responsible Agency	City of Palm Bay

Prepared For:

SPACE COAST TPO

2725 Judge Fran Jamieson Way,
Bldg. B, Room 105,
Melbourne, FL 32940

Prepared By:

KITTELSON & ASSOCIATES

225 E Robinson Street,
Suite 355,
Orlando, FL 32801