SCHOOL ROUTES ANALYSIS

ODYSSEY CHARTER SCHOOL

ASSESSMENT & IMPLEMENTATION REPORT

JULY 2020

SPACE COAST TPO

KITTELSON & ASSOCIATES

School Routes Analysis

Odyssey Charter School

Palm Bay, FL

Assessment & Implementation Report

July 2020

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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 Odyssey Charter School located at 1755 Eldron Boulevard, 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, Public Schools, Odyssey Charter School, 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 Odyssey Charter School are summarized in **Table 1**.

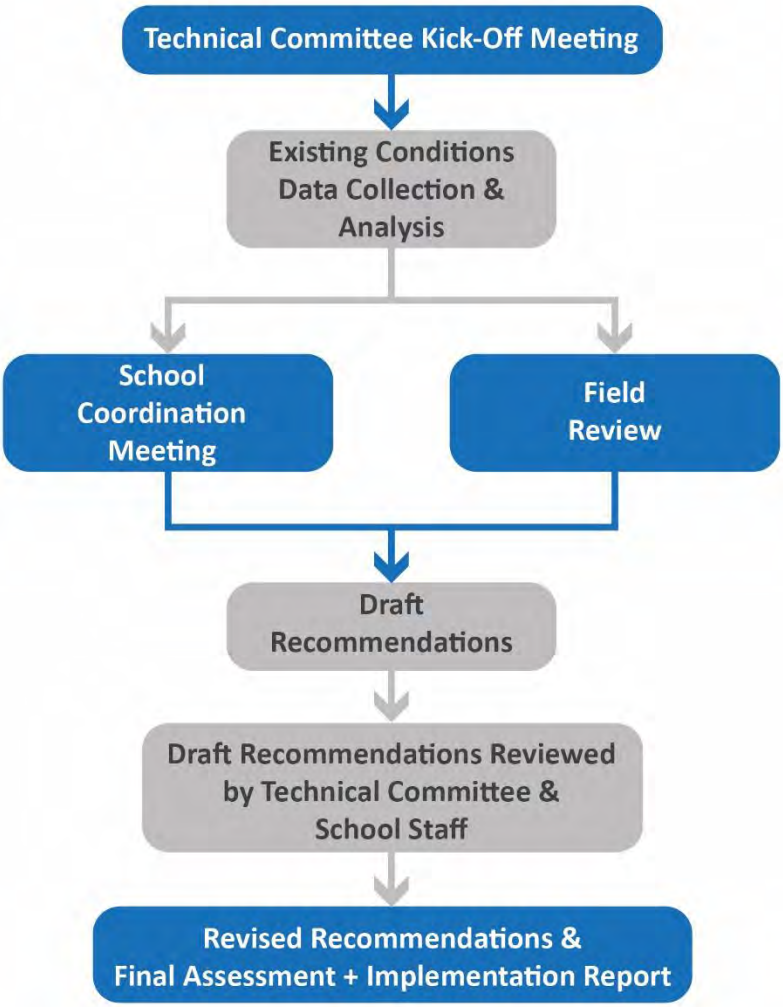


Figure 1: Study Process

Table 1: Recommendations Summary

School Campus Recommendations					
No.	**Location**	**Recommendation**	**Type**	**Time-Frame**	**Cost Estimate**
1	Crosswalks on School Property	Re-stripe crosswalks as high-visibility crosswalks and add ADA compliant pedestrian ramps.	Crossing	Near-Term	$10,000 to $15,000
2	Proposed New Staff Parking Lot Driveway on Raleigh Road	Add new pedestrian gate and 5 foot to 6 foot sidewalk to the school entrance.	Sidewalk	Near-Term	$45,000 to $50,000
3	Northeast Corner of Eldron Boulevard and the School Entrance	Trim hedges in front of the school sign to increase sight distance for vehicles turning onto Eldron Boulevard	Maintenance	Maintenance	Routine Maintenance
Study Area Recommendations					
No.	**Location**	**Recommendation**	**Type**	**Time-Frame**	**Cost Estimate**
4	Shrine Circle/Adview Road from just West of Gaskins Place to Raleigh Road	Build a 5 foot to 6 foot wide sidewalk on the south/east side.	Sidewalk	Long-Term	$160,000 to $190,000
5	Walden Boulevard from Adview Road to Emerson Drive	Build a 5 foot to 6 foot wide sidewalk on the south side.	Sidewalk	Long-Term	$55,000 to $65,000
6	Eldron Boulevard from Raleigh Road to Ruffin Circle	Build a 5 foot to 6 foot wide sidewalk on the west side.	Sidewalk	Long-Term	$185,000 to $215,000

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
7	Cogan Drive/Eldron Boulevard from Stonebriar Drive to Raleigh Road	Widen existing sidewalk to 10 foot to 12 foot shared use path on the east side.	Sidewalk	Long-Term	$730,000 to $850,000
8	Eldron Boulevard and Bayside Lakes Boulevard Intersection	Install high visibility crosswalks and upgrade pedestrian ramps to make them ADA compliant.	Crossing	Near-Term	$15,000 to $20,000
9	Eldron Boulevard and Raleigh Road Intersection	Conduct an operational/warrant study to review changing the two-way stop control to an all way stop control or signal/roundabout.	Feasibility Study (Intersection Control)	Near-Term	Further Study Required
10	Raleigh Road from Eldron Boulevard to Kansas Road	Install 'No Parking' signs on both sides of the roadway and increase enforcement.	Sign/Signal	Near-Term	$15,000 to $20,000
11	Abello Road from Hammock Road to Elmhurst Circle	Build a 5 foot to 6 foot wide sidewalk on south/east side of Abello Road the road.	Sidewalk	Long-Term	$275,000 to $320,000
12	Elmhurst Circle from Abello Road to Hammock Road	Build a 5 foot to 6 foot wide sidewalk on north/west side of Abello Road the road.	Sidewalk	Long-Term	$85,000 to $100,000
13	Birtle Lane/Operetta Avenue/Sauders Road from Eldron Boulevard to Eldron Boulevard	Build a 5 foot to 6 foot wide sidewalk on one side of the road.	Sidewalk	Long-Term	$240,000 to $280,000

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
14	Eldron Boulevard from just North of Bayside Lakes Shopping Center to just North of Raleigh Road	Adjust school zone speed limit to 15 MPH per guidance in the FDOT Speed Zoning Manual.	Sign/Signal	Near-Term	Further Study Required
15	Eldron Boulevard from just North of Bayside Lakes Shopping Center to Abello Road	Add traffic calming devices such as speed humps, raised crosswalks, street trees, etc.	Traffic Calming	Near-Term	Further Study Required

Assessment

This section of the report documents the existing conditions within the Odyssey Charter 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 Odyssey Charter 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.

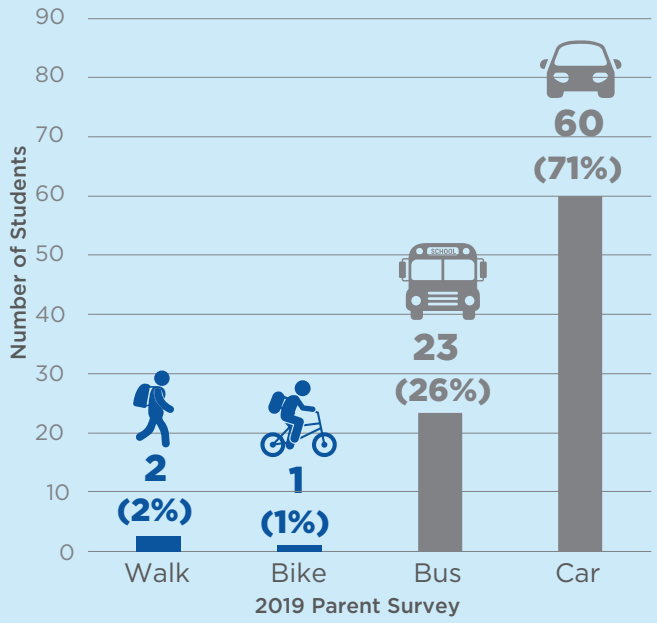
Previous and Ongoing Studies

A major construction project on Odyssey Charter School property is currently scheduled to begin in March 2020. Improvements to the school campus include:

- Sidewalks along the exterior of the school building will be widened to a minimum of seven feet.
- The western parent/bus drop-off/pick-up loop will be expanded north to increase the queue length of the loop. The loop will also include 44 new parent/staff parking spaces.
- A new 76 staff parking lot will be constructed along the southwest corner of the intersection of Raleigh Road and Kansas Road. This parking lot will be accessed by a new driveway along Raleigh Road.
- A new play field will be constructed at the northeast corner of the school property.
- A five foot public sidewalk will be constructed along the school property on Kansas Road and Shrine Circle.
- An additional classroom building will be constructed along the northwest corner of the existing school building.

The City of Palm Bay has trails planned along drainage water canals along the southern end of the study area. **Figure 2** is an info-graphic summarizing the main background information collected as part of the existing conditions analysis.

Student Travel Modes (2019)



Total Bicycle & Pedestrian Crashes within Study Area

7 Pedestrian

8 Bicycle

School Aged Bicycle & Pedestrian Crashes within Study Area

3 Pedestrian

3 Injury

2 Bicycle

1 Fatal

1 Injury

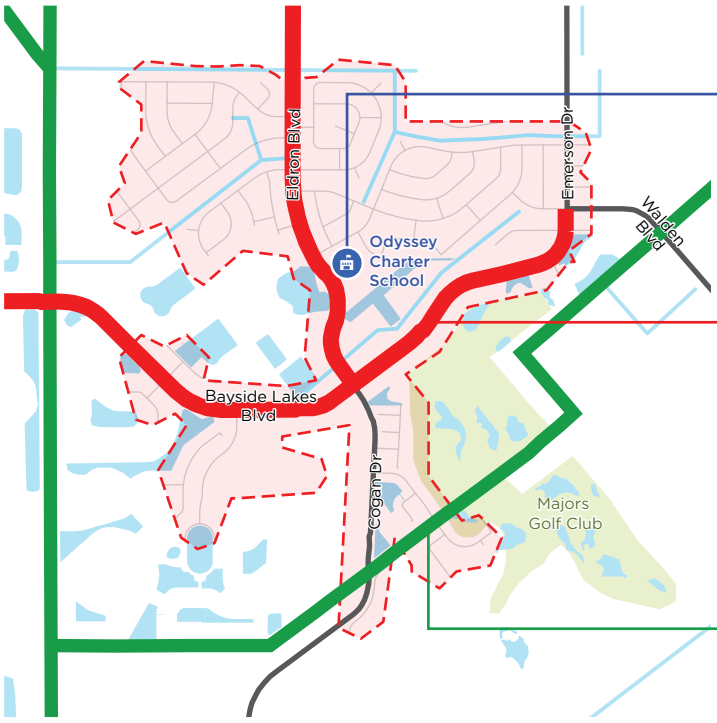
2014 to 2018 Crashes from University of Florida's Signal Four Analytics Database

Signals and Crossings within Study Area

2 Signalized Intersections

6 Unsignalized Marked Crosswalks Across Major Streets

2 Crossing Guards at
Eldron Blvd. & Raleigh Rd.
Eldron Blvd. & School Ent.



Previous & Ongoing Plans

School Campus Projects

- Sidewalks to be widened along the school driveway
- Parent/bus drop-off/pick-up loop and parking to be expanded
- New staff parking lot to be constructed
- New sidewalk will be constructed along Kansas Road and Shrine Circle

Bicycle & Pedestrian Master Plan (2019)

- Bicycle facilities prioritized along Emerson Drive and Bayside Lakes Boulevard

City of Palm Bay - Planned Trails

- Trail facilities planned along drainage water canals

Figure 2: Background Information

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School Routes Analysis

Odyssey Charter School

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.

Eldron Boulevard has sidewalks along the east side of the roadway from the northern study area boundary to Raleigh Road and on both sides of the roadway from Raleigh Road to Bayside Lakes Boulevard. Raleigh Road has sidewalks along the south side of the roadway from Eldron Boulevard to Bayside Lakes Boulevard. The neighborhoods north and west of the school are missing sidewalks.

Bicycle facilities located within the study area are along Emerson Drive from the northern study area boundary to Walden Boulevard. Currently proposed bicycle facilities were mapped using recommendations from the SCTPO Bicycle and Pedestrian Master Plan. Bicycle facilities are proposed along Eldron Boulevard from the northern study area boundary to Bayside Lakes Boulevard and along Bayside Lakes Boulevard from the western study area boundary to Walden Boulevard.

Signalized intersections and marked crosswalks across major streets were mapped using data from aerial satellite imagery. There are two signalized intersections within the study area. There are unsignalized marked crosswalks at the intersection of Eldron Boulevard and Raleigh Road and Raleigh Road and Emerson Drive. Crossing guard information was provided by the City of Palm Bay. Crossing guards are present at the intersections of Eldron Boulevard and Raleigh Road and Eldron Boulevard and the school entrance. Teacher crossing guards are present at the entrance to Odyssey Charter School and Pineapple Cove Academy along Eldron Boulevard.

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.

Odyssey Charter School

Existing Sidewalk

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

Marked Crosswalks across Major Streets

Crossing Guard Location

Teacher Crossing Guard Location

Traffic Signals within Study Area

Existing Bicycle Facilities*

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

Study Area

City of Palm Bay

** 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.*

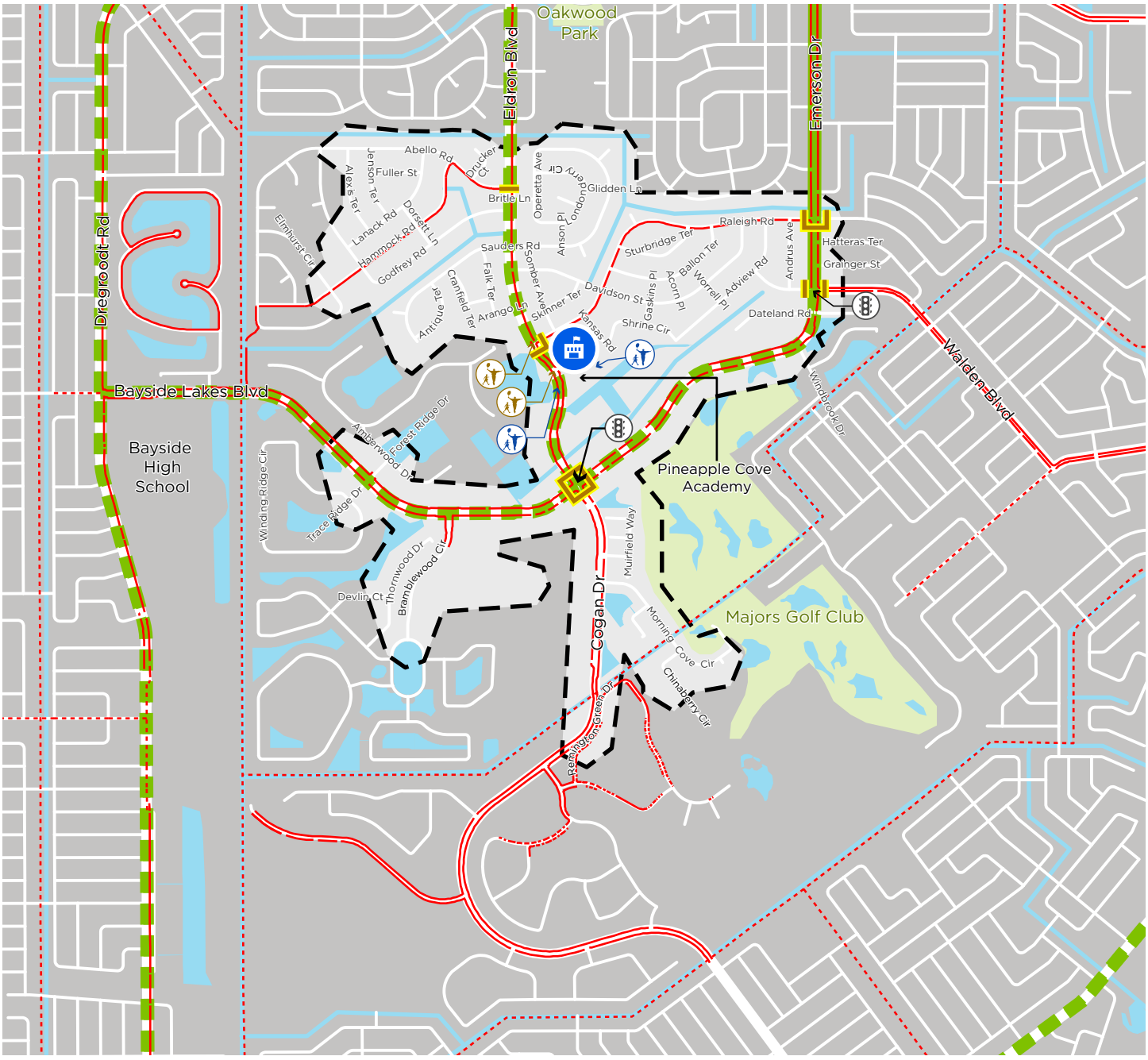
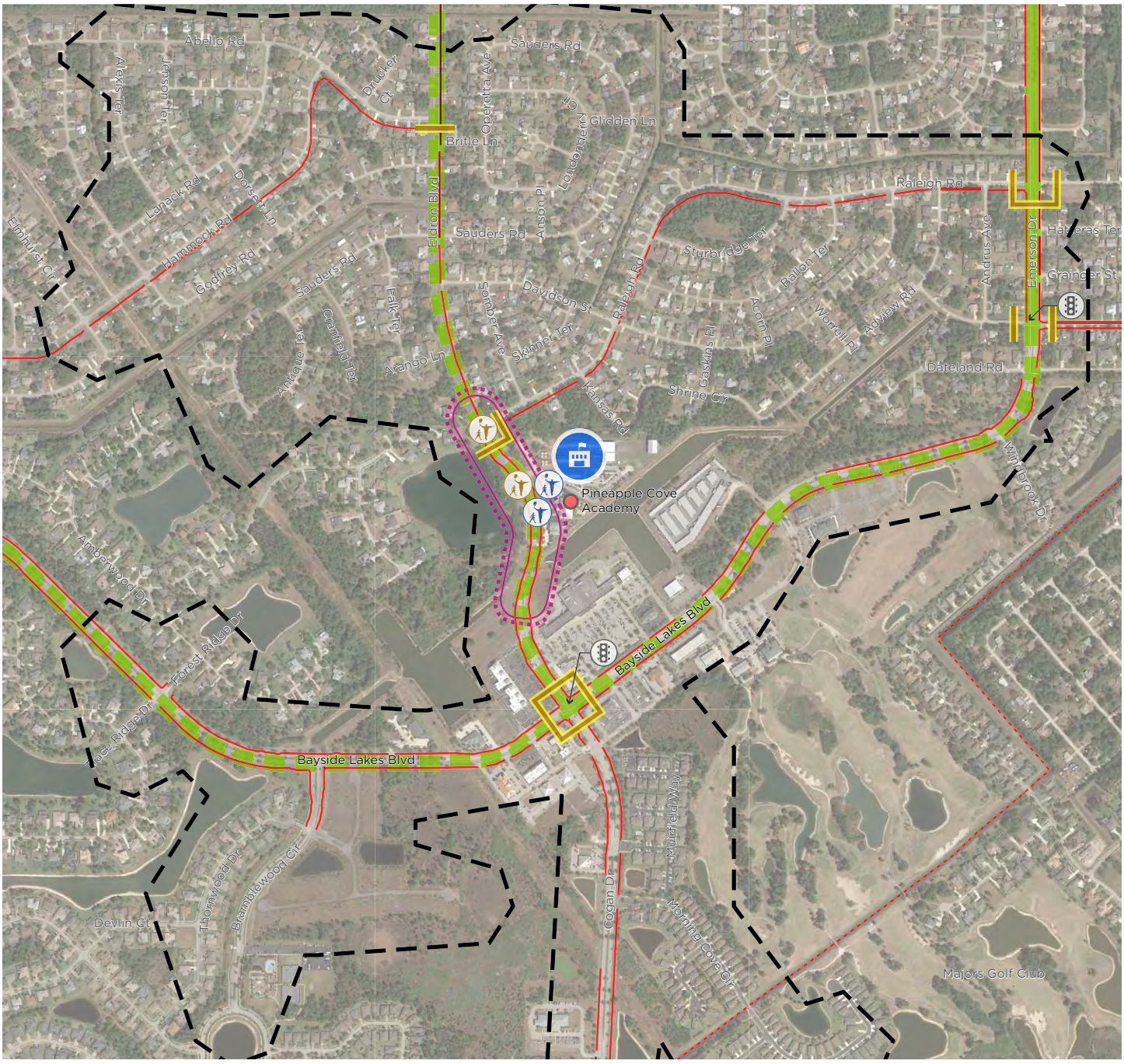


Figure 3: Existing and Planned Bicycle and Pedestrian Facilities

School Routes Analysis

Odyssey Charter School



Odyssey Charter School

Existing Sidewalk

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

Marked Crosswalks across Major Streets

Traffic Signals within Study Area

Existing Bicycle Facilities*

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

** 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.*

Crossing Guard Location

Teacher Crossing Guard Location

School Advance Warning Area

School Zone

Study Area

Feet

0 1,000 2,000

N

Figure 4: Existing Conditions: School Context Aerial Map

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School Routes Analysis

Odyssey Charter 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 along Eldron Boulevard near the school campus is 30 miles per hour (MPH). AADT information was mapped using data from SCTPO's 2018 State of the System (SOS) and FDOT.

School zone and school zone advance warning areas were mapped using data from aerial satellite imagery and field review observations. The only school zone within the study area is located along Eldron Boulevard from just North of Bayside Lakes Boulevard to just North of Raleigh Road.

Figure 5 shows the existing conditions of traffic data.

School Campus Circulation

Circulation patterns were gathered during the school coordination meeting and field review. There is one entrance to the school campus along Eldron Boulevard. This entrance serves as the ingress and egress point for parent, bus, and daycare drop-off/pick-up. The entrance is also used by pedestrians and bicyclists and has a bicycle rack at the southwest corner of the school building. There is parking located along the parent/bus drop-off/pick-up loop and a parking lot located at the entrance to the school campus.

Figure 6 shows various circulation patterns within the school campus.

Odyssey Charter 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

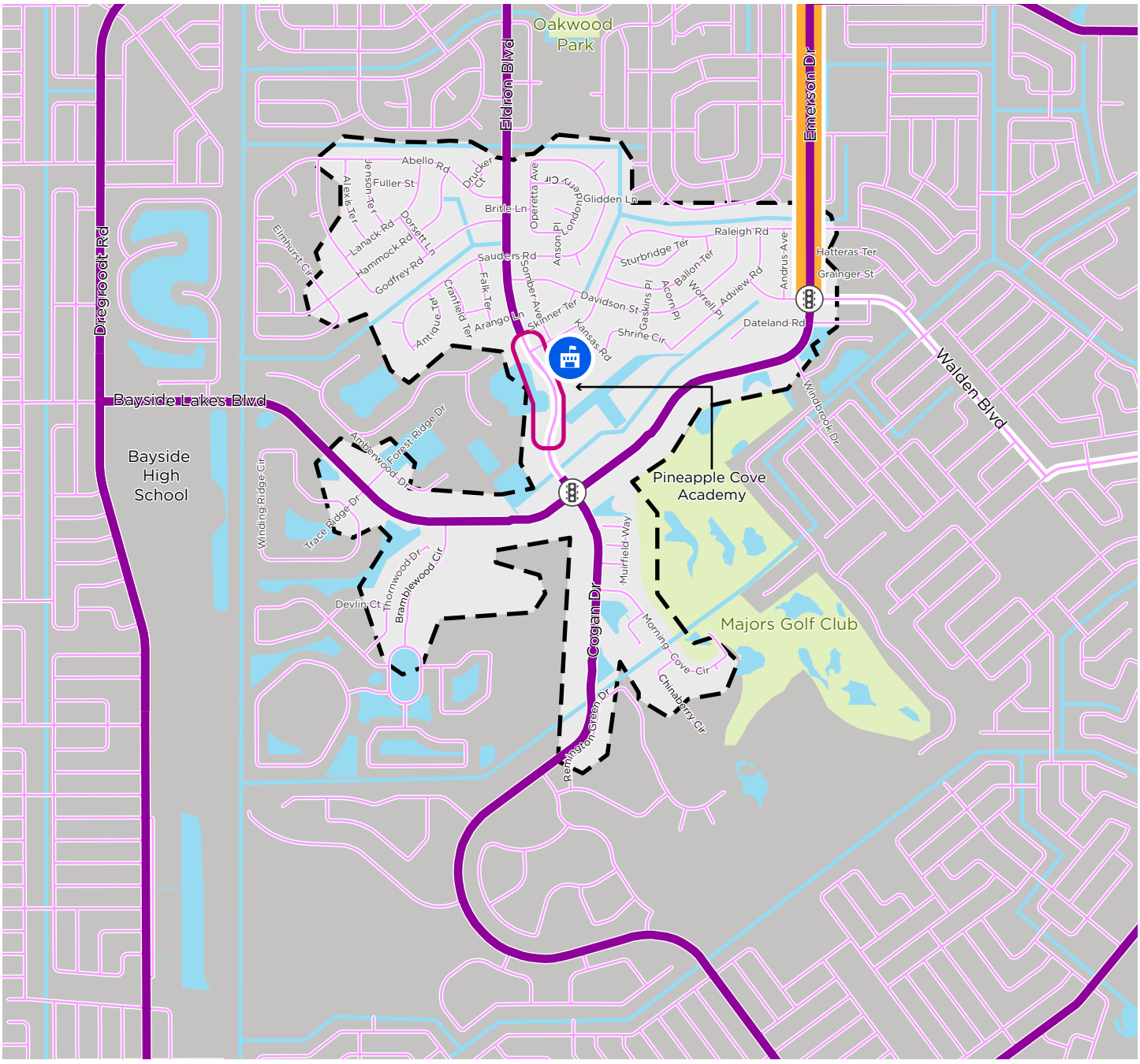
Average Annual Daily Traffic (AADT) (2018)

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



Feet

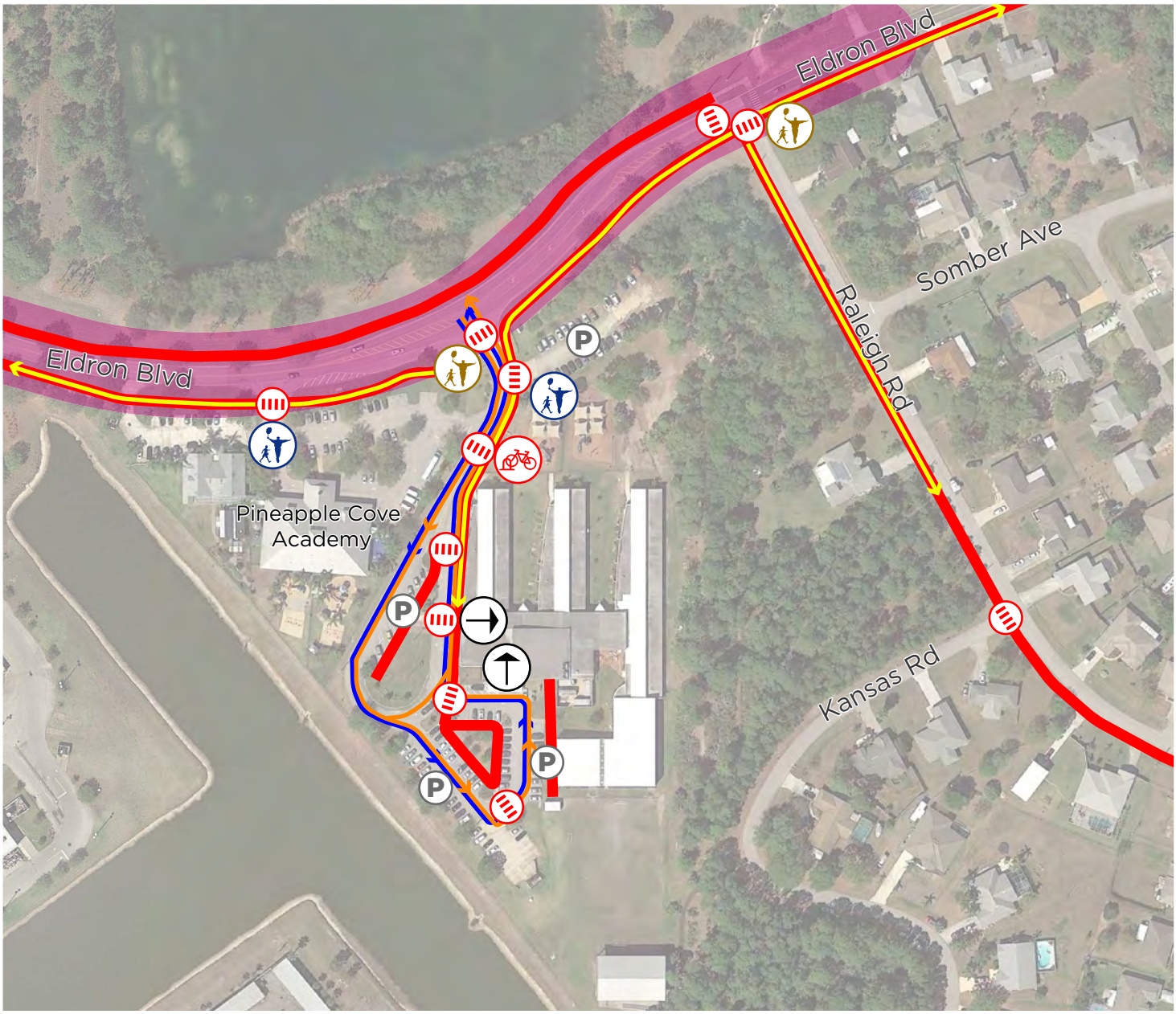
0 2,000 4,000

N

Figure 5: Existing Conditions Traffic Data

School Routes Analysis

Odyssey Charter School



Odyssey Charter School

Marked Crosswalks

School Building Entrance

Crossing Guard Location

Teacher Crossing Guard Location

Bike Parking

Car Parking

School Zone

Existing Sidewalk

Circulation Patterns

Walkers/Bikers

School Bus Loop

Parent Drop-Off/Pick-Up Loop

Feet

0 200 400

N

Figure 6: Existing Conditions: School Campus Aerial Map

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School Routes Analysis

Odyssey Charter School

School Student & Parent Survey Summary

The SCTPO conducts student and parent surveys alternating every other year 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. The latest Student Travel Mode Survey was conducted in 2019 and the latest Parent Survey was conducted in 2018. This section summarizes the results of these surveys for Odyssey Charter 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 Odyssey Charter School were surveyed asking how they traveled to and from school.

Figure 7 shows the percentage of students walking or biking to school from 2003 to 2019. **Figure 8** shows total number of students walking of biking to school from 2003 to 2019. **Figure 9** shows percentage of students walking or biking to school in 2019 in AM and PM. **Figure 10** shows total number of students walking or biking to school in 2019 in AM and PM.

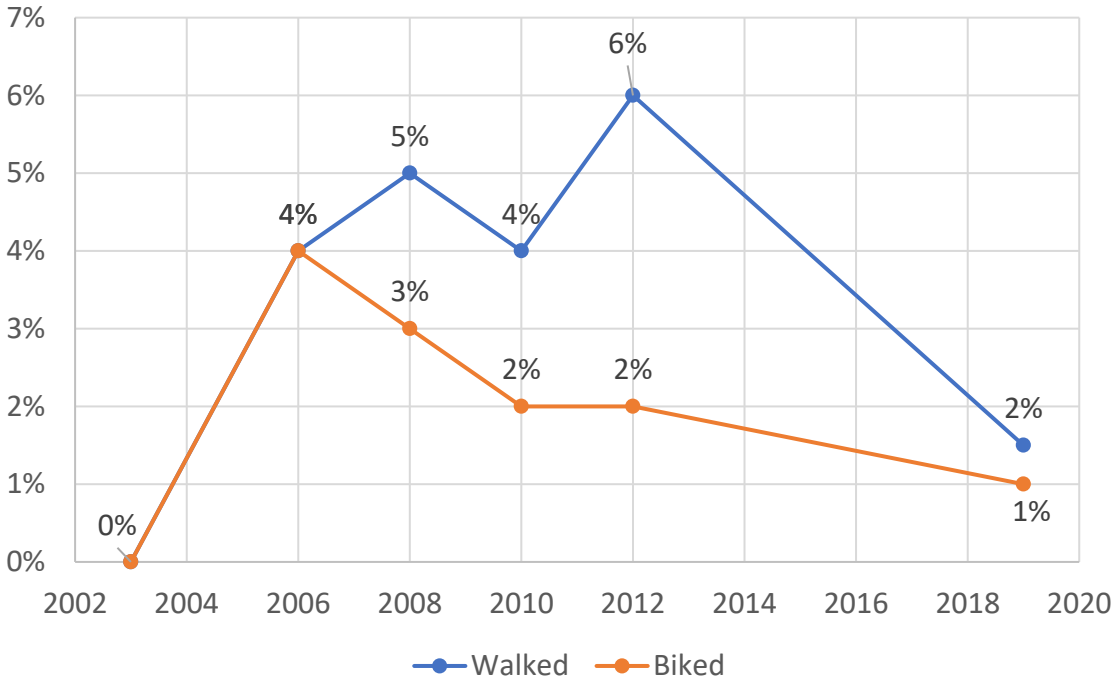


Figure 7: Percentage of Students Walking or Biking to School from 2003 to 2019

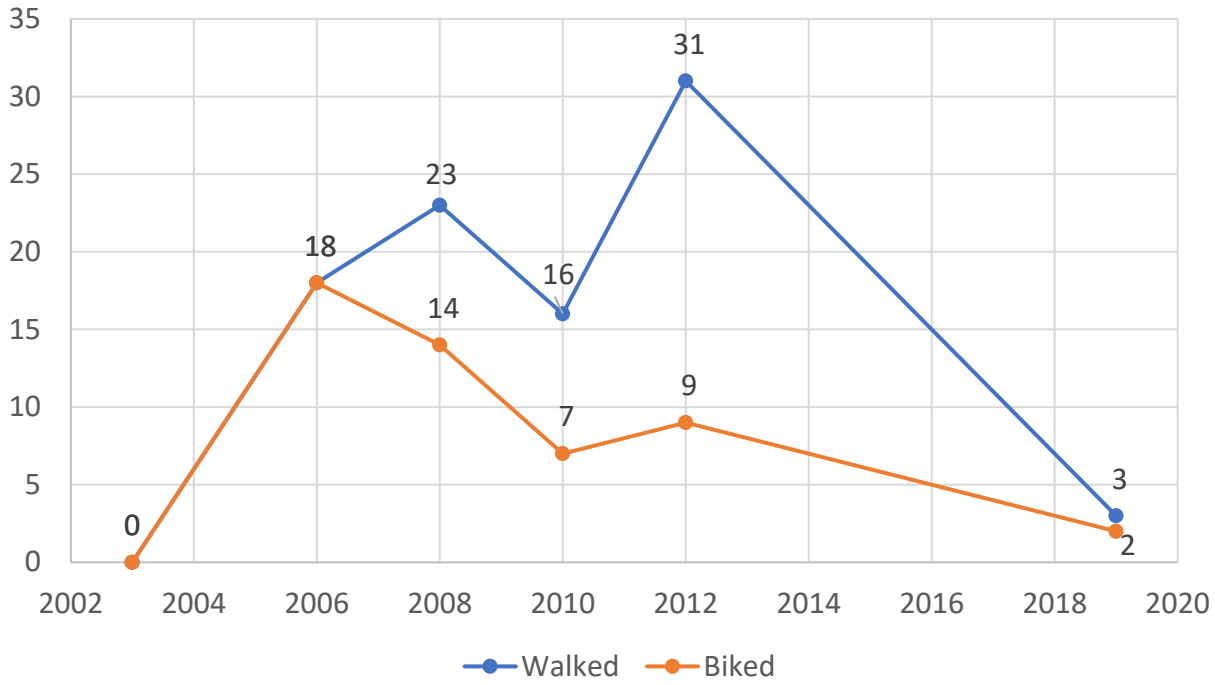


Figure 8: Total Number of Students Walking or Biking to School from 2003 to 2019

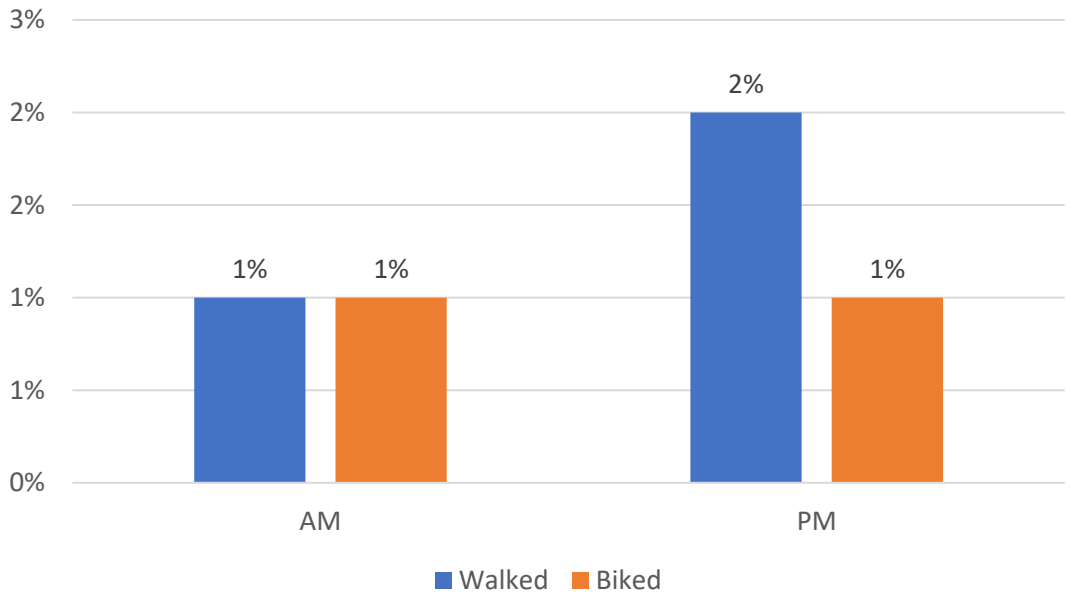


Figure 9: Percentage of Students Walking or Biking to School in 2019 in AM and PM

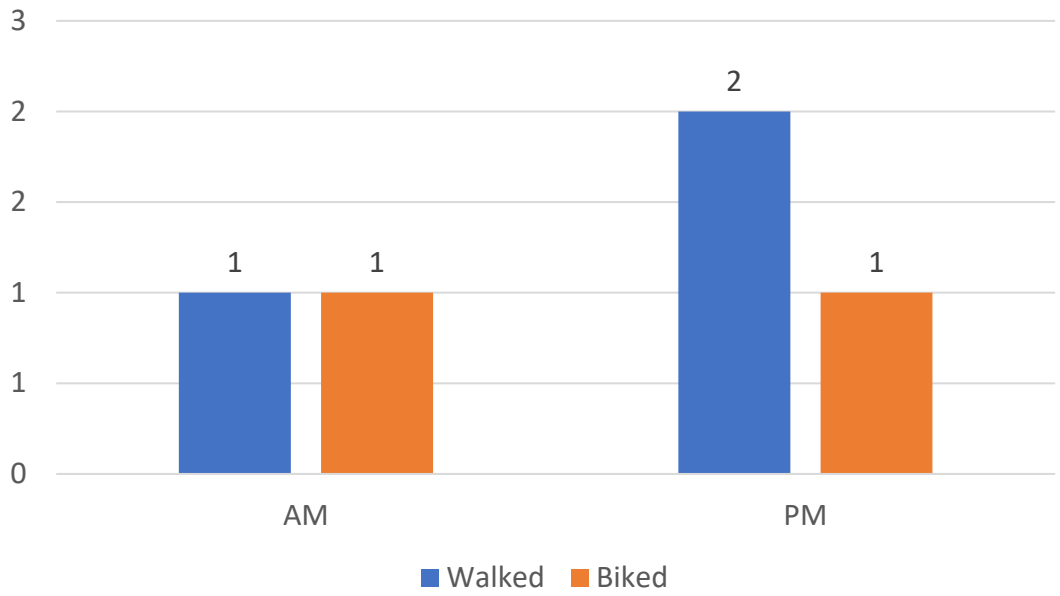


Figure 10: Total Number of Students Walking or Biking to School in 2019 in AM and PM

Main takeaways from the Student Travel Mode Survey:

- Based on the survey data from year 2003 to 2019, on average about five percent of total students travel by walking (three percent) or biking (two percent).
- The total number of students seen walking or biking to school increased from 2003 to 2012 but decreased from 2013 to 2019.
- More students bike from school in the afternoon than in the morning. Most students either travel by car (71 percent) or bus (26 percent) to school as shown in **Figure 2**.

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 that responded to the survey because there was not enough data from each individual school to draw reasonable conclusions.

Figure 11 shows issues reported to affect the decision to allow a child to walk or bike to/from school by parents.

Figure 12 shows the parent's opinions about how healthy walking and biking to/from school is for their child.

Figure 13 parent's opinions about how much their child's school encourages or discourages walking and biking to/from school.

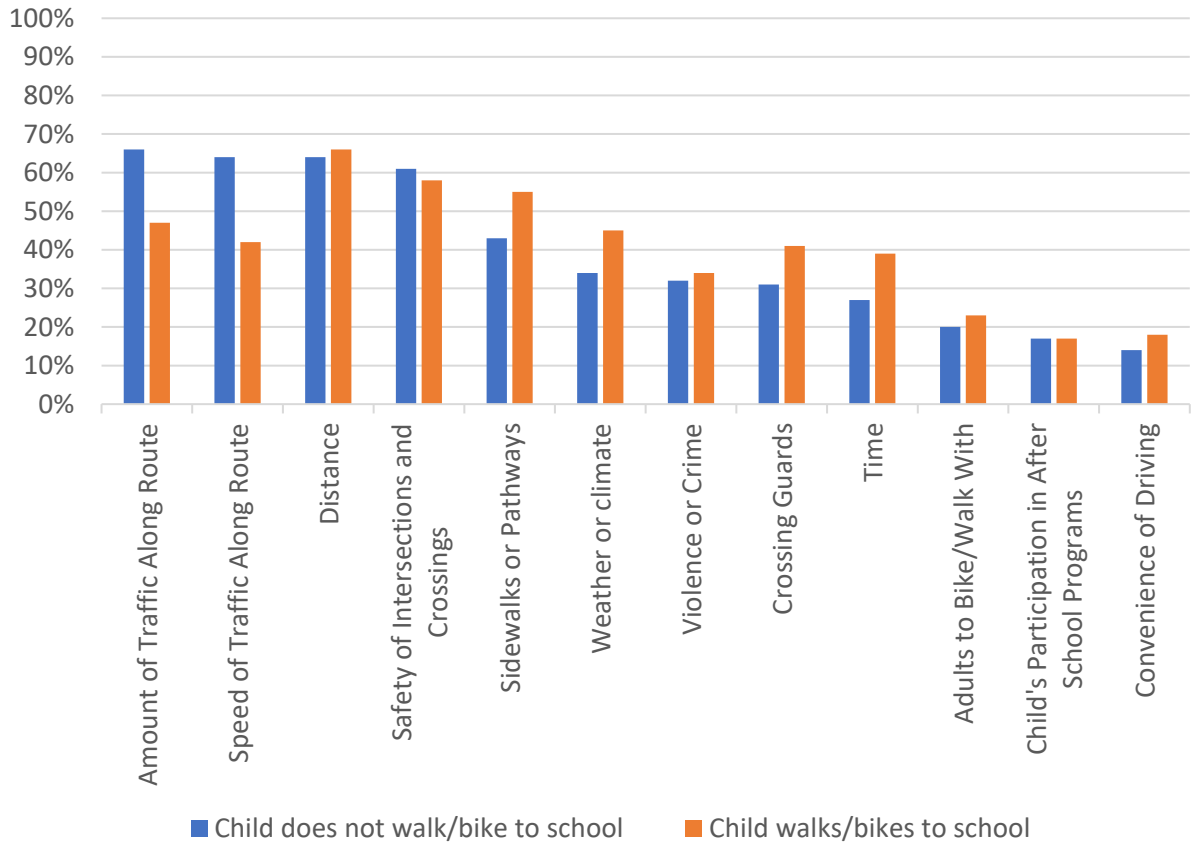


Figure 11: Issues Reported to Affect the Decision to Allow a Child to Walk or Bike to/from School by Parents (Based on 2018 Survey)

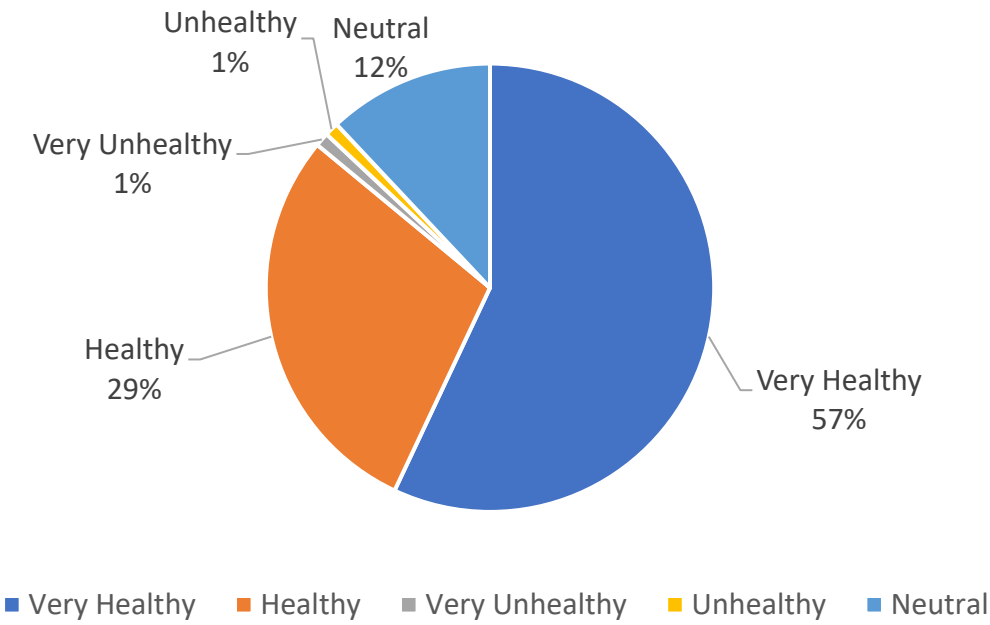


Figure 12: Parent's Opinions about How Healthy Walking and Biking to/from School is for Their Child (Based on 2018 Survey)

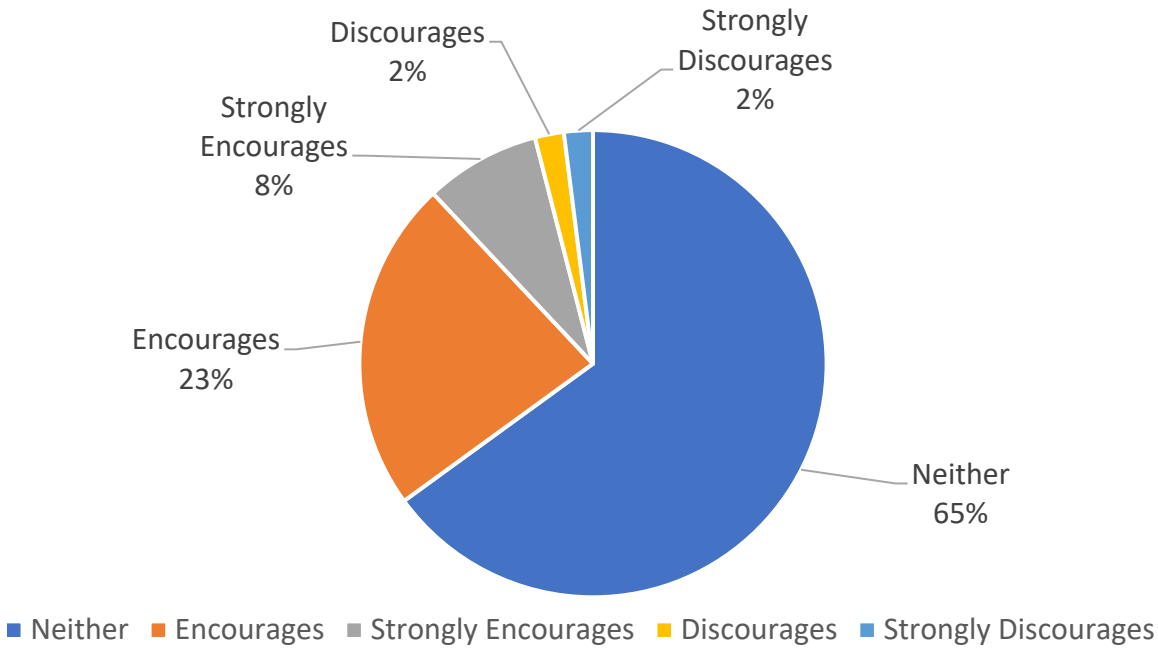


Figure 13: Parent's Opinions about How Much their Child's School Encourages or Discourages Walking and Biking to/from School (Based on 2018 Survey)

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 Odyssey Charter 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 Odyssey Charter School study area.

Pedestrian/Bicycle Crash Statistics

There were 14 total pedestrian and bicycle crashes within the study area (six pedestrian and eight bicycle). Two of the crashes were property damage only, 11 of the crashes resulted in injury, and one crash resulted in a fatality. Seventy-one percent of crashes occurred during the day and all crashes occurred under dry conditions. The reported crashes are displayed by different measures of time (year, month, day, and hour) in **Figure 14**, **Figure 15**, **Figure 16**, and **Figure 17**.

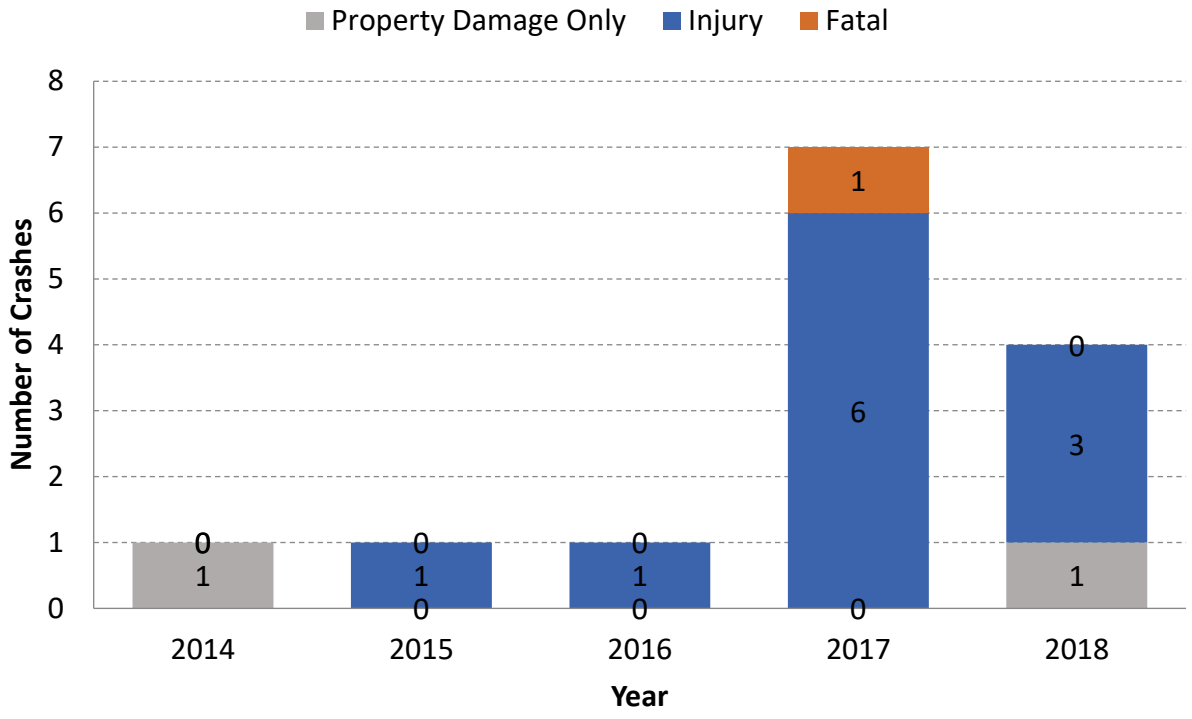


Figure 14: Crashes by Year and Severity

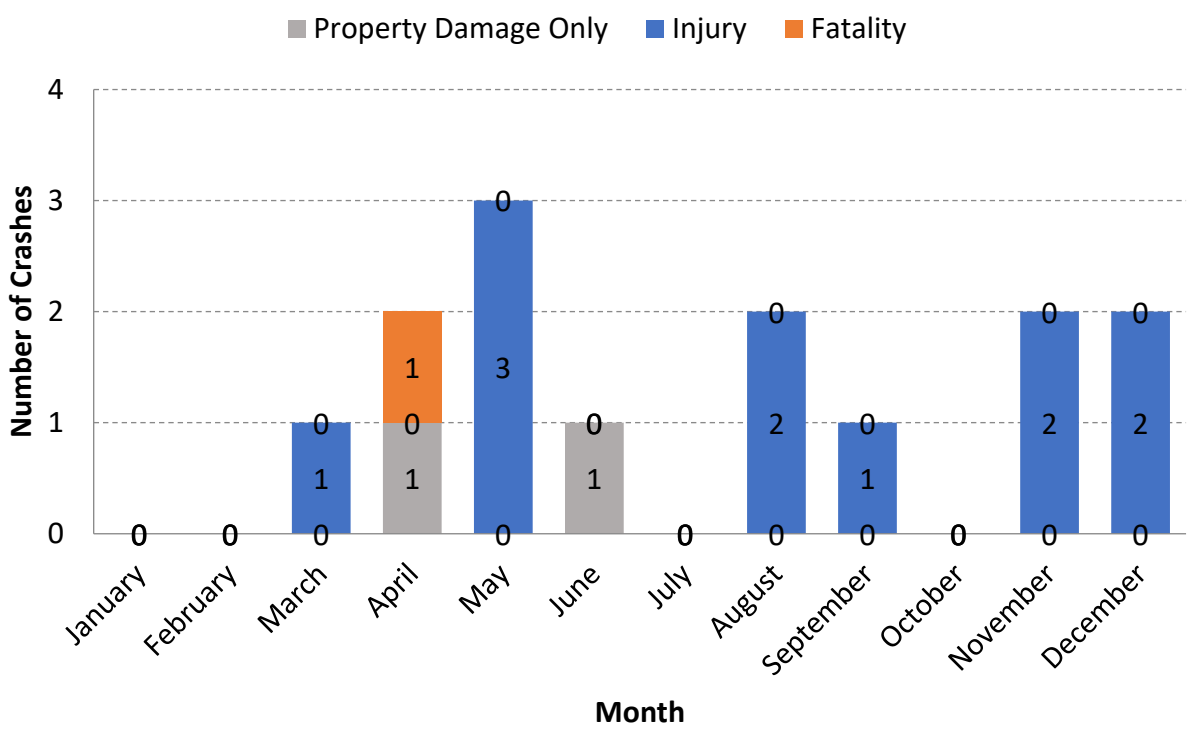


Figure 15: Crashes by Month and Severity

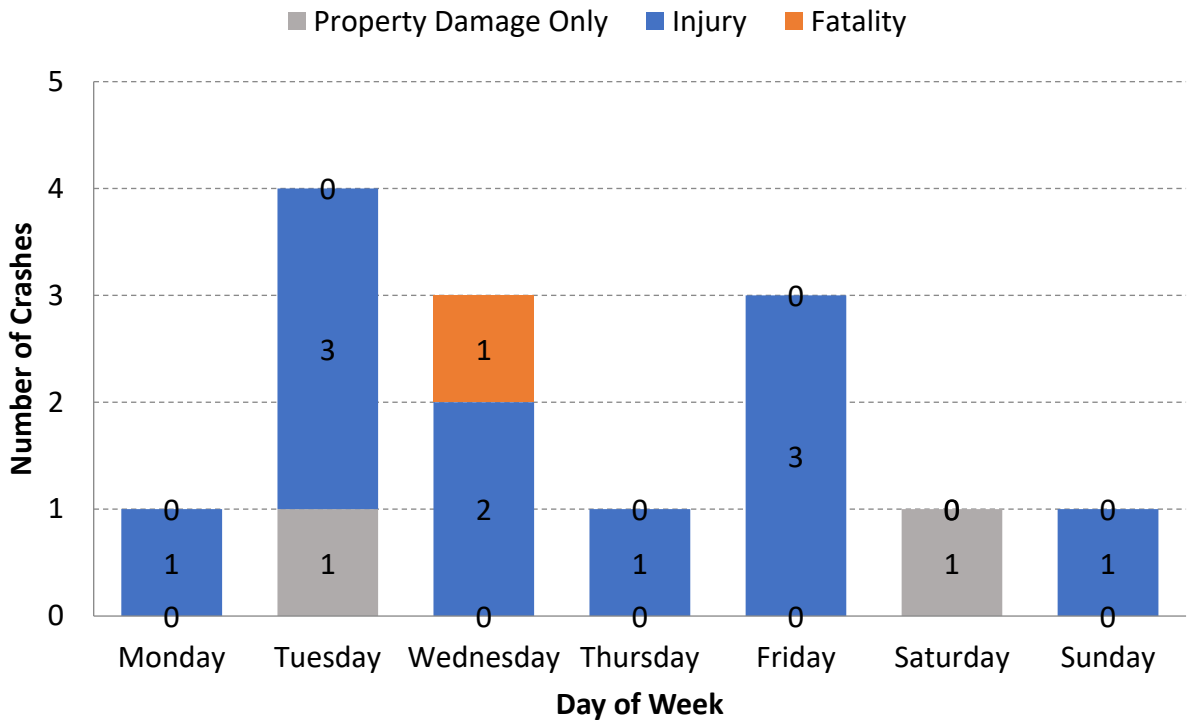


Figure 16: Crashes by Day of Week and Severity

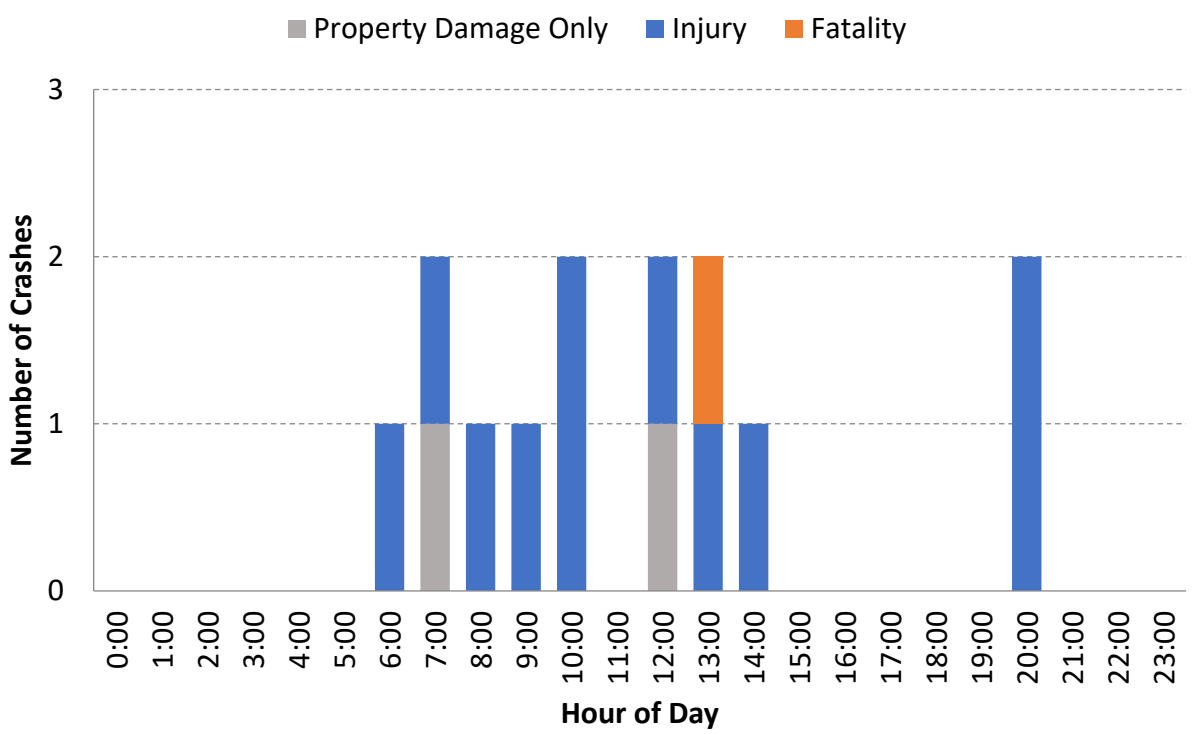


Figure 17: Crashes by Hour of Day and Severity

One crash occurred per year from 2014 to 2016 and increased to seven crashes in 2017. The most crashes occurred in the month of May (three) and Tuesday was the most common day when crashes occurred (four). By time of day, most crashes occurred from 12 PM to 2 PM (four). Alcohol and/or drug involved crashes accounted for seven percent of all crashes.

School Aged Pedestrian/Bicycle Crash Statistics

There were five total school aged pedestrian and bicycle crashes within the study area (three pedestrian and two bicycle). Four of the crashes resulted in injury and one crash resulted in a fatality. Eighty percent of crashes occurred during the day and all occurred under dry conditions. **Figure 18** maps the locations of the school-aged pedestrian and bicycle crashes. The reported crashes are displayed by different measures of time (year, month, day, and hour) in **Figure 19**, **Figure 20**, **Figure 21**, and **Figure 22**.

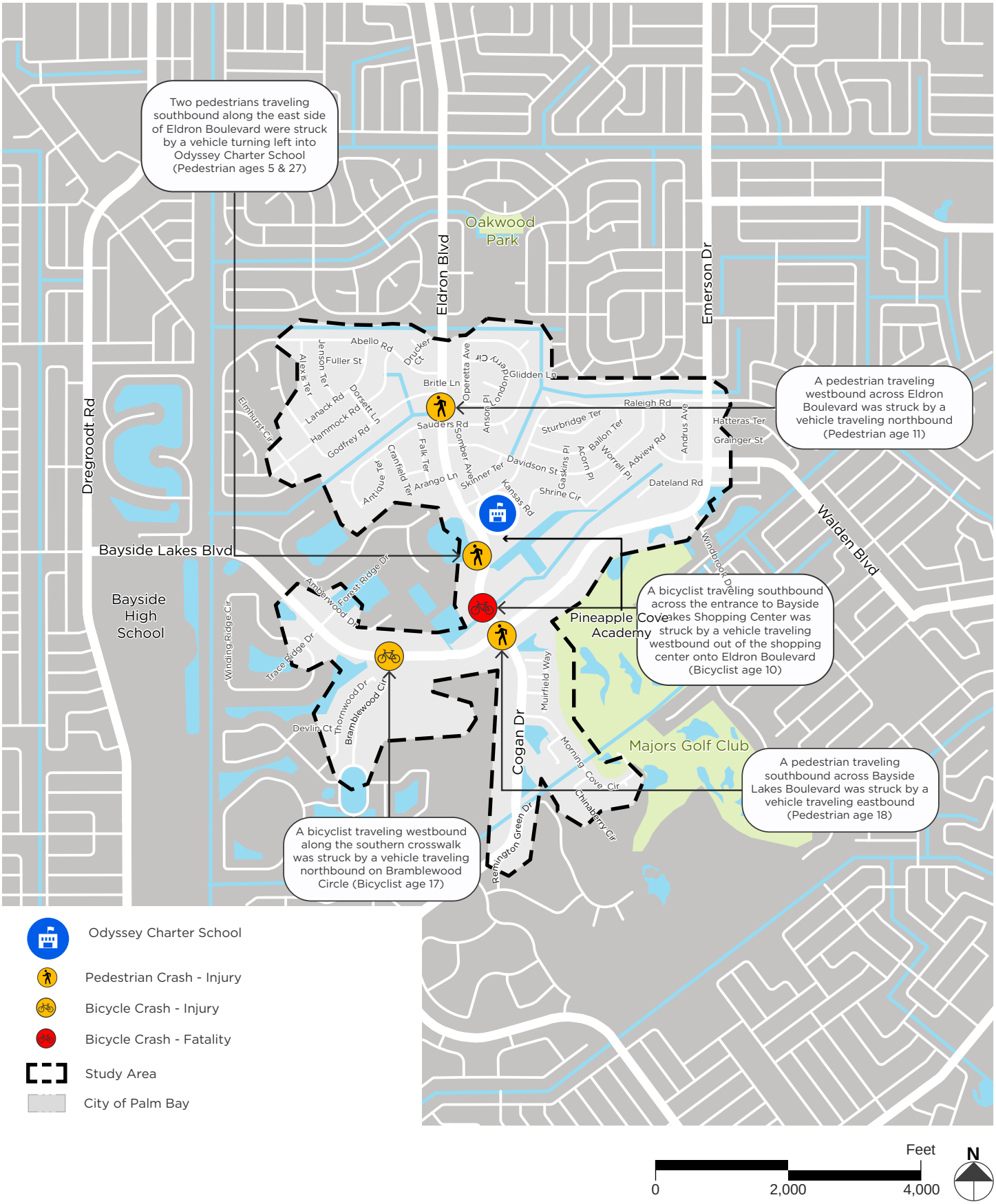


Figure 18: Bicycle and Pedestrian Crashes (2014 - 2018)

School Routes Analysis

Odyssey Charter School

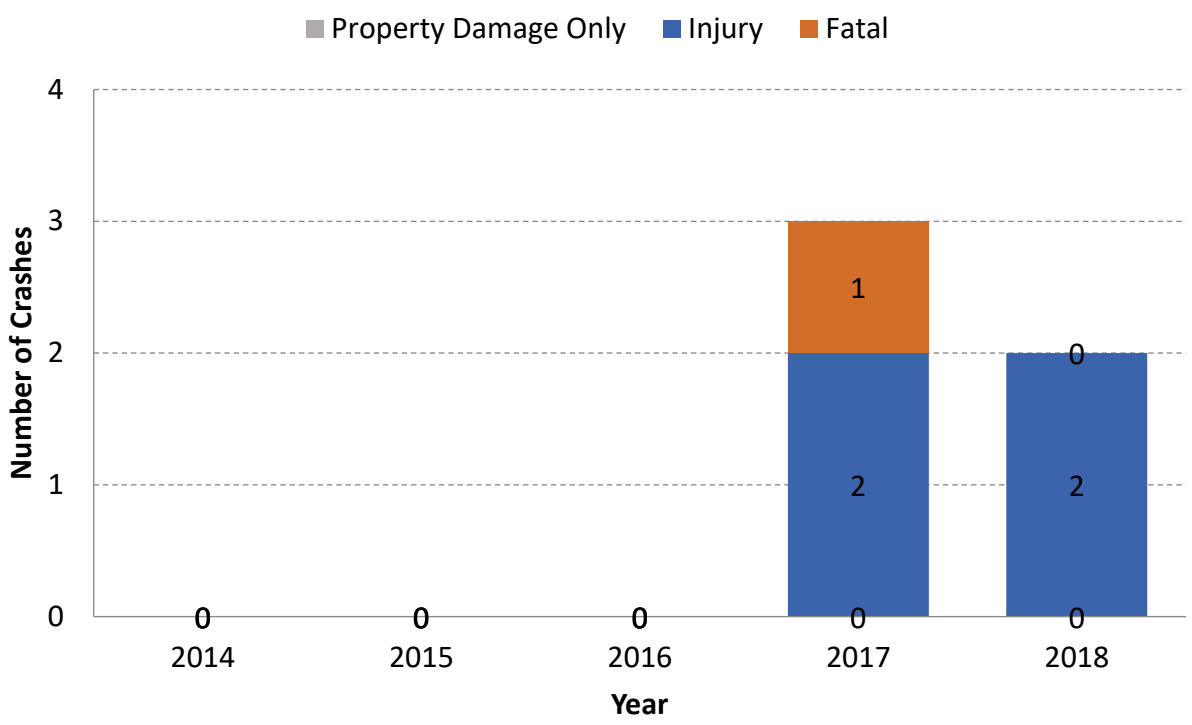


Figure 19: School-Aged Crashes by Year and Severity

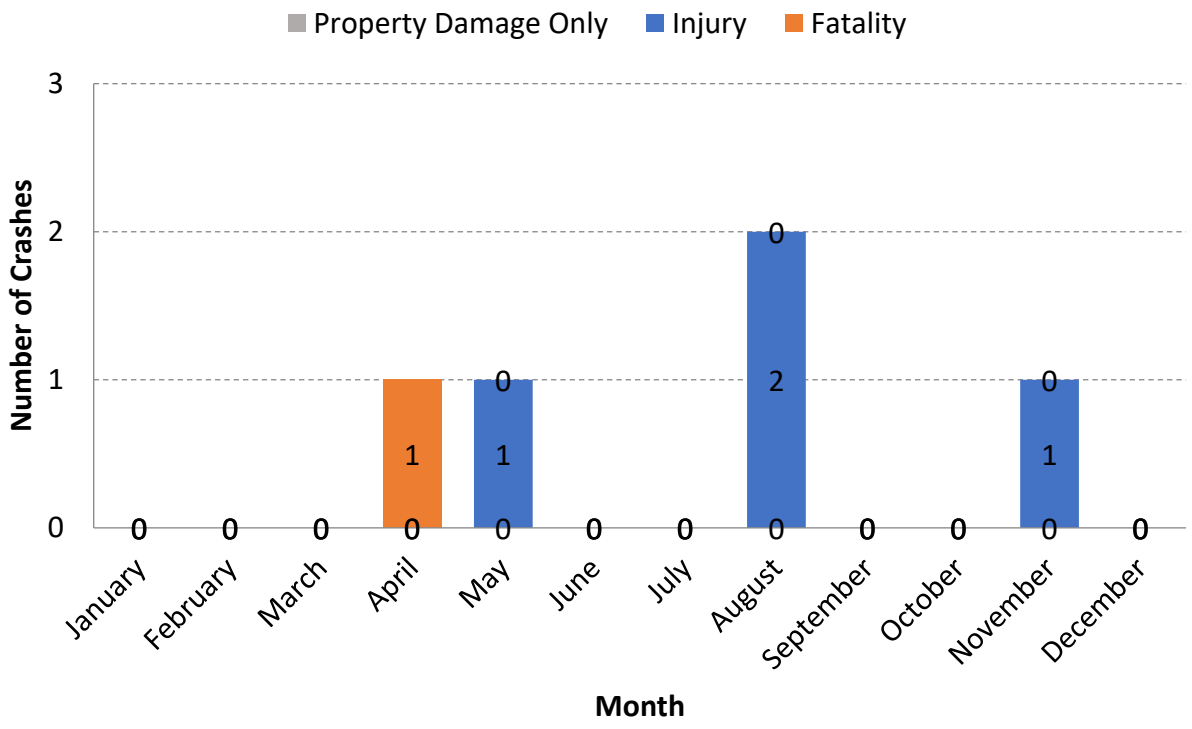


Figure 20: School-Aged Crashes by Month and Severity

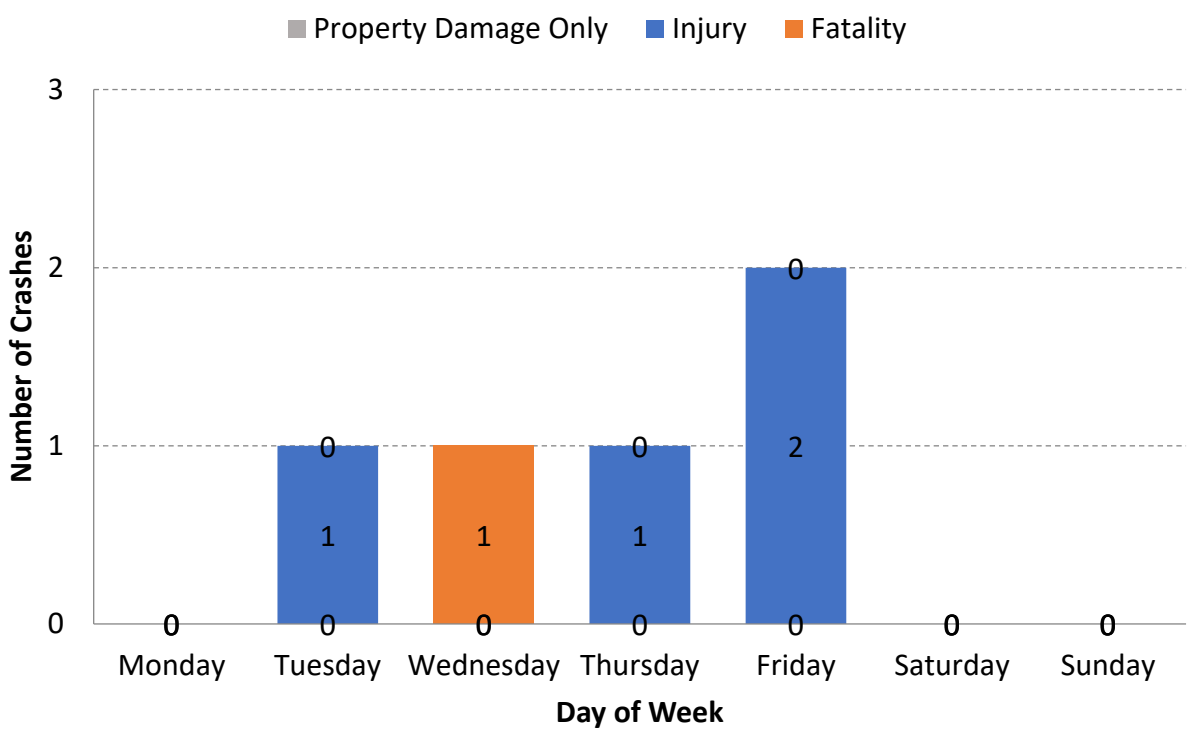


Figure 21: School-Aged Crashes by Day of Week and Severity

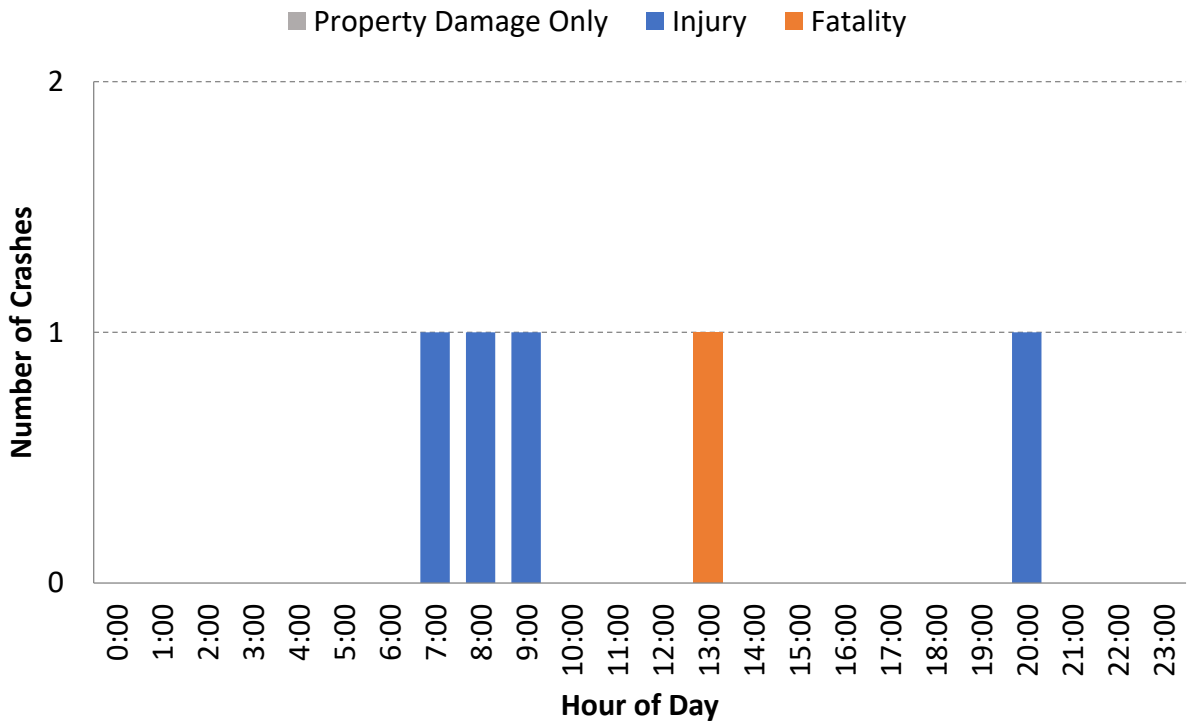


Figure 22: School-Aged Crashes by Hour of Day and Severity

All five crashes occurred in 2017 (three) and 2018 (two). The highest crash month was August (two) and all of the crashes occurred during the week with Friday being the most common crash day (two). Most crashes occurred from 7 AM to 10 AM (three).

A few other crash statistics worthy to note:

- Alcohol and/or drug involved did not account for any of the crashes; and
- One pedestrian and one bicycle crash involved a vehicle making a left or right turn at an intersection (based on the crash reports).

School-Aged Crash Report Summaries

Pedestrian Crashes:

1. Report Number: 87367968
    - On August 24, 2017 at 7:35 AM, a crash involving two pedestrians occurred at the intersection of Eldron Boulevard and the entrance to Odyssey Charter School. The pedestrians were traveling southbound along the east side of Eldron Boulevard, crossing the entrance to Odyssey Charter School, and were struck by a vehicle traveling southbound on Eldron Boulevard turning left into Odyssey Charter School. The crash resulted in possible injury for both pedestrians. The crash occurred under dry conditions during the day.
2. Report Number: 87368755
    - On November 21, 2017 at 8:09 PM, a crash involving a pedestrian occurred at the intersection of Bayside Lakes Boulevard and Cogan Drive. The pedestrian was traveling southbound across Bayside Lakes Boulevard, just east of the eastern crosswalk, and was struck by a vehicle traveling eastbound along Bayside Lakes Boulevard. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions at night.
3. Report Number: 87791405
    - On August 31, 2018 at 8:10 AM, a crash involving a pedestrian occurred along Eldron Boulevard just south of Godfrey Road. The pedestrian was traveling westbound across Eldron Boulevard and was struck by a vehicle traveling northbound along Eldron Boulevard. The crash resulted in incapacitating injury. The crash occurred under dry conditions during the day.

Bicycle Crashes:

1. Report Number: 86756461
    - On April 5, 2017 at 1:49 PM, a crash involving a bicyclist occurred at the intersection of Eldron Boulevard and the entrance to Bayside Lakes Shopping Center, just north of Bayside Lakes Boulevard. The bicyclist was traveling southbound along the east side of Eldron Boulevard across the entrance to Bayside Lakes Shopping Center and was struck by a vehicle traveling westbound

out of the driveway turning right onto Eldron Boulevard. The vehicle continued to make the right turn and the bicyclist went under the vehicle and was drug several feet before the driver came to a stop. The crash resulted in a fatality. The crash occurred under dry conditions during the day.

2. Report Number: 87790729
    - On May 18, 2018 at 9:18 AM, a crash involving a bicyclist occurred at the intersection of Bayside Lakes Boulevard and Bramblewood Circle. The bicyclist was traveling westbound along the southern crosswalk and was struck by a vehicle traveling northbound on Bramblewood Circle. The crash resulted in non-incapacitating injury. The crash occurred under dry conditions during the day.

Non-School Aged Pedestrian/Bicycle Crash Statistics

There were nine total non-school aged pedestrian and bicycle crashes within the study area (three pedestrian and six bicycle). Two crashes resulted in property damage only and seven crashes resulted in injury. Sixty-seven percent of the crashes occurred in daylight conditions and all occurred under dry conditions. The reported crashes are displayed by different measures of time (year, month, day, and hour) in **Figure 23**, **Figure 24**, **Figure 25**, and **Figure 26**.

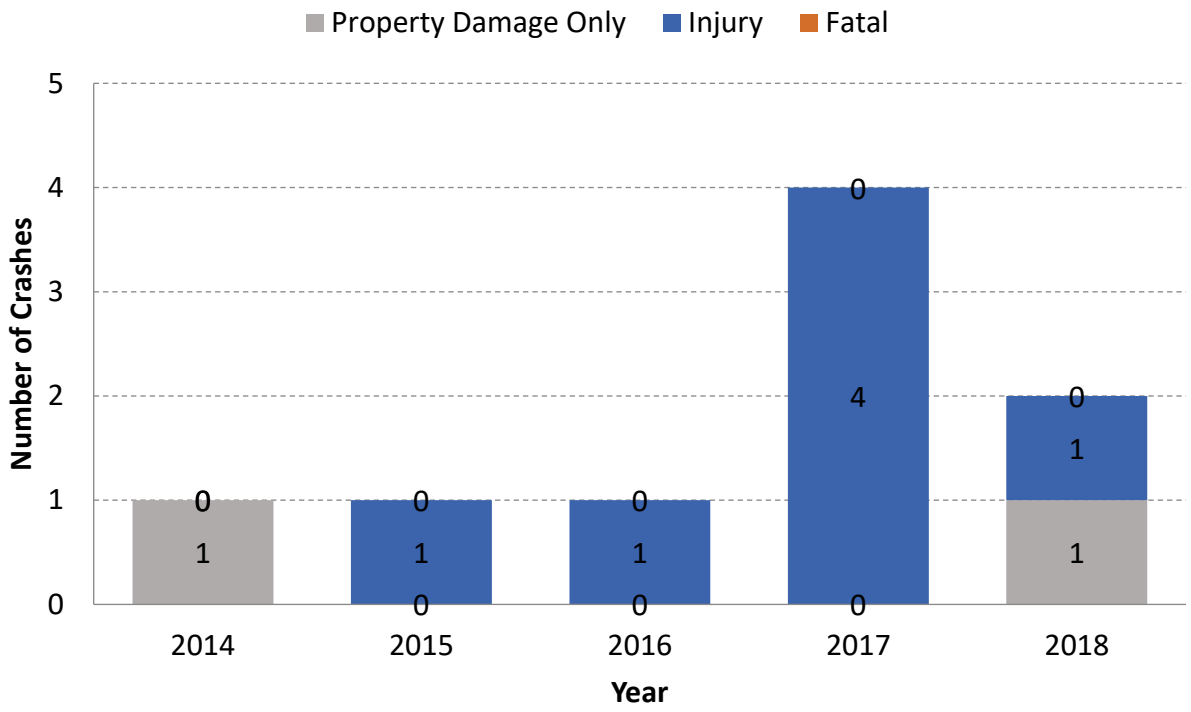


Figure 23: Non-School Aged Crashes by Year and Severity

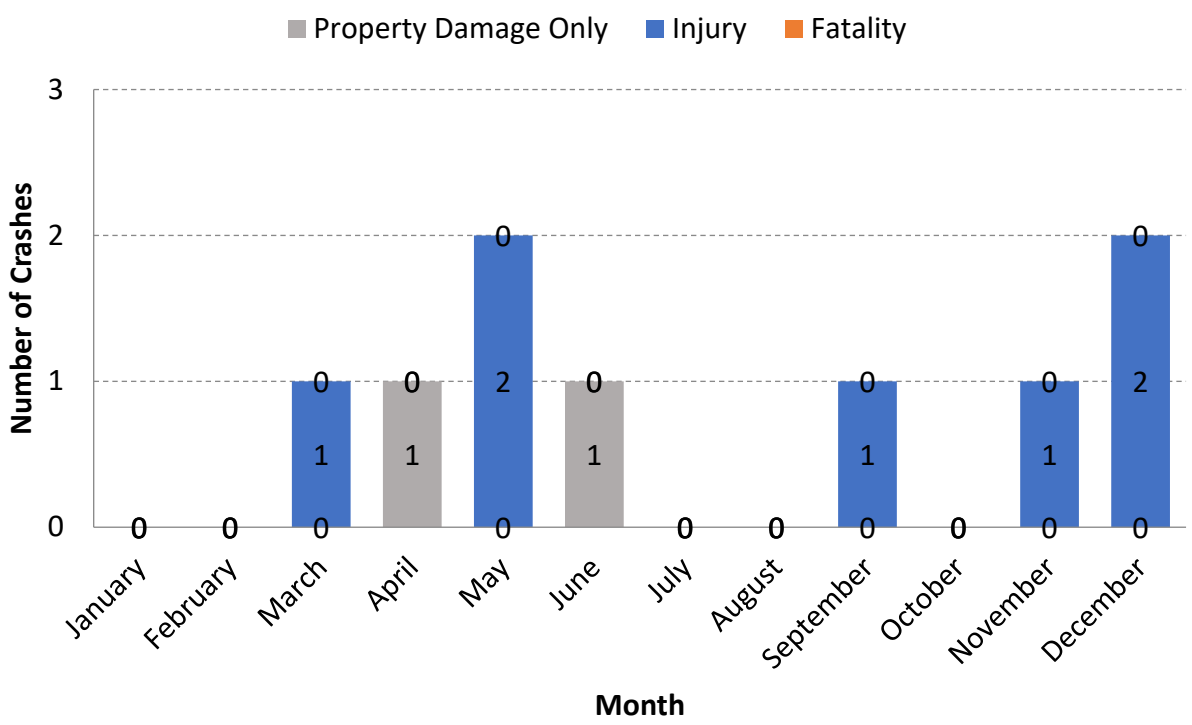


Figure 24: Non-School Aged Crashes by Month and Severity

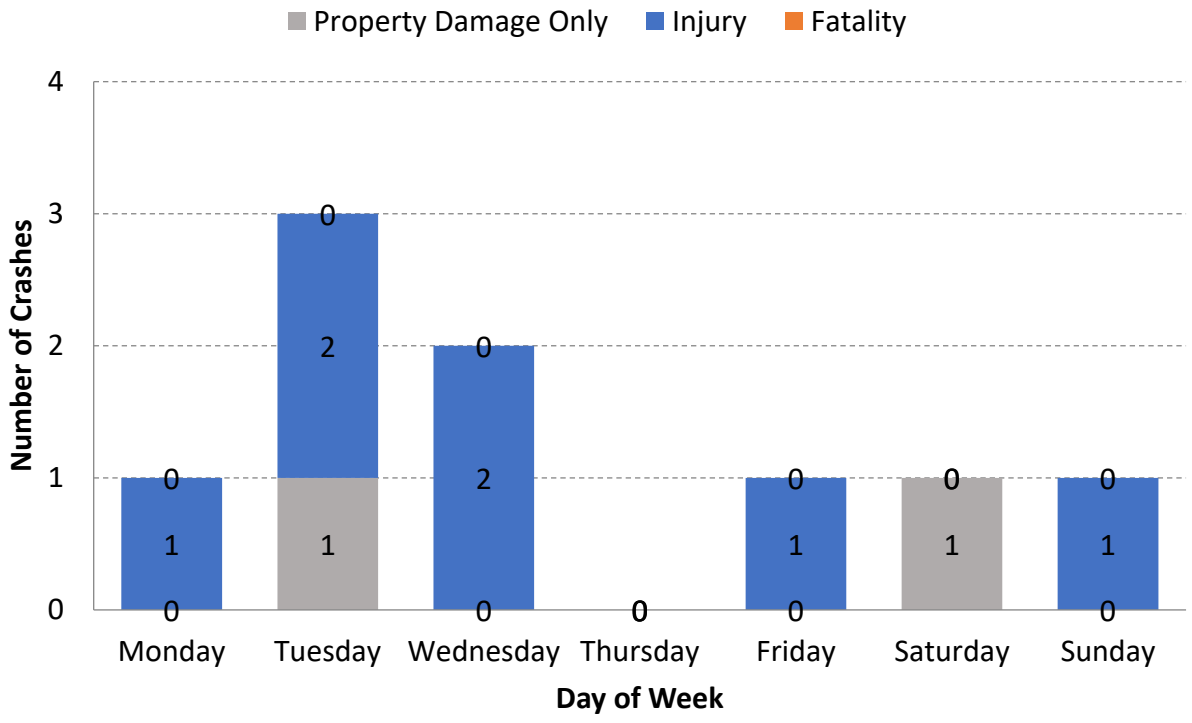


Figure 25: Non-School Aged Crashes by Day of Week and Severity

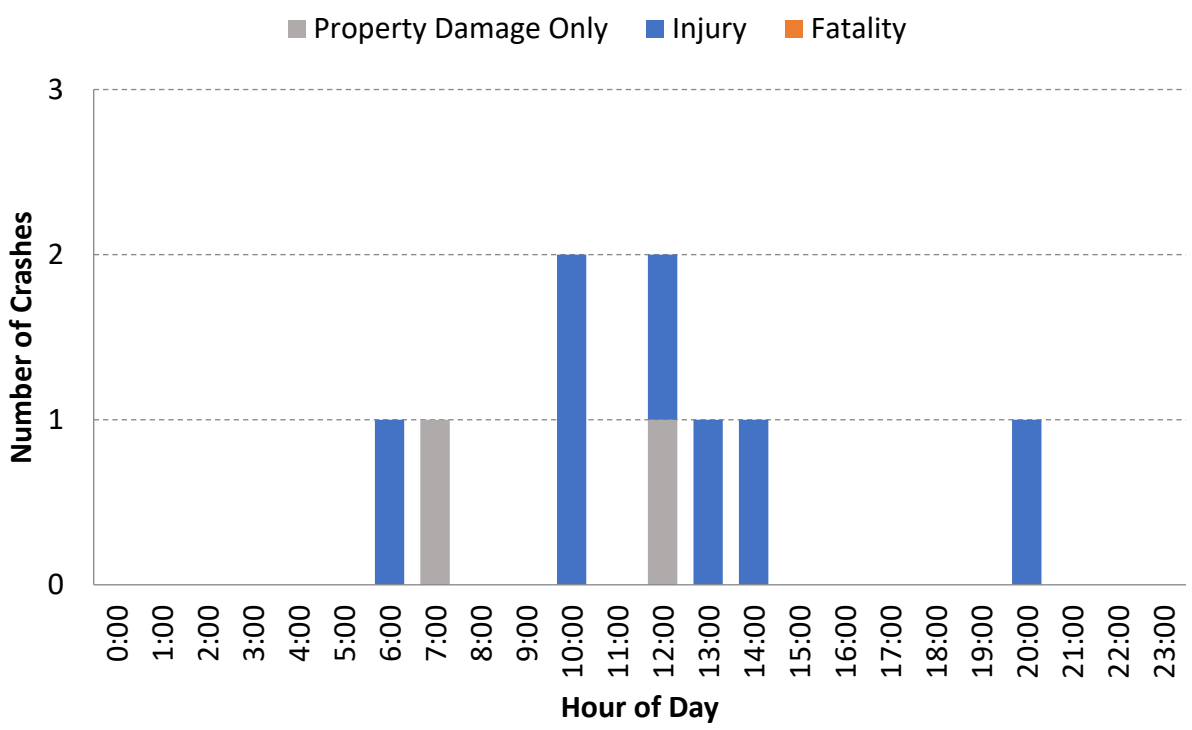


Figure 26: Non-School Aged Crashes by Hour of Day and Severity

One crash occurred per year from 2014 to 2016 and increased to four crashes in 2017. May and December were the highest reported crash months with two crashes each. Most crashes occurred on Tuesday (three). By time of day, the two highest crash hours were from 10 AM to 11 AM (two) and 12 PM to 1 PM (two). Alcohol and/or drug involved accounted for one crash.

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

There were more non-school aged crashes than school aged crashes from 2014 to 2017 and there were equal school aged and non-school aged crashes in 2018. School aged crashes only occurred during months when school is in session while one non-school aged crash occurred during the summer months. School aged crashes only occurred during the week while non-school aged crashes occurred throughout the week and on weekends. The peak time of the day for non-school aged crashes occurred from 12:00 PM to 3:00 PM (four) while the peak time of day for school aged crashes occurred from 7:00 AM to 10:00 PM (three).

Figure 27, **Figure 28**, **Figure 29**, and **Figure 30** 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).

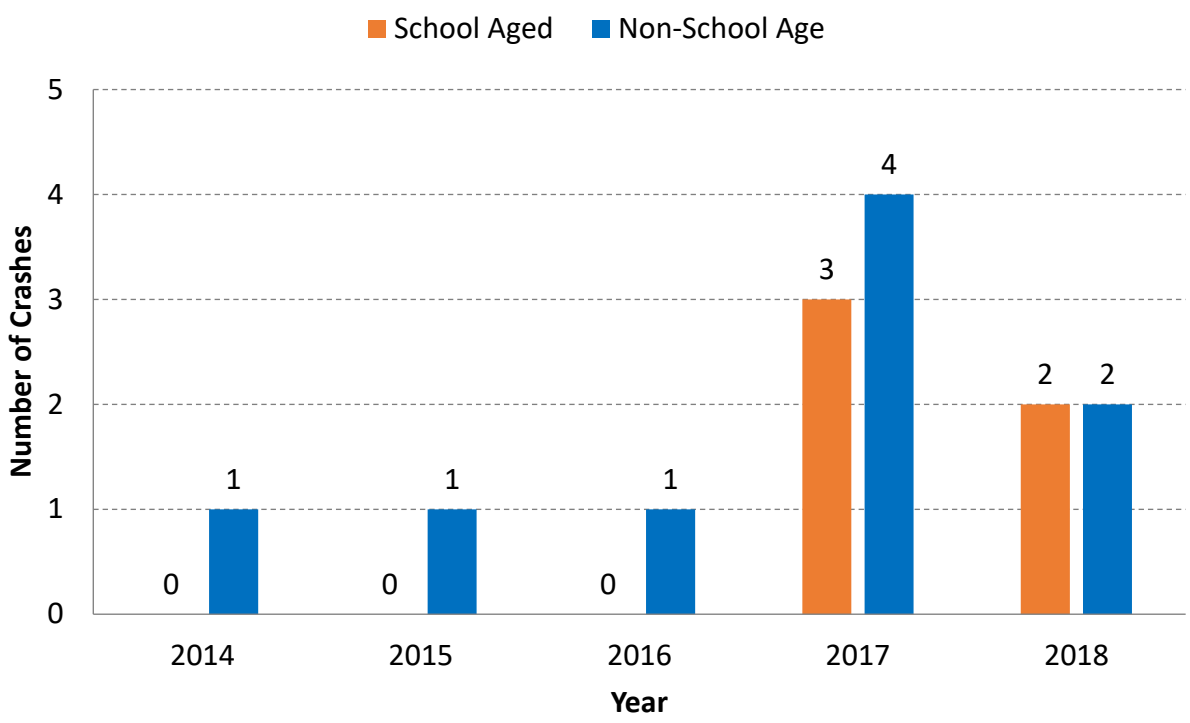


Figure 27: Comparison of School Aged and Non-School Aged Crashes by Year

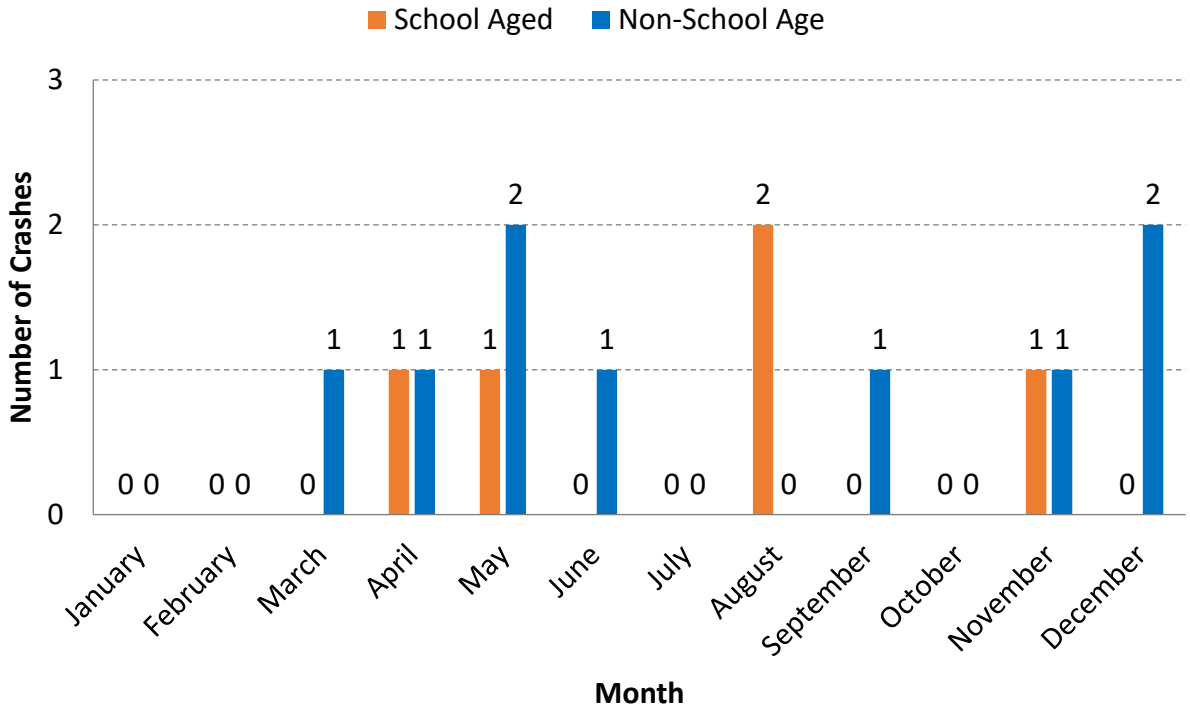


Figure 28: Comparison of School Aged and Non-School Aged Crashes by Month

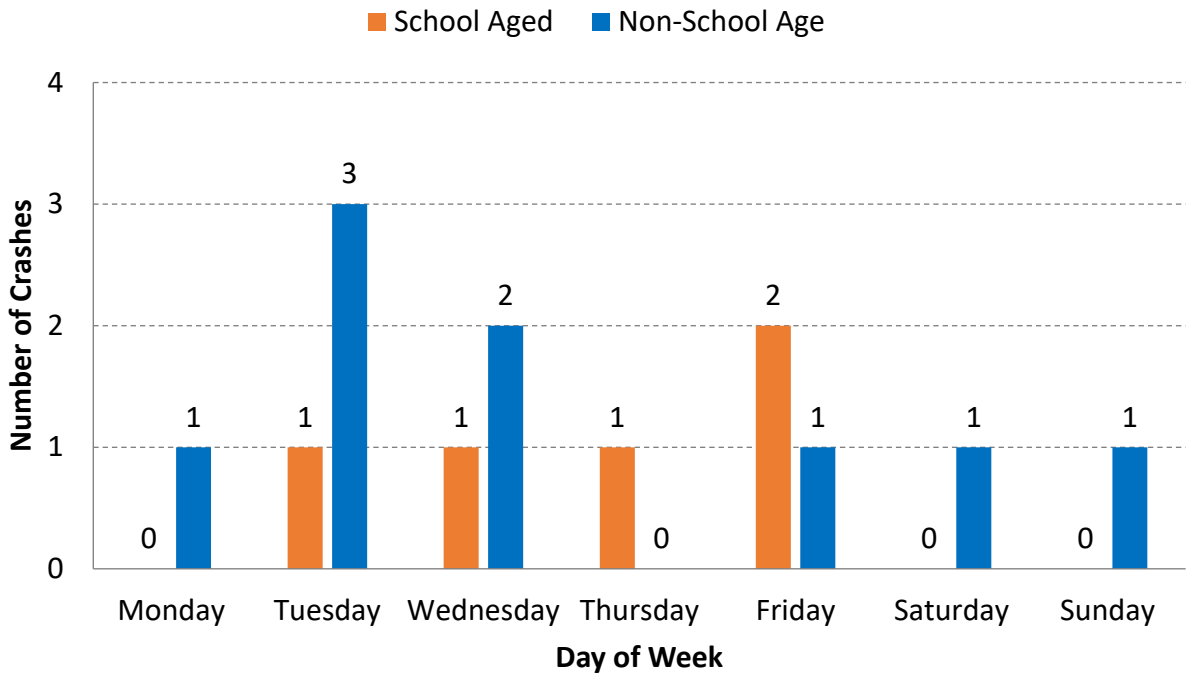


Figure 29: Comparison of School Aged and Non-School Aged Crashes by Day of Week

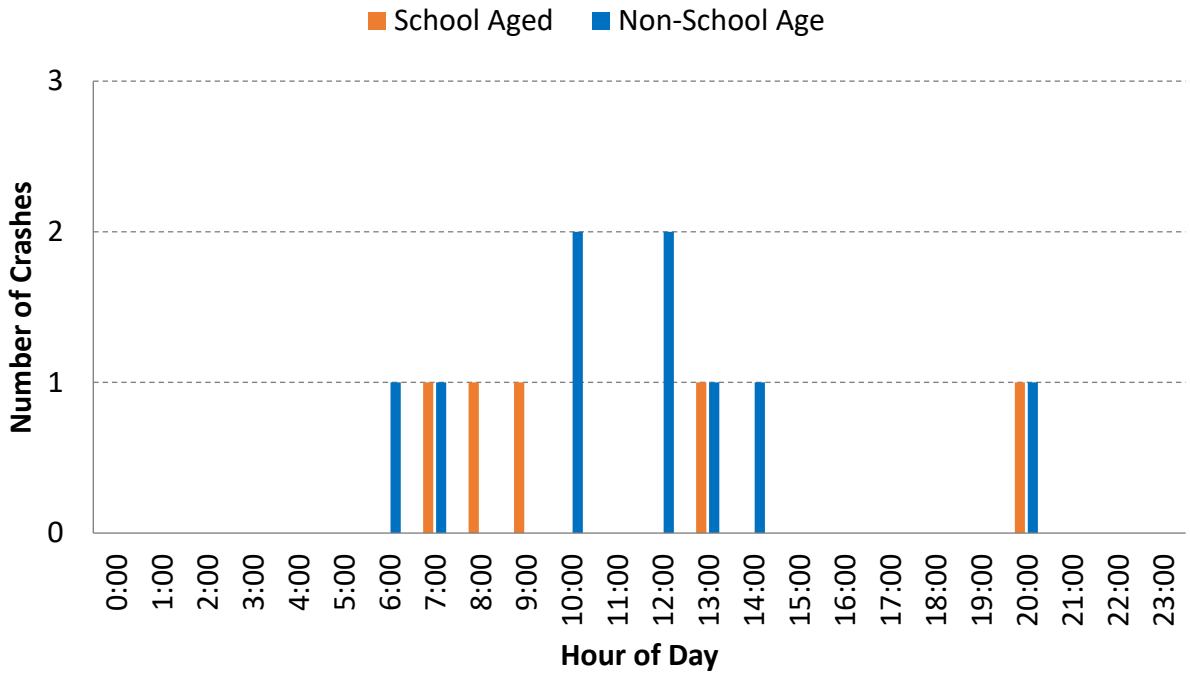


Figure 30: Comparison of School Aged and Non-School Aged Crashes by Hour of Day

School Coordination Meeting

A coordination meeting was held on February 19, 2020 to bring stakeholders together and discuss issues and opportunities related to students walking and biking to the school. Members from Brevard County Schools, Odyssey Charter School, SCTPO, and KAI 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 and work conducted to date. She briefly introduced the meeting materials included in the attendee handout package. The materials shared with attendees includes the following documents:

- 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
    - 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)

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

School Timings

- The school hours are as follows:
    - 8:00 AM to 2:30 PM – Monday through Thursday
    - 8:00 AM to 1:15 PM – Friday
- Before school care operates Monday through Friday, 6:00 AM to 8:00 AM.
- The peak period of students arriving in the morning is from 7:20 AM to 8:00 AM.
- There are two sessions for the Voluntary Prekindergarten Education Program (VPK) at the school. VPK students for the first session arrive from 8:15 AM to 8:30 AM and leave from 11:15 AM to 11:30 AM. The second session of VPK students arrive from 12:00 PM to 12:15 PM and leave from 3:15 PM to 3:30 PM. Some students attend both sessions of VPK. In total, approximately 52 students attend VPK.
- The peak period of students leaving in the afternoon is from 2:30 PM to 3:00 PM. Parents begin to queue around 1:00 PM for afternoon pick-up even though the dismissal time is 2:30 PM for the students. Parents are not allowed to queue before 1:00 PM.

- Tutoring operates on Tuesdays and Thursdays from 3:15 PM to 4:15 PM. After school care and after school tutoring ends at 4:15 PM. Approximately 100 students attend after school care and tutoring.

School Entrances and Circulation

- There is one entrance to the school campus along Eldron Boulevard, which serves as the entrance and exit for parent drop-off/pick-up, bus drop-off/pick-up, pedestrians, and bicyclists.
- Parents and buses use the same loop to drop-off/pick-up students. Parents drop-off/pick-up students at the main entrance to the school and buses drop-off/pick-up students along the eastern side of the school.
- There are three entrances to the school building.
    - The main entrance to the school is located at the middle of the southern edge of the school building and serves as an entrance for students walking, biking, or being dropped off at the parent drop-off/pick-up loop.
    - A second entrance to the school is located at the southwest corner of the school building and serves as a second entrance for students walking, biking, or being dropped off at the parent drop-off/pick-up loop.
    - A third entrance to the school is located along the eastern edge of the main building and serves as an entrance for students riding the bus.
    - The entrances to the school are staffed by a school faculty member during student drop-off/pick-up.

Main Walking and Biking Routes

- Most students who walk or bike to school come from neighborhoods just north of the school campus.
- There are four bicycle riders that travel along the east side of Eldron Boulevard north of the school campus.
- Many parents park along Raleigh Road or at the northwest corner of the Bayside Lakes Shopping Center and walking their student to and from school.
- Students do not cross the intersection of Bayside Lakes Boulevard and Eldron Boulevard when walking or biking to school.
- There are two crossing guard locations within the study area, one at the intersection of Raleigh Road and Eldron Boulevard and another at the intersection of Eldron Boulevard and the entrance to the school.
- There is one bicycle rack located on the school campus at the southwest corner of the main school building.

- Major walking and biking routes for students include Eldron Boulevard, Raleigh Road, and Sauders Road.

Drop-Off/Pick Up

- The school is served by 10 buses. Buses typically arrive from 7:20 AM to 8:00 AM. Buses begin arriving for student pick-up at 1:00 PM.
- Staff noted a concern that the entrance to the school campus off Eldron Boulevard is a tight turn for buses to enter and exit. Staff also noted that it is hard for the buses to turn right onto Raleigh Road from Eldron Boulevard due to the tight turning radii.
- If parents wish to drop-off their children before 7:30 AM, they must enroll in before care, which runs from 6:00 AM to 8:00 AM. There are approximately 35 students enrolled in before care.
- The morning peak drop-off period is from 7:20 AM to 8:00 AM with the highest number of parents dropping off at 7:45 AM. Staff noted that traffic does not typically back up onto Eldron Boulevard during AM drop-off.
- In the afternoon, vehicle stacking occurs in the southbound left turn lane and northbound right turn lane along Eldron Boulevard to turn into the parent drop-off/pick-up loop. Staff noted that vehicles leave gaps to allow vehicles and buses to enter/exit the school driveways along Eldron Boulevard and the stacking rarely extends beyond the turn lane.
- Parents who have students enrolled in Pineapple Cove Academy and Odyssey Charter School will park at the Pineapple Cove Academy parking lot and drop-off their student at Pineapple Cove Academy, and then drop off their student at Odyssey Charter School.
- Parents cannot turn left out of Pineapple Cove Academy into the parent and bus drop-off/pick-up loop to turn onto Eldron Boulevard.
- Parents also park in the staff/parent parking lot loop to walk their student to/from the school.

Recent and Planned Projects

- A major construction project on Odyssey Charter School property is currently scheduled to begin in March 2020. Improvements to the school campus include:
    - Sidewalks along the exterior of the school building will be widened to a minimum of seven feet.
    - The western parent/bus drop-off/pick-up loop will be expanded north to increase the queue length of the loop. The loop will also include 44 new parent/staff parking spaces.

    - A new 76 staff parking lot will be constructed along the southwest corner of the intersection of Raleigh Road and Kansas Road. This parking lot will be accessed by a new driveway along Raleigh Road.
    - A new play field will be constructed at the northeast corner of the school property.
    - A five foot public sidewalk will be constructed along the school property on Kansas Road and Shrine Circle.
    - An additional classroom building will be constructed along the northwest corner of the existing school building.
- The SCTPO Bicycle and Pedestrian Master Plan prioritizes bicycle facilities prioritized along Emerson Drive and Bayside Lakes Boulevard.

Other Issues

- There was a crash in 2016 that resulted in a fatality of a 10 year old school student at the entrance to Bayside Lakes Shopping Center. The student was on a bicycle and was struck by a vehicle traveling westbound out of the shopping center onto Eldron Boulevard.
- A school zone was added along Eldron Boulevard after the fatality.
- Staff noted that there are students that live close enough to walk or bike to school that currently do not walk or bike, but might in the future if they felt safer to do so.
- The school has a total of 742 students and 52 VPK students. The school is expected to add an additional 32 students and 54 VPK students in the 2020 to 2021 school year.
- Staff noted that speeding is an issue along Eldron Boulevard and vehicles are observed driving faster than the 20 MPH speed limit in the school zone.
- Sight distance issues have been reported for vehicles traveling along Eldron Boulevard.
- There is a new development under construction south of the school campus at the intersection of Bayside Lakes Boulevard and Bramblewood Circle, which is likely to increase the number of students walking/biking to/from the school campus.
- During field review check for the following issues:
    - The stacking lengths for vehicles turning into the parent drop-off/pick-up loop during morning and afternoon peak periods.
    - The number of students walking/biking to/from the school campus.
    - The number of parents parking along Raleigh Road and walking their student to school.

Field Review

A field review was conducted on February 20, 2020 to review the existing conditions and to observe student drop-off activity from 7:00 AM to 8:15 AM and student pick-up activity from 1:00 PM to 3:00 PM. Members from 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 the entrance to Odyssey Charter School. There is also a teacher assisting the crossing guard at this intersection. The crossing guard helps direct traffic while the teacher assists in crossing pedestrians and bicyclists across the entrance to the school.
- There is another crossing guard at the intersection of Eldron Boulevard and Raleigh Road.
- There are additional teacher crossing guards at the following locations.
    - Staff and visitor parking lot driveway.
    - Eldron Boulevard and the southern Pineapple Cove Academy driveway.
- Additional teachers are assisting at the following locations.
    - Crosswalk across the western staff parking lot entrance.
    - Crosswalk across the parent and bus drop-off/pick-up loop at the main entrance to the school building.

School Campus

- Crosswalk markings across the parent drop-off/pick-up loop and parking lots are faded and require restriping.
- The sidewalk in front of the school building is narrow. The school has plans for reconstructing this sidewalk to be wider as part of the overall parking lot construction project.
- The hedges in the northeast corner of the intersection of Eldron Boulevard and the entrance to Odyssey Charter School are tall and cause sight distance issues for vehicles turning right out of the school onto Eldron Boulevard.
- Vehicles must turn right onto Eldron Boulevard from the school campus during student drop-off/pick-up hours.

Study Area

- Parents were observed parking along Raleigh Road and walking their students to/from school.

- The speed limit is 30 MPH along Eldron Boulevard in front of the school campus. Vehicles traveling higher than the posted speed limit were observed along this roadway.
- Crosswalk markings at the intersection of Raleigh Road and Eldron Boulevard are faded and need to be restriped.
- There is no sidewalk along the west side of Eldron Boulevard from Raleigh Road to the northern boundary of the study area.

Morning Observations

- Ten school buses were observed dropping students off at the bus drop-off area. School buses began to arrive at the school campus at 7:13 AM. The last bus arrived at 7:27 AM.
- Most cars began arriving at 7:18 AM for parent drop-off. The peak period for parent drop-off was from 7:30 AM to 8:00 AM.
- The parent drop-off moved smoothly with little delays.
- There were three teachers observed helping students out of cars from 7:30 AM to 8:00 AM.
- Ten to fifteen parents were observed parking on campus and walking students into school.
- Twenty-five students and eighteen parents were observed walking to school. A parent accompanied most walkers.
- No vehicle stacking was observed along Eldron Boulevard during parent drop-off.
- The following issues were discussed with the crossing guard at Eldron Boulevard and Raleigh Road intersection:
    - Students mostly walk on the sidewalk located on the east side of Eldron Boulevard.
    - Two students cross private property connecting between the Brightwater Drive cul-de-and Raleigh Road/Eldron Boulevard intersection. The property owner does not mind students walking across his property.
    - Speeding issues have been observed at this intersection.
    - Many drivers do not stop for pedestrians crossing across Eldron Boulevard even when the crossing guard is present.
    - Around ten to twelve parents park their cars on grass shoulder along Raleigh Road to walk to the school to drop-off/pick-up students. These cars are parked very close to the Raleigh Road and Eldron Boulevard intersection and often block the intersection by backing out into the intersection when they are about to leave.
    - The crossing guard is present from 7:15 AM to 8:00 AM.

Afternoon Observations

- Vehicles began to queue for student pick-up at 1:13 PM.
- Eleven buses were observed picking students up at the bus pick-up area. The buses queued along the eastern edge of the school building. Parents were good about waiting for the buses to queue before queueing behind them. The first bus arrived at 1:27 PM, and the last one came at 1:56 PM. The buses left the school campus at 2:50 PM.
- Three daycare vans were observed picking up students amongst the parent vehicles.
- The following issues were discussed with the crossing guard at Eldron Boulevard and the entrance to Odyssey Charter School:
    - No flooding issues have been observed.
    - Vehicle stacking along Eldron Boulevard occurs only on days when there is no tutoring or after school activities.
    - Tutoring or after school activities are scheduled for most weekdays.
    - Generally, students do not cross Eldron Boulevard between intersections.
- Teacher crossing guards left at 3:00 PM.
- Forty-one pedestrians and three bicyclists were observed walking/biking off the school campus.

Opportunities

- Add a new pedestrian gate and sidewalk connection from the proposed new parking lot driveway along Raleigh Road to the school entrance.
- Add traffic calming elements along Eldron Boulevard.
- Widen existing sidewalk to a 10 to 12-foot wide shared-use path on the east side. The widened sidewalk/shared-use path will extend the existing wide shared-use path along the east side of Eldron Boulevard that is located north of Raleigh Road.
- Add sidewalks along Shrine Circle and Adview Road. The new sidewalk will extend the proposed sidewalks along the school property on Kansas Road and Shrine Circle.
- Add sidewalks on the west side of Eldron Boulevard, north of Raleigh Road.

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 Odyssey Charter School study area. 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 31**, **Figure 32**, and **Figure 33**.

Table 2: School Campus Recommendations

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
1	Crosswalks on School Property	Re-stripe crosswalks as high-visibility crosswalks and add ADA compliant pedestrian ramps.	Crossing	Near-Term	$10,000 to $15,000
2	Proposed New Staff Parking Lot Driveway on Raleigh Road	Add new pedestrian gate and 5 foot to 6 foot sidewalk to the school entrance.	Sidewalk	Near-Term	$45,000 to $50,000
3	Northeast Corner of Eldron Boulevard and the School Entrance	Trim hedges in front of the school sign to increase sight distance for vehicles turning onto Eldron Boulevard	Maintenance	Maintenance	Routine Maintenance

Table 3: Study Area Recommendations

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
4	Shrine Circle/Adview Road from just West of Gaskins Place to Raleigh Road	Build a 5 foot to 6 foot wide sidewalk on the south/east side.	Sidewalk	Long-Term	$160,000 to $190,000
5	Walden Boulevard from Adview Road to Emerson Drive	Build a 5 foot to 6 foot wide sidewalk on the south side.	Sidewalk	Long-Term	$55,000 to $65,000
6	Eldron Boulevard from Raleigh Road to Ruffin Circle	Build a 5 foot to 6 foot wide sidewalk on the west side.	Sidewalk	Long-Term	$185,000 to $215,000
7	Cogan Drive/Eldron Boulevard from Stonebriar Drive to Raleigh Road	Widen existing sidewalk to 10 foot to 12 foot shared use path on the east side.	Sidewalk	Long-Term	$730,000 to $850,000
8	Eldron Boulevard and Bayside Lakes Boulevard Intersection	Install high visibility crosswalks and upgrade pedestrian ramps to make them ADA compliant.	Crossing	Near-Term	$15,000 to $20,000
9	Eldron Boulevard and Raleigh Road Intersection	Conduct an operational/warrant study to review changing the two-way stop control to an all way stop control or signal/roundabout.	Feasibility Study (Intersection Control)	Near-Term	Further Study Required
10	Raleigh Road from Eldron Boulevard to Kansas Road	Install 'No Parking' signs on both sides of the roadway and increase enforcement.	Sign/Signal	Near-Term	$15,000 to $20,000

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
11	Abello Road from Hammock Road to Elmhurst Circle	Build a 5 foot to 6 foot wide sidewalk on south/east side of Abello Road the road.	Sidewalk	Long-Term	$275,000 to $320,000
12	Elmhurst Circle from Abello Road to Hammock Road	Build a 5 foot to 6 foot wide sidewalk on north/west side of Abello Road the road.	Sidewalk	Long-Term	$85,000 to $100,000
13	Birtle Lane/Operetta Avenue/Sauders Road from Eldron Boulevard to Eldron Boulevard	Build a 5 foot to 6 foot wide sidewalk on one side of the road.	Sidewalk	Long-Term	$240,000 to $280,000
14	Eldron Boulevard from just North of Bayside Lakes Shopping Center to just North of Raleigh Road	Adjust school zone speed limit to 15 MPH per guidance in the FDOT Speed Zoning Manual.	Sign/Signal	Near-Term	Further Study Required
15	Eldron Boulevard from just North of Bayside Lakes Shopping Center to Abello Road	Add traffic calming devices such as speed humps, raised crosswalks, street trees, etc.	Traffic Calming	Near-Term	Further Study Required

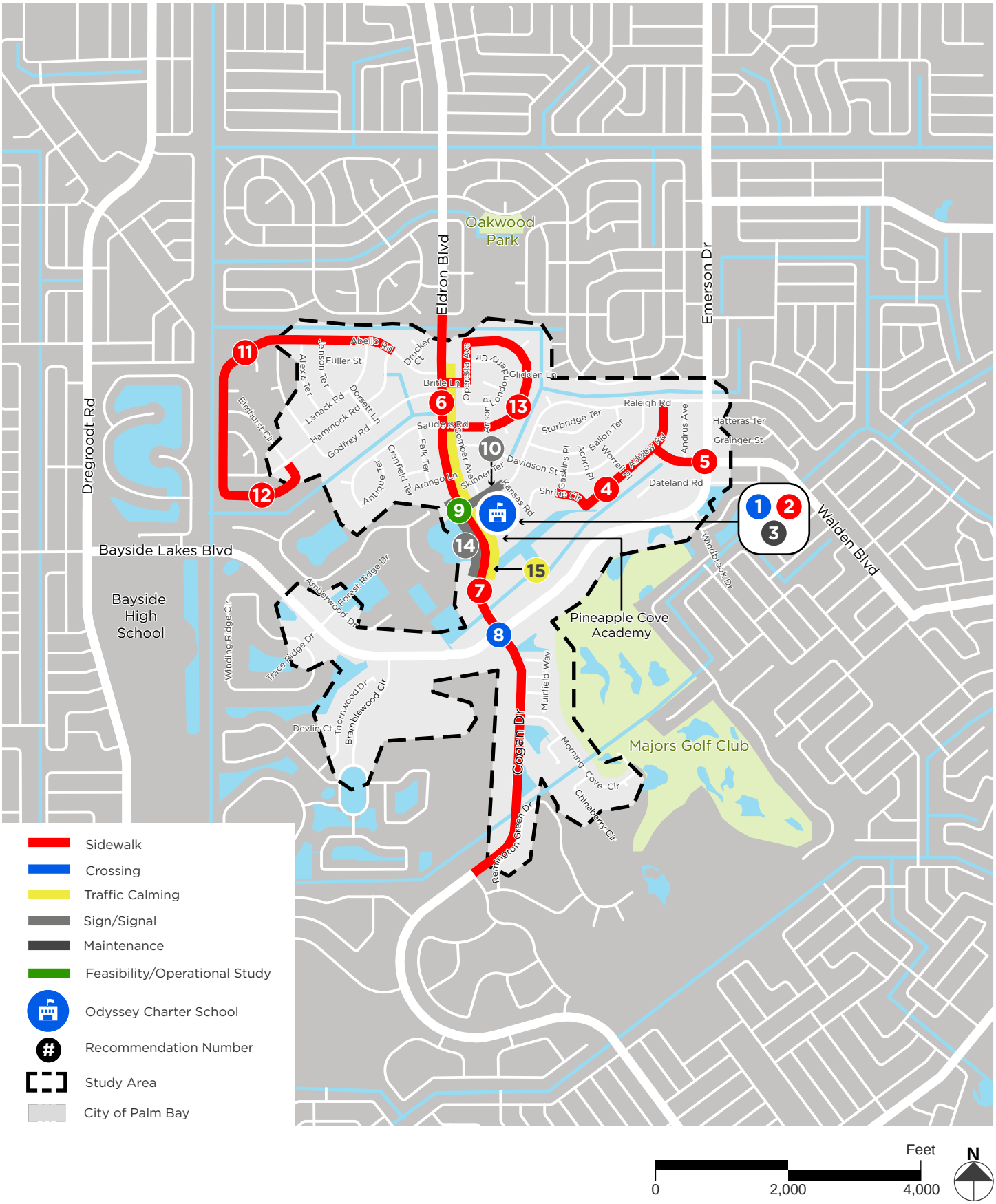


Figure 31: Recommendations

School Routes Analysis

Odyssey Charter School

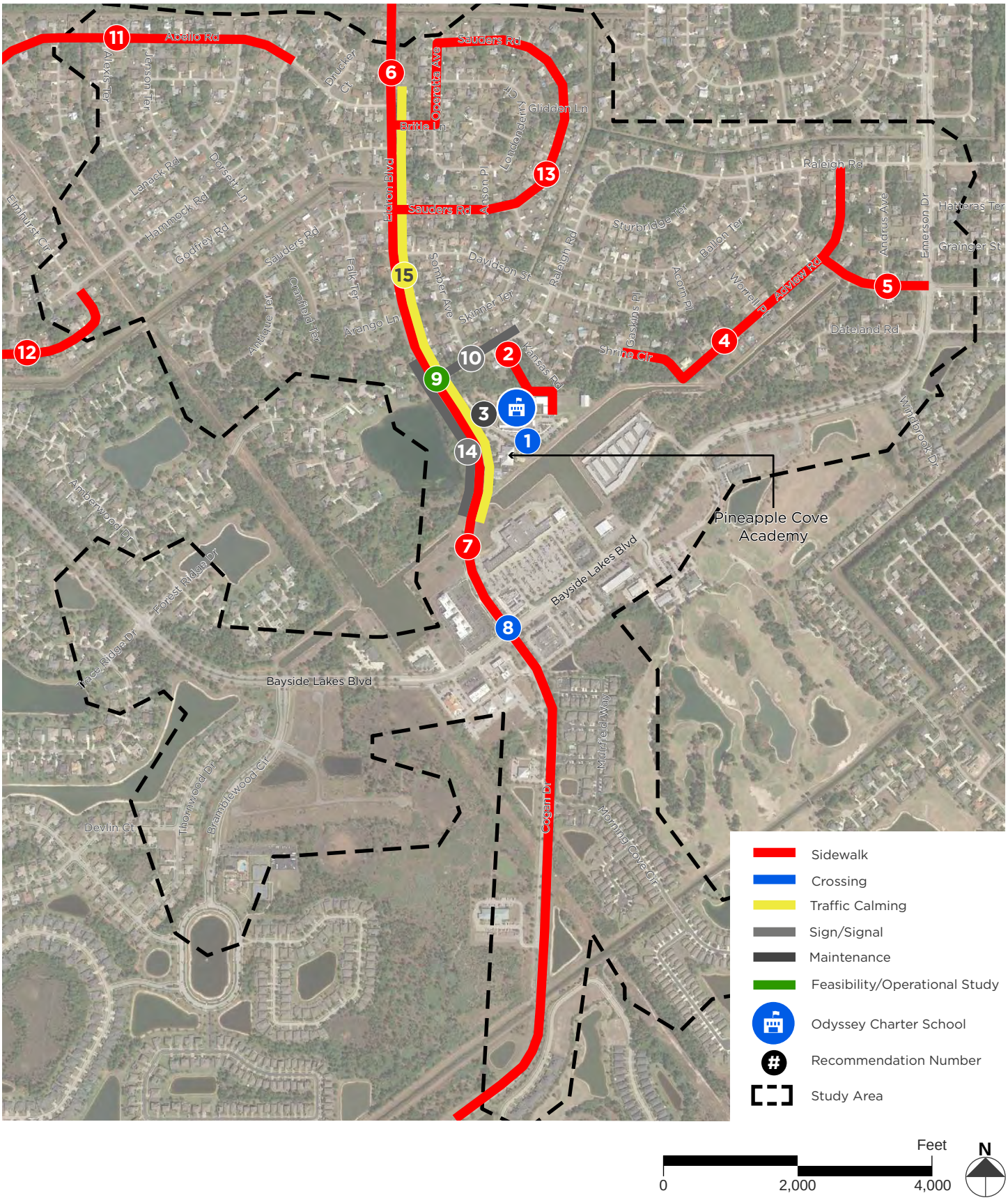


Figure 32: Recommendations: School Context Aerial Map

School Routes Analysis

Odyssey Charter School

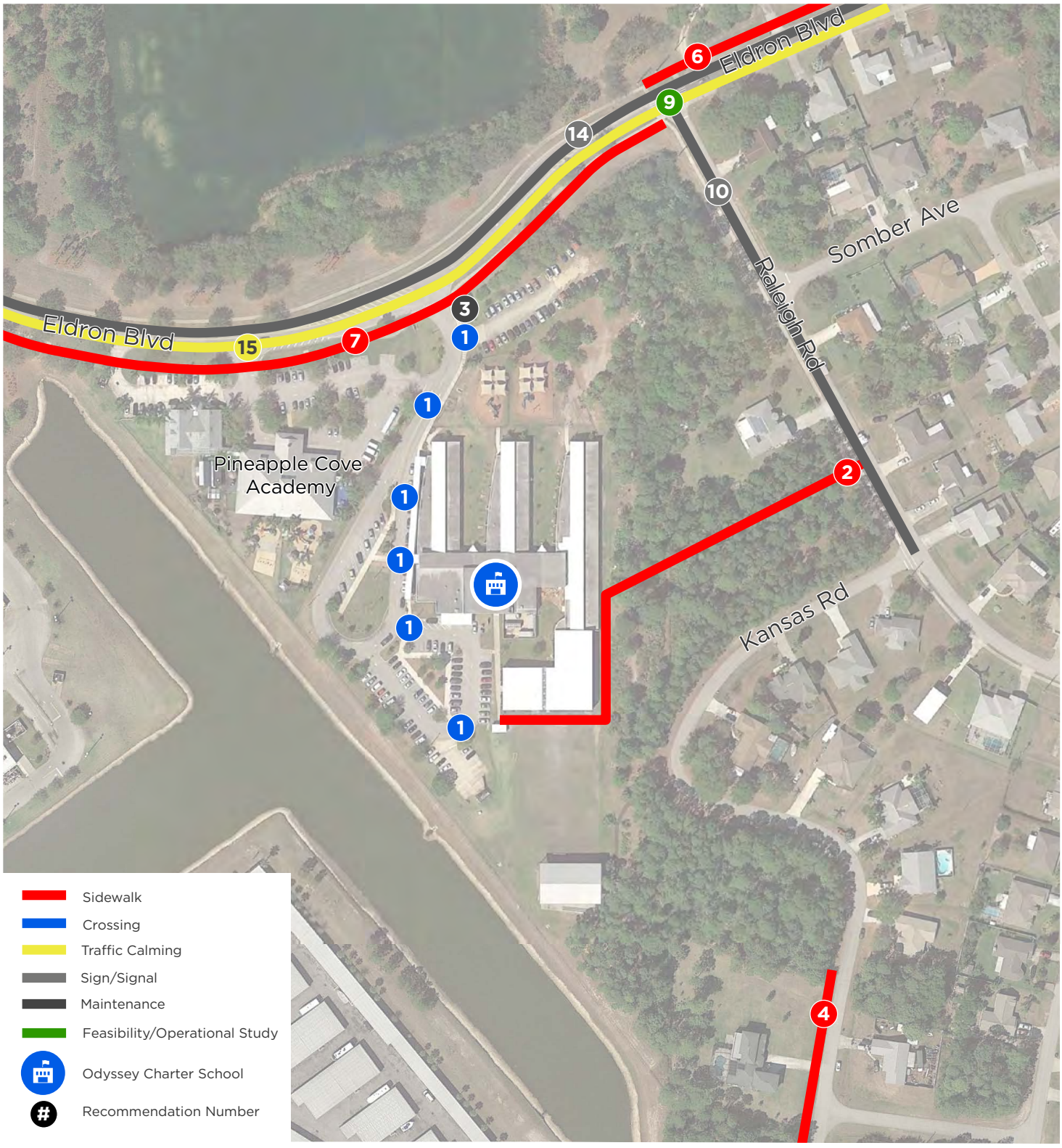


Figure 33: Recommendations: School Campus Aerial Map

School Routes Analysis

Odyssey Charter 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.

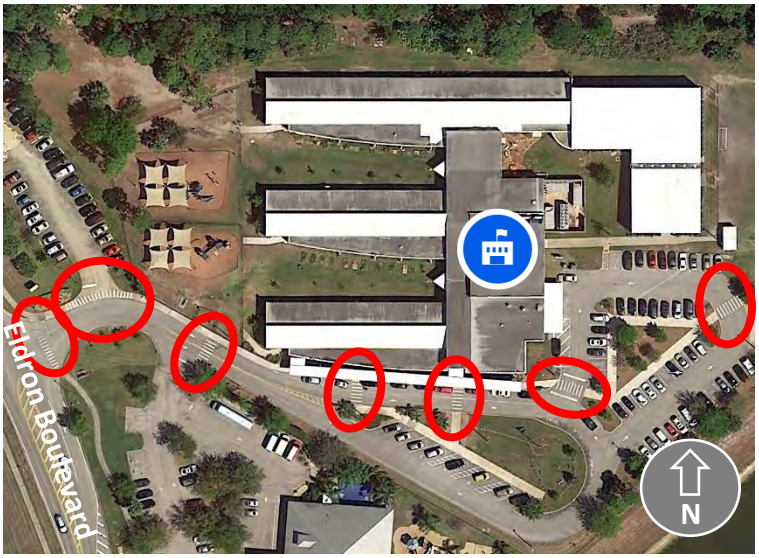
Figure 34 below shows an example of the cost estimate process described above.

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 34: Example Cost Estimate Process

Project 1: Restripe crosswalks to be high-visibility crosswalks and add ADA complain pedestrian ramps

Location	Crosswalks on School Property
Type	Crossing
Issue	The crosswalks on the school property were observed to be faded.
Recommendation	Re-stripe crosswalks as high-visibility crosswalks and add ADA compliant pedestrian ramps.



Faded Crosswalks and Pedestrian Ramps on the School Campus

	Implementation Time-Frame	Near-Term
	Estimated Project Cost	$10,000 to $15,000
	Right-of Way Needed?	No
	Drainage or Utility Impact?	No
	Responsible Agency	Odyssey Charter School

Project 2: Add pedestrian gate and sidewalk along new staff parking lot

Location	Proposed New Staff Parking Lot Driveway on Raleigh Road
Type	Sidewalk
Issue	There is only one pedestrian and bicyclist entrance to the school.
Recommendation	Add new pedestrian gate and 5 foot to 6 foot sidewalk to the school entrance.

Add Pedestrian Gate and Sidewalk Along New Staff Parking Lot

	Implementation Time-Frame	Near-Term
	Estimated Project Cost	$45,000 to $50,000
	Right-of Way Needed?	No
	Drainage or Utility Impact?	Unknown
	Responsible Agency	Odyssey Charter School

Project 3: Trim hedges at the entrance to the school campus

Location	Northeast Corner of Eldron Boulevard and the School Entrance
Type	Maintenance
Issue	There are sight distance issues for vehicles turning right out of the school campus onto Eldron Boulevard.
Recommendation	Trim hedges in front of the school sign to increase sight distance for vehicles turning onto Eldron Boulevard.

Trim the Bushes at the Northeast Corner of Eldron Boulevard and the School Entrance

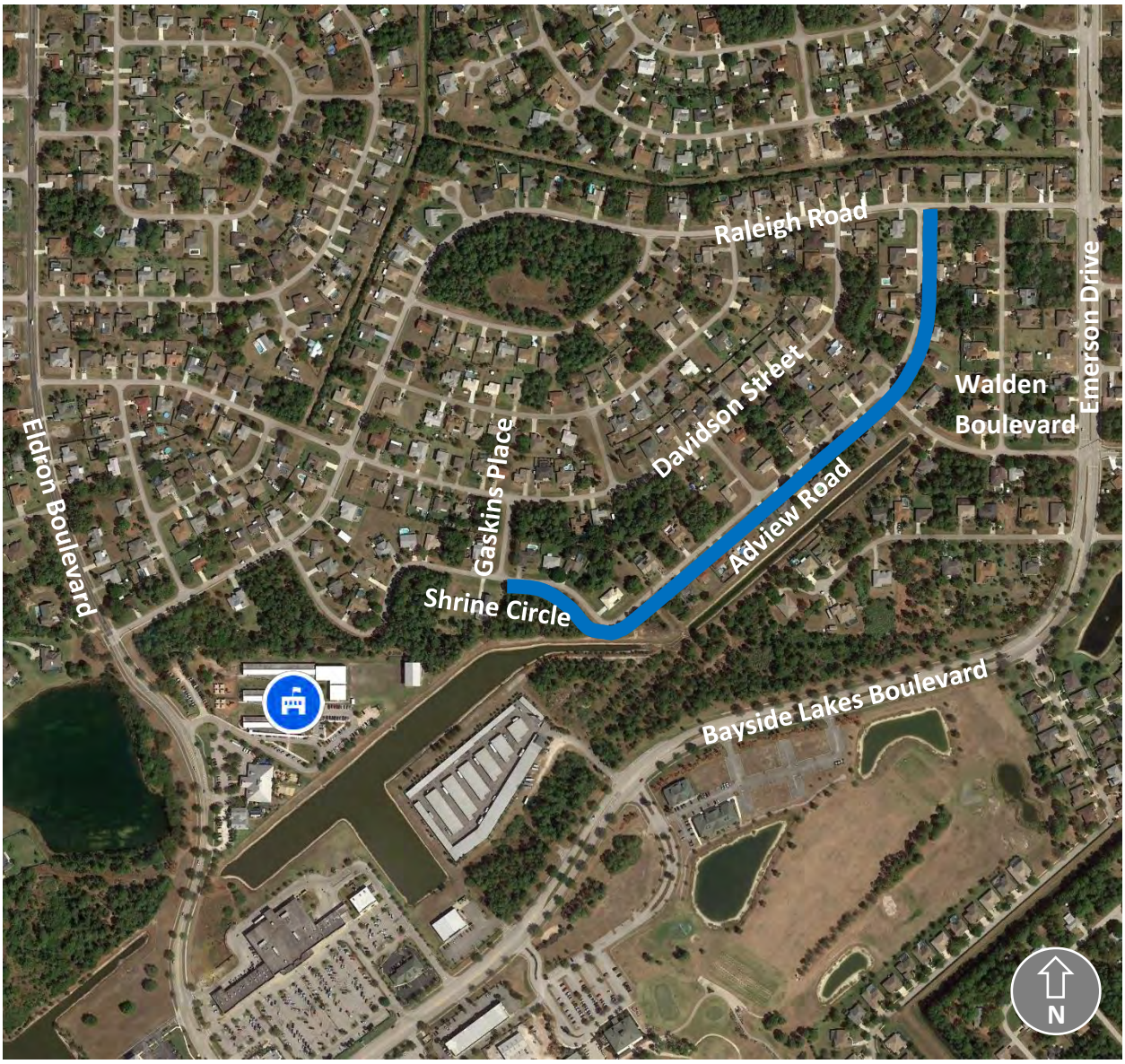
	Implementation Time-Frame	Maintenance
	Estimated Project Cost	Routine Maintenance
	Right-of Way Needed?	No
	Drainage or Utility Impact?	No
	Responsible Agency	Odyssey Charter School

Project 4: Construct a five to six foot sidewalk along Shrine Circle/Adview Road

Location	**Shrine Circle/Adview Road from just West of Gaskins Place to Raleigh Road**
Type	**Sidewalk**
Issue	There are sidewalk gaps along Shrine Circle and Adview Road.
Recommendation	Build a 5 foot to 6 foot wide sidewalk on the south/east side.

Sidewalk Gap Along Shrine Circle

	Implementation Time-Frame	**Long-Term**
	Estimated Project Cost	**$160,000 to $190,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Palm Bay**



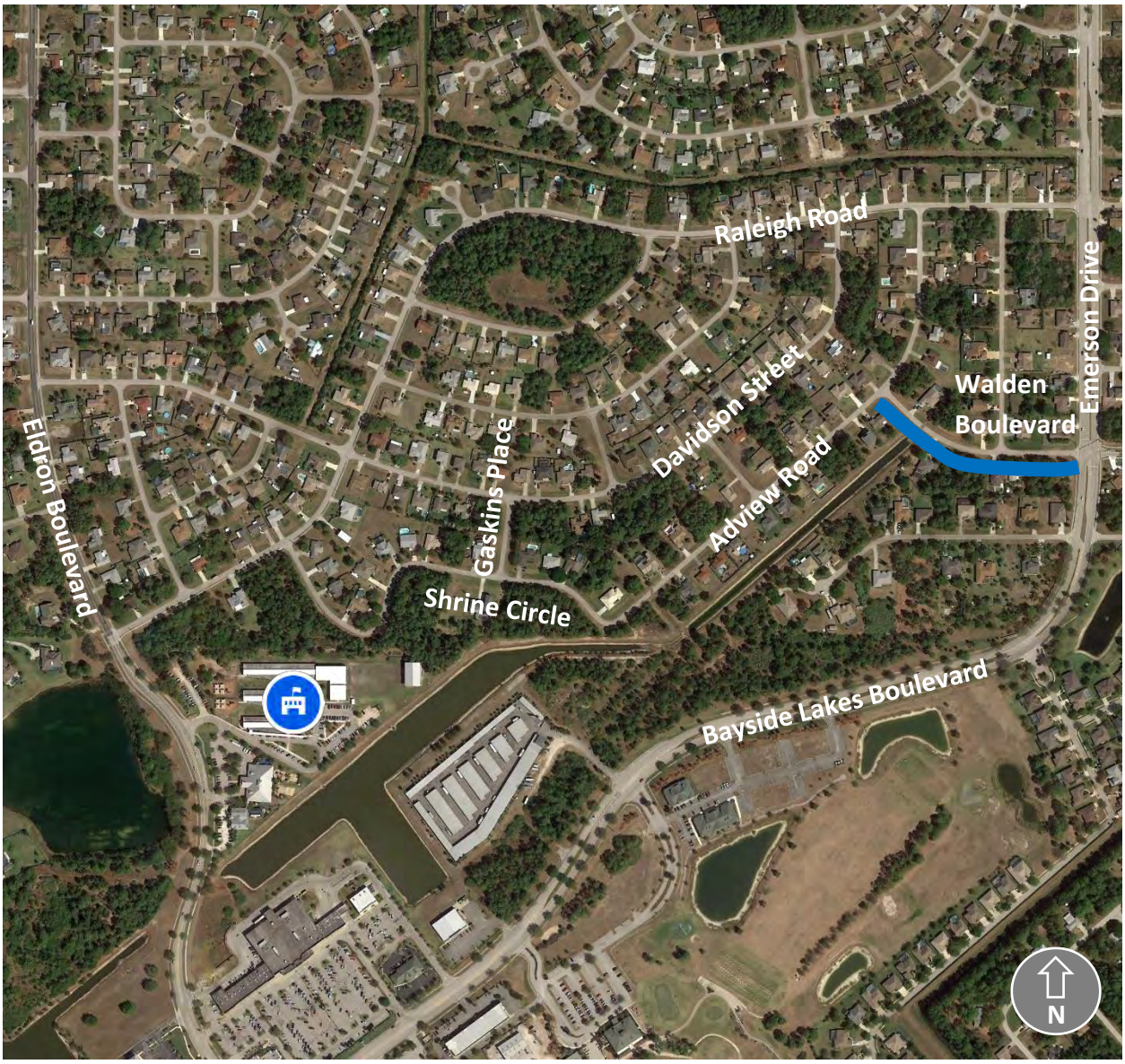
Add Sidewalk Along the South/East Side of Shrine Circle and Adview Road

Project 5: Construct a five to six foot sidewalk along Walden Boulevard

Location	**Walden Boulevard from Adview Road to Emerson Drive**
Type	**Sidewalk**
Issue	There are no sidewalks along Walden Boulevard.
Recommendation	Build a 5 foot to 6 foot wide sidewalk on the south side.

Lack of Sidewalks Along Walden Boulevard

	Implementation Time-Frame	**Long-Term**
	Estimated Project Cost	**$55,000 to $65,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Palm Bay**



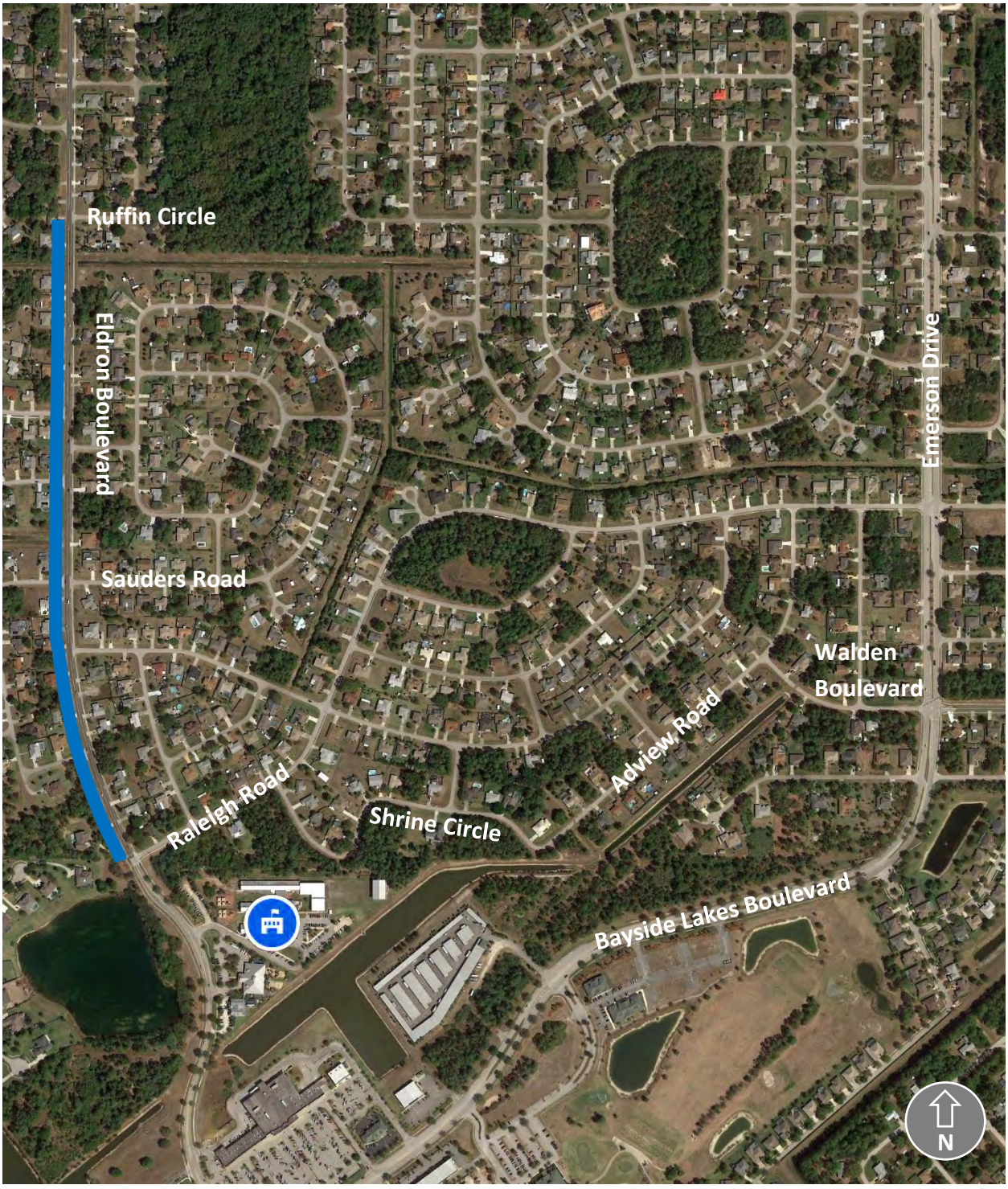
Add Sidewalk Along the South Side of Walden Boulevard

Project 6: Construct a five to six foot sidewalk along Eldron Boulevard

Location	**Eldron Boulevard from Raleigh Road to Ruffin Circle**
Type	**Sidewalk**
Issue	There is a sidewalk gap along Eldron Boulevard on the west side of the roadway.
Recommendation	Build a 5 foot to 6 foot wide sidewalk on the west side.

Sidewalk Gap Along Eldron Boulevard

	Implementation Time-Frame	**Long-Term**
	Estimated Project Cost	**$185,000 to $215,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Palm Bay**



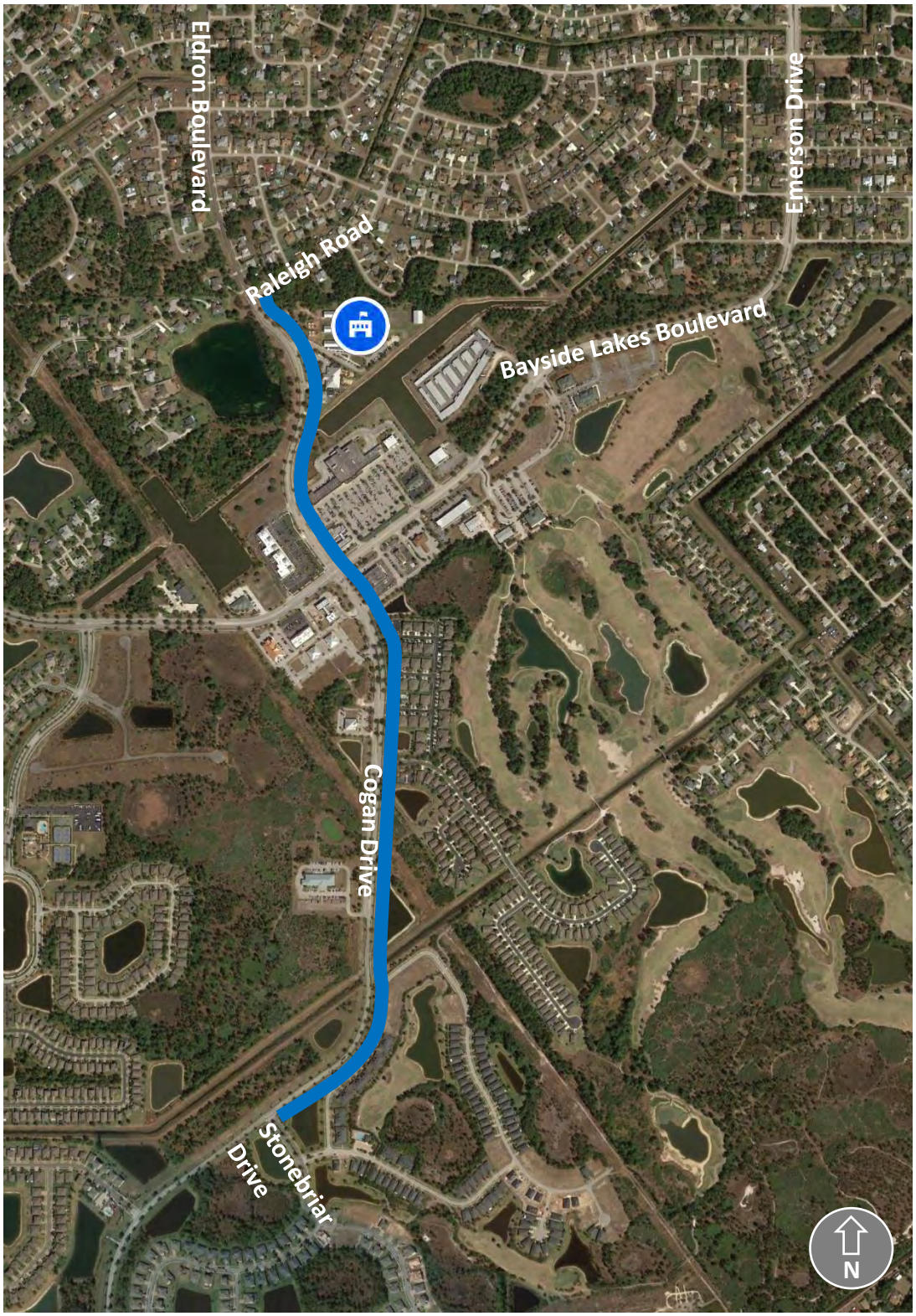
Add Sidewalk Along the West Side of Eldron Boulevard

Project 7: Widen sidewalk along Cogan Drive/Eldron Boulevard to a 10 to 12 foot shared use path

Location	Cogan Drive/Eldron Boulevard from Stonebriar Drive to Raleigh Road
Type	Sidewalk
Issue	There are no bicycle facilities along Cogan Drive or Eldron Boulevard.
Recommendation	Widen existing sidewalk to 10 foot to 12 foot shared use path on the east side.

Existing Sidewalk Along Eldron Boulevard

	Implementation Time-Frame	Long-Term
	Estimated Project Cost	$730,000 to $850,000
	Right-of Way Needed?	Unknown
	Drainage or Utility Impact?	Unknown
	Responsible Agency	City of Palm Bay



Widen Existing Sidewalk to a 10 to 12 Foot Shared Use Path on the East Side of the Roadway

Project 8: Restripe crosswalks to be high-visibility crosswalks and add ADA complain pedestrian ramps

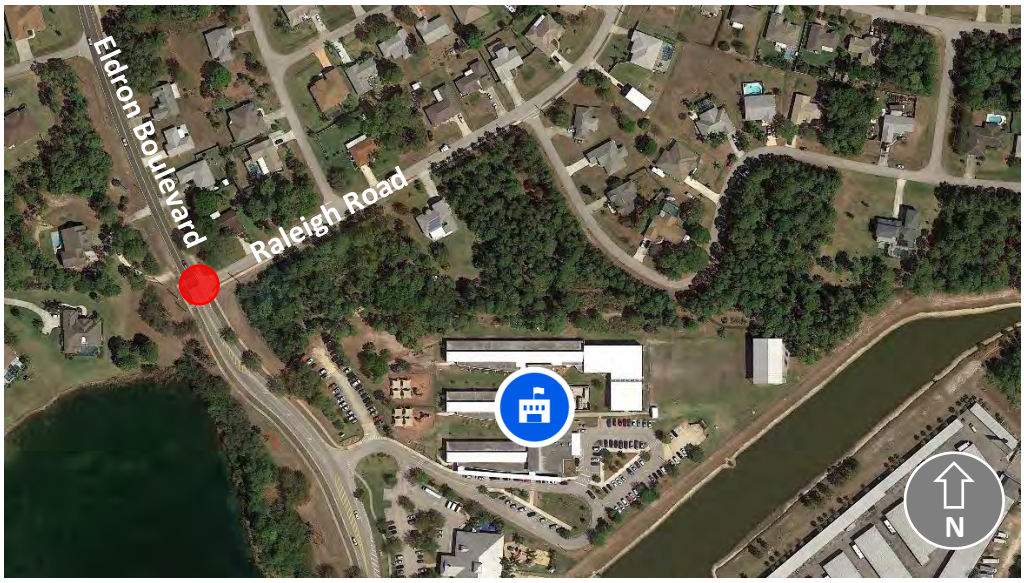
Location	Eldron Boulevard and Bayside Lakes Boulevard Intersection
Type	Crossing
Issue	The crosswalks at the intersection of Eldron Boulevard and Bayside Lakes Boulevard are faded and the pedestrian ramps are not ADA compliant.
Recommendation	Install high visibility crosswalks and upgrade pedestrian ramps to make them ADA compliant.

Restripe Crosswalks and Add ADA Compliant Pedestrain Ramps At the Intersection of Eldron Boulevard and Bayside Lakes Boulevard

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

Project 9: Conduct an operational/warrant study at the intersection of Eldron Boulevard and Raleigh Road

Location	Eldron Boulevard and Raleigh Road Intersection
Type	Feasibility Study (Intersection Control)
Issue	Speeding was observed along Eldron Boulevard and pedestrians and bicyclists were observed crossing at the intersection of Eldron Boulevard and Raleigh Road.
Recommendation	Conduct an operational/warrant study to review changing the two-way stop control to an all way stop control or signal/roundabout.



Intersection of Eldron Boulevard and Raleigh Road

	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

Project 10: Install 'No Parking' signs on Raleigh Road

Location	Raleigh Road from Eldron Boulevard to Kansas Road
Type	Sign/Signal
Issue	Parents were observed parking along Raleigh Road to drop-off/pick-up their student.
Recommendation	Install 'No Parking' signs on both sides of the roadway and increase enforcement.

Install 'No Parking' Signs Along Raleigh Road

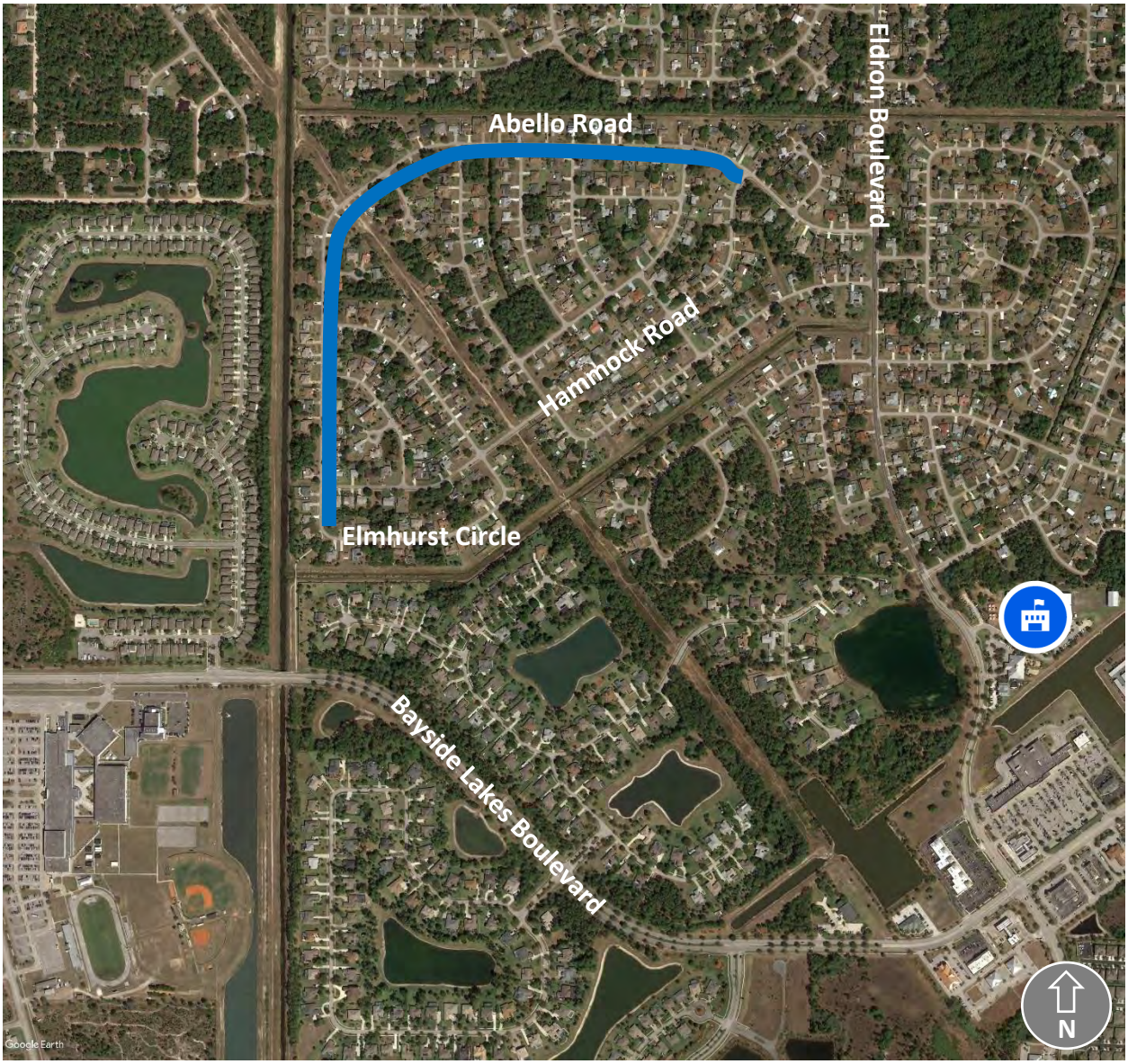
	Implementation Time-Frame	Near-Term
	Estimated Project Cost	$15,000 to $20,000
	Right-of Way Needed?	No
	Drainage or Utility Impact?	No
	Responsible Agency	City of Palm Bay

Project 11: Construct a five to six foot sidewalk along Abello Road

Location	**Abello Road from Hammock Road to Elmhurst Circle**
Type	**Sidewalk**
Issue	There is a sidewalk gap along Abello Road.
Recommendation	Build a 5 foot to 6 foot wide sidewalk on south/east side of Abello Road the road.

Lack of Sidewalk Along Abello Road

	Implementation Time-Frame	**Long-Term**
	Estimated Project Cost	**$275,000 to $320,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Palm Bay**



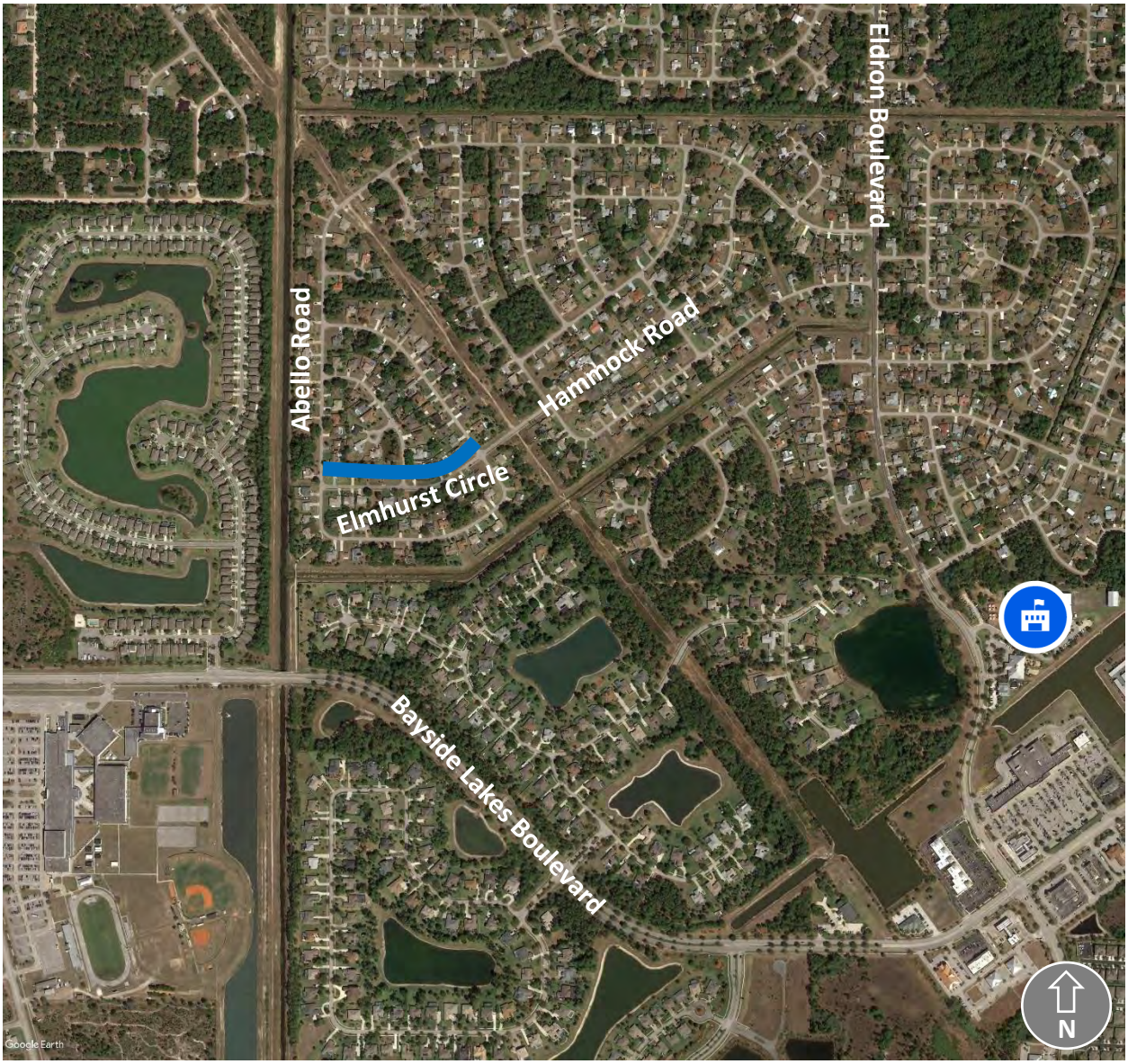
Add Sidewalk Along the South/East Side of Abello Road

Project 12: Construct a five to six foot sidewalk along Elmhurst Circle

Location	**Elmhurst Circle from Abello Road to Hammock Road**
Type	**Sidewalk**
Issue	There are no sidewalks along Elmhurst Circle.
Recommendation	Build a 5 foot to 6 foot wide sidewalk on north/west side of Abello Road the road.

Lack of Sidewalk Along Elmhurst Circle

	Implementation Time-Frame	**Long-Term**
	Estimated Project Cost	**$85,000 to $100,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Palm Bay**



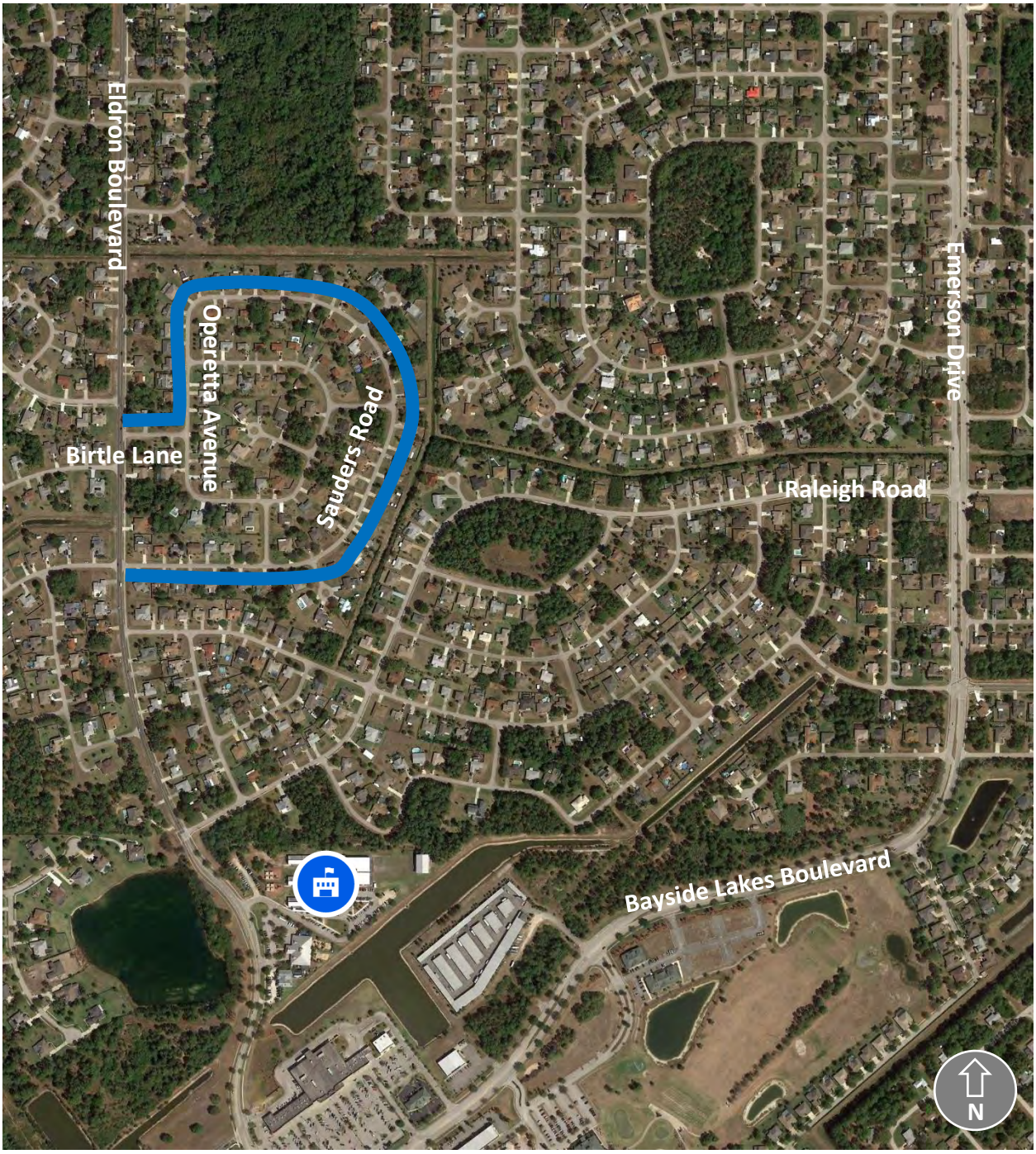
Add Sidewalk Along the North/West Side of Elmhurst Circle

Project 13: Construct a five to six foot sidewalk along Birtle Lane Lane/Operetta Avenue/Sauders Road

Location	**Birtle Lane/Operetta Avenue/Sauders Road from Eldron Boulevard to Eldron Boulevard**
Type	**Sidewalk**
Issue	There are no sidewalks along Birtle Lane/Operetta Avenue/Sauders Road.
Recommendation	Build a 5 foot to 6 foot wide sidewalk on one side of the road.

Lack of Sidewalk Along Sauders Road

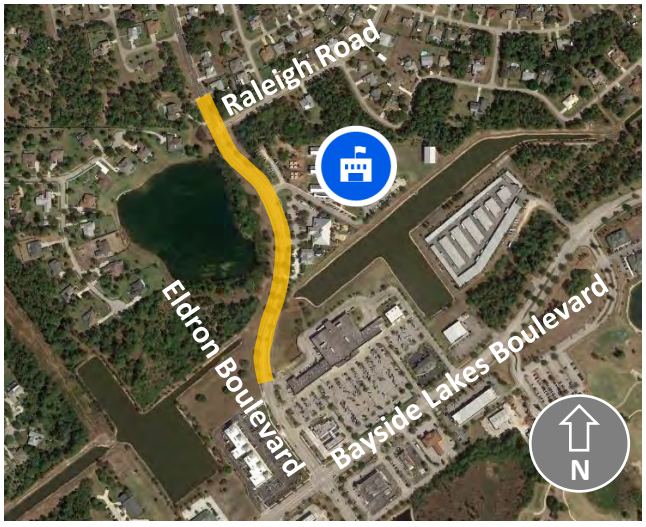
	Implementation Time-Frame	**Long-Term**
	Estimated Project Cost	**$240,000 to $280,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Palm Bay**



Add Sidewalk Along the Outer Edge of Britle Lane/Operetta Avenue/Sauders Road

Project 14: Adjust school zone speed limit to 15 MPH

Location	Eldron Boulevard from just North of Bayside Lakes Shopping Center to just North of Raleigh Road
Type	Sign/Signal
Issue	Speeding was observed along Eldron Boulevard. The school zone speed limit along Eldron Boulevard is not in accordance with guidance in the FDOT Speed Zoning Manual.
Recommendation	Adjust school zone speed limit to 15 MPH per guidance in the FDOT Speed Zoning Manual.

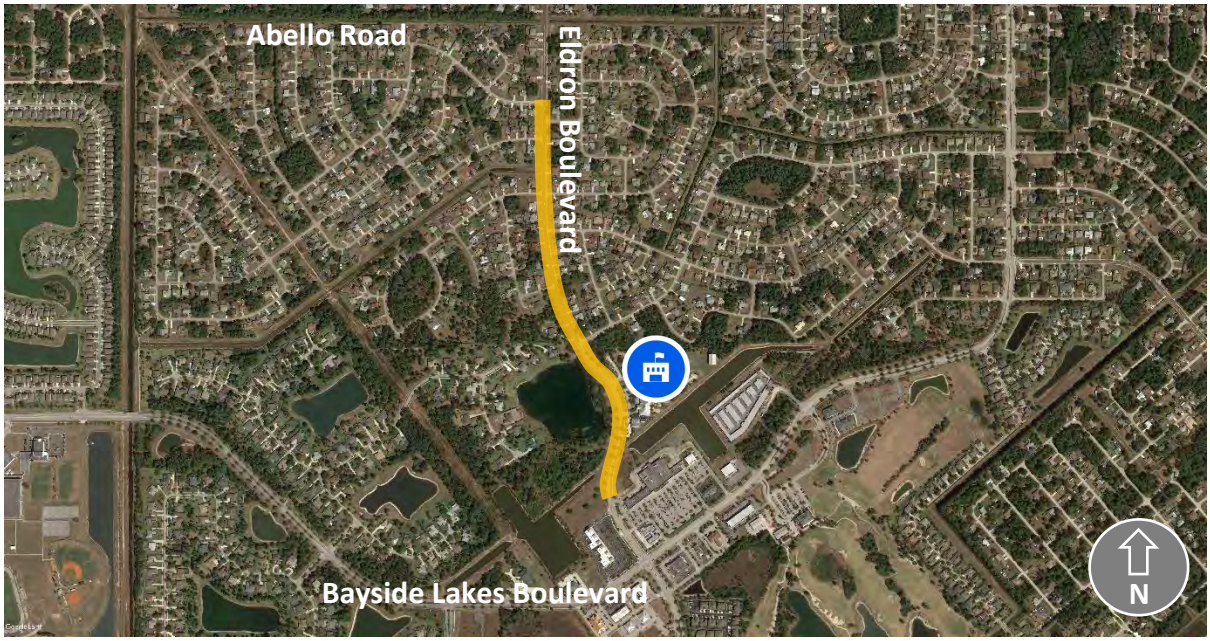


Existing School Zone Along Eldron Boulevard

	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

Project 15: Add traffic calming devices along Eldron Boulevard

Location	Eldron Boulevard from just North of Bayside Lakes Shopping Center to Abello Road
Type	Traffic Calming
Issue	Speeding was observed along Eldron Boulevard.
Recommendation	Add traffic calming devices such as speed humps, raised crosswalks, street trees, etc.



Add Traffic Calming Devices Along Eldron Boulevard

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

Typical Traffic Calming Treatments

Speed Cushion

Speed Hump

Street Trees

Curb Extension

Prepared For:

SPACE COAST TPO

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

Prepared By:

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225 E Robinson Street,
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