SCHOOL ROUTES ANALYSIS

ROY ALLEN ELEMENTARY SCHOOL

ASSESSMENT & IMPLEMENTATION REPORT

JULY 2020

SPACE COAST TPO

KITTELSON & ASSOCIATES

School Routes Analysis

Roy Allen Elementary School

Melbourne, 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 Roy Allen Elementary School located at 2601 Fountainhead Boulevard, Melbourne, FL 32935.

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 Roy Allen Elementary School are summarized in **Table 1**.

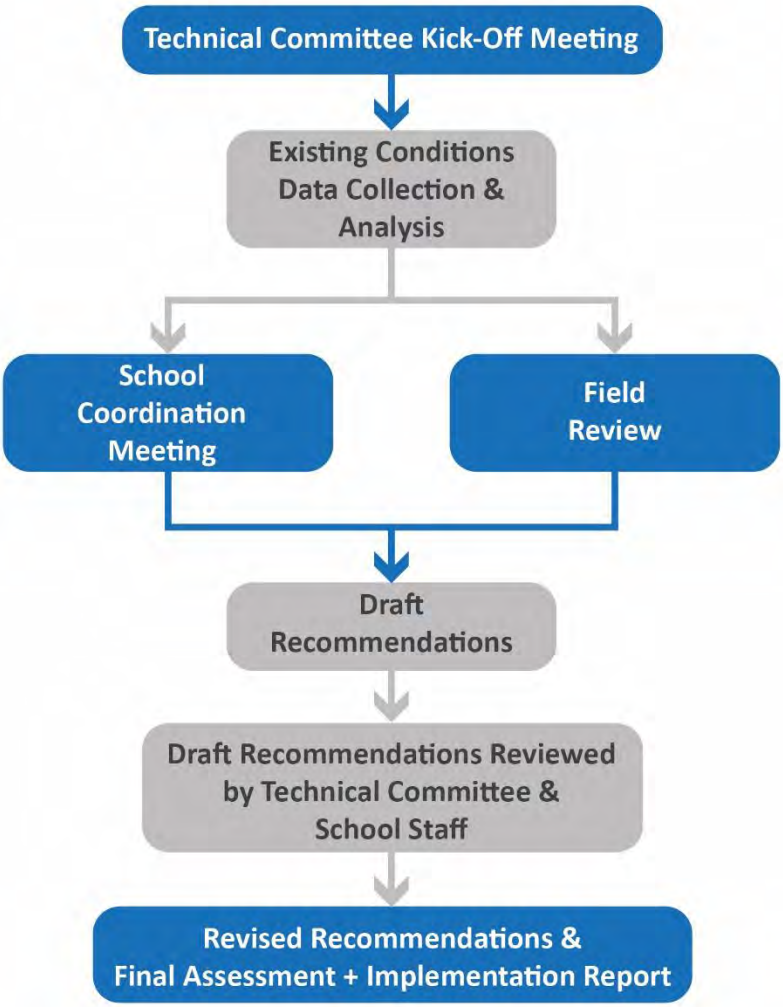


Figure 1: Study Process

Table 1: Recommendations Summary

School Campus Recommendations					
No.	**Location**	**Recommendation**	**Type**	**Time-Frame**	**Cost Estimate**
1	School Campus	Re-stripe faded crosswalks as high visibility crosswalks.	Crossing	Maintenance	<$10,000
2	School Campus	Install signs for Drop-Off/Pick-Up loop.	School Circulation	Near-Term	$10,000 to $15,000
Study Area Recommendations					
3	Canal between Choctaw Drive and Fountainhead Boulevard	Conduct a feasibility study to add a paved trail connecting Jimmy Moore Park and Roy Allen Elementary School.	Feasibility Study (Trail)	Near-Term	Further study is required
4	Iroquois Avenue from Choctaw Drive to Sarno Road	Build 5 to 6 foot wide sidewalks on both sides.	Sidewalk	Near-Term	$115,000 to $130,000
5	Fountainhead Boulevard from Wickham Road to Roy Allen Elementary School	Install traffic calming devices such as speed cushions, curb extensions, speed humps etc.	Traffic Calming	Near-Term	Further study is required
6	Fatzler Road from Osage Avenue to Croton Road	Install traffic calming devices such as speed cushions, curb extensions, speed humps etc.	Traffic Calming	Near-Term	Further study is required

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
7	Fatzler Road from Osage Avenue to Croton Road	Conduct a feasibility study to evaluate adding bike lanes and/or wider sidewalks	Feasibility Study (Bike Lanes/Side walks)	Near-Term	Further study is required
8	Osage Avenue from Fatzler Road to Sarno Road	Install traffic calming devices such as speed cushions, curb extensions, speed humps, etc.	Traffic Calming	Near-Term	Further study is required
9	Dijon Drive from Corbusier Drive to Fountainhead Boulevard	Install traffic calming devices such as speed cushions, curb extensions, speed humps etc.	Traffic Calming	Near-Term	Further study is required
10	Canals south of Chartres Avenue, Quebec Avenue, Apache Drive, Montgomery Road, and between Cheyenne Avenue and Clark Avenue	Conduct a feasibility study to add paved trails along the canal ROWs.	Feasibility Study (Trail)	Near-Term	Further study is required
11	Fountainhead Boulevard and Roy Allen Drive	Add a crossing guard.	Crossing	Near-Term	Coordinate staffing

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
12	Fountainhead Boulevard and Roy Allen Drive	Install raised crosswalks or raised intersection or re-stripe as high visibility crosswalk markings and upgrade pedestrian ramps to make them ADA compliant.	Crossing	Long-Term	$10,000 to $100,000
13	School Zone	Evaluate existing extents of the school zone and re-sign new school zone	Sign/Signal	Near-Term	Further study is required
14	School Zone	Install flashing beacons for school zone reduced speed sign.	Sign/Signal	Near-Term	$10,000 to $15,000
15	Wickham Road	Fill in gaps with 5 to 6 foot wide sidewalks on both sides.	Sidewalk	Long-Term	$800,000 to $925,000
16	Loop - Cresthaven Parkway, Dakota Drive, Comanche Avenue, Cheyenne Avenue, Apache Drive	Build a 5 to 6 foot wide sidewalks on both sides.	Sidewalk	Long-Term	$815,000 to $950,000


Fountainhead Blvd
Roy Allen Dr
STOP

Assessment

This section of the report documents the existing conditions within Roy Allen Elementary 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 Roy Allen Elementary 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.

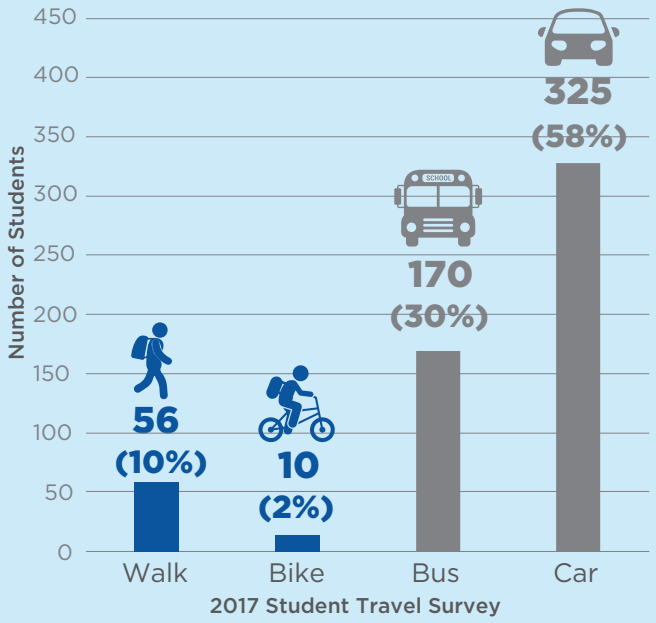
Previous and Ongoing Studies

The Sarno Road Corridor Study was completed in 2018 by the City of Melbourne, Brevard County, FDOT, and the SCTPO and spans from Eau Gallie Boulevard to US 1. This study recommended short-term, medium-term, and long-term recommendations to improve pedestrian and bicycle facilities as well as to address safety issues, traffic operations, and transit movements along the corridor.

The SCTPO Bicycle and Pedestrian Master Plan prioritizes bicycle facilities along Wickham Road and sidewalks along Nasa Boulevard.

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

Student Travel Modes (2017)



2017 Student Travel Survey

Total Bicycle & Pedestrian Crashes within Study Area

12 Pedestrian

17 Bicycle

School Aged Bicycle & Pedestrian Crashes within Study Area

5 Pedestrian

1 Bicycle

5 Injury

1 Property Damage Only

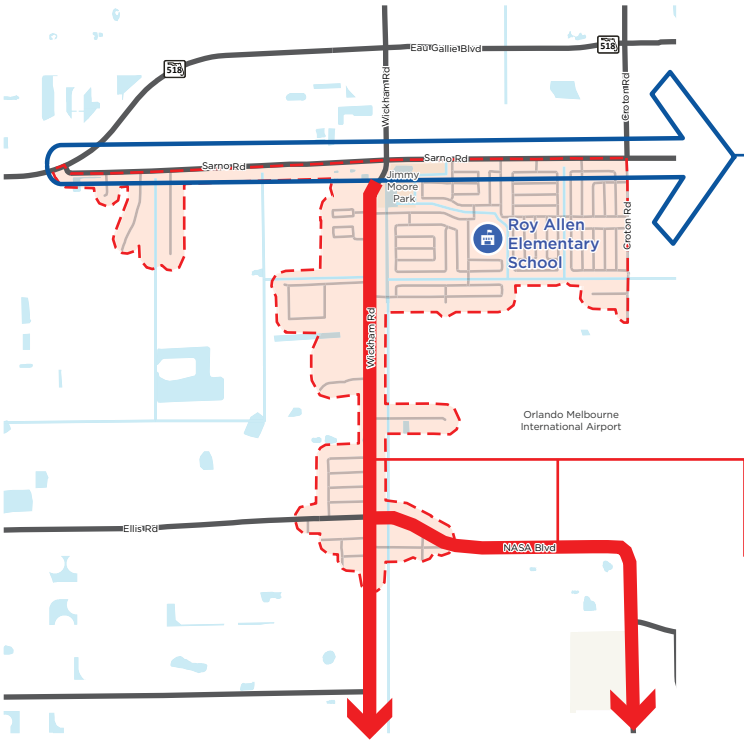
2014 to 2018 Crashes from University of Florida's Signal Four Analytics Database

Signals and Crossings within Study Area

8 Signalized Intersections

0 Unsignalized Marked Crosswalks Across Major Streets

0 No Crossing Guards



Previous & Ongoing Plans

Sarno Road Corridor Study (2018)

- Reconstruct sidewalks from Wickham Road to US 1 to 8' where possible (both sides of roadway).
- Construct 8' wide sidewalks along Sarno Road from Eau Gallie Boulevard to Wickham Road (both sides of roadway).
- Construct a five-lane urban roadway section from Croton Road to Apollo Boulevard.
- Develop a comprehensive landscaping plan.

Bicycle & Pedestrian Master Plan (Ongoing)

- Bicycle Facilities and Sidewalks prioritized along Wickham Road.
- Sidewalks prioritized along NASA Boulevard.

Figure 2: Background Information

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School Routes Analysis

Roy Allen Elementary 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 Melbourne and SCTPO as well as utilizing aerial satellite imagery and field review observations.

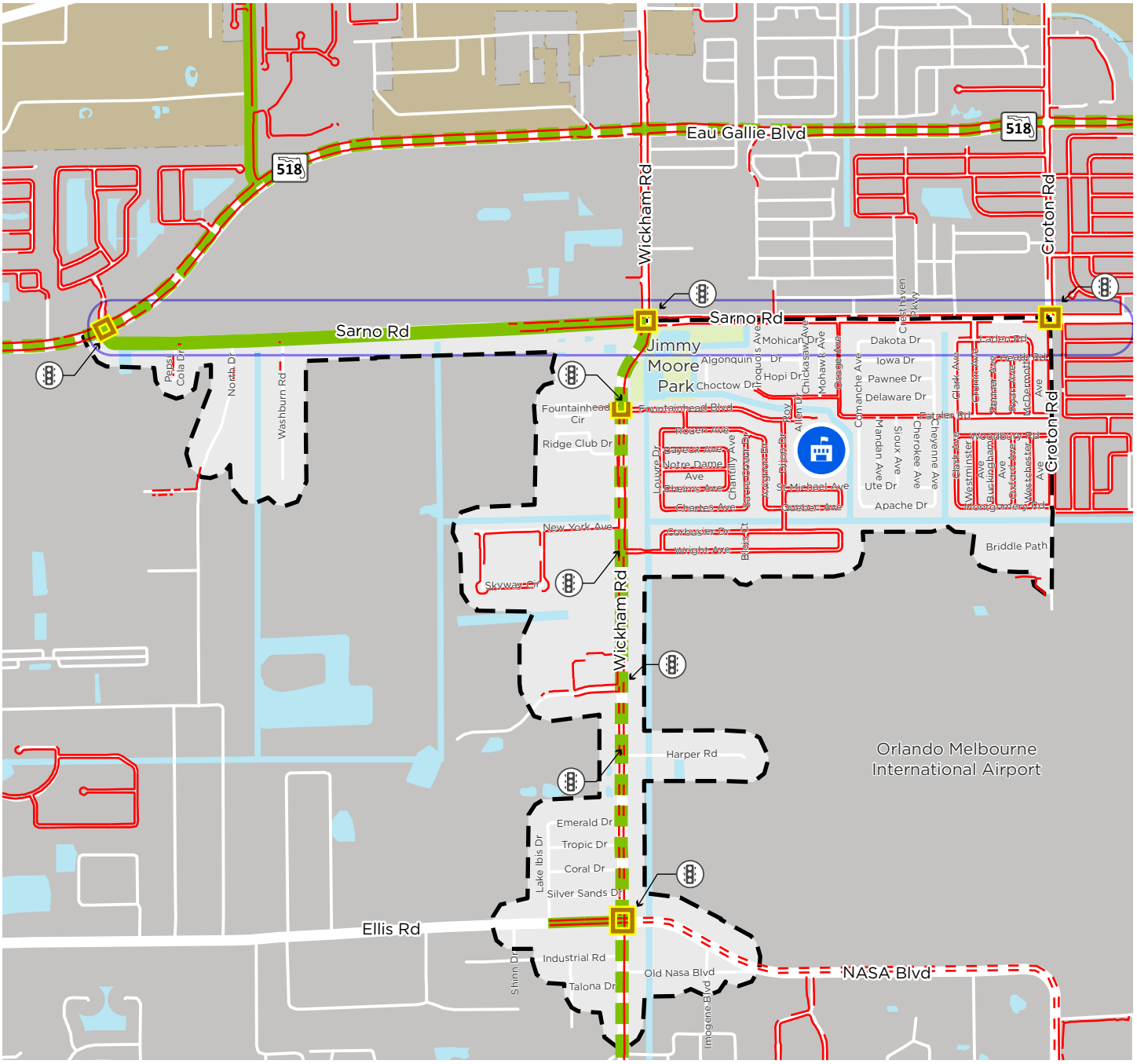
Sarno Road has sidewalks on both sides from Croton Road to Apollo Boulevard and on the south side from Apollo Boulevard to US 1. The Sarno Road Corridor Study recommended to enhance the FEC railroad crossing to include pedestrian facilities on both the north and south sides of Sarno Road. The study also proposed to reconstruct sidewalks from Wickham Road to US 1 to 8' wide on both sides of roadway as a long-term recommendation.

There are sidewalk gaps on Wickham Road at the intersection with Fountainhead Boulevard, and there are no crosswalk markings on the north leg of the intersection. Currently proposed sidewalk facilities were mapped using recommendations from the SCTPO Bicycle and Pedestrian Master Plan. Sidewalk facilities are proposed along Wickham Road on both sides of the roadway from Nasa Boulevard to Sarno Road within the study area. Sidewalk facilities are also proposed on both sides of the roadway for Nasa Boulevard from Wickham Road to the east study area limits. The neighboring streets of Fatzler Road and Iroquois Avenue could accommodate bicycle lanes and sidewalks, respectively.

The only bicycle facility within the study area is located along Sarno Road from Eau Gallie Boulevard to Wickham Road. Currently proposed bicycle facilities were mapped using recommendations from the SCTPO Bicycle and Pedestrian Master Plan. Bicycle facilities are proposed along Wickham Road from the southern boundary of the study area to Sarno Road within the study area.

Signalized intersections and marked crosswalks across major streets were mapped using data from aerial satellite imagery. The signalized intersections along Sarno Road have crosswalks for students to cross northbound and southbound across Sarno Road. Crossing guard information was provided by the City of Melbourne. There are no crossing guards or police enforcement to assist with traffic for Roy Allen Elementary School.

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.



Roy Allen Elementary School

Existing Sidewalk

Prioritized Sidewalk (As per Draft Bicycle & Pedestrian Master Plan)

Marked Crosswalks across Major Streets

Existing Bicycle Facilities*

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

Study Area

Sarno Road Corridor Study

Traffic Signals within Study Area

City of Melbourne

Unincorporated Brevard County

** 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.*

Feet

0 2,000 4,000

N

Figure 3: Existing and Planned Bicycle and Pedestrian Facilities

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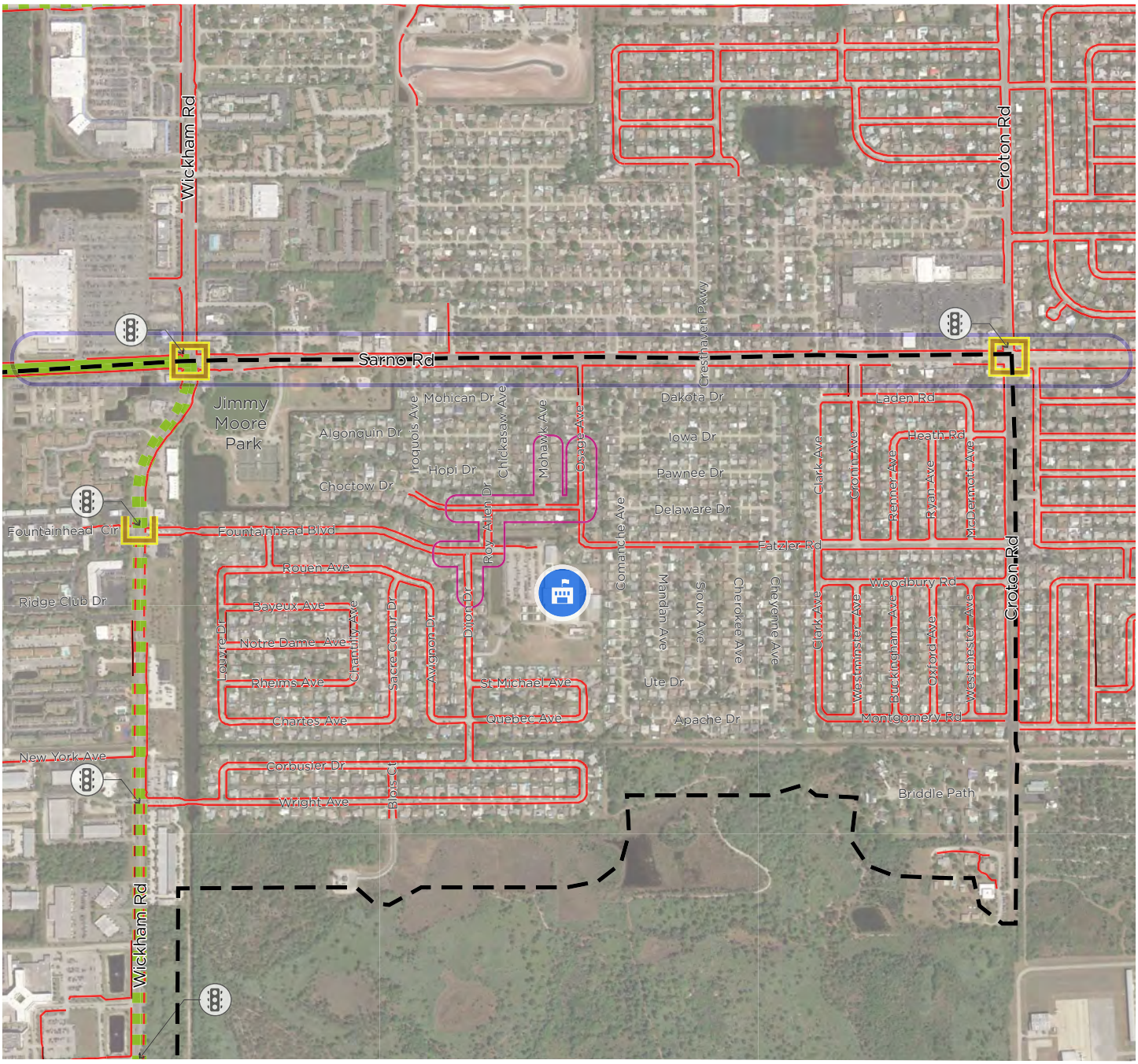
School Routes Analysis

Roy Allen Elementary School



Roy Allen Elementary School

Existing Sidewalk

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.*

Sarno Road Corridor Study

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

Roy Allen Elementary 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 Roy Allen Drive, Fountainhead Boulevard, and Dijon Drive is 25 miles per hour (MPH). The speed limit on Sarno Road and Wickham Road by Roy Allen Elementary is 40 MPH and 35 MPH, respectively. AADT information was mapped using data from SCTPO's 2018 State of the System (SOS) and FDOT. Traffic volumes along Sarno Road and Wickham Road in front of the school ranges from 20,000 to 40,000 vehicles per day.

School zone and school zone advance warning areas were mapped using data from aerial satellite imagery and field review observations. School zone designation spans multiple streets and intersections and does not appear to be consistent. There are no flashing beacons for school zone speed limit signs. Generally, school zones appear unenforced.

Figure 5 shows the existing conditions of traffic data.

School Campus Circulation

There is one entrance at the intersection of Fountainhead Boulevard and Roy Allen Drive for students arriving by car. Students walking and biking to school use the sidewalk on either side of Fountainhead Boulevard. The purpose of both entrances is to prevent students from crossing Fountainhead Boulevard. There are two bicycle racks on campus – one on the north side of campus and one on the southwest corner of campus. The school buses and daycare vans enter and exit on Dijon Drive.

Figure 6 shows various circulation patterns within the school campus.

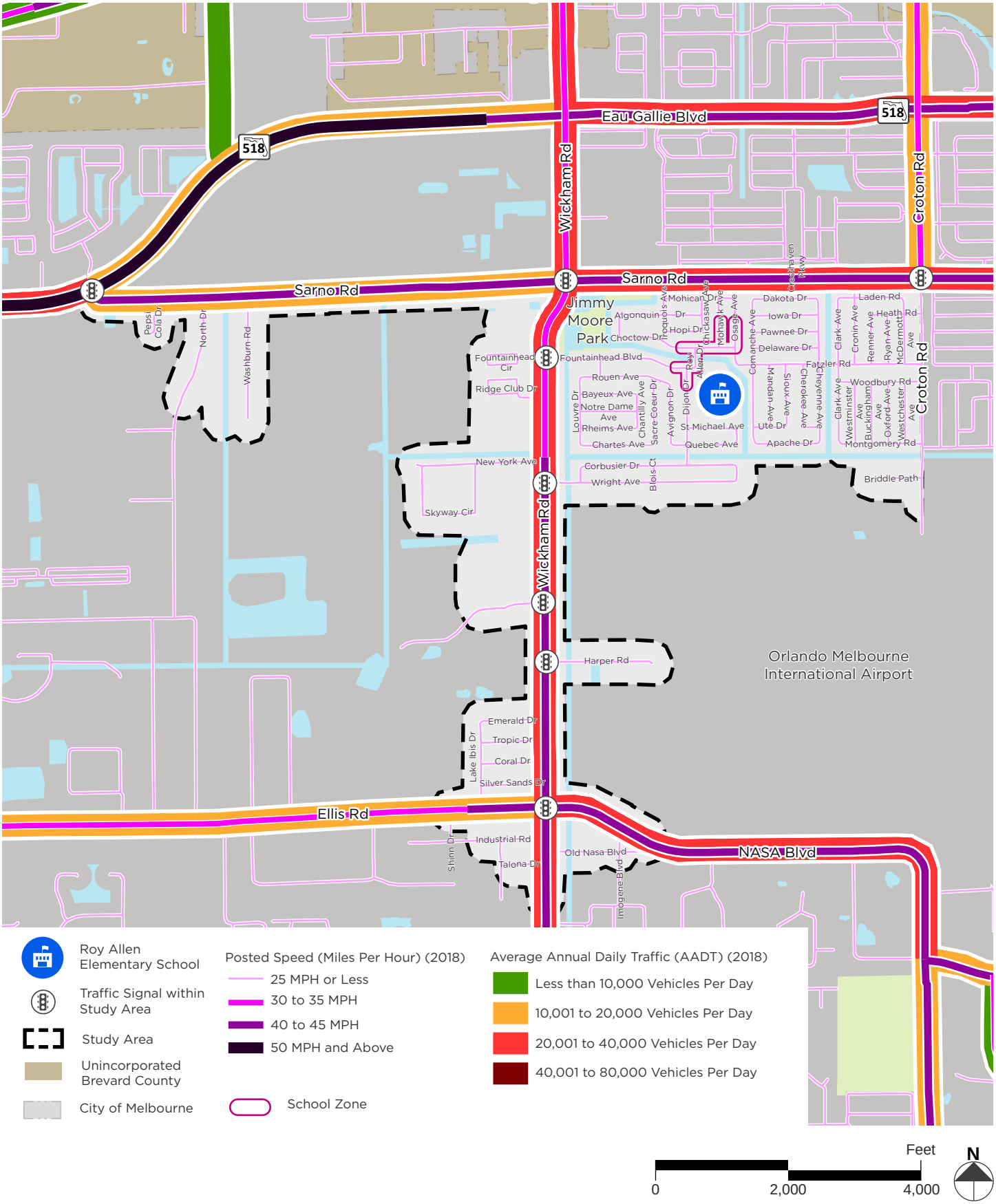
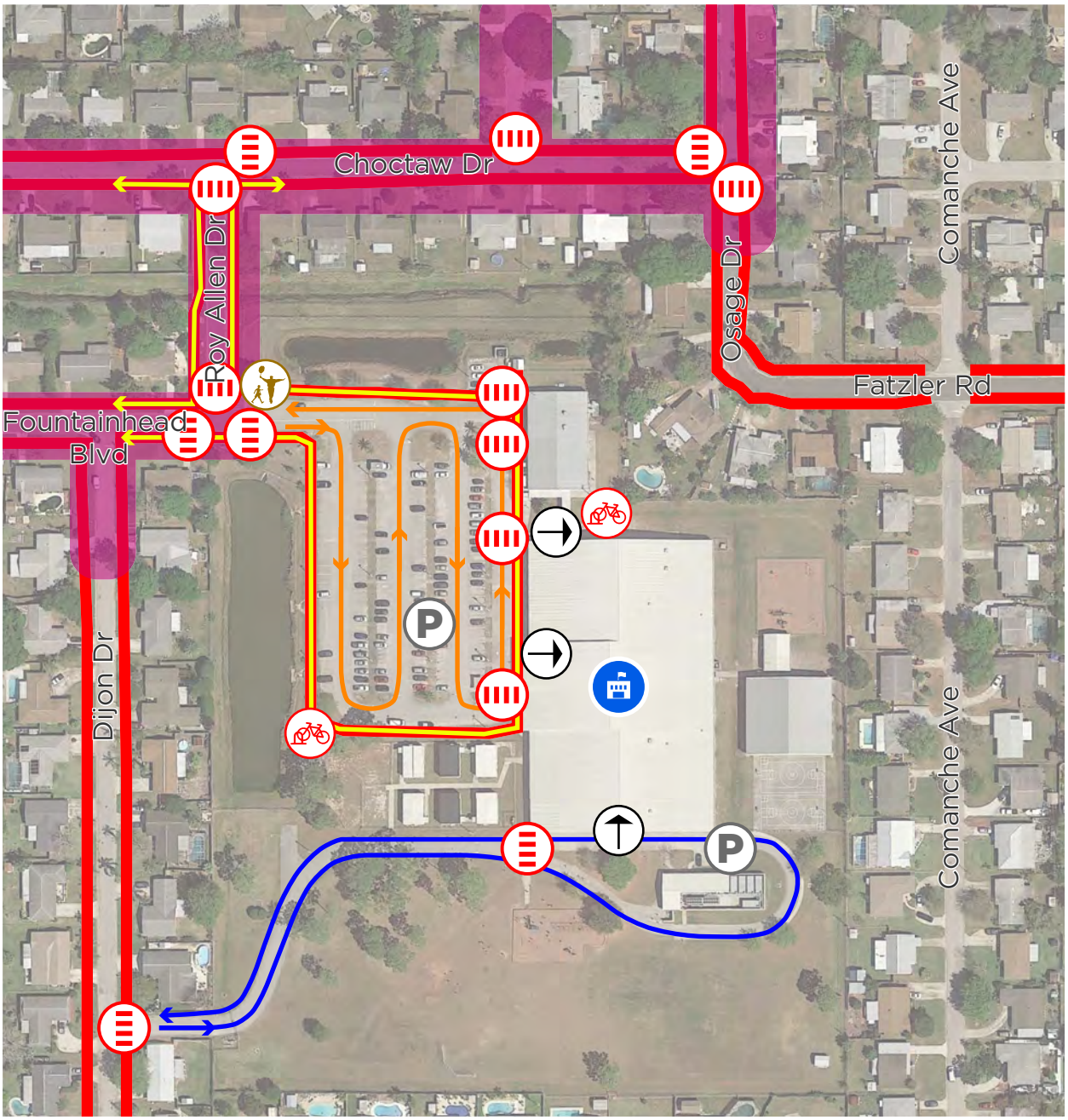


Figure 5: Existing Conditions Traffic Data

School Routes Analysis

Roy Allen Elementary School



Roy Allen Elementary School

Marked Crosswalks

School Building Entrance

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 School Circulation Map

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School Routes Analysis

Roy Allen Elementary 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 2017 and the latest Parent Survey was conducted in 2018. This section summarizes the results of these surveys for Roy Allen Elementary 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 Roy Allen Elementary School were surveyed asking how they traveled to and from school.

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.

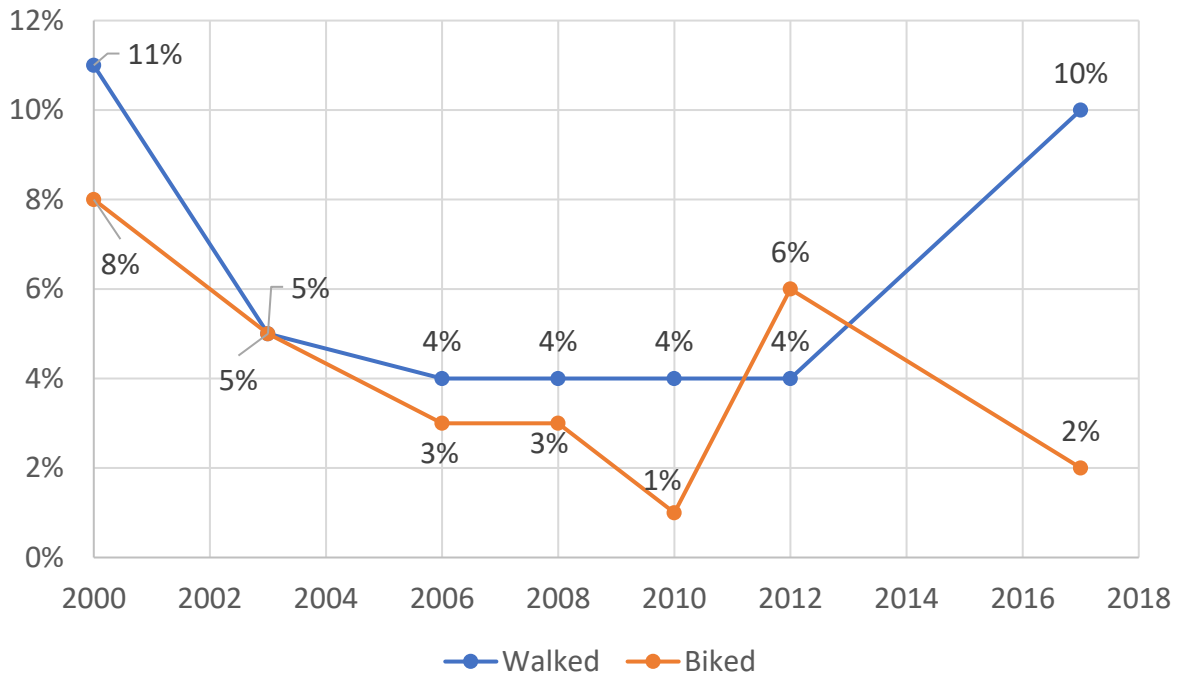

Figure 7: Percentage of Students Walking or Biking to School from 2000 to 2017

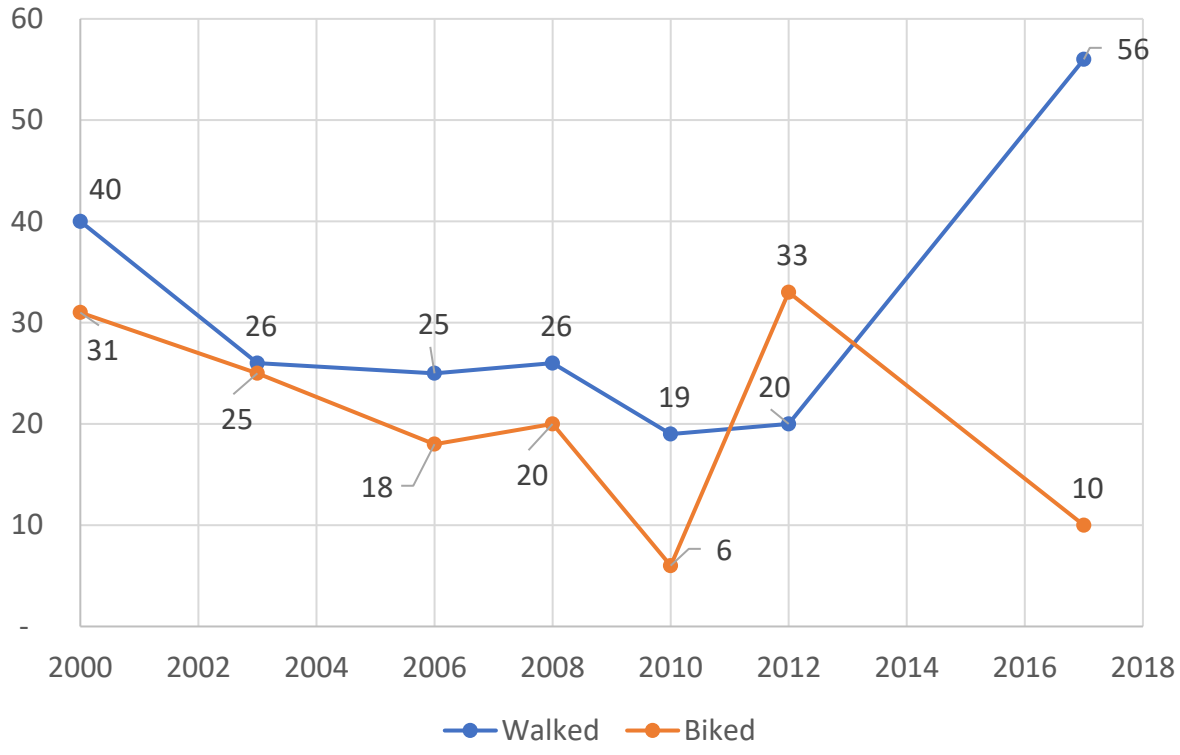

Figure 8: Total Number of Students Walking or Biking to School from 2000 to 2017

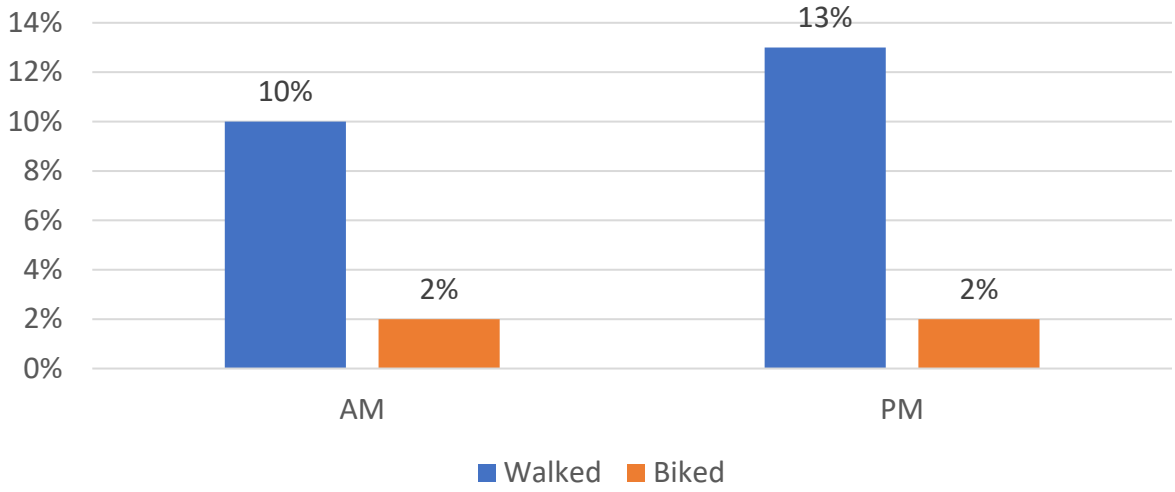

Figure 9: Percentage of Students Walking or Biking to School in 2017 in AM and PM

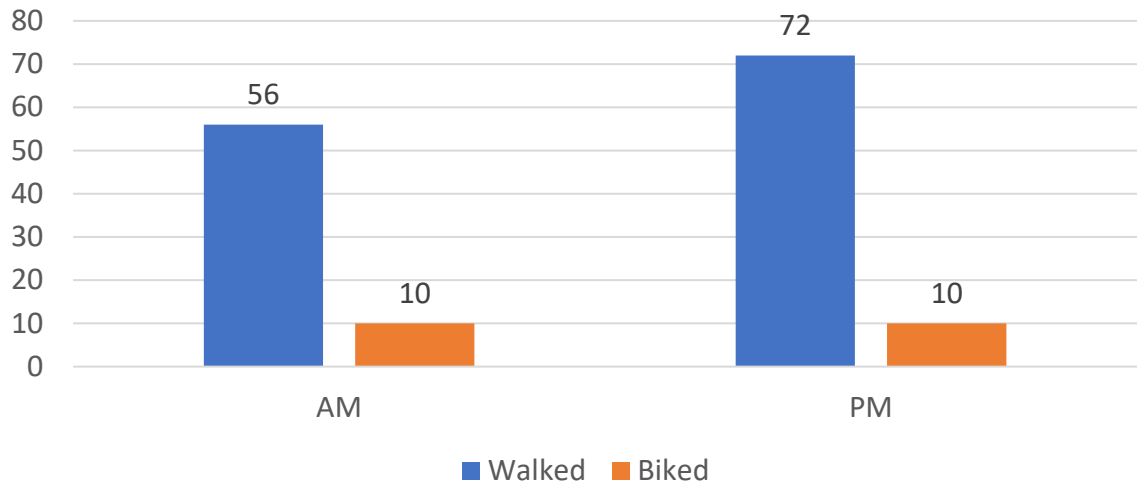

Figure 10: Total Number of Students Walking or Biking to School in 2017 in AM and PM

Main takeaways from the Student Travel Mode Survey:

- Based on the survey data from year 2000 to 2017, on average about 10 percent of total students travel by walking (six percent) or biking (four percent).
- The total number of students seen walking to school increased from 2000 to 2017 from 40 to 56. More students answered the survey in 2017 than in 2000 (561 from 370.)
- The total number of students seen biking to school decreased from 2000 to 2017 from 31 to 10.
- On average, more students walk in the afternoon than in the morning. Most students either travel by car (58 percent) or bus (30 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.

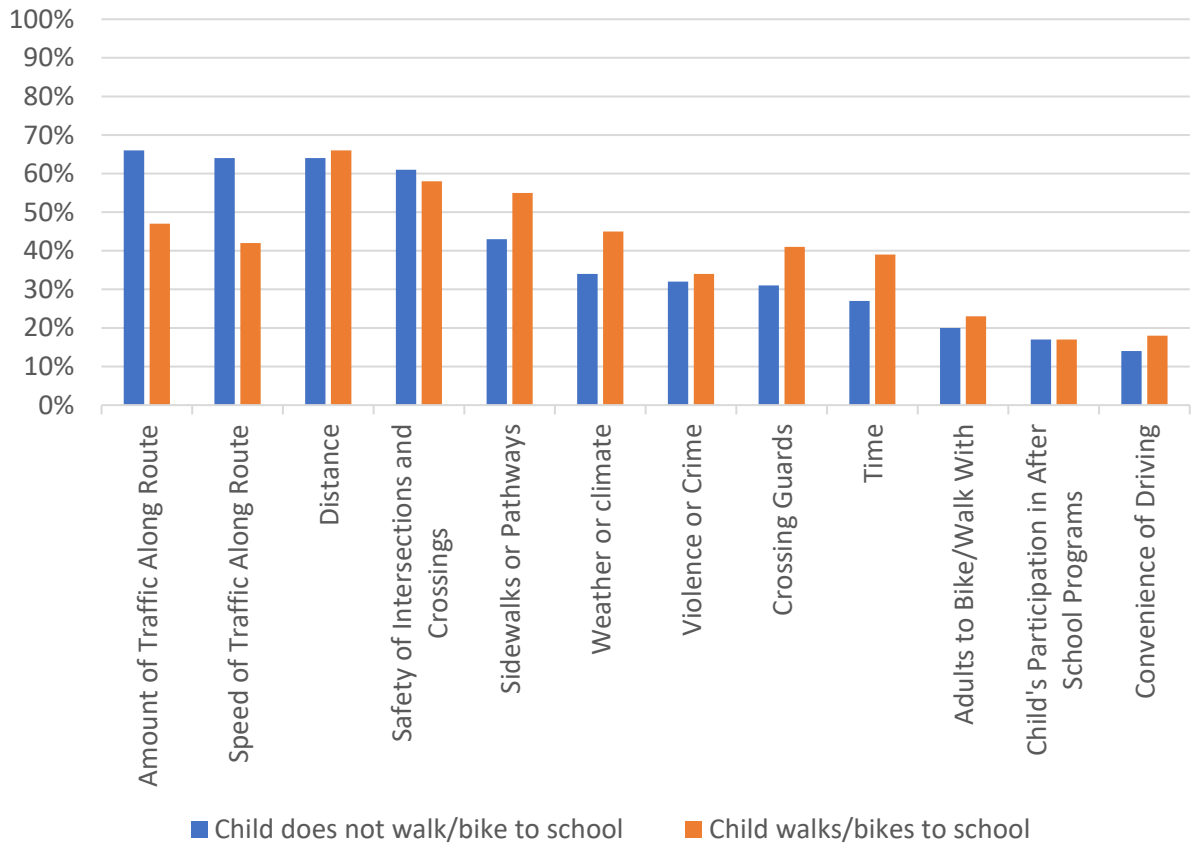

Figure 11: Issues Reported to Affect the Decision to Allow a Child to Walk or Bike to/from School by Parents (Based on 2018 Survey)

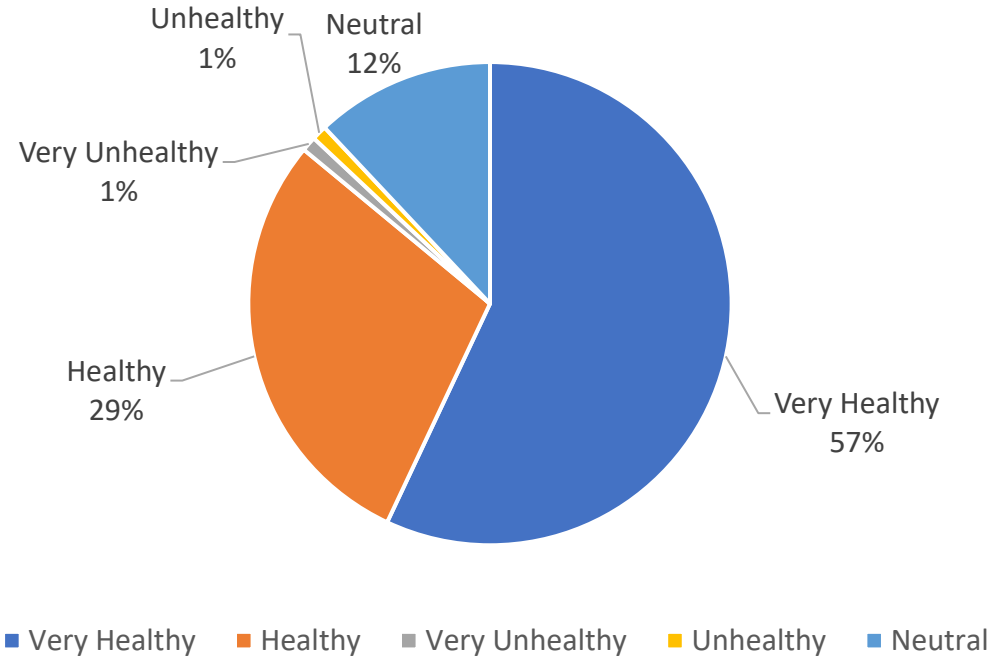

Figure 12: Parent's Opinions about How Healthy Walking and Biking to/from School is for Their Child (Based on 2018 Survey)

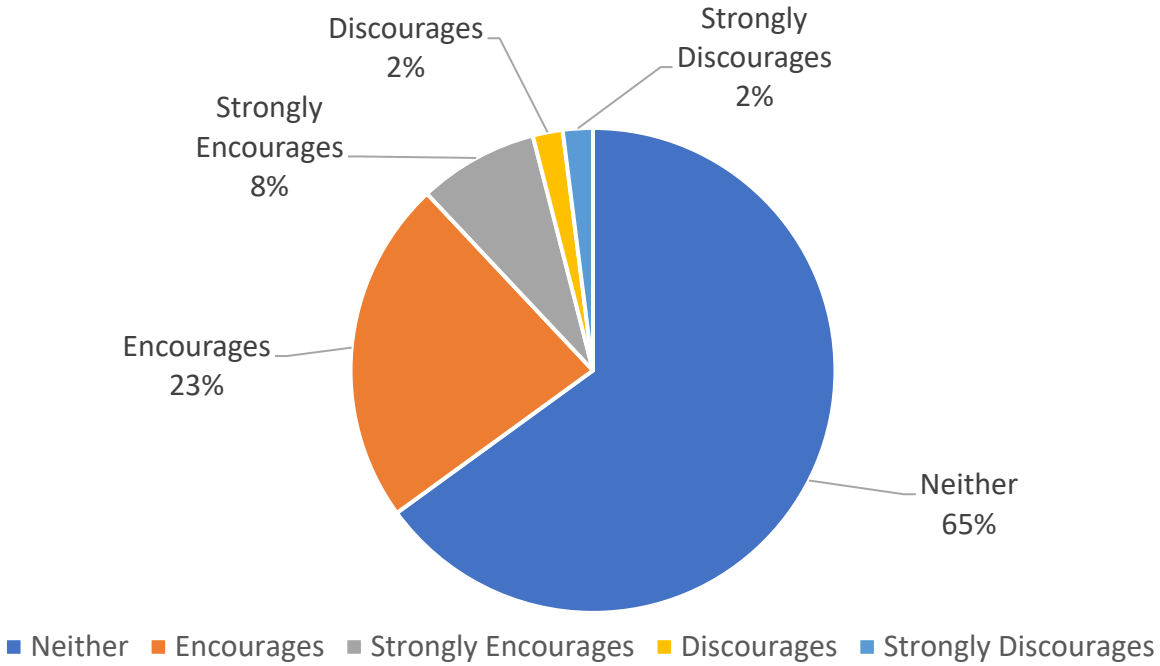

Figure 13: Parent's Opinions about How Much their Child's School Encourages or Discourages Walking and Biking to/from School (Based on 2018 Survey)

Main takeaways from the Parent Survey:

- The most common issues that affect, both, the 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 Roy Allen Elementary 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 Roy Allen Elementary School study area.

Pedestrian/Bicycle Crash Statistics

There were 29 total pedestrian and bicycle crashes within the study area (12 pedestrian and 17 bicycle). Six of the crashes were property damage only, 22 of the crashes resulted in injury, and one crash resulted in a fatality. Fifty-five percent of crashes occurred during the day and 93 percent of 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**.

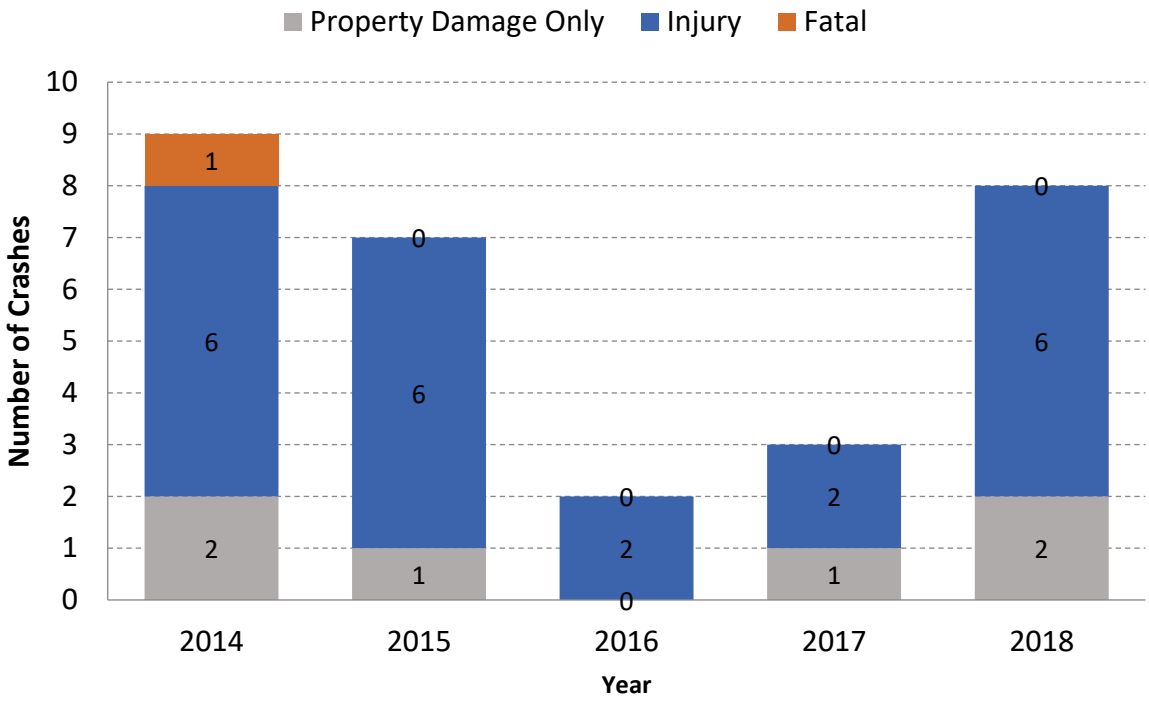

Figure 14: Crashes by Year and Severity

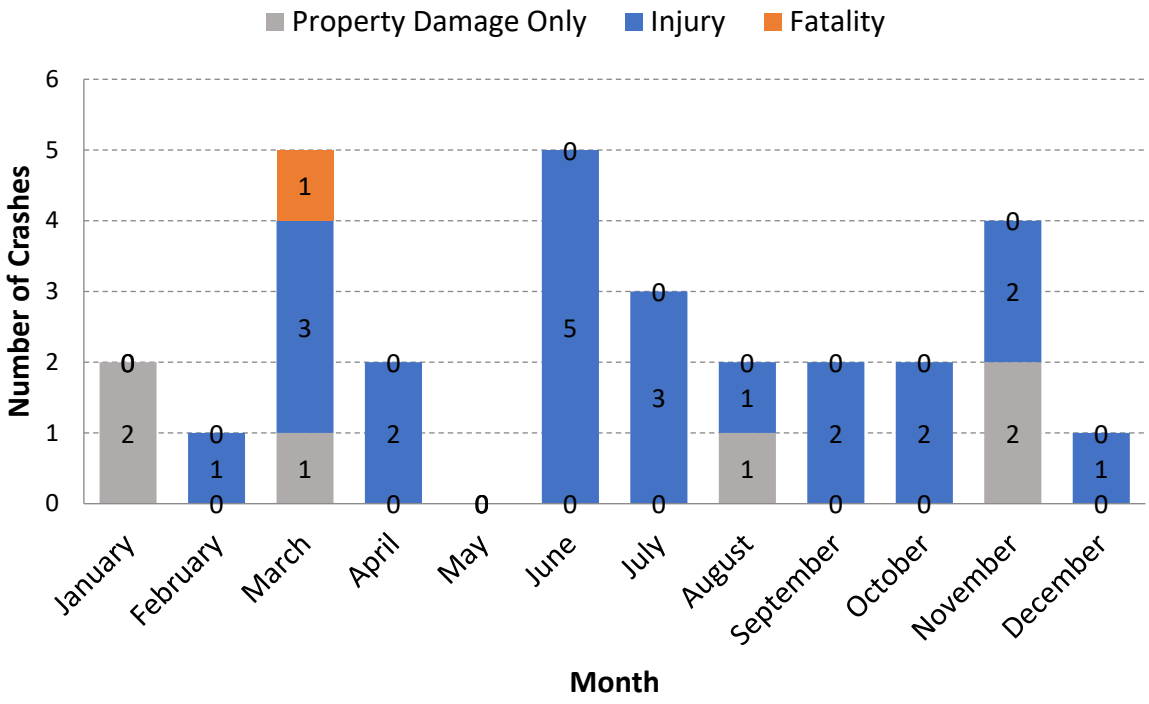

Figure 15: Crashes by Month and Severity

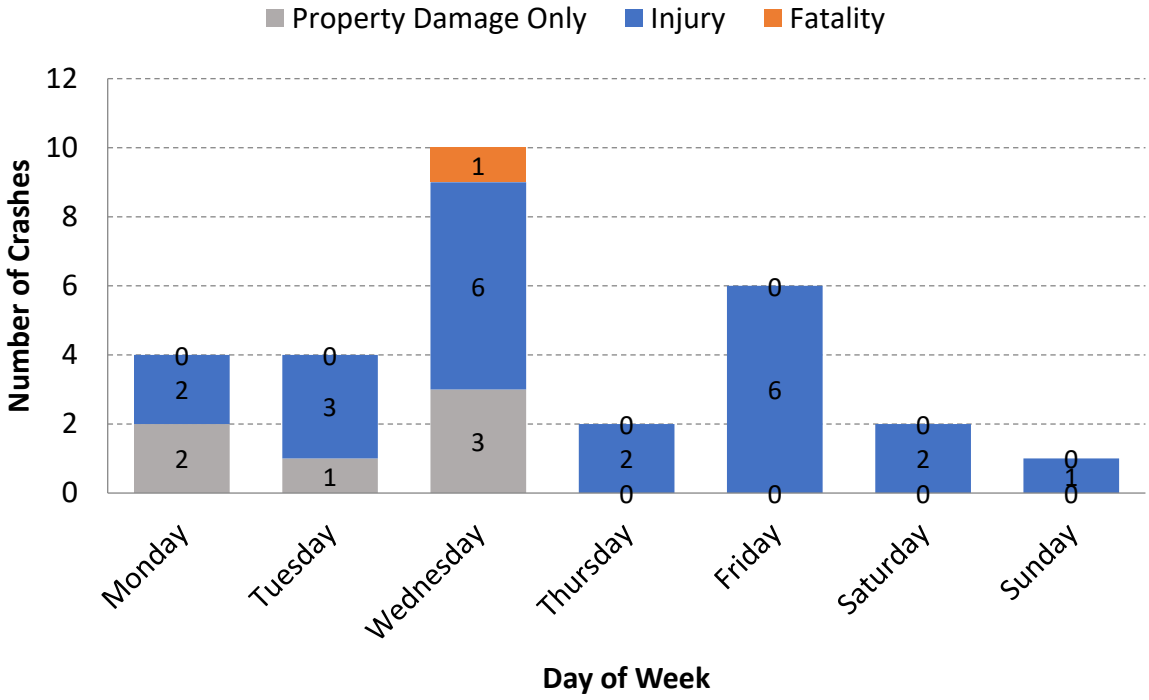

Figure 16: Crashes by Day of Week and Severity

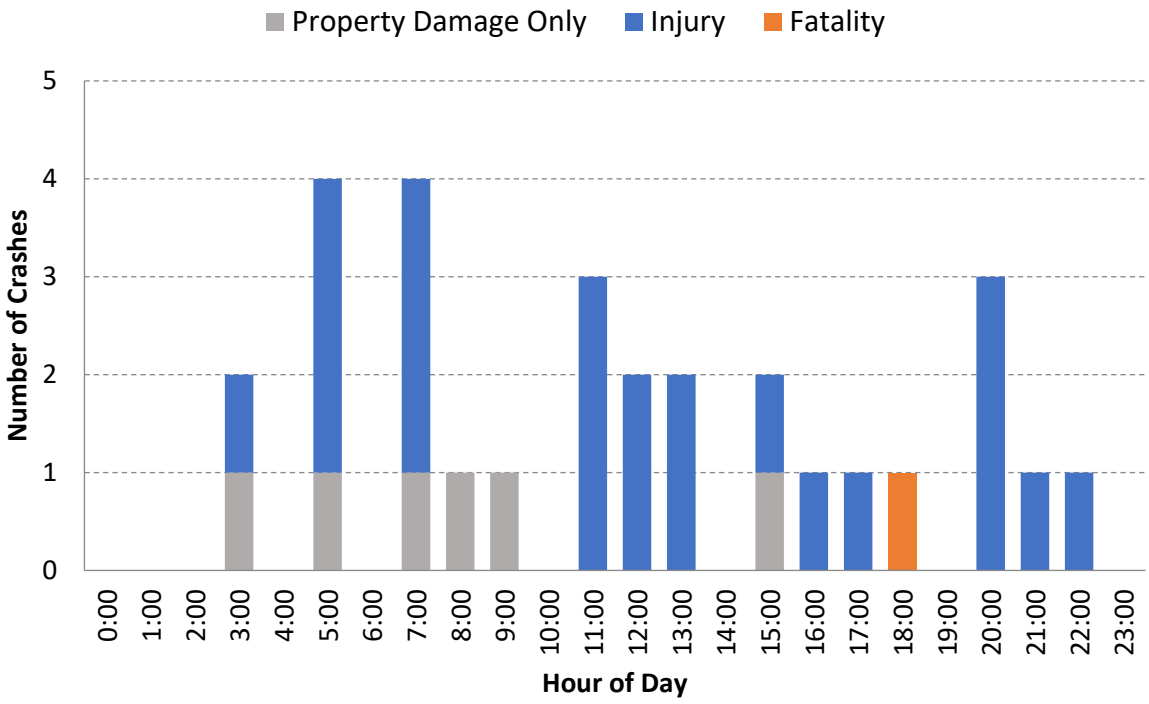

Figure 17: Crashes by Hour of Day and Severity

There was an average of six crashes per year from 2014 to 2018. The most crashes occurred in the months of March and June (five) and Wednesday was the most common day when crashes occurred (ten). By time of day, the highest crash hour was from 5 AM to 6 AM and 7 AM to 8 AM.

School-aged Pedestrian/Bicycle Crash Statistics

There were six total school-aged pedestrian and bicycle crashes within the study area (five pedestrian and one bicycle). One of the crashes was property damage only and five crashes resulted in injury. Five of the reported crashes occurred under dry conditions and one occurred under wet 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**.

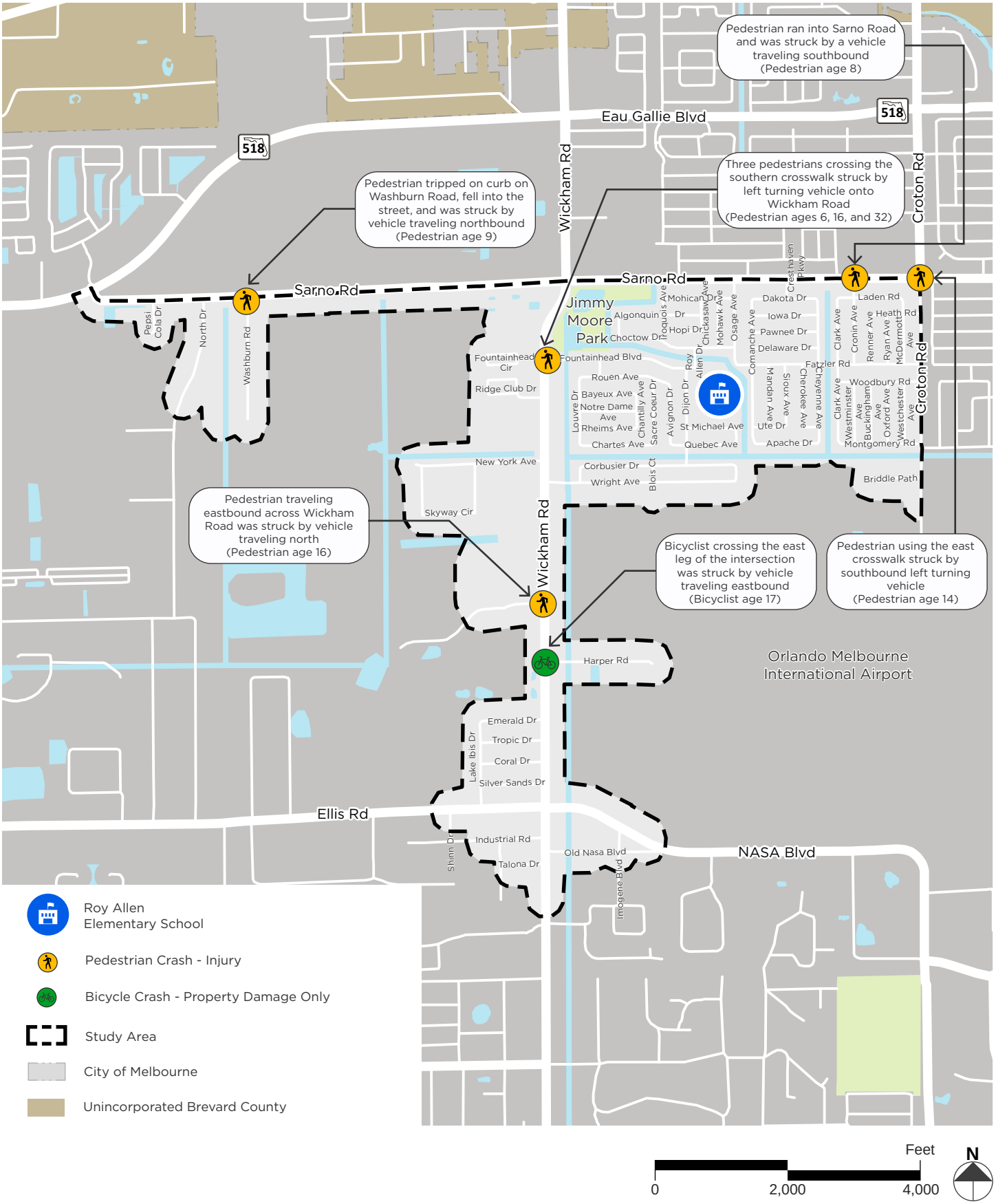

Figure 18: Bicycle and Pedestrian Crashes (2014 - 2018)

School Routes Analysis

Roy Allen Elementary School

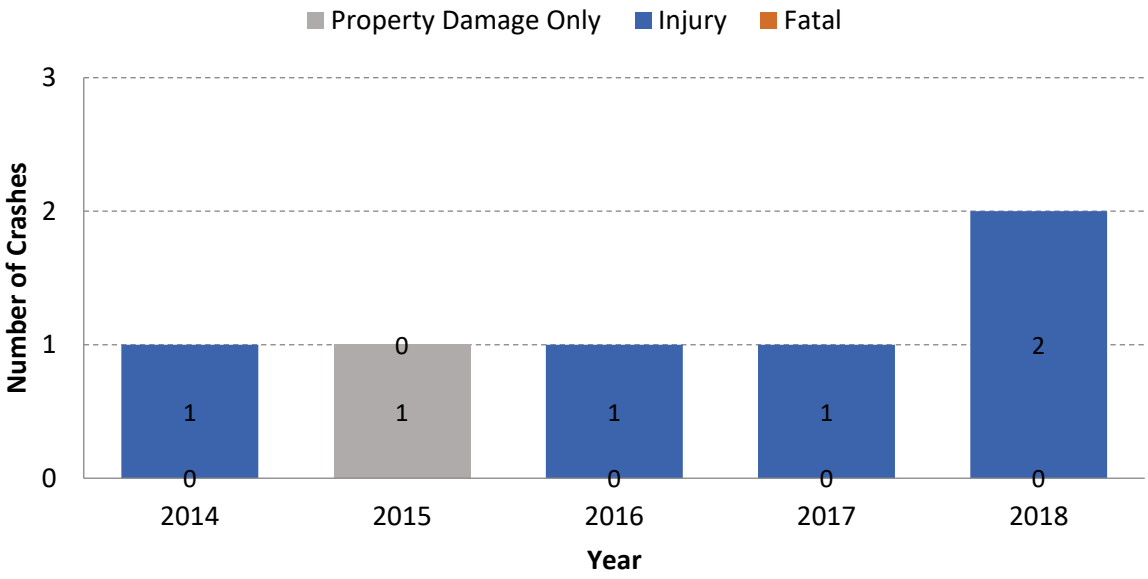

Figure 19: School-Aged Crashes by Year and Severity

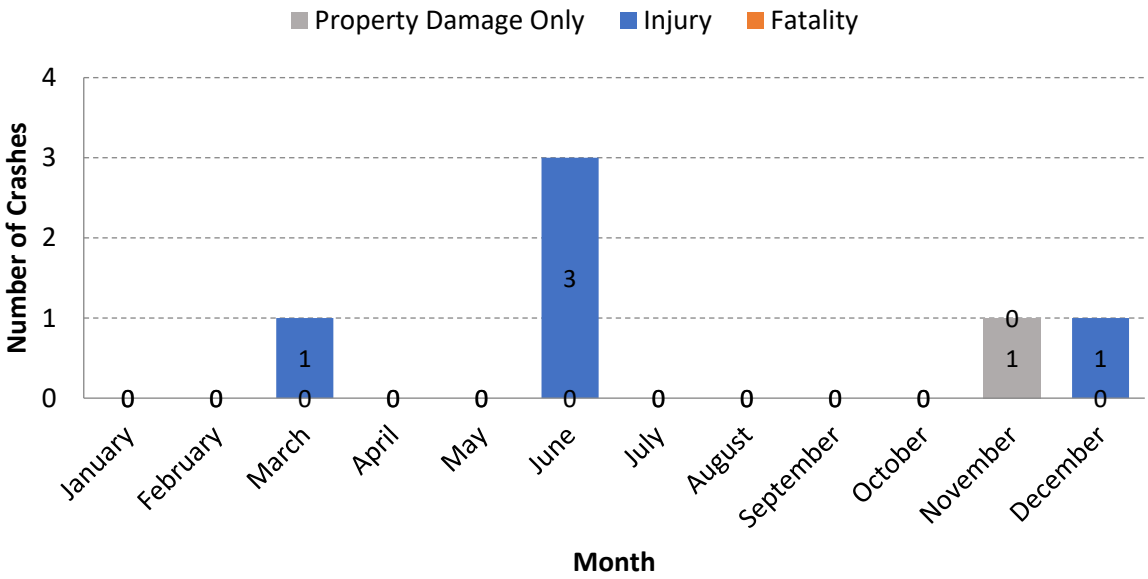

Figure 20: School-Aged Crashes by Month and Severity

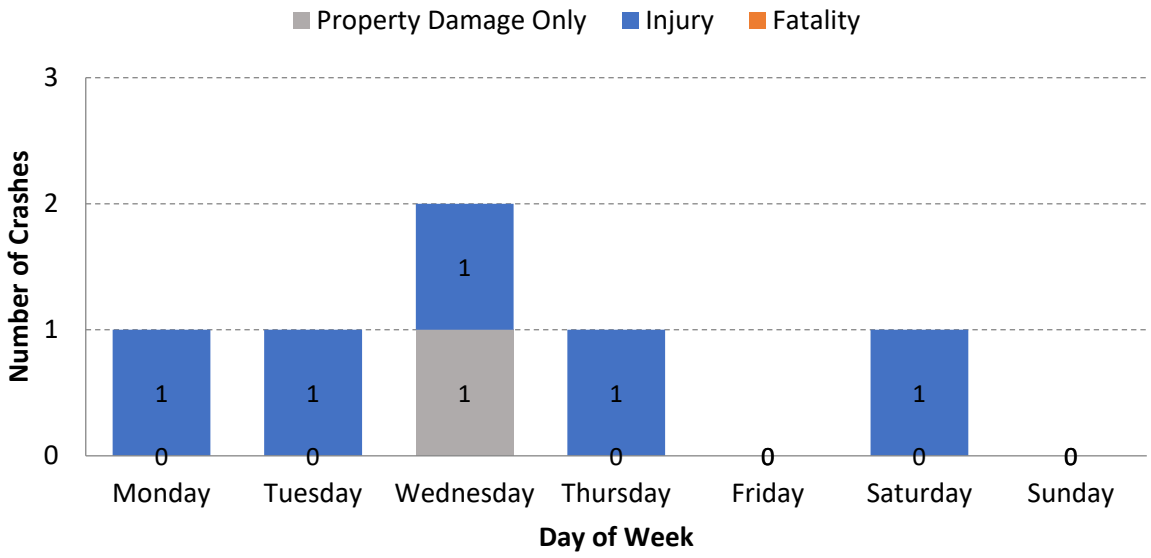

Figure 21: School-Aged Crashes by Day of Week and Severity

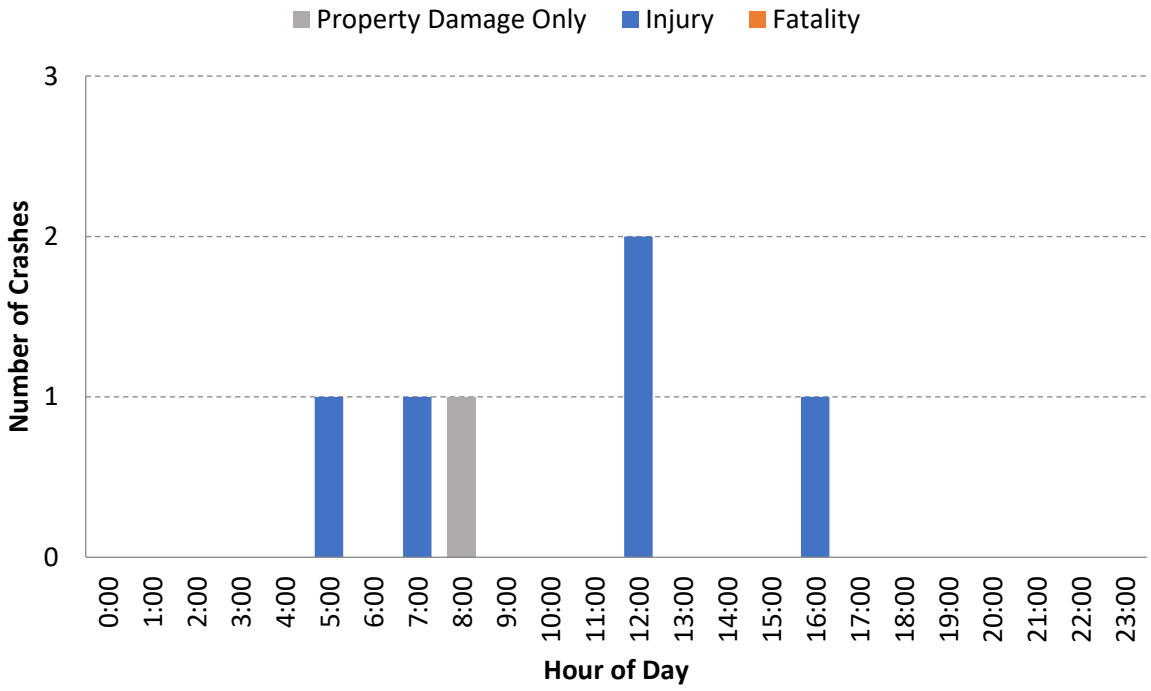

Figure 22: School-Aged Crashes by Hour of Day and Severity

Fifty percent of crashes occurred in June (three) and most of the crashed occurred on Wednesday (two.) Five out of the six total pedestrian and bicycle crashes occurred during daylight conditions. By time of day, the highest crash hour was from 12 PM to 1 PM.

A few other crash statistics worth noting:

- Alcohol and/or drug involvement did not account for any of the crashes; and
- Pedestrian crashes make up 83% of the total pedestrian and bicycle crashes (five.)

School-Aged Crash Report Summaries

Pedestrian Crashes:

1. Crash Number: 87412165
    - On June 4, 2018 at 4:50 PM, a crash involving a pedestrian occurred at the intersection of Sarno Road and Cronin Avenue. The pedestrian was crossing the roadway and the driver was traveling west on Sarno Road when she struck the pedestrian. The crash resulted in a non-incapacitating injury. The crash occurred under wet conditions during daylight hours.
2. Crash Number: 86394134
    - On June 18, 2016 at 12:05 PM, a crash involving three pedestrians occurred at the intersection of Wickham Road and Fountainhead Boulevard. The pedestrians were crossing Wickham Road eastbound at the walk signal when a vehicle turned left onto Wickham Road from Fountainhead Boulevard. Two pedestrians suffered non-incapacitating injuries and one suffered incapacitating injuries. The crash occurred under dry conditions during daylight hours.
3. Crash Number: 86794185
    - On June 29, 2017 at 5:33 AM, a crash involving a pedestrian occurred at the intersection of North Wickham Road and Technology Drive. The pedestrian was crossing the south leg of the intersection when a vehicle traveling north struck the pedestrian. The crash resulted in non-incapacitating injuries. The crash occurred under dry conditions at night.
4. Crash Number: 87411472
    - On March 14, 2018 at 12:52 PM, a crash involving a pedestrian occurred at the intersection of Washburn Road and Sarno Road. The pedestrian tripped over the edge of the curb east of Washburn Road and fell towards the roadway when a vehicle traveling north on Washburn Road struck her. The crash resulted in a non-incapacitating injury. The crash occurred under dry conditions during the day.

5. Crash Number: 84798756
    - On December 2, 2014 at 07:52 AM, a crash involving a pedestrian occurred at the intersection of Croton Road and Sarno Road. The pedestrian was crossing the east leg of the intersection northbound when a southbound vehicle made a left turn and struck the pedestrian on the crosswalk. The crash resulted in a non-incapacitating injury. The crash occurred under dry conditions during the day.

Bicycle Crashes:

1. Crash Number: 86005191
    - On November 11, 2015 at 8:00 AM, a vehicle traveling westbound on Harper Road at the intersection of South Wickham Road struck a bicyclist. The bicyclist was travelling southbound crossing Harper Road when struck. The vehicle struck the rear tire of a bicycle causing the bicyclists to come off the bicycle. The driver fled the scene. The crash did not result in any injuries according to the crash report. The crash occurred under dry conditions during the day.

Non-School-aged Pedestrian/Bicycle Crash Statistics

There were 23 total non-school-aged pedestrian and bicycle crashes within the study area (7 pedestrian and 16 bicycle). Forty-eight percent of the crashes occurred in daylight conditions, and 96 percent occurred with dry roadway 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**.

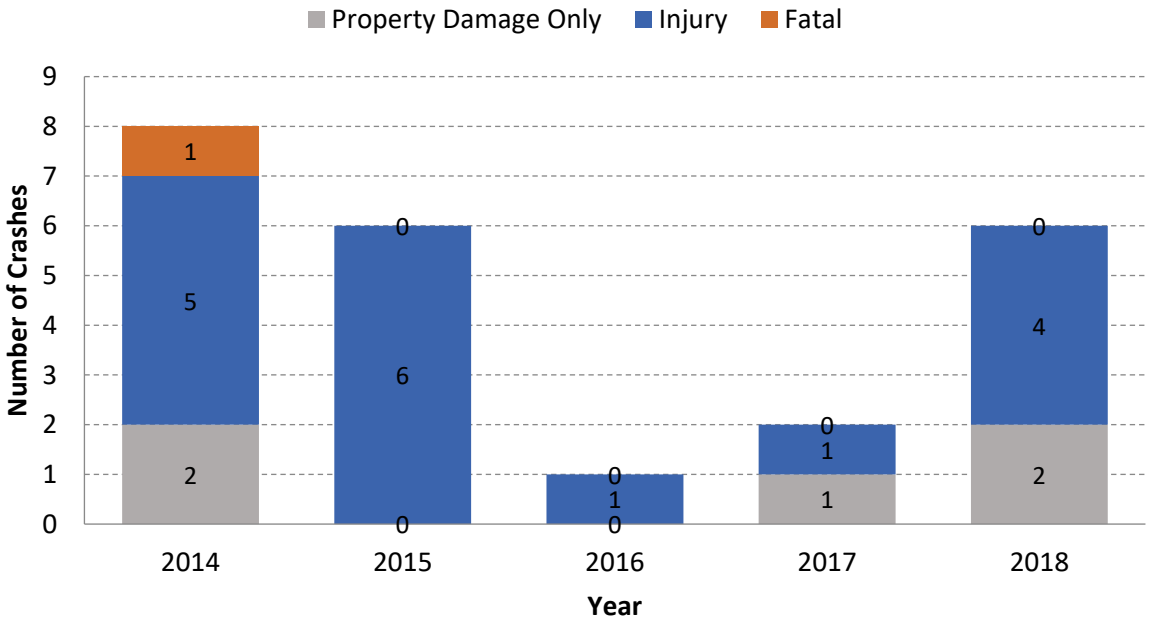

Figure 23: Non-School-Aged Crashes by Year and Severity

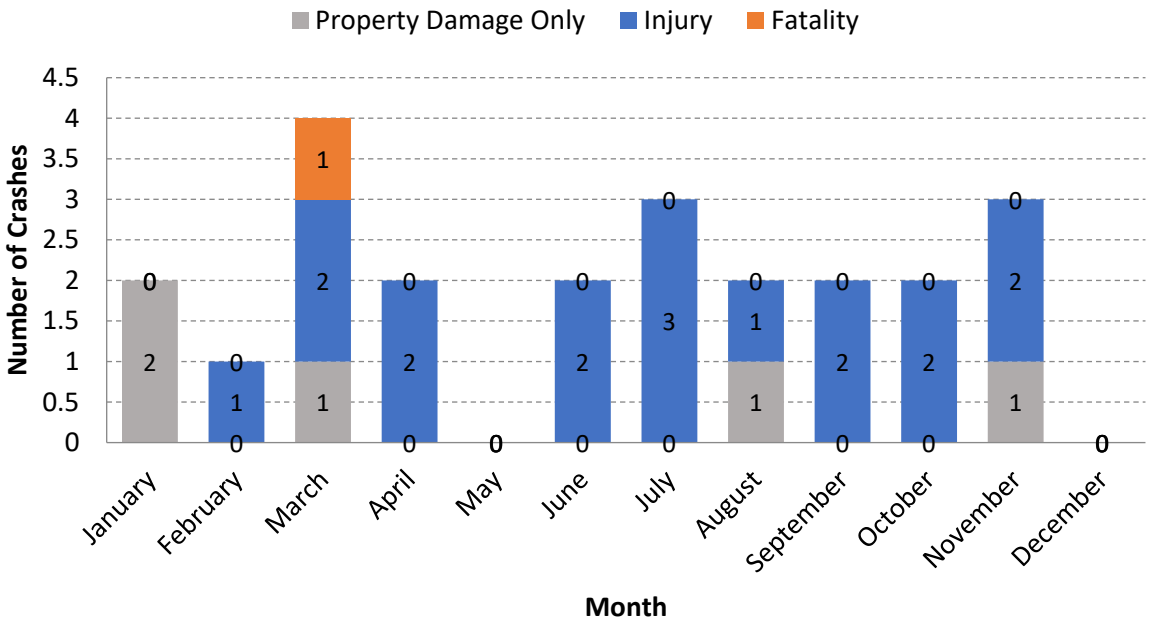

Figure 24: Non-School-Aged Crashes by Month and Severity

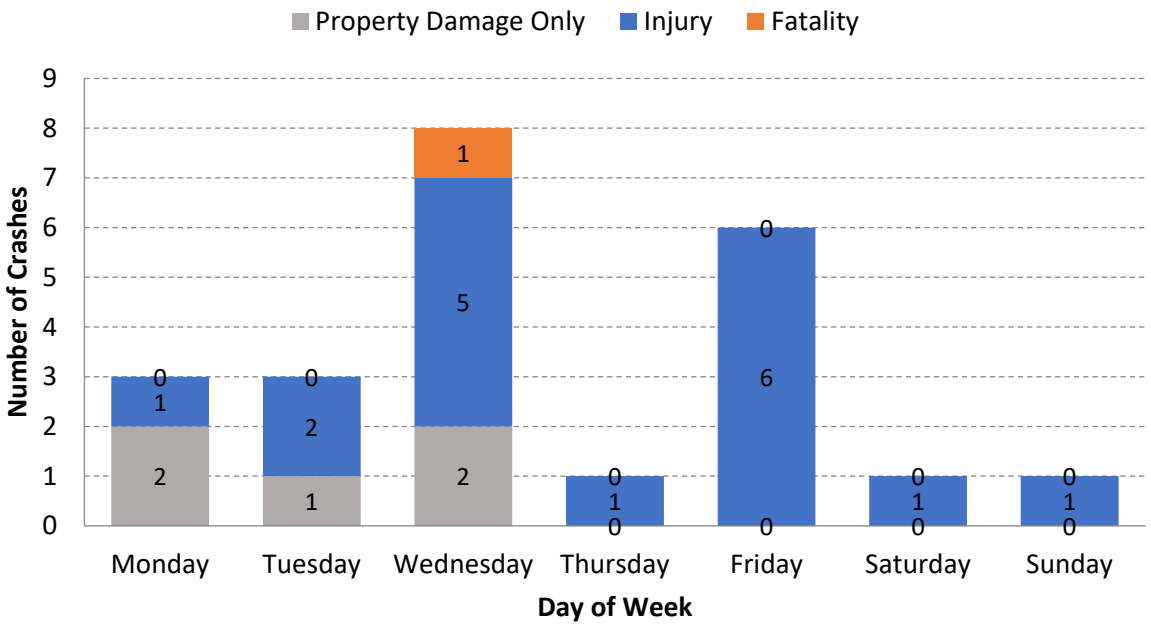

Figure 25: Non-School-Aged Crashes by Day of Week and Severity

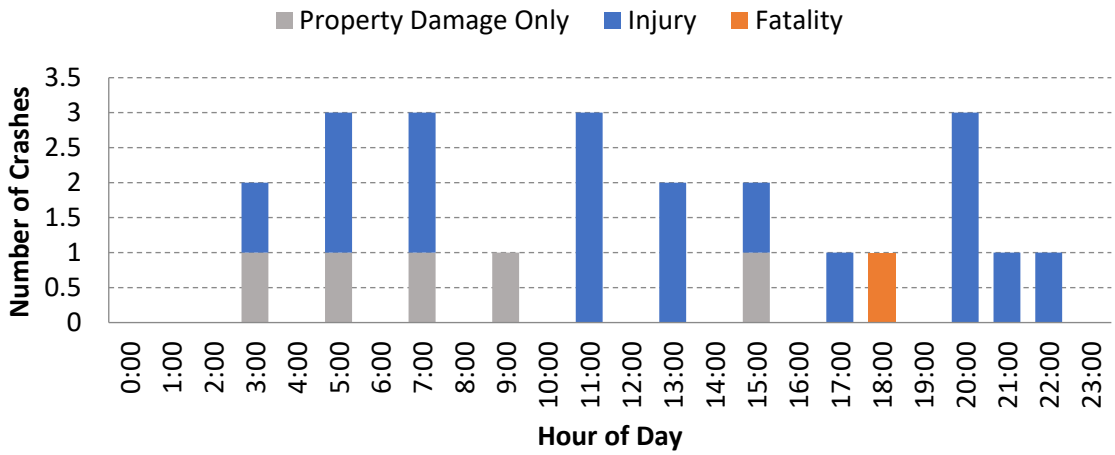

Figure 26: Non-School-Aged Crashes by Hour of Day and Severity

On average there were five crashes per year from 2014 to 2018. There was one fatality in 2014. March was the highest reported crash months with four crashes. Thirty-five percent of crashes occurred on Wednesday. By time of day, the four highest crash hours were from 5 AM to 6 AM, 7 AM to 8 AM, 11 AM to 12 PM, and 8 PM to 9 PM (three crashes for each of these hours). None of the crashes involved alcohol and/or drug use.

Non School-Aged Fatal Crash Report Summaries

1. Crash Number: 84289877
    - On March 5, 2014 at 06:47 PM, a crash involving a pedestrian occurred at the intersection of Wickham Road and Wright Avenue. The pedestrian was crossing Wickham Road eastbound when a driver travelling northbound on Wickham Road struck him. The crash resulted in a pedestrian fatality. The crash occurred under dry conditions at night.

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

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).

There were more non-school aged crashes than school aged crashes from 2014 to 2018. Most school aged crashes occurred in June (three) while most non-school aged crashes occurred in March (four). Most school aged and non-school aged crashes occurred on a Wednesday. Most school aged crashes occurred from 12 PM to 1 PM (two) while most non-school aged crashes occurred from 5 AM to 6 AM, 7 AM to 8 AM, 11 AM to 12 PM, and 8 PM to 9 PM (three crashes for each of these hours).

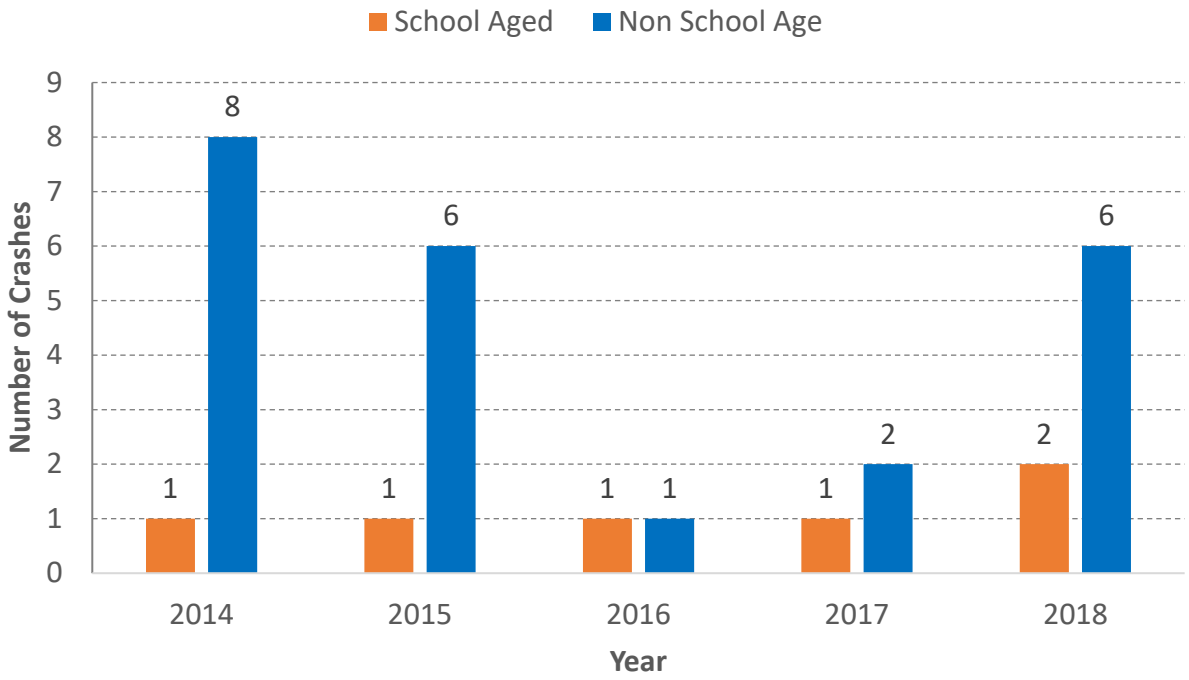

Figure 27: Comparison of School Aged and Non-School Aged Crashes by Year

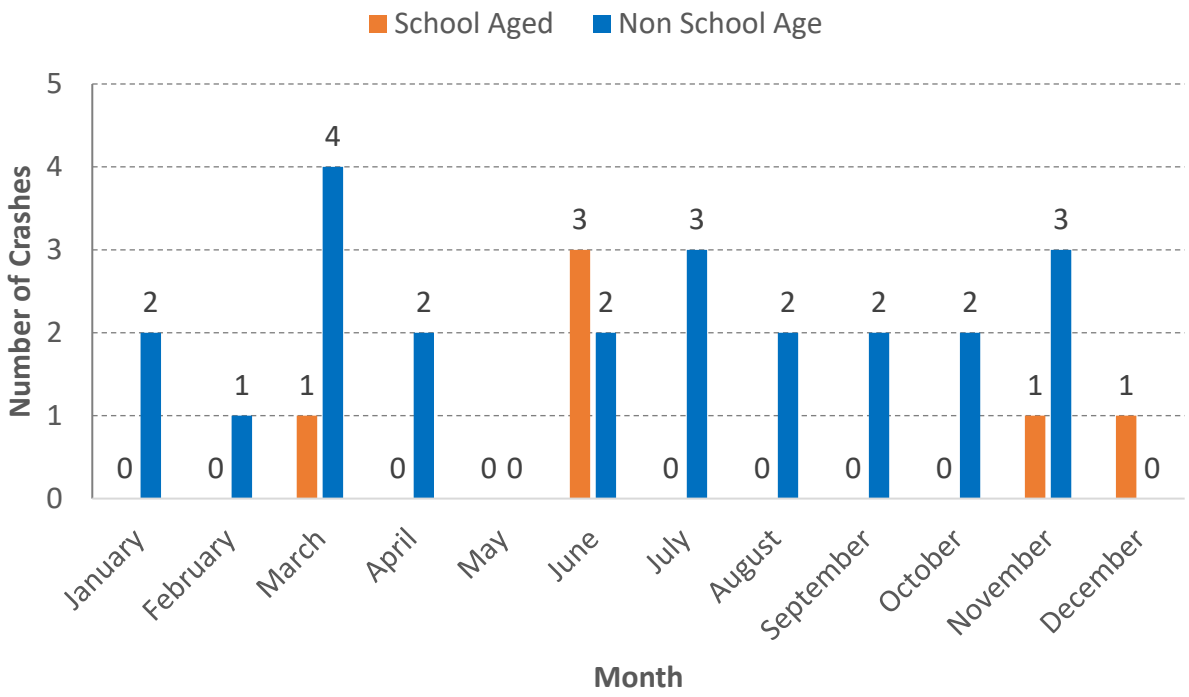

Figure 28: Comparison of School Aged and Non-School Aged Crashes by Month

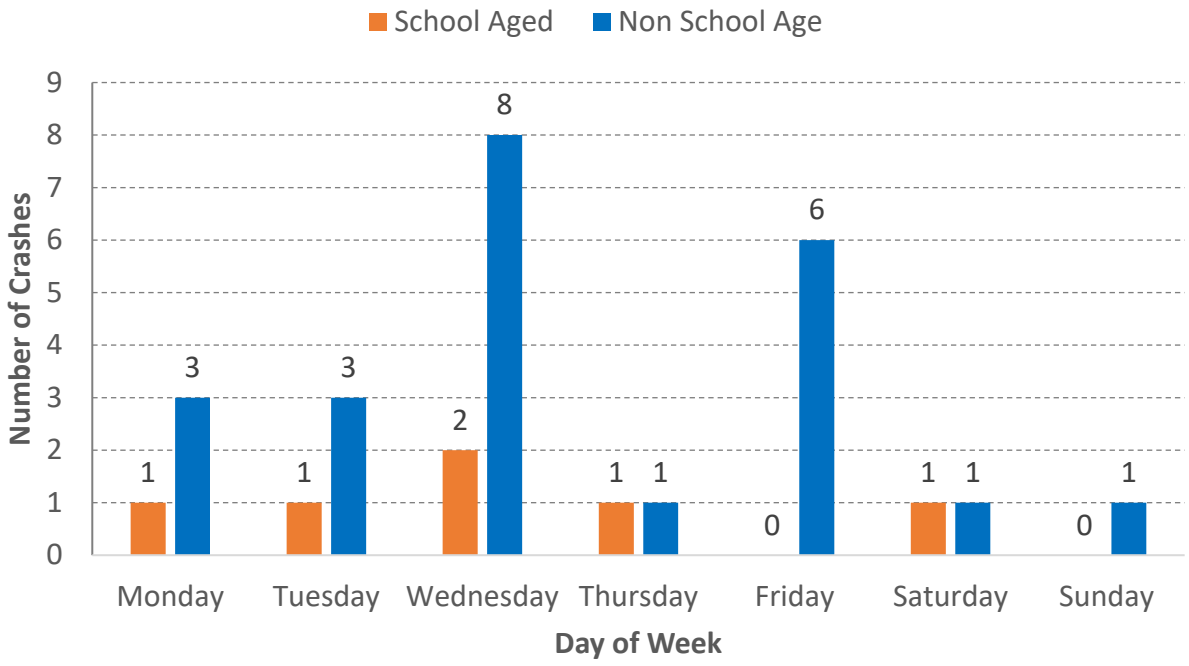

Figure 29: Comparison of School Aged and Non-School Aged Crashes by Day of Week

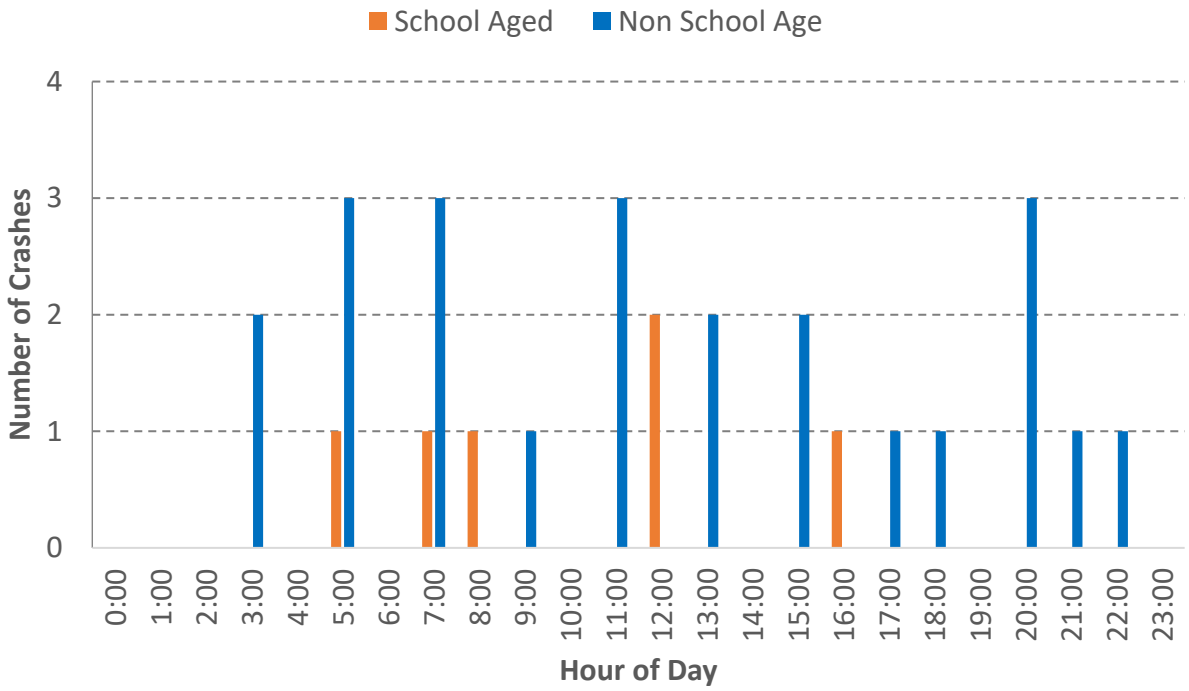

Figure 30: Comparison of School Aged and Non-School Aged Crashes by Hour of Day

School Coordination Meeting

A coordination meeting was held on November 4, 2019 to bring stakeholders together and discuss issues and opportunities related to students walking and biking to the school. Members from Brevard County Schools, City of Melbourne, FDOT, Roy Allen Elementary 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 started the discussion with an overview of the project and work conducted to-date. He briefly introduced the meeting materials included in the attendee handout package. The materials shared with attendees include 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)
- Two larger plots showing the school context aerial and a school campus aerial (used to draw on during meeting)

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
- The peak period of students arriving in the morning is 7:30 to 8:00 AM
- The peak period of students departing is 2:30 to 3:00 PM
- School buses leave shortly after 2:30 PM
- Parent's cars begin queuing around 1:15 PM

School Entrances and Circulation

- There is one entrance at the intersection of Fountainhead Boulevard and Roy Allen Drive for students arriving by car. There are two separate pedestrian and bicyclist entrances connecting to sidewalks on either side of this entrance.
- Students walking or bicycling to school from the north and east are supposed to enter via a sidewalk on the north side of the entrance; similarly, students walking or bicycling from the south and west are supposed to enter via a sidewalk on the south side of the entrance. Having both entrances is supposed to prevent students from crossing Fountainhead Boulevard.
- There is another separate entrance along Dijon Drive for students arriving by bus and daycare van.
- There are six buses in the morning, seven buses in the afternoon, and six to seven daycare vans that enter at a separate bus only location. The daycare vans yield to school buses.

Main Walking and Biking Routes

- Students are not crossing Wickham Road.
- Marked crossing locations are present at the intersections of Roy Allen Drive at Fountainhead Boulevard, Roy Allen Drive at Choctaw Drive, and Osage Avenue at Choctaw Drive.
- Students never have to cross the surface parking lot to access the school entrance.
- There are two bicycle racks on campus – one on the north side of campus and one on the southwest corner of campus. The rack on the north side of campus adjacent to the cafeteria is used more than the rack on the southwest corner.
- Students arriving at the school from Dijon Drive can use the sidewalk on the south side of Fountainhead Boulevard to circumvent the surface parking lot and access the school entrance.
- Students arriving at the school from Fountainhead Boulevard can use the sidewalk on the north or south side of Fountainhead Boulevard to circumvent the surface parking lot and access the school entrance.
- Students arriving at the school from Roy Allen Drive can use the sidewalk on the north side of Fountainhead Boulevard to circumvent the surface parking lot and access the school entrance.
- School staff park at the surface lot in front of the school entrance and walk through the lot to access the school building entrance.

- There are sidewalk gaps on Wickham Road, although students do not cross Wickham Road to access Roy Allen Elementary. Students are, however, bused from the areas west of Wickham Road.
- There are no crossing guards at Roy Allen Elementary School. A teacher serves as a crossing guard at the main entrance of the school.
- Some parents/guardians walk and bike with their children.
- At 3:30 PM, students leaving extracurricular activities can walk alone.

Drop-Off/Pick Up

- Some parents and guardians will park on residential streets on the grassy areas near the school entrance on Roy Allen Drive near Fountainhead Boulevard and wait for students to walk out to them.
- At Fountainhead Boulevard and Osage Avenue there are speeding issues during drop-off/pick-up.
- Parents and guardians queue at the aisles of the surface parking lot, with about 10 cars fitting per aisle. There are three aisles and a pick-up lane in front of the school building.
- On a few occasions, parents have reported instances of 'road rage' and cut each other off in the vehicle queue on the school parking lot.
- The car queue builds at the signal of Wickham Road and Fountainhead Boulevard in the AM and PM peak periods.
- Traffic backs up around Wickham Road when parents are departing in the PM because of the traffic signal timing.

Recent and Planned Projects

- The City of Melbourne has conducted speed studies and recommended installations of speed cushions.
  The FDOT performed a signal retiming for Eau Gallie Boulevard from I-95 to Sarno Road in Spring 2019.

Other Issues

- There are no trained crossing guards or police enforcement.
- On Osage Avenue, the school zone speed limit reduction is not obvious. Generally, school zones appear unenforced.
- There are no flashing beacons for school zone speed limit signs.
- At Cheyenne Avenue, the pedestrian facilities do not meet ADA specifications and there are issues of vertical deflection.

- The study team observed students crossing back and forth on Roy Allen Drive around 2:45/2:50 PM on November 4, 2019.
- There is the potential to add trails along drainage canals.
- On Fatzler Road, bicycle lanes and curb outs for landscaping could be implemented.
- Signage and enforcement needed to prevent parking in residential areas near campus and on swales.
- The school would like to prohibit parents from picking up children outside of campus and limit it to pick-up queue.

Field Review

As part of the assessment analysis, a field review for Roy Allen Elementary School was conducted on November 5, 2019, by the study team led by SCTPO and KAI. The weather conditions on the day of the review were mostly sunny and partly cloudy, typical for the season in Melbourne, FL. The temperatures ranged from the mid-70s to the mid-80s. The field review observed the drop-off activity from 7:00 to 8:15 AM and pick-up activity from 1:30 to 3:00 PM. The field review also included interacting with the teachers serving as crossing guards and observing and documenting conditions within the school's walk zone.

The following document summarizes the observations from the field review.

Crossing Guards

- Roy Allen Elementary does not have crossing guards, but there are teachers present at dismissal to observe students loading into vehicles. Teachers serve the role of the crossing guard and are stationed at Fountainhead Boulevard and Roy Allen Drive.
- Teachers are present at dismissal to observe students loading into vehicles.
- Cars do not stop at the stop sign and will drive through the intersection even though a teacher is present and directing school children to cross.
- Teachers identified the need for a trained crossing guard at crossing locations and other enforcement.
- Most students are arriving at the school from the neighborhoods north of the school using Roy Allen Drive and the teachers wonder how these students are crossing Roy Allen Drive and Choctaw Drive.
- The teacher crossing guard was observed directing one high school student across Fountainhead Boulevard.

School Campus

- Students do not have to cross the surface parking lot to access the school entrance because there are sidewalks on the north and south side of Fountainhead Boulevard.
- There are two bicycle racks on campus – one on the north side of campus and one on the southwest corner of campus.
- The bicycle rack on the north side of campus had 19 bicycles and five scooters, while the bicycle rack on the southwest corner had one bicycle.
- Signage instructing parents/guardians about entering the on-campus queue is not totally visible
- The eastern most and western most school driveways along Pepper Street do not have marked crosswalks.

- School buses and daycare vans enter a bus-only driveway loop on the south side of campus on Dijon Drive.

Study Area

- Pavement marking and crosswalk marking along and across Sarno Road are faded and worn.
- Most of the intersections along Sarno Road are not ADA compliant and some do not have pedestrian ramps or sidewalk connections.
- The convenience store located on the south side of Sarno Road, just west of Ironwood Drive, has a wide extended driveway which may lead to conflicts between pedestrians walking along Sarno Road and cars turning into the driveway.
- An off-road trail exists just east of Sweetwater Bend and connects Apollo Boulevard and Sarno Road between Ixora Drive and Tupelo Drive. Neighborhood residents mentioned that there was an issue with homeless people living on the trial.
- Need to notify City of Melbourne Public Works for maintenance of broken drain inlet at the Ironwood Drive/Sarno Road intersection.

Morning Observations

- The drop-off loop on campus was the busiest from 7:42 AM to 7:53 AM.
- The cars on Roy Allen Drive backed up almost to Choctaw Drive.
- Cars backed up on Fountainhead Boulevard to Lyon Drive.
- Cars were observed mounting the curb around the school entrance at the intersection of Fountainhead Boulevard and Roy Allen Drive.
- Students were dropped off at Dijon Drive and walked to campus.
- Sixty-four (64) children were observed walking to school from the front entrance.
- Twenty-two (22) children were observed bicycling to school from the front entrance.
- Thirty-three (33) students were walking to school and eleven 11 students were bicycling to school at Choctaw Drive and Osage Avenue.
- Some parents were accompanying their children to school (walking or bicycling).
- No speed issues were noted on Osage Avenue.
- Traffic was generally heading south on Osage Avenue and eastbound on Fatzler Road (toward the school campus).
- At 7:36 AM, a school bus was traveling northbound on Osage Avenue and Choctaw Drive.
- The peak activity on Osage Avenue and Choctaw Drive was around 7:45 AM and was over by about 7:53 AM.
- After drop-off, vehicles on Osage Avenue and Choctaw Drive traveled to Sarno Road.

- One parent commented that there are speeding issues during drop-off and pick-up and that there should be a greater police presence and enforcement.

Afternoon Observations

- Cars began queuing at the school parking lot around 1:15 PM.
- There were about 55 cars queued around 2:00 PM.
- There were about 70 cars in the peak period around 2:20 PM.
- Cars backed up on Fountainhead Boulevard at 2:10 PM and the school's secondary gate was opened for cars to enter the double lane pick-up zone.
- Opening the secondary gate relieved the queueing outside of the school property.
- Cars were backed up on Choctaw Drive at 2:32 PM.
- The car pickup loop was flowing smoothly once the peak passed around 2:40 PM and was cleared out by 2:47 PM.
- Custodian unlocked the school gates to the bus entrance at approximately 1:58 PM.
- The first bus arrived at 2:00 PM and the last bus arrived at 2:24 PM.
- Six total school buses entered the school.
- The first bus departed campus at 2:25 PM and the last departed at 2:32 PM.
- The first daycare van arrived at 1:59 PM and the daycare vans were gone by 2:35 PM.
- There was a total of seven daycare vans picking up students in the afternoon.
- The daycare vans staged on the side of the bus driveway and waited while the school buses entered, pulling in behind the school buses.
- Students who walk and bike were released at 2:20 PM and had left the school property by 2:30 PM.
- The teacher crossing guard was observed crossing two students across Fountainhead Boulevard at the school entrance although it is encouraged to leave the school via the south side of the street on the sidewalk in order to not have to cross Fountainhead Boulevard.
- Teachers were present at dismissal until the students were picked up.
- The teacher serving as a crossing guard at the school entrance shared various issues observed.
    - Drivers that are not parents/guardians are trying to get out of the queue creating potential conflicts.
    - Drivers slow down at Choctaw Drive.
- Eight cars were observed at Roy Allen Drive and 12 cars were observed at Fountainhead Boulevard at 2:35 PM.
- Thirty-nine (39) students were observed walking on Osage Avenue and Choctaw Drive.
- Eleven (11) students were observed bicycling on Osage Avenue and Choctaw Drive.

- A school bus was observed on Osage Avenue and Choctaw Drive at 2:22 PM.
- Peak activity on Osage Avenue and Choctaw Drive was observed at 2:30 PM until 2:35 PM.

Opportunities

- The large canal that is in the south part of the study area could be a potential trail connection and may connect to the canal-trail recommendation in the Harbor City Elementary study area.
- There is potential to create a sidewalk loop within two blocks of the neighborhoods that lack sidewalks.
- The route would be from Comanche Avenue north to Dakota Drive, then east to Cheyenne Avenue (with a link to Sarno Road via Cresthaven Parkway), then south to Apache Drive and west to Comanche Avenue.

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SCHOOL
SPEED
LIMIT
15
7:00 - 8:00 AM
2:20 - 2:50 PM

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 Roy Allen Elementary School study area. Planning level cost estimates, implementation timeframes, 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	School Campus	Re-stripe faded crosswalks as high visibility crosswalks.	Crossing	Maintenance	<$10,000
2	School Campus	Install signs for Drop-Off/Pick-Up loop.	School Circulation	Near-Term	$10,000 to $15,000

Table 3: Study Area Recommendations

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
3	Canal between Choctaw Drive and Fountainhead Boulevard	Conduct a feasibility study to add a paved trail connecting Jimmy Moore Park and Roy Allen Elementary School.	Feasibility Study (Trail)	Near-Term	Further study is required
4	Iroquois Avenue from Choctaw Drive to Sarno Road	Build 5 to 6 foot wide sidewalks on both sides.	Sidewalk	Near-Term	$115,000 to $130,000
5	Fountainhead Boulevard from Wickham Road to Roy Allen Elementary School	Install traffic calming devices such as speed cushions, curb extensions, speed humps etc.	Traffic Calming	Near-Term	Further study is required
6	Fatzler Road from Osage Avenue to Croton Road	Install traffic calming devices such as speed cushions, curb extensions, speed humps etc.	Traffic Calming	Near-Term	Further study is required
7	Fatzler Road from Osage Avenue to Croton Road	Conduct a feasibility study to evaluate adding bike lanes and/or wider sidewalks	Feasibility Study (Bike Lanes/Side walks)	Near-Term	Further study is required
8	Osage Avenue from Fatzler Road to Sarno Road	Install traffic calming devices such as speed cushions, curb extensions, speed humps, etc.	Traffic Calming	Near-Term	Further study is required

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
9	Dijon Drive from Corbusier Drive to Fountainhead Boulevard	Install traffic calming devices such as speed cushions, curb extensions, speed humps etc.	Traffic Calming	Near-Term	Further study is required
10	Canals south of Chartres Avenue, Quebec Avenue, Apache Drive, Montgomery Road, and between Cheyenne Avenue and Clark Avenue	Conduct a feasibility study to add paved trails along the canal ROWs.	Feasibility Study (Trail)	Near-Term	Further study is required
11	Fountainhead Boulevard and Roy Allen Drive	Add a crossing guard.	Crossing	Near-Term	Coordinate staffing
12	Fountainhead Boulevard and Roy Allen Drive	Install raised crosswalks or raised intersection or re-stripe as high visibility crosswalk markings and upgrade pedestrian ramps to make them ADA compliant.	Crossing	Long-Term	$10,000 to $100,000
13	School Zone	Evaluate existing extents of the school zone and re-sign new school zone	Sign/Signal	Near-Term	Further study is required

No.	Location	Recommendation	Type	Time-Frame	Cost Estimate
14	School Zone	Install flashing beacons for school zone reduced speed sign.	Sign/Signal	Near-Term	$10,000 to $15,000
15	Wickham Road	Fill in gaps with 5 to 6 foot wide sidewalks on both sides.	Sidewalk	Long-Term	$800,000 to $925,000
16	Loop - Cresthaven Parkway, Dakota Drive, Comanche Avenue, Cheyenne Avenue, Apache Drive	Build a 5 to 6 foot wide sidewalks on both sides.	Sidewalk	Long-Term	$815,000 to $950,000

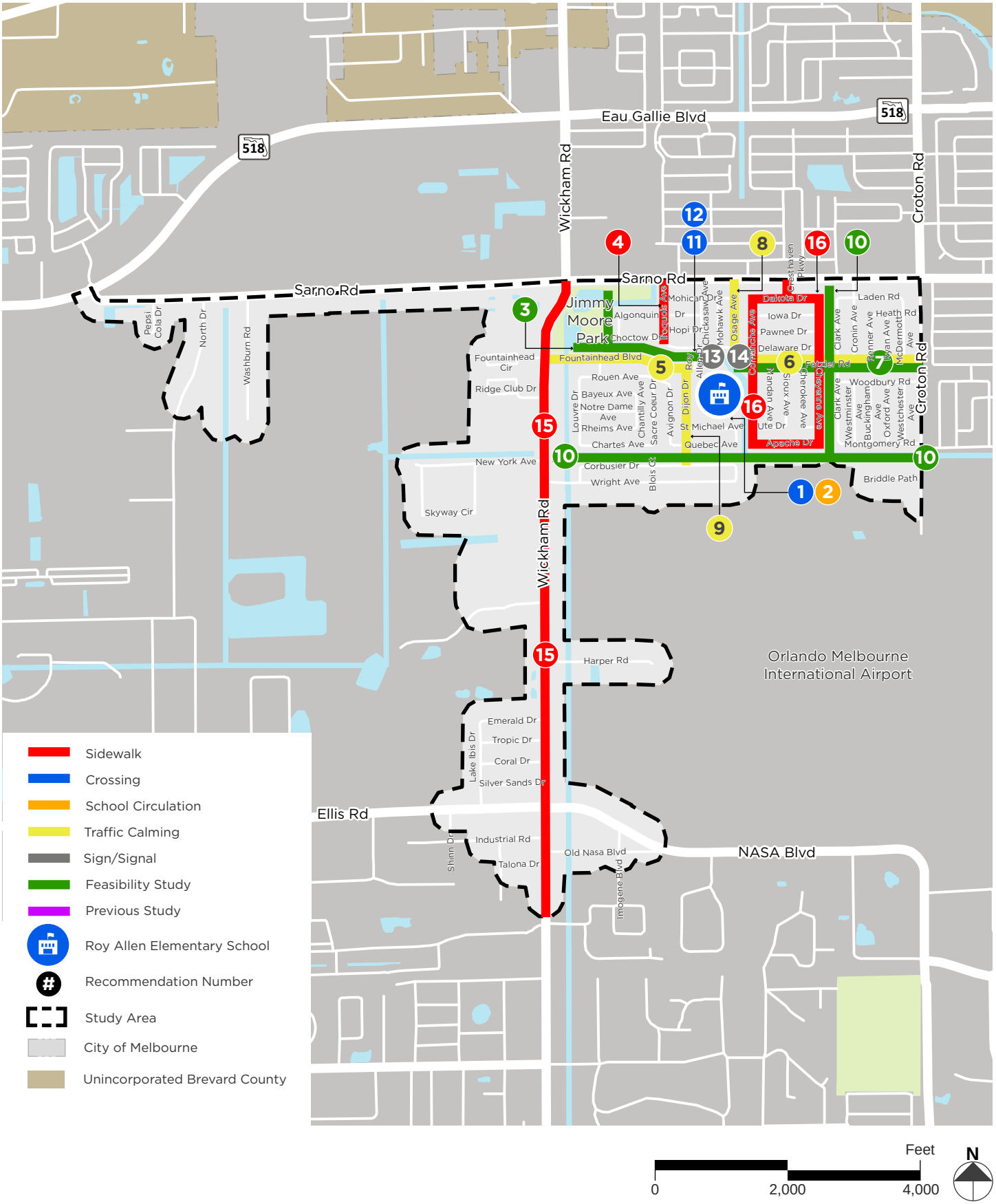


Figure 31: Recommendations

School Routes Analysis

Roy Allen Elementary School

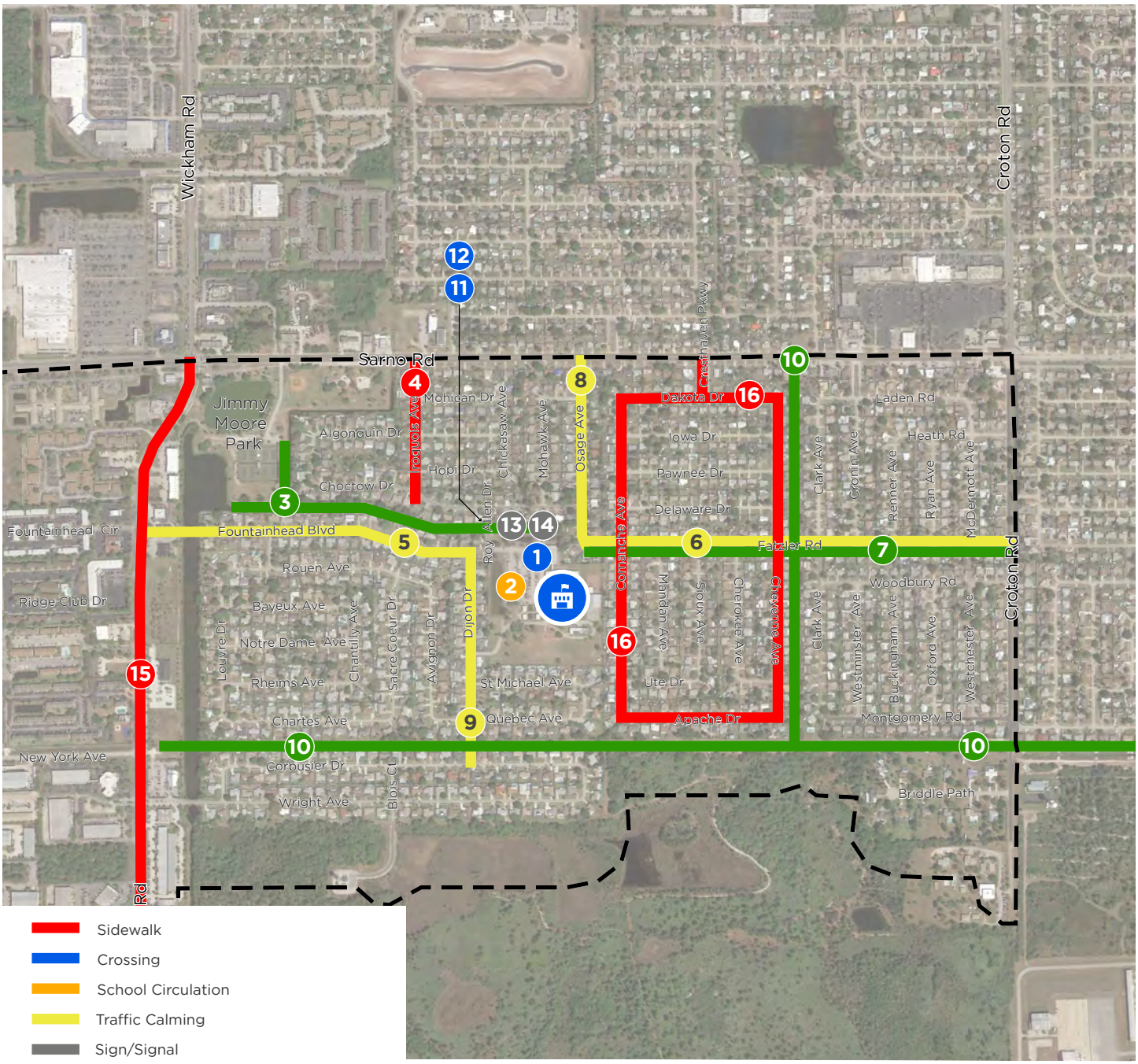


Figure 32: Recommendations: School Context Aerial Map

School Routes Analysis

Roy Allen Elementary School

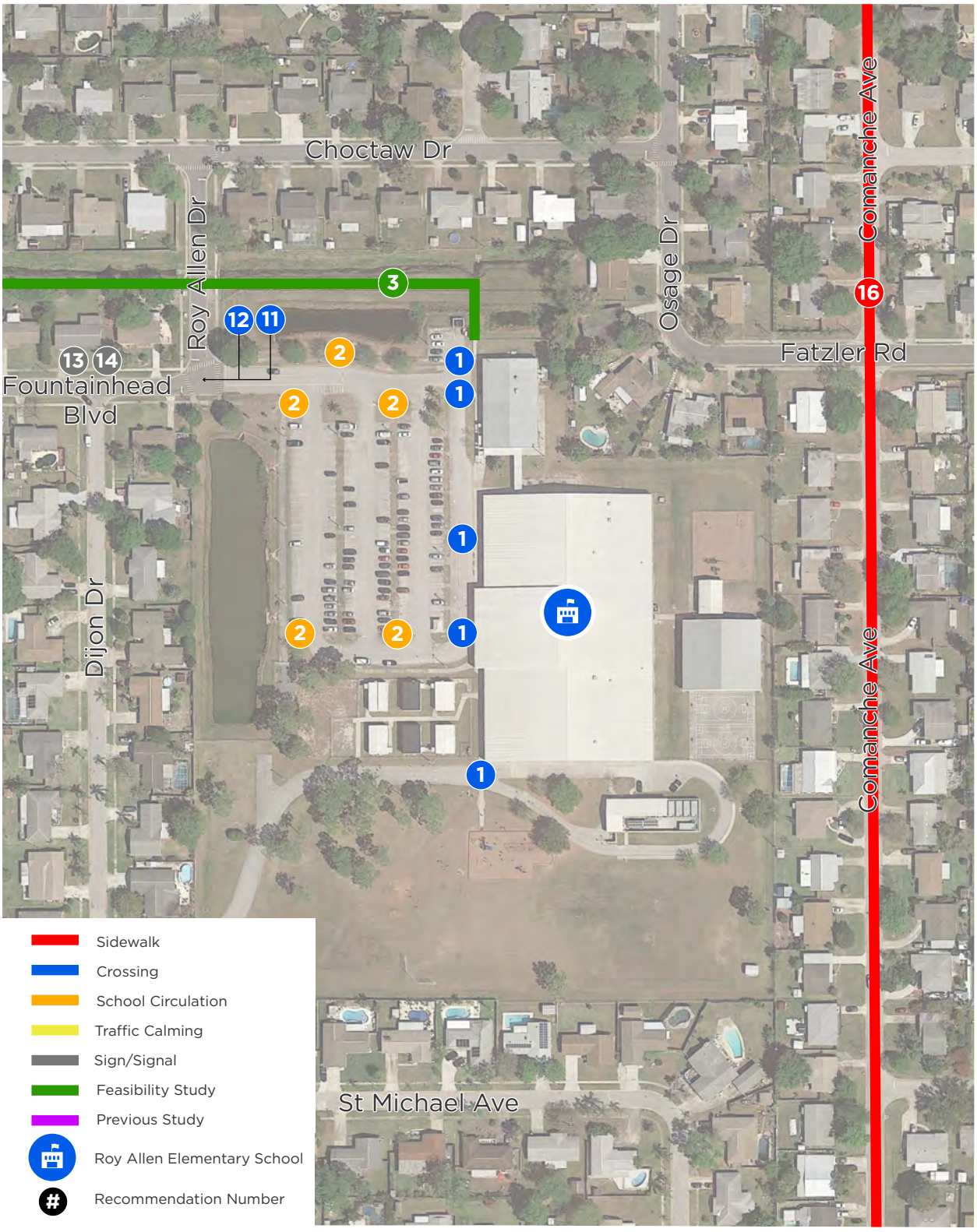


Figure 33: Recommendations: School Campus Aerial Map

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 a 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.

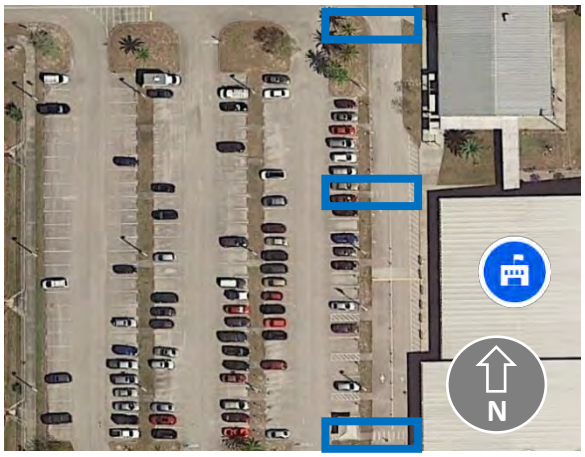
Figure 34 below shows an example of the cost estimate process described above.

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 the faded crosswalk on campus

Location	School Campus
Type	Crossing
Issue	The crosswalk connecting the surface parking lot from the school's main entrance has faded markings.
Recommendation	Re-stripe faded crosswalks (locations marked in blue boxes below) as high visibility crosswalks.



Main School Entrance

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

Project 2: Add signage for drop-off/pick-up loop

Location	School Campus
Type	School Circulation
Issue	Drivers are not directed to the drop-off/pick-up loop when they enter the school campus as Roy Allen Drive and Fountainhead Boulevard.
Recommendation	Install signs for drop-off/pick-up loop.

Main Campus Entrance and Drop-Off/Pick-Up Loop

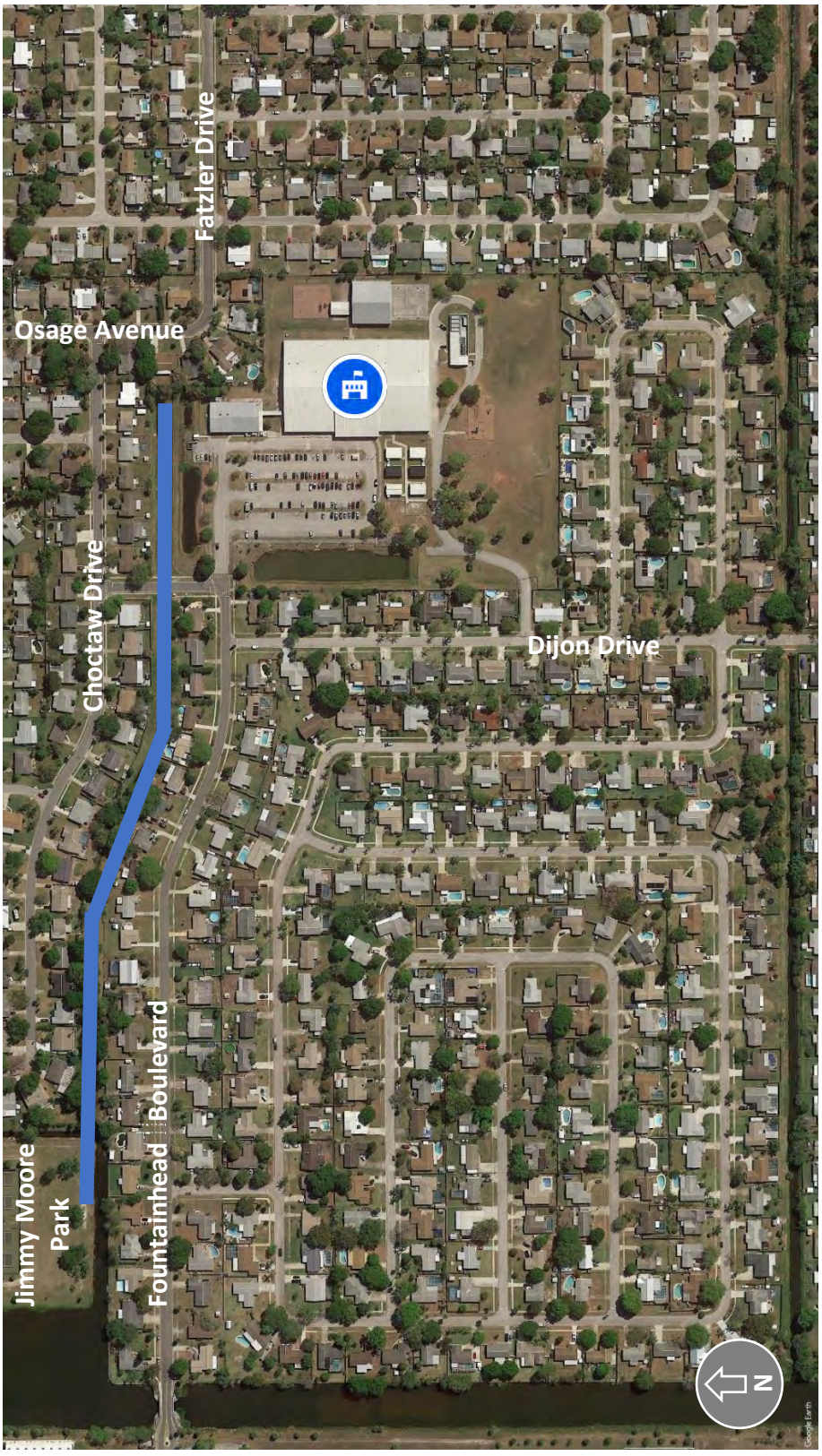
	Implementation Time-Frame	Near-Term
	Estimated Project Cost	$10,000 to $15,000
	Right-of Way Needed?	No
	Drainage or Utility Impact?	No
	Responsible Agency	Brevard County Public Schools

Project 3: Conduct a feasibility study to construct a trail between the school campus and Jimmy Moore Park

Location	**Canal between Choctaw Drive and Fountainhead Boulevard**
Type	**Feasibility Study (Trail)**
Issue	There are unpaved connections between activity centers along existing canals.
Recommendation	Conduct a feasibility study to add a paved trail connecting Jimmy Moore Park and Roy Allen Elementary School.

Canal by Roy Allen Elementary

	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**Further Study Is Required**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Melbourne**



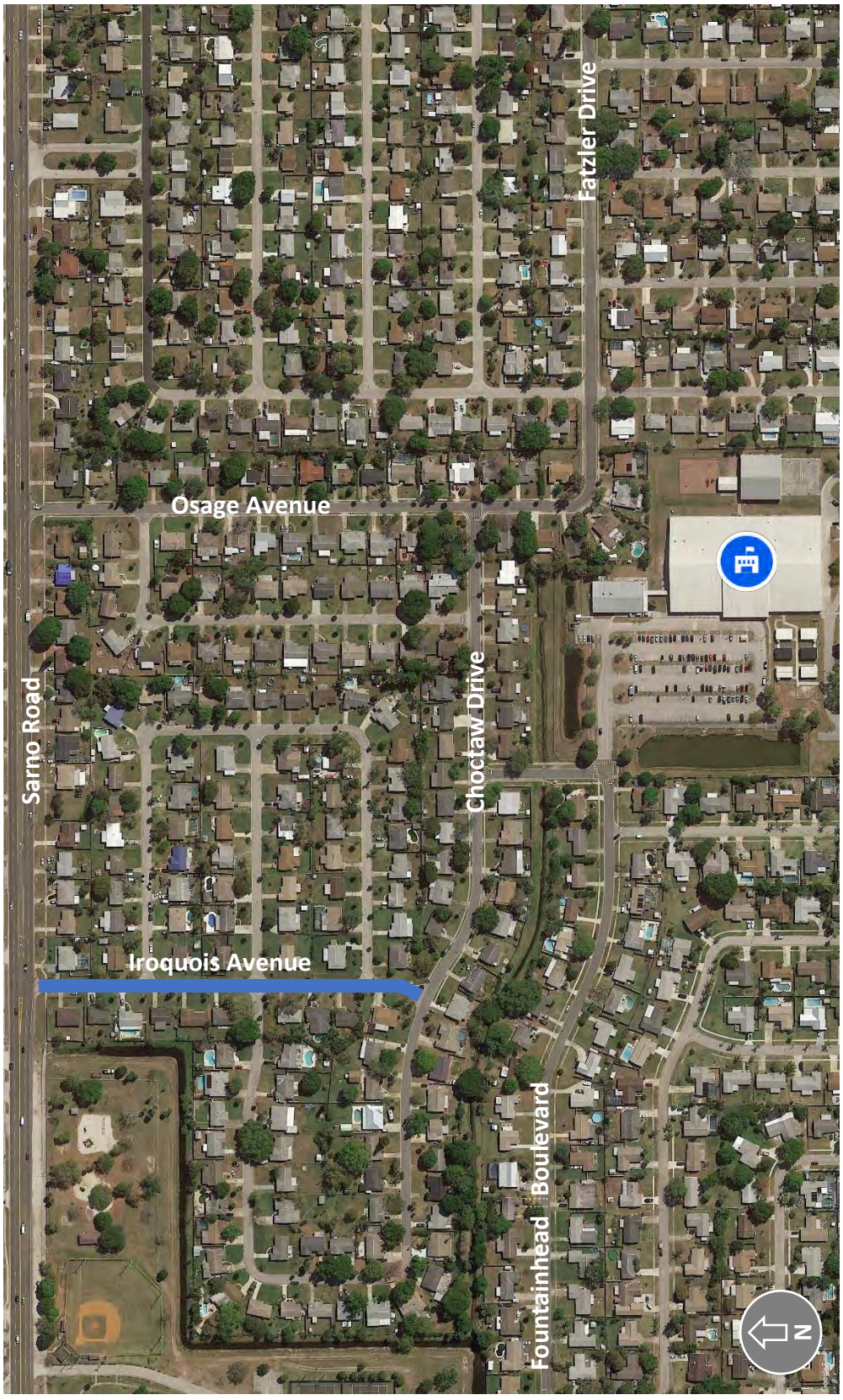
Canal Connecting Roy Allen Elementary to Jimmy Moore Park

Project 4: Add five to six foot sidewalks on Iroquois Avenue

Location	**Iroquois Avenue from Choctaw Drive to Sarno Road**
Type	**Sidewalk**
Issue	There are no sidewalk facilities on Iroquois Avenue from Choctaw Drive to Sarno Road.
Recommendation	Build 5 foot to 6 foot wide sidewalks on both sides of the roadway.

View of Iroquois Avenue Without Sidewalks

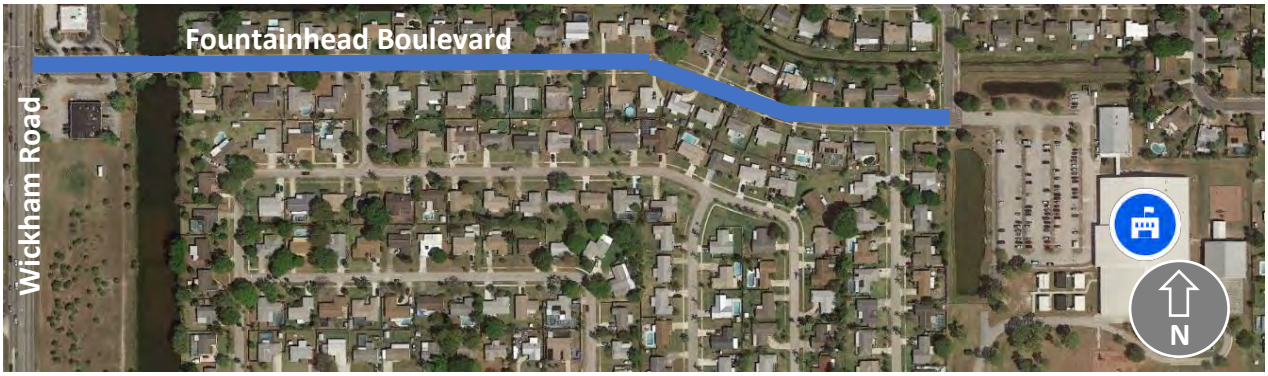
	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**$115,000 to $130,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Melbourne**



Add Sidewalk on Iroquois Avenue from Choctaw Drive to Sarno Road

Project 5: Install traffic calming devices on Fountainhead Boulevard

Location	**Fountainhead Boulevard from Wickham Road to Roy Allen Elementary School**
Type	**Traffic Calming**
Issue	Speeding vehicles on Fountainhead Boulevard as they approach Roy Allen Elementary School.
Recommendation	Install traffic calming devices such as speed cushions, curb extensions, speed humps etc.



Fountainhead Boulevard from Wickham Road to Roy Allen Elementary

	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**Further Study Is Required**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Melbourne**

Typical Neighborhood Traffic Calming Treatments

Speed Cushion

Speed Hump

Street Trees

Curb Extension

Project 6: Install traffic calming devices on Fatzler Road

Location	Fatzler Road from Osage Avenue to Croton Road
Type	Traffic Calming
Issue	Speeding vehicles on Fatzler Road.
Recommendation	Install traffic calming devices such as speed cushions, curb extensions, speed humps etc.

Fatzler Road East of Osage Avenue

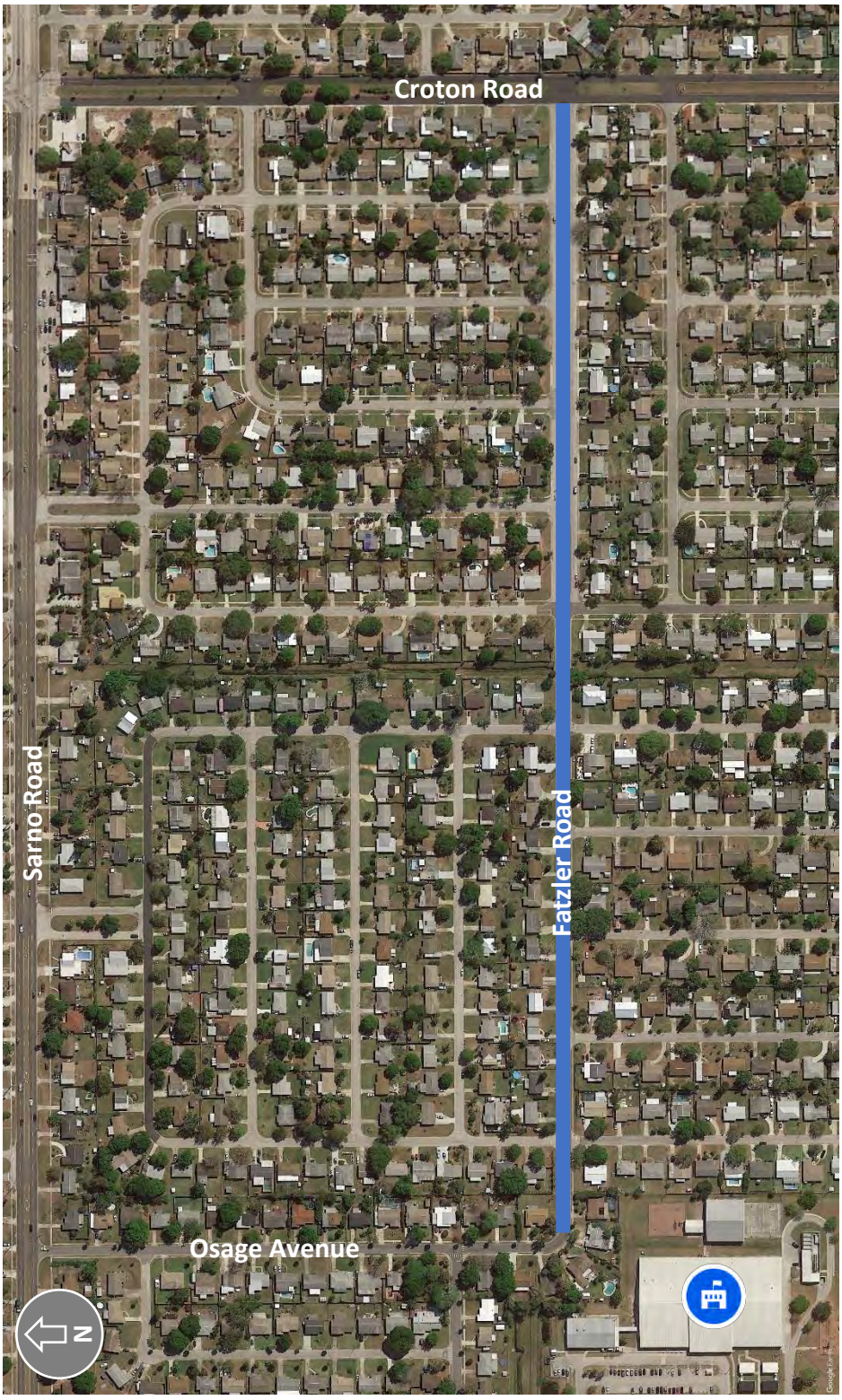
	Implementation Time-Frame	Near-Term
	Estimated Project Cost	Further Study Is Required
	Right-of Way Needed?	Unknown
	Drainage or Utility Impact?	No
	Responsible Agency	City of Melbourne

Project 7: Evaluate widening sidewalks and adding bicycle lanes on Fatzler Road

Location	**Fatzler Road from Osage Avenue to Croton Road**
Type	**Feasibility Study (Bike Lanes/Sidewalks)**
Issue	The sidewalks on Fatzler Road from Osage Avenue to Croton Road are narrow and there are no on-street bicycle facilities.
Recommendation	Conduct a feasibility study to evaluate adding bike lanes and/or wider sidewalks.

Fatzler Road Between Osage Avenue and Croton Road

	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**Further study is required**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Melbourne**



Evaluate Widening Sidewalks and Adding Bicycle Lanes on Fatzler Road

Project 8: Install traffic calming devices on Osage Avenue

Location	**Osage Avenue from Fatzler Road to Sarno Road**
Type	**Traffic Calming**
Issue	Speeding vehicles on Osage Avenue.
Recommendation	Install traffic calming devices such as speed cushions, curb extensions, speed humps etc.

Install Traffic Calming Devices on Osage Avenue

	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**Further Study Is Required**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Melbourne**

Project 9: Install traffic calming devices on Dijon Drive

Location	**Dijon Drive from Corbusier Drive to Fountainhead Boulevard**
Type	**Traffic Calming**
Issue	Speeding on Dijon Drive.
Recommendation	Install traffic calming devices such as speed cushions, curb extensions, speed humps etc.

Dijon Drive North of Corbusier Drive

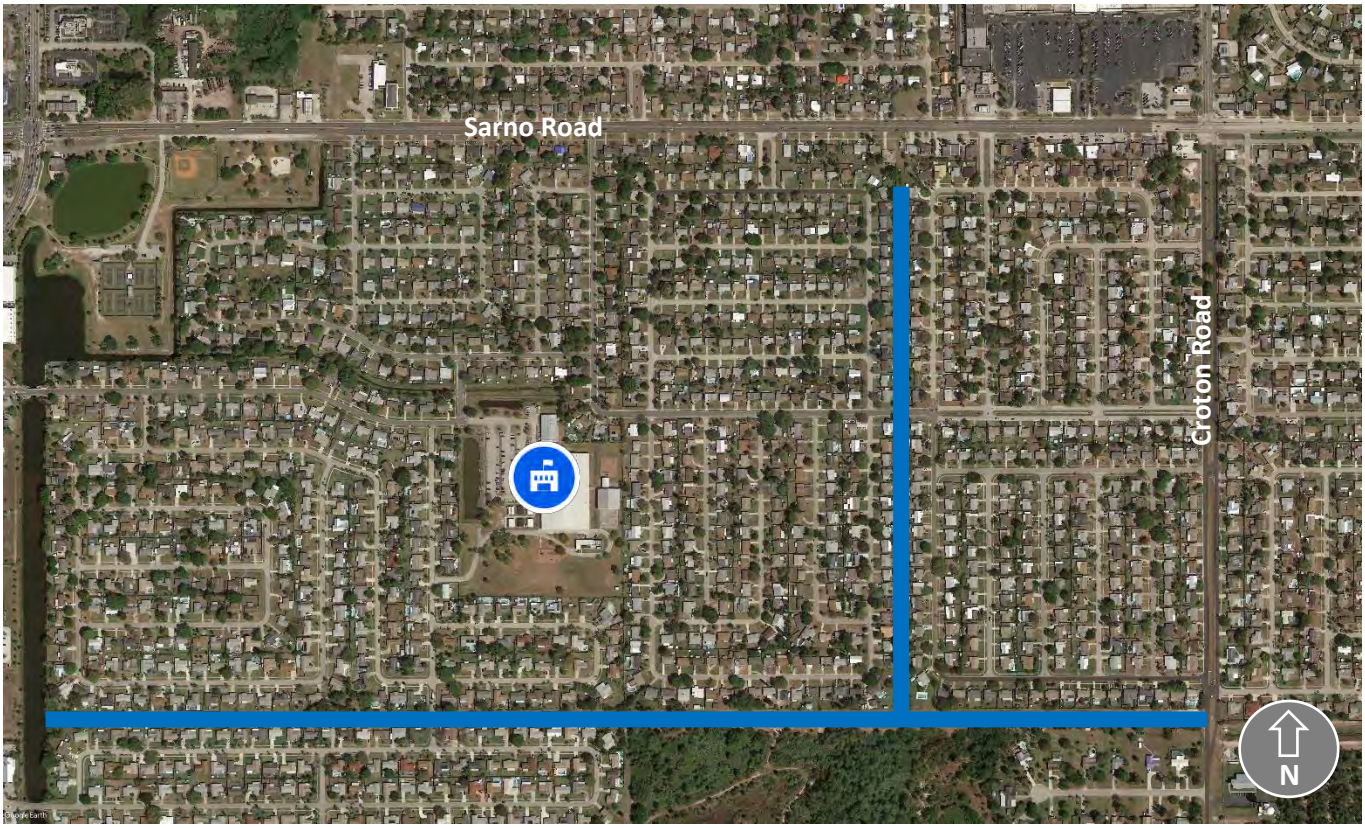
	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**Further Study Is Required**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Melbourne**

Project 10: Conduct a feasibility study to construct a trail along various canals

Location	Canals south of Chartres Avenue, Quebec Avenue, Apache Drive, Montgomery Road, and between Cheyenne Avenue and Clark Avenue
Type	Feasibility Study (Trail)
Issue	Existing canals in the study area can potentially become paved trails and provide connections between the school and other locations.
Recommendation	Conduct a feasibility study to add paved trails along the canal ROWs.

Canals in the Study Area

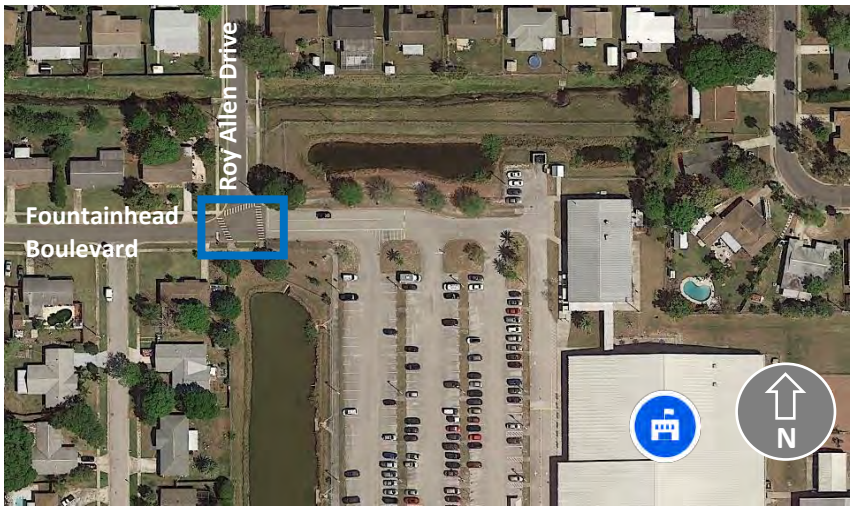
	Implementation Time-Frame	Near-Term
	Estimated Project Cost	Further Study Is Required
	Right-of Way Needed?	Unknown
	Drainage or Utility Impact?	Unknown
	Responsible Agency	City of Melbourne



Potential Alignment for Trails Along Canals as the Blue Line

Project 11: Employ official crossing guards for Roy Allen Elementary School

Location	**Fountainhead Boulevard and Roy Allen Drive**
Type	**Crossing**
Issue	There are no official crossing guards for Roy Allen Elementary School at Fountainhead Boulevard and Roy Allen Drive, nor for any other locations on and near campus.
Recommendation	Add a crossing guard at this location.



Intersection of Roy Allen Boulevard and Fountainhead Drive

	Implementation Time-Frame	**Near-Term**
	Estimated Project Cost	**Coordinate staffing**
	Right-of Way Needed?	**No**
	Drainage or Utility Impact?	**No**
	Responsible Agency	**School Board/Brevard County**

Project 12: Upgrade the pedestrian ramps to be ADA compliant, install raised crosswalks or raised intersection at Fountainhead Boulevard and Roy Allen Drive

Location	Fountainhead Boulevard and Roy Allen Drive
Type	Crossing
Issue	Pedestrian ramps at the intersection of Fountainhead Boulevard and Roy Allen Drive have ADA deficiencies. This intersection could be upgraded.
Recommendation	Install raised crosswalks or raised intersection or re-stripe as high visibility crosswalk markings and upgrade pedestrian ramps to make them ADA compliant.

Intersection of Roy Allen Boulevard and Fountainhead Drive

	Implementation Time-Frame	Long-Term
	Estimated Project Cost	$10,000 to $100,000
	Right-of Way Needed?	No
	Drainage or Utility Impact?	Unknown
	Responsible Agency	City of Melbourne

Project 13: Re-sign new school zone markings and evaluate the existing extents of the school zone

Location	School Zone
Type	Sign/Signal
Issue	The existing school zone signs are not obvious to drivers.
Recommendation	Evaluate existing extents of the school zone and re-sign new school zone.

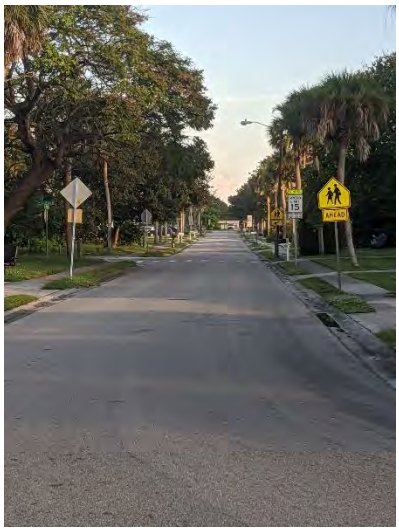
School Zone Signage Throughout the Study Area is not Obvious to Drivers

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

Project 14: Install school zone flashing beacons at school zone

Location	School Zone
Type	Sign/Signal
Issue	There are no school zone flashing beacons.
Recommendation	Install flashing beacons for school zone reduced speed sign.





Marked Crossings in the School Zone Without Flashing Beacons

	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	City of Melbourne

Project 15: Construct a 5 to 6 foot wide sidewalk where there are existing sidewalk gaps on Wickham Road

Location	**Wickham Road**
Type	**Sidewalk**
Issue	There are sidewalk gaps on both sides of Wickham Road.
Recommendation	Fill in gaps with 5 to 6 foot wide sidewalks on both sides.

Sidewalks Gaps on Both Side of Wickham Road by Fountainhead Boulevard

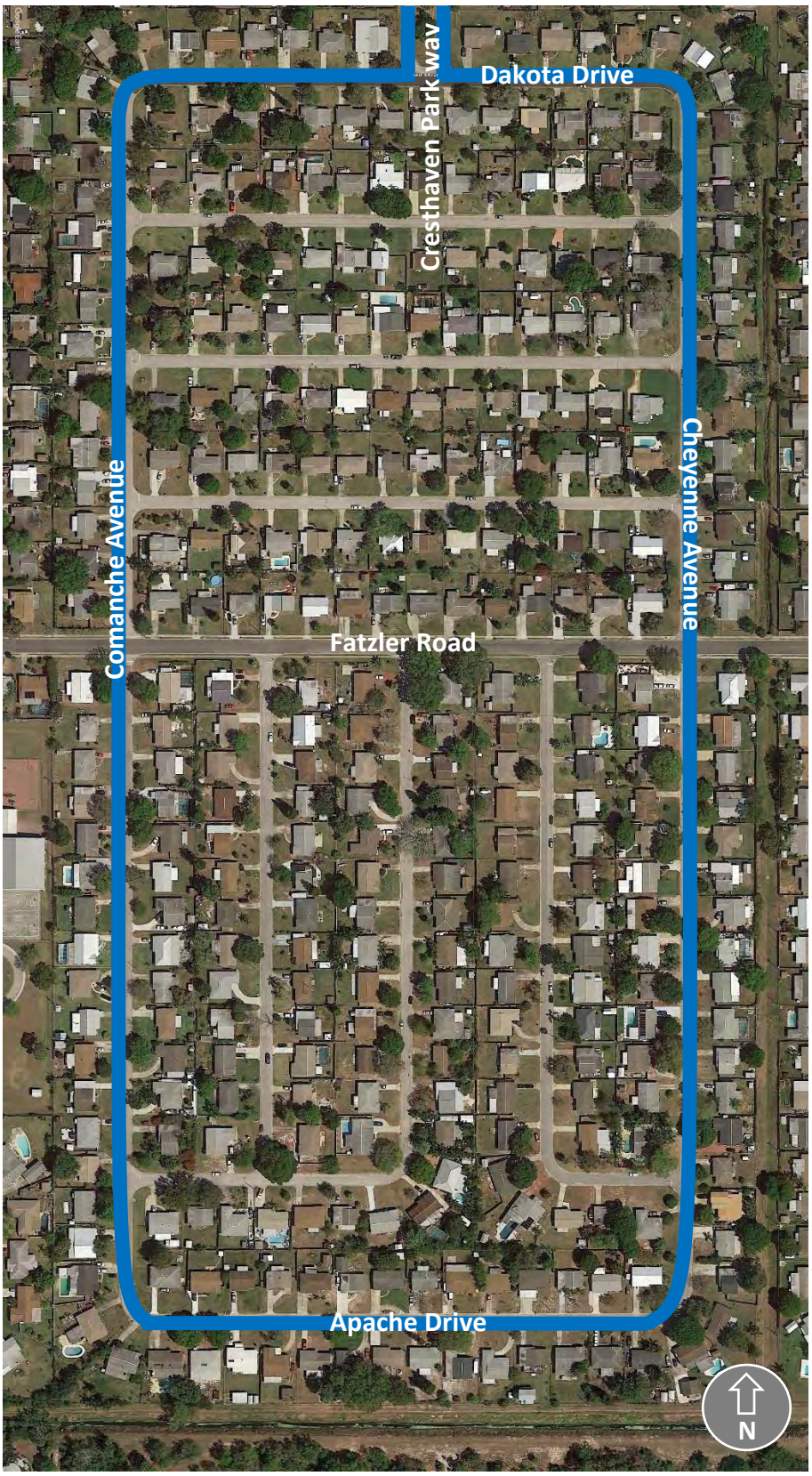
	Implementation Time-Frame	**Long-Term**
	Estimated Project Cost	**$800,000 to $925,000**
	Right-of Way Needed?	**Unknown**
	Drainage or Utility Impact?	**Unknown**
	Responsible Agency	**City of Melbourne**

Project 16: Construct a 5 foot to 6 foot wide sidewalk on Cresthaven Parkway, Dakota Drive, Comanche Avenue, Cheynenne Avenue, and Apache Drive

Location	Loop - Cresthaven Parkway, Dakota Drive, Comanche Avenue, Cheynenne Avenue, Apache Drive
Type	Sidewalk
Issue	There are no sidewalks on either side of the roadways.
Recommendation	Build 5 to 6 foot wide sidewalks on both sides.

Cheyenne Avenue Facing North from Fatzler Road

	Implementation Time-Frame	Long-Term
	Estimated Project Cost	$815,000 to $950,000
	Right-of Way Needed?	Unknown
	Drainage or Utility Impact?	Unknown
	Responsible Agency	City of Melbourne



Potential Alignment for Sidewalks Shown as the Blue Line

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