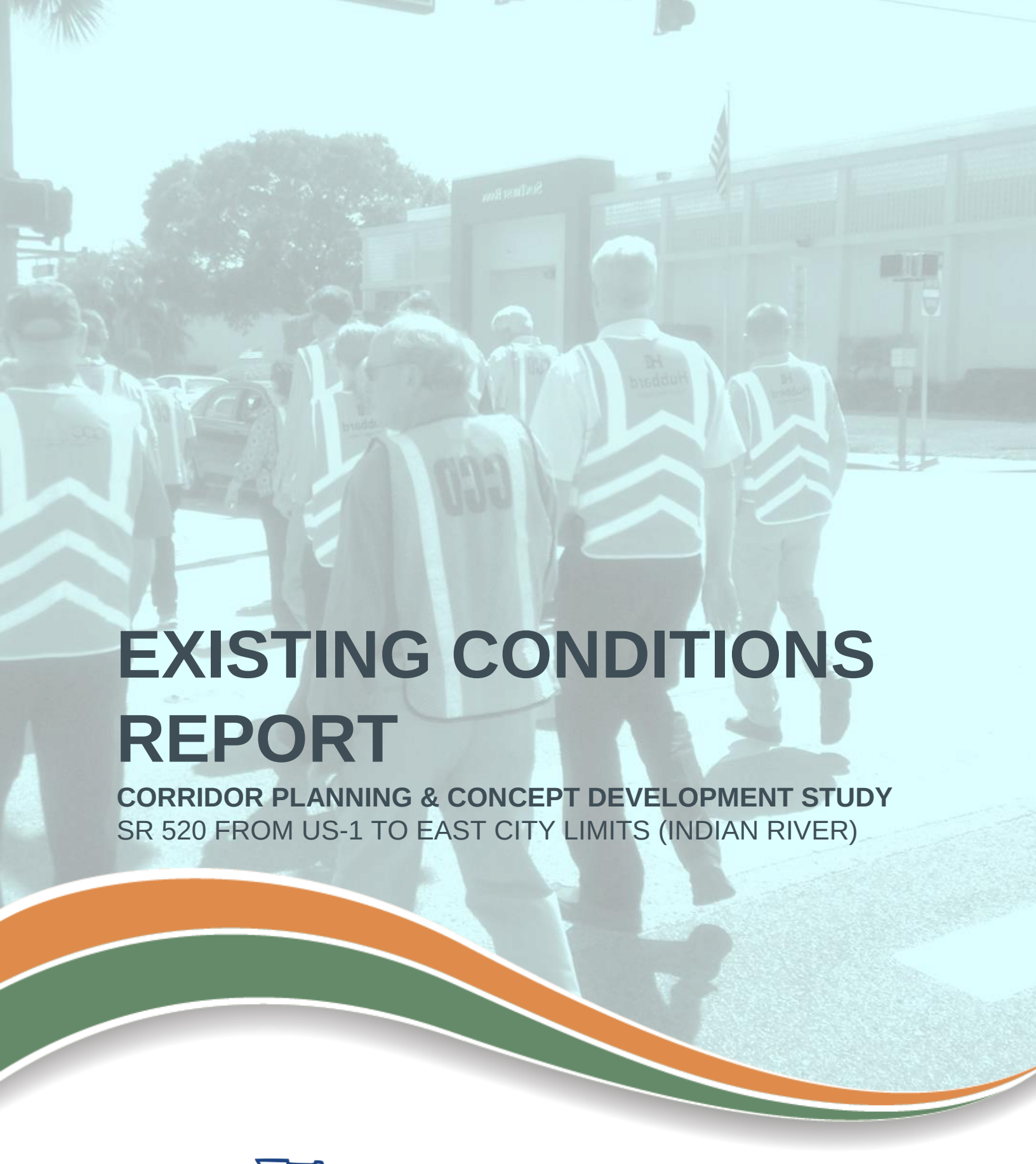


# EXISTING CONDITIONS REPORT

## CORRIDOR PLANNING & CONCEPT DEVELOPMENT STUDY

SR 520 FROM US-1 TO EAST CITY LIMITS (INDIAN RIVER)

FDOT

JUNE 2015

# Table of Contents

# 1 Introduction

## Overview

The Florida Department of Transportation is working in partnership with the City of Cocoa and the Space Coast Transportation Planning Organization (TPO) to conduct a planning and concept development corridor study for State Road 520 in the city limits of Cocoa. The study corridor is a one-mile long section of SR 520 within the City of Cocoa that extends from US 1(SR 5) to the Indian River, as illustrated in Figure 1.

The study corridor connects the Atlantic Ocean beachfront communities and Merritt Island with inland Brevard County and the Orlando region. It also provides regional east-west access to downtown Cocoa. The regional traffic on the corridor conflicts with pedestrian and bicycle travel in the walkable downtown area. The primary purpose of this study is determining how to best mitigate this conflict.

The study corridor is primarily a six-lane arterial, made up of two one-way roads: Willard Street in the westbound direction and King Street in the eastbound direction. The eastbound one-way roadway (King Street) is three lanes across while the westbound one-way roadway (Willard Street) is two lanes across up to CR 515 (Brevard Avenue) where it becomes three lanes across. The one-way pair is separated by a street block approximately 150 feet wide. This block is traversed by six north-south streets along the corridor limits, including six signalized intersections; a seventh signalized intersection is located at US 1.

*Figure 1- Study Area*


This Existing Conditions report provides a summary of the baseline conditions in the study area corridor in the following areas:

- Community characteristics
- Transportation characteristics
- Environmental characteristics
- Engineering / site characteristics
- Issues and opportunities

This report also presents a working vision that articulates important planning and design concepts based on our baseline conditions and initial stakeholders workshop. This report will serve as the basis for the Purpose and Need Statement that will be developed in the next study task. Both the Purpose and Need and the working vision will shape the alternatives and evaluation measures for the corridor.

# 2 Existing Conditions

## Community Characteristics

The SR 520 corridor study area encompasses the area within a quarter mile of SR 520, including the one way pair (Willard and King Streets) from just west of US 1 to the SR 520 causeway. The study area is approximately 0.4 square miles in size and is entirely contained within the City of Cocoa (see Figure 2).

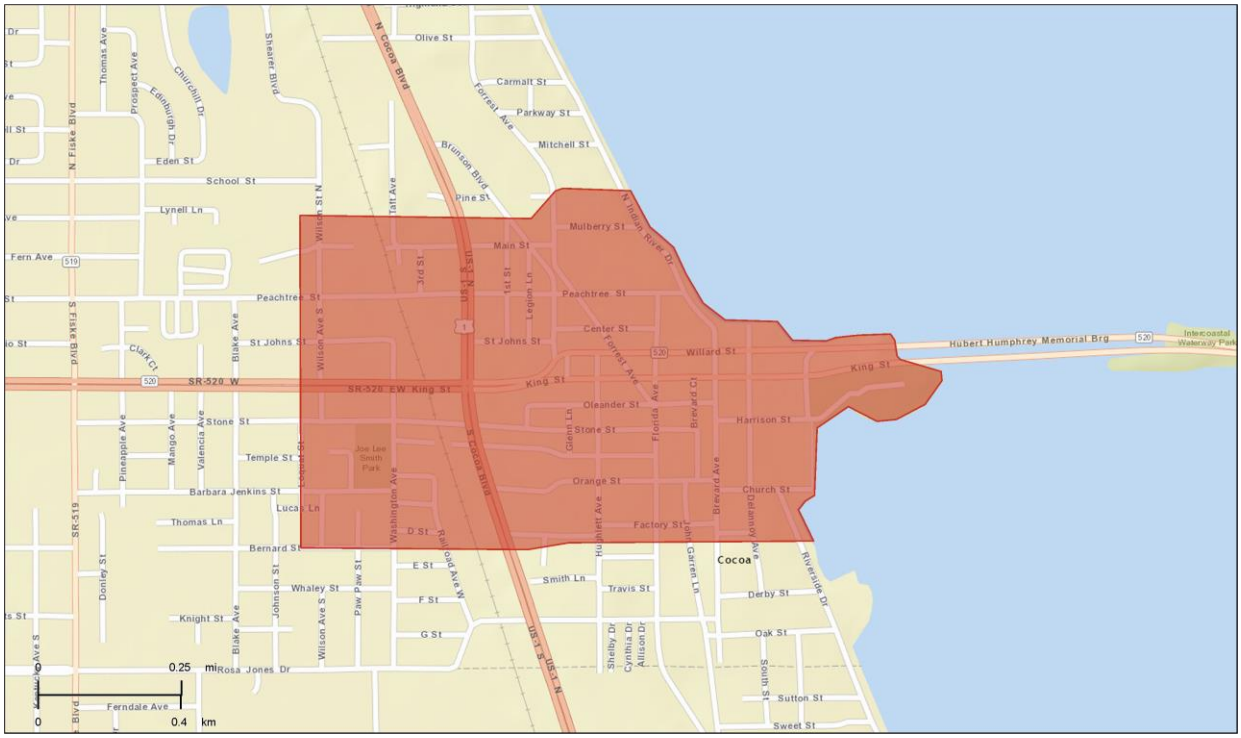
### Demographics

Demographic data describing the study area were obtained from Environmental Systems Research Institute (ESRI), a national provider of geographic and demographic data. Unless otherwise noted, the data represent estimates by ESRI for 2014.

The current population of the study area is estimated to be 811 persons. It should be noted that this estimate and historical Census counts reflect the full-time population; part-time or seasonal residents are not included. This current population estimate represents a 7.1 percent decrease from the 2000 population of 873 persons and a 1.6 percent decrease from the 2010 population of 824 persons. ESRI projects that the population in 2019 will be 813 persons, a minimal increase.

The median age of the study area population is 54.3 years. Almost one-third of the population (31.7 percent) is 65 years of age or older. Persons age 55-64 are another 17.0 percent of the population, so the prime empty-nester and retirement age groups make up almost half (48.7 percent) of the study area population.

*Figure 2 – Study area1/4 mile from Study area Corridor*




There are 425 households in the study area, and the average household size is 1.9 persons. A total of 46.1 percent of the households are families, meaning that they contain two or more people related by blood or marriage. The 2010 Census found that 44.5 percent of the households were one-person households, and overall 83.0 percent of the households had two or fewer people in them. Households with children under 18 make up 13.5 percent of the total.

ESRI estimates there are 541 housing units in the study area, with 197 (36.4 percent) owner-occupied, 227 (42.0 percent) renter-occupied, and 116 (21.4 percent) vacant. Like the Census, ESRI classifies seasonally occupied units as vacant. According to the 2009-2013 American Community Survey, 29 percent, or 34 of the 116 vacant housing units, are used for seasonal, recreational, or occasional use. Adjusting for the seasonal homes, the current housing vacancy rate in the study area is 15.2 percent.

The median household income in the study area is $34,380, while the average household income is $56,031. This significant difference between the median and average indicates that there are outliers on the high end (i.e., higher income households) pulling up the average. Households earning less than $25,000 per year make up 40.7 percent of the study area total, while households earning more than $100,000 per year make up 12.8 percent of the total.

Over three-fourths of the population age 25 or older (75.4 percent) have a high school degree, and 26.0 percent have attained at least a bachelor's degree or higher. Only 7.4 percent of the adult population does not have a high school diploma. Over half of the population age 16 or older (53.2 percent) work in white collar occupations (management, financial, professional, sales, or administrative), and 46.5 percent work in service industries, regardless of occupation. Overall, half of the population (50.2 percent) are in the labor force. The current unemployment rate is estimated at 3.7 percent.

## Business and Employment

There are an estimated 468 businesses in the study area, using data from Dun & Bradstreet. These businesses are spread among a variety of industry sectors, with the largest shares in Retail Trade (14.5 percent); Professional, Scientific, and Technical Services (13.7 percent); and Other Services – typically household, repair, and maintenance (10.9 percent).

The businesses in the study area employ 1,837 people. The largest industry sector in terms of employment is Public Administration (14.3 percent), reflecting the presence of Cocoa City Hall. The next largest employment sectors match the sectors that were the largest in terms of the number of businesses: Retail Trade (13.0 percent); Professional, Scientific, and Technical Services (10.8 percent), and Other Services (9.1 percent), with a majority of those businesses concentrated on the south side of the corridor in the "Cocoa Village" district. The study area is jobs rich, expected of a downtown area, with a jobs to housing ratio of 3.4.

## Existing Land Use /Context Zones

The 2008 Waterfront Master Plan originally organized the Downtown Redevelopment Area (RDA) into seven character areas. Subsequent planning and implementation efforts led to the adoption of the Cocoa Waterfront Overlay District in 2013 that adjusted the 2008 plan's sub-area boundaries somewhat and established eight design districts that address the land use, design, scale, and appearance of development

within the RDA. These regulations are contained within the City's Land Development Code. A map of the design districts and table of permitted building types is shown in Figure 3.

The land use and design-oriented regulations contained in the Overlay District code will shape development throughout the SR 520 study area, as nearly all of the eight design districts cover some of the land contained within the study area. The most important design districts for this study are the ones which cover the properties with frontage on the SR 520 corridor – King Street and Willard Street. The other design districts will shape the larger area surrounding the corridor and how SR 520 is used and experienced by the people who live in, work in, and visit the study area.

## Design Districts with SR 520 Frontage

There are three overlay design districts that cover properties with frontage on the SR 520 corridor (see Figure 3):

- King/Willard Corridor: This design district primarily covers properties west of Florida Avenue on the two named roadways, plus the north side of Willard between Florida Avenue and Brevard Avenue. This is the only part of the Downtown RDA where this design district is applied. The Overlay District's Regulating Plan calls for small and medium sized commercial/mixed-use buildings and one-story commercial buildings along this portion of the corridor. Townhomes or multifamily apartment buildings are permitted only on the north frontage of Willard Street, plus in a small area on the south side of King Street just west of where SR 520 splits to form the two one-way roadways.
- Cocoa Village: This design district covers the commercial heart of Cocoa Village, extending south from the SR 520 corridor along Florida Avenue, Brevard Avenue, and Delannoy Avenue. The only portions of the SR 520 corridor frontage it covers are the south side of Willard Street and both sides of King Street between Florida Avenue and Delannoy Avenue. The intent is to encourage the redevelopment of these blocks in the same pedestrian-oriented fashion as the blocks to the south in Cocoa Village, which means that addressing pedestrian conditions in this portion of the corridor will be especially important. Small residential buildings such as cottages and/or townhomes are permitted on the periphery of this district away from SR 520, but the core of the district is designated for apartments and small/medium sized commercial/mixed-use buildings.

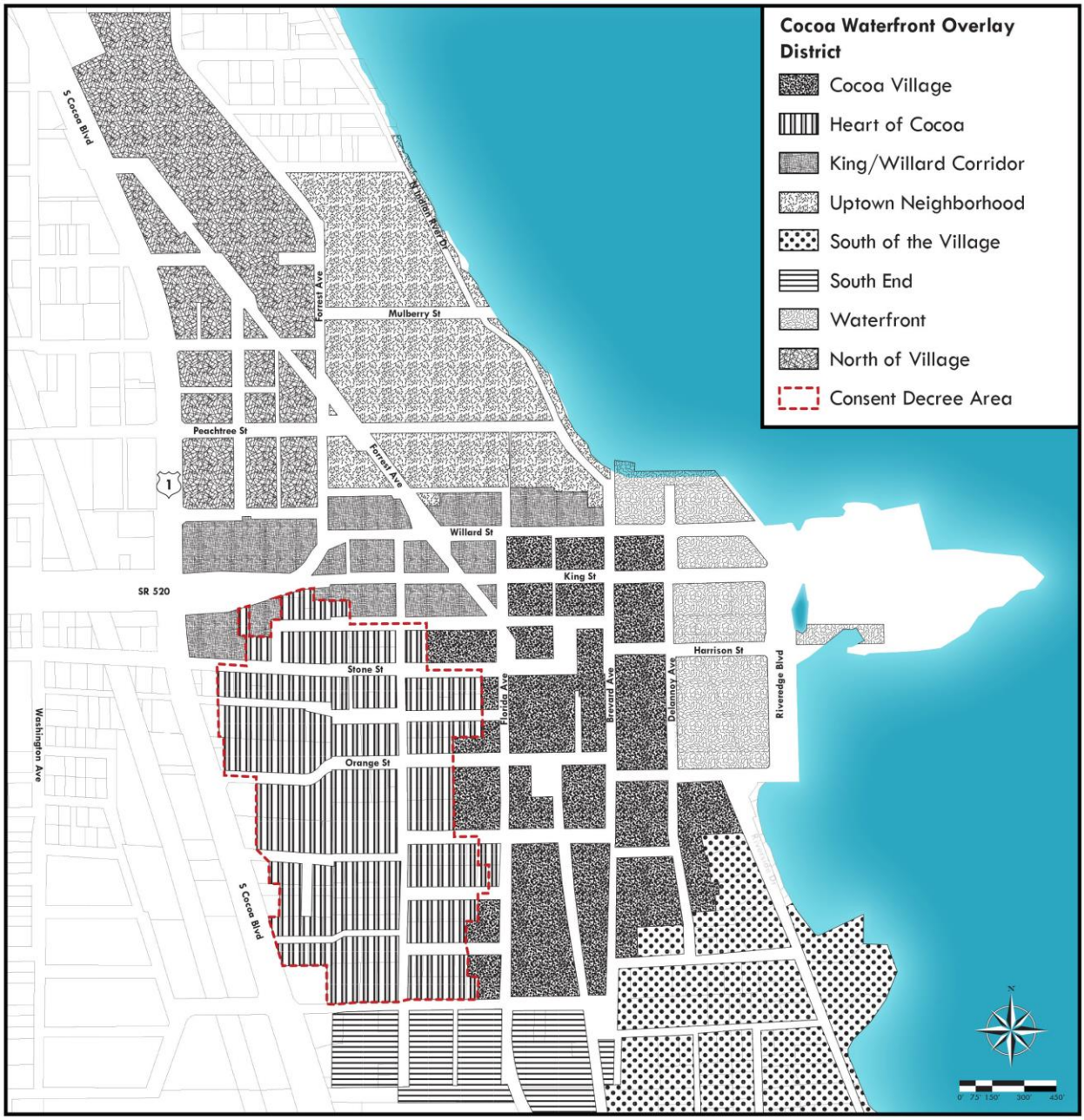
- Waterfront: This design district covers a few blocks east of Delannoy Avenue and/or north of Willard Street that are adjacent to the waterfront. In the SR 520 corridor, it covers the frontage east of Delannoy Avenue plus the north side of Willard Street on the west side of Delannoy. Apartment buildings and larger commercial/mixed-use buildings are permitted in this district, but smaller scale buildings such as townhomes and single-story commercial are not.

## Other Design Districts in the Study Area

Three other design districts cover properties located within the study area (see Figure 3):

- Heart of Cocoa: This design district covers the residential neighborhood west of Cocoa Village and east of US 1, between SR 520 and Rosa L. Jones Drive. It permits only single-family detached homes, except for a few specific parcels where townhomes are permitted. These regulations are the result of a consent decree entered into by the City with neighborhood residents, and are intended to preserve the neighborhood as a low-density residential area.

*Figure 3 – Cocoa Waterfront Overlay District*



- Uptown Neighborhood: This design district covers the area immediately north of the northern SR 520 frontage, east of Forrest Avenue, and running up to the northern edge of the RDA. The Regulating Plan permits only single-family homes and townhomes, plus civic and institutional buildings such as the existing Brevard Central Library that anchors this district.
- North of Village: This design district runs from north of the northern SR 520 frontage, west of Forrest Avenue, up to the northern edge of the RDA. It permits a range of buildings types including townhomes, apartment buildings, and small/medium sized commercial/mixed-use buildings. Single-story commercial buildings and large format commercial buildings are permitted on parcels that front on or are close to US 1.

## Other Plans / Studies

The City of Cocoa Community Redevelopment Agency (CRA) leads redevelopment initiatives in designated areas of the City. One of the focus areas for the CRA is the Downtown RDA, the boundaries of which are very similar to the study area defined for the SR 520 corridor. SR 520 essentially divides the Downtown RDA into a north half and a south half, acting as a physical and psychological barrier that makes connections and interactions within the area more challenging.

A master plan and implementation strategy has been adopted by the City for the Downtown RDA, known as the Cocoa Waterfront Master Plan. The initial focus of the plan was to improve the activity and connectivity in and around the waterfront area, but those specific objectives evolved into a more comprehensive discussion of the community's vision for the entire downtown area, which includes the SR 520 corridor. The community stakeholders established the following six points of critical focus:

- Connect the Indian River to the City
- Enhance and connect open space
- Livable approach to streets and traffic
- Expand Main Street district-wide
- Enhance the village arts image
- Enhance the sub-districts

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The Waterfront Master Plan identifies a number of key locations of redevelopment opportunity in the RDA based on current conditions and the design framework outlined in the plan. Most of these opportunities are located within the SR 520 study area. An overview of the sites is presented below and they are shown in Figure 4.

- Bank of America site: Located north of Church Street between Brevard Avenue and Delannoy Avenue, this key site occupies most of a city block in the heart of Cocoa Village and overlooks Cocoa Riverfront Park. It represents an opportunity to add more pedestrian-oriented retail storefronts to the "Main Street" strip on Brevard Avenue, as well as attracting more activity to the Riverfront Park.
- Former City Hall site/Chase Bank parking lot: The City owns the vacant site at the southwest corner of Brevard Avenue and Factory Street, and the bank parking lot across Factory to the north offers additional redevelopment potential, possibly through a public-private development partnership. Like the Bank of America site, this location offers the opportunity to fill in gaps in the walkable retail frontage along Brevard Avenue.

- Harrison Street properties: These properties facing the north end of Riverfront Park are currently occupied by one- and two-story commercial buildings, but hold the potential for mixed-use redevelopment that would enhance the environment surrounding the waterfront area. The Waterfront Master Plan recommends exploring the potential for redevelopment, possibly including a rezoning for more intensive use.
- Suntrust Bank site: The Suntrust Bank and associated parking/drive through facility are located on either side of Delannoy Avenue between King Street and Willard Street – the two one-way roadways that comprise SR 520. The location could serve as a prominent gateway into Cocoa Village for traffic coming over the causeway bridge from the east, signaling to drivers that they have entered a

special place and creating a sense of arrival and destination. The Waterfront Master Plan considers the possibility of a new public park on the drive-through facility site.

- Municipal parking lot: The parking lot on Oleander Street just west of Brevard Avenue is considered in the Master Plan as a future site for a public parking garage with ground-floor commercial space.
- Multifamily Infill: The Master Plan identifies an area bounded by King Street, Hughlett Avenue, and Oleander Street on the south side of the SR 520 corridor as a target for infill multifamily housing. There are multiple parcels of varying sizes held by several different owners, and many of the lots are vacant.
- Catalyst park site: The current AT&T yard located at Hughlett Avenue and Factory Street is proposed for a new public park, potentially with adjacent infill housing, that would bring more open space to the neighborhood and upgrade the area's pedestrian friendliness. The Master Plan suggests that a land swap between the AT&T property and the former Howard Johnson site at Forrest Avenue and US 1 could be the means for relocating the current activities on the site.

- Single-family infill: The residential neighborhood immediately west of Cocoa Village has a number of vacant and underutilized properties that could be redeveloped for new single-family homes. The lots are located throughout the area south of SR 520 and west of Florida Avenue.
- City-owned and privately owned properties near library: At the north end of the RDA, the City-owned "Brunson" site near the Central Brevard Library is a redevelopment opportunity that could anchor a revitalized neighborhood focused on the library as a community and cultural hub. There are adjacent privately owned sites that are vacant or underutilized that could potentially be combined with this opportunity.

The City of Cocoa and Cocoa Community Redevelopment Agency engaged Myra Planning and Design, Inc. (MPD) to prepare a preliminary

plan for design improvements to the SR 520 corridor. The report was delivered in May 2014, and contains an evaluation of existing conditions and preliminary recommendations.

MPD describes how over the length of the corridor, the roadway transitions from an urban highway to what could be a village street. With over 23,000 vehicles per day in each direction traveling through the corridor, it is a major traffic route that has regional as well as local impacts. The roadway is characterized by wide travel lanes that allow for higher vehicle speeds, sidewalks close to the roadway with no physical or visual separation from auto traffic, and limited landscaping. But east of Forrest Avenue, the number of walkable commercial and recreational destinations increases substantially and the presence of Whitley Bay Condominiums and other high density residential development north of the corridor creates demand for pedestrian and bicycle travel across SR 520.

The design characteristics of the north-south roadways that cross the SR 520 corridor are very different. These streets, such as Brevard Avenue and Delannoy Avenue, typically have at most two travel lanes and at least one lane of on-street parking. Most of the streets are one-way. Sidewalks are wide and shaded, with active storefronts built right up to the property line. In general, the Historic Cocoa Village area south of SR 520 is much more pedestrian-scaled and attractive to walkers and bikers than the SR 520 corridor, which despite the relatively narrow confines that the adjacent properties place on the roadways has a greater emphasis on vehicular travel.

*Figure 4 - Redevelopment Opportunity Sites*

## Educational/Community Institutions

The study area encompasses the historic downtown center of Cocoa. As such, there are a number of community institutions located within it that make it a destination.

- Civic and governmental institutions
  - Cocoa City Hall
  - Cocoa Civic Center
  - Cocoa Fire Station #1
  - Central Brevard Library
  - U.S. Post Office
- Service and nonprofit institutions
  - Florida Historical Society, Library of Florida History
  - Cocoa Elks Lodge
  - American Legion Post
- Churches
  - Bethel SDA Church
  - Community Fellowship Church
  - Greater St. Paul Baptist Church
  - Living Word Christian Center
  - Metropolitan Baptist Church
  - Mt. Moriah AME Church
  - St. Mark's Episcopal Church
  - True Pentecostal Community Temple
- Schools
  - St. Mark's Episcopal Academy

Most of these institutions are located within a few blocks north or south of SR 520, with a few of the churches and the public library located at the northern and western edges of the study area.

## Leisure and Recreation

There are a number of public parks and open space areas located within the study area (Figure 5), including:

- Cocoa Riverfront Park: Combined with Lee Wenner and Taylor Parks, this park located in the historic Cocoa Village provides public waterfront access to the Indian River. It includes a playground area, amphitheater, covered pavilions, a boardwalk, and areas for fishing, water sports, and boat launching. The park hosts "Movies in the Park" events put on by the City of Cocoa, which often also feature live entertainment and food trucks.

- Lee Wenner Park: This park is located at the foot of the causeway bridge and is a popular boat launching site, offering four ramps. The park also features a covered picnic pavilion, barbecue grills, picnic tables, restrooms, playground, and benches that are connected by a paved walkway and a boardwalk that extends to Riverfront Park and Historic Cocoa Village. There is a Coast Guard Auxiliary Building that hosts boating safety classes and has a meeting room available for rental.
- Taylor Park: The shaded benches, playground, and rose garden in this park are connected to Riverfront Park and the park is adjacent to the shops of Historic Cocoa Village.
- Peachtree Parks: This urban open space area is located at Peachtree Street and Forrest Avenue, and features shaded benches and sidewalks.
- Tiger Den Native Park: This urban open space area located at Peachtree Street and First Avenue is designated as a Florida Native State Park, and features benches and a pond with a waterfall and fountain.
- Joe Lee Smith Park: This park is located on the western edge of the study area, at 419 Washington Avenue. It is a hub for after school programs, neighborhood events, and indoor basketball. The park features a community center with a small meeting room and gymnasium, plus an outdoor swimming pool, baseball field, basketball court, and playground.

Several other leisure facilities operated by the City of Cocoa are located in the study area, including:

- Cocoa Civic Center: Located on Delannoy Avenue adjacent to Riverfront Park, this facility offers views of the Indian River and four meeting rooms that can accommodate a range of events.
- The Porcher House: This historic house is next door to the Civic Center, and can be reserved for weddings, receptions, meetings, and other special events. The upstairs areas are leased out to office users. Historical tours are available by appointment.
- Myrt Tharpe Square Gazebo: Located on Stone Street at Brevard Avenue, this public square and gazebo hosts a farmers market operated by the Cocoa Main Street organization.

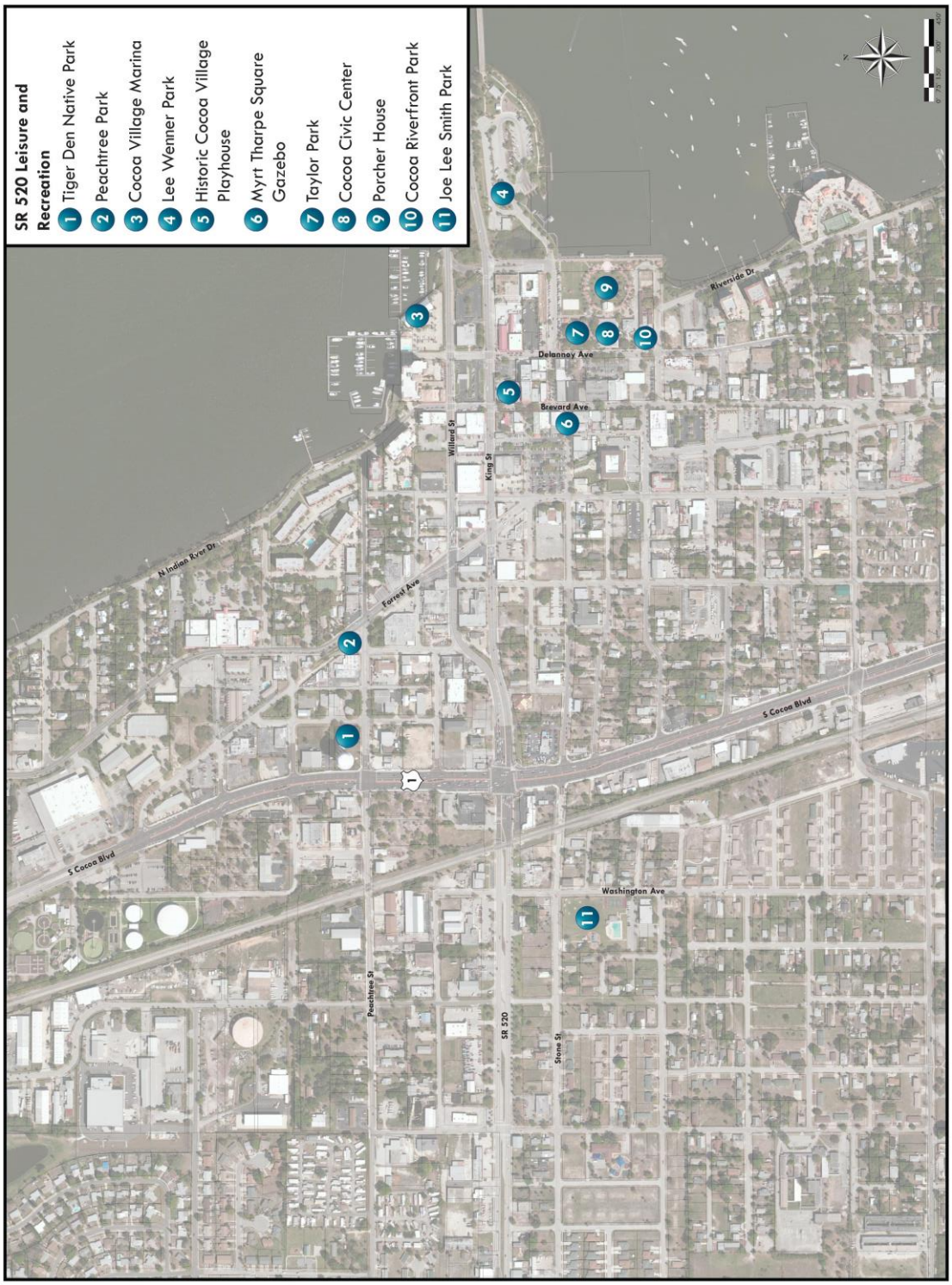
Historic Cocoa Village is a popular destination on the Space Coast, drawing residents, visitors, and even cruise ship passengers (via Port Canaveral) to the walkable business district located in the study area,

primarily south of SR 520 along Brevard Avenue, Stone Street, and Delannoy Avenue, but including other nearby merchants and destinations as well. Features of the area include:

- A wide variety of shopping and dining opportunities are found in the Village, including antique and gift shops, fashion and jewelry boutiques, art galleries, spas and beauty salons, bars, and restaurants offering a variety of cuisines.
- The Historic Cocoa Village Playhouse on Brevard Avenue is owned and maintained by the City of Cocoa and operated by a nonprofit community theater group. The Playhouse stages musicals and other theatrical performances, ballet, and community events, and runs a youth theater program with over 250 annual participants.
- The Cocoa Village Marina is located just north of SR 520 and features 117 slips accommodating vessels up to 100 feet. Amenities include a clubhouse, business center, and meeting facility.
- The Historic Cocoa Village Merchants Association puts on events throughout the year, including several arts and crafts fairs, a barbecue and blues festival, several “sip and stroll” wine and shopping events, and the Central Florida Car Show.

The number, proximity, and diversity of activities in the study area that are accessible by walking or biking highlight how the interaction of such non-motorized travel modes with automobile traffic is one of the key issues in the SR 520 corridor.

*Figure 5 - Leisure and Recreation*



# Transportation Characteristics

The Transportation Characteristics described in the following section is focused on the State Road 520 section of roadway between US 1 and the Indian River including the interactions with cross streets. The section will summarize the following characteristics and conditions:

- Roadway geometry and operations
- Traffic and congestion levels
- Transit service
- Bicycle and pedestrian facilities
- Safety and crashes

## Roadway Conditions

The study area corridor is functionally classified as an Urban Principal Arterial with a Florida Department of Transportation Access Management Class of 5 from US 1 to the split of the one-way pair, then becomes a Class 6 until Riveredge Boulevard intersections. East of Riverdge Boulevard the corridor has an Access Management Class of 3 (Table 1 14-97 Florida Administrative Code). Table 2 shows the how the corridor aligns with the Access Management Class standards for the corridor study area and corresponding posted speed limits.

*Table 1- Access Management Class Spacing Standards*

| FDOT Access Management Class | Minimum Connection Spacing (feet) | Minimum Median Opening Space (feet) | | Minimum Signal Spacing (feet) |
|---|---|---|---|---|
| | | Directional | Full | |
| Class 1 | N/A | NA | NA | N/A |
| Class 2 | 1,320/660[1] | 1,320 | 2,640 | 2,640 |
| Class 3 | 660/440[1] | 1,320 | 2,640 | 2,640 |
| Class 4 | 660/440[1] | NA | NA | 2,640 |
| Class 5 | 440/245[1] | 660 | 2,640/1,320[1] | 2,640/1,320[1] |
| Class 6 | 440/245[1] | NA | NA | 1,320 |
| Class 7 | 125 | 330 | 660 | 1,320 |

Source: Section 14-97.003, Florida Administrative Code
Note: For Class 1 roadways, no signalized intersections or driveways are allowed.

[1] Greater than 45 MPH / Less than or equal to 45 MPH

*Table 2 – Roadway Characteristics*

| Roadway | From | To | Number of Lanes | Presence of Dedicated Turn Lanes | Access Management Class | Posted Speed |
|---|---|---|---|---|---|---|
| SR 520 | US 1 | Split | 3 | Yes | 5 | 35 |
| King Street | Split | Forrest Avenue | 3 | No | 6 | 35 |
| Willard Street | Forrest Avenue | Split | 3 | Yes | 6 | 35 |
| King Street | Forrest Avenue | Brevard Avenue | 3 | No | 6 | 35 |
| Willard Street | Brevard Avenue | Forrest Avenue | 3 | No | 6 | 35 |
| King Street | Brevard Avenue | Delannoy Avenue | 3 | No | 6 | 35 |
| Willard Street | Delannoy Avenue | Brevard Avenue | 2 | Yes | 6 | 35 |
| King Street | Delannoy Avenue | Riveredge Boulevard | 2 | Yes | 6 | 35 |
| Willard Street | Riveredge Boulevard | Delannoy Avenue | 3 | No | 6 | 35 |
| King Street | Riveredge Boulevard | Merritt Island Causeway | 2 | No | 3 | 45 |
| Willard Street | Merritt Island Causeway | Riveredge Boulevard | 2 | No | 3 | 35 |

## Roadway Conditions

There are various typical cross sections along SR 520 described below.

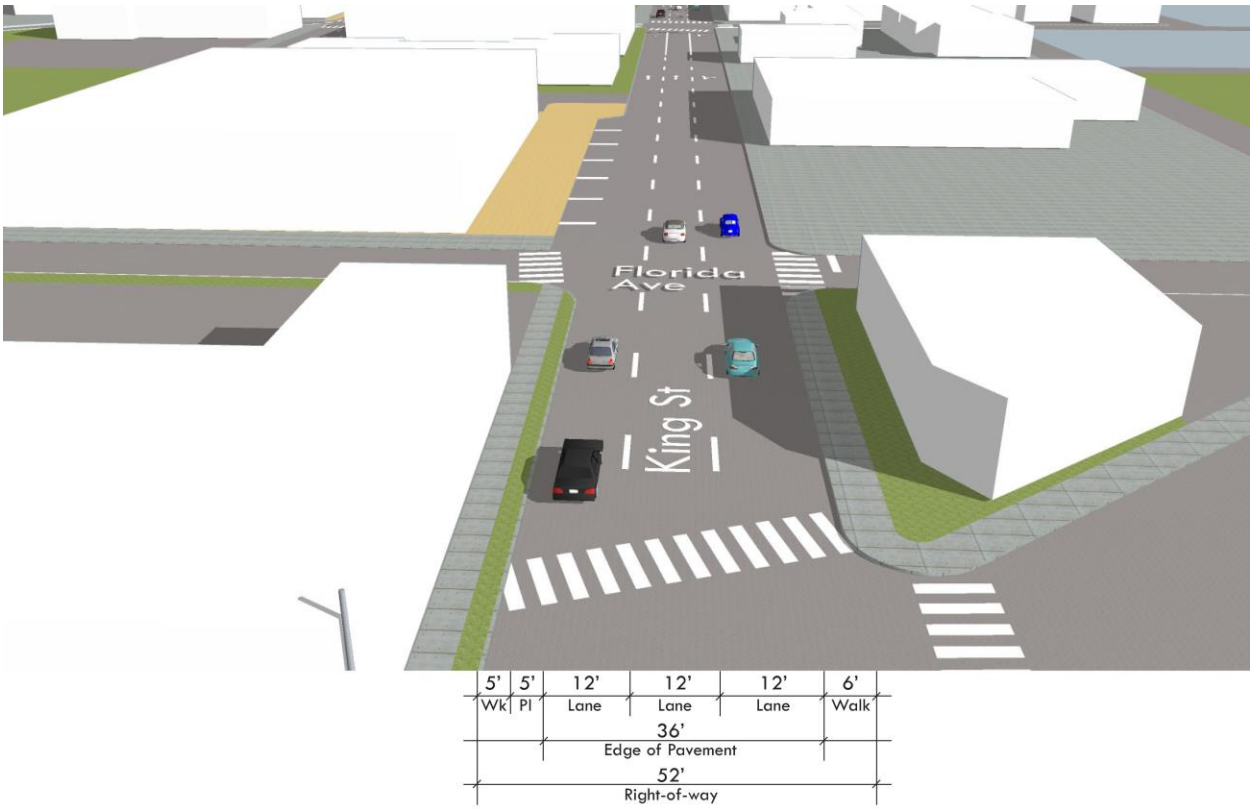
### Section 1 – US 1 to Forest

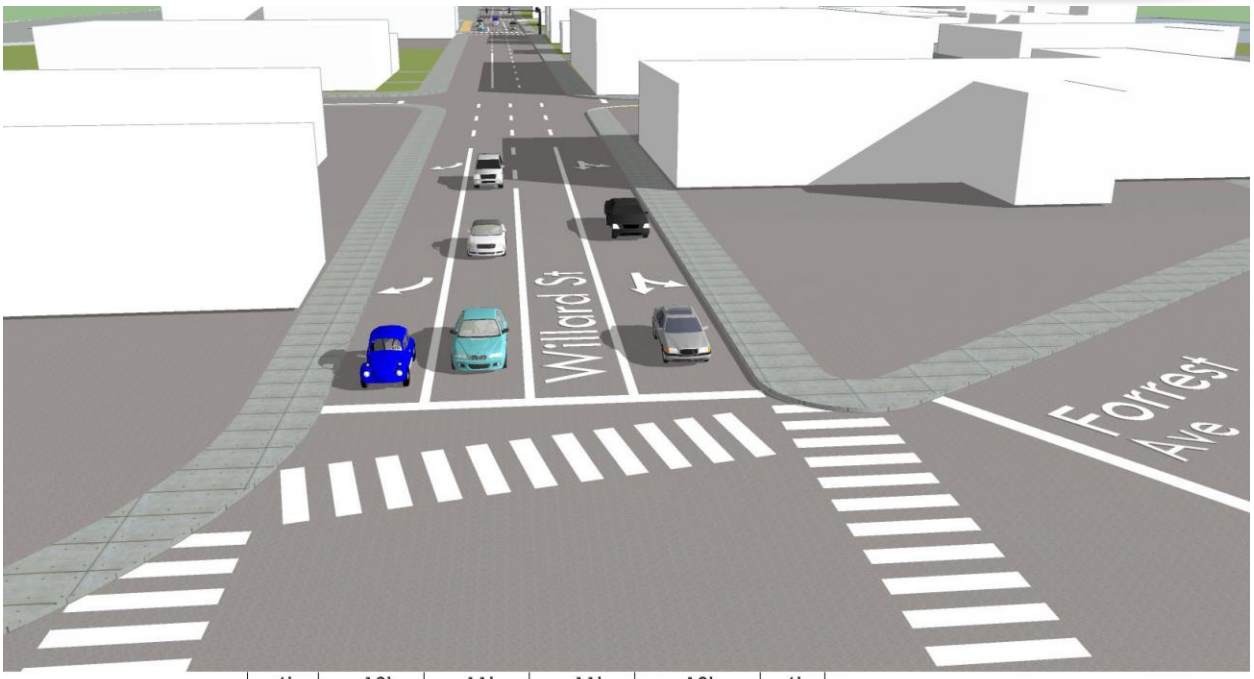
The typical section for SR 520 within this portion of the corridor generally consists of three through lanes with shared left and shared right turn lanes. This section splits into a pair of one-way streets about 550 east of US 1. The roadways access management class changes from 5 west of the split, to 6 east of the split. The section is approximately a quarter mile long with a posted speed of 35 MPH.

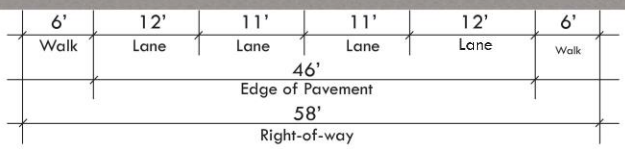
## Section 2 – Forest to Brevard

The typical section in this portion of the corridor is three one-way through lanes with shared left and shared right turn lanes for both the east and west bound directions (Figure 6). The section is approximately 0.13 miles long, with a posted speed of 35 MPH and limited on-street parking on the north side of King Street (the eastbound one-way pair). Left turns are prohibited on at the intersection of King Street & Brevard Avenue.

*Figure 6 – Forrest to Brevard Typical Section (King Street - eastbound top, Willard Street - westbound next page)*



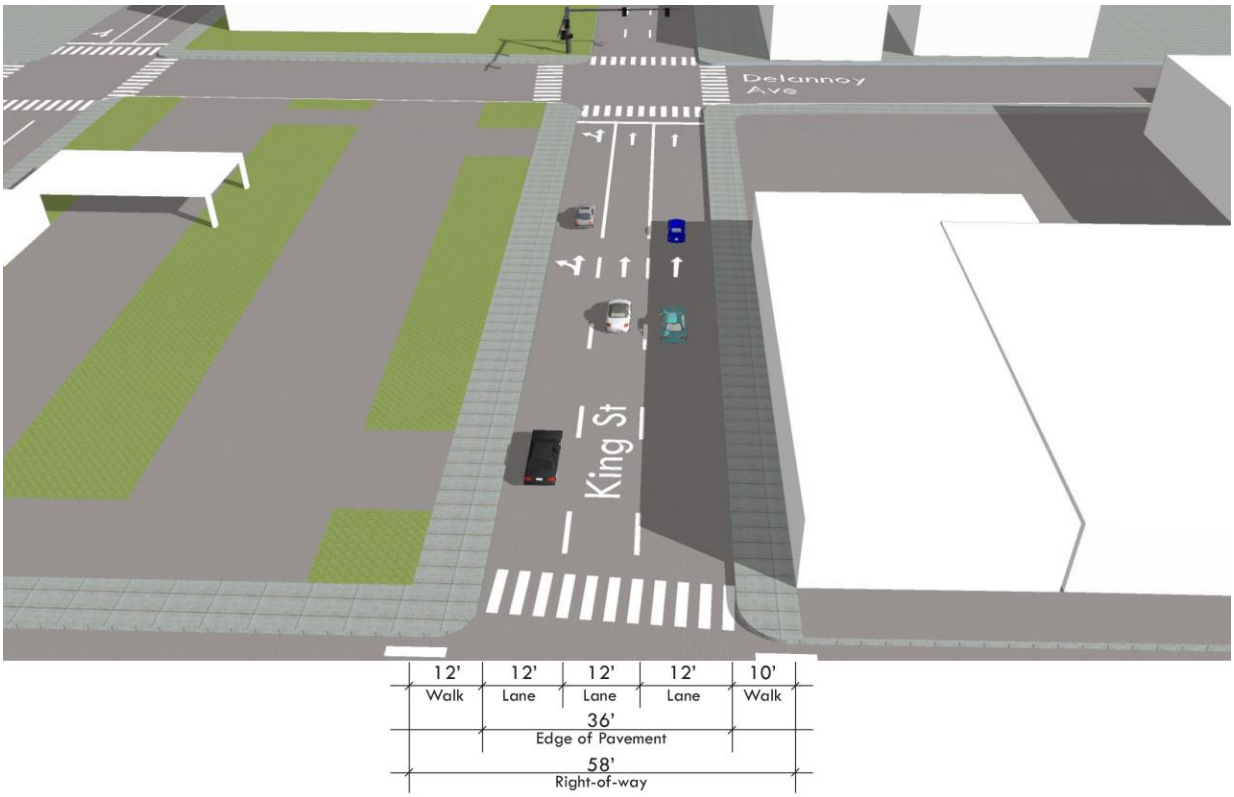

Willard St
Forest Ave

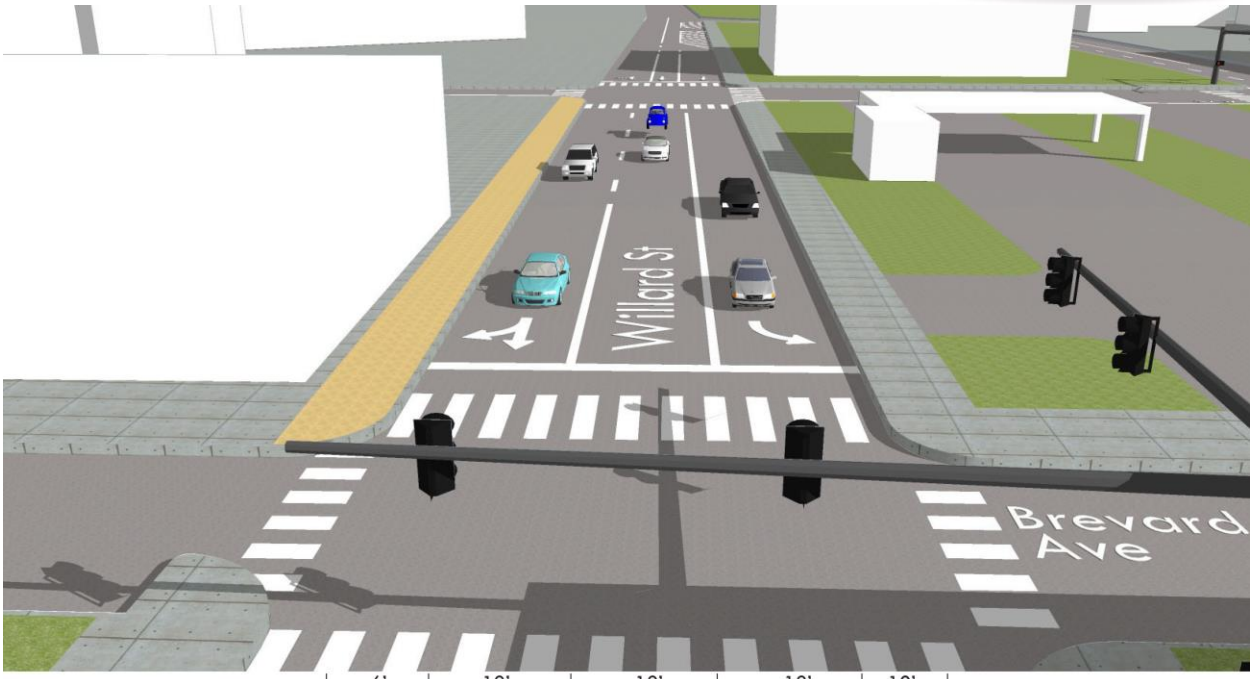

6'
Walk
12'
Lane
11'
Lane
11'
Lane
12'
Lane
6'
Walk
46'
Edge of Pavement
58'
Right-of-way

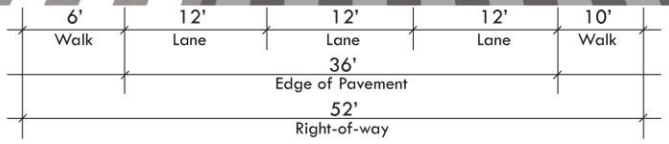
## Section 3 – Brevard to Delannoy

The typical section in this portion of the corridor differs between the east and west bound directions (Figure 7). Willard, the westbound one-way pair, has two through lanes and dedicated left turn lanes. King, the eastbound one-way pair, has three through lanes with a shared left turn lane. Right turns are prohibited at the intersection of King Street and Delannoy Avenue. The section is approximately 0.05 miles in length and both roads have a posted speed of 35 MPH.

*Figure 7- Brevard to Delannoy Typical Section (King Street - eastbound top, Willard Street - westbound next page)*



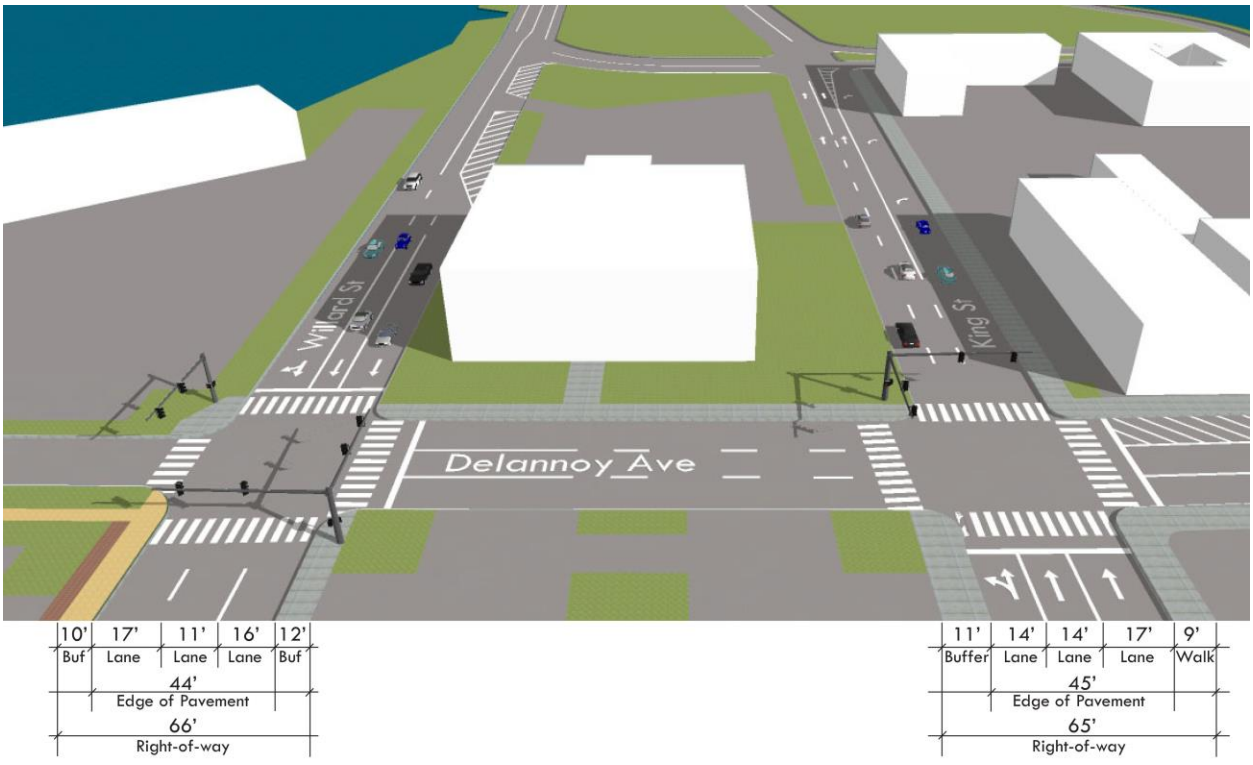

Willard St
Brevard Ave


6'
Walk
12'
Lane
12'
Lane
12'
Lane
10'
Walk
36'
Edge of Pavement
52'
Right-of-way

## Section 4 – Delannoy to Riveredge

The typical section for portion of the corridor differ between the eastbound and westbound directions. Willard, the westbound road has three through lanes, with a shared left turn lane. King, the eastbound one-way pair has two through lanes, with a shared right turn lane. The section is approximately 0.09 miles in length and both streets have a posted speed of 35 MPH. Left turns are prohibited at the intersection of King Street and Riveredge Boulevard.

*Figure 8- Typical Section Eastbound and Westbound between Delannoy and Riveredge*



## Traffic Conditions

This section details the existing traffic conditions along the corridor. As noted in the Overview, the key objective of the study is maintaining the study corridor's regional auto mobility functionality, measured primarily by speed and travel time, while mitigating conflicts with pedestrians and bicyclists in downtown Cocoa.

Table 3 presents the arterial level of service (LOS) according to State of Florida standards in the AM/PM peak hours for eastbound King Street and westbound Willard Street. The corridor is broken into four sections by signalized cross streets, all of which are operating at an acceptable level of service in the PM peak, with the exception of Willard Street from Delannoy Avenue to Brevard Avenue. This section operates at LOS E during the PM peak. The poor LOS is not due to traffic signal delay (7.7 seconds), rather the merging of traffic as the roadway drops from three to two lanes, resulting in slower average speeds (12.5 MPH).

*Table 3 – Arterial Level of Service (LOS)*

| Roadway | From | To | Posted Speed | Travel Time(s) | Arterial LOS | Adopted LOS |
|---|---|---|---|---|---|---|
| King Street *(Eastbound)* | US 1 | Forrest Avenue | 35 | 60.5 | D | D |
| | Forrest Avenue | Brevard Avenue | 35 | 21.1 | C | D |
| | Brevard Avenue | Delannoy Avenue | 35 | 9.6 | C | D |
| | Delannoy Avenue | Riveredge Boulevard | 35 | 18.8 | D | D |
| | | **Total One-Way Pair** | | **110** | **D** | **D** |

| Roadway | From | To | Posted Speed | Travel Time(s) | Arterial LOS | Adopted LOS |
|---|---|---|---|---|---|---|
| Willard Street *(Westbound)* | Riveredge Boulevard | Delannoy Avenue | 35 | 16.8 | C | D |
| | Delannoy Avenue | Brevard Avenue | 35 | 15.6 | E | D |
| | Brevard Avenue | Forrest Avenue | 35 | 32.1 | D | D |
| | Forrest Avenue | US 1 | 35 | 63.7 | D | D |
| | | **Total One-Way Pair** | | **128.2** | **D** | **D** |

There are eight signalized intersections within the corridor study area, all of which operate at an acceptable level of service in the AM and PM peak hours (Tables 4 and 5).

*Table 4 – AM Intersection Level of Service (LOS)*

| Intersection | Max VC | Delay (s) | LOS |
|---|---|---|---|
| SR 520 @ US1 | 0.81 | 44.7 | D |
| King Street @ Forrest Avenue | 0.77 | 37.4 | D |
| Willard Street @ Forrest Avenue | 0.63 | 11.3 | B |
| King Street @ Brevard Avenue | 0.60 | 6.9 | A |
| Willard Street @ Brevard Avenue | 0.54 | 11.4 | B |
| King Street @ Delannoy Avenue | 0.46 | 2.1 | A |
| Willard Street @ Delannoy Avenue | 0.37 | 3.3 | A |
| King Street @ Riveredge Boulevard | 0.66 | 10.3 | B |

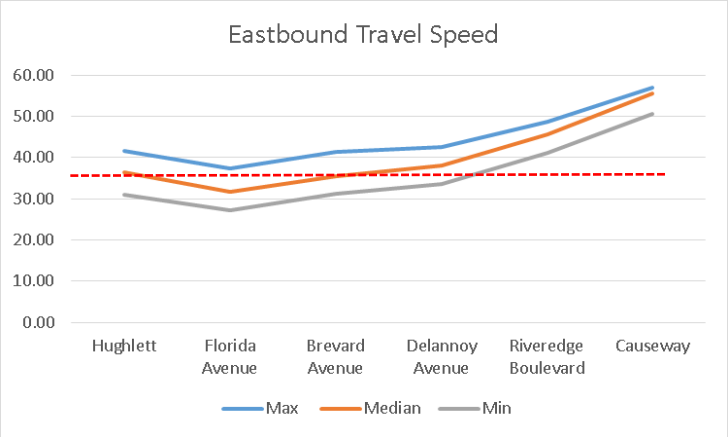
*Table 5 – PM Intersection Level of Service (LOS)*

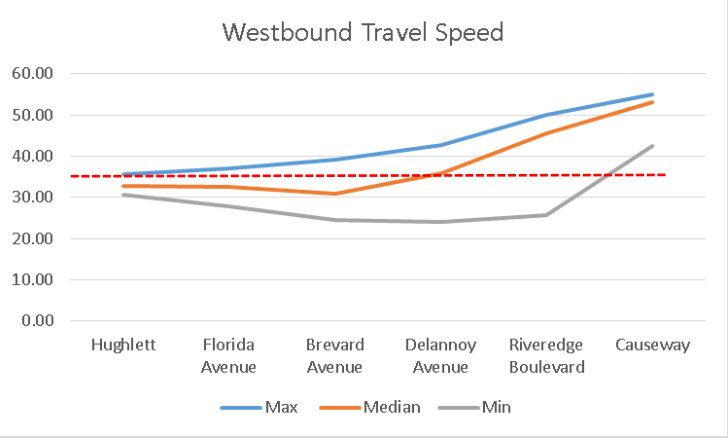
| Intersection | Max VC | Delay (s) | LOS |
|---|---|---|---|
| SR 520 @ US1 | 0.87 | 44.2 | D |
| King Street @ Forrest Avenue | 0.72 | 49.8 | D |
| Willard Street @ Forrest Avenue | 0.70 | 20.7 | C |
| King Street @ Brevard Avenue | 0.57 | 10.4 | B |
| Willard Street @ Brevard Avenue | 0.74 | 37.5 | D |
| King Street @ Delannoy Avenue | 0.53 | 6.2 | A |
| Willard Street @ Delannoy Avenue | 0.51 | 6.3 | A |
| King Street @ Riveredge Boulevard | 0.75 | 10.3 | B |

Travel speeds and times along the corridor indicate whether the roadway is providing adequate regional mobility. If speeds are too low, regional travel times both to and through Cocoa create unacceptable delays. If the speeds are too high, the level of comfort walking or biking along the corridor diminishes, and crossing the street is not only uncomfortable but unsafe. The posted speed of 35 miles per hour (MPH) provides a balanced target for this early assessment of the corridor.

Figure 9 presents the maximum, minimum and median travel speeds between intersections along the length of the study corridor for both eastbound and westbound directions. Median speeds are close to the 35 mph target, but increase towards the SR 520 bridge and causeway.

*Figure 9 – Average Travel Speed Eastbound and Westbound*




The high pedestrian areas between Brevard Avenue and Riveredge Boulevard also have high auto travel speeds. Figures 10 and 11 identify the amount of daily traffic by hour of day traveling over or under the posted speed limit of 35 MPH. Eastbound traffic approaching Delannoy Avenue intersection has 63 percent, 46 percent, and 59 percent of the traffic traveling over 35 MPH in the AM, Mid-day, and PM hours respectively. These higher speeds are a result of drivers accelerating in anticipation of the higher posted speed on the Merritt Island Causeway (45 MPH) with little calming influences when traveling through the high pedestrian area of Brevard Avenue and Delannoy Avenue. Additionally, drivers improperly use the dedicated right-turn lane between the intersections of Delannoy Avenue and Riveredge Blvd. This lane has become a passing lane for drivers to get onto the bridge faster and is a major safety concern. In the opposite direction, westbound traffic

approaching the Delannoy Avenue intersection has 84 percent, 48 percent, and 64 percent of the traffic traveling over 35 MPH in the AM, Mid-day, and PM hours respectively. These high speeds are the result of westbound traffic from the Merritt Island Causeway, with a higher posted speed (45 MPH), not slowing when approaching Delannoy Avenue.

*Figure 10– Traffic Above and Below 35 MPH on the King Street (Eastbound) Approaching to Delannoy Avenue*

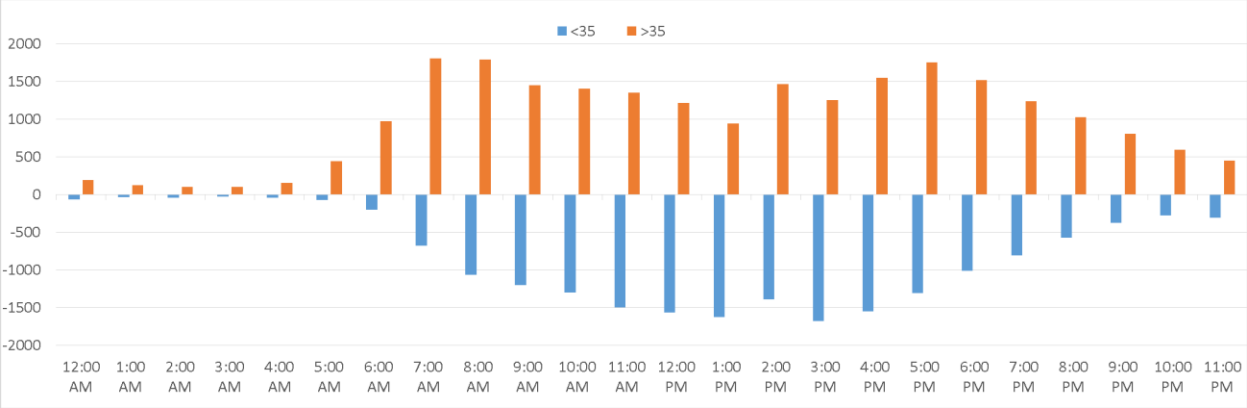
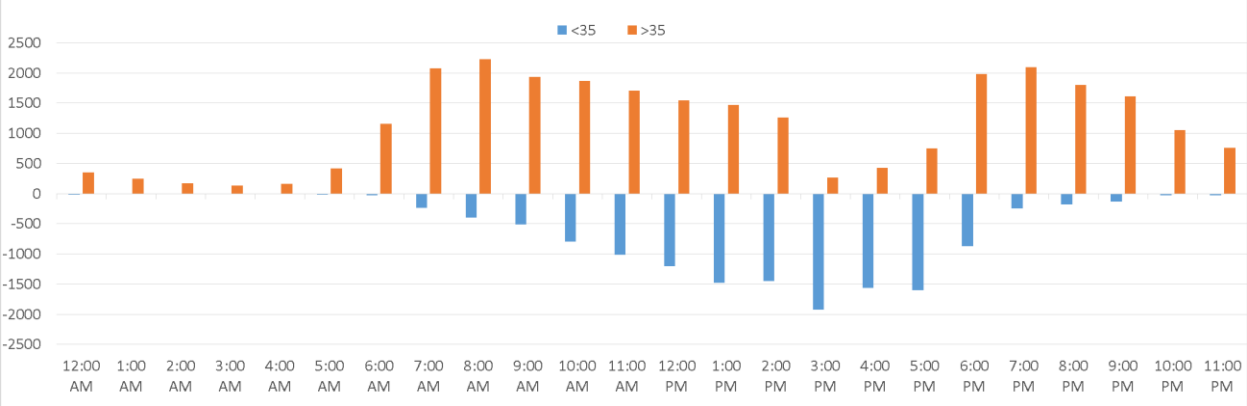


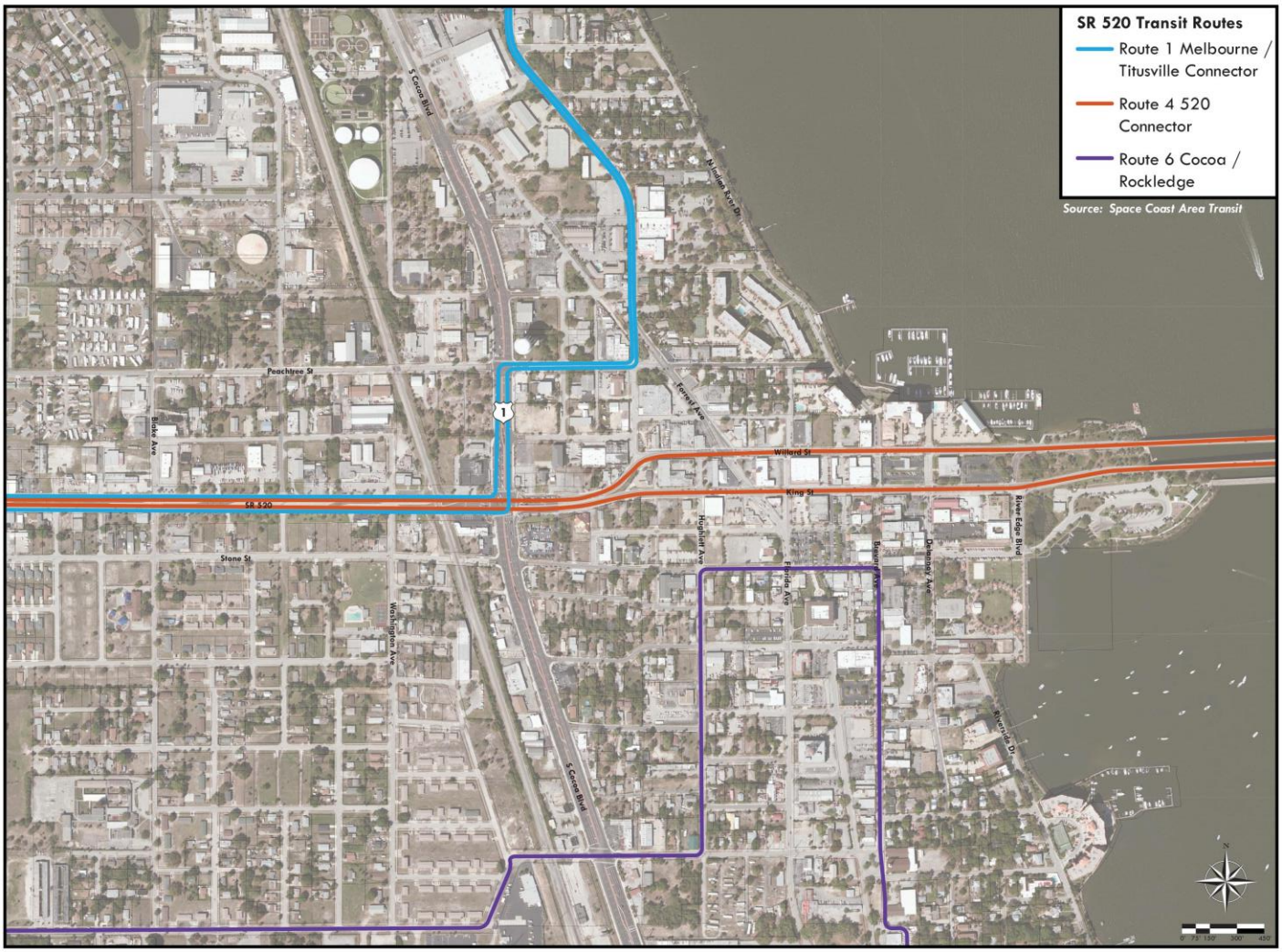

*Figure 11 – Traffic Above and Below 35 MPH on the Willard Street (Westbound) Approach to Delannoy Avenue*



## Transit Conditions

The study area corridor is served by Route 4 – 520 connector, operated by Space Coast Area Transit (SCAT) which connects US 1 to SR A1A. Service extends between 5:50AM and 11:35PM on weekdays and Saturday. Service ends on Sunday at 5:55PM. Buses on Route 4 operate on 30 minute headways with 6o minute headways in the evenings and on Sunday. Though not operating directly on the corridor, Route 1-Melbourne Titusville Connector and Route 6 are within a ½ mile walking distance from the Village Center and provide additional transit accessibility.

*Figure 12 – Transit Routes in Study Area*



## Safety and Crash Conditions

Accident data for the study area was obtained from the *State Signal 4 Analytics* database for a five year period between 2010 and 2015. During the five years there were 579 crashes involving vehicles. There were 263 injuries and no fatalities. There were 15 crashes involving bicycle and pedestrians

Figure 13 below presents locations of all crashes over the past five years. Patterns indicate an even distribution across the study corridor. Figure 13 presents locations of bike and pedestrian crashes, with most occurring at Brevard, Avenue, Delannoy Avenue and Riveredge Blvd, those locations with high approach speeds and pedestrian traffic. Figure 14 presents the frequency of crashes, by month, over the past five years. Results indicate moderate fluctuations by month. Figure 15 presents the distribution of crashes by time of day over the past five years with crash frequencies increasing towards the midday hours and peaking during the hour between 3 PM and 4 PM.

*Figure 13 – Crash Locations*


*Source: Signal Four Analytics*

*Figure 14 – Crashes by Month of the Year*

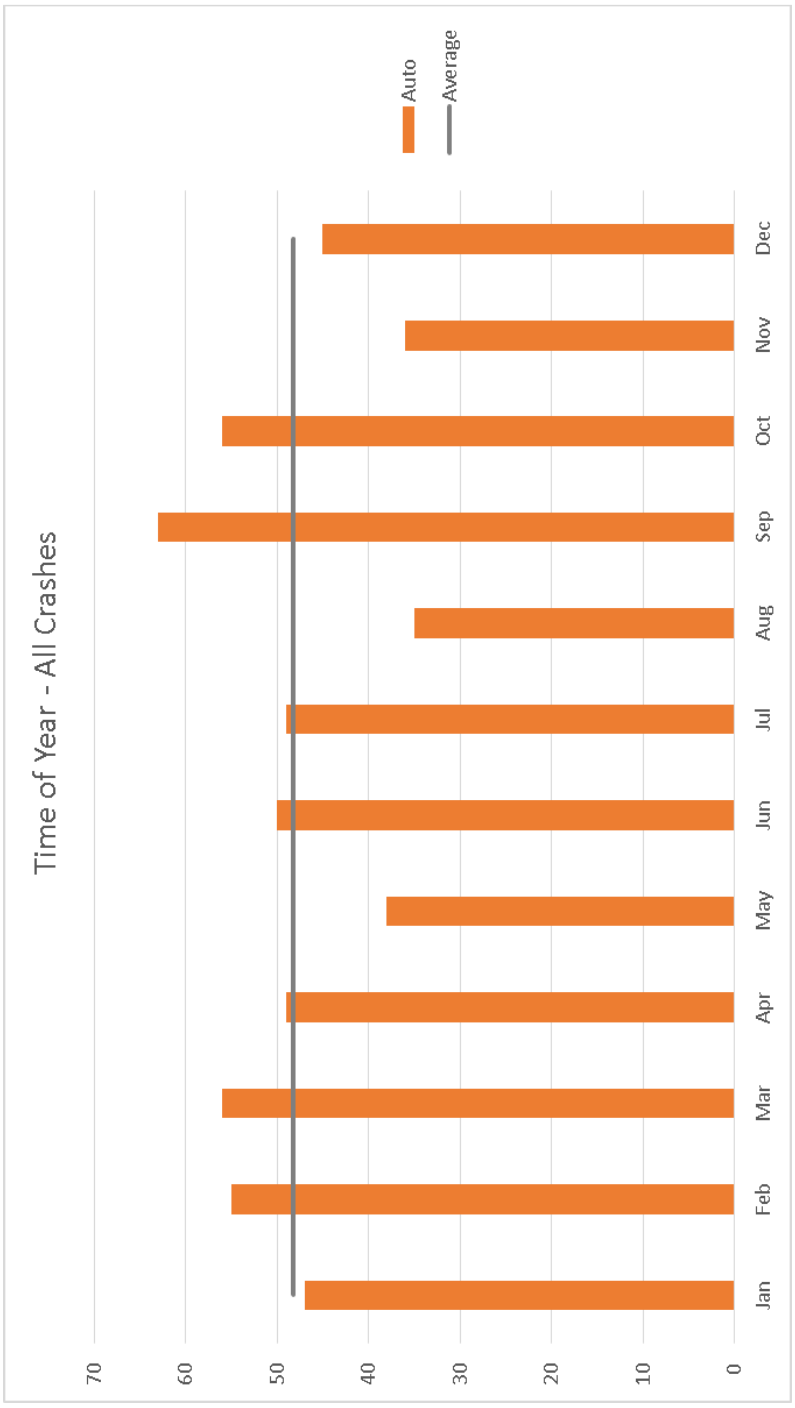


*Figure 15 – Crashes by Time of Day*

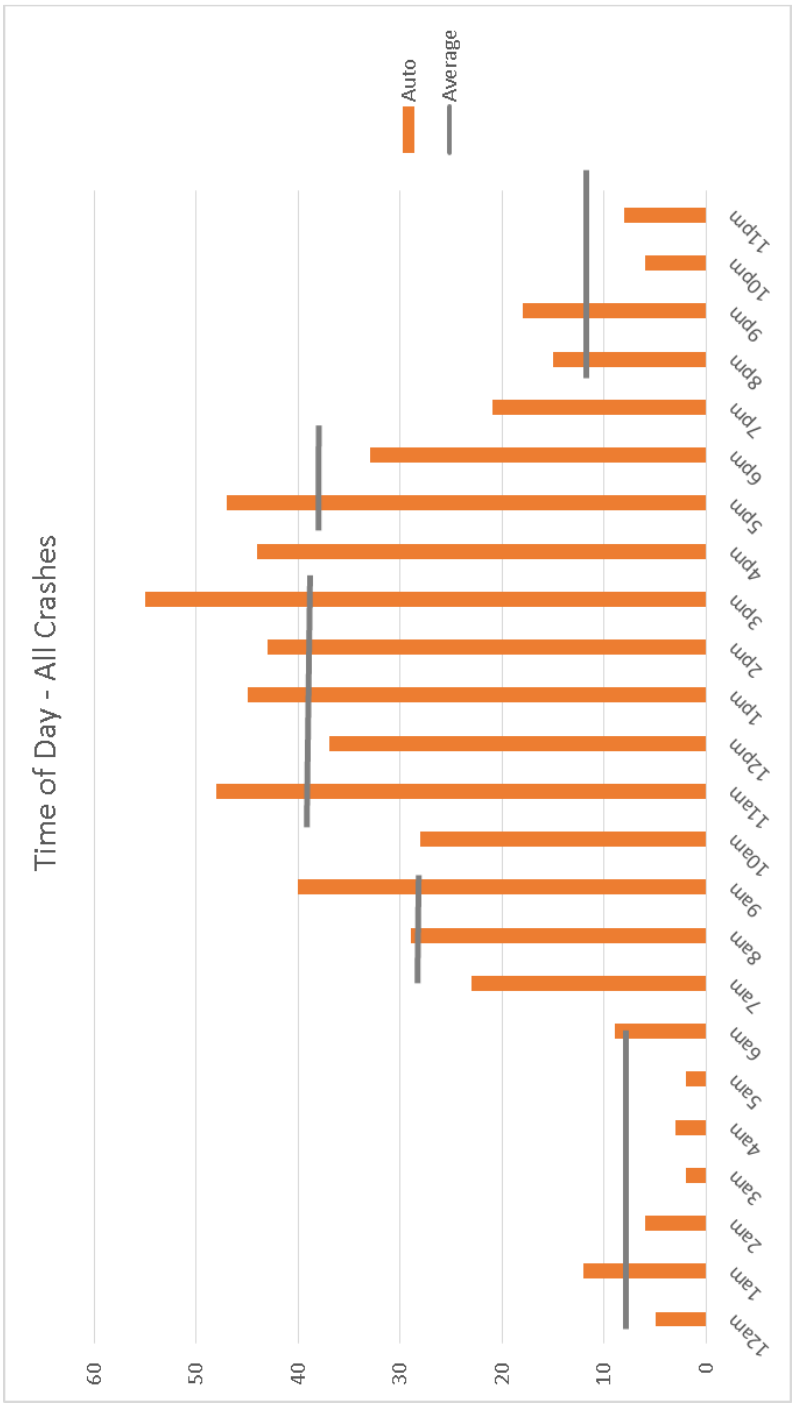
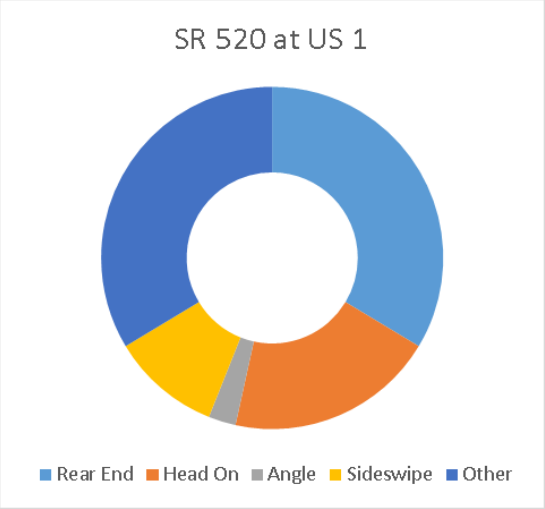


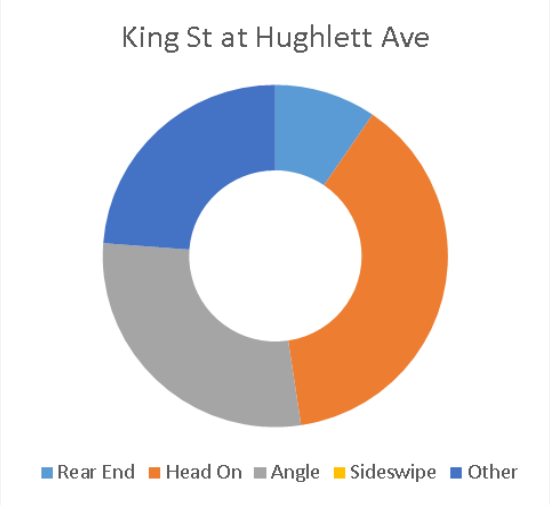
Figure 16 presents the types and quantity of crash types at the signalized intersections in the study area. The crash types are:

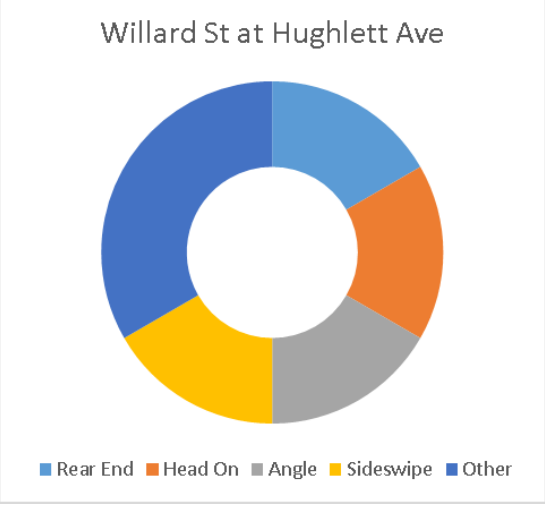
- Rear end
- Head on
- Angle
- Sideswipe
- Other

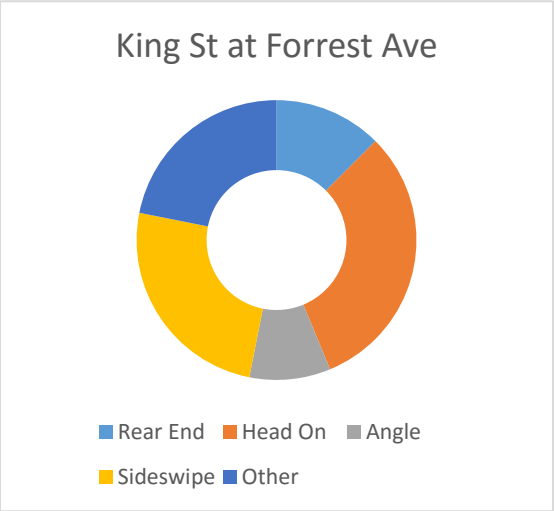
The types of crashes vary by intersection, indicating safety improvement strategies for each will differ.

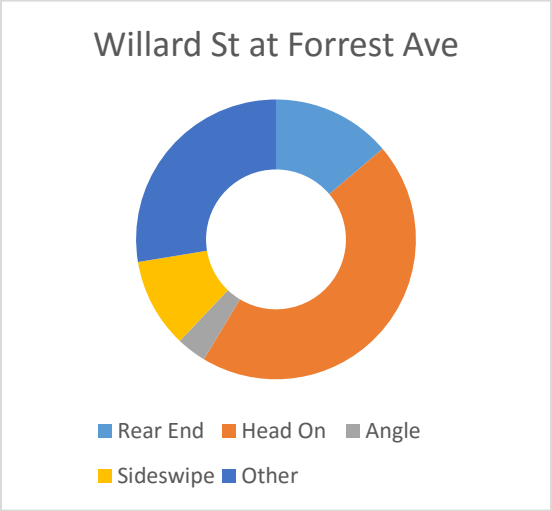
*Figure 16 – Crash Types by Intersection*

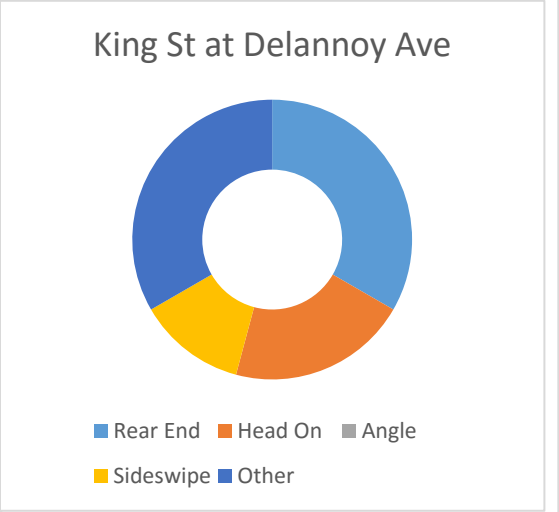


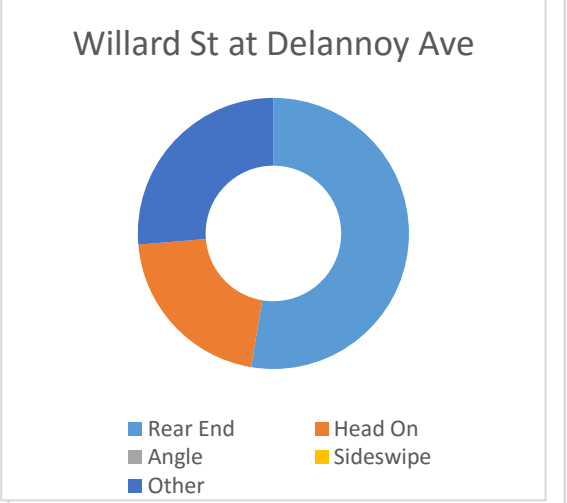



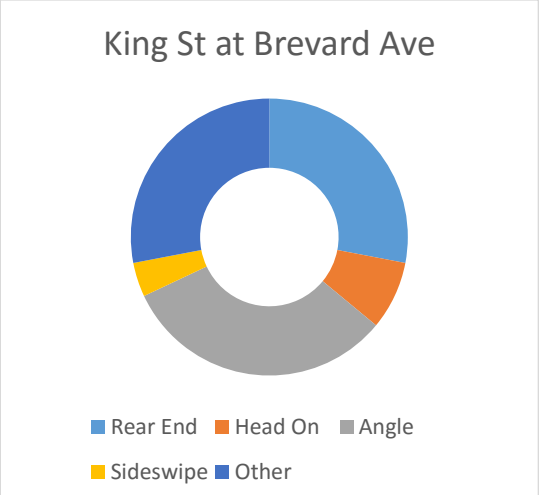



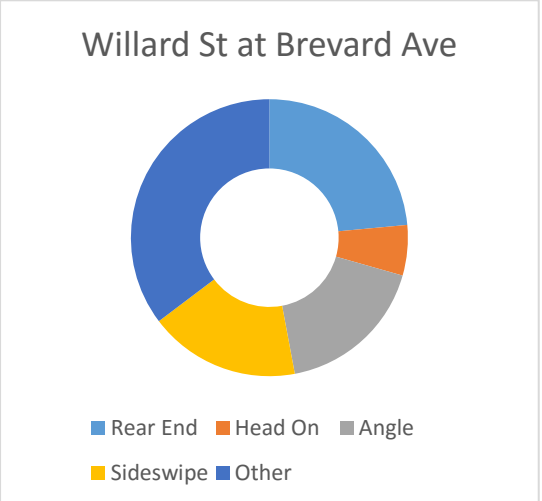

King St at Forrest Ave
Rear End
Head On
Angle
Sideswipe
Other

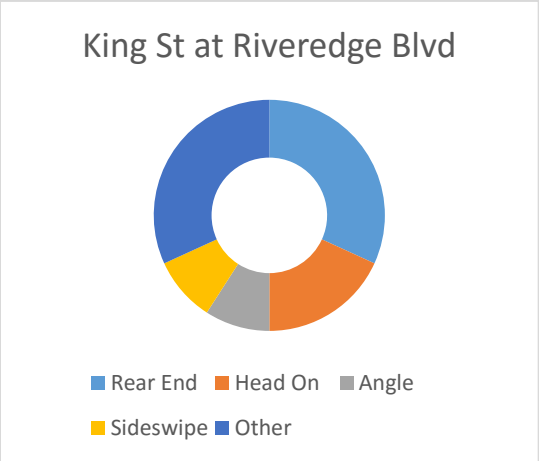

Willard St at Forrest Ave
Rear End
Head On
Angle
Sideswipe
Other

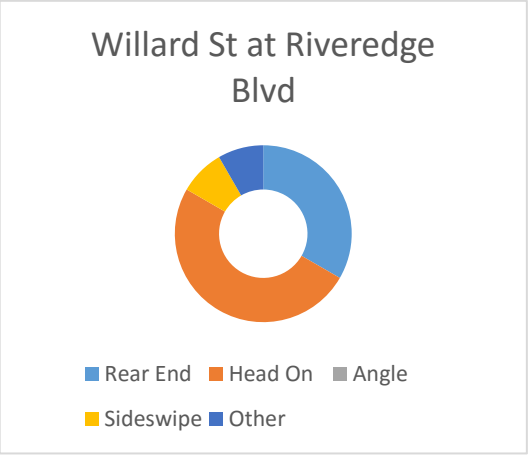

King St at Delannoy Ave
Rear End
Head On
Angle
Sideswipe
Other


Willard St at Delannoy Ave
Rear End
Head On
Angle
Sideswipe
Other


King St at Brevard Ave
Rear End
Head On
Angle
Sideswipe
Other


Willard St at Brevard Ave
Rear End
Head On
Angle
Sideswipe
Other


King St at Riveredge Blvd
Rear End
Head On
Angle
Sideswipe
Other


Willard St at Riveredge Blvd
Rear End
Head On
Angle
Sideswipe
Other

# 3

# Engineering & Site Characteristics

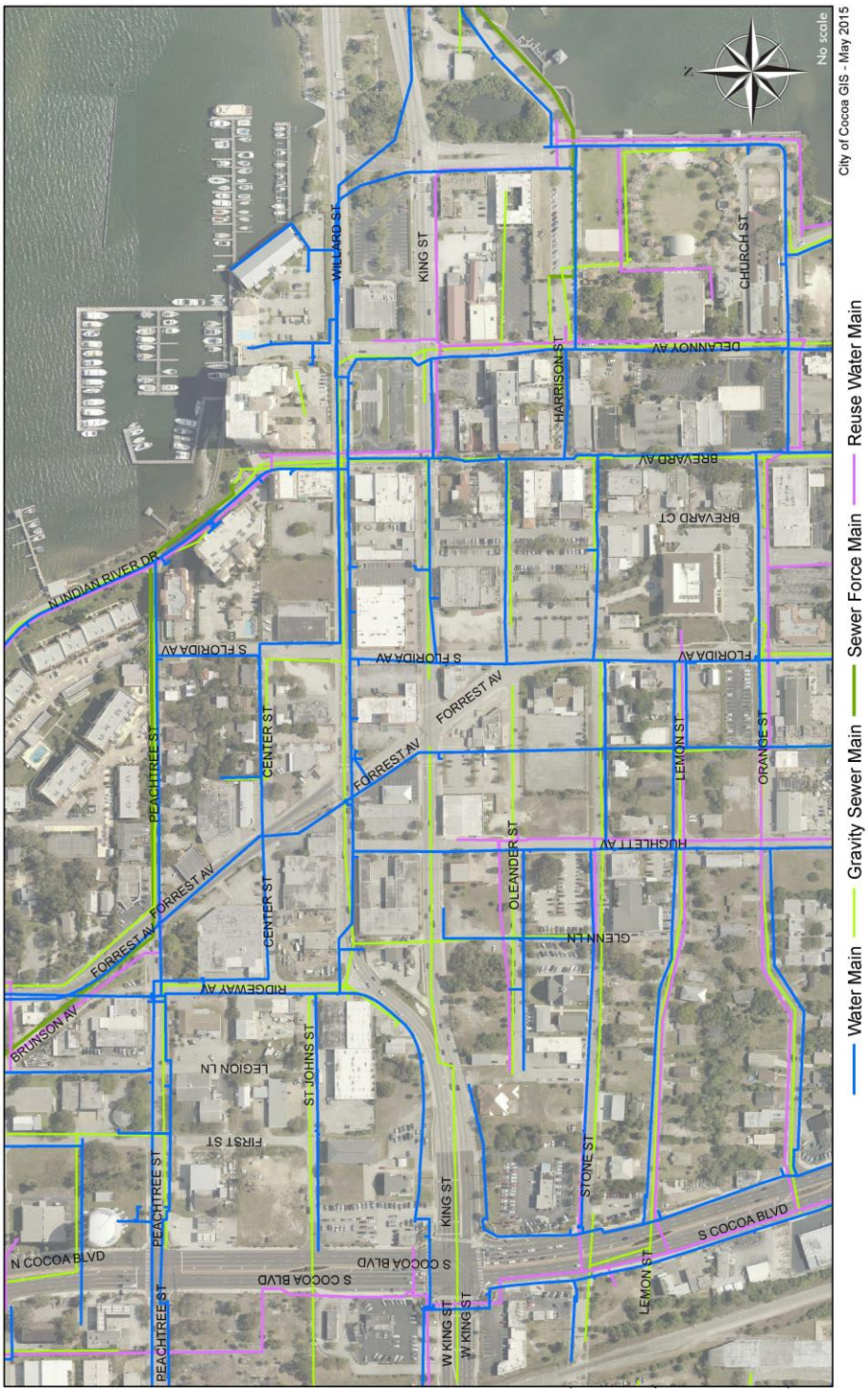
## Utilities in the Corridor

A Utility Design Ticket was called in on May 6, 2015, and the Utility Owners listed are shown below. Utility coordination letters and aerial based plan sheets were sent to all the listed utility owners on May 11, 2015 requesting that they identify their existing utility lines within this corridor. The utility responses are included in Appendix D of this report.

| Utilities |
|---|
| Allied Fiber<br>Kristin Zaky<br>845 3rd Avenue, 16th Floor<br>New York, New York 10022 631-626-4665 (cell) / kristin.zaky@alliedfiber.com |
| AT&T – Transmission<br>Greg Jacobson<br>6015 Benjamin Road<br>Tampa, Florida 33634 813-342-0512 / gj1529@att.com |
| Brevard County Public Works - Engineering Division<br>Brandon Collins<br>580 Manor Drive<br>Merritt Island, Florida 32952 321-455-1440 / brandon.collins@brevardcounty.us |
| City of Cocoa – Water and Sewer<br>Everett J. Wegerif, P.E.<br>155 N. Wilson Ave.<br>Cocoa, FL 32922 321- 433-8770 |
| City of Cocoa – Electric<br>Michael Giorgio<br>155 North Wilson Avenue<br>Cocoa, Florida 32922 321-433-8771 / mgiorgio@cocoafl.org |

| |
|---|
| Florida City Gas<br>Ron Muller<br>4180 South US Highway 1<br>Rockledge, Florida 32955 321-638-3424 / rmuller@aglresources.com |
| Florida Power and Light<br>Sue Williams<br>9001 Ellis Road<br>Melbourne, Florida 32904 321-726-4801 / sue.williams@fpl.com |
| Level 3 Communications<br>Judy Henry<br>1020 Eldorado Boulevard<br>Broomfield, Colorado 80021 720-888-2061 /<br>level3networkrelocations@level3.com |
| Verizon<br>Chuck Czumak<br>1701 Ringling Boulevard<br>Sarasota, Florida 34240 941-906-6703 / chuck.czumak@verizon.com |
| CenturyLink<br>George McElvain<br>1801 California Street, 26th Floor<br>Denver, Colorado 80202 303-992-9931 |
| AT&T – Distribution<br>Mark Guiterrez<br>3300 Okeechobee Road<br>Fort Pierce, Florida 34947 772-460-4443 |
| Bright House Networks<br>Mike Isom<br>720 South Magnolia Avenue<br>Melbourne, Florida 32935 321-757-6451 /mike.isom@mybrighthouse.com |
| Sprint<br>Mark Caldwell<br>851 Trafalgar Court, Suite 300<br>Maitland, Florida 32751 321-287-9942 / mark.d.caldwell@sprint.com |

*Figure 17 – City Utilities in Corridor*



## Stormwater and Drainage Conditions

The existing stormwater system associated with State Road 520, between U.S. Highway 1 and the Indian River, is characterized as an urban drainage system. Specifically, the existing drainage system consists of curb inlets, open grated (ditch bottom) inlets, manholes, and storm sewer pipes that convey stormwater runoff from the urban drainage areas to the Indian River. In addition, the State Road 520 drainage conveyance system includes numerous urban drainage systems associated with City rights-of-way. The Existing Conditions Stormwater Infrastructure exhibit (Figure 17), which depicts the existing drainage conveyance systems within the study area, is based on the City of Cocoa's Stormwater Atlas GIS coverage and Brevard County's LiDAR topographic data and aerial images, as well as limited information obtained from the St. Johns River Water Management District's permit files (e.g., Cocoa Riverfront Park and City Hall).

Follow-up coordination with FDOT, County and City staff will take place to identify all known drainage problem areas along State Road 520 and the urban areas within the contributing drainage basins (e.g., Cocoa Village). Also, given the Indian River is an impaired water body with an adapted TMDL (Total Maximum Daily Load) and BMAP (Basin Management Action Plan), water quality retrofit improvements will be investigated to reduce the current pollutant loads. Examples of the water quality retrofit improvements to be evaluated may range from Nutrient Separating Baffle Boxes with Bold and Gold filtration media to Modular Wetland Systems and other Low Impact Development (LID) stormwater technology.

*Figure 18 – Stormwater Infrastructure*

# 4 Working Vision

The working vision provides the framework for developing alternatives and ultimately a corridor plan that identifies strategies and solutions to improve the quality of life and support the economic development goals of the City. The working vision was developed with the contributions made by the Visioning Team comprised of business owners, residents, and City of Cocoa, Brevard County, and Space Coast TPO staff.

## Issues and Opportunities

During a workshop held on April 7, 2015 the Visioning Team identified the major accessibility and mobility issues in the corridor. Most of the issues are related to the safety for users of all travel modes and highlight a need for SR 520 to be better integrated into the mix of uses and activities in the Cocoa Village area so that it reinforces a sense of place that is comfortable and welcoming to visitors, residents, workers, and others in and around the corridor. The key issues include:

- Auto issues
  - Speeding westbound drivers often hit 50 MPH or more as they come over the causeway bridge and down into the Village area – there needs to be a sense of transition or arrival and/or traffic calming measures to encourage drivers to slow down.
  - Drivers often miss seeing red lights because of speeding and the transition of slopes
  - The sequencing of the traffic signals encourages speeding (long stretches of continuous green lights)
  - Drivers often weave into and out of the eastbound right-turn lane in order to get ahead of traffic (stakeholders called it the "slingshot" lane).
  - Vehicles exiting the waterfront park that want to go westbound are forced to go east over the causeway bridge and do a U-turn, due to the one-way street pattern.
  - The large tour buses that come from the cruise ships can have difficulty maneuvering on the narrow streets and tight corners in

the Village area. They also take up large areas of parking while waiting for excursion messengers.

- Pedestrian issues
  - SR 520 creates a physical and mental barrier between the north and south sides of the Village area.
  - Speeding vehicles are a pedestrian safety issue.
  - The pedestrian crossing at the Florida/Forrest/SR 520 intersection is particularly difficult.
  - Visitor traffic from cruise ships leads to more pedestrians in the area, which exacerbates the safety issues with crossing SR 520.
- Transit and biking issues
  - The eastbound right-turn lane is needed for bus stops.
  - Indian River Drive is a popular bike route but the connectivity for bikes in the area is difficult.

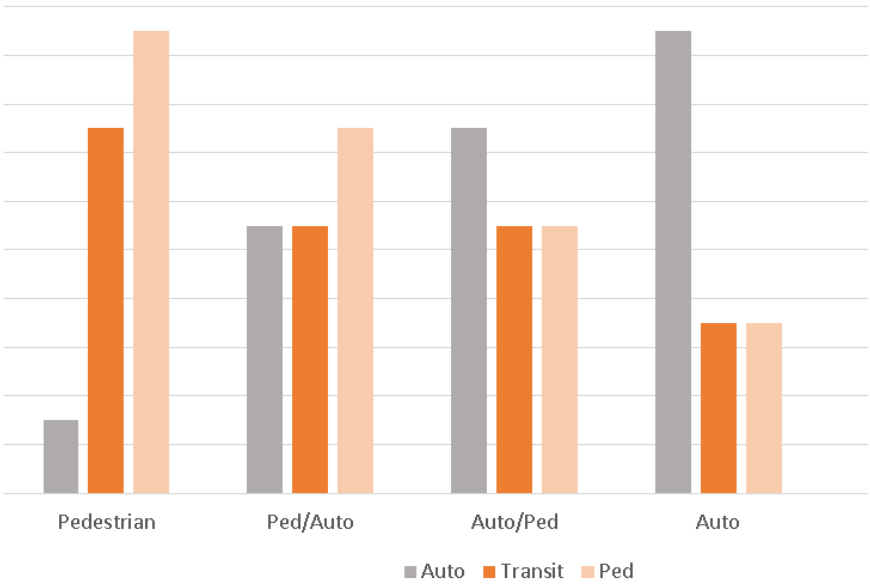
The issues identified by the Visioning Team were combined with analysis of the characteristics of the study area discussed elsewhere in this report to develop a map of the issues and opportunities for the SR 520 corridor. Figure 19 graphically represents these issues and opportunities in the corridor study area that will frame the alternatives and vision for the corridor. The map shows key safety issues such as high accident areas and areas where slowing the traffic speed should explored, and also opportunities such as potential development sites and transit sites, planned Complete Streets projects that will contribute to the multimodal quality of the area, and gateway locations.

*Figure 19 – Issues and Opportunities*

## Working Vision

The working vision illustrates a mobility framework that defines a hierarchy of street networks reflecting the functional transportation system. The hierarchy identifies the mobility areas where there should be greater pedestrian emphasis, areas with greater transit emphasis, and areas that will maintain a high automobile emphasis. The corridor has been divided into four transect zones. The zones range from high auto orientation to high pedestrian orientation with a transit element present in and supporting mobility in both the auto and pedestrian-oriented zones. Figure 20 identifies the degree of emphasis or priority for each travel mode (relative to the other modes) that will be used when developing and evaluating concept alternatives for those street types.

*Figure 20 – Relative mode emphasis by street type*



The working vision classifies the key roadways in the study area into several types, and also identifies potential transit and biking improvements:

- **Major Regional Auto-Oriented:** This street type is assigned to US 1, which is a major regional corridor connecting communities throughout the Space Coast region. Automobile traffic and higher speeds are the priority on this street type.
- **Sub-Regional Auto-Oriented:** SR 520, Forrest Avenue, and Florida Avenue are classified as this street type, which reflects a significant degree of auto emphasis but also includes transit and pedestrian elements due to its sub-regional focus that calls for greater attention to non-auto accessibility to destinations.
- **Pedestrian Streets:** The remaining streets within the study area are classified as local streets with the priority placed on pedestrian considerations in design, safety, and integration with other travel modes.
- **Commuter Rail:** The working vision recognizes the potential for future commuter rail service on the Florida East Coast line in conjunction with the planned All Aboard Florida service. A potential station location at the south end of the study area along US 1 is identified on the Issues and Opportunities map. Multimodal access to this station will be an important planning consideration.
- **Bus Rapid Transit:** A future BRT corridor is identified in the Space Coast 2040 Long Range Transportation Plan Vision. The route diverts from SR 520 west of US 1 to run along Stone Street and Harrison Street through Cocoa Village before returning to SR 520 to cross the causeway bridge. The Stone Street connection across the railroad tracks would need to be restored, as identified on the Issues and Opportunities map.
- **Regional Greenway/Bikeway:** A regional pathway running along the waterfront is identified that also provides access into the heart of Cocoa Village. This pathway would utilize the potential underpass beneath SR 520 that is described in the Cocoa Waterfront Master Plan.

A map of the working vision is presented in Figure 21.

*Figure 21 – Working Vision Map*