Corridor Planning

SR 520 SUMMARY & IMPLEMENTATION REPORT

CORRIDOR PLANNING & CONCEPT DEVELOPMENT STUDY

SR 520 From US-1 to East City Limits (Indian River)

FDOT

Corridor Planning & Concept Development Study

SR 520 from US-1 (SR 5) to East City Limits (Indian River)

SR 520

PREPARED FOR:

FLORIDA DEPARTMENT OF TRANSPORTATION

PROJECT MANAGER:

JUDY PIZZO

(386) 943-5167

JUDY.PIZZO@DOT.STATE.FL.US

PREPARED BY:

RENAISSANCE PLANNING

ORLANDO

121 S. ORANGE AVE.

SUITE 1200

ORLANDO, FL 32801

407.487.0061

www.citiesthatwork.com

FDOT

TABLE OF CONTENTS

1 INTRODUCTION 4

Study Area....6
Project....6

2 CONTEXT 7

Existing Conditions....8
Assessment....10

3 DESIGN 15

Framework Concepts....16
Scenario Development....17
Scenario Evaluation....19
Refined Scenario Concepts....25

4 IMPLEMENTATION 54

APPENDICES

A APPENDIX A - EXISTING CONDITIONS REPORT

B APPENDIX B - PURPOSE AND NEED REPORT

C APPENDIX C - ALTERNATIVES REPORT

INTRODUCTION 1

1 Introduction

OVERVIEW

The Florida Department of Transportation, in partnership with the City of Cocoa and the Space Coast Transportation Planning Organization, is conducting a planning and concept development study for SR 520 within the city limits of 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.

This document is the Corridor Summary & Implementation Report, a comprehensive look at the project and its recommendations. Preliminary reports produced during the course of the project – Existing Conditions, Purpose and Need, and Alternatives – are included in the appendices for reference.

FIGURE 1.1 *Study Area*

STUDY AREA

The corridor is a one-mile long section of SR 520 that extends from US 1 on the west to the Indian River on the east. It connects the Atlantic Ocean beachfront communities and Merritt Island with inland Brevard County and the Orlando region, as well as provides regional access to downtown Cocoa. The study area encompasses the area within one-quarter mile of the corridor and is approximately 0.4 square miles in size.

The corridor is made up of two one-way arterials – King Street in an eastbound direction and Willard Street in a westbound direction – separated by one block approximately 150-feet wide. This block is traversed by six north-south streets along the corridor. There are signalized intersections at three of the cross streets, as well as at US 1.

The study area is characterized by single- and multi-family residential uses, commercial and professional business uses, civic sites and recreational areas. It is influenced by both the adjacent Indian River and area attractions such as the Atlantic Ocean beaches, Port Canaveral and Cape Canaveral.

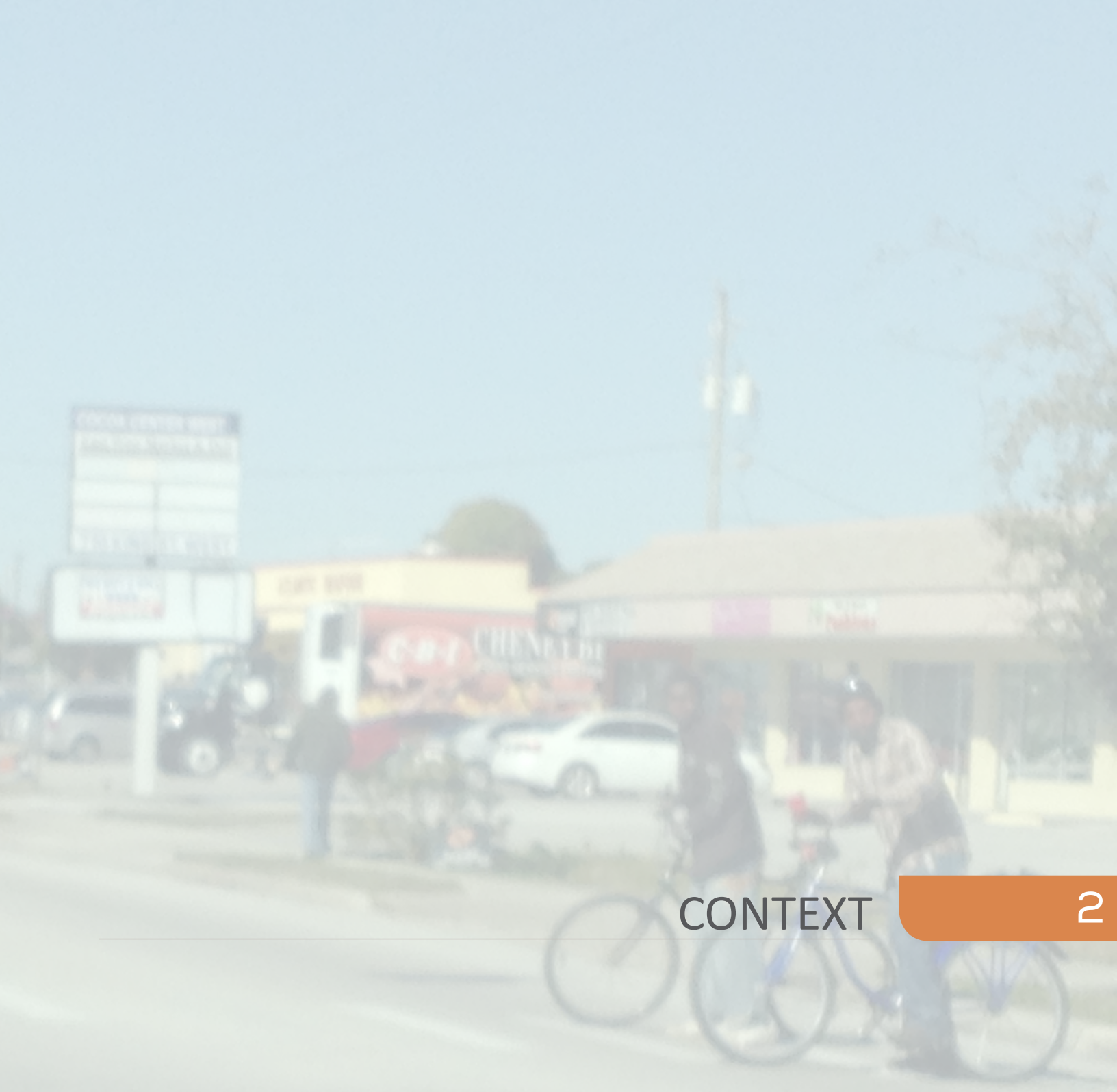
PROJECT

This study was requested by the City of Cocoa to address safety concerns for both pedestrians and motorists, as well as coordinate the development of a future vision for the SR 520 corridor that establishes a multimodal approach to providing for future transportation needs. It developed potential solutions that create a more walkable urban environment, improve pedestrian and bicycle safety, and address roadway capacity. The study involved an evaluation to determine how best to meet the needs of current and future users, and established a long-term plan to guide evolution of the corridor and balance land use and planning efforts.

PROCESS

The multimodal corridor planning and concept development process is a community-driven approach to alternatives and design. The engagement of local agencies, business owners, residents, and civic leaders as members of the Visioning Team helped craft the plan at key milestones throughout the project. The key milestones included the following general steps:

- Setting context / understanding values and issues
- Imagining outcomes / exploring options
- Defining vision / creating concepts and alternatives
- Setting priorities / developing implementation steps



CONTEXT 2

2 Context

OVERVIEW

The first component of the study process established a context for the plan that helped guide its development and laid the groundwork for linking strategies to larger community goals. Understanding the context not only included an understanding of the physical conditions of the corridor, but the political, social and market opportunities and limits as well.

EXISTING CONDITIONS

The Existing Conditions report, June 2015, and the Alternatives and Strategy report, March 2016 (both can be found at www.cflroads.com/project/435628-1/SR _520_Corridor_Study_in_Brevard_County) provide a detailed look at current conditions in the study area. The following information culled from those reports provides important data that was considered as concepts were being developed.

1. TRANSPORTATION NETWORK

The transportation network along the study corridor is comprised of several systems that are interconnected to provide a variety of movement choices to the different destinations and activities in the area:

- Pedestrian: Most streets within the study area have sidewalks on both sides of the roadway. There are some streets where sidewalks are only present on one side and there are gaps where sidewalks or ADA features are absent. Signalized intersections have crosswalks with continental style markings.
- Bicycle: There is a lot of bicycle traffic along and across SR 520; however, there are no bicycle lanes or pavement markings. "Share the Road" signs are present on SR 520.
- Street: King Street, the eastbound SR 520 one-way roadway, has three lanes of traffic. Willard Street, the westbound SR 520 one-way roadway, has two lanes of traffic from the Indian River Bridge to Brevard Street and three lanes of traffic from Brevard Street to US 1. The roadway is characterized by wide travel lanes that often create higher vehicle speeds, although the speed limit is posted at 35 mph.
- Transit: The study area is served by Space Coast Area Transit Route 4 (520 Connector), which connects US 1 to SR A1A. Route 1 (Melbourne/Titusville) and Route 6 (Cocoa/Rockledge) have stops within ½ mile walking distance from Cocoa Village and provide additional accessibility within the region.

2. SAFETY

For the five-year period between 2010 and 2015, there were 579 crashes in the corridor involving vehicles. There were 263 injuries and no fatalities. There were 15 crashes involving bicycles and pedestrians. Patterns indicate an even location distribution across the study area, but crash types vary by intersection, indicating that safety improvement strategies will need to differ. The frequency of crashes increases at midday hours and peaks during the hour between 3pm and 4pm.

3. COMMUNITY

Cocoa is a picturesque riverside destination and historic town hidden beneath hundred-year-old majestic oak trees. The current population (full-time residents) of the study area is estimated to be 811 persons. Prime empty-nesters and retirement age groups make up almost half of the population and the median age is 54 years. There are 425 households in the study area, and the average household size is 1.9 persons.

4. ECONOMIC

There are approximately 468 businesses in the study area – spread among retail, professional, scientific, technical and maintenance – that employ approximately 1,837 people. The largest industry sector in terms of employment is Public Administration, reflecting the presence of Cocoa City Hall. The majority of businesses are concentrated on the south side of the corridor in the "Cocoa Village" area.

5. OTHER PLANS

A master plan has been adopted by the City for the Downtown Redevelopment Area (RDA), known as the Cocoa Waterfront Master Plan (2008). While the initial focus of the Plan was to improve the activity and connectivity in and around the waterfront, it evolved into a more comprehensive discussion of the community's vision for the entire downtown area. However, it lacked the detailed transportation assessment needed to implement mobility alternatives. Critical points established by the Plan include:

- Connect the Indian River to the City
- Enhance and connect open spaces
- Create a livable approach to streets and traffic

6. LAND USE

The Waterfront Master Plan originally organized the RDA into seven character districts. Subsequent planning led to the adoption of the Cocoa Waterfront Overlay District (2013) that adjusted the sub-area boundaries to establish eight design districts that address the land use, design, scale and appearance of development within the RDA. Six of the eight districts cover some of the land contained within this project's study area.

7. ENVIRONMENTAL

Stormwater in the study area drains through a network of inlets, pipes and ditches directly into the Indian River. The river is classified as an impaired water body by FDEP, meaning that the amount of pollutants the water can absorb and still meet water quality standards that protect human health and aquatic life has been exceeded. Water quality improvements will need to be included as part of any roadway strategies.

8. INFRASTRUCTURE

Besides the storm drainage system, there are a variety of utilities within the corridor that are in good condition and provide adequate levels of capacity and service. It is important to note that potential implementation strategies have the potential to affect multiple components within the network due to spacing and location regulations and requirements.

ASSESSMENT

An initial assessment of existing conditions within the study area helped identify information and influences that impacted subsequent planning concepts and strategies.

1. ISSUES AND CONSTRAINTS

Through various forums, stakeholders identified major accessibility and mobility issues in the corridor. Most of these issues were related to safety of users for all travel modes and highlighted 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. Key issues included:

- Pedestrian
  - SR 520 creates a physical and mental barrier between the north and south sides of the Cocoa Village area.
  - Speeding vehicles are a pedestrian safety issue, as are intersections with slip lanes where motorists tend to watch for other vehicles more than for pedestrians.
  - Visitor traffic from cruise ship excursions leads to more pedestrian traffic in the area, which exacerbates the safety issues.
- Bicycle
  - Indian River Drive is a popular bike route, but connectivity for bicycles in the area is difficult, both along SR 520 and crossing SR 520.
  - There are limited bicycle amenities and signage.
- Street
  - 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, transition of slopes and sequencing of traffic signals. Drivers often weave into and out of the eastbound right-turn lane in order to get ahead of traffic (stakeholders call it the “slingshot lane”).
  - Large tour buses often have difficulty maneuvering on the narrow streets and tight corners in the Village area and take up large areas of parking while waiting for excursion passengers.
- Transit
  - Right lanes are needed for bus stops.

2. TRENDS AND OPPORTUNITIES

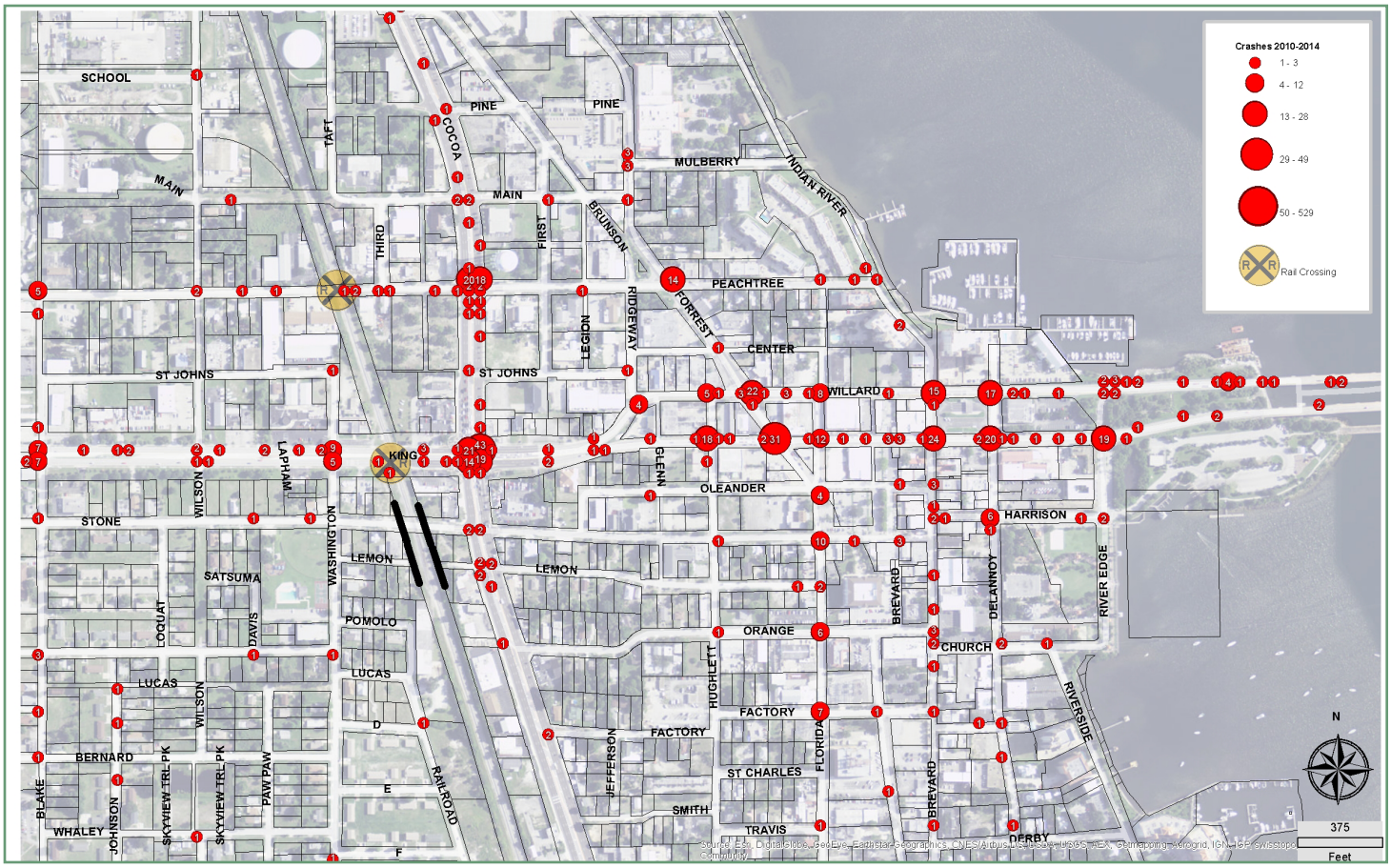
The social demand for the ability to walk and bike for everyday trips has become quite clear in Cocoa. There are a diverse number of destinations and activities within proximity to the study area that are accessible by walking or biking and highlight the importance of non-motorized travel modes within the SR 520 corridor. A transportation mode-shift from auto-oriented trips to non-motorized forms of transportation between 10% and 20% will promote SR 520 as a true multimodal corridor.

3. PROJECT NEED

The need for this project is based on the following criteria:

- Primary Criteria
  - Safety – Enhance safe conditions for all modes of travel: The safety ratio of the corridor is 28.7, meaning that the number of crashes on the roadway exceeds the average for a similar facility by up to 28 times. (Crash data for the study area was obtained from the State Signal 4 Analytics database for a five-year period between 2010 and 2014.)
  - Access- Maintain emergency access: SR 520 is part of the emergency evacuation route network designated by the Florida Department of Emergency Management and Brevard County. This roadway is critical in facilitating east-west traffic movement and evacuating people from Merritt Island and Cape Canaveral.
- Secondary Criteria
  - Linkages – Maintain connectivity in the transportation network: One of the goals of this project is to maintain regional connectivity and mobility in the study area by increasing operational efficiency of the roadway. The functionality of SR 520 will be measured primarily by speed and travel time.
  - Social Demand – Foster a more livable environment in downtown Cocoa: The City of Cocoa envisions becoming a multimodal hub within Brevard County. In order to accomplish this, SR 520 must become a multimodal corridor that transitions from existing auto-centric patterns to providing more travel choices and more housing choices.

FIGURE 2.1 *Crash Map*

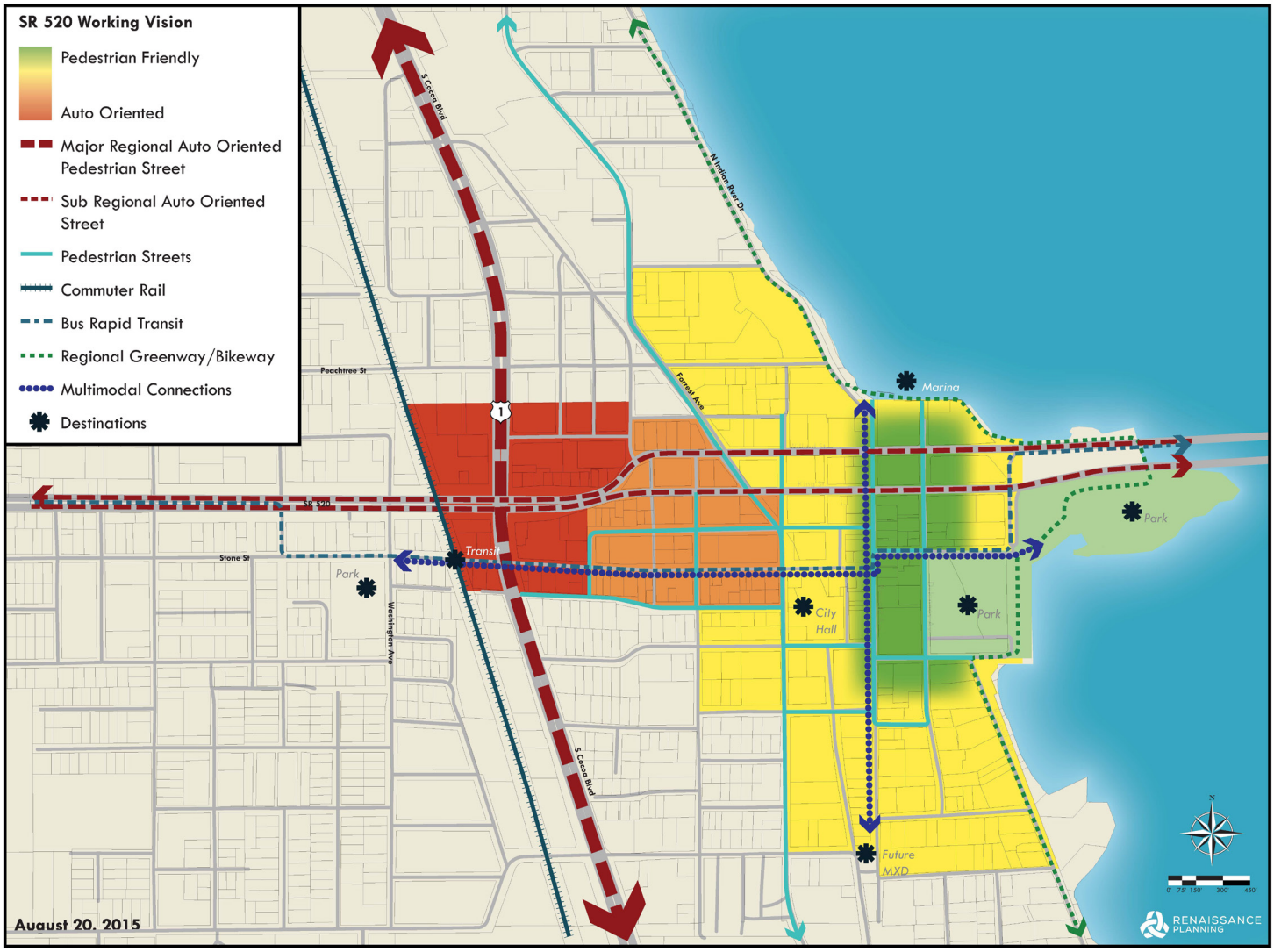


4. VISION

The working vision created a mobility framework that defined a hierarchy of street networks reflecting a functional transportation system. It identified mobility areas where there should be greater pedestrian emphasis, areas with greater transit emphasis, and areas that will maintain a high vehicle emphasis. The working vision classified roadways in the study area into different types that were used when developing and evaluating concept alternatives:

- Major Regional Auto-Oriented
- Sub-Regional Auto-Oriented
- Pedestrian Streets
- Commuter Rail
- Bus Rapid Transit
- Regional Greenway/Bikeway

FIGURE 2.2 *Working Vision Map*



STAKEHOLDER INPUT

Stakeholder input was an important component in the early stages of the project and occurred in several forms, all designed to foster a citywide conversation about the future of the corridor and set a foundation for the scenario planning work that followed. The broad goal of soliciting stakeholder input was to obtain substantive and broad-based feedback on issues and options to build consensus on potential solutions that best reflect the varied needs and interests along the corridor. Stakeholder input was gathered from a variety of sources, including:

1. PROJECT VISIONING TEAM

A project Visioning Team of supporting agencies and local stakeholders was organized to provide technical input and support to the consultant team. They engaged in regular review of the project (especially at key decision points in the process), were a sounding board for potential concepts and strategies, and provided coordination with other planning efforts.

Some of the early input from the Visioning Team that was invaluable to the designers included a discussion of issues and opportunities (from both public and private perspectives), a listing and ranking of important projects to consider, and a walking audit of the corridor to document existing conditions and discuss areas where improvements might be considered. The Visioning Team was not only able to provide input for the current project, but was able to provide important contextual information regarding previous planning efforts, funded and future projects, and concepts that had been considered by the City in the past (and their outcome, either good or bad).

2. COCOA CITY COMMISSION

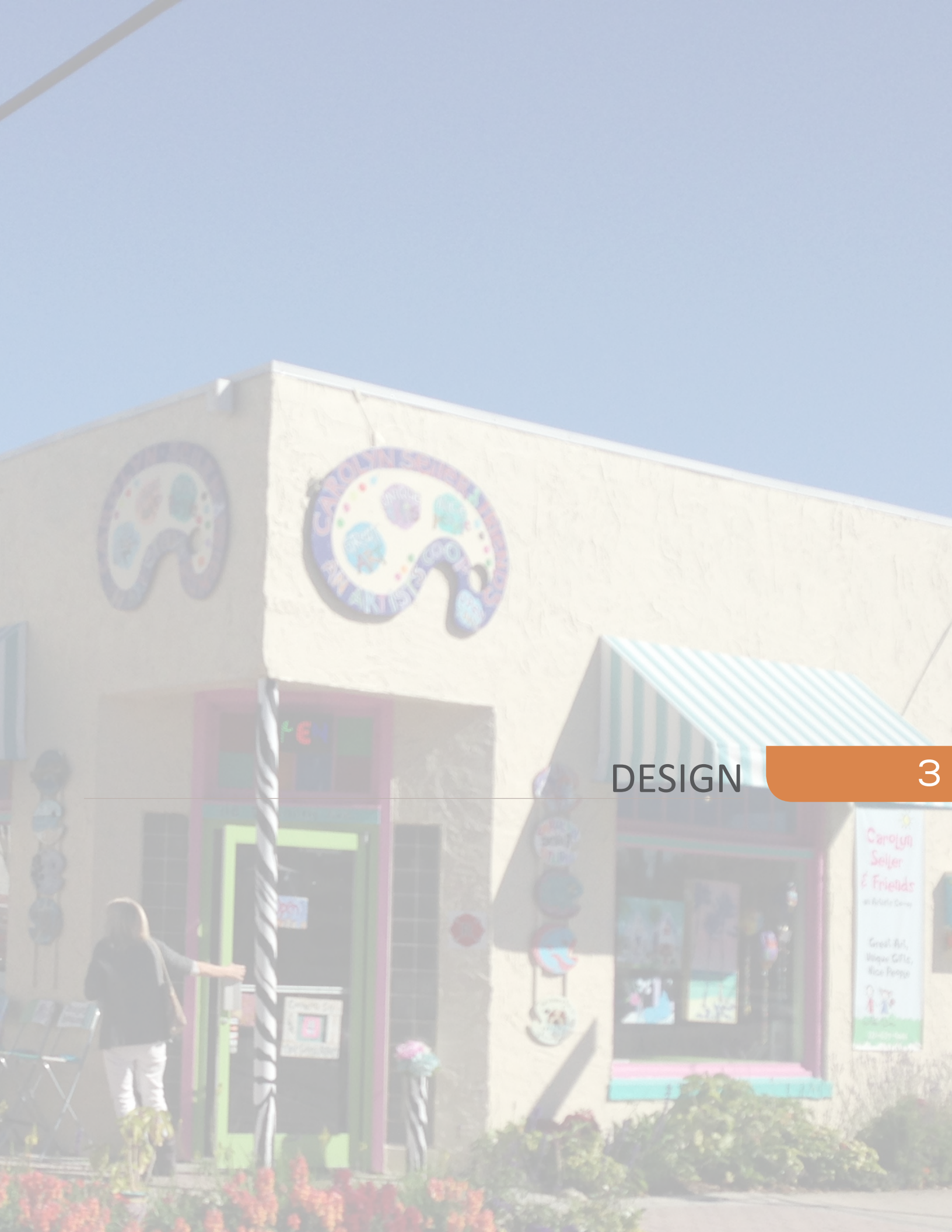
The project team briefed the City Commission at regular intervals throughout the project, not only as a checkpoint of progress, but to solicit input from community leaders who will need to be champions for the project once the planning work is complete and the City moves forward with implementation strategies.

3. STAKEHOLDERS

The project team met with stakeholders, including property owners and neighborhood association representatives, to get local perspective from groups who experience the corridor on a daily basis and who have a long history of involvement in the community.

4. COMMUNITY MEETINGS

A series of workshops were held to introduce the project and solicit input from the public. Participants were able to talk with the consultant team and engage in the process, as well as markup maps to highlight key corridor issues and concerns. A survey card was also available for participants to leave more detailed comments and contact information.



DESIGN 3

3 Design

OVERVIEW

By examining the corridor context, the project team gained a thorough understanding of the study area – its setting, mobility network, and key challenges and issues. With this planning foundation in place, the team began exploring and evaluating concepts for potential improvement options that support the purpose and need of this project, as well as the goals and values of the community.

FRAMEWORK CONCEPTS

Before creating specific improvement scenarios, it was beneficial to consider the individual mobility components within the study area, how they function (both individually and together), and visualize strategies that can help achieve the larger project goals, keeping in mind that the public realm is the common thread that connects the corridor, facilitates access, and provides places for social interaction. The public realm plays a critical role in the area's character and function, serving roles such as circulation and access, development framework, economic driver, and visual aesthetics. In order to have a safe and efficient multimodal transportation network, it is paramount to design with all modes of transportation and all users in mind.

1. PEDESTRIAN

An organized, walkable, pedestrian-friendly environment encourages people to get out and explore and take advantage of what Cocoa has to offer. A public realm framed by buildings with walkable blocks, quality sidewalks and crosswalks, public spaces, landscaping, streetscape elements, and open spaces encourages pedestrian activity and provides opportunities for shopping and dining, recreation, and gathering spaces to sit, relax, and people watch. An enhanced pedestrian environment attracts new residents, businesses, and visitors and revitalization can help generate a greater sense of community pride.

2. BICYCLE

Bicycling has gained momentum in and around Cocoa, along SR 520 as well as along the Indian River, as both a form of recreation and as an alternative mode of transportation – for both casual users and serious riders. While the framework for a connected bicycle network is in place within the study area, the transitions needed to create urban bikeways have not yet been realized. There are many ways to improve bicycle visibility and safety, enhance facilities, and provide amenities to create a more bicycle-friendly atmosphere.

3. STREET

Design of the street cross-section contributes to the perception of an area and the manner in which people interact within the built environment. A clear street network provides logical and safe routes for pedestrian, bicycle, and vehicular traffic and minimizes conflicts between the different modes. Multi-purpose streets are important to creating a quality public realm. No street should serve vehicular traffic purposes only. Appropriate design treatments should be considered based on the purpose and function of the street in order to provide safe routes for all relevant modes of travel.

4. TRANSIT

People are using public transportation in increasing numbers and communities are expanding public transportation facilities accordingly. Everyone benefits from public transportation – it saves money; enhances personal mobility; saves fuel and resources; reduces road congestion and travel time; improves the environment and public health; provides economic opportunities; and helps drive community growth and revitalization. Public transportation is important to the future of Cocoa both locally and regionally, providing more capacity, creating more choices, and helping address the needs of a growing and changing population.

SCENARIO DEVELOPMENT

Utilizing background context and stakeholder input, the project team developed preliminary scenario concept plans that provided FDOT, the City, and other agencies with a variety of useful tools to enable and encourage desired development activities along the project corridor, recognizing that the exact development structure and priorities may change as they are tested against time, community, resources, budget, and competing needs. Although each scenario planning exercise is unique based on context, the process encourages strategic thinking and helps organize complex and overlapping systems. While the scenarios may change, the vales and desires of the community that form the foundation of the planning are likely to remain the same. With that in mind, the goals for each scenario were slightly different:

1. PRELIMINARY SHORT-TERM STRATEGIES

The short-term scenario primarily covered operational improvements – potential strategies that can be implemented easily to change transportation system characteristics and increase safety throughout the study area. These strategies should be initiated by FDOT, with City of Cocoa and other agency participation.

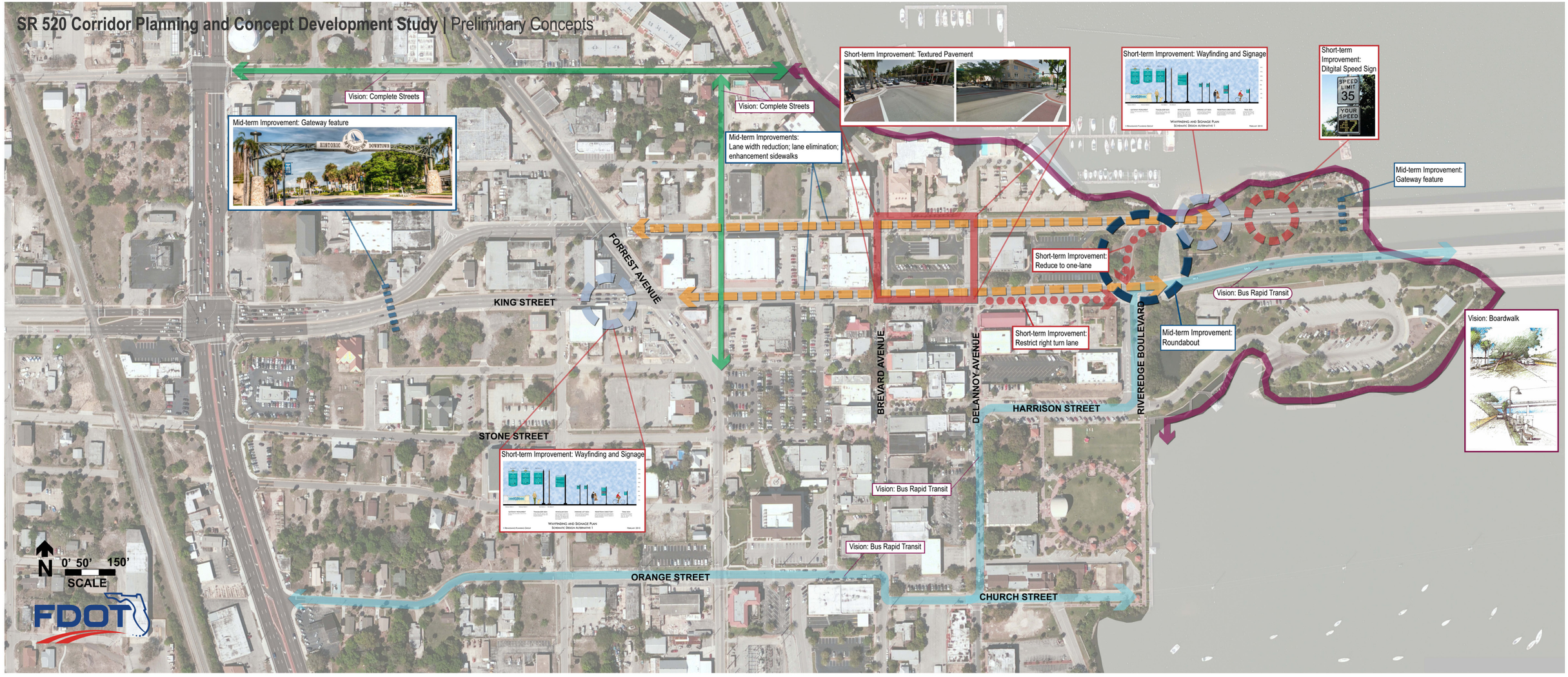
2. PRELIMINARY MID- AND LONG-TERM STRATEGIES

The mid- and long-term scenarios were more specific and covered potential complex alterations within the public realm, both to the street and to the public realm (sidewalk area), to optimize traffic flow and increase efficiency for all components of the multimodal transportation network. Funding beyond FDOT will likely be required – these strategies should be led by the City of Cocoa/CRA in support of existing policies and projects. Scenario options and implementation measures considered included:

No Build Option

The design process included a “no build” option, but after evaluation of existing conditions and the unsafe nature of the corridor for both pedestrians and motorists, it was decided that “no build” was not a viable option to consider.

FIGURE 3.1 *Corridor-wide Improvements (Includes Short-Mid-Long-Term and Vision Strategies)*



Scenario Option A

This option involves reconstruction of the right-of-way cross-section – reducing the number of travel lanes from three to two, adding on-street parking, widening sidewalks and improving aesthetics.

Scenario Option B

Option B is the same as Option A, but without the on-street parking. This option would likely be considered after a central parking structure facility has been constructed to serve Cocoa Village. Without the on-street parking, the public realm could be enhanced to a greater degree with additional landscaping and pedestrian elements.

Scenario Option C

This scenario could be designed in conjunction with either Option A or Option B as described above. It involves construction of a roundabout centered on Riveredge Boulevard that would serve as a gateway element and provide new options for continuous ingress/egress to SR 520.

3. POTENTIAL VISION STRATEGIES

The vision scenario covered potential strategies that are beyond the scope of this project, but that have been considered through stakeholder discussion and in the context of larger vision projects for the region.

SCENARIO EVALUATION

Once the preliminary scenario concept plans were completed, a review process was initiated to identify which improvement alternatives were viable and should be moved forward for further design and analysis. Scenarios were refined as issues were identified and addressed:

1. REGULATORY REVIEW

The first reviews were done internally to identify any policy issues or concerns that needed further consideration before moving forward in the evaluation process.

- FDOT Input

  The project team conducted a series of internal studios with members of FDOT District 5 Management and Divisions Managers to get their expert insights on the preliminary scenario plans. FDOT staff provided vital guidance for the issues and opportunities that helped shape the initial set of preliminary plans and solidify the main goal of improving safety in the corridor. District 5 Management and Division Managers all agreed that removing a lane would improve safety for pedestrians by slowing vehicles down closer to the posted limit, additionally reducing lane weaving and associated accidents. All parties understood that reducing speed adds slightly more delay within this mile section of the corridor; however, the delay is increased by only a few more seconds and is marginal compared to the travel time if traffic was moving at the posted speed limit. FDOT also agreed that the short-term strategy of temporary bulb outs at intersections would be a short-term solution while the financing for the long-term reconstruction of the corridor worked its way through the system. There was also agreement that the roundabout concept was worth considering as an option moving forward.

- Agency Input

  The consultant team also met with the City of Cocoa and County agencies to brief them on the preliminary scenarios and get their input. The general consensus was that the scenarios address the issues and opportunities expressed in the earlier stages of the project.

2. COMMUNITY MEETING

A workshop was held to introduce the scenario concepts and solicit input from the public. The consultant team gave a short presentation outlining the project and the different concept plan elements, after which there was a lengthy question and answer discussion. Graphics of the different scenarios were posted around the meeting room and participants were able to talk with the consultant team, ask questions, and mark-up maps with suggestions and comments. A survey card was also available for participants to leave more detailed comments and contact information.

3. TECHNICAL CONSIDERATIONS AND ANALYSIS

Using the feedback received from the different stakeholder groups as a baseline, the consultant began a more detailed review of the scenario plans to identify issues that needed to be addressed or acknowledged prior to selecting final alternatives, including:

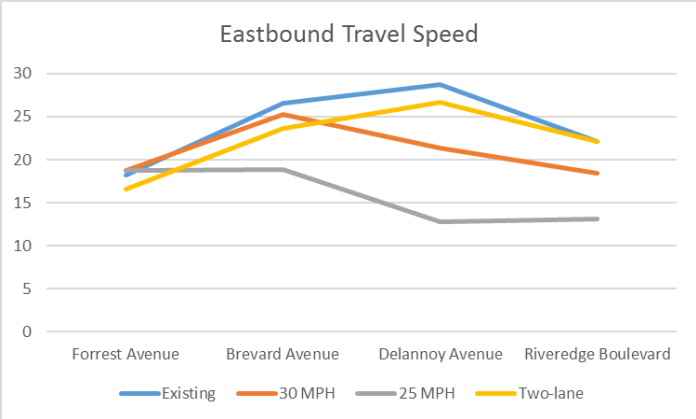
A. Engineering

Engineers looked at some of the big picture engineering issues, and concluded that the corridor presents several design and geometric challenges that will need to be evaluated in more detail during the design phases of any improvements. Specific consideration included:

- Northbound US 1, turning eastbound onto SR 520: If the slip lane is eliminated, the curb radius at the intersection will need to be at least 50-feet to accommodate turning maneuvers for the wide range of vehicles using the corridor.
- King Street and Willard Street lane reductions: A reduction of the existing pavement width, if accompanied with a shift of the existing curb line and storm inlets, may have an impact on the existing utilities that currently occupy this corridor, and may require relocation of these utilities depending on their specific location. Additional considerations should include turning movements, control and return radii, access, and pedestrian considerations.
- An AUTOTURN analysis was performed for the conceptual roundabout at SR 520 and Riveredge Boulevard. Based on the 2015 Florida Intersection Design Guide, two-lane roundabouts must be designed for operating speeds between 25 and 30 mph, and must accommodate the design vehicle (WB-62FL) and a passenger car side-by-side navigating the roundabout. The AUTOTURN analysis concluded that the current roundabout configuration does not accommodate the required vehicle combination. Flatter radii, wider pavement widths, and other geometric improvements will need to be utilized in order to meet the required criteria.

The Consultant looked at how the lane elimination would impact the flow of traffic along SR 520. The following figures 3.2 and 3.3 show that vehicle speed would be similar, and usually slightly lower, at points along the corridor and that travel time overall through the corridor would be only fractionally longer (less than one minute).

FIGURE 3.2 *AM Travel Speeds*



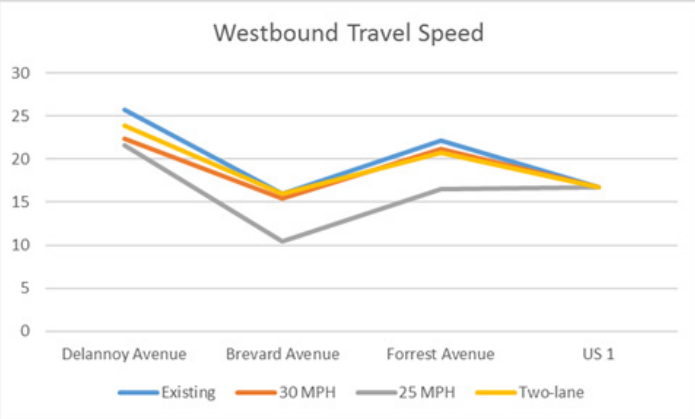
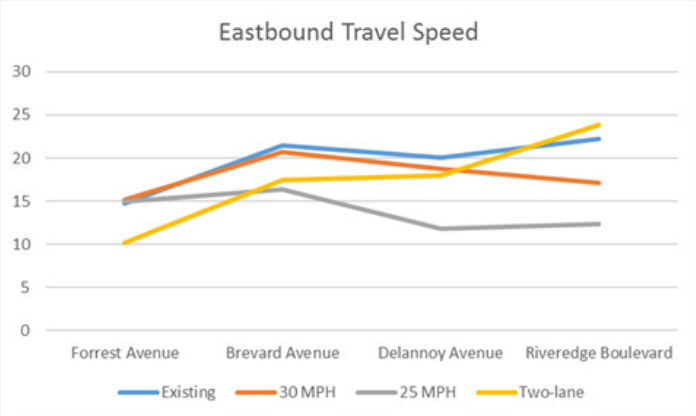
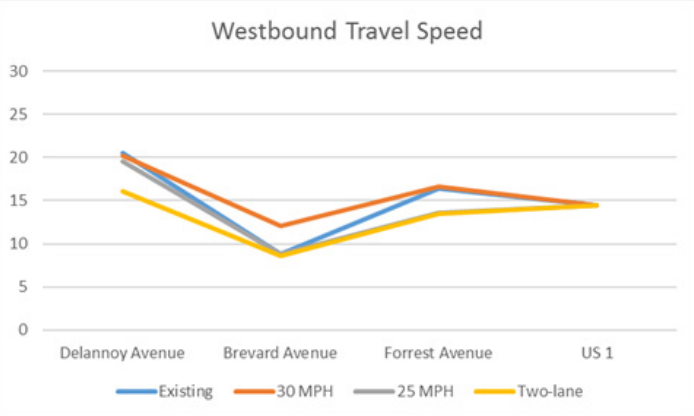


FIGURE 3.3 *PM Travel Speeds*





B. Environmental

Stormwater runoff within the study area is captured and conveyed through a network of inlets and pipes that outfall directly into the Indian River.

- The Indian River is classified as an impaired water body for total nitrogen, total phosphorous, dissolved oxygen, bacteria, and mercury by the Florida Department of Environmental Protection (FDEP), meaning that pollutants exceed the amount that water can absorb and still meet quality standards that protect human health and aquatic life. In order to reduce the pollutant loads discharged to the river, water quality improvements will need to be implemented concurrently with any planned roadway modifications. The water quality improvements can range from installing pollutant removal structures (2nd generation nutrient separating baffle box, or treatment units marketed by StormCeptor, EcoVault, CDS, Vortechs, etc…) to implementing low impact development (LID) techniques such as modular wetland systems, bio-retention systems, pervious pavement in parking areas, etc…
- In regards to the St. Johns River Water Management District (SJRWMD), permitting of proposed roadway modifications will vary based on the types of improvements. If the proposed improvements involve milling and resurfacing only, the activity would be considered exempt. However, if the proposed improvements encompass roadway reconstruction, then the SJRWMD would require an Environmental Resource Permit (ERP) in order to secure authorization to implement the improvements.
- Given the age of the existing stormwater infrastructure, upgrading existing inlets and/or implementing additional inlets may be warranted to address localized flooding and spread of water concerns. It is imperative to include the stormwater runoff associated with the existing developed parcels adjacent to the SR 520 corridor in order to properly establish the total runoff rates to be captured and conveyed. Lastly, a hydraulic gradeline (HGL) analysis may be required to analyze the existing conveyance systems to identify potential hydraulic "bottlenecks" and quantify required pipe upgrades.

C. Operational

There are several operational aspects of the corridor transportation management that can be looked at, and that would likely provide greater efficiency with little effort, including:

- Speed limits: Enforce the existing speed limits to a greater degree to change motorists driving patterns through the corridor.
- Signal timing: Coordinate north/south signals so that traffic from side roads can clear shorter block lengths without backing up adjacent traffic.
- Pedestrian signals: Ensure that pedestrian crossing signals are operational and directionally accurate. Consider a pedestrian crossing condition where vehicles are stopped in all directions.

D. Transit

Improvements in both service and infrastructure can help Space Coast Area Transit (SCAT) attract more riders, create more choices, and help address the needs of a growing and changing population.

- SCAT representatives have requested that there be no pull outs or bays at stops. It is hard for buses to merge back into moving traffic and maintain service efficiency (on-time performance).
- All bus stops should be ADA accessible, not only in terms of bus boarding, but also in terms of providing clear widths for wheelchair maneuvering at stops.

- Visibility of stops should be enhanced so that pick-up locations are easily identifiable.
- Amenities can improve stop locations and encourage people to take transit.
- As BRT routing is considered through Cocoa village (along Stone Street with a transit center near City Hall), street widths and intersection radii will need to be considered to ensure vehicles will be able to make needed turning movements.

E. Urban Design

Good urban design helps unify the corridor. It provides streets that organize the built environment and guides how different strategies fit together as development occurs over time.

- The short-term scenario adds bulb outs in the outside lane of both King and Willard Streets for lane reduction (from three lanes to two lanes). While the bulb outs help reduce pedestrian crossing distance, there are a number of layout options to consider for the area blocked off by the bulb outs:
  - On-street parking lane where spaces are striped and can be used for both parking and loading/unloading activities (all hours or specified hours)
  - On-street parking lane where spaces are not striped and can be used for both parking and loading/unloading activities (all hours or specified hours)
  - On-street parking lane where spaces are not striped and can be used only for loading/unloading activities
  - Area is used for neither and striped off pending development of mid- and long-term scenarios
- Crosswalks should be designed as enhanced crossings that combine high visibility markings with additional pedestrian treatments such as shorter crossing distances or traffic calming measures.
- If patterned or brick crosswalks/pavement is used to highlight key intersections, there need to be clear expectations or agreements regarding maintenance and/or roadway resurfacing to ensure that the streetscape enhancement is kept to its intended design .
- Wayfinding tells visitors where they are, where they want to go, and how to get there. It provides direction for people on the move. The addition of wayfinding signage along the corridor can serve a number of purposes:
  - Guide visitors to destinations.
  - Guide visitors to parking, reducing the recirculation of vehicles.
  - Reinforce the City's public image by incorporating branding elements.
  - Create an area that appears well-organized and safe and encourages people to venture further, knowing that wayfinding information will be available for orientation.

F. Policy

The Cocoa Waterfront Overlay District has created a framework for future development and urban design guidelines to shape the form of that development.

- The Overlay District does not have specific guidelines regarding sidewalk design. Since the scenarios propose widening sidewalks to enhance the public realm and encourage street-level activity, it would be appropriate to define different sidewalk zones. Streetscape elements are organized within the sidewalk zones to ensure a measure of uniformity and provide pedestrian circulation and safety. There are four distinct zones that will vary in width depending on the function of the street:
  - Frontage Zone – the transition area between the property line and the sidewalk where awnings, stairs, storefront displays and other building elements intrude into the sidewalk.
  - Pedestrian Zone – the clear portion of the sidewalk on which pedestrians travel.
  - Furnishings Zone – the portion of the sidewalk used for street furniture, trees and landscaping, transit stops, lights, and other furnishings.
  - Curb Zone – the portion of the sidewalk where the curb is located.
- The Overlay District Regulating Plan calls for building setbacks of 10-15' in the King and Willard Corridor Sub-District along SR 520. With the lane reduction and sidewalk widening, buildings should have a 0-5' setback to engage the street and create an active pedestrian environment.
- The Heart of Cocoa Sub-District is under a Consent Decree that specifies that the character of the area is to be low-density residential, although it also recognizes less intensive neighborhood commercial uses such as mixed use developments where residential serves as the primary use. This is generally consistent with the uses permitted in the Regulating Plan. However, the vision scenario for this project speculates that a long-term possibility is a BRT route along Stone Street that connects to a transit center near City Hall. If Stone Street becomes more multimodal-oriented, the parties that are part of the Consent Decree may determine, as has been done previously, that the document "no longer meets the needs of the parties and should be modified" to take advantage of new development opportunities within the area.

REFINED SCENARIO CONCEPTS

After the preliminary concepts were reviewed, both internally and externally, revisions were made and the final scenario plans were finalized.

1. ROADWAY LAYOUTS/ALIGNMENTS

POTENTIAL SHORT-TERM STRATEGIES

Implementation measures for the short-term scenario include:

- Pedestrian
  - Sidewalk improvements: Eliminate deficiencies and gaps in the sidewalk network so that all pedestrian areas meet ADA requirements.
  - Crosswalk upgrades: Use specialty pavers or textured/colored treatments to define and enhance the visibility of crosswalks at key intersections.
  - Bulb outs: Install sidewalk bulb outs at intersections to reduce pedestrian crossing distance, improve visibility and sight lines between pedestrians and vehicles, and define limits of on-street parking.
- Bicycle
  - Signage: Add signs indicating bicycle routes and bicycle traffic to increase awareness of bicyclists using the roadway.
- Street
  - Speed monitoring: Install digital speed display signs to alert motorists of their vehicle speed versus the posted speed limit.
  - Pavement upgrades: Use textured/colored pavement at key intersections
  - On-street parking: Add on-street parking between bulb outs to provide spaces for adjacent uses and help slow traffic.
  - Concrete lane separator: Create vertical barrier between through lanes and right-turn lane from Delannoy Ave. to Riveredge Blvd. to prevent vehicle weaving (“slingshot effect”).
  - Lane reduction: Reduce southbound Riveredge Blvd. to one lane between Willard Street and King Street.
  - Loading area identification: Restrict loading zones to designated areas to reduce congestion on retail streets.
  - Oversized parking area identification: Create areas where tour buses and oversized vehicles can park that provide easy ingress/egress to SR 520.
  - Wayfinding signs: Add signs that guide visitors to destinations
- Transit
  - Transit stop enhancement: Clearly identify bus stop locations and add amenities that improve comfort and enhance security. Evaluate stops to ensure that maneuvering space, height, slope and clearances at all stops meet ADA requirements.

2. ROADWAY CROSS SECTIONS - SHORT TERM

The following illustrations show the location of existing and proposed roadway cross-sections:

FIGURE 3.4 *Roadway Cross-section Key Map*

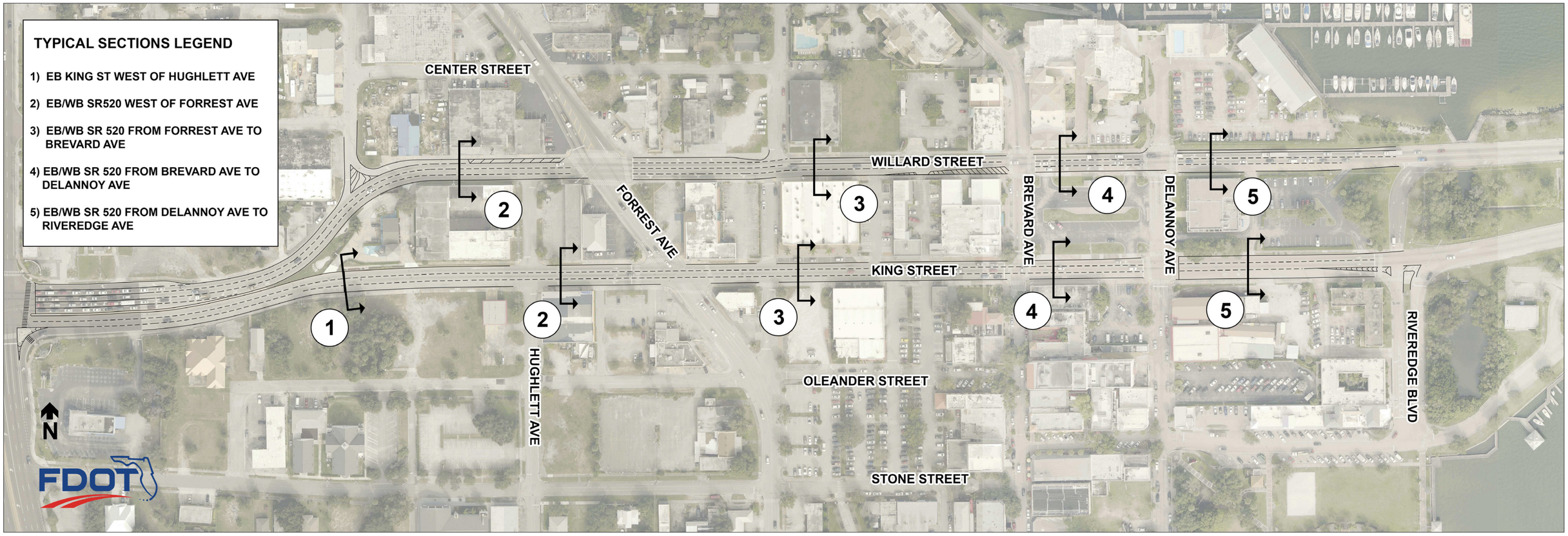


FIGURE 3.5 *King Street West of Hughlett Avenue (East Bound)*

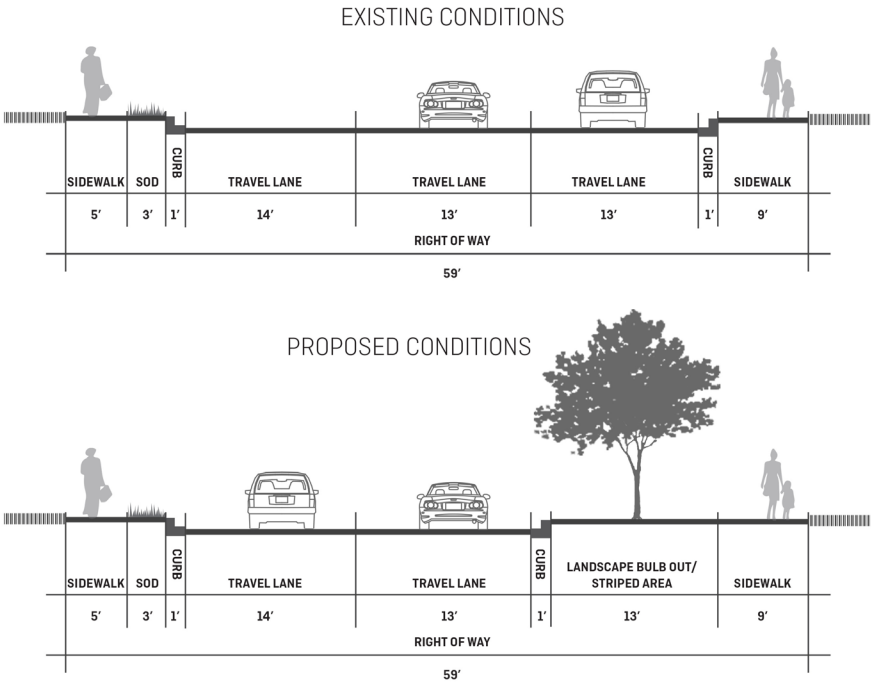


FIGURE 3.6 *King Street at Hughlett Avenue (East Bound)*

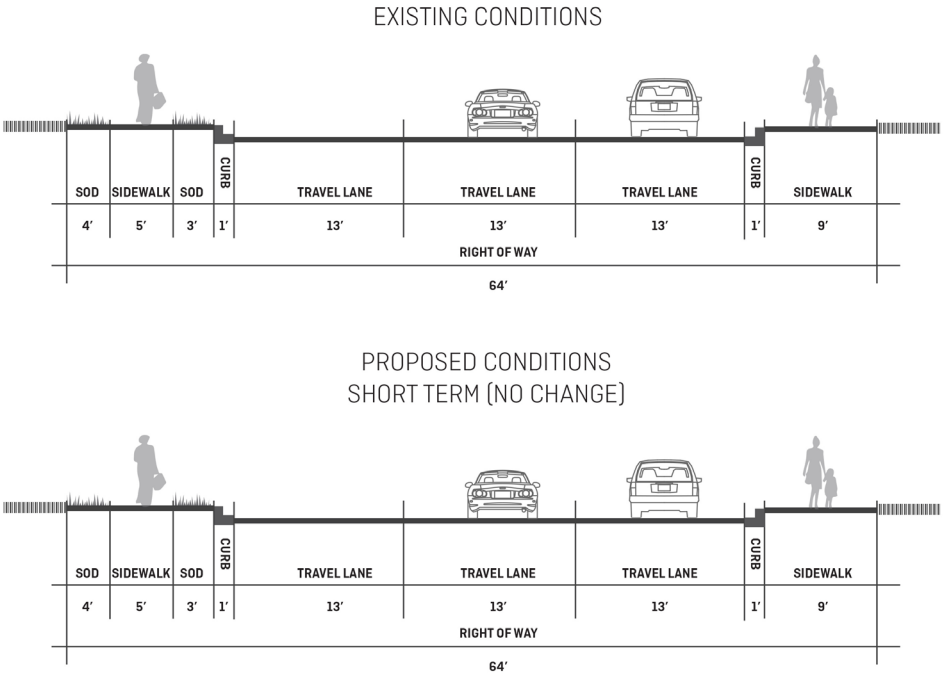


FIGURE 3.7 *King Street at Florida Avenue (East Bound)*

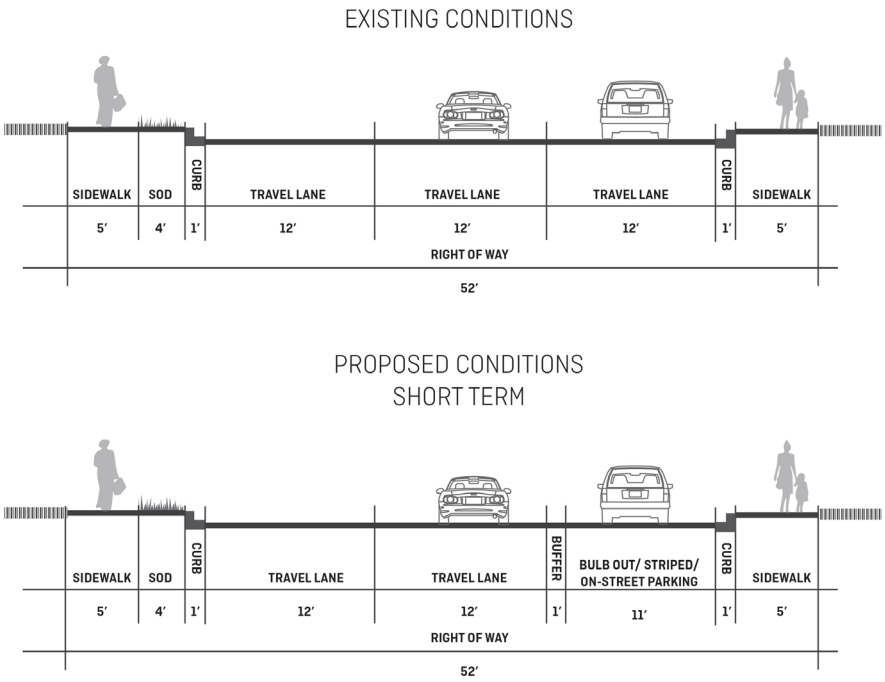


FIGURE 3.8 *King Street at Brevard Avenue (East Bound)*

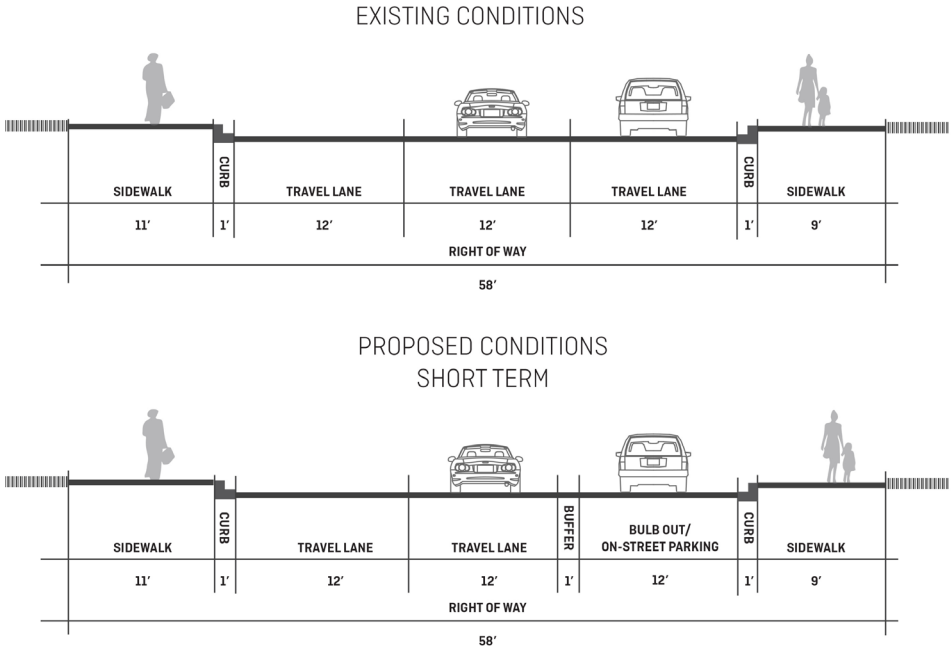


FIGURE 3.9 *King Street at Delannoy Avenue (East Bound)*

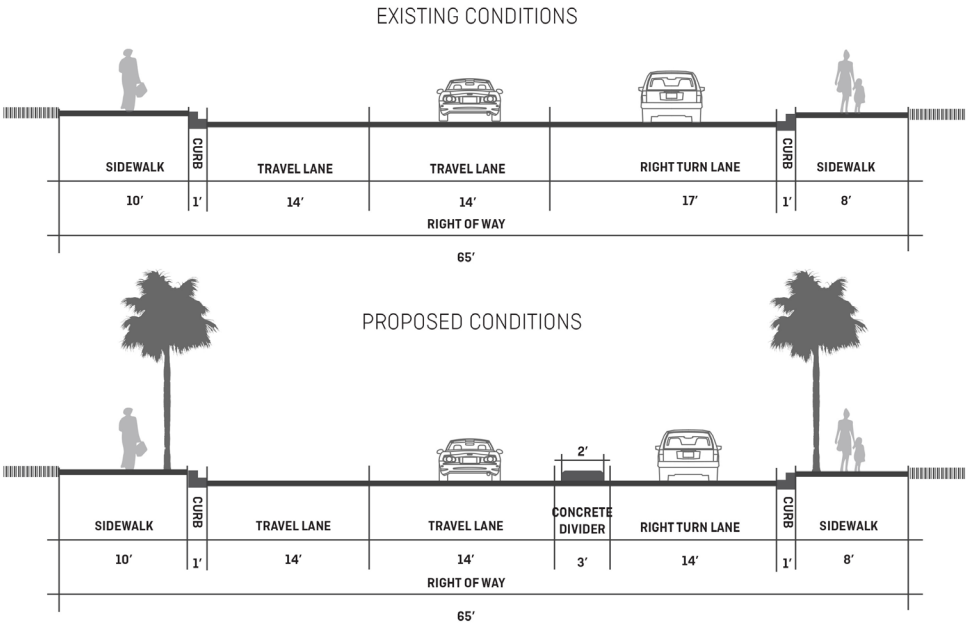


FIGURE 3.10 *Willard Street at Delannoy Avenue (West Bound)*

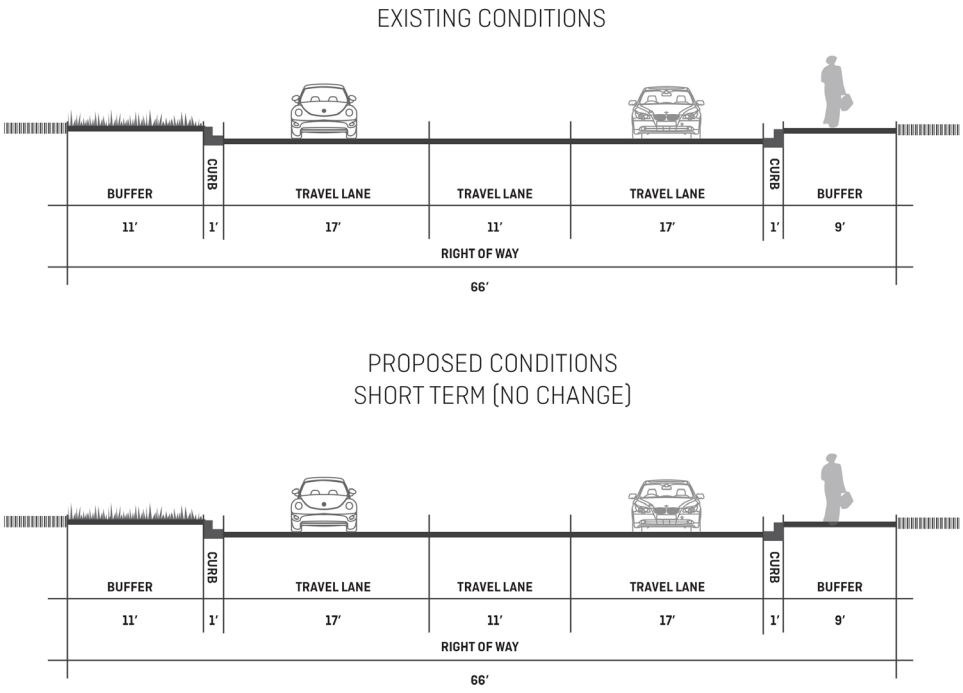


FIGURE 3.11 *WIllard Street at Brevard (West Bound)*

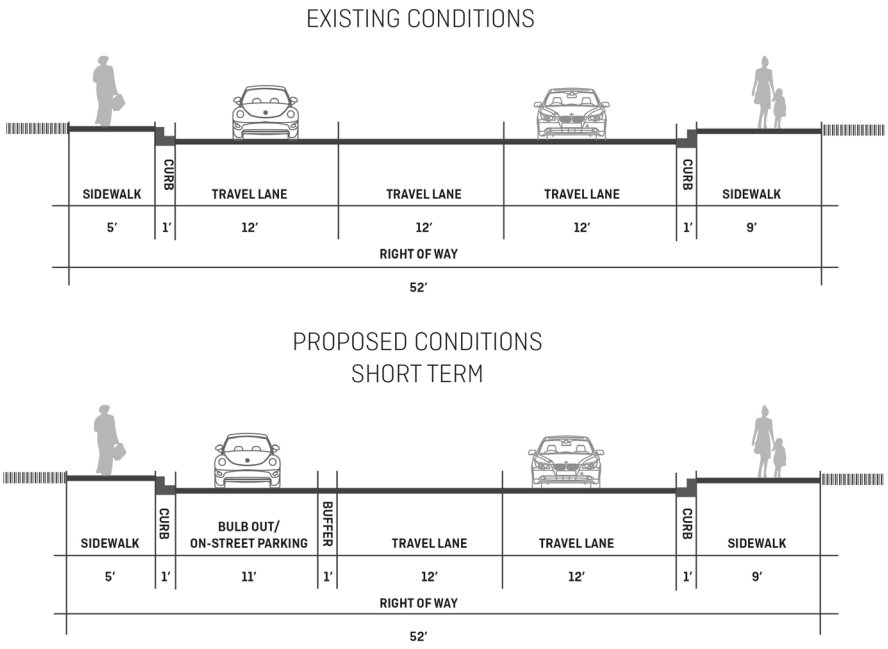


FIGURE 3.12 *Willard Street at Florida Avenue (West Bound)*

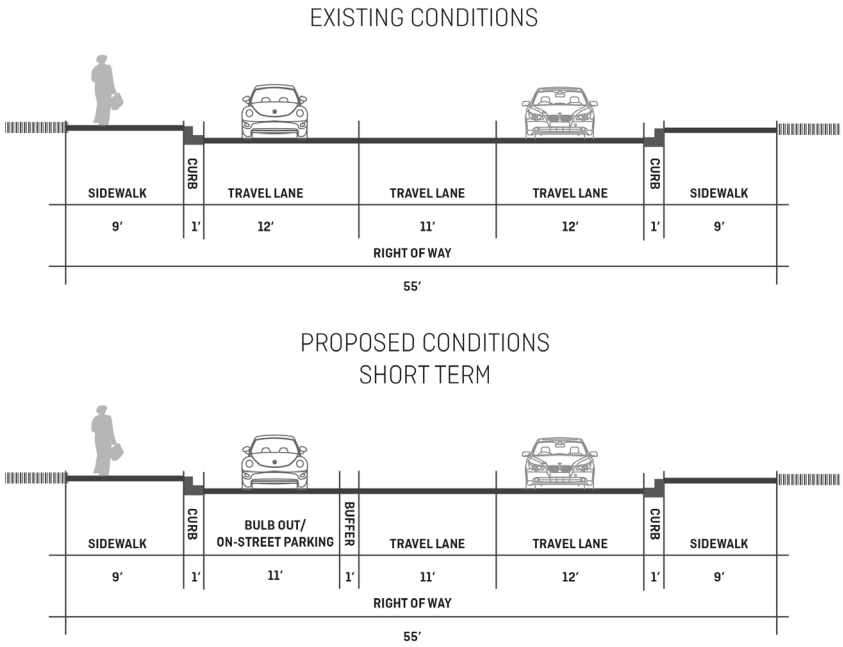


FIGURE 3.13 *Willard Street at Hughlett Avenue (West Bound)*

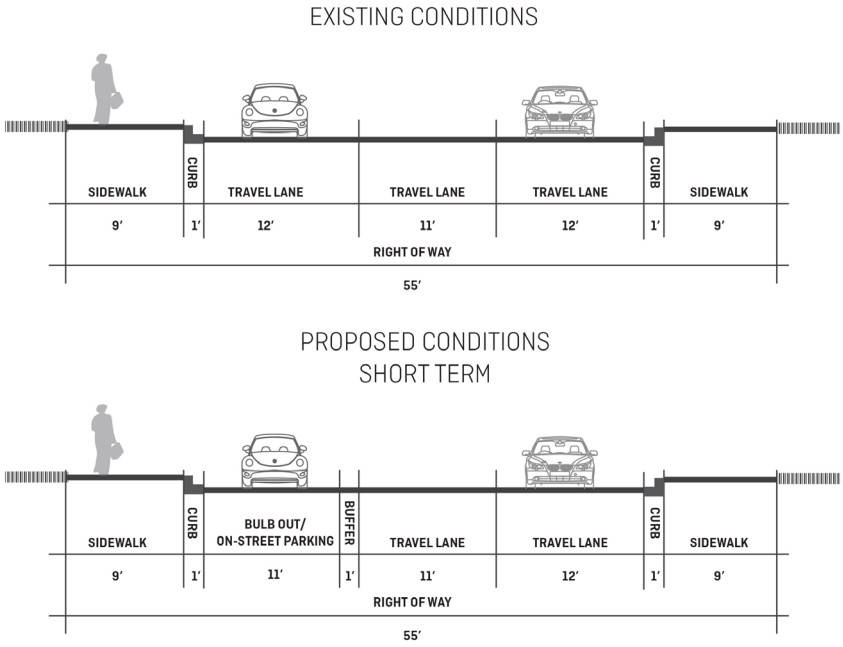
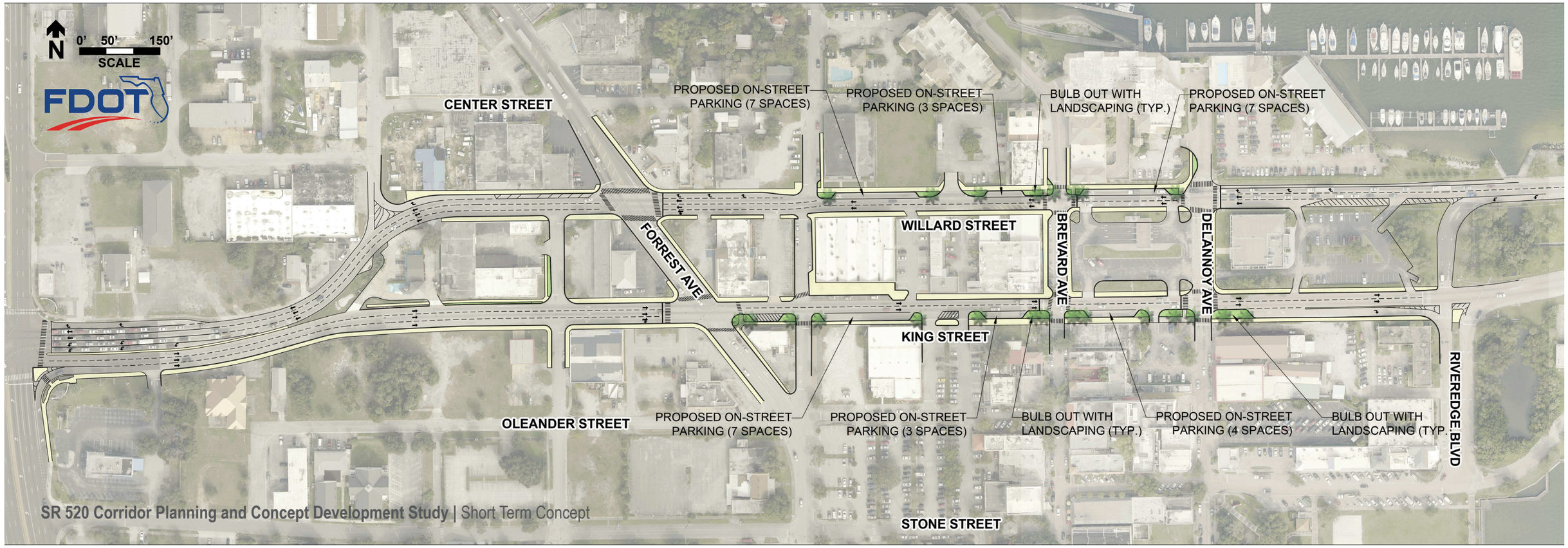


FIGURE 3.14 *Short Term Scenario- Lane Elimination w ith On-street Parking*



3. CONCEPT DESIGN DETAILS

The following information details specific design recommendations for elements of the scenario plans.

SHORT TERM SCENARIO

Pedestrian

- Street trees: Street trees are an essential element in the streetscape. They help soften the built environment, define parking areas, buffer the roadway, provide shade, and filter dust and pollutants from the air.
  - Application: Street trees should be installed at intersections between Forrest Avenue and Delannoy Avenue in conjunction with bulb outs to help identify parking areas and pedestrian street crossing locations.
  - Details: Since this is a short-term action, we recommend that trees be situated in planters so there is minimal disruption of the roadway and subgrade conditions and trees can be moved at a later time to permanent locations. Trees should be deciduous canopy species and should be limbed up to 7-feet to create a comfortable clearance and avoid blocking sight lines. Planters should be large enough to accommodate sufficient volume to prevent soil from drying too quickly (3-4' min. diameter recommended). Planter design should be simple and intentionally understated in character, with a neutral stone color that is compatible with the many different architectural styles and streetscape elements found along the corridor.
- Curb ramp: Curb ramps should be provided at all street corners, access drives, and other locations where sidewalks intersect with vehicular zones and where existing grades require the use of ramps to maintain accessible routes.
  - Application: Locations along the corridor where curb ramps should be installed include:
    - King Street at Florida Avenue
    - Willard Street at Florida Avenue
  - Details: Ramps at intersections should be aligned with existing or future opposing ramp locations on adjacent blocks and they should provide a level landing at the top so that a wheelchair can turn without having to negotiate the sloped side flares. The landing also improves through-travel on the sidewalk so that all users don't have to travel through the curb ramp. Streetscape features should be integrated such that they do not obstruct or hinder access to curb ramp transition areas.
    - Tactile warning strip: The detectable warning surface at the bottom of the curb ramp alerts visually impaired users of the transition between the sidewalk and roadway.
  - Application: There are several places along the corridor where tactile warning strips should be installed. This can be done in association with new development, redevelopment, retrofitting, or as maintenance budgets permit.
  - Details: Detectable warnings should be installed across the full width of the curb ramp and should contrast visually with the adjoining pavement surface. The City uses yellow polyurethane mats with truncated domes at ramps and grade changes.
- Sidewalk: An organized, walkable, pedestrian-friendly environment encourages people to get out and explore. The quality, condition, and connectivity of the sidewalk is a major determinant of the quality of the streetscape.
  - Application: There is a gap in the existing sidewalk along the north side of Willard Street, both east and west of Ridgeway Avenue. Additionally, a sidewalk should be considered on Ridgeway Ave. between Willard Street and Peachtree Street.

- Details: Sidewalk width and materials should match that existing on both Willard Street and Peachtree Street.

- Crosswalk: Crosswalks not only tell pedestrians where to cross the street, but alert vehicles of the potential presence of pedestrians at any intersection.
  - Application: All side street pedestrian crossings should be marked when there is a sidewalk. The following unmarked intersections should add crosswalks:
    - Willard Street at Florida Avenue
    - King Street at Hughlett Avenue

    Textured treatments should be used to distinguish crosswalks at key intersections and provide a pedestrian-scale, textural design element within the expansive pavement area of the intersections. Key intersections on the SR 520 corridor include:
    - King Street at both Delannoy and Brevard Avenues
    - Willard Street at both Delannoy and Brevard Avenues
  - Details: Standard crosswalk markings should be continental style, a minimum of 8-feet wide, to match those existing along the corridor. Textured crosswalks should use patterned pavement that is appropriate for heavy urban traffic. There are textured crosswalk patterns currently existing within Cocoa Village that can be extended to the SR 520 corridor. As sections of paving are eventually removed to access sub-surface utilities, replicating original patterns, colors, and placement of textured surfaces may prove to be a challenge. For this reason, simple, easily replicated paving patterns should be utilized wherever possible.

Bicycle

- Bike rack: Short term parking, usually bike racks, is intended for stays of less than two hours, with typical users being customers of retail, dining, and personal or professional services.
  - Application: With the exception of Magnolia Plaza and Riverfront Park, there are few, if any, bike racks in the Cocoa Village area. People often lock their bikes to the columns of the gazebo in Magnolia Plaza. New racks should be located near clusters of restaurants and retail along Delannoy and Brevard Avenues.
  - Details: Bicycle parking should be located where easily visible, with a clear line of sight from the building entrance, near busy areas and the street; if racks are located too far away, bicyclists will often lock their bikes to a closer piece of street furniture or a tree. Racks should be sturdy and well-anchored and support bikes by their frame at two points.

Roadway

- Bulb out: Bulb outs will be installed in the right-hand lane, reducing the travel lanes from three to two and providing shorter distance for pedestrians to cross the street. Bulb outs extend pedestrian waiting areas into the driver's cone of vision.
  - Application: Bulb outs will be installed on both King and Willard Streets, between Forrest and Delannoy Avenues.
  - Details: Bulb outs will be composed of curbing laid out over existing pavement, with the area behind the curbing filled with concrete and connected to the existing sidewalk to create a congregating area for pedestrians waiting to cross the street.

- On-street parking: On-street parking areas will be created through the installation of bulb outs along the corridor. This parking is important for not only providing some of the parking needs for adjacent uses, but also as a means of defining the character of the corridor. On-street parking creates pedestrian activity and provides a buffer between those pedestrians and moving traffic.
  - Application: On-street parking will be located on King and Willard Streets, between Forrest and Delannoy Avenues.
  - Details: The on-street parking spaces will be unmarked. This flexibility, coupled with the deeper width of the parking area (former travel lane), will facilitate easier access, hopefully eliminating the need for parallel parking maneuvers that would slow traffic. The deeper width will also allow easier vehicle door opening without the fear of hitting vehicles in travel lanes. Parking will initially be for both parking and loading/deliveries; however, vehicle parking may be restricted if safety issues arise.
- Traffic signals: Coordination of traffic signals can help keep north-south side streets with shorter block length clear of traffic back-up caused by offset signal timing. A divider will be used to separate through travel from right turn movements to eliminate speeding and lane weaving in the area preceding the Indian River Bridge.
  - Application: Traffic lights at all intersections along the corridor. The separator will be installed on King Street between Delannoy Avenue and Riveredge Boulevard.
  - Details: Traffic lights should not only be reviewed on an operational basis for vehicle timing, but a vehicular stop condition in all directions should be considered to provide a safer crossing for pedestrians and bicyclists. Additionally, all pedestrian crossing mechanisms (push buttons and electronic messaging) should be inspected to ensure to the correct crossing direction. The separator will be a continuous 4-feet wide concrete strip that has tapered edges and is approximately 5.25” high at the centerline, designed to FDOT Design Standards Index #302.
- Traffic separator: A divider will be used to separate through travel from right turn movements to eliminate speeding and lane weaving in the area preceding the Indian River Bridge.
  - Application: The separator will be installed on King Street between Delannoy Avenue and Riveredge Boulevard.
  - Details: The separator will be a continuous 4-feet wide concrete strip that has tapered edges and is approximately 5.25” high at the centerline, designed to FDOT Design Standards Index #302.

Transit

- Bus stop amenities: The design of bus stop waiting areas plays a significant role in a person’s decision to use transit. Passenger amenities improve comfort and enhance security. There are four bus stops along the corridor - one stop has a bench, one has a bench and trash receptacle, and two stops have no amenities.
  - Application: At a minimum, each stop should have a bench and trash receptacle. A functional shelter that protects from the elements (wind, sun, and rain) is desirable.
  - Details: The sidewalk at bus stops should connect to the curb and meet both ADA and SCAT accessibility standards. There should be adequate maneuvering space, slope, and clearances to accommodate wheelchairs. If existing street lights do not provide proper illumination for nighttime safety, pedestrian-scale lighting should be added. The sidewalk should be finished in pavers or stamped concrete so that the bus stop is easily recognizable. The pavement pattern should complement other textured elements along the corridor for continuity of style, but have distinct identifying elements.

Miscellaneous

- Wayfinding signage: Wayfinding incorporates signs and directional devices that tell visitors where they are, where they want to go, and how to get there. It provides direction for people on the move. A successful wayfinding system should provide information for visitors to identify and orient their location within an area or space, reinforce they are traveling in the correct direction, and identify their destination upon arrival.
  - Application: Wayfinding along the corridor is minimal. Signs that emphasize the Cocoa brand and are easily recognized/read should be designed and located along both King and Willard Streets to direct visitors to parking and/or destinations in the area.
  - Details: Information should be presented in a logical and orderly fashion. Determining the decision points visitors will face throughout their journey and identifying a hierarchy of information required at each of those decision points will allow visitors to easily recognize and interpret messages. The wayfinding components along the SR 520 corridor should include:
    - Destination signs - located at key intersections, they function as both vehicular and pedestrian guidance.
    - Parking signs – increase awareness of available resources and cut down on traffic recirculation.
    - Kiosks – provide pedestrians with specific information and orient them to the surrounding environment.

Potential Mid- and Long-Term Strategies

Scenario options and implementation measures for the mid- and long-term scenario include:

SCENARIO OPTION A

This option involves reconstruction of the right-of-way cross-section – reducing the number of travel lanes from three to two, adding on-street parking, widening sidewalks and improving aesthetics. Specifics for this scenario include:

- Pedestrian
  - Wider sidewalks: Identifying wider sidewalks creates the opportunity to define and enhance the public realm (area between the curb line and building façade) and help shape the walking experience. Sidewalk zones should be organized to ensure a measure of uniformity throughout the corridor and provide pedestrian safety and comfort. Wider sidewalks also provide space for outdoor dining, providing more presence and interaction on the pedestrian level.
- Street
  - Travel lanes: Two (2) 11’ travel lanes
  - On-street parking: On-street parking (8.5’ wide) will be located on the right-hand side of the roadway on both King Street and Willard Street between Forrest Avenue and Delannoy Avenue.
- Other
  - Gateways: Gateway elements will be located eastbound near King St./Forrest Ave. and westbound near Willard St./Riveredge Blvd. to help calm traffic and announce arrival into the Cocoa Village area.

SCENARIO OPTION B

Option B is the same as Option A, but without the on-street parking. This option would likely be considered if a central parking structure facility is planned or has been constructed to serve Cocoa Village. Without the on-street parking, the sidewalk zones could be enhanced to a greater degree with landscaping and pedestrian elements.

4. ROADWAY CROSS SECTIONS MID / LONG TERM (CHANGES BEYOND SHORT – TERM)

The illustrations below show the location of proposed Mid / Long term roadway cross-sections:

FIGURE 3.15 *Roadway Cross-section Key Map*

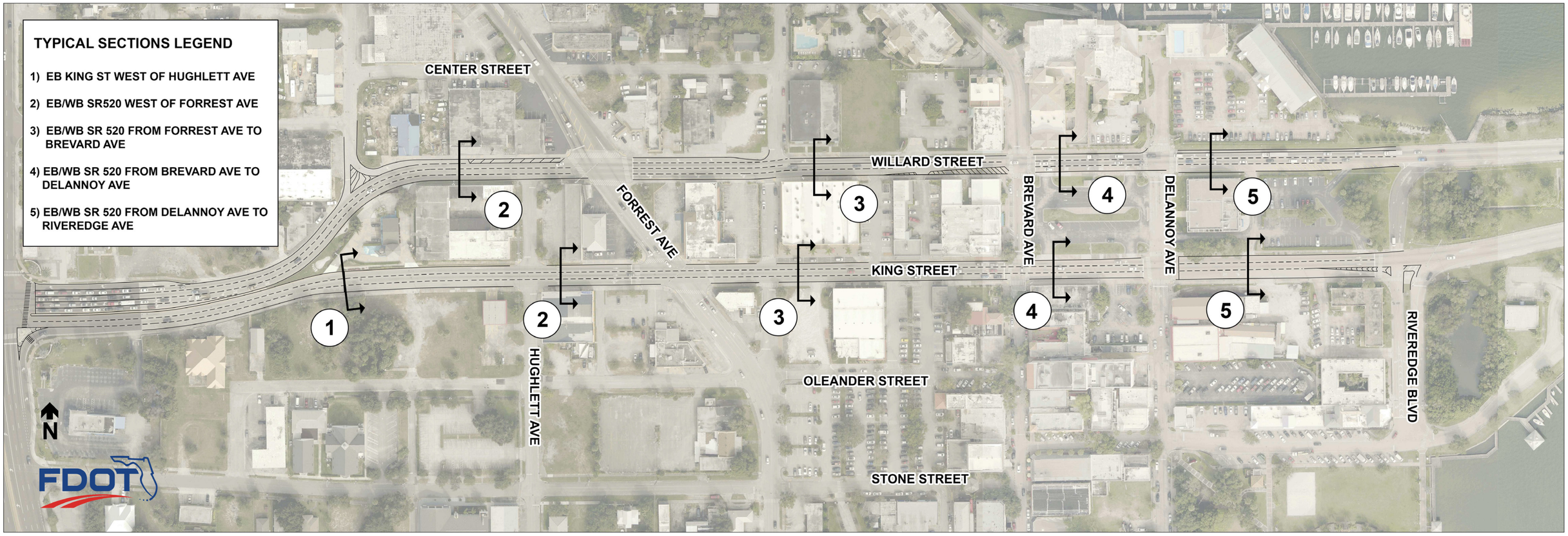


FIGURE 3.16 *King Street West of Hughlett Avenue (East Bound)* (No Change from Short Term)

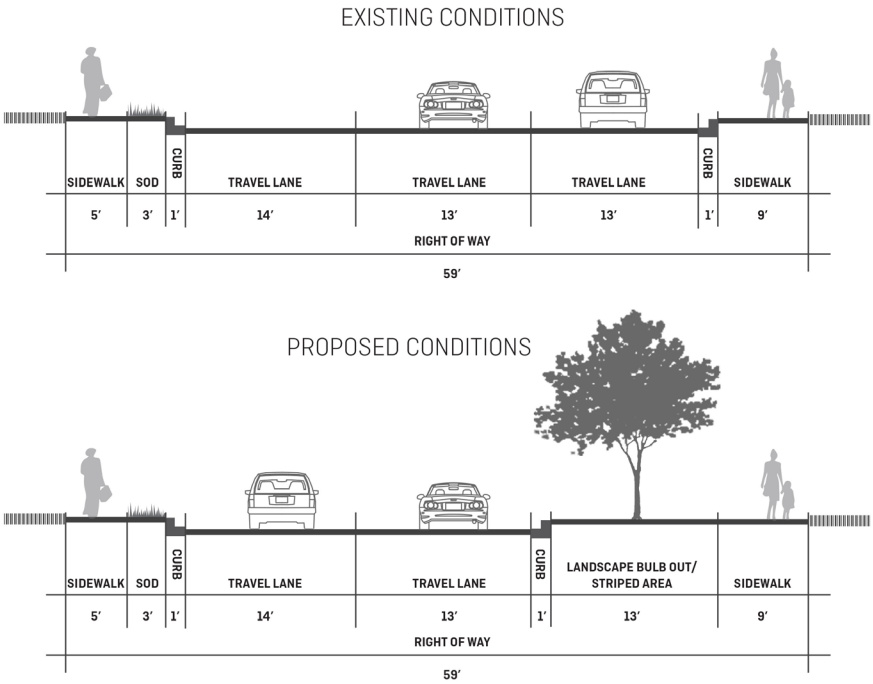


FIGURE 3.17 *King Street at Hughlett Avenue (East Bound)*

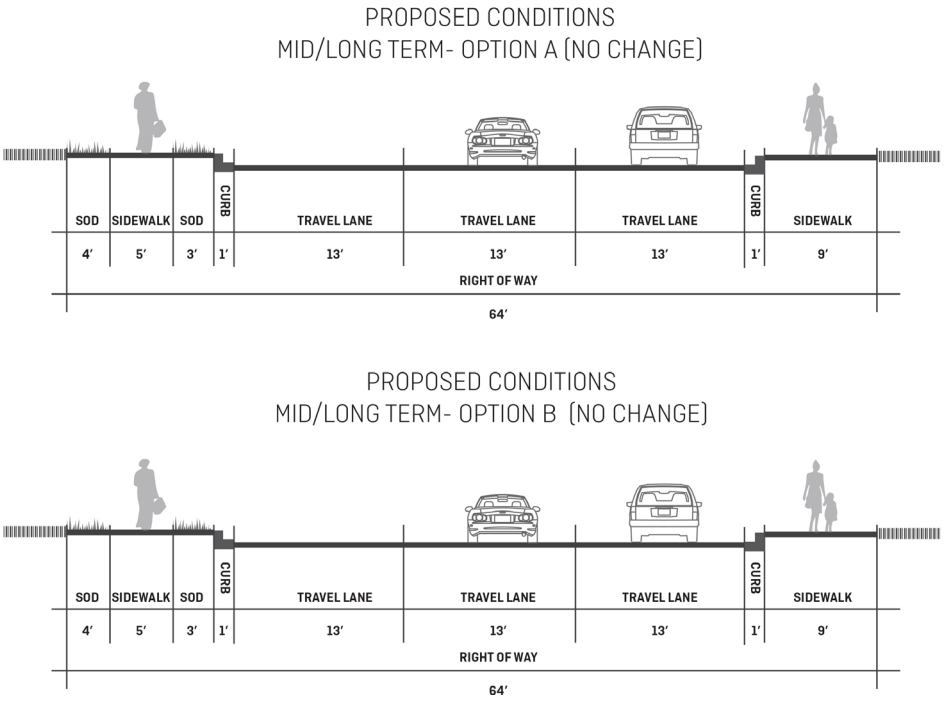


FIGURE 3.18 *King Street at Florida Avenue (East Bound)*

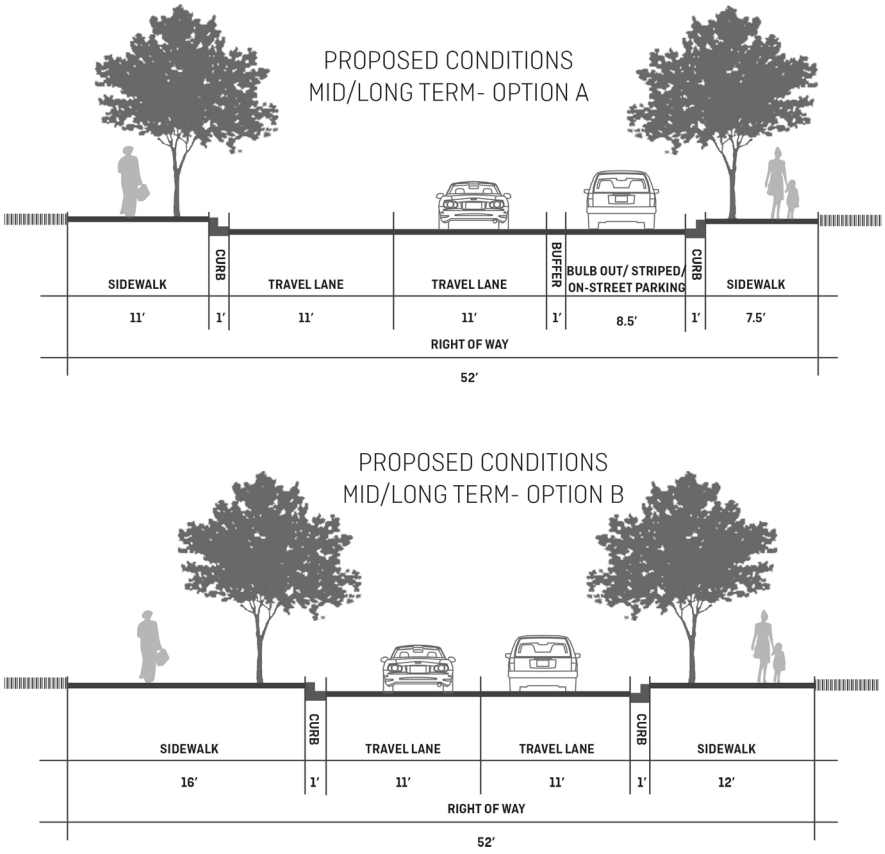


FIGURE 3.19 *King Street at Brevard Avenue (East Bound)*

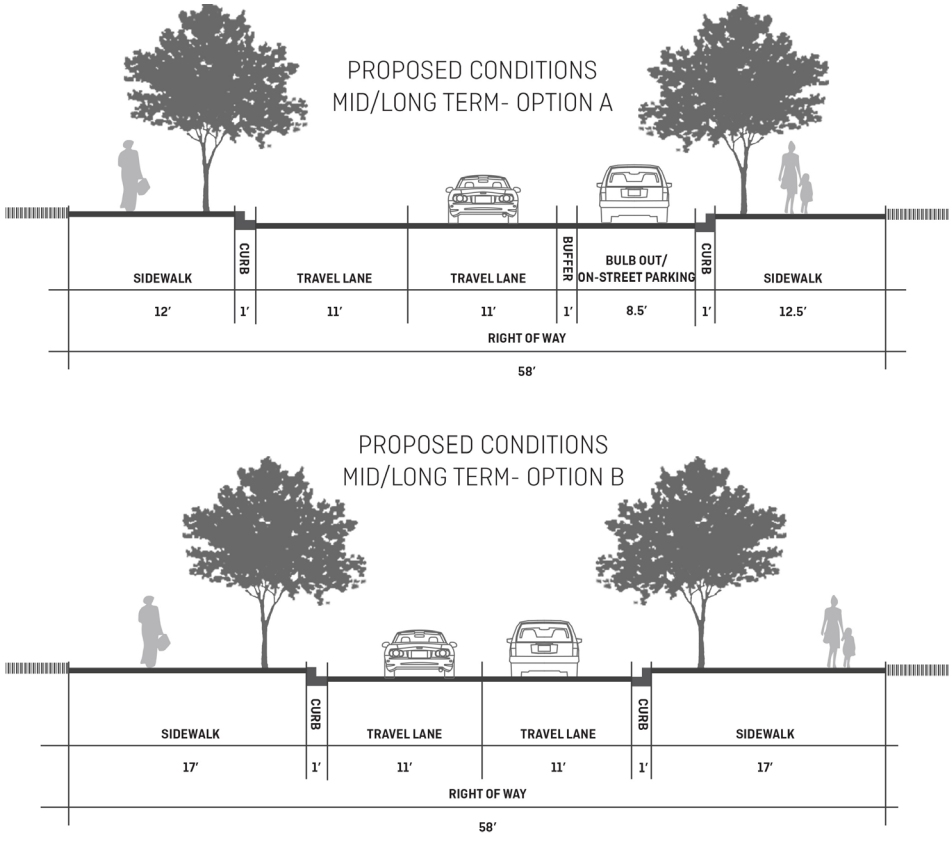


FIGURE 3.20 *King Street at Delannoy Avenue (East Bound)* (No Change from Short Term)

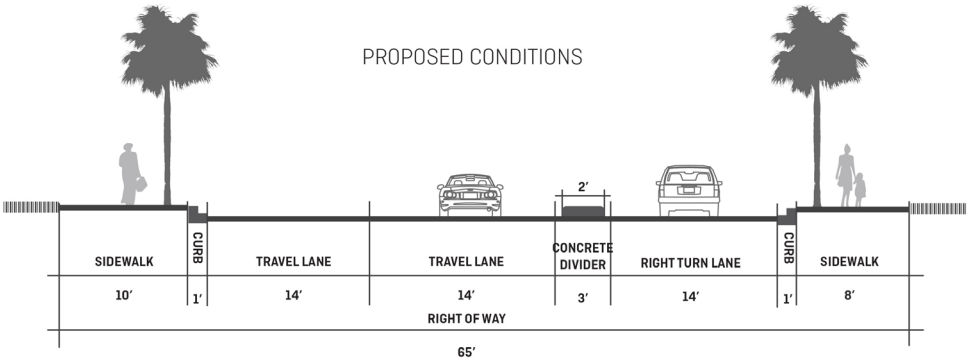
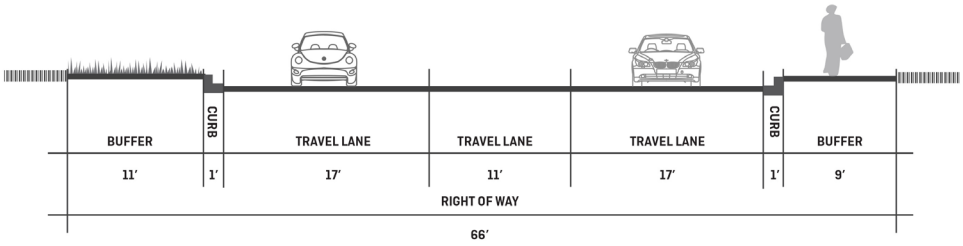


FIGURE 3.21 *Willard Street at Delannoy Avenue (West Bound)* (No Change from Short Term)

PROPOSED CONDITIONS
MID/LONG TERM- OPTION A (NO CHANGE)



PROPOSED CONDITIONS
MID/LONG TERM- OPTION B (NO CHANGE)

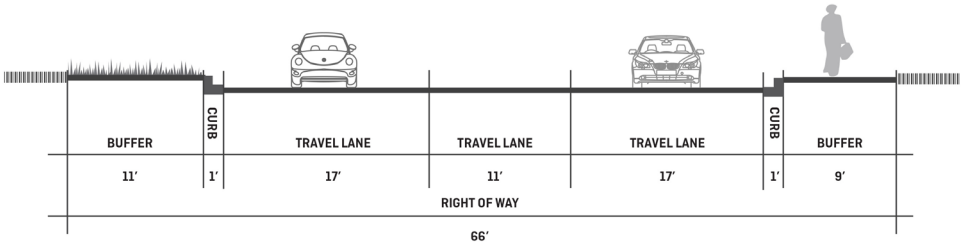


FIGURE 3.22 *WIllard Street at Brevard (West Bound)*

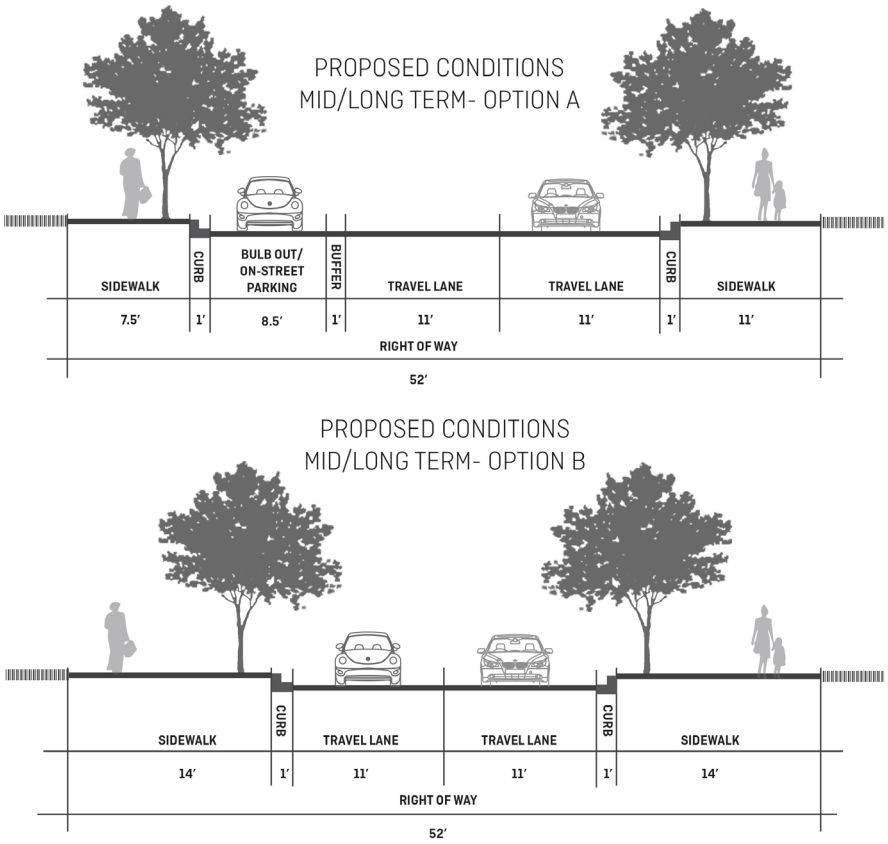


FIGURE 3.23 *Willard Street at Florida Avenue (West Bound)*

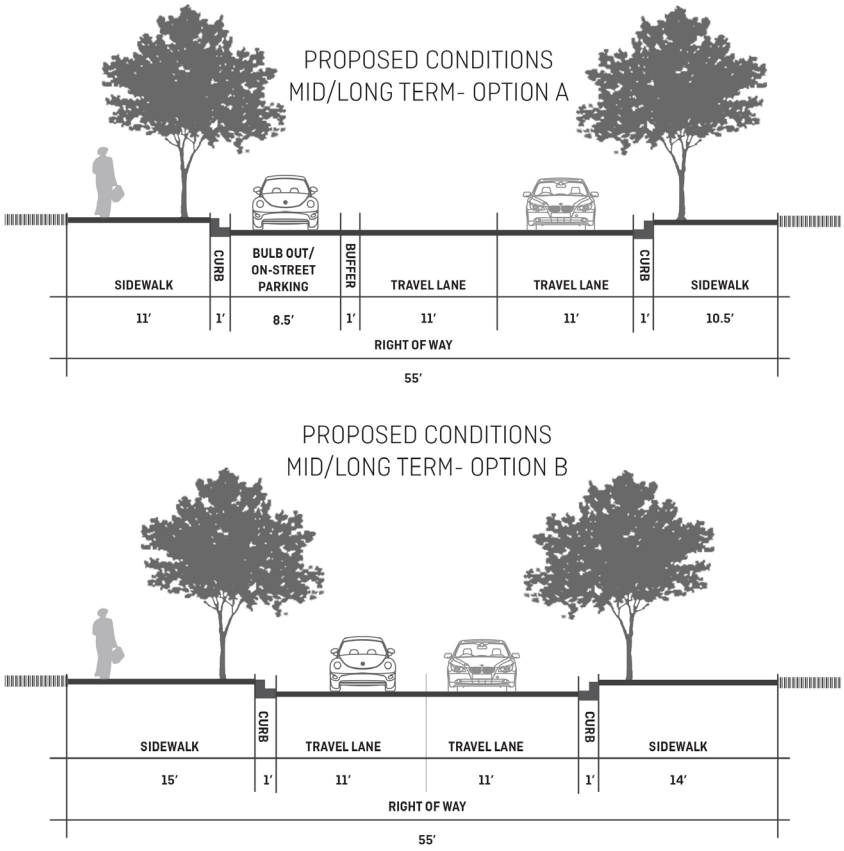
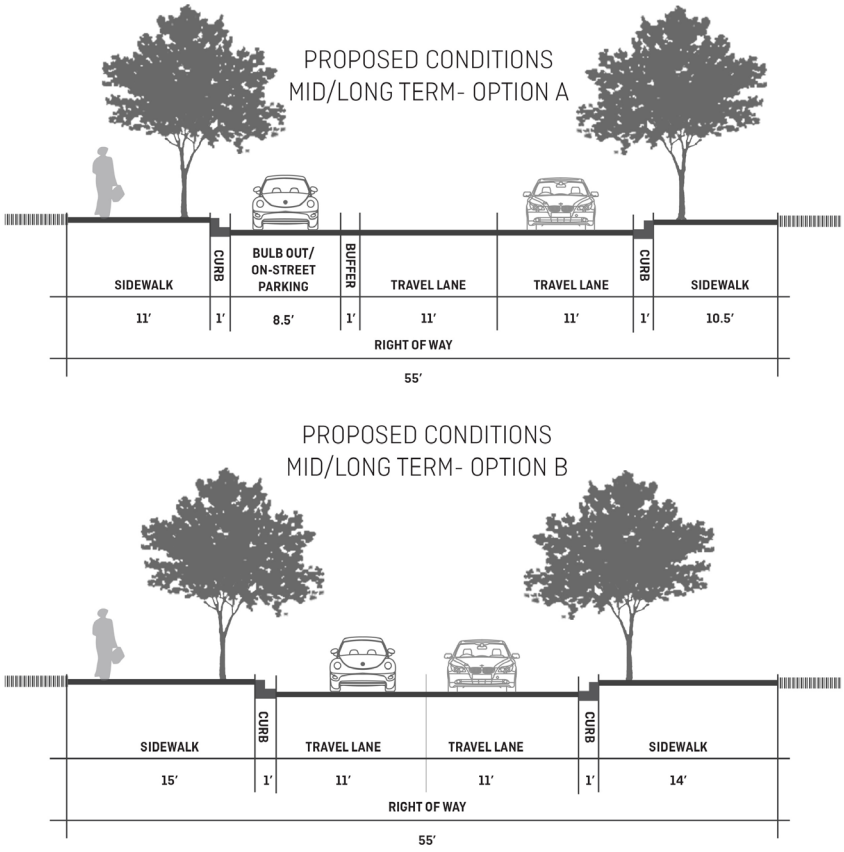


FIGURE 3.24 *Willard Street at Hughlett Avenue (West Bound)*

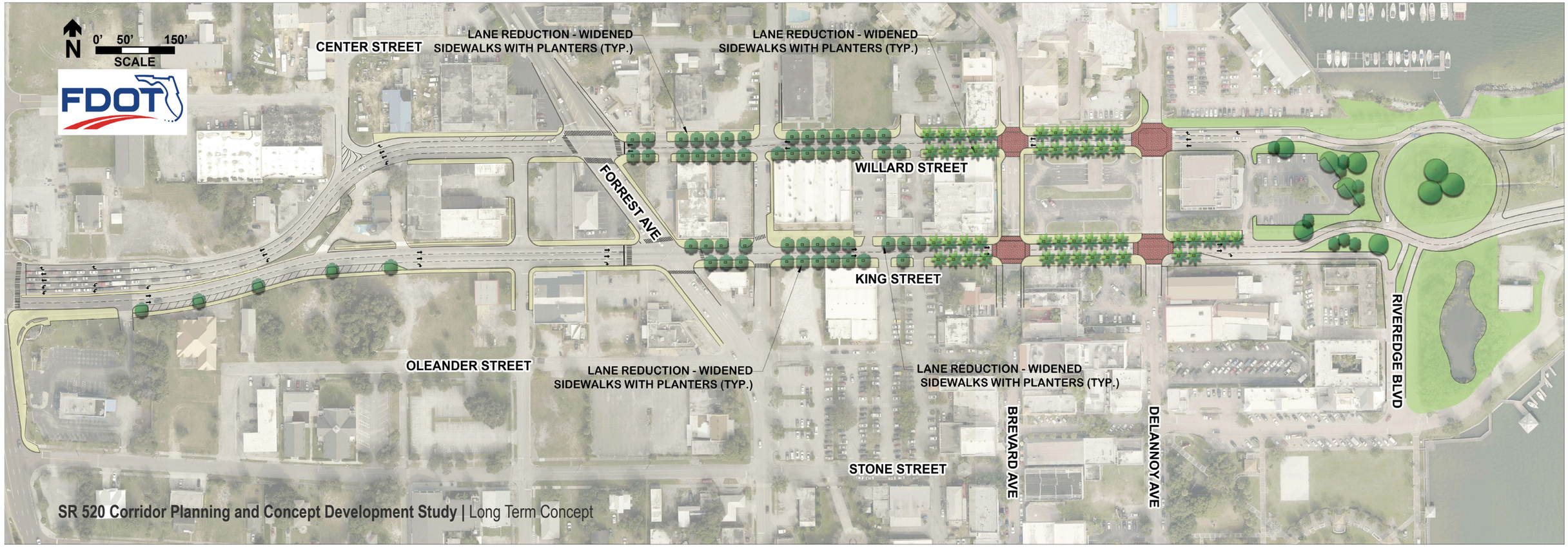


Scenario Option C

This scenario could be designed in conjunction with either Option A or Option B as described above. It involves construction of a roundabout centered on Riveredge Boulevard that would serve as a gateway element and provide new options for continuous ingress/egress to SR 520. Its configuration would also slow traffic, especially westbound off the Indian River Bridge – a lane shift would redirect the driver's cone of visibility and eliminate the current tunnel vision along SR 520 that drivers currently experience. A gateway can be incorporated and the roundabout can become a central organizing feature of the corridor and entryway for Cocoa Village.

FIGURE 3.25 *Mid/ Long Term Scenario- option C (Rounabout at Riveredge Boulevard)*

FIGURE 3.26 *Mid/ Long Term Scenario-Streetscape*



5. POTENTIAL VISION STRATEGIES

The vision scenario covers potential strategies that are beyond the scope of this project, but that have been considered through stakeholder discussion and in the context of larger vision projects. These strategies include:

- Structured parking: The City has long discussed structured parking with ground floor commercial uses in the existing surface lot between Oleander Street and Stone Street adjacent to City Hall. Structured parking would cut down traffic recirculation, concentrate land and resources needed to park Cocoa Village uses, and reduce vehicle conflicts with pedestrians and bicyclists. Structured parking would also be a perfect place for long-term bicycle storage and electric vehicle charging stations.
- Bus Rapid Transit (BRT) and transit center: Although it is unfunded and not a part of the latest LRTP, Space Coast Area Transit has started to explore the long-term possibility of complementing existing transit service with new BRT routes. One of the new routes evaluated is SR 520, with BRT detouring into Cocoa Village, where a centrally-located multimodal transit station would be located. This station could be integrated into the design of the proposed parking garage and feature complementary retail uses as well.
- Regional train service connections: There has been discussion of regional commuter rail service utilizing the FEC railroad tracks west of the study area, with a station located near Stone Street. This station would bookend with the transit center to enhance Stone Street as a multimodal corridor, effectively extending the downtown area and creating a new node of neighborhood development.
- "Complete Streets" expansion: Complete Streets projects are currently underway on Peachtree Street and Florida Avenue and the program should be expanded to other streets to create a connected system. Complete Streets is an approach that encourages roadways to be planned, designed, operated and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation, be it walking, bicycling, driving, riding public transportation or delivering goods.
- Boardwalk extension: One of the ways to connect areas north and south of SR 520 and provide access to recreational and open space amenities would be to create a continuous boardwalk starting at Peachtree Street on the north (where Complete Streets treatments are being designed), running east around the point, and connecting to the existing boardwalk in Lee Wenner Park.

MID/LONG TERM SCENARIO DESIGN

The following information details specific design recommendations for elements of the scenario plans.

Pedestrian

- Street trees: As roadway cross-sections are reconfigured and sidewalks are widened, street trees become a more permanent and prominent element of the streetscape along the corridor and a primary provider of shade.
  - Application: Canopy trees should be located along all sidewalks.
  - Details: Trees should be located in the Furnishings Zone (as described earlier in this report), with species form selected to provide a continuous canopy at maturity.

    -Trees should be located a minimum of 40-feet from each other and three-feet from the curb. Trees can be clustered to minimize obstruction of views to retail uses.

    - Placement should respect building storefronts and signs. Trees should be arranged in a manner that frames building facades.

- Trees at intersections should be planted at least 25-feet away from the corner to allow for adequate line of sight in all directions.
- Street trees should be no closer than 12-feet from a street light.
- Where there is on-street parking, tree locations should be coordinated with parking stall lines to minimize conflicts with vehicle doors.
- Tree grates with perforated rings should be used to accommodate tree growth.

- Sidewalk: Wider sidewalks help create an organized, walkable, pedestrian-friendly environment that encourages people to get out and explore. A public realm framed by buildings with walkable blocks and quality sidewalks and public spaces that include lighting, seating, and landscape provides opportunities for shopping and dining, and gathering spaces to sit, relax, and people watch.
  - Application: Sidewalk widening will be accomplished as part of the King Street and Willard Street roadway reconfigurations.
  - Details: Simpler paving design is more compatible with diverse building styles and better unifies the various design elements found along the street. The color of brick and concrete pavers should coordinate with building architecture and adjacent streetscape pavements. Colored concrete is not recommended for sidewalks. Weathering makes it nearly impossible to match when sidewalk repairs are necessary. Materials that have an uneven surface should be avoided in pedestrian areas.
- Streetscape elements: The use of similar streetscape elements along the corridor helps create organization and provides greater visual continuity. A basic palette with simple designs and clean lines can help highlight the overall theming of the area.
  - Application: Streetscape elements should be provided in all areas where the public realm is changing due to roadway reconfiguration and other improvements.
  - Details: Streetscape elements may include street trees, lighting, signage, benches, trash receptacles, bike racks, kiosks, public art, planters, bollards, and bus shelters.
    - Furnishings should be styled and scaled to complement architecture.
    - Seating should be located in an aesthetically pleasing environment receiving good natural light and adequate air flow.
    - Seating is best located near street corners, mid-block spaces, bus stops, and other desirable resting locations.
    - Seating location should not create unsafe obstructions for such things as building entrances and utilities.
    - Trash receptacles should be placed convenient to seating areas, but not directly against any individual seat.
    - Pedestrian lighting should be decorative and of a lower intensity and height so that the effect is comfortable for the pedestrian.
    - Furnishings and street lights should be coordinated in style, color, and finish.

Bicycle

- Bike parking: Long-term bicycle parking accommodates bicyclists for stays longer than two-hours or people who travel regularly to the same destination such as work or home. When bicyclists stay for a longer period of time, their needs and expectations of security increase. Security and weather protection become more important than convenience and proximity.
  - Application: Locations for long-term bicycle parking include shelters secure enclosures, lockers or cages inside a building on the ground floor and/or designated areas within a work or living space. In mixed-use developments, parking for residents and commercial users should be separated. All parking structures, whether public or private, should be required to provide designated parking and storage areas for bicycles.
  - Details: Long-term parking should be covered and/or enclosed to protect from the elements. It can be located further away from the primary building entrance than short-term parking as long as it is secure and there are signs directing users to the location.

Roadway

- Bulb out: Bulb outs will be installed in the right-hand lane, reducing the travel lanes from three to two.
  - Application: Bulb outs will be installed on King Street between US 1 and Hughlett Avenue.
  - Details: The area between the bulb outs will be striped only – no on-street parking or loading will be allowed in this area.
- Textured intersection pavement: In urban areas, intersections can have a place-making function as well as a transportation function. An intersection with textured pavement denotes prominence and establishes a greater pedestrian presence at key locations by bringing the visual cues of the public realm into the roadway. The visual cues and pavement texture increase recognition of the crosswalk area by vehicles and alert motorists to look for pedestrians. The textured surface helps promote a sense of arrival and improve safety by slowing vehicles to a speed more appropriate to the context of the area.
  - Application: Textured pavement is proposed for King Street and Willard Street at the Delannoy Avenue and Brevard Avenue intersections.
  - Details: Pavement materials should fit the theme and style of Cocoa Village. Both rigid and flexible construction techniques should be considered, depending on FDOT design guidelines. Scored and colored concrete that replicates the appearance of textured pavement may provide a viable alternative to brick paving where significant truck or bus turning maneuvers occur. The following elements should be evaluated in choosing textured pavement:
    - Design traffic
    - Subgrade stability
    - Environmental factors
    - Pavement and surface material options
    - Construction and maintenance

- US 1 intersection: Motorists traveling northbound on US 1 wishing to turn right (eastbound) onto SR 520 in the slip lane create two safety issues. First, turning motorists are looking at traffic and often do not pay attention to pedestrians in the marked crosswalk. Second, there is often a conflict with northbound motorists turning right and southbound motorists turning left at the same time.
  - Application: SE quadrant of the US 1/SR 520 intersection
  - Details: The slip lane should be eliminated. The northbound US 1 right travel lane will then accommodate both through movements and right turns and be subject to the stop/go cycles of the traffic signal. The sidewalk will be widened, making pedestrians more visible to vehicles. The minimum turning radius at the intersection should be 50-feet.
- Pavement marking/signage: Pavement markings and corresponding signage will need to be installed to inform motorists of new "Right Turn Only " lanes.
  - Application: The new lanes are located eastbound at Hughlett Avenue and Forrest Avenue.
  - Details: All messaging should conform to standard FDOT design guidelines in terms of materials, construction, and placement.

Transit

- Rider pick-up signs: Space Coast Area Transit has identified a number of amenity improvements in their TDP, including passenger push-button signs that will illuminate to notify operators when passengers are waiting at stops.
  - Application: Rider pick-up signs should be installed at all bus stops in the project corridor.
  - Details: Signs should be solar-powered and located in clear view of approaching buses. Signs should be integrated into the design of shelters if possible.

Miscellaneous

- Gateway feature: Gateways announce arrival to the Cocoa downtown area along the SR 520 corridor. Their main purpose is to create a sense of place and boundary. Gateways are often undervalued as part of the wayfinding system, but they have the potential to impact visitor perceptions. They not only serve as an introduction to the area itself, but to the style and mood of the corridor.

  Each entry into the corridor should be marked with a gateway feature – a combination of architecture and open space such as a monument sign, sculpture, public space, art installation or combination of elements – that tells visitors they are arriving in a special place and begins the branding and identity of the corridor.
  - Application: There should be two levels of gateway features for the corridor. The primary gateway should announce arrival into Cocoa. The monuments existing eastbound at the SR 520/US 1 intersection should be duplicated westbound near the end of the Indian River Bridge where the small "City of Cocoa" sign sits now. The secondary gateway should announce arrival into Cocoa Village. Eastbound, the gateway should be located where SR 520 splits into King and Willard Streets. Westbound, the gateway should be located near Riveredge Boulevard. Although the exact placement may be different either with or without the roundabout, the general location would remain the same.
  - Details: Each secondary gateway should be marked with an identifying feature – a combination of architecture and landscaping such as a monument sign, sculpture, public space, art installation or combination of elements – that tells visitors they are arriving in a special place and begins the branding and identity of the corridor.

- Rain garden: Curbside rain gardens are small, shallow, planted depressions that collect and filter runoff from adjacent paved areas. They are a component of LID, low impact development, an ecologically-based stormwater management approach that uses various techniques to infiltrate, filter, store, and evaporate runoff close to its source. Rain gardens planted with native plants benefit the urban environment, beautify the streetscape, and serve as a planted buffer between the sidewalk and roadway, creating a safe and pleasant place for people to walk.
  - Application: Since LID is a fairly new approach, a demonstration project could be appropriate as part of the Complete Streets improvements planned for Florida Avenue, possibly for the block between King Street and Willard Street or the block between King Street and Oleander Street.
  - Details: Rain gardens should be designed with the following in mind:
    - It should be located at least 10 feet from a building and 5 feet from utilities.
    - The infiltration surface area (bottom of rain garden) should be approximately 10% of the area draining to it.
    - Maximum ponding depth is 3 inches.
    - Plants should have a maximum height of 3 feet; plants within 10 feet of a driveway or 30 feet of an intersection should have a maximum height of 24-30 inches.
- Electric Vehicle Charging Station: Electric vehicles provide low carbon, highly efficient, and cost-effective transportation. As their use becomes more popular, the infrastructure for their charging will need to become more readily available. While most users charge their vehicles at home during overnight hours, charging opportunities away from home are needed to allow longer trips that increase the use for existing owners and the confidence future car buyers.
  - Application: Primary locations for electric vehicle charging stations includes City Hall, the Cocoa Village parking lot north of City Hall, and Harrison Street adjacent to Riverfront Park. Stations should be included with any parking garage constructed. This will be especially important if the garage is located adjacent to the future multimodal center.
  - Details: The majority of charging stations will be installed in parking lots and garages where access can be controlled, longer charging sessions can be provided, and proximity to moving traffic is not a safety issue. See table 3.1 for considerations for locations along the project corridor.

TABLE 3.1 *ELECTRIC VEHICLE CHARGING DETAILS*

	LEVEL 1 (120V)	LEVEL 2 (208/240V)	DC FAST CHARGING
CHARGING TIME	5-10 hours	1-4 hours	30-45 minutes
RANGE PER HOUR OF CHARGING	5 miles	10-20 miles	75+ miles
PRIORITY LOCATIONS	Employee parking, long-term parking	Shopping area parking lot	Near high volume roadways

IMPLEMENTATION

4

4 Implementation

Implementing this Plan will require a coordinated effort among many local, regional, and state agencies over the coming years.

A. STRATEGIES

Implementation strategies for advancing corridor scenario recommendations should be formulated considering safety and operational needs, multimodal transportation needs, and potential partners and funding options.

1. TIMELINE

The targeted horizons demonstrate the suggested time frame for implementation, identifying short-term (0-3 years), mid/long-term (3-7 years), and vision (7+ years) projects and priorities.

2. FUNDING

The Short Term scenario will be initiated by FDOT, with City of Cocoa and other agency participation. The Mid/Long Term scenario will require funding beyond FDOT – these strategies will be led by the City of Cocoa/CRA in support of existing policies and projects. The Vision scenario describes long-range projects that are beyond the scope of this work, but that will influence other projects.

3. SYNERGIES

This Plan is intended to be a living document and it will subject to change as it is tested against assumptions among the partners and stakeholders, potential development trends along the corridor, and within the context of larger regional projects and priorities. It will be critical at all times to keep momentum and a focus on the Plan to capitalize on unforeseen opportunities that may arise if they are consistent with the overall vision of the corridor.

B. COSTS

The following matrixes identify projects and planning level costs associated with each of the scenarios:

TABLE 4.1 *Mid/ Short-Term Scenario Planning Level Costs*

Short Term Scenario						
No.	**Project**	**Qty.**	**Units**	**Unit Cost**	**Total Cost**	**Priority**
Pedestrian						
P1	Street trees in planters	20	EA	$2,000	$40,000	Mid
P2	Curb ramp	2	EA	$1,500	$3,000	High
P3	Tactile warning strip	8	EA	$400	$3,200	Mid
P4	Sidewalk	3,500	SF	$10	$35,000	Low
P5	Crosswalk – continental style	110	LF	$50	$5,500	Mid
P6	Crosswalk – patterned surface	500	LF	$120	$60,000	High
Bicycle						
B1	Bicycle rack	4	EA	$500	$2,000	Low
Roadway						
R1	Bulb out	16	EA	$4,000	$64,000	High
R2	On-street parking signage	6	EA	$200	$1,200	Mid
R3	Traffic separator	325	LF	$40	$13,000	High
Transit						
T1	Bus stop amenities (per stop)	4	EA	$4,000	$16,000	Mid
T2	Shelter	4	EA	$7,500	$30,000	Low
T3	Sidewalk – patterned surface	600	SF	$15	$9,000	Low
Miscellaneous						
M1	Wayfinding signage	4	EA	$2,000	$8,000	Mid
TOTAL					**$289,900**	

TABLE 4.2 *MID- AND LONG-TERM SCENARIO PLANNING LEVEL COSTS*

Mid/Long Term Scenario						
No.	**Project**	**Qty.**	**Units**	**Unit Cost**	**Total Cost**	**Priority**
Pedestrian						
P7	Street tree in grate	110	EA	$2,000	$220,000	High
P8	Sidewalk	25,000	SF	$10	$250,000	High
P9	Bench	14	EA	$1,500	$21,000	Mid
P10	Trash receptacle	14	EA	$1,000	$14,000	Mid
P11	Lighting	50	EA	$2,500	$125,000	Mid
P12	Irrigation (street tree pits)	110	EA	$80	$8,800	High
Bicycle						
B2	Bike shelter	2	EA	5,000	10,000	Low
Roadway						
R4	Bulb out	5	EA	$5,000	$25,000	High
R5	Pavement marking	600	LF	$5	$3,000	High
R6	Signage	2	EA	$300	$600	High
R7	Textured pavement	7,200	SF	$25	$180,000	Mid
R8	US 1 intersection improvement	1	EA	$100,000	$100,000	Mid
R9	Roadway reconfiguration	2,600	LF	$600	$1,560,000	High
R10	Roundabout	1	EA	$600,000	$600,000	Mid
Transit						
T4	Rider pick-up signal	4	EA	$1,500	$6,000	Mid
Miscellaneous						
M2	Gateway	2	EA	$25,000	$50,000	Mid
M3	Rain garden	500	SF	$10	$5,000	Low
M4	Electric vehicle charging station	3	EA	$5,000	$15,000	Low
TOTAL					**$3,193,400**	

C. ACTION PLAN

Implementing the corridor plan will be accomplished through strategic actions that organize the vision into achievable and actionable steps that can be undertaken over time.

1. MEASURING SUCCESS

The Plan provides a range of recommendations so that as priorities or opportunities arise, the City can make progress in transforming the corridor so it can achieve its full potential and community vision. The actions identified are those most important to initiating change. Over time, the City of Cocoa will need to check in and track its collective progress towards achieving the corridor vision. To ensure implementation is sustained over the long time periods required for transformation and redevelopment, the City should establish a review of the progress in achieving the desired community outcomes.

It is recommended that the City establish a short list of indicators and benchmarks that it can report progress toward on an annual basis to demonstrate the benefits of improvements and changes along the corridor. This will be an important tool to keep focus on the vision as time elapses and there is turnover in elected officials, appointed officials, and staff who have been involved in the planning process, and will help cultivate new champions for the vision and its recommendations as they evolve.

Examples of potential indicators or benchmarks to track may include:

- Walkability score (see www.walkscore.com or www.walkableamerica.org for additional information)
- Number of crashes
- Linear feet of street frontage with streetscape improvements
- Number of intersections improved with pedestrian amenities
- Number of bus stops upgraded

2. NEXT STEPS

The next steps for the SR 520 project will be for the City/TPO and FDOT to develop a timeline for design and construction of the short-term scenario improvements (such as bulb-outs). Based on that schedule, the City can begin to program other components of the corridor recommendations into their CIP. They will need to work through the TPO process to incorporate the mid- and long-term scenarios, including the roundabout, into the projects priorities for funding, using the transportation improvement program of the TPO.

SR 520

SR 520 Summary & Implementation Report | August 2016

FDOT