



SR 520 from US 1 to Indian River Purpose and Need Statement

Purpose

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. SR 520 is a six-lane urban principal arterial with a posted speed limit of 35mph, and is made up of two one-way roads (Willard and King Streets). The purpose of this proposed project is to maintain SR 520 corridor's auto mobility functionality, as measured by speed and travel times, while mitigating conflicts with pedestrians and bicyclists in downtown Cocoa. With over 23,000 vehicles traveling through the corridor per day, it is a major regional traffic route but also has local significance as well. The roadway acts as both a physical and psychological barrier in downtown Cocoa, making connections and interactions north and south of the roadway challenging.

Project Need

SR 520 is identified as a Priority Regional Corridor by the Space Coast Transportation Planning Organization. The need for the proposed project is based on the following criteria:

Figure 1- Study Area





Primary Criteria

Safety: Enhance Safety Conditions

The safety ratio of the SR 520 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 2015. During this five year period, there were 579 crashes involving vehicles with 263 injuries and no fatalities. Crash types at signalized intersections in the study corridor include: rear end, head on, angle, sideswipe, and other. Crash types vary by intersection, indicating that safety improvement strategies will need to differ.

There were 15 crashes involving bicyclists and pedestrians. Locations with the most crashes involving bicycles and pedestrians occur at Brevard Avenue, Delannoy Ave, and Riveredge Boulevard, where there are high approach speeds and pedestrian traffic. These types of crashes tend to increase towards midday hours and between the hour of 3PM and 4PM. In addition, it is very difficult for pedestrians to cross at the Florida Avenue and Forrest Avenue intersections with the high speeds of SR 520, short pedestrian signals for crossing and inadequate corner areas for pedestrians to wait. The existing pedestrian waiting area has just enough room for one person.

Some of the key safety-related issues within the corridor include:

- Speeding westbound – The posted speed limit is 35mph; however, automobiles often exceed 50mph coming over the causeway bridge, likely due to the anticipation of a higher posted speed limit along Merritt Island Causeway.
- Improper Vehicle Passing – Drivers improperly use the dedicated right-turn lane between the intersections of Delannoy Avenue and Riveredge Boulevard. This lane has become a passing lane for drivers to get onto the bridge faster and is a major safety concern. Locals call it the “slingshot” lane.
- Sequencing of traffic signals – There are often long stretches of continuous green lights along the corridor that encourage speeding. Drivers often miss seeing red lights because of speeding and the transition of slopes along SR 520.

It was also noted that SR 520 is also part of the emergency evacuation route network designated by the Florida Division of Emergency Management, as well as the network established by Brevard County. This roadway is critical in facilitating east-west traffic movement and evacuating residents off of Merritt Island and Cape Canaveral. The SR 520 anticipated to: enhance connectivity and accessibility to other major arterials designated on the state evacuation route network (including US 1 and I-95) and provide improved access for emergency responders.



SECONDARY CRITERIA

Area Wide Network/System Linkage: Maintain Connectivity to the Regional Network

The SR 520 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 project aims to maintain regional connectivity and mobility in the study corridor by increasing operational efficiency of the roadway.

The functionality of SR 520 is measured primarily by speed and travel time. Through travel time is a way of measuring where delay occurs in the corridor. Travel times have been calculated with the posted speed limit of 35mph and the observed speeds (85th percentile). The arterial level of service (LOS) according to the State of Florida standards in the AM/PM peak hours for eastbound King Street and westbound Willard Street below:

Table 2- Posted and Observed Travel Speeds

AM PEAK			Posted Speeds		Observed Speeds		Difference	
Roadway	From	To	Travel Time (Seconds)	Arterial Speed	Travel Time (Seconds)	Arterial Speed	Travel Time Diff	Arterial Speed Diff
SR 520 Eastbound	Fiske Blvd	SR 3	410.66	22.44	365.96	25.18	44.70	-2.74
SR 520 Westbound	SR 3	Fiske Blvd	381.96	24.32	332.78	27.91	49.18	-3.59

PM PEAK			Posted Speeds		Observed Speeds		Difference	
Roadway	From	To	Travel Time (Seconds)	Arterial Speed	Travel Time (Seconds)	Arterial Speed	Travel Time Diff	Arterial Speed Diff
SR 520 Eastbound	Fiske Blvd	SR 3	427.06	21.58	391.39	23.55	35.67	-1.97
SR 520 Westbound	SR 3	Fiske Blvd	402.56	23.07	362.20	25.64	40.36	-2.57

All of the roadway segments along the SR 520 study corridor are operating at an acceptable levels of delay with the exception of Willard Street from Delannoy Avenue to Brevard Avenue. This section of roadway experiences the most travel delay due to the merging of traffic as the roadway transitions from three to two lanes, resulting in slower average speeds (12.5 MPH) and longer travel times compared to eastbound trips.

In the eastbound direction of King Street, the opposite problem is occurring. Automobiles often exceed 50MPH between the intersections of Delannoy Avenue and Riveredge Boulevard and drivers are using the right-turn only lane to pass stopped vehicles and get onto the Merritt Island Causeway in a shorter amount of time.

A project alternative is needed to maintain adequate travel times in both directions given the posted speed limit of 35MPH.



SOCIAL DEMAND: Foster a more livable environment in downtown Cocoa through improved multimodal mobility and accessibility

The City of Cocoa envisions becoming a multimodal hub within Brevard County. In order to complete this vision, SR 520 must become a multimodal corridor that transitions from existing auto-centric patterns to providing more travel choices, such as bus rapid transit (BRT), and more housing choices. Right of way for traffic and BRT are adequate for nearly the entire length of SR 520 from west of I-95 to Cocoa Beach. A transportation mode-shift from auto-oriented trips to non-motorized forms of transportation between 10-20% is desired to promote SR 520 as a true multimodal corridor.

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 activities within proximity to the study corridor that are accessible by walking or biking and highlight the importance of non-motorized travel modes within the SR 520 corridor. One of the major attractors for residents and visitors is Historic Cocoa Village. Cocoa Village offers shopping, dining, a marina, the Playhouse for theatrical performances, and several Merchants Association festivals and events throughout the year. Additionally, there are several civic and governmental institutions, service and nonprofit institutions, churches, leisure and recreational parks and open spaces, and a school within a quarter-mile buffer of the study corridor. All of these destinations create a latent demand for increased pedestrian and bicycle activity in the area.