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Before-and-After Evaluation of Business Access and Transit (BAT) Lanes SR 693 (Pasadena Avenue) from Matthews Road/Shore Drive to Central Avenue Pinellas County, Florida

Background

The Florida Department of Transportation (FDOT), District Seven evaluated the traffic operational characteristics along SR 693 (Pasadena Avenue) before-and-after the repurposing of the outside travel lane on SR 693 (Pasadena Avenue) to form Business Access and Transit (BAT) lanes in the northbound and southbound directions of travel. These BAT lanes were developed in support of Pinellas Suncoast Transit Authority (PSTA) implementation of the SunRunner Bus Rapid Transit (BRT) service, which opened to the public on October 21, 2022.

Methodology

To perform this before and after evaluation, FDOT District Seven utilized HERE probe data from the Regional Integrated Transportation Information System (RITIS). HERE probe data comes from vehicles with Global Navigation Satellite System (GNSS) or Global Positioning System (GPS) installed, and the position of each vehicle is established using this satellite-based positioning system. HERE data evaluation metrics include average vehicle operating speeds measured in miles per hour (mph) and average travel time measured in minutes and seconds. Probe data was collected for an approximate 8-month before period (from October 21, 2018 to June 14, 2019) and an approximate 8-month after period spanning the date of the BAT lanes opening on October 21, 2022 to the most current date (June 14, 2023) for which this summary was prepared. Data was obtained for a 2.68-mile segment of SR 693 (Pasadena Avenue) from SR 699 (Blind Pass Road) to 66th Street North, as shown in **Exhibit 1**. Evaluation metrics were summarized for the weekday morning peak (6:00 AM – 9:00 AM), weekday and weekend midday peak (11:00 AM – 1:00 PM), weekday afternoon peak (4:00 PM – 7:00 PM), and 24-hour weekday and weekend time periods (12:00 AM – 12:00 AM).

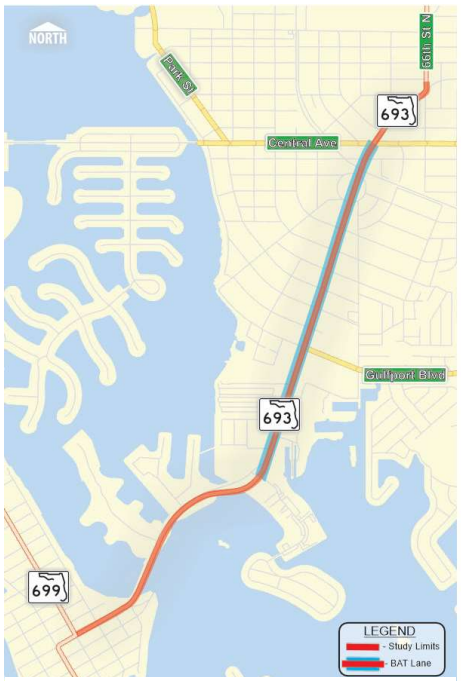

Exhibit 1: Study and BAT Lane Limits

Analysis Results

The results from the before-and-after analysis comparing average speed and average travel time for the SR 693 (Pasadena Avenue) study corridor are summarized in **Table 1** and **Table 2**, respectively. Average vehicle operating speeds on northbound SR 693 (Pasadena Avenue) ranged from a low of 24.4 mph to a high of 31.2 mph during the before period and ranged from a low of 25.6 mph to a high of 31.5 mph in the after period. Moreover, average vehicle operating speeds on southbound SR 693 (Pasadena Avenue) within the study area ranged from a low of 25.3 mph to a high of 30.2 mph during the before period and ranged from a low of 24.6 mph to a high of 31.8 mph in the after period. The posted speed limit on SR 693 (Pasadena Avenue) is 35 mph from SR 699 (Blind Pass Road) to Central Avenue and 40 mph from Central Avenue to 66th Street North. After implementation of the BAT lanes, the difference in vehicle operating speeds on northbound and southbound SR 693 (Pasadena Avenue) from the before condition is negligible. There is only a slight reduction (i.e., less than 1.4 mph difference) in speeds on SR 693 (Pasadena Avenue) with BAT lanes during the weekend midday time period.

Table 1: Before-and-After Comparison Summary – Average Speed

Analysis Time Period	Northbound SR 693 (Pasadena Avenue)			Southbound SR 693 (Pasadena Avenue)		
	Before Speed (MPH)	After Speed (MPH)	Difference Speed (MPH)	Before Speed (MPH)	After Speed (MPH)	Difference Speed (MPH)
Weekday AM Peak (6:00 AM – 9:00 AM)	31.2	31.5	0.3	30.2	31.8	1.6
Weekday Midday (11:00 AM – 1:00 PM)	24.4	25.6	1.2	25.3	26.3	1.0
Weekday PM Peak (4:00 – 7:00 PM)	26.3	26.6	0.3	26.9	27.7	0.8
Weekday (12:00 AM – 12:00 AM)	28.9	30.1	1.2	29.2	30.8	1.6
Weekend Midday (11:00 AM – 1:00 PM)	28.1	26.7	-1.4	25.3	24.6	-0.7
Weekend (12:00 AM – 12:00 AM)	30.4	31.0	0.6	29.7	30.6	0.9

Average travel times on northbound SR 693 (Pasadena Avenue) ranged from a low of 5.09 minutes to a high of 6.51 minutes during the before period and ranged from a low of 5.05 minutes to a high of 6.21 minutes in the after period. Likewise, average travel times on southbound

SR 693 (Pasadena Avenue) ranged from a low of 5.23 minutes to a high of 6.24 minutes during the before period and ranged from a low of 4.96 minutes to 6.42 minutes in the after period. After implementation of BAT lanes, the difference in average travel times on northbound and southbound SR 693 (Pasadena Avenue) from the before condition is less than 18 seconds for all analysis time periods.

Table 2: Before-and-After Comparison Summary – Travel Time

Analysis Time Period	Northbound SR 693 (Pasadena Avenue)			Southbound SR 693 (Pasadena Avenue)		
	Before Travel Time (Minutes)	After Travel Time (Minutes)	Difference Travel Time (Minutes)	Before Travel Time (Minutes)	After Travel Time (Minutes)	Difference Travel Time (Minutes)
Weekday AM Peak (6:00 AM – 9:00 AM)	5.09	5.05	-0.04	5.23	4.96	-0.27
Weekday Midday (11:00 AM – 1:00 PM)	6.51	6.21	-0.30	6.24	5.99	-0.25
Weekday PM Peak (4:00 – 7:00 PM)	6.04	5.97	-0.07	5.87	5.70	-0.17
Weekday (12:00 AM – 12:00 AM)	5.50	5.28	-0.22	5.41	5.12	-0.29
Weekend Midday (11:00 AM – 1:00 PM)	5.65	5.95	0.30	6.24	6.42	0.18
Weekend (12:00 AM – 12:00 AM)	5.22	5.13	-0.09	5.31	5.17	-0.14

The temporal distributions of average vehicle speeds on SR 693 (Pasadena Avenue) through a 24-hour period during both weekdays and weekends are graphically illustrated in **Exhibit 2** and **Exhibit 3**, respectively. The HERE probe data shows that, in general, vehicle operating speeds are higher under a BAT lanes scenario during uncongested time periods of the day, about the same during congested conditions on a weekday, and slightly lower during congested conditions on the weekend. It is worthwhile noting that lower traffic volumes following the COVID-19 pandemic could be contributing to the slightly higher speeds with BAT lanes than without BAT lanes.

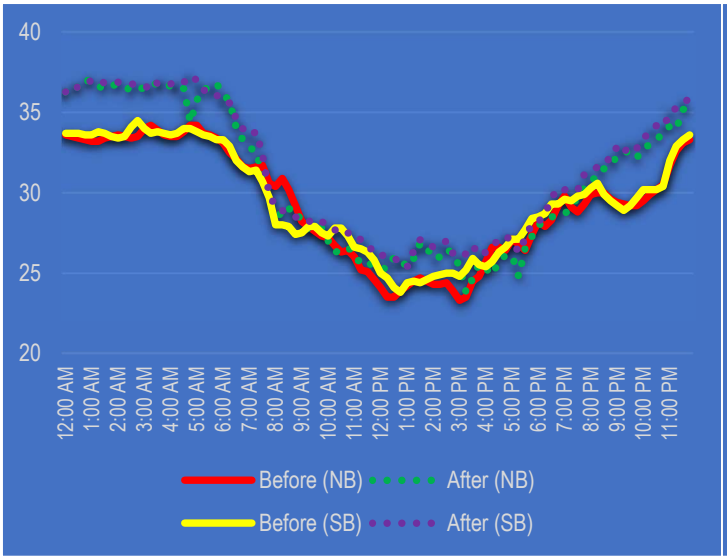

Exhibit 2: Average Weekday Speed

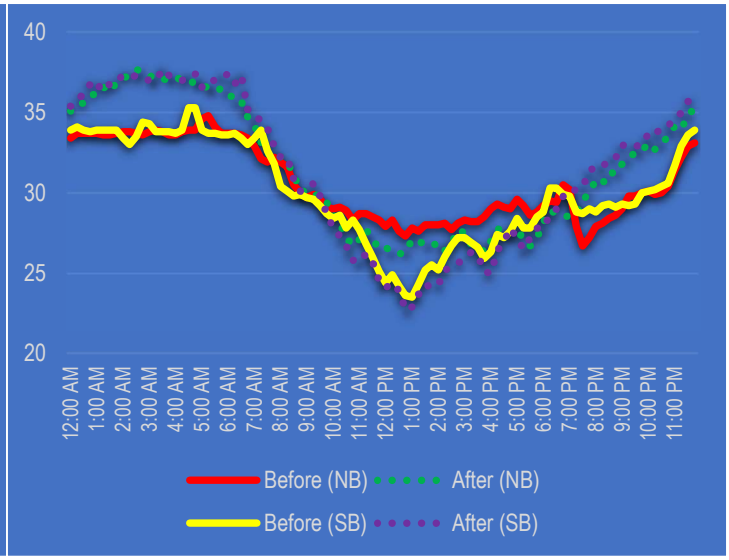

Exhibit 3: Average Weekend Speed

The results of the before-and-after analysis yielded the following conclusions:

- Average vehicle operating speeds on SR 693 (Pasadena Avenue) are at their lowest and travel time is at its highest during the midday time period. This is likely due to a combination of land use and socio-demographic factors including, but are not limited to: the influence of recreational beach traffic, a higher proportion of retirement age (non-commuter) population, and commercial activities centered around lunch time dining and shopping;
- Average vehicle operating speeds on SR 693 (Pasadena Avenue) before and after the implementation of BAT lanes are similar, as the greatest difference in speed during the time periods analyzed is less than 1.4 mph;
- The highest observed travel time on SR 693 (Pasadena Avenue) occurred during the midday time period on a weekend. With the BAT lanes in place, motorists experienced less than an 18-second increase in travel time to traverse the 2.68-mile section of roadway; and
- With the implementation of BAT lanes, average speeds on SR 693 (Pasadena Avenue) are greater than 24.6 mph for both directions of travel and for all time periods analyzed. According to Exhibit 16-3 from the *Highway Capacity Manual, 6th Edition*, average travel speeds greater than 20 mph provide a Level of Service (LOS) C or better for a posted speed limit of 35 mph.