City of Santa Barbara
Transportation & Circulation Committee
Staff Report

DATE: June 24, 2021

TO: Transportation & Circulation Committee (TCC) Members

FROM: Derrick Bailey, Principal Transportation Engineer

SUBJECT: Chapala Street Vision Zero Safety and Paving Project

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RECOMMENDATION

That the Committee receive a report and presentation on the Chapala Street Vision Zero Safety and Paving Project, and find the project consistent with the Bicycle Master Plan, the Pedestrian Master Plan, and the Vision Zero Strategy.

DISCUSSION:

Prior to pavement maintenance projects, staff reviews collision records and traffic operations for opportunities to incorporate cost effective safety changes into the maintenance efforts. Pavement maintenance is scheduled on Chapala Street between Sola and Mission Streets in late 2021 (Attachment 1: Project Location Map). Staff proposes the following operational changes to address collision patterns identified in the Vison Zero traffic collision safety analysis:

- A new traffic signal and improved lighting at the intersection of Chapala and Arrellaga Streets to address a pattern of broadside collisions; and,
- Reducing Chapala Street from two lanes to one lane between Arrellaga Street and Mission Street to address patterns of intersection related broadside collisions and collisions into parked vehicles.

While the purpose of the project is to address the pattern of broadside and sideswipe collisions, the changes present an opportunity to improve safety and mobility for pedestrians and cyclists. Pedestrians benefit as they only have to cross one vehicular lane at three intersections, and the lane reduction allows for the addition of an on-street buffered bike lane. A tradeoff with the lane reduction proposal is the net removal of seven unrestricted parking on-street spaces on Chapala Street near Mission Street. There will also be a slight increase in side street delay and corridor travel time.

Background

The Santa Barbara Vision Zero Strategy, which was unanimously adopted by Council on September 11, 2018, aims to eliminate all traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility for all. Traffic collision data from the last 10

years are analyzed to identify Priority Corridors with the highest concentrations of fatal and severe traffic collisions, and where transportation efforts and investments can have the greatest results. Based on collision records, Chapala Street is a Vision Zero Priority Corridor.

Staff performed a Vision Zero traffic collision analysis within the paving project limits along Chapala Street between Sola to Mission Streets to identify any collision patterns and opportunities to eliminate collisions. The City has also received numerous requests to improve traffic safety in the area.

A new traffic signal is already planned for the Chapala Street and Sola Street intersection as part of a separate project, so the focus of the investigation is the segment between Micheltorena and Mission Streets. The five year collision analysis from 2015 to 2019 revealed there were 32 traffic related collisions resulting in 19 injuries between Micheltorena and Mission Streets. The highest location is at the intersection of Chapala and Arrellaga Streets, which had 7 broadside collisions. The remaining collisions were generally spread out along the corridor and not concentrated at any specific location. Refer to Attachment 2 for the detailed collision analysis.

This segment of Chapala Street is largely residential. Attachment 3 provides a comparison of collision rates to other one-way streets through residential or mixed use areas. This segment of Chapala has the second highest collision rate of the comparable one-way streets.

Proposed Safety Changes

The configuration for the proposed changes is shown in Attachment 4.

A new traffic signal and improved intersection lighting is proposed at the intersection of Chapala and Arrellaga Streets. This will address the pattern of broadside collisions at the intersection.

Chapala Street is proposed to be restriped from two travel lanes to one traffic lane plus a buffered bike lane from Arrellaga Street to just south of Mission Street. The one-lane configuration will address the patterns of collisions elsewhere along the corridor:

- One lane will promote slower traffic speeds, which will reduce the frequency of severity of collisions.
- The single traffic lane will be positioned several feet off the west side parking lane, which will improve sight lines between drivers on Chapala Street and drivers on side streets, thus reducing broadside collisions at Valerio, Islay, and Pedregosa Streets. This will also reduce the frequency of collisions involving parked vehicles.

The single lane configuration will also make it safer and easier for pedestrians to cross Chapala Street. The multiple threat condition is eliminated with a single lane configuration (where a driver stopping in one lane to permit a pedestrian to cross, and a driver in the adjacent lane does not stop).

Traffic Performance and Capacity Discussion

A traffic signal at Chapala and Arrellaga Streets will be consistent with the traffic controls along both streets. On Chapala Street, most intersections to the south have traffic signals. The new signal will be timed to provide a 25mph "green wave" for northbound Chapala Street traffic. On Arrellaga Street, the Chapala Street intersection is currently the only intersection from State Street to the northbound Highway 101 ramps that is not either traffic signal or all-way stop sign controlled.

For other recent lane reduction projects in Santa Barbara, field studies were performed to test the viability of the lane reduction. For example, on Anacapa Street (implemented in 2020), a traffic lane was closed for a day and traffic counts and measurements were taken and compared to a computerized traffic model.

For this proposal on Chapala Street, a day long lane closure was not done since the traffic volumes during the pandemic were about 20 percent below pre-pandemic volumes. Staff was able to compare this segment of Chapala Street to other one-lane streets (pre-pandemic volumes) through a computerized traffic modelling effort.

Table 1, below, compares the traffic volumes on this segment of Chapala Street with other one lane projects.

Table 1: Traffic Volumes On Other One Lane Projects

Street	From/To	Daily Traffic Volume	PM Peak Hourly Traffic Volume	Comments
Chapala	Arrellaga to Mission	5,400	670	Various traffic counts along Chapala Street were performed between 2015 and 2019 and were utilized for this analysis.
Anacapa	Mission to Micheltorena	5,900	700	Implemented 2020
De La Vina	Constance to Padre	8,900	800	Implementation summer 2021. This was studied in 2019 (prior to pandemic) and approved by City Council in 2020.
Bath	Carrillo to Micheltorena	4,600	500	Implemented 1970's

Table 2, below, shows the results of a traffic modeling effort to quantify corridor travel time on Chapala Street between Micheltorena to Mission Streets, and side street delay for both two lane and one lane conditions. Side street delay is an important metric for consideration because with traffic on Chapala Street concentrated into one lane, there will be fewer gaps for side street traffic.

Overall corridor travel time will likely increase an average of about 10 seconds. Side street delay at Valerio Street, Islay Street, and Pedregosa Street will increase an average of about 1 to 2 seconds. At Arrellaga Street, side street delay will increase an average of about 10 to 15 seconds due to the installation of a traffic signal.

Table 2: Expected PM Peak Traffic Performance

Performance Metric		Existing Conditions (Two Lanes)	Traffic Signal at Arrellaga and One Lane Configuration	Difference
PM Peak Travel Time (Sola To Mission)		144.3s	153.5s	+9.2s
PM Peak Side Street Delay (Average)	WB Arrellaga	13.9s	27.3s	+13.4s
	EB Arrellaga	14.7s	23.9s	+9.2s
	WB Valerio	9.9s	13.2s	+3.3s
	EB Valerio	10.3s	10.6s	+0.3s
	WB Islay	8.7s	9.7s	+1.0s
	EB Islay	8.6s	9.5s	+0.9s
	WB Pedregosa	8.5s	10.2s	+1.7s
	EB Pedregosa	8.4s	9.5s	+1.1s

Bike Lanes vs. Shoulders (Buffers)

By removing one vehicular travel lane, there will be eight to ten feet of unused space of pavement (depending on the block). There are two options to utilize the extra space: install a buffered bike lane (a bike lane with a striped buffer separating the bike lane from travel lane similar to Bath Street), or install shoulders (striped buffers on either side of the travel lane similar to Anacapa Street).

On Anacapa Street, shoulders (buffers) were installed. The traffic lane was kept in the middle of the street and shoulders (buffers) were installed on either side. The benefits for this configuration include superior sight lines for drivers on Anacapa Street and side streets because drivers are centered in the street, reduced collisions involving parked vehicles, and space to open parked vehicle doors. Cyclists can use the shoulder area, which is the same width as a bike lane, but the shoulder space is not specifically marked for cyclists. This configuration was chosen over a buffered bike lane (similar to Bath Street) because a bike lane on Anacapa Street would not connect to any of the City's existing or proposed bike network. We have heard from cyclists that they would have preferred a buffered bike lane configuration even though it would not connect to another cycling facility. The City will revisit this configuration the next time Anacapa Street is resurfaced.

On Chapala Street, a buffered bike lane configuration with a six-foot wide bike lane and 2-foot wide buffer (similar to Bath Street) would connect to the existing Chapala Street bike lane north of Mission Street. This would create a continuous bike lane from Arrellaga Street to Constance Avenue, and provide a good connection to existing and proposed bike lanes on upper De La Vina Street.

The proposed bike lane on Chapala Street was not identified in the Bicycle Master Plan (BMP). The route identified in the BMP to close a gap between Downtown and upper De La Vina Street is via State Street to Padre Street. Given the opportunity presented by the Project, this route will likely be preferred by cyclists due to less climbing or topography gain and wider, more comfortable bike lanes. Several blocks on northbound State Street have significant uphill grades. A route elevation change analysis was performed. Net climbing on State Street is about 61-feet with a maximum 4.9% grade versus 37-feet and a maximum 2.5% grade via Chapala Street. Attachment 5 illustrates the northbound gap closure and climbing analysis.

Need for Parking Removal

The traffic capacity analysis revealed that one lane can accommodate traffic on Chapala Street between Arrellaga Street to just south of Mission Street. However, two northbound lanes of traffic are needed at the intersection of Chapala and Mission Streets. The traffic signal at intersection of Chapala and Mission Streets favors Mission Street due to higher traffic volumes and the amount of green time needed to clear queues on Mission Street. This leaves a limited amount of green time available for Chapala Street. With only one northbound lane on Chapala Street at Mission Street, queues will form during the PM peak that are nearly a block long.

There are two options to provide two northbound lanes on Chapala Street at Mission Street:

1. End the bike lane just south of Mission Street and begin the bike lane again north of Mission Street where the street will taper back to one northbound lane. This creates a “conflict point” where through traffic and cyclists will merge and share space. This will be the most likely place that collisions will happen between cyclists and vehicles. This configuration is inconsistent with Vision Zero principles to prioritize and maximize safety.
2. Continue the bike lane to the Mission Street intersection. In order to provide two northbound lanes plus the bike lane, parking removal will be required along the west side of Chapala Street to create enough room for the second northbound lane. Approximately eight parking spaces will have to be removed along the west side of Chapala Street. One parking space can be added on the east side of Chapala Street, creating a net loss of seven parking spaces in the vicinity.

The seven parking spaces proposed for removal are unrestricted, meaning there is no time limit other than the citywide 72 hour parking rule. Unrestricted parking spaces are typically used by nearby residents overnight, who leave during the day to go to work or school. The unrestricted spaces are typically used by employees of nearby businesses during the day.

Community Feedback

On Wednesday, June 16th, the City hosted a public webinar to describe the planned changes. The meeting was advertised through a media press release, City News In Brief, and NextDoor. Posters were placed at each intersection along Chapala Street from Michetorena Street to Mission Street, and a project web site was created.

Preliminary feedback from residents that live on or near Chapala Street are generally supportive of the overall project. Other comments included:

- Not supportive of parking removal.
- Would like to see more speed control incorporated into the project.
- Concerned about possible congestion in the 1900 block (between Pedregosa and Mission Streets).

PLAN AND POLICY CONSISTENCY

Bicycle Master Plan

Although this project was not identified in the Bicycle Master Plan, the Project is consistent with policies in the BMP:

- 1.1 The City shall integrate the safety needs of people bicycling into all City roadway projects.
- 2.1 Through implementation of the Bicycle Master Plan, the City shall expand the bikeway network and close gaps in the existing system.
- 4.1 The City shall use leading-edge practices in the Bikeway Facility Design, while also considering the context-sensitive design appropriate for Santa Barbara.

Pedestrian Master Plan

The Project is consistent with Pedestrian Master Plan policies:

- 1.2 The City shall improve pedestrian comfort and safety at intersections.

Vision Zero Strategy

The Project is consistent with the Vision Zero Strategy by incorporating collision reducing features into roadway maintenance projects.

Next Steps
TCC's recommendation will be shared with City Council. Staff has been bringing all Vision Zero Paving Projects to Council that result in a change in roadway configuration.

ATTACHMENTS:

1. Project Area Map
2. Traffic Collision Data
3. Santa Barbara One Way Street Collision Rates
4. Map of Proposed Changes
5. Northbound Cycling Gap Closure and Climbing Analysis