



## MEMORANDUM

**Date:** April 13, 2023 **GTS:** 190507.8  
**To:** City of Hermosa Beach  
**From:** GTS  
**Subject:** Benefits of lane reconfiguration for outdoor dining on Hermosa and Pier Avenues

This memo discusses the benefits of the lane reconfiguration that was implemented in 2020 on Hermosa and Pier Avenues in the City of Hermosa Beach. The reconfiguration removed one lane of traffic in each direction and added bicycle lanes. The study area is shown in Figure 1.



Figure 1. Study area map

## **Background**

Lanes were reconfigured in 2020 on Pier Avenue from Palm Drive to Bard Street (0.25 mile) and on Hermosa Avenue from 8<sup>th</sup> Street to 14<sup>th</sup> Street (0.3 mile). Both road segments are commercial areas with a high density of restaurants and bars.

Prior to the reconfiguration, each of the road segments had two travel lanes in each direction (not including turn lanes). The travel lanes on Hermosa Avenue were 12 feet wide, and the travel lanes on Pier Avenue varied between 10 and 12 feet. As an example, a portion of the reconfiguration is shown in Figure 2 below. Concurrently, restaurants were permitted to convert adjacent on-street parking spaces for outdoor dining, constructing dining decks, as can be seen in the figure below. In the reconfigured street cross-section, there is one vehicular travel lane in each direction, about 11 feet wide, and a 5-foot-wide bicycle lane in each direction. The additional space allows for a buffer zone, separating the bicycle lanes from the on-street parking and the dining decks.

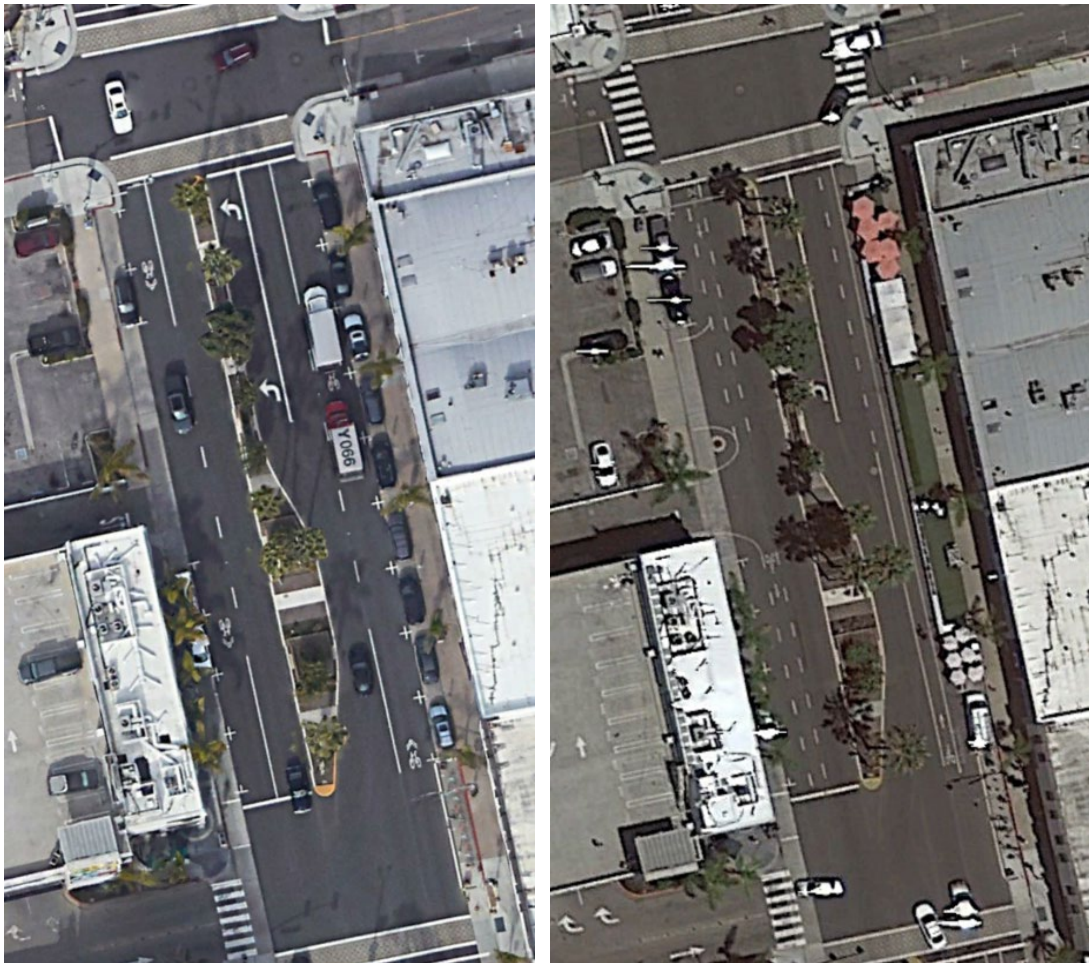


Figure 2. Aerial view of Hermosa Avenue between 13<sup>th</sup> Street and 14<sup>th</sup> Street in January 2020 (left) and August 2021 (right)

In addition, the intersection of Hermosa Avenue and Greenwich Village (at the North End Bar and Grill) was reconfigured, converting the slip right-turn lane to outdoor dining space. Because of the tight radius, vehicles cannot turn right from Greenwich Village onto Hermosa Avenue. A traffic study in 2020 determined that the closure of this right-turn option would be feasible.

The previous and existing cross-sections of Hermosa Avenue and Pier Avenue are shown in the figures below.



Figure 3. Hermosa Avenue - previous cross-section (looking north)



Figure 4. Hermosa Avenue - existing cross-section (looking north)

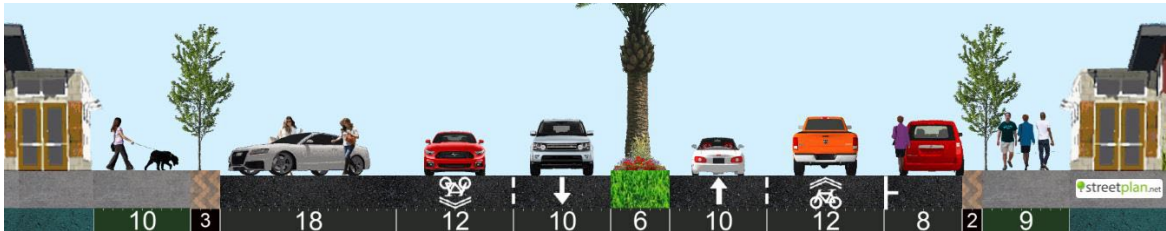


Figure 5. Pier Avenue - previous cross-section (looking east)

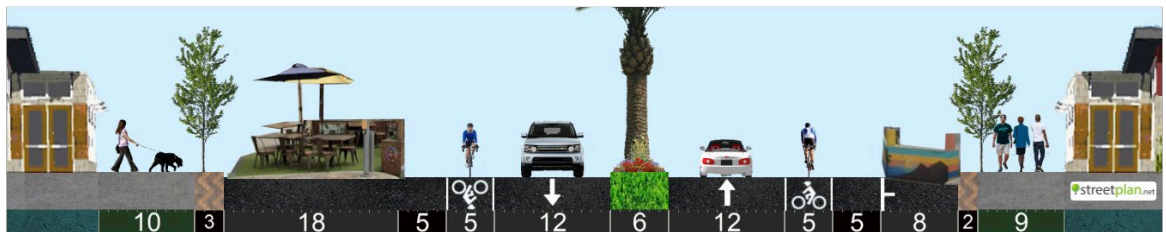


Figure 6. Pier Avenue - existing cross-section (looking east)

## ***Discussion***

### **1. Benefits of Lane Reconfiguration**

Reductions in road capacity, often referred to as “road diets,” can be beneficial for some high-density commercial areas where the reduction in speed and increased accommodation of non-automobile modes lead to a safer and more pleasant environment. This is especially true for commercial areas that are a focus for street life, where the street functions more as a community gathering place and less as a corridor for moving traffic through. Several recent success stories exist, such as in New York City, where an economic study of 7 road diet corridors found consistent increases in business revenues.

From a traffic engineering perspective, the lane reconfiguration confers the following benefits:

1. Speeds are lower, assumed to be a result of the following factors:
  - a. Without a passing lane, speeds are limited to the speed of the lead vehicle in the through lane.
  - b. The presence of bicycle lanes has been shown to have a traffic-calming effect, slowing driving speeds.
  - c. The presence of vertical features that narrow the perceived width of the roadway (such as dining decks) has been shown to reduce driving speeds.

Lower speeds reduce the frequency of collisions because road users have more time to react to each other and prevent a collision. At lower speeds, any collisions that do occur will also be less severe. As an example, this was already demonstrated by the earlier Complete Streets redesign of Pier Avenue in Hermosa Beach, which led to a crash reduction factor of 0.6, according to the City’s General Plan.

2. The traffic noise level experienced by diners on the outdoor dining decks (as well as for pedestrians on the sidewalk) is lower. The reconfiguration with bicycle lanes brings about a minimum separation of approximately 12 feet between outdoor diners and automobiles in the through lanes. By comparison, if the outdoor dining decks remained and the previous 4-lane configuration were restored, there could be a separation of as little as 3 feet between diners and moving vehicles. The noise level experienced by diners is further reduced by the assumed reduction in speed, since vehicles traveling faster make more noise.
3. The separation between dining decks and through traffic, mentioned above, is beneficial for safety. With through traffic separated from dining decks by a 12-foot buffer, it is less likely that a motor vehicle will collide with a dining deck. Several other jurisdictions require a buffer, such as a bike lane or space of comparable width, between automobile through lanes and parklets.
4. The lane reconfiguration reduces the effective pedestrian crossing distance and improves the comfort and safety of pedestrians crossing at crosswalks, because on each side of the roadway there is one less lane of traffic for pedestrians to cross.
5. Pedestrian and bicycle traffic have increased in the study area, which can be assumed to benefit local businesses. Pedestrian traffic increased by 52% on Pier Ave. and by 23% on Hermosa Ave. between August 2021 and July 2022. Bicycle traffic increased by 44% on Pier Ave. and by 27% on Hermosa Ave. in the same timeframe.
6. Based on traffic volumes, four lanes are more capacity than is needed. Per 2015 volume and capacity measurements in the Plan Hermosa Environmental Impact Report (p. 4.14-16), the section of Hermosa Avenue in the study area had a capacity of 22,000 daily vehicles and a volume of 11,128 average daily traffic (ADT), with a volume-to-capacity (V/C) ratio of 0.384 (indicating that excess capacity is present) and level of service A (which indicates free-flowing traffic). Pier Avenue had a capacity of 29,000 daily vehicles and a volume of 13,352, with a V/C ratio of 0.46 and level of service A. More recent traffic volume measurements (July 2022) showed similar volumes (11,749 for Hermosa Ave. at 11<sup>th</sup> St. and 11,059 for Pier Ave. between Hermosa Ave. and Monterey Blvd.). Free-flowing traffic

at 30 MPH is not necessarily desirable for a business corridor with many pedestrian-oriented destinations; as noted above, lower speeds result in a safer and quieter environment.

7. The removal of the slip lane at the North End Bar & Grill, besides benefiting a local business, has had the benefit of increasing this intersection's role as a pedestrian-friendly community node (there are also a coffee shop and a restaurant in the immediate area).

## **2. Shoulder and Buffer Requirements**

According to the Caltrans *Highway Design Manual* (HDM), 7<sup>th</sup> edition (2022), Topic 302, which references Caltrans Design Information Bulletin No. 79-04, an 8-foot shoulder is required for two-lane roads with ADT between 6,001 and 18,000. This requirement is satisfied by the 5-foot bike lane plus 3 feet of buffer space on Hermosa Ave. and Pier Ave. With 4 lanes of traffic, there would not be adequate space to satisfy the shoulder requirement with dining decks present.

The HDM allows barriers to encroach into the clear recovery zone. Per Section 309.1(1): "Certain yielding types of fixed objects, such as sand filled barrels, guardrail, breakaway wood posts, etc. may encroach within the clear recovery zone. While these objects are designed to reduce the severity of accidents, efforts should be made to maximize the distance between any object and the edge of traveled way."

Also per the HDM, Topic 1003 – Bikeway Design Criteria, "A minimum 2-foot horizontal clearance from the paved edge of a bike path to obstructions shall be provided."

The above points are important to note from a liability perspective in case a collision occurs. The current design provides the minimum required 2-foot buffer for the bike lanes and the 8-foot shoulder (which includes the bike lane) for the dining decks.

## **3. Alternative Parking Schemes**

Angled parking currently exists on the north side of Pier Avenue. This side of Pier Avenue is 40 feet wide from the curb to the median. There is a 5-foot buffer space for vehicles backing out of the angled spaces. By contrast, each side of Hermosa Avenue is 32 feet from the curb to the median, and angled parking on Hermosa Avenue would leave no buffer space between vehicles backing out and vehicles in the through lanes. This is shown in Figure 7.

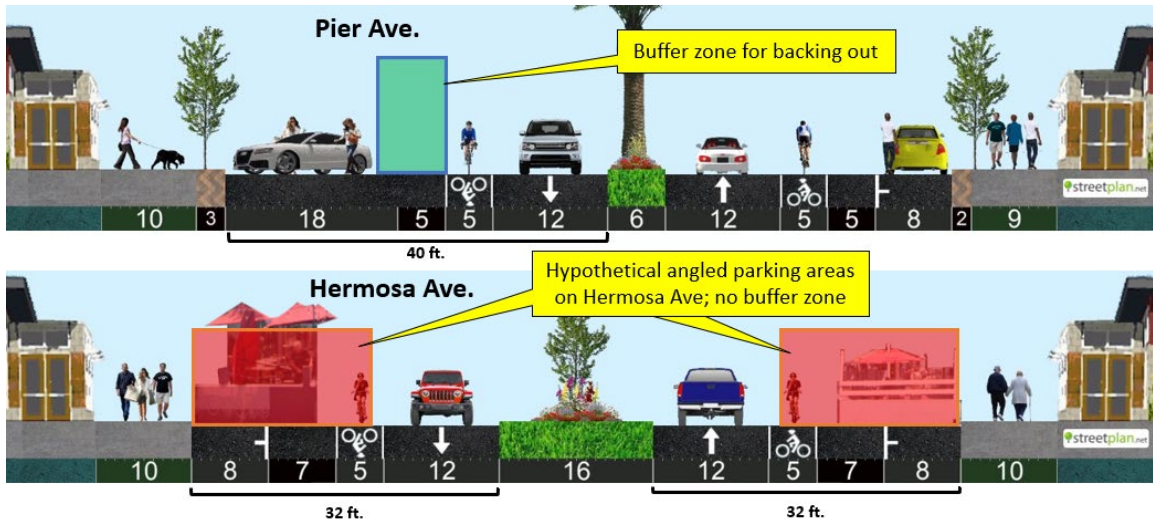


Figure 7. Comparison of buffer space available with angled parking on Pier Ave. (existing) and on Hermosa Ave. (hypothetical).

The following alternative on-street parking concepts were developed for Hermosa Avenue between 10<sup>th</sup> and 14<sup>th</sup> Streets:

- Concept 1: 30° reverse angled parking (45 spaces). This concept included reduction from 4 to 2 through lanes and added bicycle lanes on the outside of the parking lanes (adjacent to the through lanes).
- Concept 2: 30° head-in angled parking (42 spaces). This concept also reduced the roadway from 4 to 2 through lanes and included bicycle lanes mostly on the inside of the parking lanes (adjacent to the sidewalk), except for one block where the northbound bicycle lane would have been adjacent to the vehicular lane.
- Concept 3: 45° reverse angled parking (70 spaces). This concept also reduced the roadway from 4 to 2 through lanes, but the 45° angled parking does not leave adequate buffer space for vehicles backing out from a safety perspective. It would also require removal of the bike lanes.

The current design includes 57 parallel parking spaces in the same section.

## Summary

The following points summarize the key findings of this memo.

1. With 4 lanes, both Hermosa Ave. and Pier Ave. had more capacity than needed, while with 2 lanes the capacity is adequate.
2. Due to the HDM shoulder requirement, 4 lanes of traffic are not compatible with dining decks on either Hermosa Ave. or Pier Ave.
3. Angled parking on Hermosa Ave. would result in no buffer space for safe backing (as compared to the existing angled parking on Pier Ave.).
4. The bicycle lanes strengthen the citywide bicycle network and connect to future bike facilities that are in Plan Hermosa.

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