



HEXAGON TRANSPORTATION CONSULTANTS, INC.

Memorandum



Date: February 14, 2023

To: CRP Affordable Housing and Community Development

From: Gary Black
Jonathan Wong

Subject: Traffic Study Peer Review for the Proposed Affordable Housing Development at 4401 Capitola Road in Capitola, California



Hexagon Transportation Consultants, Inc. has completed a peer review of the traffic study for the proposed affordable housing development at 4401 Capitola Road in Capitola, California (see Figure 1). The traffic study was prepared by Dudek, dated November 17, 2022. The purpose of the review is to ensure that the completed traffic study prepared for the project is technically adequate and that the conclusions and recommendations presented are appropriate.



Project Description

The project proposes to construct a residential development with 36 units and two adjacent parking lots. The project would demolish the existing office buildings in order to construct the proposed project. The project is north of an existing 3-way stop intersection at 45th Avenue/Capitola Road. The project will provide two parking lots on the project site. A 15-space parking lot would be provided on the northwest portion of the site, accessed via a driveway on 44th Avenue, and a 21-space parking lot would be provided on the east side, accessed via a driveway forming the north leg of the 45th Avenue and Capitola Road intersection. The 45th Avenue and Capitola Road intersection would be converted from a 3-way stop intersection to a 4-way stop intersection.



Scope of Review

The following items were reviewed in the traffic study:

1. Project Trip Generation and Distribution
2. Level of Service Calculations
3. Site Access and On-site Circulation



Review Results

Hexagon concurs with the methodologies and conclusions of the traffic study. The following is a detailed discussion of each of the key issues of the review.



Project Trip Generation and Distribution

A review of the trip generation estimates contained in the traffic report was conducted to verify that they are accurate, that representative land uses were chosen, and that the rates are based on the appropriate land use data as published in the most recent Institute of Transportation Engineers (ITE) *Trip Generation Manual*.



Page 64 of the traffic study states that trip rates from the *Trip Generation Manual, 11th Edition* were used to estimate trips for the project. A review of the site traffic projections finds that the trip generation estimates presented in Table 1 in the traffic study are generally accurate based on the ITE land use categories. The selected land use categories are as follows:

- #223 - Affordable Housing – 36 units
- #712 – Small Office Buildings – 3,697 square feet

However, the total net trips for the outbound and total trips during the PM peak hour do not add up correctly. The net outbound trips and net total trips during the PM peak hour should be 2 trips and 9 trips, respectively. It should be noted that the additional trip in the PM peak hour would not change the conclusions presented in the traffic study.

The traffic study states that “...project trip distribution assumptions are based on logical travel paths to and from the project site and consideration of the traffic distribution patterns in the area.” It is not uncommon to use professional judgement in determining the projected distribution of development trips. The primary factor that dictates the distribution is typically existing travel patterns. The traffic study distributed 80 percent of the project trips to the west towards 41st Avenue and 20 percent of the project trips to the east towards Wharf Road. The distribution is logical given the amount of traffic heading towards 41st Avenue, which provides access to Highway 1 to the north.

Level of Service Calculations

The level of service results as presented in the traffic study were reviewed for accuracy. The traffic study states that the methodology used to evaluate level of service is based on the *Highway Capacity Manual* (HCM) using Synchro 11 software. The results of the review indicate that the level of service results are accurate as presented.

The results of the traffic signal warrant analysis were also reviewed for accuracy. The warrant analysis was conducted for the intersection of 45th Avenue and Capitola Road. The traffic study states that the signal warrant analysis conducted was based on the California Manual of Uniform Traffic Control Devices (MUTCD). The traffic signal warrants are consistent with the methodology described to have been used in the analysis. The traffic study concludes that a traffic signal is warranted under existing conditions. The study notes that signal warrants are not the sole determinant of whether a signal should be installed. Hexagon concurs with this finding and conclusion. Capitola should determine whether a signal should be installed at this intersection.

Site Access and On-site Circulation

The discussion of the project site access is limited to only a description of the design recommendations mentioned on page 68 of the traffic study. The study recommended the following:

- The relocated continental crosswalk on the west leg of the intersection shall be placed at a 90-degree angle with the roadway. This requires modification of the existing raised median on Capitola Road. The crosswalk shall be designed per City and ADA standards.
- A hammer head turnaround shall be placed at the north end of the east parking lot so that vehicles can turn around on site instead of backing into the intersection. The City may waive certain landscaping requirements in the parking lot to achieve this design.

The relocated crosswalk is needed in order to provide the new driveway on the north leg at the 45th Avenue/Capitola Road intersection. Hexagon concurs with this recommendation.

The study also recommends a hammerhead turnaround at the north end of the east parking lot. While Hexagon agrees that vehicles should not have to back out into the intersection, a hammerhead turnaround does not seem feasible. Instead, the project has modified the site plan (see Figure 1) to include a “no parking” zone near the west end of the parking lot. The “no parking” zone could be used by vehicles to turn around in the parking lot.

Driveway Access

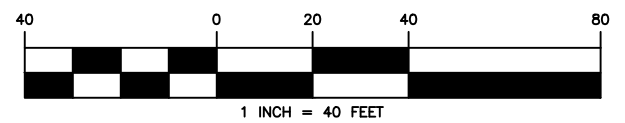
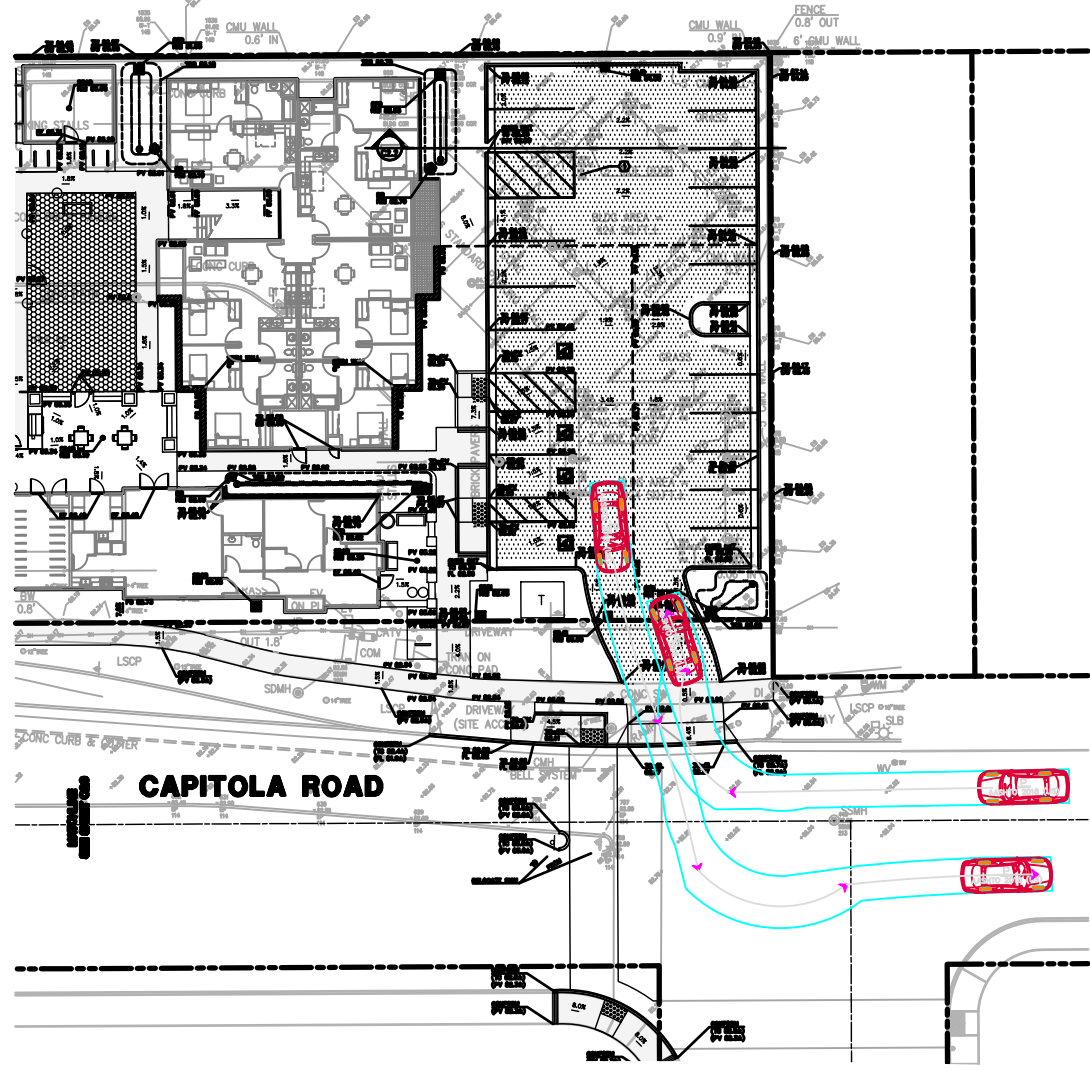
The study does not address the adequacy of turning into and out of the new driveway opposite 45th Avenue. Therefore, Hexagon conducted an analysis of turns at the driveway into the eastern parking lot. As shown in figure 2, a large passenger vehicle would be able to make the through, left and right turns into and out of the driveway from Capitola Road. According to the site plan, the driveway is shown to be 24 feet wide, which provides adequate space for 2-way travel. In addition, the drive aisle is shown to be 24 feet wide, allowing vehicles to maneuver within the parking lot. Thus, the driveway would provide adequate access for vehicles utilizing the parking lot.

The site plan shows the location of the driveway entrance is not aligned with the south leg of the intersection. Generally, roadways are aligned with each other to allow drivers a straight travel path through an intersection. However, given that the intersection would be converted to a 4-way stop, vehicles crossing through the intersection can make the through movement from the south leg. Thus, the 4-way stop intersection will mitigate the misalignment between the south leg and the driveway. Figure 2 indicates that vehicles entering the driveway can make through movements to and from the south leg.

The proposed driveway should be free and clear of any obstructions to optimize sight distance. Providing the appropriate sight distance reduces the likelihood of a collision at the driveway and provides drivers with the ability to locate sufficient gaps in traffic and exit the site. The site plan shows that there would be no landscaping features at the entry of the driveway. Vehicles exiting the driveway would have sufficient sight distance in both directions on Capitola Road to see oncoming vehicles.



Figure 1
Site Plan



DRAWN

CHECKED

SCALE
1" = 40'

DATE
2/8/23

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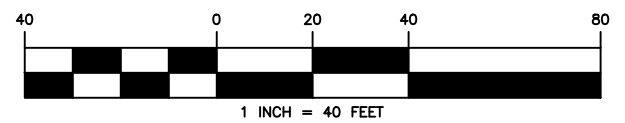
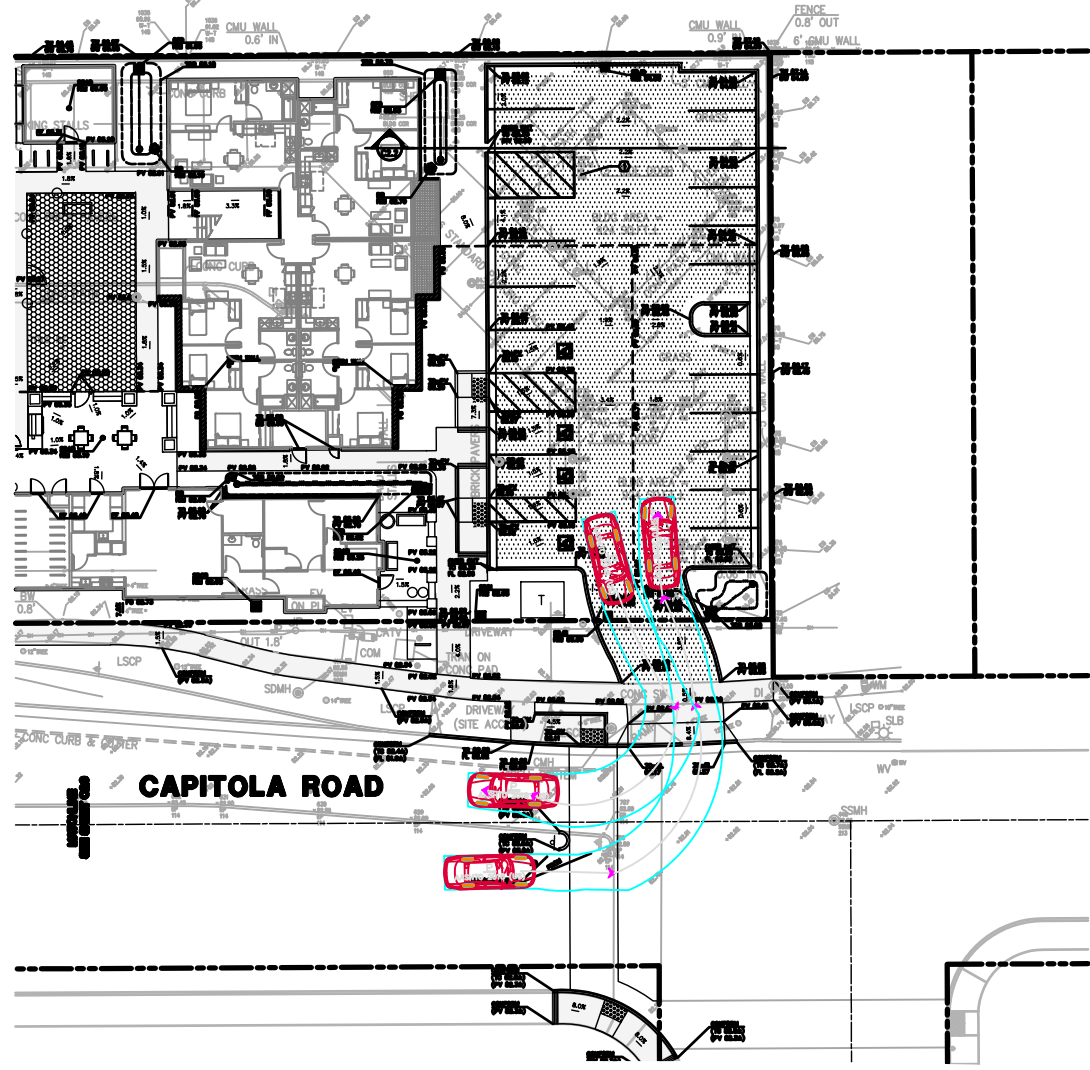
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CITY OF CAPITOLA

4401 CAPITOLA RD

FIGURE NO.

2



DRAWN

CHECKED

SCALE
1" = 40'

DATE
2/8/23

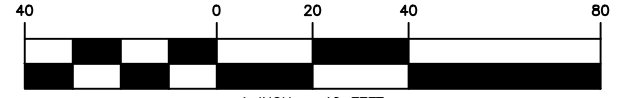
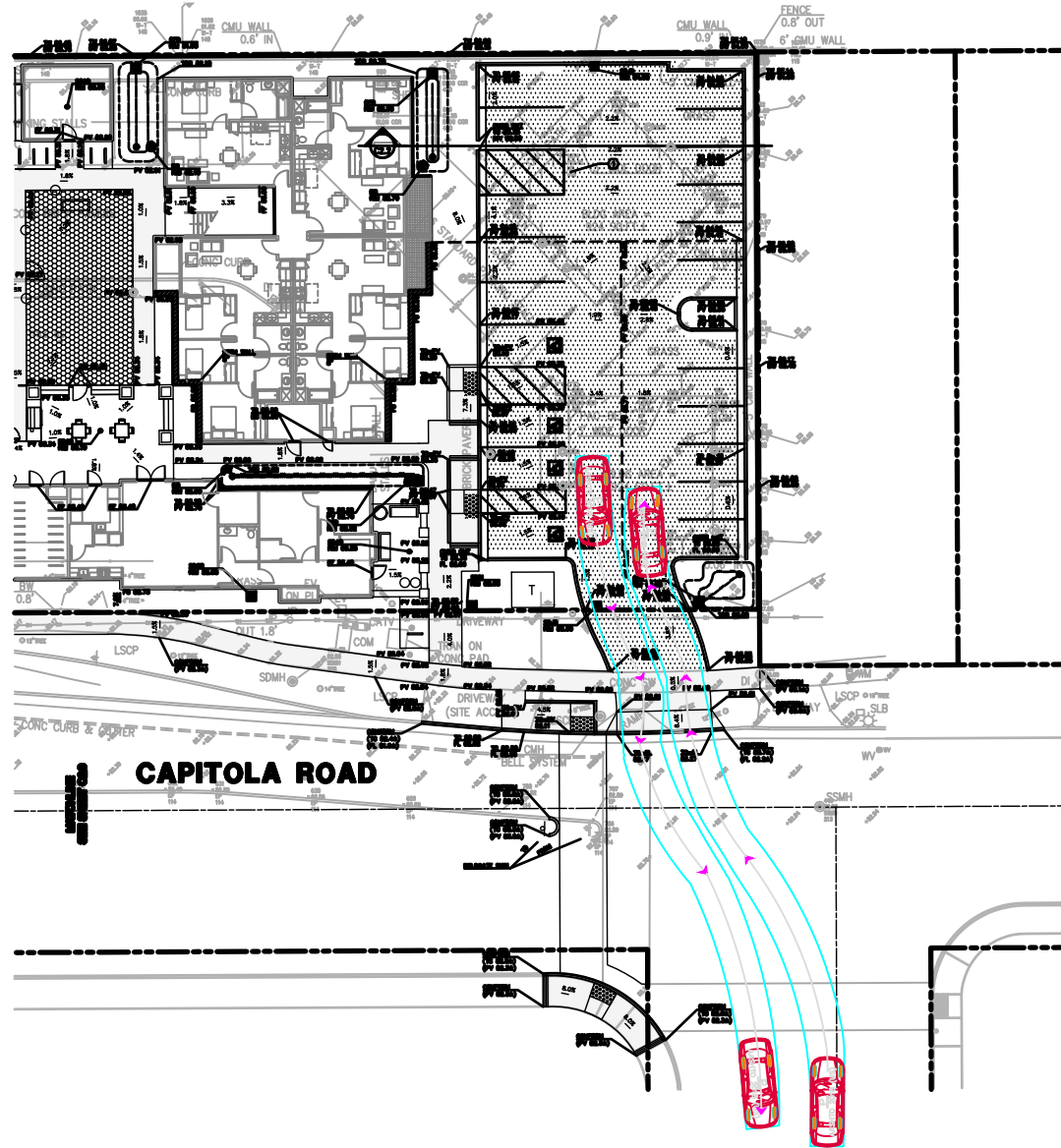
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CITY OF CAPITOLA

4401 CAPITOLA RD

FIGURE NO.
2 (continued)



DRAWN

CHECKED

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FIGURE NO.
2 (continued)