HEXAGON TRANSPORTATION CONSULTANTS, INC.

# Draft Memorandum

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| Date: | April 13, 2021 |
| **To:** | Mr. Samuel J. Gutierrez, City of Palo Alto |
| **From:** | Gary Black |
| | Selvi Sivaraj |
| **Subject:** | Additional Memo for Parking and Circulation Analysis for the Proposed Hotel at 4256 El Camino Real in Palo Alto, California |

Hexagon Transportation Consultants, Inc. completed a transportation study for the proposed hotel development at 4256 El Camino Real in Palo Alto, California. As proposed, the project would construct a hotel with 96 rooms by replacing the existing restaurant on the project site. Hexagon prepared a transportation study for the project in May of 2020 including an analysis of on-site circulation and parking. This memorandum evaluates and documents the on-site circulation and parking operations of the revised site plan dated October 29, 2020.

Vehicular access to the project site would be provided via two driveways on El Camino Real. The northern driveway would be for inbound traffic only including drop-offs and deliveries under the Porte-Cochere. The southern driveway would be for outbound only traffic. Both the driveways would connect to the underground parking garage. Parking for hotel registration is intended to occur in the basement parking garage.

## On-Site Circulation

All parking for the hotel would be valet only; self-parking would not be provided. Guests could enter the site from northern driveway and use the garage ramp to drop off their vehicles at the valet parking station in the basement. Valets would move the vehicles from the valet station into the parking spaces. When the owner returns to retrieve their vehicle, the valet team would drive it back to the valet station in the basement. The vehicles would exit the hotel through the exit-only southern driveway. The width of the driveway is shown to be 18 feet wide, which meets the City's minimum (12 feet) and maximum (20 feet) width requirement for a one-way driveway.

On-site vehicular circulation was reviewed in accordance with the City of Palo Alto Zoning Code and generally accepted traffic engineering standards. On-site parking would be provided in a basement parking garage including standard parking stalls and parking lifts (see Figure 1). The project would provide 90-degree parking stalls in the underground garage. The City's standard minimum width for two-way drive aisles is 25 feet wide where 90-degree parking is provided. This allows sufficient room for vehicles to back out of the parking spaces. According to the site plan, the two-way drive aisles with parking available on either side measure 25 feet wide throughout the garage. Thus, adequate access to all parking stalls would be provided.

Per the City's Zoning Code, garage ramps are to have no greater than a 22 percent slope with transition grades of 11 percent over a minimum length of 10 feet and a minimum width of 18 feet for a two-way ramp. The project site plan shows a slope of approximately 22 percent for the 20-foot wide garage driveway ramp, with transition grades of 11 percent. Therefore, the proposed slope of

the garage ramp adheres to the standards as specified in the Palo Alto Zoning Code. It should be noted that although the ramp would be adequate for vehicles, pedestrians and bicyclists are not expected to be using the ramp given that the slope's grade would be too difficult for pedestrians and bicyclists to traverse.

**Parking Garage Circulation**

Access to the underground parking garage would be provided via a ramp located along the southern edge of the project site. The site plan shows one dead-end drive aisle at the terminus of the east-west drive aisle (see Figure 1). However, the dead-end aisle is not expected to be problematic given that parking would be completed by valets, and the drive aisles are very short.

In the parking garage, 59 parking spaces would be provided in three level puzzle lifts. Except when full, the puzzle lifts present an open parking stall that, once occupied, would automatically shift downward or rotate, presenting another open stall. This system automatically shifts vehicles to allow retrieval without the need to move other vehicles.

The parking garage was also reviewed for vehicle access using vehicle turning-movement templates. Analysis using the appropriate turning templates shows that the driveway aisle, ramp, and turning space from the ramp to the drive aisle could accommodate two vehicles traveling in the opposite direction at the same time (see Figure 1). Hexagon recommends the project install convex mirrors at the bottom of the ramp to allow vehicles going up or down the ramp to see each other around the turn for additional safety.

Pedestrian access between the garage and the hotel lobby would be provided via elevators and stairways located within the garage. The elevators and stairways would provide direct access to either the building's main lobby or to an exit corridor and would be located along the western edge and at the center of the garage.

**Parking Stall Dimensions**

According to the project site plan, the project proposes standard-sized (8.5 feet wide by 18 feet long) stalls, which meet the City's off-street parking design standard. Van accessibility would be provided at one of the ADA accessible stalls.

The City of Palo Alto Zoning Code states that mechanical-stack parking systems must at least accommodate full-size cars as well as mid-size sport utility vehicles. The project as proposed would include the use of the CityLift Model No. 3LP puzzle stacker system in the parking structure, which would consist of standard-size (8.5 feet wide by 18 feet long) parking stall dimensions and a height of about 6 feet and 6 inches. This vehicle clearance would be adequate for almost all passenger cars and trucks as well as mid-sized SUVs. Therefore, the proposed mechanical-stack parking system would comply with the City's Zoning Code. The site plan also shows 18 non-lift stalls that could accommodate taller vehicles.

## Truck Access and Circulation

As proposed, the hotel building would comprise a total of 51,864 square feet gross floor area. In accordance with the City's Zoning Code (Section 18.52.040), a hotel building with a gross floor area between 10,000 square feet and 99,999 square feet is required to provide a minimum of one off-street loading/unloading space to serve deliveries. Truck activities for the project are not expected to occur within the garage due to height limitations. The required loading space is shown within the Porte-cochere drop-off/pick-up area, adjacent to the building entrance.


**Figure 1**
**Passenger Car Turning Template (Inbound and Outbound Vehicles)**



NORTH
Not to Scale

### Traffic Operations at Porte-cochere

The northern driveway which connects to Porte-cochere would be for inbound traffic only and is intended to accommodate drop-offs and deliveries. The width of the driveway is shown to be 22 feet wide, which meets the City's minimum width requirement of 20 feet. Parking for hotel registration is intended to occur in the basement parking garage. The Porte-cochere area was reviewed for truck access using truck turning-movement templates for a SU-30 truck type, which represents small emergency vehicles, garbage trucks, and small to medium delivery trucks. The analysis showed that the Porte-cochere could accommodate trucks of this type. There are two lanes and approximately 50 feet of storage (room for 4 vehicles) available at the inbound driveway, which would be adequate for inbound drop-offs and deliveries within the project site.

Appropriate wayfinding signs are shown on the site plan at the project driveways and parking garage entrance to direct drop-off traffic and guests seeking to check-in. Guests checking in or returning to the hotel would drive into the garage to the valet kiosk.

### Traffic Operations at Valet Station

Guests would enter the site through the northern driveway and would use the ramp into the garage to get to the valet station. Valets would move the vehicles from the valet station into the parking stalls. When the owner returns to retrieve their vehicle, the valet team would drive it back to the valet station in the basement.

The peak hour trips generated by the hotel are estimated to be 21 inbound trips and 15 outbound trips during the AM peak hour, and 22 inbound trips and 19 outbound trips during the PM peak hour, which is one inbound vehicle every three minutes and one outbound vehicle every three minutes during the AM and PM peak hours (see Table 1). The proposed valet station has one parking space. Based on the mechanical lifts' specification (CityLift -Puzzle model), the average retrieval time for a two to five level parking lift is 30 to 90 seconds. Retrieving a vehicle from the first floor takes only a few seconds, from the second floor takes 30 seconds, and from the third floor takes 50 seconds on average. Parked cars in the aisle, which could occur under peak occupancy conditions, would affect the parking and retrieval time for some of the lifts but not for all of them. Hexagon assumes it would take a minimum of 20 seconds and a maximum of 40 seconds to clear the aisle parking and drive to the valet zone. Therefore, it would take a minimum of 20 seconds to a maximum of 90 seconds for each drop off and pick up. The maximum time of 90 seconds would be required only for the 8 third floor lift spaces parallel to the aisle. Considering the hotel would generate an average of one inbound trip every three minutes and one outbound trips every three minutes during the peak hours and retrieval time varying from 20 to 90 seconds on average to operate, there would not be any queuing issues or spill over onto the garage ramp. There is also queuing space of 25 feet available between the valet station and ramp for one additional car for inbound vehicles. In the event there is a vehicle waiting at the valet station for drop off, there is ample space available for vehicle pick up (see Figure 1). During guest check-in and check-out there will also be the need to unload and load luggage. Valets should assist guests in loading and unloading luggage to minimize vehicle queuing near the valet station. Assuming the unloading/loading takes 5 minutes, there would be the occasional queue of up to two vehicles inside the garage. There would be enough queuing space inside the garage to accommodate this queue. Hexagon recommends that the valets prioritize parking cars in the parking lifts. Aisle parking should only be used when the lifts are full. Also, valets should move cars from the aisle parking into the lifts whenever possible to keep the aisle parking clear and minimize retrieval time.

**Table 1**
**Project Trip Generation Estimates**

| Land Use | Size | Daily | | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Rate | Trips | Rate | In | Out | Total | Rate | In | Out | Total |
| **Proposed Use** | | | | | | | | | | | |
| Boutique Hotel [1] | 96 rooms | 8.17 | 784 | 0.53 | 30 | 21 | 51 | 0.60 | 31 | 27 | 58 |
| TDM Program (30%) | | | (235) | | (9) | (6) | (15) | | (9) | (8) | (17) |
| **Subtotal** | | | 549 | | 21 | 15 | 36 | | 22 | 19 | 41 |
| **Existing Use** | | | | | | | | | | | |
| Su Hong Eatery Restaurant [2] | 3.30 ksf | 89.95 | (297) | | - | - | - | 7.49 | (17) | (8) | (25) |
| **Total New Project Trips** | | | **252** | | **21** | **15** | **36** | | **5** | **11** | **16** |

Notes:
KSF = 1,000 square feet
[1] Hotel (Land Use 310) average rates published in ITE's *Trip Generation Manual, 9th Edition, 2012.*
[2] Quality Restaurant (Land Use 931) average rates published in ITE's *Trip Generation Manual, 9th Edition, 2012.*
[3] In accordance with the *2030 Palo Alto Comprehensive Plan* , the project site is located within the El Camino Real Corridor, thus a comprehensive Transportation Demand Management (TDM) plan is required to reduce vehicle trips by at least 30 percent.

## Parking Analysis

The City of Palo Alto Parking Code (Section 18.52.040) states that hotel uses are to provide 1.0 parking space per guestroom plus the applicable requirement for eating and drinking, banquet, assembly, commercial or other uses, less up to 75% of the spaces required for guestrooms. Given that the included business center and restaurant would only serve as ancillary uses to the hotel, the project as proposed is required to provide a minimum parking of 96 spaces based on the proposed 96 guest rooms. Up to a 20 percent parking reduction may be granted by the Planning Director with implementation of a TDM Plan. Accounting for the TDM reduction, the project is required to provide 77 parking spaces.

For non-residential projects with mechanical-stack parking systems, the City of Palo Alto Zoning Code requires a minimum of two spaces or 10 percent of the total parking spaces provided (whichever is greater) be non-mechanical parking spaces. The required accessible spaces shall not be counted as one of the standard spaces for this requirement. Thus, of the required 77 spaces (with TDM reduction), at least 8 spaces are to be standard non-mechanical parking spaces, excluding accessible parking spaces. Based on the project site plan, the parking garage would provide a total of 77 parking spaces consisting of eight non-mechanical parking spaces, five accessible parking spaces, five aisle parking spaces and 59 mechanical-stack parking spaces. Given that the project proposes a parking reduction, a TDM Plan is required. Projects located within the El Camino Real Corridor providing a TDM Plan have a minimum trip reduction target of 30 percent, per the 2030 Palo Alto Comprehensive Plan. The Palo Alto Parking Code allows up to a 20 percent parking reduction for transportation and parking alternatives via a TDM plan. Thus, the requested 15 percent reduction would comply with the City code.

Per the California Building Code (CBC) Table 11B-208.2, four (4) ADA accessible spaces are required for projects with 76 to 100 parking spaces. Of the required accessible parking spaces, one van accessible space is required. The plans show a total of five (5) accessible spaces located within the garage. Of the ADA accessible spaces, one (1) is shown to be van accessible. Thus, the

project adheres to the CBC accessible parking provisions. In addition, the project proposes to include shuttle parking in the basement garage.

**Electric Vehicle Service Equipment (EVSE) Spaces**

Per City of Palo Alto Zoning Code Chapter 16.14 (A4.106.8.3), the project is required to provide EVSE-ready spaces for at least 30% of all hotel parking spaces, among which at least 10% shall be installed with EVSE. Thus, the project is required to ensure 23 parking spaces are EVSE-ready, of which 8 spaces should be installed with EVSE. The project currently proposes 16 EVSE-ready and nine EVSE-installed spaces, for a total of 25 EV spaces.

Based on the 2016 California Building Code (Table 11B-228.3.2.1), parking facilities that provide 5 to 25 Electric Vehicle Charging Stations (EVCS) are required to provide one van accessible Electric Vehicle Charging Station (EVCS) and one standard accessible Electric Vehicle Charging Station (EVCS). As per the proposed site plan, the project is planning to provide two EVCS at the standard accessible parking spaces. The project should include one EVCS at a van accessible space to meet the code requirement.

## Bicycle Parking

The City's municipal code requires a minimum bike parking supply of one space per 10 guestrooms, with all spaces being short-term stalls. Therefore, the project as proposed is required to provide a minimum of 10 bicycle spaces. The project is proposing to provide six bike racks adjacent to the building entrance and four bike racks in the Courtyard. Thus, the project as proposed would conform to the City's Bicycle Parking Code. In addition, the project is planning to provide six secure long term bicycle parking spaces under the basement ramp for employees or guests.