FEHR PEERS

Memorandum

Date: April 16, 2021

To: Manjit Banwait and Florin Lapustea, City of San Jose

From: Franziska Church, Fehr & Peers

Subject: Supplemental Analysis for the Downtown West Mixed-Use Project

SJ19-1951

The Local Transportation Analysis (LTA), which was included as Appendix J2 to the Downtown West Mixed-Use Project Draft EIR includes analysis to support the closure of two street segments that are currently part of the City's Transportation Diagram, including Delmas Avenue between Santa Clara Street and San Fernando Street. The analysis presented in the LTA provides an assessment of how this segment of Delmas Avenue primarily serves as an access point to the existing surface parking lots and has a low demand for through traffic. Existing through traffic was mainly observed to come from the eastbound right-turn lane from Santa Clara Street onto Delmas Avenue; though with the conversion of Autumn Street[1] to a two-way street, Delmas Avenue will have low demand for through traffic.

This memo provides supplemental information that evaluates operations of Autumn Street with the removal of Delmas Avenue under future conditions with the full buildout of the project.

Background

Delmas Avenue currently is a two-lane roadway that runs west of and parallel to SR-87 between West Santa Clara Street and Auzerais Street. As proposed, the Project would eliminate vehicle through access for the approximately 700-foot segment of Delmas Avenue between West Santa Clara Street and San Fernando Street. Through access would be provided for pedestrians and bicyclists only. The southern portion of the removed segment of Delmas Avenue would be reconfigured as a private street/driveway from West San Fernando Street. This new private street would connect with two new private streets between West San Fernando Street and West Santa

[1] It should be noted that San Jose City Council in January 2021 renamed Autumn Street to Barack Obama Boulevard.

Clara. These new streets would provide parking access to the proposed development on the portion of the Project area between Los Gatos Creek and the Guadalupe River.

Analysis Scenario

To evaluate operation of Autumn Street under future conditions, traffic volumes from the Background Plus Project Buildout scenario (LTA Scenario 2c) were modified to account for the full Transportation Demand Management (TDM) commitment required by mitigation measure AQ-2h, *Enhanced Transportation Demand Management Program*.[2] **Figure 1** to the right illustrates the AM and PM peak hour volumes along Autumn Street between Santa Clara Street and San Fernando Street.

The background no project volumes (to which traffic from Downtown West are added) represent existing volumes plus traffic from "approved but not yet built" and "not occupied" developments in the area per the City's Approved Trip Inventory (ATI). It should be noted that the existing volumes and trips from the City's ATI do not account for any shifts from non-single occupancy vehicles (non-SOV) that would occur in the project area with the planned investments in pedestrian, bicycle, and transit infrastructure and services by DTW, the City, Caltrain, and BART. Ultimately, the project area would need to achieve a achieve a 75 percent non-SOV mode split to achieve the City's full vision of *Envision San José*. Thus, traffic volumes are likely overstated and represent a conservative analysis.

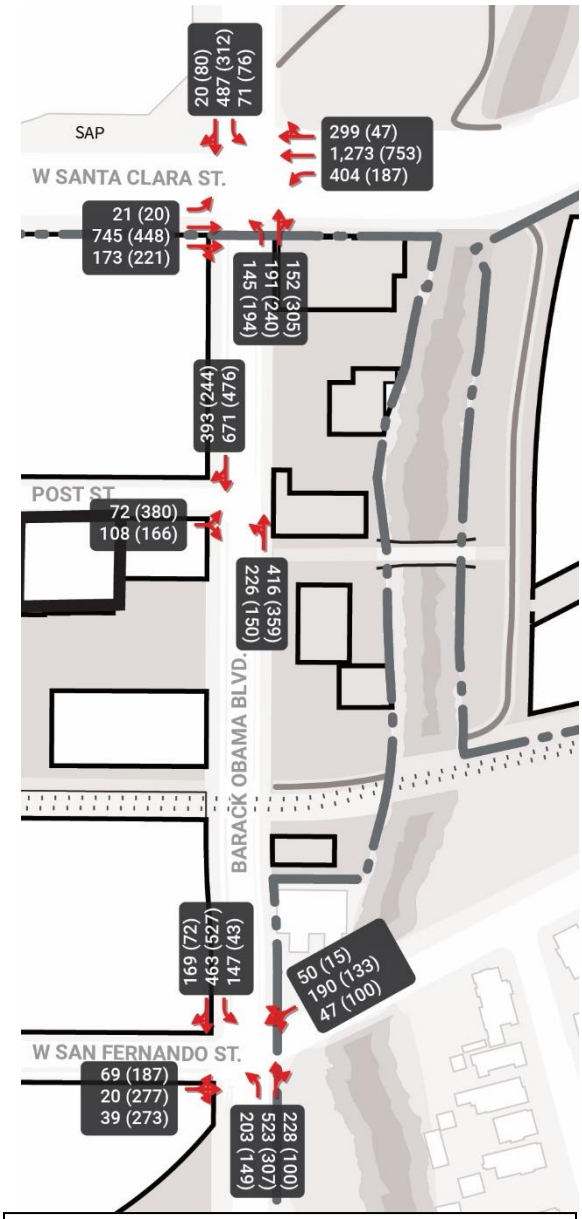

Figure 1: *AM and PM Peak Hour Intersection Turning Movement Volumes and Geometries*

[2] The original analysis presented in the LTA attached to the Draft EIR accounts for an approximately 18 percent trip reduction due a basic TDM program and does not include the additional nine percentage points required by the EIR TDM mitigation measure.

Street Capacity Level of Service

To evaluate whether Autumn Street could accommodate any shift in traffic volumes from the Delmas Street closure, a daily volume roadway capacity analysis was conducted. While the City does not apply LOS analysis for facilities in the downtown core, the roadway capacity analysis was only conducted to evaluate the effect of the proposed closure of Delmas Street. Using the peak hour volumes presented in **Figure 1** daily roadway volumes were estimated for Autumn Street as presented in **Table 1**. Daily roadway volumes estimates were used to develop planning level LOS based on urban street capacities summarized in Exhibit 16-16 in the HCM 6th Edition.

Table 1: Autumn Street Daily Traffic Estimates – Background Plus Project Buildout

Street Segment	AM Peak Hour	PM Peak Hour	Estimated Daily Volumes[1]	Daily LOS[2]
Autumn St between Santa Clara Street and Post Street	1,550	1,460	15,050	E
Autumn St between Post Street and San Fernando Street	1,420	1,150	12,850	E

Notes:
1. Daily volumes estimate assume that the AM and PM peak hour each represent ten percent of daily traffic ((AM peak hour + PM peak hour)/20%).
2. Daily LOS based on Exhibit 16-16 of the Highway Capacity Manual, 6th Edition.

Source: Fehr & Peers, April 2021.

Based on the HCM 6th Edition, two-lane streets with roadway volumes up to 16,400 vehicles would operate at LOS E. Autumn Street's projected daily volumes are within the acceptable range (i.e., not LOS F) and the roadway closure of Delmas Avenue is not expected to have an adverse effect on the Autumn Street.

Intersection Queueing Analysis

In addition to the daily roadway capacity analysis presented above, the intersections on Autumn Street at Santa Clara Street and San Fernando Street were evaluated for queuing during the morning and evening peak hours.

The operations analysis was conducted using Synchro/SimTraffic. The TRAFFIX software is typically used to evaluate City of San Jose intersection operations. TRAFFX is a macro simulation tool used to determine intersection level of service (LOS) per the Highway Capacity Manual and identify adverse effects per Council Policy 5-1. TRAFFIX evaluates intersections in isolation without considering the operations of adjacent or nearby intersections. Therefore, to capture the interaction between closely spaced intersections, the simulation module of the Synchro software, SimTraffic, was used to evaluate the two intersections along Autumn Parkway.

SimTraffic is a microsimulation tool used to model the behavior of individual vehicles on the roadway and identify operational constraints that can occur at an intersection, or between multiple intersections, such as queuing and queue spillback. SimTraffic is not used by the City to determine LOS. However, SimTraffic modeling is included in this memo for informational purposes to support the City identifying operational constraints within the Project area.

The study area is within the City's Downtown Core and does not have established LOS thresholds per Council Policy 5-3. Therefore, the Synchro/SimTraffic analysis software was used to evaluate intersection turn-lane queuing and intersection LOS is not analyzed.

Intersection Queueing Results

The results of the left-turn queuing analysis for the intersections on Autumn Street at Santa Clara Street and San Fernando Street are presented below in **Table 2**. **Attachment A** includes the detailed calculation sheets from SimTraffic.

Table 2: Autumn Street Intersection Queuing Analysis – Background Plus Project Buildout

Intersection		Movement[1]	Available Storage[2]	Queue Estimates in Feet[3]			
				AM		PM	
				Average	95th	Average	95th
A	Santa Clara Street/Autumn Street	NBL	300 feet	120	200	120	220
		SBL	160 feet	100	**220**	60	160
		EBL	60 feet	60	**120**	40	**80**
		WBL	220 feet	**240**	**260**	180	**260**
B	San Fernando Street/Autumn Street	NBL	120 feet	100	**160**	120	**160**
		SBL	100 feet	100	**140**	40	100

Notes:
1. NBL = northbound left-turn; SBL = southbound left-turn, EBL = eastbound left-turn WBL = westbound left-turn, NBR = northbound left-turn, SBR = southbound right-turn, EBR = eastbound right-turn, WBR = westbound right-turn.
2. Storage length is the length of the longest left turn lane.
3. Queue length is measured in feet for average and longest 95th percentile queue length based on SimTraffic analysis results.

Bold/underlined text indicates projected queue length exceeds available storage length.
Source: Fehr & Peers, March 2021.

Intersection Queueing Analysis

This section discusses each intersection where the average and/or 95th percentile queues exceed available storage capacity. In SimTraffic, the average queue is the average of the maximum queues every 2 minutes observed during the simulation. The 95th percentile queue length is a factor (1.65) times the average queue length (assumes queue length is normally distributed). The Highway Capacity Manual recommends that turn pockets be designed to accommodate the 95th percentile queue, to the extent possible. Average queues are presented for informational purposes to illustrate whether, on average, the provided turn pockets can accommodate projected queues. Ideally, all average queues can be accommodated within available storage capacity, otherwise it would indicate consistent queuing and queue spillback issues at a given location.

A. Autumn Street/Santa Clara Street

At this signalized intersection, the average queues can be accommodated within the provided storage capacity for all movements during both peak hours, except for the westbound left-turn during the AM peak hour; thought the average queue only exceeds available storage by about 20 feet (i.e., less than one car length). For this same location, the 95th percentile queue exceeds available storage by 40 feet. To the extent feasible, the westbound left-turn pocket should be extended to accommodate the AM and PM peak hour queues. The turn pocket extension would need to be coordinated with the design and placement of the proposed pedestrian crossing at the Guadalupe River to ensure the left-turn pocket does not extend through the pedestrian crossing. The final design of the pedestrian crossing and length of the westbound left-turn at Autumn Parkway will be determined under future analysis.

The 95th percentile queues for the eastbound left-turn exceed available storage capacity by 60 and 20 feet during the AM and PM peak hours, respectively. There is not additional right-of-way to lengthen the turn-pocket, without reducing the westbound left-turn pocket length at Montgomery Street. The final design of the eastbound left-turn at Autumn Parkway should be balanced with the queue estimates for the westbound left-turn at Montgomery Parkway to maximize operations along the Santa Clara Street corridor.

B. Autumn Street/San Fernando Street

At this signalized intersection, the average queues can be accommodated within the provided storage capacity for all movements during both peak hours. Based on the 95th percentile queues, the proposed northbound and southbound left-turn pockets would ideally be extended to accommodate the projected queue estimates at the northbound approach and southbound approaches. The final design of the northbound and southbound left-turn pockets will be determined under future focused LTAs.

Summary

Based on the capacity analyses presented in this supplemental memorandum Autumn Street would operate within acceptable range. Operationally, the final design of turn pockets within the study area will be finalized; though no excessive queuing was observed in the analysis that would indicate the need for added roadway capacity (i.e., added through or left-turn lanes); thus the segment of Delmas Avenue between Santa Clara Street and San Fernando Street could be vacated to through traffic.

While the data indicates that the closure of Delmas Avenue would not result in any through traffic diversion, it should be noted that the Project includes a neighborhood traffic intrusion plan that would address any neighborhood cut-through traffic concerns.