

**ATTACHMENT E
'EAST WALNUT MIXED-USE PROJECT ADDENDUM TRAFFIC IMPACT ANALYSIS'
(OCTOBER 25, 2013)**

MEMORANDUM

To: Mike Bagheri
City of Pasadena Department of
Transportation

Date: October 25, 2013

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Subject: East Walnut Mixed-Use Project Addendum Traffic Impact Analysis

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This memorandum has been prepared to summarize the addendum traffic impact analysis prepared for the proposed East Walnut Mixed-Use project (“proposed project”) located at 1727-1787 East Walnut Street in the City of Pasadena, California. The addendum traffic impact analysis has been prepared to address comments received from the City’s Planning Commission on the final traffic impact study¹ prepared for the proposed project. Specifically, Planning Commission members had questions regarding the use of trip generation adjustments (e.g., internal capture, transit, etc.) and potential changes to the results of the street segment analysis as well as the development of the scope of the traffic impact study. The following paragraphs contain responses to the comments received from the Planning Commission.

Traffic Impact Study Area

The traffic analysis study area is generally comprised of those locations which have the greatest potential to experience significant traffic impacts due to the proposed project as defined by the Lead Agency. In the traffic engineering practice, the study area generally includes those intersections and street segments that are:

- a. Immediately adjacent or in close proximity to the project site;
- b. In the vicinity of the project site that are documented to have current or projected future adverse operational issues; and
- c. In the vicinity of the project site that are forecast to experience a relatively greater percentage of project-related vehicular turning movements.

As noted on page 2 of the final traffic impact study, the intersections and street segments selected for analysis are consistent with the criteria noted above. In conjunction with City of Pasadena Department of Transportation (PasDOT) staff, a total of 11 locations including seven study intersections and four street segments, were identified for evaluation. The locations selected for analysis were based on the above criteria, the proposed East Walnut Street Mixed-Use project peak hour vehicle trip generation, the anticipated distribution of project vehicular trips and existing

¹ *Final Traffic Impact Study, East Walnut Street Mixed-Used Project, City of Pasadena, California*, dated March 19, 2013, and prepared by LLG Engineers.

intersection/corridor operations. The traffic study area included several intersections immediately adjacent to the site, key intersections in the project vicinity that may have future operational issues and a relatively higher percentage of project-related turning movements. Therefore, the traffic study area used in the traffic impact study is sufficiently comprehensive to identify and represent the potential significant traffic impacts related to the project.

Trip Generation Adjustments

Residential Transit Adjustments

As noted in the proposed project's final traffic impact study (refer to Subsection 7.1), the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*² contains trip rates for a variety of land uses (including office buildings, shopping centers, condominiums, etc.), which have been derived based on traffic counts conducted at existing suburban sites. It is noted on page 1 of Volume 1, *User's Guide and Handbook*, of the ITE *Trip Generation Manual* that, "Data were primarily collected at suburban locations having little or no transit service, nearby pedestrian amenities, or travel demand management (TDM) measures; enhanced pedestrian and bicycle trip-making opportunities; or other special characteristics of the site and surrounding area. When practical, the user is encouraged to supplement the data in this document with local data that have been collected at similar sites." Accordingly, as encouraged by ITE, additional trip generation data were reviewed at existing development sites in urban areas located in close proximity to public transit facilities, similar to the proposed project.

Two recent research efforts by the Transportation Research Board³ (TRB) and California Department of Transportation⁴ (Caltrans") conducted for purposes of evaluating the trip generation characteristics at development sites located in urban areas in close proximity to transit stations/hubs were reviewed in detail in the proposed project's final traffic impact study. These extensive research studies concluded the following:

- Daily (24-hour): 44% (TRB) fewer vehicle trips at Transit Oriented Developments (TOD) as compared to ITE trip rates
- AM peak hour: 49% (TRB) to 61% (Caltrans) fewer vehicle trips at TODs as compared to ITE trip rates

² Institute of Transportation Engineers *Trip Generation Manual*, 9th Edition, 2012, Washington, D.C..

³ *TCRP [Transit Cooperative Research Program] Report 128 – Effects of TOD on Housing, Parking, and Travel* published by the Transportation Research Board in 2008.

⁴ *Trip-Generation Rates for Urban Infill Land Uses in California* prepared for Caltrans by the Association of Bay Area Governments in April 2008.

- PM peak hour: 48% (TRB) to 60% (Caltrans) fewer vehicle trips at TODs as compared to ITE trip rates

For the proposed East Walnut Mixed-Use project, it is reasonable to conclude that its design and location in proximity to the Metro Gold Line Allen station would result in a considerable reduction (possible 50% or greater) in vehicle trips compared to the trip forecasts that would otherwise be calculated using the applicable and unadjusted ITE trip rates. Accordingly, it is concluded that employing only a 5% transit adjustment for the residential land use component of the project presents a conservative, worst case forecast of project-related trips. Further, it is noted that no transit adjustment was applied to the retail land use component of the proposed project.

Internal Capture/Walk-in Trip Adjustments

An internal capture adjustment was applied to account for the mixed-use nature of the project development components (e.g., to account for the interaction between the residential use and the retail use). Internal capture trips are those trips made internal to the site between land uses in a mixed-use development. When combined within a mixed-use development, land uses tend to interact, and thus attract a portion of each other's trip generation. Criteria set forth in the *ITE Trip Generation Handbook*, June, 2004, were referenced to estimate the appropriate internal capture/walk-in adjustment. Data provided in Tables 7.1 and 7.2 in the *Trip Generation Handbook* were reviewed with respect to internal capture rates within a multi-use development. For example, internal capture rates for trip origins from residential land uses to retail land uses are shown to vary from 34 percent to 53 percent, depending on the peak hour. However, in order to provide a conservative analysis, an internal capture/walk-in rate of only 25% was been utilized in the analysis.

To further reiterate that adjustments to ITE trip generation rates are appropriate, the document presented at the 2013 Transportation Research Board of the National Academies Annual Meeting, *Phantom Trips, Overestimating the Traffic Impacts of New Development*⁵, states that the limited applicability of ITE-published rates to mixed-use, high-density centers has long been recognized, and ITE's publications themselves have extensive caveats to this effect. However, practices have evolved to grant credits or downward adjustments to trip generation rates for developments that are less auto-oriented and further research is underway. Thus, data and practice have both evolved to at least partially address the special circumstances of mixed-use and transit-oriented development.

⁵ *Phantom Trips, Overestimating the Traffic Impacts of New Development*, Adam Millard-Ball, Environmental Studies Department, University of California Santa Cruz, November 2012.

Addendum Project Traffic Generation

Based on discussions with PasDOT staff, an addendum project trip generation forecast has been prepared without any adjustments (e.g., transit, etc.) to determine the potential change to the results of the street segment analysis. All of the same trip rates for the proposed and existing uses utilized in the final traffic impact study were used in the addendum traffic impact analysis. However, no transit adjustment was applied to the apartment land use component and no internal capture/walk-in adjustment was employed for the retail component.

The addendum trip generation rates and forecast of the vehicular trips anticipated to be generated by the proposed project are presented in the attached *Table 7-1*. As summarized in *Table 7-1*, the proposed project is expected to generate a net increase of 65 vehicle trips (13 inbound trips and 52 outbound trips) during the weekday AM peak hour without any adjustments to the proposed project trips. During the weekday PM peak hour, the proposed project is expected to generate a net increase of 88 vehicle trips (56 inbound trips and 32 outbound trips) without any adjustments to the proposed project trips. Over a 24-hour period, the proposed project is forecast to generate a net increase of 976 daily trip ends during a typical weekday (488 inbound trips and 488 outbound trips) without any adjustments to the proposed project trips.

Addendum Street Segment Analysis

The addendum street segment analysis has been prepared utilizing the addendum project trip generation forecasts. The existing and forecast existing with project volumes at the street segment study locations are summarized in the attached *Table 9-2*. The existing ADT volume is shown in column [1]. The total net new project ADT volumes without any adjustments to the proposed project trips at the study locations are shown in column [2]. Finally, the project-related percent increases in ADT growth for the analyzed street segments are presented in column [3].

Application of the City's threshold criteria indicates that the proposed project is not expected to create significant impacts at any of the four study street segments. Similar to what was concluded in the final traffic impact study, all of the street segment ADT increases are forecast to be 2.4 percent (2.4%) or less. As indicated in *Table 9-2*, the proposed project is forecast to increase ADT volumes on the study street segments as summarized below:

- Street Segment No. 1: 2.4 percent (2.4%)
- Street Segment No. 2: 1.5 percent (1.5%)
- Street Segment No. 3: 0.6 percent (0.6%)
- Street Segment No. 4: 1.2 percent (1.2%)

Conclusions

It is concluded that no changes to the results of the street segment analysis of the proposed project would occur by not employing trip generation adjustments in the project trip generation forecasts. Only nominal increases (0.2% or less) in the ADT volumes would be expected to occur without use of any trip generation adjustments. However, it is our professional opinion that use of transit, internal capture/walk-in, and pass-by adjustments are appropriate to use for Pasadena projects given that ITE trip rates are derived based on traffic counts conducted at existing suburban sites. Further, based on the multi-use project development program for the East Walnut Street Mixed-Use project and proximity to the Metro Gold Line Allen station, we would consider it overly conservative not to employ any transit or internal capture/walk-in adjustments for the proposed project.

Please feel free to contact should you have any questions or comments regarding this addendum traffic impact analysis.

c: File

**Table 7-1
ADDENDUM PROJECT TRIP GENERATION [1]**

LAND USE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2]			PM PEAK HOUR VOLUMES [2]		
			IN	OUT	TOTAL	IN	OUT	TOTAL
<u>Proposed Project</u>								
Apartment [3]	128 DU	851	13	52	65	51	28	79
Retail [4]	5,000 GLSF	200	4	2	6	9	9	18
Subtotal Proposed Project		1,051	17	54	71	60	37	97
<u>Less Existing</u>								
Automobile Care Center [5]	(2,735) GLSF	(75)	(4)	(2)	(6)	(4)	(5)	(9)
Subtotal Existing		(75)	(4)	(2)	(6)	(4)	(5)	(9)
NET INCREASE		976	13	52	65	56	32	88

[1] Source: ITE "Trip Generation", 9th Edition, 2012; and "(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region", SANDAG, April 2002.

[2] Trips are one-way traffic movements, entering or leaving.

[3] ITE Land Use Code 220 (Apartment) trip generation average rates.

- Daily Trip Rate: 6.65 trips/dwelling unit; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.51 trips/dwelling units; 20% inbound/80% outbound
- PM Peak Hour Trip Rate: 0.62 trips/dwelling units; 65% inbound/35% outbound

[4] SANDAG trip generation rates for Specialty Retail/Strip Commercial:

- Daily Trip Rate: 40.0 trips/1,000 SF of gross leasable floor area; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 1.20 trips (3% of daily)/1,000 SF of gross leasable floor area; 60% inbound/40% outbound
- PM Peak Hour Trip Rate: 3.60 trips (9% of daily)/1,000 SF of gross leasable floor area; 50% inbound/50% outbound

[5] ITE Land Use Code 942 (Automobile Care Service) trip generation average rates.

- Daily Trip Rate: Average of AM/PM peak hour volumes assumed to represent 10% of daily volumes
- AM Peak Hour Trip Rate: 2.25 trips/1,000 SF; 66% inbound/34% outbound
- PM Peak Hour Trip Rate: 3.11 trips/dwelling units; 48% inbound/52% outbound

**Table 9-2
ADDENDUM SUMMARY OF STREET SEGMENT ANALYSIS**

Location		Dir.	[1] Existing Weekday ADT Volume	[2] Net Project ADT Volume	[3] Percent ADT Growth ([2]/[1])
1	Walnut Street west of Meridith Avenue	EB	8,486	174	2.0%
		WB	8,714	244	2.8%
Total Location 1			17,200	418	2.4%
2	Allen Avenue north of Walnut Street	NB	10,416	116	1.1%
		SB	9,771	186	1.9%
Total Location 2			20,187	302	1.5%
3	Allen Avenue south of Walnut Street	NB	7,537	52	0.7%
		SB	6,897	28	0.4%
Total Location 3			14,434	79	0.6%
4	Walnut Street east of Allen Avenue	EB	7,671	101	1.3%
		WB	7,520	76	1.0%
Total Location 4			15,191	177	1.2%

[1] Existing ADT volumes based on traffic counts conducted by City Traffic Counters in February 2013.

Copies of the summary data worksheets of the 24-hour traffic counts are provided in Appendix A.

[2] Total daily project volume includes inbound and outbound trips based on the proposed project land use trip generation forecasts provided in Table 7-1, Project Trip Generation, and trip distribution/assignment patterns employed in this analysis.

[3] Column [2] divided by column [1].

City of Pasadena ADT thresholds for street segment ADT increases are as follows:

<u>ADT Growth on Street Segment</u>	<u>Required Traffic Mitigation Measures [4]</u>
0.0 - 2.4% ADT Growth	- Staff review and conditions
2.5 - 4.9% ADT Growth	- Initial study required if existing count is greater than 2,000 VPD Soft mitigation required
5.0 - 7.4% ADT Growth	- Initial study required Soft mitigation required Physical mitigation may be required
7.5% + ADT Growth	- Initial study required Soft mitigation required Extensive physical mitigation may be required Project alternatives may be considered

[4] Please refer to pages 15 to 18 of the "Guidelines for Transportation Review of Projects" provided in Section 5 of the City's traffic study guidelines which list suitable traffic mitigation measures for forecast increases in ADT volumes.