



# KITTELSON & ASSOCIATES, INC.

TRANSPORTATION ENGINEERING / PLANNING

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## MEMORANDUM

Date: January 4, 2017

Project #: 20950

To: Hamid G. Mayeh  
Palm Plaza Development, Inc.  
441 West 10th Street  
Pittsburg, CA 94565

From: Hassan Ahmed, TE  
Tim Erney, AICP/PTP/CTP

Project: Plaza San Pablo Residences & Retail Project  
Subject: Site Access & Circulation Study

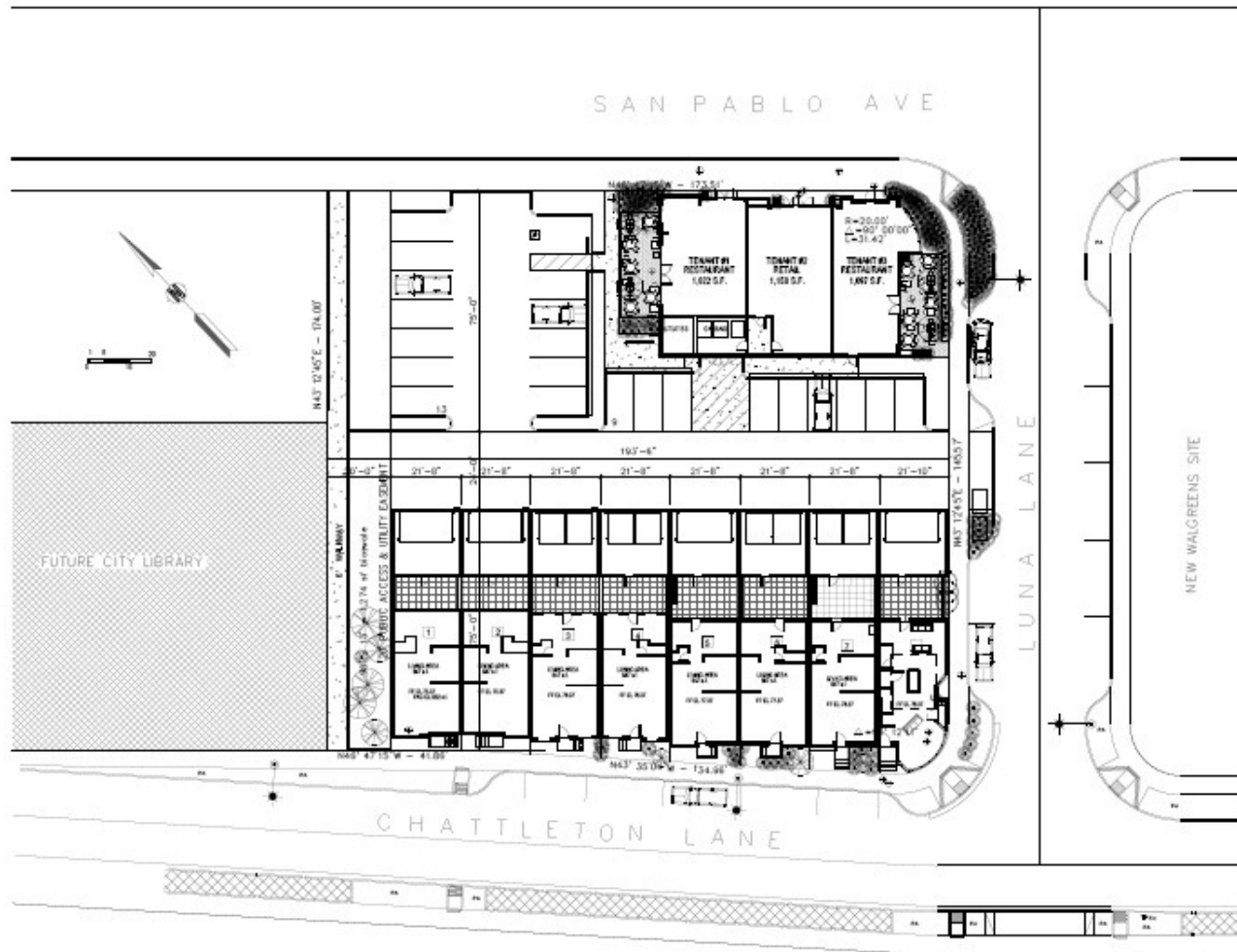
Palm Plaza Development, Inc. has retained Kittelson & Associates, Inc. (KAI) to conduct a site access and circulation analysis for the proposed Plaza San Pablo Residences & Retail Project (Project) located in the City of San Pablo, California (City). The purpose of this study is to analyze the potential of inbound traffic associated with the Project queuing up on Luna Lane and backing up onto San Pablo Avenue and Chattleton Lane. This memorandum summarizes the results of the analysis.

## PROJECT DESCRIPTION AND LOCATION

The Project is proposed to consist of eight (8) townhomes and approximately 3,000 square feet (sqft) of retail/restaurant space, with 22 parking spaces serving the retail/restaurant portion of the Project and eight residential garages connected to the townhomes. The Project site is located at 13717 San Pablo Avenue in the City of San Pablo (City) on the northwest corner of the intersection of San Pablo Avenue & Luna Lane (herein referred to as the Project site). As currently proposed, access to the Project site would be provided via a full-access driveway on Luna Lane. An alternative option would provide a secondary right-in/right-out driveway on San Pablo Avenue in addition to the full-access driveway on Luna Lane.

The current site plan is presented in Figure 1.

**Figure 1: Site Plan**



## PROJECT TRIP GENERATION

The vehicle trips associated with the Project were generated using rates presented in the ITE Trip Generation Manual.<sup>1</sup> The trip generation rates for fast-food restaurant uses, as presented in the ITE Trip Generation Manual, are higher than those presented for retail uses. Since the actual breakdown of the square footage of the retail/restaurant portion of the Project has not yet been determined, it was conservatively assumed that all 3,000 sqft of the proposed retail/restaurant space would be occupied by fast-food restaurant space as that would generate the highest number of vehicle trips. As shown in Table 1, with this assumption, the Project would generate 82 vehicles trips (43 inbound and 39 outbound) during the weekday PM peak hour. The ITE rates are presented in the Attachment.

<sup>1</sup> Trip Generation Manual, 9th Edition (Institute of Transportation Engineers, 2012)

**Table 1: Project Trip Generation**

| Land Use                       | PM Inbound<br>Vehicle Trips | PM Outbound<br>Vehicle Trips | PM Total<br>Vehicle Trips |
|--------------------------------|-----------------------------|------------------------------|---------------------------|
| Residential (8 dwelling units) | 3                           | 1                            | 4                         |
| Restaurant (3,000 sqft)        | 40                          | 38                           | 78 <sup>1</sup>           |
| <b>TOTAL</b>                   | <b>43</b>                   | <b>39</b>                    | <b>82</b>                 |

Source: Institute of Transportation Engineers and Kittelson & Associates, Inc.

<sup>1</sup> Since a portion of the 3,000 sqft, assumed to be fast-food restaurant space in this analysis, is expected to be occupied by retail space that generates fewer vehicle trips than the fast-food land use, the actual number of vehicle trips generated by the retail/restaurant portion of the Project is expected to be lower than 78 vehicle trips. Thus, the assumptions made in this analysis are conservative and represent the worst-case scenario.

## PROJECT PARKING GENERATION

The peak hour parking demand for the Project was generated using rates presented in the ITE Parking Generation.<sup>2</sup> Similar to the trip generation, it was conservatively assumed that all 3,000 sqft of the proposed retail/restaurant space would be occupied by fast-food restaurant space. Based on a rate of 8.20 spaces per 1,000 sqft of use, the peak parking demand for the Project's 3,000 sqft of fast-food restaurant space is approximately 25 spaces during the peak hour. All of the residents of the residential portion of the Project would park in their individual garages, as the other 22 parking spaces would be for patrons of the retail/restaurant portion of the Project only. As with the trip generation, the parking demand is expected to be lower with retail uses and the assumptions made in this analysis are conservative and represent the worst-case scenario.

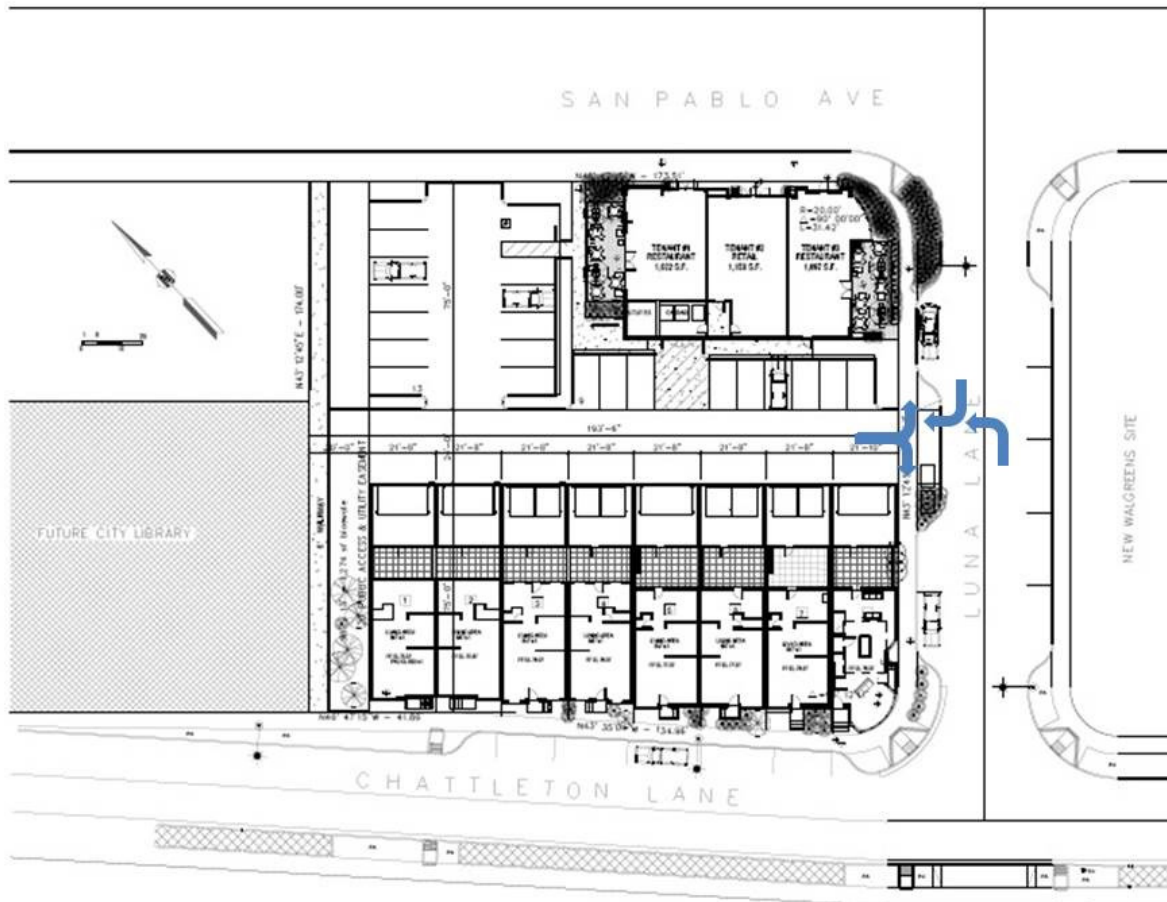
## PROJECT ACCESS AND QUEUING

As currently proposed and shown in Figure 2, access to the Project site would be provided via a full-access driveway on Luna Lane. This driveway would be located mid-block between San Pablo Avenue and Chattleton Lane and provides approximately 100 feet of space (about 4 vehicles) for inbound traffic before any vehicles queuing would back up to San Pablo Avenue or Chattleton Lane.

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<sup>2</sup> Parking Generation, 4th Edition (Institute of Transportation Engineers, 2010)

**Figure 2: Driveway Access**



Based on the anticipated access routes to the Project site, it is expected that a majority of inbound vehicle trips would make a northbound left-turn or a southbound right-turn onto Luna Lane from San Pablo Avenue (however, some vehicles may utilize Chatteleton Lane, as it provides a connection to Church Lane, which then connects to El Portal Drive and Market Avenue). Based on the projected trip generation of 43 inbound vehicle trips during the weekday PM peak hour, as presented in Table 1, there would be an average of less than one inbound trip per minute during the weekday PM peak hour.

The purpose of this study is to analyze the potential of inbound traffic associated with the Project queuing up on Luna Lane and backing up onto San Pablo Avenue and Chatteleton Lane. Based on a review of the site plan and the configuration of Luna Lane, blockages occurring in the aisle directly in front of the driveway could cause queuing to occur on Luna Lane. As shown in the site plan, the aisle directly in front of the driveway consists of nine perpendicular parking spaces and all eight residential garages. Based on the location of the driveway, only the vehicles turning into and out of the first few parking spaces and residential garages adjacent to the driveway may temporarily block inbound vehicles, and thus cause any vehicles turning into the driveway to queue up on Luna Lane. Queues caused by parking spaces and residential garages further inside the Project site should have enough

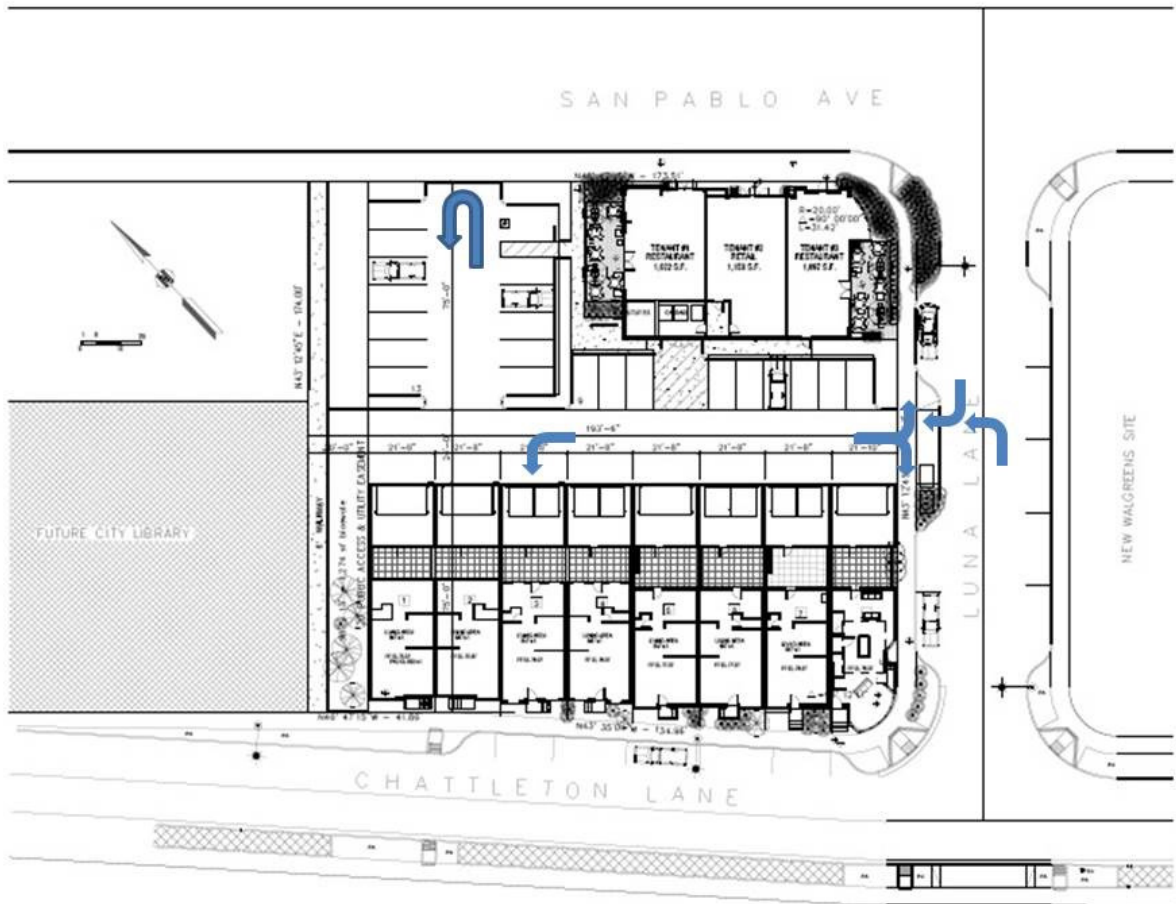
space in the aisle and are not expected to back out onto Luna Lane. Based on field observations of the time it takes for a residential garage door to open and the time it takes for vehicles to turn into and out of parking spaces, it is expected that the space in the aisle directly in front of the Project driveway may be blocked for a maximum of two minutes at a time. With the anticipated arrival rate of inbound vehicles (less than one per minute, on average), there would be the potential for one or two vehicles to queue on Luna Lane due to the blockage of the entrance driveway. Since there would be approximately 100 feet (with room for at least four vehicles) between the driveway and both San Pablo Avenue and Chattleton Lane, the queue for the inbound traffic for the Project is not expected to back up onto San Pablo Avenue or Chattleton Lane.

## PARKING AND INTERNAL CIRCULATION

The retail/restaurant portion of the Project is expected to generate a maximum parking demand of 25 vehicles during the peak hour (distributed throughout the peak hour), based on conservatively assuming that the entire 3,000 sqft will be occupied by fast-food restaurant space). Since the actual Project would consist of some retail used, the proposed supply of 22 parking spaces is expected to be adequate to meet the peak hour parking demand.

Based on the current site plan, vehicles would enter from the driveway on Luna Lane. The vehicles heading to the residential portion of the Project would proceed to the residential garages (an example of which is shown in Figure 3) and the vehicles heading to the retail/restaurant portion would need to circulate the parking aisles to look for parking. If the nine spaces in the aisle directly in front of the residential driveway are occupied, vehicles would continue to circulate to the aisle at the north side of the Project site. Should all parking spaces be occupied and vehicles want to turn around in the aisle on the north side of the Project site, they would have to make a U-turn in limited space at the end of the aisle as shown in Figure 3. This may result in multi-turn maneuvers, which could block parking spaces and affect accessibility for users.

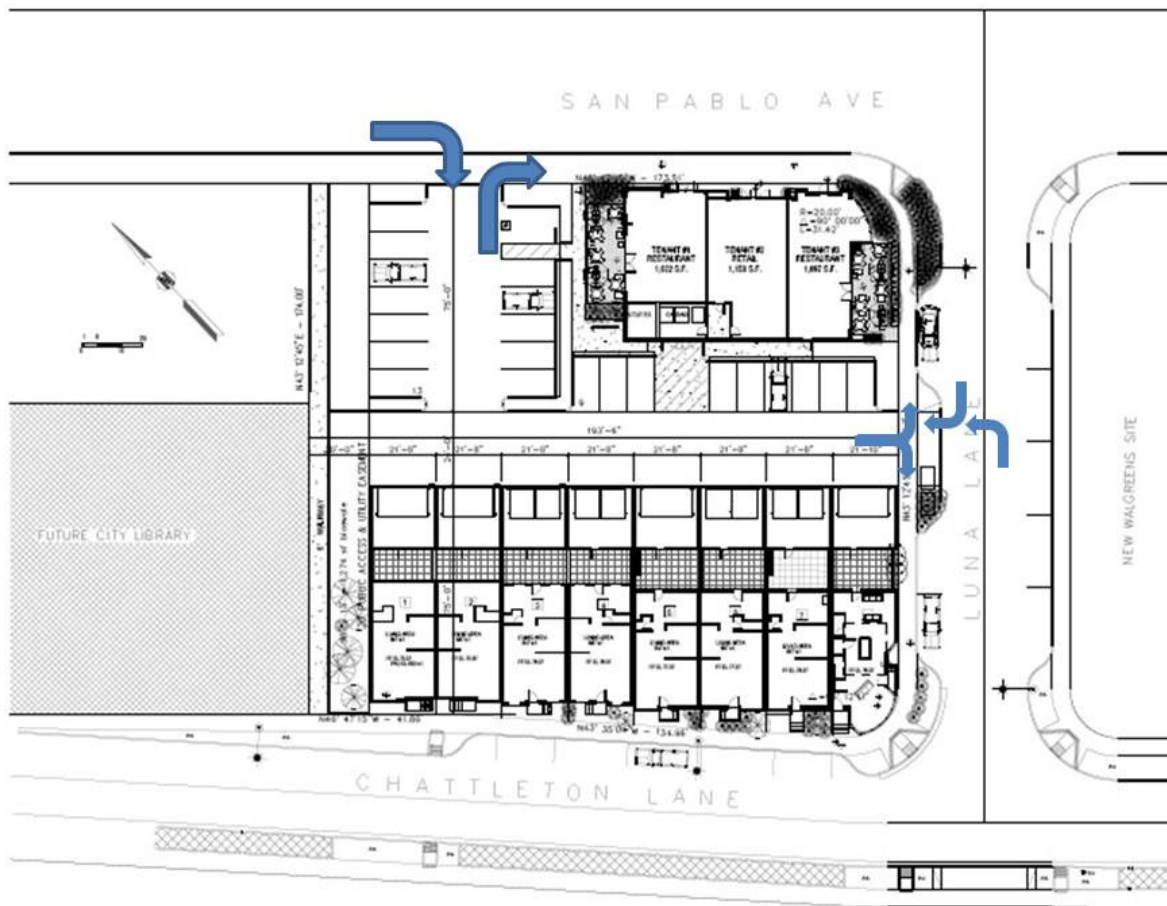
Figure 3: Project Circulation



## ALTERNATIVE DRIVEWAY ACCESS

An alternative option is being considered by the Project sponsor to provide a secondary right-in/right-out driveway on San Pablo Avenue (as shown in Figure 4) in addition to the full-access driveway on Luna Lane.

**Figure 4: Alternative Driveway Access**



### Project Access and Queuing

The addition of the right-in/right-out driveway on San Pablo Avenue would likely improve conditions at the driveway on Luna Lane. In particular, inbound traffic traveling southbound on San Pablo Avenue would be able to make a right turn into the driveway on San Pablo Avenue rather than making a right turn on Luna Lane and then entering the Project site from the driveway on Luna Lane. There would, therefore, be a reduction in the number of inbound vehicles using Luna Lane to access the Project. As a result, the potential for queuing at the driveway would be reduced, and thus the potential for queue to back up onto San Pablo Avenue or Chattleton Lane would be lessened. The southbound right-turning traffic into the driveway on San Pablo Avenue may cause minimal queuing to occur on San Pablo Avenue. This minimal queuing may temporarily block the right lane and the bike lane on San Pablo

Avenue, but is only expected to occur for short periods of time when vehicles turning into and out of the first few parking spaces are blocking the aisle directly in front of the driveway.

### Internal Circulation

The addition of the right-in/right-out driveway on San Pablo Avenue would improve circulation within the Project's parking lot. Vehicles circulating in the aisles would be able to exit on San Pablo rather than being forced to perform a U-turn in the aisle. This would result in fewer conflicts in the aisles of the Project site and further reduce the potential for queuing at the driveway on Luna Lane.

## SUMMARY/CONCLUSIONS

The Project is expected to generate approximately 43 inbound vehicle trips during the weekday PM peak hour. If the inbound vehicle trips were evenly distributed throughout the hour, less than one inbound trip would occur per minute. As currently proposed, access to the Project site on Luna Lane is located mid-block between San Pablo Avenue and Chattleton Lane and provides approximately 100 feet of space (4 vehicles) for inbound traffic before any vehicles queuing would back up to either street. Based on the review of the potential blockages to the internal driveway, it is expected that the queue for the inbound traffic of the Project would be approximately two vehicles which would not back up onto San Pablo Avenue or Chattleton Lane.

The addition of a right-in/right-out driveway on San Pablo Avenue is expected to further improve conditions at the driveway on Luna Lane and would allow for more efficient circulation on the Project site. However, it may result in short blockages of the right lane and bike lane on eastbound San Pablo Avenue, if vehicles are delayed entering the parking lot.

Attachment:  
Trip Generation

**ATTACHMENT  
TRIP GENERATION  
PLAZA SAN PABLO RESIDENCES & RETAIL PROJECT**

| <b>Table 1: Trip Generation Rates [a]</b>                        |              |              |                     |            |              |
|------------------------------------------------------------------|--------------|--------------|---------------------|------------|--------------|
| <b>Land Use</b>                                                  | <b>Rate</b>  | <b>Daily</b> | <b>PM Peak Hour</b> |            |              |
|                                                                  |              |              | <b>In</b>           | <b>Out</b> | <b>Total</b> |
| Residential Condominium/Townhouse (ITE Code 230)                 | per du       | 5.81         | 67%                 | 33%        | 0.52         |
| Fast-Food Restaurant without Drive-Through Window (ITE Code 933) | per 1,000 sf | 716.0        | 51%                 | 49%        | 26.15        |

| <b>Table 2: Trip Generation Estimates</b> |             |              |                     |            |              |
|-------------------------------------------|-------------|--------------|---------------------|------------|--------------|
| <b>Land Use</b>                           | <b>Size</b> | <b>Daily</b> | <b>PM Peak Hour</b> |            |              |
|                                           |             |              | <b>In</b>           | <b>Out</b> | <b>Total</b> |
| Residential (ITE Code 230)                | 8 du        | 46           | 3                   | 1          | 4            |
| Fast-Food Restaurant (ITE Code 933)       | 3,000 sf    | 2,148        | 40                  | 38         | 78           |
| <b>TOTAL</b>                              |             | <b>2,194</b> | <b>43</b>           | <b>39</b>  | <b>82</b>    |

Notes:

du - dwelling units

SF - square feet

[a] Source: *Trip Generation Manual, 9th Edition* (Institute of Transportation Engineers, 2012).