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Technical Memorandum

April 19, 2022 Project# 24837.008

To: Wendy Lao, AICP
Associate Planner – Community Development
City of San Mateo
330 W. 20th Avenue
San Mateo, CA 94403

From: Mychal Loomis and Dhawal Kataria

RE: **222 East 4th Ave Project – Parking Study**

This memorandum presents the findings of a parking study conducted for the 222 East 4th Avenue Project at the existing Draeger's site in San Mateo, CA (Project). The Project is located within the Central Parking and Improvement District (CPID) and hence, requires a City-commissioned project-specific parking demand study.

The purpose of this study is to determine the peak parking demand for the Project. In lieu of using the City's Municipal Code requirements for parking, this study demonstrates the parking demand based on ITE Parking Generation Manual, 5th Edition data adjusted to localized conditions and Urban Land Institute (ULI) Shared Parking methodologies, accounting for the land-use mix and for the ability to share parking throughout the day. This memorandum provides a summary of these three different parking methodologies that support the parking study findings.

PROJECT DESCRIPTION

The Project is proposing to replace the existing Draeger's retail grocery store with 17,658 SF of retail space on the ground floor; 104,722 SF of office space on levels 2-4; and 10 residential units on level 5. The site plan also includes community open space and a loading zone on B Street. The project currently proposes 239 parking spaces throughout the surface-level parking lot and two levels of below-grade parking garage. Figure 1 shows the proposed parking layout for the Project.

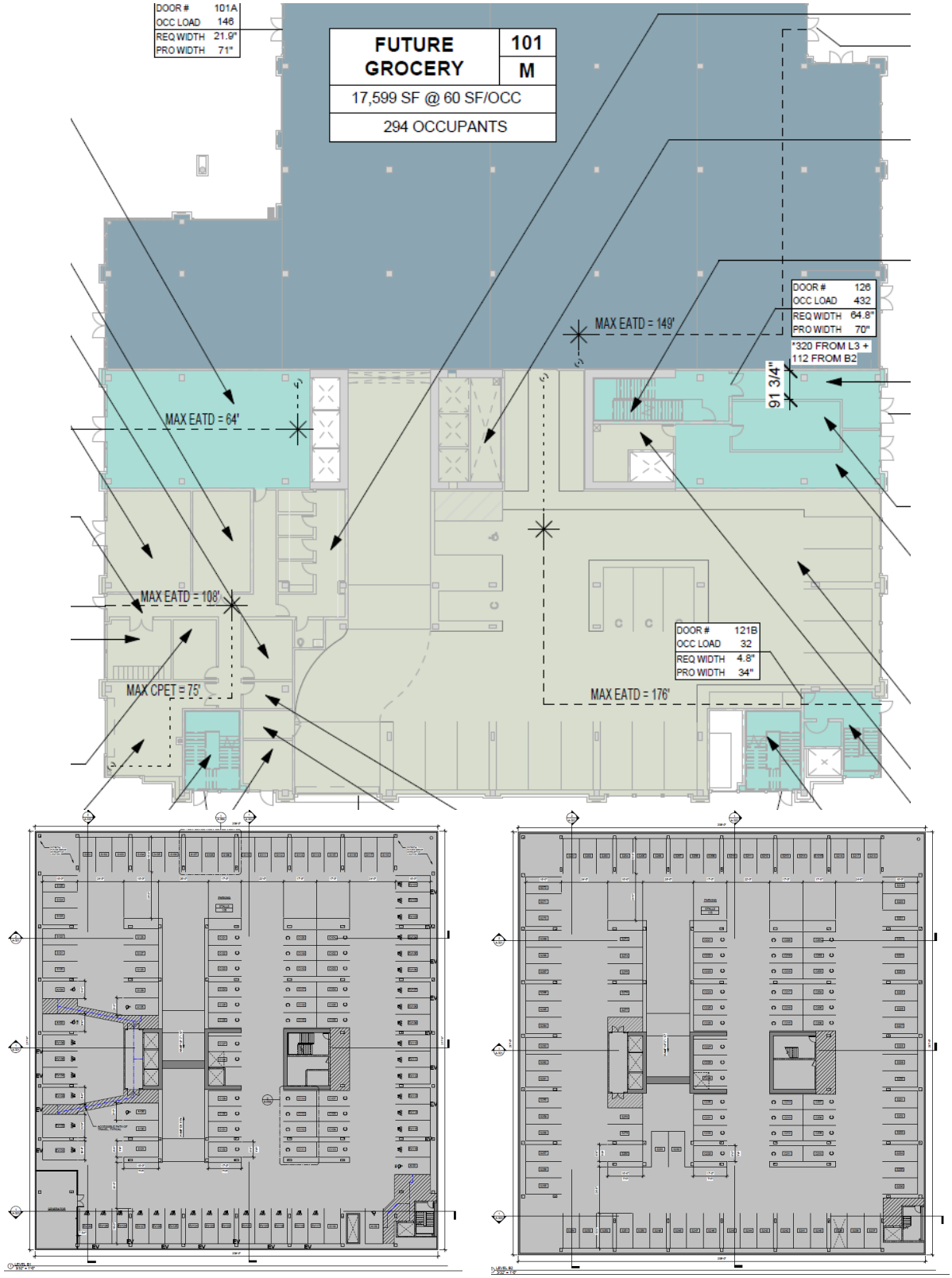
Access and Pedestrian Circulation: The below-grade parking spaces can be accessed through two stairs and three elevators that connect all the floors. The stairs and elevators are placed centrally to minimize the vehicle-pedestrian conflict in the parking garage.

Drive Aisles: The one-way drive aisles near the passenger parking stalls are 22-26 feet wide for the cars to maneuver in and out of the perpendicular parking stalls which exceed the City "Standard Drawings and Specifications" requirement of 22-24 feet wide parking aisle for one-way aisle along perpendicular parking[1]. The proposed parking layout conforms with the requirements mentioned in SMC 27.64.125(d).

Parking Stalls Dimensions: The project meets the minimum parking stalls dimension of 8 feet by 17 feet for compact spaces and 8.5 feet by 18 feet for standard parking spaces.

[1] City of San Mateo Parking Standards: https://www.cityofsanmateo.org/DocumentCenter/View/8009/PW_Parking_Standard-Specifications?bidId=

Figure 1 Parking Layout Plans



Vehicle Clearance: The proposed vertical clearance is 13 feet for Level B1 and 10 feet for Level B2, which again exceeds the SMC 27.64.120(f) requirement of seven (7) foot clearance.

Affordable Housing Parking Reduction: Since the Project is located within a half-mile of a major transit stop, the state density bonus law exempts parking for 100% affordable projects. Therefore, the affordable housing portion of the project has zero drive-alone trips attributed to it for the purpose of this evaluation[2].

PARKING REQUIREMENTS

Kittelson calculated the parking demand using the following three references:

- City of San Mateo Municipal Code Requirements
- ITE Parking Generation, 5th edition, released in January 2019
- Urban Land Institute, Shared Parking Model, 3rd Edition, released in March 2020

STANDARD PARKING RATIO EVALUATIONS

Table 1 Parking Requirement Calculation as per Municipal Code, ULI Shared Parking Manual and ITE Parking Generation Manual

Land Use (ITE Land Use Code)	Size	Unit	Type	San Mateo Municipal Code		ITE Parking Generation, 5th Edition		ULI Shared Parking Manual	
				Requirement	Number of Required Spaces	Requirement	Number of Required Spaces	Requirement	Number of Required Spaces
Retail Space (850)	17.6	KSF	Employee	0.5 Stalls per KSF GFA	9	2.09 Stalls per KSF GFA	37	0.7 Stalls per KSF GFA	13
			Visitor	1.4 Stalls per KSF GFA	25			2.9 Stalls per KSF GFA	52
Office Space (710)	104.7	KSF	Employee	2.4 Stalls per KSF GFA	251	1.63 Stalls per KSF GFA	171	3.15 Stalls per KSF GFA	330
			Visitor	0.2 Stalls per KSF FGA	21			0.25 Stalls per KSF GFA	27
Total					**306**		**208**		**422**

Note: KSF – 1,000 Square Feet; GFA – Gross Floor Area

Table 1 shows the parking requirement for each land use using the City of San Mateo Municipal Code, ITE Parking Generation, 5th Edition and ULI Shared Parking Manual.

Per the SMC 27.64.100(a)(1), the minimum parking required for the proposed development is calculated as 306 parking spaces.

The latest ITE Parking Generation manual, 5th edition, estimates parking demand based on the location of a project. The Project is assumed to be in the 'Dense Multi-use Urban' location, which has lower average parking rates requirements than a 'General Urban/Suburban Location'. The expanded database includes new and reclassified land uses such as affordable housing units. The minimum number of parking spaces

[2] California Government Code § 65915

required as per the ITE Parking Generation, 5th edition, is 208. The ITE parking generation rates are based on survey of similar land uses and does not provide different parking ratios for employees and visitors.

ULI Shared Parking Model, 3rd edition, parking ratios are based on the ITE Trip Generation manual 5th but assume that the project is located in general urban/suburban location. The initial minimum number of parking spaces required under the model is 422. However, the ULI database adds information on different user types (employees and visitors), time-of-day patterns, and day-of-week patterns. Because of this additional information, the ULI Shared Parking Model helps in estimating the parking requirements for mixed-use projects such as this project. The model considers that while each land use generates demand for a certain number of parking spaces, these parking demands fluctuate hour-by-hour and day-by-day and shared parking between land uses can minimize the amount of space and resources devoted to parking. Additionally, the ULI Shared Parking Model allows for nonvehicular mode (trips such as walking, biking, transit, and rideshare) and internal trip capture (trips between land uses internal to the site, between office and retail for instance) adjustments to be made for mixed-use developments to account for trips generated by the site that do not require parking.

Comparing the three methods, it appears that the ITE Parking Generation is the most suitable method to estimate the number of required parking spaces for the project context. However, additional information from the ULI Shared Parking Manual should also be applied to evaluate how the mix of uses will interact throughout a typical day to determine shared parking demand.

SHARED PARKING EVALUATION

The ITE parking requirements calculated above assumes individual use and does not account for the reduction of parking due to shared parking, alternate modes, or internal capture. This section expands on the baseline parking rates to evaluate internal capture, parking by user type and time-of-day and resulting parking demand.

Internal Trip Capture

Kittelson utilized the NCHRP Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments tool to estimate the number of internal trips that will be generated through mixed-use development. Typically, the tool is used to estimate peak hour internal capture percentages. Kittelson adjusted the tool to obtain weekday daily estimates. Appendix 1 shows the NCHRP Internal Trip Capture calculations for the project.

These assumptions reduce overall parking demand due to trips that do not require a vehicle to leave the site and are applied to the base parking ratios to estimate the adjusted number of parking spaces required. Parking rates and adjustment percentages are summarized in Table 2.

Table 2 Parking Requirement Calculation as per ULI Shared Parking Model

Land Use	Size	Unit	Weekday Peak Ratio Requirement (Visitor + Employees)	Number of Required Spaces	Internal Trip Capture	Adjusted Number of Required Spaces
Retail Space	17.6	KSF	2.09 Stalls per KSF GFA	37	13%	33
Office Space	104.7	KSF	1.63 Stalls per KSF GFA	171		149
Total				**208**		**182**

Note: KSF – 1,000 Square Feet; GFA – Gross Floor Area

Mode Adjustment

Given the location, the Project is estimated to have higher trips by walking, bicycling and transit than rest of the City. The San Mateo Downtown Caltrain Station is located 0.3 miles from the Project and will be a major alternative to driving for the visitors and employees. SamTrans also operates two bus routes – 59 and 295 on the East 4th Avenue providing connections to Redwood City, Belmont, Hillsborough, and Foster City. Route 59 is a School Days Only Route which operates only on Tuesdays and Thursdays primarily providing connection to Aragon High School. Route 295 runs along El Camino Real and Alameda connecting major Caltrain Transit Stations along the route. Effective January 16, 2022, the bus operates from 6 am to 6 pm at a frequency of one bus every two hours[3]. The Project also provides a loading zone on B Street that could be utilized for drop-off and pick-up as shown in Figure 2.

Figure 3 Loading Zone rendering at B-Street

Due to the lack of reliable data, the impact on required number of parking spaces due to mode adjustment cannot be estimated without surveying additional nearby locations. However, it is relevant to acknowledge these connections that help reduce parking demand and confirm a dense multi-use urban environment is appropriate assumption for the project.

Time-of-Day Needs

Different land-uses have varying parking demand across the day, the ULI Shared Parking Model provides the time-of-day rates for each land uses to estimate the staggered peak or to identify the peak parking period. Ratio of employee and visitor demands were applied to the ITE rates to estimate the parking user type. Table 3 shows the time-of-day factors for the weekday. It is observed that retail and office use will not have 100 percent occupancy for the same hour.

Table 3 Time-of-Day Factors for Weekday Demand

Land Use	Type	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM
Retail Space	Employee	20%	30%	40%	80%	90%	100%	100%	100%	100%
	Visitor	5%	20%	30%	50%	60%	67%	85%	90%	95%
Office	Employee	0%	20%	60%	80%	90%	100%	90%	80%	60%
	Visitor	0%	20%	60%	80%	90%	100%	90%	80%	60%

Land Use	Type	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM
Retail Space	Employee	100%	100%	80%	50%	35%	20%	15%	15%	10%	0%
	Visitor	100%	100%	100%	85%	55%	35%	30%	30%	10%	0%
Office	Employee	40%	20%	10%	5%	0%	0%	0%	0%	0%	0%

[3] Source: SamTrans, 2022: https://www.samtrans.com/schedulesandmaps/maps.html

	Visitor	40%	20%	10%	5%	0%	0%	0%	0%	0%	0%

Source: ULI Shared Parking Manual, 3rd edition

Reviewing the employee percent assumptions for retail space throughout the day, an adjustment was made to better reflect anticipated employee demand for a grocery store that is operating from 7:00 AM to 9:00 PM. When calculating demand, the retail employee percent was changed to 100% between 6:00 AM and 10:00 PM.

Table 4 provides the resulting weekday parking demands by hour and Figure 3 illustrates it in graph format. The peak hour parking demand for the Project occurs at 11 AM with a peak demand of 173. The projected parking demand does not exceed the parking supply of 239 spaces throughout the day. The peak number of parking spaces by user is summarized below.

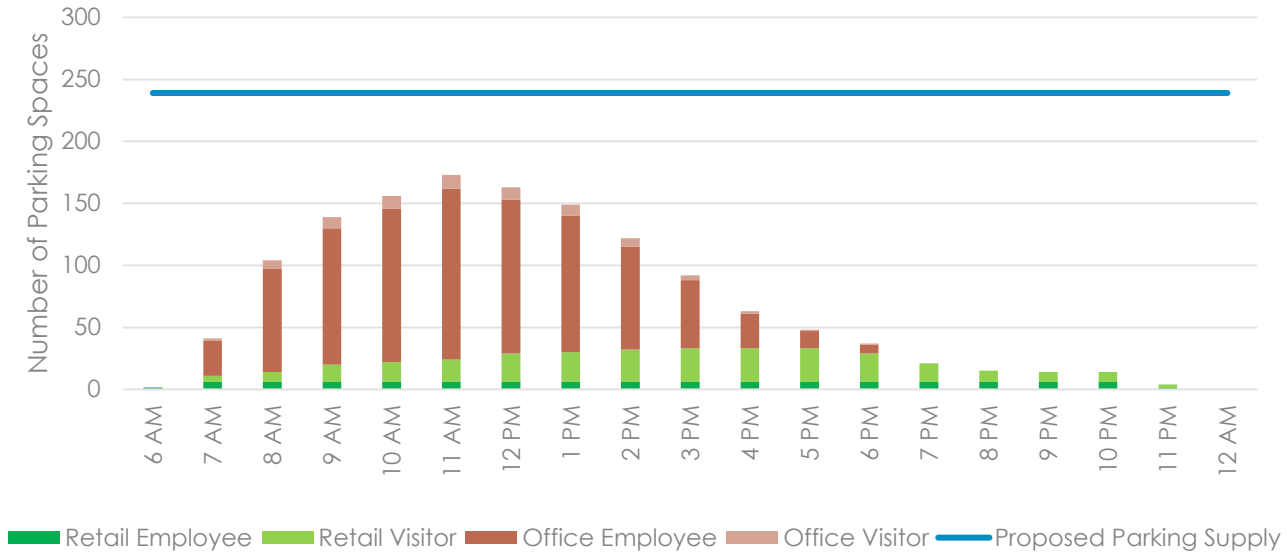
- Retail employees: 6 spaces (all day)
- Retail visitors: 27 spaces (3:00 – 6:00 PM)
- Office employees: 138 spaces (11:00 AM)
- Office visitors: 11 spaces (11:00 AM)

Table 4 Time-of-Day Weekday Demand

Land Use	Type	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM
Retail Space	Employee	6	6	6	6	6	6	6	6	6
	Visitor	1	5	8	14	16	18	23	24	26
Office	Employee	0	28	83	110	124	138	124	110	83
	Visitor	0	2	7	9	10	11	10	9	7

Land Use	Type	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM
Retail Space	Employee	6	6	6	6	6	6	6	6	1	0
	Visitor	27	27	27	23	15	9	8	8	3	0
Office	Employee	55	28	14	7	0	0	0	0	0	0
	Visitor	4	2	1	1	0	0	0	0	0	0

Figure 4 Weekday Parking Demand by Hour



BICYCLE PARKING

SMC 27.64.262 requires all new development to provide short-term and long-term bicycle parking facilities. This would require the project to provide 15 short-term and 21 long-term bicycle spaces. The bicycle storage space is located near the entrance on S. Ellsworth Avenue and provides more than the required number. Table 4 provides a summary of required and proposed bicycle parking for both short and long-term.

Table 5 Proposed and Required Bicycle Parking

Land Use	Size	Unit	Short-Term Bicycle Parking Requirement	Long-Term Bicycle Parking Requirement	Required Number of Short-Term Spaces	Required Number of Long-Term Spaces	Proposed Number of Short-Term Spaces	Proposed Number of Long-Term Spaces
Retail Space	17.6	KSF	1 per 2 KSF	1 per 12 KSF	9	1	12	1
Office Space	104.7	KSF	1 per 20 KSF	1 per 10 KSF	5	10	5	10
Affordable Housing	10	DU	0.05 per unit	1 per unit	1	10	0	10
					15	**21**	**17**	**21**

CONCLUSION AND RECOMMENDATIONS

Based on the ITE Parking Generation ratios for a dense multi-use urban location, the Project is expected to generate a parking demand of 208 parking spaces. The demand would be less than the proposed supply by 31 parking spaces.

Applying internal capture and ULI Shared Parking Model information on time of day, the Project is expected to generate a peak parking demand of 173 parking spaces during weekdays around 11 AM. The peak number of parking spaces required by user is summarized below.

- Retail employees: 6 spaces (all day)
- Retail visitors: 27 spaces (3:00 – 6:00 PM)
- Office employees: 138 spaces (11:00 AM)
- Office visitors: 11 spaces (11:00 AM)

Kittelson concludes that the parking provided by the applicant is sufficient and would meet the parking demand needs for the proposed project. The projected demand will not exceed the proposed parking supply throughout the day. The project also provides more than the required number of short-term and long-term bicycle parking.

APPENDIX 1 NCHRP INTERNAL TRIP CAPTURE ESTIMATION

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	222 East 4th Avenue Project	**Organization:**	Kittelson & Associates, Inc.
Project Location:	San Mateo, CA	**Performed By:**	Dhawal Kataria
Scenario Description:		**Date:**	20-Mar-22
Analysis Year:	2022	**Checked By:**	
Analysis Period:	**Weekday**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	105	KSF	1134	567	567
Retail	850	18	KSF	1652	826	826
Restaurant				0		
Cinema/Entertainment				0		
Residential	223	10	DU	4	2	2
Hotel				0		
All Other Land Uses[2]				0		
Total				2790	1395	1395

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.30	12%	3%	1.30	12%	3%
Retail	1.30	12%	3%	1.30	12%	3%
Restaurant						
Cinema/Entertainment						
Residential	1.00	12%	3%	1.00	12%	3%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		206	0	0	0	0
Retail	29		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	3,626	1,813	1,813
Internal Capture Percentage	13%	13%	13%
External Vehicle-Trips[3]	2,066	1,033	1,033
External Transit-Trips[4]	378	189	189
External Non-Motorized Trips[4]	94	47	47

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	4%	28%
Retail	19%	3%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute