MEMORANDUM

URBAN | CROSSROADS

DATE: June 9, 2023
TO: Tracy Zinn, T&B Planning, Inc.
FROM: Charlene So, Urban Crossroads, Inc.
JOB NO: 15461-02 TG Letter

PLATFORM TUSTIN TRIP GENERATION ASSESSMENT

Urban Crossroads, Inc. is pleased to provide the following Trip Generation Assessment for the Platform Tustin (**Project**), which is located at 15661 Red Hill Avenue (Assessor's Parcel Number APN 430-233-19) in the City of Tustin.

PROPOSED PROJECT

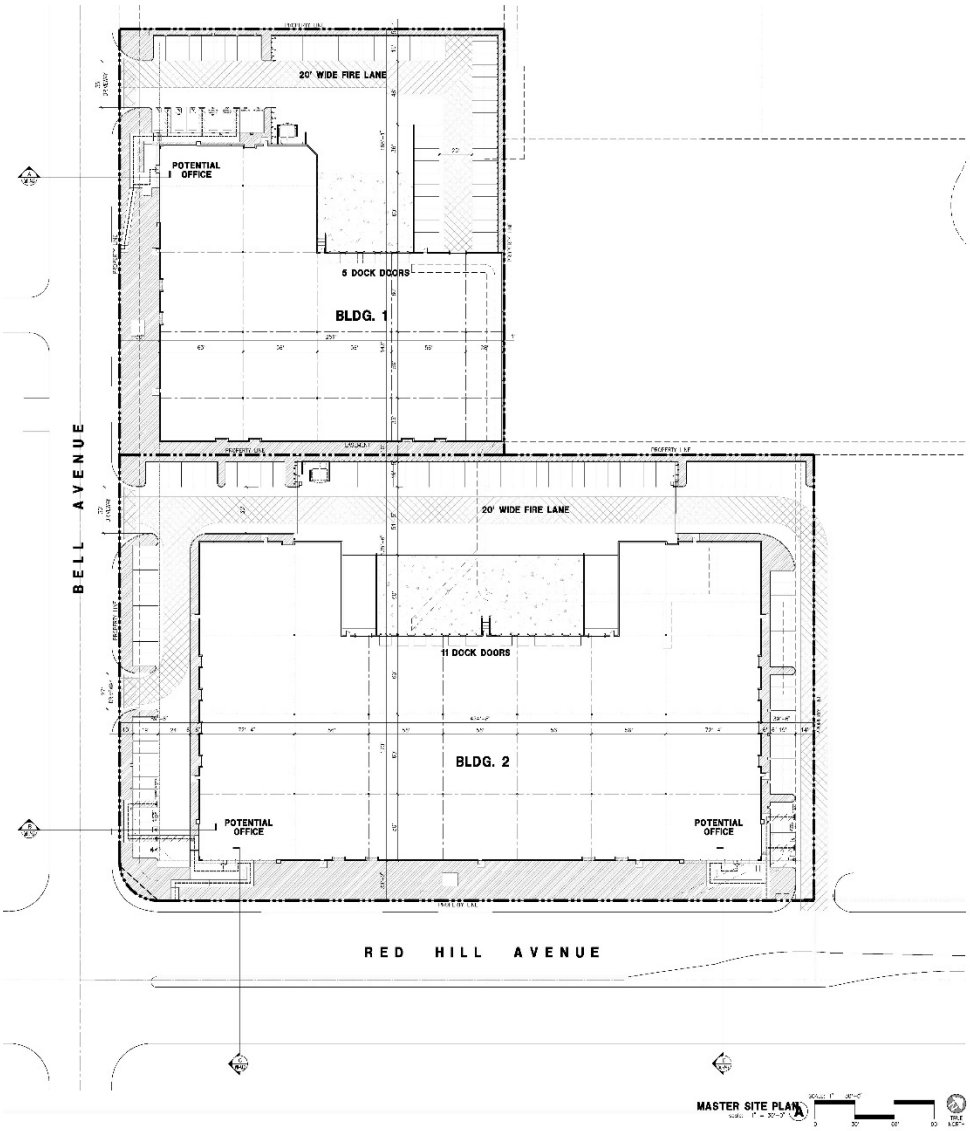
There are three existing office buildings within Centurion Plaza that currently occupy the site and are presently occupied:

- 15641 Red Hill Avenue: 2-story, multi-tenant office building totaling 50,311 square feet
- 15661 Red Hill Avenue: 2-story, multi-tenant office building totaling 47,782 square feet
- 15621 Red Hill Avenue: 2-story, multi-tenant office building totaling 41,085 square feet
- **Total of 139,178 square feet**

In addition to the ground parking, there is also an existing parking garage located behind 15621 Red Hill Avenue that also serves the site. The Project includes the redevelopment of the site to construct two new warehouse buildings totaling 142,788 square feet with Building 1 totaling 49,553 square feet and Building 2 totaling 93,235 square feet (**totaling 142,788 square feet**).

There are currently two full-access driveways on Bell Avenue and two right-in/right-out driveways on Red Hill Avenue. The Project is proposing three full-access driveways on Bell Avenue and a single right-in/right-out driveway on Red Hill Avenue. A preliminary site plan for the proposed Project is shown in Exhibit 1.

EXHIBIT 1: PRELIMINARY SITE PLAN



TRIP GENERATION

EXISTING TRAFFIC

As noted previously, the site is currently developed with three 2-story multi-tenant office buildings within Centurion Plaza that accommodates ground parking and a parking garage:

- 15641 Red Hill Avenue: 50,311 square feet
- 15661 Red Hill Avenue: 47,782 square feet
- 15621 Red Hill Avenue: 41,085 square feet
- **Total of 139,178 square feet**

In an effort to understand the existing traffic associated with the current use, trip-generation statistics published in the Institute of Transportation Engineers (**ITE**) Trip Generation Manual (11th Edition, 2021) was used for the existing use. The existing use has been evaluated assuming general office use (see Attachment A). Table 1 summarizes the trip generation rates and existing trip generation. Attachment A includes the pages from the ITE Trip Generation Manual for the General Office (ITE Land Use Code 710) land use category. Table 1 summarizes the existing trip generation which indicates the existing site currently generates an average of 1,510 two-way trips per day, with 211 trips during the AM peak hour and 200 trips during the PM peak hour.

TABLE 1: EXISTING TRIP GENERATION SUMMARY

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
General Office	TSF	710	1.34	0.18	1.52	0.24	1.20	1.44	10.84

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

[2] TSF = thousand square feet

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Existing Use: General Office	139.178	TSF	186	25	211	34	166	200	1,510

[1] TSF = thousand square feet

PROPOSED PROJECT

It is our understanding that the Project will redevelop the site to construct two new warehouse buildings: Building 1 with 49,553 square feet and Building 2 with 93,235 square feet (total of 142,788 square feet). In order to develop the traffic characteristics of the proposed Project, trip-generation statistics published in the ITE Trip Generation Manual (11th Edition, 2021) was used for the proposed Project. Since the proposed is a speculative warehousing-related use without a current tenant identifies, the Project has been evaluated assuming high-cube warehousing fulfillment (sort facility). Table 2 summarizes the trip generation rates. For purposes of this assessment, the following land use, and vehicle mix have been utilized (see Attachment B):

- High-Cube Fulfillment Center Warehouse (ITE Land Use Code 155) has been used to derive site specific trip generation estimates for up to 142,788 square feet of the proposed Project. The ITE Trip Generation Manual has trip generation rates for high-cube fulfillment center use for both non-sort and sort facilities (ITE land use code 155). As defined by ITE, *a high-cube warehouse is a building that typically has at least 200,000 gross square feet of floor area, has a ceiling height of 24 feet or more, and is used primarily for the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. A typical high-cube warehouse has a high level of on-site automation and logistics management. The automation and logistics enable highly-efficient processing of goods through the high-cube warehouse.* The ITE Trip Generation Manual has two subcategories for the High-Cube Fulfillment Center use: sort and non-sort. ITE describes a sort facility as a *fulfillment center that ships out smaller items, requiring extensive sorting, typically by manual means*. In comparison, *a non-sort facility is a fulfillment center that ships large box items that are processed primarily*

with automation rather than through manual means. Some limited assembly and repackaging may occur within the facility. A sort facility has been assumed for the purposes of calculating trip generation for the Project due to its current speculative nature. The vehicle mix (passenger cars versus trucks) has been obtained from the ITE's Trip Generation Manual. The truck percentages were further broken down by axle type per the following South Coast Air Quality Management District (SCAQMD) recommended truck mix: 2-Axle = 16.7%; 3-Axle = 20.7%; 4+-Axle = 62.6%.

TABLE 2: TRIP GENERATION RATES

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicle Trip Generation Rates									
High-Cube Fulfillment Center (Sort)[3]	TSF	155	0.651	0.089	0.740	0.091	0.559	0.650	4.870
Passenger Cars			0.645	0.085	0.730	0.086	0.554	0.640	4.620
Trucks			0.000	0.000	0.000	0.000	0.000	0.000	0.000
High-Cube Fulfillment Center (Sort)[3]	TSF	155	0.651	0.089	0.740	0.091	0.559	0.650	4.870
Passenger Cars			0.645	0.085	0.730	0.086	0.554	0.640	4.620
Trucks (PCE = 3.0)			0.194	0.025	0.219	0.026	0.166	0.192	1.386

[1] Trip Generation & Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

[2] TSF = thousand square feet

[3] Truck Mix: South Coast Air Quality Management District's (SCAQMD) recommended truck mix, by axle type.
Normalized % - Without Cold Storage: 16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.6% 4-Axle trucks.

TABLE 3: PROJECT TRIP GENERATION SUMMARY

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicles:									
High-Cube Fulfillment Center (Sort Facility)	140.788	TSF							
Passenger Cars:			91	12	103	12	78	90	650
Total Truck Trips:			1	0	1	0	0	0	38
Total Trips (Actual Vehicles)[2]			**92**	**12**	**104**	**12**	**78**	**90**	**688**
High-Cube Fulfillment Center (Sort Facility)	140.788	TSF							
Passenger Cars:			91	12	103	12	78	90	650
Total Truck Trips (PCE = 3.0):			3	0	3	0	0	0	114
Total Trips (PCE)[2]			**94**	**12**	**106**	**12**	**78**	**90**	**764**

[1] TSF = thousand square feet

[2] Total Trips = Passenger Cars + Truck Trips.

Passenger car equivalent (PCE) factors were applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). PCEs allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, to be used for the purposes of capacity and level of service analyses. A PCE factor of 3.0 has been utilized for all trucks.

The trip generation summary illustrating daily and peak hour trip generation estimates for the proposed Project are summarized on Table 3 in actual vehicles. The proposed Project is anticipated to generate 688 two-way trips per day with 104 AM peak hour trips and 90 PM peak

hour trips. The Project is anticipated to generate 764 two-way PCE trips per day with 106 PCE AM peak hour trips and 90 PCE PM peak hour trips.

TRIP GENERATION COMPARISON

Table 4 shows the trip generation comparison between the existing use and proposed Project and identifies the resulting net new trips (reflected in PCE). As shown, the Project is anticipated to generate 756 fewer two-way PCE trips per day with105 fewer PCE AM peak hour trips and 110 PCE net new PM peak hour trips as compared to the existing use.

TABLE 4: TRIP GENERATION COMPARISON

	AM Peak Hour			PM Peak Hour			
Land Use	In	Out	Total	In	Out	Total	Daily
Existing Use							
General Office	186	25	211	34	166	200	1,510
Proposed Project							
High-Cube Fulfillment (Sort Facility)	94	12	106	12	78	90	764
Net New Project Trips (PCE)	**-92**	**-13**	**-105**	**-22**	**-88**	**-110**	**-746**

FINDINGS

The City utilizes a threshold of 50 peak hour trips. If a project generates more than 50 peak hour trips (in either the AM or PM peak hours, the project could be required to conduct a more intensive analysis that evaluates near-by study area intersections as opposed to a localized site access study.

The proposed Project is anticipated to generate a net reduction of 746 daily two-way PCE trips in conjunction with a net decrease in PCE AM and PM peak hour trips of 105 and 110 peak hour trips, respectively. As such, the Project would not require any additional traffic operations analysis beyond this trip generation assessment. If you have any questions or comments, I can be reached at cso@urbanxroads.com

ATTACHMENT A

ITE TRIP GENERATION RATES – GENERAL OFFICE (ITE 710)

Land Use: 710
General Office Building

Description

A general office building is a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted. An office building houses multiple tenants that can include, as examples, professional services, insurance companies, investment brokers, a banking institution, a restaurant, or other service retailers. A general office building with a gross floor area of 10,000 square feet or less is classified as a small office building (Land Use 712). Corporate headquarters building (Land Use 714), single tenant office building (Land Use 715), medical-dental office building (Land Use 720), office park (Land Use 750), research and development center (Land Use 760), and business park (Land Use 770) are additional related uses.

Additional Data

If two or more general office buildings are in close physical proximity (within a close walk) and function as a unit (perhaps with a shared parking facility and common or complementary tenants), the total gross floor area or employment of the paired office buildings can be used for calculating the site trip generation. If the individual buildings are isolated or not functionally related to one another, trip generation should be calculated for each building separately.

For study sites with reported gross floor area and employees, an average employee density of 3.3 employees per 1,000 square feet GFA (or roughly 300 square feet per employee) has been consistent through the 1980s, 1990s, and 2000s. No sites counted in the 2010s reported both GFA and employees.

The average building occupancy varies considerably within the studies for which occupancy data were provided. The reported occupied gross floor area was 88 percent for general urban/suburban sites and 96 percent for the center city core and dense multi-use urban sites.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

The average numbers of person trips per vehicle trip at the eight center city core sites at which both person trip and vehicle trip data were collected are as follows:

- 2.8 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 2.9 during Weekday, AM Peak Hour of Generator
- 2.9 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 3.0 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 18 dense multi-use urban sites at which both person trip and vehicle trip data were collected are as follows:

- 1.5 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.5 during Weekday, AM Peak Hour of Generator
- 1.5 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.5 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 23 general urban/suburban sites at which both person trip and vehicle trip data were collected are as follows:

- 1.3 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.3 during Weekday, AM Peak Hour of Generator
- 1.3 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.4 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, the 2010s, and the 2020s in Alberta (CAN), California, Colorado, Connecticut, Georgia, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Michigan, Minnesota, Missouri, Montana, New Hampshire, New Jersey, New York, Ontario (CAN)Pennsylvania, Texas, Utah, Virginia, and Washington.

Source Numbers

161, 175, 183, 184, 185, 207, 212, 217, 247, 253, 257, 260, 262, 273, 279, 297, 298, 300, 301, 302, 303, 304, 321, 322, 323, 324, 327, 404, 407, 408, 419, 423, 562, 734, 850, 859, 862, 867, 869, 883, 884, 890, 891, 904, 940, 944, 946, 964, 965, 972, 1009, 1030, 1058, 1061

General Office Building
(710)

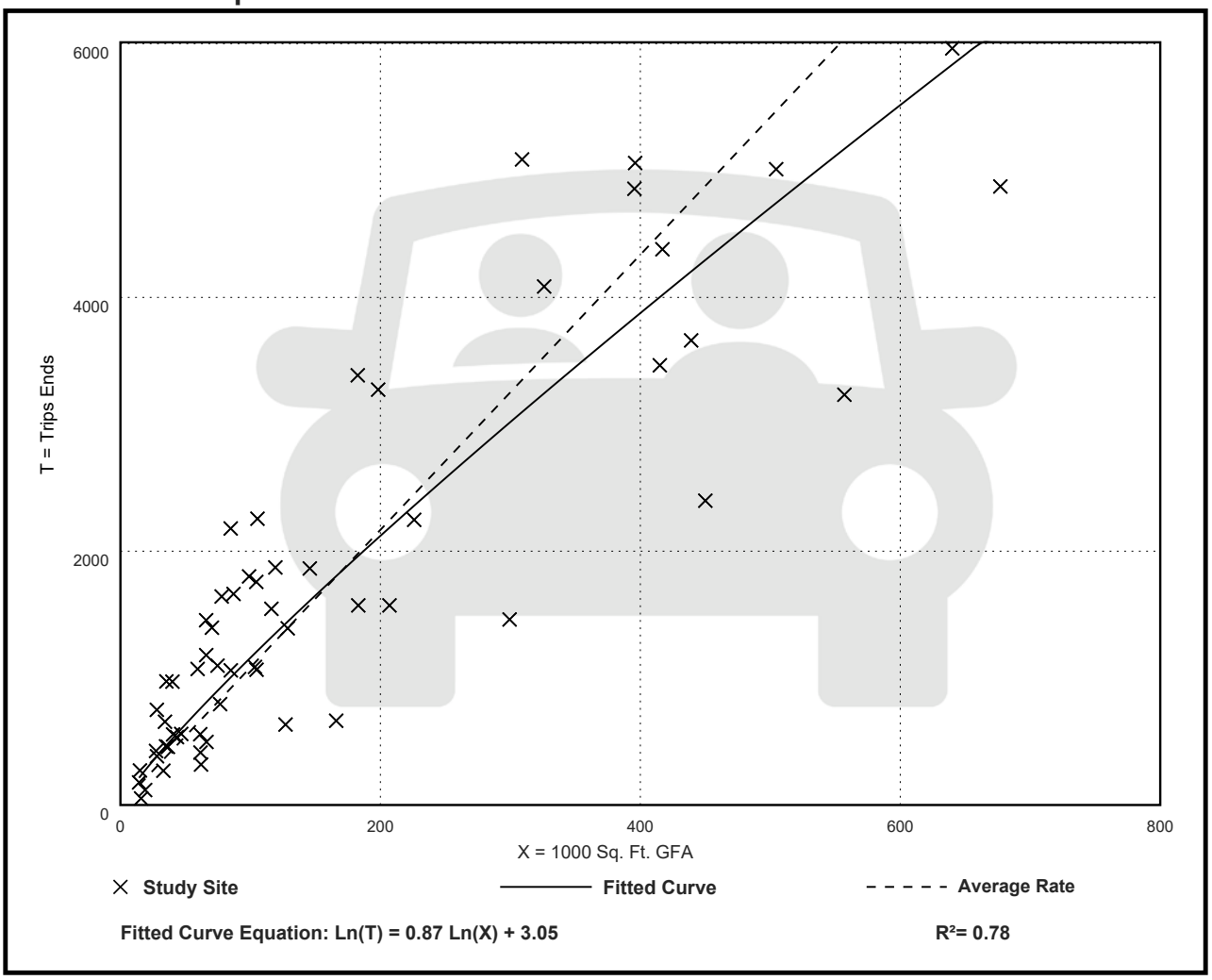
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 59
Avg. 1000 Sq. Ft. GFA: 163
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
10.84	3.27 - 27.56	4.76

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.87 Ln(X) + 3.05

R^2= 0.78

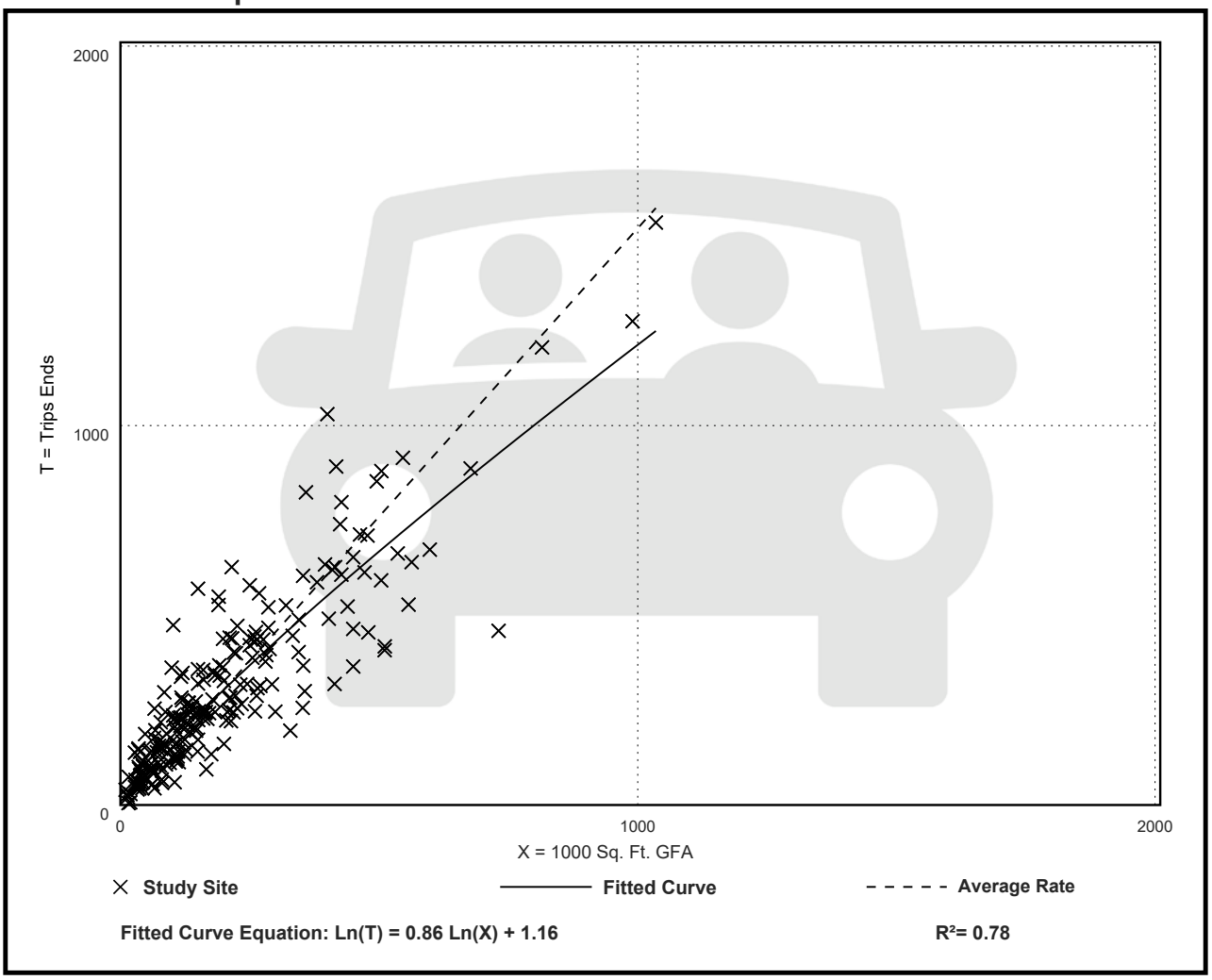
General Office Building
(710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 221
Avg. 1000 Sq. Ft. GFA: 201
Directional Distribution: 88% entering, 12% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.52	0.32 - 4.93	0.58

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.86 Ln(X) + 1.16

R^2= 0.78

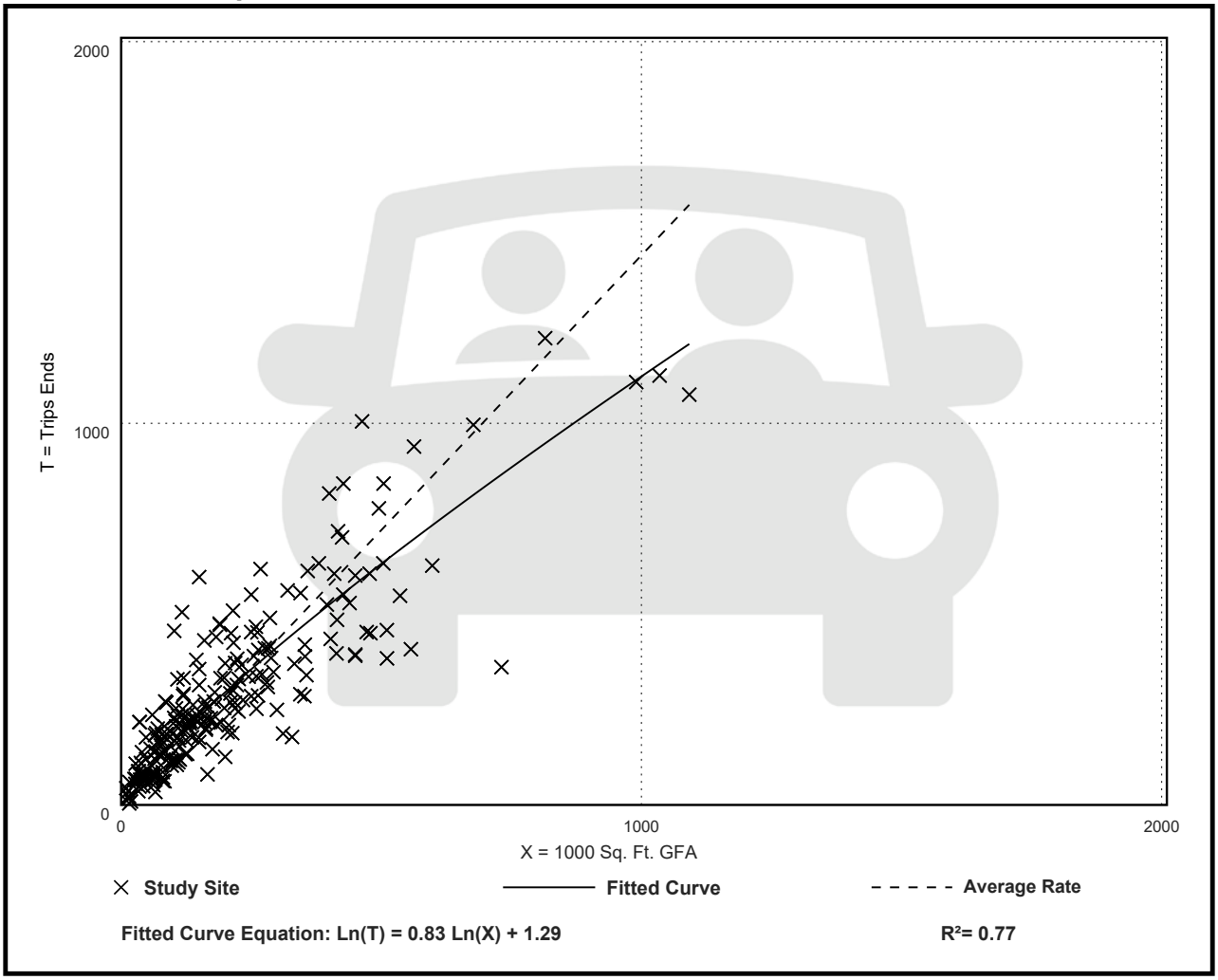
General Office Building
(710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 232
Avg. 1000 Sq. Ft. GFA: 199
Directional Distribution: 17% entering, 83% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.44	0.26 - 6.20	0.60

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.83 Ln(X) + 1.29

R^2= 0.77

ATTACHMENT B

ITE TRIP GENERATION RATES – HIGH-CUBE FULFILLMENT (SORT FACILITY) (ITE 155)

Land Use: 155
High-Cube Fulfillment Center Warehouse

Description

A high-cube warehouse (HCW) is a building that typically has at least 200,000 gross square feet of floor area, has a ceiling height of 24 feet or more, and is used primarily for the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. A typical HCW has a high level of on-site automation and logistics management. The automation and logistics enable highly-efficient processing of goods through the HCW. A high-cube warehouse can be free-standing or located in an industrial park.

Warehousing (Land Use 150), high-cube transload and short-term storage warehouse (Land Use 154), high-cube parcel hub warehouse (Land Use 156), and high-cube cold storage warehouse (Land Use 157) are related land uses.

Land Use Subcategory

Each fulfillment center in the ITE database has been categorized as either a sort or non-sort facility. A sort facility is a fulfillment center that ships out smaller items, requiring extensive sorting, typically by manual means. A non-sort facility is a fulfillment center that ships large box items that are processed primarily with automation rather than through manual means. Separate sets of data plots are presented for the sort and non-sort fulfillment centers. Some limited assembly and repackaging may occur within the facility.

Additional Data

A high-cube warehouse may contain a mezzanine. In a HCW setting, a mezzanine is a free-standing, semi-permanent structure that is commonly supported by structural steel columns and that is lined with racks or shelves. The gross floor area (GFA) values for the study sites in the database for this land use do NOT include the floor area of the mezzanine. The GFA values represent only the permanent ground-floor square footage.

The amount of office/employee welfare space that is provided within a HCW can be highly variable but is typically an insignificant portion of the overall building square footage. Within the trip generation database, common values are between 3,000 and 5,000 square feet for a Cold Storage HCW and between 5,000 and 10,000 square feet for Transload, Fulfillment Center, and Parcel Hub HCW (all of which are less than one percent of total GFA for a site). Therefore, for the trip generation data plots, any office space that is part of the normal operation of the warehouse is included in the total GFA.

The High-Cube Warehouse/Distribution Center-related land uses underwent specialized consideration through a commissioned study titled “High-Cube Warehouse Vehicle Trip Generation Analysis,” published in October 2016. The results of this study are posted on the ITE website at http://library.ite.org/pub/a3e6679a-e3a8-bf38-7f29-2961becdd498.

The sites were surveyed in the 2000s and the 2010s in California, New Jersey, and Texas.

Source Numbers

752, 941, 1001, 1002, 1011

High-Cube Fulfillment Center Warehouse - Sort (155)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

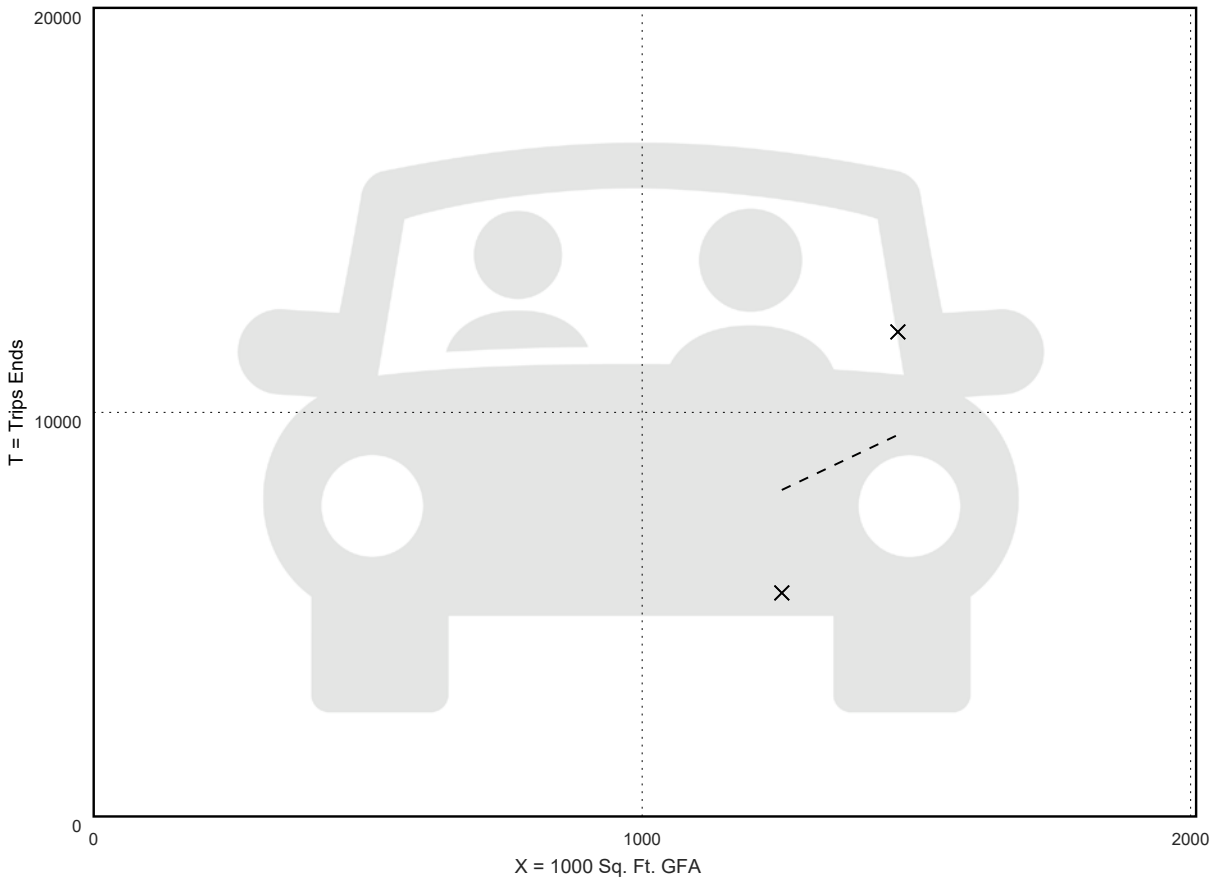
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. 1000 Sq. Ft. GFA: 1360
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
6.44	4.41 - 8.18	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

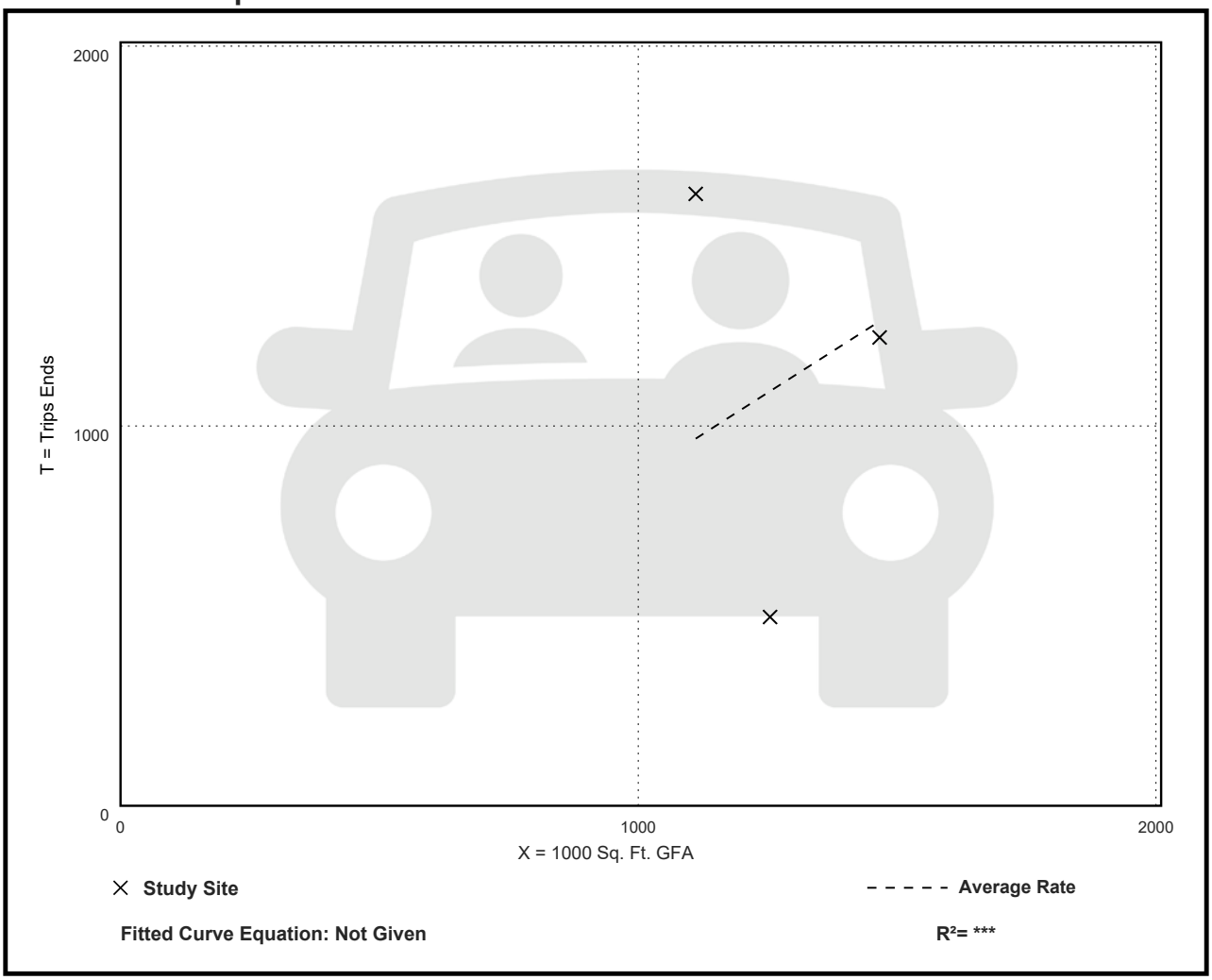
High-Cube Fulfillment Center Warehouse - Sort (155)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. 1000 Sq. Ft. GFA: 1277
Directional Distribution: 81% entering, 19% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.87	0.40 - 1.45	0.51

Data Plot and Equation



High-Cube Fulfillment Center Warehouse - Sort (155)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. 1000 Sq. Ft. GFA: 1277
Directional Distribution: 39% entering, 61% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.20	0.55 - 1.98	0.77

Data Plot and Equation