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To: Essex, Vermont Planning & Zoning

From: Christopher McLean, P.E., SITES AP

CC: O'Leary-Burke Civil Associates

Date: 30 January 2025

Re: Traffic Impact Statement
Proposed Delivery Station
Kimo Drive
Essex, Vermont
Langan Project No.: 140287401

Langan Engineering & Environmental Services, Inc. (Langan) has evaluated traffic operations for the proposed package delivery station on Kimo Drive in Essex, Vermont. Scannell Properties ("Scannell") proposes to construct a single-story, package delivery facility with surface-level car, van and trailer parking and associated site improvements. Our analysis supplements the findings of the Saxon Hill Industrial Park Phase II – Transportation Impact Study prepared by Wall Consultant Group dated 5 September 2024 for the subdivision.

PROJECT DESCRIPTION

The project site occupies two parcels within the Saxon Hill Industrial Park ("SHIP") Phase II subdivision. The subdivision is depicted on plans entitled "Saxon Hill Industrial Park ("SHIP") Phase II Six Lot Industrial Subdivision prepared by O'Leary-Burke Civil Associates, PLC dated 1/2/2025. The project site is located on two lots within the subdivision: lots 14 (± 18.9 acres) and 13 (± 4.0 acres) totaling approximately ± 22.9 acres¹. The site is bordered by undeveloped woodland to the north and east, a solar panel farm to the south, and undeveloped Lots 10, 11 and 12 of the SHIP subdivision to the west.

Scannell proposes to construct a single-story, $\pm 107,000$ square-foot footprint package delivery station on the site. The facility includes 211 car parking stalls, 271 van parking stalls, 5 trailer parking stalls, 5 box truck parking stalls, and 11 loading docks. The site will be accessed via four driveways off Kimo Drive. The two southern driveways are full access for employees and vans.

¹ Lots 13 and 14 are referred to as lots 4 and 5 in the Wall Consultant Group traffic study. These lots will be combined into a single Lot 13 as part of the Final Subdivision Approval.

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The next driveway to the north services the loading docks, exclusively. The northernmost driveway is primarily for van egress. The site plan is provided in the attachments.

SITE OPERATIONS

There are three distinct parking and loading areas on the site. The southeast lot provides 271 van parking spaces. This lot is accessed from the southernmost driveway. Vans are stored in the lot overnight. Delivery drivers take the van from the lot to the loading area on the east side of the facility. Once loaded the vans leave via the northernmost, exit-only driveway. Employees and visitors park in the lot immediately south of the facility. This area is served by an exclusive full access driveway along the west side of the building. Tractor trailer and single-unit vehicle (box truck) deliveries are isolated on the north side of the building via a separate full access driveway.

Tractor trailers are expected to deliver packages to the facility overnight. Associates working in the facility will then sort the boxes into individual routes. Van drivers will arrive in their personal vehicles during the day, park and switch to a van. They will drive the vans from the van parking area to the building, where the vans are loaded with the packages for their route. Once complete with their route and at the end of their shift, the van drivers will return to the facility and switch back to their personal vehicle and leave the facility.

TRIP GENERATION

The trip generation for the proposed delivery station was compared to total estimate for the SHIP Phase II subdivision as presented in the Wall Consultant Group September 2024 traffic study. The trip generation for the approved subdivision and the project's parcels were estimated using trip generation data contained in the ITE *Trip Generation Manual*, 11th Edition². In the SHIP II subdivision study, Land Use Code (LUC) 130 – *Industrial Park* was used to estimate the trip generation of the entire subdivision. The WCG study assumed floor area ratio (FAR) of 0.32 and applied it to the overall subdivision acreage resulting in an estimated overall building area of 528,100 square-feet (SF) for the entire subdivision. The total allotted building square-footage was then used to calculate peak hour trips using ITE.

The delivery station's anticipated trip generation for the project was estimated using LUC 156 – *High-Cube Parcel Hub Warehouse* as it most closely represents the planned use. Additionally, we applied a 20% increase to the ITE trip generation estimates as a conservative measure. The intent of the adjustment is to provide a buffer for potential tenant-specific traffic schedule due to its nature of being a newer facility with less empirical data than a typical delivery station. The

² Trip Generation Manual, 11th Edition published by the Institution of Transportation Engineers (ITE).

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resulting trip generation estimates and comparisons during the AM and PM peak hour periods can be seen below in **Table 1**.

TABLE 1 ANTICIPATED TRIP GENERATION – ESSEX, VT DELIVERY STATION							
USE	LAND USE CODE¹	AM PEAK HOUR			PM PEAK HOUR		
		ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
SHIP Subdivision Trip Gen (528,100 SF)	130 ²	145	34	180	40	140	180
Proposed Delivery Station (107,000 SF)	156 ³	38	37	75	46	22	68
Adjustment Escalation (20%)		8	7	15	9	4	13
Proposed Delivery Station (107,000 SF)	156 ³	46	44	90	55	26	81
Remaining Trips		99	-10	90	-15	114	99

¹ Land Use Codes based on ITE Trip Generation Manual 11th Edition

² Volume based on ITE Trip Generation Manual 11th Edition: Land Use Code 130: Industrial Park as presented in the September 2024 SHIP II Subdivision traffic study by WCG

³ Volume based on ITE Trip Generation Manual 11th Edition: Land Use Code 156: High-Cube Parcel Hub Warehouse

The resulting trip generation calculations indicate that the proposed delivery station will generate 90 total morning peak hour trips (46 in, 44 out) and 82 total afternoon peak hour trips (55 in, 26 out). Although the enter/exit distribution of trips may exceed their respective allotment from the approved Transportation Impact Study for the SHIP subdivision, the total overall traffic to be generated by the proposed delivery station during the AM and PM peak hours falls within the total approved trips.

Employees and van drivers are expected to be hired from the greater Essex area and will arrive from and delivery to the surrounding area. Vans will provide deliveries to the west via Route 117 and Route 15 and to the south/east via Route 117 and I-89. The proposed trip distribution is similar to the approved trip distribution for the overall SHIP subdivision, which expects employees to arrive/depart from the greater Essex area. Therefore, no revisions to the subdivision trip distribution is proposed as part of this traffic statement.

SAFETY ANALYSIS

Intersection Sight Distance

Langan evaluated the sight distances at the site driveways on Thompson Drive to determine if the available sight distances meet the minimum requirements established in the AASHTO publication titled *A Policy on Geometric Design of Highways and Streets 7th Edition*³.

Intersection sight distance is the distance a vehicle stopped on the minor leg of an intersection is required to see in each direction on the major road to provide enough time to make a turn. The calculation uses the design speed of the major road, the distance the stopped vehicle is required to travel across lanes, and reaction times based on the design vehicle. The sight triangle is measured from the driver's eye 3.5 feet above the road surface and 15 feet behind the edge of the traveled way. The driver must see an object 3.5 feet off the ground in the distance. A clear sight triangle is established within based on these measurements.

The site driveway's are proposed to provide access to the new Kimo Drive to be constructed under the SHIP subdivision. Due to the nature of the subdivision and the anticipated users, an assumed speed limit for the new industrial park was determined to be 25 MPH. Based on this, a design speed of 30 MPH was selected (5 MPH over assumed posted speed limit). A summary of the available and required sight distances at the site driveways (numbered one through four from north to south) can be seen below in **Table 2**.

³ A Policy on Geometric Design of Highways and Streets, 7th Edition published by the American Association of State Highway and Transportation Officials (AASHTO) in 2018

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TABLE 2 INTERSECTION SIGHT DISTANCE SUMMARY			
LOCATION	Design Speed	Intersection Sight Distance	
		Required	Provided
Driveway 1 Looking Right Looking Left	30 mph	335' 335'	335' 400'
Driveway 2 Looking Right Looking Left	30 mph	335' 335'	350' 750'
Driveway 3 Looking Right Looking Left	30 mph	335' 335'	355' 550'
Driveway 4 Looking Right Looking Left	30 mph	335' 335'	490' 390'

As shown, the intersection sight distances (ISDs) provided at the site driveways for exiting vehicles meet AASHTO's minimum requirements. In instances where sight lines are required to cross over the development's property, unobstructed sight triangles will be ensured by the developer.

CONCLUSION

This assessment investigates the potential traffic impacts generated by the proposed delivery station on Kimo Drive in Essex, Vermont on the surrounding area roadway network. Our evaluation indicates that the existing roadway infrastructure within the project vicinity has the capacity to accommodate the traffic generated by the site. The anticipated traffic to be generated by the proposed delivery station falls under the total allotted trip generation estimates under the Transportation Impact Study prepared for the SHIP Phase II subdivision.

ZONING REQUIREMENTS

ZONE: RPD-1 40% - RESOURCE PRESERVATION DISTRICT INDUSTRIAL
 PARCEL AREA: ±999,266 SF = ±22.94 AC

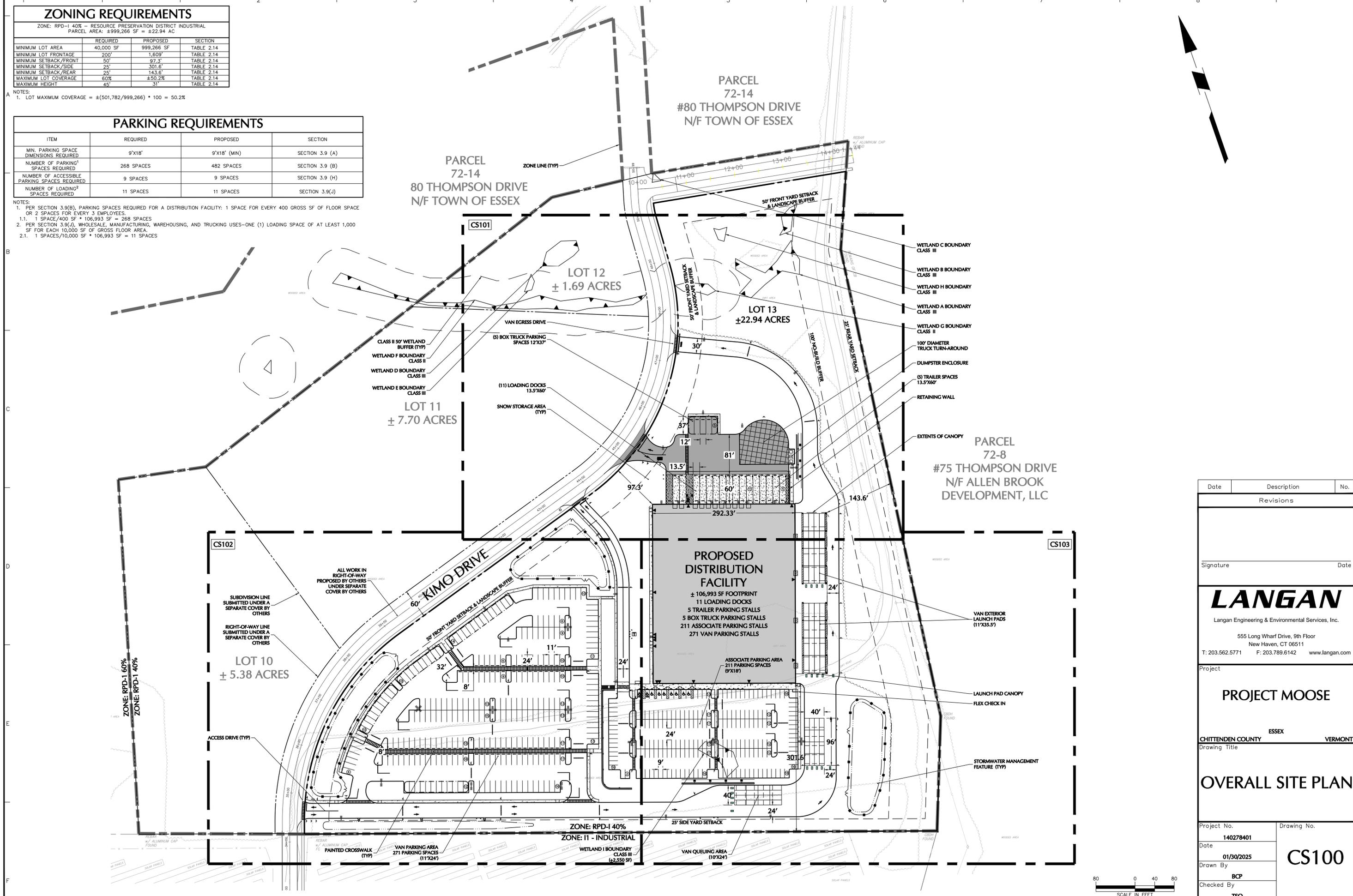
	REQUIRED	PROPOSED	SECTION
MINIMUM LOT AREA	40,000 SF	999,266 SF	TABLE 2.14
MINIMUM LOT FRONTAGE	200'	1,609'	TABLE 2.14
MINIMUM SETBACK/FRONT	50'	97.3'	TABLE 2.14
MINIMUM SETBACK/SIDE	25'	301.6'	TABLE 2.14
MINIMUM SETBACK/REAR	25'	143.6'	TABLE 2.14
MAXIMUM LOT COVERAGE	60%	±50.2%	TABLE 2.14
MAXIMUM HEIGHT	45'	31'	TABLE 2.14

NOTES:
 1. LOT MAXIMUM COVERAGE = $\pm(501,782/999,266) \cdot 100 = 50.2\%$

PARKING REQUIREMENTS

ITEM	REQUIRED	PROPOSED	SECTION
MIN. PARKING SPACE DIMENSIONS REQUIRED	9'X18'	9'X18' (MIN)	SECTION 3.9 (A)
NUMBER OF PARKING SPACES REQUIRED	268 SPACES	482 SPACES	SECTION 3.9 (B)
NUMBER OF ACCESSIBLE PARKING SPACES REQUIRED	9 SPACES	9 SPACES	SECTION 3.9 (H)
NUMBER OF LOADING SPACES REQUIRED	11 SPACES	11 SPACES	SECTION 3.9(J)

NOTES:
 1. PER SECTION 3.9(B), PARKING SPACES REQUIRED FOR A DISTRIBUTION FACILITY: 1 SPACE FOR EVERY 400 GROSS SF OF FLOOR SPACE OR 2 SPACES FOR EVERY 3 EMPLOYEES.
 1.1. 1 SPACE/400 SF * 106,993 SF = 268 SPACES
 2. PER SECTION 3.9(J), WHOLESALE, MANUFACTURING, WAREHOUSING, AND TRUCKING USES-ONE (1) LOADING SPACE OF AT LEAST 1,000 SF FOR EACH 10,000 SF OF GROSS FLOOR AREA.
 2.1. 1 SPACES/10,000 SF * 106,993 SF = 11 SPACES



Date	Description	No.
Revisions		

Signature _____ Date _____

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Project
PROJECT MOOSE
 ESSEX VERMONT
 CHITTENDEN COUNTY
 Drawing Title

OVERALL SITE PLAN

Project No. 140278401	Drawing No. CS100
Date 01/30/2025	
Drawn By BCP	
Checked By TSO	



Land Use: 156

High-Cube Parcel Hub 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.

A high-cube parcel hub warehouses typically serves as a regional and local freight-forwarder facility for time sensitive shipments via airfreight and ground carriers. A site can also include truck maintenance, wash, or fueling facilities. Some limited assembly and repackaging may occur within the facility.

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.

Warehousing (Land Use 150), high-cube transload and short-term storage warehouse (Land Use 154), high-cube fulfillment center warehouse (Land Use 155), and high-cube cold storage warehouse (Land Use 157) are related land uses.

Additional Data

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 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 sites were surveyed in the 2010s in California, Connecticut, and Minnesota.

Source Numbers

869, 892, 941, 1001, 1011

High-Cube Parcel Hub Warehouse (156)

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: 4

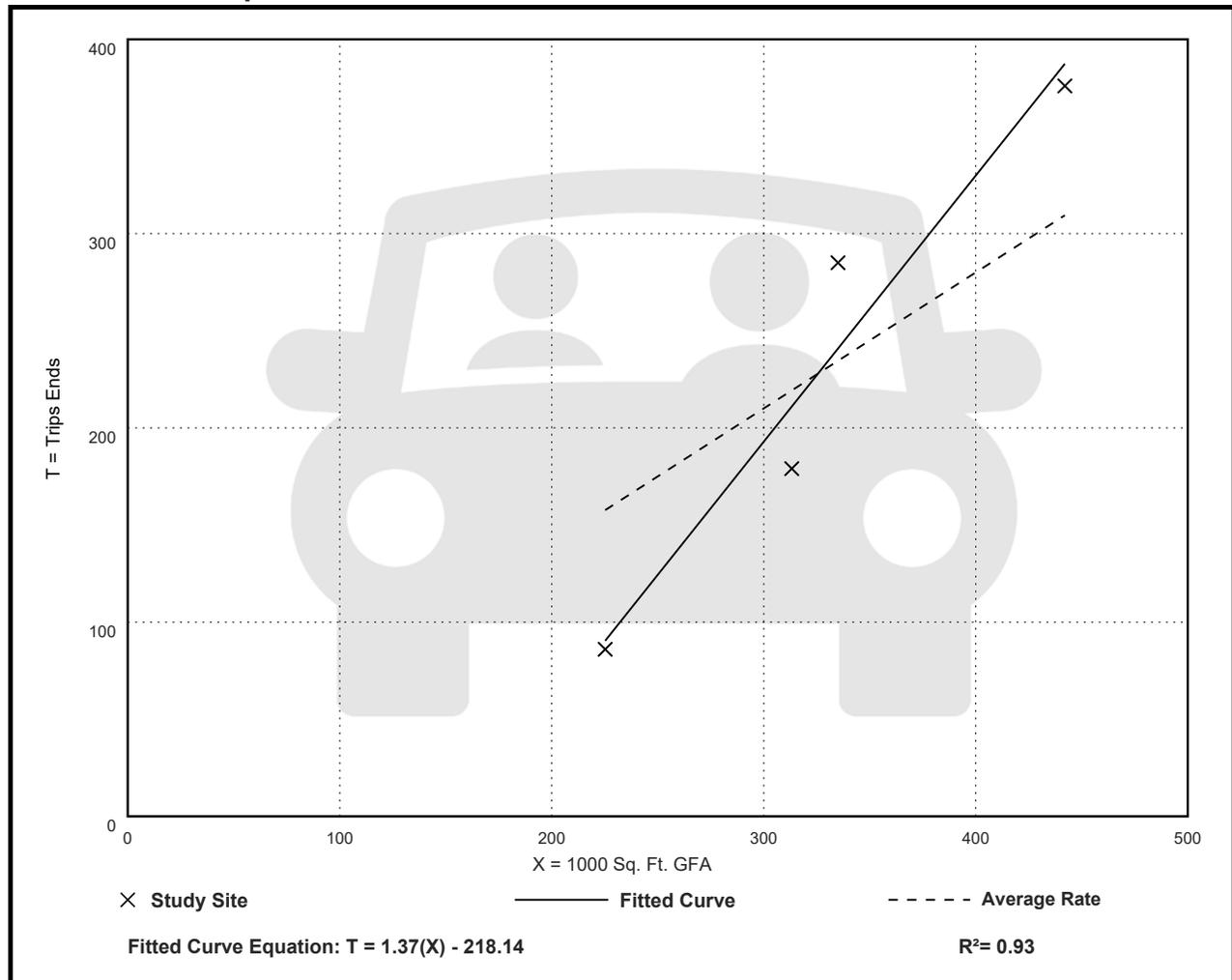
Avg. 1000 Sq. Ft. GFA: 329

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.70	0.38 - 0.85	0.21

Data Plot and Equation



High-Cube Parcel Hub Warehouse (156)

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: 4

Avg. 1000 Sq. Ft. GFA: 329

Directional Distribution: 68% entering, 32% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.64	0.26 - 0.86	0.27

Data Plot and Equation

