TRAFFIC ANALYSIS REPORT

Legacy Park – Spac 1 Port St. Lucie, FL

Prepared for: Culpepper & Terpening, Inc.

Prepared by:



1172 SW 30th Street, Suite 500 Palm City, FL 34990 (772) 286-8030



EXECUTIVE SUMMARY

MacKenzie Engineering and Planning, Inc. performed an analysis of the traffic impacts resulting from Legacy Park – Spac 1. The project is located at the northeast corner of Becker Road and Village Parkway, Port St. Lucie, Florida. The applicant proposes 168,000 SF Regional Distribution Center.

The proposed project is expected to generate the following net new external trips and driveway trips:

• 235 daily, 13 AM peak hour (10 in/3 out), and 17 PM peak hour (5 in/12 out) trips.

The project is located within the approved Southern Grove DRI. The property meets concurrency because the Southern Grove has satisfied its transportation conditions to date.

Sansone Boulevard is projected to become a north-south road collector for the area and has posted speed limit of 40 miles per hour (MPH). Further, Sansone Boulevard is the expected truck route within this area of Southern Grove. Therefore, we recommend that the developer construct left-turn lanes or two-way left-turn lanes on front of the site on Sansone Boulevard at all driveways for both safety and capacity.

Additionally, all truck driveways and intersections (e.g. Sansone Boulevard & Legacy Park East-West Road intersection) are recommended to use 50-foot radii.

080007 Page i



TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
TABLE OF CONTENTS	ii
LIST OF TABLES	iii
LIST OF FIGURES	iii
EXHIBIT	iii
INTRODUCTION	1
PROJECT TRAFFIC	2
Trip Generation	2
Approved Use	2
Proposed Use	2
Internal Capture	2
Pass-by Trip Capture	2
TRAFFIC DISTRIBUTION	3
TRAFFIC ASSIGNMENT	4
INTERSECTION ANALYSIS	5
Paar Drive & Village Parkway	5
Legacy Park East-West Road & Village Parkway	5
Legacy Park North-South Road & Becker Road	5
Sansone Boulevard & Becker Road	6
DRIVEWAYS	6
Proposed Access	6
Driveway 1 (North) & Sansone Boulevard	8
Driveway 2 (North) & Sansone Boulevard	8
CONCLUSION	Q



LIST OF TABLES

Table 1. Trip Generation	3
LIST OF FIGURES	
Figure 1. Site Location Map	1
Figure 2. Traffic Assignment	4
Figure 3. Driveway Map	7
EXHIBIT	
Exhibit 1A. Trip Generation – Summary	
Exhibit 1B. Trip Generation – BTS	
Exhibit 1C. Trip Generation – FedEx	
Exhibit 1D. Trip Generation – Legacy Park – Spec 1	
Exhibit 1E. Trip Generation – Legacy Park – Spec 2	
Exhibit 2A. BTS Driveway Trips	
Exhibit 2B. FedEx Driveway Trips	
Exhibit 2C. Legacy Park – Spec 1 Driveway Trips	
Exhibit 2D. Legacy Park – Spec 2 Driveway Trips	
Exhibit 2E. Total Driveway Trips	

080007 Page iii



INTRODUCTION

MacKenzie Engineering & Planning, Inc. was retained to prepare a traffic impact analysis for Legacy Park - 1. This document presents the methodology used and the findings of the traffic impact analysis. The analysis was conducted in accordance with the requirements of the City of Port St. Lucie.

This analysis has been prepared to evaluate traffic impacts resulting from 168,000 SF Regional Distribution Center. The project is located at the northeast corner of Becker Road and Village Parkway. The project is located within the approved Southern Grove DRI. The property meets concurrency because the Southern Grove has satisfied its transportation conditions to date.

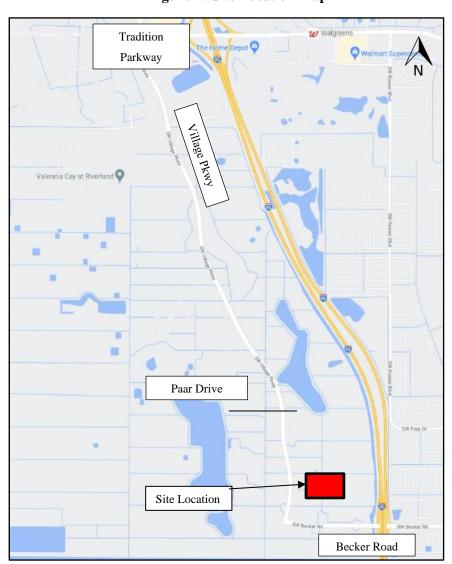


Figure 1. Site Location Map



PROJECT TRAFFIC

Trip Generation

The study uses trip generation rates for High-Cube Transload & Short-Term Storage Warehouse (ITE Land Use 154) published in the Institute of Traffic Engineers' (ITE) report, *Trip Generation* (10th Edition).

Approved Use

- 245,000 SF FedEx (ITE Land Use 156)
- 219,000 SF BTS
- 520,000 SF Reginal Distribution Center/Warehouse (Sansone Lot 4) (ITE Land Use 154)

Proposed Use

• 168,000 SF Regional Distribution Center/Warehouse (ITE Land Use 154)

Internal Capture

The site contains no internal capture.

Pass-by Trip Capture

The pass-by trip capture rate is 0.

The proposed project is expected to generate the following net new external trips and driveway trips:

• 235 daily, 13 AM peak hour (10 in/3 out), and 17 PM peak hour (5 in/12 out) trips.



Table 1. Trip Generation

Land Use	Land Use				Daily	AM	I Peak H	our	PM Peak Hour			
					Trips	Total	In	Out	Total	In	Out	
Proposed Site Traffic												
High-Cube Transload & Short- Term Storage Warehouse	Legacy I	Park – Spec 1	168.000	1000 SF	235	13	10	3	17	5	12	
NET CHANGE IN TRIPS (FOR THE PURPOSES OF CONCURRENCY)					235	13	10	3	17	5	12	
NET CHANGE IN DRIVEWAY VOLUMES					235	13	10	3	17	5	12	
Note: Trip generation was calculated usin	ng the foll	owing data:		1								
					Pass-by	Al	M Peak Ho	ur	PM Peak Hour			
	ITE											
Land Use	Code	Unit	D	aily Rate	Rate	in/out	Ra	ate	in/out	Equa	ation	
High-Cube Transload & Short-Term Storage Warehouse	154	1000 SF		1.4	0%	77/23	0.0	08	28/72	0	.1	
					Copyrigh	nt © 2021	, MacKei	ızie Engi	neering a	nd Plann	ing, Inc.	

TRAFFIC DISTRIBUTION

Traffic distribution and assignment was determined using engineering judgment, trip lengths, surrounding uses and review of the roadway network. The overall distribution is summarized by general directions and is depicted below:

NORTH - 25 percent

SOUTH - 0 percent

WEST - 0 percent

EAST - 75 percent



TRAFFIC ASSIGNMENT

The distributed external trips for the project were assigned to the roadway network within the radius of influence. The project assignment is shown in Figure 2.

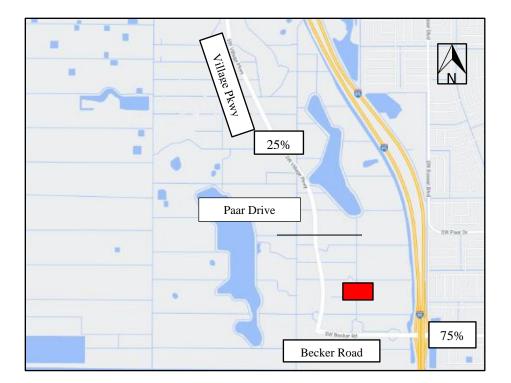


Figure 2. Traffic Assignment



INTERSECTION ANALYSIS

Paar Drive & Village Parkway

The Paar Drive and Village Parkway intersection is currently not constructed. The traffic volumes on Village Parkway are currently too low to warrant a traffic signal based on existing traffic volumes. A traffic signal is expected to be warranted in the future.

The following are recommended initially:

- 1. Restripe the southbound left-turn with left-turn arrows.
- 2. Install stop signs on the side street approach(es).

The intersection should be monitored for signalization in the future.

Legacy Park East-West Road & Village Parkway

The Legacy Park East-West Road and Village Parkway intersection is currently not constructed. The traffic volumes on Village Parkway are currently low.

The following are recommended initially:

- 1. Restripe the southbound left-turn with left-turn arrows.
- 2. Install stop signs on the side street approach(es).

Legacy Park North-South Road & Becker Road

The Legacy Park North-South Road and Becker Road intersection is currently not constructed. The traffic volumes on Becker Road are currently low. The west driveway is projected to have 29 peak hour right-turning vehicles.

A right-turn lane is constructed at this location. At such time, as the Legacy Park North-South Road is constructed, the following are recommended:

- 1. Remove the existing hatching and stripe a right-turn lane.
- 2. Install stop signs on the side street approach(es).



Sansone Boulevard & Becker Road

The Sansone Boulevard and Becker Road intersection is currently not constructed. The traffic volumes on Becker Road are currently low. The west driveway is projected to have 79 peak hour right-turning vehicles. A right-turn lane is constructed at this location. A signal is recommended at this location upon satisfaction of Traffic Signal Warrants.

DRIVEWAYS

Proposed Access

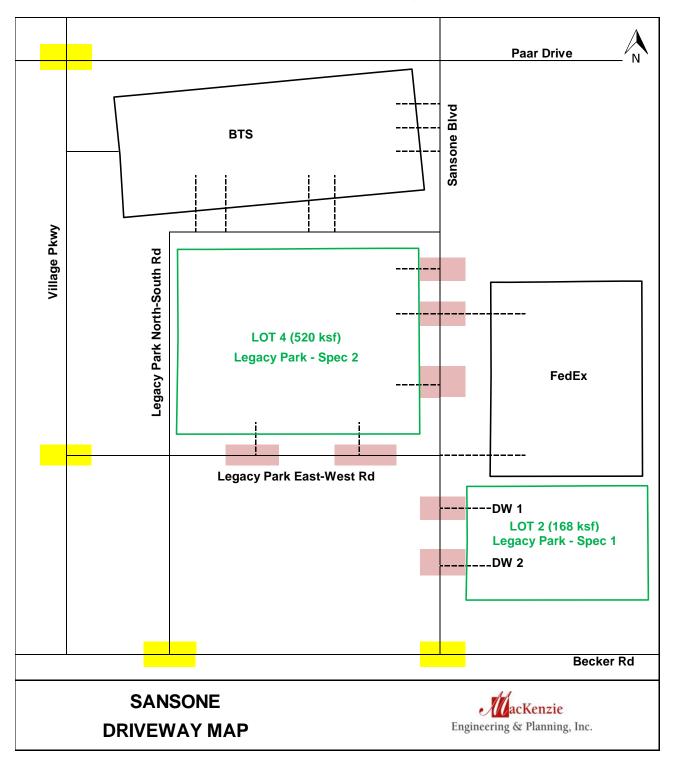
The site proposes two points of access:

- DW 1 (North) Full Opening
- DW 2 (South) Full Opening

Figure 3 shows the driveway map. Exhibit 2C displays the proposed driveway volumes. Exhibit 2E displays the projected driveway volumes in Legacy Park based on the currently approved development.



Figure 3. Driveway Map





Driveway 1 (North) & Sansone Boulevard

Driveway 1 (North) is a full opening, only a small amount of traffic will be destined to the north in the future. The volumes at this driveway are relatively low and do not warrant turn lanes. However, Sansone Boulevard will become a north-south road for the area and has posted speed limit of 40 miles per hour (MPH). Further, Sansone Boulevard is the expected truck route within this area of Southern Grove. Therefore, we recommend that the developer construct left-turn lanes or two-way left-turn lanes on front of the site on Sansone Boulevard for both safety and capacity.

Driveway 2 (South) & Sansone Boulevard

Driveway 2 (south) is a full opening. The volumes at this driveway are relatively low and do not warrant turn lanes. However, Sansone Boulevard will become a north-south road for the area and has posted speed limit of 40 miles per hour (MPH). Further, Sansone Boulevard is the expected truck route within this area of Southern Grove. Therefore, we recommend that the developer construct left-turn lanes or two-way left-turn lanes on front of the site on Sansone Boulevard for both safety and capacity.

Additionally, all truck driveways and intersections (e.g. Sansone Boulevard & Legacy Park East-West Road intersection) are recommended to use 50-foot radii.



CONCLUSION

MacKenzie Engineering and Planning, Inc. performed an analysis of the traffic impacts resulting from Legacy Park – Spac 1. The project is located at the northeast corner of Becker Road and Village Parkway, Port St. Lucie, Florida. The applicant proposes 168,000 SF Regional Distribution Center.

The proposed project is expected to generate the following net new external trips and driveway trips:

• 235 daily, 13 AM peak hour (10 in/3 out), and 17 PM peak hour (5 in/12 out) trips.

The project is located within the approved Southern Grove DRI. The property meets concurrency because the Southern Grove has satisfied its transportation conditions to date.

Sansone Boulevard is projected to become a north-south road collector for the area and has posted speed limit of 40 miles per hour (MPH). Further, Sansone Boulevard is the expected truck route within this area of Southern Grove. Therefore, we recommend that the developer construct left-turn lanes or two-way left-turn lanes on front of the site on Sansone Boulevard at all driveways for both safety and capacity.

Additionally, all truck driveways and intersections (e.g. Sansone Boulevard & Legacy Park East-West Road intersection) are recommended to use 50-foot radii.

EXHIBIT 1A
SANSONE
TRIP GENERATION

Land Use		In	Intensity		AM Peak Hour			PM Peak Hour			
				Trips	Total	In	Out	Total	In	Out	
Proposed Site Traffic											
FedEx		245.000	1000 SF	1,899	118	59	59	91	62	29	
BTS		219.000	1000 SF	2,196	3	1	2	136	91	45	
High-Cube Transload & Short- Term Storage Warehouse	Legacy Park - Spec 2	520.000	1000 SF	728	42	32	10	52	15	37	
High-Cube Transload & Short- Term Storage Warehouse	Legacy Park - Spec 1	168.000	1000 SF	235	13	10	3	17	5	12	
NET CHANGE IN TRIPS (FOR THE PURPOSES OF CONCURRENCY)				5,058	176	102	74	296	173	123	
NET CHANGE IN DRIVEWAY VOLUMES					176	102	74	296	173	123	

Note:	Trip	generation w	vas calcul	ated using	the following	ng data:

				Pass-by	y AM Peak Hour		PM Peak Hour				
Land Use	ITE Code	Unit	Daily Rate	Rate	in/out	in/out Rate		Equation			
High-Cube Transload & Short-Term Storage Warehouse	154	1000 SF	1.4	0%	77/23	0.08	28/72	0.1			
High-Cube Parcel Hub Warehouse	156	1000 SF	7.75	0%	50/50	T = 1.37 (X) - 218.14	68/32	T = 1.41 (X) - 254.12			
BTS	BTS	1000 SF	10.03	0%	33/67	0.01	67/33	0.62			
Copyright © 2021, MacKenzie Engineering and Planning, Inc.											

EXHIBIT 1B SANSONE - BTS (APPROVED) TRIP GENERATION

TRIP GENERATION											
Land Use		In	Intensity		AN	A Peak H	our	PM Peak Hour			
					Trips	Total	In	Out	Total	In	Out
Proposed Site Traffic 219.000 1000 SF						3	1	2	136	91	45
NET CHANGE IN TRIPS (FOR THE PURPOSES OF CONCURRENCY)						3	1	2	136	91	45
NET CHANGE IN DRIVEWAY VOLUMES						3	1	2	136	91	45
Note: Trip generation was calc	ulated usin	g the follow	ing data:			•			•		•
					Pass-by	А	M Peak Ho	ur	Р	M Peak Ho	our
Land Use	ITE Code	Unit	Da	ily Rate	Rate	in/out	R	ate	in/out	Equ	ıation
BTS	BTS	1000 SF		10.03	03 0% 33/67 0.01 67/33 0.					.62	
					Co	opyright ©	2021, Ma	cKenzie E	ngineering	and Plan	ning, Inc.

EXHIBIT 1C SANSONE - FEDEX (APPROVED) TRIP GENERATION

TRIP GENERATION												
Land Use			In	Intensity		Al	M Peak Ho	our	PM Peak Hour			
					Trips	Total	In	Out	Total	In	Out	
Proposed Site Traffic FedEx			245.000	1000 SF	1,899	118	59	59	91	62	29	
NET CHANGE IN TRIPS (NCURRENCY)	1,899	118	59	59	91	62	29				
	AY VOLUMES	1,899	118	59	59	91	62	29				
Note: Trip generation was calcula	ated usin	g the follow	ing data:									
					Pass-by	А	M Peak Ho	ur	PM Peak Hour			
Land Use	ITE Code	Unit	Da	aily Rate	Rate in/out		Rate		in/out	Equation		
High-Cube Parcel Hub Warehouse	156	1000 SF		7.75	0%	50/50	T = 1.37 (X) - 218.14		68/32	T = 1.41 (X) - 254.12		
	1				Ca	pyright ©	2021, Ma	cKenzie E	ngineerinį	g and Plan	ning, Inc.	

EXHI	

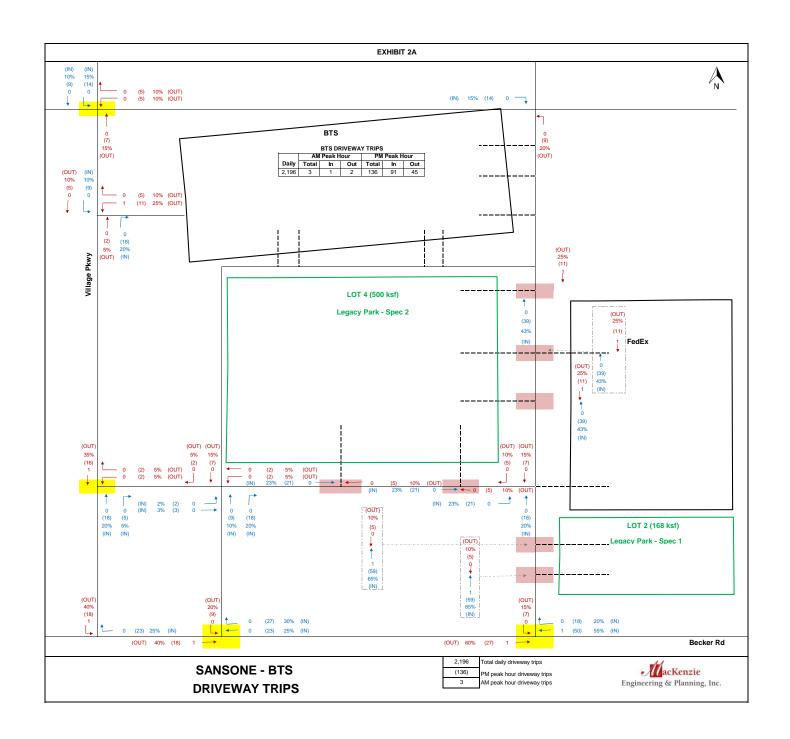
SANSONE - Legacy Park - Spec 1

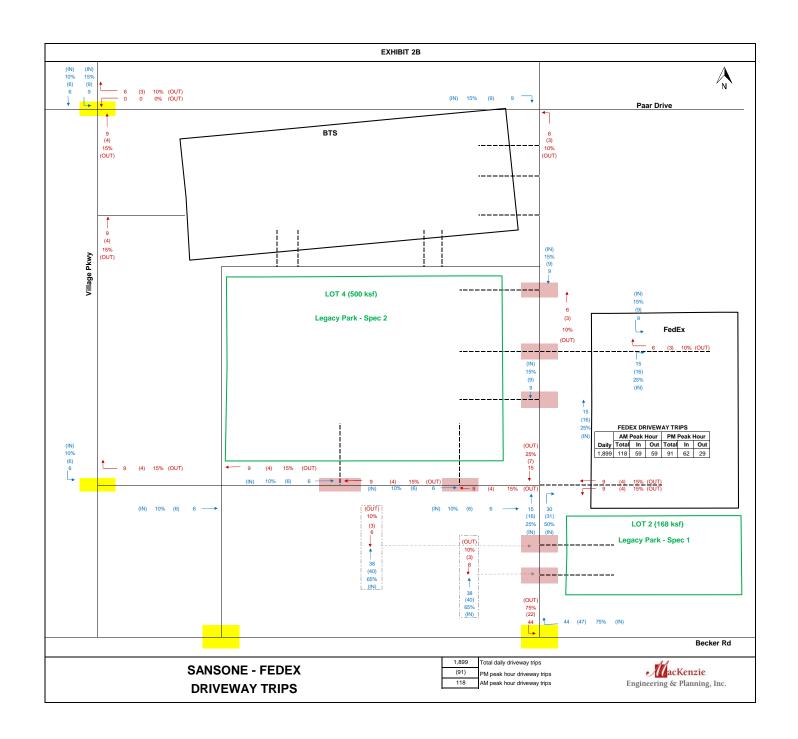
	TRIP GENERATION												
Land Use		I	Intensity		AM Peak Hour			PM Peak Hour					
					Total	In	Out	Total	In	Out			
Proposed Site Traffic High-Cube Transload & Short- Term Storage Warehouse Legacy Park – Spec 1			168.000	1000 SF	235	13	10	3	17	5	12		
NET CHANGE IN TRIPS (FOR THE PURPOSES OF CONCURRENCY)						13	10	3	17	5	12		
NET CHANGE IN DRIVEWAY VOLUMES					235	13	10	3	17	5	12		
Note: Trip generation was calculated usin	g the follow	ing data:				•		•					
					Pass-by	Α	M Peak Ho	ur	Р	M Peak Ho	ur		
Land Use	ITE Code	Unit	[Daily Rate	Rate	in/out	Rate		in/out	in/out Equation			
High-Cube Transload & Short-Term Storage Warehouse	154	1000 SF		1.4	0%	77/23 0.08 28/72 0.1				.1			
	•		•		C	opyright ©	2021, Ma	cKenzie E	Ingineering	and Plan	ning, Inc.		

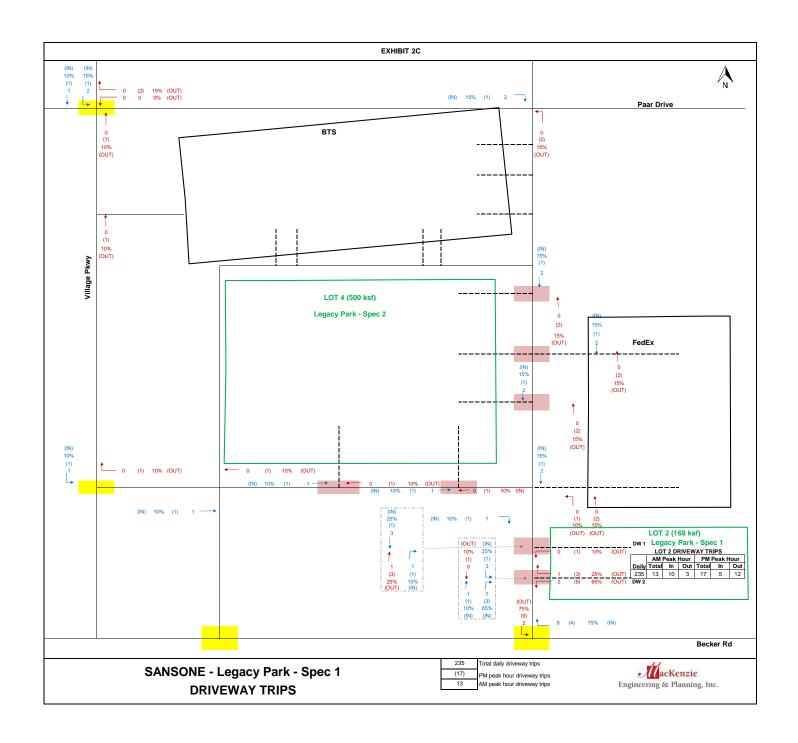
EXHIBIT	

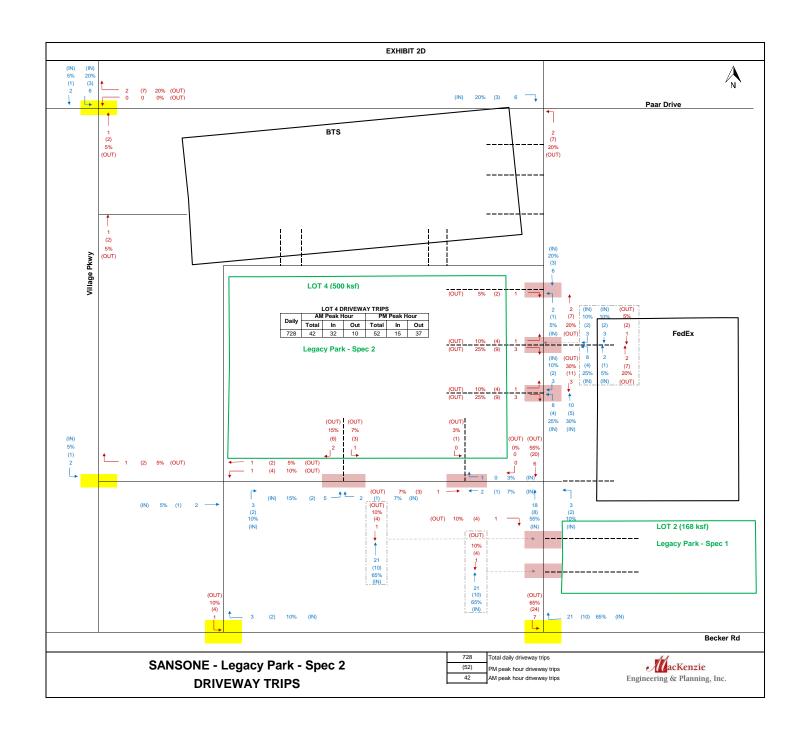
SANSONE - Legacy Park - Spec 2

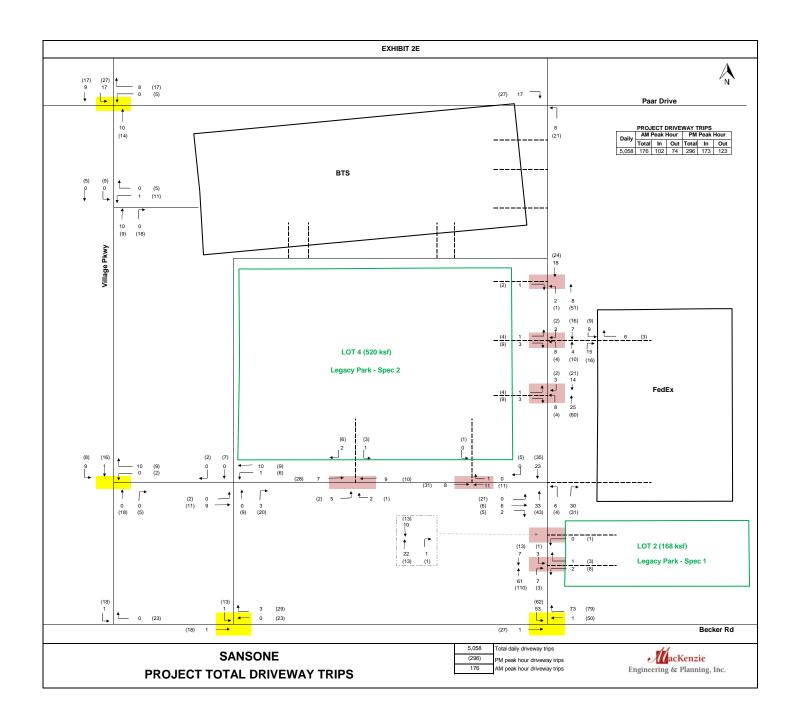
TRIP GENERATION											
Land Use			Intensity Daily		AM Peak Hour			PM Peak Hour			
					Trips	Total	In	Out	Total	In	Out
Proposed Site Traffic High-Cube Transload & Short- Term Storage Warehouse Legacy Park – Spec 2			520.000	1000 SF	728	42	32	10	52	15	37
NET CHANGE IN TRIPS (FOR THE PURPOSES OF CONCURRENCY)				728	42	32	10	52	15	37	
NET CHANGE IN DRIVEWAY VOLUMES			728	42	32	10	52	15	37		
Note: Trip generation was calculated usin	g the follo	wing data:		-							
				Pass-by	AM Peak Hour		PM Peak Hour				
Land Use	ITE Code	Unit	1	Daily Rate	Rate	in/out	Ra	ate	in/out	Equ	ation
High-Cube Transload & Short-Term Storage Warehouse	154	1000 SF		1.4	0%	77/23	0.	08	28/72	0	.1
Copyright © 2021, MacKenzie Engineering and Planning, Inc.											

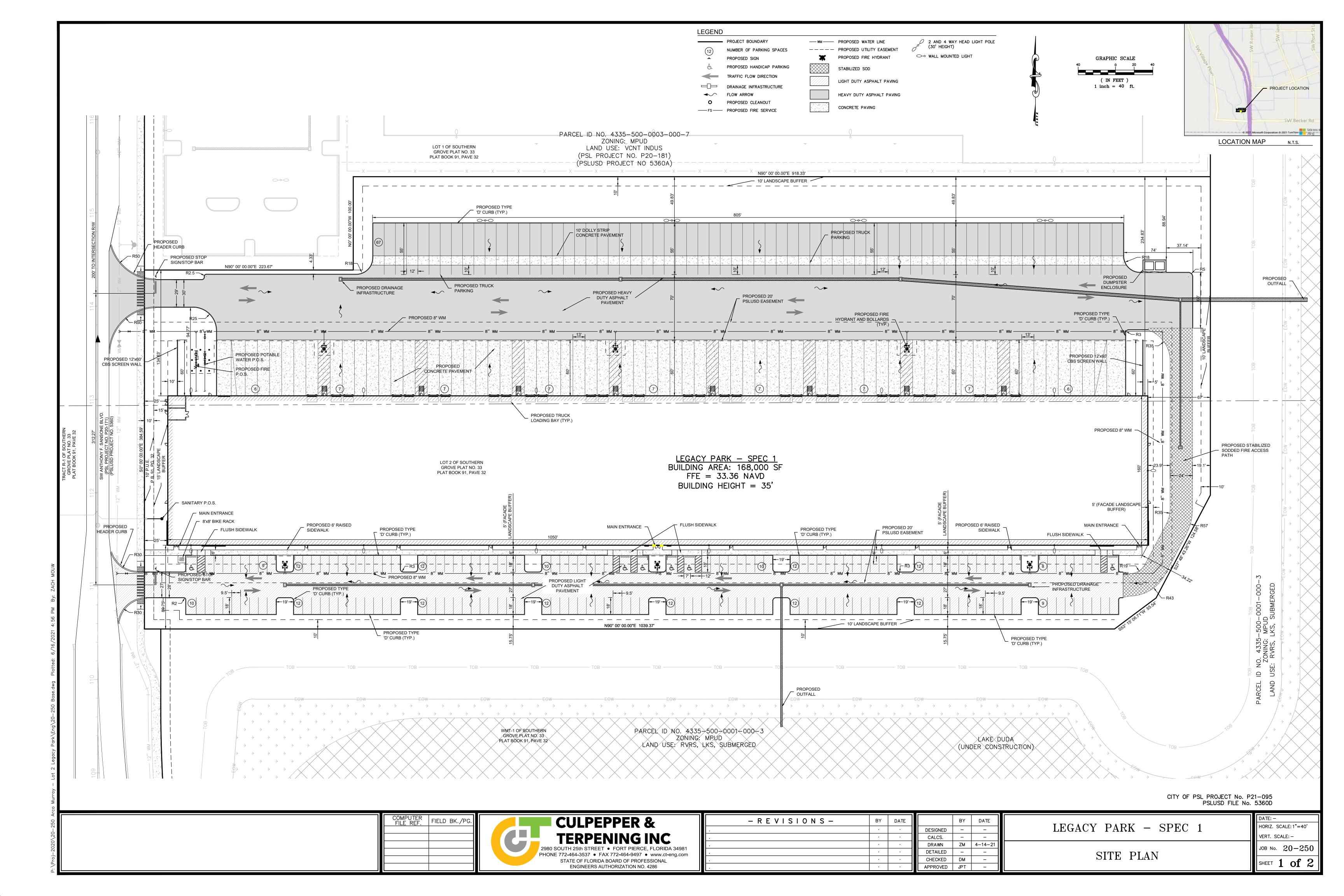


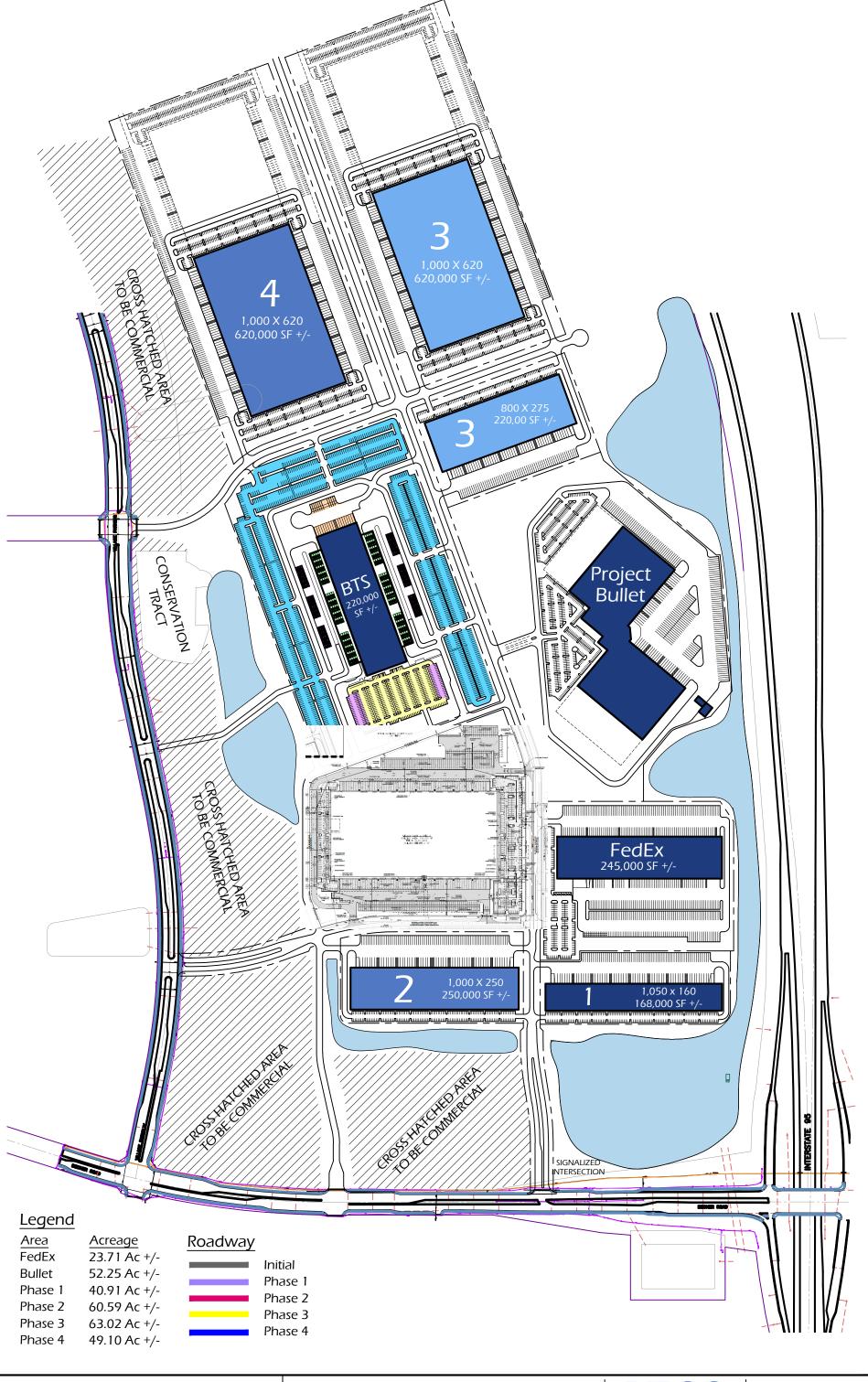














Legacy Park At Tradition

SCALE: N.T.S.







Land Use: 154 High-Cube Transload and Short-Term Storage 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. The HCWs included in this land use include transload and short-term facilities. Transload facilities have a primary function of consolidation and distribution of pallet loads (or larger) for manufacturers, wholesalers, or retailers. They typically have little storage duration, high throughput, and are high-efficiency facilities. Short-term HCWs are high-efficiency distribution facilities often with custom/special features built into structure for movement of large volumes of freight with only short-term storage of products. Warehousing (Land Use 150), high-cube fulfillment center warehouse (Land Use 155), high-cube parcel hub warehouse (Land Use 156), 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 have been incorporated into the 10th Edition *Trip Generation Manual* and are published on the ITE website at http://library.ite.org/pub/a3e6679a-e3a8-bf38-7f29-2961becdd498 where the study is posted.

Time-of-day distribution data for this land use are presented in Appendix A. For the three general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 9:00 and 10:00 a.m. and 3:00 and 4:00 p.m., respectively.

The sites were surveyed in the 1980s, the 2000s, and the 2010s in Alberta (CAN), California, Florida, Michigan, New Jersey, Texas, and Washington.

Source Numbers

331, 605, 619, 642, 645, 649, 739, 750, 752, 903, 904, 941, 942, 943, 969



High-Cube Transload and Short-Term Storage Warehouse

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

Setting/Location: General Urban/Suburban

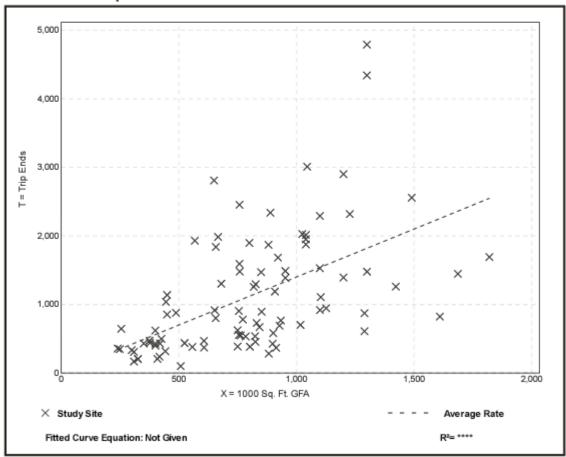
Number of Studies: 91 1000 Sq. Ft. GFA: 798

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.40	0.20 - 4.32	0.86

Data Plot and Equation





High-Cube Transload and Short-Term Storage Warehouse (154)

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

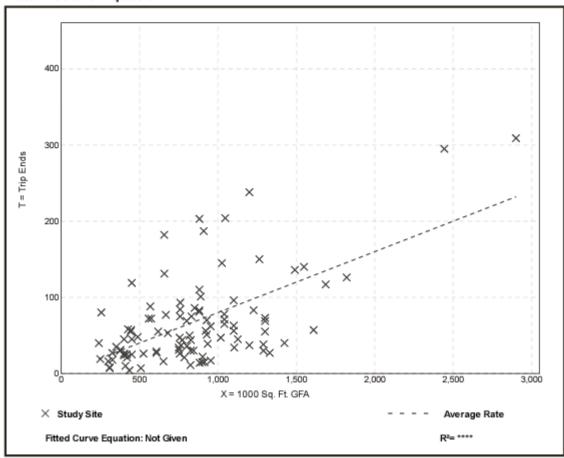
Number of Studies: 102 1000 Sq. Ft. GFA: 846

Directional Distribution: 77% entering, 23% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate		Range of Rates	Standard Deviation
	0.08	0.01 - 0.31	0.05

Data Plot and Equation





High-Cube Transload and Short-Term Storage Warehouse (154)

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

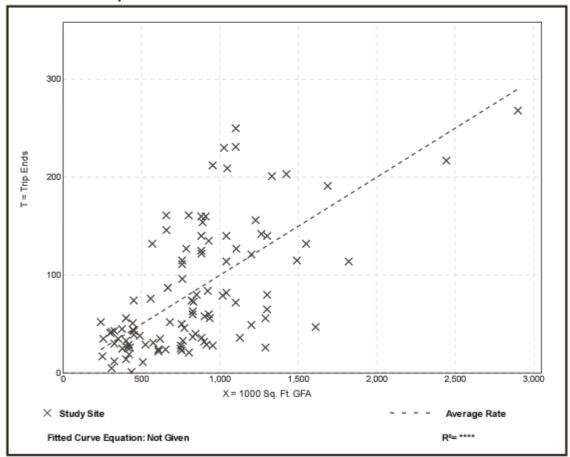
Number of Studies: 103 1000 Sq. Ft. GFA: 840

Directional Distribution: 28% entering, 72% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.10	0.00 - 0.25	0.06

Data Plot and Equation





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. High-cube parcel hub warehouses typically serve as regional and local freight-forwarder facilities for time sensitive shipments via airfreight and ground carriers. These sites also often include truck maintenance, wash, or fueling facilities. 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 have been incorporated into the 10th Edition *Trip Generation Manual* and are published on the ITE website at http://library.ite.org/pub/a3e6679a-e3a8-bf38-7f29-2961becdd498 where the study is posted.

Time-of-day distribution data for this land use are presented in Appendix A. For the two general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 8:15 and 9:15 a.m. and 5:15 and 6:15 p.m., respectively.

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

Source Numbers

869, 892, 941



High-Cube Parcel Hub Warehouse (156)

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

Setting/Location: General Urban/Suburban

Number of Studies: 3 1000 Sq. Ft. GFA: 363

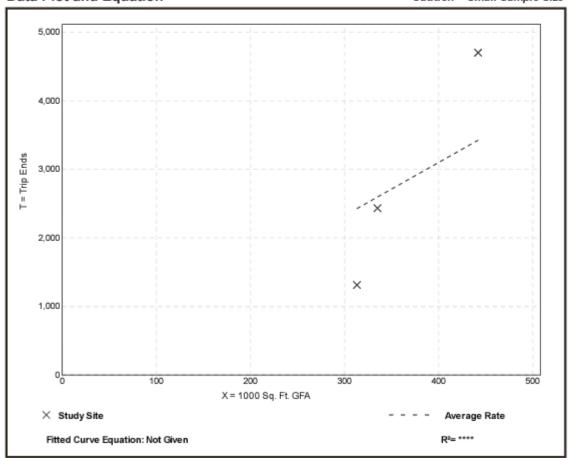
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
7.75	4.20 - 10.64	9.58

Data Plot and Equation

Caution - Small Sample Size





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 1000 Sq. Ft. GFA: 329

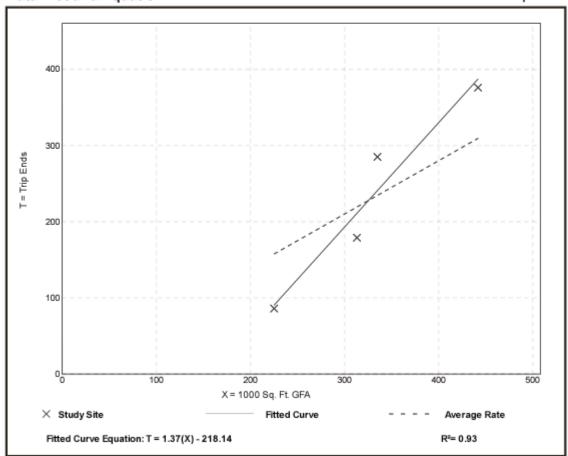
Directional Distribution: 50% entering, 50% exiting

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

Caution - Small Sample Size





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 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

Caution - Small Sample Size

