LSC TRANSPORTATION CONSULTANTS, INC.

1889 York Street
Denver, CO 80206
(303) 333-1105
FAX (303) 333-1107
E-mail: lsc@lscdenver.com

Responses by Chris McGranahan
LSC Transportation Consultants, Inc.
February 7, 2025

December 10, 2024

Mr. Daniel Madruga
Atwell
Two Town Square, Suite 700
Southfield, MI 48076

Re: Project Frontier
Aurora, CO
LSC #240760

Dear Mr. Madruga:

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic impact analysis for the proposed Project Frontier development. As shown on Figure 1, the site is located north of E. 32nd Parkway and northwest of E. 33rd Drive in Aurora, Colorado.

REPORT CONTENTS

The report contains the following: the existing roadway and traffic conditions in the vicinity of the site including the lane geometries, traffic controls, posted speed limits, etc.; the existing weekday peak-hour traffic volumes; the typical weekday site-generated traffic volume projections for the site; the assignment of the projected traffic volumes to the area roadways; the projected background and resulting total traffic volumes on the area roadways; the site's projected traffic impacts; and any recommended roadway improvements to mitigate growth in background traffic or from the impact of the site.

LAND USE AND ACCESS

The site is proposed to include about 119,160 square feet of high cube cold storage warehouse and about 11,672 square feet of vehicle maintenance space. Access is proposed from E. 32nd Parkway and E. 33rd Drive as shown in the conceptual site plan in Figure 2.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the site's vicinity are shown on Figure 1 and are described below.

- **E. 32nd Parkway** is an east-west, two-lane roadway south of the site. All of the intersections in the study area are stop-sign controlled. The posted speed limit in the vicinity of the site is 40 mph. There are no turn lanes in the area of the site but rather two wide through lanes to accommodate large trucks plus on-street bike lanes.

Summary of Comments on RTC-TIS Comments.pdf

Page: 1

Number: 1 Author: lsc Subject: Text Box Date: 2/7/2025 1:35:01 PM

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6. **E. 33rd Drive/Site Access:** This intersection was analyzed only in the total traffic scenarios.

TRIP GENERATION

Table 2 shows the estimated average weekday, morning peak-hour, and afternoon peak-hour trip generation for the proposed site based on rates from *Trip Generation, 11th Edition, 2021* by the Institute of Transportation Engineers (ITE) and based on feedback from the applicant.

Based on the ITE trip generation rates, the site is projected to generate about 273 vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 9 vehicles would enter and about 7 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 8 vehicles would enter and about 9 vehicles would exit.

Based on feedback from the applicant, the site is projected to generate about 500 vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 175 vehicles would enter and about 9 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 8 vehicles would enter and about 168 vehicles would exit.

TRIP DISTRIBUTION

Figure 6 shows the estimated directional distribution of the site-generated traffic volumes on the area roadways. The estimates were based on the location of the site with respect to the regional population, employment, and activity centers; and the site's proposed land use.

TRIP ASSIGNMENT

Need a little more information about trip assignment. Guessing this is based on most of the trips coming and going on I-70 as regional distribution. Give a sentence or two that explains the reasoning on trip assignment and if there is any data that would back this up. 1

2027 AND 2045 TOTAL TRAFFIC

Figure 8 shows the 2027 total traffic which is the sum of the 2027 background traffic volumes (from Figure 4) and the site-generated traffic volumes (from Figure 7). Figure 8 also shows the 2027 total traffic lane geometry and traffic control.

Figure 9 shows the 2045 total traffic which is the sum of the 2045 background traffic volumes (from Figure 5) and the site-generated traffic volumes (from Figure 7). Figure 9 also shows the 2045 total traffic lane geometry and traffic control.

PROJECTED LEVELS OF SERVICE

The intersections in the study area were analyzed to determine the 2027 and 2045 total levels of service. Table 1 shows the level of service analysis results for each movement or lane group. The level of service reports are attached.

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Number: 1 Author: jigo Subject: Text Box Date: 1/23/2025 10:31:43 AM

Need a little more information about trip assignment. Guessing this is based on most of the trips coming and going on I-70 as regional distribution. Give a sentence or two that explains the reasoning on trip assignment and if there is any data that would back this up.

Author: lsc Subject: Sticky Note Date: 2/7/2025 1:35:25 PM

This section has been expanded to provide additional details.

This is below the lower bound of the ITE trip gen limit for this land use.

1

Table 2
ESTIMATED TRAFFIC GENERATION
Project Frontier
Aurora, CO
LSC #240760; December, 2024

Trip Generating Category	Quantity	Trip Generation Rates (1) Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out	Vehicle-Trips Generated Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out
CURRENTLY PROPOSED LAND USE PER ITE TRIP GENERATION RATES											
High Cube Cold Storage Warehouse (2)	119.160 KSF (3)	2.12	0.055	0.055	0.060	0.060	253	7	7	7	7
Vehicle Maintenance (4)	11.672 KSF (3)	1.71	0.131	0.039	0.050	0.130	20	2	0	1	2
					Total =		**273**	**9**	**7**	**8**	**9**
CURRENTLY PROPOSED LAND USE PER FEEDBACK FROM THE APPLICANT											
Passenger Vehicles of Employee Trips (5)							440	165	6	6	165
Tractor Trailer Trips (6)							50	10	3	2	3
Miscellaneous Trips for Deliveries, etc.							10	0	0	0	0
					Total =		**500**	**175**	**9**	**8**	**168**

Notes:
(1) Source: *Trip Generation*, Institute of Transportation Engineers, 11th Edition, 2021
(2) ITE Land Use No. 157 - High Cube Cold Storage Warehouse - no directional distributed rates given - 50% in/out was used
(3) KSF = 1,000 square feet
(4) ITE Land Use No. 110 - General Light Industrial
(5) Assumes about 75% of employees arrive during the morning peak-hour and leave during the afternoon peak-hour and a small percentage are dropped off/picked up.
(6) Assumes 25 truck round trips per day with 10 arriving in the morning peak-hour and none during the afternoon peak-hour - trucks will leave the site between 7:00 pm and 10:00 pm

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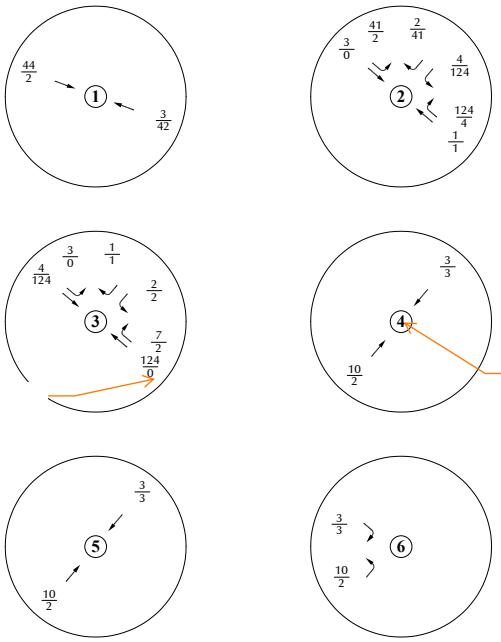
Number: 1 Author: jhoffman Subject: Callout Date: 1/14/2025 5:03:51 PM

This is below the lower bound of the ITE trip gen limit for this land use.

Author: lsc Subject: Sticky Note Date: 2/7/2025 1:36:42 PM

The land use is not a great match for the intended use but the resulting trips from using these rates is appropriate based on coordination with the end user.



LEGEND:

$\frac{26}{35}$ = AM Peak Hour Traffic / PM Peak Hour Traffic

1,000 = Average Daily Traffic

Approximate Scale
Scale: 1"=400'

1 Site plan has what looks to be a full movement in and out the site. Explain why there is no trips using this access.

2 M should be 4

Figure 7

Assignment of Site-Generated Traffic

Project Frontier (LSC #240760)

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Number: 1 Author: jigo Subject: Callout Date: 1/23/2025 2:17:54 PM

Site plan has what looks to be a full movement in and out the site. Explain why there is no trips using this access.

Author: lsc Subject: Sticky Note Date: 2/7/2025 1:37:25 PM

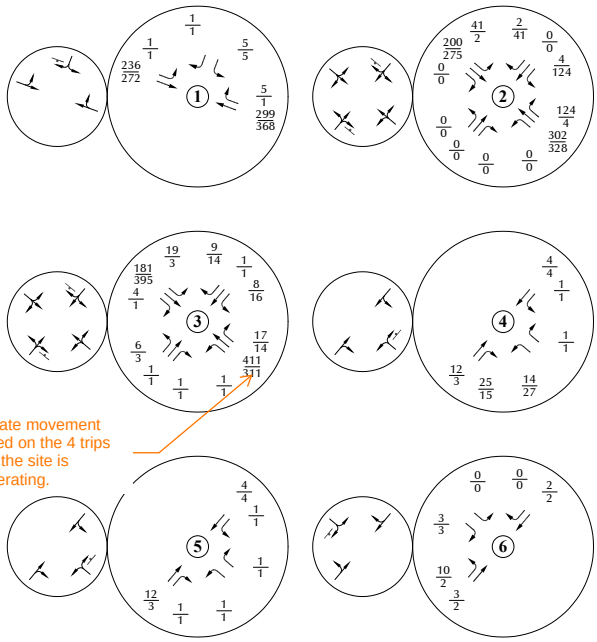
This access is planned as emergency-only per the note on Figure 2.

Number: 2 Author: jigo Subject: Callout Date: 1/23/2025 2:24:24 PM

PM should be 4

Author: lsc Subject: Sticky Note Date: 2/7/2025 1:37:03 PM

Updated.



1 pdate movement based on the 4 trips that the site is generating.

LEGEND:

⊦ = Stop Sign

26/35 = AM Peak Hour Traffic / PM Peak Hour Traffic

1,000 = Average Daily Traffic

Figure 8

Year 2027 Total Traffic, Lane Geometry and Traffic Control

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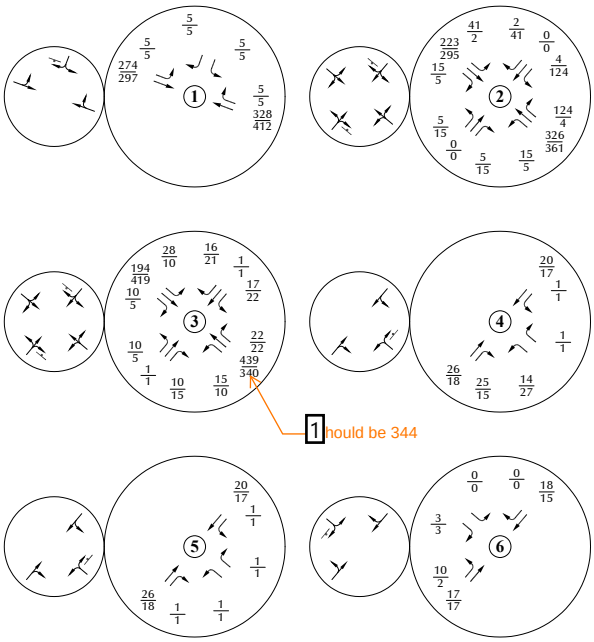
Number: 1 Author: jigo Subject: Callout Date: 1/23/2025 2:27:56 PM

Update movement based on the 4 trips that the site is generating.

Author: lsc Subject: Sticky Note Date: 2/7/2025 1:37:45 PM

Updated.



LEGEND:

⊦ = Stop Sign

$\frac{26}{35}$ = $\frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$

1,000 = Average Daily Traffic

Figure 9

Year 2045 Total Traffic, Lane Geometry and Traffic Control

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Number: 1 Author: jigo Subject: Callout Date: 1/23/2025 2:29:02 PM

Should be 344

Author: lsc Subject: Sticky Note Date: 2/7/2025 1:38:02 PM

Updated.