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Traffic Analysis

August 16, 2021

To: Jon Suddarth, William Warren Group

From: Jeff Hee, Transportation Solutions

Subject: StorQuest Liggett Road
Town of Castle Rock, CO

This memorandum summarizes the trip generation for StorQuest, the "project", a proposed self-storage at the northwest corner of Liggett Road and Kellogg Road in the Town of Castle Rock in Douglas County, CO.

This document updates the June 28, 2021, traffic analysis to reflect the current site access configuration.

Project Description

The project is proposed at approximately 2631 Liggett Road. The underlying property is zoned I-2, General Industrial. The proposal redevelops three land parcels: 2351-340-00-009 (2631 Liggett Road), 2351-340-00-035 (2583 Liggett Road), and 2351-352-00-006 (no address).[1] The existing uses include:

- 1 single-family home
- 733 square feet of office space.
- 1,526 square feet of light industrial space.
- 2,483 square feet of service garage space.
- 9,960 square feet of self-storage building space.
- 672 square feet or materials storage space.
- 220 outdoor RV storage spaces.

Figure 1 includes a vicinity map highlighting the site's location.

The proposed StorQuest includes:

- 17,900 square feet of rentable drive-up storage building area.
- 80,000 square feet of enclosed four-story self-storage building area.
- 66 covered outdoor RV storage spaces.
- 25 uncovered outdoor RV storage spaces.

The site includes 11 onsite vehicle parking spaces.

Two site accesses are proposed: one exit-only driveway off Liggett Road at the north end of the site ("North Driveway") and a full access driveway off the private road extension of Kellogg Court to the west of Liggett Road ("South Driveway"). Both driveways will be gated.

Figure 2 includes a conceptual site plan. Build-out is anticipated by 2022.

[1] Douglas County Accessor Real Property application. https://www.douglas.co.us/assessor/maps/

Liggett Road is planned to be widened to a 5-lane cross-section; with two travel lanes in each direction and a center turn lane.

The North Driveway will be exit only and will operate with no turn restrictions, assuming the future widening on Liggett Road and a physical median on Liggett Road are not complete with the project.

In the long-term a physical median is anticipated on Liggett Road fronting the North Driveway. The median, when complete, will prohibit left-turn egress out of the site.

Along with frontage improvements, which include widening on Liggett Road fronting the site, the Applicant will install the appropriate signage to notify drivers that the North Driveway is for exit only.

Roadway Conditions

Liggett Road is classified as a Collector Arterial between Santa Fe Drive and Front Street. Near the site the road has one lane in each direction and paved shoulders. The posted speed is 35 mph north of the site and 45 mph south of the site. At Kellogg Court, Liggett Road widens to include turn lanes. Castle Rock's Master Street Plan shows Liggett Road as a future Major Arterial with a four-lane cross-section.[2]

Santa Fe Drive, to the north of the site, is classified as an existing Minor Arterial. The Master Street Plan shows Santa Fe Drive as a Major Arterial.[2]

Kellogg Court is oriented east-west and provides local access to the Castle Rock Water Departments and Castle Rock Self-Storage and U-Haul. Kellogg Ct. includes curb and gutter and has sidewalk on the north side of the road. The posted speed is 25 mph. The development will complete the west leg of Kellogg Court and Liggett Road, as a private access road.

Existing Use Trip Generation

The existing uses are being replaced by the proposal. For this analysis, the existing site includes known buildings and uses on land parcel 2351-340-00-009 and 220 outdoor RV storage spaces on the remaining site. Credit for trips generated by existing uses is factored into the net new trips generated by the proposed redevelopment. Existing use trip generation is primarily based on data from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*.

The ITE manual does not include trip generation data specific to RV storage. For this analysis trip generation for the RV storage use was based on the *Trip Generation Analysis for the Proposed Self-Storage and RV Storage Facility at 3701 Pacific Place, Long Beach, California* memorandum (February 27, 2020) by LSA and review of the *Route 52 RV Traffic Impact Study, Weld County, Colorado* (August 28, 2017) by Sustainable Traffic Solutions, Inc. The LSA memorandum included weekday daily, AM peak hour and PM peak hour trip generation data obtained between November 2019 and January 2020 at an RV storage site in Desert Hot Springs, CA. The Sustainable Traffic Solutions, Inc. study included weekday PM peak hour trip generation obtained in 2017 at RV storage sites in Brighton, CO and Erie, CO. Excerpts from the California and Colorado trip generation data is attached.

[2] Town of Castle Rock Transportation Master Plan (October 2017) Figure I – Existing Roadway Function Classifications

Table 1 summarizes the existing use trip generation for the site. Detailed calculations are attached.

Table 1: Existing Site Trip Generation Credits

Land Use	Inbound	Outbound	Total Trips
Weekday	(76)	(76)	(151)
AM Peak	(8)	(4)	(12)
PM Peak	(8)	(9)	(17)

StorQuest Trip Generation

For this analysis, and to address City staff comments, trip generation for the project was forecast using the ITE trip rates, which as shown in the past analysis are higher than the trip rates associated with a StorQuest.

Table 3 summarizes the trip generation forecast for the proposed development. The trip generation output includes rounding.

Table 3: Project Trip Generation

Land Use (ITE LU)	Size	Rate	Trips-In	Trips-Out	Trips-Total
StorQuest (151)	97,900 square feet	1.51 / 1,000 square feet [1]	74	74	148
RV Storage (n/a)	91 RV spaces	17.23 / 100 RV spaces [2]	8	8	16
Weekday			82	82	164
StorQuest (151)	97,900 square feet	0.10 / 1,000 square feet [1]	6	4	10
RV Storage (n/a)	91 RV spaces	0.97 / 100 RV spaces [2]	1	0	1
AM Peak			7	4	11
StorQuest (151)	97,900 square feet	0.19 / 1,000 square feet [1]	8	9	17
RV Storage (n/a)	91 RV spaces	2.05 / 100 RV spaces [2]	1	1	2
PM Peak			9	10	19

1. Source: ITE Trip Generation Manual. Land Use 151 "Mini-Warehouse"
2. Source: RV storage data via Desert Hot Springs, CA

New Trips Generated

Net new trips, accounts for the difference between the proposed development trips and trips generated by existing use of the site. Table 4 summarizes the net new trip generation. Detailed calculations are attached.

Table 4: Net New Trips Generated

Land Use	Proposed Development			Existing Trips	New Trips
	In	Out	Total		
Weekday	82	82	164	(151)	+13
AM Peak	7	4	11	(12)	(1)
PM Peak	9	10	19	(17)	+2

The proposal generates 13 more daily and 2 more PM peak hour trips, compared to the existing site.

Section 7.2.1 of the Castle Rock Transportation Design Criteria Manual states; *a TIA* (Transportation Impact Analysis) *requirement may be waived if the average daily trip generation of the proposed project is less than 200 vehicles per day of the generator or by special variance approved by the Town.*

The proposed development generates less than 200 vehicles per day and does not require a formal TIA.

An alternative trip generation forecast, attached, shows that the proposal could generate fewer trips than presented above and based on data collected at other StorQuest sites. For this traffic analysis and to be conservative, the higher trip generation forecast from above (Table 4) is used to evaluate the traffic impact generated by the project.

Peak Hour Trip Distribution and Travel Assignment

The development's PM peak hour trip impacts at local intersections is less than existing trip impacts from the site's current uses. A graphic showing the PM peak hour trip distribution and travel assignment, unadjusted for credits for existing uses on the site, is attached as Figure 3.

The trip distribution is based on review of the local area and proximity to residential uses. The trip distribution forecasts 70% of development traffic to/from the north of the site and 30% of development traffic to/from the south of the site. The PM peak hour travel assignment was forecast by multiplying the PM peak hour development-generated trips by the forecasted trip distribution percentages.

This study includes trip assignment scenarios, a short-term scenario with left-turns and right-turns allowed at the North Driveway and long-term scenario with the North Driveway restricted to right-turns out only.

Traffic Volumes

For this analysis, PM peak hour traffic volumes were collected at Liggett Road and Kellogg Court on Thursday, June 24, 2021. The PM peak hour of the intersection was between 5:00 and 6:00 PM.

Future conditions without the project were forecast by adding a 3% annual growth over a 5-year horizon to the existing volumes. Future conditions were forecast by adding the project generated trips (Figure 3) to the without-project volumes.

Figure 4 summaries the year 2021 and forecasted 2026 PM peak hour volumes without the project.

Figure 5 summaries the year forecasted 2026 PM peak hour volumes with the project, without and with the North Driveway restricted to right-turns out only.

Traffic Operations

Synchro, version 10, was used to evaluate intersection level of service (LOS), delay, and queuing, using HCM 6 methodology. Intersection LOS categories ranges from LOS A, representing free flow conditions with minimal delays, to LOS F, representing breakdown flow with high delays.

For this analysis, future conditions without the project assume no widening on Liggett Road. Conditions with the project assume Liggett Road is widened to a 5-lane cross-section and the North Driveway is (a) unrestricted, left-out and right-out allowed, and (b) restricted to right-out only.

Table 5 summarizes the intersection operations.

Table 5: Intersection Level of Services

Without the Project	**2021 Existing Conditions**				**2026 Without Widening**			
	Mvmt.	**LOS**	**Delay**	**95-Q**	**Mvmt.**	**LOS**	**Delay**	**95-Q**
Liggett / Kellogg / Private Road	EB	A	9.3	0.0	EB	A	9.5	0.0
	WB L	B	10.9	0.1	WB L	B	11.4	0.1
	WB R-T	A	8.6	0.1	WB R-T	A	8.7	0.1
	NB L	A	7.6	0.0	NB L	A	7.7	0.0
	SB L	A	7.4	0.0	SB L	A	7.4	0.0
With the Project	**2026 With Widening Left-Out/Right-Out**				**2026 With Widening Right-Out**			
	Mvmt.	**LOS**	**Delay**	**95-Q**	**Mvmt.**	**LOS**	**Delay**	**95-Q**
Liggett / Kellogg / Private Road	EB	B	10.5	0.0	EB	B	10.6	0.0
	WB L	B	11.5	0.1	WB L	B	11.5	0.1
	WB R-T	A	8.7	0.1	WB R-T	A	8.7	0.1
	NB L	A	7.7	0.0	NB L	A	7.7	0.0
	SB L	A	7.4	0.0	SB L	A	7.4	0.0
Liggett / North Driveway	EB	B	10.0	0.0	EB	A	9.0	0.0

Liggett Road at Kellogg Court and the private roadway is forecast to operate at LOS B with the project.

- The northbound left-turn movement is forecast to operate at LOS A with the project. Figure 6 includes a conceptual left turn lane striping for northbound lefts from Liggett Road to the private Road. Figure 7 shows the analysis for concurrent left-turns from Liggett Road to Kellogg Road and the private road.
- The eastbound approach from the private road is forecast to operate at LOS B. There is no demand forecast from east-to-west and vice versa between the private road and Kellogg Court. Figures 8 shows the concurrent analysis for left-turns from Kellogg Road and the private road to Liggett Road. The figures show that the proposed private road alignment is reasonable due to concurrency left-turns not overlapping and a low volume of left-turns forecast to/from the private road.
- Vehicle queues, computed using HCM 6 methodology, are not forecast to extend on the private road from Liggett Road to near the proposed South Driveway, which is about 150 feet west of Liggett Road. The access spacing for the site access is reasonable.
- Vehicle queues on Liggett Road are also forecast to be negligible.

Liggett Road at the North Driveway is forecast to operate at operates at LOS B or better with and without lefts-out allowed. Vehicle queues are negligible with and without lefts-out allowed.

Summary and Conclusions

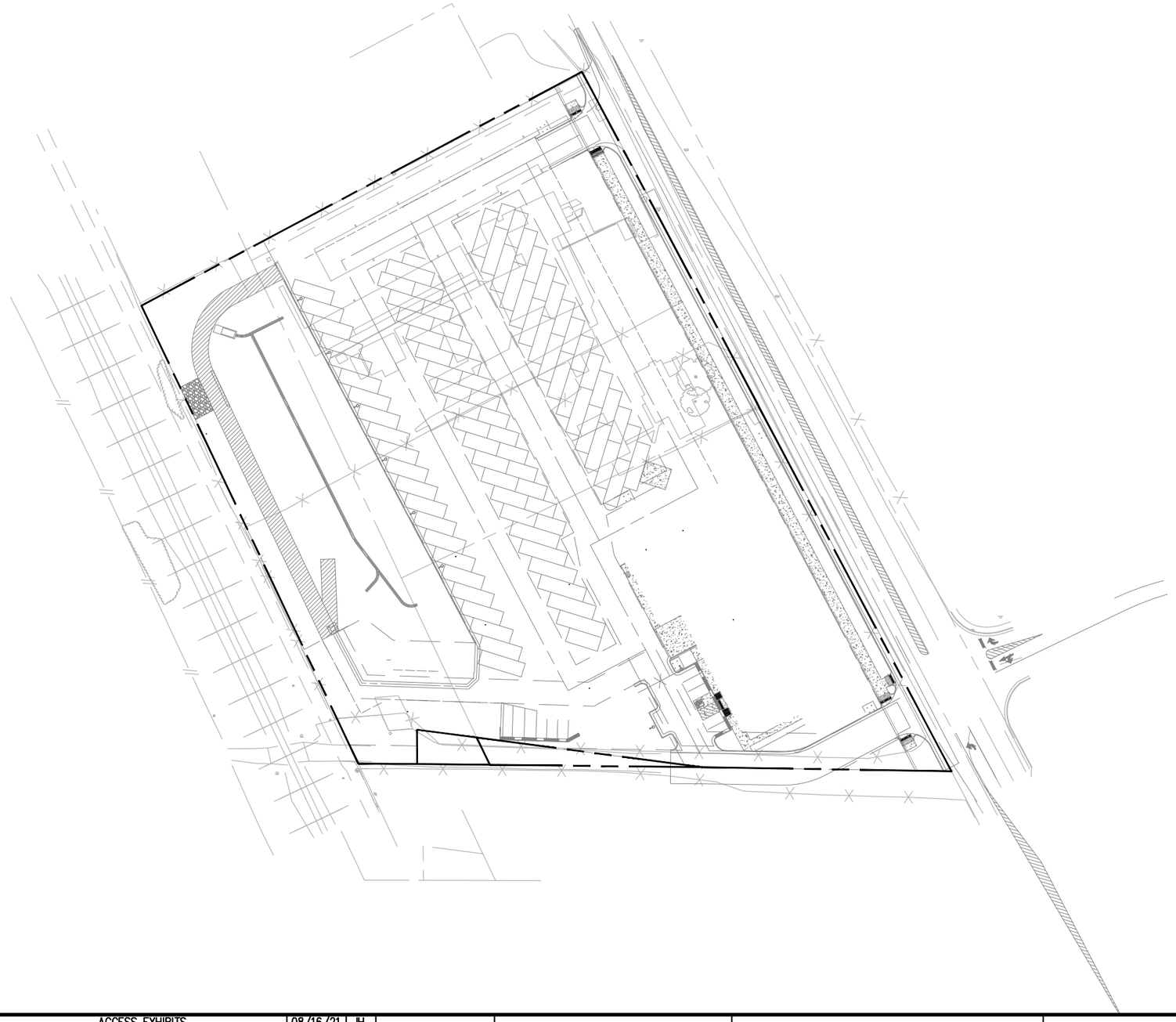
StorQuest is forecast to generate up to 13 new daily or peak hour trips and 2 new PM peak hour trips to the local road network. The net new daily trips generated by the project is less than City's trip threshold (200 trips) for preparing a formal TIA.

In year 2026, PM peak hour project trips are not forecast to impact the load road network significantly or adversely. Liggett Road and Kellogg Court is forecast to operate well at LOS B with the project. Liggett Road and the North Driveway is forecast to operate at LOS B or better with the project and without or with left-turns out allowed at the driveway.

Vehicle queues on Liggett Road are negligible and queues on the private road are not forecast to extend to near the proposed site access.

I trust that the finding above, will support your needs. Please let me know if you or the Development Reviewer have any questions or concerns.

Figure 1:
Vicinity Map



100 0 50 100

SCALE
1 inch = 100 ft.

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FIGURE 2
SITE PLAN

STORQUEST CASTLE ROCK
ALIGNMENT EXHIBIT

ROAD ALIGNMENT EXHIBIT

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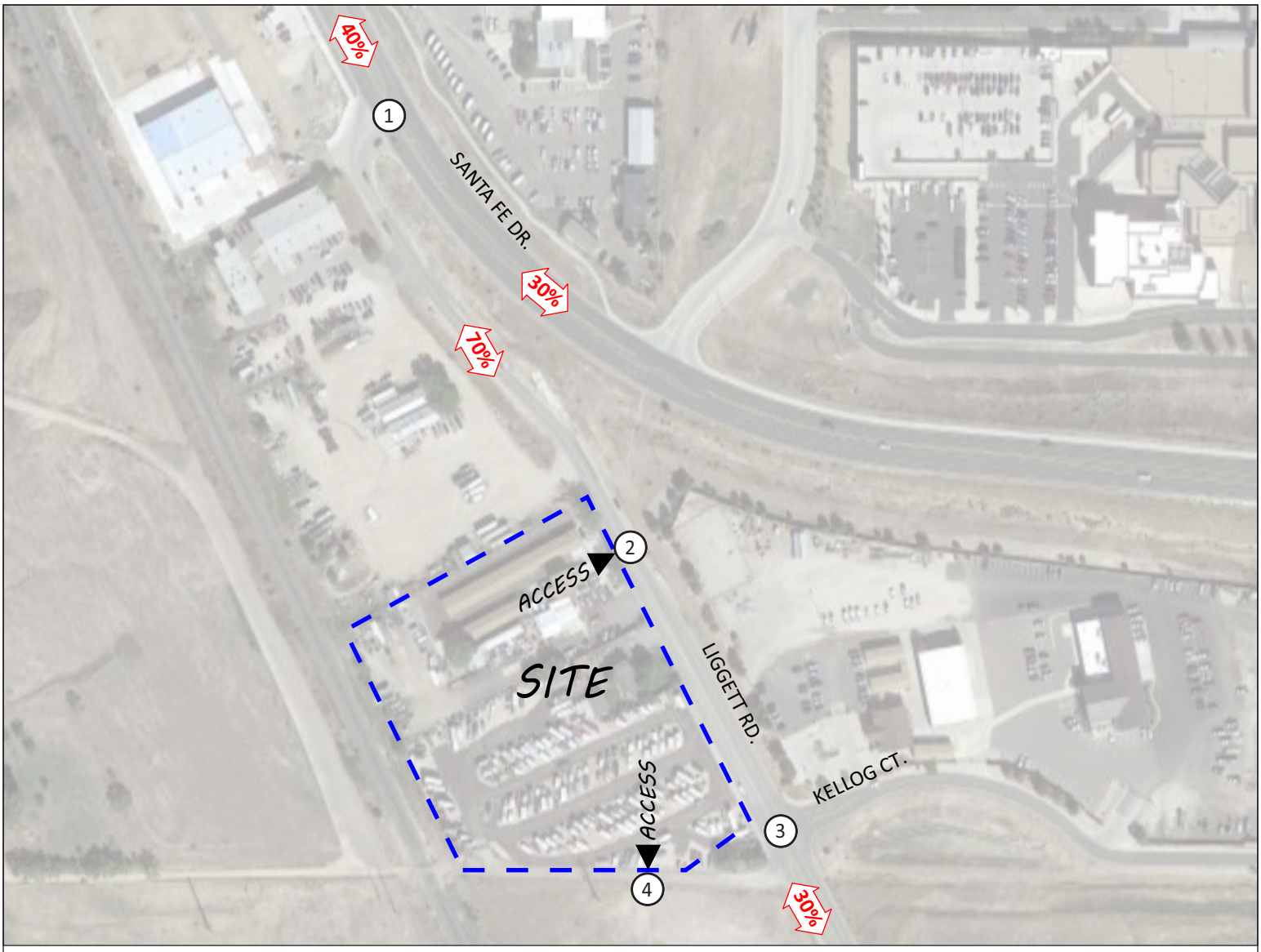
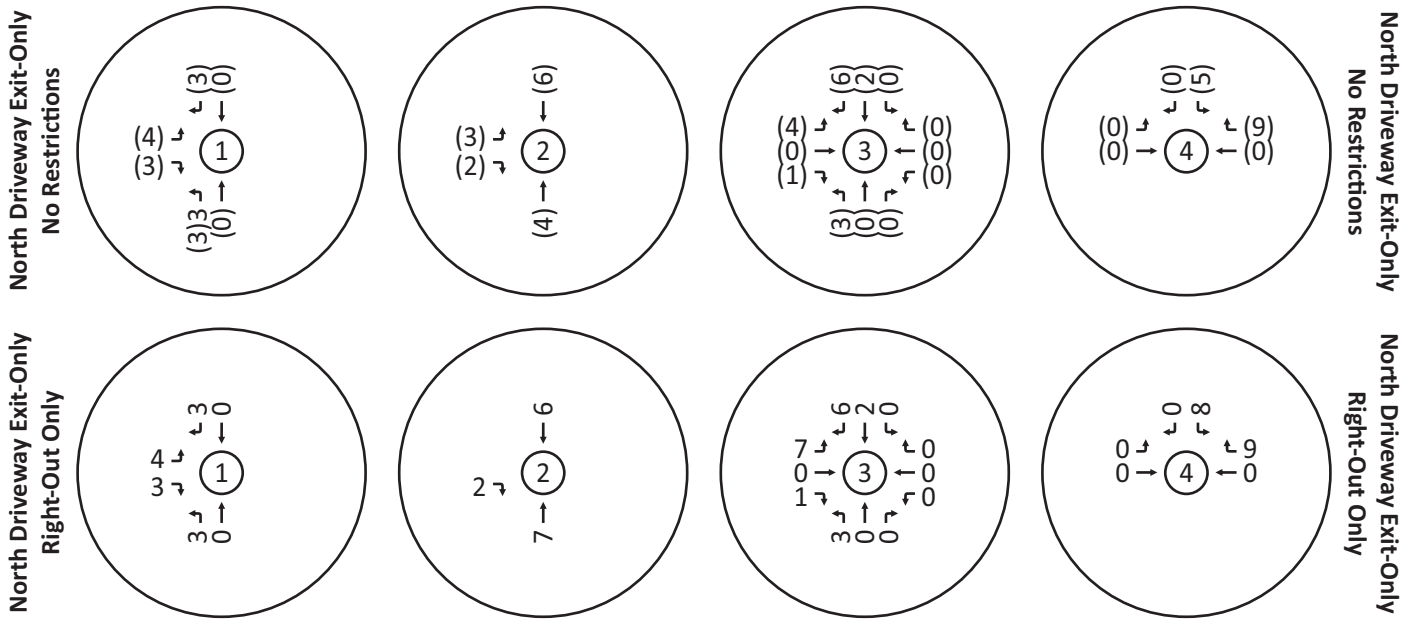
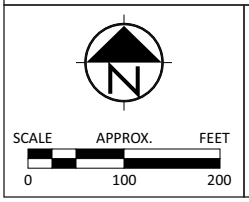
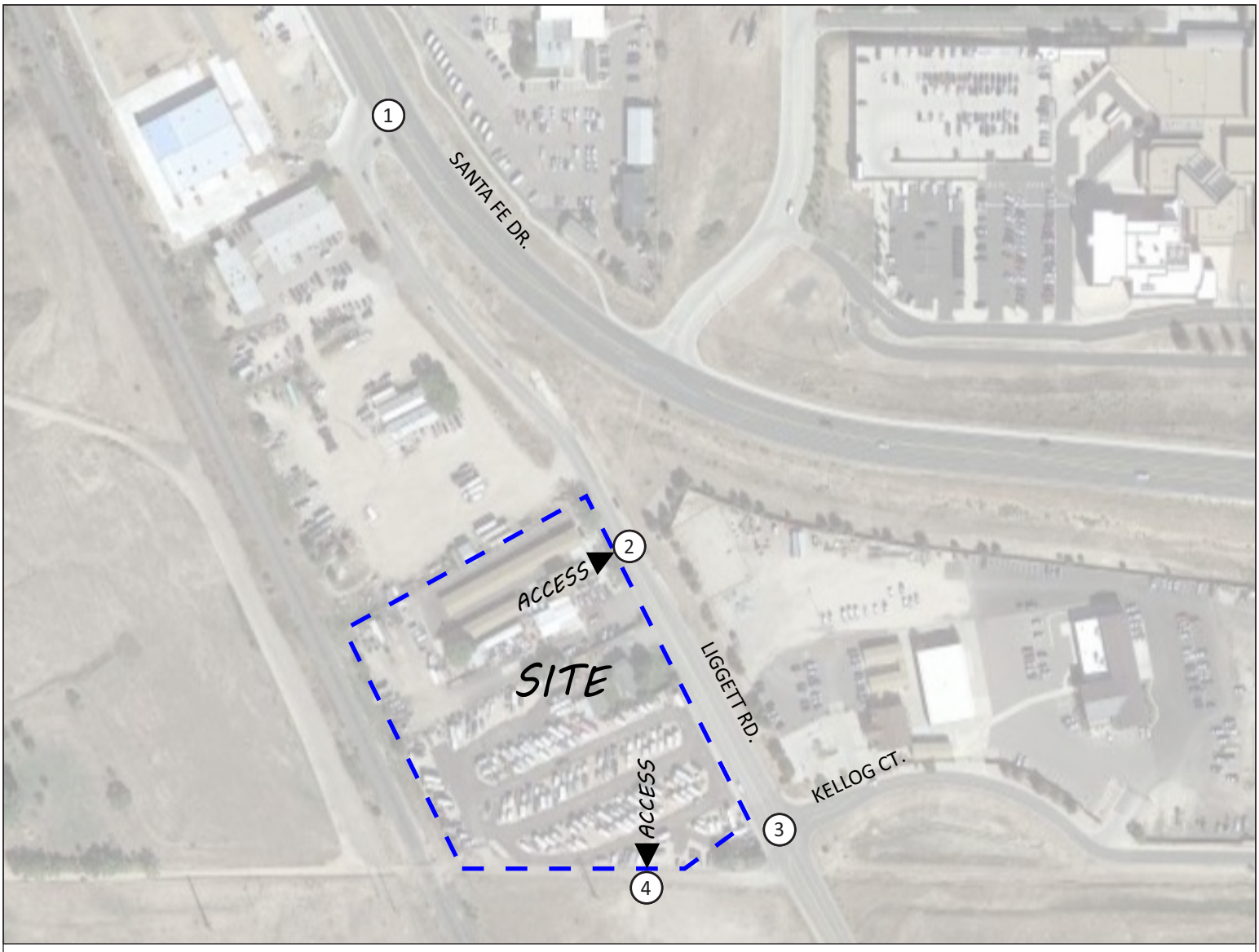


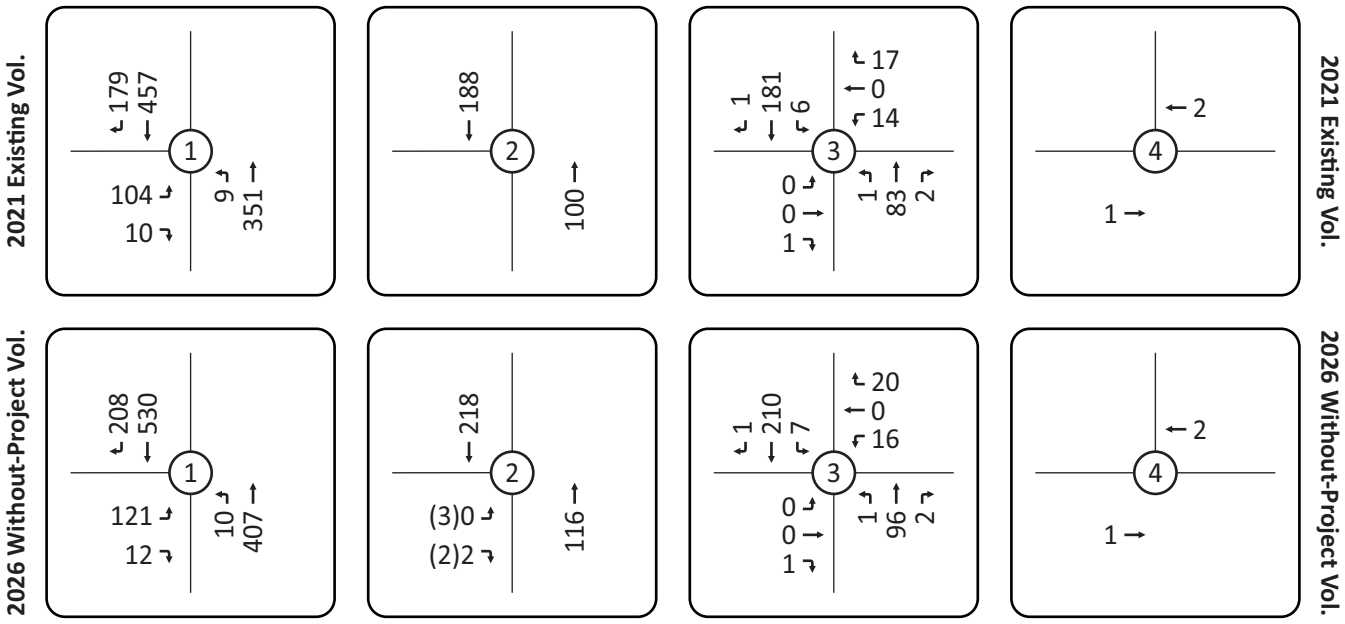




* Project-Trips Not Adjusted for Credit for Existing Uses Removed from the Site. *

Figure 3:
PM Peak Hour Project Trip Distribution and Assignment





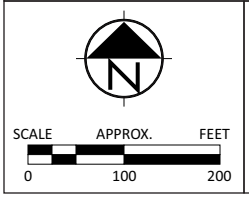
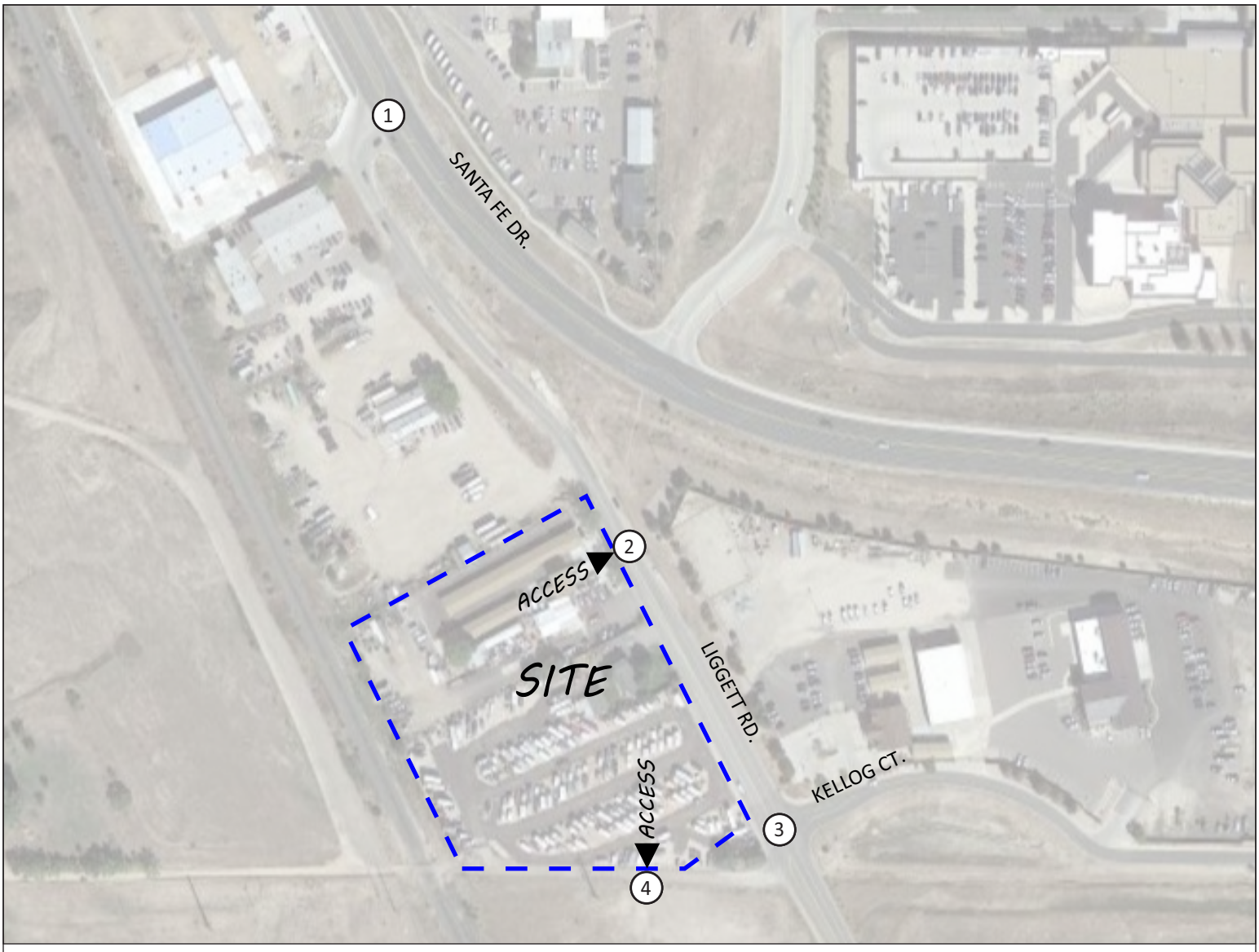
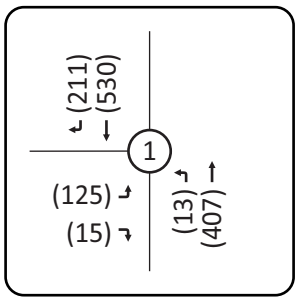
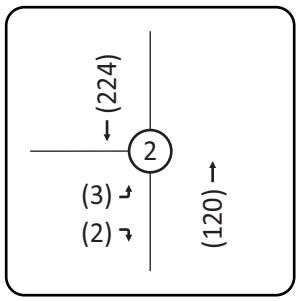


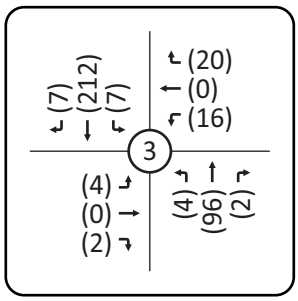
Figure 4:
2021 and 2026 Existing and Without-Project PM Peak Hour Volumes

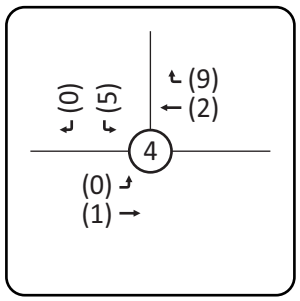


North Driveway Exit-Only
No Restrictions



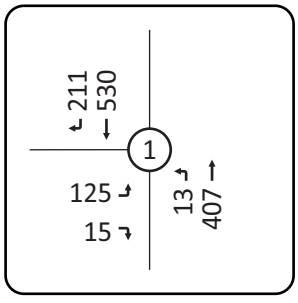


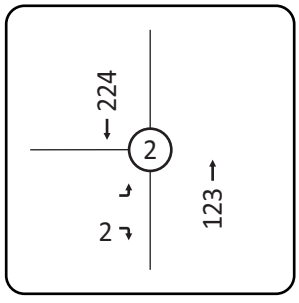


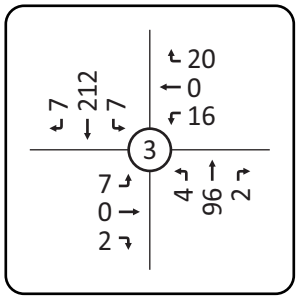


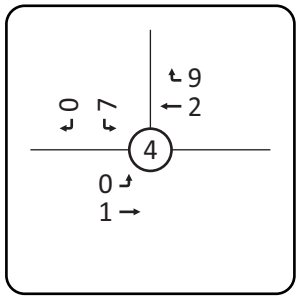
North Driveway Exit-Only
No Restrictions

North Driveway Exit-Only
Right-Out Only

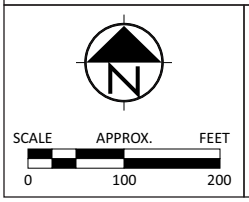








North Driveway Exit-Only
Right-Out Only



* Project-Trips Not Adjusted for Credit for Existing Uses Removed from the Site. *

Figure 5:
2026 With the Project
PM Peak Hour Volumes

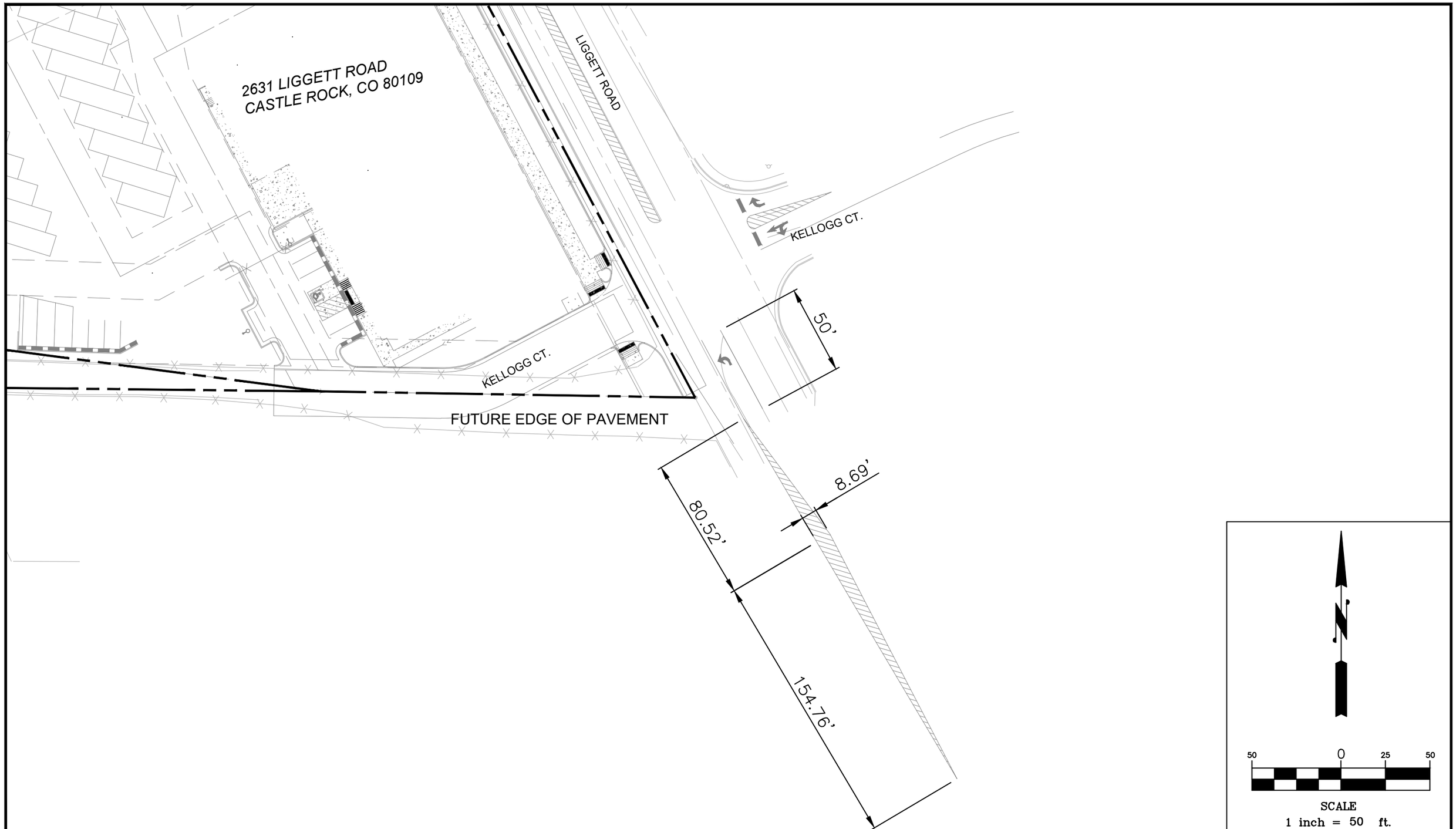


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FIGURE 6

STORQUEST CASTLE ROCK
ALIGNMENT EXHIBIT

LIGGETT ROAD / KELLOGG COURT
NB LEFT-TURN CONCEPTUAL ALTERNATIVE

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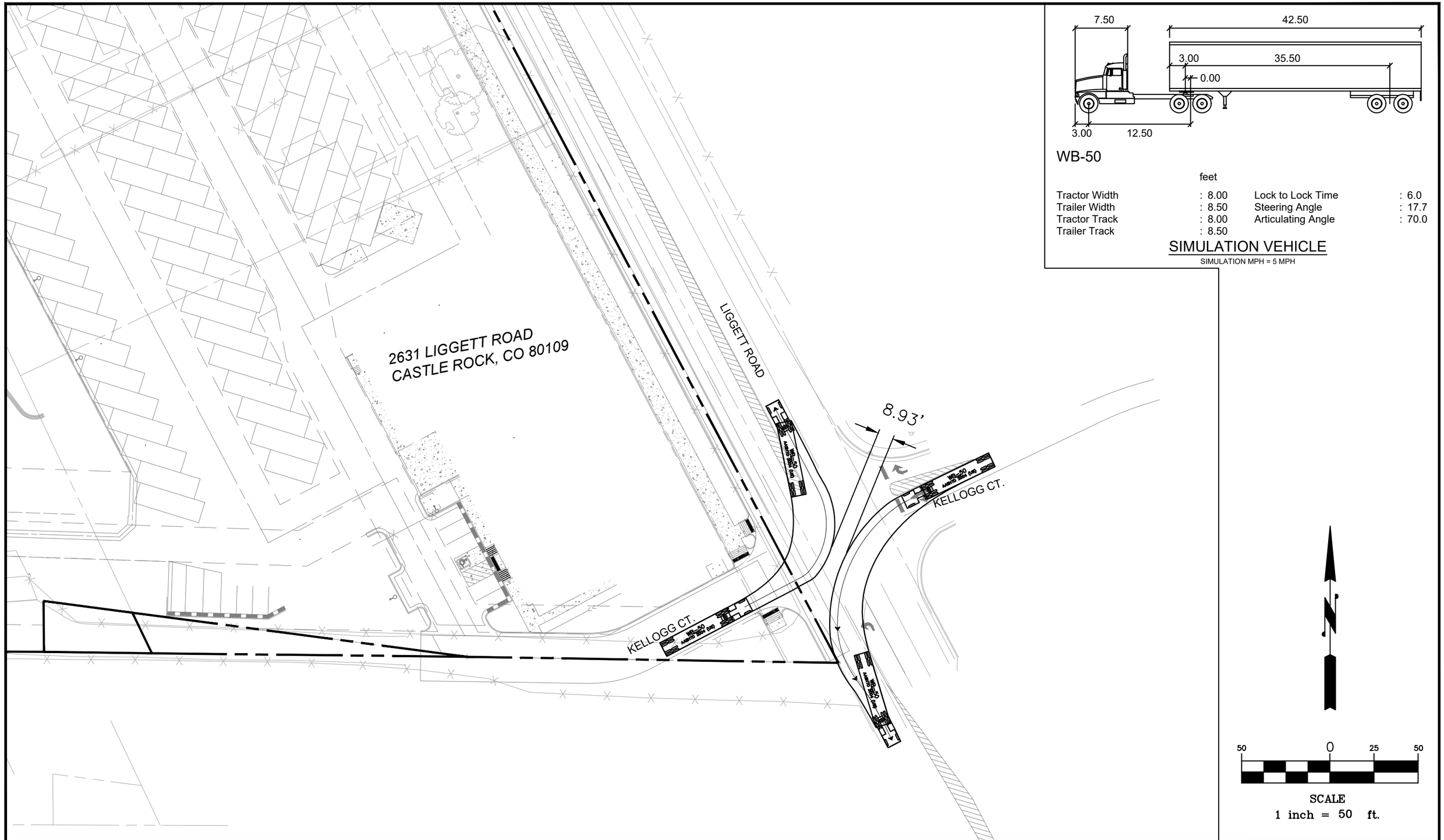

WB-50

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 17.7
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		

SIMULATION VEHICLE

SIMULATION MPH = 5 MPH

N

50 0 25 50

SCALE
1 inch = 50 ft.

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FIGURE 7

STORQUEST CASTLE ROCK
ALIGNMENT EXHIBIT

LIGGETT ROAD / KELLOGG COURT
EB AND WB LEFT-TURNS WITH WB-50 DESIGN VEHICLE

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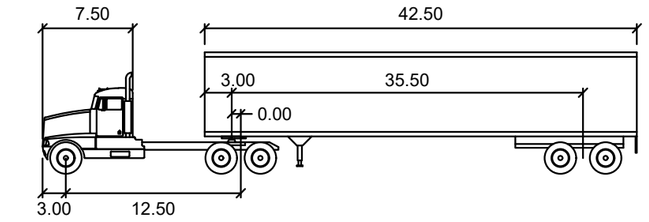
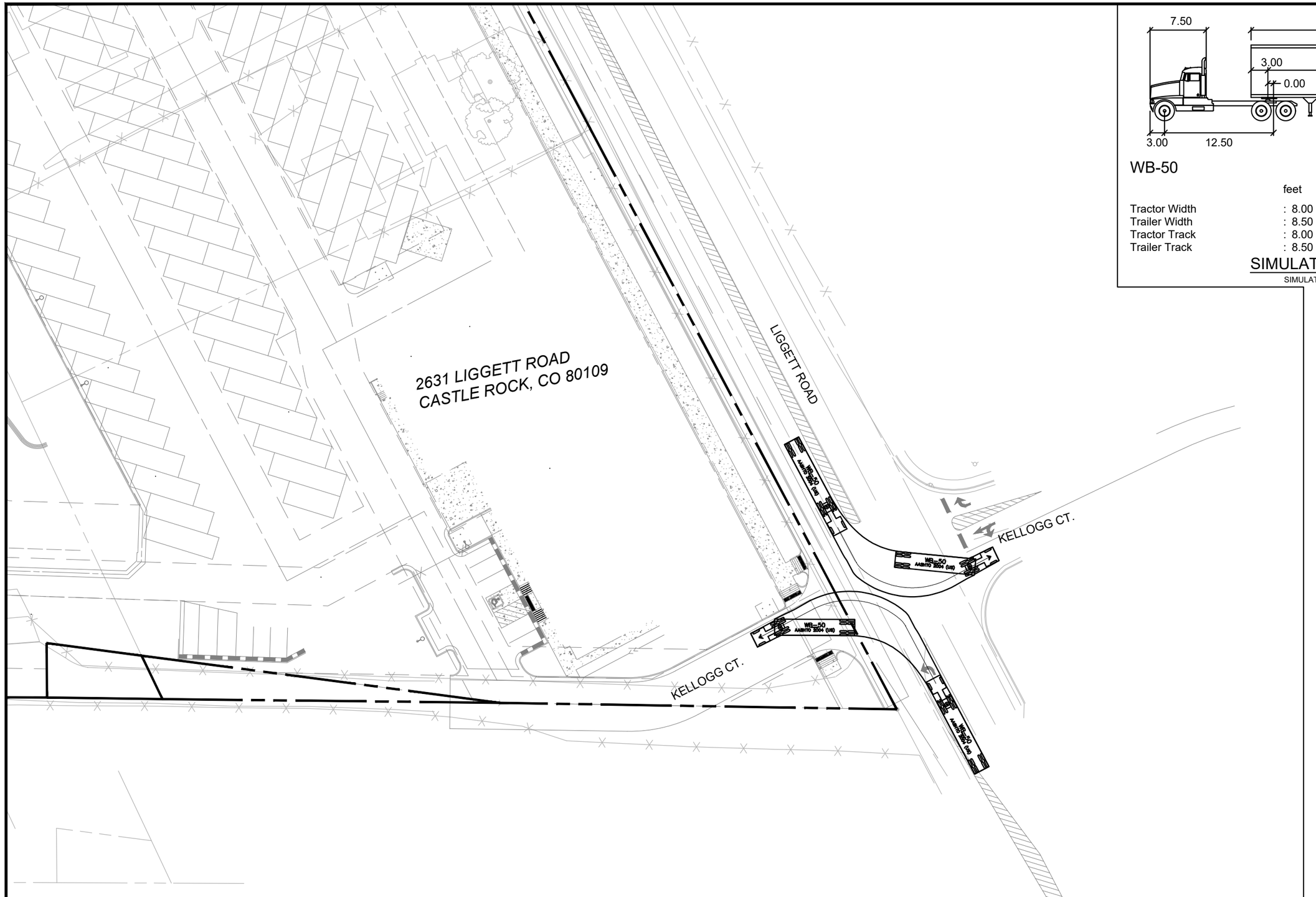


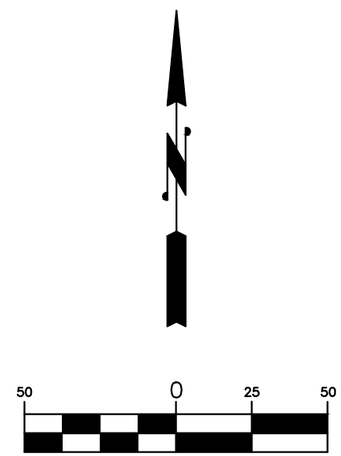
WB-50

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 17.7
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		

SIMULATION VEHICLE

SIMULATION MPH = 5 MPH





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1 inch = 50 ft.

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FIGURE 8

STORQUEST CASTLE ROCK
ALIGNMENT EXHIBIT

LIGGETT ROAD / KELLOGG COURT
EB AND WB LEFT-TURNS WITH WB-50 DESIGN VEHICLE

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ITE Code	Land Use	Size	Variable	Daily Rate		Distribution %-in	Distribution %-out	Trips Generated In	Trips Generated Out	Trips Generated Total
210	Single-Family	1	dwelling units	(9.44)	per DU	50%	50%	(4.5)	(4.5)	(9)
110	Light Industrial	2,259	square feet[1]	(4.96)	per 1,000 SF	50%	50%	(5.5)	(5.5)	(11)
942	Service Garage	2,483	square feet	(31.10)	per 1,000 SF[2]	50%	50%	(38.5)	(38.5)	(77)
151	Mini-Warehouse	9,960	square feet	(1.51)	per 1,000 SF	50%	50%	(7.5)	(7.5)	(15)
150	Storage	672	square feet	(1.74)	per 1,000 SF	50%	50%	(0.5)	(0.5)	(1)
	Existing Subtotal[3]		square feet					(57)	(57)	(113)
N/A	RV Storage	220	RV spaces	(17.23)	per 100 RV spaces[4]	50%	50%	(19.0)	(19.0)	(38)
~~N/A~~	~~RV Storage~~	~~220~~	~~RV spaces~~		~~per 100 RV spaces~~[5]			~~0.0~~	~~0.0~~	~~0~~
	Existing RV Storage[6]							(19)	(19)	(38)
	Existing Trips Total[7]							(76)	(76)	(151)
N/A	Proposed StorQuest	97,900	square feet	1.51	per 1,000 SF	50%	50%	74.0	74.0	148.0
N/A	Proposed RV Storage	91	RV spaces	17.23	per 100 RV spaces[4]	50%	50%	8.0	8.0	16.0
	Proposed Trip-Subtotal							82.0	82.0	164.0
	NEW DAILY TRIPS[8]							7	7	13

ITE Code	Land Use	Size	Variable	AM Rate		Distribution %-in	Distribution %-out	Trips Generated In	Trips Generated Out	Trips Generated Total
210	Single-Family	1	dwelling units	(0.74)	per DU	25%	75%	0	(1)	(1)
110	Light Industrial	2,259	square feet[1]	(0.70)	per 1,000 SF	88%	12%	(2)	0	(2)
942	Service Garage	2,483	square feet	(2.25)	per 1,000 SF	66%	34%	(4)	(2)	(6)
151	Mini-Warehouse	9,960	square feet	(0.10)	per 1,000 SF	60%	40%	(1)	0	(1)
150	Storage	672	square feet	(0.17)	per 1,000 SF	77%	23%	0	0	0
	Existing Subtotal[3]		square feet					(7)	(3)	(10)
N/A	RV Storage	220	RV spaces	(0.97)	per 100 RV spaces[4]	52%	48%	(1)	(1)	(2)
~~N/A~~	~~RV Storage~~	~~220~~	~~RV spaces~~		~~per 100 RV spaces~~[5]			~~0~~	~~0~~	~~0~~
	Existing RV Storage[6]							(1)	(1)	(2)
	Existing Trips Total[7]							(8)	(4)	(12)
N/A	Proposed StorQuest	97,900	square feet	0.10	per 1,000 SF	60%	40%	6.0	4.0	10.0
N/A	Proposed RV Storage	91	RV spaces	0.97	per 100 RV spaces[4]	52%	48%	1.0	0.0	1.0
	Proposed Trip-Subtotal							7.0	4.0	11.0
	NEW AM PEAK HOUR TRIPS[8]							(1)	0	(1)

ITE Code	Land Use	Size	Variable	AM Rate		Distribution %-in	Distribution %-out	Trips Generated In	Trips Generated Out	Trips Generated Total
210	Single-Family	1	dwelling units	(0.99)	per DU	63%	37%	(1)	0	(1)
110	Light Industrial	2,259	square feet[1]	(0.63)	per 1,000 SF	13%	87%	0	(1)	(1)
942	Service Garage	2,483	square feet	(3.11)	per 1,000 SF	48%	52%	(4)	(4)	(8)
151	Mini-Warehouse	9,960	square feet	(0.17)	per 1,000 SF	47%	53%	(1)	(1)	(2)
150	Storage	672	square feet	(0.19)	per 1,000 SF	27%	73%	0	0	0
	Existing Subtotal[3]		square feet					(6)	(6)	(12)
N/A	RV Storage	220	RV spaces	(2.05)	per 100 RV spaces[4]	45%	55%	(2)	(3)	(5)
~~N/A~~	~~RV Storage~~	~~220~~	~~RV spaces~~	~~(0.84)~~	~~per 100 RV spaces~~[5]	~~44%~~	~~56%~~	~~(1)~~	~~(1)~~	~~(2)~~
	Existing RV Storage[6]							(2)	(3)	(5)
	Existing Trips Total[7]							(8)	(9)	(17)
N/A	Proposed StorQuest	97,900	square feet	0.17	per 1,000 SF	47%	53%	8	9	17
N/A	Proposed RV Storage	91	RV spaces	2.05	per 100 RV spaces[4]	45%	55%	1	1	2
	Proposed Trip-Subtotal							9	10	19
	NEW PM PEAK HOUR TRIPS[8]							1	1	2

1 Light Industrial use square footage includes existing office and light industrial buildings areas.
2 Rate estimated 10 X "PM Peak Hour Rate", no ITE data available.
3 Trip total for uses on Land Parcel 2351-340-00-009. Does not include existing RV storage trips.
4 From data compiled in Desert Hot Springs, CA.
5 From data compiled in Brighton and Erie, CO, PM data only (data is significantly less than the data compiled in California).
6 Total RV Trips is based on the data compiled for the Desert Hot Springs, CA site only.
7 Total Existing Trips = Trip total for uses on Land Parcel 2351-340-00-009 + RV Trips.
8 New Trips = Proposed Use Trips - Total Existing Trips.

date:
06-23-2021

prepared by:
Transportation Solutions

CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

MEMORANDUM

DATE: February 27, 2020

TO: Annie Baek, InSite Property Group

FROM: Dean Arizabal, LSA

SUBJECT: Trip Generation Analysis for the Proposed Self-Storage and RV Storage Facility at 3701 Pacific Place, Long Beach, California

LSA has prepared this trip generation analysis for the proposed self-storage and recreational vehicle (RV) storage facility (project) in Long Beach, California. The proposed project is at 3701 Pacific Place, the former site of the Long Beach Golf Learning Center. The proposed project will construct a 150,000-gross-square-foot building with 1,100 self-storage units and 580 RV storage spaces on the currently vacant property.

The project site is north of the Interstate 405 (I-405) freeway, east of the Interstate 710 (I-710) freeway and the Los Angeles River, and west of the Los Angeles Metropolitan Transportation Authority (Metro) A Line light rail tracks and Los Cerritos Park. Access to the site is currently provided at the signalized intersection of Pacific Place/Wardlow Road and the unsignalized intersection of Pacific Place/I-405 and I-710 northbound on-ramps.

The purpose of this analysis is to identify the proposed project trip generation and determine whether the project would require a more-detailed traffic analysis according to the City of Long Beach's (City) *Traffic Impact Analysis (TIA) Guidelines*. The *TIA Guidelines* state that a TIA should be prepared for every project that would generate more than 100 vehicle trips per day. The TIA requirement can be waived by the City Traffic Engineer where impacts are deemed negligible. In addition, the *TIA Guidelines* state that intersections at which the project contributes a total of 50 or more peak-hour trips should be analyzed. As such, this trip generation analysis evaluates the proposed project against the City's two trip thresholds.

Trip Generation

The potential trip generation of the proposed project was calculated using trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition (2017) for self-storage use (Land Use Code 151: Mini-Warehouse). Although ITE does not have trip rates for RV storage use, the trip-generating characteristics of an RV storage use closely resemble those of a self-storage (mini-warehouse) use. Table A presents the trip generation estimate using the ITE (Land Use Code 151) trip rates for the proposed project of 1,100 self-storage units and 580 RV storage spaces (considered "units" for purposes of the trip generation).

Table A: Project Trip Generation (ITE Trip Rates)

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates									
Mini-Warehouse (Self-Storage and RV Storage)[1]		100 storage units (100 RV spaces)	17.960	0.710	0.680	1.390	0.980	0.970	1.950
Project Trip Generation									
Self-Storage and RV Storage[2]	16.80	100 storage units (100 RV spaces)	302	12	11	23	17	16	33

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual,* 10th Edition (2017). Land Use Code (151) - Mini Warehouse

[2] Proposed project includes 1,100 self-storage units and 580 RV storage spaces (1,680 total units and spaces).

ADT = average daily traffic

RV = recreational vehicle

As Table A shows, the proposed project is estimated to generate 302 daily trips, 23 of which would occur in the a.m. peak hour and 33 of which would occur in the p.m. peak hour, using ITE trip rates.

As an alternative method to calculating trips for the self-storage and RV storage uses, LSA also applied trip rates developed from gate data (vehicle entries and exits) recorded between November 2019 and January 2020 for a self-storage facility in Moreno Valley (14150 Grant Street) and a self-storage and RV storage facility in Desert Hot Springs (15305 Little Morongo Road). The gate data is provided as an attachment. Table B presents the trip generation estimate for the proposed project using the gate trip rates for the 1,100 self-storage units and the 580 RV storage spaces.

Table B: Project Trip Generation (Gate Trip Rates)

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Self-Storage		100 storage units	12.90	0.53	0.40	0.93	0.93	0.79	1.72
RV Storage		100 RV spaces	17.23	0.50	0.47	0.97	0.93	1.12	2.05
Project Trip Generation									
Self-Storage	11.00	100 storage units	142	6	4	10	10	9	19
RV Storage	5.80	100 RV spaces	100	3	3	6	5	7	12
Total			242	9	7	16	15	16	31

[1] Trip rates developed from gate data for the Moreno Valley Self Storage and Desert Hot Springs Self Storage and RV Storage facilities (November 2019 to January 2020).

ADT = average daily traffic

RV = recreational vehicle

As Table B shows, the proposed project is estimated to generate 242 daily trips, 16 of which would occur in the a.m. peak hour and 31 of which would occur in the p.m. peak hour, using trip rates developed from gate data of one existing self-storage facility and one existing self-storage and RV storage facility.

Conclusion

LSA analyzed the trip generation for the proposed project to determine whether it would require a more-detailed traffic analysis according to the City's *TIA Guidelines*. Using ITE trip rates or trip rates developed from similar facilities currently in operation, the proposed project is anticipated to generate a maximum of 302 daily trips, including a maximum of 33 trips during the peak hours.

Although the proposed project would generate more than 100 trips per day, it would generate fewer than 50 trips per peak hour. Because the proposed project would not contribute 50 or more trips per peak hour to any intersection, an intersection analysis is not required per the *TIA Guidelines*. A maximum project contribution of 33 peak-hour trips to the adjacent intersections is nominal, and the potential for an intersection impact is unlikely. As such, LSA recommends that the City Traffic Engineer waive the TIA requirement for this project.

If you have any questions, please contact me at (949) 553-0666.

Attachment: Self Storage and RV Storage Gate Data (November 2019 to January 2020)

LSA

Self Storage Trip Generation and Trip Rates (Moreno Valley and Desert Hot Springs)

Trip Generation

Day and Date	Size[1]	Daily	AM Peak Hour[2]			PM Peak Hour[3]		
			In	Out	Total	In	Out	Total
Tuesday 11/5/19		170	9	4	13	20	30	50
Wednesday 11/6/19		164	4	5	9	5	8	13
Thursday 11/7/19		194	8	6	14	10	10	20
Tuesday 11/12/19		167	9	14	23	17	10	27
Wednesday 11/13/19		209	11	9	20	17	15	32
Thursday 11/14/19		188	9	6	15	8	8	16
Tuesday 11/19/19		219	14	6	20	10	10	20
Wednesday 11/20/19		173	6	8	14	7	9	16
Thursday 11/21/19		183	15	9	24	11	12	23
Tuesday 12/3/19		182	8	7	15	21	11	32
Wednesday 12/4/19		162	9	10	19	9	8	17
Thursday 12/5/19		213	3	3	6	19	13	32
Tuesday 12/10/19		209	5	3	8	16	10	26
Wednesday 12/11/19		225	6	9	15	22	9	31
Thursday 12/12/19		206	8	4	12	19	18	37
Tuesday 12/17/19		174	13	6	19	8	7	15
Wednesday 12/18/19		242	9	7	16	16	13	29
Thursday 12/19/19		188	5	2	7	17	14	31
Tuesday 1/7/20		213	13	8	21	16	16	32
Wednesday 1/8/20		195	3	2	5	24	10	34
Thursday 1/9/20		210	5	4	9	22	7	29
Tuesday 1/14/20		202	10	11	21	13	14	27
Wednesday 1/15/20		218	13	8	21	10	13	23
Thursday 1/16/20		195	5	6	11	18	14	32
Tuesday 1/28/20		162	7	5	12	6	7	13
Wednesday 1/29/20		204	4	5	9	14	14	28
Thursday 1/30/20	**15.12**	203	6	4	10	6	11	17
Average	**15.12**	**195**	**8**	**6**	**14**	**14**	**12**	**26**

Trip Rates

Land Use Type	Size	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Self Storage	**1.00**	**12.90**	**0.53**	**0.40**	**0.93**	**0.93**	**0.79**	**1.72**

[1] Size is the total number of self storage units of the Moreno Valley and Desert Hot Springs self storage facilities (in hundreds).

[2] AM Peak Hour is the one-hour period between 7:00 and 9:00 a.m. with the highest trip generation (7:00-8:00, 7:15-8:15, 7:30-8:30, 7:45-8:45, or 8:00-9:00 a.m.).

[3] PM Peak Hour is the one-hour period between 4:00 and 6:00 a.m. with the highest trip generation (4:00-5:00, 4:15-5:15, 4:30-5:30, 4:45-5:45, or 5:00-6:00 p.m.).

LSA

RV Storage Trip Generation and Trip Rates (Desert Hot Springs)

Trip Generation

Day and Date	Size[1]	Daily	AM Peak Hour[2]			PM Peak Hour[3]		
			In	Out	Total	In	Out	Total
Tuesday 11/5/19		50	0	0	0	0	3	3
Wednesday 11/6/19		57	1	2	3	4	2	6
Thursday 11/7/19		49	1	1	2	5	5	10
Tuesday 11/12/19		37	0	0	0	3	5	8
Wednesday 11/13/19		38	1	0	1	0	0	0
Thursday 11/14/19		52	2	1	3	2	2	4
Tuesday 11/19/19		41	3	2	5	1	2	3
Wednesday 11/20/19		49	3	3	6	3	7	10
Thursday 11/21/19		55	3	3	6	4	3	7
Tuesday 12/3/19		43	1	1	2	3	3	6
Wednesday 12/4/19		24	0	0	0	0	1	1
Thursday 12/5/19		65	3	4	7	1	2	3
Tuesday 12/10/19		52	0	0	0	4	4	8
Wednesday 12/11/19		44	1	0	1	1	2	3
Thursday 12/12/19		44	2	2	4	3	5	8
Tuesday 12/17/19		38	1	1	2	2	3	5
Wednesday 12/18/19		54	1	1	2	2	3	5
Thursday 12/19/19		49	3	3	6	3	2	5
Tuesday 1/7/20		70	1	1	2	6	4	10
Wednesday 1/8/20		32	1	1	2	0	1	1
Thursday 1/9/20		35	0	0	0	2	2	4
Tuesday 1/14/20		39	2	2	4	4	3	7
Wednesday 1/15/20		58	2	2	4	5	7	12
Thursday 1/16/20		57	3	2	5	7	5	12
Tuesday 1/28/20		48	1	2	3	2	3	5
Wednesday 1/29/20		50	1	0	1	1	2	3
Thursday 1/30/20	**2.78**	63	1	1	2	2	3	5
Average	**2.78**	**48**	**1**	**1**	**3**	**3**	**3**	**6**

Trip Rates

Land Use Type	Size	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
RV Storage	**1.00**	**17.23**	**0.50**	**0.47**	**0.97**	**0.93**	**1.12**	**2.05**

[1] Size is the total number of RV storage spaces of the Desert Hot Springs RV storage facility (in hundreds).

[2] AM Peak Hour is the one-hour period between 7:00 and 9:00 a.m. with the highest trip generation (7:00-8:00, 7:15-8:15, 7:30-8:30, 7:45-8:45, or 8:00-9:00 a.m.).

[3] PM Peak Hour is the one-hour period between 4:00 and 6:00 a.m. with the highest trip generation (4:00-5:00, 4:15-5:15, 4:30-5:30, 4:45-5:45, or 5:00-6:00 p.m.).

Summary

Moreno Valley Self Storage Trip Generation

	Daily	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Tuesday 11/5/19	116	8	3	10	4
Wednesday 11/6/19	93	2	3	3	5
Thursday 11/7/19	111	6	2	3	6
Tuesday 11/12/19	106	4	4	6	4
Wednesday 11/13/19	125	6	5	8	8
Thursday 11/14/19	108	4	4	6	6
Tuesday 11/19/19	130	13	5	5	7
Wednesday 11/20/19	110	3	5	5	7
Thursday 11/21/19	100	10	4	5	6
Tuesday 12/3/19	101	3	4	13	6
Wednesday 12/4/19	97	3	6	5	2
Thursday 12/5/19	118	2	2	5	6
Tuesday 12/10/19	109	1	1	9	4
Wednesday 12/11/19	112	2	3	14	4
Thursday 12/12/19	121	5	1	11	9
Tuesday 12/17/19	106	8	4	3	5
Wednesday 12/18/19	123	3	3	8	7
Thursday 12/19/19	101	2	1	11	9
Tuesday 1/7/20	94	8	3	9	7
Wednesday 1/8/20	107	3	2	12	5
Thursday 1/9/20	114	0	1	8	4
Tuesday 1/14/20	109	6	7	8	6
Wednesday 1/15/20	111	8	2	4	4
Thursday 1/16/20	85	1	3	5	4
Tuesday 1/28/20	97	3	2	4	4
Wednesday 1/29/20	122	2	2	4	7
Thursday 1/30/20	113	4	3	3	5

from LSA Study

Summary

Desert Hot Springs Self Storage Trip Generation

	Daily	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Tuesday 11/5/19	54	1	1	10	26
Wednesday 11/6/19	71	2	2	2	3
Thursday 11/7/19	83	2	4	7	4
Tuesday 11/12/19	61	5	10	11	6
Wednesday 11/13/19	84	5	4	9	7
Thursday 11/14/19	80	5	2	2	2
Tuesday 11/19/19	89	1	1	5	3
Wednesday 11/20/19	63	3	3	2	2
Thursday 11/21/19	83	5	5	6	6
Tuesday 12/3/19	81	5	3	8	5
Wednesday 12/4/19	65	6	4	4	6
Thursday 12/5/19	95	1	1	14	7
Tuesday 12/10/19	100	4	2	7	6
Wednesday 12/11/19	113	4	6	8	5
Thursday 12/12/19	85	3	3	8	9
Tuesday 12/17/19	68	5	2	5	2
Wednesday 12/18/19	119	6	4	8	6
Thursday 12/19/19	87	3	1	6	5
Tuesday 1/7/20	119	5	5	7	9
Wednesday 1/8/20	88	0	0	12	5
Thursday 1/9/20	96	5	3	14	3
Tuesday 1/14/20	93	4	4	5	8
Wednesday 1/15/20	107	5	6	6	9
Thursday 1/16/20	110	4	3	13	10
Tuesday 1/28/20	65	4	3	2	3
Wednesday 1/29/20	82	2	3	10	7
Thursday 1/30/20	90	2	1	3	6

from LSA Study

Summary

Desert Hot Springs RV Storage Trip Generation

	Daily	AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Tuesday 11/5/19	50	0	0	0	3
Wednesday 11/6/19	57	1	2	4	2
Thursday 11/7/19	49	1	1	5	5
Tuesday 11/12/19	37	0	0	3	5
Wednesday 11/13/19	38	1	0	0	0
Thursday 11/14/19	52	2	1	2	2
Tuesday 11/19/19	41	3	2	1	2
Wednesday 11/20/19	49	3	3	3	7
Thursday 11/21/19	55	3	3	4	3
Tuesday 12/3/19	43	1	1	3	3
Wednesday 12/4/19	24	0	0	0	1
Thursday 12/5/19	65	3	4	1	2
Tuesday 12/10/19	52	0	0	4	4
Wednesday 12/11/19	44	1	0	1	2
Thursday 12/12/19	44	2	2	3	5
Tuesday 12/17/19	38	1	1	2	3
Wednesday 12/18/19	54	1	1	2	3
Thursday 12/19/19	49	3	3	3	2
Tuesday 1/7/20	70	1	1	6	4
Wednesday 1/8/20	32	1	1	0	1
Thursday 1/9/20	35	0	0	2	2
Tuesday 1/14/20	39	2	2	4	3
Wednesday 1/15/20	58	2	2	5	7
Thursday 1/16/20	57	3	2	7	5
Tuesday 1/28/20	48	1	2	2	3
Wednesday 1/29/20	50	1	0	1	2
Thursday 1/30/20	63	1	1	2	3

from LSA Study

Pivot Moreno Entry

Date	COUNTA of Name	SUM of Peak AM 7-8	SUM of Peak AM 7:15-8:15	SUM of Peak AM 7:30-8:30	SUM of Peak AM 7:45-8:45	SUM of Peak AM 8-9	SUM of Peak PM 4-5	SUM of Peak PM 4:15-5:15	SUM of Peak PM 4:30-5:30	SUM of Peak PM 4:45-5:45	SUM of Peak PM 5-6
11/5/2019	65	7	8	2	2	0	4	4	3	5	10
11/6/2019	45	1	0	1	2	0	2	2	2	1	3
11/7/2019	49	3	4	2	6	0	3	3	3	3	2
11/12/2019	57	4	3	2	1	0	6	4	4	1	1
11/13/2019	69	2	6	6	6	0	3	5	5	8	6
11/14/2019	55	3	3	2	4	0	4	5	4	6	5
11/19/2019	66	2	9	13	13	0	3	4	5	5	5
11/20/2019	53	3	3	2	2	0	5	5	4	3	4
11/21/2019	52	10	10	8	3	0	5	2	2	2	1
12/3/2019	50	2	2	3	2	0	13	9	9	0	0
12/4/2019	47	3	2	2	2	0	1	2	3	5	4
12/5/2019	57	2	2	2	1	0	4	5	4	4	2
12/10/2019	57	1	1	0	0	0	6	5	9	7	6
12/11/2019	56	2	2	1	1	0	5	3	4	14	13
12/12/2019	61	0	0	4	5	0	3	5	9	11	11
12/17/2019	50	7	8	3	3	0	3	2	2	0	0
12/18/2019	53	1	2	3	3	0	8	5	4	4	3
12/19/2019	50	1	0	1	2	0	11	10	4	3	4
1/7/2020	49	7	7	8	3	0	7	9	7	7	6
1/8/2020	55	1	3	3	2	0	7	7	12	8	9
1/9/2020	63	0	0	0	0	0	8	5	3	6	5
1/14/2020	57	1	1	3	6	0	8	7	8	6	6
1/15/2020	57	1	3	2	8	0	4	4	4	3	4
1/16/2020	45	1	1	1	1	0	5	5	5	1	3
1/28/2020	52	1	3	3	3	0	3	3	3	4	3
1/29/2020	67	1	1	2	1	0	4	3	3	4	4
1/30/2020	56	4	4	3	3	0	3	1	1	1	1
Grand Total	1493	71	88	82	85	0	138	124	126	122	121

from LSA Study

Pivot Moreno Exit

Date	COUNTA of Name	SUM of Peak AM 7-8	SUM of Peak AM 7:15-8:15	SUM of Peak AM 7:30-8:30	SUM of Peak AM 7:45-8:45	SUM of Peak AM 8-9	SUM of Peak PM 4-5	SUM of Peak PM 4:15-5:15	SUM of Peak PM 4:30-5:30	SUM of Peak PM 4:45-5:45	SUM of Peak PM 5-6
11/5/2019	51	2	3	2	2	0	3	2	2	3	4
11/6/2019	48	3	1	1	1	0	4	5	4	3	3
11/7/2019	62	1	2	2	2	0	2	4	6	5	6
11/12/2019	49	4	3	2	2	0	3	4	3	3	1
11/13/2019	56	2	4	5	4	0	2	4	7	7	8
11/14/2019	53	4	2	2	2	0	4	4	6	6	6
11/19/2019	64	3	4	5	4	0	4	6	6	7	6
11/20/2019	57	2	5	5	4	0	5	3	4	3	7
11/21/2019	48	2	4	3	4	0	6	6	3	2	3
12/3/2019	51	4	4	3	3	0	6	3	4	3	1
12/4/2019	50	3	4	5	6	0	1	2	2	1	2
12/5/2019	61	1	2	2	2	0	3	5	6	5	5
12/10/2019	52	0	1	1	1	0	3	4	4	3	4
12/11/2019	56	3	3	1	1	0	1	1	1	2	4
12/12/2019	60	0	0	1	1	0	8	8	9	9	4
12/17/2019	56	4	4	4	3	0	4	5	4	5	2
12/18/2019	70	1	1	2	3	0	4	5	7	7	6
12/19/2019	51	1	1	0	0	0	7	9	7	4	3
1/7/2020	45	3	3	2	3	0	7	6	4	4	4
1/8/2020	52	1	2	2	1	0	5	4	2	3	4
1/9/2020	51	1	0	0	0	0	2	4	2	2	3
1/14/2020	52	4	5	7	4	0	4	6	4	3	4
1/15/2020	54	1	1	2	2	0	2	2	3	4	4
1/16/2020	40	1	2	2	3	0	4	4	4	4	1
1/28/2020	45	1	1	2	2	0	4	4	4	3	4
1/29/2020	55	2	2	2	1	0	7	7	4	4	4
1/30/2020	57	1	3	3	3	0	5	4	2	1	3
Grand Total	1446	55	67	68	64	0	110	121	114	106	106

from LSA Study

PIVOT DHS Storage Entry

Date	COUNTA of Name	SUM of Peak AM 7-8	SUM of Peak AM 7:15-8:15	SUM of Peak AM 7:30-8:30	SUM of Peak AM 7:45-8:45	SUM of Peak AM 8-9	SUM of Peak PM 4-5	SUM of Peak PM 4:15-5:15	SUM of Peak PM 4:30-5:30	SUM of Peak PM 4:45-5:45	SUM of Peak PM 5-6
11/5/2019	28	1	0	0	1	0	9	10	10	7	2
11/6/2019	37	2	2	1	0	0	1	2	2	2	2
11/7/2019	44	2	2	1	1	0	4	3	2	3	7
11/12/2019	34	2	4	5	5	0	11	7	7	3	2
11/13/2019	43	5	3	4	4	0	9	8	3	4	2
11/14/2019	40	2	3	4	5	0	2	1	1	1	1
11/19/2019	48	0	0	0	1	0	5	1	2	4	5
11/20/2019	32	3	3	3	3	0	0	2	2	2	2
11/21/2019	43	2	5	5	4	0	6	3	3	3	2
12/3/2019	42	3	5	4	3	0	8	8	7	2	3
12/4/2019	33	6	6	5	1	0	4	4	4	4	4
12/5/2019	48	1	1	0	1	0	14	10	2	2	3
12/10/2019	50	3	3	4	2	0	7	4	4	1	1
12/11/2019	58	2	3	4	3	0	4	8	8	8	7
12/12/2019	42	2	2	1	3	0	5	7	8	7	5
12/17/2019	35	0	3	5	5	0	2	1	2	4	5
12/18/2019	61	2	3	3	6	0	8	8	8	4	4
12/19/2019	42	1	1	2	3	0	6	4	5	3	1
1/7/2020	61	5	5	4	3	0	7	6	5	6	5
1/8/2020	44	0	0	0	0	0	12	12	4	4	4
1/9/2020	50	5	4	5	4	0	2	4	4	12	14
1/14/2020	46	2	3	3	4	0	5	3	4	5	4
1/15/2020	54	5	4	4	3	0	6	4	2	4	3
1/16/2020	57	3	3	3	4	0	10	13	11	11	7
1/28/2020	32	4	4	3	3	0	2	2	2	2	2
1/29/2020	42	2	1	1	1	0	8	9	10	9	3
1/30/2020	44	1	1	0	2	0	1	1	3	3	3
Grand Total	1190	66	74	74	75	0	158	145	125	120	103

from LSA Study

PIVOT DHS Storage Exit

Date	COUNTA of Name	SUM of Peak AM 7-8	SUM of Peak AM 7:15-8:15	SUM of Peak AM 7:30-8:30	SUM of Peak AM 7:45-8:45	SUM of Peak AM 8-9	SUM of Peak PM 4-5	SUM of Peak PM 4:15-5:15	SUM of Peak PM 4:30-5:30	SUM of Peak PM 4:45-5:45	SUM of Peak PM 5-6
11/5/2019	26	1	1	0	0	0	1	16	26	26	26
11/6/2019	34	1	2	1	1	0	2	1	0	0	3
11/7/2019	39	4	4	4	1	0	4	4	3	3	1
11/12/2019	27	1	2	2	10	0	6	3	4	4	1
11/13/2019	41	4	3	3	2	0	7	6	4	4	2
11/14/2019	40	1	1	2	2	0	2	1	1	0	1
11/19/2019	41	1	0	0	1	0	3	2	2	1	1
11/20/2019	31	2	1	3	3	0	1	1	1	1	2
11/21/2019	40	1	3	5	5	0	5	6	3	2	3
12/3/2019	39	3	3	2	1	0	2	5	4	5	4
12/4/2019	32	2	4	4	2	0	6	2	1	2	2
12/5/2019	47	1	1	0	0	0	7	7	5	3	2
12/10/2019	50	0	2	2	2	0	5	6	5	4	4
12/11/2019	55	2	3	6	5	0	5	3	4	5	5
12/12/2019	43	2	2	2	3	0	6	7	8	7	9
12/17/2019	33	0	0	1	2	0	2	2	1	1	1
12/18/2019	58	2	2	2	4	0	6	5	3	4	4
12/19/2019	45	1	1	1	1	0	5	4	5	4	4
1/7/2020	58	5	5	5	2	0	9	8	5	5	5
1/8/2020	44	0	0	0	0	0	4	2	3	4	5
1/9/2020	46	3	3	2	2	0	2	1	3	3	2
1/14/2020	47	1	2	4	4	0	1	3	3	6	8
1/15/2020	53	3	6	6	5	0	9	7	6	4	1
1/16/2020	53	3	3	1	2	0	7	8	7	10	7
1/28/2020	33	2	3	3	3	0	1	0	1	2	3
1/29/2020	40	3	2	1	0	0	5	6	6	7	3
1/30/2020	46	1	1	1	1	0	1	1	5	6	5
Grand Total	1141	50	60	63	64	0	114	117	119	123	114

from LSA Study

PIVOT DHS RV Entry

Date	COUNTA of Name	SUM of Peak AM 7-8	SUM of Peak AM 7:15-8:15	SUM of Peak AM 7:30-8:30	SUM of Peak AM 7:45-8:45	SUM of Peak AM 8-9	SUM of Peak PM 4-5	SUM of Peak PM 4:15-5:15	SUM of Peak PM 4:30-5:30	SUM of Peak PM 4:45-5:45	SUM of Peak PM 5-6
11/5/2019	25	0	0	0	0	0	0	0	0	0	0
11/6/2019	29	1	1	1	0	0	3	4	3	2	3
11/7/2019	24	1	1	1	1	0	3	3	5	3	2
11/12/2019	19	0	0	0	0	0	1	3	3	3	2
11/13/2019	18	0	0	0	1	0	0	0	0	0	0
11/14/2019	26	1	1	1	2	0	2	0	0	0	0
11/19/2019	19	1	3	3	3	0	1	0	0	0	0
11/20/2019	25	3	3	2	1	0	1	3	3	2	2
11/21/2019	28	3	2	2	3	0	0	1	1	1	4
12/3/2019	22	0	0	1	1	0	3	3	3	2	1
12/4/2019	12	0	0	0	0	0	0	0	0	0	0
12/5/2019	31	3	3	2	1	0	1	0	0	0	1
12/10/2019	25	0	0	0	0	0	4	2	1	1	1
12/11/2019	22	0	0	0	1	0	1	1	1	1	1
12/12/2019	20	1	1	1	2	0	2	2	3	2	2
12/17/2019	20	1	1	1	1	0	2	2	1	1	0
12/18/2019	27	1	1	1	1	0	2	2	2	1	1
12/19/2019	26	0	1	1	3	0	3	2	1	1	1
1/7/2020	35	0	0	1	1	0	0	3	4	6	6
1/8/2020	16	0	0	1	1	0	0	0	0	0	0
1/9/2020	18	0	0	0	0	0	1	1	2	2	1
1/14/2020	18	1	1	1	2	0	2	4	2	2	2
1/15/2020	29	1	1	2	1	0	5	4	4	1	2
1/16/2020	28	3	2	2	1	0	7	2	1	1	0
1/28/2020	23	1	0	1	1	0	2	1	1	1	0
1/29/2020	26	0	0	0	1	0	0	0	1	1	1
1/30/2020	31	0	1	1	1	0	2	2	2	2	1
Grand Total	642	22	23	26	30	0	48	45	44	36	34

from LSA Study

PIVOT DHS RV Exit

Date	COUNTA of Name	SUM of Peak AM 7-8	SUM of Peak AM 7:15-8:15	SUM of Peak AM 7:30-8:30	SUM of Peak AM 7:45-8:45	SUM of Peak AM 8-9	SUM of Peak PM 4-5	SUM of Peak PM 4:15-5:15	SUM of Peak PM 4:30-5:30	SUM of Peak PM 4:45-5:45	SUM of Peak PM 5-6
11/5/2019	25	0	0	0	0	0	3	2	0	0	0
11/6/2019	28	2	2	2	2	0	1	1	2	2	2
11/7/2019	25	0	1	1	1	0	3	3	5	4	2
11/12/2019	18	0	0	0	0	0	0	2	5	5	5
11/13/2019	20	0	0	0	0	0	0	0	0	0	0
11/14/2019	26	0	1	1	1	0	2	2	0	0	0
11/19/2019	22	1	1	2	2	0	2	1	0	0	1
11/20/2019	24	3	3	2	2	0	3	6	7	6	5
11/21/2019	27	2	2	2	3	0	1	0	1	1	3
12/3/2019	21	0	0	1	1	0	3	3	2	3	1
12/4/2019	12	0	0	0	0	0	1	1	0	0	0
12/5/2019	34	3	4	4	3	0	1	0	1	1	2
12/10/2019	27	0	0	0	0	0	4	2	2	1	1
12/11/2019	22	0	0	0	0	0	2	2	1	1	1
12/12/2019	24	1	1	1	2	0	2	4	5	4	3
12/17/2019	18	1	1	1	1	0	2	2	3	2	1
12/18/2019	27	0	0	1	1	0	3	3	3	2	2
12/19/2019	23	1	1	1	3	0	2	2	2	2	1
1/7/2020	35	0	0	1	1	0	2	0	2	3	4
1/8/2020	16	0	0	0	1	0	0	1	1	1	1
1/9/2020	17	0	0	0	0	0	1	2	2	2	2
1/14/2020	21	0	1	1	2	0	2	3	3	3	2
1/15/2020	29	1	1	2	2	0	7	6	6	6	4
1/16/2020	29	2	2	2	2	0	3	4	5	3	2
1/28/2020	25	2	0	0	0	0	3	1	1	2	1
1/29/2020	24	0	0	0	0	0	0	0	1	1	2
1/30/2020	32	1	0	0	1	0	2	3	2	1	2
Grand Total	651	20	21	25	31	0	55	56	62	56	50

from LSA Study

LSA

Table B: Project Trip Generation (Gate Data)

Land Use	Size	Unit	Weekday							Saturday							Sunday						
				AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour				AM Peak Hour			PM Peak Hour		
			ADT	In	Out	Total	In	Out	Total	ADT	In	Out	Total	In	Out	Total	ADT	In	Out	Total	In	Out	Total
Trip Rates[1]																							
Self-Storage		100 storage units	12.90	0.53	0.40	0.93	0.93	0.79	1.72	14.09	0.80	0.66	1.46	0.92	0.93	1.85	11.04	0.33	0.20	0.53	0.86	0.73	1.59
RV Storage		100 RV spaces	17.23	0.50	0.47	0.97	0.93	1.12	2.05	16.95	0.85	0.72	1.57	0.99	1.21	2.20	14.25	0.63	0.45	1.08	0.81	1.35	2.16
Project Trip Generation																							
Self-Storage	11.00	100 storage units	142	6	4	10	10	9	19	155	9	7	16	10	10	20	121	4	2	6	9	8	17
RV Storage	5.80	100 RV spaces	100	3	3	6	5	7	12	98	5	4	9	6	7	13	83	4	3	7	5	8	13
Total			**242**	**9**	**7**	**16**	**15**	**16**	**31**	**253**	**14**	**11**	**25**	**16**	**17**	**33**	**204**	**8**	**5**	**13**	**14**	**16**	**30**

[1] Trip rates developed from gate data for the Moreno Valley Self Storage and Desert Hot Springs Self Storage and RV Storage facilities (November 2019 to January 2020).

ADT = average daily traffic

RV = recreational vehicle

Route 52 RV

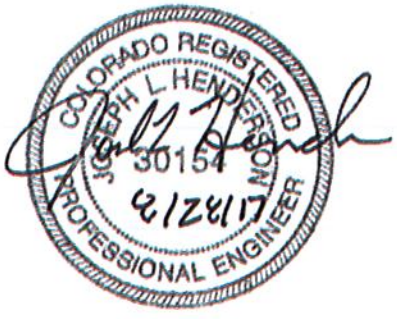
Traffic Impact Study

Route 52 Storage LLC

Weld County, Colorado

August 28, 2017

Prepared By:



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5.0 Site Generated Traffic Volumes

5.1 Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation manual[4] does not contain trip generation rates for the RV storage yard use, so STS collected peak hour count data at two similar facilities to develop trip generation rates for the weekday and Sunday evening peak hours. The facilities where the data were collected include:

- Brighton Outdoor Storage which is located at 312 County Road 19 in Brighton
- Recreational Storage Solutions which is located at 5360 County Road 6 in Erie

The independent variable used for the trip generation rates is the number of spaces to park RV's. The trip generation rates are contained in Table 2 and a summary of the data used to develop the rates are contained on the second page of Table 2.

5.2 Trip Distribution and Assignment

The trip distribution for the development was based on the existing traffic volumes. It is contained in Figure 10. The short term trip assignment for Phase I is contained in Figures 11 and 12, and the long term assignment is contained in Figures 13 and 14.

6.0 Total Traffic Volumes

The total traffic volumes were developed by combining the background traffic volumes with the trip assignment. The following figures contain the total traffic volume scenarios.

- Figures 15 and 16 contain the Year 2018 total traffic volumes. These volumes were developed by adding the background volumes contained in Figures 6 and 7 with the short term trip assignment contained in Figures 11 and 12.
- Figures 17 and 18 contain the Year 2037 total traffic volumes. These volumes were developed by adding the background volumes contained in Figures 8 and 9 with the long term trip assignment contained in Figures 13 and 14.

6.1 Level of Service Analysis

The level of service analysis shows that the intersection of SH 52 / site access is expected to continue to operate at LOS C during weekday evening peak hour and LOS B during the Sunday evening peak hour in the Year 2018 total traffic volume scenarios. However, the intersection is expected to operate at LOS D during the weekday evening peak hour and LOS C during the Sunday evening peak hour in Year 2037 total traffic volume scenarios. The level of service analysis is summarized in Table 1.

7.0 Auxiliary Lanes

The need for auxiliary lanes at the site access was determined based on the State Highway Access Code. Section 3.8 (5) describes the need for the lanes and Table

4 Trip Generation. Institute of Transportation Engineers, 9th Edition. 2012.

Table 2. Trip Generation Estimate Based on Spaces

Land Use	Size [1]	Unit	Weekday Evening Peak Hour Trips				Sunday Afternoon Peak Hour Trips			
			Rate [2]	Total	In	Out	Rate [2]	Total	In	Out
Outdoor RV Storage	18.61	100 Spaces	0.84	16	7	9	3.32	62	33	29

Notes:

1. The size of the development and the land use were provided by Bryan Haffner.

2. The trip generation rates were developed based on data collected at two existing facilities in Weld County.

Development Scenarios

Development Scenarios	Weekday Evening Peak Hour Trips				Sunday Afternoon Peak Hour Trips			
	In		Out		In		Out	
	EB	WB	EB	WB	EB	WB	EB	WB
Full Buildout	4	4	4	4	16	16	15	15
Phase 1 (55% of Full Buildout)	2	2	2	2	9	9	8	8
Phase 2 (Completion of Development)	2	2	2	2	7	7	7	7

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Addendum

July 13, 2021

To: Jon Suddarth, William Warren Group

From: Jeff Hee, Transportation Solutions

Subject: StorQuest Castle Rock Supplemental Trip Generation

This addendum to the June 23, 2021, *StorQuest Liggett Road Trip Generation Technical Memorandum* is to provide supplemental trip generation and a vehicle classification forecast for the proposed StorQuest Castle Rock off Liggett Road.

StorQuest data was compiled from three existing sites in Denver and Manitou Springs, CO. Driveway volumes and vehicle classifications were collected by IDAX, an independent traffic data collection firm.

1. 5200 E Evans Ave, Denver, CO. Building area: 102,180 square feet of gross floor area. Trip generation was collected in August 2014 and 2017. In 2014 the site was about 87.1% occupied. By 2017 the site was fully occupied. The year 2017 data included vehicle classifications, discussed later in the memorandum.
2. 549 Kalamath Street, Denver, CO. Building area: 67,000 square feet of net rentable area. Trip generation and vehicle classifications were collected in September 2017. In 2017 the site was only 42% occupied.
3. 125 Higginbotham Road, Manitou Springs, CO. Building area: 44,475 square feet of gross floor area spread through 9 buildings. Trip generation and vehicle classifications were collected in June 2021 and the site is fully occupied.

These sites do not include an RV storage component.

Conclusions

Table 1 summarizes the report findings compared to the ITE trip generation (and RV storage trip generation) used to forecast the traffic impacts of the proposed StorQuest Castle Rock site, please refer to the *StorQuest Liggett Road Trip Generation* report, dated June 23, 2021.

Table 1: StorQuest Trip Rate Findings Summary

Land Use	Size	Trip Rate [1]	Forecasted Trips	ITE Rate [2]	ITE Trips [3]
Self-Storage	97,900 SF GFA	1.03	101	1.51	148
RV Storage [4]	91 spaces	17.23	16	17.23	16
Weekday Total			117		164
Self-Storage [5]	Truck Rate		18%		18%
Self-Storage	97,900 SF GFA	0.09	9	0.10	10
RV Storage [4]	91 spaces	0.97	1	0.97	1
AM Peak Total			10		11
Self-Storage	97,900 SF GFA	0.07	7	0.17	17
RV Storage [4]	91 spaces	2.05	2	2.05	2
PM Peak Total			9		19

1. Trip rate findings (Trip ends per 1,000 sq. ft. of gross building area) from StorQuest data collection.
2. Trip ends per 1,000 sq. ft. of gross building area from ITE *Trip Generation Manual (10th Edition)*.
3. Trip generation forecast for the development, see Table 3 of June 23, 2021, StorQuest Liggett Road Trip Generation report.
4. RV Storage trip generation based on data from Desert Hot Springs, CA. Assumes all trips generated at RVs (40' vehicles).
5. Truck rate based on findings from StorQuest data collection. Represents commercial vans, 30'-long single-unit trucks.

We are not proposing to change the trip generation or traffic study findings from the June 2021 report, at this time. The findings presented in this document are to show that the ITE trip generation data, as applied to the proposal by recommendation of town staff, is conservative.

The report findings are also intended to show that there are no large commercial semi-trucks forecast to/from the site and that the numbers of 40-foot-long single axel vehicles are anticipated to primarily be related to the RV component of the development. The findings at other StorQuest sites identified only vans and 30-foot-long single-unit trucks as the heavy vehicle type of choice for site visitors. It is recognized that the occasional vehicle or RV pulling a trailer or car are likely, but these are not anticipated to be major part of the trip generation forecast for the proposed site, based on the user-characteristics documented below.

Trip Generation

StorQuest Evans, Denver, CO

Table 1 compares the findings from year 2014 visitor counts and year 2017 driveway volume counts at the stie to the ITE trip rates for Land Use 151, Mini-Warehouse. In 2014, the storage units were 87.1% occupied. In 2017, the storage units were full occupied. Trip rates computed for StorQuest Evans are, on average, 26% lower than the ITE trip rates.

Table 1: StorQuest Evans (102,180 SF GFA) Trip Generation

Time-Period	2014 Trips Adjusted [1]	2017 Trips Counted [2]	Average No. of Trips	Trip Rate per 1,000 SF GFA	ITE Rate per 1,000 SF GFA [3]
Weekday (Tu-W-Th) Daily	125	145	135	1.32	1.51
AM Peak Hour	3	8	6	0.06	0.10
Midday Peak Hour [4]	15	20	18	0.18	0.20
PM Peak Hour	11	12	12	0.12	0.17
Saturday Daily	180	125	153	1.50	1.98
AM Peak Hour	10	9	10	0.10	-
Midday Peak Hour [5]	11	24	18	0.18	0.31
PM Peak Hour	16	15	16	0.16	-

1. 2014 trips generated, adjusted for building occupancy.
2. 2017 trips generated.
3. Trip ends per 1,000 sq. ft. of gross building area from ITE Trip Generation Manual (10th Edition).
4. ITE rate is the PM peak hour of the generator.
5. ITE rate is the peak hour of the generator.

Table 2 summarizes the vehicle classification findings from the 2017 survey. A vehicle classification was not documented in 2014. There were no 40-foot-long trucks or semi-trucks with or without tailers observed.

Table 2: StorQuest Evans Vehicle Classification

Survey Day	Non-Rental	Moving Vans	Moving Trucks	Truck-Trailer
Tuesday (8/15/17)	62%	38%	0%	0%
Saturday (8/12/17)	81%	17%	2%	0%

Vehicle classifications included:

- Non-rental vehicles, includes passenger cars, trucks and SUVs, pickup trucks, cars with trailers.
- Moving vans, include mail trucks and commercial vans.
- Moving trucks, includes single-unit commercial trucks.

StorQuest Kalamath, Denver, CO

StorQuest Kalamath was less than 50% occupied in September 2017. Table 3 summarizes the vehicle classification findings from the 2017 survey only. There were no 40-foot-long trucks or semi-trucks with or without tailers observed.

Table 3: StorQuest Kalamath Vehicle Classification

Survey Day	Non-Rental	Moving Vans	Moving Trucks	Truck-Trailer
Thursday (9/7/17)	86%	3%	11%	0%
Saturday (9/9/17)	89%	3%	8%	0%

StorQuest Manitou Springs, CO

Video was used to collect entering and existing vehicle volumes on Wednesday, June 23, 2021, and Saturday, June 26, 2021. The data was collected by IDAX. Table 4 compares the resulting rates to the ITE trip rates.

Table 4: StorQuest Manitou Springs (44,475 SF GFA) Trip Generation

Wednesday (6/23/21)	Trips-In	Trips-Out	Trips-Total	Trip Rate [1]	ITE Rate [2]
Weekday Daily	22	22	44	1.03	1.51
AM Peak Hour	2	2	4	0.09	0.10
Midday Peak Hour [3]	5	4	9	0.20	0.20
PM Peak Hour	2	1	3	0.07	0.17
Saturday (6/26/21)	**Trips-In**	**Trips-Out**	**Trips-Total**	**Trip Rate [1]**	**ITE Rate [2]**
Saturday Daily	25	26	51	1.09	1.98
AM Peak Hour	3	3	6	0.13	-
Midday Peak Hour [4]	6	5	11	0.25	0.31
PM Peak Hour	3	5	8	0.18	-

1. Calculated trip ends per 1,000 square feet of gross building area.
2. Trip ends per 1,000 sq. ft. of gross building area from ITE Trip Generation Manual (10th Edition).
3. ITE rate is the PM peak hour of the generator.
4. ITE rate is the peak hour of the generator.

Trip rates computed for StorQuest Manitou Springs are, on average, 27% lower than the ITE trip rates.

Table 5 summarizes the vehicle classification findings. There were no 40-foot-long trucks or semi-trucks with or without tailers observed.

Table 5: StorQuest Manitou Springs Vehicle Classification

Survey Day	Light Vehicles	30' Box Trucks	Car with Trailer	Truck-Trailer
Wednesday (6/23/21)	91%	0%	9%	0%
Saturday (6/26/21)	73%	12%	16%	0%

Vehicle classifications included:

- Light Vehicles (passenger cars, SUVs, minivans, pickup trucks, non-commercial vehicles)
- 30-foot single-unit box trucks
- Passenger cars with trailers

Summary of Findings

Table 6 summarizes the trip rate findings from StorQuest Evans and Manitou Springs.

Table 6: StorQuest Trip Rate Findings Summary

Time-Period	Evans [1]	Manitou Springs [2]	Average [3]	ITE [4]
Weekday Daily	1.32	1.03	1.23	1.51
AM Peak Hour	0.06	0.09	0.07	0.10
Midday Peak Hour [5]	0.18	0.20	0.19	0.20
PM Peak Hour	0.12	0.07	0.10	0.17
Saturday Daily	1.50	1.09	1.38	1.98
AM Peak Hour	0.10	0.13	0.11	-
Midday Peak Hour [6]	0.18	0.25	0.20	0.31
PM Peak Hour	0.16	0.18	0.17	-

1. Table 1
2. Table 4
3. Weighted Average
4. Trip ends per 1,000 sq. ft. of gross building area from ITE Trip Generation Manual (10th Edition).
5. ITE rate is the PM peak hour of the generator.
6. ITE rate is the peak hour of the generator.

The surveyed StorQuest trip rates are, on average, 27% lower than the ITE trip rates.

Table 7 summarizes the vehicle classification findings from StorQuest Evans, Kalamath, and Manitou Springs.

Table 7: StorQuest Vehicle Classification Findings Summary

Survey Day	Light Vehicles	Vans/Trucks ≤ 30'	40' Trucks	Truck-Trailer
Weekday Average	83%	17%	0%	0%
Saturday Average	86%	14%	0%	0%

Vehicle classifications included:

- Light vehicles (non-commercial vehicles, passenger cars, SUVs, minivans, van, pickup trucks, and cars with trailers)
- Single-unit van and box trucks 30-feet-long or less (mail van or truck, Fed-Ex, Amazon)

I trust that the finding above, will support your needs. Please let me know if you or the Development Reviewer have any questions or concerns.