

# LSC Responses to EPC TIS Redline Comments



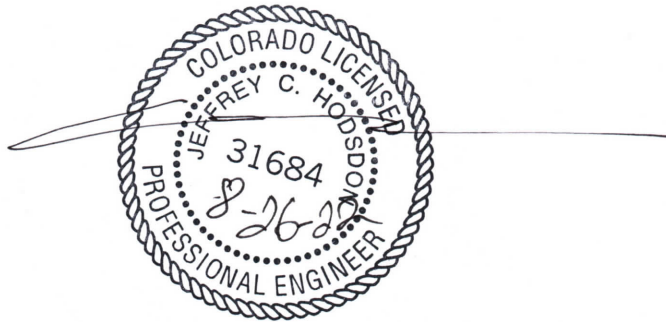
LSC TRANSPORTATION CONSULTANTS, INC.  
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## Falcon U-Haul Traffic Impact Study (LSC #S224140) August 26, 2022

Please Add PCD File <sup>1</sup>  
#SF-22-40 &  
PPR-22-56

### Traffic Engineer's Statement

This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



### Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

\_\_\_\_\_


\_\_\_\_\_ Date

# LSC Responses to EPC TIS Redline Comments


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Page: 1

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 Number: 1      Author: eschoenheit      Subject: Cloud+      Date: 1/17/2023 6:43:04 PM -07'00'

[Please Add PCD File #SF-22-40 & PPR-22-56](#)

 Author: jchodsdon      Subject: Sticky Note      Date: 5/31/2023 11:38:33 AM  
LSC Response: Added as requested.

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- Estimation of directional distribution of site-generated vehicle trips on the area road system, at the study-area intersections, and at the proposed site-access points;
- Projections of site-generated turning-movement traffic volumes at the following “study-area” intersections:
  - Rolling Thunder Way/Foxtail Meadow Lane
  - Meridian Road/Rolling Thunder Way
  - Meridian Road/South site access
- Estimates of short- and long-term background traffic volumes at the study-area intersections;
- Total traffic (site traffic plus background traffic) projections at the study-area intersections and site access points for the short term and long term;
- Level of service (LOS) analysis at the study-area intersections;
- Estimated average daily traffic (ADT) on the study-area streets;
- Evaluation of existing, short-term, and long-term projected intersection volumes to determine the potential need for any new auxiliary right-/left-turn lanes on Meridian Road, Rolling Thunder Way, and Foxtail Meadow Lane, based on the criteria in the County’s *Engineering Criteria Manual*;
- El Paso County Road Impact Fee Program requirement;
- Summary of compiled data, analysis, findings, and recommendations.

## SITE DEVELOPMENT AND LAND USE

Figure 2 shows the site plan. The site is planned to be developed in two phases. Ultimately, about 1,153 total storage units would be developed on the site, consisting of 1,090 interior storage units (phase 1) and 63 exterior storage units (phase 2). The 17,012-square-foot building will be a U-Box storage building where trucks deliver U-Boxes for storage within the building (phase 1). For Phase 2, 99 RV storage spaces may also be added to the site.

Located southwest of the intersection of Rolling Thunder Way/Meridian Road, two access points are proposed for the property. The main access would connect to the south leg of the existing intersection of Meridian Road/Foxtail Meadow Lane (signalized intersection). A right-in/right-out access to Meridian Road is also proposed as a secondary access point.

## ROADWAY AND TRAFFIC CONDITIONS

Add Tamlin Road <sup>1</sup>

### Area Roadways

Figure 1 shows the roadways in the vicinity of the site. Major roadways are identified below, followed by a brief description.


**Meridian Road** is shown on the *Major Transportation Corridors Plan (MTCP)* as a four-lane north/south Principal Arterial north of US Highway (Hwy) 24 and a two-lane Minor Arterial south of US Hwy 24. Auxiliary left- and right-turn lanes currently exist on all approaches at the signalized

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Number: 1 Author: dsdlaforce Subject: Callout Date: 1/17/2023 10:25:13 AM -07'00'

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[Add Tamlin Road](#)

 Author: jchodsdon Subject: Sticky Note Date: 5/31/2023 11:38:40 AM  
LSC Response: Added as requested.

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## TRIP GENERATION

Estimates of the existing and projected vehicle trips to be generated by the site have been made using the following nationally-published average trip-generation rates land use codes in *Trip Generation, 11<sup>th</sup> Edition, 2017* by the Institute of Transportation Engineers (ITE):

- 150 – Warehouse
- 151 – Mini Warehouse
- RV/Vehicle Storage – Also utilized are estimated trip-generation rates for the "RV/Vehicle Storage" land use. These were estimated previously by LSC. These rates were derived from local data collected by LSC at area RV storage facilities in El Paso County (2018).

### Phase 1

Land uses for Phase 1 will include a 17,012-square-foot warehouse building and 1,090 "interior" storage units. Table 1 below presents a summary of the estimated site trip generation for Phase 1. A detailed trip-generation estimate for the development, including ITE rates for the proposed land use, is presented in Table 4 (attached).

**Table 1: Estimated Site Vehicle-Trip Generation – Phase 1**

Analysis Period	Weekday		
	In	Out	Total
Morning Peak Hour	12	9	21
Evening Peak Hour	12	15	28
Daily/24-hour	115	115	230

The site is projected to generate about 230 vehicle-trips on the average weekday during Phase 1, with about 115 vehicles entering and 115 vehicles exiting the site in a 24-hour period. During the morning peak hour, about 12 vehicles would enter and 9 vehicles would exit the site. Approximately 12 vehicles would enter and 15 vehicles would exit the site during the afternoon peak hour.

### Phase 2

The property is planned to be rezoned in the future to allow for 99 RV storage spaces on the property. An additional 63 "exterior" storage units would also be constructed during Phase 2 of development. Table 2 below presents a summary of the estimated site trip generation for Phase 1 and Phase 2 combined.

At buildout, the site is projected to generate about 262 vehicle-trips on the average weekday, with about 131 vehicles entering and 131 vehicles exiting the site in a 24-hour period. During the morning peak hour, about 16 vehicles would enter and 12 vehicles would exit the site. Approximately 15 vehicles would enter and 19 vehicles would exit the site during the afternoon peak hour.

Add statement that a new TIS will likely be required with phase 2 development. <sup>1</sup>




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Number: 1 Author: dsdlaforce Subject: Callout Date: 1/17/2023 10:48:09 AM -07'00'

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Add statement that a new TIS will likely be required with phase 2 development.

 Author: jchodsdon Subject: Sticky Note Date: 5/31/2023 11:38:52 AM  
LSC Response: Added as requested.

laborate on the background traffic estimates by including exhibits/table showing the specific future developments accounted for and distribution assumptions. Through 2014 this lane was striped for dual left turn.

staff's main concern is regarding the recommendation for restriping the southbound approach to a through lane. Specifically, the TIS shall address if the "striped out" lane was intended for additional future left turn lane when the area is completely built out.

1

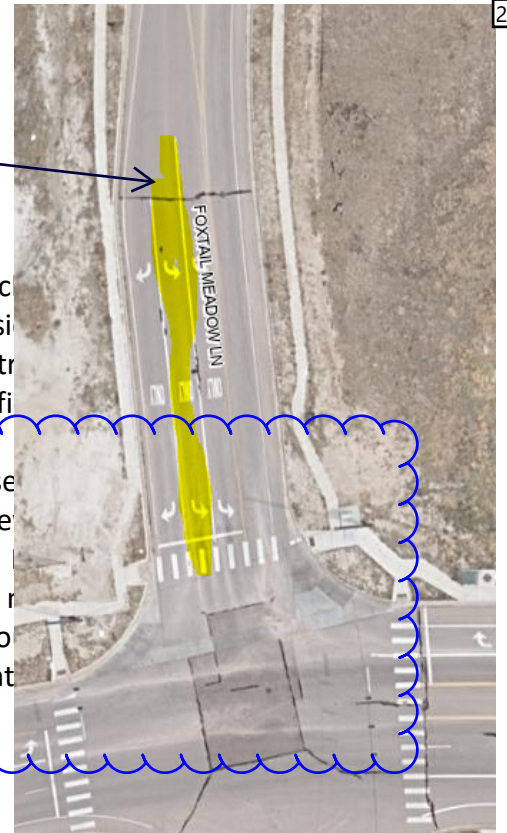
2

year 2042. Background traffic estimates are based on traffic volume data from the year 2014 without considering future developments.

development. Background traffic includes the through traffic and the traffic from future developments (existing and anticipated future) but assumes zero traffic from the site.

3

Long-term background traffic-volume estimates have also been based on traffic-count data and previous work completed in the area by LSC. Several future uses are anticipated for the remainder of the 8.19-acre Falcon project, including sit-down restaurants and strip-mall retail stores. Additional nearby development includes 75,000 square feet of office space, single-family detached homes, a retail store, and RV/self-storage space. All anticipated nearby development is included in the background traffic volumes in the vicinity of the site.



**2042 TOTAL TRAFFIC**

Figure 9 shows the total traffic volumes for the year 2042 at the study-area intersections, which are the sum of the 2042 background traffic volumes (from Figure 8) plus the Phases 1 & 2 site-generated traffic volumes (from Figure 6).

**LEVEL OF SERVICE ANALYSIS**

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection and is indicated on a scale from "A" to "F." LOS A is indicative of little congestion or delay. LOS F indicates a high level of congestion or delay. Table 3 shows the level of service delay ranges for signalized and unsignalized intersections.

**Table 3: Intersection Levels of Service Delay Ranges**

Level of Service	Signalized Intersections	Unsignalized Intersections
	Average Control Delay (seconds per vehicle)	Average Control Delay (seconds per vehicle) <sup>(1)</sup>
A	10.0 sec or less	10.0 sec or less
B	10.1-20.0 sec	10.1-15.0 sec
C	20.1-35.0 sec	15.1-25.0 sec
D	35.1-55.0 sec	25.1-35.0 sec
E	55.1-80.0 sec	35.1-50.0 sec
F	80.1 sec or more	50.1 sec or more


(1) For unsignalized intersections, if V/C ratio is greater than 1.0 the level of service is LOS F, regardless of the projected average control delay per vehicle.

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 Number: 1 Author: dsdlaforce Subject: Callout Date: 1/17/2023 3:08:27 PM -07'00'

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Elaborate on the background traffic estimates by including exhibits/table showing the specific future developments accounted for and distribution assumptions. Through 2014 this lane was striped for dual left turn. Staff's main concern is regarding the recommendation for restriping the southbound approach to a through lane. Specifically, the TIS shall address if the "striped out" lane was intended for additional future left turn lane when the area is completely built out.

 Author: jchodsdon Subject: Sticky Note Date: 5/31/2023 11:39:30 AM

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LSC Response: This comment has been addressed in the updated report.

Number: 2 Author: dsdlaforce Subject: Image Date: 1/17/2023 3:08:17 PM -07'00'

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 Number: 3 Author: dsdlaforce Subject: Cloud Date: 1/17/2023 2:53:09 PM -07'00'

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update

3

Matthew Eriksen, PE, CFM  
Falcon U-Haul

Discuss 2040 background + analysis and whether or not a southbound second left turn lane be warranted or is a single turn lane be sufficient since the intersection appears to have been originally constructed with two SBLT

2

**Error! Reference source not found** -lane l  
intersection of Rolling Thunder Way and Meridian Road. The *ECM*-re based on 2042 projected volumes.

The northbound left-turn lane is about 340 feet plus about a 125-foot taper. This lane meets the *ECM* requirement for deceleration length plus storage distance, but is slightly shorter than criteria, but that is preferable because the entry to the intersection is of a horizontal curve. A shorter taper helps to prevent through traffic from crossing the left-turn lane.

Identify if the single SBLT on Foftail meet current criteria.

4

The southbound right-turn lane is continuous back to the access point. The taper length exceeds the *ECM* criteria for deceleration length plus taper length.



**Back-to-Back Left-Turn-Lane Configuration on Rolling Thunder Way**

The left-turn lanes on Rolling Thunder Way between the site access/Foftail Meadow Lane and Meridian Road are in a back-to-back configuration with a fixed distance between these intersections. The existing configuration, assuming restriping for the left-turn bay into the site (similar to the eastbound approach left-turn median striping on the west side of the intersection) will be sufficient to accommodate the queuing at these intersections.

**Meridian Road/South Site Access (Right-in/Right-out)**

Although not required based on projected site-generated right-turning volume, there is an existing southbound right-turn deceleration lane (currently striped out/not in use). This lane is about 245 feet long with a 140-foot taper. This would exceed the *ECM* required length.

**CONFORMANCE WITH THE MTCP**

No reimbursable roadway improvement projects have been identified as being needed by the year 2040, per Map 13 and Table 4 of El Paso County's 2016 *MTCP*.

See the attached *MTCP* maps for reference.

**COUNTY ROAD IMPROVEMENT FEE PROGRAM**

The applicant will be required to participate in this program. The PID option will be identified with the Plat submittal.


Update to identify the PID option. The current applicant is for subdivision plat.

5

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Number: 1 Author: dsdlaforce Subject: Image Date: 1/17/2023 3:17:02 PM -07'00'

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 Number: 2 Author: dsdlaforce Subject: Text Box Date: 1/17/2023 3:14:35 PM -07'00'


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Discuss 2040 background + analysis and whether or not a southbound second left turn lane be warranted or is a single turn lane be sufficient since the intersection appears to have been originally constructed with two SBLT

 Author: jchodsdon Subject: Sticky Note Date: 5/31/2023 1:55:34 PM


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LSC Response: This comment has been addressed in the updated TIS.

 Number: 3 Author: dsdlaforce Subject: Callout Date: 1/17/2023 3:11:21 PM -07'00'


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update

 Author: jchodsdon Subject: Sticky Note Date: 6/15/2023 7:13:51 PM


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LSC Response: Corrected as requested.

 Number: 4 Author: dsdlaforce Subject: Text Box Date: 5/31/2023 12:24:01 PM


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Identify if the single SBLT on Foxtail meet current criteria.

 Author: jchodsdon Subject: Sticky Note Date: 6/15/2023 7:14:39 PM


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LSC Response: This has been addressed in the updated report.

 Number: 5 Author: dsdlaforce Subject: Callout Date: 1/17/2023 11:27:02 AM -07'00'

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Update to identify the PID option. The current applicant is for subdivision plat.

 Author: jchodsdon Subject: Sticky Note Date: 5/31/2023 11:41:23 AM

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LSC Response: Updated to include the PID option.

## MULTI-MODAL/TRANSPORTATION DEMAND MANAGEMENT (TDM) OPPORTUNITIES

No multi-modal/transportation demand management (TDM) roadway improvement projects have been identified as being needed by the year 2040 per Map 15 and Table 5 of El Paso County's 2016 *MTCP*.

There is a park-and-ride lot to the southeast at the intersection of US Hwy 24/Meridian Road in Falcon.

### DEVIATIONS

The proposed right-in/right-out access to Meridian Road was previously constructed. Although this access is consistent with the section of Meridian Road north of Rolling Thunder (through the commercial core of the Falcon area), staff may require a deviation for intersection spacing less than one-half mile.

## SUMMARY OF FINDINGS AND RECOMMENDATIONS

### Trip Generation

Delete

1

#### Phase 1

- The site is projected to generate about 230 vehicle-trips on the average weekday, with about 115 vehicles entering and 115 vehicles exiting the site in a 24-hour period.
- During the morning peak hour, about 12 vehicles would enter and 9 vehicles would exit the site.
- Approximately 12 vehicles would enter and 15 vehicles would exit the site during the afternoon peak hour.

#### Phases 1 & 2 – Buildout

- At buildout, the site is projected to generate about 262 vehicle-trips on the average weekday, with about 131 vehicles entering and 131 vehicles exiting the site in a 24-hour period.
- During the morning peak hour, about 16 vehicles would enter and 12 vehicles would exit the site.
- Approximately 15 vehicles would enter and 19 vehicles would exit the site during the afternoon peak hour.

### Projected Levels of Service

- All individual turning movements and single-lane approaches at the following study-area intersections currently operate at and are projected to remain at LOS D or better through the 20-year horizon, with or without the addition of site-generated traffic:

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Number: 1 Author: dsdlaforce Subject: Cloud+ Date: 1/17/2023 11:42:39 AM -07'00'

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[Delete](#)

Author: jchodsdon Subject: Sticky Note Date: 5/31/2023 11:41:49 AM  
LSC Response: Deleted as requested.

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- Rolling Thunder Way/Foxtail Meadow Lane (proposed north access)
- Meridian Road/Rolling Thunder Way
- Meridian Road/proposed southeast access

### **Auxiliary Turn Lanes**

- Please refer to the “Auxiliary Turn-Lane Analysis” section for more detail regarding the adequacy of existing auxiliary turn lanes at the study-area intersections which may be utilized by traffic entering and exiting this site.
- LSC recommends restriping to “open” existing turn bays which are currently “striped out.” These include the southbound right-turn lane at the south site access on Meridian and the westbound left-turn bay on Rolling Thunder Way at the site access.
- The site access should be striped for a northbound left-turn bay which will need to align with the southbound left-turn lane across the intersection.
- The remaining width on the northbound approach may be such that a separate through and right-turn bay should be striped to avoid an excessively wide through/right shared lane.

### **Other Recommendations**

- The southbound approach to the Rolling Thunder Way/Foxtail Meadow Lane intersection should be restriped so this through lane is not “striped out.”
- The traffic signal at the Rolling Thunder Way/Foxtail Meadow Lane intersection will need to be modified to convert operation to a four-leg intersection with the opening of the site access/south leg of the intersection.

Since the RIRO (Meridian Rd/Tamlin Rd) will be used by this project <sup>1</sup> provide signage recommendation along Meridian Rd/RIRO pork chop island.

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☰ Number: 1 Author: dsdlaforce Subject: Callout Date: 6/15/2023 5:28:28 PM

Since the RIRO (Meridian Rd/Tamlin Rd) will be used by this project provide signage recommendation along Meridian Rd/RIRO pork chop island.

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👤 Author: jchodsdon Subject: Sticky Note Date: 5/31/2023 11:42:11 AM  
LSC Response: Added as requested.

Please contact me if you have any questions regarding this report.

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

By: Jeffrey C. Hodsdon, P.E.  
Principal

JCH/JAB:jas

Enclosures: Table 4  
Figure 1 - Figure 9  
Traffic Count Reports  
Synchro Level of Service Reports

Provide signal analysis and recommendations at the intersection of Foxtail Meadow Lane and Rolling Thunder.

1. The restriping to add a WBLT would need an additional signal head for the turn lane.
2. The restriping to add a southbound through lane would need an additional signal head for the through lane.
3. The addition of the site access/south leg of the intersection would need the corresponding signal on the north side of the intersection.

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☰ Number: 1 Author: dsdlaforce Subject: Text Box Date: 1/17/2023 2:12:15 PM -07'00'

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Provide signal analysis and recommendations at the intersection of Foxtail Meadow Lane and Rolling Thunder. 1. The restriping to add a WBLT would need an additional signal head for the turn lane. 2. The restriping to add a southbound through lane would need an additional signal head for the through lane. 3. The addition of the site access/south leg of the intersection would need the corresponding signal on the north side of the intersection.

👉 Author: jchodsdon Subject: Sticky Note Date: 6/15/2023 7:16:00 PM

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LSC Response: This comment has been addressed in the updated report. Regarding No. 1: an additional signal head should not be needed as no protected left-turn phasing is proposed. Per MUTCD, a three-section signal head with circular indications should not be positioned over the center of the turn lane. The two existing heads should be sufficient. No. 2: The two signal heads for southbound traffic should also be sufficient. No. 3: South-facing signal heads will need to be added on the north side to serve the site access.



**Table 4: Detailed Trip-Generation Estimate**

ITE		Value	Units <sup>1</sup>	Trip Generation Rates <sup>2</sup>				Driveway Trips Generated					
Code	Description			Average Weekday	A.M. In	A.M. Out	P.M. In	P.M. Out	Average Weekday	A.M. In	A.M. Out	P.M. In	P.M. Out
<b>Phase 1</b>													
150	Warehouse	17.012	KSF	1.96	0.27	0.08	0.11	0.28	34	5	2	2	5
151	Mini-Warehouse	10.90	SU (100s)	17.96	0.62	0.59	0.84	0.84	196	7	7	10	10
<b>Sub-Total</b>									<b>230</b>	<b>12</b>	<b>9</b>	<b>12</b>	<b>15</b>
<b>Phase 2</b>													
-	RV/Vehicle/Boat Storage <sup>3</sup>	99	Occ. Spaces	0.20	0.02	0.01	0.02	0.03	20	3	2	2	3
151	Mini-Warehouse	0.63	SU (100s)	17.96	0.62	0.59	0.84	0.84	12	1	1	1	1
<b>Sub-Total</b>									<b>32</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>4</b>
<b>Phase 1 Only</b>									<b>230</b>	<b>12</b>	<b>9</b>	<b>12</b>	<b>15</b>
<b>Phase 2 Only</b>									<b>32</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>4</b>
<b>Buildout Total</b>									<b>262</b>	<b>16</b>	<b>12</b>	<b>15</b>	<b>19</b>


<sup>1</sup> Occ. Spaces = occupied RV and boat storage spaces; HSU = storage units (in 100s)

<sup>2</sup> Source: *Trip Generation*, 11th Edition, 2021, by the Institute of Transportation Engineers (ITE)


<sup>3</sup> "RV/Vehicle Storage" rates based on RV storage facility trip generation counts conducted by LSC in El Paso County (2018)

Provide copy of study. Staff to verify if this followed the trip generation study guideline outlined by ITE and if the resulting trip rates were approved by the County Engineer for use on future projects. If it was not then update the Boat/RV estimate to use a comparable land use that's defined in the ITE Trip Gen manual. 1

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 Number: 1 Author: dsdlaforce Subject: Callout Date: 1/17/2023 10:45:47 AM -07'00'

Provide copy of study. Staff to verify if this followed the trip generation study guideline outlined by ITE and if the resulting trip rates were approved by the County Engineer for use on future projects. If it was not then update the Boat/RV estimate to use a comparable land use that's defined in the ITE Trip Gen manual.

 Author: jchodsdon Subject: Sticky Note Date: 5/31/2023 11:52:47 AM

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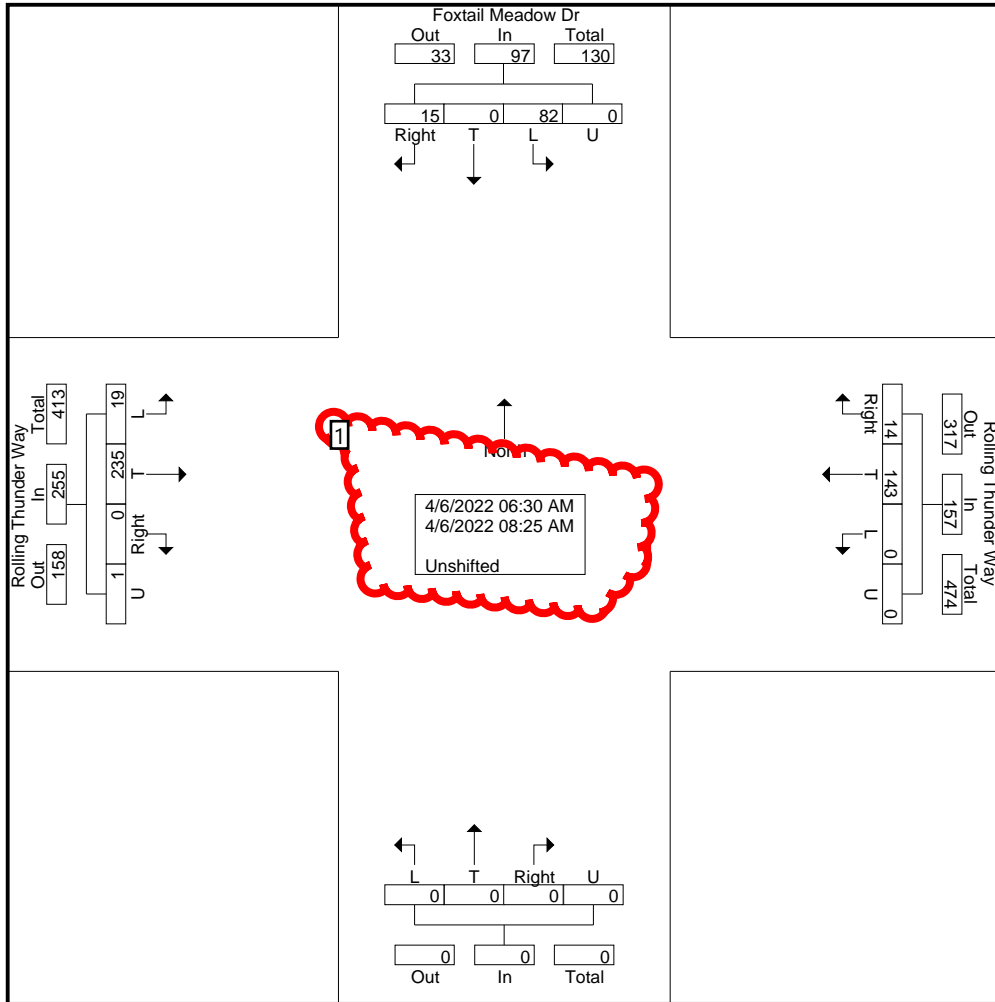
LSC Response: This has been revised in the updated report.

# LSC Transportation Consultants, Inc.

2504 E. Pikes Peak Ave, Suite 304  
 Colorado Springs, CO 80909  
 719-633-2868

## Groups Printed- Unshifted

	Foxtail Meadow Dr Southbound					Rolling Thunder Way Westbound					Northbound					Rolling Thunder Way Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
Grand Total	15	0	82	0	97	14	143	0	0	157	0	0	0	0	0	0	235	19	1	255	509
Apprch %	15.5	0	84.5	0		8.9	91.1	0	0		0	0	0	0		0	92.2	7.5	0.4		
Total %	2.9	0	16.1	0	19.1	2.8	28.1	0	0	30.8	0	0	0	0		0	46.2	3.7	0.2	50.1	





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2504 E. Pikes Peak Ave, Suite 304  
 Colorado Springs, CO 80909  
 719-633-2868

## Groups Printed- Unshifted

	Foxtail Meadow Dr Southbound					Rolling Thunder Way Westbound					Northbound					Rolling Thunder Way Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
Grand Total	50	0	104	0	154	34	278	0	0	312	0	0	0	0	0	0	185	49	0	234	700
Apprch %	32.5	0	67.5	0		10.9	89.1	0	0		0	0	0	0		0	79.1	20.9	0		
Total %	7.1	0	14.9	0	22	4.9	39.7	0	0	44.6	0	0	0	0	0	0	26.4	7	0	33.4	

