

# LSC Responses to EPC TIS Redline Comments



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## Colorado Center Habitat for Humanity Traffic Impact Study (LSC #S244050) April 24, 2024 PCD File No. SP243<sup>1</sup>

### 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: Bret      Subject: Engineer      Date: 6/24/2024 10:57:19 AM

[PCD File No. SP243](#)

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 Author: jchodsdon      Subject: Sticky Note      Date: 9/6/2024 11:34:44 AM

LSC Response: Added as requested. Note: The name of the project has also been revised.

Table 2 below presents a summary of the estimated external site trip generation. A detailed trip-generation estimate for the site, including ITE rates for the proposed land uses, is presented in Table 4 (attached).

The proposed subdivision is projected to generate about 387 total vehicle trips on the average weekday during a 24-hour period, with approximately half entering and half exiting the site. During the morning peak hour, approximately 8 entering vehicle and 22 exiting vehicles are estimated to be generated. Approximately 25 entering and 15 exiting vehicles are estimated to be generated by the site during the afternoon peak hour.

**Table 2: Estimated Site Vehicle-Trip Generation**

Analysis Period	Weekday		
	In	Out	Total
Morning Peak Hour	8	22	30
Afternoon Peak Hour	25	15	40
Daily/24-hour	194	194	387

**TRIP DISTRIBUTION AND ASSIGNMENT**

**Trip Directional Distribution**

The directional-distribution estimate of site-generated vehicle trips to the study-area roads and intersections is a necessary component in determining the site’s traffic impacts. Figure 4 shows the percentages of the site-generated vehicle trips projected to be oriented to and from the site’s major approaches. Estimates have been based on the following factors: the area traffic impact studies, the traffic-count data, the proposed land use, the area roadway system serving the site, proposed future roadway connections in the vicinity of the site, and the site’s geographic location relative to the Fountain Valley area and the overall greater El Paso County/Colorado Springs area.

**Site-Generated Traffic**

should this be Peaceful Meadow <sup>1</sup>

Site-generated traffic volumes have been estimated at the following intersections:

- Proposed west site access/Harvest Moon Terrace
- Proposed east site access/Harvest Moon Terrace
- Horizonview Drive/Prairie Sage Drive (future)
- Horizonview Drive/Hazy Morning Drive
- Hazy Morning Drive/Harvest Moon Terrace
- Peaceful Meadow Street/Harvest Moon Terrace

This appears to be the same intersection. Also, it appears that Peaceful Meadow/Prairie Sage intersection (#6 in figures) is missing <sup>2</sup>

These site-generated volumes have been calculated by applying directional-distribution percentages estimated by LSC (from Figure 4) to the trip-generation estimates (from Table 4). Figure 5 shows the projected short-term site-generated traffic volumes for the weekday morning

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Number: 1 Author: Daniel Torres Subject: Callout Date: 7/9/2024 2:38:32 PM

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should this be Peaceful Meadow

Author: jchodsdon Subject: Sticky Note Date: 9/6/2024 11:11:02 AM

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LSC Response: Yes. Corrected in the updated TIS report.

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Number: 2 Author: Daniel Torres Subject: Callout Date: 7/9/2024 2:39:42 PM

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This appears to be the same intersection. Also, it appears that Peaceful Meadow/Prairie Sage intersection (#6 in figures) is missing

Author: jchodsdon Subject: Sticky Note Date: 9/6/2024 11:15:13 AM

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LSC Response: Both have been corrected in the updated report.

and afternoon peak hours. Projected long-term site-generated traffic volumes for the weekday morning and afternoon peak hours are shown in Figure 6.

### Existing + Site-Generated Traffic Volumes

Figure 7 shows the sum of the existing traffic volumes (from Figure 3) and short-term site-generated peak-hour traffic volumes (shown in Figure 5). These volumes represent the projected short-term total traffic following site buildout. These volumes assume conditions prior to the adjacent Meadowworks development.

### 2044 Background Traffic Volumes

Long-term background traffic volumes at Horizonview intersections are estimates by LSC, based in part on existing count data and projections in the Meadowworks TIS. Estimated site-generated traffic for the 41-dwelling-unit Colorado Center Habitat for Humanity residential development has **not** been included in 2044 background traffic volumes.

The projected traffic volumes for all the study-area intersections incorporate LSC estimates of local area traffic pattern and volume shifts that will result with new street connections west of this site that are shown on the Meadowworks development plan. **Error! Reference source not found.** Appendix Figure 1 summarizes shifts in existing travel patterns/volumes with these future street connections.

Fix the reference here <sup>2</sup>

Please refer to Figure 8 for estimated long-term background volumes and assumed laneage at the study-area intersections.

### 2044 Total Traffic Volumes

Figure 9 shows the sum of 2044 background traffic volumes (from Figure 8) plus long-term site-generated traffic volumes (from Figure 6).

## LEVEL OF SERVICE ANALYSIS

### Intersection Level of Service

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.

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 Number: 1      Author: Bret      Subject: Engineer      Date: 6/24/2024 11:27:03 AM  
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 Number: 2      Author: Bret      Subject: Engineer      Date: 6/24/2024 11:27:33 AM

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[Fix the reference here](#)

 Author: jchodsdon      Subject: Sticky Note      Date: 9/6/2024 11:34:52 AM  
LSC Response: This has been fixed in the updated TIS.

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**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.

LOS values have been included in each figure for each turning movement/approach during the weekday morning and afternoon peak hours for the proposed site-access intersections and off-site intersections in the study area:

- Figure 3: 2024 Existing Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 7: 2024 Existing + Site Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 8: 2044 Background Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 9: 2044 Background + Site Traffic, Lane Geometry, Traffic Control, and LOS

LOS calculations for long-term scenarios were based upon the recommended lane geometries and traffic controls outlined in the figures above.

**Proposed West Site Access/Harvest Moon Terrace**

shouldnt this be Peaceful Meadow St <sup>1</sup>

All movements at this intersection currently operate at and are projected to remain at LOS A during both peak hours with the addition of site-generated traffic.

**Proposed East Site Access/Harvest Moon Terrace**

All movements at this intersection are projected to operate at LOS A during both peak hours with the addition of site-generated traffic.

**Horizonview Drive/Hazy Morning Drive**

All movements at this intersection currently operate at and are projected to remain at LOS B or better during both peak hours with the addition of site-generated traffic.

provide LOS for Hazy Moring/Harvest Moon intersection and Prairie Sage/Peaceful Meadow. <sup>2</sup>

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Number: 1 Author: Daniel Torres Subject: Callout Date: 7/9/2024 2:43:19 PM

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[shouldnt this be Peaceful Meadow St](#)

Author: jchodsdon Subject: Sticky Note Date: 9/6/2024 11:35:00 AM  
LSC Response: Yes. These have been corrected in the updated TIS.

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Number: 2 Author: Daniel Torres Subject: Text Box Date: 7/9/2024 2:42:44 PM

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[provide LOS for Hazy Moring/Harvest Moon intersection and Prairie Sage/Peaceful Meadow.](#)

Author: jchodsdon Subject: Sticky Note Date: 9/6/2024 4:07:29 PM

LSC Response: LOS for the Hazy Morning/Rising Moon intersection has been added to the report. Regarding the inclusion of the intersection LOS for Hazy Morning/Harvest Moon, this future intersection is shown as part of the planned Meadowworks project. The intersection volumes and associated levels of service were not specifically detailed for this intersection in the SM Rocha TIS report. The site plan shown in Figure 2 of that report shows street connections to the north and east (connecting to Peaceful Meadow Street). Since intersection volumes, laneage, and other information were not detailed in that study, we have only included estimates of trips to be added as a result of this currently-proposed development's trip generation (shown on Figure 6 of our traffic report). These volumes can be used for reference, if needed, as part of a city application for Filing No. 4 of that development. The Rising Moon parcel was previously set aside for a school site, which was presumably anticipated as part of the Meadowworks planning process. The currently-estimated site-generated traffic volumes for Rising Moon would be significantly lower than if this parcel were developed with a school use.

#### Left-Turn Deceleration Lanes

According to the El Paso County *Engineering Criteria Manual (ECM)*, exclusive left-turn lanes shall be provided for any access on “Minor Arterials and lower classifications” with a projected peak-hour ingress turning volume of 25 vehicles per hour (vph) or greater.

#### Right-Turn Deceleration Lane

Per Section 2.3.7.D.1 of the *ECM* for Minor Arterials and lower classifications, exclusive right-turn lanes shall be provided for any access with a projected peak-hour ingress turning volume of 50 vehicles per hour (vph) or greater.

#### Right-Turn Acceleration Lanes

Right-turn acceleration lanes are generally not required on Minor Arterials and lower classifications roadways, per Section 2.3.7.D.2 of the *ECM*.

#### *Findings*

Figure 7 indicates that existing and proposed traffic volume exceed the thresholds for exclusive turn lanes

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#### Peaceful Meadow Street/Proposed West Site Access

No auxiliary turn lanes would be required on any approach at the proposed Peaceful Meadow Street/proposed west site-access intersection.

#### Peaceful Meadow Street/Proposed East Site Access

No auxiliary turn lanes would be required on any approach at the proposed Peaceful Meadow Street/proposed east site-access intersection.

#### Auxiliary Turn Lane Needs Evaluation and Recommendations – City of Colorado Springs Intersections

#### *City of Colorado Springs Criteria for Collector Streets*

Per Section 8.1 of the City of Colorado Springs’ *Traffic Criteria Manual*, “Turn lane requirements on lower classification roads are determined on a case-by-case basis depending on recommendations from a traffic impact study and approved by City Engineering.”

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 Number: 1      Author: Bret      Subject: Engineer      Date: 7/9/2024 4:56:14 PM

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Figure 7 indicates that existing and proposed traffic volume exceed the thresholds for exclusive turn lanes

 Author: jchodsdon      Subject: Sticky Note      Date: 9/6/2024 11:35:16 AM

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LSC Response: This comment has been addressed in the narrative of the updated report. Note: I also provided a response to the related comment on Figure 7.

**Table 4: Detailed Trip Generation Estimate**

ITE		Value	Units <sup>1</sup>	Trip Generation Rates <sup>2</sup>					Total Driveway Trips Generated				
Code	Description			Average Weekday	A.M.		P.M.		Average Weekday	A.M.		P.M.	
				In	Out	In	Out		In	Out	In	Out	
210	Single-Family (Detached) Housing	41	DU	9.43	0.18	0.53	0.59	0.35	387	8	22	25	15

<sup>1</sup> DU = dwelling units

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

Note: Based on ITE average rates

Updated by LSC: April 1, 2024

**Table 5. Recommended Improvements**

Item #	Improvement	Timing	Jurisdiction	Responsibility
<b>Roadway Segment Improvements</b>				
1	Construct Subdivision Streets to county Urban Local standards	With this development	El Paso County	Applicant/Developer
2	Restripe Horizonview for two through lanes plus paved shoulders	w/Meadoworks development	City of Colorado Springs	Meadoworks Developer
<b>Peaceful Meadow Street/east and west site access intersection Improvements</b>				
3	Install north-facing Stop signs on the southbound approaches.	With the development	El Paso County	Applicant/Developer
<b>Multi-Modal Improvements</b>				
4	Construct Sidewalks along Horizonview	w/Meadoworks development	1 El Paso County	Meadoworks Developer
5	Construct Sidewalks along the Peaceful Meadow Street frontage	With the development	El Paso County	Applicant/Developer

Source: LSC Transportation Consultants, Inc. (4-12-24)

Check jurisdiction; believe this segment is in the City <sup>2</sup>

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 Number: 1 Author: Bret Subject: Engineer Date: 6/24/2024 12:54:07 PM  
El Paso County

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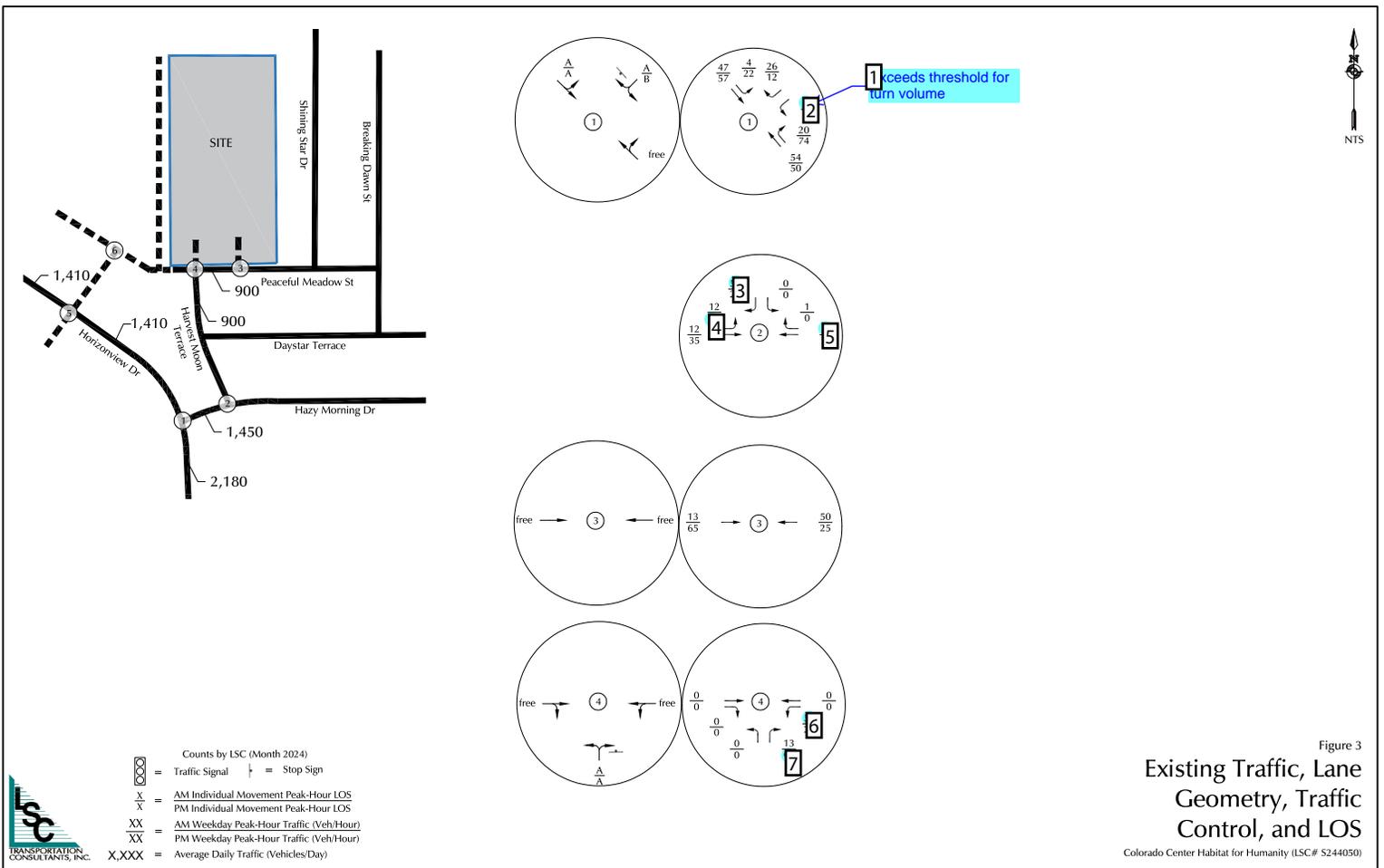
 Number: 2 Author: Bret Subject: Engineer Date: 6/24/2024 12:55:01 PM

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[Check jurisdiction; believe this segment is in the City](#)

 Author: jchodsdon Subject: Sticky Note Date: 9/6/2024 11:35:25 AM  
LSC Response: This has been corrected in the updated TIS.

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 Number: 1      Author: Bret      Subject: Engineer      Date: 6/24/2024 2:23:00 PM

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Exceeds threshold for turn volume

 Author: jchodsdon      Subject: Sticky Note      Date: 9/6/2024 11:35:34 AM

LSC Response: Comment Noted. Please refer to my response to the comment on Page 27 (Figure 7) relative to existing plus project traffic.

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 Number: 2      Author: Bret      Subject: Engineer      Date: 6/24/2024 1:03:32 PM

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 Number: 3      Author: Bret      Subject: Engineer      Date: 6/24/2024 1:04:05 PM

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 Number: 4      Author: Bret      Subject: Engineer      Date: 6/24/2024 1:04:04 PM

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 Number: 5      Author: Bret      Subject: Engineer      Date: 6/24/2024 1:04:07 PM

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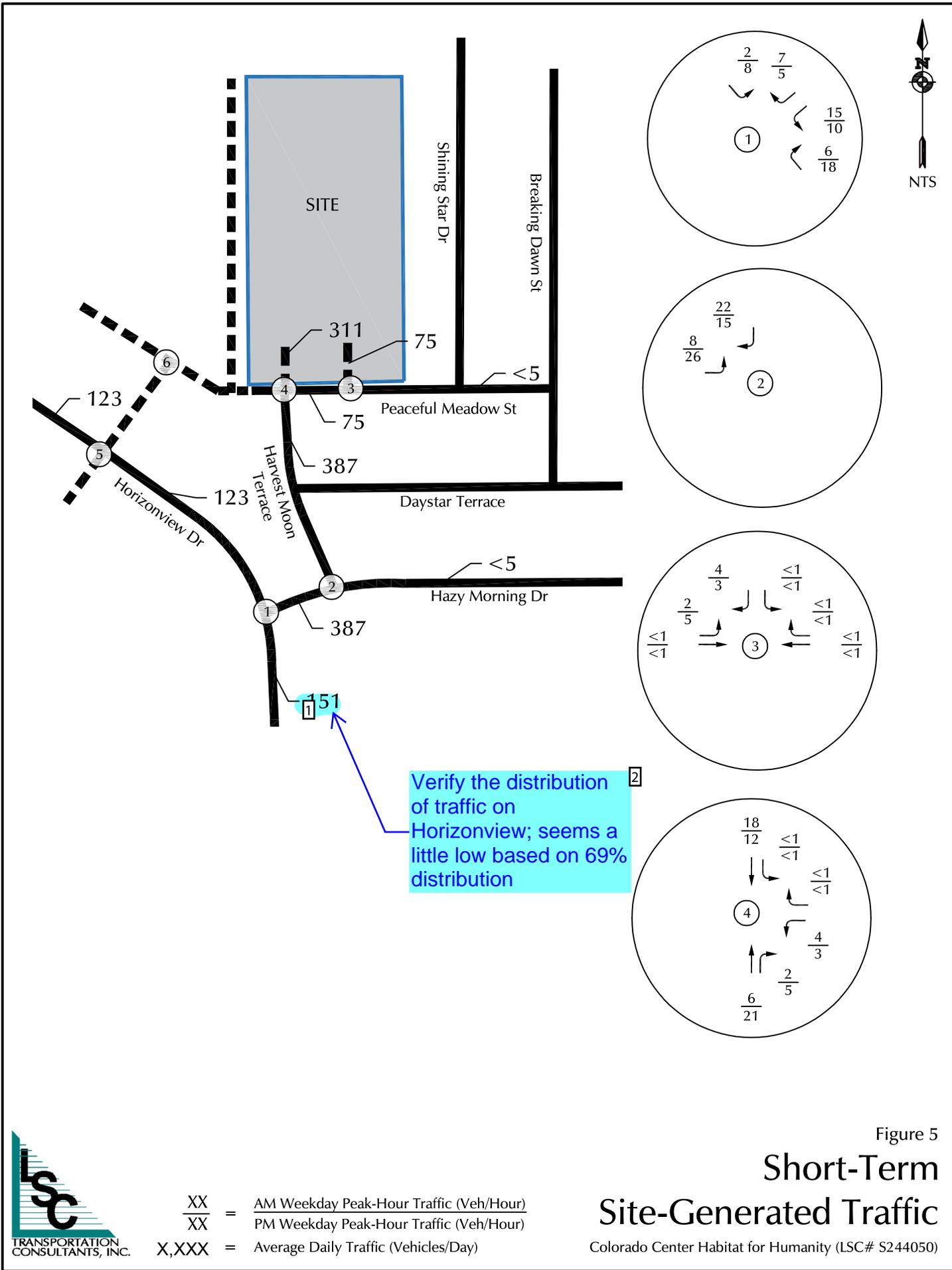
 Number: 6      Author: Bret      Subject: Engineer      Date: 6/24/2024 1:21:03 PM

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 Number: 7      Author: Bret      Subject: Engineer      Date: 6/24/2024 1:20:58 PM

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 Number: 1 Author: Bret Subject: Engineer Date: 7/9/2024 4:59:06 PM

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 Number: 2 Author: Bret Subject: Engineer Date: 7/9/2024 5:01:09 PM

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[Verify the distribution of traffic on Horizonview; seems a little low based on 69% distribution](#)

 Author: jchodsdon Subject: Sticky Note Date: 9/6/2024 11:35:42 AM

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LSC Response: This "154" volume has been corrected in the updated TIS. The correct value is "267."

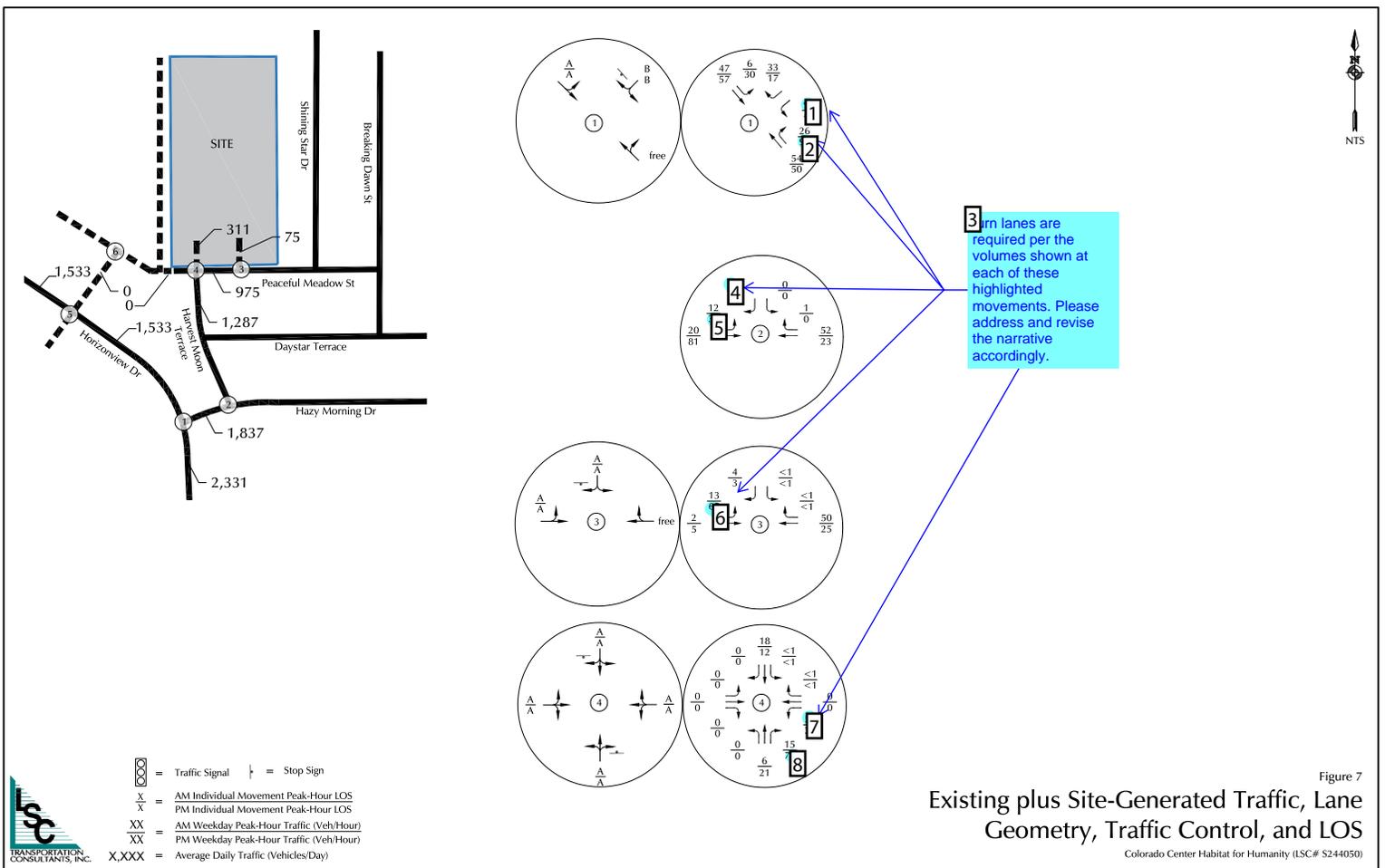


Figure 7  
 Existing plus Site-Generated Traffic, Lane  
 Geometry, Traffic Control, and LOS  
 Colorado Center Habitat for Humanity (LSC# S244050)

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 Number: 1 Author: Bret Subject: Engineer Date: 6/24/2024 1:05:39 PM

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 Number: 2 Author: Daniel Torres Subject: Highlight Date: 7/9/2024 2:53:53 PM

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 Number: 3 Author: Daniel Torres Subject: Callout Date: 7/9/2024 2:58:22 PM

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turn lanes are required per the volumes shown at each of these highlighted movements. Please address and revise the narrative accordingly.

 Author: jchodsdon Subject: Sticky Note Date: 9/6/2024 11:35:50 AM

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LSC Response: This comment has been addressed in the updated report. A few items to note:

- 1) The PM peak-hour eastbound-left turn at intersection No. 3 shown as "65" has been corrected to show "5." The "65" was a typo.
- 2) Regarding the comment regarding the PM northbound right-turn movement on Horizonview at Hazy Morning, the County ECM turn-lane-threshold volumes do not apply. This is a city intersection and the city "Traffic Criteria Manual" applies and is referenced in the TIS.

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 Number: 4 Author: Bret Subject: Engineer Date: 6/24/2024 1:06:03 PM

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 Number: 5 Author: Daniel Torres Subject: Highlight Date: 7/9/2024 2:53:59 PM

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 Number: 6 Author: Daniel Torres Subject: Highlight Date: 7/9/2024 2:54:04 PM

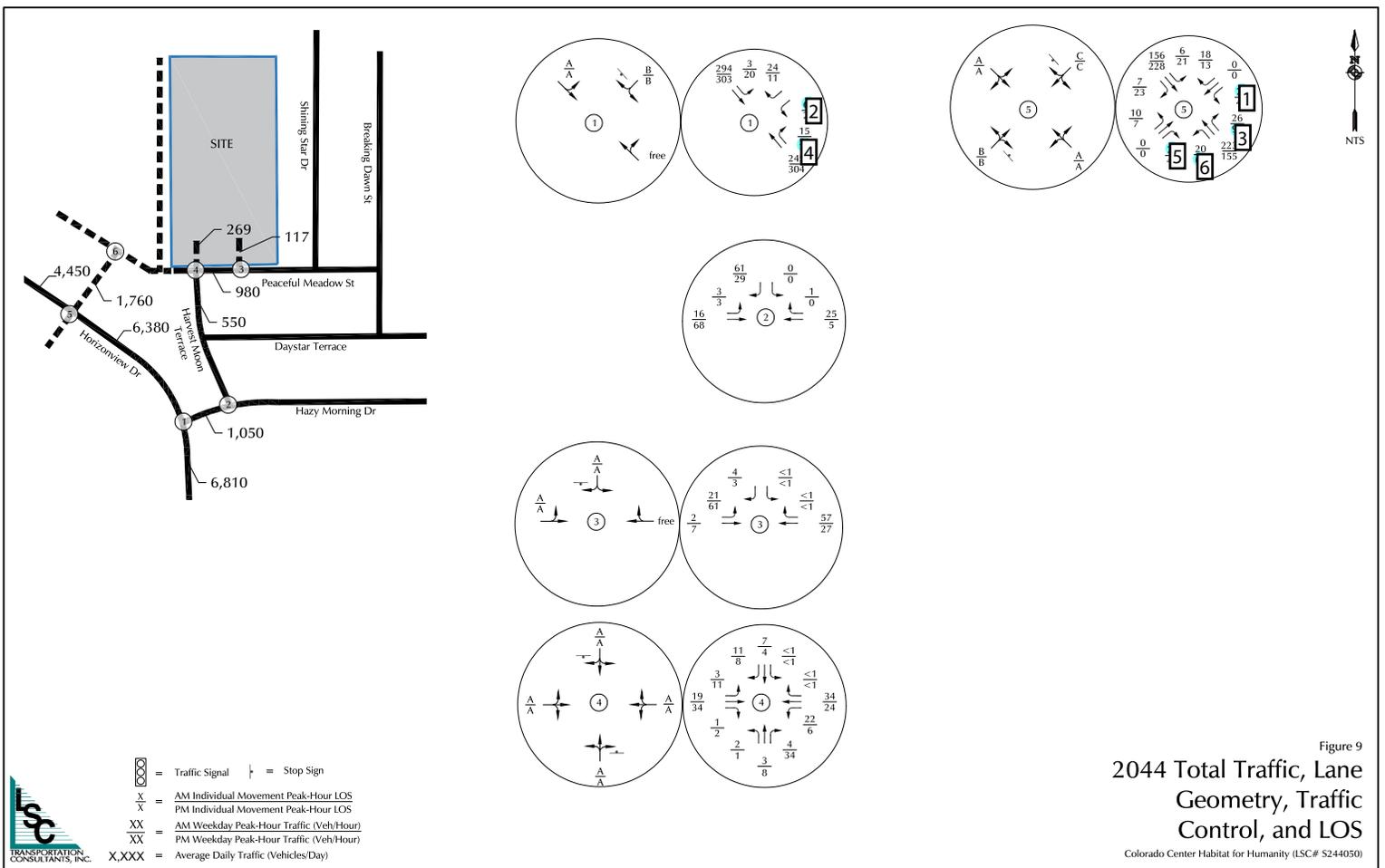
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 Number: 7 Author: Daniel Torres Subject: Highlight Date: 7/9/2024 2:54:21 PM

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 Number: 8 Author: Daniel Torres Subject: Highlight Date: 7/9/2024 2:54:16 PM

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 Number: 1	Author: Bret	Subject: Engineer	Date: 6/24/2024 1:09:41 PM
 Number: 2	Author: Bret	Subject: Engineer	Date: 6/24/2024 1:09:36 PM
 Number: 3	Author: Bret	Subject: Engineer	Date: 6/24/2024 1:09:40 PM
 Number: 4	Author: Bret	Subject: Engineer	Date: 6/24/2024 1:09:35 PM
 Number: 5	Author: Bret	Subject: Engineer	Date: 6/24/2024 1:09:49 PM
 Number: 6	Author: Bret	Subject: Engineer	Date: 6/24/2024 1:09:47 PM

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