



February 3, 2026

William Tamminga  
BurgerWorks  
908 N John Redditt  
Lufkin, Texas 75904

**RE: Promenade Whataburger / Traffic Generation Analysis  
Castle Rock, Colorado**

Dear William,

SM ROCHA, LLC is pleased to provide traffic generation information for the development entitled Promenade Whataburger. This development is located near the northeast corner of Promenade Parkway and Alpine Vista Circle in Castle Rock, Colorado.

This information has been revised to address Town Staff review comments dated January 9, 2026 regarding updates to traffic generation estimates.

The intent of this analysis is to present traffic volumes likely generated by the proposed development, provide a traffic volume comparison to previous land use assumptions approved for the development site, consider potential impacts to the adjacent roadway network, and to consider solutions to potential queuing that may affect the adjacent roundabout.

The following is a summary of analysis results.

### **Site Description and Access**

Land for the development is currently vacant and surrounded by a mix of commercial, residential, and open space land uses.

The proposed development is understood to entail the new construction of an approximate 3,200 square-foot Whataburger fast-food restaurant.

The previously approved transportation impact analysis for Promenade at Castle Rock<sup>1</sup> assumed approximately 161,200 square feet of shopping center in the same overall development area as currently proposed with this project.

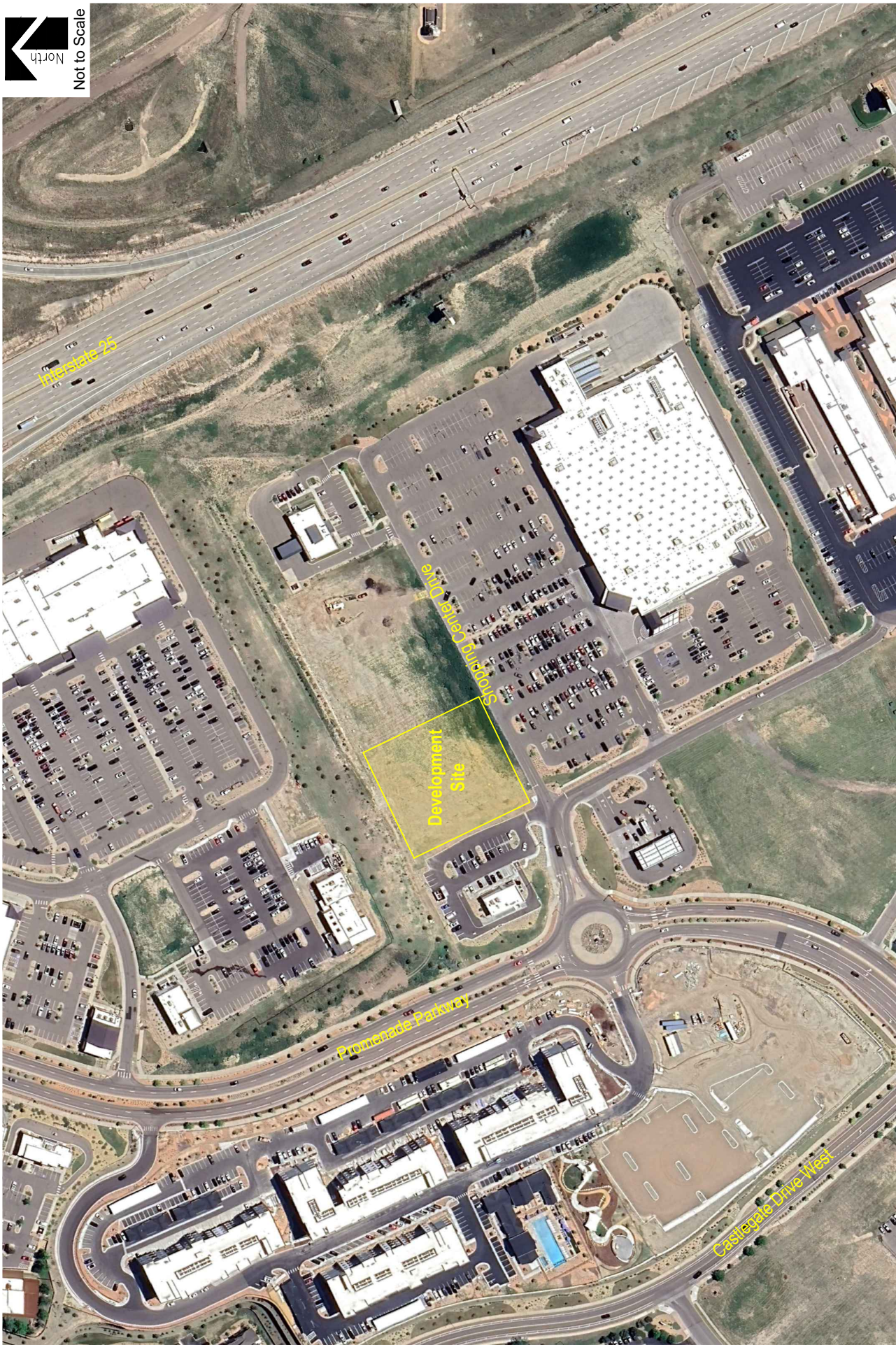
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<sup>1</sup> Promenade At Castle Rock: Transportation Impact Analysis, Felsburg Holt & Ullevig, January 2015.

Existing access to the development is generally provided via the east leg of the roundabout-controlled intersection at Promenade Parkway (referred to as Shopping Center Drive). Direct access to Whataburger is provided via one existing access drive shared with Chipotle (referred to as Access A) and one proposed full-movement access drive (referred to as Access B).

General site and access locations are shown on Figure 1.

A site plan, as prepared by HR Green, Inc., is shown on Figure 2. This plan is provided for illustrative purposes only.



**PROMENADE WHATABURGER**  
Traffic Generation Analysis

**SM ROCHA, LLC**  
Traffic & Transportation Engineering

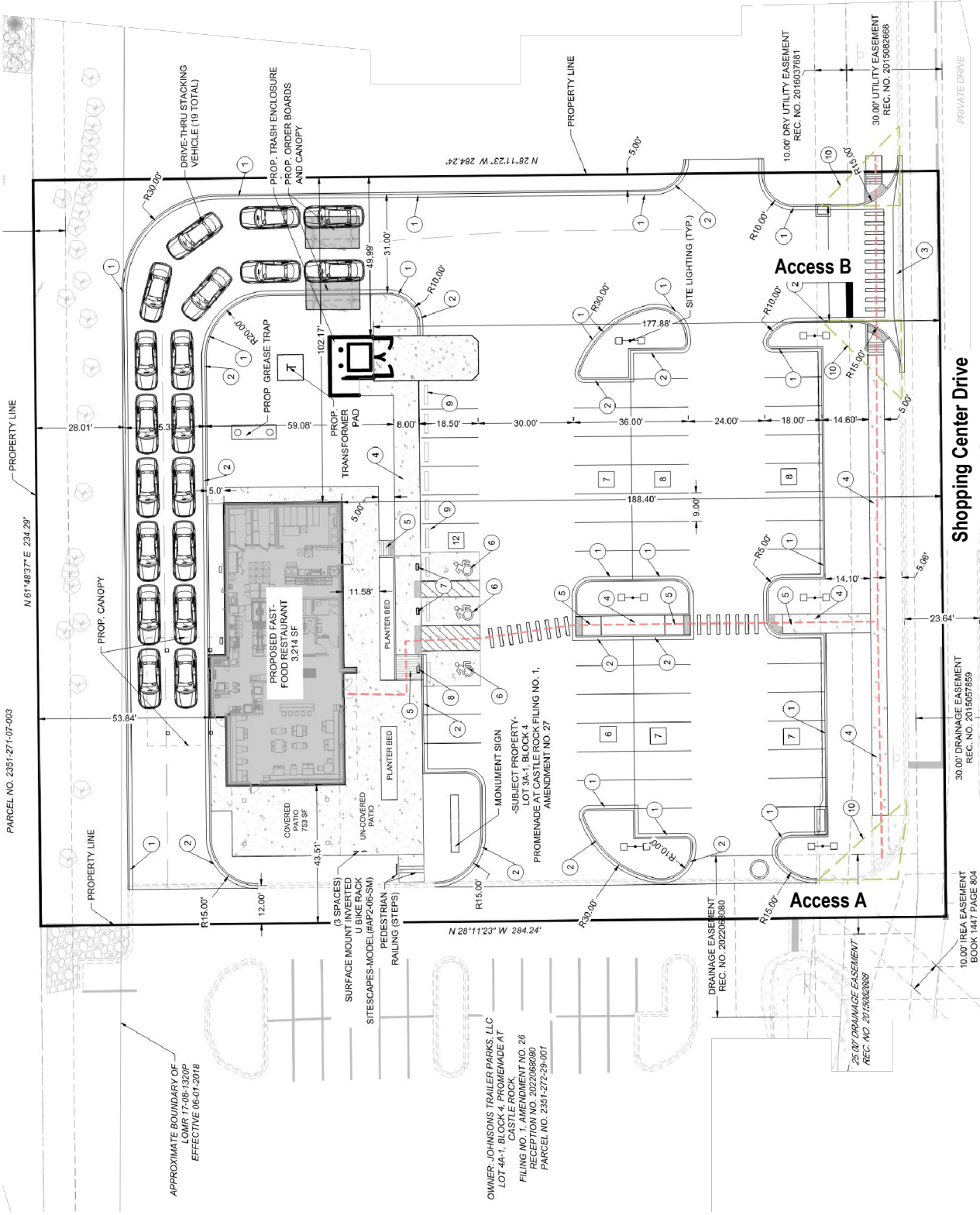
**Figure 1**  
**SITE LOCATION**

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Not to Scale



APPROXIMATE BOUNDARY OF LOMR 17-08-1320P EFFECTIVE 06-01-2018

OWNER: JOHNSONS TRAILER PARKS, LLC  
LOT 4A-1, PROMENADE AT CASTLE ROCK  
FILING NO. 1, AMENDMENT NO. 26  
RECEPTION NO. 2022068080  
PARCEL NO. 2351-272-29-001

**PROMENADE WHATABURGER**  
Traffic Generation Analysis

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**Figure 2**  
**SITE PLAN**

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## Vehicle Trip Generation

Standard traffic generation characteristics compiled by the Institute of Transportation Engineers (ITE) in their report entitled Trip Generation Manual, 12<sup>th</sup> Edition, were applied to the existing and proposed land uses in order to estimate the average daily traffic (ADT) and peak hour vehicle trips. A vehicle trip is defined as a one-way vehicle movement from point of origin to point of destination.

The approved traffic impact study for Promenade at Castle Rock used trip generation rates from ITE’s Trip Generation Manual, 9<sup>th</sup> Edition, and included “Shopping Center” land use in the same development area as currently proposed with this project.

Table 1 presents average trip generation rates for the development area proposed. Use of average trip generation rates presents a conservative analysis. ITE land use code 934 (Fast-Food Restaurant with Drive-Through Window) was used for analysis because of its best fit to the proposed land use. ITE land use code 820 (Shopping Center) was used for analysis because of its best fit to the existing land use.

**Table 1 – Trip Generation Rates**

ITE CODE	LAND USE	UNIT	TRIP GENERATION RATES									
			24	AM PEAK HOUR			PM PEAK HOUR			SATURDAY PEAK HOUR		
			HOUR	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
934	Fast-Food Restaurant w/DTW	KSF	448.12	16.95	16.29	33.24	16.43	15.17	31.60	25.88	24.87	50.75
820	Shopping Center	KSF	36.39	0.55	0.33	0.88	1.60	1.66	3.26	2.18	2.10	4.28

Key: KSF = Thousand Square Feet Gross Floor Area.  
Note: All data and calculations above are subject to being rounded to nearest value.

Table 2 summarizes the projected ADT and peak hour traffic volumes likely generated by the land use area proposed and provides comparison to traffic volume estimates for the previously approved land use.

**Table 2 – Trip Generation Summary**

ITE CODE	LAND USE	SIZE	TOTAL TRIPS GENERATED									
			24 HOUR	AM PEAK HOUR			PM PEAK HOUR			SATURDAY PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
<u>Site Development - Previously Approved - PDP *</u>												
820	Shopping Center	161.2 KSF	6,882	96	59	155	287	311	598	405	372	777
<i>Previously Approved Total:</i>			<i>6,882</i>	<i>96</i>	<i>59</i>	<i>155</i>	<i>287</i>	<i>311</i>	<i>598</i>	<i>405</i>	<i>372</i>	<i>777</i>
<u>Site Development - Existing</u>												
820	Shopping Center - Sam's Club	134.6 KSF	4,896	73	45	118	215	224	439	294	282	576
820	Shopping Center - Credit Union	5.3 KSF	194	3	2	5	9	9	17	12	11	23
820	Shopping Center - Chipotle	2.3 KSF	84	1	1	2	4	4	7	5	5	10
<u>Site Development - Proposed</u>												
934	Fast-Food Restaurant w/DTW	3.2 KSF	1,440	54	52	107	53	49	102	83	80	163
<i>Existing + Proposed Total:</i>			<i>6,614</i>	<i>132</i>	<i>100</i>	<i>232</i>	<i>280</i>	<i>285</i>	<i>565</i>	<i>394</i>	<i>378</i>	<i>772</i>
<b><i>Difference Total:</i></b>			<b><i>-268</i></b>	<b><i>36</i></b>	<b><i>41</i></b>	<b><i>77</i></b>	<b><i>-7</i></b>	<b><i>-26</i></b>	<b><i>-33</i></b>	<b><i>-11</i></b>	<b><i>6</i></b>	<b><i>-5</i></b>

Key: KSF = Thousand Square Feet Gross Floor Area.  
\* = Promenade at Castle Rock: Transportation Impact Analysis, Felsburg Holt & Ullevig, January 2015.  
Note: All data and calculations above are subject to being rounded to nearest value.

As Table 2 shows, the proposed development area has the potential to generate approximately 1,440 daily trips with 107 of those occurring during the morning peak hour, 102 during the afternoon peak hour, and 163 during the Saturday peak hour. Table 2 further shows how proposed development traffic volumes generally do not exceed that approved for Block 4B in the Promenade at Castle Rock traffic study.

Please note that the overall Saturday peak hour trips are larger than the morning and afternoon peak hour trips, yet less than the previously approved traffic study's projected trips, which further indicates that the analyses performed in the previously approved traffic study remain valid.

### Adjustments to Trip Generation Rates

While a development of this type is likely to attract trips from within area land uses as well as pass-by or diverted link trips from the adjacent roadway system, no trip reduction was taken in this analysis. This assumption provides for a conservative analysis.

### Vehicle Trip Generation Comparison & Development Impacts

As Table 2 shows, the proposed development does not exceed traffic volumes in comparison to previously approved volumes of the development area. These volumes are not likely to negatively impact operations of Promenade Parkway nor other adjacent roadways or intersections.

As example, published ITE pass-by and diverted link trip data indicates an average trip generation reduction rate between 50 and 55 percent as typical to fast-food restaurants with drive-through window. Considering the lowest reduction percentage, primary trip generation for the proposed development equates to approximately half of trip generation volumes presented in Table 2. A primary trip is defined by ITE as a trip made for the specific purpose of visiting the destination generator.

### **Drive-Through Lane Queuing Analysis**

Vehicle storage associated with the proposed Whataburger was evaluated against ITE research, publications, recommendations, and application of standard probability equations.

ITE research and associated publications recommend approximately 240 to 300 feet of drive-through lane for fast-food restaurant with drive-through lane establishments. Assuming a conservative average vehicle length of 25 feet, this drive-through length provides for approximately 10-12 vehicles of total storage and should be adequate to handle the vast majority of the drive-through lane volumes that might be encountered.

Drive-through vehicle queuing calculations were also performed using standard probability equations based on the highest number of vehicles entering the site during peak hours, assumed drive-through service rate, and the percentage of entering vehicles using the drive-through.

Queue length probability parameters assumed for this analysis utilize Saturday peak hour entering trips as the highest number of vehicles anticipated within a given hour. As recommended by ITE research, 75 percent of vehicles entering the site are conservatively assumed to utilize one of the two available drive-through lanes with an assumed service rate of 45 seconds. Using these parameters, estimated queue length potential was determined.

Based on these calculations, a 95th percentile queue length of approximately 11 vehicles was established for the fast-food restaurant with drive-through window. This equates to a drive-through queue of six vehicles per service bay. It is noted that 95th percentile queue lengths only have a five percent probability of being exceeded during the analysis time period.

The above calculations were then applied to the proposed site plan. It is concluded that adequate vehicle storage is provided on-site and is not anticipated to negatively impact internal vehicular circulation nor the adjacent public roadway network. Probability calculation worksheets are provided for reference in Attachment A.

The proposed site plan currently shows approximately 180 feet of total vehicle storage for one of the drive-through lanes, and 210 feet for the other drive-through lane, providing 390 feet of total vehicle storage. A drive-through storage exhibit is included for reference in Attachment B.

## **Site Circulation Analysis**

Vehicle queueing along Shopping Center Drive was considered based on existing area land uses as well as the anticipated trip generation.

It is noted that the proposed intersection of Access A with Shopping Center Drive prioritizes inbound traffic volumes in order to prevent delays that could result in vehicle queueing into the adjacent roundabout on Promenade Parkway. As a result, egress traffic heading westbound towards the roundabout may experience delay as a result of the eastbound free-flow movement and potential conflicting movements. However, this potential will occur internal to the overall development area without negatively impacting public roadways and intersections. Moreover, considering the roundabout-controlled nature of the study intersection, the westbound approach is yield-controlled and therefore expected to experience minimal, if any, vehicle queueing during peak traffic periods.

## Conclusion

This analysis assessed traffic generation for the Promenade Whataburger development, provided a traffic volume comparison to previous land use assumptions approved for the development site, and considered potential impacts to the adjacent roadway network.

It is our professional opinion that the proposed site-generated traffic is expected to create no negative impact to traffic operations for the surrounding roadway network and Shopping Center Drive, and is believed to be in compliance with the Promenade at Castle Rock Transportation Impact Analysis.

We trust that our findings will assist in the planning and approval of the Promenade Whataburger development. Please contact us should further assistance be needed.

Sincerely,

**SM ROCHA, LLC**  
*Traffic & Transportation Engineering*



Brandon Wilson, EIT  
Traffic Engineer | Project Manager



Fred Lantz, PE  
Traffic Engineer

**ATTACHMENT A**

**Drive-Through Queue Length Analysis Worksheet**



**Queue Length Probability Analysis Worksheet**

Provide input (red) values in the indicated fields.

Output (blue) values are shown as indicated.

Values in black are constants and do not change.

**Input**

**Output**

**Constant**

Saturday Peak Hour Trips Entering: **83** vehicles  
 Assumed % Drive-Thru Trips: **75** %  
 Assumed Service Rate: **45** seconds

**Traffic Intensity**

$$\rho = \frac{\lambda}{\mu}$$

$\lambda$  = mean arrival rate per min  
 $\mu$  = mean service rate per min

$\lambda = 1.04$  veh/min  
 $\mu = 1.333$  veh/min  
 $\rho = 0.78$  veh/min

**Average Vehicle Queue**

$$E(n) = \frac{\rho}{1 - \rho}$$

$\rho = 0.78$  veh/min  
 $E(n) = 3.5$  veh  
 Queue = **71** ft

**Average Drive-Thru Wait Time**

$$E(v) = \frac{1}{\mu(1 - \rho)}$$

$\rho = 0.78$  veh/min  
 $\mu = 1.333$  veh/min  
 $E(v) = 3.41$  min

**Average Order Board-Window Wait Time**

$$E(w) = \frac{\rho}{\mu(1 - \rho)}$$

$\rho = 0.78$  veh/min  
 $\mu = 1.333$  veh/min  
 $E(w) = 2.66$  min

**Queue Probability Equation**

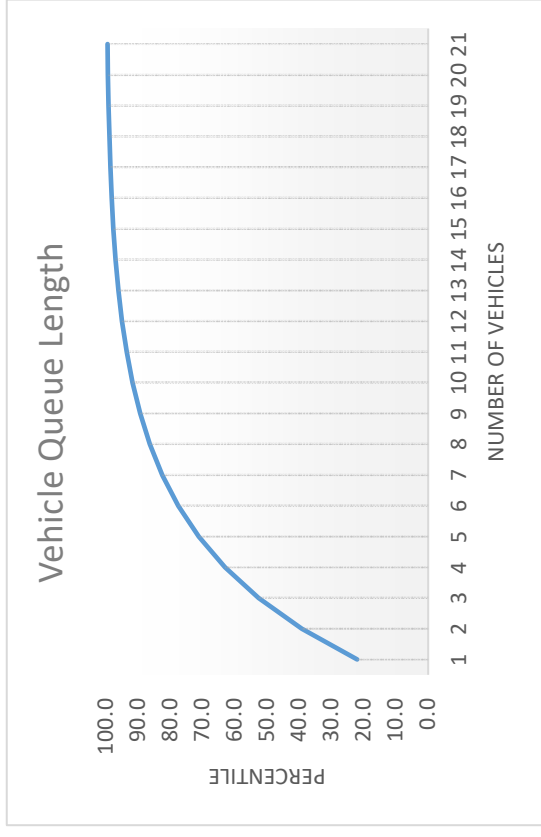
$$P(n) = \rho^n(1 - \rho)$$

**Percentile**

$$\sum_0^n P(n) \geq \%$$

50th Percentile  
 85th Percentile  
 95th Percentile

Number of Vehicles in Queue (n)	Probability of Occurrence P(n) (%)	Percentile
0	22.00	22.0
1	17.16	39.2
2	13.38	52.5
3	10.44	63.0
4	8.14	71.1
5	6.35	77.5
6	4.95	82.4
7	3.86	86.3
8	3.01	89.3
9	2.35	91.7
10	1.83	93.5
11	1.43	94.9
12	1.12	96.0
13	0.87	96.9
14	0.68	97.6
15	0.53	98.1
16	0.41	98.5
17	0.32	98.9
18	0.25	99.1
19	0.20	99.3
20	0.15	99.5



**Notes:**

- The **greatest** volume of entering peak hour trips should be used (AM is shown as it is typically the highest).
- Percent drive-through trips are determined based on land use, and confirmed (when possible) with client/developer/owner.
- Service rate is defined as the rate at which vehicles pass a given point in the queue; or, the average time a vehicle spends in a given queue position before progressing to the next position. Pursuant to ITE publications this is typically 30 seconds. However, it may be adjusted for establishments which take longer or shorter to prepare orders. See the **average wait time** outputs for average time spent in the queue as a whole.
- Traffic intensity must be less than 1. An intensity greater than 1 indicates an over-saturated queue (vehicles arrive faster than they can be served). When a queue is at capacity (intensity = 1) the next vehicle will typically choose to park or go elsewhere to avoid a long delay.

Standard Vehicle Length	Feet
20	Feet

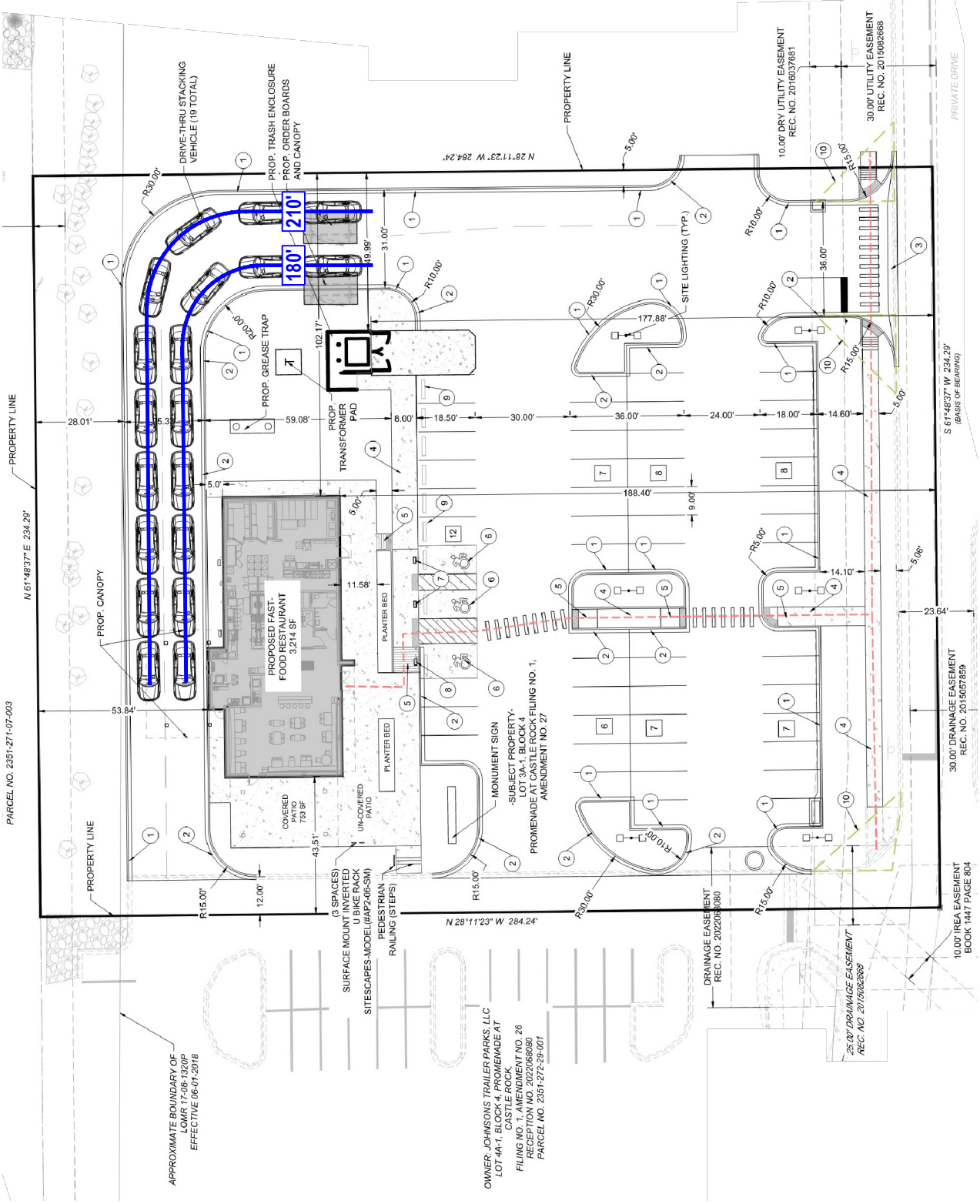
Recommended Queue Design Length			
Length	50th Queue	85th Queue	95th Queue
Vehicles	2	7	11
Feet	40	140	220

**ATTACHMENT B**

**Drive-Through Storage Length Exhibit**



Not to Scale



APPROXIMATE BOUNDARY OF LOMR 17-08-1320P EFFECTIVE 06-01-2018

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**DRIVE THROUGH STORAGE LENGTH EXHIBIT**

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