SM ROCHA, LLC
TRAFFIC AND TRANSPORTATION CONSULTANTS

June 1, 2021

Krysta Houtchens
Entitlement and Engineering Solutions, Inc.
501 S Cherry Street, Suite 300
Glendale, CO 80246

RE: Cross Creek 7-Eleven / Traffic Generation Analysis
Aurora, Colorado

Dear Krysta,

SM ROCHA, LLC is pleased to provide traffic generation information for the development entitled Cross Creek 7-Eleven. This development is located near the northeast corner of E 6th Parkway and N Gun Club Road in Aurora, Colorado.

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 for the development site, and consider potential impacts to the adjacent roadway network.

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 open space, office, residential, and recreational land uses. The proposed development is understood to entail the new construction of an approximate 4,000 square foot 7-Eleven gas station convenience market with 12 fueling positions and an automated car wash.

Proposed access to the development is provided at the following locations: two full-movement accesses onto the future east-west local roadway extending east off of N Gun Club Road (referred to as Access A and Access B). Both access drives shall provide a minimum of 75 feet spacing, centerline-to-centerline, and a minimum of 220 feet from N Gun Club Road.

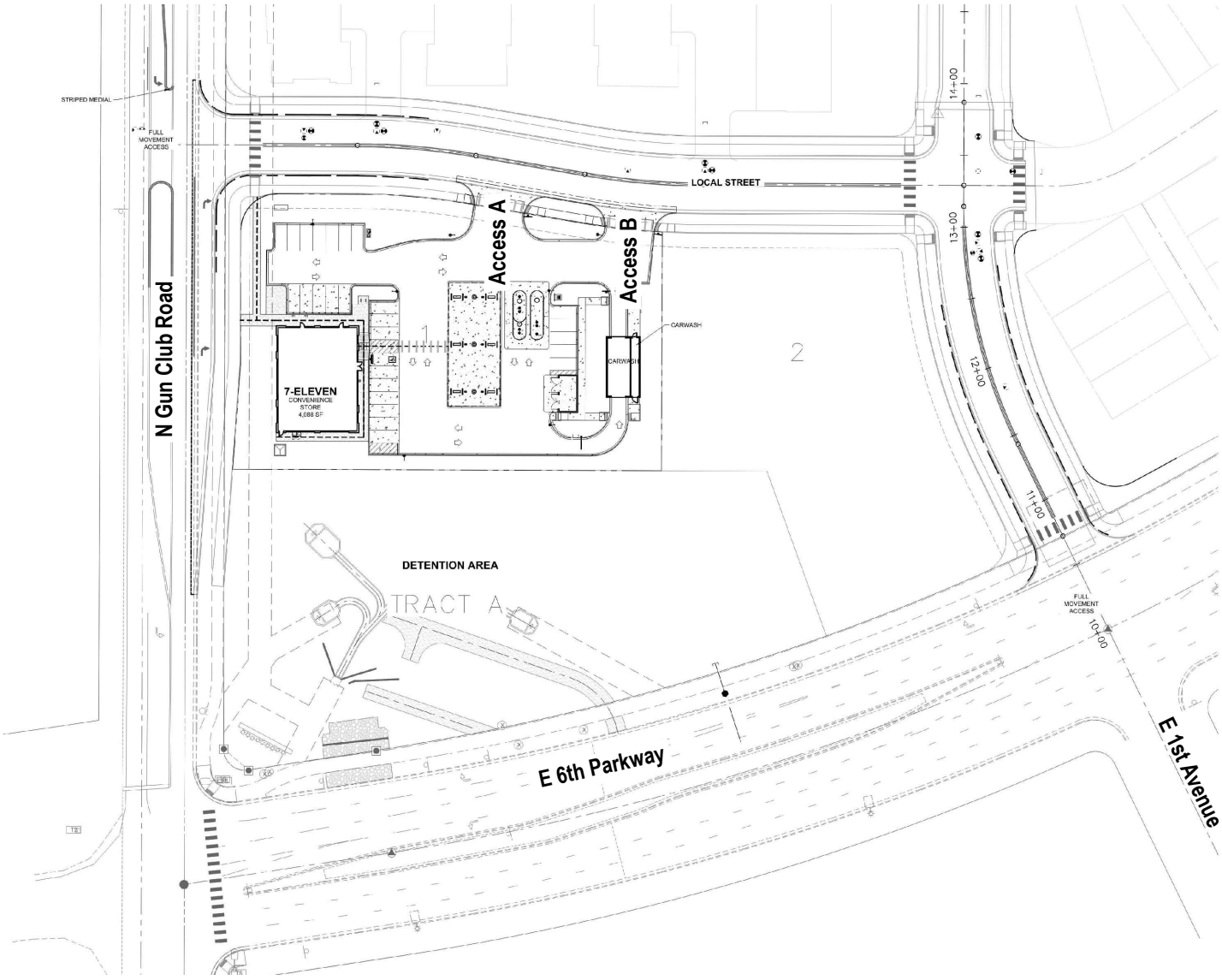
General site and access locations are shown on Figure 1.

A conceptual site plan, as prepared by Entitlement and Engineering Solutions, Inc., is shown on Figure 2. This plan is provided for illustrative purposes.


North
Not to Scale
E 6th Avenue
E 5th Avenue
N Gun Club Road
E-470
Development Site
E 6th Parkway
E 1st Avenue

North

Not to Scale



Vehicle Trip Generation

Standard traffic generation characteristics compiled by the Institute of Transportation Engineers (ITE) in their report entitled Trip Generation Manual, 10th Edition, were applied to the previously assumed 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.

Table 1 presents average trip generation rates for previously assumed land use and for the development area proposed. Use of average trip generation rates presents a conservative analysis. ITE land use codes 948 (Automated Car Wash) and 960 (Super Convenience Market/Gas Station) were used for analysis because of their best fit to the previously assumed and proposed land uses.

Table 1 – Trip Generation Rates

ITE			TRIP GENERATION RATES						
			24	AM PEAK HOUR			PM PEAK HOUR		
CODE	LAND USE	UNIT	HOUR	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
948	Automated Car Wash	WS	142.00	*	*	*	7.10	7.10	14.20
960	Super Convenience Market/Gas Station	KSF	837.58	41.57	41.57	83.14	34.64	34.64	69.28

Key: KSF = Thousand Square Feet Gross Floor Area. WS = Wash Stalls.
Note: All data and calculations above are subject to being rounded to nearest value.
* = ITE does not report significant AM peak hour generation due to the nature of the business (ie, operating hours typically open after AM peak).

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 assumed land use assumed within the Cross Creek master traffic impact study[1].

Table 2 – Trip Generation Summary

ITE			TOTAL TRIPS GENERATED						
			24	AM PEAK HOUR			PM PEAK HOUR		
CODE	LAND USE	SIZE	HOUR	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Site Development - Previously Assumed									
960	Super Convenience Market/Gas Station	4.7 KSF	3,895	193	193	387	161	161	322
	Previously Proposed Total:		*3,895*	*193*	*193*	*387*	*161*	*161*	*322*
Site Development - Proposed									
948	Automated Car Wash	2.0 WS	284	*	*	*	14	14	28
960	Super Convenience Market/Gas Station	4.0 KSF	3,350	166	166	333	139	139	277
	Proposed Total:		*3,634*	*166*	*166*	*333*	*153*	*153*	*306*
	Difference Total:		***-260***	***-27***	***-27***	***-54***	***-8***	***-8***	***-17***

Note: All data and calculations above are subject to being rounded to nearest value.

[1] Cross Creek, SM ROCHA, LLC, January 2021.

As Table 2 shows, the proposed development area has the potential to generate approximately 3,634 daily trips with 333 of those occurring during the morning peak hour and 306 during the afternoon peak hour. Table 2 further shows how proposed development traffic volumes do not exceed that previously assumed within the Cross Creek master traffic impact study.

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 and remains compliant with the Cross Creek master traffic impact study.

As example, published ITE pass-by and diverted link trip data indicates an average trip generation reduction rate between 46 and 78 percent as typical to service stations with convenience store. Considering the lowest reduction percentage, primary trip generation for the proposed development equates to 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.

Vehicle Trip Generation Comparison & Development Impacts

As Table 2 shows, the proposed development does not exceed traffic volumes approved for the area in comparison to previously projected volumes of the overall development area. These volumes are not likely to negatively impact operations of N Gun Club Road nor other adjacent roadways or intersections. For example, the ADT projected on N Gun Club Road with the proposed development represents a decrease of approximately 260 vehicles per day (VPD).

Conclusion

This analysis assessed traffic generation for the Cross Creek 7-Eleven development, provided a traffic volume comparison to previous land use assumptions 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 existing site access, nor at the N Gun Club Road intersection with the future east-west roadway, and is in compliance with the Cross Creek master traffic impact study.

We trust that our findings will assist in the planning and approval of the Cross Creek 7-Eleven development. Please contact us should further assistance be needed.

Sincerely,

SM ROCHA, LLC
Traffic and Transportation Consultants



Brandon Wilson
Traffic Engineer

Fred Lantz, PE
Traffic Engineer