

To: Town of Parker, CO

From: Brian Horan, PE, PTOE
Galloway

Date: July 29, 2024

Re: **Mister Car Wash – Parker, CO
Traffic Conformance Letter**



INTRODUCTION

This memorandum provides the results of a traffic conformance analysis performed in support of an approximately 1.35-acre lot located in Parker, Colorado. The site is located east of Parker Road and south of Stroh Road and is currently vacant. The site location is shown on Figure 1.



Figure 1 – Site Location

BACKGROUND

The subject site was previously studied as commercial and retail space as part of a larger proposed development, Parker Pointe, which was supported by a Master Traffic Impact Study (MTIS) completed February 2024. The full planning area for Parker Pointe is shown on Figure 2.



Figure 2 – Parker Pointe

The MTIS analyzed the planning area which encompasses the subject site with the following uses:

- 30 KSF Medical Office
- 4.8 KSF Fast-Food
- 8 FP Gas Station w/ Convenience Store
- 5 KSF Bank
- 5 KSF Day Care
- 2 SERVICE POSITION Quick Lube Vehicle Stop
- 4 KSF Fast-Food
- 1 TUNNEL Car Wash
- 2 KSF Coffee/Donut Shop w/Drive Thru

Excerpts from the MTIS are included as Attachment I.

The Applicant proposes to develop the subject site with car wash use. Specifically, the Applicant is proposing a 1 TUNNEL Car Wash use. A full-sized copy of the site plan is provided as Attachment II.

The following memorandum has been prepared for the Town as required. The purpose is to evaluate the traffic generated by the currently proposed car wash use in comparison to the uses analyzed in the approved MTIS.

MTIS TRIP GENERATION AND RECOMMENDATIONS

As mentioned previously, the MTIS is dated February 2024 and contemplates a mix of commercial and retail uses for the Parker Pointe planning area. The MTIS forecasted trip generation estimates for the above development program based on rates/equations published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition and industry standard methodologies which includes an overall internal capture rate reduction of 10%.

The MTIS concluded that in order to accommodate the projected volumes a number of roadway improvements would need to be provided. Suggested intersection geometries were provided for all affected intersections and access points included in the MTIS and included herein as Attachment I.

As determined by virtual field reconnaissance of the area, the existing intersections surrounding the subject site have been constructed generally consistent with the recommendations of the MTIS.

PROPOSED DEVELOPMENT AND TRIP GENERATION

Overview

The Applicant is proposing a 1 TUNNEL car wash use for the subject site which was included in the assumed uses of the approved MTIS.

Proposed Trip Generation

Trip generation estimates for the weekday AM and PM peak hours, as well as the weekday average daily traffic (ADT), were derived from the standard Institute of Transportation Engineers (ITE) Trip Generation Manual rates/equations, as published in the 11th edition for the proposed car wash.

In accordance with these ITE assumptions, Table 1 below shows the trip generation for the proposed use at build out and full occupancy:

Table 1
Site Trip Generation

Land Use	Land Use Code	Amount	Units	AM Peak Hour			PM Peak Hour			Average Daily Trips
				In	Out	Total	In	Out	Total	
<u>Proposed</u> ⁽¹⁾										
Automated Car Wash	948	1	TUNNELS	-	-	-	39	39	78	780

Note(s):

(1) Trip generation based on the Institute of Transportation Engineers' Trip Generation Manual, 11th Edition

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CONCLUSIONS

Based on the trip generation contained herein, the proposed car wash use is consistent with the MTIS and would have no adverse effect on the conclusions or recommendations of the MTIS. The traffic impacts associated with the proposed use would be adequately accommodated by the constructed/proposed road network without the need for additional improvements.

We trust that the information contained herein satisfies the request of Parker, CO. If you have any questions or need further information, please contact Brian Horan at BrianHoran@gallowayus.com or 303-770-8884.

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Attachment I

Parker Pointe MTIS dated February 2024



ALDRIDGE TRANSPORTATION CONSULTANTS, LLC
Advanced Transportation Planning and Traffic Engineering

John M.W. Aldridge, P.E.
Colorado Licensed Professional Engineer

1082 Chimney Rock Road
Highlands Ranch, CO 80126
303-703-9112
john@atceng.com

February 29, 2024

Mr. Brad Willet
Brad@wildercolorado.com.

RE: Traffic Impact Study
Parker Pointe – Parker, CO

Dear Mr. Willet:

Aldridge Transportation Consultants (ATC) is pleased to present this Master Traffic Impact Study for the proposed Parker Pointe in Parker, Colorado.

ATC is professional service firm specializing in traffic engineering and transportation planning. ATC's principal, John M.W. Aldridge is a Colorado licensed professional engineer. In the past 20 years, ATC has prepared over 1,500 traffic impact studies, designed over 100 traffic signals, and has provided expert witness testimony on engineering design and access issues on multi-million-dollar interchange and highway projects in Kansas and Colorado.

ATC appreciates the opportunity to be of service. Please call if you have any questions. We can be reached at 303-703-9112.

Respectfully submitted,
Aldridge Transportation Consultants, LLC




John M.W. Aldridge, P.E.
Principal



1. Introduction/Project Description

This study analyzes the impact of the site generated traffic of a new commercial/retail development project known as Parker Pointe located on the SEC of Stroh Road and Parker Road in Douglas County. Figure 1 shows the location of the site, access locations and type, and surrounding streets and intersections.



Figure 1 Project Vicinity and Site Plan



The site is approximately 14 acres and zoned for commercial development. The site will contain lots for general commercial/retail uses that include a myriad of uses such as fast-food, coffee shops, gas stations and convenience stores, day care, bank, and a quick lubrication vehicle shop.

Three accesses are proposed. From Parker Road at approximately 550 feet south of Stroh Road a right in/right out only access. On Stroh Road at approximately 250 east of Parker Road a right in only access, and at approximately 700 feet and directly opposite Reata Ridge Dr., a full-movement access.

Since 2018 several improvements have been made to the Parker/Stroh intersection to accommodate the new Stroh Crossing commercial/retail development on the northeast corner. The improvements include channelized free right turn for the westbound to northbound movement, two through lanes, an exclusive left turn lane, a new northbound right turn lane (which was previously a shared through and right turn lane) and accompanying traffic signal modifications.

With this project a right turn channelizing traffic island will be constructed to contain the existing signal pole in place and a new pedestrian push button post. A new eastbound through lane will also be constructed that will become a right turn only lane at the site access opposite the road serving Stroh Crossing. In addition, a southbound to eastbound left turn lane will be added to the Stroh/Parker intersection to form a dual left turn configuration.



2. Existing Conditions

Parker Road is State Highway 83 and the State Highway Access Code governs access. In addition, the SH-83/SH-86 Access Control Plan defines the type and location of access under an agreement with CDOT, counties, and communities within the corridor. Parker Road is a six-lane principal arterial that currently carries 33,000 AADT per the latest CDOT OTIS website. The posted speed limit is 55 mph. The Code defines it as an NR-A highway. A 30-foot grassy median divides the highway.

On the east side of Parker Road, Stroh Road is a two-lane minor arterial that currently carries approximately 2,000 AADT if the PM peak hour is 10 percent of the daily volume. On the west side, Stroh Road is a four-lane roadway carrying approximately 11,000 AADT. The westbound approach contains two through lanes, and exclusive right and left turn lanes. The eastbound approach includes an exclusive left turn lane and a shared through/left turn lane that will be striped to form a dual left turn lane and a single through lane when the second through receiving lane is constructed on the west side. The eastbound to southbound right turn lane is channelized and operates freely with a southbound acceleration lane.



3. Proposed Conditions

The site plan includes approximately 70,000 square feet of commercial and retail land uses. The trip generation rates for the uses are from the *ITE Trip Generation Manual, 11th Edition*. The following table provides the ADT and AM/PM Peak Hour traffic volumes.

Trip Generation Worksheet								
ITE CODE	LAND USE	UNIT	QUANTITY	ADT	AM		PM	
					IN	OUT	IN	OUT
720	Medical Office	KSF	30	36.00	2.45	0.65	1.18	2.75
				1080	74	20	35	83
934	Fast-Food McDonald's	KSF	4.8	467.48	22.75	21.86	17.18	15.85
				2242	109	105	82	76
945	Gas Statiion w/Convenience Store	Fueling Positions	8	265.12	8.03	8.03	9.21	9.21
				2121	64	64	74	74
912	Bank	KSF	5	100.36	5.77	4.18	10.50	10.50
				502	29	21	53	53
565	Day Care	KSF	5	47.62	5.83	5.17	5.23	5.89
				238	29	26	26	29
941	Quick Lube Vehicle Stop	Service Positions	2	40.00	2.01	0.99	2.72	2.13
				80	4	2	5	4
945	Fast-Food	KSF	4	467.48	22.75	21.86	17.18	15.85
				1870	91	87	69	63
948	Car-Wash	Tunnels	1				39.00	39.00
							39	39
945	Coffee/Donut Shop w/Drive Thru	KSF	2	533.67	43.80	42.08	19.50	19.50
				1067	88	84	39	39
Total Trips				9200	487	409	422	460

With this mix of uses, internal capture can be expected. In this case, based on the NCHRP 684 Internal Capture Estimation Tool a trip reduction of approximately 10 percent is anticipated.



The PM peak hour is the highest time of travel on the adjacent streets and at the intersections and therefore considered the design hour volume (DHV) for operations analysis and geometric design purposes.

About distribution, for the inbound movements, 40 percent of the commercial/retail traffic will turn left at the intersection and turn into the right in only access from Stroh Road. 20 percent will enter the right in only coming from the west on Stroh Road. Ten percent will turn left at the full movement access on Stroh Road. 30 percent will enter by turning right from northbound Parker at the right in/right out access. The outbound movements basically mirror the inbound. Figure 2 shows the distribution percentage and trip assignment. Note that while other movements may carry some of the site generated traffic these are considered nominal.

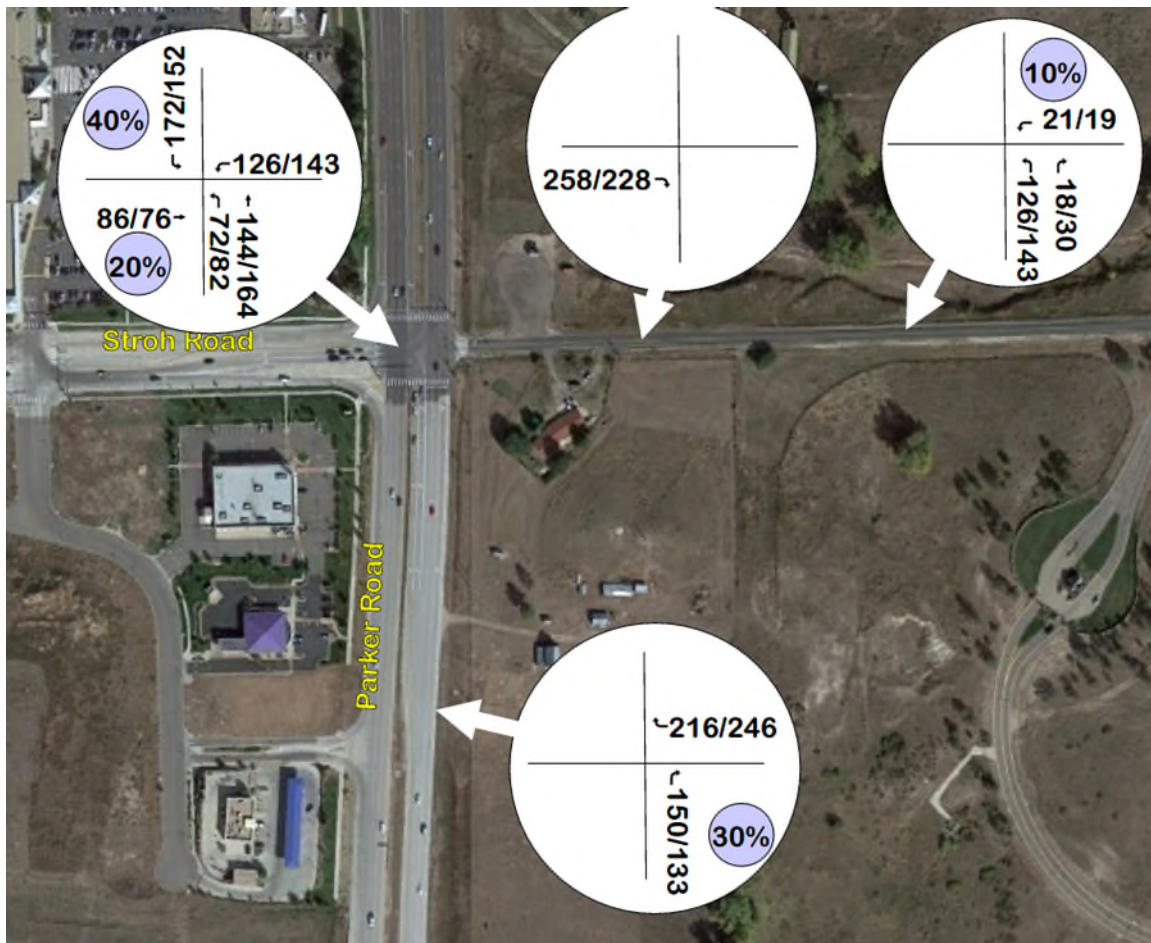


Figure 3 Trip Distribution & Assignment



4. Future Conditions

According to CDOT 20-year growth rate, traffic on Parker Road is expected to increase by a factor of 1.23. This factor was applied as well to Stroh Road for the 5-year and 20-year analysis of traffic conditions. The near-term (within 5 years) background traffic growth assumed a growth factor of 1.05 on Parker Road and the western section of Stroh Road.

Figures 5 through 13 show the near-term 5-year AM and PM with and without the project and the 20-year long-term AM and PM with and without the project.



5. Site Circulation and Design Evaluation

ATC uses Synchro v.11 for operations analyses. The Synchro v.11 methodology is based on the Highway Capacity Manual, 6th Edition (HCM). The Synchro HCM reports are attached for reference. The chart summarizes the forecast near-term and 2044 LOS (level of service). LOS is letter rating from A to F. LOS A indicates free-flow traffic conditions and no delay at intersections. LOS F is heavy traffic congestion with significant delay. LOS is provided for the overall operations at signalized intersections. LOS D is generally the benchmark for acceptable signalized intersection operations during the weekday peak hours. The critical movement, not the overall, provides the LOS rating for unsignalized intersections. The critical movement is generally a left turn from the minor approach. Caution is advised when evaluating the LOS at unsignalized intersections particularly when LOS F shows. In cases of an LOS F, the HCM¹ suggests that other evaluation measures should be considered such as the volume over capacity ratio and 95th percentile queue length to make the most effective traffic control decision. LOS F at unsignalized intersections is often normal for the average weekday peak hour.

The HCM does not analyze intersections without a stop condition. So, the right in only access on Stroh Road is not included in the table. Additionally, the HCM does not analyze a right in/right out movement if there are 3 through lanes or more on the mainline. Consequently, the right in/right out on Parker Road is not included in the table.

LOS Summary (LOS/Seconds of Delay)										
Intersection	Existing		2029 w/o Project		2029 with Project		2044 w/o Project		2044 with Project	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Parker/Stroh (Signalized)	C/26.6	C/32.6	C/26.6	C/32.6	D/40.9	D/36.1	D/38.3	C/33.0	E/60.9	D/51.2
Stroh/Full-Movement	B/10.2	B/10.1	B/10.2	B/10.1	B/14.0	B/13.6	B/10.7	B/10.6	C/16.3	C/15.8

The Parker/Stroh signalized intersection will continue to provide an acceptable level of service (LOS C and D) in the 2029 with and without the project conditions. In the long-term 2044 future the intersection will operate at LOS D/C without the project and LOS E and D with the project.

¹ Highway Capacity Manual 2010 page 19-40



The Reata Ridge Dr./Stroh Road full movement intersection will operate at LOS B in the 2029 future with and without the project. In 2044 the intersection will operate at LOS B without the project and LOS C with the project.

The Colorado Golf Club representatives had a special concern regarding the implementation of a southbound dual left turn lane at the Parker/Stroh intersection. Though it is not warranted by volume, a dual left turn will be constructed.

The Synchro graphics and reports are provided in the appendix for reference.



6. Proposed Mitigation Measures

Based on the analysis, traffic generated by project can be easily absorbed and will not cause a safety or operational problem on the adjacent streets and intersections. The proposed access locations are the best engineering fit for the parcel's configuration and for matching to the internal street layout. The following improvements are recommended.

1. Full movement access by forming the south leg of the Stroh Road at Reata Ridge Dr. intersection is critical for traffic exiting the site to head southbound on Parker Road. This access, located approximately 700 feet east of Parker Road, will be connected to the eastern edge of the shopping center property via a short roadway parallel to Stroh Road. No deceleration or acceleration turn lanes are necessary at this intersection. Stroh Road is posted at 40 mph and would be considered an NR-C by access code standards. The town defers to the access code standards for acceleration and deceleration lanes. In this case, a right turn deceleration lane would be warranted with a turning volume of greater than 50 vph. The turning volume is projected to be zero as all the right turn in traffic will make the movement at the western right in only access. The left turn deceleration lane would be warranted with 25 vph. The maximum projected left turn volume is 21 vph.
2. A right in/right access located approximately 550 feet south of Stroh Road. A right turn deceleration lane of 600 feet will be required. A right turn acceleration lane is warranted but will overlap with the new northbound to eastbound right turn lane forming a continuous turn lane.
3. A right in only access located approximately 250 feet will serve as the primary entry for traffic from southbound Parker Road and eastbound Stroh Road. The outside lane on the new roadway cross-section will serve as the deceleration lane.



7. Conclusions/Recommendations

This analysis finds that the trip generation from the proposed project and the recommended roadway and intersection improvements will operate efficiently at an acceptable level of service.

Mister Car Wash
Parker, CO

Attachment II

Site Plan

