

**TRAFFIC STUDY
FOR
554 S. MAIN STREET
EXTRA SHINE – AUTOMATIC CAR WASH CONVERSION**

Milpitas, California

May 3, 2019



BKF Project No. 20178148-11

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INTRODUCTION

This report addresses the potential traffic impact associated with the proposed improvements at the existing car wash located at 554 S. Main Street in Milpitas.

The project scope of the work consists of demolishing the existing 4-bay self-service car wash facility, and constructing a new 3,000 SF automatic car wash system.

Both driveways on S. Main Street will remain as existing.

Based on the review letter comments, and our review of the project, the focus of this study included review of:

- Vehicle trip generation change from existing uses to new proposed use
- External traffic circulation - ingress/egress at driveways
- Internal traffic circulation
 - o Sufficient queuing capacity for car wash operations
 - o Traffic patterns to serve building and car wash
 - o Parking space usage

Current Site Conditions

As previously noted, the carwash project site is located at 554 S. Main Street in Milpitas. The site contains 4 self-service car wash bays. The site also has parking stalls and vending machines for drying and vacuuming at the rear of the site.

S. Main Street fronts the property with two 2-way driveways.

Site Access

Regional and Local Roadways

Regional access to site is provided by Highway 680, east of the site, and Highway 880, west of the site. Arterial connections can be made from Calaveras Boulevard to the north and Great Mall Parkway to the south with direct connections to either highway. The nearest intersections on S. Main Street are at Corning Avenue (1-way stop controlled) and Curtis Avenue (signalized).

S. Main Street is a north-south collector. In the vicinity of the site, it is a two-lane street with direct access to the major east-west arterials noted above. Parking is allowed with a bike lane across the street from the site, and a narrow shoulder is striped adjacent to the site with no parking.

Please refer to Figure 1 for the Project Site Location Map.

Surrounding Land Use

Retail, industrial, and large commercial properties occupy the immediate areas around the site, with multi-family properties and a small enclave of single family homes nearby.

Existing Traffic Volumes along S. Main Street

Existing daily traffic volumes along S. Main Street are reported as 12,326 (assumed to be annual average daily traffic, AADT), per the City's Traffic Volume Map's 2007 counts.

Existing Traffic Volumes at Car Wash

Per the car wash owner, the existing site serves about a maximum of 100 vehicles per day.

TRAFFIC CONDITIONS WITH PROPOSED PROJECT

Traffic Volumes for Automatic Car Wash with Proposed Project

Trip Generation

Because of the limited visibility from regional roadways and location on a local collector, the revised car wash facility is not expected to increase a significant amount of traffic on S. Main Street. Instead, any increase in trip ends to the site would be expected to stem mostly from the existing traffic.

For comparison purposes, calculation of the traffic generated by the site was based on trip generation rates listed in the ITE Trip Generation Manual, 9th Edition, for Self-Service Carwash (Land Use 947) and Automated Carwash (Land Use 948). These calculations were prepared for peak hour of the adjacent street. We assume that car washes would generally be during off-peak commute hours and on weekends.

It should also be noted that the daily variability of a car wash business can be quite high depending on the day of the week (Fridays are generally the highest weekday), weather factors, and seasonal fluctuations. The day of heaviest activity is typically a Sunday. Another characteristic is that the car wash will rarely have any business before 9 am, so the weekday AM peak period is not expected to generate many vehicle trips.

Existing traffic counts were not obtained, and therefore are based on calculating trip generation for the existing project. These are then compared to the proposed calculated trips. The ITE generated trips were then adjusted based on the owner's record of maximum daily vehicles serviced. This provides a more site-specific expectation. Having reviewed a number of similar traffic studies, and our experience with other similar sites, we expect the adjusted volumes may be under-estimated. However we also expect the ITE trip generation rates are extremely conservative for this site. A likely expectation for projected volumes may be an average of these two estimates.

The ITE Trip Generation Manual data for both Land Use Codes are extremely limited. Therefore, the calculated volumes (existing and projected) should only be used with caution. When this data is limited, traffic counts for existing and at nearby sites similar to the proposed project are often taken for a more realistic expectation. There are no nearby sites similar to the proposed project, so therefore no traffic counts are available for this purpose.

Please refer to Table 1 for trip generation calculations. The net increase in trips calculated were 29 AM peak hour trips and 20 PM peak hour trips. Because this is a national average with very limited data, it is likely not an accurate evaluation of this specific site. Using the data provided by the owner, the adjusted net increase in trips calculated were 7 AM peak hour trips and 5 PM peak hour trips.

For comparison purposes, the AM peak hour trip increase represents about 100% of the existing trips; and the PM peak hour trip increase represents about 100% of the existing trips.

Trip Distribution and Assignment

Since the project does not significantly change its use, it was assumed that the trip distribution would match current conditions. Trip distribution analysis and trip assignment was not a part of the scope for this project.

Level Of Service (LOS) analysis

Because the project is not expected to significantly increase the amount of traffic along S. Main Street, and that any increase in trip ends to the site would be expected to stem from the existing traffic, the Level Of Service (LOS) was not analyzed for the nearby intersections. Regardless, the net increase in trips generated to the site is so small that it would not statistically change the delay values with standard LOS calculations. LOS calculations were not a part of the scope for this project.

The AADT of S. Main Street is 12,326. The estimated increase in daily trips is 91. This represents less than 1% of the AADT of S. Main Street.

SITE ACCESS AND EGRESS EVALUATION

S. Main Street Access

No concerns with ingress and egress for the current site configuration have been identified by the City or the owner.

The site is in the middle of the block and well situated for ingress and egress without impacting the nearest intersections. There is a mid-block crosswalk about 70 feet to the north of the northernmost driveway. There is sufficient distance and visibility from the driveways for the flashing beacons at this crosswalk.

INTERNAL CIRCULATION EVALUATION

Internal traffic circulation was reviewed based on the proposed site plan by NORR Associates, dated 4/23/2019.

By placing the new car wash facility for circulation around the perimeter of the property, we expect this revised layout will provide sufficient space for internal circulation of vehicles

using the carwash facility. With this configuration, we expect to see relatively little conflicting traffic movements, on site traffic queuing, and competition for parking.

Available space for queues for car washes were compared to the calculations from the trip generations in Table 1. Assuming a maximum of 14 vehicles in the car wash system during the peak hour, we find there is sufficient on-site capacity as shown on Figure 2. Regardless, we expect if there is an excessive number of vehicles queued, customers will forgo the car wash and not create logistical issues.

SUMMARY OF FINDINGS

The following is a summary of findings based on the analysis of the project site:

- Configuration of the site will allow for internal circulation with little potential for vehicular conflicts.
- Configuration of the site will allow for ingress and egress.
- The car wash facility appears to have sufficient capacity to accommodate the expected peak hour service demand and queues.
- Off-peak car wash demand will have fewer impacts to adjacent streets.
- The calculated increase in trips generated to the proposed project represent less than 1% of the AADT of the adjacent street.

TABLE 1
PROJECT TRIP GENERATION CALCULATIONS
(From ITE Trip Generation Manual, 9th Edition)

**Existing Use Trip Generation:
Self-Service Carwash (947)**

# Stalls	Average Rate	Average Trip Ends	Owner Recorded Trips	Percent of Average	Period
					Weekday
4	8.00	32	7	23%	AM Peak Hr of Adjacent Street
4	5.54	22	5	23%	PM Peak Hr of Adjacent Street
4	108.00	432	100	23%	Weekday

* ITE Trip Generation rates for Weekday and AM Peak Hour for Code 947 is based on a small sample size.

** Owner recorded trips for AM and PM is extrapolated based on the Weekday value and percent of average.

**Proposed Use Trip Generation:
Automated Carwash (948)**

Thousand Square Feet	Average Rate	Average Trip Ends	Percent of Average	Adjusted Trip Ends	Period
					Weekday
3.00	20.39	61	23%	14	AM Peak Hr of Adjacent Street
3.00	14.12	42	23%	10	PM Peak Hr of Adjacent Street
3.00	275.26	826	23%	191	Weekday

* ITE Trip Generation rates for Weekday and AM Peak Hour of Code 948 is not available. Percentage difference between 947 and 948 for PM was used to extrapolate an average rate for Weekday and AM.

** ITE Trip Generation rates for PM Peak Hour for Code 948 is based on a small sample size.

Land Use 948 trip ends - Land Use 947 trip ends = trips related to change in car wash during period noted

Average trips related to change

Percent increase compared to existing

29 AM Peak Hr of Adjacent Street
20 PM Peak Hr of Adjacent Street

91.2%
91.2%

TABLE 1
PROJECT TRIP GENERATION CALCULATIONS
(From ITE Trip Generation Manual, 9th Edition)

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J.Mansfield
5/3/2019

<u>Adjusted</u> Average trips related to change	Percent increase compared to existing
Weekday	
8 AM Peak Hr of Adjacent Street	108.7%
5 PM Peak Hr of Adjacent Street	92.4%

Carwash Queue Analysis

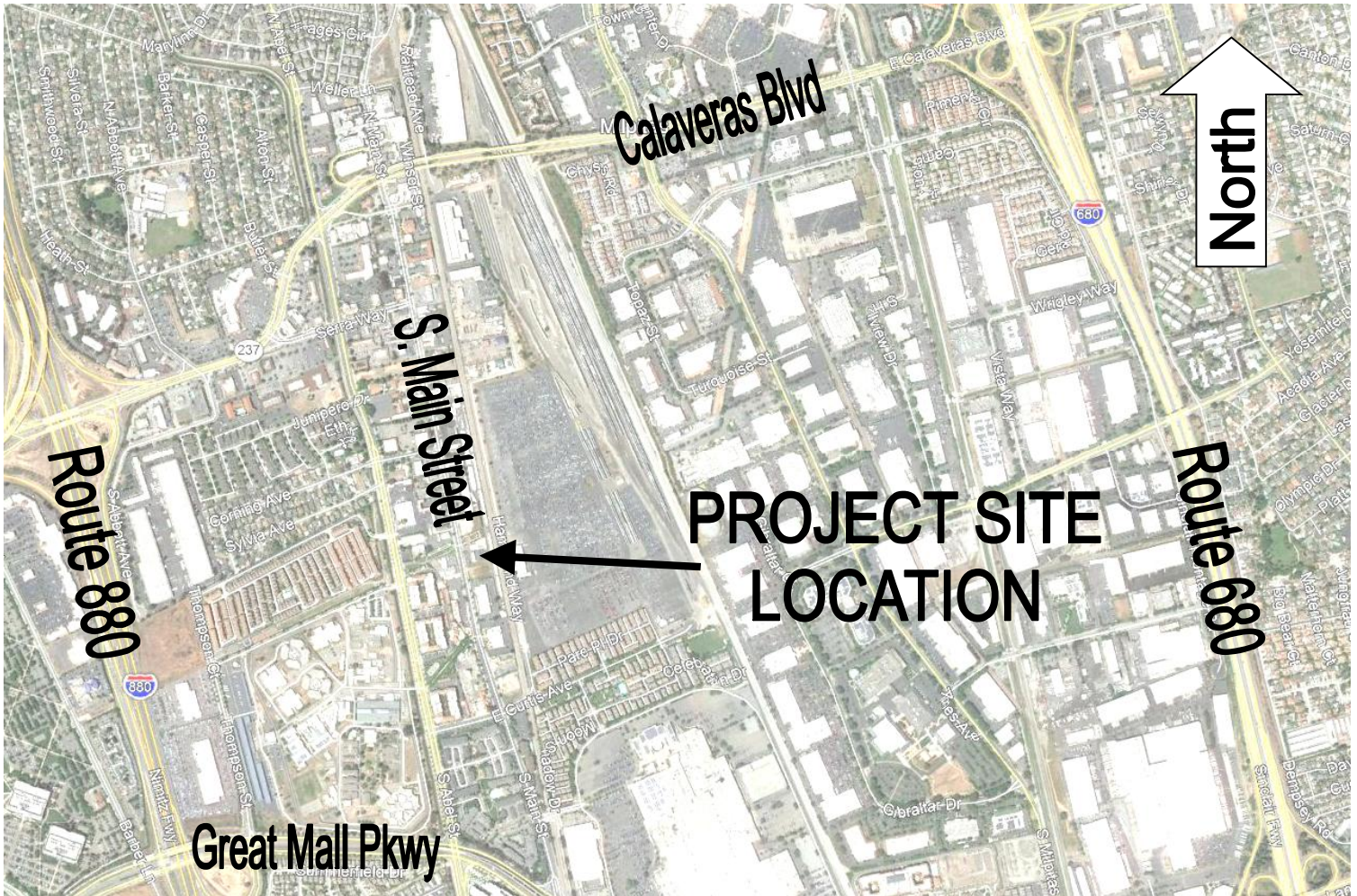
14 maximum vehicles using car wash during peak hour

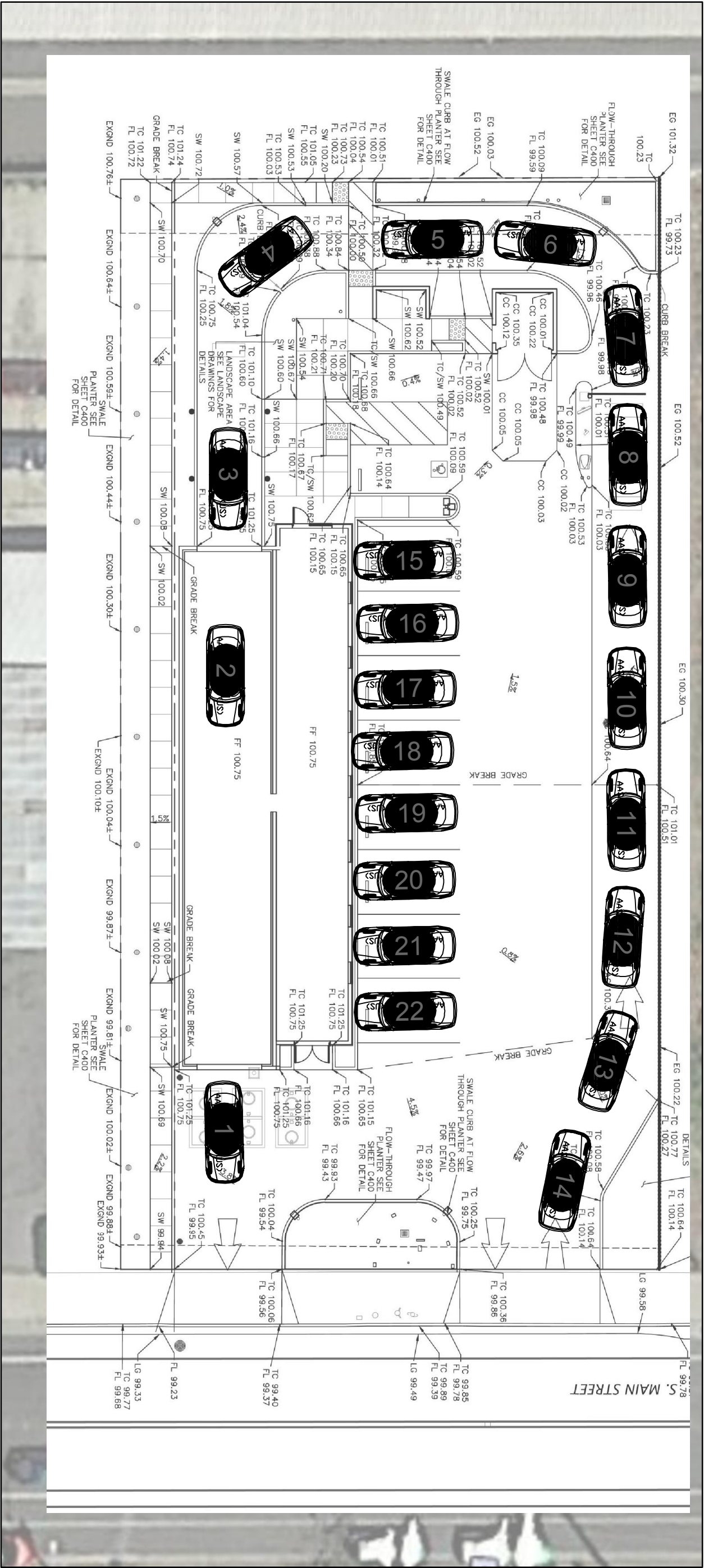
At 7 min per car wash cycle (8 complete the cycle during peak hour) = $14 - 8 = 6$ **max vehicles in system**



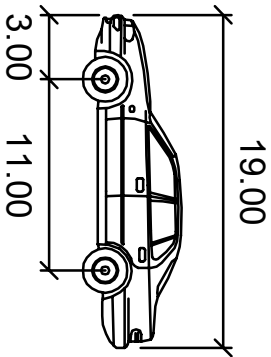
ENGINEERS
SURVEYORS
PLANNERS

FIGURE 1
PROJECT SITE LOCATION MAP

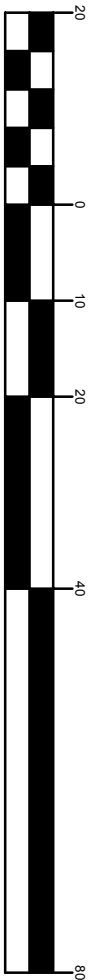




22 Cars Shown



P
feet
Width : 7.00
Track : 6.00
Lock to Lock Time : 6.0
Steering Angle : 31.6



GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.



EXTRA SHINE AUTOMATIC CAR WASH
CAR WASH SYSTEM REVIEW

MILPITAS

SANTA CLARA COUNTY

CALIFORNIA



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Revisions	No.	Date
		5/3/2019
		Scale: 1"=20'
		Design:
		Drawn: AL
		Approved: JM
		Job No: 20178148
		Drawing Number:

EX-1

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