



February 4, 2021

Reza Amirrezvani
SSCW Companies
1830 N. 95th Avenue, Suite 106
Phoenix, AZ 85037

Phone: (602) 421-6717

Email: r.amirrezvani@superstarcarwashaz.com

Engineering Review

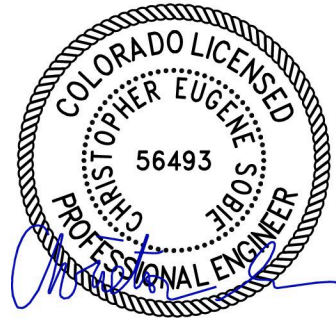
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dsdrice

JeffRice@elpasoco.com

(719) 520-7877

EPC Planning & Community
Development Department



Subject: Traffic Impact Statement

Super Star Car Wash, Intermediate Traffic Impact Study – Falcon, CO

Dear Mr. Amirrezvani,

Y2K Engineering, LLC. (Y2K) has been retained to prepare an Intermediate Traffic Impact Study (TIS) for the proposed Project, Super Star Car Wash, located on Lot 10 in the future Falcon Marketplace development near the northwest corner of Woodmen Road and Meridian Road in Falcon, CO. The project proposes an automated car wash facility with one \pm 5,200 square-foot tunnel and parking for 33 vacuum stalls. Located in the southwest corner of the future Falcon Marketplace development, one site access point is proposed on the northeast corner of the parcel. This access point will be a shared driveway between Lot 9 and Lot 10, which will have a full access driveway with the Falcon Marketplace internal circulation roadway. A vicinity map of the project site is shown in **Figure 1**.

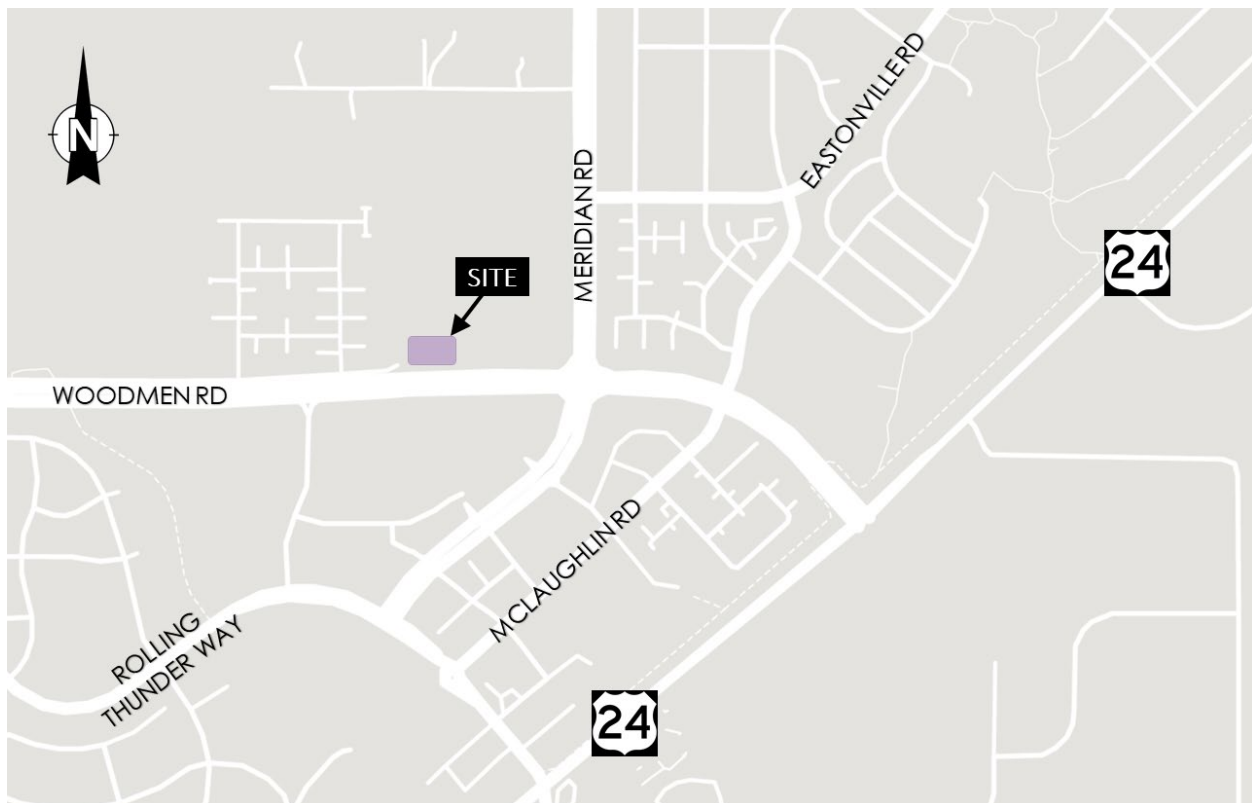
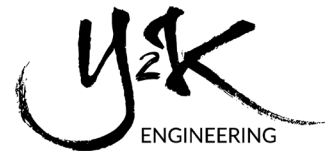


Figure 1: Vicinity Map





EXISTING CONDITIONS

SURROUNDING LAND USE

The proposed Super Star Car Wash is located on Lot 10 in the southwest corner of the future Falcon Marketplace development. Currently this land is vacant. The Falcon Marketplace is anchored by a King Soopers grocery store and has 11 additional lots for mixed-use development. Surrounding land uses include a neighborhood of single-family residential homes directly to the west, residential rural (5 acre) single-family homes to the north, single-family residential homes to the east, and commercial development to the south.

seems low

ROADWAY NETWORK

Access to the future Falcon Marketplace will be from Meridian Road to the east and Woodmen Road and Woodmen Frontage Road to the south. For the south access, ingress will be made from Woodmen Road and egress will be made to Woodmen Frontage Road.

Meridian Road is classified as a principal arterial per El Paso County 2016 Major Transportation Corridors Plan Update. Meridian Road has a north-south alignment with two travel lanes in each direction. Adjacent to the site, Meridian Road is divided by a 35-foot raised median. The west side of the street is partially improved with curb, gutter, and a 3-foot median, and the east side of the street has a 6-foot median but no curb and gutter. There are currently no bicycle lanes or sidewalks along either side of Meridian Road in the project vicinity. The posted speed limit on Meridian Road is 55 mph. Traffic counts reported in the El Paso County 2016 Major Transportation Corridors Plan Update indicate the average daily traffic on Meridian Road near the project site is approximately 2,600 vehicles per day (vpd).

Woodmen Road is classified as a principal arterial per El Paso County 2016 Major Transportation Corridors Plan Update. Woodmen Road has an east-west alignment with two travel lanes in each direction. Adjacent to the site, Woodmen Road is divided by a 35-foot raised median. The eastbound direction has a 6-foot shoulder, and the westbound direction has a 10-foot shoulder. Neither direction has curb, gutter, bicycle lanes, or sidewalks. The posted speed limit on Meridian Road is 55 mph. The nearest traffic counts reported in the El Paso County 2016 Major Transportation Corridors Plan Update indicate the average daily traffic on Meridian Road approximately 3.5 miles to the west of the project site is approximately 22,600 vpd.

Woodmen Frontage Road is an east-west local roadway with one lane in each direction. Woodmen Frontage Road is located on the north side of Woodmen Road and currently terminates in a cul-de-sac at the southwest corner of the future Falcon Marketplace. Woodmen Frontage Road does not have any curb, gutter, or bicycle lanes. There is a sidewalk on the northside of Woodmen Frontage Road which runs along the adjacent neighborhood. Woodmen Frontage Road provides access to Woodmen Road approximately one mile to the west of the development.

Falcon Market Place internal drive is a future roadway that will be constructed in conjunction with the future Falcon Marketplace development. Construction plans indicate that Falcon Market Place will provide one lane in each direction with a center lane striped to provide dedicated left turn lanes at site driveways, including the Super Star Car Wash driveway. Sidewalks will be provided on both sides of the roadway.

The **east access point to Falcon Marketplace** is the intersection of Meridian Road and Eastonville Road which is currently minor-street stop controlled, with a stop sign on the westbound approach. The Falcon

Marketplace site plan proposes this intersection to be the east access point as a four-legged signalized intersection.

The **south access point to Falcon Marketplace** is proposed as an ingress movement from Woodmen Road and an egress movement to Woodmen Frontage Road. Currently Woodmen Road has a lane drop in the vicinity of the future access point, and Woodmen Frontage Road ends in a cul-de-sac. The Falcon Marketplace site plan proposes the drop lane is repurposed as a dedicated right-turn lane into the site and the cul-de-sac will be converted to an access point.

The **Super Star Car Wash internal** access point is proposed as a full movement minor-street stop intersection with the internal access road. The Super Star Car Wash will share a driveway with the lot directly to the east, Lot 9. The internal access driveway will be signed for 25 MPH and consist of one lane in each direction separated by a two way left turn lane (TWLTL).

An aerial of the surrounding roadway network is depicted in Figure 2.

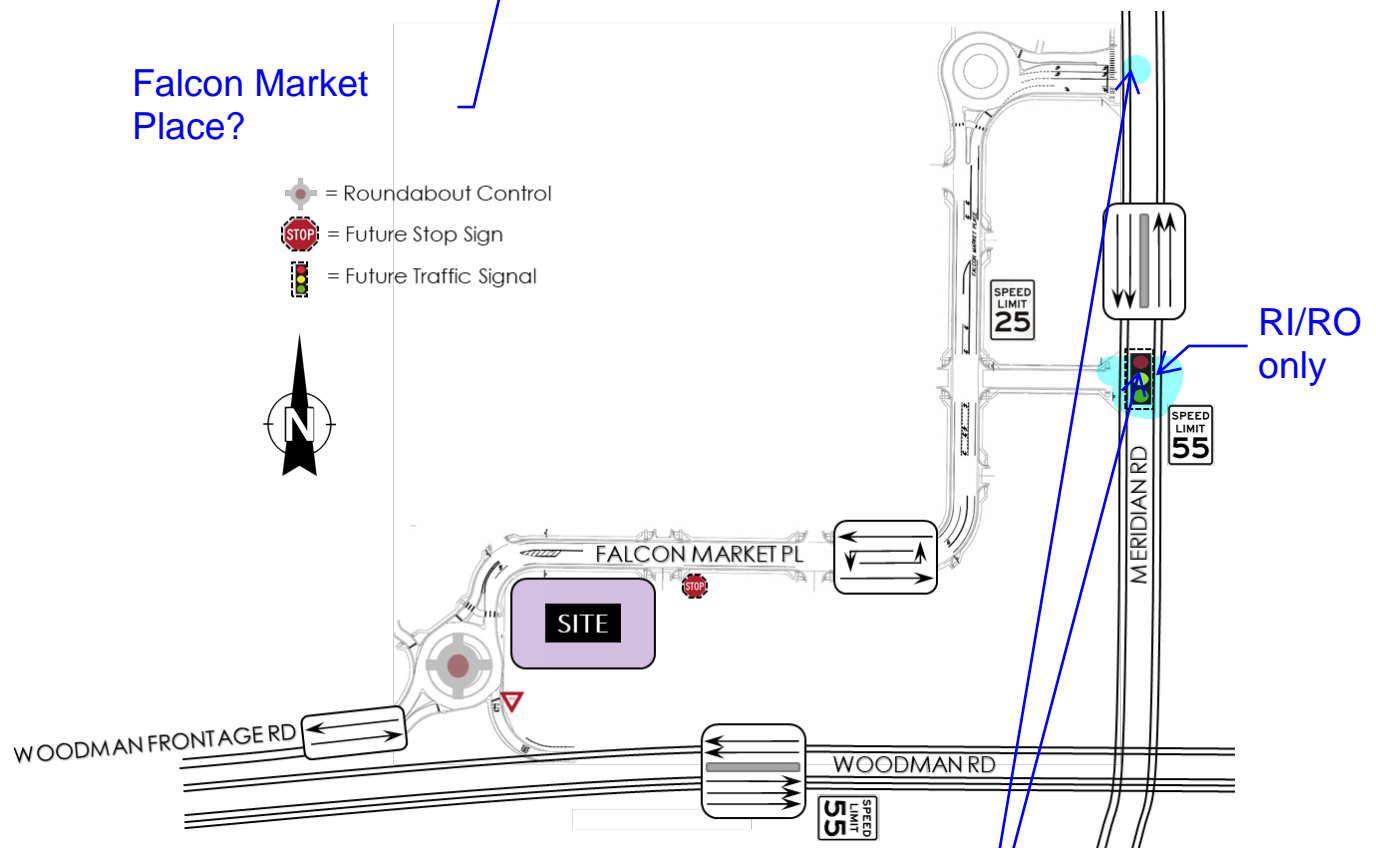


Figure 2: Existing Roadway Network and Intersection Lane Configuration

PROPOSED DEVELOPMENT

SITE LOCATON, LAND USE, AND ACCESS

The Super Star Car Wash is proposed for Lot 10 (approximately ± 1.62 acres) in the southwest corner of Falcon Marketplace development in Falcon, Colorado. The project proposes an automated car wash facility with one $\pm 5,200$ square-foot tunnel and parking for 33 vacuum stalls. One site access point is proposed:

- Driveway A (full-access) – Falcon Marketplace access drive internal intersection

Driveway A will be shared between the Super Star Car Wash (Lot 10) and Lot 9. Driveway A will be aligned with access to the King Soopers parking lot directly to the north. The site plan is provided in **Attachment A** and is depicted in **Figure 3**.

SITE CIRCULATION

Vehicles entering and exiting the car wash will use Driveway A or come from the neighboring business in Lot 9. Once at the car wash, three lanes of queuing are provided in advance of the payment gates, which provides enough space for up to 21 vehicles to queue. The pay stations are able to process up to 80 vehicles an hour, and the tunnel is able to process 130 vehicles per hour. Therefore, significant stacking of vehicles is not expected, and ample storage is provided per the site plan. Following the payment station, vehicles continue through the car wash tunnel, and then may continue into one of the vacuum bays or exit the site. Ingress and egress are permitted through Driveway A. The internal site access drive is proposed to have one lane in each direction separated by a TWLTL. The TWLTL will provide 200 feet of storage for westbound left-turning ingress vehicles. Eastbound right-turning ingress vehicles will be uncontrolled and therefore have no storage or delay associated. There is anticipated to be adequate storage within the site for egress movements.

Falcon Market
Place?

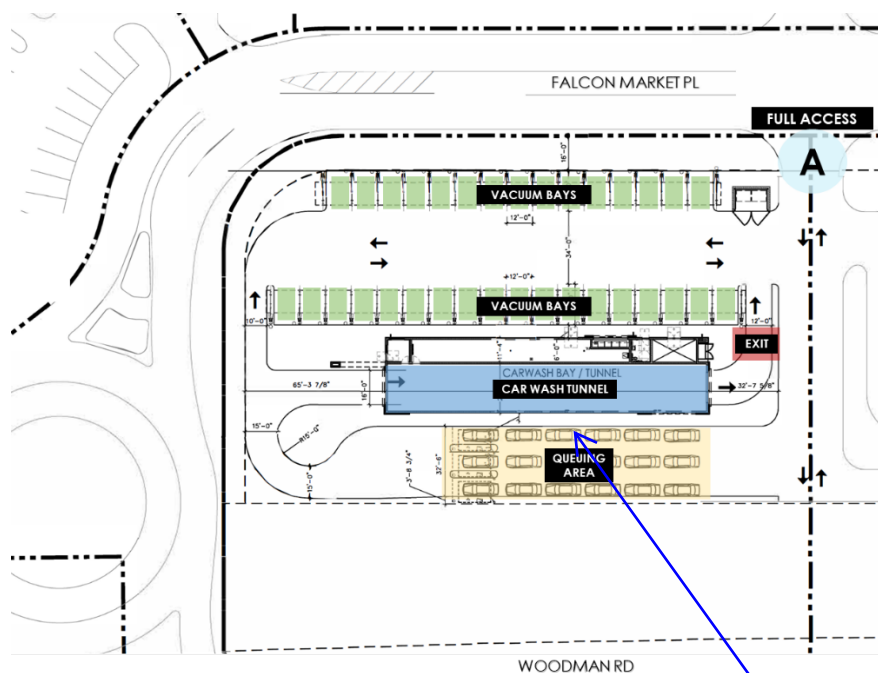


Figure 3: Site Plan

Provide the layout
from the site
development plan



TRIP GENERATION

ITE's *Trip Generation Manual, 10th Edition* contains data collected by various transportation professionals for a wide range of different land uses. The data summarized in the manual include average rates and equations that have been established correlating the relationship between an independent variable that describes the development size and generated trips for each categorized land use. The manual provides information for daily and peak hour trips. Land Use Category (LUC) 948, Automated Car Wash, best fits the proposed development.

The ITE *Trip Generation Manual, 10th Edition* does not provide data for the daily and AM peak hour for the Automated Car Wash land use. Therefore, only the weekday PM peak hour is reported, which is expected to be more than the AM peak hour. Estimates were also provided by Super Star Car Wash Companies for a previous Traffic Impact Statement. Super Star Car Wash estimates a maximum of 50 vehicles enter during the weekday PM peak hour and a maximum of 75 vehicles enter during the Saturday peak hour. The trip generation estimates for the weekday PM peak hour and Saturday peak hour are provided in **Table 1** and **Table 2**, respectively. The estimated trips provided by Super Star Car Wash were selected for use in this study as they are more conservative than the estimates provided in the ITE *Trip Generation Manual*.

Table 1: Trip Generation – Weekday PM Peak Hour

DESCRIPTION OF LAND USE			VEHICLE GENERATED TRIPS		
			Weekday PM Peak Hour		
LAND USE	ITE LUC	SIZE	Enter	Exit	Total
Super Star Car Wash ¹	948	1 Car Wash Tunnel	39	39	78
Super Star Car Wash ²			50	50	100

1. Source: ITE's *Trip Generation Manual, 10th Edition*. The average rate and directional distributions are provided below:
 Weekday PM Average Rate: 77.50 In: 50%, Out: 50%
2. Estimate provided from Super Star Car Wash

Table 2: Trip Generation – Saturday Peak Hour

DESCRIPTION OF LAND USE			VEHICLE GENERATED TRIPS		
			Saturday Peak Hour		
LAND USE	ITE LUC	SIZE	Enter	Exit	Total
Super Star Car Wash ¹	948	1 Car Wash Tunnel	19	22	41
Super Star Car Wash ²			75	75	150

1. Source: ITE's *Trip Generation Manual, 10th Edition*. The average rate and directional distributions are provided below:
 Saturday Average Rate: 41.00 In: 46%, Out: 54%
2. Estimate provided from Super Star Car Wash

The proposed Super Star Car Wash is anticipated to generate a total of 100 weekday PM peak hour trips (entering and exiting) and 150 Saturday peak hour trips (entering and exiting).

PASS-BY TRIPS

Not all generated trips to a project will be 'new' to the locality. Some vehicles will already be present on the street system passing by or will be able to make a short diversion. This is particularly true during the weekday morning and evening peak hours when traffic is diverted from the work/home trips. It is also true

Provide comparison to the subdivision TIS values.

on Saturdays when traffic is already on the adjacent roadways running errands and desires to have their car cleaned prior to evening plans. Pass-by traffic refers to drivers already on the adjacent street who enter the site from or to another destination. Diverted traffic refers to traffic which makes a *very short* diversion to visit the proposed site. The *ITE Trip Generation Handbook, 3rd Edition* has data and provides percentages for pass-by traffic. Reductions for pass-by and diverted trips are only applied to the off-site traffic movements while 100% of the generated trips are applied to the traffic entering and exiting the driveways. While a car wash is expected to attract pass-by trips, no reductions in the site-generated traffic were included in this analysis, since the traffic statement focuses on the driveways.

TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT

Trip distribution for this site was assumed based on access to the nearby arterial network and is depicted in **Figure 4**. It is assumed that 60% of traffic will come to/from the west from Woodmen Road and 40% of traffic will come to/from the east on Falcon Market Place and from Meridian Road.

Based on the trip distribution, new trips from the proposed Super Star Car Wash have been assigned to the site driveways. The trip assignment percentages are shown in **Figure 4**, and the associated volumes for the weekday PM and Saturday peak hours are shown in **Figure 5**.

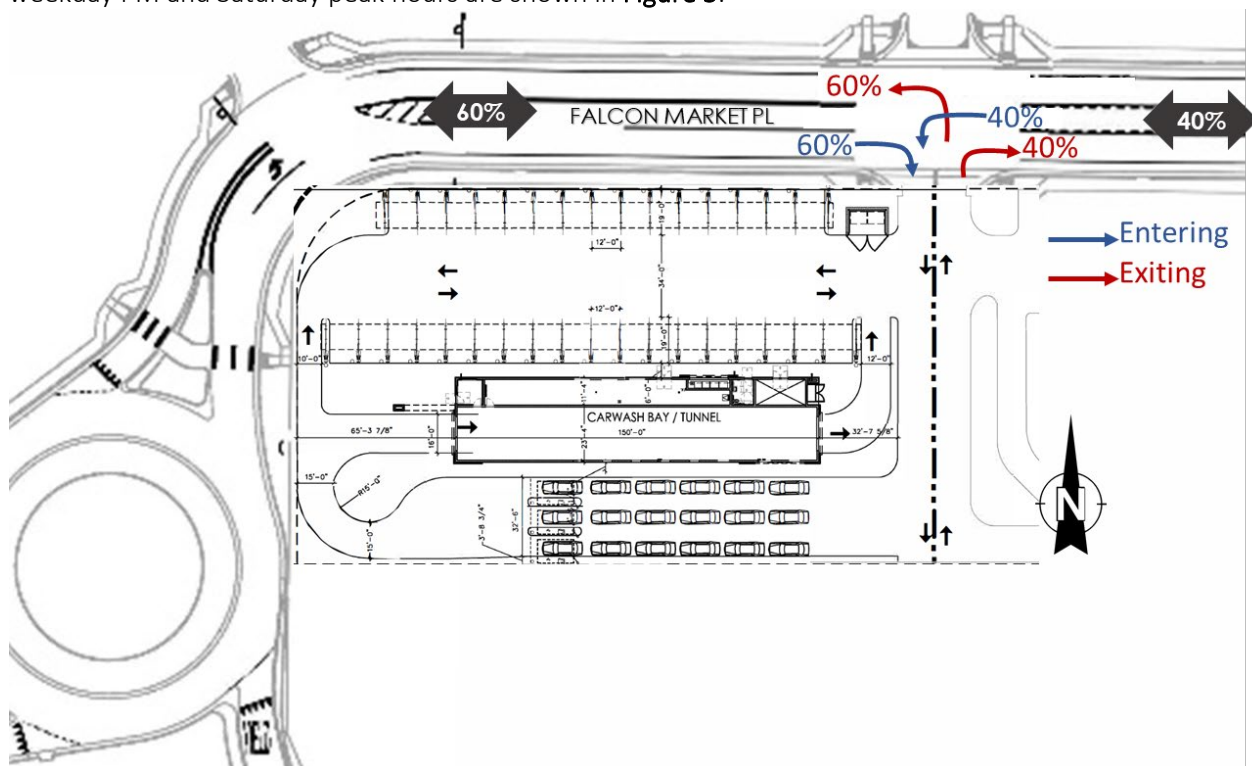


Figure 4: Trip Distribution

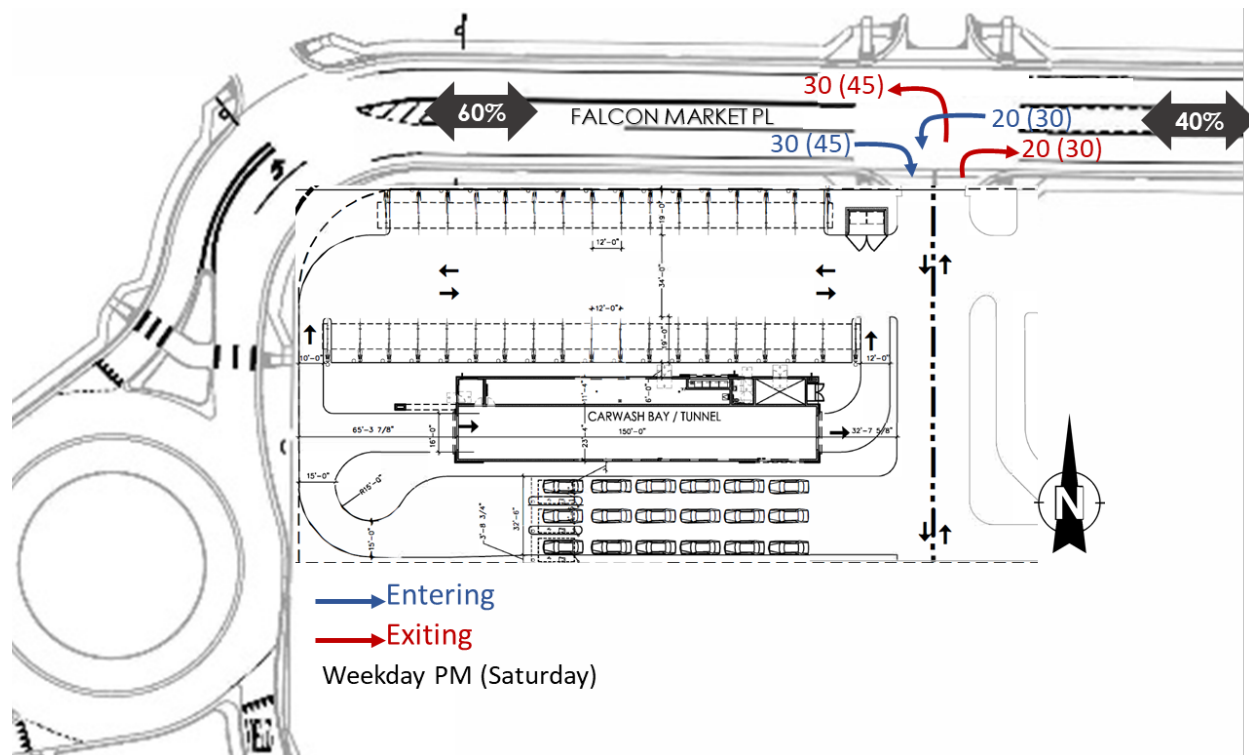


Figure 5: Site Traffic Volumes – Weekday PM and Saturday Peak Hour

IMPROVEMENT ANALYSIS

DRIVEWAYS

Site access will be provided from a single proposed full-access driveway on Falcon Market Place approximately 400 feet east of the proposed roundabout at the intersection of Woodmen Frontage Road and Falcon Market Place. Driveway A will provide shared access to the adjacent shopping center to the east. A westbound TWLTL is planned at Driveway A to support the shopping center.

AUXILIARY LANES

When warranted, turn lanes permit separation of conflicting traffic movements and removes the slower turning traffic from the through traffic, thus improving capacity and reducing rear-end crashes. The analysis focuses on the auxiliary lane needs at Driveway A. A center TWLTL to provide dedicated left turn lanes into site driveways, including Driveway A, is proposed on the future Falcon Market Place roadway.

The criteria for a right-turn lane is based on the criteria set forth in the *El Paso County – Engineering Criteria Manual* revised in 2016. The manual specifies that on roadways with the classification of Minor Arterial or lower, right turn lanes are required for any access with a project peak hour right turning volume of 50 vehicles per hour (VPH) or greater. During the Saturday peak hour, 45 westbound right-turning vehicles are anticipated at Driveway A. As such, a right-turn deceleration lane is not warranted or recommended at Driveway A. The right-turn lane needs at Driveway A should be re-evaluated as development continues to grow in the adjacent commercial lots east of the proposed car wash site.



CONCLUSIONS

- The proposed car wash site includes an automated car wash facility with one ±5,200 square-foot tunnel and parking for 33 vacuum stalls.
- Site access will be provided from a single proposed full-access driveway on Falcon Market Place approximately 400 feet east of the proposed roundabout at the intersection of Woodmen Frontage Road and Falcon Market Place.
- The car wash is anticipated to generate a total of 100 trips (entering and exiting) during the weekday PM peak hour and a total of 150 trips (entering and exiting) during the Saturday peak hour.
- A center TWLTL lane to provide left turn lanes into site driveways, including Driveway A, is proposed on the future Falcon Market Place roadway.
- Based on projected site volumes and the El Paso County right-turn lane criteria, a right-turn lane is not considered to be necessary at Driveway A. The right-turn lane needs at Driveway A should be re-evaluated as development expands east of the proposed car wash site, as a portion of the adjacent site will share access of Driveway A.

We appreciate the opportunity to prepare this study. Should you have any questions, please feel free to contact me by email at csobie@y2keng.com or by phone at (720) 735-5855.

Sincerely,

A handwritten signature in black ink, appearing to read 'Chris Sobie', with a stylized flourish at the end.

Christopher Sobie, PE, PTOE
Project Engineer

Attachments

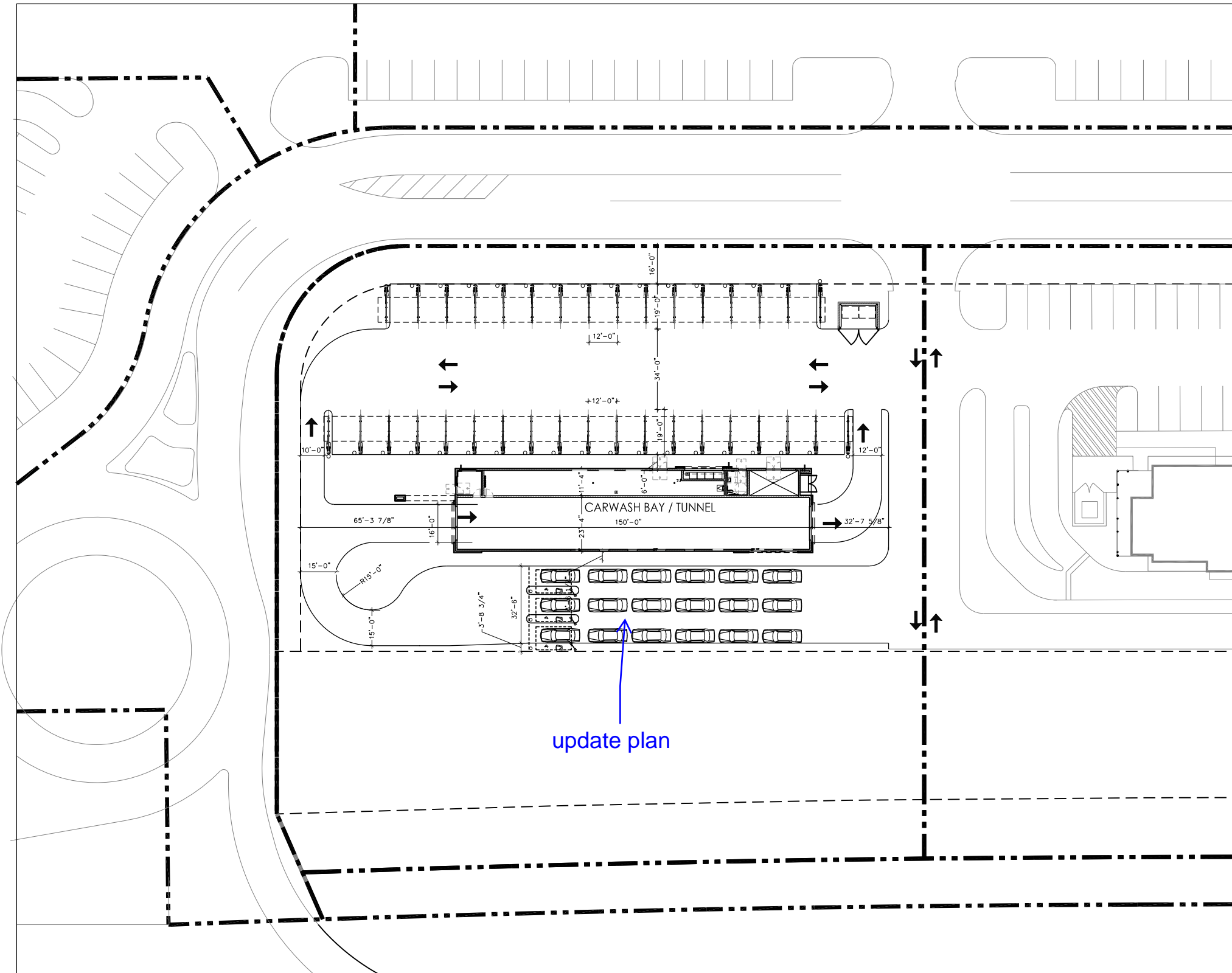
delete "future"

not per current Lot
9 plan?

How does this
compare to the
subdivision TIS?

Address escrow contribution requirements per the
subdivision TIS. Discuss with Staff.

ATTACHMENT A:
SITE PLAN



SUPERSTAR CARWASH
E. WOODMAN, FALCON, CO

PRELIMINARY SITE LAYOUT
OPTION 1r3
8-27-20
SCALE = NTS

