



TECHNICAL MEMORANDUM

TO: For applicant submittal to CITY OF PALMDALE

FROM: Perrie Ilercil, Senior Engineer | GANDDINI GROUP, INC.

DATE: November 20, 2023

SUBJECT: Beyond Food Mart (25th and Avenue R) Project Trip Generation Comparison
GGI Project No. 19524

Ganddini Group, Inc. is pleased to provide this Trip Generation Comparison for the proposed Beyond Food Mart (25th and Avenue R) project in the City of Palmdale. The purpose of this comparison analysis is to evaluate the change in trip generation that can be expected between the original project site plan (June 16, 2022) and the revised project site plan (October 6, 2023). We trust the findings of this analysis will aid the City of Palmdale in assessing the project.

PROJECT DESCRIPTION

The 5.69-acre project site (APN: 3018-028-023 and 054) is located at the northwest corner of 25th Street East and Avenue R in the City of Palmdale California. The project site is currently vacant and zoned C-1. Figure 1 illustrates the project location map.

The proposed project involves the construction of a convenience store gas station and automatic car wash tunnel. The proposed project also involves the construction of a raised median on 25th Street along the project frontage. Vehicular access is proposed to be provided by one driveway at Avenue R providing right turn in/out and left turn in access and one driveway at 25th Street providing right in/out only access.

The *Beyond Food Mart (25th and Avenue R) Project Traffic Impact Analysis* was prepared by Ganddini Group, Inc., (November 23, 2022) and evaluated the original project. The original project involved the construction of a 7,460 square foot convenience store gas station with eight (8) dual-sided fuel pumps (i.e., 16-vehicle fueling positions) and an approximately 1,790 square foot automatic car wash tunnel. The original site plan is shown in Attachment A.

The revised project involves the construction of a 7,258 square foot convenience store gas station with eight (8) dual-sided fuel pumps (i.e., 16-vehicle gasoline fueling positions), two (2) dual-sided hydrogen fuel pumps (i.e., 4-vehicle fueling positions) and an approximately 2,127 square foot automatic car wash tunnel. The proposed site plan is shown in Attachment B.

The revised site plan also shows the adjacent 3.08-acre parcel to the west as 'Not Part of Project'. The potential future development is shown as a 22,500 square feet of retail/food building and a 3,000 square feet fast food restaurant with drive through window. The western parcel is not part of the project and is not included in the revised trip generation. The western parcel development will need to provide a separate traffic impact study with the currently proposed project as an existing or cumulative project.

ORIGINAL PROJECT TRIP GENERATION

Table 1 shows the original project trip generation from the *Beyond Food Mart (25th and Avenue R) Project Traffic Impact Analysis* (Ganddini Group, Inc. November 23, 2022) The original project trip generation was based on rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021). When data was not available from the current ITE *Trip Generation Manual*, supplemental data from other approved sources were also used for this project.

The original project trip generation was based trip generation rates for ITE Land Use Codes 945 (Convenience Store Gas Station (5.5-10 TSF) and 948 (Automated Car Wash) which were determined to adequately represent the land use for the proposed project and were selected for calculation of the project trip generation forecast. The forecast included applicable pass-by adjustments based the methodology recommended by ITE. Since there is no daily pass-by data provided in ITE *Trip Generation Manual Appendices*, the daily pass-by value was conservatively determined by the sum of the AM peak and PM peak pass-by values.

As shown in Table 1, the proposed project was forecast to generate a total of approximately 6,393 gross daily trips, including 540 gross trips during the AM peak hour and 508 gross trips during the PM peak hour without pass-by trip reduction. Pass-by trips are included at the project driveways. With application of pass-by trip adjustments for the surrounding street system, the proposed project is forecast to generate a total of approximately 5,685 new daily trips, including 155 new trips during the AM peak hour and 185 new trips during the PM peak hour.

REVISED PROJECT TRIP GENERATION

Table 2 shows the revised project trip generation forecast based on rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021). Based on review of the ITE land use description, trip generation rates for ITE Land Use Codes 945 (Convenience Store Gas Station (5.5-10 TSF) and 948 (Automated Car Wash) were selected for this analysis. When data was not available from the current ITE *Trip Generation Manual*, supplemental data from the San Diego Association of Governments (SANDAG) (*Not So*) *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (April 2002)* and the *101 Bernal Road Hydrogen Fueling Project Initial Study* (Rincon Consultants, Inc., July 2020) was used to obtain trip generation rates for the hydrogen fueling positions. See Attachment C for the hydrogen fueling study. The project trip generation forecasts include applicable pass-by adjustments based the methodology recommended by ITE. When there is no daily pass-by data provided in ITE *Trip Generation Manual Appendices*, the daily pass-by value is determined by one-half of the average of the AM peak and PM peak pass-by values. Trip generation rates were determined for daily trips, AM peak hour trips, and PM peak hour trips for the proposed land use.

As shown in Table 2, the proposed revised project is forecast to generate a total of approximately 6,703 gross daily trips, including 556 gross trips during the AM peak hour and 532 gross trips during the PM peak hour without pass-by trip reductions. Pass-by trips are included at the project driveways. With application of pass-by trip adjustments for the surrounding street system, the proposed project is forecast to generate a total of approximately 4,656 new daily trips, including 171 new trips during the AM peak hour and 209 new trips during the PM peak hour.

TRIP GENERATION COMPARISON

Table 3 shows the difference in project trip generation between the original project and the revised project land use plans. As shown in Table 3, the revised project is forecast to generate approximately 310 more daily

City of Palmdale
Beyond Food Mart (25th and Avenue R)
November 20, 2023

trips compared to the original project, including 16 more trips during the AM peak hour and 24 more trips during the PM peak hour.

CONCLUSIONS

Based on the trip generation comparison analysis, the revised project site plan (October 6, 2023) updated the convenience store and carwash square footage and added 4 hydrogen fueling positions to the gas station. These site plan changes would have a negligible impact on the previously completed Level of Service analysis because they are forecast to generate fewer than 50 additional peak hour trips compared to the original project site plan (June 16, 2022). Therefore, the revised project site plan is not expected to result in any additional impacts compared to those identified in the *Beyond Food Mart (25th and Avenue R) Project Traffic Impact Analysis* (Ganddini Group, Inc. November 23, 2022).

The proposed revised project satisfies the City-established VMT screening criteria for local servicing retail development and may be presumed to result in a less than significant VMT impact.

It has been a pleasure to assist you with this project. Should you have any questions or comments, please contact Perrie Ilercil at (714) 795-3100 ext. 103 or perrie@ganddini.com.

Table 1
Project Trip Generation from November 2022 Traffic Impact Analysis

Trip Generation Rates									
Land Use	Source ¹	Land Use Variable ²	AM Peak Hour			PM Peak Hour			Daily Rate
			% In	% Out	Rate	% In	% Out	Rate	
Automated Car Wash	ITE 948 ³	CWT	50%	50%	34.44	50%	50%	77.50	861.11
Convenience Store Gas Station (5.5-10 ksf GFA)	ITE 945	VFP	50%	50%	31.60	50%	50%	26.90	345.75

Trips Generated									
Land Use	Source	Quantity	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Convenience Store Gas Station (5.5-10 ksf GFA)	ITE 945	16 VFP	253	253	506	215	215	430	5,532
<i>Pass-by Trips (76%AM, 75%PM)</i>	ITE 945		-192	-193	-385	-161	-162	-323	-708
Subtotal			61	60	121	54	53	107	4,824
Automated Car Wash	ITE 948	1 CWT	17	17	34	39	39	78	861
Total Gross Trips (Without Pass-by Trip Adjustments)			270	270	540	254	254	508	6,393
Total Pass-by Trips			-192	-193	-385	-161	-162	-323	-708
TOTAL NEW TRIPS GENERATED			78	77	155	93	92	185	5,685

Notes:

1. ITE = Institute of Transportation Engineers *Trip Generation Manual* (11th Edition, 2021); ### = Land Use Code.
All rates based on General Urban/Suburban setting.
2. CWT = Car Wash Tunnels; VFP = Vehicle Fuel Positions
3. In the absence of ITE trip rates for AM peak hour and daily, trip rates for these periods were determined based on the ratio relative to the PM peak hour in comparison to data from the San Diego Association of Governments (SANDAG) *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region* (April 2002).

Table 2
Revised Project Trip Generation

Trip Generation Rates									
Land Use	Source ¹	Land Use Variable ²	AM Peak Hour			PM Peak Hour			Daily Rate
			% In	% Out	Rate	% In	% Out	Rate	
Convenience Store Gas Station (5.5-10 ksf GFA)	ITE 945	VFP	50%	50%	31.60	50%	50%	26.90	345.75
Automated Car Wash	ITE 948 ³	CWT	50%	50%	34.44	50%	50%	77.50	861.11
Hydrogen Fuel Pumps at Gas Station	TG Data ⁴	VFP	50%	50%	4.00	48%	52%	6.00	77.40

Trips Generated										
Land Use	Source	Quantity		AM Peak Hour			PM Peak Hour			Daily
				In	Out	Total	In	Out	Total	
Convenience Store Gas Station (5.5-10 ksf GFA)	ITE 945	16	VFP	253	253	506	215	215	430	5,532
Pass-by Trips (76%AM, 75%PM, 37%Daily)	ITE 945 ⁵			-192	-193	-385	-161	-162	-323	-2,047
Subtotal				61	60	121	54	53	107	3,485
Automated Car Wash	ITE 948	1	CWT	17	17	34	39	39	78	861
Hydrogen Fuel Pumps at Gas Station	TG Data ⁶	4	VFP	8	8	16	12	12	24	310
Subtotal Project Trips (Gross)				278	278	556	266	266	532	6,703
Total Pass-by Trips				-192	-193	-385	-161	-162	-323	-2,047
TOTAL NEW TRIPS GENERATED				86	85	171	105	104	209	4,656

Notes:

1. ITE = Institute of Transportation Engineers *Trip Generation Manual* (11th Edition, 2021); ### = Land Use Code. All rates based on General Urban/Suburban setting.
2. VFP = Vehicle Fuel Positions; CWT = Car Wash Tunnels.
3. ITE rates with data from San Diego Association of Governments (SANDAG) *Vehicular Traffic Generation Rates* (April 2002). Where the daily or peak hour rate is not provided by ITE, the SANDAG percentage of peak hour to daily rate is used to calculate the missing data. Where the peak hour distribution is not provided by ITE, the SANDAG peak hour distribution is used.
4. Trip generation data obtained from *101 Bernal Road Hydrogen Fueling Project Initial Study*, (Rincon Consultants, Inc. July 2020).
5. Pass-by trips calculated in accordance with ITE recommended practice and rates from the *Trip Generation Manual* (11th Edition, 2021). Daily pass-by is calculated as the sum of the AM and PM pass-by trips.
6. In the absence of a daily rate for Hydrogen Fuel Pumps, the ratio of the daily rate to the PM rate for ITE 945 (Convenience Store and Gas Station) was used to determine the daily rate from the Hydrogen Fuel Pump PM rate.

Table 3
Project to Revised Project Trip Generation Comparison

Land Use	Trips Generated						Daily
	AM Peak Hour			PM Peak Hour			
	In	Out	Total	In	Out	Total	
Project TIA¹							
Total Gross Trips (Without Pass-by Trip Adjustments)	270	270	540	254	254	508	6,393
Total Pass-by Trips ²	-192	-193	-385	-161	-162	-323	-2,047
TOTAL NEW TRIPS GENERATED	78	77	155	93	92	185	4346
Revised Project³							
Subtotal Project Trips (Gross)	278	278	556	266	266	532	6,703
Total Pass-by Trips	-192	-193	-385	-161	-162	-323	-2,047
TOTAL NEW TRIPS GENERATED	86	85	171	105	104	209	4,656
Difference							
Subtotal Project Trips (Gross)	8	8	16	12	12	24	310
Total Pass-by Trips	0	0	0	0	0	0	0
TOTAL NEW TRIPS GENERATED	8	8	16	12	12	24	310

Notes:

1. See Table 1.
2. To more accurately forecast the pass-by trips which occur for a 24-hour day, the daily pass-by calculation changed from a sum of peak hours trips (only) to one-half of the average of the peak hour rates applied to the daily trips.
3. See Table 2.

ATTACHMENT A

**SITE PLAN
DATED 2022**

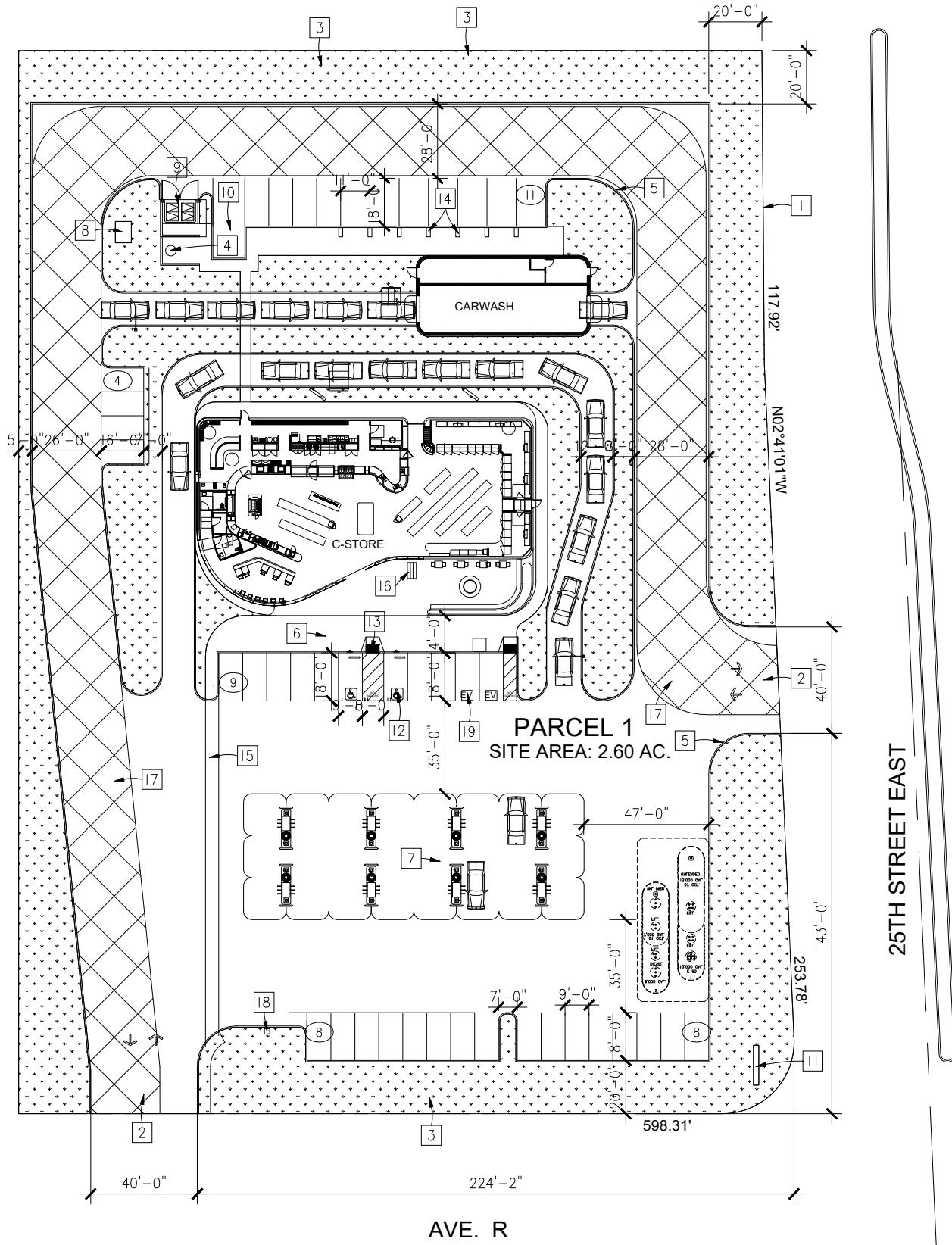
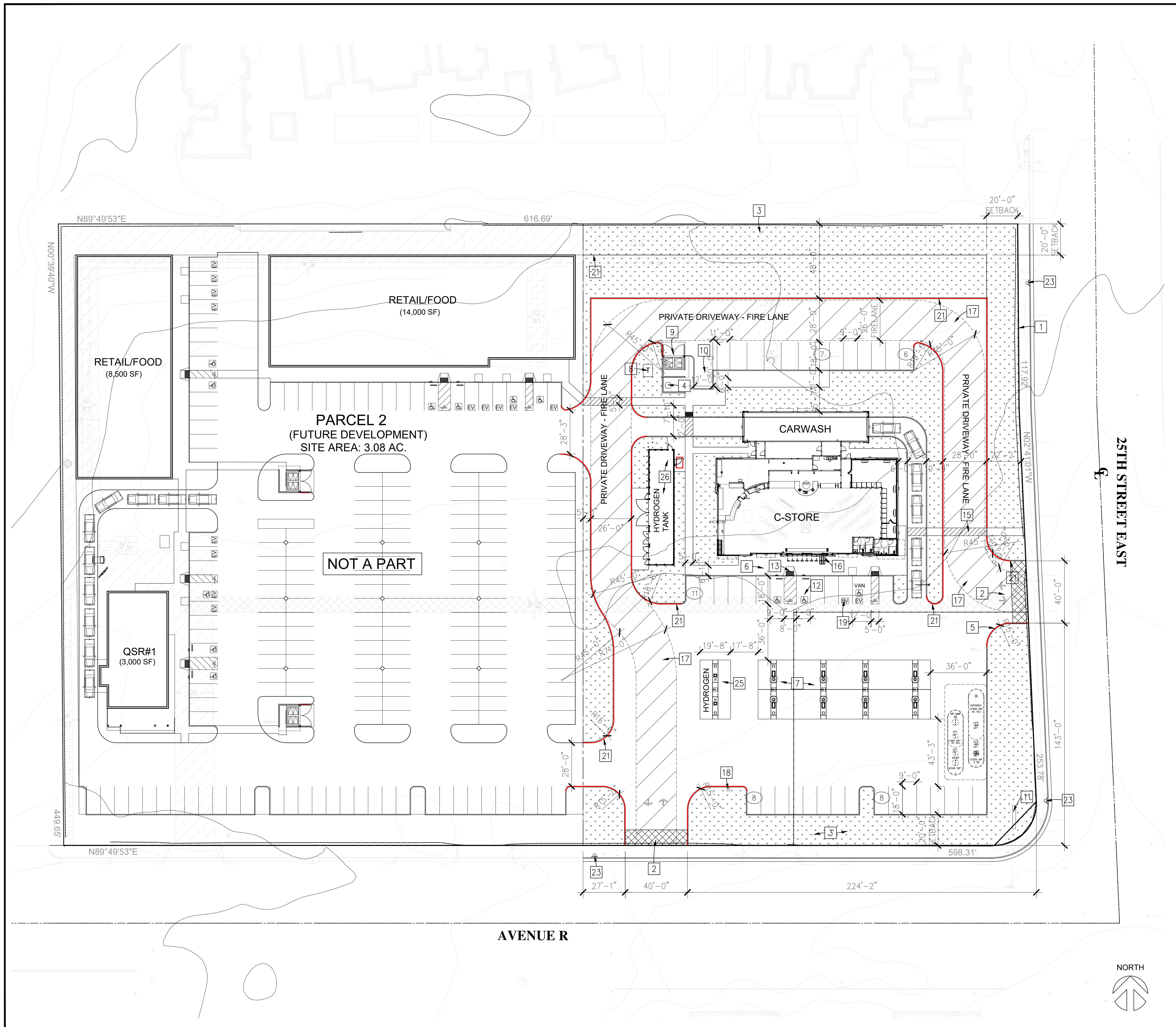


Figure 3
Site Plan

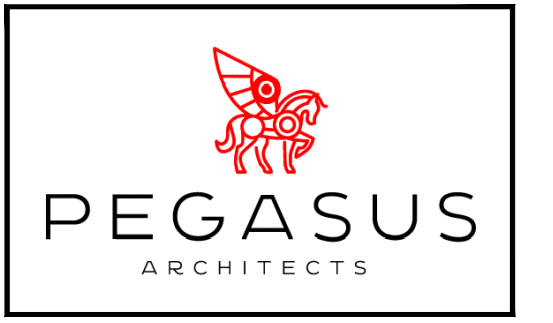
ATTACHMENT B

SITE PLAN
DATED 10/06/2023



Reference Notes

- 1 (E) PROPERTY LINES
- 2 (N) CURB AND GUTTER/DRIVEWAY (RIGHT IN & OUT)
- 3 (N) LANDSCAPE
- 4 (N) HEALY TANK
- 5 (N) CONCRETE CURB
- 6 (N) CONCRETE SIDEWALK
- 7 (N) CANOPY 47'-0"x128'-0" (UNDER SEPARATED PERMIT)
- 8 (N) TRANSFORMER PAD
- 9 (N) TRASH/RECYCLE ENCLOSURE
- 10 (N) LOADING/UNLOADING (12'-0" x 30'-0")
- 11 (N) CORNER MONUMENT, SIGN BY OTHERS, UNDER SEPARATE PERMIT.
- 12 (N) HCP PARKING
- 13 (N) HCP RAMP
- 14 NOT IN USED.
- 15 (N) 5'-0" WIDE HCP PATH OF TRAVEL PER CODE STD.
- 16 BIKE RACK PER CITY'S STANDARD.
- 17 (N) 26' WIDE FIRE LANE
FIRE APPARATUS ACCESS ROAD PROVIDE A MINIMUM UNOBSTRUCTED WIDTH OF 26 FEET, EXCLUSIVE OF SHOULDERS AND AN UNOBSTRUCTED VERTICAL CLEARANCE "CLEAR TO SKY". FIRE CODE 503.2.1
- 18 (N) AIR/WATER TOWER
- 19 EVCS PARKING PER CITY'S STD. PROVIDE MIN. 1" CONDUIT TERMINATING IN LISTED ENCLOSURE FOR FUTURE CHARGER.
- 20 (N) 8' HT. SPLITFACE CMU FENCE WALL
- 21 (N) NO-PARKING DESIGNATION, SEE A1.02.
- 22 (N) ON-SITE FIRE HYDRANT, SEE CIVIL PLANS.
- 23 (N) PUBLIC FIRE HYDRANT, SEE CIVIL PLANS.
- 24 PROPOSED BUS STOP SHELTER AND TRASH CAN PER ANTELOPE VALLEY TRANSIT AUTHORITY (AVTA), SEE CIVIL PLAN FOR DIMENSIONS.
- 25 (N) HYDROGEN CANOPY
- 26 (N) HYDROGEN EQUIPMENT



4300 EDISON AVE.,
CHINO, CA 91710
TEL: 909.465.4101
FAX: 909.606.6839

PROJECT: **NEW BEYOND MARKET & CARWASH DEVELOPMENT**
ADDRESS: NWC 25TH ST. EAST & AVE R., CITY OF PALMDALE, CA
CLIENT: PARADISE LAKE LLC 4300 EDISON AVE., CHINO CA 91710

SHEET TITLE:
SITE PLAN

KEY MAP SEAL/STAMP

JOB NO.	SITE # 1166
DRAWN BY:	TL/ZL
SUPERVISED BY:	TL
CHECKED BY:	TL
PLAN CHECK	_____
PERMIT SET	_____
BID SET	_____

REVISIONS

▲	2ND CLIP RESUBMITTAL	01/05/2022
▲		
▲		
▲		
▲		
▲		

SHEET NO:

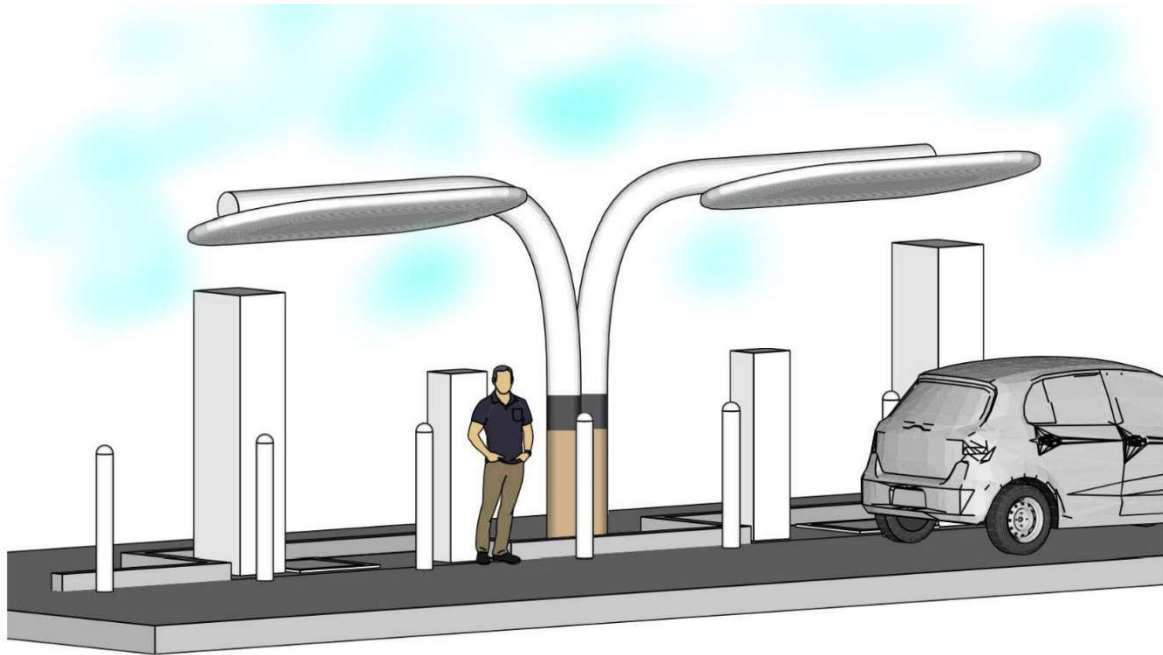
A1.01

OF SHEETS
S H E E T

ALL BEYOND FOOD MART DESIGN, DRAWINGS AND PATTERNS ARE COPYRIGHT AND TRADE DRESS OF BEYOND FOOD MART INC. AND BEYOND FRANCHISING INC.

ATTACHMENT C

**101 BERNAL ROAD HYDROGEN FUELING PROJECT INITIAL STUDY
(RINCON CONSULTANTS, INC., JULY 2020)**



101 Bernal Road Hydrogen Fueling Project

Initial Study

File No. PDA98-079-01

prepared by

City of San José

Department of Planning, Building and Code Enforcement

200 East Santa Clara Street, 3rd Floor

San José, California 95113

Contact: Shannon Hill, Planner

prepared with the assistance of

Rincon Consultants, Inc.

200 Washington Street, Suite 207

Santa Cruz, California 95060

July 2020



RINCON CONSULTANTS, INC.

Environmental Scientists | Planners | Engineers

rinconconsultants.com

APX-6

Appendix B

Trip Generation Study



HEXAGON TRANSPORTATION CONSULTANTS, INC.

February 24, 2020

Mr. Harsh Dev
Fiedler Group
299 N. Euclid Avenue, Suite 550
Pasadena, CA 91101

Re: *Trip Generation Study for the Proposed Hydrogen Fuel Station Located at 101 Bernal Road in San Jose, California*

Dear Mr. Dev:

Hexagon Transportation Consultants, Inc. has completed a trip generation analysis for the proposed hydrogen fuel station at 101 Bernal Road in San Jose, California. Hydrogen fuel is used by fuel cell vehicles. There are currently 7 models of fuel cell vehicles for sale in the country. The number of fuel cell vehicles is expected to increase in the future. The project proposes to install two hydrogen fuel pumps to the existing Shell gas station on site. There would be no reduction in the number of gasoline pumps. The existing Shell gas station currently does not have any hydrogen fuel pumps.

Project Trip Generation

Typically, the magnitude of traffic generated by a project can be estimated by applying to the size of the development the applicable trip generation rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual* for the proposed land uses. However, the ITE *Trip Generation Manual* does not have trip generation rates for hydrogen fuel pumps. Therefore, vehicle trips that would be generated by the addition of hydrogen fuel pumps were estimated based on driveway counts collected at an existing hydrogen fuel pump station on Winchester Boulevard in Campbell, California (see Appendix A). The Campbell location is comparable to the proposed Bernal Road location in that it is on a major street and is located in a predominantly residential area.

There are 2 existing hydrogen fuel pumps at the Valero gas station in Campbell. The peak hour volumes are summarized in Table 1 for the AM and PM peak hours. The project proposes to install 2 hydrogen fuel pumps at the Shell gas station. Therefore, the average existing peak hour volumes were used to estimate the trips generated by the project. The project is expected to generate 8 AM peak hour trips (4 inbound and 4 outbound) and 12 PM peak hour trips (6 inbound and 6 outbound) (see Table 2).

It is expected that as the number of hydrogen-powered vehicles increases, the number of gasoline-powered vehicles will decrease proportionately. Therefore, vehicle trips to gas stations could remain unchanged.



Table 1
Driveway Counts at Valero Gas Station (2855 S. Winchester Boulevard, Campbell, CA)

Peak Hour	2/11/2020		2/12/2020		2/13/2020		Average Peak Volume	
	In	Out	In	Out	In	Out	In	Out
AM	4	4	6	6	3	3	4	4
PM	7	7	6	6	4	4	6	6

Source: Driveway counts conducted at Valero Gas Station (2855 S. Winchester Blvd., Campbell, CA) on typical weekdays

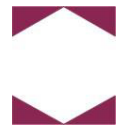
Table 2
Project Trip Generation Estimates

Land Use	Size	AM Peak Hour			PM Peak Hour		
		In	Out	Total Trips	In	Out	Total Trips
Proposed Shell Station¹							
Hydrogen Fuel Pumps	2 pumps	4	4	8	6	6	12

Notes:
 1. Trip for the proposed addition of hydrogen fuel pumps at the existing Shell Gas Station were estimated using driveway counts at the existing hydrogen fuel pumps at the Valero Gas Station in Campbell in February 2020.

Increases in Fuel Cell Vehicles

The number of fuel cell vehicles is expected to increase in the future. The *Road Map to a US Hydrogen Economy* report, published for the California Fuel Cell Partnership, has a road map for the projected increase in fuel cell vehicles and stations. Table 3 summarizes the number of fuel cell vehicles and stations today in the country and the predicted numbers for 2022, 2025, and 2030. While the number of fuel cell vehicles is expected to increase, it is unclear whether that increase would lead to an increase in trips to fueling stations. It is expected that as the number of hydrogen-powered vehicles increases, the number of gasoline-powered vehicles will decrease proportionately. Therefore, vehicle trips to gas stations could remain unchanged.



**Table 3
 Projected Country Wide Increase in Fuel Cell Vehicles and Stations**

	Today ¹	2022	2025	2030
Fuel Cell Vehicles	8,098	50,000	200,000	5,300,000
Fueling Stations	63	110	580	5,600
Vehicles per Station	129	455	345	946

Source: Road Map to a US Hydrogen Economy, Executive Summary
 (<http://www.fchea.org/us-hydrogen-study>)
 1. The national number of fuel cell vehicles as reported on the California Fuel Cell Partnership website: https://catcp.org/by_the_numbers

We appreciate the opportunity to submit this trip generation analysis. If you have any questions, please do not hesitate to call.

Sincerely,

HEXAGON TRANSPORTATION CONSULTANTS, INC.

Gary K. Black
 President

Jocelyn Lee
 Engineer

Appendix A
Driveway Counts at Valero Gas Station

20GB04- Hydrogen Gas Pump(Campbell)

Date: 2/11, 2/12, & 2/13 2020
 Counter: Jana
 Intersection Name: 2855 Winchester Blvd.
 Weather: Fair

AUTO CENSUS
Traffic Monitoring and Analysis

5973 Larkstone Loop
 San Jose, Ca. 95123
 Phone 408-533-3398

Tue 2/11

AM	IN	OUT
7:00	0	0
7:15	1	1
7:30	2	2
7:45	4	4
8:00	4	4
8:15	4	4
8:30	4	4
8:45	6	6
9:00	8	8

Wed 2/12

AM	IN	OUT
7:00	0	0
7:15	2	2
7:30	4	4
7:45	4	4
8:00	5	5
8:15	7	7
8:30	9	9
8:45	10	10
9:00	10	10

Thur 2/13

AM	IN	OUT
7:00	0	0
7:15	1	1
7:30	2	2
7:45	2	2
8:00	2	2
8:15	2	2
8:30	4	4
8:45	5	5
9:00	5	5

Peak Hour

7:00 - 8:00	4	4
7:15 - 8:15	3	3
7:30 - 8:30	2	2
7:45 - 8:45	2	2
8:00 - 9:00	4	4

7:00 - 8:00	5	5
7:15 - 8:15	5	5
7:30 - 8:30	5	5
7:45 - 8:45	6	6
8:00 - 9:00	5	5

7:00 - 8:00	2	2
7:15 - 8:15	1	1
7:30 - 8:30	2	2
7:45 - 8:45	3	3
8:00 - 9:00	3	3

PM	IN	OUT
4:00	0	0
4:15	6	6
4:30	7	7
4:45	7	7
5:00	7	7
5:15	7	7
5:30	8	8
5:45	8	8
6:00	8	8

PM	IN	OUT
4:00	0	0
4:15	1	1
4:30	2	2
4:45	2	2
5:00	3	3
5:15	3	3
5:30	6	6
5:45	7	7
6:00	9	9

PM	IN	OUT
4:00	0	0
4:15	2	2
4:30	3	3
4:45	3	3
5:00	4	4
5:15	4	4
5:30	4	4
5:45	6	6
6:00	7	7

Peak Hour

4:00 - 5:00	7	7
4:15 - 5:15	1	1
4:30 - 5:30	1	1
4:45 - 5:45	1	1
5:00 - 6:00	1	1

4:00 - 5:00	3	3
4:15 - 5:15	2	2
4:30 - 5:30	4	4
4:45 - 5:45	5	5
5:00 - 6:00	6	6

4:00 - 5:00	4	4
4:15 - 5:15	2	2
4:30 - 5:30	1	1
4:45 - 5:45	3	3
5:00 - 6:00	3	3

Highlighted cells represent peak volumes