

**APPENDIX E:**  
**PROJECT TRIP GENERATION ANALYSIS**



## TECHNICAL MEMORANDUM

**To:** Lisa Flores, City of Arcadia  
Vanessa Quiroz, City of Arcadia

**From:** Carla Dietrich, Michael Baker International

**CC:** John Bellas, Michael Baker International  
Madonna Marcelo, Michael Baker International

**Date:** December 17, 2019

**Subject:** Artis Senior Assisted Living Facility Trip Generation Analysis

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### Project Description

The Project proposes the construction of a 44,192 square-foot senior assisted living facility with 80 rooms to be located at 1150 W. Colorado Boulevard in Arcadia, California. The facility would be dedicated to people afflicted with Alzheimer’s disease and related memory disorders. The Project is proposed at the location of the existing Coco’s Bakery Restaurant near the intersection is W. Colorado Boulevard and Michillinda Avenue. **Exhibit A-1** (attached) shows the proposed site plan.

### Trip Generation

#### *Applicable Trip Credits*

Trip credits may be applied to account for certain conditions including current operational uses located at the proposed site. **Table 1** details the type of trip credits which were considered during this study.

**Table 1: Trip Credit Summary**

Item	Project Condition	Credit Applied?
<b>Existing Active Land Use</b>	The site is currently occupied by an operational Coco’s Bakery Restaurant which will be demolished to accommodate the proposed Project.	Yes
<b>Internal Trip Reduction</b>	Singular land use proposed which is not consistent with internal trip reductions.	No
<b>Pass-by Trip Reduction</b>	Land use not consistent with pass-by trips.	No

Traffic counts of the ingress/egress traffic at the two (2) existing Coco’s Bakery Restaurant site driveways were collected on Tuesday, December 3, 2019 for a 24-hour period. The traffic count data is included as an attachment. **Table 2** details the daily and hourly ingress/egress data for the entire 24-hour period and summarizes the ingress/egress data for the peak hours.

**Table 2: Existing Coco's Bakery Restaurant Ingress/Egress 24-Hour Volume Summary**

<b>Coco's Bakery Restaurant - Entering/Existing Hourly Traffic Volumes</b>											
<b>Start Time</b>	<b>W. Colorado Blvd Driveway</b>						<b>Michillinda Ave Driveway</b>		<b>Total Entering Traffic</b>	<b>Total Exiting Traffic</b>	
	<b>Enter</b>			<b>Exit</b>			<b>Enter</b>	<b>Exit</b>			
	<b>Right Turn</b>	<b>Left Turn</b>	<b>Total</b>	<b>Right Turn</b>	<b>Left Turn</b>	<b>Total</b>	<b>Right Turn</b>	<b>Right Turn</b>			
12:00 AM	0	0	0	0	0	0	0	1	0	1	
1:00 AM	0	0	0	0	0	0	0	0	0	0	
2:00 AM	0	0	0	0	0	0	0	0	0	0	
3:00 AM	0	0	0	0	0	0	0	0	0	0	
4:00 AM	0	0	0	0	0	0	0	0	0	0	
5:00 AM	2	1	3	0	1	1	3	0	6	1	
6:00 AM	3	2	5	0	2	2	2	1	7	3	
7:00 AM	3	0	3	2	0	2	7	4	10	6	
8:00 AM	11	4	15	3	1	4	7	5	22	9	
9:00 AM	13	7	20	10	5	15	10	5	30	20	
10:00 AM	23	6	29	14	11	25	19	9	48	34	
11:00 AM	15	0	15	9	1	10	9	10	24	20	
12:00 PM	15	2	17	7	8	15	9	14	26	29	
1:00 PM	12	2	14	7	9	16	3	14	17	30	
2:00 PM	10	3	13	9	4	13	5	9	18	22	
3:00 PM	11	1	12	5	3	8	3	4	15	12	
4:00 PM	5	0	5	2	5	7	6	4	11	11	
5:00 PM	10	3	13	7	2	9	4	8	17	17	
6:00 PM	11	2	13	6	6	12	6	6	19	18	
7:00 PM	8	1	9	8	7	15	3	9	12	24	
8:00 PM	5	1	6	3	3	6	5	8	11	14	
9:00 PM	1	2	3	3	2	5	1	1	4	6	
10:00 PM	0	0	0	1	2	3	0	4	0	7	
11:00 PM	0	0	0	0	1	1	0	0	0	1	
<b>Total</b>	<b>158</b>	<b>37</b>	<b>195</b>	<b>96</b>	<b>73</b>	<b>169</b>	<b>102</b>	<b>116</b>	<b>297</b>	<b>285</b>	
Adjacent Street	AM Peak Hour	8	0	8	5	1	6	9	3	17	9
	PM Peak Hour	10	3	13	7	2	9	6	4	19	13
Coco's	AM Peak Hour	23	6	29	14	11	25	19	9	48	34
	PM Peak Hour	15	2	17	7	8	15	9	14	26	29

### Project Trips

Trip generation analysis was conducted for the weekday daily, AM Peak Hour, and PM Peak Hour time periods. The *ITE Trip Generation Manual*, 10<sup>th</sup> Edition published in 2017, was the source of the project trip generation rates. Given the nature of the proposed use, the proposed Project is anticipated to generate trips due to employees, visitors, and deliveries. **Table 3** summarizes the trip generation rates for an assisted living facility.

**Table 3: Trip Generation Rates**

Land Use	ITE Code	Daily Trips		AM Peak Hour Trips		PM Peak Hour Trips	
		Rate	In : Out	Rate	In : Out	Rate	In : Out
Assisted Living	254	2.60 / bed	50% : 50%	0.19 / bed	63% : 37%	0.26 / bed	38% : 62%
<i>Notes:</i> Source: ITE Trip Generation Manual, 10 <sup>th</sup> Edition							

The project trips estimated for the proposed assisted living facility are shown in **Table 4** in addition to the trip credit which is applicable given that the Coco’s Restaurant is currently in operation. As shown, the estimated new trips based on the proposed assisted living facility is 374 fewer daily trips, 11 fewer AM peak hour trips and 11 fewer PM peak hour trip compared to the existing Coco’s Restaurant.

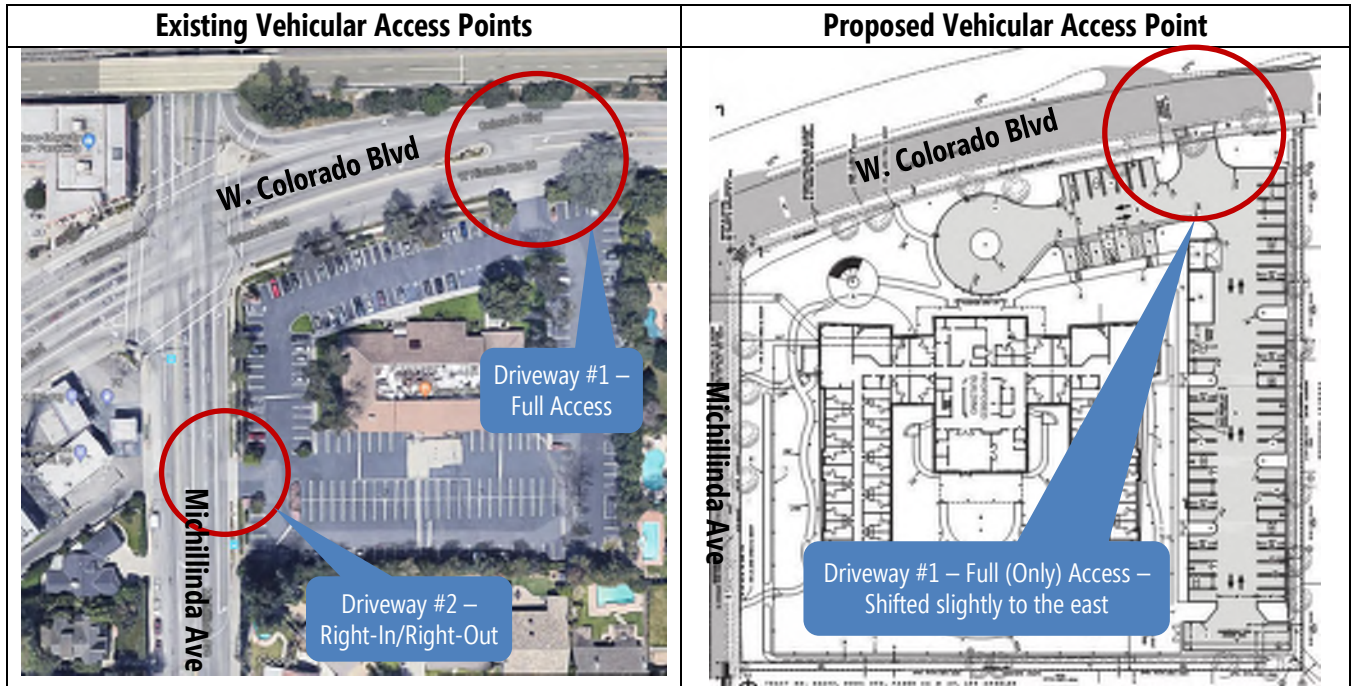
**Table 4: Estimated Number of Project Trips**

Land Use	Source	ITE Code	Intensity		Daily Trips			AM Peak Hour Trips			PM Peak Hour Trips		
					Total	In	Out	Total	In	Out	Total	In	Out
Assisted Living (Proposed)	ITE Trip Generation Manual, 10th Edition	254	80	beds	208	104	104	15	9	6	21	8	13
Coco's Bakery Restaurant (Existing)	Traffic Count Data	--	Approximate		582	297	285	26	17	9	32	19	13
			13,000	sf									
<b><i>Estimated New Trips (Proposed minus Existing)</i></b>					-374	-193	-181	-11	-8	-3	-11	-11	0
<i>Notes:</i> sf = square feet													

### Trip Distribution/Assignment

The existing restaurant has two access points (see **Exhibit 1**). One driveway provides full access along W. Colorado Boulevard. The second driveway provides right-in/right-out access along Michillinda Avenue. The Project proposes a single, full access driveway along W. Colorado Boulevard, shifted slightly east of the existing access driveway.

**Exhibit 1: Site Access**



The existing restaurant trips are distributed between the two site driveways, while the proposed Project would concentrate all trips at the W. Colorado Boulevard driveway. It is anticipated that the area trip distribution would be similar between the existing and proposed land uses given the location of the surrounding roadways, with consideration of the driveway consolidation. **Exhibit 2** shows the trip distribution percentages based on the Coco’s Bakery Restaurant count data at the two existing site driveways and **Exhibit 3** graphically shows the anticipated distribution patterns for the proposed Assisted Living facility with a single site driveway.

**Exhibit 2: Coco’s Restaurant Trip Distribution**



**Exhibit 3: Projected Trip Distribution**

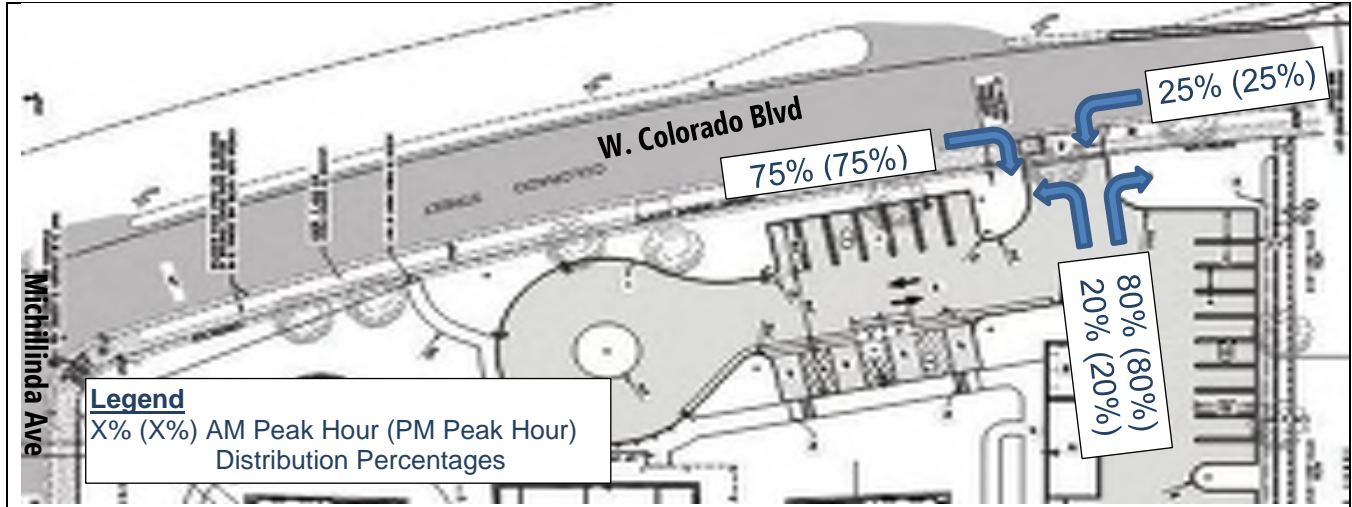
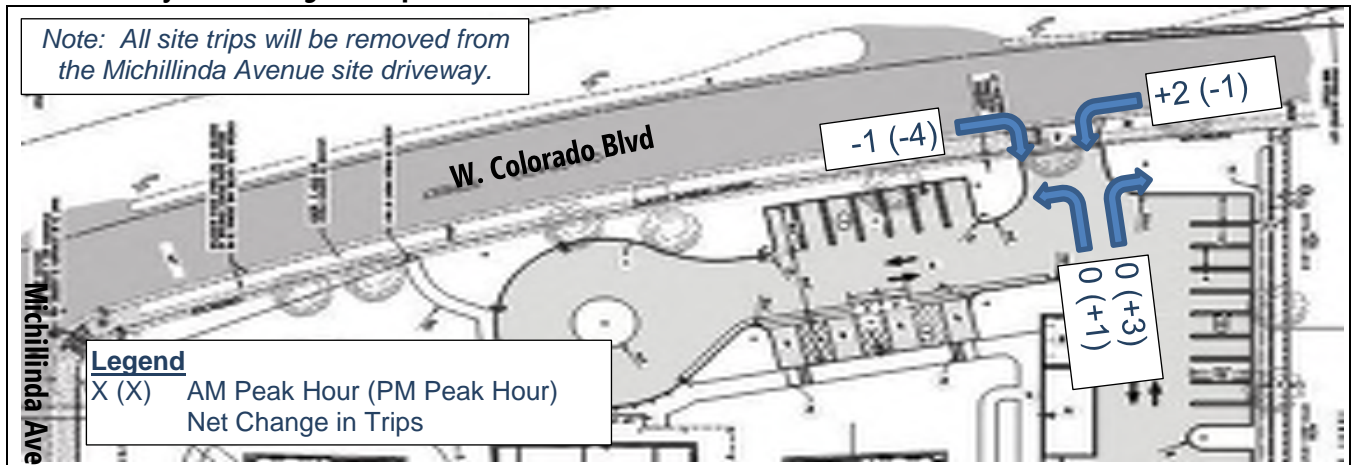


Exhibit 4 shows the anticipated change in trips at the Assisted Living site driveway as a result of demolishing the existing Coco’s Bakery Restaurant and constructing the proposed Assisted Living facility.

**Exhibit 4: Projected Change in Trips**



**Findings**

Given the overall estimated reduction in trips based upon the trip generation analysis, it is anticipated that the change in site trips entering and exiting the site at the W. Colorado Boulevard driveway will range from -4 to +3 trips per movement during the AM and PM Peak Hours. In terms of total site trips entering the intersection, this equates to one additional trip during the AM Peak Hour and a reduction of one trip during the PM Peak Hour. It is anticipated that these minimal changes in site trips would have a negligible impact on the intersection operations at the W. Colorado Avenue site driveway. Additionally, all site traffic would be removed from the existing Michillinda Avenue site driveway with the development of the Assisted Living facility.





**Driveway INS/OUTS Study**

Location: Coco's Bakery Restaurant Dwy & W Colorado Blvd  
 City: Arcadia

Date: 12/3/2019  
 Day: Tuesday

TIME	15 Minute Volumes				TOTALS
	Ingress		Egress		
	ER	WL	NL	NR	
12:00 AM	0	0	0	0	0
12:15 AM	0	0	0	0	0
12:30 AM	0	0	0	0	0
12:45 AM	0	0	0	0	0
1:00 AM	0	0	0	0	0
1:15 AM	0	0	0	0	0
1:30 AM	0	0	0	0	0
1:45 AM	0	0	0	0	0
2:00 AM	0	0	0	0	0
2:15 AM	0	0	0	0	0
2:30 AM	0	0	0	0	0
2:45 AM	0	0	0	0	0
3:00 AM	0	0	0	0	0
3:15 AM	0	0	0	0	0
3:30 AM	0	0	0	0	0
3:45 AM	0	0	0	0	0
4:00 AM	0	0	0	0	0
4:15 AM	0	0	0	0	0
4:30 AM	0	0	0	0	0
4:45 AM	0	0	0	0	0
5:00 AM	0	1	0	0	1
5:15 AM	0	0	0	0	0
5:30 AM	0	0	0	0	0
5:45 AM	2	0	1	0	3
6:00 AM	0	0	1	0	1
6:15 AM	0	1	0	0	1
6:30 AM	2	0	1	0	3
6:45 AM	1	1	0	0	2
7:00 AM	1	0	0	0	1
7:15 AM	1	0	0	0	1
7:30 AM	1	0	0	2	3
7:45 AM	0	0	0	0	0
8:00 AM	3	0	0	0	3
8:15 AM	4	0	1	3	8
8:30 AM	1	3	0	0	4
8:45 AM	3	1	0	0	4
9:00 AM	5	0	1	2	8
9:15 AM	2	3	2	2	9
9:30 AM	4	1	0	5	10
9:45 AM	2	3	2	1	8
10:00 AM	3	1	1	2	7
10:15 AM	7	3	4	2	16
10:30 AM	7	2	5	8	22
10:45 AM	6	0	1	2	9
11:00 AM	4	0	0	3	7
11:15 AM	5	0	0	3	8
11:30 AM	3	0	1	3	7
11:45 AM	3	0	0	0	3
12:00 PM	4	0	1	1	6
12:15 PM	8	2	0	4	14
12:30 PM	1	0	4	2	7
12:45 PM	2	0	3	0	5
1:00 PM	4	0	2	1	7
1:15 PM	1	0	4	0	5
1:30 PM	0	2	0	5	7
1:45 PM	7	0	3	1	11
2:00 PM	2	0	0	2	4
2:15 PM	3	1	0	0	4
2:30 PM	3	2	2	5	12
2:45 PM	2	0	2	2	6
3:00 PM	2	1	1	2	6
3:15 PM	2	0	0	1	3
3:30 PM	3	0	1	1	5
3:45 PM	4	0	1	1	6
4:00 PM	1	0	0	0	1
4:15 PM	0	0	1	0	1
4:30 PM	1	0	4	0	5
4:45 PM	3	0	0	2	5
5:00 PM	2	1	0	1	4
5:15 PM	4	1	0	1	6
5:30 PM	1	0	1	1	3
5:45 PM	3	1	1	4	9
6:00 PM	3	0	1	1	5
6:15 PM	0	1	3	3	7
6:30 PM	5	0	1	0	6
6:45 PM	3	1	1	2	7
7:00 PM	2	0	4	4	10
7:15 PM	2	1	2	2	7
7:30 PM	2	0	0	2	4
7:45 PM	2	0	1	0	3
8:00 PM	2	1	0	2	5
8:15 PM	1	0	1	0	2
8:30 PM	2	0	1	1	4
8:45 PM	0	0	1	0	1
9:00 PM	0	0	1	1	2
9:15 PM	0	2	1	1	4
9:30 PM	0	0	0	0	0
9:45 PM	1	0	0	1	2
10:00 PM	0	0	0	0	0
10:15 PM	0	0	0	0	0
10:30 PM	0	0	2	1	3
10:45 PM	0	0	0	0	0
11:00 PM	0	0	1	0	1
11:15 PM	0	0	0	0	0
11:30 PM	0	0	0	0	0
11:45 PM	0	0	0	0	0
<b>Grand Totals</b>	<b>158</b>	<b>37</b>	<b>73</b>	<b>96</b>	<b>364</b>

TIME	Hourly Volumes				TOTALS
	Ingress		Egress		
	ER	WL	NL	NR	
12:00 AM	0	0	0	0	0
1:00 AM	0	0	0	0	0
2:00 AM	0	0	0	0	0
3:00 AM	0	0	0	0	0
4:00 AM	0	0	0	0	0
5:00 AM	2	1	1	0	4
6:00 AM	3	2	2	0	7
7:00 AM	3	0	0	2	5
8:00 AM	11	4	1	3	19
9:00 AM	13	7	5	10	35
10:00 AM	23	6	11	14	54
11:00 AM	15	0	1	9	25
12:00 PM	15	2	8	7	32
1:00 PM	12	2	9	7	30
2:00 PM	10	3	4	9	26
3:00 PM	11	1	3	5	20
4:00 PM	5	0	5	2	12
5:00 PM	10	3	2	7	22
6:00 PM	11	2	6	6	25
7:00 PM	8	1	7	8	24
8:00 PM	5	1	3	3	12
9:00 PM	1	2	2	3	8
10:00 PM	0	0	2	1	3
11:00 PM	0	0	1	0	1
<b>Grand Totals</b>	<b>158</b>	<b>37</b>	<b>73</b>	<b>96</b>	<b>364</b>

**Driveway INS/OUTS Study**

Location: Michillinda Ave & Coco's Bakery Restaurant Dwy  
City: Arcadia

Date: 12/3/2019  
Day: Tuesday

TIME	15 Minute Volumes		TOTALS
	Ingress	Egress	
	NR	WR	
12:00 AM	0	0	0
12:15 AM	0	0	0
12:30 AM	0	1	1
12:45 AM	0	0	0
1:00 AM	0	0	0
1:15 AM	0	0	0
1:30 AM	0	0	0
1:45 AM	0	0	0
2:00 AM	0	0	0
2:15 AM	0	0	0
2:30 AM	0	0	0
2:45 AM	0	0	0
3:00 AM	0	0	0
3:15 AM	0	0	0
3:30 AM	0	0	0
3:45 AM	0	0	0
4:00 AM	0	0	0
4:15 AM	0	0	0
4:30 AM	0	0	0
4:45 AM	0	0	0
5:00 AM	0	0	0
5:15 AM	0	0	0
5:30 AM	0	0	0
5:45 AM	3	0	3
6:00 AM	0	0	0
6:15 AM	0	0	0
6:30 AM	2	0	2
6:45 AM	0	1	1
7:00 AM	2	1	3
7:15 AM	0	1	1
7:30 AM	1	2	3
7:45 AM	4	0	4
8:00 AM	2	0	2
8:15 AM	2	1	3
8:30 AM	2	3	5
8:45 AM	1	1	2
9:00 AM	2	1	3
9:15 AM	2	1	3
9:30 AM	3	2	5
9:45 AM	3	1	4
10:00 AM	4	2	6
10:15 AM	4	2	6
10:30 AM	5	4	9
10:45 AM	6	1	7
11:00 AM	0	2	2
11:15 AM	2	3	5
11:30 AM	4	4	8
11:45 AM	3	1	4
12:00 PM	4	2	6
12:15 PM	0	3	3
12:30 PM	1	5	6
12:45 PM	4	4	8
1:00 PM	0	5	5
1:15 PM	1	3	4
1:30 PM	0	4	4
1:45 PM	2	2	4
2:00 PM	1	4	5
2:15 PM	0	3	3
2:30 PM	1	2	3
2:45 PM	3	0	3
3:00 PM	2	2	4
3:15 PM	0	1	1
3:30 PM	1	1	2
3:45 PM	0	0	0
4:00 PM	1	1	2
4:15 PM	1	1	2
4:30 PM	2	1	3
4:45 PM	2	1	3
5:00 PM	0	2	2
5:15 PM	2	5	7
5:30 PM	0	1	1
5:45 PM	2	0	2
6:00 PM	2	1	3
6:15 PM	3	2	5
6:30 PM	0	2	2
6:45 PM	1	1	2
7:00 PM	1	7	8
7:15 PM	0	1	1
7:30 PM	1	1	2
7:45 PM	1	0	1
8:00 PM	2	2	4
8:15 PM	2	4	6
8:30 PM	1	0	1
8:45 PM	0	2	2
9:00 PM	1	0	1
9:15 PM	0	1	1
9:30 PM	0	0	0
9:45 PM	0	0	0
10:00 PM	0	0	0
10:15 PM	0	1	1
10:30 PM	0	3	3
10:45 PM	0	0	0
11:00 PM	0	0	0
11:15 PM	0	0	0
11:30 PM	0	0	0
11:45 PM	0	0	0
<b>Grand Totals</b>	<b>102</b>	<b>116</b>	<b>218</b>

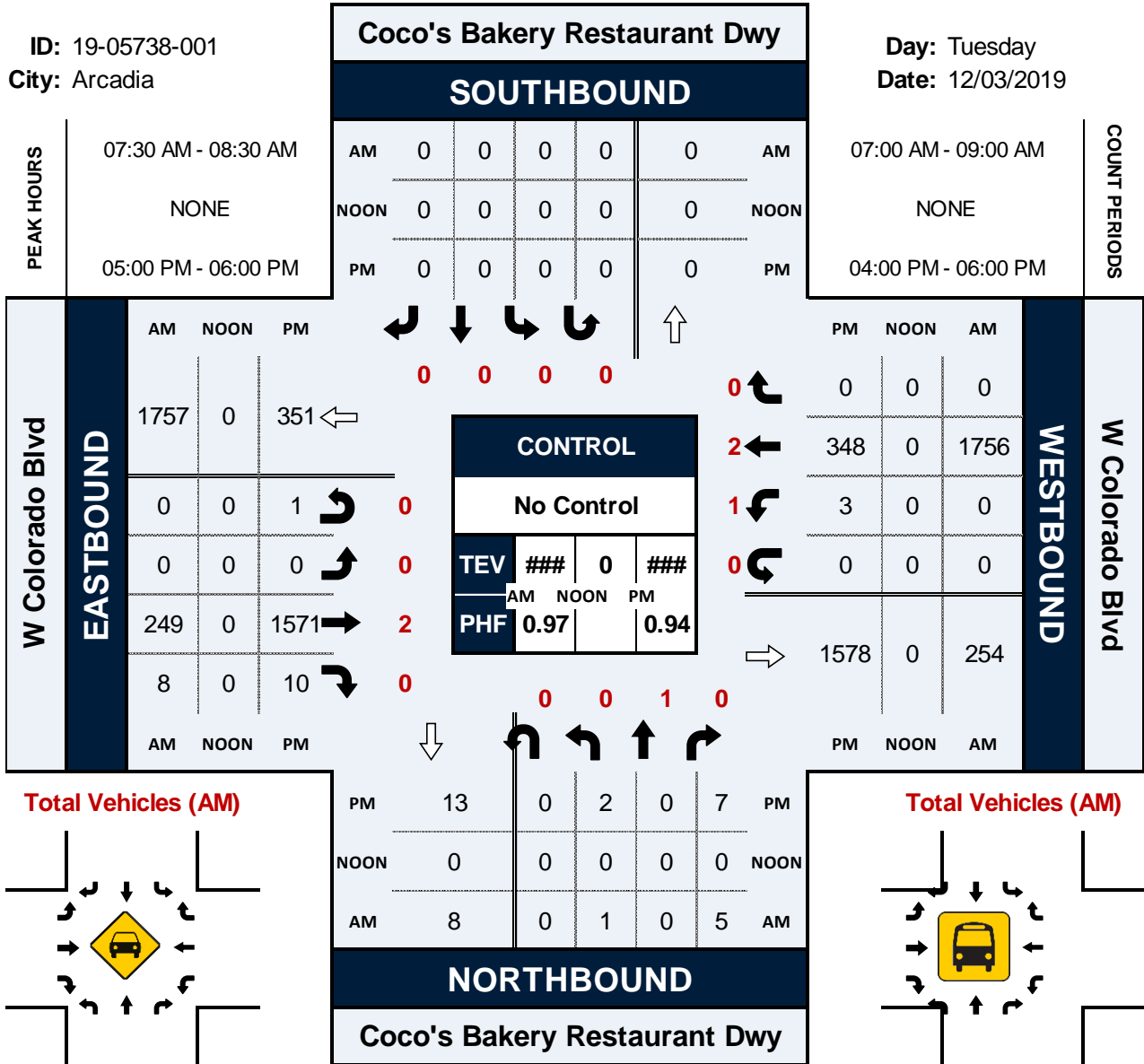
TIME	Hourly Volumes		TOTALS
	Ingress	Egress	
	NR	WR	
12:00 AM	0	1	1
1:00 AM	0	0	0
2:00 AM	0	0	0
3:00 AM	0	0	0
4:00 AM	0	0	0
5:00 AM	3	0	3
6:00 AM	2	1	3
7:00 AM	7	4	11
8:00 AM	7	5	12
9:00 AM	10	5	15
10:00 AM	19	9	28
11:00 AM	9	10	19
12:00 PM	9	14	23
1:00 PM	3	14	17
2:00 PM	5	9	14
3:00 PM	3	4	7
4:00 PM	6	4	10
5:00 PM	4	8	12
6:00 PM	6	6	12
7:00 PM	3	9	12
8:00 PM	5	8	13
9:00 PM	1	1	2
10:00 PM	0	4	4
11:00 PM	0	0	0
<b>Grand Totals</b>	<b>102</b>	<b>116</b>	<b>218</b>

# Coco's Bakery Restaurant Dwy & W Colorado Blvd

## Peak Hour Turning Movement Count

ID: 19-05738-001  
City: Arcadia

Day: Tuesday  
Date: 12/03/2019



Location: Coco's Bakery Restaurant Dwy & W Colorado Blvd  
 City: Arcadia  
 Control: No Control

Project ID: 19-05738-001  
 Date: 12/3/2019

**Total**

NS/EW Streets:	Coco's Bakery Restaurant Dwy				Coco's Bakery Restaurant Dwy				W Colorado Blvd				W Colorado Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	0	0	0	0	0	0	0	0	0	26	1	0	0	478	0	0	505
7:15 AM	0	0	0	0	0	0	0	0	0	42	1	0	0	434	0	0	477
7:30 AM	0	0	2	0	0	0	0	0	0	69	1	0	0	424	0	0	496
7:45 AM	0	0	0	0	0	0	0	0	0	62	0	0	0	449	0	0	511
8:00 AM	0	0	0	0	0	0	0	0	0	59	3	0	0	429	0	0	491
8:15 AM	1	0	3	0	0	0	0	0	0	59	4	0	0	454	0	0	521
8:30 AM	0	0	0	0	0	0	0	0	0	58	1	0	3	429	0	0	491
8:45 AM	0	0	0	0	0	0	0	0	0	55	3	0	1	406	0	0	465
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	1	0	5	0	0	0	0	0	0	430	14	0	4	3503	0	0	3957
	16.67%	0.00%	83.33%	0.00%					0.00%	96.85%	3.15%	0.00%	0.11%	99.89%	0.00%	0.00%	
<b>PEAK HR :</b>	<b>07:30 AM - 08:30 AM</b>																TOTAL
<b>PEAK HR VOL :</b>	1	0	5	0	0	0	0	0	0	249	8	0	0	1756	0	0	2019
<b>PEAK HR FACTOR :</b>	0.250	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.902	0.500	0.000	0.000	0.967	0.000	0.000	0.969
	0.375								0.918				0.967				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	0	0	0	0	0	0	0	0	0	284	1	1	0	100	0	0	386
4:15 PM	1	0	0	0	0	0	0	0	0	342	0	0	0	124	0	1	468
4:30 PM	4	0	0	0	0	0	0	0	0	376	1	0	0	83	0	0	464
4:45 PM	0	0	2	0	0	0	0	0	0	377	3	2	0	100	0	0	484
5:00 PM	0	0	1	0	0	0	0	0	0	339	2	0	1	88	0	0	431
5:15 PM	0	0	1	0	0	0	0	0	0	388	4	1	1	94	0	0	489
5:30 PM	1	0	1	0	0	0	0	0	0	426	1	0	0	86	0	0	515
5:45 PM	1	0	4	0	0	0	0	0	0	418	3	0	1	80	0	0	507
<b>TOTAL VOLUMES :</b>	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
<b>APPROACH %'s :</b>	7	0	9	0	0	0	0	0	0	2950	15	4	3	755	0	1	3744
	43.75%	0.00%	56.25%	0.00%					0.00%	99.36%	0.51%	0.13%	0.40%	99.47%	0.00%	0.13%	
<b>PEAK HR :</b>	<b>05:00 PM - 06:00 PM</b>																TOTAL
<b>PEAK HR VOL :</b>	2	0	7	0	0	0	0	0	0	1571	10	1	3	348	0	0	1942
<b>PEAK HR FACTOR :</b>	0.500	0.000	0.438	0.000	0.000	0.000	0.000	0.000	0.000	0.922	0.625	0.250	0.750	0.926	0.000	0.000	0.943
	0.450								0.926				0.924				



