Michael Baker
INTERNATIONAL

LOCAL MOBILITY ANALYSIS
Palm & Hollister Development
PTS# 698277

City of San Diego

Prepared for:
Ambient Communities
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1 EXECUTIVE SUMMARY

This Local Mobility Analysis (LMA) analyzes forecast traffic conditions associated with the proposed Palm and Hollister Development (Project) and evaluates its effects on mobility, access, circulation and related safety elements in the proximate area of the project. The Project is located on a 5.92-acre site in the Otay Mesa-Nestor Community Plan area, situated north of the Palm Avenue Trolley Station, south of the Otay Valley Regional Park, and east of Hollister Street. The Project plans to construct 198 multi-family residential units including eight affordable housing units on a lot north of the Palm Avenue Trolley Station in the City of San Diego. Construction of the Project would consist of a single phase and scheduled to be fully constructed by Year 2024.

Vehicular access to the project would be from the south along the western portion of the project site via an existing signalized driveway off Palm Avenue. There is a proposed access easement through property owned by the Metropolitan Transit System (MTS). Pedestrian access to the Palm Avenue Trolley Station and Palm Avenue would be provided within the proposed access easement and also directly to the trolley platform at the southwestern corner of the site.

The Project is expected to generate approximately 1,070 new daily trips, which includes approximately 82 AM (17 inbound and 65 outbound) peak hour trips and 92 PM (64 inbound and 28 outbound) peak hour trips. The project would require an amendment to the Otay Mesa-Nestor Community Plan to change the existing land use designation from Open Space to Medium-High Density (30 - 44 du/nra) and a Rezone to change the existing zone from AR-1-2, RM-1-1, and RS-1-5 to RM-2-6. Additionally, the project proposes a Vesting Tentative Map, Planned Development Permit to allow deviations from the RM-2-6 zone regulations, and Site Development Permit.

1.1 LOCAL MOBILITY ANALYSIS (LMA) SUMMARY

The Local Mobility Analysis (LMA) evaluates the effects of a development project on mobility, access, circulation and related safety elements near the Project site per the City's Transportation Study Manual (September 2020). Below is a brief summary of analysis results. **Table ES-1** provides an overall summary of the delays and levels of service (LOS) for all study conditions evaluated in this report.

Existing Conditions:

The results of the Existing conditions analysis show that all four signalized study intersections currently operate at LOS D or better. The westbound left-turn at Palm Avenue / Hollister Street is currently operating at LOS E during both the AM and PM peak hour. Synchro's Sim-Traffic software was utilized to evaluate these two closely spaced intersections due to the rail crossing several times during the AM and PM peak hours.

TABLE ES-1: STUDY INTERSECTION LEVEL OF SERVICE SUMMARY

ID	Study Intersection	Approach	Movement	EXISTING (AM Peak Hour)		EXISTING (PM Peak Hour)		OPENING YEAR 2024 W/O PROJECT (AM Peak Hour)		OPENING YEAR 2024 W/O PROJECT (PM Peak Hour)		OPENING YEAR 2024 PLUS PROJECT (AM Peak Hour)		OPENING YEAR 2024 PLUS PROJECT (PM Peak Hour)		HORIZON YEAR 2050 W/O PROJECT (AM Peak Hour)		HORIZON YEAR 2050 W/O PROJECT (PM Peak Hour)		HORIZON YEAR 2050 PLUS PROJECT (AM Peak Hour)		HORIZON YEAR 2050 PLUS PROJECT (PM Peak Hour)	
				Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS
1	Palm Ave & I-5 SB Ramps	All		35.8	D	29.7	C	36.9	D	32.3	C	37.2	D	33.0	C	46.5	D	37.1	D	53.1	D	50.0	D
2	Palm Ave & I-5 NB Ramps	All		15.6	B	13.1	B	19.1	B	13.3	B	19.9	B	15.4	B	22.8	C	23.6	C	24.2	C	23.8	C
3	Palm Ave & Hollister St	Eastbound	Left	51.5	D	53.9	D	54.0	D	80.4	F	85.3	F	87.8	F	47.5	D	141.1	F	54.2	D	149.5	F
			Through	17.0	B	23.8	C	29.9	C	53.5	D	47.4	D	85.5	F	50.3	D	150.6	F	53.7	D	151.7	F
			Right	15.0	B	20.4	C	36.2	D	54.8	D	38.2	D	81.9	F	32.9	C	149.6	F	36.0	D	160.0	F
		Westbound	Left	70.7	E	69.8	E	74.7	E	62.8	E	75.7	E	64.2	E	70.2	E	64.9	E	74.4	E	66.8	E
			Through	6.5	A	9.4	A	11.0	B	12.9	B	8.7	A	13.8	B	9.2	A	9.7	A	9.5	A	9.9	A
			Right	4.6	A	5.0	A	17.0	B	7.7	A	3.6	A	17.6	B	6.9	A	9.6	A	7.4	A	9.8	A
		Northbound	Left	42.0	D	36.0	D	42.6	D	38.1	D	60.7	E	42.8	D	39.2	D	37.5	D	65.1	E	43.9	D
			Through	36.1	D	24.7	C	38.6	D	27.6	C	47.2	D	28.9	C	49.4	D	32.4	C	32.8	C	38.8	D
			Right	15.9	B	20.2	C	21.5	C	25.8	C	48.2	D	27.7	C	23.4	C	33.5	C	24.8	C	36.4	D
		Southbound	Left	45.8	D	40.4	D	47.2	D	41.1	D	49.0	D	42.7	D	55.9	E	60.1	E	58.4	E	60.8	E
			Through	22.9	C	33.7	C	25.6	C	35.6	D	41.2	D	38.0	D	17.1	B	26.2	C	32.4	C	30.2	C
			Right	15.5	B	18.3	B	18.5	B	25.8	C	22.9	C	31.3	C	11.2	B	18.6	B	17.5	B	20.8	C
		Intersection		**21.9**	**C**	**23.5**	**C**	**25.6**	**C**	**39.5**	**D**	**32.3**	**C**	**47.8**	**D**	**24.6**	**C**	**57.4**	**E**	**30.7**	**C**	**78.6**	**E**
4	Palm Ave & Harris Ave-MTS Access	Eastbound	Left	19.8	B	32.0	C	83.9	F	86.5	F	110.7	F	112.6	F	95.9	F	96.1	F	113.4	F	116.3	F
			Through	15.8	B	17.6	B	36.5	D	25.9	C	37.2	D	32.8	C	35.8	D	22.3	C	37.0	D	36.6	D
			Right	11.8	B	13.7	B	19.7	B	25.1	C	27.8	C	29.4	C	28.9	C	12.7	B	29.1	C	32.2	C
		Westbound	Left	27.8	C	25.9	C	51.0	D	65.2	E	78.6	E	67.0	E	83.8	F	68.4	E	126.6	F	78.1	E
			Through	14.2	B	17.6	B	53.5	D	29.2	C	53.6	D	30.9	C	41.0	D	29.2	C	131.6	F	34.6	C
			Right	6.5	A	14.2	B	51.4	D	19.0	B	53.2	D	30.7	C	42.5	D	21.8	C	144.6	F	24.1	C
		Northbound	Left	18.5	B	17.0	B	45.7	D	34.9	C	58.1	E	35.3	D	55.2	E	62.4	E	61.2	E	35.7	D
			Through	N/A	N/A	N/A	N/A	22.8	C	21.2	C	62.9	E	33.6	C	56.1	E	66.3	E	67.7	E	28.1	C
			Right	14.1	B	3.4	A	20.7	C	18.5	B	33.7	C	19.4	B	24.4	C	24.2	C	25.6	C	25.5	C
		Southbound	Left	25.3	C	21.6	C	33.1	C	35.5	D	44.1	D	36.7	D	65.1	E	62.4	E	67.0	E	65.3	E
			Through	28.8	C	17.4	B	45.4	D	31.1	C	48.1	D	40.6	D	43.9	D	50.1	D	44.1	D	54.0	D
			Right	23.8	C	11.4	B	33.7	C	16.6	B	57.2	E	26.8	C	59.1	E	11.5	B	82.3	F	17.0	B
		Intersection		**15.0**	**B**	**17.3**	**B**	**45.2**	**D**	**31.9**	**C**	**51.0**	**D**	**38.7**	**D**	**47.2**	**D**	**32.0**	**C**	**86.4**	**F**	**42.1**	**D**

Signalized LOS Criteria	
A	10
B	20
C	35
D	55
E	80
F	>80

Opening Year 2024 Without Project Conditions:

The Opening Year 2024 Without Project condition includes traffic from three cumulative projects added to the existing traffic volumes at the study intersections. Under the Opening Year 2024 Without Project condition, all four study intersections are forecast to operate at LOS D or better, although the westbound left at Palm Ave/Hollister St for both AM and PM peak hours, and westbound left at Palm Ave/Harris Ave-MTS Access for PM peak hour are expected to operate at LOS E. Additionally, the eastbound left at Palm Ave/Hollister St for PM peak hour and eastbound left at Palm Ave/Harris Ave-MTS Access for both AM and PM peak hours are expected to operate at LOS F.

Opening Year 2024 Plus Project Conditions:

Under the Opening Year 2024 Plus Project conditions, all study intersections continue to operate at LOS D or better. However, the intersection queuing analysis for Palm Avenue / Harris Avenue-MTS Access indicates that vehicles in the eastbound left-turn lane would spill over into the through lane due to the limited amount of storage available. Lengthening the turn pocket is not physically feasible. Therefore, the following improvements are recommended:

Recommended Improvement:

According to the City's TSM, lengthening a turn pocket is required if the project adds traffic to a turning movement and causes the 95th percentile queue to exceed the available turn pocket length. However, lengthening the turn pocket of the eastbound left-turn lane at Palm Avenue / Harris Avenue-MTS Access is not feasible due to the existing railroad crossing and short distance (170 feet) between the two signalized intersections. Therefore, the Project is recommending the installation of a 5-section signal head for the eastbound left-turn movement at Palm Avenue / Harris Avenue-MTS Access to include a permissive left-turn movement during a flashing yellow arrow. **Table ES-2** presents the delays, LOS and queues with the proposed improvements at Palm Avenue / Harris Avenue-MTS Access. The Project would prepare a traffic signal modification plan and construct the proposed improvement to the satisfaction of the City Engineer.

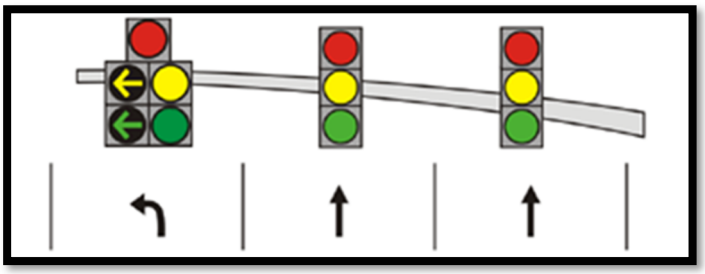

TABLE ES-2: OPENING YEAR 2024 PLUS PROJECT LOS AND QUEUE WITHOUT & WITH PROPOSED IMPROVEMENTS

ID	Study Intersection	Approach	Movement	OPENING YEAR 2024 PLUS PROJECT							
				WITHOUT IMPROVEMENTS				WITH IMPROVEMENTS			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4	Palm Avenue & Harris Ave-MTS Access	EB	Left-Turn	110.7	F	112.6	F	42.0	D	41.5	D
		All		51.0	D	38.7	D	47.3	D	33.4	C
		EB Left-Turn 95th % Queue		93 feet		90 feet		75 feet		77 feet	
		Exceeded Queue		43 feet		40 feet		25 feet		27 feet	
		EB Left-Turn Available Storage		50 feet				50 feet			

As shown in Table ES-2, the proposed improvements are expected to improve the eastbound left-turn movement level of service from LOS F to LOS D during both the AM and PM peak hour at the intersection of Palm Avenue/Harris Ave-MTS Access. With the proposed improvements, the overall intersection LOS would remain as LOS D during the AM peak hour and would improve from LOS D to LOS C during the PM peak hour. It should be noted that the eastbound left-turn queue will continue to exceed the existing storage length since lengthening the left-turn pocket is not feasible due to the existing railroad tracks and close proximity to the adjacent intersection (Palm Ave / Hollister St).

Horizon Year 2050 Without Project Conditions:

Horizon Year 2050 Without Project condition assumes traffic growth based on SANDAG's web-based interactive Transportation Forecast Information Center (TFIC) Year 2050 Series 14 travel model. Under the Horizon Year 2050 Without Project conditions, all four study intersections are forecast to operate at LOS D or better during the AM and PM peak hour with the exception of Palm Avenue / Hollister Street intersection during the PM peak hour which would operate at LOS E.

Horizon Year 2050 Plus Project Conditions:

Under Horizon Year 2050 Plus Project conditions, the intersection at Palm Avenue / Harris Avenue-MTS Access is forecast to operate at LOS F during the AM peak hour and LOS D during the PM peak hour. The eastbound left-turn lane is forecast to operate at LOS F due to the short left-turn pocket (50 feet) and the trolley crossings interrupting signal operations. In addition, the intersection queueing analysis indicates the eastbound left-turn queue would exceed the available storage at Palm Avenue / Harris Avenue-MTS Access during the AM and PM peak hours. Therefore, the Project is recommending the installation of a 5-section signal head for the eastbound left-turn movement at Palm Avenue / Harris Avenue-MTS Access to include a permissive left-turn movement during a flashing yellow arrow. **Table ES-3** presents the delays, LOS and queues with the proposed improvements at Palm Avenue / Harris Avenue-MTS Access. The Project would construct the proposed improvement to the satisfaction of the City Engineer.

TABLE ES-3: HORIZON YEAR 2050 PLUS PROJECT LOS AND QUEUE WITHOUT & WITH PROPOSED IMPROVEMENTS

ID	Study Intersection	Approach	Movement	HORIZON YEAR 2050 PLUS PROJECT							
				WITHOUT IMPROVEMENTS				WITH IMPROVEMENTS			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4	Palm Avenue & Harris Ave-MTS Access	EB	Left-Turn	113.4	F	116.3	F	45.0	D	47.3	D
		All		86.4	F	42.1	D	68.2	E	36.2	D
		EB Left-Turn 95th % Queue		96 feet		90 feet		78 feet		79 feet	
		Exceeded Queue		46 feet		40 feet		28 feet		29 feet	
		EB Left-Turn 95th % Queue		50 feet				50 feet			

As shown in **Table ES-3**, the proposed improvements are expected to improve eastbound left-turn movement level of service from LOS F to LOS D during both the AM and PM peak hour at the intersection of Palm Ave/Harris Ave-MTS Access. With the proposed improvements, the overall intersection LOS would improve from LOS F to LOS E during the AM peak hour and would remain as LOS D during the PM peak hour. It should be noted that the eastbound left-turn queue will continue to exceed the existing storage length since lengthening the left-turn pocket is not feasible due to the existing railroad tracks and close proximity to the adjacent intersection (Palm Ave / Hollister St).

Systemic Safety Review:

The City of San Diego adopted a Vision Zero approach in 2015 to eliminate fatalities and serious injuries on City streets by 2025. This approach included standardizing processes to perform crash analyses, identify safety issues, and develop a list of low-cost proven safety countermeasures. The City-wide analysis of crashes revealed that many reported crashes occurred at intersections. Each of the roadway user types such as vehicles, pedestrians and bicyclists were evaluated and organized by crash characteristics. This led to the City's recommendation of effective low-cost safety improvements for all users of the roadway.

Systemic hotspots at study intersections were identified using the framework of the systemic collision matrices developed by the *City of San Diego's Systemic Safety Analysis Report Program*, April 2019. In Appendix C, threshold criterion such as roadway characteristics, traffic volumes, and intersection control types are used to identify a hotspot. If the criteria for a study location is met, specific countermeasures are listed in efforts to improve the safety of motorists, pedestrians and bicyclists. Based on the evaluation for the project's study area, the intersection criteria is met for pedestrian footprint (P-2 and P-3) and bicycle footprint (B-1) at Palm Avenue / Hollister Street. Therefore, the following countermeasures are proposed by the project in accordance with the *City's Systemic Safety Analysis Report Program.*

Proposed Countermeasures at Palm Avenue / Hollister Street

- Install High Visibility Pedestrian Crossing (Marked Continental Crosswalks) at each leg of the intersection;
- Install blank-out NO RIGHT TURN signs on the northbound and southbound approach of Hollister Street to be displayed during the Lead Pedestrian Interval (LPI) phase;
- Install a blank-out NO LEFT TURN sign on the southbound approach of Hollister Street to be displayed during preemption limited service; and
- Replace the existing vehicle and bicycle inductive loop detectors in the eastbound and westbound approaches of Palm Avenue with new vehicle and bicycle loop detectors to the satisfaction of the City Traffic Engineer.

At the intersection of Palm Avenue / Harris Avenue-MTS Access, the intersection criteria is met for pedestrian footprint (P-2) and bicycle footprint (B-1). Therefore, the following countermeasures are proposed by the project.

Proposed Countermeasures at Palm Avenue / Harris Avenue-MTS Access

- Install High Visibility Pedestrian Crossing (Marked Continental Crosswalks) at all legs of the intersection, except the west leg where pedestrian crossing is prohibited;
- Replace the existing vehicle and bicycle inductive loop detectors in the eastbound and westbound approaches of Palm Avenue with new vehicle and bicycle loop detectors to the satisfaction of the City Traffic Engineer.

1.2 MOST INTENSE AND MOST IMPACTFUL LAND USE

The proposed project requires an amendment to the Otay Mesa-Nestor Community Plan to change the existing land use designation from Open Space to Residential Medium-High Density (20-35 du/nra) and a Rezone to change the existing zone from AR-1-2, RM-1-1, and RS-1-5 to RM-2-6. A Rezone requires the proposed project to analyze the most intense and most impactful use permitted under the new zone. Under the proposed RM-2-6 zone, the project site could be developed to construct up to 206 dwelling units. This equates to an additional 8 dwelling units compared to the proposed project which plans to construct a total of 198 dwelling units. **Table ES-4** shows a comparison of the proposed project trips from 198 dwelling units versus trips from 206 dwelling units with the transit credit. As shown in **Table ES-4**, the additional 8 dwelling units would be expected to generate an additional 42 daily vehicle trips with 3 additional AM and 3 additional PM peak hour trips

TABLE ES-4: TRIP GENERATION COMPARISON (PROPOSED PROJECT VERSUS MOST INTENSE & IMPACTFUL USE)

Land Use	Intensity	Daily Trips	AM Peak Hour Trips				PM Peak Hour Trips			
			Total	In	:	Out	Total	In	:	Out
PROPOSED PROJECT										
Multi-Family Dwelling Units	198 DU	1,188	95	19	:	76	107	75	:	32
Transit Credit[1]		-118	-13	-2	:	-11	-15	-11	:	-4
Total Proposed Project Trip Generation		**1,070**	**82**	**17**	**:**	**65**	**92**	**64**	**:**	**28**
MOST INTENSE & IMPACTFUL USE										
Multi-Family Dwelling Units	206 DU	1,236	99	20	:	79	111	78	:	33
Transit Credit[1]		-124	-14	-3	:	-11	-16	-11	:	-5
Total Most Intense Use Trip Generation		**1,112**	**85**	**17**	**:**	**68**	**95**	**67**	**:**	**28**
CHANGE (MOST INTENSE USE VS PROPOSED PROJECT)										
NET ADDITIONAL TRIPS (Most Intense Use – Proposed Project)		**42**	**3**	**0**	**:**	**3**	**3**	**3**	**:**	**0**

[1] Transit Credit (10% Daily, 14% AM and 14% PM)

Under Opening Year 2024 Plus Project and Horizon Year 2050 Plus Project conditions for the proposed project, the eastbound left-turn approach at Palm Avenue & Harris Street/MTS Access intersection is anticipated to operate at LOS F and the 95th percentile queue would exceed the available storage during both the AM and PM peak hour with the additional 2 left turns (due to a 20%/75% east west split at project access). The eastbound left-turn is expected to continue operating at LOS F and the queue would continue exceeding the available storage assuming the most intense and impactful use.

The proposed improvements for the project include the installation of a 5-section signal head for the eastbound left-turn movement at Palm Avenue / Harris Avenue-MTS Access to include a permissive left-turn movement during a flashing yellow arrow. The proposed project plans to enhance the pedestrian and bicycle facilities as discussed in the Executive Summary at Palm Avenue / Hollister Street and Palm Avenue / Harris Avenue-MTS Access intersections. Traffic generated by the additional 8 dwelling units under the Most Intense Use and Most Impactful Use would not change the proposed improvements and LOS identified in this report and would not generate the need for additional improvements.

Table ES-5 shows a comparison of the delay, LOS, and queue for the eastbound left-turn movement at Palm Avenue / Harris Avenue-MTS Access between the proposed project and the most intense and impactful use under the Horizon Year 2050 Plus Project worst case condition. As shown, the additional 2 AM and 2 PM peak hour trips added to the eastbound left-turn movement would add 5 feet of queue during the AM peak hour and 4 feet of queue during the PM peak hour compared to the queue under the proposed project. Additional improvements beyond what is proposed by the project is not triggered by the additional trips from the most intense and impactful use project at this intersection.

TABLE ES-5: HORIZON YEAR 2050 PLUS PROJECT EASTBOUND LEFT-TURN ASSESSMENT & COMPARISON (PROPOSED PROJECT VERSUS MOST INTENSE & IMPACTFUL USE)

ID	Study Intersection	Approach	Movement	HORIZON YEAR 2050 PLUS PROJECT (WITHOUT IMPROVEMENTS)							
				PROPOSED PROJECT				MOST INTENSE & IMPACTUFL USE			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4	Palm Avenue & Harris Ave-MTS Access	EB	Left-Turn	113.4	F	116.3	F	118.7	F	122.6	F
		All		86.4	F	42.1	D	90.3	F	46.2	D
		EB Left-Turn 95th % Queue		96 feet		90 feet		101 feet		94 feet	
		Exceeded Queue		46 feet		40 feet		51 feet		44 feet	
		EB Left-Turn Available Storage		50 feet				50 feet			

Table ES-6 shows the delay, LOS and queue for the eastbound left-turn movement at Palm Avenue / Harris Avenue-MTS Access for the most intense and impactful use under the Horizon Year 2050 Plus Project condition with and without improvements. As shown, the proposed improvements would improve the eastbound left-turn movement LOS from LOS F to LOS D for both AM and PM peak hour and decrease queueing from 101 feet to 82 feet in the AM peak hour and decrease queueing from 94 feet to 85 feet in the PM peak hour under the most intense and impactful use. With the proposed improvements, the overall intersection LOS would improve from LOS F to LOS E during the AM peak hour and would remain as LOS D during the PM peak hour. The eastbound left turn queues would continue to exceed storage.

Appendix J includes the Synchro worksheets for the most intense and impactful use.

TABLE ES-6: HORIZON YEAR 2050 PLUS PROJECT EASTBOUND LEFT-TURN ASSESSMENT & COMPARISON WITHOUT AND WITH IMPROVEMENTS (MOST INTENSE & IMPACTFUL USE)

ID	Study Intersection	Approach	Movement	HORIZON YEAR 2050 PLUS PROJECT MOST INTENSE & IMPACTFUL USE							
				WITHOUT IMPROVEMENTS				WITH IMPROVEMENTS			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4	Palm Avenue & Harris Ave-MTS Access	EB	Left-Turn	118.7	F	122.6	F	48.2	D	51.3	D
		All		90.3	F	46.2	D	71.4	E	39.1	D
		EB Left-Turn 95th % Queue		101 feet		94 feet		82 feet		85 feet	
		Exceeded Queue		51 feet		44 feet		32 feet		35 feet	
		EB Left-Turn Available Storage		50 feet				50 feet			

2 INTRODUCTION

The Project is located on a 5.92-acre site in the Otay Mesa-Nestor Community Plan area, situated north of the Palm Avenue Trolley Station, south of the Otay Valley Regional Park, and east of Hollister Street. The project site has been previously graded and is undeveloped, with the exception of a vacant residential structure and out-buildings. The Project plans to construct 198 multi-family residential units, including eight affordable housing units. The unit mix would include one bedroom/one bath, two bedroom/two bath, and three bedroom/two bath units. Residential amenities in the western portion of the Project site would feature a pool, spa, fire pit, patio/bar-b-que areas, fitness center, co-working spaces, and a leasing office. A total of 267 parking spaces would be provided as individual tuck-under garages, carports, and surface spaces. Vehicular access to the project would be from the south along in the western portion of the project site via an existing signalized driveway off Palm Avenue through the MTS Trolley Station site. There is a proposed access easement through property owned by the Metropolitan Transit System (MTS). Pedestrian access to the Palm Avenue Trolley Station and Palm Avenue would be provided within the proposed access easement and also directly to the trolley platform at the southwestern corner of the site.

Exhibit 1 shows the regional location of the Project site. **Exhibit 2** shows the Project site plan.

This LMA has been prepared in accordance with the City of San Diego TSM dated September 29, 2020. The LMA Scoping Agreement and Project Information Form (PIF) was completed by Michael Baker staff and reviewed by the City of San Diego Transportation staff in October 2021. **Appendix A** includes the PIF.

2.1 STUDY AREA

According to the City's TSM, intersections where 50 or more peak hour final primary trips from the Project are added in any direction should be analyzed. As such, the study evaluates the following four (4) intersections during the AM and PM peak hours in the vicinity of the project site:

1. Palm Avenue / I-5 Southbound Ramps
2. Palm Avenue / I-5 Northbound Ramps
3. Palm Avenue / Hollister Street
4. Palm Avenue / MTS Access-Harris Avenue

Per the TSM, roadway segment analysis should be evaluated for any roadway segment that has identified improvements in the Community Plan and the project is expected to add 1,000 or more daily final primary trips (cumulative trips) if consistent with the Community Plan, or 500 or more daily final primary trips (cumulative trips) if inconsistent with the Community Plan. However, no affected segments in the immediate area have identified improvements in the Community Plan therefore no roadway segments were analyzed.

These four study intersections identified in **Exhibit 3** have the potential for additional traffic generated by the Project to negatively affect intersection operations. The study intersections are analyzed under the following traffic conditions per the City's TSM:

- Existing Conditions
- Opening Year 2024 Without Project Conditions
- Opening Year 2024 Plus Project Conditions
- Horizon Year 2050 Without Project Conditions
- Horizon Year 2050 Plus Project Conditions

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Regional Context

OCTOBER 2021
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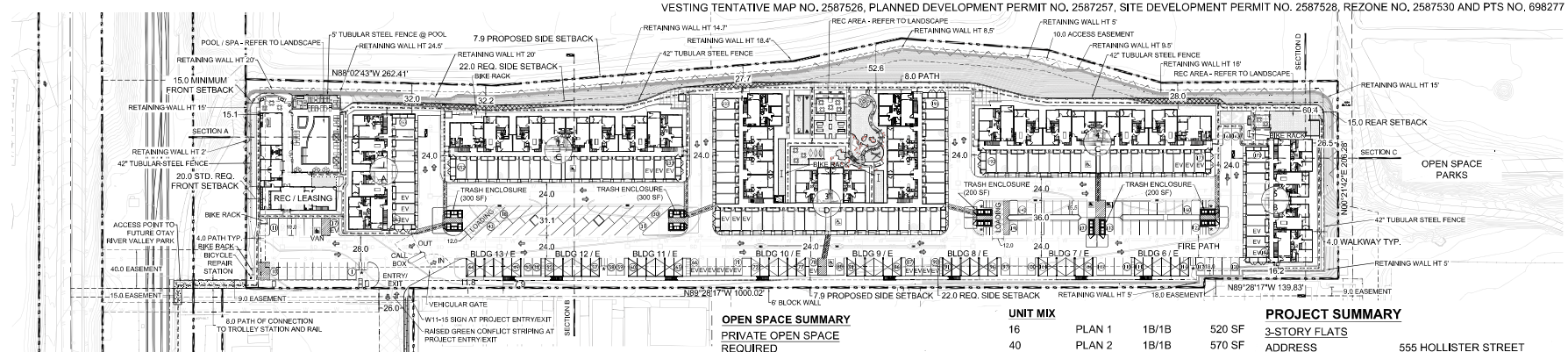
Exhibit 1

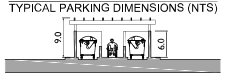
VESTING TENTATIVE MAP NO. 2587526, PLANNED DEVELOPMENT PERMIT NO. 2587257, SITE DEVELOPMENT PERMIT NO. 2587528, REZONE NO. 2587530 AND PTS NO. 698277



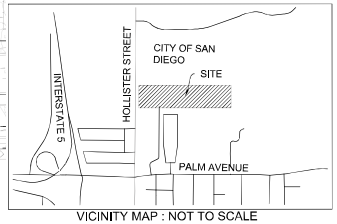
LEGEND:

- BUILDING NUMBER — 8 / A
- BUILDING TYPE
- PROPERTY LINE
- ACCESSIBLE PATH OF TRAVEL — MIN. 4' WIDE PATH
- ACCESSIBLE PARKING STALL
- FIRE HYDRANT
- MOTORCYCLE STALL LOCATION — *
- BICYCLE RACK (8 BIKE CAPACITY)
- EVCS — EV
- LOADING ZONE — (2 REQUIRED, 2 PROVIDED) 12' x 36' TYPICAL
- PARKING SPACE COUNT — ①
- VEHICULAR CIRCULATION
- 10' SIGHT VISIBILITY TRIANGLE

TYPICAL PARKING DIMENSIONS (NTS)



TYPICAL TRASH ENCLOSURE SECTION



VICINITY MAP : NOT TO SCALE

OPEN SPACE SUMMARY

PRIVATE OPEN SPACE

REQUIRED

75% OF 198 DU (149 DU) W/ 60 SF MIN W/ 6' MIN. DIM.

PROVIDED*

92% OF 198 DU (182 DU) W/ 60 SF MIN W/ 6' MIN. DIM.

*REFER TO UNIT PLANS ON SHEET A003

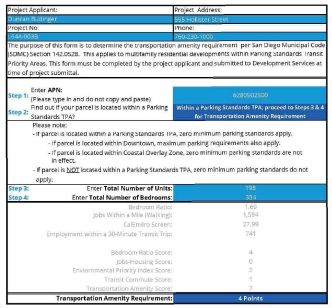
COMMON OPEN SPACE

REQUIRED 4,950 SF (198 DU X 25 SF)

PROVIDED 20,9637 SF

TRANSPORTATION AMENITIES

AMENITIES REQUIRED



AMENITIES PROVIDED

ON SITE BICYCLE REPAIR STATION (2 POINTS)

CO-WORKING SPACE (2 POINTS)

TRASH ENCLOSURES

REQUIRED	
TRASH	384 SF
RECYCLING	384 SF
ORGANIC WASTE	384 SF
TOTAL REQUIRED	1,152 SF
PROVIDED	
TRASH	400 SF
RECYCLING	400 SF
ORGANIC WASTE	400 SF
TOTAL PROVIDED	1,200 SF

UNIT MIX

16	PLAN 1	1B/1B	520 SF
40	PLAN 2	1B/1B	570 SF
33	PLAN 3	1B/1B	670 SF
46	PLAN 4	2B/2B	825 SF
36	PLAN 5	2B/2B	920 SF
27	PLAN 6	3B/2B	1134 SF

198 TOTAL UNITS

PARKING SUMMARY

0 SPACES REQUIRED IN A PARKING STANDARD TRANSIT PRIORITY AREA PER TABLE 142-05C

PROVIDED (UNBUNDLED PER SDMC 142.0528(b)

GARAGE	100 SP	
CARPORTS	48 SP	
OPEN	114 SP	
TOTAL PROVIDED	262 (1.32 SP/DU)	

ACCESSIBLE PARKING

ASSIGNED	245 X 2% =	5 SP
UNASSIGNED	17 X 5% =	1 SP
TOTAL REQUIRED		6 SP
TOTAL PROVIDED		7 SP

VAN ACCESSIBLE PARKING

1 IN 8 ACCESSIBLE SPACES SHALL BE VAN ACCESSIBLE (1 REQUIRED, 1 PROVIDED)

ELECTRIC VEHICLE PARKING

262 SP X 10% =		27 SP

1 IN 25 SHALL BE LOCATED ADJACENT TO AN ACCESSIBLE PARKING SPACE OR ON AN ACCESSIBLE ROUTE(2 REQUIRED, 2 PROVIDED

MOTORCYCLE PARKING

TOTAL REQUIRED	198 X .1=	20 SP
TOTAL PROVIDED		20 SP*

BICYCLE PARKING

49 1BD X .4=	20 SP
42 2BD X .5=	21 SP
7 3BD X .6=	5 SP
TOTAL REQUIRED	46 SP
TOTAL PROVIDED	48 SP

PROJECT SUMMARY

3-STORY FLATS

ADDRESS	555 HOLLISTER STREET
APN	6280502500
TOTAL	198 UNITS
LOT AREA	5.92 AC
NET PAD	5.12 AC
DENSITY	33.5 DU/AC
NET DENSITY	38.7 DU/AC
FLOOR AREA	231,207 SF
FAR	0.90
OCCUPANCY	R-2, S-2
CONST. TYPE	VA
EXISTING ZONING	AR 1-2, RM 1-1, RS 1-5
PROPOSED ZONING	RM 2-6
EXISTING USE	SPACED RURAL RESIDENTIAL
PROPOSED USE	MULTI-FAMILY RESIDENTIAL
HAZARD CATEGORY	53 / 31
LANDSCAPE AREA	53,520 SF

LEGAL DESCRIPTION:

THAT PORTION OF THE NORTH QUARTER OF THE WEST HALF OF THE SOUTHWEST QUARTER AND THE NORTH 5 ACRES OF THE EAST HALF OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 18 SOUTH, RANGE 2 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, MORE FULLY DESCRIBED IN GRANT DEED RECORDED IN THE OFFICE OF THE SAN DIEGO COUNTRY RECORDER AS DOCUMENT NO. 2017-0387959.

EXISTING STRUCTURES:

3 EXISTING STRUCTURES DATING BACK TO ROUGHLY 1920 TO BE DEMOLISHED. NONE WERE SUBJECT TO A RECORDED COVENANT ORDINANCE OR LAW THAT RESTRICTS RENTS FOR VERY LOW INCOME OR LOW INCOME HOUSEHOLDS OR WERE OCCUPIED BY VERY LOW INCOME HOUSEHOLDS.

SCOPE OF WORK

- 198 APARTMENT UNITS (INCLUDING 8 AFFORDABLE UNITS) IN 13 BUILDINGS
- ONE RECREATION/LEASING BUILDING TO INCLUDE FITNESS CENTER, COMMUNITY LOUNGE, CO-WORKING SPACES, AND A LEASING OFFICE
- RECREATION AREAS TO INCLUDE POOL, SPA, FIRE PIT, BARBEQUE AREAS, TURF AREAS, PLAYGROUNDS, COURTYARD SEATING AREAS
- DEVIATIONS INCLUDE SETBACKS, BUILDING HEIGHT, AND RETAINING WALL HEIGHT

NOTE:

BUILDING ADDRESS NUMBERS SHALL BE VISIBLE AND LEGIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY PER FHPS POLICY P-00-6 (UFC 901.4.4)

SAN DIEGO, CA

PALM AND HOLLISTER

SITE PLAN

AMBIENT COMMUNITIES
179 CALLE MAGDALENA STE 201
ENCINITAS, CA 92024
760.230.1000

DECEMBER 2, 2022

SCALE: 0 40 80 120

Revision 5: _____
Revision 4: _____
Revision 3: 12-02-2022
Revision 2: 07-08-2022
Revision 1: 03-22-2022
Original Date: 11-11-2021

Revision 10: _____
Revision 9: _____
Revision 8: _____
Revision 7: _____
Revision 6: _____

SUMMA ARCHITECTURE
5256 S. Mission Road, Ste 404
Bonsall, CA 92003
760.724.1198

A002

PROJECT NO. 698277

Michael Baker INTERNATIONAL

Project Site Plan

Exhibit 2

Michael Baker INTERNATIONAL

OCTOBER 2021
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Project Study Area

Exhibit 3

2.2 ANALYSIS METHODOLOGY

2.2.1 Intersection Methodology

Level of Service (LOS) is commonly used as a qualitative description of intersection operation and is based on the capacity of the intersection and the volume of traffic using the intersection. The intersection analysis conforms to the operational analysis methodology outlined the Highway Capacity Manual (HCM 6th Edition) and performed utilizing the Synchro 10 traffic analysis software.

The HCM analysis methodology describes the operation of an intersection using a range of level of service from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding stopped delay experienced per vehicle for study intersections as shown in **Table 1**.

For signalized intersections, signal timing data and parameters such as cycle lengths, splits, clearance intervals, etc. were obtained from the current signal timing sheets provided by City staff and incorporated into the Synchro model (see Appendix B). Synchro reports average delays for a signalized intersection, which correspond to a particular LOS, to describe the overall operation of an intersection.

TABLE 1: LEVEL OF SERVICE & DELAY RANGE

	Control Delay (seconds/vehicle)		
Level of Service	Signalized Intersections	Unsignalized Intersections	Description
A	≤ 10.0	≤ 10.0	Operates with very low delay and most vehicles do not stop.
B	> 10.0 to 20.0	> 10.0 to 15.0	Operates with good progression with some restricted movements.
C	> 21.0 to 35.0	>15.1 to 25.0	Operates with significant number of vehicles stopping with some backup and light congestion.
D	> 35.1 to 55.0	> 25.0 to 35.0	Operates with noticeable congestion, longer delays occur, and many vehicles stop.
E	>55.0 to 80.0	> 35.1 to 50.0	Operates with significant delay, extensive queuing and unfavorable progression.
F	> 80.0	> 50.0	Operates at a level that is unacceptable to most drivers. Arrival rates exceed capacity of the intersection. Extensive queuing occurs.

Source: Highway Capacity Manual (HCM) 6th Edition.

The intersection operational analysis considers the Blue Line Trolley crossing Palm Avenue between the signalized intersections of Palm Avenue / Hollister Street and Palm Avenue / MTS Access-Harris Avenue. In order to simulate the Trolley crossing, a micro-simulation was prepared using the Synchro 10 Sim-Traffic software during the AM and PM peak hours. According to MTS's Blue Line schedule (contained in **Appendix B**), the Trolley crosses Palm Avenue approximately every 8 minutes in both the northbound and southbound directions. This equates to approximately 7 trains traveling northbound and 7 trains traveling southbound during the AM and PM peak hours for a total of 14 trains. The level of service performance worksheets produced by Synchro provide a delay per vehicle at each turn movement and reported in this report for each study condition. The rail crossings were simulated using Sim-Traffic which assumed, a cycle length

of 145 seconds for the rail crossing based on field observations of the current cycle length with and without trolley crossings which ranged from 70 seconds without a trolley crossing to 150 seconds with a trolley crossing. The Sim-Traffic analysis for intersections adjacent to the rail crossing assumed 15-minute seeding, 60-minute recordings, and 10 simulations. In order to account for the trolley pre-emption, an intersection representing the trolley crossings was added on Palm Avenue between Hollister Street and MTS Access-Harris Avenue. The control at this location was pre-timed with a cycle length of 257 seconds (3,600 seconds in one hour / 14 trains) to account for the trains crossing during the peak hour. When a train was crossing Palm Avenue, the eastbound and westbound through movements at Hollister Street and MTS Access-Harris had a red indication.

2.2.2 Pedestrian Analysis Methodology

The pedestrian analysis primarily focuses on pedestrian connectivity and the presence of adequate facilities. In dense, urban environments featuring substantial pedestrian volumes, analysis of pedestrian facilities may be required in accordance with HCM 6th Edition. Existing and planned pedestrian facilities within the Project study area are documented in this report. The Palm Avenue Revitalization Plan (March 2016) which was prepared by the Planning Department, but not formally adopted by City Council, however, was used as a resource to identify planned improvements to pedestrian facilities near the Project site.

2.2.3 Bikeway Analysis Methodology

Design standards and bikeway facilities are established by the California Department of Transportation (Caltrans) and provided in the Caltrans Highway Design Manual (2018). Bicycle facilities are defined using the following four classifications:

- **Class I Bikeway (Bike Path)** – facilities with exclusive right-of-way for bicyclists and pedestrians, away from the roadway and with cross flows by motor traffic minimized.

- **Class II Bikeway (Bike Lanes)** – bike lanes established along streets and defined by pavement striping and signage to delineate a portion of the roadway for bicycle travel. Bike lanes are one- way facilities, typically striped adjacent to motor traffic travelling in the same direction.

- **Class III Bikeways (Bike Routes)** – a preferred route for bicyclists on streets shared with motor traffic not served by dedicated bikeways to provide continuity to the bikeway network. Bike routes are generally not appropriate for roadways with higher motor traffic speeds or volumes. Bike routes are established by placing bike route signs and optional shared roadway markings (sharrow) along roadways.

- **Class IV Bikeways** – often referred to as a cycle track or protected bike lane and is for the exclusive use of bicycles, physically separated from motor traffic with a vertical feature. The separation may include grade separation, flexible posts, inflexible barriers, or on-street parking. Separated bikeways can provide for one-way or two-way travel.

The Bicycle analysis primarily focuses on bicycle connectivity, presence of adequate facilities, consistency with the City's Bicycle Master Plan and the Community's Bicycle Mobility Element. The Palm Avenue Revitalization Plan was reviewed in order to identify planned bicycle improvements along Palm Avenue near the Project site.

2.2.4 Transit Analysis Methodology

The Project effects on the transportation system should be evaluated and consider the increased travel time for buses that could adversely effect on-time performance (intersection delay, corridor delay, etc.). Conflicts (e.g. weaving, sight distance) involving buses at stop due to nearby driveways should be evaluated. The Palm Avenue Revitalization Plan was reviewed to determine if there are any planned transit improvements and stops identified within the study area.

3 EXISTING CONDITIONS

3.1 SURROUNDING ROADWAY NETWORK

The characteristics of the roadway system near the Project site are described below:

- **Interstate 5** is a state highway that is north-south facility that links major Cities throughout San Diego County. South of Palm Avenue, I-5 connects to the Mexican border at the San Ysidro Port of Entry, one of the busiest border crossings in the world.

- **Palm Avenue** is an east-west divided roadway that provides direct access from the I-5 freeway to the Project site. From the I-5 Southbound off-ramp to I-5 Northbound off-ramp, Palm Avenue is functionally and ultimately classified as a 4-lane Major Arterial in accordance with the Otay-Mesa Nestor Community Plan. From the I-5 Northbound off-ramp to Harris Avenue-MTS Access, Palm Avenue is functionally classified as a 4-lane collector (no raised median). A raised median exists between the I-5 Southbound and Northbound ramps and at the trolley tracks between Hollister Street and Harris Avenue. A striped median is provided between the I-5 Northbound ramps and Hollister Street. Contiguous sidewalks are provided along the north side of the bridge over I-5 freeway and along both sides of Palm Avenue between the I-5 Northbound ramps and the Harris Ave/MTS Access intersection. Class II bike facilities are not provided along Palm Avenue between the I-5 Southbound ramps and Harris Avenue, except on the south side of the bridge over I-5 between the I-5 southbound and northbound ramps. On-street parking is permitted only along the north side of Palm Avenue between the I-5 Northbound ramps and Hollister Street within the limits of the study area. The posted speed limit is 45 MPH.

- **Hollister Street** is a two-lane north-south undivided roadway north and south of Palm Avenue. Hollister Street runs parallel to the Blue Trolley Line and is functionally and ultimately classified as a two-lane collector according to the Otay-Mesa Nestor Community Plan. North of Palm Avenue, sidewalks are provided along both sides of Hollister Street for approximately 200 feet. Bicycle facilities are not provided on Hollister Street. South of Palm Avenue, sidewalks are provided on only the west side of the road. The posted speed limit is 30 MPH and parking is permitted on both sides of Hollister Street.

3.2 EXISTING PEDESTRIAN, BICYCLE, AND TRANSIT FACILITIES

Contiguous sidewalks are currently provided on both sides of Palm Avenue within a ½ mile radius of the project site with the exception of the south side of the bridge over I-5. **Exhibit 4** shows the presence of sidewalks within the study area on the major roadways. North of Palm Avenue, sidewalks are provided on both sides of Hollister Street for approximately 200 feet. On the east side of Hollister, the sidewalk leads to a set of stairs to the Palm Avenue Trolley Station platform. South of Palm Avenue on Hollister, a sidewalk exists on the west side for approximately 850 feet and then terminates. At the signalized intersection of Palm Avenue / Harris Avenue-MTS Access, marked crosswalks are provided on the north, south and east legs of the intersection with pedestrian countdown signal heads. At Palm Avenue / Hollister Street, marked crosswalks are provided on all four legs of the intersection with pedestrian countdown signal heads.

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Existing Bicycle & Pedestrian Facilities

Exhibit 4

3.2.1 Existing Bicycle Facilities

Within the ½ mile radius of the project site, Class II bike lanes are provided on both sides of Palm Avenue east of Harris Avenue as shown in Exhibit 4. There is an existing Class II bike lane on the south side of the bridge over I-5 between the I-5 southbound and northbound ramps and no other bike facilities within the Project study area.

3.2.2 Existing Transit Facilities (Trolley and Bus)

Blue Line Trolley - Transit service in this area is operated and maintained by MTS. **Exhibit 5** shows the existing transit routes within the study area. The UC San Diego Blue Line Trolley (Blue Line) is a 15.4-mile light rail line that currently operates between Downtown San Diego and San Ysidro, at the border with Mexico. On November 21, 2021, the Blue Line extension opened and expanded the San Diego Trolley system from Downtown San Diego to the UTC Transit Center, serving nine new Trolley Stations. The Project site is located approximately 600 feet north of the Palm Avenue Trolley Station that serves the Blue Line. The Blue Line operates between 4:02 AM and 1:43 AM on weekdays with 8-minute headways throughout the day with the exception of 15-minute headways from 8:28 AM to 3:28 PM. On Saturdays and Sundays, the Blue Line operates between 4:17 AM and 1:43 AM, with 15-minute headways from 6:58 AM to 8:58 PM and 30-minute headways at other times. Refer to **Appendix B** for the trolley and bus schedule.

Bus Route 932 – Runs north/south between 8th Street Transit Center located in National City and the Iris Avenue Transit Center. Route 932 currently runs between 4:32 AM and 12:20 AM on weekdays, 4:38 AM and 12:20 AM on Saturdays, and 5:38 AM and 8:19 PM on Sundays. This route runs at 15-minute headways during its peak period and 30-minute headways during off-peak periods.

Bus Route 933 – Runs counterclockwise from the Iris Avenue Transit Center and the Palm Avenue Trolley Station. Route 933 currently runs between 4:41 AM and 12:57 AM on weekdays and Saturdays, and between 5:07 AM and 7:09 PM on Sundays/Holidays. Route 933 runs at 12-minute headways during its peak period and 15-minute headways during off-peak periods.

Bus Route 934 – Runs clockwise from the Iris Avenue Transit Center and the Palm Avenue Trolley Station. This route runs between 4:41 AM and 1:13 AM on weekdays and Saturdays, and between 6:57 AM and 8:56 PM on Sundays/Holidays. Route 934 runs at 12-minute headways during its peak period and 15- minute headways during off-peak periods.

Table 2 summarizes the existing bus stop amenities at locations within the study area.

TABLE 2: EXISTING BUS STOP AMENITIES

BUS ROUTE	DIRECTION	LOCATION	BUS STOP AMENITIES			
			SHELTERS	BENCHES	CONCRETE PAD	TRASH CANS
934	Eastbound	Palm Avenue / Hollister Street	X	X	X	X
933	Westbound	Palm Avenue / Hollister Street	X	X	X	X
934	Eastbound	Palm Avenue / Beejay Drive				
933	Westbound	Palm Avenue / Beejay Drive	X	X	X	X
932	Northbound	Hollister Street / Palm Avenue	X	X		X
932	Southbound	Hollister Street / Palm Avenue (South)	X	X		X
932	Northbound	Hollister Street / Palm Avenue (North)	X	X		X
932	Northbound	Hollister Street / Elm Avenue				
932	Southbound	Hollister Street / Elm Avenue				

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MARCH 2022
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Existing Transit Routes

Exhibit 5

3.3 EXISTING TRAFFIC VOLUMES

To determine the existing operations of the study intersections, peak hour intersection turn movement counts were collected on Tuesday, August 24, 2021 while Sweetwater Union schools were in session. AM peak period counts were collected from 7:00 AM to 9:00 AM and PM peak period counts were collected from 4:00 PM to 6:00 PM. The counts used in this analysis were taken from the highest hour within the peak periods counted for each intersection. Pedestrian and bicycle counts were collected during the AM and PM peak hours at each of the four study intersections. Daily traffic volumes were collected along Palm Avenue within the study area on Wednesday, March 2, 2022. Detailed count data is contained in **Appendix B**.

Exhibit 6 shows the existing lane geometry at the four study intersections.

Exhibit 7 shows the existing AM and PM peak hour volumes in the study area.

3.4 EXISTING PEAK HOUR STUDY INTERSECTION LEVELS OF SERVICE

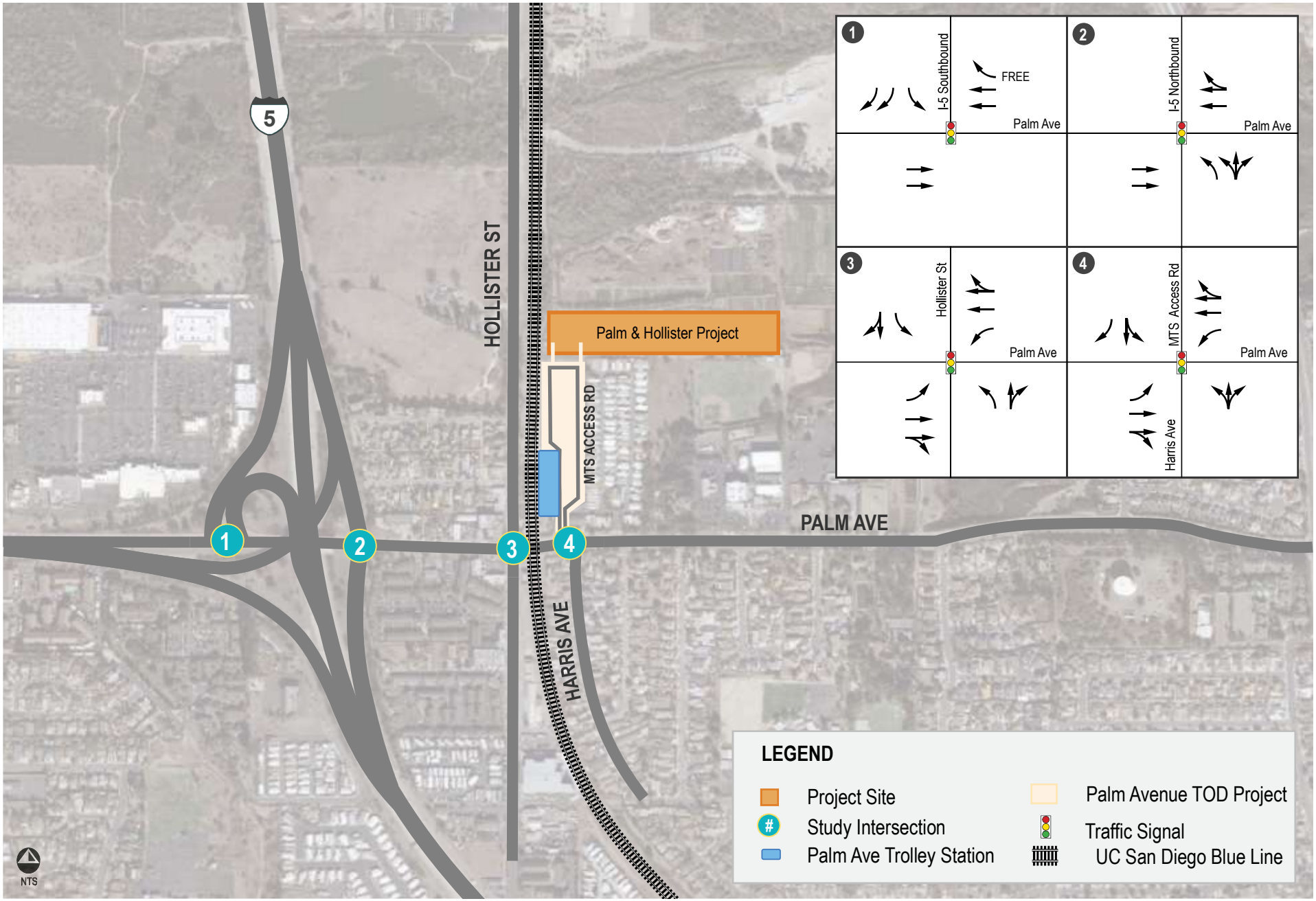
Table 3 summarizes existing conditions AM/PM peak hour level of service for all study intersections. Detailed analysis sheets are contained in **Appendix C**. Delays and level of service are presented at study intersections 3 and 4 for each turn movement since the Synchro performance reports were taken from the SimTraffic simulation to account for the rail crossing. The Sim-Traffic analysis for intersections 3 and 4 assumes 15-minute seeding, 60-minute recordings, and 10 simulations. For analysis purposes, a cycle length of 145 seconds was used. This cycle length was confirmed by field observations of the current cycle length with and without trolley crossings which ranged from 70 seconds without a trolley crossing to 150 seconds with a trolley crossing.

As shown in Table 3, the overall study intersections within the study area are currently operating at LOS D or better, although, the westbound left-turn movement at the Palm Ave/Hollister intersection currently operates at LOS E in both the AM and PM peak hour.

At the Palm Avenue / Hollister Street intersection, the westbound left-turn movement is currently operating at LOS E in the AM and PM peak hour due to the limited left turn pocket available due to the trolley crossing i.e. approx. 60 feet. When a train activates the crossing gates at the intersection, a green signal indication is displayed for the westbound approach allowing vehicles to clear the queue and rail crossing area before the train arrives. The distance between the two signals at Hollister Street and the MTS Access is approximately 170 feet (limit line to limit line), providing storage for only two to three vehicles per signal cycle in the left-turn lane.

At the Palm Avenue / Harris Ave – MTS Access intersection, the intersection currently operates at LOS B or better during both peak hours, with eastbound and westbound left turn movements operating at LOS C.

As shown in Table 3, the I-5 Northbound and Southbound ramps at Palm Avenue currently operate at LOS D or better during both peak hours. It may be noted that LOS "D" is considered acceptable intersection operations for intersections within the City of San Diego and LOS "E" and "F" is considered deficient intersection operating conditions. These LOS operating standards were also used at Caltrans facilities.



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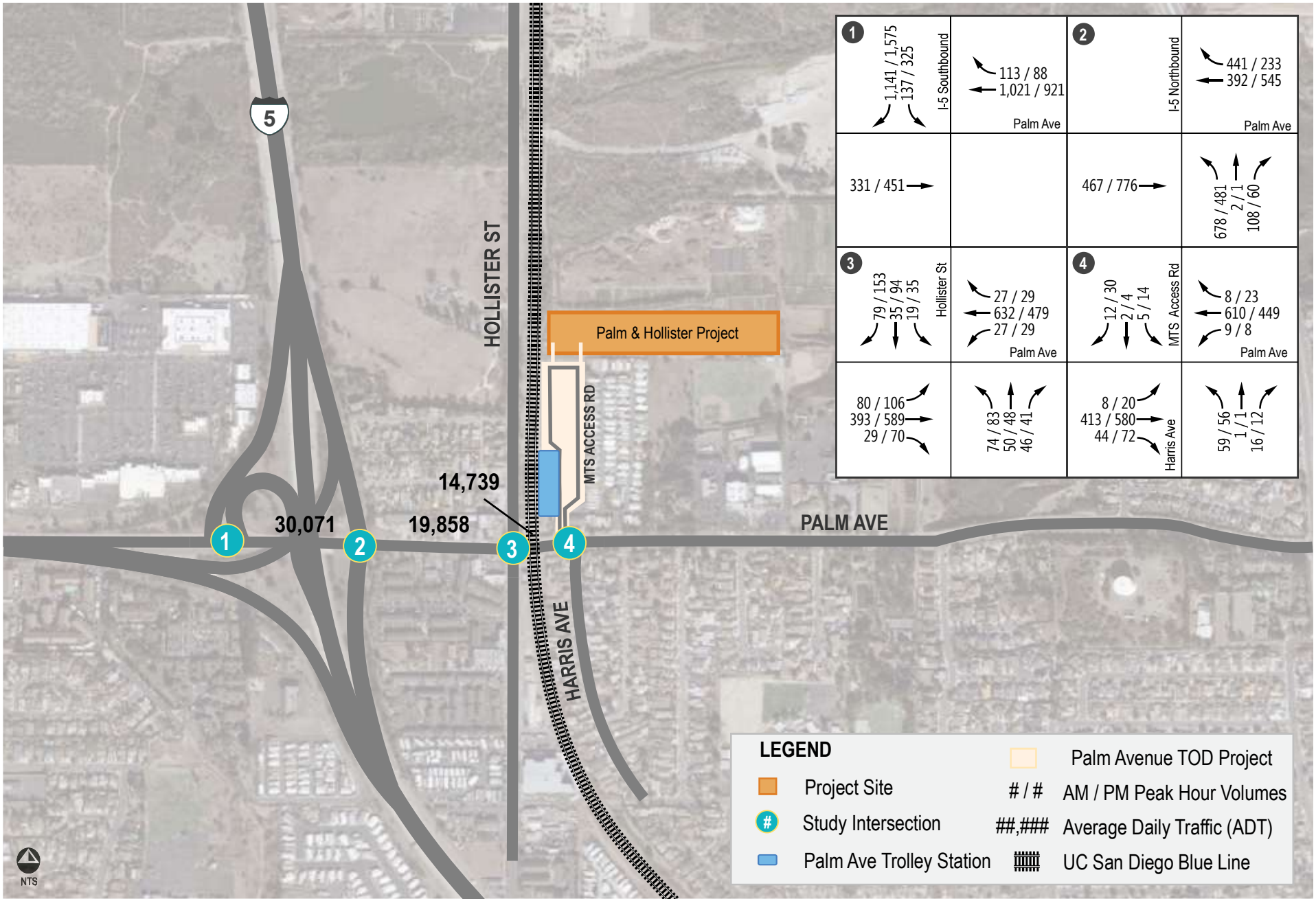
Existing Intersection Lane Geometry

Exhibit 6



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Existing Daily ADT & AM/PM Peak Hour Traffic Volumes

MARCH 2022
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Exhibit 7

TABLE 3: EXISTING AM/PM PEAK HOUR INTERSECTION LOS

ID	Study Intersection	Approach	Movement	EXISTING (AM Peak Hour)		EXISTING (PM Peak Hour)	
				Delay/veh (sec)[1]	HCM LOS	Delay/veh (sec)[1]	HCM LOS
1	Palm Avenue & I-5 Southbound Ramps	All		35.8	D	29.7	C
2	Palm Avenue & I-5 Northbound Ramps	All		15.6	B	13.1	B
3	Palm Avenue & Hollister Street	Eastbound	Left	51.5	D	53.9	D
			Through	17.0	B	23.8	C
			Right	15.0	B	20.4	C
		Westbound	Left	70.7	E	69.8	E
			Through	6.5	A	9.4	A
			Right	4.6	A	5.0	A
		Northbound	Left	42.0	D	36.0	D
			Through	36.1	D	24.7	C
			Right	15.9	B	20.2	C
		Southbound	Left	45.8	D	40.4	D
			Through	22.9	C	33.7	C
			Right	15.5	B	18.3	C
		Intersection		**21.9**	**C**	**23.5**	**C**
4	Palm Avenue & Harris Avenue-MTS Access	Eastbound	Left	19.8	B	32.0	C
			Through	15.8	B	17.6	B
			Right	11.8	B	13.7	B
		Westbound	Left	27.8	C	25.9	C
			Through	14.2	B	17.6	B
			Right	6.5	A	14.2	B
		Northbound	Left	18.5	B	17.0	B
			Through	-	-	-	-
			Right	14.1	B	3.4	A
		Southbound	Left	25.3	C	21.6	C
			Through	28.8	C	17.4	B
			Right	23.8	C	11.4	B
		Intersection		**15.0**	**B**	**17.3**	**B**

[1]Average seconds of delay per vehicle.
LOS = Level of Service

Signalized LOS Criteria	
A	10
B	20
C	35
D	55
E	80
F	> 80

3.5 EXISTING CONDITIONS QUEUING ANALYSIS

Table 4 presents the Existing Conditions queuing analysis on movements where project-related traffic could potentially affect intersection operations. The 95th percentile queue length value indicates that during the peak hour, a queue of this length or less would occur on 95 percent of the signal cycles. The 95th percentile queue length is reported in Synchro and provided in the appendix for each condition analyzed. The results of the queuing analysis are based on Sim-Traffic with 15-minute seeding, 60-minute recordings and an average of 10 simulations. As shown, the current 95th percentile queues at these specific turn movements do not exceed the available storage provided except for the eastbound left-turn at Palm Avenue / Harris Avenue-MTS Access in the PM peak hour. **Appendix C** contains the queuing worksheets.

TABLE 4: EXISTING CONDITIONS INTERSECTION QUEUING ANALYSIS

Movement	No. Lanes	Storage Length Per Lane (ft)	Peak Hour Volume		95th % Queue (ft) [1]		Queue Exceeds Storage Capacity?
			AM	PM	AM	PM	
Int. #1 – Palm Avenue / I-5 Southbound Ramps							
SBL	1	440	137	325	141	200	No
Int. #2 – Palm Avenue / I-5 Northbound Ramps							
NB LTR	1	550	108	60	356	236	No
Int. #3 – Palm Avenue / Hollister Street							
WBL	1	60	33	22	38	33	No
Int. #4 – Palm Avenue / Harris Avenue-MTS Access							
EBL	1	50	8	20	0	64	**Yes**

[1] Synchro reports 95th percentile queue in feet.

Field Observations

Michael Baker conducted a field visit on Thursday, March 24, 2022 to observe the existing queues at Palm Avenue/Hollister Street and Palm Avenue / Harris Avenue-MTS Access. The primary objective of the field visit was to observe the eastbound left-turn queue during the morning peak hour (7:15 AM to 8:15 AM) at the Palm Avenue / Harris Avenue-MTS Access intersection. The maximum queue observed at the eastbound left-turn was 4 vehicles, however, the majority of signal cycles only had one vehicle. The maximum queue observed at the westbound left-turn lane at Palm Avenue / Hollister Street had two vehicles during the AM and PM peak hour. During the PM peak hour (4:45 PM to 5:45 PM) at Palm Avenue / Harris Avenue-MTS Access, the maximum queue observed for the eastbound left-turn lane had 5 vehicles where one vehicle was waiting on the railroad tracks.

4 PROPOSED PROJECT

The Project plans to construct 198 multi-family dwelling units on a vacant 5.92 acres of undeveloped land north of the MTS Palm Avenue Trolley Station. Eight (8) of the units will be affordable and 190 will be market rate units. Project Opening Day is expected to be Year 2024.

4.1 TRIP GENERATION

In order to calculate vehicle trips expected to be generated by the Project, trip rates from the City of San Diego Trip Generation Manual, May 2003 were utilized. **Table 5** summarizes the trip generation rates used. It may be noted driveway trip rates are the same as cumulative trip rates for residential uses.

TABLE 5: TRIP GENERATION RATES

	Daily	AM Peak Hour Rate		PM Peak Hour Rate	
Land Use	Trip Rate[1]	Total	In : Out	Total	In : Out
Multi-Family Dwelling Unit	6 / DU	8%	20% : 80%	9%	70% : 30%

[1]Source: City of San Diego Trip Generation Manual, May 2003

Table 6 summarizes the project trip generation using the rates shown in **Table 5** with trip adjustments applied. In accordance with the City's TSM, driveway trip reductions can be applied for residential, employment and retail projects within ½ mile of a major transit stop. As the Project is located immediately adjacent to the Palm Avenue Trolley Station, the residential reductions of 10% daily and 14% for the AM and PM peak hours was applied to the Project. With the driveway trip reductions applied, the Project is expected to generate approximately 1,070 new daily vehicle trips with 82 AM peak hour trips and 92 PM peak hour trips.

TABLE 6: PALM & HOLLISTER DEVELOPMENT TRIP GENERATION

		Daily	AM Peak Hour Trips			PM Peak Hour Trips			
Land Use	Intensity	Trips	Total	In	: Out	Total	In	:	Out
Multi-Family Dwelling Unit	198 DU	1,188	95	19	: 76	107	75	:	32
Transit Credit (10% Daily, 14% AM & 14% PM)		-118	-13	-2	: -11	-15	-11	:	-4
Total Project Trip Generation		**1,070**	**82**	**17**	**: 65**	**92**	**64**	**:**	**28**

DU = Dwelling Unit

4.2 TRIP DISTRIBUTION AND TRIP ASSIGNMENT OF PROPOSED PROJECT

Exhibit 8 shows the expected trip percent distribution within the study area. Project traffic was distributed on the roadway network based on existing travel patterns, proximity to the I-5 freeway, and complementary land uses (employment, retail and schools) within the study area. As shown, Project traffic is anticipated to distribute 75% to the west on Palm Avenue, 20% to the east on Palm Avenue and 5% south on Harris Avenue. **Exhibit 9** shows the corresponding assignment of peak hour project- generated trips using the trip percent distribution shown in **Exhibit 8**.

Project Trip Distribution

Exhibit 8

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Project Trip Assignment

Exhibit 9

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5 OPENING YEAR 2024 WITHOUT PROJECT CONDITIONS

5.1 OPENING YEAR 2024 WITHOUT PROJECT TRAFFIC VOLUMES

The Project is expected to be constructed and occupied by the Year 2024. Therefore, this timeframe represents the near-term "Opening Year" baseline conditions. By Year 2024, it is reasonable to assume ambient traffic growth to occur within the study area from other nearby development projects. Based on a review of known development projects in the area, Michael Baker found three (3) cumulative projects that are anticipated to be constructed and occupied by the Project Opening Year 2024 and that would add traffic to the study area. The following three cumulative projects included in the Opening Year 2024 Conditions analysis are listed below.

Bella Mar (PTS# 631240) – Consists of 380 multi-family dwelling units (of which 100 are affordable units) located at 408 Hollister Street. This project is currently under review.

Palm Avenue Transit Oriented Development (TOD) (PTS# 689213) – Consists of 390 apartments and 3,400 square feet of local serving retail to be constructed on the existing surface parking lot of the Palm Avenue Trolley Station. This project is currently under preliminary review but was included because the Palm Avenue TOD project is adjacent to the Palm and Hollister Development and adds traffic to the Project study area.

Salt Bay Design (PTS# 527383) – Consists of 50,000 square feet of high-turnover/sit down restaurant and 550,000 square feet of Industrial/Business Park with some commercial included. The project area extends along Bay Boulevard between Palomar Street to West Frontage Road where it terminates at Main Street. The traffic report for this project is currently being prepared and was included since this project is expected to add traffic to the Project study area. The timing and phasing of this project is unknown, therefore, the full project is assumed in this scenario to provide a conservative analysis.

Worksheets with information on these cumulative projects is provided in **Appendix D**. Traffic volumes from these three projects were extracted from traffic studies and added to existing traffic volumes. **Table 7** provides the trip generation from these three cumulative projects.

TABLE 7: CUMULATIVE PROJECTS TRIP GENERATION

	Project	Land Use	Amount	ADT	AM Peak Hour			PM Peak Hour		
					Total	In	Out	Total	In	Out
1	Bella Mar (PTS# 631240)	Multi-Family Residential	380 DU	2,052	157	31	126	176	124	52
2	Palm AvenueTOD (PTS# 689213)	Apartments	390 DU	2,462	207	55	152	233	153	80
		Retail	3,400 SF							
		Childcare Facility	2,750 SF							
3	Salt Bay Design[1] (PTS# 527383)	High Turnover/ Sit-Down Restaurant	50,000 SF	16,054	1,639	1,137	502	1,639	559	1,080
		Industrial/Business Park	550,000 SF							
Total Cumulative Projects Trip Generation				**20,568**	**2,003**	**1,223**	**780**	**2,048**	**836**	**1,212**

DU = Dwelling Unit; SF = Square Feet; ADT = Average Daily Traffic

Footnote 1: The Chen Ryan Traffic Study does not provide a phased analysis. To be conservative, it was assumed the entire project will be constructed by 2024. The volumes from the Salt Bay Design that travel onto the Project study area are fairly minor.

As shown, the three cumulative projects would generate approximately 20,568 daily trips with 2,003 AMpeak hour trips and 2,048 PM peak hour trips. **Exhibit 10** shows the Cumulative Project Only AM/PM peakhour traffic volumes and location of cumulative projects. **Exhibit 11** shows the Opening Year Without Project AM/PM peak hour traffic volumes.

5.2 OPENING YEAR 2024 WITHOUT PROJECT PEAK HOUR STUDY INTERSECTION LOS

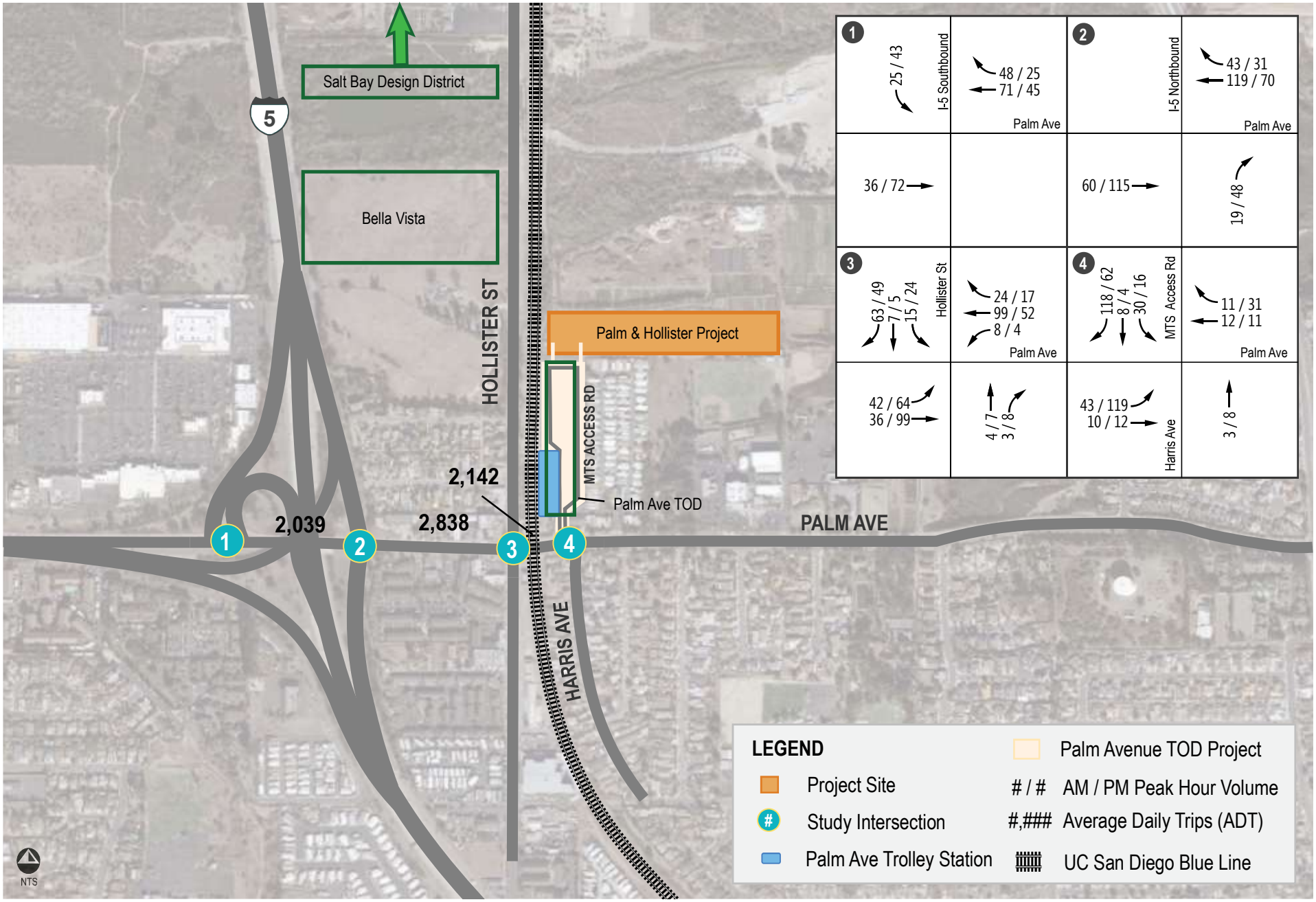
Table 8 summarizes the Opening Year 2024 Without Project AM and PM peak hour level of service for all study intersections. Detailed analysis sheets are contained in **Appendix E**.

TABLE 8: OPENING YEAR 2024 WITHOUT PROJECT AM/PM PEAK HOUR INTERSECTION LOS

ID	Study Intersection	Approach	Movement	OPENING YEAR 2024W/O PROJECT (AM Peak Hour)		OPENING YEAR 2024W/O PROJECT (PM Peak Hour)	
				Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS
1	Palm Avenue & I-5 Southbound Ramps	All		36.9	D	32.3	C
2	Palm Avenue & I-5 Northbound Ramps	All		19.1	B	13.3	B
3	Palm Avenue & Hollister Street	Eastbound	Left	54.0	D	80.4	F
			Through	29.9	C	53.5	D
			Right	36.2	D	54.8	D
		Westbound	Left	74.7	E	62.8	E
			Through	11.0	B	12.9	B
			Right	17.0	B	7.7	A
		Northbound	Left	42.6	D	38.1	D
			Through	38.6	D	27.6	C
			Right	21.5	C	25.8	C
		Southbound	Left	47.2	D	41.1	D
			Through	25.6	B	35.6	D
			Right	18.5	A	25.8	C
		Intersection		**25.6**	**C**	**39.5**	**D**
4	Palm Avenue & Harris Street-Trolley Station Driveway	Eastbound	Left	83.9	F	86.5	F
			Through	36.5	D	25.9	C
			Right	19.7	B	25.1	C
		Westbound	Left	51.0	D	65.2	E
			Through	53.5	D	29.2	C
			Right	51.4	D	19.0	B
		Northbound	Left	45.7	D	34.9	C
			Through	22.8	C	21.2	C
			Right	20.7	C	18.5	B
		Southbound	Left	33.1	D	35.5	D
			Through	45.4	C	31.1	C
			Right	33.7	C	16.6	B
		Intersection		**45.2**	**D**	**31.9**	**C**

[1]Average seconds of delay per vehicle.
LOS = Level of Service

Signalized LOS Criteria	
A	10
B	20
C	35
D	55
E	80
F	> 80



Cumulative Project Only ADT & AM / PM Peak Hour Traffic Volumes

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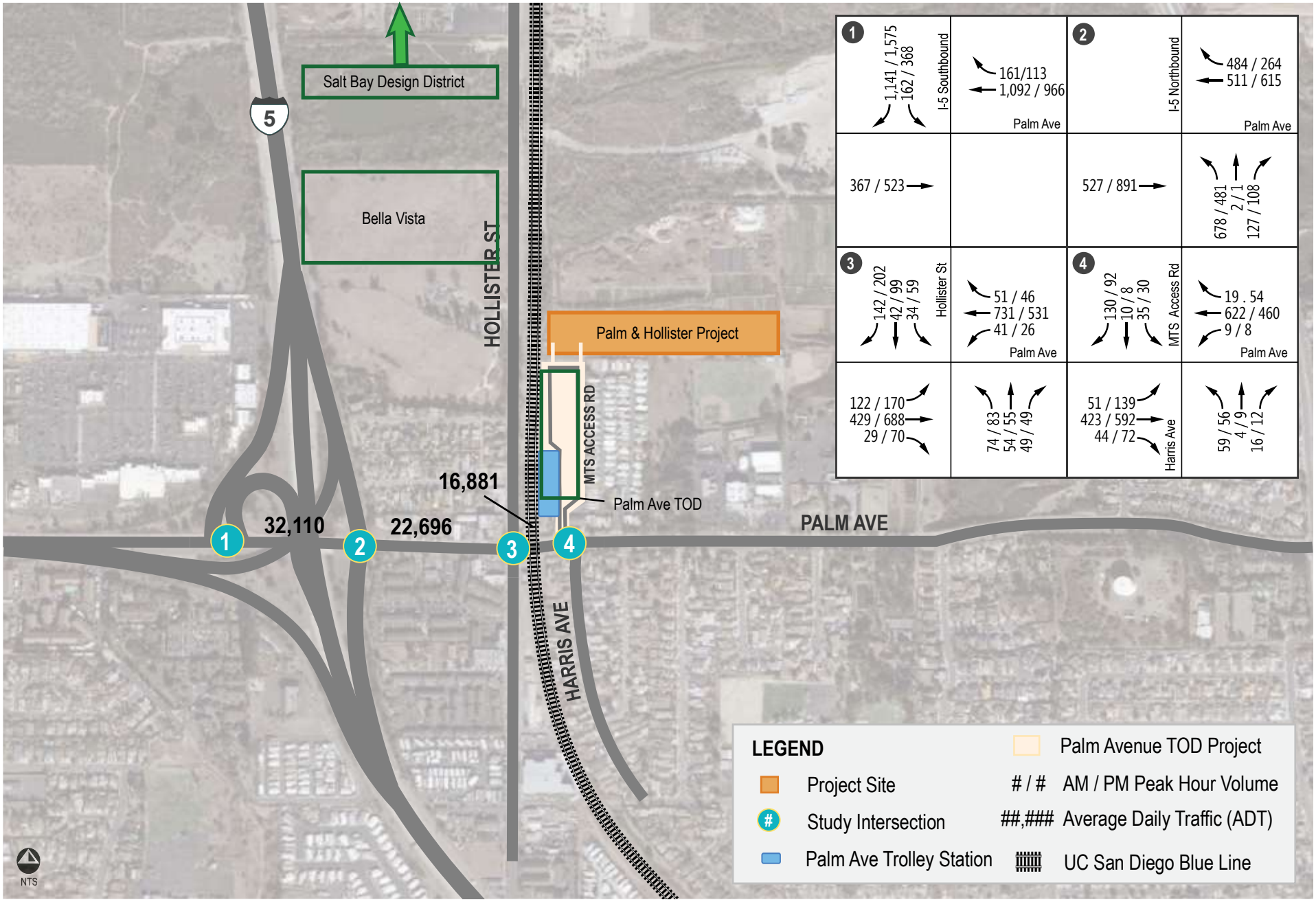
Exhibit 10



Opening Year 2024 Without Project ADT & AM / PM Peak Hour Traffic Volumes

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Exhibit 11

As shown in **Table 8**, the overall study intersections are expected to operate at LOS D or better. However, there are several turning movements at study intersection #3 and #4 that would be expected to operate at LOS E or F.

At the Palm Avenue / Hollister Street intersection (study int. #3), the westbound left-turn movement would operate poorly at LOS E in the AM and PM peak hour. The existing storage capacity of the westbound left-turn lane is approximately 60 feet i.e. 2 to 3 vehicles. There may not be sufficient green time for this turn movement to accommodate the 41 vehicles in the AM and 26 vehicles in the PM peak hour.

At the Palm Avenue / Harris Avenue-MTS Access intersection (study int. #4), the eastbound left-turn lane would operate poorly at LOS F during the AM and PM peak hours. This is due to the 50-foot left- turn pocket due to the rail crossing between the two signals. Also, the westbound left-turn lane would operate at LOS E during the PM peak hour.

5.3 OPENING YEAR 2024 WITHOUT PROJECT QUEUING ANALYSIS

Table 9 presents a queuing analysis under Opening Year 2024 Without Project conditions at movements which the project traffic would affect. **Appendix E** contains the queuing worksheets.

TABLE 9: OPENING YEAR 2024 WITHOUT PROJECT INTERSECTION QUEUE ANALYSIS

Movement	No. Lanes	Storage Length Per Lane (ft)	Peak Hour Volume		95th % Queue (ft) [1]		Queue Exceeds Storage?
			AM	PM	AM	PM	
Int. #1 – Palm Avenue / I-5 Southbound Ramps							
SBL	1	440	162	368	235	384	No
Int. #2 – Palm Avenue / I-5 Northbound Ramps							
NB LTR	1	550	129	114	355	285	No
Int. #3 – Palm Avenue / Hollister Street							
WBL	1	60	41	26	44	43	No
SBL	1	90	34	59	53	**120**	**Yes**
Int. #4 – Palm Avenue / Harris Avenue-MTS Access							
EBL	1	50	51	139	**87**	**82**	**Yes**

[1] Synchro reports 95th percentile queue in feet.

As shown in **Table 9**, the reported 95th percentile queue would exceed the available storage provided for the eastbound left-turn lane at Palm Avenue / Harris Avenue-MTS Access. The increase in vehicular queues exceeding the available storage is due to additional traffic generated by cumulative projects such as the Palm Avenue TOD project, specifically for the eastbound left-turn movement. At Palm Avenue / Hollister Street, the PM peak hour queue is expected to exceed the storage for the southbound left-turn lane.

6 OPENING YEAR 2024 PLUS PROJECT CONDITIONS

6.1 OPENING YEAR 2024 PLUS PROJECT TRAFFIC VOLUMES AND LOS

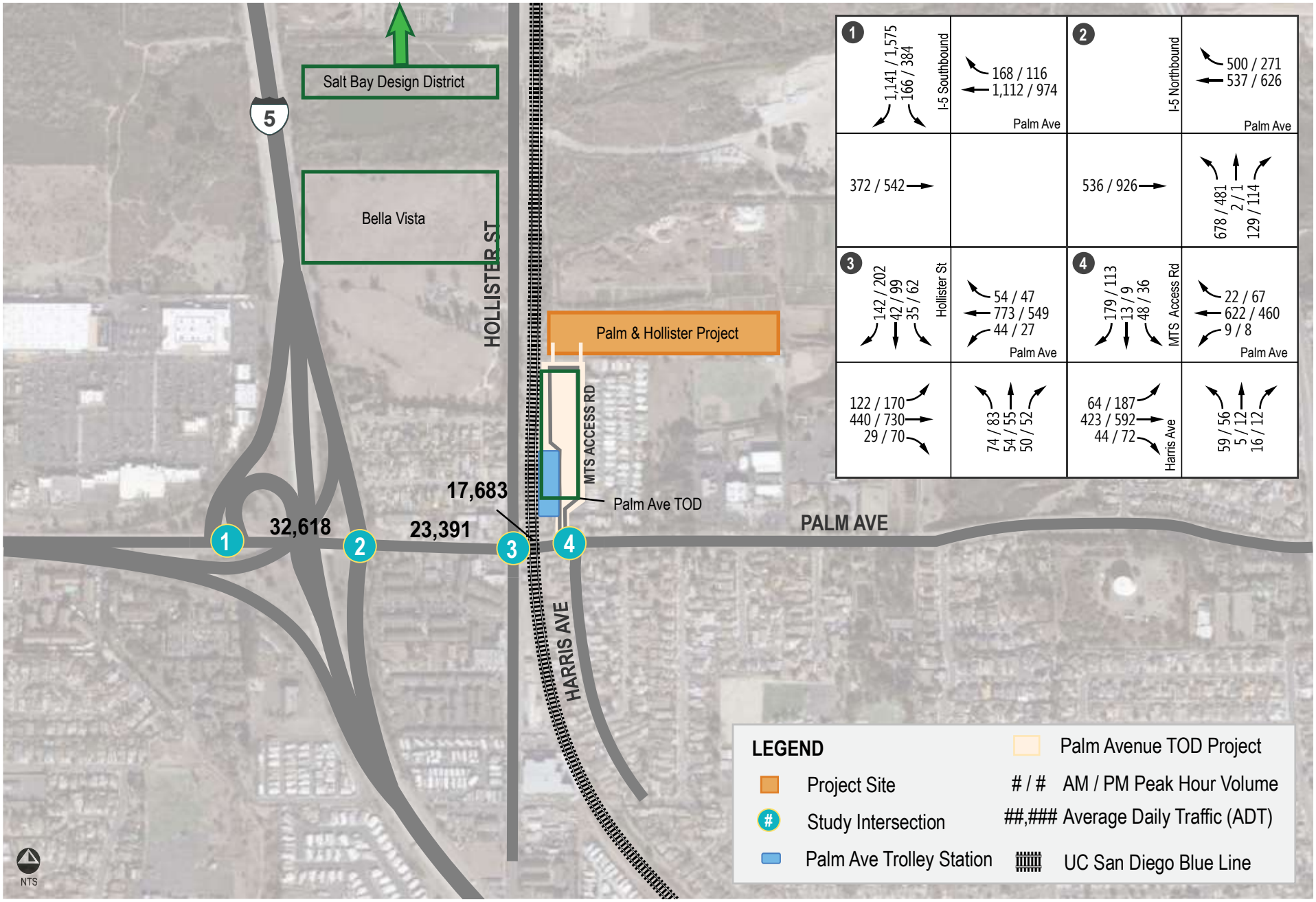
Opening Year 2024 Plus Project traffic volumes are derived by adding project trips to Opening Year 2024 Without Project traffic volumes. The existing lane geometry, pedestrian and bicycle facilities and transit service was assumed in this analysis. **Exhibit 12** shows the Opening Year 2024 Plus Project AM and PM peak hour volumes. **Table 10** summarizes Opening Year 2024 Plus Project AM and PM peak hour level of service for all study intersections with HCM worksheets in **Appendix F**.

TABLE 10: OPENING YEAR 2024 PLUS PROJECT AM/PM PEAK HOUR INTERSECTION LOS

ID	Study Intersection	Approach	Movement	OPENING YEAR 2024 WITHOUT PROJECT (AM Peak Hour)		OPENING YEAR 2024 WITHOUT PROJECT (PM Peak Hour)		OPENING YEAR 2024 PLUS PROJECT (AM Peak Hour)		OPENING YEAR 2024 PLUS PROJECT (PM Peak Hour)	
				Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS
1	Palm Ave & I-5 SB Ramps	All		36.9	D	32.3	C	37.2	D	33.0	C
2	Palm Ave & I-5 NB Ramps	All		19.1	B	13.3	B	19.9	B	15.4	B
3	Palm Ave & Hollister St	Eastbound	Left	54.0	D	80.4	F	85.3	F	87.8	F
			Through	29.9	C	53.5	D	47.4	D	85.5	F
			Right	36.2	D	54.8	D	38.2	D	81.9	F
		Westbound	Left	74.7	E	62.8	E	75.7	E	64.2	E
			Through	11.0	B	12.9	B	8.7	A	13.8	B
			Right	17.0	B	7.7	A	3.6	A	17.6	B
		Northbound	Left	42.6	D	38.1	D	60.7	E	42.8	D
			Through	38.6	D	27.6	C	47.2	D	28.9	C
			Right	21.5	C	25.8	C	48.2	D	27.7	C
		Southbound	Left	47.2	D	41.1	D	49.0	D	48.7	D
			Through	25.6	C	35.6	D	41.2	D	38.0	D
			Right	18.5	B	25.8	C	22.9	C	31.3	C
		Intersection		**25.6**	**C**	**39.5**	**D**	**32.3**	**C**	**47.8**	**D**
4	Palm Ave & Harris Ave-MTS Access	Eastbound	Left	83.9	F	86.5	F	110.7	F	112.6	F
			Through	36.5	D	25.9	C	37.2	D	32.8	C
			Right	19.7	B	25.1	C	27.8	C	29.4	C
		Westbound	Left	51.0	D	65.2	E	78.6	E	67.0	E
			Through	53.5	D	29.2	C	53.6	D	30.9	C
			Right	51.4	D	19.0	B	53.2	D	30.7	C
		Northbound	Left	45.7	D	34.9	C	58.1	E	35.3	D
			Through	22.8	C	21.2	C	62.9	E	33.6	C
			Right	20.7	C	18.5	B	33.7	C	19.4	B
		Southbound	Left	33.1	C	35.5	D	44.1	D	36.7	D
			Through	45.4	D	31.1	C	48.1	D	40.6	D
			Right	33.7	C	16.6	B	57.2	E	26.8	C
		Intersection		**45.2**	**D**	**31.9**	**C**	**51.0**	**D**	**38.7**	**D**

[1]Average seconds of delay per vehicle.

LOS = Level of Service



Opening Year 2024 Plus Project ADT & AM / PM Peak Hour Traffic Volumes

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Exhibit 12

As shown in **Table 10**, the overall level of service at study intersections would operate at LOS D or better. However, there are several turning movements at study intersection #3 and #4 expected to operate at LOS E or F under Opening Year 2024 Plus Project conditions.

At the Palm Avenue / Hollister Street intersection (study int. #3), the westbound left-turn lane is expected to operate poorly at LOS E in the AM and PM peak hour due to the short left-turn pocket available due to the trolley crossing (approximately 60 feet). Only a minor amount of Project traffic is turning left and right on the westbound approach i.e. 3 AM peak hour trips and 1 PM peak hour trip. The majority of Project traffic is traveling westbound through the intersection i.e. 42 AM peak hour trips and 18 PM peak hour trips. Movements on the eastbound approach would operate at LOS F during the AM and PM peak hour.

At the Palm Avenue / Harris Avenue-MTS Access intersection (study int. #4), the eastbound left-turn movement is forecast to operate poorly at LOS F during both the AM and PM peak hours. This is due to the close proximity of the signal at Hollister Street and the trolley crossing limiting the left-turn lane to 50 foot in the eastbound approach and the relatively large volume of left turns expected (187 in the PM peak hour). The eastbound left-turn delay increases in the AM peak hour from 83.9 sec to 110.7 sec in the AM peak hour and from 86.5 sec to 112.6 sec in the PM peak hour. However, the overall delay at the intersection is forecast to operate at LOS D in the AM and PM peak hour with the additional project traffic under Opening Year 2024 Plus Project conditions.

6.2 OPENING YEAR 2024 PLUS PROJECT QUEUE ANALYSIS

Table 11 presents a queuing analysis for Opening Year 2024 Plus Project conditions at movements the project traffic would affect. As shown, the reported 95th percentile queue exceeds the available storage provided for the eastbound left-turn lane at Palm Avenue / Harris Avenue-MTS Access. At Palm Avenue/Hollister Street, the southbound left-turn lane queue is expected to exceed the available storage by other development projects and the queue increases slightly due to project traffic. **Appendix F** contains the queuing worksheets.

TABLE 11: OPENING YEAR 2024 PLUS PROJECT INTERSECTION QUEUE ANALYSIS

Movement	No. Lanes	Storage Length Per Lane (ft)	Opening Year 2024 Plus Project Peak Hour Volume		Opening Year 2024 Without Project 95th % Queue (ft) [1]		Opening Year 2024 Plus Project 95th % Queue (ft) [1]		Queue Exceeds Storage?
			AM	PM	AM	PM	AM	PM	
Int. #1 – Palm Avenue / I-5 Southbound Ramps									
SBL	1	440	166	384	235	343	245	384	No
Int. #2 – Palm Avenue / I-5 Northbound Ramps									
NB LTR	1	550	129	114	355	285	363	294	No
Int. #3 – Palm Avenue / Hollister Street									
WBL	1	60	44	27	44	43	47	49	No
SBL	1	90	35	62	53	**120**	58	**127**	**Yes**
Int. #4 – Palm Avenue / Harris Avenue-MTS Access									
EBL	1	50	64	187	**87**	**82**	**93**	**90**	**Yes**

[1] Synchro reports 95th percentile queue in feet.

At Palm Avenue/Hollister Street, the southbound left-turn queue exceeds the existing storage length. The project is not proposing to lengthen the turn pocket since it would require removing the existing on-street parking provided for businesses on the west side of Hollister Street.

Recommended Improvement:

According to the City's TSM, lengthening a turn pocket is required if the project adds traffic to a turning movement and causes the 95th percentile queue to exceed the available turn pocket length. However, lengthening the turn pocket of the eastbound left-turn lane at Palm Avenue / Harris Avenue-MTS Access is not feasible due to the existing railroad crossing and short distance (170 feet) between the two signalized intersections. Therefore, the Project is recommending the installation of a 5-section signal head for the eastbound left-turn movement at Palm Avenue / Harris Avenue-MTS Access to include a permissive left-turn movement during a flashing yellow arrow. **Table 12** presents the delays, LOS and queues with the proposed improvements at Palm Avenue / Harris Avenue-MTS Access. The Project would prepare a traffic signal modification plan and construct the proposed improvement to the satisfaction of the City Engineer. **Appendix I** contains the Synchro worksheets with the proposed improvements.

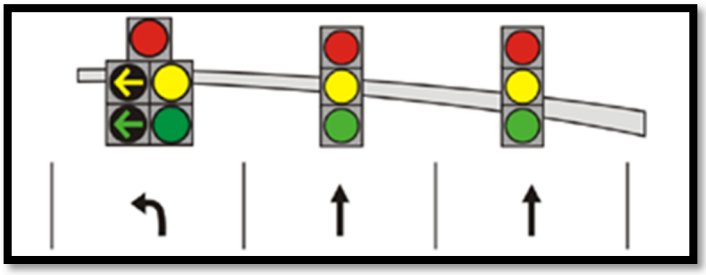


TABLE 12: OPENING YEAR 2024 PLUS PROJECT LOS AND QUEUE WITHOUT & WITH PROPOSED IMPROVEMENTS

ID	Study Intersection	Approach	Movement	OPENING YEAR 2024 PLUS PROJECT							
				WITHOUT IMPROVEMENTS				WITH IMPROVEMENTS			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4	Palm Avenue & Harris Street-Trolley Station Driveway	EB	Left-Turn	110.7	F	112.6	F	42.0	D	41.5	D
		All		51.0	D	38.7	D	47.3	D	33.4	C
		EB Left-Turn 95th % Queue		93 feet		90 feet		75 feet		77 feet	
		EB Left-Turn Available Storage		50 feet				50 feet			

As shown in Table 12, the proposed improvements are expected to improve intersection level of service from LOS F to LOS D for the eastbound left-turn movement during both the AM and PM peak hour under Opening Year Plus Project. It should be noted the eastbound left-turn queue will continue to be exceeded since lengthening the left-turn pocket is not feasible due to the existing railroad tracks and close proximity to the adjacent intersection (Palm Ave / Hollister St).

7 HORIZON YEAR 2050 WITHOUT PROJECT CONDITIONS

7.1 HORIZON YEAR 2050 WITHOUT PROJECT TRAFFIC VOLUMES

The Project will be processing a Community Plan Amendment and Rezone. Therefore, a Horizon Year 2050 Condition analysis is required according to the City's TSM. Horizon Year 2050 Without Project traffic volumes were developed by using the daily traffic volumes within the study area from SANDAG's web- based interactive Transportation Forecast Information Center (TFIC) Year 2050 Series 14 travel model https://tfic.sandag.org/.

To determine traffic growth in the area, Series 14, Year 2025 and Year 2050 daily traffic volumes were extracted from the model and used to determine the growth at the study intersections. Average daily traffic growth in the model within the study area was calculated to be 0.65% per year from Year 2025 to Year 2050. The calculated growth from each segment was applied to each approach at all four study intersections for a period of 29 years (Year 2050 – Year 2021). This growth was applied to the Existing AM and PM peak hour traffic volumes to derive the Horizon Year 2050 Without Project AM and PM peak hour traffic volumes. Horizon Year 2050 volumes were reviewed to determine the reasonableness of growth within the study area. The Horizon Year 2050 Without Project conditions do not assume any roadway improvements within the study area. Therefore, the existing roadway network is used in the Horizon Year 2050 analysis. Appendix G includes the Horizon Year 2050 growth calculation worksheets.

Exhibit 13 shows the Horizon Year 2050 Without Project daily and AM/PM peak hour volumes at study intersections.

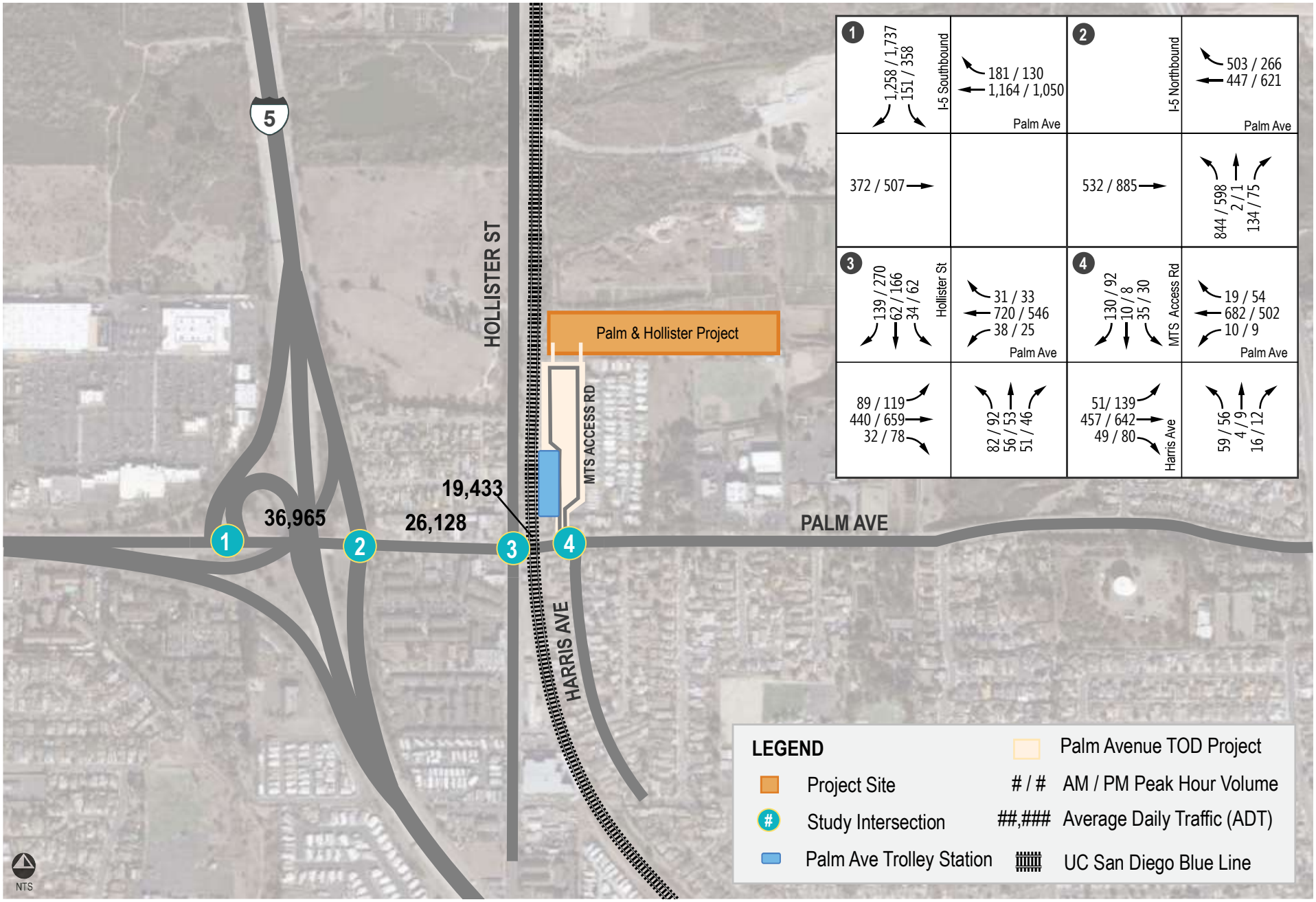
7.2 HORIZON YEAR 2050 WITHOUT PROJECT PEAK HOUR STUDY INTERSECTION LOS

Table 13 summarizes Horizon Year 2050 Without Project AM and PM peak hour level of service for all study intersections. Detailed analysis sheets are contained in **Appendix G**.

As shown in **Table 13**, the overall level of service at Palm Avenue / Hollister is LOS C during the AM peak hour and LOS E during the PM peak hour. At Palm Avenue / Harris Ave-MTS Access, the AM peak hour is forecast to operate at LOS D and PM peak hour is forecast to operate at LOS C.

At the Palm Avenue / Hollister Street intersection (study int. #3), the westbound left-turn movement is operating at LOS E in both the AM and PM peak hour. The existing storage capacity of the westbound left-turn lane is approximately 60 feet i.e. 2 to 3 vehicles. There may not be sufficient green time for this turn movement to accommodate the 38 vehicles in the AM and 25 vehicles in the PM peak hour.

At the Palm Avenue / Harris Avenue-MTS Access intersection (study int. #4), the eastbound left-turn lane is currently operating at LOS F during the AM and PM peak hours. This is due to the 50-foot left-turn pocket provided to accommodate the rail crossing between the two signals.



Horizon Year 2050 Without Project ADT & AM / PM Peak Hour Traffic Volumes

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Exhibit 13

TABLE 13: HORIZON YEAR 2050 WITHOUT PROJECT AM/PM PEAK HOUR INTERSECTION LOS

ID	Study Intersection	Approach	Movement	HORIZON YEAR 2050 WITHOUT PROJECT (AM Peak Hour)		HORIZON YEAR 2050 WITHOUT PROJECT (PM Peak Hour)	
				Delay/veh (sec)[1]	HCM LOS	Delay/veh (sec)[1]	HCM LOS
1	Palm Avenue & I-5 Southbound Ramps	All		46.5	D	37.1	D
2	Palm Avenue & I-5 Northbound Ramps	All		22.8	C	23.6	C
3	Palm Avenue & Hollister Street	Eastbound	Left	47.5	D	141.1	F
			Through	50.3	D	150.6	F
			Right	32.9	C	149.6	F
		Westbound	Left	70.2	E	64.9	E
			Through	9.2	A	9.7	A
			Right	6.9	A	9.6	A
		Northbound	Left	39.2	D	37.5	D
			Through	49.4	D	32.4	C
			Right	23.4	C	33.5	C
		Southbound	Left	55.9	E	60.1	E
			Through	17.1	B	26.2	C
			Right	11.2	B	18.6	B
		Intersection		**24.6**	**C**	**57.4**	**E**
4	Palm Avenue & Harris Avenue-MTS Access	Eastbound	Left	95.9	F	96.1	F
			Through	35.8	D	22.3	C
			Right	28.9	C	12.7	B
		Westbound	Left	83.8	F	68.4	E
			Through	41.0	D	29.2	C
			Right	42.5	D	21.8	C
		Northbound	Left	55.2	E	62.4	E
			Through	56.1	E	66.3	E
			Right	24.4	C	24.2	C
		Southbound	Left	65.1	E	62.4	E
			Through	43.9	D	50.1	D
			Right	59.1	E	11.5	B
		Intersection		**47.2**	**D**	**32.0**	**C**

1Average seconds of delay per vehicle.

LOS = Level of Service

Signalized LOS Criteria	
A	10
B	20
C	35
D	55
E	80
F	> 80

7.3 HORIZON YEAR 2050 WITHOUT PROJECT INTERSECTION QUEUING ANALYSIS

Table 14 presents a queuing analysis where project-related traffic at specific turn movements could potentially affect intersection operations under Horizon Year 2050 Without Project conditions. **Appendix G** contains the queuing worksheets.

TABLE 14: HORIZON YEAR 2050 WITHOUT PROJECT INTERSECTION QUEUE ANALYSIS

Movement	No. Lanes	Storage Length Per Lane (ft)	Peak Hour Volume		95th % Queue (ft) [1]		Queue Exceeds Storage?
			AM	PM	AM	PM	
Int. #1 – Palm Avenue / I-5 Southbound Ramps							
SBL	1	440	155	358	281	338	No
Int. #2 – Palm Avenue / I-5 Northbound Ramps							
NB LTR	1	550	136	76	361	346	No
Int. #3 – Palm Avenue / Hollister Street							
WBL	1	60	38	25	45	34	No
SBL	1	90	34	62	80	**122**	**Yes**
Int. #4 – Palm Avenue / Harris Avenue-MTS Access							
EBL	1	50	51	139	**85**	**80**	**Yes**

[1] Synchro reports 95th percentile queue in feet. **Bold** indicates queue storage is exceeded.

As shown in **Table 14**, the reported 95th percentile queue exceeds the available storage provided for the southbound left-turn lane at Palm Avenue / Hollister Street and eastbound left-turn lane at Palm Avenue / Harris Avenue-MTS Access. The increase in vehicular queues exceeding the available storage is due to additional traffic generated by cumulative projects such as the Palm Avenue TOD project, specifically for the eastbound left-turn movement.

8 HORIZON YEAR 2050 PLUS PROJECT CONDITIONS

8.1 HORIZON YEAR 2050 PLUS PROJECT TRAFFIC VOLUMES

Horizon Year 2050 Plus Project traffic volumes were derived by adding trips expected to be generated by the Project to Horizon Year 2050 Without Project traffic volumes. **Exhibit 14** shows the Horizon Year 2050 Plus Project peak hour volumes. The existing lane geometry, pedestrian and bicycle facilities and transit service was assumed in this analysis.

8.2 HORIZON YEAR 2050 PLUS PROJECT PEAK HOUR STUDY INTERSECTION LOS

Table 15 summarizes Horizon Year 2050 Plus Project AM and PM peak hour level of service for all study intersections. Synchro analysis worksheets are contained in **Appendix H**.

As shown in **Table 15**, the overall level of service at the I-5/Palm Avenue interchange intersections are forecast to operate at LOS D or better under Horizon Year 2050 Plus Project conditions while Palm Avenue/Hollister Street shown to operate at LOS E during the PM peak hour. The Palm Avenue/Harris Avenue-MTS Access intersection is forecast to operate at LOS F during the AM peak hour and LOS D during the PM peak hour.

At the Palm Avenue / Hollister Street intersection, the westbound left-turn lane is forecast to operate at LOS E in the AM and PM peak hour due to the short left-turn pocket provided i.e. approx. 60 feet. Only a minor amount of project traffic is turning left and right in the westbound approach i.e. 3 AM peak hour trips and 1 PM peak hour trip. The majority of Project traffic is traveling through the intersection in the westbound approach i.e. 42 AM peak hour trips and 18 PM peak hour trips. The overall delay at the intersection is forecast to operate at LOS E during the PM peak hour and LOS C during the AM peak hour.

At the Palm Avenue / Harris Avenue-MTS Access intersection, the addition of project traffic at the eastbound left-turn movement is forecast to operate at LOS F during both the AM and PM peak hours. This is due to the close proximity to the signal at Hollister Street limiting the left-turn lane to 50 foot in the eastbound approach. The eastbound left-turn delay increases in the AM peak hour from 95.9 to 113.4 in the AM peak hour and from 96.1 to 116.3 in the PM peak hour. The overall delay at the intersection is forecast to operate at LOS F in the AM peak hour and LOS D in the PM peak hour with the additional Project traffic.

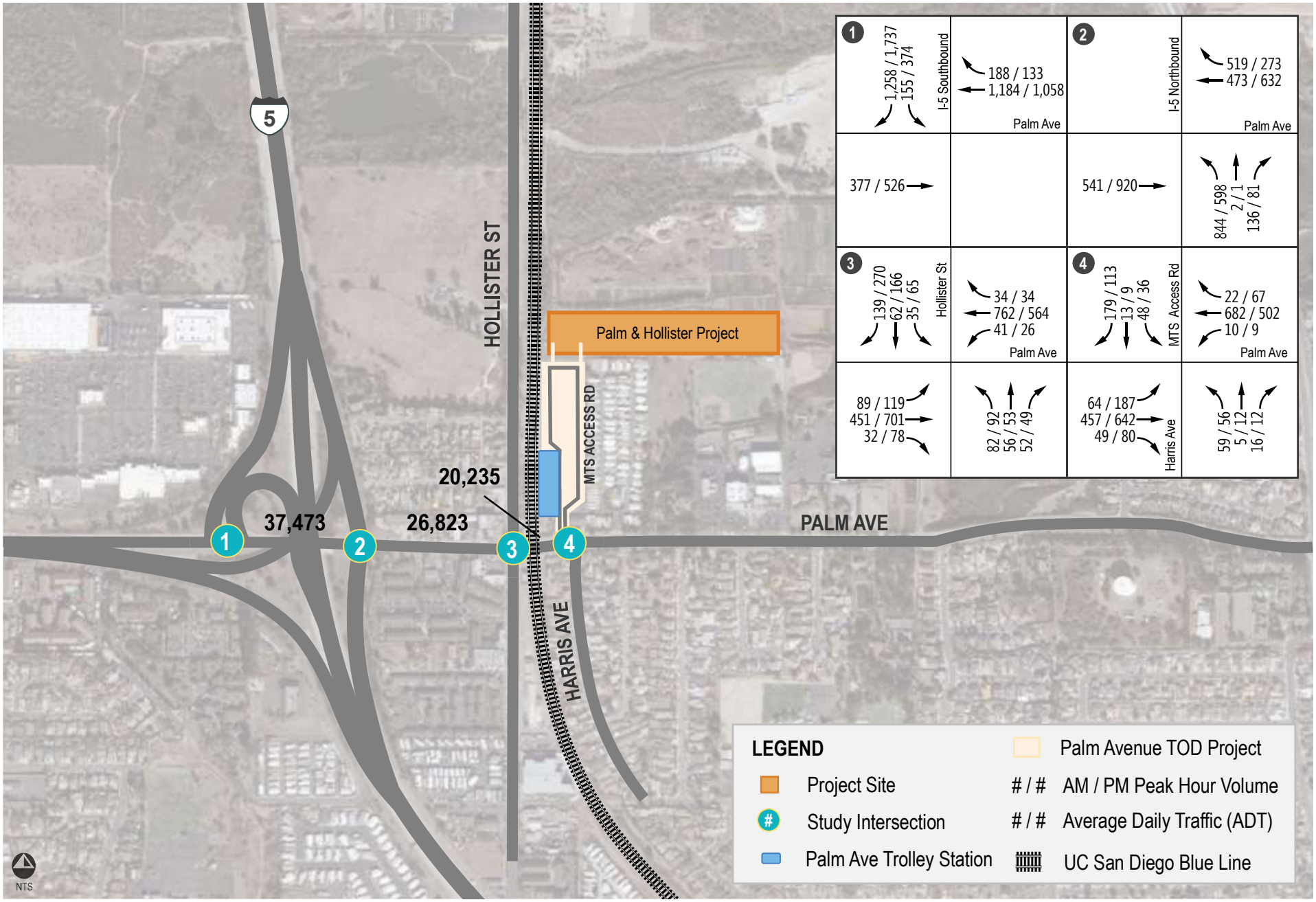
TABLE 15: HORIZON YEAR 2050 PLUS PROJECT AM/PM PEAK HOUR INTERSECTION LOS

ID	Study Intersection	Approach	Movement	HORIZON YEAR 2050 WITHOUT PROJECT (AM Peak Hour)		HORIZON YEAR 2050 WITHOUT PROJECT (PM Peak Hour)		HORIZON YEAR 2050 PLUS PROJECT (AM Peak Hour)		HORIZON YEAR 2050 PLUS PROJECT (PM Peak Hour)	
				Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS	Delay/veh (sec)	HCM LOS
1	Palm Ave & I-5 SB Ramps	All		46.5	D	37.1	D	53.1	D	50.0	D
2	Palm Ave & I-5 NB Ramps	All		22.8	C	23.6	C	24.2	C	23.8	C
3	Palm Ave & Hollister St	Eastbound	Left	47.5	D	141.1	F	54.2	D	149.5	F
			Through	50.3	D	150.6	F	53.7	D	151.7	F
			Right	32.9	C	149.6	F	36.0	D	160.0	F
		Westbound	Left	70.2	E	64.9	E	74.4	E	66.8	E
			Through	9.2	A	9.7	A	9.5	A	9.9	A
			Right	6.9	A	9.6	A	7.4	A	9.8	A
		Northbound	Left	39.2	D	37.5	D	65.1	E	43.9	D
			Through	49.4	D	32.4	C	32.8	C	38.8	D
			Right	23.4	C	33.5	C	24.8	C	36.4	D
		Southbound	Left	55.9	E	60.1	E	58.4	E	60.8	E
			Through	17.1	B	26.2	C	32.4	C	30.2	C
			Right	11.2	B	18.6	B	17.5	B	20.8	C
		Intersection		**24.6**	**C**	**57.4**	**E**	**30.7**	**C**	**78.6**	**E**
4	Palm Ave & Harris Ave-MTS Access	Eastbound	Left	95.9	F	96.1	F	113.4	F	116.3	F
			Through	35.8	D	22.3	C	37.0	D	36.6	D
			Right	28.9	C	12.7	B	29.1	C	32.2	C
		Westbound	Left	83.8	F	68.4	E	126.6	F	78.1	E
			Through	41.0	D	29.2	C	131.6	F	34.6	C
			Right	42.5	D	21.8	C	144.6	F	24.1	C
		Northbound	Left	55.2	E	62.4	E	61.2	E	35.7	D
			Through	56.1	E	66.3	E	67.7	E	28.1	C
			Right	24.4	C	24.2	C	25.6	C	25.5	C
		Southbound	Left	65.1	E	62.4	E	67.0	E	65.3	E
			Through	43.9	D	50.1	D	44.1	D	54.0	D
			Right	59.1	E	11.5	B	82.3	F	17.0	B
		Intersection		**47.2**	**D**	**32.0**	**C**	**86.4**	**F**	**42.1**	**D**

[1]Average seconds of delay per vehicle.

LOS = Level of Service

Signalized LOS Criteria	
A	10
B	20
C	35
D	55
E	80
F	> 80



Horizon Year 2050 Plus Project ADT & AM / PM Peak Hour Traffic Volumes

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Exhibit 14

8.3 HORIZON YEAR 2050 PLUS PROJECT INTERSECTION QUEUE ANALYSIS

Table 16 presents the Horizon Year 2050 Plus Project conditions queuing analysis. **Appendix H** contains the queuing worksheets.

TABLE 16: HORIZON YEAR 2050 PLUS PROJECT INTERSECTION QUEUING ANALYSIS

Movement	No. Lanes	Storage Length Per Lane (ft)	Horizon Year 2050 Plus Project Peak Hour Volume		Horizon Year 2050 Without Project 95th % Queue (ft) [1]		Horizon Year 2050 Plus Project 95th % Queue (ft) [1]		Queue Exceeds Storage?
			AM	PM	AM	PM	AM	PM	
Int. #1 – Palm Avenue / I-5 Southbound Ramps									
SBL	1	440	155	374	281	338	346	414	No
Int. #2 – Palm Avenue / I-5 Northbound Ramps									
NB LTR	1	550	136	81	361	346	378	411	No
Int. #3 – Palm Avenue / Hollister Street									
WBL	1	60	41	26	45	34	43	39	No
SBL	1	90	35	65	80	**120**	**104**	**129**	**Yes**
Int. #4 – Palm Avenue / Harris Avenue-MTS Access									
EBL	1	50	64	187	**85**	**80**	**96**	**85**	**Yes**

[1] Synchro reports 95th percentile queue in feet. **Bold** indicates queue storage is exceeded.

As shown, the intersection queueing analysis indicates the eastbound left-turn queue would exceed the available storage at Palm Avenue / Harris Avenue-MTS Access during the AM and PM peak hours. Therefore, the Project is recommending the installation of a 5-section signal head for the eastbound left-turn movement at Palm Avenue / Harris Avenue-MTS Access to include a permissive left-turn movement during a flashing yellow arrow. At Palm Avenue/Hollister Street, the southbound left-turn queue exceeds the existing storage length. The project is not proposing to lengthen the turn pocket since it would require removing the existing on-street parking provided for businesses on the west side of Hollister Street. **Table 17** presents the delays, LOS and queues with the proposed improvements at Palm Avenue / Harris Avenue-MTS Access. The Project would construct the proposed improvement to the satisfaction of the City Engineer.

Appendix I contains the worksheets with improvements.

TABLE 17: HORIZON YEAR 2050 PLUS PROJECT LOS AND QUEUE WITHOUT & WITH PROPOSED IMPROVEMENTS

ID	Study Intersection	Approach	Movement	HORIZON YEAR 2050 PLUS PROJECT							
				WITHOUT IMPROVEMENTS				WITH IMPROVEMENTS			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4	Palm Avenue & Harris Street-Trolley Station Driveway	EB	Left-Turn	113.4	F	116.3	F	45.0	D	47.3	D
		All		86.4	F	42.1	D	68.2	E	36.2	D
		EB Left-Turn 95th % Queue		96 feet		90 feet		78 feet		79 feet	
		EB LT Available Storage		50 feet				50 feet			

As shown in Table 17, the proposed improvements are expected to improve the eastbound left-turn movement level of service from LOS F to LOS D for both the AM and PM peak hour under Horizon Year Plus Project. The intersection level of service improves from LOS F to LOS E in the AM peak hour and remains as LOS D in the PM peak hour. It should be noted the eastbound left-turn queue will continue to be exceeded since lengthening the left-turn pocket is not feasible due to the existing railroad tracks and close proximity to the adjacent intersection (Palm Ave / Hollister St).

9 PROJECT ACCESS, PARKING AND ON-SITE CIRCULATION

Vehicular access to the Project would be from the south along the western portion of the project site via a proposed access easement through property owned by MTS. The Palm Avenue TOD project plans to construct 390 apartment units, 3,400 SF of retail, and 2,750 SF childcare facility on the existing surface parking lot of the Palm Avenue Trolley Station. **Exhibit 15** illustrates how the proposed Palm Avenue TOD project would be developed and shows the Palm and Hollister project at the north end of the MTS property.

The existing signalized intersection of Palm Avenue / Harris Avenue-MTS Access will provide access to the Palm and Hollister development, Palm Avenue TOD project, and the Palm Avenue Trolley Station. The red arrows on **Exhibit 15** demonstrate how traffic would circulate within the Palm Avenue TOD site and how traffic would enter and exit the Palm and Hollister development.

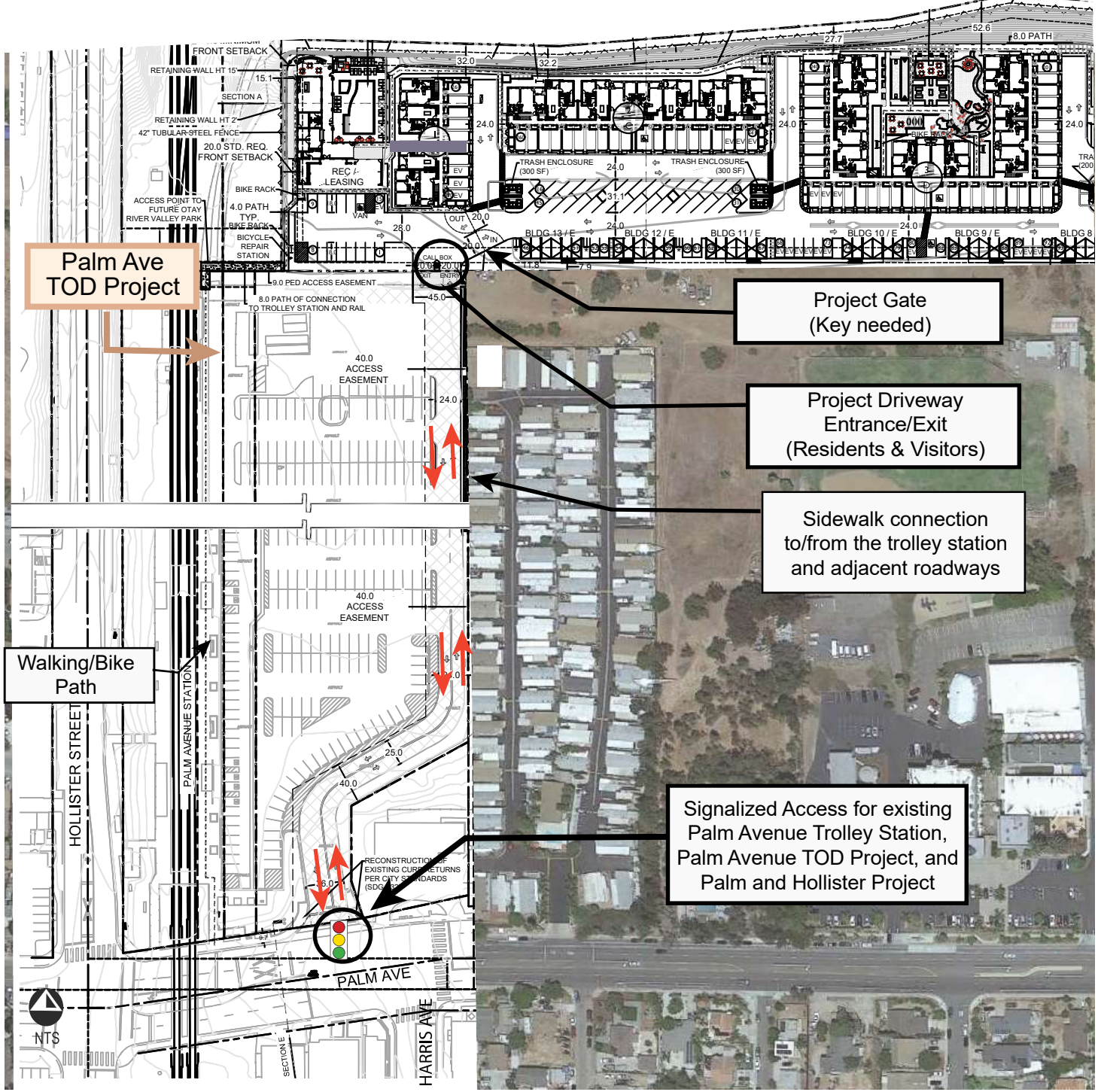
Residents of the Palm and Hollister development would use the eastern driveway to enter the property. The driver would then activate the main security gate using a remote-control gate opener. Residents exiting the Palm and Hollister development would make an immediate left turn using the eastern driveway. Residents exiting the Palm and Hollister development could then either travel south or turn right traveling through the Palm Avenue TOD project to access the signalized intersection at Palm Avenue.

Visitors of the Palm and Hollister development would enter the site using the western driveway which leads directly to the parking area designated for the leasing office and recreational facility. Visitors entering the property through the security gate would use the call box to contact a resident for access through the security gate. When exiting the property, the security gate will open automatically when a vehicle is detected. Visitors would then exit using the eastern driveway traveling south towards the signal at Palm Avenue. Visitors of the Palm and Hollister development will not be permitted to use the parking designated for the Palm Avenue TOD project or the Palm Avenue Trolley Station parking lot. It is presumed that the Palm Avenue TOD project and/or MTS would provide signage related to parking restrictions. Property owners would be responsible for enforcing parking restrictions on their own properties.

The Project is not required to provide standard parking spaces for residents since the Project is located in a Parking Standards Transit Priority Area per Table 142-05C of the City's Municipal Code. However, the project is providing a total of 264 spaces for residents which equates to 1.33 spaces per dwelling unit. **Table 18** provides a summary of the parking provided on-site.

TABLE 18: PROJECT SITE PARKING SUMMARY

Parking Facility	Number of Parking Spaces	
	Required	Provided
Garage	0	100
Carports	0	48
Open	0	116
Accessible (ADA)	6	8
Electric Vehicle	27	27
Motorcycle	20	20
Bicycle	46	48
Total Vehicular Parking	**34**	**264**



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Project Access and On-Site Circulation

OCTOBER 2022
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Exhibit 15

10 ACTIVE TRANSPORTATION

Active transportation relates to human-powered, multi-modal transportation solutions that connect people of all ages and abilities to where they need to go using active modes, primarily walking and bicycling. The term "active transportation" highlights the connection between our transportation choices and healthy and active living. An active transportation network usually includes a combination of on-street and off-street facilities that work together to help move pedestrians and bicyclists throughout a community safely and conveniently, and connect to other travel modes such as public transit. Investing in pedestrian and bicycle facilities as well as public transportation creates opportunities for people to exercise.

PEDESTRIAN FACILITIES:

Sidewalks are currently provided on both sides of Palm Avenue near the project site. On Hollister Street approximately 190 feet north of Palm Avenue, sidewalks are currently provided and then ends on both sides north of this point. Sidewalks are currently provided on both sides of Harris Avenue approximately 90 feet south of Palm Avenue and then ends on the west side of Harris Avenue past this point. Marked pedestrian crosswalks and ADA compliant curb ramps are provided at both the Palm Avenue/Hollister Street intersection and Palm Avenue/Harris Avenue-MTS Access intersection. To improve the walkability near the Project site, the following improvements are proposed by the Project:

- **Pedestrian Improvements**

  At Palm Avenue/Hollister Street

  - a) install a blank-out NO RIGHT TURN sign on the northbound and southbound approach on Hollister Street to be displayed during the existing Lead Pedestrian Interval (LPI). This will help reduce conflicts between vehicles and pedestrians that are crossing the street.
  - b) Install a blank-out NO LEFT TURN sign on the southbound approach at Palm Avenue/Hollister Street to be displayed during preemption limited service. This will notify drivers that left-turn movements are prohibited when a train is crossing and help reduce conflicts between vehicles and pedestrians crossing the street.
  - c) Install High Visibility Pedestrian Crossings (Marked Continental Crosswalks) at each leg of the Palm Avenue/Hollister intersection
  - d) Install High Visibility Pedestrian Crossing (Marked Continental Crosswalks) at each leg of the Palm Avenue/Harris Avenue-MTS Access intersection, except at the west leg where pedestrian crossing is prohibited.

BICYCLE FACILITIES:

Class II (striped) bike lanes are currently provided on both sides of Palm Avenue east of Harris Avenue-MTS Access. West of the Palm Avenue/Harris Avenue-MTS Access intersection, Class II bike lanes are not provided. Bicycle detection is currently provided at the signalized intersections at Palm Avenue/Hollister Street and Palm Avenue/Harris Avenue-MTS Access in the eastbound and westbound approaches. To improve bicycle facilities near the Project site, the following improvements are proposed by the Project:

- **Bicycle Improvements**

At Palm Avenue/Hollister Street and Palm Avenue/Harris Avenue-MTS Access, replace the existing vehicle and bicycle inductive loop detectors in the eastbound and westbound approaches with new bicycle loop detectors to improve the detection of motorcyclists and bicyclists on Palm Avenue to the satisfaction of the City Traffic Engineer.

TRANSIT FACILITIES:

Transit service in this area is operated and maintained by MTS. The UC San Diego Blue Line Trolley (Blue Line) is a light rail line that currently operates between UTC and San Ysidro. The Project site is located approximately 600 feet north of the Palm Avenue Trolley Station that serves the Blue Line. The Project does not propose any improvements to the existing transit service or facilities since the project is not anticipated to negatively affect the existing operations.

11 SYSTEMIC HOTSPOT EVALUATION

Systemic hotspots are identified using the framework of the systemic collision matrices developed by the *City of San Diego's Systemic Safety The Data-Driven Path to Vision Zero*, April 2019. **Table 19** summarizes the systemic hotspot criteria and whether a study intersection meets the criteria. As shown, the pedestrian and bicycle footprint are met at Palm Avenue / Hollister Street and Palm Avenue / Harris Avenue-MTS Access. The Project is providing non-motorized improvements at Palm Avenue / Hollister Street. Pedestrian and bicycle facilities are currently provided at Project access.

TABLE 19: SYSTEMIC HOTSPOT CRITERIA – STUDY INTERSECTIONS

Footprint[1]	Intersection Criteria for Analysis[2]	I-5 SB Ramps & Palm Avenue		I-5 NB Ramps & Palm Avenue		Palm Avenue & Hollister Street		Palm Avenue & Harris Avenue-MTS Access	
P-1	Signalized	Yes	Criteria Not Met	Yes	Criteria Not Met	Yes	Criteria Not Met	Yes	Criteria Not Met
	One-way 3-lane roadway intersects 4-lane roadway **OR**	Yes		No		No		No	
	One-way 3-lane roadway intersects one-way 3-lane roadway	No		No		No		No	
	Primary road ADT: 7,001 – 15,000	No		No		Yes		Yes	
P-2	Signalized	Yes	Criteria Not Met	Yes	Criteria Not Met	Yes	**Criteria Met**	Yes	**Criteria Met**
	4-lane roadway intersects 2-lane roadway	No		No		Yes		Yes	
	Primary road ADT: 7,001 – 25000	Yes		Yes		Yes		Yes	
P-3	Signalized	Yes	Criteria Not Met	Yes	Criteria Not Met	Yes	**Criteria Met**	Yes	Criteria Not Met
	4-lane roadway intersects 2-lane roadway	No		No		Yes		Yes	
	Primary road ADT: 15,001 – 25,000	Yes		Yes		Yes		No	
B-1	Signalized	Yes	Criteria Not Met	Yes	Criteria Not Met	Yes	**Criteria Met**	Yes	**Criteria Met**
	4-lane roadway intersects 2-lane roadway **OR**	No		No		Yes		Yes	
	4-lane roadway intersects 4-lane roadway	No		No		No		No	
B-2	Side-street stop	No	Criteria Not Met	No	Criteria Not Met	No	Criteria Not Met	No	Criteria Not Met
	2-lane roadway intersects 4-lane roadway	No		No		No		No	
V-1	Signalized	Yes	Criteria Not Met	Yes	Criteria Not Met	Yes	Criteria Not Met	Yes	Criteria Not Met
	4-lane roadway intersects 2-lane roadway	No		No		Yes		Yes	
	Primary road ADT: >15,000	Yes		Yes		Yes		No	
	Secondary road ADT: ≤7,000	No		No		No		Yes	
V-2	Signalized	Yes	Criteria Not Met	Yes	Criteria Not Met	Yes	Criteria Not Met	Yes	Criteria Not Met
	6-lane roadway intersects 4-lane roadway	No		No		No		No	
	Primary road ADT: >15,000	Yes		Yes		Yes		No	
	Secondary road ADT: >7,000	Yes		Yes		Yes		No	
V-3	Signalized	Yes	Criteria Not Met	Yes	Criteria Not Met	Yes	Criteria Not Met	Yes	Criteria Not Met
	4-lane roadway intersects 4-lane roadway	No		No		No		No	
	Secondary road ADT: >7,000	Yes		Yes		Yes		No	
	Signalized	Yes		Yes		Yes		Yes	

Footprint[1]	Intersection Criteria for Analysis[2]	I-5 SB Ramps & Palm Avenue		I-5 NB Ramps & Palm Avenue		Palm Avenue & Hollister Street		Palm Avenue & Harris Avenue-MTS Access	
V-4	One-way 3-lane roadway intersects with a one-way 3-lane roadway	No	Criteria Not Met	No	Criteria Not Met	No	Criteria Not Met	No	Criteria Not Met
	Primary Roadway ADT: <15,000	No		No		Yes		Yes	
	Secondary Roadway ADT: >7,000	Yes		Yes		No		No	

1 Type of Matrix – Intersection Footprint #, P=Pedestrian, B=Bicycle, and V=Vehicle

2 Based on the City of San Diego Systemic Safety, The Data-Driven Path to Vision Zero, April 2019, Appendix C

Systemic hotspots at study intersections were identified using the framework of the systemic collision matrices developed by the *City of San Diego's Systemic Safety The Data-Driven Path to Vision Zero*, April 2019. In Appendix C, threshold criteria such as roadway characteristics, traffic volumes, and intersection control types are used to identify a hotspot. If the criteria for a study location is met, specific countermeasures are listed in efforts to improve the safety of motorists, pedestrians and bicyclists. Based on the evaluation for the project's study area, the intersection criteria is met for pedestrian footprints (P-2 and P-3) and bicycle footprint (B-1) at Palm Avenue / Hollister Street and pedestrian footprint P-2 and bicycle footprint (B-1) at Palm Avenue / Harris Avenue-MTS Access. Therefore, the following countermeasures are proposed by the project in accordance with the *City's Systemic Safety The Data-Driven Path to Vision Zero.*

Proposed Countermeasures at Palm Avenue / Hollister Street

- Install High Visibility Pedestrian Crossing (Marked Continental Crosswalks) at each leg of the intersection;
- Install blank-out NO RIGHT TURN signs on the northbound and southbound approach of Hollister Street to be displayed during the Lead Pedestrian Interval (LPI) phase;
- Install a blank-out NO LEFT TURN sign on the southbound approach of Hollister Street to be displayed during preemption limited service; and
- Replace the existing vehicle and bicycle inductive loop detectors in the eastbound and westbound approaches of Palm Avenue with new vehicle and bicycle loop detectors to the satisfaction of the City Traffic Engineer.

At the intersection of Palm Avenue / Harris Avenue-MTS Access, the intersection criteria is met for pedestrian footprint (P-2) and bicycle footprint (B-1). Therefore, the following countermeasures are proposed by the project.

Proposed Countermeasures at Palm Avenue / Harris Avenue-MTS Access

- Install High Visibility Pedestrian Crossing (Marked Continental Crosswalks) at each leg of the intersection, except at the west leg where pedestrian crossing is prohibited;
- Replace the existing vehicle and bicycle inductive loop detectors in the eastbound and westbound approaches of Palm Avenue with new vehicle and bicycle loop detectors to the satisfaction of the City Traffic Engineer.

12 FINDINGS AND RECOMMENDATIONS

This Local Mobility Analysis (LMA) evaluates the effects of a development project on mobility, access, circulation and related safety elements near the Project site per the City's Transportation Study Manual (September 2020). Below is a brief summary of analysis results.

Existing Conditions:

The results of the Existing conditions analysis show that all four signalized study intersections currently operate at LOS D or better. The westbound left-turn at Palm Avenue / Hollister Street is currently operating at LOS E during both the AM and PM peak hour. Synchro's Sim-Traffic software was utilized to evaluate these two closely spaced intersections due to the rail crossing several times during the AM and PM peak hours.

Opening Year 2024 Without Project Conditions:

The Opening Year 2024 Without Project condition includes traffic from three cumulative projects added to the existing traffic volumes at the study intersections. Under the Opening Year 2024 Without Project condition, all four study intersections are forecast to operate at LOS D or better, although the westbound left at Palm Ave/Hollister St for both AM and PM peak hours, and westbound left at Palm Ave/Harris Ave-MTS Access for PM peak hour are expected to operate at LOS E. Additionally, the eastbound left at Palm Ave/Hollister St for PM peak hour and eastbound left at Palm Ave/Harris Ave-MTS Access for both AM and PM peak hours are expected to operate at LOS F.

Opening Year 2024 Plus Project Conditions:

Under the Opening Year 2024 Plus Project conditions, all study intersections continue to operate at LOS D or better. However, the intersection queuing analysis for Palm Avenue / Harris Avenue-MTS Access indicates that vehicles in the eastbound left-turn lane would spill over into the through lane due to the limited amount of storage available. Lengthening the turn pocket is not physically feasible. Therefore, the following improvements are recommended:

Recommended Improvement:

According to the City's TSM, lengthening a turn pocket is required if the project adds traffic to a turning movement and causes the 95th percentile queue to exceed the available turn pocket length. However, lengthening the turn pocket of the eastbound left-turn lane at Palm Avenue / Harris Avenue-MTS Access is not feasible due to the existing railroad crossing and short distance (170 feet) between the two signalized intersections. Therefore, the Project is recommending the installation of a 5-section signal head for the eastbound left-turn movement at Palm Avenue / Harris Avenue-MTS Access to include a permissive left-turn movement during a flashing yellow arrow. **Table 20** presents the delays, LOS and queues with the proposed improvements at Palm Avenue / Harris Avenue-MTS Access. The Project would prepare a traffic signal modification plan and construct the proposed improvement to the satisfaction of the City Engineer.

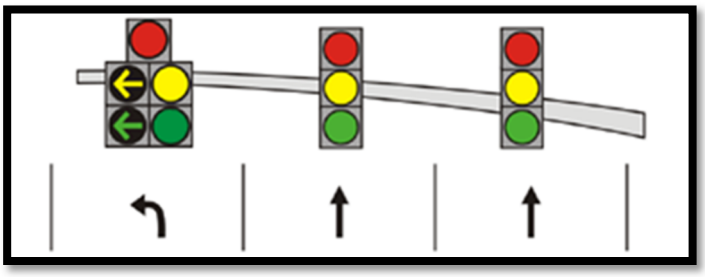

TABLE 20: OPENING YEAR 2024 PLUS PROJECT LOS AND QUEUE WITHOUT & WITH PROPOSED IMPROVEMENTS

ID	Study Intersection	Approach	Movement	OPENING YEAR 2024 PLUS PROJECT							
				WITHOUT IMPROVEMENTS				WITH IMPROVEMENTS			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4	Palm Avenue & Harris Avenue-MTS Access Driveway	EB	Left-Turn	110.7	F	112.6	F	42.0	D	41.5	D
		All		51.0	D	38.7	D	47.3	D	33.4	C
		EB Left-Turn 95th % Queue		93 feet		90 feet		75 feet		77 feet	
		Exceeded Queue		43 feet		40 feet		25 feet		27 feet	
		EB Left-Turn Available Storage		50 feet				50 feet			

As shown in Table 20, the proposed improvements are expected to improve the eastbound left-turn movement intersection level of service from LOS F to LOS D for during both the AM and PM peak hour. The intersection level of service remains as LOS D during AM peak hour and improves from LOS D to LOS C during PM peak hour. It should be noted the eastbound left-turn queue will continue to be exceeded since lengthening the left-turn pocket is not feasible due to the existing railroad tracks and close proximity to the adjacent intersection (Palm Ave / Hollister St).

Horizon Year 2050 Without Project Conditions:

Horizon Year 2050 Without Project condition assumes traffic growth based on SANDAG's web- based interactive Transportation Forecast Information Center (TFIC) Year 2050 Series 14 travel model. Under the Horizon Year 2050 Without Project conditions, all four study intersections are forecast to operate at LOS D or better during the AM and PM peak hour with the exception of Palm Avenue / Hollister Street intersection during the PM peak hour which would operate at LOS E.

Horizon Year 2050 Plus Project Conditions:

Under Horizon Year 2050 Plus Project conditions, the intersection at Palm Avenue / Harris Avenue-MTS Access is forecast to operate at LOS F during the AM peak hour and LOS D during the PM peak hour. The eastbound left-turn lane is forecast to operate at LOS F due to the short left-turn pocket (50 feet) and the trolley crossings interrupting signal operations. In addition, the intersection queueing analysis indicates the eastbound left-turn queue would exceed the available storage at Palm Avenue / Harris Avenue-MTS Access during the AM and PM peak hours. Therefore, the Project is recommending the installation of a 5-section signal head for the eastbound left-turn movement at Palm Avenue / Harris Avenue-MTS Access to include a permissive left-turn movement during a flashing yellow arrow. **Table 21** presents the delays, LOS and queues with the proposed improvements at Palm Avenue / Harris Avenue-MTS Access. The Project would construct the proposed improvement to the satisfaction of the City Engineer.

TABLE 21: HORIZON YEAR 2050 PLUS PROJECT LOS AND QUEUE WITHOUT & WITH PROPOSED IMPROVEMENTS

ID	Study Intersection	Approach	Movement	HORIZON YEAR 2050 PLUS PROJECT							
				WITHOUT IMPROVEMENTS				WITH IMPROVEMENTS			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4	Palm Avenue & Harris Street-Trolley Station Driveway	EB	Left-Turn	113.4	F	116.3	F	45.0	D	47.3	D
		All		86.4	F	42.1	D	68.2	E	36.2	D
		EB Left-Turn 95th % Queue		96 feet		90 feet		78 feet		79 feet	
		EB Left-Turn 95th % Queue		50 feet				50 feet			

As shown in **Table 21**, the proposed improvements are expected to improve the eastbound left-turn movement intersection level of service from LOS F to LOS D for during both the AM and PM peak hour. With the proposed improvements, the overall LOS improves from LOS F to E during the AM peak hour and would remain as LOS D during the PM peak hour. It should be noted the eastbound left-turn queue will continue to be exceeded since lengthening the left-turn pocket is not feasible due to the existing railroad tracks and close proximity to the adjacent intersection (Palm Ave / Hollister St).

Systemic Safety Review:

The City of San Diego adopted a Vision Zero approach in 2015 to eliminate fatalities and serious injuries on City streets by 2025. This approach included standardizing processes to perform crash analyses, identify safety issues, and develop a list of low-cost proven safety countermeasures. The City-wide analysis of crashes revealed that many reported crashes occurred at intersections. Each of the roadway user types such as vehicles, pedestrians and bicyclists were evaluated and organized by crash characteristics. This led to the City's recommendation of effective low-cost safety improvements for all users of the roadway.

Systemic hotspots at study intersections were identified using the framework of the systemic collision matrices developed by the *City of San Diego's Systemic Safety Analysis Report Program*, April 2019. In Appendix C, threshold criteria such as roadway characteristics, traffic volumes, and intersection control types are used to identify a hotspot. If the criteria for a study location is met, specific countermeasures are listed in efforts to improve the safety of motorists, pedestrians and bicyclists. Based on the evaluation for the project's study area, the intersection criteria is met for pedestrian footprint (P-2 and P-3) and bicycle footprint (B-1) at Palm Avenue / Hollister Street. Therefore, the following countermeasures are proposed by the project in accordance with the *City's Systemic Safety Analysis Report Program.*

Proposed Countermeasures at Palm Avenue / Hollister Street

- Install High Visibility Pedestrian Crossing (Marked Continental Crosswalks) at each leg of the intersection;
- Install blank-out NO RIGHT TURN signs on the northbound and southbound approach of Hollister Street to be displayed during the existing Lead Pedestrian Interval (LPI) phase;

- Install a blank-out NO LEFT TURN sign on the southbound approach of Hollister Street to be displayed during preemption limited service; and
- Replace the existing vehicle and bicycle inductive loop detectors in the eastbound and westbound approaches of Palm Avenue with new vehicle and bicycle loop detectors to the satisfaction of the City Traffic Engineer.

At the intersection of Palm Avenue / Harris Avenue-MTS Access, the intersection criteria is met for pedestrian footprint (P-2) and bicycle footprint (B-1). Therefore, the following countermeasures are proposed by the project.

Proposed Countermeasures at Palm Avenue / Harris Avenue-MTS Access

- Install High Visibility Pedestrian Crossing (Marked Continental Crosswalks) at all legs of the intersection, except at the west leg where pedestrian crossing is prohibited.
- Replace the existing vehicle and bicycle inductive loop detectors in the eastbound and westbound approaches of Palm Avenue with new vehicle and bicycle loop detectors to the satisfaction of the City Traffic Engineer.

Most Intense and Most Impactful Land Use:

The proposed project requires an amendment to the Otay Mesa-Nestor Community Plan to change the existing land use designation from Open Space to Residential Medium-High Density (20-35 du/nra) and a Rezone to change the existing zone from AR-1-2, RM-1-1, and RS-1-5 to RM-2-6. A Rezone requires the proposed project to analyze the most intense and most impactful use permitted under the new zone. Under the proposed RM-2-6 zone, the project site could be developed to construct up to 206 dwelling units. This equates to an additional 8 dwelling units compared to the proposed project which plans to construct a total of 198 dwelling units. **Table 22** shows a comparison of the proposed project trips from 198 dwelling units versus trips from 206 dwelling units with the transit credit. As shown in **Table 22**, the additional 8 dwelling units would be expected to generate an additional 42 daily vehicle trips with 3 additional AM and 3 additional PM peak hour trips.

TABLE 22: TRIP GENERATION COMPARISON (PROPOSED PROJECT VERSUS MOST INTENSE & IMPACTFUL USE)

Land Use	Intensity	Daily Trips	AM Peak Hour Trips				PM Peak Hour Trips			
			Total	In	:	Out	Total	In	:	Out
PROPOSED PROJECT										
Multi-Family Dwelling Units	198 DU	1,188	95	19	:	76	107	75	:	32
Transit Credit[1]		-118	-13	-2	:	-11	-15	-11	:	-4
Total Proposed Project Trip Generation		**1,070**	**82**	**17**	**:**	**65**	**92**	**64**	**:**	**28**
MOST INTENSE & IMPACTFUL USE										
Multi-Family Dwelling Units	206 DU	1,236	99	20	:	79	111	78	:	33
Transit Credit[1]		-124	-14	-3	:	-11	-16	-11	:	-5
Total Most Intense Use Trip Generation		**1,112**	**85**	**17**	**:**	**68**	**95**	**67**	**:**	**28**
CHANGE (MOST INTENSE USE VS PROPOSED PROJECT)										
NET ADDITIONAL TRIPS (Most Intense Use – Proposed Project)		**42**	**3**	**0**	**:**	**3**	**3**	**3**	**:**	**0**

[1] Transit Credit (10% Daily, 14% AM and 14% PM)

Under Opening Year 2024 Plus Project and Horizon Year 2050 Plus Project conditions for the proposed project, the eastbound left-turn approach at Palm Avenue & Harris Street/MTS Access intersection is anticipated to operate at LOS F and the 95th percentile queue would exceed the available storage during both the AM and PM peak hour with the additional 2 left turns (due to a 20%/75% east west split at project access). The eastbound left-turn is expected to continue operating at LOS F and the queue would continue exceeding the available storage assuming the most intense and impactful use.

The proposed improvements for the project include the installation of a 5-section signal head for the eastbound left-turn movement at Palm Avenue / Harris Avenue-MTS Access to include a permissive left-turn movement during a flashing yellow arrow. The proposed project plans to enhance the pedestrian and bicycle facilities as discussed in the Executive Summary at Palm Avenue / Hollister Street and Palm Avenue / Harris Avenue-MTS Access intersections. Traffic generated by the additional 8 dwelling units under the Most Intense and Most Impactful Use would not change the proposed improvements and LOS identified in this report and would not generate the need for additional improvements.

Table 23 shows a comparison of the delay, LOS, and queue for the eastbound left-turn movement at Palm Avenue / Harris Avenue-MTS Access between the proposed project and the most intense and impactful use under the Horizon Year 2050 Plus Project worst case condition. As shown, the additional 2 AM and 2 PM peak hour trips added to the eastbound left-turn movement would add 5 feet of queue during the AM peak hour and 4 feet of queue during the PM peak hour compared to the queue under the proposed project. Additional improvements beyond what is proposed by the project is not triggered by the additional trips from the most intense and impactful use project at this intersection..

TABLE 23: HORIZON YEAR 2050 PLUS PROJECT EASTBOUND LEFT-TURN ASSESSMENT & COMPARISON (PROPOSED PROJECT VERSUS MOST INTENSE & IMPACTFUL USE)

ID	Study Intersection	Approach	Movement	HORIZON YEAR 2050 PLUS PROJECT (WITHOUT IMPROVEMENTS)							
				PROPOSED PROJECT				MOST INTENSE & IMPACTUFL USE			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4	Palm Avenue & Harris Ave-MTS Access	EB	Left-Turn	113.4	F	116.3	F	118.7	F	122.6	F
		All		86.4	F	42.1	D	90.3	F	46.2	D
		EB Left-Turn 95th % Queue		96 feet		90 feet		101 feet		94 feet	
		Exceeded Queue		46 feet		40 feet		51 feet		44 feet	
		EB Left-Turn Available Storage		50 feet				50 feet			

Table 24 shows the delay, LOS and queue for the eastbound left-turn movement at Palm Avenue / Harris Avenue-MTS Access for the most intense and impactful use under the Horizon Year 2050 Plus Project condition with and without improvements. As shown, the proposed improvements would improve the eastbound left-turn movement LOS from LOS F to LOS D for both AM and PM peak hour and decrease queueing from 101 feet to 82 feet in the AM peak hour and decrease queueing from 94 feet to 85 feet in the PM peak hour under the most intense and impactful use. With the proposed improvements, the overall intersection LOS would improve from LOS F to LOS E during the AM peak hour and would remain as LOS D during the PM peak hour. The eastbound left turn queues would continue to exceed storage.

Appendix J includes the Synchro worksheets for the most intense and impactful use.

TABLE 24: HORIZON YEAR 2050 PLUS PROJECT EASTBOUND LEFT-TURN ASSESSMENT & COMPARISON WITHOUT AND WITH IMPROVEMENTS (MOST INTENSE & IMPACTFUL USE)

ID	Study Intersection	Approach	Movement	HORIZON YEAR 2050 PLUS PROJECT MOST INTENSE & IMPACTFUL USE							
				WITHOUT IMPROVEMENTS				WITH IMPROVEMENTS			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4	Palm Avenue & Harris Ave-MTS Access	EB	Left-Turn	118.7	F	122.6	F	48.2	D	51.3	D
		All		90.3	F	46.2	D	71.4	E	39.1	D
		EB Left-Turn 95th % Queue		101 feet		94 feet		82 feet		85 feet	
		Exceeded Queue		51 feet		44 feet		32 feet		35 feet	
		EB Left-Turn Available Storage		50 feet				50 feet			

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Appendix A - Project Information Form

City of San Diego
Project Information Form

Project Information

Project Name:	Palm & Hollister Residential Project				
Project Applicant					
Name:	Ambient Communities				
Address:	179 Calle Magdelena, Ste 201, Encinitas, CA 92024				
Contact Information	Phone Number:	760-230-1000	Email:	dbudinger@ambient.email	
Project Location and Context					
Project Address:	555 Hollister Street				
APN:	628-050-25-00				
Driveway Cross Streets:	Palm Avenue / Harris Avenue				
Please attach a Project Location Map that clearly identifies project driveways and access points. See Exhibit 1					
Community Plan Area:	Otay Mesa - Nestor	Land Use Designation:	Open Space to Medium Density	Zoning Designation:	RM 1-1 RS 1-7 AR 1-2

Is any portion of the project located in an RTIP Transit Priority Area?: ☑ Yes ☐ No

Project Description (with Proposed Land Uses and Intensities):

The project will construct a three story, 198 unit residential development 900 ft north of the Palm Ave Trolley Station immediately east of the UC San Diego Blue Line on 6.3 acres of vacant land. The existing lot overlaps three land use zones, RM 1-1, RS 1-7, and AR 1-2. The project will be processing a Community Plan Amendment and zone change from mixed-use, low-density residential and open space to medium density residential. When constructed, the project will provide direct pedestrian access to the adjacent Palm Avenue Trolley Station. The project will share parking lot access with the adjacent trolley station and proposed Palm Avenue Trolley Station TOD as noted in the site plan.

Number of Parking Spaces:	Vehicle Spaces	Accessible Spaces	Bicycle Spaces *(racks and secure Storage)*	Motorcycle Spaces
	284	7	94	20

Identify any project features related to TDM and Identify any transportation amenities or travel demand management measures that are required based on the San Diego Municipal Code Section 142.0528 (transportation amenities) or the Climate Action Plan Consistency Checklist. For example: transit pass subsidies, unbundled parking, shuttle services, car share, bicycle supportive features (bike repair station, bike lockers, etc.).

Please attach a project site plan that clearly identifies the following:

- Land use types and quantities, and number of parking spaces provided (vehicle and bicycle) clearly identified. See Exhibit 1
- Driveway locations and type (full access, partial access, right in/out only) identified. See Exhibit 1
- Pedestrian access, bicycle access and on-site pedestrian circulation clearly identified. See Exhibit 1
- Location/distance of closest existing transit stop and proposed transit stops identified in RTIP (measured as walking distance to project entrance/or middle of parcel). See Exhibit 1

City of San Diego
Project Information Form

Trip Generation Estimates (calculated using the process described in the TSM):	Unadjusted Driveway Trips		Total Net New Trips	
	Daily:	1,188	Daily:	1,070
	AM Peak Hour:	95	AM Peak Hour:	82
	PM Peak Hour:	107	PM Peak Hour:	92

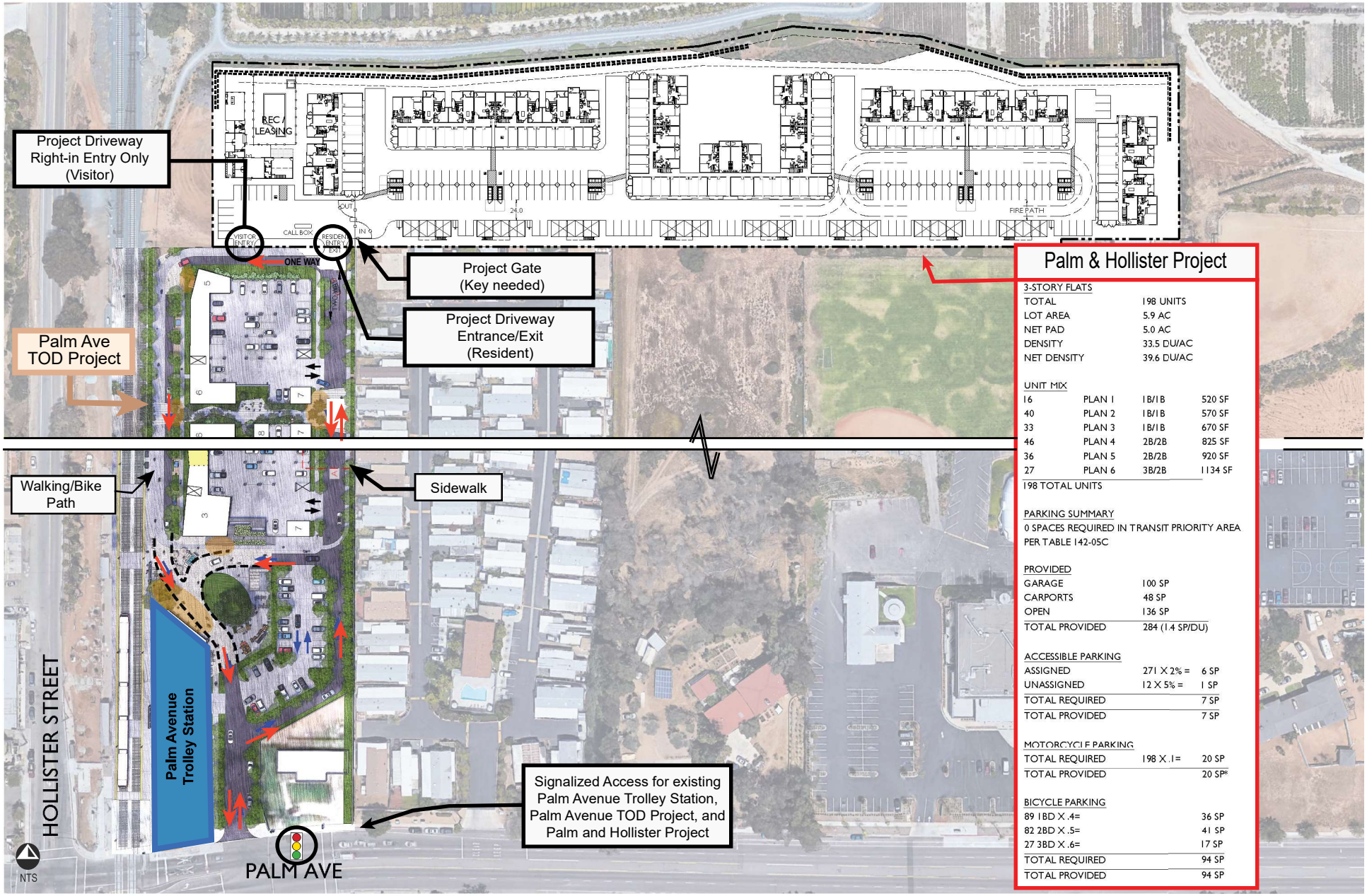
Preliminary Screening Criteria

	CEQA Transportation Analysis Screening 1) Select the Land Uses that apply to your project 2) Answer the questions for each Land Use that applies to your project *(if "Yes" in any land use category below then that land use (or a portion of the land use) is screened from CEQA Transportation Analysis)*	Screened Out **Yes**	Not Screened Out **No**
☐	1. Redevelopment Project:		
	a. Does the project result in a net decrease in total Project VMT?	○	○
	b. Answer if yes to 1a. If the project replaces affordable housing with market rate housing, are there more market rate units planned than existing affordable units being replaced.	○	○
☒	2. Residential Project:		
	a. Is the project in a VMT/Capita Efficient Area (per SANDAG screening maps)?	☒	○
	b. Does the project include Affordable Housing? $\frac{8}{Affordable\ Units} + \frac{190}{Marke\ Rate\ Units} = \frac{198}{Total\ Units}$ All affordable units are screened out.	○	○
☐	3. Commercial Employment Project:		
	• Is the project in a VMT/Employee Efficient Area? (per SANDAG screening maps?)	○	○
☐	4. Industrial Employment Project		
	• Is the project in a VMT/Industrial Employee Efficient Area?	○	○
☐	5. Retail/Public Facility/Recreational		
	• Is the project locally serving: - Retail OR Public Facility OR Recreational	○	○
☐	6. Small Project		
	• For all components of a project that are not screened out above (all 'Yes' in a land use category), what is the daily unadjusted driveway trip generation? _____ Is it less than 300 daily trips?	○	○

Local Mobility Analysis			
Is your project's land use consistent with the Community Plan zoning?	○ Consistent ☐ Generates less than 1,000 daily trips (unadjusted driveway trips)	◉ Inconsistent ☐ Generates less than 500 daily trips (unadjusted driveway trips)	
Will project development be phased?	No	In what month are traffic counts planned to be conducted?	August 2021

City of San Diego
Project Information Form

If a project generates 1,000 or more daily trips (consistent with Community Plan Zoning) or 500 or more daily trips (inconsistent with Community Plan zoning), attach an exhibit showing the project's trip distribution percentages and project trip assignment using the process described in the TSM. See Exhibits 3 and 4



Palm & Hollister Project

3-STORY FLATS

TOTAL	198 UNITS
LOT AREA	5.9 AC
NET PAD	5.0 AC
DENSITY	33.5 DU/AC
NET DENSITY	39.6 DU/AC

UNIT MIX

16	PLAN 1	1B/1B	520 SF
40	PLAN 2	1B/1B	570 SF
33	PLAN 3	1B/1B	670 SF
46	PLAN 4	2B/2B	825 SF
36	PLAN 5	2B/2B	920 SF
27	PLAN 6	3B/2B	1134 SF

198 TOTAL UNITS

PARKING SUMMARY

0 SPACES REQUIRED IN TRANSIT PRIORITY AREA
PER TABLE 142-05C

PROVIDED

GARAGE	100 SP
CARPORTS	48 SP
OPEN	136 SP
TOTAL PROVIDED	284 (1.4 SP/DU)

ACCESSIBLE PARKING

ASSIGNED	271 X 2% =	6 SP
UNASSIGNED	12 X 5% =	1 SP
TOTAL REQUIRED		7 SP
TOTAL PROVIDED		7 SP

MOTORCYCLE PARKING

TOTAL REQUIRED	198 X .1=	20 SP
TOTAL PROVIDED		20 SP*

BICYCLE PARKING

89 1BD X .4=	36 SP
82 2BD X .5=	41 SP
27 3BD X .6=	17 SP
TOTAL REQUIRED	94 SP
TOTAL PROVIDED	94 SP

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September 2021
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Site Plan

Exhibit 1

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MAY 2021

Project Trip Distribution Percentages

Exhibit 3

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September 2021
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Project Trip Assignment

Exhibit 4

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MAY 2021

Study Area

Exhibit 5

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Appendix B - Traffic Count Data; Signal Timing Sheets; & Transit Schedule

Prepared by National Data & Surveying Services

I 5 SB Freeway Exit & Palm Ave

Peak Hour Turning Movement Count

ID: 21-040143-001
City: San Diego

Day: Tuesday
Date: 8/24/2021

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:45 PM - 05:45 PM

COUNT PERIODS

AM: 7:00 AM - 09:00 AM
NOON: NONE
PM: 4:00 PM - 06:00 PM

SOUTHBOUND (I 5 SB Freeway Exit)

AM	1141	0	137	0	0	AM
NOON	0	0	0	0	0	NOON
PM	1575	0	325	0	0	PM

EASTBOUND (Palm Ave)

AM	NOON	PM	
2162	0	2496 ⇦	
0	0	0 ↶	0
0	0	0 ↱	0
331	0	451 →	2
0	0	0 ↴	0
AM	NOON	PM	

WESTBOUND (Palm Ave)

PM	NOON	AM	
0	0	0	2
921	0	1021	0
0	0	0	1
0	0	0	0
776 ⇨	0	468	
PM	NOON	AM	

NORTHBOUND (I 5 SB Freeway Exit)

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

0 0 0 0

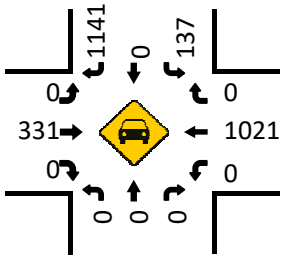
CONTROL

Signalized

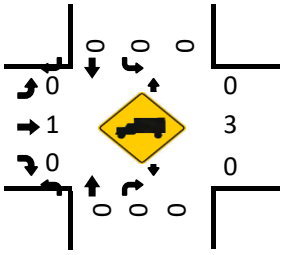
	AM	NOON	PM
TEV	2630	0	3272
PHF	0.96		0.98

2 0 1 0

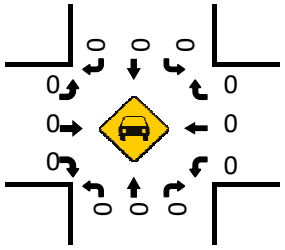
Totals (AM)



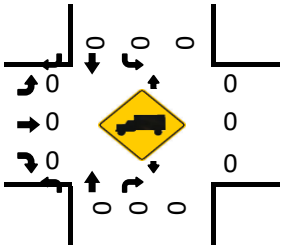
Total Bikes (AM)



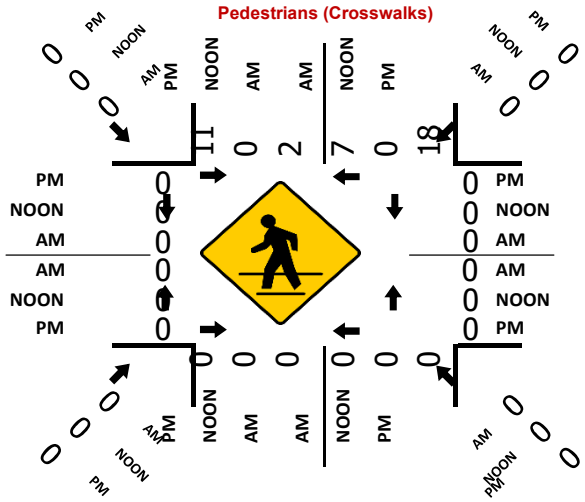
Totals (NOON)



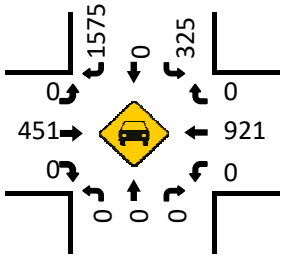
Total Bikes (NOON)



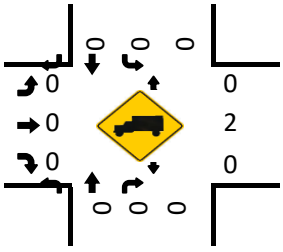
Pedestrians (Crosswalks)



Totals (PM)



Total Bikes (PM)



Prepared by National Data & Surveying Services

I 5 NB Freeway Entrance & Palm Ave

Peak Hour Turning Movement Count

ID: 21-040143-002
City: San Diego

Day: Tuesday
Date: 8/24/2021

PEAK HOURS

AM: 07:15 AM - 08:15 AM
NOON: NONE
PM: 04:45 PM - 05:45 PM

COUNT PERIODS

AM: 7:00 AM - 09:00 AM
NOON: NONE
PM: 4:00 PM - 06:00 PM

SOUTHBOUND — I 5 NB Freeway Entrance

AM	0	0	0	0	443	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	234	PM

EASTBOUND — Palm Ave

AM	NOON	PM	
1070	0	1026	⇦
0	0	0	↶ 0
0	0	0	↱ 0
467	0	776	→ 2
0	0	0	↷ 0
AM	NOON	PM	

WESTBOUND — Palm Ave

PM	NOON	AM	
233	0	441	0 ↰
545	0	392	2 ←
0	0	0	0 ↙
0	0	0	0 ↲
836	0	575	⇨
PM	NOON	AM	

NORTHBOUND — I 5 NB Freeway Entrance

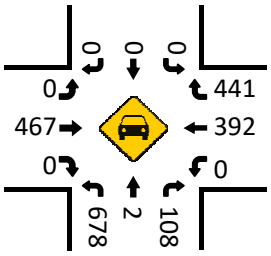
PM	0	0	481	1	60	PM
NOON	0	0	0	0	0	NOON
AM	0	0	678	2	108	AM
		0	1.3	0.3	0.3	

CONTROL

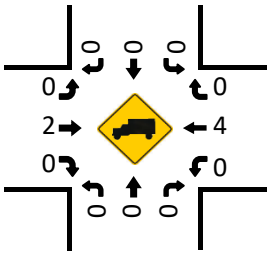
Signalized

TEV	2088 AM	0 NOON	2096 PM
PHF	0.89		0.93

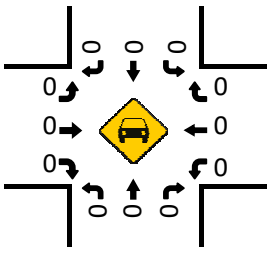
Totals (AM)



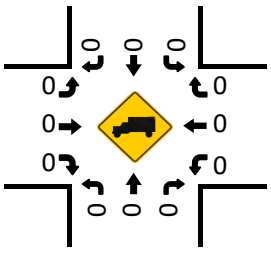
Total Bikes (AM)



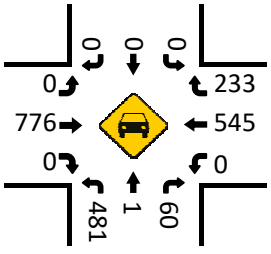
Totals (NOON)



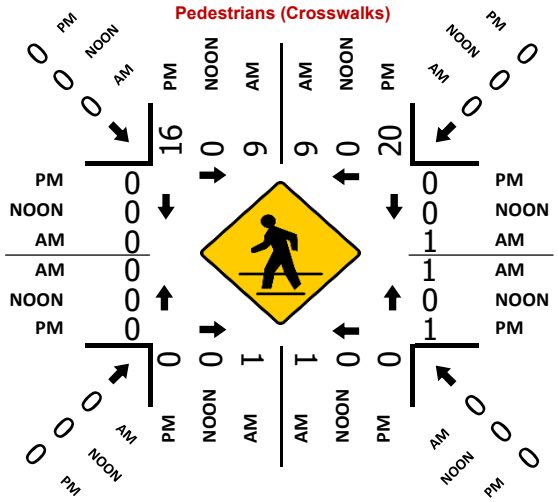
Total Bikes (NOON)



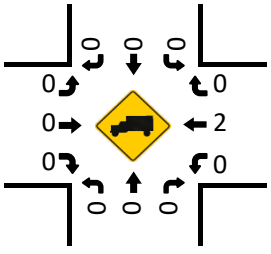
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



Prepared by National Data & Surveying Services

Hollister St & Palm Ave

Peak Hour Turning Movement Count

ID: 21-040143-003
City: San Diego

Day: Tuesday
Date: 8/24/2021

PEAK HOURS

AM: 07:15 AM - 08:15 AM
NOON: NONE
PM: 04:45 PM - 05:45 PM

COUNT PERIODS

AM: 7:00 AM - 09:00 AM
NOON: NONE
PM: 4:00 PM - 06:00 PM

SOUTHBOUND (Hollister St)

AM	79	35	19	0	157	AM
NOON	0	0	0	0	0	NOON
PM	153	94	35	0	181	PM

EASTBOUND (Palm Ave)

AM	NOON	PM	
785	0	717	
0	0	2	0
80	0	104	0
393	0	589	3
29	0	70	0
AM	NOON	PM	

WESTBOUND (Palm Ave)

PM	NOON	AM	
29	0	27	0
479	0	632	2
22	0	33	1
0	0	0	0
665	0	458	
PM	NOON	AM	

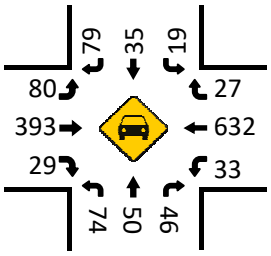
NORTHBOUND (Hollister St)

PM	186	0	83	48	41	PM
NOON	0	0	0	0	0	NOON
AM	97	0	74	50	46	AM

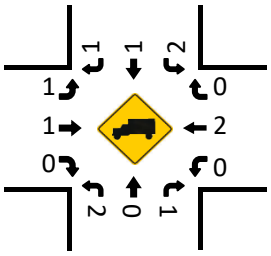
CONTROL: Signalized

TEV	1497 AM	0 NOON	1749 PM
PHF	0.84		0.91

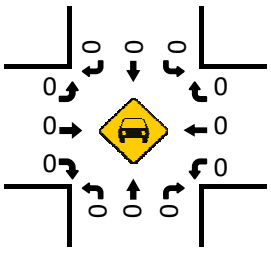
Totals (AM)



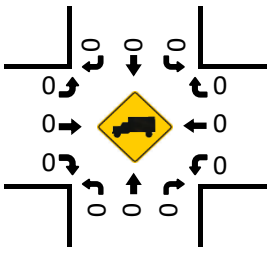
Total Bikes (AM)



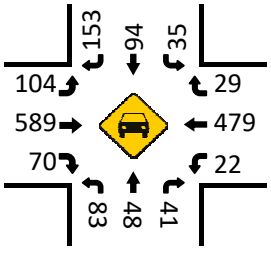
Totals (NOON)



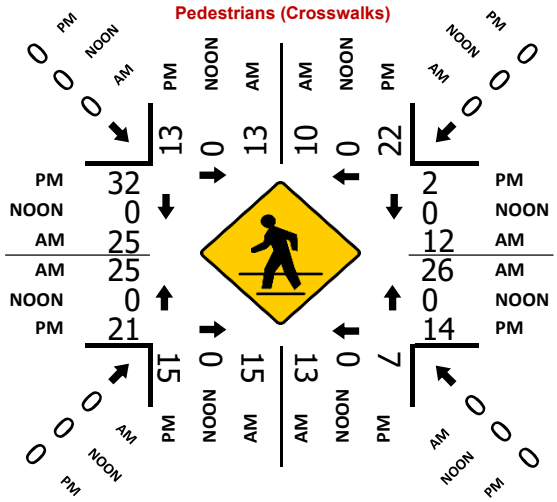
Total Bikes (NOON)



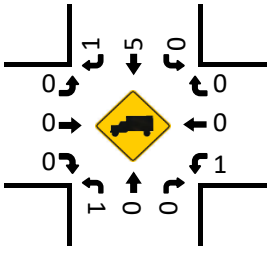
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



Prepared by National Data & Surveying Services

Harris Ave & Palm Ave

Peak Hour Turning Movement Count

ID: 21-040143-004
City: San Diego

Day: Tuesday
Date: 8/24/2021

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	4:00 PM - 06:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	1187	0	1269
PHF	0.80		0.89

SOUTHBOUND (Harris Ave)

	Left	Thru	Right	U-Turn	
AM	12	2	5	0	17
NOON	0	0	0	0	0
PM	30	4	14	0	44

EASTBOUND (Palm Ave)

	Left	Thru	Right	U-Turn
AM	8	413	44	0
NOON	0	0	0	0
PM	20	580	72	1

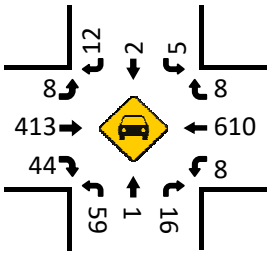
WESTBOUND (Palm Ave)

	Left	Thru	Right	U-Turn
AM	8	610	435	0
NOON	0	0	0	0
PM	23	449	8	0

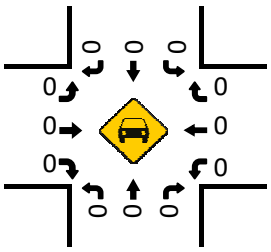
NORTHBOUND (Harris Ave)

	Left	Thru	Right	U-Turn	
AM	54	0	59	1	16
NOON	0	0	0	0	0
PM	84	0	56	1	12

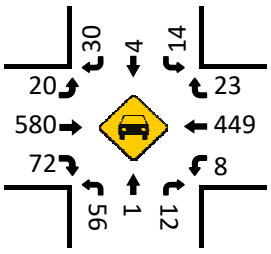
Totals (AM)



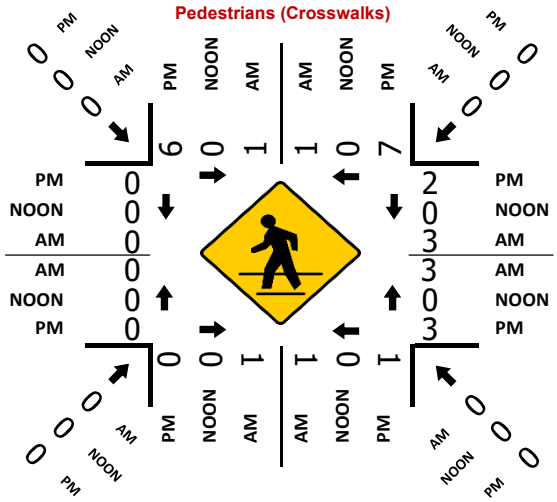
Totals (NOON)



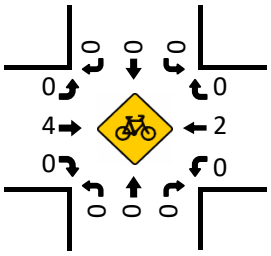
Totals (PM)



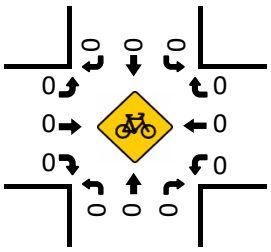
Pedestrians (Crosswalks)



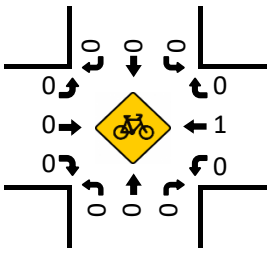
Total Bikes (AM)



Total Bikes (NOON)



Total Bikes (PM)



Counts Unlimited, Inc.

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Phone: (951) 268-6268
email: counts@countsunlimited.com

City of San Diego
Palm Avenue
B/ Hollister Street - Harris Avenue
24 Hour Directional Volume Count

SDG003
Site Code: 122-22150

Start	3/2/2022	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		26	110			10	98				
12:15		18	123			8	93				
12:30		20	94			13	106				
12:45		15	101	79	428	4	107	35	404	114	832
01:00		10	135			1	95				
01:15		10	111			8	93				
01:30		1	124			2	101				
01:45		10	145	31	515	5	90	16	379	47	894
02:00		8	125			8	113				
02:15		10	148			6	**122**				
02:30		8	168			4	**136**				
02:45		0	132	26	573	12	**151**	30	522	56	1095
03:00		22	174			10	**135**				
03:15		9	125			13	119				
03:30		14	161			11	113				
03:45		6	152	51	612	18	127	52	494	103	1106
04:00		6	153			20	105				
04:15		11	166			20	98				
04:30		12	**156**			33	130				
04:45		17	**194**	46	669	46	143	119	476	165	1145
05:00		21	**170**			57	105				
05:15		21	**170**			50	122				
05:30		23	142			79	115				
05:45		31	161	96	643	61	125	247	467	343	1110
06:00		31	167			97	107				
06:15		45	171			88	104				
06:30		43	142			97	88				
06:45		50	120	169	600	109	92	391	391	560	991
07:00		69	119			123	86				
07:15		**110**	60			**129**	59				
07:30		**119**	122			**139**	80				
07:45		**170**	99	468	400	**153**	65	544	290	1012	690
08:00		**108**	95			**174**	85				
08:15		92	88			100	85				
08:30		91	74			133	64				
08:45		83	79	374	336	96	53	503	287	877	623
09:00		80	65			87	49				
09:15		76	49			103	31				
09:30		74	54			108	28				
09:45		81	59	311	227	95	33	393	141	704	368
10:00		73	38			81	24				
10:15		82	47			86	23				
10:30		86	47			76	31				
10:45		82	23	323	155	99	25	342	103	665	258
11:00		85	25			107	12				
11:15		93	28			101	20				
11:30		98	16			116	11				
11:45		116	21	392	90	117	15	441	58	833	148
Total		2366	5248	2366	5248	3113	4012	3113	4012	5479	9260
Combined Total		7614		7614		7125		7125		14739	
AM Peak	-	07:15	-	-	-	07:15	-	-	-	-	-
Vol.	-	507	-	-	-	595	-	-	-	-	-
P.H.F.		0.746				0.855					
PM Peak	-	-	04:30	-	-	-	02:15	-	-	-	-
Vol.	-	-	690	-	-	-	544	-	-	-	-
P.H.F.			0.889				0.901				
Percentage		31.1%	68.9%			43.7%	56.3%				
ADT/AADT		ADT 14,739		AADT 14,739							

Counts Unlimited, Inc.

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City of San Diego
Palm Avenue
B/ Intersate 5 Northbound Ramps - Hollister Street
24 Hour Directional Volume Count

SDG002
Site Code: 122-22150

Start	3/2/2022	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		36	130			15	157				
12:15		23	129			12	143				
12:30		34	138			23	132				
12:45		29	156	122	553	13	174	63	606	185	1159
01:00		15	152			16	152				
01:15		11	142			9	145				
01:30		9	148			10	155				
01:45		18	154	53	596	3	134	38	586	91	1182
02:00		16	169			20	187				
02:15		17	178			11	**181**				
02:30		6	179			8	**168**				
02:45		17	**216**	56	742	14	**202**	53	738	109	1480
03:00		20	**188**			17	**193**				
03:15		15	**192**			24	164				
03:30		14	**216**			12	154				
03:45		16	205	65	801	24	178	77	689	142	1490
04:00		19	182			31	158				
04:15		26	208			31	157				
04:30		34	181			44	175				
04:45		31	132	110	703	65	173	171	663	281	1366
05:00		40	177			74	197				
05:15		39	202			88	171				
05:30		42	178			114	168				
05:45		62	172	183	729	83	164	359	700	542	1429
06:00		49	157			138	176				
06:15		67	187			107	151				
06:30		67	165			135	152				
06:45		84	160	267	669	149	132	529	611	796	1280
07:00		86	160			169	109				
07:15		144	131			**181**	116				
07:30		113	118			**191**	100				
07:45		**175**	105	518	514	**169**	93	710	418	1228	932
08:00		**136**	104			**222**	96				
08:15		**134**	105			137	113				
08:30		**127**	93			171	108				
08:45		108	89	505	391	138	80	668	397	1173	788
09:00		99	74			120	66				
09:15		114	75			129	65				
09:30		114	72			156	41				
09:45		102	75	429	296	137	45	542	217	971	513
10:00		123	59			109	38				
10:15		122	56			118	49				
10:30		119	42			128	41				
10:45		111	49	475	206	132	30	487	158	962	364
11:00		145	39			115	33				
11:15		132	51			154	26				
11:30		132	29			146	21				
11:45		151	22	560	141	180	19	595	99	1155	240
Total		3343	6341	3343	6341	4292	5882	4292	5882	7635	12223
Combined Total		9684		9684		10174		10174		19858	
AM Peak	-	07:45	-	-	-	07:15	-	-	-	-	-
Vol.	-	572	-	-	-	763	-	-	-	-	-
P.H.F.		0.817				0.859					
PM Peak	-	-	02:45	-	-	-	02:15	-	-	-	-
Vol.	-	-	812	-	-	-	744	-	-	-	-
P.H.F.			0.940				0.921				
Percentage		34.5%	65.5%			42.2%	57.8%				

ADT/AADT ADT 19,858 AADT 19,858

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City of San Diego
Palm Avenue
B/ Interstate 5 Southbound - Northbound Ramps
24 Hour Directional Volume Count

SDG001
Site Code: 122-22150

Start	3/2/2022	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		28	116			29	276				
12:15		19	148			41	303				
12:30		24	112			51	293				
12:45		19	138	90	514	22	251	143	1123	233	1637
01:00		11	153			20	285				
01:15		7	131			24	256				
01:30		6	131			31	251				
01:45		11	180	35	595	29	271	104	1063	139	1658
02:00		8	162			34	287				
02:15		9	172			37	322				
02:30		1	157			26	332				
02:45		10	184	28	675	33	370	130	1311	158	1986
03:00		8	175			33	372				
03:15		5	160			45	337				
03:30		10	187			35	345				
03:45		7	168	30	690	45	311	158	1365	188	2055
04:00		6	165			46	374				
04:15		14	178			64	366				
04:30		11	**186**			74	347				
04:45		15	**207**	46	736	104	**385**	288	1472	334	2208
05:00		23	**182**			107	**359**				
05:15		21	**188**			157	**403**				
05:30		26	185			157	**371**				
05:45		42	177	112	732	216	369	637	1502	749	2234
06:00		34	174			206	338				
06:15		42	203			292	336				
06:30		50	168			295	309				
06:45		63	160	189	705	313	286	1106	1269	1295	1974
07:00		70	114			405	266				
07:15		128	103			**451**	226				
07:30		97	110			**498**	258				
07:45		**142**	119	437	446	**466**	229	1820	979	2257	1425
08:00		**117**	100			**501**	246				
08:15		**119**	106			380	179				
08:30		**124**	94			390	214				
08:45		98	93	458	393	305	168	1576	807	2034	1200
09:00		92	74			276	150				
09:15		97	61			244	147				
09:30		103	63			265	126				
09:45		94	63	386	261	293	118	1078	541	1464	802
10:00		105	50			282	99				
10:15		102	56			263	94				
10:30		110	56			281	86				
10:45		119	34	436	196	247	89	1073	368	1509	564
11:00		107	39			323	50				
11:15		121	32			252	55				
11:30		120	27			298	62				
11:45		127	21	475	119	298	36	1171	203	1646	322
Total		2722	6062	2722	6062	9284	12003	9284	12003	12006	18065
Combined Total		8784		8784		21287		21287		30071	
AM Peak	-	07:45	-	-	-	07:15	-	-	-	-	-
Vol.	-	502	-	-	-	1916	-	-	-	-	-
P.H.F.		0.884				0.956					
PM Peak	-	-	04:30	-	-	-	04:45	-	-	-	-
Vol.	-	-	763	-	-	-	1518	-	-	-	-
P.H.F.			0.921				0.942				
Percentage		31.0%	69.0%			43.6%	56.4%				
ADT/AADT		ADT 30,071		AADT 30,071							

LOCATION: **RTE 75 / NB 5 @ Palm Ave**

CALTRANS C8 Version 3 DATE: 1/20/16 PAGE 1

F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9	PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
0	WALK	1	**1**	1	1	1	**7**	1	**7**	CLK RST	EV SEL	**0**	PERMIT		**2**				**6**		**8**	0
1	DONT WALK	1	**1**	1	1	1	**5**	1	**20**		RR1 CLR	**5**	RED LOCK									1
2	MIN GREEN	1	**5**	1	1	1	**5**	1	**5**		EVA DLY	**0**	YEL LOCK									2
3	TYPE 3 DET	0	**0**	0	0	0	**0**	0	**0**		EVA CLR	**5**	V RECALL		**2**				**6**			3
4	ADD/VEH	0.0	**0.0**	0.0	0.0	0.0	**0.0**	0.0	**0.0**		EVB DLY	**0**	P RECALL									4
5	PASSAGE	0.9	**5.0**	0.9	0.9	0.9	**5.5**	0.9	**2.0**		EVB CLR	**5**	PED PHASES						**6**		**8**	5
6	MAX GAP	0.9	**6.2**	0.9	0.9	0.9	**7.0**	0.9	**2.0**		EVC DLY	**0**	RT OLA									6
7	MIN GAP	0.9	**3.0**	0.9	0.9	0.9	**3.0**	0.9	**2.0**		EVC CLR	**5**	RT OLB									7
8	MAX EXT	9	**35**	9	9	9	**35**	9	**25**		EVD DLY	**0**	DBL ENTRY									8
9	MAX 2									YR	EVD CLR	**5**	MAX 2 PHASES									9
A	MAX 3									MO	MAX EV	**255**	LAG PHASES	**READ ONLY**								A
B										DAY	RR2 CLR	**5**	RED REST									B
C	REDUCE BY	0.0	**0.1**	0.0	0.0	0.0	**0.1**	0.0	**0.0**	DOW			REST-IN-WALK									C
D	EVERY	1.0	**0.8**	1.0	1.0	1.0	**0.6**	1.0	**1.0**	HR			MAX 3 PHASES									D
E	YELLOW	3.0	**4.4**	3.0	3.0	3.0	**4.4**	3.0	**4.1**	MIN			YEL START UP		**2**				**6**			E
F	RED	1.0	**1.0**	1.0	1.0	1.0	**1.0**	1.0	**1.0**	SEC			FIRST PHASE								**8**	F
3.5'	PED XING FT						35'		85'					1	2	3	4	5	6	7	8	

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	**0**
FOF	**5**
FCO	**3**
FC1	**3**
FC2	**10**
FCA	**0.0**
FCB	**0.0**
FCC	**0.0**
FCD	**0.0**
FDO TB SELECT	**1**
FD3 PED SELECT	**0**
FD4 7 WIRE	**0**
FD5 PERMISSIVE	**0**
FD8 OS SEEKING	**1**
CO5 FLASH TYPE	**1**
CC2 DOWNLOAD	**1**

NOTES: MPH = 40

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

		CONTROL PLANS									Y-COORD			LAG PHASE	FLAGS								
		1	2	3	4	5	6	7	8	9		C	D	E	F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH														LAG FZ FREE		**2**		**4**		**6**		**8**	0
1	FZ1 GRN FCTR													GAPOUT CP1	LAG FZ CP 1									1
2														GAPOUT CP2	LAG FZ CP 2									2
3	FZ3 GRN FCTR													GAPOUT CP3	LAG FZ CP 3									3
4	FZ4 GRN FCTR										PERM TIME			GAPOUT CP4	LAG FZ CP 4									4
5	FZ5 GRN FCTR										LAG OFFSET			GAPOUT CP5	LAG FZ CP 5									5
6											FORCE OFF			GAPOUT CP6	LAG FZ CP 6									6
7	FZ7 GRN FCTR										LONG GRN			GAPOUT CP7	LAG FZ CP 7									7
8	FZ8 GRN FCTR										NO GREEN			GAPOUT CP8	LAG FZ CP 8									8
9	MULTI CYCLE													GAPOUT CP9	LAG FZ CP 9									9
A	OFFSET A										OFFSET				LAG C COORD									A
B	OFFSET B														LAG D COORD									B
C	OFFSET C														COORD FAZES		**2**				**6**			C
D	FZ 3 EXT																							D
E	FZ 7 EXT																							E
F	OFFSET INTRPT																							F
																1	2	3	4	5	6	7	8	

CO1 MANUAL CP
CO2 MASTER CP
CO3 CURRENT CP
CO4 LAST CP
CO7 TRNSMT CP
COD MANUAL OFFSET
CAO LOCAL CYCLE TIMER
CBO MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

SYSTEM MASTER:
7th / DELAWARE ST.

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		**1**
2		
3		
4		
5		
6		
7		
8		

COO = **1**

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: **RTE 75 / NB 5 @ Palm Ave**

CALTRANS C8 Version 3 DATE: 1/12/11 PAGE 3

D PAGE

	D	FLAGS								E	FLAGS								F	FLAGS							
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL									RCL									RCL								
1	CP 1									CP 1									CP 1								
2	CP 2									CP 2									CP 2								
3	CP 3									CP 3									CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																			RCL 1								
B																			RCL 2								
C																											
D																											
E																											
F																											
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

E PAGE

	E	FLAGS								F	FLAGS								
	FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8	
0										CODE 4									0
1										CODE 5									1
2										C-RECALL									2
3										D-RECALL									3
4										EXCLUSIVE									4
5										2 PED		**2**							5
6										6 PED						**6**			6
7										4 PED				**4**					7
8										8 PED								**8**	8
9																			9
A	OLA NOT									OLA ON									A
B	OLB NOT									OLB ON									B
C	OLC NOT									OLC ON									C
D	OLD NOT									OLD ON									D
E																			E
F																			F
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	

LAST POWER FAILURE REGISTER

HOUR = D-A-E

MINUTE = D-B-E

DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES

(CALL ACTIVE LIGHTS)

RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES

(CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER

HOUR = D-A-F

MINUTE = D-B-F

DAY = D-C-F

D-E-F = C8 VERSION NUMBER

D-E-F = LITHIUM BATTERY CONDITION

84 = BAD

85 = GOOD

7 PAGE

TIME OF DAY ACTIVITY TABLE											
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS											
	HR	MIN	ACT	ON/ OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

ACTIVITY CODE

1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN

9 PAGE C09 = 0 or 1

CONTROL PLAN TIME OF DAY											
9+EVENT+HR+MIN+CP+OS+E+DOW											
	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

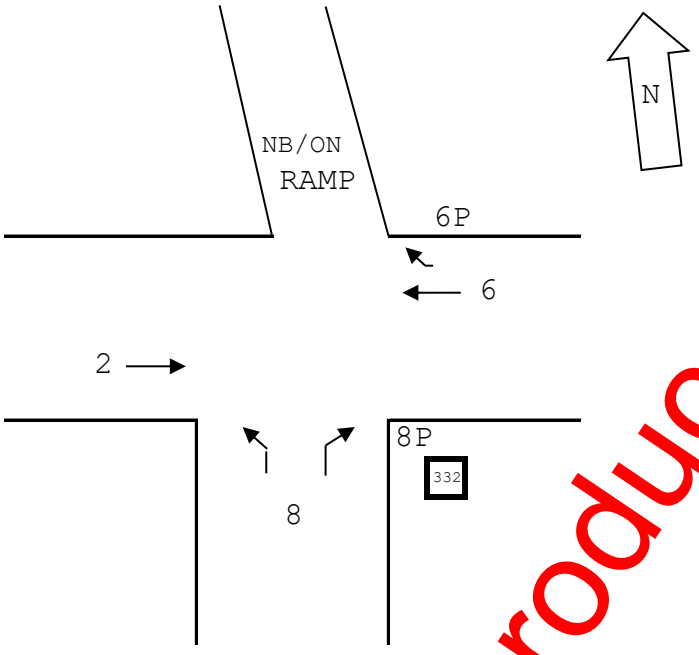
9 PAGE CO9 = 2

CONTROL PLAN TIME OF DAY											
9+EVENT+HR+MIN+CP+OS+E+DOW											
	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

DATE: 1/12/11

LOCATION: RTE 75 / NB 5 @ Palm Ave

CONFLICT MONITOR PROGRAM



LOCATION: **RTE 75 / SB 5 @ Palm Ave.**

CALTRANS C8 Version 3 DATE: 1/20/16

F PAGE

	INTERVAL	PHASE TIMING 1	2	3	4	5	6	7	8	9	PRE-EMPTION E		F FLAGS	1	2	3	4	5	6	7	8	
0	WALK	**1**	**7**	1	1	1	**1**	1	**1**	CLK RST	EV SEL	**0**	PERMIT	**1**	**2**				**6**		**8**	0
1	DONT WALK	**1**	**12**	1	1	1	**1**	1	**1**		RR1 CLR	**5**	RED LOCK									1
2	MIN GREEN	**5**	**5**	1	1	1	**5**	1	**5**		EVA DLY	**0**	YEL LOCK									2
3	TYPE 3 DET	**0**	**0**	0	0	0	**0**	0	**0**		EVA CLR	**5**	V RECALL		**2**				**6**			3
4	ADD/VEH	**0.0**	**0.0**	0.0	0.0	0.0	**0.0**	0.0	**0.0**		EVB DLY	**0**	P RECALL									4
5	PASSAGE	**2.0**	**5.5**	0.9	0.9	0.9	**5.5**	0.9	**2.0**		EVB CLR	**5**	PED PHASES		**2**							5
6	MAX GAP	**2.0**	**7.0**	0.9	0.9	0.9	**7.0**	0.9	**2.0**		EVC DLY	**0**	RT OLA									6
7	MIN GAP	**2.0**	**3.0**	0.9	0.9	0.9	**3.0**	0.9	**2.0**		EVC CLR	**5**	RT OLB									7
8	MAX EXT	**15**	**25**	9	9	9	**25**	9	**15**		EVD DLY	**0**	DBL ENTRY									8
9	MAX 2	**10**							**25**	YR	EVD CLR	**5**	MAX 2 PHASES	**1**							**8**	9
A	MAX 3	**25**								MO	MAX EV	**255**	LAG PHASES	**READ ONLY**								A
B										DAY	RR2 CLR	**5**	RED REST									B
C	REDUCE BY	**0.0**	**0.1**	0.0	0.0	0.0	**0.1**	0.0	**0.0**	DOW			REST-IN-WALK									C
D	EVERY	**1.0**	**0.6**	1.0	1.0	1.0	**0.6**	1.0	**1.0**	HR			MAX 3 PHASES	**1**								D
E	YELLOW	**4.1**	**4.5**	3.0	3.0	3.0	**4.5**	3.0	**4.1**	MIN			YEL START UP		**2**				**6**			E
F	RED	**1.0**	**1.0**	0.0	0.0	0.0	**1.0**	0.0	**1.0**	SEC			FIRST PHASE								**8**	F
3.5'	PED XING FT		59'											1	2	3	4	5	6	7	8	

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	**0**
FOF	**5**
FCO	**3**
FC1	**3**
FC2	**10**
FCA	**0.0**
FCB	**0.0**
FCC	**0.0**
FCD	**0.0**
FDO TB SELECT	**1**
FD3 PED SELECT	**0**
FD4 7 WIRE	**0**
FD5 PERMISSIVE	**0**
FD8 OS SEEKING	**1**
CO5 FLASH TYPE	**1**
CC2 DOWNLOAD	**1**

NOTES: MPH = 40

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

LOCATION: **RTE 75 / SB 5 @ Palm Ave.**

CALTRANS C8 Version 3 DATE: 4/21/11 PAGE 2

C PAGE

		CONTROL PLANS									Y-COORD			LAG PHASE	FLAGS								
		1	2	3	4	5	6	7	8	9		C	D	E	F	1	2	3	4	5	6	7	8	
0	CYCLE LENGTH														LAG FZ FREE		**2**		**4**		**6**		**8**	0
1	FZ1 GRN FCTR													GAPOUT CP1	LAG FZ CP 1									1
2														GAPOUT CP2	LAG FZ CP 2									2
3	FZ3 GRN FCTR													GAPOUT CP3	LAG FZ CP 3									3
4	FZ4 GRN FCTR										PERM TIME			GAPOUT CP4	LAG FZ CP 4									4
5	FZ5 GRN FCTR										LAG OFFSET			GAPOUT CP5	LAG FZ CP 5									5
6											FORCE OFF			GAPOUT CP6	LAG FZ CP 6									6
7	FZ7 GRN FCTR										LONG GRN			GAPOUT CP7	LAG FZ CP 7									7
8	FZ8 GRN FCTR										NO GREEN			GAPOUT CP8	LAG FZ CP 8									8
9	MULTI CYCLE													GAPOUT CP9	LAG FZ CP 9									9
A	OFFSET A										OFFSET				LAG C COORD									A
B	OFFSET B														LAG D COORD									B
C	OFFSET C														COORD FAZES		**2**				**6**			C
D	FZ 3 EXT																							D
E	FZ 7 EXT																							E
F	OFFSET INTRPT																							F
																1	2	3	4	5	6	7	8	

CO1 MANUAL CP
CO2 MASTER CP
CO3 CURRENT CP
CO4 LAST CP
CO7 TRNSMT CP
COD MANUAL OFFSET
CAO LOCAL CYCLE TIMER
CBO MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

SYSTEM MASTER:
RTE 75 / SB 5 @ Palm

FEATURE	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

LOCATION	OFF	ON
1		
2		**2**
3		
4		
5		
6		
7		
8		

COO = **2**

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

LOCATION: **RTE 75 / SB 5 @ Palm Ave.**

CALTRANS C8 Version 3 DATE: 4/21/11 PAGE 3

D PAGE

	D	FLAGS								E	FLAGS								F	FLAGS							
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL									RCL									RCL								
1	CP 1									CP 1									CP 1								
2	CP 2									CP 2									CP 2								
3	CP 3									CP 3									CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																			RCL 1								
B																			RCL 2								
C																											
D																											
E																											
F																											
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

E PAGE

	E	FLAGS								F	FLAGS								
	FUNCTION	1	2	3	4	5	6	7	8	FUNCTION	1	2	3	4	5	6	7	8	
0										CODE 4									0
1										CODE 5									1
2										C-RECALL									2
3										D-RECALL									3
4										EXCLUSIVE									4
5										2 PED		**2**							5
6										6 PED						**6**			6
7										4 PED				**4**					7
8										8 PED								**8**	8
9																			9
A	OLA NOT		**2**							OLA ON	**1**							**8**	A
B	OLB NOT									OLB ON									B
C	OLC NOT									OLC ON									C
D	OLD NOT									OLD ON									D
E																			E
F																			F
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	

LAST POWER FAILURE REGISTER

HOUR = D-A-E

MINUTE = D-B-E

DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES

(CALL ACTIVE LIGHTS)

RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES

(CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER

HOUR = D-A-F

MINUTE = D-B-F

DAY = D-C-F

D-E-E = C8 VERSION NUMBER

D-E-F = LITHIUM BATTERY CONDITION

84 = BAD

85 = GOOD

7 PAGE

TIME OF DAY ACTIVITY TABLE											
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS											
	HR	MIN	ACT	ON/ OFF	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0	**05**	**30**	**3**	**ON**		**2**	**3**	**4**	**5**	**6**	
1	**08**	**00**	**3**			**2**	**3**	**4**	**5**	**6**	
2	**14**	**30**	**3**	**ON**		**2**	**3**	**4**	**5**	**6**	
3	**15**	**30**	**2**	**ON**		**2**	**3**	**4**	**5**	**6**	
4	**15**	**31**	**3**			**2**	**3**	**4**	**5**	**6**	
5	**22**	**00**	**2**			**2**	**3**	**4**	**5**	**6**	
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

9 PAGE C09 = 0 or 1

CONTROL PLAN TIME OF DAY											
9+EVENT+HR+MIN+CP+OS+E+DOW											
	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

9 PAGE CO9 = 2

CONTROL PLAN TIME OF DAY											
9+EVENT+HR+MIN+CP+OS+E+DOW											
	HR	MIN	CP	OS	S 1	M 2	T 3	W 4	T 5	F 6	S 7
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
A											
B											
C											
D											
E											
F											

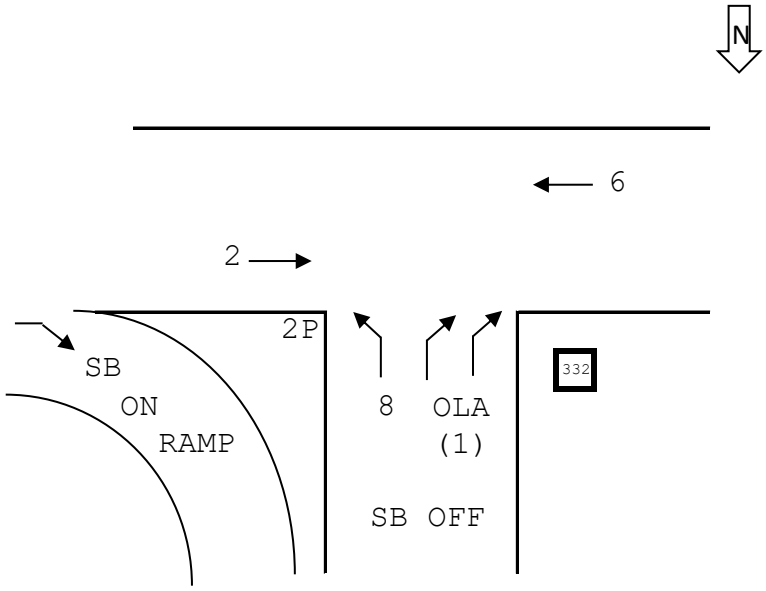
ACTIVITY CODE

1 TYPE OF MAX TERMINATION
2 MAX 2
3 MAX 3
4 COND SERV (1ST SELECT)
5 COND SERV (2ND SELECT)
6 ENERGIZE AUX OUTPUT-RED
7 ENERGIZE AUX OUTPUT-GREEN
8 ENERGIZE AUX OUTPUT-YELLOW
9 TIME OF DAY MAX RECALL (1ST SELECT)
A TRAFFIC ACT. MAX 2 OPERATION
B TIME OF DAY MAX RECALL (2ND SELECT)
C YELLOW YIELD COORDINATION
D YELLOW YIELD COORDINATION
E TIME OF DAY FREE OPERATION
F FLASHING OPERATION

DATE: 4/21/11

LOCATION: RTE 75 / SB 5 @ Palm Ave.

CONFLICT MONITOR PROGRAM



INTERSECTION: HARRIS @ PALM

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **10**

N/S Street Name: **PALM**
E/W Street Name: **HARRIS**

Last Database Change: **11/6/2014 11:26**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	2	<C/0+0+0>
Zone Number	2	<C/0+0+1>
Area Number	7	<C/0+0+2>
Area Address	60	<C/0+0+3>
QuicNet Channel	59	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start		<F/1+0+E>
Red Revert		<F/1+0+F>
All Red Start		<F/1+C+0>
FYA Red Revert		<F/1+0+5>
OVLP CHG Red		<F/1+0+3>

Start / Revert Times

Exclusive Walk		<F/1+0+0>
Exclusive FDW		<F/1+0+1>
All Red Clear		<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

Row	Column Numbers —> / Phase Names —>	Phase 1	2	3	4	5	6	7	8
0	Ped Walk		7		7				7
1	Ped FDW		17		11				7
2	Min Green	4	6	4	15			10	15
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	2.0	2.0	2.0			2.5	2.7
6	Max Gap	2.0	2.0	2.0	2.0			2.5	2.7
7	Min Gap	2.0	2.0	2.0	0.2			2.5	0.2
8	Max Limit	30	30	20	60			40	60
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW		1		1				1
C	Cond Serv Check								
D	Reduce Every				1.7				1.2
E	Yellow Change	3.4	3.4	3.4	3.9			3.4	5.2
F	Red Clear	2.0	2.0	1.0	1.0			1.0	1.0

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

	E
RR-1 Delay	
RR-1 Clear	10
EV-A Delay	
EV-A Clear	
EV-B Delay	
EV-B Clear	
EV-C Delay	
EV-C Clear	
EV-D Delay	
EV-D Clear	
RR-2 Delay	
RR-2 Clear	10
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing

Row		F
0	Permit	1234__78
1	Red Lock	
2	Yellow Lock	
3	Min Recall	___4___8
4	Ped Recall	
5	*View Set Peds*	
6	Rest In Walk	
7	Red Rest	
8	Dual Entry	
9	Max Recall	
A	Soft Recall	
B	Max 2	
C	Cond. Service	
D	Man Cntrl Calls	
E	Yellow Start	_2_____
F	First Phases	___4___8

Phase Functions <C+0+F=1>

Overlap Assignments <C+0+E=29>

Row	Column Numbers ----> / Overlap Name ---->	Overlap 1	2	3	4	5	6	7	8
0	Load Switch Number								
1	Veh Set 1 - Phases								
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases								
5	Neg Ped Phases								
6	Green Omit Phases								
7	Green Clear Omit Phs.								
8	Overlap Recall								
9	Queue Jump Phase								
A	Queue Jump Time								
B	Minimum Green								
C	Maximum Green								
D	Green Clear								
E	Yellow Change								
F	Red Clear								

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = Reserved
3 = Disable Min Walk
4 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

Preempt Priority <C+0+E=125>

(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row		C
0	EV-A	
1	EV-B	
2	EV-C	
3	EV-D	
4	RR-1 *	---
5	RR-2 *	---
6	SE-1	
7	SE-2	

Configuration <C+0+E=125>

Row	Column Numbers ---->	E
0	Exclusive Phases	
1	RR-1 Clear Phases	4 7
2	RR-2 Clear Phases	4 7
3	RR-2 Limited Service	123
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	
B	EV-B Phases	4 7
C	EV-C Phases	
D	EV-D Phases	3 8
E	Extra 1 Config. Bits	1 345
F	IC Select (Interconnect)	2

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	12345678
Ped for 2P Output	2
Ped for 6P Output	
Ped for 4P Output	4
Ped for 8P Output	8
Yellow Flash Phases	
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	3

Specials <C+0+F=2>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	1234 78
Sequential Timing	
Advance Walk Phases	
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	1234 78
Start-up Ped Calls	1234 78

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

Coordination Transition Minimums <C+0+C=5>

	2
Phase 1	
Phase 2	
Phase 3	
Phase 4	
Phase 5	
Phase 6	
Phase 7	
Phase 8	

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name ---->										
0	Cycle Length										0
1	Phase 1 - ForceOff										1
2	Phase 2 - ForceOff										2
3	Phase 3 - ForceOff										3
4	Phase 4 - ForceOff										4
5	Phase 5 - ForceOff										5
6	Phase 6 - ForceOff										6
7	Phase 7 - ForceOff										7
8	Phase 8 - ForceOff										8
9	Ring Offset										9
A	Offset 1										A
B	Offset 2										B
C	Offset 3										C
D	Perm 1 - End										D
E	Hold Release										E
F	Reserved										F

Coordination - Bank 1 <C+0+C=1>

Row		E	Row
			0
1	Plan 1 - Sync		1
2	Plan 2 - Sync		2
3	Plan 3 - Sync		3
4	Plan 4 - Sync		4
5	Plan 5 - Sync		5
6	Plan 6 - Sync		6
7	Plan 7 - Sync		7
8	Plan 8 - Sync		8
9	Plan 9 - Sync		9
A	NEMA Sync		A
B	NEMA Hold		B
C			C
D			D
E			E
F			F

Sync Phases <C+0+C=1>

Row			Row
0	Ped Adjustment		0
1	Perm 2 - Start		1
2	Perm 2 - End		2
3	Perm 3 - Start		3
4	Perm 3 - End		4
5	Reservice Time		5
6	Reservice Phases		6
7			7
8	Pretimed Phases		8
9	Max Recall		9
A	Perm 1 Veh Phase		A
B	Perm 1 Ped Phase		B
C	Perm 2 Veh Phase		C
D	Perm 2 Ped Phase		D
E	Perm 3 Veh Phase		E
F	Perm 3 Ped Phase		F

Coordination - Bank 2 <C+0+C=2>

Row		F	Row
0	Free Lag	2_4_6_8	0
1	Plan 1 - Lag		1
2	Plan 2 - Lag		2
3	Plan 3 - Lag		3
4	Plan 4 - Lag		4
5	Plan 5 - Lag		5
6	Plan 6 - Lag		6
7	Plan 7 - Lag		7
8	Plan 8 - Lag		8
9	Plan 9 - Lag		9
A	External Lag		A
B	Lag Hold		B
C			C
D			D
E			E
F			F

Lag Phases <C+0+C=1>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	One-Shot Timer		Latch 1 Set		NOT-3		Max 2		Pretimed		Set DOW		Dial 2 (7-Wire)		Sim Term		0
1	AND-5 (a)		Latch 1 Reset		NOT-4		Reserved		Plan 1		Ext. Perm 1		Dial 3 (7-Wire)		EV-A	71	1
2	AND-5 (b)		Latch 2 Set		OR-4 (a)	51	Reserved		Plan 2		Ext. Perm 2		Offset 1 (7-Wire)		EV-B	72	2
3	AND-6 (a)		Latch 2 Reset		OR-4 (b)	51	Reserved		Plan 3		Gate Down		Offset 2 (7-Wire)		EV-C	73	3
4	AND-6 (b)		NAND-3 (a)		OR-5 (a)	52	Reserved		Plan 4		Set Clock		Offset 3 (7-Wire)		EV-D	74	4
5	Reserved		NAND-3 (b)		OR-5 (b)	52	Reserved		Plan 5		Stop Time	82	Free (7-Wire)		RR-1	211	5
6	Reserved		NAND-4 (a)		OR-6 (a)		Reserved		Plan 6		Flash Sense	81	Flash (7-Wire)	75	RR-2	52	6
7	Reserved		NAND-4 (b)		OR-6 (b)		Reserved		Plan 7		Manual Enable		Excl. Ped Omit		Spec. Event 1		7
8	Spec. Funct. 1		OR-7 (a)		EXTMR		Reserved		Plan 8		Man. Advance		NOT-1	51	Spec. Event 2		8
9	Spec. Funct. 2		OR-7 (b)		Reserved		Max Inhibit (nema)		Plan 9		External Alarm		NOT-2	52	External Lag		9
A	Spec. Funct. 3		OR-7 (c)		AND-4 (a)		Force A (nema)		DELAY-A		Phase Bank 2		OR-1 (a)		AND-1 (a)	51	A
B	Spec. Funct. 4		OR-7 (d)		AND-4 (b)		Force B (nema)		DELAY-B		Phase Bank 3		OR-1 (b)		AND-1 (b)	52	B
C	Reserved		OR-8 (a)		NAND-1 (a)		C.N.A. (nema)		DELAY-C		Overlap Set 2		OR-2 (a)	201	AND-2 (a)	203	C
D	Reserved		OR-8 (b)		NAND-1 (b)		Hold (nema)		DELAY-D		Overlap Set 3		OR-2 (b)	202	AND-2 (b)	204	D
E	Reserved		OR-8 (c)		NAND-2 (a)		Max Recall		DELAY-E		Detector Set 2		OR-3 (a)		AND-3 (a)		E
F	Reserved		OR-8 (d)		NAND-2 (b)		Min Recall		DELAY-F		Detector Set 3		OR-3 (b)		AND-3 (b)		F

Assignable Inputs <C+0+E=126>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Reserved		Phase ON - 1		Preempt Fail		Flasher 0		Free		NOT-1	204	TOD Out 1		Dial 2 (7-Wire)		0
1	Reserved		Phase ON - 2		Sp Evnt Out 1		Flasher 1		Plan 1		OR-1		TOD Out 2		Dial 3 (7-Wire)		1
2	Reserved		Phase ON - 3		Sp Evnt Out 2		Fast Flasher		Plan 2		OR-2	211	TOD Out 3		Offset 1 (7-Wire)		2
3	Reserved		Phase ON - 4		Sp Evnt Out 3		EXTMR		Plan 3		OR-3		TOD Out 4		Offset 2 (7-Wire)		3
4	Reserved		Phase ON - 5		Sp Evnt Out 4		One-Shot Timer		Plan 4		AND-1	201	TOD Out 5		Offset 3 (7-Wire)		4
5	Reserved		Phase ON - 6		Sp Evnt Out 5		Reserved		Plan 5		AND-2	202	TOD Out 6		Free (7-Wire)		5
6	Reserved		Phase ON - 7		Sp Evnt Out 6		Latch 1		Plan 6		AND-3		TOD Out 7		Flash (7-Wire)		6
7	Reserved		Phase ON - 8		Sp Evnt Out 7		Latch 2		Plan 7		NOT-2	203	TOD Out 8		Preempt		7
8	Flh Yell Arrow 1		Ph. Check - 1		Sp Evnt Out 8		NOT-3		Plan 8		EV-A		Adv. Warn - 1		Low Priority A		8
9	Green 1		Ph. Check - 2		Coord On		NOT-4		Plan 9		EV-B		Adv. Warn - 2		Low Priority B		9
A	Flh Yell Arrow 3		Ph. Check - 3		Detector Fail		OR-4	85	Spec. Funct. 3		EV-C		DELAY-A		Low Priority C		A
B	Green 3		Ph. Check - 4		Spec. Funct. 1		OR-5	84	Spec. Funct. 4		EV-D		DELAY-B		Low Priority D		B
C	Flh Yell Arrow 5		Ph. Check - 5		Spec. Funct. 2		OR-6		NAND-3		RR-1		DELAY-C		AND-5		C
D	Green 5		Ph. Check - 6		Central Control		AND-4		NAND-4		RR-2		DELAY-D		AND-6		D
E	Flh Yell Arrow 7		Ph. Check - 7		Excl. Ped DW		NAND-1		OR-7		Spec. Event 1		DELAY-E		Reserved		E
F	Green 7		Ph. Check - 8		Excl. Ped WK		NAND-2		OR-8		Spec. Event 2		DELAY-F		Reserved		F

Assignable Outputs <C+0+E=127>

Row	Phase Names --->	Phase 1	2	3	4	5	6	7	8
	Column Numbers --->								
0	Ped Walk								
1	Ped FDW								
2	Min Green								
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension								
6	Max Gap								
7	Min Gap								
8	Max Limit								
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change								
F	Red Clear								

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type		<C/5+1+9>

TBC Transition

Hawk Select	<F/1+0+4>

Hawk Select 200 = Mid-Block, 201 = Hawk

Address		<C/1+0+6>
Select Parity		<C/1+0+5>

AB3418 Comm 2 0 = No Parity, 1 = Even

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month		<C/5+2+A>
Begin Week		<C/5+2+B>
End Month		<C/5+2+C>
End Week		<C/5+2+D>

Daylight Savings Time

Time B4 Yellow		<F/1+C+E>
Phase Number		<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow		
Phase Number		<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time		<C/5+2+E>
Max Cycle Time		<C/5+2+F>

Yellow Yield Coordination

12345678

Omit Alarm		<C/5+F+0>

Local Alarm Disable

Row	Phase Names --->	Phase 1	2	3	4	5	6	7	8
	Column Numbers --->								
0	Ped Walk								
1	Ped FDW								
2	Min Green								
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension								
6	Max Gap								
7	Min Gap								
8	Max Limit								
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change								
F	Red Clear								

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					

Max Initial
Alternate Walk
Alternate FDW
Alternate Initial
Alternate Extension

Alternate Timing

Column Numbers --->	0	1	2	3	1	3
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		39	45_7_	2	123		
1		40	45_7_	6	123		
2		41	45_7_	4	123		1.8
3		42	45_7_	8	123		1.8
4		43	45_7_	2	123		
5		44	45_7_	6	123		
6		45	45_7_	4	123		
7		46	45_7_	8	123		
8		47	67_	2	123		
9		48	67_	6	123		
A		49	67_	4	123		
B		50	67_	8	123		
C		55	45_7_	5	123		
D		56	45_7_	1	123		
E		57	45_7_	7	123		
F		58	45_7_	3	123		

	4	5	6	7	2	4
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		59	45_7_	5	123		
1		60	45_7_	1	123		
2		61	45_7_	7	123		
3		62	45_7_	3	123		
4		63	45_7_	2	123		
5		64	45_7_	6	123		
6		65	45_7_	4	123		
7		66	45_7_	8	123		
8		67	2	2	123		
9		68	2	6	123		
A		69	2	4	123		
B		70	2	8	123		
C		76	45_7_	2	123		
D		77	45_7_	6	123		
E		78	45_7_	4	123		
F		79	45_7_	8	123		

Detector Assignments <C+0+E=126> <C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

Column Numbers --->	Ped / Phase / Overlap 1	2	3	4	5	6	7	8	Row
Walk									0
Don't Walk									1
Phase Green									2
Phase Yellow									3
Phase Red									4
Overlap Green									5
Overlap Yellow									6
Overlap Red									7

Redirect Phase Outputs <C+0+E=127>

Cabinet Type		<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)		<D/0+0+1>
Max ON (minutes)		<D/0+0+2>
Chatter Fail Time		<D/0+0+4>

Detector Failure Monitor

	B	Row
One-Shot		8
Ext. Timer		9
DELAY-A		A
DELAY-B		B
DELAY-C		C
DELAY-D		D
DELAY-E		E
DELAY-F		F

Delay Logic Times
<C+0+D=0> (seconds)

Row	Time	Plan	Offset	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits

TOD Function <C+0+7=0.1> <C+0+E=27>

Day	Year	Month	Holiday Type

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 6 - FYA Inhibit
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Row	Time	Plan	Offset	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type

Holiday Events <C+0+9=1.2>
(Bank 2)

Month Select: October = A, November = B, Decmber = C

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										
A										
B										
C										
D										
E										
F										

Special Event Schedule -- Table 1 <C+0+E=27>

Notes:

[ ] <E/27+5+F>
Limited Service Interval

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										
A										
B										
C										
D										
E										
F										

Special Event Schedule -- Table 2 <C+0+E=28>

Notes:

[ ] <E/28+5+F>
Limited Service Interval

Min Time (seconds) <F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes) <F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds) <F/1+0+A>

Min Time Between Same Preempts

(Does Not Apply To Railroad Preempt)

Low Pri. Channel <E/125+C+8>

Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Row		
C	Bus Headway	
D	Bus Delay	
E	Max Early Grn	
F	Max Grn Ext.	

Priority Parameters
<F/1 +A+Row>

Row	Time	Headway	Direction	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

Headway Schedule <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

Name	Type	EWStreet	NSStreet	Group	Drop#	Area	AreaAddr	Channel	Sys Ref #	Last Change	FM Name
Hollister St @	233New233.:	Hollister St	Palm (SB) A\	NONE	1	7	59	36	8	##########	NONE

		Coord Minimums														Bar Hour	Minute
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	0	1

Page 0 <C/5>

Notes are in Column A, Rows 32 to 40

INTERSECTION: Hollister St @ Palm (SB) Av

Group Assignment: **NONE**
Field Master Assignment: **NONE**
System Reference Number: **8**

N/S Street Name: **Palm (SB) Av**
E/W Street Name: **Hollister St**

Last Database Change: **11/6/2014 11:45**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	1	<C/0+0+0>
Zone Number	1	<C/0+0+1>
Area Number	7	<C/0+0+2>
Area Address	59	<C/0+0+3>
QuicNet Channel	36	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start		<F/1+0+E>
Red Revert		<F/1+0+F>
All Red Start		<F/1+C+0>
FYA Red Revert		<F/1+0+5>
OVLP CHG Red		<F/1+0+3>

Start / Revert Times

Exclusive Walk		<F/1+0+0>
Exclusive FDW		<F/1+0+1>
All Red Clear		<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ---->								
0	Ped Walk		7		7		7		7
1	Ped FDW		13		19		12		20
2	Min Green	4	10		7	6	10		7
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension	2.0	4.5		2.0	2.0	4.1		2.0
6	Max Gap	2.0	4.5		2.0	2.0	4.1		2.0
7	Min Gap	2.0	0.2		2.0	2.0	0.2		2.0
8	Max Limit	30	60		40	30	60		40
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW		1		1		1		1
C	Cond Serv Check								
D	Reduce Every		0.7				0.8		
E	Yellow Change	3.4	4.2		3.9	3.4	5.0		3.9
F	Red Clear	1.0	1.0		1.0	1.0	1.0		1.0

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

	E
RR-1 Delay	
RR-1 Clear	10
EV-A Delay	
EV-A Clear	
EV-B Delay	
EV-B Clear	
EV-C Delay	
EV-C Clear	
EV-D Delay	
EV-D Clear	
RR-2 Delay	
RR-2 Clear	10
View EV Delay	---
View EV Clear	---
View RR Delay	---
View RR Clear	---

Preempt Timing

Row	F
0	Permit: 12_456_8
1	Red Lock:
2	Yellow Lock:
3	Min Recall: _2___6__
4	Ped Recall:
5	*View Set Peds*:
6	Rest In Walk:
7	Red Rest:
8	Dual Entry: ___4___8
9	Max Recall:
A	Soft Recall:
B	Max 2:
C	Cond. Service:
D	Man Cntrl Calls:
E	Yellow Start: _2___6__
F	First Phases: ___4___8

Phase Functions <C+0+F=1>

Overlap Assignments <C+0+E=29>

Row	Column Numbers ---->	Overlap 1	2	3	4	5	6	7	8
	Overlap Name ---->								
0	Load Switch Number								
1	Veh Set 1 - Phases								
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases								
5	Neg Ped Phases								
6	Green Omit Phases								
7	Green Clear Omit Phs.								
8	Overlap Recall								
9	Queue Jump Phase								
A	Queue Jump Time								
B	Minimum Green								
C	Maximum Green								
D	Green Clear								
E	Yellow Change								
F	Red Clear								

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = Reserved
3 = Disable Min Walk
4 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

Preempt Priority <C+0+E=125>

(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row		C
0	EV-A	
1	EV-B	
2	EV-C	
3	EV-D	
4	RR-1 *	---
5	RR-2 *	---
6	SE-1	
7	SE-2	
8		
9		
A		
B		
C		
D		
E		
F		

Configuration <C+0+E=125>

Row	Column Numbers ---->	E
0	Exclusive Phases	
1	RR-1 Clear Phases	1 6
2	RR-2 Clear Phases	1 6
3	RR-2 Limited Service	45 8
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	
B	EV-B Phases	4
C	EV-C Phases	
D	EV-D Phases	
E	Extra 1 Config. Bits	1 3 5
F	IC Select (Interconnect)	2

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	12 456 8
Ped for 2P Output	2
Ped for 6P Output	6
Ped for 4P Output	4
Ped for 8P Output	8
Yellow Flash Phases	
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	3

Specials <C+0+F=2>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	12 456 8
Sequential Timing	
Advance Walk Phases	
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	12 456 8
Start-up Ped Calls	12 456 8

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

Coordination Transition Minimums <C+0+C=5>

	2
Phase 1	
Phase 2	
Phase 3	
Phase 4	
Phase 5	
Phase 6	
Phase 7	
Phase 8	

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row	Column Numbers ----> / Plan Name ---->	Plan 1	2	3	4	5	6	7	8	9	Row
0	Cycle Length										0
1	Phase 1 - ForceOff										1
2	Phase 2 - ForceOff										2
3	Phase 3 - ForceOff										3
4	Phase 4 - ForceOff										4
5	Phase 5 - ForceOff										5
6	Phase 6 - ForceOff										6
7	Phase 7 - ForceOff										7
8	Phase 8 - ForceOff										8
9	Ring Offset										9
A	Offset 1										A
B	Offset 2										B
C	Offset 3										C
D	Perm 1 - End										D
E	Hold Release										E
F	Reserved										F

Coordination - Bank 1 <C+0+C=1>

Row		E	Row
0			0
1	Plan 1 - Sync		1
2	Plan 2 - Sync		2
3	Plan 3 - Sync		3
4	Plan 4 - Sync		4
5	Plan 5 - Sync		5
6	Plan 6 - Sync		6
7	Plan 7 - Sync		7
8	Plan 8 - Sync		8
9	Plan 9 - Sync		9
A	NEMA Sync		A
B	NEMA Hold		B
C			C
D			D
E			E
F			F

Sync Phases <C+0+C=1>

Row		Plan 1	2	3	4	5	6	7	8	9	Row
0	Ped Adjustment										0
1	Perm 2 - Start										1
2	Perm 2 - End										2
3	Perm 3 - Start										3
4	Perm 3 - End										4
5	Reservice Time										5
6	Reservice Phases										6
7											7
8	Pretimed Phases										8
9	Max Recall										9
A	Perm 1 Veh Phase										A
B	Perm 1 Ped Phase										B
C	Perm 2 Veh Phase										C
D	Perm 2 Ped Phase										D
E	Perm 3 Veh Phase										E
F	Perm 3 Ped Phase										F

Coordination - Bank 2 <C+0+C=2>

Row		F	Row
0	Free Lag	2 4 6 8	0
1	Plan 1 - Lag		1
2	Plan 2 - Lag		2
3	Plan 3 - Lag		3
4	Plan 4 - Lag		4
5	Plan 5 - Lag		5
6	Plan 6 - Lag		6
7	Plan 7 - Lag		7
8	Plan 8 - Lag		8
9	Plan 9 - Lag		9
A	External Lag		A
B	Lag Hold		B
C			C
D			D
E			E
F			F

Lag Phases <C+0+C=1>

Row	Column 8	Column 9	Column A	Column B	Column C	Column D	Column E	Column F	Row
0	One-Shot Timer	Latch 1 Set	NOT-3	Max 2	Pretimed	Set DOW	Dial 2 (7-Wire)	Sim Term	0
1	AND-5 (a)	Latch 1 Reset	NOT-4	Reserved	Plan 1	Ext. Perm 1	Dial 3 (7-Wire)	EV-A 71	1
2	AND-5 (b)	Latch 2 Set	OR-4 (a) 51	Reserved	Plan 2	Ext. Perm 2	Offset 1 (7-Wire)	EV-B 72	2
3	AND-6 (a)	Latch 2 Reset	OR-4 (b) 51	Reserved	Plan 3	Gate Down	Offset 2 (7-Wire)	EV-C 73	3
4	AND-6 (b)	NAND-3 (a)	OR-5 (a) 52	Reserved	Plan 4	Set Clock	Offset 3 (7-Wire)	EV-D 74	4
5	Reserved	NAND-3 (b)	OR-5 (b) 52	Reserved	Plan 5	Stop Time 82	Free (7-Wire)	RR-1 211	5
6	Reserved	NAND-4 (a)	OR-6 (a)	Reserved	Plan 6	Flash Sense 81	Flash (7-Wire) 75	RR-2 52	6
7	Reserved	NAND-4 (b)	OR-6 (b)	Reserved	Plan 7	Manual Enable	Excl. Ped Omit	Spec. Event 1	7
8	Spec. Funct. 1	OR-7 (a)	EXTMR	Reserved	Plan 8	Man. Advance	NOT-1 51	Spec. Event 2	8
9	Spec. Funct. 2	OR-7 (b)	Reserved	Max Inhibit (nema)	Plan 9	External Alarm	NOT-2 52	External Lag	9
A	Spec. Funct. 3	OR-7 (c)	AND-4 (a)	Force A (nema)	DELAY-A	Phase Bank 2	OR-1 (a)	AND-1 (a) 51	A
B	Spec. Funct. 4	OR-7 (d)	AND-4 (b)	Force B (nema)	DELAY-B	Phase Bank 3	OR-1 (b)	AND-1 (b) 52	B
C	Reserved	OR-8 (a)	NAND-1 (a)	C.N.A. (nema)	DELAY-C	Overlap Set 2	OR-2 (a) 201	AND-2 (a) 203	C
D	Reserved	OR-8 (b)	NAND-1 (b)	Hold (nema)	DELAY-D	Overlap Set 3	OR-2 (b) 202	AND-2 (b) 204	D
E	Reserved	OR-8 (c)	NAND-2 (a)	Max Recall	DELAY-E	Detector Set 2	OR-3 (a)	AND-3 (a)	E
F	Reserved	OR-8 (d)	NAND-2 (b)	Min Recall	DELAY-F	Detector Set 3	OR-3 (b)	AND-3 (b)	F

Assignable Inputs <C+0+E=126>

Row	Column 8	Column 9	Column A	Column B	Column C	Column D	Column E	Column F	Row
0	Reserved	Phase ON - 1	Preempt Fail	Flasher 0	Free	NOT-1 204	TOD Out 1	Dial 2 (7-Wire)	0
1	Reserved	Phase ON - 2	Sp Evnt Out 1	Flasher 1	Plan 1	OR-1	TOD Out 2	Dial 3 (7-Wire)	1
2	Reserved	Phase ON - 3	Sp Evnt Out 2	Fast Flasher	Plan 2	OR-2 211	TOD Out 3	Offset 1 (7-Wire)	2
3	Reserved	Phase ON - 4	Sp Evnt Out 3	EXTMR	Plan 3	OR-3	TOD Out 4	Offset 2 (7-Wire)	3
4	Reserved	Phase ON - 5	Sp Evnt Out 4	One-Shot Timer	Plan 4	AND-1 201	TOD Out 5	Offset 3 (7-Wire)	4
5	Reserved	Phase ON - 6	Sp Evnt Out 5	Reserved	Plan 5	AND-2 202	TOD Out 6	Free (7-Wire)	5
6	Reserved	Phase ON - 7	Sp Evnt Out 6	Latch 1	Plan 6	AND-3	TOD Out 7	Flash (7-Wire)	6
7	Reserved	Phase ON - 8	Sp Evnt Out 7	Latch 2	Plan 7	NOT-2 203	TOD Out 8	Preempt	7
8	Flh Yell Arrow 1	Ph. Check - 1	Sp Evnt Out 8	NOT-3	Plan 8	EV-A	Adv. Warn - 1	Low Priority A	8
9	Green 1	Ph. Check - 2	Coord On	NOT-4	Plan 9	EV-B	Adv. Warn - 2	Low Priority B	9
A	Flh Yell Arrow 3	Ph. Check - 3	Detector Fail	OR-4 85	Spec. Funct. 3	EV-C	DELAY-A	Low Priority C	A
B	Green 3	Ph. Check - 4	Spec. Funct. 1	OR-5 84	Spec. Funct. 4	EV-D	DELAY-B	Low Priority D	B
C	Flh Yell Arrow 5	Ph. Check - 5	Spec. Funct. 2	OR-6	NAND-3	RR-1	DELAY-C	AND-5	C
D	Green 5	Ph. Check - 6	Central Control	AND-4	NAND-4	RR-2	DELAY-D	AND-6	D
E	Flh Yell Arrow 7	Ph. Check - 7	Excl. Ped DW	NAND-1	OR-7	Spec. Event 1	DELAY-E	Reserved	E
F	Green 7	Ph. Check - 8	Excl. Ped WK	NAND-2	OR-8	Spec. Event 2	DELAY-F	Reserved	F

Assignable Outputs <C+0+E=127>

		Phase							
	Column Numbers ---->	1	2	3	4	5	6	7	8
Row	*Phase Names ---->*								
0	Ped Walk								
1	Ped FDW								
2	Min Green								
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension								
6	Max Gap								
7	Min Gap								
8	Max Limit								
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change								
F	Red Clear								

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type		<C/5+1+9>

TBC Transition

Hawk Select		<F/1+0+4>

Hawk Select 200 = Mid-Block, 201 = Hawk

Address		<C/1+0+6>
Select Parity		<C/1+0+5>

AB3418 Comm 2 0 = No Parity, 1 = Even

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month		<C/5+2+A>
Begin Week		<C/5+2+B>
End Month		<C/5+2+C>
End Week		<C/5+2+D>

Daylight Savings Time

Time B4 Yellow		<F/1+C+E>
Phase Number		<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow		
Phase Number		<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time		<C/5+2+E>
Max Cycle Time		<C/5+2+F>

Yellow Yield Coordination

	12345678	
Omit Alarm		<C/5+F+0>

Local Alarm Disable

Row		1	2	3	4	5	6	7	8
0	Ped Walk								
1	Ped FDW								
2	Min Green								
3	Type 3 Disconnect								
4	Added per Vehicle								
5	Veh Extension								
6	Max Gap								
7	Min Gap								
8	Max Limit								
9	Max Limit 2								
A	Adv. / Delay Walk								
B	PE Min Ped FDW								
C	Cond Serv Check								
D	Reduce Every								
E	Yellow Change								
F	Red Clear								

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	---	---	---	---	---
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					
Phase 6					
Phase 7					
Phase 8					
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Column Numbers --->	0	1	2	3	1	3
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		39	45_7_	2	123		1.8
1		40	45_7_	6	123		1.8
2		41	45_7_	4	123		
3		42	45_7_	8	123		
4		43	45_7_	2	123		
5		44	45_7_	6	123		
6		45	45_7_	4	123	5.0	
7		46	45_7_	8	123	5.0	
8		47	67_	2	123	5.0	
9		48	67_	6	123		
A		49	67_	4	123		
B		50	67_	8	123		
C		55	45_7_	5	123		
D		56	45_7_	1	123		
E		57	45_7_	7_	123		
F		58	45_7_	3	123		

	4	5	6	7	2	4
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		59	45_7_	5	123		
1		60	45_7_	1	123		
2		61	45_7_	7_	123		
3		62	45_7_	3	123		
4		63	45_7_	2	123		
5		64	45_7_	6	123		
6		65	45_7_	4	123		
7		66	45_7_	8	123		
8		67	2	2	123		
9		68	2	6	123		
A		69	2	4	123		
B		70	2	8	123		
C		76	45_7_	2	123		
D		77	45_7_	6	123		
E		78	45_7_	4	123		
F		79	45_7_	8	123		

Detector Assignments <C+0+E=126>

<C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

Column Numbers --->	Ped / Phase / Overlap 1	2	3	4	5	6	7	8	Row
Walk									0
Don't Walk									1
Phase Green									2
Phase Yellow									3
Phase Red									4
Overlap Green									5
Overlap Yellow									6
Overlap Red									7

Redirect Phase Outputs <C+0+E=127>

Cabinet Type		<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)		<D/0+0+1>
Max ON (minutes)		<D/0+0+2>
Chatter Fail Time		<D/0+0+4>

Detector Failure Monitor

	B	Row
One-Shot		8
Ext. Timer		9
DELAY-A		A
DELAY-B		B
DELAY-C		C
DELAY-D		D
DELAY-E		E
DELAY-F		F

Delay Logic Times
<C+0+D=0> (seconds)

Row	Time	Plan	Offset	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week

TOD Function <C+0+7=0.1>

Column 4
Phases/Bits

<C+0+E=27>

Day	Year	Month	Holiday Type

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 6 - FYA Inhibit
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Row	Time	Plan	Offset	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type

Holiday TOD Function <C+0+7=0.2>

Column 4
Phases/Bits

<C+0+E=28>

Day	Year	Month	Holiday Type

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type

Holiday Events <C+0+9=1.2>
(Bank 2)

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Month Select: October = A, November = B, Decmber = C

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										
A										
B										
C										
D										
E										
F										

Special Event Schedule -- Table 1 <C+0+E=27>

Notes:

[ ] <E/27+5+F>
Limited Service Interval

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										
A										
B										
C										
D										
E										
F										

Special Event Schedule -- Table 2 <C+0+E=28>

Notes:

[ ] <E/28+5+F>
Limited Service Interval

Min Time (seconds) <F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes) <F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds) <F/1+0+A>

Min Time Between Same Preempts

(Does Not Apply To Railroad Preempt)

Low Pri. Channel <E/125+C+8>

Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Row	
C	Bus Headway
D	Bus Delay
E	Max Early Grn
F	Max Grn Ext.

Priority Parameters
<F/1 +A+Row>

Row	Time	Headway	Direction	Day of Week
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
A				
B				
C				
D				
E				
F				

Headway Schedule <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

Name	Type	EWStreet	NSStreet	Group	Drop#	Area	AreaAddr	Channel	Sys Ref #	Last Change	FM Name
Harbor and S	233New233.X			NONE	2	2	150	COM1:	4	##########	NONE

		Coord Minimums														Bar Hour	Minute
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	0	1

Page 0 <C/5>

Notes are in Column A, Rows 32 to 40

Effective April 12, 2020

Trolley

UC San Diego Blue Line
San Ysidro ↔ America Plaza

Orange Line
Arnele Ave. ↔ Courthouse

Sycuan Green Line
Santee ↔ 12th & Imperial

SDG&E® Silver Line
Downtown San Diego Loop

MTS®

04/20

FARE PAYMENT / *Pago de tarifas*

There are several options to purchase your Trolley fare.
Existen varias opciones de compra para su tarifa del Trolley.

Ticket Vending Machines: Ticket vending machines are located at all Trolley Stations. Riders may purchase one-way, 1-Day, 30-Day or Monthly passes, or Compass Cash (stored value), using a ticket vending machine.

***Máquinas Expendedoras de Boletos**: Las máquinas expendedoras de boletos están ubicadas en todas las estaciones del Trolley. Los pasajeros pueden comprar viajes sencillos, de Un Día, 30 Días o Mensuales, o valor almacenado Compass Cash desde una máquina expendedora de boletos.*

- **One-Way Tickets**: Paper tickets are issued for one-way Adult, Youth or Senior/Disabled/Medicare fares.

  ***Boletos de Viaje Sencillo**: boletos de papel son generados para tarifas de viajes sencillos para Adultos, Jóvenes y Mayores de Edad/ Discapacitados/Medicare.*

- **Adult Compass Card**: Riders who have a Compass Card can load passes or stored value at any Trolley station. If you do not have a Compass Card, you can purchase a reusable card for a one-time $2 fee.

  ***Tarjeta Compass Card para Adultos**: Pasajeros con una Tarjeta Compass pueden cargar pases o almacenar valor en cualquier estación del Trolley. Si usted no tiene una Tarjeta Compass, puede adquirir una tarjeta reusable por la cantidad de $2.*

- **Reduced Fare Compass Card**: To purchase a Compass Card for discounted fares, please purchase your card and pass at the Transit Store or Compass Card outlet. Once you have received a discounted Compass Card, future purchases can be made at ticket machines. (Proof of eligibility is required to purchase and ride with a discounted fare.)

  ***Tarjeta Compass de Tarifa Reducida**: Para comprar una Tarjeta Compass para tarifas con descuento, por favor adquiera su tarjeta en la tienda Transit Store o en un distribuidor de Tarjetas Compass. Una vez que haya recibido una Tarjeta Compass para pases con descuento, compras futuras pueden realizarse en máquinas expendedoras de boletos. (Se requiere prueba de elegibilidad para comprar y viajar con tarifas descontadas.)*

Online: Adult Compass Cards can be purchased (with a loaded Pass) for mailing online. Riders who have a Compass Card should register their cards to protect value in the event of a lost card, and to automatically reload passes or stored value. There may be up to a 72-hour delay in passes being activated on your Compass Card.

***En Línea:** Tarjetas para Adulto Compass Card pueden comprarse (cargadas con un Pase) en línea y ser enviadas por correo. Pasajeros que cuenten con una Tarjeta Compass deben registrar sus tarjetas en línea para proteger su valor en caso de extraviarse, y para recargar pases o valor de manera automática. Puede haber una demora de hasta 72 horas en la activación de pases en Tarjeta Compass.*

Compass Cloud: The free Compass Cloud mobile app can be downloaded to Apple and Android phones. Adult (1-Day and 30-Day), reduced fare (1-Day and 30-Day) and special event passes are available on the app. Day and 30-Day passes can be stored for up to a year without use. To get access to discounted passes on the app, please visit the MTS Transit Store to show proof of eligibility.

***Compass Cloud:** La aplicación móvil gratuita Compass Cloud puede ser descargada en teléfonos Apple o Android. Pases para adulto (1 Día y 30 Días), tarifas con descuento (1 Día y 30 Días) y pases para eventos especiales están disponibles en la aplicación. Pases sin usarse de 1 y 30 Días pueden guardarse hasta por un año. Para obtener acceso a pases con descuento en la aplicación, por favor visite la tienda MTS Transit Store para mostrar prueba de elegibilidad.*

FARE INSPECTION / *Inspección de boletos*

Random fare inspections will be made. Passengers without a valid ticket or pass will be removed from the train and/or fined. You must have a valid fare or be in the process of purchasing one while at the station. You must tap your Compass Card at a station validator prior to boarding.

Se efectuarán inspecciones aleatorias de boletos. Los pasajeros que no posean un boleto o pase válido deberán abandonar el tren y/o serán multados. Mientras se encuentre en la estación, debe poseer un boleto válido o estar comprándolo. Usted debe tocar su tarjeta Compass Card en un validador de estación antes de abordar.

PROMOTIONS & DISCOUNTS / *Promociones y descuentos*

Family Weekends
Fines de semana para la familia

Two children (12 and under) ride free Saturdays and Sundays with a fare-paying adult (18 or older).

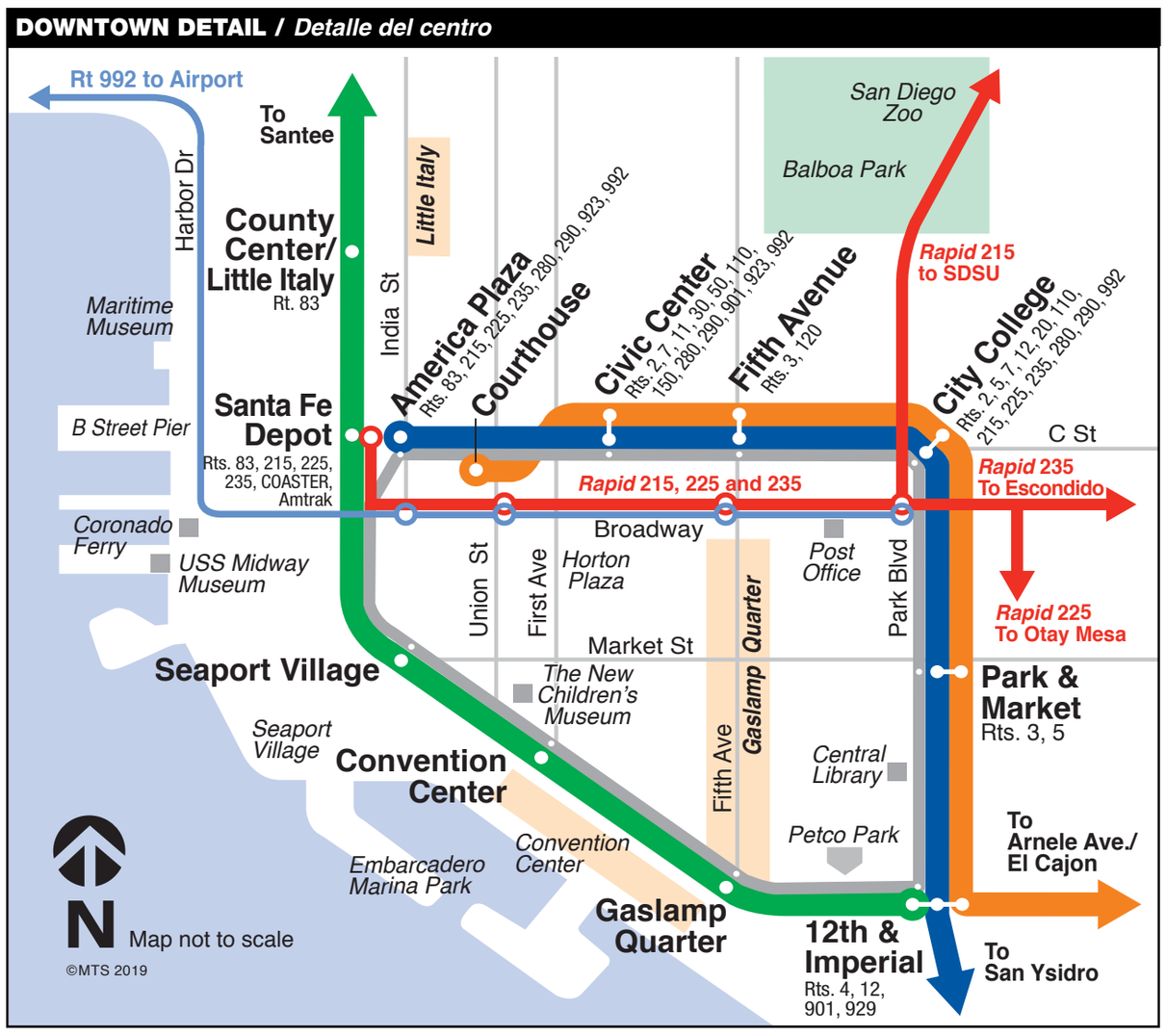
Dos menores (de hasta 12 años) viajan gratis los sábados y domingos con sólo abonar la tarifa de un adulto (de 18 años o más).

Holiday Friends Ride Free
Los días festivos, los amigos viajan gratis

On New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day, two people may ride any MTS bus or Trolley with one fare or pass.

En New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, y día de Navidad, dos personas pueden viajar en cualquier ruta de autobús o Trolley de MTS con un pase o pasaje.

DOWNTOWN DETAIL / *Detalle del centro*



FARES / *Tarifas*

ONE-WAY FARE / *Tarifa de una dirección*

Adult / *Adulto*	$2.50
Youth (ages 6-18)* *Jóvenes (edades 6-18)**	$2.50
Senior/Disabled/Medicare (S/D/M)* *Personas Mayores/con Discapacidades Medicare (S/D/M)**	$1.25
Child (5 and under) *Niño (5 años o menos)*	**FREE** *GRATIS*

One-way fares are valid for two hours from the time of purchase and in one direction only. Not valid for transfer to other Trolley Lines, bus routes or COASTER.

Pasajes de ida son válidos por dos horas a partir del momento de compra y solo válido en una sola dirección. No válido para transferirse a otras líneas del Trolley, rutas de autobús o COASTER.

You may purchase monthly passes at all Albertsons stores in San Diego County, as well as select Vons and community outlet locations. Visit **sdmts.com** for store locations and more information.

Puede adquirir pases mensuales en todas las tiendas Albertsons en el condado de San Diego, así como en sedes seleccionadas de Vons y outlets comunitarios. Visite sdmts.com para consultar las ubicaciones de las tiendas y obtener más información.

Albertsons VONS

DAY PASSES / *Pases diarios*

Regional — **Not valid on MTS *Rapid* Express or COASTER** / *No son válidos en MTS Rapid Express o COASTER*

Adult 1-Day / *Adulto 1 día*	$6.00
Youth (ages 6-18)* *Jóvenes (edades 6-18)**	$3.00
Senior/Disabled/Medicare (S/D/M)* *Personas Mayores/con Discapacidades Medicare (S/D/M)**	$3.00

Premium Regional — **Valid on MTS *Rapid* Express (280/290)** / *Es válido en MTS Rapid Express (280/290)*

Adult 1-Day / *Adulto 1 día*	$12.00
Youth (ages 6-18)* *Jóvenes (edades 6-18)**	$6.00
Senior/Disabled/Medicare (S/D/M)* *Personas Mayores/con Discapacidades Medicare (S/D/M)**	$6.00

MONTHLY AND 30-DAY PASSES / *Pases mensuales y pases de 30 días*

Adult / *Adulto*	$72.00
Youth (ages 6-18)* *Jóvenes (edades 6-18)**	$23.00
Senior/Disabled/Medicare (S/D/M)* *Personas Mayores/con Discapacidades Medicare (S/D/M)**	$23.00
Child (5 and under) *Niño (5 años o menos)*	**FREE** *GRATIS*

*Proof of eligibility required. Senior Eligibility: Age 65+ or born on or before September 1, 1959.
*Se requiere verificación de elegibilidad. Elegibilidad para Personas Mayores: Edad 65+ o nacido en o antes del 1 de septiembre, 1959.

RIDE ASSURED / *Viaje Tranquilo*

Contact MTS Security for issues of harassment, suspicious or illegal behavior. *Contáctenos en situaciones de hostigamiento y comportamiento sospechoso o ilegal.*

Text (619) 318-1338 • Call (619) 595-4960

ANIMALS / *Animales*

A trained service animal may accompany a rider with disabilities. Non-service animals must be in enclosed carriers and transported by passengers without the assistance of drivers or operators.

Se permite que un animal de servicio entrenado acompañe a un pasajero discapacitado. Los pasajeros deben transportar los animales que no sean de servicio en una jaula cerrada, sin ayuda de los conductores ni de los choferes.

BIKES / *Bicicletas*

- On Trolleys with stairs, board at rear doors of each car. Board low-floor cars at any door.
- Stay with bike to keep it secure.
- One bike is allowed per car during weekday rush hours, two bikes per car at all other times.
- MTS is not responsible for loss or damage to bicycles.
- *En los Trolleys con escaleras, aborde en las puertas traseras. Aborde los Trolleys de piso bajo en cualquier puerta.*
- *Por seguridad, manténgase junto a la bicicleta.*
- *En las horas pico durante la semana, sólo se admite una bicicleta por unidad. En otros tiempos, se admiten dos bicicletas.*
- *MTS no es responsable por el extravío o daño de bicicletas.*

ACCESSIBLE SERVICE / *Accesibilidad de los servicios*

All Trolleys are equipped with ramps. Seats closest to the doors are reserved for senior and disabled riders.

Todos los Trolleys cuentan con rampas para sillas de ruedas. Los asientos más cercanos a las puertas están reservados por gentileza para pasajeros mayores o discapacitados.

DIRECTORY / *Directorio*

MTS Information & Trip Planning *MTS Información y planeo de viaje*	**511** or/*ó* **(619) 233-3004**
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	**(619) 234-5005** or/*ó* **(888) 722-4889**
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	**(619) 685-4900**
Customer Service / *Servicio al cliente*	**(619) 557-4555**
MTS Security / *Seguridad de MTS*	**(619) 595-4960**
Compass Card / *Tarjeta Compass*	**(619) 595-5636**
Lost & Found / *Objetos extraviados*	**(619) 557-4555**
Transit Store	**(619) 234-1060** 12th & Imperial Transit Center M–F 8am–5pm

sdmts.com

Trip planning, route alerts, updated schedules, connections and more! *¡Planificación de viajes, alertas de ruta, horarios actualizados, conexiones y más!*

Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

THINGS TO REMEMBER / *Cosas que recordar*

YES / *Sí*	NO / *No*
Wear headphones *Use audífonos*	Smoking/Vaping *Fume/Vapiar*
Cover drinks *Cubra las bebidas*	Eating or open drinks *Coma ni bebidas destapadas*
Stay with bike *Manténgase junto a su bicicleta*	Feet on seats *Ponga los pies en los asientos*
Hold belongings *Sujete sus pertenencias*	Climbing or jumping between Trolleys *Colgar o brincar entre los Trolleys*

CART POLICY / *Política de carritos*

YES / *Sí*	NO / *No*
Smaller than 30" high, 18" wide, 18" deep *Menos de 30" de alto, 18" de ancho, 18" de grueso*	Load does not exceed capacity *Carga no sobrepasa de capacidad*
Can be loaded in a single trip *Se puede cargar en un solo viaje*	Does not block aisle *No obstruye el pasillo*
No more than two carry-on items *No más que dos piezas de equipaje de mano*	**More details on** *Más detalles en* **sdmts.com**
	Larger than 30" high, 18" wide, 18" deep *Mayor de 30" de alto, 18" de ancho, 18" de grueso*
	Load exceeds capacity *Carga sobrepasa de capacidad*
	Cannot be loaded in a single trip *No se puede cargar en un solo viaje*
	Blocks aisle *Obstruye el pasillo*
	More than two carry-on items *Más que dos piezas de equipaje de mano*
	Bags of cans/ Leaking items *Bolsa de latas/ objetos goteando*

Alternative formats available upon request. Please call (619) 557-4555
Formato alternativo disponible al preguntar. Favor de llamar (619) 557-4555

TROLLEY SYSTEM MAP / *Mapa del sistema de Trolley*

Sycuan Green Line

Monday through Friday / *lunes a viernes*

SANTEE ➡ DOWNTOWN

Santee	El Cajon	Grossmont	SDSU	Stadium	Fashion Valley	Old Town	Santa Fe Depot	12th & Imperial
—	—	—	—	—	—	4:52a	5:01a	5:08a
—	—	—	—	4:52a	5:01a	5:07	5:16	5:23
—	—	—	—	—	—	5:22	5:31	5:38
—	—	—	—	5:22	5:31	5:37	5:46	5:53
5:03a	5:14a	5:20a	5:29a	5:37	5:46	5:52	6:01	6:08
5:18	5:29	5:35	5:44	5:52	6:01	6:07	6:16	6:23
5:33	5:44	5:50	5:59	6:07	6:16	6:22	6:31	6:38
AND THEN EVERY 15 MINUTES AT: / *Y LUEGO CADA 15 MINUTOS A LA:*								
:48	:59	:05	:14	:22	:31	:37	:46	:53
:03	:14	:20	:29	:37	:46	:52	:01	:08
:18	:29	:35	:44	:52	:01	:07	:16	:23
:33	:44	:50	:59	:07	:16	:22	:31	:38
UNTIL: / *HASTA:*								
8:48p	**8:59p**	**9:05p**	**9:14p**	**9:22p**	**9:31p**	**9:37p**	**9:46p**	**9:53p**
9:18	**9:29**	**9:35**	**9:44**	**9:52**	**10:01**	**10:07**	**10:16**	**10:23**
9:48	**9:59**	**10:05**	**10:14**	**10:22**	**10:31**	**10:37**	**10:46**	**10:53**
10:18	**10:29**	**10:35**	**10:44**	**10:52**	**11:01**	**11:07**	**11:16**	**11:23**
10:48	**10:59**	**11:05**	**11:14**	**11:22**	**11:31**	**11:37**	**11:46**	**11:53**
—	—	—	**11:29**	**11:37**	**11:46**	**11:52**	12:01a	12:08a
11:18	**11:29**	**11:35**	**11:44**	**11:52**	12:01a	12:07a	12:16	12:23
—	—	—	**11:59**	12:07a	12:16	12:22	12:31	12:38
—	—	—	12:29a	12:37	12:46	12:52	1:01	1:08

DOWNTOWN ➡ SANTEE

12th & Imperial	Santa Fe Depot	Old Town	Fashion Valley	Stadium	SDSU	Grossmont	El Cajon	Santee
—	H 3:58a	4:07a	4:13a	4:22a	4:30a	4:39a	4:46a	4:57a
—	H 4:13	4:22	4:28	4:37	4:45	4:54	5:01	5:12
—	H 4:28	4:37	4:43	4:52	5:00	5:09	5:16	5:27
—	H 4:43	4:52	4:58	5:07	5:15	5:24	5:31	5:42
—	H 4:58	5:07	5:13	5:22	5:30	5:39	5:46	5:57
5:06a	5:13	5:22	5:28	5:37	5:45	5:54	6:01	6:12
5:21	5:28	5:37	5:43	5:52	6:00	6:09	6:16	6:27
AND THEN EVERY 15 MINUTES AT: / *Y LUEGO CADA 15 MINUTOS A LA:*								
:36	:43	:52	:58	:07	:15	:24	:31	:42
:51	:58	:07	:13	:22	:30	:39	:46	:57
:06	:13	:22	:28	:37	:45	:54	:01	:12
:21	:28	:37	:43	:52	:00	:09	:16	:27
UNTIL: / *HASTA:*								
7:36p	**7:43p**	**7:52p**	**7:58p**	**8:07p**	**8:15p**	**8:24p**	**8:31p**	**8:42p**
8:06	**8:13**	**8:22**	**8:28**	**8:37**	**8:45**	**8:54**	**9:01**	**9:12**
8:36	**8:43**	**8:52**	**8:58**	**9:07**	**9:15**	**9:24**	**9:31**	**9:42**
9:06	**9:13**	**9:22**	**9:28**	**9:37**	**9:45**	**9:54**	**10:01**	**10:12**
9:36	**9:43**	**9:52**	**9:58**	**10:07**	**10:15**	**10:24**	**10:31**	**10:42**
10:06	**10:13**	**10:22**	**10:28**	**10:37**	**10:45**	**10:54**	**11:01**	**11:12**
10:36	**10:43**	**10:52**	**10:58**	**11:07**	**11:15**	—	—	—
11:06	**11:13**	**11:22**	**11:28**	**11:37**	**11:45**	—	—	—
11:36	**11:43**	**11:52**	**11:58**	12:07a	12:15a	—	—	—

Saturday / *sábado*

SANTEE ➡ DOWNTOWN

Santee	El Cajon	Grossmont	SDSU	Stadium	Fashion Valley	Old Town	Santa Fe Depot	12th & Imperial
—	—	—	—	4:52a	5:01a	5:07a	5:16a	5:23a
—	—	—	—	5:22	5:31	5:37	5:46	5:53
5:18a	5:29a	6:05	6:16	6:22	6:31	6:37	6:46	6:53
—	—	—	—	6:37	6:46	6:52	7:01	7:08
AND THEN EVERY 15–30 MINUTES AT: / *Y LUEGO CADA 15–30 MINUTOS A LA:*								
:18	:29	:35	:44	:52	:01	:07	:16	:23
—	—	—	—	:07	:16	:22	:31	:38
:48	:59	:05	:14	:22	:31	:37	:46	:53
—	—	—	—	:37	:46	:52	:01	:08
UNTIL: / *HASTA:*								
11:18	11:29	11:35	11:44	11:52	**12:01p**	**12:07p**	**12:16p**	**12:23p**
11:33	11:44	11:50	11:59	**12:07p**	**12:16**	**12:22**	**12:31**	**12:38**
AND THEN EVERY 15 MINUTES AT: / *Y LUEGO CADA 15 MINUTOS A LA:*								
:48	**:59**	**:05**	**:14**	**:22**	**:31**	**:37**	**:46**	**:53**
:03	**:14**	**:20**	**:29**	**:37**	**:46**	**:52**	**:01**	**:08**
:18	**:29**	**:35**	**:44**	**:52**	**:01**	**:07**	**:16**	**:23**
:33	**:44**	**:50**	**:59**	**:07**	**:16**	**:22**	**:31**	**:38**
UNTIL: / *HASTA:*								
7:48p	**7:59p**	**8:05p**	**8:14p**	**8:22**	**8:31**	**8:37**	**8:46**	**8:53**
8:18	**8:29**	**8:35**	**8:44**	**8:52**	**9:01**	**9:07**	**9:16**	**9:23**
8:48	**8:59**	**9:05**	**9:14**	**9:22**	**9:31**	**9:37**	**9:46**	**9:53**
9:18	**9:29**	**9:35**	**9:44**	**9:52**	**10:01**	**10:07**	**10:16**	**10:23**
9:48	**9:59**	**10:05**	**10:14**	**10:22**	**10:31**	**10:37**	**10:46**	**10:53**
10:18	**10:29**	**10:35**	**10:44**	**10:52**	**11:01**	**11:07**	**11:16**	**11:23**
10:48	**10:59**	**11:05**	**11:14**	**11:22**	**11:31**	**11:37**	**11:46**	**11:53**
—	—	—	**11:29**	**11:37**	**11:46**	**11:52**	12:01a	12:08a
11:18	**11:29**	**11:35**	**11:44**	**11:52**	12:01a	12:07a	12:16	12:23
—	—	—	**11:59**	12:07a	12:16	12:22	12:31	12:38
—	—	—	12:29a	12:37	12:46	12:52	1:01	1:08

DOWNTOWN ➡ SANTEE

12th & Imperial	Santa Fe Depot	Old Town	Fashion Valley	Stadium	SDSU	Grossmont	El Cajon	Santee
—	H 4:13a	4:22a	4:28a	4:37a	4:45a	4:54a	5:01a	5:12a
—	H 4:43	4:52	4:58	5:07	5:15	5:24	5:31	5:42
5:06a	5:13	5:22	5:28	5:37	5:45	5:54	6:01	6:12
5:36	5:43	5:52	5:58	6:07	6:15	6:24	6:31	6:42
6:06	6:13	6:22	6:28	6:37	6:45	6:54	7:01	7:12
AND THEN EVERY 15-30 MINUTES AT: / *Y LUEGO CADA 15–30 MINUTOS A LA:*								
:21	:28	:37	:43	:52	—	—	—	—
:36	:43	:52	:58	:07	:15	:24	:31	:42
:51	:58	:07	:13	:22	—	—	—	—
:06	:13	:22	:28	:37	:45	:54	:01	:12
UNTIL: / *HASTA:*								
10:21	10:28	10:37	10:43	10:52	11:00	11:09	11:16	11:27
10:36	10:43	10:52	10:58	11:07	11:15	11:24	11:31	11:42
10:51	10:58	11:07	11:13	11:22	11:30	11:39	11:46	11:57
11:06	11:13	11:22	11:28	11:37	11:45	11:54	**12:01p**	**12:12p**
11:21	11:28	11:37	11:43	11:52	**12:00p**	**12:09p**	**12:16**	**12:27**
AND THEN EVERY 15 MINUTES AT: / *Y LUEGO CADA 15 MINUTOS A LA:*								
:36	**:43**	**:52**	**:58**	**:07**	**:15**	**:24**	**:31**	**:42**
:51	**:58**	**:07**	**:13**	**:22**	**:30**	**:39**	**:46**	**:57**
:06	**:13**	**:22**	**:28**	**:37**	**:45**	**:54**	**:01**	**:12**
:21	**:28**	**:37**	**:43**	**:52**	**:00**	**:09**	**:16**	**:27**
UNTIL: / *HASTA:*								
6:36p	**6:43p**	**6:52p**	**6:58p**	**7:07p**	**7:15**	**7:24**	**7:31**	**7:42**
7:06	**7:13**	**7:22**	**7:28**	**7:37**	**7:45**	**7:54**	**8:01**	**8:12**
7:36	**7:43**	**7:52**	**7:58**	**8:07**	**8:15**	**8:24**	**8:31**	**8:42**
8:06	**8:13**	**8:22**	**8:28**	**8:37**	**8:45**	**8:54**	**9:01**	**9:12**
8:36	**8:43**	**8:52**	**8:58**	**9:07**	**9:15**	**9:24**	**9:31**	**9:42**
9:06	**9:13**	**9:22**	**9:28**	**9:37**	**9:45**	**9:54**	**10:01**	**10:12**
9:36	**9:43**	**9:52**	**9:58**	**10:07**	**10:15**	**10:24**	**10:31**	**10:42**
10:06	**10:13**	**10:22**	**10:28**	**10:37**	**10:45**	**10:54**	**11:01**	**11:12**
10:36	**10:43**	**10:52**	**10:58**	**11:07**	**11:15**	—	—	—
11:06	**11:13**	**11:22**	**11:28**	**11:37**	**11:45**	—	—	—
11:36	**11:43**	**11:52**	**11:58**	12:07a	12:15a	—	—	—

Sunday / *domingo*

SANTEE ➡ DOWNTOWN

Santee	El Cajon	Grossmont	SDSU	Stadium	Fashion Valley	Old Town	Santa Fe Depot	12th & Imperial
—	—	—	—	4:52a	5:01a	5:07a	5:16a	5:23a
—	—	—	—	5:22	5:31	5:37	5:46	5:53
5:18a	5:29a	5:35a	5:44a	5:52	6:01	6:07	6:16	6:23
5:48	5:59	6:05	6:14	6:22	6:31	6:37	6:46	6:53
6:18	6:29	6:35	6:44	6:52	7:01	7:07	7:16	7:23
6:48	6:59	7:05	7:14	7:22	7:31	7:37	7:46	7:53
7:18	7:29	7:35	7:44	7:52	8:01	8:07	8:16	8:23
7:48	7:59	8:05	8:14	8:22	8:31	8:37	8:46	8:53
—	—	—	—	8:37	8:46	8:52	9:01	9:08
AND THEN EVERY 15–30 MINUTES AT: / *Y LUEGO CADA 15–30 MINUTOS A LA:*								
:18	:29	:35	:44	:52	:01	:07	:16	:23
—	—	—	—	:07	:16	:22	:31	:38
:48	:59	:05	:14	:22	:31	:37	:46	:53
—	—	—	—	:37	:46	:52	:01	:08
UNTIL: / *HASTA:*								
11:18	11:29	11:35	11:44	11:52	**12:01p**	**12:07p**	**12:16p**	**12:23p**
—	—	—	11:59	**12:07p**	**12:16**	**12:22**	**12:31**	**12:38**
11:48	11:59	**12:05p**	**12:14p**	**12:22**	**12:31**	**12:37**	**12:46**	**12:53**
—	—	—	**12:29**	**12:37**	**12:46**	**12:52**	**1:01**	**1:08**
AND THEN EVERY 15–30 MINUTES AT: / *Y LUEGO CADA 15–30 MINUTOS A LA:*								
:18	:29	:35	:44	:52	:01	:07	:16	:23
—	—	—	:59	:07	:16	:22	:31	:38
:48	:59	:05	:14	:22	:31	:37	:46	:53
—	—	—	:29	:37	:46	:52	:01	:08
UNTIL: / *HASTA:*								
7:18p	**7:29p**	**7:35**	**7:44**	**7:52**	**8:01**	**8:07**	**8:16**	**8:23**
7:48	**7:59**	**8:05**	**8:14**	**8:22**	**8:31**	**8:37**	**8:46**	**8:53**
8:18	**8:29**	**8:35**	**8:44**	**8:52**	**9:01**	**9:07**	**9:16**	**9:23**
8:48	**8:59**	**9:05**	**9:14**	**9:22**	**9:31**	**9:37**	**9:46**	**9:53**
9:18	**9:29**	**9:35**	**9:44**	**9:52**	**10:01**	**10:07**	**10:16**	**10:23**
9:48	**9:59**	**10:05**	**10:14**	**10:22**	**10:31**	**10:37**	**10:46**	**10:53**
10:18	**10:29**	**10:35**	**10:44**	**10:52**	**11:01**	**11:07**	**11:16**	**11:23**
10:48	**10:59**	**11:05**	**11:14**	**11:22**	**11:31**	**11:37**	**11:46**	**11:53**
—	—	—	**11:29**	**11:37**	**11:46**	**11:52**	12:01a	12:08a
11:18	**11:29**	**11:35**	**11:44**	**11:52**	12:01a	12:07a	12:16	12:23
—	—	—	**11:59**	12:07a	12:16	12:22	12:31	12:38
—	—	—	12:29a	12:37	12:46	12:52	1:01	1:08

DOWNTOWN ➡ SANTEE

12th & Imperial	Santa Fe Depot	Old Town	Fashion Valley	Stadium	SDSU	Grossmont	El Cajon	Santee
—	H 4:13a	4:22a	4:28a	4:37a	4:45a	4:54a	5:01a	5:12a
—	H 4:43	4:52	4:58	5:07	5:15	5:24	5:31	5:42
5:06a	5:13	5:22	5:28	5:37	5:45	5:54	6:01	6:12
5:36	5:43	5:52	5:58	6:07	6:15	6:24	6:31	6:42
6:06	6:13	6:22	6:28	6:37	6:45	6:54	7:01	7:12
6:36	6:43	6:52	6:58	7:07	7:15	7:24	7:31	7:42
7:06	7:13	7:22	7:28	7:37	7:45	7:54	8:01	8:12
7:36	7:43	7:52	7:58	8:07	8:15	8:24	8:31	8:42
8:06	8:13	8:22	8:28	8:37	8:45	8:54	9:01	9:12
8:36	8:43	8:52	8:58	9:07	9:15	9:24	9:31	9:42
9:06	9:13	9:22	9:28	9:37	9:45	9:54	10:01	10:12
9:36	9:43	9:52	9:58	10:07	10:15	10:24	10:31	10:42
10:06	10:13	10:22	10:28	10:37	10:45	10:54	11:01	11:12
10:36	10:43	10:52	10:58	11:07	11:15	—	—	—
11:06	11:13	11:22	11:28	11:37	11:45	—	—	—
11:36	11:43	11:52	11:58	12:07a	12:15a	—	—	—

H = Trip begins at Gaslamp Quarter Station five minutes earlier than time show. / Este viaje comienza cinco minutos antes del tiempo indicado en la estacion de Gaslamp Quarter.

Orange Line

Monday through Friday / *lunes a viernes*

ARNELE AVE. ➡ DOWNTOWN

Arnele Ave.	El Cajon	Grossmont	Spring Street	Euclid Avenue	12th & Imperial	City College	Courthouse
—	—	—	—	D 4:58a	5:12a	5:17a	5:23a
4:45a	4:48a	4:54a	5:00a	5:13	5:27	5:32	5:38
5:00	5:03	5:09	5:15	5:28	5:42	5:47	5:53
5:15	5:18	5:24	5:30	5:43	5:57	6:02	6:08
5:30	5:33	5:39	5:45	5:58	6:12	6:17	6:23
5:45	5:48	5:54	6:00	6:13	6:27	6:32	6:38
6:00	6:03	6:09	6:15	6:28	6:42	6:47	6:53
6:15	6:18	6:24	6:30	6:43	6:57	7:02	7:08
6:30	6:33	6:39	6:45	6:58	7:12	7:17	7:23
—	—	—	F 6:53	7:06	7:20	G 7:25	—
6:45	6:48	6:54	7:00	7:13	7:27	7:32	7:38
—	—	—	F 7:08	7:21	7:35	G 7:40	—
7:00	7:03	7:09	7:15	7:28	7:42	7:47	7:53
AND THEN EVERY 15 MINUTES AT: / *Y LUEGO CADA 15 MINUTOS A LA:*							
:15	:18	:24	:30	:43	:57	:02	:08
:30	:33	:39	:45	:58	:12	:17	:23
:45	:48	:54	:00	:13	:27	:32	:38
:00	:03	:09	:15	:28	:42	:47	:53
UNTIL: / *HASTA:*							
8:15p	**8:18p**	**8:24p**	**8:30p**	**8:43p**	**8:57p**	**9:02p**	**9:08p**
8:45	**8:48**	**8:54**	**9:00**	**9:13**	**9:27**	**9:32**	**9:38**
9:15	**9:18**	**9:24**	**9:30**	**9:43**	**9:57**	**10:02**	**10:08**
9:45	**9:48**	**9:54**	**10:00**	**10:13**	**10:27**	**10:32**	**10:38**
10:15	**10:18**	**10:24**	**10:30**	**10:43**	**10:57**	**11:02**	**11:08**
10:45	**10:48**	**10:54**	**11:00**	**11:13**	**11:27**	**11:32**	**11:38**
11:15	**11:18**	**11:24**	**11:30**	**11:43**	**11:57**	12:02a	12:08a
11:45	**11:48**	**11:54**	12:00a	12:13a	12:27a	12:27	12:38
12:15a	12:18a	12:24a	12:30	12:43	12:57	1:02	1:08
12:45	12:48	12:54	1:00	1:13	1:27	1:32	1:38

DOWNTOWN ➡ ARNELE AVE.

Courthouse	City College	12th & Imperial	Euclid Avenue	Spring Street	Grossmont	El Cajon	Arnele Ave.
—	—	—	E 4:09a	4:23a	4:29a	4:36a	4:38a
—	—	—	E 4:24	4:38	4:44	4:51	4:53
—	—	—	E 4:39	4:53	4:59	5:06	5:08
—	—	—	E 4:54	5:08	5:14	5:21	5:23
—	—	—	E 5:09	5:23	5:29	5:36	5:38
—	C 5:05a	5:11a	5:24	5:38	5:44	5:51	5:53
—	C 5:20	5:26	5:39	5:53	5:59	6:06	6:08
5:30a	5:35	5:41	5:54	6:08	6:14	6:21	6:23
5:45	5:50	5:56	6:09	6:23	6:29	6:36	6:38
6:00	6:05	6:11	6:24	6:38	6:44	6:51	6:53
AND THEN EVERY 15 MINUTES AT: / *Y LUEGO CADA 15 MINUTOS A LA:*							
:15	:20	:26	:39	:53	:59	:06	:08
:30	:35	:41	:54	:08	:14	:21	:23
:45	:50	:56	:09	:23	:29	:36	:38
:00	:05	:11	:24	:38	:44	:51	:53
UNTIL: / *HASTA:*							
7:15p	**7:20p**	**7:26p**	**7:39p**	**7:53p**	**7:59p**	**8:06p**	**8:08p**
7:45	**7:50**	**7:56**	**8:09**	**8:23**	**8:29**	**8:36**	**8:38**
8:15	**8:20**	**8:26**	**8:39**	**8:53**	**8:59**	**9:06**	**9:08**
8:45	**8:50**	**8:56**	**9:09**	**9:23**	**9:29**	**9:36**	**9:38**
9:15	**9:20**	**9:26**	**9:39**	**9:53**	**9:59**	**10:06**	**10:08**
9:45	**9:50**	**9:56**	**10:09**	**10:23**	**10:29**	**10:36**	**10:38**
10:15	**10:20**	**10:26**	**10:39**	**10:53**	**10:59**	**11:06**	**11:08**
10:45	**10:50**	**10:56**	**11:09**	**11:23**	**11:29**	**11:36**	**11:38**
11:15	**11:20**	**11:26**	**11:39**	**11:53**	**11:59**	12:06a	12:08a
11:45	**11:50**	**11:56**	12:09a	12:23a	12:29a	12:36	12:38

Saturday / *sábado*

ARNELE AVE. ➡ DOWNTOWN

Arnele Ave.	El Cajon	Grossmont	Spring Street	Euclid Avenue	12th & Imperial	City College	Courthouse
5:15a	5:18a	5:24a	5:30a	5:43a	5:57a	6:02a	6:08a
5:45	5:48	5:54	6:00	6:13	6:27	6:32	6:38
6:15	6:18	6:24	6:30	6:43	6:57	7:02	7:08
6:45	6:48	6:54	7:00	7:13	7:27	7:32	7:38
7:15	7:18	7:24	7:30	7:43	7:57	8:02	8:08
—	—	—	—	—	8:12	8:17	8:23
7:45	7:48	7:54	8:00	8:13	8:27	8:32	8:38
—	—	—	—	—	8:42	8:47	8:53
8:15	8:18	8:24	8:30	8:43	8:57	9:02	9:08
—	—	—	—	—	9:12	9:17	9:23
8:45	8:48	8:54	9:00	9:13	9:27	9:32	9:38
—	—	—	—	—	9:42	9:47	9:53
9:15	9:18	9:24	9:30	9:43	9:57	10:02	10:08
9:30	9:33	9:39	9:45	9:58	10:12	10:17	10:23
9:45	9:48	9:54	10:00	10:13	10:27	10:32	10:38
10:00	10:03	10:09	10:15	10:28	10:42	10:47	10:53
AND THEN EVERY 15 MINUTES AT: / *Y LUEGO CADA 15 MINUTOS A LA:*							
:15	:18	:24	:30	:43	:57	:02	:08
:30	:33	:39	:45	:58	:12	:17	:23
:45	:48	:54	:00	:13	:27	:32	:38
:00	:03	:09	:15	:28	:42	:47	:53
UNTIL: / *HASTA:*							
7:15p	**7:18p**	**7:24p**	**7:30p**	**7:43p**	**7:57p**	**8:02p**	**8:08p**
7:45	**7:48**	**7:54**	**8:00**	**8:13**	**8:27**	**8:32**	**8:38**
8:15	**8:18**	**8:24**	**8:30**	**8:43**	**8:57**	**9:02**	**9:08**
8:45	**8:48**	**8:54**	**9:00**	**9:13**	**9:27**	**9:32**	**9:38**
9:15	**9:18**	**9:24**	**9:30**	**9:43**	**9:57**	**10:02**	**10:08**
9:45	**9:48**	**9:54**	**10:00**	**10:13**	**10:27**	**10:32**	**10:38**
10:15	**10:18**	**10:24**	**10:30**	**10:43**	**10:57**	**11:02**	**11:08**
10:45	**10:48**	**10:54**	**11:00**	**11:13**	**11:27**	**11:32**	**11:38**
11:15	**11:18**	**11:24**	**11:30**	**11:43**	**11:57**	12:02a	12:08a
11:45	**11:48**	**11:54**	12:00a	12:13a	12:27a	12:32	12:38
12:15a	12:18a	12:24a	12:30	12:43	12:57	1:02	1:08
12:45	12:48	12:54	1:00	1:13	1:27	1:32	1:38

DOWNTOWN ➡ ARNELE AVE.

Courthouse	City College	12th & Imperial	Euclid Avenue	Spring Street	Grossmont	El Cajon	Arnele Ave.
—	—	—	E 4:39a	4:53a	4:59a	5:06a	5:08a
—	—	—	E 5:09	5:23	5:29	5:36	5:38
—	C 5:20a	5:26a	5:39	5:53	5:59	6:06	6:08
—	C 5:50	5:56	6:09	6:23	6:29	6:36	6:38
6:15a	6:20	6:26	6:39	6:53	6:59	7:06	7:08
6:45	6:50	6:56	7:09	7:23	7:29	7:36	7:38
7:15	7:20	7:26	7:39	7:53	7:59	8:06	8:08
7:45	7:50	7:56	8:09	8:23	8:29	8:36	8:38
8:15	8:20	8:26	8:39	8:53	8:59	9:06	9:08
8:30	8:35	8:41	8:54	9:08	9:14	9:21	9:23
8:45	8:50	8:56	9:09	9:23	9:29	9:36	9:38
9:00	9:05	9:11	9:24	9:38	9:44	9:51	9:53
AND THEN EVERY 15 MINUTES AT: / *Y LUEGO CADA 15 MINUTOS A LA:*							
:15	:20	:26	:39	:53	:59	:06	:08
:30	:35	:41	:54	:08	:14	:21	:23
:45	:50	:56	:09	:23	:29	:36	:38
:00	:05	:11	:24	:38	:44	:51	:53
UNTIL: / *HASTA:*							
6:15p	**6:20p**	**6:26p**	**6:39p**	**6:53p**	**6:59p**	**7:06p**	**7:08p**
6:45	**6:50**	**6:56**	**7:09**	**7:23**	**7:29**	**7:36**	**7:38**
7:15	**7:20**	**7:26**	**7:39**	**7:53**	**7:59**	**8:06**	**8:08**
7:45	**7:50**	**7:56**	**8:09**	**8:23**	**8:29**	**8:36**	**8:38**
8:15	**8:20**	**8:26**	**8:39**	**8:53**	**8:59**	**9:06**	**9:08**
8:45	**8:50**	**8:56**	**9:09**	**9:23**	**9:29**	**9:36**	**9:38**
9:15	**9:20**	**9:26**	**9:39**	**9:53**	**9:59**	**10:06**	**10:08**
9:45	**9:50**	**9:56**	**10:09**	**10:23**	**10:29**	**10:36**	**10:38**
10:15	**10:20**	**10:26**	**10:39**	**10:53**	**10:59**	**11:06**	**11:08**
10:45	**10:50**	**10:56**	**11:09**	**11:23**	**11:29**	**11:36**	**11:38**
11:15	**11:20**	**11:26**	**11:39**	**11:53**	**11:59**	12:06a	12:08a
11:45	**11:50**	**11:56**	12:09a	12:23a	12:29a	12:36	12:38

E = Trip begins at 25th & Commercial Station ten minutes earlier than time show. / *Este viaje comienza diez minutos antes del tiempo indicado en la estacion de 25th & Commercial.*
C = Trip begins at Civic Center Station four minutes earlier than time show. / *Este viaje comienza cuatro minutos antes del tiempo indicado en la estacion de Civic Center.*
D = Trip begins at Encanto/62nd Street Station three minutes earlier than time show. / *Este viaje comienza tres minutos antes del tiempo indicado en la estacion deEncanto/62nd Street.*
F = Trip begins at La Mesa Station three minutes earlier than time show. / *Este viaje comienza tres minutos antes del tiempo indicado en la estacion de La Mesa.*
G = Trip does not serve Courthouse Station, and ends at America Plaza six minutes later than time shown. / *Este viaje no brinda servicio a la estacion Courthouse, y termina seis minutos despues del tiempo indicado en la estacion de America Plaza.*

UC San Diego Blue Line

Monday through Friday / *lunes a viernes*

SAN YSIDRO ➡ DOWNTOWN

San Ysidro	Iris Avenue	H Street	8th Street	12th & Imperial	City College	America Plaza
—	—	—	—	4:32a	4:37a	4:43a
—	—	—	—	4:47	4:52	4:58
—	4:27a	4:36a	4:44a	4:54	4:59	5:05
4:28a	4:35	4:44	4:52	5:02	5:07	5:13
4:35	4:42	4:51	4:59	5:09	5:14	5:20
4:43	4:50	4:59	5:07	5:17	5:22	5:28
4:50	4:57	5:06	5:14	5:24	5:29	5:35
4:58	5:05	5:14	5:22	5:32	5:37	5:43
5:05	5:12	5:21	5:29	5:39	5:44	5:50
5:13	5:20	5:29	5:37	5:47	5:52	5:58
5:20	5:27	5:36	5:44	5:54	5:59	6:05
5:28	5:35	5:44	5:52	6:02	6:07	6:13
AND THEN EVERY 7–8 MINUTES AT: / *Y LUEGO CADA 7–8 MINUTOS A LA:*						
:35	:42	:51	:59	:09	:14	:20
:43	:50	:59	:07	:17	:22	:28
:50	:57	:06	:14	:24	:29	:35
:58	:05	:14	:22	:32	:37	:43
:05	:12	:21	:29	:39	:44	:50
:13	:20	:29	:37	:47	:52	:58
:20	:27	:36	:44	:54	:59	:05
:28	:35	:44	:52	:02	:07	:13
UNTIL: / *HASTA:*						
8:43	8:50	8:59	9:07	9:17	9:22	9:28
8:58	9:05	9:14	9:22	9:32	9:37	9:43
AND THEN EVERY 15 MINUTES AT: / *Y LUEGO CADA 15 MINUTOS A LA:*						
:13	:20	:29	:37	:47	:52	:58
:28	:35	:44	:52	:02	:07	:13
:43	:50	:59	:07	:17	:22	:28
:58	:05	:14	:22	:32	:37	:43
UNTIL: / *HASTA:*						
3:05p	**3:12p**	**3:21p**	**3:29p**	**3:39p**	**3:44p**	**3:50p**
**3:13

Exact fare, please *Favor de pagar la cantidad exacta*

Fares *Tarifas*	Adult *Adulto*	Senior/Disabled/ Medicare/Youth* *Personas Mayores/con Discapacidades/Medicare/Jóvenes**
ONE-WAY FARES *Tarifas Sencillas*	$2.50	$1.25
EARNED DAY PASS *Pase del Día Ganado*	$6.00	$3.00
MONTH PASS *Pase mensual*	$72.00	$23.00

Load money into your PRONTO account to earn Day Passes and Month Passes. Tap your PRONTO card ($2) or scan your PRONTO mobile app (free) to ride. *Carga dinero a tu cuenta de PRONTO para ganar Pases del Día y Pases Mensuales. Toca tu tarjeta PRONTO ($2) o escanea tu aplicación móvil PRONTO (gratis) para viajar.*

- **One-ways with PRONTO receive free transfers for two hours. No free transfers for cash.** *Los viajes de ida con PRONTO reciben transbordes gratuitos por dos horas. No se permiten transbordes gratuitos con pagos en efectivo.*
- **Day Passes not sold in advance. Earned with PRONTO.** *Los pases diarios no se venden por adelantado. Se obtienen con PRONTO.*
- **A month pass can be purchased in advanced or earned with PRONTO. Good from first day to last day of the month.** *El Pase Mensual se puede comprar por adelantado o se obtiene mientras viaja con PRONTO. Válido desde el primer día hasta el último día del mes.*

*Proof of eligibility required. Senior Eligibility: Age 65+ or born on or before September 1, 1959. Youth Eligibility: Ages 6-18
Se requiere verificación de elegibilidad. Elegibilidad para Personas Mayores: Edad 65+ o nacido en o antes del 1 de septiembre, 1959. Elegibilidad para Jóvenes: edades 6-18

For more information, visit: / *Para más información, visite:* **sdmts.com/fares**

DIRECTORY / *Directorio*

MTS Information & Trip Planning *MTS Información y planeo de viaje*	**511** or/*ó* **(619) 233-3004**
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	**(619) 234-5005** or/*ó* **(888) 722-4889**
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	**(619) 685-4900**
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	**(619) 557-4555**
MTS Security *MTS Seguridad*	**(619) 595-4960**
Lost & Found *Objetos extraviados*	**(619) 233-3004**
Transit Store	**(619) 234-1060** 12th & Imperial Transit Center M–F 8am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	**sdmts.com**

For more information on riding MTS services, pick up a Rider's Guide on a bus or at the Transit Store, or visit **sdmts.com.**

Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en la Transit Store, o visita a ***sdmts.com.***

Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

Effective NOVEMBER 21, 2021

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8th St. Transit Center – Iris Avenue Transit Center

via National City Boulevard / Broadway

DESTINATIONS
- Broadway Plaza
- Chula Vista Center
- National City Civic Center

TROLLEY CONNECTIONS
- 8th St.
- E St.
- Iris Avenue
- Palm Avenue

11/21

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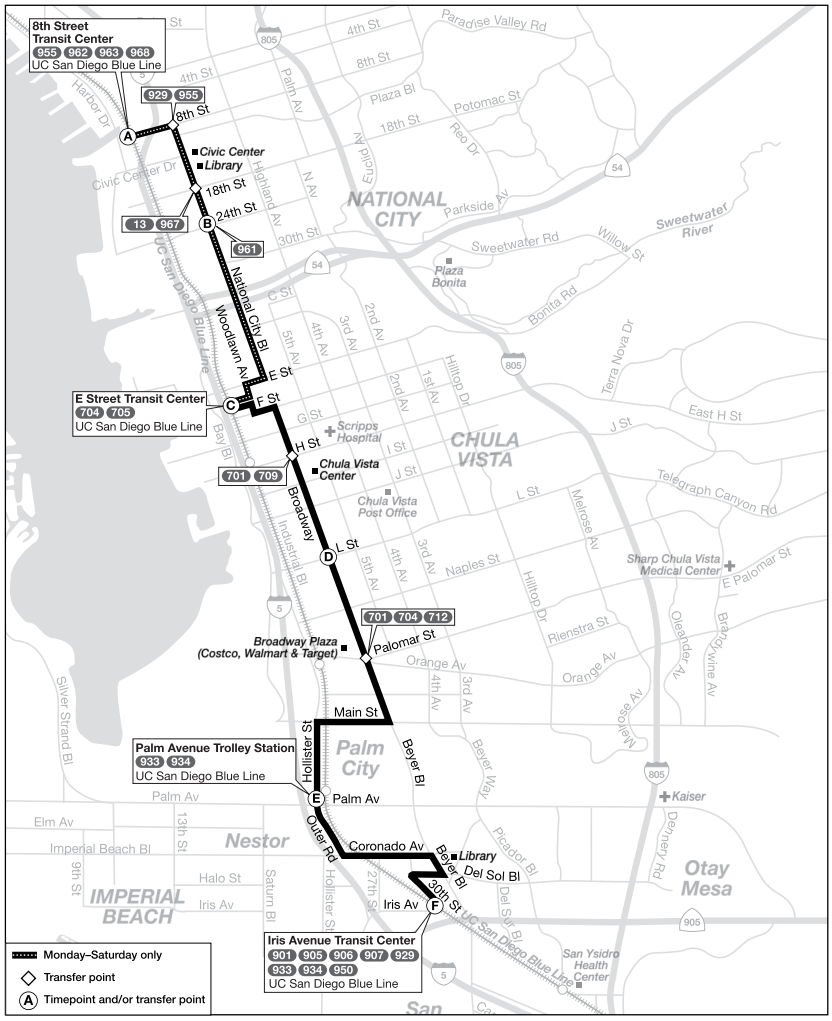
Route Alerts, Updated Schedules, Connections & More



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Please call: (619) 557-4555
Formato alternativo disponible al preguntar.
Favor de llamar: (619) 557-4555

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Los horarios e información que se indican en este itinerario están sujetos a cambios. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.

Route 932 – Sunday / *domingo*

Otay/Nestor ➡ Chula Vista

(F) Iris Avenue Transit Center **DEPART**	(E) Palm Avenue Trolley Station	(D) Broadway & L St.	(C) E Street Transit Center	(B) National City Bl. & 24th St.	(A) 8th Street Transit Center **ARRIVE**
5:44a	5:52a	6:01a	6:10a	–	–
6:44	6:52	7:02	7:11	–	–
7:44	7:53	8:05	8:15	–	–
8:44	8:53	9:06	9:17	–	–
9:44	9:53	10:06	10:17	–	–
10:44	10:53	11:07	11:19	–	–
11:14	11:23	11:37	11:49	–	–
11:44	11:53	**12:07p**	**12:19p**	–	–
12:14p	**12:23p**	**12:37**	**12:49**	–	–
12:43	**12:53**	**1:08**	**1:20**	–	–
1:13	**1:23**	**1:38**	**1:50**	–	–
1:43	**1:53**	**2:08**	**2:20**	–	–
2:13	**2:23**	**2:38**	**2:50**	–	–
2:43	**2:53**	**3:08**	**3:20**	–	–
3:13	**3:23**	**3:38**	**3:50**	–	–
3:43	**3:53**	**4:08**	**4:20**	–	–
4:13	**4:23**	**4:38**	**4:50**	–	–
4:43	**4:53**	**5:08**	**5:20**	–	–
5:14	**5:24**	**5:38**	**5:50**	–	–
6:14	**6:23**	**6:36**	**6:48**	–	–
7:14	**7:23**	**7:35**	**7:46**	–	–

Chula Vista ➡ Otay/Nestor

(A) 8th Street Transit Center **DEPART**	(B) National City Bl. & 24th St.	(C) E Street Transit Center	(D) Broadway & L St.	(E) Palm Avenue Trolley Station	(F) Iris Avenue Transit Center **ARRIVE**
–	–	6:26a	6:34a	6:44a	6:53a
–	–	7:29	7:38	7:50	7:59
–	–	8:29	8:38	8:50	8:59
–	–	9:23	9:37	9:50	10:00
–	–	10:26	10:37	10:50	11:00
–	–	10:55	11:07	11:21	11:31
–	–	11:30	11:42	11:56	**12:06p**
–	–	11:58	**12:10p**	**12:25p**	**12:35**
–	–	**12:28p**	**12:41**	**12:56**	**1:06**
–	–	**12:58**	**1:11**	**1:26**	**1:36**
–	–	**1:28**	**1:41**	**1:56**	**2:06**
–	–	**1:58**	**2:11**	**2:26**	**2:36**
–	–	**2:28**	**2:41**	**2:56**	**3:06**
–	–	**2:58**	**3:11**	**3:26**	**3:36**
–	–	**3:28**	**3:41**	**3:56**	**4:06**
–	–	**3:58**	**4:11**	**4:26**	**4:36**
–	–	**4:28**	**4:41**	**4:56**	**5:06**
–	–	**4:58**	**5:11**	**5:26**	**5:36**
–	–	**5:59**	**6:11**	**6:26**	**6:36**
–	–	**7:00**	**7:10**	**7:22**	**7:31**
–	–	**7:58**	**8:08**	**8:20**	**8:29**

Route 932 – Monday through Friday / *lunes a viernes*

Otay/Nestor ➡ Chula Vista ➡ National City

Ⓕ Iris Avenue Transit Center **DEPART**	Ⓔ Palm Avenue Trolley Station	Ⓓ Broadway & L St.	Ⓒ E Street Transit Center	Ⓑ National City Bl. & 24th St.	Ⓐ 8th Street Transit Center **ARRIVE**
4:22a	4:31a	4:42a	4:51a	4:58a	5:07a
4:52	5:01	5:12	5:21	5:28	5:37
5:17	5:26	5:37	5:46	5:53	6:02
5:47	5:56	6:07	6:16	6:23	6:32
6:02	6:11	6:22	6:32	6:40	6:49
6:17	6:26	6:37	6:47	6:55	7:04
6:32	6:41	6:53	7:04	7:13	7:22
6:47	6:56	7:08	7:19	7:28	7:37
7:02	7:12	7:25	7:36	7:45	7:54
7:17	7:27	7:40	7:51	8:00	8:09
7:32	7:42	7:55	8:06	8:15	8:24
7:47	7:57	8:10	8:21	8:30	8:39
8:02	8:12	8:25	8:36	8:45	8:54
8:18	8:28	8:41	8:52	9:01	9:10
8:33	8:43	8:56	9:07	9:16	9:25
8:48	8:58	9:11	9:22	9:31	9:40
9:03	9:13	9:26	9:37	9:46	9:55
9:18	9:28	9:41	9:52	10:01	10:10
9:31	9:41	9:54	10:05	10:14	10:23
9:45	9:54	10:08	10:21	10:30	10:39
10:00	10:09	10:23	10:36	10:45	10:54
10:15	10:24	10:38	10:51	11:00	11:09
10:30	10:39	10:53	11:06	11:15	11:24
10:45	10:54	11:08	11:21	11:30	11:39
11:00	11:09	11:23	11:36	11:45	11:54
11:15	11:24	11:38	11:51	**12:00p**	**12:09p**
11:30	11:39	11:53	**12:06p**	**12:15**	**12:24**
11:45	11:54	**12:08p**	**12:21**	**12:30**	**12:39**
12:00p	**12:09p**	**12:23**	**12:36**	**12:45**	**12:54**
12:15	**12:24**	**12:38**	**12:51**	**1:00**	**1:09**
12:29	**12:38**	**12:52**	**1:05**	**1:15**	**1:24**
12:43	**12:53**	**1:08**	**1:21**	**1:31**	**1:40**
12:58	**1:08**	**1:23**	**1:36**	**1:46**	**1:55**
1:13	**1:23**	**1:38**	**1:51**	**2:01**	**2:10**
1:28	**1:38**	**1:53**	**2:06**	**2:16**	**2:25**
1:43	**1:53**	**2:08**	**2:21**	**2:31**	**2:40**
1:58	**2:08**	**2:23**	**2:36**	**2:46**	**2:55**
2:13	**2:23**	**2:39**	**2:53**	**3:03**	**3:12**
2:28	**2:38**	**2:54**	**3:08**	**3:18**	**3:27**
2:43	**2:53**	**3:09**	**3:23**	**3:33**	**3:42**
2:58	**3:08**	**3:24**	**3:38**	**3:48**	**3:57**
3:13	**3:23**	**3:39**	**3:53**	**4:03**	**4:12**
3:28	**3:38**	**3:54**	**4:08**	**4:18**	**4:27**
3:43	**3:53**	**4:09**	**4:23**	**4:33**	**4:42**
3:58	**4:08**	**4:24**	**4:38**	**4:48**	**4:57**
4:13	**4:23**	**4:39**	**4:53**	**5:03**	**5:12**
4:29	**4:39**	**4:55**	**5:09**	**5:19**	**5:28**
4:44	**4:54**	**5:10**	**5:24**	**5:34**	**5:43**
4:59	**5:09**	**5:25**	**5:39**	**5:49**	**5:58**
5:14	**5:24**	**5:40**	**5:54**	**6:04**	**6:13**
5:29	**5:39**	**5:55**	**6:09**	**6:19**	**6:28**
5:45	**5:55**	**6:10**	**6:23**	**6:33**	**6:42**
6:00	**6:09**	**6:23**	**6:35**	**6:45**	**6:54**
6:16	**6:25**	**6:39**	**6:51**	**7:01**	**7:10**
6:32	**6:41**	**6:54**	**7:06**	**7:15**	**7:24**
6:47	**6:56**	**7:09**	**7:21**	**7:30**	**7:39**
7:08	**7:17**	**7:29**	**7:41**	**7:49**	**7:58**
7:38	**7:47**	**7:59**	**8:10**	**8:18**	**8:26**
8:08	**8:17**	**8:29**	**8:40**	**8:48**	**8:56**
8:44	**8:53**	**9:04**	**9:14**	**9:22**	**9:30**
9:44	**9:53**	**10:03**	**10:13**	**10:20**	**10:28**
10:44	**10:52**	**11:01**	**11:10**	**11:17**	**11:25**
11:44	**11:52**	12:01a	12:10a	12:17a	12:25a

National City ➡ Chula Vista ➡ Otay/Nestor

Ⓐ 8th Street Transit Center **DEPART**	Ⓑ National City Bl. & 24th St.	Ⓒ E Street Transit Center	Ⓓ Broadway & L St.	Ⓔ Palm Avenue Trolley Station	Ⓕ Iris Avenue Transit Center **ARRIVE**
5:11a	5:17a	5:26a	5:34a	5:44a	5:53a
5:41	5:48	5:58	6:06	6:16	6:25
6:06	6:13	6:23	6:31	6:41	6:50
6:20	6:27	6:37	6:45	6:55	7:04
6:34	6:41	6:51	7:00	7:11	7:21
6:49	6:56	7:06	7:15	7:26	7:36
7:03	7:11	7:21	7:31	7:43	7:53
7:18	7:26	7:36	7:46	7:58	8:08
7:33	7:41	7:51	8:01	8:13	8:23
7:48	7:56	8:06	8:16	8:28	8:38
8:03	8:11	8:21	8:31	8:43	8:53
8:18	8:26	8:36	8:46	8:58	9:08
8:36	8:44	8:54	9:05	9:19	9:29
8:51	8:59	9:09	9:20	9:34	9:44
9:06	9:14	9:24	9:35	9:49	9:59
9:21	9:29	9:39	9:50	10:04	10:14
9:36	9:44	9:54	10:05	10:19	10:29
9:51	9:59	10:09	10:20	10:34	10:44
10:06	10:14	10:24	10:35	10:49	10:59
10:21	10:29	10:39	10:50	11:04	11:14
10:36	10:44	10:54	11:05	11:19	11:29
10:51	10:59	11:09	11:21	11:36	11:46
11:06	11:14	11:24	11:36	11:51	**12:01p**
11:21	11:29	11:39	11:51	**12:06p**	**12:16**
11:35	11:43	11:54	**12:06p**	**12:22**	**12:32**
11:49	11:58	**12:09p**	**12:22**	**12:38**	**12:48**
12:04p	**12:13p**	**12:24**	**12:37**	**12:53**	**1:03**
12:19	**12:28**	**12:39**	**12:52**	**1:08**	**1:18**
12:34	**12:43**	**12:54**	**1:07**	**1:23**	**1:33**
12:49	**12:58**	**1:09**	**1:22**	**1:38**	**1:48**
1:04	**1:13**	**1:24**	**1:37**	**1:53**	**2:03**
1:19	**1:28**	**1:39**	**1:52**	**2:08**	**2:18**
1:34	**1:43**	**1:54**	**2:07**	**2:23**	**2:33**
1:50	**1:59**	**2:10**	**2:23**	**2:39**	**2:49**
2:05	**2:14**	**2:25**	**2:38**	**2:54**	**3:04**
2:20	**2:29**	**2:40**	**2:53**	**3:09**	**3:19**
2:35	**2:44**	**2:55**	**3:08**	**3:24**	**3:34**
2:50	**2:59**	**3:10**	**3:23**	**3:39**	**3:49**
3:05	**3:14**	**3:25**	**3:38**	**3:54**	**4:04**
3:21	**3:30**	**3:41**	**3:54**	**4:10**	**4:20**
3:36	**3:45**	**3:56**	**4:09**	**4:25**	**4:35**
3:51	**4:00**	**4:11**	**4:24**	**4:40**	**4:50**
4:06	**4:15**	**4:26**	**4:39**	**4:55**	**5:05**
4:21	**4:30**	**4:41**	**4:54**	**5:10**	**5:20**
4:36	**4:45**	**4:56**	**5:09**	**5:25**	**5:35**
4:51	**5:00**	**5:11**	**5:24**	**5:40**	**5:50**
5:07	**5:16**	**5:27**	**5:40**	**5:56**	**6:06**
5:22	**5:31**	**5:42**	**5:55**	**6:11**	**6:21**
5:37	**5:45**	**5:56**	**6:08**	**6:23**	**6:33**
5:52	**6:00**	**6:11**	**6:23**	**6:38**	**6:48**
6:07	**6:15**	**6:25**	**6:36**	**6:50**	**7:00**
6:22	**6:30**	**6:40**	**6:51**	**7:05**	**7:15**
6:37	**6:45**	**6:55**	**7:06**	**7:20**	**7:30**
7:04	**7:11**	**7:21**	**7:31**	**7:44**	**7:54**
7:34	**7:41**	**7:50**	**8:00**	**8:13**	**8:22**
8:04	**8:11**	**8:20**	**8:29**	**8:41**	**8:50**
8:34	**8:40**	**8:49**	**8:58**	**9:09**	**9:18**
9:04	**9:10**	**9:19**	**9:28**	**9:39**	**9:48**
9:34	**9:40**	**9:49**	**9:58**	**10:09**	**10:18**
10:34	**10:40**	**10:48**	**10:56**	**11:06**	**11:15**
11:34	**11:40**	**11:48**	11:56a	12:06a	12:15a

Route 932 – Saturday / *sábado*

Otay/Nestor ➡ Chula Vista ➡ National City

Ⓕ Iris Avenue Transit Center **DEPART**	Ⓔ Palm Avenue Trolley Station	Ⓓ Broadway & L St.	Ⓒ E Street Transit Center	Ⓑ National City Bl. & 24th St.	Ⓐ 8th Street Transit Center **ARRIVE**
4:44a	4:52a	5:01a	5:10a	5:17a	5:24a
5:14	5:22	5:31	5:40	—	—
5:45	5:53	6:02	6:11	6:18	6:25
6:05	6:13	6:22	6:31	—	—
6:24	6:32	6:42	6:51	6:59	7:06
6:44	6:52	7:02	7:11	—	—
7:04	7:13	7:24	7:33	7:41	7:48
7:24	7:33	7:44	7:53	—	—
7:44	7:53	8:05	8:15	8:24	8:31
8:01	8:10	8:22	8:32	—	—
8:21	8:30	8:43	8:54	9:03	9:11
8:41	8:50	9:03	9:14	—	—
9:05	9:14	9:27	9:38	9:47	9:55
9:24	9:33	9:46	9:57	—	—
9:44	9:53	10:06	10:17	10:26	10:34
10:04	10:13	10:27	10:39	—	—
10:24	10:33	10:47	10:59	11:08	11:16
10:44	10:53	11:07	11:19	—	—
11:04	11:13	11:27	11:39	11:48	11:56
11:24	11:33	11:47	11:59	—	—
11:44	11:53	**12:07p**	**12:19p**	**12:28p**	**12:36p**
12:04p	**12:13p**	**12:27**	**12:39**	**—**	**—**
12:24	**12:33**	**12:47**	**12:59**	**1:08**	**1:16**
12:44	**12:54**	**1:09**	**1:21**	**—**	**—**
1:04	**1:14**	**1:29**	**1:41**	**1:51**	**1:59**
1:24	**1:34**	**1:49**	**2:01**	**—**	**—**
1:44	**1:54**	**2:09**	**2:21**	**2:31**	**2:39**
2:04	**2:14**	**2:29**	**2:41**	**—**	**—**
2:24	**2:34**	**2:49**	**3:01**	**3:11**	**3:19**
2:44	**2:54**	**3:09**	**3:21**	**—**	**—**
3:04	**3:14**	**3:29**	**3:41**	**3:51**	**3:59**
3:24	**3:34**	**3:49**	**4:01**	**—**	**—**
3:44	**3:54**	**4:09**	**4:21**	**4:31**	**4:39**
4:04	**4:14**	**4:29**	**4:41**	**—**	**—**
4:24	**4:34**	**4:49**	**5:01**	**5:11**	**5:19**
4:44	**4:54**	**5:09**	**5:21**	**—**	**—**
5:04	**5:14**	**5:28**	**5:40**	**5:49**	**5:57**
5:24	**5:34**	**5:48**	**6:00**	**—**	**—**
5:44	**5:53**	**6:06**	**6:18**	**6:27**	**6:35**
6:04	**6:13**	**6:26**	**6:38**	**—**	**—**
6:24	**6:33**	**6:46**	**6:58**	**—**	**—**
6:44	**6:53**	**7:06**	**7:18**	**7:27**	**7:35**
7:14	**7:23**	**7:35**	**7:46**	**—**	**—**
7:44	**7:53**	**8:05**	**8:16**	**8:24**	**8:31**
8:44	**8:53**	**9:04**	**9:14**	**9:22**	**9:29**
9:44	**9:53**	**10:03**	**10:12**	**10:19**	**10:26**
10:44	**10:52**	**11:01**	**11:10**	**11:17**	**11:24**
11:44	**11:52**	12:01a	12:10a	12:17a	12:24a

National City ➡ Chula Vista ➡ Otay/Nestor

Ⓐ 8th Street Transit Center **DEPART**	Ⓑ National City Bl. & 24th St.	Ⓒ E Street Transit Center	Ⓓ Broadway & L St.	Ⓔ Palm Avenue Trolley Station	Ⓕ Iris Avenue Transit Center **ARRIVE**
—	—	5:47a	5:55a	6:04a	6:13a
6:04a	6:10a	6:20	6:28	6:38	6:47
—	—	6:42	6:50	7:00	7:09
6:48	6:54	7:04	7:12	7:23	7:32
—	—	7:24	7:33	7:45	7:54
7:27	7:34	7:44	7:53	8:05	8:14
—	—	8:02	8:11	8:23	8:31
8:05	8:12	8:22	8:31	8:43	8:52
—	—	8:42	8:52	9:05	9:14
8:45	8:52	9:02	9:12	9:25	9:34
—	—	9:22	9:33	9:46	9:56
9:30	9:37	9:47	9:58	10:11	10:21
—	—	10:12	10:23	10:36	10:46
10:15	10:22	10:32	10:43	10:56	11:06
—	—	10:52	11:04	11:18	11:28
10:55	11:02	11:12	11:24	11:38	11:48
—	—	11:32	11:44	11:58	**12:08p**
11:34	11:41	11:52	**12:04p**	**12:19p**	**12:29**
—	—	**12:12p**	**12:25**	**12:40**	**12:50**
12:13p	**12:21p**	**12:32**	**12:45**	**1:00**	**1:10**
—	**—**	**12:52**	**1:05**	**1:20**	**1:30**
12:53	**1:01**	**1:12**	**1:25**	**1:40**	**1:50**
—	**—**	**1:32**	**1:45**	**2:00**	**2:10**
1:33	**1:41**	**1:52**	**2:05**	**2:20**	**2:30**
—	**—**	**2:12**	**2:25**	**2:40**	**2:50**
2:13	**2:21**	**2:32**	**2:45**	**3:00**	**3:10**
—	**—**	**2:52**	**3:05**	**3:20**	**3:30**
2:53	**3:01**	**3:12**	**3:25**	**3:40**	**3:50**
—	**—**	**3:32**	**3:45**	**4:00**	**4:10**
3:33	**3:41**	**3:52**	**4:05**	**4:20**	**4:30**
—	**—**	**4:12**	**4:25**	**4:40**	**4:50**
4:13	**4:21**	**4:32**	**4:45**	**5:00**	**5:10**
—	**—**	**4:52**	**5:05**	**5:20**	**5:30**
4:53	**5:01**	**5:12**	**5:25**	**5:40**	**5:50**
—	**—**	**5:32**	**5:44**	**5:59**	**6:09**
5:34	**5:41**	**5:52**	**6:04**	**6:19**	**6:29**
—	**—**	**6:12**	**6:23**	**6:37**	**6:47**
6:15	**6:22**	**6:32**	**6:43**	**6:57**	**7:07**
—	**—**	**6:52**	**7:03**	**7:17**	**7:27**
6:55	**7:02**	**7:12**	**7:23**	**7:37**	**7:47**
—	**—**	**7:33**	**7:43**	**7:56**	**8:06**
7:48	**7:55**	**8:05**	**8:15**	**8:27**	**8:36**
8:34	**8:40**	**8:49**	**8:58**	**9:09**	**9:18**
9:34	**9:39**	**9:48**	**9:57**	**10:07**	**10:16**
10:35	**10:40**	**10:48**	**10:56**	**11:05**	**11:14**
11:35	**11:40**	**11:48**	**11:56**	12:05a	12:14a

A Saturday or Sunday schedule will be operated on the following holidays and observed holidays >>> New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas

Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados

Exact fare, please *Favor de pagar la cantidad exacta*

Fares *Tarifas*	Adult *Adulto*	Senior/Disabled/ Medicare/Youth* *Personas Mayores/con Discapacidades/Medicare/Jóvenes**
ONE-WAY FARES *Tarifas Sencillas*	$2.50	$1.25
EARNED DAY PASS *Pase del Día Ganado*	$6.00	$3.00
MONTH PASS *Pase mensual*	$72.00	$23.00

Load money into your PRONTO account to earn Day Passes and Month Passes. Tap your PRONTO card ($2) or scan your PRONTO mobile app (free) to ride. *Carga dinero a tu cuenta de PRONTO para ganar Pases del Día y Pases Mensuales. Toca tu tarjeta PRONTO ($2) o escanea tu aplicación móvil PRONTO (gratis) para viajar.*

- **One-ways with PRONTO receive free transfers for two hours. No free transfers for cash.** *Los viajes de ida con PRONTO reciben transbordes gratuitos por dos horas. No se permiten transbordes gratuitos con pagos en efectivo.*
- **Day Passes not sold in advance. Earned with PRONTO.** *Los pases diarios no se venden por adelantado. Se obtienen con PRONTO.*
- **A month pass can be purchased in advanced or earned with PRONTO. Good from first day to last day of the month.** *El Pase Mensual se puede comprar por adelantado o se obtiene mientras viaja con PRONTO. Válido desde el primer día hasta el último día del mes.*

*Proof of eligibility required. Senior Eligibility: Age 65+ or born on or before September 1, 1959. Youth Eligibility: Ages 6-18
Se requiere verificación de elegibilidad. Elegibilidad para Personas Mayores: Edad 65+ o nacido en o antes del 1 de septiembre, 1959. Elegibilidad para Jóvenes: edades 6-18

For more information, visit: / *Para más información, visite:* **sdmts.com/fares**

DIRECTORY / *Directorio*

MTS Information & Trip Planning *MTS Información y planeo de viaje*	511 *or/ó* (619) 233-3004
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	(619) 234-5005 *or/ó* (888) 722-4889
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	(619) 685-4900
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	(619) 557-4555
MTS Security *MTS Seguridad*	(619) 595-4960
Lost & Found *Objetos extraviados*	(619) 233-3004
Transit Store	(619) 234-1060 12th & Imperial Transit Center M–F 8am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	**sdmts.com**

For more information on riding MTS services, pick up a Rider's Guide on a bus or at the Transit Store, or visit **sdmts.com.**

Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en la Transit Store, o visita a ***sdmts.com.***

Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

Effective JANUARY 30, 2022

933 934

Iris Transit Center – Seacoast

via Imperial Beach Boulevard or Palm Avenue

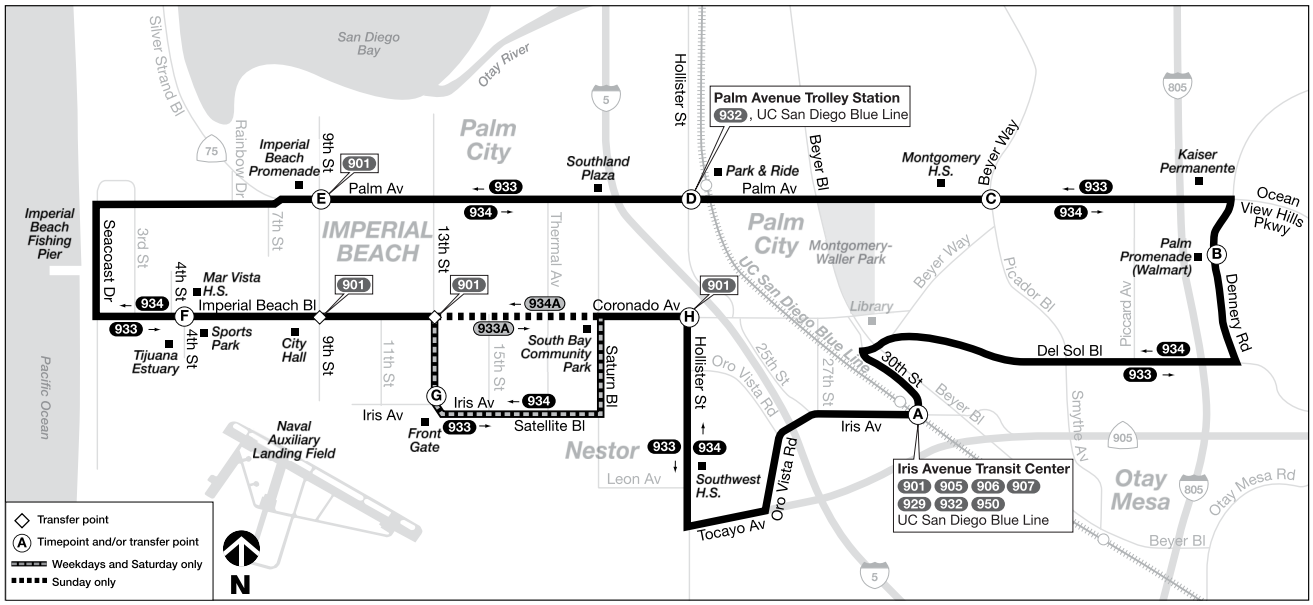
DESTINATIONS
- Imperial Beach Pier
- Kaiser Permanente
- Mar Vista High School
- Montgomery High School
- Naval Auxiliary Landing Field
- Palm Promenade (Walmart)
- Southwest High School

TROLLEY CONNECTIONS
- Iris Avenue
- Palm Avenue

01/22

sdmts.com
Route Alerts, Updated Schedules, Connections & Maps

Alternative formats available upon request. Please call: (619) 557-4555 / *Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555*



The schedules and other information shown in this timetable are subject to change. MTS does not assume responsibility for errors in timetables nor for any inconvenience caused by delayed buses.
Los horarios e información que se indican en este itinerario están sujetos a cambios. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.

A Saturday or Sunday schedule will be operated on the following holidays and observed holidays >>> New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas
Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados

Route 933A – Sunday / *domingo*

Otay Mesa ➡ Palm City ➡ Imperial Beach ➡ Nestor ➡ Otay Mesa

(A) Iris Ave. Transit Center **DEPART**	(B) Dennery Rd. @ Walmart	(C) Palm Av. & Beyer Way	(D) Palm Av. Trolley Station	(E) Palm Av. & 9th St.	(F) Imperial Beach Bl. & 4th St.	(G) 13th St. & Iris Av.	(H) Coronado Av. & Hollister St.	(A) Iris Ave. Transit Center **ARRIVE**
5:14a	5:23a	5:30a	5:35a	5:42a	5:49a	–	5:58a	6:08a
6:14	6:23	6:30	6:35	6:42	6:49	–	6:58	7:09
7:15	7:24	7:32	7:37	7:45	7:53	–	8:02	8:13
8:15	8:24	8:32	8:37	8:46	8:54	–	9:03	9:14
9:00	9:10	9:18	9:23	9:32	9:40	–	9:49	10:01
9:45	9:55	10:03	10:08	10:17	10:25	–	10:34	10:46
10:15	10:25	10:33	10:38	10:47	10:55	–	11:04	11:16
10:45	10:55	11:03	11:08	11:17	11:25	–	11:34	11:46
11:14	11:24	11:32	11:37	11:46	11:54	–	**12:04p**	**12:16p**
11:43	11:53	**12:01p**	**12:06p**	**12:15p**	**12:24p**	–	**12:34**	**12:46**
12:13p	**12:23p**	**12:31**	**12:36**	**12:45**	**12:54**	–	**1:04**	**1:16**
12:43	**12:53**	**1:01**	**1:06**	**1:15**	**1:24**	–	**1:34**	**1:46**
1:13	**1:23**	**1:31**	**1:36**	**1:45**	**1:54**	–	**2:04**	**2:16**
1:45	**1:56**	**2:04**	**2:09**	**2:19**	**2:28**	–	**2:38**	**2:50**
2:14	**2:25**	**2:34**	**2:39**	**2:49**	**2:58**	–	**3:08**	**3:21**
2:44	**2:55**	**3:04**	**3:09**	**3:19**	**3:28**	–	**3:38**	**3:51**
3:14	**3:25**	**3:34**	**3:39**	**3:49**	**3:58**	–	**4:08**	**4:21**
3:44	**3:55**	**4:04**	**4:09**	**4:19**	**4:28**	–	**4:37**	**4:50**
4:14	**4:25**	**4:34**	**4:39**	**4:49**	**4:58**	–	**5:07**	**5:20**
5:15	**5:26**	**5:35**	**5:40**	**5:50**	**5:59**	–	**6:08**	**6:20**
6:29	**6:39**	**6:47**	**6:52**	**7:02**	**7:10**	–	**7:19**	**7:30**
7:31	**7:41**	**7:48**	**7:53**	**8:01**	**8:09**	–	**8:18**	**8:28**
8:28	**8:38**	**8:45**	**8:50**	**8:57**	**9:05**	–	**9:14**	**9:24**

Route 934A – Sunday / *domingo*

Otay Mesa ➡ Nestor ➡ Imperial Beach ➡ Palm City ➡ Otay Mesa

(A) Iris Ave. Transit Center **DEPART**	(H) Coronado Av. & Hollister St.	(G) 13th St. & Iris Av.	(F) Imperial Beach Bl. & 4th St.	(E) Palm Av. & 9th St.	(D) Palm Av. Trolley Station	(C) Palm Av. & Beyer Way	(B) Dennery Rd. @ Walmart	(A) Iris Ave. Transit Center **ARRIVE**
–	–	–	–	6:57a	7:06a	7:11a	7:17a	7:29a
7:29a	7:38a	–	7:47a	7:56	8:05	8:10	8:16	8:28
8:29	8:38	–	8:47	8:56	9:05	9:10	9:16	9:28
9:29	9:38	–	9:47	9:56	10:06	10:11	10:18	10:30
10:29	10:38	–	10:47	10:56	11:06	11:11	11:18	11:30
10:59	11:08	–	11:17	11:26	11:36	11:41	11:48	**12:00p**
11:29	11:38	–	11:47	11:57	**12:08p**	**12:13p**	**12:20p**	**12:32**
11:59	**12:08p**	–	**12:17p**	**12:27p**	**12:39**	**12:44**	**12:51**	**1:03**
12:29	**12:38**	–	**12:48**	**12:58**	**1:10**	**1:15**	**1:22**	**1:34**
12:59	**1:08**	–	**1:18**	**1:28**	**1:40**	**1:45**	**1:52**	**2:04**
1:29	**1:38**	–	**1:48**	**1:58**	**2:10**	**2:15**	**2:22**	**2:34**
1:59	**2:08**	–	**2:18**	**2:28**	**2:40**	**2:45**	**2:53**	**3:05**
2:29	**2:38**	–	**2:48**	**2:58**	**3:10**	**3:15**	**3:23**	**3:35**
2:59	**3:08**	–	**3:18**	**3:28**	**3:40**	**3:45**	**3:53**	**4:05**
3:29	**3:38**	–	**3:48**	**3:58**	**4:10**	**4:15**	**4:23**	**4:35**
3:59	**4:08**	–	**4:18**	**4:28**	**4:38**	**4:43**	**4:51**	**5:03**
4:59	**5:08**	–	**5:18**	**5:28**	**5:38**	**5:43**	**5:51**	**6:03**
5:59	**6:08**	–	**6:17**	**6:26**	**6:36**	**6:41**	**6:49**	**7:00**
7:00	**7:09**	–	**7:18**	**7:26**	**7:35**	**7:40**	**7:47**	**7:58**
8:06	**8:14**	–	**8:23**	**8:31**	**8:38**	**8:43**	**8:49**	**9:00**
9:06	**9:14**	–	**9:23**	**9:31**	**9:38**	**9:43**	**9:49**	**10:00**

Route 933 – Monday through Friday / *lunes a viernes*

Otay Mesa ➡ Palm City ➡ Imperial Beach ➡ Nestor ➡ Otay Mesa

Ⓐ Iris Ave. Transit Center **DEPART**	Ⓑ Dennery Rd. @ Walmart	Ⓒ Palm Av. & Beyer Way	Ⓓ Palm Av. Trolley Station	Ⓔ Palm Av. & 9th St.	Ⓕ Imperial Beach Bl. & 4th St.	Ⓖ 13th St. & Iris Av.	Ⓗ Coronado Av. & Hollister St.	Ⓐ Iris Ave. Transit Center **ARRIVE**
4:40a	4:49a	4:56a	5:01a	5:07a	5:13a	5:19a	5:25a	5:35a
4:54	5:03	5:10	5:15	5:21	5:27	5:33	5:39	5:50
5:09	5:18	5:25	5:30	5:37	5:44	5:50	5:56	6:08
5:24	5:33	5:40	5:45	5:52	5:59	6:05	6:11	6:23
5:43	5:52	5:59	6:04	6:11	6:19	6:25	6:31	6:44
5:58	6:07	6:14	6:19	6:27	6:35	6:41	6:48	7:02
6:13	6:22	6:29	6:35	6:43	6:51	6:57	7:04	7:18
6:28	6:38	6:46	6:52	7:00	7:09	7:15	7:22	7:36
6:43	6:53	7:01	7:07	7:15	7:24	7:30	7:37	7:51
6:58	7:08	7:17	7:23	7:32	7:41	7:47	7:54	8:08
7:13	7:23	7:32	7:38	7:47	7:56	8:02	8:09	8:23
7:28	7:38	7:47	7:53	8:02	8:11	8:17	8:24	8:38
7:43	7:53	8:02	8:08	8:17	8:26	8:32	8:39	8:53
7:58	8:08	8:17	8:23	8:32	8:41	8:47	8:54	9:08
8:13	8:23	8:32	8:38	8:47	8:56	9:02	9:09	9:23
8:28	8:38	8:46	8:52	9:01	9:09	9:15	9:22	9:36
8:43	8:53	9:01	9:06	9:15	9:23	9:29	9:36	9:49
8:58	9:08	9:16	9:21	9:30	9:38	9:44	9:51	10:04
9:13	9:23	9:31	9:36	9:45	9:53	9:59	10:06	10:19
9:28	9:38	9:46	9:51	10:00	10:08	10:14	10:21	10:34
9:43	9:53	10:01	10:06	10:15	10:23	10:29	10:36	10:49
9:58	10:08	10:16	10:21	10:30	10:38	10:44	10:51	11:04
10:13	10:23	10:31	10:36	10:45	10:53	10:59	11:06	11:19
10:28	10:38	10:46	10:51	11:00	11:08	11:14	11:21	11:34
10:43	10:53	11:01	11:06	11:15	11:23	11:29	11:36	11:49
10:58	11:08	11:16	11:21	11:30	11:38	11:44	11:51	**12:04p**
11:13	11:23	11:31	11:36	11:45	11:53	11:59	**12:06p**	**12:19**
11:28	11:38	11:46	11:51	**12:00p**	**12:08p**	**12:14p**	**12:21**	**12:34**
11:43	11:53	**12:01p**	**12:06p**	**12:15**	**12:23**	**12:29**	**12:36**	**12:49**
11:58	**12:08p**	**12:16**	**12:21**	**12:30**	**12:38**	**12:44**	**12:51**	**1:04**
12:13p	**12:23**	**12:31**	**12:36**	**12:45**	**12:53**	**12:59**	**1:06**	**1:19**
12:28	**12:38**	**12:46**	**12:51**	**1:00**	**1:08**	**1:14**	**1:21**	**1:34**
12:43	**12:53**	**1:01**	**1:06**	**1:15**	**1:23**	**1:29**	**1:36**	**1:49**
12:58	**1:08**	**1:16**	**1:21**	**1:30**	**1:38**	**1:44**	**1:51**	**2:04**
1:13	**1:23**	**1:31**	**1:36**	**1:45**	**1:53**	**1:59**	**2:06**	**2:19**
1:28	**1:38**	**1:46**	**1:51**	**2:00**	**2:08**	**2:14**	**2:21**	**2:34**
1:43	**1:54**	**2:02**	**2:07**	**2:17**	**2:25**	**2:31**	**2:39**	**2:52**
1:58	**2:09**	**2:17**	**2:22**	**2:32**	**2:40**	**2:47**	**2:56**	**3:10**
2:13	**2:24**	**2:33**	**2:38**	**2:48**	**2:57**	**3:04**	**3:13**	**3:27**
2:28	**2:39**	**2:48**	**2:53**	**3:03**	**3:12**	**3:19**	**3:28**	**3:42**
2:43	**2:54**	**3:03**	**3:09**	**3:19**	**3:28**	**3:36**	**3:45**	**4:00**
2:58	**3:09**	**3:18**	**3:24**	**3:34**	**3:43**	**3:51**	**4:00**	**4:15**
3:13	**3:24**	**3:33**	**3:39**	**3:49**	**3:58**	**4:06**	**4:15**	**4:30**
3:28	**3:39**	**3:48**	**3:54**	**4:04**	**4:13**	**4:21**	**4:30**	**4:45**
3:43	**3:54**	**4:03**	**4:09**	**4:19**	**4:28**	**4:36**	**4:45**	**5:00**
3:58	**4:09**	**4:18**	**4:24**	**4:34**	**4:43**	**4:51**	**5:00**	**5:15**
4:13	**4:24**	**4:33**	**4:39**	**4:49**	**4:58**	**5:06**	**5:15**	**5:30**
4:28	**4:39**	**4:48**	**4:54**	**5:04**	**5:13**	**5:21**	**5:30**	**5:45**
4:43	**4:54**	**5:03**	**5:09**	**5:20**	**5:28**	**5:35**	**5:43**	**5:57**
4:58	**5:09**	**5:18**	**5:24**	**5:35**	**5:43**	**5:50**	**5:58**	**6:12**
5:13	**5:24**	**5:33**	**5:39**	**5:50**	**5:58**	**6:05**	**6:13**	**6:27**
5:28	**5:39**	**5:48**	**5:55**	**6:06**	**6:14**	**6:21**	**6:29**	**6:44**
5:43	**5:54**	**6:03**	**6:09**	**6:19**	**6:27**	**6:33**	**6:41**	**6:54**
5:58	**6:09**	**6:17**	**6:22**	**6:32**	**6:40**	**6:46**	**6:53**	**7:04**
6:13	**6:24**	**6:32**	**6:37**	**6:47**	**6:55**	**7:01**	**7:08**	**7:19**
6:30	**6:41**	**6:49**	**6:54**	**7:03**	**7:11**	**7:17**	**7:24**	**7:34**
6:53	**7:03**	**7:11**	**7:16**	**7:24**	**7:32**	**7:38**	**7:45**	**7:55**
7:13	**7:23**	**7:31**	**7:36**	**7:44**	**7:52**	**7:58**	**8:05**	**8:15**
7:43	**7:53**	**8:00**	**8:05**	**8:13**	**8:21**	**8:27**	**8:33**	**8:43**
8:14	**8:24**	**8:31**	**8:36**	**8:44**	**8:52**	**8:58**	**9:04**	**9:14**
8:44	**8:54**	**9:01**	**9:06**	**9:13**	**9:21**	**9:27**	**9:33**	**9:43**
9:44	**9:54**	**10:01**	**10:06**	**10:13**	**10:21**	**10:27**	**10:33**	**10:43**
10:43	**10:52**	**10:58**	**11:03**	**11:10**	**11:17**	**11:23**	**11:29**	**11:39**
11:35	**11:44**	**11:50**	**11:55**	12:01a	12:08a	12:14a	12:20a	12:30a

Route 934 – Monday through Friday / *lunes a viernes*

Otay Mesa ➡ Nestor ➡ Imperial Beach ➡ Palm City ➡ Otay Mesa

Ⓐ Iris Ave. Transit Center **DEPART**	Ⓗ Coronado Av. & Hollister St.	Ⓖ 13th St. & Iris Av.	Ⓕ Imperial Beach Bl. & 4th St.	Ⓔ Palm Av. & 9th St.	Ⓓ Palm Av. Trolley Station	Ⓒ Palm Av. & Beyer Way	Ⓑ Dennery Rd. @ Walmart	Ⓐ Iris Ave. Transit Center **ARRIVE**
4:40a	4:47a	4:53a	4:59a	5:07a	5:14a	5:19a	5:25a	5:36a
4:55	5:02	5:08	5:14	5:22	5:29	5:34	5:40	5:51
5:09	5:16	5:22	5:28	5:36	5:43	5:48	5:54	6:05
5:23	5:30	5:36	5:42	5:50	5:57	6:02	6:08	6:19
5:38	5:46	5:52	5:58	6:06	6:14	6:19	6:25	6:36
5:53	6:01	6:07	6:13	6:21	6:30	6:35	6:41	6:52
6:08	6:16	6:23	6:30	6:38	6:47	6:53	6:59	7:11
6:23	6:32	6:39	6:47	6:55	7:05	7:11	7:17	7:29
6:38	6:48	6:55	7:03	7:11	7:21	7:27	7:34	7:46
6:53	7:03	7:10	7:18	7:26	7:36	7:42	7:49	8:01
7:08	7:18	7:25	7:33	7:41	7:51	7:57	8:04	8:16
7:23	7:33	7:40	7:48	7:56	8:06	8:12	8:19	8:31
7:38	7:48	7:55	8:03	8:11	8:21	8:26	8:33	8:45
7:53	8:03	8:10	8:18	8:26	8:36	8:41	8:48	9:00
8:08	8:17	8:24	8:31	8:39	8:49	8:54	9:01	9:13
8:23	8:32	8:39	8:46	8:54	9:04	9:09	9:16	9:28
8:38	8:47	8:54	9:01	9:09	9:19	9:24	9:31	9:43
8:53	9:02	9:09	9:16	9:24	9:34	9:39	9:46	9:58
9:08	9:17	9:24	9:31	9:39	9:49	9:54	10:01	10:13
9:23	9:32	9:39	9:46	9:54	10:04	10:09	10:16	10:28
9:38	9:47	9:54	10:01	10:09	10:19	10:24	10:31	10:43
9:53	10:02	10:09	10:16	10:24	10:34	10:39	10:46	10:58
10:08	10:17	10:24	10:31	10:39	10:49	10:54	11:01	11:13
10:23	10:32	10:39	10:46	10:54	11:04	11:09	11:16	11:28
10:38	10:47	10:54	11:01	11:09	11:19	11:24	11:31	11:43
10:53	11:02	11:09	11:16	11:24	11:34	11:39	11:46	11:58
11:08	11:17	11:24	11:31	11:39	11:49	11:54	**12:01p**	**12:13p**
11:23	11:32	11:39	11:46	11:54	**12:04p**	**12:09p**	**12:16**	**12:28**
11:38	11:47	11:54	**12:01p**	**12:09p**	**12:20**	**12:26**	**12:33**	**12:45**
11:53	**12:02p**	**12:09p**	**12:16**	**12:24**	**12:35**	**12:41**	**12:48**	**1:00**
12:08p	**12:17**	**12:24**	**12:31**	**12:39**	**12:50**	**12:56**	**1:03**	**1:15**
12:23	**12:32**	**12:39**	**12:46**	**12:54**	**1:05**	**1:11**	**1:18**	**1:30**
12:38	**12:47**	**12:54**	**1:01**	**1:09**	**1:20**	**1:26**	**1:33**	**1:45**
12:53	**1:02**	**1:09**	**1:16**	**1:24**	**1:35**	**1:41**	**1:48**	**2:00**
1:08	**1:17**	**1:24**	**1:31**	**1:39**	**1:50**	**1:56**	**2:03**	**2:15**
1:23	**1:32**	**1:39**	**1:46**	**1:54**	**2:05**	**2:11**	**2:18**	**2:30**
1:38	**1:47**	**1:56**	**2:03**	**2:11**	**2:24**	**2:30**	**2:38**	**2:50**
1:53	**2:02**	**2:11**	**2:18**	**2:27**	**2:41**	**2:47**	**2:55**	**3:07**
2:08	**2:17**	**2:26**	**2:33**	**2:42**	**2:56**	**3:02**	**3:10**	**3:22**
2:23	**2:32**	**2:41**	**2:49**	**2:58**	**3:13**	**3:19**	**3:27**	**3:40**
2:38	**2:47**	**2:56**	**3:04**	**3:13**	**3:28**	**3:34**	**3:42**	**3:55**
2:53	**3:02**	**3:11**	**3:18**	**3:27**	**3:42**	**3:48**	**3:56**	**4:09**
3:08	**3:17**	**3:26**	**3:33**	**3:42**	**3:57**	**4:03**	**4:11**	**4:24**
3:23	**3:32**	**3:41**	**3:48**	**3:57**	**4:12**	**4:18**	**4:26**	**4:39**
3:38	**3:47**	**3:56**	**4:03**	**4:12**	**4:27**	**4:33**	**4:41**	**4:54**
3:53	**4:02**	**4:11**	**4:18**	**4:27**	**4:40**	**4:46**	**4:54**	**5:07**
4:08	**4:17**	**4:26**	**4:33**	**4:42**	**4:55**	**5:01**	**5:09**	**5:22**
4:23	**4:32**	**4:41**	**4:48**	**4:57**	**5:10**	**5:16**	**5:24**	**5:37**
4:38	**4:47**	**4:56**	**5:03**	**5:12**	**5:25**	**5:31**	**5:39**	**5:52**
4:53	**5:02**	**5:11**	**5:18**	**5:27**	**5:39**	**5:45**	**5:53**	**6:06**
5:08	**5:17**	**5:26**	**5:33**	**5:42**	**5:54**	**6:00**	**6:08**	**6:21**
5:23	**5:32**	**5:40**	**5:46**	**5:55**	**6:07**	**6:13**	**6:21**	**6:34**
5:38	**5:47**	**5:55**	**6:01**	**6:10**	**6:21**	**6:27**	**6:35**	**6:47**
5:53	**6:02**	**6:10**	**6:16**	**6:24**	**6:35**	**6:40**	**6:48**	**7:00**
6:08	**6:17**	**6:24**	**6:30**	**6:38**	**6:48**	**6:53**	**7:01**	**7:12**
6:23	**6:32**	**6:39**	**6:45**	**6:53**	**7:03**	**7:08**	**7:16**	**7:27**
6:38	**6:47**	**6:54**	**7:00**	**7:08**	**7:18**	**7:23**	**7:31**	**7:42**
6:53	**7:02**	**7:09**	**7:15**	**7:23**	**7:31**	**7:36**	**7:43**	**7:54**
7:09	**7:18**	**7:25**	**7:31**	**7:39**	**7:47**	**7:52**	**7:59**	**8:10**
7:44	**7:53**	**8:00**	**8:06**	**8:14**	**8:21**	**8:26**	**8:33**	**8:44**
8:14	**8:23**	**8:30**	**8:36**	**8:44**	**8:51**	–	–	–
8:45	**8:53**	**9:00**	**9:06**	**9:14**	**9:21**	**9:26**	**9:32**	**9:43**
9:46	**9:54**	**10:01**	**10:07**	**10:15**	**10:22**	**10:27**	**10:33**	**10:44**
10:46	**10:54**	**11:01**	**11:07**	**11:15**	**11:22**	**11:27**	**11:33**	**11:44**
12:05a	12:12a	12:19a	12:24a	12:32a	12:39a	12:44a	12:50a	1:01a

Route 933 – Saturday / *sábado*

Otay Mesa ➡ Palm City ➡ Imperial Beach ➡ Nestor ➡ Otay Mesa

Ⓐ Iris Ave. Transit Center **DEPART**	Ⓑ Dennery Rd. @ Walmart	Ⓒ Palm Av. & Beyer Way	Ⓓ Palm Av. Trolley Station	Ⓔ Palm Av. & 9th St.	Ⓕ Imperial Beach Bl. & 4th St.	Ⓖ 13th St. & Iris Av.	Ⓗ Coronado Av. & Hollister St.	Ⓐ Iris Ave. Transit Center **ARRIVE**
4:59a	5:08a	5:15a	5:20a	5:26a	5:32a	5:38a	5:44a	5:54a
5:59	6:08	6:15	6:20	6:27	6:34	6:40	6:47	6:58
6:29	6:38	6:45	6:50	6:57	7:04	7:10	7:17	7:28
6:59	7:08	7:16	7:21	7:29	7:37	7:43	7:50	8:01
7:29	7:38	7:46	7:51	7:59	8:07	8:13	8:20	8:31
7:52	8:01	8:09	8:14	8:22	8:30	8:36	8:43	8:54
8:16	8:25	8:33	8:38	8:47	8:55	9:01	9:08	9:19
8:38	8:47	8:55	9:00	9:09	9:17	9:23	9:30	9:41
8:58	9:07	9:15	9:20	9:29	9:37	9:43	9:50	10:01
9:18	9:28	9:36	9:41	9:50	9:58	10:04	10:11	10:23
9:38	9:48	9:56	10:01	10:10	10:18	10:24	10:31	10:43
9:58	10:08	10:16	10:21	10:30	10:38	10:44	10:51	11:03
10:18	10:28	10:36	10:41	10:50	10:58	11:04	11:11	11:23
10:38	10:48	10:56	11:01	11:10	11:18	11:24	11:31	11:43
10:58	11:08	11:16	11:21	11:30	11:38	11:44	11:51	**12:03p**
11:18	11:28	11:36	11:41	11:50	11:58	**12:04p**	**12:11p**	**12:23**
11:38	11:48	11:56	**12:01p**	**12:10p**	**12:19p**	**12:25**	**12:32**	**12:44**
11:58	**12:08p**	**12:16p**	**12:21**	**12:30**	**12:39**	**12:45**	**12:52**	**1:04**
12:18p	**12:28**	**12:36**	**12:41**	**12:50**	**12:59**	**1:05**	**1:12**	**1:24**
12:38	**12:48**	**12:56**	**1:01**	**1:10**	**1:19**	**1:25**	**1:32**	**1:44**
12:58	**1:08**	**1:16**	**1:21**	**1:30**	**1:39**	**1:45**	**1:52**	**2:04**
1:18	**1:28**	**1:36**	**1:41**	**1:50**	**1:59**	**2:05**	**2:12**	**2:24**
1:38	**1:49**	**1:57**	**2:02**	**2:12**	**2:21**	**2:27**	**2:34**	**2:46**
1:58	**2:09**	**2:17**	**2:22**	**2:32**	**2:41**	**2:47**	**2:54**	**3:06**
2:18	**2:29**	**2:38**	**2:43**	**2:53**	**3:02**	**3:08**	**3:15**	**3:28**
2:38	**2:49**	**2:58**	**3:03**	**3:13**	**3:22**	**3:28**	**3:35**	**3:48**
2:58	**3:09**	**3:18**	**3:23**	**3:33**	**3:42**	**3:48**	**3:55**	**4:08**
3:18	**3:29**	**3:38**	**3:43**	**3:53**	**4:02**	**4:08**	**4:15**	**4:28**
3:38	**3:49**	**3:58**	**4:03**	**4:13**	**4:22**	**4:28**	**4:35**	**4:48**
3:58	**4:09**	**4:18**	**4:23**	**4:33**	**4:42**	**4:48**	**4:55**	**5:08**
4:18	**4:29**	**4:38**	**4:43**	**4:53**	**5:02**	**5:08**	**5:15**	**5:28**
4:38	**4:49**	**4:58**	**5:03**	**5:13**	**5:22**	**5:28**	**5:35**	**5:47**
4:58	**5:09**	**5:18**	**5:23**	**5:33**	**5:42**	**5:48**	**5:55**	**6:07**
5:18	**5:29**	**5:38**	**5:43**	**5:53**	**6:02**	**6:08**	**6:15**	**6:27**
5:38	**5:48**	**5:56**	**6:01**	**6:11**	**6:19**	**6:25**	**6:32**	**6:43**
5:58	**6:08**	**6:16**	**6:21**	**6:31**	**6:39**	**6:45**	**6:52**	**7:03**
6:20	**6:30**	**6:38**	**6:43**	**6:53**	**7:01**	**7:07**	**7:14**	**7:25**
6:44	**6:54**	**7:02**	**7:07**	**7:16**	**7:24**	**7:30**	**7:36**	**7:46**
7:13	**7:23**	**7:30**	**7:35**	**7:43**	**7:51**	**7:57**	**8:03**	**8:13**
7:43	**7:53**	**8:00**	**8:05**	**8:13**	**8:21**	**8:27**	**8:33**	**8:43**
8:14	**8:24**	**8:31**	**8:36**	**8:43**	**8:51**	**8:57**	**9:03**	**9:13**
8:44	**8:54**	**9:01**	**9:06**	**9:13**	**9:21**	**9:27**	**9:33**	**9:43**
9:44	**9:54**	**10:01**	**10:00**	**10:06**	**10:13**	**10:21**	**10:27**	**10:37**
10:43	**10:52**	**10:58**	**11:03**	**11:10**	**11:17**	**11:23**	**11:29**	**11:39**
11:35	**11:44**	**11:50**	**11:55**	12:01a	12:08a	12:14a	12:20a	12:30a

Route 934 – Saturday / *sábado*

Otay Mesa ➡ Nestor ➡ Imperial Beach ➡ Palm City ➡ Otay Mesa

Ⓐ Iris Ave. Transit Center **DEPART**	Ⓗ Coronado Av. & Hollister St.	Ⓖ 13th St. & Iris Av.	Ⓕ Imperial Beach Bl. & 4th St.	Ⓔ Palm Av. & 9th St.	Ⓓ Palm Av. Trolley Station	Ⓒ Palm Av. & Beyer Way	Ⓑ Dennery Rd. @ Walmart	Ⓐ Iris Ave. Transit Center **ARRIVE**
5:29a	5:36a	5:42a	5:48a	5:55a	6:02a	6:06a	6:12a	6:22a
6:00	6:07	6:13	6:19	6:27	6:35	6:40	6:46	6:57
6:30	6:38	6:44	6:51	6:59	7:08	7:13	7:19	7:31
7:00	7:09	7:15	7:22	7:31	7:40	7:45	7:51	8:03
7:20	7:29	7:35	7:42	7:51	8:00	8:05	8:11	8:23
7:38	7:47	7:53	8:00	8:09	8:18	8:23	8:29	8:41
7:58	8:07	8:13	8:20	8:29	8:38	8:43	8:49	9:01
8:18	8:27	8:33	8:40	8:49	8:58	9:03	9:09	9:21
8:38	8:47	8:53	9:00	9:09	9:18	9:23	9:29	9:41
8:58	9:07	9:13	9:20	9:29	9:38	9:43	9:49	10:01
9:18	9:27	9:34	9:41	9:50	10:00	10:05	10:12	10:24
9:38	9:47	9:54	10:01	10:10	10:20	10:25	10:32	10:44
9:58	10:07	10:14	10:21	10:30	10:40	10:45	10:52	11:04
10:18	10:27	10:34	10:41	10:50	11:00	11:05	11:12	11:24
10:38	10:47	10:54	11:01	11:10	11:20	11:25	11:32	11:44
10:58	11:07	11:14	11:21	11:30	11:40	11:45	11:52	**12:04p**
11:18	11:27	11:34	11:41	11:51	**12:02p**	**12:07p**	**12:14p**	**12:26**
11:38	11:47	11:54	**12:01p**	**12:11p**	**12:23**	**12:28**	**12:35**	**12:47**
11:58	**12:07p**	**12:14p**	**12:21**	**12:31**	**12:43**	**12:48**	**12:55**	**1:07**
12:18p	**12:27**	**12:34**	**12:41**	**12:51**	**1:03**	**1:08**	**1:15**	**1:27**
12:38	**12:47**	**12:54**	**1:01**	**1:11**	**1:23**	**1:28**	**1:35**	**1:47**
12:58	**1:07**	**1:14**	**1:21**	**1:31**	**1:43**	**1:48**	**1:55**	**2:07**
1:18	**1:27**	**1:34**	**1:41**	**1:51**	**2:03**	**2:08**	**2:15**	**2:27**
1:38	**1:47**	**1:54**	**2:01**	**2:11**	**2:23**	**2:28**	**2:36**	**2:48**
1:58	**2:07**	**2:14**	**2:21**	**2:31**	**2:43**	**2:48**	**2:56**	**3:08**
2:18	**2:27**	**2:34**	**2:41**	**2:51**	**3:03**	**3:08**	**3:16**	**3:28**
2:38	**2:47**	**2:54**	**3:01**	**3:11**	**3:23**	**3:28**	**3:36**	**3:48**
2:58	**3:07**	**3:14**	**3:21**	**3:31**	**3:43**	**3:48**	**3:56**	**4:08**
3:18	**3:27**	**3:34**	**3:41**	**3:51**	**4:03**	**4:08**	**4:16**	**4:28**
3:38	**3:47**	**3:54**	**4:01**	**4:11**	**4:23**	**4:28**	**4:36**	**4:48**
3:58	**4:07**	**4:14**	**4:21**	**4:31**	**4:41**	**4:46**	**4:54**	**5:06**
4:18	**4:27**	**4:34**	**4:41**	**4:51**	**5:01**	**5:06**	**5:14**	**5:26**
4:38	**4:47**	**4:54**	**5:01**	**5:11**	**5:21**	**5:26**	**5:34**	**5:46**
4:58	**5:07**	**5:14**	**5:21**	**5:31**	**5:41**	**5:46**	**5:54**	**6:06**
5:18	**5:27**	**5:34**	**5:40**	**5:50**	**6:00**	**6:05**	**6:13**	**6:25**
5:38	**5:47**	**5:54**	**6:00**	**6:10**	**6:20**	**6:25**	**6:33**	**6:45**
5:58	**6:07**	**6:14**	**6:20**	**6:29**	**6:39**	**6:44**	**6:52**	**7:03**
6:18	**6:27**	**6:34**	**6:40**	**6:49**	**6:59**	**7:04**	**7:12**	**7:23**
6:38	**6:47**	**6:54**	**7:00**	**7:09**	**7:19**	**7:24**	**7:32**	**7:43**
6:58	**7:07**	**7:14**	**7:20**	**7:29**	**7:38**	**7:43**	**7:50**	**8:01**
7:29	**7:38**	**7:45**	**7:51**	**7:59**	**8:08**	**8:13**	**8:20**	**8:31**
7:58	**8:07**	**8:13**	**8:19**	**8:27**	**8:35**	–	–	–
8:45	**8:53**	**8:59**	**9:05**	**9:13**	**9:21**	**9:26**	**9:32**	**9:43**
9:46	**9:54**	**10:00**	**10:06**	**10:14**	**10:21**	**10:26**	**10:32**	**10:43**
10:46	**10:54**	**11:00**	**11:06**	**11:14**	**11:21**	**11:26**	**11:32**	**11:43**
12:05a	12:12a	12:18a	12:23a	12:31a	12:38a	12:43a	12:49a	1:00a

Michael Baker
INTERNATIONAL

Appendix C: Existing Synchro Worksheets

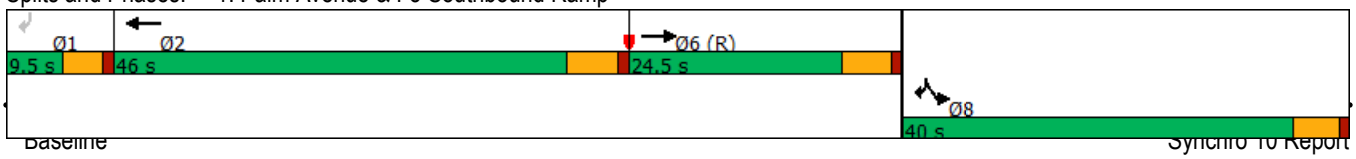
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations		↑↑	↑↑		↰	↱↑	
Traffic Volume (vph)	0	331	1021	0	137	1141	
Future Volume (vph)	0	331	1021	0	137	1141	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0			100	440	440	
Storage Lanes	0			0	1	0	
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	0.88	
Ped Bike Factor						0.98	
Frt						0.850	
Flt Protected					0.950		
Satd. Flow (prot)	0	3539	3539	0	1770	2787	
Flt Permitted					0.950		
Satd. Flow (perm)	0	3539	3539	0	1770	2728	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)						629	
Link Speed (mph)		40	40		30		
Link Distance (ft)		952	701		860		
Travel Time (s)		16.2	11.9		19.5		
Confl. Peds. (#/hr)				9			
Confl. Bikes (#/hr)						1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	0	345	1064	0	143	1189	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	345	1064	0	143	1189	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(ft)		0	0		12		
Link Offset(ft)		0	0		0		
Crosswalk Width(ft)		16	16		16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15			9	15	9	
Number of Detectors		2	2		1	1	
Detector Template		Thru	Thru		Left	Right	
Leading Detector (ft)		100	100		20	20	
Trailing Detector (ft)		0	0		0	0	
Detector 1 Position(ft)		0	0		0	0	
Detector 1 Size(ft)		6	6		20	20	
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94	94				
Detector 2 Size(ft)		6	6				
Detector 2 Type		Cl+Ex	Cl+Ex				
Detector 2 Channel							
Detector 2 Extend (s)		0.0	0.0				

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Turn Type		NA	NA		Prot	custom	
Protected Phases		6	2		8	8	1
Permitted Phases						1	
Detector Phase		6	2		8	8	
Switch Phase							
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)		23.5	24.5		23.1	23.1	9.5
Total Split (s)		24.5	46.0		40.0	40.0	9.5
Total Split (%)		20.4%	38.3%		33.3%	33.3%	8%
Maximum Green (s)		19.0	40.5		34.9	34.9	5.0
Yellow Time (s)		4.5	4.5		4.1	4.1	3.5
All-Red Time (s)		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.5	5.5		5.1	5.1	
Lead/Lag			Lag				Lead
Lead-Lag Optimize?			Yes				Yes
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)		3.0	3.0		2.0	2.0	3.0
Time Before Reduce (s)		0.6	0.6		1.0	1.0	0.0
Time To Reduce (s)		0.1	0.1		0.0	0.0	0.0
Recall Mode		C-Max	Ped		Max	Max	None
Walk Time (s)		1.0	7.0		1.0	1.0	
Flash Dont Walk (s)		1.0	12.0		1.0	1.0	
Pedestrian Calls (#/hr)		0	10		0	0	
Act Effct Green (s)		25.6	43.4		34.9	34.9	
Actuated g/C Ratio		0.21	0.36		0.29	0.29	
v/c Ratio		0.46	0.83		0.28	0.95	
Control Delay		44.8	33.7		34.7	35.2	
Queue Delay		0.0	0.0		0.0	0.0	
Total Delay		44.8	33.7		34.7	35.2	
LOS		D	C		C	D	
Approach Delay		44.8	33.7		35.2		
Approach LOS		D	C		D		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 6:EBT, Start of Green, Master Intersection
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 35.8 Intersection LOS: D
Intersection Capacity Utilization 77.0% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Palm Avenue & I-5 Southbound Ramp



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱↱
Traffic Volume (vph)	0	451	921	0	325	1575
Future Volume (vph)	0	451	921	0	325	1575
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			100	440	440
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	*1.00	*1.00	1.00	1.00	*1.00
Ped Bike Factor						
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3725	3725	0	1770	3167
Flt Permitted					0.950	
Satd. Flow (perm)	0	3725	3725	0	1770	3167
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						17
Link Speed (mph)		40	40		30	
Link Distance (ft)		952	701		860	
Travel Time (s)		16.2	11.9		19.5	
Confl. Peds. (#/hr)				29		
Confl. Bikes (#/hr)				2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	460	940	0	332	1607
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	460	940	0	332	1607
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type		NA	NA		Prot	custom
Protected Phases		6	2		8	8
Permitted Phases						6
Detector Phase		6	2		8	8
Switch Phase						
Minimum Initial (s)		5.0	5.0		5.0	5.0
Minimum Split (s)		23.5	24.5		23.1	23.1
Total Split (s)		25.0	31.0		34.0	34.0
Total Split (%)		27.8%	34.4%		37.8%	37.8%
Maximum Green (s)		19.5	25.5		28.9	28.9
Yellow Time (s)		4.5	4.5		4.1	4.1
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.5	5.5		5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Minimum Gap (s)		3.0	3.0		2.0	2.0
Time Before Reduce (s)		0.6	0.6		1.0	1.0
Time To Reduce (s)		0.1	0.1		0.0	0.0
Recall Mode		C-Max	Ped		Max	Max
Walk Time (s)		1.0	7.0		1.0	1.0
Flash Dont Walk (s)		1.0	12.0		1.0	1.0
Pedestrian Calls (#/hr)		0	10		0	0
Act Effct Green (s)		19.9	25.1		28.9	54.3
Actuated g/C Ratio		0.22	0.28		0.32	0.60
v/c Ratio		0.56	0.91		0.58	0.84
Control Delay		34.3	44.7		30.6	19.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		34.3	44.7		30.6	19.5
LOS		C	D		C	B
Approach Delay		34.3	44.7		21.4	
Approach LOS		C	D		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 6:EBT, Start of Green, Master Intersection			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 29.7		Intersection LOS: C	
Intersection Capacity Utilization 89.4%		ICU Level of Service E	
Analysis Period (min) 15			
* User Entered Value			

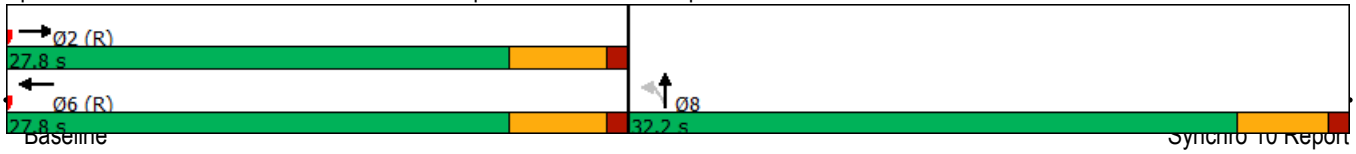
Splits and Phases: 1: Palm Avenue & I-5 Southbound Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	467	0	0	392	441	678	2	108	0	0	0
Future Volume (vph)	0	467	0	0	392	441	678	2	108	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	515		515	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor					0.96			1.00				
Frt					0.921			0.958				
Flt Protected							0.950	0.965				
Satd. Flow (prot)	0	3539	0	0	3142	0	1681	1630	0	0	0	0
Flt Permitted							0.950	0.965				
Satd. Flow (perm)	0	3539	0	0	3142	0	1681	1630	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					496			42				
Link Speed (mph)		30			40			30			30	
Link Distance (ft)		701			701			812			291	
Travel Time (s)		15.9			11.9			18.5			6.6	
Confl. Peds. (#/hr)						18			2			
Confl. Bikes (#/hr)						4						
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	525	0	0	440	496	762	2	121	0	0	0
Shared Lane Traffic (%)							41%					
Lane Group Flow (vph)	0	525	0	0	936	0	450	435	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2		1	2				
Detector Template		Thru			Thru		Left	Thru				
Leading Detector (ft)		100			100		20	100				
Trailing Detector (ft)		0			0		0	0				
Detector 1 Position(ft)		0			0		0	0				
Detector 1 Size(ft)		6			6		20	6				
Detector 1 Type		Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0		0.0	0.0				
Detector 1 Queue (s)		0.0			0.0		0.0	0.0				
Detector 1 Delay (s)		0.0			0.0		0.0	0.0				
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA			NA		Perm	NA				
Protected Phases		2			6			8				
Permitted Phases							8					
Detector Phase		2			6		8	8				
Switch Phase												
Minimum Initial (s)		5.0			5.0		5.0	5.0				
Minimum Split (s)		23.5			23.4		32.1	32.1				
Total Split (s)		27.8			27.8		32.2	32.2				
Total Split (%)		46.3%			46.3%		53.7%	53.7%				
Maximum Green (s)		22.4			22.4		27.1	27.1				
Yellow Time (s)		4.4			4.4		4.1	4.1				
All-Red Time (s)		1.0			1.0		1.0	1.0				
Lost Time Adjust (s)		0.0			0.0		0.0	0.0				
Total Lost Time (s)		5.4			5.4		5.1	5.1				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		8.0			8.0		8.0	8.0				
Minimum Gap (s)		3.0			3.0		2.0	2.0				
Time Before Reduce (s)		0.8			0.6		1.0	1.0				
Time To Reduce (s)		0.1			0.1		0.0	0.0				
Recall Mode		C-Max			C-Max		None	None				
Walk Time (s)		1.0			7.0		7.0	7.0				
Flash Dont Walk (s)		1.0			5.0		20.0	20.0				
Pedestrian Calls (#/hr)		0			10		10	10				
Act Effct Green (s)		25.3			25.3		24.2	24.2				
Actuated g/C Ratio		0.42			0.42		0.40	0.40				
v/c Ratio		0.35			0.58		0.66	0.64				
Control Delay		24.5			8.1		19.4	17.1				
Queue Delay		0.0			0.0		0.0	0.0				
Total Delay		24.5			8.1		19.4	17.1				
LOS		C			A		B	B				
Approach Delay		24.5			8.1			18.2				
Approach LOS		C			A			B				

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 48 (80%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 77.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: I-5 Northbound Off-Ramp/I-5 Northbound Ramp & Palm Avenue

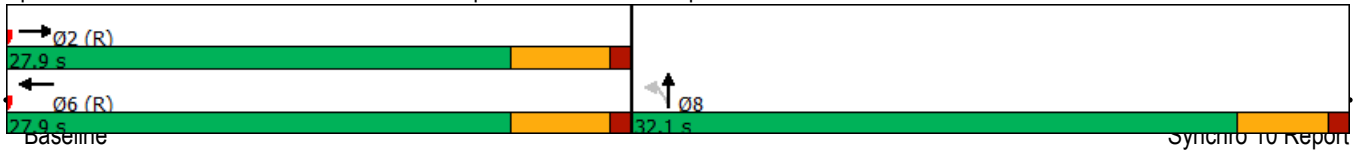


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	776	0	0	545	233	481	1	60	0	0	0
Future Volume (vph)	0	776	0	0	545	233	481	1	60	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	515		515	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor					0.97			1.00				
Frt					0.955			0.966				
Flt Protected							0.950	0.963				
Satd. Flow (prot)	0	3539	0	0	3268	0	1681	1641	0	0	0	0
Flt Permitted							0.950	0.963				
Satd. Flow (perm)	0	3539	0	0	3268	0	1681	1641	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					127			32				
Link Speed (mph)		30			40			30			30	
Link Distance (ft)		701			701			812			291	
Travel Time (s)		15.9			11.9			18.5			6.6	
Confl. Peds. (#/hr)						36			1			
Confl. Bikes (#/hr)						2						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	834	0	0	586	251	517	1	65	0	0	0
Shared Lane Traffic (%)							43%					
Lane Group Flow (vph)	0	834	0	0	837	0	295	288	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2		1	2				
Detector Template		Thru			Thru		Left	Thru				
Leading Detector (ft)		100			100		20	100				
Trailing Detector (ft)		0			0		0	0				
Detector 1 Position(ft)		0			0		0	0				
Detector 1 Size(ft)		6			6		20	6				
Detector 1 Type		Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)		0.0			0.0		0.0	0.0				
Detector 1 Queue (s)		0.0			0.0		0.0	0.0				
Detector 1 Delay (s)		0.0			0.0		0.0	0.0				
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type		NA			NA		Perm	NA				
Protected Phases		2			6			8				
Permitted Phases							8					
Detector Phase		2			6		8	8				
Switch Phase												
Minimum Initial (s)		5.0			5.0		5.0	5.0				
Minimum Split (s)		23.5			23.4		32.1	32.1				
Total Split (s)		27.9			27.9		32.1	32.1				
Total Split (%)		46.5%			46.5%		53.5%	53.5%				
Maximum Green (s)		22.5			22.5		27.0	27.0				
Yellow Time (s)		4.4			4.4		4.1	4.1				
All-Red Time (s)		1.0			1.0		1.0	1.0				
Lost Time Adjust (s)		0.0			0.0		0.0	0.0				
Total Lost Time (s)		5.4			5.4		5.1	5.1				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		8.0			8.0		8.0	8.0				
Minimum Gap (s)		3.0			3.0		2.0	2.0				
Time Before Reduce (s)		0.8			0.6		1.0	1.0				
Time To Reduce (s)		0.1			0.1		0.0	0.0				
Recall Mode		C-Max			C-Max		None	None				
Walk Time (s)		1.0			7.0		7.0	7.0				
Flash Dont Walk (s)		1.0			5.0		20.0	20.0				
Pedestrian Calls (#/hr)		0			10		10	10				
Act Effct Green (s)		29.0			29.0		20.5	20.5				
Actuated g/C Ratio		0.48			0.48		0.34	0.34				
v/c Ratio		0.49			0.51		0.51	0.49				
Control Delay		12.1			11.2		18.1	15.9				
Queue Delay		0.0			0.0		0.0	0.0				
Total Delay		12.1			11.2		18.1	15.9				
LOS		B			B		B	B				
Approach Delay		12.1			11.2			17.0				
Approach LOS		B			B			B				

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 28 (47%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 13.1		Intersection LOS: B	
Intersection Capacity Utilization 89.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: I-5 Northbound Off-Ramp/I-5 Northbound Ramp & Palm Avenue



3: Hollister Street & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.0	3.8	0.5	0.5	3.6	0.2	0.3
Total Del/Veh (s)	51.5	17.0	15.0	70.7	6.5	4.6	42.0	36.1	15.9	45.8	22.9	15.5

3: Hollister Street & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	21.9

3: Hollister Street & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.6	0.0	3.7	0.4	0.3	2.9	0.2	0.4
Total Del/Veh (s)	53.9	23.8	20.4	69.8	9.4	5.0	36.0	24.7	20.2	40.4	33.7	18.3

3: Hollister Street & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	23.5

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	3.4	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	19.8	15.8	11.8	27.8	14.2	6.5	18.5	14.1	25.3	28.8	23.8	15.0

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.3	3.0	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	32.0	17.6	13.7	25.9	17.6	14.2	17.0	3.4	21.6	17.4	11.4	17.3

Intersection: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	L	R	R
Maximum Queue (ft)	198	143	349	404	133	385	356
Average Queue (ft)	147	116	272	296	107	269	262
95th Queue (ft)	237	152	423	431	141	375	347
Link Distance (ft)	900	900	659	659		812	812
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					440		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: I-5 Northbound Off-Ramp/I-5 Northbound Ramp & Palm Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	TR	L	LTR
Maximum Queue (ft)	160	215	244	292	254	327
Average Queue (ft)	106	114	162	180	187	258
95th Queue (ft)	180	209	265	315	275	356
Link Distance (ft)	659	659	623	623		765
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					515	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Hollister Street & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	69	113	115	31	72	56	92	88	69	94
Average Queue (ft)	59	71	82	20	62	54	45	57	26	59
95th Queue (ft)	77	125	142	38	78	58	90	108	68	98
Link Distance (ft)		623	623		39	39		1088		1206
Upstream Blk Time (%)				17	30	25				
Queuing Penalty (veh)				0	102	85				
Storage Bay Dist (ft)	125			35			75		80	
Storage Blk Time (%)		0		17	31		14	4	0	3
Queuing Penalty (veh)		0		54	10		14	3	0	1

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	WB	WB	WB	NB	SB
Directions Served	T	TR	L	T	TR	LTR	LT
Maximum Queue (ft)	116	130	30	277	224	73	30
Average Queue (ft)	59	80	6	162	131	54	12
95th Queue (ft)	115	127	25	319	239	89	35
Link Distance (ft)	121	121		478	478	281	924
Upstream Blk Time (%)	0	3					
Queuing Penalty (veh)	1	6					
Storage Bay Dist (ft)			55				
Storage Blk Time (%)	17			30			
Queuing Penalty (veh)	1			3			

Intersection: 12: Palm Avenue & Rail xing

Movement	EB	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	50	52	196	143	48	27
Average Queue (ft)	20	20	107	104	24	8
95th Queue (ft)	60	60	208	160	57	26
Link Distance (ft)	39	39	121	121	143	279
Upstream Blk Time (%)	13	14	19	20		
Queuing Penalty (veh)	29	32	66	68		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 475

Intersection: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	L	R	R
Maximum Queue (ft)	136	139	446	484	171	340	328
Average Queue (ft)	119	94	367	390	139	230	222
95th Queue (ft)	134	145	575	585	199	375	354
Link Distance (ft)	900	900	659	659		812	812
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					440		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: I-5 Northbound Off-Ramp/I-5 Northbound Ramp & Palm Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	TR	L	LTR
Maximum Queue (ft)	116	117	152	185	188	220
Average Queue (ft)	85	87	92	121	122	197
95th Queue (ft)	125	124	158	216	230	236
Link Distance (ft)	659	659	623	623		765
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					515	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Hollister Street & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	179	421	424	28	72	56	129	99	119	176
Average Queue (ft)	90	164	188	21	59	43	70	65	49	140
95th Queue (ft)	173	401	425	33	72	63	139	113	110	200
Link Distance (ft)		623	623		39	39		1088		1206
Upstream Blk Time (%)				1	33	20				
Queuing Penalty (veh)				0	88	54				
Storage Bay Dist (ft)	125			35			75		80	
Storage Blk Time (%)	0	18		1	33		23	4		34
Queuing Penalty (veh)	1	19		3	7		21	3		12

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	T	TR	LTR	LT	R
Maximum Queue (ft)	73	134	159	216	138	93	30	29
Average Queue (ft)	17	95	122	88	56	34	21	28
95th Queue (ft)	64	137	177	195	125	92	40	29
Link Distance (ft)		121	121	478	478	281	924	924
Upstream Blk Time (%)		6	8					
Queuing Penalty (veh)		21	25					
Storage Bay Dist (ft)	50							
Storage Blk Time (%)		19		20				
Queuing Penalty (veh)		4		2				

Intersection: 12: Palm Avenue & Rail xing

Movement	EB	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	51	56	135	136	28	27
Average Queue (ft)	32	41	96	75	6	8
95th Queue (ft)	61	76	158	176	25	25
Link Distance (ft)	39	39	121	121	143	279
Upstream Blk Time (%)	19	23	15	14		
Queuing Penalty (veh)	62	75	39	37		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 471

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Appendix D: Cumulative Projects Information

Palm & Hollister Cumulative Projects List

Other Projects Summary List

	Project	Jurisdiction	Land Use	Intensity	ADT	AM Peak Hour			PM Peak Hour		
						Total	Inbound	Outbound	Total	Inbound	Outbound
1	Bella Vista (KHA)	City of SD	Residential	380 Du	2,052	157	31	126	176	124	52
2	TOD (LLG)	City of SD	Residential (Apartments)	390 Du	2,106	161	32	129	181	127	54
			Local Serving Retail	3.40 KSF	136	4	2	2	12	6	6
			Childcare	2.75 KSF	220	42	21	21	40	20	20
					2,462	207	55	152	233	153	80
3	Salt Bay Design (CRA)	City of SD	Restaurant	50.0 KSF							
			Industrial/Business Park	550.0 KSF	16,054	1,639	1,137	502	1,639	559	1,080
4											
5											
6											
7											
8											
	Total Cumulative Project Trips				23,030	2,210	1,278	932	2,281	989	1,292

Note: all volumes are in passenger car equivalents (PCE's)
KSF = Thousand Square Feet; DU=Dwelling Unit

Cumulative Projects Peak Hour Trip Assignment

Inbound Outbound

Int. 1	*EXAMPLE*				Bella Vista (KHA)				TOD (LLG)				Salt Bay Design (CRA)				Total	
	Car Dist.	*Truck Dist.*	*AM. Vol.*	*PM Vol.*	Car Dist.	Truck Dist.	AM. Vol.	PM Vol.	Car Dist.	Truck Dist.	AM. Vol.	PM Vol.	Car Dist.	Truck Dist.	AM. Vol.	PM Vol.	AM	PM
NBL					0%	0%	0	0	0%	0%	0	0					0	0
NBT					0%	0%	0	0	0%	0%	0	0					0	0
NBR					0%	0%	0	0	0%	0%	0	0					0	0
SBL					0%	0%	0	0	25%		8	32	1.0%		11	5	19	37
SBT					0%	0%	0	0	0%	0%	0	0					0	0
SBR					0%	0%	0	0	0%	0%	0	0					0	0
EBL					0%	0%	0	0	0%	0%	0	0					0	0
EBT					15%		5	19	30%		10	38	1.2%		14	7	29	64
EBR					0%	0%	0	0	0%	0%	0	0					0	0
WBL					0%	0%	0	0	0%	0%	0	0					0	0
WBT					15%		19	8	30%		39	16	1.2%		6	13	64	37
WBR					25%		31	13	10%		13	5	0.4%		2	4	46	22

Int. 2	*EXAMPLE*				Bella Vista (KHA)				TOD (LLG)				Salt Bay Design (CRA)				Total	
	Car Dist.	*Truck Dist.*	*AM. Vol.*	*PM Vol.*	Car Dist.	Truck Dist.	AM. Vol.	PM Vol.	Car Dist.	Truck Dist.	AM. Vol.	PM Vol.	Car Dist.	Truck Dist.	AM. Vol.	PM Vol.	AM	PM
NBL					0%	0%	0	0	0%	0%	0	0					0	0
NBT					0%	0%	0	0	0%	0%	0	0					0	0
NBR					25%		8	31	10%		3	13	0.4%		5	2	16	46
SBL					0%	0%	0	0	0%	0%	0	0					0	0
SBT					0%	0%	0	0	0%	0%	0	0					0	0
SBR					0%	0%	0	0	0%	0%	0	0					0	0
EBL					0%	0%	0	0	0%	0%	0	0					0	0
EBT					15%		5	19	55%		18	70	2.2%		25	12	48	101
EBR					0%	0%	0	0	0%	0%	0	0					0	0
WBL					0%	0%	0	0	0%	0%	0	0					0	0
WBT					40%		50	21	40%		52	22	1.6%		8	17	110	60
WBR					0%	0%	0	0	25%		32	14	1.0%		5	11	37	25

Int. 3	*EXAMPLE*				Bella Vista (KHA)				TOD (LLG)				Salt Bay Design (CRA)				Total	
	Car Dist.	*Truck Dist.*	*AM. Vol.*	*PM Vol.*	Car Dist.	Truck Dist.	AM. Vol.	PM Vol.	Car Dist.	Truck Dist.	AM. Vol.	PM Vol.	Car Dist.	Truck Dist.	AM. Vol.	PM Vol.	AM	PM
NBL					0%	0%	0	0	0%	0%	0	0					0	0
NBT					5%		2	6	0%	0%	0	0	0.2%		2	1	4	7
NBR					0%	0%	0	0	5%		2	6					2	6
SBL					5%		6	3	5%		2	6	1.2%		6	13	14	22
SBT					5%		6	3	0%	0%	0	0	0.2%		1	2	7	5
SBR					40%		50	21	0%	0%	0	0	2.6%		13	28	63	49
EBL					40%		12	50	0%	0%	0	0	2.6%		30	14	42	64
EBT					0%	0%	0	0	65%		21	83					21	83
EBR					0%	0%	0	0	0%	0%	0	0					0	0
WBL					0%	0%	0	0	5%		6	3					6	3
WBT					0%	0%	0	0	65%		84	35					84	35
WBR					5%		2	6	5%		6	3	1.2%		14	7	22	16

Int. 4	*EXAMPLE*				Bella Vista (KHA)				TOD (LLG)				Salt Bay Design (CRA)				Total	
	Car Dist.	*Truck Dist.*	*AM. Vol.*	*PM Vol.*	Car Dist.	Truck Dist.	AM. Vol.	PM Vol.	Car Dist.	Truck Dist.	AM. Vol.	PM Vol.	Car Dist.	Truck Dist.	AM. Vol.	PM Vol.	AM	PM
NBL					0%	0%	0	0	0%	0%	0	0					0	0
NBT					0%	0%	0	0	5%		2	6					2	6
NBR					0%	0%	0	0	0%	0%	0	0					0	0
SBL					0%	0%	0	0	20%		26	11					26	11
SBT					0%	0%	0	0	5%		6	3					6	3
SBR					0%	0%	0	0	75%		97	41	0.4%		4	2	101	43
EBL					0%	0%	0	0	75%		24	95	0.8%		2	4	26	99
EBT					0%	0%	6	3	0%	0%	0	0	0.8%		4	9	10	12
EBR					0%	0%	0	0	0%	0%	0	0					0	0
WBL					0%	0%	0	0	0%	0%	0	0					0	0
WBT					0%	0%	2	6	0%	0%	0	0	0.4%		10	5	12	11
WBR					0%	0%	0	0	20%		6	25					6	25

4 PROJECT TRAFFIC

The following section describes the trip generation, distribution and assignment related to the proposed Bella Mar project at 408 Hollister Street. The proposed project includes the construction of 380-unit multi-family residential dwelling units, including 100 affordable units, within the City of San Diego.

4.1 ROADWAY NETWORK CHANGES

The development of the project site will include the following improvements to provide accessible connectivity for the project site and to comply with the City of San Diego Bike Master Plan:

- Widen Hollister Street along the project frontage by 16 feet to the ultimate classification of a two-lane collector with a continuous two-way left-turn lane and buffered bike lanes.
- Relocate the southbound bus stop on Hollister Street for Bus Route 932 to be in front of the project site.
- Construct a bus stop on northbound Hollister Street for Bus Route 932 across from the project site.
- Construct a mid-block crossing across Hollister Street on the north side of the southern project driveway with a rectangular rapid flashing beacon (RRFB) system. Mid-block crossing warrant evaluation provided in **Appendix F**.
- Construct non-contiguous sidewalk facilities along the project frontage on southbound Hollister Street
- Construct non-contig-uous sidewalk facilities along northbound Hollister Street from the proposed bus stop to the proposed mid-block crossing.
- Construct temporary accessible sidewalk along southbound Hollister Street between the project site and Conifer Avenue.

These improvements along the project frontage are assumed for the Opening Year with Project and Horizon Year with Project scenarios.

4.2 TRIP GENERATION

The City of San Diego *Trip Generation Manual* (May 2003) was referenced to calculate the estimated trip generation for the proposed project. The driveway trip generation rate of 6 trips per dwelling units for *Multiple Dwelling Unit – Over 20 dwelling units/acre* was used to estimate trips for the project. A 10% daily trip reduction and 14% AM peak hour and 14% PM peak hour was then applied to account for the project's proximity within a half mile of the Palm Avenue Transit Station and that it is anticipated transit will be heavily utilized by the project. Accessible connections to the transit station will be provided as part of the project with bus stops for Bus Route 932 in front of the project site on Hollister Street as discussed in Section 4-1.

The resulting trip generation with the trip reductions is 2,052 daily trips with 156 morning peak-hour trips (31 in, 125 out) and 176 afternoon peak-hour trips (124 in, 52 out). These values are used in the trip assignment to the roadway network. **Table 4-1** summarizes the trip generation for the site.

Table 4-1 Trip Generation Summary

Land Use	Units[1]	Trip Rate[2]	Daily Trips	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Multiple Dwelling Unit – Over 20 dwelling units/acre	380 du	6 / du	2,280	36	146	182	144	61	205
Trip Reductions for Proximity to the Palm Avenue Transit Station			-10%	-14%			-14%		
			-228	-5	-20	-25	-20	-9	-29
NET TRIP GENERATION			**2,052**	**31**	**126**	**157**	**124**	**52**	**176**

Notes:
1. Du = dwelling units
2. Daily and peak-hour, trip generation rates referenced are from the City of San Diego Land Development Code - Trip Generation Manual, May 2003. Transit reductions are from the draft TSM (June 2020)

4.3 TRIP DISTRIBUTION

The project traffic distribution was estimated based on the project access locations, freeway access and knowledge of the existing roadway network within the study area. Although a market study was not performed for this location, it was assumed that 100% of the traffic with destinations along northbound I-5 would utilize Main Street to access the freeway, and 100% of traffic with destinations along southbound I-5 would utilize Palm Avenue to access the freeway. Based on ADT values along Hollister Street north and south of the project site and assumed employment opportunities, it was assumed that 50% of the project traffic will travel to destinations north of the site using northbound Hollister Street and 50% of traffic will have destinations south of the project using southbound Hollister Street.

Figure 4-1 shows the general project traffic distribution within the study area and throughout the study intersections.

4.4 TRIP ASSIGNMENT

Based on the project trip generation and trip distribution, AM and PM project trips were assigned to the local roadway network and through the study intersections. **Figure 4-2** displays the trip assignment for the project at the study intersections and roadway segments within the study area.

FIGURE 4-1 PROJECT TRIP DISTRIBUTION

1 I-5 SB Ramps ⇦ 40% Main Street 15% ⇨ ⇦ 25%	**2** I-5 NB Ramps ⇦ (40%) Main Street 40% ⇨	**3** Hollister Street ⇨ 5% Main Street ⇦ 5% 40% ⇘ (40%) ⇗ (5%) ⇦ (5%)	**4** I-5 SB Ramps ⇗ (0%) / 0% Palm Avenue ⇨ (25%) ⇦ (15%) 15% ⇨
5 I-5 NB Ramps Palm Avenue ⇦ (40%) 15% ⇨ ⇦ 25%	**6** Hollister Street ⇦ (40%) ⇨ (5%) ⇦ (5%) Palm Avenue ⇧ 5% 40% ⇦ ⇧ 5%	**7** Hollister Street North Project Driveway ⇗ 25% ⇘ 25% (25%) ⇦ (25%) ⇗ 25% ⇦ (25%) ⇨	**8** Hollister Street South Project Driveway ⇗ 25% ⇘ (25%) (25%) ⇦ (25%) ⇗ ⇦ 25% ⇧ 25%

LEGEND

- (#) Unsignalized Study Intersection
- (#) Signalized Study Intersection
- Study Roadway Segment
- (T) Palm Avenue Trolley Station
- ⇦ X% / (Y%) Inbound / Outbound Percent Distribution
- ***X%*** Daily Percent Distribution

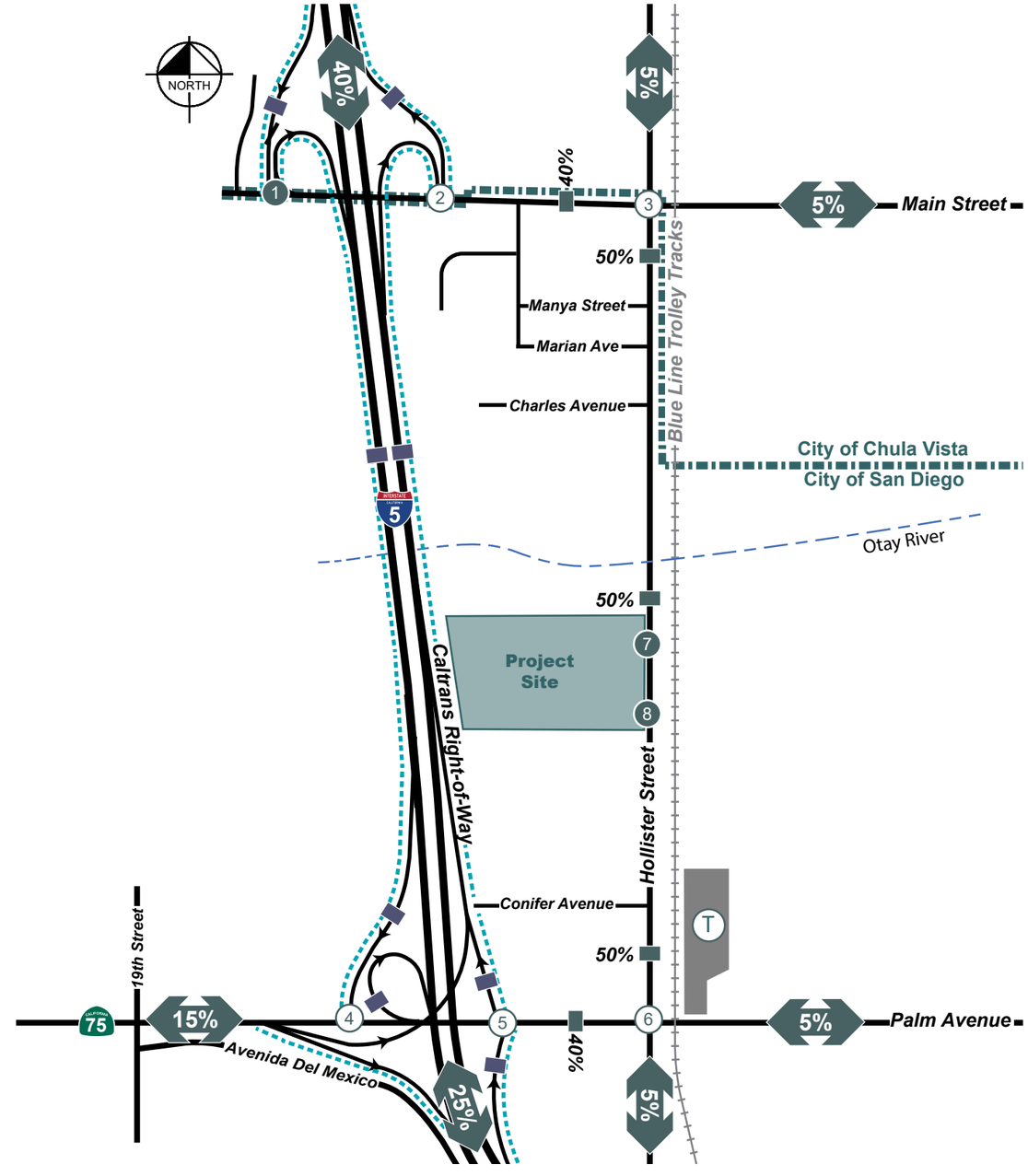
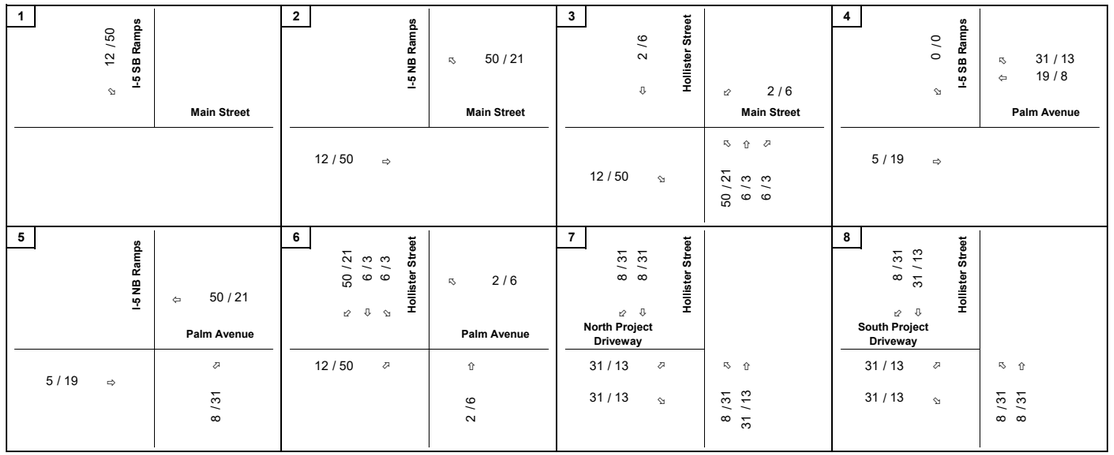
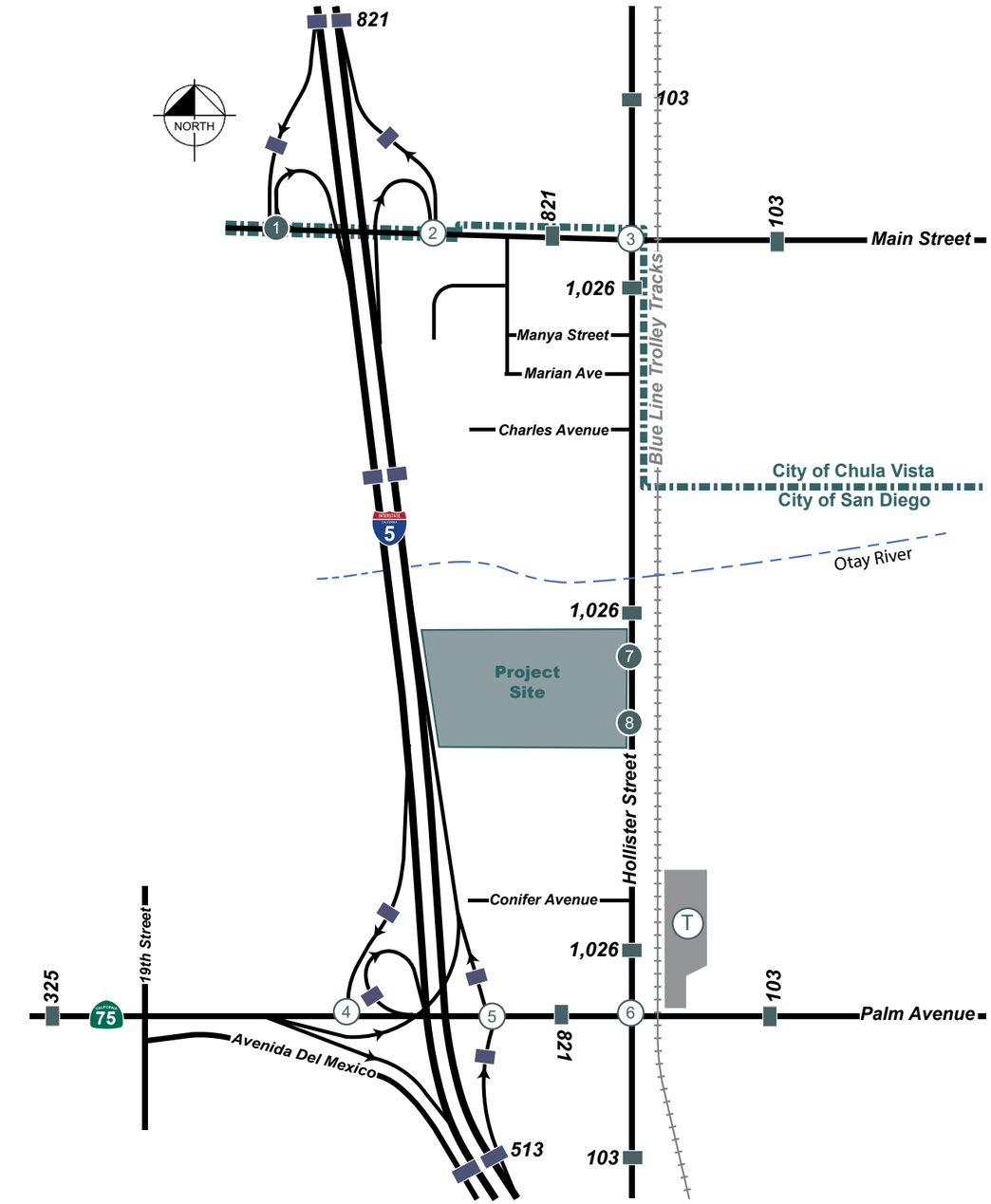


FIGURE 4-2 PROJECT TRIP ASSIGNMENT



LEGEND

- (#) Unsignalized Study Intersection
- (#) Signalized Study Intersection
- Study Roadway Segment
- Study Freeway Segment
- (T) Palm Avenue Trolley Station
- ⇦ X / Y AM / PM Peak-Hour Traffic Volumes
- ***X,XXX*** ADT Traffic Volumes



Palm Avenue Transit Oriented Development Trip Generation

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour					PM Peak Hour				
		Rate	Volume	% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Apartments	390 DU	6 /DU[a]	2,340	8%	20 : 80	37	150	187	9%	70 : 30	148	63	211
	Transit Reduction (10%) [b]		*-234*			*-5*	*-21*	*-26*			*-21*	*-9*	*-30*
	Subtotal		*2,106*			*32*	*129*	*161*			*127*	*54*	*181*
Local Serving Retail	3.4 KSF	40 /KSF[c]	136	3%	60 : 40	2	2	4	9%	50 : 50	6	6	12
Total			**2,242**			**34**	**131**	**165**			**133**	**60**	**193**

Footnotes:

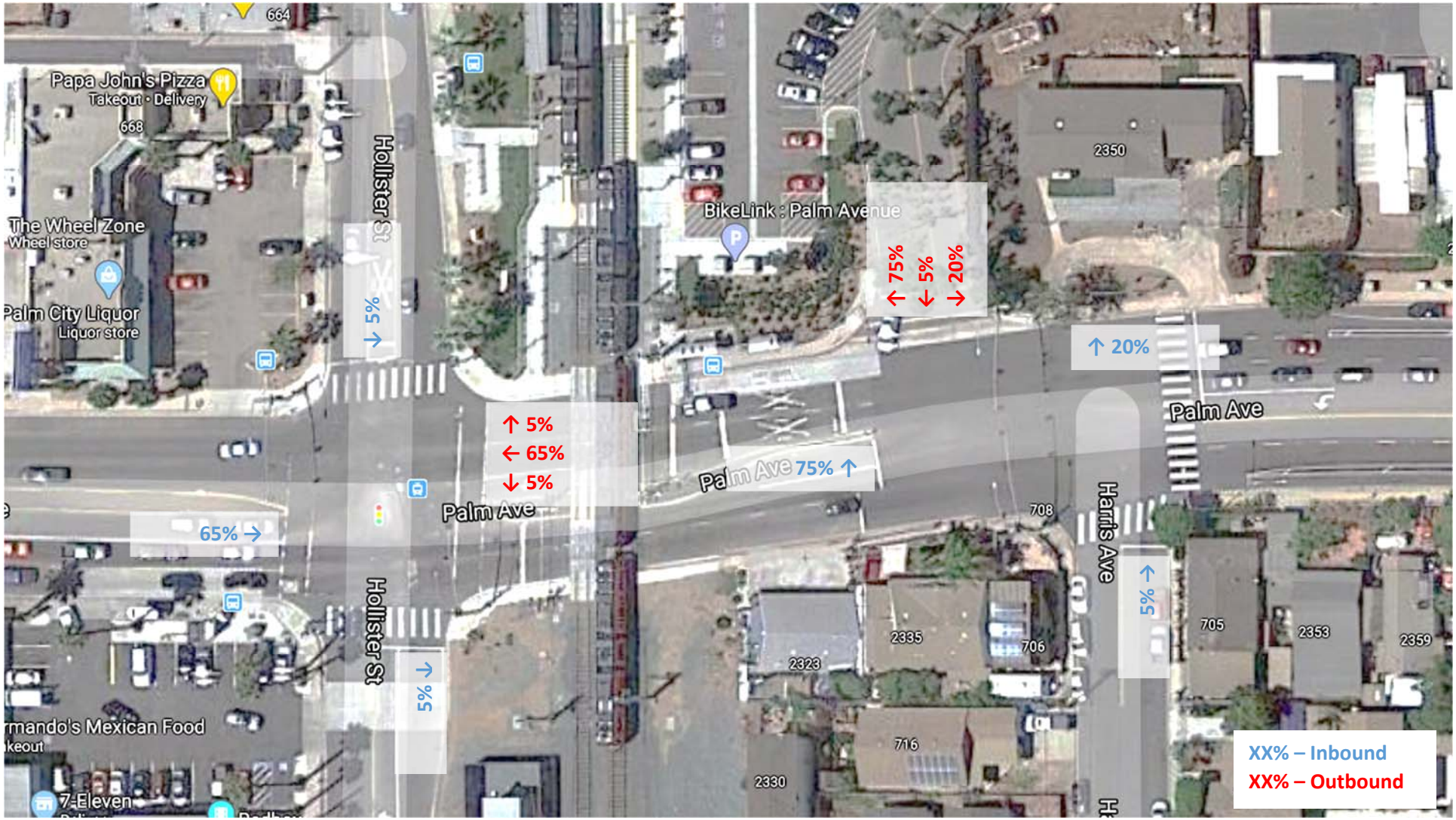
a. Per the City of San Diego's Trip Generation Manual, the residential rate of 6/DU was used.

b. Transit credit for residential land uses are 10% ADT, 14% AM and 14% PM peak hours.

c. Per the City of San Diego's Trip Generation Manual, the specialty retail center rate of 40/ksf was used.

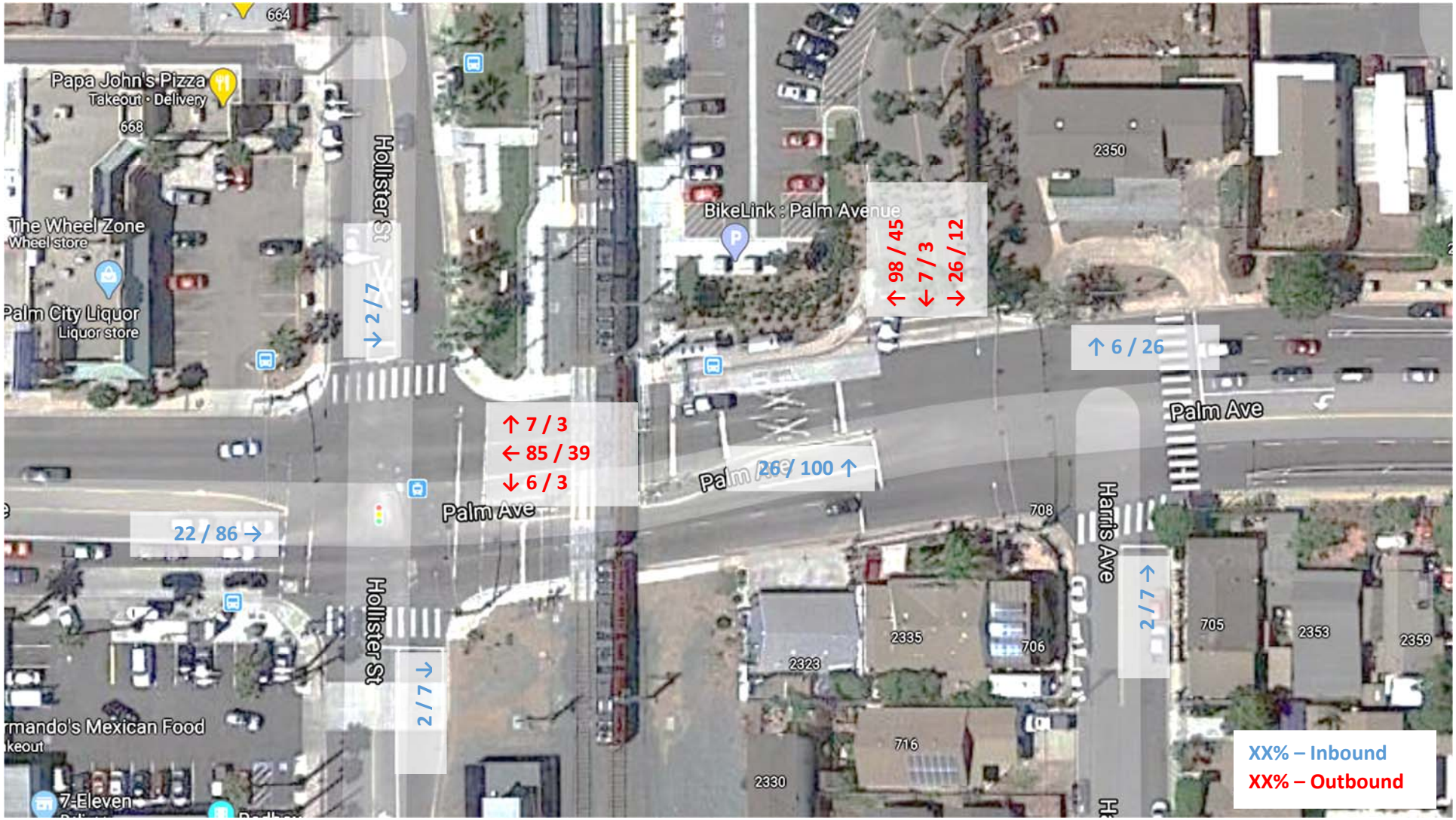
PALM AVENUE TOD TIA

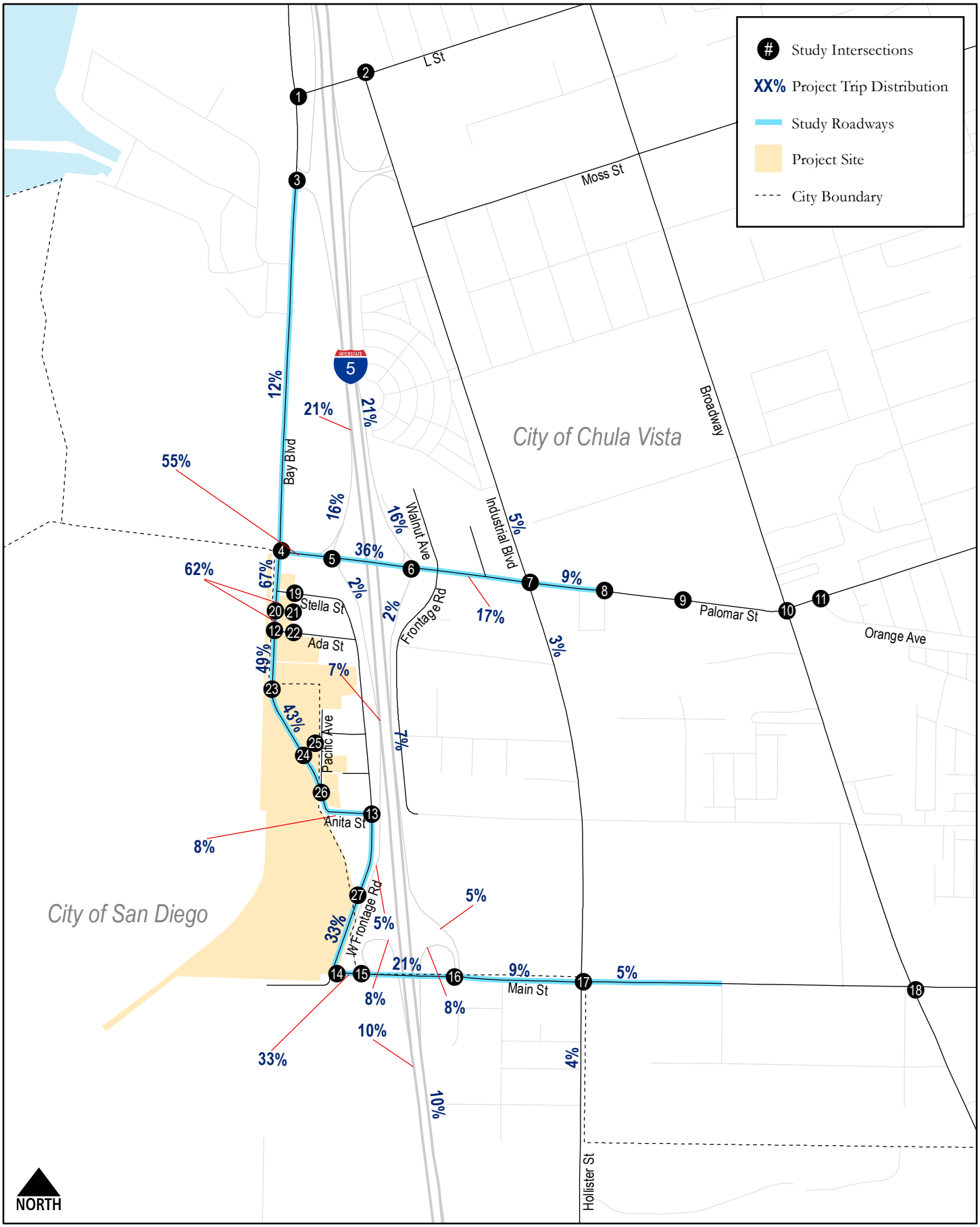
PROJECT TRIP DISTRIBUTION



PALM AVENUE TOD TIA

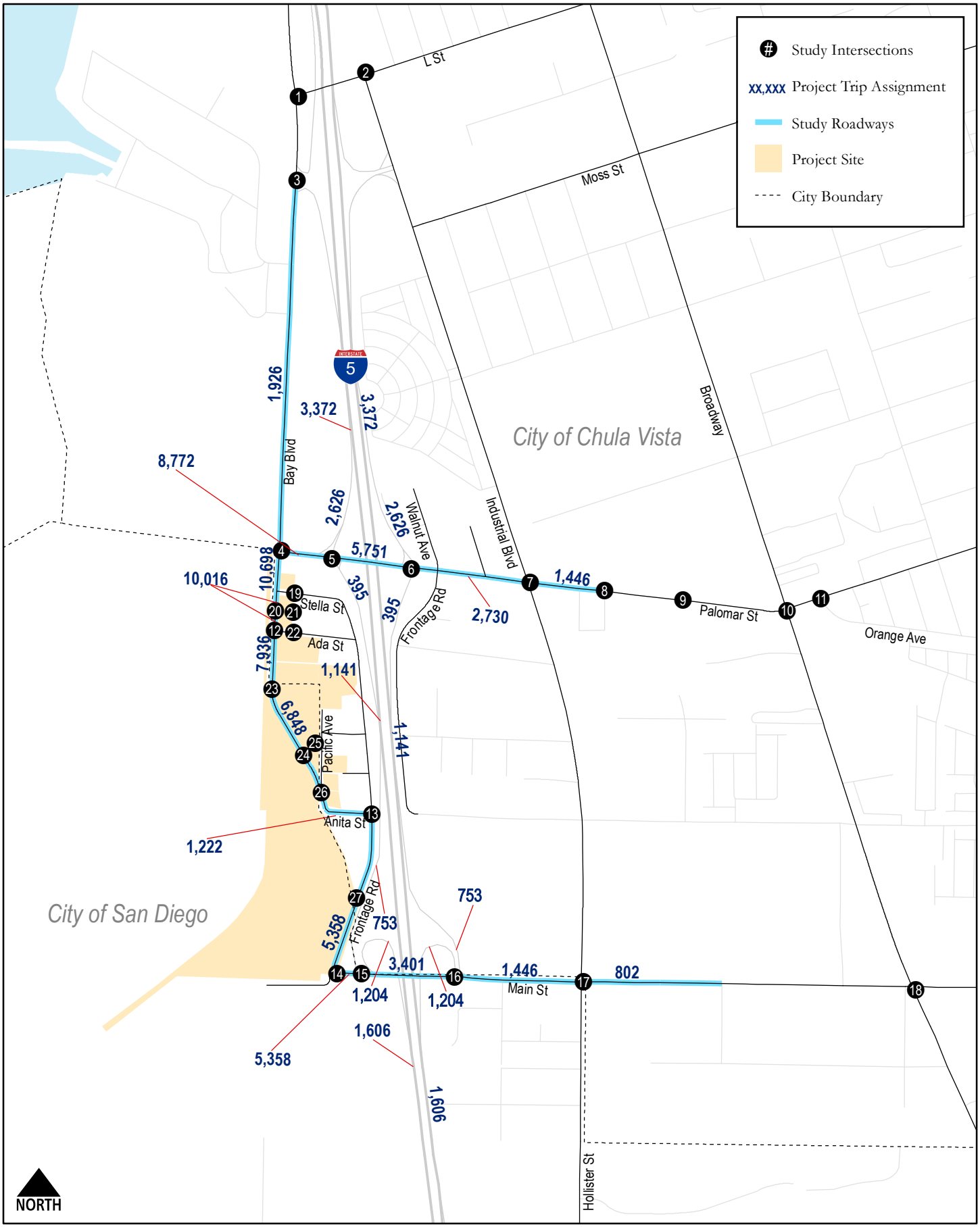
PROJECT TRAFFIC VOLUMES





Salt Bay Design District
Local Mobility Analysis
CHEN RYAN

Figure 3.2
Project Trip Distribution



Salt Bay Design District
Local Mobility Analysis
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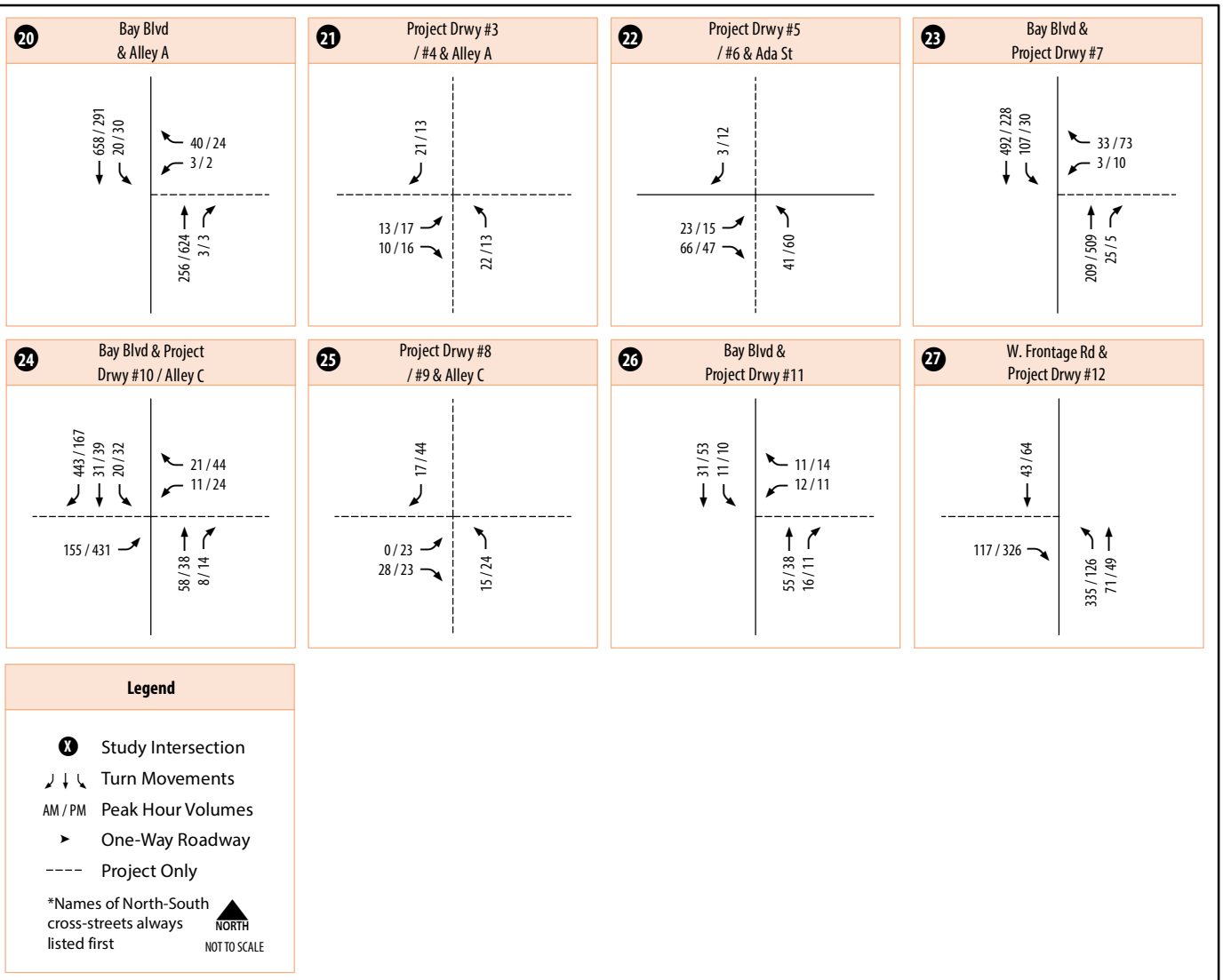
Figure 3.3
Project Trip Assignment (Roadway)



Salt Bay Design District
Local Mobility Analysis

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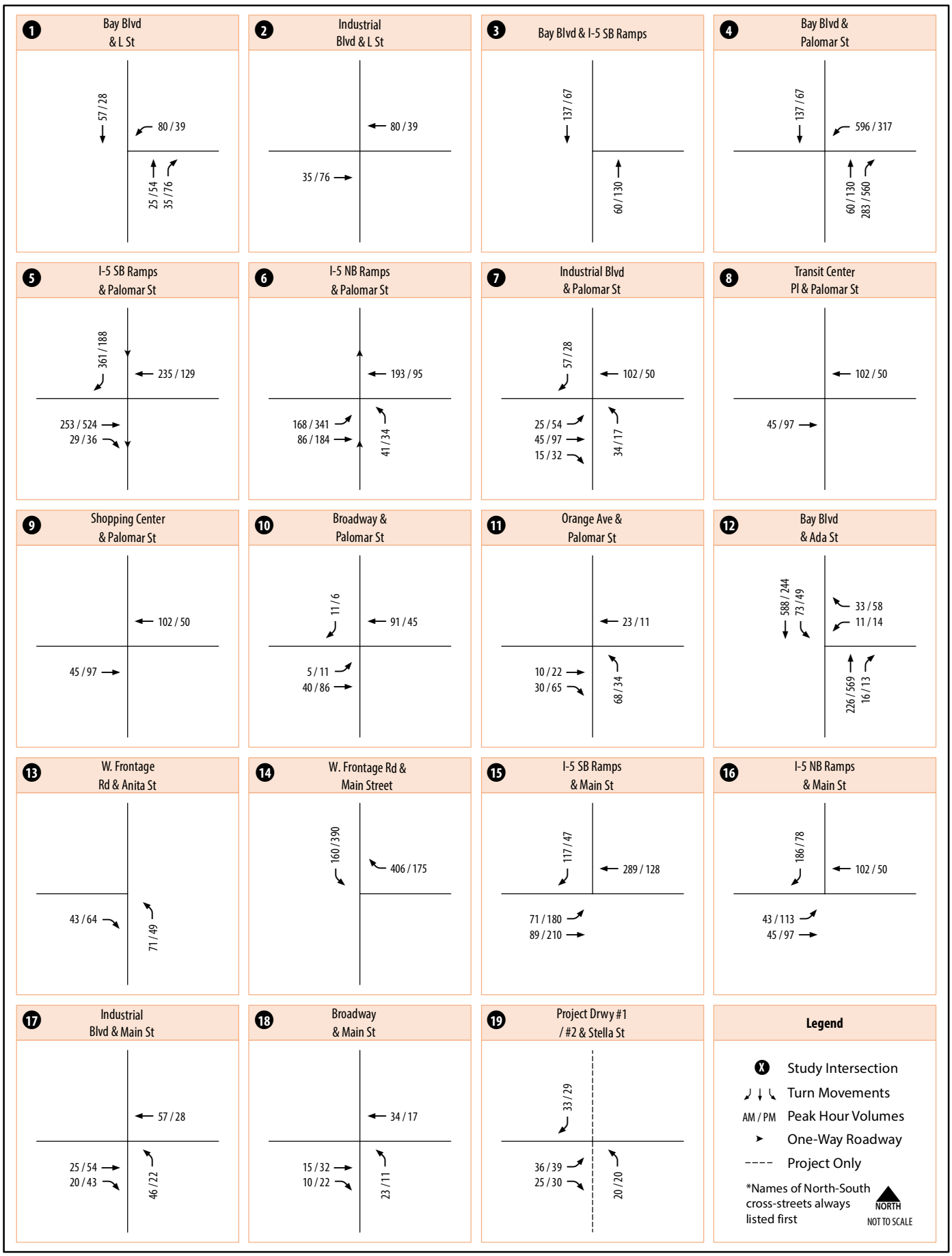
Figure 3.4
Project Trip Assignment (Intersections 20-27)



Salt Bay Design District
Local Mobility Analysis

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Figure 3.4
Project Trip Assignment (Intersections 1-19)

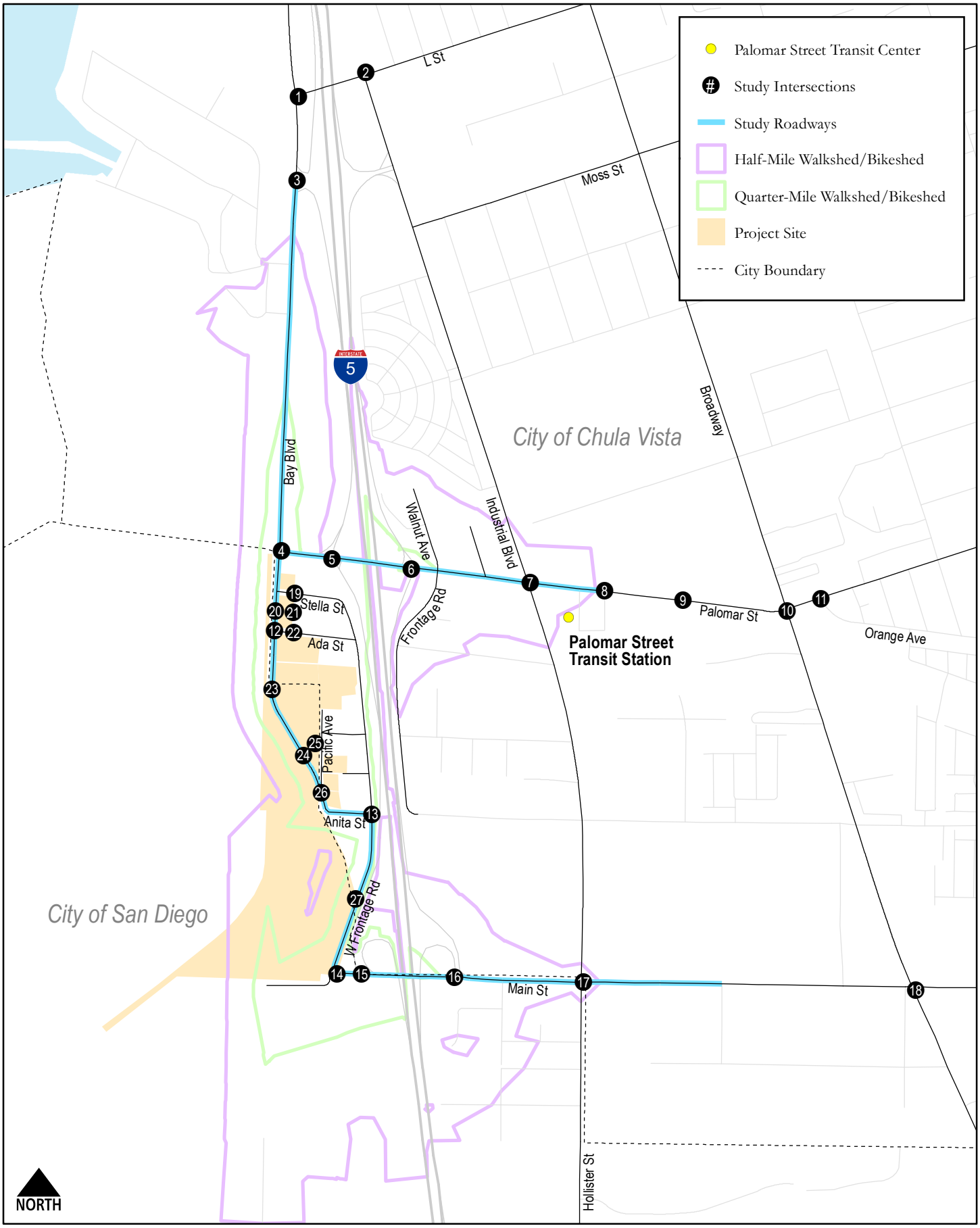

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Figure 3.5
Project Study Area

Michael Baker
INTERNATIONAL

Appendix E: Opening Year 2024 Without Project Synchro Worksheets

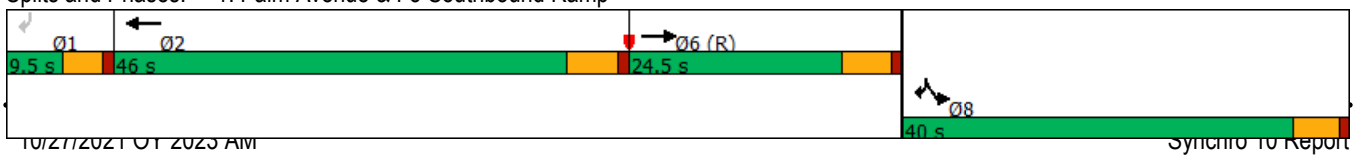
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations		↑↑	↑↑		↰	↱↑	
Traffic Volume (vph)	0	367	1092	48	162	1141	
Future Volume (vph)	0	367	1092	48	162	1141	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0			100	440	440	
Storage Lanes	0			0	1	0	
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.88	
Ped Bike Factor			1.00			0.98	
Frt			0.994			0.850	
Flt Protected					0.950		
Satd. Flow (prot)	0	3539	3511	0	1770	2787	
Flt Permitted					0.950		
Satd. Flow (perm)	0	3539	3511	0	1770	2728	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			4			625	
Link Speed (mph)		40	40		30		
Link Distance (ft)		952	701		860		
Travel Time (s)		16.2	11.9		19.5		
Confl. Peds. (#/hr)				9			
Confl. Bikes (#/hr)						1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	0	382	1138	50	169	1189	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	382	1188	0	169	1189	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(ft)		0	0		12		
Link Offset(ft)		0	0		0		
Crosswalk Width(ft)		16	16		16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15			9	15	9	
Number of Detectors		2	2		1	1	
Detector Template		Thru	Thru		Left	Right	
Leading Detector (ft)		100	100		20	20	
Trailing Detector (ft)		0	0		0	0	
Detector 1 Position(ft)		0	0		0	0	
Detector 1 Size(ft)		6	6		20	20	
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94	94				
Detector 2 Size(ft)		6	6				
Detector 2 Type		Cl+Ex	Cl+Ex				
Detector 2 Channel							
Detector 2 Extend (s)		0.0	0.0				

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Turn Type		NA	NA		Prot	custom	
Protected Phases		6	2		8	8	1
Permitted Phases						1	
Detector Phase		6	2		8	8	
Switch Phase							
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)		23.5	24.5		23.1	23.1	9.5
Total Split (s)		24.5	46.0		40.0	40.0	9.5
Total Split (%)		20.4%	38.3%		33.3%	33.3%	8%
Maximum Green (s)		19.0	40.5		34.9	34.9	5.0
Yellow Time (s)		4.5	4.5		4.1	4.1	3.5
All-Red Time (s)		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.5	5.5		5.1	5.1	
Lead/Lag			Lag				Lead
Lead-Lag Optimize?			Yes				Yes
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)		3.0	3.0		2.0	2.0	3.0
Time Before Reduce (s)		0.6	0.6		1.0	1.0	0.0
Time To Reduce (s)		0.1	0.1		0.0	0.0	0.0
Recall Mode		C-Max	Ped		Max	Max	None
Walk Time (s)		1.0	7.0		1.0	1.0	
Flash Dont Walk (s)		1.0	12.0		1.0	1.0	
Pedestrian Calls (#/hr)		0	10		0	0	
Act Effct Green (s)		19.7	49.3		34.9	34.9	
Actuated g/C Ratio		0.16	0.41		0.29	0.29	
v/c Ratio		0.66	0.82		0.33	0.95	
Control Delay		53.4	32.8		35.6	35.7	
Queue Delay		0.0	0.0		0.0	0.0	
Total Delay		53.4	32.8		35.6	35.7	
LOS		D	C		D	D	
Approach Delay		53.4	32.8		35.7		
Approach LOS		D	C		D		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 6:EBT, Start of Green, Master Intersection
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 36.9 Intersection LOS: D
Intersection Capacity Utilization 80.5% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Palm Avenue & I-5 Southbound Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	527	0	0	511	484	678	2	127	0	0	0
Future Volume (veh/h)	0	527	0	0	511	484	678	2	127	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	592	0	0	574	544	897	0	0			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1536	0	0	768	655	1399	735	0			
Arrive On Green	0.00	0.29	0.00	0.00	0.43	0.43	0.39	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	1870	1516	3563	1870	0			
Grp Volume(v), veh/h	0	592	0	0	574	544	897	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1516	1781	1870	0			
Q Serve(g_s), s	0.0	8.0	0.0	0.0	16.3	19.1	12.3	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	8.0	0.0	0.0	16.3	19.1	12.3	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1536	0	0	768	655	1399	735	0			
V/C Ratio(X)	0.00	0.39	0.00	0.00	0.75	0.83	0.64	0.00	0.00			
Avail Cap(c_a), veh/h	0	1536	0	0	768	655	1609	845	0			
HCM Platoon Ratio	1.00	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.81	0.00	0.00	0.86	0.86	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	14.9	0.0	0.0	14.3	15.1	14.8	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	5.7	10.2	2.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	3.2	0.0	0.0	6.4	7.0	4.8	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.5	0.0	0.0	20.0	25.3	17.1	0.0	0.0			
LnGrp LOS	A	B	A	A	B	C	B	A	A			
Approach Vol, veh/h		592			1118			897				
Approach Delay, s/veh		15.5			22.6			17.1				
Approach LOS		B			C			B				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		31.3				31.3		28.7				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		22.4				22.4		27.1				
Max Q Clear Time (g_c+I1), s		10.0				21.1		14.3				
Green Ext Time (p_c), s		7.6				1.3		9.2				

Intersection Summary												
HCM 6th Ctrl Delay			19.1									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

3: Hollister Street & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.5	0.0	4.0	0.1	0.5	3.4	0.1	0.3
Total Del/Veh (s)	54.0	29.9	36.2	74.7	11.0	17.0	42.6	38.6	21.5	47.2	25.6	18.5

3: Hollister Street & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	25.6

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.6	1.0	1.8	3.3	0.2	0.5	0.2	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	83.9	36.5	19.7	51.0	53.5	51.4	45.7	22.8	20.7	33.1	45.4	33.7

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	45.2

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱↑
Traffic Volume (vph)	0	523	966	25	368	1575
Future Volume (vph)	0	523	966	25	368	1575
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			100	440	440
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	*1.00	*1.00	0.95	1.00	*1.00
Ped Bike Factor			1.00			
Frt			0.996			0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3725	3702	0	1770	3167
Flt Permitted					0.950	
Satd. Flow (perm)	0	3725	3702	0	1770	3167
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			3			16
Link Speed (mph)		40	40		30	
Link Distance (ft)		952	701		860	
Travel Time (s)		16.2	11.9		19.5	
Confl. Peds. (#/hr)				29		
Confl. Bikes (#/hr)				2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	534	986	26	376	1607
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	534	1012	0	376	1607
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type		NA	NA		Prot	custom
Protected Phases		6	2		8	8
Permitted Phases						6
Detector Phase		6	2		8	8
Switch Phase						
Minimum Initial (s)		5.0	5.0		5.0	5.0
Minimum Split (s)		23.5	24.5		23.1	23.1
Total Split (s)		26.0	32.0		32.0	32.0
Total Split (%)		28.9%	35.6%		35.6%	35.6%
Maximum Green (s)		20.5	26.5		26.9	26.9
Yellow Time (s)		4.5	4.5		4.1	4.1
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.5	5.5		5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Minimum Gap (s)		3.0	3.0		2.0	2.0
Time Before Reduce (s)		0.6	0.6		1.0	1.0
Time To Reduce (s)		0.1	0.1		0.0	0.0
Recall Mode		C-Max	Ped		Max	Max
Walk Time (s)		1.0	7.0		1.0	1.0
Flash Dont Walk (s)		1.0	12.0		1.0	1.0
Pedestrian Calls (#/hr)		0	10		0	0
Act Effct Green (s)		20.5	26.5		26.9	52.9
Actuated g/C Ratio		0.23	0.29		0.30	0.59
v/c Ratio		0.63	0.93		0.71	0.86
Control Delay		35.2	46.3		36.8	21.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		35.2	46.3		36.8	21.5
LOS		D	D		D	C
Approach Delay		35.2	46.3		24.4	
Approach LOS		D	D		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 6:EBT, Start of Green, Master Intersection			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 32.3		Intersection LOS: C	
Intersection Capacity Utilization 91.5%		ICU Level of Service F	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	891	0	0	615	264	481	1	108	0	0	0
Future Volume (veh/h)	0	891	0	0	615	264	481	1	108	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.94	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	958	0	0	661	284	626	0	0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1801	0	0	1202	517	1134	595	0			
Arrive On Green	0.00	0.51	0.00	0.00	0.51	0.51	0.32	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	2466	1019	3563	1870	0			
Grp Volume(v), veh/h	0	958	0	0	495	450	626	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1615	1781	1870	0			
Q Serve(g_s), s	0.0	10.9	0.0	0.0	11.4	11.4	8.7	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	10.9	0.0	0.0	11.4	11.4	8.7	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.63	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1801	0	0	900	819	1134	595	0			
V/C Ratio(X)	0.00	0.53	0.00	0.00	0.55	0.55	0.55	0.00	0.00			
Avail Cap(c_a), veh/h	0	1801	0	0	900	819	1603	842	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.66	0.00	0.00	0.87	0.87	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	10.0	0.0	0.0	10.1	10.1	16.9	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	2.1	2.3	1.9	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	3.7	0.0	0.0	3.9	3.6	3.5	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	10.7	0.0	0.0	12.2	12.4	18.9	0.0	0.0			
LnGrp LOS	A	B	A	A	B	B	B	A	A			
Approach Vol, veh/h		958			945			626				
Approach Delay, s/veh		10.7			12.3			18.9				
Approach LOS		B			B			B				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		35.8				35.8		24.2				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		22.5				22.5		27.0				
Max Q Clear Time (g_c+I1), s		12.9				13.4		10.7				
Green Ext Time (p_c), s		8.1				7.6		8.3				

Intersection Summary												
HCM 6th Ctrl Delay			13.3									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

3: Hollister Street & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.3	0.0	3.7	0.4	0.6	3.5	0.4	0.4
Total Del/Veh (s)	80.4	53.5	54.8	62.8	12.9	7.7	38.1	27.6	25.8	41.1	35.6	25.8

3: Hollister Street & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	39.5

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.3	0.3	1.1	2.0	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	86.5	25.9	25.1	65.2	29.2	19.0	34.9	21.2	18.5	35.5	31.1	16.6

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	31.9

Intersection: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	T	TR	L	R	R
Maximum Queue (ft)	221	219	538	509	463	484	444
Average Queue (ft)	183	135	305	324	113	283	265
95th Queue (ft)	231	215	443	445	235	395	379
Link Distance (ft)	900	900	647	647		812	812
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					440		
Storage Blk Time (%)						1	
Queuing Penalty (veh)						2	

Intersection: 2: I-5 Northbound Off-Ramp & Palm Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	TR	L	LTR
Maximum Queue (ft)	253	247	282	323	366	415
Average Queue (ft)	163	160	95	139	177	246
95th Queue (ft)	251	256	206	268	292	355
Link Distance (ft)	647	647	623	623		765
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					515	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Hollister Street & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	180	468	465	39	75	114	114	114	66	119
Average Queue (ft)	105	185	210	24	55	70	44	58	24	64
95th Queue (ft)	195	366	365	44	68	98	87	103	53	105
Link Distance (ft)		623	623		39	39		1088		1206
Upstream Blk Time (%)				7	52	58				
Queuing Penalty (veh)				0	203	229				
Storage Bay Dist (ft)	125			35			75		80	
Storage Blk Time (%)	3	30		7	53		3	8	0	4
Queuing Penalty (veh)	6	37		27	22		4	6	0	1

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	159	164	79	517	512	265	92	396
Average Queue (ft)	50	125	123	5	410	414	75	38	177
95th Queue (ft)	87	163	172	31	644	637	172	77	348
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		33	38		59	67	0		
Queuing Penalty (veh)		82	94		0	0	0		
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	41	46		1	72				
Queuing Penalty (veh)	86	24		2	6				

Intersection: 12: Palm Avenue & Rail xing

Movement	EB	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	72	78	170	166	94	29
Average Queue (ft)	43	49	136	137	25	6
95th Queue (ft)	77	75	163	157	72	22
Link Distance (ft)	39	39	121	121	143	279
Upstream Blk Time (%)	33	38	38	52		
Queuing Penalty (veh)	83	97	154	212		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 1377

Intersection: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	T	TR	L	R	R
Maximum Queue (ft)	380	302	502	531	465	846	864
Average Queue (ft)	201	144	286	304	297	510	489
95th Queue (ft)	308	260	441	463	343	962	936
Link Distance (ft)	900	900	647	647		812	812
Upstream Blk Time (%)						28	8
Queuing Penalty (veh)						0	0
Storage Bay Dist (ft)					440		
Storage Blk Time (%)					32	4	
Queuing Penalty (veh)					252	16	

Intersection: 2: I-5 Northbound Off-Ramp & Palm Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	TR	L	LTR
Maximum Queue (ft)	671	663	254	322	254	300
Average Queue (ft)	421	420	128	153	121	195
95th Queue (ft)	771	747	237	294	255	285
Link Distance (ft)	647	647	623	623		765
Upstream Blk Time (%)	13	9				
Queuing Penalty (veh)	60	38				
Storage Bay Dist (ft)					515	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Hollister Street & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	180	680	664	39	103	101	129	226	120	317
Average Queue (ft)	176	615	614	20	50	59	70	103	49	159
95th Queue (ft)	194	694	697	43	76	82	138	184	120	280
Link Distance (ft)		623	623		39	39		1088		1206
Upstream Blk Time (%)		26	27	12	36	41				
Queuing Penalty (veh)		130	136	0	105	119				
Storage Bay Dist (ft)	125			35			75		80	
Storage Blk Time (%)	28	72		13	37		12	28	6	32
Queuing Penalty (veh)	97	122		34	10		12	23	19	19

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	166	154	78	351	346	97	73	118
Average Queue (ft)	68	139	132	14	130	140	45	33	46
95th Queue (ft)	88	174	155	54	269	271	88	65	92
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		42	33						
Queuing Penalty (veh)		164	128						
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	62	23		0	45				
Queuing Penalty (veh)	184	33		1	4				

Intersection: 12: Palm Avenue & Rail xing

Movement	EB	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	94	56	180	167	28	70
Average Queue (ft)	54	52	113	115	10	15
95th Queue (ft)	67	62	185	167	28	51
Link Distance (ft)	39	39	121	121	143	279
Upstream Blk Time (%)	49	41	24	23		
Queuing Penalty (veh)	196	163	74	71		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 2206

Michael Baker
INTERNATIONAL

Appendix F: Opening Year 2024 Plus Project Synchro Worksheets

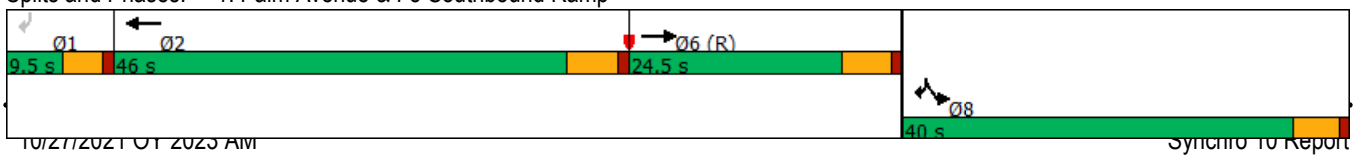
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations		↑↑	↑↑		↰	↱↑	
Traffic Volume (vph)	0	372	1112	55	166	1141	
Future Volume (vph)	0	372	1112	55	166	1141	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0			100	440	440	
Storage Lanes	0			0	1	0	
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.88	
Ped Bike Factor			1.00			0.98	
Frt			0.993			0.850	
Flt Protected					0.950		
Satd. Flow (prot)	0	3539	3507	0	1770	2787	
Flt Permitted					0.950		
Satd. Flow (perm)	0	3539	3507	0	1770	2728	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			4			624	
Link Speed (mph)		40	40		30		
Link Distance (ft)		952	701		860		
Travel Time (s)		16.2	11.9		19.5		
Confl. Peds. (#/hr)				9			
Confl. Bikes (#/hr)						1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	0	388	1158	57	173	1189	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	388	1215	0	173	1189	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(ft)		0	0		12		
Link Offset(ft)		0	0		0		
Crosswalk Width(ft)		16	16		16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15			9	15	9	
Number of Detectors		2	2		1	1	
Detector Template		Thru	Thru		Left	Right	
Leading Detector (ft)		100	100		20	20	
Trailing Detector (ft)		0	0		0	0	
Detector 1 Position(ft)		0	0		0	0	
Detector 1 Size(ft)		6	6		20	20	
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94	94				
Detector 2 Size(ft)		6	6				
Detector 2 Type		Cl+Ex	Cl+Ex				
Detector 2 Channel							
Detector 2 Extend (s)		0.0	0.0				

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Turn Type		NA	NA		Prot	custom	
Protected Phases		6	2		8	8	1
Permitted Phases						1	
Detector Phase		6	2		8	8	
Switch Phase							
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)		23.5	24.5		23.1	23.1	9.5
Total Split (s)		24.5	46.0		40.0	40.0	9.5
Total Split (%)		20.4%	38.3%		33.3%	33.3%	8%
Maximum Green (s)		19.0	40.5		34.9	34.9	5.0
Yellow Time (s)		4.5	4.5		4.1	4.1	3.5
All-Red Time (s)		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.5	5.5		5.1	5.1	
Lead/Lag			Lag				Lead
Lead-Lag Optimize?			Yes				Yes
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)		3.0	3.0		2.0	2.0	3.0
Time Before Reduce (s)		0.6	0.6		1.0	1.0	0.0
Time To Reduce (s)		0.1	0.1		0.0	0.0	0.0
Recall Mode		C-Max	Ped		Max	Max	None
Walk Time (s)		1.0	7.0		1.0	1.0	
Flash Dont Walk (s)		1.0	12.0		1.0	1.0	
Pedestrian Calls (#/hr)		0	10		0	0	
Act Effct Green (s)		19.0	50.0		34.9	34.9	
Actuated g/C Ratio		0.16	0.42		0.29	0.29	
v/c Ratio		0.69	0.83		0.34	0.95	
Control Delay		55.0	33.0		35.7	35.8	
Queue Delay		0.0	0.0		0.0	0.0	
Total Delay		55.0	33.0		35.7	35.8	
LOS		E	C		D	D	
Approach Delay		55.0	33.0		35.8		
Approach LOS		E	C		D		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 6:EBT, Start of Green, Master Intersection
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 37.2 Intersection LOS: D
Intersection Capacity Utilization 81.3% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Palm Avenue & I-5 Southbound Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	536	0	0	537	500	678	2	129	0	0	0
Future Volume (veh/h)	0	536	0	0	537	500	678	2	129	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	602	0	0	603	562	899	0	0			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1535	0	0	767	655	1401	735	0			
Arrive On Green	0.00	0.29	0.00	0.00	0.43	0.43	0.39	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	1870	1516	3563	1870	0			
Grp Volume(v), veh/h	0	602	0	0	603	562	899	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1516	1781	1870	0			
Q Serve(g_s), s	0.0	8.1	0.0	0.0	17.5	20.1	12.3	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	8.1	0.0	0.0	17.5	20.1	12.3	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1535	0	0	767	655	1401	735	0			
V/C Ratio(X)	0.00	0.39	0.00	0.00	0.79	0.86	0.64	0.00	0.00			
Avail Cap(c_a), veh/h	0	1535	0	0	767	655	1609	845	0			
HCM Platoon Ratio	1.00	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.79	0.00	0.00	0.84	0.84	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	15.0	0.0	0.0	14.7	15.4	14.8	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	6.8	11.8	2.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	3.3	0.0	0.0	7.0	7.6	4.8	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.6	0.0	0.0	21.4	27.2	17.0	0.0	0.0			
LnGrp LOS	A	B	A	A	C	C	B	A	A			
Approach Vol, veh/h		602			1165			899				
Approach Delay, s/veh		15.6			24.2			17.0				
Approach LOS		B			C			B				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		31.3				31.3		28.7				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		22.4				22.4		27.1				
Max Q Clear Time (g_c+I1), s		10.1				22.1		14.3				
Green Ext Time (p_c), s		7.6				0.3		9.2				

Intersection Summary												
HCM 6th Ctrl Delay			19.9									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

3: Hollister Street & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.8	0.8	0.9	3.6	0.5	0.4	3.4	0.2	0.3
Total Del/Veh (s)	85.3	47.4	38.2	75.7	8.7	3.6	60.7	47.2	48.2	49.0	41.2	22.9

3: Hollister Street & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	32.3

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.7	1.5	1.0	2.5	0.2	0.5	0.1	0.5	0.1	0.1	0.1	0.2
Total Del/Veh (s)	110.7	37.2	27.8	78.6	53.6	53.2	58.1	62.9	33.7	44.1	48.1	57.2

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	51.0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱↑
Traffic Volume (vph)	0	542	974	28	384	1575
Future Volume (vph)	0	542	974	28	384	1575
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			100	440	440
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	*1.00	*1.00	0.95	1.00	*1.00
Ped Bike Factor			1.00			
Frt			0.996			0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3725	3701	0	1770	3167
Flt Permitted					0.950	
Satd. Flow (perm)	0	3725	3701	0	1770	3167
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			3			16
Link Speed (mph)		40	40		30	
Link Distance (ft)		952	701		860	
Travel Time (s)		16.2	11.9		19.5	
Confl. Peds. (#/hr)				29		
Confl. Bikes (#/hr)				2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	553	994	29	392	1607
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	553	1023	0	392	1607
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type		NA	NA		Prot	custom
Protected Phases		6	2		8	8
Permitted Phases						6
Detector Phase		6	2		8	8
Switch Phase						
Minimum Initial (s)		5.0	5.0		5.0	5.0
Minimum Split (s)		23.5	24.5		23.1	23.1
Total Split (s)		26.0	32.0		32.0	32.0
Total Split (%)		28.9%	35.6%		35.6%	35.6%
Maximum Green (s)		20.5	26.5		26.9	26.9
Yellow Time (s)		4.5	4.5		4.1	4.1
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.5	5.5		5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Minimum Gap (s)		3.0	3.0		2.0	2.0
Time Before Reduce (s)		0.6	0.6		1.0	1.0
Time To Reduce (s)		0.1	0.1		0.0	0.0
Recall Mode		C-Max	Ped		Max	Max
Walk Time (s)		1.0	7.0		1.0	1.0
Flash Dont Walk (s)		1.0	12.0		1.0	1.0
Pedestrian Calls (#/hr)		0	10		0	0
Act Effct Green (s)		20.5	26.5		26.9	52.9
Actuated g/C Ratio		0.23	0.29		0.30	0.59
v/c Ratio		0.65	0.94		0.74	0.86
Control Delay		35.7	47.7		38.4	21.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		35.7	47.7		38.4	21.5
LOS		D	D		D	C
Approach Delay		35.7	47.7		24.8	
Approach LOS		D	D		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 6:EBT, Start of Green, Master Intersection			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 33.0		Intersection LOS: C	
Intersection Capacity Utilization 91.8%		ICU Level of Service F	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	926	0	0	626	271	481	1	114	0	0	0
Future Volume (veh/h)	0	926	0	0	626	271	481	1	114	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.94	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	996	0	0	673	291	320	276	123			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1627	0	0	1082	468	654	450	201			
Arrive On Green	0.00	0.46	0.00	0.00	0.46	0.46	0.37	0.37	0.37			
Sat Flow, veh/h	0	3741	0	0	2457	1022	1781	1225	546			
Grp Volume(v), veh/h	0	996	0	0	506	458	320	0	399			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1609	1781	0	1772			
Q Serve(g_s), s	0.0	12.7	0.0	0.0	12.9	12.9	8.3	0.0	11.0			
Cycle Q Clear(g_c), s	0.0	12.7	0.0	0.0	12.9	12.9	8.3	0.0	11.0			
Prop In Lane	0.00		0.00	0.00		0.64	1.00		0.31			
Lane Grp Cap(c), veh/h	0	1627	0	0	813	737	654	0	651			
V/C Ratio(X)	0.00	0.61	0.00	0.00	0.62	0.62	0.49	0.00	0.61			
Avail Cap(c_a), veh/h	0	1627	0	0	813	737	802	0	797			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.66	0.00	0.00	0.73	0.73	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	12.3	0.0	0.0	12.3	12.3	14.6	0.0	15.5			
Incr Delay (d2), s/veh	0.0	1.1	0.0	0.0	2.6	2.9	2.6	0.0	4.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	4.5	0.0	0.0	4.6	4.2	3.5	0.0	4.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	13.4	0.0	0.0	14.9	15.2	17.2	0.0	19.8			
LnGrp LOS	A	B	A	A	B	B	B	A	B			
Approach Vol, veh/h		996			964			719				
Approach Delay, s/veh		13.4			15.1			18.7				
Approach LOS		B			B			B				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		32.9				32.9		27.1				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		22.5				22.5		27.0				
Max Q Clear Time (g_c+I1), s		14.7				14.9		13.0				
Green Ext Time (p_c), s		6.9				6.5		9.0				

Intersection Summary												
HCM 6th Ctrl Delay			15.4									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

3: Hollister Street & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	1.2	0.0	3.6	0.2	0.2	3.0	0.6	0.5
Total Del/Veh (s)	87.8	85.8	81.9	64.2	13.8	17.6	42.8	28.9	27.7	42.7	38.0	31.3

3: Hollister Street & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	47.8

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.5	0.7	0.0	3.9	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2
Total Del/Veh (s)	112.6	32.8	29.4	67.0	30.9	30.7	35.3	33.6	19.4	36.7	40.6	26.8

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	38.7

Intersection: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	T	TR	L	R	R
Maximum Queue (ft)	269	190	530	509	465	595	581
Average Queue (ft)	165	116	284	301	123	338	307
95th Queue (ft)	233	203	417	415	245	499	460
Link Distance (ft)	900	900	647	647		812	812
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					440		
Storage Blk Time (%)						3	
Queuing Penalty (veh)						4	

Intersection: 2: I-5 Northbound Off-Ramp & Palm Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	TR	L	LTR
Maximum Queue (ft)	275	260	324	350	343	413
Average Queue (ft)	161	154	117	175	171	234
95th Queue (ft)	257	253	235	308	302	363
Link Distance (ft)	647	647	623	623		765
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					515	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Hollister Street & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	180	495	531	47	87	106	78	96	71	139
Average Queue (ft)	106	213	215	24	57	64	43	44	24	64
95th Queue (ft)	206	407	404	47	72	89	71	87	58	119
Link Distance (ft)		623	623		39	39		1088		1206
Upstream Blk Time (%)				16	43	49				
Queuing Penalty (veh)				0	171	194				
Storage Bay Dist (ft)	125			35			75		80	
Storage Blk Time (%)	6	33		17	44		2	5	0	5
Queuing Penalty (veh)	14	40		66	20		2	4	0	2

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	172	138	80	373	410	163	114	254
Average Queue (ft)	62	130	128	14	208	214	61	52	117
95th Queue (ft)	93	163	154	55	328	359	120	99	228
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		32	35						
Queuing Penalty (veh)		80	87						
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	50	47		1	52				
Queuing Penalty (veh)	106	30		4	5				

Intersection: 12: Palm Avenue & Rail xing

Movement	EB	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	56	76	180	163	51	51
Average Queue (ft)	45	50	128	128	11	16
95th Queue (ft)	72	70	175	165	38	47
Link Distance (ft)	39	39	121	121	143	279
Upstream Blk Time (%)	37	39	23	37		
Queuing Penalty (veh)	98	102	100	160		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 1287

Intersection: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	T	TR	L	R	R
Maximum Queue (ft)	253	183	290	321	264	417	391
Average Queue (ft)	193	136	225	253	195	278	261
95th Queue (ft)	263	185	293	321	384	411	391
Link Distance (ft)	900	900	647	647		812	812
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					440		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: I-5 Northbound Off-Ramp & Palm Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	TR	L	LTR
Maximum Queue (ft)	230	224	139	178	168	247
Average Queue (ft)	147	143	105	105	61	143
95th Queue (ft)	255	227	166	198	155	294
Link Distance (ft)	647	647	623	623		765
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					515	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Hollister Street & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	179	392	332	30	52	116	130	225	120	237
Average Queue (ft)	133	260	275	19	51	74	65	109	67	138
95th Queue (ft)	193	433	371	49	52	112	121	223	127	248
Link Distance (ft)		623	623		39	39		1088		1206
Upstream Blk Time (%)				9	29	51				
Queuing Penalty (veh)				0	90	161				
Storage Bay Dist (ft)	125			35			75		80	
Storage Blk Time (%)	3	31		10	30		4	46	0	24
Queuing Penalty (veh)	10	53		26	8		4	38	1	15

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	74	162	138	27	92	137	70	49	52
Average Queue (ft)	67	150	130	8	63	95	42	24	42
95th Queue (ft)	90	168	144	27	101	139	81	52	59
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		48	24						
Queuing Penalty (veh)		201	103						
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	64	15			15				
Queuing Penalty (veh)	191	28			1				

Intersection: 12: Palm Avenue & Rail xing

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	54	55	133	141
Average Queue (ft)	51	48	90	106
95th Queue (ft)	55	63	134	155
Link Distance (ft)	39	39	121	121
Upstream Blk Time (%)	43	36	3	6
Queuing Penalty (veh)	181	153	9	19
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 1292

Michael Baker
INTERNATIONAL

Appendix G: Horizon Year 2050 Without Project Synchro Worksheets

Year 2050 Intersection Growth Factoring Worksheet

Intersection		Approach	Base Year (Series 14 2025)	Model Year (Series 14 2050)	Total Growth (%)	Growth Per Year (%)	Assumed Growth - (%)
1	I-5 SB and Palm Ave	NB	0	0	-	-	-
		SB	15,800	17,200	8.86%	0.35%	10.28%
		EB	71,000	78,600	10.70%	0.43%	12.42%
		WB	25,700	28,800	12.06%	0.48%	13.99%
2	I-5 NB and Palm Ave	NB	1,900	2,300	21.05%	0.84%	24.42%
		SB	0	0	-	-	-
		EB	25,700	28,800	12.06%	0.48%	13.99%
		WB	25,700	28,800	12.06%	0.48%	13.99%
3	Palm Ave & Hollister Street	NB	13,200	14,500	9.85%	0.39%	11.42%
		SB	5,000	8,300	66.00%	2.64%	76.56%
		EB	13,700	15,100	10.22%	0.41%	11.85%
		WB	25,700	28,800	12.06%	0.48%	13.99%
4	Palm Ave & Harris Avenue	NB	2,400	2,400	0.00%	0.00%	0.00%
		SB	1,300	1,300	0.00%	0.00%	0.00%
		EB	10,800	11,800	9.26%	0.37%	10.74%
		WB	13,700	15,100	10.22%	0.41%	11.85%
					Avg:	0.65%	16.20%

Note: Volumes taken from SANDAG's Traffic Forecast Information Center (TFIC) Year 2025 and 2050 Series 14 Travel Model

Year 2050 Intersection Growth Post Processing Worksheet

1. I-5 SB and Palm Ave

Movement	Existing (2021)		Assumed Growth - (%)	Year 2050 Without Project	
	AM	PM		AM	PM
NBL	0	0	0.00%	0	0
NBT	0	0	0.00%	0	0
NBR	0	0	0.00%	0	0
SBL	137	325	10.28%	151	358
SBT	0	0	10.28%	0	0
SBR	1,141	1,575	10.28%	1,258	1,737
EBL	0	0	12.42%	0	0
EBT	331	451	12.42%	372	507
EBR	0	0	12.42%	0	0
WBL	0	0	13.99%	0	0
WBT	1,021	921	13.99%	1,164	1,050
WBR	113	88	13.99%	129	100

2. I-5 NB and Palm Ave

Movement	Existing (2021)		Assumed Growth - (%)	Year 2050 Without Project	
	AM	PM		AM	PM
NBL	678	481	24.42%	844	598
NBT	2	1	24.42%	2	1
NBR	108	60	24.42%	134	75
SBL	0	0	0.00%	0	0
SBT	0	0	0.00%	0	0
SBR	0	0	0.00%	0	0
EBL	0	0	13.99%	0	0
EBT	467	776	13.99%	532	885
EBR	0	0	13.99%	0	0
WBL	0	0	13.99%	0	0
WBT	392	545	13.99%	447	621
WBR	441	233	13.99%	503	266

3. Palm Ave & Hollister Street

Movement	Existing (2021)		Assumed Growth - (%)	Year 2050 Without Project	
	AM	PM		AM	PM
NBL	74	83	11.42%	82	92
NBT	50	48	11.42%	56	53
NBR	46	41	11.42%	51	46
SBL	19	35	76.56%	34	62
SBT	35	94	76.56%	62	166
SBR	79	153	76.56%	139	270
EBL	80	106	11.85%	89	119
EBT	393	589	11.85%	440	659
EBR	29	70	11.85%	32	78
WBL	33	22	13.99%	38	25
WBT	632	479	13.99%	720	546
WBR	27	29	13.99%	31	33

4. Palm Ave & Harris Avenue

Movement	Existing (2021)		Assumed Growth - (%)	Year 2050 Without Project	
	AM	PM		AM	PM
NBL	59	56	0.00%	59	56
NBT	1	1	0.00%	1	1
NBR	16	12	0.00%	16	12
SBL	5	14	0.00%	5	14
SBT	2	4	0.00%	2	4
SBR	12	30	0.00%	12	30
EBL	8	20	10.74%	9	22
EBT	413	580	10.74%	457	642
EBR	44	72	10.74%	49	80
WBL	9	8	11.85%	10	9
WBT	610	449	11.85%	682	502
WBR	8	23	11.85%	9	26

Year 2050 Intersection Growth Post Processing Worksheet

1. I-5 SB and Palm Ave

Movement	Existing (2021)		Assumed Growth - (%)	Year 2050 Without Project	
	AM	PM		AM	PM
NBL	0	0	0.00%	0	0
NBT	0	0	0.00%	0	0
NBR	0	0	0.00%	0	0
SBL	137	325	10.28%	151	358
SBT	0	0	10.28%	0	0
SBR	1,141	1,575	10.28%	1,258	1,737
EBL	0	0	12.42%	0	0
EBT	331	451	12.42%	372	507
EBR	0	0	12.42%	0	0
WBL	0	0	13.99%	0	0
WBT	1,021	921	13.99%	1,164	1,050
WBR	113	88	13.99%	129	100

2. I-5 NB and Palm Ave

Movement	Existing (2021)		Assumed Growth - (%)	Year 2050 Without Project	
	AM	PM		AM	PM
NBL	678	481	24.42%	844	598
NBT	2	1	24.42%	2	1
NBR	108	60	24.42%	134	75
SBL	0	0	0.00%	0	0
SBT	0	0	0.00%	0	0
SBR	0	0	0.00%	0	0
EBL	0	0	13.99%	0	0
EBT	467	776	13.99%	532	885
EBR	0	0	13.99%	0	0
WBL	0	0	13.99%	0	0
WBT	392	545	13.99%	447	621
WBR	441	233	13.99%	503	266

3. Palm Ave & Hollister Street

Movement	Existing (2021)		Assumed Growth - (%)	Year 2050 Without Project	
	AM	PM		AM	PM
NBL	74	83	11.42%	82	92
NBT	50	48	11.42%	56	53
NBR	46	41	11.42%	51	46
SBL	19	35	76.56%	34	62
SBT	35	94	76.56%	62	166
SBR	79	153	76.56%	139	270
EBL	80	106	11.85%	89	119
EBT	393	589	11.85%	440	659
EBR	29	70	11.85%	32	78
WBL	33	22	13.99%	38	25
WBT	632	479	13.99%	720	546
WBR	27	29	13.99%	31	33

4. Palm Ave & Harris Avenue

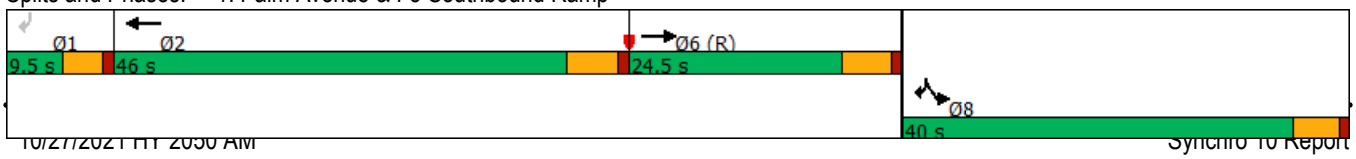
Movement	Existing (2021)		Assumed Growth - (%)	Year 2050 Without Project	
	AM	PM		AM	PM
NBL	59	56	0.00%	59	56
NBT	1	1	0.00%	1	1
NBR	16	12	0.00%	16	12
SBL	5	14	0.00%	5	14
SBT	2	4	0.00%	2	4
SBR	12	30	0.00%	12	30
EBL	8	20	10.74%	9	22
EBT	413	580	10.74%	457	642
EBR	44	72	10.74%	49	80
WBL	9	8	11.85%	10	9
WBT	610	449	11.85%	682	502
WBR	8	23	11.85%	9	26

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations		↑↑	↑↑		↰	↱↑	
Traffic Volume (vph)	0	372	1164	0	151	1258	
Future Volume (vph)	0	372	1164	0	151	1258	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0			100	440	440	
Storage Lanes	0			0	1	0	
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	0.88	
Ped Bike Factor						0.98	
Frt						0.850	
Flt Protected					0.950		
Satd. Flow (prot)	0	3539	3539	0	1770	2787	
Flt Permitted					0.950		
Satd. Flow (perm)	0	3539	3539	0	1770	2728	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)						622	
Link Speed (mph)		40	40		30		
Link Distance (ft)		952	701		860		
Travel Time (s)		16.2	11.9		19.5		
Confl. Peds. (#/hr)				9			
Confl. Bikes (#/hr)						1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	0	388	1213	0	157	1310	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	388	1213	0	157	1310	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(ft)		0	0		12		
Link Offset(ft)		0	0		0		
Crosswalk Width(ft)		16	16		16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15			9	15	9	
Number of Detectors		2	2		1	1	
Detector Template		Thru	Thru		Left	Right	
Leading Detector (ft)		100	100		20	20	
Trailing Detector (ft)		0	0		0	0	
Detector 1 Position(ft)		0	0		0	0	
Detector 1 Size(ft)		6	6		20	20	
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94	94				
Detector 2 Size(ft)		6	6				
Detector 2 Type		Cl+Ex	Cl+Ex				
Detector 2 Channel							
Detector 2 Extend (s)		0.0	0.0				

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Turn Type		NA	NA		Prot	custom	
Protected Phases		6	2		8	8	1
Permitted Phases						1	
Detector Phase		6	2		8	8	
Switch Phase							
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)		23.5	24.5		23.1	23.1	9.5
Total Split (s)		24.5	46.0		40.0	40.0	9.5
Total Split (%)		20.4%	38.3%		33.3%	33.3%	8%
Maximum Green (s)		19.0	40.5		34.9	34.9	5.0
Yellow Time (s)		4.5	4.5		4.1	4.1	3.5
All-Red Time (s)		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.5	5.5		5.1	5.1	
Lead/Lag			Lag				Lead
Lead-Lag Optimize?			Yes				Yes
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)		3.0	3.0		2.0	2.0	3.0
Time Before Reduce (s)		0.6	0.6		1.0	1.0	0.0
Time To Reduce (s)		0.1	0.1		0.0	0.0	0.0
Recall Mode		C-Max	Ped		Max	Max	None
Walk Time (s)		1.0	7.0		1.0	1.0	
Flash Dont Walk (s)		1.0	12.0		1.0	1.0	
Pedestrian Calls (#/hr)		0	10		0	0	
Act Effct Green (s)		19.0	50.0		34.9	34.9	
Actuated g/C Ratio		0.16	0.42		0.29	0.29	
v/c Ratio		0.69	0.82		0.31	1.05	
Control Delay		55.0	29.5		35.1	61.0	
Queue Delay		0.0	0.0		0.0	0.0	
Total Delay		55.0	29.5		35.1	61.0	
LOS		E	C		D	E	
Approach Delay		55.0	29.5		58.2		
Approach LOS		E	C		E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 6:EBT, Start of Green, Master Intersection			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 46.5		Intersection LOS: D	
Intersection Capacity Utilization 85.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Palm Avenue & I-5 Southbound Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	532	0	0	447	503	844	2	134	0	0	0
Future Volume (veh/h)	0	532	0	0	447	503	844	2	134	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	598	0	0	502	565	1090	0	0			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1423	0	0	711	606	1513	794	0			
Arrive On Green	0.00	0.13	0.00	0.00	0.40	0.40	0.42	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	1870	1513	3563	1870	0			
Grp Volume(v), veh/h	0	598	0	0	502	565	1090	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1513	1781	1870	0			
Q Serve(g_s), s	0.0	9.3	0.0	0.0	14.2	21.5	15.2	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	9.3	0.0	0.0	14.2	21.5	15.2	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1423	0	0	711	606	1513	794	0			
V/C Ratio(X)	0.00	0.42	0.00	0.00	0.71	0.93	0.72	0.00	0.00			
Avail Cap(c_a), veh/h	0	1423	0	0	711	606	1609	845	0			
HCM Platoon Ratio	1.00	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.79	0.00	0.00	0.87	0.87	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	19.6	0.0	0.0	15.0	17.2	14.3	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	5.1	21.2	3.0	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	4.2	0.0	0.0	5.7	9.6	5.9	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	20.4	0.0	0.0	20.1	38.4	17.3	0.0	0.0			
LnGrp LOS	A	C	A	A	C	D	B	A	A			
Approach Vol, veh/h		598			1067			1090				
Approach Delay, s/veh		20.4			29.8			17.3				
Approach LOS		C			C			B				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		29.4				29.4		30.6				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		22.4				22.4		27.1				
Max Q Clear Time (g_c+I1), s		11.3				23.5		17.2				
Green Ext Time (p_c), s		7.0				0.0		8.2				

Intersection Summary		
HCM 6th Ctrl Delay		22.8
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

3: Hollister Street & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.2	1.2	3.1	0.4	0.4	2.9	0.3	0.3
Total Del/Veh (s)	47.5	50.3	32.9	70.2	9.2	6.9	39.2	49.4	23.4	55.9	17.1	11.2

3: Hollister Street & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	24.6

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	1.2	1.6	3.3	0.2	0.6	0.1	0.1	0.2	0.2	0.1	0.2
Total Del/Veh (s)	95.9	35.8	28.9	83.8	41.0	42.5	55.2	56.1	24.4	65.1	43.9	59.1

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	47.2

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱↱
Traffic Volume (vph)	0	507	1050	0	358	1737
Future Volume (vph)	0	507	1050	0	358	1737
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			100	440	440
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	*1.00	*1.00	1.00	1.00	*1.00
Ped Bike Factor						
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3725	3725	0	1770	3167
Flt Permitted					0.950	
Satd. Flow (perm)	0	3725	3725	0	1770	3167
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						13
Link Speed (mph)		40	40		30	
Link Distance (ft)		952	701		860	
Travel Time (s)		16.2	11.9		19.5	
Confl. Peds. (#/hr)				29		
Confl. Bikes (#/hr)				2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	517	1071	0	365	1772
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	517	1071	0	365	1772
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type		NA	NA		Prot	custom
Protected Phases		6	2		8	8
Permitted Phases						6
Detector Phase		6	2		8	8
Switch Phase						
Minimum Initial (s)		5.0	5.0		5.0	5.0
Minimum Split (s)		23.5	24.5		23.1	23.1
Total Split (s)		26.0	36.0		38.0	38.0
Total Split (%)		26.0%	36.0%		38.0%	38.0%
Maximum Green (s)		20.5	30.5		32.9	32.9
Yellow Time (s)		4.5	4.5		4.1	4.1
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.5	5.5		5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Minimum Gap (s)		3.0	3.0		2.0	2.0
Time Before Reduce (s)		0.6	0.6		1.0	1.0
Time To Reduce (s)		0.1	0.1		0.0	0.0
Recall Mode		C-Max	Ped		Max	Max
Walk Time (s)		1.0	7.0		1.0	1.0
Flash Dont Walk (s)		1.0	12.0		1.0	1.0
Pedestrian Calls (#/hr)		0	10		0	0
Act Effct Green (s)		20.5	30.5		32.9	58.9
Actuated g/C Ratio		0.20	0.30		0.33	0.59
v/c Ratio		0.68	0.94		0.63	0.95
Control Delay		41.8	44.9		34.1	31.5
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		41.8	44.9		34.1	31.5
LOS		D	D		C	C
Approach Delay		41.8	44.9		32.0	
Approach LOS		D	D		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 6:EBT, Start of Green, Master Intersection			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 37.1		Intersection LOS: D	
Intersection Capacity Utilization 98.6%		ICU Level of Service F	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	885	0	0	621	266	598	1	75	0	0	0
Future Volume (veh/h)	0	885	0	0	621	266	598	1	75	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	952	0	0	668	286	719	0	0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	2084	0	0	1395	597	1100	577	0			
Arrive On Green	0.00	0.19	0.00	0.00	0.59	0.59	0.31	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	2473	1019	3563	1870	0			
Grp Volume(v), veh/h	0	952	0	0	499	455	719	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1622	1781	1870	0			
Q Serve(g_s), s	0.0	23.7	0.0	0.0	16.1	16.1	17.5	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	23.7	0.0	0.0	16.1	16.1	17.5	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.63	1.00		0.00			
Lane Grp Cap(c), veh/h	0	2084	0	0	1042	951	1100	577	0			
V/C Ratio(X)	0.00	0.46	0.00	0.00	0.48	0.48	0.65	0.00	0.00			
Avail Cap(c_a), veh/h	0	2084	0	0	1042	951	1457	765	0			
HCM Platoon Ratio	1.00	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.71	0.00	0.00	0.87	0.87	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	26.2	0.0	0.0	11.9	11.9	29.9	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	1.4	1.5	3.0	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	11.4	0.0	0.0	6.0	5.6	7.8	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	26.8	0.0	0.0	13.3	13.4	33.0	0.0	0.0			
LnGrp LOS	A	C	A	A	B	B	C	A	A			
Approach Vol, veh/h		952			954			719				
Approach Delay, s/veh		26.8			13.3			33.0				
Approach LOS		C			B			C				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		64.0				64.0		36.0				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		48.6				48.6		40.9				
Max Q Clear Time (g_c+I1), s		25.7				18.1		19.5				
Green Ext Time (p_c), s		17.6				21.6		11.4				

Intersection Summary												
HCM 6th Ctrl Delay			23.6									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

3: Hollister Street & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.2	3.4	0.3	0.4	2.8	0.5	0.5
Total Del/Veh (s)	141.1	150.6	149.6	64.9	9.7	9.6	37.5	32.4	33.5	60.1	26.2	18.6

3: Hollister Street & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	57.4

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	15.4	6.4	12.6	2.7	0.2	0.4	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	96.1	22.3	12.7	68.4	29.2	21.8	62.4	66.3	24.2	62.4	50.1	11.5

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	4.3
Total Del/Veh (s)	32.0

Intersection: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	L	R	R
Maximum Queue (ft)	226	189	454	447	265	846	851
Average Queue (ft)	170	126	290	306	249	703	682
95th Queue (ft)	219	195	409	418	281	1017	1040
Link Distance (ft)	900	900	659	659		812	812
Upstream Blk Time (%)						48	43
Queuing Penalty (veh)						0	0
Storage Bay Dist (ft)					440		
Storage Blk Time (%)					0	56	
Queuing Penalty (veh)					0	85	

Intersection: 2: I-5 Northbound Off-Ramp/I-5 Northbound Ramp & Palm Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	TR	L	LTR
Maximum Queue (ft)	227	256	246	389	294	392
Average Queue (ft)	152	153	119	193	180	258
95th Queue (ft)	235	249	223	341	273	361
Link Distance (ft)	659	659	623	623		765
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					515	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Hollister Street & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	179	456	444	39	87	101	129	222	120	180
Average Queue (ft)	78	138	150	22	57	58	56	70	31	70
95th Queue (ft)	160	320	321	45	76	80	112	160	80	138
Link Distance (ft)		623	623		39	39		1088		1206
Upstream Blk Time (%)				14	37	42				
Queuing Penalty (veh)				0	157	181				
Storage Bay Dist (ft)	125			35			75		80	
Storage Blk Time (%)	5	17		15	38		7	14	1	7
Queuing Penalty (veh)	10	15		53	14		7	11	2	2

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	151	163	51	487	449	136	155	158
Average Queue (ft)	47	108	120	11	200	228	68	62	71
95th Queue (ft)	85	171	176	37	379	380	118	126	137
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		20	32		0				
Queuing Penalty (veh)		52	84		0				
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	33	42		1	45				
Queuing Penalty (veh)	76	21		4	4				

Intersection: 12: Palm Avenue & Rail xing

Movement	EB	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	77	56	156	162	48	70
Average Queue (ft)	39	45	122	127	12	8
95th Queue (ft)	74	68	163	154	33	38
Link Distance (ft)	39	39	121	121	143	279
Upstream Blk Time (%)	25	27	21	31		
Queuing Penalty (veh)	66	71	90	135		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 1143

Intersection: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	L	R	R
Maximum Queue (ft)	938	915	463	508	365	875	827
Average Queue (ft)	440	402	262	279	319	689	651
95th Queue (ft)	983	971	415	442	338	1022	983
Link Distance (ft)	900	900	659	659		812	812
Upstream Blk Time (%)	25	22				31	13
Queuing Penalty (veh)	0	0				0	0
Storage Bay Dist (ft)					440		
Storage Blk Time (%)					17	19	
Queuing Penalty (veh)					147	69	

Intersection: 2: I-5 Northbound Off-Ramp/I-5 Northbound Ramp & Palm Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	TR	L	LTR
Maximum Queue (ft)	702	695	255	265	345	421
Average Queue (ft)	451	452	128	155	216	267
95th Queue (ft)	828	824	216	245	306	346
Link Distance (ft)	659	659	623	623		765
Upstream Blk Time (%)	20	21				
Queuing Penalty (veh)	87	89				
Storage Bay Dist (ft)					515	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Hollister Street & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	180	663	659	31	75	98	129	243	120	599
Average Queue (ft)	157	620	628	12	55	59	72	90	64	201
95th Queue (ft)	241	690	691	34	71	80	136	199	122	397
Link Distance (ft)		623	623		39	39		1088		1206
Upstream Blk Time (%)		34	39	6	29	33				
Queuing Penalty (veh)		163	189	0	95	108				
Storage Bay Dist (ft)	125			35			75		80	
Storage Blk Time (%)	9	88		6	31		28	12	5	37
Queuing Penalty (veh)	31	104		17	8		27	11	21	23

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	186	158	47	443	400	137	112	168
Average Queue (ft)	71	143	133	15	137	120	69	45	47
95th Queue (ft)	80	167	149	39	265	238	125	88	104
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		60	38						
Queuing Penalty (veh)		229	147						
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	78	19		5	37				
Queuing Penalty (veh)	251	27		13	3				

Intersection: 12: Palm Avenue & Rail xing

Movement	EB	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	97	78	142	140	51	51
Average Queue (ft)	54	55	103	101	8	7
95th Queue (ft)	71	69	156	154	32	30
Link Distance (ft)	39	39	121	121	143	279
Upstream Blk Time (%)	64	47	10	10		
Queuing Penalty (veh)	245	182	33	31		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 2351

Michael Baker
INTERNATIONAL

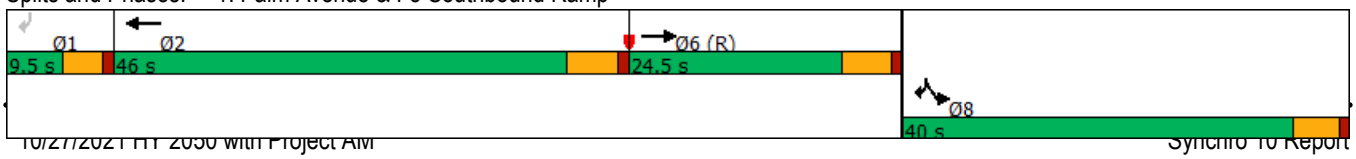
Appendix H:
Horizon Year 2050 Plus Project Synchro Worksheets

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations		↑↑	↑↑		↰	↱↱	
Traffic Volume (vph)	0	377	1184	188	155	1258	
Future Volume (vph)	0	377	1184	188	155	1258	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0			100	440	440	
Storage Lanes	0			0	1	0	
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	0.88	
Ped Bike Factor			0.99			0.98	
Frt			0.979			0.850	
Flt Protected					0.950		
Satd. Flow (prot)	0	3539	3442	0	1770	2787	
Flt Permitted					0.950		
Satd. Flow (perm)	0	3539	3442	0	1770	2728	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			16			621	
Link Speed (mph)		40	40		30		
Link Distance (ft)		952	701		860		
Travel Time (s)		16.2	11.9		19.5		
Confl. Peds. (#/hr)				9			
Confl. Bikes (#/hr)						1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	0	393	1233	196	161	1310	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	393	1429	0	161	1310	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(ft)		0	0		12		
Link Offset(ft)		0	0		0		
Crosswalk Width(ft)		16	16		16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15			9	15	9	
Number of Detectors		2	2		1	1	
Detector Template		Thru	Thru		Left	Right	
Leading Detector (ft)		100	100		20	20	
Trailing Detector (ft)		0	0		0	0	
Detector 1 Position(ft)		0	0		0	0	
Detector 1 Size(ft)		6	6		20	20	
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94	94				
Detector 2 Size(ft)		6	6				
Detector 2 Type		Cl+Ex	Cl+Ex				
Detector 2 Channel							
Detector 2 Extend (s)		0.0	0.0				

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Turn Type		NA	NA		Prot	custom	
Protected Phases		6	2		8	8	1
Permitted Phases						1	
Detector Phase		6	2		8	8	
Switch Phase							
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)		23.5	24.5		23.1	23.1	9.5
Total Split (s)		24.5	46.0		40.0	40.0	9.5
Total Split (%)		20.4%	38.3%		33.3%	33.3%	8%
Maximum Green (s)		19.0	40.5		34.9	34.9	5.0
Yellow Time (s)		4.5	4.5		4.1	4.1	3.5
All-Red Time (s)		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.5	5.5		5.1	5.1	
Lead/Lag			Lag				Lead
Lead-Lag Optimize?			Yes				Yes
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)		3.0	3.0		2.0	2.0	3.0
Time Before Reduce (s)		0.6	0.6		1.0	1.0	0.0
Time To Reduce (s)		0.1	0.1		0.0	0.0	0.0
Recall Mode		C-Max	Ped		Max	Max	None
Walk Time (s)		1.0	7.0		1.0	1.0	
Flash Dont Walk (s)		1.0	12.0		1.0	1.0	
Pedestrian Calls (#/hr)		0	10		0	0	
Act Effct Green (s)		19.0	50.0		34.9	34.9	
Actuated g/C Ratio		0.16	0.42		0.29	0.29	
v/c Ratio		0.70	0.99		0.31	1.05	
Control Delay		55.4	46.9		35.3	61.3	
Queue Delay		0.0	0.0		0.0	0.0	
Total Delay		55.4	46.9		35.3	61.3	
LOS		E	D		D	E	
Approach Delay		55.4	46.9		58.5		
Approach LOS		E	D		E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 6:EBT, Start of Green, Master Intersection			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 53.1		Intersection LOS: D	
Intersection Capacity Utilization 91.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Palm Avenue & I-5 Southbound Ramp

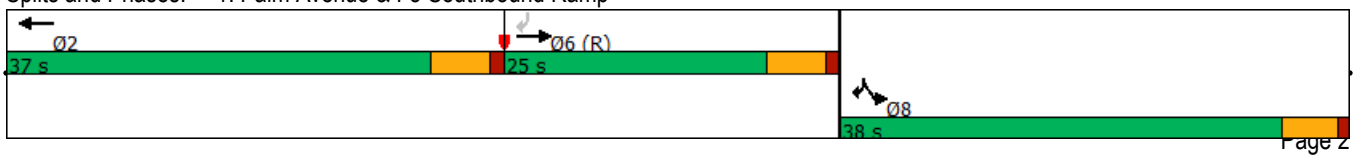


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱↱
Traffic Volume (vph)	0	526	1058	133	374	1737
Future Volume (vph)	0	526	1058	133	374	1737
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			100	440	440
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	*0.98	*0.98	0.95	1.00	*1.00
Ped Bike Factor			0.99			
Frt			0.983			0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3651	3550	0	1770	3167
Flt Permitted					0.950	
Satd. Flow (perm)	0	3651	3550	0	1770	3167
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			15			15
Link Speed (mph)		40	40		30	
Link Distance (ft)		952	701		860	
Travel Time (s)		16.2	11.9		19.5	
Confl. Peds. (#/hr)				29		
Confl. Bikes (#/hr)				2		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	537	1080	136	382	1772
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	537	1216	0	382	1772
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Type		NA	NA		Prot	custom
Protected Phases		6	2		8	8
Permitted Phases						6
Detector Phase		6	2		8	8
Switch Phase						
Minimum Initial (s)		5.0	5.0		5.0	5.0
Minimum Split (s)		23.5	24.5		23.1	23.1
Total Split (s)		25.0	37.0		38.0	38.0
Total Split (%)		25.0%	37.0%		38.0%	38.0%
Maximum Green (s)		19.5	31.5		32.9	32.9
Yellow Time (s)		4.5	4.5		4.1	4.1
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.5	5.5		5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Minimum Gap (s)		3.0	3.0		2.0	2.0
Time Before Reduce (s)		0.6	0.6		1.0	1.0
Time To Reduce (s)		0.1	0.1		0.0	0.0
Recall Mode		C-Max	Ped		Max	Max
Walk Time (s)		1.0	7.0		1.0	1.0
Flash Dont Walk (s)		1.0	12.0		1.0	1.0
Pedestrian Calls (#/hr)		0	10		0	0
Act Effct Green (s)		19.5	31.5		32.9	57.9
Actuated g/C Ratio		0.20	0.32		0.33	0.58
v/c Ratio		0.76	1.08		0.66	0.96
Control Delay		45.7	78.9		35.1	34.7
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		45.7	78.9		35.1	34.7
LOS		D	E		D	C
Approach Delay		45.7	78.9		34.8	
Approach LOS		D	E		C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 6:EBT, Start of Green, Master Intersection			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 50.0		Intersection LOS: D	
Intersection Capacity Utilization 103.4%		ICU Level of Service G	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 1: Palm Avenue & I-5 Southbound Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	541	0	0	473	519	844	2	136	0	0	0
Future Volume (veh/h)	0	541	0	0	473	519	844	2	136	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	608	0	0	531	583	1092	0	0			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	1422	0	0	711	605	1514	795	0			
Arrive On Green	0.00	0.13	0.00	0.00	0.40	0.40	0.42	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	1870	1513	3563	1870	0			
Grp Volume(v), veh/h	0	608	0	0	531	583	1092	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1513	1781	1870	0			
Q Serve(g_s), s	0.0	9.4	0.0	0.0	15.3	22.6	15.3	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	9.4	0.0	0.0	15.3	22.6	15.3	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1422	0	0	711	605	1514	795	0			
V/C Ratio(X)	0.00	0.43	0.00	0.00	0.75	0.96	0.72	0.00	0.00			
Avail Cap(c_a), veh/h	0	1422	0	0	711	605	1609	845	0			
HCM Platoon Ratio	1.00	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.78	0.00	0.00	0.85	0.85	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	19.7	0.0	0.0	15.4	17.6	14.3	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	6.0	25.9	3.0	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	4.3	0.0	0.0	6.2	10.6	5.9	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	20.5	0.0	0.0	21.4	43.4	17.3	0.0	0.0			
LnGrp LOS	A	C	A	A	C	D	B	A	A			
Approach Vol, veh/h		608			1114			1092				
Approach Delay, s/veh		20.5			33.0			17.3				
Approach LOS		C			C			B				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		29.4				29.4		30.6				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		22.4				22.4		27.1				
Max Q Clear Time (g_c+I1), s		11.4				24.6		17.3				
Green Ext Time (p_c), s		7.0				0.0		8.2				

Intersection Summary		
HCM 6th Ctrl Delay		24.2
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	920	0	0	632	273	598	1	81	0	0	0
Future Volume (veh/h)	0	920	0	0	632	273	598	1	81	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	989	0	0	680	294	725	0	0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	2	0	0	2	2	2	2	2			
Cap, veh/h	0	2077	0	0	1386	599	1106	581	0			
Arrive On Green	0.00	0.19	0.00	0.00	0.58	0.58	0.31	0.00	0.00			
Sat Flow, veh/h	0	3741	0	0	2465	1025	3563	1870	0			
Grp Volume(v), veh/h	0	989	0	0	509	465	725	0	0			
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1777	1620	1781	1870	0			
Q Serve(g_s), s	0.0	24.7	0.0	0.0	16.7	16.7	17.6	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	24.7	0.0	0.0	16.7	16.7	17.6	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		0.63	1.00		0.00			
Lane Grp Cap(c), veh/h	0	2077	0	0	1039	947	1106	581	0			
V/C Ratio(X)	0.00	0.48	0.00	0.00	0.49	0.49	0.66	0.00	0.00			
Avail Cap(c_a), veh/h	0	2077	0	0	1039	947	1457	765	0			
HCM Platoon Ratio	1.00	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.63	0.00	0.00	0.83	0.83	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	26.7	0.0	0.0	12.1	12.1	29.8	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	1.4	1.5	3.0	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	11.8	0.0	0.0	6.3	5.7	7.9	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	27.2	0.0	0.0	13.5	13.6	32.9	0.0	0.0			
LnGrp LOS	A	C	A	A	B	B	C	A	A			
Approach Vol, veh/h		989			974			725				
Approach Delay, s/veh		27.2			13.5			32.9				
Approach LOS		C			B			C				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		63.9				63.9		36.1				
Change Period (Y+Rc), s		5.4				5.4		5.1				
Max Green Setting (Gmax), s		48.6				48.6		40.9				
Max Q Clear Time (g_c+I1), s		26.7				18.7		19.6				
Green Ext Time (p_c), s		17.3				21.6		11.4				

Intersection Summary												
HCM 6th Ctrl Delay			23.8									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

3: Hollister Street & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	4.2	3.7	0.3	0.3	3.4	0.3	0.3
Total Del/Veh (s)	54.2	53.7	36.0	74.4	9.5	7.4	65.1	32.8	24.8	58.4	34.2	17.5

3: Hollister Street & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	30.7

3: Hollister Street & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0	3.3	0.4	0.2	2.7	0.5	0.5
Total Del/Veh (s)	149.5	151.7	160.0	66.8	9.9	9.8	43.9	38.8	36.4	60.8	30.2	20.8

3: Hollister Street & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	78.6

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	1.5	0.7	5.5	4.7	7.6	0.2	0.1	0.1	0.2	0.1	0.2
Total Del/Veh(s)	113.4	37.0	29.1	126.6	131.6	144.6	61.2	67.7	25.6	67.0	44.1	82.3

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	2.5
Total Del/Veh (s)	86.4

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	6.7	3.2	5.4	3.4	0.2	0.4	0.2	0.2	0.2	0.1	0.1	0.1
Total Del/Veh(s)	116.3	36.6	32.2	78.1	34.6	24.1	35.7	28.1	25.5	65.3	54.0	17.0

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	2.1
Total Del/Veh (s)	42.1

Intersection: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	T	TR	L	R	R
Maximum Queue (ft)	230	184	515	482	365	674	622
Average Queue (ft)	187	160	376	380	381	574	559
95th Queue (ft)	223	195	547	523	346	703	665
Link Distance (ft)	900	900	647	647		812	812
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					440		
Storage Blk Time (%)						44	
Queuing Penalty (veh)						69	

Intersection: 2: I-5 Northbound Off-Ramp & Palm Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	TR	L	LTR
Maximum Queue (ft)	242	228	472	485	320	375
Average Queue (ft)	207	197	230	298	233	278
95th Queue (ft)	254	232	461	535	394	378
Link Distance (ft)	647	647	623	623		765
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					515	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Hollister Street & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	69	159	164	32	61	76	129	140	73	94
Average Queue (ft)	47	125	122	24	44	52	52	78	37	59
95th Queue (ft)	70	228	223	43	82	80	122	148	99	102
Link Distance (ft)		623	623		39	39		1088		1206
Upstream Blk Time (%)				13	40	40				
Queuing Penalty (veh)				0	183	183				
Storage Bay Dist (ft)	125			35			75		80	
Storage Blk Time (%)		19		13	41			22	0	3
Queuing Penalty (veh)		17		51	17			18	1	1

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	139	138	80	493	493	93	95	510
Average Queue (ft)	57	105	107	19	400	447	54	60	274
95th Queue (ft)	104	157	157	70	502	516	97	97	488
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		20	19		15	17			
Queuing Penalty (veh)		53	51		0	0			
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	26	39			81				
Queuing Penalty (veh)	59	25			8				

Intersection: 12: Palm Avenue & Rail xing

Movement	EB	EB	WB	WB	SB
Directions Served	T	T	T	T	T
Maximum Queue (ft)	56	72	180	169	73
Average Queue (ft)	45	54	154	145	41
95th Queue (ft)	62	71	187	166	73
Link Distance (ft)	39	39	121	121	279
Upstream Blk Time (%)	14	23	46	56	
Queuing Penalty (veh)	39	62	214	259	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 1309

Intersection: 1: Palm Avenue & I-5 Southbound Ramp

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	T	TR	L	R	R
Maximum Queue (ft)	206	187	615	548	464	520	515
Average Queue (ft)	187	141	406	402	243	338	320
95th Queue (ft)	230	205	673	642	414	538	507
Link Distance (ft)	900	900	647	647		812	812
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					440		
Storage Blk Time (%)						4	
Queuing Penalty (veh)						16	

Intersection: 2: I-5 Northbound Off-Ramp & Palm Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	TR	L	LTR
Maximum Queue (ft)	118	118	208	258	311	376
Average Queue (ft)	107	90	127	152	256	309
95th Queue (ft)	137	127	205	240	342	411
Link Distance (ft)	647	647	623	623		765
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					515	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Hollister Street & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	180	376	459	31	60	65	119	159	120	203
Average Queue (ft)	114	213	259	20	47	57	85	85	86	153
95th Queue (ft)	208	365	447	39	62	64	124	151	129	222
Link Distance (ft)		623	623		39	39		1088		1206
Upstream Blk Time (%)				10	28	40				
Queuing Penalty (veh)				0	94	133				
Storage Bay Dist (ft)	125			35			75		80	
Storage Blk Time (%)	0	34		11	29		43	19	27	33
Queuing Penalty (veh)	0	41		30	8		44	17	116	21

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	159	139	29	201	185	70	52	78
Average Queue (ft)	74	148	135	9	122	117	51	42	56
95th Queue (ft)	85	166	140	28	230	203	72	59	86
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		38	53						
Queuing Penalty (veh)		154	214						
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	55	47			35				
Queuing Penalty (veh)	177	87			3				

Intersection: 12: Palm Avenue & Rail xing

Movement	EB	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	55	55	137	139	27	27
Average Queue (ft)	52	53	97	106	15	10
95th Queue (ft)	56	56	169	150	25	27
Link Distance (ft)	39	39	121	121	143	279
Upstream Blk Time (%)	59	60	25	15		
Queuing Penalty (veh)	242	243	86	51		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 1776

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Appendix I - Synchro Worksheets With Improvements

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.5	0.9	2.3	2.7	0.2	0.4	0.2	0.1	0.1	0.1	0.2	0.2
Total Del/Veh (s)	42.0	38.3	31.6	57.3	47.7	52.8	59.2	24.1	19.7	37.6	54.8	69.2

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	47.3

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	174	160	80	345	436	136	139	354
Average Queue (ft)	49	119	120	14	214	257	54	40	142
95th Queue (ft)	75	184	166	50	343	400	108	96	293
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		24	25						
Queuing Penalty (veh)		59	63						
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	27	43		0	54				
Queuing Penalty (veh)	56	28		2	5				

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.5	0.6	2.6	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1
Total Del/Veh (s)	41.5	34.5	28.1	55.8	33.6	24.3	31.9	40.2	14.5	33.1	29.3	23.4

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	33.4

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	162	157	80	337	272	114	76	162
Average Queue (ft)	70	135	133	14	133	130	48	30	70
95th Queue (ft)	77	169	156	49	243	236	89	65	136
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		39	39						
Queuing Penalty (veh)		164	165						
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	46	47		0	42				
Queuing Penalty (veh)	137	88		0	3				

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.8	1.7	0.6	28.0	20.0	18.1	0.2	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	45.0	36.4	22.8	152.5	98.1	77.6	64.7	53.7	19.2	42.9	43.0	162.3

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	9.5
Total Del/Veh (s)	68.2

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	161	142	79	530	512	138	99	711
Average Queue (ft)	53	116	118	8	324	350	66	46	274
95th Queue (ft)	78	180	177	43	578	573	121	87	605
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		25	28		22	29			
Queuing Penalty (veh)		68	76		0	0			
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	22	37		0	58				
Queuing Penalty (veh)	50	24		0	6				

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	6.7	3.2	5.4	3.4	0.2	0.4	0.2	0.2	0.2	0.1	0.1	0.1
Total Del/Veh (s)	47.3	36.6	32.2	48.1	34.6	17.1	35.7	28.1	17.5	35.6	54.0	17.0

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	2.1
Total Del/Veh (s)	36.2

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	167	167	80	400	457	160	95	162
Average Queue (ft)	72	144	140	15	142	133	58	36	59
95th Queue (ft)	79	164	154	60	297	304	110	78	117
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		53	45						
Queuing Penalty (veh)		214	185						
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	67	38		1	40				
Queuing Penalty (veh)	215	71		1	4				

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Appendix J - Most Intense & Most Impactful Synchro Worksheets

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	1.5	0.7	5.5	4.7	7.6	0.2	0.1	0.1	0.2	0.1	0.2
Total Del/Veh(s)	118.7	37.0	29.1	126.6	131.6	144.6	61.2	67.7	25.6	67.0	44.1	82.3

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	2.5
Total Del/Veh (s)	90.3

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	6.7	3.2	5.4	3.4	0.2	0.4	0.2	0.2	0.2	0.1	0.1	0.1
Total Del/Veh(s)	122.6	36.6	32.2	78.1	34.6	24.1	35.7	28.1	25.5	65.3	54.0	17.0

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	2.1
Total Del/Veh (s)	46.2

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	139	138	80	493	493	93	95	510
Average Queue (ft)	57	105	107	19	400	447	54	60	274
95th Queue (ft)	101	157	157	70	502	516	97	97	488
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		20	19		15	17			
Queuing Penalty (veh)		53	51		0	0			
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	26	39			81				
Queuing Penalty (veh)	59	25			8				

Intersection: 12: Palm Avenue & Rail xing

Movement	EB	EB	WB	WB	SB
Directions Served	T	T	T	T	T
Maximum Queue (ft)	56	72	180	169	73
Average Queue (ft)	45	54	154	145	41
95th Queue (ft)	62	71	187	166	73
Link Distance (ft)	39	39	121	121	279
Upstream Blk Time (%)	14	23	46	56	
Queuing Penalty (veh)	39	62	214	259	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 1309

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	75	159	139	29	201	185	70	52	78
Average Queue (ft)	74	148	135	9	122	117	51	42	56
95th Queue (ft)	94	166	140	28	230	203	72	59	86
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		38	53						
Queuing Penalty (veh)		154	214						
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	55	47			35				
Queuing Penalty (veh)	177	87			3				

Intersection: 12: Palm Avenue & Rail xing

Movement	EB	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	55	55	137	139	27	27
Average Queue (ft)	52	53	97	106	15	10
95th Queue (ft)	56	56	169	150	25	27
Link Distance (ft)	39	39	121	121	143	279
Upstream Blk Time (%)	59	60	25	15		
Queuing Penalty (veh)	242	243	86	51		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 1776

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.8	1.7	0.6	28.0	20.0	18.1	0.2	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	48.2	36.4	22.8	152.5	98.1	77.6	64.7	53.7	19.2	42.9	43.0	162.3

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	9.5
Total Del/Veh (s)	71.4

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	6.9	3.2	5.4	3.4	0.2	0.4	0.2	0.2	0.2	0.1	0.1	0.1
Total Del/Veh (s)	51.3	36.6	32.2	48.1	34.6	17.1	35.7	28.1	17.5	35.6	54.0	17.0

4: Harris St/Project Drwy & Palm Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	2.1
Total Del/Veh (s)	39.1

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	77	161	142	79	530	512	138	99	711
Average Queue (ft)	63	116	118	8	324	350	66	46	274
95th Queue (ft)	82	180	177	43	578	573	121	87	605
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		25	28		22	29			
Queuing Penalty (veh)		68	76		0	0			
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	22	37		0	58				
Queuing Penalty (veh)	50	24		0	6				

Intersection: 4: Harris St/Project Drwy & Palm Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	85	167	167	80	400	457	160	95	162
Average Queue (ft)	82	144	140	15	142	133	58	36	59
95th Queue (ft)	85	164	154	60	297	304	110	78	117
Link Distance (ft)		121	121		478	478	281	924	924
Upstream Blk Time (%)		53	45						
Queuing Penalty (veh)		214	185						
Storage Bay Dist (ft)	50			55					
Storage Blk Time (%)	67	38		1	40				
Queuing Penalty (veh)	215	71		1	4				