TRAFFIC IMPACT ANALYSIS

For

9th and Palm Redevelopment

Prepared for

Sudberry Properties, Inc.
and
City of Imperial Beach

Second Draft: October 11, 2011

TRAFFIC PLANNING & ENGINEERING, MARKETING & PROJECT SUPPORT
CONSULTANTS TO INDUSTRY AND GOVERNMENT
4540 Kearny Villa Road, Suite 106
San Diego, CA 92123-1573
(858) 560-4911

TABLE OF CONTENTS

LIST OF FIGURES

Number **Page**

LIST OF TABLES

Number **Page**

APPENDICES

A. SANDAG Select Zone Assignment

B. Existing Conditions Traffic Counts

C. Existing Synchro Worksheets

D. SANDAG Trip Generation Rates

E. Project Synchro Worksheets
(Existing + Project, Near Term, Near Term with Project, Year 2030, Year 2030 + Project)

F. Synchro Comparison for u-turn at SR-75/Palm

1.0 EXECUTIVE SUMMARY

Urban Systems Associates, Inc. was retained to evaluate possible traffic impacts from the 9th and Palm Project. The proposed 9th and Palm Project is proposed as a commercial redevelopment of an existing site on the southwest corner of the intersection of 9th and Palm (SR-75) in the City of Imperial Beach. The project includes a variety of commercial retail types including a proposed market, specialty retail, food service, fast food with drive thru and a drug store. Evaluation of traffic impacts for the 9th and Palm Project was based on examination and comparison of six scenarios. These scenarios were existing, Existing with the Project, Near Term, Near Term with project, Year 2030, and Year 2030 with the Project. Utilizing traffic projections and computerized traffic models, along with available existing traffic counts, the Project was evaluated for each of these time-frames and scenarios. Evaluation of these conditions is important in order to determine potential Direct and Cumulative traffic impacts from the 9th and Palm Project.

Various impact thresholds were utilized in determining potential traffic impacts caused by the Project. Commonly accepted traffic impact thresholds were utilized in order to determine deficiencies in the roadway network. Specific constrained areas were determined to be SR-75 east of Florida Street. SR-75 is expected to operate near capacity in the future. Applying the impact thresholds adopted as a regional traffic standard, it was determined that the project would cause no direct or cumulative impacts.

2.0 INTRODUCTION

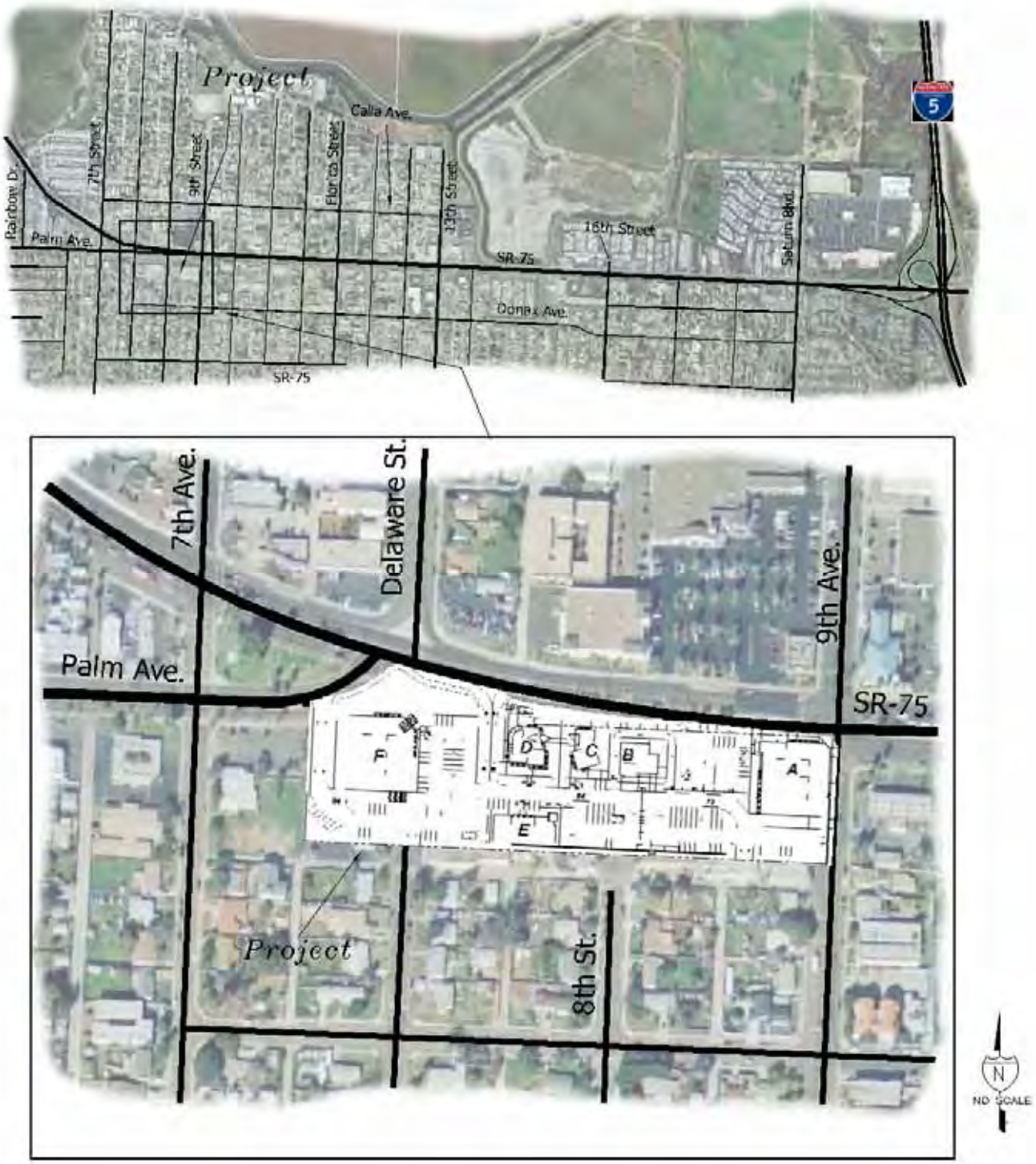
Urban Systems Associates, Inc. has been retained by Sudberry Properties, Inc. to evaluate possible traffic impacts for their proposed 9th and Palm Project. The plan area is located south of SR-75 and west of 9th Street in the City of Imperial Beach. **Figure 2-1** shows the Project location and its proximity to SR-75 and other existing roadways in the area.

The proposed 9th and Palm Project is a redevelopment of an existing commercial site within the City of Imperial Beach. The project includes a mix of commercial-retail uses including a market, specialty retail, food service, fast food with a drive thru and a drug store. Existing on the Project site currently are several commercial uses including a drive-thru bank, a market and a significant amount of specialty retail. The Project is designed to allow for the redevelopment of the site at a future date to be coordinated and planned in such a way as to be coordinated and complementary to the surrounding community.

In order to evaluate possible Project traffic impacts caused by the land uses included in the Project, Existing, Existing plus Project, Near Term, Near Term plus Project and Year 2030 Conditions With and Without the Project were evaluated. Estimates of Year 2030 traffic volumes were based on the San Diego Association of Governments (SANDAG) Series 11, Year 2030 Regional Traffic Model. The regional model was updated to reflect assumed land uses for the proposed Project.

FIGURE 2-1

Project Location



For this evaluation, the report is therefore divided into the following sections:

1.0 EXECUTIVE SUMMARY

2.0 INTRODUCTION

3.0 METHODOLOGY

4.0 EXISTING CONDITIONS

5.0 PROJECT TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT

6.0 IMPACT ANALYSIS

7.0 PROJECT ACCESS AND PARKING

8.0 STUDY RESULTS AND RECOMMENDED MITIGATION

9.0 REFERENCE

3.0 METHODOLOGY

This Section is intended to discuss the various applicable Guidelines/ Standards which establish the criteria and methodology by which the Project is evaluated. A combination of these documents, Agency direction, standard practice, and engineering judgment were utilized during preparation of this document.

3.1 REGIONAL GUIDELINES

Significance criteria and general guidelines used for this traffic analysis are based on the Santec/ ITE Guidelines for Traffic Impact Studies in the San Diego Region. The stated purpose of these Guidelines is to "assist local agencies throughout the San Diego Region in promoting consistency and uniformity in traffic impact studies". The idea behind these Guidelines was to "promote cooperation among the Cities, Caltrans, and the County of San Diego to create a region-wide standard for determining traffic impacts in environmental reports".

These Guidelines were adopted and included in the 2008 Congestion Management Program Update, November 2008 prepared by Sandag. These Guidelines can be found in Appendix D, "Traffic Impact Study TIS Guidelines" in the Congestion Management Program Update.

3.2 DIRECT VS. CUMULATIVE IMPACTS

Part of a traffic impact study involves a discussion of direct (project level) vs. cumulative impacts. A direct impact is an impact "that would result solely from the implementation of the project". A cumulative impact would be based on a list of "past, present, and probable future Projects" in the area and/or "summary of projects contained in an adopted general plan or related planning document". This means

that a cumulative impact would occur as a result of traffic growth both from the Project and from Approved/Pending projects in the area. Thus, a direct impact would occur when considering impacts in the Existing + Project condition and cumulative impacts when considering Near Term with Project and Year 2030 with Project conditions.

3.3 NEED AND CRITERIA FOR A STUDY

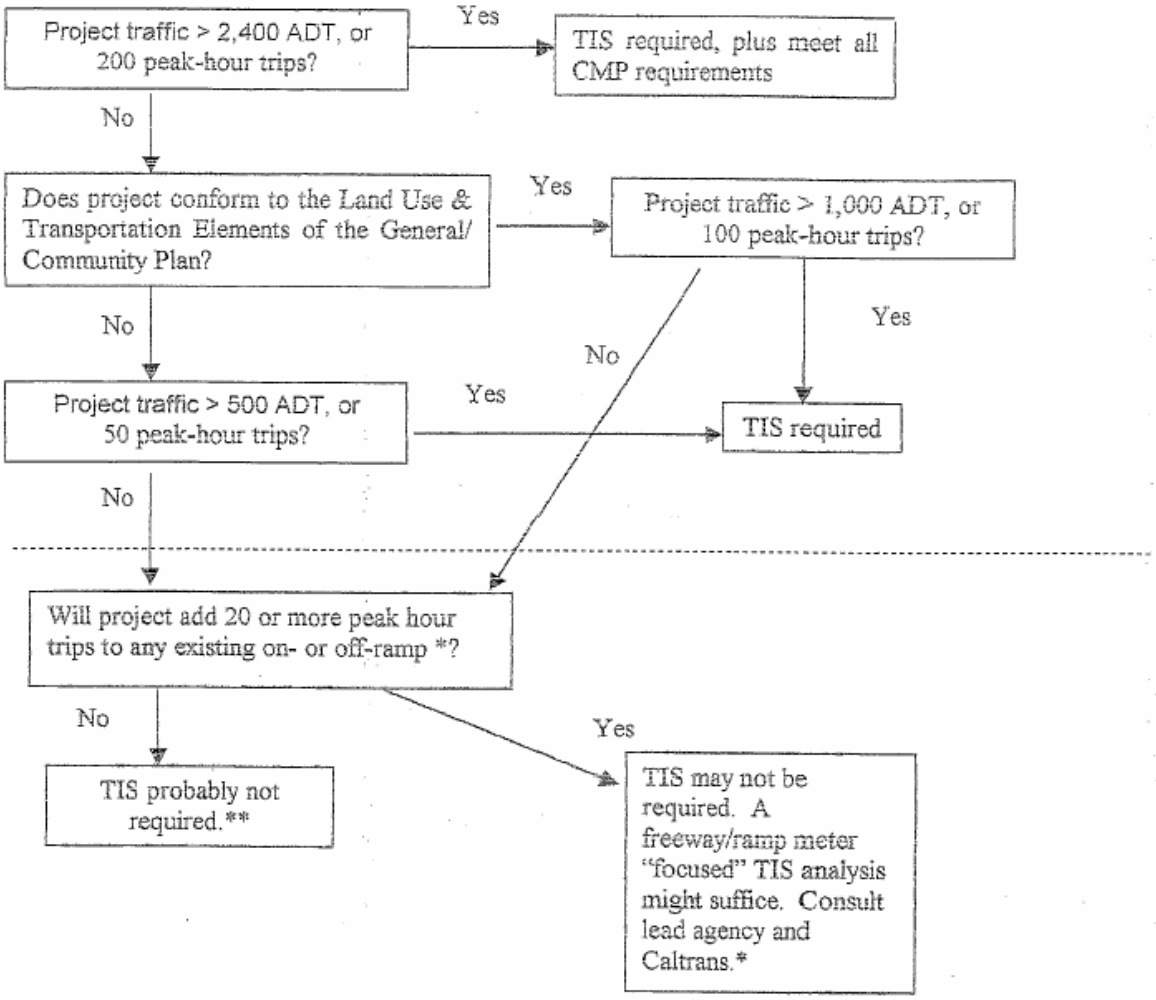
As far as thresholds for determining significant impacts, the Santec/ ITE Guidelines also include criteria. **Figure 3-1** shows these Guidelines for determining the need and extent of a traffic study. As can be seen, a full traffic study for this Project is required because more than 2,400 daily and 200 peak trips are generated. **Figure 3-2** shows the Santec/ITE criteria for determining a significant Project impact on road segments and at intersections.

3.4 TRIP DISTRIBUTION

Project trips were distributed based upon the SANDAG select zone assignment (**Appendix A**) and existing traffic flow on City roads in the Project vicinity. The SANDAG select zone is a computerized traffic forecast that has been plotted with project only trips from the project zone shown distributed onto the street network. The traffic model works by matching up productions with attractions. These productions and attractions exist in certain discrete locations called traffic analysis zones (TAZ) which correspond to existing or proposed locations throughout the City of Imperial Beach. The productions and

Figure 1

FLOW CHART FOR TRAFFIC IMPACT STUDY REQUIREMENTS



* Check with Caltrans for current ramp metering rates and ramp storage capacities. (See Attachment B – Ramp Metering Analysis)

** However, for health and safety reasons, and/or local and residential street issues, an "abbreviated" or "focused" TIS may still be requested by a local agency. (For example, this may include traffic backed up beyond an off-ramp's storage capacity, or may include diverted traffic through an existing neighborhood.)

5

Revised 2/28/00

FIGURE 3-1

Flow Chart for Study Requirements

Table 1

MEASURE OF SIGNIFICANT PROJECT TRAFFIC IMPACTS

Level of Service with Project*	Allowable Change due to Project Impact**					
	Freeways		Roadway Segments		Intersections	Ramp*** Metering
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay(min.)
D, E, & F (or ramp meter delays above 15 min.)	0.01	1	0.02	1	2	2

NOTES:

* All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using Table 2 or a similar LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped or not densely developed locations per jurisdiction definitions). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

** If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are determined to be significant. These impact changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigation (within the Traffic Impact Study [TIS] report) that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see above * note), or if the project adds a significant amount of peak-hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating significant impact changes.

*** See Attachment B for ramp metering analysis.

KEY: V/C = Volume to Capacity ratio
Speed = Speed measured in miles per hour
Delay = Average stopped delay per vehicle measured in seconds for intersections, or minutes for ramp meters
LOS = Level of Service

FIGURE 3-2

Measures of Significant Project Impacts

attractions are based on land use data supplied by various agencies for use in planning situations such as population growth and traffic forecasts for the San Diego Region. SANDAG collects this data and maintains a region wide traffic forecast model. In order to accurately evaluate the project, one select zone traffic model was obtained. When appropriate, adjustments to the Project only trip distribution are made based on engineering judgment and direction from regional guidelines. **Figure 3-3** shows the project trip distribution.

3.5 STREET LOS THRESHOLD

When analyzing street segments, the level of service (LOS) must be determined. LOS is a measure used to describe the conditions of traffic flow. LOS is expressed using letter designations from "A" to "F". LOS "A" represents the best case and LOS "F" represents the worst case. Generally LOS "A" through "C" represents free flowing traffic conditions with little or no delay. LOS "D" represent limited congestion and some delay, however, the duration of periods of delay are acceptable to most people. LOS "E" and "F" represent significant delays on local streets which are generally not accepted for urban design purposes. The LOS descriptions are from Chapter 9 of the Highway Capacity Manual (Transportation Research Board, 2000).

The City of San Diego has developed LOS threshold tables based on the different functional street classifications and their ability to carry traffic. Similar standards have been created by other jurisdictions including the County of San Diego. Many streets in the 9th and Palm Project area have been augmented in some way to increase capacity. Refer to Table 3-1 for the ADT thresholds for the various streets.

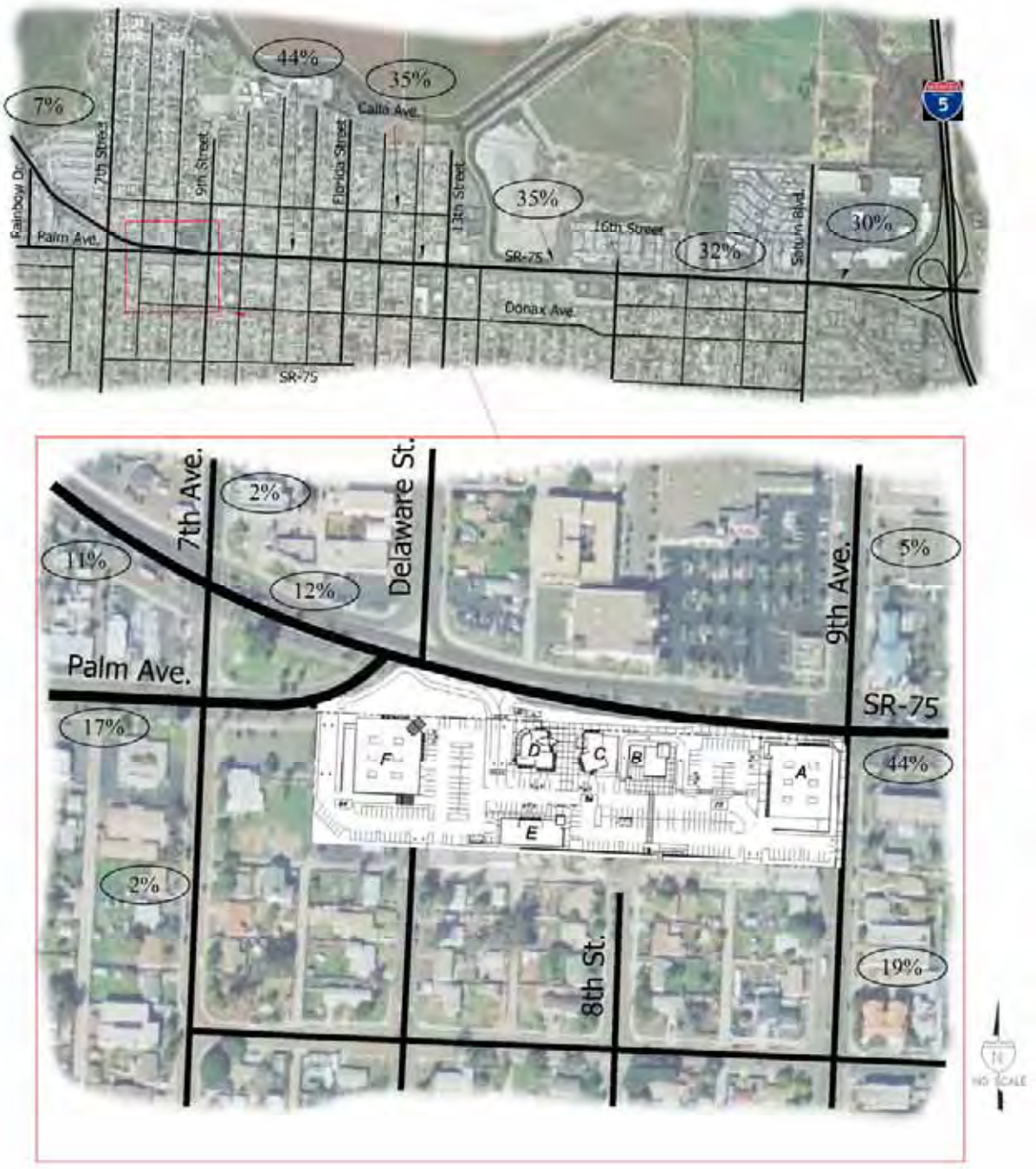


FIGURE 3-3

Project Trip Distribution

As can be seen in **Table 3-1**, street segments are broken up into their functional classification. This Classification is based on definitions found in A Policy on Geometric Design of Highways and Streets, 2001 from the American Association of State Highway and Transportation Officials and the City of San Diego, Street Design Manual.

The Function of the street was first determined (i.e. Major or Collector street). Criteria such as access control, type of median, and number of lanes were utilized to determine the functional classification as shown in **Table 3-1**. Capacity of a roadway is assumed to be the LOS "E/F" threshold.

TABLE 3-1

Measures of Significant Project Impacts

Table 2

ROADWAY CLASSIFICATIONS, LEVELS OF SERVICE (LOS) AND AVERAGE DAILY TRAFFIC (ADT)

STREET CLASSIFICATION	LANES	CROSS SECTIONS* (APPROX.)	LEVEL OF SERVICE W/ADT** A	B	C	D	E
Expressway	6 lanes	102-160/122-200	30,000	42,000	60,000	70,000	80,000
Prime Arterial	6 lanes	102-108/122-128	25,000	35,000	50,000	55,000	60,000
Major Arterial	6 lanes	102/122	20,000	28,000	40,000	45,000	50,000
Major Arterial	4 lanes	78-82/98-102	15,000	21,000	30,000	35,000	40,000
Secondary Arterial/ Collector	4 lanes	64-72/84-92	10,000	14,000	20,000	25,000	30,000
Collector (no center lane) (continuous left-turn lane)	4 lanes 2 lanes	64/84 50/70	5,000	7,000	10,000	13,000	15,000
Collector (no fronting property)	2 lanes	40/60	4,000	5,500	7,500	9,000	10,000
Collector (commercial-industrial fronting)	2 lanes	50/70	2,500	3,500	5,000	6,500	8,000
Collector (multi-family)	2 lanes	40/60	2,500	3,500	5,000	6,500	8,000
Sub-Collector (single-family)	2 lanes	36/56	---	---	2,200	---	---

LEGEND:

* Curb to curb width (feet)/right of way width (feet): based upon the City of San Diego Street Design Manual and other jurisdictions within the San Diego region.

** Approximate recommended ADT based upon the City of San Diego Street Design Manual.

NOTES:

1. The volumes and the average daily level of service listed above are only intended as a general planning guideline.
2. Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

3.6 INTERSECTION LOS PROCEDURES

The Regional Congestion Management Program (CMP) Guidelines, as adopted by SANDAG, and Caltrans Guidelines determine the procedures to be used for intersection peak hour analysis. To determine an intersection peak hour LOS, the guidelines require use of the most recent procedure from Chapters 16 and 17 of the Highway Capacity Manual (Transportation Research Board, 2000). The procedure in Chapters 16 and 17 which is used to analyze signalized intersections is the "operational method". This method determines LOS based on total vehicle delay expressed in seconds. A computer program referred to as Synchro is used to complete the analysis. As discussed above, guidelines have established LOS "D" as the objective for intersections and street segments.

3.7 CMP ENHANCED CEQA REVIEW GUIDELINES

The Congestion Management Program (CMP) Regional Guidelines were developed by the San Diego Association of Governments (SANDAG) to provide a set of procedures for completing enhanced CEQA review for certain Projects. These Guidelines are referenced in the above sections and are discussed in a little more detail here. The CMP Guidelines stipulate that any development Project generating 2,400 or more average daily trips, or 200 or more peak hour trips must be evaluated in accordance with the requirements of the Regional CMP. The CMP analysis must include the traffic level of service (LOS) impacts on affected freeways and Regionally Significant Arterial (RSA) systems, which includes all designated CMP roadways. In order to conform to the region's CMP, the local jurisdiction must adopt and implement a land use analysis program to assess impacts of land use decisions on the regional transportation system.

A review of the trip generation from Section 4.0 compared to the CMP requirements is summarized below:

	9th and Palm	CMP Requirements
ADT	1,751	< 2400

As shown, 9th and Palm traffic volumes are below these thresholds. Therefore, no additional CMP analysis is required.

3.8 STUDY AREA

The study area for a Project is determined pursuant to Guidelines developed by SANDAG as discussed previously, along with consultation with City of Imperial Beach staff. Information that is used to identify likely Project impacts after the plan is built was determined utilizing a Select Zone Travel Forecast. The forecast provides a Project only distribution of traffic, which is then used for the initial assessment of the location and magnitude of project traffic impacts. This information was then reviewed by City of Imperial Beach staff and a consensus on a Project study area is identified. Once a study area is determined, street or road segments and intersections are identified for analysis. Generally, circulation element road intersections and other important intersections and street segments within the study area are evaluated.

For the 9th and Palm Project, a select zone travel forecast was prepared at SANDAG using the latest Series 11, 2030 traffic model which was updated to reflect the Project. **Appendix A** provides the actual select zone information that was used for this analysis. Also shown in **Appendix A** is the resulting Project

traffic distribution and the basis for a recommended study area. Based on this data and the process described above, the Project study area is shown on **Figure 3-4.**

3.9 TRAFFIC MODEL

As previously mentioned, the SANDAG (updated to reflect the Project) Regional Series 11, 2030 traffic model was used as the basis for this analysis. So-called "Full Forecast" volumes were used as the basis for Near Term and Year 2030 assessments. These volumes were compared to the Sandag traffic model posted online. The 2030 volumes were further compared to existing volumes to ensure model calibration. Where volumes were lower, they were adjusted upward to show a growth in traffic as time progresses. These Year 2030 volumes provide growth projection information which was used to factor existing volumes to provide Year 2030 with and without project AM/PM intersection volumes.

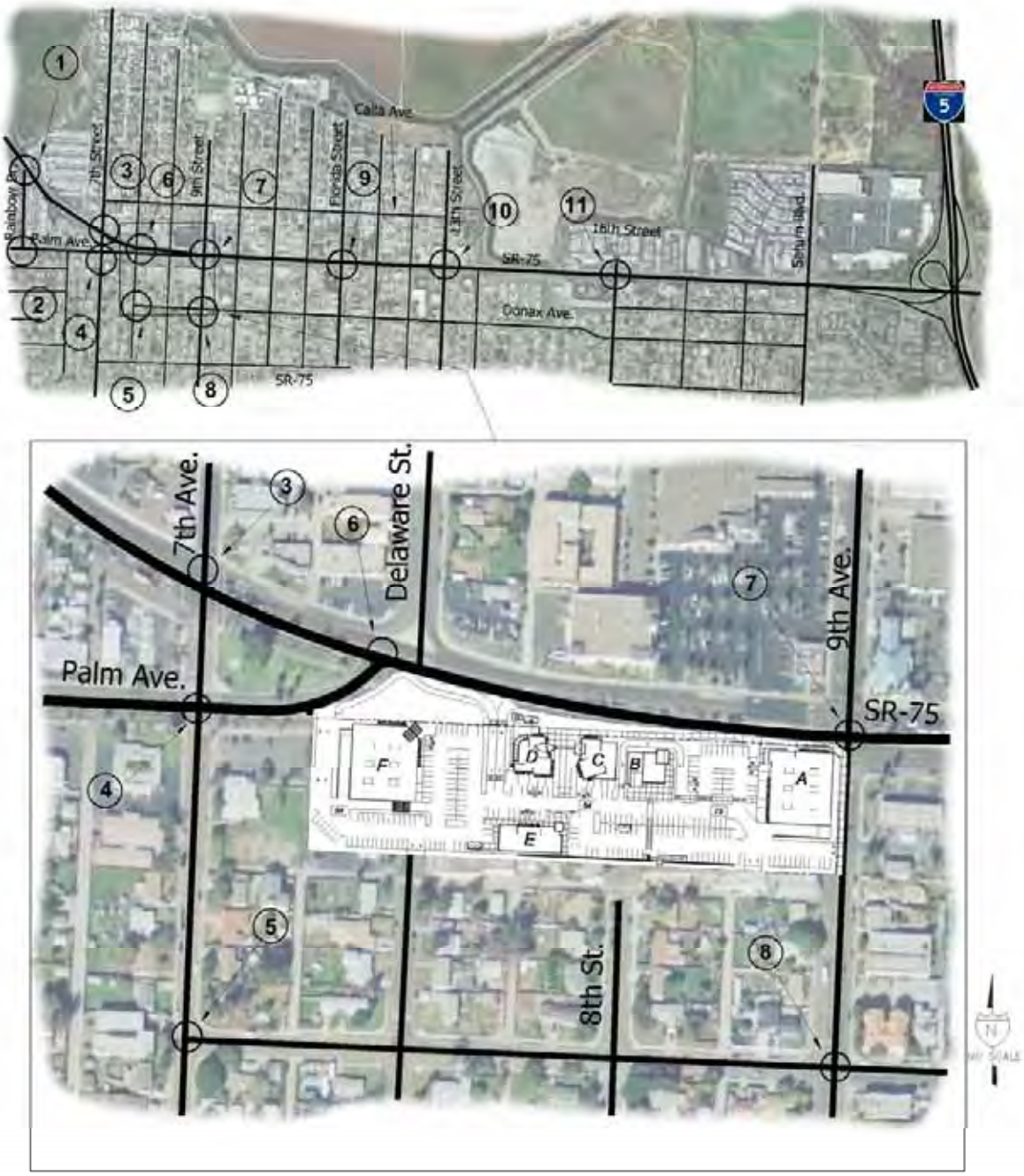


FIGURE 3-4

Project Study Area

4.0 EXISTING CONDITIONS

This section of the report evaluates existing average daily traffic (ADT) volumes on study area street segments (between intersections) and at intersections during AM and PM peak hours. Traffic volumes are based on recent daily roadway traffic counts and peak period manual traffic counts at intersections. A portion of the existing project site was temporarily closed at the time the existing counts were taken. This represents a temporary condition pending redevelopment of the project site. This traffic historically has been present in the project study area. In order to provide a conservative traffic analysis, additional traffic based on the existing development was added to the existing average daily traffic (ADT) volumes to account for this missing traffic. Existing Conditions information is provided to establish the context with which to understand/evaluate all future conditions.

4.1 STREET SEGMENTS

Figure 3-3 also shows street segments that were studied within the study area boundary and **Table 4-1** shows existing roadway segment classifications, capacity and levels of service. As shown in **Table 4-1**, all street segments operate at acceptable levels of service (LOS) in this condition.

Descriptions of the roadways and freeway segments within the study area and listed in **Table 4-1** are presented below.

SR-75 – SR-75 is a major road running east/west through the Project area and turning to the north as it approaches the coast. As SR-75 crosses Palm Avenue, it becomes Palm Avenue. However, for analysis purposes, we have labeled SR-75 consistently along its entire length to avoid confusion with intersections

TABLE 4-1

Existing Street Segment Level of Service

Road	Segment	Jurisdiction	Class.	Cap.	Volume	V/C	LOS
SR-75	North of Rainbow Drive	Imp. Beach	4-M	40,000	16,865	0.42	B
	Rainbow Drive/ 7th Street	Imp. Beach	4-M	40,000	14,974	0.37	A
	7th Street/ Palm Avenue	Imp. Beach	6-M	50,000	14,361	0.29	A
	9th Avenue/ Florida Street	Imp. Beach	6-M	50,000	31,316	0.63	C
	Florida Street/ 13th Street	Imp. Beach	6-M	50,000	36,373	0.73	C
Palm Avenue	Rainbow Drive/ 7th Street	Imp. Beach	4-M	40,000	12,234	0.31	A
9th Avenue	Donnax/ Project Boundary	Imp. Beach	4-C	30,000	6,797	0.23	A

Legend:

Cap.= Capacity 6-M = 6 lane Major

Class.= Classification 4-M=4 lane Major

LOS= Level of Service

V/C= Volume to Capacity Ratio

Notes:

Counts Conducted May 2011

Existing traffic adjusted to account for existing site to be demolished

and segments on Palm Avenue west of SR-75. SR-75 functions as a major road consisting of six lanes with widening at intersections.

Palm Avenue- Palm Avenue is a Major four lane road running East/West and connecting the City of Imperial Beach with SR-75 adjacent to the project. The existing configuration of the intersection of Palm/SR-75 is expected to be changed in the future with the project to operate more safely and efficiently.

Figure 4-1 shows existing average daily traffic volumes on street segments within the study area. These volumes were taken from recent traffic counts ordered for this TIA by Urban Systems.

Count Date: May 2011

FIGURE 4-1

Existing Street Segment Average Daily Traffic

4.2 INTERSECTIONS

Figure 4-2 shows the existing lane configurations at all eleven (11) study intersections.

Figure 4-3 shows existing AM and PM peak hour traffic volumes at the existing study area intersections. Intersection levels of service for the AM and PM peak hours were calculated using Highway Capacity Manual procedures as discussed in Section 3.0. **Table 4-2** summarizes the results of the intersection level of service evaluation for existing conditions. All intersections operate at an acceptable Level of Service.

Appendix B includes existing conditions traffic counts.

Appendix C includes the existing Synchro worksheets.

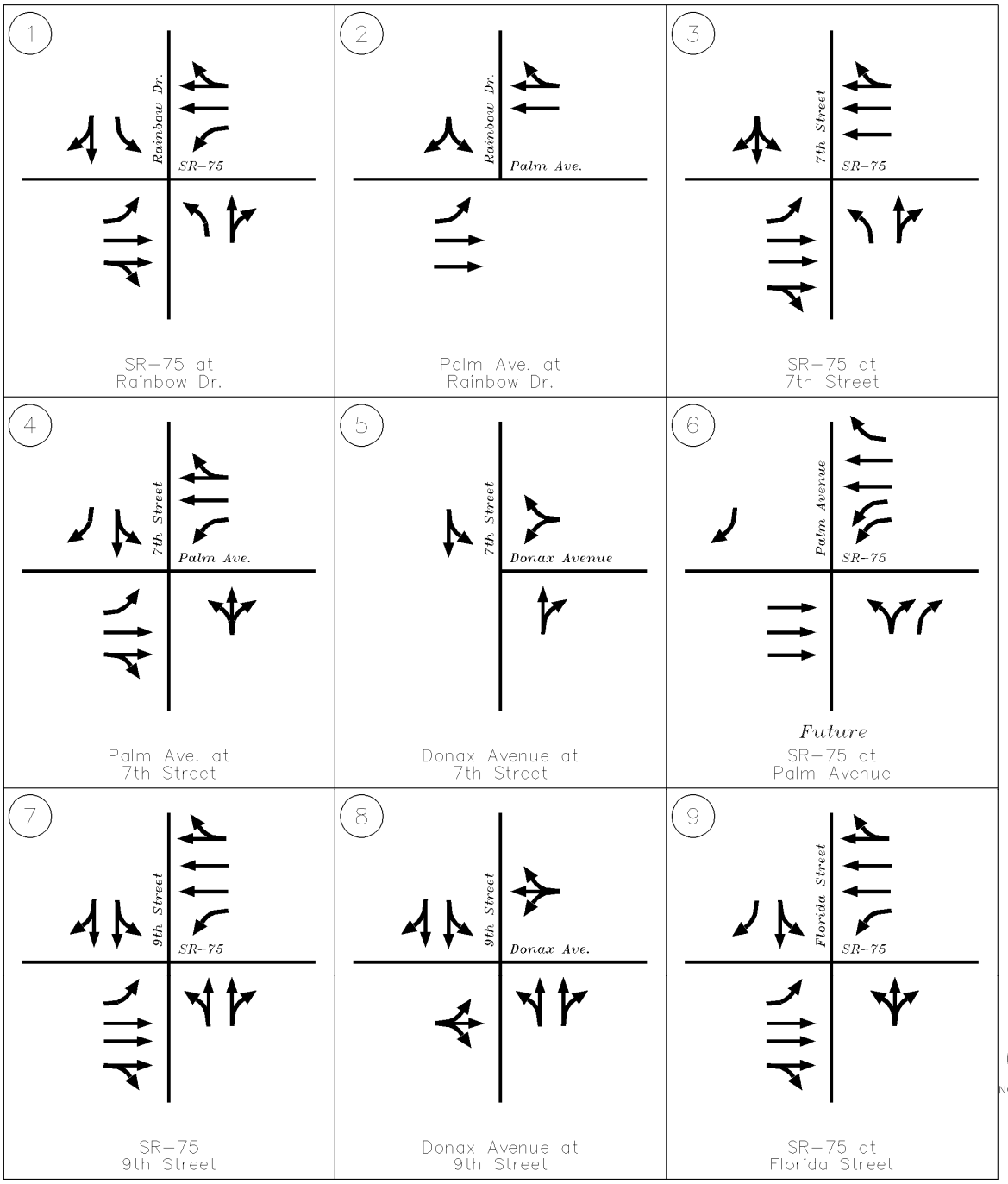


FIGURE 4-2

Existing Lane Configurations

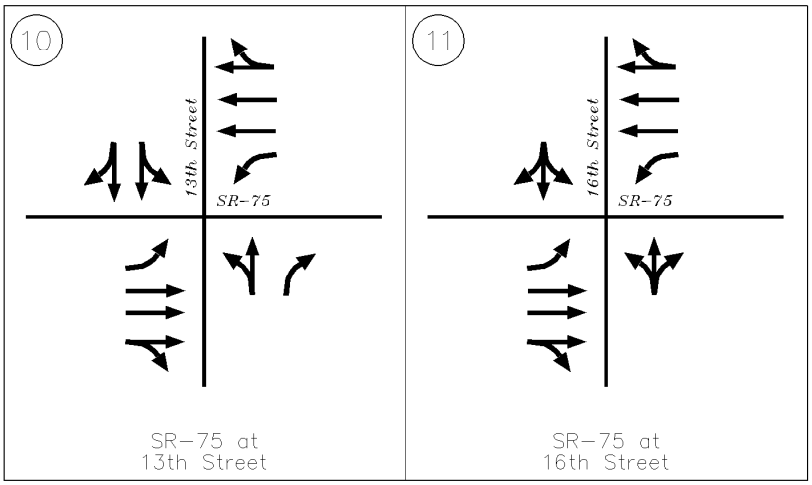


FIGURE 4-2

Existing Lane Configurations

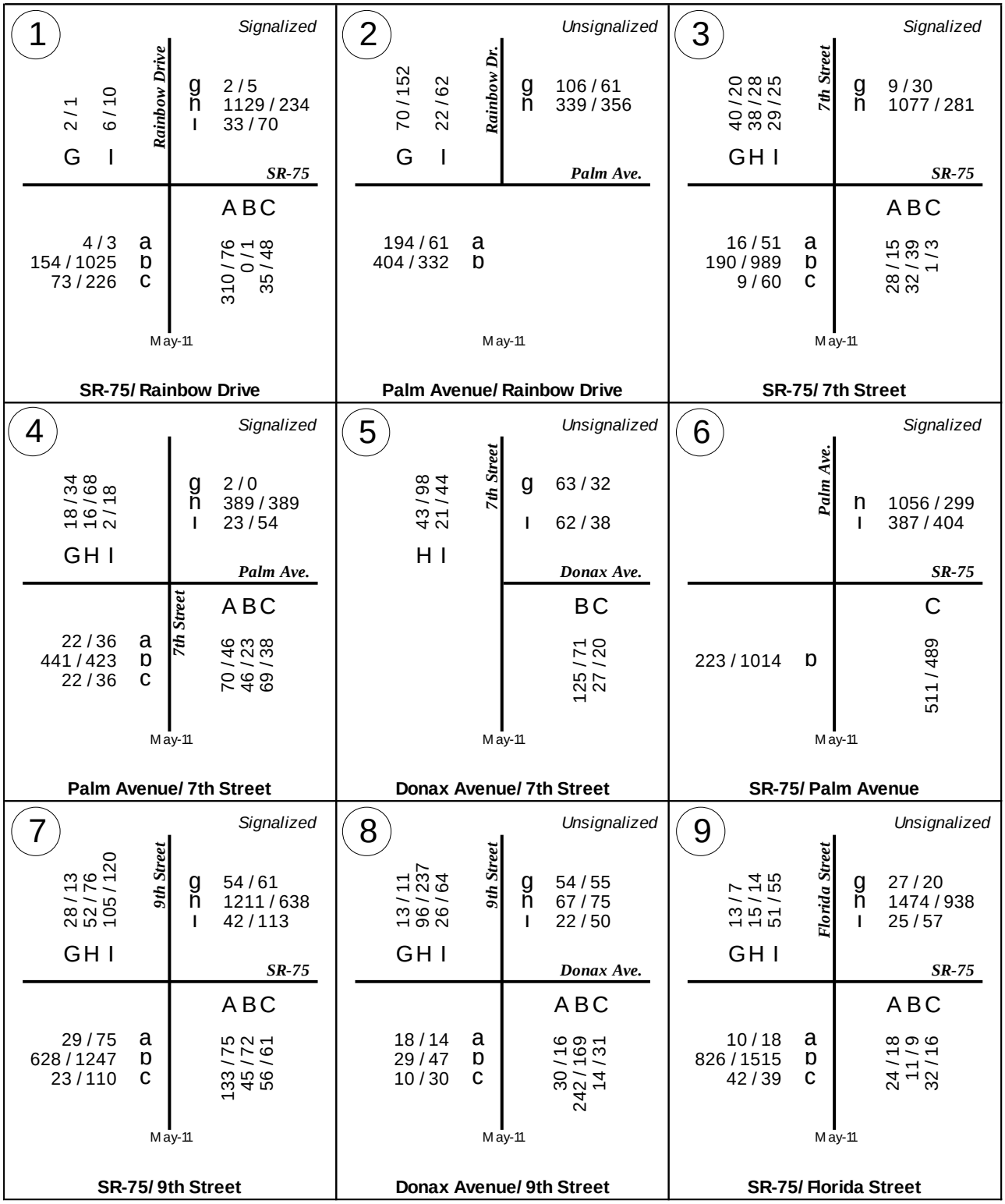


FIGURE 4-3

Existing AM/PM Peak Hour Intersection Volumes

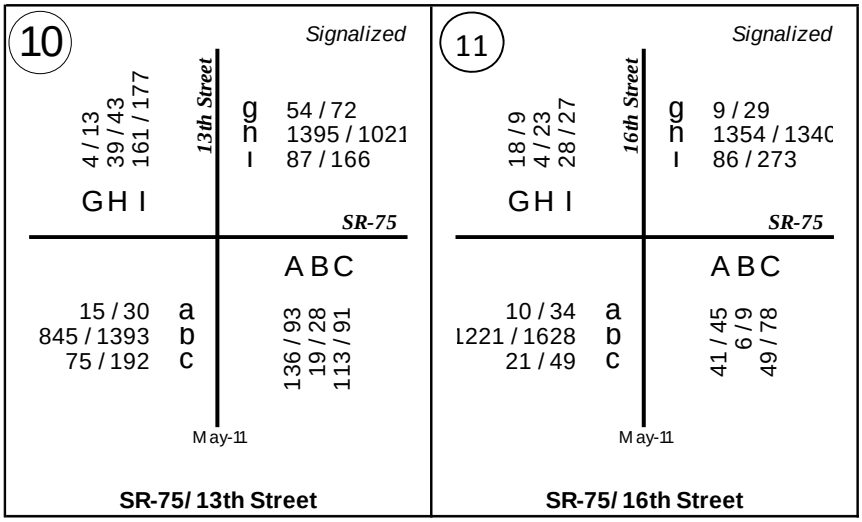


FIGURE 4-3

Existing AM/PM Peak Hour Intersection Volumes

TABLE 4-2

Existing Intersection Level of Service

Number	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	SR-75/ Rainbow Drive	Signalized	29.5	C	22.9	C
2	Palm Avenue/ Rainbow Drive	Unsignalized	15.9	C	15.7	C
3	SR-75/ 7th Street	Signalized	16.2	B	16.7	B
4	Palm Avenue/ 7th Street	Signalized	29.0	C	31.5	C
5	Donax Avenue/ 7th Street	Unsignalized	10.4	B	10.0	A
6	SR-75/ Palm Avenue	Signalized	20.6	C	16.1	B
7	SR-75/ 9th Street	Signalized	40.1	D	34.7	C
8	Donax Avenue/ 9th Street	Unsignalized	8.6	A	9.7	A
9	SR-75/ Florida Street	Signalized	10.7	B	17.7	B
10	SR-75/ 13th Street	Signalized	29.9	C	40.8	D
11	SR-75/ 16th Street	Signalized	13.3	B	31.2	C

Notes:

LOS = Level of Service

5.0 PROJECT TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT

This section of the report includes the 9th and Palm Project trip generation, distribution, and assignment to adjacent roadways and intersections.

5.1 TRIP GENERATION

Figure 5-1 shows the Project site plan as proposed. As mentioned previously, there are several types of uses contemplated for the Project Site. These include a market, specialty retail, food service, fast food with drive thru and a drug store. All have different trip generation rates according to the SANDAG Trip Generation Guide

Tables 5-1 through 5-4 show potential trip generation for the Project. SANDAG trip generation rates were used for the proposed land uses. These rates are based on statistics from various existing sites with the respective land uses contained within the Project. Total Driveway Trip Generation is the anticipated traffic load at project driveways and is used for site planning purposes.

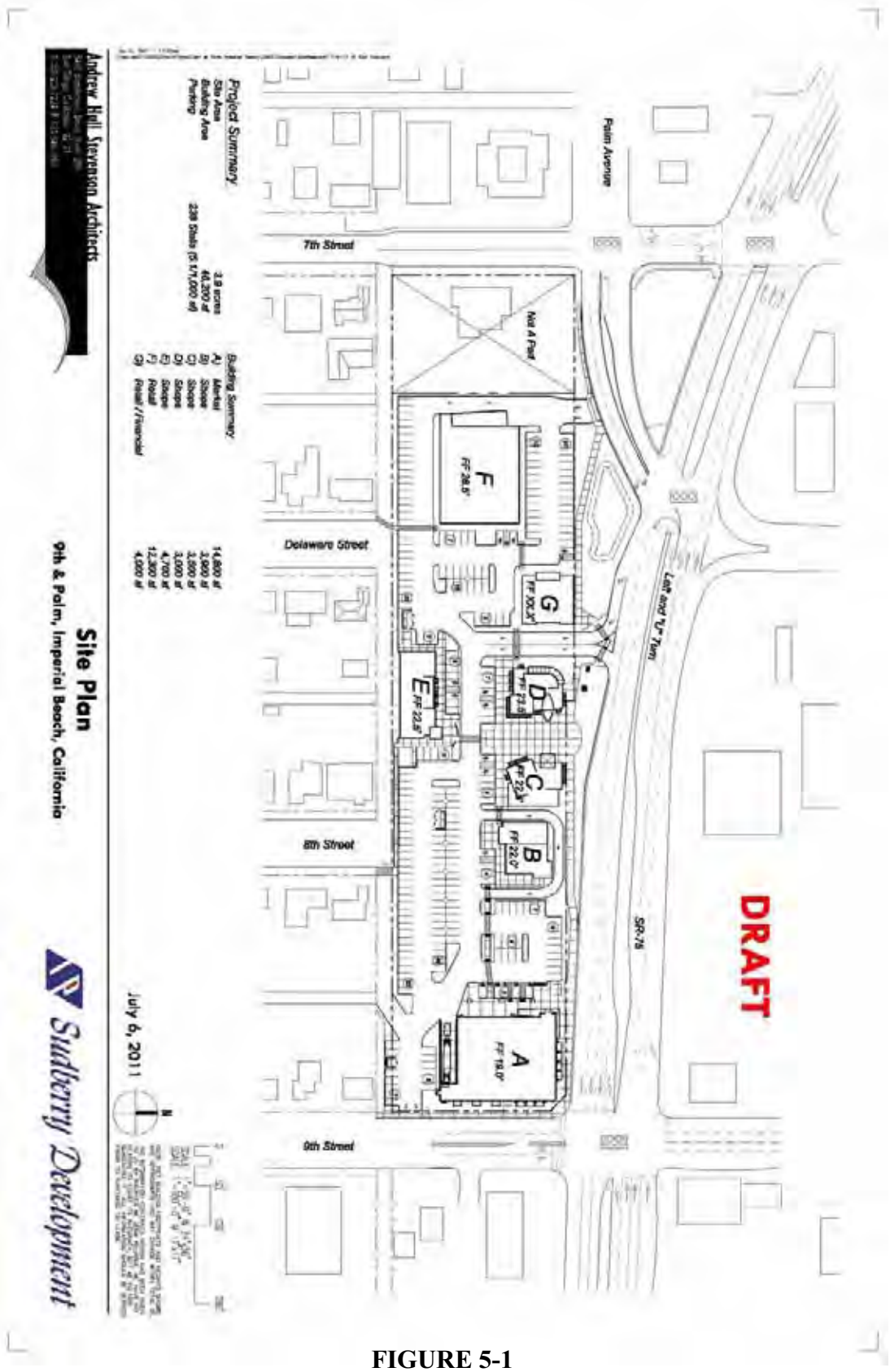


FIGURE 5-1

Project Site Plan

TABLE 5-1

Existing Site Driveway Trip Generation

Use	Intensity	Trip Rate	ADT	AM						PM					
				Peak %	Vol.	In %		Out%	In	Out	Peak %	Vol.	In %		Out%	In	Out
Bank (with drive thru)	3,935	200 /KSF	**787**	5%	**39**	60%	:	40%	**24**	**16**	10%	**79**	50%	:	50%	**39**	**39**
supermarket	6,181	150 /KSF	**927**	4%	**37**	70%	:	30%	**26**	**11**	10%	**93**	50%	:	50%	**46**	**46**
food service	3,629	160 /KSF	**581**	8%	**46**	50%	:	50%	**23**	**23**	8%	**46**	60%	:	40%	**28**	**19**
Specialty Retail	55,933	40 /KSF	**2,237**	3%	**67**	60%	:	40%	**40**	**27**	9%	**201**	50%	:	50%	**101**	**101**
Total Driveway Trip Generation			**4,532**		**190**				**113**	**77**		**419**				**214**	**205**

Note:
Rates taken from Sandag "Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region"

TABLE 5-2

Existing Site Cumulative Trip Generation

Use	Intensity	Trip Rate	Pass-by Reduct.	ADT	AM						PM	PM					
					Peak %	Vol.	In %	Out%	In	Out	Reduc.	Peak %	Vol.	In %	Out%	In	Out
Bank (with drive thru)	3,935	200 /KSF	23%	**606**	5%	**30**	60%	40%	**18**	**12**	25%	10%	**59**	50%	50%	**30**	**30**
supermarket	6,181	150 /KSF	15%	**788**	4%	**32**	70%	30%	**22**	**9**	40%	10%	**56**	50%	50%	**28**	**28**
food service	3,629	160 /KSF	12%	**511**	8%	**41**	50%	50%	**20**	**20**	20%	8%	**37**	60%	40%	**22**	**15**
Specialty Retail	55,933	40 /KSF	15%	**1,902**	3%	**57**	60%	40%	**34**	**23**	10%	9%	**181**	50%	50%	**91**	**91**
Total Cumulative Trip Generation				**3,807**		**160**			**95**	**65**			**333**			**170**	**163**

Note:
Rates taken from Sandag "Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region"

TABLE 5-3

Future Project Driveway Trip Generation

Use	Intensity	Trip Rate	ADT	AM						PM					
				Peak %	Vol.	In %		Out%	In	Out	Peak %	Vol.	In %		Out%	In	Out
Market	14,800	150 /KSF	**2,220**	4%	**89**	70%	:	30%	**62**	**27**	10%	**222**	50%	:	50%	**111**	**111**
Specialty Retail	2,600	40 /KSF	**104**	3%	**3**	60%	:	40%	**2**	**1**	9%	**9**	50%	:	50%	**5**	**5**
Food Service	10,800	160 /KSF	**1,728**	8%	**138**	50%	:	50%	**69**	**69**	8%	**138**	60%	:	40%	**83**	**55**
Fast Food w/ Drive-thru	1,700	650 /KSF	**1,105**	7%	**77**	50%	:	50%	**39**	**39**	7%	**77**	50%	:	50%	**39**	**39**
Discount Store	12,300	60 /KSF	**738**	4%	**30**	60%	:	40%	**18**	**12**	8%	**59**	50%	:	50%	**30**	**30**
Financial	4,000	150 /KSF	**600**	4%	**24**	70%	:	30%	**17**	**7**	8%	**48**	40%	:	60%	**19**	**29**
Total Driveway Trip Generation			**6,495**		**361**				**206**	**155**		**554**				**286**	**268**
Existing Driveway Trips			**4,532**		**190**				**113**	**77**		**419**				**214**	**205**
Net Driveway Trip Generation			**1,963**		**171**				**93**	**78**		**135**				**72**	**63**

Note:
Rates taken from Sandag "Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region"

TABLE 5-4

Future Project Cumulative Trip Generation

Use	Intensity	Trip Rate	Pass-by Reduct.	ADT	AM						PM Reduc.	PM					
					Peak %	Vol.	In %		Out%	In	Out		Peak %	Vol.	In %		Out%	In	Out
Market	14,800	150 /KSF	15%	**1,887**	4%	**75**	70%	:	30%	**53**	**23**	40%	10%	**133**	50%	:	50%	**67**	**67**
Specialty Retail	2,600	40 /KSF	15%	**88**	3%	**3**	60%	:	40%	**2**	**1**	10%	9%	**8**	50%	:	50%	**4**	**4**
Food Service	10,800	160 /KSF	12%	**1,521**	8%	**122**	50%	:	50%	**61**	**61**	20%	8%	**111**	60%	:	40%	**66**	**44**
Fast Food w/ Drive-thru	1,700	650 /KSF	12%	**972**	7%	**68**	50%	:	50%	**34**	**34**	40%	7%	**46**	50%	:	50%	**23**	**23**
Discount Store	12,300	60 /KSF	15%	**627**	4%	**25**	60%	:	40%	**15**	**10**	30%	8%	**41**	50%	:	50%	**21**	**21**
Financial	4,000	150 /KSF	23%	**462**	4%	**18**	70%	:	30%	**13**	**6**	25%	8%	**36**	40%	:	60%	**14**	**22**
Total Cumulative Trip Generation				**5,558**		**311**				**177**	**134**			**376**				**195**	**181**
Existing Cumulative Trips				**3,807**		**160**				**95**	**65**			**333**				**170**	**163**
Net Cumulative Trip Generation				**1,751**		**152**				**82**	**69**			**43**				**25**	**18**

Note:
Rates taken from Sandag "Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region"

Both Sandag and ITE recognize the need to distinguish between "driveway trips" and "cumulative trips" when conducting a traffic impact analysis. "Driveway trips" are defined as the total number of trips expected to be generated by a project site. In other words, if a traffic counter were laid on the driveway of a project, the total number of trips counted would equal "driveway trips". On the other hand, "pass-by trips" are intermediate stops on the way to or from a primary trip destination without any route diversion. In other words, "pass-by trips" are trips which occur on the street system without the project and "pass-by" the project site on their way to and from their primary destination. These trips are not new trips which are added by the project. These trips are deducted from "Driveway trips" in order to calculate "cumulative trips" which represent the total number of new trips expected to be added to the community as a result of the project. Please refer to **Appendix D** for more details.

Currently the Project site supports various commercial activities. Traffic from these uses were counted and subtracted from the commercial trip generation in this table. Thus, the table represents net new trips. That is, new trips created by the construction of the Project.

Cumulative trips were utilized for analyzing potential impacts to the community as a result of the Project unless otherwise noted.

Appendix D contains the SANDAG Trip Generation Rates.

5.2 PROJECT ONLY TRAFFIC DISTRIBUTION AND ASSIGNMENT

Figure 5-2 shows the expected Project traffic distribution and assignment to the road system expected to be in place in Year 2030 for the proposed Project. To determine the Project impacts, as discussed, an

updated Series 11 SANDAG Regional Traffic Model for the Year 2030 was used. As discussed previously, a "Select-Zone" forecast was used to determine trip distribution. This forecast is a computerized forecast tool wherein a zone representing the Project area is selected in the Series 11 model. **Figure 5-3** shows the Project only average daily traffic that was used for analysis in subsequent sections of this report. **Figures 5-4** shows the Project only peak hour volumes used for intersection analysis in subsequent sections of this report.

FIGURE 5-2

Project Trip Distribution

FIGURE 5-3

Project Average Daily Traffic

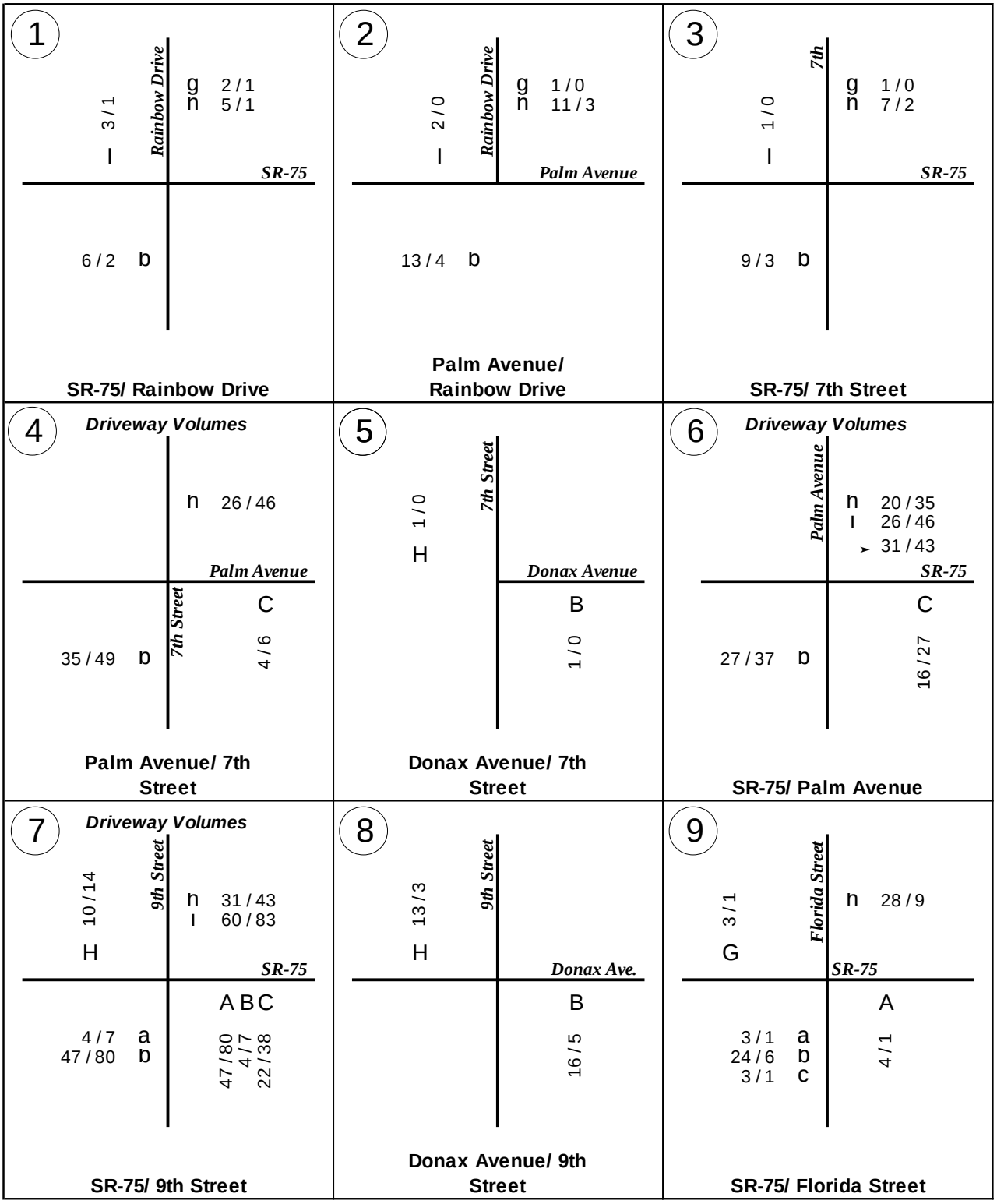


FIGURE 5-4

Project Only AM/PM Peak Hour Intersection Volumes

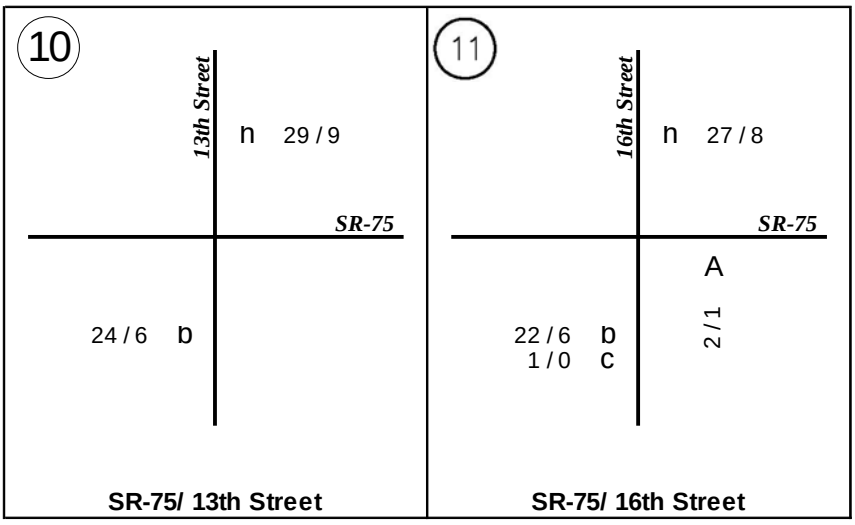


FIGURE 5-4

Project Only AM/PM Peak Hour Intersection Volumes

6.0 IMPACT ANALYSIS

This chapter discusses the analysis results for the project. As previously discussed, the project involves redevelopment of an existing site in order to create the 9th and Palm Project. Trip generation and project distribution/traffic information on this project was presented in Chapter 5.0. All conditions analyzed with the project assume reconfiguration of the intersection of SR-75/Palm Avenue as discussed in the access section.

6.1 DIRECT PROJECT IMPACT ANALYSIS

In order to determine potential direct impacts from the project, expected traffic from the project were added to existing traffic and impacts caused directly by the project were evaluated. Existing traffic conditions as evaluated in Chapter 4.0 of this report were compared to traffic conditions after project traffic was added. This comparison makes clear impacts caused as a sole result of traffic added by the project. These impacts are known as "direct impacts" and actual improvements would be necessary to mitigate these impacts rather than a contribution in the form of a "fair-share".

Figure 6-1 shows the existing plus project average daily traffic volumes. As discussed previously, for street segments, a significant Project traffic impact may occur if, at street segments with "E" or "F" levels of service, the volume to capacity (v/c) ratio is changed by more than 0.02 with the addition of traffic from the Project site. **Table 6-1** shows a comparison of existing traffic conditions with and without project traffic added. As shown in the table, there are no significant direct impacts to street segments identified.

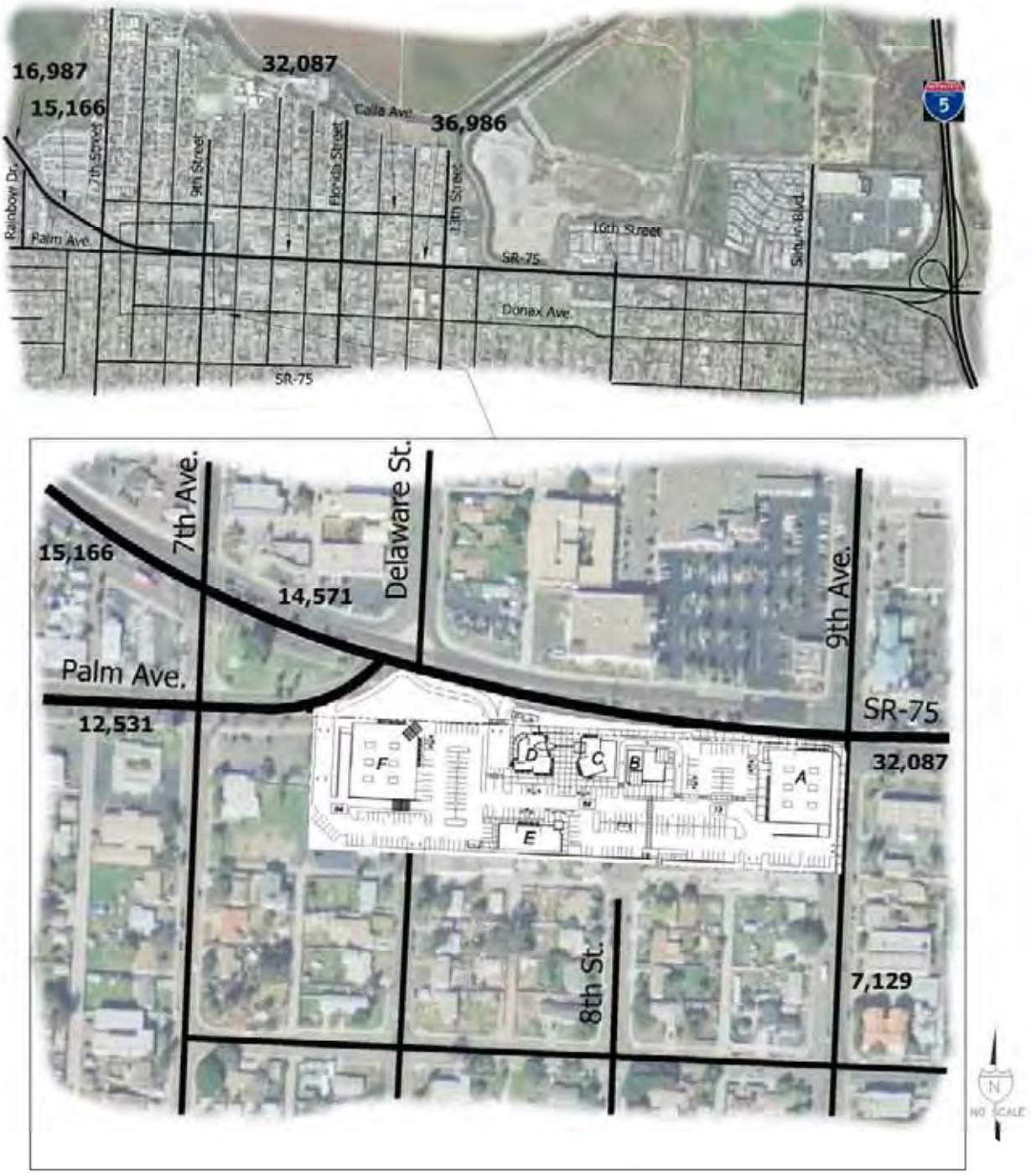


FIGURE 6-1

Existing + Project Average Daily Traffic Volumes

TABLE 6-1

Existing vs. Existing Plus Project Street Segment Comparison

Road	Segment	Class.	Existing			Existing + Project			ΔV/C	CMP Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
SR-75	North of Rainbow Drive	4-M	B	16,865	0.42	B	16,987	0.42	0.003	***NO***
	Rainbow Drive/ 7th Street	4-M	A	14,974	0.37	B	15,166	0.38	0.005	***NO***
	7th Street/ Palm Avenue	6-M	A	14,361	0.29	A	14,571	0.29	0.004	***NO***
	9th Avenue/ Florida Street	6-M	C	31,316	0.63	C	32,087	0.64	0.015	***NO***
	Florida Street/ 13th Street	6-M	C	36,373	0.73	C	36,986	0.74	0.012	***NO***
Palm Avenue	Rainbow Drive/ 7th Street	4-M	A	12,234	0.31	A	12,531	0.31	0.007	***NO***
9th Avenue	Donnax/ Project Boundary	4-C	A	6,797	0.23	A	7,129	0.24	0.011	***NO***

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

Also as discussed previously, for intersections, a significant project traffic impact may occur if, there is an unacceptable level of service i.e. "E" or "F" and second, the project adds a significant amount of traffic sufficient to change the average intersection delay by greater than 2 seconds. For this evaluation, project traffic for the AM and PM peaks was added to existing traffic and compared to existing conditions in order to identify direct project impacts at intersections. **Figure 6-2** shows the peak hour traffic volumes for existing conditions with project traffic added. **Table 6-2** shows the resulting comparison AM and PM peak levels of service.

Appendix E contains the project analysis worksheets.

6.2 CUMULATIVE PROJECT IMPACT ANALYSIS

In order to determine potential cumulative impacts from the project, projected traffic from this alternative was added to other project traffic in order to approximate "near term" conditions. Traffic from "other projects" in the study area were added to existing traffic. These "other projects" include the City of Imperial Beach Rezone (3,955 ADT), Bikeway Village (864 ADT) and Seacoast Inn Expansion (400 ADT). Project traffic was then added to the Near Term to determine Near Term with Project conditions. Additonally, project traffic was added to traffic model projections for Year 2030 and impacts caused as a result of community traffic growth as well as traffic from the project area were evaluated. Traffic projections, as discussed previously were based on a Series 11 traffic model received from Sandag. This traffic model was used to project growth in traffic volumes throughout the San Diego Region and is based on future land use plans provided by the various jurisdictions in the region. Project traffic was subtracted from Year 2030 traffic model projections to obtain a "Year 2030" or long term analysis. This comparison makes clear impacts caused as a result of

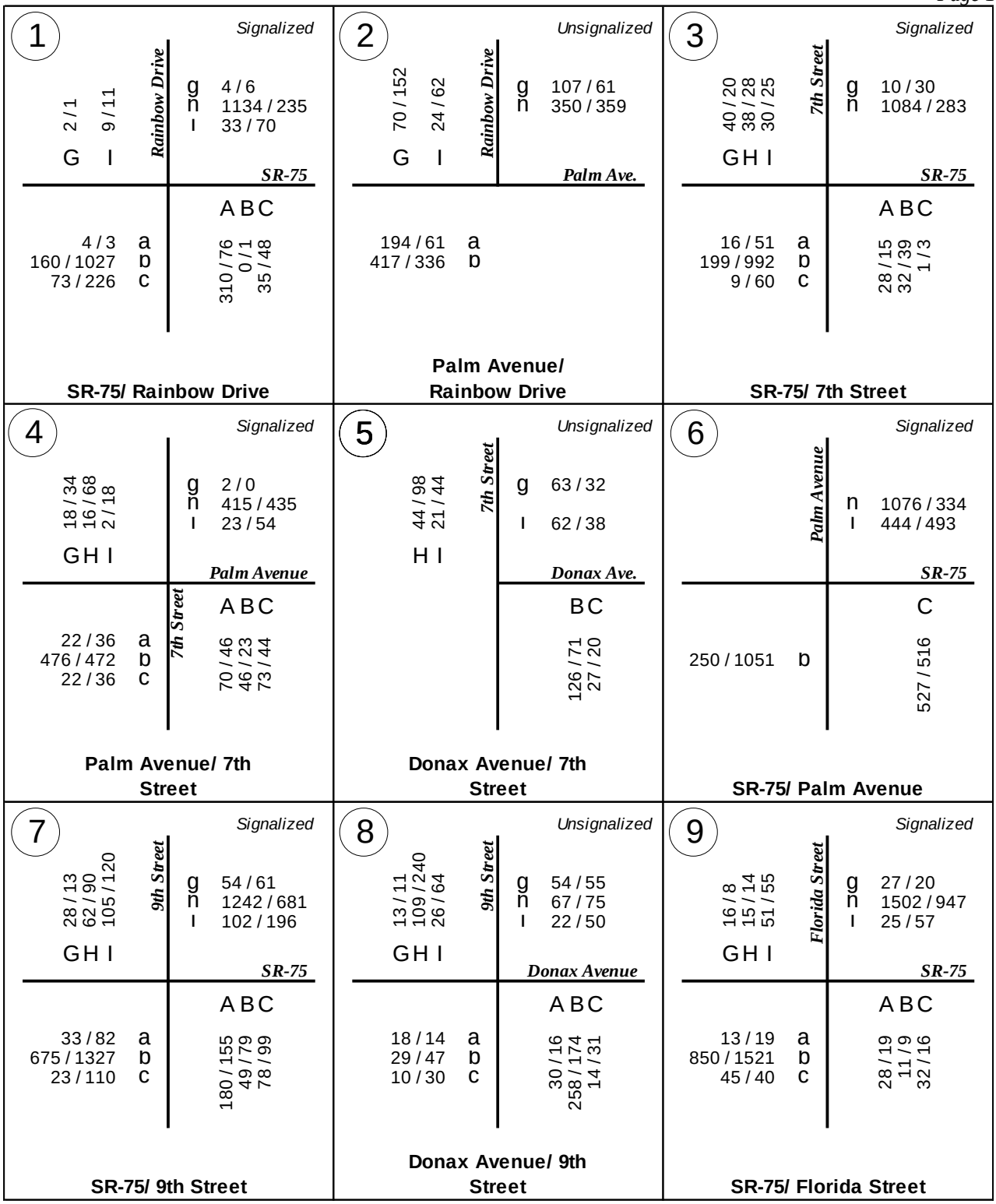


FIGURE 6-2

Existing + Project AM/PM Peak Hour Volumes

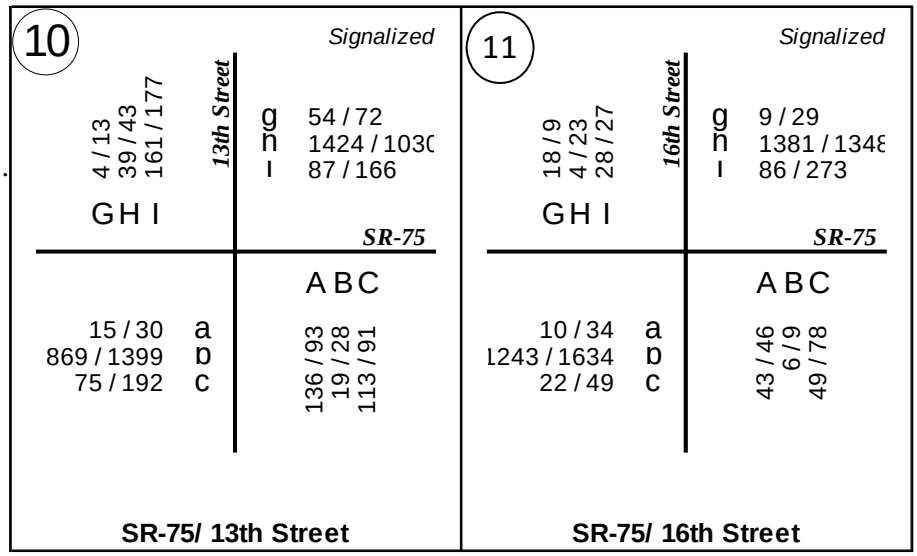


FIGURE 6-2

Existing + Project AM/PM Peak Hour Volumes

TABLE 6-2

Existing vs. Existing Plus Project Intersection Comparison

#	Intersection	Existing				Existing + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	S ?	PM Peak Hour		Δ	S ?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	SR-75/ Rainbow Drive	29.5	C	22.9	C	32.2	C	2.7	No	23.5	C	0.6	No
2	Palm Avenue/ Rainbow Drive	15.9	C	15.7	C	16.6	C	0.7	No	15.8	C	0.1	No
3	SR-75/ 7th Street	16.2	B	16.7	B	22.2	C	6.0	No	17.5	B	0.8	No
4	Palm Avenue/ 7th Street	29.0	C	31.5	C	30.5	C	1.5	No	31.7	C	0.2	No
5	Donax Avenue/ 7th Street	10.4	B	10.0	A	10.4	B	0.0	No	10.0	A	0.0	No
6	SR-75/ Palm Avenue	20.6	C	16.1	B	10.0	A	-10.6	No	16.0	B	-0.1	No
7	SR-75/ 9th Street	40.1	D	34.7	C	41.3	D	1.2	No	49.0	D	14.3	No
8	Donax Avenue/ 9th Street	8.6	A	9.7	A	8.8	A	0.2	No	9.8	A	0.1	No
9	SR-75/ Florida Street	10.7	B	17.7	B	16.0	B	5.3	No	26.5	C	8.8	No
10	SR-75/ 13th Street	29.9	C	40.8	D	30.1	C	0.2	No	40.8	D	0.0	No
11	SR-75/ 16th Street	13.3	B	31.2	C	15.6	B	2.3	No	31.2	C	0.0	No

Notes:

LOS = Level of Service
Δ = Change
S = Significant
D= Delay

traffic added by the project along with cumulative traffic growth in the region both in the near term and long term. These impacts are known as "cumulative impacts" and fair-share contributions to long term improvement projects would typically be required to mitigate these impacts rather than actually constructing an improvement.

Figure 6-3 through **Figure 6-6** shows the street segment and intersection volumes for Near Term conditions with and without the project.

Figure 6-7 through **Figure 6-10** shows the street segment and intersection volumes for Year 2030 conditions with and without the project.

As discussed previously, for street segments, a significant project traffic impact may occur if, at street segments with "E" or "F" levels of service, the volume to capacity (v/c) ratio is changed by more than 0.02 with the addition of traffic from the Project site. **Tables 6-3** and **6-4** shows a comparison of street segment operations for Near Term and Year 2030 traffic conditions with and without project traffic added. As shown in these tables, there are no significant cumulative impacts to street segments identified.

Also as discussed previously, for intersections, a significant project traffic impact may occur if, there is an unacceptable level of service i.e. "E" or "F" and second, the project adds a significant amount of traffic sufficient to change the average intersection delay by greater than 2 seconds. **Tables 6-5** and **6-6** shows a comparison of intersection operations for Near Term and Year 2030 traffic conditions with and without project traffic added. As shown in these tables, there are no significant cumulative impacts to Intersections identified.

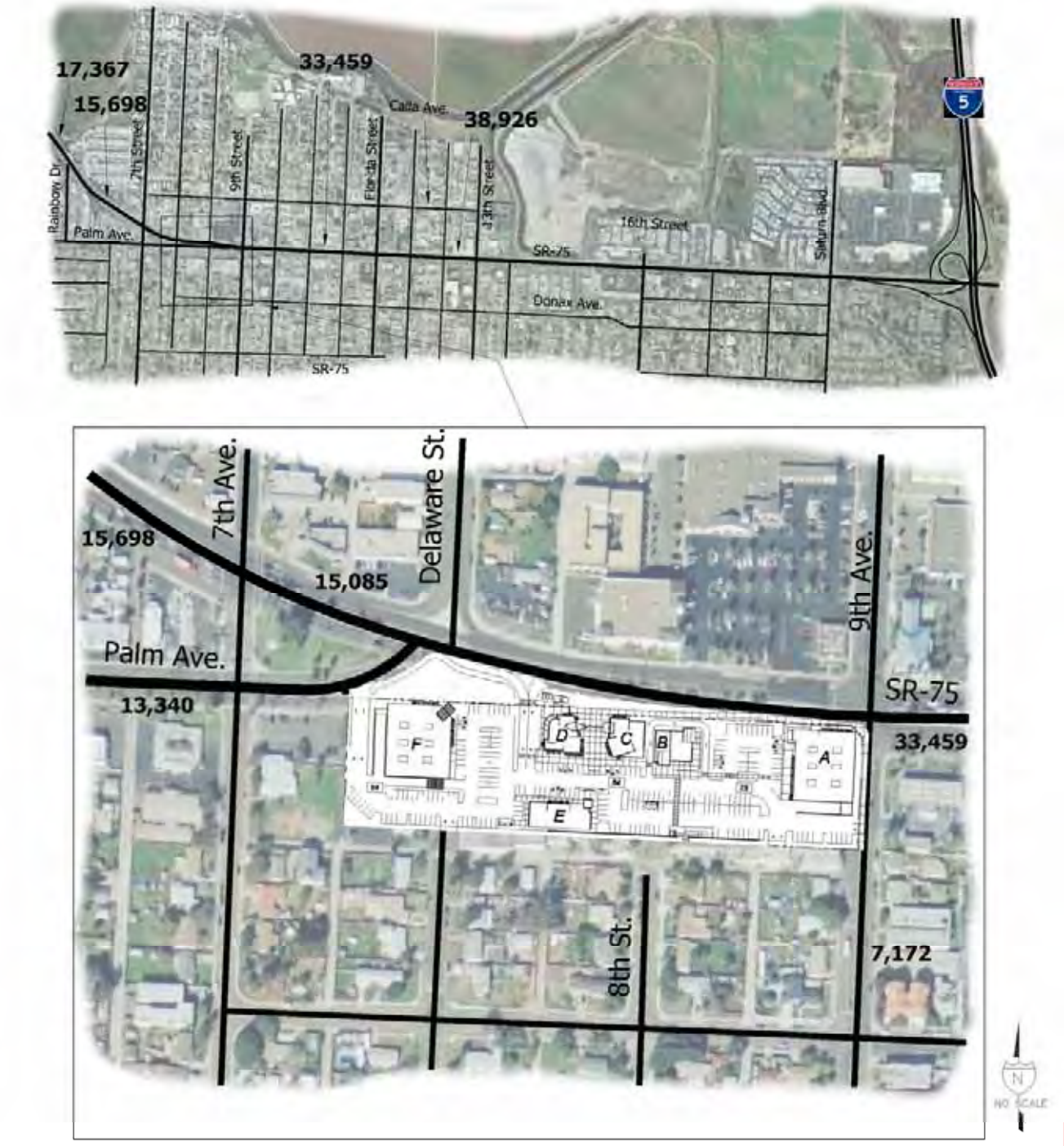


FIGURE 6-3

Near Term Without Project Average Daily Traffic Volumes

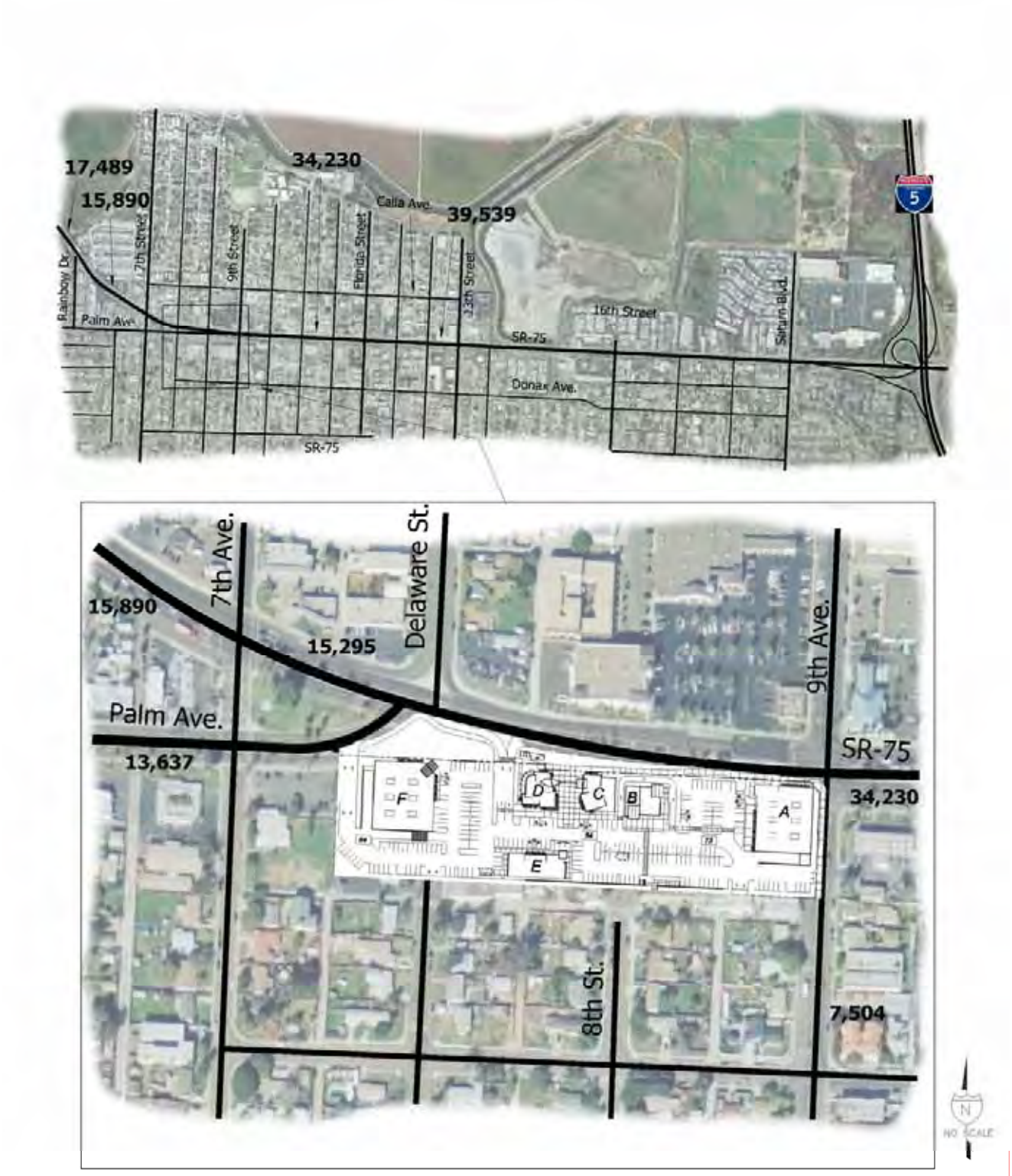


FIGURE 6-4

Near Term + Project Average Daily Traffic Volumes

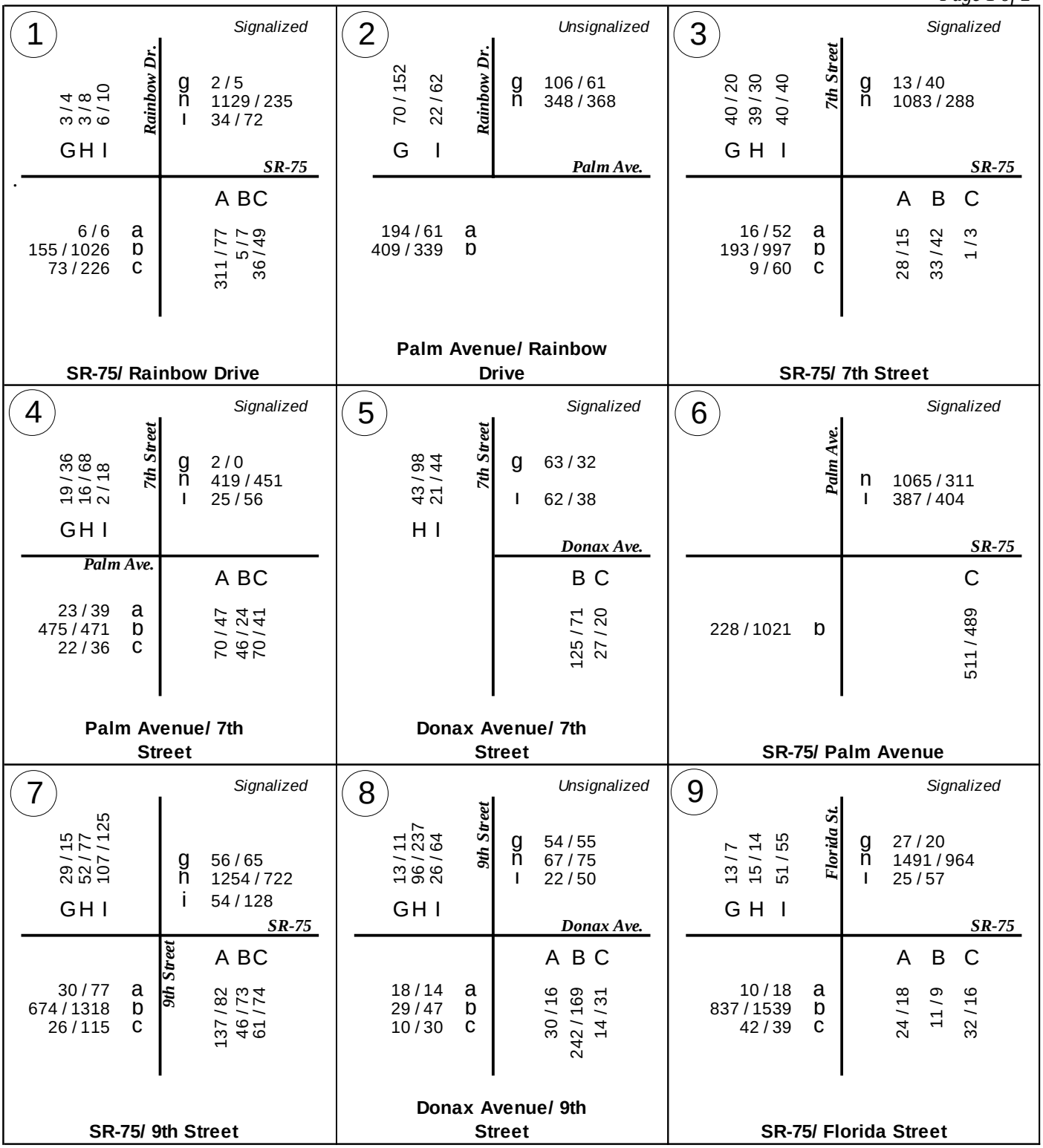


FIGURE 6-5

Near Term without Project AM/PM Peak Hour Volumes

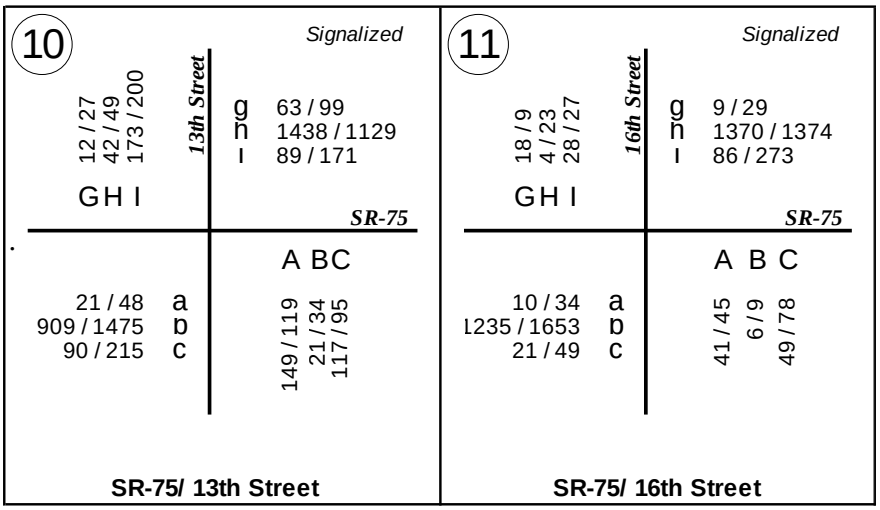


FIGURE 6-5

Near Term without Project AM/PM Peak Hour Volumes

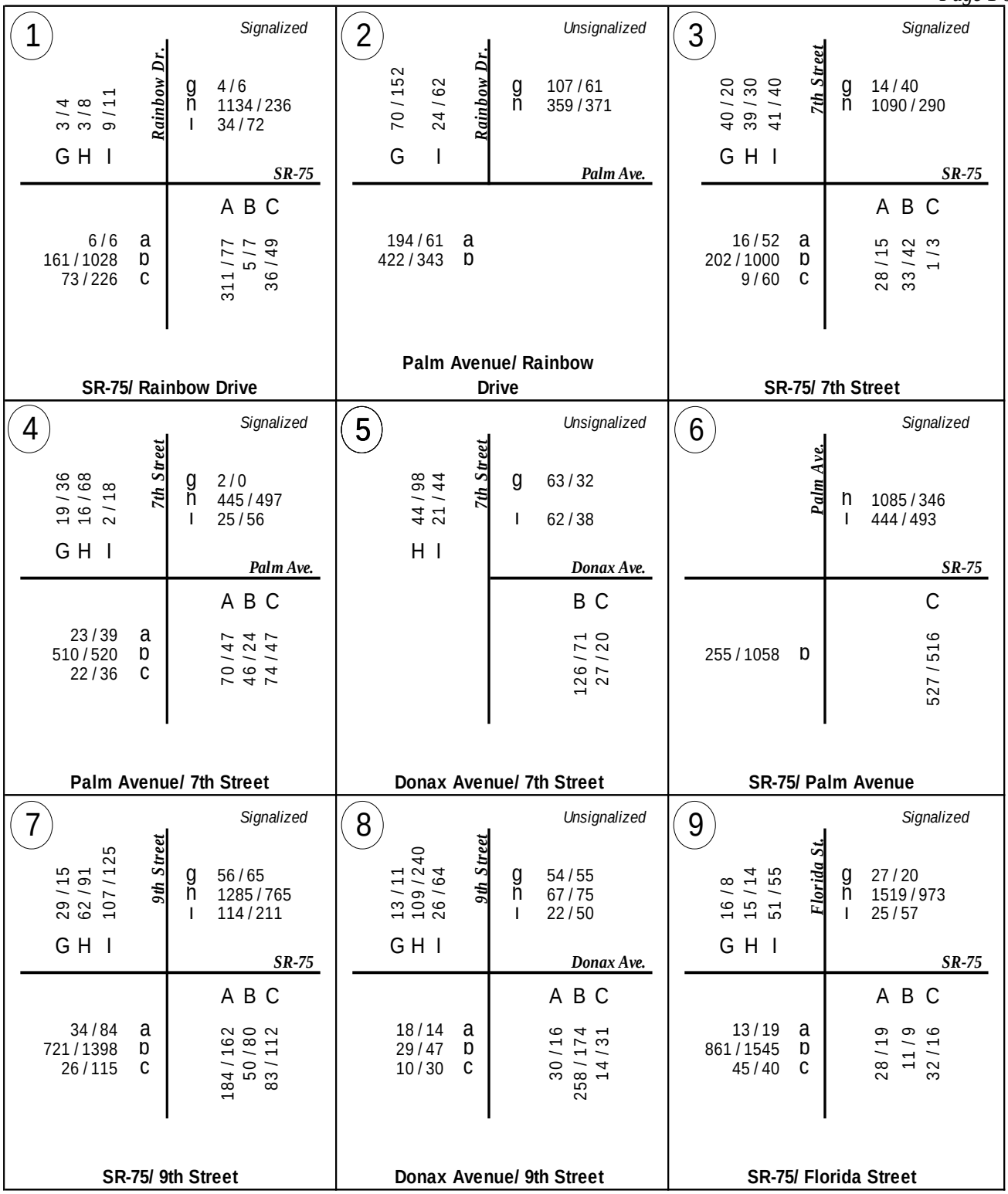


FIGURE 6-6

Near Term + Project AM/PM Peak Hour Volumes

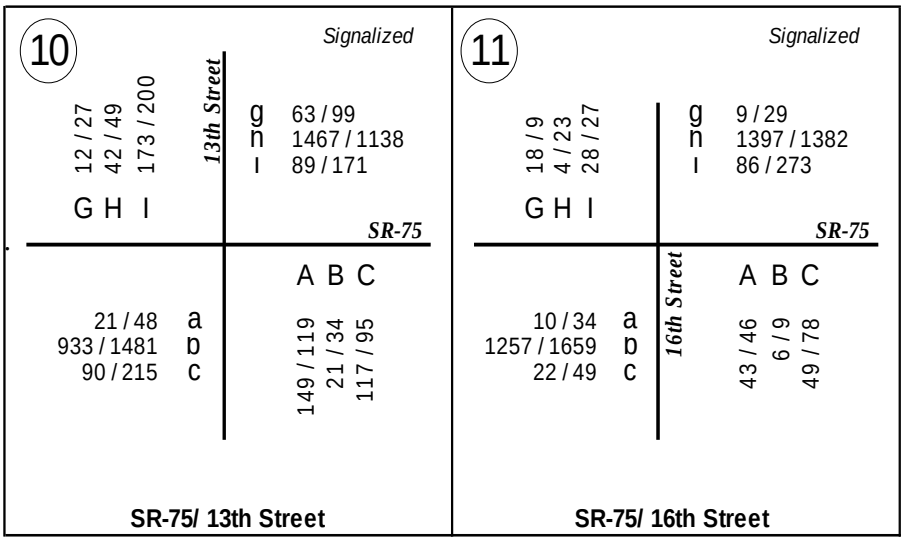


FIGURE 6-6

Near Term + Project AM/PM Peak Hour Volumes

FIGURE 6-7

Year 2030 Without Project Average Daily Traffic Volumes

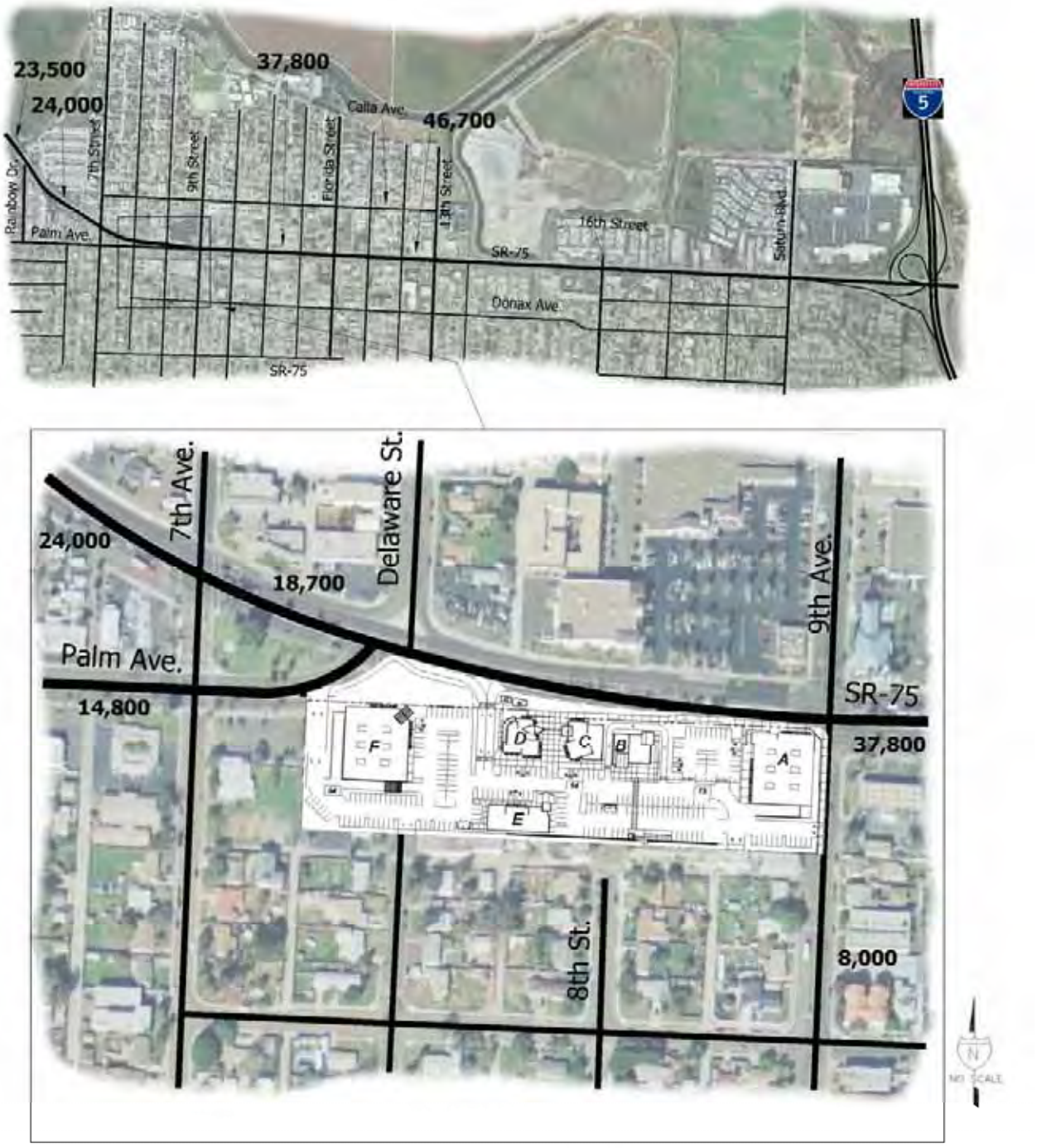


FIGURE 6-8

Year 2030 + Project Average Daily Traffic Volumes

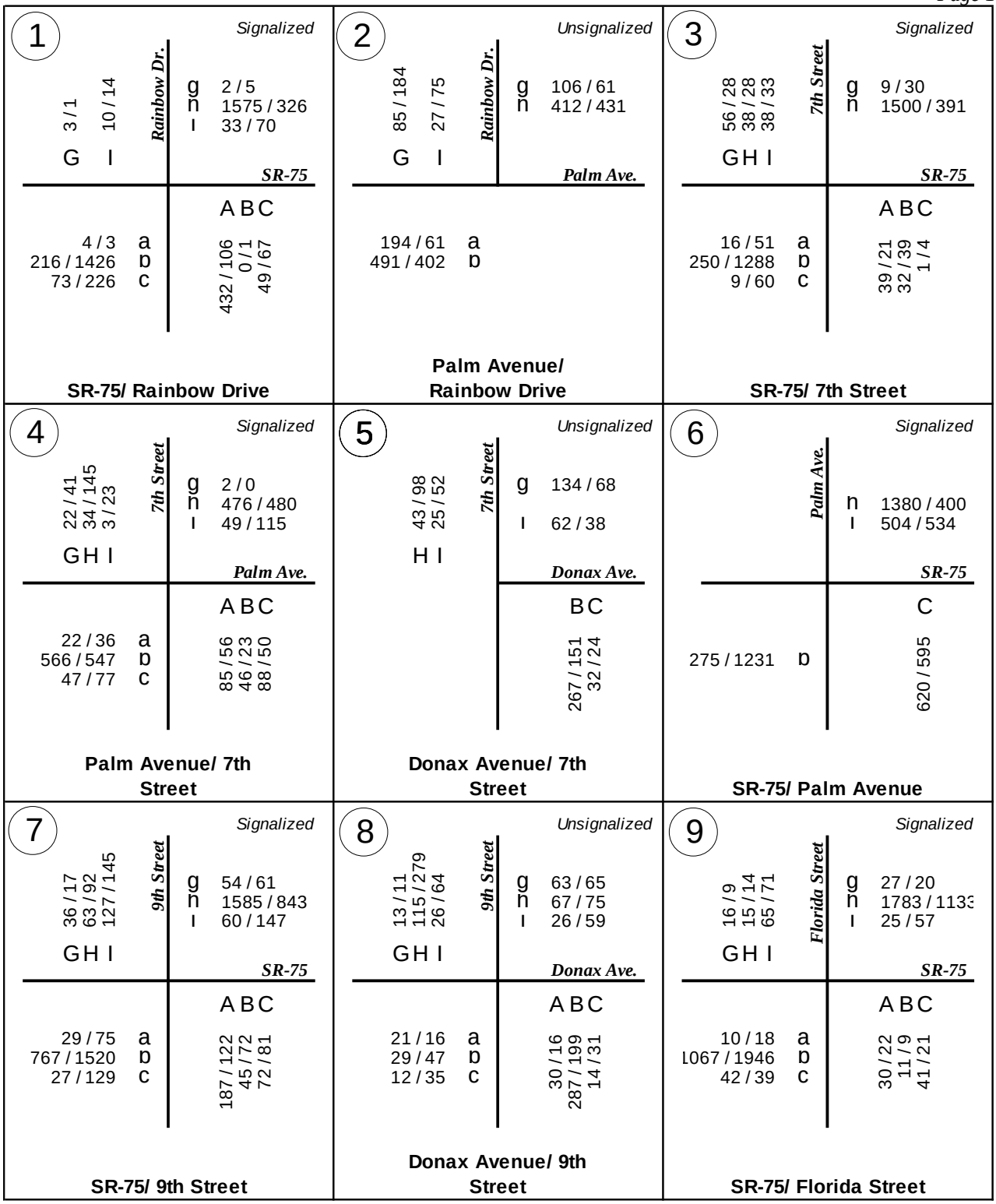


FIGURE 6-9

Year 2030 without Project AM/PM Peak Hour Volumes

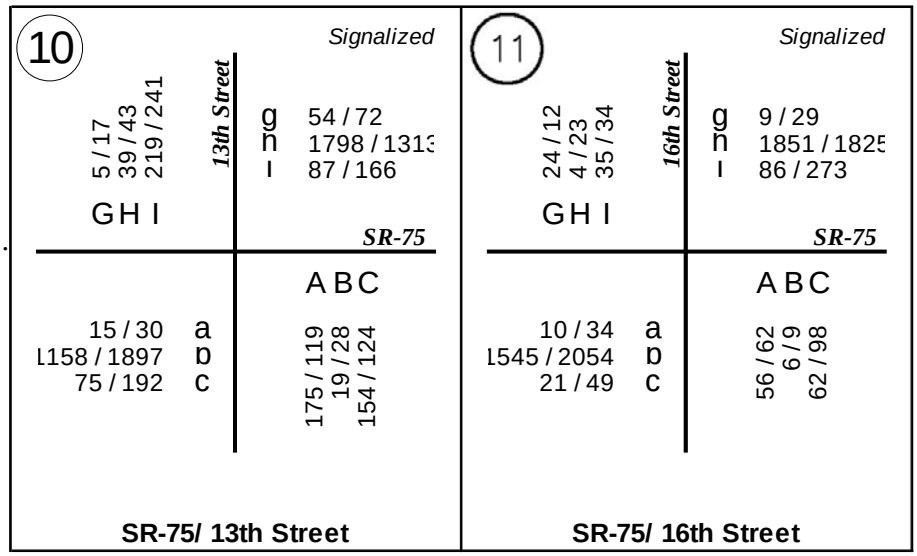


FIGURE 6-9

Year 2030 without Project AM/PM Peak Hour Volumes

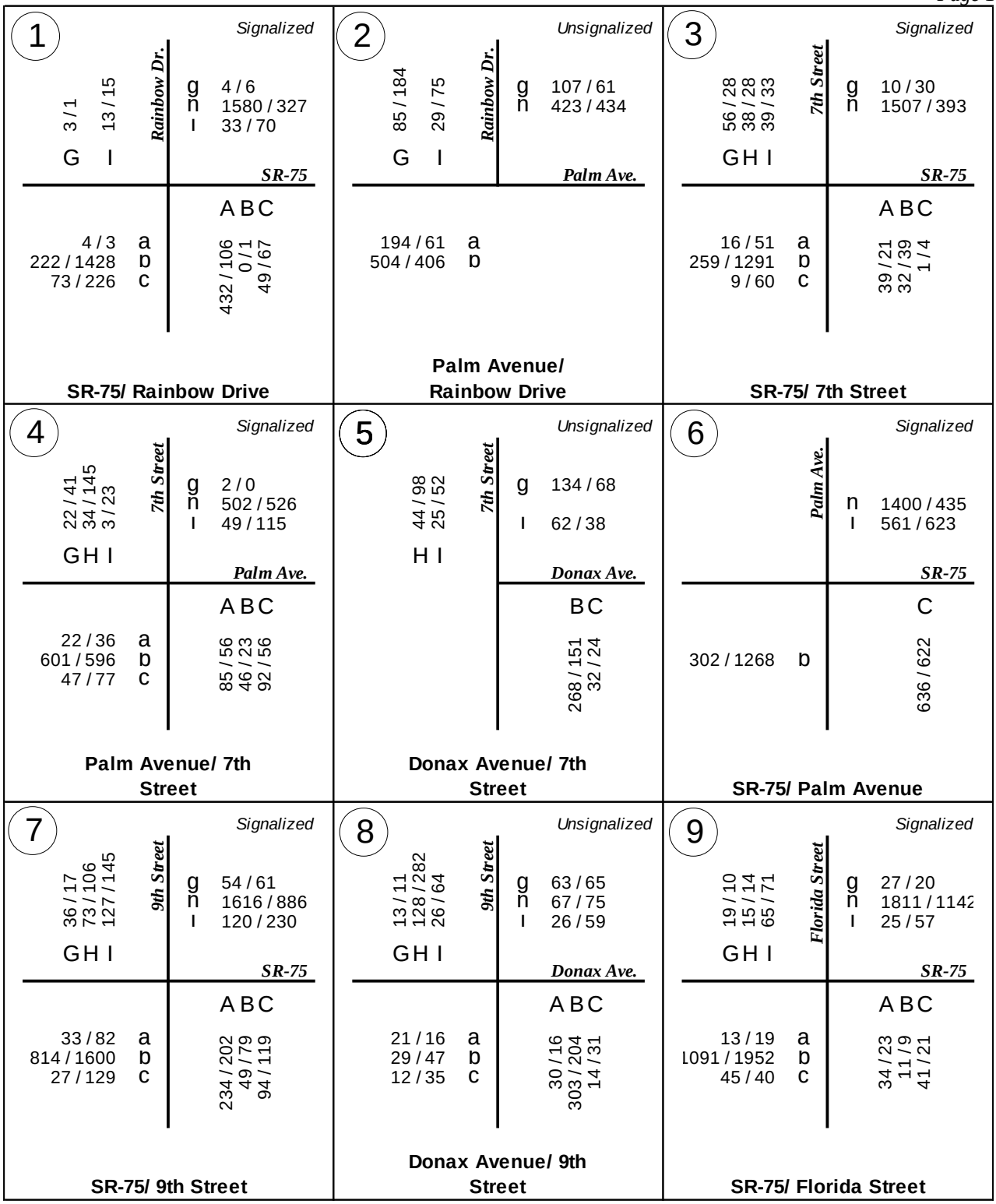


FIGURE 6-10

Year 2030 + Project AM/PM Peak Hour Volumes

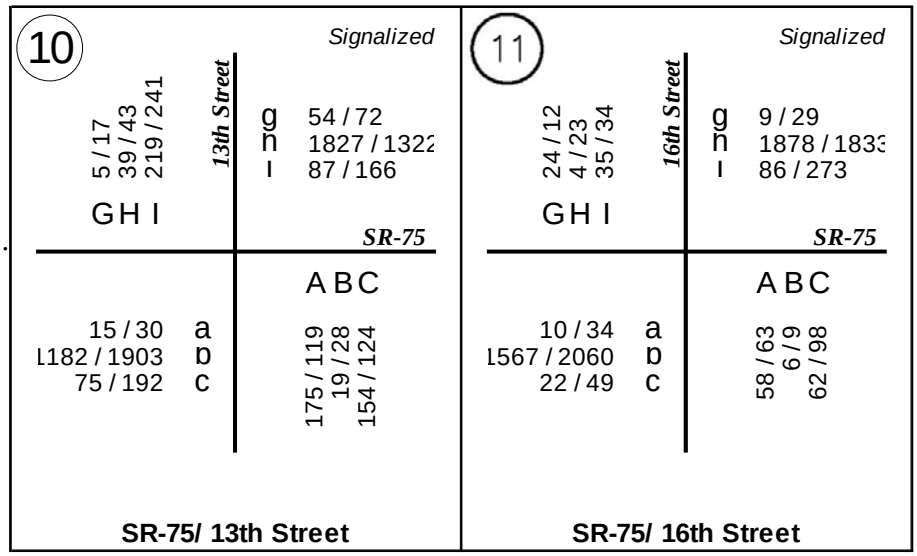


FIGURE 6-10

Year 2030 + Project AM/PM Peak Hour Volumes

TABLE 6-3

Near Term vs. Near Term Plus Project Street Segment Comparison

Road	Segment	Class.	Near Term			Near Term + Project			ΔV/C	CMP Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
SR-75	North of Rainbow Drive	4-M	B	17,367	0.43	B	17,367	0.44	0.003	***NO***
	Rainbow Drive/ 7th Street	4-M	B	15,698	0.39	B	15,698	0.40	0.005	***NO***
	7th Street/ Palm Avenue	6-M	A	15,085	0.30	A	15,085	0.31	0.004	***NO***
	9th Avenue/ Florida Street	6-M	C	33,459	0.67	C	33,459	0.68	0.015	***NO***
	Florida Street/ 13th Street	6-M	C	38,926	0.78	C	38,926	0.79	0.012	***NO***
Palm Avenue	Rainbow Drive/ 7th Street	4-M	A	13,340	0.33	A	13,340	0.34	0.007	***NO***
9th Avenue	Donnax/ Project Boundary	4-C	A	7,172	0.24	A	7,172	0.25	0.011	***NO***

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

TABLE 6-4

Year 2030 vs. Year 2030 Plus Project Street Segment Comparison

Road	Segment	Class.	Year 2030			Year 2030 + Project			ΔV/C	CMP Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
SR-75	North of Rainbow Drive	4-M	C	23,377	0.58	C	23,500	0.59	0.003	***NO***
	Rainbow Drive/ 7th Street	4-M	C	23,807	0.60	C	24,000	0.60	0.005	***NO***
	7th Street/ Palm Avenue	6-M	A	18,490	0.37	A	18,700	0.37	0.004	***NO***
	9th Avenue/ Florida Street	6-M	C	37,030	0.74	C	37,800	0.76	0.015	***NO***
	Florida Street/ 13th Street	6-M	E	46,087	0.92	E	46,700	0.93	0.012	***NO***
Palm Avenue	Rainbow Drive/ 7th Street	4-M	A	14,502	0.36	A	14,800	0.37	0.007	***NO***
9th Avenue	Donnax/ Project Boundary	4-C	A	7,667	0.26	A	8,000	0.27	0.011	***NO***

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

TABLE 6-5

Near Term vs. Near Term Plus Project Intersection Comparison

#	Intersection	Near Term				Near Term + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	S ?	PM Peak Hour		Δ	S ?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	SR-75/ Rainbow Drive	35.7	D	23.4	C	35.8	D	0.1	N	23.4	C	0.0	N
2	Palm Avenue/ Rainbow Drive	16	C	16	C	16.8	C	0.8	N	16.3	C	0.3	N
3	SR-75/ 7th Street	15.3	B	18.6	B	22.1	C	6.8	N	19.9	B	1.3	N
4	Palm Avenue/ 7th Street	31	C	32.5	C	31.5	C	0.5	N	33.5	C	1.0	N
5	Donax Avenue/ 7th Street	10.4	B	10	A	10.4	B	0.0	N	10	B	0.0	N
6	SR-75/ Palm Avenue	28.9	C	40.9	D	10	A	-18.9	N	16.1	B	-24.8	N
7	SR-75/ 9th Street	25.5	C	38.8	D	40.4	D	14.9	N	47.9	D	9.1	N
8	Donax Avenue/ 9th Street	8.6	A	9.7	A	8.8	A	0.2	N	9.8	A	0.1	N
9	SR-75/ Florida Street	25.3	C	14.6	B	27.6	C	2.3	N	32.5	C	17.9	N
10	SR-75/ 13th Street	31.2	C	40.1	D	31.8	C	0.6	N	44.5	D	4.4	N
11	SR-75/ 16th Street	17	B	29.8	C	20.5	C	3.5	N	31.2	C	1.4	N

Notes:

LOS = Level of Service

Δ = Change

S = Significant

D= Delay

TABLE 6-6

Year 2030 vs. Year 2030 Plus Project Intersection Comparison

#	Intersection	Year 2030				Year 2030 + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	S ?	PM Peak Hour		Δ	S ?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	SR-75/ Rainbow Drive	45.7	D	28.5	C	46.9	D	1.2	No	31.1	C	2.6	No
2	Palm Avenue/ Rainbow Drive	18.6	C	18.7	C	19.6	C	1.0	No	18.9	C	0.2	No
3	SR-75/ 7th Street	20.6	C	18.5	B	24.7	C	4.1	No	23.0	C	4.5	No
4	Palm Avenue/ 7th Street	32.9	C	42.4	D	33.2	C	0.3	No	42.5	D	0.1	No
5	Donax Avenue/ 7th Street	12.7	B	10.8	B	12.7	B	0.0	No	10.8	B	0.0	No
6	SR-75/ Palm Avenue	13.3	B	17.7	B	15.1	B	1.8	No	18.3	B	0.6	No
7	SR-75/ 9th Street	34.7	C	40.5	D	44.9	D	10.2	No	50.6	D	10.1	No
8	Donax Avenue/ 9th Street	9.1	A	10.4	B	9.2	A	0.1	No	10.5	B	0.1	No
9	SR-75/ Florida Street	20.8	C	23.5	C	20.8	C	0.0	No	23.9	C	0.4	No
10	SR-75/ 13th Street	39.2	D	54.3	D	39.5	D	0.3	No	54.5	D	0.2	No
11	SR-75/ 16th Street	19.2	B	36.1	D	19.2	B	0.0	No	36.5	D	0.4	No

7.0 PROJECT ACCESS AND PARKING

Due to planned changes in the configuration of the intersection of Palm Ave. at SR-75, the future access to the project site is expected to differ from the existing configuration. These alterations are discussed here.

7.1 PROJECT ACCESS

As shown on **Figure 7-1**, the intersection of Palm Ave. at SR-75 is expected to be altered in the future to remove an existing free eastbound move from Palm to SR-75. It is expected that this move will be accommodated in the future at a reconfigured intersection as shown in the Figure. In order to maintain proper access to the project site, a u-turn move will be provided at this intersection for traffic on westbound SR-75 to come back and access the project via a channelized right in/out access. This new access will be constructed per Caltrans standards and is expected to be located midway between the intersection of SR-75 at Palm and SR-75 at 9th.

It is expected that up to 43 vehicles will make a u-turn at the intersection of Palm/ SR-75 in the future with the project. These vehicles will be accommodated with the future reconfiguration of this intersection. This protected u-turn move will conflict with the controlled right turns turning from eastbound Palm Avenue onto SR-75. As a result, the phasing at this signal will not include an overlap phase. Synchro worksheets showing the difference caused by this change in phasing are included in **Appendix F**. It is not anticipated that there will be any significant degradation in LOS as a result of this altered phasing. As seen in this analysis, the anticipated inclusion of the u-turn movement will not significantly deteriorate intersection operations.

Figure 7-2 shows the expected traffic load at each driveway. The project access at 9th was analyzed as a stop control intersection in Synchro. The expected LOS at this location is LOS "C" with a delay of 15.3 seconds in the PM peak hour. Synchro results for this intersection are included in **Appendix F**.

7.2 PROJECT PARKING

Project parking will be provided at a rate of 5.1 stalls per 1,000 square feet of building area. This will yield approximately 238 stalls.

Figure 7-1

Project Access

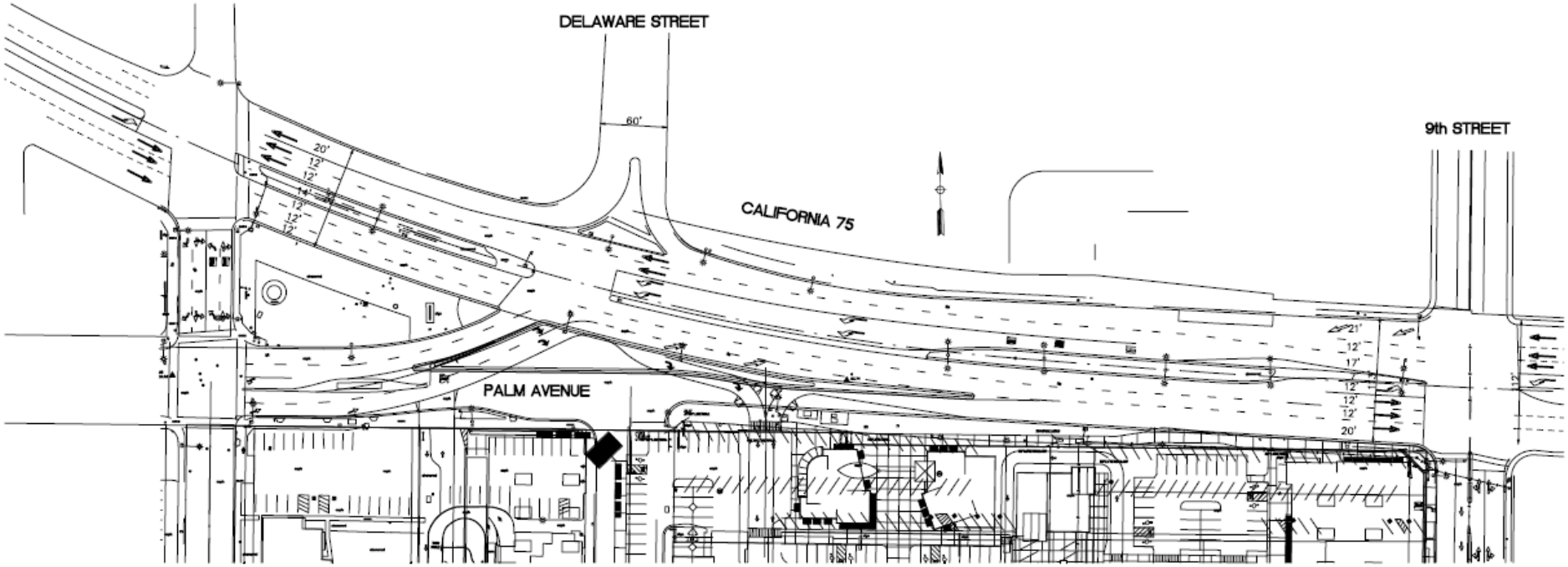
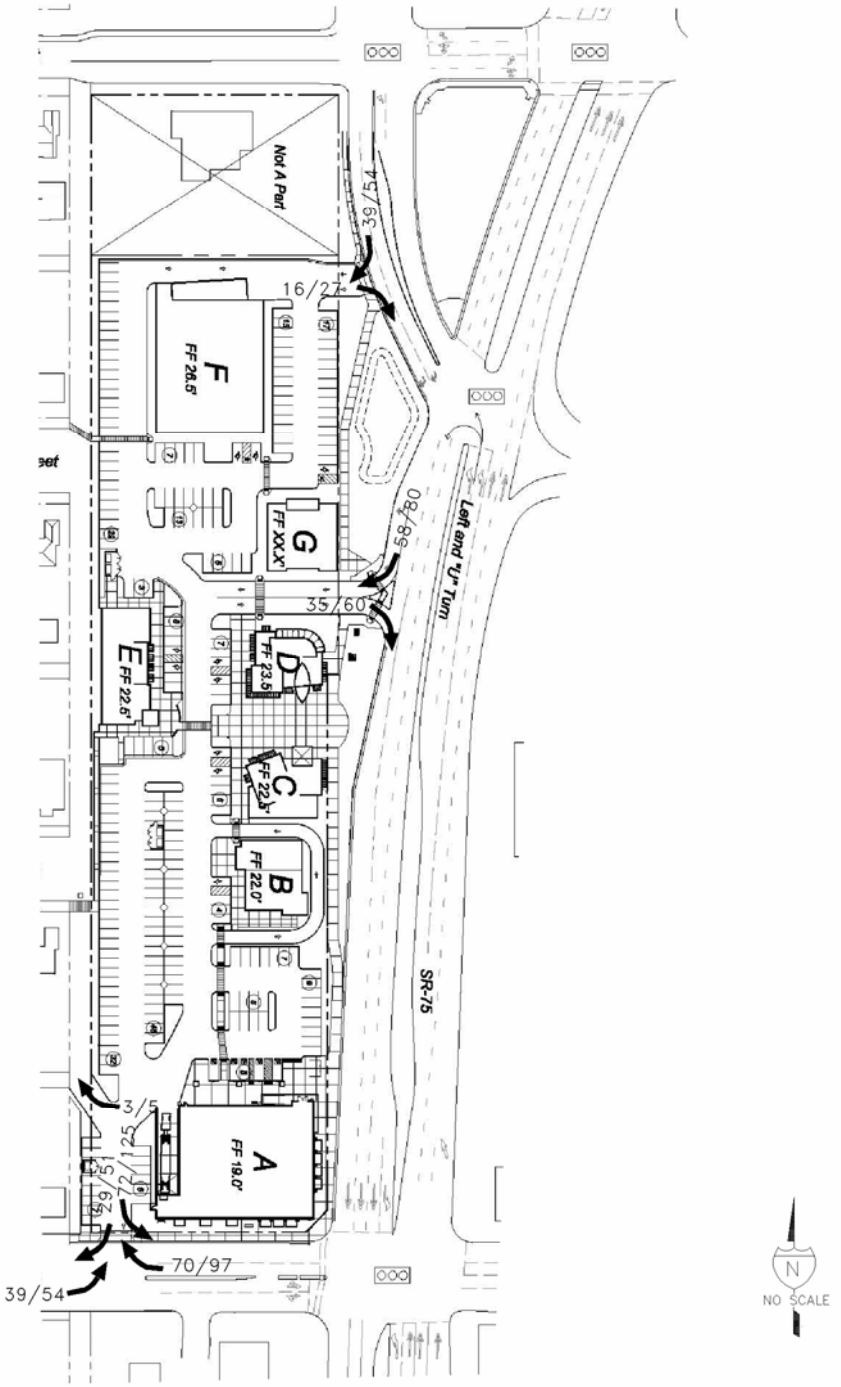


Figure 7-2

Project Access Volumes



8.0 STUDY RESULTS AND RECOMMENDED MITIGATION

As shown in the detailed analysis for the project contained within this traffic study and within the Appendices, there are no significant impacts discovered as a result of the 9th and Palm Project traffic.

8.1 PROJECT IMPACT

There are no impacts anticipated as a result of this project.

8.2 RECOMMENDED IMPROVEMENTS

It is recommended that the project frontage along SR-75 be improved to provide pedestrian accommodations, along with a reconfiguration of the intersection of Palm/SR-75. This reconfiguration will be similar to the "Park Sector alternative 3" evaluated and recommended in the "Imperial Beach SR-75 Corridor Traffic Impact Analysis" prepared for the City of Imperial Beach. This reconfiguration will consolidate movements at this intersection at the signal location and eliminate the existing free-right turn move from eastbound Palm Avenue to SR-75. This is expected to reduce vehicle conflicts and improve corridor flow. Additionally, a channelized right in/out access is planned for the project site between the intersection of Palm/SR-75 and 9th/SR-75. Traffic flow to this access point will be facilitated through provision of a "u-turn" movement from westbound SR-75 at the intersection of Palm/SR-75.

Anticipated improvements to the Project frontage are shown on **Figure 8-1**.

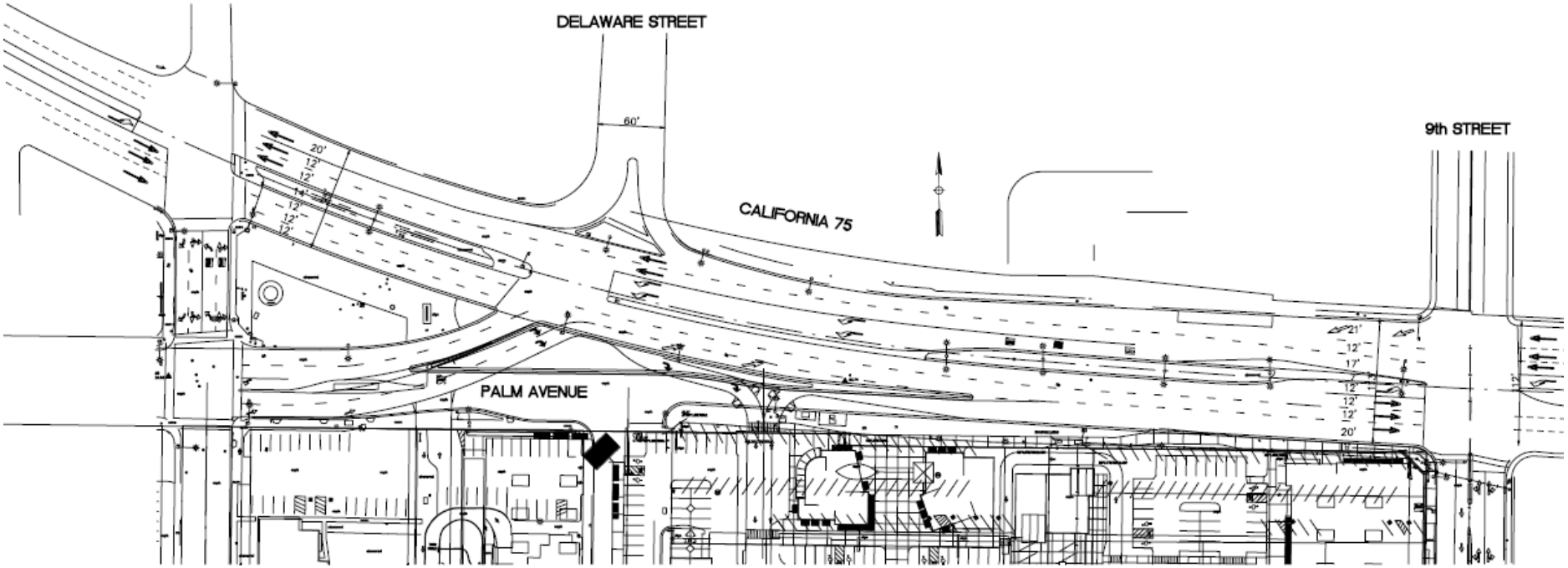


Figure 8-1

Frontage Improvements

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10.0 URBAN SYSTEMS ASSOCIATES, INC. PREPARERS

Principal Engineer

Andrew P. Schlaefli; M.S. Civil Engineering, B.S. Civil Engineering
Registered Civil Engineer, Licensed Traffic Engineer

Project Manager

Justin P. Schlaefli; MCE, B.S. Civil Engineering
Registered Civil Engineer, Licensed Traffic Engineer

Jacob D. Swim; B.S. Civil Engineering

Senior Technical Support, Graphics and Illustrations

Jacob D. Swim

Word Processing, Report Production and Compilation

Lisa Diaz

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Appendix A

SANDAG Select Zone Assignment

Appendix B

Existing Conditions Traffic Counts

Appendix C

Existing Synchro Worksheets

Appendix D

SANDAG Trip Generation Rates

Appendix E

Project Synchro Worksheets
(Existing + Project, Near Term, Near Term + Project, Year 2030, Year 2030 + Project)

Appendix F

Office – Alternative 2 Synchro Worksheets
(Existing + Project, Near Term + Project, Year 2030 + Project)

Appendix G

Retail – Alternative 3 Synchro Worksheets
(Existing + Project, Near Term + Project, Year 2030 + Project)