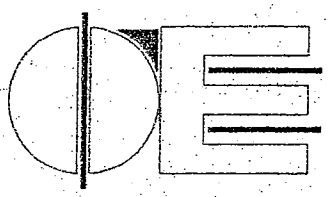
TRAFFIC IMPACT STUDY

FOR JOSEPHO GROUP DEVELOPMENT

Prepared for:
The Josepho Group

Prepared by:



O'ROURKE ENGINEERING

August 14, 2000

O'ROURKE ENGINEERING

TRAFFIC IMPACT STUDY

FOR JOSEPHO GROUP DEVLEOPMENT IN THE CITY OF OCEANSIDE

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August 14, 2000

The Josepho Group
3122 San Luis Rey Road
Oceanside, California 92054

RE: Parcel 2- Parcel 6 Traffic Impact Study

Dear Mr. Josepho:

The traffic analysis for the proposed parcel development to be located in the City of Oceanside is complete. The steps in the analysis and the ensuring results are presented herein.

It has been a pleasure working with you. If you have any questions or comments, please give me a call.

Very truly yours,
O'ROURKE ENGINEERING

Susan E. O'Rourke P.E.
President

8/14/00

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EXECUTIVE SUMMARY

O'Rourke Engineering was retained to prepare a Traffic Impact Study for the development of five parcels of land located generally south of the Oceanside Municipal Airport. Although the development of the parcels will be approached individually the traffic study was prepared as one document to facilitate future planning and processing of the parcels.

Upon determining the existing conditions and traffic volumes in the proximity of the development, a detailed analysis was undertaken to determine the impact of parcel development on the surrounding roadway segments and intersections. The project traffic generated by each parcels development was calculated using trip generation rates produced by San Diego Association of Governments (SANDAG) and the land use and building footage provided by the developer.

The study roadway segments and intersections were analyzed for existing, existing plus parcel, existing plus cumulative development and 2020 citywide buildout scenarios. The Oceanside City Level of Service Criteria was used to analyze the study roadway segments and the Highway Capacity Software was used to analyze the study intersections. The development of the parcels was found to have an insignificant impact on the surrounding roadway network in all scenarios. Therefore, all study roadway segments and intersections will continue operate at acceptable service levels and no mitigation is required.

INTRODUCTION

The Josepho Group has several undeveloped parcels located generally south of the Oceanside Municipal Airport in the City of Oceanside, California. This report documents the methods and findings of a study conducted by O'Rourke Engineering to determine the potential traffic impacts of the development of five individual parcels.

PROJECT DESCRIPTION

O'Rourke Engineering was retained to prepare a traffic impact analysis for the proposed development of five parcels designated as Parcel 2 through 6 in Figure 1. The parcel designations were used as specified by the internal planning efforts of the Josepho Group. The land use and square footage of building space for each parcel was obtained from a series of preliminary site plans provided by ABL Associates and Smith Consulting Architects. An overview of the proposed development for each parcel is shown in Table 1. The development of these parcels will be approached individually however, the traffic study was prepared as one document to facilitate planning and processing of the parcels.

Figure 1: Parcel Locations

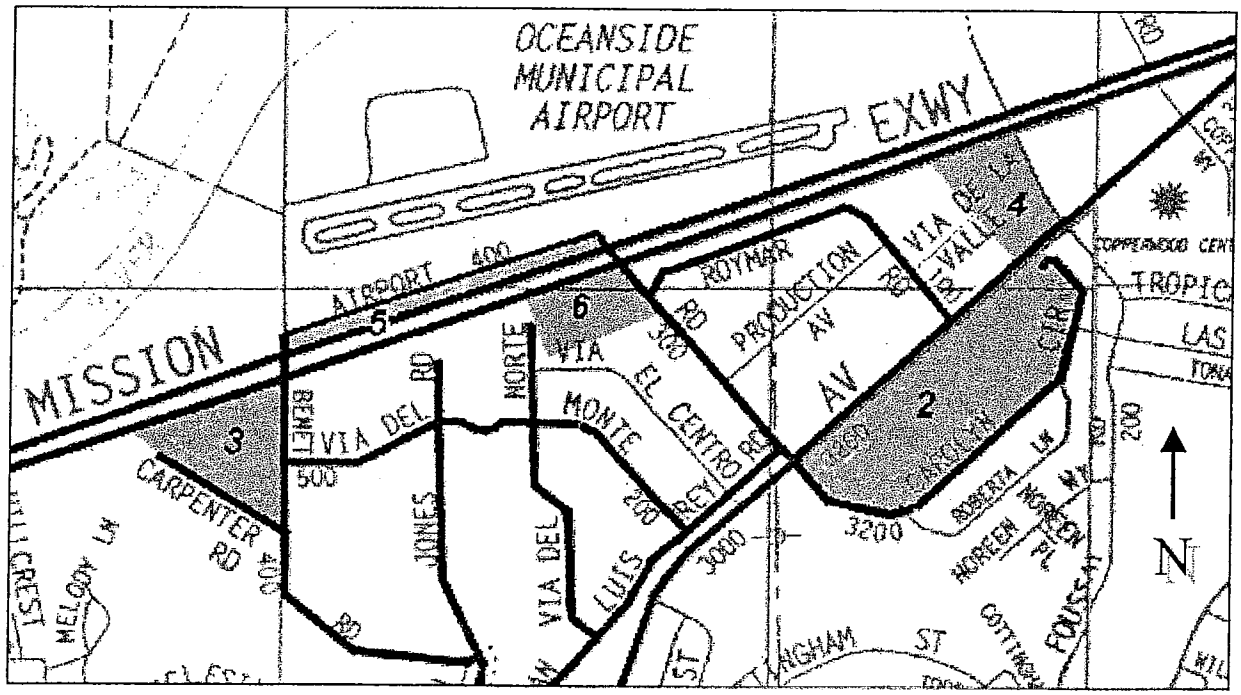


Table 1: Project land use and area

PARCEL	Land Use	Building Area (sqft)	Total Area (acres)
2	Industrial Park	261,876	14.46
3	Commercial	52,098	4.63
4	Industrial (light commercial)	51,300	4.16
5	Auto Retail/Auto Parts	28,864	1.50
6	Office (standard commercial)	33,304	1.8

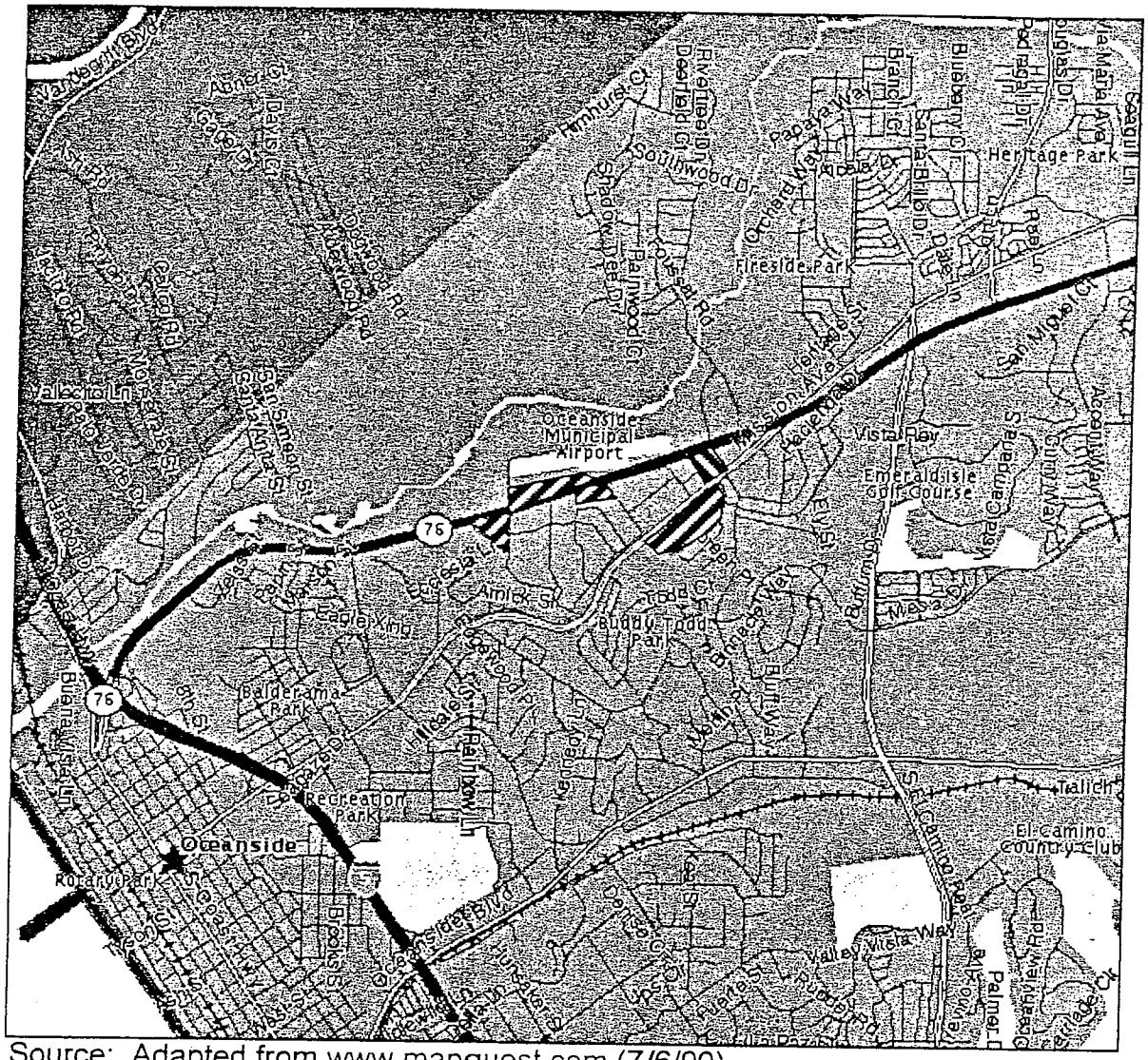
STUDY SCOPE

The scope of analysis was developed in conjunction with the City of Oceanside. The report was structured as specified in the City of Oceanside Traffic Impact Study Report Guidelines, received from the Engineering Division of Oceanside City in May 2000. The analysis methods and study scenarios contained herein are both based upon these guidelines.

The purpose of this study is to evaluate the impact of the developed parcels on the surrounding roadway network. Figure 2 illustrates the location of the parcels in relation to the surrounding street system. The influence of development is considered separately for the five parcels. In each scenario the roadways and off-site intersections effected by the projected traffic were identified and analyzed. The roadway segments and intersections considered in the study for each parcel are as follows:

Roadway	PARCEL 2	3	4	5	6	Intersection	PARCEL 2	3	4	5	6
Benet Road		■				Benet Road/Airport Road				■	
Airport Road	■		■	■	■	Benet Road/Highway 76	■	■		■	■
Via Del Monte						Benet Road/Via Del Monte		■			
Carpenter Road						Benet Road/Carpenter Road					
Highway 76	■	■	■	■	■	Airport Road/Highway 76	■	■	■	■	■
Mission Avenue	■	■	■	■	■	Roymar Road/Mission Avenue	■				
Roymar Road						Airport Road/Mission Avenue	■				
Foussat Road	■		■			Airport Road/Roymar Road					■
Copperwood Way						Foussat Road/Highway 76	■	■	■	■	■
						Foussat Road/Mission Avenue	■		■		
						Copperwood Way/Mission Avenue	■		■		

■ Development of Parcel has an impact at the identified location


Oceanside Municipal Airport
Heritage Park
Fireside Park
Emeraldisle Golf Course
Vista Way
Buddy Todd Park
Balderama Park
Recreation Park
Oceanside
El Camino Country Club
Valley Vista Way
Palmer
Talich
Eaglewood
Buena Vista Ln
Rosary Park
Brooks St
Mesa Rd
Hamlet Ct
Seagull Ln
Bluebird Ct
Branch Ct
Deerfield Ct
Shadow Tree Dr
Palmwood Dr
Calle Montecito
Calle Acapulco
Calle Tecate
Calle Tampico
Calle Tijuana
Calle Tres
Calle Cuarto
Calle Primera
Calle Segunda
Calle Quinta
Calle Sexta
Calle Rancho Del Oro
Calle Montecito
Calle Acapulco
Calle Tecate
Calle Tampico
Calle Tijuana
Calle Tres
Calle Cuarto
Calle Primera
Calle Segunda
Calle Quinta
Calle Sexta
Calle Rancho Del Oro
Vista Way
Oceanside Blvd
Mesa Rd
Buena Vista Ln
Rosary Park
Brooks St
Eaglewood
Balderama Park
Recreation Park
Buddy Todd Park
Fireside Park
Heritage Park
Emeraldisle Golf Course
Oceanside Municipal Airport
El Camino Country Club
Valley Vista Way
Palmer
Talich
Seagull Ln
Bluebird Ct
Branch Ct
Deerfield Ct
Shadow Tree Dr
Palmwood Dr
Hamlet Ct

The study area was defined as intersections with state owned facilities (SR76) with a project impact of 20 or more trips and local and regional key intersections with a project impact of 50 or more trips. The threshold for Highway 76 is based upon the California Department of Transportation (CALTRANS) guidelines while the 50 peak hour limit is based on Regional Guidelines followed by Oceanside.

STUDY SCENARIOS

Several scenarios were analyzed in this study: Existing conditions, existing plus project for each parcel, short term cumulative (existing plus each parcel plus other area projects) and 2020 citywide buildout.

METHODOLGY

The roadway congestion due to each scenario is measured based upon intersection and roadway segment levels of service. Level of service, or LOS, is a measure of the operating efficiency of a roadway. The level of service for intersections and critical roadway segments is a significant measure of the degree of congestion on a roadway. Level of service ranges from A to F. LOS A represents minimal delay, while LOS F represents unacceptable delay. LOS E is commonly identified as the level of service existing when a roadway reaches capacity. Level of Service D is typically recognized as the satisfactory level of service for intersections in urban areas. According to the 1995 City of Oceanside Circulation Element, the City's goal for acceptable service standards during AM and PM peak periods is LOS D for all intersections. Table 2 contains a description of signalized intersection level of service A-F.

Table 2: Level of Service Description for Signalized Intersections

LOS	Average Delay (sec)	Traffic flow/delay characteristics
A	0-10	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all and cycle lengths are short.
B	10-20	More vehicles stop than for LOS A, causing higher levels of average delay.
C	20-35	Individual cycle failure may begin to appear. The number of vehicles stopping is significant and cycle lengths increase.
D	35-55	Longer delays may result from some combination of unfavorable progression, long cycle length, or high v/c ratios. Many vehicles stop, and the proportion of vehicle not stopping declines.
E	55-80	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.
F	Over 80	This is considered to be unacceptable to most drivers. Oversaturation occurs as the arrival flow rates exceed the capacity of the intersection

Source: Highway Capacity Manual, Special Report 209 Transportation Research Board, National Research Council 1997

Table 3 contains a similar description of the Highway Capacity Manual level of service criteria for unsignalized intersections. As evident from a comparison of the delay and associated LOS, unsignalized intersections are evaluated with a stricter delay criteria then signalized intersections. This is due primarily to drivers expectation of a higher level of performance at unsignalized intersections. Drivers generally associate large traffic volumes and large delay times with signalized intersections, and therefore expect to be periodically delayed. Unsignalized intersections on the other hand are expected to operate at a higher level of performance and with less delay. Delay at unsignalized intersections is generally more disturbing for drivers than the same delay at signalized intersections, therefore the LOS thresholds for unsignalized intersections are lower.

Table 3: Level of Service Description for Unsignalized Intersections

LOS	Average Delay (sec/vehicle)	Description
A	0-5	Little or no delay
B	5-10	Short traffic delays
C	10-20	Average traffic delays
D	20-30	Long traffic delays
E	30-45	Very long traffic delays
F	>45	**

Source: Highway Capacity Manual, 1994, Special Report 209 Washington, DC: Transportation Research Board

**When demand volume exceeds the capacity of the intersection, extreme delays will be encountered which may affect other traffic zones. This condition usually warrants improvement to or signalization of the intersection.

The roadway segment analysis of the 76 Expressway is based on 1999 County of San Diego Traffic Impact Analysis Guidelines published by SANDAG and on conversation with staff of CALTRANS. The remainder of the roadway segment analysis is based upon the 1995 City of Oceanside Circulation Element and the Oceanside Level of Service Criteria for street segments. The street segment level of service criteria is included in Appendix A of this report.

According to the 1995 City of Oceanside Circulation Element, the City's goal for acceptable service levels is LOS C for roadway segments where appropriate with LOS D being permissible. The Circulation Plan contains the following excerpt describing the limitations of the city's goal for level of service C:

> *The goal is to provide a LOS "C" for street segments but recognizing that a LOS "D" is considered acceptable for short peak hour periods and only if it becomes impractical to achieve a LOS "C." The region recognizes that LOS "D" is considered acceptable.*

A description of the operating conditions for street segment LOS is contained in Table 4. The same description is included in the City of Oceanside Circulation Element.

Table 4: Level of Service Description for Roadway Segments

LOS	Description
A	Free flow condition, speed controlled by drivers desire, speed limits, or physical roadway conditions
B	Stable flow, small restriction in operating speeds is present, little or no restrictions on mobility
C	Stable flow, speeds and maneuverability are more restricted
D	Approaches unstable flow, tolerable speeds can be maintained, but temporary restrictions to flow cause substantial drops in speed.
E	Volumes near capacity, the ability to maneuver is severely restricted
F	Forced flow, low operating speeds, queues form and volumes are below capacity

Source: 1985 Highway Capacity Manual, Special Report 209, Chapter 11, pg. 11-4

The unsignalized intersections were evaluated with the stop-control analysis module of the Highway Capacity Software, version 2.1f. The signalized intersections were analyzed with the signalized analysis module of the Highway Capacity Software, version 3.1b.

ORGANIZATION OF REPORT

To evaluate the impact of the aforementioned development of parcels 2-6, the following tasks were undertaken and constitute the body of this report:

a) Review existing conditions
b) Overview traffic impact of each parcel
c) Identify future volumes and Levels of Service
d) Recommend improvements

STREET SYSTEM

A field review was conducted to determine the existing conditions within the defined study area. The roadway segments and intersections considered in the study area are described below and are shown graphically in Figure 3.

ROADWAYS

Benet Road is a two-lane industrial street located east of Parcel 3. The roadway is classified as a secondary arterial north of the Airport Road intersection. The exclusive access for Parcel 3 will be located on Benet Road at the crossing of Via Del Monte. Access to the proposed service station and restaurant on the southeast corner of Benet Road/Highway 76, will also be located on Benet Road.

Airport Road is a two-lane industrial street bordering the northern edge of Parcel 5. All of the proposed access points for Parcel 5 will be located on Airport Road.

Via Del Monte is a two-lane industrial street which provides access to Parcel 3 at the intersection with Benet Road.

Carpenter Road is a two-lane industrial street bordering the southern edge of Parcel 3.

Highway 76 is a four-lane State Route Expressway located south of the Oceanside Municipal Airport. The roadway narrows from a short segment of six thru lanes to 4 thru lanes just west of the Foussat Road intersection. Highway 76 provides indirect access to the five parcels considered in the study. Parcels 3, 5 and 6 will all have frontage along the expressway.

Mission Avenue is a four-lane major arterial located south of Parcel 4 and north of Parcel 2. An existing access and a proposed access for Parcel 4 will be located west of the Foussat Road/Mission Avenue intersection. Due to the presence of a raised median, both accesses to Parcel 4 are modeled as exclusive right-turn in and right-turn out driveways. Three proposed access points for Parcel 2 will also be located along Mission Avenue. The most westerly access to Parcel 2 is also modeled as an exclusive right in/right out driveway.

Roymar Road is a two-lane industrial street located west of Parcel 4. Proposed access for Parcel 4 is offset a short distance east of the Airport Road/Roymar Road intersection. Access to parcel 2 is proposed at the signalized intersection of Roymar Road and Mission Avenue. Access to Parcel 6 is proposed south of the intersection of Roymar Road with Airport Road.

OCEANSIDE MUNICIPAL AIRPORT

SR 76 EXWY.

FOUSSAT RD

AIRPORT RD

ROYMAR RD

PRODUCTION AVE

VIA DE LA VALLE

COPPERWOOD WAY

MISSION AVE

CAROLYN CIR

BENET RD

CARPENTER RD

VIA DEL NORTE

VIA EL CENTRO

VIA DEL MONTE

JONES RD

SAN LUIS REY RD

6L

4L

2L

3

4

5

6

2

1

NTS

LEGEND

- EXISTING STOP SIGN
- EXISTING SIGNAL
- 2L NUMBER OF LANES
- DO NOT ENTER SIGN
- JOSEPHO GROUP PARCEL

O'ROURKE ENGINEERING

FIGURE 3
EXISTING CONDITIONS
JOSEPHO GROUP

STREET SYSTEM

A field review was conducted to determine the existing conditions within the defined study area. The roadway segments and intersections considered in the study area are described below and are shown graphically in Figure 3.

ROADWAYS

Benet Road is a two-lane industrial street located east of Parcel 3. The roadway is classified as a secondary arterial north of the Airport Road intersection. The exclusive access for Parcel 3 will be located on Benet Road at the crossing of Via Del Monte. Access to the proposed service station and restaurant on the southeast corner of Benet Road/Highway 76, will also be located on Benet Road.

Airport Road is a two-lane industrial street bordering the northern edge of Parcel 5. All of the proposed access points for Parcel 5 will be located on Airport Road.

Via Del Monte is a two-lane industrial street which provides access to Parcel 3 at the intersection with Benet Road.

Carpenter Road is a two-lane industrial street bordering the southern edge of Parcel 3.

Highway 76 is a four-lane State Route Expressway located south of the Oceanside Municipal Airport. The roadway narrows from a short segment of six thru lanes to 4 thru lanes just west of the Foussat Road intersection. Highway 76 provides indirect access to the five parcels considered in the study. Parcels 3, 5 and 6 will all have frontage along the expressway.

Mission Avenue is a four-lane major arterial located south of Parcel 4 and north of Parcel 2. An existing access and a proposed access for Parcel 4 will be located west of the Foussat Road/Mission Avenue intersection. Due to the presence of a raised median, both accesses to Parcel 4 are modeled as exclusive right-turn in and right-turn out driveways. Three proposed access points for Parcel 2 will also be located along Mission Avenue. The most westerly access to Parcel 2 is also modeled as an exclusive right in/right out driveway.

Roymar Road is a two-lane industrial street located west of Parcel 4. Proposed access for Parcel 4 is offset a short distance east of the Airport Road/Roymar Road intersection. Access to parcel 2 is proposed at the signalized intersection of Roymar Road and Mission Avenue. Access to Parcel 6 is proposed south of the intersection of Roymar Road with Airport Road.

Foussat Road is classified as a secondary arterial north of Mission Avenue and a collector south of Mission Avenue. The roadway borders the eastern edge of Parcel 4. A proposed access to Parcel 4 will be offset approximately 150 feet north of the Foussat Road/Mission Avenue intersection. Due to the width of the roadway and to the close proximity of the Foussat Road/Mission Avenue intersection, the access to Parcel 4 is modeled as an exclusive right in/right out driveway.

Copperwood Way is a 2-lane industrial street located east of Parcel 2 and 4. The roadway provides access to the retail centers and private property located south of Mission Avenue.

INTERSECTIONS

Benet Road/Airport Road is a stop controlled T-intersection located west of Parcel 5.

Benet Road/Highway 76 is a 4-way signalized intersection located at the northeast corner of Parcel 3.

Benet Road/Via Del Monte is a stop controlled T-intersection located east of Parcel 3. The proposed access for the site will be opposite Via Del Monte.

Benet Road/Carpenter Road is a stop controlled T-intersection on the southwest corner of Parcel 3.

Airport Road/Highway 76 is a signalized 4-way intersection on the northeast corner of parcel 6 and the southeast corner of Parcel 5.

Royamar Road/Mission Avenue is a signalized T-intersection located north of Parcel 2. An access for Parcel 2 is proposed at the intersection which would cause a conversion from a T-intersection to a 4-way intersection

Airport Road/Mission Avenue is a signalized 4-way intersection on the northwest corner of Parcel 2.

Airport Road/Roymar Road is a stop controlled T-intersection located south of Parcel 6. Although there is a westbound lane on Roymar Road the westbound movements are restricted. However, drivers do not abide by the restriction which is evident from AM and PM westbound volumes measured during traffic counts.

Foussat Road/Highway 76 is a signalized 4-way intersection located north of Parcel 4. Like the other intersections along Highway 76, the Foussat Road/Highway 76 intersection will be influenced by the development of all five of the parcels.