



# Special Traffic Studies #1 Final Draft Report

Prepared for:

**City of Grover Beach**

Prepared by:



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ENGINEERS · PLANNERS

**CITY OF GROVER BEACH  
SPECIAL TRAFFIC STUDIES #1**

**FINAL DRAFT REPORT**

**PREPARED FOR:  
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GROVER BEACH, CA 93433**

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**NOVEMBER 25, 2008**

**25-3472-02  
R1325RPT001**

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## INTRODUCTION

This report has been prepared to present the analysis and findings of three special traffic studies to address specific issues identified by the Grover Beach City Council and the community at large. The specific traffic studies requested are as follows:

1. Consideration of angled on-street parking on Grand Avenue between 6<sup>th</sup> Street and 12<sup>th</sup> Street.
2. Consideration of the need for traffic calming on Margarita Avenue between Charles Street and 12<sup>th</sup> Street.
3. Evaluation of the need for a pedestrian crossing at the Brighton Avenue/Oak Park Boulevard intersection.

Shown in Figure 1 are the study locations within the City. In order to address these specific issues, appropriate technical traffic data, including daily and peak hour traffic counts and radar speed surveys were collected. Past documents, including the General Plan Circulation Element and other traffic studies were obtained and reviewed. In addition, City staff, including representatives from Community Development, Public Works and the Police Department were contacted and interviewed. Lastly, a field survey was conducted to observe first hand current traffic and other physical conditions that may cause or contribute to the specific issues under study.

The following analysis summarizes the traffic data collected, the past studies and interviews and presents the opportunities and constraints of alternative changes that could potentially address the issues raised.

## CONSIDERATION OF ANGLED PARKING ON GRAND AVENUE

### *Issue*

The City Council directed staff to investigate the feasibility of reducing Grand Avenue to two lanes and placing on-street angled parking for some or all of the blocks between 6<sup>th</sup> and 12<sup>th</sup> Streets. This was a result of comments from some downtown business owners that believe the present four lane design of Grand Avenue is not oriented to serve downtown businesses because it allows for excessive travel speeds. The goal of the redesign would be to reduce traffic speeds and provide additional parking for downtown businesses.

### *Background*

Grand Avenue serves as the most important “backbone” travel corridor within and through the City. The idea of providing angled parking along Grand Avenue has been discussed in the past. . In 1998, the *City of Grover Beach Traffic Calming Study* was prepared by RMO Architects. This study analyzed traffic, parking and angled parking and design related features on Grand Avenue. As a result of this study, the *City of Grover Beach – Downtown Project* and the associated Environmental Impact Report (Rincon Consultants, April 2000) was prepared for a project of physical improvements in the form of traffic calming measures to beautify and enhance traffic safety on Grand Avenue between 8<sup>th</sup> Street and 11<sup>th</sup> Street. The Council approved the Downtown Project as shown in Figure 2 with the following improvements:

- Mid-block pedestrian crossing without an activated signal in the 900 block of West Grand Avenue;
- Bulb-outs at all intersections from 8<sup>th</sup> Street (a total of 16), so that the length of any pedestrian crossing on Grand Avenue would be no more than 54 feet;
- Decorative pavers at intersections from 8<sup>th</sup> Street to 11<sup>th</sup> Street;
- A new traffic signal at 10<sup>th</sup> Street and 11<sup>th</sup> Street;

- Timing of the signals at 8<sup>th</sup>, 9<sup>th</sup>, 11<sup>th</sup> and 13<sup>th</sup> Streets to achieve a target vehicle speed of 25 miles per hour; and
- Landscaped median, repaired sidewalks, and upgraded street furniture.

Based on the traffic analysis conducted for the Downtown Project, the Council determined that many existing features of West Grand Avenue needed to remain to provide the projected traffic capacity and maintain good traffic flow (Level of Service) conditions. The following summarizes these key features:

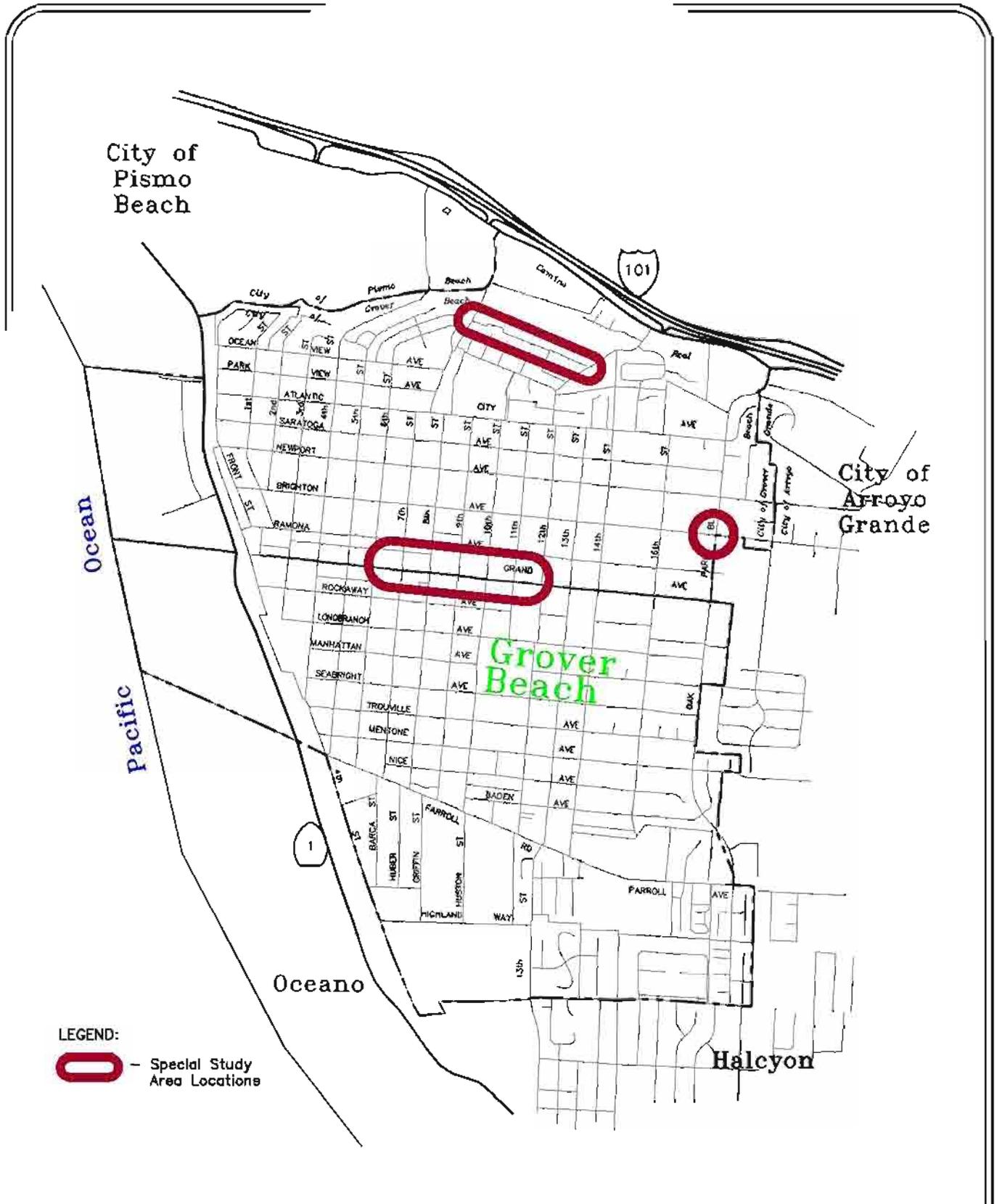
- Four-lane traffic would continue along the length of Grand Avenue;
- Existing on-street parallel parking would remain; and
- All side streets perpendicular to West Grand Avenue would remain as two-way streets.

Subsequent to the approval of the Downtown Project, a follow-up traffic operations study, entitled *West Grand Avenue Traffic Mitigation Project* (TPG Consulting, June 2002) was prepared in order to inspect and study existing signal facilities before project construction could proceed.

In 2004, federal grant monies were used to install the landscape center median, street lights, street trees, benches and trash receptacles between 9<sup>th</sup> and 10<sup>th</sup> Streets. However, the grant amounts were not sufficient to fund the remaining portions of the Downtown Project.

In 2005, the Council adopted the updated Circulation Element and incorporated the Downtown Project policies related to Grand Avenue.

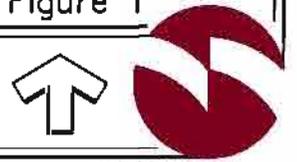
The goal of the Downtown Project was to provide traffic calming and enhance the pedestrian environment while still meeting the travel demand needs. This is similar to this current analysis of whether the placement of angled parking can satisfy the two divergent goals for West Grand Avenue of slowing traffic and increasing pedestrian friendliness while at the same time servicing high levels of through traffic at acceptable Levels of Service.

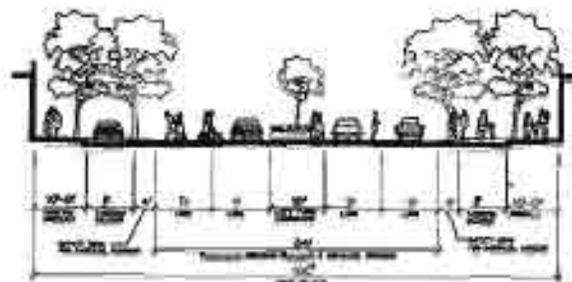


**GROVER BEACH SPECIAL TRAFFIC STUDIES**

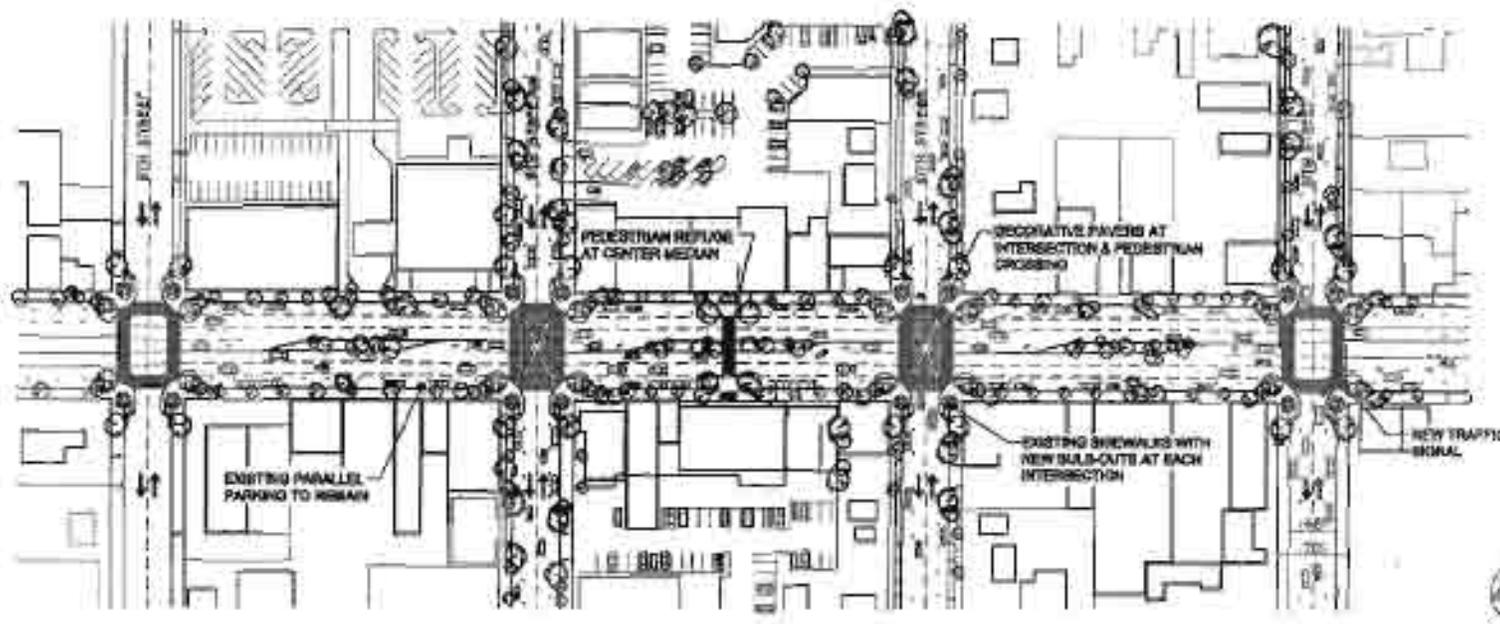
Figure 1

**Study Area Locations**





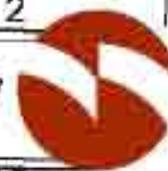
GRAND AVENUE SECTION



GROVER BEACH SPECIAL TRAFFIC STUDIES

Figure 2

**W. GRAND AVE. "DOWNTOWN PROJECT" IMPROVEMENTS  
BETWEEN 8TH AND 11TH STREETS**



## ***Criteria for Analysis***

In establishing criteria for this traffic analysis for the consideration of angled parking on Grand Avenue, the relevant General Plan Circulation Element policies need to be understood. They are as follows:

### **GOALS, POLICIES AND PROGRAMS**

#### **Goal 1: Provide Safe and Efficient Vehicular Movement**

##### **Policy 1.2: Monitor the operation and performance of the street system.**

- Program 1.2.1: The City shall maintain and update a functional classification of the street system that reflects land use and traffic patterns.
- 
- Program 1.2.3: The City shall maintain a minimum traffic operating Level of Service of “C” on all City transportation facilities.

##### **Policy 1.4: Improve traffic capacities of streets.**

- Program 1.4.3: The City shall consider restriction of on-street parking on major and secondary arterials when needed to provide additional street capacity.

##### **Policy 1.5: Improve traffic safety.**

- Program 1.5.2: The City shall consider changes in speed limits, parking and turning restrictions to enhance safety.

#### **Goal 2: Coordinate Policies for Land Development and Circulation**

##### **Policy 2.1: The planning, alignment and improvement of the street network will reflect the proposed land use pattern of the General Plan.**

- Program 2.1.1: The functional classification of streets will identify street purpose and the standards of improvement necessary to accommodate anticipated traffic demand.

##### **Policy 2.3: Integrate the circulation system as a positive element of community design.**

- Program 2.3.4: The City shall consider the construction of landscaped medians on commercial thoroughfares (such as Grand Avenue) to help slow traffic flows and to help provide for a more scenic roadway.

#### **Goal 3: Promote Alternative Travel Modes, Including Transit, Pedestrian, Bicycle, Rail Systems**

##### **Policy 3.3: Encourage bicycle transportation.**

- Program 3.3.2: The City shall provide bicycle lanes along the Grand Avenue corridor.
- Policy 3.4: Improve and maintain the system of sidewalks and crosswalks to promote a pedestrian-friendly community
- Program 3.4.1: The City shall identify and prioritize major sidewalk improvements.

### **LEVEL OF SERVICE CRITERIA**

In order to evaluate the Level of Service (LOS) on Grand Avenue, the current General Plan Level of Service criteria was identified. As shown in Table 1, Level of Service criteria and thresholds in the General Plan Circulation Element are provided for each classification of roadway within the City.

**TABLE 1  
LEVEL-OF-SERVICE (LOS) CRITERIA FOR ROADWAY SEGMENTS**

Roadway Segment Type	Total Two-way Average Daily Traffic (ADT)				
	LOS "A"	LOS "B"	LOS "C"	LOS "D"	LOS "E"
4-Lane Divided Freeway	28,000	43,200	61,600	74,400	80,000
2-Lane Highway	11,000	12,500	14,500	16,000	18,000
4-Lane Major Divided Arterial (with left-turn lane) Existing Grand Avenue	22,000	25,000	29,000	32,500	36,000
4-Lane Minor Undivided Arterial (no left-turn lane)	18,000	21,000	24,000	27,000	30,000
2-Lane Major Arterial (with left-turn lane) Grand Ave. w/angled parking	11,000	12,500	14,500	16,000	18,000
2-Lane Minor Arterial (no left-turn lane)	9,000	10,500	12,000	13,500	15,000
2-Lane Collector	6,000	7,500	9,000	10,500	12,000
2-Lane Local Street	2,000	3,000	4,000	5,000	6,000

*Note: 1. Based on "Highway Capacity Manual", Transportation Research Board, 2000.*

*2. All traffic volumes are approximate and assume ideal roadway characteristics. Actual threshold volumes for each Level of Service listed above may vary depending on a variety of factors including (but not limited to) roadway curvature and grade, intersection or interchange spacing, driveway spacing, percentage of trucks and other heavy vehicles, travel lane widths, signal timing characteristics, on-street parking, volume of cross traffic and pedestrians, etc.*

Grand Avenue is currently a 4-Lane Major Divided Arterial (with left-turn lane) with a Level of Service (LOS) "C" traffic volume threshold of 29,000 ADT. If angled parking were to be installed reducing Grand Avenue to two lanes, the LOS "C" threshold for a 2-Lane Major Arterial (with left-hand turn) would drop to 14,500 ADT or potentially lower, given the capacity-reducing activities inherent to angled parking. Therefore, LOS "C" traffic capacity on Grand Avenue with angled parking would likely fall between 12,000 and 14,500 ADT, or around 13,500 ADT.

***Alternatives Analysis***

In analyzing the Grand Avenue angled parking proposal, many criteria in the General Plan goals, policies and programs need to be considered. The first criteria that need to be addressed is related to *Goal 1: Provide Safe and Efficient Vehicular Movement* that articulates *Policy 1.2, Program 1.2.3* for maintaining acceptable LOS "C" travel conditions throughout the City. Table 2 indicates the existing and projected 2025 traffic volumes at selected locations on Grand Avenue and the associated LOS if the arterial remains four-lanes or is reduced to two-lanes with angled parking.

**TABLE 2  
GRAND AVENUE EXISTING AND 2025 TRAFFIC PROJECTIONS**

<b>Grand Avenue Segment</b>	<b>Target LOS</b>	<b>Existing ADT</b>	<b>Existing LOS 4 Lanes</b>	<b>Existing LOS 2 Lanes</b>	<b>2025 ADT</b>	<b>2025 LOS 4 Lanes</b>	<b>2025 LOS 2 Lanes</b>
Between 3 <sup>rd</sup> and 4 <sup>th</sup> Streets	C				14,690	A	
Between 6 <sup>th</sup> and 7 <sup>th</sup> Streets	C	12,404	A	C	19,425	B	F
Between 9 <sup>th</sup> and 10 <sup>th</sup> Streets	C	14,739	A	D	22,380	B	F
Between 11 <sup>th</sup> and 12 <sup>th</sup> Streets	C	14,462	A	D	22,380	B	F

*Source: Traffic Counts taken September 16, 2008, 2025 Traffic Forecasts from Citywide Traffic Model*  
*Notes:*

Upon review of Table 2, if the arterial remains four-lanes, Grand Avenue will stay at LOS “A” based on existing traffic volumes and is projected to be LOS “B” in 2025. However, the reduction to two lanes and the addition of angled parking would result in an immediate change in the LOS to “C” and “D”, and the LOS is projected to be “F” in 2025. The current General Plan policy requires a LOS “C” be maintained.

In addition to the LOS analysis, traffic speeds were also evaluated. Radar surveys were taken on November 5, 2008 along Grand Avenue between 2<sup>nd</sup> and 4<sup>th</sup> Streets, 5<sup>th</sup> and 6<sup>th</sup> Streets, 9<sup>th</sup> and 10<sup>th</sup> Streets and 15<sup>th</sup> and 16<sup>th</sup> Streets. The results are shown in Table 3.

**TABLE 3  
GRAND AVENUE RADAR SPEED SURVEY**

<b>Grand Avenue</b>	<b>Average Speed Eastbound/Westbound</b>	<b>85<sup>th</sup> Percentile Eastbound/Westbound</b>
1 Between 2 <sup>nd</sup> and 4 <sup>th</sup> Streets	30 mph	34 mph
2 Between 5 <sup>th</sup> and 6 <sup>th</sup> Streets	32 mph	36 mph
3 Between 9 <sup>th</sup> and 10 <sup>th</sup> Streets	25 mph	30 mph
4 Between 15 <sup>th</sup> and 16 <sup>th</sup> Streets	30 mph	34 mph

*Notes: Metro Traffic Data taken on November 5, 2008*

As evidenced in the radar speed surveys, with a posted speed limit of 35 miles per hour (mph) along the entire length of Grand Avenue through the City of Grover Beach, speeding is not a significant problem. Average travel speeds of between 25 – 32 mph are well within the posted speed limit. The 85<sup>th</sup> Percentile is consistent with the posted speed limit, therefore justifying the enforceability of the posted limit. Interestingly, the landscaped center median between 9<sup>th</sup> and 10<sup>th</sup> Streets does affect travel speeds as the average speed and the 85<sup>th</sup> percentile speed are significantly lower than the adjacent street segments of Grand Avenue and achieves the General Plan target vehicle speed of 25 miles per hour.

Recognizing that there are additional goal and policy considerations other than Level of Service, alternative angled parking concepts were considered that could further enhance pedestrian friendliness of the downtown Grand Avenue corridor. Shown in Figures 3 and 4 are two concepts, one with a conventional 45-degree angled parking facing the outside curb, and another alternative concept that was installed along Price Street in downtown Pismo Beach.

General Plan Policy 3.3 requires that Grand Avenue be a designated bike lane to encourage bicycle transportation. Currently, only portions of Grand Avenue have been striped for bike lanes and most portions are illegible and are not labeled as bike lanes. However, the policy is clear that bike lanes shall be included along Grand Avenue.

**Alternative 1 – Angled Parking Concept**

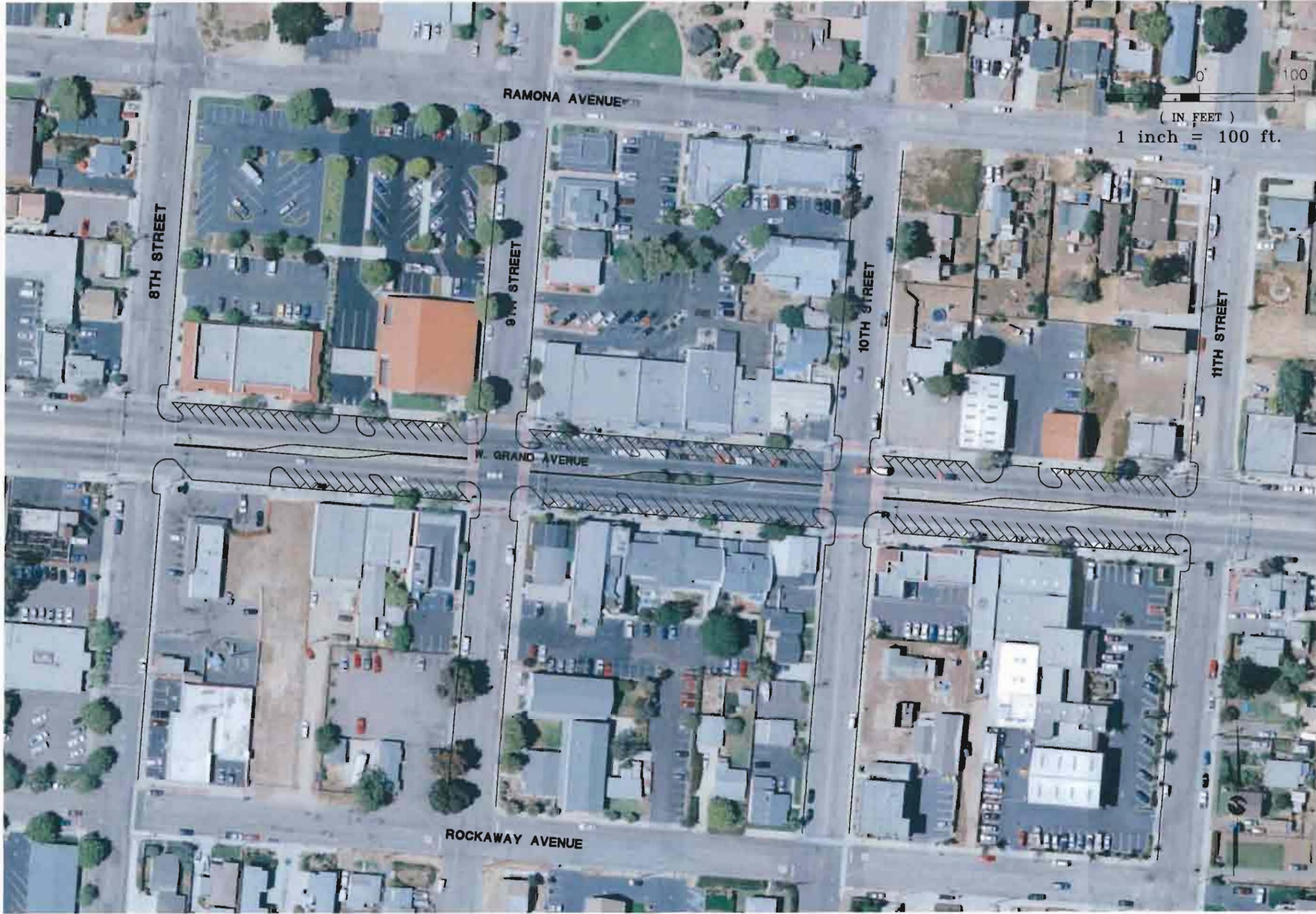
Under Alternative 1, with the conventional angled parking along the outside curb, a traditional downtown character can definitely be developed. Traffic flow along Grand Avenue would slow in anticipation of vehicles entering and leaving the angled parking spaces. However, bike lanes on Grand Avenue would need to be removed as biking behind angled parking spaces is not safe. With the loss of bike and second travel lanes with this concept, increased traffic congestion will result as the competing goals of moving arterial through traffic and increasing the pedestrian friendliness of downtown would be in conflict. If travel movement along Grand Avenue congests, the traffic volumes will not be reduced. Drivers will either bear the congestion and pass slowly along Grand Avenue (particularly problematic during the peak hours) or drivers will seek alternative routes around the congested Grand Avenue segments. Given the grid-like downtown street design of Grover Beach, avoidance of congestion can be achieved by using adjacent parallel streets, such as Ramona Avenue to the north and Rockaway Avenue to the south. These residential streets, although capable from a street width capacity standpoint to handle the increased traffic, are not desirable alternatives due to impacts to adjacent residents. This would also not be consistent with General Policy 2.1.3 which states that through traffic will be discouraged in residential neighborhoods. Bike lanes removed from Grand Avenue could be relocated to these parallel adjacent streets. However, this would not eliminate bicyclists from Grand Avenue as State law permits them whether or not bike lanes are designated.

### **Alternative 2 – Angled Parking Concept**

Under Alternative 2, the less familiar design of center angled parking further cautions drivers and travel typically slows even more than under the traditional Alternative 1 design. Although bike lanes can remain on Grand Avenue under this design, the loss of the second travel lane will again result in traffic congestion with similar impacts to adjacent residential streets as discussed in Alternative 1. Although this concept appears to work in Pismo Beach on Price Street, the existing and projected travel demand on the Grand Avenue corridor in Grover Beach differ significantly. The estimated average daily trips (ADT) on Price Street is about 5 – 6,000 ADT in comparison to Grand Avenue which has 14,500 trips per day. Additionally, in conversation with the City of Pismo Beach, they expressed caution in applying their Price Street angled parking treatment to Grand Avenue. With the higher traffic volume on Grand Avenue, the questions of safety both of vehicles backing out of parking spaces and of pedestrians, particularly young children, crossing the travel way to enter or leave parked vehicles, presents significant liability concerns.

OMNI-MEANS prepared the traffic analysis for the Price Street conversion and clearly, when the modification was proposed, Price Street was projected to have excess capacity as a four lane arterial. Whereas Grand Avenue serves significantly more through traffic, the traffic on Price Street was oriented to businesses along the route while through traffic was primarily served by US Highway 101 and Dolliver Street (Highway 1). In this environment, cross access from US 101 to downtown Pismo Beach was probably more important than circulation on Price Street itself. One of the reasons the center angled parking was utilized was to allow safer bike movement along Price Street, even though bike lanes were not striped (as technically there was insufficient street width). For Pismo Beach, the concept was very successful in slowing travel speeds significantly and creating a pedestrian and business friendly environment.

For Grand Avenue, because of the higher traffic volumes and through travel demand for commuter and recreational purposes, placement of the center angled parking creates many if not more traffic impacts than those described in Alternative 1. With the center angled parking and the parallel parking curbside, the perception and presence of increased safety conflicts will cause traffic to slow even further and congest. Although such traffic calming might be considered as a desirable effect, if it forces additional traffic into the adjacent residential areas, the cumulative neighborhood impacts may be greater than the localized benefits.



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1 inch = 100 ft.

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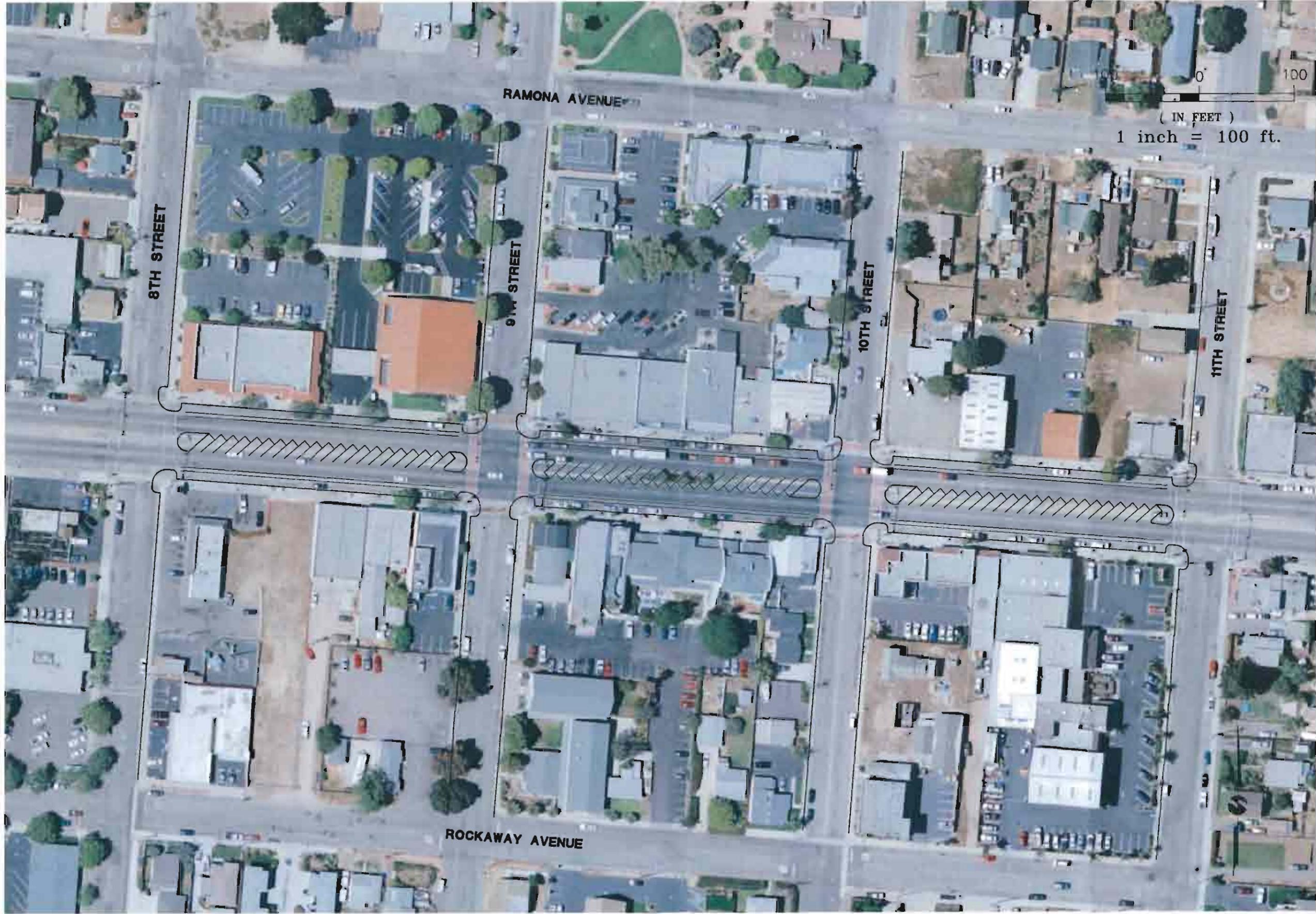
REVISIONS	DESCRIPTION

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1325 EXETER DRIVE  
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**FIGURE 3 - ALTERNATIVE 1**  
**GROVER BEACH SPECIAL TRAFFIC STUDIES**  
**GRAND AVENUE STREETScape DESIGN**  
**GROVER BEACH, CA**

SCALE	1" = 100'
JOB NO.	25-3472-02
DESIGNED	NJ
DRAWN	NJ
FILE	1325EX1001.dwg
CHECKED	IN
DATE	10-29-08

SHEET No.  
**EX1**  
1 of 3



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- APPROVED
- BID
- CONSTRUCTION
- RECORD

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1320 K STREET, SUITE 200  
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(916) 752-8628  
WALNUT CREEK

**FIGURE 4 - ALTERNATIVE 2**  
**GROVER BEACH SPECIAL TRAFFIC STUDIES**  
**GRAND AVENUE STREETScape DESIGN**  
**GROVER BEACH, CA**

SCALE	1" = 100'
JOB NO.	25-3472-02
DESIGNED	NJ
DRAWN	NJ
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DATE	10-29-08

SHEET No.  
**EX2**  
2 of 3

### **Alternative 3 - Maintaining Grand Avenue as a Four Lane Arterial**

In returning to a concept that maintains four-lanes on Grand Avenue, Alternative 3, as shown in Figure 5, incorporates pedestrian-friendly amenities such as curbside bulb-outs and angled parking on the side streets which creates additional parking spaces. With the bulb-outs, the Grand Avenue center median lane widths can be reduced to 11 foot lanes, while the 5 foot bike lanes and parallel parking can remain and serve a dual-purpose of narrowing the appearance of Grand Avenue and subsequently slowing traffic. Right now, with just the center median between 9<sup>th</sup> and 10<sup>th</sup> Streets, traffic is slowing as evidenced in the radar speed survey to an average speed of 25 mph. With the further implementation of the Downtown Project with the center median, narrowed lanes and pedestrian friendly features, the potential for slowing traffic further and creating a more pedestrian and business friendly environment between 6<sup>th</sup> and 12<sup>th</sup> Streets is certainly achievable.

In discussion with the Police Chief regarding the three alternatives, the two concepts that reduce travel lanes on Grand Avenue could be acceptable if the improvements would maintain efficient traffic flow and not reroute vehicles onto the residential side streets. However, his concern is that current and projected travel demand along Grand Avenue will exceed the capacity of Grand Avenue with only two through travel lanes. This would cause traffic congestion on Grand Avenue and force motorists to use other east/west residential streets, which he views as a significant problem. Therefore, he would prefer a design solution that enhances a more business and pedestrian friendly environment while still maintaining adequate capacity on Grand Avenue to avoid traffic congestion.

#### ***Recommendation***

The Downtown Project adopted in 2000, implements traffic calming features and creates a more pedestrian friendly environment while still maintaining the four lane arterial road. It is recommended that efforts to complete the enhancements to Grand Avenue, consistent with the Downtown Project should continue to be pursued. The installation of the medians in the remaining blocks should reduce speeds to an average of 25 miles per hour as evidenced by the speed survey for the block between 9<sup>th</sup> and 10<sup>th</sup> Streets. It is understood that storm drainage issues and financing options need to be resolved, but achieving the City's cumulative circulation goals would be best served by a plan that maintains four lanes on Grand Avenue. As shown in Exhibits 1 and 2, the segment of Grand Avenue between 9<sup>th</sup> and 10<sup>th</sup> Streets is a good start and it slows traffic.

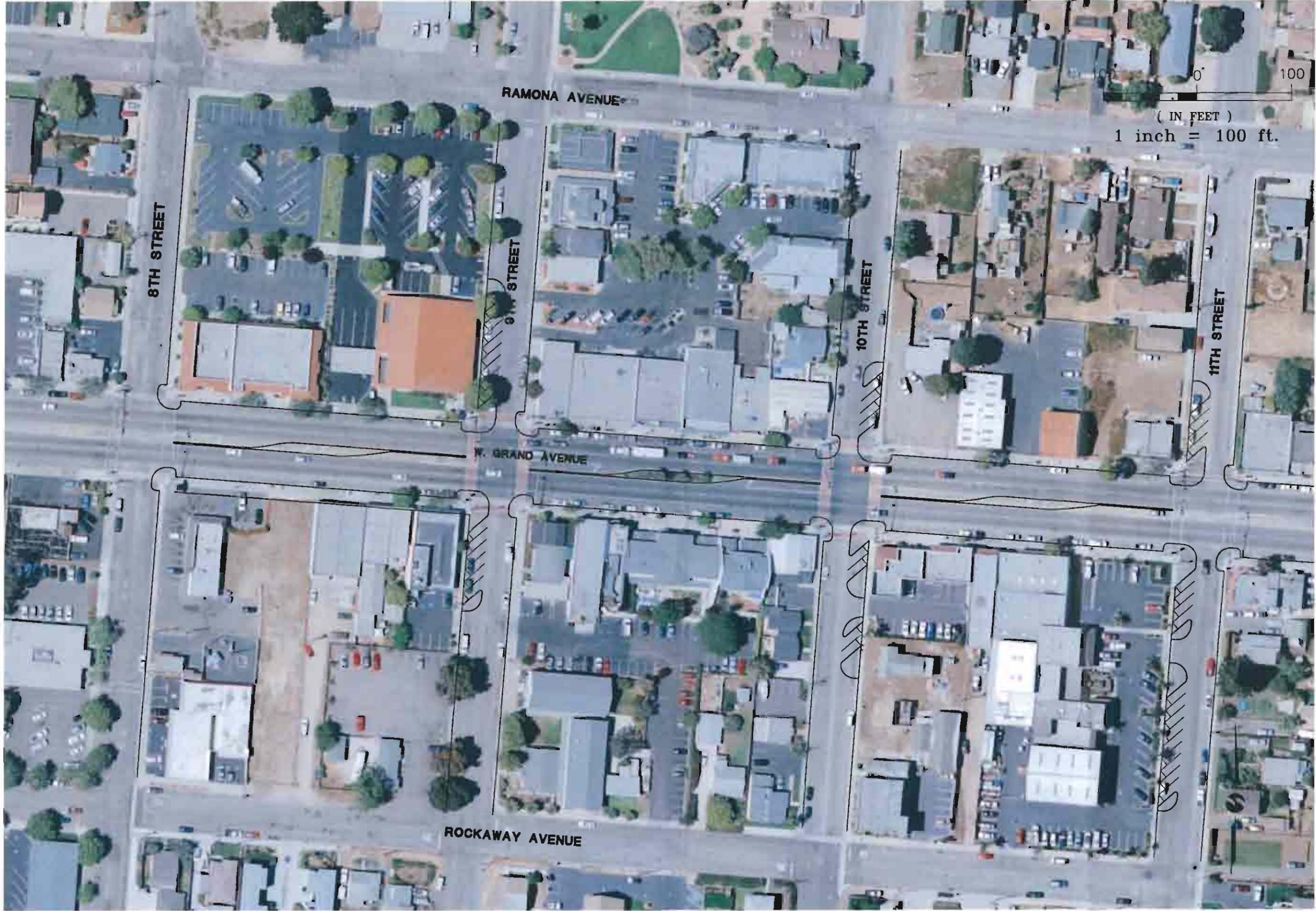
However, if the Council determines that there are over riding benefits to one of the alternatives that would reduce Grand Avenue to two travel lanes, an environmental review and traffic study would need to be completed prior to making any lane changes. The purpose would be to quantify the vehicle trips that would be potentially rerouted onto residential streets. In addition, the City's Circulation Element would need to be revised to reflect the changes to the circulation system and adopted levels of service. It should also be noted that if bike lanes were removed from Grand Avenue, SLOCOG may withhold the funding of future projects on Grand Avenue.

**Exhibit 1 - Grand Avenue without Median Improvements**



**Exhibit 2 - Grand Avenue with Median Improvements**





( IN FEET )  
1 inch = 100 ft.

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**FIGURE 5 - ALTERNATIVE 3**  
**GROVER BEACH SPECIAL TRAFFIC STUDIES**  
**GRAND AVENUE STREETSCAPE DESIGN**  
**GROVER BEACH, CA**

SCALE	1" = 100'
JOB NO.	25-3472-02
DESIGNED	MJ
DRAWN	MJ
FILE	1325CR003.dwg
CHECKED	MF
DATE	10-29-08

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**EX3**  
**3** OF **3**

## CONSIDERATION OF TRAFFIC CALMING FEATURES ON MARGARITA AVENUE

### *Issue*

Margarita Avenue is located between Charles Street and 12<sup>th</sup> Street on the northern side of the City. Portions of Margarita Avenue, towards Charles Street, were originally constructed as private streets that were later dedicated to the City. Over the years, recurring concern as to the speed of travel along Margarita Avenue has prompted the need to study whether implementation of traffic calming measures might be effective in reducing travel speeds.

### *Background*

Over the years, residents living on Margarita Avenue have stated their concerns about speeding. Margarita Avenue is narrower than most streets in the City with a curb to curb width of approximately 32 feet. It also is somewhat unique with its rolling terrain and in particular on the western end of the street, the horizontal curvature of the roadway coupled with the vertical rolling terrain conditions do not immediately seem to lend themselves to excessive travel speeds. Additionally, the west end of Margarita Avenue connects to Charles Street on a steep vertical curve that currently has a recommended speed sign of 10 mph because of the difficult terrain and speed related concerns. Exhibits 3 through 5 show the east end, west end and Margarita Avenue/Charles Street intersection and the 10 mph posted speed limit sign.

**Exhibit 3 - East End of Margarita Avenue**



**Exhibit 4 - West End of Margarita Avenue**



**Exhibit 5 - Charles Street approach to Margarita Avenue**



## ***Criteria for Analysis***

In establishing the criteria for this traffic analysis to consider traffic calming on Margarita Avenue, the relevant General Plan Circulation Element policies need to be stated and understood. They are as follows:

### **Goal 1: Provide Safe and Efficient Vehicular Movement**

#### **Policy 1.2: Monitor the operation and performance of the street system.**

- Program 1.2.4: The City shall strive to control traffic levels in residential neighborhoods to not exceed a threshold of 4,000 ADT on any given residential street segment. If such threshold is exceeded, alternative traffic calming strategies shall be considered and implemented as resources permit.

#### **Policy 1.5: Improve traffic safety.**

- Program 1.5.2: The City shall consider changes in speed limits, parking and turning restrictions to enhance safety.

#### **Policy 1.6: Provide for truck and emergency vehicle traffic.**

- Program 1.6.3: Design standards for local streets will provide adequate access for fire and police department services.
- Program 1.6.4: Implementation of traffic calming measures shall consider potential impacts to response times for emergency service vehicles.

## ***Analysis***

In analyzing the potential speeding and safety problem, official radar speed surveys were conducted on Margarita Avenue. The average speed observed was 23 mph and the 85th percentile speed was 25 mph. Additionally, a daily traffic count was taken on Margarita Avenue on September 16, 2008 to determine whether the traffic volumes were consistent with the residential character of the street. The observed traffic count was 315 daily trips, evenly split in both eastbound and westbound directions. The observed traffic volume was well within the acceptable threshold of 4,000 daily trips for neighborhood streets. Discussion with the Police Chief indicated that complaints of speeding has occurred in the past, however, their radar speed observations were consistent with the findings of this analysis, suggesting that on average speeding is not a problem. However, it was acknowledged that drivers at times may speed on Margarita Avenue and enforcement and education efforts could continue.

## ***Recommendation***

Based on the findings of the radar speed survey, daily traffic count and field observations, the configuration of the street seems to function as designed. The curvilinear alignment on the western end of the street is in fact a traffic calming feature. From a traffic engineering point of view, no improvements are recommended. However, should the City wish to address the issue of speed, traffic undulations might be a potential solution.

## **CONSIDERATION OF A PEDESTRIAN CROSSING AT BRIGHTON AVENUE & OAK PARK**

### ***Issue***

Oak Park Boulevard is a major arterial in the City of Grover Beach oriented in a north-south direction and adjacent to the City of Arroyo Grande. The east side frontage on Oak Park Boulevard is within the City of Arroyo Grande. Regular pedestrian crossing of Oak Park Boulevard occurs at Brighton Avenue, which requires a pedestrian to cross four through lanes and a left turn lane pocket. Site distance is good on the southerly sloping street that serves important arterial access for both Cities to US 101. At Brighton

Avenue, speeding on Oak Park Boulevard has in the past been a problem and a permanent active radar display has been installed for both directions to help control and reduce travel speeds. Speeding on Oak Park Boulevard is a persistent problem that has been studied in the past. This analysis will again analyze speeding on Oak Park Boulevard and make a recommendation based on the evaluation of alternative measures.

### ***Background***

In 2006, Oak Park Boulevard was widened to a full four-lane arterial street with left turn channelization. For many years, just north of the Brighton Avenue intersection, Oak Park Boulevard remained partially finished as a three lane arterial. Remaining right of way was purchased from adjacent property owners and the improvement was finally completed to facilitate arterial traffic flow. However, upon completion of the widening improvements, speeding problems arose as an unforeseen consequence of the increased capacity, traffic levels, and perceived driver safety of the new four-lane roadway.

### ***Criteria for Analysis***

In establishing the criteria for this traffic analysis to consider a pedestrian crosswalk at Brighton Avenue and Oak Park, the relevant General Plan Circulation Element policies need to be stated and understood. They are as follows:

#### **Goal 1: Provide Safe and Efficient Vehicular Movement**

##### **Policy 1.2: Monitor the operation and performance of the street system.**

- Program 1.2.3: The City shall maintain a minimum traffic operating Level of Service of “C” on all City transportation facilities.

##### **Policy 1.5: Improve traffic safety.**

- Program 1.5.1: The City shall review the location and frequency of accidents and develop specific site improvements.
- Program 1.5.2: The City shall consider changes in speed limits, parking and turning restrictions to enhance safety.

### ***Analysis***

In analyzing the need for a pedestrian crossing, traffic counts and radar speed surveys were taken on Oak Park. On an average weekday (Tuesday, September 16, 2008) 15,174 vehicles were counted with an even 50/50 split in northbound and southbound travel. During the AM and PM peak hours, the resulting Levels of Service (LOS) were at LOS “C” and “F”, respectively. The LOS “F” PM peak hour condition is largely due to the high volume of traffic on Oak Park Boulevard. Side traffic on Brighton Avenue is not significant on the stop signed controlled approaches. The cause of this LOS PM peak hour problem is for only one movement, which is the eastbound to northbound left turn.

No pedestrians were observed during the site visit to this intersection location. The radar speed surveys conducted in both the northbound and southbound direction indicated that the average travel speed is 34 mph, with an 85<sup>th</sup> percentile speed of 37/38 mph, which exceeds the posted speed limit of 30 mph. Exhibits 6 and 7 show the range of visibility in both directions along Oak Park Boulevard and the evidence of travel speeds as indicated on the fixed radar signage with the posted speed limit. The combination of the high peak hour and the current travel speeds evidences that pedestrian crossing at this location would not be easy, particularly during the AM and PM peak hours. However, in reviewing signal warrants, no warrant for potential signalization of this intersection is met, largely because of the low number of traffic and pedestrian crossing at Brighton Avenue. Discussion with Police Chief Copey indicates that the pedestrian and traffic crossing of Oak Park Boulevard at Brighton Avenue has been subject to a number of complaints with no easy solution.

***Recommendation***

Given the high traffic volume on Oak Park Boulevard particularly during the AM and PM peak hours, it is understandable that crossing or entering onto Oak Park Boulevard from Brighton Avenue would be difficult for vehicle traffic and for pedestrians trying to cross this street. Although signalization of this intersection would significantly increase vehicular and pedestrian crossing safety at this location, signal warrants are not met nor would the cost/benefit analysis indicate such signalization would be worthwhile. Crosswalks could be added with advanced signage, however, findings and opinions are mixed amongst professionals as to their potential benefit and/or impact recognizing the potential false sense of security of pedestrians crossing in crosswalks. Alternative solutions were explored with the Police Chief, however, each potential solution presented trade-offs that were as significant a safety and liability problem as to keeping the present condition as it exists. It is therefore recommended that no improvements be immediately installed and that travel conditions in the future be monitored for the need for alternative solutions to slow traffic and improve pedestrian and traffic crossing safety along Oak Park Boulevard at this intersection.

**Exhibit 6 – Southbound on Oak Park Boulevard**



**Exhibit 7 – Looking Northbound from Brighton Avenue**



# APPENDIX

## Traffic Data

Daily Traffic Volume Counts  
AM and PM Peak Hour Traffic Counts  
Level of Service Calculations  
Radar Speed Surveys



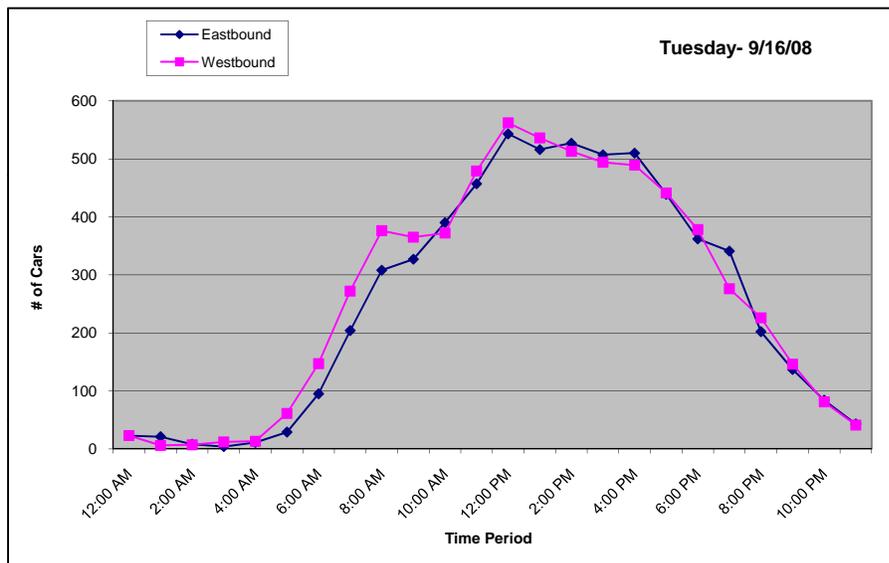
**Metro Traffic Data Inc.**  
 310 N. Irwin Street - Suite 20  
 Hanford, CA 93230  
 800-975-6938 Phone/Fax  
 www.metrotrafficdata.com

# 24 Hour Count Report

Prepared For: **Todd Tregenza**  
 OMNI-MEANS, Ltd.  
 943 Reserve Drive, Suite 100  
 Roseville, CA  
 (916) 782-8688

**LOCATION** Grand Avenue btw 6th/7th **LATITUDE** 35°7'17.83"N  
**COUNTY** San Luis Obispo **LONGITUDE** 120°37'23.79"W  
**COLLECTION DATE** 9/16/2008 **WEATHER** Clear  
**NUMBER OF LANES** 4

Hour	Eastbound					Westbound					Hourly Totals
	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	
12:00 AM	3	6	7	7	23	4	4	11	4	23	46
1:00 AM	7	5	4	5	21	2	3	1	0	6	27
2:00 AM	1	5	2	0	8	4	0	3	0	7	15
3:00 AM	1	2	1	0	4	4	2	3	3	12	16
4:00 AM	1	2	4	4	11	1	6	3	3	13	24
5:00 AM	5	6	8	10	29	7	16	14	24	61	90
6:00 AM	20	19	28	28	95	22	22	53	50	147	242
7:00 AM	43	36	49	76	204	57	63	75	77	272	476
8:00 AM	58	91	72	87	308	99	82	91	104	376	684
9:00 AM	58	94	85	90	327	85	87	93	100	365	692
10:00 AM	100	88	87	115	390	69	96	107	100	372	762
11:00 AM	121	96	118	122	457	92	142	109	136	479	936
12:00 PM	142	129	144	128	543	143	148	138	133	562	1105
1:00 PM	128	126	145	117	516	145	133	141	117	536	1052
2:00 PM	154	137	117	119	527	125	129	135	124	513	1040
3:00 PM	117	120	128	142	507	104	127	132	131	494	1001
4:00 PM	118	127	133	132	510	124	122	132	111	489	999
5:00 PM	121	114	106	98	439	108	111	108	114	441	880
6:00 PM	107	74	93	88	362	118	87	91	82	378	740
7:00 PM	98	90	75	78	341	82	64	67	63	276	617
8:00 PM	62	60	31	49	202	53	65	65	43	226	428
9:00 PM	44	33	30	30	137	51	34	37	24	146	283
10:00 PM	24	26	21	13	84	22	22	20	17	81	165
11:00 PM	18	4	15	6	43	10	11	9	11	41	84
<b>Total</b>	49.1%				<b>6088</b>	50.9%				<b>6316</b>	<b>12404</b>





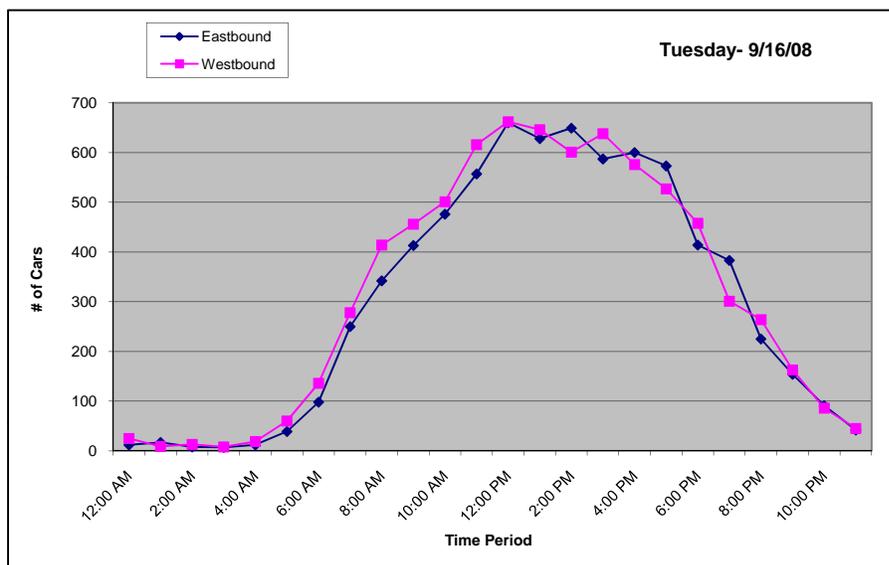
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 310 N. Irwin Street - Suite 20  
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 www.metrotrafficdata.com

# 24 Hour Count Report

Prepared For: **Todd Tregenza**  
 OMNI-MEANS, Ltd.  
 943 Reserve Drive, Suite 100  
 Roseville, CA  
 (916) 782-8688

**LOCATION** Grand Avenue btw 9th/10th **LATITUDE** 35°7'17.15"N  
**COUNTY** San Luis Obispo **LONGITUDE** 120°37'10.55"W  
**COLLECTION DATE** 9/16/2008 **WEATHER** Clear  
**NUMBER OF LANES** 4

Hour	Eastbound					Westbound					Hourly Totals
	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	
12:00 AM	3	0	3	6	12	3	10	7	5	25	37
1:00 AM	2	6	4	5	17	5	1	2	1	9	26
2:00 AM	1	5	2	0	8	4	3	4	2	13	21
3:00 AM	2	3	2	0	7	2	1	3	2	8	15
4:00 AM	1	3	2	6	12	4	6	3	6	19	31
5:00 AM	5	12	9	13	39	7	18	15	20	60	99
6:00 AM	18	21	29	30	98	14	29	53	40	136	234
7:00 AM	59	46	61	84	250	55	58	79	86	278	528
8:00 AM	59	100	80	103	342	107	98	94	115	414	756
9:00 AM	83	106	113	111	413	105	105	115	131	456	869
10:00 AM	122	127	105	122	476	105	126	158	112	501	977
11:00 AM	137	137	140	143	557	132	155	156	173	616	1173
12:00 PM	174	168	172	146	660	161	176	166	159	662	1322
1:00 PM	153	159	170	146	628	179	154	152	161	646	1274
2:00 PM	180	164	158	147	649	162	150	149	140	601	1250
3:00 PM	151	136	146	154	587	162	154	148	174	638	1225
4:00 PM	140	148	171	141	600	134	147	155	140	576	1176
5:00 PM	168	156	127	122	573	131	136	128	132	527	1100
6:00 PM	134	91	101	88	414	127	109	98	124	458	872
7:00 PM	116	97	89	81	383	82	69	79	71	301	684
8:00 PM	69	79	35	42	225	66	69	70	59	264	489
9:00 PM	41	43	38	32	154	49	39	40	35	163	317
10:00 PM	27	27	23	14	91	20	27	20	19	86	177
11:00 PM	19	4	12	7	42	9	17	10	9	45	87
<b>Total</b>	49.1%				<b>7237</b>	50.9%				<b>7502</b>	<b>14739</b>





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# 24 Hour Count Report

Prepared For: Todd Tregenza  
 OMNI-MEANS, Ltd.  
 943 Reserve Drive, Suite 100  
 Roseville, CA  
 (916) 782-8688

LOCATION Grand Avenue btw 11th/12th

LATITUDE 35°7'16.74"N

COUNTY San Luis Obispo

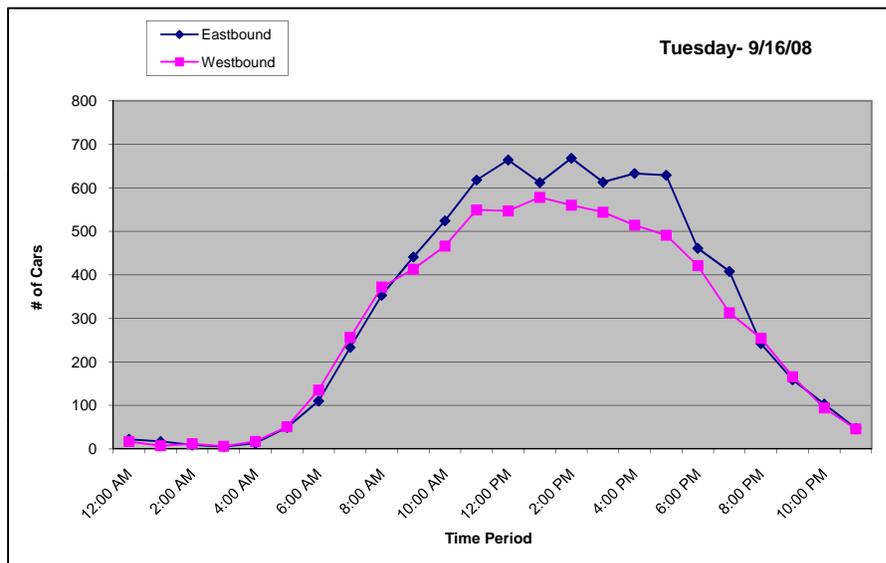
LONGITUDE 120°37'1.56"W

COLLECTION DATE 9/16/2008

WEATHER Clear

NUMBER OF LANES 4

Hour	Eastbound					Westbound					Hourly Totals
	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	
12:00 AM	4	6	6	6	22	4	3	3	7	17	39
1:00 AM	3	6	3	5	17	2	3	0	2	7	24
2:00 AM	3	3	3	0	9	4	2	4	2	12	21
3:00 AM	0	3	2	0	5	2	1	2	1	6	11
4:00 AM	1	4	3	5	13	3	4	4	6	17	30
5:00 AM	6	11	13	19	49	10	13	14	14	51	100
6:00 AM	14	31	26	39	110	23	21	53	38	135	245
7:00 AM	41	50	65	77	233	51	48	67	90	256	489
8:00 AM	65	92	98	98	353	89	95	86	102	372	725
9:00 AM	93	121	113	114	441	88	97	95	133	413	854
10:00 AM	145	137	112	130	524	87	117	139	123	466	990
11:00 AM	144	145	174	155	618	122	132	149	146	549	1167
12:00 PM	179	166	165	154	664	132	149	140	126	547	1211
1:00 PM	171	144	149	148	612	159	138	143	138	578	1190
2:00 PM	181	169	156	162	668	144	140	142	134	560	1228
3:00 PM	148	162	157	146	613	143	124	131	146	544	1157
4:00 PM	164	148	164	157	633	129	130	125	130	514	1147
5:00 PM	176	184	149	120	629	120	121	127	123	491	1120
6:00 PM	134	116	112	99	461	117	104	92	108	421	882
7:00 PM	123	96	91	98	408	81	72	81	79	313	721
8:00 PM	69	80	44	49	242	52	76	75	51	254	496
9:00 PM	45	41	40	33	159	59	34	41	32	166	325
10:00 PM	33	23	29	18	103	27	28	16	23	94	197
11:00 PM	20	11	11	5	47	12	13	12	9	46	93
<b>Total</b>	52.8%				<b>7633</b>	47.2%				<b>6829</b>	<b>14462</b>





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# 24 Hour Count Report

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 OMNI-MEANS, Ltd.  
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 Roseville, CA  
 (916) 782-8688

LOCATION Oak Park Blvd btw Brighton/Grand

LATITUDE 35°7'20.96"N

COUNTY San Luis Obispo

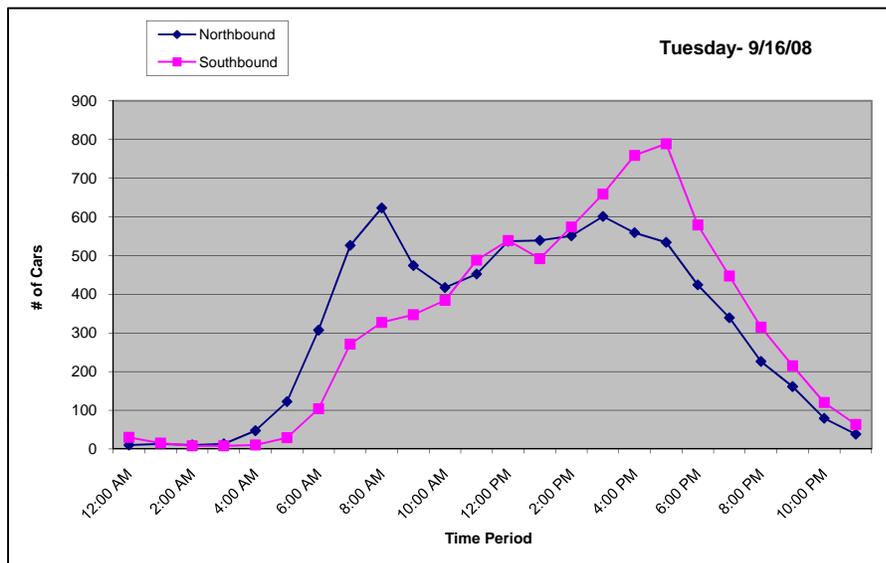
LONGITUDE 120°36'32.53"W

COLLECTION DATE 9/16/2008

WEATHER Clear

NUMBER OF LANES 4

Hour	Northbound					Southbound					Hourly Totals
	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	
12:00 AM	1	1	6	2	10	11	7	3	9	30	40
1:00 AM	5	2	4	2	13	2	2	7	4	15	28
2:00 AM	3	5	1	1	10	3	2	2	1	8	18
3:00 AM	1	4	3	5	13	1	3	3	1	8	21
4:00 AM	12	6	17	12	47	1	5	1	3	10	57
5:00 AM	21	25	32	44	122	1	7	7	14	29	151
6:00 AM	54	67	85	101	307	17	24	35	28	104	411
7:00 AM	109	115	141	161	526	39	51	79	102	271	797
8:00 AM	145	173	148	157	623	81	84	83	79	327	950
9:00 AM	110	92	119	153	474	78	90	88	91	347	821
10:00 AM	111	91	111	104	417	99	83	103	99	384	801
11:00 AM	89	101	129	133	452	101	116	136	135	488	940
12:00 PM	125	123	138	151	537	121	163	131	124	539	1076
1:00 PM	153	133	135	118	539	127	119	125	121	492	1031
2:00 PM	111	138	129	173	551	130	139	161	144	574	1125
3:00 PM	177	130	150	144	601	151	169	141	198	659	1260
4:00 PM	132	142	141	144	559	170	178	198	213	759	1318
5:00 PM	155	141	115	123	534	206	208	209	166	789	1323
6:00 PM	123	128	85	88	424	152	155	131	141	579	1003
7:00 PM	86	96	79	78	339	131	104	119	93	447	786
8:00 PM	83	49	48	46	226	86	92	77	60	315	541
9:00 PM	58	37	29	37	161	70	76	41	28	215	376
10:00 PM	32	15	19	13	79	49	35	23	13	120	199
11:00 PM	13	12	8	5	38	19	17	13	14	63	101
<b>Total</b>	50.1%				<b>7602</b>	49.9%				<b>7572</b>	<b>15174</b>





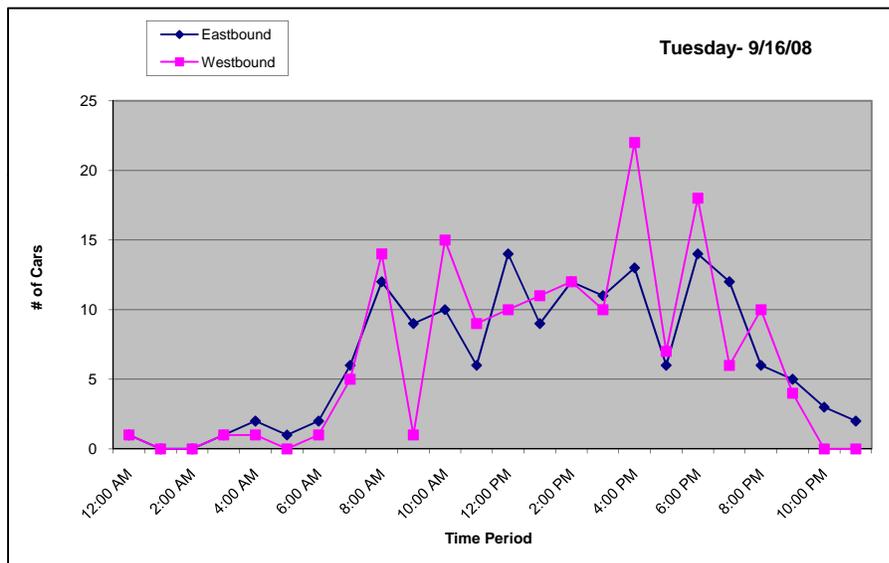
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# 24 Hour Count Report

Prepared For: **Todd Tregenza**  
 OMNI-MEANS, Ltd.  
 943 Reserve Drive, Suite 100  
 Roseville, CA  
 (916) 782-8688

**LOCATION** Margarita Ave btw Charles/12th **LATITUDE** 35°7'52.80"N  
**COUNTY** San Luis Obispo **LONGITUDE** 120°37'11.97"W  
**COLLECTION DATE** 9/16/2008 **WEATHER** Clear  
**NUMBER OF LANES** 4

Hour	Eastbound					Westbound					Hourly Totals
	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	
12:00 AM	0	1	0	0	1	1	0	0	0	1	2
1:00 AM	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	1	0	1	0	0	1	0	1	2
4:00 AM	0	0	0	2	2	0	0	0	1	1	3
5:00 AM	0	0	1	0	1	0	0	0	0	0	1
6:00 AM	0	1	0	1	2	0	1	0	0	1	3
7:00 AM	3	2	1	0	6	2	1	1	1	5	11
8:00 AM	1	3	3	5	12	3	0	4	7	14	26
9:00 AM	1	5	2	1	9	1	0	0	0	1	10
10:00 AM	4	1	5	0	10	4	7	1	3	15	25
11:00 AM	3	1	0	2	6	3	0	1	5	9	15
12:00 PM	1	2	4	7	14	3	1	1	5	10	24
1:00 PM	1	3	5	0	9	3	4	1	3	11	20
2:00 PM	3	4	2	3	12	0	4	3	5	12	24
3:00 PM	3	4	2	2	11	1	4	3	2	10	21
4:00 PM	3	1	3	6	13	3	6	8	5	22	35
5:00 PM	1	1	1	3	6	4	2	0	1	7	13
6:00 PM	5	2	4	3	14	9	5	2	2	18	32
7:00 PM	7	1	1	3	12	1	0	2	3	6	18
8:00 PM	4	0	2	0	6	4	1	3	2	10	16
9:00 PM	3	2	0	0	5	1	0	3	0	4	9
10:00 PM	1	1	0	1	3	0	0	0	0	0	3
11:00 PM	0	1	1	0	2	0	0	0	0	0	2
<b>Total</b>	49.8%				<b>157</b>	50.2%				<b>158</b>	<b>315</b>





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# Turning Movement Report

Prepared For: **Todd Tregenza**  
 OMNI-MEANS, Ltd.  
 943 Reserve Drive, Suite 100  
 Roseville, CA  
 (916) 782-8688

**LOCATION** Grand Avenue @ 8th Street

**LATITUDE** 35°7'17.52"N

**COUNTY** San Luis Obispo

**LONGITUDE** 120°37'17.25"W

**COLLECTION DATE** 9/16/2008

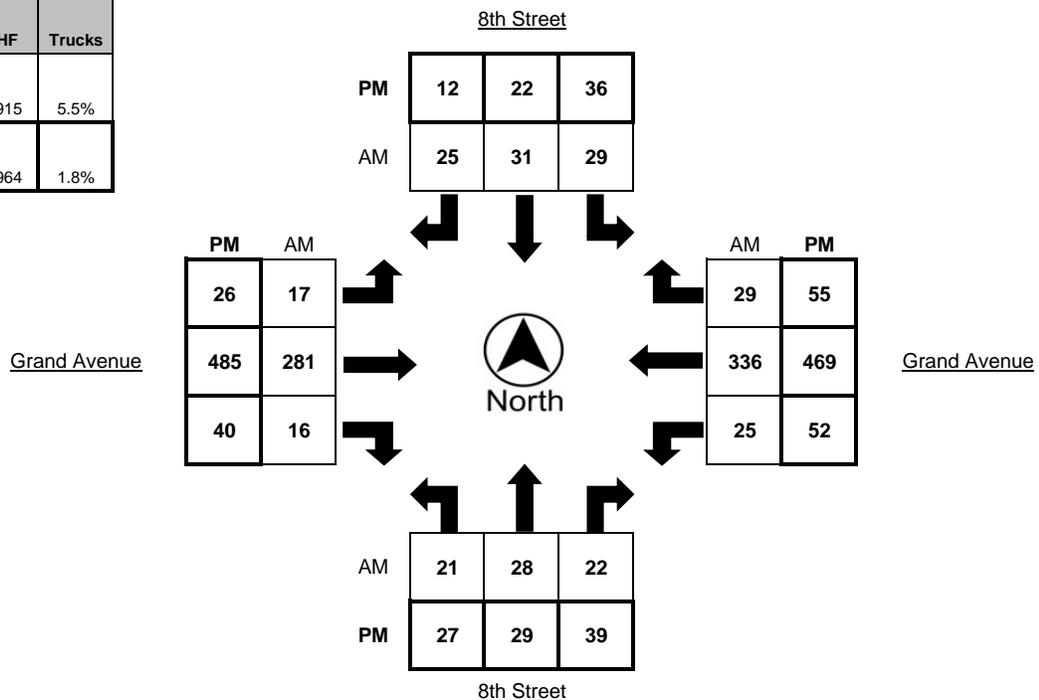
**WEATHER** Sunny and Clear

Time	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	9	3	3	0	3	1	4	1	0	36	1	2	1	41	3	2
7:15 AM - 7:30 AM	5	3	6	1	5	7	0	0	3	30	3	6	0	58	3	4
7:30 AM - 7:45 AM	11	2	5	0	5	3	2	0	1	47	4	6	5	62	5	6
7:45 AM - 8:00 AM	9	2	2	0	4	5	2	1	0	55	5	5	2	67	4	2
8:00 AM - 8:15 AM	3	7	8	1	5	10	4	0	6	57	8	1	6	75	3	5
8:15 AM - 8:30 AM	3	11	3	2	7	11	7	2	6	68	4	6	11	96	8	6
8:30 AM - 8:45 AM	9	5	3	0	14	7	6	1	3	80	2	8	3	79	8	4
8:45 AM - 9:00 AM	6	5	8	1	3	3	8	1	2	76	2	4	5	86	10	6
<b>TOTAL</b>	<b>55</b>	<b>38</b>	<b>38</b>	<b>5</b>	<b>46</b>	<b>47</b>	<b>33</b>	<b>6</b>	<b>21</b>	<b>449</b>	<b>29</b>	<b>38</b>	<b>33</b>	<b>564</b>	<b>44</b>	<b>35</b>

Time	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	6	8	5	0	5	4	2	0	7	136	8	4	6	132	11	9
4:15 PM - 4:30 PM	7	10	7	0	4	5	3	0	6	114	6	3	14	118	6	2
4:30 PM - 4:45 PM	10	9	12	0	2	6	2	0	10	117	10	9	14	114	12	2
4:45 PM - 5:00 PM	4	8	10	0	11	3	3	0	6	111	15	2	12	129	13	5
5:00 PM - 5:15 PM	6	10	10	0	11	5	3	0	5	130	9	1	13	117	16	1
5:15 PM - 5:30 PM	7	2	7	0	12	8	4	0	5	127	6	4	13	109	14	0
5:30 PM - 5:45 PM	4	5	6	0	12	6	2	0	3	116	7	6	3	123	10	3
5:45 PM - 6:00 PM	6	3	11	0	4	2	2	1	2	94	8	3	5	108	6	1
<b>TOTAL</b>	<b>50</b>	<b>55</b>	<b>68</b>	<b>0</b>	<b>61</b>	<b>39</b>	<b>21</b>	<b>1</b>	<b>44</b>	<b>945</b>	<b>69</b>	<b>32</b>	<b>80</b>	<b>950</b>	<b>88</b>	<b>23</b>

PEAK HOUR	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
8:00 AM - 9:00 AM	21	28	22	4	29	31	25	4	17	281	16	19	25	336	29	21
4:30 PM - 5:30 PM	27	29	39	0	36	22	12	0	26	485	40	16	52	469	55	8

	PHF	Trucks
AM	0.915	5.5%
PM	0.964	1.8%





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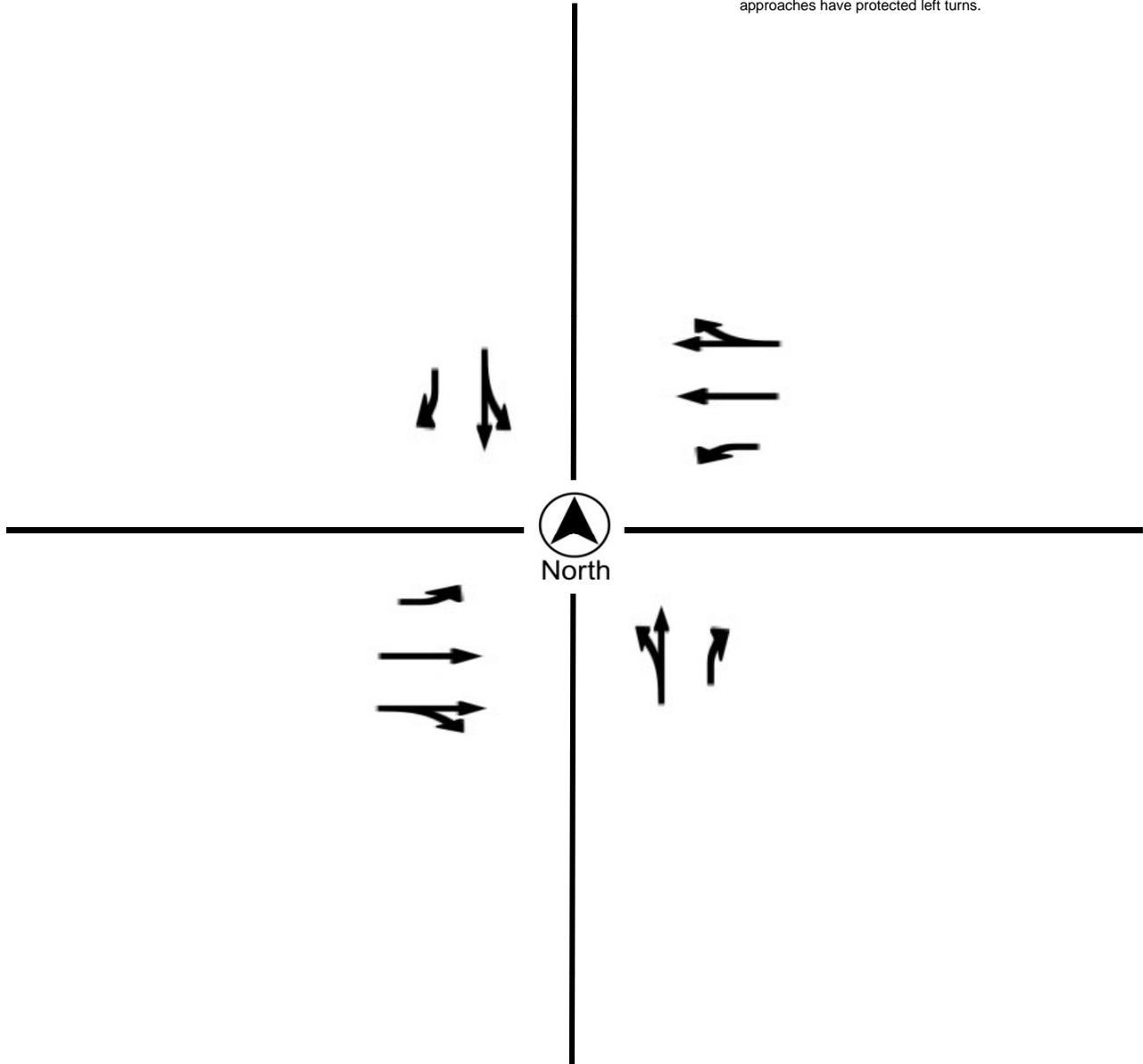
# Turning Movement Report

Prepared For: **Todd Tregenza**  
**OMNI-MEANS, Ltd.**  
 943 Reserve Drive, Suite 100  
 Roseville, CA

**LOCATION** Grand Avenue @ 8th Street  
**COUNTY** San Luis Obispo  
**COLLECTION DATE** 9/16/2008  
**CYCLE TIME** 52 Seconds

**N/S STREET** 8th Street  
**E/W STREET** Grand Avenue  
**WEATHER** Sunny and Clear  
**CONTROL TYPE** Signal

**COMMENTS** Northbound and Southbound approaches have permitted left turns. Eastbound and Westbound approaches have protected left turns.





**Metro Traffic Data Inc.**  
 310 N. Irwin Street - Suite 20  
 Hanford, CA 93230  
 800-975-6938 Phone/Fax  
 www.metrotrafficdata.com

# Turning Movement Report

Prepared For: **Todd Tregenza**  
 OMNI-MEANS, Ltd.  
 943 Reserve Drive, Suite 100  
 Roseville, CA  
 (916) 782-8688

**LOCATION** Grand Avenue @ 11th Street

**LATITUDE** 35°7'16.90"N

**COUNTY** San Luis Obispo

**LONGITUDE** 120°37'3.96"W

**COLLECTION DATE** 9/16/2008

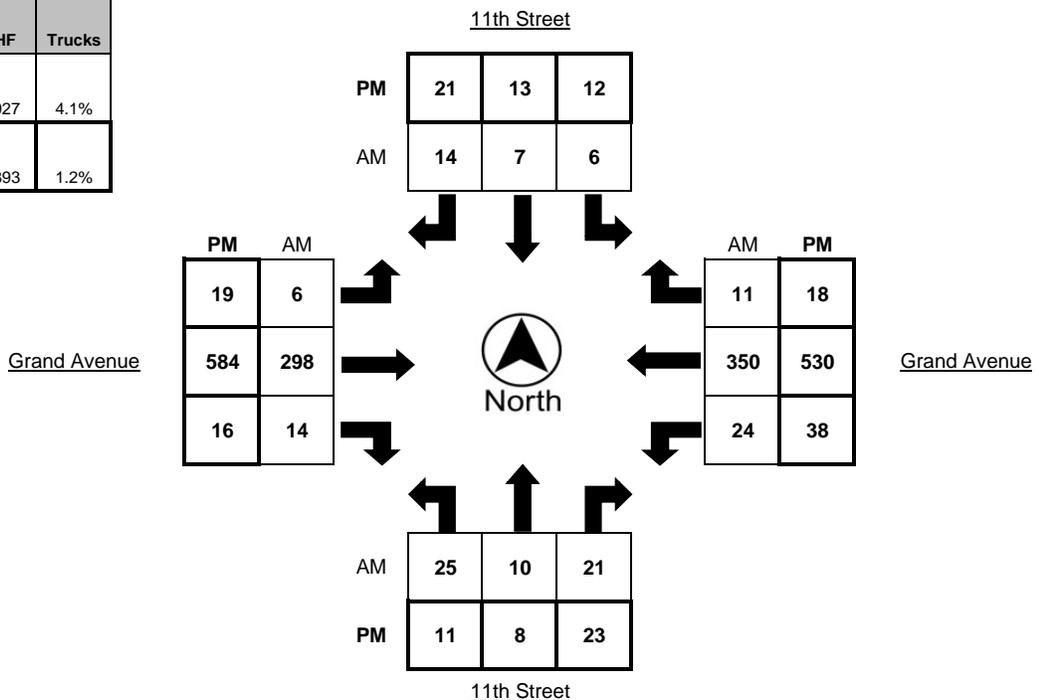
**WEATHER** Sunny and Clear

Time	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	0	3	1	1	0	0	1	0	0	37	0	1	1	37	2	1
7:15 AM - 7:30 AM	2	0	1	0	2	0	2	0	2	49	1	5	1	47	4	4
7:30 AM - 7:45 AM	1	0	3	0	0	0	1	1	0	47	2	5	2	55	1	1
7:45 AM - 8:00 AM	4	0	2	0	3	1	4	0	2	55	2	1	3	71	0	3
8:00 AM - 8:15 AM	5	1	7	0	1	1	3	0	1	76	3	4	7	82	1	5
8:15 AM - 8:30 AM	6	2	1	0	1	3	7	1	3	59	5	0	5	87	6	2
8:30 AM - 8:45 AM	7	6	5	0	1	1	1	0	1	84	3	5	6	96	1	3
8:45 AM - 9:00 AM	7	1	8	1	3	2	3	0	1	79	3	7	6	85	3	5
<b>TOTAL</b>	<b>32</b>	<b>13</b>	<b>28</b>	<b>2</b>	<b>11</b>	<b>8</b>	<b>22</b>	<b>2</b>	<b>10</b>	<b>486</b>	<b>19</b>	<b>28</b>	<b>31</b>	<b>560</b>	<b>18</b>	<b>24</b>

Time	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	2	1	9	0	2	2	4	0	3	139	4	1	9	160	3	3
4:15 PM - 4:30 PM	4	3	2	0	1	4	10	1	1	145	7	1	4	124	4	2
4:30 PM - 4:45 PM	0	1	9	0	2	4	4	0	5	131	4	4	3	123	4	3
4:45 PM - 5:00 PM	6	2	1	0	4	4	4	0	6	149	4	4	8	156	2	1
5:00 PM - 5:15 PM	3	3	9	0	3	2	5	0	4	138	4	1	11	108	5	1
5:15 PM - 5:30 PM	2	2	4	0	3	3	8	0	4	166	4	0	16	143	7	1
5:30 PM - 5:45 PM	1	1	5	0	3	4	3	0	1	128	4	2	4	128	2	1
5:45 PM - 6:00 PM	3	4	4	0	3	4	2	0	2	115	1	3	8	109	3	0
<b>TOTAL</b>	<b>21</b>	<b>17</b>	<b>43</b>	<b>0</b>	<b>21</b>	<b>27</b>	<b>40</b>	<b>1</b>	<b>26</b>	<b>1111</b>	<b>32</b>	<b>16</b>	<b>63</b>	<b>1051</b>	<b>30</b>	<b>12</b>

PEAK HOUR	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
8:00 AM - 9:00 AM	25	10	21	1	6	7	14	1	6	298	14	16	24	350	11	15
4:30 PM - 5:30 PM	11	8	23	0	12	13	21	0	19	584	16	9	38	530	18	6

	PHF	Trucks
AM	0.927	4.1%
PM	0.893	1.2%





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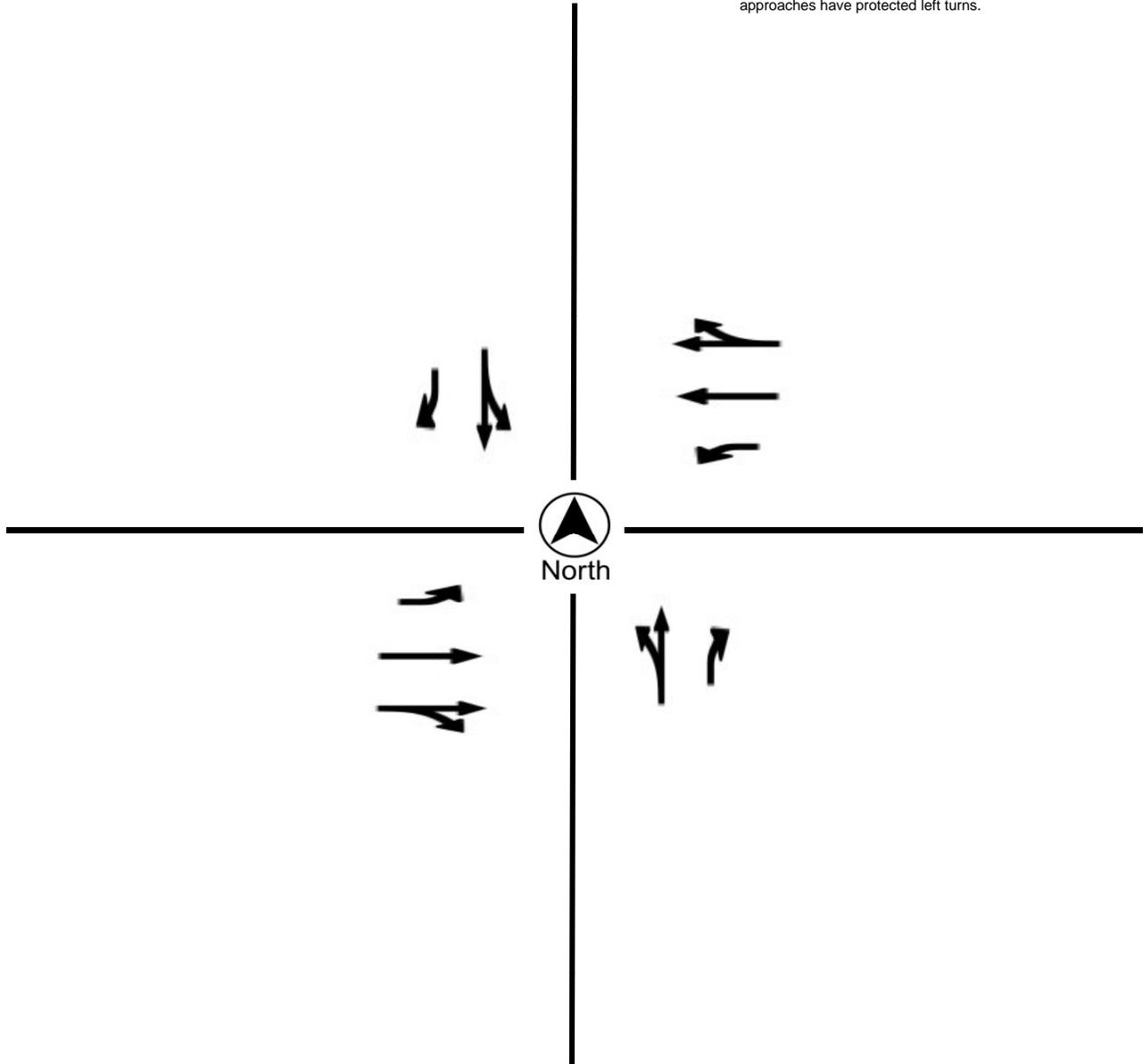
# Turning Movement Report

Prepared For: **Todd Tregenza**  
**OMNI-MEANS, Ltd.**  
 943 Reserve Drive, Suite 100  
 Roseville, CA

**LOCATION** Grand Avenue @ 11th Street  
**COUNTY** San Luis Obispo  
**COLLECTION DATE** 9/16/2008  
**CYCLE TIME** 58 Seconds

**N/S STREET** 11th Street  
**E/W STREET** Grand Avenue  
**WEATHER** Sunny and Clear  
**CONTROL TYPE** Signal

**COMMENTS** Northbound and Southbound approaches have permitted left turns. Eastbound and Westbound approaches have protected left turns.





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# Turning Movement Report

Prepared For: **Todd Tregenza**  
 OMNI-MEANS, Ltd.  
 943 Reserve Drive, Suite 100  
 Roseville, CA  
 (916) 782-8688

**LOCATION** Oak Park Boulevard @ Brighton Avenue

**LATITUDE** 35°7'23.95"N

**COUNTY** San Luis Obispo

**LONGITUDE** 120°36'32.19"W

**COLLECTION DATE** 9/16/2008

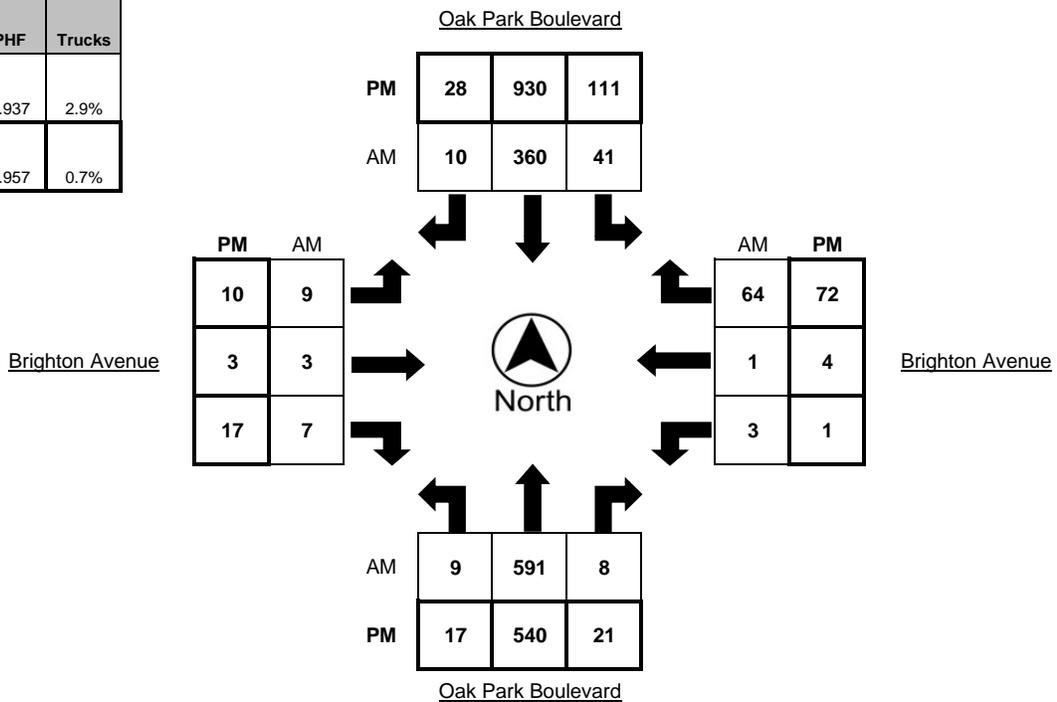
**WEATHER** Sunny and Clear

Time	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	1	103	0	3	5	35	4	1	3	0	2	0	3	0	7	0
7:15 AM - 7:30 AM	2	116	0	2	3	47	2	2	4	0	4	0	1	1	16	0
7:30 AM - 7:45 AM	1	121	1	3	7	71	2	3	2	0	8	0	1	0	12	0
7:45 AM - 8:00 AM	2	155	0	3	9	100	3	5	2	1	1	0	0	0	22	0
8:00 AM - 8:15 AM	3	134	1	6	5	89	4	3	6	0	3	1	3	0	11	0
8:15 AM - 8:30 AM	3	154	2	4	10	84	3	1	1	2	2	0	0	0	14	0
8:30 AM - 8:45 AM	1	148	5	7	17	87	0	2	0	0	1	0	0	1	17	0
8:45 AM - 9:00 AM	3	153	1	9	8	86	3	5	0	0	3	0	1	1	20	0
<b>TOTAL</b>	<b>16</b>	<b>1084</b>	<b>10</b>	<b>37</b>	<b>64</b>	<b>599</b>	<b>21</b>	<b>22</b>	<b>18</b>	<b>3</b>	<b>24</b>	<b>1</b>	<b>9</b>	<b>3</b>	<b>119</b>	<b>0</b>

Time	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	2	135	3	6	15	194	5	3	1	0	2	0	4	0	17	1
4:15 PM - 4:30 PM	2	127	7	3	15	174	4	2	3	1	6	1	1	0	19	1
4:30 PM - 4:45 PM	5	126	1	3	25	202	8	2	2	0	3	0	0	0	22	0
4:45 PM - 5:00 PM	3	136	3	1	21	238	2	2	4	0	4	0	0	0	21	0
5:00 PM - 5:15 PM	3	152	6	3	29	239	6	3	1	2	3	0	0	3	14	0
5:15 PM - 5:30 PM	4	124	4	0	34	216	12	2	3	0	5	0	0	0	21	0
5:30 PM - 5:45 PM	7	128	8	0	27	237	8	2	2	1	5	0	1	1	16	0
5:45 PM - 6:00 PM	7	86	2	1	28	205	4	5	5	2	0	0	0	2	21	0
<b>TOTAL</b>	<b>33</b>	<b>1014</b>	<b>34</b>	<b>17</b>	<b>194</b>	<b>1705</b>	<b>49</b>	<b>21</b>	<b>21</b>	<b>6</b>	<b>28</b>	<b>1</b>	<b>6</b>	<b>6</b>	<b>151</b>	<b>2</b>

PEAK HOUR	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:45 AM - 8:45 AM	9	591	8	20	41	360	10	11	9	3	7	1	3	1	64	0
4:45 PM - 5:45 PM	17	540	21	4	111	930	28	9	10	3	17	0	1	4	72	0

	PHF	Trucks
AM	0.937	2.9%
PM	0.957	0.7%





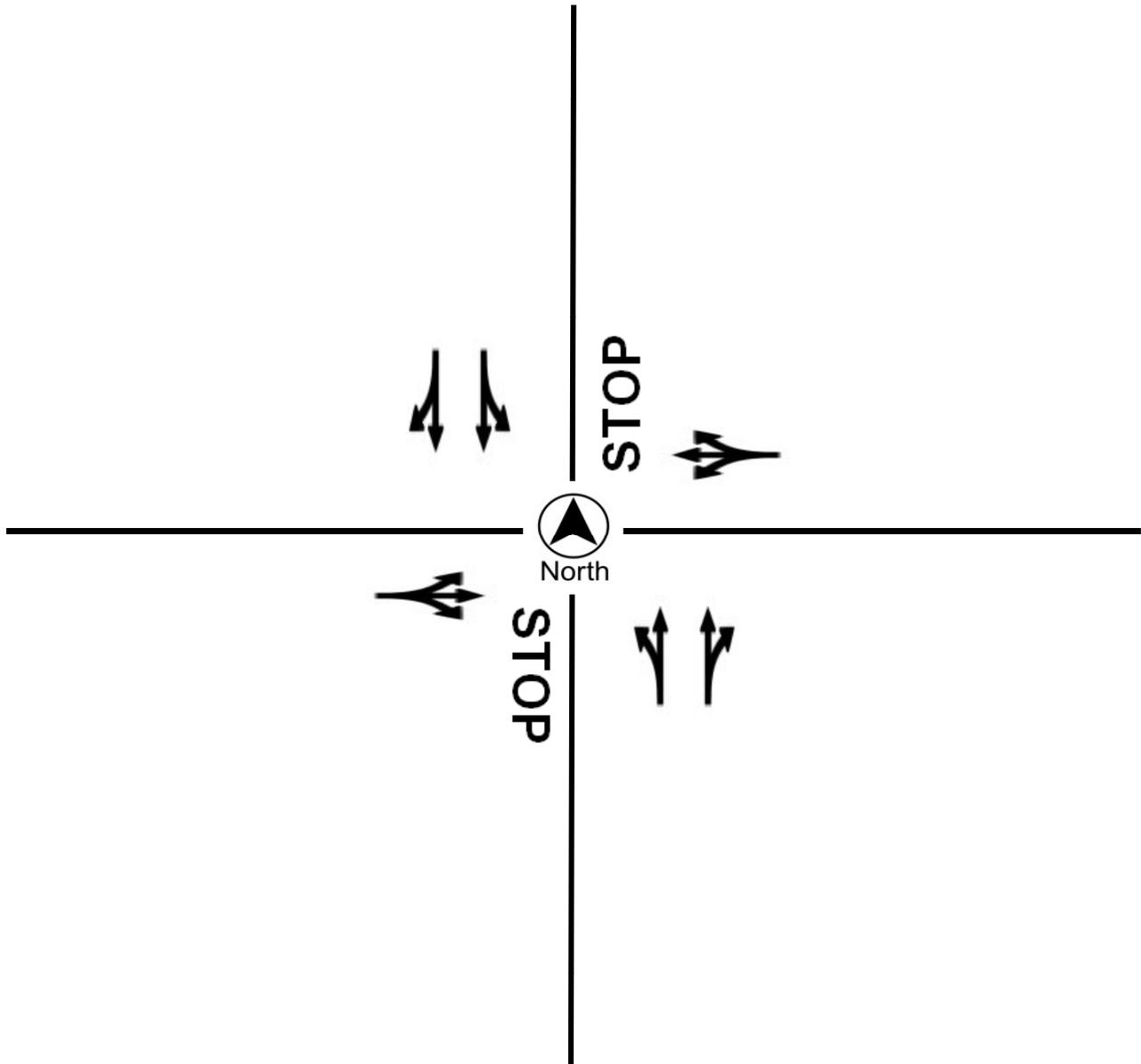
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# Turning Movement Report

Prepared For: **Todd Tregenza**  
 OMNI-MEANS, Ltd.  
 943 Reserve Drive, Suite 100  
 Roseville, CA

<b>LOCATION</b>	<u>Oak Park Boulevard @ Brighton Avenue</u>	<b>N/S STREET</b>	<u>Oak Park Boulevard</u>
<b>COUNTY</b>	<u>San Luis Obispo</u>	<b>E/W STREET</b>	<u>Brighton Avenue</u>
<b>COLLECTION DATE</b>	<u>9/16/2008</u>	<b>WEATHER</b>	<u>Sunny and Clear</u>
<b>CYCLE TIME</b>	<u>N/A</u>	<b>CONTROL TYPE</b>	<u>Two-Way Stop</u>

**COMMENTS**



## Existing Conditions

#	Intersection	Control Type <sup>1,2</sup>	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met? <sup>3</sup>	Delay	LOS	Warrant Met? <sup>3</sup>
1	Grand Avenue/8th Street	Signal	C	18.8	B	-	20.1	C	-
2	Grand Avenue/11th Street	Signal	C	9.4	A	-	8.4	A	-
3	<b>Oak Park Boulevard/Brighton Avenue</b>	<b>TWSC</b>	<b>C</b>	19.3	C	-	<b>58.7</b>	<b>F</b>	-

Notes:

1. TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections
3. Warrant = Based on California MUTCD Warrant 3

\*Modify Footnotes as Necessary

City of Grover Beach  
1: Grand Avenue & 8th Street

Existing Conditions  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.98	1.00
Satd. Flow (prot)	1770	3511		1770	3496			1823	1583		1819	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.92	1.00		0.90	1.00
Satd. Flow (perm)	1770	3511		1770	3496			1705	1583		1675	1583
Volume (vph)	17	281	16	25	336	29	21	28	22	29	31	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	305	17	27	365	32	23	30	24	32	34	27
RTOR Reduction (vph)	0	5	0	0	8	0	0	0	11	0	0	12
Lane Group Flow (vph)	18	317	0	27	389	0	0	53	13	0	66	15
Turn Type	Prot		Prot		Perm		Perm		Perm		Perm	
Protected Phases	7	4		3	8			2	2		6	6
Permitted Phases							2		2	6		6
Actuated Green, G (s)	1.3	11.7		2.6	13.0			32.7	32.7		32.7	32.7
Effective Green, g (s)	1.3	11.7		2.6	13.0			32.7	32.7		32.7	32.7
Actuated g/C Ratio	0.02	0.20		0.04	0.22			0.55	0.55		0.55	0.55
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	39	696		78	770			945	877		928	877
v/s Ratio Prot	0.01	0.09		c0.02	c0.11							
v/s Ratio Perm								0.03	0.01		c0.04	0.01
v/c Ratio	0.46	0.46		0.35	0.51			0.06	0.02		0.07	0.02
Uniform Delay, d1	28.5	20.8		27.4	20.2			6.0	5.9		6.1	5.9
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	8.4	0.5		2.7	0.5			0.1	0.0		0.1	0.0
Delay (s)	36.9	21.3		30.0	20.7			6.2	5.9		6.3	6.0
Level of Service	D	C		C	C			A	A		A	A
Approach Delay (s)		22.1			21.3			6.1			6.2	
Approach LOS		C			C			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			18.8	HCM Level of Service				B				
HCM Volume to Capacity ratio			0.19									
Actuated Cycle Length (s)			59.0	Sum of lost time (s)				8.0				
Intersection Capacity Utilization			33.4%	ICU Level of Service				A				
Analysis Period (min)			15									
c Critical Lane Group												

City of Grover Beach  
2: Grand Avenue & 11th Street

Existing Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.98	1.00
Satd. Flow (prot)	1770	3516		1770	3523			1799	1583		1820	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.83	1.00		0.90	1.00
Satd. Flow (perm)	1770	3516		1770	3523			1549	1583		1669	1583
Volume (vph)	6	298	14	24	350	11	25	10	21	6	7	14
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	324	15	26	380	12	27	11	23	7	8	15
RTOR Reduction (vph)	0	4	0	0	2	0	0	0	16	0	0	11
Lane Group Flow (vph)	7	335	0	26	390	0	0	38	7	0	15	4
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2		6		6
Permitted Phases							2		2	6		6
Actuated Green, G (s)	0.8	6.4		0.9	6.5			8.1	8.1		8.1	8.1
Effective Green, g (s)	0.8	6.4		0.9	6.5			8.1	8.1		8.1	8.1
Actuated g/C Ratio	0.03	0.23		0.03	0.24			0.30	0.30		0.30	0.30
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	52	821		58	836			458	468		493	468
v/s Ratio Prot	0.00	0.10		c0.01	c0.11							
v/s Ratio Perm								c0.02	0.00		0.01	0.00
v/c Ratio	0.13	0.41		0.45	0.47			0.08	0.01		0.03	0.01
Uniform Delay, d1	13.0	8.9		13.0	9.0			7.0	6.8		6.9	6.8
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.2	0.3		5.4	0.4			0.1	0.0		0.0	0.0
Delay (s)	14.1	9.2		18.4	9.4			7.0	6.8		6.9	6.8
Level of Service	B	A		B	A			A	A		A	A
Approach Delay (s)		9.3			9.9			7.0			6.9	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			9.4			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.21									
Actuated Cycle Length (s)			27.4			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			31.9%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

City of Grover Beach  
3: Brighton Avenue & Oak Park Boulevard

Existing Conditions  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	9	3	7	3	1	64	9	591	8	41	360	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	3	8	3	1	70	10	642	9	45	391	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	897	1157	201	960	1158	326	402			651		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	897	1157	201	960	1158	326	402			651		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	98	99	98	99	90	99			95		
cM capacity (veh/h)	201	184	806	197	184	670	1153			931		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	21	74	331	330	240	207
Volume Left	10	3	10	0	45	0
Volume Right	8	70	0	9	0	11
cSH	272	586	1153	1700	931	1700
Volume to Capacity	0.08	0.13	0.01	0.19	0.05	0.12
Queue Length 95th (ft)	6	11	1	0	4	0
Control Delay (s)	19.3	12.0	0.3	0.0	2.1	0.0
Lane LOS	C	B	A		A	
Approach Delay (s)	19.3	12.0	0.2		1.1	
Approach LOS	C	B				

Intersection Summary		
Average Delay		1.6
Intersection Capacity Utilization	43.4%	ICU Level of Service
Analysis Period (min)		15
		A

City of Grover Beach  
1: Grand Avenue & 8th Street

Existing Conditions  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98	1.00		0.97	1.00
Satd. Flow (prot)	1770	3499		1770	3483			1819	1583		1807	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.90	1.00		0.86	1.00
Satd. Flow (perm)	1770	3499		1770	3483			1672	1583		1603	1583
Volume (vph)	26	485	40	52	469	55	27	29	39	36	22	12
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	527	43	57	510	60	29	32	42	39	24	13
RTOR Reduction (vph)	0	8	0	0	11	0	0	0	22	0	0	7
Lane Group Flow (vph)	28	562	0	57	559	0	0	61	20	0	63	6
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2		6		6
Permitted Phases							2		2	6		6
Actuated Green, G (s)	2.6	15.5		4.6	17.5			30.0	30.0		30.0	30.0
Effective Green, g (s)	2.6	15.5		4.6	17.5			30.0	30.0		30.0	30.0
Actuated g/C Ratio	0.04	0.25		0.07	0.28			0.48	0.48		0.48	0.48
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	74	873		131	982			808	765		774	765
v/s Ratio Prot	0.02	c0.16		c0.03	0.16							
v/s Ratio Perm								0.04	0.01		c0.04	0.00
v/c Ratio	0.38	0.64		0.44	0.57			0.08	0.03		0.08	0.01
Uniform Delay, d1	29.0	20.8		27.5	19.1			8.6	8.4		8.6	8.3
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	3.2	1.6		2.3	0.8			0.2	0.1		0.2	0.0
Delay (s)	32.2	22.5		29.8	19.8			8.8	8.5		8.8	8.3
Level of Service	C	C		C	B			A	A		A	A
Approach Delay (s)		22.9			20.7			8.7			8.8	
Approach LOS		C			C			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			20.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			62.1			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			37.9%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

City of Grover Beach  
2: Grand Avenue & 11th Street

Existing Conditions  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↷	↶		↷	↶
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.98	1.00
Satd. Flow (prot)	1770	3525		1770	3521			1811	1583		1819	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.85	1.00		0.87	1.00
Satd. Flow (perm)	1770	3525		1770	3521			1580	1583		1619	1583
Volume (vph)	19	584	16	38	530	18	11	8	23	12	13	21
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	635	17	41	576	20	12	9	25	13	14	23
RTOR Reduction (vph)	0	2	0	0	2	0	0	0	20	0	0	18
Lane Group Flow (vph)	21	650	0	41	594	0	0	21	5	0	27	5
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		6
Actuated Green, G (s)	1.0	12.4		2.1	13.5			6.7	6.7		6.7	6.7
Effective Green, g (s)	1.0	12.4		2.1	13.5			6.7	6.7		6.7	6.7
Actuated g/C Ratio	0.03	0.37		0.06	0.41			0.20	0.20		0.20	0.20
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	53	1317		112	1432			319	319		327	319
v/s Ratio Prot	0.01	c0.18		c0.02	0.17						c0.02	0.00
v/s Ratio Perm								0.01	0.00			0.00
v/c Ratio	0.40	0.49		0.37	0.41			0.07	0.02		0.08	0.01
Uniform Delay, d1	15.8	8.0		14.9	7.0			10.7	10.6		10.8	10.6
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	4.8	0.3		2.0	0.2			0.1	0.0		0.1	0.0
Delay (s)	20.6	8.3		16.9	7.2			10.8	10.6		10.9	10.6
Level of Service	C	A		B	A			B	B		B	B
Approach Delay (s)		8.7			7.9			10.7			10.8	
Approach LOS		A			A			B			B	

**Intersection Summary**

HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	33.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

City of Grover Beach  
3: Brighton Avenue & Oak Park Boulevard

Existing Conditions  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	3	17	1	4	72	17	540	21	111	930	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	3	18	1	4	78	18	587	23	121	1011	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1678	1914	521	1402	1918	305	1041			610		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1678	1914	521	1402	1918	305	1041			610		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	76	94	96	99	92	89	97			87		
cM capacity (veh/h)	46	57	500	81	57	691	664			965		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	33	84	312	316	626	536
Volume Left	11	1	18	0	121	0
Volume Right	18	78	0	23	0	30
cSH	98	412	664	1700	965	1700
Volume to Capacity	0.33	0.20	0.03	0.19	0.13	0.32
Queue Length 95th (ft)	32	19	2	0	11	0
Control Delay (s)	58.7	16.0	1.0	0.0	3.1	0.0
Lane LOS	F	C	A		A	
Approach Delay (s)	58.7	16.0	0.5		1.7	
Approach LOS	F	C				

Intersection Summary		
Average Delay		2.9
Intersection Capacity Utilization	64.3%	ICU Level of Service
Analysis Period (min)		15
		C



































