

**Appendix F -
Traffic Impact Analysis for
City of Huntington Beach
Downtown Specific Plan Update dated June 2009**

Prepared by:
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Traffic Impact Analysis

for

City of Huntington Beach Downtown Specific Plan Update

Prepared for:

The City of Huntington Beach

June, 2009

**TRAFFIC IMPACT STUDY
FOR THE CITY OF HUNTINGTON BEACH
DOWNTOWN SPECIFIC PLAN UPDATE**

Prepared for:

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TRAFFIC IMPACT ANALYSIS FOR THE PROPOSED CITY OF HUNTINGTON BEACH DOWNTOWN SPECIFIC PLAN UPDATE

INTRODUCTION

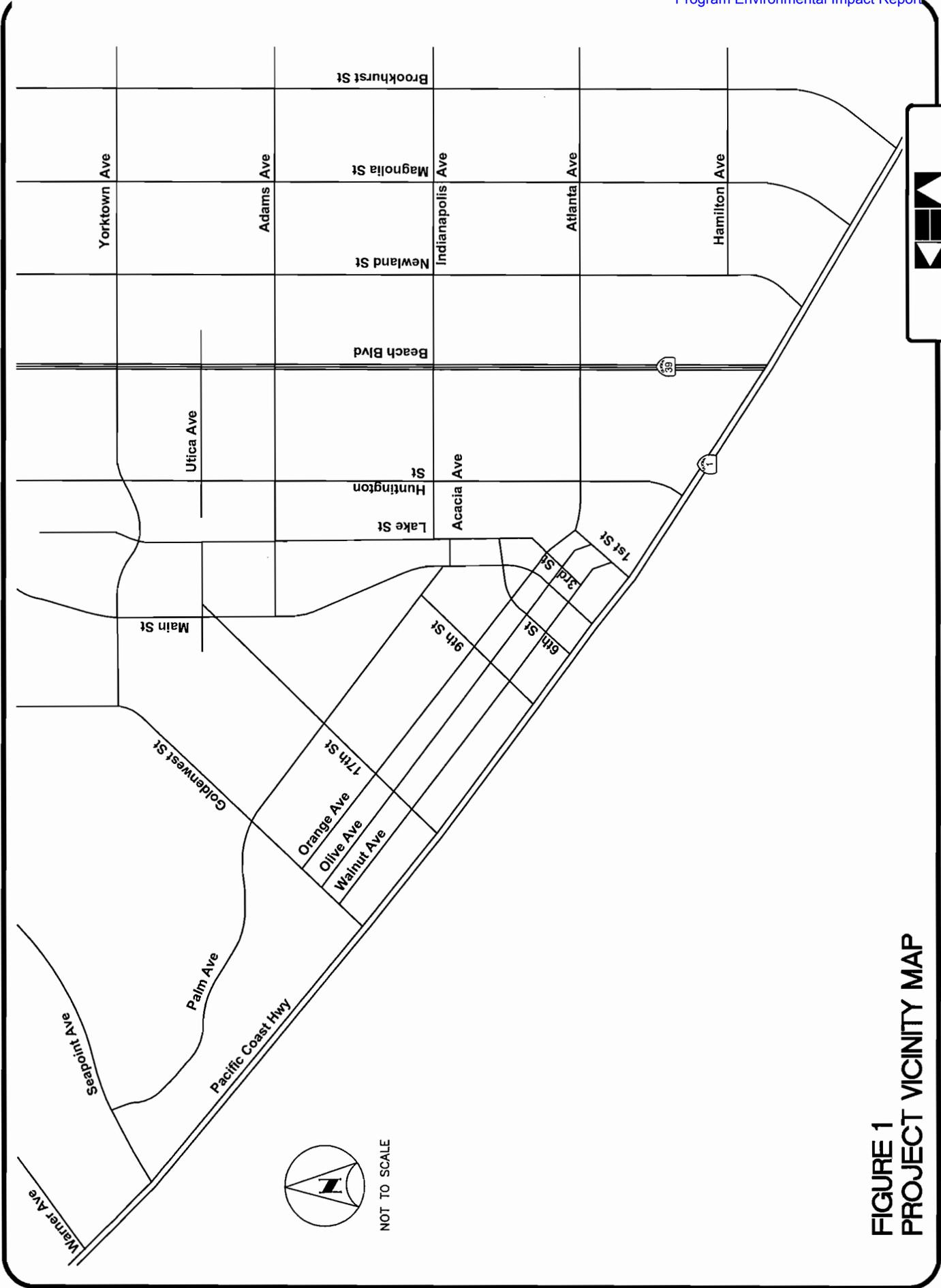
The purpose of this report is to address the traffic-related impacts associated with the proposed Update to the City of Huntington Beach Downtown Specific Plan. The Downtown Specific Plan covers an area of approximately 336 acres in the downtown area of Huntington Beach. The area includes the seventeen blocks on the ocean side of Walnut Avenue, from Goldenwest Street and Sixth Street; a central area between Sixth Street and First Street up to Palm Avenue; properties generally south of Atlanta Avenue between Lake Street and Beach Boulevard; and the beach area between Goldenwest Street and Beach Boulevard.

Figure 1 shows the project vicinity, and **Figure 2** shows the Downtown Specific Plan area within the City of Huntington Beach.

The Downtown Specific Plan Update project consists of implementation of new zoning designations and floor area ratios which will allow for the potential for development of additional resident- and visitor-serving retail, restaurant, office, hotel, and residential development in the downtown core of the city.

The scope of work for this traffic study was developed based on discussions with City of Huntington Beach Transportation and Engineering staff, and Caltrans District 12 staff. As applicable, the study has been prepared in accordance with the requirements of the City of Huntington Beach, and the Caltrans Guide for the Preparation of Traffic Impact Studies, December 2002. This report will also satisfy the Traffic Impact requirements of the County of Orange Congestion Management Program (CMP).

The traffic impact analysis will focus on the impact of the project on study intersections within the project vicinity. The study will address morning and evening peak hour operating conditions at 24 study intersections.

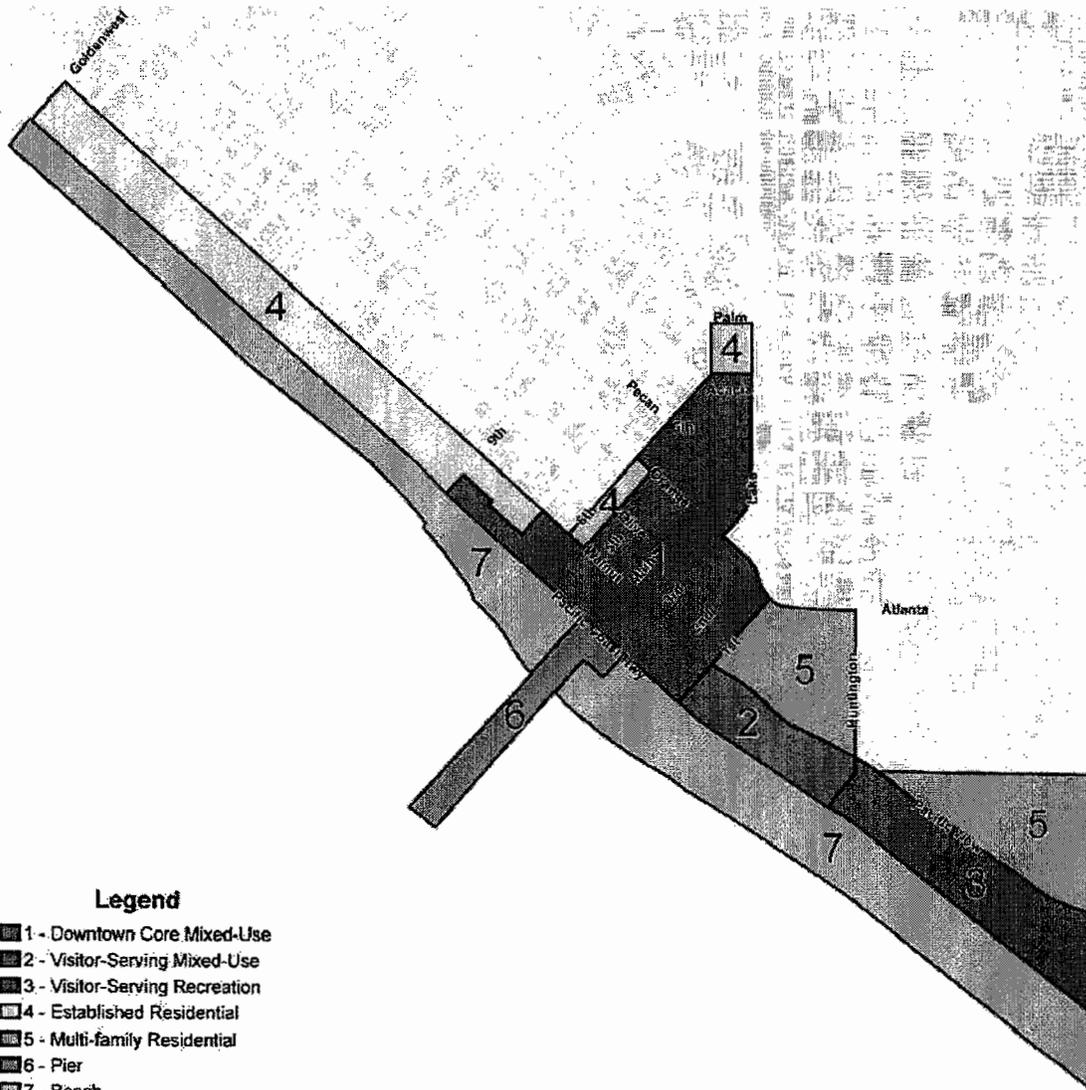


**FIGURE 1
PROJECT VICINITY MAP**





NOT TO SCALE



Legend

- 1 - Downtown Core Mixed-Use
 - 2 - Visitor-Serving Mixed-Use
 - 3 - Visitor-Serving Recreation
 - 4 - Established Residential
 - 5 - Multi-family Residential
 - 6 - Pier
 - 7 - Beach
- Building Footprints
 Parcels

**FIGURE 2
 DOWNTOWN SPECIFIC PLAN AREA**



PROJECT DESCRIPTION

The project location is the City of Huntington Beach Downtown Specific Plan area, with area boundaries as described above. The area is currently developed with a mix of downtown and visitor-serving uses, including a variety of residential, retail, restaurant, office, and other commercial uses.

The proposed Huntington Beach Downtown Specific Plan Update will result in the potential for development of approximately 400,000 square feet of additional resident- and visitor-serving uses, as well as new residential development. The development thresholds identified in the proposed Specific Plan Update are as follows:

Huntington Beach Downtown Specific Plan Update Maximum Development Potential		
Land Use	Quantity	Unit
Retail	213,467	SF
Restaurant	92,332	SF
Office	92,784	SF
Cultural Facilities	30,000	SF
Residential	648	DU
Hotel	235	Rooms

This maximum development potential for the downtown represents net new development quantities over and above existing development in the downtown, as well as other approved developments, including The Strand, and Pacific City. The current existing plus approved development within the Downtown Specific Plan area represents build-out of the current Downtown Specific Plan potential. The new development potential shown above has been identified through the Specific Planning process, which has determined that the majority of this development potential is expected to occur within the downtown core district (District 1) of the Specific Plan, as shown on Figure 2. Project development is expected to occur over a 20-year period, as market conditions and property owner interests allow.

The Downtown Specific Plan Update also proposes a number of circulation changes in the downtown area:

- Realignment of 6th Street between Orange Avenue and Pecan Avenue;
- Realignment of Walnut Avenue to intersect 1st Street at a right angle, to align with the future extension of Pacific View Avenue (currently approved under PPSA 86-1);
- Implementation of exclusive pedestrian phases at the intersections of Pacific Coast Highway at 1st Street and 6th Street;
- Addition of a bicycle lanes and/or bike routes on 6th Street, Orange Avenue, and Lake / 3rd Street, and connections near 6th Street and 1st Street to the existing multi-purpose recreational beach path;
- Provision of a downtown trolley to circulate between downtown, Pacific City, the Waterfront development and the surrounding residential neighborhoods.

TRAFFIC IMPACT ANALYSIS

This traffic study includes documentation of Existing Conditions, Cumulative Conditions (Year 2020) without and with the Project, and Forecast Year 2030 without and with the Project, and identification of project-related impacts and mitigation.

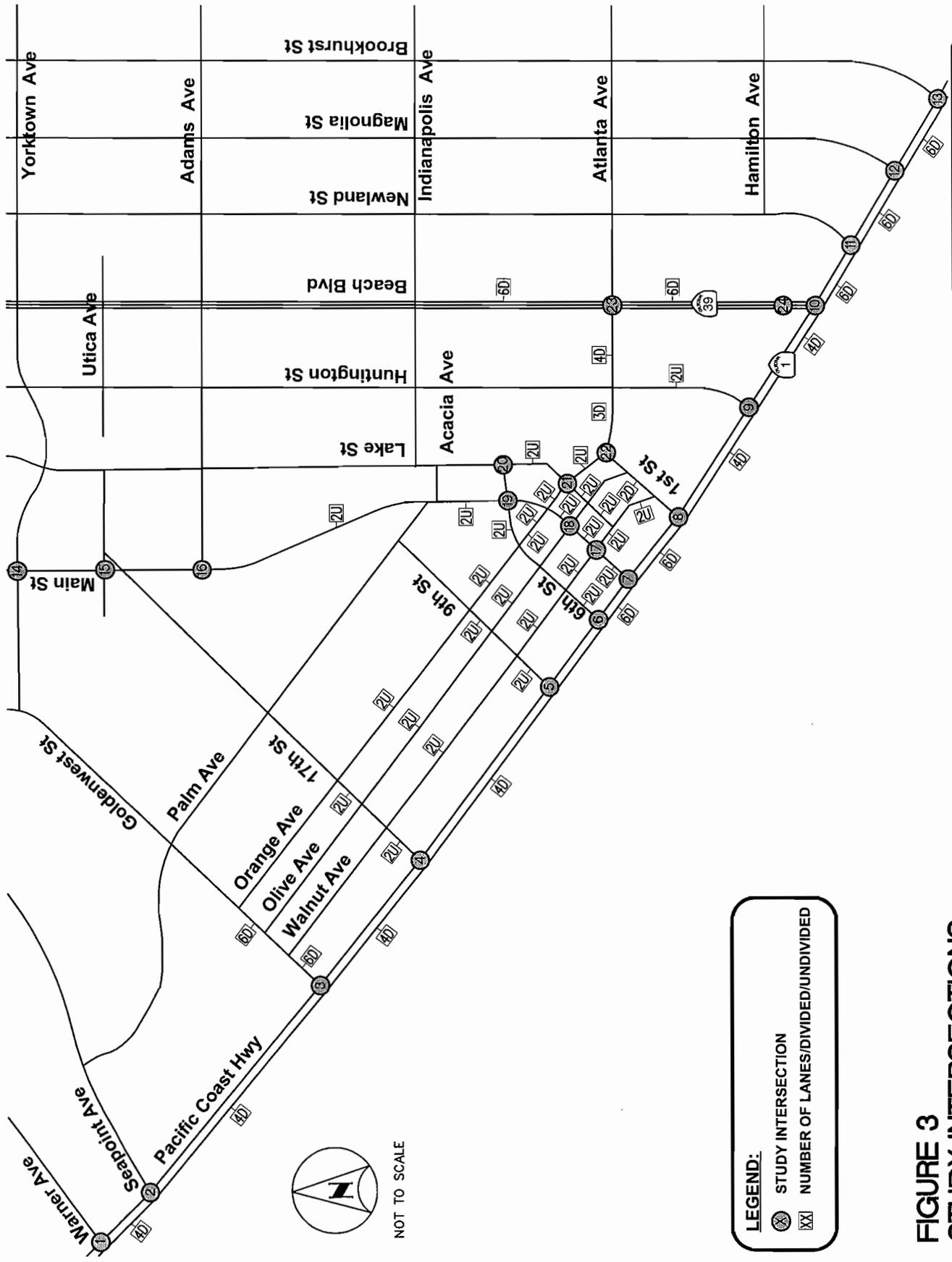
Study Area Determination

The study area was developed in consultation with the City of Huntington Beach Public Works Engineering and Caltrans District 12 Transportation staff. Traffic impact analyses were conducted for the following study intersections:

List of Study Intersections

1. Pacific Coast Highway at Warner Avenue
2. Pacific Coast Highway at Seapoint Avenue
3. Pacific Coast Highway at Goldenwest Street
4. Pacific Coast Highway at 17th Street
5. Pacific Coast Highway at 9th Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Huntington Street
10. Pacific Coast Highway at Beach Boulevard
11. Pacific Coast Highway at Newland Street
12. Pacific Coast Highway at Magnolia Street
13. Pacific Coast Highway at Brookhurst Street
14. Main Street at Yorktown Avenue
15. Main Street at 17th Street
16. Main Street at Adams Avenue
17. Main Street at Walnut Avenue
18. Main Street at Olive Avenue
19. Main Street at 6th Street
20. Lake Street at 6th Street
21. Lake Street / 3rd Street at Orange Avenue
22. Orange Avenue/Atlanta Avenue at 1st Street
23. Beach Boulevard at Atlanta Avenue
24. Beach Boulevard at Pacific View Avenue

The location of the study intersections is shown in **Figure 3**.



LEGEND:

- ⊗ STUDY INTERSECTION
- XX NUMBER OF LANES/DIVIDED/UNDIVIDED

**FIGURE 3
 STUDY INTERSECTIONS**

Traffic Impact Analysis Scenarios

The traffic impact analysis has been conducted to evaluate morning and evening peak hour conditions at the study intersections for typical summer weekday conditions. Summer weekday conditions in downtown Huntington Beach represent a slightly higher condition than non-summer, due to its proximity to the beach and its visitor-serving draw.

The following scenarios will be analyzed:

- Existing Conditions
- Cumulative Conditions Year 2020 without and with Project
- Forecast Year 2030 without and with Project.

In addition, a number of network alternatives will be analyzed. The Downtown Specific Plan Update proposes to realign 6th Street between Orange Avenue and Main Street. In addition to this proposed network change, three other network options are evaluated here. Each of the three additional options address varying degrees of closure of Main Street in the downtown core. While these Main Street closure options are not specifically proposed by in the Specific Plan Update, they are evaluated here to address alternative configurations for Main Street that have been discussed as potential options in the past.

The four network alternatives that will be analyzed are:

- Alternative 1 – Main Street Closure PCH to Orange, with no cross traffic on Olive and Walnut
- Alternative 2 – Main Street Closure PCH to Orange, with cross traffic on Olive and Walnut
- Alternative 3 – Main Street Closure from Walnut to Olive only
- Alternative 4 – 6th Street realignment between Orange Avenue and Main Street (proposed in the Downtown Specific Plan Update)

STUDY METHODOLOGY AND SIGNIFICANCE CRITERIA

This traffic impact analysis has been prepared in accordance with City of Huntington Beach and applicable agency requirements, as outlined below. Where appropriate and required, this analysis complies with the traffic impact analysis requirements of the State of California Department of Transportation (Caltrans), as outlined in the Caltrans Guide for the Preparation of Traffic Impact Studies (December, 2002). A description of the level of analysis methodology, Level of Service standards and significance criteria applied in this traffic impact analysis is provided below.

Analysis Methodology

Intersection Capacity Utilization (ICU) Methodology

For this analysis, the peak hour Level of Service at all non-Caltrans controlled signalized intersections is evaluated using the Intersection Capacity Utilization (ICU) methodology. The ICU methodology provides a comparison of the theoretical hourly vehicular capacity of an intersection to the number of vehicles actually passing through that intersection during a given hour.

The ICU calculation assumes a per-lane capacity of 1,700 vehicles per hour (vph) for each travel lane (through or turning lane) through the intersection. Where there is no separately striped right-turn lane, if the width of the outside through lane is at least 19 feet, and parking is prohibited during the peak period, a separate “de-facto” right-turn lane is assumed. A clearance factor of 0.05 (5%) of the total intersection capacity is included in the ICU calculation.

The ICU calculation returns a volume-to-capacity (V/C) ratio, which translates into a corresponding Level of Service (LOS) measure, ranging from LOS "A", representing uncongested, free-flowing conditions, to LOS "F", representing severely congested, over-capacity conditions. A summary description of each Level of Service and the corresponding V/C ratio is provided on the following chart:

LEVEL OF SERVICE DESCRIPTIONS SIGNALIZED INTERSECTIONS		
Level of Service	ICU Value	Description
A	0.00 - 0.60	At this LOS, traffic volumes are low and speed is not restricted by other vehicles. All signal cycles clear with no vehicles waiting through more than one original cycle.
B	0.61 - 0.70	At this LOS, traffic volumes begin to be affected by other traffic. Between one and ten percent of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods.
C	0.71 - 0.80	At this LOS, operating speeds and maneuverability are closely controlled by other traffic. Between 11 and 30 percent of the cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods.
D	0.81 - 0.90	At this LOS, traffic will operate at tolerable operating speeds, although with restricted maneuverability.
E	0.91 - 1.00	Traffic will experience restricted speeds, vehicles will frequently have to wait through two or more cycles at signalized intersections, and any additional traffic will result in breakdown of the traffic carrying ability of the system.
F	> 1.00	Long queues at traffic signals, unstable flow, stoppages of long duration with traffic volumes, and traffic speed can drop to zero. Traffic volumes will be less than the volume which occurs at Level of Service E.

Highway Capacity Manual (HCM) Methodology

All Caltrans-controlled signalized intersections (intersections located on a State Highway, i.e., Pacific Coast Highway and Beach Boulevard) are analyzed in two ways. To meet the requirements of the City of Huntington Beach, all Caltrans-controlled intersections are analyzed using the Intersection Capacity Utilization (ICU) methodology described above. In addition, in accordance with Caltrans requirements, Caltrans-controlled intersections are also analyzed using the methodology contained in the *Highway Capacity Manual*, 2000 Edition. The 2000 HCM methodology measures average delay per vehicle based on a number of technical parameters, such as peak hourly traffic volumes, number of lanes, type of operation (signalized or unsignalized), and signal phasing in the calculations.

The qualitative “A” through “F” LOS scale is measured quantitatively using “measures of effectiveness”. The measure used depends on the type of facility being assessed. A summary of each LOS and the corresponding control delay for both signalized and unsignalized intersections are provided in the following chart:

LEVEL OF SERVICE RANGES		
Level of Service	Signalized Intersections: Average Delay per Vehicle (sec)	Unsignalized Intersections: Average Delay per Vehicle (sec)
A	≤10	≤10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50
Source: Highway Capacity Manual, 2000		

The overall Level of Service at an intersection using one methodology may be slightly different than the Level of Service using the other, since the two methodologies use different input parameters and report different measures of effectiveness. Most specifically, the ICU methodology is based on basic volume and capacity (number of lanes) data, while the HCM delay methodology incorporates more detailed information about signal timing, phasing, and operation. In general, when comparing the LOS results between the two methodologies, the LOS for a particular intersection may be the same, or may vary by a level of service range. In some cases, depending on signal timing conditions or other unique intersection conditions, the LOS results may vary by more than one level of service range.

Unsignalized intersections are analyzed using the Highway Capacity Manual (HCM) analysis methodology for stop-controlled intersections.

Level of Service Standard and Performance Criteria

Level of Service Standard

In accordance with the City of Huntington Beach General Plan, LOS “D” is the acceptable Level of Service for peak hour operation at city intersections.

For intersections that are designated as part of the Congestion Management Program (CMP) Highway System, the acceptable Level of Service is LOS “E”. The designated CMP routes in the vicinity of the project are Warner Avenue, Pacific Coast Highway, Beach Boulevard, and Adams Avenue.

For State-controlled intersections, LOS standards and impact criteria specified by Caltrans will apply. The Caltrans Guide for the Preparation of Traffic Impact Studies states that “Caltrans endeavors to maintain a target LOS at the transition between LOS “C” and LOS “D” on State highway facilities, however Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS.” In consultation with Caltrans, it was determined that the target Level of Service for Caltrans-controlled intersections will be an average delay of 55.0 seconds in the peak hours (LOS “D”).

Performance Criteria

Performance criteria are established in order to determine what mitigation measures would be required of the development based on its impacts. Project mitigation would be required in the following circumstances:

- **Intersections:** If the intersection in question exceeds the acceptable LOS and the impact of the development results in a v/c impact of 0.01 or more, the impact is considered to be significant. Project mitigation is typically required to achieve a v/c ratio of 0.90 or baseline, if baseline is greater than 0.90.
- **CMP Intersections:** According to the CMP, in order to be in compliance with congestion management guidelines, mitigation is required when the v/c ratio increases beyond 0.10 above the baseline condition, when the base condition is greater than LOS E.
- **Caltrans Intersections:** In consultation with Caltrans District 12 staff, it was determined that a significant traffic impact for Caltrans intersections is defined as a project-related delay value greater than or equal to LOS “E” (55.1 sec / veh) which requires mitigation by reducing the intersection delay to LOS “D” (55.0 sec / veh) or baseline, if the baseline is LOS “E” or “F” (greater than or equal to 55.1 sec / veh). Baseline is defined as the pre-project condition.

Orange County Congestion Management Plan

The Orange County Congestion Management Program (CMP) was established in 1991, to reduce traffic congestion and to provide a mechanism for coordinating land use and development decisions. Compliance with the CMP requirements ensures a city’s eligibility to compete for State gas tax funds for local transportation projects. Within the defined CMP highway network, intersections are not allowed to deteriorate to a condition which is worse than LOS “E” or the base year LOS, if worse than “E”, without mitigation being prescribed in an acceptable deficiency plan.

Within the City of Huntington Beach, the CMP Highway System includes portions of Pacific Coast Highway, Adams Avenue, Warner Avenue, Beach Boulevard, Bolsa Street, and Bolsa Chica Road. There are three CMP intersections within the study area:

- Pacific Coast Highway and Warner Avenue
- Pacific Coast Highway and Beach Boulevard
- Beach Boulevard and Adams Avenue

The Orange County CMP also states that “a TIA will be required for CMP purposes for all proposed developments generating 2,400 or more daily trips,” and that “for developments which will directly access a CMP Highway System link, the threshold for requiring a TIA should be reduced to 1,600 or more trips per day.” The project is estimated to generate approximately 12,800 daily trips. Given the number of daily trips forecasted to be generated by the project, a CMP level of analysis is also required for this report.

EXISTING TRANSPORTATION SYSTEM

Regional access to the Downtown area is provided by the San Diego (I-405) Freeway and Pacific Coast Highway (State Route 1) (also known as PCH or SR-1), both of which run in a northwest-to-southeast orientation in the general vicinity of the project area. The San Diego Freeway is located approximately 5.5 miles to the north, and can be accessed from the downtown area via Main Street to Beach Boulevard, or via Goldenwest Street. PCH runs along the south side of the downtown area, and is an interstate highway which traverses through and beyond the city of Huntington Beach to the north and the south.

Local access to the project area is provided by a number of local major and minor roadways leading to and from the project area. The following discussion provides a description of the existing roadway characteristics in the vicinity of the proposed development site.

Existing Roadways

Pacific Coast Highway (SR-1) is a State Highway, oriented in a northwest-southeast direction. Pacific Coast Highway (PCH) extends throughout the State of California and provides regional access to the project site. In the vicinity of the downtown core, Pacific Coast Highway provides six travel lanes divided by a raised median between 6th Street and 1st Street. North of 6th Street and south of 1st Street, PCH becomes a four-lane divided facility with metered parallel parking. Pacific Coast Highway is a Caltrans facility, and all study intersections along Pacific Coast Highway are Caltrans-controlled intersections.

Beach Boulevard (State Route 39) is designated as a Smart Street on the County of Orange Master Plan of Arterial Highways (MPAH) through the City of Huntington Beach. Beach Boulevard is also a Caltrans facility. All study intersections along Beach Boulevard are Caltrans-controlled intersections. Beach Boulevard currently provides eight lanes north of Ellis Avenue / Main Street and six lanes between Ellis Avenue / Main Street and Pacific Coast Highway.

Goldenwest Street is a six-lane road divided by a raised median. Goldenwest Street is oriented in a northeast-southwest direction, starting at PCH and extending through the City of Huntington Beach, continuing into the City of Westminster. Parking is prohibited on both sides of the road. Goldenwest Street is classified as a six-lane Major Roadway on the City's Circulation Plan.

17th Street is a two-lane divided roadway oriented in a northeast-southwest direction, starting at PCH and ending at Main Street. Non-metered parallel parking is allowed on both sides of the road. 17th Street is classified as a four-lane Primary Roadway on the City's Circulation Plan.

9th Street is a two-lane undivided road oriented in a northeast-southwest direction, starting at PCH and ending at Palm Avenue. Parking is allowed on both sides of the street along the entire length of 9th Street.

6th Street is a two-lane road with two undivided lanes and street parking between PCH and Orange, widening to provide a painted center median between Main and Orange. Parking is allowed on both sides of the street. 6th Street is classified as a four-lane Primary from PCH to Orange Avenue, and as a four-lane Secondary between Orange Avenue and Main Street on the City's Circulation Plan and on the Orange County Master Plan of Arterial Highways (MPAH).

Main Street extends through and beyond the downtown area, starting at PCH and ending at Beach Boulevard. Main Street is currently a two-lane undivided road through the downtown area with a combination of diagonal and parallel metered street parking throughout the downtown, and unmetered street parking north of downtown. The posted speed limit on Main Street is 25-35 mph.

Lake Street / 3rd Street is a northeast-southwest roadway starting as Lake Street at Yorktown Avenue, changing to 3rd Street at Orange Avenue, and ending at Walnut Street. Lake Street is a two-lane roadway with a painted median and parking and bike lanes on both sides of the street between Yorktown Avenue and 6th Street. Lake Street narrows north of Orange Avenue and the bike lane becomes a signed bike route. South of Orange Avenue, 3rd Street provides one lane in each direction with metered parking on both sides of the street. The speed limit on Lake Street is 30 to 35 mph. Lake Street is classified as a four-lane Primary Roadway north of Orange Avenue on the City's Circulation Plan and on the County of Orange MPAH.

1st Street extends from PCH to Atlanta Avenue/Orange Avenue and currently provides two travel lanes and a center median. Metered on-street parking is provided on the west side of the street. 1st Street is designated as a four-lane Primary Arterial on the City's Circulation Plan and on the County of Orange MPAH.

Walnut Avenue is a two-lane undivided road oriented in a northwest-southeast direction paralleling PCH, starting at Goldenwest Street and ending at 1st Street. Parking is allowed on both sides of the street, with metered parking through Downtown. Walnut Avenue is classified as a four-lane divided primary roadway between 6th Street and 1st Street on the City's Circulation Plan and as a four-lane undivided secondary roadway on the County of Orange MPAH. Between 2nd and 1st Street, Walnut Avenue follows a diagonal northwest to southeast course, connecting with 1st Street approximately 200 feet south of its ultimate alignment, which is shown on the Circulation Plan to continue straight across 2nd Street and connect at 1st Street with the future Pacific View Avenue through the Pacific City development.

Pacific View Avenue is a four-lane roadway with a raised median between Huntington Street and Beach Boulevard. Parking is prohibited on both sides of the street. Pacific View Avenue is planned to extend from its current terminus at Huntington Street westward through the Pacific City development to connect with Walnut Avenue at 1st Street. Pacific View Avenue is classified as a Primary Roadway on the City's Circulation Plan and on the County of Orange MPAH. The development plans for Pacific City show Pacific View Avenue to be a two-lane divided roadway with angled parking along the south side of the street throughout the Pacific City development.

Olive Avenue is a two-lane undivided road oriented in a northwest-southeast direction, starting at Goldenwest Street and ending at 1st Street. Parking is allowed on both sides of the street, with metered parking through downtown.

Orange Avenue is a two-lane undivided road oriented in a northwest-southeast direction from Goldenwest Street to 1st Street. Parking is allowed on both sides of the street. Through downtown, Orange Avenue is classified as a four-lane Primary Roadway on the City's Circulation Plan and on the County MPAH.

Atlanta Avenue extends from the intersection of Orange Avenue and 1st Street eastward through the City, terminating east of Brookhurst Street at the City boundary. Between 1st Street and Huntington Street, Atlanta Avenue is currently a two-lane undivided roadway. With the development of the Pacific City site, Atlanta Avenue will be widened to provide a four-lane divided roadway. Atlanta Avenue is classified as a four-lane Primary Roadway on the City's Circulation Plan and on the County of Orange MPAH.

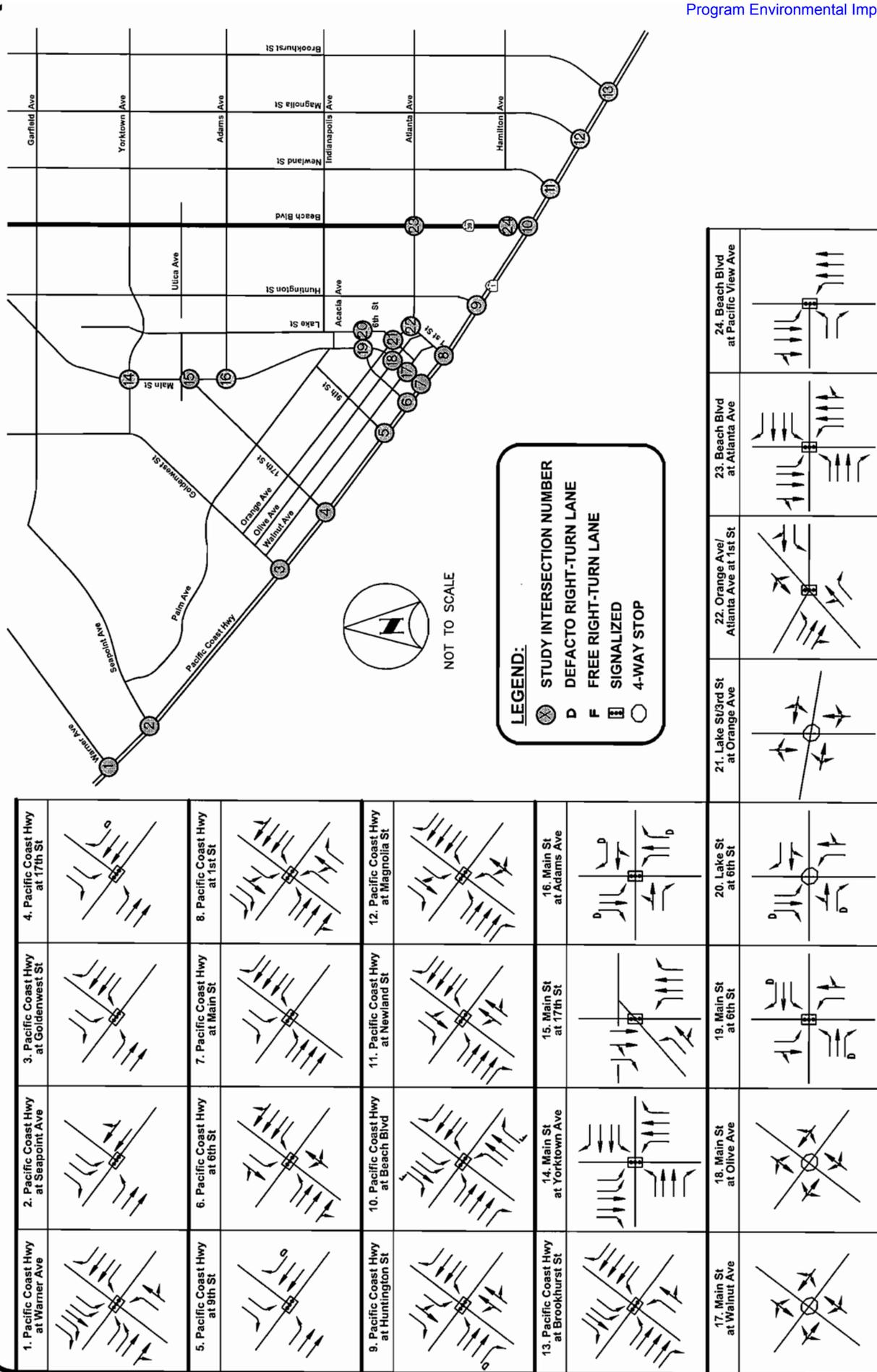
Additional local streets serving the Downtown Specific Plan area include Acacia Avenue, Frankfort Avenue, Pecan Avenue at the north end of downtown, and the "numbered streets" to the west of Main Street, including 5th Street, 7th Street, 8th Street, etc.

The existing transportation system operating characteristics, including lane configurations and traffic control at the study intersections are shown on **Figure 4**.

Public Transportation Service

The Orange County Transportation Authority (OCTA) provides local and regional bus service to the City of Huntington Beach.

Figure 5 illustrates the bus routes operated by OCTA to the Huntington Beach Downtown Area. OCTA operates Routes 1, 25, 29, and 172 within the Huntington Beach Downtown area. The locations of bus stops in the downtown area are also shown on Figure 5. A bus layover zone for all four routes is located on the ocean side of PCH between Main Street and 1st Street. Enhancements to the layover area are planned to provide passenger amenities, such as bus benches and shelters.

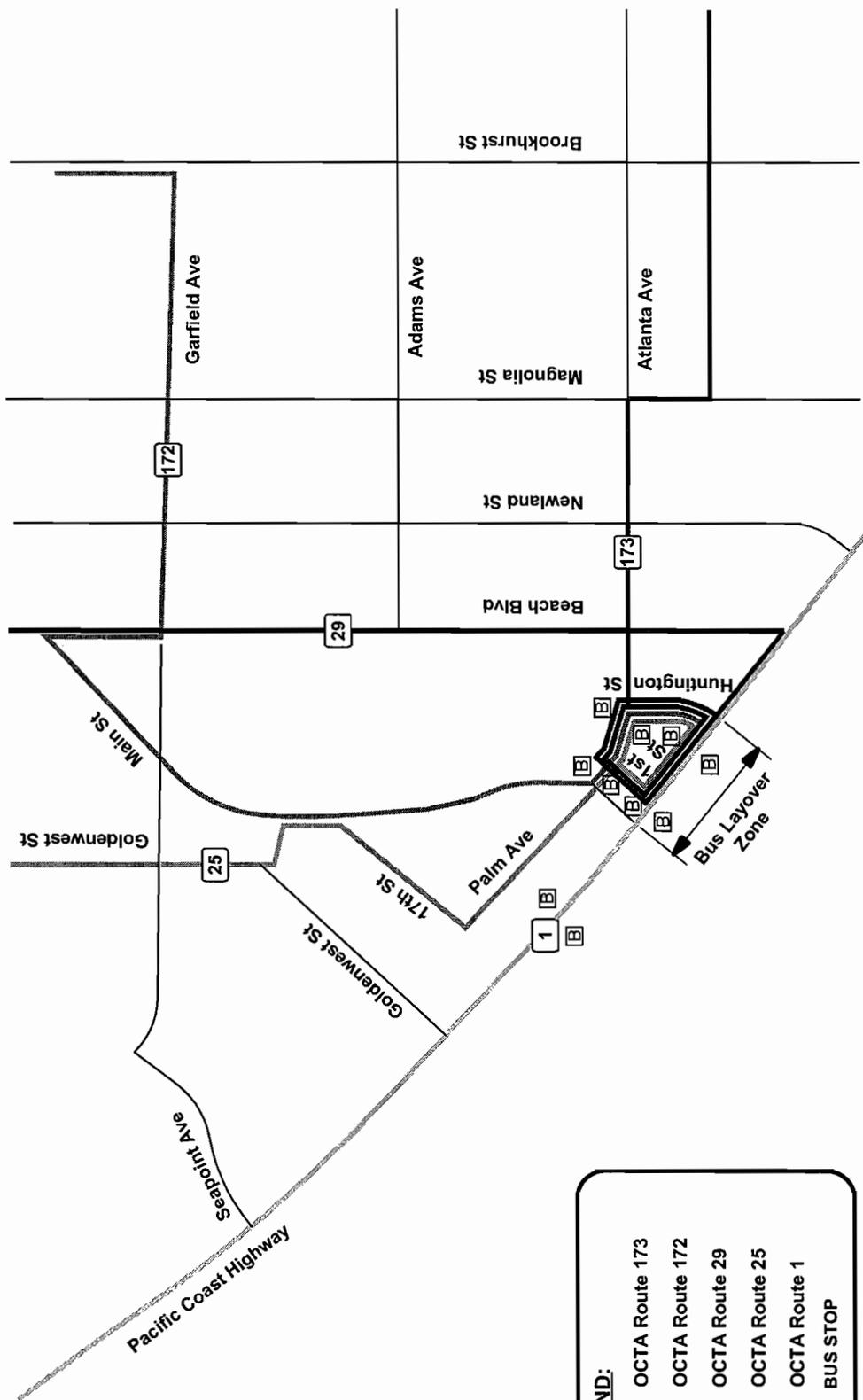


**FIGURE 4
 EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL**





NOT TO SCALE



LEGEND:

- OCTA Route 173
- OCTA Route 172
- OCTA Route 29
- OCTA Route 25
- OCTA Route 1
- BUS STOP

**FIGURE 5
 EXISTING TRANSIT SERVICE**



OCTA Route 1 operates between the City of Long Beach and the City of San Clemente via Pacific Coast Highway (PCH) which runs along the edge of downtown Huntington Beach. Route 1 starts in San Clemente at El Camino Real and Avenida Santa Margarita and continues north through the cities of Dana Point, Laguna Beach, Newport Beach, Huntington Beach, Seal Beach and Long Beach; where it eventually turns around at 7th Street and Channel. Route 1 passes through downtown Huntington Beach on PCH, and operates seven days a week, from 4:30 AM to 11:00 PM on weekdays and 5:20 AM to 9:30 PM on weekends with 10-15 minute headways throughout the day.

OCTA Route 25 operates between the City of Fullerton and the City of Huntington Beach via Knott Avenue and Goldenwest Street in a northbound and southbound direction. Route 25 starts at the Fullerton Park-N-Ride lot at Magnolia and Orangethorpe, heads west through the City of Buena Park before it turns south on Knott Avenue through the cities of Cypress and Garden Grove; where it eventually turns into Goldenwest Street and continues south to Huntington Beach. In the Huntington Beach Downtown area, Route 25 turns around at PCH and 1st Street. Route 25 operates seven days a week, from 4:50 AM to 11:00 PM on weekdays and 7:20 AM to 7:40 PM on weekends with 7-10 minute headways throughout the day.

OCTA Route 29 operates between the City of Brea and the City of Huntington Beach via La Habra Boulevard and Beach Boulevard in a northbound and southbound direction. Route 29 starts near the Brea Mall and continues west on La Habra Boulevard through to the City of Brea before it heads south on Beach Boulevard through the cities of Buena Park, Anaheim, Stanton, Garden Grove and Westminster; where it eventually turns around at PCH and 1st Street. Route 29 operates seven days a week, from 4:00 AM to 12:30 AM on weekdays and 4:30 AM to 11:40 PM on weekends with 10-15 minute headways throughout the day.

OCTA Route 172 operates between the City of Costa Mesa and the City of Huntington Beach via MacArthur Boulevard and Main Street in a northbound and southbound direction. Route 172 starts at Anton Avenue and Park Center in Costa Mesa and heads south through to the cities of Santa Ana and Fountain Valley. It makes a turn onto Main Street from Garfield Avenue in the City of Huntington Beach and heads southeast into downtown where it eventually turns around at PCH and 1st Street. Route 172 operates seven days a week, from 6:10 AM to 8:50 PM on weekdays and 6:13 AM to 8:00 PM on weekends with 5-15 minute headways throughout the day.

The Downtown Specific Plan Update does not propose any changes to the public transit service offered by OCTA. The Specific Plan does propose a downtown trolley system to enhance transit service in the downtown area. The trolley would circulate between the Waterfront Development (along PCH, west of Beach Boulevard), the future Pacific City development, the downtown core, and the surrounding residential neighborhoods. The trolley will be designed to allow downtown visitors to conveniently circulate between development areas within the downtown, without the need to drive from place to place, and to also allow nearby residents to get to and from downtown without driving.

Bicycle System

Existing and proposed bicycle facilities in the vicinity of the downtown are shown on **Figure 6**. A Class I trail (an off-road multi-purpose trail) runs along the ocean side of PCH throughout and beyond the downtown area. On Lake Street, there is a Class II bike lane on both sides of the street from Yorktown Avenue to 6th Street. A Class II bike lane is a striped on-road bicycle lane. On Lake Street / 3rd Street, from 6th Street to Walnut Avenue, the bike lane becomes a Class III bike route, which is an on-road signed-only facility. A Class II bike lane is also provided on 1st Street, between PCH and Orange/Atlanta Avenue.

Outside the downtown area, Class II bike lanes also exist along Main Street, 17th Street, Adams Avenue, Yorktown Avenue, and Hamilton Avenue.

The City's Bicycle Plan indicates that Class II bike lanes are planned for Atlanta Avenue, from where it meets with Orange Avenue to Newland Avenue, and for Goldenwest Street from PCH to Warner Avenue. The Downtown Specific Plan Update also proposes additional bicycle lanes and routes in the downtown area on 6th Street, Orange Avenue, and Lake Street, and proposes connections between the street system and the multi-purpose recreational beach path near 6th Street and 1st Street. These proposed additions to the bicycle system are also shown on Figure 6.

EXISTING TRAFFIC CONDITIONS

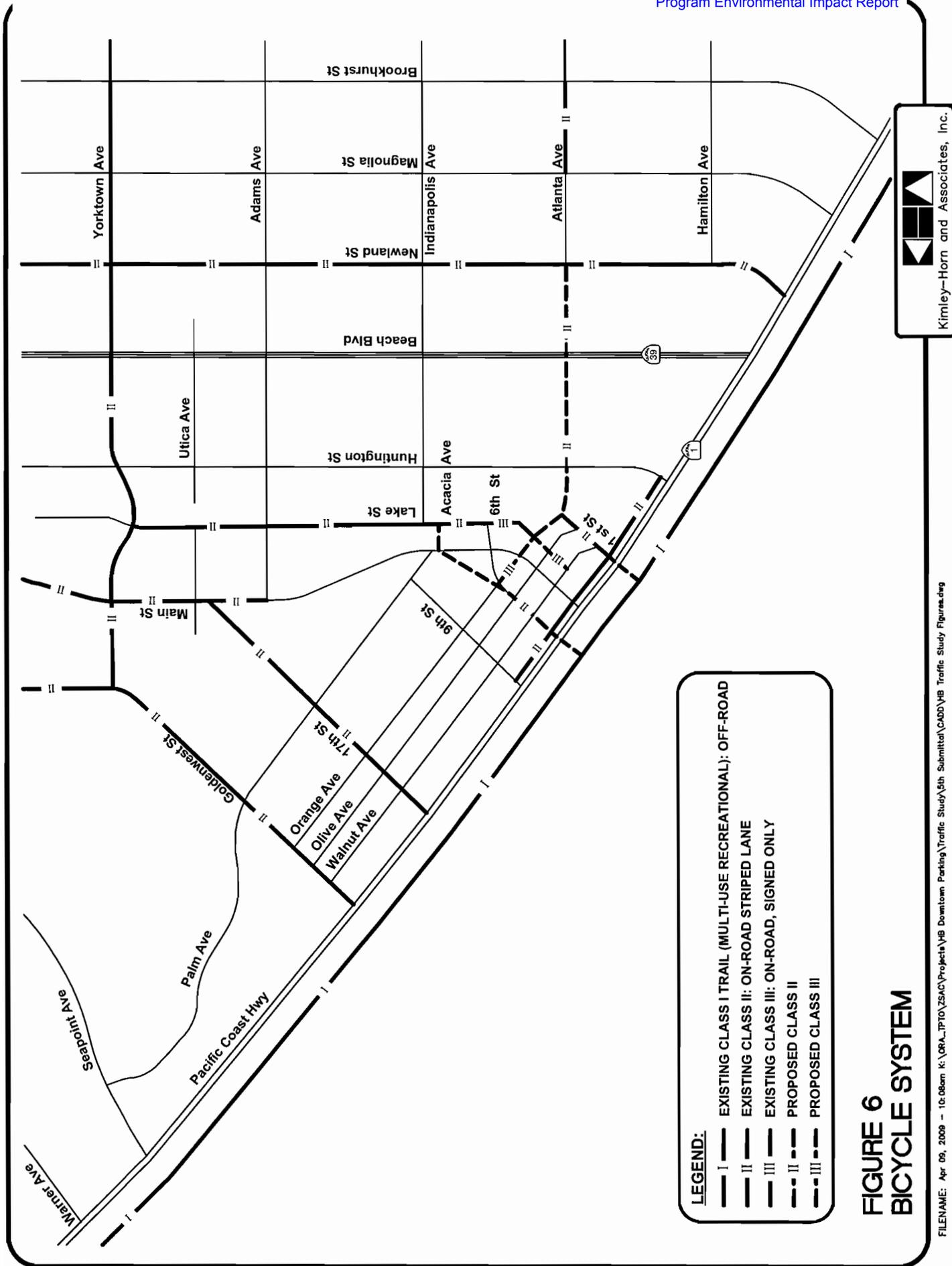
Existing Traffic Volumes

Morning and evening peak hourly traffic volume data was collected at the study intersections in August, 2008. Summer weekday peak hour traffic operating conditions have been analyzed to reflect typical commute conditions during the peak coastal activity season.

Existing peak hour turning movement volumes at the study intersections are shown on **Figure 7**. Copies of the count data forms are provided in the *Appendix A* to this report.

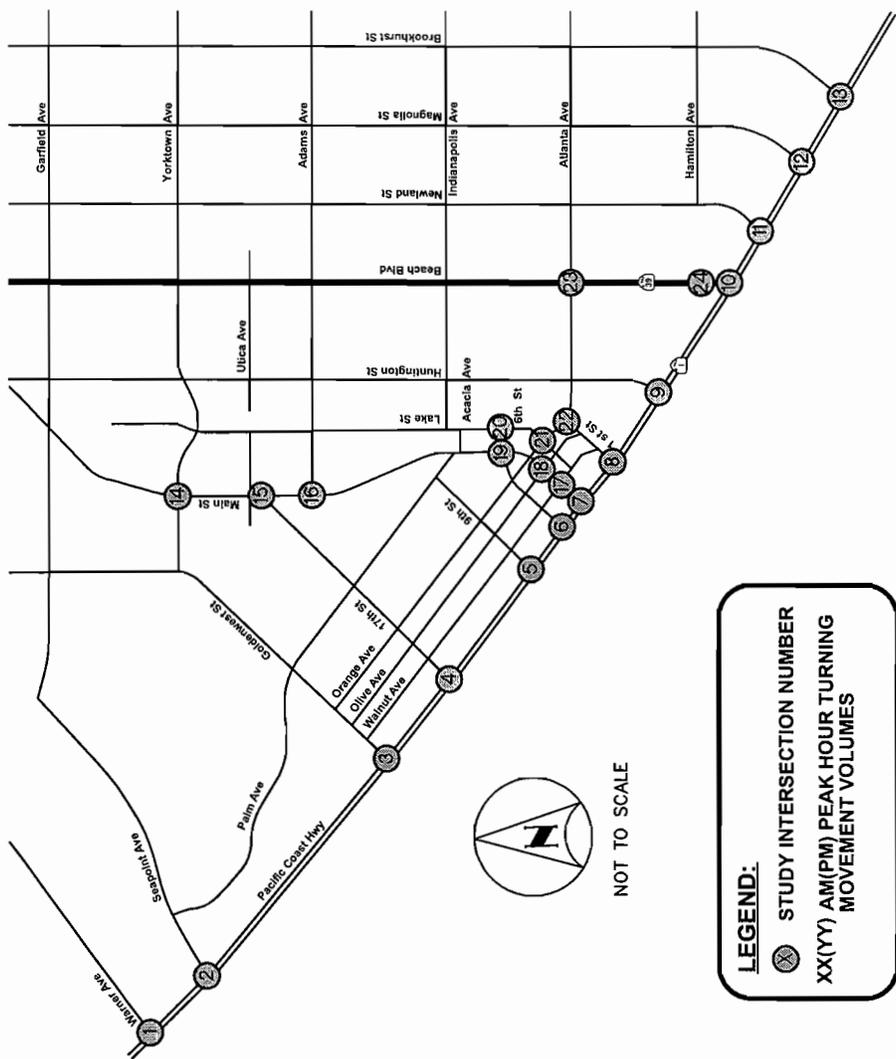
Existing Operating Conditions

Existing operating conditions at the study intersection during the morning and evening peak hours are summarized on **Table 1**. The table shows that all study intersections are currently operating at an acceptable LOS "D" or better in both peak hours. The peak hour analysis for the intersection of Main Street at Pacific Coast Highway reflects the existing pedestrian-only phase, in which pedestrians are given a "walk" phase across all approaches to the intersection in each signal cycle.



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LEGEND:
 STUDY INTERSECTION NUMBER
 XX'(YY) AM(PM) PEAK HOUR TURNING MOVEMENT VOLUMES

<p>1. Pacific Coast Hwy at Warner Ave</p> <p>Pacific Coast Hwy</p> <p>Warner Ave</p> <p>1160(1390) 220(320) 30(40) 40(30) 150(1150) 410(350) 600(550) 500(70) 290(330)</p> <p>190(200) 20(20) 30(40) 40(30)</p>	<p>2. Pacific Coast Hwy at Seapoint Ave</p> <p>Pacific Coast Hwy</p> <p>Seapoint Ave</p> <p>1110(1350) 80(40) 250(170) 80(210) 1270(1370) 80(210)</p> <p>30(20) 20(20) 30(30) 40(30)</p>	<p>3. Pacific Coast Hwy at Goldenwest St</p> <p>Pacific Coast Hwy</p> <p>Golden West St</p> <p>970(1250) 140(220) 300(190) 140(220) 1250(1060) 140(220)</p> <p>20(10) 20(10) 30(30) 40(30)</p>	<p>4. Pacific Coast Hwy at 17th St</p> <p>Pacific Coast Hwy</p> <p>17th St</p> <p>1010(1390) 30(70) 80(90) 80(50) 1420(1110) 60(160)</p> <p>40(50) 40(40) 30(30) 40(30)</p>	<p>5. Pacific Coast Hwy at 9th St</p> <p>Pacific Coast Hwy</p> <p>9th St</p> <p>1050(1540) 10(30) 1500(1150) 20(20) 1500(1150) 20(20)</p> <p>10(30) 20(20) 30(30) 40(30)</p>	<p>6. Pacific Coast Hwy at 6th St</p> <p>Pacific Coast Hwy</p> <p>6th St</p> <p>940(1320) 20(20) 20(20) 30(30) 1490(1030) 40(80)</p> <p>20(20) 20(20) 30(30) 40(30)</p>	<p>7. Pacific Coast Hwy at Main St</p> <p>Pacific Coast Hwy</p> <p>Main St</p> <p>910(1320) 10(40) 70(90) 40(90) 1500(1040) 40(90)</p> <p>10(40) 10(40) 30(30) 40(30)</p>	<p>8. Pacific Coast Hwy at 1st St</p> <p>Pacific Coast Hwy</p> <p>1st St</p> <p>800(1430) 40(50) 110(50) 80(30) 1380(1000) 40(100)</p> <p>40(50) 40(40) 30(30) 40(30)</p>	<p>9. Pacific Coast Hwy at Huntington St</p> <p>Pacific Coast Hwy</p> <p>Huntington St</p> <p>830(1380) 50(40) 10(10) 30(50) 1460(1060) 30(50)</p> <p>50(40) 20(20) 30(30) 40(30)</p>	<p>10. Pacific Coast Hwy at Beach Blvd</p> <p>Pacific Coast Hwy</p> <p>Beach Blvd</p> <p>220(750) 220(40) 860(1380) 20(40) 1520(1010) 100(190)</p> <p>20(20) 20(20) 30(30) 40(30)</p>	<p>11. Pacific Coast Hwy at Newland St</p> <p>Pacific Coast Hwy</p> <p>Newland St</p> <p>930(2080) 30(270) 100(130) 60(150) 1800(1150) 60(150)</p> <p>10(10) 10(10) 30(30) 40(30)</p>	<p>12. Pacific Coast Hwy at Magnolia St</p> <p>Pacific Coast Hwy</p> <p>Magnolia St</p> <p>840(2390) 20(30) 140(70) 20(30) 1800(1070) 80(120)</p> <p>20(30) 20(30) 30(30) 40(30)</p>	<p>13. Pacific Coast Hwy at Brookhurst St</p> <p>Pacific Coast Hwy</p> <p>Brookhurst St</p> <p>750(2010) 10(20) 690(270) 150(140) 1800(1240) 150(190)</p> <p>10(20) 10(20) 30(30) 40(30)</p>	<p>14. Main St at Yorktown Ave</p> <p>Main St</p> <p>Yorktown Ave</p> <p>110(190) 30(50) 90(160) 110(230) 330(460) 40(90)</p> <p>140(150) 34(40) 30(30) 40(30)</p>	<p>15. Main St at 17th St</p> <p>Main St</p> <p>17th St</p> <p>290(430) 20(10) 10(10) 160(180) 350(520) 160(180)</p> <p>10(10) 10(10) 30(30) 40(30)</p>	<p>16. Main St at Adams Ave</p> <p>Main St</p> <p>Adams Ave</p> <p>300(370) 30(60) 30(60) 190(260) 280(240) 50(90)</p> <p>30(10) 30(10) 30(30) 40(30)</p>	<p>17. Main St at Walnut Ave</p> <p>Main St</p> <p>Walnut Ave</p> <p>701(150) 10(10) 10(10) 30(30) 90(120) 30(30)</p> <p>10(10) 10(10) 30(30) 40(30)</p>	<p>18. Main St at Olive Ave</p> <p>Main St</p> <p>Olive Ave</p> <p>80(140) 20(40) 10(30) 70(40) 100(120) 20(30)</p> <p>10(30) 10(30) 30(30) 40(30)</p>	<p>19. Main St at 6th St</p> <p>Main St</p> <p>6th St</p> <p>80(150) 30(20) 10(10) 130(160) 30(50) 10(10)</p> <p>40(50) 40(70) 30(30) 40(30)</p>	<p>20. Lake St at 6th St</p> <p>Lake St</p> <p>6th St</p> <p>20(150) 40(20) 70(70) 70(70) 40(30) 10(10)</p> <p>40(30) 40(30) 30(30) 40(30)</p>	<p>21. Lake St / 3rd St at Orange Ave</p> <p>Lake St</p> <p>Orange Ave</p> <p>10(20) 10(20) 10(20) 60(60) 40(70) 10(20)</p> <p>10(20) 10(20) 30(30) 40(30)</p>	<p>22. 1st St at Orange Ave / Atlanta Ave</p> <p>1st St</p> <p>Orange Ave / Atlanta Ave</p> <p>40(70) 40(70) 0(10) 0(10) 150(220) 220(170)</p> <p>10(10) 10(10) 30(30) 40(30)</p>	<p>23. Beach Blvd at Atlanta Ave</p> <p>Beach Blvd</p> <p>Atlanta Ave</p> <p>110(70) 10(80) 320(840) 60(100) 170(270) 170(270)</p> <p>50(80) 50(80) 140(280) 140(280)</p>	<p>24. Beach Blvd at Pacific View Ave</p> <p>Beach Blvd</p> <p>Pacific View Ave</p> <p>30(40) 350(960) 60(60) 60(60) 50(80) 30(40)</p> <p>30(40) 30(40)</p>
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FIGURE 7
EXISTING AM/PM PEAK HOUR TRAFFIC VOLUMES



Table 1 Summary of Intersection Operation Existing Traffic Conditions								
Int. #	Intersection	Control	AM Peak Hour			PM Peak Hour		
			Delay / ICU	LOS	Delay / ICU	LOS		
Pacific Coast Highway at:								
1	Warner Avenue	S	26.4	sec/veh	C	23.8	sec/veh	C
		S	0.73	v/c	C	0.67	v/c	B
2	Seapoint Avenue	S	14.3	sec/veh	B	13.5	sec/veh	B
		S	0.58	v/c	A	0.69	v/c	B
3	Goldenwest Street	S	19.5	sec/veh	B	21.4	sec/veh	C
		S	0.61	v/c	A	0.74	v/c	C
4	17th Street	S	6.2	sec/veh	A	9.4	sec/veh	A
		S	0.52	v/c	A	0.61	v/c	A
5	9th Street	S	2.3	sec/veh	A	2.6	sec/veh	A
		S	0.52	v/c	A	0.54	v/c	A
6	6th Street	S	6.6	sec/veh	A	12.2	sec/veh	B
		S	0.42	v/c	A	0.47	v/c	A
7	Main Street	S	14.3	sec/veh	B	20.0	sec/veh	B
		S	0.64	v/c	B	0.67	v/c	B
8	1st Street	S	14.6	sec/veh	B	14.8	sec/veh	B
		S	0.44	v/c	A	0.48	v/c	A
9	Huntington Street	S	7.0	sec/veh	A	8.2	sec/veh	A
		S	0.55	v/c	A	0.58	v/c	A
10	Beach Boulevard	S	18.2	sec/veh	B	18.0	sec/veh	B
		S	0.67	v/c	B	0.72	v/c	C
11	Newland Street	S	10.4	sec/veh	B	10.8	sec/veh	B
		S	0.50	v/c	A	0.63	v/c	B
12	Magnolia Street	S	12.6	sec/veh	B	9.8	sec/veh	A
		S	0.53	v/c	A	0.65	v/c	B
13	Brookhurst Street	S	21.9	sec/veh	C	17.3	sec/veh	B
		S	0.63	v/c	B	0.68	v/c	B
Main Street at:								
14	Yorktown Avenue	S	0.35	v/c	A	0.48	v/c	A
15	17th Street	S	0.25	v/c	A	0.32	v/c	A
16	Adams Avenue	S	0.43	v/c	A	0.59	v/c	A
17	Walnut Avenue	U	7.7	sec/veh	A	8.6	sec/veh	A
18	Olive Avenue	U	8.1	sec/veh	A	8.7	sec/veh	A
19	6th Street	S	0.20	v/c	A	0.25	v/c	A
Lake Street at:								
20	6th Street	U	8.0	sec/veh	A	9.2	sec/veh	A
21	Orange Avenue	U	8.9	sec/veh	A	10.2	sec/veh	B
Orange Avenue/Atlanta Avenue at:								
22	1st Street	S	0.29	v/c	A	0.35	v/c	A
Beach Boulevard at:								
23	Atlanta Avenue	S	20.9	sec/veh	C	22.1	sec/veh	C
		S	0.34	v/c	A	0.53	v/c	A
24	Pacific View Avenue	S	7.3	sec/veh	A	8.3	sec/veh	A
		S	0.24	v/c	A	0.29	v/c	A
S = Signalized, U = Unsignalized Intersection operation is expressed in average seconds of delay per vehicle during the peak hour for HCM 2000 Methodology and is expressed in volume-to-capacity (v/c) for ICU Methodology								

It should be noted that although the traffic volume data was collected during a peak seasonal period, the Summer of 2008 was also an unusual time, in that gas prices had reached a high of over \$4.00 a gallon, and unemployment rates in the County were also unusually high. As a result, the traffic volumes collected on some roadways and at some intersections are lower than some historical data in recent past years. As a result, the traffic Level of Service conditions reported for Existing Conditions in this report may reflect a better Level of Service than has been reported in recent past years.

The analysis for the intersection of Main Street at PCH takes into account the pedestrian-only phase during each signal cycle, in which only pedestrian crossing movements are allowed on all four legs of the intersection. This pedestrian-only phase accounts for roughly 30% of each signal cycle, which reduces the intersection capacity for vehicular movement through the intersection.

CUMULATIVE YEAR 2020 CONDITIONS

An interim year analysis has been conducted to evaluate Cumulative traffic conditions in the short-term future (Year 2020). Although the Specific Plan has identified a 20-year build-out as the projected timing to achieve the full development potential, the entire project has been evaluated for the Cumulative Year 2020 short-term future analysis, for a conservative worst-case condition.

Cumulative traffic projections for the study intersections have been developed for the short-term future using the build-up method. Cumulative traffic forecasts consist of existing traffic levels with an annual compounded growth rate applied for each year between existing conditions and the Cumulative Year. In addition, traffic from any approved and pending projects (Cumulative Projects) in the vicinity of the project is also added to the existing volumes. Cumulative Projects consist of any project which has been approved and is not yet occupied, has been proposed and is currently being processed, or is otherwise a reasonably-foreseeable project.

Ambient Growth

An ambient traffic growth rate was applied to the existing traffic volumes at each of the study area intersections. Based on build-out traffic forecasts and prior studies conducted in the downtown area, a conservative ambient traffic growth rate of 1% a year was applied to all peak hour traffic volumes.

Cumulative Projects

In addition, potential traffic from Cumulative Projects (projects that have already been approved, or are pending and likely to be approved) has been added to Existing plus Ambient Growth traffic volumes. Information regarding cumulative projects in the vicinity of the project was obtained from the planning staff of the City of Huntington Beach.

In all, twelve cumulative projects were identified, including The Strand and the Pacific City projects, both of which are major projects located within the Downtown Specific Plan area. A list of the cumulative projects and their trip-generating potential is provided on **Table 2**. The location of each cumulative project is shown on **Figure 8**. The total combined traffic generated by all the cumulative projects through the study intersections is shown on **Figure 9**.

Cumulative Traffic Volumes Without the Project

Ambient Growth and Cumulative Projects traffic were added to Existing traffic volumes, to develop Cumulative Conditions traffic volume forecasts without the proposed project. The resulting peak hour forecast volumes are shown on **Figure 10**.

Each study intersection was analyzed with the Cumulative Conditions traffic volumes, and the results are shown on **Table 3**. With the addition of ambient growth and Cumulative Projects traffic, all study intersections will continue to operate at LOS "D" or better in both peak hours. Copies of the Traffix output intersection analysis worksheets for the Cumulative Conditions Without Project analysis are provided in **Appendix B**.

PROJECT TRAFFIC

Project Trip Generation

The Huntington Beach Downtown Specific Plan Update project represents the potential for development of additional downtown resident- and visitor-serving uses throughout the downtown area. The Downtown Specific Plan Update contemplates the following development thresholds:

- Retail – 213,467 square feet
- Restaurant – 92,332 square feet
- Office – 92,784 square feet
- Cultural facilities – 30,000 square feet
- Residential (condominium / townhome) – 648 units
- Hotel – 235 rooms

Table 2
Summary of Cumulative Projects

Project Name	Location	Land Use	Quantity	Unit	ADT	AM Peak Hour		PM Peak Hour	
						In	Out	In	Out
1. The Strand	6th and Walnut	Retail / Restaurant Hotel	135 149	KSF Rooms	7,106	220	163	324	293
2. Pacific City	PCH and 1st	Retail / Restaurant Hotel Residential	208 250 514	KSF Rooms DU	12,002	345	283	505	546
3. Senior Center	SWC Goldenwest and Talbert	Senior Center	45	KSF	3,395	60	274	40	110
4. Brightwater	Bolsa Chica, County of Orange	Single-Family Res.	346	DU	3,258	63	189	206	121
5. Parkside Estates	Graham, south of Warner	Single-Family Res.	112	DU	2,052	49	115	144	61
6. Ocean Breeze Plaza	Beach Blvd and Ronald Drive	General Office	9.5	KSF	218	25	3	15	74
7. Harmony Cove	Warner and PCH	Single-Family Res.	15	DU	182	5	15	12	7
8. Longs Drugs	NWC Beach Blvd and Newman	Drugstore	8.8	KSF	794	17	11	37	37
9. Fein Medical	Liberty Ave, west of Beach Blvd.	Medical Office	6.5	KSF	236	6	18	118	118
10. Waterfront - 3rd Hotel	PCH west of Beach Boulevard	Hotel	250	Rooms	2,043	85	55	78	70
11. Newland Residential	Newland and Hamilton	Single-Family Res.	201	DU	1,976	38	113	127	74
12. Magnolia Pacific Spec Plan	Hamilton and Magnolia	Single-Family Res.	502	DU	4,588	90	271	289	169
13. Mixed-Use Project	PCH and 7th	Retail Residential	4.26 6	KSF DU	184 36	2 1	2 2	8 2	8 1
Total					38,070	1,006	1,514	1,905	1,689

KSF = Thousand Square Feet, DU = Dwelling Units

ADT = Average Daily Traffic

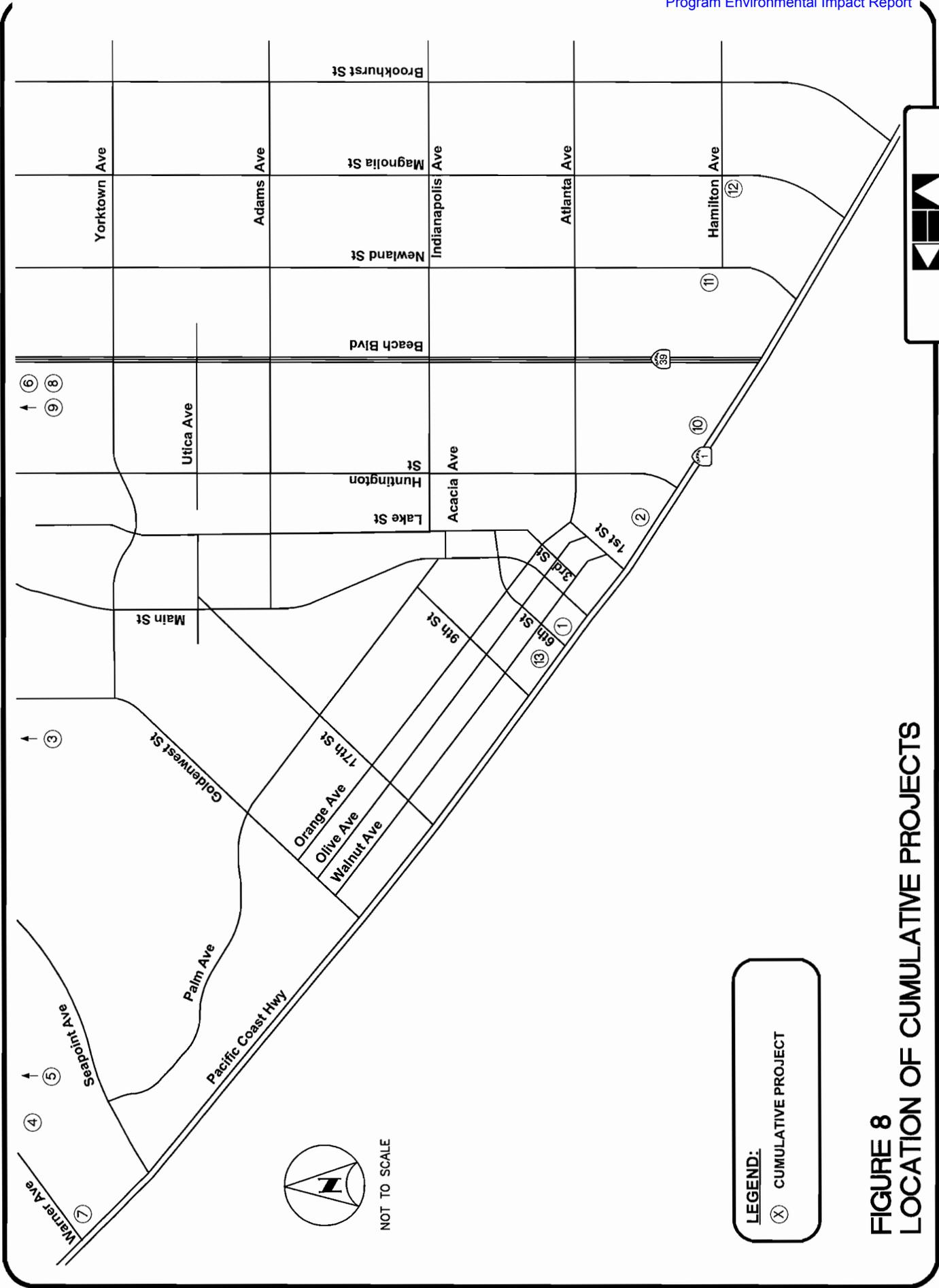


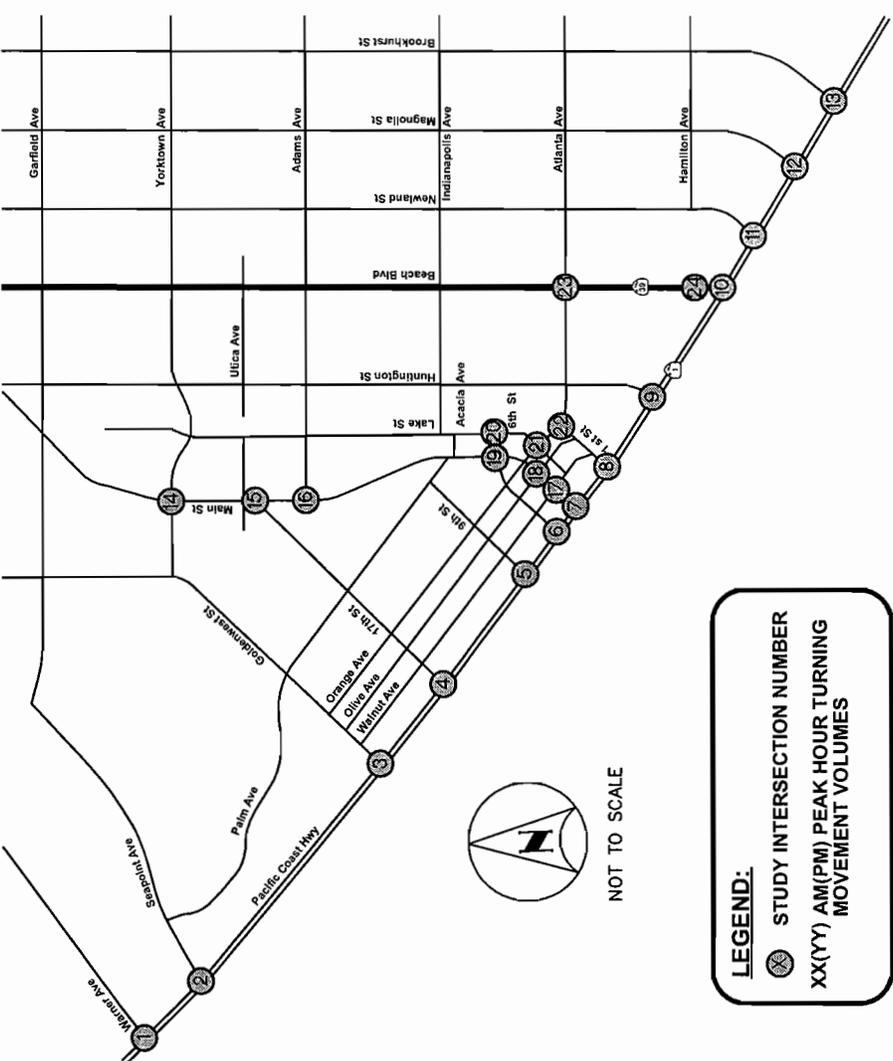
FIGURE 8
LOCATION OF CUMULATIVE PROJECTS



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FIGURE 9
CUMULATIVE PROJECTS AM/PM PEAK HOUR TRAFFIC VOLUMES

<p>1. Pacific Coast Hwy at Warner Ave</p>	<p>2. Pacific Coast Hwy at Seapoint Ave</p>	<p>3. Pacific Coast Hwy at Goldenwest St</p>	<p>4. Pacific Coast Hwy at 17th St</p>
<p>5. Pacific Coast Hwy at 9th St</p>	<p>6. Pacific Coast Hwy at 6th St</p>	<p>7. Pacific Coast Hwy at Main St</p>	<p>8. Pacific Coast Hwy at 1st St</p>
<p>9. Pacific Coast Hwy at Huntington St</p>	<p>10. Pacific Coast Hwy at Beach Blvd</p>	<p>11. Pacific Coast Hwy at Newland St</p>	<p>12. Pacific Coast Hwy at Magnolia St</p>
<p>13. Pacific Coast Hwy at Brookhurst St</p>	<p>14. Main St at Yorktown Ave</p>	<p>15. Main St at 17th St</p>	<p>16. Main St at Adams Ave</p>
<p>17. Main St at Walnut Ave</p>	<p>18. Main St at Olive Ave</p>	<p>19. Main St at 6th St</p>	<p>20. Lake St at 6th St</p>
<p>21. Lake St / 3rd St at Orange Ave</p>	<p>22. 1st St at Orange Ave / Atlanta Ave</p>	<p>23. Beach Blvd at Atlanta Ave</p>	<p>24. Beach Blvd at Pacific View Ave</p>



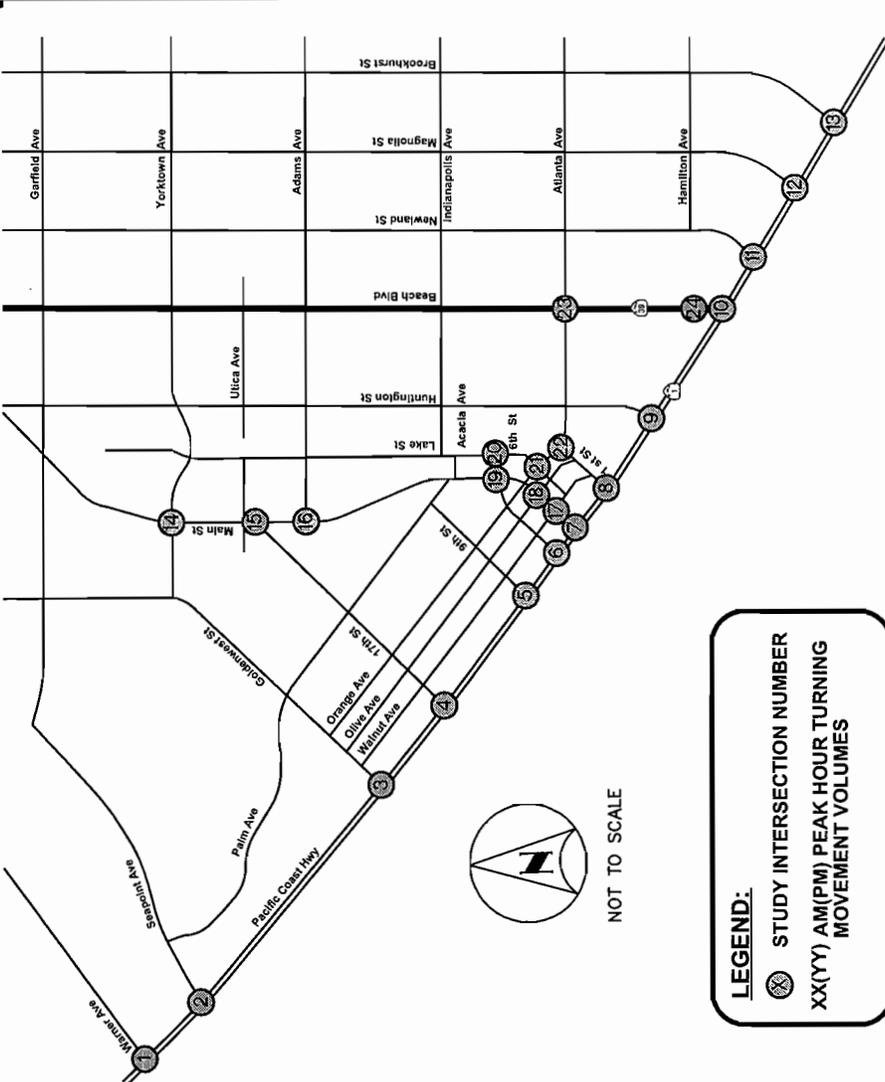
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**FIGURE 10 CUMULATIVE
 AM/PM PEAK HOUR TRAFFIC VOLUMES WITHOUT PROJECT**

<p>1. Pacific Coast Hwy at Warner Ave</p>	<p>2. Pacific Coast Hwy at Seapoint Ave</p>	<p>3. Pacific Coast Hwy at Goldenwest St</p>	<p>4. Pacific Coast Hwy at 17th St</p>
<p>5. Pacific Coast Hwy at 9th St</p>	<p>6. Pacific Coast Hwy at 6th St</p>	<p>7. Pacific Coast Hwy at Main St</p>	<p>8. Pacific Coast Hwy at 1st St</p>
<p>9. Pacific Coast Hwy at Huntington St</p>	<p>10. Pacific Coast Hwy at Beach Blvd</p>	<p>11. Pacific Coast Hwy at Newland St</p>	<p>12. Pacific Coast Hwy at Magnolia St</p>
<p>13. Pacific Coast Hwy at Brookhurst St</p>	<p>14. Main St at Yorktown Ave</p>	<p>15. Main St at 17th St</p>	<p>16. Main St at Adams Ave</p>
<p>17. Main St at Walnut Ave</p>	<p>18. Main St at Olive Ave</p>	<p>19. Main St at 6th St</p>	<p>20. Lake St at 6th St</p>
<p>21. Lake St / 3rd St at Orange Ave</p>	<p>22. 1st St at Orange Ave / Atlanta Ave</p>	<p>23. Beach Blvd at Atlanta Ave</p>	<p>24. Beach Blvd at Pacific View Ave</p>



LEGEND:
 STUDY INTERSECTION NUMBER
 XX(YY) AM(PM) PEAK HOUR TURNING MOVEMENT VOLUMES

Table 3
Summary of Intersection Operation
Year 2020 Cumulative without Project

Int. #	Intersection	Control	AM Peak Hour			PM Peak Hour		
			Delay / ICU	LOS	Delay / ICU	LOS		
Pacific Coast Highway at:								
1	Warner Avenue	S	28.6	sec/veh	C	25.3	sec/veh	C
		S	0.83	v/c	D	0.78	v/c	C
2	Seapoint Avenue	S	15.1	sec/veh	B	14.9	sec/veh	B
		S	0.66	v/c	B	0.80	v/c	C
3	Goldenwest Street	S	21.7	sec/veh	C	24.5	sec/veh	C
		S	0.71	v/c	C	0.85	v/c	D
4	17th Street	S	6.4	sec/veh	A	9.9	sec/veh	A
		S	0.60	v/c	A	0.71	v/c	C
5	9th Street	S	2.4	sec/veh	A	2.9	sec/veh	A
		S	0.60	v/c	A	0.65	v/c	B
6	6th Street	S	8.7	sec/veh	A	14.1	sec/veh	B
		S	0.50	v/c	A	0.62	v/c	B
7	Main Street	S	14.6	sec/veh	B	20.4	sec/veh	C
		S	0.70	v/c	B	0.74	v/c	C
8	1st Street	S	18.0	sec/veh	B	19.7	sec/veh	B
		S	0.51	v/c	A	0.63	v/c	B
9	Huntington Street	S	8.4	sec/veh	A	10.0	sec/veh	A
		S	0.66	v/c	B	0.74	v/c	C
10	Beach Boulevard	S	20.2	sec/veh	C	22.6	sec/veh	C
		S	0.77	v/c	C	0.86	v/c	D
11	Newland Street	S	10.3	sec/veh	B	11.3	sec/veh	B
		S	0.58	v/c	A	0.73	v/c	C
12	Magnolia Street	S	12.6	sec/veh	B	10.5	sec/veh	B
		S	0.61	v/c	A	0.77	v/c	C
13	Brookhurst Street	S	22.8	sec/veh	C	18.3	sec/veh	B
		S	0.72	v/c	C	0.79	v/c	C
Main Street at:								
14	Yorktown Avenue	S	0.40	v/c	A	0.58	v/c	A
15	17th Street	S	0.30	v/c	A	0.38	v/c	A
16	Adams Avenue	S	0.52	v/c	A	0.71	v/c	B
17	Walnut Avenue	U	8.3	sec/veh	A	10.2	sec/veh	B
18	Olive Avenue	U	8.4	sec/veh	A	9.3	sec/veh	A
19	6th Street	S	0.29	v/c	A	0.39	v/c	A
Lake Street at:								
20	6th Street	U	13.7	sec/veh	B	9.9	sec/veh	A
21	Orange Avenue	U	8.1	sec/veh	A	13.4	sec/veh	B
Orange Avenue/Atlanta Avenue at:								
22	1st Street	S	0.34	v/c	A	0.43	v/c	A
Beach Boulevard at:								
23	Atlanta Avenue	S	22.3	sec/veh	C	24.0	sec/veh	C
		S	0.41	v/c	A	0.64	v/c	B
24	Pacific View Avenue	S	10.2	sec/veh	B	13.3	sec/veh	B
		S	0.33	v/c	A	0.39	v/c	A
S = Signalized, U = Unsignalized Intersection operation is expressed in average seconds of delay per vehicle during the peak hour for HCM 2000 Methodology and is expressed in volume-to-capacity (v/c) for ICU Methodology								

Although no actual development plans have yet been presented, the Specific Plan has identified key opportunity areas throughout the Downtown, as shown on **Figure 11**. Many of these key opportunity sites are currently developed with existing, occupied and operating uses. The development potential identified in the Specific Plan Update represents development increases over existing development levels in the downtown, and may, in some cases, represent new development that replaces a prior existing use. Trip generation for the development contemplated by the Specific Plan Update, therefore, also represents net new trip-making potential, over and above traffic currently being generated by existing uses in the downtown.

Trip generation estimates for the project were developed using the Institute of Transportation Engineers (ITE) publication Trip Generation, 7th Edition. The trip generation rates and equations for each of the project components are summarized on **Table 4**. Resulting project trip generation estimates are shown on **Table 5**.

Internal Capture and Mode Shift

With regard to trip-generating potential, one characteristic of multi-use developments is the potential for a number of beneficial interactions among a variety of uses in terms of walk trips or shared vehicular trips between land uses. These interactions represent the potential for a reduction in the number of trips assumed for the new development. For example:

- Patrons of the proposed hotel or the workers in the proposed office space may also patronize the proposed new restaurants and shops on the same trip.
- There also exists the opportunity for patrons of each of the new businesses to interact on the same trip with the other already-existing downtown uses, including other retail, restaurant, and office uses, existing residential, and the beach and pier recreational uses.
- Moreover, people who are already patrons of the existing businesses in the downtown, or visitors to the beach and pier, may use the same trip to patronize the new development.
- In addition to the potential for shared trips between multiple existing and future uses, residents of both the new residential units and of the existing downtown and surrounding neighborhood will be able to walk or bicycle to the downtown, eliminating some vehicular trips altogether.
- The provision of a downtown trolley system and enhancement of the bicycle facilities in the downtown area will also enhance the potential for reducing or eliminating trips associated with the new development. A trolley system and additional bike lanes will allow downtown visitors to conveniently circulate between development areas within the downtown, and will also allow nearby residents to get to and from downtown without driving.

The resulting potential for reduction in vehicular trips is known as internal capture and mode shift. As a result of these factors, the total inbound and outbound vehicular trips for the project may be reduced. The ITE Trip Generation Handbook (Second Edition) provides the methodology for estimating the percentage of internal capture for multi-use developments. Internal capture potential for the potential new Specific Plan development was calculated, and the calculation spreadsheets are provided in **Appendix C** of this study. The internal capture and mode shift percentages for each use and for each time period are shown on the Trip Generation table.



NOT TO SCALE



Legend

- Potential Redevelopment Sites
- Specific Plan Boundary
- Building Footprints
- Parcels

**FIGURE 11 DOWNTOWN SPECIFIC PLAN UPDATE
 KEY OPPORTUNITY SITES**



Table 4
City of Huntington Beach Downtown Specific Plan Update
Trip Generation Rates and Equations

ITE Land Use Code / Land Use	Unit	Time Period	Trip Rate / Equation	Directional Split	
				Inbound	Outbound
820: Shopping Center (Retail / Restaurant)	KSF	Daily	$\text{Ln}(T) = 0.643 \text{Ln}(X) + 5.866$	50%	50%
		AM Peak	$\text{Ln}(T) = 596 \text{Ln}(X) + 2.329$	61%	39%
		PM Peak	$\text{Ln}(T) = 0.660 \text{Ln}(X) + 3.403$	48%	52%
710: General Office	KSF	Daily	$\text{Ln}(T) = 0.768 \text{Ln}(X) + 3.654$	50%	50%
		AM Peak	$\text{Ln}(T) = 0.797 \text{Ln}(X) + 1.558$	88%	12%
		PM Peak	$T = 1.121(X) + 79.295$	17%	83%
310: Hotel	Room	Daily	$T = 8.946(X) - 368.112$	50%	50%
		AM Peak	$\text{Ln}(T) = 1.240 \text{Ln}(X) - 1.998$	61%	39%
		PM Peak	$\text{Ln}(T) = 1.212 \text{Ln}(X) - 1.763$	33%	47%
230: Residential Condominium/Townhouse	Dwelling Unit	Daily	$\text{Ln}(T) = 0.85 \text{Ln}(X) + 2.564$	50%	50%
		AM Peak	$\text{Ln}(T) = 0.79 \text{Ln}(X) + 0.298$	17%	83%
		PM Peak	$\text{Ln}(T) = 0.827 \text{Ln}(X) + 0.309$	67%	33%
Cultural Arts Center: 441: Live Theater Component	Seat	Daily ^a	1.76 per seat	50%	50%
		AM Peak	0.00 per seat	0%	0%
		PM Peak	0.02 / per seat	50%	50%
Cultural Arts Center: Museum Component ^b	KSF	Daily	16 per KSF	50%	50%
		AM Peak	0.00 per KSF	0%	0%
		PM Peak	1.14 per KSF	35%	65%

Source: Institute of Transportation Engineers (ITE) Trip Generation (7th Edition), unless otherwise noted
 KSF = Thousand Square Feet

^a ITE does not provide a daily rate for 441: Live Theater. The daily rate for Movie Theater without Matinee (443) is used here.

^b ITE does not provide trip rates for a Museum. Rates are based on trip rates developed for a 25,000 SF Museum for the Los Angeles Entertainment District.

Table 5
City of Huntington Beach Downtown Specific Plan Update
Project Trip Generation

Land Use	Unit	Quant	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
820 - Retail / Restaurant Internal Capture (20%/20%/19%) Mode Shift (15%)			13,131	192	123	315	396	429	826
			(2,626)	(38)	(25)	(63)	(75)	(82)	(157)
	KSF	305.799	(1,970)	(29)	(18)	(47)	(59)	(64)	(124)
710 - General Office Internal Capture (15%/15%/13%) Mode Shift (15%)			1,022	127	17	144	24	115	138
			(153)	(19)	(3)	(22)	(3)	(15)	(18)
	KSF	92.784	(153)	(19)	(3)	(22)	(4)	(17)	(21)
310 - Hotel Internal Capture (28%/28%/42%) Mode Shift (15%)			1,920	80	51	132	73	65	139
			(538)	(22)	(14)	(37)	(31)	(27)	(58)
	Room	235	(288)	(12)	(8)	(20)	(11)	(10)	(21)
230 - Resid'l Condo / Townhome Internal Capture (20%/20%/27%) Mode Shift (15%)			3,797	48	237	285	226	111	337
			(759)	(10)	(47)	(57)	(61)	(30)	(91)
	DU	648	(570)	(7)	(35)	(43)	(34)	(17)	(51)
Cultural Art Center: Live Theater	Seat	150	264	0	0	0	2	2	3
Cultural Art Center: Museum	KSF	20	320	0	0	0	8	15	23
TOTAL TRIP GENERATION			20,454	447	428	876	729	737	1,465
NET TRAFFIC GENERATION			13,397	291	275	566	451	475	925

Source: Institute of Transportation Engineers (ITE) Trip Generation (7th Edition)

KSF = Thousand Square Feet

DU = Dwelling Unit

ADT = Average Daily Traffic

(xx%/yy%/zz%) = (Daily/AM Peak/PM Peak)

As indicated on Table 5, the project is forecasted to generate approximately 13,397 trips per day, with 291 inbound and 275 outbound trips in the morning peak hour, and 451 inbound and 475 outbound trips in the evening peak hour.

Project Trip Distribution and Assignment

The Downtown Specific Plan Update project contemplates the potential for over 400,000 square feet of downtown development throughout the core district of the downtown specific plan area. Development is anticipated to take place on a number of key opportunity sites dispersed throughout the downtown area, some representing individual parcels, and some representing larger development areas. Project traffic will approach and depart the development areas via the existing downtown grid street system, similar to current traffic patterns. Project trip distribution assumptions for the project area were developed, based on select zone runs of the Huntington Beach Traffic Model (HBTM), and taking into account the proposed mix of uses and the location of area trip producers, such as residential population, tourist population, and employment areas. Trip assignment was conducted taking into account the multiple approach and departure opportunities provided by the downtown grid street system.

Project Trips

Trip distribution assumptions for the proposed Downtown Specific Plan Update project are shown on **Figure 12**. Based on the trip distribution patterns shown on Figure 12, the new trips to be added to the street system by the proposed project were calculated. Project-related peak hour volumes are shown on **Figure 13**.

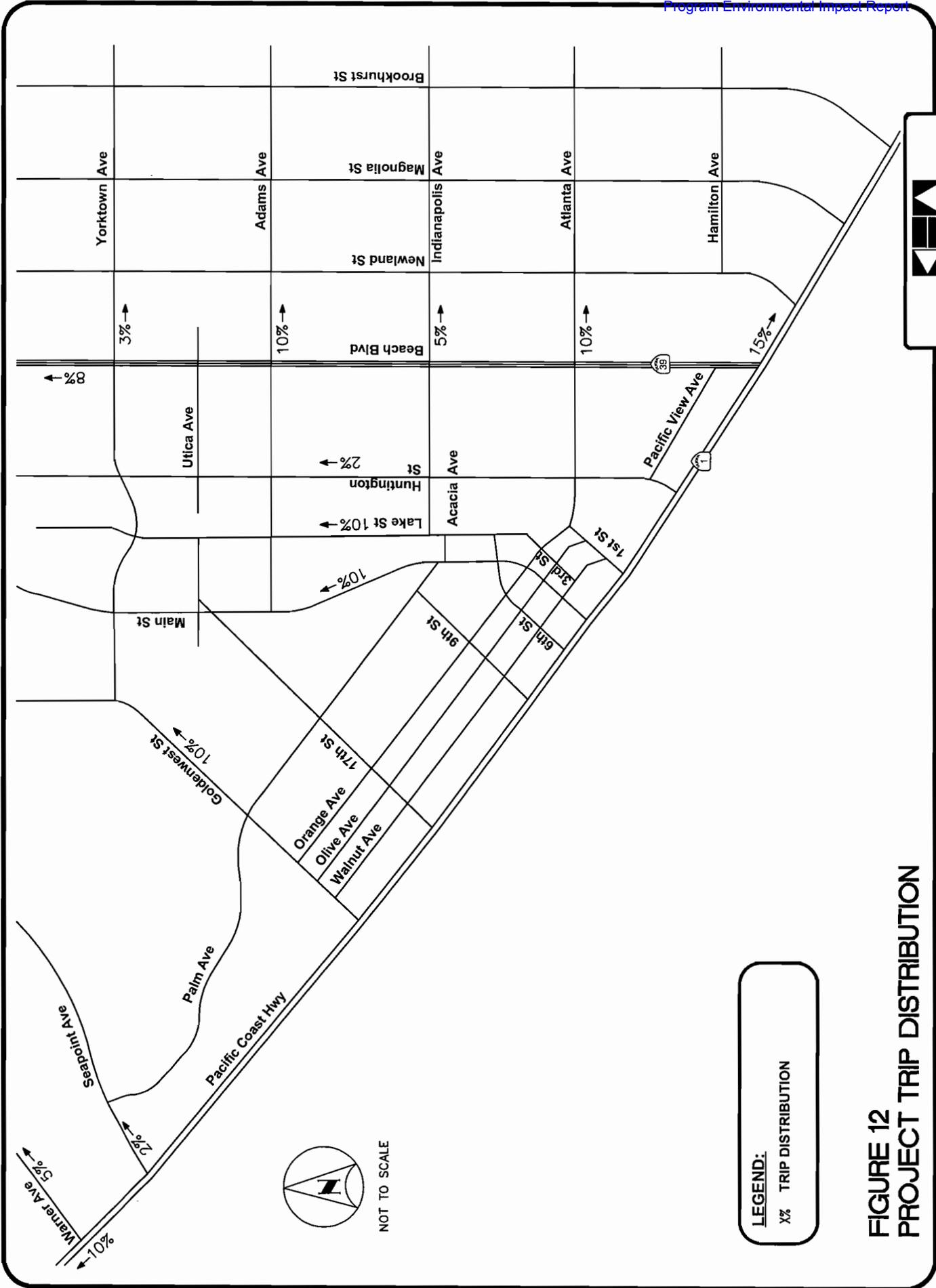
CUMULATIVE PLUS PROJECT CONDITIONS

Project traffic was added to the Cumulative Conditions base traffic volumes. The resulting peak hour traffic volumes are shown on **Figure 14**.

The study intersections were analyzed for Cumulative Plus Project Conditions, and the results are summarized on **Table 6**. The “With Project” analysis assumes the implementation of a pedestrian-only phase at the intersections of PCH at 6th Street and at 1st Street, as proposed by the Downtown Specific Plan Update.

With the addition of project traffic, all study intersections are forecasted to continue to operate at an acceptable Level of Service “D” or better, except the intersections of Pacific Coast Highway at 1st Street and at 6th Street. The proposed implementation of the pedestrian-only phases at these intersections reduces the capacity for the movement of vehicles by roughly 30%, and results in LOS “E” conditions at both intersections in the evening peak hour, using the ICU methodology. The proposed pedestrian-only phase is the direct cause of the unacceptable Level of Service at these two intersections. Without the pedestrian-only phase, both intersections would operate at LOS “D” or better in both peak hours. Options to mitigate this impact are presented in the Mitigation Section.

There are no other significant project-related impacts forecasted at the study intersections. Copies of the intersection analysis worksheets are provided in **Appendix B** of this report.

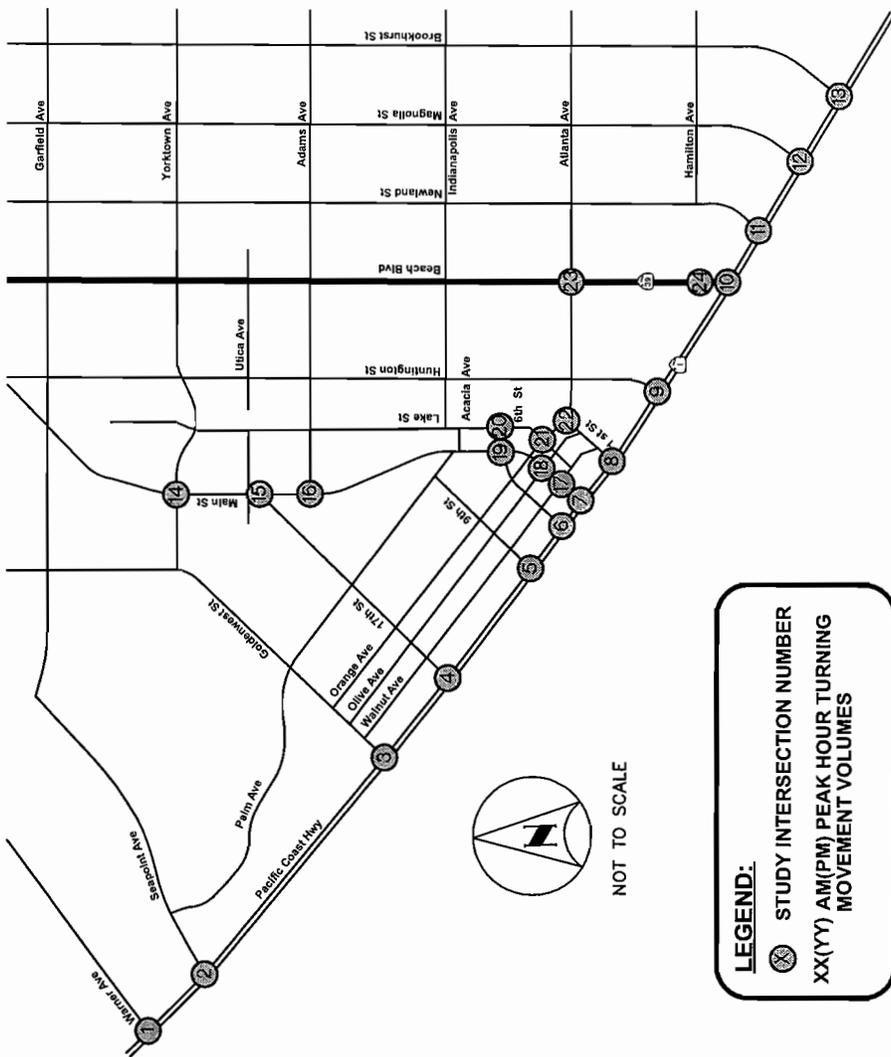


NOT TO SCALE

LEGEND:
 X% TRIP DISTRIBUTION

**FIGURE 12
 PROJECT TRIP DISTRIBUTION**

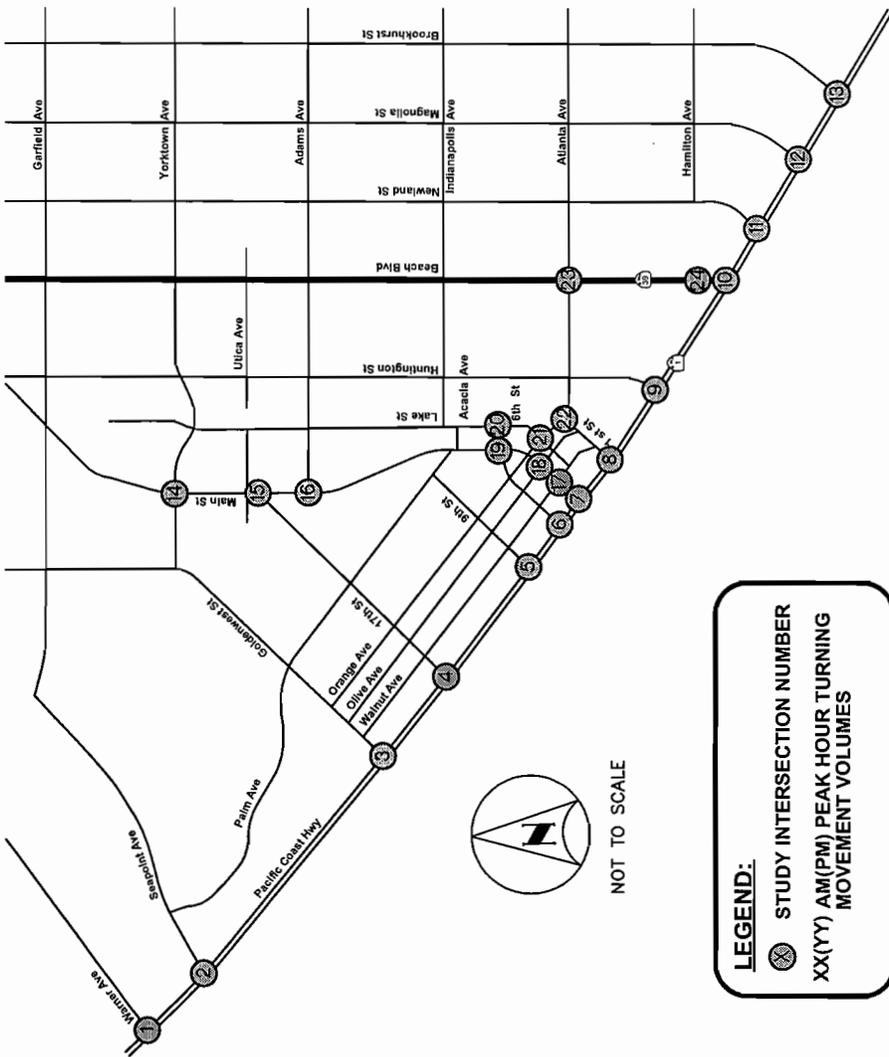




<p>1. Pacific Coast Hwy at Warner Ave</p> <p>Warner Ave Pacific Coast Hwy</p> <p>29(45) → 28(46) ← 14(24) ← 15(23) →</p>	<p>2. Pacific Coast Hwy at Seapoint Ave</p> <p>Seapoint Ave Pacific Coast Hwy</p> <p>44(68) → 47(71) ← 5(10) → 6(9) ←</p>	<p>3. Pacific Coast Hwy at Goldenwest St</p> <p>Goldenwest St Pacific Coast Hwy</p> <p>49(77) → 47(81) ← 11(18) → 11(17) ←</p>	<p>4. Pacific Coast Hwy at 17th St</p> <p>17th St Pacific Coast Hwy</p> <p>61(94) → 58(99) ←</p>	<p>5. Pacific Coast Hwy at 9th St</p> <p>9th St Pacific Coast Hwy</p> <p>61(94) → 58(99) ←</p>	<p>6. Pacific Coast Hwy at 6th St</p> <p>6th St Pacific Coast Hwy</p> <p>49(76) → 11(18) → 11(17) ← 10(17) ← 47(80) → 11(17) →</p>	<p>7. Pacific Coast Hwy at Main St</p> <p>Main St Pacific Coast Hwy</p> <p>20(33) → 39(61) → 32(52) → 19(31) → 15(22) → 20(33) ← 33(52) ←</p>	<p>8. Pacific Coast Hwy at 1st St</p> <p>1st St Pacific Coast Hwy</p> <p>42(72) → 10(16) → 44(68) → 29(45) → 10(17) → 28(46) →</p>	<p>9. Pacific Coast Hwy at Huntington St</p> <p>Huntington St Pacific Coast Hwy</p> <p>69(119) → 73(113) →</p>	<p>10. Pacific Coast Hwy at Beach Blvd</p> <p>Beach Blvd Pacific Coast Hwy</p> <p>47(71) → 29(46) → 44(68) → 29(46) →</p>	<p>11. Pacific Coast Hwy at Newland St</p> <p>Newland St Pacific Coast Hwy</p> <p>41(71) → 44(68) →</p>	<p>12. Pacific Coast Hwy at Magnolia St</p> <p>Magnolia St Pacific Coast Hwy</p> <p>41(71) → 44(68) →</p>	<p>13. Pacific Coast Hwy at Brookhurst St</p> <p>Brookhurst St Pacific Coast Hwy</p> <p>41(71) → 44(68) →</p>	<p>14. Main St at Yorktown Ave</p> <p>Yorktown Ave Main St</p> <p>34(52) → 7(12) → 3(6) → 6(11) → 32(55) → 5(9) → 6(11) → 3(6) → 7(12) →</p>	<p>15. Main St at 17th St</p> <p>17th St Main St</p> <p>46(71) → 44(75) →</p>	<p>16. Main St at Adams Ave</p> <p>Adams Ave Main St</p> <p>46(71) → 44(75) → 8(12) →</p>	<p>17. Main St at Walnut Ave</p> <p>Walnut Ave Main St</p> <p>41(71) → 11(18) → 8(13) → 5(8) → 11(17) → 7(12) → 11(17) → 11(17) → 11(17) →</p>	<p>18. Main St at Olive Ave</p> <p>Olive Ave Main St</p> <p>7(12) → 14(22) → 47(76) → 7(12) → 7(12) → 14(22) → 7(12) → 7(12) → 7(12) → 7(12) →</p>	<p>19. Main St at 6th St</p> <p>6th St Main St</p> <p>14(22) → 12(20) → 13(23) → 14(22) → 43(67) → 43(67) → 12(20) → 12(20) → 12(20) → 12(20) →</p>	<p>20. Lake St at 6th St</p> <p>6th St Lake St</p> <p>10(15) → 28(43) → 27(46) → 2(3) → 19(16) →</p>	<p>21. Lake St / 3rd St at Orange Ave</p> <p>Orange Ave Lake St / 3rd St</p> <p>21(33) → 21(33) →</p>	<p>22. 1st St at Orange Ave / Atlanta Ave</p> <p>Orange Ave / Atlanta Ave 1st St</p> <p>41(70) → 10(17) → 8(14) → 10(16) → 43(66) → 8(13) →</p>	<p>23. Beach Blvd at Atlanta Ave</p> <p>Atlanta Ave Beach Blvd</p> <p>14(25) → 23(40) → 25(39) → 15(24) → 25(38) → 4(7) → 24(41) → 4(7) →</p>	<p>24. Beach Blvd at Pacific View Ave</p> <p>Pacific View Ave Beach Blvd</p> <p>29(46) → 28(48) →</p>
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FIGURE 13
PROJECT-RELATED AM/PM PEAK HOUR TRAFFIC VOLUMES





<p>1. Pacific Coast Hwy at Warner Ave</p>	<p>2. Pacific Coast Hwy at Seapoint Ave</p>	<p>3. Pacific Coast Hwy at Golden West St</p>	<p>4. Pacific Coast Hwy at 17th St</p>
<p>5. Pacific Coast Hwy at 9th St</p>	<p>6. Pacific Coast Hwy at 6th St</p>	<p>7. Pacific Coast Hwy at Main St</p>	<p>8. Pacific Coast Hwy at 1st St</p>
<p>9. Pacific Coast Hwy at Huntington St</p>	<p>10. Pacific Coast Hwy at Beach Blvd</p>	<p>11. Pacific Coast Hwy at Newland St</p>	<p>12. Pacific Coast Hwy at Magnolia St</p>
<p>13. Pacific Coast Hwy at Brookhurst St</p>	<p>14. Main St at Yorktown Ave</p>	<p>15. Main St at 17th St</p>	<p>16. Main St at Adama Ave</p>
<p>17. Main St at Walnut Ave</p>	<p>18. Main St at Olive Ave</p>	<p>19. Main St at 6th St</p>	<p>20. Lake St at 6th St</p>
<p>21. Lake St / 3rd St at Orange Ave</p>	<p>22. 1st St at Orange Ave / Atlanta Ave</p>	<p>23. Beach Blvd at Atlanta Ave</p>	<p>24. Beach Blvd at Pacific View Ave</p>

FIGURE 14 CUMULATIVE AM/PM PEAK HOUR TRAFFIC VOLUMES WITH PROJECT



Table 6 Summary of Intersection Operation Year 2020 Cumulative with Project								
Int. #	Intersection	Control	AM Peak Hour			PM Peak Hour		
			Delay / ICU	LOS	Delay / ICU	LOS		
Pacific Coast Highway at:								
1	Warner Avenue	S	29.0	sec/veh	C	25.7	sec/veh	C
		S	0.84	v/c	D	0.80	v/c	C
2	Seapoint Avenue	S	15.0	sec/veh	B	15.1	sec/veh	B
		S	0.68	v/c	B	0.82	v/c	D
3	Goldenwest Street	S	22.0	sec/veh	C	25.3	sec/veh	C
		S	0.73	v/c	C	0.89	v/c	D
4	17th Street	S	6.3	sec/veh	A	9.8	sec/veh	A
		S	0.62	v/c	B	0.74	v/c	C
5	9th Street	S	2.4	sec/veh	A	2.9	sec/veh	A
		S	0.62	v/c	B	0.68	v/c	B
6	6th Street	S	19.8	sec/veh	B	27.4	sec/veh	C
		S	0.76	v/c	C	0.91	v/c	E
7	Main Street	S	18.8	sec/veh	B	26.4	sec/veh	C
		S	0.73	v/c	C	0.82	v/c	D
8	1st Street	S	29.3	sec/veh	C	35.4	sec/veh	D
		S	0.77	v/c	C	0.93	v/c	E
9	Huntington Street	S	8.3	sec/veh	A	9.8	sec/veh	A
		S	0.68	v/c	B	0.77	v/c	C
10	Beach Boulevard	S	20.8	sec/veh	C	24.9	sec/veh	C
		S	0.79	v/c	C	0.91	v/c	D
11	Newland Street	S	10.2	sec/veh	B	11.2	sec/veh	B
		S	0.59	v/c	A	0.75	v/c	C
12	Magnolia Street	S	12.4	sec/veh	B	10.4	sec/veh	B
		S	0.61	v/c	B	0.78	v/c	C
13	Brookhurst Street	S	22.6	sec/veh	C	18.1	sec/veh	B
		S	0.73	v/c	C	0.81	v/c	C
Main Street at:								
14	Yorktown Avenue	S	0.42	v/c	A	0.60	v/c	A
15	17th Street	S	0.31	v/c	A	0.40	v/c	A
16	Adams Avenue	S	0.55	v/c	A	0.77	v/c	C
17	Walnut Avenue	U	9.1	sec/veh	A	13.1	sec/veh	B
18	Olive Avenue	U	9.1	sec/veh	A	11.5	sec/veh	B
19	6th Street	S	0.34	v/c	A	0.48	v/c	A
Lake Street at:								
20	6th Street	U	8.3	sec/veh	A	10.9	sec/veh	B
21	Orange Avenue	U	11.5	sec/veh	B	23.2	sec/veh	C
Orange Avenue/Atlanta Avenue at:								
22	1st Street	S	0.36	v/c	A	0.47	v/c	A
Beach Boulevard at:								
23	Atlanta Avenue	S	22.8	sec/veh	C	24.8	sec/veh	C
		S	0.43	v/c	A	0.66	v/c	B
24	Pacific View Avenue	S	9.9	sec/veh	A	12.9	sec/veh	B
		S	0.33	v/c	A	0.40	v/c	A
S = Signalized, U = Unsignalized Intersection operation is expressed in average seconds of delay per vehicle during the peak hour for HCM 2000 Methodology and is expressed in volume-to-capacity (v/c) for ICU Methodology								

YEAR 2030 CONDITIONS

Year 2030 forecast peak hour volumes for the long-term future conditions were developed using the City of Huntington Beach Traffic Model (HBTM), which is currently maintained and operated by the City's General Plan Circulation Element Update traffic consultant, Austin Foust and Associates.

The Huntington Beach Traffic Model forecasts assume improvements to the City's transportation network that reflect committed (funded) network improvements and forecasted development levels for Year 2030. Within the study area, the network contained in the HBTM would include the following improvements or additions to the transportation network:

- Completion of Pacific View Avenue as a two-lane divided roadway between Huntington Avenue and 1st Street.
- Re-opening of 5th Street as a two-lane roadway between Walnut Avenue and PCH through The Strand development.¹

Year 2030 Traffic Without Project Conditions

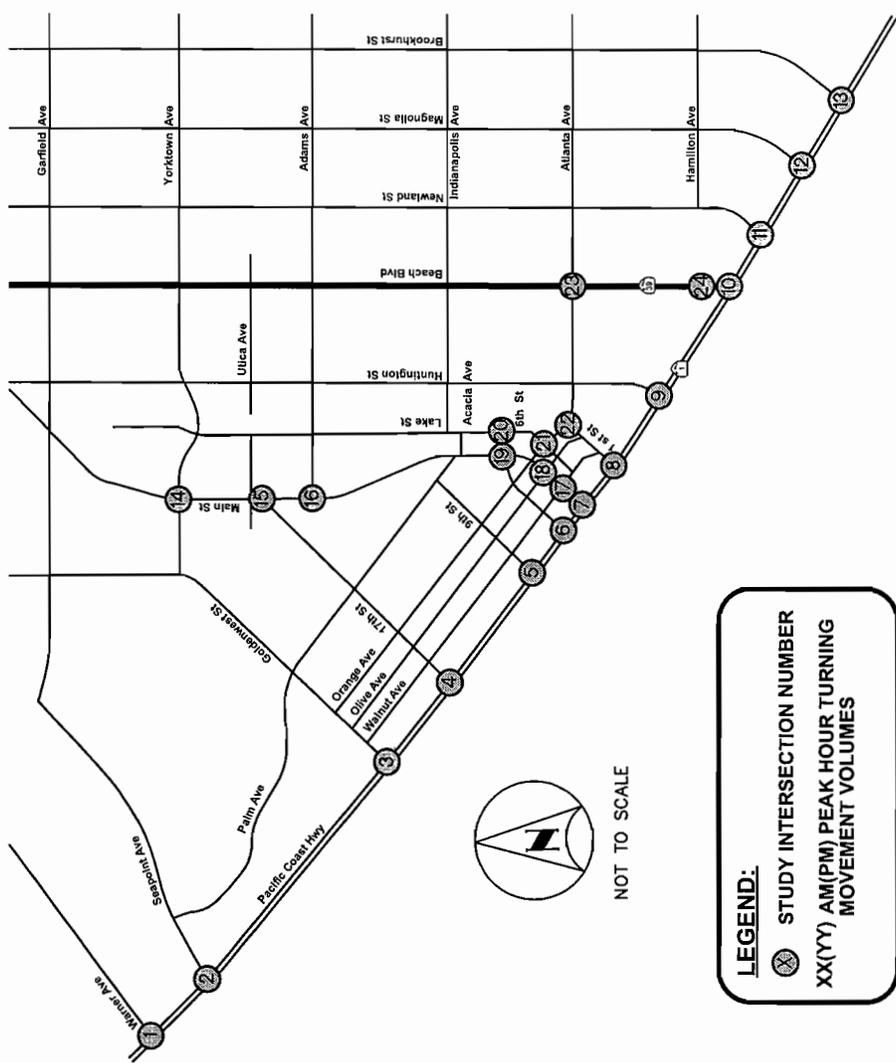
A copy of the Huntington Beach Traffic Model output provided by the General Plan Circulation Element Update consultant is included in *Appendix D*. Traffic forecasts for Year 2030 Base Case (without the Specific Plan development) assume the approved land uses and densities for the downtown area assumed in the existing General Plan. Year 2030 peak hour traffic volumes at the study intersections are shown on **Figure 15**.

Intersection operations for Year 2030 without Project Conditions were evaluated and the results are summarized on **Table 7**. The results indicate that under Year 2030 Without Project condition, two intersections are forecasted to operate at an unacceptable Level of Service (LOS "E" or "F"):

- Goldenwest Street at Pacific Coast Highway is forecasted (PM peak – LOS "E" – ICU method)
- Orange Avenue and Lake Street (PM peak – LOS "E")

All other study intersections are forecasted to operate at LOS "D" or better in both peak hours.

¹ At the time the traffic data collection for this study was conducted, 5th Street was still closed to traffic. At the time this report was completed, The Strand development had been completed, and the 5th Street had been re-opened.



<p>1. Pacific Coast Hwy at Warner Ave</p> <p>Warner Ave Pacific Coast Hwy</p> <p>200(110) 30(40) 40(30) 180(1240) 560(110) 30(20) 70(330) 300(350) 1250(1560) 260(330) 1470(1380) 150(340) 150(40) 1120(1500) 350(410) 50(50)</p>	<p>2. Pacific Coast Hwy at Seapoint Ave</p> <p>Seapoint Ave Pacific Coast Hwy</p> <p>20(10) 140(1420) 190(540) 20(10) 1170(230) 290(490) 170(230) 320(210)</p>	<p>3. Pacific Coast Hwy at Goldenwest St</p> <p>Goldenwest St Pacific Coast Hwy</p> <p>70(20) 1580(1310) 70(340) 90(100) 1280(1640) 30(70) 150(110) 50(110)</p>	<p>4. Pacific Coast Hwy at 17th St</p> <p>17th St Pacific Coast Hwy</p> <p>40(60) 810(1540) 200(190) 40(60) 60(190) 1390(1030) 70(20) 150(360) 70(90) 50(40) 50(40) 50(40) 70(70) 50(40)</p>	<p>5. Pacific Coast Hwy at 9th St</p> <p>9th St Pacific Coast Hwy</p> <p>10(10) 1550(1220) 40(60) 150(970) 20(90) 70(40) 40(60) 20(90) 70(40) 110(80) 960(1720) 20(90) 110(80) 40(60) 110(80) 40(60) 110(80) 40(60)</p>	<p>6. Pacific Coast Hwy at 6th St</p> <p>6th St Pacific Coast Hwy</p> <p>30(30) 1580(1190) 62(10) 150(340) 1470(1380) 150(340) 1120(1500) 40(80) 350(410) 50(50)</p>	<p>7. Pacific Coast Hwy at Main St</p> <p>Main St Pacific Coast Hwy</p> <p>10(40) 1260(1590) 70(200) 10(40) 70(90) 50(100) 150(100) 30(200) 70(20) 1390(1030) 150(360) 40(60) 480(260) 200(190) 210(200) 40(60)</p>	<p>8. Pacific Coast Hwy at 1st St</p> <p>1st St Pacific Coast Hwy</p> <p>20(30) 180(1220) 100(120) 30(30) 190(1220) 100(120) 20(30) 20(30) 20(30) 20(30) 170(100) 20(30) 20(30) 160(110) 180(110) 20(30)</p>	<p>9. Pacific Coast Hwy at Huntington St</p> <p>Huntington St Pacific Coast Hwy</p> <p>10(10) 1550(1220) 40(60) 150(970) 20(90) 70(40) 40(60) 20(90) 70(40) 110(80) 960(1720) 20(90) 110(80) 40(60) 110(80) 40(60) 110(80) 40(60)</p>	<p>10. Pacific Coast Hwy at Beach Blvd</p> <p>Beach Blvd Pacific Coast Hwy</p> <p>20(40) 1800(1320) 110(200) 30(30) 1530(1200) 30(30) 1060(1530) 50(50) 300(660) 10(40) 20(40) 170(110) 170(110) 480(340) 300(660) 10(40)</p>	<p>11. Pacific Coast Hwy at Newland St</p> <p>Newland St Pacific Coast Hwy</p> <p>0(0) 100(200) 100(200) 0(0) 30(320) 0(0) 1140(2230) 0(0) 220(210) 0(0) 0(0) 230(110) 20(10) 20(10) 190(1220) 100(120) 20(30) 20(30) 170(100) 20(30) 20(30) 160(110) 180(110) 20(30)</p>	<p>12. Pacific Coast Hwy at Magnolia St</p> <p>Magnolia St Pacific Coast Hwy</p> <p>20(30) 60(190) 1030(2580) 20(30) 20(30) 60(190) 190(1220) 20(30) 30(30) 20(30) 100(120) 100(120) 20(30) 20(30) 170(100) 20(30) 20(30) 160(110) 180(110) 20(30)</p>	<p>13. Pacific Coast Hwy at Brookhurst St</p> <p>Brookhurst St Pacific Coast Hwy</p> <p>10(10) 1970(1410) 160(220) 10(10) 10(10) 10(10) 10(10) 10(10) 10(10) 10(10) 210(550) 10(10) 920(2130) 10(10) 210(550) 10(10) 10(10) 10(10) 10(10) 10(10)</p>	<p>14. Main St at Yorktown Ave</p> <p>Yorktown Ave Main St</p> <p>60(160) 390(470) 110(330) 110(330) 110(330) 110(330) 270(220) 40(50) 420(470) 40(50) 40(50) 40(50) 0(0) 0(0) 20(20) 20(20) 180(190) 170(190) 360(530) 30(10)</p>	<p>15. Main St at 17th St</p> <p>17th St Main St</p> <p>30(10) 30(10) 230(200) 10(10) 30(10) 30(10) 70(210) 70(210) 70(70) 230(340) 30(10) 30(10) 310(470) 30(10)</p>	<p>16. Main St at Adams Ave</p> <p>Adams Ave Main St</p> <p>30(10) 30(10) 230(200) 10(10) 30(10) 30(10) 70(210) 70(210) 70(70) 230(340) 30(10) 30(10) 310(470) 30(10)</p>	<p>17. Main St at Walnut Ave</p> <p>Walnut Ave Main St</p> <p>40(30) 30(70) 10(20) 10(20) 10(20) 10(20) 10(20) 10(20) 10(20) 10(20) 210(550) 10(10) 920(2130) 10(10) 210(550) 10(10) 10(10) 10(10) 10(10) 10(10)</p>	<p>18. Main St at Olive Ave</p> <p>Olive Ave Main St</p> <p>30(40) 100(130) 20(30) 20(30) 20(30) 20(30) 10(40) 10(40) 10(40) 10(40) 100(150) 50(50) 50(60) 50(60) 80(50) 80(50) 160(170) 160(170) 10(40) 10(40) 10(40) 10(40)</p>	<p>19. Main St at 6th St</p> <p>6th St Main St</p> <p>20(60) 160(170) 10(40) 10(40) 10(40) 10(40)</p>	<p>20. Lake St at 6th St</p> <p>6th St Lake St</p> <p>20(30) 20(30) 20(30) 20(30)</p>	<p>21. Lake St / 3rd St at Orange Ave</p> <p>Orange Ave Lake St</p> <p>10(10) 10(10) 290(230) 20(40) 10(10) 10(10) 10(10) 10(10) 10(10) 10(10) 40(150) 30(40) 200(280) 30(40) 30(40) 30(40)</p>	<p>22. 1st St at Orange Ave / Atlanta Ave</p> <p>Orange Ave / Atlanta Ave 1st St</p> <p>0(0) 80(200) 140(210) 410(770) 10(10) 80(200) 10(10) 80(200) 10(10) 80(200) 0(0) 80(200) 140(210) 410(770) 10(10) 80(200) 10(10) 80(200)</p>	<p>23. Beach Blvd at Atlanta Ave</p> <p>Atlanta Ave Beach Blvd</p> <p>200(100) 200(100) 620(510) 200(100) 200(310) 200(310) 80(220) 80(220) 80(500) 80(500) 60(70) 60(70) 20(90) 410(880) 70(110) 70(110) 42(50) 50(30)</p>	<p>24. Beach Blvd at Pacific View Ave</p> <p>Pacific View Ave Beach Blvd</p> <p>50(200) 360(970) 150(110) 70(140) 690(490) 42(50) 150(110) 70(140) 690(490) 42(50)</p>
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Source: Austin Foust & Associates
 Huntington Beach General Plan
 Update Traffic Model Forecasts

Kimley-Horn and Associates, Inc.

**FIGURE 15 YEAR 2030
 AM/PM PEAK HOUR TRAFFIC FORECASTS WITHOUT PROJECT**

Table 7 Summary of Intersection Operation Year 2030 without Project								
Int. #	Intersection	Control	AM Peak Hour			PM Peak Hour		
			Delay / ICU	LOS	Delay / ICU	LOS		
Pacific Coast Highway at:								
1	Warner Avenue	S	38.1	sec/veh	D	39.2	sec/veh	D
		S	0.81	v/c	D	0.83	v/c	D
2	Seapoint Avenue	S	10.0	sec/veh	A	16.7	sec/veh	B
		S	0.64	v/c	B	0.83	v/c	D
3	Goldenwest Street	S	17.3	sec/veh	B	32.9	sec/veh	C
		S	0.61	v/c	B	0.92	v/c	E
4	17th Street	S	8.8	sec/veh	A	20.1	sec/veh	C
		S	0.56	v/c	A	0.79	v/c	C
5	9th Street	S	6.5	sec/veh	A	7.9	sec/veh	A
		S	0.53	v/c	A	0.59	v/c	A
6	6th Street	S	9.3	sec/veh	A	14.3	sec/veh	B
		S	0.46	v/c	A	0.63	v/c	B
7	Main Street	S	24.2	sec/veh	C	33.2	sec/veh	C
		S	0.68	v/c	B	0.79	v/c	C
8	1st Street	S	21.6	sec/veh	C	30.1	sec/veh	C
		S	0.60	v/c	A	0.66	v/c	B
9	Huntington Street	S	17.9	sec/veh	B	18.8	sec/veh	B
		S	0.62	v/c	B	0.51	v/c	A
10	Beach Boulevard	S	22.0	sec/veh	C	23.1	sec/veh	C
		S	0.54	v/c	A	0.68	v/c	B
11	Newland Street	S	11.0	sec/veh	B	14.3	sec/veh	B
		S	0.55	v/c	A	0.68	v/c	B
12	Magnolia Street	S	16.8	sec/veh	B	20.9	sec/veh	C
		S	0.50	v/c	A	0.71	v/c	C
13	Brookhurst Street	S	24.5	sec/veh	C	24.3	sec/veh	C
		S	0.66	v/c	B	0.66	v/c	B
Main Street at:								
14	Yorktown Avenue	S	0.48	v/c	A	0.54	v/c	A
15	17th Street	S	0.27	v/c	A	0.33	v/c	A
16	Adams Avenue	S	0.53	v/c	A	0.70	v/c	B
17	Walnut Avenue	U	8.0	sec/veh	A	9.5	sec/veh	A
18	Olive Avenue	U	8.6	sec/veh	A	9.8	sec/veh	A
19	6th Street	S	0.29	v/c	A	0.38	v/c	A
Lake Street at:								
20	6th Street	U	8.6	sec/veh	A	11.7	sec/veh	B
21	Orange Avenue	U	11.6	sec/veh	B	46.5	sec/veh	E
Orange Avenue/Atlanta Avenue at:								
22	1st Street	S	0.56	v/c	A	0.77	v/c	C
Beach Boulevard at:								
23	Atlanta Avenue	S	19.5	sec/veh	B	34.5	sec/veh	C
		S	0.45	v/c	A	0.69	v/c	B
24	Pacific View Avenue	S	6.4	sec/veh	A	9.1	sec/veh	A
		S	0.28	v/c	A	0.37	v/c	A
S = Signalized, U = Unsignalized Intersection operation is expressed in average seconds of delay per vehicle during the peak hour for HCM 2000 Methodology and is expressed in volume-to-capacity (v/c) for ICU Methodology								

Year 2030 With Project Conditions

Project traffic associated with the proposed Downtown Specific Plan Update was added to the Year 2030 traffic volumes, and the study intersections were re-analyzed. Year 2030 With Project peak hour traffic volumes are shown on **Figure 16**. The Year 2030 With Project analysis assumes the implementation of a pedestrian-only phase at the intersections of PCH at 6th Street and PCH at 1st Street, as proposed by the Downtown Specific Plan Update.

Intersection operations for Year 2030 with Project Conditions were evaluated and the results are summarized on **Table 8**. The results indicate that the intersection of Goldenwest Street at Pacific Coast Highway will continue to operate at LOS "E" in the evening peak hour (based on the ICU method), and the intersection of Orange Avenue at Lake Street will worsen to LOS "F" levels of delay.

At the intersection of Goldenwest Street and PCH, the project will increase the ICU value by 0.02, to bring it 0.94. At the intersection of Orange Avenue at Lake Street, the project traffic will cause the intersection to worsen from LOS "E" to LOS "F" in the evening peak hour.

In addition, as with Year 2020 conditions, the proposed implementation of the pedestrian-only phases at the intersections of PCH at 6th Street and PCH at 1st Street would reduce the capacity for the movement of vehicles by roughly 30%, and result in LOS "E" or "F" conditions in the evening peak hour (LOS "E" at the intersection of PCH and 6th Street using the ICU methodology, and at the intersection of PCH and 1st Street, LOS "F" using HCM and LOS "E" using the ICU methodology). The proposed pedestrian-only phase is the direct cause of the unacceptable Level of Service at these two intersections. Without the pedestrian-only phases, both intersections would operate at LOS "D" or better in both peak hours.

Each of these impacts is a significant impact, and mitigation for these project impacts will be identified in the Mitigation Section.

SUMMARY OF PROJECT MITIGATION

Cumulative Year 2020

The traffic impact analysis indicates that for Cumulative Year 2020 conditions, the proposed Huntington Beach Downtown Specific Plan Update will result in a significant impact at two study intersections. The implementation of the proposed pedestrian-only phase would result in LOS "E" or "F" conditions at the intersections of:

- Pacific Coast Highway at 1st Street (PM peak - LOS "E" - ICU), and
- Pacific Coast Highway at 6th Street (PM peak - LOS "E" - ICU)

Mitigation options for this impact include:

- Implement time-of-day signal timing options that would implement the pedestrian-only phase during peak pedestrian flow periods, such as summer weekends and special event days, and eliminate the pedestrian-only phases during the morning and evening commute peak periods. (Note: While this option would have the benefit of facilitating peak pedestrian traffic flows during peak activity periods, it would also result in additional delay for vehicular traffic movements during these same peak activity periods.)
- If the proposed pedestrian-only phase were to be implemented, and operational at all times, including the AM and PM commute peak periods, in order to achieve an acceptable Level of Service, a second southbound left-turn lane from PCH onto 1st Street and a second southbound left-turn lane from PCH onto 6th Street would be needed to mitigate the impact of the proposed pedestrian-only phases. This improvement at either intersection would involve roadway widening and right-of-way acquisition on PCH, and would require Caltrans coordination and approval, and may be found to not be feasible.
- Removal of the pedestrian-only phase altogether (which would mean not implementing the Specific Plan recommendation) would improve the Level of Service at both intersections to LOS “D” or better in both peak hours.

Year 2030

The traffic impact analysis indicates that for Cumulative Year 2030 conditions, the proposed implementation of the proposed pedestrian-only phase would result in LOS “E” conditions at the intersections of:

- Pacific Coast Highway at 1st Street (PM peak – LOS “E” – ICU and LOS “F” – HCM), and
- Pacific Coast Highway at 6th Street (PM peak - LOS “E” – ICU)

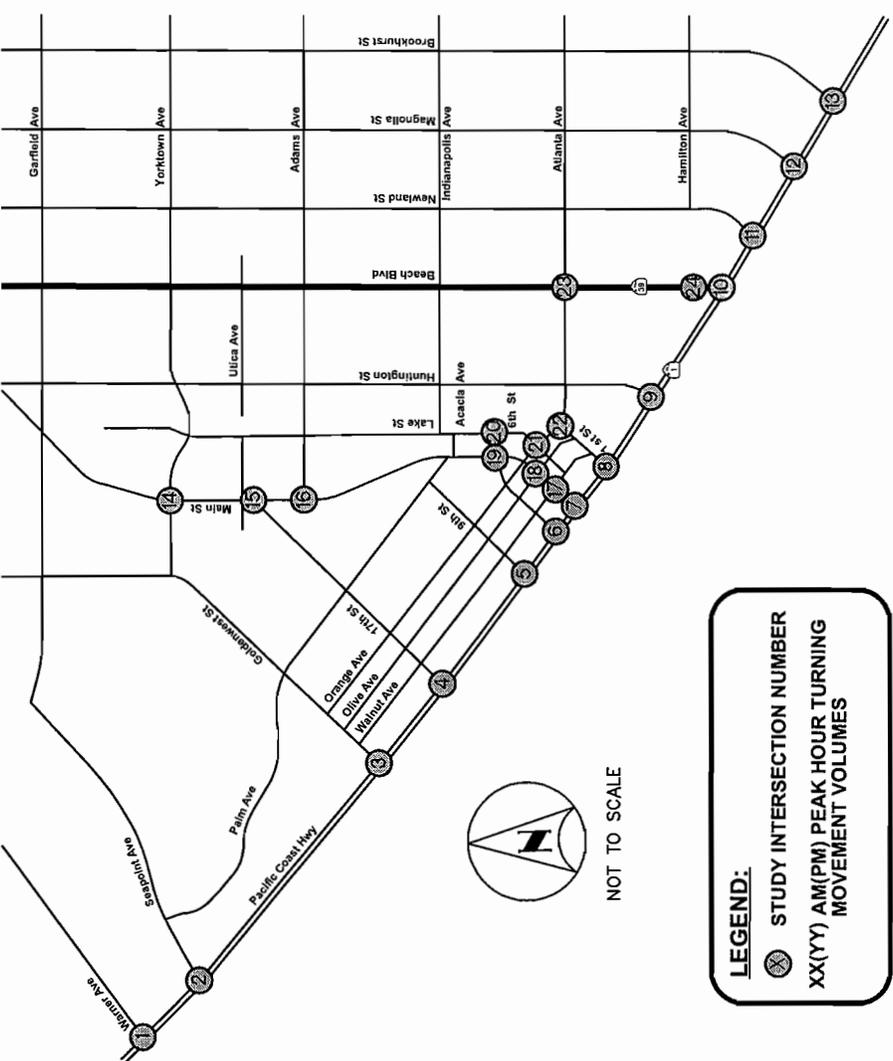
The mitigation options for the impact of the pedestrian-only phase are the same as listed above for Cumulative Year 2020 With Project conditions.

The proposed project is forecasted to result in a significant impact at two additional study intersections under the Year 2030 conditions:

- Pacific Coast Highway at Goldenwest Street (PM peak – LOS “E” – ICU), and
- Orange Avenue at Lake Street (PM peak – LOS “F”).



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<p>1. Pacific Coast Hwy at Warner Ave</p>	<p>2. Pacific Coast Hwy at Seapoint Ave</p>	<p>3. Pacific Coast Hwy at Goldenwest St</p>	<p>4. Pacific Coast Hwy at 17th St</p>
<p>5. Pacific Coast Hwy at 9th St</p>	<p>6. Pacific Coast Hwy at 6th St</p>	<p>7. Pacific Coast Hwy at Main St</p>	<p>8. Pacific Coast Hwy at 1st St</p>
<p>9. Pacific Coast Hwy at Huntington St</p>	<p>10. Pacific Coast Hwy at Beach Blvd</p>	<p>11. Pacific Coast Hwy at Newland St</p>	<p>12. Pacific Coast Hwy at Magnolia St</p>
<p>13. Pacific Coast Hwy at Brookhurst St</p>	<p>14. Main St at Yorktown Ave</p>	<p>15. Main St at 17th St</p>	<p>16. Main St at Adams Ave</p>
<p>17. Main St at Walnut Ave</p>	<p>18. Main St at Olive Ave</p>	<p>19. Main St at 6th St</p>	<p>20. Lake St at 6th St</p>
<p>21. Lake St / 3rd St at Orange Ave</p>	<p>22. 1st St at Orange Ave / Atlanta Ave</p>	<p>23. Beach Blvd at Atlanta Ave</p>	<p>24. Beach Blvd at Pacific View Ave</p>

FIGURE 16 YEAR 2030 AM/PM PEAK HOUR TRAFFIC VOLUMES WITH PROJECT

Table 8 Summary of Intersection Operation Year 2030 with Project								
Int. #	Intersection	Control	AM Peak Hour			PM Peak Hour		
			Delay / ICU		LOS	Delay / ICU		LOS
Pacific Coast Highway at:								
1	Warner Avenue	S	38.6	sec/veh	D	42.4	sec/veh	D
		S	0.82	v/c	D	0.84	v/c	D
2	Seapoint Avenue	S	10.3	sec/veh	B	17.7	sec/veh	B
		S	0.66	v/c	B	0.85	v/c	D
3	Goldenwest Street	S	18.1	sec/veh	B	36.1	sec/veh	D
		S	0.63	v/c	B	0.94	v/c	E
4	17th Street	S	8.9	sec/veh	A	21.2	sec/veh	C
		S	0.58	v/c	A	0.82	v/c	D
5	9th Street	S	6.6	sec/veh	A	8.0	sec/veh	A
		S	0.56	v/c	A	0.63	v/c	B
6	6th Street	S	22.5	sec/veh	C	50.5	sec/veh	D
		S	0.73	v/c	C	0.92	v/c	E
7	Main Street	S	21.7	sec/veh	C	38.1	sec/veh	D
		S	0.70	v/c	B	0.86	v/c	D
8	1st Street	S	37.6	sec/veh	D	156.1	sec/veh	F
		S	0.86	v/c	D	0.99	v/c	E
9	Huntington Street	S	17.3	sec/veh	B	19.3	sec/veh	B
		S	0.64	v/c	B	0.56	v/c	A
10	Beach Boulevard	S	22.4	sec/veh	C	24.1	sec/veh	C
		S	0.56	v/c	A	0.70	v/c	B
11	Newland Street	S	11.1	sec/veh	B	14.9	sec/veh	B
		S	0.56	v/c	A	0.69	v/c	B
12	Magnolia Street	S	16.8	sec/veh	B	21.3	sec/veh	C
		S	0.52	v/c	A	0.72	v/c	C
13	Brookhurst Street	S	24.7	sec/veh	C	24.6	sec/veh	C
		S	0.66	v/c	B	0.67	v/c	B
Main Street at:								
14	Yorktown Avenue	S	0.49	v/c	A	0.56	v/c	A
15	17th Street	S	0.32	v/c	A	0.41	v/c	A
16	Adams Avenue	S	0.55	v/c	A	0.75	v/c	C
17	Walnut Avenue	U	8.9	sec/veh	A	12.3	sec/veh	B
18	Olive Avenue	U	9.4	sec/veh	A	12.8	sec/veh	B
19	6th Street	S	0.36	v/c	A	0.48	v/c	A
Lake Street at:								
20	6th Street	U	9.2	sec/veh	A	13.9	sec/veh	B
21	Orange Avenue	U	13.4	sec/veh	B	148.4	sec/veh	F
Orange Avenue/Atlanta Avenue at:								
22	1st Street	S	0.66	v/c	B	0.76	v/c	C
Beach Boulevard at:								
23	Atlanta Avenue	S	21.0	sec/veh	C	36.9	sec/veh	D
		S	0.48	v/c	A	0.72	v/c	C
24	Pacific View Avenue	S	6.9	sec/veh	A	9.1	sec/veh	A
		S	0.29	v/c	A	0.38	v/c	A
S = Signalized, U = Unsignalized Intersection operation is expressed in average seconds of delay per vehicle during the peak hour for HCM 2000 Methodology and is expressed in volume-to-capacity (v/c) for ICU Methodology								

The Level of Service “E” PM peak hour condition at the intersection of PCH and Goldenwest Street is caused, in part, by a heavy southbound right-turn movement from Goldenwest Street to westbound PCH – approximately 500 peak hour vehicles. The following mitigation measure would achieve acceptable Level of Service at this intersection:

- Implement right-turn overlap signal phasing for southbound Goldenwest Street. This would bring the PM peak hour to LOS “D”. A right-turn overlap for southbound Goldenwest Street would require that u-turn movements on eastbound PCH be prohibited.

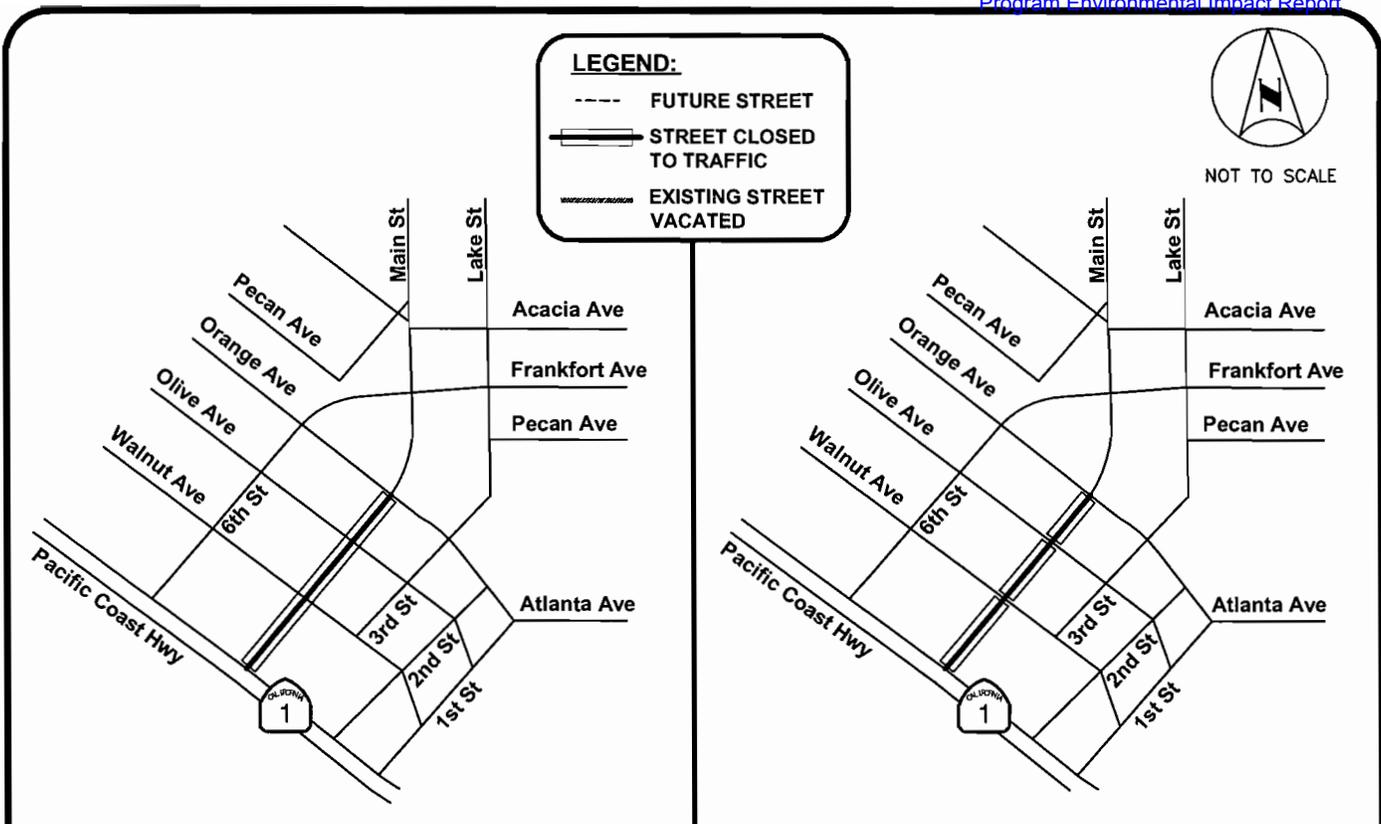
The unsignalized intersection of Orange Avenue and Lake Street will worsen from LOS “E” to LOS “F” delays in the evening peak hour with the addition of project traffic. Either of the following mitigation options would achieve acceptable Level of Service at this intersection:

- Provide two eastbound and westbound through lanes on Orange Avenue. This would achieve Level of Service “D” in the evening peak hour. This improvement would require the removal of street parking on both sides of Orange Avenue on either side of Lake Street, or;
- Installation of a signal at this intersection would achieve acceptable Level of Service operation.

PROJECT NETWORK ALTERNATIVES

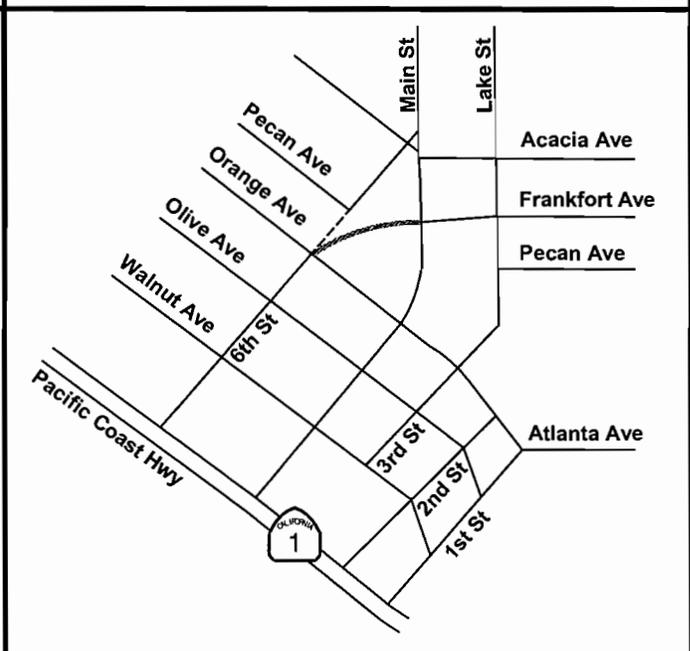
The proposed Downtown Specific Plan Update includes development options that would result in circulation changes in the Downtown area, including modification of the roadway network. Three network options address varying degrees of closure of Main Street in the downtown core. While these Main Street closure options are not specifically proposed by the Specific Plan Update, they are evaluated here to address alternative configurations for Main Street that have been discussed as potential options in the past. In addition, the Downtown Specific Plan Update presents an option that would realign 6th Street between Orange Avenue and Main Street, as described below. A conceptual depiction of each network alternative is provided on **Figure 17** and a brief description of each is provided here.

- Alternative 1 - Main Street Closure - with no cross traffic on Olive or Walnut: Main Street would be closed to all traffic between Orange Avenue and PCH, but would be retained as a circulation facility for the movement of pedestrians and bicycles. Olive Avenue and Walnut Avenue would be terminated on both sides of Main Street, with no traffic movements across Main Street. Walnut Street is shown on the Orange County MPAH as a Secondary Arterial between 6th Street and 1st Street, therefore, this network change would require an amendment to the MPAH.
- Alternative 2 – Main Street Closure - with cross traffic allowed on Olive and Walnut: Main Street would be closed to traffic between Orange Avenue and PCH, but would be retained as a circulation facility for the movement of pedestrians and bicycles. Traffic on Olive Avenue and Walnut Avenue would continue to be allowed to cross Main Street, with traffic control to assign right-of-way to vehicles and pedestrians.



NETWORK ALTERNATIVE 1:
 MAIN STREET CLOSURE PCH TO ORANGE,
 NO CROSS TRAFFIC ON OLIVE OR WALNUT

NETWORK ALTERNATIVE 2:
 MAIN STREET CLOSURE PCH TO ORANGE,
 CROSS TRAFFIC ALLOWED ON OLIVE AND WALNUT



NETWORK ALTERNATIVE 3:
 MAIN STREET CLOSURE WALNUT TO OLIVE

NETWORK ALTERNATIVE 4:
 6TH STREET REALIGNMENT TO PECAN

**FIGURE 17 DOWNTOWN SPECIFIC PLAN
 NETWORK ALTERNATIVES**



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- Alternative 3 – Main Street Closure – Second Block Only: Main Street would be closed to traffic between Olive Avenue and Walnut Avenue, but this segment would be retained as a circulation facility for the movement of pedestrians and bicycles. The two segments of Main Street on either side of the closure would remain open to traffic, and the intersections of Main Street at Olive Avenue and Main Street at Walnut Avenue would operate as “T” intersections.
- Alternative 4 – 6th Street realignment: 6th Street would be realigned north of Orange Avenue to connect to Pecan Avenue. The existing curved segment of 6th Street between Orange Avenue and Main Street would be vacated.

Analysis of Network Alternatives

The effects of these network changes on traffic circulation and Level of Service are discussed here. Forecasted changes in traffic patterns in the downtown area that would occur as a result of these network alternatives were derived by conducting focused model runs with the Huntington Beach Traffic Model. The effects of these network changes on traffic circulation and Level of Service were evaluated for Cumulative Year 2020 and Forecast Year 2030 with Project Conditions. Evaluation of the effects of the changes in traffic volumes that would occur as a result of each network alternative was conducted for selected intersections and roadway segments in the immediate vicinity of the changes.

Peak Hour Intersection Analysis

The results of the peak hour intersection analysis for all four network alternatives are summarized for Cumulative Year 2020 With Project Conditions on **Table 9** and for Year 2030 With Project Conditions on **Table 10**. With each alternative, the intersections of Pacific Coast Highway at 6th Street and at 1st Street will continue to operate at Level of Service “E” or “F” due to the proposed implementation of the pedestrian-only phases. The peak hour analysis of network alternatives will address any additional adverse impacts in Level of Service that will occur as a direct result of the proposed changes to the network.

Daily Roadway Analysis

Evaluation of the effects of the changes in traffic patterns due to the proposed network alternatives was also conducted on downtown roadways, to determine whether or not the network alternatives would result in the need for improvement of any roadways in the downtown area beyond their current configuration. Under current conditions, the roadways throughout the downtown area are generally configured to provide one travel lane in each direction. While some roadways in the downtown are classified as four-lane secondary (undivided) or primary (divided) roadways, the downtown street system is currently configured to provide one travel lane in each direction and on-street parking. The purpose of this analysis is to determine whether or not any downtown roadways would be impacted by any of the Network Alternatives such that improvement to four-lane secondary or primary standards would be necessary.

Table 9
Summary of Intersection Operation
For Downtown Network Alternatives
Year 2020 Cumulative with Project

Int. #	Intersection	Current Network						Network Alternative 1						Network Alternative 2						Network Alternative 3						Network Alternative 4						
		AM Peak Hour	PM Peak Hour	LOS	Del/ICU	LOS	sec/veh	AM Peak Hour	PM Peak Hour	LOS	Del/ICU	LOS	sec/veh	AM Peak Hour	PM Peak Hour	LOS	Del/ICU	LOS	sec/veh	AM Peak Hour	PM Peak Hour	LOS	Del/ICU	LOS	sec/veh	AM Peak Hour	PM Peak Hour	LOS	Del/ICU	LOS	sec/veh	
Pacific Coast Highway at:																																
5	9th Street	2.4	A	2.9	A	3.6	A	2.9	A	3.6	A	2.9	A	3.6	A	2.9	A	3.6	A	2.9	A	3.7	A	2.4	A	2.4	A	2.9	A	2.9	A	
		0.62	B	0.62	B	0.68	B	0.62	B	0.68	B	0.62	B	0.67	B	0.62	B	0.67	B	0.62	B	0.68	B	0.62	B	0.62	B	0.62	B	0.68	B	
6	6th Street	19.8	B	25.7	C	45.3	D	26.0	C	45.1	D	19.8	B	45.1	D	19.8	B	45.1	D	19.8	B	26.0	C	19.8	B	19.8	B	19.8	B	27.4	C	
		0.76	C	0.82	D	1.02	F	0.83	D	1.02	F	0.83	D	1.02	F	0.83	D	1.02	F	0.83	D	0.91	E	0.76	C	0.76	C	0.91	E	0.91	E	
7	Main Street	18.8	B	7.7	A	8.9	A	7.7	A	8.9	A	7.7	A	8.9	A	7.7	A	8.9	A	7.7	A	32.3	C	18.8	B	18.8	B	26.4	C	26.4	C	
		0.73	C	0.82	D	0.67	B	0.67	B	0.64	B	0.67	B	0.64	B	0.67	B	0.64	B	0.67	B	0.92	C	0.73	C	0.73	C	0.82	D	0.82	D	
8	1st Street	29.3	C	64.6	D	106.1	F	64.6	D	106.1	F	64.6	D	135.0	F	57.5	E	135.0	F	57.5	E	86.2	F	29.3	C	29.3	C	35.4	D	35.4	D	
		0.77	C	1.01	E	1.01	E	1.01	E	1.01	E	1.01	E	1.15	F	0.99	E	1.15	F	0.99	E	1.06	F	0.77	C	0.77	C	0.93	E	0.93	E	
9	Huntington Street	8.3	A	8.2	A	10.0	A	8.2	A	10.0	A	8.2	A	10.0	A	8.2	A	10.0	A	8.2	A	9.9	A	8.3	A	8.3	A	9.8	A	9.8	A	
		0.68	B	0.68	B	0.77	C	0.68	B	0.77	C	0.68	B	0.77	C	0.68	B	0.77	C	0.68	B	0.77	C	0.68	B	0.68	B	0.77	C	0.77	C	
Main Street at:																																
16	Adams Avenue	0.55	A	0.55	A	0.76	C	0.55	A	0.76	C	0.55	A	0.76	C	0.55	A	0.76	C	0.55	A	0.78	C	0.55	A	0.55	A	0.77	C	0.77	C	
17	Walnut Avenue	9.1	A	NA	NA	NA	NA	7.4	A	7.5	A	7.4	A	7.5	A	6.9	A	7.5	A	6.9	A	8.5	A	9.10	A	9.10	A	13.1	B	13.1	B	
18	Olive Avenue	9.1	A	NA	NA	NA	NA	8.0	A	8.3	A	8.0	A	8.3	A	7.1	A	8.3	A	7.1	A	7.9	A	9.6	A	9.6	A	13.0	B	13.0	B	
19	6th Street	0.34	A	0.34	A	0.50	A	0.34	A	0.50	A	0.34	A	0.47	A	0.33	A	0.47	A	0.33	A	0.47	A	0.23	A	0.23	A	0.32	A	0.32	A	
Lake Street at:																																
20	6th Street	8.3	A	8.2	A	10.9	B	8.3	A	11.1	B	8.3	A	11.1	B	8.1	A	11.1	B	8.1	A	9.6	A	8.6	A	8.6	A	12.3	B	12.3	B	
21	Orange Avenue	11.5	B	15.2	C	74.8	F	12.8	B	55.0	F	11.0	B	55.0	F	11.0	B	55.0	F	11.0	B	32.7	D	12.6	B	12.6	B	37.8	E	37.8	E	
Orange Avenue/Atlanta Avenue at:																																
22	1st Street	0.36	A	0.35	A	0.50	A	0.35	A	0.50	A	0.35	A	0.50	A	0.35	A	0.50	A	0.35	A	0.50	A	0.36	A	0.36	A	0.47	A	0.47	A	
Beach Boulevard at:																																
24	Pacific View Ave	9.9	A	9.5	A	12.2	B	9.4	A	12.2	B	8.0	A	12.2	B	8.0	A	12.2	B	8.0	A	9.2	A	9.9	A	9.9	A	12.9	B	12.9	B	
		0.33	A	0.34	A	0.40	A	0.34	A	0.40	A	0.34	A	0.35	A	0.31	A	0.35	A	0.31	A	0.37	A	0.33	A	0.33	A	0.40	A	0.40	A	

Description of Network Alternatives (see Figure 18)

Network Alternative 1 = Closure of Main Street from PCH to Orange, with no cross traffic on Walnut Avenue or Olive Avenue

Network Alternative 2 = Closure of Main Street from PCH to Orange, with cross traffic on Walnut Avenue or Olive Avenue

Network Alternative 3 = Closure of Main Street between Walnut Avenue and Olive Avenue

Network Alternative 4 = Realign 6th Street between Orange Avenue and Pecan Avenue

Intersection operation is expressed in average seconds of delay per vehicle during the peak hour for HCM 2000 Methodology and is expressed in volume-to-capacity (v/c) for ICU Methodology

Table 10
Summary of Intersection Operation
For Downtown Network Alternatives
Year 2030 with Project

Int. #	Intersection	sec/veh v/c	Current Network			Network Alternative 1			Network Alternative 2			Network Alternative 3			Network Alternative 4		
			AM Peak Hour Del/ICU	PM Peak Hour Del/ICU	LOS	AM Peak Hour Del/ICU	PM Peak Hour Del/ICU	LOS	AM Peak Hour Del/ICU	PM Peak Hour Del/ICU	LOS	AM Peak Hour Del/ICU	PM Peak Hour Del/ICU	LOS	AM Peak Hour Del/ICU	PM Peak Hour Del/ICU	LOS
Pacific Coast Highway at:																	
5	9th Street	sec/veh v/c	6.6 A	8.0 A	A	6.9 A	8.0 A	A	6.6 A	8.1 A	A	6.7 A	8.1 A	A	6.6 A	8.0 A	A
6	6th Street	sec/veh v/c	22.5 C	50.5 D	D	31.2 C	60.2 E	E	31.6 C	59.8 E	E	28.6 C	40.5 D	D	22.5 C	50.5 D	D
7	Main Street	sec/veh v/c	21.7 C	38.1 C	C	20.3 C	20.8 C	C	20.3 C	20.8 C	C	26.2 C	39.5 D	D	21.7 C	38.1 D	D
8	1st Street	sec/veh v/c	37.6 D	156.1 F	F	49.3 D	194.9 F	F	49.3 D	209.2 F	F	46.1 D	165.9 F	F	37.6 D	156.1 F	F
9	Huntington Street	sec/veh v/c	17.3 B	19.3 B	B	17.4 B	19.3 B	B	17.4 B	19.3 B	B	18.0 B	19.4 B	B	17.3 B	19.3 B	B
Main Street at:																	
16	Adams Avenue	v/c	0.55 A	0.75 C	C	0.54 A	0.75 C	C	0.55 A	0.75 C	C	0.57 C	0.77 C	C	0.55 A	0.75 C	C
17	Walnut Avenue	sec/veh	8.9 A	12.3 B	B	NA NA	NA NA	NA	NA NA	NA NA	NA	7.5 A	8.5 A	A	8.9 A	12.3 B	B
18	Olive Avenue	sec/veh	9.4 A	12.8 B	B	NA NA	NA NA	NA	NA NA	NA NA	NA	7.7 A	8.2 A	A	9.7 A	13.7 B	B
19	6th Street	v/c	0.36 A	0.48 A	A	0.29 A	0.47 A	A	0.33 A	0.45 A	A	0.27 A	0.41 A	A	0.24 A	0.32 A	A
Lake Street at:																	
20	6th Street	sec/veh	9.2 A	13.9 B	B	9.3 A	14.8 B	B	9.2 A	14.7 B	B	8.5 A	10.2 B	B	9.6 A	13.9 B	B
21	Orange Avenue	sec/veh	13.4 B	148.4 F	F	24.2 C	271.4 F	F	15.3 C	221.5 F	F	12.3 B	138.9 F	F	14.8 B	188.5 F	F
Orange Avenue/Atlanta Avenue at:																	
22	1st Street	v/c	0.66 B	0.76 C	C	0.66 B	0.76 C	C	0.67 B	0.76 C	C	0.64 B	0.80 C	C	0.66 B	0.76 C	C
Beach Boulevard at:																	
24	Pacific View Ave	sec/veh v/c	6.9 A	9.1 A	A	6.9 A	9.1 A	A	6.8 A	9.1 A	A	6.4 A	7.3 A	A	6.9 A	9.1 A	A

Description of Network Alternatives (see Figure 18)
 Network Alternative 1 = Closure of Main Street from PCH to Orange, with no cross traffic on Walnut Avenue or Olive Avenue
 Network Alternative 2 = Closure of Main Street from PCH to Orange, with cross traffic on Walnut Avenue or Olive Avenue
 Network Alternative 3 = Closure of Main Street between Walnut Avenue and Olive Avenue
 Network Alternative 4 = Realign 6th Street between Orange Avenue and Pecan Avenue
 Intersection operation is expressed in average seconds of delay per vehicle during the peak hour for HCM 2000 Methodology and is expressed in volume-to-capacity (v/c) for ICU Methodology

Table 11
Summary of Roadway Segment Analysis
For Downtown Network Alternatives

Roadway Segment	No. of Lanes	LOS "E" Capacity	Year 2020 Cumulative with Project				Year 2030 with Project					
			Current Network		With Network Alternatives		Current Network		With Network Alternatives			
			Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 1	Alt. 2	Alt. 3	Alt. 4		
6th Street between:												
Main Street and Olive Ave	Collector / 2	12,500	7,175	10,045	10,045	5,740	0	6,598	9,237	9,237	5,278	0
Olive Avenue and PCH	Collector / 2	12,500	7,494	11,241	11,241	9,992	7,494	7,014	10,521	10,521	9,352	7,014
Main Street between:												
6th Street and Orange Ave	Collector / 2	12,500	9,939	8,697	6,212	7,454	12,092	10,702	9,364	6,689	8,027	12,352
Orange Avenue and Olive Ave	Collector / 2	12,500	8,002	0	0	3,429	8,720	7,806	0	0	3,345	8,466
Olive Avenue and Walnut Ave	Collector / 2	12,500	7,513	0	0	0	7,513	7,176	0	0	0	7,176
Walnut Avenue and PCH	Collector / 2	12,500	8,852	0	0	11,802	8,852	6,932	0	0	9,243	6,932
Lake Street / 3rd Street between:												
Acacia Avenue and Orange Ave	Collector / 2	12,500	6,686	11,700	11,700	5,014	8,121	5,392	9,436	9,436	4,044	6,712
Orange Avenue and Olive Ave	Collector / 2	12,500	4,771	9,541	6,361	3,180	5,488	4,080	8,160	5,440	2,720	4,740
Olive Avenue and Walnut Ave	Collector / 2	12,500	5,006	10,012	10,012	3,754	5,006	4,704	9,408	9,408	3,528	4,704
1st Street between:												
Orange Avenue and PCH	Collector / 2	12,500	8,376	9,074	9,074	4,886	8,376	12,860	13,932	13,932	7,502	12,860
Orange Avenue between:												
6th Street and Main Street	Collector / 2	12,500	9,307	21,272	21,272	11,966	11,459	7,994	18,272	18,272	10,278	9,973
Main Street and 3rd Street	Collector / 2	12,500	9,943	23,614	19,886	12,428	10,660	10,912	25,916	21,824	13,640	11,572
3rd Street and 1st Street	Collector / 2	12,500	10,391	15,586	14,287	12,988	10,391	10,444	15,666	14,361	13,055	10,444
Walnut Avenue between:												
6th Street and Main Street	Collector / 2	12,500	5,392	5,392	7,189	7,189	5,392	6,334	6,334	8,445	8,445	6,334
Main Street and 3rd Street	Collector / 2	12,500	7,683	2,561	5,122	2,561	7,683	6,206	2,069	4,137	2,069	6,206
3rd Street and 1st Street	Collector / 2	12,500	4,505	2,252	4,505	2,252	4,505	3,416	1,708	3,416	1,708	3,416

Description of Network Alternatives (see Figure 18)

Network Alternative 1 = Closure of Main Street from PCH to Orange, with no cross traffic on Walnut Avenue or Olive Avenue

Network Alternative 2 = Closure of Main Street from PCH to Orange, with cross traffic on Walnut Avenue or Olive Avenue

Network Alternative 3 = Closure of Main Street between Walnut Avenue and Olive Avenue

Network Alternative 4 = Realignment 6th Street between Orange Avenue and Pecan Avenue

A summary of the roadway analysis for each alternative for both Cumulative 2020 and Year 2030 conditions is provided on **Table 11**. As indicated on Table 11, when compared against the existing daily LOS “E” capacity of 12,500 vehicle trips for a typical two-lane roadway, a number of roadways in the downtown will experience moderate to high increases in traffic as a result of the potential changes in the downtown network.

A discussion of the results of the analysis for each alternative is presented below.

Alternative 1 – Main Street Closure PCH to Orange, with no cross traffic on Olive and Walnut

Peak Hour Intersection Analysis

The results of the intersection analysis indicate that in both Cumulative 2020 and Year 2030 Conditions, the study intersections would continue to operate as they would without the changes proposed by Network Alternative 1 – Closure of Main Street between PCH and Orange Avenue with no cross traffic on Olive Avenue and Walnut Avenue.

Mitigation options at these intersections are the same as presented above in the Mitigation Section. The changes in traffic resulting from Alternative 1 would not cause any additional intersections to deteriorate to unacceptable conditions.

Daily Roadway Analysis

Traffic diversions as a result of the Main Street closure Alternative 1 would result in daily traffic volumes on Orange Avenue approaching or exceeding 20,000 vehicle trips per day on either side of Main Street in both the Cumulative 2020 and the Year 2030 conditions. With this level of daily traffic, Orange Avenue would require, at a minimum, a secondary (four-lane undivided) configuration from 6th Street to 1st Street, which would require either removal of the existing on-street parking or street widening.

Traffic on Lake Street north of Orange Avenue would increase to just under 12,000 vehicles trips per day under Alternative 1 conditions, which is still within the Level of Service “E” capacity of a standard two-lane collector roadway.

Network Alternative 1 includes the closure of Walnut Avenue to through traffic across Main Street. Since Walnut Avenue is shown on the Orange County Master Plan of Arterial Highways (MPAH) as a Secondary arterial between 6th Street and 1st Street, this network alternative would require an amendment to the MPAH. This would involve submitting a proposal to amend the MPAH to Orange County Transportation Authority (OCTA), and going through the MPAH Amendment Process as outlined in the “Guidance for Administration of the Orange County Master Plan of Arterial Highways,” publication.

Alternative 2 – Main Street Closure PCH to Orange, with cross traffic on Olive and Walnut

Peak Hour Intersection Analysis

Under Network Alternative 2 – Closure of Main Street between PCH and Orange Avenue and maintaining cross traffic on Olive Avenue and Walnut Avenue – the study intersections would continue to operate as they would without the changes proposed by Network Alternative 2. Once again, the mitigation options for these intersections are the same as presented above in the Mitigation Section. The changes in traffic resulting from Alternative 2 would not cause any additional intersections to deteriorate to unacceptable conditions.

Daily Roadway Analysis

As with Alternative 1, traffic diversions as a result of the Main Street closure would result in increases in daily traffic volumes on Orange Avenue. While the increases would not be as great as with Alternative 1, attributable to the fact that cross traffic at Main Street would be maintained on Olive and Walnut Avenues, the daily volumes would still approach and exceed 20,000 vehicle trips per day on either side of Main Street in both the Cumulative 2020 and the Year 2030 conditions. Similarly to Alternative 1, with this level of daily traffic, Orange Avenue would require a secondary (four-lane undivided) configuration from 6th Street to 1st Street, which would require either the removal of the existing on-street parking, or street widening.

Traffic on Lake Street north of Orange Avenue would increase to just under 12,000 vehicles trips per day under Alternative 2 conditions, which is still within the Level of Service “E” capacity of a standard two-lane collector roadway.

Since Walnut Avenue would not be closed at Main Street in Alternative 2, this network alternative would not require an amendment to the MPAH.

Alternative 3 – Main Street Closure from Walnut Avenue to Olive Avenue only

Peak Hour Intersection Analysis

Under Network Alternative 3 – Closure of Main Street between Walnut Avenue and Olive Avenue only (and with cross traffic on Olive and Walnut Avenues allowed), no additional study intersections would deteriorate to unacceptable conditions. The intersection of Lake Street / 3rd Street and Orange Avenue, which was forecasted to deteriorate to Level of Service “F” in the PM peak hour under Alternatives 1 and 2 is forecasted to operate at LOS “D” under Alternative 3.

Daily Roadway Analysis

As with Alternative 1 and 2, traffic diversions as a result of the Main Street closure would result in increases in daily traffic volumes on Orange Avenue, although to a lesser extent. The daily traffic volumes would remain under 12,500 on the west and east side of Main Street in Year 2020, but would exceed 14,000 vehicle trips between 3rd Street and 1st Street in both Year 2020 and Year 2030.

While this level of daily traffic would exceed the capacity of a two-lane roadway, the intersections on each end of the segment are forecasted to operate at an acceptable Level of Service, therefore, a four-lane configuration on Orange Avenue would not be required.

Since Walnut Avenue would not be closed at Main Street in Alternative 3, this network alternative would not require an amendment to the MPAH.

Alternative 4 – 6th Street Realignment between Orange Avenue and Main Street

Peak Hour Intersection Analysis

With Alternative 4 – 6th Street Realignment between Orange Avenue and Main Street – no additional study intersections would deteriorate to unacceptable conditions. Traffic diversion resulting from Alternative 4 will consist primarily of traffic that currently turns to or from 6th Street at Main Street. The traffic destined to the north on Main Street will likely use the new segment of 6th Street between Orange and Pecan. Traffic headed for destinations across Main Street will divert to other cross streets such as Orange Avenue and Olive Avenue, prior to getting to the deleted segment, depending on the driver's destination.

Daily Roadway Analysis

Alternative 4 would cause a slight increase in traffic on Main Street between Orange Avenue and 6th Street / Frankfort Street, and on Orange and Olive Streets, due to drivers diverting to / staying on Main Street because of the deleted segment of 6th Street. All street segments will operate within the daily capacity of a standard two-lane Collector.

MPAH Network Facilities in the Downtown

As mentioned in earlier sections of this report, a number of downtown roadways are shown on the Orange County Master Plan of Arterial Highways (MPAH). In order to remain eligible to receive both Measure M and Congestion Management Program (CMP) funds, the City is required to maintain consistency with the MPAH by including each of the MPAH roadway elements on the City's Circulation Plan, and by not taking actions that would preclude the ability to maintain or implement the MPAH classification in the future.

A summary of the downtown roadways that are included on the Orange County MPAH is provided on **Table 12**. As review of Table 12 shows, these MPAH roadways are designated as either a four-lane Secondary roadway or a four-lane Primary roadway. The City's Circulation Plan also designates each roadway as a Primary or Secondary, consistent with the MPAH with standard or specified street widths identified through standard plans or a Precise Plan of Street Alignment..

As Table 12 shows, each of these roadways is currently configured to provide one travel lane in each direction, with on-street parallel parking on both sides of the street. Under the current roadway classifications, when a property along any of these roadway segments redevelops in the future, in order to achieve the required right-of-way for the designated secondary or primary four-lane classification, a dedication of additional frontage from that property would be required to achieve the standard cross-sections.

The daily traffic analysis for these roadway segments do not indicate the future need to configure or widen the roadways to provide four travel lanes, as designated on the MPAH. The daily roadway analysis results for Proposed Specific Plan Cumulative 2020 and Year 2030 conditions provided on Table 11 indicate that, with one exception, the typical daily traffic volumes forecasted for each of the MPAH roadway segments in the downtown is within the LOS "E" capacity of a two-lane roadway (12,500 vehicles per day). The segment of 1st Street between Orange / Atlanta and PCH is forecasted to just exceed the 12,500 daily capacity, with a volume of 12,860. The intersections at either end of this roadway segment are forecasted to operate at an acceptable LOS under future with project conditions (except that the proposed exclusive pedestrian phase would cause the intersection of PCH and 1st to fall to and unacceptable LOS), indicating that for this roadway segment, as well as remaining two-lane roadways, a two-lane roadway would accommodate future traffic volumes, including the Specific Plan Update project traffic for Cumulative 2020 and Year 2030 conditions.

Based on the results of the analysis, recommendations for reclassifying certain downtown roadway segments to provide two travel lanes and either bike and / or parking lanes are presented on Table 12. These changes in classification will result in reduced ultimate roadway width compared to the current roadway classifications, which will mean less right-of-way impact on the properties along those roadways, when they redevelop in the future.

If the City elects to change the designation of any of these roadways to reclassify the roadway from a four-lane to a two-lane facility on the City's Circulation Plan, it will be necessary to process an amendment to the MPAH through the OCTA for consistency, in order to remain eligible for Measure M and CMP funding. The amendment of the MPAH through OCTA must precede any change in street classification by the City.

Table 12
Downtown Roadway Consistency with MPAH

Roadway Segment	Roadway Classification			Recommended Configuration
	Orange County MPAH	Huntington Beach Circulation Plan	Existing Configuration	
6th Street - PCH to Orange Avenue - Orange Avenue to Main Street	Primary (4D)	Primary (4D)	Two lanes, undivided with street parking on both sides of the street	Two lanes, undivided with parallel parking and bike lanes - both sides
	Secondary (4U)	Secondary (4U)	Two lanes, with a wide painted divider, and street parking on both sides of the street	Two lanes, undivided with parallel parking and bike lanes - both sides
Lake Street - north of Orange	Primary (4D)	Primary (4D)	Two lanes, with a wide painted divider, and street parking on both sides of the street between Yorktown and n/o Orange, narrowing to two lanes undivided and street parking at Orange.	Two lanes, undivided with parallel parking and bike lanes - both sides
1st Street - Orange / Atlanta to PCH	Primary (4D)	Primary (4D)	Two lanes divided, street parking on one side of the street	Two lanes divided, street parking on the west side of the street, bike lanes, both sides
Walnut Avenue - 6th Street to 1st Street - 1st Street to Huntington / Pacific View	Secondary (4U)	Secondary (4U)	Two lanes, undivided with street parking on both sides of the street	Two lanes, undivided with parallel parking - both sides
	Primary (4D)	Primary (4D)	Future roadway through Pacific City development.	Development plans reflect a 70-foot travelway, 90-foot ROW, with 2 lanes divided and diagonal parking along the south side.
Orange Avenue - 6th Street to 1st Street	Primary (4D)	Primary (4D)	Two lanes, undivided with street parking on both sides of the street, widening just before 1st Street	Two lanes, undivided with street parking and bike lanes both sides of the street.

Proposed Downtown Circulation and Streetscape Changes

The Specific Plan Update proposes a number of circulation and streetscape changes to Main Street and other downtown streets, to implement streetscape improvements and circulation enhancements.

Streetscape Improvements

A copy of the street cross sections proposed in the Specific Plan Update is provided on **Figure 18**. The most significant changes will be on the first three blocks of Main Street. Main Street will be maintained as a two-lane roadway through the downtown. From PCH to Orange Avenue, the Specific Plan proposes a 28-foot roadway with two 14-foot traffic lanes, and an additional 26 feet on both sides for sidewalk and outdoor dining, for a total of 80 feet of streetscape between building frontages. In order to achieve the additional width for wider sidewalks and to maintain the outdoor dining areas, the existing on-street parking along Main Street will be removed from PCH to Orange, and additional sidewalk width will be constructed in its place.

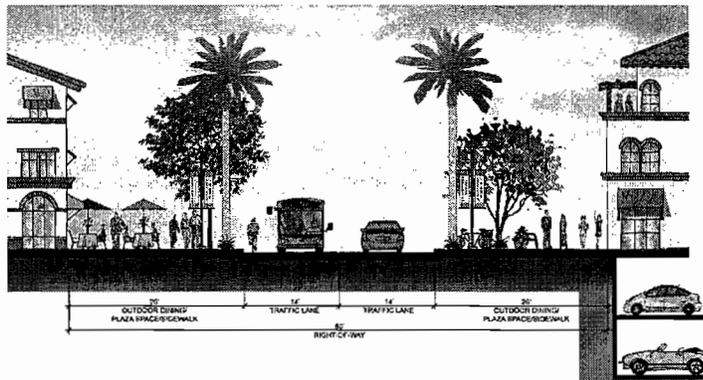
North of Orange Avenue, the Specific Plan Update proposes to retain the existing street width, parking, and sidewalk configuration on Main Street, with 12 to 14-foot travel lanes in each direction; on-street parking in the form of either parallel or angled parking on both sides of the street; and existing sidewalk widths, for a total of 75 feet of streetscape between building frontages.

The Specific Plan Update proposes to widen the sidewalks along 5th Street for the two blocks between Walnut Avenue and Orange Avenue. This will be accomplished by converting the current head-in parking, which requires 18 feet of street width, to parallel parking, which requires 8 feet, resulting in an additional 10 feet of sidewalk width on each side of the street.

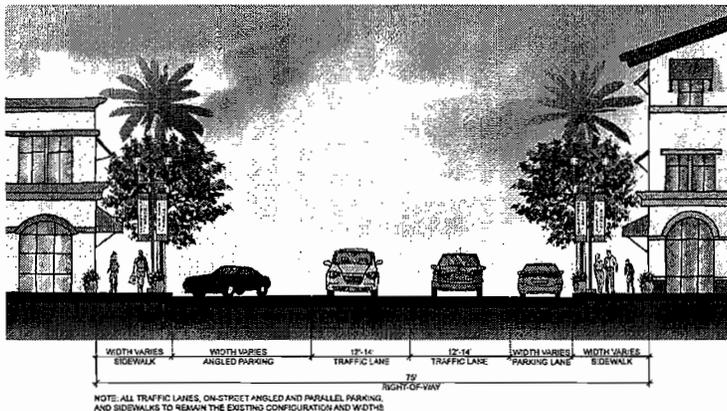
For other streets within the downtown core which will serve a mix of existing and new uses, the Specific Plan indicates a 60-foot cross section, with two 12-foot travel lanes, an 8-foot parking lane on both sides of the street, and 10-foot sidewalks.

As discussed previously, recommendations for reclassifying certain roadway segments to provide two travel lanes and either bike and / or parking lanes are presented on Table 12. Recommendations for the total roadway width and right-of-way width needed for each segment will be developed and included in the Specific Plan. Right-of-way widths will vary between different roadway segments, depending on the width of the travel lanes, whether or not the segment is to include bike lanes and parking lanes, and the width of the sidewalk and parkway. Adopting these revised classifications and accompanying cross-sections will establish the requirement for future right-of-way dedication and improvements that will be required of each property along that roadway when that property redevelops.

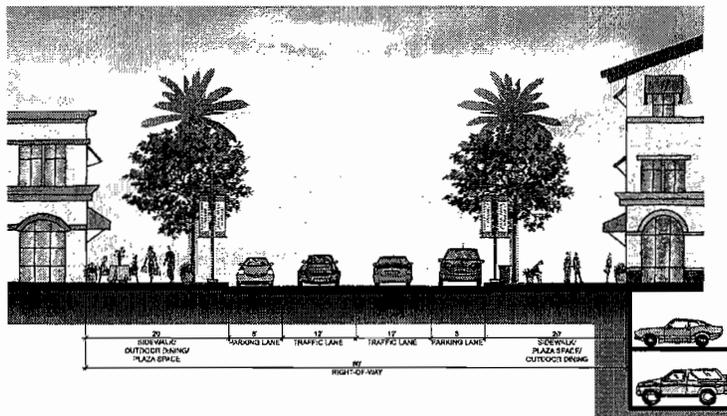
Cross Section of
 Main Street from
 Pacific Coast Highway
 to Orange Avenue



Cross Section of
 Main Street from
 Orange Avenue to
 Acacia Avenue



Cross Section of
 5th Street



Cross Section of
 Mixed-Use Street
 Within the Downtown Core

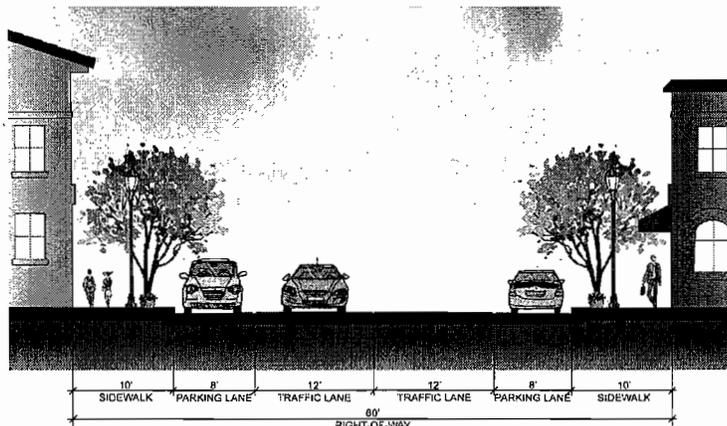
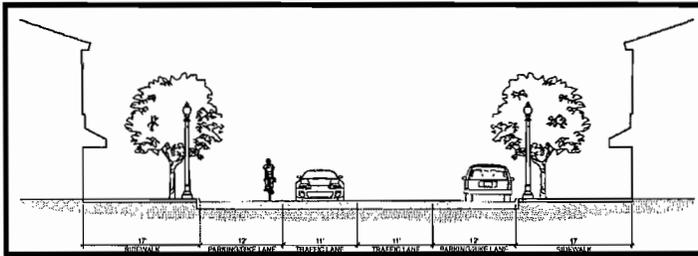


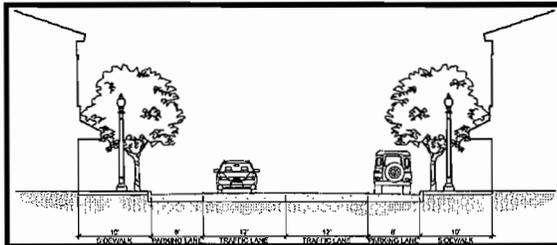
FIGURE 18A
DOWNTOWN SPECIFIC PLAN UPDATE
PROPOSED STREET CROSS - SECTIONS



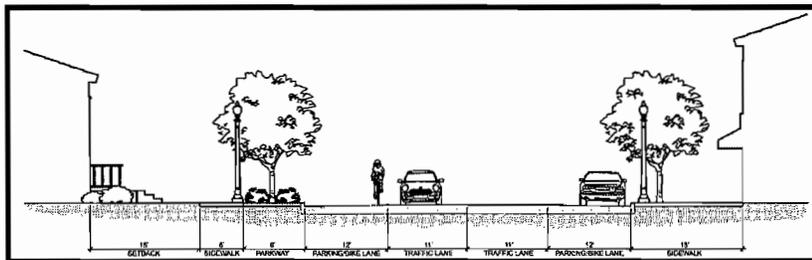
Cross Section of
 Orange Avenue from
 6th Street to 1st Street



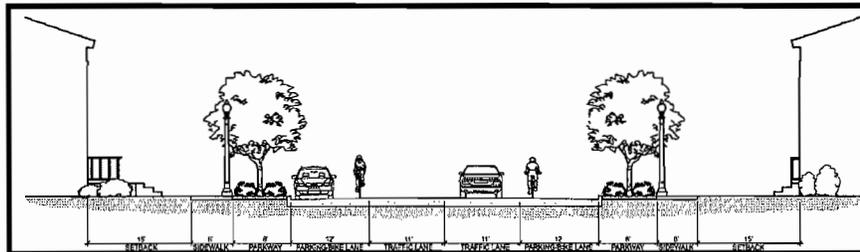
Cross Section of
 Walnut Avenue from
 6th Street to 1st Street



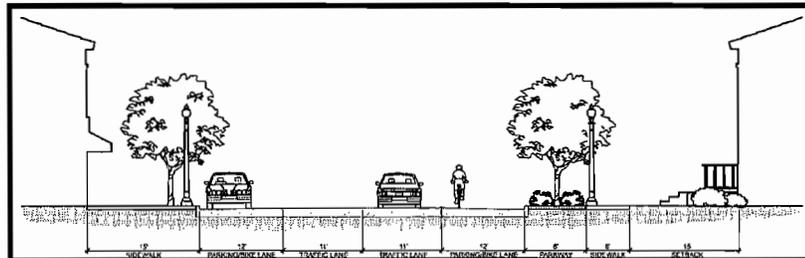
Cross Section of
 6th Street from
 Orange Avenue to
 Main Street



Cross Section of
 6th Street from
 PCH to Main Street



Cross Section of
 Lake Street North of
 Orange Avenue



Cross Section of
 1st Street from
 Orange Avenue to PCH

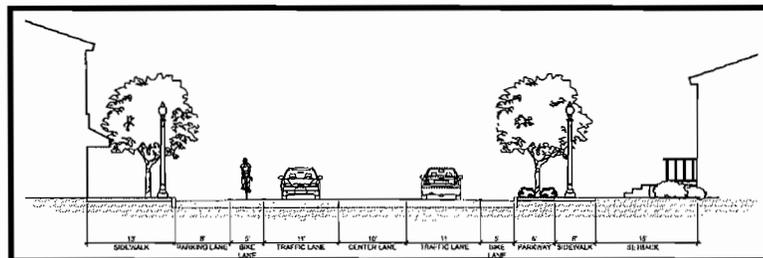


FIGURE 18B
DOWNTOWN SPECIFIC PLAN UPDATE
PROPOSED STREET CROSS - SECTIONS



Bicycle Improvements

The Specific Plan Update proposes the addition of bicycles lanes and/or bicycle routes on some streets in the downtown. A copy of the proposed changes to the bicycle system in the downtown is provided on **Figure 19**.

The Specific Plan proposes to add a Class II bicycle lane to 6th Street from PCH to Main Street, connecting to the existing bicycle lane on Lake Street via Acacia Avenue. On-street parallel parking is provided along both sides of 6th Street from PCH to Main Street, and along Acacia Avenue. A revised recommended cross-section for 6th Street will be developed to accommodate both street parking and bike lanes.

The Specific Plan also proposes to extend the existing Class II bicycle lane on Lake Street from its current terminus near Pecan Avenue down to Orange Street, and then along Orange Avenue to connect with the Class II bike lane planned for Atlanta Avenue east of 1st Street. Lake Street narrows from an approximately 90-foot right-of-way to a 60-foot right-of-way between Pecan and Orange Avenues. The bicycle lane is dropped, and the on-street parking remains through the narrower section of the street. A revised recommended cross-section for 6th Street will be developed to accommodate both street parking and bike lanes through this segment. The same is true of Orange Avenue, between Lake / 3rd Street and 2nd Street. East of 2nd Street, there is sufficient width on Orange Avenue to provide an on-street bicycle lane without impacting parking or requiring widening.

Pedestrian Improvements

The Specific Plan Update proposes the implementation of pedestrian-only phases for the signal operation at the intersections of PCH at 1st Street and PCH at 6th Street to facilitate the movement of pedestrians across PCH to and from the beach. Pedestrian movements up and down and across Main Street throughout the downtown can also represent a significant impediment to the movement of vehicular traffic.

Main Street is equipped with sidewalks on both sides of the street, as are the side streets that cross Main Street. At the intersections of Main Street with Walnut Avenue, Olive Avenue, and Orange Avenue, traffic is controlled with stop signs on all four approaches, and pedestrian crosswalks are provided on all four legs. A mid-block crosswalk is also provided between Olive Avenue and Walnut Avenue, from the Promenade parking structure to the shops and restaurants on the other side of the street.

It should be noted that the typical morning and evening peak hour Level of Service values reported at the stop-controlled intersections in the core of the downtown, such as along Main Street, indicate very good peak hour levels of service – LOS “A” or “B”. This does not fully reflect the delay to motorists caused by the influence of heavy pedestrian activity throughout the day, particularly during the midday and evening hours and on weekends, when vehicles on stop-controlled approaches must often wait for substantial volumes of pedestrians to cross the intersection. Although the volume of vehicular traffic alone at these intersections may be accommodated through the intersection with an acceptable Level of Service, heavy pedestrian activity along and across Main Street during the seasonal peak periods can add several seconds of delay to each vehicle waiting to cross through the intersection, resulting in a degradation of one or more levels of service due to the added delay.

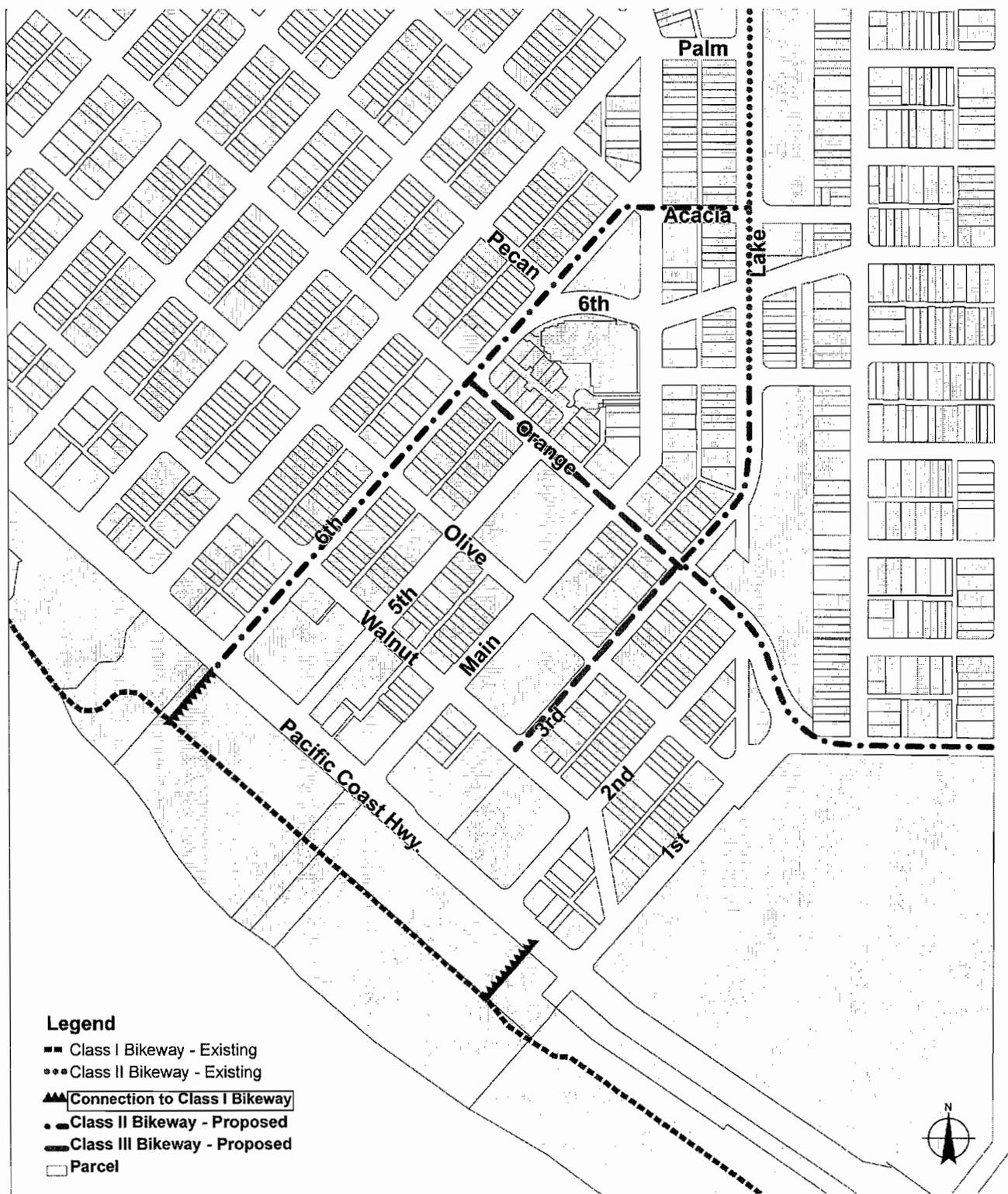


FIGURE 19
EXISTING AND PROPOSED
BICYCLE FACILITIES

Motorists driving on and across Main Street through the stop-controlled intersections in the downtown core can find themselves delayed extensively while waiting for a break in the streams of pedestrians in all directions, particularly during the peak demand seasons, such as summer weekends and during special events. Pedestrians move independently, often in continuous streams of one and two people at a time across the intersections along Main Street. Pedestrians have and will usually take the right-of-way at stop-controlled intersections, even if a vehicle has been waiting for some time for a break in the pedestrian stream. As a result, the impact of pedestrian volumes on the movement of traffic through the stop-controlled intersections can result in extensive delay to the motorist, traffic congestion, and long queues.

Pedestrian activity through the downtown is not to be discouraged, however, since a person who moves throughout the downtown by walking represents less vehicular demand in the downtown.

The challenge is how to continue to encourage pedestrian activity while reducing the impact on the movement of vehicular traffic, particularly on and across Main Street. The impact of heavy pedestrian activity on the movement of vehicles through the stop-controlled intersections in the downtown is an aspect of the downtown circulation that will not be completely eliminated. As mentioned above, pedestrian activity in the downtown is not to be discouraged. However, the Specific Plan proposes some measures to disperse pedestrian movement throughout the downtown by creating paseos through and between developments, enhancing and improving the walking environment along parallel side streets and alleys, encouraging pedestrian paths both parallel to Main Street through development blocks such as has been accomplished in the Pierside and Strand developments, as well as connecting Main Street and the parallel streets; and providing additional pedestrian access from new parking areas and developments.

Although the delay to motorists resulting from pedestrian traffic will not be eliminated completely, some measures that may be implemented at the downtown intersections to reduce delay to motorists due to pedestrian demand are:

- Limit the pedestrian crossings of Main Street at Walnut Avenue to only one crosswalk – on the north leg of the intersection through a combination of physical barriers, signing, and enforcement. Limiting Main Street crossing to one crosswalk at this intersection will reduce the number of pedestrian streams that a vehicle must cross from two to one for 50% of the traffic movements through the intersection.
- Eliminating both crosswalks across Main Street at Walnut Avenue would eliminate vehicle-pedestrian conflicts for the two through movements on Main Street altogether, and reduce the number of pedestrian streams that a vehicle must cross from two to one for eight of the ten remaining traffic movements through the intersection.
- During peak pedestrian and vehicular demand periods (i.e., summer weekends and special events), channel and group pedestrian movements into pedestrian “platoons” across stop-controlled intersections through the use of traffic control personnel or pedestrian signals.

CONGESTION MANAGEMENT PROGRAM (CMP) ANALYSIS

This traffic report is consistent with the requirements and procedures outlined in the current Orange County Congestion Management Program (CMP). The CMP requires that a traffic impact analysis be conducted for any projects generating 2,400 or more daily trips, or 1,600 or more daily trips for projects that directly access the CMP Highway System (CMPHS).

The proposed project is forecasted to generate approximately 13,400 daily trips, and therefore compliance with the CMP TIA requirements is required.

The CMPHS includes specific roadways designated as CMP facilities. The CMP highway system arterial facilities and CMP arterials in the vicinity of the project area consists of Beach Boulevard, Pacific Coast Highway (PCH), and Warner Avenue. The CMP arterial monitoring locations/intersections nearest to the project area consist of Warner Avenue at PCH, Beach Boulevard at PCH, and Beach Boulevard at Adams Avenue. Each of these intersections has been analyzed in this study for both Cumulative Year 2020 and Forecast Year 2030 conditions with and without the Project. All three intersections are forecasted to operate at an acceptable Level of Service in all analysis scenarios. Based on the above analysis, the proposed project would not have any significant traffic impacts on the CMPHS.

SUMMARY OF FINDINGS AND CONCLUSIONS

- The proposed Huntington Beach Downtown Specific Plan Update project will result in the development potential for approximately 400,000 additional square feet of resident- and visitor-serving development in the downtown core area of City of Huntington Beach.
- Twenty-four study intersections were analyzed to determine the project's off-site traffic impacts.
- Under Existing Conditions, all study intersections are currently operating at an acceptable LOS in the morning and evening peak hours.
- A Cumulative Conditions analysis was conducted for Year 2020. Ambient growth and trips from cumulative projects in the project area were added to existing conditions traffic volumes.
- With the addition of ambient growth and cumulative projects, all study intersections are forecasted to continue to operate at an acceptable Level of Service under Cumulative Without Project conditions.
- The proposed project is estimated to generate approximately 13,400 new trips per day, with 566 morning peak hour trips, and 925 evening peak hour trips.

- Under Cumulative Year 2020 with Project conditions, all but two study intersections are forecasted to operate at Level of Service “D” or better in both the morning and evening peak hours. The proposed project will cause the intersections of PCH at 6th Street and PCH at 1st Street to worsen to an unacceptable Level of Service, due to the proposed implementation of pedestrian-only signal phases at these intersections. Mitigation options have been identified to mitigate these impacts.
- A Forecast Year 2030 analysis was conducted to evaluate future conditions with anticipated development levels and committed network improvements. Peak hour turning movement forecasts were developed using forecasts from the Huntington Beach Traffic Model, which is maintained and operated by the City’s General Plan Update traffic consultant, Austin Foust and Associates.
- Under Year 2030 conditions, the project will cause two additional intersections – PCH at Goldenwest Street and Orange Avenue at Lake Street – to worsen to an unacceptable Level of Service. Mitigation options have been identified to mitigate these project this impacts.
- Four network alternatives for streets within the downtown core were evaluated. Changes in traffic patterns for the network alternatives were developed using forecasts from the Huntington Beach Traffic Model.
- Under the four network alternatives, a number of roadway segments would experience daily traffic increases that would result in daily traffic volumes that would exceed the LOS “E” capacity of their current two-lane undivided roadway configurations. Most notably, the Main Street closure Alternatives 1 and 2 would cause traffic volumes on Orange Avenue to approach and exceed 20,000 vehicle trips per day on all three study segments. Improvement of Orange Avenue to its ultimate four-lane classification would be needed to mitigate the effects of Main Street closure Alternative 1 or 2.
- Five downtown streets are shown as four-lane arterials on the Orange County Master Plan of Arterial Highways (MPAH). These streets – Orange Avenue, Walnut Avenue, 6th Street, Lake Street, and 1st Street – are each currently functioning as two-lane streets with parallel street parking on one or both sides of the street. Consistency between the City of Huntington Beach Circulation Plan and the MPAH is required in order to remain eligible to receive Measure M and CMP funds. The analysis has indicated that, with the exception of Orange Avenue, application to the OCTA to downgrade or eliminate many of the MPAH roadway segments in the downtown may be warranted. Recommended street cross-sections for these streets have been developed to establish the right-of-way needed to achieve the goals of the Specific Plan when the properties along each street redevelop.
- The Specific Plan Update proposes to provide a Class II bicycle lane on 6th Street, and portions Acacia Avenue, Lake Street, and Orange Avenue. The recommended street cross-sections for these streets will provide the street width and right-of-way needed to accommodate bike lanes and street parking on these streets.
- This traffic study has been prepared in compliance with the requirements of the County of Orange Congestion Management Program (CMP) traffic study requirements.

APPENDIX A
TRAFFIC COUNT
DATA SHEETS

APPENDIX B
INTERSECTION ANALYSIS
WORKSHEETS

APPENDIX C
INTERNAL CAPTURE
WORKSHEETS

APPENDIX D

**HUNTINGTON BEACH
TRAFFIC MODEL
YEAR 2030 FORECASTS**

APPENDIX E

**NETWORK ALTERNATIVE
INTERSECTION ANALYSIS
WORKSHEETS**