3.7 TRANSPORTATION AND CIRCULATION

This section summarizes the *SR-22/West Orange County Connection Traffic/Circulation Impact Report* (May 2001) and the *Traffic/Circulation Impact Report Reduced Build Alternative Addendum* (May 2001) (Appendix E). The traffic and circulation data presented is Year 2020 data, not existing Year 2000 data, because Year 2020 is representative of the future or baseline condition when the SR-22/West Orange County Connection would be in place. The 2020 data results in a "worst-case" scenario. State and federal procedures usually recommend addressing a design year 20 years (Year 2025) after construction is completed. The demographic data required to forecast travel demand beyond 2020 is not available and is not anticipated until July 2001 when SCAG, the MPO, adopts a new regional growth forecast.

Traffic forecasts were developed using the Orange County Transportation Analysis Model, version 2.8 (OCTAM 2.8), the county's travel forecasting tool. Travel forecasting models, like the OCTAM 2.8, are mathematical models, which describe the relationships between personal travel causes (home to work, home to shop, work to shop, etc.) and the resulting amount (traffic volumes) and location of that travel (the roadway facility used).

The traffic and circulation analysis is divided into five components:

1. The corridor-level analysis presents the traffic and circulation data for the entire SR-22/West Orange County Connector study area – the entire highway system used to move persons and vehicles through the area.
2. The mainline analysis presents the data for the SR-22 freeway sections between SR-55 and I-405.
3. The HOV analysis presents data for the HOV connectors used by two-people and three-people or more carpools.
4. The arterial analysis presents data for the roadway along the former Pacific Electric right-of-way, Newhope Street, Harbor Boulevard, Fairview Street, Westminster Boulevard, Fifth Street, and First Street.
5. The intersection analysis includes 37 intersections throughout the corridor including all SR-22 ramp intersections.

The following sections present the corridor's traffic conditions including aggregate travel time, vehicle kilometers/miles traveled, vehicle hours traveled, a screenline analysis, and travel time comparisons. The freeway mainline analysis presents the average daily traffic, traffic volume compared to roadway facility capacities, and levels of service. This information is also presented for the HOV connectors. The arterial information presented includes the facility type (lanes and whether or not it is divided), levels of service, and average daily traffic. Finally, the existing intersection conditions are presented. The information presented below is for the 2020 No Build Alternative, which is the base condition used to compare the other alternatives in Section 4.7.

3.7.1 Corridor Conditions

A. CORRIDOR TRAVEL TIME

The aggregate corridor travel time is the sum of all time required to make a trip by all travelers who have at least one end of their trip in the SR-22 corridor. It is an overall measure of mobility and, when compared among alternatives, provides a measure of the aggregate, relative mobility benefit provided by each alternative. For the baseline No Build 2020 scenario, daily aggregate corridor travel time would be 2,610,240 hours. The annual aggregate travel time of all travelers with at least one trip end in the SR-22 corridor would be 783,072,000 hours.

B. CORRIDOR VKT/VMT AND VHT

Vehicle kilometers traveled (VKT)/vehicle miles traveled (VMT), vehicle hours traveled (VHT), and the ratio between the two (average corridor speed) are three more corridor throughput indicators. The average 2020 No Build corridor speed provides an understanding of the study area mobility (including the freeway and the arterials).

A VKT (VMT) increase indicates that more vehicles would be moving through the study area. A VHT reduction and an average corridor speed increase indicate that the vehicles would be moving faster. The 2020 No Build scenario shows 16,155,410 VKT (10,040,650 VMT), with these kilometers (miles) being traveled in approximately 311,360 total vehicle hours. The ratio between these two numbers (average corridor speed) indicates the relative mobility motorists experience within the corridor. The data reflects an average corridor speed of 51.8 kilometers per hour (km/h) (32.2 miles per hour [mph]).

C. CORRIDOR SCREENLINE ANALYSIS

A screenline is an imaginary line across parallel roadways. Screenline analysis is a method used to evaluate the corridor's overall roadway travel changes rather than reviewing each individual roadway's performance. The number of vehicles crossing a screenline is an additional indicator of throughput – the more vehicles, the higher the throughput and the greater the mobility at that screenline. Forecast daily traffic volumes are compiled for each roadway facility types that the screenline intersects. These volumes are summed and reported as a screenline total.

To assess travel demand and average speed, four north/south screenlines were identified, as shown in Figure 3.7-1. They are located:

- West of the SR-22/I-405 interchange
- Between Beach Boulevard and Magnolia Street
- Between Harbor Boulevard and Haster Street
- Between Glassell Street and Tustin Street

The screenlines volume is the aggregate of all the vehicles on all the facilities types that cross the screenline, not just those vehicles on SR-22. For example, in addition to SR-22, Screenline No. 4 crosses Chapman Avenue, 17th Street, I-5, and First Street (among others). All of the vehicles that are on those roadways are also included in the Screenline No. 4 volume and speed data.

The 2020 No Build scenario screenline information on Table 3.7-1 indicates the mobility on four screenlines. When comparing the various screenlines, please note that Screenline No. 1 crosses I-405 where it is currently six general-purpose lanes and one HOV lane in each direction, and Screenline No. 4 crosses SR-22 and I-5. At both of these screenlines, the baseline volumes are fairly high because there are substantially more freeway lanes at these screenlines than there are at Screenline Nos. 2 and 3. Screenlines 2 and 3 cross only the freeway SR-22. Therefore, they are more representative of the SR-22 traffic conditions, compared to screenlines 1 and 4.

Table 3.7-1
SR-22 CORRIDOR NO BUILD SCREENLINE SUMMARY

Screenline	Volume*	VKT (VMT)	VHT
1 – West of the SR-22/I-405 Interchange	431,340	521,040 (323,830)	9,190
2 – Between Beach Boulevard and Magnolia Street	283,910	246,690 (153,320)	3,240
3 – Between Harbor Boulevard and Haster Street	381,030	317,170 (197,120)	5,530
4 – Between Glassell Street and Tustin Street	634,888	453,480 (281,840)	7,420

Source: OCTAM 2.8 – SR-22 MIS/EIR/EIS Analysis
* ADT volumes were derived from adjusted estimates and daily traffic demand provided by OCTA, December 1999

Figure 3.7-1
Screenlines
8.5X11

D. CORRIDOR TRAVEL TIME COMPARISON

The time it takes to travel from point "A" to point "B" is an important indicator of mobility. Travel time comparisons show changes in the minutes a trip takes as a result of new conditions within the corridor. While there are millions of potential trip-paths in the study area, several more common trips can be used to represent mobility and throughput. Travel time within the corridor was compared by selecting several pairs of trip origins (O) and destinations (D). These O-D pairs were selected as representative travel markets.

Table 3.7-2 indicates that the selected trips that extend beyond the study area are forecasted to take approximately 30 minutes and that a trip within the study area (from Westminster to Orange) is forecasted to take approximately 18 minutes.

Table 3.7-2
SOV AND 3+ HOV TRAVEL TIMES IN MINUTES
YEAR 2020 – NO BUILD AM PEAK PERIOD

Origin	Destination	Mode	Travel Time (min.)[1]
Orange Mall Orange	Leisure World Seal Beach	SOV[2] 3+ HOV	31.4 31.4
17th St. at Bristol St. Santa Ana	Belmont Shore Dr. Long Beach	SOV 3+ HOV	30.9 30.9
I-405 at Bellflower St. Long Beach	Chapman Ave. Orange	SOV 3+ HOV	29.9 28.8
Belmont Shore Dr. Long Beach	Civic Center Santa Ana	SOV 3+ HOV	33.4 33.4
I-405 at SR-22 Westminster	Children's Hospital Orange County Orange	SOV 3+ HOV	18.2 18.2

Source: OCTAM 2.8 – SR-22 MIS/EIR/EIS Analysis
[1] Rounded to nearest 0.1 minute
[2] SOV – single-occupant vehicle, including those with two occupants

3.7.2 Freeway Mainline Conditions

A. FREEWAY AVERAGE DAILY TRIPS

As shown in Table 3.7-3, SR-22 base year (1996) average daily traffic (ADT) volumes range between 135,000 to 206,000 vehicles (Caltrans, 1997). Two-way peak-hour volumes range from 10,500 to 15,000 vehicles. The peak period represents eight to ten percent of the average daily traffic. Existing ADT on other freeway facilities would include 327,000 vehicles on I-405, 166,000 vehicles on I-605, and 245,000 vehicles on SR-55 (OCTA, 1999).

Year 2020 forecasted traffic volumes are estimated to range between 158,100 and 222,600 vehicles per day. This is an increase of approximately 8 to 20 percent over existing traffic volumes along the SR-22 mainline. Peak-hour traffic would increase at about the same rate, ranging between 11,390 and 17,160 vehicles. ADT changes would range between a 2-percent increase on I-605 to a 24-percent increase on SR-55; similarly peak-hour traffic would also change between 1996 and the 2020 forecast baseline. This anticipated traffic growth would be spurred by future population and economic growth within the SR-22 corridor and those geographic areas whose travelers would use SR-22 for part of their trips.

B. FREEWAY V/C RATIOS AND LOS

A level of service (LOS) is a letter designation ranging from A through F, describing the operating conditions on a particular roadway facility type. LOS A and B indicate free flow travel, while LOS C indicates stable traffic flow. LOS D indicates the beginning of traffic congestion, while LOS E indicates the start of stop-and-go traffic conditions. LOS F indicates stop-and-go traffic conditions. The LOS as a qualitative measure describing a roadway's operational conditions and motorists and/or passengers perceptions of these conditions. The variables used to define LOS are speed, delay, travel time, traffic density, and traffic flow rates.

Table 3.7-3
YEAR 1996 AND YEAR 2020 TRAFFIC DEMANDS (NO BUILD)

Freeway Section	Year 1996			Year 2020			Percent Change	
	ADT	Peak Hour	# of Lanes	ADT*	Peak Hour	# of Lanes	ADT*	Peak Hour
SR-22								
Tustin St. – Glassell St.	146,000	10,900	3	173,600	11,390	3	18.9%	4.5%
Main St. – I-5/SR-57 IC	159,000	11,800	3	190,500	12,880	3	19.8%	9.2%
I-5/SR-57 IC – The City Dr.	206,000	15,000	3	222,600	17,160	3	8.1%	14.4%
Harbor Blvd. – Euclid St.	183,000	13,600	3	204,800	15,980	3	11.9%	17.5%
Beach Blvd. – Knott St.	135,000	10,500	3	158,000	12,490	3	11.7%	19.0%
I-405								
I-605 – Seal Beach Blvd.	327,000	26,000	6	332,700	28,620	6	1.7%	10.1%
SR-55								
SR-22 – Chapman Ave.	245,000	15,400	5	304,700	20,300	5	24.4%	31.8%

Source: Caltrans, 1997; OCTAM 2.8 – SR-22 MIS/EIS Analysis
IC = Interchange
* ADT forecasts were derived from adjusted estimates of daily traffic demand in the SR-22 corridor provided by OCTA, December 1999.

The freeway mainline LOS can be used as an indicator of freeway throughput and mobility. The Caltrans *Highway Capacity Manual*[1] prescribes using one of the following as a measure of effectiveness (MOE) to determine the mainline LOS: density, maximum service flow rate, or maximum volume-to-capacity (V/C) ratio. For this study, the V/C criteria shown in Table 3.7-4 was used to assign the mainline traffic LOS. Table 3.7-6 shows the base-year peak-hour traffic volumes and associated LOS conditions on SR-22, I-405, I-605, and SR-55 for 1996 and baseline 2020 peak-hour conditions.

Under the No Build Scenario, the peak-hour SR-22 eastbound forecast traffic demand approaches 4,600 vehicles near SR-55, 8,000 vehicles between The City Drive and Euclid Street, and 6,700 vehicles between Beach Boulevard and Valley View Street. The westbound forecasted traffic demand would range between 4,000 and 8,500 vehicles, with traffic peaking near the I-5/SR-57 interchange. The forecast traffic demands would exceed the mainline capacity (three lanes in each direction) at several locations along SR-22 in both directions. Of the 30 sections studied on SR-22, 15 would operate below the LOS E threshold (LOS F conditions), and six would experience an improvement in level of service compared to the 1996 condition, as shown in Table 3.7-5. The forecasted growth in the corridor (and in trips through the corridor) accounts for the 15 sections operating at LOS F, and the elements of the No Build Alternative that were not in place in 1996 (such as *Master Plan of Arterial Highways* transportation improvements) account for the reduction of demand (and corresponding improvement in level of service) at several locations. (See Section 2.2.1 for a full description of the No Build Alternative.) Southbound I-405 between SR-22 and I-605 would experience very heavy travel activity and, as a result, would operate at LOS F conditions. All other general-purpose sections on SR-55 and I-605 would operate at LOS E or

[1] Available at Caltrans, District 12.

better conditions. Traffic forecasts also indicate the HOV lanes in both directions of SR-55 would operate at over-capacity conditions resulting in LOS F conditions.

Table 3.7-4
FREEWAY MAINLINE LOS CRITERIA

LOS	Maximum V/C Ratio	Speed
A	0.283	105 km/h (65 mph)
B	0.452	105 km/h (65 mph)
C	0.673	104 km/h (64.5 mph)
D	0.849	98 km/h (65 mph)
E	1.000	85 km/h (53 mph)
F	*	less than 85 km/h (53 mph)

Source: Transportation Research Board, 1997
* Demand flows exceed capacity limits

3.7.3 HOV Conditions

Freeway-to-freeway HOV connectors can also be evaluated based on the throughput level of service. If a connector's forecasted demand is less than the design capacity, it would operate better than a connector where the forecasted demand is greater than the design capacity. (The currently accepted HOV lane capacity range is from 800 vehicles per hour per lane [vphpl] to 1,500 vphpl. Less than 800 vphpl could result in the "empty lane syndrome" perception and more than 1,500 vphpl is estimated to result in congestion in the HOV lane.)

In the baseline 2020 No Build scenario there are no HOV connectors in the study area, nor is there an HOV lane on SR-22 that would indicate the volumes anticipated to benefit from such connectors. However, some understanding of the potential need for HOV connectors can be determined from the congestion level on the existing general-purpose connectors that handle the movements that would be augmented by HOV freeway-to-freeway direct connectors. Table 3.7-6 illustrates the vehicles and the LOS on the eight general-purpose connectors.

Capacity of the I-405/I-605 connectors and the SR-22/I-405 connectors is assumed to be the same as the freeway mainline (2,300 vphpl) because of their higher-speed design. Capacity of the I-5/SR-22 and SR-22/SR-55 connectors is assumed to be less (2,000 vphpl) because of their geometry.

3.7.4 Arterial Conditions

The following arterials are in the vicinity of the former Pacific Electric right-of-way: Newhope Street, Harbor Boulevard, Fairview Street, Westminster Boulevard, Fifth Street, and First Street. (This provides the baseline information for analysis of a new arterial in Section 4.7.) The County of Orange has arterial LOS criteria, as shown in Table 3.7-7, which were compared to the baseline conditions on the arterials.

The adjacent arterial system within the SR-22 corridor is also burdened by heavy travel activity, while lacking sufficient mobility measures such as adequate capacity on arterials and intersections, HOV lanes and express transit services, continuity in arterial roadways, and TSM-related strategies. The 2020 No Build volumes on the parallel arterials in Table 3.7-8 illustrate the area congestion level that currently serves arterial traffic from the area around the SR-22/Euclid Street interchange (near the proposed Pacific Electric Arterial's northwest terminus) to central Santa Ana (near the proposed arterial's southeastern terminus). The table also includes the eastbound SR-22 to southbound I-5 connector and the northbound I-5 to westbound SR-22 connector that would carry some traffic from the Euclid Street area to central Santa Ana on the freeways.

Table 3.7-5
FREEWAY V/C RATIO AND LEVEL OF SERVICE
YEAR 1996 and YEAR 2020 PEAK HOUR

Study Freeway	Study Segment Between	Year 1996				Year 2020 No Build			
		General-Purpose		2+ HOV		General-Purpose		3+ HOV	
		V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Eastbound SR-22	SR-22/I-405 – Valley View Blvd.	NA	NA	--	--	0.94	E	--	--
	Valley View Blvd. – Knott St.	NA	NA	--	--	0.97	E	--	--
	Knott St. – Beach Blvd.	0.68	D	--	--	0.98	E	--	--
	Beach Blvd. – Magnolia St.	0.87	E	--	--	1.05	F	--	--
	Magnolia St. – Brookhurst St.	0.87	E	--	--	1.09	F	--	--
	Brookhurst. – Euclid St.	0.88	E	--	--	1.12	F	--	--
	Euclid St. – Harbor Blvd.	0.89	E	--	--	1.15	F	--	--
	Harbor Blvd. – Haster St.	0.88	E	--	--	1.14	F	--	--
	Haster St. – The City Dr.	0.91	E	--	--	1.20	F	--	--
	The City Dr. – Bristol St.	NA	NA	--	--	1.26	F	--	--
	Bristol St. – I-5/SR-57 Interchange	NA	NA	--	--	1.03	F	--	--
	I-5/SR-57 Interchange – Main St.	NA	NA	--	--	1.02	F	--	--
	Main St. – Glassell St.	NA	NA	--	--	1.01	F	--	--
	Glassell St. – Tustin St.	0.87	E	--	--	0.92	E	--	--
	Tustin St. – SR-55	0.71	D	--	--	0.67	C	--	--
Westbound SR-22	SR-55 – Tustin St.	0.58	C	--	--	0.55	C	--	--
	Tustin St. – Glassell St.	0.71	D	--	--	0.73	D	--	--
	Glassell St. – Main St.	NA	NA	--	--	0.77	D	--	--
	Main St. – I-5/SR-57 Interchange	NA	NA	--	--	0.84	D	--	--
	I-5/SR-57 Interchange – Bristol St.	NA	NA	--	--	0.82	D	--	--
	Bristol St. – The City Dr.	NA	NA	--	--	1.23	F	--	--
	The City Dr. – Haster St.	1.11	F	--	--	0.88	E	--	--
	Haster St. – Harbor Blvd.	NA	NA	--	--	1.18	F	--	--
	Harbor Blvd. – Euclid St.	NA	NA	--	--	1.16	F	--	--
	Euclid St. – Brookhurst St.	NA	NA	--	--	1.10	F	--	--
	Brookhurst St. – Magnolia St.	1.07	F	--	--	1.03	F	--	--
	Magnolia St. – Beach Blvd.	1.07	F	--	--	0.94	E	--	--
	Beach Blvd. – Knott St.	0.84	D	--	--	0.83	D	--	--
	Knott St. – Valley View St.	NA	NA	--	--	0.73	D	--	--
	Valley View St. – SR-22/I-405	NA	NA	--	--	0.75	D	--	--
Northbound I-405	SR-22/I-405 – Seal Beach Blvd.	0.85	E	NA	NA	0.86	E	0.47	C
	Seal Beach Blvd. – I-605	0.79	D	NA	NA	0.84	D	0.63	C
SR-55	SR-22 – Chapman Ave.	NA	NA	NA	NA	0.79	D	1.12	F
I-605	I-405 – Katella Ave	NA	NA	--	--	0.63	C	--	--
Southbound I-405	I-605 – Seal Beach Blvd.	0.79	D	NA	NA	1.08	F	0.95	E
	Seal Beach Blvd. – SR-22/I-405	NA	NA	NA	NA	1.06	F	0.71	D
SR-55	Chapman Ave – SR-22	NA	NA	NA	NA	0.68	D	1.13	F
I-605	Katella Ave – I-405	0.78	D	--	--	0.70	D	--	--

Source: OCTAM 2.8 – SR-22 MIS/EIR/EIS Analysis
NA = Not available; -- = No HOV lane
Capacity of the freeway mainline is assumed to be 2,300 vphpl per the Caltrans *Highway Capacity Manual*. Capacity of the HOV lane is assumed to be 1,500 vphpl.

Table 3.7-6
FREEWAY CONNECTOR V/C RATIO AND LEVEL OF SERVICE
YEAR 2020 AM AND PM PEAK HOUR (NO BUILD)

Connector	# of Lanes	AM			PM		
		Volume	V/C	LOS	Volume	V/C	LOS
Southbound I-605 to Southbound I-405	2	2,320	0.50	C	2,600	0.57	C
Northbound I-405 to Northbound I-605	2	3,470	0.75	D	3,010	0.65	C
Southbound I-405 to Eastbound SR-22	3	4,190	0.61	C	6,510	0.94	E
Westbound SR-22 to Northbound I-405	3	6,540	0.95	E	5,160	0.75	D
Eastbound SR-22 to Southbound I-5	2	2,060	0.52	C	2,140	0.54	C
Northbound I-5 to Westbound SR-22	1	2,390	1.20	F	2,020	1.01	F
Eastbound SR-22 to Northbound SR-55	2	2,070	0.52	C	2,770	0.69	D
Southbound SR-55 to Westbound SR-22	2	2,120	0.53	C	1,880	0.47	C

Source: OCTAM 2.8 – SR-22 MIS/EIR/EIS Analysis

Table 3.7-7
ARTERIAL LOS CRITERIA

Type of Arterial	Level of Service					
	A	B	C	D	E	F
8 Lanes Divided	45,000	52,500	60,000	67,500	75,000	-
6 Lanes Divided	33,900	39,400	45,000	50,600	56,300	-
4 Lanes Divided	22,500	26,300	30,000	33,800	37,500	-
4 Lanes Undivided	15,000	17,500	20,000	22,500	25,000	-
2 Lanes Undivided	7,500	8,800	10,000	11,300	12,500	-

Source: OCTA, 1995

Table 3.7-8
ARTERIAL AND FREEWAY CONNECTOR LEVEL OF SERVICE
YEAR 2020 (NO BUILD)

Arterial	Type	ADT Volume*	LOS
Newhope Street at Westminster Boulevard	4 lanes divided	29,100	C
Harbor Boulevard at Westminster Boulevard	8 lanes divided	60,000	C
Fairview Street at Westminster Boulevard	4 lanes divided	45,800	F
Westminster Boulevard/17th Street at Fairview Avenue	6 lanes divided	38,700	B
Fifth Street at Fairview Avenue	2 lanes undivided	12,000	E
First Street at Fairview Avenue	6 lanes divided	44,100	C

		AM			PM		
Connector	# of Lanes	Volume	V/C	LOS	Volume	V/C	LOS
Eastbound SR-22 to Southbound I-5	2	2,060	0.52	C	2,140	0.54	C
Northbound I-5 to Westbound SR-22	1	2,390	1.20	F	2,020	1.01	F

Source: OCTAM 2.8 – SR-22 MIS/EIR/EIS Analysis
* ADT forecasts were derived from adjusted estimates of daily traffic demand provided by OCTA, December 1999

One of the arterials shown in Table 3.7-8 is forecast to experience congestion (LOS F) in 2020. Also, the demand on the connector from northbound I-5 to westbound SR-22 is also forecast to exceed the capacity

in the morning and evening peak periods. This data indicates that some transportation enhancement could improve flow on this arterial and these connectors.

The I-405/I-605 connectors and the SR-22/I-405 connectors capacity is assumed to be the same as the freeway mainline (2,300 vphpl) because of their higher-speed design. The I-5/SR-22 and SR-22/SR-55 connectors capacity is assumed to be less (2,000 vphpl) because of their geometry.

3.7.5 Intersection Conditions

The Intersection Capacity Utilization (ICU) methodology was used to calculate evening peak-hour LOS for the study area intersections. This method and the capacity assumptions are consistent with the requirements of the Orange County *Congestion Management Program* (CMP) traffic study guidelines (OCTA, 1996)[2]. Thirty-seven intersections were chosen for the traffic analysis, which included all SR-22 ramp intersections. The ICU methodology uses the peak-hour turning movements in association with the intersection lane geometry to calculate the intersection V/C ratio. The V/C ratio measures how well an intersection operates by comparing the volume of cars within the intersection with the estimated intersection vehicle processing capacity. Table 3.7-9 shows the intersection LOS classification based on V/C ratios.

Table 3.7-9
INTERSECTION LOS CRITERIA

LOS	V/C Ratio
A	0.01 - 0.60
B	0.61 - 0.70
C	0.71 - 0.80
D	0.81 - 0.90
E	0.91 - 1.00
F	> 1.00

Source: OCTA, 1996

Table 3.7-10 summarizes ICU ratios and LOS for the baseline 2020 No Build scenario. Of the 37 intersections studied, 16 of them or approximately 43 percent are projected to operate below LOS E thresholds (LOS F conditions) in the evening peak period. The most congested intersections (V/C over 1.2) are as follows: I-605/Katella Avenue northbound on-/off-ramps, SR-22/Haster Street westbound on-ramp, SR-22/Fairview Street eastbound on-ramp, SR-22/Bristol Street eastbound on-/off-ramps, SR-22/ Main Street/Town and Country Road eastbound on-/off-ramps, SR-22/Glassel Street westbound on-/off-ramps, and SR-22/Tustin Street eastbound off-ramp.

[2] Available at OCTA.

Table 3.7-10
INTERSECTION ICU RATIO AND LEVEL OF SERVICE
YEAR 2020 PEAK HOUR (NO BUILD)

Study Intersection	No Build			
	ICU		LOS	
	AM	PM	AM	PM
I-605/Katella Ave. Northbound On-/Off-Ramps	1.25	1.34	**F**	**F**
I-605/Katella Ave. Southbound On-/Off-Ramps	0.86	1.11	D	**F**
I-405/Seal Beach Northbound On-/Off-Ramps	0.60	0.68	A	B
I-405/Seal Beach Southbound On-/Off-Ramps	0.75	0.75	C	C
SR-22/Valley View St. Westbound On-/Off-Ramps	0.96	1.10	E	**F**
SR-22/Valley View St./Garden Grove Blvd. Eastbound On-/Off-Ramps	0.75	0.83	C	D
SR-22/Knott St. Westbound On-Ramp	0.73	0.95	C	E
SR-22/Goldenwest St. Eastbound Off-Ramp	0.64	0.82	B	D
SR-22/Goldenwest St. Westbound Off-Ramp	0.96	0.89	E	D
SR-22/Beach Blvd. Westbound On-/Off-Ramps	0.53	0.65	A	B
SR-22/Beach Blvd. Eastbound On-/Off-Ramps	0.57	0.61	A	B
SR-22/Magnolia St. Eastbound On-/Off-Ramps	0.97	1.03	E	**F**
SR-22/Magnolia St. Westbound Off-Ramp	0.59	0.81	A	D
SR-22/Brookhurst St. Westbound On-/Off-Ramps	0.82	0.91	D	E
SR-22/Brookhurst St. Eastbound On-/Off-Ramps	0.77	0.93	C	E
SR-22/Euclid St. Eastbound On-/Off-Ramps	0.68	0.98	B	E
SR-22/Euclid St. Westbound On-/Off-Ramps	1.11	1.17	**F**	**F**
SR-22/Harbor Blvd. Westbound Off-Ramp	0.75	0.89	C	D
SR-22/Harbor Blvd. Eastbound On-Ramp	0.52	0.65	A	B
SR-22/Haster St. Westbound Off-Ramp	0.82	0.94	D	E
SR-22/Haster St. Westbound On-Ramp	0.84	1.28	D	**F**
SR-22/Fairview St. Eastbound On-Ramp	1.32	1.21	**F**	**F**
SR-22/Fairview St. Eastbound Off-Ramp	0.81	0.71	D	C
SR-22/The City-Metropolitan Dr. Westbound On-/Off-Ramps	1.04	1.16	**F**	**F**
SR-22/The City Dr. Eastbound On-/Off-Ramps	1.05	0.92	**F**	E
SR-22/Bristol St. Eastbound On-/Off-Ramps	1.29	1.39	**F**	**F**
SR-22/Bristol St./La Veta Ave. Westbound On-/Off-Ramps	0.75	0.88	C	D
SR-22/Main St. Westbound On-/Off-Ramps	0.78	1.14	C	**F**
SR-22/Main St. Eastbound On-/Off-Ramps	1.37	0.93	**F**	E
SR-22/Glassel St. Westbound On-/Off-Ramps	1.07	1.29	**F**	**F**
SR-22/Glassel St. Eastbound On-/Off-Ramps	0.80	1.07	C	**F**
SR-22/Tustin St. Westbound On-Ramp	0.89	0.78	D	C
SR-22/Tustin St. Eastbound Off-Ramp	0.84	1.39	D	**F**
SR-55/Chapman Ave. Southbound On-/Off-Ramps	0.68	0.65	B	B
SR-55/Chapman Ave. Northbound On-/Off-Ramps	0.50	0.65	A	B
Fairview St./Civic Center Dr.	0.90	1.04	D	**F**
Raitt St./Santa Ana Blvd.	0.59	0.65	A	B

Source: OCTAM 2.8 – SR-22 MIS/EIR/EIS Analysis