

MEMORANDUM

Date: October 1, 2019

Project #: 22820

To: Dan Phu, Sam Sharvini
OCTA

From: Tim Erney, Neelam Dorman

Project: Beach Boulevard Corridor Study

Subject: Lane Reduction Concept Operations Assessment

As part of the Beach Boulevard Corridor Study (Project), an initial list of corridor-wide improvement concepts was prepared. Three of the toolbox elements (transit-only lane, protected bicycle lane and on-street parking/loading with wider sidewalks) would require the reduction in the number of travel lanes on Beach Boulevard. In order to determine whether lanes could be removed on Beach Boulevard, an initial assessment was conducted to determine the shift in volumes with various lane reduction scenarios. As part of this initial assessment, it was determined that feasible lane reduction concepts would warrant further evaluation to determine the anticipated affect on roadway operations.

INITIAL ASSESSMENT SUMMARY

For the initial assessment, OCTA ran three lane reduction concept scenarios in OCTAM:

- Plan A: The segments of Beach Boulevard that have four travel lanes in each direction (generally Ellis Avenue to SR-91) were reduced to three lanes in each direction.
- Plan B: The entire length of Beach Boulevard would have one lane removed in each direction (i.e., the four lane segments were reduced to three lanes; the three lane segments were reduced to two lanes).
- Plan C, The entire length of Beach Boulevard would be reduced to two lanes in each direction (e.g., two lanes were eliminated in the four-lane segments and one lane were eliminated in the three-lane segments).

Based on the model output, it was estimated how many vehicles would divert off Beach Boulevard at various points in the corridor for each of these scenarios. The following are the key findings from this initial review:

1. The percent shift in volumes for Plan A would be between 0% - 13% from Beach Boulevard to other streets, which equates to about 20 to 8,500 vehicles a day. The highest volume and percent shift would occur in the I-405/SR-22 area, which also has the highest ADT along the corridor.
2. The percent shift in volumes for Plan B would be between 8% - 15% from Beach Boulevard to other streets, which equates to about 1,400 to 8,700 vehicles a day. The highest volume shift would occur in the I-405/SR-22 area, which also has the highest ADT along the corridor. In addition, the highest percentage change occurred in the northern portion of the corridor (between Malvern Avenue and SR-90)
3. With Plan C, the percent shift in volume would be between is 13% - 29% from Beach Boulevard to other streets, which translates to about 3,300 to 22,000 vehicles a day. The highest volume and percent shift would occur in the I-405/SR-22 area, which also has the highest ADT along the corridor.

Based this initial review, Plan A seems to be potentially viable, and would allow for the provision of transit-only lanes that mostly overlap with OCTA's Bravo! bus service, or protected bike lanes in the portion of the corridor with the least available parallel facilities. As such, it was recommended that this option be carried forward in the study.

From an operational perspective, Plan B may or not be practical. At both the southern and northern end of the study corridor, there is not as much of a need for transit-only lanes (since the Bravo! service does not currently run, or is planned to run, in these areas) and there are good parallel bicycle facilities. However, the northern and southern areas have more of a neighborhood parking/loading demand (due to the adjacent residential neighborhoods) and higher pedestrian volumes. Given that this option may have value, it was recommended to be carried forward.

With Plan C, there would be a volume shift of about 24,000 vehicles on a daily basis. This would be a significant shifting of traffic, and there is likely not capacity available on the parallel streets to accommodate these vehicles. In addition, there is likely not the need to have two lanes of improvements (such as a bike lane and a transit only lane) in the current four-lane segments. As such, it was recommended that this option be eliminated from future consideration.

Based on this initial assessment, an operations analysis for Plan A and B was recommended to determine operational changes along the Project Corridor as well as the parallel streets.

LANE REDUCTION CONCEPT OPERATIONS ASSESSMENT

The preliminary operations assessment evaluated 26 segments along the Project Corridor using volume-to-capacity (V/C) ratios and equating them to a corresponding level of service (LOS). The 26 study segments correspond to segments along the corridor where data was available from the Caltrans' Traffic Census Program and are the locations evaluated as part of the Baseline Conditions Report. The *Guidance for Administration of the Orange County Master Plan of Arterial Highways* (August 2017) was used to determine the classification of roadways, the capacity of the roadways, and the corresponding LOS thresholds. Given that recent traffic counts were not available for the study segments on Beach

Boulevard, annual average daily traffic (AADT) volumes which were sourced from Caltrans’ Traffic Census Program (2017) for Existing Conditions. In addition, growth from OCTAM was applied to the existing volumes to estimate 2040 Baseline Conditions volumes along Beach Boulevard.

The reduction in travel lanes on Beach Boulevard would cause a shift in traffic from the Project Corridor and onto parallel corridors as capacity were available. From OCTAM output, segments along the parallel corridor to the east and west of the Project Corridor were reviewed to determine how these corridors would be affected by the change in volumes.

It should be noted that since existing AADT volumes were not available for the parallel corridors, the 2040 ADT volumes were sourced directly from the OCTAM. Although this data is not considered actual volumes along the parallel corridors, they provide a general gauge of the level of activity, and thus would be appropriate for this assessment.

Existing and Future Baseline Conditions

For background information on existing operations as well as projected baseline operations, Existing Conditions and 2040 Baseline Conditions volumes were sourced from the *Beach Boulevard Corridor Study – Baseline Conditions Report*. Table 1 and 2 provide the volumes and operations results for Existing and 2040 Baseline Conditions, respectively. As shown, for Existing Conditions 14 of the 26 roadway segments operate at LOS E or F and for 2040 Baseline conditions 18 segments operate at LOS E and F.

Table 1: Existing Conditions Operations Assessment – Project Corridor

City	Nearest Cross-Street	Postmile	Classification	No of Lanes	Capacity*	Existing Conditions		
						AADT	V/C	LOS
Huntington Beach	SR-1	0	Major	6	56,300	29,400	0.52	A
	Adams Avenue	1.63	Major	6	56,300	42,600	0.76	C
	Ellis Avenue	3.12	Major	6	56,300	65,100	1.16	F
	Talbert Avenue	3.611	Principal	8	75,000	66,500	0.89	D
	Slater Avenue	4.131	Principal	8	75,000	69,600	0.93	E
	Warner Avenue	4.631	Principal	8	75,000	71,900	0.96	E
	I-405	5.8	Principal	8	75,000	83,600	1.11	F
Westminster	Bolsa Avenue	6.63	Principal	8	75,000	77,500	1.03	F
	Westminster Avenue	7.634	Principal	8	75,000	74,500	0.99	E
	SR-22	8.478	Principal	8	75,000	74,600	0.99	E

City	Nearest Cross-Street	Postmile	Classification	No of Lanes	Capacity*	Existing Conditions		
						AADT	V/C	LOS
Stanton	Lampson Avenue	9.171	Principal	8	75,000	77,600	1.03	F
	Chapman Avenue	9.671	Principal	8	75,000	71,500	0.95	E
	Katella Avenue	10.66	Principal	8	75,000	64,600	0.86	D
	Cerritos Avenue	11.181	Principal	8	75,000	65,200	0.87	D
Anaheim	Ball Road	11.681	Principal	8	75,000	62,500	0.83	D
	Lincoln Avenue	12.685	Principal	8	75,000	66,700	0.89	D
Buena Park	SR-91	14.378	Major	6	56,300	57,800	1.03	F
	I-5	15.07	Major	6	56,300	57,800	1.03	F
	Auto Center Drive	15.15	Major	6	56,300	57,600	1.02	F
	Artesia Boulevard	15.573	Major	6	56,300	60,700	1.08	F
	Stage Road	16.13	Major	6	56,300	66,400	1.18	F
	La Mirada Boulevard	16.38	Major	6	56,300	48,600	0.86	D
La Mirada	Rosecrans Avenue	17.34	Major	6	56,300	44,000	0.78	C
La Habra	SR-90	19.168	Major	6	56,300	48,800	0.87	D
	Lambert Road	19.671	Major	6	56,300	34,700	0.62	B
	SR-72	20.719	Major	6	56,300	39,700	0.71	C

Rounded to the nearest 100

*Capacity defined as the volume associated with LOS E as defined by OCTA MPAH Table A-4-1: Arterial Highways MPAH Capacity Values

Table 2: 2040 Baseline Conditions Operations Assessment – Project Corridor

City	Nearest Cross-Street	Postmile	Classification	No of Lanes	Capacity*	Future 2040 Conditions		
						AADT	V/C	LOS
	SR-1	0	Major	6	56,300	29,600	0.53	A

City	Nearest Cross-Street	Postmile	Classification	No of Lanes	Capacity*	Future 2040 Conditions		
						AADT	V/C	LOS
Huntington Beach	Adams Avenue	1.63	Major	6	56,300	46,700	0.83	D
	Ellis Avenue	3.12	Major	6	56,300	66,800	1.19	F
	Talbert Avenue	3.611	Principal	8	75,000	68,200	0.91	E
	Slater Avenue	4.131	Principal	8	75,000	71,300	0.95	E
	Warner Avenue	4.631	Principal	8	75,000	72,800	0.97	E
	I-405	5.8	Principal	8	75,000	85,800	1.14	F
Westminster	Bolsa Avenue	6.63	Principal	8	75,000	78,100	1.04	F
	Westminster Avenue	7.634	Principal	8	75,000	75,100	1.00	F
	SR-22	8.478	Principal	8	75,000	75,400	1.01	F
Stanton	Lampson Avenue	9.171	Principal	8	75,000	78,200	1.04	F
	Chapman Avenue	9.671	Principal	8	75,000	72,100	0.96	E
	Katella Avenue	10.66	Principal	8	75,000	65,400	0.87	D
	Cerritos Avenue	11.181	Principal	8	75,000	67,100	0.89	D
Anaheim	Ball Road	11.681	Principal	8	75,000	64,800	0.86	D
	Lincoln Avenue	12.685	Principal	8	75,000	76,200	1.02	F
Buena Park	SR-91	14.378	Major	6	56,300	63,300	1.12	F
	I-5	15.07	Major	6	56,300	60,600	1.08	F
	Auto Center Drive	15.15	Major	6	56,300	59,300	1.05	F
	Artesia Boulevard	15.573	Major	6	56,300	62,800	1.12	F
	Stage Road	16.13	Major	6	56,300	67,800	1.20	F
	La Mirada Boulevard	16.38	Major	6	56,300	53,700	0.95	E

City	Nearest Cross-Street	Postmile	Classification	No of Lanes	Capacity*	Future 2040 Conditions		
						AADT	V/C	LOS
La Mirada	Rosecrans Avenue	17.34	Major	6	56,300	48,100	0.85	D
La Habra	SR-90	19.168	Major	6	56,300	58,300	1.04	F
	Lambert Road	19.671	Major	6	56,300	39,300	0.70	B
	SR-72	20.719	Major	6	56,300	49,400	0.88	D

Rounded to the nearest 100

*Capacity defined as the volume associated with LOS E as defined by OCTA MPAH Table A-4-1: Arterial Highways MPAH Capacity Values

The effect of the diversion of trips was assessed for the “West” and “East” parallel corridors. In particular, the West Parallel Corridor consisted as the major roadways of Goldenwest Street, Knott Street and Santa Gertrudes Avenue; the East Parallel Corridor consisted of the major roadways of Magnolia Street and Gilbert Street, and the minor roadway of Idaho Street.

As shown in Table 3, all study segments along the West Parallel Corridor would operate at LOS B or better under 2040 Baseline conditions. As shown in Table 4, all study segments along the East Parallel Corridor would operate at LOS D or better under 2040 Baseline conditions, with the exception of a portion of Westminster Avenue within the City of Westminster.

Table 3: 2040 Baseline Conditions Operations Assessment – West Parallel Corridor

City	Nearest Cross-Street	Classification	No of Lanes	Capacity ¹	2040 Plan A Conditions		
					ADT ²	V/C	LOS
Huntington Beach	Ellis Avenue	Primary	6	56,300	9,500	0.17	A
	Warner Avenue	Primary	6	56,300	18,700	0.33	A
Westminster	Westminster Avenue	Primary	6	56,300	29,300	0.52	A
	SR-22	Primary	6	56,300	15,600	0.28	A
Stanton	Lampson Avenue	Primary	6	56,300	29,600	0.53	A
	Katella Avenue	Primary	4	37,500	23,300	0.62	B
Anaheim	Ball Road	Primary	4	37,500	21,400	0.57	A
	Lincoln Avenue	Primary	5	46,900	29,100	0.62	B
Buena Park	SR-91	Primary	6	56,300	15,600	0.28	A

City	Nearest Cross-Street	Classification	No of Lanes	Capacity ¹	2040 Plan A Conditions		
					ADT ²	V/C	LOS
	La Mirada Boulevard	Primary ²	4	37,500	25,600	0.68	B
La Habra	SR-90	Primary ²	4	37,500	18,700	0.50	A
	SR-72	Primary ²	4	37,500	9,000	0.24	A

Rounded to the nearest 100

West Parallel Corridor = Goldenwest Street, Knott Street, Santa Gertrudes Avenue

1: Capacity defined as the volume associated with LOS E as defined by OCTA MPAH Table A-4-1: Arterial Highways MPAH Capacity Values

2: Existing AADT was not available; ADT data provided is directly reported from OCTAM and used to provide a general gauge of operations along the corridor.

3: Santa Gertrudes Avenue is outside of the County of Orange and therefore does not have a classification in the OCTA MPAH document. The facility operates similar to other Primary Arterial facilities and so classification and their corresponding capacities were assigned accordingly.

Table 4: 2040 Baseline Conditions Operations Assessment – East Parallel Corridor

City	Nearest Cross-Street	Classification	No of Lanes	Capacity ¹	2040 Plan A Conditions		
					ADT ²	V/C	LOS
Huntington Beach	Ellis Avenue	Primary	6	56,300	21,100	0.37	A
	Warner Avenue	Primary	6	56,300	24,600	0.44	A
Westminster	Westminster Avenue	Primary	6	56,300	52,000	0.92	E
	SR-22	Primary	6	56,300	17,000	0.30	A
Stanton	Lampson Avenue	Primary	6	56,300	15,000	0.27	A
	Katella Avenue	Primary	4	37,500	18,500	0.49	A
Anaheim	Ball Road	Primary	4	37,500	19,800	0.53	A
	Lincoln Avenue	Primary	4	37,500	22,700	0.61	B
Buena Park	SR-91	Primary	6	56,300	23,700	0.42	A
	La Mirada Boulevard	Primary	4	37,500	13,400	0.36	A
La Habra	SR-90	Secondary	4	37,500	10,300	0.27	A
	SR-72	Secondary	2	12,500	11,200	0.90	D

Rounded to the nearest 100

East Parallel Corridor = Magnolia Street, Gilbert Street, Idaho Street

1: Capacity defined as the volume associated with LOS E as defined by OCTA MPAH Table A-4-1: Arterial Highways MPAH Capacity Values

2: Existing AADT was not available; ADT data provided is directly reported from OCTAM and used to provide a general gauge of operations along the corridor.

3: Santa Gertrudes Avenue is outside of the County of Orange and therefore does not have a classification in the OCTA MPAH document. The facility operates similar to other Primary Arterial facilities and so classification and their corresponding capacities were assigned accordingly.

Lane Reduction Concept Plan A

Lane Reduction Concept Plan A would reduce the segments that have four travel lanes in each direction (generally Ellis Avenue to SR-91) to three lanes in each direction. The 2040 Plan A volumes along the Project Corridor and the corresponding LOS are presented in Table 5 below. As shown in Table 5, 21 of the 26 segments would operate at LOS E or F with Plan A. Specially, the LOS for following segments of the Project Corridor would deteriorate to LOS E or F with the implementation of Lane Reduction Concept Plan A:

- Katella Avenue
- Cerritos Avenue
- Ball Road

Table 5: 2040 Plan A Conditions Operations Assessment – Project Corridor

City	Nearest Cross-Street	Postmile	Classification	No of Lanes	Capacity*	2040 Plan A Conditions		
						ADT	V/C	LOS
Huntington Beach	SR-1	0	Major	6	56,300	28,900	0.51	A
	Adams Avenue	1.63	Major	6	56,300	45,900	0.82	D
	Ellis Avenue	3.12	Major	6	56,300	61,200	1.09	F
	Talbert Avenue	3.611	Principal	8	75,000	61,600	1.09	F
	Slater Avenue	4.131	Principal	8	75,000	64,100	1.14	F
	Warner Avenue	4.631	Principal	8	75,000	64,600	1.15	F
	I-405	5.8	Principal	8	75,000	76,400	1.36	F
Westminster	Bolsa Avenue	6.63	Principal	8	75,000	70,100	1.25	F
	Westminster Avenue	7.634	Principal	8	75,000	68,500	1.22	F
	SR-22	8.478	Principal	8	75,000	72,200	1.28	F
Stanton	Lampson Avenue	9.171	Principal	8	75,000	78,000	1.39	F
	Chapman Avenue	9.671	Principal	8	75,000	71,800	1.28	F
	Katella Avenue	10.66	Principal	8	75,000	65,200	1.16	F

City	Nearest Cross-Street	Postmile	Classification	No of Lanes	Capacity*	2040 Plan A Conditions		
						ADT	V/C	LOS
	Cerritos Avenue	11.181	Principal	8	75,000	67,000	1.19	F
Anaheim	Ball Road	11.681	Principal	8	75,000	64,700	1.15	F
	Lincoln Avenue	12.685	Principal	8	75,000	76,000	1.35	F
Buena Park	SR-91	14.378	Major	6	56,300	63,400	1.13	F
	I-5	15.07	Major	6	56,300	60,800	1.08	F
	Auto Center Drive	15.15	Major	6	56,300	59,600	1.06	F
	Artesia Boulevard	15.573	Major	6	56,300	62,900	1.12	F
	Stage Road	16.13	Major	6	56,300	67,800	1.20	F
	La Mirada Boulevard	16.38	Major	6	56,300	53,600	0.95	E
La Mirada	Rosecrans Avenue	17.34	Major	6	56,300	48,100	0.85	D
La Habra	SR-90	19.168	Major	6	56,300	58,700	1.04	F
	Lambert Road	19.671	Major	6	56,300	39,200	0.70	B
	SR-72	20.719	Major	6	56,300	49,400	0.88	D

Rounded to the nearest 100

* Capacity defined as the volume associated with LOS E as defined by OCTA MPAH Table A-4-1: Arterial Highways MPAH Capacity Values

The 2040 Plan A volumes for the West and East Parallel Corridors and the corresponding LOS are presented in Table 6 and 7, respectively. As shown in Table 6, all study segments along the West Parallel Corridor would continue to operate at LOS B or better with Plan A. For the East Parallel Corridor, all study segments would continue to operate at LOS D or better, and the Westminster Avenue segment would continue to operate at LOS E with a small increase in the V/C ratio.

Table 6: 2040 Plan A Conditions Operations Assessment – West Parallel Corridor

City	Nearest Cross-Street	Classification	No of Lanes	Capacity ¹	2040 Plan A Conditions		
					ADT ²	V/C	LOS
Huntington Beach	Ellis Avenue	Primary	6	56,300	10,300	0.18	A

City	Nearest Cross-Street	Classification	No of Lanes	Capacity ¹	2040 Plan A Conditions		
					ADT ²	V/C	LOS
	Warner Avenue	Primary	6	56,300	20,600	0.37	A
Westminster	Westminster Avenue	Primary	6	56,300	30,600	0.54	A
	SR-22	Primary	6	56,300	16,100	0.29	A
Stanton	Lampson Avenue	Primary	6	56,300	29,700	0.53	A
	Katella Avenue	Primary	4	37,500	23,400	0.62	B
Anaheim	Ball Road	Primary	4	37,500	21,400	0.57	A
	Lincoln Avenue	Primary	5	46,900	29,000	0.62	B
Buena Park	SR-91	Primary	6	56,300	15,600	0.28	A
	La Mirada Boulevard	Primary ²	4	37,500	25,600	0.68	B
La Habra	SR-90	Primary ²	4	37,500	18,700	0.50	A
	SR-72	Primary ²	4	37,500	9,000	0.24	A

Rounded to the nearest 100

West Parallel Corridor = Goldenwest Street, Knott Street, Santa Gertrudes Avenue

1: LOS E as defined by OCTA MPAH Table A-4-1: Arterial Highways MPAH Capacity Values

2: Existing AADT was not available; ADT data provided is directly reported from OCTAM and used to provide a general gauge of operations along the corridor.

3: Santa Gertrudes Avenue is outside of the County of Orange and therefore does not have a classification in the OCTA MPAH document. The facility operates similar to other Primary Arterial facilities and so classification and their corresponding capacities were assigned accordingly.

Table 7: 2040 Plan A Conditions Operations Assessment – East Parallel Corridor

City	Nearest Cross-Street	Classification	No of Lanes	Capacity ¹	2040 Plan A Conditions		
					ADT ²	V/C	LOS
Huntington Beach	Ellis Avenue	Primary	6	56,300	22,000	0.39	A
	Warner Avenue	Primary	6	56,300	25,400	0.45	A
Westminster	Westminster Avenue	Primary	6	56,300	52,500	0.93	E
	SR-22	Primary	6	56,300	16,900	0.30	A
Stanton	Lampson Avenue	Primary	6	56,300	14,900	0.26	A
	Katella Avenue	Primary	4	37,500	18,500	0.49	A
Anaheim	Ball Road	Primary	4	37,500	19,800	0.53	A

City	Nearest Cross-Street	Classification	No of Lanes	Capacity ¹	2040 Plan A Conditions		
					ADT ²	V/C	LOS
	Lincoln Avenue	Primary	4	37,500	22,700	0.61	B
Buena Park	SR-91	Primary	6	56,300	23,600	0.42	A
	La Mirada Boulevard	Primary	4	37,500	13,300	0.35	A
La Habra	SR-90	Secondary	4	37,500	10,300	0.27	A
	SR-72	Secondary	2	12,500	11,200	0.90	D

Rounded to the nearest 100

East Parallel Corridor = Magnolia Street, Gilbert Street, Idaho Street

1: Capacity defined as the volume associated with LOS E as defined by OCTA MPAH Table A-4-1: Arterial Highways MPAH Capacity Values

2: Existing AADT was not available therefore the ADT data provided is directly reported from OCTAM and used to provide a general gauge of operations along the corridor.

3: Please note that Santa Gertrudes Avenue is outside of the County of Orange and therefore does not have a classification in the OCTA MPAH document. The facility operates similar to other Primary Arterial facilities and so classification and their corresponding capacities were assigned accordingly.

Lane Reduction Concept Plan B

Lane Reduction Concept Plan B would reduce the entire length of Beach Boulevard by one lane in each direction (i.e., the four lane segments would go to three lanes; the three lane segments would go to two lanes). The 2040 Plan B volumes along the Project Corridor and the corresponding LOS are presented in Table 8 below. As shown in Table 8, 25 of the 26 segments along the Project Corridor would operate at LOS E or F. The LOS for following segments would deteriorate to LOS E or F with the implementation of Lane Reduction Concept Plan B:

- Adams Avenue
- Katella Avenue
- Cerritos Avenue
- Ball Road
- Rosecrans Avenue
- Lambert Road
- SR-72

Table 8: 2040 Plan B Conditions Operations Assessment – Project Corridor

City	Nearest Cross-Street	Postmile	Classification	No of Lanes	Capacity*	2040 Plan B Conditions		
						ADT	V/C	LOS
	SR-1	0	Major	4	37,500	28,700	0.77	C

City	Nearest Cross-Street	Postmile	Classification	No of Lanes	Capacity*	2040 Plan B Conditions		
						ADT	V/C	LOS
Huntington Beach	Adams Avenue	1.63	Major	4	37,500	43,000	1.15	F
	Ellis Avenue	3.12	Major	4	37,500	60,800	1.62	F
	Talbert Avenue	3.611	Principal	6	56,300	61,400	1.09	F
	Slater Avenue	4.131	Principal	6	56,300	64,000	1.14	F
	Warner Avenue	4.631	Principal	6	56,300	64,500	1.15	F
	I-405	5.8	Principal	6	56,300	76,300	1.36	F
Westminster	Bolsa Avenue	6.63	Principal	6	56,300	69,800	1.24	F
	Westminster Avenue	7.634	Principal	6	56,300	67,800	1.20	F
	SR-22	8.478	Principal	6	56,300	70,200	1.25	F
Stanton	Lampson Avenue	9.171	Principal	6	56,300	70,400	1.25	F
	Chapman Avenue	9.671	Principal	6	56,300	63,700	1.13	F
	Katella Avenue	10.66	Principal	6	56,300	56,700	1.01	F
	Cerritos Avenue	11.181	Principal	6	56,300	59,000	1.05	F
Anaheim	Ball Road	11.681	Principal	6	56,300	56,800	1.01	F
	Lincoln Avenue	12.685	Principal	6	56,300	70,100	1.25	F
Buena Park	SR-91	14.378	Major	4	37,500	53,000	1.41	F
	I-5	15.07	Major	4	37,500	48,000	1.28	F
	Auto Center Drive	15.15	Major	4	37,500	43,100	1.15	F
	Artesia Boulevard	15.573	Major	4	37,500	47,400	1.26	F
	Stage Road	16.13	Major	4	37,500	54,800	1.46	F
	La Mirada Boulevard	16.38	Major	4	37,500	45,400	1.21	F

City	Nearest Cross-Street	Postmile	Classification	No of Lanes	Capacity*	2040 Plan B Conditions		
						ADT	V/C	LOS
La Mirada	Rosecrans Avenue	17.34	Major	4	37,500	41,100	1.10	F
La Habra	SR-90	19.168	Major	4	37,500	54,600	1.46	F
	Lambert Road	19.671	Major	4	37,500	36,000	0.96	E
	SR-72	20.719	Major	4	37,500	48,100	1.28	F

Rounded to the nearest 100

* Capacity defined as the volume associated with LOS E as defined by OCTA MPAH Table A-4-1: Arterial Highways MPAH Capacity Values

The 2040 Plan B volumes for the West and East Parallel Corridors and the corresponding LOS are presented in Table 9 and 10, respectively. As shown in Table 9, all study segments along the West Parallel Corridor would continue to operate at LOS B or better. For the East Parallel Corridor, all study segments would continue to operate at LOS D or better with the exception of the following location:

- Westminster Avenue (continues to operate at LOS E with a small increase in the V/C ratio)
- SR-72

Table 9: 2040 Plan A Conditions Operations Assessment – West Parallel Corridor

City	Nearest Cross-Street	Classification	No of Lanes	Capacity ¹	2040 Plan A Conditions		
					ADT ²	V/C	LOS
Huntington Beach	Ellis Avenue	Primary	6	56,300	10,300	0.18	A
	Warner Avenue	Primary	6	56,300	20,700	0.37	A
Westminster	Westminster Avenue	Primary	6	56,300	30,300	0.54	A
	SR-22	Primary	6	56,300	16,300	0.29	A
Stanton	Lampson Avenue	Primary	6	56,300	30,500	0.54	A
	Katella Avenue	Primary	4	37,500	23,600	0.63	B
Anaheim	Ball Road	Primary	4	37,500	21,900	0.58	A
	Lincoln Avenue	Primary	5	46,900	29,200	0.62	B
Buena Park	SR-91	Primary	6	56,300	16,400	0.29	A
	La Mirada Boulevard	Primary ²	4	37,500	26,100	0.70	B
La Habra	SR-90	Primary ²	4	37,500	18,200	0.49	A
	SR-72	Primary ²	4	37,500	8,700	0.23	A

Rounded to the nearest 100

West Parallel Corridor = Goldenwest Street, Knott Street, Santa Gertrudes Avenue

1: Capacity defined as the volume associated with LOS E as defined by OCTA MPAH Table A-4-1: Arterial Highways MPAH Capacity Values

2: Existing AADT was not available therefore the ADT data provided is directly reported from OCTAM and used to provide a general gauge of operations along the corridor.

3: Santa Gertrudes Avenue is outside of the County of Orange and therefore does not have a classification in the OCTA MPAH document. The facility operates similar to other Primary Arterial facilities and so classification and their corresponding capacities were assigned accordingly.

Table 10: 2040 Plan A Conditions Operations Assessment – East Parallel Corridor

City	Nearest Cross-Street	Classification	No of Lanes	Capacity ¹	2040 Plan A Conditions		
					ADT ²	V/C	LOS
Huntington Beach	Ellis Avenue	Primary	6	56,300	22,000	0.39	A
	Warner Avenue	Primary	6	56,300	25,500	0.45	A
Westminster	Westminster Avenue	Primary	6	56,300	53,300	0.95	E
	SR-22	Primary	6	56,300	17,100	0.30	A
Stanton	Lampson Avenue	Primary	6	56,300	15,500	0.28	A
	Katella Avenue	Primary	4	37,500	19,100	0.51	A
Anaheim	Ball Road	Primary	4	37,500	20,500	0.55	A
	Lincoln Avenue	Primary	4	37,500	23,300	0.62	B
Buena Park	SR-91	Primary	6	56,300	24,100	0.43	A
	La Mirada Boulevard	Primary	4	37,500	14,700	0.39	A
La Habra	SR-90	Secondary	4	37,500	11,200	0.30	A
	SR-72	Secondary	2	12,500	11,300	0.90	E

Rounded to the nearest 100

East Parallel Corridor = Magnolia Street, Gilbert Street, Idaho Street

1: Capacity defined as the volume associated with LOS E as defined by OCTA MPAH Table A-4-1: Arterial Highways MPAH Capacity Values

2: Existing AADT was not available therefore the ADT data provided is directly reported from OCTAM and used to provide a general gauge of operations along the corridor.

3: Please note that Santa Gertrudes Avenue is outside of the County of Orange and therefore does not have a classification in the OCTA MPAH document. The facility operates similar to other Primary Arterial facilities and so classification and their corresponding capacities were assigned accordingly.

Summary of Assessment

Table 11 provides a summary of the levels of service for the Project Corridor. Overall, of the 26 study segments evaluated in this assessment, 14 segments are failing during Existing Conditions and four

additional locations were projected to fail with the forecasted growth in the region, for a total of 18 segments failing during 2040 Baseline Conditions.

With the implementation of Lane Reduction Concept Plan A, three additional segments in the center of the Project Corridor (milepost 10.6 to 11.6) would fail. The shift in traffic from the Project Corridor under Plan A, however, would not significantly affect operations along the West or East Parallel Corridors.

With the implementation of Lane Reduction Concept Plan B, seven additional segments along the Project Corridor would fail. The shift in traffic from the Project Corridor under Plan B would significantly affect operations along the East Parallel Corridor in the northern end of the study area at SR-72 (two-lane segment on Idaho Street).

Table 11: Summary of Operations – Project Corridor

City	Nearest Cross-Street	Existing LOS	2040 Base LOS	Plan A LOS	Plan B Base LOS
Huntington Beach	SR-1	A	A	A	C
	Adams Avenue	C	D	D	F
	Ellis Avenue	F	F	F	F
	Talbert Avenue	D	E	F	F
	Slater Avenue	E	E	F	F
	Warner Avenue	E	E	F	F
	I-405	F	F	F	F
Westminster	Bolsa Avenue	F	F	F	F
	Westminster Avenue	E	F	F	F
	SR-22	E	F	F	F
Stanton	Lampson Avenue	F	F	F	F
	Chapman Avenue	E	E	F	F
	Katella Avenue	D	D	F	F
	Cerritos Avenue	D	D	F	F
Anaheim	Ball Road	D	D	F	F
	Lincoln Avenue	D	F	F	F
Buena Park	SR-91	F	F	F	F
	I-5	F	F	F	F
	Auto Center Drive	F	F	F	F

City	Nearest Cross-Street	Existing LOS	2040 Base LOS	Plan A LOS	Plan B Base LOS
	Artesia Boulevard	F	F	F	F
	Stage Road	F	F	F	F
	La Mirada Boulevard	D	E	E	F
La Mirada	Rosecrans Avenue	C	D	D	F
La Habra	SR-90	D	F	F	F
	Lambert Road	B	B	B	E
	SR-72	C	D	D	F