

## 2.2.7 Transportation

### 2.2.7.1 Regulatory Setting

This section discusses effects to transportation and circulation resulting from the Project, both during construction (construction impacts) and after completion of the Project (long-term or operational impacts).

Effects to transportation are analyzed differently under the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). This section of the document focuses on travel forecasting required by federal laws related to the general design of Federal-aid highways and interstate facilities (23 United States Code [USC] 109), as well as regulations related to air quality conformity (40 Code of Federal Regulations [CFR] 93). The method of forecasting included in this section relies on travel demand models to predict future traffic data which includes vehicle speed, volume, and mix (i.e., passenger cars vs. light and heavy-duty trucks, etc.), which are then used as inputs to air quality conformity modeling required by the Federal Clean Air Act and the Federal Highway Administration's (FHWA's) Traffic Noise Model for the noise analysis performed under 23 CFR 772.

The California Department of Transportation (Caltrans) CEQA analysis may use a travel-demand model and/or the National Center for Sustainable Transportation induced-travel calculator, depending upon the specifics of a project. Vehicle miles traveled (VMT) is the metric used to evaluate CEQA transportation impacts. Caltrans transportation analysis under CEQA and the transportation analysis framework provides guidance for evaluating VMT impacts on state highway facilities. In general, the potential for a significant transportation impact under CEQA is based on the measurable and substantial increase in VMT resulting from induced vehicle travel in the study area. Per 2019 State CEQA Guidelines Section 15064.3, a significant transportation impact is driven by an increase in VMT. The guidelines state that "transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less-than-significant transportation impact." For more information on the CEQA analysis, please see the CEQA Evaluation chapter of this document.

Please note that recreational trails, such as equestrian trails, are covered in the Parks and Recreational Facilities section of the document.

Caltrans, as assigned by FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of Federal-aid highway projects (see 23 USC 217). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

Accessibility in federally assisted programs is governed by the U.S. Department of Transportation regulations (49 CFR 27) implementing Section 504 of the Rehabilitation Act (29 USC 794). The FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act, including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the Americans with Disabilities Act (ADA) requirements to federal-aid projects, including Transportation Enhancement Activities.

### **2.2.7.2 Affected Environment**

This section is based on the Final Traffic Operations Analysis Report (TOAR) (Caltrans 2026a), and the Supplemental Community Impact Assessment (Caltrans 2026b) for the Project.

#### ***Existing Facilities***

The Interstate (I-) 5/EI Toro Road Interchange configuration is a mix of loop and direct ramp configurations: the southeast quadrant contains a direct exit off-ramp from northbound (NB) I-5 to EI Toro Road and a loop on-ramp from a controlled intersection at EI Toro Road to NB I-5; the northeast quadrant contains a direct on-ramp from EI Toro Road to NB I-5; the southwest quadrant contains a direct on-ramp from EI Toro Road to southbound (SB) I-5; and the northwest quadrant contains a hook ramp off-ramp from SB I-5 to Avenida De la Carlota and a hook ramp on-ramp from Avenida De la Carlota to the SB I-5. All ramp termini incorporate controlled free-right movements.

Within the Project limits, I-5 serves the cities of Laguna Hills, Laguna Woods, and Lake Forest. I-5 connects to the southern terminus of I-405 2 miles north of the Project limits. In addition, there are two toll roads in the vicinity that connect to I-5: State Route (SR) 133 and SR 73. SR 133 is approximately 4 miles north of the Project limits, and SR 73 is approximately 6 miles south of the Project limits.

The I-5/EI Toro Road Interchange serves as the primary access point to I-5 for adjacent cities and is also one of the main interchanges providing access to the adjacent retirement community of Laguna Woods (formerly known as Leisure World). The interchange will also serve as the primary access point to the Village at Laguna Hills, which is an approximately 68-acre mixed-use development approved by the City of Laguna Hills in 2022. Other land uses within and adjacent to the Project limits include residential, recreational, commercial, and educational. High demand coupled with short spacing between adjacent local intersections have resulted in heavy traffic congestion during the weekday peak hours, weekends, and holidays.

The I-5 corridor serves as a vital north-south link throughout the state and provides for the interregional, interstate, and international movement of goods and vehicles from the Mexican border south of San Diego to the Oregon state line. It is the major link between San Diego, Orange, and Los Angeles Counties.

In the vicinity of the I-5/El Toro Road Interchange, I-5 has five existing general-purpose (GP) lanes, an auxiliary lane, and one High-Occupancy Vehicle (HOV) lane in the NB direction. A second HOV lane picks up just north of the interchange. In the SB direction, the existing configuration includes five GP lanes, one auxiliary lane, and two HOV lanes that merge into one just south of the El Toro Road Undercrossing. The outside shoulder varies from 10 feet to 18 feet, and there is a retaining wall separating I-5 from the adjacent westerly frontage road, Avenida de la Carlota. Along I-5, existing soundwalls are generally located throughout the Project limits in the NB direction and north of El Toro Road in the SB direction.

Sidewalks and pedestrian facilities, including crosswalks, are provided at the El Toro Road/Bridger Road and El Toro Road/Avenida de la Carlota intersections. Dedicated bicycle lanes are not provided through the interchange.

### **Existing Traffic Volumes, Operations, and Demand**

The freeway mainline study area includes the I-5 freeway mainline segments and ramps between Lake Forest Drive and Alicia Parkway in both the NB and SB directions, which are shown in Table 2.2.7-1. The existing traffic volumes are also presented in Table 2.2.7-1. This table provides information on the existing traffic volumes during the AM and PM peak hours on the I-5 mainline, ramps, and local intersections.

**Table 2.2.7-1. Existing Traffic Volumes**

| Roadway      | Count Location                                                                                                | Existing Conditions<br>Peak Hour (2023) |        |
|--------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------|
|              |                                                                                                               | AM                                      | PM     |
| I-5 Mainline |                                                                                                               |                                         |        |
| Northbound   | Alicia Parkway on-ramp to El Toro Road off-ramp                                                               | 10,129                                  | 8,284  |
|              | El Toro Road off-ramp to EB El Toro Road loop on-ramp                                                         | 9,429                                   | 7,500  |
|              | EB El Toro Road loop on-ramp to WB El Toro Road loop on-ramp                                                  | 10,014                                  | 8,104  |
|              | WB El Toro Road loop on-ramp to Lake Forest Drive off-ramp                                                    | 10,864                                  | 8,634  |
| Southbound   | Lake Forest Drive on-ramp to Avenida de la Carlota/Paseo de Valencia hook off-ramp                            | 9,630                                   | 10,196 |
|              | Avenida de la Carlota/Paseo de Valencia hook off-ramp to Avenida de la Carlota/Paseo de Valencia hook on-ramp | 8,119                                   | 8,655  |
|              | Avenida de la Carlota/Paseo de Valencia hook on-ramp to El Toro Road on-ramp                                  | 8,615                                   | 9,239  |
|              | El Toro Road on-ramp to Alicia Parkway off-ramp                                                               | 8,821                                   | 9,303  |

| Roadway                                        | Count Location                                        | Existing Conditions<br>Peak Hour (2023) |       |
|------------------------------------------------|-------------------------------------------------------|-----------------------------------------|-------|
|                                                |                                                       | AM                                      | PM    |
| Ramps                                          |                                                       |                                         |       |
| Northbound                                     | El Toro Road off-ramp                                 | 700                                     | 785   |
|                                                | EB El Toro Road loop on-ramp                          | 585                                     | 780   |
|                                                | WB El Toro Road loop on-ramp                          | 850                                     | 530   |
| Southbound                                     | Lake Forest Drive on-ramp                             | 165                                     | 316   |
|                                                | Avenida de la Carlota/Paseo de Valencia hook off-ramp | 1,510                                   | 1,125 |
|                                                | Avenida de la Carlota/Paseo de Valencia hook on-ramp  | 495                                     | 585   |
|                                                | El Toro Road on-ramp                                  | 270                                     | 195   |
| Intersections                                  |                                                       |                                         |       |
| Paseo de Valencia/I-5 SB Ramps                 | Avenida de la Carlota                                 | 2,650                                   | 2,775 |
| Avenida de la Carlota                          | El Toro Road                                          | 3,600                                   | 4,330 |
| Bridger Road/I-5 NB Ramps                      | El Toro Road                                          | 4,205                                   | 4,695 |
| Rockfield Blvd                                 | El Toro Road                                          | 4,160                                   | 4,820 |
| Paseo de Valencia                              | El Toro Road                                          | 3,155                                   | 3,475 |
| Swartz Drive                                   | El Toro Road                                          | 3,235                                   | 3,535 |
| Plaza Lane/Laguna Hills Development Driveway   | Avenida de la Carlota                                 | 870                                     | 1,290 |
| Orchard Lane/Laguna Hills Development Driveway | Rockfield Boulevard                                   | 1,460                                   | 1,865 |
| Landisview Avenue                              | Rockfield Boulevard                                   | 1,495                                   | 1,530 |
| Oak Village Driveway 2                         | Avenida de la Carlota                                 | 695                                     | 1,055 |
| Avenida de la Carlota                          | Los Alisos Boulevard                                  | 2,390                                   | 2,780 |
| Rockfield Boulevard                            | Los Alisos Boulevard                                  | 2,940                                   | 3,125 |

Source: Caltrans 2026a.

EB = eastbound

Peak hour volumes are based on vehicles per hour. As shown, traffic volumes along the I-5 mainline are generally directional, where NB AM peak hour volumes are higher than NB PM peak hour volumes. The reciprocal occurs in the SB direction. Traffic volumes at various local arterials adjacent to the I-5/El Toro Road Interchange generally experience slightly higher PM peak hour volumes than during the AM peak hour. With respect to ramp volumes, AM peak hour volumes are higher at the westbound (WB) El Toro Road loop on-ramp, Avenida de la Carlota/Paseo de Valencia hook off-ramp, and El Toro Road on-ramp; PM peak hour volumes are higher at the remaining ramps.

Forecast traffic volumes with and without the Build Alternatives (including Design Variation: Build Alternative 1a) in 2035 and 2055 are discussed in detail in Section

2.2.7.3, *Environmental Consequences*, in the subsections titled *Build Alternatives* and *No-Build Alternative*.

### **Intersection Operations Analysis: Level of Service**

The Synchro software (version 12), along with the companion SimTraffic tool, was used for the intersection analysis. For the analysis, the Synchro software was the primary software and methodology of use to determine intersection delay and level of service (LOS). However, considering that the study area is prone to high congestion, supplemental evaluations to determine the 95<sup>th</sup> percentile queue was done using SimTraffic software. The Synchro traffic software is preloaded with the Highway Capacity Manual (HCM [sixth edition]) methodologies for signalized, unsignalized, and roundabout intersections. Traffic analysis reports and summaries were based on direct output from these integrated software functions.

The LOS criteria are provided in Table 2.2.7-2 (HCM [sixth edition]). For all study intersections, the LOS calculation was based on delay and LOS.

**Table 2.2.7-2. Intersection Level of Service Thresholds**

| Level of Service | Description                                                                                                                                                                                                                                                                           | HCM                         |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
|                  |                                                                                                                                                                                                                                                                                       | Average Delay (sec/del/veh) |
| A                | Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.                                                                                                                       | 0.0–10.0                    |
| B                | Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.                                                     | 10.1–20.0                   |
| C                | Good operation. Occasionally drivers may have to wait more than 60 seconds, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted.                                                                                                                   | 20.1–35.0                   |
| D                | Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.                                                                                                                                               | 35.1–55.0                   |
| E                | Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.                                                                                                                                             | 55.1–80.0                   |
| F <sup>2</sup>   | Forced flow. Represents jammed conditions. Backups form locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop-and-go-type traffic flow. | >80.0                       |

Source: Transportation Research Board 2016.

sec/del/veh = seconds of delay per vehicle; v/c = volume-to-capacity ratio

Existing Year 2023 AM and PM peak hour operating conditions for the study intersections are summarized in Table 2.2.7-3. Three of the 12 intersections are

currently operating at LOS E or worse during the AM peak hour. During the PM peak hour, two of the 12 intersections are currently operating at LOS E. All other study intersections are operating at LOS D or better during the peak hours.

**Table 2.2.7-3. Existing 2023 Conditions LOS Summary**

| #  | Intersection                                                       | Intersection Control | Existing 2023   |                 |                 |                 |
|----|--------------------------------------------------------------------|----------------------|-----------------|-----------------|-----------------|-----------------|
|    |                                                                    |                      | AM              |                 | PM              |                 |
|    |                                                                    |                      | Delay (seconds) | LOS             | Delay (seconds) | LOS             |
| 1  | Paseo de Valencia/I-5 SB Ramps/Avenida de la Carlota               | Signalized           | 57.2            | <b>E</b>        | 56.3            | <b>E</b>        |
| 2  | Avenida de la Carlota/El Toro Road                                 | Signalized           | 32.6            | C               | 48.4            | D               |
| 3  | Bridger Road/I-5 NB Ramps/El Toro Road                             | Signalized           | 120.3           | <b>F</b>        | 31.2            | C               |
| 4  | Rockfield Blvd/El Toro Road                                        | Signalized           | 54.7            | D               | 43.4            | D               |
| 5  | Paseo de Valencia/El Toro Road                                     | Signalized           | 40.2            | D               | 41.8            | D               |
| 6  | Swartz Drive/El Toro Road                                          | Unsignalized         | -- <sup>1</sup> | -- <sup>1</sup> | -- <sup>1</sup> | -- <sup>1</sup> |
| 7  | Plaza Lane/Laguna Hills Development Driveway/Avenida de la Carlota | Signalized           | 21.0            | C               | 18.7            | B               |
| 8  | Orchard Lane/Laguna Hills Development Driveway/Rockfield Boulevard | Signalized           | 13.5            | B               | 27.7            | C               |
| 9  | Landisview Avenue/Rockfield Boulevard                              | Signalized           | 20.8            | C               | 15.6            | B               |
| 10 | Oak Village Driveway 2/Avenida de la Carlota                       | Signalized           | 14.0            | B               | 15.7            | B               |
| 11 | Avenida de la Carlota/Los Alisos Boulevard                         | Signalized           | 25.0            | C               | 41.0            | D               |
| 12 | Rockfield Boulevard/Los Alisos Boulevard                           | Signalized           | 82.4            | <b>F</b>        | 66.3            | <b>E</b>        |

Source: Caltrans 2026a.

**Bold** indicates LOS E or worse.

<sup>1</sup> HCM 6<sup>th</sup> Edition does not support more than three “through” lanes on major-street approach.

### **Intersection Queuing Analysis**

Network queues from SimTraffic were reported for each intersection approach, in feet, and compared to the current or proposed queue storage, as applicable, to determine the queues for each approach. The queue lengths were compared to the distance to the upstream intersection. Excess queues beyond the available storage were converted to the number of vehicles using 29 feet per vehicle (per the Caltrans Ramp Metering Design Manual, October 2022).

Table 2.2.7-4 is a comparison of the average and 95<sup>th</sup> percentile queues (queues occurring one of every 20 cycles) to the current available storage lengths for each

intersection approach for existing conditions. The table includes the number of vehicles that extend beyond the upstream intersection (excess vehicles). As shown in the table, based on the 95<sup>th</sup> percentile queues, there is one approach during the AM peak hour and four approaches during the PM peak hour with two to six vehicles extending beyond the upstream intersection. For other intersection approaches, the queues do not extend beyond the upstream intersection. On average, there is only one intersection approach with two vehicles extending beyond the upstream intersection.

**Table 2.2.7-4. Existing 2023 Conditions LOS Summary**

| # | Intersection                                         | Approach      | Available Storage (feet) | Existing 2023        |     |                    |                    |                                                        |       |                    |                    |
|---|------------------------------------------------------|---------------|--------------------------|----------------------|-----|--------------------|--------------------|--------------------------------------------------------|-------|--------------------|--------------------|
|   |                                                      |               |                          | Average Queue (feet) |     |                    |                    | 95 <sup>th</sup> Percentile (feet)<br>(1 of 20 cycles) |       |                    |                    |
|   |                                                      |               |                          | AM                   | PM  | AM Excess Vehicles | PM Excess Vehicles | AM                                                     | PM    | AM Excess Vehicles | PM Excess Vehicles |
| 1 | Paseo de Valencia/I-5 SB Ramps/Avenida de la Carlota | EB            | 1,125                    | 67                   | 47  | --                 | --                 | 110                                                    | 89    | --                 | --                 |
|   |                                                      | WB (off-ramp) | 1,050                    | 221                  | 559 | --                 | --                 | 418                                                    | 1,096 | --                 | 2                  |
|   |                                                      | NB            | 1,000                    | 121                  | 121 | --                 | --                 | 214                                                    | 235   | --                 | --                 |
|   |                                                      | SB            | 1,900                    | 75                   | 223 | --                 | --                 | 147                                                    | 434   | --                 | --                 |
| 2 | Avenida de la Carlota/EI Toro Road                   | EB            | 550                      | 31                   | 515 | --                 | --                 | 80                                                     | 680   | --                 | 5                  |
|   |                                                      | WB            | 650                      | 74                   | 106 | --                 | --                 | 177                                                    | 250   | --                 | --                 |
|   |                                                      | NB            | 450                      | 77                   | 130 | --                 | --                 | 140                                                    | 208   | --                 | --                 |
|   |                                                      | SB            | 1,000                    | 199                  | 316 | --                 | --                 | 279                                                    | 506   | --                 | --                 |
| 3 | Bridger Road/I-5 NB Ramps/EI Toro Road               | EB            | 650                      | 318                  | 697 | --                 | 2                  | 573                                                    | 822   | --                 | 6                  |
|   |                                                      | WB            | 800                      | 225                  | 174 | --                 | --                 | 510                                                    | 376   | --                 | --                 |
|   |                                                      | NB (off-ramp) | 1,200                    | 249                  | 238 | --                 | --                 | 384                                                    | 347   | --                 | --                 |
|   |                                                      | SB            | 650                      | 92                   | 78  | --                 | --                 | 148                                                    | 129   | --                 | --                 |
| 4 | Rockfield Blvd/EI Toro Road                          | EB            | 800                      | 175                  | 231 | --                 | --                 | 261                                                    | 315   | --                 | --                 |
|   |                                                      | WB            | 700                      | 405                  | 313 | --                 | --                 | 548                                                    | 451   | --                 | --                 |
|   |                                                      | NB            | 450                      | 179                  | 185 | --                 | --                 | 333                                                    | 355   | --                 | --                 |
|   |                                                      | SB            | 450                      | 80                   | 181 | --                 | --                 | 138                                                    | 294   | --                 | --                 |
| 5 | Paseo de Valencia/EI Toro Road                       | EB            | 1,500                    | 191                  | 361 | --                 | --                 | 272                                                    | 533   | --                 | --                 |
|   |                                                      | WB            | 650                      | 122                  | 98  | --                 | --                 | 179                                                    | 174   | --                 | --                 |
|   |                                                      | NB            | 900                      | 152                  | 212 | --                 | --                 | 228                                                    | 309   | --                 | --                 |
|   |                                                      | SB            | 1,125                    | 266                  | 193 | --                 | --                 | 401                                                    | 293   | --                 | --                 |

| #  | Intersection                                                           | Approach | Available Storage (feet) | Existing 2023        |     |                    |                    |                                                        |      |                    |                    |
|----|------------------------------------------------------------------------|----------|--------------------------|----------------------|-----|--------------------|--------------------|--------------------------------------------------------|------|--------------------|--------------------|
|    |                                                                        |          |                          | Average Queue (feet) |     |                    |                    | 95 <sup>th</sup> Percentile (feet)<br>(1 of 20 cycles) |      |                    |                    |
|    |                                                                        |          |                          | AM                   | PM  | AM Excess Vehicles | PM Excess Vehicles | AM                                                     | PM   | AM Excess Vehicles | PM Excess Vehicles |
| 7  | Plaza Lane/Laguna Hills Development Driveway/<br>Avenida de la Carlota | EB       | 400                      | 18                   | 102 | --                 | --                 | 46                                                     | 181  | --                 | --                 |
|    |                                                                        | WB       | 75                       | 4                    | 23  | --                 | --                 | 20                                                     | 56   | --                 | --                 |
|    |                                                                        | NB       | 2,100                    | 19                   | 51  | --                 | --                 | 70                                                     | 109  | --                 | --                 |
|    |                                                                        | SB       | 450                      | 16                   | 83  | --                 | --                 | 66                                                     | 197  | --                 | --                 |
| 8  | Orchard Lane/Laguna Hills Development Driveway/Rockfield Boulevard     | WB       | 200                      | 48                   | 82  | --                 | --                 | 92                                                     | 140  | --                 | --                 |
|    |                                                                        | NB       | 1,150                    | 44                   | 88  | --                 | --                 | 103                                                    | 153  | --                 | --                 |
|    |                                                                        | SB       | 450                      | 52                   | 97  | --                 | --                 | 123                                                    | 179  | --                 | --                 |
| 9  | Landisview Avenue/<br>Rockfield Boulevard                              | EB       | 125                      | 55                   | 56  | --                 | --                 | 99                                                     | 108  | --                 | --                 |
|    |                                                                        | WB       | 125                      | 110                  | 32  | --                 | --                 | 164                                                    | 72   | 2                  | --                 |
|    |                                                                        | NB       | 1,300                    | 90                   | 57  | --                 | --                 | 165                                                    | 116  | --                 | --                 |
|    |                                                                        | SB       | 1,150                    | 43                   | 50  | --                 | --                 | 95                                                     | 122  | --                 | --                 |
| 10 | Oak Village Driveway 2/<br>Avenida de la Carlota                       | EB       | 125                      | 45                   | 59  | --                 | --                 | 88                                                     | 113  | --                 | --                 |
|    |                                                                        | NB       | 1,125                    | 0                    | 0   | --                 | --                 | 0                                                      | 0    | --                 | --                 |
|    |                                                                        | SB       | 2,100                    | 37                   | 51  | --                 | --                 | 79                                                     | 100  | --                 | --                 |
| 11 | Avenida de la Carlota/<br>Los Alisos Boulevard                         | EB       | 1,350                    | 19                   | 50  | --                 | --                 | 61                                                     | 122  | --                 | --                 |
|    |                                                                        | WB       | 2,400                    | 216                  | 205 | --                 | --                 | 369                                                    | 351  | --                 | --                 |
|    |                                                                        | NB       | 100                      | 284                  | 238 | --                 | --                 | 434                                                    | 384  | --                 | --                 |
|    |                                                                        | SB       | 1,125                    | 56                   | 47  | --                 | --                 | 106                                                    | 98   | --                 | --                 |
| 12 | Rockfield Boulevard/Los Alisos Boulevard                               | EB       | 2,400                    | 140                  | 162 | --                 | --                 | 208                                                    | 239  | --                 | --                 |
|    |                                                                        | WB       | 1,900                    | 67                   | 47  | --                 | --                 | 110                                                    | 89   | --                 | --                 |
|    |                                                                        | NB       | 250                      | 221                  | 559 | --                 | --                 | 418                                                    | 1096 | --                 | 2                  |
|    |                                                                        | SB       | 1,300                    | 121                  | 121 | --                 | --                 | 214                                                    | 235  | --                 | --                 |

Source: Caltrans 2026a.

EB = eastbound

### **Freeway Traffic Operations Analysis**

The Highway Capacity Software was used for the freeway analysis. The software is preloaded with HCM methodologies for freeway mainline segments (basic and weaving segments) and the freeway ramp junctions (merge and diverge). Density (passenger cars per mile per lane) and LOS were reported per the HCM (sixth edition) function for freeway basic segment, weaving segment, ramp merge, and ramp diverge.

Freeway traffic flow can be defined in terms of LOS. For freeways, there are six defined LOS, ranging from LOS A to LOS F. LOS A represents free traffic flow with low traffic volumes and high speeds, and LOS F represents traffic volumes that exceed the facility capacity and result in forced flow operations at low speeds, as shown in Table 2.2.7-5.

**Table 2.2.7-5. Freeway Segment Level of Service Thresholds**

| Level of Service | Description                                                                                                                                                                                       | Density (pc/mi/ln) <sup>1</sup>        |                         |                                        |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-------------------------|----------------------------------------|
|                  |                                                                                                                                                                                                   | Basic                                  | Merge and Diverge       | Weave                                  |
| A                | Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.                                                                        | ≤ 11                                   | < 10                    | ≤ 10                                   |
| B                | Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.                                                                                     | > 11 to 18                             | > 10 to 20              | > 10 to 20                             |
| C                | Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. | > 18 to 26                             | > 20 to 28              | > 20 to 28                             |
| D                | Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.     | > 26 to 35                             | > 28 to 35              | > 28 to 35                             |
| E                | Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing.         | > 35 to 45                             | > 35                    | > 35 to 43                             |
| F                | Represents a breakdown in flow.                                                                                                                                                                   | Demand Exceeds Capacity OR Density >45 | Demand Exceeds Capacity | Demand Exceeds Capacity OR Density >43 |

Source: Transportation Research Board 2016

<sup>1</sup> Density is reported in number of passenger cars per mile per lane (pc/mi/ln); ≤ = less than or equal to; > = greater than.

Existing Year 2023 AM and PM peak hour operating conditions for the I-5 mainline and ramps in the study area are summarized in Table 2.2.7-6. All the mainline and ramp segments are currently operating at LOS D or better during the AM and PM peak hours. Operations may be constrained by downstream bottlenecks on the freeway or ramp terminal intersections, but these factors are not included in the HCM segment analysis.

**Table 2.2.7-6. Existing 2023 Freeway Traffic Operations**

| # | I-5 Direction | Location                                                                           | Type              | Existing 2023 AM |         |     |                  |         |     | Existing 2023 PM |         |     |                  |         |     |
|---|---------------|------------------------------------------------------------------------------------|-------------------|------------------|---------|-----|------------------|---------|-----|------------------|---------|-----|------------------|---------|-----|
|   |               |                                                                                    |                   | HOV              |         |     | GP+Aux           |         |     | HOV              |         |     | GP+Aux           |         |     |
|   |               |                                                                                    |                   | v/c              | Density | LOS | v/c <sup>1</sup> | Density | LOS | v/c              | Density | LOS | v/c <sup>1</sup> | Density | LOS |
| 1 | NB            | Alicia Parkway on-ramp to El Toro Road off-ramp                                    | mainline          | 0.83             | 22.4    | C   | 0.95             | 28.2    | D   | 0.63             | 15.9    | B   | 0.6              | 23.5    | C   |
| 2 | NB            | El Toro Road off-ramp                                                              | ramp <sup>3</sup> | --               | --      | --  | --               | --      | --  | --               | --      | --  | --               | --      | --  |
| 3 | NB            | El Toro Road off-ramp to EB El Toro Road loop on-ramp                              | mainline          | 0.9              | 25.1    | C   | 0.74             | 25.9    | C   | 0.64             | 15.9    | B   | 0.64             | 21.3    | C   |
| 4 | NB            | EB El Toro Road loop on-ramp                                                       | ramp              | --               | --      | --  | 0.79/<br>0.30    | 27.5    | C   | --               | --      | --  | 0.71/<br>0.42    | 26.7    | C   |
| 5 | NB            | EB El Toro Road loop on-ramp to WB El Toro Road loop on-ramp                       | mainline          | 0.96             | 28.1    | D   | 0.79             | 28.8    | D   | 0.71             | 18.3    | C   | 0.69             | 23.7    | C   |
| 6 | NB            | WB El Toro Road loop on-ramp                                                       | ramp              | --               | --      | --  | 0.87/<br>0.48    | 26      | C   | --               | --      | --  | 0.71/<br>0.32    | 19.4    | B   |
| 7 | NB            | WB El Toro Road loop on-ramp to Lake Forest Drive off-ramp                         | mainline          | 0.5              | 13      | B   | 0.71             | 24.5    | C   | 0.44             | 11.2    | B   | 0.59             | 19.3    | C   |
| 8 | SB            | Lake Forest Drive on-ramp                                                          | ramp <sup>2</sup> | --               | --      | --  | --               | --      | --  | --               | --      | --  | --               | --      | --  |
| 9 | SB            | Lake Forest Drive on-ramp to Avenida de la Carlota/Paseo de Valencia hook off-ramp | mainline          | 0.47             | 12      | B   | 0.76             | 23      | C   | 0.61             | 16.7    | B   | 0.65             | 23.4    | C   |

| #  | I-5 Direction | Location                                                                                                      | Type              | Existing 2023 AM |         |     |                  |         |     | Existing 2023 PM |         |     |                  |         |     |
|----|---------------|---------------------------------------------------------------------------------------------------------------|-------------------|------------------|---------|-----|------------------|---------|-----|------------------|---------|-----|------------------|---------|-----|
|    |               |                                                                                                               |                   | HOV              |         |     | GP+Aux           |         |     | HOV              |         |     | GP+Aux           |         |     |
|    |               |                                                                                                               |                   | v/c              | Density | LOS | v/c <sup>1</sup> | Density | LOS | v/c              | Density | LOS | v/c <sup>1</sup> | Density | LOS |
| 10 | SB            | Avenida de la Carlota/Paseo de Valencia hook off-ramp                                                         | ramp <sup>3</sup> | --               | --      | --  | --               | --      | --  | --               | --      | --  | --               | --      | --  |
| 11 | SB            | Avenida de la Carlota/Paseo de Valencia hook off-ramp to Avenida de la Carlota/Paseo de Valencia hook on-ramp | mainline          | 0.31             | 7.3     | A   | 0.68             | 23      | C   | 0.5              | 12.1    | B   | 0.67             | 22.5    | C   |
| 12 | SB            | Avenida de la Carlota/Paseo de Valencia hook on-ramp                                                          | ramp              | --               | --      | --  | 0.72/<br>0.26    | 24.9    | C   | --               | --      | --  | 0.72/<br>0.31    | 25.3    | C   |
| 13 | SB            | Avenida de la Carlota/Paseo de Valencia hook on-ramp to El Toro Road on-ramp                                  | mainline          | 0.29             | 7.1     | A   | 0.73             | 25.4    | C   | 0.45             | 11.4    | B   | 0.74             | 25.8    | C   |
| 14 | SB            | El Toro Road on-ramp                                                                                          | ramp <sup>2</sup> | --               | --      | --  | --               | --      | --  | --               | --      | --  | --               | --      | --  |
| 15 | SB            | El Toro Road on-ramp to Alicia Parkway off-ramp                                                               | mainline          | 0.59             | 14.5    | B   | 0.86             | 23.4    | C   | 0.9              | 25.4    | C   | 0.81             | 23      | C   |

Source: Caltrans 2026a.

<sup>1</sup> For ramp locations, two volume-to-capacity (v/c) ratios are provided. First v/c ratio is for the freeway mainline and second v/c ratio is for the ramp.

<sup>2</sup> On-ramp density, LOS, and v/c ratio are not provided because ramp operation is part of the weaving analysis for the downstream mainline segment. See downstream mainline segment analysis.

<sup>3</sup> Off-ramp density, LOS, and v/c ratio are not provided because ramp operation is part of the weaving analysis for the upstream mainline segment. See upstream mainline segment analysis.

EB = eastbound

### ***Future Forecasting Methodology***

Future 2035 and 2055 No-Build Alternative traffic volumes were developed by applying an annual traffic volume percent change to the existing traffic volumes (0.47 percent during the AM peak and 0.56 percent during the PM peak) and adjusted to include traffic volumes for the major redevelopment projects within the study area. The annual traffic volume percent change was derived from the Orange County Transportation Authority's Orange County Transportation Analysis Model Travel Demand Forecast Model. The major redevelopment project included in the No-Build Alternative is the Village at Laguna Hills Project, at the southwest corner of the El Toro Road and Avenida de la Carlota intersection in Laguna Hills.

For Build Alternative 1, traffic volumes were reassigned manually. The reassignment of traffic was based on the current vehicle origin-destination information for the I-5 SB off-ramp to Avenida de la Carlota/El Toro Road and the I-5 SB on-ramp from El Toro Road, engineering judgment, proposed lane geometrics, and the proposed signage for the I-5 SB off-ramp to El Toro Road. For Build Alternative 3, the traffic volumes for the study intersections were assumed to be the same as for the No-Build Alternative.

Additional information on the development of the future forecast is provided in the TOAR (Caltrans 2026a).

### ***Pedestrian and Bicycle Facilities***

Pedestrian travel within the Project limits is currently provided via sidewalks at the following roadway street/arterials:

- El Toro Road
- Paseo de Valencia
- Avenida de la Carlota
- Bridger Road
- Rockfield Boulevard

These arterials include sidewalks on at least one side of the road segments and include crosswalks, pedestrian crossing signage, ADA curb ramps with truncated domes, and lighting. Of these local roadways, Class II on-street bicycle lanes are currently available along Paseo de Valencia (0.3 mile west of the SB on-ramps) and Rockfield Boulevard (0.25 mile east of the NB I-5 off-ramp). Bicyclists can travel underneath the El Toro Road undercrossing, regardless of the provision of designated bicycle lanes.

According to the cities of Lake Forest, Laguna Hills, and Laguna Woods Bicycle Master Plans, there are no future planned bicycle facilities for Class II connectivity to transect the I-5/El Toro Road Interchange; however, the Orange County Transportation Authority's District 5 Bikeway Strategy Report (OCTA 2015), Corridor C proposes a regional 15.3-mile bikeway corridor that would extend from Alicia Parkway in Rancho Santa Margarita to Paseo de Valencia, to El Toro Road, then along SR 133 and ending

at Pacific Coast Highway in Laguna Beach. The proposed bikeway is south of the Paseo de Colinas/El Toro Road intersection, southerly of the Project limits.

The Aliso Creek Bikeway, a Class I (off-street) bike path, is within 1 mile south of the Project limits.

### **2.2.7.3 Environmental Consequences**

This section presents traffic analysis results for each Build Alternative under construction (i.e., temporary) and long-term operational conditions. Construction information is provided in the Project Report, while operational analysis is supported by the TOAR. The LOS analysis in this section is used to support planning and policy consistency and the NEPA analysis; VMT is the metric used to determine CEQA significance. The VMT analysis is provided in Chapter 3.

The TOAR (Caltrans 2026a) considered existing conditions, conditions under the No-Build Alternative (in both 2035 and 2055), Build Alternative 1 and its design variation (Build Alternative 1a), and Build Alternative 3 for 2035 and 2055:

- Existing Conditions (2023)
- No-Build Conditions (2035 and 2055): The No-Build Alternative functions as the baseline and would leave the interchange in its current configuration.
- Alternative 1 Braided Ramps with Transportation System Management (TSM)/Transportation Demand Management (TDM) (Opening Year 2035 and Design Year 2055)
  - Build Alternative 1a: the addition of a new public street entering the Village of Laguna Hills development at the new SB I-5/Avenida de la Carlota ramp terminal intersection south of El Toro Road
- Alternative 3 TSM/TDM (Opening Year 2035 and Design Year 2055)

### ***Build Alternatives***

#### **Temporary Impacts**

##### ***Build Alternative 1***

Construction of Build Alternative 1 would result in temporary impacts on traffic circulation and pedestrian and bicycle access on and in the vicinity of the Project segment of I-5. Those impacts would include short-term closures of mainline, ramp, and arterial facilities as described in the following sections.

Build Alternative 1 is proposed to be constructed in three preliminary stages as discussed below. Stage 1 would involve:

- Construction of a new alignment of Avenida de la Carlota south of El Toro Road, including proposed SB hook on- and off-ramp terminus
- Construction of I-5 SB off-ramp bridge columns and abutments

- Installation of a temporary barrier system along the SB mainline shoulder
- Restriping of SB I-5/EI Toro Road hook off-ramp
- Construction of new retaining wall with soundwall, including necessary on-ramp facilities, along the NB I-5 on-ramp from WB EI Toro Road

Stage 2 would involve:

- Construction of I-5 SB off-ramp bridge
- Construction of retaining walls along the proposed I-5 SB hook on-ramp from Avenida de la Carlota
- Lengthening of the NB I-5 on-ramp from WB EI Toro Road to merge with the NB I-5 mainline
- Widening of EI Toro Road west of EI Toro Road/Avenida de la Carlota intersection to accommodate additional right-turn lane

Stage 3 would involve:

- Completion of I-5 SB off-ramp bridge
- Completion of extension of NB I-5 on-ramp from WB EI Toro Road
- Completion of right-turn lane on EI Toro Road
- Construction and completion of I-5 SB hook on-ramp from Avenida de la Carlota

Construction of Build Alternative 1 is anticipated to take 2.5 to 3 years. Temporary closures of the I-5 mainline, interchange ramps, and local arterials would be limited to overnight (between 10:00 p.m. and 5:00 p.m.) closures.

In addition, the following temporary modifications to the existing freeway mainline, connector and ramp facilities, and arterial streets in the construction zone could be implemented during construction of Build Alternative 1:

- Temporary lane closures and lane narrowing on the freeway mainline, ramps, and local arterials
- Temporary full closures of freeway mainline segments and ramps, as needed
- Temporary vehicle detour routes to accommodate full freeway mainline and ramp closures
- Temporary pedestrian and bicycle detours, as needed to maintain safety and ADA compliance
- Temporary speed reductions through construction areas

These temporary modifications would allow for traffic to pass through the Project limits along I-5, the ramps, and the arterials, but those travelers would be expected to experience some delays as they travel on those facilities.

The proposed temporary closures of, and modifications to, the freeway and local arterials and the potential effects of those closures and modifications under Build Alternative 1 are described further in the following sections.

#### Temporary Mainline, Ramp, or Local Arterials Closures

Construction activities are anticipated to occur primarily during overnight hours, where feasible, to minimize traffic disruptions. It is anticipated that most temporary closures of the I-5 mainline, ramps, or local arterials would occur primarily during overnight hours, where feasible. A Transportation Management Plan (TMP), including construction staging, traffic control, and detour details, will be developed during final design in coordination with Caltrans and affected local jurisdictions, as part of **PF-TRA-1**. Final timing of closures will be determined during the final design phase of the Project as part of the TMP.

Preliminary detour routes include the following:

- For the SB Avenida de la Carlota closure, vehicles could take either:
  - WB El Toro Road to SB Paseo de Valencia to eastbound (EB) Los Alisos Boulevard where Avenida de la Carlota terminates
  - EB El Toro Road to NB Paseo de Valencia to WB Los Alisos Boulevard where Avenida de la Carlota terminates
- For the NB I-5 on-ramp from WB El Toro Road closure, vehicles could take:
  - NB Rockfield Boulevard to WB Lake Forest Drive to NB I-5 on-ramp
- For the SB I-5 hook off-ramp closure
  - I-5 Alicia Parkway off-ramp

#### Pedestrian and Bicycle Facilities

Construction of Build Alternative 1 would result in the following temporary closures of pedestrian and bicycle facilities:

- The crosswalk on the south side of the Avenida de la Carlota/El Toro Road intersection would be temporarily closed. Pedestrians and bicyclists would be routed to the crosswalk on the north side of the intersection.
- The crosswalk on the west side of the Avenida de la Carlota/El Toro Road intersection would be temporarily closed. Pedestrians and bicyclists would be routed to the crosswalk on the west side of the Regional Center/El Toro Road intersection.
- The crosswalk on the north side of the Avenida de la Carlota/El Toro Road intersection would be temporarily closed. Pedestrians and bicyclists would be routed to the crosswalk on the south side of the intersection.

### ***Design Variation: Build Alternative 1a***

Temporary impacts of Build Alternative 1a would be the same as the impacts described for Build Alternative 1, including those impacts described for pedestrian and bicycle facilities and temporary mainline, ramp, or local arterials closures.

### ***Build Alternative 3***

Build Alternative 3 does not include any physical or geometric improvements and therefore would not include construction activities on the I-5 mainline, ramp, or arterial facilities. As such, there would be no temporary impacts under Build Alternative 3.

### **Permanent Impacts**

The following tables provide detailed information of the traffic operations for existing conditions, No-Build 2035 and 2055; Opening Year 2035; and Future Year 2055.

- Table 2.2.7-7: This table provides the Existing (2023) and No-Build conditions at Opening Year 2035 and Future Year 2055 LOS for AM and PM peak hours on NB and SB I-5 mainline segments; on- and off-ramps at El Toro Road, Lake Forest Drive, and Avenida de la Carlota/Paseo de Valencia; and at 12 intersections immediately adjacent to El Toro Road.
- Table 2.2.7-8: This table provides Opening Year 2035 AM and PM peak hour LOS for all Build Alternatives and evaluates NB and SB lanes of the I-5 mainline; on- and off-ramps at El Toro Road, Lake Forest Drive, and Avenida de la Carlota/Paseo de Valencia; and at 12 intersections immediately adjacent to El Toro Road.
- Table 2.2.7-9: This table provides Future Year 2055 AM and PM peak hour LOS for all Build Alternatives and evaluates NB and SB lanes of the I-5 mainline; on- and off-ramps at El Toro Road, Lake Forest Drive, and Avenida de la Carlota/Paseo de Valencia; and at 12 intersections immediately adjacent to El Toro Road.

As noted above, 2035 represents the Project's opening year and 2055 represents the Project's build-out year. The traffic operations under the Build and No-Build Alternatives in 2035 and 2055 are discussed by alternative below.

Table 2.2.7-7. Existing (2023)/No Build (2035/2055): Mainline, Ramps, Intersection Volumes, and Level of Service

| Roadway                        | Count Location                                                                                                | Existing Volumes (2023) |        | Existing LOS (2023) |                 | Opening Year (2035) No-Build Volumes |        | Opening Year (2035) No-Build LOS |                 | Future (2055) No-Build Volumes |        | Future (2055) No-Build LOS |                 |
|--------------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------|--------|---------------------|-----------------|--------------------------------------|--------|----------------------------------|-----------------|--------------------------------|--------|----------------------------|-----------------|
|                                |                                                                                                               | AM                      | PM     | AM                  | PM              | AM                                   | PM     | AM                               | PM              | AM                             | PM     | AM                         | PM              |
| I-5 Mainline <sup>1</sup>      |                                                                                                               |                         |        |                     |                 |                                      |        |                                  |                 |                                |        |                            |                 |
| Northbound                     | Alicia Parkway on-ramp to El Toro Road off-ramp                                                               | 10,129                  | 8,284  | D                   | C               | 10,935                               | 9,146  | F                                | F               | 12,008                         | 10,234 | F                          | F               |
|                                | El Toro Road off-ramp to EB El Toro Road loop on-ramp                                                         | 9,429                   | 7,500  | C                   | C               | 9,975                                | 8,023  | C                                | C               | 10,954                         | 8,978  | D                          | C               |
|                                | EB El Toro Road loop on-ramp to WB El Toro Road loop on-ramp                                                  | 10,014                  | 8,104  | D                   | C               | 10,834                               | 9,334  | D                                | D               | 11,898                         | 10,445 | E                          | D               |
|                                | WB El Toro Road loop on-ramp to Lake Forest Drive off-ramp                                                    | 10,864                  | 8,634  | C                   | C               | 11,755                               | 9,975  | D                                | C               | 12,909                         | 11,162 | D                          | D               |
| Southbound                     | Lake Forest Drive on-ramp to Avenida de la Carlota/Paseo de Valencia hook off-ramp                            | 9,630                   | 10,196 | C                   | C               | 10,494                               | 11,247 | C                                | C               | 11,524                         | 12,585 | F                          | D               |
|                                | Avenida de la Carlota/Paseo de Valencia hook off-ramp to Avenida de la Carlota/Paseo de Valencia hook on-ramp | 8,119                   | 8,655  | C                   | C               | 8,589                                | 9,704  | C                                | C               | 9,432                          | 10,859 | C                          | D               |
|                                | Avenida de la Carlota/Paseo de Valencia hook on-ramp to El Toro Road on-ramp                                  | 8,615                   | 9,239  | C                   | C               | 9,194                                | 10,491 | C                                | D               | 10,097                         | 11,739 | D                          | E               |
|                                | El Toro Road on-ramp to Alicia Parkway off-ramp                                                               | 8,821                   | 9,303  | C                   | C               | 9,618                                | 10,886 | C                                | D               | 10,562                         | 12,181 | F                          | F               |
| Ramps                          |                                                                                                               |                         |        |                     |                 |                                      |        |                                  |                 |                                |        |                            |                 |
| Northbound                     | El Toro Road off-ramp <sup>2</sup>                                                                            | 700                     | 785    | D                   | C               | 960                                  | 1,123  | F                                | F               | 1,054                          | 1,257  | F                          | F               |
|                                | EB El Toro Road loop on-ramp                                                                                  | 585                     | 780    | C                   | C               | 859                                  | 1,311  | D                                | D               | 943                            | 1,467  | D                          | D               |
|                                | WB El Toro Road loop on-ramp                                                                                  | 850                     | 530    | C                   | B               | 921                                  | 641    | C                                | C               | 1,011                          | 717    | D                          | C               |
| Southbound                     | Lake Forest Drive on-ramp <sup>3</sup>                                                                        | 165                     | 316    | C                   | C               | 175                                  | 338    | C                                | C               | 192                            | 378    | F                          | D               |
|                                | Avenida de la Carlota/Paseo de Valencia hook off-ramp <sup>2</sup>                                            | 1,510                   | 1,125  | C                   | C               | 1,905                                | 1,543  | C                                | C               | 2,092                          | 1,727  | F                          | D               |
|                                | Avenida de la Carlota/Paseo de Valencia hook on-ramp                                                          | 495                     | 585    | C                   | C               | 605                                  | 787    | C                                | D               | 664                            | 881    | D                          | D               |
|                                | El Toro Road on-ramp <sup>3</sup>                                                                             | 270                     | 195    | C                   | C               | 424                                  | 395    | C                                | D               | 466                            | 442    | F                          | F               |
| Intersections                  |                                                                                                               |                         |        |                     |                 |                                      |        |                                  |                 |                                |        |                            |                 |
| Paseo de Valencia/I-5 SB Ramps | Avenida de la Carlota                                                                                         | 2,650                   | 2,775  | E                   | E               | 3,193                                | 3,527  | F                                | E               | 3,506                          | 3,947  | F                          | E               |
| Avenida de la Carlota          | El Toro Road                                                                                                  | 3,600                   | 4,330  | C                   | D               | 4,851                                | 6,239  | D                                | F               | 5,328                          | 6,981  | D                          | F               |
| Bridger Road/I-5 NB Ramps      | El Toro Road                                                                                                  | 4,205                   | 4,695  | F                   | C               | 4,974                                | 5,885  | D                                | C               | 5,463                          | 6,585  | D                          | C               |
| Rockfield Boulevard            | El Toro Road                                                                                                  | 4,160                   | 4,820  | D                   | D               | 4,462                                | 5,253  | E                                | D               | 4,899                          | 5,878  | E                          | D               |
| Paseo de Valencia              | El Toro Road                                                                                                  | 3,155                   | 3,475  | D                   | D               | 3,526                                | 4,008  | D                                | D               | 3,873                          | 4,485  | D                          | D               |
| Swartz Drive                   | El Toro Road                                                                                                  | 3,235                   | 3,535  | -- <sup>4</sup>     | -- <sup>4</sup> | ---                                  | ---    | -- <sup>4</sup>                  | -- <sup>4</sup> | ---                            | ---    | -- <sup>4</sup>            | -- <sup>4</sup> |

| Roadway                                      | Count Location        | Existing Volumes (2023) |       | Existing LOS (2023) |          | Opening Year (2035) No-Build Volumes |       | Opening Year (2035) No-Build LOS |          | Future (2055) No-Build Volumes |       | Future (2055) No-Build LOS |          |
|----------------------------------------------|-----------------------|-------------------------|-------|---------------------|----------|--------------------------------------|-------|----------------------------------|----------|--------------------------------|-------|----------------------------|----------|
|                                              |                       | AM                      | PM    | AM                  | PM       | AM                                   | PM    | AM                               | PM       | AM                             | PM    | AM                         | PM       |
| Plaza Lane/Laguna Hills Development Driveway | Avenida de la Carlota | 870                     | 1,290 | C                   | B        | 1,376                                | 2,167 | C                                | B        | 1,509                          | 2,425 | C                          | B        |
| Orchard Lane                                 | Rockfield Boulevard   | 1,460                   | 1,865 | B                   | C        | 1,546                                | 1,994 | B                                | C        | 1,698                          | 2,232 | B                          | C        |
| Landisview Avenue                            | Rockfield Boulevard   | 1,495                   | 1,530 | C                   | B        | 1,583                                | 1,637 | C                                | B        | 1,740                          | 1,832 | C                          | B        |
| Oak Village Driveway 2                       | Avenida de la Carlota | 695                     | 1,055 | B                   | B        | 772                                  | 1,188 | B                                | B        | 849                            | 1,329 | B                          | B        |
| Avenida de la Carlota                        | Los Alisos Boulevard  | 2,390                   | 2,780 | C                   | D        | 2,565                                | 3,032 | C                                | D        | 2,816                          | 3,394 | C                          | D        |
| Rockfield Boulevard                          | Los Alisos Boulevard  | 2,940                   | 3,125 | <b>F</b>            | <b>E</b> | 3,145                                | 3,400 | <b>F</b>                         | <b>F</b> | 3,453                          | 3,805 | <b>F</b>                   | <b>F</b> |

Source: Caltrans 2026a.

**Bold** indicates LOS E or worse.

<sup>1</sup> GP+Aux LOS for I-5 mainline segments is presented in this table.

<sup>2</sup> Off-ramp density, LOS, and volume-to-capacity (v/c) ratio are not provided because ramp operation is part of the weaving analysis for the upstream mainline segment. See upstream mainline segment analysis.

<sup>3</sup> On-ramp density, LOS, and v/c ratio are not provided because ramp operation is part of the weaving analysis for the downstream mainline segment. See downstream mainline segment analysis.

<sup>4</sup> HCM 6<sup>th</sup> Edition does not support more than three “through” lanes on major-street approach.

Table 2.2.7-8. Opening Year 2035: I-5 Mainline, Ramps, and Intersection Level of Service

| Roadway                        | Count Location                                                                                                | No-Build (2035) LOS        |                 |                            |                 | Build Alternative 1 (2035) LOS |                 |                            |                 | Build Alternative 1a (2035) LOS |                 |                            |                 | Build Alternative 3 (2035) LOS |                 |                            |                 |
|--------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------|-----------------|----------------------------|-----------------|--------------------------------|-----------------|----------------------------|-----------------|---------------------------------|-----------------|----------------------------|-----------------|--------------------------------|-----------------|----------------------------|-----------------|
|                                |                                                                                                               | Den/<br>Delay <sup>1</sup> | AM              | Den/<br>Delay <sup>1</sup> | PM              | Den/<br>Delay <sup>1</sup>     | AM              | Den/<br>Delay <sup>1</sup> | PM              | Den/<br>Delay <sup>1</sup>      | AM              | Den/<br>Delay <sup>1</sup> | PM              | Den/<br>Delay <sup>1</sup>     | AM              | Den/<br>Delay <sup>1</sup> | PM              |
| I-5 Mainline <sup>2</sup>      |                                                                                                               |                            |                 |                            |                 |                                |                 |                            |                 |                                 |                 |                            |                 |                                |                 |                            |                 |
| Northbound                     | Alicia Parkway on-ramp to El Toro Road off-ramp                                                               | --                         | F               | --                         | F               | --                             | F               | --                         | F               | --                              | F               | --                         | F               | --                             | F               | --                         | F               |
|                                | El Toro Road off-ramp to EB El Toro Road loop on-ramp                                                         | 25.5                       | C               | 21.8                       | C               | 25.5                           | C               | 21.8                       | C               | 25.5                            | C               | 21.8                       | C               | 25.5                           | C               | 21.8                       | C               |
|                                | EB El Toro Road loop on-ramp to WB El Toro Road loop on-ramp                                                  | 29.8                       | D               | 27.5                       | D               | 29.8                           | D               | 27.5                       | D               | 29.8                            | D               | 27.5                       | D               | 29.8                           | D               | 27.5                       | D               |
|                                | WB El Toro Road loop on-ramp to Lake Forest Drive off-ramp                                                    | 27.7                       | D               | 25.1                       | C               | 27.7                           | D               | 25.1                       | C               | 27.7                            | D               | 25.1                       | C               | 27.7                           | D               | 25.1                       | C               |
| Southbound                     | Lake Forest Drive on-ramp to Avenida de la Carlota/Paseo de Valencia hook off-ramp                            | 25.4                       | C               | 26.6                       | C               | 25.4                           | C               | 26.6                       | C               | 25.4                            | C               | 26.6                       | C               | 25.4                           | C               | 26.6                       | C               |
|                                | Avenida de la Carlota/Paseo de Valencia hook off-ramp to Avenida de la Carlota/Paseo de Valencia hook on-ramp | 23.4                       | C               | 25.9                       | C               | 23.4                           | C               | 25.9                       | C               | 23.4                            | C               | 25.9                       | C               | 23.4                           | C               | 25.9                       | C               |
|                                | Avenida de la Carlota/Paseo de Valencia hook on-ramp to El Toro Road on-ramp                                  | 25.8                       | C               | 29.1                       | D               | 25.8                           | C               | 29.1                       | D               | 25.8                            | C               | 29.1                       | D               | 25.8                           | C               | 29.1                       | D               |
|                                | El Toro Road on-ramp to Alicia Parkway off-ramp                                                               | 25.3                       | C               | 28.1                       | D               | 25.3                           | C               | 28.1                       | D               | 25.3                            | C               | 28.1                       | D               | 25.3                           | C               | 28.1                       | D               |
| Ramps                          |                                                                                                               |                            |                 |                            |                 |                                |                 |                            |                 |                                 |                 |                            |                 |                                |                 |                            |                 |
| Northbound                     | El Toro Road off-ramp <sup>3</sup>                                                                            | --                         | F               | --                         | F               | --                             | F               | --                         | F               | --                              | F               | --                         | F               | --                             | F               | --                         | F               |
|                                | EB El Toro Road loop on-ramp                                                                                  | 29.4                       | D               | 31.4                       | D               | 29.4                           | D               | 31.4                       | D               | 29.4                            | D               | 31.4                       | D               | 29.4                           | D               | 31.4                       | D               |
|                                | WB El Toro Road loop on-ramp                                                                                  | 27.2                       | C               | 23.7                       | C               | 27.2                           | C               | 23.7                       | C               | 27.2                            | C               | 23.7                       | C               | 27.2                           | C               | 23.7                       | C               |
| Southbound                     | Lake Forest Drive on-ramp <sup>4</sup>                                                                        | --                         | C               | --                         | C               | --                             | C               | --                         | C               | --                              | C               | --                         | C               | --                             | C               | --                         | C               |
|                                | Avenida de la Carlota/Paseo de Valencia hook off-ramp                                                         | --                         | C               | --                         | C               | --                             | C               | --                         | C               | --                              | C               | --                         | C               | --                             | C               | --                         | C               |
|                                | Avenida de la Carlota/Paseo de Valencia hook on-ramp                                                          | 26.0                       | C               | 28.9                       | D               | 26                             | C               | 28.9                       | D               | 26                              | C               | 28.9                       | D               | 26.0                           | C               | 28.9                       | D               |
|                                | El Toro Road on-ramp                                                                                          | --                         | C               | --                         | D               | --                             | C               | --                         | D               | --                              | C               | --                         | D               | --                             | C               | --                         | D               |
| Intersections                  |                                                                                                               |                            |                 |                            |                 |                                |                 |                            |                 |                                 |                 |                            |                 |                                |                 |                            |                 |
| Paseo de Valencia/I-5 SB Ramps | Avenida de la Carlota                                                                                         | 89.1                       | F               | 57.4                       | E               | 51.7                           | D               | 44.6                       | D               | 51.7                            | D               | 44.6                       | D               | 81.1                           | F               | 52.2                       | D               |
| Avenida de la Carlota          | El Toro Road                                                                                                  | 40.2                       | D               | 122.4                      | F               | 45.7                           | D               | 34.7                       | C               | 45.7                            | D               | 34.7                       | C               | 36.6                           | D               | 111.4                      | F               |
| Bridger Road/I-5 NB Ramps      | El Toro Road                                                                                                  | 37.0                       | D               | 24.7                       | C               | 21.3                           | C               | 18.2                       | B               | 21.3                            | C               | 18.2                       | B               | 33.7                           | C               | 22.5                       | C               |
| Rockfield Boulevard            | El Toro Road                                                                                                  | 58.7                       | E               | 47.2                       | D               | 54.8                           | D               | 42.7                       | D               | 54.8                            | D               | 42.7                       | D               | 53.4                           | D               | 43.0                       | D               |
| Paseo de Valencia              | El Toro Road                                                                                                  | 42.3                       | D               | 44.1                       | D               | 38.0                           | D               | 40.7                       | D               | 38.0                            | D               | 40.7                       | D               | 38.5                           | D               | 40.1                       | D               |
| Swartz Drive                   | El Toro Road                                                                                                  | -- <sup>5</sup>            | -- <sup>5</sup> | -- <sup>5</sup>            | -- <sup>5</sup> | -- <sup>5</sup>                | -- <sup>5</sup> | -- <sup>5</sup>            | -- <sup>5</sup> | -- <sup>5</sup>                 | -- <sup>5</sup> | -- <sup>5</sup>            | -- <sup>5</sup> | -- <sup>5</sup>                | -- <sup>5</sup> | -- <sup>5</sup>            | -- <sup>5</sup> |

| Roadway                                                   | Count Location        | No-Build (2035) LOS        |          |                            |          | Build Alternative 1 (2035) LOS |          |                            |          | Build Alternative 1a (2035) LOS |          |                            |          | Build Alternative 3 (2035) LOS |          |                            |          |
|-----------------------------------------------------------|-----------------------|----------------------------|----------|----------------------------|----------|--------------------------------|----------|----------------------------|----------|---------------------------------|----------|----------------------------|----------|--------------------------------|----------|----------------------------|----------|
|                                                           |                       | Den/<br>Delay <sup>1</sup> | AM       | Den/<br>Delay <sup>1</sup> | PM       | Den/<br>Delay <sup>1</sup>     | AM       | Den/<br>Delay <sup>1</sup> | PM       | Den/<br>Delay <sup>1</sup>      | AM       | Den/<br>Delay <sup>1</sup> | PM       | Den/<br>Delay <sup>1</sup>     | AM       | Den/<br>Delay <sup>1</sup> | PM       |
| Plaza Lane/Laguna Hills Development Driveway/I-5 SB Ramps | Avenida de la Carlota | 21.7                       | C        | 14.8                       | B        | 11.6                           | B        | 14.8                       | B        | 25.7                            | C        | 34.2                       | C        | 19.7                           | B        | 13.5                       | B        |
| Orchard Lane                                              | Rockfield Boulevard   | 13.5                       | B        | 26.6                       | C        | 25.8                           | C        | 24.9                       | C        | 25.8                            | C        | 24.9                       | C        | 12.3                           | B        | 24.2                       | C        |
| Landisview Avenue                                         | Rockfield Boulevard   | 21.0                       | C        | 16.3                       | B        | 20.7                           | C        | 13.4                       | B        | 20.7                            | C        | 13.4                       | B        | 19.1                           | B        | 14.8                       | B        |
| Oak Village Driveway 2                                    | Avenida de la Carlota | 13.5                       | B        | 15.5                       | B        | 11.8                           | B        | 15.2                       | B        | 11.8                            | B        | 15.2                       | B        | 12.3                           | B        | 14.1                       | B        |
| Avenida de la Carlota                                     | Los Alisos Boulevard  | 26.1                       | C        | 42.4                       | D        | 38.5                           | D        | 41.3                       | D        | 38.5                            | D        | 41.3                       | D        | 23.8                           | C        | 38.6                       | D        |
| Rockfield Boulevard                                       | Los Alisos Boulevard  | 96.8                       | <b>F</b> | 82.1                       | <b>F</b> | 69.0                           | <b>E</b> | 106.7                      | <b>F</b> | 69.0                            | <b>E</b> | 106.7                      | <b>F</b> | 88.1                           | <b>F</b> | 74.7                       | <b>E</b> |

Source: Caltrans 2026a.

**Bold** indicates LOS E or worse.

<sup>1</sup> Den/Delay = density/delay: Density is calculated for mainline and ramps. Delay is a unit of measurement at intersections.

<sup>2</sup> GP+Aux LOS for I-5 mainline segments is presented in this table.

<sup>3</sup> Off-ramp density, LOS, and volume-to-capacity (v/c) ratio are not provided because ramp operation is part of the weaving analysis for the upstream mainline segment. See upstream mainline segment analysis.

<sup>4</sup> On-ramp density, LOS, and v/c ratio are not provided because ramp operation is part of the weaving analysis for the downstream mainline segment. See downstream mainline segment analysis.

<sup>5</sup> HCM 6<sup>th</sup> Edition does not support more than three “through” lanes on major-street approach.

Table 2.2.7-9. Future Year 2055: I-5 Mainline, Ramps, and Intersection Level of Service

| Roadway                        | Count Location                                                                                                | No-Build (2055) LOS        |                 |                            |                 | Build Alternative 1 (2055) LOS |                 |                            |                 | Build Alternative 1a (2055) LOS |                 |                            |                 | Build Alternative 3 (2055) LOS |                 |                            |                 |
|--------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------|-----------------|----------------------------|-----------------|--------------------------------|-----------------|----------------------------|-----------------|---------------------------------|-----------------|----------------------------|-----------------|--------------------------------|-----------------|----------------------------|-----------------|
|                                |                                                                                                               | Den/<br>Delay <sup>1</sup> | AM              | Den/<br>Delay <sup>1</sup> | PM              | Den/<br>Delay <sup>1</sup>     | AM              | Den/<br>Delay <sup>1</sup> | PM              | Den/<br>Delay <sup>1</sup>      | AM              | Den/<br>Delay <sup>1</sup> | PM              | Den/<br>Delay <sup>1</sup>     | AM              | Den/<br>Delay <sup>1</sup> | PM              |
| I-5 Mainline <sup>2</sup>      |                                                                                                               |                            |                 |                            |                 |                                |                 |                            |                 |                                 |                 |                            |                 |                                |                 |                            |                 |
| Northbound                     | Alicia Parkway on-ramp to El Toro Road off-ramp                                                               | --                         | F               | --                         | F               | --                             | F               | --                         | F               | --                              | F               | --                         | F               | --                             | F               | --                         | F               |
|                                | El Toro Road off-ramp to EB El Toro Road loop on-ramp                                                         | 29.4                       | D               | 25.3                       | C               | 29.4                           | D               | 25.3                       | C               | 29.4                            | D               | 25.3                       | C               | 29.4                           | D               | 25.3                       | C               |
|                                | EB El Toro Road loop on-ramp to WB El Toro Road loop on-ramp                                                  | 35.1                       | E               | 33                         | D               | 35.1                           | E               | 33.1                       | D               | 35.1                            | E               | 33.1                       | D               | 35.1                           | E               | 33                         | D               |
|                                | WB El Toro Road loop on-ramp to Lake Forest Drive off-ramp                                                    | 32.3                       | D               | 29.7                       | D               | 32.3                           | D               | 29.7                       | D               | 32.3                            | D               | 29.7                       | D               | 32.3                           | D               | 29.7                       | D               |
| Southbound                     | Lake Forest Drive on-ramp to Avenida de la Carlota/Paseo de Valencia hook off-ramp                            | --                         | F               | 30.3                       | D               | --                             | F               | 30.3                       | D               | --                              | F               | 30.3                       | D               | --                             | F               | 30.3                       | D               |
|                                | Avenida de la Carlota/Paseo de Valencia hook off-ramp to Avenida de la Carlota/Paseo de Valencia hook on-ramp | 26.7                       | C               | 30.8                       | D               | 26.7                           | C               | 30.8                       | D               | 26.7                            | C               | 30.8                       | D               | 26.7                           | C               | 30.8                       | D               |
|                                | Avenida de la Carlota/Paseo de Valencia hook on-ramp to El Toro Road on-ramp                                  | 29.8                       | D               | 35.4                       | E               | 29.8                           | D               | 35.4                       | E               | 29.8                            | D               | 35.4                       | E               | 29.8                           | D               | 35.4                       | E               |
|                                | El Toro Road on-ramp to Alicia Parkway off-ramp                                                               | --                         | F               | --                         | F               | -                              | F               | -                          | F               | --                              | F               | --                         | F               | --                             | F               | --                         | F               |
| Ramps                          |                                                                                                               |                            |                 |                            |                 |                                |                 |                            |                 |                                 |                 |                            |                 |                                |                 |                            |                 |
| Northbound                     | El Toro Road off-ramp <sup>3</sup>                                                                            | --                         | F               | --                         | F               | --                             | F               | --                         | F               | --                              | F               | --                         | F               | --                             | F               | --                         | F               |
|                                | EB El Toro Road loop on-ramp                                                                                  | 32.8                       | D               | 34.7                       | D               | 32.8                           | D               | 34.7                       | D               | 32.8                            | D               | 34.7                       | D               | 32.8                           | D               | 34.7                       | D               |
|                                | WB El Toro Road loop on-ramp                                                                                  | 30.9                       | D               | 27.8                       | C               | 30.9                           | D               | 27.8                       | C               | 30.9                            | D               | 27.8                       | C               | 30.9                           | D               | 27.8                       | C               |
| Southbound                     | Lake Forest Drive on-ramp <sup>4</sup>                                                                        | --                         | F               | --                         | D               | --                             | F               | --                         | D               | --                              | F               | --                         | D               | --                             | F               | --                         | D               |
|                                | Avenida de la Carlota/Paseo de Valencia hook off-ramp                                                         | --                         | F               | --                         | D               | --                             | F               | --                         | D               | --                              | F               | --                         | D               | --                             | F               | --                         | D               |
|                                | Avenida de la Carlota/Paseo de Valencia hook on-ramp                                                          | 28.5                       | D               | 33                         | D               | 28.5                           | D               | 33                         | D               | 28.5                            | D               | 33                         | D               | 28.5                           | D               | 33                         | D               |
|                                | El Toro Road on-ramp                                                                                          | --                         | F               | --                         | F               | --                             | F               | --                         | F               | --                              | F               | --                         | F               | --                             | F               | --                         | F               |
| Intersections                  |                                                                                                               |                            |                 |                            |                 |                                |                 |                            |                 |                                 |                 |                            |                 |                                |                 |                            |                 |
| Paseo de Valencia/I-5 SB Ramps | Avenida de la Carlota                                                                                         | 113.7                      | F               | 65.9                       | E               | 52.7                           | D               | 45.9                       | D               | 52.7                            | D               | 45.9                       | D               | 103.5                          | F               | 60.0                       | E               |
| Avenida de la Carlota          | El Toro Road                                                                                                  | 42.1                       | D               | 155.5                      | F               | 47.6                           | D               | 38.8                       | D               | 47.6                            | D               | 38.8                       | D               | 38.3                           | D               | 141.5                      | F               |
| Bridger Road/I-5 NB Ramps      | El Toro Road                                                                                                  | 40.3                       | D               | 28.0                       | C               | 23.2                           | C               | 19.8                       | B               | 23.2                            | C               | 19.8                       | B               | 36.7                           | D               | 25.5                       | C               |
| Rockfield Boulevard            | El Toro Road                                                                                                  | 71.1                       | E               | 50.2                       | D               | 67.1                           | E               | 45.1                       | D               | 67.1                            | E               | 45.1                       | D               | 64.7                           | E               | 45.7                       | D               |
| Paseo de Valencia              | El Toro Road                                                                                                  | 44.8                       | D               | 48.2                       | D               | 40.3                           | D               | 42.8                       | D               | 40.3                            | D               | 42.8                       | D               | 40.8                           | D               | 43.9                       | D               |
| Swartz Drive                   | El Toro Road                                                                                                  | -- <sup>5</sup>            | -- <sup>5</sup> | -- <sup>5</sup>            | -- <sup>5</sup> | -- <sup>5</sup>                | -- <sup>5</sup> | -- <sup>5</sup>            | -- <sup>5</sup> | -- <sup>5</sup>                 | -- <sup>5</sup> | -- <sup>5</sup>            | -- <sup>5</sup> | -- <sup>5</sup>                | -- <sup>5</sup> | -- <sup>5</sup>            | -- <sup>5</sup> |

| Roadway                                                   | Count Location        | No-Build (2055) LOS        |          |                            |          | Build Alternative 1 (2055) LOS |          |                            |          | Build Alternative 1a (2055) LOS |          |                            |          | Build Alternative 3 (2055) LOS |          |                            |          |
|-----------------------------------------------------------|-----------------------|----------------------------|----------|----------------------------|----------|--------------------------------|----------|----------------------------|----------|---------------------------------|----------|----------------------------|----------|--------------------------------|----------|----------------------------|----------|
|                                                           |                       | Den/<br>Delay <sup>1</sup> | AM       | Den/<br>Delay <sup>1</sup> | PM       | Den/<br>Delay <sup>1</sup>     | AM       | Den/<br>Delay <sup>1</sup> | PM       | Den/<br>Delay <sup>1</sup>      | AM       | Den/<br>Delay <sup>1</sup> | PM       | Den/<br>Delay <sup>1</sup>     | AM       | Den/<br>Delay <sup>1</sup> | PM       |
| Plaza Lane/Laguna Hills Development Driveway/I-5 SB Ramps | Avenida de la Carlota | 22.5                       | C        | 15.8                       | B        | 11.7                           | B        | 15.7                       | B        | 28.2                            | C        | 39.2                       | D        | 20.5                           | C        | 14.4                       | B        |
| Orchard Lane                                              | Rockfield Boulevard   | 13.9                       | B        | 28.4                       | C        | 12.5                           | B        | 25.7                       | C        | 12.5                            | B        | 25.7                       | C        | 12.6                           | B        | 25.8                       | C        |
| Landisview Avenue                                         | Rockfield Boulevard   | 21.8                       | C        | 17.2                       | B        | 21.6                           | C        | 13.7                       | B        | 21.6                            | C        | 13.7                       | B        | 19.8                           | B        | 15.7                       | B        |
| Oak Village Driveway 2                                    | Avenida de la Carlota | 13.5                       | B        | 15.9                       | B        | 11.9                           | B        | 15.8                       | B        | 11.9                            | B        | 15.8                       | B        | 12.3                           | B        | 14.5                       | B        |
| Avenida de la Carlota                                     | Los Alisos Boulevard  | 26.9                       | C        | 47.5                       | D        | 40.8                           | D        | 44.5                       | D        | 40.8                            | D        | 44.5                       | D        | 24.5                           | C        | 43.2                       | D        |
| Rockfield Boulevard                                       | Los Alisos Boulevard  | 114.1                      | <b>F</b> | 112.8                      | <b>F</b> | 88                             | <b>F</b> | 147                        | <b>F</b> | 88                              | <b>F</b> | 147                        | <b>F</b> | 103.8                          | <b>F</b> | 102.6                      | <b>F</b> |

Source: Caltrans 2026a.

**Bold** indicates LOS E or worse.

<sup>1</sup> Den/Delay = density/delay: Density is calculated for mainline and ramps. Delay is a unit of measurement at intersections.

<sup>2</sup> GP+Aux LOS for I-5 mainline segments is presented in this table.

<sup>3</sup> Off-ramp density, LOS, and volume-to-capacity (v/c) ratio are not provided because ramp operation is part of the weaving analysis for the upstream mainline segment. See upstream mainline segment analysis.

<sup>4</sup> On-ramp density, LOS, and v/c ratio are not provided because ramp operation is part of the weaving analysis for the downstream mainline segment. See downstream mainline segment analysis.

<sup>5</sup> HCM 6<sup>th</sup> Edition does not support more than three “through” lanes on major-street approach.

### ***Build Alternative 1***

The lane configurations along the I-5 freeway mainline and ramp junctions are assumed to be mostly the same between the No-Build Alternative and Build Alternative 1 (for both the base condition and Build Alternative 1a). Build Alternative 1 is proposed to relocate the existing I-5 SB on-ramp from El Toro Road to along Avenida de la Carlota south of El Toro Road. The new SB on-ramp location would combine with the SB braided off-ramp, forming a new ramp terminal intersection along Avenida de la Carlota south of El Toro Road.

Based on the 95<sup>th</sup> percentile queues, the base condition Build Alternative 1 would result in fewer excess vehicles compared to the No-Build Alternative, especially for the existing I-5 SB off-ramp to Avenida de la Carlota north of El Toro Road. Most of the intersection approaches are not expected to have vehicles extend beyond the upstream intersection under Build Alternative 1. There are a few intersection approaches where no more than five excess vehicles are expected to extend beyond the upstream intersection.

In 2035 and 2055, Build Alternative 1 would result in lower intersection delay at most of the study intersections compared to the No-Build Alternative. For the intersection locations where there is an increase in delay, the intersections are expected to operate at the same LOS, or LOS D or better.

#### Opening Year 2035

As shown in Table 2.2.7-8, in 2035 under Build Alternative 1, the following mainline GP segment and ramp are anticipated to operate at LOS F during the AM and PM peak hours. All other mainline and ramp segments are anticipated to operate at LOS D or better during the AM and PM peak hours.

- AM and PM peak hour: NB Alicia Parkway on-ramp to El Toro Road off-ramp
- AM and PM peak hour: NB El Toro Road off-ramp

In comparison to the 2035 No-Build Alternative, Build Alternative 1 mainline and ramp LOS would remain the same in 2035 .

As shown in Table 2.2.7-8, in 2035 under Build Alternative 1, the following intersection is anticipated to operate at LOS E during the AM peak hour and at LOS F or worse during the PM peak hour. All other study intersections are expected to operate at LOS D or better during the peak hours.

- AM and PM peak hour: Los Alisos Boulevard/Rockfield Boulevard

In comparison to the 2035 No-Build Alternative, improved intersection operations would occur at the following intersections:

- Avenida de la Carlota/Paseo de Valencia/I-5 SB ramps (LOS F to LOS D in the AM peak hour and LOS E to LOS D in the PM peak hour)

- El Toro Road/Avenida de la Carlota (LOS F to LOS C in the PM peak hour)
- El Toro Road/Bridger Road/I-5 NB ramps (LOS D to LOS C in the AM peak hour and LOS C to LOS B in the PM peak hour)
- El Toro Road/Rockfield Boulevard (LOS E to LOS D in the AM peak hour)
- Avenida de la Carlota/I-5 SB ramps (LOS C to LOS B in the AM peak hour)
- Los Alisos Boulevard/Rockfield Boulevard (LOS F to LOS E in the AM peak hour)

In comparison to the 2035 No-Build Alternative, LOS at the following intersections would be reduced:

- Rockfield Boulevard/Orchard Lane/(LOS B to LOS C in the AM peak hour)
- Los Alisos Boulevard/Avenida de la Carlota (LOS C to LOS D in the AM peak hour)

#### Future Year 2055

For 2055 under Build Alternative 1, four mainline segments are anticipated to operate at LOS E or worse in either the AM and PM peak hours or both. In addition, four ramp locations would operate at LOS F during AM and/or PM peak hours. All other study segments are anticipated to operate at LOS D or better during the peak hours.

- AM and PM peak hour: NB Alicia Parkway on-ramp to El Toro Road off-ramp
- AM peak hour: EB El Toro Road loop on-ramp to WB El Toro Road loop on-ramp
- AM peak hour: SB Lake Forest Drive on-ramp to Avenida de la Carlota/Paseo de Valencia hook off-ramp
- PM peak hour: SB Avenida de la Carlota/Paseo de Valencia hook on-ramp to El Toro Road on-ramp
- AM and PM peak hour: SB El Toro Road on-ramp to Alicia Parkway off-ramp
- AM and PM peak hour: NB El Toro Road off-ramp
- AM peak hour: SB Lake Forest Drive on-ramp
- AM Peak Hour: SB Avenida de la Carlota/Paseo de Valencia hook off-ramp
- AM and PM peak hour: SB El Toro Road on-ramp

In comparison to the 2055 No-Build Alternative, Build Alternative 1 mainline and ramp LOS would remain the same in 2055.

In 2055 under Build Alternative 1, two intersections are anticipated to operate at LOS E or worse during the AM peak hour and one intersection is anticipated to operate at LOS F or worse during the PM peak hour. All other study intersections are expected to operate at LOS D or better during the peak hours.

- AM peak hour: El Toro Road/Rockfield Boulevard
- AM and PM peak hour: Los Alisos Boulevard/Rockfield Boulevard

In comparison to the 2055 No-Build Alternative, improved intersection operations would occur at the following intersections:

- Avenida de la Carlota (NB)/Paseo de Valencia/I-5 SB ramps (LOS F to LOS D in the AM peak hour and LOS E to LOS D in the PM peak hour)
- El Toro Road/Avenida de la Carlota (LOS F to LOS D in the PM peak hour)
- El Toro Road/Bridger Road/I-5 NB ramps (LOS D to LOS C in the AM peak hour and LOS C to LOS B in the PM peak hour)
- Avenida de la Carlota (NB)/Plaza Lane/Laguna Hill Development Driveway (LOS C to LOS B in the AM peak hour)

In comparison to the 2055 No-Build Alternative, LOS at the following intersection would be reduced:

- Los Alisos Boulevard/Avenida de la Carlota (LOS C to LOS D in the AM peak hour)

#### Traffic Operations Summary

Table 2.2.7-8 and Table 2.2.7-9 provide a summary of mainline, ramp, and intersection LOS for all Build Alternatives in 2035 and 2055.

For I-5 freeway operations under Build Alternative 1 and its design variation (Build Alternative 1a), the I-5 mainline segments (both GP and HOV) and ramps in the NB and SB directions are anticipated to operate at LOS D or better except for three weaving mainline segments (one NB and two SB segments). LOS F is expected in 2055 due to traffic demand exceeding the weaving segment capacity. Freeway traffic operations between Build Alternative 1 and the No-Build Alternative are expected to be generally the same.

For Build Alternative 1, almost all of the study intersections are anticipated to operate at LOS D or better. Under Build Alternative 1 in 2035, the Los Alisos Boulevard/Rockfield Boulevard intersection is anticipated to operate at LOS E or worse during the peak hours.

Based on the 95th percentile queues, Build Alternative 1 would result in fewer excess vehicles compared to the No-Build Alternative, especially for the existing I-5 SB off-ramp to Avenida de la Carlota north of El Toro Road. Most of the intersection approaches are not expected to have queues extending beyond the upstream intersection under Build Alternative 1. There are a few intersection approaches where fewer than five vehicles are expected to extend beyond the upstream intersection. The intersection queue analysis is conservative because it only assumes the benefits of the lane geometric improvements for Build Alternative 1.

#### Pedestrian and Bicycle Facilities

Build Alternative 1 and its design variation (Build Alternative 1a) include minor modifications to existing arterials at their crossings of I-5 to accommodate the

permanent improvements to the I-5/EI Toro Road Interchange and contributing ramps/intersections proposed by the Build Alternatives. Existing sidewalks and/or bicycle facilities on arterials affected during construction would be returned to their original or better conditions no later than the completion of construction. At arterial crossings where modifications to the sidewalks are needed as part of Build Alternative 1 and its design variation (Build Alternative 1a), those modifications would be consistent with ADA accessibility requirements. The permanent improvements in Build Alternative 1 and its design variation (Build Alternative 1a) would not permanently affect the existing on-street Class II bicycle lanes along Rockfield Boulevard, Paseo de Valencia, or Los Alisos Boulevard or Aliso Creek Bikeway (Class I bicycle path); therefore, Build Alternative 1 would not permanently result in gaps or disruptions in the regional bicycle lane network and would not interfere with the regional bicycle lane planning efforts.

#### *Design Variation: Build Alternative 1a*

As shown in Table 2.2.7-8 and Table 2.2.7-9, with the addition of the Village of Laguna Hills driveway to the new I-5 SB ramp/Avenida de la Carlota ramp terminal intersection south of EI Toro Road, the ramp terminal intersection is expected to operate at LOS C during the AM peak hour for 2035 and 2055 and LOS D or better during the PM peak hour. Without the Village of Laguna Hills driveway (Build Alternative 1), the ramp terminal intersection is expected to operate at LOS B during the AM and PM peak hour for 2035 and 2055. LOS at all other mainline segments, ramps, and intersections would be the same as under Build Alternative 1.

In addition, based on the average and 95<sup>th</sup> percentile queues, vehicles are not expected to extend beyond the available storage at the new I-5 SB ramp/Avenida de la Carlota ramp terminal intersection for Build Alternative 1a.

#### Pedestrian and Bicycle Facilities

Potential impacts on pedestrian and bicycle facilities would be the same as described under Build Alternative 1.

#### *Build Alternative 3*

The lane configurations along the I-5 freeway mainline and ramp junctions are assumed to be the same between the No-Build Alternative and Build Alternative 3. Build Alternative 3 proposes technology improvements along the arterial roadways and ramp terminal intersections. Therefore, traffic operations on the I-5 freeway mainline and ramp junctions for Build Alternative 3 are expected to be the same as described for the No-Build Alternative, as shown in Table 2.2.7-8 and Table 2.2.7-9. Therefore, only intersection LOS is discussed below.

In addition, intersection queue analysis was not provided for this alternative. However, with implementation of the TSM/TDM technology improvements, the resulting queues for this alternative compared to the No-Build Alternative could potentially be shorter due to the improvements to the intersection delay.

With the TSM/TDM improvements under this alternative, delay at all intersections would be reduced by 9 percent.

#### Opening Year 2035

Under Build Alternative 3, in the AM peak hour for 2035, two intersections are anticipated to operate at LOS E or worse. All other intersections would operate at LOS D or better. In the PM peak hour for 2035, two intersections are anticipated to operate at LOS E or worse. All other study intersections would operate at LOS D or better.

- AM peak hour: Avenida de la Carlota/Paseo de Valencia/I-5 SB ramps
- PM peak hour: El Toro Road/Avenida de la Carlota
- AM and PM peak hour: Los Alisos Boulevard/Rockfield Boulevard

In comparison to the 2035 No-Build Alternative, Build Alternative 3 would result in improved intersection operations at the following intersections:

- Avenida de la Carlota/Paseo de Valencia/I-5 SB ramps (LOS E to LOS D in the PM peak hour)
- El Toro Road/Bridger Road/I-5 NB ramps (LOS D to LOS C in the AM peak hour)
- El Toro Road/Rockfield Boulevard (LOS E to LOS D in the AM peak hour)
- Avenida de la Carlota/Plaza Lane/Laguna Hill Development Driveway (LOS C to LOS B in the AM peak hour)
- Rockfield Boulevard/Landisview Avenue (LOS C to LOS B in the AM peak hour)
- Los Alisos Boulevard/Rockfield Boulevard (LOS F to LOS E in the PM peak hour)

No intersections would experience reductions in LOS under Build Alternative 3.

#### Future Year 2055

In 2055 under Build Alternative 3, three intersections would operate at LOS E or worse in the AM and PM peak hour. All other study intersections would operate at LOS D or better.

- AM and PM peak hour: Avenida de la Carlota/Paseo de Valencia/I-5 SB ramps
- PM peak hour: El Toro Road/Avenida de la Carlota
- AM peak hour: El Toro Road/Rockfield Boulevard
- AM and PM peak hour: Los Alisos Boulevard/Rockfield Boulevard

In comparison to the 2055 No-Build Alternative, Build Alternative 3 would result in improved intersection operations at the following intersection:

- Rockfield Boulevard/Landisview Avenue (LOS C to LOS B in the AM peak hour)

No intersections would experience reductions in LOS under Build Alternative 3.

### Traffic Operations Summary

Table 2.2.7-8 and Table 2.2.7-9 provide a summary of mainline, ramps, and intersection LOS for all Build Alternatives in 2035 and 2055.

Under Build Alternative 3, the lane configurations along the I-5 freeway mainline and ramp junctions are assumed to be the same as for the No-Build Alternative. Therefore, traffic operations on the I-5 freeway mainline and ramp junctions for Build Alternative 3 are expected to be the same as described for the No-Build Alternative.

Under Build Alternative 3, the number of locations that are anticipated to operate at LOS E or F improves as compared to the No-Build Alternative. Although reductions in delay are expected with application of the TSM/TDM technologies under Build Alternative 3, operations at the two intersections would remain at LOS E or LOS F during one of the peak hours.

Intersection queue analysis was not provided for Build Alternative 3. However, with implementation of the TSM/TDM technology improvements under all Build Alternatives, the resulting queues could potentially be shorter.

### Pedestrian and Bicycle Facilities

Build Alternative 3 does not include any physical or geometric improvements; therefore, there would be no impact on pedestrian and bicycle facilities.

### **No-Build Alternative**

Under the No-Build Alternative, no reconstruction or improvements would be made to the existing I-5/EI Toro Road Interchange other than routine roadway maintenance. As a result, the No-Build Alternative would not result in temporary impacts related to traffic and circulation or to pedestrian or bicycle facilities.

Table 2.2.7-7 shows the intersection LOS for Existing Year 2023, 2035 No-Build Alternative, and 2055 No-Build Alternative. The intersection LOS at the study intersections for the No-Build Alternative either stays the same or becomes worse during either of the peak hours, as compared to existing conditions, for all study intersections except one where the LOS improves. Of the 12 study intersections, three intersections in the AM peak hour and three intersections in the PM peak hour for both 2035 and 2055 deteriorate to LOS E or worse. All other study intersections operate at LOS D or better. The EI Toro Road/Bridger Road/I-5 NB ramp intersection improves from LOS F to LOS D due to the additional lane on the off-ramp from the South County I-5 Improvement project.

The five I-5 mainline segments (both GP and HOV) and ramps in the NB and SB directions that are anticipated to deteriorate to LOS E or worse consist of the following:

- I-5 NB from Alicia Parkway on-ramp to EI Toro Road off-ramp (AM and PM peak hour) in 2035 and 2055

- I-5 EB El Toro Road loop on-ramp to WB El Toro Road loop on-ramp (AM peak hour) in 2055
- I-5 SB from Lake Forest Drive on-ramp to Avenida de la Carlota/El Toro Road off-ramp (AM peak hour) in 2055
- I-5 SB from Avenida de la Carlota/Paseo de Valencia hook on-ramp to El Toro Road on-ramp (PM peak hour) in 2055
- I-5 SB from El Toro Road on-ramp to Alicia Parkway off-ramp (AM and PM peak hour) in 2055

For the intersection 95<sup>th</sup> percentile queues, without improvements at the study intersections, queues are expected to increase, resulting in more movements exceeding the available storage. The key queue location for the No-Build Alternative is the I-5 SB off-ramp to Avenida de la Carlota/El Toro Road. Without improvements to the intersection, the off-ramp queue is expected to increase and continue to extend onto the freeway mainline.

#### **2.2.7.4 Avoidance, Minimization, and/or Mitigation Measures**

No Project-specific avoidance, minimization, and/or mitigation measures are required with adherence to the Project Feature described above.

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