TRAFFIC STUDY REPORT

Volume I
(2 of 2)

HIGH DESERT CORRIDOR

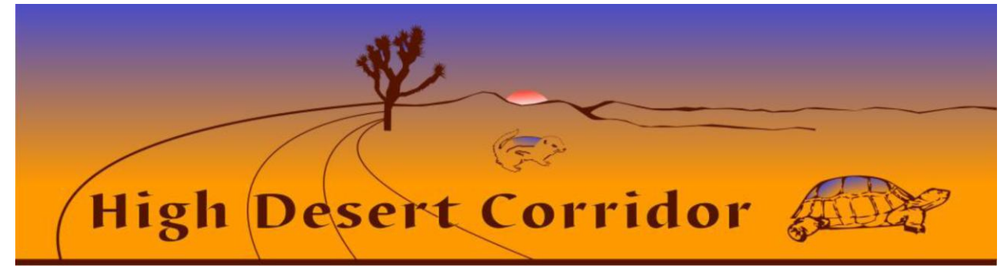
Palmdale to Apple Valley
(State Route 14 to State Route 18)

PARSONS

June 2014

TRAFFIC STUDY REPORT

Volume I *(2 of 2)*



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Palmdale to Apple Valley
(State Route 14 to State Route 18)

June 2014

Parsons Transportation Group Inc.
100 West Walnut Street
Pasadena, CA 91124

Contract No.: 07A2912
Caltrans Project No.: 0700000080 (EA: 16720)

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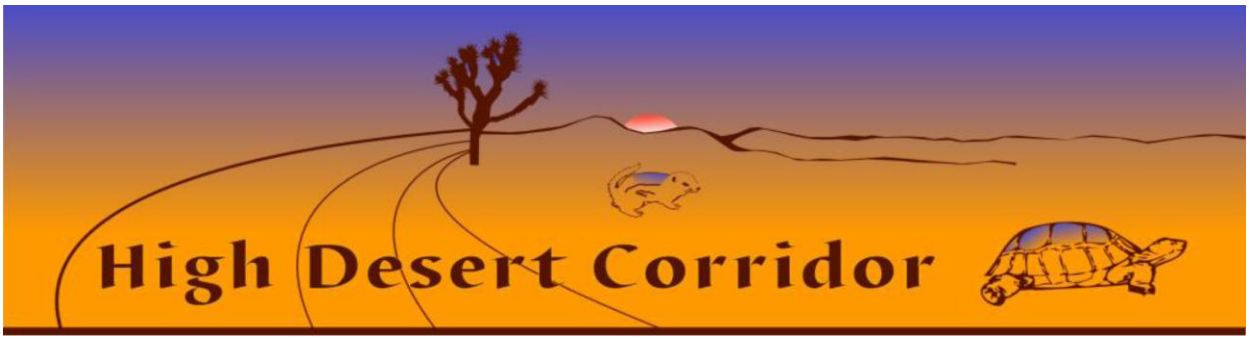
Traffic Study Report
Volume I *(2 of 2)*



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Acronyms/Abbreviations

AADT	annual average daily traffic
ADA	Americans with Disabilities Act of 1990
B-V	Barstow to Victor Valley
BLM	Bureau of Land Management
BNSF	Burlington Northern Santa Fe Railway
Btu	British thermal units
Cal-B/C	California Life-Cycle Benefit/Cost Analysis Model
Caltrans	California Department of Transportation
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
EAVTAM3	Enhanced Antelope Valley Transportation Analysis Model
FHWA	Federal Highway Administration
H_2O	water vapor
HC	hydrocarbon
HCM	Highway Capacity Manual
HDC	High Desert Corridor
HOT	high occupancy toll
HOV	high occupancy vehicle
I-	Interstate
Kern COG	Kern Council of Governments
LOS	level of service
mph	miles per hour
MOE	measures of effectiveness
N_2O	nitrous oxide
NASA	National Aeronautics and Space Administration
NO_X	nitrogen oxide
NTC	National Training Center
pc/mi/ln	passenger cars per mile per lane
pc/h/ln	passenger cars per hour per lane
PM	postmile
PM_{10}	fine particulate matter
PTSF	percent time spent following
RTP	regional transportation plan
RTIP	regional transportation improvement program
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SANBAG	San Bernardino Associated Governments

Acronyms/Abbreviations *(continued)*

SCAG	Southern California Association of Governments
SCLA	Southern California Logistics Airport
sec/veh	seconds per vehicle
SR	State Route
STEAM	Surface Transportation Efficiency Analysis Model
TASAS-TSN	Traffic Accident Surveillance and Analysis System-Transportation System Network
TAZ	traffic analysis zone
VHT	vehicle hours traveled
VMT	vehicle miles traveled
VPD	vehicles per day
VVTA	Victor Valley Transit Authority

Chapter 4
TRAFFIC OPERATIONS ANALYSIS

4.1 Project Description

The proposed project is located in the High Desert area of Los Angeles and San Bernardino counties, north of the San Gabriel/San Bernardino mountains and the heavily populated areas of those two counties. The proposed route would run primarily in an east–west direction between SR 14 and SR 18 and extend for approximately 63 miles.

For the purpose of this traffic study report, the overall project is divided into three segments, as illustrated on Figure 4-1.

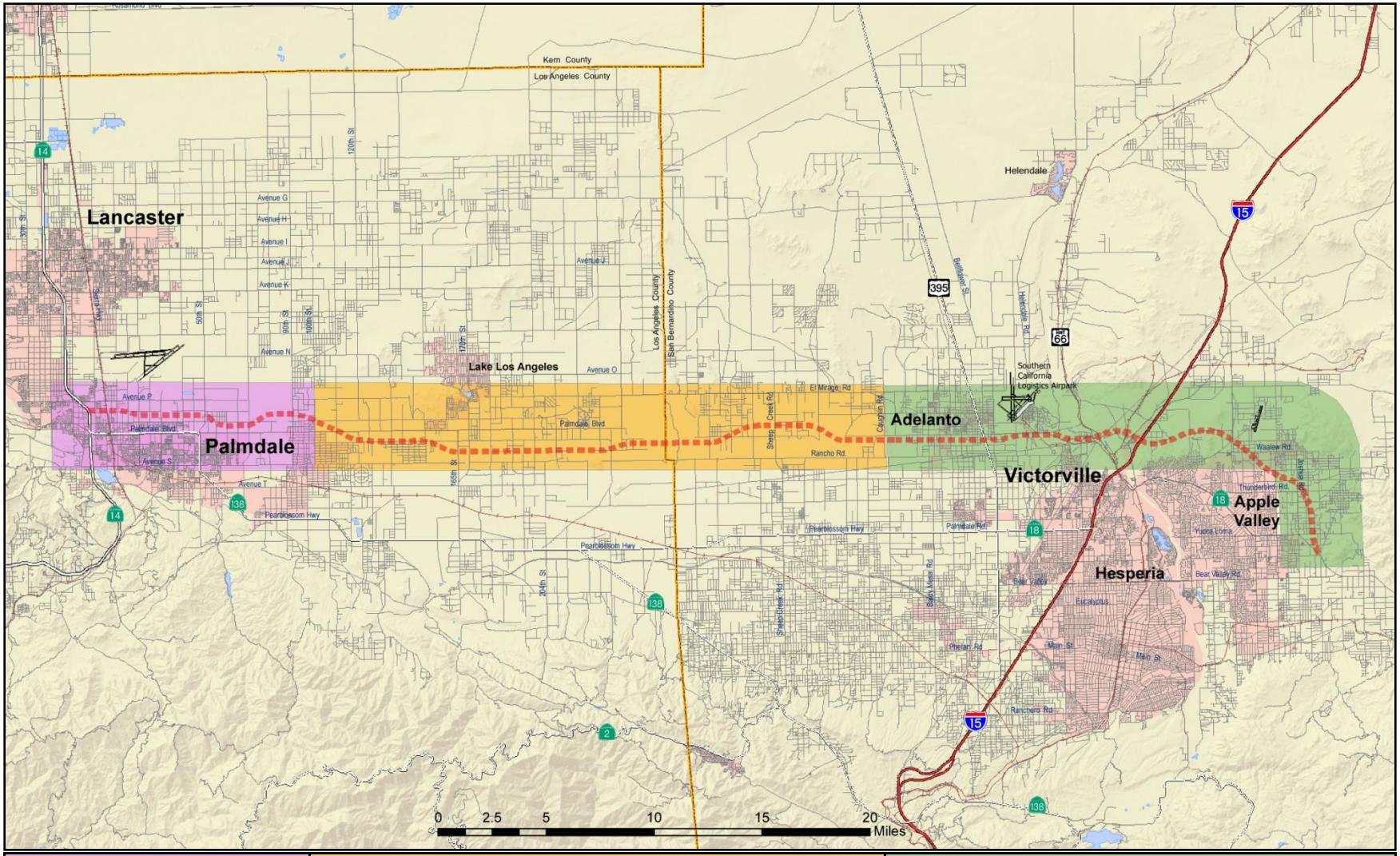
- ***Antelope Valley segment***
  From SR 14 to 100th Street East in Palmdale, a distance of approximately 10 miles.
- ***High Desert segment***
  From Palmdale city limits to Adelanto city limits in unincorporated Los Angeles and San Bernardino counties, a distance of approximately 26 miles.
- ***Victor Valley segment***
  From west of Caughlin Road in Adelanto to SR 18 east of Joshua Road in Apple Valley, a distance of approximately 27 miles.

Graphics and text in this report are generally characterized according to these three segments.[38]

4.1.1 Antelope Valley Segment

The project would construct a new freeway running in an east–west direction near Avenue P-8 between SR 14 and 100th Street East in Palmdale, California. This 10-mile long segment is part of the overall High Desert Corridor extending from SR 14 to I-15. The ultimate freeway would be able to expand to four lanes in each direction. A freeway-to-freeway interchange for SR 14/High Desert Corridor would be constructed with direct ramp connectors. New local interchanges are currently proposed at 20th Street East, 30th Street East, 50th Street East, and 90th Street EaSt (Note: This traffic study initially analyzed an interchange at 10th Street East in lieu of the interchange at 30th Street East. The results of both access configurations are reported in this traffic study report.) Viaduct structures would be constructed between Division Street and 10th Street East and over Little Rock Wash. The resulting grade separations from the first viaduct include freeway undercrossings at Division Street (when paved), Third Street, Sierra Highway, Union Pacific and Metrolink tracks, Eighth Street and 10th Street. Additional grade separations (overcrossings or undercrossings) are proposed at 15th Street, 25th Street, 40th Street, and 70th Street. The overcrossing structures at 15th, 20th, 25th, 30th, 40th, and 50th Streets would be constructed to accommodate four lanes of traffic (two lanes per direction). New frontage roads would be built to mitigate street closures, where required. The existing partial interchange at SR 14/Rancho Vista Boulevard would be closed and a full interchange would be constructed at 10th Street West to provide better weaving distance with the direct connector ramps of the SR 14/High Desert Corridor interchange.

[38] Other project approval/environmental documents may define different limits when describing High Desert Corridor segments.



ANTELOPE VALLEY	HIGH DESERT	VICTOR VALLEY
Los Angeles County	**Los Angeles County–San Bernardino County**	**San Bernardino County**
Lancaster, Palmdale	Lake Los Angeles, El Mirage	Adelanto, Victorville, Apple Valley, Hesperia

Figure 4-1: High Desert Corridor Segments

Alternatives to the above project description include a slightly different centerline alignment between 15th Street East and Little Rock Wash. This version of the centerline alignment would follow the original easement that the Los Angeles World Airport has agreed to donate. This version of the alignment is illustrated on most of the graphics contained in this traffic report.

4.1.2 High Desert Segment

The project would construct a new freeway connecting Palmdale with Adelanto, running in an east–west direction parallel and approximately one-quarter mile south of Palmdale Boulevard. The freeway would be three lanes in each direction, with right-of-way acquired to support an ultimate facility of four lanes plus a high-speed passenger rail line in each direction. The High Desert segment may be a toll facility, with the tolling limits extending from 100th Street East to U.S. Route 395. New local interchanges are currently proposed at Longview Road/140th Street, 170th Street, 210th Street, and 240th Street in Los Angeles County, and Oasis Road, Sheep Creek Road and Caughlin Road in San Bernardino County. Additional freeway grade separations (overcrossings or undercrossings) are proposed at 110th Street, Palmdale Boulevard, 165th Street, and Big Rock Creek (a viaduct structure). Grade separations may also be proposed at Avenue Q, 200th Street, 230th Street, Saint Anthony Avenue, Palmer Road, and Tanner Road at a later date when land development warrants additional north–south circulation capacity.

Alternatives to the above project description include the following.

- A slightly different centerline alignment between 180th Street East and 230th Street East. This version of the centerline alignment would run parallel and approximately one-half mile south of Palmdale Boulevard.
- A different centerline alignment between Saint George Avenue and just west of Caughlin Road. This version of the centerline alignment would pass Krey Field Airport on its south side.

4.1.3 Victor Valley Segment

The project would construct a new freeway running in an east–west direction, generally following the alignment of Air Expressway Boulevard, between Caughlin Road in Adelanto and Dale Evans Parkway east of I-15 in town of Apple Valley, and continuing southeasterly as an expressway, joining SR 18 just east of Joshua Road. Once constructed, the existing alignment of SR 18 west of Joshua Road would be relinquished, and the new freeway/expressway designated as SR 18 east of I-15. The freeway portion of the facility between Caughlin Road and I-15 would be six lanes wide, continuing to Dale Evans Parkway as a four- or six-lane facility, initially. Right-of-way would be acquired to support an ultimate facility of four lanes plus a high-speed passenger rail line in each direction. East of Dale Evans Parkway, an access-controlled, four-lane divided expressway would be constructed for the remaining extent of the project as it continues easterly toward the Apple Valley Airport before turning south-easterly to align with the existing SR 18, north of Bear Valley cutoff. This entire segment would be constructed within a minimum 300-foot right-of-way to provide for an ultimate 8-lane multi-modal facility.

A freeway-freeway interchange for I-15/High Desert Corridor/SR 18 would be constructed with direct ramp connectors. Viaduct/bridge structure(s) would be constructed over the BNSF Railway and Mojave Northern Railroad tracks and the Mojave River. New local interchanges are currently proposed at Caughlin Road, as mentioned previously, Koala Road, U.S. Route 395, Phantom Road West, Phantom Road East, National Trails Highway, Choco Road and Dale Evans Parkway. Additional grade separations are proposed at Bellflower Road, Turner Wash, Ossam Wash, Bell Mountain Wash, Adelanto Road, New Stoddard Wells Road and Apple Valley Road. Grade separations at Richardson Road, Beaver Road, Raccoon Avenue, Aster Road, Verbena Road, Evado Road/Majeta Avenue (south alternative alignment),

Village Drive (south alternative alignment), Rancho Road (south alternative alignment), and Quarry Road may be proposed at a later date when local circulation needs warrant their construction. For the access-controlled, expressway portion of the project east of Dale Evans Parkway, at-grade, traffic signal controlled intersections are proposed at Waalew Road, Central Road, Joshua Road, Standing Rock Road and Yucca Loma Road.

Alternatives to the above project description include a different centerline alignment between Aster Road and Quarry Road. This version of the centerline alignment would run parallel to Rancho Road, approximately one-half mile south of Air Expressway Boulevard, to pass by the Victorville Federal Correctional Complex on the south side of this facility. This southern alignment would omit the local service interchange at Phantom Road east.

4.2 Project Alternatives

Several alternatives have been proposed to satisfy the purpose and need for this project. This traffic study report will be used in part to evaluate the performance of these alternatives. The following alternatives will be studied.

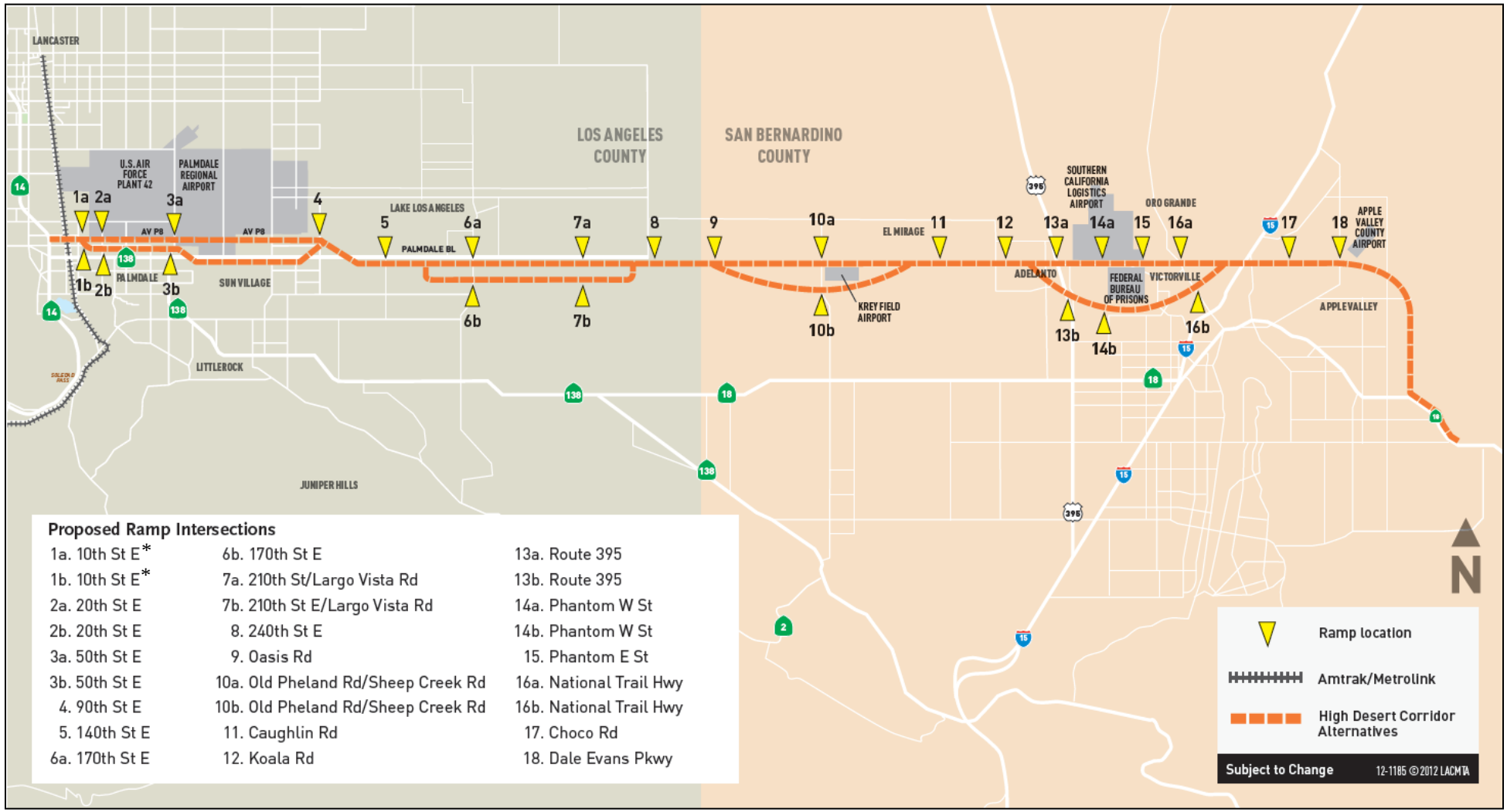
- ***Freeway/expressway alternative***

  This alternative is described more fully in section 1.4. In summary, this alternative consists of a combination of a controlled-access freeway and an expressway. It generally follows Avenue P-8 in Los Angeles County and runs just south of El Mirage Road in San Bernardino County. This alternative then extends to Air Expressway Road near I-15 and curves south, terminating at Bear Valley Road. Four physical alignment variations are under consideration:

  - Variation A
    - Located in the city of Palmdale, the freeway/expressway would dip slightly south of the main alignment, approximately between 15th Street East and Little Rock Wash.
  - Variation B (south)
    - East of the county line, the freeway/expressway would dip slightly south of the main alignment between Oasis Road and Caughlin Road.
  - Variation D
    - Near the community of Lake Los Angeles, the freeway/expressway would dip slightly south of the main alignment just south of Avenue R, approximately between 180th Street East and 230th Street East.
  - Variation E
    - Located near the Cities of Adelanto and Victorville, the freeway/expressway would dip south of the federal prison.

  The general alignment of this alternative along with variations and local service interchange locations are depicted on Figure 4-2.

  For the purpose of this traffic study report, alignment variations A, B and C do not affect traffic forecast volumes or traffic operations. The project description without or with these alignment variations is therefore treated as one. Throughout this document, the freeway/expressway alternative is referenced as the **build alternative.**



Source: metro.net, http://www.metro.net/projects/high-desert-corridor/
*Replaced by 30th Street East.

Figure 4-2: High Desert Corridor Alignments with Proposed Ramp Locations

For the purpose of this traffic study report, alignment variation E was tested along with a slightly different array of local service interchanges. This alternative was labeled **build alternative with reduced interchanges.** The interchanges at Oasis Road and Phantom St East Street were removed from this alternative; however, a local service interchange at 70th Street was added.

- ***Freeway/tollway alternative***

This alternative follows the same route as the freeway/expressway alternative (including variations A, B, D and E), but would have sections operate as tollways. Details of this operating feature are being evaluated as part of the ongoing public–private partnership analysis. The incorporation of green technologies and a bike path will also be considered.

For the purpose of this traffic study report, this alternative is labeled **build toll alternative.** The tolled portion of the project has been defined as extending from 90th Street East in Palmdale to U.S. Route 395 in Adelanto. Alignment variation E has not been tested by this traffic study.

- ***Freeway/expressway alternative with high-speed rail feeder service***

This alternative is the same as the freeway/expressway alternative (including variations A, B, D and E) and includes a high-speed rail feeder service between Palmdale and Victorville. The location of the high-speed rail feeder service in relation to the High Desert Corridor is being evaluated considering design travel speeds, alignment of tracks, and connections to existing rail stations.

- ***Freeway/tollway alternative with high speed rail feeder service***

This alternative is the same as the freeway/tollway alternative (including variations A, B, D and E) and includes a high-speed rail feeder service between Palmdale and Victorville. Details of this operating feature are being evaluated as part of the ongoing public–private partnership analysis. The location of the high-speed rail feeder service in relation to the High Desert Corridor is being evaluated considering design travel speeds, alignment of tracks and connections to existing rail stations. The incorporation of green energy technologies and a bike path will also be considered.

- ***Transportation system/demand management alternative***

The transportation system demand management alternative is a collection of lower cost roadway improvements through the project corridor that can be evaluated against the proposed project alternatives. The transportation system demand management alternative focuses on improvements that connect SR 14 with SR 138 and then extend east to connect with U.S. Route 395, I-15 and SR 18. The key elements under consideration for this alternative include:

- An eight-lane grade-separated freeway from SR 14 to 30th Street East
- A transition to a four-lane at-grade expressway from 30th Street East to Longview Road
- A four-lane at-grade highway connecting to SR 138 and extending east to U.S. Route 395 along SR 18
- A six-lane arterial highway along SR 18 (Palmdale Road) from U.S. Route 395 to I-15
- Minor roadway and signal improvements along SR 18 from I-15 to Bear Valley Road

Except for the freeway portion between SR 14 and 30th Street East, these transportation system demand management roadway improvements would maintain at-grade intersections with local roads and driveway access.

The alignment and limits of these roadway improvement limits are illustrated on Figure 4-3.

For the purpose of this traffic study report, this alternative is labeled **transportation system management alternative.** Efforts to manage transportation demand are ongoing by the Southern California Association of Governments and are assumed as background (no-build) conditions for all alternatives.

- ***Hybrid alternative***

  This alternative would consist of a combination of the previously identified alternatives, whose elements (transportation system demand management, freeway, expressway, tollway, high-speed rail feeder service, green energy technologies, bike path) would be pieced together to best fit the needs of each section of the corridor. The determination of which elements to use, and at which locations, would be based on the results of the traffic study, environmental studies and public input.

  For this purpose of this traffic report, the hybrid alternative is assumed to consist of elements defined for the freeway/expressway alternative extending from SR 14 to 90th Street East in Palmdale and from U.S. Route 395 to I-15 in Adelanto and Victorville, extending east to join with SR 18 east of the town of Apple Valley.

  This alternative will be tested for year 2020 conditions as an interim improvement, intended to serve as Phase 1 of the ultimate build alternative (with alignment variations A, B, C and E). For the purpose of this traffic study report, this alternative is labeled **no toll partial build alternative.**

- ***No-build alternative***

  The no-build alternative consists of those transportation projects that are already planned and have committed funds to be constructed by or before 2040. Consequently, the no-build alternative represents future travel conditions in the High Desert Corridor study area without the High Desert Corridor project and is the baseline against which other transportation alternatives proposed for the study area will be assessed.

4.3 Traffic Lane Configuration Assumed for Traffic Operational Analysis

The overall scope of the High Desert Corridor project is illustrated on Figure 4-4. Work includes the new freeway running from SR 14 to I-15, continuing as a freeway/ expressway east of I-15 as realigned SR 18; work along SR 14 from south of Avenue S to north of Avenue N to accommodate the new freeway to freeway system interchange with the High Desert Corridor freeway; and work along I-15 from north of Stoddard Wells Road South to Stoddard Wells Road North to accommodate the new High Desert Corridor system interchange within the interstate freeway. The traffic lane configuration of these roadways is described below.

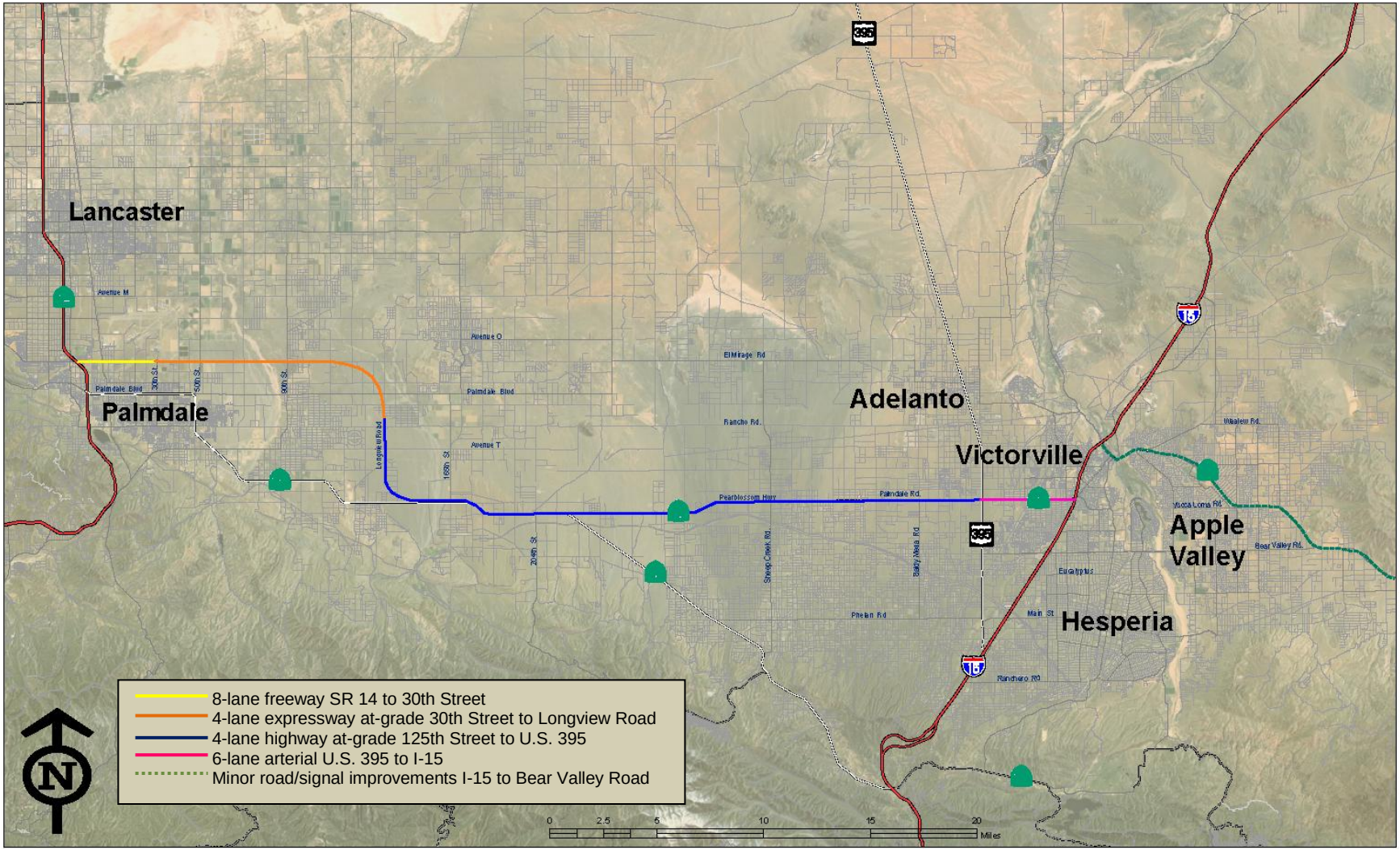


Figure 4-3: Transportation System Management Alternative

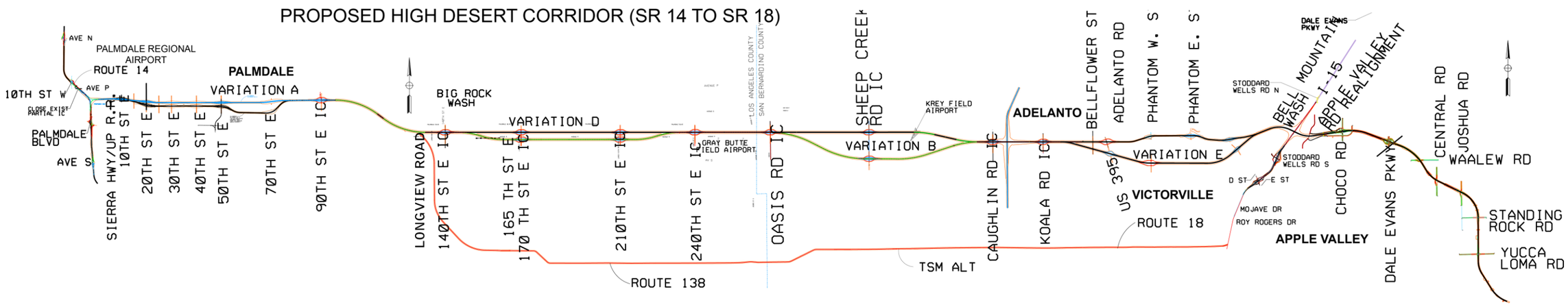


Figure 4-4: High Desert Corridor Project Scope

4.3.1 High Desert Corridor New Freeway/Expressway

The traffic lane configuration for the new High Desert Corridor freeway, continuing west of I-15 as realigned SR 18, is illustrated on Figure 4-5. The lane geometry graphic illustrates that the build alternative and the build toll alternative would construct a six- to eight-lane freeway from SR 14 in Palmdale to Choco Road in Apple Valley, continuing as a 4- to 6-lane freeway to east of Dale Evans Parkway. The transportation systems management alternative would construct only the western portion of this freeway as illustrated on Figure 4-3.

The grade separated interchanges illustrated on Figure 4-5 are, for the most part, spread diamond (type L-2) depending on physical, geometric, or right-of-way restrictions, or operational requirements. The proposed interchange at 10th Street East in Palmdale would be a compact diamond (type L-1) due to right-of-way restrictions. **Note that the proposed interchange at 10th Street East was eliminated during subsequent design refinement and an interchange at 30th Street East was added.** The proposed interchanges at Koala Road, U.S. Route 395, Phantom St West and Phantom St East Streets and Dale Evans Parkway (on SR 18 east of I-15) would all have either one or two loop on-ramps (type L-9) in addition to four diamond on- and off-ramps. During the design refinement stage of project development, some of these loop on-ramps may be eliminated.

Pending further design level studies, Caltrans is considering the installation of dual roundabout intersections at the interchanges located within the High Desert segment of the corridor, from and including the 140th Street East interchange on the west end of the segment to the Koala Road interchange on the east end of the segment (see Figure 4-6). The right-of-way reserved for the spread diamond type interchange will permit stop sign, traffic signal, or roundabout traffic control at all ramp terminal intersections.

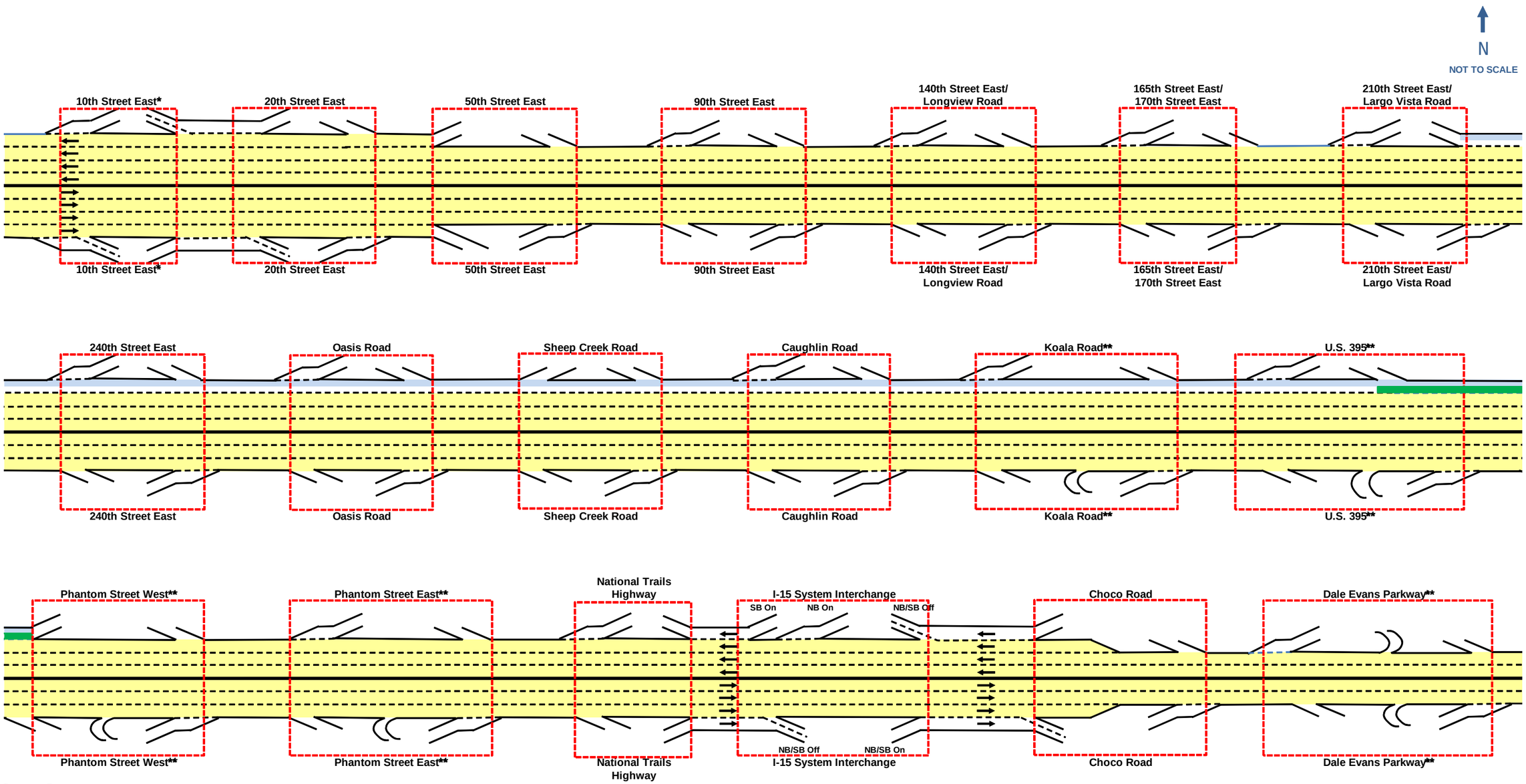
Most ramps would be single-lane facilities as they merge or diverge with the High Desert Corridor. Dual lane off-ramps are recommended for the 10th Street East interchange to accommodate project traffic demands both with or without the anticipated High-speed Rail Station. A dual lane off-ramp is also recommended for the eastbound exit to 20th Street East and the eastbound exit to Choco Road.

Geometric design drawings of the proposed High Desert Corridor new freeway/expressway are illustrated as Figure 4-7, and serve as the basis of the traffic operations analysis using the CORSIM traffic simulation software program.

4.3.2 State Route 14

The traffic lane configuration for the existing SR 14 freeway is illustrated on Figure 4-7, along with improvements needed to accommodate the new High Desert Corridor to SR 14 freeway-to-freeway system interchange.

Traveling northbound, the proposed lane geometry for the TSM and 2020 (opening year) alternatives would construct an auxiliary lane to accommodate traffic exiting to the High Desert Corridor (new freeway/expressway). The auxiliary lane would begin following the Pearblossom Highway interchange, approximately 2.2 miles in advance of the East Avenue S off-ramp and continue north to the High Desert Corridor eastbound two-lane branch connector exit. A second auxiliary lane would be added from the East Avenue S on-ramp, and extend to the West Palmdale Boulevard off-ramp, which would be widened to two lanes. To the north of the branch connector exit to High Desert Corridor, an auxiliary lane would be added to receive traffic from the two West Palmdale Boulevard on-ramps. This auxiliary lane would



Source: Parsons

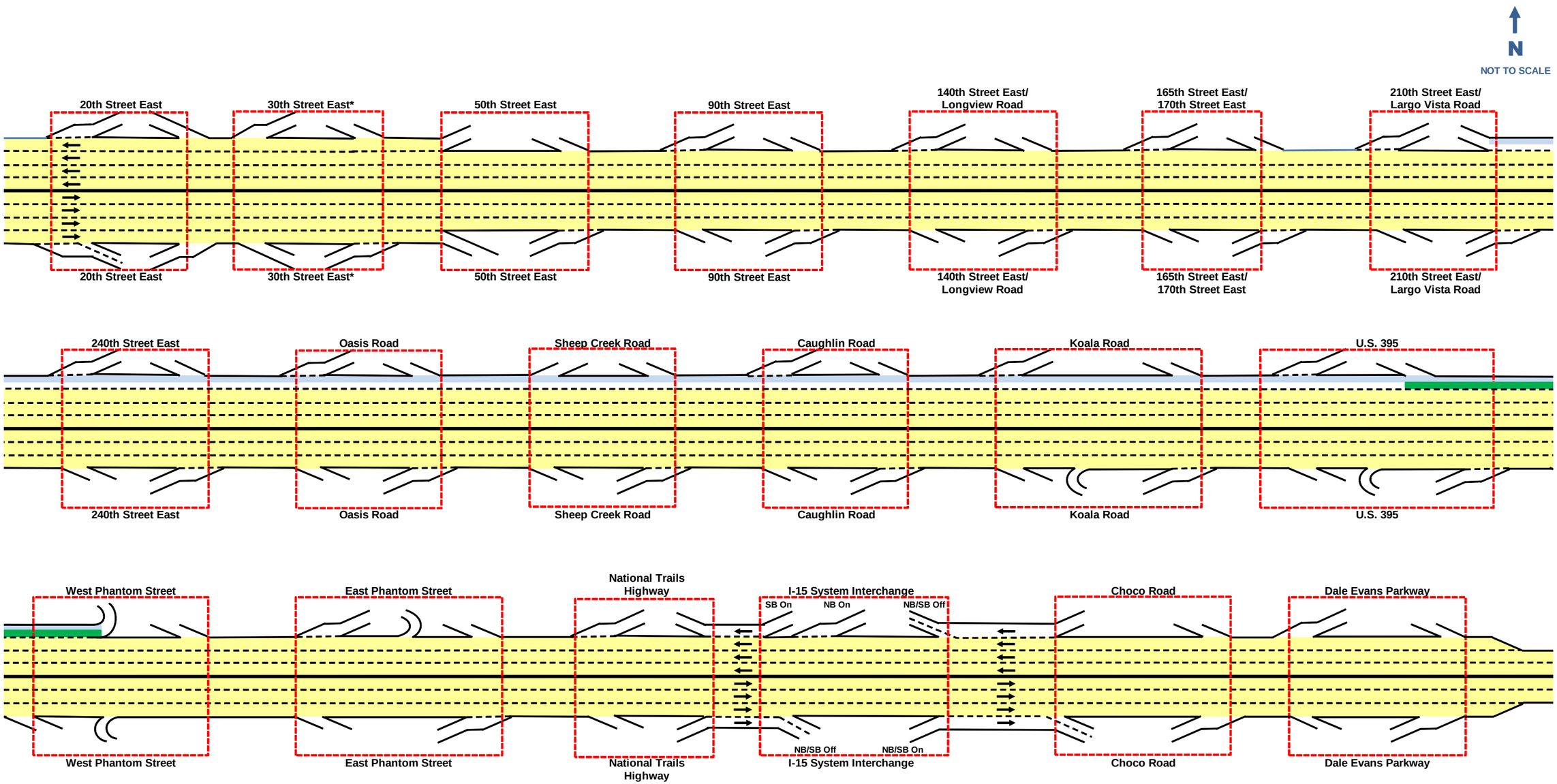
Proposed additional improvements

Proposed additional improvements with toll alternative

*Proposed interchange eliminated during design refinement.

**Interchange configuration changed during design refinement.

Figure 4-5: High Desert Corridor Freeway Traffic Lane Configurations
(Initial) (1 of 2)



Source: Parsons

Proposed additional improvements

Proposed additional improvements with toll alternative

*Proposed interchange added during design refinement.

Figure 4-5: High Desert Corridor Freeway Traffic Lane Configurations
(Revised) (2 of 2)

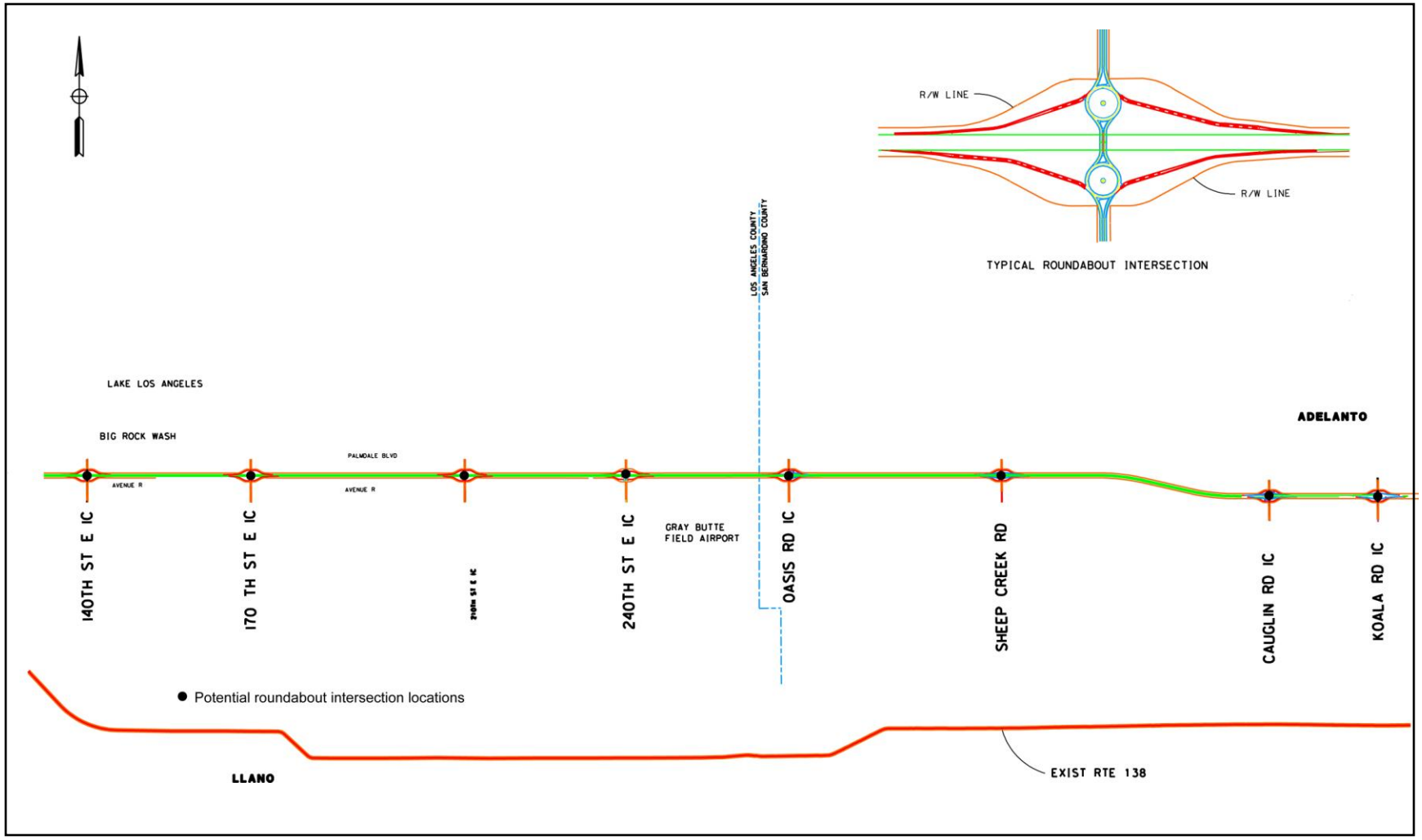
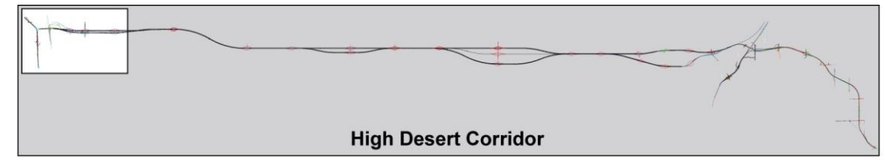


Figure 4-6: Potential High Desert Corridor Roundabout Locations



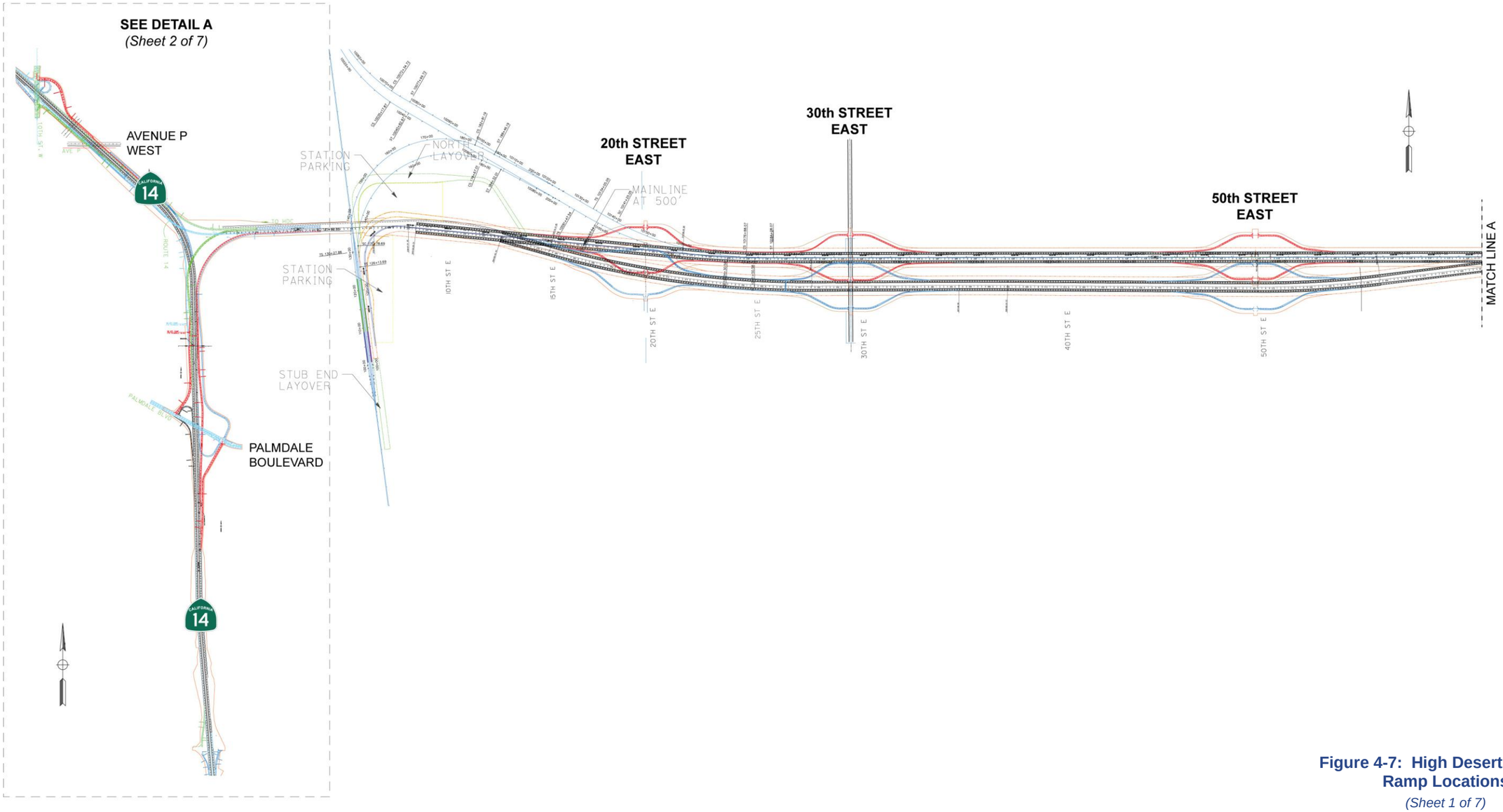
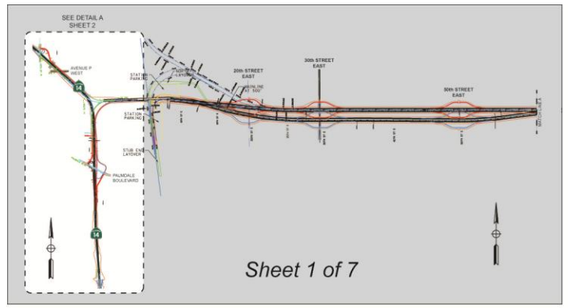


Figure 4-7: High Desert Corridor Ramp Locations
(Sheet 1 of 7)



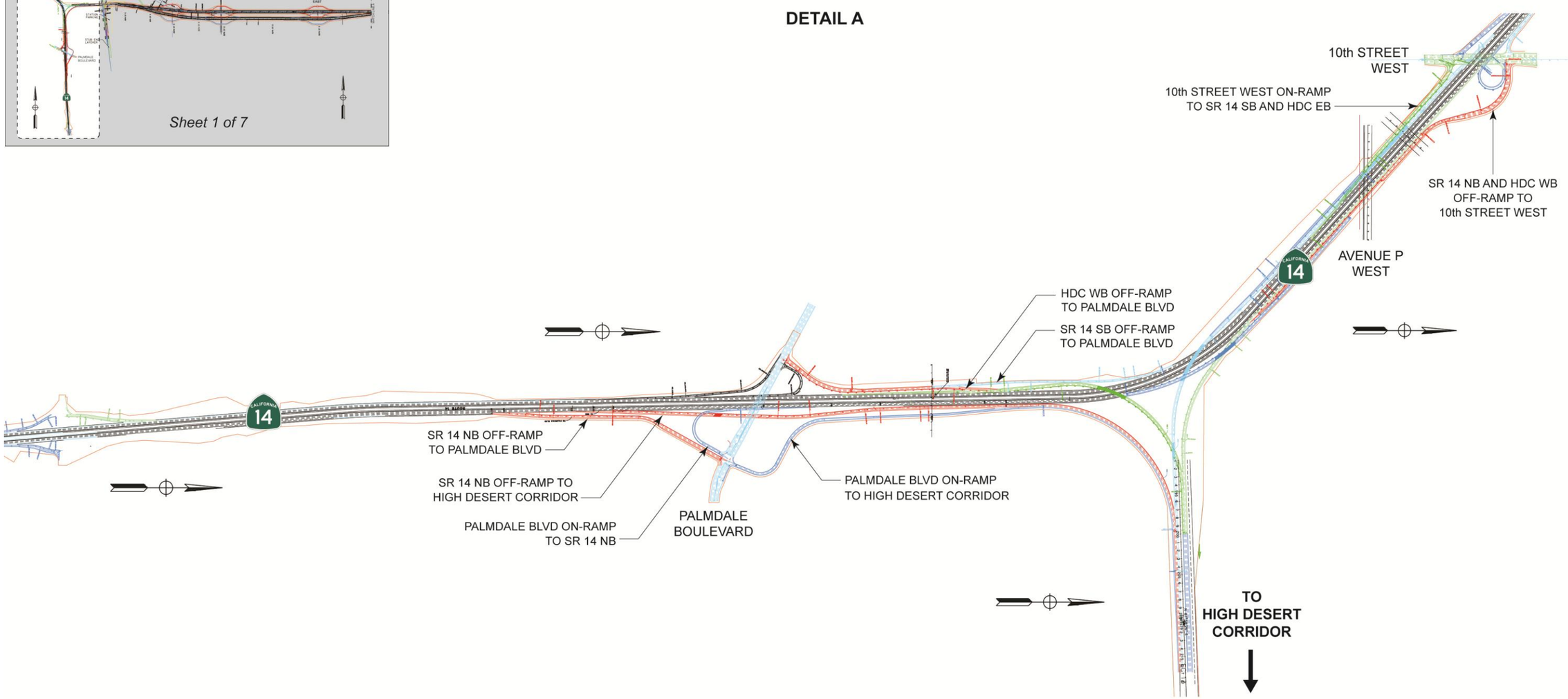


Figure 4-7: High Desert Corridor Ramp Locations
(Sheet 2 of 7)

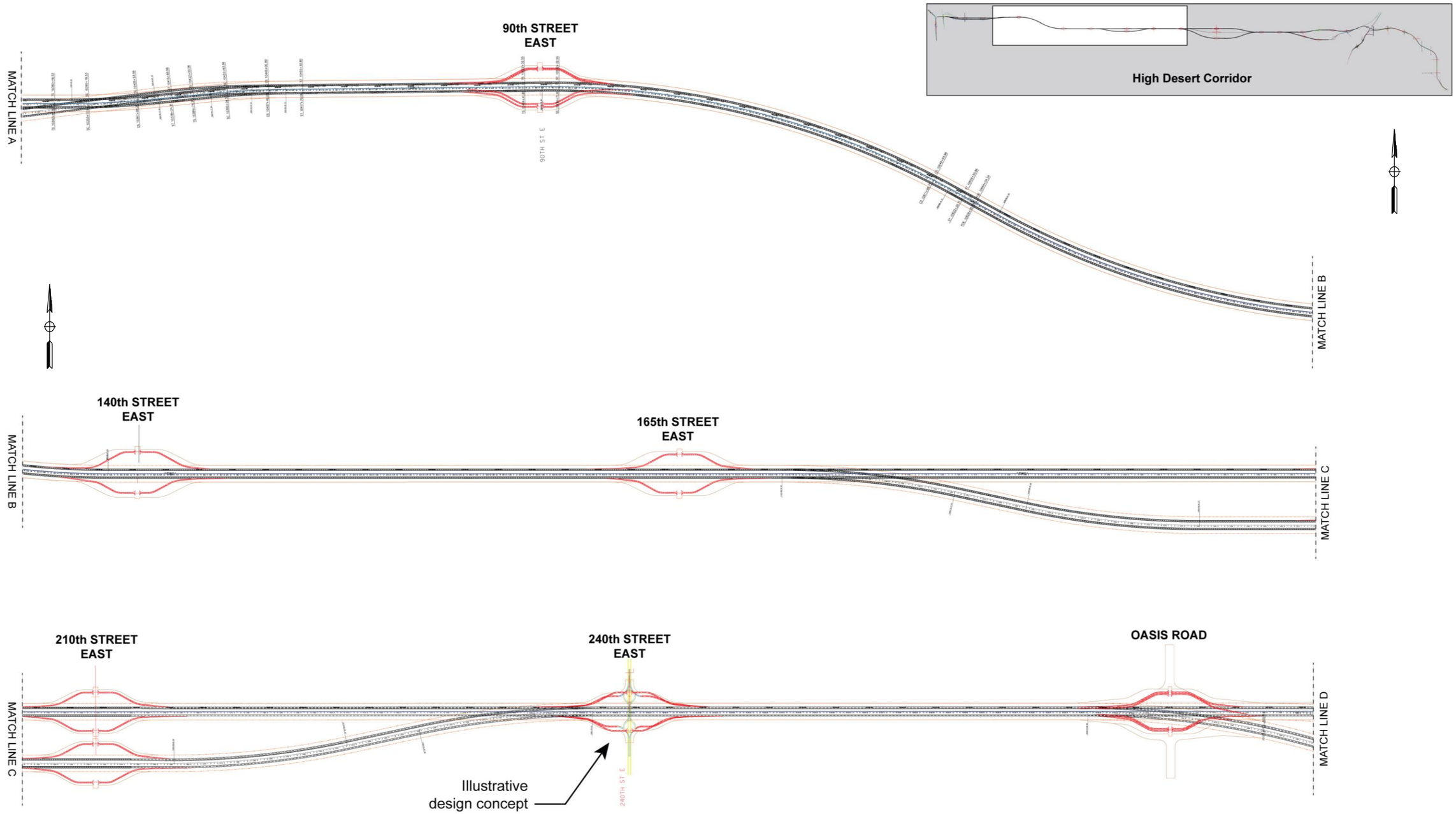


Figure 4-7. High Desert Corridor Ramp Locations

(Sheet 3 of 7)

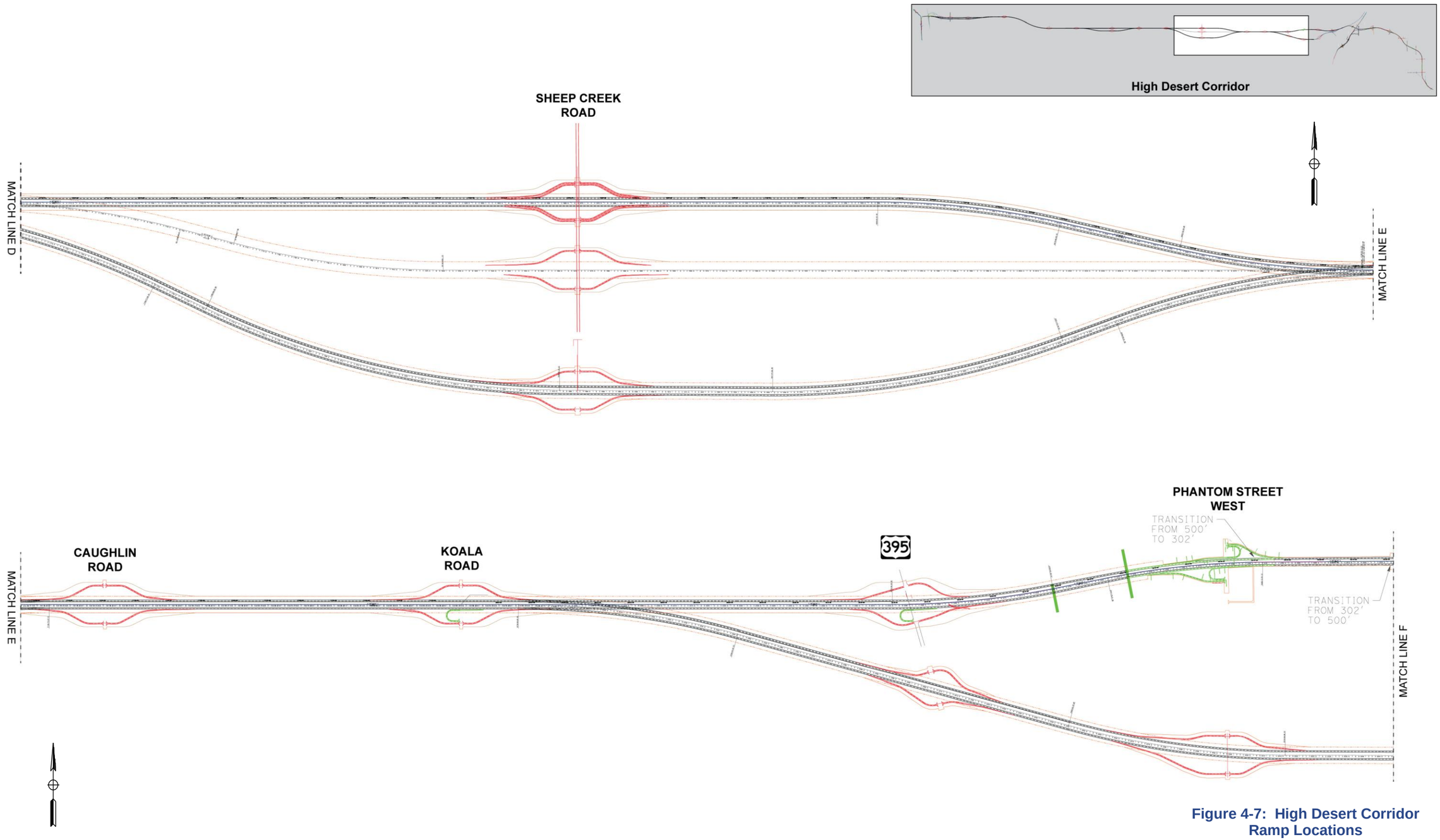


Figure 4-7: High Desert Corridor Ramp Locations

(Sheet 4 of 7)

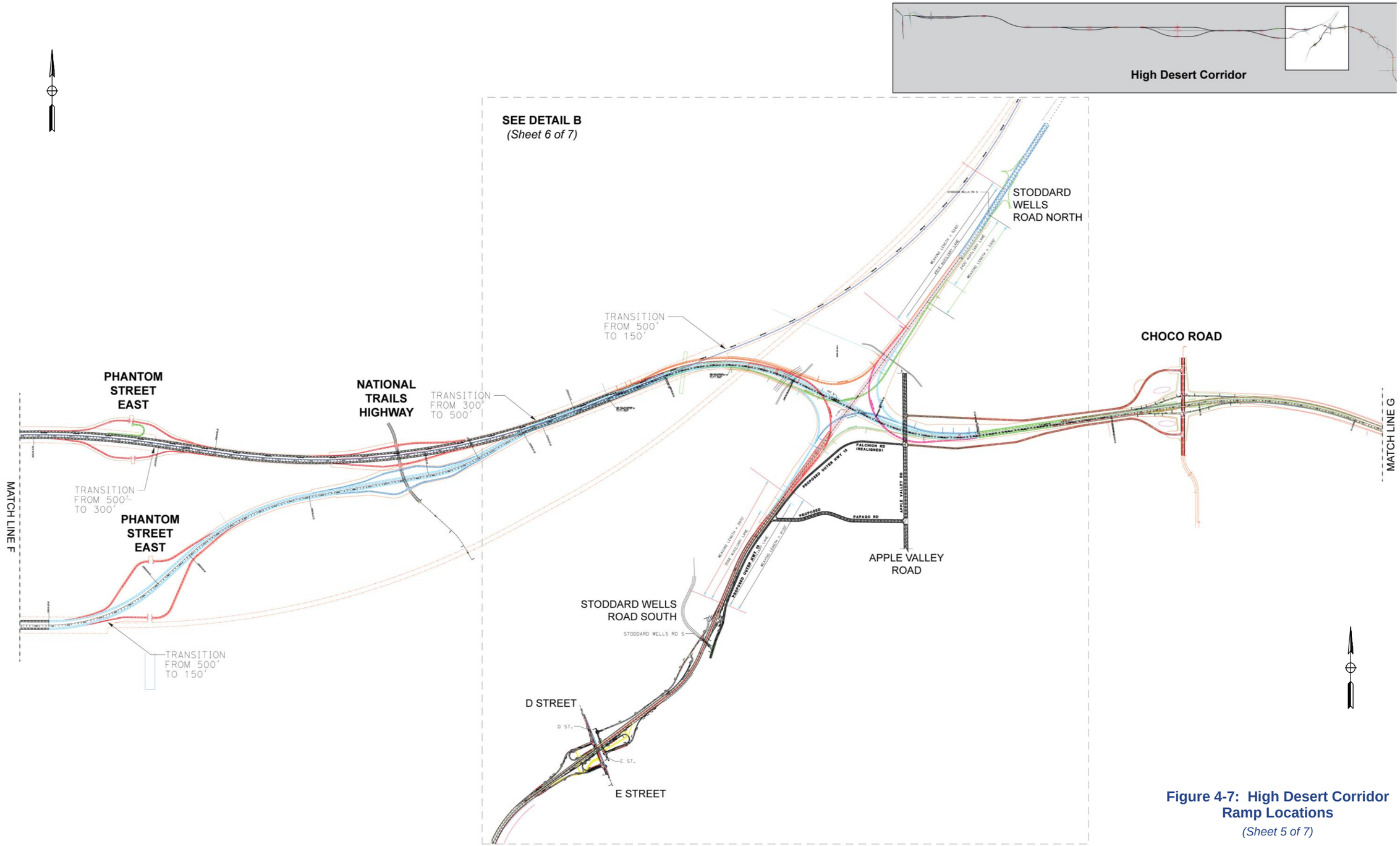


Figure 4-7: High Desert Corridor Ramp Locations
(Sheet 5 of 7)

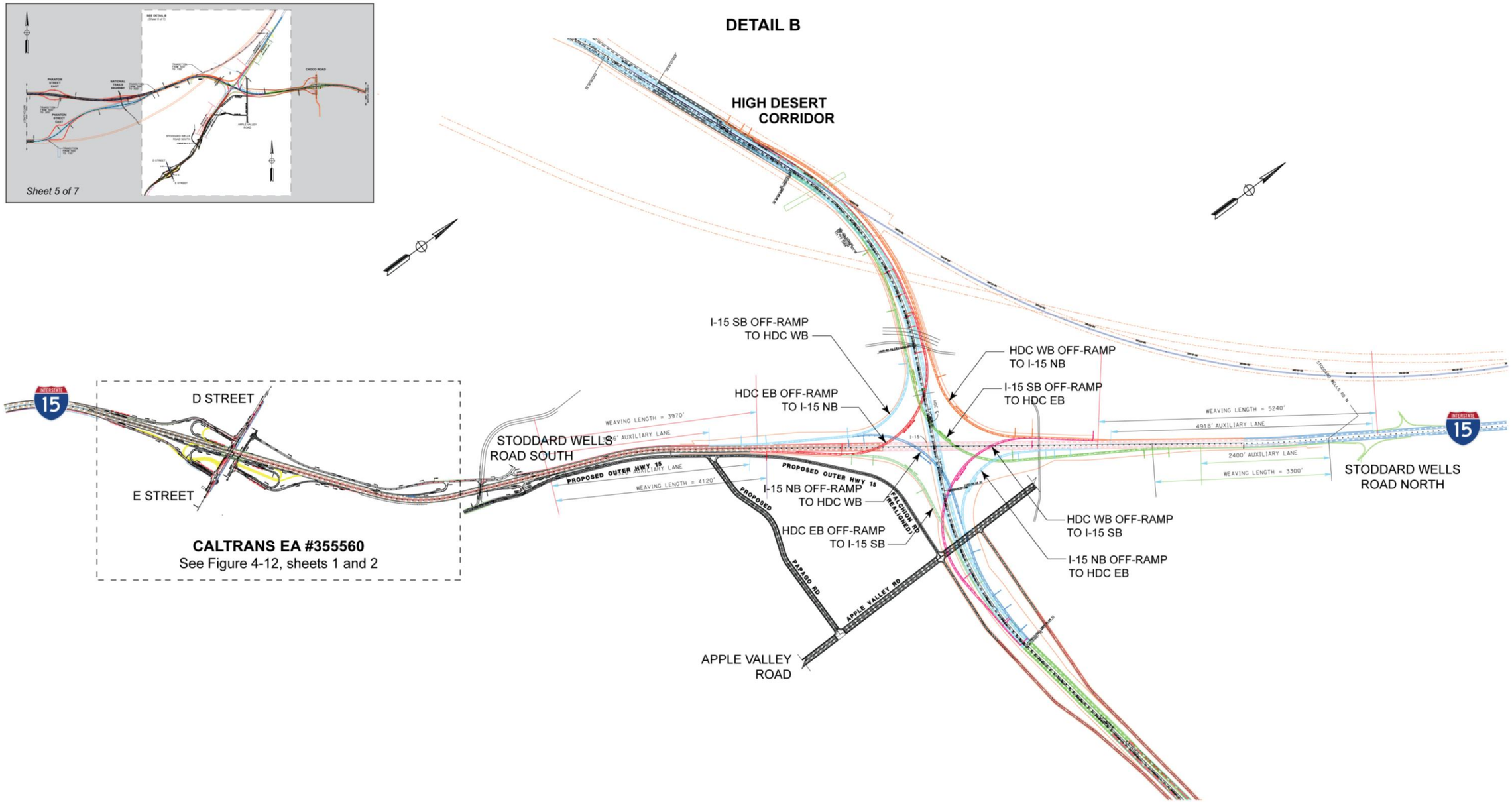
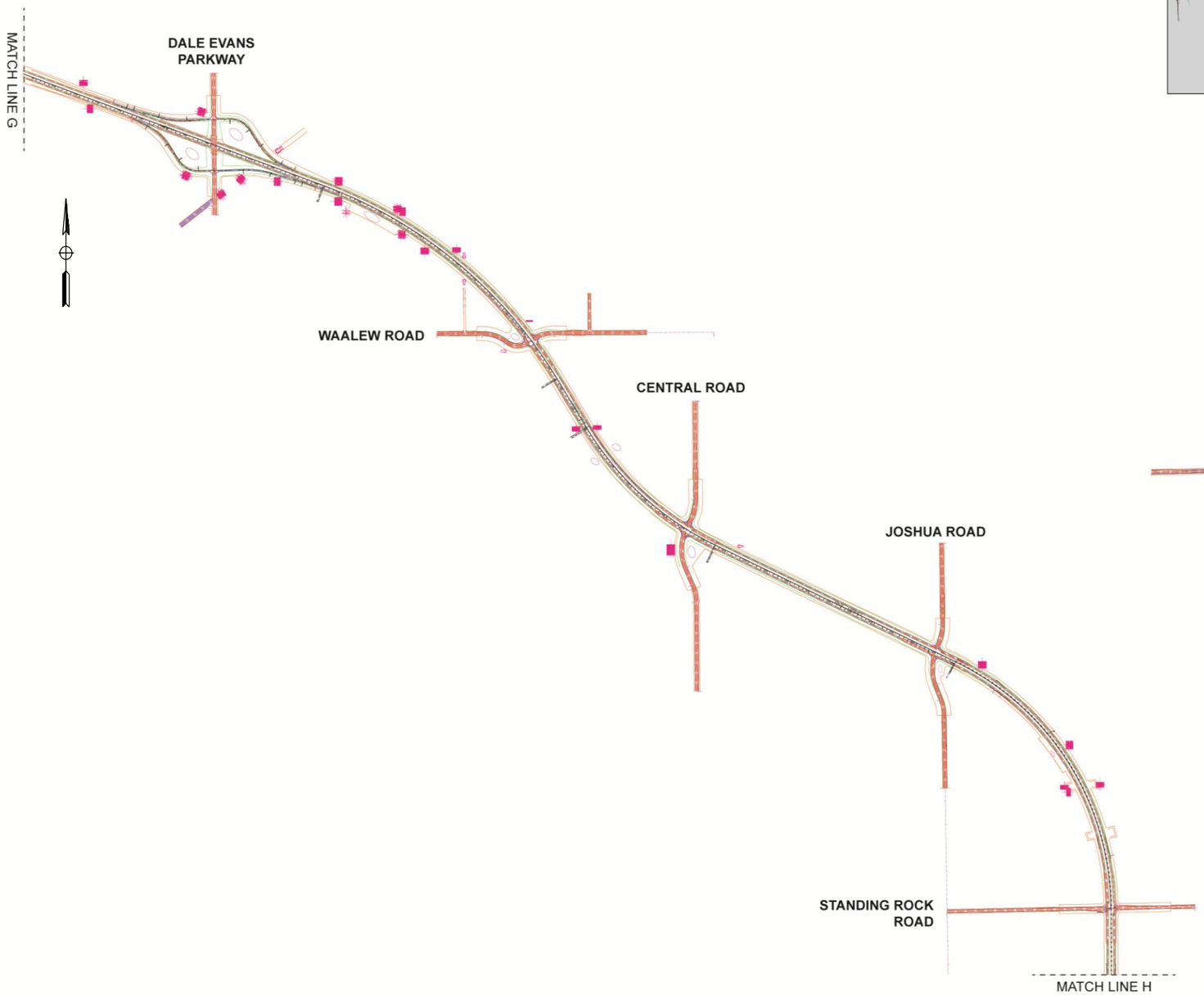


Figure 4-7: High Desert Corridor Ramp Locations
(Sheet 6 of 7)



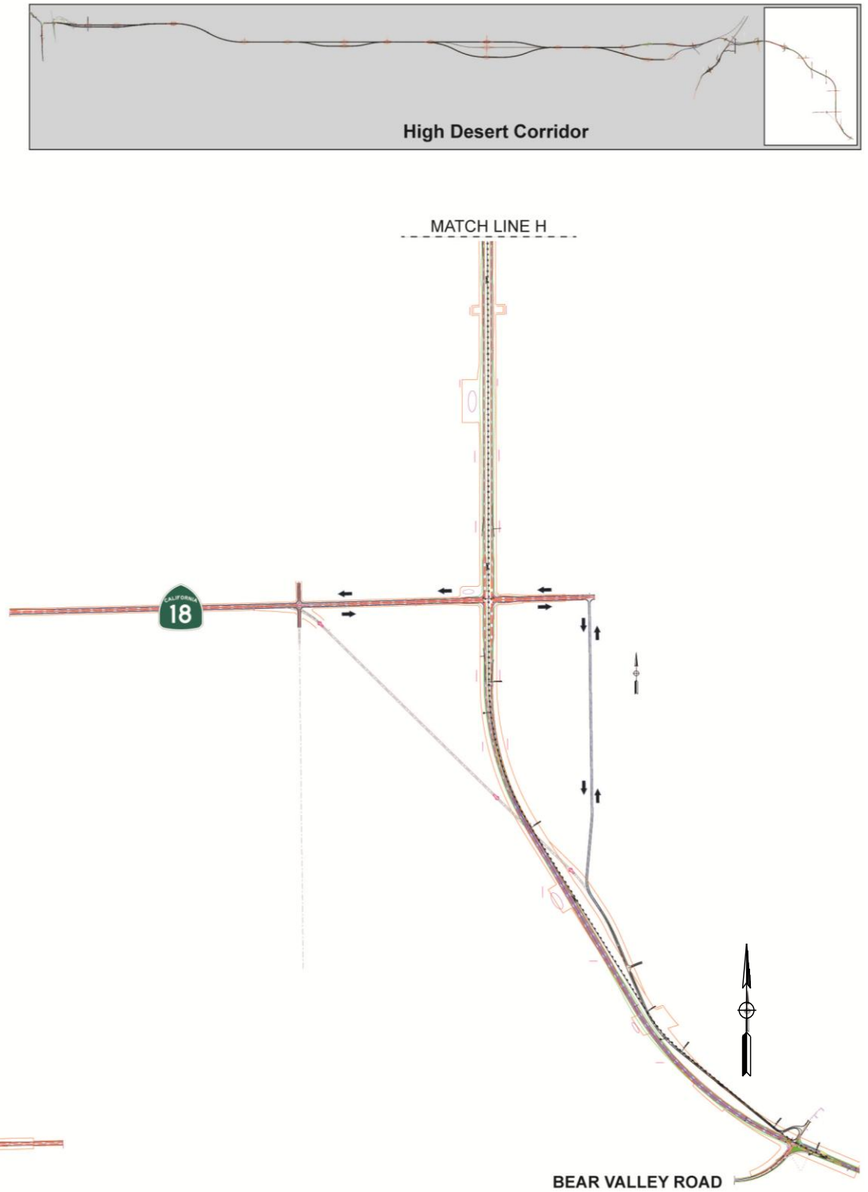


Figure 4-7: High Desert Corridor Ramp Locations

(Sheet 7 of 7)

continue for approximately 0.8 miles leading to a two-lane extended off-ramp to 10th Street West. A two-lane branch connector (on-ramp) from westbound High Desert Corridor would then braid with the SR 14 off-ramp to 10th Street West. A slip ramp would be provided to allow westbound High Desert Corridor traffic to exit at 10th Street West. The High Desert Corridor to SR 14 two-lane branch connector would join SR 14 via two receiving auxiliary lanes that would taper to one auxiliary lane prior to the 10th Street West loop on-ramp. This auxiliary lane would continue north for over one mile, ending at a two-lane off-ramp to West Avenue N.

The proposed lane geometry for northbound SR 14 under the 2040 build and build toll alternatives (High Desert Corridor new freeway from SR 14 to I-15) would be identical to that described for the TSM and opening year alternatives, except for the limits of the auxiliary lane. As illustrated on Figure 4-8, a fourth mainline lane is assumed for SR 14 south of Pearblossom Highway. This #4 mainline lane would exit (drop) at the branch connector to eastbound High Desert Corridor, and resume (be added) to receive westbound High Desert Corridor to northbound SR 14 traffic volumes.

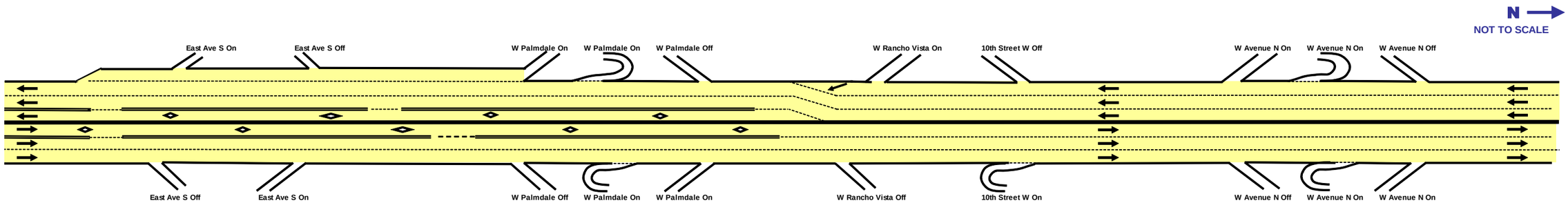
During the design refinement stage of project development, an on-ramp to eastbound High Desert Corridor from West Palmdale Boulevard was added to the project definition for the build alternatives. The diagonal on-ramp to northbound SR 14 from West Palmdale Boulevard was removed as a consequence. These revisions are illustrated on Figure 4-8, sheet 2 of 2.

Traveling southbound, an auxiliary lane would be added to receive on-ramp traffic from West Avenue N. This auxiliary lane would extend for 1.6 miles to the 10th Street West off-ramp, which would be widened to two lanes. One thousand feet south of the 10th Street West off-ramp diverge, an auxiliary lane would be added to serve the southbound SR 14 to eastbound High Desert Corridor two-lane branch connector exit. An on-ramp from 10th Street West to SR 14 would braid with the High Desert Corridor branch connector and would include a slip ramp. The slip ramp would allow motorists using the southbound 10th Street West on-ramp to access eastbound High Desert Corridor.

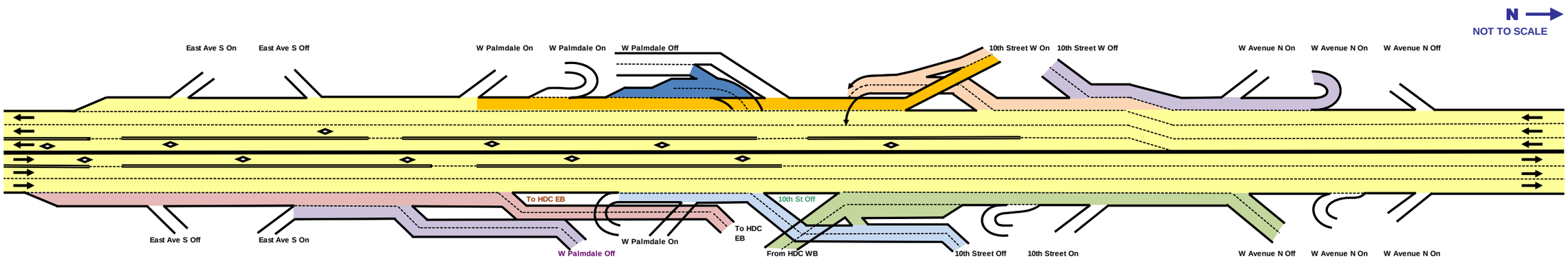
The on-ramp from 10th Street West would continue south along SR 14 as an auxiliary lane, extending to the West Palmdale Boulevard southbound on-ramp. Traffic from westbound High Desert Corridor to southbound SR 14 two-lane branch connector would be received by this auxiliary lane. The branch connector would include a slip off-ramp to West Palmdale Boulevard, and would subsequently narrow to a single lane before its merge with the SR 14 outside (#4) lane.

The proposed lane geometry for southbound SR 14 under the 2040 build and build toll alternatives (High Desert Corridor new freeway from SR 14 to I-15) would be identical to that described for the TSM and 2020 opening year alternatives, except for the limits of the auxiliary lane. As illustrated on Figure 4-8, a fourth mainline lane is assumed for SR 14 extending from north of Palmdale to Santa Clarita as described in section 3.3. The fourth southbound mainline would exit (drop) to the eastbound High Desert Corridor branch connector, and resume with the on-ramp from 10th Street West.

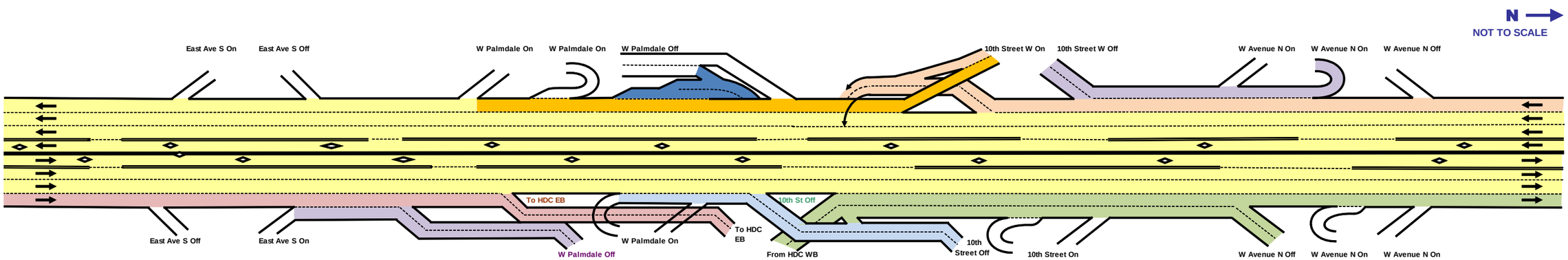
Given the complexity of the improvements along SR 14, Figure 4-9, which presents the alignment for the build alternatives, is included in the main body of this traffic report.



Existing Lane Geometry

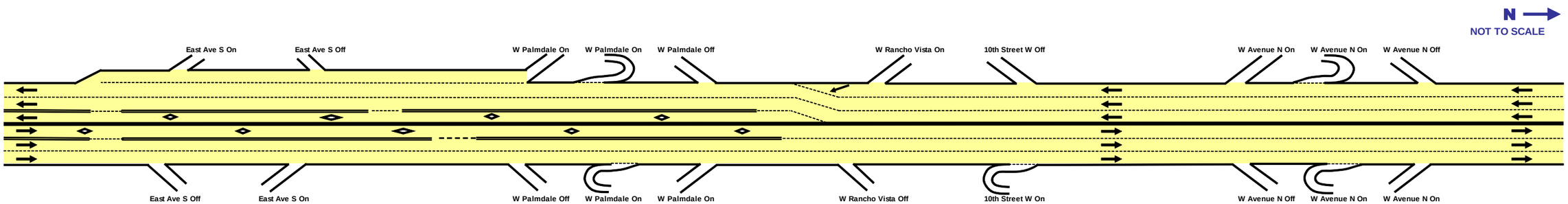


Proposed Lane Geometry for the TSM and 2020 Alternatives

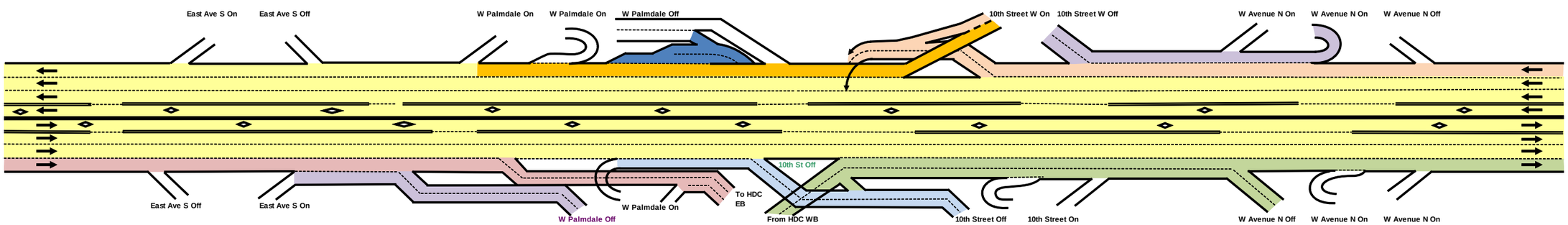


Proposed Lane Geometry for the 2040 and Build Toll Alternatives

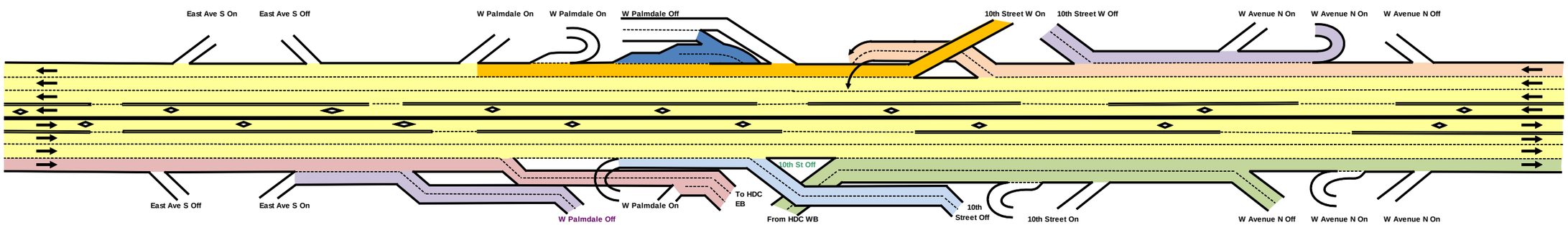
Figure 4-8: SR 14 Freeway Traffic Lane Configurations *(Initial)*
(1 of 2)



Existing Lane Geometry



Revised Lane Geometry for the 2020 Alternatives



Revised Lane Geometry for the 2040 and Build Toll Alternatives

Figure 4-8: SR 14 Freeway Traffic Lane Configurations *(Revised)*
(2 of 2)

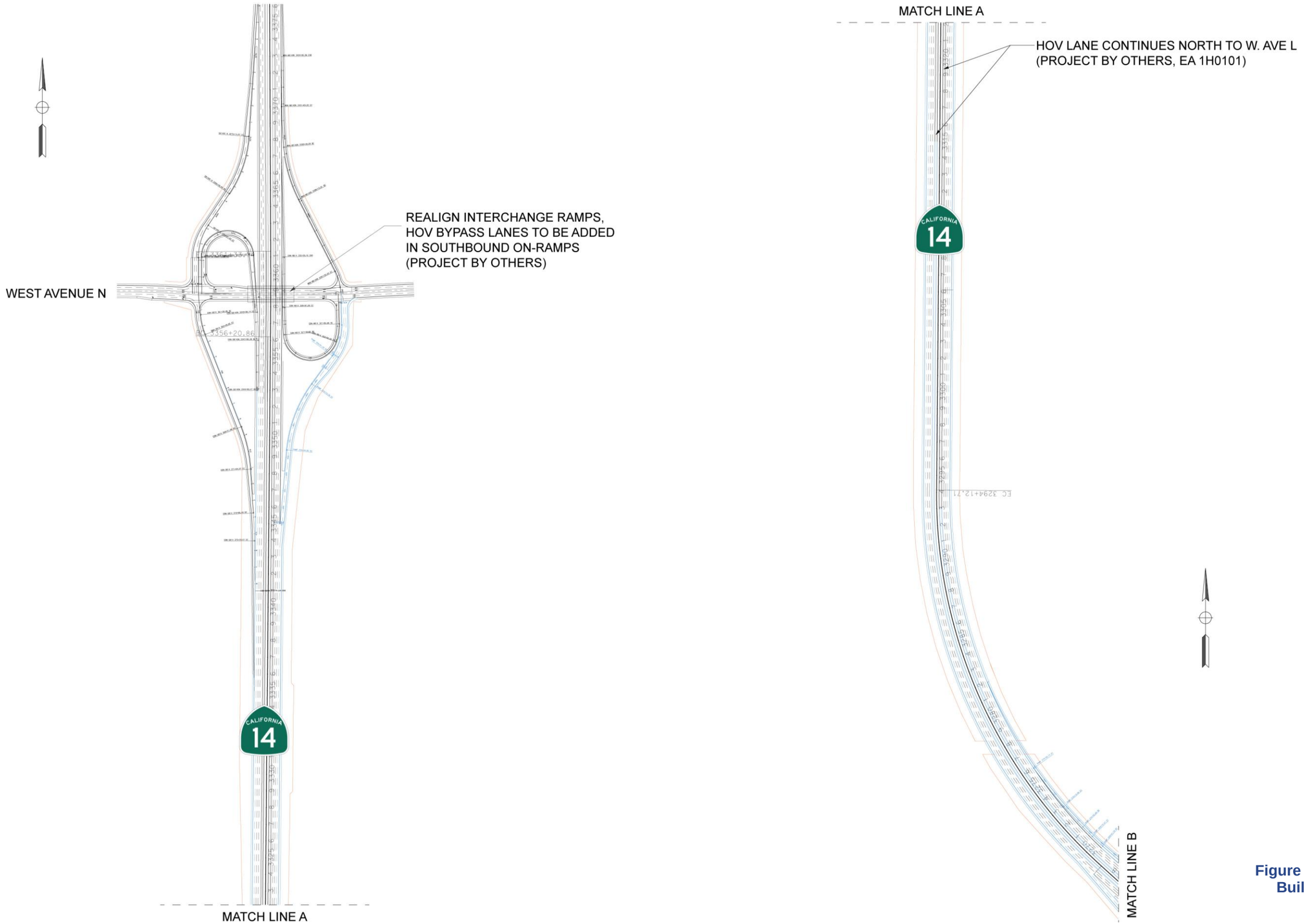


Figure 4-9: Year 2020 SR 14 Build Alignment *(1 of 3)*

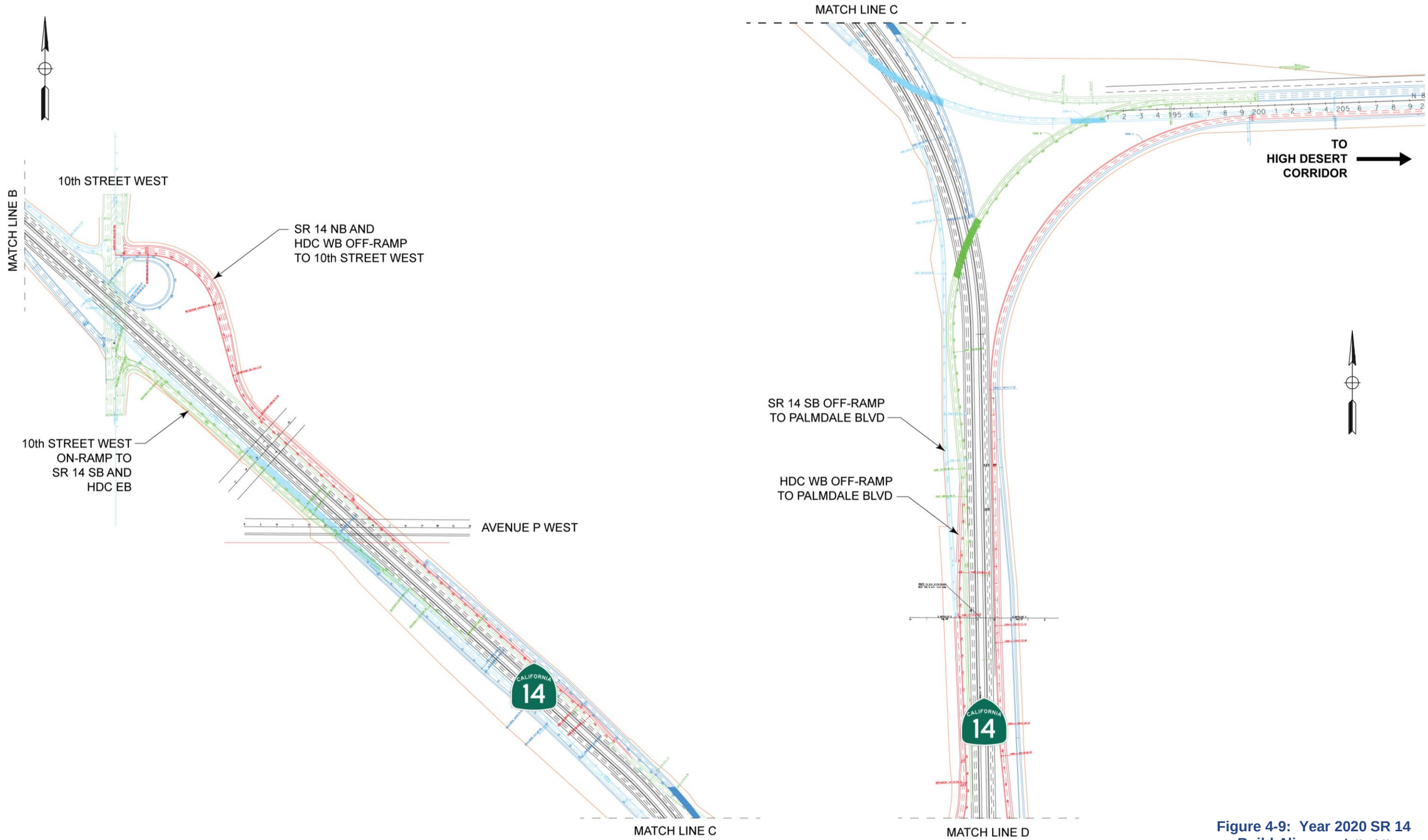


Figure 4-9: Year 2020 SR 14 Build Alignment *(2 of 3)*

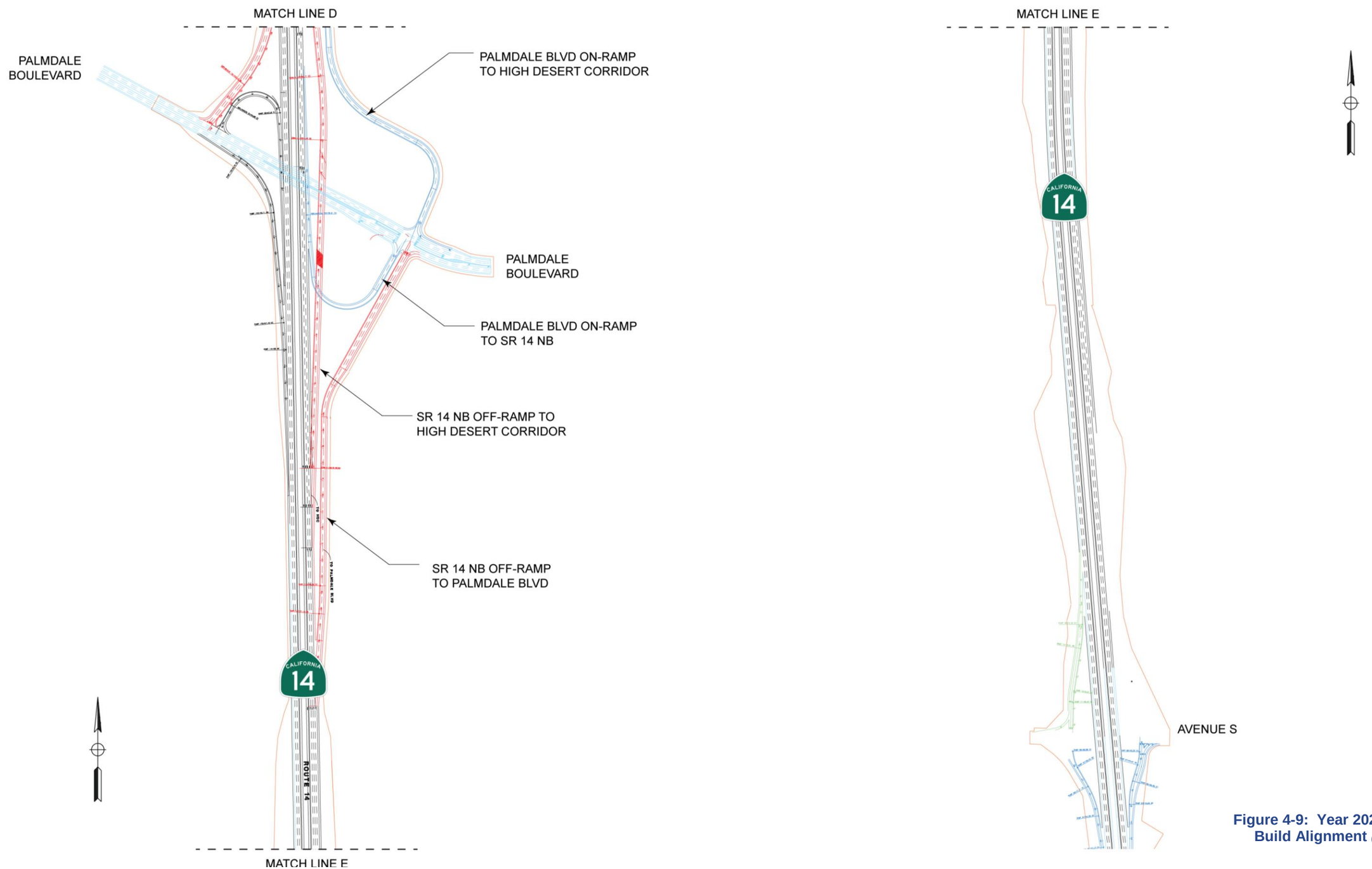


Figure 4-9: Year 2020 SR 14 Build Alignment *(3 of 3)*

4.3.3 Interstate 15

Figure 4-10 illustrates the proposed traffic lane geometry of I-15 from Palmdale Road on the south to Dale Evans Parkway on the north. By and large, this is currently, and is proposed to continue as, a six-lane facility with auxiliary lanes between Palmdale Road and Roy Rogers Drive, and to/from D Street to the south.

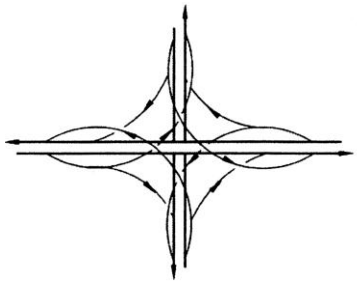
The proposed High Desert Corridor system interchange would be inserted between two lightly used local interchanges serving Stoddard Wells Road south and Stoddard Wells Road north. Auxiliary lanes are proposed along I-15 north and south of the system interchange.

Figure 4-11 illustrates the proximity of the system interchange to the adjacent existing and proposed interchanges. Stoddard Wells Road south is approximately 1.3 miles to the south, while Stoddard Wells Road north lies approximately 1.6 miles north of the proposed system interchange. Along High Desert Corridor/SR 18, the adjacent interchanges serving National Trails Highway to the west of I-15 and Choco Road/Apple Valley Road east of I-15 are at, or in excess of, two miles from the proposed system interchange.

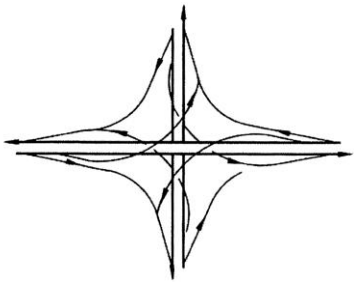
Given the importance of I-15 to the High Desert Corridor project, the full scope of improvements along I-15 are included in the main body of this traffic report as Figure 4-12.

Figure 4-12 (sheet 3 of 4) illustrates that a four-level system interchange is proposed with direct connector ramps serving all movements. A type F-1 alternative A interchange design is proposed for all direct connector ramp diverging (exiting) movements, while a type F-1 alternative B interchange design is proposed for all but one (southbound I-15 to westbound High Desert corridor) of the connector ramp merging (entering) movements, as illustrated below.

Typical Freeway to Freeway Interchanges



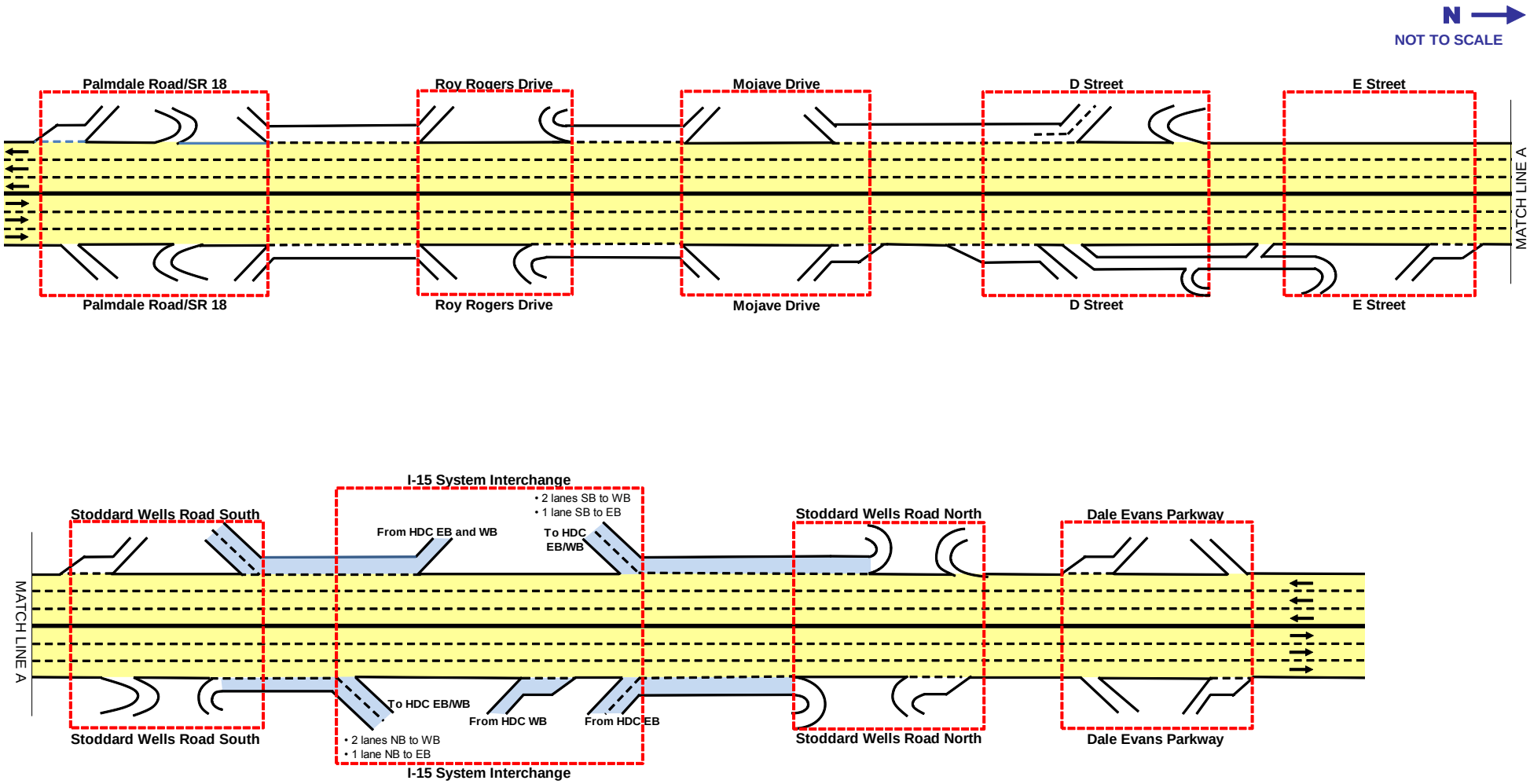
Type F-1 (Alternative A)



Type F-1 (Alternative B)

Director connector ramps are proposed for all freeway-to-freeway movements due to safety and speed considerations.

Figure 4-12 (sheets 1 and 2 of 4) illustrate the proposed reconfiguration of two closely spaced interchanges at D Street and E Street and the reconfiguration of the southbound on-ramp at Stoddard Wells Road (south). This proposed work is a separately funded and environmentally reviewed project (Caltrans EA #355560) which has been approved by FHWA in accordance with Title 23, United States Code, Highways Section 111 (23 U.S.C. 111).



Source: Parsons

Proposed improvements

Figure 4-10: I-15 Proposed Lane Geometry

Figure 4-11: Proximity of I-15 – High Desert Corridor/SR 18 Interchange to Adjacent Interchanges

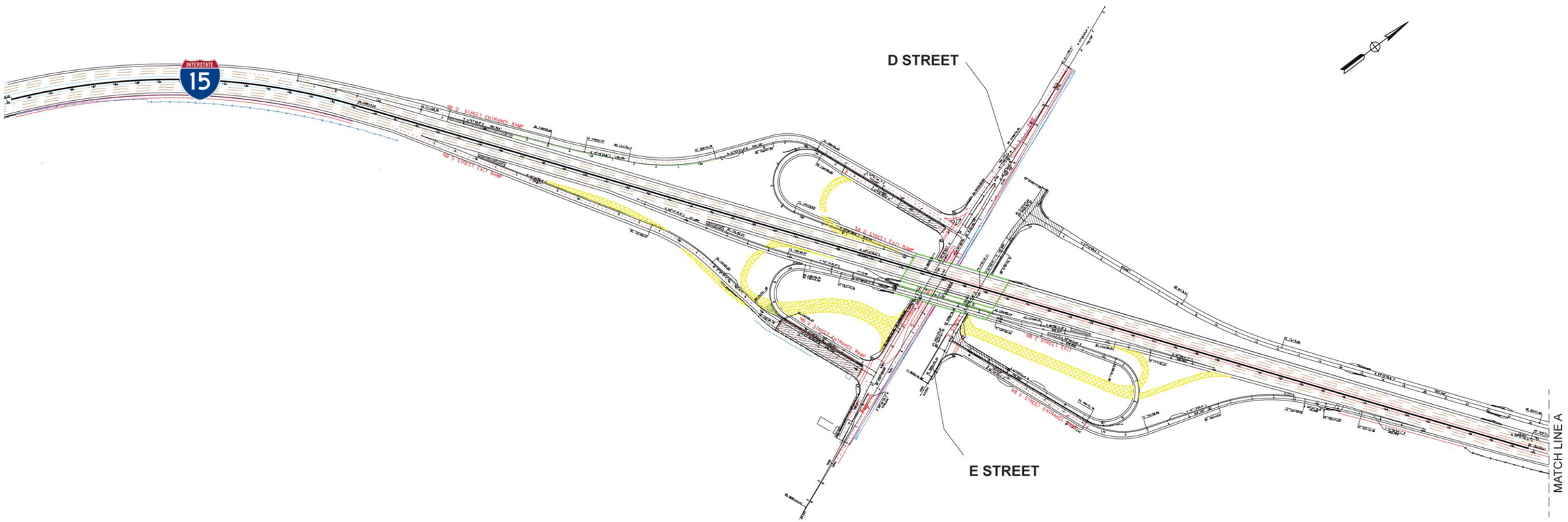


Figure 4-12: I-15 Build Alignment *(1 of 4)*

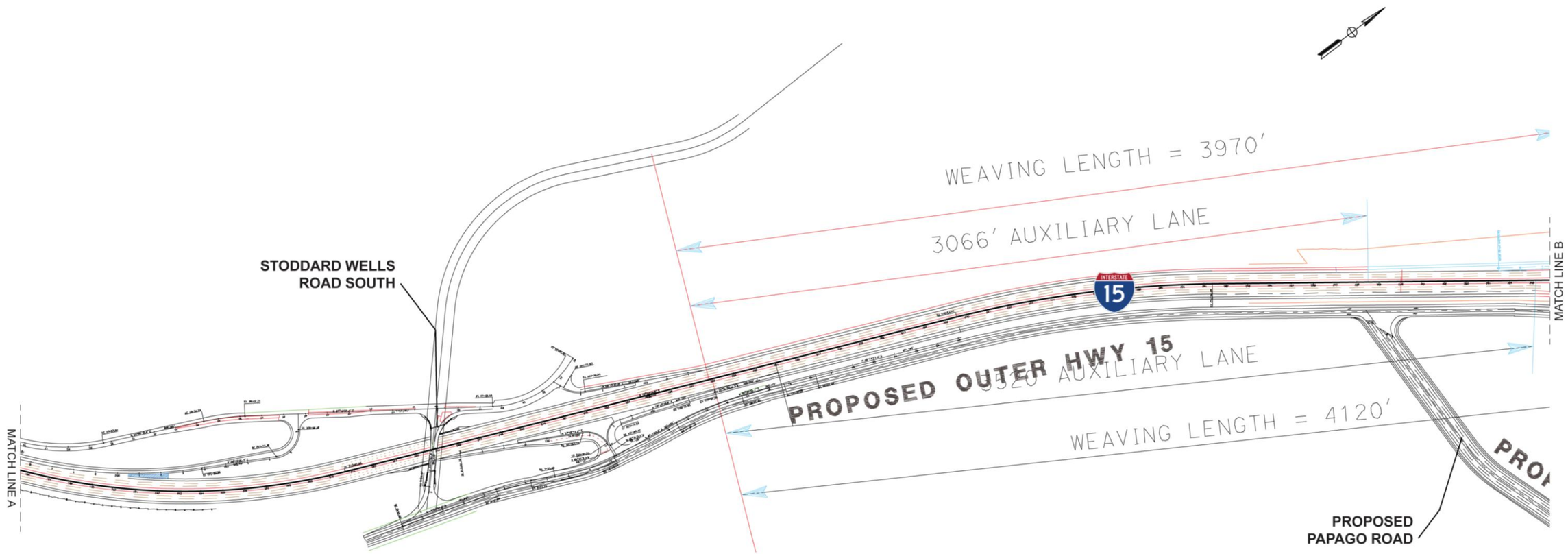


Figure 4-12: I-15 Build Alignment *(2 of 4)*

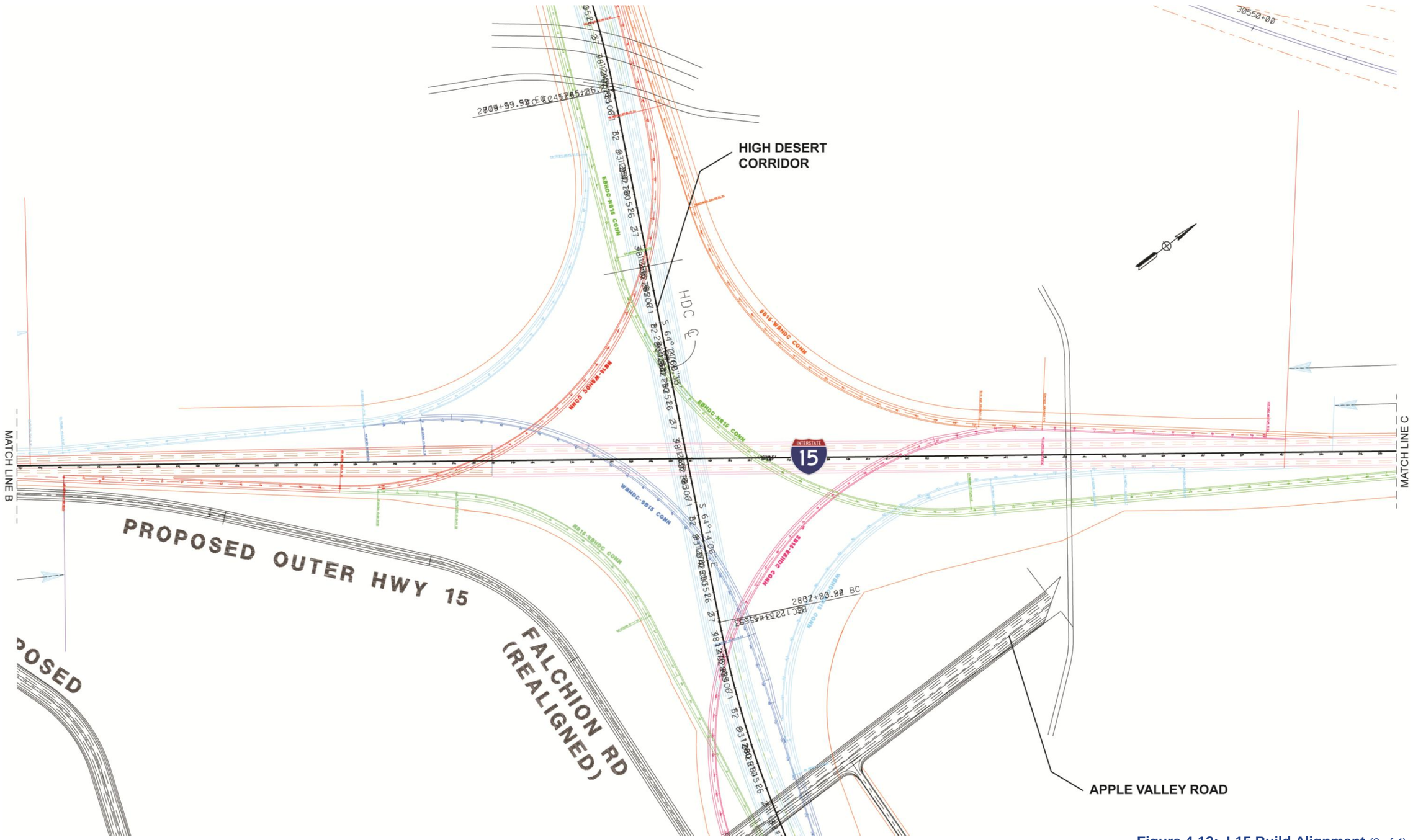


Figure 4-12: I-15 Build Alignment *(3 of 4)*

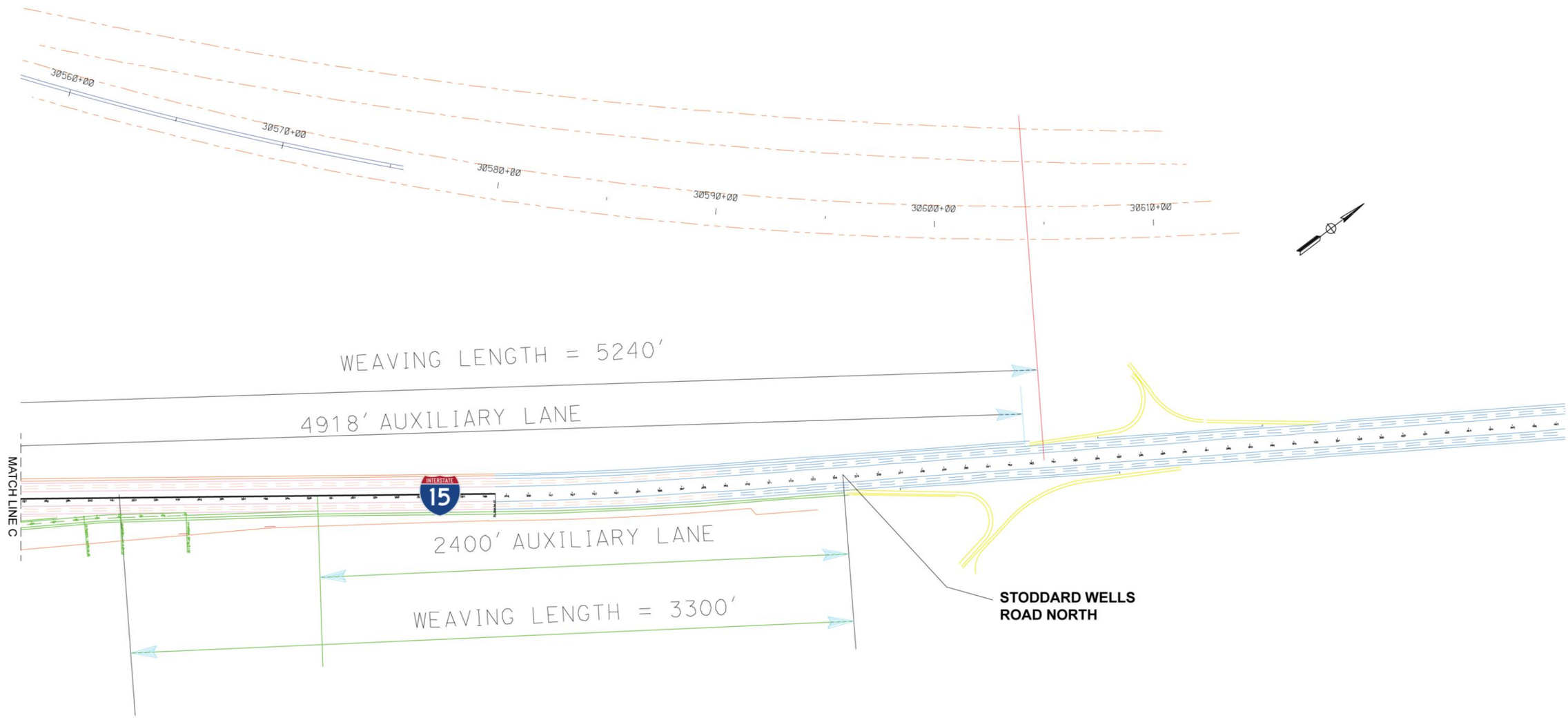


Figure 4-12: I-15 Build Alignment *(4 of 4)*

4.4 Methodology

The traffic operations analysis considers the overall performance of the highway network, the performance of the freeways affected by the project, specifically SR 14, the new High Desert Corridor freeway, and I-15, local street intersections impacted by the project, and local traffic circulation impacts. These areas of interest are addressed for the opening year of the project, 2020, and a horizon year of 2040, which constitutes the design year for new construction related to the High Desert Corridor project.

The overall performance of the highway network was gauged using the Regional Transportation Travel Forecasting Model, as previously discussed and reported in Chapter 3.

Freeway operational performance was measured using the CORSIM traffic simulation model. CORSIM (corridor simulation) is the traffic modeling and simulation software package funded by the Federal Highway Administration (FHWA) and is widely used for analyzing existing conditions and evaluating plans for new construction. To apply the simulation model, the physical features of the highway network must first be coded. This as-built condition was ascertained using an aerial photography base map and ground level reconnaissance. Traffic volumes and volume-weighted origin-destination matrices were then entered and the simulation model was calibrated to replicate existing conditions as measured by observed versus modeled traffic volumes, speeds, and traffic queues. Volume II of this report documents the calibration of the CORSIM model for local conditions along SR 14 in Palmdale and Lancaster.[39]

The calibration goal was to replicate local drivers' behavior and traffic characteristics to within ±10 percent of the existing count and travel time data collected. As CORSIM is a stochastic model, traffic response is simulated on random seeds. Thus, each scenario of network conditions (AM and PM) is simulated 10 times with different random seeds. The final result is based on the average of the 10 runs. Once the model is calibrated, it can be used to analyze both existing conditions and future scenarios.

To gauge traffic operational performance, level of service (LOS) is a qualitative measure used to describe the driver's experience within a traffic stream, generally in terms of service measures such as speed and travel time, freedom to maneuver, traffic interruptions and delay, and comfort and convenience. Six levels of service are defined by the Highway Capacity Manual (HCM) 2000. Letters designate each level—from LOS A (indicating traffic flows with little or no delay) to LOS F (indicating over-saturated conditions where traffic flow exceeds freeway capacity, generally resulting in long queues and delays). The level of service criteria for density on freeways are presented in Table 4-1.

To determine freeway level of service, the density of each mainline segment was extracted from the CORSIM output and compared to the criteria listed on Table 4-1.

Insofar as existing conditions, Tables 4-2 and 4-3 list the freeway segment LOS computed via the HCM Highway Capacity Software, versus that estimated based on CORSIM microsimulation. This comparison was performed for I-15 to serve as a validation check of the CORSIM model which was calibrated for SR 14.

[39] Insufficient congestion was observed along I-15 in Victor Valley to properly calibrate the CORSIM model for that facility; hence, the model as calibrated for SR 14 was used for all High Desert Corridor area microsimulation.

Table 4-1. Mainline and Ramp Level of Service Definitions

LOS	DESCRIPTION	DENSITY (pc/mi/ln)	
		MAINLINE	RAMPS
A	Describes free-flow operations. Free-flow speeds prevail.	<11	<10
B	Represents reasonably free-flow operations and free-flow speeds are maintained.	>11 and <18	>10 and <20
C	Provides for flow with speeds at or near the free-flow speed of the freeway.	>18 and <26	>20 and <28
D	Describes the level at which speeds begin to decline slightly with increasing flows and density begins to increase somewhat more quickly.	>26 and <35	>28 and <35
E	At this level's highest density value, it describes operation that is at capacity of the freeway.	>35 and <45	>35
F	Describes breakdown in vehicular flow and queues forming behind the breakdown points.	>45	Demand exceeds capacity

Source: Highway Capacity Manual 2000

It must be noted that CORSIM does not output HCM level of service. Simulation model measures of effectiveness are usually not directly translatable into HCM LOS measures, because the HCM bases hourly level of service on the performance of the facility during the peak 15-consecutive-minute period within the analysis hour. Also, most all simulation tools such as CORSIM report the density of vehicles; while the density used in HCM LOS for uninterrupted flow facilities (no signals or stop signs) is the passenger car equivalent in passenger car units of the actual density of vehicles on the facility.

Since each microscopic and macroscopic analysis tool (including the HCM method) has notably different definitions of what constitutes stopped and queued vehicles, and because the tools also vary significantly in the determination of which vehicles to include in the computations (vehicles that both entered and exited during the analysis period, vehicles that did neither, or vehicles that either entered or exited, but not both, during the analysis period), it is not feasible for an analyst to take the macroscopic output from one tool, apply a conversion factor (or procedure) and compare the results to that of another tool.

This conclusion means that looking up HCM levels of service using measures of effectiveness (MOE) produced by a different analytical method is not completely accurate.

The CORSIM derived LOS determinations are therefore considered approximations, to be viewed along with density and speed MOEs.

Examining the density parameter, upon which the level of service is graded, indicates the following:

- On I-15, which is less congested than SR 14, the HCM Highway Capacity Software provides indications of higher densities, and thus more congestion, compared to the more extensive microsimulation of existing traffic operations using the CORSIM model.
- On I-15, the HCM software indicates slightly higher speeds compared to the CORSIM model results.

The HCM High Capacity Software software analyzes traffic operations based on isolated link conditions, whereas CORSIM analyzes freeway conditions taking downstream congestion and spillback into account.

Table 4-2. Existing I-15 Northbound Freeway Mainline and Ramp Junction Level of Service

FREEWAY SEGMENT	AM PEAK						PM PEAK					
	HCS[1]			CORSIM[2]			HCS[1]			CORSIM[2]		
	LOS	DENSITY (veh/ln/mi)	SPEED (mph)	LOS	DENSITY (veh/ln/mi)	SPEED (mph)	LOS	DENSITY (veh/ln/mi)	SPEED (mph)	LOS	DENSITY (veh/ln/mi)	SPEED (mph)
I-15 NB MAINLINE												
I-15 northbound south end of the network to Palmdale Road off-ramp	B	12.7	65	B	11.6	63	B	14.5	65	B	13.3	63
Palmdale Road direct on-ramp to Roy Rogers Drive off-ramp	A	9.7	65	A	8.9	62	B	11.2	65	A	10.4	61
Roy Rogers Drive on-ramp to Mojave Drive off-ramp	A	8.8	65	A	8.1	62	A	10.7	65	A	10.1	61
Mojave Drive on-ramp to D Street off-ramp	B	11.4	65	A	9.1	62	B	13.0	65	A	10.5	62
D Street on-ramp to E Street off-ramp	A	7.1	65	A	6.5	63	A	8.6	65	A	8.0	63
E Street on-ramp to Stoddard Wells Road off-ramp	A	7.0	65	A	6.4	63	A	8.5	65	A	7.9	63
Stoddard Wells Road on-ramp to Stoddard Wells Road off-ramp (Quarry Road)	A	6.0	65	A	5.6	63	A	7.2	65	A	6.5	63
Stoddard Wells Road on-ramp (Quarry Road) to Dale Evans Parkway off-ramp	A	6.6	65	A	5.2	63	A	7.8	65	A	6.1	63
Dale Evans Parkway on-ramp to I-15 northbound north end of the network	A	6.4	65	A	5.4	63	A	7.0	65	A	5.9	63

[1]HCS+ version 5.5 (HCM 2000)
[2]CORSIM version 6.1

Table 4-3. Existing I-15 Southbound Freeway Mainline and Ramp Junction Level of Service

FREEWAY SEGMENT	AM PEAK						PM PEAK					
	HCS[1]			CORSIM[2]			HCS[1]			CORSIM[2]		
	LOS	DENSITY (veh/ln/mi)	SPEED (mph)	LOS	DENSITY (veh/ln/mi)	SPEED (mph)	LOS	DENSITY (veh/ln/mi)	SPEED (mph)	LOS	DENSITY (veh/ln/mi)	SPEED (mph)
I-15 SOUTHBOUND MAINLINE												
I-15 southbound north end of the network to Dale Evans Parkway off-ramp	A	4.3	65	A	3.6	65	B	11.6	65	A	10.4	63
Dale Evans Parkway on-ramp to Quarry Road off-ramp	A	4.2	65	A	3.5	64	A	10.7	65	A	9.7	63
Quarry Road on-ramp to Stoddard Wells Road off-ramp	A	4.4	65	A	3.7	63	A	10.8	65	A	9.8	62
Stoddard Wells Road direct on-ramp to E Street off-ramp	A	6.4	65	A	5.5	62	B	12.2	65	A	10.7	61
E Street on-ramp to D Street off-ramp	A	6.6	65	A	5.6	63	B	12.3	65	A	10.7	62
D Street on-ramp to Mojave Drive off-ramp	A	8.1	65	A	6.9	62	B	12.8	65	A	10.8	61
Mojave Drive on-ramp to Roy Rogers Drive off-ramp	A	9.2	65	A	8.1	61	B	13.2	65	B	11.5	61
Roy Rogers Drive on-ramp to Palmdale Road off-ramp	A	9.2	65	A	8.0	62	B	14.0	65	B	15.2	61
Palmdale Road direct on-ramp to I-15 southbound south end of the network	B	11.5	65	A	9.8	63	C	18.3	65	B	15.4	61

[1]HCS+ version 5.5 (HCM 2000)
[2]CORSIM version 6.1

For future year conditions, freeway traffic performance was measured using a traffic simulation program, such as CORSIM, as recommended by FHWA for saturated traffic conditions in an urban setting.[40]

In addition to level of service, additional measures of effectiveness can be extracted from the CORSIM traffic simulation model output. These include link volumes served by the facility (throughput), speed, delay time, vehicle miles traveled, vehicle hours traveled, and overall vehicle delay. These are defined on Figure 4-13, which presents an example table of CORSIM analysis results.

In addition to evaluating the performance of the SR 14, High Desert Corridor/SR 18 new freeway, and I-15 freeway segments in the study corridor, interchange ramp termini intersections were evaluated as part of this study. The CORSIM software was again used for the intersection analysis, as both freeway and the ramp intersections were modeled as an integrated system. CORSIM is capable of analyzing both unsignalized and signalized intersections and was used to compute control delay per vehicle. HCM 2000-defined levels of service criteria for intersections are presented in Table 4-4.

Table 4-5 lists the 164 intersections selected for study and Figure 4-14 illustrates the locations of the intersections. As noted above, ramp terminal and adjacent intersections were analyzed using the CORSIM microsimulation software. The remaining isolated intersections were analyzed using TRAFFIX, version 8.0 software.

[40] Interstate System Access Informational Guide, August 2010.

Demand: Horizon year traffic volume (vehicles per hour) on freeway segment
Served: Traffic volume accommodated by freeway segment, taking traffic operational factors into account
% Served: Served volume/demand volume

Freeway Segment	PM Peak - Overall								
	Demand (vph)	Served (vph)	% Served	Travel Time (sec/veh)	Delay Time (sec/veh)	Speed (mph)	Density (veh/ln/mi)	LOS (HCM 2000)	Cumulative Time (sec/veh)
SR-14 NB Mainline									
Pearblossom Hwy Direct On Ramp to East Ave S Off Ramp	2,760	2,758	100%	177.9	23.4	56	16.4	B	178
East Ave S Off Ramp to East Ave S On Ramp	2,202	2,202	100%	27.6	1.7	61	12.1	B	205
East Ave S On Ramp to West Palmdale Blvd Off Ramp	2,934	2,925	100%	60.4	5.7	59	16.4	B	266
West Palmdale Blvd Off Ramp to HDC Off Ramp	2,321	2,310	100%	21.7	1.0	62	12.5	B	288
HDC Off Ramp to West Palmdale Blvd Loop On Ramp	2,486	2,463	99%	16.9	1.1	60	12.7	B	304
West Palmdale Blvd Loop On Ramp to West Palmdale Blvd Direct On Ramp	3,102	3,074	99%	57.4	5.3	58	17.2	B	362
West Palmdale Blvd Direct On Ramp to 10th St West Off Ramp	2,183	2,156	99%	49.0	1.4	63	11.4	B	411
10th St West Off Ramp to HDC On Ramp	2,955	2,939	99%	82.6	4.3	61	15.8	B	493
HDC On Ramp to 10th St West On Ramp	2,688	2,667	99%	17.8	0.7	62	14.3	B	511
10th St W Loop On Ramp to 10th St W Direct On Ramp	2,858	2,838	99%	9.5	0.6	61	13.9	B	521
10th St W Direct On Ramp to West Ave N Off Ramp	3,109	3,075	99%	31.2	1.7	61	16.3	B	552
SR-14 SB Mainline									
West Ave M On Ramp to West Ave N Off Ramp	4,542	4,540	100%	37.3	2.5	60	25.1	C	37
West Ave N Off Ramp to West Ave N Loop On Ramp	4,128	4,127	100%	18.6	1.2	61	22.7	C	56
West Ave N Loop On Ramp to West Ave N Direct On Ramp	4,224	4,220	100%	11.3	0.8	60	21.3	C	67
West Ave N Direct On Ramp to 10th St W Off Ramp	4,350	4,343	100%	88.9	7.8	59	24.3	C	156
10th St W Off Ramp to HDC Off Ramp	3,251	3,243	100%	53.3	3.7	60	17.9	B	209
HDC Off Ramp to 10th St W On Ramp	3,832	3,813	100%	58.1	6.4	58	20.1	C	267
10th St W On Ramp to Palmdale Blvd Off Ramp	2,980	2,980	100%	16.9	0.9	61	16.3	B	284
West Palmdale Blvd Off Ramp to HDC On Ramp	3,079	3,079	100%	13.6	0.8	61	15.7	B	298
HDC On Ramp to West Palmdale Blvd Loop On Ramp	3,286	3,286	100%	66.6	3.9	61	13.5	B	365
West Palmdale Blvd Loop On Ramp to West Palmdale Blvd Direct On Ramp	2,381	2,381	100%	21.6	1.1	62	10.9	A	386
West Palmdale Blvd Direct On Ramp to East Ave S Off Ramp	2,575	2,575	100%	209.2	21.4	59	12.6	B	595

LOS: Approximate level of service. Note that CORSIM's computation of density differs from the Highway Capacity Manual
Density: The indicator of level of service according to the *2000 Highway Capacity Manual*
Speed: An indicator of level of service according to the *1994 Highway Capacity Manual*
Delay Time: Travel time in excess of "free flow," uncongested travel time
Travel Time: Time to traverse freeway segment (seconds per vehicle)

Figure 4-13: Measures of Effectiveness Derived from CORSIM Traffic Simulation Model

Table 4-4. Intersection Level of Service Definitions

LOS	DESCRIPTION	CONTROL DELAY PER VEHICLE (sec/veh)	
		UNSIGNALIZED	SIGNALIZED
A	Traffic flows with very little delay and optimal speeds. Most vehicles do not stop at all.	0–10	<10
B	Traffic flows with very little delay and speeds may be slightly reduced. Very infrequent and short waits at traffic signals. More vehicles stop at intersections than for LOS A.	>10–15	>10–20
C	Traffic speeds continue to slow. Some vehicles may stop at this level, although many vehicles still pass through the intersection without stopping.	>15–25	>20–35
D	Congestion becomes more noticeable. Many vehicles stop and the proportion of vehicles not stopping declines.	>25–35	>35–55
E	Low speeds and traffic backups at intersections. Often considered to be the limit of acceptable delay.	>35–50	>55–80
F	Very slow speeds and congestion. Long traffic backups. Very likely to wait for multiple greens to get through an intersection. This is considered to be unacceptable to most drivers.	>50	>80

Source: Highway Capacity Manual 2000

Table 4-5. List of Study Intersections *(1 of 3)*

NO.	INTERSECTION
1	SR 14 southbound off-ramp and West Avenue
2	SR 14 northbound off-ramp and West Avenue N
3	10th Street West and West Avenue O-8
4	10th Street West and Sam's Club access
5	10th Street West and SR 14 northbound on-ramp
6	10th Street West and SR 14 southbound off-ramp
7	10th Street West and Mall Ring Road
8	10th Street West and West Avenue P
9	Lowe's Driveway and West Avenue P
10	SR 14 southbound on-ramp and West Avenue P
11	SR 14 northbound off-ramp and West Avenue P
12	10th Street West and West Palmdale Boulevard
13	SR 14 southbound off-/on-ramps and West Palmdale Boulevard
14	SR 14 northbound off-/on-ramps and East Palmdale Boulevard
15	Division Street and East Palmdale Boulevard
16	SR 14 southbound off-ramp and West Avenue S
17	SR 14 northbound off-ramp and East Avenue S

NO.	INTERSECTION
18	Sierra Highway and East Avenue P
19	Sierra Highway and Technology Drive
20	Sierra Highway and East Avenue Q
21	5th Street East and East Palmdale Boulevard
22	6th Street East and East Palmdale Boulevard
23	Sierra Highway and East Palmdale Boulevard
24	10th Street East and East Avenue P
25	10th Street East or 30th Street East and westbound High Desert Corridor
26	10th Street East or 30th Street East and eastbound High Desert Corridor
27	10th Street East and East Avenue Q
28	10th Street East and East Palmdale Boulevard
29	15th Street East and East Avenue Q
30	15th Street East and East Palmdale Boulevard
31	20th Street East and East Avenue P
32	20th Street East and westbound High Desert Corridor
33	20th Street East and eastbound High Desert Corridor
34	20th Street East and East Avenue Q
35	20th Street East and East Palmdale Boulevard
36	25th Street East and East Palmdale Boulevard
37	30th Street East and East Avenue P
38	30th Street East and East Avenue Q

Table 4-5. List of Study Intersections *(2 of 3)*

NO.	INTERSECTION
39	30th Street East and East Palmdale Boulevard
40	40th Street East and East Avenue Q
41	40th Street East and East Palmdale Boulevard
42	50th Street East and East Avenue P
43	50th Street East and westbound High Desert Corridor
44	50th Street East and eastbound High Desert Corridor
45	50th Street East and East Palmdale Avenue
46	70th Street East and East Avenue P
47	70th Street and westbound High Desert Corridor
48	70th Street and eastbound High Desert Corridor
49	70th Street East and East Palmdale Boulevard
50	90th Street East and East Avenue P
51	90th Street East and westbound High Desert Corridor
52	90th Street East and eastbound High Desert Corridor
53	90th Street East and East Avenue Q
54	90th Street East and East Palmdale Boulevard
55	110th Street East and East Palmdale Boulevard
56	140th Street and East Palmdale Boulevard
57	140th Street and westbound High Desert Corridor
58	140th Street and eastbound High Desert Corridor
59	140th Street and East Avenue R
60	170th Street East an East Palmdale Boulevard
61	170th Street East and westbound High Desert Corridor
62	170th Street East and eastbound High Desert Corridor
63	170th Street East and East Avenue S
64	165th Street East and SR 138
65	180th Street East and East Palmdale Boulevard
66	210th Street and East Palmdale Boulevard
67	210th Street and westbound High Desert Corridor
68	210th Street and eastbound High Desert Corridor
69	210th Street and East Avenue S
70	SR 138 and SR 18

NO.	INTERSECTION
71	240th Street and East Palmdale Boulevard
72	240th Street East and westbound High Desert Corridor
73	240th Street East and eastbound High Desert Corridor
74	240th Street East and East Avenue R
75	Oasis Road and El Mirage Road
76	Oasis Road and westbound High Desert Corridor
77	Oasis Road and eastbound High Desert Corridor
78	Sheep Creek Road and El Mirage Road
79	Sheep Creek Road and westbound High Desert Corridor
80	Sheep Creek Road and eastbound High Desert Corridor
81	Sheep Creek Road and Holly Street
82	Sheep Creek Road and SR 18
83	Caughlin Road and Air Base Road
84	Caughlin Road and westbound High Desert Corridor
85	Caughlin Road and eastbound High Desert Corridor
86	Caughlin Road and Rancho Road
87	Koala Road and Air Base Road
88	Koala Road and westbound High Desert Corridor
89	Koala Road and eastbound High Desert Corridor
90	Koala Road and Rancho Road
91	Aster Road and SR 18
92	Bellflower Street and SR 18
93	U.S. 395 and Chamberlaine Way
94	U.S. 395 and Air Base Road
95	U.S. 395 and westbound High Desert Corridor
96	U.S. 395 and eastbound High Desert Corridor
97	U.S. 395 and Rancho Road
98	U.S. 395 and Mojave Drive
99	U.S. 395 and SR 18
100	Phantom Street and Mustang Street
101	Phantom St West and westbound High Desert Corridor
102	Phantom St West and eastbound High Desert Corridor
103	Phantom Street and Rancho Road
104	Topaz Road and SR 18

Table 4-5. List of Study Intersections *(3 of 3)*

NO.	INTERSECTION
105	Amethyst Road and SR 18
106	Phantom St East and westbound High Desert Corridor
107	Phantom St East and eastbound High Desert Corridor
108	El Evado Road and Air Expressway Boulevard
109	Village Drive and Air Expressway Boulevard
110	El Evado Road and SR 18
111	National Trails Highway and westbound High Desert Corridor
112	National Trails Highway and eastbound High Desert Corridor
113	National Trails Highway and Air Expressway Boulevard
114	I-15 southbound off-/on-ramps and Mojave Drive
115	I-15 northbound off-/on-ramps and Mojave Drive
116	I-15 southbound off-/on-ramps and Roy Rogers Drive
117	I-15 northbound off-/on-ramps and Roy Rogers Drive
118	Amargosa Road and SR 18
119	Kentwood Boulevard and SR 18
120	Park Avenue and SR 18
121	I-15 southbound off-ramp and Palmdale Road
122	I-15 northbound on-ramp and Palmdale Road
123	I-15 northbound off-ramp and Mariposa Road
124	I-15 southbound off-/on-ramps and National Trails Highway/D Street
125	I-15 northbound off-/on-ramps and National Trails Highway/D Street
126	West Frontage Road and E Street
127	I-15 northbound off-/on-ramps and E Street
128	Gateway and north Frontage Road
129	Gateway and south Frontage Road
130	I-15 southbound off-ramp and Stoddard Wells Road
131	I-15 northbound on-ramp and Stoddard Wells Road/Frontage Road
132	I-15 West Frontage Road and Stoddard Wells Road
133	Stoddard Wells Road and I-15 Frontage Road
134	Stoddard Wells Road and SR 18
135	Apple Valley Road and SR 18
136	I-15 southbound off-/on-ramps and Victorville Quarry Road
137	I-15 northbound off-/on-ramps and Stoddard Wells Road (north)
138	I-15 southbound off-/on-ramps and Dale Evans Parkway
139	I-15 northbound off-/on-ramps and Dale Evans Parkway
140	Choco Road and Frontage Road
141	Choco Road and westbound High Desert Corridor
142	Choco Road and eastbound High Desert Corridor
143	Choco Road and Falchion Road
144	Dale Evans Parkway and Air Expressway Boulevard
145	Dale Evans Parkway and westbound High Desert Corridor
146	Dale Evans Parkway and eastbound High Desert Corridor
147	Dale Evans Parkway and SR 18
148	Navajo Road and Waalew Road
149	High Desert Corridor and Waalew Road
150	Central Road and Waalew Road
151	High Desert Corridor and Central Road
152	Central Road and Thunderbird Road
153	Central Road and SR 18
154	Joshua Road and Cahuilla Road
155	Joshua Road and High Desert Corridor
156	Joshua Road and Thunderbird Road
157	Joshua Road and Standing Rock Road
158	Joshua Road and Yucca Loma Road
159	Joshua Road and Nisqually Road
160	High Desert Corridor and Standing Rock Road
161	High Desert Corridor and Yucca Loma Road
162	High Desert Corridor and Nisqually Road
163	Bear Valley Road and SR 18
175	West Frontage Road and I-15 southbound on-ramp

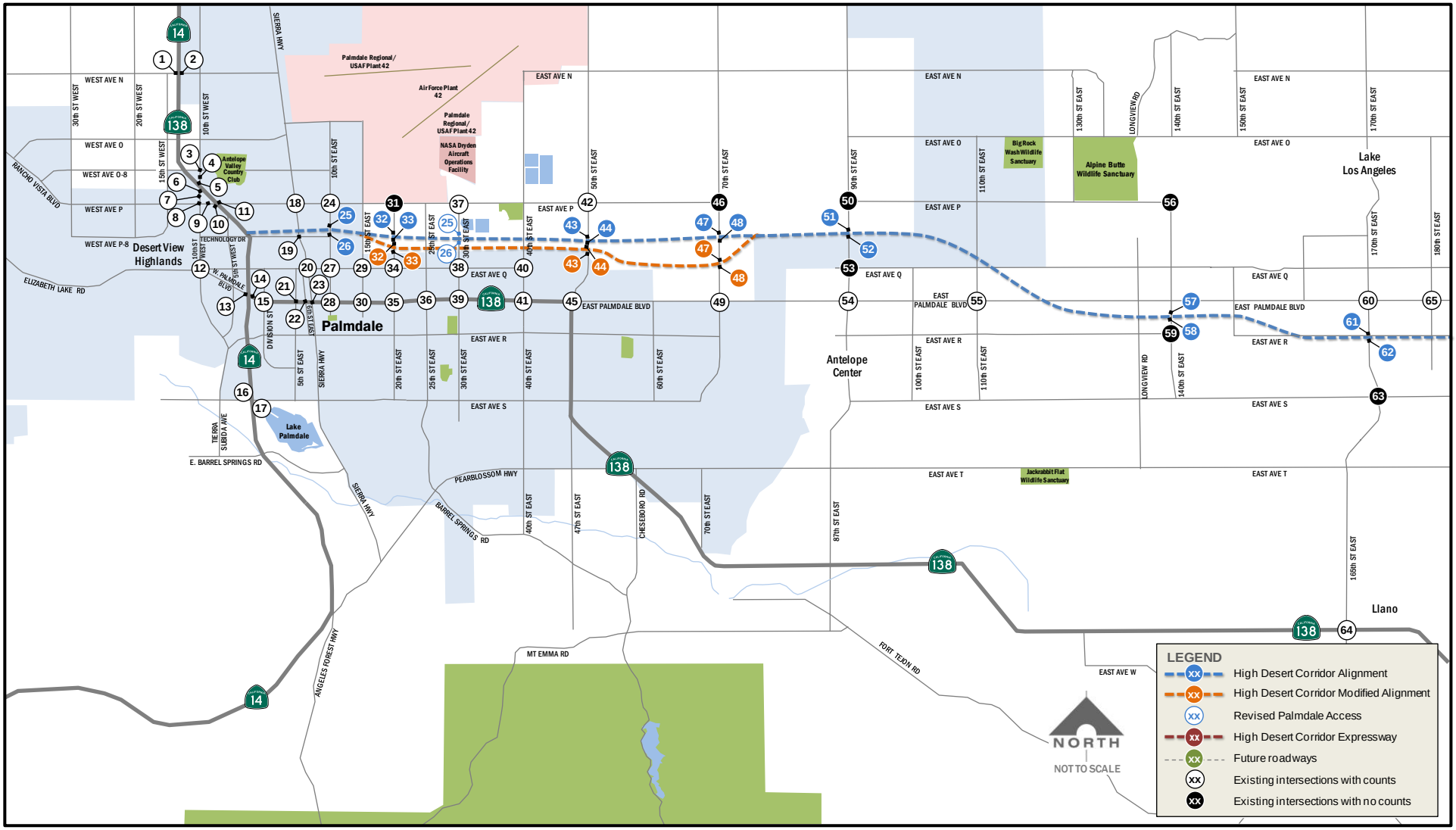


Figure 4-14: High Desert Corridor Study Intersections *(1 of 3)*

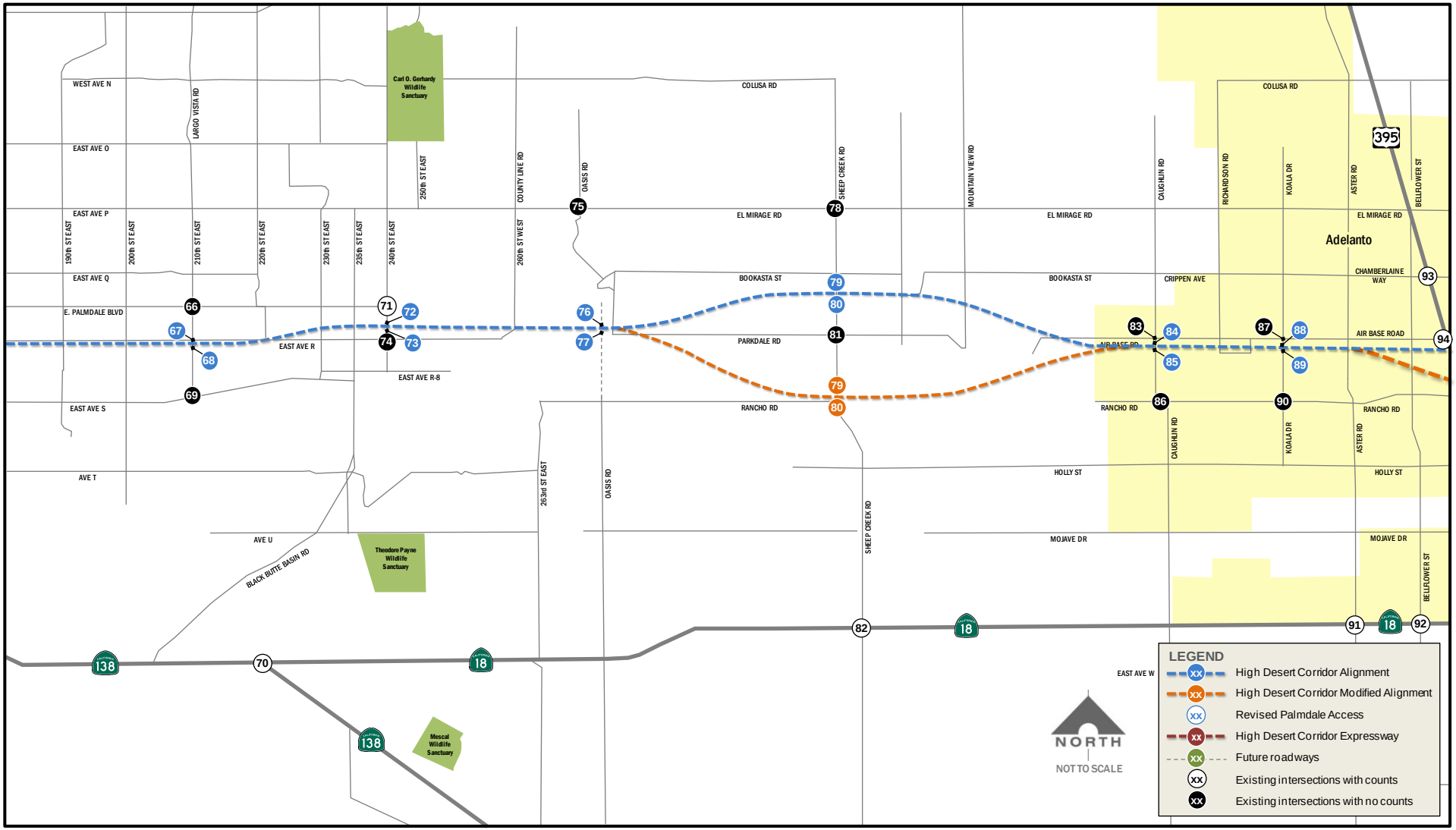


Figure 4-14: High Desert Corridor Study Intersections *(2 of 3)*

Figure 4-14: High Desert Corridor Study Intersections *(3 of 3)*

4.5 Freeway Mainline and Ramp Analysis Results

The no-build and interim build alternatives were analyzed for opening year (2020) and design year (2040) traffic demand conditions using the CORSIM traffic simulation model. CORSIM was described in section 4.4 of this report and the model calibration process is detailed in Volume II of this report.

Consistent with the evaluation of existing conditions, model output was extracted on a link by link and ramp basis to include demand volumes, operationally constrained (CORSIM served) volumes, travel time, delay time, speed, density and level of service (LOS). As described in section 4.4, level of service is a qualitative measure used to describe the driver's experience within a traffic stream, generally in terms of service measures such as speed and travel time, freedom to maneuver, traffic interruptions and delay, and comfort and convenience. Six levels of service are defined by the Highway Capacity Manual (HCM) 2000. Letters designate each level—from LOS A (indicating traffic flows with little or no delay) to LOS F (indicating over-saturated conditions where traffic flow exceeds freeway capacity, generally resulting in long queues and delays). The level of service criteria for density on freeways were presented in Table 4-1.

The freeway and ramp traffic operational analysis was conducted for eleven network alternatives under SCAG land use assumptions, and one network alternative under local land use assumptions as a sensitivity test. Two tables are presented for each analysis scenario addressing (1) freeway mainline measures of effectiveness and (2) on-ramp merge and off-ramp diverge measures of effectiveness. An index for the resulting twenty-four (24) tables of measures of effectiveness is presented below:

Index of Freeway and Ramp Analysis (Initial) Results*

FIGURE NO.	TABLE NO. (ELEMENT)	YEAR	NETWORK	LAND USE
4-15	4-6 (mainline) 4-7 (ramps)	2020	No-build	SCAG
4-16	4-8 (mainline) 4-9 (ramps)	2020	Build	SCAG
4-17	4-10 (mainline) 4-11 (ramps)	2020	Build with tolls	SCAG
4-18	4-12 (mainline) 4-13 (ramps)	2020	Partial build	SCAG
4-19	4-14 (mainline) 4-15 (ramps)	2020	Build with rail	SCAG
4-20	4-16 (mainline) 4-17 (ramps)	2020	Build with tolls and rail	SCAG
4-21	4-18 (mainline) 4-19 (ramps)	2040	No-Build	SCAG
4-22	4-20 (mainline) 4-21 (ramps)	2040	Build	SCAG
4-23	4-22 (mainline) 4-23 (ramps)	2040	Build with tolls	SCAG
4-24	4-24 (mainline) 4-25 (ramps)	2040	Build with rail	SCAG
4-25	4-26 (mainline) 4-27 (ramps)	2040	Build with tolls and rail	SCAG
4-26	4-28 (mainline) 4-29 (ramps)	2040	Build	Local

*Initial results do not reflect Palmdale access refinements.

Three network scenarios addressed by the *High Desert Corridor Traffic Study* are not listed in the above index of freeway and ramp analysis results.

- ***2040 transportation systems management alternative***
  The analysis results for this alternative are summarized in section 4.7.
- ***2040 build alternative with reduced interchanges***
  The operational analysis of freeway mainline and ramp performance was not undertaken for this alternative due to the similarity of design year traffic volumes with those forecast for the Build alternative.
- ***Build alternative with reduced interchanges and high speed rail feeder service (2020 and 2040)***
  The operational analysis of freeway mainline and ramp performance was not undertaken for this alternative due to the similarity of opening and design year traffic volumes with those forecast for the build alternative.

The results of the build alternatives with high speed rail feeder service are discussed later in this chapter under section 4.8. The results of the land use sensitivity test are discussed later in this chapter under section 4.13.

Subsequent to the analysis of the above alternatives, the proposed access to Palmdale was refined. The proposed High Desert Corridor interchange at 10th Street East was eliminated. An interchange at 30th Street East was added. Ramp access at West Palmdale Boulevard to northbound SR 14 was revised, and direct access to the eastbound High Desert Corridor freeway was added. A number of interchange configurations were also refined based on additional design studies. The results of these access changes are discussed later in this chapter under Section 4.14.

As a result of these access revisions, the freeway and ramp analysis was recomputed for a subset of the initial test alternatives. An index of the revised access alternatives is presented below.

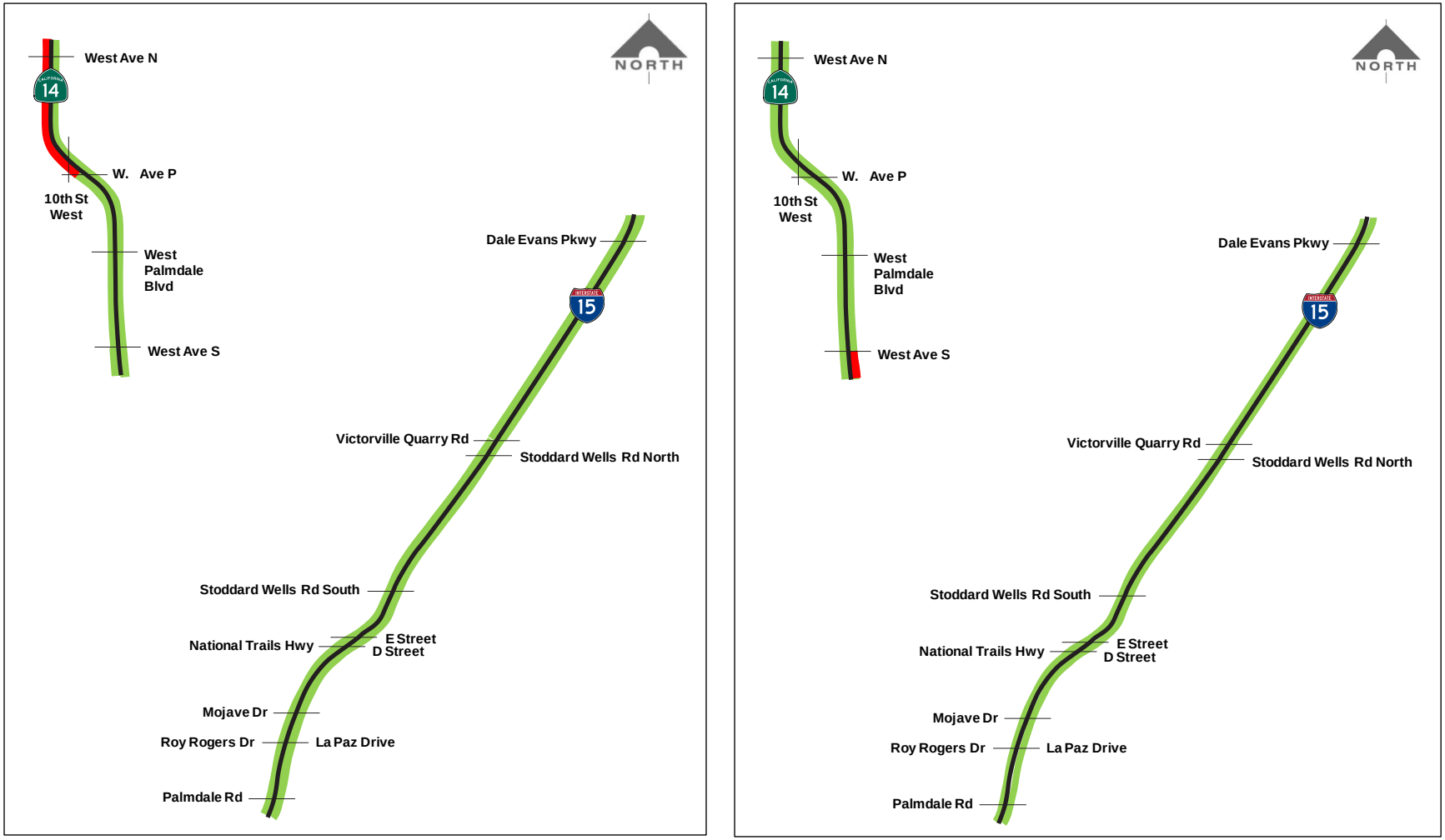
Index of Freeway and Ramp Analysis (Revised Palmdale Access) Results

FIGURE NO.	TABLE NO. (ELEMENT)	YEAR	NETWORK	LAND USE
4-27	4-30 (mainline) 4-31 (ramps)	2020	No build with Palmdale circulation system improvements	SCAG
4-28	4-32 (mainline) 4-33 (ramps)	2020	Build (revised Palmdale access)	SCAG
4-29	4-34 (mainline) 4-35 (ramps)	2020	Build with tolls (revised Palmdale access)	SCAG
4-30	4-36 (mainline 4-37 (ramps)	2040	No build with Palmdale circulation system improvements	SCAG
4-31	4-38 (mainline) 4-39 (ramps)	2040	Build (revised Palmdale access)	SCAG
4-32	4-40 (mainline) 4-41 (ramps)	2040	Build with tolls (revised Palmdale access)	SCAG

Freeway segments which are projected to operate below the design level of service standard of "D" are highlighted on Tables 4-6 to 4-41 and the graphics (Figures 4-15 through 4-32) which precede and summarize the results of the freeway mainline analysis.

The no-build alternative clearly has more segments along SR 14 operating at LOS E or F, compared with the build alternative(s), particularly by 2040 (compare Tables 4-18 and 4-19 with Tables 4-20 and 4-21 and Tables 4-36 and 4-37 with Tables 4-38 and 4-39 for the revised Palmdale access alternatives). A southbound auxiliary lane from the West Avenue N on-ramp(s) to the 10th Street West off-ramp along with a northbound auxiliary lane from the East Avenue S on-ramp to the Palmdale Boulevard off-ramp would address most of the congestion issues associated with the no-build alternative.

The build alternatives generally meet the LOS D or better design standard for all segments with few exceptions. The one notable exception is southbound SR 14 during the AM peak period assuming the SCAG land use projection. Under this scenario, traffic spills back from the uphill grade which begins south of the Avenue S interchange, approaching the Pearblossom Highway interchange. The uphill grade slows traffic, which when combined with on-ramp traffic, increases vehicle density.



AM **PM**

Level of service D or better
Level of service E
Level of service F

Figure 4-15: Year 2020 No-build Alternative Freeway Mainline Level of Service

Table 4-6. Year 2020 No-build Alternative Freeway Mainline Analysis Results *(1 of 2)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
SR 14 NB south end of the network to East Avenue S off-ramp	1,925	1,921	100%	172.5	19.0	58	11.1	B	172	1,925	1,921	100%	172.5	19.0	58	11.1	B	172	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	1,735	1,732	100%	27.6	1.9	61	9.9	A	200	1,735	1,732	100%	27.6	1.9	61	9.9	A	200	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to West Palmdale Blvd off-ramp	2,680	2,660	99%	58.9	4.5	60	15.1	B	259	2,680	2,660	99%	58.9	4.5	60	15.1	B	259	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to West Palmdale Blvd loop on-ramp	2,205	2,210	100%	21.5	0.9	62	11.8	B	280	2,205	2,210	100%	21.5	0.9	62	11.8	B	280	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	2,450	2,413	98%	16.8	1.1	61	13.2	B	297	2,450	2,413	98%	16.8	1.1	61	13.2	B	297	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to West Avenue P off-ramp	3,385	3,324	98%	57.6	5.9	58	19.0	C	355	3,385	3,324	98%	57.6	5.9	58	19.0	C	355	—	—	—	—	—	—	—	—	—
West Avenue P off-ramp to 10th St West on-ramp	2,785	2,724	98%	49.7	2.3	62	14.6	B	405	2,785	2,724	98%	49.7	2.3	62	14.6	B	405	—	—	—	—	—	—	—	—	—
10th St West on-ramp to West Avenue N off-ramp	3,480	3,335	96%	83.3	5.3	61	18.3	C	488	3,480	3,335	96%	83.3	5.3	61	18.3	C	488	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	3,240	3,107	96%	18.0	0.9	62	16.8	B	506	3,240	3,107	96%	18.0	0.9	62	16.8	B	506	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	3,565	3,390	95%	9.8	0.9	59	19.0	C	516	3,565	3,390	95%	9.8	0.9	59	19.0	C	516	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to SR 14 north end of the network	3,695	3,548	96%	31.4	1.9	61	19.4	C	547	3,695	3,548	96%	31.4	1.9	61	19.4	C	547	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
SR 14 SB north end of the network to West Avenue N off-ramp	4,025	3,771	94%	127.1	92.3	18	71.8	**F**	127	4,025	3,771	94%	127.1	92.3	18	71.8	**F**	127	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	3,710	3,376	91%	92.9	75.5	12	92.8	**F**	220	3,710	3,376	91%	92.9	75.5	12	92.8	**F**	220	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	3,760	3,362	89%	64.8	54.3	10	107.4	**F**	285	3,760	3,362	89%	64.8	54.3	10	107.4	**F**	285	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St West off-ramp	4,015	3,457	86%	541.1	459.7	12	114.5	**F**	826	4,015	3,457	86%	541.1	459.7	12	114.5	**F**	826	—	—	—	—	—	—	—	—	—
10th St West off-ramp to West Rancho Vista Blvd on-ramp	3,405	2,847	84%	66.5	16.9	48	19.6	C	892	3,405	2,847	84%	66.5	16.9	48	19.6	C	892	—	—	—	—	—	—	—	—	—
West Rancho Vista Blvd on-ramp to West Palmdale Blvd off-ramp	4,205	3,845	91%	74.2	21.8	50	24.0	C	967	3,100	3,179	103%	75.0	22.6	49	25.7	C	967	1,105	666	60%	41.4	5.0	53	11.6	B	41
West Palmdale Blvd off-ramp to West Palmdale Blvd loop on-ramp	3,165	2,733	86%	17.5	1.5	59	15.4	B	984	2,437	2,033	83%	17.2	1.1	61	16.0	B	985	728	700	96%	18.5	2.3	56	14.2	B	60
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,925	3,446	88%	14.7	2.0	56	20.5	C	999	3,022	2,650	88%	15.0	2.3	55	24.1	C	1,000	903	796	88%	13.7	0.8	60	13.2	B	74
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	4,505	4,058	90%	68.1	5.3	60	17.0	B	1,067	2,960	3,027	102%	68.1	5.5	60	18.1	C	1,068	1,545	1,031	67%	67.7	4.7	60	13.9	B	141
East Avenue S off-ramp to East Avenue S on-ramp	3,980	3,547	89%	22.0	1.4	61	14.6	B	1,089	3,065	2,705	88%	21.8	1.3	61	14.8	B	1,090	915	843	92%	22.4	1.7	59	14.2	B	164
East Avenue S on-ramp to SR 14 SB south end of the network	5,260	4,769	91%	249.0	61.0	50	25.1	C	1,338	3,310	3,318	100%	256.4	68.7	49	28.7	D	1,346	1,950	1,452	74%	214.5	24.8	57	15.0	B	378

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
SR 14 NB south end of the network to East Avenue S off-ramp	6,630	4,501	68%	534.1	379.5	23	75.3	**F**	534	4,970	3,027	61%	722.8	568.1	19	99.6	**F**	723	1,660	1,475	89%	177.4	23.1	56	26.7	D	177
East Avenue S off-ramp to East Avenue S on-ramp	5,150	3,475	67%	28.3	2.5	59	19.6	C	562	3,863	2,196	57%	28.4	2.6	59	18.6	C	751	1,288	1,279	99%	28.1	2.3	60	21.5	C	205
East Avenue S on-ramp to West Palmdale Blvd off-ramp	5,930	4,252	72%	62.0	7.4	57	25.0	C	624	4,550	3,142	69%	63.2	8.5	56	28.2	D	814	1,380	1,110	80%	59.1	4.5	60	18.5	C	265
West Palmdale Blvd off-ramp to West Palmdale Blvd loop on-ramp	4,435	3,261	74%	22.0	1.3	61	17.8	B	646	3,326	2,211	66%	21.7	1.0	62	17.9	B	836	1,109	1,050	95%	22.6	1.9	59	17.7	B	287
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,635	3,446	74%	17.2	1.4	60	19.3	C	664	3,476	2,395	69%	17.1	1.3	60	20.0	C	853	1,159	1,051	91%	17.3	1.5	59	17.8	B	304
West Palmdale Blvd direct on-ramp to West Avenue P off-ramp	5,695	4,468	78%	60.5	8.5	55	26.9	D	724	4,470	4,117	92%	61.3	9.3	55	28.7	D	914	1,225	351	29%	17.4	1.6	20	6.0	A	322
West Avenue P off-ramp to 10th St West on-ramp	4,390	3,524	80%	50.2	2.6	61	19.1	C	774	4,390	3,524	80%	50.2	2.6	61	19.1	C	774	—	—	—	—	—	—	—	—	—
10th St West on-ramp to West Avenue N off-ramp	5,180	4,279	83%	85.1	6.9	59	24.1	C	859	5,180	4,279	83%	85.1	6.9	59	24.1	C	859	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,810	3,988	83%	18.3	1.2	61	22.0	C	878	4,810	3,988	83%	18.3	1.2	61	22.0	C	878	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	5,080	4,224	83%	10.0	1.0	58	24.2	C	888	5,080	4,224	83%	10.0	1.0	58	24.2	C	888	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to SR 14 north end of the network	5,335	4,497	84%	32.4	2.9	59	25.4	C	920	5,335	4,497	84%	32.4	2.9	59	25.4	C	920	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
SR 14 SB north end of the network to West Avenue N off-ramp	4,595	4,594	100%	37.5	2.7	60	25.5	C	37	4,595	4,594	100%	37.5	2.7	60	25.5	C	37	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,135	4,131	100%	18.6	1.2	61	22.7	C	56	4,135	4,131	100%	18.6	1.2	61	22.7	C	56	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,245	4,228	100%	11.3	0.9	60	23.5	C	67	4,245	4,228	100%	11.3	0.9	60	23.5	C	67	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St West off-ramp	4,435	4,423	100%	89.7	8.5	58	25.2	C	157	4,435	4,423	100%	89.7	8.5	58	25.2	C	157	—	—	—	—	—	—	—	—	—
10th St West off-ramp to West Rancho Vista Blvd on-ramp	3,330	3,314	100%	53.7	4.0	60	18.4	C	211	3,330	3,314	100%	53.7	4.0	60	18.4	C	211	—	—	—	—	—	—	—	—	—
West Rancho Vista Blvd on-ramp to West Palmdale Blvd off-ramp	4,010	3,972	99%	59.7	8.0	57	21.8	C	270	4,010	3,972	99%	59.7	8.0	57	21.8	C	270	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to West Palmdale Blvd loop on-ramp	2,915	2,912	100%	17.0	1.0	61	15.9	B	287	2,915	2,912	100%	17.0	1.0	61	15.9	B	287	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,210	3,161	98%	13.8	1.0	60	17.6	B	301	3,210	3,161	98%	13.8	1.0	60	17.6	B	301	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	3,450	3,399	99%	67.1	4.4	60	14.0	B	368	3,450	3,399	99%	67.1	4.4	60	14.0	B	368	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	2,545	2,489	98%	21.7	1.2	61	11.4	B	390	2,545	2,489	98%	21.7	1.2	61	11.4	B	390	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to SR 14 SB south end of the network	3,030	2,948	97%	216.3	28.7	58	14.8	B	606	3,030	2,948	97%	216.3	28.7	58	14.8	B	606	—	—	—	—	—	—	—	—	—

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-6. Year 2020 No-build Alternative Freeway Mainline Analysis Results *(2 of 2)*

FREEWAY SEGMENT	AM PEAK - OVERALL									PM PEAK - OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off-ramp	2,830	2,836	100%	148.3	6.9	62	15.2	B	148	4,670	4,666	100%	154.9	13.6	60	26.2	D	155
Palmdale Rd off-ramp to Palmdale Rd loop on-ramp	2,395	2,386	100%	22.1	1.1	62	13.0	B	170	4,155	4,152	100%	23.0	2.0	60	23.4	C	178
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	2,700	2,699	100%	11.3	0.8	61	14.9	B	182	4,530	4,527	100%	11.9	1.4	57	26.3	D	190
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	3,035	3,026	100%	22.0	1.3	61	12.4	B	204	4,940	4,930	100%	23.0	2.4	58	21.2	C	213
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	2,540	2,532	100%	23.9	1.2	62	13.7	B	228	4,400	4,382	100%	25.0	2.2	59	24.6	C	238
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	2,865	2,861	100%	16.7	0.9	61	11.8	B	244	4,895	4,876	100%	17.6	1.8	58	20.9	C	255
Mojave Dr off-ramp to Mojave Dr on-ramp	2,420	2,412	100%	20.6	0.9	62	13.0	B	265	4,415	4,422	100%	21.6	1.8	59	24.8	C	277
Mojave Dr on-ramp to D St off-ramp	2,805	2,797	100%	49.9	2.7	61	13.3	B	315	4,790	4,764	99%	52.1	4.9	59	23.8	C	329
D St off-ramp to D St on-ramp	1,910	1,883	99%	22.9	0.8	63	10.0	A	338	3,870	3,827	99%	23.7	1.6	61	21.0	C	353
D St on-ramp to E St off-ramp	2,170	2,125	98%	11.0	0.6	62	11.5	B	349	4,180	4,097	98%	11.6	1.2	59	23.2	C	364
E St off-ramp to E St on-ramp	2,135	2,094	98%	9.7	0.4	62	11.2	B	359	4,150	4,104	99%	10.2	0.8	60	22.9	C	374
E St on-ramp to Stoddard Wells Rd off-ramp	2,175	2,131	98%	35.7	1.6	62	11.5	B	394	4,180	4,131	99%	37.0	2.9	60	23.0	C	411
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	1,855	1,815	98%	10.9	0.4	63	9.7	A	405	3,865	3,858	100%	11.3	0.8	60	21.3	C	423
Stoddard Wells Rd on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,100	2,084	99%	164.1	7.3	62	11.4	B	569	4,425	4,402	99%	171.8	15.1	59	24.8	C	594
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	1,915	1,908	100%	22.6	1.0	62	10.3	A	592	4,325	4,274	99%	23.5	1.9	60	23.9	C	618
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	2,030	2,028	100%	215.7	10.5	62	10.9	A	807	4,535	4,430	98%	225.9	20.7	59	25.0	C	844
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	1,875	1,846	98%	31.8	1.5	62	9.9	A	839	4,365	4,211	96%	33.2	2.9	59	23.6	C	877
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,095	2,052	98%	63.6	2.8	62	11.0	B	903	4,560	4,369	96%	67.0	6.3	59	24.8	C	944
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	3,485	3,484	100%	58.2	3.0	62	18.9	C	58	2,690	2,691	100%	57.6	2.2	62	14.4	B	58
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	3,305	3,303	100%	36.6	2.2	61	18.0	B	95	2,385	2,382	100%	36.0	1.6	62	12.9	B	94
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	3,450	3,446	100%	216.0	16.6	60	19.1	C	311	2,575	2,570	100%	211.7	11.8	61	14.1	B	305
Quarry Rd off-ramp to Quarry Rd on-ramp	3,335	3,333	100%	25.1	2.0	60	18.6	C	336	2,445	2,442	100%	24.6	1.4	61	13.5	B	330
Quarry Rd on-ramp to Stoddard Wells Rd off-ramp	3,470	3,460	100%	173.3	15.3	59	19.5	C	509	2,775	2,771	100%	169.8	11.5	61	15.5	B	500
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	2,995	2,984	100%	28.3	2.1	60	16.7	B	538	2,520	2,512	100%	28.0	1.8	61	14.1	B	528
Stoddard Wells Rd direct on-ramp to E St off-ramp	3,440	3,439	100%	23.3	2.5	58	19.7	C	561	2,910	2,910	100%	22.9	2.1	59	16.6	B	551
E St off-ramp to E St on-ramp	3,420	3,417	100%	8.9	0.8	59	19.5	C	570	2,875	2,870	100%	8.8	0.7	60	16.3	B	559
E St on-ramp to D St off-ramp	3,465	3,458	100%	11.5	1.0	60	19.6	C	581	2,915	2,908	100%	11.3	0.8	60	16.5	B	571
D St off-ramp to D St on-ramp	3,275	3,269	100%	22.0	1.6	60	18.4	C	603	2,710	2,701	100%	21.7	1.3	61	15.1	B	592
D St on-ramp to Mojave Dr off-ramp	4,070	4,036	99%	53.2	4.8	59	17.2	B	656	3,700	3,700	100%	52.6	4.2	60	15.5	B	645
Mojave Dr off-ramp to Mojave Dr on-ramp	3,870	3,860	100%	20.7	1.7	60	21.8	C	677	3,370	3,365	100%	20.5	1.5	60	19.1	C	666
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	4,430	4,429	100%	15.3	1.6	58	19.2	C	692	3,900	3,895	100%	15.0	1.3	59	16.8	B	681
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,095	4,090	100%	27.6	2.4	59	23.0	C	720	3,500	3,500	100%	26.9	1.8	61	19.6	C	707
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	4,470	4,434	99%	23.6	1.9	60	18.6	C	744	4,045	4,039	100%	23.4	1.7	60	17.0	B	731
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,020	4,013	100%	12.9	1.0	60	22.3	C	756	3,365	3,364	100%	12.7	0.7	61	18.4	C	744
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,160	4,132	99%	8.6	0.8	59	23.3	C	765	3,555	3,506	99%	8.5	0.6	60	19.3	C	752
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,385	4,325	99%	171.0	15.4	59	24.4	C	936	3,865	3,786	98%	167.8	11.9	60	21.0	C	920

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-7. Year 2020 No-build Alternative Weaving and Ramp Merging/Diverging Analysis Results

Summary of State Route 14

LOCATION	ANALYSIS TYPE	AM PEAK SPEED (mph)	AM PEAK DENSITY (veh/ln/mi)	AM PEAK LOS (HCM 2000)	PM PEAK SPEED (mph)	PM PEAK DENSITY (veh/ln/mi)	PM PEAK LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	56	18.6	B	55	25.6	C
West Palmdale Blvd loop	Merging	61	15.7	B	60	19.3	B
West Palmdale Blvd direct	Merging	55	25.3	C	52	28.7	D
10th St. W.	Merging	56	21	C	55	27	C
West Avenue N loop	Merging	58	20.1	C	57	25.3	C
West Avenue N direct	Merging	60	20.4	C	58	26.8	C
East Avenue S	Merging	63	10.4	B	48	30.8	D
West Palmdale Blvd	Merging	61	18.5	B	58	24.6	C
West Rancho Vista Blvd	Diverging	57	22.6	C	54	30.7	D
West Avenue N	Diverging	60	19.3	B	59	25.3	C
SOUTHBOUND							
West Avenue N loop	Merging	9	109.7	**E**	60	23.4	C
West Avenue N direct	Merging	9	118.4	**E**	59	25.5	C
West Rancho Vista Blvd	Merging	29	45.9	**E**	51	22.2	C
West Palmdale Blvd loop	Merging	56	20.5	C	59	17.4	B
West Palmdale Blvd direct	Merging	60	17.0	B	61	12.6	B
East Avenue S	Merging	52	21.8	C	59	12.5	B
West Avenue N	Merging	15	78.7	**E**	59	27.1	C
10th St. West	Diverging	23	48.1	**E**	56	27.7	C
West Palmdale Blvd	Diverging	56	21.7	C	56	26.0	C
East Avenue S	Diverging	57	17.6	B	56	14.5	B

Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK SPEED (mph)	AM PEAK DENSITY (veh/ln/mi)	AM PEAK LOS (HCM 2000)	PM PEAK SPEED (mph)	PM PEAK DENSITY (veh/ln/mi)	PM PEAK LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	60	16	B	56	27	C
Mojave Dr	Merging	60	17	B	55	29	D
D St	Merging	61	12	B	58	24	C
E St	Merging	62	12	B	60	23	C
Stoddard Wells Rd S	Merging	61	12	B	56	26	C
Stoddard Wells Rd (Quarry Rd)	Merging	62	11	B	58	25	C
Dale Evans Pkwy	Merging	61	11	B	58	25	C
Palmdale Rd	Diverging	60	17	B	55	29	D
D St	Diverging	61	12	B	60	19	B
E St	Diverging	61	12	B	58	24	C
Stoddard Wells Rd S	Diverging	61	12	B	60	23	C
Stoddard Wells Rd N	Diverging	61	12	B	59	24	C
Dale Evans Pkwy	Diverging	61	11	B	58	25	C
Palmdale Rd direct to Roy Rogers Dr	Weaving	61	13	B	58	20	C
Roy Rogers Dr to Mojave Dr	Weaving	61	12	B	57	20	C
SOUTHBOUND							
Dale Evans Pkwy	Merging	60	19	B	62	15	B
Quarry Rd	Merging	59	19	B	60	16	B
Stoddard Wells Rd direct	Merging	58	19	B	59	18	B
E St	Merging	59	19	B	60	17	B
Palmdale Rd Loop	Merging	59	23	C	60	20	B
Plamdale Rd Direct	Merging	57	25	C	59	22	C
Dale Evans Pkwy	Diverging	61	20	B	61	16	B
Quarry Rd	Diverging	59	19	B	61	15	B
Stoddard Wells Rd S	Diverging	56	21	C	60	17	B
E St	Diverging	58	20	B	59	18	B
D St	Diverging	59	19	B	60	17	B
D St to Mojave Dr	Weaving	59	16	B	59	15	B
Mojave Dr to Roy Rogers Dr	Weaving	57	18	B	58	17	B
Roy Rogers Dr to Palmdale Rd	Weaving	59	17	B	59	17	B

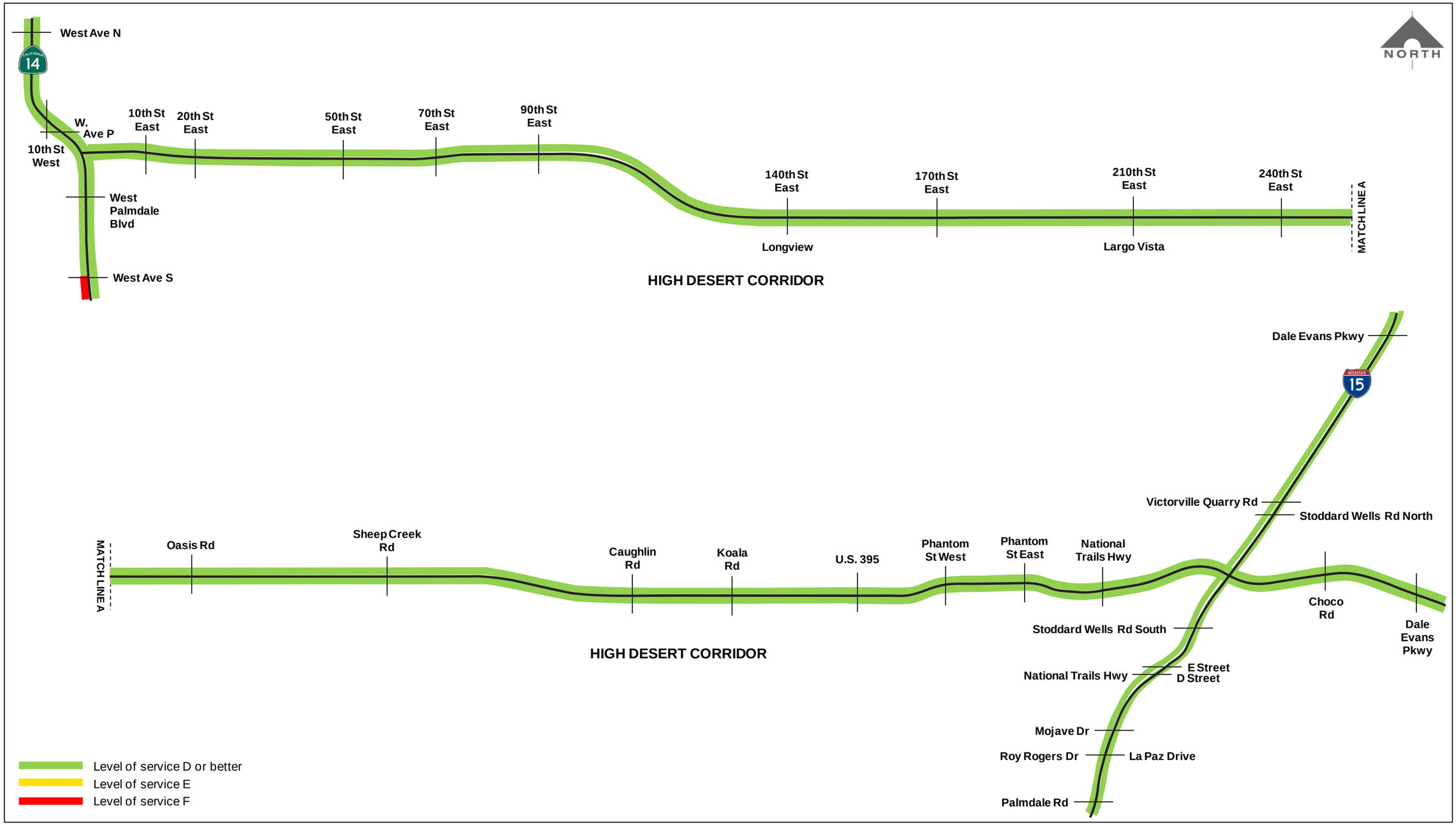
Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

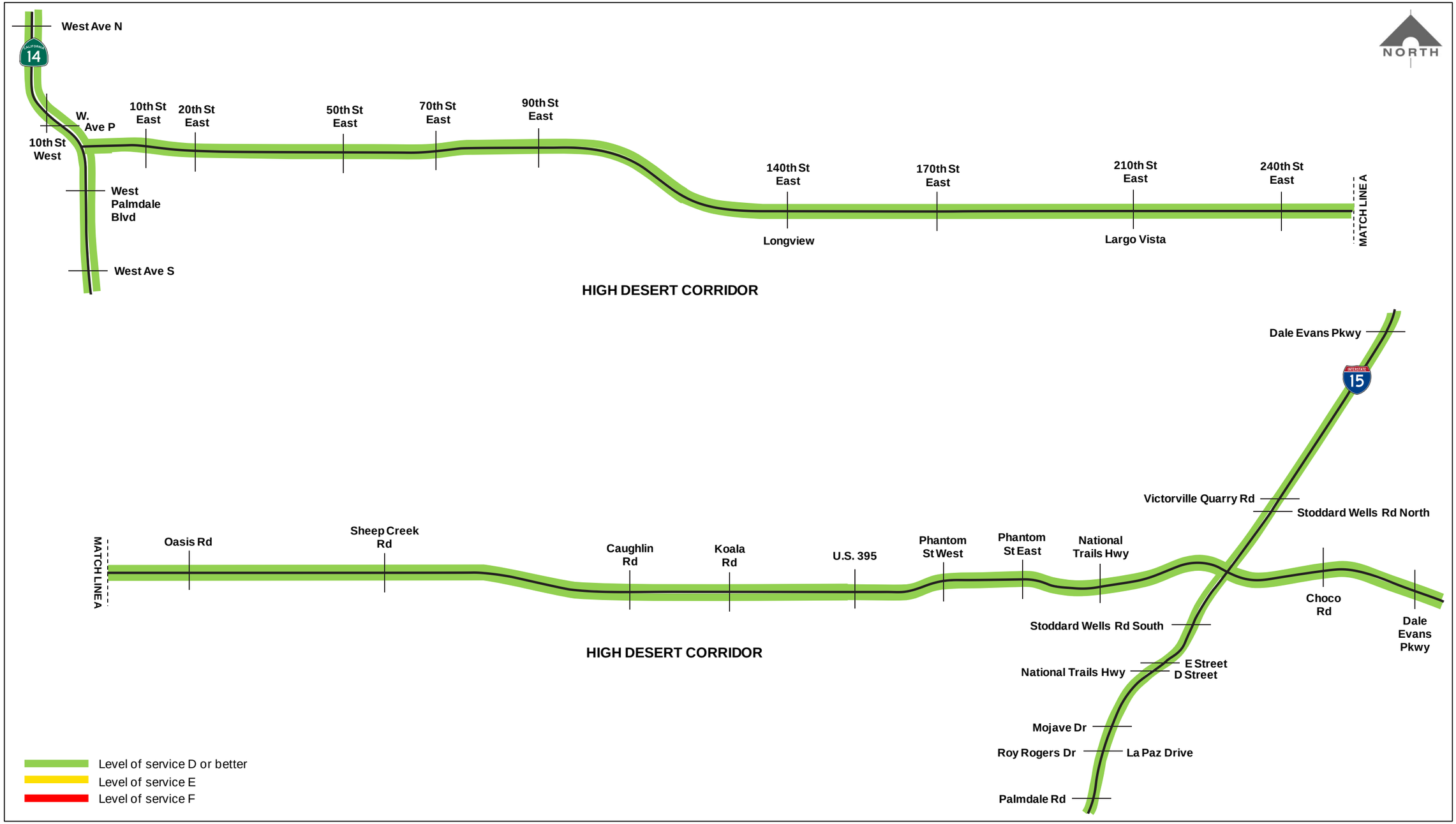
Level of service E

Level of service F



AM PEAK HOUR

Figure 4-16: Year 2020 Build Alternative Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 4-16: Year 2020 Build Alternative Freeway Mainline Level of Service *(2 of 2)*

Table 4-8. Year 2020 Build Alternative Freeway Mainline Analysis Results *(1 of 4)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	2,285	2,279	100%	202.7	49.5	54	14.4	B	203	2,285	2,279	100%	202.7	49.5	54	14.4	B	203	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	2,145	2,144	100%	28.0	2.4	60	9.1	A	231	2,145	2,144	100%	28.0	2.4	60	9.1	A	231	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to West Palmdale Blvd off-ramp	3,055	3,053	100%	58.3	3.9	61	10.2	A	289	3,055	3,053	100%	58.3	3.9	61	10.2	A	289	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,715	2,714	100%	16.7	0.8	61	11.1	B	306	2,715	2,714	100%	16.7	0.8	61	11.1	B	306	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,630	1,622	100%	5.0	0.2	63	8.8	A	311	1,630	1,622	100%	5.0	0.2	63	8.8	A	311	—	—	—	—	—	—	—	—	—
W Palmdale loop on-ramp to W Palmdale Blvd direct on-ramp	1,885	1,880	100%	16.2	0.5	63	7.6	A	327	1,885	1,880	100%	16.2	0.5	63	7.6	A	327	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	2,370	2,351	99%	33.1	1.5	62	9.1	A	360	2,370	2,351	99%	33.1	1.5	62	9.1	A	360	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	2,025	2,015	100%	23.1	1.4	61	11.0	B	383	2,025	2,015	100%	23.1	1.4	61	11.0	B	383	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	3,440	3,288	96%	48.2	2.8	61	10.7	A	431	3,440	3,288	96%	48.2	2.8	61	10.7	A	431	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	3,902	3,761	96%	16.8	1.1	61	14.1	B	448	3,902	3,761	96%	16.8	1.1	61	14.1	B	448	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Avenue N off-ramp	4,005	3,865	96%	66.2	3.9	61	15.4	B	514	4,005	3,865	96%	66.2	3.9	61	15.4	B	514	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	3,735	3,597	96%	18.2	1.2	61	19.8	C	532	3,735	3,597	96%	18.2	1.2	61	19.8	C	532	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,030	3,887	96%	9.4	0.5	62	15.8	B	542	4,030	3,887	96%	9.4	0.5	62	15.8	B	542	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	4,150	4,008	97%	30.7	1.3	62	15.6	B	573	4,150	4,008	97%	30.7	1.3	62	15.6	B	573	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	5,155	5,154	100%	38.0	3.2	59	29.0	D	38	5,155	5,154	100%	38.0	3.2	59	29.0	D	38	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,845	4,839	100%	18.9	1.5	60	27.0	D	57	4,845	4,839	100%	18.9	1.5	60	27.0	D	57	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,900	4,890	100%	11.2	0.8	60	20.2	C	68	4,900	4,890	100%	11.2	0.8	60	20.2	C	68	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St West off-ramp	5,190	5,176	100%	102.7	26.9	47	27.7	D	171	5,190	5,176	100%	102.7	26.9	47	27.7	D	171	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC off-ramp	4,570	4,556	100%	21.2	5.1	48	25.1	C	192	3,230	3,267	100%	21.7	5.7	47	30.9	D	192	1,340	1,289	96%	16.4	0.2	63	7.8	A	16
HDC off-ramp to 10th St West on-ramp	1,948	1,918	98%	22.0	0.9	62	10.3	A	214	1,408	1,402	100%	21.8	0.8	62	11.2	B	214	540	515	95%	22.4	1.2	61	8.4	A	39
10th St West on-ramp to Palmdale Blvd off-ramp	3,100	3,074	99%	33.2	1.5	62	12.5	B	247	1,760	1,882	100%	33.0	1.4	62	13.3	B	247	1,340	1,191	89%	33.8	2.1	61	9.8	A	73
West Palmdale Blvd off-ramp to HDC on-ramp	2,718	2,706	100%	32.2	1.1	63	10.8	A	279	1,378	1,483	100%	31.8	0.8	63	10.4	A	279	1,340	1,223	91%	33.2	1.9	61	11.9	B	106
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,865	3,721	96%	23.8	1.4	61	11.8	B	303	2,610	2,772	100%	23.7	1.3	61	12.5	B	303	1,255	950	76%	24.2	1.6	60	9.2	A	130
W Palmdale loop on-ramp to W Palmdale Blvd direct on-ramp	4,375	4,269	98%	13.8	1.0	60	15.9	B	317	3,120	3,359	100%	13.7	1.0	60	16.0	B	316	1,255	910	73%	14.1	1.3	59	15.5	B	144
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	4,935	4,784	97%	72.4	9.7	57	20.9	C	389	3,645	3,794	100%	73.5	10.9	56	22.2	C	390	1,290	991	77%	68.2	5.4	60	16.6	B	212
East Avenue S off-ramp to East Avenue S on-ramp	4,680	4,421	94%	42.2	21.6	32	35.0	**E**	431	2,720	2,910	100%	48.0	27.4	28	41.0	**E**	438	1,960	1,511	77%	22.5	1.9	59	17.1	B	235
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	5,775	5,240	91%	471.5	282.9	32	50.9	**F**	903	3,815	3,799	100%	545.0	356.3	29	61.6	**F**	983	1,960	1,341	68%	214.3	25.8	57	20.1	C	449

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	6,900	5,261	76%	206.3	51.9	52	29.0	D	206	5,045	3,669	73%	221.9	67.6	51	29.9	D	222	1,855	1,592	86%	178.4	23.8	56	28.2	D	178
East Avenue S off-ramp to East Avenue S on-ramp	6,050	4,668	77%	28.8	3.0	58	20.1	C	235	4,195	3,010	72%	28.6	2.8	58	17.2	B	250	1,855	1,658	89%	29.0	3.2	58	28.8	D	207
East Avenue S on-ramp to West Palmdale Blvd off-ramp	6,800	5,405	79%	59.3	4.7	60	18.1	C	294	5,145	4,216	82%	59.4	4.8	59	17.7	B	310	1,655	1,189	72%	58.6	4.1	60	19.8	C	266
West Palmdale Blvd off-ramp to HDC off-ramp	5,845	4,634	79%	17.1	1.2	60	19.4	C	311	4,190	3,688	88%	17.2	1.2	60	20.6	C	327	1,655	946	57%	17.0	1.2	60	15.7	B	283
HDC off-ramp to West Palmdale Blvd loop on-ramp	3,725	2,905	78%	5.2	0.3	61	15.9	B	317	2,030	1,959	97%	5.2	0.3	61	16.0	B	332	1,695	946	56%	5.3	0.4	60	15.8	B	288
W Palmdale loop on-ramp to W Palmdale Blvd direct on-ramp	3,910	3,093	79%	16.6	0.8	61	12.6	B	333	2,215	2,122	96%	16.4	0.6	62	11.3	B	349	1,695	970	57%	17.2	1.3	59	16.3	B	306
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	4,425	3,567	81%	33.8	2.2	60	14.1	B	367	2,730	2,684	98%	33.7	2.0	61	13.9	B	382	1,695	883	52%	34.2	2.5	60	14.7	B	340
10th St West off-ramp to HDC on-ramp	3,649	2,998	82%	23.5	1.2	60	16.3	B	391	1,954	2,140	110%	23.4	1.2	60	16.9	B	406	1,695	858	51%	23.8	1.3	59	14.5	B	363
HDC on-ramp to 10th St West on-ramp	6,365	5,136	81%	49.6	4.0	60	17.1	B	440	6,365	5,136	81%	49.6	4.0	60	17.1	B	440	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	6,802	5,594	82%	17.8	2.0	57	22.2	C	458	6,802	5,594	82%	17.8	2.0	57	22.2	C	458	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Avenue N off-ramp	6,905	5,678	82%	81.1	18.6	51	28.1	D	539	6,905	5,678	82%	81.1	18.6	51	28.1	D	539	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	6,610	5,362	81%	22.2	5.0	50	34.8	D	561	6,610	5,362	81%	22.2	5.0	50	34.8	D	561	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	6,785	5,522	81%	10.3	1.3	57	24.4	C	572	6,785	5,522	81%	10.3	1.3	57	24.4	C	572	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	7,035	5,760	82%	31.7	2.2	60	23.0	C	603	7,035	5,760	82%	31.7	2.2	60	23.0	C	603	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	5,310	5,310	100%	38.5	3.7	58	30.3	D	39	5,310	5,310	100%	38.5	3.7	58	30.3	D	39	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,860	4,869	100%	19.0	1.5	59	27.3	D	57	4,860	4,869	100%	19.0	1.5	59	27.3	D	57	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,970	4,979	100%	11.2	0.8	60	20.6	C	69	4,970	4,979	100%	11.2	0.8	60	20.6	C	69	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St West off-ramp	5,195	5,208	100%	82.3	6.2	60	21.4	C	151	5,195	5,208	100%	82.3	6.2	60	21.4	C	151	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC off-ramp	4,085	4,056	99%	17.4	1.4	59	17.2	B	168	4,085	4,056	99%	17.4	1.4	59	17.2	B	168	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St West on-ramp	1,758	1,749	99%	21.7	0.6	63	9.6	A	190	1,758	1,749	99%	21.7	0.6	63	9.6	A	190	—	—	—	—	—	—	—	—	—
10th St West on-ramp to Palmdale Blvd off-ramp	2,595	2,591	100%	33.0	1.3	62	10.7	A	223	2,595	2,591	100%	33.0	1.3	62	10.7	A	223	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	2,029	2,022	100%	31.7	0.6	63	8.2	A	255	2,029	2,022	100%	31.7	0.6	63	8.2	A	255	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,460	3,248	94%	23.9	1.5	60	10.4	A	279	3,460	3,248	94%	23.9	1.5	60	10.4	A	279	—	—	—	—	—	—	—	—	—
W Palmdale loop on-ramp to W Palmdale Blvd direct on-ramp	3,565	3,337	94%	13.4	0.7	62	12.1	B	292	3,565	3,337	94%	13.4	0.7	62	12.1	B	292	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	3,800	3,558	94%	66.5	3.7	61	14.2	B	359	3,800	3,558	94%	66.5	3.7	61	14.2	B	359	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	3,245	3,083	95%	21.3	0.8	62	12.4	B	380	3,245	3,083	95%	21.3	0.8	62	12.4	B	380	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	3,645	3,447	95%	213.0	25.1	58	16.0	B	593	3,645	3,447	95%	213.0	25.1	58	16.0	B	593	—	—	—	—	—	—	—	—	—

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-8. Year 2020 Build Alternative Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (VPH)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EB MAINLINE																		
SR 138 EB west end of the network to SR 14 NB on-ramp	2,750	2,733	99%	21.0	1.8	48	28.4	D	21	2,420	2,344	97%	20.9	1.7	48	24.2	C	21
SR 14 NB on-ramp to 10th St East off-ramp	3,835	3,803	99%	33.6	1.9	61	14.1	B	55	4,540	4,058	89%	33.7	2.0	61	15.1	B	55
10th St East off-ramp to 10th St East on-ramp	3,590	3,569	99%	45.7	1.9	62	14.3	B	100	4,185	3,737	89%	45.9	2.1	62	15.1	B	100
10th St East on-ramp to 20th St East off-ramp	4,020	3,959	98%	16.7	0.9	61	13.0	B	117	4,590	4,142	90%	16.9	1.0	61	13.7	B	117
20th St East off-ramp to 20th St East on-ramp	3,445	3,444	100%	43.2	1.7	62	13.8	B	160	3,730	3,381	91%	43.2	1.6	62	13.5	B	160
20th St East on-ramp to 50th St East off-ramp	3,575	3,570	100%	136.3	6.5	62	13.5	B	297	3,850	3,495	91%	136.0	6.2	62	13.2	B	296
50th St East off-ramp to 50th St East on-ramp	3,025	3,016	100%	43.6	2.2	61	16.7	B	340	3,105	2,764	89%	43.2	1.9	62	14.9	B	340
50th St East on-ramp to 90th St East off-ramp	3,500	3,486	100%	197.1	13.4	60	19.0	C	537	3,590	3,176	88%	195.3	11.4	61	17.1	B	535
90th St East off-ramp to 90th St East on-ramp	3,300	3,247	98%	45.8	2.9	61	17.8	B	583	3,225	2,816	87%	45.2	2.3	62	15.3	B	580
90th St East on-ramp to 140th St East off-ramp	3,455	3,330	96%	274.8	20.3	60	18.2	C	858	3,340	2,865	86%	270.0	15.7	61	15.4	B	850
140th St East off-ramp to 140th St East on-ramp	3,200	3,000	94%	46.5	3.0	61	16.5	B	904	2,825	2,396	85%	45.5	2.0	62	12.9	B	896
140th St East on-ramp to 170th St East off-ramp	3,345	3,118	93%	137.1	9.7	60	16.8	B	1,041	3,000	2,534	84%	134.1	6.7	61	13.3	B	1,030
170th St East off-ramp to 170th St East on-ramp	3,265	3,036	93%	47.4	3.3	60	16.8	B	1,089	2,875	2,392	83%	46.5	2.3	62	13.0	B	1,076
170th St East on-ramp to 210th St East off-ramp	3,530	3,232	92%	196.7	15.1	60	17.6	B	1,286	3,015	2,483	82%	191.7	10.2	61	13.2	B	1,268
210th St East off-ramp to 210th St East on-ramp	3,485	3,118	89%	44.2	3.3	60	17.3	B	1,330	2,960	2,394	81%	43.2	2.3	61	13.0	B	1,311
210th St East on-ramp to 240th St East off-ramp	3,585	3,184	89%	141.9	11.4	59	17.3	B	1,472	3,010	2,421	80%	137.9	7.5	61	12.8	B	1,449
240th St East off-ramp to 240th St East on-ramp	3,465	3,031	87%	47.9	3.5	60	16.9	B	1,520	2,980	2,380	80%	46.9	2.6	61	13.0	B	1,496
240th St East on-ramp to Oasis Rd off-ramp	3,720	3,241	87%	138.2	11.5	59	17.7	B	1,658	3,145	2,526	80%	134.5	7.9	61	13.4	B	1,630
Oasis Rd off-ramp to Oasis Rd on-ramp	3,605	3,089	86%	48.1	3.5	60	17.1	B	1,706	3,045	2,435	80%	47.2	2.7	61	13.3	B	1,677
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	3,685	3,095	84%	198.4	18.3	59	17.2	B	1,904	3,110	2,449	79%	191.7	11.7	61	13.1	B	1,869
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	2,885	2,381	83%	48.5	2.5	61	12.9	B	1,953	2,710	2,100	77%	48.3	2.4	62	11.4	B	1,917
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	3,060	2,508	82%	258.6	16.6	60	13.5	B	2,211	2,975	2,329	78%	256.7	15.2	61	12.5	B	2,174
Caughlin Rd off-ramp to Caughlin Rd on-ramp	2,770	2,211	80%	46.9	2.5	61	12.0	B	2,258	2,665	2,018	76%	46.4	2.1	62	10.9	A	2,220
Caughlin Rd on-ramp to Koala Rd off-ramp	2,860	2,285	80%	72.5	4.6	61	12.1	B	2,331	2,730	2,067	76%	71.6	3.9	61	10.8	A	2,292
Koala Rd off-ramp to Koala Rd loop on-ramp	2,655	2,095	79%	32.6	1.7	61	11.4	B	2,363	2,570	1,932	75%	32.4	1.5	62	10.4	A	2,324
Koala Rd loop on-ramp to Koala Rd direct on-ramp	3,198	2,652	83%	17.5	1.7	59	13.3	B	2,381	2,907	2,256	78%	16.9	1.1	60	11.0	A	2,341
Koala Rd direct on-ramp to Route 395 off-ramp	3,255	2,689	83%	107.1	7.9	60	14.4	B	2,488	3,005	2,339	78%	105.0	6.0	61	12.3	B	2,446
Route 395 off-ramp to Route 395 loop on-ramp	2,540	2,096	83%	25.7	1.0	62	11.2	B	2,514	2,515	1,951	78%	25.7	1.0	62	10.4	A	2,472
Route 395 loop on-ramp to Route 395 direct on-ramp	3,489	3,036	87%	22.6	2.1	59	16.0	B	2,536	3,258	2,689	83%	22.0	1.5	60	13.9	B	2,494
Route 395 direct on-ramp to Phantom St West off-ramp	3,635	3,164	87%	60.0	5.3	59	17.3	B	2,596	3,365	2,779	83%	58.3	3.6	61	14.8	B	2,552
Phantom St West off-ramp to Phantom St West loop on-ramp	2,680	2,351	88%	27.6	0.9	63	12.5	B	2,624	2,695	2,228	83%	27.7	0.9	62	11.9	B	2,580
Phantom St West loop on-ramp to Phantom St West direct on-ramp	2,730	2,397	88%	12.4	0.5	62	10.9	A	2,636	2,965	2,490	84%	12.6	0.6	62	11.5	B	2,593
Phantom St West direct on-ramp to Phantom St East direct off-ramp	2,830	2,499	88%	56.8	2.5	62	12.9	B	2,693	3,065	2,591	85%	56.9	2.6	62	13.4	B	2,650
Phantom St East direct off-ramp to Phantom St East loop on-ramp	2,360	2,067	88%	35.6	1.2	63	11.0	B	2,729	2,785	2,361	85%	35.8	1.5	62	12.7	B	2,685
Phantom St East loop on-ramp to Phantom St East direct on-ramp	2,488	2,174	87%	15.9	0.7	62	11.7	B	2,745	3,233	2,767	86%	16.4	1.1	60	15.3	B	2,702
Phantom St East direct on-ramp to National Trails Hwy off-ramp	2,565	2,263	88%	40.6	1.8	62	12.2	B	2,785	3,340	2,896	87%	41.0	2.2	61	15.7	B	2,743
National Trails Hwy off-ramp to National Trails Hwy on-ramp	2,265	1,987	88%	42.6	1.4	63	10.6	A	2,828	3,050	2,637	86%	43.0	1.8	62	14.2	B	2,786
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	2,435	2,131	88%	101.8	3.4	63	8.5	A	2,930	3,205	2,777	87%	102.9	4.6	62	11.2	B	2,889
I-15 NB/SB off-ramp to I-15 NB on-ramp	1,140	972	85%	79.3	1.4	64	5.1	A	3,009	1,350	1,150	85%	79.4	1.5	64	6.0	A	2,968
I-15 NB/SB on-ramp to Choco Rd off-ramp	1,370	1,208	88%	56.4	1.4	63	4.8	A	3,065	1,705	1,508	88%	56.7	1.5	63	6.0	A	3,025
Choco Rd off-ramp to Choco Rd on-ramp	1,290	1,078	84%	32.8	0.7	64	7.0	A	3,098	1,430	1,194	83%	33.0	0.9	63	7.8	A	3,058
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	1,435	1,156	81%	71.1	1.9	63	8.6	A	3,169	1,530	1,212	79%	71.3	2.0	63	9.1	A	3,129
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	1,190	942	79%	26.6	0.5	64	7.4	A	3,196	1,255	973	78%	26.7	0.6	64	7.6	A	3,156
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,255	1,016	81%	10.2	0.3	63	6.1	A	3,206	1,303	1,016	78%	10.2	0.3	63	6.1	A	3,166
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,300	1,056	81%	31.6	0.8	64	7.6	A	3,237	1,350	1,061	79%	31.7	0.8	63	7.7	A	3,198

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-8. Year 2020 Build Alternative Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WB MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	750	738	98%	36.3	1.4	62	6.0	A	36	1,975	1,867	95%	38.8	3.7	57	16.5	B	39
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	680	669	98%	25.3	0.7	63	5.3	A	62	1,855	1,753	95%	26.1	1.5	61	14.4	B	65
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	755	735	97%	11.0	0.4	63	4.5	A	73	1,994	1,891	95%	11.6	1.0	59	12.3	B	76
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	855	830	97%	79.3	2.3	63	6.2	A	152	2,220	2,120	96%	83.6	6.5	59	16.8	B	160
Choco Rd off-ramp to Choco Rd on-ramp	785	754	96%	34.6	0.8	63	5.4	A	186	2,120	2,016	95%	36.1	2.4	61	15.0	B	196
Choco Rd on-ramp to I-15 NB/SB off-ramp	1,005	966	96%	56.4	1.0	64	3.8	A	243	2,250	2,145	95%	57.5	2.1	62	8.6	A	254
I-15 NB/SB off-ramp to I-15 SB on-ramp	670	630	94%	98.6	0.9	64	3.3	A	341	1,930	1,809	94%	101.5	3.6	62	9.7	A	355
I-15 NB on-ramp to I-15 NB on-ramp	1,235	1,199	97%	11.0	0.5	62	5.5	A	352	2,560	2,408	94%	11.3	0.9	60	11.3	B	366
I-15 SB on-ramp to National Trails Hwy off-ramp	1,930	1,898	98%	65.5	2.3	63	7.6	A	418	3,520	3,312	94%	67.6	4.3	61	13.6	B	434
National Trails Hwy off-ramp to National Trails Hwy on-ramp	1,805	1,773	98%	41.7	1.1	63	9.3	A	460	3,325	3,119	94%	43.0	2.3	61	16.9	B	477
National Trails Hwy on-ramp to Phantom St East off-ramp	2,020	1,978	98%	51.9	2.0	63	10.2	A	512	3,705	3,479	94%	53.9	3.9	60	18.7	C	531
Phantom St East off-ramp to Phantom St East loop on-ramp	1,635	1,610	98%	32.9	0.8	63	8.5	A	544	3,405	3,169	93%	34.0	1.8	61	17.2	B	565
Phantom St East loop on-ramp to Phantom St East direct on-ramp	1,888	1,830	97%	5.4	0.2	62	9.8	A	550	3,874	3,553	92%	5.8	0.6	58	20.4	C	571
Phantom St East direct on-ramp to Phantom St West off-ramp	1,910	1,871	98%	57.9	2.0	63	9.9	A	608	3,900	3,641	93%	60.6	4.6	60	20.3	C	631
Phantom St West off-ramp to Phantom St West on-ramp	1,635	1,605	98%	42.1	1.0	63	8.4	A	650	3,715	3,460	93%	43.9	2.8	61	19.0	C	675
Phantom St West on-ramp to Route 395 off-ramp	2,170	2,123	98%	53.7	2.0	62	8.5	A	704	4,735	4,444	94%	57.0	5.3	59	19.0	C	732
Route 395 off-ramp to Route 395 on-ramp	1,445	1,420	98%	46.9	0.7	64	5.6	A	750	3,550	3,286	93%	48.1	1.9	62	13.2	B	780
Route 395 on-ramp to Koala Rd off-ramp	1,830	1,808	99%	100.3	2.3	63	7.0	A	851	4,350	4,056	93%	104.2	6.2	60	16.3	B	885
Koala Rd off-ramp to Koala Rd on-ramp	1,420	1,410	99%	48.5	0.8	64	5.5	A	899	3,770	3,477	92%	50.0	2.2	62	14.0	B	935
Koala Rd on-ramp to Caughlin Rd off-ramp	1,535	1,514	99%	66.5	1.3	64	5.8	A	966	3,985	3,692	93%	68.8	3.4	61	14.6	B	1,003
Caughlin Rd off-ramp to Caughlin Rd on-ramp	1,475	1,442	98%	49.2	1.0	64	5.7	A	1,015	3,885	3,582	92%	50.9	2.5	62	14.6	B	1,054
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	1,725	1,667	97%	246.5	5.7	63	6.5	A	1,262	4,205	3,841	91%	255.5	14.3	61	15.5	B	1,310
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	1,525	1,459	96%	45.0	1.0	63	5.7	A	1,307	3,915	3,497	89%	46.5	2.3	61	14.2	B	1,356
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	1,660	1,570	95%	183.4	4.3	63	6.1	A	1,490	4,770	4,309	90%	191.8	12.1	60	17.5	B	1,548
Oasis Rd off-ramp to Oasis Rd loop on-ramp	1,600	1,491	93%	47.6	1.1	63	5.9	A	1,538	4,680	4,173	89%	49.7	3.1	61	17.2	B	1,598
Oasis Rd direct on-ramp to 240th St East off-ramp	1,675	1,545	92%	128.2	3.2	63	6.0	A	1,666	4,800	4,242	88%	134.3	9.1	60	17.2	B	1,732
240th St East off-ramp to 240th St East on-ramp	1,525	1,375	90%	43.8	1.0	63	5.4	A	1,709	4,450	3,881	87%	45.5	2.6	61	15.9	B	1,778
240th St East on-ramp to 210th St East off-ramp	1,545	1,384	90%	134.1	3.4	63	5.4	A	1,844	4,585	3,958	86%	142.3	11.3	59	16.3	B	1,920
210th St East off-ramp to 210th St East on-ramp	1,495	1,322	88%	42.1	1.1	63	7.0	A	1,886	4,360	3,727	85%	44.2	3.1	60	20.7	C	1,964
210th St East on-ramp to 170th St East off-ramp	1,535	1,337	87%	188.0	5.4	63	6.9	A	2,074	4,410	3,719	84%	198.7	15.6	60	20.3	C	2,163
170th St East off-ramp to 170th St East on-ramp	1,435	1,227	86%	44.2	1.3	63	6.5	A	2,118	4,105	3,393	83%	46.4	3.2	60	18.8	C	2,209
170th St East on-ramp to 140th St East off-ramp	1,550	1,312	85%	134.2	3.9	63	6.7	A	2,252	4,200	3,413	81%	141.8	10.9	60	18.5	C	2,351
140th St East off-ramp to 140th St East on-ramp	1,430	1,198	84%	36.3	1.0	63	6.3	A	2,288	4,035	3,241	80%	38.2	2.7	60	18.0	B	2,389
140th St East on-ramp to 90th St East off-ramp	1,930	1,651	86%	267.3	8.9	63	8.6	A	2,556	4,325	3,453	80%	282.4	22.9	59	19.1	C	2,672
90th St East off-ramp to 90th St East on-ramp	1,835	1,552	85%	44.1	1.5	63	8.2	A	2,600	4,145	3,209	77%	46.2	3.3	60	17.9	B	2,718
90th St East on-ramp to 70th St East off-ramp	2,190	1,882	86%	191.3	8.0	62	10.0	A	2,791	4,365	3,370	77%	201.6	17.6	59	18.8	C	2,919
50th St East off-ramp to 50th St East on-ramp	1,810	1,526	84%	43.0	1.4	63	8.1	A	2,834	3,815	2,917	76%	44.6	2.9	60	16.1	B	2,964
50th St East on-ramp to 20th St East off-ramp	2,500	2,193	88%	136.2	5.1	62	8.8	A	2,970	4,490	3,554	79%	139.8	8.3	61	14.6	B	3,104
20th St East off-ramp to 20th St East on-ramp	2,390	2,073	87%	41.3	1.5	62	8.3	A	3,012	4,350	3,374	78%	42.4	2.5	61	13.9	B	3,146
20th St East on-ramp to 10th St East off-ramp	3,065	2,736	89%	16.7	0.8	61	8.9	A	3,028	5,020	4,015	80%	17.3	1.4	59	13.6	B	3,164
10th St East off-ramp to 10th St East on-ramp	2,685	2,402	89%	45.2	1.4	63	9.6	A	3,074	4,505	3,596	80%	47.6	3.6	60	15.0	B	3,211
10th St East on-ramp to SR 14 SB off-ramp	2,940	2,637	90%	32.9	1.1	62	10.3	A	3,107	4,785	3,848	80%	34.9	3.0	59	16.0	B	3,246
SR 14 SB off-ramp to SR 138 WB west end of the network	1,665	1,495	90%	12.4	0.3	55	13.6	B	3,119	3,195	2,547	80%	13.0	0.9	52	24.4	C	3,259

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-8. Year 2020 Build Alternative Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off-ramp	2,795	2,791	100%	148.0	6.5	62	15.0	B	148	5,205	5,203	100%	161.3	19.8	57	30.5	D	161
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	2,350	2,332	99%	22.1	1.1	62	12.5	B	170	4,655	4,615	99%	23.8	2.8	57	26.8	D	185
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	2,685	2,651	99%	11.3	0.8	61	14.6	B	181	5,035	4,956	98%	12.1	1.7	56	29.4	D	197
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	3,060	3,032	99%	22.1	1.3	61	12.5	B	203	5,485	5,433	99%	23.8	3.1	56	24.1	C	221
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	2,545	2,530	99%	23.9	1.1	62	13.6	B	227	4,925	4,897	99%	25.7	2.9	58	28.3	D	247
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	2,905	2,895	100%	16.7	0.8	61	11.8	B	244	5,440	5,405	99%	18.0	2.2	57	23.7	C	265
Mojave Dr off-ramp to Mojave Dr on-ramp	2,430	2,421	100%	20.6	0.8	62	12.9	B	265	4,880	4,803	98%	22.0	2.2	58	27.4	D	287
Mojave Dr on-ramp to D St off-ramp	2,835	2,810	99%	49.9	2.7	61	13.4	B	315	5,260	5,173	98%	52.7	5.5	58	26.2	D	339
D St off-ramp to D St on-ramp	1,900	1,893	100%	22.9	0.7	63	10.0	A	337	4,305	4,182	97%	23.8	1.7	60	23.1	C	363
D St on-ramp to E St off-ramp	2,170	2,137	98%	11.1	0.6	62	11.6	B	348	4,630	4,458	96%	11.7	1.2	58	25.5	C	375
E St off-ramp to E St on-ramp	2,135	2,112	99%	9.7	0.4	62	11.3	B	358	4,590	4,403	96%	10.3	0.9	59	24.9	C	385
E St on-ramp to Stoddard Wells Rd off-ramp	2,175	2,153	99%	35.8	1.5	62	11.6	B	394	4,635	4,445	96%	37.6	3.4	59	25.2	C	423
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	1,775	1,752	99%	10.8	0.3	63	9.3	A	405	4,140	3,940	95%	11.3	0.8	60	21.8	C	434
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	2,050	2,008	98%	47.9	1.7	62	8.1	A	453	4,735	4,512	95%	50.0	3.9	60	18.9	C	484
HDC EB/WB off-ramp to HDC WB on-ramp	1,405	1,353	96%	70.5	1.8	63	7.1	A	523	3,875	3,647	94%	73.4	4.8	61	20.0	C	558
HDC WB on-ramp to HDC EB on-ramp	1,535	1,485	97%	7.6	0.3	63	6.1	A	531	4,030	3,790	94%	7.9	0.6	60	16.3	B	565
HDC EB on-ramp to Stoddard Wells Rd off-ramp(Quarry Rd)	2,255	2,106	93%	36.2	1.4	62	8.5	A	567	5,250	4,825	92%	39.2	4.4	57	21.3	C	605
Stoddard Wells Rd off-ramp(Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	2,055	1,930	94%	22.7	0.7	63	10.3	A	590	5,065	4,650	92%	24.0	2.0	59	26.1	D	629
Stoddard Wells Rd on-ramp(Quarry Rd) to Dale Evans Pkwy off-ramp	2,175	2,029	93%	214.7	8.4	62	10.9	A	804	5,285	4,818	91%	227.3	21.3	59	27.4	D	856
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	1,915	1,760	92%	31.7	1.2	62	9.4	A	836	5,005	4,536	91%	33.4	2.9	59	25.6	C	889
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,210	2,044	92%	63.5	2.5	62	11.0	A	900	5,335	4,833	91%	67.9	6.9	58	27.8	D	957
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	3,560	3,560	100%	58.5	3.3	61	19.4	C	58	3,045	3,036	100%	58.1	2.9	62	16.5	B	58
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	3,330	3,329	100%	36.6	2.4	61	18.2	C	95	2,660	2,630	99%	36.2	1.9	62	14.2	B	94
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	3,590	3,585	100%	216.2	16.8	60	20.0	C	311	3,035	3,006	99%	212.9	13.5	61	16.4	B	307
Quarry Rd off-ramp to Quarry Rd on-ramp	3,465	3,457	100%	25.1	2.0	60	19.4	C	336	2,905	2,872	99%	24.7	1.6	61	15.7	B	332
Quarry Rd on-ramp to HDC EB/WB off-ramp	3,620	3,614	100%	52.4	4.2	60	15.2	B	389	3,250	3,220	99%	51.9	3.6	60	13.3	B	384
HDC EB/WB off-ramp to HDC EB on-ramp	2,775	2,765	100%	78.7	5.0	61	15.2	B	467	2,165	2,156	100%	77.2	3.5	62	11.7	B	461
HDC WB on-ramp to HDC EB on-ramp	2,980	2,974	100%	10.7	0.8	60	13.6	B	478	2,330	2,327	100%	10.5	0.6	62	10.5	A	471
HDC EB on-ramp to Stoddard Wells Rd off-ramp	3,555	3,492	98%	28.5	2.3	60	14.6	B	507	2,965	2,899	98%	27.9	1.7	61	11.9	B	499
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,075	3,020	98%	28.0	1.8	61	16.5	B	535	2,705	2,651	98%	27.6	1.4	62	14.3	B	527
Stoddard Wells Rd direct on-ramp to E St off-ramp	3,540	3,469	98%	23.0	2.1	59	19.5	C	558	3,130	3,066	98%	22.8	1.9	60	17.1	B	550
E St off-ramp to E St on-ramp	3,510	3,473	99%	8.8	0.6	60	19.3	C	566	3,090	3,031	98%	8.7	0.5	61	16.6	B	558
E St on-ramp to D St off-ramp	3,560	3,520	99%	11.3	0.8	60	19.5	C	578	3,135	3,069	98%	11.2	0.7	61	16.8	B	570
D St off-ramp to D St on-ramp	3,360	3,330	99%	21.8	1.4	61	18.3	C	600	2,900	2,846	98%	21.5	1.1	62	15.4	B	591
D St on-ramp to Mojave Dr off-ramp	4,200	4,169	99%	52.7	4.3	60	17.1	B	652	3,920	3,850	98%	52.0	3.7	60	15.6	B	643
Mojave Dr off-ramp to Mojave Dr on-ramp	3,945	3,916	99%	20.7	1.6	60	21.8	C	673	3,540	3,488	99%	20.3	1.3	61	19.1	C	663
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	4,540	4,515	99%	15.3	1.6	58	19.5	C	688	4,130	4,056	98%	14.9	1.2	60	17.0	B	678
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,170	4,170	100%	27.4	2.3	60	23.4	C	716	3,725	3,668	98%	26.7	1.6	61	20.1	C	705
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	4,550	4,539	100%	23.4	1.8	60	18.9	C	739	4,275	4,234	99%	23.3	1.6	60	17.6	B	728
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,030	4,010	100%	12.8	0.9	61	22.1	C	752	3,540	3,476	98%	12.6	0.7	61	18.9	C	741
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,185	4,147	99%	8.5	0.7	60	23.1	C	760	3,745	3,648	97%	8.4	0.6	61	20.1	C	749
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,415	4,346	98%	169.8	14.1	60	24.3	C	930	4,055	3,940	97%	167.7	11.8	60	21.8	C	917

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-9. Year 2020 Build Alternative Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	58	12.5	B	59	19.6	B
West Palmdale Blvd loop	Merging	63	7.9	A	61	12.6	B
West Palmdale Blvd direct	Merging	62	9.0	A	61	12.1	B
SR 138 WB	Merging	61	11.0	B	60	17.0	B
10th St West loop	Merging	59	16.4	B	54	24.6	C
10th St West direct	Merging	61	16.1	B	58	22.5	C
West Avenue N loop	Merging	61	15.8	B	57	22.0	C
West Avenue N direct	Merging	61	12.7	B	61	17.0	B
East Avenue S	Diverging	62	11.4	B	56	29.5	D
West Palmdale Blvd	Diverging	60	11.9	B	58	18.2	B
SR 138 EB	Diverging	61	12.8	B	60	19.4	B
10th St West	Diverging	60	10.8	B	60	15.0	B
West Avenue N	Diverging	57	18.1	B	38	37.0	**E**
SOUTHBOUND							
West Avenue N loop	Merging	61	17.8	B	61	18.1	B
West Avenue N direct	Merging	62	14.1	B	62	13.7	B
10th St West	Merging	61	12.4	B	62	13.6	B
SR 138 WB	Merging	60	11.0	B	60	11.5	B
West Palmdale Blvd loop	Merging	59	16.7	B	60	15.2	B
West Palmdale Blvd direct	Merging	58	19.1	B	60	16.9	B
East Avenue S	Merging	26	45.2	**E**	59	14.8	B
West Avenue N	Diverging	58	30.2	D	57	32.4	D
10th St West	Diverging	39	38.9	**E**	58	23.3	C
SR 138 EB	Diverging	48	25.1	C	59	22.8	C
West Palmdale Blvd	Diverging	61	13.6	B	61	14.7	B
East Avenue S	Diverging	46	25.9	C	58	19.5	B

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F

Table 4-9. Year 2020 Build Alternative Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	59	16	B	59	17	B
20th St East	Merging	63	10	A	62	10	A
50th St East	Merging	58	18	B	59	17	B
90th St East	Merging	59	16	B	61	14	B
140th St East	Merging	60	15	B	61	12	B
170th St East	Merging	58	16	B	61	12	B
210th St East	Merging	59	15	B	61	11	B
240th St East	Merging	57	16	B	60	12	B
Oasis Rd	Merging	60	15	B	61	12	B
Sheep Creek Rd loop	Merging	62	12	B	61	11	B
Sheep Creek Rd direct	Merging	60	12	B	60	11	B
Caughlin Rd loop	Merging	61	12	B	62	11	B
Caughlin Rd direct	Merging	60	11	B	61	9	A
Koala Rd loop	Merging	58	14	B	60	11	B
Koala Rd direct	Merging	60	13	B	61	11	B
Route 395 loop	Merging	57	17	B	59	14	B
Route 395 direct	Merging	60	16	B	61	14	B
Phantom St West loop	Merging	62	10	B	61	11	B
Phantom St West direct	Merging	62	11	B	61	12	B
Phantom St East loop	Merging	61	12	B	59	16	B
Phantom St East direct	Merging	61	13	B	60	17	B
Choco Rd	Merging	63	6	A	63	6	A
Dale Evans Pkwy loop	Merging	63	5	A	63	5	A
Dale Evans Pkwy direct	Merging	63	6	A	63	6	A
10th St East	Diverging	63	9	A	62	11	B
50th St East	Diverging	60	15	B	61	15	B
90th St East	Diverging	59	20	B	60	19	B
140th St East	Diverging	58	19	B	60	17	B
170th St East	Diverging	60	18	B	61	14	B
210th St East	Diverging	59	18	B	61	14	B
240th St East	Diverging	58	18	B	61	13	B
Oasis Rd	Diverging	58	19	B	61	14	B
Sheep Creek Rd	Diverging	54	20	B	59	14	B
Caughlin Rd	Diverging	59	14	B	59	14	B
Koala Rd	Diverging	60	13	B	61	12	B
Route 395	Diverging	57	17	B	59	14	B
Phantom St West	Diverging	57	21	C	59	17	B
Phantom St East	Diverging	61	15	B	61	15	B
National Trails Hwy	Diverging	61	13	B	61	17	B
Dale Evans Pkwy	Diverging	63	7	A	63	7	A
10th St East to 20th St East	Weaving	61	12	B	59	14	B
National Trails Hwy to I-15 NB/SB	Weaving	62	8	A	61	11	B
I-15 NB/SB to Choco Rd	Weaving	63	4	A	63	6	A

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-9. Year 2020 Build Alternative Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy loop	Merging	63	5	A	59	12	B
Dale Evans Pkwy direct	Merging	63	6	A	59	15	B
I-15 NB	Merging	61	6	A	60	11	B
National Trails Hwy	Merging	62	10	B	58	18	B
Phantom St East loop	Merging	61	11	B	57	22	C
Phantom St East direct	Merging	62	11	B	58	22	C
Phantom St West	Merging	62	9	A	60	18	B
Route 395	Merging	61	7	A	58	15	B
Koala Rd loop	Merging	62	6	A	61	13	B
Koala Rd direct	Merging	62	6	A	60	13	B
Caughlin Rd loop	Merging	62	6	A	61	14	B
Caughlin Rd direct	Merging	61	7	A	60	14	B
Sheep Creek Rd loop	Merging	62	6	A	61	14	B
Sheep Creek Rd direct	Merging	62	6	A	56	18	B
Oasis Rd loop	Merging	62	6	A	60	17	B
Oasis Rd direct	Merging	62	5	A	59	15	B
240th St East	Merging	62	5	A	60	14	B
210th St East	Merging	62	6	A	60	17	B
170th St East	Merging	62	6	A	60	16	B
140th St East	Merging	61	8	A	58	17	B
90th St East	Merging	60	9	A	57	16	B
50th St East	Merging	61	9	A	60	13	B
10th St East	Merging	62	10	B	57	19	B
Dale Evans Pkwy	Diverging	63	6	A	61	15	B
Choco Rd	Diverging	63	7	A	60	18	B
Phantom St East	Diverging	61	13	B	60	20	C
Phantom St West	Diverging	61	12	B	60	21	C
Route 395	Diverging	60	12	B	54	24	C
Koala Rd	Diverging	61	10	A	59	20	B
Caughlin Rd	Diverging	62	7	A	61	15	B
Sheep Creek Rd	Diverging	61	8	A	60	17	B
Oasis Rd	Diverging	62	7	A	60	18	B
240th St East	Diverging	62	7	A	58	19	B
210th St East	Diverging	62	6	A	56	16	B
170th St East	Diverging	62	7	A	58	21	C
140th St East	Diverging	62	7	A	59	19	B
90th St East	Diverging	62	9	A	58	19	B
50th St East	Diverging	61	11	B	56	20	B
20th St East	Diverging	62	8	A	61	13	B
SR 14 SB	Diverging	63	12	B	57	22	C
Choco to I-15 NB/SB	Weaving	63	4	A	63	7	A
I-15 SB to National Trails Hwy	Weaving	62	9	A	61	14	B
20th St East to 10th St East	Weaving	60	9	A	58	12	B

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

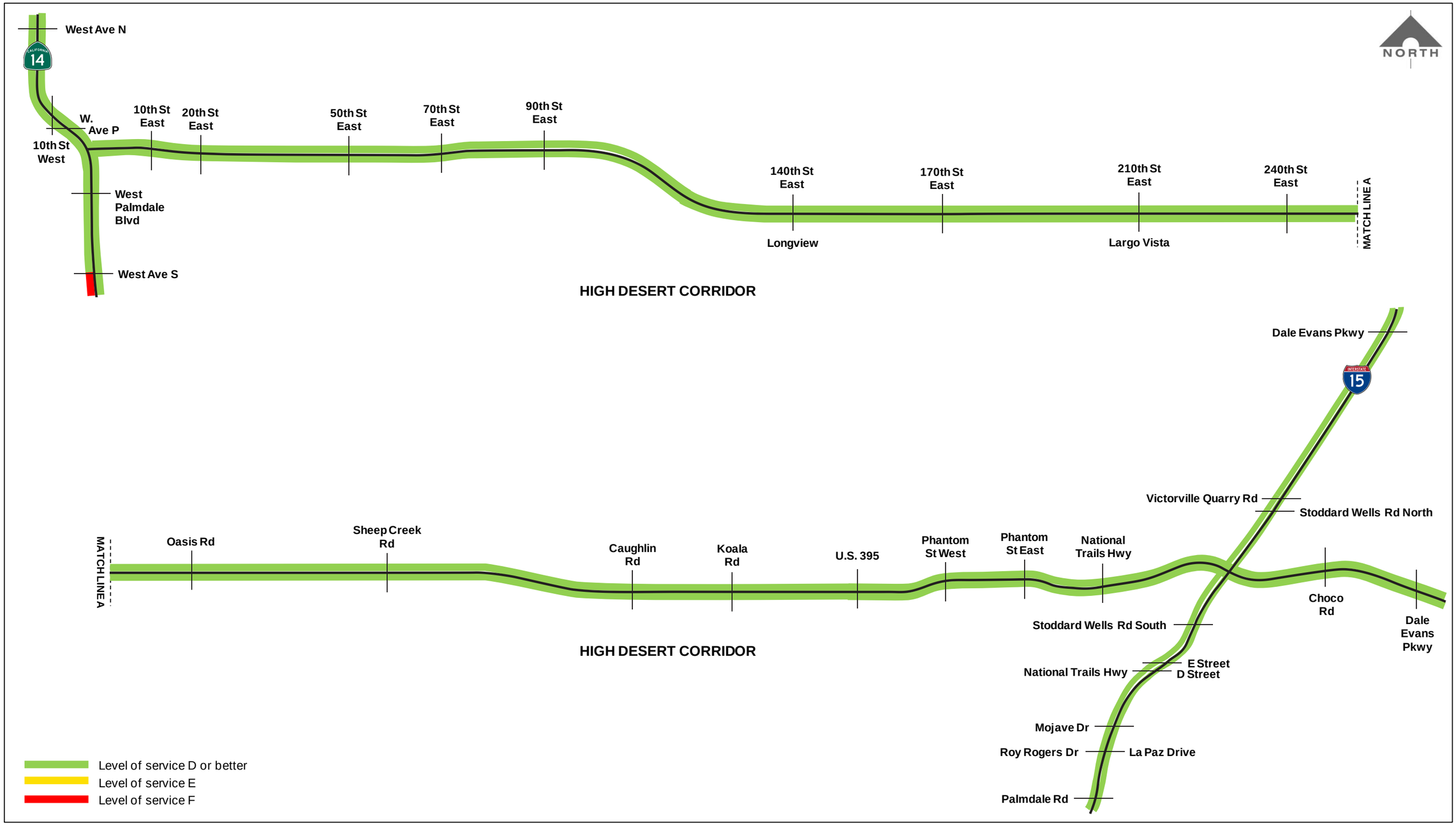
Table 4-9. Year 2020 Build Alternative Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	60	17	B	55	30	D
Mojave Dr	Merging	60	17	B	54	32	D
D St	Merging	61	13	B	58	26	C
E St	Merging	62	13	B	59	25	C
HDC WB	Merging	62	6	A	60	14	B
Stoddard Wells Rd (Quarry Rd)	Merging	62	11	B	58	28	C
Dale Evans Pkwy	Merging	61	11	B	57	28	C
Palmdale Rd	Diverging	60	18	B	49	35	**E**
D St	Diverging	61	13	B	60	21	C
E St	Diverging	61	13	B	58	26	C
Stoddard Wells Rd	Diverging	61	13	B	58	26	C
Dale Evans Pkwy	Diverging	61	11	B	57	27	C
Palmdale Rd direct to Roy Rogers Dr	Weaving	60	13	B	55	23	C
Roy Rogers Dr to Mojave Dr	Weaving	61	13	B	56	23	C
Stoddard Wells Rd to HDC EB/WB	Weaving	62	8	A	59	18	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	62	8	A	56	20	B
SOUTHBOUND							
Dale Evans Pkwy	Merging	60	21	C	60	18	B
HDC WB	Merging	60	12	B	61	10	A
Stoddard Wells Rd direct	Merging	58	20	C	58	19	B
E St	Merging	60	20	B	60	18	B
Palmdale Rd loop	Merging	60	23	C	60	21	C
Palmdale Rd direct	Merging	58	24	C	58	23	C
Dale Evans Pkwy	Diverging	61	21	C	60	19	B
Quarry Rd	Diverging	59	20	C	60	17	B
E St	Diverging	59	20	C	59	19	B
D St	Diverging	60	20	B	60	18	B
Quarry Rd to HDC EB/WB	Weaving	60	14	B	60	13	B
HDC EB to Stoddard Wells Rd	Weaving	59	14	B	61	12	B
D St to Mojave Dr	Weaving	59	16	B	60	15	B
Mojave Dr to Roy Rogers Dr	Weaving	57	19	B	59	17	B
Roy Rogers Dr to Palmdale Rd	Weaving	60	18	B	60	18	B

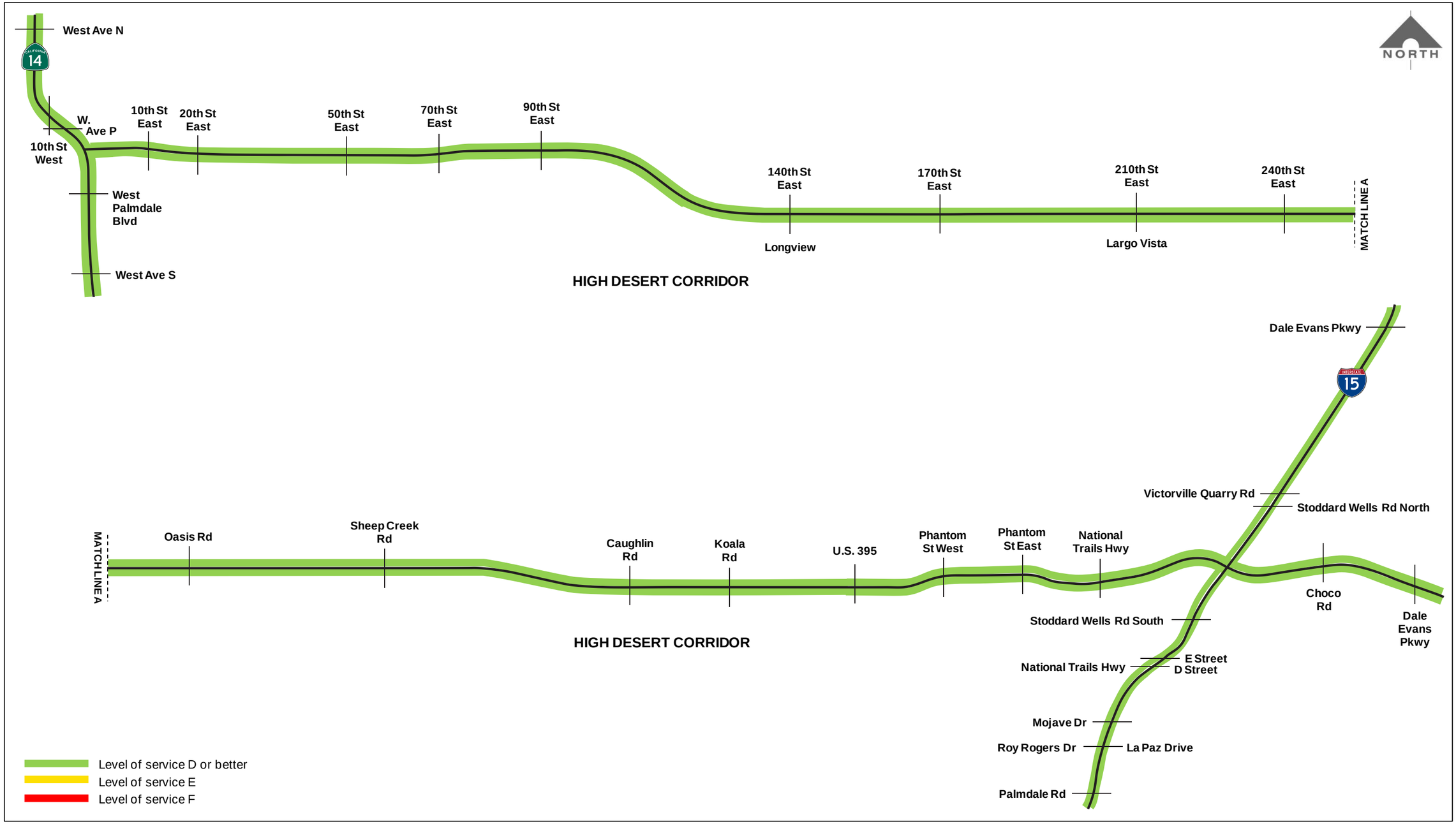
Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F



AM PEAK HOUR

Figure 4-17: Year 2020 Build Alternative with Tolls Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 4-17: Year 2020 Build Alternative with Tolls Freeway Mainline Level of Service *(2 of 2)*

Table 4-10. Year 2020 Build Alternative with Tolls Freeway Mainline Analysis Results *(1 of 4)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	2,300	2,301	100%	200.3	46.7	54	14.4	B	200	2,300	2,311	100%	200.3	46.7	54	14.4	B	200	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	2,160	2,150	100%	27.9	2.3	60	9.2	A	228	2,160	2,160	100%	27.9	2.3	60	9.2	A	228	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to West Palmdale Blvd off-ramp	2,820	2,810	100%	58.3	4.0	61	9.5	A	287	2,820	2,820	100%	58.3	4.0	61	9.5	A	287	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,485	2,480	100%	16.6	0.8	61	10.2	A	303	2,485	2,485	100%	16.6	0.8	61	10.2	A	303	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,520	1,510	99%	5.0	0.2	63	8.2	A	308	1,520	1,520	100%	5.0	0.2	63	8.2	A	308	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	1,770	1,765	100%	16.2	0.5	63	7.1	A	324	1,770	1,770	100%	16.2	0.5	63	7.1	A	324	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	2,215	2,207	100%	32.9	1.4	62	8.5	A	357	2,215	2,207	100%	32.9	1.4	62	8.5	A	357	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	1,864	1,858	100%	22.9	1.2	62	10.1	A	380	1,864	1,858	100%	22.9	1.2	62	10.1	A	380	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	3,275	3,190	97%	48.2	2.8	61	10.4	A	428	3,275	3,190	97%	48.2	2.8	61	10.4	A	428	—	—	—	—	—	—	—	—	—
10th St West loop on-ramp to 10th St West direct on-ramp	3,750	3,677	98%	16.9	1.1	61	13.8	B	445	3,750	3,677	98%	16.9	1.1	61	13.8	B	445	—	—	—	—	—	—	—	—	—
10th St West direct on-ramp to West Avenue N off-ramp	3,850	3,768	98%	66.2	4.0	61	15.0	B	511	3,850	3,768	98%	66.2	4.0	61	15.0	B	511	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	3,595	3,512	98%	18.2	1.2	61	19.3	C	530	3,595	3,512	98%	18.2	1.2	61	19.3	C	530	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	3,875	3,780	98%	9.4	0.5	62	15.3	B	539	3,875	3,780	98%	9.4	0.5	62	15.3	B	539	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	4,000	3,899	97%	30.6	1.3	62	15.1	B	570	4,000	3,899	97%	30.6	1.3	62	15.1	B	570	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	4,885	4,883	100%	37.7	2.9	60	27.3	D	38	4,885	4,883	100%	37.7	2.9	60	27.3	D	38	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,585	4,580	100%	18.7	1.3	60	25.5	C	56	4,585	4,580	100%	18.7	1.3	60	25.5	C	56	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,635	4,633	100%	11.2	0.7	61	19.2	C	68	4,635	4,633	100%	11.2	0.7	61	19.2	C	68	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St W off-ramp	4,925	4,920	100%	89.1	13.1	55	22.1	C	157	4,925	4,920	100%	89.1	13.1	55	22.1	C	157	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	4,325	4,325	100%	19.5	3.5	53	22.3	C	176	3,020	3,015	100%	19.8	3.8	52	27.1	D	176	1,305	1,300	100%	16.5	0.2	62	8.0	A	16
HDC off-ramp to 10th St West on-ramp	1,911	1,911	100%	22.0	0.8	62	10.6	A	198	1,306	1,243	95%	21.8	0.7	62	11.6	B	198	605	530	88%	22.5	1.2	61	8.7	A	39
10th St West on-ramp to Palmdale Blvd off-ramp	3,000	3,000	100%	33.3	1.5	62	12.3	B	231	1,695	1,729	102%	33.1	1.4	62	13.1	B	231	1,305	1,298	99%	33.9	2.0	60	9.9	A	73
West Palmdale Blvd off-ramp to HDC on-ramp	2,620	2,602	99%	32.3	1.1	62	10.4	A	264	1,315	1,316	100%	31.9	0.7	63	10.0	A	263	1,305	1,293	99%	33.4	2.0	60	11.8	B	106
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,745	3,641	97%	23.8	1.4	61	11.6	B	288	2,525	2,510	99%	23.8	1.4	61	12.2	B	287	1,220	1,140	93%	24.2	1.5	60	9.0	A	131
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,265	4,208	99%	13.9	1.1	59	15.8	B	301	3,045	3,109	102%	13.9	1.1	60	15.9	B	301	1,220	1,100	90%	14.0	1.2	59	15.3	B	145
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	4,835	4,740	98%	68.3	5.5	59	19.5	C	370	3,265	3,563	109%	68.3	5.6	59	20.5	C	369	1,570	1,177	75%	68.3	5.3	59	16.4	B	213
East Avenue S off-ramp to East Avenue S on-ramp	4,585	4,465	97%	30.2	9.6	54	25.3	C	400	2,675	2,764	103%	32.3	11.8	51	28.1	D	401	1,910	1,600	84%	22.6	1.9	59	17.0	B	235
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	5,630	5,231	93%	466.0	277.0	33	49.0	**F**	866	3,720	3,904	105%	537.6	348.6	31	59.1	**F**	939	1,910	1,327	69%	213.8	24.8	57	19.8	C	449

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	6,920	5,208	75%	204.4	49.8	52	28.5	D	204	5,100	3,624	71%	219.4	64.9	51	29.3	D	219	1,820	1,585	87%	176.6	21.9	56	27.9	D	177
East Avenue S off-ramp to East Avenue S on-ramp	6,085	4,602	76%	28.8	2.9	58	19.8	C	233	4,265	2,974	70%	28.6	2.9	58	17.0	B	248	1,820	1,628	89%	29.0	3.1	58	28.3	D	206
East Avenue S on-ramp to West Palmdale Blvd off-ramp	6,605	5,124	78%	59.1	4.5	60	17.1	B	292	4,985	3,938	79%	59.1	4.5	60	16.5	B	307	1,620	1,186	73%	58.9	4.2	60	19.8	C	265
West Palmdale Blvd off-ramp to HDC off-ramp	5,675	4,400	78%	17.0	1.1	60	18.3	C	309	4,055	3,431	85%	17.0	1.0	60	19.0	C	324	1,620	970	60%	17.1	1.2	60	16.2	B	282
HDC off-ramp to West Palmdale Blvd loop on-ramp	3,715	2,916	78%	5.2	0.3	61	16.0	B	315	2,025	1,946	96%	5.2	0.2	62	15.8	B	329	1,690	970	57%	5.3	0.4	60	16.3	B	287
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,905	3,111	80%	16.7	0.8	61	12.7	B	331	2,215	2,115	95%	16.4	0.6	62	11.3	B	346	1,690	996	59%	17.3	1.4	59	16.9	B	304
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	4,400	3,560	81%	33.8	2.2	60	14.1	B	365	2,710	2,652	98%	33.7	2.0	61	13.7	B	379	1,690	908	54%	34.2	2.5	60	15.2	B	338
10th St West off-ramp to HDC on-ramp	3,735	3,128	84%	23.5	1.2	60	16.6	B	389	2,045	2,246	110%	23.4	1.2	60	17.1	B	403	1,690	882	52%	23.8	1.4	59	14.9	B	362
HDC on-ramp to 10th St West on-ramp	6,310	5,215	83%	49.6	4.0	60	17.4	B	438	6,310	5,215	83%	49.6	4.0	60	17.4	B	438	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	6,725	5,622	84%	17.8	2.0	58	22.2	C	456	6,725	5,622	84%	17.8	2.0	58	22.2	C	456	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Avenue N off-ramp	6,825	5,693	83%	72.8	10.5	55	25.4	C	529	6,825	5,693	83%	72.8	10.5	55	25.4	C	529	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	6,525	5,414	83%	21.4	4.3	52	34.9	D	550	6,525	5,414	83%	21.4	4.3	52	34.9	D	550	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	6,660	5,626	84%	10.2	1.2	57	24.7	C	560	6,660	5,626	84%	10.2	1.2	57	24.7	C	560	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	6,905	5,856	85%	31.7	2.3	60	23.4	C	592	6,905	5,856	85%	31.7	2.3	60	23.4	C	592	—	—	—	—	—	—	—	—	—
West Avenue M on-ramp to West Avenue N off-ramp	4,850	4,845	100%	37.7	3.0	60	27.1	D	38	4,850	4,845	100%	37.7	3.0	60	27.1	D	38	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,450	4,432	100%	18.7	1.3	60	24.7	C	56	4,450	4,432	100%	18.7	1.3	60	24.7	C	56	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,550	4,546	100%	11.1	0.7	61	18.9	C	67	4,550	4,546	100%	11.1	0.7	61	18.9	C	67	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St West off-ramp	4,775	4,771	100%	81.6	5.6	60	19.7	C	149	4,775	4,771	100%	81.6	5.6	60	19.7	C	149	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC off-ramp	3,980	3,760	94%	17.3	1.3	59	15.9	B	166	3,980	3,760	94%	17.3	1.3	59	15.9	B	166	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St West on-ramp	1,712	1,612	94%	21.6	0.5	63	8.5	A	188	1,712	1,612	94%	21.6	0.5	63	8.5	A	188	—	—	—	—	—	—	—	—	—
10th St West on-ramp to Palmdale Blvd off-ramp	2,540	2,427	96%	32.9	1.2	62	9.7	A	221	2,540	2,427	96%	32.9	1.2	62	9.7	A	221	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	1,845	1,840	100%	31.6	0.6	64	7.5	A	253	1,845	1,840	100%	31.6	0.6	64	7.5	A	253	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,330	3,068	92%	23.8	1.5	61	9.8	A	276	3,330	3,068	92%	23.8	1.5	61	9.8	A	276	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,435	3,158	92%	13.4	0.7	62	11.4	B	290	3,435	3,158	92%	13.4	0.7	62	11.4	B	290	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	3,655	3,352	92%	66.2	3.6	61	13.4	B	356	3,655	3,352	92%	66.2	3.6	61	13.4	B	356	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	3,130	2,900	93%	21.3	0.7	63	11.6	B	377	3,130	2,900	93%	21.3	0.7	63	11.6	B	377	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	3,540	3,285	93%	212.0	24.5	59	15.2	B	589	3,540	3,285	93%	212.0	24.5	59	15.2	B	589	—	—	—	—	—	—	—	—	—

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-10. Year 2020 Build Alternative with Tolls Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EB MAINLINE																		
SR 138 EB west end of the network to SR 14 NB on-ramp	2,535	2,515	99%	20.9	1.7	48	26.0	C	21	2,360	2,245	95%	20.8	1.6	49	23.1	C	21
SR 14 NB on-ramp to 10th St East off-ramp	3,500	3,479	99%	33.6	1.9	61	12.9	B	54	4,320	3,729	86%	33.6	1.9	61	13.8	B	54
10th St East off-ramp to 10th St East on-ramp	3,260	3,256	100%	45.7	1.8	62	13.1	B	100	4,005	3,488	87%	45.7	1.9	62	14.0	B	100
10th St East on-ramp to 20th St East off-ramp	3,665	3,660	100%	16.8	0.8	61	12.0	B	117	4,465	3,923	88%	16.8	0.9	61	12.9	B	117
20th St East off-ramp to 20th St East on-ramp	3,135	3,108	99%	43.1	1.5	63	12.4	B	160	3,615	3,219	89%	43.0	1.5	63	12.9	B	160
20th St East on-ramp to 50th St East off-ramp	3,255	3,233	99%	135.6	5.7	62	12.2	B	296	3,730	3,317	89%	135.2	5.3	62	12.5	B	295
50th St East off-ramp to 50th St East on-ramp	2,635	2,633	100%	43.3	1.9	62	14.2	B	339	2,950	2,597	88%	43.1	1.7	62	13.9	B	338
50th St East on-ramp to 90th St East off-ramp	3,020	2,970	98%	194.7	10.8	61	16.0	B	534	3,380	2,963	88%	194.3	10.4	61	15.9	B	532
90th St East off-ramp to 90th St East on-ramp	2,655	2,597	98%	45.0	2.1	62	14.0	B	579	2,955	2,542	86%	44.9	2.0	62	13.7	B	577
90th St East on-ramp to 140th St East off-ramp	2,675	2,562	96%	268.8	14.2	61	13.7	B	847	2,975	2,503	84%	268.4	13.9	61	13.4	B	846
140th St East off-ramp to 140th St East on-ramp	2,275	2,123	93%	45.5	2.0	62	11.4	B	893	2,265	1,875	83%	45.0	1.6	63	10.0	A	891
140th St East on-ramp to 170th St East off-ramp	2,455	2,275	93%	133.9	6.6	61	12.0	B	1,027	2,350	1,936	82%	132.5	5.3	62	10.1	A	1,023
170th St East off-ramp to 170th St East on-ramp	2,415	2,206	91%	46.3	2.1	62	11.9	B	1,073	2,215	1,813	82%	45.9	1.7	62	9.7	A	1,069
170th St East on-ramp to 210th St East off-ramp	2,435	2,184	90%	191.0	9.5	62	11.6	B	1,264	2,230	1,801	81%	189.2	7.8	62	9.4	A	1,258
210th St East off-ramp to 210th St East on-ramp	2,415	2,147	89%	43.2	2.2	61	11.7	B	1,307	2,190	1,721	79%	42.5	1.6	62	9.2	A	1,301
210th St East on-ramp to 240th St East off-ramp	2,465	2,154	87%	138.0	7.5	61	11.4	B	1,445	2,205	1,740	79%	136.0	5.6	62	9.1	A	1,437
240th St East off-ramp to 240th St East on-ramp	2,300	1,984	86%	46.6	2.2	62	10.7	A	1,492	2,110	1,628	77%	46.2	1.8	62	8.7	A	1,483
240th St East on-ramp to Oasis Rd off-ramp	2,580	2,210	86%	133.8	7.2	61	11.7	B	1,626	2,310	1,804	78%	132.2	5.6	62	9.4	A	1,615
Oasis Rd off-ramp to Oasis Rd on-ramp	2,480	2,075	84%	46.8	2.2	62	11.2	B	1,672	2,230	1,713	77%	46.4	1.9	62	9.2	A	1,662
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	2,585	2,150	83%	190.0	10.2	61	11.4	B	1,862	2,315	1,760	76%	188.4	8.6	62	9.3	A	1,850
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	2,075	1,692	82%	47.7	1.8	62	9.0	A	1,910	2,000	1,477	74%	47.5	1.6	63	7.9	A	1,898
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	2,185	1,775	81%	251.9	10.4	62	9.3	A	2,162	2,150	1,608	75%	250.7	8.9	62	8.4	A	2,148
Caughlin Rd off-ramp to Caughlin Rd on-ramp	1,940	1,547	80%	45.8	1.6	63	8.2	A	2,208	1,920	1,421	74%	45.8	1.5	63	7.6	A	2,194
Caughlin Rd on-ramp to Koala Rd off-ramp	1,955	1,539	79%	70.3	2.6	62	7.9	A	2,278	1,945	1,437	74%	70.2	2.3	63	7.4	A	2,264
Koala Rd off-ramp to Koala Rd loop on-ramp	1,910	1,481	78%	32.0	1.1	63	7.9	A	2,310	1,915	1,417	74%	32.0	1.1	63	7.6	A	2,296
Koala Rd loop on-ramp to Koala Rd direct on-ramp	2,152	1,718	80%	16.6	0.8	62	8.2	A	2,327	2,105	1,601	76%	16.5	0.7	62	7.6	A	2,313
Koala Rd direct on-ramp to Route 395 off-ramp	2,230	1,788	80%	102.9	4.0	62	9.2	A	2,429	2,120	1,600	75%	102.5	3.3	63	8.2	A	2,415
Route 395 off-ramp to Route 395 loop on-ramp	2,110	1,668	79%	25.6	0.9	63	8.9	A	2,455	2,035	1,524	75%	25.5	0.8	63	8.1	A	2,441
Route 395 loop on-ramp to Route 395 direct on-ramp	3,023	2,575	85%	22.2	1.7	60	13.4	B	2,477	2,736	2,242	82%	21.8	1.3	61	11.5	B	2,463
Route 395 direct on-ramp to Phantom St West off-ramp	3,150	2,710	86%	58.6	3.9	60	14.5	B	2,536	2,860	2,370	83%	57.4	2.7	62	12.4	B	2,520
Phantom St West off-ramp to Phantom St West loop on-ramp	2,345	2,062	88%	27.6	0.9	63	10.9	A	2,563	2,290	1,931	84%	27.6	0.8	63	10.3	A	2,547
Phantom St West loop on-ramp to Phantom St West direct on-ramp	2,398	2,103	88%	12.4	0.4	63	9.5	A	2,576	2,480	2,123	86%	12.4	0.5	62	9.7	A	2,560
Phantom St West direct on-ramp to Phantom St East direct off-ramp	2,510	2,221	88%	56.7	2.4	62	11.5	B	2,632	2,675	2,323	87%	56.7	2.3	62	12.0	B	2,617
Phantom St East direct off-ramp to Phantom St East loop on-ramp	2,020	1,762	87%	35.3	1.0	63	9.3	A	2,668	2,395	2,084	87%	35.6	1.1	63	11.1	B	2,652
Phantom St East loop on-ramp to Phantom St East direct on-ramp	2,124	1,845	87%	15.8	0.6	63	9.8	A	2,683	2,786	2,427	87%	16.1	0.8	61	13.2	B	2,668
Phantom St East direct on-ramp to National Trails Hwy off-ramp	2,205	1,930	88%	40.3	1.5	62	10.3	A	2,724	2,915	2,558	88%	40.7	1.8	62	13.8	B	2,709
National Trails Hwy off-ramp to National Trails Hwy on-ramp	1,870	1,638	88%	42.1	1.1	63	8.6	A	2,766	2,660	2,355	89%	42.7	1.6	62	12.6	B	2,752
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	2,020	1,775	88%	101.0	2.8	63	7.0	A	2,867	2,785	2,463	88%	102.3	3.9	62	9.9	A	2,854
I-15 NB/SB off-ramp to I-15 NB on-ramp	955	848	89%	79.3	1.3	64	4.4	A	2,946	1,070	952	89%	79.4	1.3	64	5.0	A	2,933
I-15 NB/SB on-ramp to Choco Rd off-ramp	1,180	1,068	91%	56.4	1.2	63	4.2	A	3,002	1,445	1,294	90%	56.8	1.5	63	5.2	A	2,990
Choco Rd off-ramp to Choco Rd on-ramp	1,110	1,005	91%	32.9	0.7	63	5.3	A	3,035	1,195	1,050	88%	33.0	0.8	63	5.5	A	3,023
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	1,140	1,029	90%	71.1	1.5	63	5.2	A	3,106	1,265	1,116	88%	71.3	1.7	63	5.7	A	3,094
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	975	851	87%	26.8	0.5	64	4.5	A	3,133	1,070	924	86%	26.8	0.5	63	4.9	A	3,121
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,044	923	88%	10.2	0.3	63	4.0	A	3,143	1,133	983	87%	10.2	0.2	63	4.3	A	3,131
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,080	957	89%	31.7	0.7	63	4.7	A	3,175	1,165	1,013	87%	31.7	0.7	63	5.0	A	3,163

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-10. Year 2020 Build Alternative with Tolls Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WB MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	690	675	98%	36.0	1.1	63	5.4	A	36	1,240	1,219	98%	37.1	2.2	60	10.2	A	37
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	620	598	96%	25.0	0.5	64	4.7	A	61	1,160	1,147	99%	25.6	1.1	62	9.2	A	63
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	694	666	96%	10.9	0.3	63	4.1	A	72	1,245	1,233	99%	11.2	0.6	62	7.7	A	74
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	790	758	96%	78.7	1.6	63	5.7	A	150	1,370	1,369	100%	81.0	4.0	62	10.5	A	155
Choco Rd off-ramp to Choco Rd on-ramp	730	708	97%	34.3	0.6	64	3.7	A	185	1,320	1,317	100%	35.3	1.7	62	7.1	A	190
Choco Rd on-ramp to I-15 NB/SB off-ramp	930	896	96%	56.2	0.8	64	3.5	A	241	1,420	1,410	99%	56.8	1.5	63	5.6	A	247
I-15 NB/SB off-ramp to I-15 SB on-ramp	605	584	96%	98.3	0.7	65	3.0	A	339	1,185	1,113	94%	100.0	2.2	63	5.9	A	347
I-15 NB on-ramp to I-15 NB on-ramp	995	932	94%	10.9	0.4	62	4.2	A	350	1,745	1,737	100%	11.1	0.7	61	8.0	A	358
I-15 SB on-ramp to National Trails Hwy off-ramp	1,670	1,629	98%	65.4	1.9	63	6.5	A	416	2,670	2,670	100%	66.6	3.3	62	10.9	A	425
National Trails Hwy off-ramp to National Trails Hwy on-ramp	1,550	1,509	97%	41.8	1.0	63	7.9	A	457	2,490	2,489	100%	42.4	1.7	62	13.3	B	467
National Trails Hwy on-ramp to Phantom St East off-ramp	1,815	1,761	97%	51.9	1.9	63	9.1	A	509	2,860	2,832	99%	52.9	3.1	61	14.9	B	520
Phantom St East off-ramp to Phantom St East loop on-ramp	1,440	1,397	97%	32.8	0.7	64	7.3	A	542	2,560	2,524	99%	33.5	1.4	62	13.5	B	553
Phantom St East loop on-ramp to Phantom St East direct on-ramp	1,616	1,562	97%	5.4	0.2	62	8.3	A	547	2,956	2,874	97%	5.6	0.4	60	16.1	B	559
Phantom St East direct on-ramp to Phantom St West off-ramp	1,635	1,592	97%	57.6	1.6	63	8.4	A	605	2,975	2,934	99%	59.4	3.4	61	16.0	B	618
Phantom St West off-ramp to Phantom St West on-ramp	1,445	1,389	96%	42.1	0.9	63	7.3	A	647	2,830	2,777	98%	43.3	2.2	62	15.0	B	662
Phantom St West on-ramp to Route 395 off-ramp	1,675	1,615	96%	53.6	1.7	63	6.5	A	701	3,940	3,874	98%	58.0	6.4	58	16.8	B	720
Route 395 off-ramp to Route 395 on-ramp	900	871	97%	46.8	0.6	64	3.4	A	747	2,595	2,592	100%	47.6	1.4	63	10.3	A	767
Route 395 on-ramp to Koala Rd off-ramp	930	897	96%	99.6	1.3	64	3.4	A	847	2,965	2,949	99%	102.0	4.0	62	11.5	B	869
Koala Rd off-ramp to Koala Rd on-ramp	725	691	95%	48.6	0.6	64	2.7	A	896	2,450	2,450	100%	49.3	1.5	63	9.8	A	919
Koala Rd on-ramp to Caughlin Rd off-ramp	755	716	95%	66.4	0.8	64	2.7	A	962	2,530	2,530	100%	67.6	2.2	63	9.8	A	986
Caughlin Rd off-ramp to Caughlin Rd on-ramp	735	682	93%	49.1	0.6	64	2.7	A	1,011	2,480	2,475	100%	50.1	1.7	63	9.9	A	1,036
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	870	817	94%	245.2	3.6	64	3.2	A	1,256	2,800	2,765	99%	250.9	9.9	62	10.9	A	1,287
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	820	759	93%	44.9	0.7	64	3.0	A	1,301	2,740	2,634	96%	45.9	1.8	62	10.6	A	1,333
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	910	847	93%	183.1	3.1	63	3.3	A	1,484	3,100	2,961	96%	187.6	8.2	62	11.7	B	1,521
Oasis Rd off-ramp to Oasis Rd loop on-ramp	890	823	92%	47.6	0.8	63	3.2	A	1,532	3,075	2,886	94%	48.7	2.1	62	11.6	B	1,569
Oasis Rd direct on-ramp to 240th St East off-ramp	940	867	92%	128.1	2.4	63	3.3	A	1,660	3,220	2,981	93%	131.5	6.4	62	11.8	B	1,701
240th St East off-ramp to 240th St East on-ramp	825	762	92%	43.7	0.7	63	3.0	A	1,704	2,865	2,614	91%	44.6	1.8	62	10.5	A	1,745
240th St East on-ramp to 210th St East off-ramp	925	860	93%	133.9	2.6	63	3.3	A	1,838	2,985	2,695	90%	137.2	6.4	62	10.7	A	1,883
210th St East off-ramp to 210th St East on-ramp	915	840	92%	42.1	0.9	63	4.4	A	1,880	2,805	2,497	89%	43.1	2.1	62	13.5	B	1,926
210th St East on-ramp to 170th St East off-ramp	950	864	91%	187.5	4.0	63	4.5	A	2,067	2,825	2,470	87%	192.9	10.1	61	13.1	B	2,119
170th St East off-ramp to 170th St East on-ramp	900	801	89%	44.2	1.0	63	4.2	A	2,111	2,555	2,188	86%	45.2	2.2	62	11.8	B	2,164
170th St East on-ramp to 140th St East off-ramp	950	840	88%	134.0	3.0	63	4.3	A	2,245	2,595	2,198	85%	137.7	7.3	61	11.6	B	2,302
140th St East off-ramp to 140th St East on-ramp	915	802	88%	36.3	0.8	63	4.2	A	2,282	2,570	2,154	84%	37.4	2.0	61	11.7	B	2,339
140th St East on-ramp to 90th St East off-ramp	1,405	1,277	91%	266.4	6.7	63	6.7	A	2,548	3,220	2,736	85%	275.7	17.3	61	14.8	B	2,615
90th St East off-ramp to 90th St East on-ramp	1,385	1,234	89%	43.9	1.1	63	6.5	A	2,592	3,180	2,632	83%	45.4	2.8	61	14.4	B	2,660
90th St East on-ramp to 70th St East off-ramp	1,885	1,731	92%	190.4	6.6	62	9.1	A	2,782	3,665	3,079	84%	197.6	14.2	60	16.9	B	2,858
50th St East off-ramp to 50th St East on-ramp	1,600	1,464	92%	42.9	1.3	63	7.8	A	2,825	3,310	2,721	82%	44.1	2.5	61	14.8	B	2,902
50th St East on-ramp to 20th St East off-ramp	2,480	2,315	93%	136.4	5.1	62	9.3	A	2,962	4,060	3,456	85%	138.9	7.9	61	14.1	B	3,041
20th St East off-ramp to 20th St East on-ramp	2,410	2,238	93%	41.4	1.6	62	9.0	A	3,003	3,910	3,298	84%	42.2	2.4	61	13.5	B	3,083
20th St East on-ramp to 10th St East off-ramp	3,090	2,899	94%	16.7	0.9	61	9.5	A	3,020	4,795	4,168	87%	17.4	1.6	59	14.2	B	3,100
10th St East off-ramp to 10th St East on-ramp	2,770	2,594	94%	45.5	1.6	63	10.4	A	3,065	4,325	3,753	87%	47.5	3.7	60	15.7	B	3,148
10th St East on-ramp to SR 14 SB off-ramp	2,910	2,732	94%	33.0	1.2	62	10.7	A	3,098	4,515	3,911	87%	34.4	2.6	59	16.0	B	3,182
SR 14 SB off-ramp to SR 138 WB west end of the network	1,660	1,564	94%	12.4	0.4	55	14.3	B	3,111	3,030	2,595	86%	12.9	0.7	53	24.6	C	3,195

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-10. Year 2020 Build Alternative with Tolls Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off-ramp	2,725	2,725	100%	148.0	6.5	62	14.6	B	148	5,315	5,315	100%	163.8	22.5	57	31.5	D	164
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	2,290	2,285	100%	22.1	1.0	62	12.3	B	170	4,770	4,749	100%	24.1	3.0	57	27.8	D	188
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	2,615	2,606	100%	11.3	0.9	60	14.4	B	181	5,130	5,046	98%	12.2	1.8	56	30.1	D	200
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	2,935	2,917	99%	22.0	1.3	61	12.0	B	203	5,430	5,371	99%	23.7	3.0	57	23.7	C	224
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	2,450	2,443	100%	24.0	1.2	62	13.2	B	227	4,855	4,806	99%	25.7	2.9	58	27.7	D	249
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	2,805	2,792	100%	16.7	0.9	61	11.4	B	244	5,355	5,301	99%	17.8	2.0	57	23.1	C	267
Mojave Dr off-ramp to Mojave Dr on-ramp	2,325	2,319	100%	20.6	0.8	62	12.4	B	265	4,760	4,732	99%	21.9	2.1	59	26.8	D	289
Mojave Dr on-ramp to D St off-ramp	2,710	2,689	99%	49.9	2.6	62	12.7	B	314	4,899	4,899	100%	53.0	5.9	58	25.9	C	342
D St off-ramp to D St on-ramp	1,825	1,813	99%	22.9	0.7	63	9.6	A	337	4,205	4,138	98%	23.8	1.7	60	22.8	C	366
D St on-ramp to E St off-ramp	2,085	2,053	98%	11.1	0.5	62	11.1	B	348	4,485	4,385	98%	11.7	1.2	58	25.1	C	378
E St off-ramp to E St on-ramp	2,050	2,013	98%	9.7	0.3	63	10.7	A	358	4,445	4,342	98%	10.3	0.9	59	24.5	C	388
E St on-ramp to Stoddard Wells Rd off-ramp	2,085	2,043	98%	35.7	1.5	62	11.0	B	394	4,485	4,389	98%	37.5	3.4	59	24.9	C	425
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	1,710	1,645	96%	10.8	0.3	63	8.7	A	405	4,035	3,937	98%	11.3	0.8	60	21.8	C	437
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	1,925	1,833	95%	47.6	1.4	63	7.3	A	452	4,465	4,350	97%	49.8	3.7	60	18.1	C	486
HDC EB/WB off-ramp to HDC WB on-ramp	1,450	1,401	97%	70.5	1.8	63	7.4	A	523	3,605	3,484	97%	73.3	4.8	61	19.1	C	560
HDC WB on-ramp to HDC EB on-ramp	1,575	1,519	96%	7.6	0.3	63	6.3	A	530	3,745	3,616	97%	7.9	0.6	60	15.6	B	568
HDC EB on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,115	1,977	93%	36.0	1.3	62	7.9	A	566	4,910	4,569	93%	38.8	4.1	57	19.9	C	607
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	1,920	1,793	93%	22.7	0.8	63	9.5	A	589	4,720	4,408	93%	23.9	1.9	60	24.7	C	630
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	2,030	1,880	93%	214.6	8.6	62	10.1	A	804	4,855	4,490	92%	226.0	20.2	59	25.4	C	856
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	1,775	1,625	92%	31.7	1.2	62	8.7	A	835	4,585	4,190	91%	33.2	2.8	59	23.5	C	890
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,075	1,921	93%	63.5	2.5	62	10.3	A	899	4,890	4,464	91%	67.1	6.2	59	25.4	C	957
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	3,540	3,540	100%	58.4	3.2	61	19.2	C	58	3,040	3,040	100%	57.9	2.7	62	16.4	B	58
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	3,315	3,314	100%	36.7	2.3	61	18.2	C	95	2,670	2,637	99%	36.0	1.8	62	14.2	B	94
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	3,555	3,555	100%	216.3	16.7	60	19.9	C	311	3,060	3,029	99%	212.4	13.2	61	16.5	B	306
Quarry Rd off-ramp to Quarry Rd on-ramp	3,445	3,447	100%	25.1	2.0	60	19.2	C	337	2,930	2,889	99%	24.6	1.6	61	15.7	B	331
Quarry Rd on-ramp to HDC EB/WB off-ramp	3,570	3,569	100%	52.5	4.2	60	14.9	B	389	3,155	3,133	99%	51.8	3.6	61	13.3	B	383
HDC EB/WB off-ramp to HDC EB on-ramp	2,755	2,731	99%	78.8	5.0	61	14.9	B	468	2,120	2,120	100%	77.1	3.4	62	11.6	B	460
HDC WB on-ramp to HDC EB on-ramp	2,955	2,929	99%	10.7	0.8	60	13.4	B	478	2,250	2,250	100%	10.4	0.5	62	10.4	A	470
HDC EB on-ramp to Stoddard Wells Rd off-ramp	3,480	3,383	97%	28.5	2.2	60	14.1	B	507	2,800	2,800	100%	27.9	1.7	61	11.6	B	498
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	2,965	2,882	97%	28.0	1.8	61	15.8	B	535	2,520	2,520	100%	27.6	1.4	62	14.0	B	526
Stoddard Wells Rd direct on-ramp to E St off-ramp	3,380	3,354	99%	23.2	2.2	59	19.0	C	558	2,880	2,880	100%	22.5	1.6	61	16.3	B	548
E St off-ramp to E St on-ramp	3,350	3,318	99%	8.8	0.7	60	18.4	C	567	2,840	2,840	100%	8.7	0.6	61	15.9	B	557
E St on-ramp to D St off-ramp	3,400	3,363	99%	11.3	0.8	60	18.6	C	578	2,885	2,885	100%	11.2	0.6	61	16.1	B	568
D St off-ramp to D St on-ramp	3,155	3,119	99%	21.8	1.4	61	17.1	B	600	2,665	2,665	100%	21.4	1.0	62	14.5	B	589
D St on-ramp to Mojave Dr off-ramp	3,800	3,757	99%	52.3	3.9	60	15.3	B	652	3,640	3,640	100%	51.8	3.4	61	14.8	B	641
Mojave Dr off-ramp to Mojave Dr on-ramp	3,580	3,543	99%	20.6	1.6	60	19.6	C	673	3,275	3,290	100%	20.2	1.2	61	18.0	B	661
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	4,200	4,179	100%	15.2	1.4	59	17.9	B	688	3,855	3,845	100%	14.8	1.1	60	16.1	B	676
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,815	3,793	99%	27.2	2.1	60	21.1	C	715	3,460	3,460	100%	26.7	1.5	61	19.0	C	703
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	4,185	4,153	99%	23.4	1.6	60	17.3	B	739	3,995	3,994	100%	23.3	1.6	60	16.7	B	726
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	3,695	3,645	99%	12.8	0.8	61	20.0	C	751	3,275	3,271	100%	12.6	0.7	61	18.3	C	739
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,855	3,774	98%	8.5	0.6	60	21.0	C	760	3,455	3,449	100%	8.4	0.6	61	19.4	C	747
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,100	4,004	98%	169.1	13.0	60	22.3	C	929	3,755	3,748	100%	167.1	11.2	60	20.9	C	914

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-11. Year 2020 Build Alternative with Tolls Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	58	11.2	B	59	18.4	B
West Palmdale Blvd loop	Merging	63	7.6	A	61	12.7	B
West Palmdale Blvd direct	Merging	62	8.5	A	61	12.2	B
SR 138 WB	Merging	61	11.0	B	60	18.0	B
10th St West loop	Merging	59	16.5	B	55	24.4	C
10th St West direct	Merging	61	16.0	B	59	22.2	C
West Avenue N loop	Merging	61	15.4	B	58	22.2	C
West Avenue N direct	Merging	61	12.4	B	61	17.1	B
East Avenue S	Diverging	62	11.5	B	56	28.9	D
West Palmdale Blvd	Diverging	60	11.1	B	59	17.1	B
SR 138 EB	Diverging	61	11.8	B	60	18.3	B
10th St West	Diverging	61	10.2	B	60	15.0	B
West Avenue N	Diverging	57	17.8	B	43	33.1	D
SOUTHBOUND							
West Avenue N loop	Merging	61	16.9	B	61	16.7	B
West Avenue N direct	Merging	62	13.5	B	62	13.0	B
10th St West	Merging	61	12.3	B	62	12.6	B
SR 138 WB	Merging	60	10.8	B	60	11.1	B
West Palmdale Blvd loop	Merging	58	16.7	B	60	14.7	B
West Palmdale Blvd direct	Merging	58	18.9	B	60	16.1	B
East Avenue S	Merging	31	37.4	**E**	59	14.3	B
West Avenue N	Diverging	59	28.4	D	59	28.1	D
10th St West	Diverging	51	27.8	C	58	21.6	C
SR 138 EB	Diverging	53	22.3	C	59	21.0	C
West Palmdale Blvd	Diverging	61	13.5	B	61	13.6	B
East Avenue S	Diverging	57	20.9	C	58	18.7	B

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F

Table 4-11. Year 2020 Build Alternative with Tolls Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	59	15	B	60	16	B
20th St East	Merging	63	9	A	63	9	A
50th St East	Merging	60	15	B	60	15	B
90th St East	Merging	61	12	B	62	11	B
140th St East	Merging	61	11	B	62	9	A
170th St East	Merging	61	10	B	62	8	A
210th St East	Merging	61	10	B	62	8	A
240th St East	Merging	60	11	B	61	9	A
Oasis Rd	Merging	61	10	B	62	8	A
Sheep Creek Rd loop	Merging	62	9	A	62	8	A
Sheep Creek Rd direct	Merging	62	8	A	62	8	A
Caughlin Rd loop	Merging	62	8	A	62	8	A
Caughlin Rd direct	Merging	62	7	A	62	6	A
Koala Rd loop	Merging	61	8	A	62	8	A
Koala Rd direct	Merging	62	9	A	62	8	A
Route 395 loop	Merging	58	14	B	59	12	B
Route 395 direct	Merging	61	14	B	61	12	B
Phantom St West loop	Merging	62	9	A	61	10	A
Phantom St West direct	Merging	61	10	B	61	11	B
Phantom St East loop	Merging	62	10	B	60	14	B
Phantom St East direct	Merging	62	11	B	61	15	B
Choco Rd	Merging	64	5	A	63	5	A
Dale Evans Pkwy loop	Merging	63	4	A	63	4	A
Dale Evans Pkwy direct	Merging	63	4	A	63	5	A
10th St East	Diverging	63	8	A	63	10	A
50th St East	Diverging	61	14	B	61	15	B
90th St East	Diverging	60	18	B	60	17	B
140th St East	Diverging	59	15	B	59	15	B
170th St East	Diverging	61	13	B	62	11	B
210th St East	Diverging	61	12	B	62	10	A
240th St East	Diverging	60	12	B	62	10	A
Oasis Rd	Diverging	61	12	B	62	10	B
Sheep Creek Rd	Diverging	59	13	B	61	10	B
Caughlin Rd	Diverging	61	10	B	62	9	A
Koala Rd	Diverging	62	8	A	62	8	A
Route 395	Diverging	61	10	B	62	9	A
Phantom St West	Diverging	58	18	B	60	15	B
Phantom St East	Diverging	60	13	B	61	14	B
National Trails Hwy	Diverging	61	11	B	61	15	B
Dale Evans Pkwy	Diverging	63	5	A	63	6	A
10th St East to 20th St East	Weaving	60	12	B	60	13	B
National Trails Hwy to I-15 NB/SB	Weaving	63	7	A	62	10	A
I-15 NB/SB to Choco Rd	Weaving	63	4	A	62	5	A

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-11. Year 2020 Build Alternative with Tolls Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy loop	Merging	63	4	A	62	8	A
Dale Evans Pkwy direct	Merging	63	5	A	61	9	A
I-15 NB	Merging	62	5	A	60	8	A
National Trails Hwy	Merging	62	9	A	60	15	B
Phantom St East loop	Merging	61	9	A	58	18	B
Phantom St East direct	Merging	62	9	A	59	17	B
Phantom St West	Merging	62	6	A	60	16	B
Route 395	Merging	62	3	A	61	11	B
Koala Rd loop	Merging	63	3	A	62	10	A
Koala Rd direct	Merging	63	2	A	61	8	A
Caughlin Rd loop	Merging	63	3	A	61	10	A
Caughlin Rd direct	Merging	62	3	A	60	10	B
Sheep Creek Rd loop	Merging	63	3	A	61	10	B
Sheep Creek Rd direct	Merging	62	3	A	60	11	B
Oasis Rd loop	Merging	63	3	A	61	11	B
Oasis Rd direct	Merging	62	3	A	60	10	B
240th St East	Merging	62	3	A	61	9	A
210th St East	Merging	63	4	A	61	11	B
170th St East	Merging	63	4	A	61	10	A
140th St East	Merging	61	7	A	58	14	B
90th St East	Merging	60	9	A	57	15	B
50th St East	Merging	60	9	A	60	13	B
10th St East	Merging	62	11	B	59	19	B
Dale Evans Pkwy	Diverging	63	5	A	62	10	A
Choco Rd	Diverging	63	6	A	61	11	B
Phantom St East	Diverging	61	11	B	61	17	B
Phantom St West	Diverging	62	10	A	61	17	B
Route 395	Diverging	60	10	A	52	25	C
Koala Rd	Diverging	62	4	A	60	14	B
Caughlin Rd	Diverging	63	3	A	61	10	B
Sheep Creek Rd	Diverging	63	4	A	61	11	B
Oasis Rd	Diverging	63	4	A	61	12	B
240th St East	Diverging	62	4	A	60	13	B
210th St East	Diverging	63	3	A	60	11	B
170th St East	Diverging	62	5	A	60	14	B
140th St East	Diverging	63	5	A	61	11	B
90th St East	Diverging	62	7	A	61	14	B
50th St East	Diverging	61	10	A	59	17	B
20th St East	Diverging	61	9	A	61	13	B
SR 14 SB	Diverging	63	13	B	58	22	C
Choco to I-15 NB/SB	Weaving	64	3	A	63	5	A
I-15 SB to National Trails Hwy	Weaving	63	7	A	61	12	B
20th St East to 10th St East	Weaving	60	9	A	57	13	B

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

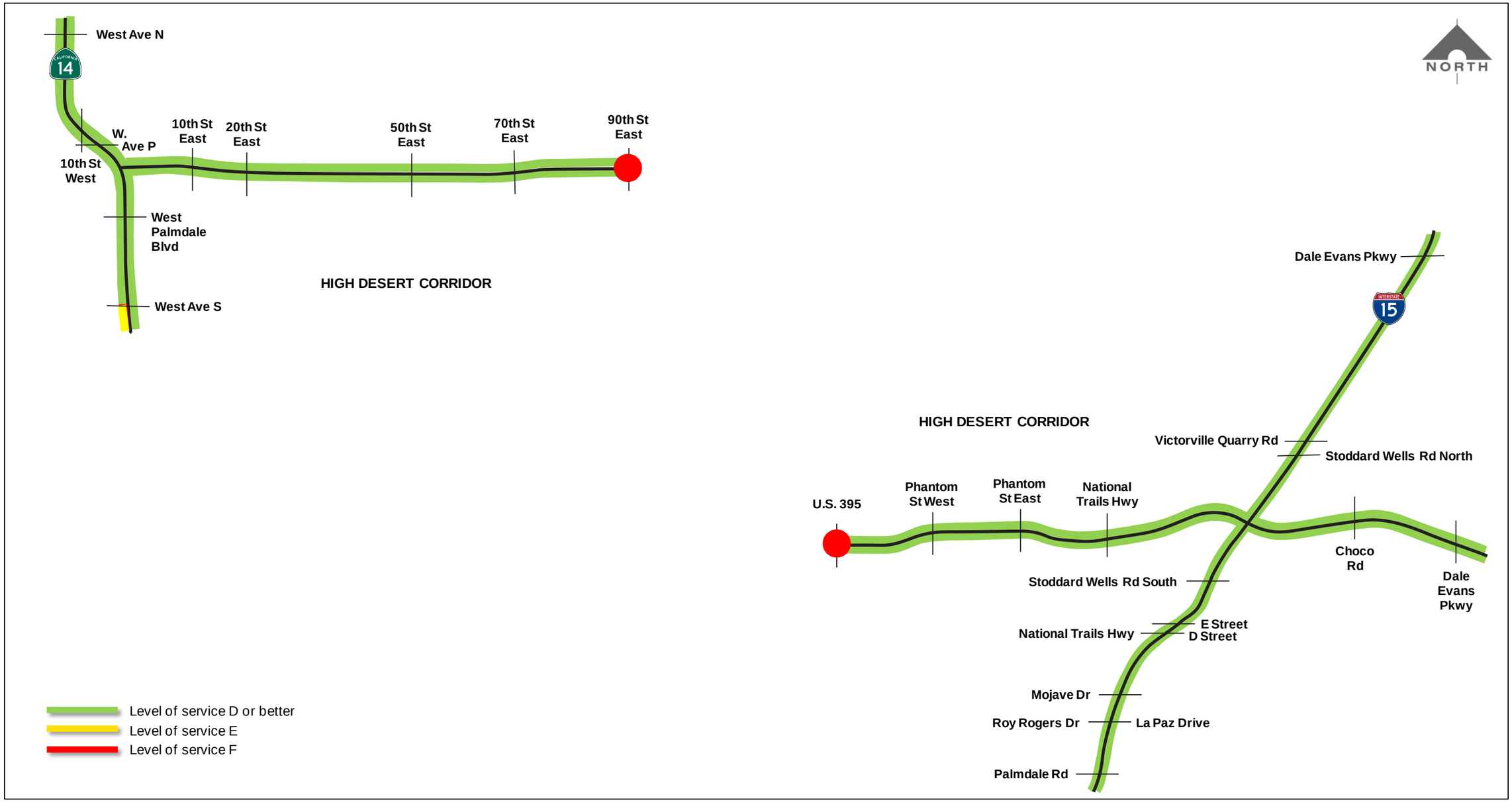
Table 4-11. Year 2020 Build Alternative with Tolls Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	60	16	B	54	30	D
Mojave Dr	Merging	60	16	B	54	32	D
D St	Merging	61	12	B	58	26	C
E St	Merging	62	12	B	59	25	C
HDC WB	Merging	62	6	A	60	14	B
Stoddard Wells Rd (Quarry Rd)	Merging	62	10	B	58	26	C
Dale Evans Pkwy	Merging	61	11	B	58	25	C
Palmdale Rd	Diverging	60	17	B	49	35	**E**
D St	Diverging	61	12	B	60	20	C
E St	Diverging	61	12	B	58	26	C
Stoddard Wells Rd	Diverging	61	13	B	58	26	C
Dale Evans Pkwy	Diverging	61	10	B	58	25	C
Palmdale Rd direct to Roy Rogers Dr	Weaving	61	13	B	55	22	C
Roy Rogers Dr to Mojave Dr	Weaving	61	12	B	56	22	C
Stoddard Wells Rd to HDC EB/WB	Weaving	62	7	A	60	17	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	62	8	A	56	19	B
SOUTHBOUND							
Dale Evans Pkwy	Merging	60	20	C	60	18	B
HDC WB	Merging	60	12	B	61	10	A
Stoddard Wells Rd direct	Merging	58	20	B	60	18	B
E St	Merging	60	19	B	61	17	B
Palmdale Rd loop	Merging	60	21	C	60	20	C
Palmdale Rd direct	Merging	59	23	C	59	22	C
Dale Evans Pkwy	Diverging	61	20	C	61	18	B
Quarry Rd	Diverging	59	20	C	60	17	B
E St	Diverging	59	20	B	60	18	B
D St	Diverging	60	19	B	61	17	B
Quarry Rd to HDC EB/WB	Weaving	60	14	B	60	13	B
HDC EB to Stoddard Wells Rd	Weaving	60	14	B	61	11	B
D St to Mojave Dr	Weaving	60	14	B	60	15	B
Mojave Dr to Roy Rogers Dr	Weaving	58	17	B	59	16	B
Roy Rogers Dr to Palmdale Rd	Weaving	60	16	B	60	17	B

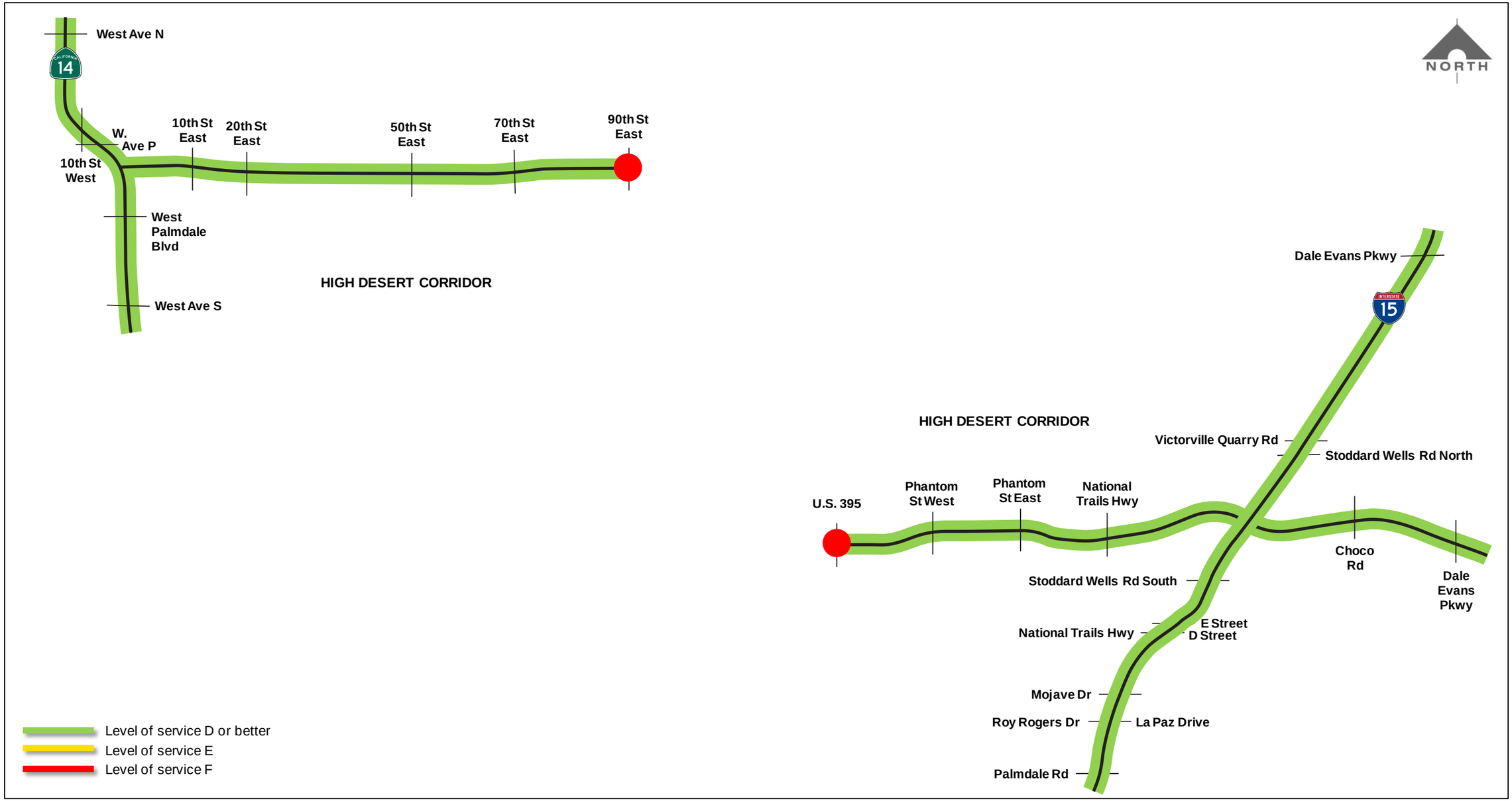
Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F



AM PEAK HOUR

Figure 4-18: Year 2020 Build Partial High Desert Corridor Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 4-18: Year 2020 Build Partial High Desert Corridor Freeway Mainline Level of Service *(2 of 2)*

Table 4-12. Year 2020 Build Partial High Desert Corridor Freeway Mainline Analysis Results *(1 of 4)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	2,130	2,130	100%	176.4	22.6	58	10.0	A	176	2,130	2,130	100%	176.4	22.6	58	10.0	A	176	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	1,985	1,978	100%	27.5	1.8	61	8.3	A	204	1,985	1,978	100%	27.5	1.8	61	8.3	A	204	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to West Palmdale Blvd off-ramp	2,625	2,619	100%	57.3	2.8	62	8.7	A	261	2,625	2,619	100%	57.3	2.8	62	8.7	A	261	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,330	2,329	100%	16.5	0.6	62	9.4	A	278	2,330	2,329	100%	16.5	0.6	62	9.4	A	278	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,495	1,489	100%	5.0	0.1	63	7.9	A	283	1,495	1,489	100%	5.0	0.1	63	7.9	A	283	—	—	—	—	—	—	—	—	—
West Palmdale loop on-ramp to West Palmdale Blvd direct on-ramp	1,755	1,750	100%	16.2	0.4	63	7.0	A	299	1,755	1,750	100%	16.2	0.4	63	7.0	A	299	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	2,195	2,167	99%	32.9	1.3	62	8.3	A	332	2,195	2,167	99%	32.9	1.3	62	8.3	A	332	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	1,789	1,779	99%	22.8	1.1	62	9.6	A	355	1,789	1,779	99%	22.8	1.1	62	9.6	A	355	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	3,000	2,992	100%	47.8	2.3	62	9.7	A	402	3,000	2,992	100%	47.8	2.3	62	9.7	A	402	—	—	—	—	—	—	—	—	—
10th St West loop on-ramp to 10th St West direct on-ramp	3,470	3,462	100%	16.8	1.0	61	12.9	B	419	3,470	3,462	100%	16.8	1.0	61	12.9	B	419	—	—	—	—	—	—	—	—	—
10th St West direct on-ramp to West Avenue N off-ramp	3,570	3,561	100%	65.8	3.5	61	14.1	B	485	3,570	3,561	100%	65.8	3.5	61	14.1	B	485	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	3,325	3,314	100%	18.0	1.0	61	18.0	C	503	3,325	3,314	100%	18.0	1.0	61	18.0	C	503	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	3,585	3,558	99%	9.4	0.4	62	14.4	B	512	3,585	3,558	99%	9.4	0.4	62	14.4	B	512	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	3,720	3,694	99%	30.6	1.2	62	14.3	B	543	3,720	3,694	99%	30.6	1.2	62	14.3	B	543	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	4,780	4,781	100%	37.6	2.9	60	26.6	D	38	4,780	4,781	100%	37.6	2.9	60	26.6	D	38	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,475	4,473	100%	18.7	1.4	60	25.0	C	56	4,475	4,503	101%	18.7	1.4	60	25.0	C	56	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,520	4,501	100%	11.2	0.7	61	18.8	C	67	4,520	4,551	101%	11.2	0.7	61	18.8	C	67	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St W off-ramp	4,805	4,800	100%	87.4	11.3	56	21.2	C	155	4,805	4,847	101%	87.4	11.3	56	21.2	C	155	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	4,185	4,091	98%	18.5	2.5	55	20.8	C	173	2,920	2,894	99%	18.8	2.8	54	24.5	C	174	1,265	1,197	95%	16.4	0.2	62	9.6	A	16
HDC off-ramp to 10th St W on-ramp	2,223	2,209	99%	22.1	1.0	62	12.2	B	195	1,258	1,270	101%	21.8	0.8	62	13.0	B	195	965	939	97%	22.7	1.6	60	10.6	A	39
10th St W on-ramp to Palmdale Blvd off-ramp	3,330	3,321	100%	33.4	1.7	61	13.6	B	229	2,065	2,114	102%	33.2	1.5	62	14.2	B	229	1,265	1,207	95%	34.1	2.4	60	11.8	B	73
West Palmdale Blvd off-ramp to HDC on-ramp	2,843	2,845	100%	32.4	1.2	62	11.5	B	261	1,663	1,717	103%	31.9	0.8	63	10.7	A	261	1,180	1,128	96%	33.6	2.3	60	13.8	B	107
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,765	3,724	99%	23.9	1.5	60	12.2	B	285	2,585	2,603	101%	23.7	1.4	61	12.6	B	284	1,180	1,121	95%	24.4	1.8	59	10.5	A	131
W Palmdale loop on-ramp to W Palmdale Blvd direct on-ramp	4,200	4,192	100%	13.8	1.0	60	16.0	B	299	3,015	3,091	103%	13.7	0.9	60	15.6	B	298	1,185	1,101	93%	14.3	1.4	58	17.3	B	145
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	4,755	4,729	99%	68.3	5.6	59	19.9	C	367	3,270	3,355	103%	68.2	5.5	60	20.4	C	366	1,485	1,374	93%	68.7	6.0	59	18.2	C	214
East Avenue S off-ramp to East Avenue S on-ramp	4,530	4,494	99%	22.1	1.5	60	19.1	C	389	2,630	2,898	110%	22.0	1.4	61	19.2	C	388	1,900	1,596	84%	22.6	2.0	59	18.6	C	237
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	5,465	5,334	98%	408.0	219.0	37	43.6	E	797	3,565	3,821	107%	466.6	277.6	35	51.5	F	855	1,900	1,513	80%	215.3	26.8	57	21.4	C	452

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	6,855	5,248	77%	205.2	50.8	52	28.8	D	205	5,000	3,666	73%	220.6	66.2	51	29.7	D	221	1,855	1,581	85%	176.9	22.5	56	27.9	D	177
East Avenue S off-ramp to East Avenue S on-ramp	6,000	4,582	76%	28.7	2.9	58	19.7	C	234	4,145	2,969	72%	28.6	2.8	59	16.9	B	249	1,855	1,613	87%	29.0	3.2	58	28.0	D	206
East Avenue S on-ramp to West Palmdale Blvd off-ramp	6,560	5,124	78%	59.1	4.5	60	17.2	B	293	4,905	3,913	80%	59.1	4.5	60	16.4	B	308	1,655	1,211	73%	59.0	4.4	60	20.2	C	265
West Palmdale Blvd off-ramp to HDC off-ramp	5,675	4,438	78%	17.0	1.1	60	18.5	C	310	4,020	3,427	85%	17.0	1.0	60	19.0	C	325	1,655	1,011	61%	17.1	1.3	60	16.9	B	282
HDC off-ramp to West Palmdale Blvd loop on-ramp	3,925	3,049	78%	5.2	0.3	61	16.7	B	315	2,230	2,041	92%	5.2	0.3	61	16.6	B	330	1,695	1,008	59%	5.3	0.4	59	17.0	B	287
W Palmdale loop on-ramp to W Palmdale Blvd direct on-ramp	4,130	3,267	79%	16.7	0.9	61	13.4	B	332	2,435	2,230	92%	16.4	0.6	62	12.0	B	347	1,695	1,037	61%	17.3	1.4	59	17.5	B	305
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	4,605	3,698	80%	34.1	2.4	60	14.7	B	366	2,910	2,769	95%	34.0	2.3	60	14.4	B	381	1,695	929	55%	34.5	2.8	59	15.6	B	339
10th St West off-ramp to HDC on-ramp	3,942	3,258	83%	23.7	1.4	60	17.3	B	390	2,247	2,356	105%	23.6	1.4	60	17.9	B	404	1,695	902	53%	24.1	1.6	59	15.4	B	363
HDC on-ramp to 10th St West on-ramp	5,905	5,063	86%	49.1	3.5	60	16.7	B	439	5,905	5,063	86%	49.1	3.5	60	16.7	B	439	—	—	—	—	—	—	—	—	—
10th St West loop on-ramp to 10th St West direct on-ramp	6,345	5,494	87%	17.6	1.8	58	21.5	C	456	6,345	5,494	87%	17.6	1.8	58	21.5	C	456	—	—	—	—	—	—	—	—	—
10th St West direct on-ramp to West Avenue N off-ramp	6,445	5,572	86%	71.0	8.5	57	24.2	C	527	6,445	5,572	86%	71.0	8.5	57	24.2	C	527	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	6,165	5,294	86%	20.3	3.1	55	32.3	D	548	6,165	5,294	86%	20.3	3.1	55	32.3	D	548	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	6,310	5,433	86%	9.9	0.9	59	23.1	C	558	6,310	5,433	86%	9.9	0.9	59	23.1	C	558	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	6,575	5,679	86%	31.6	2.1	60	22.7	C	589	6,575	5,679	86%	31.6	2.1	60	22.7	C	589	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																			—	—	—	—	—	—	—	—	—
West Avenue M on-ramp to West Avenue N off-ramp	4,750	4,750	100%	37.7	3.0	60	26.6	D	38	4,750	4,750	100%	37.7	3.0	60	26.6	D	38	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,360	4,359	100%	18.7	1.3	60	24.1	C	56	4,360	4,359	100%	18.7	1.3	60	24.1	C	56	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,450	4,446	100%	11.1	0.7	61	18.3	C	67	4,450	4,446	100%	11.1	0.7	61	18.3	C	67	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St W off-ramp	4,670	4,667	100%	81.7	5.7	60	19.1	C	149	4,670	4,667	100%	81.7	5.7	60	19.1	C	149	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	3,830	3,829	100%	17.3	1.3	59	16.5	B	167	3,830	3,829	100%	17.3	1.3	59	16.5	B	167	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St W on-ramp	1,797	1,776	99%	21.6	0.5	63	9.4	A	188	1,797	1,776	99%	21.6	0.5	63	9.4	A	188	—	—	—	—	—	—	—	—	—
10th St W on-ramp to Palmdale Blvd off-ramp	2,665	2,654	100%	33.0	1.3	62	10.7	A	221	2,665	2,654	100%	33.0	1.3	62	10.7	A	221	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	2,049	2,037	99%	31.7	0.5	64	8.0	A	253	2,049	2,037	99%	31.7	0.5	64	8.0	A	253	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,165	3,135	99%	23.6	1.2	61	9.9	A	276	3,165	3,135	99%	23.6	1.2	61	9.9	A	276	—	—	—	—	—	—	—	—	—
W Palmdale loop on-ramp to W Palmdale Blvd direct on-ramp	3,275	3,245	99%	13.4	0.6	62	11.7	B	290	3,275	3,245	99%	13.4	0.6	62	11.7	B	290	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	3,445	3,403	99%	66.0	3.3	61	13.5	B	356	3,445	3,403	99%	66.0	3.3	61	13.5	B	356	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	2,910	2,903	100%	21.3	0.7	63	11.9	B	377	2,910	2,903	100%	21.3	0.7	63	11.9	B	377	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	3,305	3,300	100%	210.1	22.3	59	15.4	B	587	3,305	3,300	100%	210.1	22.3	59	15.4	B	587	—	—	—	—	—	—	—	—	—

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-12. Year 2020 Build Partial High Desert Corridor Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EB MAINLINE																		
SR 138 EB west end of the network to SR 14 NB on-ramp	2,085	2,055	99%	20.6	1.4	49	21.0	C	21	2,130	2,127	100%	20.7	1.6	49	22.8	C	21
SR 14 NB on-ramp to 10th St East off-ramp	2,920	2,896	99%	33.3	1.6	61	10.6	A	54	3,880	3,607	93%	33.5	1.9	61	13.3	B	54
10th St East off-ramp to 10th St East on-ramp	2,650	2,630	99%	45.4	1.5	63	10.5	A	99	3,545	3,271	92%	45.7	1.9	62	13.2	B	100
10th St East on-ramp to 20th St East off-ramp	2,905	2,872	99%	16.6	0.7	62	9.3	A	116	3,950	3,658	93%	16.9	0.9	61	12.1	B	117
20th St East off-ramp to 20th St East on-ramp	2,145	2,105	98%	42.8	1.2	63	8.4	A	159	2,905	2,687	92%	43.0	1.4	63	10.7	A	160
20th St East on-ramp to 50th St East off-ramp	2,195	2,157	98%	134.7	4.7	62	8.1	A	293	2,960	2,722	92%	135.9	6.0	62	10.3	A	296
50th St East off-ramp to 50th St East on-ramp	1,380	1,374	100%	42.8	1.4	63	7.3	A	336	1,745	1,617	93%	43.0	1.6	62	8.7	A	339
50th St East on-ramp to 90th St East off-ramp	1,450	1,411	97%	191.0	7.4	62	7.5	A	527	1,865	1,701	91%	192.3	8.3	62	9.1	A	531
90th St East off-ramp to 90th St East on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
90th St East on-ramp to 140th St East off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
140th St East off-ramp to 140th St East on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
140th St East on-ramp to 170th St East off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
170th St East off-ramp to 170th St East on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
170th St East on-ramp to 210th St East off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
210th St East off-ramp to 210th St East on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
210th St East on-ramp to 240th St East off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
240th St East off-ramp to 240th St East on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
240th St East on-ramp to Oasis Rd off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Oasis Rd off-ramp to Oasis Rd on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Caughlin Rd off-ramp to Caughlin Rd on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Caughlin Rd on-ramp to Koala Rd off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Koala Rd off-ramp to Koala Rd loop on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Koala Rd loop on-ramp to Koala Rd direct on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Koala Rd direct on-ramp to Route 395 off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Route 395 off-ramp to Route 395 loop on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Route 395 loop on-ramp to Route 395 direct on-ramp	1,774	1,770	100%	22.1	1.6	61	14.8	B	549	1,528	1,523	100%	22.0	1.5	61	12.5	B	22
Route 395 direct on-ramp to Phantom St West off-ramp	2,050	2,048	100%	57.4	2.7	62	11.2	B	57	1,720	1,713	100%	56.8	2.1	62	9.2	A	79
Phantom St West off-ramp to Phantom St West loop on-ramp	1,335	1,333	100%	27.5	0.7	63	7.2	A	85	1,205	1,200	100%	27.4	0.6	63	6.4	A	49
Phantom St West loop on-ramp to Phantom St West direct on-ramp	1,357	1,352	100%	12.3	0.3	63	6.2	A	97	1,479	1,473	100%	12.4	0.4	63	6.7	A	62
Phantom St West direct on-ramp to Phantom East direct off-ramp	1,400	1,396	100%	56.2	1.6	63	7.3	A	153	1,580	1,574	100%	56.0	1.7	63	8.1	A	118
Phantom East direct off-ramp to Phantom East loop on-ramp	965	963	100%	35.0	0.6	64	5.2	A	188	1,350	1,343	99%	35.1	0.8	63	7.2	A	153
Phantom East loop on-ramp to Phantom East direct on-ramp	1,027	1,023	100%	15.6	0.3	63	5.5	A	204	1,682	1,650	98%	15.9	0.6	62	8.8	A	169
Phantom East direct on-ramp to National Trails Hwy off-ramp	1,110	1,109	100%	39.9	0.9	63	6.0	A	244	1,845	1,818	99%	40.2	1.3	63	9.7	A	209
National Trails Hwy off-ramp to National Trails Hwy on-ramp	830	826	100%	41.7	0.5	64	4.4	A	285	1,615	1,611	100%	42.1	1.0	63	8.5	A	251
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	980	980	100%	99.8	1.4	64	3.9	A	385	1,740	1,733	100%	100.8	2.6	63	6.9	A	352
I-15 NB/SB off-ramp to I-15 NB on-ramp	205	203	99%	78.3	0.3	65	1.1	A	464	505	500	99%	78.7	0.6	64	2.6	A	431
I-15 NB/SB on-ramp to Choco Rd off-ramp	400	400	100%	56.1	0.9	64	1.6	A	520	835	827	99%	56.5	1.1	63	3.3	A	487
Choco Rd off-ramp to Choco Rd on-ramp	350	346	99%	32.4	0.3	64	2.2	A	552	625	606	97%	32.6	0.5	64	3.9	A	520
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	395	377	95%	70.2	0.7	64	2.8	A	622	755	698	92%	70.9	1.3	63	5.2	A	590
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	275	255	93%	26.3	0.1	65	2.0	A	648	600	544	91%	26.6	0.3	64	4.3	A	617
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	343	321	94%	10.1	0.2	64	1.9	A	659	648	600	93%	10.1	0.2	64	3.6	A	627
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	390	364	93%	31.2	0.3	64	2.6	A	690	695	646	93%	31.4	0.5	64	4.6	A	659

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-12. Year 2020 Build Partial High Desert Corridor Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WB MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	430	430	100%	35.6	0.5	63	3.4	A	36	375	330	88%	35.9	0.7	63	2.6	A	36
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	355	355	100%	24.8	0.3	64	2.8	A	60	285	250	88%	24.8	0.2	64	1.9	A	61
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	426	426	100%	10.9	0.2	63	2.6	A	71	382	339	89%	10.9	0.2	63	2.1	A	72
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	520	516	99%	78.2	1.1	64	3.8	A	149	540	503	93%	78.3	1.1	64	3.7	A	150
Choco Rd off-ramp to Choco Rd on-ramp	455	446	98%	34.1	0.4	64	3.2	A	184	465	446	96%	34.2	0.3	64	3.2	A	184
Choco Rd on-ramp to I-15 NB/SB off-ramp	660	649	98%	56.2	0.9	64	2.5	A	240	585	557	95%	56.2	0.8	64	2.2	A	240
I-15 NB/SB off-ramp to I-15 SB on-ramp	275	264	96%	98.5	0.4	64	1.4	A	338	115	110	96%	99.0	0.5	64	0.6	A	339
I-15 NB on-ramp to I-15 SB on-ramp	610	610	100%	11.0	0.5	61	2.8	A	349	550	521	95%	11.2	0.7	60	2.4	A	351
I-15 SB on-ramp to National Trails Hwy off-ramp	1,020	1,020	100%	64.9	1.6	63	4.2	A	414	1,080	1,063	98%	65.2	1.8	63	4.2	A	416
National Trails Hwy off-ramp to National Trails Hwy on-ramp	920	920	100%	41.4	0.7	64	4.9	A	456	905	885	98%	41.4	0.7	64	4.6	A	457
National Trails Hwy on-ramp to Phantom St East off-ramp	1,275	1,275	100%	51.7	1.6	63	6.7	A	507	1,330	1,309	98%	51.6	1.6	63	6.7	A	509
Phantom St East off-ramp to Phantom St East loop on-ramp	930	930	100%	32.7	0.5	64	5.0	A	540	1,105	1,087	98%	32.7	0.6	64	5.7	A	542
Phantom St East loop on-ramp to Phantom St East direct on-ramp	1,238	1,238	100%	5.4	0.2	62	6.7	A	545	1,566	1,501	96%	5.5	0.3	61	8.2	A	547
Phantom St East direct on-ramp to Phantom St West off-ramp	1,265	1,265	100%	57.7	1.6	63	6.9	A	603	1,590	1,569	99%	58.0	1.9	63	8.4	A	605
Phantom St West off-ramp to Phantom St West on-ramp	985	985	100%	41.9	0.7	64	5.3	A	645	1,390	1,371	99%	42.1	1.0	63	7.2	A	647
Phantom St West on-ramp to Route 395 Off	1,200	1,200	100%	52.9	1.3	63	6.3	A	698	2,250	2,217	99%	54.4	2.7	62	11.6	B	701
Route 395 off-ramp to Route 395 on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Route 395 on-ramp to Koala Rd off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Koala Rd off-ramp to Koala Rd on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Koala Rd on-ramp to Caughlin Rd off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Caughlin Rd off-ramp to Caughlin Rd on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Oasis Rd off-ramp to Oasis Rd loop on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Oasis Rd direct on-ramp to 240th St East off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
240th St East off-ramp to 240th St East on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
240th St East on-ramp to 210th St East off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
210th St East off-ramp to 210th St East on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
210th St East on-ramp to 170th St East off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
170th St East off-ramp to 170th St East on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
170th St East on-ramp to 140th St East off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
140th St East off-ramp to 140th St East on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
140th St East on-ramp to 90th St East off-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
90th St East off-ramp to 90th St East on-ramp	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
90th St East on-ramp to 50th St East off-ramp	1,203	1,200	100%	190.1	6.1	62	6.9	A	190	2,010	2,005	100%	191.3	7.4	62	11.5	B	191
50th St East off-ramp to 50th St East on-ramp	1,005	998	99%	42.6	1.0	63	5.3	A	233	1,915	1,914	100%	43.3	1.6	62	10.2	A	235
50th St East on-ramp to 20th St East off-ramp	1,995	1,986	100%	135.6	4.3	63	8.3	A	368	2,925	2,912	100%	137.5	6.0	62	11.8	B	372
20th St East off-ramp to 20th St East on-ramp	1,940	1,932	100%	41.0	1.2	63	8.0	A	409	2,840	2,812	99%	41.7	1.8	62	11.4	B	414
20th St East on-ramp to 10th St East off-ramp	2,625	2,621	100%	16.7	0.8	61	8.8	A	426	3,720	3,682	99%	17.2	1.3	60	12.4	B	431
10th St East off-ramp to 10th St East on-ramp	2,310	2,303	100%	45.2	1.3	63	9.4	A	471	3,340	3,305	99%	46.4	2.4	61	13.5	B	477
10th St East on-ramp to SR 14 SB off-ramp	2,450	2,446	100%	32.8	1.0	62	9.8	A	504	3,550	3,500	99%	33.6	1.8	61	14.0	B	511
SR 14 SB off-ramp to SR 138 WB west end of the network	1,425	1,418	100%	12.4	0.3	55	12.9	B	516	2,310	2,281	99%	12.7	0.6	54	21.3	C	524

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-12. Year 2020 Build Partial High Desert Corridor Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off-ramp	2,610	2,606	100%	147.3	6.2	63	13.9	B	147	5,225	5,218	100%	160.7	19.4	57	30.6	D	161
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	2,170	2,169	100%	22.0	1.0	62	11.6	B	169	4,715	4,714	100%	24.0	3.0	57	27.7	D	185
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	2,500	2,457	98%	11.2	0.7	61	13.4	B	180	5,075	5,018	99%	12.1	1.6	56	29.7	D	197
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	2,800	2,769	99%	21.9	1.2	61	11.3	B	202	5,410	5,348	99%	23.5	2.8	57	23.4	C	220
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	2,300	2,266	99%	23.8	1.0	62	12.1	B	226	4,815	4,708	98%	25.4	2.6	58	26.9	D	246
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	2,630	2,620	100%	16.6	0.7	62	10.6	A	243	5,295	5,182	98%	17.7	1.9	58	22.4	C	263
Mojave Dr off-ramp to Mojave Dr on-ramp	2,170	2,145	99%	20.5	0.7	63	11.4	B	263	4,690	4,566	97%	21.7	1.9	59	25.6	C	285
Mojave Dr on-ramp to D St off-ramp	2,570	2,534	99%	49.5	2.3	62	11.9	B	313	5,050	4,927	98%	52.3	5.2	58	24.8	C	337
D St off-ramp to D St on-ramp	1,700	1,697	100%	22.8	0.6	63	9.1	A	335	4,110	3,965	96%	23.7	1.6	61	21.8	C	361
D St on-ramp to E St off-ramp	1,965	1,954	99%	11.0	0.5	62	10.5	A	346	4,405	4,225	96%	11.7	1.2	58	24.1	C	373
E St off-ramp to E St on-ramp	1,930	1,920	99%	9.7	0.3	63	10.2	A	356	4,365	4,173	96%	10.3	0.9	59	23.5	C	383
E St on-ramp to Stoddard Wells Rd off-ramp	1,965	1,956	100%	35.6	1.3	62	10.5	A	392	4,405	4,204	95%	37.4	3.3	59	23.8	C	420
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	1,605	1,595	99%	10.8	0.3	63	8.6	A	402	3,935	3,740	95%	11.3	0.8	60	20.7	C	432
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	1,835	1,829	100%	47.8	1.6	62	7.4	A	450	4,405	4,198	95%	49.8	3.7	60	17.5	B	482
HDC EB/WB off-ramp to HDC WB on-ramp	1,430	1,419	99%	70.7	1.9	63	7.5	A	521	3,750	3,553	95%	73.5	4.9	61	19.5	C	555
HDC WB on-ramp to HDC EB on-ramp	1,580	1,572	99%	7.7	0.3	62	6.5	A	529	3,950	3,737	95%	8.0	0.6	60	16.2	B	563
HDC EB on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,005	2,005	100%	36.1	1.2	62	8.0	A	565	4,705	4,448	95%	38.5	3.8	58	19.2	C	601
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	1,825	1,810	99%	22.7	0.7	63	9.6	A	587	4,545	4,325	95%	23.9	1.9	60	24.1	C	625
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	1,940	1,913	99%	214.4	8.1	62	10.2	A	802	4,685	4,413	94%	225.6	19.9	59	24.9	C	851
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	1,700	1,664	98%	31.6	1.1	62	8.9	A	833	4,425	4,107	93%	33.1	2.7	60	23.0	C	884
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	1,985	1,936	98%	63.3	2.2	62	10.4	A	897	4,740	4,386	93%	67.2	6.3	58	25.0	C	951
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	3,440	3,439	100%	58.2	3.0	62	18.6	C	58	2,615	2,613	100%	57.4	2.2	62	13.9	B	57
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	3,225	3,225	100%	36.5	2.2	61	17.6	B	95	2,255	2,250	100%	35.8	1.5	63	12.1	B	93
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	3,475	3,469	100%	215.4	15.9	60	19.3	C	310	2,615	2,614	100%	211.3	12.0	61	14.3	B	304
Quarry Rd off-ramp to Quarry Rd on-ramp	3,355	3,349	100%	24.9	1.8	60	18.6	C	335	2,505	2,501	100%	24.5	1.4	61	13.7	B	329
Quarry Rd on-ramp to HDC EB/WB off-ramp	3,490	3,487	100%	52.1	4.0	60	14.5	B	387	2,750	2,741	100%	51.3	3.1	61	11.3	B	380
HDC EB/WB off-ramp to HDC EB on-ramp	2,955	2,934	99%	79.0	5.2	61	16.1	B	466	2,110	2,107	100%	77.5	3.7	62	11.3	B	458
HDC WB on-ramp to HDC EB on-ramp	3,190	3,163	99%	10.7	0.8	60	14.5	B	477	2,380	2,358	99%	10.5	0.6	61	10.6	A	468
HDC EB on-ramp to Stoddard Wells Rd off-ramp	3,540	3,485	98%	28.4	2.2	60	14.5	B	505	2,860	2,844	99%	28.0	1.7	61	11.7	B	496
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	2,995	2,944	98%	28.0	1.8	61	16.1	B	533	2,540	2,526	99%	27.5	1.3	62	13.6	B	524
Stoddard Wells Rd direct on-ramp to E St off-ramp	3,395	3,318	98%	22.8	1.8	60	18.5	C	556	2,885	2,869	99%	22.5	1.6	61	15.8	B	546
E St off-ramp to E St on-ramp	3,365	3,297	98%	8.8	0.6	60	18.2	C	565	2,845	2,823	99%	8.7	0.5	61	15.4	B	555
E St on-ramp to D St off-ramp	3,415	3,338	98%	11.3	0.7	60	18.4	C	576	2,890	2,865	99%	11.2	0.6	61	15.6	B	566
D St off-ramp to D St on-ramp	3,135	3,060	98%	21.6	1.2	61	16.7	B	598	2,635	2,594	98%	21.4	1.0	62	14.0	B	588
D St on-ramp to Mojave Dr off-ramp	3,780	3,692	98%	51.9	3.5	61	14.9	B	650	3,610	3,561	99%	51.6	3.2	61	14.3	B	639
Mojave Dr off-ramp to Mojave Dr on-ramp	3,550	3,433	97%	20.4	1.4	60	18.9	C	670	3,240	3,183	98%	20.2	1.2	61	17.4	B	659
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	4,140	4,029	97%	15.1	1.4	59	17.2	B	685	3,815	3,745	98%	14.8	1.1	60	15.6	B	674
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,750	3,639	97%	26.9	1.8	61	20.0	C	712	3,410	3,338	98%	26.6	1.4	61	18.1	C	701
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	4,100	3,970	97%	23.2	1.4	61	16.4	B	735	3,950	3,901	99%	23.3	1.5	60	16.1	B	724
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	3,600	3,480	97%	12.7	0.8	61	19.0	C	748	3,215	3,162	98%	12.6	0.6	62	17.1	B	737
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,765	3,622	96%	8.5	0.6	60	20.0	C	756	3,405	3,327	98%	8.4	0.5	61	18.2	C	745
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,000	3,806	95%	168.1	12.2	60	21.1	C	925	3,695	3,575	97%	166.5	10.6	61	19.6	C	911

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-13. Year 2020 Build Partial High Desert Corridor Freeway Weaving and Ramp Merging/Diverging Analysis Results *(1 of 3)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	60	9.4	A	59	18.4	B
West Palmdale Blvd loop	Merging	63	7.3	A	61	13.4	B
West Palmdale Blvd direct	Merging	62	8.3	A	61	12.6	B
SR 138 WB	Merging	62	10.0	B	61	16.0	B
10th St West loop	Merging	59	15.4	B	56	23.6	C
10th St West direct	Merging	61	15.0	B	59	21.7	C
West Avenue N loop	Merging	61	14.5	B	59	20.8	C
West Avenue N direct	Merging	61	11.8	B	61	16.1	B
East Avenue S	Diverging	64	8.8	A	56	28.9	D
West Palmdale Blvd	Diverging	61	9.8	A	59	17.0	B
SR 138 EB	Diverging	62	10.8	B	60	18.5	B
10th St West	Diverging	61	10.1	B	59	15.7	B
West Avenue N	Diverging	58	16.5	B	46	30.5	D
SOUTHBOUND							
West Avenue N loop	Merging	61	16.5	B	61	16.2	B
West Avenue N direct	Merging	62	13.1	B	62	12.3	B
10th St. West	Merging	61	13.7	B	62	13.8	B
SR 138 WB	Merging	60	11.4	B	60	10.9	B
West Palmdale Blvd loop	Merging	59	16.8	B	61	14.8	B
West Palmdale Blvd direct	Merging	58	19.4	B	61	15.9	B
East Avenue S	Merging	46	26.5	C	60	14.4	B
West Avenue N	Diverging	59	27.6	C	59	28.2	D
10th St West	Diverging	53	25.5	C	58	20.4	C
SR 138 EB	Diverging	55	20.8	C	59	21.8	C
West Palmdale Blvd	Diverging	60	15.1	B	61	14.8	B
East Avenue S	Diverging	57	21.4	C	58	18.6	B

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F

Table 4-13. Year 2020 Build Partial High Desert Corridor Freeway Weaving and Ramp Merging/Diverging Analysis Results *(2 of 3)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	60	12	B	60	15	B
20th St East	Merging	64	5	A	63	6	A
50th St East	Merging	63	6	A	63	7	A
Route 395 direct	Merging	62	11	B	62	9	A
Phantom St West loop	Merging	63	5	A	63	7	A
Phantom St West direct	Merging	63	6	A	63	8	A
Phantom East loop	Merging	64	6	A	62	10	A
Phantom St East direct	Merging	63	6	A	62	11	B
Choco Rd	Merging	64	2	A	63	4	A
Dale Evans Pkwy loop	Merging	64	2	A	63	3	A
Dale Evans Pkwy direct	Merging	64	2	A	64	3	A
10th St East	Diverging	63	7	A	62	10	A
50th St East	Diverging	61	9	A	59	12	B
Phantom St West	Diverging	60	13	B	61	10	B
Phantom St East	Diverging	62	9	A	62	10	A
National Trails Hwy	Diverging	62	7	A	62	11	B
Dale Evans Pkwy	Diverging	63	2	A	63	4	A
10th St East to 20th St East	Weaving	61	9	A	60	12	B
National Trails Hwy to I-15 NB/SB	Weaving	64	4	A	63	7	A
I-15 NB/SB to Choco Rd	Weaving	64	2	A	63	4	A
WESTBOUND							
Dale Evans Pkwy loop	Merging	63	3	A	63	2	A
Dale Evans Pkwy direct	Merging	63	3	A	63	3	A
I-15 NB	Merging	61	4	A	60	3	A
National Trails Hwy	Merging	62	7	A	62	8	A
Phantom St East loop	Merging	61	8	A	60	10	A
Phantom St East direct	Merging	62	8	A	62	10	A
Phantom St West	Merging	62	6	A	60	13	B
50th St East	Merging	59	9	A	60	12	B
10th St East	Merging	62	10	A	60	16	B
Dale Evans Pkwy	Diverging	63	3	A	63	3	A
Choco Rd	Diverging	64	4	A	64	4	A
Phantom St East	Diverging	62	9	A	62	9	A
Phantom St West	Diverging	62	8	A	62	10	A
Route 395	Diverging	63	10	A	61	18	B
50th St East	Diverging	62	7	A	61	11	B
20th St East	Diverging	62	8	A	61	11	B
SR 14 SB	Diverging	63	11	B	60	19	B
Choco to I-15 NB/SB	Weaving	63	3	A	63	2	A
I-15 SB to National Trails Hwy	Weaving	63	5	A	63	5	A
20th St East to 10th St East	Weaving	60	9	A	58	12	B

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

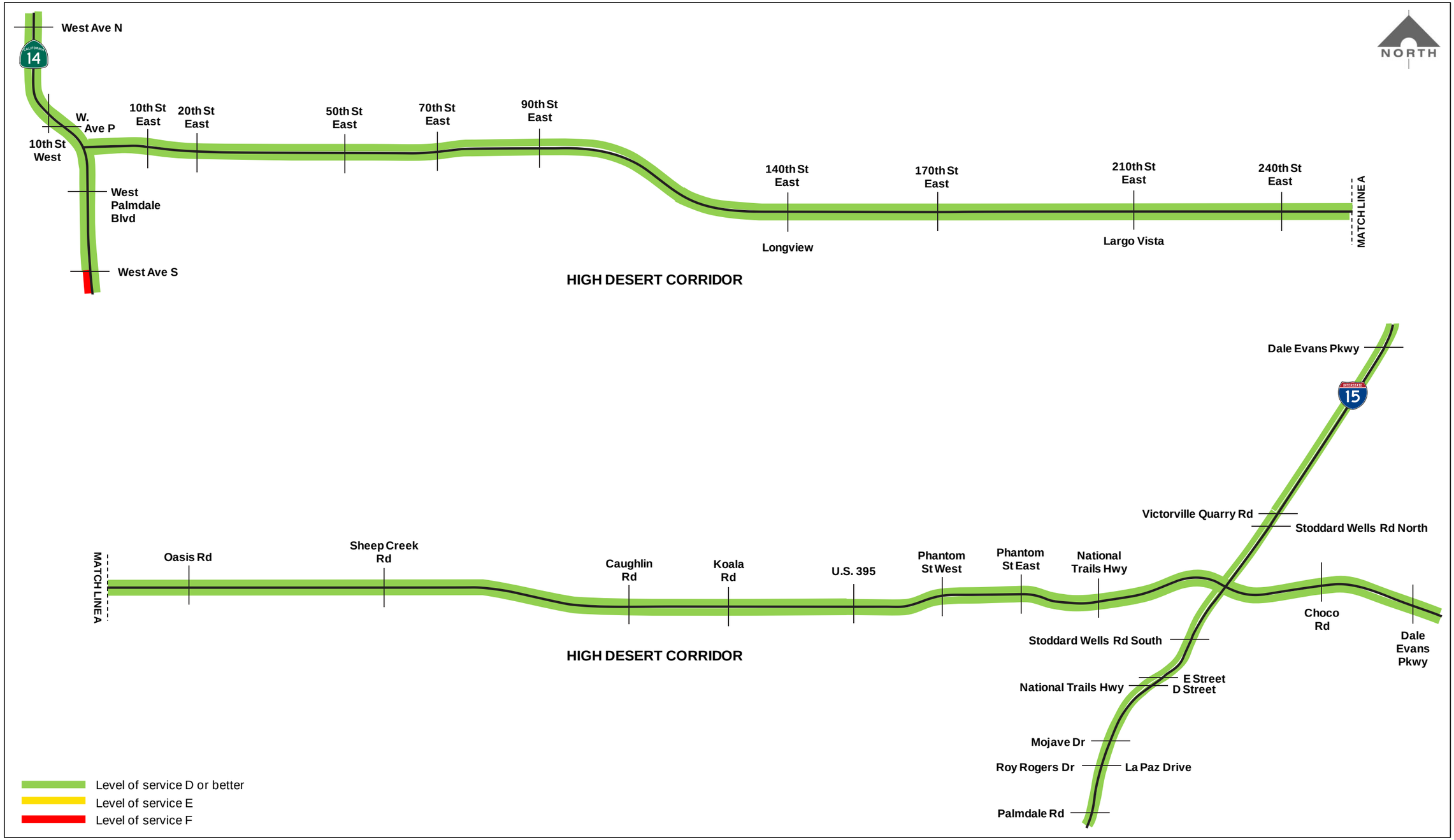
Table 4-13. Year 2020 Build Partial High Desert Corridor Freeway Weaving and Ramp Merging/Diverging Analysis Results *(3 of 3)*

Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	60	15	B	55	30	D
Mojave Dr	Merging	61	15	B	55	30	D
D St	Merging	61	12	B	58	25	C
E St	Merging	62	12	B	59	24	C
HDC WB	Merging	62	6	A	60	14	B
Stoddard Wells Rd (Quarry Rd)	Merging	62	11	B	59	25	C
Dale Evans Pkwy	Merging	62	10	B	57	25	C
Palmdale Rd	Diverging	61	16	B	49	35	**E**
D St	Diverging	61	11	B	60	20	B
E St	Diverging	61	12	B	58	25	C
Stoddard Wells Rd	Diverging	61	12	B	58	25	C
Dale Evans Pkwy	Diverging	61	11	B	58	25	C
Palmdale Rd direct to Roy Rogers Dr	Weaving	61	12	B	56	22	C
Roy Rogers Dr to Mojave Dr	Weaving	61	11	B	57	21	C
Stoddard Wells Rd to HDC EB/WB	Weaving	62	7	A	60	16	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	62	8	A	57	18	B
SOUTHBOUND							
Dale Evans Pkwy	Merging	60	20	C	61	16	B
HDC WB	Merging	60	13	B	61	10	B
Stoddard Wells Rd direct	Merging	59	19	B	60	17	B
E St	Merging	60	19	B	61	17	B
Palmdale Rd loop	Merging	60	20	B	60	19	B
Palmdale Rd direct	Merging	60	21	C	59	21	C
Dale Evans Pkwy	Diverging	61	20	B	62	16	B
Quarry Rd	Diverging	60	20	B	61	15	B
E St	Diverging	60	19	B	60	17	B
D St	Diverging	60	19	B	61	17	B
Quarry Rd to HDC EB/WB	Weaving	60	13	B	61	11	B
HDC EB to Stoddard Wells Rd	Weaving	60	14	B	61	12	B
D St to Mojave Dr	Weaving	60	14	B	60	14	B
Mojave Dr to Roy Rogers Dr	Weaving	58	17	B	59	16	B
Roy Rogers Dr to Palmdale Rd	Weaving	60	15	B	60	16	B

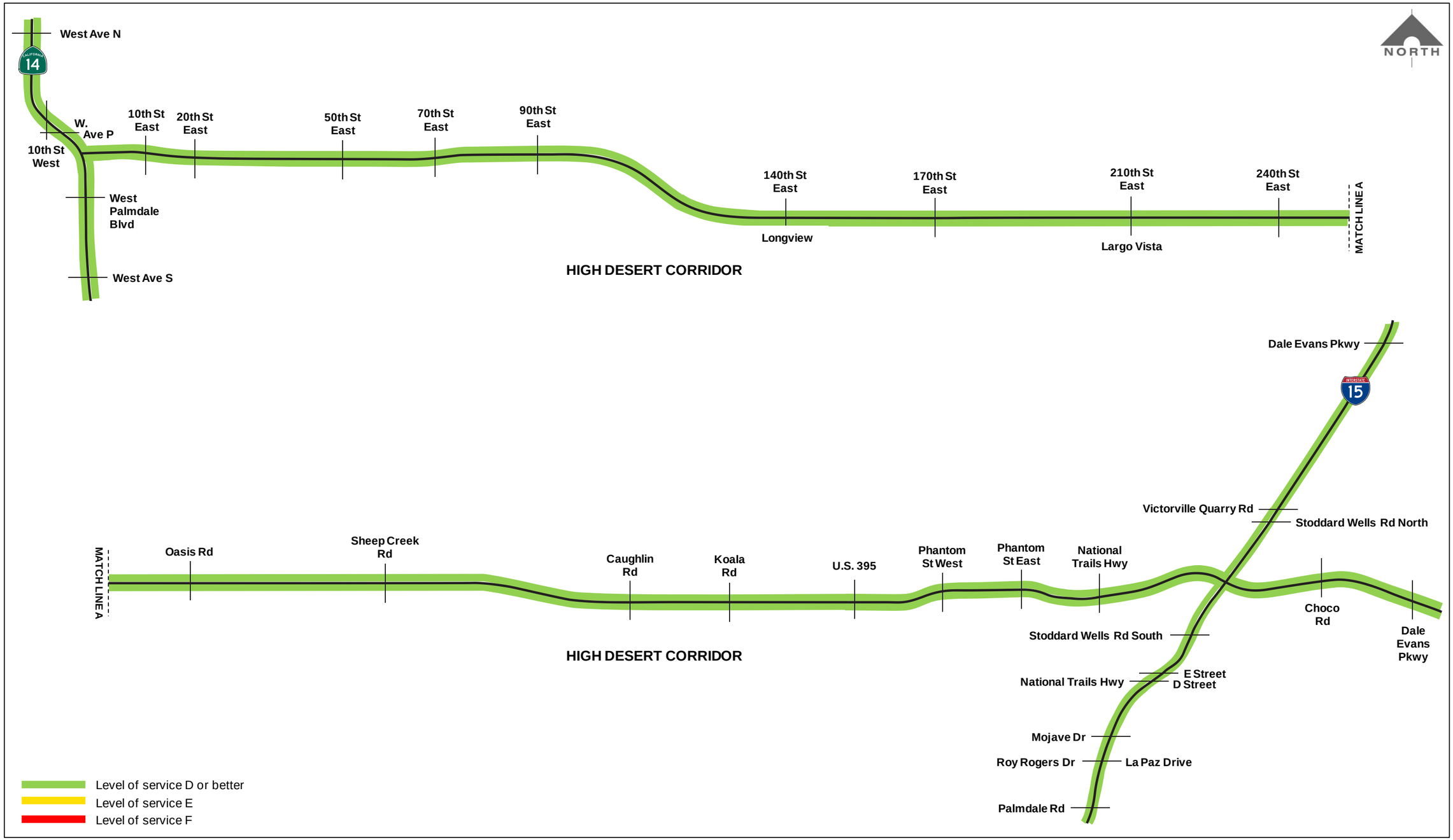
Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F



AM PEAK HOUR

Figure 4-19: Year 2020 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 4-19: Year 2020 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Level of Service *(2 of 2)*

Table 4-14. Year 2020 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Analysis Results *(1 of 4)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	2,285	2,285	100%	201.2	48.5	54	14.4	B	201	2,285	2,285	100%	201.2	48.5	54	14.4	B	201	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	2,145	2,145	100%	27.9	2.3	60	9.1	A	229	2,145	2,145	100%	27.9	2.3	60	9.1	A	229	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to West Palmdale Blvd off-ramp	3,055	3,055	100%	57.9	3.7	61	10.2	A	287	3,055	3,055	100%	57.9	3.7	61	10.2	A	287	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,690	2,690	100%	16.6	0.7	62	10.9	A	304	2,690	2,690	100%	16.6	0.7	62	10.9	A	304	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,630	1,630	100%	5.0	0.2	63	8.7	A	309	1,630	1,630	100%	5.0	0.2	63	8.7	A	309	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	1,885	1,885	100%	16.1	0.5	63	7.5	A	325	1,885	1,885	100%	16.1	0.5	63	7.5	A	325	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	2,370	2,348	99%	32.9	1.5	62	9.0	A	358	2,370	2,348	99%	32.9	1.5	62	9.0	A	358	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	2,025	2,014	99%	23.0	1.3	61	10.9	A	381	2,025	2,014	99%	23.0	1.3	61	10.9	A	381	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	3,451	3,294	95%	48.2	2.8	61	10.7	A	429	3,451	3,294	95%	48.2	2.8	61	10.7	A	429	—	—	—	—	—	—	—	—	—
10th St West loop on-ramp to 10th St West direct on-ramp	3,913	3,755	96%	16.9	1.1	61	14.1	B	446	3,913	3,755	96%	16.9	1.1	61	14.1	B	446	—	—	—	—	—	—	—	—	—
10th St West direct on-ramp to West Avenue N off-ramp	4,016	3,861	96%	66.3	4.0	61	15.4	B	512	4,016	3,861	96%	66.3	4.0	61	15.4	B	512	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	3,746	3,571	95%	18.2	1.2	61	19.6	C	530	3,746	3,571	95%	18.2	1.2	61	19.6	C	530	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,041	3,853	95%	9.5	0.5	61	15.7	B	540	4,041	3,853	95%	9.5	0.5	61	15.7	B	540	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	4,161	3,974	96%	30.7	1.3	62	15.4	B	570	4,161	3,974	96%	30.7	1.3	62	15.4	B	570	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	5,155	5,156	100%	38.0	3.3	59	29.1	D	38	5,155	5,156	100%	38.0	3.3	59	29.1	D	38	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,845	4,852	100%	18.9	1.5	60	27.1	D	57	4,845	4,852	100%	18.9	1.5	60	27.1	D	57	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,900	4,905	100%	11.2	0.8	60	20.3	C	68	4,900	4,905	100%	11.2	0.8	60	20.3	C	68	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St West off-ramp	5,190	5,198	100%	100.6	24.7	48	27.1	D	169	5,190	5,198	100%	100.6	24.7	48	27.1	D	169	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC off-ramp	4,570	4,570	100%	20.7	4.7	49	24.8	C	189	3,230	4,393	136%	21.2	5.2	48	30.3	D	190	1,340	514	38%	16.4	0.2	62	8.2	A	16
HDC off-ramp to 10th St West on-ramp	1,948	1,944	100%	21.9	0.8	62	10.4	A	211	608	1,401	230%	21.7	0.6	63	11.2	B	212	1,340	542	40%	22.5	1.2	61	8.9	A	39
10th St West on-ramp to Palmdale Blvd off-ramp	3,100	3,077	99%	33.2	1.5	62	12.4	B	244	1,760	2,461	140%	33.0	1.3	62	13.2	B	245	1,340	616	46%	33.8	2.0	61	10.2	A	73
West Palmdale Blvd off-ramp to HDC on-ramp	2,718	2,702	99%	32.2	1.1	63	10.8	A	277	1,378	1,954	142%	31.8	0.7	63	10.3	A	276	1,340	748	56%	33.3	2.0	61	12.4	B	106
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,829	3,707	97%	23.7	1.4	61	11.7	B	300	2,574	3,145	122%	23.6	1.3	61	12.3	B	300	1,255	563	45%	24.2	1.5	60	9.4	A	130
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,392	4,308	98%	13.9	1.1	60	16.1	B	314	3,137	3,384	108%	13.8	1.1	60	16.2	B	314	1,255	924	74%	14.1	1.3	59	15.8	B	144
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	4,952	4,822	97%	71.6	9.0	57	20.8	C	386	3,662	3,820	104%	72.5	9.9	57	22.1	C	386	1,290	1,002	78%	68.3	5.6	59	16.9	B	212
East Avenue S off-ramp to East Avenue S on-ramp	4,697	4,473	95%	38.5	18.0	35	32.3	D	424	2,737	3,452	126%	43.2	22.7	31	37.3	**E**	429	1,960	1,021	52%	22.5	2.0	59	17.3	B	235
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	5,792	5,286	91%	458.3	269.5	32	49.9	**F**	883	3,832	4,135	108%	526.6	337.6	30	60.1	**F**	956	1,960	1,152	59%	218.5	30.3	56	20.6	C	453

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	6,900	5,298	77%	204.2	49.7	52	28.9	D	204	5,045	3,695	73%	218.3	63.9	51	29.8	D	218	1,855	1,602	86%	178.2	23.4	56	28.3	D	178
East Avenue S off-ramp to East Avenue S on-ramp	6,050	4,673	77%	28.7	2.9	58	20.1	C	233	4,195	3,006	72%	28.6	2.8	59	17.1	B	247	1,855	1,668	90%	29.0	3.1	58	28.9	D	207
East Avenue S on-ramp to West Palmdale Blvd off-ramp	6,800	5,414	80%	59.2	4.6	60	18.2	C	292	5,145	4,217	82%	59.3	4.7	59	17.7	B	306	1,655	1,197	72%	58.7	4.0	60	19.9	C	266
West Palmdale Blvd off-ramp to HDC off-ramp	5,823	4,613	79%	17.1	1.2	60	19.3	C	309	4,168	3,650	88%	17.2	1.2	60	20.4	C	323	1,655	963	58%	17.0	1.2	60	16.0	B	283
HDC off-ramp to West Palmdale Blvd loop on-ramp	3,725	2,923	78%	5.2	0.3	61	16.0	B	315	2,030	1,957	96%	5.2	0.2	61	15.9	B	328	1,695	966	57%	5.3	0.4	60	16.2	B	288
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,910	3,112	80%	16.7	0.8	61	12.7	B	331	2,215	2,117	96%	16.4	0.6	62	11.3	B	345	1,695	994	59%	17.2	1.3	60	16.7	B	305
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	4,425	3,579	81%	33.8	2.1	61	14.1	B	365	2,730	2,702	99%	33.7	2.0	61	14.0	B	379	1,695	877	52%	34.1	2.3	60	14.6	B	339
10th St West off-ramp to HDC on-ramp	3,649	3,102	85%	23.4	1.2	60	16.2	B	388	1,954	2,522	129%	23.4	1.2	60	16.8	B	402	1,695	850	50%	23.7	1.3	60	14.3	B	363
HDC on-ramp to 10th St West on-ramp	6,383	5,174	81%	49.7	4.1	60	17.2	B	438	6,383	5,174	81%	49.7	4.1	60	17.2	B	452	—	—	—	—	—	—	—	—	—
10th St West loop on-ramp to 10th St West direct on-ramp	6,820	5,635	83%	17.9	2.1	57	22.4	C	456	6,820	5,635	83%	17.9	2.1	57	22.4	C	470	—	—	—	—	—	—	—	—	—
10th St West direct on-ramp to West Avenue N off-ramp	6,923	5,732	83%	77.5	15.1	52	27.3	D	533	6,923	5,732	83%	77.5	15.1	52	27.3	D	547	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	6,628	5,460	82%	22.5	5.4	49	37.1	**E**	556	6,628	5,460	82%	22.5	5.4	49	37.1	**E**	570	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	6,803	5,615	83%	10.6	1.5	55	25.5	C	567	6,803	5,615	83%	10.6	1.5	55	25.5	C	580	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	7,053	5,856	83%	31.8	2.3	60	23.5	C	598	7,053	5,856	83%	31.8	2.3	60	23.5	C	612	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	5,310	5,309	100%	38.3	3.5	59	30.1	D	38	5,310	5,309	100%	38.3	3.5	59	30.1	D	38	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,860	4,860	100%	18.9	1.5	60	27.3	D	57	4,860	4,860	100%	18.9	1.5	60	27.3	D	57	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,970	4,970	100%	11.2	0.7	60	20.7	C	68	4,970	4,970	100%	11.2	0.7	60	20.7	C	68	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St West off-ramp	5,195	5,195	100%	82.2	6.2	60	21.4	C	151	5,195	5,195	100%	82.2	6.2	60	21.4	C	151	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC off-ramp	4,085	4,085	100%	17.4	1.4	59	17.5	B	168	4,085	4,085	100%	17.4	1.4	59	17.5	B	168	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St West on-ramp	1,758	1,758	100%	21.6	0.6	63	9.6	A	190	1,758	1,758	100%	21.6	0.6	63	9.6	A	190	—	—	—	—	—	—	—	—	—
10th St West on-ramp to Palmdale Blvd off-ramp	2,595	2,595	100%	32.9	1.3	62	10.7	A	223	2,595	2,595	100%	32.9	1.3	62	10.7	A	223	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	2,029	2,029	100%	31.7	0.6	64	8.2	A	254	2,029	2,029	100%	31.7	0.6	64	8.2	A	254	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,377	3,124	92%	23.6	1.3	61	9.9	A	278	3,377	3,124	92%	23.6	1.3	61	9.9	A	278	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,571	3,327	93%	13.5	0.7	61	12.1	B	291	3,571	3,327	93%	13.5	0.7	61	12.1	B	291	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	3,806	3,556	93%	66.6	4.0	61	14.3	B	358	3,806	3,556	93%	66.6	4.0	61	14.3	B	358	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	3,251	3,106	96%	21.3	0.8	62	12.4	B	379	3,251	3,106	96%	21.3	0.8	62	12.4	B	379	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	3,651	3,470	95%	213.3	25.8	58	16.1	B	593	3,651	3,470	95%	213.3	25.8	58	16.1	B	593	—	—	—	—	—	—	—	—	—

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-14. Year 2020 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EB MAINLINE																		
SR 138 EB west end of the network to SR 14 NB on-ramp	2,750	2,731	99%	21.0	1.8	48	28.4	D	21	2,420	2,385	99%	20.9	1.7	48	24.6	C	21
SR 14 NB on-ramp to 10th St East off-ramp	3,810	3,782	99%	33.7	2.1	61	14.0	B	55	4,518	4,064	90%	33.7	1.9	61	15.1	B	55
10th St East off-ramp to 10th St East on-ramp	3,489	3,482	100%	45.6	1.9	62	14.0	B	100	4,097	3,705	90%	46.0	2.1	62	15.0	B	101
10th St East on-ramp to 20th St East off-ramp	3,919	3,885	99%	16.7	0.9	61	12.7	B	117	4,502	4,092	91%	16.9	0.9	61	13.5	B	117
20th St East off-ramp to 20th St East on-ramp	3,344	3,341	100%	43.2	1.7	62	13.4	B	160	3,642	3,296	90%	43.2	1.5	62	13.2	B	161
20th St East on-ramp to 50th St East off-ramp	3,474	3,458	100%	136.1	6.6	62	13.1	B	296	3,762	3,413	91%	136.0	5.7	62	12.9	B	297
50th St East off-ramp to 50th St East on-ramp	2,924	2,924	100%	43.5	2.2	62	16.0	B	340	3,017	2,701	90%	43.3	1.8	62	14.5	B	340
50th St East on-ramp to 90th St East off-ramp	3,399	3,360	99%	196.5	13.0	61	18.3	C	536	3,502	3,127	89%	195.5	11.1	61	16.9	B	535
90th St East off-ramp to 90th St East on-ramp	3,199	3,103	97%	45.5	2.8	61	17.0	B	582	3,137	2,775	88%	45.2	2.3	61	15.1	B	581
90th St East on-ramp to 140th St East off-ramp	3,354	3,181	95%	272.5	18.7	60	17.3	B	854	3,252	2,827	87%	270.7	15.7	61	15.2	B	851
140th St East off-ramp to 140th St East on-ramp	3,099	2,874	93%	46.1	2.7	61	15.7	B	900	2,737	2,324	85%	45.5	2.0	62	12.5	B	897
140th St East on-ramp to 170th St East off-ramp	3,244	2,982	92%	136.0	9.0	61	15.9	B	1,036	2,912	2,465	85%	134.2	6.8	61	13.0	B	1,031
170th St East off-ramp to 170th St East on-ramp	3,164	2,874	91%	47.2	3.1	61	15.8	B	1,084	2,787	2,333	84%	46.4	2.2	62	12.6	B	1,077
170th St East on-ramp to 210th St East off-ramp	3,429	3,071	90%	194.6	13.5	60	16.6	B	1,278	2,927	2,426	83%	191.5	9.8	61	12.9	B	1,269
210th St East off-ramp to 210th St East on-ramp	3,384	2,971	88%	43.8	3.0	61	16.4	B	1,322	2,872	2,337	81%	43.0	2.0	62	12.6	B	1,312
210th St East on-ramp to 240th St East off-ramp	3,484	3,042	87%	140.3	10.1	60	16.4	B	1,462	2,922	2,357	81%	137.5	6.9	61	12.4	B	1,449
240th St East off-ramp to 240th St East on-ramp	3,364	2,892	86%	47.4	3.1	61	15.9	B	1,510	2,892	2,312	80%	46.8	2.4	61	12.5	B	1,496
240th St East on-ramp to Oasis Rd off-ramp	3,619	3,116	86%	136.7	10.3	60	16.9	B	1,646	3,057	2,458	80%	134.2	7.5	61	13.0	B	1,630
Oasis Rd off-ramp to Oasis Rd on-ramp	3,504	2,971	85%	47.7	3.2	61	16.4	B	1,694	2,957	2,343	79%	47.1	2.5	61	12.7	B	1,677
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	3,584	2,985	83%	196.4	16.6	59	16.4	B	1,890	3,022	2,369	78%	191.2	11.0	61	12.7	B	1,869
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	2,784	2,303	83%	48.3	2.4	62	12.5	B	1,939	2,622	2,022	77%	48.1	2.1	62	10.9	A	1,917
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	2,959	2,435	82%	256.8	15.2	61	13.1	B	2,196	2,887	2,262	78%	255.7	13.6	61	12.1	B	2,172
Caughlin Rd off-ramp to Caughlin Rd on-ramp	2,669	2,176	82%	46.7	2.4	61	11.8	B	2,242	2,577	1,968	76%	46.3	2.0	62	10.6	A	2,219
Caughlin Rd on-ramp to Koala Rd off-ramp	2,759	2,233	81%	71.8	4.1	61	11.7	B	2,314	2,642	2,017	76%	71.4	3.6	61	10.5	A	2,290
Koala Rd off-ramp to Koala Rd loop on-ramp	2,554	2,043	80%	32.4	1.5	62	11.0	B	2,346	2,482	1,876	76%	32.2	1.4	62	10.1	A	2,322
Koala Rd loop on-ramp to Koala Rd direct on-ramp	3,097	2,585	83%	17.2	1.4	59	12.8	B	2,364	2,819	2,194	78%	17.0	1.2	60	10.7	A	2,339
Koala Rd direct on-ramp to Route 395 off-ramp	3,154	2,618	83%	105.7	6.8	60	13.9	B	2,469	2,917	2,278	78%	104.7	5.6	61	11.9	B	2,444
Route 395 off-ramp to Route 395 loop on-ramp	2,439	2,048	84%	25.7	0.9	62	10.9	A	2,495	2,427	1,881	78%	25.7	0.9	62	10.1	A	2,470
Route 395 loop on-ramp to Route 395 direct on-ramp	3,388	2,996	88%	22.2	1.7	60	15.6	B	2,517	3,170	2,611	82%	22.0	1.5	61	13.5	B	2,492
Route 395 direct on-ramp to Phantom St West off-ramp	3,534	3,123	88%	59.5	4.8	60	17.0	B	2,577	3,277	2,705	83%	58.3	3.6	61	14.4	B	2,550
Phantom St West off-ramp to Phantom St West loop on-ramp	2,579	2,290	89%	27.7	0.9	63	12.2	B	2,604	2,607	2,162	83%	27.7	0.9	63	11.5	B	2,578
Phantom St West loop on-ramp to Phantom St West direct on-ramp	2,629	2,339	89%	12.4	0.5	62	10.6	A	2,617	2,877	2,428	84%	12.5	0.6	62	11.2	B	2,590
Phantom St West direct on-ramp to Phantom St East direct off-ramp	2,729	2,433	89%	56.9	2.5	62	12.6	B	2,674	2,977	2,529	85%	56.8	2.5	62	13.1	B	2,647
Phantom St East direct off-ramp to Phantom St East loop on-ramp	2,259	2,001	89%	35.5	1.1	63	10.6	A	2,709	2,697	2,269	84%	35.7	1.3	62	12.1	B	2,683
Phantom St East loop on-ramp to Phantom St East direct on-ramp	2,387	2,115	89%	15.9	0.7	62	11.4	B	2,725	3,145	2,682	85%	16.3	1.0	61	14.7	B	2,699
Phantom St East direct on-ramp to National Trails Hwy off-ramp	2,464	2,199	89%	40.6	1.7	62	11.8	B	2,766	3,252	2,805	86%	40.9	2.1	61	15.2	B	2,740
National Trails Hwy off-ramp to National Trails Hwy on-ramp	2,164	1,920	89%	42.6	1.4	63	10.2	A	2,808	2,962	2,571	87%	42.9	1.7	62	13.8	B	2,783
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	2,334	2,075	89%	101.8	3.5	63	8.3	A	2,910	3,117	2,714	87%	102.7	4.4	62	11.0	A	2,885
I-15 NB/SB off-ramp to I-15 NB on-ramp	1,140	1,016	89%	79.8	1.6	63	5.3	A	2,990	1,350	1,196	89%	79.9	1.6	63	6.3	A	2,965
I-15 NB/SB on-ramp to Choco Rd off-ramp	1,370	1,233	90%	56.6	1.5	63	4.9	A	3,046	1,705	1,567	92%	57.0	1.7	63	6.3	A	3,022
Choco Rd off-ramp to Choco Rd on-ramp	1,290	1,164	90%	33.1	0.9	63	6.2	A	3,079	1,430	1,327	93%	33.3	1.0	63	7.1	A	3,056
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	1,435	1,304	91%	71.6	2.1	63	6.7	A	3,151	1,530	1,419	93%	71.9	2.3	62	7.3	A	3,127
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	1,190	1,058	89%	26.8	0.6	63	5.6	A	3,178	1,255	1,163	93%	27.0	0.7	63	6.2	A	3,154
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,255	1,127	90%	10.2	0.3	63	4.9	A	3,188	1,303	1,200	92%	10.2	0.3	63	5.3	A	3,165
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,300	1,164	90%	31.8	0.9	63	5.8	A	3,220	1,350	1,243	92%	31.9	0.9	63	6.2	A	3,197

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-14. Year 2020 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WB MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	750	738	98%	36.2	1.3	62	5.9	A	36	1,975	1,880	95%	39.1	4.1	56	16.8	B	39
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	680	669	98%	25.2	0.7	63	5.3	A	61	1,855	1,756	95%	26.1	1.6	61	14.4	B	65
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	755	740	98%	11.0	0.3	63	4.5	A	72	1,994	1,893	95%	11.6	1.0	59	12.3	B	77
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	855	833	97%	79.2	2.1	63	6.3	A	151	2,220	2,133	96%	83.9	6.9	59	17.0	B	161
Choco Rd off-ramp to Choco Rd on-ramp	785	753	96%	34.5	0.7	63	4.0	A	186	2,120	2,053	97%	36.2	2.5	60	11.3	B	197
Choco Rd on-ramp to I-15 NB/SB off-ramp	1,005	963	96%	56.3	1.0	64	3.8	A	242	2,250	2,176	97%	57.5	2.1	62	8.7	A	254
I-15 NB/SB off-ramp to I-15 SB on-ramp	774	629	81%	98.9	0.9	64	3.3	A	341	1,854	1,856	100%	101.8	3.9	62	9.9	A	356
I-15 NB on-ramp to I-15 NB on-ramp	1,235	1,172	95%	11.0	0.6	61	5.4	A	352	2,560	2,463	96%	11.3	0.9	60	11.6	B	368
I-15 SB on-ramp to National Trails Hwy off-ramp	1,868	1,812	97%	65.6	2.1	63	7.2	A	418	3,393	3,253	96%	67.6	4.1	61	13.4	B	435
National Trails Hwy off-ramp to National Trails Hwy on-ramp	1,743	1,688	97%	41.9	1.1	63	8.9	A	460	3,198	3,070	96%	43.2	2.5	61	16.7	B	478
National Trails Hwy on-ramp to Phantom St East off-ramp	1,958	1,887	96%	52.0	1.9	62	9.8	A	512	3,578	3,423	96%	54.0	4.0	60	18.4	C	532
Phantom St East off-ramp to Phantom St East loop on-ramp	1,573	1,484	94%	32.9	0.8	63	7.8	A	545	3,278	3,113	95%	34.0	1.9	61	16.9	B	566
Phantom St East loop on-ramp to Phantom St East direct on-ramp	1,826	1,707	93%	5.4	0.2	62	9.2	A	550	3,747	3,505	94%	5.7	0.5	59	19.8	C	572
Phantom St East direct on-ramp to Phantom St West off-ramp	1,848	1,748	95%	57.9	1.7	63	9.3	A	608	3,773	3,591	95%	60.5	4.4	60	20.0	C	632
Phantom St West off-ramp to Phantom St West on-ramp	1,573	1,485	94%	42.2	0.9	63	7.8	A	650	3,588	3,413	95%	43.9	2.8	61	18.7	C	676
Phantom St West on-ramp to Route 395 off-ramp	2,108	2,007	95%	53.9	2.0	62	8.1	A	704	4,608	4,403	96%	57.2	5.5	58	18.9	C	734
Route 395 off-ramp to Route 395 on-ramp	1,383	1,325	96%	46.9	0.6	64	5.2	A	751	3,423	3,244	95%	48.0	1.8	62	13.0	B	782
Route 395 on-ramp to Koala Rd off-ramp	1,768	1,715	97%	100.4	2.3	63	6.6	A	851	4,223	4,012	95%	103.9	5.8	61	16.0	B	885
Koala Rd off-ramp to Koala Rd on-ramp	1,358	1,303	96%	48.6	0.7	64	5.1	A	900	3,643	3,439	94%	50.0	2.2	62	13.9	B	936
Koala Rd on-ramp to Caughlin Rd off-ramp	1,473	1,414	96%	66.6	1.2	64	5.4	A	966	3,858	3,647	95%	68.8	3.5	61	14.4	B	1,004
Caughlin Rd off-ramp to Caughlin Rd on-ramp	1,413	1,350	96%	49.2	0.8	64	5.3	A	1,015	3,758	3,527	94%	50.8	2.5	62	14.3	B	1,055
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	1,663	1,583	95%	246.4	5.0	63	6.2	A	1,262	4,078	3,777	93%	255.5	14.3	61	15.2	B	1,311
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	1,463	1,373	94%	45.0	0.9	64	5.4	A	1,307	3,788	3,427	90%	46.5	2.4	61	13.9	B	1,357
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	1,598	1,490	93%	183.2	3.6	63	5.8	A	1,490	4,643	4,225	91%	191.8	12.3	60	17.2	B	1,549
Oasis Rd off-ramp to Oasis Rd loop on-ramp	1,538	1,418	92%	47.5	0.9	64	5.6	A	1,537	4,553	4,089	90%	49.7	3.1	61	16.8	B	1,599
Oasis Rd direct on-ramp to 240th St East off-ramp	1,613	1,473	91%	127.9	2.7	63	5.7	A	1,665	4,673	4,168	89%	134.2	9.0	60	16.9	B	1,733
240th St East off-ramp to 240th St East on-ramp	1,463	1,311	90%	43.7	0.9	63	5.2	A	1,709	4,323	3,807	88%	45.5	2.6	61	15.6	B	1,778
240th St East on-ramp to 210th St East off-ramp	1,483	1,318	89%	133.9	2.9	63	5.1	A	1,843	4,458	3,887	87%	142.7	11.8	59	16.1	B	1,921
210th St East off-ramp to 210th St East on-ramp	1,433	1,259	88%	42.0	0.9	63	6.6	A	1,885	4,233	3,636	86%	44.3	3.3	60	20.2	C	1,965
210th St East on-ramp to 170th St East off-ramp	1,473	1,278	87%	187.4	4.4	63	6.6	A	2,072	4,283	3,616	84%	198.4	15.5	60	19.7	C	2,164
170th St East off-ramp to 170th St East on-ramp	1,373	1,169	85%	44.2	1.0	63	6.2	A	2,117	3,978	3,278	82%	46.3	3.2	60	18.1	C	2,210
170th St East on-ramp to 140th St East off-ramp	1,488	1,260	85%	134.2	3.4	63	6.5	A	2,251	4,073	3,310	81%	141.3	10.6	60	17.9	B	2,351
140th St East off-ramp to 140th St East on-ramp	1,368	1,152	84%	36.3	0.9	63	6.1	A	2,287	3,908	3,131	80%	38.1	2.7	60	17.3	B	2,389
140th St East on-ramp to 90th St East off-ramp	1,868	1,619	87%	266.9	8.0	63	8.5	A	2,554	4,198	3,346	80%	280.9	21.7	60	18.4	C	2,670
90th St East off-ramp to 90th St East on-ramp	1,773	1,521	86%	44.0	1.3	63	8.1	A	2,598	4,018	3,124	78%	46.0	3.3	60	17.3	B	2,716
90th St East on-ramp to 70th St East off-ramp	2,128	1,850	87%	191.0	7.4	62	9.8	A	2,789	4,328	3,288	76%	199.9	16.2	59	18.2	C	2,916
50th St East off-ramp to 50th St East on-ramp	1,748	1,511	86%	42.9	1.3	63	8.0	A	2,832	3,688	2,794	76%	44.4	2.7	61	15.3	B	2,960
50th St East on-ramp to 20th St East off-ramp	2,438	2,187	90%	136.0	4.8	62	8.8	A	2,968	4,363	3,451	79%	139.6	8.4	61	14.2	B	3,100
20th St East off-ramp to 20th St East on-ramp	2,328	2,066	89%	41.3	1.4	63	8.3	A	3,009	4,223	3,296	78%	42.4	2.6	61	13.5	B	3,142
20th St East on-ramp to 10th St East off-ramp	3,003	2,725	91%	16.7	0.8	61	8.9	A	3,026	4,893	3,920	80%	17.3	1.4	59	13.2	B	3,160
10th St East off-ramp to 10th St East on-ramp	2,623	2,393	91%	45.2	1.3	63	9.5	A	3,071	4,378	3,510	80%	47.5	3.5	60	14.6	B	3,207
10th St East on-ramp to SR 14 SB off-ramp	2,915	2,685	92%	33.0	1.2	62	10.5	A	3,104	4,720	3,824	81%	35.6	3.8	57	16.2	B	3,243
SR 14 SB off-ramp to SR 138 WB west end of the network	1,676	1,542	92%	12.5	0.4	55	14.1	B	3,117	3,213	2,622	82%	13.1	0.9	52	25.2	C	3,256

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-14. Year 2020 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off Ramp	2,795	2,803	100%	148.4	7.0	62	15.0	B	148	5,205	5,223	100%	160.2	18.8	58	30.2	D	160
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	2,350	2,343	100%	22.1	1.1	62	12.6	B	171	4,655	4,648	100%	23.7	2.6	58	26.8	D	184
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	2,685	2,656	99%	11.3	0.8	60	14.7	B	182	5,035	4,991	99%	12.2	1.7	56	29.7	D	196
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	3,060	3,045	100%	22.0	1.3	61	12.5	B	204	5,485	5,463	100%	24.0	3.3	56	24.4	C	220
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	2,545	2,519	99%	24.0	1.2	62	13.6	B	228	4,925	4,904	100%	25.8	3.0	58	28.4	D	246
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	2,905	2,884	99%	16.7	0.9	61	11.8	B	245	5,440	5,420	100%	18.1	2.3	57	23.9	C	264
Mojave Dr off-ramp to Mojave Dr on-ramp	2,430	2,410	99%	20.6	0.8	62	12.9	B	265	4,880	4,840	99%	22.0	2.3	58	27.6	D	286
Mojave Dr on-ramp to D St off-ramp	2,835	2,799	99%	49.9	2.6	61	13.3	B	315	5,260	5,205	99%	53.0	5.8	58	26.5	D	339
D St off-ramp to D St on-ramp	1,900	1,900	100%	22.8	0.7	63	10.1	A	338	4,305	4,245	99%	23.8	1.7	60	23.4	C	363
D St on-ramp to E St off-ramp	2,170	2,153	99%	11.1	0.6	61	11.7	B	349	4,630	4,521	98%	11.7	1.2	58	25.9	C	374
E St off-ramp to E St on-ramp	2,135	2,112	99%	9.7	0.4	62	11.3	B	359	4,590	4,472	97%	10.3	1.0	59	25.3	C	385
E St on-ramp to Stoddard Wells Rd off-ramp	2,175	2,153	99%	35.8	1.6	62	11.6	B	394	4,635	4,522	98%	37.7	3.5	58	25.8	C	422
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	1,775	1,742	98%	10.8	0.3	63	9.2	A	405	4,140	4,061	98%	11.4	0.9	60	22.6	C	434
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	2,050	2,003	98%	47.9	1.8	62	8.0	A	453	4,735	4,630	98%	50.3	4.2	59	19.5	C	484
HDC EB/WB off-ramp to HDC WB on-ramp	1,405	1,384	99%	70.6	1.9	63	7.3	A	524	3,875	3,755	97%	73.7	5.0	60	20.7	C	558
HDC WB on-ramp to HDC EB on-ramp	1,535	1,524	99%	7.6	0.3	63	6.3	A	531	4,030	3,907	97%	8.0	0.6	60	16.9	B	566
HDC EB on-ramp to Stoddard Wells Rd off-ramp(Quarry Rd)	2,154	2,066	96%	36.1	1.3	62	8.3	A	567	5,162	4,849	94%	39.5	4.8	56	21.6	C	605
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	1,954	1,864	95%	22.7	0.7	63	9.9	A	590	4,977	4,681	94%	24.2	2.2	59	26.5	D	629
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	2,074	1,969	95%	214.7	8.6	62	10.6	A	805	5,197	4,842	93%	228.1	22.1	58	27.7	D	858
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	1,714	1,619	94%	31.6	1.2	62	8.7	A	836	4,809	4,429	92%	33.3	2.9	59	24.9	C	891
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,014	1,914	95%	63.3	2.3	62	10.3	A	900	5,147	4,725	92%	67.6	6.6	58	27.1	D	958
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	3,560	3,556	100%	58.5	3.3	61	19.3	C	58	3,045	3,019	99%	77.3	22.0	44	23.7	C	77
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	3,324	3,318	100%	36.6	2.4	61	18.1	C	95	2,653	2,604	98%	37.0	2.7	60	14.4	B	114
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	3,658	3,651	100%	216.4	16.9	60	20.3	C	311	3,153	3,108	99%	213.2	13.7	61	17.0	B	327
Quarry Rd off-ramp to Quarry Rd on-ramp	3,533	3,511	99%	25.0	1.9	60	19.5	C	336	3,023	2,978	99%	24.7	1.6	61	16.3	B	352
Quarry Rd on-ramp to HDC EB/WB off-ramp	3,688	3,663	99%	52.2	4.0	60	15.3	B	389	3,368	3,333	99%	52.0	3.7	60	13.8	B	404
HDC EB/WB off-ramp to HDC EB on-ramp	2,905	2,877	99%	78.9	5.1	61	15.7	B	468	2,410	2,399	100%	77.8	3.9	62	12.9	B	482
HDC WB on-ramp to HDC EB on-ramp	3,110	3,068	99%	10.7	0.8	60	14.0	B	478	2,575	2,542	99%	10.5	0.6	61	11.4	B	492
HDC EB on-ramp to Stoddard Wells Rd off-ramp	3,685	3,551	96%	28.5	2.3	60	14.8	B	507	3,210	3,080	96%	28.2	1.9	61	12.7	B	521
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,205	3,078	96%	28.0	1.8	61	16.9	B	535	2,950	2,822	96%	27.8	1.6	61	15.3	B	548
Stoddard Wells Rd direct on-ramp to E St off-ramp	3,670	3,522	96%	23.2	2.2	59	20.0	C	558	3,375	3,228	96%	22.8	1.8	60	18.0	B	571
E St off-ramp to E St on-ramp	3,640	3,530	97%	8.8	0.7	60	19.7	C	567	3,335	3,195	96%	8.7	0.6	61	17.6	B	580
E St on-ramp to D St off-ramp	3,690	3,579	97%	11.4	0.9	60	19.9	C	578	3,380	3,235	96%	11.2	0.7	61	17.8	B	591
D St off-ramp to D St on-ramp	3,490	3,410	98%	21.9	1.5	61	18.7	C	600	3,145	2,993	95%	21.6	1.2	61	16.3	B	613
D St on-ramp to Mojave Dr off-ramp	4,330	4,229	98%	52.8	4.5	59	17.4	B	653	4,165	4,003	96%	52.5	4.0	60	16.4	B	665
Mojave Dr off-ramp to Mojave Dr on-ramp	4,075	3,988	98%	20.7	1.6	60	22.2	C	674	3,785	3,603	95%	20.5	1.4	60	19.9	C	686
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	4,670	4,582	98%	15.3	1.6	58	19.8	C	689	4,375	4,172	95%	15.0	1.3	59	17.7	B	701
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,300	4,213	98%	27.4	2.2	60	23.6	C	716	3,970	3,784	95%	26.9	1.7	61	20.8	C	728
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	4,680	4,565	98%	23.6	1.9	60	19.2	C	740	4,520	4,354	96%	23.5	1.8	60	18.2	C	751
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,160	4,041	97%	12.9	1.0	60	22.4	C	753	3,785	3,662	97%	12.7	0.8	61	20.0	C	764
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,315	4,173	97%	8.6	0.7	60	23.3	C	761	3,990	3,839	96%	8.5	0.7	60	21.3	C	772
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,545	4,375	96%	170.2	14.2	59	24.6	C	931	4,300	4,123	96%	168.6	12.6	60	22.9	C	941

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-15. Year 2020 Build Alternative with High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	58	12.4	B	59	19.5	B
West Palmdale Blvd loop	Merging	63	7.9	A	61	12.7	B
West Palmdale Blvd direct	Merging	62	9.0	A	61	12.1	B
SR 138 WB	Merging	61	11	B	60	18	B
10th St W. loop	Merging	59	16.4	B	54	24.9	C
10th St W. direct	Merging	60	16.1	B	59	22.5	C
West Avenue N loop	Merging	60	15.6	B	56	22.8	C
West Avenue N direct	Merging	61	12.5	B	61	17.6	B
East Avenue S	Diverging	63	11.4	B	56	29.4	D
West Palmdale Blvd	Diverging	61	11.9	B	58	18.3	B
SR 138 EB	Diverging	61	12.7	B	60	19.3	B
10th St W.	Diverging	60	10.6	B	60	15.0	B
West Avenue N	Diverging	57	18.0	B	38	36.6	**E**
SOUTHBOUND							
West Avenue N loop	Merging	61	17.9	B	61	18.2	B
West Avenue N direct	Merging	62	14.2	B	62	13.8	B
10th St W.	Merging	61	12.4	B	62	13.5	B
SR 138 WB	Merging	60	11.0	B	60	10.7	B
West Palmdale Blvd loop	Merging	59	17.0	B	60	15.1	B
West Palmdale Blvd direct	Merging	58	19.3	B	60	16.7	B
East Avenue S	Merging	27	43.6	**E**	59	14.7	B
West Avenue N	Diverging	58	30.3	D	57	32.0	D
10th St W.	Diverging	40	37.5	**E**	58	23.3	C
SR 138 EB	Diverging	49	24.8	C	59	23.1	C
West Palmdale Blvd	Diverging	61	13.6	B	61	14.5	B
East Avenue S	Diverging	47	25.8	C	57	19.5	B

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F

Table 4-15. Year 2020 Build Alternative with High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	59	16	B	59	17	B
20th St E	Merging	63	9	A	62	9	A
50th St E	Merging	58	18	B	59	16	B
90th St E	Merging	60	15	B	61	13	B
140th St E	Merging	60	14	B	61	11	B
170th St E	Merging	59	15	B	61	12	B
210th St E	Merging	59	15	B	61	11	B
240th St E	Merging	58	16	B	60	12	B
Oasis Rd	Merging	60	14	B	61	11	B
Sheep Creek Rd loop	Merging	62	12	B	62	11	B
Sheep Creek Rd direct	Merging	61	11	B	60	11	B
Caughlin Rd loop	Merging	61	12	B	62	11	B
Caughlin Rd direct	Merging	61	10	B	61	9	A
Koala Rd loop	Merging	59	13	B	59	11	B
Koala Rd direct	Merging	61	13	B	61	11	B
Route 395 loop	Merging	58	16	B	59	14	B
Route 395 direct	Merging	60	16	B	61	14	B
Phantom St West loop	Merging	62	10	A	61	11	B
Phantom St West direct	Merging	61	11	B	61	12	B
Phantom St East loop	Merging	62	11	B	60	16	B
Phantom St East direct	Merging	62	12	B	61	16	B
Choco Rd	Merging	63	6	A	63	7	A
Dale Evans Pkwy loop	Merging	63	5	A	63	5	A
Dale Evans Pkwy direct	Merging	63	5	A	63	6	A
10th St E	Diverging	63	9	A	62	11	B
50th St E	Diverging	60	15	B	61	15	B
90th St E	Diverging	60	19	B	60	18	B
140th St E	Diverging	59	18	B	59	17	B
170th St E	Diverging	60	17	B	61	14	B
210th St E	Diverging	60	17	B	61	13	B
240th St E	Diverging	59	17	B	61	13	B
Oasis Rd	Diverging	59	18	B	61	14	B
Sheep Creek Rd	Diverging	55	19	B	59	14	B
Caughlin Rd	Diverging	59	14	B	60	13	B
Koala	Diverging	60	13	B	61	11	B
Route 395	Diverging	58	16	B	60	14	B
Phantom St West	Diverging	57	21	C	59	17	B
Phantom St East	Diverging	61	14	B	61	15	B
National Trails Hwy	Diverging	61	13	B	61	17	B
Dale Evans Pkwy	Diverging	62	7	A	62	8	A
10th St East to 20th St E	Weaving	61	12	B	60	14	B
National Trails Hwy to I-15 NB/SB	Weaving	62	8	A	62	11	B
I-15 NB/SB to Choco Rd	Weaving	63	4	A	62	6	A

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-15. Year 2020 Build Alternative with High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy loop	Merging	63	5	A	59	12	B
Dale Evans Pkwy direct	Merging	63	6	A	58	15	B
I-15 NB	Merging	61	6	A	59	12	B
National Trails Hwy	Merging	62	10	A	59	17	B
Phantom St East loop	Merging	61	10	B	58	21	C
Phantom St East direct	Merging	62	10	B	58	21	C
Phantom St West	Merging	62	8	A	60	18	B
Route 395	Merging	61	7	A	59	15	B
Koala Rd loop	Merging	62	6	A	61	14	B
Koala Rd direct	Merging	62	5	A	60	13	B
Caughlin Rd loop	Merging	62	6	A	61	14	B
Caughlin Rd direct	Merging	61	6	A	60	14	B
Sheep Creek Rd loop	Merging	62	6	A	61	13	B
Sheep Creek Rd direct	Merging	62	5	A	57	17	B
Oasis Rd loop	Merging	62	6	A	60	16	B
Oasis Rd direct	Merging	62	5	A	59	15	B
240th St E	Merging	62	4	A	60	13	B
210th St E	Merging	63	6	A	60	17	B
170th St E	Merging	62	6	A	60	15	B
140th St E	Merging	61	8	A	58	16	B
90th St E	Merging	60	9	A	58	16	B
50th St E	Merging	61	9	A	60	13	B
10th St E	Merging	62	11	B	55	20	B
Dale Evans Pkwy	Diverging	63	6	A	61	15	B
Choco Rd	Diverging	63	7	A	60	18	B
Phantom St East	Diverging	61	12	B	60	20	C
Phantom St West	Diverging	61	11	B	60	21	C
Route 395	Diverging	59	12	B	54	24	C
Koala Rd	Diverging	61	9	A	59	19	B
Caughlin Rd	Diverging	62	7	A	61	15	B
Sheep Creek Rd	Diverging	61	7	A	59	16	B
Oasis Rd	Diverging	62	6	A	60	18	B
240th St E	Diverging	62	7	A	59	18	B
210th St E	Diverging	63	5	A	56	16	B
170th St E	Diverging	62	7	A	58	21	C
140th St E	Diverging	62	7	A	59	18	B
90th St E	Diverging	62	9	A	59	19	B
50th St E	Diverging	61	11	B	57	19	B
20th St E	Diverging	62	8	A	61	13	B
SR 14 SB	Diverging	62	12	B	56	24	C
Choco to I-15 NB/SB	Weaving	64	4	A	63	7	A
I-15 SB to National Trails Hwy	Weaving	62	8	A	61	14	B
20th St East to 10th St E	Weaving	60	9	A	58	12	B

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

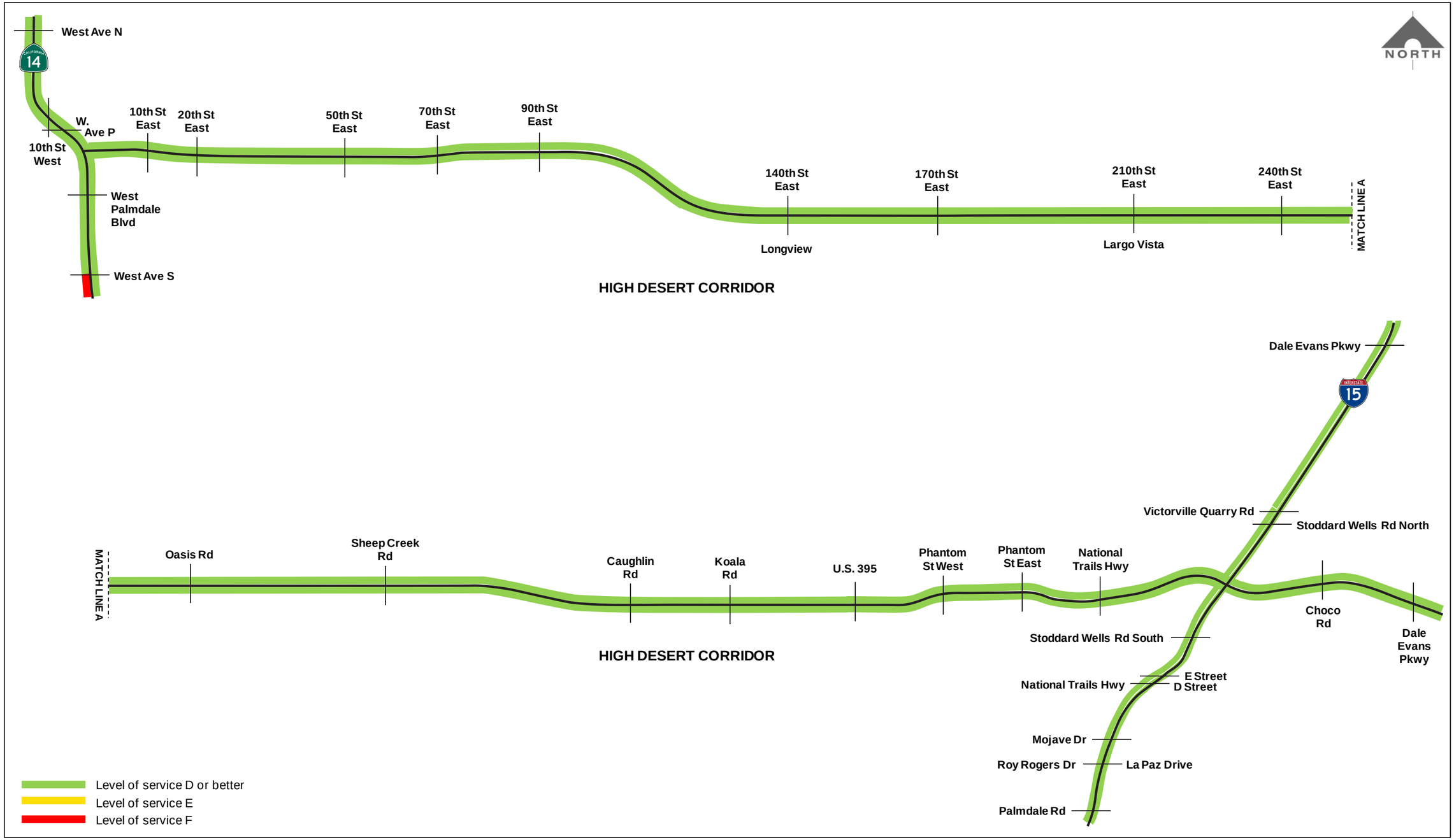
Table 4-15. Year 2020 Build Alternative with High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	60	17	B	54	31	D
Mojave Dr	Merging	60	17	B	54	32	D
D St	Merging	61	13	B	57	26	C
E St	Merging	62	13	B	59	26	C
HDC WB	Merging	62	6	A	60	15	B
Stoddard Wells Rd (Quarry Rd)	Merging	62	11	B	57	28	D
Dale Evans Pkwy	Merging	61	10	B	57	27	C
Palmdale Rd	Diverging	60	18	B	50	34	D
D St	Diverging	61	12	B	60	21	C
E St	Diverging	61	13	B	57	26	C
Stoddard Wells Rd	Diverging	61	13	B	58	27	C
Dale Evans Pkwy	Diverging	61	11	B	56	28	D
Palmdale Rd direct to Roy Rogers Dr	Weaving	60	13	B	55	23	C
Roy Rogers Dr to Mojave Dr	Weaving	61	12	B	55	23	C
Stoddard Wells Rd to HDC EB/WB	Weaving	62	8	A	59	18	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	62	8	A	55	20	C
SOUTHBOUND							
Dale Evans Pkwy	Merging	59	21	C	60	18	B
HDC WB	Merging	60	13	B	61	11	B
Stoddard Wells Rd direct	Merging	58	21	C	59	19	B
E St	Merging	60	20	C	60	19	B
Palmdale Rd loop	Merging	59	23	C	59	22	C
Palmdale Rd direct	Merging	58	25	C	58	24	C
Dale Evans Pkwy	Diverging	61	20	C	30	35	D
Quarry Rd	Diverging	59	21	C	60	18	B
E St	Diverging	58	21	C	59	19	B
D St	Diverging	60	20	C	60	19	B
Quarry Rd to HDC EB/WB	Weaving	60	14	B	60	14	B
HDC EB to Stoddard Wells Rd	Weaving	60	14	B	60	13	B
D St to Mojave Dr	Weaving	59	16	B	59	16	B
Mojave Dr to Roy Rogers Dr	Weaving	57	19	B	58	17	B
Roy Rogers Dr to Palmdale Rd	Weaving	59	18	B	59	18	B

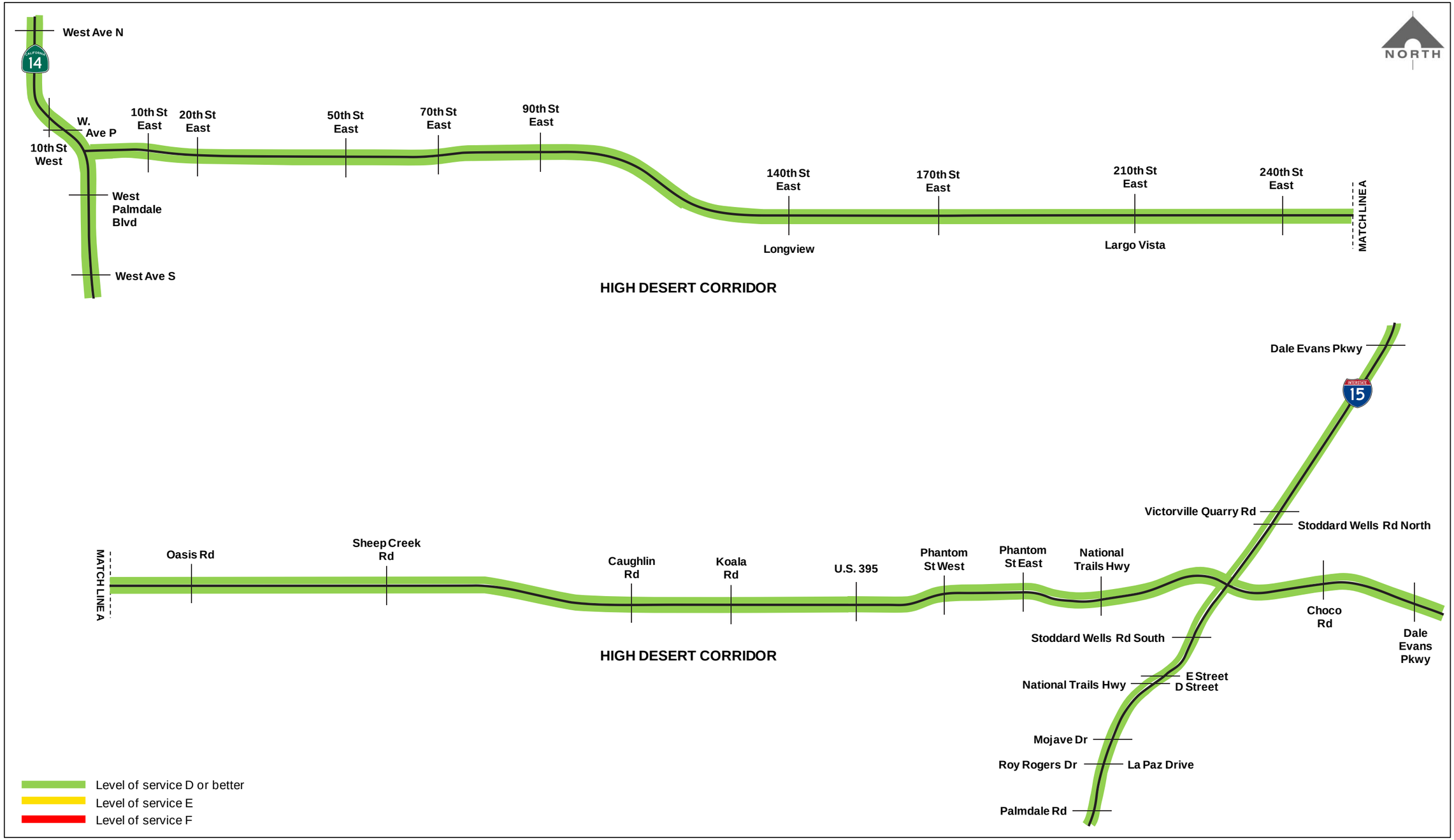
Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F



AM PEAK HOUR

Figure 4-20: Year 2020 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 4-20: Year 2020 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Level of Service *(2 of 2)*

Table 4-16. Year 2020 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Analysis Results *(1 of 4)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	2,300	2,294	100%	202.3	49.1	54	14.5	B	202	2,300	2,294	100%	202.3	49.1	54	14.5	B	202	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	2,160	2,160	100%	27.9	2.3	60	9.1	A	230	2,160	2,160	100%	27.9	2.3	60	9.1	A	230	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to West Palmdale Blvd off-ramp	2,820	2,820	100%	58.0	3.6	61	9.3	A	288	2,820	2,820	100%	58.0	3.6	61	9.3	A	288	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,460	2,428	99%	16.6	0.6	62	9.8	A	305	2,460	2,428	99%	16.6	0.6	62	9.8	A	305	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,520	1,520	100%	5.0	0.2	63	8.0	A	310	1,520	1,520	100%	5.0	0.2	63	8.0	A	310	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	1,770	1,770	100%	16.2	0.5	63	7.1	A	326	1,770	1,770	100%	16.2	0.5	63	7.1	A	326	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	2,215	2,215	100%	33.1	1.5	62	8.6	A	359	2,215	2,215	100%	33.1	1.5	62	8.6	A	359	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	1,864	1,864	100%	23.1	1.4	61	10.3	A	382	1,864	1,864	100%	23.1	1.4	61	10.3	A	382	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	3,286	3,227	98%	48.3	2.9	61	10.5	A	431	3,286	3,227	98%	48.3	2.9	61	10.5	A	431	—	—	—	—	—	—	—	—	—
10th St West loop on-ramp to 10th St West direct on-ramp	3,761	3,709	99%	16.8	1.1	61	13.9	B	447	3,761	3,709	99%	16.8	1.1	61	13.9	B	447	—	—	—	—	—	—	—	—	—
10th St West direct on-ramp to West Avenue N off-ramp	3,861	3,796	98%	66.4	4.1	61	15.2	B	514	3,861	3,796	98%	66.4	4.1	61	15.2	B	514	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	3,606	3,516	98%	18.3	1.2	60	19.4	C	532	3,606	3,516	98%	18.3	1.2	60	19.4	C	532	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	3,886	3,792	98%	9.5	0.5	61	15.5	B	542	3,886	3,792	98%	9.5	0.5	61	15.5	B	542	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	4,011	3,912	98%	30.8	1.3	62	15.2	B	572	4,011	3,912	98%	30.8	1.3	62	15.2	B	572	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	4,885	4,887	100%	37.8	3.0	60	27.3	D	38	4,885	4,887	100%	37.8	3.0	60	27.3	D	38	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,585	4,582	100%	18.8	1.4	60	25.5	C	57	4,585	4,582	100%	18.8	1.4	60	25.5	C	57	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,635	4,631	100%	11.2	0.7	61	19.1	C	68	4,635	4,631	100%	11.2	0.7	61	19.1	C	68	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St West off-ramp	4,925	4,927	100%	89.3	13.3	54	22.3	C	157	4,925	4,927	100%	89.3	13.3	54	22.3	C	157	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC off-ramp	4,325	4,680	108%	19.5	3.4	53	22.3	C	176	3,020	4,186	139%	19.8	3.8	52	27.0	D	177	1,305	494	38%	16.4	0.2	62	7.9	A	16
HDC off-ramp to 10th St West on-ramp	1,911	1,977	103%	22.0	0.9	62	10.6	A	198	606	1,461	241%	21.8	0.8	62	11.7	B	199	1,305	516	40%	22.6	1.3	61	8.5	A	39
10th St West on-ramp to Palmdale Blvd off-ramp	3,000	3,068	102%	33.3	1.5	62	12.5	B	232	1,695	2,476	146%	33.1	1.4	62	13.3	B	232	1,305	592	45%	33.9	2.0	60	9.8	A	73
West Palmdale Blvd off-ramp to HDC on-ramp	2,620	2,636	101%	32.2	1.1	63	10.5	A	264	1,315	1,912	145%	31.7	0.7	63	10.0	A	263	1,305	724	55%	33.4	2.1	60	12.0	B	106
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,709	3,648	98%	23.8	1.4	61	11.6	B	288	2,489	3,099	125%	23.6	1.3	61	12.2	B	287	1,220	550	45%	24.2	1.6	60	9.2	A	131
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,282	4,252	99%	13.9	1.1	60	15.9	B	302	3,062	3,342	109%	13.8	1.0	60	16.0	B	301	1,220	910	75%	14.1	1.3	59	15.5	B	145
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	4,852	4,785	99%	73.3	10.7	56	21.1	C	375	3,282	3,786	115%	74.7	12.1	55	22.5	C	376	1,570	999	64%	68.4	5.6	59	16.9	B	213
East Avenue S off-ramp to East Avenue S on-ramp	4,602	4,442	97%	44.3	23.8	30	37.0	**E**	419	2,692	3,415	127%	50.9	30.3	26	43.5	**E**	426	1,910	1,027	54%	22.6	2.0	59	17.5	B	236
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	5,647	5,216	92%	498.9	310.0	31	53.5	**F**	918	3,737	4,066	109%	581.1	392.2	28	64.9	**F**	1,008	1,910	1,150	60%	215.2	26.6	57	20.4	C	451

PM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	6,920	5,274	76%	204.6	50.2	52	28.9	D	205	5,100	3,707	73%	219.2	64.9	51	29.9	D	219	1,820	1,567	86%	177.3	22.7	56	27.6	D	177
East Avenue S off-ramp to East Avenue S on-ramp	6,085	4,664	77%	28.8	3.0	58	20.1	C	233	4,265	3,035	71%	28.7	3.0	58	17.4	B	248	1,820	1,629	90%	29.0	3.1	58	28.3	D	206
East Avenue S on-ramp to West Palmdale Blvd off-ramp	6,605	5,185	79%	59.0	4.4	60	17.3	B	292	4,985	4,012	80%	59.0	4.4	60	16.8	B	307	1,620	1,173	72%	58.7	4.2	60	19.5	C	265
West Palmdale Blvd off-ramp to HDC off-ramp	5,653	4,465	79%	17.0	1.1	60	18.6	C	309	4,033	3,518	87%	17.0	1.0	60	19.5	C	324	1,620	947	58%	17.0	1.2	60	15.8	B	282
HDC off-ramp to West Palmdale Blvd loop on-ramp	3,715	2,904	78%	5.2	0.3	61	15.9	B	315	2,025	1,958	97%	5.1	0.2	62	15.9	B	329	1,690	946	56%	5.3	0.4	60	15.9	B	287
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,905	3,103	79%	16.6	0.8	61	12.6	B	331	2,215	2,128	96%	16.4	0.6	63	11.4	B	345	1,690	976	58%	17.3	1.4	59	16.5	B	305
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	4,400	3,561	81%	33.8	2.1	61	14.0	B	365	2,710	2,671	99%	33.7	2.0	61	13.8	B	379	1,690	890	53%	34.1	2.3	60	14.8	B	339
10th St West off-ramp to HDC on-ramp	3,735	3,673	98%	23.5	1.2	60	16.5	B	388	2,045	2,808	137%	23.4	1.2	60	17.2	B	402	1,690	865	51%	23.7	1.3	59	14.6	B	362
HDC on-ramp to 10th St West on-ramp	6,328	5,257	83%	49.7	4.2	60	17.5	B	438	6,328	5,257	83%	49.7	4.2	60	17.5	B	452	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	6,743	5,658	84%	17.6	1.8	58	22.1	C	456	6,743	5,658	84%	17.6	1.8	58	22.1	C	470	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Avenue N off-ramp	6,843	5,740	84%	73.8	11.5	55	26.0	C	530	6,843	5,740	84%	73.8	11.5	55	26.0	C	543	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	6,543	5,440	83%	20.8	3.7	53	34.1	D	550	6,543	5,440	83%	20.8	3.7	53	34.1	D	564	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	6,678	5,638	84%	10.1	1.1	58	24.4	C	560	6,678	5,638	84%	10.1	1.1	58	24.4	C	574	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	6,923	5,873	85%	31.7	2.2	60	23.5	C	592	6,923	5,873	85%	31.7	2.2	60	23.5	C	606	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	4,850	4,850	100%	37.7	3.0	60	27.1	D	38	4,850	4,850	100%	37.7	3.0	60	27.1	D	38	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,450	4,451	100%	18.7	1.4	60	24.7	C	56	4,450	4,451	100%	18.7	1.4	60	24.7	C	56	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,550	4,550	100%	11.1	0.7	61	18.9	C	68	4,550	4,550	100%	11.1	0.7	61	18.9	C	68	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St W off-ramp	4,775	4,775	100%	81.9	5.9	60	19.7	C	149	4,775	4,775	100%	81.9	5.9	60	19.7	C	149	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	3,980	3,980	100%	17.4	1.4	59	17.2	B	167	3,980	3,980	100%	17.4	1.4	59	17.2	B	167	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St W on-ramp	1,712	1,712	100%	21.6	0.6	63	9.4	A	188	1,712	1,712	100%	21.6	0.6	63	9.4	A	188	—	—	—	—	—	—	—	—	—
10th St W on-ramp to Palmdale Blvd off-ramp	2,540	2,540	100%	33.0	1.3	62	10.5	A	221	2,540	2,540	100%	33.0	1.3	62	10.5	A	221	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	1,994	1,994	100%	31.6	0.6	64	8.0	A	253	1,994	199,4	100%	31.6	0.6	64	8.0	A	253	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,247	3,093	95%	23.7	1.3	61	9.8	A	277	3,247	3,093	95%	23.7	1.3	61	9.8	A	277	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,441	3,275	95%	13.4	0.6	62	11.8	B	290	3,441	3,275	95%	13.4	0.6	62	11.8	B	290	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	3,661	3,468	95%	66.2	3.6	61	13.8	B	356	3,661	3,468	95%	66.2	3.6	61	13.8	B	356	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	3,136	3,025	96%	21.3	0.8	62	12.1	B	378	3,136	3,025	96%	21.3	0.8	62	12.1	B	378	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	3,546	3,405	96%	215.3	27.7	58	15.9	B	593	3,546	3,405	96%	215.3	27.7	58	15.9	B	593	—	—	—	—	—	—	—	—	—

Source: Parsons
Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-16. Year 2020 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EB MAINLINE																		
SR 138 EB west end of the network to SR 14 NB on-ramp	2,535	2,494	98%	20.9	1.7	49	25.7	C	21	2,360	2,365	100%	20.9	1.7	48	24.5	C	21
SR 14 NB on-ramp to 10th St East off-ramp	3,475	3,404	98%	33.5	1.8	61	12.6	B	54	4,298	3,914	91%	33.6	1.9	61	14.5	B	55
10th St East off-ramp to 10th St East on-ramp	3,159	3,081	98%	45.4	1.6	63	12.3	B	100	3,917	3,541	90%	45.9	2.0	62	14.3	B	100
10th St East on-ramp to 20th St East off-ramp	3,564	3,465	97%	16.6	0.7	62	11.3	B	116	4,377	3,978	91%	16.9	0.9	61	13.1	B	117
20th St East off-ramp to 20th St East on-ramp	3,034	2,931	97%	42.9	1.3	63	11.7	B	159	3,527	3,215	91%	43.1	1.4	63	12.9	B	160
20th St East on-ramp to 50th St East off-ramp	3,154	3,078	98%	135.2	5.4	62	11.6	B	294	3,642	3,319	91%	135.4	5.5	62	12.5	B	296
50th St East off-ramp to 50th St East on-ramp	2,534	2,426	96%	43.1	1.8	62	13.0	B	338	2,862	2,606	91%	43.0	1.7	62	14.0	B	339
50th St East on-ramp to 90th St East off-ramp	2,919	2,790	96%	194.2	10.3	61	15.0	B	532	3,292	2,963	90%	194.6	10.7	61	15.9	B	533
90th St East off-ramp to 90th St East on-ramp	2,554	2,420	95%	45.0	2.1	62	13.1	B	577	2,867	2,520	88%	44.9	1.9	62	13.6	B	578
90th St East on-ramp to 140th St East off-ramp	2,574	2,383	93%	268.6	14.2	61	12.7	B	845	2,887	2,481	86%	268.3	13.6	61	13.3	B	847
140th St East off-ramp to 140th St East on-ramp	2,174	1,951	90%	45.3	1.9	62	10.5	A	891	2,177	1,828	84%	44.9	1.5	63	9.7	A	891
140th St East on-ramp to 170th St East off-ramp	2,354	2,112	90%	133.4	6.2	62	11.1	B	1,024	2,262	1,887	83%	132.2	5.1	62	9.8	A	1,024
170th St East off-ramp to 170th St East on-ramp	2,314	2,038	88%	46.2	2.1	62	11.0	A	1,070	2,127	1,766	83%	45.7	1.6	63	9.4	A	1,069
170th St East on-ramp to 210th St East off-ramp	2,334	2,024	87%	190.0	8.6	62	10.7	A	1,260	2,142	1,749	82%	188.2	6.8	62	9.1	A	1,258
210th St East off-ramp to 210th St East on-ramp	2,314	1,984	86%	42.9	2.0	62	10.7	A	1,303	2,102	1,679	80%	42.4	1.6	62	9.0	A	1,300
210th St East on-ramp to 240th St East off-ramp	2,364	2,012	85%	137.0	6.7	62	10.6	A	1,440	2,117	1,698	80%	135.5	5.0	62	8.8	A	1,435
240th St East off-ramp to 240th St East on-ramp	2,199	1,843	84%	46.3	2.0	62	9.9	A	1,486	2,022	1,587	78%	45.9	1.5	63	8.4	A	1,481
240th St East on-ramp to Oasis Rd off-ramp	2,479	2,085	84%	133.1	6.7	62	11.0	A	1,620	2,222	1,752	79%	131.2	4.7	62	9.1	A	1,613
Oasis Rd off-ramp to Oasis Rd on-ramp	2,379	1,967	83%	46.6	2.1	62	10.6	A	1,666	2,142	1,657	77%	46.1	1.6	63	8.8	A	1,659
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	2,484	2,024	81%	189.2	9.5	61	10.7	A	1,855	2,227	1,715	77%	186.7	6.9	62	8.9	A	1,845
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	1,974	1,585	80%	47.5	1.5	63	8.4	A	1,903	1,912	1,459	76%	47.3	1.5	63	7.7	A	1,893
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	2,084	1,668	80%	251.2	9.9	62	8.7	A	2,154	2,062	1,595	77%	249.7	8.1	63	8.3	A	2,142
Caughlin Rd off-ramp to Caughlin Rd on-ramp	1,839	1,428	78%	45.7	1.5	63	7.6	A	2,200	1,832	1,388	76%	45.6	1.3	63	7.4	A	2,188
Caughlin Rd on-ramp to Koala Rd off-ramp	1,854	1,427	77%	70.2	2.4	63	7.3	A	2,270	1,857	1,402	75%	69.9	2.1	63	7.1	A	2,258
Koala Rd off-ramp to Koala Rd loop on-ramp	1,809	1,376	76%	31.9	1.1	63	7.3	A	2,302	1,827	1,378	75%	31.8	0.9	63	7.3	A	2,290
Koala Rd loop on-ramp to Koala Rd direct on-ramp	2,051	1,602	78%	16.5	0.7	62	7.6	A	2,318	2,017	1,561	77%	16.4	0.6	62	7.4	A	2,306
Koala Rd direct on-ramp to Route 395 off-ramp	2,129	1,669	78%	102.3	3.5	63	8.5	A	2,421	2,032	1,560	77%	102.1	3.1	63	8.0	A	2,408
Route 395 off-ramp to Route 395 loop on-ramp	2,009	1,568	78%	25.5	0.8	63	8.3	A	2,446	1,947	1,478	76%	25.6	0.8	63	7.9	A	2,434
Route 395 loop on-ramp to Route 395 direct on-ramp	2,922	2,493	85%	22.1	1.7	61	12.9	B	2,468	2,648	2,176	82%	21.7	1.2	61	11.1	B	2,455
Route 395 direct on-ramp to Phantom St West off-ramp	3,049	2,621	86%	58.3	3.7	61	14.0	B	2,526	2,772	2,293	83%	57.2	2.5	62	12.0	B	2,513
Phantom St West off-ramp to Phantom St West loop on-ramp	2,244	1,962	87%	27.5	0.8	63	10.4	A	2,554	2,202	1,863	85%	27.6	0.8	63	9.9	A	2,540
Phantom St West loop on-ramp to Phantom St West direct on-ramp	2,297	2,016	88%	12.3	0.4	63	9.1	A	2,566	2,392	2,043	85%	12.4	0.4	62	9.3	A	2,553
Phantom St West direct on-ramp to Phantom St East direct off-ramp	2,409	2,118	88%	56.6	2.3	62	10.9	A	2,623	2,587	2,244	87%	56.6	2.2	62	11.6	B	2,609
Phantom St East direct off-ramp to Phantom St East loop on-ramp	1,919	1,685	88%	35.3	1.0	63	8.9	A	2,658	2,307	1,980	86%	35.5	1.1	63	10.5	A	2,645
Phantom St East loop on-ramp to Phantom St East direct on-ramp	2,023	1,785	88%	15.8	0.5	63	9.5	A	2,674	2,698	2,323	86%	16.1	0.8	61	12.6	B	2,661
Phantom St East direct on-ramp to National Trails Hwy off-ramp	2,104	1,855	88%	40.3	1.5	62	9.9	A	2,714	2,827	2,462	87%	40.6	1.7	62	13.3	B	2,701
National Trails Hwy off-ramp to National Trails Hwy on-ramp	1,769	1,571	89%	42.3	1.2	63	8.3	A	2,756	2,572	2,253	88%	42.6	1.4	63	12.0	B	2,744
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	1,919	1,714	89%	101.0	2.8	63	6.8	A	2,857	2,697	2,364	88%	102.2	3.8	62	9.5	A	2,846
I-15 NB/SB off-ramp to I-15 NB on-ramp	955	850	89%	79.5	1.3	64	4.5	A	2,937	1,070	925	86%	79.7	1.4	63	4.9	A	2,926
I-15 NB/SB on-ramp to Choco Rd off-ramp	1,180	1,057	90%	56.5	1.3	63	4.2	A	2,993	1,445	1,248	86%	56.8	1.5	63	5.0	A	2,983
Choco Rd off-ramp to Choco Rd on-ramp	1,110	995	90%	32.9	0.7	63	5.2	A	3,026	1,195	1,017	85%	33.0	0.9	63	5.4	A	3,016
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	1,140	1,014	89%	70.9	1.5	63	5.1	A	3,097	1,265	1,082	86%	71.4	1.8	63	5.5	A	3,087
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	975	854	88%	26.7	0.5	64	4.5	A	3,124	1,070	910	85%	26.8	0.6	63	4.8	A	3,114
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,044	927	89%	10.2	0.3	63	4.0	A	3,134	1,133	974	86%	10.2	0.3	63	4.2	A	3,124
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,080	956	89%	31.6	0.7	64	4.7	A	3,166	1,165	1,006	86%	31.8	0.7	63	5.0	A	3,156

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-16. Year 2020 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WB MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	690	689	100%	36.1	1.2	62	5.5	A	36	1,240	1,213	98%	37.0	2.2	60	10.1	A	37
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	620	619	100%	25.1	0.6	63	4.9	A	61	1,160	1,138	98%	25.5	1.0	62	9.1	A	62
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	694	685	99%	11.0	0.4	63	4.2	A	72	1,245	1,221	98%	11.2	0.6	62	7.6	A	74
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	790	782	99%	78.9	2.0	63	5.8	A	151	1,370	1,349	98%	80.8	3.8	62	10.3	A	154
Choco Rd off-ramp to Choco Rd on-ramp	730	724	99%	34.4	0.7	64	3.8	A	185	1,320	1,297	98%	35.2	1.4	62	7.0	A	190
Choco Rd on-ramp to I-15 NB/SB off-ramp	930	922	99%	56.2	1.0	64	3.6	A	242	1,420	1,390	98%	56.7	1.4	63	5.5	A	246
I-15 NB/SB off-ramp to I-15 SB on-ramp	605	600	99%	98.5	0.9	64	3.1	A	340	1,185	1,112	94%	100.0	2.2	63	5.8	A	346
I-15 NB on-ramp to I-15 NB on-ramp	995	982	99%	10.9	0.5	62	4.4	A	351	1,745	1,707	98%	11.1	0.6	61	7.9	A	357
I-15 SB on-ramp to National Trails Hwy off-ramp	1,608	1,589	99%	65.2	1.9	63	6.3	A	416	2,543	2,477	97%	66.2	2.7	62	10.0	A	423
National Trails Hwy off-ramp to National Trails Hwy on-ramp	1,488	1,470	99%	41.6	1.0	64	7.7	A	458	2,363	2,286	97%	42.3	1.5	63	12.2	B	466
National Trails Hwy on-ramp to Phantom St East off-ramp	1,753	1,721	98%	51.9	1.9	63	8.9	A	510	2,733	2,635	96%	52.7	2.7	62	13.8	B	518
Phantom St East off-ramp to Phantom St East loop on-ramp	1,378	1,331	97%	32.7	0.7	64	7.0	A	542	2,433	2,343	96%	33.5	1.3	62	12.5	B	552
Phantom St East loop on-ramp to Phantom St East direct on-ramp	1,554	1,492	96%	5.3	0.2	63	7.9	A	548	2,829	2,690	95%	5.5	0.4	61	14.8	B	557
Phantom St East direct on-ramp to Phantom St West off-ramp	1,573	1,524	97%	57.4	1.5	63	8.0	A	605	2,848	2,748	96%	58.9	2.8	62	14.9	B	616
Phantom St West off-ramp to Phantom St West on-ramp	1,383	1,337	97%	42.0	0.8	64	7.0	A	647	2,703	2,600	96%	43.1	1.9	62	14.0	B	659
Phantom St West on-ramp to Route 395 off-ramp	1,613	1,582	98%	53.6	1.8	63	6.3	A	701	3,813	3,601	94%	57.3	5.6	58	15.5	B	717
Route 395 off-ramp to Route 395 on-ramp	838	810	97%	46.6	0.5	64	3.2	A	747	2,468	2,300	93%	47.3	1.1	63	9.1	A	764
Route 395 on-ramp to Koala Rd off-ramp	868	828	95%	99.3	1.3	64	3.1	A	847	2,838	2,659	94%	101.3	3.3	62	10.3	A	865
Koala Rd off-ramp to Koala Rd on-ramp	663	618	93%	48.1	0.5	64	2.4	A	895	2,323	2,214	95%	49.1	1.4	63	8.8	A	914
Koala Rd on-ramp to Caughlin Rd off-ramp	693	651	94%	65.8	0.8	64	2.5	A	960	2,403	2,301	96%	67.3	2.1	63	8.9	A	982
Caughlin Rd off-ramp to Caughlin Rd on-ramp	673	627	93%	48.7	0.6	64	2.4	A	1,009	2,353	2,233	95%	49.8	1.5	63	8.9	A	1,031
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	808	760	94%	243.4	3.4	64	2.9	A	1,253	2,673	2,534	95%	249.6	8.7	62	10.0	A	1,281
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	758	702	93%	44.5	0.6	64	2.7	A	1,297	2,613	2,423	93%	45.6	1.6	63	9.7	A	1,327
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	848	782	92%	181.4	2.7	64	3.0	A	1,478	2,973	2,744	92%	186.5	7.2	62	10.8	A	1,513
Oasis Rd off-ramp to Oasis Rd loop on-ramp	828	756	91%	47.1	0.7	64	2.9	A	1,525	2,948	2,683	91%	48.5	2.0	62	10.8	A	1,562
Oasis Rd direct on-ramp to 240th St East off-ramp	878	788	90%	126.8	2.1	64	3.0	A	1,652	3,093	2,785	90%	130.7	5.6	62	11.0	A	1,692
240th St East off-ramp to 240th St East on-ramp	763	675	88%	43.4	0.7	64	2.6	A	1,696	2,738	2,411	88%	44.3	1.5	63	9.6	A	1,737
240th St East on-ramp to 210th St East off-ramp	863	774	90%	132.6	2.3	64	3.0	A	1,828	2,858	2,495	87%	136.5	5.6	62	9.8	A	1,873
210th St East off-ramp to 210th St East on-ramp	853	761	89%	41.6	0.7	64	4.0	A	1,870	2,678	2,312	86%	42.9	1.8	62	12.4	B	1,916
210th St East on-ramp to 170th St East off-ramp	888	785	88%	185.4	3.2	64	4.0	A	2,055	2,698	2,298	85%	192.1	9.2	62	12.1	B	2,108
170th St East off-ramp to 170th St East on-ramp	838	733	87%	43.7	0.8	64	3.8	A	2,099	2,428	2,028	84%	45.2	2.1	62	10.9	A	2,153
170th St East on-ramp to 140th St East off-ramp	888	779	88%	132.4	2.4	64	3.9	A	2,231	2,468	2,037	83%	137.2	6.6	62	10.7	A	2,290
140th St East off-ramp to 140th St East on-ramp	853	737	86%	35.9	0.6	64	3.8	A	2,267	2,443	1,991	81%	37.3	1.9	62	10.8	A	2,328
140th St East on-ramp to 90th St East off-ramp	1,343	1,215	91%	264.8	6.4	63	6.3	A	2,532	3,093	2,587	84%	274.8	15.9	61	13.9	B	2,602
90th St East off-ramp to 90th St East on-ramp	1,323	1,183	89%	43.7	1.1	63	6.2	A	2,576	3,053	2,506	82%	45.4	2.7	61	13.7	B	2,648
90th St East on-ramp to 70th St East off-ramp	1,823	1,671	92%	190.1	6.6	62	8.8	A	2,766	3,538	2,933	83%	197.0	13.5	60	16.0	B	2,845
50th St East off-ramp to 50th St East on-ramp	1,538	1,409	92%	42.9	1.3	63	7.5	A	2,809	3,183	2,598	82%	44.0	2.3	61	14.1	B	2,889
50th St East on-ramp to 20th St East off-ramp	2,418	2,255	93%	136.2	4.9	62	9.0	A	2,945	3,933	3,319	84%	138.6	7.4	61	13.5	B	3,027
20th St East off-ramp to 20th St East on-ramp	2,348	2,187	93%	41.3	1.5	63	8.7	A	2,986	3,783	3,147	83%	42.0	2.2	61	12.8	B	3,069
20th St East on-ramp to 10th St East off-ramp	3,028	2,838	94%	16.7	0.8	61	9.3	A	3,003	4,668	4,009	86%	17.4	1.5	59	13.6	B	3,087
10th St East off-ramp to 10th St East on-ramp	2,708	2,542	94%	45.4	1.5	63	10.1	A	3,048	4,198	3,584	85%	46.8	3.0	61	14.8	B	3,133
10th St East on-ramp to SR 14 SB off-ramp	2,885	2,715	94%	33.0	1.1	62	10.7	A	3,081	4,450	3,815	86%	34.6	2.9	59	15.7	B	3,168
SR 14 SB off-ramp to SR 138 WB west end of the network	1,671	1,581	95%	12.5	0.4	55	14.4	B	3,094	3,048	2,597	85%	12.8	0.7	53	24.4	C	3,181

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-16. Year 2020 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off Ramp	2,725	2,732	100%	147.8	6.4	62	14.6	B	148	5,315	5,332	100%	160.8	19.3	57	31.0	D	161
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	2,290	2,298	100%	22.0	1.0	62	12.3	B	170	4,770	4,788	100%	23.8	2.8	57	27.8	D	185
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	2,615	2,601	99%	11.3	0.8	61	14.3	B	181	5,130	5,093	99%	12.1	1.6	56	30.2	D	197
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	2,935	2,911	99%	22.0	1.2	61	11.9	B	203	5,430	5,406	100%	23.6	2.9	57	23.8	C	220
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	2,450	2,414	99%	23.9	1.1	62	13.0	B	227	4,855	4,840	100%	25.4	2.6	58	27.7	D	246
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	2,805	2,780	99%	16.7	0.9	61	11.3	B	244	5,355	5,345	100%	17.9	2.0	57	23.3	C	264
Mojave Dr off-ramp to Mojave Dr on-ramp	2,325	2,302	99%	20.6	0.8	63	12.3	B	264	4,760	4,771	100%	21.9	2.2	59	27.1	D	285
Mojave Dr on-ramp to D St off-ramp	2,710	2,672	99%	49.8	2.5	62	12.7	B	314	4,899	4,899	100%	52.6	5.4	58	25.9	C	338
D St off-ramp to D St on-ramp	1,825	1,814	99%	22.8	0.7	63	9.6	A	337	4,205	4,213	100%	23.8	1.7	60	23.3	C	362
D St on-ramp to E St off-ramp	2,085	2,074	99%	11.0	0.6	62	11.2	B	348	4,485	4,458	99%	11.7	1.2	58	25.5	C	374
E St off-ramp to E St on-ramp	2,050	2,032	99%	9.7	0.3	63	10.8	A	358	4,445	4,419	99%	10.3	0.9	59	24.9	C	384
E St on-ramp to Stoddard Wells Rd off-ramp	2,085	2,066	99%	35.6	1.4	62	11.1	B	393	4,485	4,457	99%	37.6	3.4	59	25.3	C	421
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	1,710	1,683	98%	10.8	0.3	63	8.9	A	404	4,035	3,986	99%	11.3	0.8	60	22.1	C	433
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	1,925	1,882	98%	47.6	1.5	63	7.5	A	452	4,465	4,397	98%	49.8	3.7	60	18.3	C	483
HDC EB/WB off-ramp to HDC WB on-ramp	1,450	1,428	99%	70.7	1.9	63	7.5	A	522	3,605	3,574	99%	73.4	4.8	61	19.6	C	556
HDC WB on-ramp to HDC EB on-ramp	1,575	1,558	99%	7.6	0.3	63	6.5	A	530	3,745	3,701	99%	7.9	0.6	60	16.0	B	564
HDC EB on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,014	1,947	97%	36.0	1.2	63	7.8	A	566	4,822	4,614	96%	38.7	4.0	58	20.0	C	602
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	1,819	1,735	95%	22.7	0.7	63	9.2	A	589	4,632	4,402	95%	23.9	1.9	60	24.6	C	626
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	1,929	1,832	95%	214.0	7.9	62	9.8	A	803	4,767	4,490	94%	226.1	20.3	59	25.4	C	853
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	1,574	1,486	94%	31.6	1.1	62	7.9	A	834	4,389	4,073	93%	32.9	2.6	60	22.7	C	885
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	1,879	1,768	94%	63.2	2.3	62	9.5	A	897	4,702	4,349	92%	66.7	5.9	59	24.6	C	952
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	3,540	3,538	100%	58.4	3.3	61	19.2	C	58	3,040	3,037	100%	57.9	2.8	62	16.4	B	58
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	3,309	3,293	100%	36.6	2.3	61	17.9	B	95	2,663	2,663	100%	36.1	1.8	62	14.4	B	94
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	3,623	3,608	100%	216.0	16.5	60	20.0	C	311	3,178	3,169	100%	214.1	14.5	61	17.4	B	308
Quarry Rd off-ramp to Quarry Rd on-ramp	3,513	3,482	99%	25.1	2.0	60	19.3	C	336	3,048	3,058	100%	24.8	1.7	61	16.8	B	333
Quarry Rd on-ramp to HDC EB/WB off-ramp	3,638	3,608	99%	52.3	4.0	60	15.1	B	388	3,273	3,273	100%	52.1	3.8	60	14.1	B	385
HDC EB/WB off-ramp to HDC EB on-ramp	2,885	2,854	99%	78.9	5.1	61	15.6	B	467	2,365	2,365	100%	78.1	4.2	62	13.6	B	463
HDC WB on-ramp to HDC EB on-ramp	3,085	3,038	98%	10.7	0.8	60	13.9	B	478	2,495	2,495	100%	10.5	0.6	61	11.9	B	474
HDC EB on-ramp to Stoddard Wells Rd off-ramp	3,610	3,493	97%	28.6	2.3	60	14.6	B	507	3,045	3,045	100%	28.1	1.9	61	12.9	B	502
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,095	2,987	97%	28.0	1.8	61	16.3	B	535	2,643	2,640	100%	27.8	1.6	61	15.7	B	530
Stoddard Wells Rd direct on-ramp to E St off-ramp	3,510	3,460	99%	23.0	2.1	59	19.5	C	558	3,125	3,125	100%	22.7	1.7	60	17.9	B	552
E St off-ramp to E St on-ramp	3,480	3,434	99%	8.8	0.7	60	19.1	C	566	3,085	3,085	100%	8.7	0.6	61	17.6	B	561
E St on-ramp to D St off-ramp	3,530	3,484	99%	11.4	0.8	60	19.3	C	578	3,130	3,130	100%	11.2	0.7	61	17.8	B	572
D St off-ramp to D St on-ramp	3,285	3,242	99%	21.8	1.4	61	17.8	B	600	2,910	2,905	100%	21.6	1.2	61	16.3	B	594
D St on-ramp to Mojave Dr off-ramp	3,930	3,880	99%	52.3	3.8	60	15.8	B	652	3,885	3,885	100%	52.4	3.9	60	16.3	B	646
Mojave Dr off-ramp to Mojave Dr on-ramp	3,710	3,640	98%	20.6	1.6	60	20.2	C	672	3,520	3,520	100%	20.4	1.4	60	19.9	C	667
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	4,330	4,255	98%	15.2	1.5	58	18.2	C	688	4,100	4,100	100%	15.0	1.3	59	17.6	B	682
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,945	3,871	98%	27.1	2.0	60	21.5	C	715	3,705	3,705	100%	27.0	1.8	61	20.8	C	709
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	4,315	4,213	98%	23.3	1.6	60	17.5	B	738	4,240	4,240	100%	23.5	1.7	60	18.0	C	732
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	3,825	3,719	97%	12.8	0.8	61	20.4	C	751	3,520	3,520	100%	12.7	0.8	61	19.8	C	745
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,985	3,857	97%	8.5	0.6	60	21.4	C	759	3,700	3,700	100%	8.5	0.6	60	20.8	C	753
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,230	4,096	97%	168.8	12.8	60	22.8	C	928	4,000	4,000	100%	168.7	12.6	60	22.4	C	922

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-17. Year 2020 Build Alternative with Tolls and High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	58	10.9	B	59	18.6	B
West Palmdale Blvd loop	Merging	63	7.6	A	61	12.6	B
West Palmdale Blvd direct	Merging	61	8.9	A	61	12.1	B
SR 138 WB	Merging	61	11	B	61	18	B
10th St W. loop	Merging	59	16.7	B	56	24.2	C
10th St W. direct	Merging	60	16.3	B	59	22.4	C
West Avenue N loop	Merging	60	15.4	B	58	22.0	C
West Avenue N direct	Merging	61	12.4	B	61	16.9	B
East Avenue S	Diverging	62	11.3	B	56	29.7	D
West Palmdale Blvd	Diverging	60	11.0	B	59	17.3	B
SR 138 EB	Diverging	61	11.5	B	60	18.6	B
10th St W.	Diverging	60	10.4	B	60	14.9	B
West Avenue N	Diverging	57	17.8	B	42	34.1	D
SOUTHBOUND							
West Avenue N loop	Merging	61	16.9	B	61	16.7	B
West Avenue N direct	Merging	62	13.3	B	62	12.8	B
10th St W.	Merging	61	12.4	B	62	13.4	B
SR 138 WB	Merging	60	10.8	B	60	10.7	B
West Palmdale Blvd loop	Merging	59	16.7	B	60	15.0	B
West Palmdale Blvd direct	Merging	58	19.0	B	61	16.4	B
East Avenue S	Merging	23	48.6	**E**	60	14.6	B
West Avenue N	Diverging	59	28.7	D	59	28.3	D
10th St W.	Diverging	50	28.5	D	58	21.2	C
SR 138 EB	Diverging	53	22.3	C	59	22.8	C
West Palmdale Blvd	Diverging	61	13.7	B	61	14.4	B
East Avenue S	Diverging	44	27.2	C	58	19.2	B

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F

Table 4-17. Year 2020 Build Alternative with Tolls and High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	60	14	B	59	16	B
20th St East	Merging	63	8	A	63	9	A
50th St East	Merging	60	14	B	60	15	B
90th St East	Merging	61	11	B	62	11	B
140th St East	Merging	61	10	B	62	9	A
170th St East	Merging	61	9	A	62	8	A
210th St East	Merging	61	9	A	62	8	A
240th St East	Merging	61	10	B	62	8	A
Oasis Rd	Merging	61	10	A	62	8	A
Sheep Creek Rd loop	Merging	63	8	A	63	8	A
Sheep Creek Rd direct	Merging	62	8	A	62	8	A
Caughlin Rd loop	Merging	63	7	A	62	7	A
Caughlin Rd direct	Merging	62	6	A	62	6	A
Koala Rd loop	Merging	62	8	A	62	7	A
Koala Rd direct	Merging	62	8	A	62	7	A
Route 395 loop	Merging	58	14	B	60	12	B
Route 395 direct	Merging	61	13	B	61	12	B
Phantom St West loop	Merging	62	9	A	61	9	A
Phantom St West direct	Merging	62	10	A	61	11	B
Phantom St East loop	Merging	62	10	A	61	14	B
Phantom St East direct	Merging	62	10	B	61	14	B
Choco Rd	Merging	64	5	A	63	5	A
Dale Evans Pkwy loop	Merging	63	4	A	63	4	A
Dale Evans Pkwy direct	Merging	64	4	A	63	5	A
10th St East	Diverging	63	8	A	62	11	B
50th St East	Diverging	61	14	B	61	14	B
90th St East	Diverging	60	16	B	60	18	B
140th St East	Diverging	59	14	B	59	15	B
170th St East	Diverging	61	12	B	62	11	B
210th St East	Diverging	62	11	B	62	9	A
240th St East	Diverging	61	11	B	62	9	A
Oasis Rd	Diverging	61	12	B	62	10	A
Sheep Creek Rd	Diverging	60	12	B	61	10	A
Caughlin Rd	Diverging	61	10	A	62	9	A
Koala	Diverging	62	8	A	62	7	A
Route 395	Diverging	62	9	A	62	9	A
Phantom St West	Diverging	58	17	B	60	15	B
Phantom St East	Diverging	61	13	B	61	13	B
National Trails Hwy	Diverging	61	11	B	61	15	B
Dale Evans Pkwy	Diverging	63	5	A	63	6	A
10th St East to 20th St East	Weaving	61	11	B	60	14	B
National Trails Hwy to I-15 NB/SB	Weaving	63	7	A	62	9	A
I-15 NB/SB to Choco Rd	Weaving	63	4	A	63	5	A

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-17. Year 2020 Build Alternative with Tolls and High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy loop	Merging	63	4	A	62	8	A
Dale Evans Pkwy direct	Merging	63	5	A	61	9	A
I-15 NB	Merging	62	5	A	61	8	A
National Trails Hwy	Merging	62	9	A	60	14	B
Phantom St East loop	Merging	62	9	A	60	16	B
Phantom St East direct	Merging	62	9	A	60	16	B
Phantom St West	Merging	62	6	A	61	15	B
Route 395	Merging	63	3	A	61	10	A
Koala Rd loop	Merging	63	2	A	62	9	A
Koala Rd direct	Merging	63	2	A	62	8	A
Caughlin Rd loop	Merging	63	2	A	62	9	A
Caughlin Rd direct	Merging	63	3	A	60	9	A
Sheep Creek Rd loop	Merging	63	3	A	61	9	A
Sheep Creek Rd direct	Merging	63	3	A	60	10	B
Oasis Rd loop	Merging	63	3	A	61	11	B
Oasis Rd direct	Merging	63	3	A	61	10	A
240th St E	Merging	63	3	A	61	8	A
210th St E	Merging	63	4	A	62	11	B
170th St E	Merging	63	4	A	61	9	A
140th St E	Merging	62	6	A	58	13	B
90th St E	Merging	60	8	A	57	15	B
50th St E	Merging	60	9	A	60	13	B
10th St E	Merging	62	11	B	58	19	B
Dale Evans Pkwy	Diverging	63	5	A	62	10	A
Choco Rd	Diverging	63	6	A	62	11	B
Phantom St East	Diverging	61	11	B	61	16	B
Phantom St West	Diverging	62	9	A	61	16	B
Route 395	Diverging	60	10	A	53	23	C
Koala Rd	Diverging	62	4	A	60	13	B
Caughlin Rd	Diverging	63	3	A	62	9	A
Sheep Creek Rd	Diverging	63	3	A	61	10	B
Oasis Rd	Diverging	63	3	A	61	11	B
240th St E	Diverging	62	4	A	60	12	B
210th St E	Diverging	63	3	A	61	10	A
170th St E	Diverging	63	4	A	61	13	B
140th St E	Diverging	63	4	A	61	11	B
90th St E	Diverging	63	7	A	61	14	B
50th St E	Diverging	61	10	A	59	17	B
20th St E	Diverging	61	8	A	61	12	B
SR 14 SB	Diverging	62	13	B	58	22	C
Choco to I-15 NB/SB	Weaving	63	3	A	63	5	A
I-15 SB to National Trails Hwy	Weaving	63	7	A	62	11	B
20th St East to 10th St E	Weaving	60	9	A	57	13	B

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-17. Year 2020 Build Alternative with Tolls and High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	60	16	B	55	31	D
Mojave Dr	Merging	60	16	B	54	31	D
D St	Merging	61	12	B	58	26	C
E St	Merging	62	12	B	59	25	C
HDC WB	Merging	62	6	A	60	14	B
Stoddard Wells Rd (Quarry Rd)	Merging	62	10	B	59	25	C
Dale Evans Pkwy	Merging	62	9	A	58	24	C
Palmdale Rd	Diverging	60	17	B	49	35	**E**
D St	Diverging	61	12	B	60	20	C
E St	Diverging	61	12	B	58	26	C
Stoddard Wells Rd	Diverging	61	13	B	58	26	C
Dale Evans Pkwy	Diverging	61	10	B	57	26	C
Palmdale Rd direct to Roy Rogers Dr	Weaving	61	13	B	56	22	C
Roy Rogers Dr to Mojave Dr	Weaving	61	12	B	56	22	C
Stoddard Wells Rd to HDC EB/WB	Weaving	62	7	A	60	17	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	62	8	A	57	19	B
SOUTHBOUND							
Dale Evans Pkwy	Merging	60	21	C	59	19	B
HDC WB	Merging	60	13	B	61	11	B
Stoddard Wells Rd direct	Merging	58	20	C	59	19	B
E St	Merging	60	20	B	60	19	B
Palmdale Rd loop	Merging	60	21	C	60	21	C
Palmdale Rd direct	Merging	59	23	C	58	23	C
Dale Evans Pkwy	Diverging	60	21	C	61	18	B
Quarry Rd	Diverging	59	20	C	60	18	B
E St	Diverging	59	20	C	60	19	B
D St	Diverging	60	20	B	60	19	B
Quarry Rd to HDC EB/WB	Weaving	60	14	B	60	14	B
HDC EB to Stoddard Wells Rd	Weaving	59	14	B	60	13	B
D St to Mojave Dr	Weaving	60	15	B	59	16	B
Mojave Dr to Roy Rogers Dr	Weaving	58	18	B	58	17	B
Roy Rogers Dr to Palmdale Rd	Weaving	60	16	B	59	18	B

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area
Level of service E
Level of service F

Level of service D or better
Level of service E
Level of service F

Figure 4-21: Year 2040 No-build Alternative Freeway Mainline Level of Service

Table 4-18. Year 2040 No-build Alternative Freeway Mainline Analysis Results *(1 of 2)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
SR 14 NB south end of the network to East Avenue S off-ramp	2,575	2,575	100%	169.3	15.5	59	10.9	A	169	2,575	2,575	100%	169.3	15.5	59	10.9	A	169	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	2,330	2,330	100%	27.4	1.7	61	9.8	A	197	2,330	2,330	100%	27.4	1.7	61	9.8	A	197	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to West Palmdale Blvd off-ramp	3,365	3,365	100%	58.5	4.0	60	14.1	B	255	3,365	3,365	100%	58.5	4.0	60	14.1	B	255	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to West Palmdale Blvd loop on-ramp	2,830	2,791	99%	21.4	0.7	63	11.1	B	277	2,830	2,791	99%	21.4	0.7	63	11.1	B	277	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,105	3,015	97%	16.6	0.8	62	12.2	B	293	3,105	3,015	97%	16.6	0.8	62	12.2	B	293	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to West Avenue P off-ramp	4,360	4,212	97%	57.2	5.3	59	18.0	B	350	4,360	4,212	97%	57.2	5.3	59	18.0	B	350	—	—	—	—	—	—	—	—	—
West Avenue P off-ramp to 10th St W. on-ramp	3,675	3,542	96%	50.0	2.4	62	14.4	B	400	3,675	3,542	96%	50.0	2.4	62	14.4	B	400	—	—	—	—	—	—	—	—	—
10th St W. on-ramp to West Avenue N off-ramp	4,710	4,554	97%	83.9	5.8	60	18.9	C	484	4,710	4,554	97%	83.9	5.8	60	18.9	C	484	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,435	4,342	98%	18.1	1.0	61	17.7	B	502	4,435	4,342	98%	18.1	1.0	61	17.7	B	502	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Ave. N direct on-ramp	4,765	4,625	97%	10.0	1.0	58	19.9	C	512	4,765	4,625	97%	10.0	1.0	58	19.9	C	512	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to SR 14 north end of the network	4,950	4,837	98%	31.7	2.2	60	20.1	C	544	4,950	4,837	98%	31.7	2.2	60	20.1	C	544	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
SR 14 SB north end of the network to West Avenue N off-ramp	5,890	4,888	83%	170.7	135.2	13	93.5	F	171	4,525	3,558	79%	217.7	182.0	10	115.7	F	218	1,365	1,329	97%	45.1	10.3	51	26.9	D	45
West Avenue N off-ramp to West Avenue N loop on-ramp	5,560	4,529	81%	103.1	85.2	11	103.6	F	274	4,281	3,207	75%	136.5	118.5	8	129.5	F	354	1,279	1,321	103%	21.9	4.4	51	25.7	C	67
West Avenue N loop on-ramp to West Avenue N direct on-ramp	5,630	4,521	80%	63.2	52.5	11	105.7	F	337	4,335	3,199	74%	84.6	73.8	8	133.4	F	439	1,295	1,322	102%	11.6	1.1	58	22.6	C	79
West Avenue N direct on-ramp to 10th St W. off-ramp	5,950	4,675	79%	504.5	422.5	13	109.1	F	842	4,565	3,419	75%	611.3	529.0	11	126.4	F	1,050	1,385	1,256	91%	224.5	143.3	31	57.1	F	303
10th St W. off-ramp to West Rancho Vista Blvd on-ramp	5,210	4,016	77%	52.6	2.8	61	16.4	B	894	4,038	2,859	71%	52.5	2.6	61	15.6	B	1,103	1,172	1,157	99%	53.0	3.1	61	19.1	C	356
West Rancho Vista Blvd on-ramp to West Palmdale Blvd off-ramp	6,445	5,211	81%	57.3	5.4	58	22.4	C	951	5,020	4,127	82%	57.7	5.8	58	23.9	C	1,160	1,425	1,084	76%	55.8	3.8	60	18.0	C	412
West Palmdale Blvd off-ramp to West Palmdale Blvd loop on-ramp	5,170	4,233	82%	17.1	1.0	61	17.4	B	968	3,981	3,180	80%	16.9	0.9	61	17.3	B	1,177	1,189	1,052	88%	17.4	1.3	60	17.7	B	429
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	6,070	5,116	84%	14.4	1.6	57	22.3	C	983	4,674	4,064	87%	14.5	1.8	57	23.8	C	1,192	1,396	1,052	75%	14.0	1.1	59	17.8	B	443
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	6,850	5,913	86%	73.2	10.4	55	26.7	D	1,056	5,105	4,797	94%	74.2	11.4	55	29.3	D	1,266	1,745	1,115	64%	69.0	6.2	59	19.0	C	512
East Avenue S off-ramp to East Avenue S on-ramp	5,910	5,092	86%	23.4	2.9	57	22.4	C	1,079	4,551	3,961	87%	23.6	3.1	56	23.4	C	1,289	1,359	1,131	83%	22.7	2.1	59	19.3	C	535
East Avenue S on-ramp to SR 14 SB south end of the network	7,705	6,703	87%	301.3	113.3	43	40.2	E	1,381	5,755	5,359	93%	323.2	135.3	41	45.6	F	1,613	1,950	1,344	69%	216.7	28.5	56	23.9	C	752

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	8,200	5,906	72%	612.9	457.5	18	85.7	F	613	6,400	5,906	92%	793.0	637.1	15	104.1	F	793	1,800	1,643	91%	180.6	26.2	55	30.4	D	181
East Avenue S off-ramp to East Avenue S on-ramp	6,205	4,335	70%	89.7	63.1	19	58.1	F	703	4,840	4,336	90%	118.7	91.6	14	69.7	F	9 12	1,365	1,386	102%	28.2	2.3	59	23.3	C	209
East Avenue S on-ramp to West Palmdale Blvd off-ramp	7,030	4,737	67%	233.9	178.3	17	75.4	F	937	5,335	4,737	89%	294.6	238.8	14	93.4	F	1,206	1,695	1,182	70%	64.3	9.7	56	21.4	C	273
West Palmdale Blvd off-ramp to HDC off-ramp	5,165	3,430	66%	21.9	1.1	61	14.0	B	958	4,029	3,430	85%	21.8	1.0	62	12.9	B	1,228	1,136	1,052	93%	22.1	1.4	61	17.4	B	295
HDC off-ramp to West Palmdale Blvd loop on-ramp	5,425	3,616	67%	16.8	1.0	61	14.8	B	975	4,232	3,616	85%	16.6	0.8	62	13.9	B	1,245	1,194	1,053	88%	17.1	1.3	60	17.6	B	312
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	6,710	4,857	72%	77.3	25.0	54	27.9	D	1,052	5,145	4,857	94%	82.4	30.1	41	31.7	D	1,327	1,565	975	62%	56.6	4.6	60	16.4	B	369
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	5,070	3,735	74%	50.3	2.7	61	15.2	B	1,103	3,517	3,735	106%	49.8	2.2	62	15.1	B	1,377	1,553	925	60%	51.8	4.1	60	15.5	B	421
10th St West off-ramp to HDC on-ramp	5,920	4,538	77%	84.2	6.0	60	18.9	C	1,187	4,380	4,538	104%	83.8	5.5	60	19.7	C	1,461	1,540	969	63%	85.7	7.4	59	16.4	B	506
HDC on-ramp to 10th St West on-ramp	5,480	4,194	77%	18.2	1.1	61	17.2	B	1,205	4,055	4,194	103%	18.0	0.9	61	17.4	B	1,479	1,425	979	69%	18.8	1.8	59	16.7	B	525
10th St W loop on-ramp to 10th St W direct on-ramp	5,815	4,432	76%	9.8	0.9	59	18.8	C	1,215	4,303	4,432	103%	9.8	0.9	59	19.4	C	1,488	1,512	979	65%	9.9	1.0	59	16.7	B	535
10th St W direct on-ramp to West Avenue N off-ramp	6,090	4,728	78%	32.1	2.5	60	19.8	C	1,247	4,525	4,728	104%	31.7	2.2	60	20.3	C	1,520	1,565	1,048	67%	33.3	3.8	58	18.2	C	568
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	5,800	3,934	68%	48.9	14.1	46	21.7	C	49	5,800	3,934	68%	48.9	14.1	46	21.7	C	49	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	5,300	3,639	69%	29.6	12.2	38	24.0	C	79	5,300	3,639	69%	29.6	12.2	38	24.0	C	79	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	5,445	3,665	67%	20.3	9.8	33	27.5	D	99	5,445	3,665	67%	20.3	9.8	33	27.5	D	99	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St W off-ramp	5,810	3,691	64%	216.9	133.0	24	38.4	E	316	5,810	3,691	64%	216.9	133.0	24	38.4	E	316	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	4,270	2,662	62%	74.9	25.1	43	15.5	B	391	4,270	2,662	62%	74.9	25.1	43	15.5	B	391	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St W on-ramp	5,380	3,557	66%	195.7	142.1	19	50.4	F	586	5,380	3,557	66%	195.7	142.1	19	50.4	F	586	—	—	—	—	—	—	—	—	—
10th St W on-ramp to Palmdale Blvd off-ramp	3,640	2,511	69%	16.9	0.9	61	10.2	A	603	3,640	2,511	69%	16.9	0.9	61	10.2	A	603	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	3,960	2,802	71%	13.5	0.8	61	11.5	B	617	3,960	2,802	71%	13.5	0.8	61	11.5	B	617	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	4,205	3,035	72%	66.5	3.8	61	12.4	B	683	4,205	3,035	72%	66.5	3.8	61	12.4	B	683	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,010	2,456	82%	21.4	0.8	62	9.9	A	705	3,010	2,456	82%	21.4	0.8	62	9.9	A	705	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	3,960	3,203	81%	207.3	19.5	59	13.5	B	912	3,960	3,203	81%	207.3	19.5	59	13.5	B	912	—	—	—	—	—	—	—	—	—

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-18. Year 2040 No-build Alternative Freeway Mainline Analysis Results *(2 of 2)*

FREEWAY SEGMENT	AM PEAK - OVERALL									PM PEAK - OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off-ramp	3,545	3,551	100%	150.3	9.0	61	19.3	C	150	6,055	5,607	93%	218.1	76.8	42	44.2	**E**	218
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	3,080	3,080	100%	22.4	1.4	61	16.9	B	173	5,425	5,044	93%	27.8	6.7	49	34.1	D	246
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,450	3,444	100%	11.5	1.1	59	19.4	C	184	5,865	5,429	93%	15.8	5.4	43	42.1	**E**	262
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	3,910	3,904	99%	22.4	1.7	60	16.3	B	207	6,405	5,989	94%	27.3	6.5	49	30.4	D	289
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,340	3,340	97%	24.4	1.7	61	18.4	C	231	5,790	5,421	94%	27.7	4.9	54	33.7	D	317
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	3,750	3,747	97%	17.0	1.2	60	15.5	B	248	6,385	6,031	94%	18.9	3.1	54	27.9	D	336
Mojave Dr off-ramp to Mojave Dr on-ramp	3,185	3,169	96%	20.9	1.1	62	17.1	B	269	5,615	5,333	95%	23.2	3.5	55	32.1	D	359
Mojave Dr on-ramp to D St off-ramp	3,655	3,603	97%	50.8	3.6	60	17.4	B	320	6,035	5,713	95%	56.9	9.7	53	31.7	D	416
D St off-ramp to D St on-ramp	2,500	2,455	98%	23.1	1.0	62	13.1	B	343	4,970	4,740	95%	24.1	2.0	60	26.5	D	440
D St on-ramp to E St off-ramp	2,810	2,730	97%	11.2	0.7	61	14.9	B	354	5,365	5,087	95%	12.1	1.6	56	30.0	D	452
E St off-ramp to E St on-ramp	2,765	2,685	98%	9.8	0.5	62	14.5	B	364	5,305	5,043	95%	10.6	1.2	58	29.2	D	462
E St on-ramp to Stoddard Wells Rd off-ramp	2,820	2,738	97%	36.1	2.0	61	14.9	B	400	5,345	5,081	95%	38.4	4.2	57	29.5	D	501
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	2,365	2,307	98%	10.9	0.4	62	12.3	B	411	4,830	4,579	95%	11.5	1.1	59	25.8	C	512
Stoddard Wells Rd on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,685	2,615	97%	165.4	8.7	62	14.2	B	576	5,630	5,345	95%	178.5	21.8	57	31.3	D	691
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	2,325	2,246	97%	22.6	1.1	62	12.1	B	599	5,410	5,106	94%	24.0	2.4	59	29.1	D	715
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	2,485	2,387	96%	217.2	12.0	61	13.0	B	816	5,685	5,311	93%	231.5	26.2	57	30.8	D	946
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	2,070	1,946	94%	31.8	1.6	62	10.5	A	848	5,280	4,868	92%	33.6	3.3	59	27.7	D	980
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,535	2,392	94%	63.9	3.2	61	13.0	B	912	5,730	5,267	92%	70.2	9.4	56	31.4	D	1,050
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	4,550	4,551	100%	60.3	5.1	59	25.6	C	60	3,510	3,509	100%	58.6	3.4	61	19.1	C	59
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	4,120	4,133	100%	37.4	3.0	60	23.0	C	98	3,025	3,020	100%	36.3	2.1	62	16.3	B	95
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	4,510	4,525	100%	220.8	21.1	59	25.8	C	318	3,460	3,460	100%	215.2	15.8	60	19.2	C	310
Quarry Rd off-ramp to Quarry Rd on-ramp	4,285	4,284	100%	25.4	2.3	59	24.1	C	344	3,210	3,194	100%	24.8	1.7	61	17.5	B	335
Quarry Rd on-ramp to Stoddard Wells Rd off-ramp	4,490	4,481	100%	178.5	20.3	58	26.0	C	522	3,630	3,609	99%	172.7	14.8	60	20.2	C	508
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,745	3,723	99%	28.8	2.6	59	20.9	C	551	3,005	2,977	99%	28.0	1.8	61	16.3	B	536
Stoddard Wells Rd direct on-ramp to E St off-ramp	4,255	4,182	98%	23.9	2.9	57	24.4	C	575	3,500	3,445	98%	23.2	2.3	59	19.5	C	559
E St off-ramp to E St on-ramp	4,220	4,149	98%	9.1	1.0	58	23.7	C	584	3,450	3,412	99%	8.8	0.7	60	19.0	C	568
E St on-ramp to D St off-ramp	4,280	4,198	98%	11.6	1.1	59	23.8	C	596	3,500	3,454	99%	11.3	0.8	60	19.1	C	579
D St off-ramp to D St on-ramp	3,920	3,834	98%	22.1	1.7	60	21.3	C	618	3,200	3,144	98%	21.7	1.3	61	17.1	B	601
D St on-ramp to Mojave Dr off-ramp	4,810	4,730	98%	53.4	5.1	59	19.7	C	671	4,310	4,285	99%	52.9	4.5	59	17.7	B	653
Mojave Dr off-ramp to Mojave Dr on-ramp	4,455	4,362	98%	20.9	1.9	59	24.6	C	692	3,840	3,816	99%	20.6	1.6	60	21.2	C	674
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	5,210	5,124	98%	15.8	2.1	56	22.8	C	708	4,535	4,497	99%	15.2	1.5	58	19.3	C	689
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,825	4,717	98%	27.9	2.8	58	26.9	D	736	4,070	4,036	99%	27.1	2.0	60	22.4	C	716
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	5,275	5,158	98%	23.7	1.9	59	21.7	C	759	4,695	4,652	99%	23.7	2.0	59	19.6	C	740
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,435	4,346	98%	12.9	0.9	60	24.1	C	772	3,735	3,703	99%	12.7	0.7	61	20.2	C	753
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,640	4,514	97%	8.7	0.8	59	25.5	C	781	3,955	3,864	98%	8.5	0.7	60	21.5	C	761
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,980	4,819	97%	171.9	16.1	59	27.3	D	953	4,320	4,208	97%	169.0	13.1	60	23.5	C	930

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-19. Year 2040 No-build Alternative Weaving and Ramp Merging/Diverging Analysis Results

Summary of State Route 14

LOCATION	ANALYSIS TYPE	AM PEAK SPEED (mph)	AM PEAK DENSITY (veh/ln/mi)	AM PEAK LOS (HCM 2000)	PM PEAK SPEED (mph)	PM PEAK DENSITY (veh/ln/mi)	PM PEAK LOS (HCM 2000)
NORTHBOUND							
East Ave. S	Merging	54	20.9	C	11	100.5	**E**
West Palmdale Blvd loop	Merging	60	17.0	B	61	13.5	B
West Palmdale Blvd direct	Merging	51	31.4	D	44	26.7	C
10th St. W.	Merging	52	29	D	58	19	B
West Avenue N loop	Merging	56	26.5	C	58	18.9	B
West Avenue N direct	Merging	58	26.8	C	59	20.0	C
East Avenue S	Diverging	62	13.8	B	25	60.4	**E**
West Palmdale Blvd	Diverging	59	20.8	C	20	58.5	**E**
West Rancho Vista Blvd	Diverging	55	26.5	C	40	31.7	D
West Avenue N	Diverging	59	25.3	C	60	19.6	B
SOUTHBOUND							
West Avenue N loop	Merging	11	98.7	**E**	19	32.1	D
West Avenue N direct	Merging	11	104.9	**E**	16	38.9	**E**
West Rancho Vista Blvd	Merging	57	22.7	C	9	72.8	**E**
West Palmdale Blvd loop	Merging	57	22.3	C	61	9.1	A
West Palmdale Blvd direct	Merging	54	26.9	C	61	11.0	B
East Avenue S	Merging	38	42.2	**E**	57	15.2	B
West Avenue N	Diverging	12	93.8	**E**	39	18.7	B
10th St. W.	Diverging	23	49.0	**E**	11	59.0	**E**
West Palmdale Blvd	Diverging	57	24.3	C	16	57.7	**E**
East Avenue S	Diverging	52	28.3	D	58	13.9	B

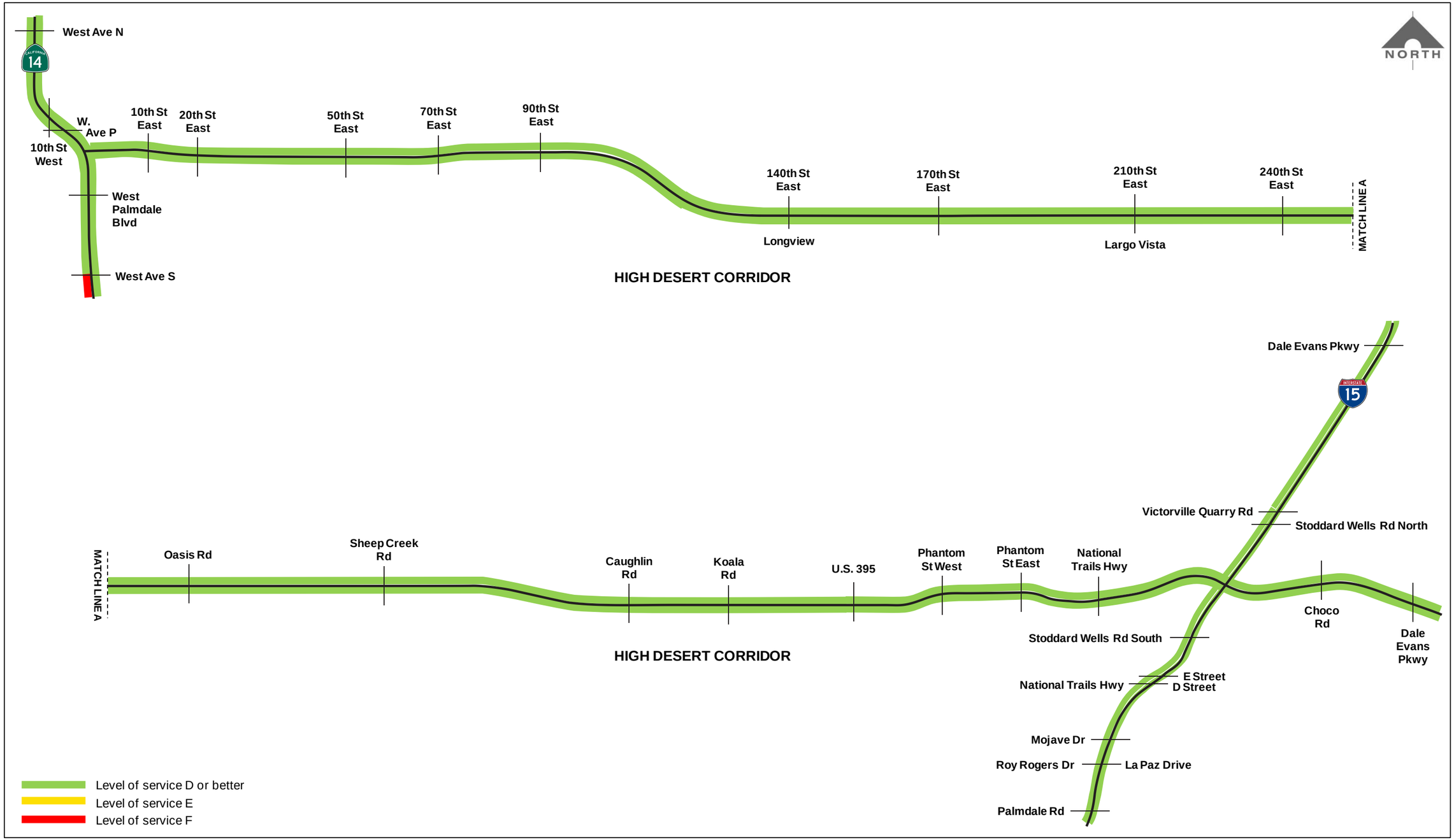
Summary of Interstate 15

LOCATION	ANALYSIS TYPE	AM PEAK SPEED (mph)	AM PEAK DENSITY (veh/ln/mi)	AM PEAK LOS (HCM 2000)	PM PEAK SPEED (mph)	PM PEAK DENSITY (veh/ln/mi)	PM PEAK LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	59	21	C	38	46	**E**
Mojave Dr	Merging	58	22	C	46	40	**E**
D St	Merging	60	16	B	55	30	D
E St	Merging	61	16	B	58	29	D
Stoddard Wells Rd S	Merging	61	14	B	49	35	**E**
Stoddard Wells Rd (Quarry Rd)	Merging	62	12	B	56	31	D
Dale Evans Pkwy	Merging	60	13	B	54	31	D
Palmdale Rd	Diverging	59	22	C	42	42	**E**
D St	Diverging	60	16	B	59	23	C
E St	Diverging	60	16	B	55	30	D
Stoddard Wells Rd S	Diverging	61	16	B	57	30	D
Stoddard Wells Rd N	Diverging	60	15	B	57	30	D
Dale Evans Pkwy	Diverging	60	13	B	55	32	D
Palmdale Rd direct to Roy Rogers Dr	Weaving	59	17	B	47	29	D
Roy Rogers Dr to Mojave Dr	Weaving	60	16	B	52	26	C
SOUTHBOUND							
Dale Evans Pkwy	Merging	56	27	C	59	21	C
Quarry Rd	Merging	58	25	C	58	21	C
Stoddard Wells Rd direct	Merging	56	24	C	57	20	C
E St	Merging	58	24	C	60	20	B
Palmdale Rd loop	Merging	59	25	C	59	22	C
Palmdale Rd direct	Merging	56	28	D	57	25	C
Dale Evans Pkwy	Diverging	58	27	C	60	21	C
Quarry Rd	Diverging	58	26	C	59	20	C
Stoddard Wells Rd S	Diverging	51	30	D	56	23	C
E St	Diverging	57	24	C	58	21	C
D St	Diverging	58	24	C	60	20	B
D St to Mojave Dr	Weaving	59	18	B	59	17	B
Mojave Dr to Roy Rogers Dr	Weaving	55	22	C	57	19	B
Roy Rogers Dr to Palmdale Rd	Weaving	59	20	C	58	20	B

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

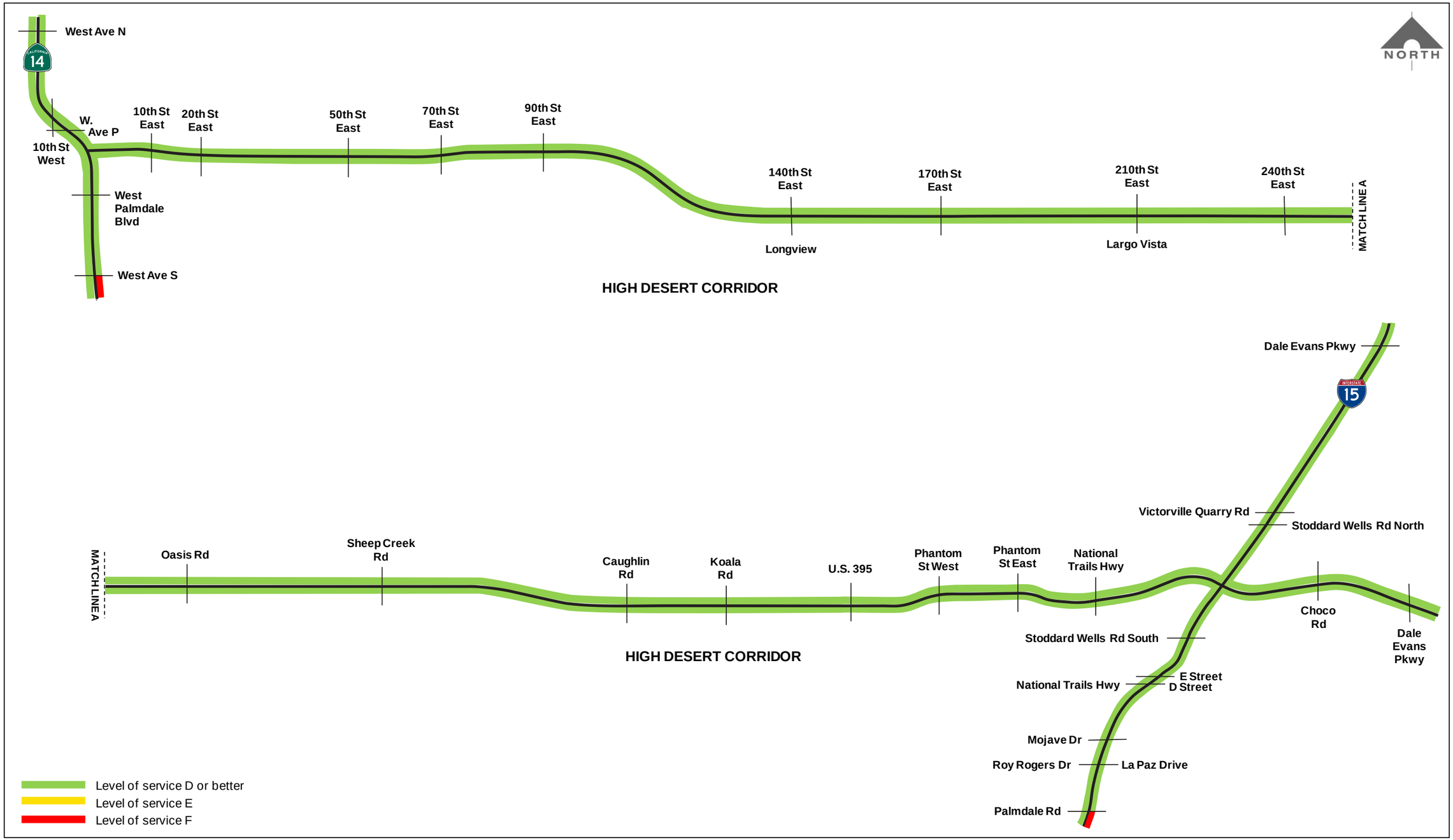
Level of service E

Level of service F



AM PEAK HOUR

Figure 4-22: Year 2040 Build Alternative Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 4-22: Year 2040 Build Alternative Freeway Mainline Level of Service *(2 of 2)*

Table 4-20. Year 2040 Build Alternative Freeway Mainline Analysis Results *(1 of 4)*

FREEWAY SEGMENT	AM PEAK – OVERALL									AM PEAK – MIXED-FLOW LANES									AM PEAK – HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR-14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Ave S off-ramp	2,825	2,823	100%	183.1	29.8	56	13.8	B	183	2,825	2,823	100%	183.1	29.8	56	13.8	B	183	—	—	—	—	—	—	—	—	—
East Ave S off-ramp to East Ave S on-ramp	2,625	2,625	100%	27.9	2.3	60	11.2	B	211	2,625	2,625	100%	27.9	2.3	60	11.2	B	211	—	—	—	—	—	—	—	—	—
East Ave S on-ramp to West Palmdale Blvd off-ramp	3,340	3,340	100%	58.2	3.9	61	11.1	B	269	3,340	3,340	100%	58.2	3.9	61	11.1	B	269	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,920	2,910	100%	16.7	0.8	61	11.9	B	286	2,920	2,910	100%	16.7	0.8	61	11.9	B	286	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,535	1,513	99%	5.0	0.2	63	8.0	A	291	1,535	1,513	99%	5.0	0.2	63	8.0	A	291	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	1,890	1,870	99%	16.2	0.4	63	7.4	A	307	1,890	1,870	99%	16.2	0.4	63	7.4	A	307	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	2,415	2,342	97%	32.9	1.4	62	9.0	A	340	2,415	2,342	97%	32.9	1.4	62	9.0	A	340	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	2,028	1,957	96%	22.9	1.2	62	10.6	A	363	2,028	1,957	96%	22.9	1.2	62	10.6	A	363	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	3,885	3,641	94%	47.8	2.3	62	11.8	B	411	3,885	3,641	94%	47.8	2.3	62	11.8	B	411	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	4,607	4,349	94%	16.8	1.0	61	13.2	B	427	4,607	4,349	94%	16.8	1.0	61	13.2	B	427	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Ave N off-ramp	4,800	4,532	94%	66.6	4.3	61	14.5	B	494	4,800	4,532	94%	66.6	4.3	61	14.5	B	494	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	4,490	4,272	95%	17.8	0.8	62	17.2	B	512	4,490	4,272	95%	17.8	0.8	62	17.2	B	512	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	4,830	4,613	96%	9.4	0.4	62	14.9	B	521	4,830	4,613	96%	9.4	0.4	62	14.9	B	521	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to West Ave M off-ramp	5,000	4,783	96%	30.6	1.2	62	14.9	B	552	5,000	4,783	96%	30.6	1.2	62	14.9	B	552	—	—	—	—	—	—	—	—	—
SR-14 SB MAINLINE																											
West Ave M on-ramp to West Ave N off-ramp	6,860	6,859	100%	38.4	3.7	58	29.3	D	38	5,140	5,208	101%	38.5	3.8	58	29.7	D	38	1,720	1,651	96%	38.3	3.4	59	28.1	D	38
West Ave N off-ramp to West Ave N loop on-ramp	6,540	6,499	99%	19.0	1.7	59	27.4	D	57	4,820	4,850	101%	18.9	1.6	60	27.1	D	57	1,720	1,650	96%	19.3	1.9	58	28.3	D	58
West Ave N loop on-ramp to West Ave N direct on-ramp	6,605	6,565	99%	11.4	0.9	60	22.0	C	69	4,885	4,915	101%	11.3	0.8	60	20.4	C	69	1,720	1,650	96%	11.6	1.1	58	28.4	D	69
West Ave N direct on-ramp to 10th St W off-ramp	6,975	6,934	99%	89.1	13.1	56	24.4	C	158	5,268	5,486	104%	90.3	14.4	55	24.4	C	159	1,708	1,448	85%	84.5	8.4	59	24.7	C	154
10th St W off-ramp to HDC off-ramp	6,200	6,130	99%	18.6	2.7	55	27.9	D	177	4,505	4,999	111%	19.0	3.1	54	31.0	D	178	1,695	1,131	67%	16.9	1.0	61	18.7	C	171
HDC off-ramp to 10th St W on-ramp	2,792	2,718	97%	22.3	1.3	61	14.9	B	199	1,097	1,587	145%	21.9	0.9	62	12.8	B	200	1,695	1,131	67%	22.9	1.8	59	19.0	C	194
10th St W on-ramp to Palmdale Blvd off-ramp	4,250	4,226	99%	34.0	2.3	60	17.5	B	233	2,295	3,018	132%	33.5	1.7	61	16.4	B	233	1,955	1,208	62%	35.4	3.6	58	20.8	C	229
West Palmdale Blvd off-ramp to HDC on-ramp	3,692	3,695	100%	32.8	1.6	61	15.1	B	266	1,737	2,367	136%	32.0	0.9	63	12.5	B	265	1,955	1,328	68%	34.3	3.0	59	22.6	C	263
HDC on-ramp to West Palmdale Blvd loop on-ramp	5,105	4,965	97%	24.5	2.1	59	16.3	B	290	3,400	3,977	117%	24.3	2.0	59	16.3	B	290	1,705	988	58%	24.9	2.3	58	17.0	B	288
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	5,770	5,681	98%	14.6	1.8	56	22.4	C	305	4,055	4,130	102%	14.3	1.5	58	20.4	C	304	1,715	1,551	90%	15.6	2.8	53	29.3	D	304
West Palmdale Blvd direct on-ramp to East Ave S off-ramp	6,450	6,311	98%	71.6	8.9	57	27.2	D	376	4,609	4,671	101%	71.5	8.8	57	26.6	D	375	1,841	1,640	89%	71.9	9.0	56	29.1	D	376
East Ave S off-ramp to East Ave S on-ramp	6,065	5,911	97%	40.5	20.1	33	45.0	**F**	417	4,098	4,253	104%	47.4	27.1	28	50.5	**F**	423	1,967	1,658	84%	22.9	2.3	58	28.6	D	399
East Ave S on-ramp to Angeles Forest Hwy off-ramp	7,655	7,271	95%	325.7	137.0	39	48.5	**F**	743	5,688	5,409	95%	347.2	158.4	38	50.7	**F**	770	1,967	1,861	95%	262.9	74.5	46	41.7	**E**	661

FREEWAY SEGMENT	PM PEAK – OVERALL									PM PEAK – MIXED-FLOW LANES									PM PEAK – HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR-14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	9,490	7,038	74%	397.7	243.0	29	66.6	**F**	398	7,080	5,163	73%	458.1	303.5	26	73.9	**F**	458	2,410	1,875	78%	240.2	85.3	46	44.5	**E**	240
East Avenue S off-ramp to East Avenue S on-ramp	7,900	5,784	73%	29.3	3.4	57	25.3	C	427	5,490	4,093	75%	29.5	3.7	57	24.1	C	488	2,410	1,692	70%	28.6	2.7	59	28.9	D	269
East Avenue S on-ramp to West Palmdale Blvd off-ramp	8,440	6,328	75%	60.6	5.9	58	21.7	C	488	6,270	5,128	82%	61.0	6.3	58	22.2	C	549	2,170	1,200	55%	58.3	3.8	61	19.8	C	327
West Palmdale Blvd off-ramp to HDC off-ramp	7,005	5,252	75%	17.4	1.4	59	22.3	C	505	4,915	4,324	88%	17.4	1.4	59	24.6	C	566	2,090	928	44%	17.0	1.2	60	15.4	B	344
HDC off-ramp to West Palmdale Blvd loop on-ramp	4,425	3,305	75%	5.2	0.3	61	18.2	C	510	2,335	2,381	102%	5.2	0.3	61	19.6	C	571	2,090	925	44%	5.3	0.4	60	15.4	B	349
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,650	3,533	76%	16.7	0.8	61	14.4	B	527	2,560	2,578	101%	16.5	0.7	62	13.8	B	588	2,090	954	46%	17.2	1.3	59	16.0	B	367
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	5,250	4,086	78%	34.1	2.5	60	16.3	B	561	3,195	3,203	100%	34.2	2.5	60	16.8	B	622	2,055	884	43%	34.1	2.5	60	14.7	B	401
10th St West off-ramp to HDC on-ramp	4,519	3,502	77%	23.7	1.9	60	19.6	C	585	2,499	2,616	105%	23.7	1.9	60	22.0	C	646	2,020	886	44%	23.6	1.9	60	14.9	B	424
HDC on-ramp to 10th St West on-ramp	7,745	6,054	78%	49.4	3.8	60	20.3	C	634	5,720	4,826	84%	48.9	3.4	60	20.1	C	694	2,025	1,228	61%	51.0	5.4	57	21.5	C	475
10th St West loop on-ramp to 10th St W direct on-ramp	8,284	6,603	80%	17.4	1.6	59	20.8	C	651	6,254	5,273	84%	17.2	1.4	59	20.2	C	712	2,030	1,329	65%	17.9	2.1	57	23.2	C	493
10th St West direct on-ramp to West Avenue N off-ramp	8,405	6,725	80%	72.4	10.0	56	23.4	C	724	6,348	5,459	86%	73.2	10.8	56	23.8	C	785	2,057	1,266	62%	69.0	6.4	59	21.6	C	562
West Avenue N off-ramp to West Avenue N loop on-ramp	7,850	6,204	79%	18.8	1.7	59	26.4	D	743	5,780	4,921	85%	18.7	1.6	59	27.8	D	804	2,070	1,282	62%	19.2	2.1	58	22.2	C	581
West Avenue N loop on-ramp to West Avenue N direct on-ramp	8,060	6,411	80%	9.8	0.8	59	21.6	C	752	5,990	5,112	85%	9.7	0.8	60	21.4	C	813	2,070	1,299	63%	10.1	1.0	58	22.5	C	591
West Avenue N direct on-ramp to West Avenue M off-ramp	8,260	6,595	80%	31.8	2.4	60	21.4	C	784	6,190	5,250	85%	31.4	2.0	61	20.8	C	845	2,070	1,346	65%	33.5	4.0	57	23.6	C	625
SR-14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	6,870	6,871	100%	38.8	4.1	58	29.7	D	39	6,870	6,871	100%	38.8	4.1	58	29.7	D	39	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	6,350	6,308	99%	19.0	1.6	59	26.5	D	58	6,350	6,308	99%	19.0	1.6	59	26.5	D	58	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	6,470	6,433	99%	11.3	0.8	60	21.5	C	69	6,470	6,433	99%	11.3	0.8	60	21.5	C	69	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St West off-ramp	6,835	6,802	100%	85.3	9.3	58	23.2	C	154	6,835	6,802	100%	85.3	9.3	58	23.2	C	154	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC off-ramp	5,665	5,580	98%	18.1	2.1	57	24.6	C	172	5,665	5,580	98%	18.1	2.1	57	24.6	C	172	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St West on-ramp	2,521	2,520	100%	22.0	0.9	62	13.7	B	194	2,521	2,520	100%	22.0	0.9	62	13.7	B	194	—	—	—	—	—	—	—	—	—
10th St West on-ramp to Palmdale Blvd off-ramp	3,470	3,465	100%	33.7	1.9	61	14.4	B	228	3,470	3,465	100%	33.7	1.9	61	14.4	B	228	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	2,480	2,468	100%	31.9	0.7	63	9.8	A	260	2,480	2,468	100%	31.9	0.7	63	9.8	A	260	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	4,275	3,875	91%	24.1	1.7	60	12.5	B	284	4,275	3,875	91%	24.1	1.7	60	12.5	B	284	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,535	4,126	91%	13.7	0.9	61	15.2	B	298	4,535	4,126	91%	13.7	0.9	61	15.2	B	298	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	4,810	4,371	91%	68.2	5.5	60	18.0	B	366	4,810	4,371	91%	68.2	5.5	60	18.0	B	366	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	3,910	3,686	94%	21.6	1.0	62	15.0	B	387	3,910	3,686	94%	21.6	1.0	62	15.0	B	387	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to Los Angeles Forest Hwy off-ramp	4,585	4,337	95%	220.3	32.5	57	18.9	C	608	4,585	4,337	95%	220.3	32.5	5.7	18.9	C	608	—	—	—	—	—	—	—	—	—

Source: Parsons
Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-20. Year 2040 Build Alternative Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK – OVERALL									PM PEAK – OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HDC EB MAINLINE																		
SR 138 EB west end of the network to SR 14 NB on-ramp	3,570	3,570	100%	21.8	2.6	47	38.5	**E**	22	3,250	3,138	97%	21.4	2.2	47	33.2	D	21
SR 14 NB on-ramp to 10th St E off-ramp	4,955	4,955	100%	34.3	2.6	60	18.8	C	56	5,830	5,077	87%	34.1	2.4	60	19.1	C	56
10th St E off-ramp to 10th St E on-ramp	4,680	4,676	100%	46.3	2.6	61	19.1	C	102	5,405	4,708	87%	46.6	2.7	61	19.3	C	102
10th St E on-ramp to 20th St E off-ramp	5,275	5,250	100%	17.2	1.3	60	17.6	B	120	6,005	5,315	89%	17.2	1.3	59	17.9	B	119
20th St E off-ramp to 20th St E on-ramp	4,610	4,565	99%	43.8	2.3	62	18.6	C	163	4,880	4,360	89%	43.7	2.1	62	17.7	B	163
20th St E on-ramp to 50th St E off-ramp	4,895	4,849	99%	140.0	10.3	60	18.9	C	303	5,250	4,727	90%	138.9	8.6	60	18.3	C	302
50th St E off-ramp to 50th St E on-ramp	4,195	4,100	98%	44.5	3.2	60	22.7	C	348	4,130	3,701	90%	44.0	2.6	61	20.3	C	346
50th St E on-ramp to 90th St E off-ramp	4,835	4,671	97%	202.3	18.7	59	26.1	D	550	4,720	4,197	89%	199.9	15.6	59	23.2	C	546
90th St E off-ramp to 90th St E on-ramp	4,600	4,385	95%	46.7	3.9	60	24.6	C	597	4,250	3,757	88%	45.9	2.8	61	20.7	C	592
90th St E on-ramp to 140th St E off-ramp	4,825	4,507	93%	280.4	26.2	59	25.2	C	877	4,550	3,961	87%	276.3	21.1	59	21.8	C	868
140th St E off-ramp to 140th St E on-ramp	4,515	4,117	91%	47.2	3.8	60	23.0	C	925	3,975	3,393	85%	46.3	2.7	61	18.6	C	914
140th St E on-ramp to 170th St E off-ramp	4,730	4,277	90%	139.8	12.6	59	23.5	C	1,064	4,235	3,624	86%	137.0	9.3	60	19.5	C	1,051
170th St E off-ramp to 170th St E on-ramp	4,630	4,153	90%	48.3	4.1	59	23.4	C	1,113	4,040	3,413	84%	47.3	3.0	61	18.8	C	1,099
170th St E on-ramp to 210th St E off-ramp	4,950	4,397	89%	201.5	20.1	58	24.6	C	1,314	4,290	3,595	84%	195.9	13.8	60	19.5	C	1,295
210th St E off-ramp to 210th St E on-ramp	4,900	4,255	87%	45.1	4.2	59	24.2	C	1,359	4,225	3,460	82%	44.0	3.0	60	19.2	C	1,339
210th St E on-ramp to 240th St E off-ramp	5,070	4,378	86%	145.3	14.9	58	24.5	C	1,505	4,305	3,493	81%	141.2	10.3	60	18.9	C	1,480
240th St E off-ramp to 240th St E on-ramp	4,890	4,161	85%	48.7	4.3	59	23.5	C	1,553	4,265	3,428	80%	48.0	3.5	60	19.1	C	1,528
240th St E on-ramp to Oasis Rd off-ramp	5,290	4,505	85%	143.4	16.9	57	25.7	C	1,697	4,490	3,600	80%	137.7	10.7	59	19.6	C	1,666
Oasis Rd off-ramp to Oasis Rd on-ramp	5,115	4,302	84%	48.9	4.3	59	24.3	C	1,746	4,365	3,461	79%	48.2	3.5	60	19.2	C	1,714
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	5,265	4,370	83%	204.8	24.8	57	25.2	C	1,950	4,465	3,493	78%	195.9	15.4	59	19.1	C	1,910
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	4,395	3,545	81%	49.4	3.4	60	19.6	C	2,000	3,950	2,995	76%	48.9	2.8	61	16.4	B	1,959
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	4,690	3,758	80%	265.6	23.8	59	20.9	C	2,265	4,320	3,307	77%	262.1	19.6	60	18.2	C	2,221
Caughlin Rd off-ramp to Caughlin Rd on-ramp	3,910	3,050	78%	47.1	2.8	61	16.7	B	2,312	3,530	2,676	76%	46.7	2.3	61	14.5	B	2,267
Caughlin Rd on-ramp to Koala Rd off-ramp	4,055	3,163	78%	73.1	5.3	60	16.9	B	2,385	3,635	2,749	76%	72.1	4.2	61	14.5	B	2,339
Koala Rd off-ramp to Koala Rd loop on-ramp	3,675	2,825	77%	32.8	1.9	61	15.4	B	2,418	3,445	2,601	76%	32.7	1.7	61	14.2	B	2,372
Koala Rd loop on-ramp to Koala Rd direct on-ramp	4,614	3,749	81%	18.7	2.8	55	20.1	C	2,437	3,909	3,072	79%	17.4	1.6	59	15.4	B	2,390
Koala Rd direct on-ramp to Route395 off-ramp	4,695	3,812	81%	109.2	10.2	58	20.9	C	2,546	4,020	3,155	78%	106.6	7.3	60	16.9	B	2,496
Route395 off-ramp to Route395 loop on-ramp	3,875	3,156	81%	26.2	1.4	61	17.2	B	2,572	3,360	2,682	80%	26.0	1.2	62	14.5	B	2,522
Route395 loop on-ramp to Route395 direct on-ramp	5,172	4,430	86%	25.0	4.4	54	25.5	C	2,597	4,404	3,756	85%	23.3	2.8	58	20.4	C	2,545
Route395 direct on-ramp to Phantom W off-ramp	5,250	4,477	85%	70.4	15.8	52	28.7	D	2,668	4,505	3,837	85%	60.2	5.4	59	21.1	C	2,606
Phantom W St off-ramp to Phantom W St loop on-ramp	3,815	3,329	87%	28.2	1.5	61	18.1	C	2,696	3,585	3,120	87%	28.0	1.3	62	16.8	B	2,634
Phantom W St loop on-ramp to Phantom W St direct on-ramp	3,898	3,406	87%	12.6	0.6	62	15.7	B	2,708	3,940	3,477	88%	12.8	0.8	61	16.3	B	2,647
Phantom W St direct on-ramp to Phantom E St direct off-ramp	4,150	3,654	88%	58.2	3.8	60	19.4	C	2,767	4,360	3,854	88%	58.7	4.2	60	20.6	C	2,705
Phantom E St direct off-ramp to Phantom E St loop on-ramp	3,525	3,075	87%	36.2	1.7	62	16.6	B	2,803	3,965	3,498	88%	36.4	1.9	61	19.1	C	2,742
Phantom E St loop on-ramp to Phantom E St direct on-ramp	3,821	3,343	87%	16.3	1.1	60	18.5	C	2,819	4,775	4,220	88%	17.6	2.3	56	25.0	C	2,759
Phantom E St direct on-ramp to National Trails Hwy off-ramp	4,150	3,664	88%	42.0	3.1	60	20.4	C	2,861	5,295	4,766	90%	44.7	5.8	56	28.3	D	2,804
National Trails Hwy off-ramp to National Trails Hwy on-ramp	3,770	3,343	89%	43.6	2.4	61	18.2	C	2,905	4,820	4,326	90%	44.0	2.8	61	23.8	C	2,848
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	4,045	3,593	89%	104.8	6.4	61	14.8	B	3,009	5,070	4,562	90%	107.1	8.5	59	19.2	C	2,955
I-15 NB/SB off-ramp to I-15 NB on-ramp	1,925	1,693	88%	80.4	2.3	63	9.0	A	3,090	1,925	1,737	90%	80.4	2.2	63	9.2	A	3,035
I-15 NB/SB on-ramp to Choco Rd off-ramp	2,295	2,060	90%	57.5	2.3	62	8.3	A	3,147	2,500	2,303	92%	57.6	2.3	62	9.3	A	3,093
Choco Rd off-ramp to Choco Rd on-ramp	2,145	1,906	89%	33.8	1.6	62	10.3	A	3,181	2,135	1,993	93%	33.8	1.6	62	10.8	A	3,127
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	2,195	1,956	89%	72.9	3.3	62	10.2	A	3,254	2,260	2,090	92%	73.0	3.5	62	10.9	A	3,200
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	1,720	1,522	88%	27.2	0.9	63	8.1	A	3,281	1,950	1,763	90%	27.3	1.1	62	9.5	A	3,227
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,840	1,638	89%	10.4	0.4	62	7.3	A	3,291	2,045	1,858	91%	10.4	0.5	62	8.3	A	3,237
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,890	1,685	89%	32.3	1.3	62	8.5	A	3,324	2,095	1,893	90%	32.4	1.5	62	9.6	A	3,270

Source: Parsons

Note: Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-20. Year 2040 Build Alternative Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK – OVERALL									PM PEAK – OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HDC WB MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	1,410	1,410	100%	38.0	3.0	59	12.4	B	38	2,525	2,484	98%	39.8	4.8	55	22.6	C	40
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	1,280	1,280	100%	25.8	1.3	62	10.5	A	64	2,325	2,273	98%	26.1	1.6	61	18.7	C	66
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,379	1,379	100%	11.3	0.7	61	8.8	A	75	2,505	2,451	98%	11.8	1.2	58	16.2	B	78
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	1,500	1,500	100%	82.2	5.1	61	11.9	B	157	2,830	2,787	98%	85.3	8.3	58	22.6	C	163
Choco Rd off-ramp to Choco Rd on-ramp	1,395	1,395	100%	35.4	1.7	62	7.5	A	193	2,815	2,775	99%	36.7	2.9	60	15.5	B	200
Choco Rd on-ramp to I-15 NB/SB off-ramp	1,730	1,712	99%	57.0	1.6	63	6.8	A	250	3,050	3,004	98%	57.8	2.6	62	12.1	B	257
I-15 NB/SB off-ramp to I-15 SB on-ramp	1,395	1,395	100%	100.5	2.6	63	7.4	A	350	2,462	2,462	100%	102.4	4.6	62	13.9	B	360
I-15 NB on-ramp to I-15 NB on-ramp	2,475	2,442	99%	11.5	1.0	59	11.7	B	362	3,510	3,394	97%	11.7	1.3	58	16.5	B	372
I-15 SB on-ramp to National Trails Hwy off-ramp	3,745	3,665	98%	68.3	4.8	60	15.2	B	430	4,965	4,821	97%	72.0	8.6	57	21.1	C	444
National Trails Hwy off-ramp to National Trails Hwy on-ramp	3,515	3,451	98%	43.2	2.4	61	18.8	C	473	4,675	4,517	97%	44.6	3.9	59	25.4	C	488
National Trails Hwy on-ramp to Phantom E St off-ramp	3,905	3,815	98%	61.8	11.8	53	23.9	C	535	5,140	4,944	96%	60.0	10.1	54	29.8	D	548
Phantom E St off-ramp to Phantom E St loop on-ramp	2,500	2,448	98%	33.6	1.4	62	13.1	B	569	4,400	4,220	96%	34.9	2.7	60	23.5	C	583
Phantom E St loop on-ramp to Phantom E St direct on-ramp	2,785	2,694	97%	5.4	0.3	61	14.6	B	574	5,006	4,707	94%	6.3	1.2	53	29.4	D	589
Phantom E St direct on-ramp to Phantom W St off-ramp	2,815	2,752	98%	59.3	3.3	61	15.0	B	633	5,579	5,354	96%	69.7	13.7	52	34.4	D	659
Phantom W St off-ramp to Phantom W St on-ramp	2,070	2,024	98%	42.5	1.4	63	10.7	A	676	5,224	5,004	96%	45.2	4.1	59	28.3	D	704
Phantom W St on-ramp to Route 395 off-ramp	2,855	2,809	98%	54.5	2.8	61	11.4	B	730	6,235	5,987	96%	59.9	8.2	56	27.0	D	764
Route395 off-ramp to Route395 on-ramp	1,905	1,888	99%	47.0	0.9	64	7.4	A	777	4,830	4,627	96%	48.7	2.6	61	18.8	C	813
Route395 on-ramp to Koala Rd off-ramp	2,500	2,465	99%	101.2	3.2	62	9.6	A	879	5,740	5,501	96%	107.5	9.6	58	22.8	C	920
Koala Rd off-ramp to Koala Rd on-ramp	2,015	1,992	99%	48.9	1.1	63	7.9	A	927	4,630	4,433	96%	50.4	2.6	61	18.0	C	971
Koala Rd on-ramp to Caughlin Rd off-ramp	2,165	2,129	98%	67.0	1.8	63	8.2	A	994	5,000	4,782	96%	69.7	4.4	61	19.1	C	1,041
Caughlin Rd off-ramp to Caughlin Rd on-ramp	2,065	2,019	98%	49.5	1.2	63	8.0	A	1,044	4,830	4,618	96%	51.5	3.2	61	19.0	C	1,092
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	2,625	2,547	97%	248.6	7.9	63	10.0	A	1,293	5,640	5,305	94%	260.6	19.6	60	21.9	C	1,353
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	2,335	2,226	95%	45.3	1.2	63	8.8	A	1,338	5,280	4,861	92%	47.2	3.1	61	20.1	C	1,400
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	2,475	2,334	94%	185.1	5.8	63	9.1	A	1,523	6,350	5,860	92%	197.3	17.8	58	24.7	C	1,597
Oasis Rd off-ramp to Oasis Rd loop on-ramp	2,395	2,240	94%	48.1	1.5	63	8.9	A	1,571	6,190	5,618	91%	50.5	3.9	60	23.5	C	1,648
Oasis Rd direct on-ramp to 240th St E off-ramp	2,475	2,280	92%	129.4	4.4	63	8.9	A	1,700	6,395	5,760	90%	137.4	12.2	59	23.9	C	1,785
240th St E off-ramp to 240th St E on-ramp	2,300	2,099	91%	44.2	1.4	63	8.4	A	1,744	5,870	5,252	89%	46.1	3.3	60	21.8	C	1,831
240th St E on-ramp to 210th St E off-ramp	2,325	2,108	91%	135.2	4.5	63	8.2	A	1,880	6,115	5,427	89%	158.5	27.6	54	24.9	C	1,990
210th St E off-ramp to 210th St E on-ramp	2,260	2,016	89%	42.5	1.5	63	10.7	A	1,922	5,740	5,006	87%	47.3	6.2	56	29.7	D	2,037
210th St E on-ramp to 170th St E off-ramp	2,320	2,042	88%	190.0	7.2	62	10.7	A	2,112	5,795	4,953	85%	215.6	32.6	55	29.1	D	2,253
170th St E off-ramp to 170th St E on-ramp	2,140	1,832	86%	44.6	1.6	63	9.8	A	2,157	5,430	4,498	83%	47.1	3.9	59	25.2	C	2,300
170th St E on-ramp to 140th St E off-ramp	2,320	1,982	85%	135.9	5.3	62	10.3	A	2,293	5,555	4,543	82%	143.8	13.1	59	25.0	C	2,443
140th St E off-ramp to 140th St E on-ramp	2,160	1,816	84%	36.7	1.3	62	9.7	A	2,329	5,310	4,283	81%	38.6	3.2	59	24.0	C	2,482
140th St E on-ramp to 90th St E off-ramp	2,700	2,324	86%	271.1	11.8	62	12.3	B	2,601	5,635	4,484	80%	287.7	28.8	58	25.3	C	2,770
90th St E off-ramp to 90th St E on-ramp	2,470	2,088	85%	44.6	1.8	62	11.2	B	2,645	5,270	4,084	77%	46.7	4.0	59	23.0	C	2,816
90th St E on-ramp to 70th St E off-ramp	2,915	2,502	86%	193.9	10.2	61	13.4	B	2,839	5,645	4,358	77%	206.7	23.3	57	25.0	C	3,023
50th St E off-ramp to 50th St E on-ramp	2,390	2,027	85%	43.4	1.7	62	10.9	A	2,882	4,925	3,742	76%	44.9	3.3	60	20.8	C	3,068
50th St E on-ramp to 20th St E off-ramp	3,385	3,005	89%	137.6	6.3	62	12.2	B	3,020	5,740	4,516	79%	140.6	9.4	60	18.7	C	3,209
20th St E off-ramp to 20th St E on-ramp	3,085	2,714	88%	41.6	1.7	62	10.9	A	3,062	5,385	4,153	77%	42.7	2.9	60	17.2	B	3,251
20th St E on-ramp to 10th St E off-ramp	3,930	3,546	90%	17.0	1.1	60	11.8	B	3,079	6,135	4,888	80%	17.5	1.7	59	16.7	B	3,269
10th St E off-ramp to 10th St E on-ramp	3,385	3,051	90%	45.7	1.8	62	12.3	B	3,124	5,485	4,350	79%	48.2	4.4	59	18.4	C	3,317
10th St E on-ramp to SR-14 SB off-ramp	3,755	3,419	91%	33.4	1.7	61	13.6	B	3,158	5,790	4,620	80%	36.9	5.2	55	20.4	C	3,354
SR 14 SB off-ramp to SR-138 WB west end of the network	2,185	1,977	90%	12.6	0.4	54	18.2	C	3,170	3,795	3,015	79%	13.6	1.3	50	30.0	D	3,368

Source: Parsons

Note: Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-20. Year 2040 Build Alternative Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK – OVERALL									PM PEAK – OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off-ramp	3,690	3,701	100%	151.1	9.7	61	20.2	C	151	6,000	5,672	95%	234.8	93.2	41	46.9	**F**	235
Palmdale Rd off-ramp to Palmdale Rd loop on-ramp	3,215	3,193	99%	22.5	1.4	61	17.5	B	174	5,350	5,030	94%	24.8	3.7	55	30.3	D	260
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,600	3,576	99%	11.6	1.2	59	20.3	C	185	5,755	5,421	94%	13.0	2.6	53	34.4	D	273
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	4,050	4,032	100%	22.6	1.9	59	17.0	B	208	6,260	5,940	95%	25.7	5.0	52	28.4	D	298
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,490	3,473	100%	24.5	1.7	60	19.1	C	232	5,640	5,336	95%	27.5	4.7	54	33.0	D	326
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	3,915	3,886	99%	17.0	1.2	60	16.2	B	249	6,205	5,874	95%	18.7	2.9	55	26.9	D	344
Mojave Dr off-ramp to Mojave Dr on-ramp	3,310	3,285	99%	21.0	1.2	61	17.9	B	270	5,415	5,104	94%	22.5	2.7	57	29.8	D	367
Mojave Dr on-ramp to D St off-ramp	3,760	3,717	99%	51.0	3.8	60	18.0	C	321	5,805	5,491	95%	55.0	7.7	55	29.2	D	422
D St off-ramp to D St on-ramp	2,575	2,527	98%	23.1	0.9	62	13.5	B	344	4,710	4,416	94%	23.9	1.8	60	24.4	C	446
D St on-ramp to E St off-ramp	2,865	2,781	97%	11.2	0.7	61	15.3	B	356	5,080	4,736	93%	11.9	1.3	58	27.4	D	458
E St off-ramp to E St on-ramp	2,815	2,740	97%	9.9	0.5	62	14.8	B	365	5,010	4,686	94%	10.4	1.0	58	26.8	D	468
E St on-ramp to Stoddard Wells Rd off-ramp	2,865	2,782	97%	36.2	2.0	61	15.2	B	402	5,065	4,737	94%	38.0	3.9	58	27.3	D	506
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	2,370	2,314	98%	11.0	0.5	62	12.4	B	413	4,445	4,164	94%	11.4	0.9	60	23.1	C	517
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	2,810	2,720	97%	48.7	2.5	61	11.1	B	461	5,155	4,831	94%	50.6	4.5	59	20.5	C	568
HDC EB/WB off-ramp to HDC WB on-ramp	1,560	1,502	96%	70.4	1.8	63	7.9	A	532	3,970	3,679	93%	73.3	4.6	61	20.2	C	641
HDC WB on-ramp to HDC EB on-ramp	1,730	1,643	95%	7.6	0.3	63	6.8	A	539	4,180	3,881	93%	8.0	0.6	60	16.8	B	649
HDC EB on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,865	2,656	93%	36.6	1.7	62	10.8	A	576	6,185	5,373	87%	41.2	6.4	53	25.2	C	690
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	2,620	2,433	93%	22.9	0.8	62	13.0	B	599	5,920	5,108	86%	24.5	2.4	58	29.2	D	715
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	2,880	2,668	93%	217.0	10.9	61	14.5	B	816	6,160	5,290	86%	230.2	24.1	58	30.5	D	945
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	2,450	2,277	93%	31.9	1.5	62	12.3	B	848	5,735	4,878	85%	33.4	3.0	59	27.6	D	978
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,890	2,705	94%	64.3	3.3	61	14.8	B	912	6,190	5,260	85%	69.1	8.1	57	30.9	D	1,048
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	4,675	4,674	100%	61.0	5.7	59	26.6	D	61	3,900	3,900	100%	59.4	4.2	60	21.6	C	59
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	4,260	4,250	100%	37.6	3.3	59	23.8	C	99	3,380	3,380	100%	36.7	2.5	61	18.6	C	96
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	4,660	4,639	100%	221.8	22.1	58	26.6	D	320	3,835	3,835	100%	217.4	18.1	59	21.7	C	313
Quarry Rd off-ramp to Quarry Rd on-ramp	4,440	4,441	100%	25.6	2.5	59	25.2	C	346	3,560	3,560	100%	25.0	2.0	60	20.0	C	338
Quarry Rd on-ramp to HDC EB/WB off-ramp	4,710	4,714	100%	53.8	5.5	58	20.2	C	400	3,920	3,920	100%	53.5	5.2	59	16.9	B	392
HDC EB/WB off-ramp to HDC EB on-ramp	3,240	3,240	100%	79.1	5.3	61	18.1	C	479	2,205	2,205	100%	77.3	3.5	62	12.2	B	469
HDC WB on-ramp to HDC EB on-ramp	3,405	3,405	100%	10.7	0.8	60	15.7	B	490	2,405	2,405	100%	10.4	0.6	62	11.0	A	480
HDC EB on-ramp to Stoddard Wells Rd off-ramp	4,390	4,285	98%	29.1	2.9	59	18.3	C	519	3,545	3,545	100%	28.7	2.4	59	15.8	B	508
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,710	3,593	97%	28.3	2.1	60	19.8	C	547	3,030	3,030	100%	27.7	1.5	62	17.4	B	536
Stoddard Wells Rd direct on-ramp to E St off-ramp	4,260	4,103	96%	23.5	2.5	58	23.5	C	571	3,560	3,560	100%	23.0	2.0	59	20.7	C	559
E St off-ramp to E St on-ramp	4,215	4,052	96%	9.0	0.9	59	23.0	C	580	3,500	3,500	100%	8.7	0.6	61	19.9	C	568
E St on-ramp to D St off-ramp	4,280	4,111	96%	11.5	1.0	59	23.1	C	591	3,555	3,555	100%	11.3	0.7	61	20.2	C	579
D St off-ramp to D St on-ramp	3,935	3,752	95%	22.0	1.5	60	20.7	C	613	3,240	3,240	100%	21.6	1.1	62	18.0	C	601
D St on-ramp to Mojave Dr off-ramp	4,860	4,700	97%	53.4	4.9	59	19.6	C	666	4,450	4,450	100%	52.5	4.0	60	18.6	C	653
Mojave Dr off-ramp to Mojave Dr on-ramp	4,485	4,265	95%	20.8	1.8	59	23.9	C	687	3,955	3,955	100%	20.5	1.5	60	22.1	C	674
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	5,210	4,976	96%	15.5	1.8	57	21.7	C	703	4,635	4,657	100%	15.2	1.5	58	20.0	C	689
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,755	4,504	95%	27.7	2.5	59	25.5	C	730	4,160	4,160	100%	27.1	1.9	60	23.2	C	716
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	5,190	4,917	95%	23.6	1.8	60	20.6	C	754	4,740	4,740	100%	23.5	1.7	60	20.0	C	739
Palmdale Rd off-ramp to Palmdale Rd loop on-ramp	4,335	4,079	94%	12.8	0.9	60	22.5	C	767	3,745	3,745	100%	12.7	0.7	61	20.7	C	752
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,560	4,262	93%	8.6	0.8	59	23.9	C	775	3,985	3,985	100%	8.5	0.7	60	22.3	C	761
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,870	4,533	93%	170.6	14.5	59	25.5	C	946	4,320	4,319	100%	169.1	13.1	60	24.1	C	930

Source: Parsons

Note: Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-21. Year 2040 Build Alternative Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of State Route 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	58	12.5	B	58	21.2	C
West Palmdale Blvd loop	Merging	63	7.7	A	61	14.4	B
West Palmdale Blvd direct	Merging	62	9.2	A	61	13.6	B
SR 138 WB	Merging	61	13	B	58	20	C
10th St. West loop	Merging	59	16.2	B	58	20.6	C
10th St. West direct	Merging	61	16.5	B	60	19.9	B
West Avenue N loop	Merging	61	16.2	B	59	20.1	C
West Avenue N direct	Merging	61	13.5	B	60	17.6	B
East Avenue S	Diverging	63	13.2	B	47	39.1	**E**
West Palmdale Blvd	Diverging	60	13.4	B	57	21.5	C
SR 138 EB	Diverging	61	14.0	B	59	22.3	C
10th St. West	Diverging	60	10.8	B	59	17.4	B
West Avenue N	Diverging	59	17.2	B	54	23.9	C
SOUTHBOUND							
West Avenue N loop	Merging	60	20.6	C	61	17.8	B
West Avenue N direct	Merging	60	18.0	B	62	14.5	B
10th St. West	Merging	61	17.5	B	62	15.0	B
SR 138 WB	Merging	60	15.3	B	60	12.7	B
West Palmdale Blvd loop	Merging	56	23.9	C	59	18.0	B
West Palmdale Blvd direct	Merging	55	26.8	C	60	19.6	B
East Ave. S	Merging	31	52.6	**E**	56	19.0	B
West Avenue N	Diverging	58	30.3	D	55	33.8	D
10th St. West	Diverging	54	26.2	C	55	28.0	C
SR 138 EB	Diverging	55	27.9	C	55	28.3	D
West Palmdale Blvd	Diverging	60	19.4	B	59	18.6	B
East Avenue S	Diverging	55	29.6	D	55	24.4	C

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-21. Year 2040 Build Alternative Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of HDC

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	58	22	C	58	22	C
20th St E	Merging	62	14	B	61	14	B
50th St E	Merging	54	26	C	56	23	C
90th St E	Merging	58	22	C	58	20	B
140th St E	Merging	58	21	C	59	18	B
170th St E	Merging	55	23	C	59	18	B
210th St E	Merging	56	22	C	59	17	B
240th St E	Merging	51	25	C	58	18	B
Oasis Rd	Merging	58	22	C	59	17	B
Sheep Creek Rd loop	Merging	61	18	B	61	16	B
Sheep Creek Rd direct	Merging	58	18	B	58	16	B
Caughlin Rd loop	Merging	61	16	B	61	14	B
Caughlin Rd direct	Merging	60	14	B	61	12	B
Koala Rd loop	Merging	53	21	C	58	15	B
Koala Rd direct	Merging	59	19	B	60	15	B
Route 395 loop	Merging	49	27	C	54	21	C
Route 395 direct	Merging	59	22	C	60	19	B
Phantom West St loop	Merging	62	13	B	60	16	B
Phantom West St direct	Merging	60	16	B	58	19	B
Phantom East St loop	Merging	60	19	B	54	27	C
Phantom East St direct	Merging	59	21	C	53	32	D
Choco Rd	Merging	62	9	A	62	10	A
Dale Evans Pkwy loop	Merging	62	7	A	62	8	A
Dale Evans Pkwy direct	Merging	62	8	A	62	9	A
10th St E	Diverging	62	12	B	62	13	B
50th St E	Diverging	57	21	C	59	21	C
90th St E	Diverging	58	27	C	58	25	C
140th St E	Diverging	56	27	C	58	24	C
170th St E	Diverging	58	25	C	60	21	C
210th St E	Diverging	58	25	C	60	20	C
240th St E	Diverging	57	26	C	59	19	B
Oasis Rd	Diverging	58	26	C	59	20	C
Sheep Creek Rd	Diverging	50	29	D	57	21	C
Caughlin Rd	Diverging	55	23	C	57	20	B
Koala Rd	Diverging	59	18	B	60	15	B
Route 395	Diverging	55	24	C	58	19	B
Phantom West St	Diverging	49	31	D	56	25	C
Phantom East St	Diverging	59	21	C	59	23	C
National Trails Hwy	Diverging	60	21	C	57	29	D
Dale Evans Pkwy	Diverging	61	11	B	61	11	B
10th St E to 20th St E	Weaving	58	17	B	58	19	B
National Trails Hwy to I-15 NB/SB	Weaving	61	14	B	59	19	B
I-15 NB/SB to Choco Rd	Weaving	62	7	A	62	9	A

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-21. Year 2040 Build Alternative Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of HDC *(continued)*

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy loop	Merging	61	9	A	58	16	B
Dale Evans Pkwy direct	Merging	60	11	B	56	21	C
I-15 NB	Merging	58	13	B	57	17	B
National Trails Hwy	Merging	58	20	B	54	26	C
Phantom East St loop	Merging	61	14	B	51	31	D
Phantom East St direct	Merging	61	15	B	44	40	**E**
Phantom West St	Merging	62	11	B	60	24	C
Route 395	Merging	61	10	A	57	20	C
Koala Rd loop	Merging	62	8	A	62	17	B
Koala Rd direct	Merging	62	8	A	59	17	B
Caughlin Rd loop	Merging	62	8	A	61	18	B
Caughlin Rd direct	Merging	60	10	B	54	22	C
Sheep Creek Rd loop	Merging	62	9	A	60	19	B
Sheep Creek Rd direct	Merging	61	8	A	49	27	C
Oasis Rd loop	Merging	61	9	A	59	23	C
Oasis Rd direct	Merging	61	8	A	57	21	C
240th St E	Merging	62	7	A	58	19	B
210th St E	Merging	62	10	A	57	24	C
170th St E	Merging	61	9	A	59	21	C
140th St E	Merging	60	12	B	56	23	C
90th St E	Merging	59	12	B	54	23	C
50th St E	Merging	60	12	B	60	17	B
10th St E	Merging	60	14	B	54	24	C
Dale Evans Pkwy	Diverging	61	12	B	60	21	C
Choco Rd	Diverging	61	13	B	59	23	C
Phantom East St	Diverging	47	30	D	52	32	D
Phantom West St	Diverging	59	17	B	54	33	D
Route 395	Diverging	59	16	B	50	32	D
Koala Rd	Diverging	61	13	B	54	29	D
Caughlin Rd	Diverging	62	9	A	60	20	B
Sheep Creek Rd	Diverging	61	12	B	58	23	C
Oasis Rd	Diverging	61	9	A	58	25	C
240th St E	Diverging	61	10	A	56	26	C
210th St E	Diverging	62	8	A	48	25	C
170th St E	Diverging	61	11	B	54	30	D
140th St E	Diverging	61	11	B	58	26	C
90th St E	Diverging	61	13	B	56	26	C
50th St E	Diverging	60	14	B	53	27	C
20th St E	Diverging	61	12	B	60	18	B
SR 14 SB	Diverging	62	16	B	52	29	D
Choco to I-15 NB/SB	Weaving	63	6	A	63	10	B
I-15 SB to National Trails Hwy	Weaving	60	17	B	56	22	C
20th St E to 10th St E	Weaving	59	12	B	58	15	B

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-21. Year 2040 Build Alternative Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

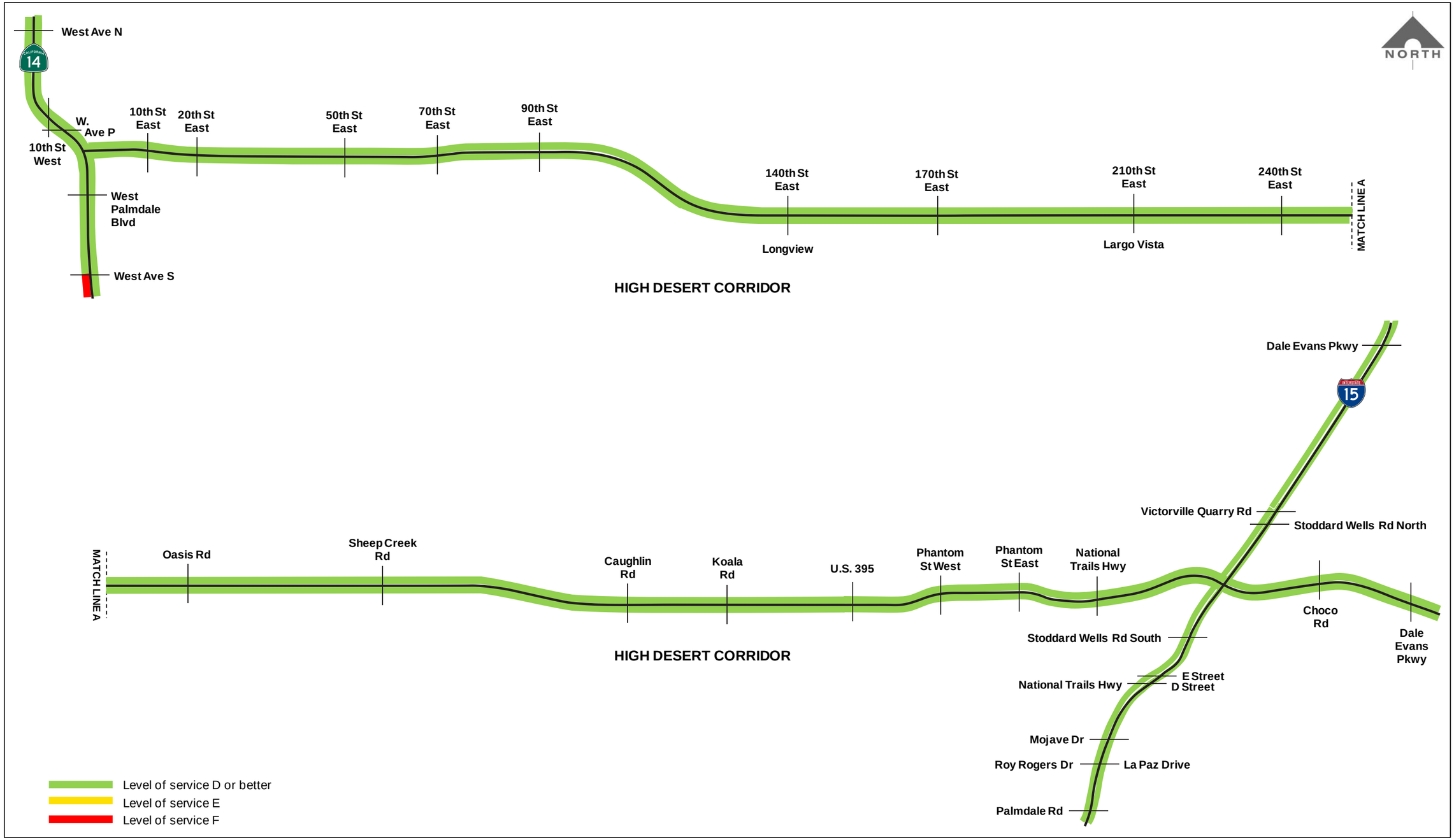
Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	58	22	C	50	36	**E**
Mojave Dr	Merging	58	23	C	49	37	**E**
D St	Merging	60	16	B	57	28	D
E St	Merging	61	16	B	58	28	C
HDC WB	Merging	62	6	A	60	15	B
Stoddard Wells Rd (Quarry Rd)	Merging	61	15	B	56	31	D
Dale Evans Pkwy	Merging	60	15	B	55	31	D
Palmdale Rd	Diverging	58	23	C	43	41	**E**
D St	Diverging	59	17	B	59	22	C
E St	Diverging	60	16	B	57	28	D
Stoddard Wells Rd	Diverging	60	17	B	57	28	D
Dale Evans Pkwy	Diverging	60	15	B	56	31	D
Palmdale Rd direct to Roy Rogers Dr	Weaving	59	17	B	50	27	C
Roy Rogers Dr to Mojave Dr	Weaving	59	17	B	53	26	C
Stoddard Wells Rd to HDC EB/WB	Weaving	61	11	B	58	20	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	61	11	B	52	24	C
SOUTHBOUND							
Dale Evans Pkwy	Merging	55	28	D	57	24	C
HDC WB	Merging	60	14	B	62	10	B
Stoddard Wells Rd direct	Merging	57	25	C	58	23	C
E St	Merging	59	24	C	60	22	C
Palmdale Rd loop	Merging	59	23	C	59	23	C
Palmdale Rd direct	Merging	57	26	C	57	26	C
Dale Evans Pkwy	Diverging	56	28	D	58	24	C
Quarry Rd	Diverging	57	27	C	58	23	C
E St	Diverging	57	25	C	59	23	C
D St	Diverging	59	24	C	60	22	C
Quarry Rd to HDC EB/WB	Weaving	58	19	B	58	17	B
HDC EB to Stoddard Wells Rd	Weaving	58	18	B	59	17	B
D St to Mojave Dr	Weaving	58	18	B	59	18	B
Mojave Dr to Roy Rogers Dr	Weaving	56	21	C	57	20	B
Roy Rogers Dr to Palmdale Rd	Weaving	59	20	B	59	20	C

Source: Parsons

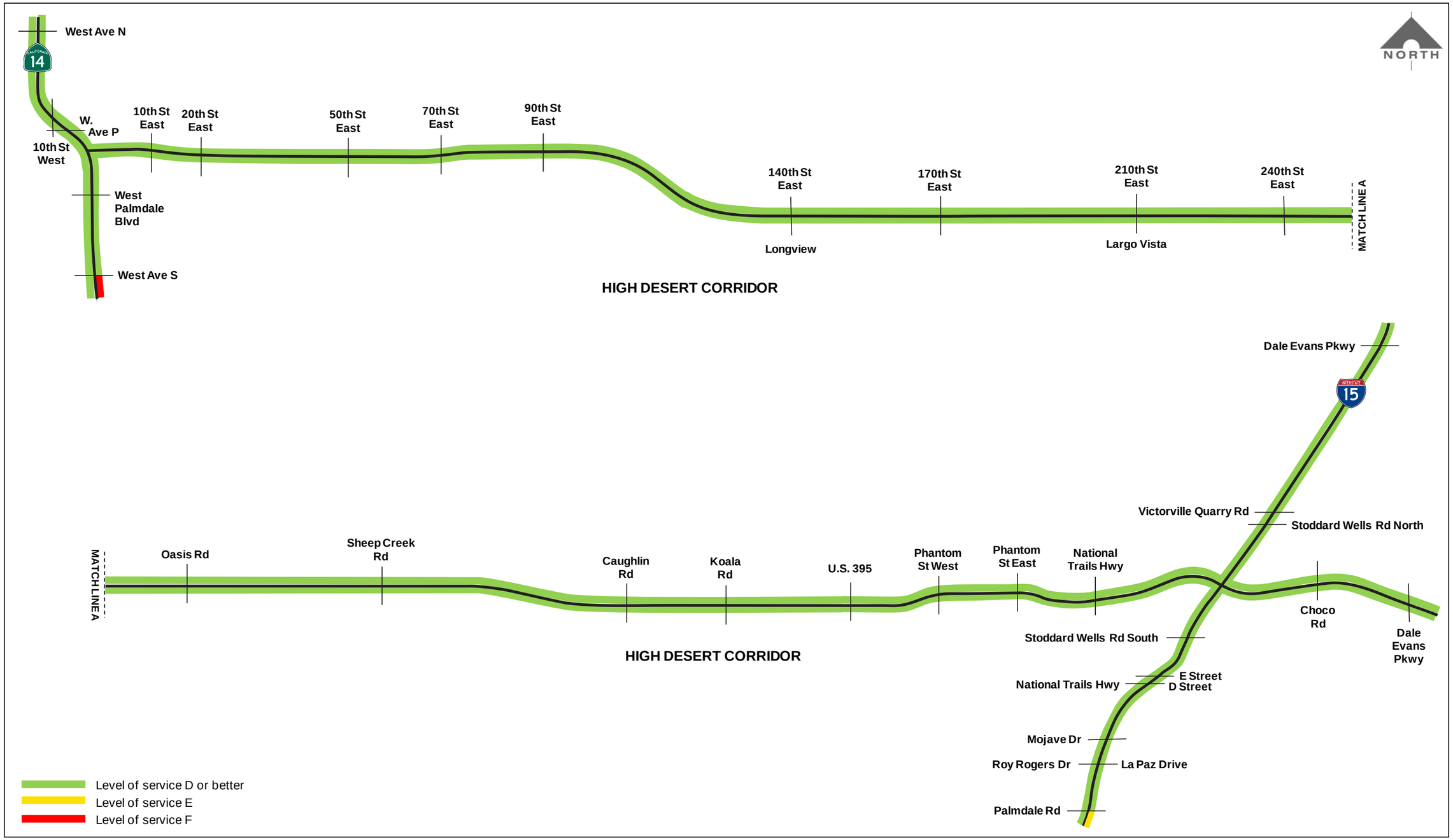
Notes:
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F



AM PEAK PERIOD

Figure 4-23: Year 2040 Build Alternative with Tolls Freeway Mainline Level of Service *(1 of 2)*



PM PEAK PERIOD

Figure 4-23: Year 2040 Build Alternative with Tolls Freeway Mainline Level of Service *(2 of 2)*

Table 4-22. Year 2040 Build with Tolls Alternative Freeway Mainline Analysis Results *(1 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	2,770	2,761	100%	184.6	31.3	56	13.7	B	185	2,770	2,761	100%	184.6	31.3	56	13.7	B	185	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	2,585	2,585	100%	27.9	2.3	60	10.8	A	212	2,585	2,585	100%	27.9	2.3	60	10.8	A	212	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to West Palmdale Blvd off-ramp	3,295	3,295	100%	58.2	3.9	61	10.9	A	271	3,295	3,295	100%	58.2	3.9	61	10.9	A	271	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,850	2,812	99%	16.7	0.8	61	11.4	B	287	2,850	2,812	99%	16.7	0.8	61	11.4	B	287	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,620	1,621	100%	5.0	0.2	63	8.6	A	292	1,620	1,621	100%	5.0	0.2	63	8.6	A	292	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	1,920	1,926	100%	16.2	0.5	63	7.6	A	308	1,920	1,926	100%	16.2	0.5	63	7.6	A	308	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	2,390	2,348	98%	33.0	1.5	62	9.0	A	341	2,390	2,348	98%	33.0	1.5	62	9.0	A	341	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	2,007	1,998	100%	23.0	1.3	61	10.9	A	364	2,007	1,998	100%	23.0	1.3	61	10.9	A	364	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	4,000	3,888	97%	48.1	2.6	61	12.7	B	412	4,000	3,888	97%	48.1	2.6	61	12.7	B	412	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	4,724	4,627	98%	16.9	1.2	60	14.2	B	429	4,724	4,627	98%	16.9	1.2	60	14.2	B	429	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Avenue N off-ramp	4,920	4,817	98%	67.3	5.0	60	15.6	B	497	4,920	4,817	98%	67.3	5.0	60	15.6	B	497	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,620	4,565	99%	17.9	0.8	62	18.5	C	515	4,620	4,565	99%	17.9	0.8	62	18.5	C	515	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,965	4,910	99%	9.4	0.4	62	15.9	B	524	4,965	4,910	99%	9.4	0.4	62	15.9	B	524	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	5,140	5,086	99%	30.6	1.2	62	15.9	B	555	5,140	5,086	99%	30.6	1.2	62	15.9	B	555	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	6,925	6,923	100%	38.7	3.9	58	29.8	D	39	5,265	5,324	101%	38.9	4.2	58	30.7	D	39	1,660	1,599	96%	38.0	3.2	59	27.0	D	38
West Avenue N off-ramp to West Avenue N loop on-ramp	6,565	6,565	100%	19.1	1.7	59	27.8	D	58	4,905	4,976	101%	19.0	1.7	59	28.0	D	58	1,660	1,597	96%	19.2	1.8	59	27.3	D	57
West Avenue N loop on-ramp to West Avenue N direct on-ramp	6,620	6,620	100%	11.3	0.9	60	22.2	C	69	4,960	5,031	101%	11.3	0.8	60	20.9	C	69	1,660	1,597	96%	11.6	1.1	58	27.3	D	69
West Avenue N direct on-ramp to 10th St W off-ramp	6,965	6,965	100%	95.2	19.2	53	25.9	C	164	5,370	5,595	104%	98.1	22.3	52	26.5	D	167	1,595	1,377	86%	84.1	7.8	59	23.4	C	153
10th St W off-ramp to HDC off-ramp	6,210	6,186	100%	20.2	4.3	51	30.5	D	184	4,855	5,123	106%	20.8	4.9	49	34.8	D	188	1,355	1,063	78%	17.0	1.2	60	17.7	B	170
HDC off-ramp to 10th St W on-ramp	2,548	2,495	98%	22.3	1.2	61	13.6	B	207	1,343	1,433	107%	21.8	0.8	62	11.5	B	210	1,205	1,063	88%	23.0	1.9	59	17.9	B	193
10th St W on-ramp to Palmdale Blvd off-ramp	3,975	3,965	100%	33.8	2.0	61	16.3	B	241	2,620	2,822	108%	33.2	1.4	62	15.3	B	243	1,355	1,143	84%	35.0	3.3	59	19.5	C	228
West Palmdale Blvd off-ramp to HDC on-ramp	3,595	3,568	99%	32.7	1.5	62	14.5	B	273	2,210	2,295	104%	31.9	0.8	63	12.1	B	275	1,355	1,273	94%	34.1	2.8	59	21.5	C	262
HDC on-ramp to West Palmdale Blvd loop on-ramp	4,905	4,773	97%	24.2	1.8	59	15.5	B	297	3,600	3,827	106%	24.0	1.6	60	15.4	B	299	1,305	946	72%	24.8	2.3	58	16.2	B	287
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	5,600	5,514	98%	14.5	1.7	57	21.5	C	312	4,295	4,034	94%	14.2	1.5	58	19.9	C	313	1,305	1,481	113%	15.1	2.3	55	27.0	D	302
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	6,390	6,273	98%	71.0	8.3	57	26.8	D	383	4,840	4,693	97%	70.9	8.2	57	26.5	D	384	1,550	1,580	102%	71.3	8.5	57	27.8	D	373
East Avenue S off-ramp to East Avenue S on-ramp	6,030	5,932	98%	33.8	13.3	39	37.7	**E**	417	4,063	4,326	106%	37.8	17.4	35	41.0	**E**	422	1,967	1,606	82%	23.0	2.3	58	27.7	D	396
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	7,680	7,366	96%	334.8	145.9	38	50.5	**F**	751	5,713	5,558	97%	342.3	153.2	38	51.5	**F**	764	1,967	1,807	92%	311.3	122.9	41	46.9	**F**	707

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	9,485	6,996	74%	410.5	256.0	28	67.7	**F**	411	7,085	5,124	72%	474.7	320.2	25	75.4	**F**	475	2,400	1,872	78%	244.9	90.3	45	44.7	**E**	245
East Avenue S off-ramp to East Avenue S on-ramp	7,870	5,723	73%	29.3	3.5	57	25.1	C	440	6,170	4,062	66%	29.6	3.8	56	24.0	C	504	1,700	1,661	98%	28.6	2.7	59	28.4	D	274
East Avenue S on-ramp to West Palmdale Blvd off-ramp	8,415	6,271	75%	60.5	5.8	58	21.5	C	500	6,715	5,076	76%	60.9	6.2	58	21.9	C	565	1,700	1,196	70%	58.3	3.8	61	19.8	C	332
West Palmdale Blvd off-ramp to HDC off-ramp	6,945	5,185	75%	17.3	1.3	59	21.9	C	518	5,245	4,256	81%	17.4	1.4	59	24.1	C	583	1,700	929	55%	16.9	1.1	61	15.3	B	349
HDC off-ramp to West Palmdale Blvd loop on-ramp	4,590	3,419	74%	5.2	0.4	61	18.8	C	523	2,890	2,490	86%	5.2	0.3	61	20.5	C	588	1,700	929	55%	5.3	0.4	60	15.4	B	354
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,745	3,571	75%	16.7	0.8	61	14.6	B	539	3,045	2,623	86%	16.5	0.7	62	14.1	B	604	1,700	949	56%	17.1	1.2	60	15.9	B	371
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	5,220	4,017	77%	34.1	2.4	60	16.0	B	574	3,570	3,209	90%	34.2	2.5	60	16.8	B	638	1,650	808	49%	33.9	2.2	60	13.4	B	405
10th St West off-ramp to HDC on-ramp	4,220	3,208	76%	23.5	1.7	60	17.8	B	597	2,570	2,402	93%	23.5	1.7	60	20.0	C	662	1,650	807	49%	23.5	1.8	60	13.5	B	428
HDC on-ramp to 10th St West on-ramp	7,990	6,131	77%	49.3	3.7	60	20.6	C	646	6,245	4,899	78%	48.8	3.2	60	20.3	C	711	1,745	1,232	71%	51.1	5.4	57	21.6	C	480
10th St W loop on-ramp to 10th St W direct on-ramp	8,531	6,681	78%	17.4	1.6	59	21.0	C	664	6,786	5,351	79%	17.3	1.5	59	20.6	C	728	1,745	1,330	76%	17.7	1.9	58	23.0	C	497
10th St W direct on-ramp to West Avenue N off-ramp	8,655	6,777	78%	72.0	9.5	57	23.4	C	736	6,565	5,484	84%	72.6	10.2	56	23.8	C	801	2,090	1,293	62%	69.2	6.6	58	22.2	C	566
West Avenue N off-ramp to West Avenue N loop on-ramp	8,095	6,338	78%	18.8	1.7	59	26.9	D	755	6,005	5,022	84%	18.7	1.6	59	28.3	D	819	2,090	1,315	63%	19.1	2.0	58	22.8	C	586
West Avenue N loop on-ramp to West Avenue N direct on-ramp	8,235	6,465	79%	9.8	0.8	59	21.7	C	764	6,145	5,142	84%	9.7	0.7	60	21.5	C	829	2,090	1,324	63%	10.0	1.0	58	22.8	C	596
West Avenue N direct on-ramp to West Avenue M off-ramp	8,420	6,632	79%	31.8	2.3	60	21.4	C	796	6,330	5,269	83%	31.4	1.9	61	20.9	C	861	2,090	1,363	65%	33.1	3.7	58	23.6	C	629
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	6,860	6,858	100%	38.9	4.2	58	29.7	D	39	6,860	6,858	100%	38.9	4.2	58	29.7	D	39	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	6,360	6,360	100%	19.1	1.7	59	27.0	D	58	6,360	6,360	100%	19.1	1.7	59	27.0	D	58	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	6,465	6,465	100%	11.3	0.9	60	21.7	C	69	6,465	6,465	100%	11.3	0.9	60	21.7	C	69	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St W off-ramp	6,705	6,703	100%	128.4	52.6	41	33.7	D	198	6,705	6,703	100%	128.4	52.6	51	33.7	D	198	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	5,595	5,584	100%	21.2	5.3	48	29.0	D	219	5,595	5,584	100%	21.2	5.3	58	29.0	D	219	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St W on-ramp	1,854	1,852	100%	22.1	1.0	62	10.0	A	241	1,854	1,852	100%	22.1	1.0	62	10.0	A	241	—	—	—	—	—	—	—	—	—
10th St W on-ramp to Palmdale Blvd off-ramp	2,875	2,875	100%	33.5	1.7	61	11.8	B	274	2,875	2,875	100%	33.5	1.7	61	11.8	B	274	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	1,980	1,980	100%	31.8	0.7	63	8.0	A	306	1,980	1,980	100%	31.8	0.7	63	8.0	A	306	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,685	3,401	92%	23.9	1.5	60	10.8	A	330	3,685	3,401	92%	23.9	1.5	60	10.8	A	330	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,125	3,824	93%	13.7	0.9	60	14.1	B	344	4,125	3,824	93%	13.7	0.9	60	14.1	B	344	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	4,550	4,208	92%	67.3	4.5	60	17.1	B	411	4,550	4,208	92%	67.3	4.5	60	17.1	B	411	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	3,730	3,555	95%	21.5	0.9	62	14.4	B	433	3,730	3,555	95%	21.5	0.9	62	14.4	B	433	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	4,545	4,355	96%	218.0	29.8	57	18.9	C	651	4,545	4,355	96%	218.0	29.8	57	18.9	C	651	—	—	—	—	—	—	—	—	—

Level of service E

Level of service F

Table 4-22. Year 2040 Build with Tolls Alternative Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EB MAINLINE																		
SR 138 EB west end of the network to SR 14 NB on-ramp	3,820	3,820	100%	22.7	3.6	45	43.2	**E**	23	3,855	3,841	100%	22.3	3.2	45	42.3	**E**	22
SR 14 NB on-ramp to 10th St East off-ramp	5,050	5,043	100%	34.4	2.7	60	19.2	C	57	6,210	5,600	90%	34.6	2.9	59	21.4	C	57
10th St East off-ramp to 10th St East on-ramp	4,760	4,739	100%	46.2	2.5	61	19.3	C	103	5,780	5,287	91%	46.7	2.9	61	21.3	C	104
10th St East on-ramp to 20th St East off-ramp	5,310	5,285	100%	17.2	1.3	60	17.7	B	120	6,345	5,738	90%	17.3	1.4	59	19.4	C	121
20th St East off-ramp to 20th St East on-ramp	4,605	4,530	98%	43.8	2.2	62	18.4	C	164	5,210	4,753	91%	43.8	2.3	61	19.3	C	165
20th St East on-ramp to 50th St East off-ramp	4,855	4,696	97%	139.3	9.6	60	18.2	C	304	5,565	5,102	92%	139.8	9.9	60	19.8	C	305
50th St East off-ramp to 50th St East on-ramp	4,080	3,888	95%	44.3	3.0	60	21.5	C	348	4,360	4,049	93%	44.2	2.8	61	22.3	C	349
50th St East on-ramp to 90th St East off-ramp	4,475	4,220	94%	200.6	16.9	59	23.4	C	548	4,750	4,361	92%	200.8	16.8	59	24.2	C	549
90th St East off-ramp to 90th St East on-ramp	3,950	3,672	93%	46.0	3.1	60	20.2	C	594	4,090	3,703	91%	45.7	2.8	61	20.3	C	595
90th St East on-ramp to 140th St East off-ramp	3,975	3,611	91%	276.2	21.9	60	19.9	C	871	4,115	3,643	89%	275.1	20.5	60	20.0	C	870
140th St East off-ramp to 140th St East on-ramp	3,350	2,976	89%	46.1	2.7	61	16.2	B	917	3,240	2,838	88%	45.8	2.3	62	15.4	B	916
140th St East on-ramp to 170th St East off-ramp	3,600	3,193	89%	136.5	9.2	60	17.1	B	1,053	3,360	2,917	87%	135.5	8.1	61	15.5	B	1,052
170th St East off-ramp to 170th St East on-ramp	3,550	3,084	87%	47.4	3.3	60	17.0	B	1,101	3,140	2,658	85%	46.6	2.4	61	14.4	B	1,098
170th St East on-ramp to 210th St East off-ramp	3,575	3,067	86%	195.3	13.9	60	16.6	B	1,296	3,160	2,634	83%	192.4	10.8	61	14.0	B	1,291
210th St East off-ramp to 210th St East on-ramp	3,550	3,010	85%	44.1	3.2	60	16.7	B	1,340	3,105	2,535	82%	43.3	2.4	61	13.8	B	1,334
210th St East on-ramp to 240th St East off-ramp	3,720	3,133	84%	141.9	11.3	59	17.1	B	1,482	3,125	2,516	81%	138.5	7.9	61	13.3	B	1,472
240th St East off-ramp to 240th St East on-ramp	3,320	2,766	83%	47.2	2.9	61	15.2	B	1,529	2,990	2,363	79%	46.9	2.5	61	12.8	B	1,519
240th St East on-ramp to Oasis Rd off-ramp	3,950	3,262	83%	136.8	10.2	60	17.7	B	1,666	3,330	2,672	80%	134.8	8.2	61	14.2	B	1,654
Oasis Rd off-ramp to Oasis Rd on-ramp	3,780	3,077	81%	47.7	3.2	61	16.9	B	1,714	3,210	2,571	80%	47.3	2.7	61	14.0	B	1,701
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	3,910	3,155	81%	196.0	16.1	59	17.3	B	1,910	3,285	2,595	79%	192.2	12.1	61	13.9	B	1,893
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	2,960	2,343	79%	48.1	2.1	62	12.6	B	1,958	2,730	2,083	76%	48.0	2.1	62	11.2	B	1,941
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	3,100	2,428	78%	256.0	14.5	61	13.0	B	2,214	2,920	2,218	76%	254.7	13.3	61	11.8	B	2,196
Caughlin Rd off-ramp to Caughlin Rd on-ramp	2,595	2,007	77%	46.3	2.0	62	10.8	A	2,260	2,595	1,936	75%	46.2	2.0	62	10.4	A	2,242
Caughlin Rd on-ramp to Koala Rd off-ramp	2,615	2,002	77%	71.3	3.5	62	10.4	A	2,331	2,625	1,949	74%	70.9	3.2	62	10.1	A	2,313
Koala Rd off-ramp to Koala Rd loop on-ramp	2,515	1,906	76%	32.4	1.5	62	10.3	A	2,364	2,575	1,911	74%	32.2	1.5	62	10.3	A	2,345
Koala Rd loop on-ramp to Koala Rd direct on-ramp	3,335	2,714	81%	17.6	1.8	58	13.8	B	2,381	2,807	2,123	76%	16.9	1.1	61	10.3	A	2,362
Koala Rd direct on-ramp to Route 395 off-ramp	3,420	2,788	82%	104.8	5.8	61	14.6	B	2,486	2,865	2,170	76%	103.9	5.2	62	11.3	B	2,466
Route 395 off-ramp to Route 395 loop on-ramp	3,270	2,647	81%	26.1	1.4	61	14.4	B	2,512	2,765	2,073	75%	25.9	1.2	62	11.2	B	2,492
Route 395 loop on-ramp to Route 395 direct on-ramp	4,726	4,126	87%	25.2	4.5	55	23.7	C	2,537	3,928	3,222	82%	23.2	2.7	58	17.4	B	2,515
Route 395 direct on-ramp to Phantom St West off-ramp	4,855	4,235	87%	65.6	11.0	55	25.3	C	2,603	4,070	3,347	82%	59.6	5.0	59	18.2	C	2,575
Phantom St West off-ramp to Phantom St West loop on-ramp	3,495	3,100	89%	27.9	1.2	62	16.7	B	2,631	3,175	2,647	83%	27.8	1.1	62	14.2	B	2,603
Phantom St West loop on-ramp to Phantom St West direct on-ramp	3,578	3,188	89%	12.5	0.5	62	14.6	B	2,643	3,428	2,896	84%	12.6	0.7	61	13.4	B	2,615
Phantom St West direct on-ramp to Phantom St East direct off-ramp	3,785	3,394	90%	57.7	3.4	61	17.9	B	2,701	3,825	3,265	85%	57.8	3.5	61	17.2	B	2,673
Phantom St East direct off-ramp to Phantom St East loop on-ramp	3,145	2,838	90%	36.0	1.6	62	15.3	B	2,737	3,500	2,983	85%	36.1	1.7	62	16.1	B	2,709
Phantom St East loop on-ramp to Phantom St East direct on-ramp	3,416	3,085	90%	16.2	0.9	61	16.9	B	2,753	4,263	3,666	86%	17.1	1.9	58	21.2	C	2,726
Phantom St East direct on-ramp to National Trails Hwy off-ramp	3,720	3,388	91%	41.5	2.6	61	18.7	C	2,795	4,665	4,082	88%	42.7	3.8	59	23.1	C	2,769
National Trails Hwy off-ramp to National Trails Hwy on-ramp	3,330	3,045	91%	43.2	2.0	62	16.5	B	2,838	4,170	3,653	88%	43.4	2.3	61	19.9	C	2,812
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	3,530	3,236	92%	103.5	5.2	61	13.2	B	2,941	4,420	3,889	88%	105.3	6.9	60	16.1	B	2,917
I-15 NB/SB off-ramp to I-15 NB on-ramp	1,675	1,500	90%	80.1	2.0	63	7.9	A	3,021	1,595	1,482	93%	79.9	1.8	63	7.8	A	2,997
I-15 NB/SB on-ramp to Choco Rd off-ramp	2,000	1,844	92%	57.1	2.1	62	7.4	A	3,078	2,165	2,049	95%	57.4	2.1	62	8.2	A	3,055
Choco Rd off-ramp to Choco Rd on-ramp	1,855	1,727	93%	33.5	1.3	62	9.3	A	3,112	1,825	1,690	93%	33.5	1.3	62	9.1	A	3,088
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	1,890	1,761	93%	72.4	2.9	62	9.1	A	3,184	1,925	1,779	92%	72.3	2.8	62	9.2	A	3,161
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	1,515	1,408	93%	27.1	0.9	63	7.5	A	3,211	1,635	1,486	91%	27.1	0.9	63	7.9	A	3,188
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,618	1,505	93%	10.3	0.4	63	6.6	A	3,222	1,733	1,586	92%	10.3	0.4	62	7.0	A	3,198
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,660	1,535	92%	32.1	1.1	63	7.7	A	3,254	1,790	1,635	91%	32.2	1.3	62	8.2	A	3,230

Source: Parsons
Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-22. Year 2040 Build with Tolls Alternative Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WB MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	855	855	100%	36.6	1.6	61	7.2	A	37	2,090	2,090	100%	39.3	4.2	56	19.0	C	39
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	725	725	100%	25.2	0.7	63	5.8	A	62	1,890	1,890	100%	26.0	1.4	61	15.5	B	65
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	811	811	100%	11.0	0.4	63	5.0	A	73	2,070	2,070	100%	11.7	1.0	59	13.5	B	77
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	945	945	100%	79.6	2.7	63	7.3	A	152	2,395	2,395	100%	83.8	6.8	59	19.1	C	161
Choco Rd off-ramp to Choco Rd on-ramp	840	840	100%	34.6	0.8	63	4.5	A	187	2,380	2,368	99%	36.3	2.6	60	13.1	B	197
Choco Rd on-ramp to I-15 NB/SB off-ramp	1,175	1,175	100%	56.6	1.3	63	4.7	A	243	2,615	2,583	99%	57.7	2.3	62	10.4	A	255
I-15 NB/SB off-ramp to I-15 SB on-ramp	838	802	96%	98.7	0.8	64	3.6	A	342	2,051	2,051	100%	101.9	3.9	62	11.3	B	357
I-15 NB on-ramp to I-15 NB on-ramp	920	887	96%	10.7	0.3	63	4.0	A	353	2,570	2,463	96%	11.1	0.7	61	11.4	B	368
I-15 SB on-ramp to National Trails Hwy off-ramp	2,110	2,102	100%	66.4	3.0	62	8.5	A	419	3,970	3,806	96%	69.0	5.5	60	15.9	B	437
National Trails Hwy off-ramp to National Trails Hwy on-ramp	1,935	1,935	100%	41.9	1.2	63	10.2	A	461	3,820	3,649	96%	43.6	2.8	61	20.0	C	480
National Trails Hwy on-ramp to Phantom St East off-ramp	2,350	2,346	100%	53.1	3.1	61	12.4	B	514	4,550	4,352	96%	56.1	6.0	58	24.3	C	536
Phantom St East off-ramp to Phantom St East loop on-ramp	1,610	1,610	100%	32.9	0.8	63	8.5	A	547	4,055	3,880	96%	34.4	2.2	61	21.3	C	571
Phantom St East loop on-ramp to Phantom St East direct on-ramp	1,855	1,826	98%	5.4	0.3	62	9.8	A	553	4,541	4,298	95%	5.8	0.7	57	25.0	C	577
Phantom St East direct on-ramp to Phantom St West off-ramp	1,875	1,867	100%	58.0	1.9	63	9.9	A	611	4,570	4,570	100%	64.5	8.4	56	29.5	D	641
Phantom St West off-ramp to Phantom St West on-ramp	1,620	1,606	99%	42.2	1.0	63	8.5	A	653	4,400	4,400	100%	44.8	3.6	60	26.8	D	686
Phantom St West on-ramp to Route 395 off-ramp	1,955	1,932	99%	54.1	2.3	62	7.8	A	707	6,080	5,897	97%	58.2	6.4	58	25.6	C	744
Route 395 off-ramp to Route 395 on-ramp	1,010	1,004	99%	46.9	0.7	64	5.2	A	754	4,415	4,239	96%	49.4	3.3	61	23.3	C	793
Route 395 on-ramp to Koala Rd off-ramp	1,105	1,106	100%	100.2	2.2	63	5.6	A	854	4,450	4,241	95%	107.5	9.6	59	23.1	C	901
Koala Rd off-ramp to Koala Rd on-ramp	875	858	98%	48.6	0.8	64	4.5	A	903	3,460	3,312	96%	50.6	2.8	61	18.1	C	952
Koala Rd on-ramp to Caughlin Rd off-ramp	950	917	96%	66.5	1.1	64	4.6	A	969	3,630	3,486	96%	69.9	4.7	60	18.5	C	1,021
Caughlin Rd off-ramp to Caughlin Rd on-ramp	925	891	96%	49.2	0.9	64	4.7	A	1,018	3,575	3,413	95%	51.8	3.5	60	18.8	C	1,073
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	1,085	1,038	96%	246.0	5.1	63	5.3	A	1,264	4,250	4,018	95%	262.9	21.9	59	22.2	C	1,336
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	1,020	953	93%	45.0	1.0	63	5.0	A	1,309	4,180	3,862	92%	48.3	4.3	59	21.8	C	1,384
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	1,185	1,105	93%	183.8	4.3	63	5.7	A	1,493	5,205	4,826	93%	203.6	23.8	56	28.1	D	1,588
Oasis Rd off-ramp to Oasis Rd loop on-ramp	1,160	1,068	92%	47.7	1.1	63	5.6	A	1,541	5,175	4,753	92%	51.4	4.8	59	27.0	D	1,639
Oasis Rd direct on-ramp to 240th St East off-ramp	1,235	1,128	91%	128.3	3.1	63	5.8	A	1,669	5,375	4,882	91%	142.6	17.4	57	27.9	D	1,782
240th St East off-ramp to 240th St East on-ramp	1,090	977	90%	43.8	0.9	63	5.1	A	1,713	4,825	4,335	90%	46.6	3.7	60	24.3	C	1,829
240th St East on-ramp to 210th St East off-ramp	1,230	1,087	88%	134.0	3.0	63	5.6	A	1,847	5,055	4,492	89%	144.4	13.3	59	24.8	C	1,973
210th St East off-ramp to 210th St East on-ramp	1,205	1,061	88%	42.1	1.0	63	5.6	A	1,889	4,725	4,119	87%	44.6	3.5	60	23.0	C	2,018
210th St East on-ramp to 170th St East off-ramp	1,255	1,101	88%	187.9	4.6	63	5.7	A	2,077	4,750	4,068	86%	200.9	17.7	59	22.5	C	2,219
170th St East off-ramp to 170th St East on-ramp	1,195	1,030	86%	44.3	1.1	63	5.5	A	2,121	4,435	3,707	84%	46.7	3.5	60	20.7	C	2,265
170th St East on-ramp to 140th St East off-ramp	1,290	1,104	86%	134.4	3.3	63	5.7	A	2,255	4,510	3,720	82%	142.7	11.8	59	20.3	C	2,408
140th St East off-ramp to 140th St East on-ramp	1,240	1,050	85%	36.4	0.9	63	5.6	A	2,292	4,480	3,659	82%	38.8	3.3	59	20.6	C	2,447
140th St East on-ramp to 90th St East off-ramp	1,990	1,682	85%	268.0	8.5	62	8.8	A	2,560	4,940	4,013	81%	286.4	27.1	58	22.6	C	2,733
90th St East off-ramp to 90th St East on-ramp	1,965	1,651	84%	44.3	1.5	62	8.8	A	2,604	4,890	3,883	79%	47.1	4.3	59	22.0	C	2,780
90th St East on-ramp to 70th St East off-ramp	2,600	2,287	88%	192.5	8.6	62	12.2	B	2,797	5,420	4,310	80%	208.1	24.4	57	24.8	C	2,988
50th St East off-ramp to 50th St East on-ramp	2,280	1,996	88%	43.3	1.7	62	10.7	A	2,840	5,025	3,924	78%	45.3	3.7	59	22.0	C	3,034
50th St East on-ramp to 20th St East off-ramp	3,405	3,109	91%	137.7	6.3	62	12.6	B	2,978	5,950	4,806	81%	141.9	10.5	60	20.1	C	3,176
20th St East off-ramp to 20th St East on-ramp	3,130	2,866	92%	41.7	1.8	62	11.6	B	3,019	5,630	4,466	79%	42.8	3.0	60	18.5	C	3,218
20th St East on-ramp to 10th St East off-ramp	3,980	3,694	93%	17.0	1.1	60	12.3	B	3,036	6,665	5,461	82%	18.6	2.8	55	19.9	C	3,237
10th St East off-ramp to 10th St East on-ramp	3,515	3,294	94%	46.0	2.1	62	13.3	B	3,082	6,035	4,850	80%	72.7	28.9	59	31.0	D	3,310
10th St East on-ramp to SR 14 SB off-ramp	3,800	3,577	94%	33.9	2.1	61	14.4	B	3,116	6,330	5,044	80%	55.1	23.2	58	32.6	D	3,365
SR 14 SB off-ramp to SR 138 WB west end of the network	2,345	2,219	95%	12.7	0.6	54	20.7	C	3,129	4,435	3,491	79%	14.6	2.3	47	37.5	**E**	3,379

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-22. Year 2040 Build with Tolls Alternative Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off-ramp	3,700	3,700	100%	150.9	9.7	61	20.2	C	151	6,025	5,633	93%	212.9	71.4	43	43.6	**E**	213
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	3,240	3,240	100%	22.5	1.5	61	17.9	B	173	5,400	5,048	93%	25.0	3.9	55	30.8	D	238
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,620	3,620	100%	11.6	1.1	59	20.7	C	185	5,800	5,420	93%	12.6	2.2	54	33.4	D	251
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	4,060	4,060	100%	22.5	1.8	60	17.2	B	207	6,300	5,940	94%	25.6	4.9	53	28.2	D	276
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,505	3,505	100%	24.5	1.8	60	19.5	C	232	5,720	5,379	94%	27.7	4.9	53	33.5	D	304
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	3,895	3,895	100%	17.0	1.2	60	16.3	B	249	6,220	5,853	94%	18.8	3.0	54	27.0	D	323
Mojave Dr off-ramp to Mojave Dr on-ramp	3,240	3,240	100%	20.9	1.1	61	17.7	B	270	5,540	5,246	95%	22.7	2.9	57	30.9	D	345
Mojave Dr on-ramp to D St off-ramp	3,740	3,740	100%	50.9	3.8	60	18.2	C	321	5,895	5,598	95%	55.5	8.4	55	30.1	D	401
D St off-ramp to D St on-ramp	2,590	2,590	100%	23.1	1.0	62	14.0	B	344	4,825	4,596	95%	24.0	1.9	60	25.6	C	425
D St on-ramp to East St off-ramp	2,890	2,868	99%	11.2	0.7	61	15.7	B	355	5,130	4,856	95%	11.9	1.4	57	28.2	D	437
E St off-ramp to East St on-ramp	2,840	2,822	99%	9.9	0.5	62	15.3	B	365	5,060	4,805	95%	10.4	1.1	58	27.5	D	447
E St on-ramp to Stoddard Wells Rd off-ramp	2,890	2,879	100%	36.4	2.2	61	15.8	B	401	5,115	4,858	95%	38.5	4.3	57	28.4	D	486
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	2,300	2,306	100%	10.9	0.5	62	12.3	B	412	4,435	4,221	95%	11.4	1.0	60	23.6	C	497
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	2,575	2,558	99%	48.1	2.1	62	10.3	A	460	5,005	4,752	95%	50.1	4.2	60	20.0	C	547
HDC EB/WB off-ramp to HDC WB on-ramp	2,275	2,217	97%	71.6	3.0	62	11.9	B	532	4,285	4,075	95%	74.0	5.3	60	22.5	C	621
HDC WB on-ramp to HDC EB on-ramp	2,425	2,383	98%	7.7	0.4	62	10.0	A	540	4,435	4,238	96%	8.0	0.7	60	18.5	C	629
HDC EB on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	3,525	3,383	96%	37.0	2.1	61	13.9	B	577	6,265	5,781	92%	44.6	9.9	49	29.7	D	674
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	3,065	2,934	96%	23.1	1.1	62	15.8	B	600	5,915	5,426	92%	26.1	4.1	55	33.1	D	700
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	3,295	3,136	95%	219.5	13.2	61	17.2	B	819	6,135	5,557	91%	250.6	44.7	53	34.6	D	951
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	2,840	2,702	95%	32.2	1.8	61	14.7	B	852	5,700	5,063	89%	33.8	3.4	58	28.9	D	984
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	3,235	3,080	95%	64.9	3.9	61	16.9	B	917	6,170	5,470	89%	70.9	10.0	55	32.9	D	1055
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	4,555	4,555	100%	60.3	5.0	59	25.6	C	60	3,860	3,860	100%	59.2	4.0	60	21.3	C	59
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	4,170	4,170	100%	37.4	3.1	60	23.4	C	98	3,360	3,360	100%	36.7	2.4	61	18.5	C	96
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	4,600	4,600	100%	221.5	21.9	58	26.5	D	319	3,840	3,840	100%	217.7	18.2	59	21.8	C	314
Quarry Rd off-ramp to Quarry Rd on-ramp	4,415	4,415	100%	25.5	2.4	59	25.0	C	345	3,580	3,580	100%	25.0	2.0	60	20.0	C	339
Quarry Rd on-ramp to HDC EB/WB off-ramp	4,705	4,705	100%	53.6	5.4	58	20.2	C	398	3,955	3,955	100%	53.3	5.0	59	16.9	B	392
HDC EB/WB off-ramp to HDC EB on-ramp	3,315	3,303	100%	79.1	5.3	61	18.1	C	477	2,295	2,295	100%	77.4	3.5	62	12.7	B	469
HDC WB on-ramp to HDC EB on-ramp	3,595	3,595	100%	10.8	0.9	59	16.7	B	488	2,600	2,600	100%	10.5	0.6	61	12.0	B	480
HDC EB on-ramp to Stoddard Wells Rd off-ramp	4,350	4,310	99%	29.1	2.9	59	18.4	C	517	3,595	3,490	97%	28.4	2.1	60	14.5	B	508
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,650	3,609	99%	28.2	2.0	60	19.9	C	546	3,095	3,017	97%	27.7	1.4	62	16.3	B	536
Stoddard Wells Rd direct on-ramp to East St off-ramp	4,245	4,156	98%	23.7	2.7	58	24.1	C	569	3,590	3,481	97%	22.9	1.9	60	19.4	C	559
E St off-ramp to East St on-ramp	4,205	4,163	99%	9.1	0.9	58	23.8	C	578	3,535	3,430	97%	8.7	0.6	61	18.9	C	567
E St on-ramp to D St off-ramp	4,275	4,229	99%	11.5	1.0	59	23.9	C	590	3,590	3,479	97%	11.2	0.7	61	19.1	C	579
D St off-ramp to D St on-ramp	3,970	3,906	98%	22.0	1.6	60	21.6	C	612	3,305	3,191	97%	21.5	1.1	62	17.3	B	600
D St on-ramp to Mojave Dr off-ramp	4,870	4,827	99%	53.5	5.1	59	20.1	C	665	4,420	4,307	97%	52.5	3.9	60	17.6	B	653
Mojave Dr off-ramp to Mojave Dr on-ramp	4,515	4,433	98%	20.9	1.9	59	25.0	C	686	3,940	3,850	98%	20.4	1.4	61	21.2	C	673
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	5,220	5,132	98%	15.5	1.8	57	22.5	C	702	4,635	4,513	97%	15.1	1.4	59	19.3	C	688
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,790	4,658	97%	27.7	2.5	59	26.3	D	729	4,175	4,071	98%	27.0	1.9	60	22.5	C	715
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	5,200	5,029	97%	23.6	1.9	60	21.1	C	753	4,730	4,631	98%	23.4	1.7	60	19.3	C	739
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,400	4,257	97%	12.9	0.9	60	23.6	C	766	3,780	3,642	96%	12.6	0.7	61	19.8	C	751
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,615	4,440	96%	8.6	0.8	59	25.0	C	775	3,980	3,822	96%	8.5	0.6	60	21.1	C	760
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,915	4,702	96%	171.4	15.4	59	26.6	D	946	4,330	4,139	96%	168.5	12.3	60	23.0	C	928

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-23. Year 2040 Build with Tolls Alternative Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	58	12.4	B	58	20.9	C
West Palmdale Blvd loop	Merging	62	7.9	A	61	14.6	B
West Palmdale Blvd direct	Merging	62	8.9	A	61	13.1	B
SR 138 WB	Merging	60	15	B	58	21	C
10th St W. loop	Merging	59	17.5	B	58	21.4	C
10th St W. direct	Merging	60	17.7	B	59	20.7	C
West Avenue N loop	Merging	61	16.8	B	59	20.1	C
West Avenue N direct	Merging	61	14.2	B	60	17.4	B
East Avenue S	Diverging	63	12.9	B	48	38.5	**E**
West Palmdale Blvd	Diverging	60	12.9	B	57	21.0	C
SR 138 EB	Diverging	61	13.3	B	59	21.9	C
10th St W.	Diverging	60	10.6	B	59	17.1	B
West Avenue N	Diverging	58	18.4	B	54	23.9	C
SOUTHBOUND							
West Avenue N loop	Merging	60	20.5	C	61	18.1	B
West Avenue N direct	Merging	60	17.8	B	62	13.7	B
10th St W.	Merging	61	16.4	B	62	10.7	B
SR 138 WB	Merging	60	14.6	B	60	11.2	B
West Palmdale Blvd loop	Merging	56	22.9	C	59	17.4	B
West Palmdale Blvd direct	Merging	55	26.5	C	59	20.0	B
East Ave. S	Merging	30	53.6	**E**	55	20.3	C
West Avenue N	Diverging	57	30.7	D	55	33.6	D
10th St W.	Diverging	50	28.2	D	30	51.0	**E**
SR 138 EB	Diverging	51	30.5	D	46	33.1	D
West Palmdale Blvd	Diverging	61	17.9	B	60	14.4	B
East Avenue S	Diverging	56	28.8	D	57	23.3	C

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-23. Year 2040 Build with Tolls Alternative Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	57	22	C	57	24	C
20th St E	Merging	62	13	B	61	15	B
50th St E	Merging	58	22	C	57	22	C
90th St E	Merging	60	17	B	60	17	B
140th St E	Merging	60	15	B	61	14	B
170th St E	Merging	60	15	B	61	12	B
210th St E	Merging	58	16	B	61	12	B
240th St E	Merging	57	17	B	59	13	B
Oasis Rd	Merging	59	15	B	60	12	B
Sheep Creek Rd loop	Merging	62	12	B	62	11	B
Sheep Creek Rd direct	Merging	61	11	B	61	10	B
Caughlin Rd loop	Merging	62	11	B	62	10	B
Caughlin Rd direct	Merging	61	9	A	62	9	A
Koala Rd loop	Merging	57	15	B	60	10	B
Koala Rd direct	Merging	60	14	B	61	10	B
Route 395 loop	Merging	49	26	C	55	19	B
Route 395 direct	Merging	59	21	C	60	17	B
Phantom St West loop	Merging	62	13	B	61	13	B
Phantom St West direct	Merging	61	15	B	59	16	B
Phantom St East loop	Merging	60	17	B	56	23	C
Phantom St East direct	Merging	60	20	B	57	26	C
Choco Rd	Merging	63	8	A	62	8	A
Dale Evans Pkwy loop	Merging	63	7	A	62	7	A
Dale Evans Pkwy direct	Merging	63	7	A	62	8	A
10th St E	Diverging	63	11	B	62	14	B
50th St E	Diverging	58	21	C	58	23	C
90th St E	Diverging	57	26	C	56	27	C
140th St E	Diverging	57	22	C	57	22	C
170th St E	Diverging	60	18	B	60	17	B
210th St E	Diverging	60	17	B	61	15	B
240th St E	Diverging	57	19	B	61	14	B
Oasis Rd	Diverging	59	19	B	60	15	B
Sheep Creek Rd	Diverging	55	20	C	59	15	B
Caughlin Rd	Diverging	60	14	B	60	13	B
Koala	Diverging	61	11	B	62	11	B
Route 395	Diverging	60	16	B	61	12	B
Phantom St West	Diverging	52	29	D	57	22	C
Phantom St East	Diverging	59	20	B	60	19	B
National Trails Hwy	Diverging	60	20	B	59	25	C
Dale Evans Pkwy	Diverging	62	10	A	62	10	A
10th St East to 20th St E	Weaving	59	17	B	58	20	B
National Trails Hwy to I-15 NB/SB	Weaving	61	13	B	60	16	B
I-15 NB/SB to Choco Rd	Weaving	62	7	A	62	8	A

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-23. Year 2040 Build with Tolls Alternative Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy loop	Merging	63	5	A	59	14	B
Dale Evans Pkwy direct	Merging	62	6	A	58	17	B
I-15 NB	Merging	62	4	A	61	11	B
Gateway Dr	Merging	61	13	B	54	24	C
Phantom St East loop	Merging	61	11	B	56	26	C
Phantom St East direct	Merging	61	11	B	50	34	D
Phantom St West	Merging	62	8	A	59	24	C
Route 395	Merging	62	5	A	60	20	B
Koala Rd loop	Merging	63	5	A	61	17	B
Koala Rd direct	Merging	63	4	A	60	16	B
Caughlin Rd loop	Merging	63	5	A	60	18	B
Caughlin Rd direct	Merging	62	5	A	55	21	C
Sheep Creek Rd loop	Merging	63	5	A	58	22	C
Sheep Creek Rd direct	Merging	62	5	A	44	31	D
Oasis Rd loop	Merging	63	6	A	58	26	C
Oasis Rd direct	Merging	62	5	A	56	24	C
240th St E	Merging	62	5	A	58	21	C
210th St E	Merging	63	5	A	59	18	B
170th St E	Merging	63	5	A	60	17	B
140th St E	Merging	61	9	A	54	21	C
90th St E	Merging	59	12	B	49	25	C
50th St E	Merging	59	13	B	59	19	B
10th St E	Merging	59	16	B	28	48	**E**
Dale Evans Pkwy	Diverging	62	7	A	61	18	B
Choco Rd	Diverging	63	8	A	60	20	B
Phantom St East	Diverging	59	16	B	58	26	C
Phantom St West	Diverging	61	11	B	58	29	D
Route 395	Diverging	60	9	A	54	28	D
Koala Rd	Diverging	62	7	A	55	27	C
Caughlin Rd	Diverging	63	5	A	60	19	B
Sheep Creek Road	Diverging	63	6	A	59	22	C
Oasis Rd	Diverging	63	6	A	59	26	C
240th St E	Diverging	62	6	A	54	30	D
210th St E	Diverging	63	6	A	57	26	C
170th St E	Diverging	63	6	A	57	23	C
140th St E	Diverging	63	6	A	59	20	B
90th St E	Diverging	62	9	A	59	22	C
50th St E	Diverging	61	13	B	56	25	C
20th St E	Diverging	61	13	B	59	19	B
SR 14 SB	Diverging	60	18	B	35	49	**E**
Choco to I-15 NB/SB	Weaving	63	5	A	63	9	A
I-15 SB to National Trails Hwy	Weaving	62	10	A	59	17	B
20th St East to 10th St E	Weaving	59	12	B	52	19	B

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-23. Year 2040 Build with Tolls Alternative Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

Summary of I-15

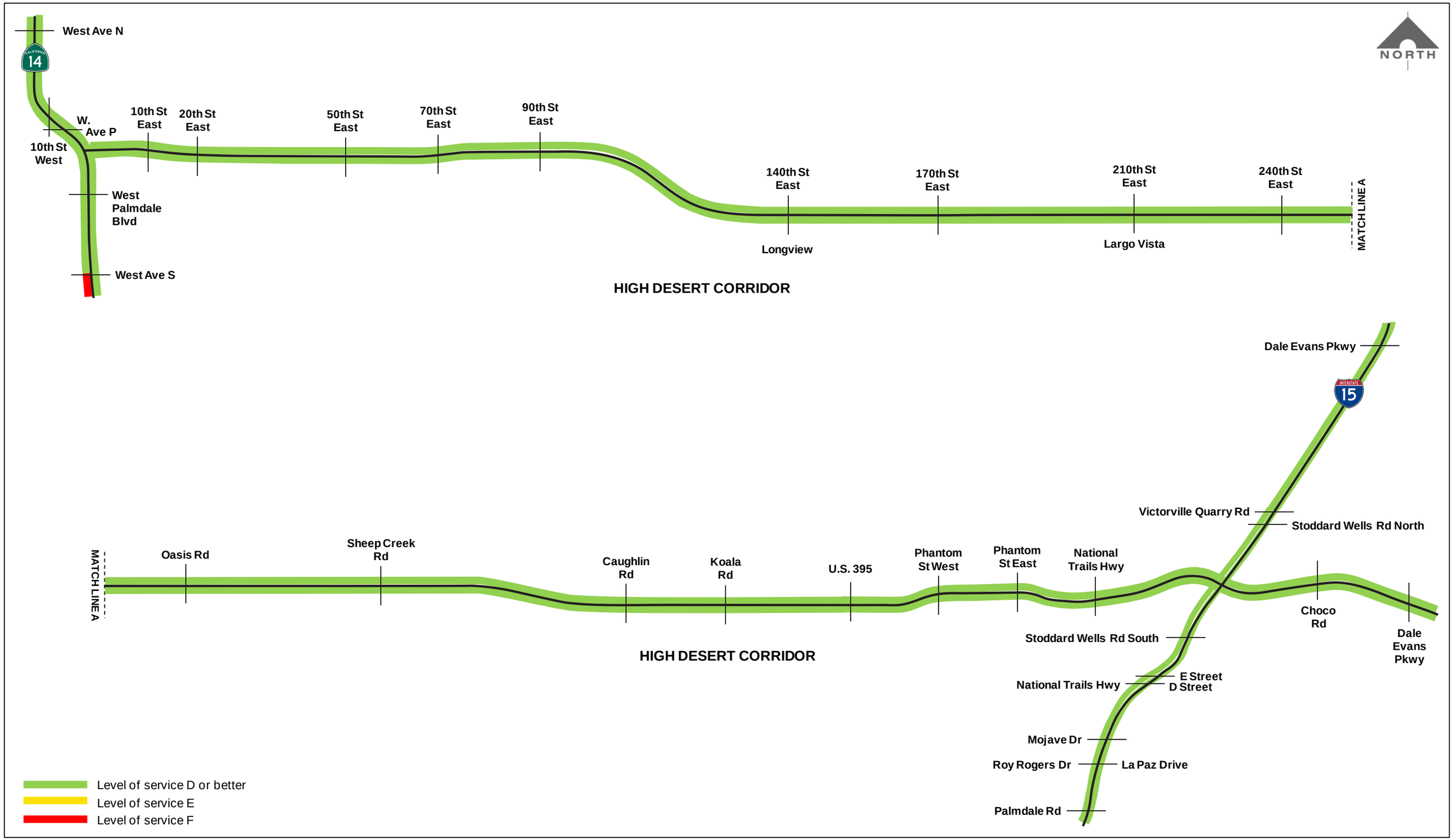
LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	58	23	C	52	34	D
Mojave Dr	Merging	58	23	C	48	38	**E**
D St	Merging	60	17	B	56	29	D
E St	Merging	61	17	B	58	28	D
HDC WB	Merging	61	9	A	59	16	B
Stoddard Wells Rd (Quarry Rd)	Merging	60	18	B	53	34	D
Dale Evans Pkwy	Merging	60	17	B	54	33	D
Palmdale Rd	Diverging	59	23	C	43	40	**E**
D St	Diverging	60	16	B	59	22	C
E St	Diverging	60	17	B	56	29	D
Stoddard Wells Rd	Diverging	60	18	B	56	30	D
Dale Evans Pkwy	Diverging	59	18	B	53	33	D
Palmdale Rd direct to Roy Rogers Dr	Weaving	59	17	B	50	27	C
Roy Rogers Dr to Mojave Dr	Weaving	59	16	B	53	26	C
Stoddard Wells Rd to HDC EB/WB	Weaving	62	10	A	59	18	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	60	14	B	46	29	D
SOUTHBOUND							
Dale Evans Pkwy	Merging	56	28	D	57	24	C
HDC WB	Merging	59	15	B	61	11	B
Stoddard Wells Rd direct	Merging	56	25	C	58	21	C
E St	Merging	58	25	C	60	20	C
Palmdale Rd loop	Merging	59	24	C	60	22	C
Palmdale Rd direct	Merging	57	27	C	58	25	C
Dale Evans Pkwy	Diverging	58	27	C	59	24	C
Quarry Rd	Diverging	58	27	C	58	23	C
E St	Diverging	57	25	C	59	21	C
D St	Diverging	58	25	C	60	20	C
Quarry Rd to HDC EB/WB	Weaving	58	19	B	58	17	B
HDC EB to Stoddard Wells Rd	Weaving	58	18	B	60	15	B
D St to Mojave Dr	Weaving	58	19	B	59	17	B
Mojave Dr to Roy Rogers Dr	Weaving	56	21	C	58	19	B
Roy Rogers Dr to Palmdale Rd	Weaving	59	20	B	59	20	B

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

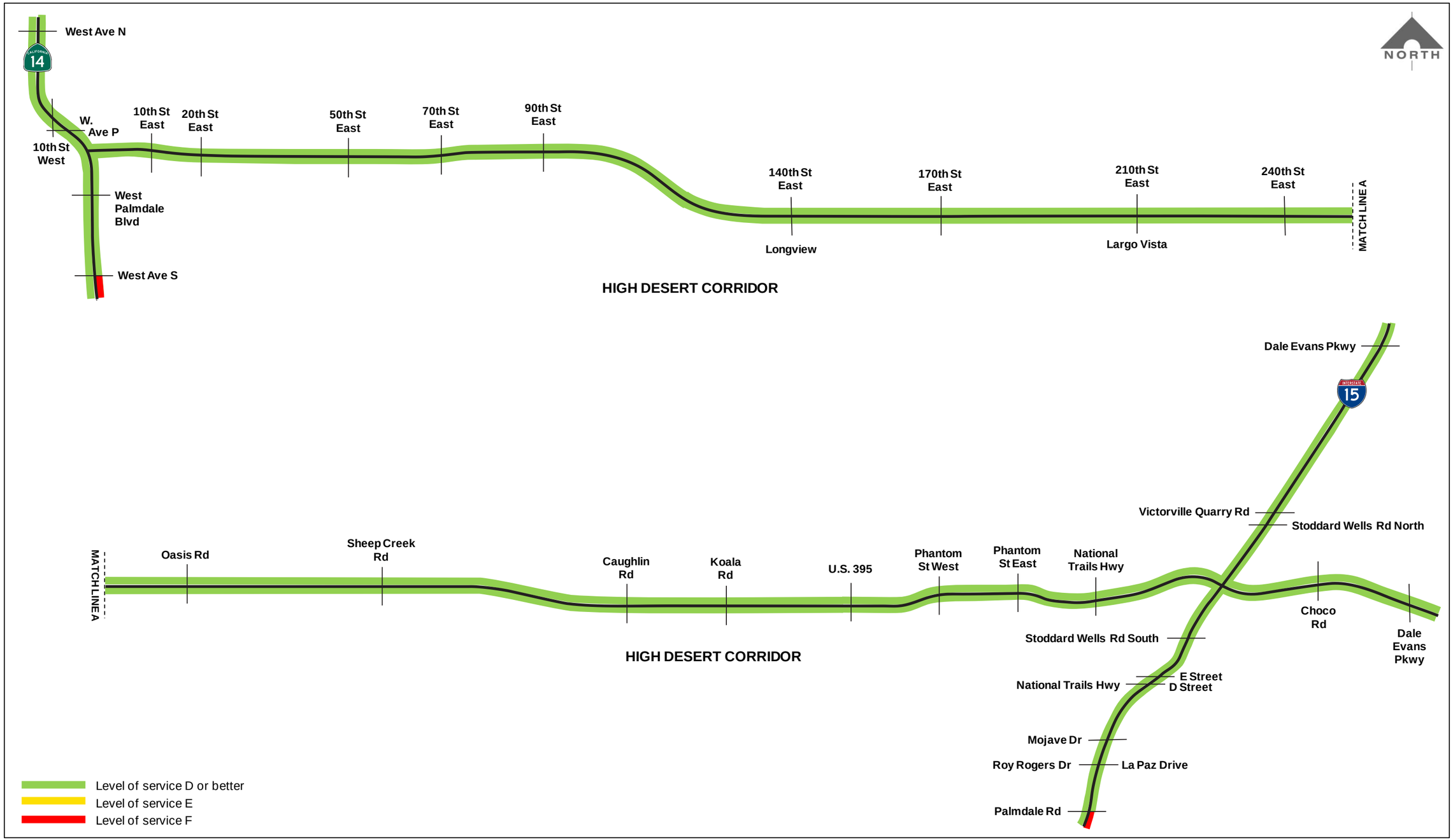
Level of service E

Level of service F



AM PEAK HOUR

Figure 4-24: Year 2040 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 4-24: Year 2040 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Level of Service *(2 of 2)*

Table 4-24. Year 2040 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Analysis Results *(1 of 4)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NORTHBOUND MAINLINE																											
Pearblossom Hwy direct on-ramp to East Ave S off-ramp	2,825	2,828	100%	185.3	31.8	56	14.1	B	185	2,825	2,828	100%	185.3	31.8	56	14.1	B	185	—	—	—	—	—	—	—	—	—
East Ave S off-ramp to East Ave S on-ramp	2,625	2,625	100%	28.0	2.4	60	11.1	B	213	2,625	2,625	100%	28.0	2.4	60	11.1	B	213	—	—	—	—	—	—	—	—	—
East Ave S on-ramp to West Palmdale Blvd off-ramp	3,340	3,350	100%	58.5	4.1	61	11.1	B	272	3,340	3,350	100%	58.5	4.1	61	11.1	B	272	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,887	2,840	98%	16.8	0.8	61	11.6	B	289	2,887	2,840	98%	16.8	0.8	61	11.6	B	289	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,535	1,528	100%	5.0	0.2	63	8.1	A	294	1,535	1,528	100%	5.0	0.2	63	8.1	A	294	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	1,890	1,898	100%	16.2	0.5	63	7.5	A	310	1,890	1,898	100%	16.2	0.5	63	7.5	A	310	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	2,415	2,368	98%	33.1	1.6	62	9.1	A	343	2,415	2,368	98%	33.1	1.6	62	9.1	A	343	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	2,028	1,988	98%	23.0	1.3	61	10.8	A	366	2,028	1,988	98%	23.0	1.3	61	10.8	A	366	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	3,885	3,753	97%	47.9	2.5	61	12.2	B	414	3,885	3,753	97%	47.9	2.5	61	12.2	B	414	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	4,607	4,479	97%	16.8	1.0	61	13.6	B	431	4,607	4,479	97%	16.8	1.0	61	13.6	B	431	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Ave N off-ramp	4,800	4,662	97%	66.9	4.6	61	15.0	B	497	4,800	4,662	97%	66.9	4.6	61	15.0	B	497	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	4,490	4,398	98%	17.9	0.8	62	17.7	B	515	4,490	4,398	98%	17.9	0.8	62	17.7	B	515	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	4,830	4,737	98%	9.4	0.4	62	15.3	B	525	4,830	4,737	98%	9.4	0.4	62	15.3	B	525	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to West Ave M off-ramp	5,000	4,908	98%	30.6	1.2	62	15.3	B	555	5,000	4,908	98%	30.6	1.2	62	15.3	B	555	—	—	—	—	—	—	—	—	—
SR 14 SOUTHBOUND MAINLINE																											
West Ave M on-ramp to West Ave N off-ramp	6,860	6,855	100%	38.4	3.6	59	29.3	D	38	5,140	5,200	101%	38.5	3.7	58	29.7	D	38	1,720	1,656	96%	38.3	3.5	59	28.2	D	38
West Ave N off-ramp to West Ave N loop on-ramp	6,540	6,501	99%	19.1	1.7	59	27.5	D	57	4,820	4,846	101%	19.0	1.6	59	27.2	D	57	1,720	1,655	96%	19.3	1.9	58	28.3	D	58
West Ave N loop on-ramp to West Ave N direct on-ramp	6,605	6,562	99%	11.3	0.9	60	22.0	C	69	4,885	4,908	100%	11.2	0.8	60	20.4	C	69	1,720	1,654	96%	11.6	1.1	58	28.5	D	69
West Ave N direct on-ramp to 10th St W off-ramp	6,975	6,939	99%	83.4	7.5	58	23.5	C	152	5,268	5,402	103%	82.9	7.0	58	22.9	C	152	1,708	1,536	90%	84.7	8.6	58	26.4	D	154
10th St W off-ramp to HDC off-ramp	6,200	6,157	99%	21.4	5.5	48	32.2	D	174	4,505	4,994	111%	21.2	5.3	48	34.6	D	173	1,695	1,163	69%	22.0	6.4	46	25.1	C	176
HDC off-ramp to 10th St W on-ramp	2,792	2,769	99%	23.7	2.6	57	16.2	B	197	1,097	1,606	146%	22.2	1.1	61	13.1	B	195	1,695	1,163	69%	25.8	4.7	53	22.2	C	202
10th St W on-ramp to Palmdale Blvd off-ramp	4,250	4,259	100%	34.2	2.5	60	17.7	B	231	2,295	3,001	131%	33.7	1.9	61	16.4	B	229	1,955	1,258	64%	35.2	3.6	59	21.5	C	237
West Palmdale Blvd off-ramp to HDC on-ramp	3,692	3,651	99%	32.8	1.7	61	14.9	B	264	1,737	2,323	134%	32.1	1.0	63	12.3	B	261	1,955	1,328	68%	34.1	2.9	59	22.5	C	271
HDC on-ramp to West Palmdale Blvd loop on-ramp	5,060	4,908	97%	24.4	2.0	59	16.1	B	289	3,361	3,922	117%	24.2	1.9	59	15.9	B	285	1,700	987	58%	24.8	2.3	58	16.9	B	296
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	5,793	5,778	100%	14.9	2.1	56	23.2	C	304	4,078	4,230	104%	14.6	1.8	57	21.4	C	300	1,715	1,548	90%	15.7	2.9	53	29.4	D	311
West Palmdale Blvd direct on-ramp to East Ave S off-ramp	6,473	6,374	98%	84.1	21.5	49	32.4	D	388	4,632	4,731	102%	88.3	25.8	47	33.4	D	388	1,841	1,644	89%	72.4	9.6	56	29.3	D	384
East Ave S off-ramp to East Ave S on-ramp	6,088	5,952	98%	45.2	24.7	29	50.5	F	433	4,121	4,282	104%	53.8	33.3	25	57.7	F	442	1,967	1,670	85%	23.0	2.4	58	28.9	D	407
East Ave S on-ramp to Angeles Forest Hwy off-ramp	7,678	7,338	96%	321.3	132.6	39	48.1	F	754	5,711	5,460	96%	342.8	154.0	38	50.4	F	784	1,967	1,878	95%	258.0	69.9	47	40.6	E	665

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NORTHBOUND MAINLINE																											
Pearblossom Hwy direct on-ramp to East Ave S off-ramp	9,490	7,093	75%	385.2	230.6	29	65.2	F	385	7,080	5,211	74%	443.5	289.0	26	72.5	F	443	2,410	1,882	78%	232.8	77.8	46	43.2	E	233
East Ave S off-ramp to East Ave S on-ramp	7,900	5,767	73%	29.3	3.5	57	25.2	C	415	5,490	4,088	74%	29.3	3.5	57	23.8	C	473	2,410	1,680	70%	29.4	3.4	57	29.5	D	262
East Ave S on-ramp to West Palmdale Blvd off-ramp	8,440	6,306	75%	60.7	6.1	58	21.7	C	475	6,270	5,110	81%	61.1	6.5	58	22.2	C	534	2,170	1,196	55%	58.7	4.1	60	19.9	C	321
West Palmdale Blvd off-ramp to HDC off-ramp	6,976	5,248	75%	17.3	1.3	59	22.2	C	493	4,886	4,327	89%	17.4	1.4	59	24.5	C	551	2,090	921	44%	17.0	1.1	60	15.3	B	338
HDC off-ramp to West Palmdale Blvd loop on-ramp	4,425	3,291	74%	5.2	0.3	61	18.1	C	498	2,335	2,373	102%	5.2	0.3	61	19.5	C	556	2,090	919	44%	5.3	0.4	60	15.3	B	343
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,650	3,512	76%	16.7	0.9	61	14.3	B	514	2,560	2,561	100%	16.5	0.7	62	13.8	B	573	2,090	952	46%	17.2	1.3	59	16.0	B	360
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	5,250	4,097	78%	34.1	2.4	60	16.3	B	549	3,195	3,193	100%	34.1	2.4	60	16.7	B	607	2,055	904	44%	34.1	2.4	60	15.1	B	394
10th St West off-ramp to HDC on-ramp	4,519	3,534	78%	23.6	1.8	60	19.7	C	572	2,499	2,627	105%	23.6	1.8	60	22.0	C	631	2,020	907	45%	23.7	1.8	60	15.2	B	418
HDC on-ramp to 10th St West on-ramp	7,745	6,089	79%	49.3	3.7	60	20.4	C	621	5,720	4,845	85%	48.7	3.2	60	20.1	C	679	2,025	1,244	61%	51.3	5.5	57	21.9	C	469
10th St W loop on-ramp to 10th St W direct on-ramp	8,284	6,629	80%	17.3	1.5	59	20.8	C	639	6,254	5,298	85%	17.2	1.4	60	20.2	C	696	2,030	1,331	66%	17.7	1.9	58	23.1	C	487
10th St W direct on-ramp to West Ave N off-ramp	8,405	6,728	80%	72.2	9.7	57	23.3	C	711	6,348	5,471	86%	72.9	10.5	56	23.8	C	769	2,057	1,257	61%	68.9	6.3	59	21.4	C	556
West Ave N off-ramp to West Ave N loop on-ramp	7,850	6,224	79%	18.8	1.7	59	26.4	D	730	5,780	4,954	86%	18.7	1.6	59	27.9	D	788	2,070	1,270	61%	19.2	2.1	58	22.0	C	575
West Ave N loop on-ramp to West Ave N direct on-ramp	8,060	6,428	80%	9.8	0.8	60	21.6	C	739	5,990	5,143	86%	9.7	0.7	60	21.4	C	798	2,070	1,285	62%	10.0	1.0	58	22.2	C	585
West Ave N direct on-ramp to West Ave M off-ramp	8,260	6,620	80%	31.8	2.4	60	21.4	C	771	6,190	5,286	85%	31.4	2.0	61	21.0	C	829	2,070	1,334	64%	33.4	3.8	57	23.4	C	618
SR 14 SOUTHBOUND MAINLINE																											
West Ave M on-ramp to West Ave N off-ramp	6,870	6,872	100%	38.9	4.3	58	29.8	D	39	6,870	6,872	100%	38.9	4.3	58	29.8	D	39	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	6,350	6,328	100%	19.0	1.6	59	26.7	D	58	6,350	6,328	100%	19.0	1.6	59	26.7	D	58	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	6,470	6,438	100%	11.3	0.8	60	21.5	C	69	6,470	6,438	100%	11.3	0.8	60	21.5	C	69	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to 10th St W off-ramp	6,835	6,796	99%	83.3	7.4	58	23.1	C	152	6,835	6,796	99%	83.3	7.4	58	23.1	C	152	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	5,665	5,638	100%	20.3	4.4	50	28.0	D	173	5,665	5,638	100%	20.3	4.4	50	28.0	D	173	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St W on-ramp	2,521	2,520	100%	22.1	1.1	61	14.3	B	195	2,521	2,520	100%	22.1	1.1	61	14.3	B	195	—	—	—	—	—	—	—	—	—
10th St W on-ramp to Palmdale Blvd off-ramp	3,470	3,470	100%	33.9	2.3	61	14.9	B	229	3,470	3,470	100%	33.9	2.3	61	14.9	B	229	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	2,480	2,480	100%	32.0	0.9	63	10.0	A	261	2,480	2,480	100%	32.0	0.9	63	10.0	A	261	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	4,168	3,891	93%	24.2	1.9	59	12.7	B	285	4,168	3,891	93%	24.2	1.9	59	12.7	B	285	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,543	4,227	93%	13.8	1.1	60	15.8	B	299	4,543	4,227	93%	13.8	1.1	60	15.8	B	299	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Ave S off-ramp	4,818	4,471	93%	68.1	5.4	60	18.3	C	367	4,818	4,471	93%	68.1	5.4	60	18.3	C	367	—	—	—	—	—	—	—	—	—
East Ave S off-ramp to East Ave S on-ramp	3,918	3,773	96%	21.7	1.1	61	15.4	B	389	3,918	3,773	96%	21.7	1.1	61	15.4	B	389	—	—	—	—	—	—	—	—	—
East Ave S on-ramp to Angeles Forest Hwy off-ramp	4,593	4,397	96%	221.7	33.9	57	19.3	C	610	4,593	4,397	96%	221.7	33.9	57	19.3	C	610	—	—	—	—	—	—	—	—	—

Source: Parsons
Level of service based on HCM 2000
Level of service E
Level of service F

Table 4-24. Year 2040 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EASTBOUND MAINLINE																		
SR-138 EB west end of the network to SR-14 NB on-ramp	3,570	3,570	100%	21.8	2.6	46	38.5	**E**	22	3,250	3,112	96%	21.4	2.1	47	32.8	D	21
SR-14 NB on-ramp to 10th St E off-ramp	4,922	4,881	99%	34.3	2.6	60	18.5	C	56	5,801	5,070	87%	34.1	2.4	60	19.1	C	55
10th St E off-ramp to 10th St E on-ramp	4,549	4,484	99%	46.1	2.3	62	18.2	C	102	5,291	4,616	87%	46.5	2.6	61	18.9	C	102
10th St E on-ramp to 20th St E off-ramp	5,144	5,051	98%	17.1	1.2	60	16.9	B	119	5,891	5,196	88%	17.2	1.3	59	17.5	B	119
20th St E off-ramp to 20th St E on-ramp	4,479	4,360	97%	43.7	2.2	62	17.7	B	163	4,766	4,261	89%	43.6	1.9	62	17.2	B	163
20th St E on-ramp to 50th St E off-ramp	4,764	4,641	97%	139.1	9.2	60	18.0	B	302	5,136	4,621	90%	138.4	8.4	61	17.8	B	301
50th St E off-ramp to 50th St E on-ramp	4,064	3,929	97%	44.3	2.8	61	21.6	C	346	4,016	3,637	91%	43.9	2.5	61	19.9	C	345
50th St E on-ramp to 90th St E off-ramp	4,704	4,499	96%	201.8	17.8	59	25.1	C	548	4,606	4,184	91%	200.0	16.1	59	23.1	C	545
90th St E off-ramp to 90th St E on-ramp	4,469	4,217	94%	46.5	3.5	60	23.5	C	595	4,136	3,759	91%	45.9	2.9	61	20.7	C	591
90th St E on-ramp to 140th St E off-ramp	4,694	4,338	92%	278.9	24.2	59	24.1	C	874	4,436	3,989	90%	276.9	22.1	59	22.0	C	868
140th St E off-ramp to 140th St E on-ramp	4,384	3,993	91%	47.1	3.6	60	22.3	C	921	3,861	3,417	89%	46.4	2.9	61	18.8	C	914
140th St E on-ramp to 170th St E off-ramp	4,599	4,160	90%	139.5	12.0	59	22.8	C	1,060	4,121	3,638	88%	137.7	10.2	60	19.7	C	1,052
170th St E off-ramp to 170th St E on-ramp	4,499	4,027	90%	48.2	3.9	59	22.6	C	1,108	3,926	3,436	88%	47.5	3.3	60	19.0	C	1,099
170th St E on-ramp to 210th St E off-ramp	4,819	4,266	89%	200.4	18.6	58	23.8	C	1,309	4,176	3,618	87%	197.1	15.4	59	19.8	C	1,296
210th St E off-ramp to 210th St E on-ramp	4,769	4,136	87%	44.8	3.8	59	23.3	C	1,354	4,111	3,492	85%	44.3	3.3	60	19.5	C	1,341
210th St E on-ramp to 240th St E off-ramp	4,939	4,235	86%	145.0	14.3	58	23.6	C	1,498	4,191	3,535	84%	141.7	11.1	60	19.2	C	1,482
240th St E off-ramp to 240th St E on-ramp	4,759	4,027	85%	48.6	4.1	59	22.7	C	1,547	4,151	3,460	83%	48.2	3.7	60	19.3	C	1,531
240th St E on-ramp to Oasis Rd off-ramp	5,159	4,383	85%	142.6	15.8	57	24.8	C	1,690	4,376	3,632	83%	138.5	11.7	59	19.9	C	1,669
Oasis Rd off-ramp to Oasis Rd on-ramp	4,984	4,178	84%	48.7	4.0	59	23.5	C	1,738	4,251	3,489	82%	48.3	3.7	60	19.5	C	1,717
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	5,134	4,239	83%	201.6	21.4	58	24.0	C	1,940	4,351	3,538	81%	197.3	17.0	59	19.5	C	1,915
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	4,264	3,483	82%	49.3	3.2	60	19.2	C	1,989	3,836	3,071	80%	49.3	3.3	60	17.0	B	1,964
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	4,559	3,704	81%	264.4	22.3	59	20.5	C	2,254	4,206	3,355	80%	264.7	22.5	59	18.6	C	2,229
Caughlin Rd off-ramp to Caughlin Rd on-ramp	3,779	3,017	80%	46.9	2.6	61	16.4	B	2,301	3,416	2,663	78%	46.8	2.5	61	14.5	B	2,275
Caughlin Rd on-ramp to Koala Rd off-ramp	3,924	3,129	80%	72.8	4.9	60	16.6	B	2,373	3,521	2,760	78%	72.4	4.4	61	14.6	B	2,348
Koala Rd off-ramp to Koala Rd loop on-ramp	3,544	2,811	79%	32.7	1.8	61	15.3	B	2,406	3,331	2,610	78%	32.9	2.0	61	14.3	B	2,381
Koala Rd loop on-ramp to Koala Rd direct on-ramp	4,483	3,739	83%	18.5	2.6	55	19.8	C	2,424	3,795	3,077	81%	17.6	1.8	58	15.6	B	2,398
Koala Rd direct on-ramp to Route 395 off-ramp	4,564	3,797	83%	108.3	9.2	59	20.7	C	2,533	3,906	3,146	81%	107.3	8.2	59	17.0	B	2,506
Route 395 off-ramp to Route 395 loop on-ramp	3,744	3,101	83%	26.1	1.3	62	16.8	B	2,559	3,246	2,613	80%	26.0	1.3	62	14.1	B	2,532
Route 395 loop on-ramp to Route 395 direct on-ramp	5,041	4,387	87%	22.0	1.5	61	18.1	C	2,581	4,290	3,588	84%	21.8	1.3	61	14.7	B	2,553
Route 395 direct on-ramp to Phantom W off-ramp	5,119	4,444	87%	58.9	4.2	60	18.1	C	2,640	4,391	3,677	84%	58.2	3.6	61	14.8	B	2,612
Phantom St West off-ramp to Phantom St West loop on-ramp	3,684	3,241	88%	28.1	1.3	62	17.5	B	2,668	3,471	2,890	83%	28.0	1.2	62	15.6	B	2,640
Phantom St West loop on-ramp to Phantom St West direct on-ramp	3,767	3,319	88%	12.7	0.7	61	15.4	B	2,680	3,826	3,242	85%	12.9	0.9	60	15.3	B	2,653
Phantom St West direct on-ramp to Phantom St East direct off-ramp	4,019	3,563	89%	58.6	4.1	60	19.0	C	2,739	4,246	3,648	86%	58.6	4.2	60	19.5	C	2,711
Phantom St East direct off-ramp to Phantom St East loop on-ramp	3,394	3,000	88%	36.0	1.6	62	16.2	B	2,775	3,851	3,284	85%	36.3	1.9	61	17.9	B	2,748
Phantom St East loop on-ramp to Phantom St East direct on-ramp	3,690	3,265	88%	16.3	1.0	61	17.9	B	2,791	4,661	4,032	87%	17.4	2.2	57	23.8	C	2,765
Phantom St East direct on-ramp to National Trails Hwy off-ramp	4,019	3,576	89%	41.8	2.9	60	19.8	C	2,833	5,181	4,578	88%	43.7	4.8	58	26.5	D	2,809
National Trails Hwy off-ramp to National Trails Hwy on-ramp	3,639	3,265	90%	43.4	2.3	61	17.7	B	2,876	4,706	4,183	89%	44.0	2.8	61	23.0	C	2,853
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	3,940	3,516	89%	104.3	5.8	61	14.4	B	2,981	4,956	4,397	89%	106.6	8.2	60	18.5	C	2,959
I-15 NB/SB off-ramp to I-15 NB on-ramp	1,925	1,739	90%	80.6	2.3	63	9.2	A	3,061	1,925	1,688	88%	80.4	2.2	63	8.9	A	3,040
I-15 NB/SB on-ramp to Choco Rd off-ramp	2,295	2,121	92%	57.5	2.3	62	8.6	A	3,119	2,500	2,213	89%	57.5	2.3	62	8.9	A	3,097
Choco Rd off-ramp to Choco Rd on-ramp	2,145	1,962	91%	33.8	1.6	62	10.6	A	3,153	2,135	1,888	88%	33.6	1.4	62	10.2	A	3,131
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	2,195	2,001	91%	72.9	3.3	62	10.4	A	3,226	2,260	1,999	88%	72.7	3.2	62	10.3	A	3,204
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	1,720	1,520	88%	27.2	0.9	63	8.1	A	3,253	1,950	1,716	88%	27.2	1.0	62	9.2	A	3,231
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,840	1,635	89%	10.4	0.5	62	7.2	A	3,263	2,045	1,809	88%	10.4	0.5	62	8.0	A	3,241
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,890	1,682	89%	32.3	1.3	62	8.5	A	3,295	2,095	1,844	88%	32.4	1.4	62	9.3	A	3,274

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-24. Year 2040 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WESTBOUND MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	1,410	1,410	100%	38.0	3.0	58	12.3	B	38	2,525	2,459	97%	39.6	4.5	56	22.2	C	40
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	1,280	1,280	100%	25.7	1.2	62	10.6	A	64	2,325	2,258	97%	26.3	1.7	60	18.7	C	66
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,379	1,379	100%	11.3	0.7	61	8.9	A	75	2,505	2,432	97%	11.9	1.3	58	16.2	B	78
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	1,500	1,500	100%	81.7	4.6	61	11.9	B	157	2,830	2,751	97%	85.3	8.2	58	22.3	C	163
Choco Rd off-ramp to Choco Rd on-ramp	1,395	1,395	100%	35.4	1.7	62	7.7	A	192	2,815	2,735	97%	36.9	3.1	59	15.4	B	200
Choco Rd on-ramp to I-15 NB/SB off-ramp	1,730	1,725	100%	57.1	1.7	63	6.9	A	249	3,050	2,966	97%	58.0	2.6	62	12.0	B	258
I-15 NB/SB off-ramp to I-15 SB on-ramp	1,395	1,395	100%	100.4	2.5	63	7.4	A	349	2,462	2,460	100%	102.6	4.7	62	13.8	B	361
I-15 NB on-ramp to I-15 NB on-ramp	2,475	2,448	99%	11.4	0.9	59	11.6	B	361	3,510	3,323	95%	11.7	1.3	58	16.2	B	372
I-15 SB on-ramp to National Trails Hwy off-ramp	3,665	3,635	99%	68.2	4.8	60	15.1	B	429	4,800	4,549	95%	70.6	7.2	58	19.5	C	443
National Trails Hwy off-ramp to National Trails Hwy on-ramp	3,435	3,414	99%	43.0	2.3	62	18.5	C	472	4,510	4,261	94%	44.3	3.5	60	23.8	C	487
National Trails Hwy on-ramp to Phantom St East off-ramp	3,825	3,774	99%	62.5	12.6	52	23.9	C	535	4,975	4,704	95%	57.3	7.3	57	26.9	D	545
Phantom St East off-ramp to Phantom St East loop on-ramp	2,420	2,367	98%	33.6	1.4	62	12.7	B	568	4,235	4,017	95%	34.5	2.4	60	22.2	C	579
Phantom St East loop on-ramp to Phantom St East direct on-ramp	2,705	2,622	97%	5.5	0.3	61	14.3	B	574	4,841	4,520	93%	6.0	0.8	56	26.9	D	585
Phantom St East direct on-ramp to Phantom St West off-ramp	2,735	2,689	98%	59.4	3.3	61	14.7	B	633	4,870	4.870	100%	65.6	9.5	55	31.1	D	651
Phantom St West off-ramp to Phantom St West on-ramp	1,990	1,950	98%	42.5	1.3	63	10.3	A	676	4,515	4,510	100%	44.9	3.7	59	26.8	D	696
Phantom St West on-ramp to Route 395 off-ramp	2,815	2,753	98%	54.4	2.6	61	11.0	B	730	6,070	5,759	95%	60.7	8.9	55	26.1	D	756
Route 395 off-ramp to Route 395 on-ramp	1,825	1,820	100%	47.4	1.1	63	9.6	A	777	4,665	4,429	95%	49.8	3.6	60	24.6	C	806
Route 395 on-ramp to Koala Rd off-ramp	2,420	2,386	99%	102.7	4.5	61	12.5	B	880	5,575	5,262	94%	116.4	18.4	54	31.5	D	922
Koala Rd off-ramp to Koala Rd on-ramp	1,935	1,897	98%	49.3	1.4	63	10.1	A	929	4,465	4,209	94%	51.3	3.5	60	23.2	C	974
Koala Rd on-ramp to Caughlin Rd off-ramp	2,085	2,041	98%	67.8	2.4	62	10.5	A	997	4,835	4,546	94%	71.3	6.0	59	24.6	C	1,045
Caughlin Rd off-ramp to Caughlin Rd on-ramp	1,985	1,932	97%	50.1	1.7	63	10.3	A	1,047	4,665	4,394	94%	52.5	4.1	60	24.5	C	1,097
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	2,545	2,464	97%	252.4	11.2	62	13.0	B	1,300	5,475	5,074	93%	269.5	28.4	57	29.0	D	1,367
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	2,255	2,135	95%	45.9	1.8	62	11.4	B	1,346	5,115	4,634	91%	48.2	4.1	59	26.0	D	1,415
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	2,395	2,239	94%	185.7	6.1	63	8.9	A	1,531	6,185	5,584	90%	195.0	15.5	59	23.5	C	1,610
Oasis Rd off-ramp to Oasis Rd loop on-ramp	2,315	2,140	92%	48.2	1.6	63	8.5	A	1,579	6,025	5,323	88%	50.5	3.9	60	22.2	C	1,660
Oasis Rd direct on-ramp to 240th St E off-ramp	2,395	2,185	91%	129.6	4.4	62	8.5	A	1,709	6,230	5,463	88%	142.4	17.3	56	23.7	C	1,803
240th St E off-ramp to 240th St E on-ramp	2,220	2,003	90%	44.5	1.6	62	10.7	A	1,754	5,705	4,945	87%	48.0	5.2	58	28.5	D	1,851
240th St E on-ramp to 210th St E off-ramp	2,245	2,005	89%	136.4	5.6	62	10.4	A	1,890	5,950	5,130	86%	150.4	19.5	56	29.5	D	2,001
210th St E off-ramp to 210th St E on-ramp	2,180	1,930	89%	42.9	1.8	62	10.4	A	1,933	5,575	4,727	85%	45.2	4.1	59	26.7	D	2,046
210th St E on-ramp to 170th St E off-ramp	2,240	1,958	87%	191.1	8.2	62	10.3	A	2,124	5,630	4,693	83%	202.9	19.9	58	26.2	D	2,249
170th St E off-ramp to 170th St E on-ramp	2,060	1,741	85%	44.8	1.7	62	9.3	A	2,169	5,265	4,298	82%	47.3	4.2	59	24.2	C	2,297
170th St E on-ramp to 140th St E off-ramp	2,240	1,897	85%	136.4	5.7	62	9.9	A	2,305	5,390	4,347	81%	144.3	13.7	59	24.0	C	2,441
140th St E off-ramp to 140th St E on-ramp	2,080	1,743	84%	36.8	1.4	62	9.3	A	2,342	5,145	4,101	80%	38.8	3.4	59	23.1	C	2,480
140th St E on-ramp to 90th St E off-ramp	2,620	2,253	86%	271.2	12.1	62	12.0	B	2,613	5,470	4,326	79%	288.5	29.8	58	24.5	C	2,768
90th St E off-ramp to 90th St E on-ramp	2,390	2,015	84%	44.5	1.8	62	10.8	A	2,658	5,105	3,949	77%	46.7	4.1	59	22.2	C	2,815
90th St E on-ramp to 70th St E off-ramp	2,835	2,441	86%	193.3	9.7	61	13.1	B	2,851	5,480	4,219	77%	206.4	22.9	57	24.1	C	3,021
50th St E off-ramp to 50th St E on-ramp	2,310	1,982	86%	43.3	1.7	62	10.6	A	2,894	4,760	3,593	75%	44.8	3.3	60	19.9	C	3,066
50th St E on-ramp to 20th St E off-ramp	3,305	2,959	90%	137.3	6.0	62	12.0	B	3,031	5,575	4,356	78%	141.1	9.9	60	18.1	C	3,207
20th St E off-ramp to 20th St E on-ramp	3,005	2,696	90%	41.6	1.8	62	10.9	A	3,073	5,220	4,030	77%	42.7	2.9	60	16.7	B	3,250
20th St E on-ramp to 10th St E off-ramp	3,850	3,524	92%	17.0	1.1	60	11.7	B	3,090	5,970	4,758	80%	17.6	1.8	58	16.4	B	3,267
10th St E off-ramp to 10th St E on-ramp	3,305	3,045	92%	45.7	1.9	62	12.2	B	3,136	5,320	4,258	80%	48.2	4.3	59	18.0	C	3,316
10th St E on-ramp to SR-14 SB off-ramp	3,710	3,455	93%	33.6	1.8	61	13.8	B	3,169	5,683	4,608	81%	37.2	5.5	55	20.6	C	3,353
SR-14 SB off-ramp to SR-138 WB west end of the network	2,185	2,044	94%	12.6	0.5	54	18.9	C	3,182	3,795	3,036	80%	14.0	1.8	49	31.2	D	3,367

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-24. Year 2040 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NORTHBOUND MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off Ramp	3,690	3,701	100%	150.9	9.7	61	20.2	C	151	6,000	5,575	93%	259.9	118.3	37	50.6	F	260
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	3,215	3,215	100%	22.5	1.5	61	17.6	B	173	5,350	4,913	92%	24.4	3.3	56	29.1	D	284
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,600	3,596	100%	11.6	1.1	59	20.3	C	185	5,755	5,294	92%	12.8	2.3	53	33.1	D	297
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	4,050	4,051	100%	22.6	1.9	59	17.0	B	207	6,260	5,805	93%	25.2	4.5	53	27.3	D	322
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,490	3,490	100%	24.5	1.8	60	19.4	C	232	5,640	5,181	92%	27.0	4.2	55	31.4	D	349
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	3,915	3,915	100%	17.1	1.3	60	16.4	B	249	6,205	5,736	92%	18.5	2.6	55	25.9	C	368
Mojave Dr off-ramp to Mojave Dr on-ramp	3,310	3,300	100%	21.0	1.3	61	18.2	C	270	5,415	5,000	92%	22.1	2.3	58	28.6	D	390
Mojave Dr on-ramp to D St off-ramp	3,760	3,768	100%	51.5	4.3	60	18.5	C	322	5,805	5,381	93%	53.2	5.9	57	27.5	D	443
D St off-ramp to D St on-ramp	2,575	2,541	99%	23.1	1.0	62	13.6	B	345	4,710	4,330	92%	23.8	1.7	60	23.9	C	467
D St on-ramp to E St off-ramp	2,865	2,793	97%	11.2	0.7	61	15.3	B	356	5,080	4,639	91%	11.8	1.3	58	26.8	D	479
E St off-ramp to E St on-ramp	2,815	2,748	98%	9.8	0.5	62	14.8	B	366	5,010	4,597	92%	10.4	1.0	59	26.2	D	489
E St on-ramp to Stoddard Wells Rd off-ramp	2,865	2,796	98%	36.2	2.0	61	15.3	B	402	5,065	4,657	92%	38.1	3.8	58	26.9	D	527
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	2,370	2,318	98%	10.9	0.4	62	12.4	B	413	4,445	4,059	91%	11.4	0.8	60	22.5	C	538
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	2,810	2,733	97%	48.8	2.6	61	11.2	B	462	5,155	4,723	92%	50.4	4.2	59	19.9	C	589
HDC EB/WB off-ramp to HDC WB on-ramp	1,560	1,488	95%	70.6	1.9	63	7.9	A	532	3,970	3,662	92%	73.4	4.6	61	20.1	C	662
HDC WB on-ramp to HDC EB on-ramp	1,730	1,651	95%	7.6	0.3	62	6.9	A	540	4,180	3,859	92%	8.0	0.6	60	16.7	B	670
HDC EB on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,734	2,500	91%	36.4	1.6	62	10.1	A	576	6,071	5,502	91%	42.0	7.2	52	26.4	D	712
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	2,489	2,285	92%	22.8	0.8	62	12.2	B	599	5,806	5,230	90%	24.7	2.6	58	30.1	D	737
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	2,749	2,518	92%	216.5	10.3	62	13.6	B	816	6,046	5,412	90%	232.6	26.2	57	31.5	D	969
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	2,189	1,971	90%	31.7	1.3	62	10.6	A	847	5,480	4,835	88%	33.5	3.0	59	27.4	D	1003
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,635	2,401	91%	63.8	2.9	62	13.0	B	911	5,945	5,238	88%	68.7	7.6	57	30.6	D	1072
I-15 SOUTHBOUND MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	4,675	4,674	100%	60.6	5.4	59	26.5	D	61	3,900	3,902	100%	59.4	4.2	60	21.6	C	59
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	4,252	4,262	100%	37.6	3.2	60	23.8	C	98	3,371	3,350	99%	36.7	2.4	61	18.3	C	96
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	4,747	4,760	100%	222.5	22.9	58	27.4	D	321	3,988	3,889	98%	217.7	18.2	59	21.8	C	314
Quarry Rd off-ramp to Quarry Rd on-ramp	4,527	4,546	100%	25.5	2.4	59	25.7	C	346	3,713	3,639	98%	25.1	2.0	60	20.2	C	339
Quarry Rd on-ramp to HDC EB/WB off-ramp	4,797	4,819	100%	53.8	5.6	58	20.7	C	400	4,073	4,003	98%	53.2	4.8	59	17.0	B	392
HDC EB/WB off-ramp to HDC EB on-ramp	3,407	3,404	100%	79.2	5.4	61	18.7	C	479	2,523	2,498	99%	77.5	3.6	62	13.4	B	469
HDC WB on-ramp to HDC EB on-ramp	3,572	3,579	100%	10.7	0.8	60	16.4	B	490	2,723	2,690	99%	10.5	0.6	61	12.0	B	480
HDC EB on-ramp to Stoddard Wells Rd off-ramp	4,557	4,465	98%	29.2	3.0	58	19.1	C	519	3,863	3,698	96%	28.6	2.3	60	15.5	B	509
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,877	3,789	98%	28.4	2.2	60	21.0	C	548	3,348	3,197	95%	27.8	1.5	61	17.4	B	536
Stoddard Wells Rd direct on-ramp to E St off-ramp	4,427	4,308	97%	23.7	2.7	58	24.9	C	571	3,878	3,693	95%	23.1	2.0	59	20.8	C	559
E St off-ramp to E St on-ramp	4,382	4,256	97%	9.0	0.8	59	24.1	C	580	3,818	3,636	95%	8.8	0.7	60	20.1	C	568
E St on-ramp to D St off-ramp	4,447	4,311	97%	11.5	1.0	59	24.3	C	592	3,873	3,684	95%	11.3	0.8	60	20.3	C	579
D St off-ramp to D St on-ramp	4,102	3,979	97%	22.1	1.6	60	22.1	C	614	3,558	3,387	95%	21.7	1.2	61	18.5	C	601
D St on-ramp to Mojave Dr off-ramp	5,027	4,933	98%	53.8	5.4	58	20.7	C	668	4,768	4,577	96%	52.8	4.3	59	18.9	C	654
Mojave Dr off-ramp to Mojave Dr on-ramp	4,652	4,532	97%	21.0	2.0	59	25.6	C	689	4,273	4,095	96%	20.6	1.5	60	22.8	C	675
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	5,377	5,246	98%	15.7	2.0	57	23.2	C	704	4,953	4,757	96%	15.3	1.5	58	20.5	C	690
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,922	4,782	97%	28.0	2.9	58	27.3	D	732	4,478	4,314	96%	27.3	2.1	60	24.1	C	717
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	5,357	5,199	97%	23.7	2.0	59	22.0	C	756	5,058	4,852	96%	23.6	1.8	60	20.4	C	741
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,502	4,345	97%	12.9	0.9	60	24.1	C	769	4,063	3,898	96%	12.8	0.8	61	21.4	C	753
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,727	4,526	96%	8.7	0.8	59	25.6	C	777	4,303	4,100	95%	8.6	0.7	60	22.9	C	762
Palmdale Rd direct on-ramp to I-15 SB south end of the network	5,037	4,795	95%	171.2	15.4	59	27.1	D	949	4,638	4,411	95%	169.7	13.5	59	24.7	C	932

Source: Parsons
Level of service based on HCM 2000
Level of service E
Level of service F

Table 4-25. Year 2040 Build Alternative with High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	57	12.7	B	58	21.1	C
West Palmdale Blvd loop	Merging	62	7.9	A	61	14.3	B
West Palmdale Blvd direct	Merging	62	9.3	A	61	13.8	B
SR 138 WB	Merging	61	14	B	58	20	C
10th St. West loop	Merging	60	16.6	B	58	20.6	C
10th St. West direct	Merging	61	17.0	B	60	20.0	B
West Avenue N loop	Merging	61	16.3	B	59	20.2	C
West Avenue N direct	Merging	61	13.8	B	60	17.6	B
East Avenue S	Diverging	62	13.4	B	48	38.6	**E**
West Palmdale Blvd	Diverging	60	13.5	B	57	21.3	C
SR 138 EB	Diverging	60	13.6	B	59	22.2	C
10th St. West	Diverging	60	11.0	B	59	17.4	B
West Avenue N	Diverging	58	17.6	B	54	23.7	C
SOUTHBOUND							
West Avenue N loop	Merging	60	20.5	C	61	17.7	B
West Avenue N direct	Merging	60	17.8	B	62	13.8	B
10th St. West	Merging	61	17.1	B	62	14.9	B
SR 138 WB	Merging	60	15.1	B	60	13.0	B
West Palmdale Blvd loop	Merging	54	24.9	C	58	19.1	B
West Palmdale Blvd direct	Merging	54	27.5	C	59	20.4	C
East Avenue S	Merging	32	51.7	**E**	57	19.1	B
West Avenue N	Diverging	58	30.3	D	55	33.8	D
10th St. West	Diverging	55	25.0	C	54	26.7	C
SR 138 EB	Diverging	48	32.2	D	49	33.1	D
West Palmdale Blvd	Diverging	59	19.6	B	57	18.6	B
East Avenue S	Diverging	38	41.7	**E**	55	24.6	C

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area
Level of service E
Level of service F

Table 4-25. Year 2040 Build Alternative with High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK SPEED (mph)	AM PEAK DENSITY (veh/ln/mi)	AM PEAK LOS (HCM 2000)	PM PEAK SPEED (mph)	PM PEAK DENSITY (veh/ln/mi)	PM PEAK LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	58	21	C	58	22	C
20th St East	Merging	62	13	B	61	13	B
50th St East	Merging	54	25	C	56	23	C
90th St East	Merging	58	22	C	58	20	B
140th St East	Merging	58	20	C	59	18	B
170th St East	Merging	55	22	C	58	18	B
210th St East	Merging	57	22	C	59	17	B
240th St East	Merging	52	24	C	58	18	B
Oasis Rd	Merging	58	21	C	58	17	B
Sheep Creek Rd loop	Merging	61	18	B	60	16	B
Sheep Creek Rd direct	Merging	58	18	B	57	17	B
Caughlin Rd loop	Merging	61	16	B	61	14	B
Caughlin Rd direct	Merging	60	14	B	60	13	B
Koala Rd loop	Merging	54	21	C	57	16	B
Koala Rd direct	Merging	59	19	B	59	16	B
Route 395 loop	Merging	59	18	B	60	15	B
Route 395 direct	Merging	61	16	B	61	13	B
Phantom St West loop	Merging	60	15	B	59	16	B
Phantom St West direct	Merging	59	18	B	58	19	B
Phantom St East loop	Merging	60	18	B	55	26	C
Phantom St East direct	Merging	59	21	C	54	30	D
Choco Rd	Merging	62	10	A	62	9	A
Dale Evans Pkwy loop	Merging	62	7	A	62	8	A
Dale Evans Pkwy direct	Merging	62	8	A	62	9	A
10th St East	Diverging	62	11	B	62	14	B
50th St East	Diverging	58	20	C	59	21	C
90th St East	Diverging	58	26	C	58	25	C
140th St East	Diverging	57	25	C	57	24	C
170th St East	Diverging	59	24	C	59	21	C
210th St East	Diverging	58	25	C	59	21	C
240th St East	Diverging	58	25	C	59	20	B
Oasis Rd	Diverging	57	26	C	59	21	C
Sheep Creek Rd	Diverging	53	27	C	57	21	C
Caughlin Rd	Diverging	55	23	C	56	20	C
Koala	Diverging	59	18	B	60	16	B
Route 395	Diverging	56	24	C	57	19	B
Phantom St West	Diverging	58	20	C	60	16	B
Phantom St East	Diverging	59	22	C	59	22	C
National Trails Hwy	Diverging	60	21	C	58	28	C
Dale Evans Pkwy	Diverging	61	11	B	61	11	B
10th St East to 20th St East	Weaving	59	16	B	58	18	B
National Trails Hwy to I-15 NB/SB	Weaving	61	14	B	59	18	B
I-15 NB/SB to Choco Rd	Weaving	62	8	A	62	8	A

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-25. Year 2040 Build Alternative with High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK SPEED (mph)	AM PEAK DENSITY (veh/ln/mi)	AM PEAK LOS (HCM 2000)	PM PEAK SPEED (mph)	PM PEAK DENSITY (veh/ln/mi)	PM PEAK LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy loop	Merging	61	9	A	58	16	B
Dale Evans Pkwy direct	Merging	61	11	B	56	20	C
I-15 NB	Merging	59	13	B	57	17	B
National Trails Hwy	Merging	58	19	B	55	25	C
Phantom St East loop	Merging	60	14	B	54	28	D
Phantom St East direct	Merging	61	14	B	49	36	**E**
Phantom St West	Merging	61	10	B	60	21	C
Route 395	Merging	60	12	B	50	30	D
Koala Rd loop	Merging	62	10	B	61	21	C
Koala Rd direct	Merging	61	9	A	58	21	C
Caughlin Rd loop	Merging	62	10	B	60	24	C
Caughlin Rd direct	Merging	60	12	B	49	29	D
Sheep Creek Rd loop	Merging	62	11	B	59	25	C
Sheep Creek Rd direct	Merging	62	8	A	59	22	C
Oasis Rd loop	Merging	63	7	A	60	20	C
Oasis Rd direct	Merging	62	6	A	58	19	B
240th St East	Merging	62	9	A	55	26	C
210th St East	Merging	62	9	A	59	22	C
170th St East	Merging	61	9	A	58	20	C
140th St East	Merging	60	11	B	55	22	C
90th St East	Merging	60	12	B	54	22	C
50th St East	Merging	60	12	B	60	16	B
10th St East	Merging	60	15	B	54	24	C
Dale Evans Pkwy	Diverging	61	12	B	60	20	C
Choco Rd	Diverging	61	13	B	59	23	C
Phantom St East	Diverging	46	31	D	55	29	D
Phantom St West	Diverging	59	17	B	57	31	D
Route 395	Diverging	60	13	B	53	26	C
Koala Rd	Diverging	60	15	B	50	35	D
Caughlin Rd	Diverging	62	11	B	59	25	C
Sheep Creek Rd	Diverging	60	14	B	56	30	D
Oasis Rd	Diverging	62	7	A	59	22	C
240th St East	Diverging	62	9	A	51	24	C
210th St East	Diverging	62	11	B	55	31	D
170th St East	Diverging	61	11	B	56	27	C
140th St East	Diverging	62	10	B	58	24	C
90th St East	Diverging	61	12	B	56	25	C
50th St East	Diverging	60	14	B	53	26	C
20th St East	Diverging	61	12	B	60	17	B
SR 14 SB	Diverging	61	17	B	51	30	D
Choco to I-15 NB/SB	Weaving	63	6	A	63	10	A
I-15 SB to National Trails Hwy	Weaving	60	16	B	58	20	C
20th St East to 10th St East	Weaving	59	12	B	57	15	B

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

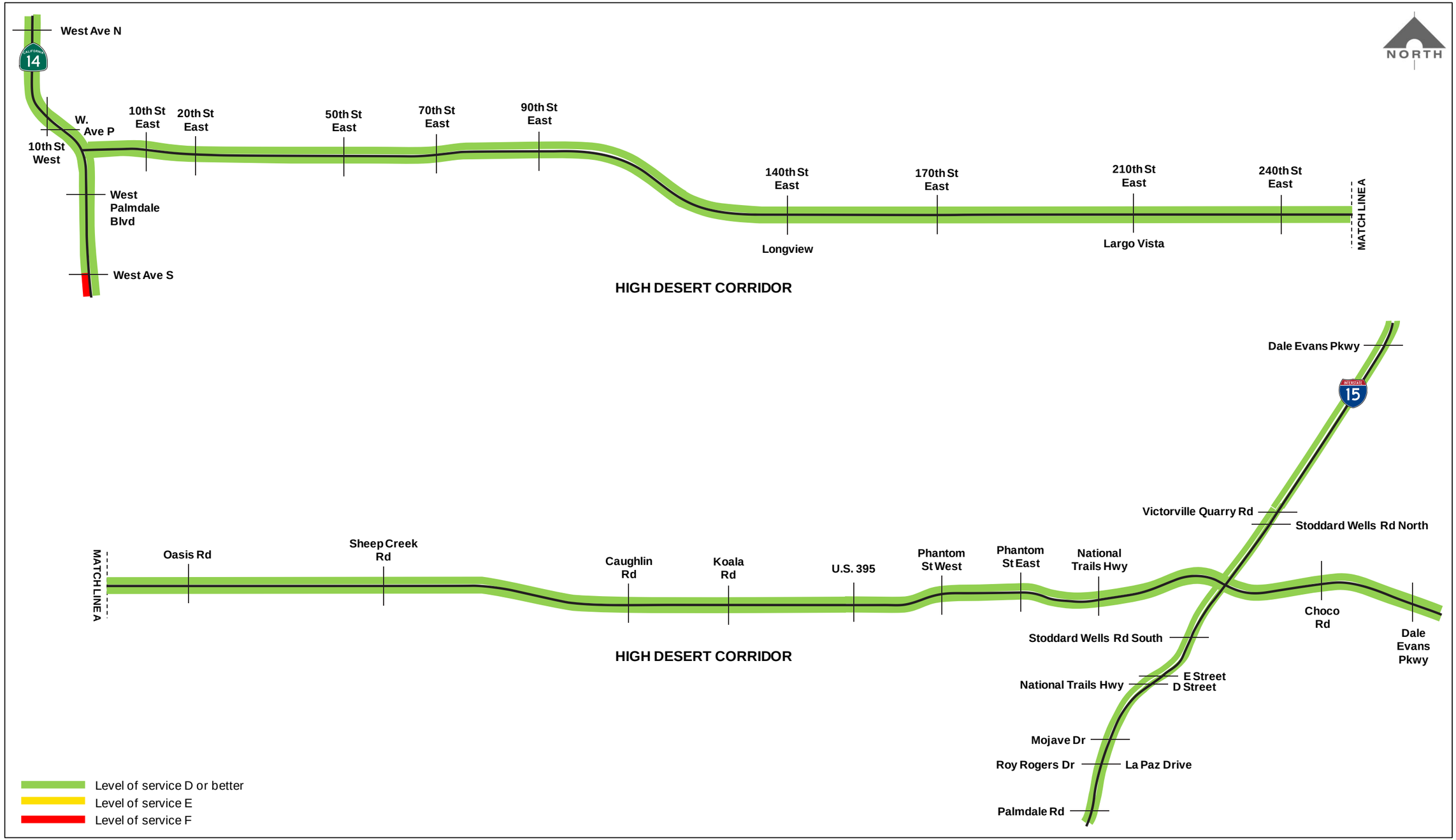
Level of service F

Table 4-25. Year 2040 Build Alternative with High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

Summary of I-15

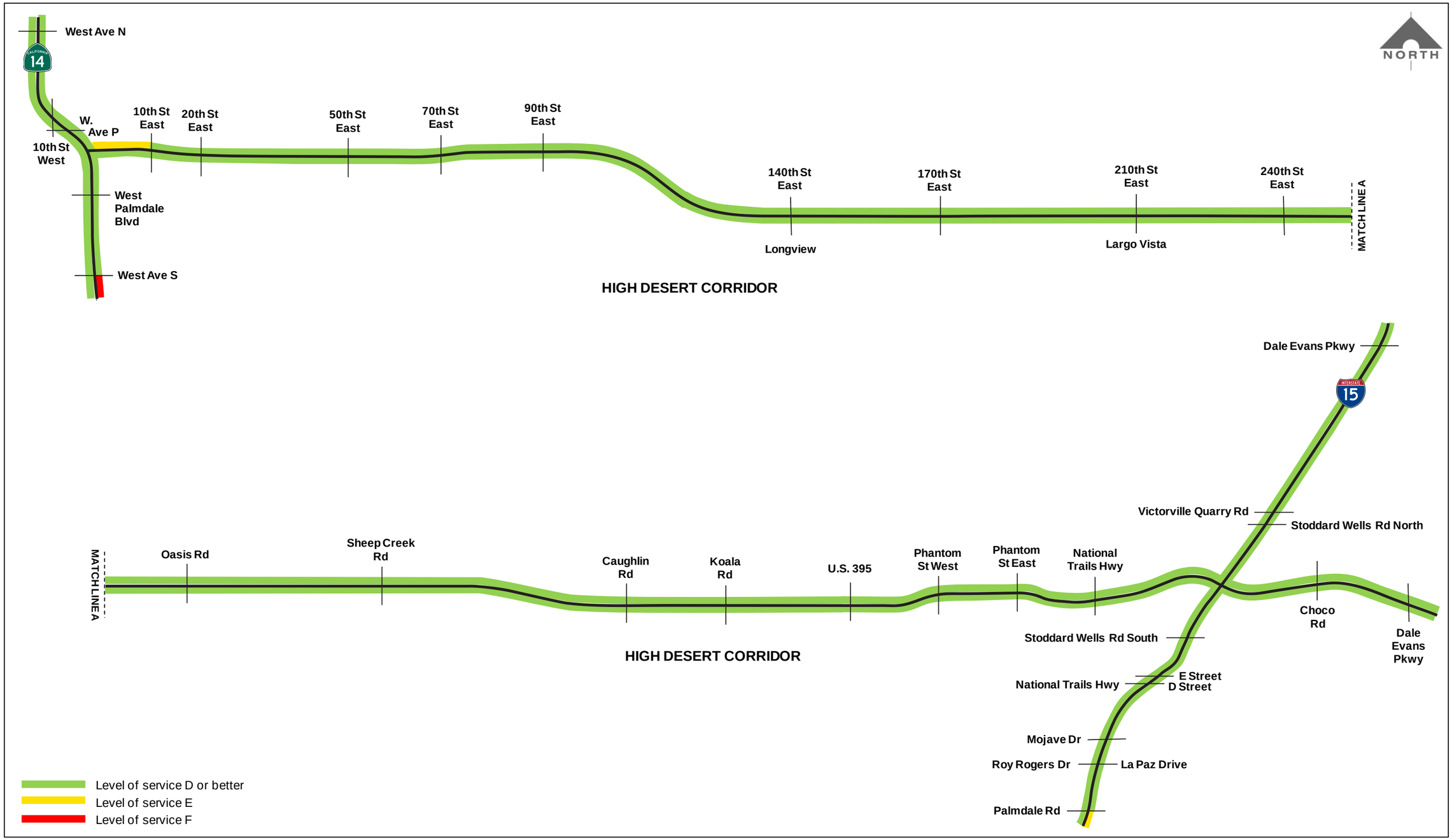
LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	58	22	C	51	34	D
Mojave Dr	Merging	57	23	C	53	33	D
D St	Merging	60	16	B	57	28	C
E St	Merging	61	16	B	58	27	C
HDC WB	Merging	62	6	A	60	15	B
Stoddard Wells Rd (Quarry Rd)	Merging	61	15	B	56	32	D
Dale Evans Pkwy	Merging	61	13	B	55	31	D
Palmdale Rd	Diverging	58	23	C	43	41	**E**
D St	Diverging	59	17	B	59	22	C
E St	Diverging	60	16	B	57	28	C
Stoddard Wells Rd	Diverging	60	17	B	57	28	D
Dale Evans Pkwy	Diverging	60	15	B	54	33	D
Palmdale Rd direct to Roy Rogers Dr	Weaving	59	17	B	51	26	C
Roy Rogers Dr to Mojave Dr	Weaving	59	17	B	54	25	C
Stoddard Wells Rd to HDC EB/WB	Weaving	61	12	B	59	19	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	61	10	B	50	26	C
SOUTHBOUND							
Dale Evans Pkwy	Merging	55	29	D	57	24	C
HDC WB	Merging	60	15	B	61	11	B
Stoddard Wells Rd direct	Merging	56	26	C	58	23	C
E St	Merging	59	25	C	60	22	C
Palmdale Rd loop	Merging	59	25	C	59	23	C
Palmdale Rd direct	Merging	57	28	C	57	26	C
Dale Evans Pkwy	Diverging	57	28	D	58	24	C
Quarry Rd	Diverging	57	28	C	58	23	C
E St	Diverging	57	26	C	58	23	C
D St	Diverging	59	25	C	60	22	C
Quarry Rd to HDC EB/WB	Weaving	58	20	B	58	17	B
HDC EB to Stoddard Wells Rd	Weaving	58	19	B	59	16	B
D St to Mojave Dr	Weaving	58	19	B	59	19	B
Mojave Dr to Roy Rogers Dr	Weaving	55	22	C	57	20	C
Roy Rogers Dr to Palmdale Rd	Weaving	59	21	C	59	20	C

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area
Level of service E
Level of service F



AM PEAK HOUR

Figure 4-25: Year 2040 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 4-25: Year 2040 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Level of Service *(2 of 2)*

Table 4-26. Year 2040 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Analysis Results *(1 of 4)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NORTHBOUND MAINLINE																											
Pearblossom Hwy direct on-ramp to East Ave S off-ramp	2,770	2,769	100%	185.2	31.7	56	13.7	B	185	2,770	2,769	100%	185.2	31.7	56	13.7	B	185	—	—	—	—	—	—	—	—	—
East Ave S off-ramp to East Ave S on-ramp	2,585	2,580	101%	27.9	2.3	60	10.9	A	213	2,585	2,580	100%	27.9	2.3	60	10.9	A	213	—	—	—	—	—	—	—	—	—
East Ave S on-ramp to West Palmdale Blvd off-ramp	3,295	3,292	100%	58.2	3.9	61	10.8	A	271	3,295	3,292	100%	58.2	3.9	61	10.8	A	271	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,817	2,764	98%	16.7	0.7	61	11.3	B	288	2,817	2,764	98%	16.7	0.7	61	11.3	B	288	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,620	1,582	98%	5.0	0.2	63	8.4	A	293	1,620	1,582	98%	5.0	0.2	63	8.4	A	293	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	1,920	1,887	98%	16.2	0.5	63	7.5	A	309	1,920	1,887	98%	16.2	0.5	63	7.5	A	309	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	2,390	2,314	97%	32.9	1.4	62	8.9	A	342	2,390	2,314	97%	32.9	1.4	62	8.9	A	342	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	2,007	1,943	97%	22.9	1.3	61	10.5	A	365	2,007	1,943	97%	22.9	1.3	61	10.5	A	365	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	4,000	3,769	94%	47.9	2.4	62	12.2	B	413	4,000	3,769	94%	47.9	2.4	62	12.2	B	413	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	4,724	4,503	95%	16.8	1.0	61	13.7	B	430	4,724	4,503	95%	16.8	1.0	61	13.7	B	430	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Ave N off-ramp	4,920	4,693	95%	66.8	4.4	61	15.1	B	496	4,920	4,693	95%	66.8	4.4	61	15.1	B	496	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	4,620	4,438	96%	17.8	0.8	62	17.9	B	514	4,620	4,438	96%	17.8	0.8	62	17.9	B	514	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	4,965	4,792	97%	9.4	0.4	62	15.5	B	524	4,965	4,792	97%	9.4	0.4	62	15.5	B	524	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to West Ave M off-ramp	5,140	4,969	97%	30.6	1.2	62	15.5	B	554	5,140	4,969	97%	30.6	1.2	62	15.5	B	554	—	—	—	—	—	—	—	—	—
SR 14 SOUTHBOUND MAINLINE																											
West Ave M on-ramp to West Ave N off-ramp	6,925	6,925	100%	38.6	3.8	58	29.7	D	39	5,265	5,322	101%	38.7	3.9	58	30.6	D	39	1,660	1,604	97%	38.2	3.6	59	27.2	D	38
West Ave N off-ramp to West Ave N loop on-ramp	6,565	6,583	100%	19.1	1.7	59	28.0	D	58	4,905	4,982	102%	19.0	1.6	59	28.1	D	58	1,660	1,601	96%	19.4	2.1	58	27.6	D	58
West Ave N loop on-ramp to West Ave N direct on-ramp	6,620	6,638	100%	11.4	0.9	60	22.3	C	69	4,960	5,037	102%	11.3	0.8	60	21.0	C	69	1,660	1,602	97%	11.6	1.1	58	27.5	D	69
West Ave N direct on-ramp to 10th St W off-ramp	6,965	6,984	100%	93.0	17.1	54	25.4	C	162	5,270	5,598	106%	95.4	19.5	53	26.0	C	164	1,695	1,387	82%	84.0	8.0	59	23.5	C	153
10th St W off-ramp to HDC off-ramp	6,210	6,198	100%	20.0	4.1	51	30.2	D	182	4,255	5,114	120%	20.6	4.7	50	34.4	D	185	1,955	1,085	55%	16.8	1.0	61	17.8	B	170
HDC off-ramp to 10th St W on-ramp	2,548	2,533	99%	22.3	1.2	61	13.8	B	204	593	1,448	244%	21.9	0.8	62	11.7	B	207	1,955	1,086	56%	22.8	1.8	60	18.1	C	193
10th St W on-ramp to Palmdale Blvd off-ramp	3,975	3,969	100%	33.8	2.1	61	16.5	B	238	2,020	2,829	140%	33.3	1.5	62	15.3	B	240	1,955	1,170	60%	35.1	3.4	59	20.0	C	228
West Palmdale Blvd off-ramp to HDC on-ramp	3,595	3,590	100%	32.8	1.7	61	14.7	B	271	1,640	2,308	141%	31.9	0.8	63	12.2	B	272	1,955	1,311	67%	34.2	3.1	59	22.3	C	262
HDC on-ramp to West Palmdale Blvd loop on-ramp	4,860	4,812	99%	24.3	1.9	59	15.6	B	295	3,555	3,839	108%	24.1	1.7	60	15.4	B	296	1,305	973	75%	24.9	2.4	58	16.8	B	287
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	5,622	5,628	100%	14.6	1.8	57	22.1	C	310	4,317	4,101	95%	14.4	1.6	58	20.4	C	311	1,305	1,527	117%	15.2	2.4	54	28.1	D	302
West Palmdale Blvd direct on-ramp to East Ave S off-ramp	6,413	6,368	99%	71.8	9.1	57	27.5	D	382	4,863	4,736	97%	71.9	9.2	56	27.1	D	383	1,550	1,632	105%	71.4	8.7	57	28.7	D	374
East Ave S off-ramp to East Ave S on-ramp	6,053	5,995	99%	42.5	22.0	31	47.8	F	424	4,086	4,336	106%	50.0	29.6	27	54.3	F	432	1,967	1,659	84%	22.9	2.3	58	28.6	D	396
East Ave S on-ramp to Angeles Forest Hwy off-ramp	7,703	7,379	96%	329.2	140.3	39	50.0	F	753	5,736	5,505	96%	354.8	165.8	37	53.4	F	787	1,967	1,874	95%	252.9	64.7	49	39.4	E	649

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NORTHBOUND MAINLINE																											
Pearblossom Hwy direct on-ramp to East Ave S off-ramp	9,485	7,045	74%	395.2	240.5	29	65.9	F	395	7,085	5,157	73%	453.2	298.6	26	73.0	F	453	2,400	1,887	79%	244.5	89.4	46	44.5	E	244
East Ave S off-ramp to East Ave S on-ramp	7,870	5,783	73%	29.5	3.6	57	25.5	C	425	6,170	4,085	66%	29.9	4.0	56	24.3	C	483	1,700	1,698	100%	28.7	2.7	58	29.1	D	273
East Ave S on-ramp to West Palmdale Blvd off-ramp	8,415	6,336	75%	60.7	6.1	58	21.8	C	485	6,715	5,094	76%	61.2	6.6	58	22.1	C	544	1,700	1,242	73%	58.4	3.9	61	20.6	C	332
West Palmdale Blvd off-ramp to HDC off-ramp	6,916	5,236	76%	17.3	1.4	59	22.2	C	503	5,216	4,251	81%	17.4	1.4	59	24.1	C	562	1,700	985	58%	17.0	1.2	60	16.4	B	349
HDC off-ramp to West Palmdale Blvd loop on-ramp	4,590	3,475	76%	5.3	0.4	60	19.2	C	508	2,890	2,494	86%	5.2	0.3	61	20.6	C	567	1,700	981	58%	5.3	0.4	60	16.4	B	354
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,745	3,625	76%	16.7	0.9	61	14.8	B	525	3,045	2,620	86%	16.5	0.7	62	14.1	B	583	1,700	1,005	59%	17.2	1.3	60	16.9	B	371
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	5,220	4,055	78%	34.2	2.5	60	16.2	B	559	3,570	3,194	89%	34.2	2.5	60	16.8	B	618	1,650	863	52%	34.1	2.5	60	14.4	B	405
10th St West off-ramp to HDC on-ramp	4,220	3,308	78%	23.6	1.9	60	18.5	C	582	2,570	2,445	95%	23.6	1.8	60	20.4	C	641	1,650	864	52%	23.7	1.9	60	14.5	B	429
HDC on-ramp to 10th St West on-ramp	7,990	6,221	78%	49.5	3.8	59	21.0	C	632	6,245	4,955	79%	49.0	3.4	60	20.6	C	690	1,745	1,266	73%	51.2	5.5	57	22.2	C	480
10th St W loop on-ramp to 10th St W direct on-ramp	8,531	6,764	79%	17.3	1.5	59	21.2	C	649	6,786	5,405	80%	17.2	1.4	59	20.7	C	707	1,745	1,358	78%	17.6	1.8	58	23.4	C	498
10th St W direct on-ramp to West Ave N off-ramp	8,655	6,855	79%	72.8	10.3	56	23.9	C	722	6,565	5,552	85%	73.7	11.2	56	24.4	C	781	2,090	1,303	62%	68.8	6.2	59	22.2	C	566
West Ave N off-ramp to West Ave N loop on-ramp	8,095	6,394	79%	18.9	1.8	59	27.3	D	741	6,005	5,067	84%	18.8	1.7	59	28.7	D	800	2,090	1,326	63%	19.2	2.1	58	23.0	C	586
West Ave N loop on-ramp to West Ave N direct on-ramp	8,235	6,523	79%	9.8	0.8	59	22.0	C	751	6,145	5,194	85%	9.7	0.7	60	21.8	C	810	2,090	1,329	64%	10.1	1.0	58	23.0	C	596
West Ave N direct on-ramp to West Ave M off-ramp	8,420	6,697	80%	31.8	2.4	60	21.7	C	782	6,330	5,321	84%	31.4	2.0	61	21.1	C	841	2,090	1,376	66%	33.4	3.9	57	24.1	C	629
SR 14 SOUTHBOUND MAINLINE																											
West Ave M on-ramp to West Ave N off-ramp	6,860	6,858	100%	38.6	3.8	58	29.5	D	39	6,860	6,858	100%	38.6	3.8	58	29.5	D	39	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	6,360	6,391	100%	19.1	1.7	59	27.0	D	58	6,360	6,391	100%	19.1	1.7	59	27.0	D	58	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	6,465	6,460	100%	11.3	0.9	60	21.8	C	69	6,465	6,460	100%	11.3	0.9	60	21.8	C	69	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to 10th St W off-ramp	6,705	6,700	100%	102.1	26.1	48	28.3	D	171	6,705	6,700	100%	102.1	26.1	48	28.3	D	171	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	5,595	5,590	100%	20.7	4.8	49	28.4	D	192	5,595	5,590	100%	20.7	4.8	49	28.4	D	192	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St W on-ramp	1,854	1,832	99%	22.0	1.0	62	9.9	A	214	1,854	1,832	99%	22.0	1.0	62	9.9	A	214	—	—	—	—	—	—	—	—	—
10th St W on-ramp to Palmdale Blvd off-ramp	2,875	2,849	99%	33.4	1.7	61	11.6	B	247	2,875	2,849	99%	33.4	1.7	61	11.6	B	247	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	1,980	1,975	100%	31.7	0.6	64	8.0	A	279	1,980	1,975	100%	31.7	0.6	64	8.0	A	279	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,578	3,244	91%	23.7	1.3	61	10.2	A	303	3,578	3,244	91%	23.7	1.3	61	10.2	A	303	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,133	3,793	92%	13.7	1.0	60	14.0	B	316	4,133	3,793	92%	13.7	1.0	60	14.0	B	316	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Ave S off-ramp	4,558	4,173	92%	67.3	4.5	60	16.9	B	384	4,558	4,173	92%	67.3	4.5	60	16.9	B	384	—	—	—	—	—	—	—	—	—
East Ave S off-ramp to East Ave S on-ramp	3,738	3,563	95%	21.5	0.9	62	14.4	B	405	3,738	3,563	95%	21.5	0.9	62	14.4	B	405	—	—	—	—	—	—	—	—	—
East Ave S on-ramp to Angeles Forest Hwy off-ramp	4,553	4,375	96%	218.3	30.4	57	19.0	C	623	4,553	4,375	96%	218.3	30.4	57	19.0	C	623	—	—	—	—	—	—	—	—	—

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-26. Year 2040 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EASTBOUND MAINLINE																		
SR-138 EB west end of the network to SR-14 NB on-ramp	3,820	3,820	100%	22.2	2.9	46	42.2	**E**	22	3,855	3,850	100%	22.6	3.4	45	43.3	**E**	23
SR-14 NB on-ramp to 10th St E off-ramp	5,017	5,026	100%	34.3	2.6	60	19.0	C	56	6,181	5,645	91%	34.6	2.8	59	21.6	C	57
10th St E off-ramp to 10th St E on-ramp	4,629	4,626	100%	46.1	2.3	62	18.8	C	103	5,666	5,202	92%	46.8	2.9	61	21.4	C	104
10th St E on-ramp to 20th St E off-ramp	5,179	5,174	100%	17.1	1.3	60	17.3	B	120	6,231	5,739	92%	17.3	1.4	59	19.4	C	121
20th St E off-ramp to 20th St E on-ramp	4,474	4,439	99%	43.7	2.1	62	18.0	C	163	5,096	4,773	94%	43.9	2.3	61	19.4	C	165
20th St E on-ramp to 50th St E off-ramp	4,724	4,610	98%	139.0	9.1	60	17.8	B	302	5,451	5,126	94%	139.9	9.8	60	19.9	C	305
50th St E off-ramp to 50th St E on-ramp	3,949	3,839	97%	44.2	2.9	61	21.1	C	347	4,246	4,042	95%	44.3	2.9	61	22.3	C	349
50th St E on-ramp to 90th St E off-ramp	4,344	4,159	96%	200.4	16.7	59	23.0	C	547	4,636	4,354	94%	200.8	16.7	59	24.2	C	550
90th St E off-ramp to 90th St E on-ramp	3,819	3,617	95%	45.9	3.0	61	19.9	C	593	3,976	3,689	93%	45.8	2.9	61	20.3	C	596
90th St E on-ramp to 140th St E off-ramp	3,844	3,559	93%	275.6	21.5	60	19.6	C	868	4,001	3,633	91%	275.6	20.6	60	20.0	C	871
140th St E off-ramp to 140th St E on-ramp	3,219	2,884	90%	46.1	2.6	61	15.7	B	915	3,126	2,807	90%	45.8	2.2	62	15.2	B	917
140th St E on-ramp to 170th St E off-ramp	3,469	3,106	90%	136.3	9.2	60	16.6	B	1,051	3,246	2,902	89%	135.5	8.0	61	15.4	B	1,053
170th St E off-ramp to 170th St E on-ramp	3,419	3,005	88%	47.2	3.1	61	16.5	B	1,098	3,026	2,633	87%	46.7	2.4	61	14.3	B	1,099
170th St E on-ramp to 210th St E off-ramp	3,444	2,986	87%	194.7	13.5	60	16.1	B	1,293	3,046	2,618	86%	193.1	11.3	61	14.0	B	1,293
210th St E off-ramp to 210th St E on-ramp	3,419	2,923	85%	43.9	3.1	60	16.1	B	1,337	2,991	2,512	84%	43.6	2.6	61	13.8	B	1,336
210th St E on-ramp to 240th St E off-ramp	3,589	3,051	85%	141.1	10.7	60	16.5	B	1,478	3,011	2,497	83%	139.5	8.8	61	13.4	B	1,476
240th St E off-ramp to 240th St E on-ramp	3,189	2,692	84%	47.0	2.7	61	14.7	B	1,525	2,876	2,317	81%	47.2	2.8	61	12.7	B	1,523
240th St E on-ramp to Oasis Rd off-ramp	3,819	3,178	83%	136.3	9.8	60	17.2	B	1,661	3,216	2,613	81%	135.6	8.7	60	14.0	B	1,658
Oasis Rd off-ramp to Oasis Rd on-ramp	3,649	3,006	82%	47.6	3.0	61	16.5	B	1,709	3,096	2,502	81%	47.4	2.7	61	13.7	B	1,706
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	3,779	3,076	81%	195.6	15.7	59	16.9	B	1,904	3,171	2,535	80%	193.5	13.0	60	13.7	B	1,899
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	2,829	2,245	79%	47.9	2.0	62	12.0	B	1,952	2,616	2,055	79%	48.3	2.2	62	11.1	B	1,948
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	2,969	2,330	78%	256.2	14.7	61	12.5	B	2,208	2,806	2,201	78%	256.4	14.1	61	11.8	B	2,204
Caughlin Rd off-ramp to Caughlin Rd on-ramp	2,464	1,930	78%	46.2	2.0	62	10.4	A	2,255	2,481	1,918	77%	46.5	2.1	62	10.4	A	2,251
Caughlin Rd on-ramp to Koala Rd off-ramp	2,484	1,935	78%	71.1	3.5	62	10.0	A	2,326	2,511	1,925	77%	71.5	3.5	61	10.0	A	2,322
Koala Rd off-ramp to Koala Rd loop on-ramp	2,384	1,855	78%	32.3	1.5	62	10.0	A	2,358	2,461	1,872	76%	32.5	1.6	61	10.2	A	2,355
Koala Rd loop on-ramp to Koala Rd direct on-ramp	3,204	2,671	83%	17.5	1.7	58	13.5	B	2,375	2,693	2,093	78%	17.0	1.2	60	10.2	A	2,372
Koala Rd direct on-ramp to Route 395 off-ramp	3,289	2,744	83%	104.6	5.8	61	14.4	B	2,480	2,751	2,143	78%	104.5	5.3	61	11.2	B	2,476
Route 395 off-ramp to Route 395 loop on-ramp	3,139	2,602	83%	26.1	1.4	61	14.1	B	2,506	2,651	2,051	77%	26.0	1.3	62	11.1	B	2,502
Route 395 loop on-ramp to Route 395 direct on-ramp	4,595	4,076	89%	24.4	3.9	56	22.9	C	2,531	3,814	3,207	84%	23.3	2.8	58	17.4	B	2,525
Route 395 direct on-ramp to Phantom W off-ramp	4,724	4,175	88%	66.2	11.5	55	25.1	C	2,597	3,956	3,337	84%	60.4	5.7	59	18.4	C	2,586
Phantom St West off-ramp to Phantom St West loop on-ramp	3,364	3,007	89%	27.9	1.1	62	16.1	B	2,625	3,061	2,648	87%	27.8	1.1	62	14.2	B	2,614
Phantom St West loop on-ramp to Phantom St West direct on-ramp	3,447	3,089	90%	12.5	0.5	62	14.2	B	2,637	3,314	2,897	87%	12.6	0.7	61	13.4	B	2,626
Phantom St West direct on-ramp to Phantom St East direct off-ramp	3,654	3,300	90%	57.7	3.4	61	17.4	B	2,695	3,711	3,281	88%	57.9	3.6	61	17.3	B	2,684
Phantom St East direct off-ramp to Phantom St East loop on-ramp	3,014	2,743	91%	35.9	1.5	62	14.7	B	2,731	3,386	2,997	89%	36.2	1.8	61	16.3	B	2,720
Phantom St East loop on-ramp to Phantom St East direct on-ramp	3,285	2,984	91%	16.2	0.9	61	16.3	B	2,747	4,149	3,674	89%	17.1	1.9	58	21.2	C	2,737
Phantom St East direct on-ramp to National Trails Hwy off-ramp	3,589	3,288	92%	41.5	2.7	60	18.1	C	2,788	4,551	4,085	90%	42.9	3.9	59	23.3	C	2,780
National Trails Hwy off-ramp to National Trails Hwy on-ramp	3,199	2,945	92%	43.2	2.1	62	15.9	B	2,832	4,056	3,651	90%	43.5	2.3	61	19.9	C	2,824
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	3,399	3,135	92%	103.5	5.0	62	12.7	B	2,935	4,306	3,883	90%	105.4	7.0	60	16.1	B	2,929
I-15 NB/SB off-ramp to I-15 NB on-ramp	1,675	1,527	91%	80.2	2.1	63	8.1	A	3,015	1,595	1,432	90%	79.8	1.8	63	7.5	A	3,009
I-15 NB/SB on-ramp to Choco Rd off-ramp	2,000	1,838	92%	57.2	2.1	62	7.4	A	3,072	2,165	1,967	91%	57.1	1.9	62	7.9	A	3,066
Choco Rd off-ramp to Choco Rd on-ramp	1,855	1,698	92%	33.5	1.3	62	9.1	A	3,106	1,825	1,661	91%	33.3	1.2	62	8.9	A	3,099
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	1,890	1,730	92%	72.3	2.8	62	8.9	A	3,178	1,925	1,756	91%	72.1	2.8	62	9.0	A	3,172
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	1,515	1,393	92%	27.1	0.8	63	7.4	A	3,205	1,635	1,477	90%	27.1	0.8	63	7.8	A	3,199
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,618	1,489	92%	10.3	0.4	62	6.6	A	3,216	1,733	1,573	91%	10.3	0.4	63	6.9	A	3,209
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,660	1,521	92%	32.1	1.1	63	7.6	A	3,248	1,790	1,618	90%	32.1	1.1	63	8.1	A	3,241

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-26. Year 2040 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WESTBOUND MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	855	850	100%	36.6	1.6	61	7.2	A	37	2,090	2,090	100%	39.4	4.5	56	19.5	C	39
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	725	722	100%	25.2	0.7	63	6.0	A	62	1,890	1,885	100%	26.0	1.5	61	15.8	B	65
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	811	806	100%	11.0	0.4	62	5.2	A	73	2,070	2,065	100%	11.7	1.1	59	13.9	B	77
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	945	940	100%	79.7	2.6	62	7.4	A	153	2,395	2,390	100%	84.6	7.5	59	19.7	C	162
Choco Rd off-ramp to Choco Rd on-ramp	840	831	100%	34.6	0.9	63	4.6	A	187	2,380	2,370	100%	36.6	2.8	60	13.4	B	198
Choco Rd on-ramp to I-15 NB/SB off-ramp	1,175	1,169	100%	56.6	1.2	63	4.7	A	244	2,615	2,611	100%	57.8	2.4	62	10.5	A	256
I-15 NB/SB off-ramp to I-15 SB on-ramp	838	772	92%	99.1	1.0	64	4.0	A	343	2,051	2,041	100%	101.9	3.9	62	11.5	B	358
I-15 NB on-ramp to I-15 NB on-ramp	920	915	100%	10.7	0.3	63	4.2	A	354	2,570	2,521	98%	11.2	0.7	61	11.7	B	369
I-15 SB on-ramp to National Trails Hwy off-ramp	2,030	2,028	100%	66.2	2.7	62	8.2	A	420	3,805	3,772	99%	68.9	5.5	60	15.8	B	438
National Trails Hwy off-ramp to National Trails Hwy on-ramp	1,855	1,854	100%	41.9	1.2	63	9.8	A	462	3,655	3,608	99%	43.6	2.8	61	19.8	C	482
National Trails Hwy on-ramp to Phantom St East off-ramp	2,270	2,270	100%	53.2	3.1	61	12.1	B	515	4,385	4,318	98%	56.5	6.5	58	24.3	C	538
Phantom St East off-ramp to Phantom St East loop on-ramp	1,530	1,491	97%	32.8	0.7	64	7.8	A	548	3,890	3,816	98%	34.3	2.2	61	20.9	C	573
Phantom St East loop on-ramp to Phantom St East direct on-ramp	1,775	1,711	96%	5.4	0.3	62	9.2	A	553	4,376	4,227	97%	5.9	0.8	56	25.0	C	578
Phantom St East direct on-ramp to Phantom St West off-ramp	1,795	1,753	98%	57.8	1.7	63	9.3	A	611	4,405	4,400	100%	64.6	8.5	56	29.2	D	643
Phantom St West off-ramp to Phantom St West on-ramp	1,540	1,486	96%	42.0	0.9	64	7.8	A	653	4,235	4,230	100%	44.8	3.6	60	26.5	D	688
Phantom St West on-ramp to Route 395 off-ramp	1,875	1,810	97%	53.8	2.0	62	7.3	A	707	5,915	5,823	98%	67.7	16.0	50	29.8	D	756
Route 395 off-ramp to Route 395 on-ramp	930	917	99%	46.7	0.6	64	4.8	A	753	4,250	4,148	98%	49.5	3.4	60	22.9	C	805
Route 395 on-ramp to Koala Rd off-ramp	1,025	1,017	99%	99.8	1.8	63	5.1	A	853	4,285	4,149	97%	107.8	9.9	59	22.7	C	913
Koala Rd off-ramp to Koala Rd on-ramp	795	774	97%	48.5	0.7	64	4.0	A	902	3,295	3,152	96%	50.4	2.6	61	17.1	B	963
Koala Rd on-ramp to Caughlin Rd off-ramp	870	835	96%	66.4	1.1	64	4.2	A	968	3,465	3,313	96%	69.6	4.2	61	17.5	B	1,033
Caughlin Rd off-ramp to Caughlin Rd on-ramp	845	802	95%	49.1	0.8	64	4.2	A	1,017	3,410	3,242	95%	51.6	3.2	61	17.8	B	1,084
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	1,005	947	94%	245.9	5.0	63	4.9	A	1,263	4,085	3,848	94%	262.1	21.0	59	21.2	C	1,346
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	940	861	92%	45.0	0.9	63	4.5	A	1,308	4,015	3,696	92%	47.8	3.7	60	20.6	C	1,394
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	1,105	1,018	92%	183.7	4.1	63	5.2	A	1,492	5,040	4,669	93%	200.9	21.2	57	26.7	D	1,595
Oasis Rd off-ramp to Oasis Rd loop on-ramp	1,080	984	91%	47.8	1.1	63	5.2	A	1,540	5,010	4,571	91%	51.2	4.6	59	25.8	C	1,646
Oasis Rd direct on-ramp to 240th St E off-ramp	1,155	1,042	90%	128.6	3.3	63	5.4	A	1,668	5,210	4,718	91%	141.0	15.9	57	26.7	D	1,787
240th St E off-ramp to 240th St E on-ramp	1,010	897	89%	43.9	1.0	63	4.7	A	1,712	4,660	4,161	89%	46.3	3.4	60	23.1	C	1,834
240th St E on-ramp to 210th St E off-ramp	1,150	1,009	88%	134.3	3.3	63	5.2	A	1,846	4,890	4,323	88%	143.8	12.8	59	23.8	C	1,977
210th St E off-ramp to 210th St E on-ramp	1,125	981	87%	42.1	1.0	63	5.2	A	1,888	4,560	3,981	87%	44.5	3.4	60	22.2	C	2,022
210th St E on-ramp to 170th St E off-ramp	1,175	1,022	87%	187.9	4.8	63	5.3	A	2,076	4,585	3,944	86%	200.0	16.9	59	21.7	C	2,222
170th St E off-ramp to 170th St E on-ramp	1,115	953	85%	44.3	1.1	63	5.0	A	2,121	4,270	3,562	83%	46.6	3.4	60	19.8	C	2,268
170th St E on-ramp to 140th St E off-ramp	1,210	1,028	85%	134.4	3.5	63	5.3	A	2,255	4,345	3,566	82%	142.0	11.4	60	19.3	C	2,411
140th St E off-ramp to 140th St E on-ramp	1,160	978	84%	36.4	1.0	63	5.2	A	2,291	4,315	3,508	81%	38.6	3.2	59	19.7	C	2,449
140th St E on-ramp to 90th St E off-ramp	1,910	1,617	85%	267.5	8.4	63	8.5	A	2,559	4,775	3,848	81%	284.5	25.6	59	21.5	C	2,734
90th St E off-ramp to 90th St E on-ramp	1,885	1,576	84%	44.2	1.5	63	8.4	A	2,603	4,725	3,714	79%	46.6	3.9	59	20.9	C	2,780
90th St E on-ramp to 70th St E off-ramp	2,520	2,217	88%	192.0	8.4	62	11.8	B	2,795	5,255	4,176	79%	205.1	21.6	58	23.7	C	2,985
50th St E off-ramp to 50th St E on-ramp	2,200	1,929	88%	43.3	1.6	62	10.3	A	2,838	4,860	3,793	78%	45.2	3.6	60	21.2	C	3,031
50th St E on-ramp to 20th St E off-ramp	3,325	3,041	91%	137.7	6.3	62	12.3	B	2,976	5,785	4,671	81%	141.3	10.1	60	19.5	C	3,172
20th St E off-ramp to 20th St E on-ramp	3,050	2,788	91%	41.7	1.8	62	11.2	B	3,018	5,465	4,312	79%	46.9	7.0	55	19.6	C	3,219
20th St E on-ramp to 10th St E off-ramp	3,900	3,619	93%	17.0	1.1	60	12.0	B	3,035	6,500	5,212	80%	25.7	9.8	40	26.2	D	3,244
10th St E off-ramp to 10th St E on-ramp	3,435	3,184	93%	45.8	1.9	62	12.8	B	3,080	5,870	4,616	79%	105.0	60.9	27	42.6	**E**	3,349
10th St E on-ramp to SR-14 SB off-ramp	3,755	3,501	93%	33.6	1.8	61	14.0	B	3,114	6,223	4,888	79%	63.1	31.2	35	35.3	**E**	3,413
SR-14 SB off-ramp to SR-138 WB west end of the network	2,345	2,159	92%	12.7	0.5	54	20.0	C	3,127	4,435	3,473	78%	15.0	2.6	45	38.2	**E**	3,428

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-26. Year 2040 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NORTHBOUND MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off Ramp	3,700	3,710	100%	150.8	9.8	61	20.2	C	151	6,025	5,649	94%	212.8	71.3	43	43.8	E	213
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	3,240	3,234	100%	22.5	1.5	61	18.0	B	173	5,400	5,070	94%	24.8	3.8	55	30.7	D	238
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,620	3,514	100%	11.6	1.2	59	20.8	C	185	5,800	5,442	94%	12.7	2.2	54	33.7	D	250
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	4,060	4,055	100%	22.5	1.9	59	17.2	B	207	6,300	5,960	95%	25.0	4.3	54	27.7	D	275
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,505	3,500	100%	24.6	1.8	60	19.4	C	232	5,720	5,410	95%	26.8	4.0	55	32.6	D	302
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	3,895	3,890	100%	17.0	1.2	60	16.2	B	249	6,220	5,891	95%	18.4	2.6	55	26.6	D	320
Mojave Dr off-ramp to Mojave Dr on-ramp	3,240	3,233	100%	20.9	1.2	61	17.5	B	270	5,540	5,265	95%	22.4	2.6	57	30.6	D	343
Mojave Dr on-ramp to D St off-ramp	3,740	3,708	99%	50.8	3.6	60	17.9	B	321	5,895	5,610	95%	54.6	7.5	56	29.7	D	397
D St off-ramp to D St on-ramp	2,590	2,585	100%	23.1	1.0	62	13.9	B	344	4,825	4,560	95%	23.9	1.8	60	25.3	C	421
D St on-ramp to E St off-ramp	2,890	2,860	99%	11.2	0.7	61	15.6	B	355	5,130	4,821	94%	11.9	1.4	57	28.1	D	433
E St off-ramp to E St on-ramp	2,840	2,817	99%	9.8	0.5	62	15.2	B	365	5,060	4,784	95%	10.5	1.1	58	27.4	D	444
E St on-ramp to Stoddard Wells Rd off-ramp	2,890	2,865	99%	39.8	5.8	57	16.8	B	405	5,115	4,839	95%	38.3	4.2	57	28.1	D	482
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	2,300	2,248	98%	11.2	0.7	61	12.3	B	416	4,435	4,207	95%	11.4	0.9	60	23.4	C	493
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	2,575	2,498	97%	48.1	2.2	62	10.1	A	464	5,005	4,745	95%	50.2	4.1	59	20.0	C	544
HDC EB/WB off-ramp to HDC WB on-ramp	2,275	2,190	96%	71.6	3.0	62	11.7	B	536	4,285	4,072	95%	73.8	5.3	60	22.5	C	617
HDC WB on-ramp to HDC EB on-ramp	2,425	2,357	97%	7.7	0.4	62	9.9	A	543	4,435	4,219	95%	8.0	0.6	60	18.3	C	625
HDC EB on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	3,394	3,240	95%	36.9	2.1	61	13.3	B	580	6,151	5,715	93%	42.6	7.9	51	27.9	D	668
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	2,934	2,795	95%	23.1	1.1	62	15.1	B	603	5,801	5,376	93%	25.1	3.1	57	31.5	D	693
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	3,164	2,993	95%	219.6	13.5	61	16.4	B	823	6,021	5,504	91%	235.4	29.3	57	32.5	D	929
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	2,579	2,434	94%	32.1	1.7	61	13.2	B	855	5,445	4,901	90%	33.5	3.0	59	27.7	D	962
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,980	2,810	94%	64.6	3.6	61	15.4	B	920	5,925	5,316	90%	68.8	7.8	57	31.0	D	1,031
I-15 SOUTHBOUND MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	4,555	4,552	100%	60.5	5.3	59	25.7	C	61	3,860	3,861	100%	59.3	4.1	60	21.3	C	59
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	4,162	4,117	99%	37.4	3.1	60	23.0	C	98	3,351	3,373	101%	36.8	2.5	61	18.5	C	96
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	4,687	4,649	99%	221.1	21.6	58	26.5	D	319	3,993	4,022	101%	218.6	19.1	59	22.7	C	315
Quarry Rd off-ramp to Quarry Rd on-ramp	4,502	4,496	100%	25.5	2.4	59	25.4	C	345	3,733	3,744	100%	25.1	2.0	60	20.8	C	340
Quarry Rd on-ramp to HDC EB/WB off-ramp	4,792	4,788	100%	53.8	5.5	58	20.5	C	398	4,108	4,127	100%	53.2	4.9	59	17.5	B	393
HDC EB/WB off-ramp to HDC EB on-ramp	3,482	3,478	100%	79.4	5.5	61	19.1	C	478	2,613	2,604	100%	77.8	4.0	62	14.0	B	471
HDC WB on-ramp to HDC EB on-ramp	3,762	3,738	99%	10.8	0.9	60	17.2	B	488	2,918	2,921	100%	10.6	0.7	61	13.2	B	481
HDC EB on-ramp to Stoddard Wells Rd off-ramp	4,517	4,423	98%	29.1	2.8	59	18.8	C	518	3,913	3,815	97%	28.7	2.4	60	16.0	B	510
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,817	3,722	98%	28.4	2.1	60	20.6	C	546	3,413	3,315	97%	27.9	1.7	61	18.1	C	538
Stoddard Wells Rd direct on-ramp to E St off-ramp	4,412	4,286	97%	23.7	2.7	58	24.8	C	570	3,908	3,769	96%	23.0	2.0	59	21.2	C	561
E St off-ramp to E St on-ramp	4,372	4,289	98%	9.0	0.8	59	24.3	C	579	3,853	3,725	97%	8.8	0.6	60	20.6	C	570
E St on-ramp to D St off-ramp	4,442	4,352	98%	11.6	1.0	59	24.6	C	590	3,908	3,768	96%	11.3	0.8	60	20.8	C	581
D St off-ramp to D St on-ramp	4,137	4,064	98%	22.1	1.7	60	22.6	C	612	3,623	3,517	97%	21.7	1.3	61	19.2	C	602
D St on-ramp to Mojave Dr off-ramp	5,037	4,985	99%	54.0	5.6	58	21.0	C	666	4,738	4,633	98%	53.1	4.6	59	19.2	C	656
Mojave Dr off-ramp to Mojave Dr on-ramp	4,682	4,617	99%	21.0	2.0	59	26.2	D	687	4,258	4,178	98%	20.6	1.6	60	23.2	C	676
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	5,387	5,318	99%	15.7	1.9	57	23.5	C	703	4,953	4,841	98%	15.3	1.6	58	20.9	C	691
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,957	4,885	99%	28.1	2.9	58	28.0	D	731	4,493	4,413	98%	27.3	2.1	60	24.6	C	719
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	5,367	5,261	98%	23.7	2.0	59	22.2	C	755	5,048	4,972	99%	23.7	2.0	59	20.9	C	742
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,567	4,493	98%	12.9	1.0	60	25.0	C	768	4,098	4,000	98%	12.8	0.8	61	21.9	C	755
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,782	4,676	98%	8.7	0.8	59	26.5	D	776	4,298	4,171	97%	8.5	0.7	60	23.2	C	764
Palmdale Rd direct on-ramp to I-15 SB south end of the network	5,082	4,938	97%	172.3	16.2	59	28.1	D	949	4,648	4,479	96%	170.0	14.0	59	25.1	C	934

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-27. Year 2040 Build Alternative with Tolls and High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK SPEED (mph)	AM PEAK DENSITY (veh/ln/mi)	AM PEAK LOS (HCM 2000)	PM PEAK SPEED (mph)	PM PEAK DENSITY (veh/ln/mi)	PM PEAK LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	58	12.2	B	58	21.3	C
West Palmdale Blvd loop	Merging	62	7.7	A	61	14.8	B
West Palmdale Blvd direct	Merging	62	8.7	A	61	13.1	B
SR 138 WB	Merging	61	14	B	58	21	C
10th St. West loop	Merging	59	16.8	B	58	21.4	C
10th St. West direct	Merging	60	17.2	B	60	20.7	C
West Avenue N loop	Merging	61	16.7	B	59	20.4	C
West Avenue N direct	Merging	61	14.0	B	60	17.7	B
East Avenue S	Diverging	63	12.6	B	48	38.6	**E**
West Palmdale Blvd	Diverging	60	12.9	B	57	21.3	C
SR 138 EB	Diverging	61	13.1	B	59	22.2	C
10th St. West	Diverging	60	10.6	B	59	17.3	B
West Avenue N	Diverging	58	17.8	B	53	24.6	C
SOUTHBOUND							
West Avenue N loop	Merging	60	20.6	C	61	18.2	B
West Avenue N direct	Merging	60	17.9	B	62	13.9	B
10th St. West	Merging	61	16.4	B	62	10.9	B
SR 138 WB	Merging	60	14.8	B	61	10.5	B
West Palmdale Blvd loop	Merging	56	23.7	C	59	17.5	B
West Palmdale Blvd direct	Merging	55	27.2	C	59	19.8	B
East Avenue S	Merging	29	55.7	**E**	55	20.6	C
West Avenue N	Diverging	57	30.6	D	56	33.2	D
10th St. West	Diverging	52	27.6	C	37	42.1	**E**
SR 138 EB	Diverging	51	30.2	D	47	32.8	D
West Palmdale Blvd	Diverging	60	18.0	B	60	14.4	B
East Avenue S	Diverging	54	30.0	D	57	23.0	C

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area
Level of service E
Level of service F

Table 4-27. Year 2040 Build Alternative with Tolls and High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK SPEED (mph)	AM PEAK DENSITY (veh/ln/mi)	AM PEAK LOS (HCM 2000)	PM PEAK SPEED (mph)	PM PEAK DENSITY (veh/ln/mi)	PM PEAK LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	58	22	C	57	25	C
20th St East	Merging	62	13	B	61	15	B
50th St East	Merging	58	21	C	58	22	C
90th St East	Merging	60	17	B	60	17	B
140th St East	Merging	60	15	B	61	13	B
170th St East	Merging	60	14	B	61	12	B
210th St East	Merging	59	15	B	60	12	B
240th St East	Merging	58	16	B	59	13	B
Oasis Rd	Merging	60	15	B	60	12	B
Sheep Creek Rd loop	Merging	62	11	B	61	11	B
Sheep Creek Rd direct	Merging	61	11	B	61	11	B
Caughlin Rd loop	Merging	62	10	B	62	10	B
Caughlin Rd direct	Merging	62	9	A	61	9	A
Koala Rd loop	Merging	57	15	B	60	10	B
Koala Rd direct	Merging	61	14	B	61	10	B
Route 395 loop	Merging	51	25	C	55	19	B
Route 395 direct	Merging	59	21	C	60	17	B
Phantom St West loop	Merging	61	12	B	61	13	B
Phantom St West direct	Merging	61	15	B	59	17	B
Phantom St East loop	Merging	61	16	B	56	23	C
Phantom St East direct	Merging	60	19	B	56	26	C
Choco Rd	Merging	63	8	A	62	8	A
Dale Evans Pkwy loop	Merging	62	7	A	63	7	A
Dale Evans Pkwy direct	Merging	63	7	A	63	8	A
10th St East	Diverging	62	11	B	62	14	B
50th St East	Diverging	58	20	C	58	23	C
90th St East	Diverging	57	25	C	57	27	C
140th St East	Diverging	56	22	C	57	23	C
170th St East	Diverging	60	17	B	60	17	B
210th St East	Diverging	60	17	B	60	15	B
240th St East	Diverging	58	18	B	60	14	B
Oasis Rd	Diverging	59	18	B	60	15	B
Sheep Creek Rd	Diverging	55	20	B	58	15	B
Caughlin Rd	Diverging	59	14	B	59	13	B
Koala	Diverging	61	11	B	61	11	B
Route 395	Diverging	60	16	B	61	12	B
Phantom St West	Diverging	51	29	D	57	22	C
Phantom St East	Diverging	60	19	B	60	19	B
National Trails Hwy	Diverging	60	19	B	59	25	C
Dale Evans Pkwy	Diverging	62	9	A	62	9	A
10th St East to 20th St East	Weaving	59	17	B	58	19	B
National Trails Hwy to I-15 NB/SB	Weaving	61	12	B	60	16	B
I-15 NB/SB to Choco Rd	Weaving	62	7	A	62	7	A

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-27. Year 2040 Build Alternative with Tolls and High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK SPEED (mph)	AM PEAK DENSITY (veh/ln/mi)	AM PEAK LOS (HCM 2000)	PM PEAK SPEED (mph)	PM PEAK DENSITY (veh/ln/mi)	PM PEAK LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy loop	Merging	62	5	A	59	14	B
Dale Evans Pkwy direct	Merging	62	7	A	57	18	B
I-15 NB	Merging	63	4	A	61	11	B
National Trails Hwy	Merging	60	12	B	54	24	C
Phantom St East loop	Merging	61	10	B	54	27	C
Phantom St East direct	Merging	62	10	B	49	34	D
Phantom St West	Merging	62	7	A	59	24	C
Route 395	Merging	63	5	A	60	19	B
Koala Rd loop	Merging	63	4	A	61	16	B
Koala Rd direct	Merging	63	4	A	60	15	B
Caughlin Rd loop	Merging	63	4	A	61	17	B
Caughlin Rd direct	Merging	62	5	A	55	20	C
Sheep Creek Rd loop	Merging	63	5	A	60	20	C
Sheep Creek Rd direct	Merging	62	5	A	47	29	D
Oasis Rd loop	Merging	62	5	A	59	25	C
Oasis Rd direct	Merging	62	5	A	56	23	C
240th St East	Merging	62	5	A	58	20	C
210th St East	Merging	62	5	A	60	18	B
170th St East	Merging	62	5	A	60	16	B
140th St East	Merging	61	9	A	55	20	B
90th St East	Merging	59	11	B	52	23	C
50th St East	Merging	59	12	B	59	18	B
10th St East	Merging	60	16	B	23	58	**E**
Dale Evans Pkwy	Diverging	62	7	A	60	18	B
Choco Rd	Diverging	62	8	A	60	20	C
Phantom St East	Diverging	59	16	B	57	26	C
Phantom St West	Diverging	61	11	B	59	28	D
Route 395	Diverging	60	9	A	41	36	**E**
Koala Rd	Diverging	62	6	A	55	26	C
Caughlin Rd	Diverging	63	5	A	61	18	B
Sheep Creek Rd	Diverging	63	5	A	59	21	C
Oasis Rd	Diverging	63	6	A	59	26	C
240th St East	Diverging	62	6	A	55	29	D
210th St East	Diverging	63	5	A	58	25	C
170th St East	Diverging	62	5	A	58	22	C
140th St East	Diverging	63	6	A	60	19	B
90th St East	Diverging	62	9	A	59	21	C
50th St East	Diverging	61	12	B	55	25	C
20th St East	Diverging	61	12	B	59	19	B
SR 14 SB	Diverging	61	18	B	33	52	**E**
Choco to I-15 NB/SB	Weaving	63	5	A	63	9	A
I-15 SB to National Trails Hwy	Weaving	62	9	A	59	16	B
20th St East to 10th St East	Weaving	59	12	B	36	26	C

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

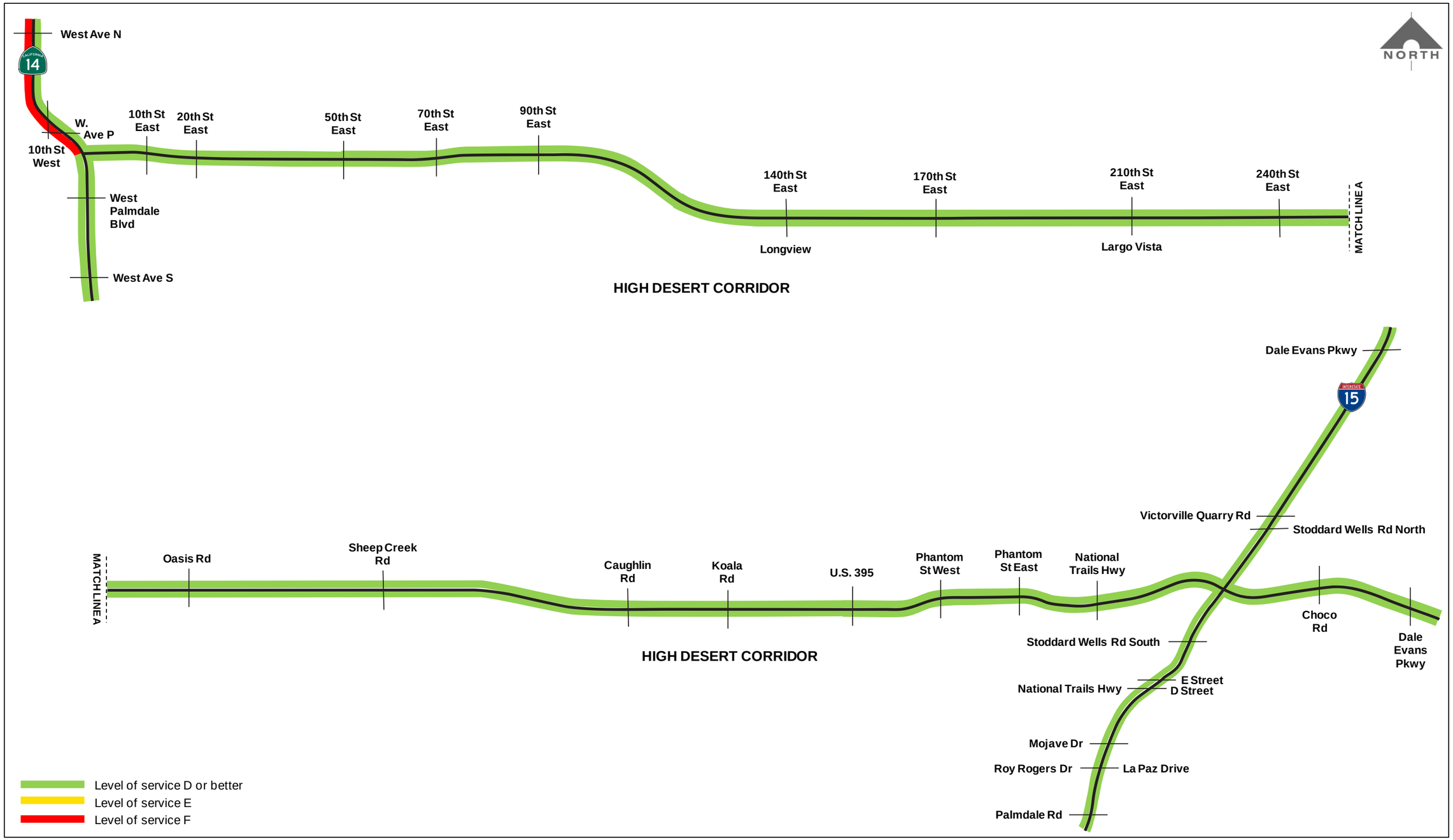
Level of service F

Table 4-27. Year 2040 Build Alternative with Tolls and High Speed Rail Feeder Service Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

Summary of I-15

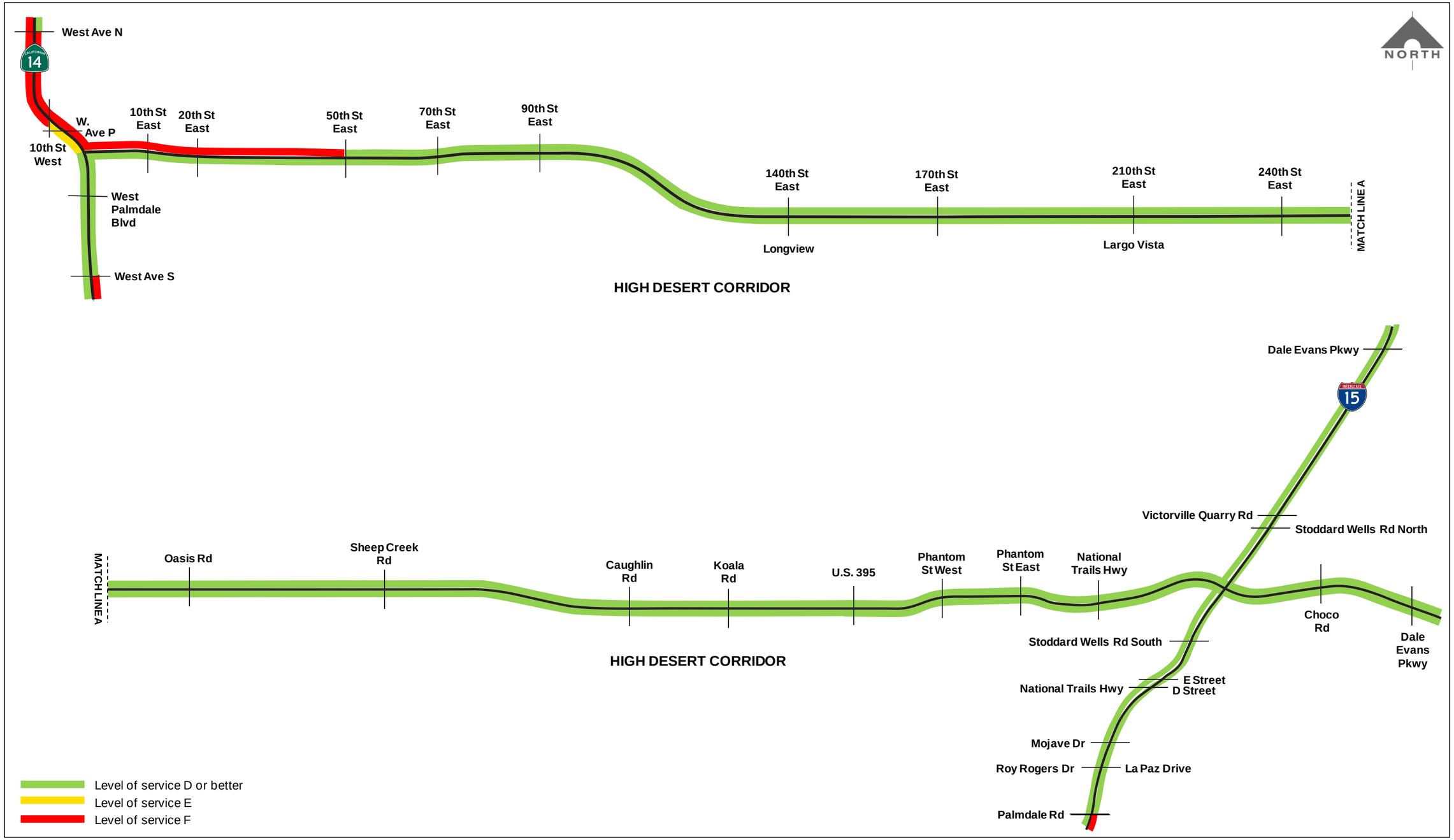
LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	58	23	C	52	35	D
Mojave Dr	Merging	58	22	C	50	36	**E**
D St	Merging	60	17	B	56	29	D
E St	Merging	61	17	B	58	28	D
HDC WB	Merging	61	9	A	60	16	B
Stoddard Wells Rd (Quarry Rd)	Merging	61	17	B	55	33	D
Dale Evans Pkwy	Merging	60	15	B	55	31	D
Palmdale Rd	Diverging	59	23	C	44	40	**E**
D St	Diverging	60	16	B	59	22	C
E St	Diverging	60	17	B	56	29	D
Stoddard Wells Rd	Diverging	47	22	C	56	29	D
Dale Evans Pkwy	Diverging	59	17	B	54	33	D
Palmdale Rd direct to Roy Rogers Dr	Weaving	59	18	B	52	26	C
Roy Rogers Dr to Mojave Dr	Weaving	59	16	B	54	25	C
Stoddard Wells Rd to HDC EB/WB	Weaving	62	9	A	59	18	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	61	13	B	49	27	C
SOUTHBOUND							
Dale Evans Pkwy	Merging	55	28	D	55	26	C
HDC WB	Merging	60	16	B	61	12	B
Stoddard Wells Rd direct	Merging	56	26	C	58	23	C
E St	Merging	58	25	C	60	22	C
Palmdale Rd loop	Merging	59	26	C	59	24	C
Palmdale Rd direct	Merging	57	28	D	56	27	C
Dale Evans Pkwy	Diverging	57	27	C	59	24	C
Quarry Rd	Diverging	58	26	C	58	24	C
E St	Diverging	57	26	C	59	23	C
D St	Diverging	58	25	C	60	22	C
Quarry Rd to HDC EB/WB	Weaving	58	20	B	58	17	B
HDC EB to Stoddard Wells Rd	Weaving	58	19	B	59	17	B
D St to Mojave Dr	Weaving	58	20	B	59	19	B
Mojave Dr to Roy Rogers Dr	Weaving	56	22	C	57	21	C
Roy Rogers Dr to Palmdale Rd	Weaving	59	21	C	59	21	C

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area
Level of service E
Level of service F



AM PEAK HOUR

Figure 4-26: Year 2040 Build Alternative with Land Use Sensitivity Test Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 4-26: Year 2040 Build Alternative with Land Use Sensitivity Test Freeway Mainline Level of Service *(2 of 2)*

Table 4-28. Year 2040 Build Alternative with Land Use Sensitivity Test Freeway Mainline Analysis Results *(1 of 4)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NORTHBOUND MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	3,985	3,978	100%	183.9	30.4	55	18.3	C	184	3,985	3,978	100%	183.9	30.4	55	18.3	C	184	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	3,595	3,593	100%	28.4	2.8	59	15.7	B	212	3,595	3,593	100%	28.4	2.8	59	15.7	B	212	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to West Palmdale Blvd off-ramp	4,455	4,444	100%	59.3	4.8	60	15.2	B	272	4,455	4,444	100%	59.3	4.8	60	15.2	B	272	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	3,580	3,561	99%	16.8	0.9	61	14.6	B	288	3,580	3,561	99%	16.8	0.9	61	14.6	B	288	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	2,230	2,233	100%	5.1	0.2	62	12.0	B	294	2,230	2,233	100%	5.1	0.2	62	12.0	B	294	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	2,450	2,461	100%	16.3	0.5	63	9.8	A	310	2,450	2,461	100%	16.3	0.5	63	9.8	A	310	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	2,930	2,925	100%	33.4	1.8	61	11.4	B	343	2,930	2,925	100%	33.4	1.8	61	11.4	B	343	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	1,907	1,907	100%	22.9	1.3	61	10.5	A	366	1,907	1,907	100%	22.9	1.3	61	10.5	A	366	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	4,355	4,213	97%	48.1	2.5	61	13.7	B	414	4,355	4,213	97%	48.1	2.5	61	13.7	B	414	—	—	—	—	—	—	—	—	—
10th St West loop on-ramp to 10th St W direct on-ramp	4,835	4,664	96%	16.7	0.9	61	14.1	B	431	4,835	4,664	96%	16.7	0.9	61	14.1	B	431	—	—	—	—	—	—	—	—	—
10th St West direct on-ramp to West Avenue N off-ramp	5,235	5,027	96%	67.6	5.2	60	16.4	B	498	5,235	5,027	96%	67.6	5.2	60	16.4	B	498	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,580	4,483	98%	17.9	0.8	62	18.1	C	516	4,580	4,483	98%	17.9	0.8	62	18.1	C	516	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,850	4,741	98%	9.4	0.4	62	15.3	B	526	4,850	4,741	98%	9.4	0.4	62	15.3	B	526	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	5,055	4,940	98%	30.7	1.3	62	15.4	B	556	5,055	4,940	98%	30.7	1.3	62	15.4	B	556	—	—	—	—	—	—	—	—	—
SR 14 SOUTHBOUND MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	8,695	6,848	79%	117.7	82.9	19	89.7	F	118	6,505	4,842	74%	144.4	109.7	16	104.0	F	144	2,190	2,006	92%	53.3	18.3	43	46.8	F	53
West Avenue N off-ramp to West Avenue N loop on-ramp	8,300	6,436	78%	64.5	47.0	17	92.1	F	182	6,110	4,437	73%	82.9	65.5	14	108.9	F	227	2,190	1,998	91%	23.4	6.0	48	41.5	E	77
West Avenue N loop on-ramp to West Avenue N direct on-ramp	8,350	6,448	77%	43.6	33.0	16	83.1	F	226	6,160	4,447	72%	56.6	46.0	12	93.0	F	284	2,190	2,000	91%	14.7	4.1	46	43.5	E	91
West Avenue N direct on-ramp to 10th St West off-ramp	8,800	6,772	77%	275.5	198.9	22	66.7	F	501	6,990	5,167	74%	346.1	269.4	19	75.3	F	630	1,810	1,605	89%	96.9	20.6	53	31.3	D	188
10th St West off-ramp to HDC off-ramp	7,790	6,027	77%	26.9	11.0	38	39.6	E	528	5,980	4,992	83%	28.9	13.0	35	47.0	F	659	1,810	1,035	57%	17.3	1.5	59	17.5	B	206
HDC off-ramp to 10th St West on-ramp	2,625	2,177	83%	22.4	1.3	61	11.9	B	551	1,195	1,140	95%	21.8	0.8	62	9.2	A	681	1,430	1,037	72%	23.0	1.9	59	17.5	B	229
10th St West on-ramp to Palmdale Blvd off-ramp	4,110	3,628	88%	33.6	1.8	61	14.8	B	584	2,680	2,511	94%	33.1	1.3	62	13.5	B	714	1,430	1,117	78%	34.5	2.8	60	18.8	C	263
West Palmdale Blvd off-ramp to HDC on-ramp	3,520	3,105	88%	32.5	1.4	62	12.6	B	617	2,090	1,859	89%	31.6	0.6	64	9.7	A	745	1,430	1,246	87%	33.9	2.7	59	21.0	C	297
HDC on-ramp to West Palmdale Blvd loop on-ramp	4,915	4,378	89%	24.1	1.7	60	14.1	B	641	3,485	3,450	99%	23.9	1.6	60	13.8	B	769	1,430	929	65%	24.7	2.1	59	15.8	B	322
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	5,360	4,842	90%	14.1	1.3	59	18.4	C	655	4,240	3,377	80%	13.7	1.0	60	16.1	B	783	1,120	1,465	131%	14.9	2.1	55	26.5	D	337
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	5,885	5,362	91%	68.2	5.5	59	22.0	C	723	4,765	3,868	81%	67.6	4.9	60	20.8	C	851	1,120	1,493	133%	69.8	7.1	58	25.7	C	407
East Avenue S off-ramp to East Avenue S on-ramp	5,410	4,955	92%	22.0	1.4	60	20.5	C	745	4,290	3,462	81%	21.7	1.1	61	18.8	C	872	1,120	1,493	133%	22.8	2.2	58	25.6	C	429
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	6,440	5,932	92%	228.5	40.5	55	26.9	D	974	5,005	4,318	86%	230.8	42.8	55	26.1	D	1,103	1,435	1,613	112%	222.6	34.5	55	29.3	D	652

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NORTHBOUND MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	7,320	7,193	98%	254.9	100.5	39	46.5	F	255	5,500	5,441	99%	280.6	126.3	36	51.7	F	281	1,820	1,752	96%	176.9	22.3	57	31.1	D	177
East Avenue S off-ramp to East Avenue S on-ramp	6,415	6,299	98%	30.3	4.5	55	28.5	D	285	4,595	4,656	101%	30.8	5.0	54	28.6	D	311	1,820	1,643	90%	28.8	3.0	58	28.3	D	206
East Avenue S on-ramp to West Palmdale Blvd off-ramp	7,455	7,328	98%	66.7	12.2	53	27.9	D	352	5,965	6,124	103%	68.2	13.6	52	29.9	D	380	1,490	1,203	81%	58.5	4.1	61	20.0	C	264
West Palmdale Blvd off-ramp to HDC off-ramp	6,285	6,162	98%	18.5	2.6	55	27.9	D	370	4,795	5,270	110%	18.8	2.8	54	32.3	D	398	1,490	893	60%	16.9	1.1	61	14.8	B	281
HDC off-ramp to West Palmdale Blvd loop on-ramp	3,775	3,639	96%	5.4	0.4	59	20.5	C	376	2,285	2,746	120%	5.4	0.4	59	23.3	C	404	1,490	893	60%	5.3	0.4	60	14.9	B	286
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,005	3,870	97%	16.7	0.9	61	15.8	B	393	2,515	2,952	117%	16.6	0.8	62	16.0	B	420	1,490	918	62%	17.2	1.3	60	15.4	B	304
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	4,950	4,829	98%	35.6	4.0	58	20.1	C	428	3,460	3,886	112%	35.9	4.4	57	21.5	C	456	1,490	944	63%	34.3	2.5	60	15.8	B	338
10th St West off-ramp to HDC on-ramp	4,491	4,384	98%	32.0	10.3	44	33.2	D	460	2,671	3,430	128%	34.3	12.6	41	41.7	E	491	1,820	954	52%	23.8	2.0	59	16.1	B	362
HDC on-ramp to 10th St West on-ramp	9,485	7,193	76%	113.1	67.4	27	53.8	F	573	7,665	5,763	75%	128.0	82.3	24	60.5	F	619	1,820	1,431	79%	54.2	8.4	53	26.9	D	416
10th St West loop on-ramp to 10th St West direct on-ramp	10,180	7,692	76%	46.2	30.1	22	64.4	F	619	8,360	6,163	74%	53.2	37.0	19	72.8	F	672	1,820	1,529	84%	18.2	2.4	56	27.2	D	434
10th St West direct on-ramp to West Avenue N off-ramp	10,505	7,912	75%	145.3	82.5	33	53.2	F	765	8,325	6,435	77%	162.4	99.6	31	59.7	F	834	2,180	1,477	68%	70.6	7.9	57	25.9	C	505
West Avenue N off-ramp to West Avenue N loop on-ramp	9,555	7,171	75%	19.2	2.1	58	31.1	D	784	7,375	5,693	77%	19.2	2.1	58	33.0	D	853	2,180	1,477	68%	19.1	1.9	58	25.5	C	524
West Avenue N loop on-ramp to West Avenue N direct on-ramp	9,665	7,264	75%	9.9	0.9	59	24.8	C	794	7,485	5,785	77%	9.9	0.9	59	24.6	C	863	2,180	1,479	68%	10.0	0.9	58	25.5	C	534
West Avenue N direct on-ramp to West Avenue M off-ramp	10,185	7,748	76%	32.1	2.6	59	25.4	C	826	7,545	6,198	82%	31.7	2.2	60	24.8	C	895	2,640	1,549	59%	33.8	4.2	56	27.6	D	568
SR 14 SOUTHBOUND MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	7,155	6,627	93%	98.9	64.1	23	73.1	F	99	7,155	6,627	93%	98.9	64.1	23	73.1	F	99	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	6,725	6,167	92%	61.4	44.1	18	84.1	F	160	6,725	6,167	92%	61.4	44.1	18	84.1	F	160	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	7,220	6,638	92%	38.2	27.7	18	74.9	F	198	7,220	6,638	92%	38.2	27.7	18	74.9	F	198	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St W off-ramp	7,640	6,931	91%	268.6	192.3	20	69.0	F	467	7,640	6,931	91%	268.6	192.3	20	69.0	F	467	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC off-ramp	6,380	5,720	90%	29.6	13.7	35	41.3	E	497	6,380	5,720	90%	29.6	13.7	35	41.3	E	497	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St West on-ramp	2,031	1,866	92%	22.1	1.1	62	10.1	A	519	2,031	1,866	92%	22.1	1.1	62	10.1	A	519	—	—	—	—	—	—	—	—	—
10th St West on-ramp to Palmdale Blvd off-ramp	3,790	3,462	91%	33.4	1.7	61	14.1	B	552	3,790	3,462	91%	33.4	1.7	61	14.1	B	552	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	3,065	2,791	91%	31.9	0.9	63	11.1	B	584	3,065	2,791	91%	31.9	0.9	63	11.1	B	584	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	4,815	3,839	80%	23.7	1.3	61	12.1	B	608	4,815	3,839	80%	23.7	1.3	61	12.1	B	608	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	5,170	4,183	81%	13.6	0.8	61	15.3	B	621	5,170	4,183	81%	13.6	0.8	61	15.3	B	621	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	5,780	4,780	83%	68.4	5.6	59	19.7	C	690	5,780	4,780	83%	68.4	5.6	59	19.7	C	690	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	4,540	3,989	88%	21.6	1.1	62	16.2	B	711	4,540	3,989	88%	21.6	1.1	62	16.2	B	711	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	5,135	4,583	89%	215.1	27.1	58	19.6	C	926	5,135	4,583	89%	215.1	27.1	58	19.6	C	926	—	—	—	—	—	—	—	—	—

Source: Parsons
Level of service based on HCM 2000
Level of service E
Level of service F

Table 4-28. Year 2040 Build Alternative with Land Use Sensitivity Test Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EASTBOUND MAINLINE																		
SR-138 EB west end of the network to SR-14 NB on-ramp	5,330	3,967	74%	21.8	2.5	47	42.6	**E**	22	4,545	4,002	88%	22.7	3.5	45	44.7	**E**	23
SR-14 NB on-ramp to 10th St East off-ramp	6,680	5,289	79%	34.3	2.7	60	20.1	C	56	7,055	6,521	92%	35.0	3.4	58	25.2	C	58
10th St East off-ramp to 10th St East on-ramp	6,315	5,027	80%	46.4	2.6	61	20.5	C	102	6,650	6,114	92%	47.8	4.0	59	25.7	C	105
10th St East on-ramp to 20th St East off-ramp	6,795	5,510	81%	17.0	1.2	60	18.3	C	119	7,280	6,749	93%	17.7	1.8	58	23.3	C	123
20th St East off-ramp to 20th St East on-ramp	5,815	4,776	82%	43.9	2.3	61	19.4	C	163	5,960	5,540	93%	44.2	2.6	61	22.7	C	167
20th St East on-ramp to 50th St East off-ramp	6,065	5,032	83%	140.2	10.3	60	19.6	C	304	6,335	5,907	93%	142.2	12.4	59	23.4	C	310
50th St East off-ramp to 50th St East on-ramp	5,100	4,238	83%	44.5	3.2	60	23.5	C	348	4,960	4,633	93%	44.6	3.3	60	25.7	C	354
50th St East on-ramp to 90th St East off-ramp	5,425	4,505	83%	200.7	17.1	59	25.0	C	549	5,650	5,256	93%	206.9	23.0	57	30.1	D	561
90th St East off-ramp to 90th St East on-ramp	5,195	4,245	82%	46.5	3.7	60	23.7	C	595	4,935	4,529	92%	46.2	3.3	60	25.1	C	607
90th St East on-ramp to 140th St East off-ramp	5,470	4,410	81%	280.7	26.3	58	24.7	C	876	5,165	4,661	90%	279.2	24.8	59	26.0	C	886
140th St East off-ramp to 140th St East on-ramp	5,035	4,001	79%	47.2	3.7	60	22.3	C	923	4,355	3,888	89%	46.4	3.0	61	21.4	C	933
140th St East on-ramp to 170th St East off-ramp	5,235	4,155	79%	139.6	12.5	59	22.8	C	1,063	4,580	4,056	89%	137.7	10.6	60	22.0	C	1,071
170th St East off-ramp to 170th St East on-ramp	5,080	3,966	78%	48.0	3.9	60	22.2	C	1,111	4,440	3,893	88%	47.7	3.6	60	21.6	C	1,118
170th St East on-ramp to 210th St East off-ramp	5,390	4,212	78%	200.3	19.1	58	23.5	C	1,311	4,600	3,969	86%	196.9	15.7	60	21.7	C	1,315
210th St East off-ramp to 210th St East on-ramp	5,340	4,085	76%	44.8	3.9	59	23.0	C	1,356	4,520	3,816	84%	44.2	3.4	60	21.2	C	1,359
210th St East on-ramp to 240th St East off-ramp	5,525	4,192	76%	145.0	14.6	58	23.3	C	1,501	4,605	3,838	83%	141.8	11.5	59	20.9	C	1,501
240th St East off-ramp to 240th St East on-ramp	5,255	3,926	75%	48.3	3.9	60	22.0	C	1,549	4,445	3,660	82%	47.9	3.6	60	20.3	C	1,549
240th St East on-ramp to Oasis Rd off-ramp	5,650	4,277	76%	140.8	14.3	58	23.9	C	1,690	4,750	3,914	82%	138.3	11.8	59	21.4	C	1,687
Oasis Rd off-ramp to Oasis Rd on-ramp	5,365	3,996	74%	48.4	3.9	60	22.3	C	1,738	4,605	3,757	82%	48.2	3.6	60	20.9	C	1,736
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	5,500	4,058	74%	200.9	21.1	58	22.9	C	1,939	4,695	3,768	80%	197.2	17.4	59	20.8	C	1,933
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	4,500	3,265	73%	49.0	3.0	61	17.9	B	1,988	3,990	3,125	78%	48.8	2.8	61	17.1	B	1,982
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	4,830	3,512	73%	263.4	21.8	59	19.4	C	2,251	4,445	3,517	79%	262.8	21.0	59	19.4	C	2,244
Caughlin Rd off-ramp to Caughlin Rd on-ramp	3,965	2,845	72%	46.8	2.5	61	15.5	B	2,298	3,565	2,788	78%	46.6	2.3	62	15.1	B	2,291
Caughlin Rd on-ramp to Koala Rd off-ramp	4,095	2,965	72%	72.8	5.0	60	15.7	B	2,371	3,675	2,890	79%	72.1	4.3	61	15.2	B	2,363
Koala Rd off-ramp to Koala Rd loop on-ramp	3,565	2,600	73%	32.6	1.8	61	14.1	B	2,404	3,460	2,717	79%	32.6	1.8	61	14.8	B	2,396
Koala Rd loop on-ramp to Koala Rd direct on-ramp	4,696	3,731	79%	18.6	2.8	55	20.0	C	2,422	3,908	3,175	81%	17.5	1.7	59	16.0	B	2,413
Koala Rd direct on-ramp to Route 395 off-ramp	4,795	3,792	79%	107.5	8.5	59	20.5	C	2,530	4,015	3,252	81%	106.8	7.8	60	17.4	B	2,520
Route 395 off-ramp to Route 395 loop on-ramp	4,165	3,272	79%	26.2	1.5	61	17.8	B	2,556	3,415	2,780	81%	26.0	1.3	62	15.0	B	2,546
Route 395 loop on-ramp to Route 395 direct on-ramp	5,500	4,632	84%	25.7	5.1	53	27.3	D	2,582	4,340	3,719	86%	22.8	2.4	59	19.9	C	2,569
Route 395 direct on-ramp to Phantom W off-ramp	5,415	4,690	87%	72.1	17.5	50	31.0	D	2,654	4,430	3,800	86%	59.5	5.0	60	20.7	C	2,628
Phantom St West off-ramp to Phantom St West loop on-ramp	4,080	3,475	85%	28.2	1.5	61	18.9	C	2,682	3,540	3,096	87%	28.0	1.2	62	16.7	B	2,656
Phantom St West loop on-ramp to Phantom St West direct on-ramp	4,148	3,550	86%	12.6	0.6	62	16.3	B	2,694	3,864	3,406	88%	12.7	0.8	61	15.9	B	2,669
Phantom St West direct on-ramp to Phantom St East direct off-ramp	4,355	3,751	86%	58.1	3.8	60	19.9	C	2,753	4,250	3,655	86%	58.2	3.9	60	19.4	C	2,727
Phantom St East direct off-ramp to Phantom St East loop on-ramp	3,605	3,115	86%	36.1	1.7	62	16.8	B	2,789	3,775	3,243	86%	36.2	1.8	61	17.6	B	2,763
Phantom St East loop on-ramp to Phantom St East direct on-ramp	3,854	3,352	87%	16.3	1.0	61	18.4	C	2,805	4,602	4,022	87%	17.3	2.1	57	23.5	C	2,781
Phantom St East direct on-ramp to National Trails Hwy off-ramp	4,130	3,623	88%	41.7	2.9	60	20.1	C	2,847	5,135	4,578	89%	43.7	4.7	58	26.5	D	2,824
National Trails Hwy off-ramp to National Trails Hwy on-ramp	3,675	3,217	88%	43.3	2.2	61	17.4	B	2,890	4,620	4,139	90%	43.7	2.5	61	22.6	C	2,868
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	3,965	3,459	87%	104.0	5.7	61	14.1	B	2,994	4,860	4,353	90%	106.1	7.8	60	18.2	C	2,974
I-15 NB/SB off-ramp to I-15 NB on-ramp	1,805	1,558	86%	80.0	2.1	63	8.2	A	3,074	1,860	1,677	90%	80.0	2.0	63	8.8	A	3,054
I-15 NB/SB on-ramp to Choco Rd off-ramp	2,150	1,892	88%	57.0	2.0	63	7.6	A	3,131	2,405	2,212	92%	57.4	2.2	62	8.9	A	3,111
Choco Rd off-ramp to Choco Rd on-ramp	2,005	1,764	88%	33.5	1.3	62	9.4	A	3,164	2,055	1,887	92%	33.7	1.5	62	10.2	A	3,145
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	2,075	1,822	88%	72.3	3.0	62	9.4	A	3,237	2,255	2,082	92%	73.2	3.7	61	10.9	A	3,218
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	1,585	1,380	87%	26.9	0.8	63	7.3	A	3,264	1,905	1,731	91%	27.2	1.0	63	9.2	A	3,245
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,740	1,530	88%	10.3	0.4	62	6.7	A	3,274	1,977	1,802	91%	10.4	0.5	62	8.0	A	3,256
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,805	1,590	88%	32.0	1.1	63	8.0	A	3,306	2,015	1,840	91%	32.7	1.8	61	9.4	A	3,289

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-28. Year 2040 Build Alternative with Land Use Sensitivity Test Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WESTBOUND MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	1,430	1,318	92%	36.0	1.1	63	10.5	A	36	2,560	2,572	100%	38.9	4.0	57	22.7	C	39
Dale Evans Pkwy off-ramp to Dale Evans Pkwy loop on-ramp	1,265	1,158	92%	25.0	0.5	64	9.1	A	61	2,350	2,353	100%	26.0	1.6	61	19.3	C	65
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,369	1,262	92%	11.0	0.4	63	7.7	A	72	2,534	2,535	100%	11.5	1.0	60	16.4	B	76
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	1,495	1,392	93%	79.5	2.6	63	10.5	A	151	2,865	2,868	100%	85.7	8.8	58	23.4	C	162
Choco Rd off-ramp to Choco Rd on-ramp	1,385	1,292	93%	34.8	1.1	63	6.9	A	186	2,830	2,838	100%	36.5	2.8	60	15.8	B	199
Choco Rd on-ramp to I-15 NB/SB off-ramp	1,725	1,631	95%	56.7	1.4	63	6.4	A	243	3,095	3,102	100%	57.8	2.5	62	12.5	B	256
I-15 NB/SB off-ramp to I-15 SB on-ramp	1,399	1,330	95%	99.8	1.9	64	7.0	A	343	2,518	2,495	99%	102.4	4.7	62	14.5	B	359
I-15 NB on-ramp to I-15 NB on-ramp	2,505	2,451	98%	11.4	1.0	59	11.6	B	354	3,585	3,558	99%	11.7	1.3	58	17.4	B	371
I-15 SB on-ramp to National Trails Hwy off-ramp	3,800	3,740	98%	68.3	4.9	60	15.5	B	422	4,975	4,905	99%	71.1	7.5	58	21.2	C	442
National Trails Hwy off-ramp to National Trails Hwy on-ramp	3,580	3,501	98%	43.0	2.3	62	19.0	C	466	4,680	4,602	98%	44.4	3.6	60	25.7	C	486
National Trails Hwy on-ramp to Phantom St East off-ramp	3,970	3,894	98%	62.2	12.3	53	24.5	C	528	5,175	5,082	98%	59.7	9.7	54	30.4	D	546
Phantom St East off-ramp to Phantom St East loop on-ramp	2,510	2,492	99%	33.5	1.3	62	13.3	B	561	4,425	4,310	97%	34.8	2.6	60	24.0	C	580
Phantom St East loop on-ramp to Phantom St East direct on-ramp	2,809	2,752	98%	5.4	0.3	62	14.9	B	567	5,036	4,802	95%	5.9	0.8	56	28.5	D	586
Phantom St East direct on-ramp to Phantom St West off-ramp	2,840	2,812	99%	59.2	3.2	61	15.3	B	626	5,065	4,932	97%	62.9	7.0	58	28.5	D	649
Phantom St West off-ramp to Phantom St West on-ramp	2,080	2,049	99%	42.4	1.3	63	10.8	A	668	4,725	4,571	97%	44.5	3.3	60	25.4	C	694
Phantom St West on-ramp to Route 395 off-ramp	2,830	2,746	97%	54.4	2.7	62	11.2	B	722	6,390	6,051	95%	62.7	11.1	54	28.8	D	756
Route 395 off-ramp to Route 395 on-ramp	1,830	1,776	97%	46.9	0.9	64	7.0	A	769	4,900	4,667	95%	48.7	2.6	61	19.0	C	805
Route 395 on-ramp to Koala Rd off-ramp	2,385	2,282	96%	100.7	2.8	63	8.8	A	870	5,790	5,489	95%	107.9	10.0	58	22.9	C	913
Koala Rd off-ramp to Koala Rd on-ramp	1,845	1,760	95%	48.6	0.9	64	6.9	A	919	4,565	4,348	95%	50.3	2.6	62	17.7	B	963
Koala Rd on-ramp to Caughlin Rd off-ramp	2,010	1,916	95%	66.8	1.5	63	7.3	A	985	4,960	4,705	95%	69.6	4.3	61	18.8	C	1,033
Caughlin Rd off-ramp to Caughlin Rd on-ramp	1,920	1,826	95%	49.3	1.0	63	7.2	A	1,035	4,790	4,529	95%	51.4	3.1	61	18.6	C	1,084
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	2,655	2,529	95%	248.3	7.4	63	9.9	A	1,283	5,700	5,357	94%	260.8	19.9	60	22.1	C	1,345
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	2,255	2,127	94%	45.2	1.2	63	8.4	A	1,328	5,400	4,977	92%	47.3	3.3	60	20.6	C	1,392
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	2,575	2,418	94%	184.7	5.5	63	9.4	A	1,513	6,715	6,057	90%	197.2	17.7	58	25.4	C	1,590
Oasis Rd off-ramp to Oasis Rd loop on-ramp	2,485	2,314	93%	47.9	1.4	63	9.2	A	1,561	6,560	5,848	89%	50.7	4.1	60	24.5	C	1,640
Oasis Rd direct on-ramp to 240th St E off-ramp	2,580	2,386	92%	129.1	4.1	63	9.3	A	1,690	6,770	5,989	88%	137.7	12.6	59	25.0	C	1,778
240th St E off-ramp to 240th St E on-ramp	2,420	2,224	92%	44.1	1.4	63	8.8	A	1,734	6,360	5,554	87%	46.3	3.5	60	23.2	C	1,824
240th St E on-ramp to 210th St E off-ramp	2,470	2,262	92%	135.5	4.8	62	8.8	A	1,870	6,635	5,729	86%	175.2	44.4	51	28.5	D	1,999
210th St E off-ramp to 210th St E on-ramp	2,415	2,190	91%	42.6	1.5	63	11.7	B	1,912	6,365	5,383	85%	50.7	9.7	52	34.2	D	2,050
210th St E on-ramp to 170th St E off-ramp	2,485	2,230	90%	190.7	7.8	62	11.7	B	2,103	6,420	5,310	83%	234.0	51.1	51	34.0	D	2,284
170th St E off-ramp to 170th St E on-ramp	2,300	2,017	88%	44.9	1.8	62	10.8	A	2,148	6,090	4,915	81%	48.2	5.1	58	28.3	D	2,332
170th St E on-ramp to 140th St E off-ramp	2,535	2,221	88%	136.9	6.2	62	11.6	B	2,285	6,370	5,118	80%	155.5	24.9	54	30.7	D	2,488
140th St E off-ramp to 140th St E on-ramp	2,365	2,025	86%	37.0	1.6	62	10.9	A	2,322	6,105	4,783	78%	61.8	26.5	37	42.9	**E**	2,550
140th St E on-ramp to 90th St E off-ramp	3,015	2,626	87%	273.3	14.5	61	14.0	B	2,595	6,665	5,163	77%	335.4	76.3	49	35.0	D	2,885
90th St E off-ramp to 90th St E on-ramp	2,800	2,390	85%	44.8	2.1	62	12.9	B	2,640	6,230	4,655	75%	47.4	4.8	58	26.6	D	2,932
90th St E on-ramp to 70th St E off-ramp	3,490	3,032	87%	195.9	12.4	61	16.5	B	2,836	6,610	4,917	74%	222.9	39.6	53	30.5	D	3,155
50th St E off-ramp to 50th St E on-ramp	2,805	2,428	87%	43.6	2.0	62	13.1	B	2,879	6,255	4,405	70%	62.4	20.8	43	34.1	D	3,218
50th St E on-ramp to 20th St E off-ramp	4,070	3,674	90%	138.2	6.8	61	15.0	B	3,017	7,260	4,850	67%	366.1	233.2	24	51.7	**F**	3,584
20th St E off-ramp to 20th St E on-ramp	3,720	3,347	90%	41.8	2.0	62	13.6	B	3,059	6,980	4,123	59%	165.1	124.1	16	65.9	**F**	3,749
20th St E on-ramp to 10th St E off-ramp	4,625	4,228	91%	17.0	1.2	60	14.1	B	3,076	8,060	4,893	61%	75.6	59.2	14	72.3	**F**	3,824
10th St E off-ramp to 10th St E on-ramp	4,055	3,724	92%	46.3	2.4	61	15.2	B	3,122	7,405	4,315	58%	184.3	139.3	16	70.5	**F**	4,009
10th St E on-ramp to SR-14 SB off-ramp	4,430	4,079	92%	34.3	2.5	60	16.7	B	3,157	7,820	4,608	59%	87.7	55.6	25	46.3	**F**	4,096
SR-14 SB off-ramp to SR-138 WB west end of the network	2,880	2,649	92%	12.8	0.6	53	24.8	C	3,170	5,875	3,413	58%	23.8	11.4	29	59.7	**F**	4,120

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-28. Year 2040 Build Alternative with Land Use Sensitivity Test Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NORTHBOUND MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off Ramp	3,860	3,855	100%	151.9	10.3	61	21.3	C	152	6,040	5,609	93%	233.6	92.2	41	46.6	**F**	234
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	3,380	3,376	100%	22.6	1.6	60	18.8	C	175	5,385	4,966	92%	25.5	4.4	54	30.8	D	259
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,760	3,770	100%	11.7	1.3	58	21.6	C	186	5,785	5,330	92%	13.5	3.1	50	35.3	**E**	273
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	4,230	4,222	100%	23.0	2.3	58	18.3	C	209	6,350	5,935	93%	25.2	4.5	53	27.8	D	298
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,640	3,637	100%	24.6	1.8	60	20.4	C	234	5,705	5,331	93%	28.2	5.4	53	33.8	D	326
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	4,050	4,044	100%	17.1	1.4	60	17.2	B	251	6,285	5,931	94%	19.1	3.3	53	27.8	D	345
Mojave Dr off-ramp to Mojave Dr on-ramp	3,470	3,463	100%	21.1	1.3	61	19.3	C	272	5,480	5,172	94%	22.8	3.0	56	30.6	D	368
Mojave Dr on-ramp to D St off-ramp	3,880	3,875	100%	51.2	4.0	60	19.1	C	323	5,860	5,541	95%	54.3	7.0	56	29.1	D	422
D St off-ramp to D St on-ramp	2,640	2,640	100%	23.1	1.0	62	14.2	B	346	4,665	4,410	95%	23.9	1.7	60	24.4	C	446
D St on-ramp to E St off-ramp	2,960	2,957	100%	11.4	0.9	60	16.6	B	358	5,065	4,806	95%	12.4	2.0	55	29.2	D	458
E St off-ramp to E St on-ramp	2,910	2,900	100%	9.9	0.6	61	16.1	B	368	5,005	4,778	95%	10.7	1.3	57	27.9	D	469
E St on-ramp to Stoddard Wells Rd off-ramp	2,965	2,960	100%	36.4	2.2	61	16.5	B	404	5,065	4,831	95%	38.7	4.5	57	28.4	D	508
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	2,485	2,480	100%	11.0	0.5	62	13.6	B	415	4,435	4,237	96%	11.4	0.9	60	23.6	C	519
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	2,820	2,813	100%	48.8	2.6	61	11.8	B	464	5,165	4,955	96%	50.3	4.2	59	20.9	C	570
HDC EB/WB off-ramp to HDC WB on-ramp	1,570	1,569	100%	70.7	2.0	63	8.4	A	535	4,000	3,792	95%	73.3	4.6	61	20.8	C	643
HDC WB on-ramp to HDC EB on-ramp	1,725	1,725	100%	7.7	0.3	62	7.3	A	542	4,195	3,984	95%	8.0	0.6	60	17.2	B	651
HDC EB on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,875	2,711	94%	36.6	1.8	61	11.0	B	579	6,165	5,728	93%	43.5	8.8	50	28.7	D	694
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	2,585	2,416	93%	22.8	0.9	62	12.9	B	602	5,930	5,495	93%	25.1	3.1	57	32.2	D	719
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	2,855	2,656	93%	216.7	10.7	62	14.4	B	818	6,180	5,656	92%	246.1	40.2	54	34.6	D	965
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	2,410	2,237	93%	31.8	1.4	62	12.0	B	850	5,715	5,116	90%	33.7	3.3	59	29.1	D	999
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,870	2,690	94%	64.2	3.2	61	14.6	B	914	6,210	5,581	90%	71.3	10.3	55	33.7	D	1,070
I-15 SOUTHBOUND MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	4,700	4,700	100%	60.9	5.6	59	26.7	D	61	3,995	3,995	100%	60.0	4.8	59	22.4	C	60
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	4,270	4,264	100%	37.7	3.3	59	24.1	C	99	3,445	3,426	99%	36.8	2.5	61	18.8	C	97
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	4,700	4,700	100%	221.9	22.2	58	27.0	D	320	3,905	3,875	99%	217.3	17.7	60	21.7	C	314
Quarry Rd off-ramp to Quarry Rd on-ramp	4,505	4,491	100%	25.6	2.4	59	25.4	C	346	3,700	3,659	99%	25.0	2.0	60	20.3	C	339
Quarry Rd on-ramp to HDC EB/WB off-ramp	4,760	4,748	100%	53.8	5.6	58	20.4	C	400	4,030	3,988	99%	53.4	5.1	59	17.0	B	392
HDC EB/WB off-ramp to HDC EB on-ramp	3,265	3,261	100%	79.0	5.2	61	17.9	B	479	2,380	2,357	99%	77.4	3.5	62	12.6	B	470
HDC WB on-ramp to HDC EB on-ramp	3,435	3,405	99%	10.6	0.8	60	15.5	B	489	2,575	2,545	99%	10.5	0.6	62	11.4	B	480
HDC EB on-ramp to Stoddard Wells Rd off-ramp	4,425	4,296	97%	29.1	2.8	59	18.3	C	519	3,605	3,425	95%	28.4	2.1	60	14.2	B	509
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,730	3,633	97%	28.3	2.1	60	20.1	C	547	3,075	2,928	95%	27.6	1.4	62	15.8	B	536
Stoddard Wells Rd direct on-ramp to E St off-ramp	4,275	4,232	99%	24.3	3.3	56	25.1	C	571	3,630	3,466	95%	23.0	2.0	59	19.4	C	559
E St off-ramp to E St on-ramp	4,225	4,209	100%	9.1	0.9	58	24.1	C	580	3,555	3,408	96%	8.8	0.6	60	18.8	C	568
E St on-ramp to D St off-ramp	4,275	4,256	100%	11.6	1.0	59	24.1	C	592	3,605	3,458	96%	11.2	0.7	61	19.0	C	579
D St off-ramp to D St on-ramp	3,920	3,920	100%	22.0	1.6	60	21.8	C	614	3,275	3,140	96%	21.5	1.1	62	17.0	B	601
D St on-ramp to Mojave Dr off-ramp	4,880	4,873	100%	53.2	4.8	59	20.2	C	667	4,455	4,306	97%	52.0	3.7	60	17.5	B	653
Mojave Dr off-ramp to Mojave Dr on-ramp	4,510	4,441	98%	20.9	1.9	59	25.1	C	688	3,970	3,831	96%	20.4	1.4	61	21.1	C	673
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	5,255	5,191	99%	15.5	1.8	57	22.7	C	703	4,665	4,519	97%	15.1	1.4	59	19.2	C	688
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,785	4,707	98%	27.7	2.6	59	26.7	D	731	4,185	4,050	97%	27.0	1.9	60	22.3	C	715
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	5,190	5,103	98%	23.5	1.8	60	21.4	C	755	4,780	4,619	97%	23.4	1.6	60	19.2	C	739
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,385	4,307	98%	12.9	0.9	60	23.8	C	767	3,825	3,684	96%	12.7	0.7	61	20.1	C	751
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,590	4,487	98%	8.7	0.8	59	25.4	C	776	4,035	3,879	96%	8.5	0.6	60	21.5	C	760
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,890	4,763	97%	171.6	15.6	59	27.0	D	948	4,340	4,166	96%	168.7	12.7	60	23.2	C	929

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-29. Year 2040 Build Alternative with Land Use Sensitivity Test Freeway Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK SPEED (mph)	AM PEAK DENSITY (veh/ln/mi)	AM PEAK LOS (HCM 2000)	PM PEAK SPEED (mph)	PM PEAK DENSITY (veh/ln/mi)	PM PEAK LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	58	15.5	B	56	25.4	C
West Palmdale Blvd loop	Merging	63	9.4	A	61	15.8	B
West Palmdale Blvd direct	Merging	62	10.2	B	61	16.4	B
SR 138 WB	Merging	60	16.0	B	26	53	**E**
10th St West loop	Merging	60	16.9	B	18	68.9	**E**
10th St West direct	Merging	59	18.9	B	18	71.3	**E**
West Avenue N loop	Merging	61	15.7	B	59	22.4	C
West Avenue N direct	Merging	61	13.4	B	60	21.2	C
East Avenue S	Diverging	62	16.5	B	48	37.6	**E**
West Palmdale Blvd	Diverging	59	17.3	B	49	28.0	C
SR 138 EB	Diverging	60	16.1	B	55	27.9	C
10th St West	Diverging	59	13.7	B	55	22.1	C
West Avenue N	Diverging	58	19.4	B	53	27.5	C
SOUTHBOUND							
West Avenue N loop	Merging	18	68.5	**E**	13	82.6	**E**
West Avenue N direct	Merging	22	61.7	**E**	13	79.8	**E**
10th St West	Merging	61	15.0	B	61	13.6	B
SR 138 WB	Merging	60	13.6	B	61	11.7	B
West Palmdale Blvd loop	Merging	58	20.1	C	60	17.7	B
West Palmdale Blvd direct	Merging	59	22.0	C	58	22.4	C
East Avenue S	Merging	56	24.4	C	59	18.8	B
West Avenue N	Diverging	23	75.0	**E**	17	91.5	**E**
10th St West	Diverging	25	51.7	**E**	19	72.6	**E**
SR 138 EB	Diverging	38	39.6	**E**	31	48.5	**E**
West Palmdale Blvd	Diverging	61	16.8	B	61	16.7	B
East Avenue S	Diverging	58	24.6	C	56	26.1	C

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area
Level of service E
Level of service F

Table 4-29. Year 2040 Build Alternative with Land Use Sensitivity Test Freeway Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	58	23	C	56	29	D
20th St East	Merging	62	14	B	60	17	B
50th St East	Merging	58	23	C	51	30	D
90th St East	Merging	57	22	C	59	22	C
140th St East	Merging	58	21	C	59	19	B
170th St East	Merging	55	22	C	59	19	B
210th St East	Merging	57	21	C	59	18	B
240th St East	Merging	55	23	C	58	20	B
Oasis Rd	Merging	58	20	B	59	18	B
Sheep Creek Rd loop	Merging	61	17	B	61	16	B
Sheep Creek Rd direct	Merging	59	17	B	58	18	B
Caughlin Rd loop	Merging	62	15	B	61	15	B
Caughlin Rd direct	Merging	61	13	B	61	13	B
Koala Rd loop	Merging	53	22	C	57	16	B
Koala Rd direct	Merging	59	19	B	59	16	B
Route 395 loop	Merging	47	29	D	56	20	C
Route 395 direct	Merging	55	24	C	60	19	B
Phantom St West loop	Merging	62	14	B	60	15	B
Phantom St West direct	Merging	60	17	B	59	18	B
Phantom St East loop	Merging	60	19	B	55	26	C
Phantom St East direct	Merging	60	21	C	55	30	D
Choco Rd	Merging	63	9	A	61	10	A
Dale Evans Pkwy loop	Merging	62	7	A	62	8	A
Dale Evans Pkwy direct	Merging	63	7	A	62	9	A
10th St East	Diverging	63	12	B	61	17	B
50th St East	Diverging	58	22	C	56	27	C
90th St East	Diverging	58	26	C	54	33	D
140th St East	Diverging	56	26	C	55	29	D
170th St East	Diverging	59	24	C	59	23	C
210th St East	Diverging	59	24	C	59	22	C
240th St East	Diverging	57	25	C	59	22	C
Oasis Rd	Diverging	58	25	C	59	22	C
Sheep Creek Rd	Diverging	53	26	C	56	23	C
Caughlin Rd	Diverging	56	22	C	56	22	C
Koala	Diverging	59	17	B	60	16	B
Route 395	Diverging	57	23	C	58	20	B
Phantom St West	Diverging	50	33	D	57	24	C
Phantom St East	Diverging	59	22	C	59	22	C
National Trails Hwy	Diverging	60	21	C	58	28	D
Dale Evans Pkwy	Diverging	62	10	A	61	11	B
10th St East to 20th St East	Weaving	60	17	B	56	24	C
National Trails Hwy to I-15 NB/SB	Weaving	61	14	B	59	18	B
I-15 NB/SB to Choco Rd	Weaving	62	7	A	62	8	A

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-29. Year 2040 Build Alternative with Land Use Sensitivity Test Freeway Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK SPEED (mph)	AM PEAK DENSITY (veh/ln/mi)	AM PEAK LOS (HCM 2000)	PM PEAK SPEED (mph)	PM PEAK DENSITY (veh/ln/mi)	PM PEAK LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy loop	Merging	63	8	A	60	16	B
Dale Evans Pkwy direct	Merging	63	9	A	54	22	C
I-15 NB	Merging	58	13	B	57	18	B
National Trails Hwy	Merging	58	20	B	54	27	C
Phantom St East loop	Merging	61	14	B	54	29	D
Phantom St East direct	Merging	61	15	B	54	30	D
Phantom St West	Merging	62	11	B	58	25	C
Route 395	Merging	62	9	A	58	20	B
Koala Rd loop	Merging	63	7	A	62	16	B
Koala Rd direct	Merging	62	7	A	60	16	B
Caughlin Rd loop	Merging	62	7	A	61	18	B
Caughlin Rd direct	Merging	60	11	B	56	22	C
Sheep Creek Rd loop	Merging	62	8	A	60	20	B
Sheep Creek Rd direct	Merging	61	9	A	51	27	C
Oasis Rd loop	Merging	61	9	A	59	24	C
Oasis Rd direct	Merging	61	8	A	57	22	C
240th St East	Merging	61	8	A	58	20	C
210th St East	Merging	62	11	B	50	29	D
170th St East	Merging	61	10	B	55	26	C
140th St East	Merging	59	13	B	32	44	**E**
90th St East	Merging	58	15	B	54	25	C
50th St East	Merging	61	15	B	32	36	**E**
10th St East	Merging	58	19	B	16	79	**E**
Dale Evans Pkwy	Diverging	63	10	B	61	21	C
Choco Rd	Diverging	62	11	B	60	24	C
Phantom St East	Diverging	46	31	D	52	33	D
Phantom St West	Diverging	59	18	B	58	28	D
Route 395	Diverging	59	16	B	48	34	D
Koala Rd	Diverging	61	12	B	53	29	D
Caughlin Rd	Diverging	62	8	A	60	20	B
Sheep Creek Rd	Diverging	60	12	B	58	24	C
Oasis Rd	Diverging	61	10	B	58	26	C
240th St East	Diverging	61	10	B	55	27	C
210th St East	Diverging	61	9	A	46	27	C
170th St East	Diverging	61	12	B	52	33	D
140th St East	Diverging	61	12	B	49	33	D
90th St East	Diverging	60	14	B	51	32	D
50th St East	Diverging	58	18	B	46	33	D
20th St East	Diverging	60	15	B	12	68	**E**
SR 14 SB	Diverging	59	22	C	23	74	**E**
Choco to I-15 NB/SB	Weaving	63	6	A	63	10	B
I-15 SB to National Trails Hwy	Weaving	59	17	B	57	22	C
20th St East to 10th St East	Weaving	59	14	B	12	65	**F**

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

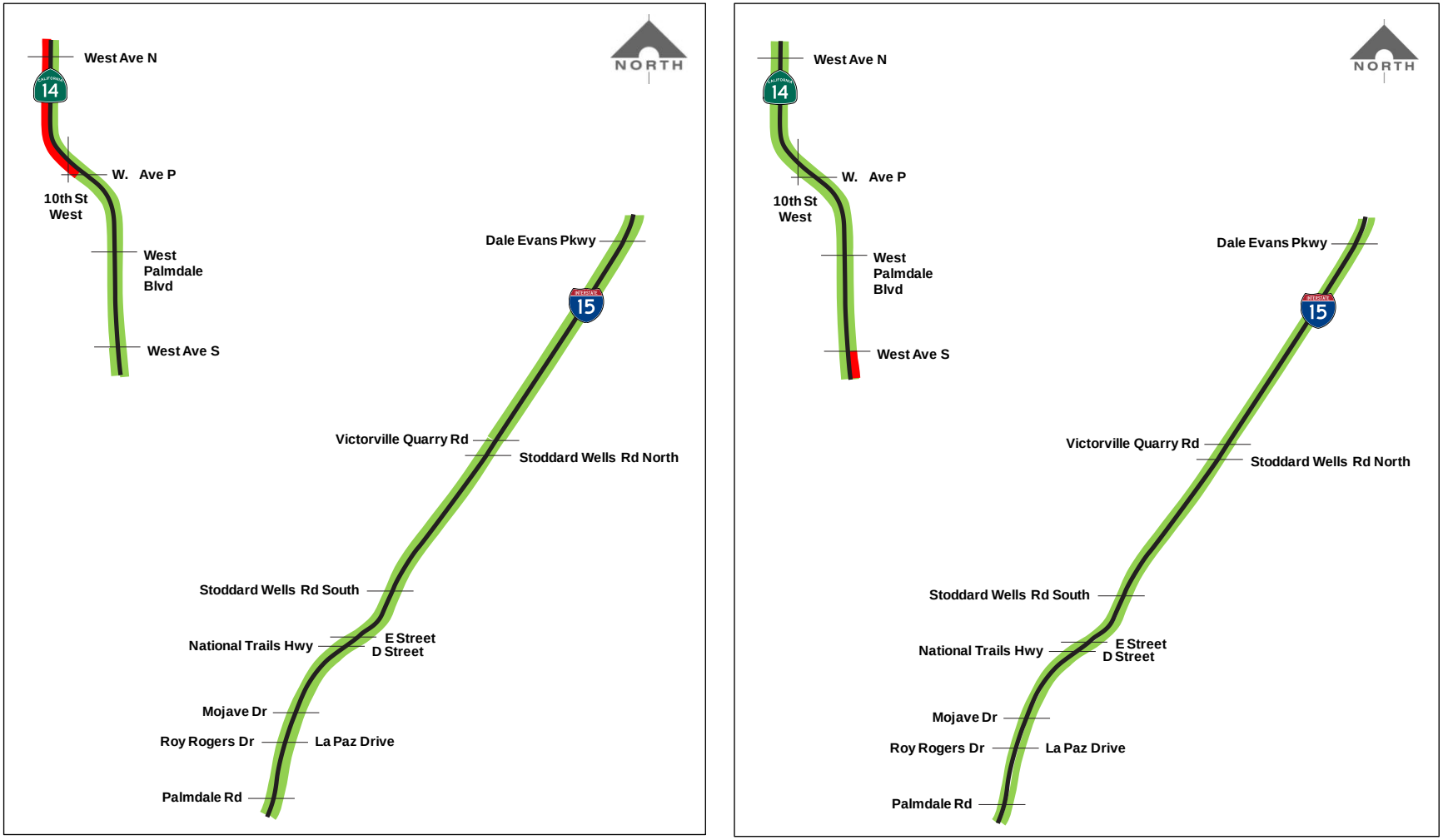
Level of service F

Table 4-29. Year 2040 Build Alternative with Land Use Sensitivity Test Freeway Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK SPEED (mph)	AM PEAK DENSITY (veh/ln/mi)	AM PEAK LOS (HCM 2000)	PM PEAK SPEED (mph)	PM PEAK DENSITY (veh/ln/mi)	PM PEAK LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	57	24	C	47	37	**E**
Mojave Dr	Merging	59	23	C	51	36	**E**
D St	Merging	59	18	B	53	31	D
E St	Merging	61	18	B	57	29	D
HDC WB	Merging	62	6	A	60	15	B
Stoddard Wells Rd (Quarry Rd)	Merging	61	15	B	55	34	D
Dale Evans Pkwy	Merging	60	15	B	53	34	D
Palmdale Rd	Diverging	58	24	C	42	41	**E**
D St	Diverging	59	18	B	59	22	C
E St	Diverging	59	18	B	53	31	D
Stoddard Wells Rd	Diverging	60	18	B	56	29	D
Dale Evans Pkwy	Diverging	60	15	B	53	35	D
Palmdale Rd direct to Roy Rogers Dr	Weaving	57	18	B	51	27	C
Roy Rogers Dr to Mojave Dr	Weaving	59	17	B	52	27	C
Stoddard Wells Rd to HDC EB/WB	Weaving	61	12	B	59	20	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	61	11	B	48	28	D
SOUTHBOUND							
Dale Evans Pkwy	Merging	56	28	D	58	23	C
HDC WB	Merging	61	14	B	61	10	B
Stoddard Wells Rd direct	Merging	54	27	C	58	22	C
E St	Merging	58	24	C	60	20	C
Palmdale Rd loop	Merging	58	25	C	60	22	C
Palmdale Rd direct	Merging	56	28	C	57	25	C
Dale Evans Pkwy	Diverging	56	28	D	57	25	C
Quarry Rd	Diverging	57	28	C	59	23	C
E St	Diverging	56	26	C	59	22	C
D St	Diverging	58	24	C	60	20	C
Quarry Rd to HDC EB/WB	Weaving	58	19	B	58	17	B
HDC EB to Stoddard Wells Rd	Weaving	58	18	B	60	15	B
D St to Mojave Dr	Weaving	59	19	B	60	17	B
Mojave Dr to Roy Rogers Dr	Weaving	56	22	C	58	19	B
Roy Rogers Dr to Palmdale Rd	Weaving	59	20	C	59	19	B

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area
Level of service E
Level of service F



AM **PM**

Level of service D or better
Level of service E
Level of service F

Figure 4-27: Year 2020 No-build Alternative with Revised Palmdale Access Freeway Mainline Level of Service

Table 4-30. Year 2020 No-build Alternative with Revised Palmdale Access Freeway Mainline Analysis Results *(1 of 2)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
SR 14 NB south end of the network to East Avenue S off-ramp	1,925	1,921	100%	172.5	19.0	58	11.1	B	172	1,925	1,921	100%	172.5	19.0	58	11.1	B	172	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	1,735	1,732	100%	27.6	1.9	61	9.9	A	200	1,735	1,732	100%	27.6	1.9	61	9.9	A	200	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to West Palmdale Blvd off-ramp	2,680	2,660	99%	58.9	4.5	60	15.1	B	259	2,680	2,660	99%	58.9	4.5	60	15.1	B	259	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to West Palmdale Blvd loop on-ramp	2,205	2,210	100%	21.5	0.9	62	11.8	B	280	2,205	2,210	100%	21.5	0.9	62	11.8	B	280	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	2,450	2,413	98%	16.8	1.1	61	13.2	B	297	2,450	2,413	98%	16.8	1.1	61	13.2	B	297	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to West Avenue P off-ramp	3,385	3,324	98%	57.6	5.9	58	19.0	C	355	3,385	3,324	98%	57.6	5.9	58	19.0	C	355	—	—	—	—	—	—	—	—	—
West Avenue P off-ramp to 10th St West on-ramp	2,785	2,724	98%	49.7	2.3	62	14.6	B	405	2,785	2,724	98%	49.7	2.3	62	14.6	B	405	—	—	—	—	—	—	—	—	—
10th St West on-ramp to West Avenue N off-ramp	3,480	3,335	96%	83.3	5.3	61	18.3	C	488	3,480	3,335	96%	83.3	5.3	61	18.3	C	488	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	3,240	3,107	96%	18.0	0.9	62	16.8	B	506	3,240	3,107	96%	18.0	0.9	62	16.8	B	506	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	3,565	3,390	95%	9.8	0.9	59	19.0	C	516	3,565	3,390	95%	9.8	0.9	59	19.0	C	516	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to SR 14 north end of the network	3,695	3,548	96%	31.4	1.9	61	19.4	C	547	3,695	3,548	96%	31.4	1.9	61	19.4	C	547	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
SR 14 SB north end of the network to West Avenue N off-ramp	4,025	3,771	94%	127.1	92.3	18	71.8	**F**	127	4,025	3,771	94%	127.1	92.3	18	71.8	**F**	127	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	3,710	3,376	91%	92.9	75.5	12	92.8	**F**	220	3,710	3,376	91%	92.9	75.5	12	92.8	**F**	220	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	3,760	3,362	89%	64.8	54.3	10	107.4	**F**	285	3,760	3,362	89%	64.8	54.3	10	107.4	**F**	285	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St West off-ramp	4,015	3,457	86%	541.1	459.7	12	114.5	**F**	826	4,015	3,457	86%	541.1	459.7	12	114.5	**F**	826	—	—	—	—	—	—	—	—	—
10th St West off-ramp to West Rancho Vista Blvd on-ramp	3,405	2,847	84%	66.5	16.9	48	19.6	C	892	3,405	2,847	84%	66.5	16.9	48	19.6	C	892	—	—	—	—	—	—	—	—	—
West Rancho Vista Blvd on-ramp to West Palmdale Blvd off-ramp	4,205	3,845	91%	74.2	21.8	50	24.0	C	967	3,100	3,179	103%	75.0	22.6	49	25.7	C	967	1,105	666	60%	41.4	5.0	53	11.6	B	41
West Palmdale Blvd off-ramp to West Palmdale Blvd loop on-ramp	3,165	2,733	86%	17.5	1.5	59	15.4	B	984	2,437	2,033	83%	17.2	1.1	61	16.0	B	985	728	700	96%	18.5	2.3	56	14.2	B	60
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,925	3,446	88%	14.7	2.0	56	20.5	C	999	3,022	2,650	88%	15.0	2.3	55	24.1	C	1,000	903	796	88%	13.7	0.8	60	13.2	B	74
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	4,505	4,058	90%	68.1	5.3	60	17.0	B	1,067	2,960	3,027	102%	68.1	5.5	60	18.1	C	1,068	1,545	1,031	67%	67.7	4.7	60	13.9	B	141
East Avenue S off-ramp to East Avenue S on-ramp	3,980	3,547	89%	22.0	1.4	61	14.6	B	1,089	3,065	2,705	88%	21.8	1.3	61	14.8	B	1,090	915	843	92%	22.4	1.7	59	14.2	B	164
East Avenue S on-ramp to SR 14 SB south end of the network	5,260	4,769	91%	249.0	61.0	50	25.1	C	1,338	3,310	3,318	100%	256.4	68.7	49	28.7	D	1,346	1,950	1,452	74%	214.5	24.8	57	15.0	B	378

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
SR 14 NB south end of the network to East Avenue S off-ramp	6,630	4,501	68%	534.1	379.5	23	75.3	**F**	534	4,970	3,027	61%	722.8	568.1	19	99.6	**F**	723	1,660	1,475	89%	177.4	23.1	56	26.7	D	177
East Avenue S off-ramp to East Avenue S on-ramp	5,150	3,475	67%	28.3	2.5	59	19.6	C	562	3,863	2,196	57%	28.4	2.6	59	18.6	C	751	1,288	1,279	99%	28.1	2.3	60	21.5	C	205
East Avenue S on-ramp to West Palmdale Blvd off-ramp	5,930	4,252	72%	62.0	7.4	57	25.0	C	624	4,550	3,142	69%	63.2	8.5	56	28.2	D	814	1,380	1,110	80%	59.1	4.5	60	18.5	C	265
West Palmdale Blvd off-ramp to West Palmdale Blvd loop on-ramp	4,435	3,261	74%	22.0	1.3	61	17.8	B	646	3,326	2,211	66%	21.7	1.0	62	17.9	B	836	1,109	1,050	95%	22.6	1.9	59	17.7	B	287
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,635	3,446	74%	17.2	1.4	60	19.3	C	664	3,476	2,395	69%	17.1	1.3	60	20.0	C	853	1,159	1,051	91%	17.3	1.5	59	17.8	B	304
West Palmdale Blvd direct on-ramp to West Avenue P off-ramp	5,695	4,468	78%	60.5	8.5	55	26.9	D	724	4,470	4,117	92%	61.3	9.3	55	28.7	D	914	1,225	351	29%	17.4	1.6	20	6.0	A	322
West Avenue P off-ramp to 10th St West on-ramp	4,390	3,524	80%	50.2	2.6	61	19.1	C	774	4,390	3,524	80%	50.2	2.6	61	19.1	C	774	—	—	—	—	—	—	—	—	—
10th St West on-ramp to West Avenue N off-ramp	5,180	4,279	83%	85.1	6.9	59	24.1	C	859	5,180	4,279	83%	85.1	6.9	59	24.1	C	859	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,810	3,988	83%	18.3	1.2	61	22.0	C	878	4,810	3,988	83%	18.3	1.2	61	22.0	C	878	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	5,080	4,224	83%	10.0	1.0	58	24.2	C	888	5,080	4,224	83%	10.0	1.0	58	24.2	C	888	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to SR 14 north end of the network	5,335	4,497	84%	32.4	2.9	59	25.4	C	920	5,335	4,497	84%	32.4	2.9	59	25.4	C	920	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
SR 14 SB north end of the network to West Avenue N off-ramp	4,595	4,594	100%	37.5	2.7	60	25.5	C	37	4,595	4,594	100%	37.5	2.7	60	25.5	C	37	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,135	4,131	100%	18.6	1.2	61	22.7	C	56	4,135	4,131	100%	18.6	1.2	61	22.7	C	56	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,245	4,228	100%	11.3	0.9	60	23.5	C	67	4,245	4,228	100%	11.3	0.9	60	23.5	C	67	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St West off-ramp	4,435	4,423	100%	89.7	8.5	58	25.2	C	157	4,435	4,423	100%	89.7	8.5	58	25.2	C	157	—	—	—	—	—	—	—	—	—
10th St West off-ramp to West Rancho Vista Blvd on-ramp	3,330	3,314	100%	53.7	4.0	60	18.4	C	211	3,330	3,314	100%	53.7	4.0	60	18.4	C	211	—	—	—	—	—	—	—	—	—
West Rancho Vista Blvd on-ramp to West Palmdale Blvd off-ramp	4,010	3,972	99%	59.7	8.0	57	21.8	C	270	4,010	3,972	99%	59.7	8.0	57	21.8	C	270	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to West Palmdale Blvd loop on-ramp	2,915	2,912	100%	17.0	1.0	61	15.9	B	287	2,915	2,912	100%	17.0	1.0	61	15.9	B	287	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,210	3,161	98%	13.8	1.0	60	17.6	B	301	3,210	3,161	98%	13.8	1.0	60	17.6	B	301	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	3,450	3,399	99%	67.1	4.4	60	14.0	B	368	3,450	3,399	99%	67.1	4.4	60	14.0	B	368	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	2,545	2,489	98%	21.7	1.2	61	11.4	B	390	2,545	2,489	98%	21.7	1.2	61	11.4	B	390	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to SR 14 SB south end of the network	3,030	2,948	97%	216.3	28.7	58	14.8	B	606	3,030	2,948	97%	216.3	28.7	58	14.8	B	606	—	—	—	—	—	—	—	—	—

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-30. Year 2020 No-build Alternative with Revised Palmdale Access Freeway Mainline Analysis Results *(2 of 2)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off-ramp	2,830	2,830	100%	148.3	6.8	62	15.2	B	148	4,670	4,670	100%	155.2	13.7	59	26.3	D	155
Palmdale Rd off-ramp to Palmdale Rd loop on-ramp	2,395	2,395	100%	22.1	1.1	62	13.0	B	170	4,155	4,155	100%	23.1	2.1	59	23.4	C	178
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	2,700	2,697	100%	11.3	0.8	61	14.8	B	182	4,530	4,499	99%	11.9	1.4	57	26.1	D	190
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	3,035	2,985	98%	21.9	1.2	61	12.2	B	204	4,940	4,845	98%	23.1	2.4	58	20.9	C	213
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	2,540	2,484	98%	23.9	1.1	62	13.4	B	228	4,400	4,290	98%	24.9	2.1	60	24.0	C	238
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	2,865	2,806	98%	16.7	0.8	61	11.4	B	244	4,895	4,788	98%	17.4	1.6	59	20.4	C	256
Mojave Dr off-ramp to Mojave Dr on-ramp	2,420	2,353	97%	20.6	0.8	62	12.6	B	265	4,415	4,319	98%	21.6	1.8	60	24.1	C	277
Mojave Dr on-ramp to D St off-ramp	2,805	2,725	97%	49.9	2.6	61	12.9	B	315	4,790	4,660	97%	52.0	4.9	59	23.2	C	329
D St off-ramp to E St off-ramp	1,910	1,821	95%	9.8	0.3	63	9.7	A	324	3,870	3,793	98%	10.1	0.7	61	20.8	C	339
E St off-ramp to D St on-ramp	1,875	1,776	95%	28.2	0.9	63	9.4	A	353	3,840	3,738	97%	29.2	2.0	61	20.5	C	369
D St on-ramp to E St on-ramp	2,135	2,019	95%	11.0	0.5	62	10.9	A	364	4,150	4,013	97%	11.6	1.1	59	22.7	C	380
E St on-ramp to Stoddard Wells Rd off-ramp	2,175	2,071	95%	29.8	1.3	62	11.1	B	393	4,180	4,062	97%	31.2	2.7	59	22.9	C	411
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	1,855	1,778	96%	20.2	0.7	63	9.4	A	414	3,865	3,777	98%	21.0	1.5	60	20.9	C	432
Stoddard Wells Rd on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,100	2,084	99%	154.4	6.2	62	11.2	B	568	4,425	4,337	98%	161.9	14.1	59	24.4	C	594
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	1,915	1,894	99%	22.5	0.9	62	10.1	A	590	4,325	4,228	98%	23.6	2.0	60	23.7	C	618
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	2,030	1,996	98%	215.4	9.5	62	10.7	A	806	4,535	4,373	96%	226.5	21.0	59	24.8	C	844
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	1,875	1,817	97%	31.8	1.4	62	9.8	A	838	4,365	4,160	95%	33.2	2.9	59	23.4	C	877
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,095	2,028	97%	63.6	2.6	62	10.9	A	901	4,560	4,314	95%	66.9	6.2	59	24.5	C	944
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	3,485	3,484	100%	58.1	3.1	62	18.8	C	58	2,690	2,690	100%	57.4	2.1	62	14.4	B	57
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	3,305	3,305	100%	36.5	2.3	61	18.0	C	95	2,385	2,385	100%	35.9	1.6	62	12.9	B	93
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	3,450	3,450	100%	215.5	16.5	60	19.1	C	310	2,575	2,575	100%	211.2	11.7	62	14.0	B	305
Quarry Rd off-ramp to Quarry Rd on-ramp	3,335	3,345	100%	25.1	2.0	60	18.6	C	335	2,445	2,445	100%	24.5	1.5	61	13.4	B	329
Quarry Rd on-ramp to Stoddard Wells Rd off-ramp	3,470	3,470	100%	173.3	15.7	59	19.5	C	508	2,775	2,775	100%	169.2	11.2	61	15.3	B	498
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	2,975	2,975	100%	34.0	2.6	60	16.7	B	542	2,485	2,485	100%	33.5	2.1	61	13.7	B	532
Stoddard Wells Rd direct on-ramp to D St off-ramp	3,465	3,465	100%	38.2	4.0	59	19.9	C	581	2,915	2,915	100%	37.7	3.3	60	16.4	B	569
D St off-ramp to D St on-ramp	3,275	3,275	100%	21.9	1.6	60	18.4	C	603	2,710	2,710	100%	21.6	1.3	61	14.8	B	591
D St on-ramp to Mojave Dr off-ramp	4,070	4,070	100%	53.0	4.8	59	17.1	B	656	3,700	3,700	100%	52.4	4.1	60	15.3	B	643
Mojave Dr off-ramp to Mojave Dr on-ramp	3,870	3,870	100%	20.8	1.8	59	22.0	C	676	3,370	3,372	100%	20.5	1.5	60	18.7	C	664
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	4,430	4,430	100%	15.3	1.6	58	19.3	C	692	3,900	3,900	100%	14.9	1.2	59	16.5	B	679
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,095	4,095	100%	27.4	2.3	59	23.0	C	719	3,500	3,500	100%	26.9	1.8	61	19.3	C	706
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	4,470	4,470	100%	23.6	1.9	60	18.8	C	743	4,045	4,045	100%	23.4	1.8	60	16.9	B	729
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,020	3,994	99%	12.9	1.0	60	22.1	C	756	3,365	3,365	100%	12.7	0.7	61	18.5	C	742
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,160	4,086	98%	8.6	0.7	60	22.8	C	764	3,555	3,508	99%	8.5	0.6	60	19.4	C	750
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,385	4,260	97%	170.0	14.4	59	23.9	C	934	3,865	3,782	98%	167.8	11.9	60	20.9	C	918

Source: Parsons
Level of service based on HCM 2000

Level of service E
Level of service F

Table 4-31. Year 2020 No-build Alternative with Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	56	18.6	B	55	25.6	C
West Palmdale Blvd loop	Merging	61	15.7	B	60	19.3	B
West Palmdale Blvd direct	Merging	55	25.3	C	52	28.7	D
10th St West	Merging	56	21.0	C	55	27.0	C
West Avenue N loop	Merging	58	20.1	C	57	25.3	C
West Avenue N direct	Merging	60	20.4	C	58	26.8	C
East Avenue S	Diverging	63	10.4	B	48	30.8	D
West Palmdale Blvd	Diverging	61	18.5	B	58	24.6	C
West Rancho Vista Blvd	Diverging	57	22.6	C	54	30.7	D
West Avenue N	Diverging	60	19.3	B	59	25.3	C
SOUTHBOUND							
West Avenue N loop	Merging	9	109.7	**E**	60	23.4	C
West Avenue N direct	Merging	9	118.4	**E**	59	25.5	C
West Rancho Vista Blvd	Merging	29	45.9	**E**	51	22.2	C
West Palmdale Blvd loop	Merging	56	20.5	C	59	17.4	B
West Palmdale Blvd direct	Merging	60	17.0	B	61	12.6	B
East Avenue S	Merging	52	21.8	C	59	12.5	B
West Avenue N	Diverging	15	78.7	**E**	59	27.1	C
10th St West	Diverging	23	48.1	**E**	56	27.7	C
West Palmdale Blvd	Diverging	56	21.7	C	56	26.0	C
East Avenue S	Diverging	57	17.6	B	56	14.5	B

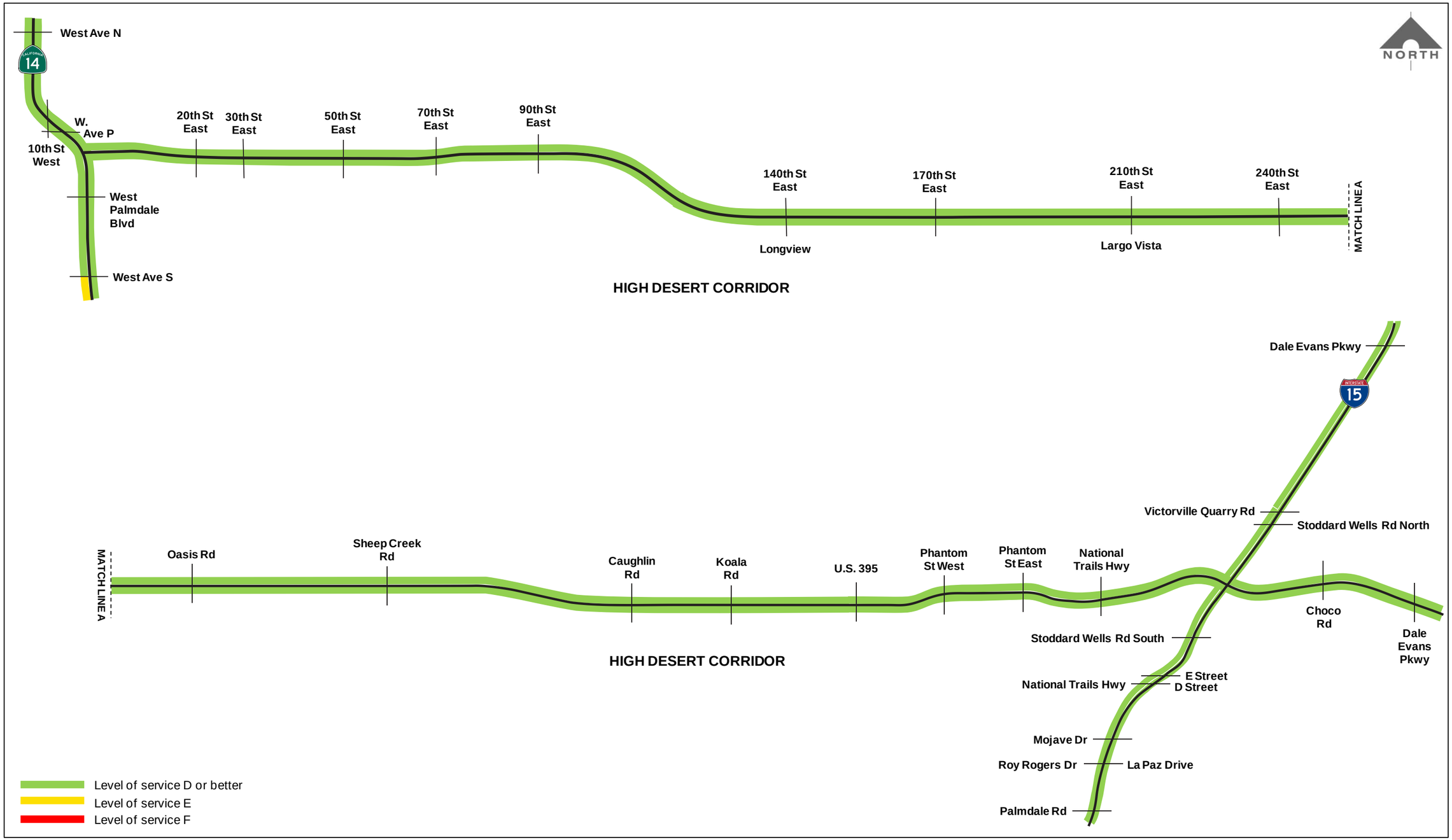
Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	60	16.6	B	57	27.1	C
Mojave Dr	Merging	60	16.4	B	55	28.4	D
D St	Merging	62	11.4	B	58	23.1	C
E St	Merging	62	12.1	B	58	23.7	C
Stoddard Wells Rd S	Merging	62	11.6	B	57	25.4	C
Stoddard Wells Rd (Quarry Rd)	Merging	62	10.5	B	58	24.9	C
Dale Evans Pkwy	Merging	61	10.6	B	58	24.1	C
Palmdale Rd	Diverging	60	17.6	B	55	29.2	D
D St	Diverging	61	12.0	B	60	18.8	B
E St	Diverging	63	10.1	B	61	20.7	C
Stoddard Wells Rd South	Diverging	61	12.2	B	59	23.2	C
Stoddard Wells Rd North	Diverging	61	11.5	B	59	24.2	C
Dale Evans Pkwy	Diverging	61	10.7	B	58	24.6	C
Palmdale Rd direct to Roy Rogers Dr	Weaving	61	12.7	B	57	19.9	B
Roy Rogers Dr to Mojave Dr	Weaving	61	11.9	B	58	19.5	B
SOUTHBOUND							
Dale Evans Pkwy	Merging	61	19.0	B	62	14.9	B
Quarry Rd	Merging	60	19.1	B	60	16.2	B
Stoddard Wells Rd	Merging	56	20.3	C	57	17.9	B
Palmdale Rd loop	Merging	60	22.1	C	60	19.8	B
Palmdale Rd direct	Merging	59	24.0	C	59	22.0	C
Dale Evans Pkwy	Diverging	61	19.4	B	62	15.9	B
Quarry Rd	Diverging	60	19.1	B	61	14.7	B
Stoddard Wells Rd South	Diverging	57	20.8	C	59	16.3	B
D St	Diverging	59	19.4	B	60	17.1	B
D St to Mojave Dr	Weaving	59	15.8	B	59	15.1	B
Mojave Dr to Roy Rogers Dr	Weaving	57	18.1	B	59	16.3	B
Roy Rogers Dr to Palmdale Rd	Weaving	59	17.3	B	59	16.8	B

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

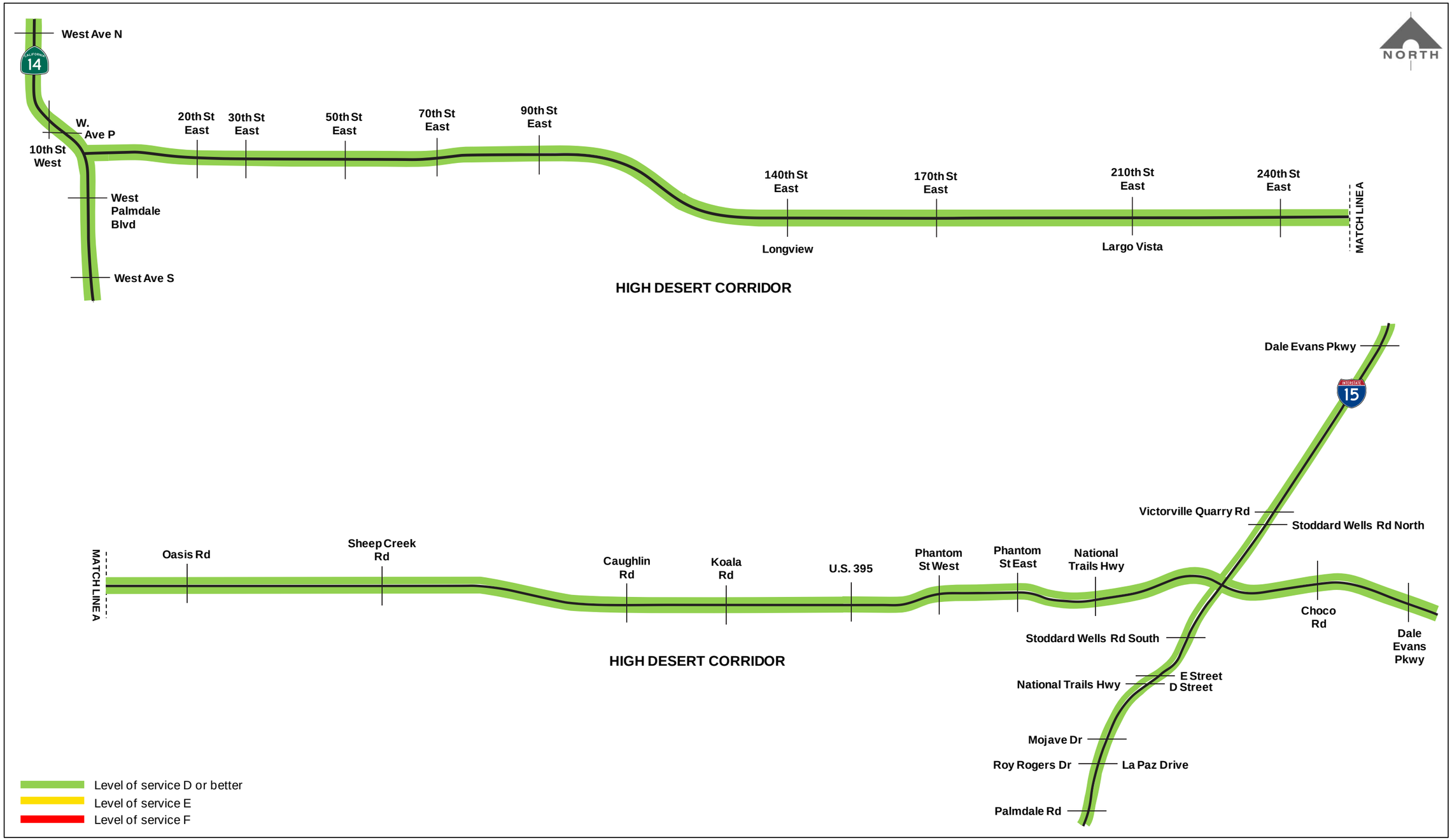
Level of service E

Level of service F



AM PEAK HOUR

Figure 4-28: Year 2020 Build Alternative with Revised Palmdale Access Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 4-28: Year 2020 Build Alternative with Revised Palmdale Access Freeway Mainline Level of Service *(2 of 2)*

Table 4-32. Year 2020 Build Alternative with Revised Palmdale Access Freeway Mainline Analysis Results *(1 of 4)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NORTHBOUND MAINLINE																											
Pearblossom Hwy direct on-ramp to East Ave S off-ramp	2,285	2,280	100%	198.4	45.1	54	14.1	B	198	2,285	2,280	100%	198.4	45.1	54	14.1	B	198	—	—	—	—	—	—	—	—	—
East Ave S off-ramp to East Ave S on-ramp	2,145	2,163	101%	28.0	2.4	60	9.0	A	226	2,145	2,140	100%	28.0	2.4	60	9.0	A	226	—	—	—	—	—	—	—	—	—
East Ave S on-ramp to West Palmdale Blvd off-ramp	3,055	3,085	101%	58.1	3.7	61	10.1	A	284	3,055	3,050	100%	58.1	3.7	61	10.1	A	284	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,665	2,650	99%	16.8	0.8	61	10.9	A	301	2,665	2,660	100%	16.8	0.8	61	10.9	A	301	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,255	1,264	101%	5.0	0.2	63	6.7	A	306	1,255	1,255	100%	5.0	0.2	63	6.7	A	306	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to 10th St West off-ramp	1,985	1,979	100%	49.5	2.1	62	8.0	A	356	1,985	1,979	100%	49.5	2.1	62	8.0	A	356	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	1,445	1,434	99%	22.7	1.0	62	7.7	A	378	1,445	1,434	99%	22.7	1.0	62	7.7	A	378	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	2,860	2,734	96%	47.9	2.5	62	8.9	A	426	2,860	2,734	96%	47.9	2.5	62	8.9	A	426	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	3,340	3,207	96%	16.7	0.9	61	11.9	B	443	3,340	3,207	96%	16.7	0.9	61	11.9	B	443	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Ave N off-ramp	3,445	3,307	96%	65.4	3.1	62	13.0	B	508	3,445	3,307	96%	65.4	3.1	62	13.0	B	508	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	3,175	3,041	96%	17.9	0.8	62	16.4	B	526	3,175	3,041	96%	17.9	0.8	62	16.4	B	526	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	3,470	3,323	96%	9.3	0.4	62	13.3	B	536	3,470	3,323	96%	9.3	0.4	62	13.3	B	536	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to West Ave M off-ramp	3,590	3,442	96%	30.4	1.0	63	13.2	B	566	3,590	3,442	96%	30.4	1.0	63	13.2	B	566	—	—	—	—	—	—	—	—	—
SR 14 SOUTHBOUND MAINLINE																											
West Ave M on-ramp to West Ave N off-ramp	5,155	5,154	100%	38.0	3.3	59	29.0	D	38	5,155	5,154	100%	38.0	3.3	59	29.0	D	38	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	4,845	4,845	100%	18.9	1.5	60	27.1	D	56	4,845	4,845	100%	18.9	1.5	60	27.1	D	57	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	4,900	4,899	100%	11.2	0.7	60	20.3	C	68	4,900	4,899	100%	11.2	0.7	60	20.3	C	68	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to 10th St W off-ramp	5,190	5,184	100%	88.5	12.6	55	23.1	C	152	5,190	5,184	100%	88.5	12.6	55	23.1	C	157	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	4,570	4,570	100%	19.6	3.6	52	23.8	C	170	3,230	3,941	122%	20.0	4.1	51	28.4	D	177	1,340	629	47%	16.5	0.2	62	10.1	A	16
HDC off-ramp to 10th St W on-ramp	2,001	1,991	100%	22.0	0.9	62	10.7	A	192	661	1,326	201%	21.7	0.8	63	10.6	A	198	1,340	665	50%	22.6	1.3	61	11.0	A	39
10th St W on-ramp to Palmdale Blvd off-ramp	3,180	3,173	100%	33.4	1.7	61	12.9	B	225	1,840	2,431	132%	33.2	1.4	62	13.1	B	232	1,340	742	55%	34.1	2.4	60	12.4	B	73
West Palmdale Blvd off-ramp to HDC on-ramp	2,670	2,666	100%	32.3	1.2	62	10.7	A	258	1,330	1,796	135%	31.7	0.7	63	9.4	A	263	1,340	871	65%	33.6	2.3	60	14.5	B	107
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,835	3,724	97%	23.9	1.5	61	11.9	B	281	2,580	3,068	119%	23.7	1.3	61	12.1	B	287	1,255	656	52%	24.4	1.8	59	11.1	B	131
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,360	4,289	98%	14.0	1.2	59	16.1	B	295	3,105	3,219	104%	13.8	1.1	60	15.4	B	301	1,255	1,069	85%	14.3	1.5	58	18.6	C	145
West Palmdale Blvd direct on-ramp to East Ave S off-ramp	4,935	4,826	98%	68.1	5.4	60	19.8	C	363	3,645	3,681	101%	67.8	5.1	60	19.9	C	369	1,290	1,145	89%	69.0	6.2	59	19.5	C	215
East Ave S off-ramp to East Ave S on-ramp	4,680	4,586	98%	22.0	1.5	60	19.0	C	385	2,720	3,419	126%	21.8	1.2	61	18.7	C	390	1,960	1,167	60%	22.7	2.1	59	19.9	C	237
East Ave S on-ramp to Angeles Forest Hwy off-ramp	5,775	5,542	96%	377.4	188.9	44	40.0	E	736	3,815	4,231	111%	429.8	241.2	42	46.1	F	820	1,960	1,310	67%	216.4	28.2	56	23.3	C	454

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
Pearblossom Hwy direct on-ramp to East Ave S off-ramp	6,900	5,257	76%	205.4	50.9	52	28.9	D	205	5,045	3,676	73%	220.5	66.1	51	29.9	D	221	1,855	1,581	85%	177.7	23.1	56	27.8	D	178
East Ave S off-ramp to East Ave S on-ramp	6,050	4,615	76%	28.7	2.9	58	19.8	C	234	4,195	2,967	71%	28.6	2.8	58	16.9	B	249	1,855	1,647	89%	28.9	3.1	58	28.5	D	207
East Ave S on-ramp to West Palmdale Blvd off-ramp	6,800	5,348	79%	59.3	4.7	60	18.0	B	293	5,145	4,238	82%	59.4	4.8	59	17.9	B	309	1,655	1,110	67%	58.1	3.6	61	18.3	C	265
West Palmdale Blvd off-ramp to HDC off-ramp	5,800	4,586	79%	17.2	1.2	60	19.2	C	311	4,145	3,748	90%	17.2	1.2	59	21.0	C	326	1,655	837	51%	16.8	1.0	61	13.8	B	282
HDC off-ramp to West Palmdale Blvd loop on-ramp	3,275	2,618	80%	5.2	0.3	61	14.2	B	316	1,580	1,780	113%	5.1	0.2	62	14.4	B	331	1,695	838	49%	5.2	0.3	61	13.8	B	287
West Palmdale Blvd loop on-ramp to 10th St West off-ramp	3,955	3,274	83%	50.6	3.1	61	13.5	B	366	2,260	2,448	108%	50.4	3.0	61	13.4	B	381	1,695	826	49%	51.0	3.5	60	13.7	B	338
10th St West off-ramp to HDC on-ramp	3,154	2,773	88%	23.3	1.1	61	14.4	B	390	1,459	2,024	139%	23.2	1.1	61	15.0	B	405	1,695	749	44%	23.5	1.2	60	12.5	B	361
HDC on-ramp to 10th St West on-ramp	5,870	4,857	83%	49.5	3.9	60	16.1	B	439	5,870	4,857	83%	49.5	3.9	60	16.1	B	454	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	6,320	5,315	84%	17.7	1.9	58	20.9	C	457	6,320	5,315	84%	17.7	1.9	58	20.9	C	472	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Ave N off-ramp	6,440	5,407	84%	73.2	10.8	55	24.2	C	530	6,440	5,407	84%	73.2	10.8	55	24.2	C	545	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	6,145	5,104	83%	20.4	3.2	54	31.3	D	550	6,145	5,104	83%	20.4	3.2	54	31.3	D	565	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	6,320	5,266	83%	10.0	1.0	58	22.6	C	560	6,320	5,266	83%	10.0	1.0	58	22.6	C	575	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to West Ave M off-ramp	6,570	5,515	84%	31.5	2.0	61	22.0	C	592	6,570	5,515	84%	31.5	2.0	61	22.0	C	607	—	—	—	—	—	—	—	—	—
																							—	—	—	—	—
West Ave M on-ramp to West Ave N off-ramp	5,310	5,309	100%	38.6	3.8	58	30.4	D	39	5,310	5,309	100%	38.6	3.8	58	30.4	D	39	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	4,860	4,857	100%	19.0	1.6	59	27.5	D	58	4,860	4,857	100%	19.0	1.6	59	27.5	D	58	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	4,970	4,966	100%	11.2	0.8	60	20.8	C	69	4,970	4,966	100%	11.2	0.8	60	20.8	C	69	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to 10th St W off-ramp	5,195	5,187	100%	82.2	6.1	60	21.4	C	151	5,195	5,187	100%	82.2	6.1	60	21.4	C	151	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	4,065	4,055	100%	17.5	1.5	59	17.5	B	168	4,065	4,055	100%	17.5	1.5	59	17.5	B	168	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St W on-ramp	1,691	1,681	99%	21.5	0.5	63	9.0	A	190	1,691	1,681	99%	21.5	0.5	63	9.0	A	190	—	—	—	—	—	—	—	—	—
10th St W on-ramp to Palmdale Blvd off-ramp	2,555	2,550	100%	32.9	1.2	62	10.3	A	223	2,555	2,550	100%	32.9	1.2	62	10.3	A	223	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	1,966	1,960	100%	31.6	0.6	64	7.8	A	255	1,966	1,960	100%	31.6	0.6	64	7.8	A	255	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,410	3,132	92%	23.8	1.4	61	10.0	A	278	3,410	3,132	92%	23.8	1.4	61	10.0	A	278	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,560	3,271	92%	13.4	0.7	62	11.8	B	292	3,560	3,271	92%	13.4	0.7	62	11.8	B	292	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Ave S off-ramp	3,835	3,538	92%	66.2	3.6	61	14.1	B	358	3,835	3,538	92%	66.2	3.6	61	14.1	B	358	—	—	—	—	—	—	—	—	—
East Ave S off-ramp to East Ave S on-ramp	3,280	3,085	94%	21.3	0.8	63	12.3	B	379	3,280	3,085	94%	21.3	0.8	63	12.3	B	379	—	—	—	—	—	—	—	—	—
East Ave S on-ramp to Angeles Forest Hwy off-ramp	3,680	3,450	94%	212.3	24.8	58	16.0	B	592	3,680	3,450	94%	212.3	24.8	58	16.0	B	592	—	—	—	—	—	—	—	—	—

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-32. Year 2020 Build Alternative with Revised Palmdale Access Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EASTBOUND MAINLINE																		
SR-138 EB west end of the network to SR-14 NB on-ramp	2,700	2,692	100%	21.1	1.8	48	28.0	D	21	2,470	2,470	100%	21.0	1.7	48	25.7	C	21
SR-14 NB on-ramp to 20th St E off-ramp	4,110	4,100	100%	97.1	5.9	61	17.4	B	118	4,995	4,858	97%	98.1	6.7	60	19.4	C	119
20th St E off-ramp to 20th St E on-ramp	3,520	3,517	100%	43.6	2.0	62	15.5	B	162	4,095	4,030	98%	43.7	2.1	62	16.4	B	163
20th St E on-ramp to 30th St E off-ramp	3,850	3,841	100%	17.1	1.3	60	17.3	B	179	4,425	4,340	98%	17.4	1.5	59	18.4	C	180
30th St E off-ramp to 30th St E on-ramp	3,410	3,403	100%	56.3	2.3	62	14.9	B	235	3,715	3,652	98%	56.2	2.2	62	14.7	B	236
30th St E on-ramp to 50th St E off-ramp	3,600	3,597	100%	63.8	3.8	61	15.5	B	299	3,940	3,878	98%	63.5	3.4	61	15.4	B	300
50th St E off-ramp to 50th St E on-ramp	3,050	3,044	100%	43.7	2.4	61	17.9	B	343	3,120	3,065	98%	43.4	2.0	62	16.6	B	343
50th St E on-ramp to 90th St E off-ramp	3,510	3,500	100%	197.6	13.9	60	20.1	C	540	3,585	3,453	96%	196.5	12.4	61	18.7	C	540
90th St E off-ramp to 90th St E on-ramp	3,310	3,305	100%	45.7	2.9	61	18.7	C	586	3,220	3,052	95%	45.4	2.5	61	16.6	B	585
90th St E on-ramp to 140th St E off-ramp	3,465	3,455	100%	273.9	19.8	60	19.0	C	860	3,335	3,115	93%	272.2	17.6	60	16.9	B	857
140th St E off-ramp to 140th St E on-ramp	3,210	3,167	99%	46.3	2.9	61	17.4	B	906	2,520	2,510	100%	45.6	2.1	62	13.8	B	903
140th St E on-ramp to 170th St E off-ramp	3,355	3,276	98%	136.8	9.7	60	17.6	B	1,043	2,995	2,706	90%	134.9	7.5	61	14.3	B	1,038
170th St E off-ramp to 170th St E on-ramp	3,275	3,160	96%	47.5	3.4	60	17.5	B	1,090	2,870	2,556	89%	46.6	2.4	61	13.9	B	1,085
170th St E on-ramp to 210th St E off-ramp	3,540	3,365	95%	196.0	14.9	60	18.3	C	1,286	3,010	2,650	88%	192.6	11.1	61	14.1	B	1,277
210th St E off-ramp to 210th St E on-ramp	3,495	3,268	94%	44.0	3.1	60	18.1	C	1,330	2,655	2,550	96%	43.3	2.4	61	13.9	B	1,320
210th St E on-ramp to 240th St E off-ramp	3,595	3,317	92%	140.8	10.5	60	17.9	B	1,471	3,005	2,559	85%	138.4	7.9	61	13.6	B	1,459
240th St E off-ramp to 240th St E on-ramp	3,475	3,161	91%	47.6	3.3	60	17.4	B	1,518	2,975	2,509	84%	47.2	2.8	61	13.7	B	1,506
240th St E on-ramp to Oasis Rd off-ramp	3,730	3,382	91%	137.0	10.5	60	18.3	C	1,655	3,140	2,642	84%	134.9	8.2	61	14.1	B	1,641
Oasis Rd off-ramp to Oasis Rd on-ramp	3,615	3,233	89%	47.8	3.3	60	17.9	B	1,703	3,040	2,533	83%	47.4	2.8	61	13.9	B	1,688
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	3,695	3,249	88%	196.4	16.5	59	17.9	B	1,900	3,105	2,532	82%	192.4	12.3	61	13.6	B	1,881
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	2,895	2,527	87%	48.3	2.3	62	13.7	B	1,948	2,705	2,171	80%	48.3	2.3	62	11.7	B	1,929
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	3,070	2,655	86%	257.2	15.6	61	14.3	B	2,205	2,970	2,401	81%	256.6	14.7	61	12.9	B	2,186
Caughlin Rd off-ramp to Caughlin Rd on-ramp	2,780	2,339	84%	46.7	2.3	62	12.7	B	2,252	2,660	2,118	80%	46.4	2.1	62	11.4	B	2,232
Caughlin Rd on-ramp to Koala Rd off-ramp	2,870	2,400	84%	71.9	4.1	61	12.6	B	2,324	2,725	2,167	80%	71.7	3.8	61	11.3	B	2,304
Koala Rd off-ramp to Koala Rd loop on-ramp	2,665	2,211	83%	32.5	1.6	62	12.0	B	2,356	2,565	2,006	78%	32.3	1.5	62	10.8	A	2,336
Koala Rd loop on-ramp to Koala Rd direct on-ramp	3,208	2,759	86%	17.4	1.5	59	13.8	B	2,374	2,902	2,323	80%	16.9	1.1	60	11.3	B	2,353
Koala Rd direct on-ramp to Route 395 off-ramp	3,265	2,799	86%	106.5	7.5	60	15.0	B	2,480	3,000	2,399	80%	105.2	6.1	61	12.6	B	2,458
Route 395 off-ramp to Route 395 loop on-ramp	2,550	2,185	86%	25.7	1.0	62	11.7	B	2,506	2,510	1,976	79%	25.7	0.9	62	10.6	A	2,484
Route 395 loop on-ramp to Route 395 direct on-ramp	3,499	3,125	89%	22.5	2.0	59	16.5	B	2,528	3,253	2,717	84%	22.0	1.5	61	14.1	B	2,506
Route 395 direct on-ramp to Phantom W off-ramp	3,645	3,241	89%	59.9	5.2	59	17.7	B	2,588	3,360	2,813	84%	58.3	3.6	61	15.0	B	2,564
Phantom St West off-ramp to Phantom St West loop on-ramp	2,690	2,416	90%	27.8	1.0	62	12.9	B	2,616	2,690	2,296	85%	27.7	1.0	62	12.3	B	2,592
Phantom St West loop on-ramp to Phantom St West direct on-ramp	2,740	2,458	90%	12.5	0.5	62	11.2	B	2,628	2,960	2,561	87%	12.6	0.6	62	11.8	B	2,604
Phantom St West direct on-ramp to Phantom St East direct off-ramp	2,840	2,556	90%	57.1	2.8	62	13.3	B	2,685	3,060	2,662	87%	56.9	2.6	62	13.8	B	2,661
Phantom St East direct off-ramp to Phantom St East loop on-ramp	2,370	2,135	90%	35.7	1.3	62	11.4	B	2,721	2,780	2,393	86%	35.7	1.3	62	12.8	B	2,697
Phantom St East loop on-ramp to Phantom St East direct on-ramp	2,498	2,241	90%	16.0	0.7	62	12.1	B	2,737	3,228	2,798	87%	16.3	1.1	60	15.4	B	2,713
Phantom St East direct on-ramp to National Trails Hwy off-ramp	2,575	2,328	90%	40.7	1.8	62	12.6	B	2,778	3,335	2,922	88%	41.0	2.1	61	15.9	B	2,754
National Trails Hwy off-ramp to National Trails Hwy on-ramp	2,275	2,045	90%	42.6	1.5	63	10.9	A	2,820	3,045	2,672	88%	43.0	1.8	62	14.4	B	2,797
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	2,445	2,195	90%	101.9	3.6	62	8.8	A	2,922	3,200	2,815	88%	103.0	4.5	62	11.4	B	2,900
I-15 NB/SB off-ramp to I-15 NB on-ramp	1,150	980	85%	79.4	1.5	64	5.1	A	3,002	1,345	1,156	86%	79.5	1.5	64	6.1	A	2,980
I-15 NB/SB on-ramp to Choco Rd off-ramp	1,380	1,211	88%	56.5	1.5	63	4.8	A	3,058	1,700	1,503	88%	56.8	1.6	63	6.0	A	3,037
Choco Rd off-ramp to Choco Rd on-ramp	1,300	1,066	82%	32.9	0.9	63	6.0	A	3,091	1,425	1,189	83%	33.1	0.9	63	6.7	A	3,070
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	1,445	1,132	78%	71.4	2.0	63	6.5	A	3,163	1,525	1,209	79%	71.8	2.2	63	7.0	A	3,142
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	1,200	922	77%	36.9	0.8	63	5.6	A	3,200	1,250	948	76%	37.0	0.8	63	5.8	A	3,179
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,310	1,026	78%	31.8	0.8	63	5.8	A	3,231	1,345	1,037	77%	31.8	0.9	63	5.9	A	3,210

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-32. Year 2020 Build Alternative with Revised Palmdale Access Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED vph ()	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WESTBOUND MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	740	721	97%	36.1	1.1	62	5.8	A	36	1,960	1,868	95%	38.8	3.8	57	16.5	B	39
Dale Evans Pkwy loop on-ramp to Dale Evans Pkwy direct on-ramp	670	659	98%	35.9	0.9	63	5.2	A	72	1,840	1,752	95%	37.3	2.2	61	14.4	B	76
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	845	819	97%	79.1	2.1	63	6.1	A	151	2,205	2,123	96%	83.3	6.4	60	16.8	B	159
Choco Rd off-ramp to Choco Rd on-ramp	775	678	87%	34.4	0.7	64	5.3	A	185	2,105	2,023	96%	36.0	2.3	61	11.2	B	196
Choco Rd on-ramp to I-15 NB/SB off-ramp	995	961	97%	56.2	0.9	64	3.8	A	242	2,235	2,157	96%	57.4	2.1	62	8.6	A	253
I-15 NB/SB off-ramp to I-15 SB on-ramp	660	629	95%	98.6	0.9	64	3.3	A	340	1,841	1,804	98%	101.6	3.8	62	9.6	A	354
I-15 NB on-ramp to I-15 NB on-ramp	1,225	1,204	98%	11.0	0.6	62	5.5	A	351	2,545	2,412	95%	11.4	0.9	60	11.4	B	366
I-15 SB on-ramp to National Trails Hwy off-ramp	1,920	1,909	99%	65.6	2.4	63	7.7	A	417	3,505	3,300	94%	67.6	4.1	61	13.5	B	433
National Trails Hwy off-ramp to National Trails Hwy on-ramp	1,795	1,785	99%	41.8	1.2	63	9.4	A	459	3,310	3,094	93%	43.1	2.4	61	16.8	B	477
National Trails Hwy on-ramp to Phantom St East off-ramp	2,010	1,996	99%	52.0	2.1	62	10.3	A	511	3,690	3,439	93%	53.8	3.8	60	18.4	C	530
Phantom St East off-ramp to Phantom St East loop on-ramp	1,625	1,619	100%	32.9	0.8	63	8.5	A	544	3,390	3,128	92%	34.0	1.9	61	17.0	B	564
Phantom St East loop on-ramp to Phantom St East direct on-ramp	1,878	1,841	98%	5.4	0.3	62	9.9	A	549	3,859	3,523	91%	5.7	0.6	59	20.0	C	570
Phantom St East direct on-ramp to Phantom St West off-ramp	1,900	1,886	99%	58.1	2.1	63	10.1	A	607	3,885	3,607	93%	60.5	4.5	60	20.1	C	631
Phantom St West off-ramp to Phantom St West on-ramp	1,625	1,588	98%	42.2	1.1	63	8.4	A	649	3,700	3,419	92%	43.9	2.7	61	18.7	C	674
Phantom St West on-ramp to Route 395 off-ramp	2,160	2,111	98%	53.8	2.0	62	8.5	A	703	4,720	4,398	93%	56.5	4.7	59	18.6	C	731
Route 395 off-ramp to Route 395 on-ramp	1,435	1,425	99%	46.9	0.7	64	5.6	A	750	3,535	3,311	94%	48.0	1.9	62	13.3	B	779
Route 395 on-ramp to Koala Rd off-ramp	1,820	1,813	100%	100.5	2.5	63	7.0	A	850	4,335	4,074	94%	104.1	6.1	61	16.3	B	883
Koala Rd off-ramp to Koala Rd on-ramp	1,410	1,402	99%	48.7	0.8	64	5.5	A	899	3,755	3,475	93%	49.9	2.2	62	14.0	B	933
Koala Rd on-ramp to Caughlin Rd off-ramp	1,525	1,518	100%	66.7	1.3	63	5.8	A	966	3,970	3,690	93%	68.7	3.5	62	14.5	B	1,002
Caughlin Rd off-ramp to Caughlin Rd on-ramp	1,465	1,454	99%	49.3	0.9	64	5.7	A	1,015	3,870	3,568	92%	50.8	2.5	62	14.5	B	1,053
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	1,715	1,686	98%	246.9	5.6	63	6.6	A	1,262	4,190	3,813	91%	254.8	13.9	61	15.3	B	1,307
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	1,515	1,452	96%	45.1	0.9	63	5.7	A	1,307	3,900	3,467	89%	46.3	2.2	62	14.1	B	1,354
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	1,650	1,563	95%	183.5	3.9	63	6.1	A	1,491	4,755	4,276	90%	191.1	11.6	61	17.3	B	1,545
Oasis Rd off-ramp to Oasis Rd loop on-ramp	1,590	1,482	93%	47.6	1.0	63	5.8	A	1,538	4,665	4,142	89%	49.5	3.0	61	17.0	B	1,594
Oasis Rd direct on-ramp to 240th St E off-ramp	1,665	1,537	92%	128.1	2.8	63	5.9	A	1,666	4,785	4,195	88%	133.7	8.5	61	16.9	B	1,728
240th St E off-ramp to 240th St E on-ramp	1,515	1,382	91%	43.8	0.9	63	5.5	A	1,710	4,435	3,840	87%	45.4	2.5	61	15.7	B	1,773
240th St E on-ramp to 210th St E off-ramp	1,535	1,387	90%	134.0	3.1	63	5.4	A	1,844	4,570	3,915	86%	141.7	10.7	60	16.1	B	1,915
210th St E off-ramp to 210th St E on-ramp	1,485	1,319	89%	42.1	1.0	63	6.9	A	1,886	4,345	3,683	85%	44.2	3.0	60	20.4	C	1,959
210th St E on-ramp to 170th St E off-ramp	1,525	1,335	88%	187.7	4.9	63	6.9	A	2,074	4,395	3,663	83%	198.0	14.9	60	19.9	C	2,157
170th St E off-ramp to 170th St E on-ramp	1,425	1,213	85%	44.2	1.1	63	6.4	A	2,118	4,090	3,329	81%	46.3	3.1	60	18.4	C	2,204
170th St E on-ramp to 140th St E off-ramp	1,540	1,303	85%	134.3	3.7	63	6.7	A	2,252	4,185	3,355	80%	141.2	10.4	60	18.1	C	2,345
140th St E off-ramp to 140th St E on-ramp	1,420	1,195	84%	36.4	0.9	63	6.3	A	2,289	4,020	3,186	79%	38.0	2.6	60	17.6	B	2,383
140th St E on-ramp to 90th St E off-ramp	1,920	1,655	86%	267.1	8.3	63	8.6	A	2,556	4,310	3,400	79%	281.5	22.3	59	18.7	C	2,664
90th St E off-ramp to 90th St E on-ramp	1,825	1,548	85%	44.1	1.4	63	8.2	A	2,600	4,130	3,175	77%	46.1	3.3	60	17.6	B	2,710
90th St E on-ramp to 70th St E off-ramp	2,180	1,883	86%	190.9	7.4	62	10.0	A	2,791	4,350	3,331	77%	200.4	16.6	59	18.5	C	2,911
50th St E off-ramp to 50th St E on-ramp	1,845	1,575	85%	43.0	1.4	63	8.4	A	2,834	3,775	2,845	75%	44.4	2.7	61	15.6	B	2,955
50th St E on-ramp to 30th St E off-ramp	2,510	2,226	89%	65.7	2.4	62	9.0	A	2,900	4,425	3,481	79%	67.2	3.9	61	14.3	B	3,022
30th St E off-ramp to 30th St E on-ramp	2,185	1,945	89%	54.0	1.6	63	7.7	A	2,953	4,150	3,231	78%	55.3	3.0	61	13.2	B	3,078
30th St E on-ramp to 20th St E off-ramp	2,635	2,394	91%	16.6	0.8	61	8.9	A	2,970	4,630	3,690	80%	17.4	1.5	59	14.2	B	3,095
20th St E off-ramp to 20th St E on-ramp	2,315	2,097	91%	41.0	1.1	63	8.3	A	3,011	4,190	3,340	80%	42.0	2.1	61	13.6	B	3,137
20th St E on-ramp to SR 14 SB off-ramp	2,960	2,723	92%	95.2	3.5	62	10.8	A	3,106	4,800	3,887	81%	99.8	8.2	59	16.2	B	3,237
SR 14 SB off-ramp to SR 138 WB west end of the network	1,665	1,530	92%	12.5	0.4	55	14.0	B	3,119	3,195	2,580	81%	13.0	0.8	52	24.6	C	3,250

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-32. Year 2020 Build Alternative with Revised Palmdale Access Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NORTHBOUND MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off Ramp	2,795	2,790	100%	148.1	6.8	62	15.0	B	148	5,205	5,200	100%	161.7	20.3	57	30.7	D	162
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	2,350	2,345	100%	22.1	1.1	62	12.7	B	170	4,655	4,619	99%	24.0	3.0	57	27.0	D	186
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	2,685	2,672	100%	11.3	0.8	61	14.7	B	181	5,035	4,961	99%	12.3	1.8	55	29.8	D	198
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	3,060	3,044	99%	22.0	1.3	61	12.5	B	203	5,485	5,439	99%	23.9	3.2	56	24.2	C	222
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	2,545	2,536	100%	23.9	1.2	62	13.7	B	227	4,925	4,866	99%	25.6	2.8	58	28.0	D	248
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	2,905	2,896	100%	16.7	0.9	61	11.8	B	244	5,440	5,375	99%	17.9	2.1	57	23.5	C	265
Mojave Dr off-ramp to Mojave Dr on-ramp	2,430	2,397	99%	20.6	0.8	62	12.8	B	265	4,880	4,796	98%	21.9	2.1	59	27.2	D	287
Mojave Dr on-ramp to D St off-ramp	2,835	2,785	98%	49.9	2.6	61	13.2	B	315	5,260	5,163	98%	52.8	5.6	58	26.2	D	340
D St off-ramp to E St off-ramp	1,900	1,858	98%	9.7	0.3	63	9.8	A	324	4,305	4,177	97%	10.2	0.7	60	23.0	C	350
E St off-ramp to D St on-ramp	1,865	1,812	97%	28.1	0.9	63	9.6	A	352	4,265	4,101	96%	29.3	2.0	61	22.6	C	380
D St on-ramp to E St on-ramp	2,135	2,056	96%	11.0	0.5	62	11.1	B	363	4,590	4,399	96%	11.7	1.2	58	25.1	C	391
E St on-ramp to Stoddard Wells Rd off-ramp	2,175	2,108	97%	29.9	1.3	62	11.4	B	393	4,635	4,469	96%	31.7	3.2	58	25.6	C	423
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	1,775	1,719	97%	20.1	0.6	63	9.1	A	413	4,140	3,992	96%	21.0	1.5	60	22.0	C	444
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	2,050	1,985	97%	38.6	1.5	62	8.0	A	452	4,735	4,562	96%	40.6	3.5	59	19.4	C	484
HDC EB/WB off-ramp to HDC WB on-ramp	1,405	1,346	96%	70.6	2.0	63	7.1	A	523	3,875	3,712	96%	73.5	4.9	61	20.4	C	558
HDC WB on-ramp to HDC EB on-ramp	1,535	1,467	96%	7.6	0.3	63	6.1	A	530	4,030	3,868	96%	8.0	0.6	60	16.7	B	566
HDC EB on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,255	2,141	95%	36.3	1.5	62	8.6	A	567	5,250	4,960	94%	39.7	4.9	56	22.2	C	606
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	2,055	1,975	96%	22.7	0.7	63	10.5	A	589	5,065	4,787	95%	24.1	2.1	59	27.0	D	630
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	2,175	2,075	95%	215.3	9.2	62	11.2	B	805	5,285	4,945	94%	227.9	22.0	58	28.2	D	858
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	1,915	1,810	95%	31.8	1.4	62	9.7	A	836	5,005	4,621	92%	33.5	3.0	59	26.1	D	891
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,210	2,089	95%	63.7	2.7	62	11.3	B	900	5,335	4,914	92%	67.8	6.9	58	28.3	D	959
I-15 SOUTHBOUND MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	3,560	3,559	100%	58.4	3.2	61	19.3	C	58	3,045	3,042	100%	57.8	2.7	62	16.4	B	58
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	3,330	3,320	100%	36.6	2.3	61	18.4	C	95	2,660	2,656	100%	36.0	1.7	62	14.2	B	94
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	3,590	3,581	100%	216.6	17.0	60	20.2	C	312	3,035	3,030	100%	212.6	13.6	61	16.6	B	306
Quarry Rd off-ramp to Quarry Rd on-ramp	3,465	3,560	103%	25.1	2.1	60	19.5	C	337	2,905	2,904	100%	24.7	1.6	61	15.9	B	331
Quarry Rd on-ramp to HDC EB/WB off-ramp	3,620	3,610	100%	52.6	4.3	60	15.3	B	389	3,250	3,250	100%	51.9	3.7	60	13.5	B	383
HDC EB/WB off-ramp to HDC EB/WB on-ramp	2,775	2,770	100%	83.0	5.2	61	15.1	B	472	2,165	2,160	100%	81.2	3.7	62	11.8	B	464
HDC EB/WB on-ramp to Stoddard Wells Rd off-ramp	3,555	3,548	100%	35.2	2.9	59	15.9	B	508	2,965	2,960	100%	34.4	2.2	61	13.0	B	499
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,045	2,980	98%	33.6	2.1	61	16.3	B	541	2,665	2,604	98%	33.0	1.6	62	14.0	B	532
Stoddard Wells Rd direct on-ramp to D St off-ramp	3,560	3,472	98%	37.8	3.4	59	19.5	C	579	3,135	3,072	98%	37.0	2.7	61	16.9	B	569
D St off-ramp to D St on-ramp	3,360	3,288	98%	21.8	1.4	61	18.0	C	601	2,900	2,850	98%	21.4	1.1	62	15.4	B	590
D St on-ramp to Mojave Dr off-ramp	4,200	4,100	98%	52.8	4.4	59	16.9	B	654	3,920	3,865	99%	52.2	3.8	60	15.7	B	642
Mojave Dr off-ramp to Mojave Dr on-ramp	3,945	3,862	98%	20.6	1.6	60	21.5	C	674	3,540	3,487	99%	20.3	1.3	61	19.1	C	662
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	4,540	4,460	98%	15.3	1.7	58	19.3	C	690	4,130	4,055	98%	15.0	1.3	59	17.1	B	677
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,170	4,107	98%	27.4	2.2	60	23.0	C	717	3,725	3,675	99%	26.8	1.7	61	20.2	C	704
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	4,550	4,473	98%	23.5	1.8	60	18.7	C	740	4,275	4,245	99%	23.4	1.7	60	17.7	B	728
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,030	3,949	98%	12.8	0.9	60	21.8	C	753	3,540	3,527	100%	12.7	0.7	61	19.2	C	740
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,185	4,079	97%	8.5	0.7	60	22.7	C	762	3,745	3,703	99%	8.5	0.6	60	20.5	C	749
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,415	4,282	97%	170.0	14.1	59	24.0	C	932	4,055	3,989	98%	168.0	12.2	60	22.1	C	917

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-33. Year 2020 Build Alternative Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Ave. S	Merging	58	12.3	B	59	19.3	B
West Palmdale Blvd loop	Merging	60	9.2	A	60	13.6	B
SR 138 WB	Merging	61	10	B	60	17	B
10th St. W. loop	Merging	59	15.2	B	55	24.0	C
10th St. W. direct	Merging	61	14.8	B	59	21.9	C
West Ave. N loop	Merging	61	13.8	B	59	20.5	C
West Ave. N direct	Merging	61	11.5	B	61	16.1	B
East Ave. S	Diverging	62	11.1	B	56	29.5	D
West Palmdale Blvd	Diverging	60	13.0	B	58	18.3	B
SR 138 EB	Diverging	61	13.1	B	60	19.2	B
10th St. W.	Diverging	61	9.4	A	60	13.7	B
West Ave. N	Diverging	59	15.5	B	43	31.2	D
SOUTHBOUND							
West Ave. N loop	Merging	61	17.7	B	61	18.3	B
West Ave. N direct	Merging	62	13.9	B	62	13.9	B
10th St. W.	Merging	61	13.2	B	62	13.4	B
SR 138 WB	Merging	60	11.3	B	60	11.1	B
West Palmdale Blvd loop	Merging	58	17.3	B	60	15.1	B
West Palmdale Blvd direct	Merging	58	19.5	B	60	17.0	B
East Ave. S	Merging	53	23.6	C	59	15.0	B
West Ave. N	Diverging	58	30.2	D	57	32.5	D
10th St. W.	Diverging	51	28.2	D	58	23.6	C
SR 138 EB	Diverging	52	23.8	C	58	23.1	C
West Palmdale Blvd	Diverging	60	14.8	B	61	14.4	B
East Ave. S	Diverging	58	21.5	C	58	19.7	B

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area
Level of service E
Level of service F

Table 4-33. Year 2020 Build Alternative with Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	59	18	B	58	20	C
20th St E	Merging	58	20	B	57	22	C
30th St E	Merging	61	14	B	61	14	B
50th St E	Merging	58	19	B	59	18	B
90th St E	Merging	59	17	B	60	15	B
140th St E	Merging	59	16	B	60	13	B
170th St E	Merging	58	17	B	60	13	B
210th St E	Merging	59	16	B	61	12	B
240th St E	Merging	58	17	B	60	13	B
Oasis Rd	Merging	60	15	B	60	12	B
Sheep Creek Rd loop	Merging	62	13	B	61	12	B
Sheep Creek Rd direct	Merging	61	12	B	60	12	B
Caughlin Rd loop	Merging	61	13	B	62	11	B
Caughlin Rd direct	Merging	61	11	B	61	10	A
Koala Rd loop	Merging	58	14	B	60	11	B
Koala Rd direct	Merging	60	14	B	61	12	B
Route 395 loop	Merging	57	17	B	59	14	B
Route 395 direct	Merging	60	16	B	61	14	B
Phantom St West loop	Merging	61	10	B	61	12	B
Phantom St West direct	Merging	61	12	B	61	13	B
Phantom St East loop	Merging	61	12	B	59	17	B
Phantom St East direct	Merging	61	13	B	61	17	B
Choco Rd	Merging	63	6	A	63	6	A
Dale Evans Pkwy direct	Merging	63	5	A	63	6	A
20th St E	Diverging	60	20	C	58	24	C
30th St E	Diverging	58	20	B	57	22	C
50th St E	Diverging	60	17	B	60	17	B
90th St E	Diverging	59	21	C	59	20	C
140th St E	Diverging	58	20	C	59	19	B
170th St E	Diverging	60	18	B	60	15	B
210th St E	Diverging	59	19	B	61	15	B
240th St E	Diverging	59	19	B	61	14	B
Oasis Rd	Diverging	59	19	B	60	15	B
Sheep Creek Rd	Diverging	55	20	C	59	15	B
Caughlin Rd	Diverging	59	15	B	60	14	B
Koala	Diverging	60	14	B	60	12	B
Route 395	Diverging	57	18	B	59	15	B
Phantom St West	Diverging	56	22	C	59	18	B
Phantom St East	Diverging	60	15	B	61	16	B
National Trails Hwy	Diverging	61	14	B	61	17	B
Dale Evans Pkwy	Diverging	63	7	A	62	7	A
National Trails Hwy to I-15 NB/SB	Weaving	62	9	A	61	11	B
I-15 NB/SB to Choco Rd	Weaving	63	4	A	63	6	A

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-33. Year 2020 Build Alternative with Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy direct	Merging	63	5	A	59	15	B
I-15 NB	Merging	61	6	A	59	12	B
National Trails Hwy	Merging	62	10	B	59	17	B
Phantom St East loop	Merging	61	11	B	57	22	C
Phantom St East direct	Merging	61	11	B	58	22	C
Phantom St West	Merging	62	9	A	60	18	B
Route 395	Merging	61	7	A	59	16	B
Koala Rd loop	Merging	62	6	A	61	14	B
Koala Rd direct	Merging	62	6	A	61	13	B
Caughlin Rd loop	Merging	62	6	A	61	14	B
Caughlin Rd direct	Merging	61	7	A	60	14	B
Sheep Creek Rd loop	Merging	62	6	A	61	14	B
Sheep Creek Rd direct	Merging	61	6	A	57	18	B
Oasis Rd loop	Merging	62	6	A	60	17	B
Oasis Rd direct	Merging	61	5	A	60	15	B
240th St E	Merging	62	5	A	60	13	B
210th St E	Merging	63	7	A	60	17	B
170th St E	Merging	62	6	A	60	15	B
140th St E	Merging	61	8	A	57	17	B
90th St E	Merging	60	9	A	58	16	B
50th St E	Merging	61	9	A	61	13	B
30th St E	Merging	60	9	A	57	14	B
20th St E	Merging	60	11	B	58	14	B
Dale Evans Pkwy	Diverging	63	6	A	61	15	B
Choco Rd	Diverging	63	6	A	60	18	B
Phantom St East	Diverging	61	13	B	60	20	C
Phantom St West	Diverging	61	12	B	60	21	C
Route 395	Diverging	60	12	B	56	23	C
Koala Rd	Diverging	61	10	A	59	20	B
Caughlin Rd	Diverging	62	7	A	61	15	B
Sheep Creek Rd	Diverging	61	8	A	60	16	B
Oasis Rd	Diverging	62	7	A	60	18	B
240th St E	Diverging	62	7	A	59	18	B
210th St E	Diverging	62	6	A	56	16	B
170th St E	Diverging	62	7	A	59	21	C
140th St E	Diverging	62	7	A	59	18	B
90th St E	Diverging	62	9	A	59	19	B
50th St E	Diverging	61	11	B	57	19	B
30th St E	Diverging	61	9	A	61	13	B
20th St E	Diverging	60	9	A	57	14	B
SR 14 SB	Diverging	62	12	B	57	23	C
Choco to I-15 NB/SB	Weaving	64	4	A	63	7	A
I-15 SB to National Trails Hwy	Weaving	62	9	A	61	14	B

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

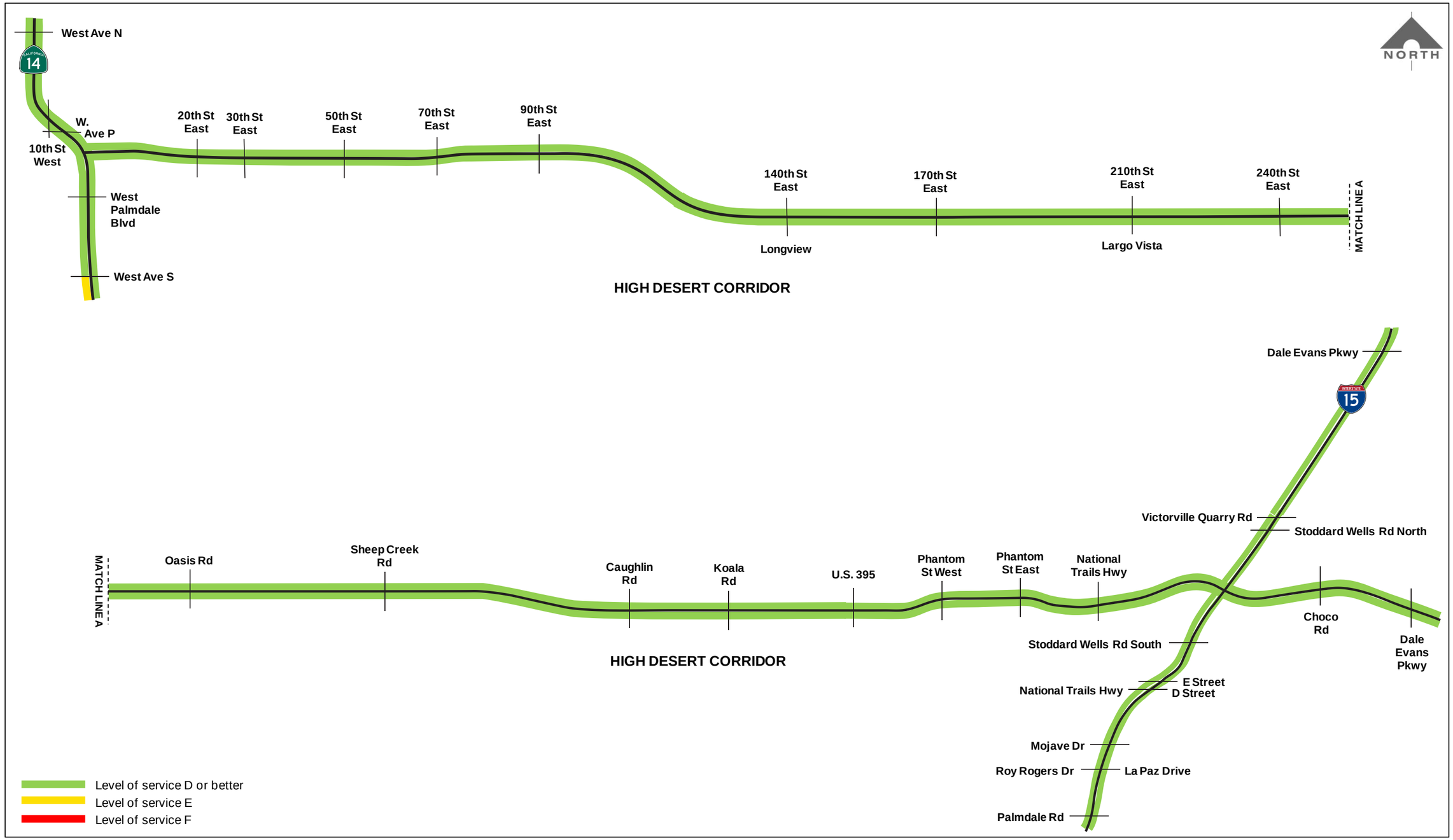
Table 4-33. Year 2020 Build Revised Palmdale Access Alternative Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	60	17	B	54	31	D
Mojave Dr	Merging	60	17	B	54	32	D
D St	Merging	61	12	B	58	26	C
E St	Merging	61	13	B	57	27	C
HDC WB	Merging	62	6	A	60	15	B
Stoddard Wells Rd (Quarry Rd)	Merging	62	12	B	57	28	D
Dale Evans Pkwy	Merging	61	11	B	57	28	D
Palmdale Rd	Diverging	60	17	B	47	37	E
D St	Diverging	61	12	B	60	21	C
E St	Diverging	63	11	B	60	23	C
Stoddard Wells Rd	Diverging	61	13	B	58	26	C
Dale Evans Pkwy	Diverging	61	12	B	56	29	D
Palmdale Rd direct to Roy Rogers Dr	Weaving	61	13	B	55	23	C
Roy Rogers Dr to Mojave Dr	Weaving	61	12	B	56	23	C
Stoddard Wells Rd to HDC EB/WB	Weaving	62	8	A	58	19	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	62	9	A	55	21	C
SOUTHBOUND							
Dale Evans Pkwy	Merging	60	21	C	61	18	B
HDC EB/WB	Merging	58	15	B	60	12	B
Stoddard Wells Rd direct	Merging	57	21	C	58	19	B
Palmdale Rd loop	Merging	60	22	C	60	21	C
Palmdale Rd direct	Merging	58	24	C	58	23	C
Dale Evans Pkwy	Diverging	61	20	C	61	18	B
Quarry Rd	Diverging	59	21	C	60	17	B
Stoddard Wells Rd	Diverging	59	14	B	60	12	B
D St	Diverging	60	20	B	60	18	B
Quarry Rd to HDC EB/WB	Weaving	59	14	B	60	13	B
D St to Mojave Dr	Weaving	59	16	B	60	16	B
Mojave Dr to Roy Rogers Dr	Weaving	57	18	B	58	17	B
Roy Rogers Dr to Palmdale Rd	Weaving	60	17	B	59	18	B

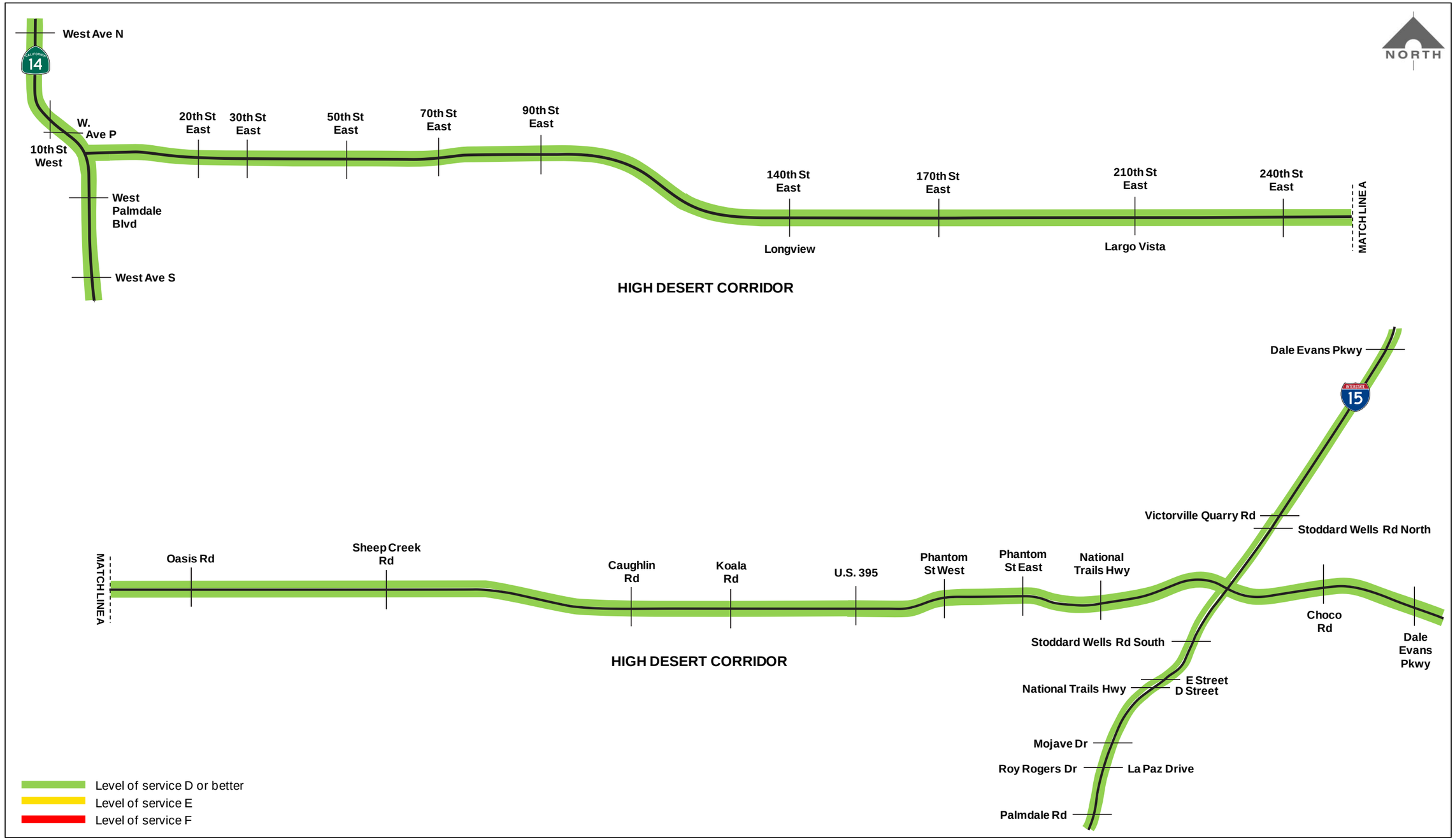
Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F



AM PEAK HOUR

Figure 4-29: Year 2020 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 4-29: Year 2020 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Level of Service *(2 of 2)*

Table 4-34. Year 2020 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Analysis Results *(1 of 4)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NORTHBOUND MAINLINE																											
Pearblossom Hwy direct on-ramp to East Ave S off-ramp	2,300	2,296	100%	201.8	48.3	54	14.5	B	202	2,300	2,296	100%	201.8	48.3	54	14.5	B	202	—	—	—	—	—	—	—	—	—
East Ave S off-ramp to East Ave S on-ramp	2,160	2,189	101%	27.9	2.2	60	9.1	A	230	2,160	2,150	100%	27.9	2.2	60	9.1	A	230	—	—	—	—	—	—	—	—	—
East Ave S on-ramp to West Palmdale Blvd off-ramp	2,820	2,868	102%	58.0	3.7	61	9.4	A	288	2,820	2,810	100%	58.0	3.7	61	9.4	A	288	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,470	2,496	101%	16.6	0.7	62	10.1	A	304	2,470	2,465	100%	16.6	0.7	62	10.1	A	304	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,505	1,514	101%	5.0	0.2	63	8.0	A	309	1,505	1,500	100%	5.0	0.2	63	8.0	A	309	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to 10th St West off-ramp	2,185	2,186	100%	49.7	2.4	62	8.9	A	359	2,185	2,180	100%	49.7	2.4	62	8.9	A	359	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	1,680	1,705	101%	22.9	1.3	61	9.3	A	382	1,680	1,675	100%	22.9	1.3	61	9.3	A	382	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	3,240	3,226	100%	48.3	2.8	61	10.5	A	430	3,240	3,226	100%	48.3	2.8	61	10.5	A	430	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	3,715	3,707	100%	16.8	1.1	61	13.9	B	447	3,715	3,707	100%	16.8	1.1	61	13.9	B	447	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Ave N off-ramp	3,825	3,799	99%	66.1	3.8	61	15.1	B	513	3,825	3,799	99%	66.1	3.8	61	15.1	B	513	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	3,570	3,512	98%	18.1	1.0	61	19.1	C	531	3,570	3,512	98%	18.1	1.0	61	19.1	C	531	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	3,850	3,789	98%	9.4	0.4	62	15.3	B	541	3,850	3,789	98%	9.4	0.4	62	15.3	B	541	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to West Ave M off-ramp	3,975	3,906	98%	30.6	1.2	62	15.1	B	571	3,975	3,906	98%	30.6	1.2	62	15.1	B	571	—	—	—	—	—	—	—	—	—
SR 14 SOUTHBOUND MAINLINE																											
West Ave M on-ramp to West Ave N off-ramp	4,885	4,885	100%	37.7	3.0	60	27.3	D	38	4,885	4,885	100%	37.7	3.0	60	27.3	D	38	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	4,585	4,581	100%	18.7	1.4	60	25.4	C	56	4,585	4,581	100%	18.7	1.4	60	25.4	C	56	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	4,635	4,630	100%	11.1	0.7	61	19.1	C	68	4,635	4,630	100%	11.1	0.7	61	19.1	C	68	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to 10th St W off-ramp	4,925	4,920	100%	84.3	8.4	58	20.7	C	152	4,925	4,920	100%	84.3	8.4	58	20.7	C	152	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	4,295	4,281	100%	18.0	2.0	57	20.7	C	170	2,940	3,614	123%	18.3	2.3	56	24.0	C	170	1,355	667	49%	16.4	0.2	62	10.7	A	16
HDC off-ramp to 10th St W on-ramp	1,837	1,832	100%	22.0	0.9	62	9.8	A	192	482	1,134	235%	21.6	0.6	63	9.0	A	192	1,355	698	52%	22.6	1.5	61	11.5	B	39
10th St W on-ramp to Palmdale Blvd off-ramp	2,980	2,972	100%	33.4	1.7	61	12.2	B	225	1,625	2,195	135%	33.1	1.4	62	11.9	B	225	1,355	777	57%	34.1	2.5	60	12.9	B	73
West Palmdale Blvd off-ramp to HDC on-ramp	2,548	2,538	100%	32.3	1.2	62	10.2	A	258	1,193	1,635	137%	31.7	0.6	64	8.6	A	257	1,355	903	67%	33.5	2.3	60	15.0	B	107
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,700	3,558	96%	23.8	1.4	61	11.3	B	281	2,450	2,882	118%	23.7	1.3	61	11.3	B	280	1,250	676	54%	24.3	1.8	59	11.4	B	131
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,285	4,157	97%	13.9	1.1	60	15.5	B	295	3,035	3,054	101%	13.7	1.0	60	14.5	B	294	1,250	1,102	88%	14.3	1.5	58	19.1	C	145
West Palmdale Blvd direct on-ramp to East Ave S off-ramp	4,870	4,703	97%	67.9	5.2	60	19.2	C	363	3,320	3,522	106%	67.6	4.8	60	19.0	C	361	1,550	1,181	76%	69.1	6.4	59	20.1	C	214
East Ave S off-ramp to East Ave S on-ramp	4,620	4,479	97%	22.0	1.4	60	18.5	C	385	2,710	3,280	121%	21.7	1.2	61	17.9	B	383	1,910	1,200	63%	22.7	2.2	59	20.5	C	237
East Ave S on-ramp to Angeles Forest Hwy off-ramp	5,665	5,397	95%	350.3	161.8	44	37.6	E	736	3,755	4,067	108%	392.7	204.1	43	42.4	E	776	1,910	1,331	70%	225.7	37.7	55	24.4	C	463

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
Pearblossom Hwy direct on-ramp to East Ave S off-ramp	6,920	5,213	75%	205.8	51.3	52	28.7	D	206	5,100	3,655	72%	221.1	66.8	51	29.8	D	221	1,820	1,558	86%	177.5	22.8	56	27.5	D	177
East Ave S off-ramp to East Ave S on-ramp	6,085	4,554	75%	29.0	3.1	58	19.7	C	235	4,265	2,940	69%	29.0	3.2	58	17.0	B	250	1,820	1,615	89%	29.0	3.1	58	28.0	D	206
East Ave S on-ramp to West Palmdale Blvd off-ramp	6,605	5,082	77%	59.0	4.4	60	17.0	B	294	4,985	3,921	79%	59.0	4.4	60	16.4	B	309	1,620	1,161	72%	58.7	4.1	60	19.3	C	265
West Palmdale Blvd off-ramp to HDC off-ramp	5,655	4,349	77%	17.0	1.1	60	18.1	C	311	4,035	3,410	85%	17.0	1.0	60	18.9	C	326	1,620	939	58%	17.0	1.2	60	15.6	B	282
HDC off-ramp to West Palmdale Blvd loop on-ramp	3,695	2,890	78%	5.2	0.3	61	15.8	B	316	2,035	1,950	96%	5.2	0.2	62	15.8	B	331	1,660	940	57%	5.3	0.4	60	15.7	B	287
West Palmdale Blvd loop on-ramp to 10th St West off-ramp	4,370	3,525	81%	50.9	3.5	60	14.6	B	367	2,710	2,602	96%	50.8	3.3	60	14.4	B	382	1,660	924	56%	51.3	3.9	60	15.5	B	339
10th St West off-ramp to HDC on-ramp	3,693	3,263	88%	23.6	1.4	60	16.2	B	390	2,033	2,418	119%	23.5	1.4	60	16.8	B	405	1,660	846	51%	23.6	1.3	60	14.2	B	362
HDC on-ramp to 10th St West on-ramp	6,290	5,234	83%	49.9	4.3	60	17.5	B	440	6,290	5,234	83%	49.9	4.3	60	17.5	B	455	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	6,720	5,667	84%	17.8	2.0	57	22.5	C	458	6,720	5,667	84%	17.8	2.0	57	22.5	C	473	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Ave N off-ramp	6,845	5,780	84%	75.8	13.4	53	26.9	D	534	6,845	5,780	84%	75.8	13.4	53	26.9	D	549	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	6,545	5,459	83%	21.6	4.5	51	35.6	E	555	6,545	5,459	83%	21.6	4.5	51	35.6	E	571	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	6,680	5,583	84%	10.3	1.3	56	24.8	C	566	6,680	5,583	84%	10.3	1.3	56	24.8	C	581	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to West Ave M off-ramp	6,925	5,817	84%	31.8	2.3	60	23.3	C	598	6,925	5,817	84%	31.8	2.3	60	23.3	C	613	—	—	—	—	—	—	—	—	—
West Ave M on-ramp to West Ave N off-ramp	4,850	4,845	100%	37.7	2.8	60	27.1	D	38	4,850	4,845	100%	37.7	2.8	60	27.1	D	38	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	4,450	4,446	100%	18.7	1.3	60	24.6	C	56	4,450	4,446	100%	18.7	1.3	60	24.6	C	56	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	4,550	4,546	100%	11.1	0.7	61	18.7	C	67	4,550	4,546	100%	11.1	0.7	61	18.7	C	67	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to 10th St W off-ramp	4,775	4,775	100%	81.7	5.6	60	19.5	C	149	4,775	4,775	100%	81.7	5.6	60	19.5	C	149	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	3,945	3,961	100%	17.4	1.3	59	16.9	B	167	3,945	3,961	100%	17.4	1.3	59	16.9	B	167	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St W on-ramp	1,629	1,628	100%	21.6	0.5	63	8.6	A	188	1,629	1,628	100%	21.6	0.5	63	8.6	A	188	—	—	—	—	—	—	—	—	—
10th St W on-ramp to Palmdale Blvd off-ramp	2,520	2,508	100%	32.9	1.2	62	10.1	A	221	2,520	2,508	100%	32.9	1.2	62	10.1	A	221	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	1,931	1,923	100%	31.7	0.6	64	7.7	A	253	1,931	1,923	100%	31.7	0.6	64	7.7	A	253	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,285	3,091	94%	23.7	1.3	61	9.8	A	276	3,285	3,091	94%	23.7	1.3	61	9.8	A	276	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,435	3,220	94%	13.4	0.6	62	11.6	B	290	3,435	3,220	94%	13.4	0.6	62	11.6	B	290	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Ave S off-ramp	3,665	3,434	94%	66.2	3.5	61	13.7	B	356	3,665	3,434	94%	66.2	3.5	61	13.7	B	356	—	—	—	—	—	—	—	—	—
East Ave S off-ramp to East Ave S on-ramp	3,140	2,972	95%	21.3	0.7	63	11.9	B	377	3,140	2,972	95%	21.3	0.7	63	11.9	B	377	—	—	—	—	—	—	—	—	—
East Ave S on-ramp to Angeles Forest Hwy off-ramp	3,550	3,364	95%	209.8	22.0	59	15.4	B	587	3,550	3,364	95%	209.8	22.0	59	15.4	B	587	—	—	—	—	—	—	—	—	—

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-34. Year 2020 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EASTBOUND MAINLINE																		
SR 138 EB west end of the network to SR 14 NB on-ramp	2,585	2,552	99%	21.0	1.8	48	26.5	D	21	2,415	2,415	100%	21.0	1.8	48	25.4	C	21
SR-14 NB on-ramp to 20th St E off-ramp	3,850	3,817	99%	96.3	5.0	61	14.9	B	117	4,620	4,205	91%	97.0	5.6	61	16.6	B	118
20th St E off-ramp to 20th St E on-ramp	3,270	3,265	100%	43.2	1.7	62	13.2	B	161	3,745	3,435	92%	43.4	1.7	62	13.8	B	161
20th St E on-ramp to 30th St E off-ramp	3,415	3,414	100%	16.7	0.9	61	14.0	B	177	4,045	3,741	92%	17.2	1.3	60	15.7	B	179
30th St E off-ramp to 30th St E on-ramp	3,000	2,972	99%	55.9	1.9	63	11.9	B	233	3,355	3,132	93%	51.5	1.6	63	12.5	B	230
30th St E on-ramp to 50th St E off-ramp	3,265	3,231	99%	63.0	2.9	62	12.7	B	296	3,720	3,502	94%	67.5	3.2	61	14.0	B	298
50th St E off-ramp to 50th St E on-ramp	2,635	2,629	100%	43.2	1.8	62	14.2	B	339	2,920	2,774	95%	43.2	1.8	62	14.9	B	341
50th St E on-ramp to 90th St E off-ramp	3,025	2,967	98%	195.0	10.8	61	16.0	B	534	3,375	3,160	94%	195.0	10.9	61	17.0	B	536
90th St E off-ramp to 90th St E on-ramp	2,660	2,564	96%	45.2	2.2	62	13.9	B	579	2,950	2,738	93%	45.1	2.2	62	14.8	B	581
90th St E on-ramp to 140th St E off-ramp	2,680	2,530	94%	270.0	15.3	61	13.6	B	849	2,970	2,698	91%	269.7	14.9	61	14.5	B	851
140th St E off-ramp to 140th St E on-ramp	2,280	2,090	92%	45.5	2.1	62	11.3	B	895	2,260	2,011	89%	45.1	1.6	62	10.7	A	896
140th St E on-ramp to 170th St E off-ramp	2,460	2,252	92%	134.0	6.8	61	11.9	B	1,029	2,345	2,068	88%	133.0	5.5	62	10.8	A	1,029
170th St E off-ramp to 170th St E on-ramp	2,420	2,180	90%	46.5	2.3	62	11.8	B	1,075	2,210	1,924	87%	46.1	1.9	62	10.3	A	1,075
170th St E on-ramp to 210th St E off-ramp	2,440	2,160	89%	191.6	10.2	61	11.5	B	1,267	2,225	1,900	85%	189.6	7.9	62	10.0	A	1,264
210th St E off-ramp to 210th St E on-ramp	2,420	2,125	88%	43.2	2.3	61	11.6	B	1,310	2,185	1,815	83%	42.7	1.7	62	9.8	A	1,307
210th St E on-ramp to 240th St E off-ramp	2,470	2,137	87%	138.2	7.7	61	11.3	B	1,448	2,200	1,830	83%	136.1	5.4	62	9.5	A	1,443
240th St E off-ramp to 240th St E on-ramp	2,305	1,946	84%	46.6	2.2	62	10.5	A	1,495	2,105	1,735	82%	46.2	1.8	62	9.3	A	1,489
240th St E on-ramp to Oasis Rd off-ramp	2,585	2,164	84%	133.5	6.9	61	11.4	B	1,628	2,305	1,901	82%	132.4	5.7	62	9.9	A	1,622
Oasis Rd off-ramp to Oasis Rd on-ramp	2,485	2,082	84%	46.8	2.2	62	11.3	B	1,675	2,225	1,804	81%	46.5	1.9	62	9.7	A	1,668
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	2,590	2,154	83%	190.5	10.6	61	11.5	B	1,866	2,310	1,854	80%	188.3	8.2	62	9.8	A	1,856
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	2,080	1,688	81%	47.7	1.8	62	9.0	A	1,913	1,995	1,579	79%	47.7	1.7	62	8.4	A	1,904
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	2,190	1,773	81%	252.2	10.5	62	9.3	A	2,166	2,145	1,703	79%	252.5	10.6	62	9.0	A	2,157
Caughlin Rd off-ramp to Caughlin Rd on-ramp	1,945	1,551	80%	45.9	1.7	62	8.3	A	2,212	1,915	1,491	78%	45.9	1.6	63	8.0	A	2,202
Caughlin Rd on-ramp to Koala Rd off-ramp	1,960	1,544	79%	70.5	2.8	62	7.9	A	2,282	1,940	1,505	78%	70.5	2.6	62	7.7	A	2,273
Koala Rd off-ramp to Koala Rd loop on-ramp	1,915	1,486	78%	32.1	1.2	62	7.9	A	2,314	1,910	1,470	77%	32.1	1.2	62	7.9	A	2,305
Koala Rd loop on-ramp to Koala Rd direct on-ramp	2,157	1,724	80%	16.7	0.9	61	8.3	A	2,331	2,100	1,643	78%	16.6	0.8	62	7.8	A	2,322
Koala Rd direct on-ramp to Route 395 off-ramp	2,235	1,791	80%	103.1	4.1	62	9.2	A	2,434	2,115	1,634	77%	103.1	3.9	62	8.4	A	2,425
Route 395 off-ramp to Route 395 loop on-ramp	2,115	1,681	79%	25.7	0.9	62	9.0	A	2,460	2,030	1,531	75%	25.7	0.9	62	8.2	A	2,450
Route 395 loop on-ramp to Route 395 direct on-ramp	3,028	2,588	85%	22.2	1.8	60	13.5	B	2,482	2,731	2,253	82%	21.9	1.5	61	11.6	B	2,472
Route 395 direct on-ramp to Phantom W off-ramp	3,155	2,723	86%	58.5	3.8	61	14.6	B	2,540	2,855	2,373	83%	57.7	2.9	61	12.5	B	2,530
Phantom St West off-ramp to Phantom St West loop on-ramp	2,350	2,088	89%	27.6	0.9	63	11.1	B	2,568	2,285	1,949	85%	27.6	0.9	63	10.4	A	2,558
Phantom St West loop on-ramp to Phantom St West direct on-ramp	2,403	2,131	89%	12.4	0.4	62	9.7	A	2,580	2,475	2,126	86%	12.5	0.5	62	9.7	A	2,570
Phantom St West direct on-ramp to Phantom St East direct off-ramp	2,515	2,242	89%	56.7	2.4	62	11.6	B	2,637	2,670	2,330	87%	56.8	2.5	62	12.1	B	2,627
Phantom St East direct off-ramp to Phantom St East loop on-ramp	2,025	1,821	90%	35.4	1.1	63	9.7	A	2,672	2,390	2,077	87%	35.5	1.2	63	11.1	B	2,662
Phantom St East loop on-ramp to Phantom St East direct on-ramp	2,129	1,912	90%	15.8	0.6	62	10.2	A	2,688	2,781	2,418	87%	16.1	0.9	61	13.1	B	2,678
Phantom St East direct on-ramp to National Trails Hwy off-ramp	2,210	1,987	90%	40.4	1.5	62	10.6	A	2,729	2,910	2,557	88%	40.7	1.9	62	13.8	B	2,719
National Trails Hwy off-ramp to National Trails Hwy on-ramp	1,875	1,684	90%	42.3	1.2	63	8.9	A	2,771	2,655	2,351	89%	42.7	1.6	62	12.6	B	2,762
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	2,025	1,832	90%	101.1	2.8	63	7.3	A	2,872	2,780	2,455	88%	102.3	4.0	62	9.9	A	2,864
I-15 NB/SB off-ramp to I-15 NB on-ramp	960	861	90%	79.2	1.2	64	4.5	A	2,951	1,065	921	87%	79.3	1.2	64	4.8	A	2,943
I-15 NB/SB on-ramp to Choco Rd off-ramp	1,185	1,068	90%	56.4	1.3	63	4.2	A	3,007	1,440	1,259	87%	56.6	1.5	63	5.0	A	3,000
Choco Rd off-ramp to Choco Rd on-ramp	1,115	943	85%	32.9	0.8	63	5.3	A	3,040	1,190	985	83%	32.9	0.7	63	5.5	A	3,033
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	1,145	905	79%	71.0	1.5	63	5.2	A	3,111	1,260	993	79%	71.1	1.6	63	5.6	A	3,104
Dale Evans Pkwy off-ramp to Dale Evans Pkwy direct on-ramp	980	726	74%	36.8	0.7	64	4.5	A	3,148	1,065	818	77%	36.9	0.7	64	4.9	A	3,141
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,085	823	76%	31.7	0.7	63	4.7	A	3,180	1,160	911	78%	31.7	0.7	63	5.1	A	3,173

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-34. Year 2020 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WESTBOUND MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	695	677	97%	35.8	1.0	63	5.4	A	36	1,230	1,211	98%	37.1	2.2	60	10.1	A	37
Dale Evans Pkwy off-ramp to Dale Evans Pkwy direct on-ramp	625	608	97%	35.7	0.7	64	4.8	A	72	1,150	1,131	98%	36.6	1.6	62	9.1	A	74
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	795	776	98%	78.5	1.5	63	5.8	A	150	1,360	1,342	99%	80.8	3.8	62	10.3	A	155
Choco Rd off-ramp to Choco Rd on-ramp	735	640	87%	34.2	0.5	64	3.7	A	184	1,310	1,162	89%	35.3	1.5	62	7.0	A	190
Choco Rd on-ramp to I-15 NB/SB off-ramp	935	906	97%	56.2	0.8	64	3.6	A	240	1,410	1,390	99%	56.8	1.4	63	5.5	A	247
I-15 NB/SB off-ramp to I-15 SB on-ramp	722	598	83%	98.8	1.0	64	3.1	A	339	1,140	1,093	96%	100.0	2.2	63	5.7	A	347
I-15 NB on-ramp to I-15 NB on-ramp	1,000	972	97%	10.9	0.4	62	4.4	A	350	1,735	1,708	98%	11.1	0.6	61	7.9	A	358
I-15 SB on-ramp to National Trails Hwy off-ramp	1,675	1,639	98%	65.4	2.1	63	6.5	A	416	2,660	2,626	99%	66.5	3.1	62	10.6	A	424
National Trails Hwy off-ramp to National Trails Hwy on-ramp	1,555	1,517	98%	41.7	1.0	63	8.0	A	457	2,480	2,432	98%	42.5	1.8	62	13.0	B	467
National Trails Hwy on-ramp to Phantom St East off-ramp	1,820	1,767	97%	52.0	2.0	62	9.2	A	509	2,850	2,773	97%	52.9	3.0	61	14.6	B	520
Phantom St East off-ramp to Phantom St East loop on-ramp	1,445	1,394	96%	32.9	0.7	64	7.3	A	542	2,550	2,458	96%	33.5	1.3	62	13.1	B	553
Phantom St East loop on-ramp to Phantom St East direct on-ramp	1,621	1,549	96%	5.3	0.2	63	8.3	A	548	2,946	2,801	95%	5.5	0.4	60	15.5	B	558
Phantom St East direct on-ramp to Phantom St West off-ramp	1,640	1,580	96%	57.7	1.6	63	8.4	A	605	2,965	2,862	97%	59.3	3.2	61	15.6	B	618
Phantom St West off-ramp to Phantom St West on-ramp	1,450	1,394	96%	42.1	1.0	63	7.3	A	647	2,820	2,707	96%	43.3	2.1	62	14.6	B	661
Phantom St West on-ramp to Route 395 off-ramp	1,680	1,620	96%	53.6	1.8	63	6.5	A	701	3,930	3,709	94%	57.3	5.6	58	15.9	B	718
Route 395 off-ramp to Route 395 on-ramp	905	890	98%	46.8	0.6	64	3.5	A	748	2,585	2,453	95%	47.5	1.3	63	9.7	A	766
Route 395 on-ramp to Koala Rd off-ramp	935	915	98%	99.6	1.5	64	3.5	A	847	2,955	2,811	95%	102.0	3.9	62	11.0	B	868
Koala Rd off-ramp to Koala Rd on-ramp	730	698	96%	48.4	0.6	64	2.7	A	896	2,440	2,297	94%	49.3	1.5	63	9.1	A	917
Koala Rd on-ramp to Caughlin Rd off-ramp	760	722	95%	66.3	1.0	64	2.7	A	962	2,520	2,377	94%	67.5	2.2	63	9.2	A	985
Caughlin Rd off-ramp to Caughlin Rd on-ramp	740	693	94%	49.0	0.7	64	2.7	A	1,011	2,470	2,331	94%	50.0	1.6	63	9.3	A	1,035
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	875	827	95%	244.9	3.9	64	3.2	A	1,256	2,790	2,632	94%	250.6	9.4	62	10.4	A	1,285
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	825	766	93%	44.8	0.7	64	3.0	A	1,301	2,730	2,530	93%	45.8	1.7	62	10.1	A	1,331
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	915	856	94%	182.5	3.1	64	3.3	A	1,483	3,090	2,854	92%	187.1	7.5	62	11.3	B	1,518
Oasis Rd off-ramp to Oasis Rd loop on-ramp	895	834	93%	47.3	0.8	64	3.3	A	1,531	3,065	2,783	91%	48.6	2.0	62	11.2	B	1,567
Oasis Rd direct on-ramp to 240th St E off-ramp	945	875	93%	127.4	2.3	64	3.4	A	1,658	3,210	2,890	90%	131.0	5.8	62	11.4	B	1,698
240th St E off-ramp to 240th St E on-ramp	830	770	93%	43.5	0.7	64	3.0	A	1,701	2,855	2,540	89%	44.5	1.6	62	10.2	A	1,742
240th St E on-ramp to 210th St E off-ramp	930	874	94%	133.4	2.6	64	3.4	A	1,835	2,975	2,619	88%	137.2	6.2	62	10.4	A	1,880
210th St E off-ramp to 210th St E on-ramp	920	859	93%	41.9	0.8	64	4.5	A	1,877	2,795	2,424	87%	43.1	2.0	62	13.1	B	1,923
210th St E on-ramp to 170th St E off-ramp	955	887	93%	186.8	4.1	63	4.6	A	2,064	2,815	2,405	85%	193.0	9.8	61	12.7	B	2,116
170th St E off-ramp to 170th St E on-ramp	905	816	90%	44.1	0.9	63	4.3	A	2,108	2,545	2,118	83%	45.2	2.1	62	11.4	B	2,161
170th St E on-ramp to 140th St E off-ramp	955	847	89%	133.6	2.9	63	4.3	A	2,241	2,585	2,127	82%	137.7	6.9	62	11.2	B	2,299
140th St E off-ramp to 140th St E on-ramp	920	800	87%	36.2	0.8	63	4.2	A	2,277	2,560	2,083	81%	37.4	2.0	61	11.3	B	2,336
140th St E on-ramp to 90th St E off-ramp	1,410	1,273	90%	265.8	6.5	63	6.6	A	2,543	3,210	2,682	84%	275.5	16.4	61	14.5	B	2,612
90th St E off-ramp to 90th St E on-ramp	1,390	1,239	89%	43.9	1.2	63	6.5	A	2,587	3,170	2,586	82%	45.4	2.8	61	14.1	B	2,657
90th St E on-ramp to 70th St E off-ramp	1,890	1,725	91%	190.6	7.0	62	9.1	A	2,778	3,655	3,025	83%	197.7	14.1	60	16.6	B	2,855
50th St E off-ramp to 50th St E on-ramp	1,590	1,442	91%	42.9	1.3	63	7.7	A	2,821	3,260	2,650	81%	44.1	2.4	61	14.4	B	2,899
50th St E on-ramp to 30th St E off-ramp	2,475	2,327	94%	65.8	2.6	62	9.4	A	2,886	3,960	3,370	85%	67.8	3.7	61	13.8	B	2,967
30th St E off-ramp to 30th St E on-ramp	2,125	1,990	94%	53.9	1.6	63	7.9	A	2,940	3,560	3,015	85%	54.0	2.6	62	12.2	B	3,021
30th St E on-ramp to 20th St E off-ramp	2,625	2,485	95%	16.6	0.8	62	9.2	A	2,957	4,090	3,530	86%	17.1	1.2	60	13.4	B	3,038
20th St E off-ramp to 20th St E on-ramp	2,400	2,273	95%	41.0	1.2	63	9.0	A	2,998	3,810	3,266	86%	41.8	1.9	62	13.2	B	3,079
20th St E on-ramp to SR 14 SB off-ramp	3,115	2,960	95%	95.5	3.9	62	11.8	B	3,093	4,560	3,991	88%	99.3	7.8	59	16.5	B	3,179
SR 14 SB off-ramp to SR 138 WB west end of the network	1,835	1,799	98%	12.6	0.5	54	16.6	B	3,106	3,055	2,692	88%	12.9	0.7	53	25.5	C	3,192

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-34. Year 2020 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NORTHBOUND MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off-ramp	2,725	2,720	100%	147.7	6.5	62	14.6	B	148	5,315	5,315	100%	163.2	21.6	57	31.4	D	163
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	2,290	2,285	100%	22.0	1.0	62	12.4	B	170	4,770	4,768	100%	24.0	2.9	57	27.9	D	187
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	2,615	2,605	100%	11.2	0.7	61	14.4	B	181	5,130	5,078	99%	12.1	1.6	56	30.1	D	199
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	2,935	2,934	100%	21.9	1.2	61	12.0	B	203	5,430	5,398	99%	23.7	3.0	57	23.8	C	223
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	2,450	2,442	100%	23.8	1.1	62	13.1	B	227	4,855	4,832	100%	25.5	2.8	58	27.8	D	249
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	2,805	2,788	99%	16.7	0.8	61	11.4	B	243	5,355	5,328	99%	17.8	2.0	57	23.2	C	266
Mojave Dr off-ramp to Mojave Dr on-ramp	2,325	2,315	100%	20.6	0.8	63	12.5	B	264	4,760	4,753	100%	21.9	2.1	59	27.0	D	288
Mojave Dr on-ramp to D St off-ramp	2,710	2,710	100%	49.7	2.5	62	12.8	B	314	5,130	5,111	100%	52.4	5.2	58	25.7	C	341
D St off-ramp to E St off-ramp	1,825	1,820	100%	9.7	0.3	63	9.8	A	323	4,205	4,200	100%	10.1	0.7	61	23.3	C	351
E St off-ramp to D St on-ramp	1,790	1,785	100%	28.1	0.9	63	9.6	A	351	4,165	4,156	100%	29.3	2.1	60	22.9	C	380
D St on-ramp to E St on-ramp	2,050	2,040	100%	11.0	0.5	62	11.0	B	362	4,445	4,426	100%	11.6	1.2	59	25.2	C	392
E St on-ramp to Stoddard Wells Rd off-ramp	2,085	2,080	100%	29.9	1.4	62	11.3	B	392	4,485	4,488	100%	31.7	3.2	58	25.7	C	423
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	1,710	1,705	100%	20.1	0.6	63	9.1	A	412	4,035	4,041	100%	21.0	1.5	60	22.4	C	444
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	1,925	1,920	100%	38.5	1.4	62	7.8	A	451	4,465	4,449	100%	40.2	3.2	59	18.7	C	485
HDC EB/WB off-ramp to HDC WB on-ramp	1,450	1,450	100%	70.7	2.1	63	7.8	A	522	3,605	3,601	100%	73.3	4.7	61	19.7	C	558
HDC WB on-ramp to HDC EB on-ramp	1,575	1,570	100%	7.6	0.3	63	6.6	A	529	3,745	3,734	100%	7.9	0.6	60	16.1	B	566
HDC EB on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,115	2,072	98%	36.1	1.3	62	8.3	A	565	4,910	4,696	96%	38.8	4.1	58	20.4	C	605
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	1,920	1,884	98%	22.7	0.7	63	10.0	A	588	4,720	4,465	95%	23.9	1.9	60	24.9	C	628
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	2,030	1,972	97%	214.3	8.5	62	10.6	A	802	4,855	4,553	94%	226.0	20.3	59	25.7	C	854
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	1,775	1,698	96%	31.6	1.3	62	9.1	A	834	4,585	4,237	92%	33.2	2.8	59	23.8	C	888
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,075	1,992	96%	63.3	2.5	62	10.7	A	897	4,890	4,508	92%	67.3	6.4	58	25.8	C	955
I-15 SOUTHBOUND MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	3,540	3,540	100%	58.3	3.1	62	19.2	C	58	3,040	3,040	100%	57.9	2.7	62	16.4	B	58
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	3,315	3,315	100%	36.6	2.3	61	18.1	C	95	2,670	2,665	100%	36.1	1.7	62	14.4	B	94
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	3,555	3,550	100%	215.9	16.6	60	19.8	C	311	3,060	3,060	100%	213.3	13.5	61	16.8	B	307
Quarry Rd off-ramp to Quarry Rd on-ramp	3,445	3,440	100%	25.1	2.0	60	19.2	C	336	2,930	2,926	100%	24.7	1.6	61	16.0	B	332
Quarry Rd on-ramp to HDC EB/WB off-ramp	3,570	3,565	100%	52.3	4.0	60	14.9	B	388	3,155	3,150	100%	52.0	3.7	60	13.6	B	384
HDC EB/WB off-ramp to HDC EB/WB on-ramp	2,755	2,750	100%	82.9	5.2	61	15.2	B	471	2,120	2,110	100%	81.5	3.7	62	11.9	B	466
HDC EB/WB on-ramp to Stoddard Wells Rd off-ramp	3,480	3,470	100%	35.0	2.8	59	15.7	B	506	2,800	2,800	100%	34.4	2.1	61	12.9	B	500
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	2,935	2,920	99%	33.5	2.0	61	15.9	B	539	2,480	2,480	100%	33.0	1.6	62	13.8	B	533
Stoddard Wells Rd direct on-ramp to D St off-ramp	3,400	3,367	99%	37.9	3.5	59	18.9	C	577	2,885	2,885	100%	37.1	2.7	60	16.3	B	570
D St off-ramp to D St on-ramp	3,155	3,119	99%	21.7	1.3	61	17.0	B	599	2,665	2,665	100%	21.4	1.0	62	14.6	B	591
D St on-ramp to Mojave Dr off-ramp	3,800	3,766	99%	52.1	3.8	60	15.3	B	651	3,640	3,640	100%	51.8	3.4	61	14.8	B	643
Mojave Dr off-ramp to Mojave Dr on-ramp	3,580	3,543	99%	20.5	1.5	60	19.6	C	672	3,275	3,275	100%	20.2	1.2	61	18.1	C	663
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	4,200	4,173	99%	15.2	1.5	58	17.9	B	687	3,855	3,850	100%	14.9	1.2	60	16.2	B	678
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,815	3,805	100%	27.1	2.0	60	21.1	C	714	3,460	3,460	100%	26.7	1.5	61	19.0	C	705
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	4,185	4,169	100%	23.3	1.6	60	17.3	B	737	3,995	3,990	100%	23.4	1.7	60	16.7	B	728
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	3,695	3,661	99%	12.8	0.8	61	20.1	C	750	3,275	3,275	100%	12.6	0.7	61	17.9	B	741
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,855	3,795	98%	8.5	0.6	60	21.1	C	759	3,455	3,434	99%	8.4	0.5	61	18.9	C	749
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,100	4,019	98%	169.2	13.2	60	22.4	C	928	3,755	3,691	98%	167.2	11.2	60	20.4	C	917

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-35. Year 2020 Build Alternative with Tolls and Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Ave. S	Merging	58	11.0	B	59	18.3	B
West Palmdale Blvd loop	Merging	60	10.0	B	60	14.7	B
SR 138 WB	Merging	61	12	B	60	18	B
10th St. W. loop	Merging	59	17.1	B	54	25.1	C
10th St. W. direct	Merging	61	16.5	B	59	23.1	C
West Ave. N loop	Merging	61	15.4	B	57	22.1	C
West Ave. N direct	Merging	61	12.4	B	61	16.8	B
East Ave. S	Diverging	63	11.4	B	55	30.0	D
West Palmdale Blvd	Diverging	60	11.1	B	59	16.9	B
SR 138 EB	Diverging	61	11.8	B	60	18.1	B
10th St. W.	Diverging	60	10.3	B	59	14.9	B
West Ave. N	Diverging	57	17.8	B	40	35.8	E
SOUTHBOUND							
West Ave. N loop	Merging	61	16.8	B	61	16.4	B
West Ave. N direct	Merging	62	13.2	B	62	12.5	B
10th St. W.	Merging	61	12.6	B	62	13.1	B
SR 138 WB	Merging	60	11.0	B	60	11.0	B
West Palmdale Blvd loop	Merging	59	16.9	B	61	14.8	B
West Palmdale Blvd direct	Merging	59	19.2	B	60	16.5	B
East Ave. S	Merging	54	23.0	C	59	14.7	B
West Ave. N	Diverging	59	28.5	D	59	28.3	D
10th St. W.	Diverging	56	23.9	C	58	21.3	C
SR 138 EB	Diverging	57	20.7	C	59	22.3	C
West Palmdale Blvd	Diverging	61	14.3	B	61	14.1	B
East Ave. S	Diverging	58	21.1	C	58	19.2	B

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area
Level of service E
Level of service F

Table 4-35. Year 2020 Build Alternative with Tolls and Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	59	16	B	59	17	B
20th St E	Merging	60	16	B	58	19	B
30th St E	Merging	62	11	B	62	14	B
50th St E	Merging	60	15	B	59	16	B
90th St E	Merging	61	12	B	61	13	B
140th St E	Merging	61	11	B	62	9	A
170th St E	Merging	61	10	B	62	9	A
210th St E	Merging	61	10	A	62	8	A
240th St E	Merging	60	11	B	61	9	A
Oasis Rd	Merging	61	10	B	62	9	A
Sheep Creek Rd loop	Merging	62	9	A	62	8	A
Sheep Creek Rd direct	Merging	62	8	A	61	8	A
Caughlin Rd loop	Merging	62	8	A	62	8	A
Caughlin Rd direct	Merging	62	7	A	62	7	A
Koala Rd loop	Merging	61	8	A	61	8	A
Koala Rd direct	Merging	62	9	A	62	8	A
Route 395 loop	Merging	58	14	B	59	12	B
Route 395 direct	Merging	60	14	B	61	12	B
Phantom St West loop	Merging	62	9	A	61	10	A
Phantom St West direct	Merging	61	10	B	61	11	B
Phantom St East loop	Merging	62	10	B	60	14	B
Phantom St East direct	Merging	62	11	B	61	15	B
Choco Rd	Merging	64	5	A	63	5	A
Dale Evans Pkwy direct	Merging	63	4	A	63	5	A
20th St E	Diverging	61	17	B	59	20	C
30th St E	Diverging	60	16	B	58	19	B
50th St E	Diverging	61	14	B	61	16	B
90th St E	Diverging	60	18	B	60	19	B
140th St E	Diverging	59	15	B	59	16	B
170th St E	Diverging	61	13	B	61	12	B
210th St E	Diverging	61	12	B	62	10	B
240th St E	Diverging	60	12	B	62	10	B
Oasis Rd	Diverging	61	12	B	62	11	B
Sheep Creek Rd	Diverging	59	13	B	61	11	B
Caughlin Rd	Diverging	61	10	B	61	10	A
Koala Rd	Diverging	62	8	A	62	8	A
Route 395	Diverging	61	10	B	62	9	A
Phantom St West	Diverging	58	18	B	60	15	B
Phantom St East	Diverging	60	13	B	61	14	B
National Trails Hwy	Diverging	61	12	B	61	15	B
Dale Evans Pkwy	Diverging	63	5	A	63	6	A
National Trails Hwy to I-15 NB/SB	Weaving	63	7	A	62	10	A
I-15 NB/SB to Choco Rd	Weaving	63	4	A	63	5	A

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-35. Year 2020 Build Alternative with Tolls and Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy direct	Merging	63	5	A	61	9	A
I-15 NB	Merging	61	5	A	61	8	A
National Trails Hwy	Merging	61	9	A	60	14	B
Phantom St East loop	Merging	61	9	A	59	17	B
Phantom St East direct	Merging	62	9	A	60	17	B
Phantom St West	Merging	62	6	A	61	15	B
Route 395	Merging	62	3	A	61	10	B
Koala Rd loop	Merging	63	3	A	62	9	A
Koala Rd direct	Merging	63	2	A	62	8	A
Caughlin Rd loop	Merging	63	3	A	61	9	A
Caughlin Rd direct	Merging	62	3	A	60	10	A
Sheep Creek Rd loop	Merging	63	3	A	61	10	A
Sheep Creek Rd direct	Merging	63	3	A	60	11	B
Oasis Rd loop	Merging	63	4	A	61	11	B
Oasis Rd direct	Merging	63	3	A	60	10	B
240th St E	Merging	62	3	A	61	9	A
210th St E	Merging	63	4	A	61	11	B
170th St E	Merging	63	4	A	61	9	A
140th St E	Merging	61	7	A	57	14	B
90th St E	Merging	60	9	A	57	15	B
50th St E	Merging	60	10	A	61	13	B
30th St E	Merging	60	10	A	59	13	B
20th St E	Merging	60	12	B	57	15	B
Dale Evans Pkwy	Diverging	63	5	A	62	10	A
Choco Rd	Diverging	63	6	A	62	11	B
Phantom St East	Diverging	61	11	B	61	17	B
Phantom St West	Diverging	62	9	A	61	17	B
Route 395	Diverging	60	10	A	53	23	C
Koala Rd	Diverging	62	4	A	60	14	B
Caughlin Rd	Diverging	63	3	A	62	10	A
Sheep Creek Rd	Diverging	63	4	A	61	11	B
Oasis Rd	Diverging	63	4	A	61	12	B
240th St E	Diverging	62	4	A	60	13	B
210th St E	Diverging	63	4	A	60	11	B
170th St E	Diverging	63	5	A	60	13	B
140th St E	Diverging	63	5	A	61	11	B
90th St E	Diverging	62	7	A	61	14	B
50th St E	Diverging	61	10	A	59	17	B
30th St E	Diverging	61	10	B	61	13	B
20th St E	Diverging	60	10	A	59	13	B
SR 14 SB	Diverging	62	15	B	58	23	C
Choco to I-15 NB/SB	Weaving	63	3	A	63	5	A
I-15 SB to National Trails Hwy	Weaving	63	7	A	62	11	B

Source: Parsons

Level of service based on HCM 2000

Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-35. Year 2020 Build Alternative with Tolls and Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	60	16	B	55	31	D
Mojave Dr	Merging	60	17	B	55	31	D
D St	Merging	61	12	B	58	26	C
E St	Merging	61	13	B	57	27	C
HDC WB	Merging	62	6	A	60	14	B
Stoddard Wells Rd (Quarry Rd)	Merging	62	11	B	59	26	C
Dale Evans Pkwy	Merging	62	11	B	57	26	C
Palmdale Rd	Diverging	60	17	B	49	36	**E**
D St	Diverging	61	12	B	60	20	C
E St	Diverging	63	11	B	60	23	C
Stoddard Wells Rd	Diverging	61	13	B	58	26	C
Dale Evans Pkwy	Diverging	61	11	B	57	26	C
Palmdale Rd direct to Roy Rogers Dr	Weaving	61	13	B	56	22	C
Roy Rogers Dr to Mojave Dr	Weaving	61	12	B	56	22	C
Stoddard Wells Rd to HDC EB/WB	Weaving	62	8	A	59	18	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	62	8	A	57	19	B
SOUTHBOUND							
Dale Evans Pkwy	Merging	60	21	C	60	18	B
HDC EB/WB	Merging	59	14	B	60	12	B
Stoddard Wells Rd direct	Merging	57	20	C	58	18	B
Palmdale Rd loop	Merging	60	21	C	60	19	B
Palmdale Rd direct	Merging	59	23	C	59	21	C
Dale Evans Pkwy	Diverging	61	20	C	61	18	B
Quarry Rd	Diverging	59	20	C	60	18	B
Stoddard Wells Rd	Diverging	60	14	B	61	12	B
D St	Diverging	60	19	B	60	17	B
Quarry Rd to HDC EB/WB	Weaving	60	14	B	60	14	B
D St to Mojave Dr	Weaving	60	14	B	60	15	B
Mojave Dr to Roy Rogers Dr	Weaving	58	17	B	59	16	B
Roy Rogers Dr to Palmdale Rd	Weaving	60	16	B	59	17	B

Source: Parsons
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F

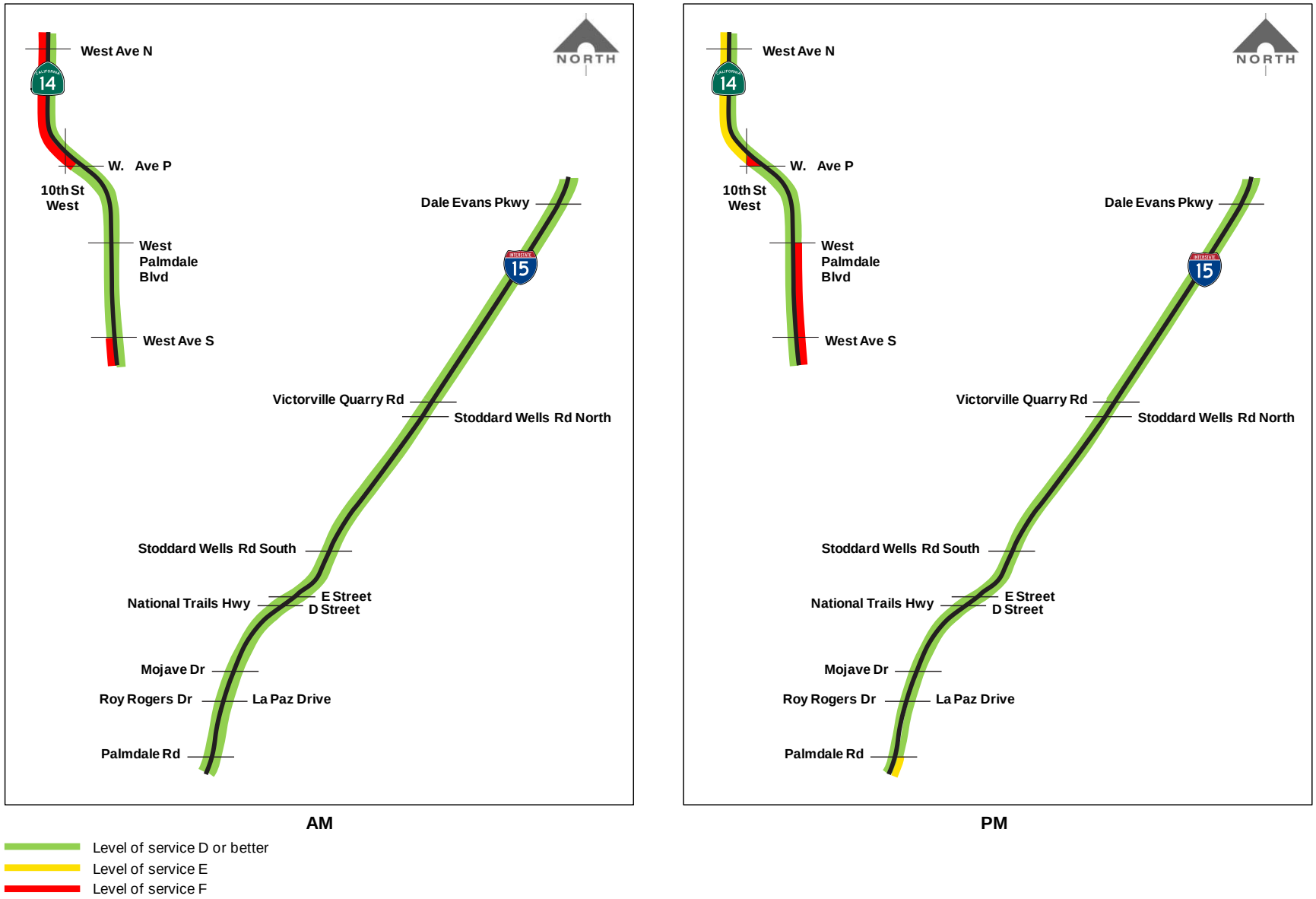


Figure 4-30: Year 2040 No-build Alternative with Revised Palmdale Access Freeway Mainline Level of Service

Table 4-36. Year 2040 No-build Alternative with Revised Palmdale Access Freeway Mainline Analysis Results *(1 of 2)*

AM Peak Hour

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
SR 14 NB south end of the network to East Avenue S off-ramp	2,575	2,575	100%	169.3	15.5	59	10.9	A	169	2,575	2,575	100%	169.3	15.5	59	10.9	A	169	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	2,330	2,330	100%	27.4	1.7	61	9.8	A	197	2,330	2,330	100%	27.4	1.7	61	9.8	A	197	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to West Palmdale Blvd off-ramp	3,365	3,365	100%	58.5	4.0	60	14.1	B	255	3,365	3,365	100%	58.5	4.0	60	14.1	B	255	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to West Palmdale Blvd loop on-ramp	2,830	2,791	99%	21.4	0.7	63	11.1	B	277	2,830	2,791	99%	21.4	0.7	63	11.1	B	277	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,105	3,015	97%	16.6	0.8	62	12.2	B	293	3,105	3,015	97%	16.6	0.8	62	12.2	B	293	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to West Avenue P off-ramp	4,360	4,212	97%	57.2	5.3	59	18.0	B	350	4,360	4,212	97%	57.2	5.3	59	18.0	B	350	—	—	—	—	—	—	—	—	—
West Avenue P off-ramp to 10th St W. on-ramp	3,675	3,542	96%	50.0	2.4	62	14.4	B	400	3,675	3,542	96%	50.0	2.4	62	14.4	B	400	—	—	—	—	—	—	—	—	—
10th St W. on-ramp to West Avenue N off-ramp	4,710	4,554	97%	83.9	5.8	60	18.9	C	484	4,710	4,554	97%	83.9	5.8	60	18.9	C	484	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,435	4,342	98%	18.1	1.0	61	17.7	B	502	4,435	4,342	98%	18.1	1.0	61	17.7	B	502	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Ave. N direct on-ramp	4,765	4,625	97%	10.0	1.0	58	19.9	C	512	4,765	4,625	97%	10.0	1.0	58	19.9	C	512	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to SR 14 north end of the network	4,950	4,837	98%	31.7	2.2	60	20.1	C	544	4,950	4,837	98%	31.7	2.2	60	20.1	C	544	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
SR 14 SB north end of the network to West Avenue N off-ramp	5,890	4,888	83%	170.7	135.2	13	93.5	F	171	4,525	3,558	79%	217.7	182.0	10	115.7	F	218	1,365	1,329	97%	45.1	10.3	51	26.9	D	45
West Avenue N off-ramp to West Avenue N loop on-ramp	5,560	4,529	81%	103.1	85.2	11	103.6	F	274	4,281	3,207	75%	136.5	118.5	8	129.5	F	354	1,279	1,321	103%	21.9	4.4	51	25.7	C	67
West Avenue N loop on-ramp to West Avenue N direct on-ramp	5,630	4,521	80%	63.2	52.5	11	105.7	F	337	4,335	3,199	74%	84.6	73.8	8	133.4	F	439	1,295	1,322	102%	11.6	1.1	58	22.6	C	79
West Avenue N direct on-ramp to 10th St W. off-ramp	5,950	4,675	79%	504.5	422.5	13	109.1	F	842	4,565	3,419	75%	611.3	529.0	11	126.4	F	1,050	1,385	1,256	91%	224.5	143.3	31	57.1	F	303
10th St W. off-ramp to West Rancho Vista Blvd on-ramp	5,210	4,016	77%	52.6	2.8	61	16.4	B	894	4,038	2,859	71%	52.5	2.6	61	15.6	B	1,103	1,172	1,157	99%	53.0	3.1	61	19.1	C	356
West Rancho Vista Blvd on-ramp to West Palmdale Blvd off-ramp	6,445	5,211	81%	57.3	5.4	58	22.4	C	951	5,020	4,127	82%	57.7	5.8	58	23.9	C	1,160	1,425	1,084	76%	55.8	3.8	60	18.0	C	412
West Palmdale Blvd off-ramp to West Palmdale Blvd loop on-ramp	5,170	4,233	82%	17.1	1.0	61	17.4	B	968	3,981	3,180	80%	16.9	0.9	61	17.3	B	1,177	1,189	1,052	88%	17.4	1.3	60	17.7	B	429
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	6,070	5,116	84%	14.4	1.6	57	22.3	C	983	4,674	4,064	87%	14.5	1.8	57	23.8	C	1,192	1,396	1,052	75%	14.0	1.1	59	17.8	B	443
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	6,850	5,913	86%	73.2	10.4	55	26.7	D	1,056	5,105	4,797	94%	74.2	11.4	55	29.3	D	1,266	1,745	1,115	64%	69.0	6.2	59	19.0	C	512
East Avenue S off-ramp to East Avenue S on-ramp	5,910	5,092	86%	23.4	2.9	57	22.4	C	1,079	4,551	3,961	87%	23.6	3.1	56	23.4	C	1,289	1,359	1,131	83%	22.7	2.1	59	19.3	C	535
East Avenue S on-ramp to SR 14 SB south end of the network	7,705	6,703	87%	301.3	113.3	43	40.2	E	1,381	5,755	5,359	93%	323.2	135.3	41	45.6	F	1,613	1,950	1,344	69%	216.7	28.5	56	23.9	C	752

PM Peak Hour

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	8,200	5,906	72%	612.9	457.5	18	85.7	F	613	6,400	5,906	92%	793.0	637.1	15	104.1	F	793	1,800	1,643	91%	180.6	26.2	55	30.4	D	181
East Avenue S off-ramp to East Avenue S on-ramp	6,205	4,335	70%	89.7	63.1	19	58.1	F	703	4,840	4,336	90%	118.7	91.6	14	69.7	F	912	1,365	1,386	102%	28.2	2.3	59	23.3	C	209
East Avenue S on-ramp to West Palmdale Blvd off-ramp	7,030	4,737	67%	233.9	178.3	17	75.4	F	937	5,335	4,737	89%	294.6	238.8	14	93.4	F	1,206	1,695	1,182	70%	64.3	9.7	56	21.4	C	273
West Palmdale Blvd off-ramp to HDC off-ramp	5,165	3,430	66%	21.9	1.1	61	14.0	B	958	4,029	3,430	85%	21.8	1.0	62	12.9	B	1,228	1,136	1,052	93%	22.1	1.4	61	17.4	B	295
HDC off-ramp to West Palmdale Blvd loop on-ramp	5,425	3,616	67%	16.8	1.0	61	14.8	B	975	4,232	3,616	85%	16.6	0.8	62	13.9	B	1,245	1,194	1,053	88%	17.1	1.3	60	17.6	B	312
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	6,710	4,857	72%	77.3	25.0	54	27.9	D	1,052	5,145	4,857	94%	82.4	30.1	41	31.7	D	1,327	1,565	975	62%	56.6	4.6	60	16.4	B	369
West Palmdale Blvd direct on-ramp to 10th St West off-ramp	5,070	3,735	74%	50.3	2.7	61	15.2	B	1,103	3,517	3,735	106%	49.8	2.2	62	15.1	B	1,377	1,553	925	60%	51.8	4.1	60	15.5	B	421
10th St West off-ramp to HDC on-ramp	5,920	4,538	77%	84.2	6.0	60	18.9	C	1,187	4,380	4,538	104%	83.8	5.5	60	19.7	C	1,461	1,540	969	63%	85.7	7.4	59	16.4	B	506
HDC on-ramp to 10th St West on-ramp	5,480	4,194	77%	18.2	1.1	61	17.2	B	1,205	4,055	4,194	103%	18.0	0.9	61	17.4	B	1,479	1,425	979	69%	18.8	1.8	59	16.7	B	525
10th St W loop on-ramp to 10th St W direct on-ramp	5,815	4,432	76%	9.8	0.9	59	18.8	C	1,215	4,303	4,432	103%	9.8	0.9	59	19.4	C	1,488	1,512	979	65%	9.9	1.0	59	16.7	B	535
10th St W direct on-ramp to West Avenue N off-ramp	6,090	4,728	78%	32.1	2.5	60	19.8	C	1,247	4,525	4,728	104%	31.7	2.2	60	20.3	C	1,520	1,565	1,048	67%	33.3	3.8	58	18.2	C	568
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	5,800	3,934	68%	48.9	14.1	46	21.7	C	49	5,800	3,934	68%	48.9	14.1	46	21.7	C	49	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	5,300	3,639	69%	29.6	12.2	38	24.0	C	79	5,300	3,639	69%	29.6	12.2	38	24.0	C	79	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	5,445	3,665	67%	20.3	9.8	33	27.5	D	99	5,445	3,665	67%	20.3	9.8	33	27.5	D	99	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St W off-ramp	5,810	3,691	64%	216.9	133.0	24	38.4	E	316	5,810	3,691	64%	216.9	133.0	24	38.4	E	316	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	4,270	2,662	62%	74.9	25.1	43	15.5	B	391	4,270	2,662	62%	74.9	25.1	43	15.5	B	391	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St W on-ramp	5,380	3,557	66%	195.7	142.1	19	50.4	F	586	5,380	3,557	66%	195.7	142.1	19	50.4	F	586	—	—	—	—	—	—	—	—	—
10th St W on-ramp to Palmdale Blvd off-ramp	3,640	2,511	69%	16.9	0.9	61	10.2	A	603	3,640	2,511	69%	16.9	0.9	61	10.2	A	603	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	3,960	2,802	71%	13.5	0.8	61	11.5	B	617	3,960	2,802	71%	13.5	0.8	61	11.5	B	617	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	4,205	3,035	72%	66.5	3.8	61	12.4	B	683	4,205	3,035	72%	66.5	3.8	61	12.4	B	683	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	3,010	2,456	82%	21.4	0.8	62	9.9	A	705	3,010	2,456	82%	21.4	0.8	62	9.9	A	705	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	3,960	3,203	81%	207.3	19.5	59	13.5	B	912	3,960	3,203	81%	207.3	19.5	59	13.5	B	912	—	—	—	—	—	—	—	—	—

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-36. Year 2040 No-build Alternative with Revised Palmdale Access Freeway Mainline Analysis Results *(2 of 2)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off-ramp	3,545	3,545	100%	150.5	9.0	61	19.3	C	151	6,055	5,604	93%	196.1	54.7	46	41.5	**E**	196
Palmdale Rd off-ramp to Palmdale Rd loop on-ramp	3,080	3,078	100%	22.5	1.4	61	16.8	B	173	5,425	5,019	93%	25.0	4.0	55	30.6	D	221
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,450	3,425	99%	11.5	1.0	59	19.2	C	184	5,865	5,441	93%	12.7	2.2	54	33.8	D	234
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	3,910	3,899	100%	22.4	1.7	60	16.3	B	207	6,405	5,994	94%	25.0	4.4	54	27.9	D	259
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,340	3,329	100%	24.4	1.6	61	18.3	C	231	5,790	5,450	94%	27.0	4.2	55	33.1	D	286
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	3,750	3,726	99%	16.9	1.1	60	15.4	B	248	6,385	6,068	95%	18.8	3.0	54	27.9	D	305
Mojave Dr off-ramp to Mojave Dr on-ramp	3,185	3,176	100%	21.0	1.1	61	17.3	B	269	5,615	5,380	96%	23.4	3.7	55	32.7	D	328
Mojave Dr on-ramp to D St off-ramp	3,655	3,612	99%	51.1	3.8	60	17.6	B	320	6,035	5,758	95%	58.6	11.4	52	33.0	D	387
D St Off Ramp to E St off-ramp	2,500	2,482	99%	9.9	0.4	62	13.3	B	330	4,970	4,757	96%	10.3	0.9	60	26.7	D	397
E St off-ramp to D St on-ramp	2,455	2,427	99%	28.5	1.2	62	13.0	B	359	4,910	4,685	95%	29.7	2.4	60	26.1	D	427
D St On Ramp to E St On Ramp	2,765	2,704	98%	11.2	0.6	61	14.8	B	370	5,305	5,029	95%	12.0	1.5	57	29.5	D	439
E St on-ramp to Stoddard Wells Rd off-ramp	2,820	2,776	98%	30.4	1.8	61	15.2	B	400	5,345	5,099	95%	32.4	4.0	57	29.9	D	471
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	2,365	2,298	97%	20.4	0.8	62	12.3	B	421	4,830	4,616	96%	21.3	1.8	60	25.9	C	492
Stoddard Wells Rd on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,685	2,606	97%	156.3	8.2	61	14.1	B	577	5,630	5,382	96%	168.5	20.7	57	31.6	D	661
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	2,325	2,226	96%	22.7	1.1	62	12.0	B	600	5,410	5,148	95%	23.8	2.2	59	29.2	D	685
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	2,485	2,364	95%	217.8	11.7	61	12.9	B	817	5,685	5,375	95%	231.7	26.1	57	31.2	D	916
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	2,070	1,938	94%	31.9	1.5	62	10.4	A	849	5,280	4,904	93%	33.6	3.2	59	27.8	D	950
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,535	2,376	94%	64.0	3.1	61	12.9	B	913	5,730	5,301	93%	69.7	8.8	56	31.4	D	1,020
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	4,550	4,550	100%	60.3	5.1	59	25.6	C	60	3,510	3,509	100%	58.5	3.4	61	19.1	C	59
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	4,120	4,120	100%	37.4	3.1	60	23.0	C	98	3,025	3,016	100%	36.3	2.1	62	16.3	B	95
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	4,510	4,510	100%	220.2	20.7	59	25.6	C	318	3,460	3,460	100%	215.2	15.8	60	19.2	C	310
Quarry Rd off-ramp to Quarry Rd on-ramp	4,285	4,281	100%	25.4	2.3	59	24.1	C	343	3,210	3,196	100%	24.8	1.7	61	17.6	B	335
Quarry Rd on-ramp to Stoddard Wells Rd off-ramp	4,490	4,490	100%	177.3	19.4	58	25.8	C	521	3,630	3,609	99%	172.8	14.7	60	20.2	C	508
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,710	3,710	100%	34.3	2.8	60	20.8	C	555	2,955	2,955	100%	33.6	2.2	61	16.2	B	541
Stoddard Wells Rd direct on-ramp to D St off-ramp	4,280	4,270	100%	39.0	4.7	57	24.8	C	594	3,500	3,499	100%	38.0	3.7	59	19.8	C	579
D St off-ramp to D St on-ramp	3,920	3,920	100%	22.1	1.8	60	21.9	C	616	3,200	3,190	100%	21.7	1.4	61	17.4	B	601
D St on-ramp to Mojave Dr off-ramp	4,810	4,810	100%	53.9	5.6	58	20.3	C	670	4,310	4,310	100%	52.9	4.6	59	17.9	B	654
Mojave Dr off-ramp to Mojave Dr on-ramp	4,455	4,455	100%	21.0	2.0	59	25.3	C	691	3,840	3,829	100%	20.6	1.7	60	21.3	C	674
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	5,210	5,210	100%	15.9	2.2	56	23.4	C	707	4,535	4,511	99%	15.2	1.5	58	19.4	C	690
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,825	4,823	100%	28.3	3.2	58	27.9	D	735	4,070	4,036	99%	27.2	2.1	60	22.4	C	717
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	5,275	5,264	100%	23.8	2.1	59	22.3	C	759	4,695	4,646	99%	23.7	2.0	59	19.6	C	741
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,435	4,435	100%	13.0	1.0	60	24.7	C	772	3,735	3,696	99%	12.7	0.8	61	20.2	C	753
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,640	4,609	99%	8.7	0.8	59	26.1	D	781	3,955	3,861	98%	8.5	0.7	60	21.5	C	762
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,980	4,907	99%	172.5	16.6	59	27.9	D	953	4,320	4,204	97%	169.5	13.4	60	23.5	C	931

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-37. Year 2040 No-build Alternative with Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	54	20.9	C	11	100.5	**E**
West Palmdale Blvd loop	Merging	60	17.0	B	61	13.5	B
West Palmdale Blvd direct	Merging	51	31.4	D	44	26.7	C
10th St W.	Merging	52	29	D	58	19	B
West Avenue N loop	Merging	56	26.5	C	58	18.9	B
West Avenue N direct	Merging	58	26.8	C	59	20.0	C
East Avenue S	Diverging	62	13.8	B	25	60.4	**E**
West Palmdale Blvd	Diverging	59	20.8	C	20	58.5	**E**
West Rancho Vista Blvd	Diverging	55	26.5	C	40	31.7	D
West Ave. N	Diverging	59	25.3	C	60	19.6	B
SOUTHBOUND							
West Avenue N loop	Merging	11	98.7	**E**	19	32.1	D
West Avenue N direct	Merging	11	104.9	**E**	16	38.9	**E**
West Rancho Vista Blvd	Merging	57	22.7	C	9	72.8	**E**
West Palmdale Blvd loop	Merging	57	22.3	C	61	9.1	A
West Palmdale Blvd direct	Merging	54	26.9	C	61	11.0	B
East Avenue S	Merging	38	42.2	**E**	57	15.2	B
West Avenue N	Diverging	12	93.8	**E**	39	18.7	B
10th St W.	Diverging	23	49.0	**E**	11	59.0	**E**
West Palmdale Blvd	Diverging	57	24.3	C	16	57.7	**E**
East Avenue S	Diverging	52	28.3	D	58	13.9	B

Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	59	21	C	51	35	D
Mojave Dr	Merging	58	22	C	42	44	**E**
D St	Merging	61	15	B	56	30	D
E St	Merging	60	17	B	55	31	D
Stoddard Wells Rd S	Merging	61	14	B	49	35	**E**
Stoddard Wells Rd (Quarry Rd)	Merging	61	12	B	56	31	D
Dale Evans Pkwy	Merging	61	13	B	54	32	D
Palmdale Rd	Diverging	59	22	C	43	41	**E**
D St	Diverging	59	16	B	58	23	C
E St	Diverging	62	14	B	59	26	C
Stoddard Wells Rd S	Diverging	60	17	B	57	30	D
Stoddard Wells Rd N	Diverging	60	15	B	57	31	D
Dale Evans Pkwy	Diverging	60	13	B	55	32	D
Palmdale Rd direct to Roy Rogers Dr	Weaving	59	17	B	52	26	C
Roy Rogers Dr to Mojave Dr	Weaving	60	16	B	53	27	C
SOUTHBOUND							
Dale Evans Pkwy	Merging	56	26	C	59	21	C
Quarry Rd	Merging	58	25	C	58	21	C
Stoddard Wells Rd direct	Merging	55	25	C	57	21	C
Palmdale Rd loop	Merging	59	25	C	59	22	C
Palmdale Rd direct	Merging	56	29	D	57	25	C
Dale Evans Pkwy	Diverging	57	27	C	60	21	C
Quarry Rd	Diverging	58	26	C	59	20	C
Stoddard Wells Rd S	Diverging	52	29	D	56	23	C
D St	Diverging	58	24	C	59	20	C
D St to Mojave Dr	Weaving	58	19	B	59	18	B
Mojave Dr to Roy Rogers Dr	Weaving	55	22	C	57	19	B
Roy Rogers Dr to Palmdale Rd	Weaving	59	21	C	58	20	B

Source: Parsons

Level of service based on HCM 2000; merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

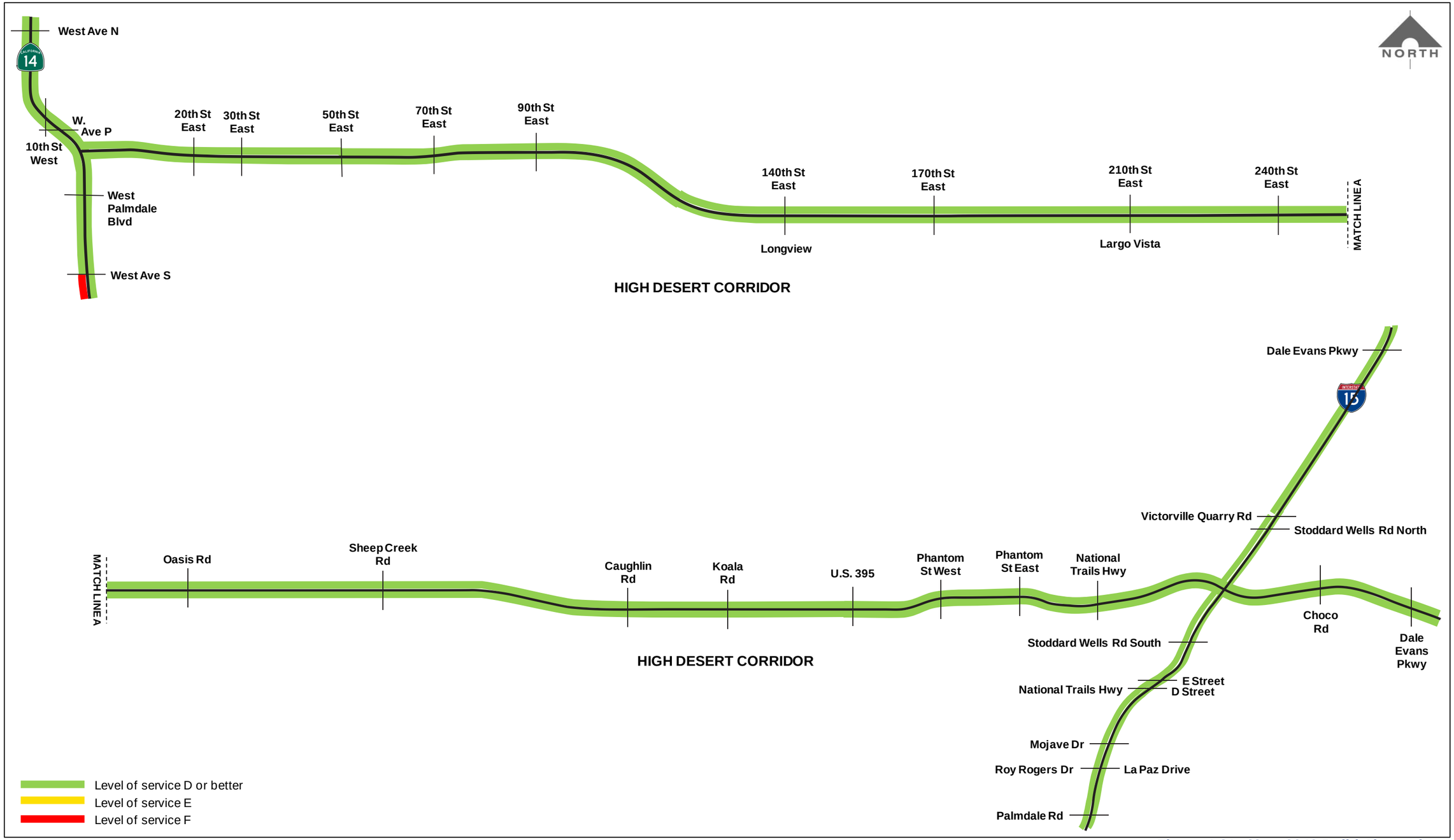
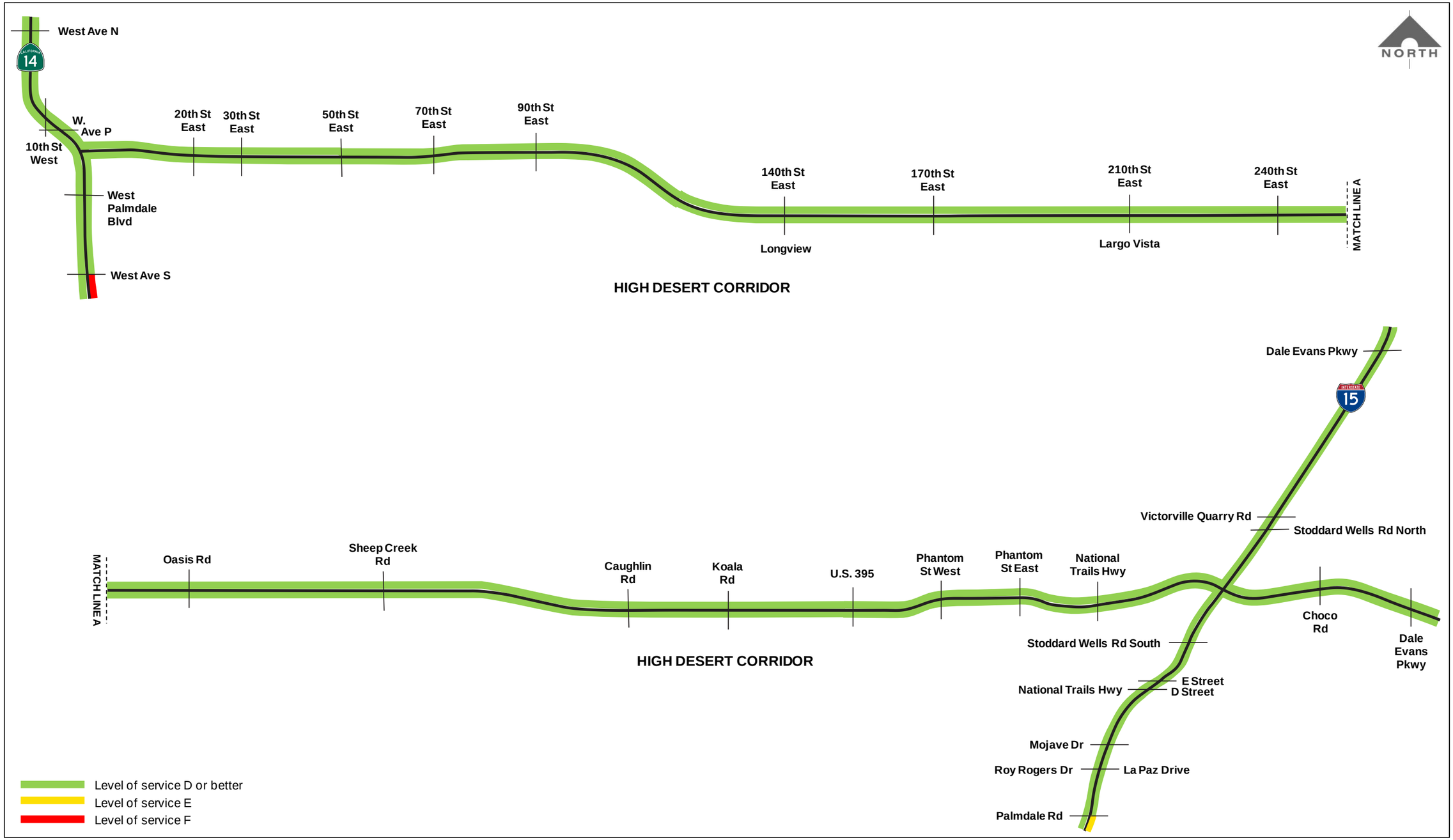


Figure 4-31: Year 2040 Build Alternative with Revised Palmdale Access Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 4-31: Year 2040 Build Alternative with Revised Palmdale Access Freeway Mainline Level of Service *(2 of 2)*

Table 4-38. Year 2040 Build Alternative with Revised Palmdale Access Freeway Mainline Analysis Results *(1 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK—MIXED-FLOW LANES									AM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	2,825	2,823	100%	184.2	31.0	56	13.9	B	184	2,825	2,823	100%	184.2	31.0	56	13.9	B	184	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	2,625	2,625	100%	28.0	2.4	60	11.2	B	212	2,625	2,625	100%	28.0	2.4	60	11.2	B	212	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to West Palmdale Blvd off-ramp	3,340	3,340	100%	58.2	4.0	61	11.1	B	270	3,340	3,340	100%	58.2	4.0	61	11.1	B	270	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,895	2,890	100%	16.8	0.8	61	11.8	B	287	2,895	2,890	100%	16.8	0.8	61	11.8	B	287	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,510	1,510	100%	5.0	0.2	63	8.0	A	292	1,510	1,510	100%	5.0	0.2	63	8.0	A	292	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to 10th St West off-ramp	2,365	2,360	100%	49.7	2.4	62	9.6	A	342	2,365	2,360	100%	49.7	2.4	62	9.6	A	342	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	1,950	1,940	99%	23.0	1.3	61	10.5	A	365	1,950	1,940	99%	23.0	1.3	61	10.5	A	365	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	3,845	3,634	95%	48.0	2.5	61	11.8	B	413	3,845	3,634	95%	48.0	2.5	61	11.8	B	413	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	4,567	4,330	95%	16.7	1.0	61	13.1	B	430	4,567	4,330	95%	16.7	1.0	61	13.1	B	430	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Avenue N off-ramp	4,760	4,500	95%	66.6	4.3	61	14.4	B	496	4,760	4,500	95%	66.6	4.3	61	14.4	B	496	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	4,450	4,247	95%	17.8	0.7	62	17.1	B	514	4,450	4,247	95%	17.8	0.7	62	17.1	B	514	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	4,790	4,586	96%	9.4	0.4	62	14.8	B	523	4,790	4,586	96%	9.4	0.4	62	14.8	B	523	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to West Avenue M off-ramp	4,960	4,754	96%	30.5	1.2	63	14.8	B	554	4,960	4,754	96%	30.5	1.2	63	14.8	B	554	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	6,860	6,859	100%	38.3	3.6	59	29.2	D	38	5,140	5,196	101%	38.3	3.6	59	29.5	D	38	1,720	1,662	97%	38.4	3.6	59	28.3	D	38
West Avenue N off-ramp to West Avenue N loop on-ramp	6,540	6,532	100%	19.1	1.7	59	27.6	D	57	4,820	4,872	101%	18.9	1.5	60	27.3	D	57	1,720	1,660	97%	19.4	2.0	58	28.7	D	58
West Avenue N loop on-ramp to West Avenue N direct on-ramp	6,605	6,596	100%	11.3	0.9	60	22.1	C	69	4,885	4,936	101%	11.2	0.8	60	20.5	C	68	1,720	1,660	97%	11.6	1.1	58	28.6	D	69
West Avenue N direct on-ramp to 10th St W off-ramp	6,975	6,970	100%	89.7	13.6	56	24.6	C	158	5,268	5,511	105%	91.1	15.1	55	24.5	C	160	1,708	1,459	85%	84.5	8.2	59	24.9	C	154
10th St W off-ramp to HDC off-ramp	6,145	6,142	100%	19.0	3.1	54	28.8	D	177	4,450	5,005	112%	19.5	3.5	52	32.1	D	179	1,695	1,137	67%	16.9	1.0	61	18.8	C	171
HDC off-ramp to 10th St W on-ramp	2,807	2,762	98%	22.4	1.3	61	15.1	B	200	1,112	1,625	146%	22.0	0.9	62	13.1	B	201	1,695	1,137	67%	22.9	1.8	60	19.1	C	194
10th St W on-ramp to Palmdale Blvd off-ramp	4,265	4,204	99%	34.0	2.2	60	17.4	B	234	2,310	2,989	129%	33.4	1.7	61	16.3	B	234	1,955	1,215	62%	35.2	3.5	58	20.8	C	229
West Palmdale Blvd off-ramp to HDC on-ramp	3,652	3,651	100%	32.9	1.7	61	15.0	B	267	1,697	2,311	136%	32.0	0.8	63	12.3	B	266	1,955	1,340	69%	34.4	3.2	58	22.9	C	263
HDC on-ramp to West Palmdale Blvd loop on-ramp	5,110	5,000	98%	24.4	1.9	59	16.3	B	291	3,405	4,002	118%	24.2	1.8	59	16.2	B	291	1,705	998	59%	24.9	2.3	58	17.2	B	288
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	5,775	5,705	99%	14.7	1.9	56	22.5	C	306	4,060	4,137	102%	14.4	1.6	57	20.7	C	305	1,715	1,568	91%	15.3	2.4	54	28.9	D	304
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	6,455	6,361	99%	71.2	8.4	57	27.3	D	377	4,614	4,711	102%	71.0	8.3	57	26.7	D	376	1,841	1,650	90%	71.7	8.6	57	29.2	D	375
East Avenue S off-ramp to East Avenue S on-ramp	6,070	5,996	99%	42.1	21.7	32	47.5	F	419	4,103	4,325	105%	49.5	29.1	37	53.7	F	426	1,967	1,671	85%	23.0	2.3	58	28.8	D	398
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	7,660	7,324	96%	328.9	140.1	39	49.0	F	748	5,693	5,464	96%	343.1	154.2	38	50.6	F	769	1,967	1,861	95%	285.3	96.9	44	43.8	E	683

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK—MIXED-FLOW LANES									PM PEAK—HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Avenue S off-ramp	9,490	7,025	74%	404.3	249.8	28	67.7	F	404	7,080	5,152	73%	464.4	310.0	45	75.2	F	464	2,410	1,873	78%	247.4	92.7	45	45.2	F	247
East Avenue S off-ramp to East Avenue S on-ramp	7,900	5,724	72%	29.3	3.5	57	25.1	C	434	5,490	4,043	74%	29.6	3.8	57	23.8	C	494	2,410	1,681	70%	28.8	2.9	58	28.9	D	276
East Avenue S on-ramp to West Palmdale Blvd off-ramp	8,440	6,277	74%	60.7	6.0	58	21.6	C	494	6,270	5,069	81%	61.2	6.5	58	22.0	C	555	2,170	1,208	56%	58.4	3.9	61	20.0	C	335
West Palmdale Blvd off-ramp to HDC off-ramp	6,990	5,218	75%	17.4	1.4	59	22.1	C	512	4,900	4,283	87%	17.4	1.4	59	24.3	C	573	2,090	935	45%	17.0	1.1	60	15.5	B	352
HDC off-ramp to West Palmdale Blvd loop on-ramp	4,410	3,327	75%	5.2	0.4	60	18.4	C	517	2,320	2,395	103%	5.2	0.3	61	19.8	C	578	2,090	932	45%	5.3	0.4	60	15.5	B	357
West Palmdale Blvd loop on-ramp to 10th St West off-ramp	5,185	4,077	79%	51.3	3.9	60	17.0	B	568	3,118	3,143	101%	51.3	3.8	60	17.5	B	629	2,067	934	45%	51.3	3.9	60	15.6	B	408
10th St West off-ramp to HDC on-ramp	4,366	3,411	78%	23.7	1.9	60	19.1	C	592	2,346	2,535	108%	23.7	1.9	60	21.3	C	653	2,020	876	43%	23.6	1.9	60	14.7	B	432
HDC on-ramp to 10th St West on-ramp	7,655	5,997	78%	49.3	3.7	60	20.1	C	641	5,630	4,789	85%	48.8	3.2	60	19.8	C	701	2,025	1,208	60%	51.3	5.5	57	21.2	C	483
10th St W loop on-ramp to 10th St W direct on-ramp	8,194	6,539	80%	17.3	1.4	59	20.4	C	658	6,164	5,250	85%	17.2	1.3	60	20.0	C	719	2,030	1,289	63%	17.7	1.8	58	22.3	C	501
10th St W direct on-ramp to West Avenue N off-ramp	8,315	6,642	80%	72.2	9.8	56	23.0	C	731	6,258	5,395	86%	72.9	10.5	56	23.5	C	792	2,057	1,247	61%	69.1	6.5	58	21.3	C	570
West Avenue N off-ramp to West Avenue N loop on-ramp	7,760	6,235	80%	18.8	1.8	59	26.5	D	750	5,690	4,970	87%	18.8	1.7	59	28.1	D	810	2,070	1,265	61%	19.1	2.0	58	21.9	C	589
West Avenue N loop on-ramp to West Avenue N direct on-ramp	7,970	6,432	81%	9.8	0.8	59	21.7	C	759	5,900	5,154	87%	9.7	0.7	60	21.6	C	820	2,070	1,278	62%	10.0	1.0	58	22.1	C	599
West Avenue N direct on-ramp to West Avenue M off-ramp	8,170	6,628	81%	31.8	2.3	60	21.5	C	791	6,100	5,305	87%	31.4	1.9	61	21.0	C	851	2,070	1,323	64%	33.5	3.9	57	23.2	C	632
SR 14 SB MAINLINE																											
West Avenue M on-ramp to West Avenue N off-ramp	6,870	6,868	100%	39.0	4.3	58	29.8	D	39	6,870	6,868	100%	39.0	4.3	58	29.8	D	39	—	—	—	—	—	—	—	—	—
West Avenue N off-ramp to West Avenue N loop on-ramp	6,350	6,321	100%	19.0	1.6	59	26.7	D	58	6,350	6,321	100%	19.0	1.6	59	26.7	D	58	—	—	—	—	—	—	—	—	—
West Avenue N loop on-ramp to West Avenue N direct on-ramp	6,470	6,433	99%	11.3	0.9	60	21.5	C	69	6,470	6,433	99%	11.3	0.9	60	21.5	C	69	—	—	—	—	—	—	—	—	—
West Avenue N direct on-ramp to 10th St W off-ramp	6,835	6,819	100%	85.3	9.2	58	23.2	C	155	6,835	6,819	100%	85.3	9.2	58	23.2	C	155	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	5,595	5,547	99%	18.0	2.0	57	24.4	C	173	5,595	5,547	99%	18.0	2.0	57	24.4	C	173	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St W on-ramp	2,551	2,519	99%	22.0	0.9	62	13.5	B	195	2,551	2,519	99%	22.0	0.9	62	13.5	B	195	—	—	—	—	—	—	—	—	—
10th St W on-ramp to Palmdale Blvd off-ramp	3,500	3,512	100%	33.6	1.9	61	14.4	B	228	3,500	3,512	100%	33.6	1.9	61	14.4	B	228	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	2,463	2,466	100%	32.0	0.9	63	9.8	A	260	2,463	2,466	100%	32.0	0.9	63	9.8	A	260	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	4,290	3,943	92%	24.2	1.9	59	12.8	B	284	4,290	3,943	92%	24.2	1.9	59	12.8	B	284	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,550	4,167	92%	13.7	0.9	60	15.4	B	298	4,550	4,167	92%	13.7	0.9	60	15.4	B	298	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Avenue S off-ramp	4,825	4,412	91%	67.7	5.0	60	18.0	B	366	4,825	4,412	91%	67.7	5.0	60	18.0	B	366	—	—	—	—	—	—	—	—	—
East Avenue S off-ramp to East Avenue S on-ramp	3,925	3,724	95%	21.6	1.0	62	15.1	B	387	3,925	3,724	95%	21.6	1.0	62	15.1	B	387	—	—	—	—	—	—	—	—	—
East Avenue S on-ramp to Angeles Forest Hwy off-ramp	4,600	4361	95%	217.4	29.4	57	18.8	C	605	4,600	4,361	95%	217.4	29.4	57	18.8	C	605	—	—	—	—	—	—	—	—	—

Source: Parsons
Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-38. Year 2040 Build Alternative with Revised Palmdale Access Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EB MAINLINE																		
SR 138 EB west end of the network to SR 14 NB on-ramp	3,500	3,500	100%	21.8	2.6	46	38.7	E	22	3,150	3,137	100%	21.4	2.2	47	33.2	D	21
SR 14 NB on-ramp to 20th St East off-ramp	5,270	5,270	100%	98.7	7.4	60	21.5	C	121	6,055	5,547	92%	99.1	7.6	60	21.5	C	120
20th St East off-ramp to 20th St East on-ramp	4,500	4,500	100%	43.8	2.3	61	18.5	C	164	4,875	4,468	92%	43.8	2.2	62	17.7	B	164
20th St East on-ramp to 30th St East off-ramp	4,815	4,815	100%	17.2	1.4	59	20.4	C	182	5,360	4,922	92%	17.5	1.7	58	20.7	C	182
30th St East off-ramp to 30th St East on-ramp	4,465	4,465	100%	57.0	2.9	61	18.5	C	239	4,740	4,317	91%	56.8	2.7	62	17.5	B	239
30th St East on-ramp to 50th St East off-ramp	4,885	4,885	100%	66.1	6.0	59	20.4	C	305	5,290	4,850	92%	65.1	4.9	60	19.7	C	304
50th St East off-ramp to 50th St East on-ramp	4,210	4,214	100%	44.5	3.1	60	23.3	C	349	4,135	3,793	92%	43.9	2.5	61	20.7	C	347
50th St East on-ramp to 90th St East off-ramp	4,845	4,754	98%	202.9	19.0	59	26.7	D	552	4,725	4,298	91%	200.0	16.2	59	23.8	C	548
90th St East off-ramp to 90th St East on-ramp	4,610	4,470	97%	46.7	3.8	60	25.0	C	599	4,255	3,807	89%	45.8	2.9	61	20.9	C	593
90th St East on-ramp to 140th St East off-ramp	4,835	4,571	95%	279.9	25.3	59	25.5	C	879	4,555	4,025	88%	277.1	22.5	59	22.2	C	870
140th St East off-ramp to 140th St East on-ramp	4,525	4,186	93%	47.4	3.9	59	23.5	C	926	3,980	3,463	87%	46.3	2.8	61	19.0	C	917
140th St East on-ramp to 170th St East off-ramp	4,740	4,344	92%	139.9	12.5	59	23.9	C	1,066	4,240	3,698	87%	137.6	10.3	60	20.0	C	1,054
170th St East off-ramp to 170th St East on-ramp	4,640	4,201	91%	48.2	4.0	59	23.6	C	1,114	4,045	3,486	86%	47.4	3.3	60	19.3	C	1,102
170th St East on-ramp to 210th St East off-ramp	4,960	4,438	89%	201.9	20.2	58	24.9	C	1,316	4,295	3,671	85%	196.7	15.2	60	20.0	C	1,298
210th St East off-ramp to 210th St East on-ramp	4,910	4,299	88%	45.1	4.2	59	24.4	C	1,361	4,230	3,550	84%	44.2	3.3	60	19.7	C	1,343
210th St East on-ramp to 240th St East off-ramp	5,080	4,411	87%	145.7	15.0	58	24.6	C	1,507	4,310	3,580	83%	141.6	11.2	60	19.4	C	1,484
240th St East off-ramp to 240th St East on-ramp	4,900	4,189	85%	48.6	4.1	59	23.6	C	1,555	4,270	3,511	82%	48.0	3.7	60	19.6	C	1,532
240th St East on-ramp to Oasis Rd off-ramp	5,300	4,542	86%	143.3	16.4	57	25.8	C	1,699	4,495	3,680	82%	138.3	11.7	59	20.1	C	1,670
Oasis Rd off-ramp to Oasis Rd on-ramp	5,125	4,308	84%	48.7	4.1	59	24.2	C	1,747	4,370	3,530	81%	48.2	3.7	60	19.6	C	1,719
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	5,275	4,364	83%	203.5	23.3	57	25.0	C	1,951	4,470	3,563	80%	196.4	16.4	59	19.6	C	1,915
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	4,405	3,569	81%	49.4	3.3	60	19.7	C	2,000	3,955	3,108	79%	49.0	3.1	61	17.1	B	1,964
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	4,700	3,788	81%	263.9	21.6	59	21.0	C	2,264	4,325	3,396	79%	263.8	22.2	59	18.8	C	2,228
Caughlin Rd off-ramp to Caughlin Rd on-ramp	3,920	3,062	78%	47.1	2.6	61	16.7	B	2,311	3,535	2,710	77%	46.8	2.5	61	14.7	B	2,275
Caughlin Rd on-ramp to Koala Rd off-ramp	4,065	3,170	78%	72.9	5.0	60	16.9	B	2,384	3,640	2,801	77%	72.4	4.6	61	14.8	B	2,347
Koala Rd off-ramp to Koala Rd loop on-ramp	3,685	2,834	77%	32.7	1.8	61	15.5	B	2,417	3,450	2,648	77%	32.8	2.0	61	14.5	B	2,380
Koala Rd loop on-ramp to Koala Rd direct on-ramp	4,624	3,757	81%	18.8	2.9	54	20.3	C	2,436	3,914	3,111	79%	17.6	1.8	58	15.8	B	2,397
Koala Rd direct on-ramp to Route 395 off-ramp	4,705	3,810	81%	108.6	9.5	59	20.8	C	2,544	4,025	3,202	80%	107.4	8.3	59	17.2	B	2,505
Route 395 off-ramp to Route 395 loop on-ramp	3,885	3,155	81%	26.2	1.4	61	17.2	B	2,570	3,365	2,661	79%	26.0	1.2	62	14.4	B	2,531
Route 395 loop on-ramp to Route 395 direct on-ramp	5,182	4,429	85%	24.6	4.0	55	25.2	C	2,595	4,409	3,739	85%	23.2	2.7	58	20.2	C	2,554
Route 395 direct on-ramp to Phantom St West off-ramp	5,260	4,474	85%	69.2	14.5	52	28.2	D	2,664	4,510	3,820	85%	60.6	5.9	59	21.1	C	2,615
Phantom St West off-ramp to Phantom St West loop on-ramp	3,825	3,309	87%	28.1	1.3	62	17.9	B	2,692	3,590	3,075	86%	28.0	1.3	62	16.6	B	2,643
Phantom St West loop on-ramp to Phantom St West direct on-ramp	3,908	3,389	87%	12.6	0.6	62	15.6	B	2,705	3,945	3,433	87%	12.8	0.8	61	16.1	B	2,655
Phantom St West direct on-ramp to Phantom St East direct off-ramp	4,160	3,630	87%	58.0	3.5	61	19.2	C	2,763	4,365	3,825	88%	58.8	4.5	60	20.5	C	2,714
Phantom St East direct off-ramp to Phantom St East loop on-ramp	3,535	3,062	87%	36.1	1.6	62	16.6	B	2,799	3,970	3,455	87%	36.4	2.0	61	18.8	C	2,751
Phantom St East loop on-ramp to Phantom St East direct on-ramp	3,831	3,325	87%	16.3	1.1	60	18.3	C	2,815	4,780	4,176	87%	17.5	2.3	56	24.7	C	2,768
Phantom St East direct on-ramp to National Trails Hwy off-ramp	4,160	3,648	88%	41.9	2.9	60	20.3	C	2,857	5,300	4,718	89%	44.0	5.2	57	27.5	D	2,812
National Trails Hwy off-ramp to National Trails Hwy on-ramp	3,780	3,318	88%	43.5	2.3	61	18.1	C	2,901	4,825	4,325	90%	44.0	2.8	61	23.8	C	2,856
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	4,055	3,565	88%	104.3	5.8	61	14.6	B	3,005	5,075	4,555	90%	107.0	8.7	59	19.2	C	2,963
I-15 NB/SB off-ramp to I-15 NB on-ramp	1,935	1,697	88%	80.6	2.3	63	9.0	A	3,086	1,930	1,782	92%	80.5	2.3	63	9.5	A	3,044
I-15 NB/SB on-ramp to Choco Rd off-ramp	2,305	2,060	89%	57.6	2.3	62	8.3	A	3,143	2,505	2,323	93%	57.6	2.3	62	9.4	A	3,101
Choco Rd off-ramp to Choco Rd on-ramp	2,155	1,782	83%	33.7	1.5	62	10.2	A	3,177	2,140	1,881	88%	33.7	1.6	62	10.8	A	3,135
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	2,205	1,718	78%	73.0	3.3	62	10.1	A	3,250	2,265	1,868	82%	72.8	3.2	62	10.9	A	3,208
Dale Evans Pkwy off-ramp to Dale Evans Pkwy direct on-ramp	1,815	1,296	71%	37.5	1.3	62	8.1	A	3,288	1,955	1,558	80%	37.6	1.4	62	9.5	A	3,245
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,900	1,454	77%	32.5	1.4	62	8.5	A	3,320	2,100	1,680	80%	32.5	1.5	62	9.7	A	3,278

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-38. Year 2040 Build Alternative with Revised Palmdale Access Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WB MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	1,400	1,400	100%	37.8	2.9	59	11.9	B	38	2,520	2,471	98%	40.0	4.9	55	22.7	C	40
Dale Evans Pkwy off-ramp to Dale Evans Pkwy direct on-ramp	1,380	1,272	92%	36.8	1.7	62	10.3	A	75	2,320	2,264	98%	37.6	2.4	61	18.7	C	78
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	1,490	1,489	100%	81.6	4.6	61	11.5	B	156	2,825	2,755	98%	85.1	8.1	58	22.3	C	163
Choco Rd off-ramp to Choco Rd on-ramp	1,385	1,285	93%	35.4	1.6	62	7.4	A	192	2,810	2,664	95%	36.8	3.1	59	15.4	B	199
Choco Rd on-ramp to I-15 NB/SB off-ramp	1,720	1,686	98%	57.0	1.7	63	6.7	A	249	3,045	2,972	98%	57.9	2.6	62	12.0	B	257
I-15 NB/SB off-ramp to I-15 SB on-ramp	1,386	1,350	97%	100.2	2.4	63	7.1	A	349	2,635	2,549	97%	102.4	4.5	62	13.7	B	360
I-15 NB on-ramp to I-15 NB on-ramp	2,465	2,403	97%	11.5	1.0	59	11.5	B	360	3,505	3,366	96%	11.6	1.2	58	16.3	B	371
I-15 SB on-ramp to National Trails Hwy off-ramp	3,735	3,633	97%	68.5	5.1	60	15.1	B	429	4,960	4,795	97%	72.1	8.6	57	21.0	C	444
National Trails Hwy off-ramp to National Trails Hwy on-ramp	3,505	3,401	97%	43.1	2.4	61	18.5	C	472	4,670	4,470	96%	44.6	3.8	59	25.1	C	488
National Trails Hwy on-ramp to Phantom St East off-ramp	3,895	3,750	96%	61.5	11.6	53	23.3	C	533	5,135	4,898	95%	58.5	8.5	55	28.6	D	547
Phantom St East off-ramp to Phantom St East loop on-ramp	2,490	2,391	96%	33.5	1.4	62	12.8	B	567	4,395	4,189	95%	34.6	2.4	60	23.2	C	581
Phantom St East loop on-ramp to Phantom St East direct on-ramp	2,775	2,637	95%	5.4	0.3	61	14.3	B	572	5,001	4,681	94%	6.1	0.9	55	28.3	D	587
Phantom St East direct on-ramp to Phantom St West off-ramp	2,805	2,697	96%	59.4	3.3	61	14.7	B	632	5,574	5,344	96%	67.8	11.7	54	33.4	D	655
Phantom St West off-ramp to Phantom St West on-ramp	2,060	1,952	95%	42.5	1.3	63	10.4	A	674	5,219	4,953	95%	45.0	3.8	59	27.9	D	700
Phantom St West on-ramp to Route 395 off-ramp	2,845	2,739	96%	54.5	2.8	61	11.1	B	729	6,230	5,923	95%	60.9	9.2	55	27.2	D	761
Route 395 off-ramp to Route 395 on-ramp	1,895	1,835	97%	46.9	0.8	64	7.2	A	776	4,825	4,445	92%	48.6	2.4	62	18.1	C	810
Route 395 on-ramp to Koala Rd off-ramp	2,490	2,393	96%	101.0	3.1	62	9.3	A	877	5,735	5,322	93%	107.2	9.2	59	22.0	C	917
Koala Rd off-ramp to Koala Rd on-ramp	2,005	1,917	96%	48.7	1.0	64	7.5	A	925	4,625	4,220	91%	50.3	2.4	62	17.1	B	967
Koala Rd on-ramp to Caughlin Rd off-ramp	2,155	2,063	96%	66.9	1.6	63	7.9	A	992	4,995	4,579	92%	69.5	4.1	61	18.3	C	1,037
Caughlin Rd off-ramp to Caughlin Rd on-ramp	2,055	1,949	95%	49.4	1.1	63	7.7	A	1,042	4,825	4,419	92%	51.4	3.0	61	18.1	C	1,088
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	2,615	2,474	95%	248.2	7.6	63	9.7	A	1,290	5,635	5,113	91%	260.8	19.6	60	21.1	C	1,349
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	2,325	2,175	94%	45.2	1.2	63	8.6	A	1,335	5,275	4,695	89%	47.2	3.1	61	19.4	C	1,396
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	2,465	2,285	93%	184.4	5.5	63	8.9	A	1,519	6,345	5,678	89%	197.0	17.2	58	23.9	C	1,593
Oasis Rd off-ramp to Oasis Rd loop on-ramp	2,385	2,197	92%	47.9	1.4	63	8.7	A	1,567	6,185	5,421	88%	50.5	3.8	60	22.7	C	1,643
Oasis Rd direct on-ramp to 240th St East off-ramp	2,465	2,236	91%	128.8	4.0	63	8.7	A	1,696	6,390	5,553	87%	137.1	11.7	59	23.0	C	1,781
240th St East off-ramp to 240th St East on-ramp	2,290	2,051	90%	43.9	1.2	63	8.1	A	1,740	5,865	5,031	86%	46.1	3.2	60	20.9	C	1,827
240th St East on-ramp to 210th St East off-ramp	2,315	2,053	89%	134.6	4.2	63	8.0	A	1,875	6,110	5,209	85%	149.9	18.8	56	22.8	C	1,976
210th St East off-ramp to 210th St East on-ramp	2,250	1,973	88%	42.4	1.4	63	10.5	A	1,917	5,735	4,816	84%	46.3	5.1	57	27.9	D	2,023
210th St East on-ramp to 170th St East off-ramp	2,310	1,997	86%	189.6	7.4	62	10.4	A	2,107	5,790	4,779	83%	204.4	21.0	58	26.9	D	2,227
170th St East off-ramp to 170th St East on-ramp	2,130	1,799	84%	44.6	1.6	63	9.6	A	2,151	5,425	4,357	80%	47.1	3.9	59	24.5	C	2,274
170th St East on-ramp to 140th St East off-ramp	2,310	1,947	84%	135.8	5.4	62	10.1	A	2,287	5,550	4,401	79%	144.2	13.2	59	24.3	C	2,418
140th St East off-ramp to 140th St East on-ramp	2,150	1,771	82%	36.6	1.3	63	9.4	A	2,324	5,305	4,137	78%	38.7	3.3	59	23.3	C	2,457
140th St East on-ramp to 90th St East off-ramp	2,690	2,284	85%	270.7	12.3	62	12.1	B	2,594	5,630	4,340	77%	287.6	28.2	58	24.5	C	2,745
90th St East off-ramp to 90th St East on-ramp	2,460	2,052	83%	44.5	1.9	62	11.0	A	2,639	5,265	3,952	75%	46.8	4.0	59	22.3	C	2,792
90th St East on-ramp to 70th St East off-ramp	2,905	2,488	86%	193.4	10.2	61	13.3	B	2,832	5,640	4,245	75%	206.5	22.7	58	24.3	C	2,998
50th St East off-ramp to 50th St East on-ramp	2,380	1,992	84%	43.2	1.7	62	10.6	A	2,875	4,920	3,637	74%	44.9	3.2	60	20.2	C	3,043
50th St East on-ramp to 30th St East off-ramp	3,375	3,002	89%	66.4	3.2	61	12.2	B	2,942	5,735	4,433	77%	67.9	4.6	60	18.4	C	3,111
30th St East off-ramp to 30th St East on-ramp	2,925	2,603	89%	54.3	2.0	62	10.4	A	2,996	5,185	3,981	77%	55.6	3.2	61	16.3	B	3,166
30th St East on-ramp to 20th St East off-ramp	3,335	2,997	90%	16.7	0.9	61	11.1	B	3,013	5,560	4,331	78%	17.3	1.4	59	16.6	B	3,184
20th St East off-ramp to 20th St East on-ramp	2,960	2,643	89%	41.2	1.4	63	10.5	A	3,054	5,100	3,976	78%	42.3	2.4	61	16.3	B	3,226
20th St East on-ramp to SR 14 SB off-ramp	3,850	3,474	90%	96.2	4.7	61	13.9	B	3,150	5,900	4,725	80%	102.8	11.4	57	20.3	C	3,329
SR 14 SB off-ramp to SR 138 WB west end of the network	2,230	1,986	89%	12.6	0.5	54	18.3	C	3,163	3,870	3,046	79%	13.6	1.4	50	30.4	D	3,342

Source: Parsons

Note: Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-38. Year 2040 Build Alternative with Revised Palmdale Access Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off-ramp	3,690	3,690	100%	151.1	9.8	61	20.2	C	151	6,000	5,666	94%	208.7	67.2	44	43.2	**E**	209
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	3,215	3,215	100%	22.5	1.5	61	17.7	B	174	5,350	5,000	93%	25.0	3.9	55	30.4	D	234
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,600	3,596	100%	11.7	1.3	58	20.5	C	185	5,755	5,399	94%	12.6	2.2	54	33.4	D	246
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	4,050	4,050	100%	22.5	1.9	60	17.1	B	208	6,260	5,937	95%	24.8	4.2	54	27.4	D	271
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,490	3,490	100%	24.5	1.8	60	19.4	C	232	5,640	5,326	94%	27.2	4.4	55	32.5	D	298
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	3,915	3,915	100%	17.1	1.3	60	16.5	B	249	6,205	5,861	94%	18.3	2.5	56	26.3	D	317
Mojave Dr off-ramp to Mojave Dr on-ramp	3,310	3,310	100%	21.0	1.2	61	18.2	C	270	5,415	5,087	94%	22.1	2.3	58	29.2	D	339
Mojave Dr on-ramp to D St off-ramp	3,760	3,760	100%	51.1	3.9	60	18.3	C	321	5,805	5,473	94%	53.7	6.5	57	28.3	D	392
D St off-ramp to E St off-ramp	2,575	2,528	98%	9.8	0.4	62	13.5	B	331	4,710	4,412	94%	10.2	0.7	60	24.5	C	403
E St off-ramp to D St on-ramp	2,525	2,472	98%	28.4	1.2	62	13.2	B	360	4,640	4,338	93%	29.4	2.1	60	24.0	C	432
D St on-ramp to E St on-ramp	2,815	2,737	97%	11.1	0.7	61	14.9	B	371	5,010	4,654	93%	11.7	1.2	58	26.7	D	444
E St on-ramp to Stoddard Wells Rd off-ramp	2,865	2,802	98%	30.4	1.9	61	15.4	B	401	5,065	4,732	93%	34.0	5.4	54	29.0	D	478
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	2,370	2,328	98%	20.3	0.8	62	12.5	B	422	4,445	4,119	93%	21.3	1.7	60	23.1	C	499
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	2,810	2,760	98%	39.4	2.2	61	11.4	B	461	5,155	4,798	93%	40.9	3.8	58	20.7	C	540
HDC EB/WB off-ramp to HDC WB on-ramp	1,560	1,519	97%	70.7	1.9	63	8.0	A	532	3,970	3,681	93%	73.3	4.6	61	20.2	C	613
HDC WB on-ramp to HDC EB on-ramp	1,730	1,693	98%	7.7	0.3	62	7.0	A	539	4,180	3,891	93%	8.0	0.6	60	16.8	B	621
HDC EB on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	2,865	2,696	94%	36.7	1.8	61	11.0	A	576	6,185	5,340	86%	40.8	6.1	54	24.8	C	662
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	2,620	2,462	94%	22.9	0.9	62	13.2	B	599	5,920	5,045	85%	24.5	2.4	58	28.8	D	686
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	2,880	2,696	94%	217.3	11.3	61	14.6	B	816	6,160	5,230	85%	229.8	23.8	58	30.1	D	916
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	2,450	2,279	93%	31.9	1.5	62	12.3	B	848	5,735	4,810	84%	33.4	3.0	59	27.2	D	950
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	2,890	2,686	93%	64.2	3.3	61	14.6	B	912	6,190	5,204	84%	68.8	7.8	57	30.4	D	1,018
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	4,675	4,675	100%	60.8	5.6	59	26.5	D	61	3,900	3,900	100%	59.3	4.1	60	21.6	C	59
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	4,260	4,259	100%	37.5	3.2	60	23.8	C	98	3,380	3,380	100%	36.7	2.4	61	18.5	C	96
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	4,660	4,659	100%	221.6	22.1	58	26.7	D	320	3,835	3,835	100%	217.0	17.5	60	21.6	C	313
Quarry Rd off-ramp to Quarry Rd on-ramp	4,440	4,437	100%	25.5	2.5	59	25.1	C	345	3,560	3,560	100%	25.0	2.0	60	19.9	C	338
Quarry Rd on-ramp to HDC EB/WB off-ramp	4,710	4,710	100%	53.8	5.6	58	20.2	C	399	3,920	3,920	100%	53.4	5.1	59	16.9	B	391
HDC EB/WB off-ramp to HDC EB/WB on-ramp	3,240	3,240	100%	83.0	5.4	61	17.9	B	482	2,205	2,205	100%	81.3	3.6	62	12.0	B	473
HDC EB/WB on-ramp to Stoddard Wells Rd off-ramp	4,390	4,390	100%	35.9	3.7	58	19.8	C	518	3,545	3,545	100%	35.4	3.1	59	16.9	B	508
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,665	3,531	96%	33.7	2.2	61	19.4	C	552	2,970	2,970	100%	33.1	1.6	62	16.6	B	541
Stoddard Wells Rd direct on-ramp to D St off-ramp	4,280	4,134	97%	38.9	4.5	58	23.8	C	591	3,555	3,555	100%	37.7	3.3	60	20.4	C	579
D St off-ramp to D St on-ramp	3,935	3,794	96%	21.9	1.5	61	20.9	C	613	3,240	3,240	100%	21.6	1.2	61	18.0	B	600
D St on-ramp to Mojave Dr off-ramp	4,860	4,739	98%	53.5	5.1	59	19.8	C	666	4,450	4,423	99%	52.7	4.2	60	18.6	C	653
Mojave Dr off-ramp to Mojave Dr on-ramp	4,485	4,317	96%	20.8	1.8	59	24.2	C	687	3,955	3,905	99%	20.5	1.5	60	22.2	C	674
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	5,210	5,029	97%	15.5	1.8	57	22.1	C	703	4,635	4,600	99%	15.2	1.5	58	20.0	C	689
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,755	4,568	96%	27.7	2.6	59	25.9	C	730	4,160	4,105	99%	27.1	1.9	60	23.1	C	716
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	5,190	4,986	96%	23.6	1.8	60	20.9	C	754	4,740	4,720	100%	23.6	1.8	60	20.0	C	739
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,335	4,172	96%	12.9	0.9	60	23.0	C	767	3,745	3,730	100%	12.7	0.8	61	20.5	C	752
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,560	4,359	96%	8.6	0.7	60	24.4	C	775	3,985	3,962	99%	8.5	0.6	60	22.0	C	761
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,870	4,625	95%	171.3	15.3	59	26.2	D	946	4,320	4,278	99%	168.5	12.5	60	23.8	C	929

Source: Parsons

Note: Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-39. Year 2040 Build Alternative with Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	57	12.5	B	58	21.1	C
West Palmdale Blvd loop	Merging	60	10.7	B	60	17.0	B
SR 138 WB	Merging	61	13	B	58	20	C
10th St W. loop	Merging	60	16.0	B	58	20.5	C
10th St W. direct	Merging	61	16.4	B	60	20.1	C
West Avenue N loop	Merging	61	15.9	B	59	20.1	C
West Avenue N direct	Merging	61	13.4	B	60	17.6	B
East Avenue S	Diverging	63	13.0	B	48	38.7	**E**
West Palmdale Blvd	Diverging	60	13.5	B	57	21.3	C
SR 138 EB	Diverging	60	13.9	B	59	22.1	C
10th St W.	Diverging	60	10.9	B	58	17.5	B
West Avenue N	Diverging	59	17.1	B	53	23.7	C
SOUTHBOUND							
West Avenue N loop	Merging	60	20.6	C	61	17.7	B
West Avenue N direct	Merging	60	18.1	B	61	14.4	B
10th St W.	Merging	61	17.5	B	62	15.0	B
SR 138 WB	Merging	60	15.4	B	60	13.1	B
West Palmdale Blvd loop	Merging	55	24.2	C	59	18.3	B
West Palmdale Blvd direct	Merging	55	26.8	C	59	20.0	B
East Avenue S	Merging	31	52.3	**E**	56	19.1	B
West Avenue N	Diverging	58	30.1	D	54	33.7	D
10th St W.	Diverging	54	26.1	C	55	27.9	C
SR 138 EB	Diverging	54	28.8	D	56	28.0	C
West Palmdale Blvd	Diverging	60	19.3	B	59	18.7	B
East Avenue S	Diverging	56	29.4	D	56	24.0	C

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-39. Year 2040 Build Alternative with Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	58	23	C	58	23	C
20th St E	Merging	58	22	C	56	24	C
30th St E	Merging	60	19	B	59	19	B
50th St E	Merging	53	27	C	56	23	C
90th St E	Merging	58	23	C	58	20	C
140th St E	Merging	57	21	C	59	18	B
170th St E	Merging	54	24	C	59	18	B
210th St E	Merging	57	22	C	59	17	B
240th St E	Merging	52	25	C	58	18	B
Oasis Rd	Merging	58	21	C	59	17	B
Sheep Creek Rd loop	Merging	61	18	B	61	17	B
Sheep Creek Rd direct	Merging	58	18	B	58	17	B
Caughlin Rd loop	Merging	61	16	B	61	14	B
Caughlin Rd direct	Merging	60	15	B	60	13	B
Koala Rd loop	Merging	52	21	C	57	16	B
Koala Rd direct	Merging	59	19	B	59	16	B
Route 395 loop	Merging	50	26	C	55	21	C
Route 395 direct	Merging	58	22	C	60	19	B
Phantom St West loop	Merging	62	13	B	60	15	B
Phantom St West direct	Merging	60	16	B	58	19	B
Phantom St East loop	Merging	60	19	B	55	27	C
Phantom St East direct	Merging	59	21	C	53	31	D
Choco Rd	Merging	62	9	A	62	10	A
Dale Evans Pkwy direct	Merging	62	8	A	62	9	A
20th St E	Diverging	58	25	C	57	27	C
30th St E	Diverging	58	22	C	56	24	C
50th St E	Diverging	57	22	C	59	22	C
90th St E	Diverging	57	28	C	58	26	C
140th St E	Diverging	57	27	C	57	24	C
170th St E	Diverging	59	25	C	59	21	C
210th St E	Diverging	58	26	C	59	21	C
240th St E	Diverging	57	26	C	59	20	C
Oasis Rd	Diverging	57	26	C	59	21	C
Sheep Creek Rd	Diverging	50	29	D	56	21	C
Caughlin Rd	Diverging	55	24	C	56	21	C
Koala	Diverging	59	19	B	60	16	B
Route 395	Diverging	56	24	C	57	20	B
Phantom St West	Diverging	50	31	D	56	25	C
Phantom St East	Diverging	59	21	C	59	23	C
National Trails Hwy	Diverging	60	21	C	58	28	D
Dale Evans Pkwy	Diverging	61	11	B	61	11	B
National Trails Hwy to I-15 NB/SB	Weaving	61	14	B	59	19	B
I-15 NB/SB to Choco Rd	Weaving	62	7	A	62	9	A

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-39. Year 2040 Build Alternative with Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy direct	Merging	60	10	B	56	20	C
I-15 NB	Merging	58	13	B	57	17	B
National Trails Hwy	Merging	57	19	B	54	26	C
Phantom St East loop	Merging	60	14	B	53	30	D
Phantom St East direct	Merging	61	14	B	47	39	**E**
Phantom St West	Merging	62	11	B	60	23	C
Route 395	Merging	61	10	A	58	19	B
Koala Rd loop	Merging	62	8	A	62	16	B
Koala Rd direct	Merging	62	8	A	60	16	B
Caughlin Rd loop	Merging	62	8	A	61	18	B
Caughlin Rd direct	Merging	61	10	B	55	21	C
Sheep Creek Rd loop	Merging	62	9	A	60	19	B
Sheep Creek Rd direct	Merging	62	8	A	50	26	C
Oasis Rd loop	Merging	62	8	A	59	22	C
Oasis Rd direct	Merging	61	7	A	57	20	C
240th St E	Merging	62	7	A	59	19	B
210th St E	Merging	62	9	A	58	23	C
170th St E	Merging	61	9	A	58	21	C
140th St E	Merging	60	11	B	56	22	C
90th St E	Merging	59	12	B	54	22	C
50th St E	Merging	60	12	B	60	17	B
30th St E	Merging	60	11	B	58	16	B
20th St E	Merging	59	14	B	56	18	B
Dale Evans Pkwy	Diverging	61	11	B	60	20	C
Choco Rd	Diverging	61	12	B	59	23	C
Phantom St East	Diverging	47	30	D	54	31	D
Phantom St West	Diverging	59	17	B	55	33	D
Route 395	Diverging	59	16	B	48	34	D
Koala Rd	Diverging	61	12	B	54	28	D
Caughlin Rd	Diverging	62	9	A	60	19	B
Sheep Creek Rd	Diverging	61	11	B	58	22	C
Oasis Rd	Diverging	62	9	A	58	25	C
240th St E	Diverging	61	9	A	56	25	C
210th St E	Diverging	62	8	A	50	24	C
170th St E	Diverging	61	11	B	54	29	D
140th St E	Diverging	61	11	B	57	25	C
90th St E	Diverging	61	13	B	56	25	C
50th St E	Diverging	60	14	B	53	26	C
30th St E	Diverging	61	13	B	60	18	B
20th St E	Diverging	60	11	B	58	16	B
SR 14 SB	Diverging	61	16	B	54	28	D
Choco to I-15 NB/SB	Weaving	63	6	A	62	10	A
I-15 SB to National Trails Hwy	Weaving	59	17	B	56	22	C
20th St East to 10th St East	Weaving	59	14	B	56	18	B

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-39. Year 2040 Build Alternative with Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

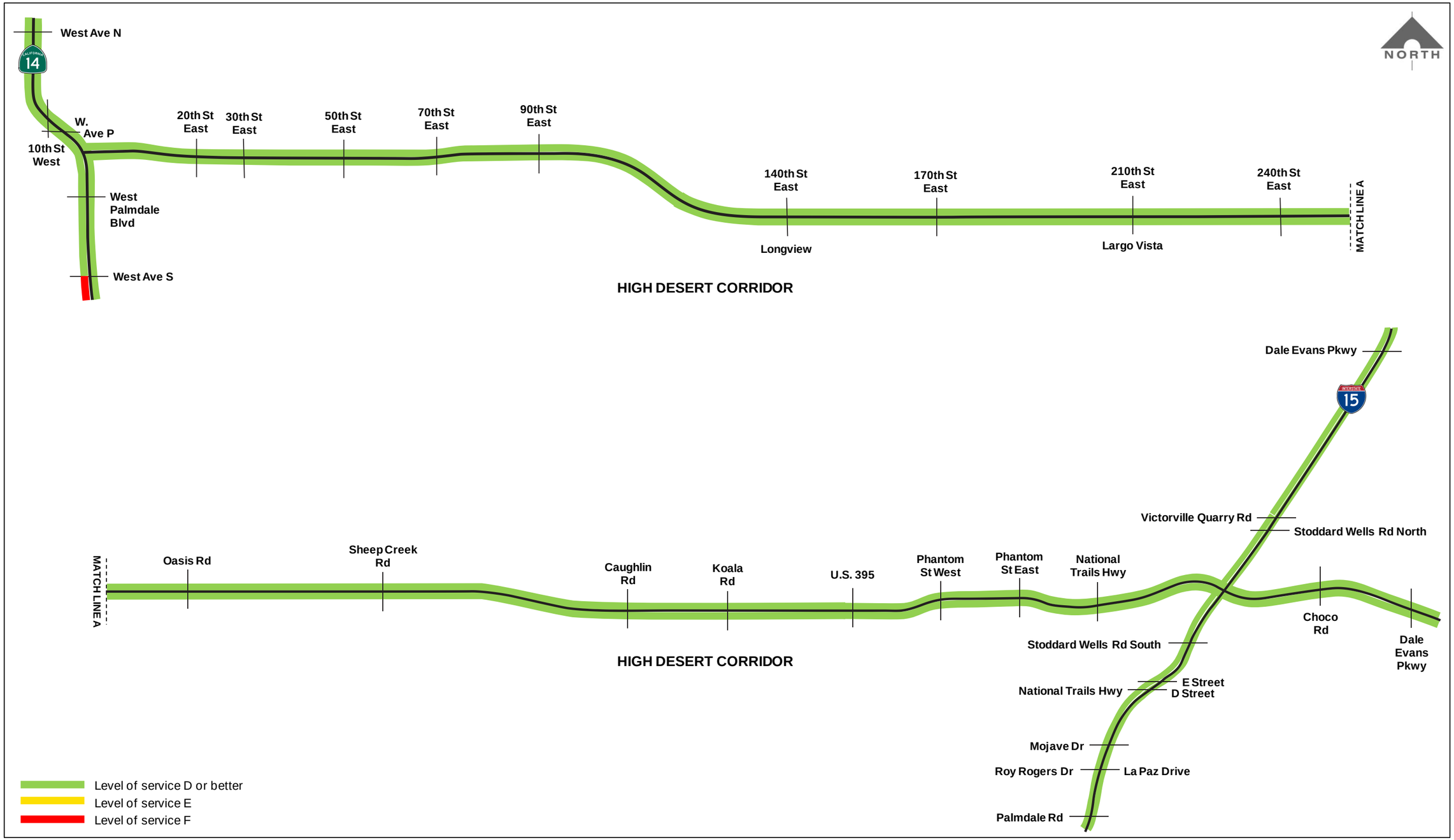
Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	57	23	C	51	35	D
Mojave Dr	Merging	58	23	C	53	34	D
D St	Merging	61	16	B	57	27	C
E St	Merging	60	17	B	55	30	D
HDC WB	Merging	62	6	A	60	15	B
Stoddard Wells Rd (Quarry Rd)	Merging	61	16	B	57	30	D
Dale Evans Pkwy	Merging	60	15	B	55	31	D
Palmdale Rd	Diverging	58	23	C	42	42	**E**
D St	Diverging	59	17	B	59	22	C
E St	Diverging	62	14	B	60	24	C
Stoddard Wells Rd	Diverging	60	17	B	49	33	D
Dale Evans Pkwy	Diverging	60	15	B	56	30	D
Palmdale Rd direct to Roy Rogers Dr	Weaving	59	17	B	52	26	C
Roy Rogers Dr to Mojave Dr	Weaving	59	17	B	54	25	C
Stoddard Wells Rd to HDC EB/WB	Weaving	60	12	B	57	20	C
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	61	11	B	52	24	C
SOUTHBOUND							
Dale Evans Pkwy	Merging	55	28	D	57	24	C
HDC EB/WB	Merging	56	18	B	57	17	B
Stoddard Wells Rd direct	Merging	54	26	C	56	23	C
Palmdale Rd loop	Merging	59	24	C	59	22	C
Palmdale Rd direct	Merging	57	27	C	58	25	C
Dale Evans Pkwy	Diverging	57	28	D	58	24	C
Quarry Rd	Diverging	57	27	C	58	23	C
Stoddard Wells Rd	Diverging	58	18	B	59	16	B
D St	Diverging	58	24	C	60	21	C
Quarry Rd to HDC EB/WB	Weaving	58	19	B	58	17	B
D St to Mojave Dr	Weaving	58	18	B	59	18	B
Mojave Dr to Roy Rogers Dr	Weaving	56	21	C	57	20	B
Roy Rogers Dr to Palmdale Rd	Weaving	59	20	B	59	20	C

Source: Parsons

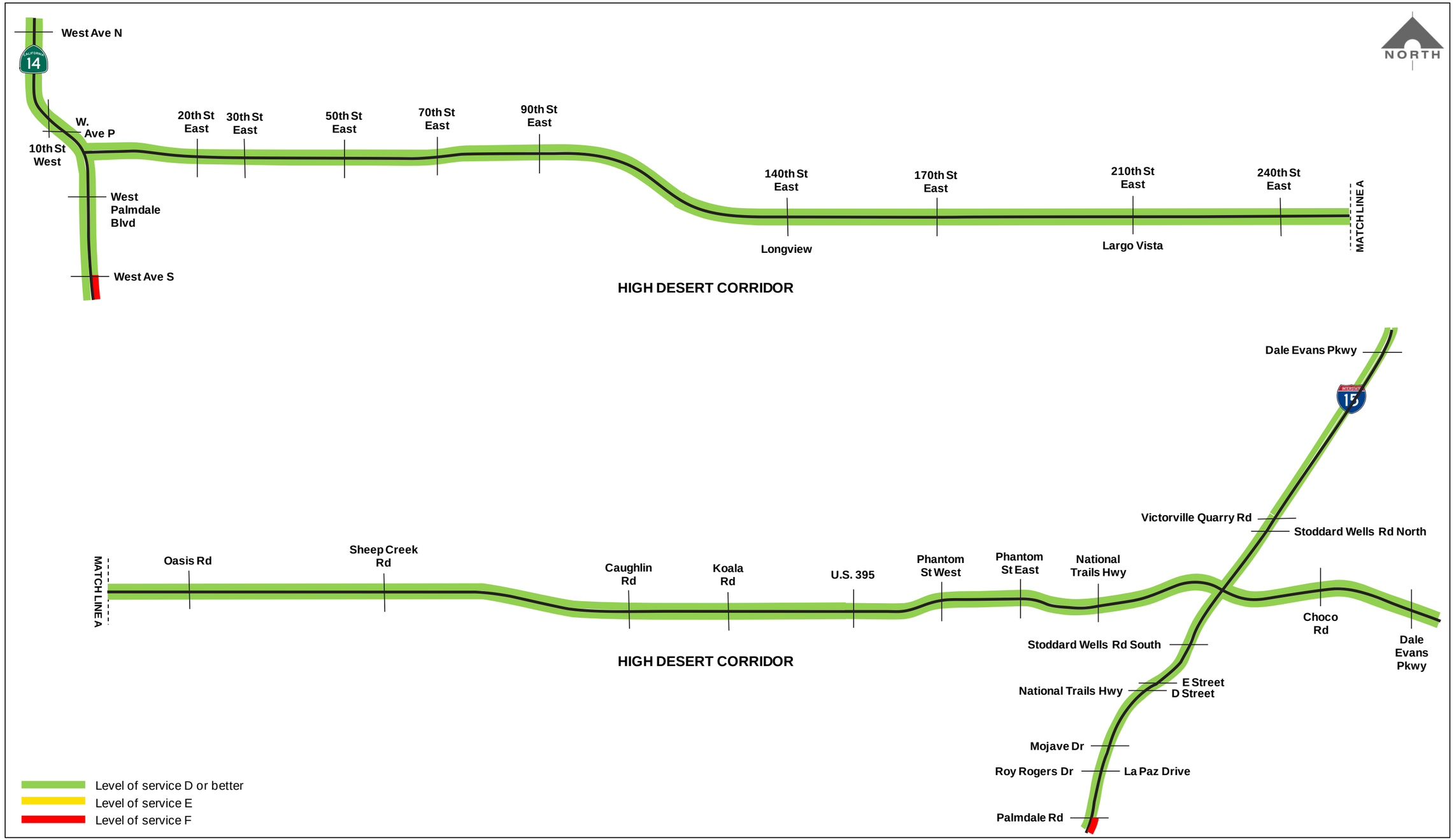
Notes:
Level of service based on HCM 2000
Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E
Level of service F



AM PEAK PERIOD

Figure 4-32: Year 2040 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Level of Service *(1 of 2)*



PM PEAK PERIOD

Figure 4-32: Year 2040 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Level of Service *(2 of 2)*

Table 4-40. Year 2040 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Analysis Results *(1 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									AM PEAK – MIXED-FLOW LANES									AM PEAK – HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Ave S off-ramp	2,800	2,776	99%	182.1	29.0	56	13.5	B	182	2,800	2,776	99%	182.1	29.0	56	13.5	B	182	—	—	—	—	—	—	—	—	—
East Ave S off-ramp to East Ave S on-ramp	2,615	2,613	100%	27.9	2.3	60	10.9	A	210	2,615	2,613	100%	27.9	2.3	60	10.9	A	210	—	—	—	—	—	—	—	—	—
East Ave S on-ramp to West Palmdale Blvd off-ramp	3,325	3,320	100%	58.1	3.8	61	10.9	A	268	3,325	3,320	100%	58.1	3.8	61	10.9	A	268	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC off-ramp	2,855	2,807	98%	16.7	0.8	61	11.4	B	285	2,855	2,807	98%	16.7	0.8	61	11.4	B	285	—	—	—	—	—	—	—	—	—
HDC off-ramp to West Palmdale Blvd loop on-ramp	1,635	1,611	99%	5.0	0.2	63	8.5	A	290	1,635	1,611	99%	5.0	0.2	63	8.5	A	290	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to 10th St West off-ramp	2,405	2,340	97%	49.6	2.3	62	9.5	A	339	2,405	2,340	97%	49.6	2.3	62	9.5	A	339	—	—	—	—	—	—	—	—	—
10th St West off-ramp to HDC on-ramp	2,019	1,997	99%	23.0	1.3	61	10.9	A	362	2,019	1,997	99%	23.0	1.3	61	10.9	A	362	—	—	—	—	—	—	—	—	—
HDC on-ramp to 10th St West on-ramp	3,970	3,791	95%	48.0	2.4	61	12.3	B	410	3,970	3,791	95%	48.0	2.4	61	12.3	B	410	—	—	—	—	—	—	—	—	—
10th St W loop on-ramp to 10th St W direct on-ramp	4,740	4,554	96%	16.9	1.1	61	13.9	B	427	4,740	4,554	96%	16.9	1.1	61	13.9	B	427	—	—	—	—	—	—	—	—	—
10th St W direct on-ramp to West Ave N off-ramp	4,940	4,721	96%	67.0	4.6	61	15.2	B	494	4,940	4,721	96%	67.0	4.6	61	15.2	B	494	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	4,640	4,487	97%	17.8	0.8	62	18.1	C	512	4,640	4,487	97%	17.8	0.8	62	18.1	C	512	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	4,985	4,825	97%	9.4	0.4	62	15.6	B	521	4,985	4,825	97%	9.4	0.4	62	15.6	B	521	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to West Ave M off-ramp	5,160	4,994	97%	30.6	1.2	62	15.6	B	552	5,160	4,994	97%	30.6	1.2	62	15.6	B	552	—	—	—	—	—	—	—	—	—
SR 14 SB MAINLINE																											
West Ave M on-ramp to West Ave N off-ramp	6,925	6,922	100%	38.5	3.8	58	29.7	D	39	5,275	5,332	101%	38.7	4.0	58	30.6	D	39	1,650	1,590	96%	37.9	3.1	59	26.8	D	38
West Ave N off-ramp to West Ave N loop on-ramp	6,565	6,578	100%	19.0	1.7	59	27.8	D	58	4,915	4,991	102%	19.0	1.6	59	28.0	D	58	1,650	1,587	96%	19.2	1.8	59	27.1	D	57
West Ave N loop on-ramp to West Ave N direct on-ramp	6,620	6,630	100%	11.3	0.9	60	22.2	C	69	4,970	5,044	101%	11.3	0.8	60	21.0	C	69	1,650	1,586	96%	11.6	1.1	58	27.2	D	69
West Ave N direct on-ramp to 10th St W off-ramp	6,965	6,980	100%	91.7	15.7	55	25.0	C	161	5,290	5,589	106%	93.7	17.8	54	25.3	C	163	1,675	1,391	83%	84.1	8.1	59	23.6	C	153
10th St W off-ramp to HDC off-ramp	6,185	6,180	100%	19.2	3.4	53	29.3	D	180	4,245	5,091	120%	19.7	3.8	52	33.1	D	182	1,940	1,089	56%	16.9	1.1	61	18.0	B	170
HDC off-ramp to 10th St W on-ramp	2,635	2,635	100%	22.3	1.4	61	14.4	B	202	695	1,545	222%	21.9	0.9	62	12.4	B	204	1,940	1,092	56%	23.0	2.0	59	18.4	C	193
10th St W on-ramp to Palmdale Blvd off-ramp	4,030	4,027	100%	33.9	2.2	61	16.7	B	236	2,090	2,854	137%	33.3	1.6	62	15.6	B	238	1,940	1,172	60%	35.2	3.6	58	20.1	C	228
West Palmdale Blvd off-ramp to HDC on-ramp	3,597	3,582	100%	32.7	1.6	62	14.6	B	269	1,657	2,281	138%	31.9	0.8	63	12.1	B	269	1,940	1,301	67%	34.1	3.0	59	22.1	C	262
HDC on-ramp to West Palmdale Blvd loop on-ramp	4,875	4,760	98%	24.3	1.9	59	15.5	B	293	3,575	3,792	106%	24.1	1.7	60	15.3	B	294	1,300	968	74%	24.9	2.4	58	16.6	B	287
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	5,565	5,478	98%	14.6	1.8	57	21.5	C	308	4,265	3,955	93%	14.3	1.5	58	19.6	C	308	1,300	1,522	117%	15.4	2.6	54	28.4	D	302
West Palmdale Blvd direct on-ramp to East Ave S off-ramp	6,365	6,255	98%	71.4	8.7	57	26.9	D	379	4,795	4,630	97%	71.4	8.7	57	26.3	D	379	1,570	1,626	104%	71.2	8.4	57	28.5	D	373
East Ave S off-ramp to East Ave S on-ramp	6,005	5,902	98%	25.8	5.3	52	28.6	D	405	4,025	4,251	106%	26.9	6.5	50	28.6	D	406	1,980	1,652	83%	22.9	2.4	58	28.5	D	396
East Ave S on-ramp to Angeles Forest Hwy off-ramp	7,655	7,389	97%	319.3	130.5	40	48.1	**F**	724	5,675	5,515	97%	344.9	155.9	38	51.3	**F**	751	1,980	1,874	95%	243.2	55.3	51	37.9	**E**	640

FREEWAY SEGMENT	PM PEAK—OVERALL									PM PEAK – MIXED-FLOW LANES									PM PEAK – HOV LANE								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
SR 14 NB MAINLINE																											
Pearblossom Hwy direct on-ramp to East Ave S off-ramp	9,495	7,044	74%	389.7	235.3	29	65.2	**F**	390	7,100	5,162	73%	450.9	296.6	26	72.8	**F**	451	2,395	1,882	79%	230.4	75.9	47	42.4	**E**	230
East Ave S off-ramp to East Ave S on-ramp	7,880	5,783	73%	29.5	3.7	57	25.5	C	419	6,180	4,092	66%	29.8	4.0	56	24.3	C	481	1,700	1,691	99%	28.8	2.9	58	29.1	D	259
East Ave S on-ramp to West Palmdale Blvd off-ramp	8,425	6,339	75%	60.6	6.0	58	21.8	C	480	6,725	5,114	76%	61.1	6.4	58	22.1	C	542	1,700	1,225	72%	58.5	3.9	61	20.3	C	318
West Palmdale Blvd off-ramp to HDC off-ramp	6,915	5,251	76%	17.3	1.4	59	22.2	C	497	5,215	4,290	82%	17.4	1.4	59	24.3	C	559	1,700	962	57%	17.0	1.2	60	15.9	B	335
HDC off-ramp to West Palmdale Blvd loop on-ramp	4,565	3,464	76%	5.3	0.4	60	19.1	C	502	2,865	2,502	87%	5.2	0.3	61	20.7	C	564	1,700	963	57%	5.3	0.4	60	16.1	B	340
West Palmdale Blvd loop on-ramp to 10th St West off-ramp	5,220	4,121	79%	51.4	4.0	60	17.3	B	554	3,560	3,169	89%	51.4	4.0	60	17.7	B	616	1,660	953	57%	51.3	3.9	60	15.9	B	391
10th St West off-ramp to HDC on-ramp	4,230	3,369	80%	23.7	1.9	60	18.9	C	577	2,590	2,477	96%	23.7	1.9	59	20.8	C	640	1,640	892	54%	23.6	1.9	60	15.0	B	415
HDC on-ramp to 10th St West on-ramp	7,970	6,287	79%	49.4	3.8	59	21.2	C	627	6,229	5,001	80%	48.9	3.4	60	20.8	C	688	1,741	1,286	74%	51.3	5.6	57	22.6	C	466
10th St W loop on-ramp to 10th St W direct on-ramp	8,515	6,828	80%	17.3	1.5	59	21.4	C	644	6,775	5,453	80%	17.2	1.4	60	20.8	C	706	1,740	1,375	79%	17.7	1.9	58	23.8	C	484
10th St W direct on-ramp to West Ave N off-ramp	8,650	6,935	80%	74.1	11.7	55	24.6	C	718	6,560	5,617	86%	75.3	12.9	55	25.1	C	781	2,090	1,319	63%	69.1	6.5	58	22.6	C	553
West Ave N off-ramp to West Ave N loop on-ramp	8,090	6,490	80%	19.0	1.9	58	27.8	D	737	6,000	5,155	86%	18.9	1.8	58	29.4	D	800	2,090	1,336	64%	19.2	2.1	58	23.2	C	572
West Ave N loop on-ramp to West Ave N direct on-ramp	8,230	6,613	80%	9.8	0.8	59	22.4	C	747	6,140	5,277	86%	9.8	0.7	60	22.1	C	810	2,090	1,336	64%	10.1	1.1	58	23.2	C	582
West Ave N direct on-ramp to West Ave M off-ramp	8,415	6,785	81%	31.8	2.3	60	21.9	C	779	6,325	5,416	86%	31.4	2.0	61	21.5	C	841	2,090	1,369	66%	33.3	3.8	57	23.9	C	615
SR 14 SB MAINLINE																											
West Ave M on-ramp to West Ave N off-ramp	6,860	6,850	100%	38.9	4.2	58	29.8	D	39	6,860	6,850	100%	38.9	4.2	58	29.8	D	39	—	—	—	—	—	—	—	—	—
West Ave N off-ramp to West Ave N loop on-ramp	6,360	6,355	100%	19.1	1.7	59	27.0	D	58	6,360	6,355	100%	19.1	1.7	59	27.0	D	58	—	—	—	—	—	—	—	—	—
West Ave N loop on-ramp to West Ave N direct on-ramp	6,465	6,495	100%	11.3	0.9	60	21.7	C	69	6,465	6,495	100%	11.3	0.9	60	21.7	C	69	—	—	—	—	—	—	—	—	—
West Ave N direct on-ramp to 10th St W off-ramp	6,705	6,700	100%	90.7	14.8	54	24.6	C	160	6,705	6,700	100%	90.7	14.8	54	24.6	C	160	—	—	—	—	—	—	—	—	—
10th St W off-ramp to HDC off-ramp	5,605	5,600	100%	20.0	4.1	51	27.6	D	180	5,605	5,600	100%	20.0	4.1	51	27.6	D	180	—	—	—	—	—	—	—	—	—
HDC off-ramp to 10th St W on-ramp	1,917	1,915	100%	22.1	1.0	62	10.5	A	202	1,917	1,915	100%	22.1	1.0	62	10.5	A	202	—	—	—	—	—	—	—	—	—
10th St W on-ramp to Palmdale Blvd off-ramp	2,925	2,920	100%	33.5	1.8	61	12.2	B	236	2,925	2,920	100%	33.5	1.8	61	12.2	B	236	—	—	—	—	—	—	—	—	—
West Palmdale Blvd off-ramp to HDC on-ramp	2,059	2,055	100%	31.7	0.6	63	8.3	A	267	2,059	2,055	100%	31.7	0.6	63	8.3	A	267	—	—	—	—	—	—	—	—	—
HDC on-ramp to West Palmdale Blvd loop on-ramp	3,715	3,424	92%	23.8	1.4	61	10.9	A	291	3,715	3,424	92%	23.8	1.4	61	10.9	A	291	—	—	—	—	—	—	—	—	—
West Palmdale Blvd loop on-ramp to West Palmdale Blvd direct on-ramp	4,165	3,833	92%	13.7	0.9	60	14.1	B	305	4,165	3,833	92%	13.7	0.9	60	14.1	B	305	—	—	—	—	—	—	—	—	—
West Palmdale Blvd direct on-ramp to East Ave S off-ramp	4,580	4,211	92%	67.0	4.3	61	17.0	B	372	4,580	4,211	92%	67.0	4.3	61	17.0	B	372	—	—	—	—	—	—	—	—	—
East Ave S off-ramp to East Ave S on-ramp	3,760	3,602	96%	21.4	0.9	62	14.5	B	393	3,760	3,602	96%	21.4	0.9	62	14.5	B	393	—	—	—	—	—	—	—	—	—
East Ave S on-ramp to Angeles Forest Hwy off-ramp	4,575	4,406	96%	214.7	26.7	58	18.8	C	608	4,575	4,406	96%	214.7	26.7	58	18.8	C	608	—	—	—	—	—	—	—	—	—

Source: Parsons
Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-40. Year 2040 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Analysis Results *(2 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR EB MAINLINE																		
SR-138 EB west end of the network to SR-14 NB on-ramp	3,705	3,700	100%	22.1	2.9	46	41.1	**E**	22	3,800	3,800	100%	22.2	3.1	46	41.7	**E**	22
SR-14 NB on-ramp to 10th St E off-ramp	5,325	5,316	100%	98.5	7.3	60	21.4	C	121	6,480	5,921	91%	100.4	9.0	59	24.2	C	123
10th St E off-ramp to 10th St E on-ramp	4,525	4,525	100%	43.8	2.3	62	18.4	C	164	5,250	4,772	91%	44.0	2.4	61	19.5	C	167
10th St E on-ramp to 20th St E off-ramp	4,810	4,790	100%	17.2	1.4	59	20.1	C	182	5,630	5,089	90%	17.7	1.9	58	22.0	C	184
20th St E off-ramp to 20th St E on-ramp	4,395	4,360	99%	56.8	2.9	62	17.7	B	238	4,970	4,482	90%	56.8	2.8	62	18.2	C	241
20th St E on-ramp to 50th St E off-ramp	4,835	4,787	99%	65.5	5.4	59	19.6	C	304	5,550	5,041	91%	65.4	5.2	59	20.6	C	306
50th St E off-ramp to 50th St E on-ramp	4,085	4,023	98%	44.3	3.0	60	22.2	C	348	4,390	4,016	91%	44.1	2.8	61	22.0	C	351
50th St E on-ramp to 90th St E off-ramp	4,485	4,358	97%	201.2	17.5	59	24.2	C	549	4,760	4,318	91%	200.5	16.5	59	23.9	C	551
90th St E off-ramp to 90th St E on-ramp	3,960	3,744	95%	45.9	3.0	61	20.6	C	595	4,100	3,646	89%	45.7	2.8	61	20.0	C	597
90th St E on-ramp to 140th St E off-ramp	3,985	3,675	92%	275.9	21.5	60	20.2	C	871	4,125	3,594	87%	275.2	20.4	60	19.7	C	872
140th St E off-ramp to 140th St E on-ramp	3,360	3,025	90%	46.1	2.6	61	16.5	B	917	3,250	2,743	84%	45.7	2.2	62	14.8	B	918
140th St E on-ramp to 170th St E off-ramp	3,610	3,263	90%	136.8	9.7	60	17.6	B	1,054	3,370	2,838	84%	135.1	7.7	61	15.1	B	1,053
170th St E off-ramp to 170th St E on-ramp	3,560	3,164	89%	47.4	3.3	60	17.5	B	1,101	3,150	2,639	84%	46.7	2.5	61	14.4	B	1,099
170th St E on-ramp to 210th St E off-ramp	3,585	3,135	87%	195.6	14.4	60	17.0	B	1,297	3,170	2,612	82%	192.3	10.8	61	13.9	B	1,292
210th St E off-ramp to 210th St E on-ramp	3,560	3,069	86%	44.2	3.3	60	17.0	B	1,341	3,115	2,517	81%	43.4	2.5	61	13.7	B	1,335
210th St E on-ramp to 240th St E off-ramp	3,730	3,188	85%	142.1	11.8	59	17.4	B	1,483	3,135	2,501	80%	138.7	8.1	61	13.3	B	1,474
240th St E off-ramp to 240th St E on-ramp	3,330	2,797	84%	47.2	2.8	61	15.3	B	1,530	3,000	2,387	80%	47.1	2.7	61	13.0	B	1,521
240th St E on-ramp to Oasis Rd off-ramp	3,960	3,295	83%	137.4	10.9	59	18.0	B	1,668	3,340	2,703	81%	135.2	8.5	60	14.5	B	1,656
Oasis Rd off-ramp to Oasis Rd on-ramp	3,790	3,080	81%	47.7	3.2	61	17.0	B	1,716	3,220	2,576	80%	47.3	2.7	61	14.1	B	1,703
Oasis Rd on-ramp to Sheep Creek Rd off-ramp	3,920	3,131	80%	196.5	16.6	59	17.3	B	1,912	3,295	2,601	79%	192.3	12.2	61	14.0	B	1,896
Sheep Creek Rd off-ramp to Sheep Creek Rd on-ramp	2,970	2,281	77%	48.1	2.1	62	12.3	B	1,960	2,740	2,155	79%	48.3	2.2	62	11.6	B	1,944
Sheep Creek Rd on-ramp to Caughlin Rd off-ramp	3,110	2,374	76%	256.1	14.6	61	12.7	B	2,216	2,930	2,305	79%	256.1	14.2	61	12.3	B	2,200
Caughlin Rd off-ramp to Caughlin Rd on-ramp	2,605	1,953	75%	46.2	1.9	62	10.5	A	2,262	2,605	2,008	77%	46.4	2.1	62	10.8	A	2,246
Caughlin Rd on-ramp to Koala Rd off-ramp	2,625	1,956	75%	71.1	3.4	62	10.1	A	2,334	2,635	2,015	76%	71.2	3.3	62	10.5	A	2,318
Koala Rd off-ramp to Koala Rd loop on-ramp	2,525	1,872	74%	32.3	1.5	62	10.1	A	2,366	2,585	1,988	77%	32.4	1.6	62	10.7	A	2,350
Koala Rd loop on-ramp to Koala Rd direct on-ramp	3,345	2,690	80%	17.6	1.8	58	13.6	B	2,383	2,817	2,203	78%	16.9	1.1	61	10.7	A	2,367
Koala Rd direct on-ramp to Route 395 off-ramp	3,430	2,763	81%	104.8	6.0	61	14.5	B	2,488	2,875	2,248	78%	104.3	5.3	61	11.7	B	2,471
Route 395 off-ramp to Route 395 loop on-ramp	3,280	2,623	80%	26.1	1.4	61	14.2	B	2,514	2,775	2,136	77%	26.0	1.2	62	11.5	B	2,497
Route 395 loop on-ramp to Route 395 direct on-ramp	4,736	4,103	87%	25.2	4.6	55	23.6	C	2,539	3,938	3,285	83%	23.6	3.1	57	18.0	B	2,521
Route 395 direct on-ramp to Phantom W off-ramp	4,865	4,221	87%	66.2	11.6	54	25.4	C	2,606	4,080	3,419	84%	60.4	5.8	59	18.8	C	2,581
Phantom St West off-ramp to Phantom St West loop on-ramp	3,505	3,100	88%	28.0	1.2	62	16.7	B	2,634	3,185	2,693	85%	27.9	1.1	62	14.5	B	2,609
Phantom St West loop on-ramp to Phantom St West direct on-ramp	3,588	3,187	89%	12.5	0.6	62	14.6	B	2,646	3,438	2,940	86%	12.6	0.7	61	13.6	B	2,622
Phantom St West direct on-ramp to Phantom St East direct off-ramp	3,795	3,396	89%	57.7	3.3	61	17.9	B	2,704	3,835	3,314	86%	58.0	3.6	61	17.5	B	2,680
Phantom St East direct off-ramp to Phantom St East loop on-ramp	3,155	2,833	90%	35.9	1.5	62	15.2	B	2,740	3,510	3,041	87%	36.2	1.8	62	16.5	B	2,716
Phantom St East loop on-ramp to Phantom St East direct on-ramp	3,426	3,074	90%	16.1	0.9	61	16.8	B	2,756	4,273	3,714	87%	17.1	1.9	58	21.5	C	2,733
Phantom St East direct on-ramp to National Trails Hwy off-ramp	3,730	3,382	91%	41.5	2.5	61	18.6	C	2,797	4,675	4,127	88%	43.1	4.1	58	23.6	C	2,776
National Trails Hwy off-ramp to National Trails Hwy on-ramp	3,340	3,039	91%	43.2	2.0	62	16.4	B	2,840	4,180	3,688	88%	43.5	2.4	61	20.1	C	2,820
National Trails Hwy on-ramp to I-15 NB/SB off-ramp	3,540	3,224	91%	103.3	4.9	62	13.1	B	2,944	4,430	3,919	88%	105.6	7.1	60	16.3	B	2,925
I-15 NB/SB off-ramp to I-15 NB on-ramp	1,685	1,493	89%	80.1	1.9	63	7.9	A	3,024	1,605	1,467	91%	80.1	2.0	63	7.8	A	3,005
I-15 NB/SB on-ramp to Choco Rd off-ramp	2,010	1,817	90%	57.2	1.9	62	7.3	A	3,081	2,175	2,007	92%	57.3	2.1	62	8.1	A	3,063
Choco Rd off-ramp to Choco Rd on-ramp	1,865	1,685	90%	33.5	1.3	62	10.5	A	3,115	1,835	1,678	91%	33.5	1.3	62	9.0	A	3,096
Choco Rd on-ramp to Dale Evans Pkwy off-ramp	1,900	1,715	90%	72.3	2.8	62	11.5	B	3,187	1,935	1,773	92%	72.4	2.8	62	9.1	A	3,168
Dale Evans Pkwy off-ramp to Dale Evans Pkwy direct on-ramp	1,598	1,360	85%	37.3	1.1	63	9.3	A	3,224	1,723	1,485	86%	37.4	1.3	63	7.9	A	3,206
Dale Evans Pkwy direct on-ramp to HDC EB east end of the network	1,670	1,486	89%	32.2	1.2	62	9.5	A	3,256	1,800	1,628	90%	32.3	1.4	62	8.2	A	3,238

Source: Parsons
Level of service based on HCM 2000

Level of service E
Level of service F

Table 4-40. Year 2040 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Analysis Results *(3 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
HIGH DESERT CORRIDOR WB MAINLINE																		
HDC WB west end of the network to Dale Evans Pkwy off-ramp	845	843	100%	36.5	1.7	61	7.2	A	37	2,080	2,070	100%	39.3	4.3	56	19.0	C	39
Dale Evans Pkwy off-ramp to Dale Evans Pkwy direct on-ramp	825	821	100%	36.1	1.0	63	6.0	A	73	2,133	2,120	99%	37.3	2.2	61	15.7	B	77
Dale Evans Pkwy direct on-ramp to Choco Rd off-ramp	935	934	100%	79.6	2.6	63	7.4	A	152	2,385	2,380	100%	84.2	7.1	59	19.3	C	161
Choco Rd off-ramp to Choco Rd on-ramp	830	830	100%	34.6	0.9	63	6.1	A	187	2,370	2,370	100%	36.5	2.7	60	13.2	B	197
Choco Rd on-ramp to I-15 NB/SB off-ramp	1,165	1,158	99%	56.7	1.3	63	4.7	A	243	2,605	2,593	100%	57.7	2.3	62	10.4	A	255
I-15 NB/SB off-ramp to I-15 SB on-ramp	735	721	98%	99.0	1.1	64	3.8	A	342	2,042	2,040	100%	101.9	3.9	62	11.5	B	357
I-15 NB on-ramp to I-15 NB on-ramp	910	904	99%	10.8	0.3	63	4.1	A	353	2,560	2,501	98%	11.1	0.7	61	11.6	B	368
I-15 SB on-ramp to National Trails Hwy off-ramp	2,100	2,100	100%	66.4	2.9	62	8.6	A	420	3,960	3,922	99%	69.2	5.8	59	16.5	B	437
National Trails Hwy off-ramp to National Trails Hwy on-ramp	1,925	1,920	100%	41.9	1.2	63	10.2	A	462	3,810	3,756	99%	43.6	2.9	61	20.6	C	481
National Trails Hwy on-ramp to Phantom St East off-ramp	2,340	2,346	100%	53.0	2.9	61	12.4	B	515	4,540	4,462	98%	57.0	7.0	57	25.3	C	538
Phantom St East off-ramp to Phantom St East loop on-ramp	1,600	1,602	100%	32.9	0.7	63	8.4	A	547	4,045	3,915	97%	34.4	2.3	61	21.5	C	572
Phantom St East loop on-ramp to Phantom St East direct on-ramp	1,845	1,809	98%	5.4	0.3	62	9.7	A	553	4,531	4,337	96%	5.9	0.7	57	25.4	C	578
Phantom St East direct on-ramp to Phantom St West off-ramp	1,865	1,855	99%	57.9	1.9	63	9.9	A	611	4,560	4,555	100%	65.6	9.5	55	30.2	D	644
Phantom St West off-ramp to Phantom St West on-ramp	1,610	1,580	98%	42.1	1.0	63	8.3	A	653	4,390	4,325	99%	44.9	3.8	59	27.1	D	689
Phantom St West on-ramp to Route 395 off-ramp	1,945	1,914	98%	54.2	2.4	62	7.7	A	707	6,070	5,925	98%	67.2	15.5	50	30.6	D	756
Route 395 off-ramp to Route 395 on-ramp	1,000	987	99%	46.6	0.5	64	3.8	A	754	4,405	4,320	98%	48.7	2.6	61	17.6	B	804
Route 395 on-ramp to Koala Rd off-ramp	1,095	1,086	99%	99.4	1.4	64	4.1	A	853	4,440	4,323	97%	104.1	6.2	61	17.3	B	909
Koala Rd off-ramp to Koala Rd on-ramp	865	841	97%	48.3	0.6	64	3.3	A	901	3,450	3,366	98%	49.8	2.1	62	13.6	B	958
Koala Rd on-ramp to Caughlin Rd off-ramp	940	903	96%	66.1	0.8	64	3.4	A	967	3,620	3,532	98%	68.6	3.3	62	13.9	B	1,027
Caughlin Rd off-ramp to Caughlin Rd on-ramp	915	880	96%	48.9	0.6	64	3.4	A	1,016	3,565	3,451	97%	50.8	2.5	62	14.0	B	1,078
Caughlin Rd on-ramp to Sheep Creek Rd off-ramp	1,075	1,025	95%	244.7	3.9	64	4.0	A	1,261	4,240	4,064	96%	256.5	15.7	61	16.5	B	1,334
Sheep Creek Rd off-ramp to Sheep Creek Rd loop on-ramp	1,010	941	93%	44.8	0.8	64	3.7	A	1,306	4,170	3,901	94%	46.9	2.9	61	16.0	B	1,381
Sheep Creek Rd direct on-ramp to Oasis Rd off-ramp	1,175	1,096	93%	182.7	3.2	64	4.2	A	1,488	5,195	4,859	94%	194.4	14.9	59	20.1	C	1,576
Oasis Rd off-ramp to Oasis Rd loop on-ramp	1,150	1,060	92%	47.5	0.9	64	4.2	A	1,536	5,165	4,764	92%	50.3	3.8	60	19.9	C	1,626
Oasis Rd direct on-ramp to 240th St E off-ramp	1,225	1,125	92%	127.8	2.5	63	4.3	A	1,664	5,365	4,901	91%	136.6	11.5	59	20.2	C	1,762
240th St E off-ramp to 240th St E on-ramp	1,080	980	91%	43.6	0.8	64	3.9	A	1,707	4,515	4,339	96%	45.7	2.9	61	17.9	B	1,808
240th St E on-ramp to 210th St E off-ramp	1,220	1,093	90%	133.6	2.7	63	4.2	A	1,841	5,045	4,496	89%	145.4	14.5	58	19.0	C	1,954
210th St E off-ramp to 210th St E on-ramp	1,195	1,059	89%	41.9	0.8	63	5.6	A	1,883	4,715	4,152	88%	44.9	3.9	59	23.4	C	1,999
210th St E on-ramp to 170th St E off-ramp	1,245	1,102	88%	187.0	4.1	63	5.7	A	2,070	4,740	4,103	87%	200.6	17.7	59	22.6	C	2,199
170th St E off-ramp to 170th St E on-ramp	1,185	1,026	87%	44.1	1.0	63	5.4	A	2,114	4,425	3,734	84%	46.8	3.6	60	20.8	C	2,246
170th St E on-ramp to 140th St E off-ramp	1,280	1,103	86%	133.9	3.2	63	5.6	A	2,248	4,500	3,742	83%	142.4	11.7	59	20.4	C	2,388
140th St E off-ramp to 140th St E on-ramp	1,230	1,050	85%	36.3	0.9	63	5.5	A	2,284	4,470	3,661	82%	38.6	3.2	59	20.5	C	2,427
140th St E on-ramp to 90th St E off-ramp	1,980	1,685	85%	267.0	8.0	63	8.8	A	2,551	4,930	3,947	80%	286.3	27.4	58	22.2	C	2,713
90th St E off-ramp to 90th St E on-ramp	1,955	1,646	84%	44.1	1.4	63	8.7	A	2,595	4,880	3,792	78%	46.8	4.1	59	21.4	C	2,760
90th St E on-ramp to 70th St E off-ramp	2,590	2,288	88%	192.2	8.5	62	12.2	B	2,787	5,410	4,249	79%	207.8	24.3	57	24.4	C	2,968
50th St E off-ramp to 50th St E on-ramp	2,245	1,947	87%	43.2	1.6	62	10.4	A	2,831	5,030	3,855	77%	45.1	3.6	60	21.5	C	3,013
50th St E on-ramp to 20th St E off-ramp	3,355	3,044	91%	66.5	3.1	61	12.4	B	2,897	5,920	4,720	80%	68.5	5.4	60	19.8	C	3,081
20th St E off-ramp to 20th St E on-ramp	2,815	2,536	90%	54.1	1.8	63	10.1	A	2,951	5,220	4,167	80%	55.6	3.4	61	17.1	B	3,137
20th St E on-ramp to 10th St E off-ramp	3,215	2,936	91%	16.7	0.8	61	10.9	A	2,968	5,570	4,488	81%	17.2	1.4	59	17.2	B	3,154
10th St E off-ramp to 10th St E on-ramp	2,835	2,607	92%	41.3	1.4	63	10.4	A	3,009	5,165	4,138	80%	42.4	2.6	61	17.0	B	3,197
10th St E on-ramp to SR-14 SB off-ramp	3,648	3,437	94%	96.3	4.6	61	13.8	B	3,105	6,240	5,034	81%	157.0	65.6	39	33.2	D	3,354
SR-14 SB off-ramp to SR-138 WB west end of the network	2,295	2,120	92%	12.7	0.6	54	19.7	C	3,118	4,400	3,464	79%	15.3	2.8	45	38.8	**E**	3,369

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-40. Year 2040 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Analysis Results *(4 of 4)*

FREEWAY SEGMENT	AM PEAK—OVERALL									PM PEAK—OVERALL								
	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)	DEMAND (vph)	SERVED (vph)	% SERVED	TRAVEL TIME (sec/veh)	DELAY TIME (sec/veh)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	CUMULATIVE TIME (sec/veh)
I-15 NB MAINLINE																		
I-15 NB south end of the network to Palmdale Rd off-ramp	3,700	3,700	100%	150.8	9.9	61	20.2	C	151	6,025	5,601	93%	235.9	94.3	40	46.6	**F**	236
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	3,240	3,235	100%	22.5	1.5	61	17.7	B	173	5,400	5,014	93%	25.1	3.9	55	30.6	D	261
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	3,620	3,615	100%	11.6	1.2	59	20.5	C	185	5,800	5,371	93%	13.2	2.7	52	34.6	D	274
Palmdale Rd direct on-ramp to Roy Rogers Dr off-ramp	4,060	4,060	100%	22.6	1.9	59	17.1	B	207	6,300	5,880	93%	25.7	5.0	52	28.1	D	300
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	3,505	3,500	100%	24.5	1.8	61	19.2	C	232	5,720	5,313	93%	27.1	4.3	55	32.4	D	327
Roy Rogers Dr on-ramp to Mojave Dr off-ramp	3,895	3,890	100%	17.0	1.2	60	16.1	B	249	6,220	5,784	93%	18.5	2.7	55	26.2	D	345
Mojave Dr off-ramp to Mojave Dr on-ramp	3,240	3,228	100%	21.0	1.3	61	17.5	B	270	5,540	5,180	94%	22.9	3.1	56	30.8	D	368
Mojave Dr on-ramp to D St off-ramp	3,740	3,704	99%	51.1	4.0	60	18.0	C	321	5,895	5,527	94%	55.5	8.2	55	29.7	D	424
D St off-ramp to E St off-ramp	2,590	2,541	98%	9.8	0.4	62	13.6	B	331	4,825	4,522	94%	10.2	0.8	60	25.2	C	434
E St off-ramp to D St on-ramp	2,540	2,493	98%	28.5	1.2	62	13.3	B	359	4,755	4,443	93%	29.5	2.2	60	24.6	C	464
D St on-ramp to E St on-ramp	2,840	2,736	96%	11.1	0.6	61	14.9	B	370	5,060	4,709	93%	11.9	1.4	57	27.3	D	475
E St on-ramp to Stoddard Wells Rd off-ramp	2,890	2,804	97%	30.7	2.2	60	15.5	B	401	5,115	4,788	94%	32.6	4.1	56	28.4	D	508
Stoddard Wells Rd off-ramp to Stoddard Wells Rd on-ramp	2,300	2,232	97%	20.4	0.9	62	12.0	B	421	4,435	4,169	94%	21.1	1.6	60	23.1	C	529
Stoddard Wells Rd on-ramp to HDC EB/WB off-ramp	2,575	2,486	97%	38.7	1.7	62	10.0	A	460	5,005	4,709	94%	40.3	3.3	59	19.9	C	569
HDC EB/WB off-ramp to HDC WB on-ramp	2,275	2,164	95%	71.5	2.9	62	11.6	B	532	4,285	4,066	95%	73.9	5.2	60	22.5	C	643
HDC WB on-ramp to HDC EB on-ramp	2,425	2,316	96%	7.7	0.4	62	9.7	A	539	4,435	4,211	95%	8.0	0.7	60	18.3	C	651
HDC EB on-ramp to Stoddard Wells Rd off-ramp (Quarry Rd)	3,525	3,308	94%	36.9	2.2	61	13.6	B	576	6,265	5,763	92%	43.2	8.4	51	28.5	D	694
Stoddard Wells Rd off-ramp (Quarry Rd) to Stoddard Wells Rd on-ramp (Quarry Rd)	3,065	2,876	94%	23.0	1.0	62	15.5	B	599	5,915	5,428	92%	25.5	3.5	56	32.4	D	720
Stoddard Wells Rd on-ramp (Quarry Rd) to Dale Evans Pkwy off-ramp	3,295	3,077	93%	218.7	13.0	61	16.8	B	818	6,135	5,562	91%	244.1	38.1	55	33.9	D	964
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	2,840	2,646	93%	32.1	1.7	61	14.3	B	850	5,700	5,070	89%	33.7	3.3	59	28.9	D	998
Dale Evans Pkwy on-ramp to I-15 NB north end of the network	3,235	3,020	93%	64.6	3.7	61	16.5	B	915	6,170	5,480	89%	69.5	8.6	57	32.3	D	1,067
I-15 SB MAINLINE																		
I-15 SB north end of the network to Dale Evans Pkwy off-ramp	4,555	4,547	100%	60.2	4.9	59	25.5	C	60	3,860	3,860	100%	59.4	4.1	60	21.4	C	59
Dale Evans Pkwy off-ramp to Dale Evans Pkwy on-ramp	4,170	4,160	100%	37.4	3.1	60	23.5	C	98	3,360	3,346	100%	36.7	2.4	61	18.3	C	96
Dale Evans Pkwy on-ramp to Quarry Rd off-ramp	4,600	4,600	100%	221.9	22.2	58	26.6	D	320	3,840	3,831	100%	217.5	18.2	59	21.5	C	314
Quarry Rd off-ramp to Quarry Rd on-ramp	4,415	4,410	100%	25.6	2.4	59	25.2	C	345	3,580	3,591	100%	25.0	2.0	60	19.9	C	339
Quarry Rd on-ramp to HDC EB/WB off-ramp	4,705	4,700	100%	53.8	5.5	58	20.3	C	399	3,955	3,970	100%	53.4	5.1	59	16.9	B	392
HDC EB/WB off-ramp to HDC EB/WB on-ramp	3,315	3,291	99%	83.3	5.5	61	18.0	C	482	2,295	2,290	100%	81.3	3.6	62	12.1	B	473
HDC EB/WB on-ramp to Stoddard Wells Rd off-ramp	4,350	4,350	100%	36.0	3.8	57	20.1	C	518	3,595	3,595	100%	35.1	2.8	59	15.5	B	508
Stoddard Wells Rd off-ramp to Stoddard Wells Rd direct on-ramp	3,610	3,489	97%	33.7	2.2	61	19.2	C	552	3,040	2,850	94%	33.2	1.7	62	15.4	B	541
Stoddard Wells Rd direct on-ramp to D St off-ramp	4,275	4,126	97%	39.0	4.6	58	23.8	C	591	3,590	3,362	94%	37.6	3.2	60	18.7	C	579
D St off-ramp to D St on-ramp	3,970	3,810	96%	21.9	1.6	60	21.0	C	613	3,305	3,080	93%	21.5	1.2	62	16.7	B	601
D St on-ramp to Mojave Dr off-ramp	4,870	4,729	97%	53.4	5.0	59	19.7	C	666	4,420	4,196	95%	52.3	3.9	60	17.1	B	653
Mojave Dr off-ramp to Mojave Dr on-ramp	4,515	4,343	96%	20.8	1.8	59	24.4	C	687	3,940	3,737	95%	20.4	1.4	60	20.6	C	673
Mojave Dr on-ramp to Roy Rogers Dr off-ramp	5,220	5,049	97%	15.5	1.7	57	22.0	C	702	4,635	4,400	95%	15.1	1.4	59	18.7	C	688
Roy Rogers Dr off-ramp to Roy Rogers Dr on-ramp	4,790	4,610	96%	27.7	2.6	59	26.1	D	730	4,175	3,954	95%	27.0	1.8	61	21.8	C	715
Roy Rogers Dr on-ramp to Palmdale Rd off-ramp	5,200	4,987	96%	23.5	1.8	60	20.9	C	754	4,730	4,515	95%	23.4	1.7	60	18.8	C	739
Palmdale Rd off Ramp to Palmdale Rd loop on-ramp	4,400	4,186	95%	12.8	0.9	60	23.1	C	766	3,780	3,596	95%	12.7	0.7	61	19.6	C	751
Palmdale Rd loop on-ramp to Palmdale Rd direct on-ramp	4,615	4,365	95%	8.6	0.8	59	24.6	C	775	3,980	3,770	95%	8.5	0.6	60	20.8	C	760
Palmdale Rd direct on-ramp to I-15 SB south end of the network	4,915	4,632	94%	170.9	14.9	59	26.1	D	946	4,330	4,079	94%	168.1	12.1	60	22.6	C	928

Source: Parsons

Level of service based on HCM 2000

Level of service E

Level of service F

Table 4-41. Year 2040 Build Alternative with Tolls and Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(1 of 4)*

Summary of SR 14

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
East Avenue S	Merging	58	12.4	B	58	21.3	C
West Palmdale Blvd loop	Merging	60	10.6	B	60	17.2	B
SR 138 WB	Merging	61	14	B	58	22	C
10th St W. loop	Merging	59	17.3	B	58	21.7	C
10th St W. direct	Merging	60	17.4	B	59	21.2	C
West Avenue N loop	Merging	60	16.6	B	59	20.7	C
West Avenue N direct	Merging	61	13.9	B	60	17.7	B
East Avenue S	Diverging	62	13.1	B	47	39.2	E
West Palmdale Blvd	Diverging	60	13.0	B	57	21.3	C
SR 138 EB	Diverging	61	13.3	B	59	22.2	C
10th St W.	Diverging	60	10.6	B	58	17.8	B
West Avenue N	Diverging	58	17.8	B	52	25.2	C
SOUTHBOUND							
West Avenue N loop	Merging	60	20.6	C	61	18.1	B
West Avenue N direct	Merging	60	17.8	B	62	13.8	B
10th St W.	Merging	61	16.6	B	62	11.7	B
SR 138 WB	Merging	60	14.5	B	61	11.2	B
West Palmdale Blvd loop	Merging	56	23.1	C	59	17.4	B
West Palmdale Blvd direct	Merging	55	26.6	C	59	19.9	B
East Avenue S	Merging	31	53.4	E	56	20.1	C
West Avenue N	Diverging	57	30.6	D	54	33.9	D
10th St W.	Diverging	53	26.5	C	49	33.0	D
SR 138 EB	Diverging	53	29.3	D	49	31.6	D
West Palmdale Blvd	Diverging	60	18.4	B	60	15.4	B
East Avenue S	Diverging	55	29.1	D	58	22.8	C

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-41. Year 2040 Build Alternative with Tolls and Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(2 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
EASTBOUND							
SR 14 NB	Merging	58	23	C	57	25	C
20th St E	Merging	58	22	C	55	25	C
30th St E	Merging	60	18	B	59	19	B
50th St E	Merging	57	23	C	57	23	C
90th St E	Merging	60	17	B	60	17	B
140th St E	Merging	59	16	B	61	13	B
170th St E	Merging	60	15	B	61	12	B
210th St E	Merging	58	16	B	61	12	B
240th St E	Merging	56	18	B	59	14	B
Oasis Rd	Merging	59	15	B	61	12	B
Sheep Creek Rd loop	Merging	62	12	B	62	12	B
Sheep Creek Rd direct	Merging	61	11	B	60	11	B
Caughlin Rd loop	Merging	62	10	B	61	11	B
Caughlin Rd direct	Merging	62	9	A	61	9	A
Koala Rd loop	Merging	57	15	B	60	11	B
Koala Rd direct	Merging	60	14	B	61	11	B
Route 395 loop	Merging	49	26	C	53	19	B
Route 395 direct	Merging	59	21	C	60	17	B
Phantom St West loop	Merging	61	13	B	61	13	B
Phantom St West direct	Merging	61	15	B	59	17	B
Phantom St East loop	Merging	61	17	B	56	24	C
Phantom St East direct	Merging	59	20	B	56	26	C
Choco Rd	Merging	62	8	A	62	8	A
Dale Evans Pkwy direct	Merging	62	7	A	62	8	A
20th St E	Diverging	58	25	C	55	30	D
30th St E	Diverging	58	22	C	55	25	C
50th St E	Diverging	58	21	C	59	23	C
90th St E	Diverging	56	27	C	57	26	C
140th St E	Diverging	57	23	C	57	22	C
170th St E	Diverging	60	19	B	60	16	B
210th St E	Diverging	60	18	B	61	15	B
240th St E	Diverging	58	19	B	60	14	B
Oasis Rd	Diverging	59	19	B	60	15	B
Sheep Creek Rd	Diverging	55	20	C	59	15	B
Caughlin Rd	Diverging	59	14	B	60	13	B
Koala	Diverging	61	11	B	61	11	B
Route 395	Diverging	60	16	B	61	13	B
Phantom St West	Diverging	51	30	D	56	22	C
Phantom St East	Diverging	59	20	C	60	20	B
National Trails Hwy	Diverging	60	20	B	58	25	C
Dale Evans Pkwy	Diverging	61	9	A	62	10	A
National Trails Hwy to I-15 NB/SB	Weaving	61	13	B	60	16	B
I-15 NB/SB to Choco Rd	Weaving	62	6	A	62	8	A

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-41. Year 2040 Build Alternative with Tolls and Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(3 of 4)*

Summary of High Desert Corridor

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
WESTBOUND							
Dale Evans Pkwy direct	Merging	62	7	A	57	18	B
I-15 NB	Merging	62	4	A	61	11	B
National Trails Hwy	Merging	60	13	B	53	25	C
Phantom St East loop	Merging	61	11	B	55	26	C
Phantom St East direct	Merging	61	11	B	49	35	D
Phantom St West	Merging	62	8	A	59	24	C
Route 395	Merging	63	4	A	62	12	B
Koala Rd loop	Merging	63	3	A	62	12	B
Koala Rd direct	Merging	63	3	A	62	11	B
Caughlin Rd loop	Merging	63	4	A	62	13	B
Caughlin Rd direct	Merging	62	4	A	58	16	B
Sheep Creek Rd loop	Merging	63	4	A	61	15	B
Sheep Creek Rd direct	Merging	62	4	A	53	22	C
Oasis Rd loop	Merging	62	4	A	60	20	B
Oasis Rd direct	Merging	62	4	A	58	18	B
240th St E	Merging	62	4	A	59	16	B
210th St E	Merging	63	5	A	59	19	B
170th St E	Merging	62	5	A	60	17	B
140th St E	Merging	61	9	A	54	21	C
90th St E	Merging	59	12	B	50	24	C
50th St E	Merging	60	12	B	59	18	B
30th St E	Merging	60	11	B	58	16	B
20th St E	Merging	59	14	B	49	23	C
Dale Evans Pkwy	Diverging	63	7	A	61	18	B
Choco Rd	Diverging	63	8	A	60	20	C
Phantom St East	Diverging	59	16	B	56	28	C
Phantom St West	Diverging	61	11	B	57	29	D
Route 395	Diverging	58	12	B	43	37	**E**
Koala Rd	Diverging	62	6	A	58	21	C
Caughlin Rd	Diverging	63	4	A	62	14	B
Sheep Creek Rd	Diverging	62	5	A	60	17	B
Oasis Rd	Diverging	62	5	A	60	20	C
240th St E	Diverging	62	5	A	56	23	C
210th St E	Diverging	63	4	A	53	20	B
170th St E	Diverging	62	6	A	57	24	C
140th St E	Diverging	63	6	A	59	20	C
90th St E	Diverging	62	9	A	59	21	C
50th St E	Diverging	60	13	B	56	25	C
30th St E	Diverging	60	14	B	59	20	B
20th St E	Diverging	60	11	B	58	16	B
SR 14 SB	Diverging	61	17	B	31	54	**E**
Choco to I-15 NB/SB	Weaving	63	5	A	63	9	A
I-15 SB to National Trails Hwy	Weaving	62	10	B	59	17	B

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

Table 4-41. Year 2040 Build Alternative with Tolls and Revised Palmdale Access Weaving and Ramp Merging/Diverging Analysis Results *(4 of 4)*

Summary of I-15

LOCATION	ANALYSIS TYPE	AM PEAK			PM PEAK		
		SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)	SPEED (mph)	DENSITY (veh/ln/mi)	LOS (HCM 2000)
NORTHBOUND							
Palmdale Rd loop	Merging	58	23	C	49	36	E
Mojave Dr	Merging	58	23	C	49	37	E
D St	Merging	61	15	B	57	28	C
E St	Merging	60	17	B	55	30	D
HDC WB	Merging	62	9	A	60	16	B
Stoddard Wells Rd (Quarry Rd)	Merging	61	17	B	54	34	D
Dale Evans Pkwy	Merging	60	16	B	55	32	D
Palmdale Rd	Diverging	58	23	C	43	40	E
D St	Diverging	59	16	B	59	22	C
E St	Diverging	62	14	B	60	24	C
Stoddard Wells Rd	Diverging	59	17	B	56	29	D
Dale Evans Pkwy	Diverging	60	17	B	54	33	D
Palmdale Rd direct to Roy Rogers Dr	Weaving	59	17	B	50	27	C
Roy Rogers Dr to Mojave Dr	Weaving	59	16	B	54	25	C
Stoddard Wells Rd to HDC EB/WB	Weaving	62	9	A	59	19	B
HDC EB to Stoddard Wells Rd (Quarry Rd)	Weaving	61	13	B	49	28	C
SOUTHBOUND							
Dale Evans Pkwy	Merging	55	29	D	57	24	C
HDC EB/WB	Merging	55	19	B	58	15	B
Stoddard Wells Rd direct	Merging	54	26	C	57	21	C
Palmdale Rd loop	Merging	59	24	C	60	21	C
Palmdale Rd direct	Merging	57	27	C	58	24	C
Dale Evans Pkwy	Diverging	58	27	C	58	24	C
Quarry Rd	Diverging	57	27	C	58	23	C
Stoddard Wells Rd	Diverging	58	18	B	60	14	B
D St	Diverging	58	24	C	60	20	B
Quarry Rd to HDC EB/WB	Weaving	58	19	B	58	17	B
D St to Mojave Dr	Weaving	58	18	B	59	17	B
Mojave Dr to Roy Rogers Dr	Weaving	56	21	C	58	19	B
Roy Rogers Dr to Palmdale Rd	Weaving	59	20	B	59	19	B

Source: Parsons

Notes:
1. Level of service based on HCM 2000
2. Merge/diverge calculations are based on mainline two right-most lanes within 1,500 feet of influence area

Level of service E

Level of service F

4.6 Ramp Termini and Study Area Intersection Analysis Results

4.6.1 Opening Year (2020) Results

The location of the ramp termini and study area intersections included as part of the analysis of opening year (2020) and design year (2040) conditions were illustrated previously on Figure 4-14. For these future years, the number of intersections analyzed was expanded from the 89 investigated as part of the existing conditions to 163 for the initial alternatives and 164 for the revised Palmdale access definition of the alternatives. The new study area intersections include the addition of new interchange ramp termini intersections accessing the High Desert Corridor new freeway/expressway, along with intersections adjacent to these new ramp termini.

The proposed traffic lane geometric configurations for the 163 study intersections are illustrated on Figures 4-33, 4-34, and 4-35. The graphics depict the number of through and turning movement lanes assumed for each of the study area intersections. No-build intersection configurations are illustrated on Figure 4-33, while build alternative intersection configurations are illustrated on Figure 4-34. For the opening year of 2020, a partial build alternative was also investigated, and the intersection lane configurations assumed for this option are illustrated on Figure 4-35.

The intersection traffic level of service analysis results for year 2020 are reported in Table 4-42 for the initial alternatives and Table 4-43 for the revised Palmdale access definition of the alternatives; and are based on the traffic volume forecasts discussed in section 3.8 and presented in Volume IV and Volume V of this report.

For the ramp termini intersections reported in Tables 4-42 and 4-43, all ramp intersections perform at LOS D or better, except for stop sign controlled intersections at the I-15 and Stoddard Wells Road south interchange. The level of service improves to LOS A or B with the installation of traffic signals at these locations (intersections 130, 131, 132 and 133).

For the intersections reported in Tables 4-42 and 4-43, the no-build alternative performs poorly compared to the build alternative. For the no-build 2020 opening year scenario, 115 intersections are analyzed. During the AM peak hour, nine intersections (eight percent) are projected to operate at LOS E or LOS F. During the PM peak hour, this number increases to 20 intersections, equal to 17 percent of the intersections studied.

The build alternative performs much better. Only two of the 159 intersections studied perform at LOS E or LOS F during the AM peak hour, while five intersections perform poorly during the PM peak hour. These poorly performing intersections are listed below.

- #30—15th Street East and East Palmdale Boulevard (AM, PM)
- #45—50th Street East and East Palmdale Boulevard (AM, PM)
- #56—140th Street East and East Palmdale Boulevard (PM–Toll Alternative)
- #59—140th Street East and East Avenue R (PM–Toll Alternative)
- #70—SR 138 and SR 18 (PM)

The partial build alternative performs much better than the no-build alternative, but worse than the build alternative, insofar as the intersection level of service.

Detailed level of service input parameters and output results for the initial analysis are provided in Volume IV of this report. Output results reflecting the revised Palmdale access are provided in Volume V.

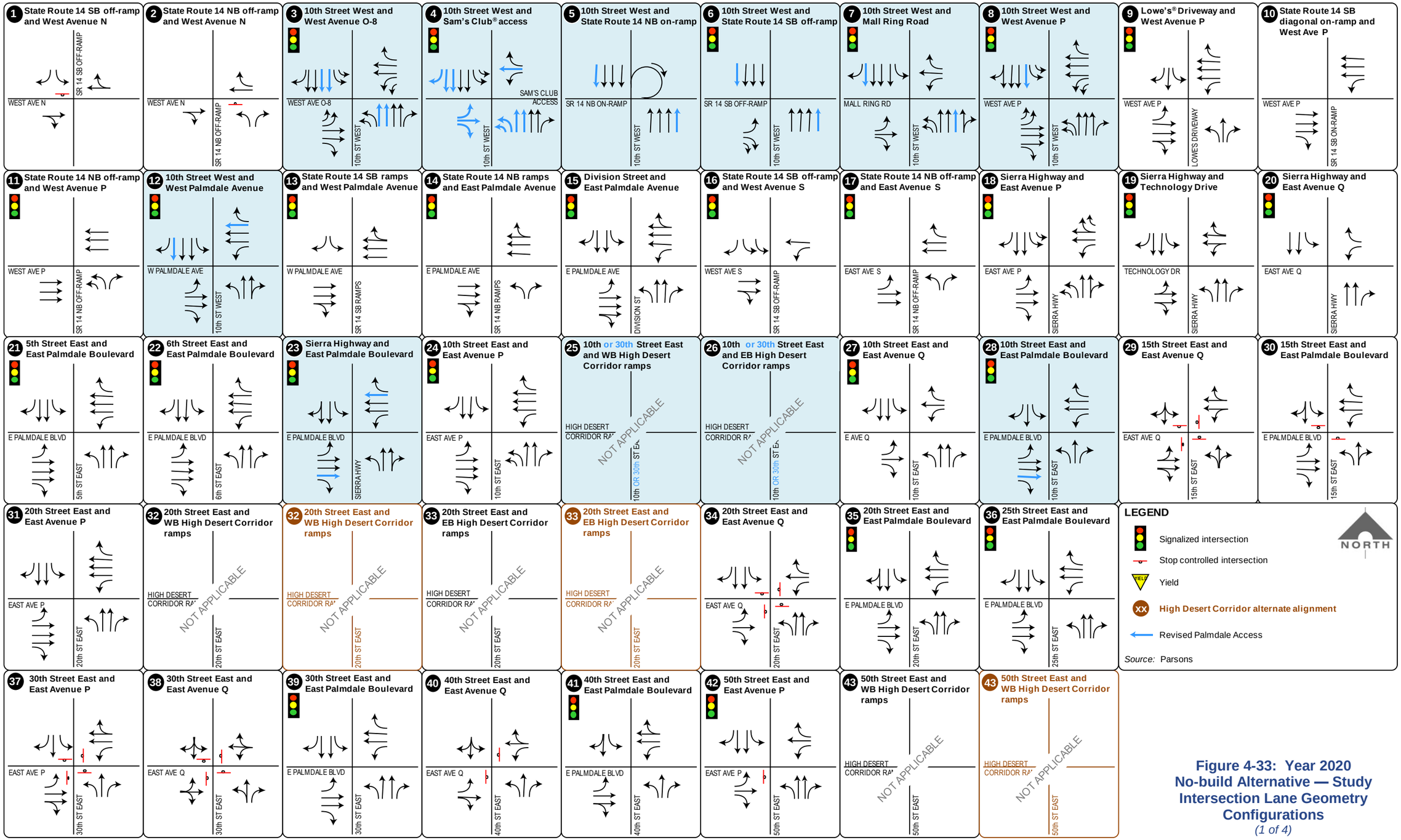


Figure 4-33: Year 2020 No-build Alternative — Study Intersection Lane Geometry Configurations
(1 of 4)

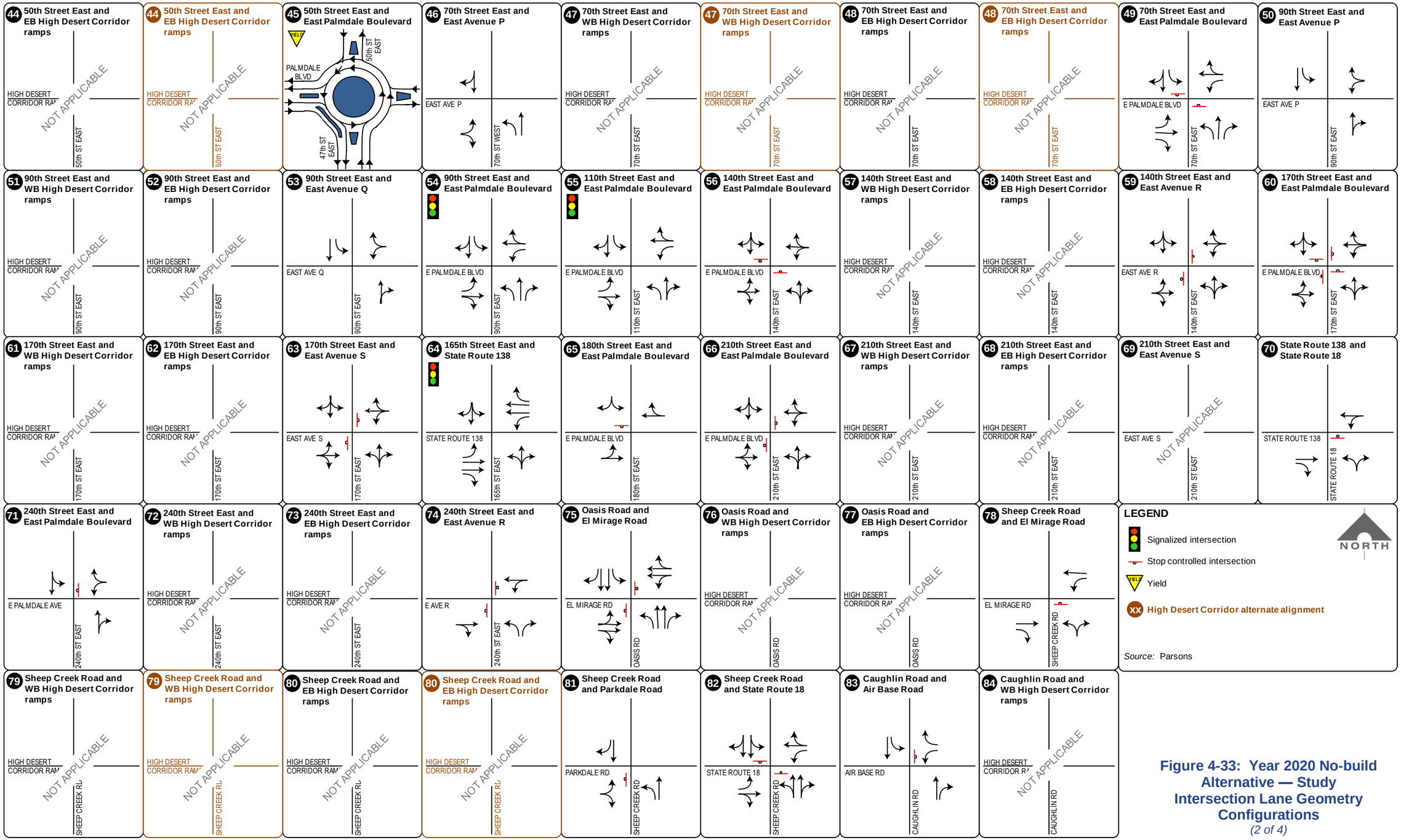


Figure 4-33: Year 2020 No-build Alternative — Study Intersection Lane Geometry Configurations
(2 of 4)

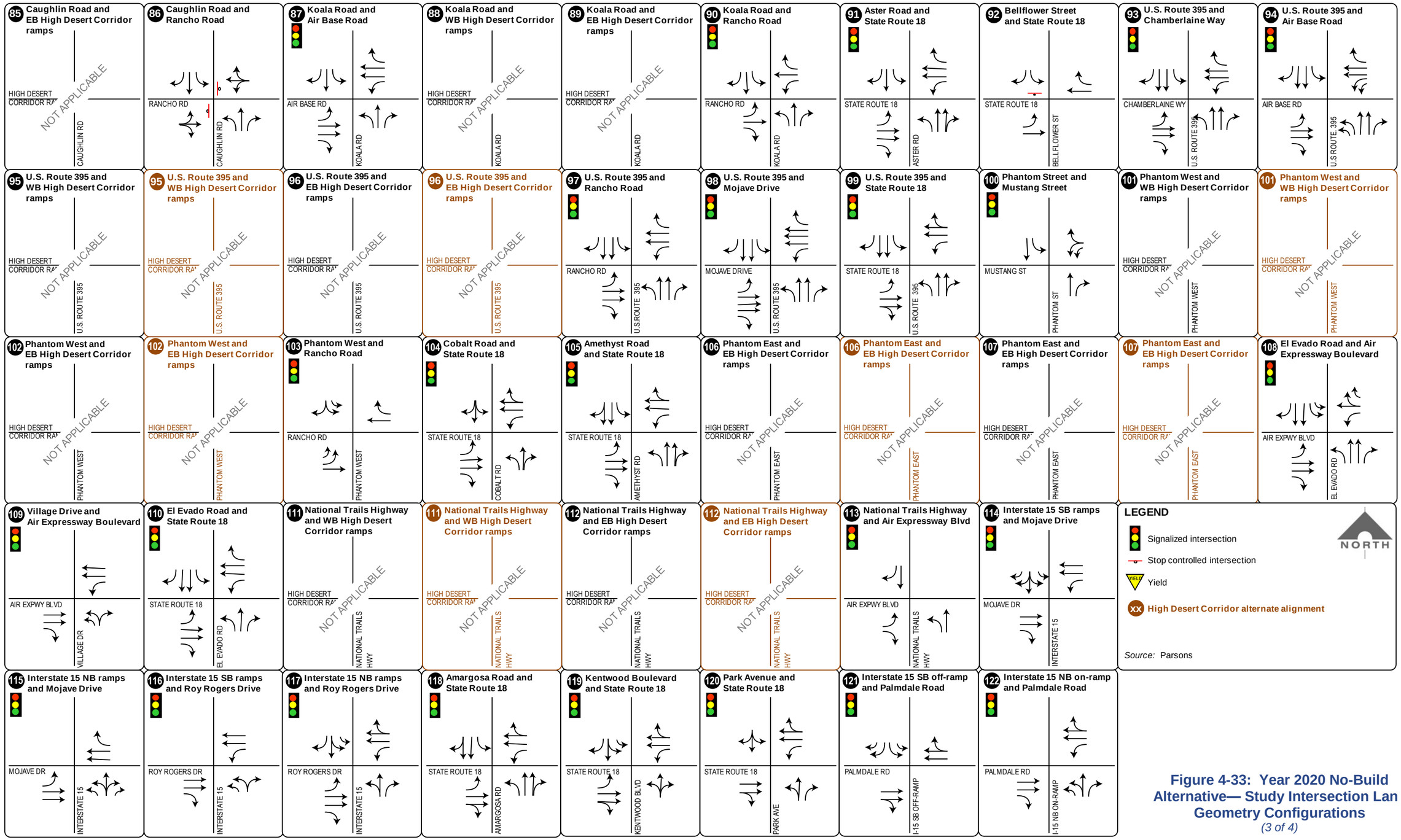


Figure 4-33: Year 2020 No-Build Alternative— Study Intersection Lan Geometry Configurations
(3 of 4)

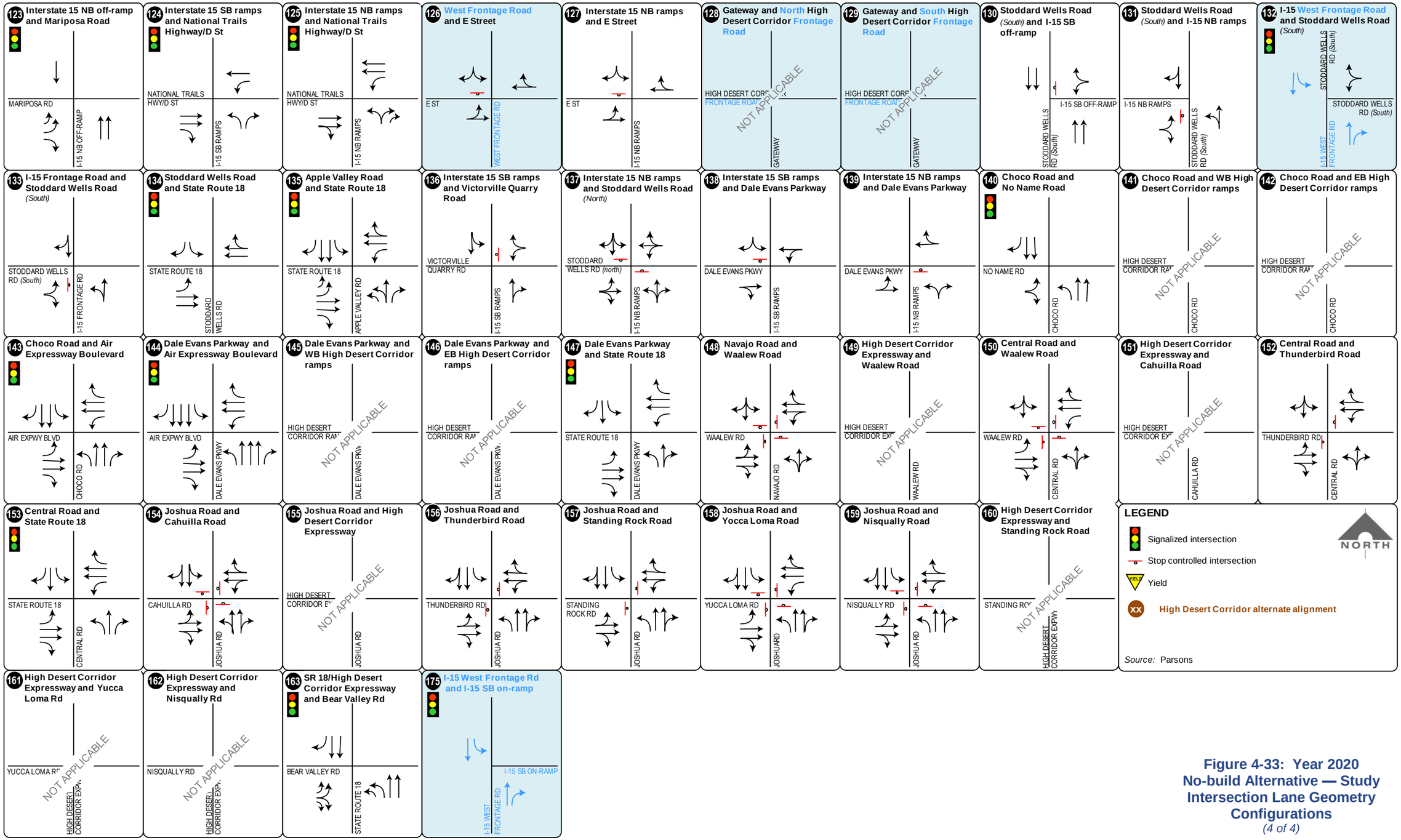


Figure 4-33: Year 2020 No-build Alternative — Study Intersection Lane Geometry Configurations
(4 of 4)

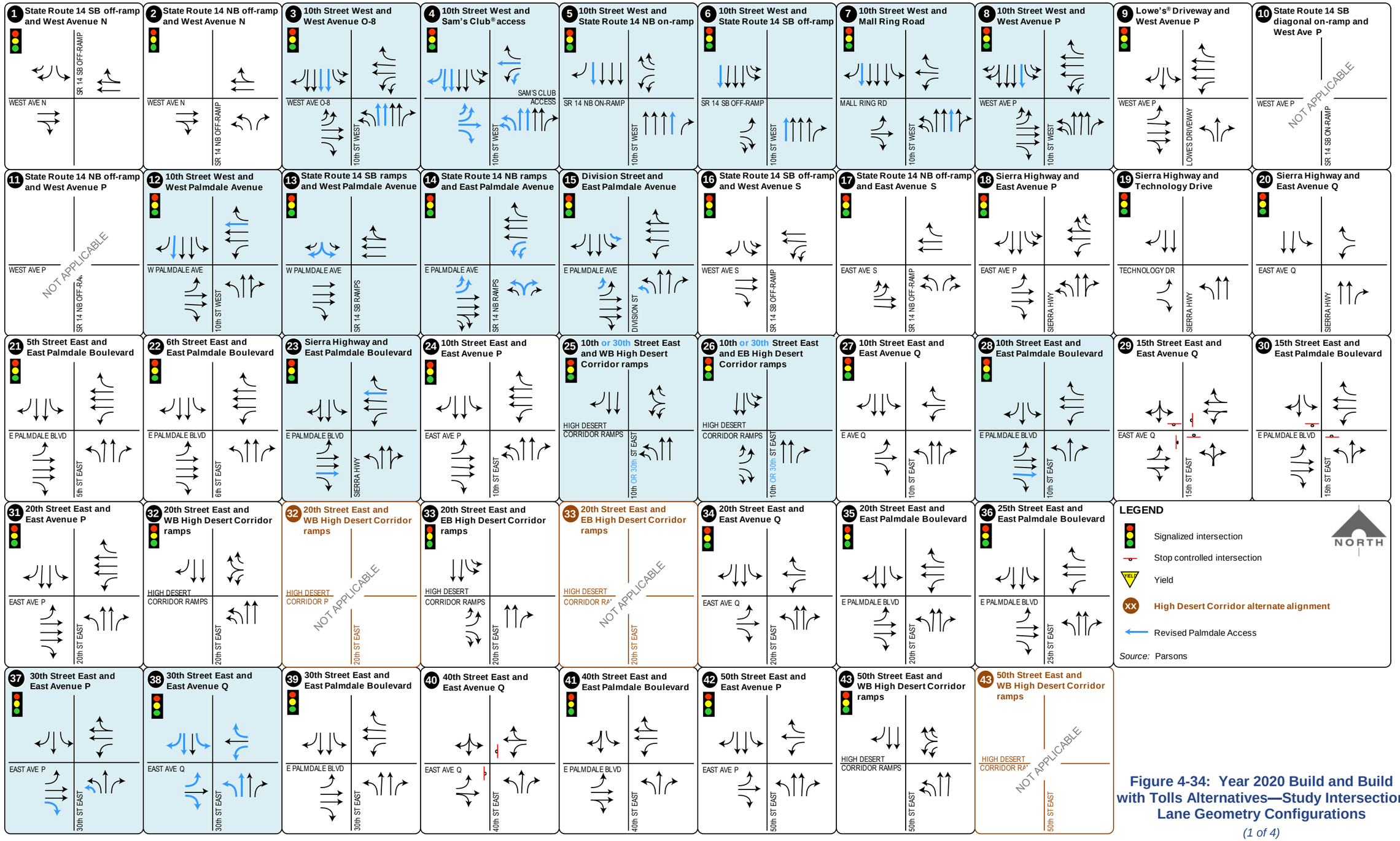


Figure 4-34: Year 2020 Build and Build with Tolls Alternatives—Study Intersection Lane Geometry Configurations

(1 of 4)

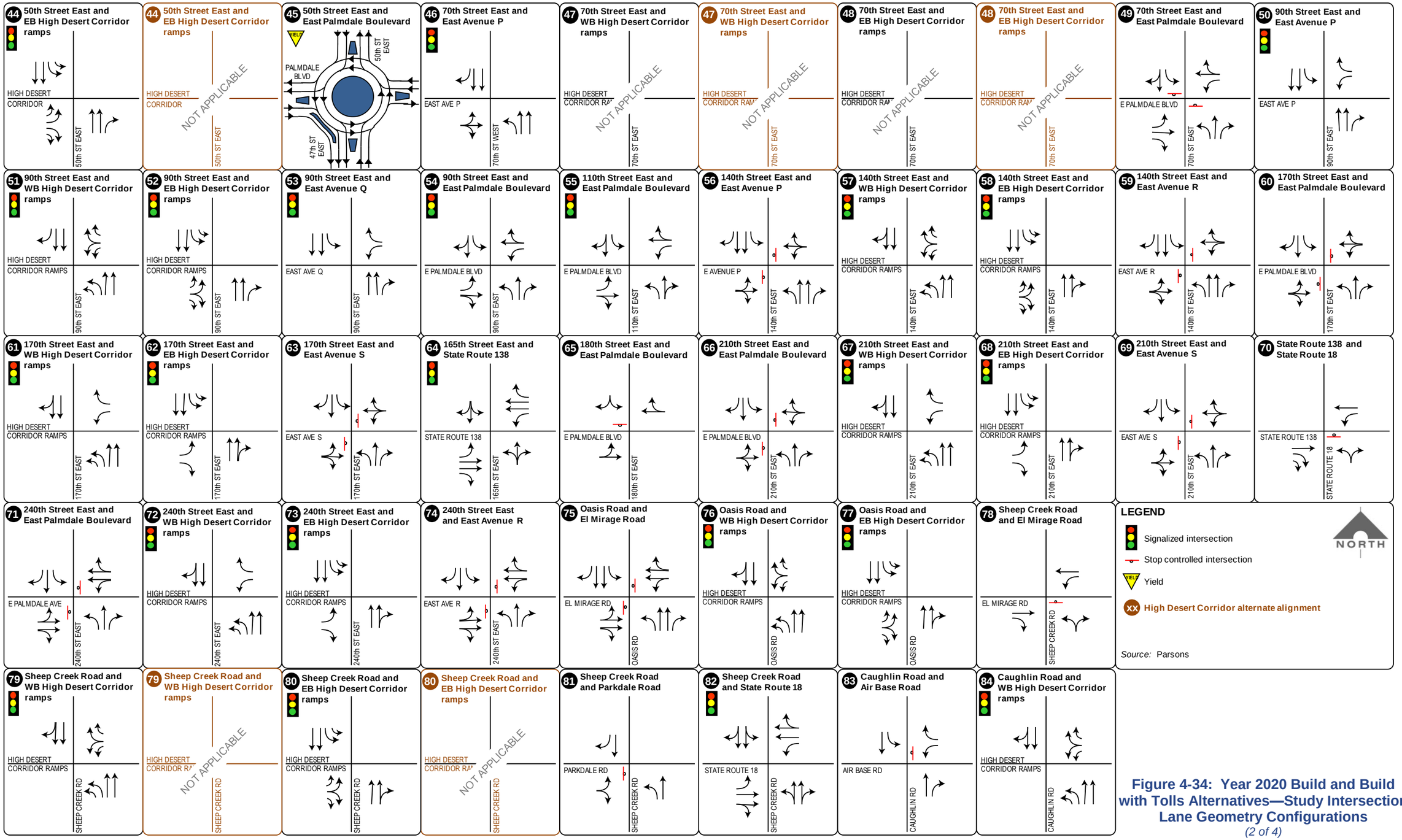


Figure 4-34: Year 2020 Build and Build with Tolls Alternatives—Study Intersection Lane Geometry Configurations
(2 of 4)

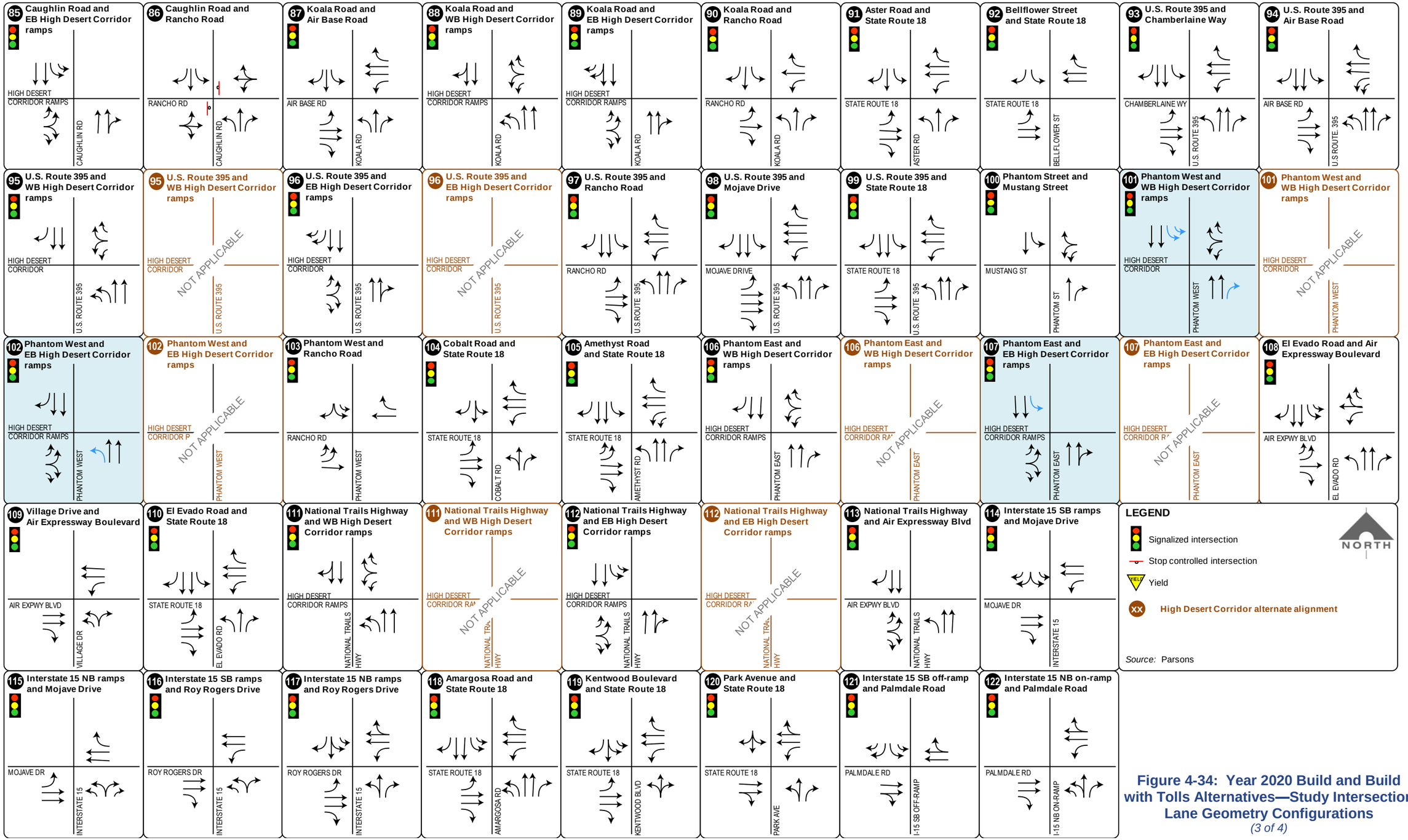


Figure 4-34: Year 2020 Build and Build with Tolls Alternatives—Study Intersection Lane Geometry Configurations
(3 of 4)

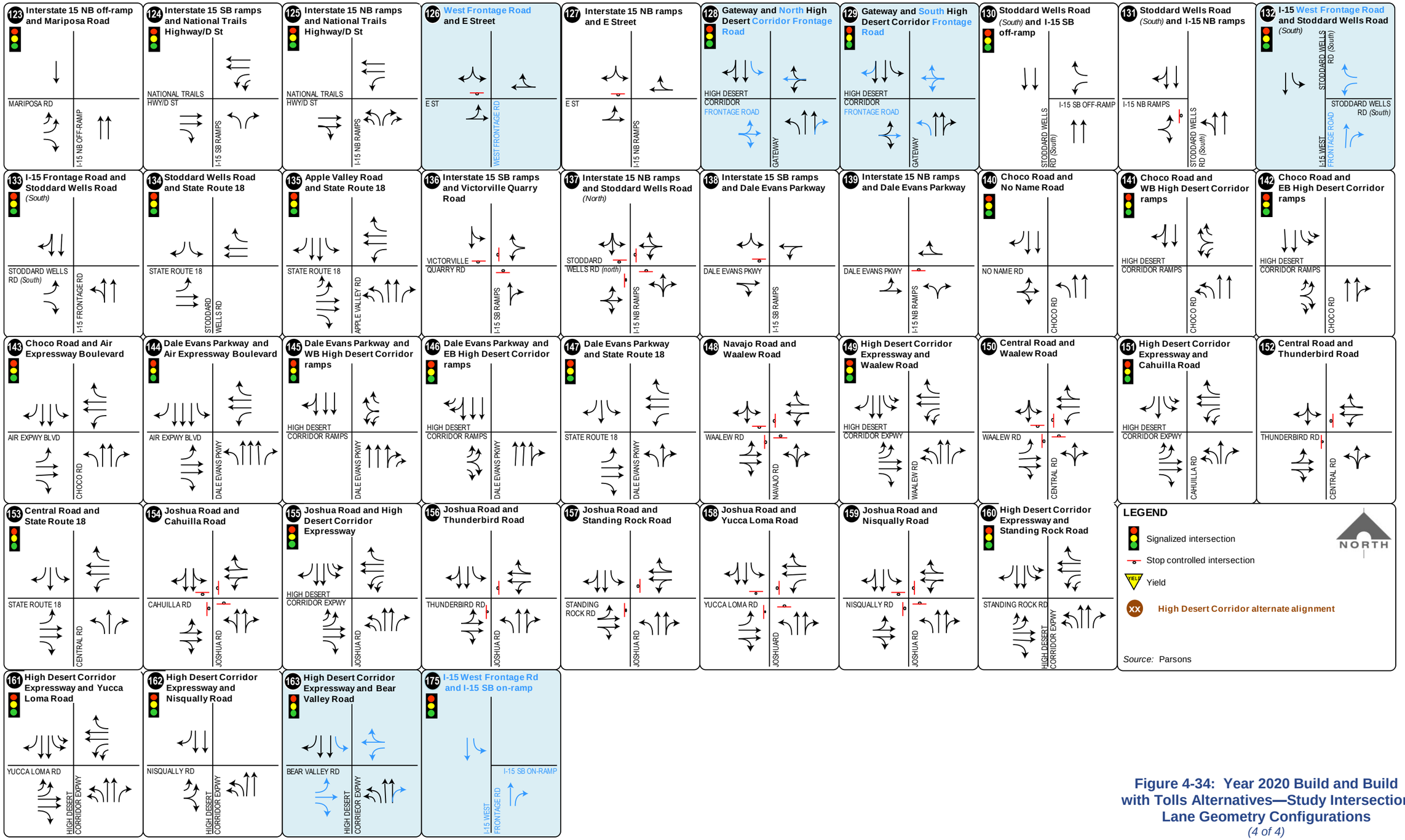


Figure 4-34: Year 2020 Build and Build with Tolls Alternatives—Study Intersection Lane Geometry Configurations
(4 of 4)

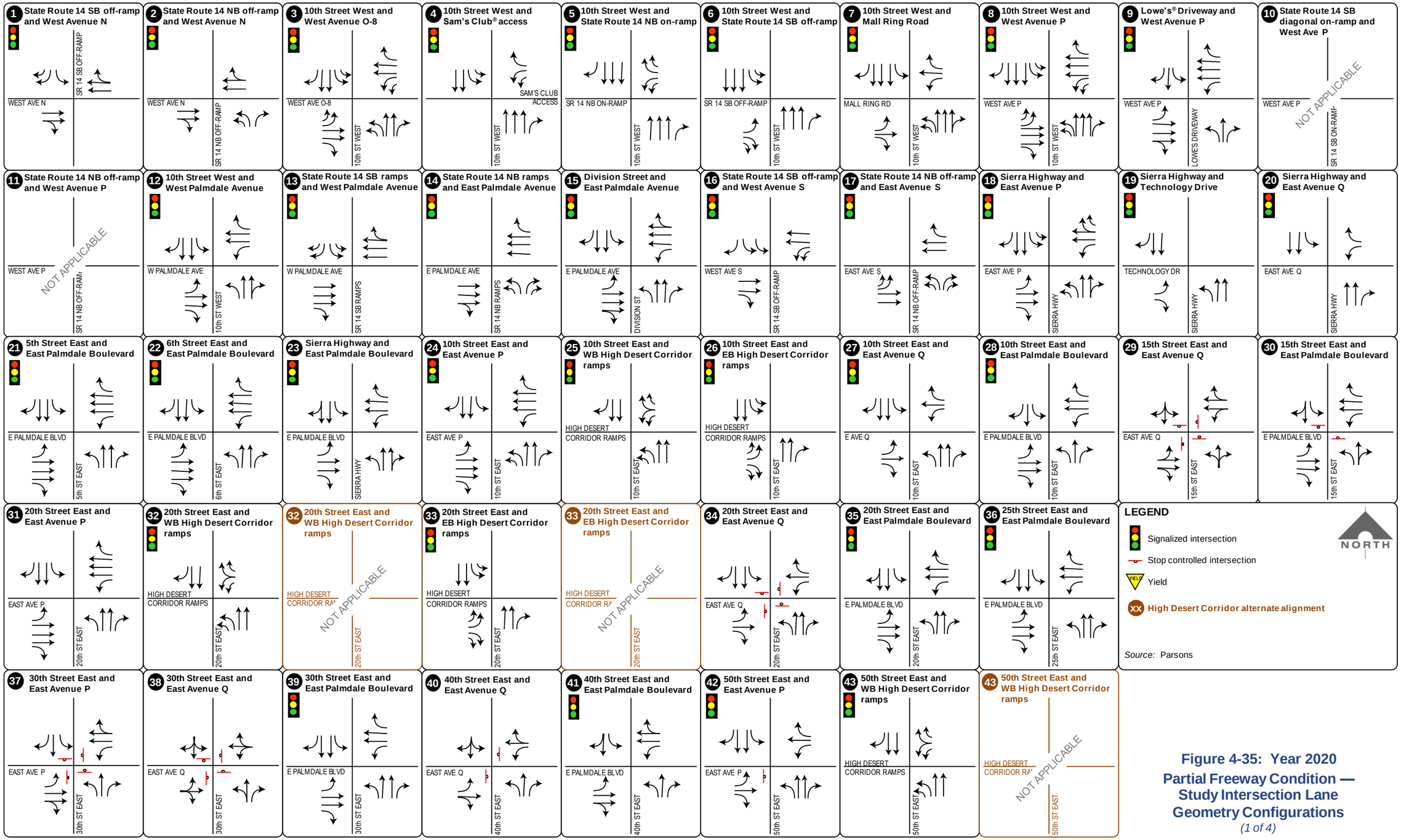


Figure 4-35: Year 2020 Partial Freeway Condition — Study Intersection Lane Geometry Configurations
(1 of 4)

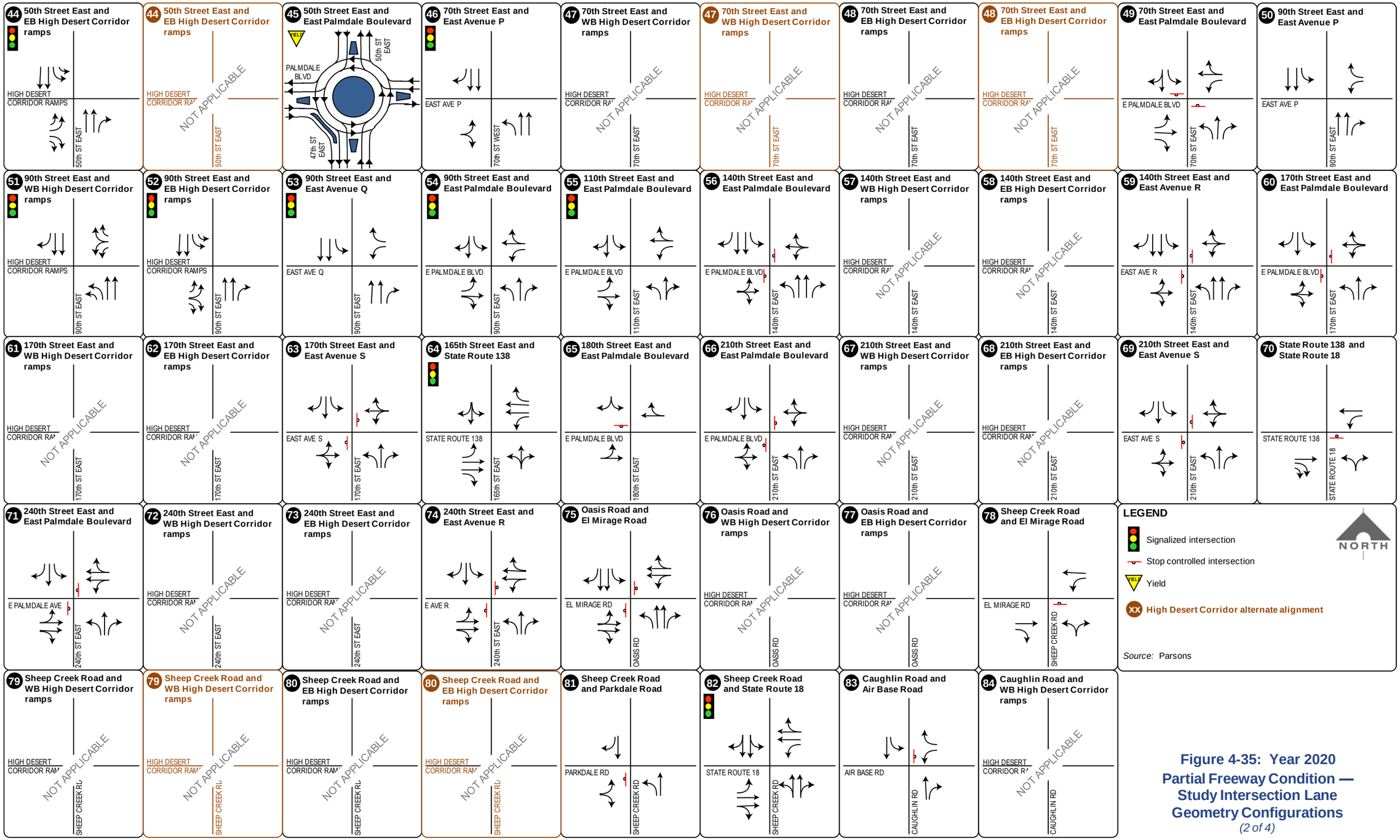


Figure 4-35: Year 2020 Partial Freeway Condition — Study Intersection Lane Geometry Configurations
(2 of 4)

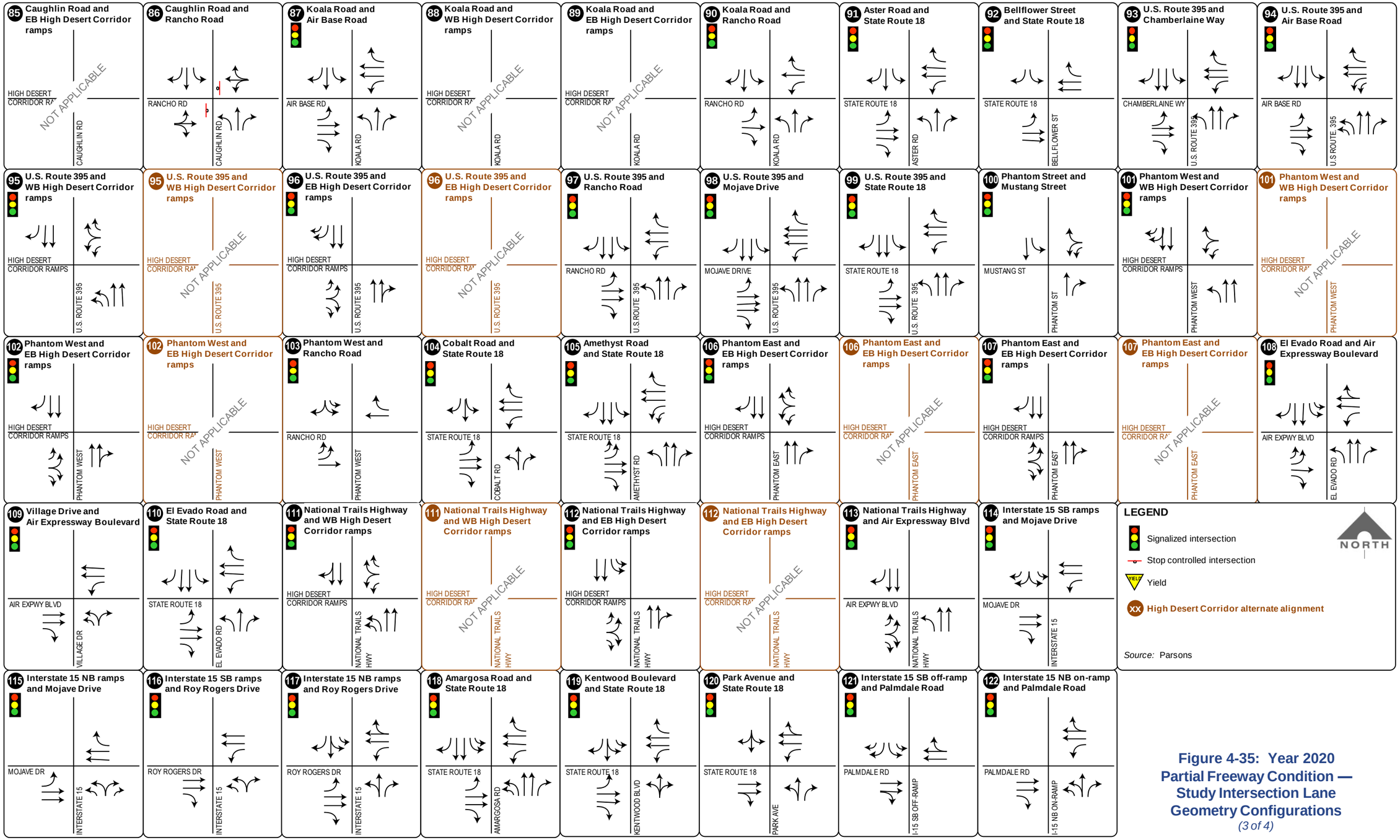


Figure 4-35: Year 2020 Partial Freeway Condition — Study Intersection Lane Geometry Configurations
(3 of 4)

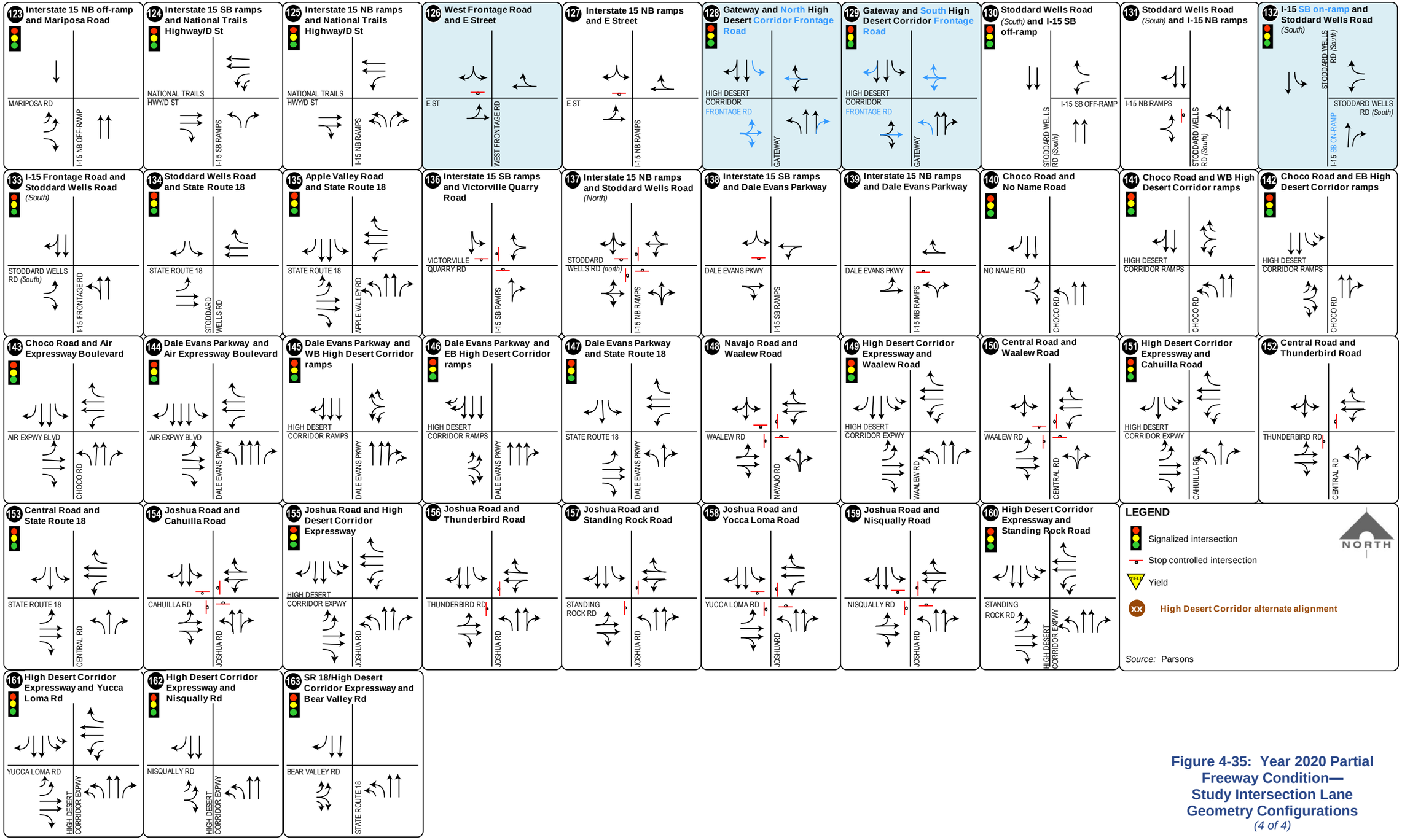


Figure 4-35: Year 2020 Partial Freeway Condition—Study Intersection Lane Geometry Configurations
(4 of 4)

Table 4-42. Year 2020 Initial Results[1] Intersection Level of Service Summary *(1 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD PARTIAL FREEWAY				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
1	SR 14 southbound off-ramp and West Avenue N	Existing/no-build–stop NB/SB; future build–signal	A	7.2	B	12.6	A	6.7	A	8.6	A	5.5	A	5.1	A	9.0	A	7.8	A	7.0	A	6.8
2	SR 14 northbound off-ramp and West Avenue N	Existing–stop NB/SB; future–signal	A	7.9	C	18.1	A	5.6	A	7.0	B	14.7	B	11.6	B	16.2	B	12.1	B	15.9	B	13.3
3	10th Street West and West Avenue O-8	Signal	C	23.5	C	24.9	C	27.9	C	27.0	C	28.9	C	22.5	C	29.5	C	24.8	C	30.5	C	22.4
4	10th Street West and Sam's Club access	Signal	B	16.5	B	14.1	B	15.8	A	8.3	B	18.0	B	13.7	C	20.6	B	15.0	B	19.2	B	14.3
5	10th Street West and SR 14 northbound on-ramp	Signal	Does not exist				Does not exist				B	14.1	A	9.5	B	17.5	B	10.6	B	16.6	B	10.9
6	10th Street West and SR 14 southbound off-ramp	Signal	B	13.2	B	11.4	C	20.2	B	16.9	C	21.4	B	19.1	C	23.0	B	19.3	C	22.4	B	19.2
7	10th Street West and Mall Ring Road	Signal	B	10.9	C	22.6	B	19.5	C	20.3	C	26.8	C	20.8	C	28.9	C	21.0	C	26.3	C	20.6
8	10th Street West and West Avenue P	Signal	C	31.3	C	30.3	C	32.0	C	34.6	C	26.6	C	26.0	C	30.4	C	29.6	C	28.4	C	29.0
9	Lowe's Driveway and West Avenue P	Signal	B	10.2	C	29.1	B	14.7	C	25.2	C	20.2	C	20.6	C	23.5	C	22.1	C	20.6	C	20.5
10	SR 14 southbound on-ramp and West Avenue P	Existing–stop NB/SB; future–signal	A	1.4	A	1.0	A	2.7	A	2.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	SR 14 northbound off-ramp and West Avenue P	Signal	B	14.3	C	20.6	A	8.4	C	20.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12*	10th Street West and West Palmdale Boulevard	Signal	C	29.9	C	34.6	C	32.3	D	37.8	C	31.1	D	36.7	C	31.1	D	36.7	C	31.1	D	36.7
13	SR 14 southbound off-/on-ramps and West Palmdale Blvd	Signal	B	11.3	B	11.1	C	26.7	C	24.3	A	7.7	B	10.4	A	9.7	B	12.0	A	9.1	B	11.7
14	SR 14 northbound off-/on-ramps and East Palmdale Blvd	Signal	A	7.4	B	10.1	B	11.3	B	10.8	A	8.2	B	12.3	A	8.4	B	13.0	A	9.0	B	12.9
15*	Division Street and East Palmdale Boulevard	Signal	C	27.9	C	28.0	D	37.8	D	38.0	C	27.3	C	32.4	C	26.2	C	32.5	C	27.3	C	32.8
16	SR 14 southbound off-ramp and West Avenue S	Signal	C	28.7	C	30.3	D	36.0	C	30.5	B	12.4	C	24.3	B	11.5	C	23.8	B	13.3	C	24.6
17	SR 14 northbound off-ramp and East Avenue S	Signal	B	16.9	B	18.9	C	28.9	C	27.0	B	12.3	C	23.6	B	14.0	C	24.4	B	13.2	C	25.5
18*	Sierra Highway and East Avenue P	Signal	C	33.4	C	34.6	D	39.4	D	51.5	C	33.8	D	38.8	C	33.8	D	38.8	C	33.8	D	38.8
19*	Sierra Highway and Technology Drive	Signal	B	14.3	B	16.8	D	43.6	**E**	78.5	B	13.1	B	16.7	B	13.1	B	16.7	B	13.1	B	16.7
20*	Sierra Highway and East Avenue Q	Signal	B	16.0	B	15.4	B	14.1	B	15.2	B	16.0	B	15.3	B	16.0	B	15.3	B	16.0	B	15.3
21*	5th Street East and East Palmdale Boulevard	Signal	C	22.1	C	23.8	B	17.9	C	24.0	C	23.1	C	26.3	C	22.3	C	26.1	C	22.8	C	26.5
22*	6th Street East and East Palmdale Boulevard	Signal	C	20.7	C	25.3	D	39.9	D	44.4	C	27.9	C	28.2	C	26.8	C	27.9	C	27.7	C	28.2
23*	Sierra Highway and East Palmdale Boulevard	Signal	C	25.5	C	27.3	D	39.8	**E**	71.4	C	27.7	C	34.5	C	27.7	C	34.5	C	27.7	C	34.5
24	10th Street East and East Avenue P	Existing–stop NB/SB; future–signal	**E***	39.0	**F***	>300	B*	16.6	B*	19.8	C	29.4	C	28.5	C	33.5	C	29.4	C	22.1	C	30.8
25	10th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	20.7	C	33.4	C	23.8	C	30.2	C	26.3	D	36.4
26	10th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	14.2	C	30.2	B	17.5	C	33.3	B	13.9	D	36.9
27	10th Street East and East Avenue Q	Existing–4-way stop; future–signal	B*	10.3	B*	12.6	C*	22.0	C*	23.2	C	27.0	C	24.4	C	30.2	C	24.7	C	27.6	C	25.5
28*	10th Street East and East Palmdale Boulevard	Signal	B	17.2	C	20.0	C	28.4	D	37.6	C	24.3	C	32.7	C	24.3	C	32.7	C	24.3	C	32.7
29*	15th Street East and East Avenue Q	4-way stop	B	10.5	B	10.8	A	9.6	B	11.0	A	9.3	A	10.00	A	9.3	A	10.0	A	9.3	A	10.0
30*	15th Street East and East Palmdale Boulevard	Stop NB/SB	D	25.2	**E**	36.1	**F**	>300	F	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
31	20th Street East and East Avenue P	Signal	Does not exist				C*	22.9	C*	25.3	C	24.9	C	27.4	C	24.6	C	30.0	C	25.6	C	28.9
32	20th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	34.6	C	23.6	D	36.4	C	25.5	D	35.3	C	26.4

Source: Parsons

Notes:
1. Initial results do not reflect Palmdale access refinements
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-42. Year 2020 Initial Results[1] Intersection Level of Service Summary *(2 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD PARTIAL FREEWAY				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
33	20th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	26.7	C	22.6	C	29.9	C	23.8	C	30.4	C	24.9
34	20th Street East and East Avenue Q	Existing–4-way stop; future–signal	B*	11.2	B*	14.5	C*	22.8	C*	22.4	C	23.4	C	21.3	C	25.5	C	24.8	C	25.9	C	23.2
35*	20th Street East and East Palmdale Boulevard	Signal	B	19.9	C	22.9	C	32.6	**E**	58.0	C	25.7	D	39.4	C	25.7	D	39.4	C	25.7	D	39.4
36*	25th Street East and East Palmdale Boulevard	Signal	C	26.2	C	30.9	D	37.0	D	49.4	C	31.9	C	34.1	C	31.6	C	34.6	C	32.2	C	33.7
37*	30th Street East and East Avenue P	4-way stop	B	12.6	C	15.1	B	13.1	C	16.6	B	12.6	C	15.3	B	12.6	C	15.3	B	12.6	C	15.3
38*	30th Street East and East Avenue Q	4-way stop	B	11.6	B	11.6	C	18.6	**F**	70.0	B	14.5	D	30.2	B	14.5	D	30.2	B	14.5	D	30.2
39*	30th Street East and East Palmdale Boulevard	Signal	B	18.4	C	20.4	C	25.9	C	32.1	C	26.4	C	32.8	C	26.4	C	32.8	C	26.4	C	32.8
40*	40th Street East and East Avenue Q	Stop EB/WB	C	16.2	C	16.0	C	19.4	D	27.6	C	16.1	C	20.2	C	16.1	C	20.2	C	16.1	C	20.2
41*	40th Street East and East Palmdale Boulevard	Signal	C	21.9	C	23.7	C	32.8	D	52.7	C	29.1	C	33.7	C	29.1	C	33.7	C	29.1	C	33.7
42	50th Street East and East Avenue P	Existing–stop EB/WB; future–signal	B*	11.9	B*	12.9	B*	19.5	C*	24.2	B	19.4	C	20.3	B	18.7	B	19.2	B	16.4	B	19.2
43	50th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	30.9	C	30.6	C	34.2	C	34.3	C	33.9	C	30.8
44	50th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	26.2	C	21.9	C	31.2	C	28.7	C	28.0	C	21.9
45*	50th Street East and East Palmdale Avenue	Roundabout	B	14.0	A	8.9	**F**	132.4	**F**	96.1	**F**	52.9	**F**	95.7	**F**	80.8	**F**	74.9	**F**	138.4	**F**	141.8
46	70th Street East and East Avenue P	Signal	Does not exist				B*	16.3	B*	15.6	B	15.6	B	16.2	C	21.8	B	18.5	B	18.2	B	18.8
47*	70th Street and westbound High Desert Corridor	Signal	Does not exist				Does not exist				Does not exist				Does not exist				Does not exist			
48*	70th Street and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				Does not exist				Does not exist				Does not exist			
49*	70th Street East and East Palmdale Boulevard	Stop NB/SB	**F**	>300	C	20.9	**F**	>300	**F**	>300	B	12.0	C	22.9	**E**	37.0	D	27.6	B	13.3	C	16.1
50	90th Street East and East Avenue P	Signal	—	—	—	—	B*	15.2	B*	14.0	B	14.4	B	12.4	B	14.1	B	19.3	B	18.3	B	18.2
51	90th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				D	36.1	D	35.0	A	4.0	B	15.9	D	41.1	D	41.3
52	90th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	14.8	B	18.2	B	11.8	C	25.2	C	22.4	C	22.6
53	90th Street East and East Avenue Q	Signal	C	22.9	C	23.1	B*	17.7	B*	17.6	B	19.5	B	17.6	B	16.6	C	27.5	B	16.8	B	16.3
54*	90th Street East and East Palmdale Boulevard	Signal	C	23.9	C	24.1	C	31.6	D	52.7	D	36.1	D	35.1	D	36.1	D	35.1	D	36.1	D	35.1
55*	110th Street East and East Palmdale Boulevard	Signal	C	22.8	B	19.8	C	22.6	C	24.7	C	25.5	C	23.5	C	24.0	C	26.2	C	25.3	C	25.0
56	140th Street and East Palmdale Boulevard	Stop EB/WB	A*	9.3	A*	9.6	C*	15.2	**E***	42.3	A	8.9	A	5.6	C*	17.2	**F***	90.8	B	14.1	**F**	>300
57	140th Street and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.8	B	19.5	Does not exist				B	10.5	C	26.5
58	140th Street and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.8	B	14.5	Does not exist				B	11.3	B	16.7
59	140th Street and East Avenue R	Stop EB/WB	Does not exist				B*	11.4	C*	17.5	A	2.7	A	4.2	**F***	>300	**F***	>300	B	11.4	**E**	39.2
60	170th Street East an East Palmdale Boulevard	Existing–4-way stop; future–stop EB/WB	A*	7.6	A*	8.1	A*	9.5	B*	13.6	A	2.7	A	3.6	C	18.0	**F***	78.9	A	6.3	A	9.9
61	170th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.2	A	9.1	Does not exist				B	13.0	A	9.3
62	170th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	7.1	A	6.1	Does not exist				B	10.2	B	11.3
63	170th Street East and East Avenue S	Stop EB/WB	Does not exist				B*	11.1	B*	12.1	A	4.2	A	3.4	B*	10.5	B*	10.9	A	6.1	A	6.1
64*	165th Street East and SR 138	Signal	C	20.6	C	21.7	**E**	57.2	D	38.9	C	31.4	C	24.9	**E**	71.6	D	49.8	D	44.9	C	31.7
65*	180th Street East and East Palmdale Boulevard	Stop EB/WB	A	8.6	A	8.7	B	11.1	C	17.5	A	8.6	A	8.9	B	10.9	B	14.3	A	9.5	B	10.3
66	210th Street and East Palmdale Boulevard	Stop EB/WB	Does not exist				B*	10.5	B*	11.6	A	2.8	A	3.4	B*	10.6	B*	10.7	A	5.9	A	6.8

Source: Parsons

Notes:
1. Initial results do not reflect Palmdale access refinements
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-42. Year 2020 Initial Results[1] Intersection Level of Service Summary *(3 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD PARTIAL FREEWAY				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
67	210th Street and westbound High Desert Corridor	Signal	Does not exist				Does not exist				A	9.5	A	9.7	Does not exist				B	16.0	B	11.8
68	210th Street and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	11.5	B	10.2	Does not exist				A	7.2	B	14.7
69	210th Street and East Avenue S	Stop EB/WB	Does not exist				Does not exist				A	2.3	A	2.6	F*	>300	F*	>300	A	6.8	A	7.9
70*	SR 138 and SR 18	Stop WB, yield EB	B	10.0	B	11.7	F	104.7	F	>300	C	21.0	F	>300	D	34.5	F	>300	C	24.6	F	>300
71	240th Street and East Palmdale Boulevard	Stop EB/WB	A*	8.7	A*	8.8	F*	>300	F*	>300	A	3.3	A	4.4	B*	13.7	C*	19.7	C	24.4	B	13.0
72	240th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.6	A	6.8	Does not exist				B	17.4	B	13.3
73	240th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	29.1	C	29.3	Does not exist				B	14.1	B	19.6
74	240th Street East and East Avenue R	Stop EB/WB	Does not exist				B*	12.7	C*	15.0	A	2.4	A	2.3	B*	13.9	C*	18.7	B	10.7	B	11.1
75	Oasis Road and El Mirage Road	Stop EB/WB	Does not exist				—	—	—	—	A	2.7	A	3.1	—	—	—	—	A	5.1	A	6.3
76	Oasis Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	17.9	B	19.2	Does not exist				B	17.0	C	22.3
77	Oasis Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	11.3	B	13.9	Does not exist				B	11.3	B	15.7
78	Sheep Creek Road and El Mirage Road	Stop NB/SB	Does not exist				E*	40.5	F*	>300	A	3.5	A	5.8	F*	>300	F*	>300	A	9.4	C	18.5
79	Sheep Creek Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	19.6	C	20.4	Does not exist				B	19.6	B	16.5
80	Sheep Creek Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.3	B	14.6	Does not exist				B	18.8	B	13.7
81	Sheep Creek Road and Holly Street	Stop EB/WB	Does not exist				B*	12.2	B*	13.7	A	6.6	B	15.2	B*	12.8	B*	13.6	A	7.4	B	12.5
82*	Sheep Creek Road and SR 18	Existing–stop NB/SB; future–signal	B	12.8	C	19.7	F	>300	F	>300	C	32.9	D	35.5	C	33.6	C	30.2	C	33.6	C	34.5
83	Caughlin Road and Air Base Road	Stop EB/WB	Does not exist				C*	17.4	C*	22.3	A	2.9	A	3.0	A*	10.0	B*	13.4	A	4.6	A	4.4
84	Caughlin Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	16.0	B	17.9	Does not exist				B	17.4	C	25.5
85	Caughlin Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	15.2	B	14.8	Does not exist				B	17.5	C	21.4
86	Caughlin Road and Rancho Road	Stop EB/WB	Does not exist				C*	16.1	E*	39.1	A	3.9	A	4.1	B*	10.5	B*	11.8	A	6.6	A	9.4
87	Koala Road and Air Base Road	Signal	Does not exist				C*	21.6	C*	22.7	B	14.7	C	26.8	C*	23.5	C*	24.3	B	15.8	C	23.7
88	Koala Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				A	8.4	B	13.3	Does not exist				A	6.6	B	14.3
89	Koala Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	6.1	B	12.0	Does not exist				A	6.8	B	18.2
90	Koala Road and Rancho Road	Signal	Does not exist				B*	18.7	C*	20.4	C	20.4	C	28.8	C*	20.3	C*	21.1	C	21.8	D	37.7
91*	Aster Road and SR 18	Signal	C	25.6	C	21.2	C	25.0	C	24.5	C	32.4	D	35.3	C	34.5	D	42.4	C	33.7	D	36.1
92*	Bellflower Street and SR 18	Existing–stop NB/SB; future–signal	C	20.8	D	27.4	E	45.5	F	176.0	B	17.2	B	15.7	B	12.4	B	11.0	B	15.8	B	14.2
93*	U.S. 395 and Chamberlaine Way	Signal	C	26.1	C	26.7	C	29.8	C	24.0	C	33.0	C	30.3	D	40.2	D	46.7	C	33.8	C	28.9
94	U.S. 395 and Air Base Road	Signal	C*	30.3	C*	34.9	B*	18.4	C*	25.3	B	15.7	C	21.9	C	25.1	C	26.3	C	20.2	C	21.5
95	U.S. 395 and westbound High Desert Corridor	Signal	Does not exist				Does not exist				A	10.0	B	18.6	B	11.4	B	10.3	B	14.6	B	18.2
96	U.S. 395 and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	9.7	A	5.3	N/A	N/A	N/A	N/A	B	13.8	A	7.8
97	U.S. 395 and Rancho Road	Signal	C*	24.6	C*	26.4	C*	30.6	D*	46.5	B	17.7	C	25.7	C	27.7	D	37.2	C	21.2	C	28.6
98*	U.S. 395 and Mojave Drive	Signal	C	26.7	C	31.1	C	34.7	C	30.8	C	31.0	C	32.4	C	33.8	D	36.0	C	26.7	C	32.1
99*	U.S. 395 and SR 18	Signal	C	34.0	D	36.5	D	47.0	E	68.1	D	39.7	D	49.4	D	41.7	D	50.2	D	39.8	D	49.4
100	Phantom Street and Mustang Street	Signal	Does not exist				A*	9.5	B*	17.4	B	11.1	C	20.2	B	12.5	B	17.9	B	12.2	C	23.6

Source: Parsons

Notes:
1. Initial results do not reflect Palmdale access refinements
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-42. Year 2020 Initial Results[1] Intersection Level of Service Summary *(4 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD PARTIAL FREEWAY				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
101	Phantom West and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	13.6	A	8.9	B	11.3	B	10.6	B	10.7	B	10.2
102	Phantom West and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	19.0	B	18.0	B	16.3	B	18.5	B	19.2	B	17.0
103	Phantom Street and Rancho Road	Signal	Does not exist				A*	9.2	B*	18.8	B	12.6	B	16.4	B	15.1	B	16.0	B	13.8	B	15.2
104*	Topaz Road and SR 18	Signal	D	43.3	C	27.5	C	21.8	C	25.8	D	36.5	C	33.7	C	34.5	C	34.3	D	36.5	C	33.6
105*	Amethyst Road and SR 18	Signal	C	28.8	C	30.4	C	26.8	C	31.0	C	30.0	D	36.1	C	31.6	D	37.5	C	30.4	C	34.7
106	Phantom East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				A	9.5	A	4.7	B	10.5	A	6.6	B	11.9	A	6.8
107	Phantom East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	8.3	A	6.6	A	9.9	A	9.6	B	10.5	A	9.2
108	El Evado Road and Air Expressway Boulevard	Signal	Does not exist				C*	22.8	C*	27.9	B	16.2	B	17.3	B	17.4	B	16.0	B	17.9	B	15.4
109*	Village Drive and Air Expressway Boulevard	Signal	B	17.5	B	15.0	B	14.0	B	16.2	B	14.2	B	16.1	B	12.6	B	15.0	B	14.7	B	15.7
110*	El Evado Road and SR 18	Signal	C	28.0	C	28.1	C	24.8	C	33.0	D	36.7	D	39.8	D	37.6	D	49.3	C	35.0	D	39.9
111	National Trails Highway and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	22.5	C	21.1	C	27.9	C	26.3	C	24.5	C	22.1
112	National Trails Highway and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	20.6	C	21.0	C	22.0	C	22.7	C	22.7	C	22.4
113*	National Trails Highway and Air Expressway Boulevard	Signal	B	18.5	B	18.7	B	19.6	B	14.8	B	15.8	B	15.8	B	13.9	B	16.4	B	15.9	B	15.6
114	I-15 southbound off-/on-ramps and Mojave Drive	Signal	A	8.3	B	11.4	B	12.6	B	12.8	B	12.7	B	12.2	B	14.5	B	13.6	B	14.4	B	13.5
115	I-15 northbound off-/on-ramps and Mojave Drive	Signal	B	19.5	B	13.5	B	19.4	B	16.3	B	12.3	B	12.8	B	13.2	B	14.3	B	12.8	B	14.3
116	I-15 southbound off-/on-ramps and Roy Rogers Drive	Signal	B	13.3	B	10.5	B	15.4	B	12.7	B	12.6	B	11.7	B	14.1	B	14.2	B	14.0	B	14.1
117	I-15 northbound off-/on-ramps and Roy Rogers Drive	Signal	C	20.7	C	21.0	C	20.2	C	23.1	B	19.6	C	21.4	C	22.4	C	26.7	C	22.1	C	24.1
118*	Amargosa Road and SR 18	Signal	C	28.2	D	39.9	D	35.4	**F**	88.3	C	24.8	C	32.4	C	26.1	D	36.9	C	25.0	C	33.1
119*	Kentwood Boulevard and SR 18	Signal	B	18.8	C	27.1	B	18.1	C	29.7	B	16.5	C	27.4	B	16.5	C	26.7	B	16.7	C	27.4
120	Park Avenue and SR 18	Signal	B	17.6	C	25.2	B	16.7	D	37.6	B	11.8	D	45.3	B	16.3	C	23.9	B	16.1	D	46.9
121	I-15 southbound off-ramp and Palmdale Road	Signal	A	8.8	C	25.1	C	26.0	C	29.1	A	5.2	C	23.1	A	6.3	C	24.0	A	9.3	D	42.0
122	I-15 northbound on-ramp and Palmdale Road	Signal	B	16.9	B	17.1	B	18.1	D	40.4	B	14.4	B	19.5	B	16.1	B	18.9	B	16.5	C	30.2
123	I-15 northbound off-ramp and Mariposa Road	Signal	B	14.1	B	13.5	B	12.9	B	11.6	B	11.3	B	12.6	B	11.6	B	12.1	B	11.5	B	12.5
124	I-15 southbound off-/on-ramps and National Trails Hwy/ D Street	Signal	B	11.2	A	9.7	B	14.2	B	15.7	A	9.6	A	8.7	B	12.9	B	11.2	B	10.4	B	10.4
125	I-15 northbound off-/on-ramps and National Trails Hwy/ D Street	Signal	B	14.4	B	11.4	C	21.9	C	20.4	B	10.2	B	15.0	B	11.3	B	16.3	B	11.9	B	16.5
126	I-15 southbound off-/on-ramps and E Street	Stop NB/SB	A	4.0	A	2.2	A	4.2	A	4.2	A	2.4	A	2.6	A	4.4	A	4.6	A	4.9	A	4.2
127	I-15 northbound off-/on-ramps and E Street	Stop NB/SB	A	4.1	A	2.1	A	4.4	A	4.5	A	2.3	A	2.5	A	4.6	A	4.7	A	4.6	A	4.6
128	Gateway and north Frontage Rd	Does not exist	Does not exist				Does not exist				Does not exist				Does not exist				Does not exist			
129	Gateway and south Frontage Rd	Does not exist	Does not exist				Does not exist				Does not exist				Does not exist				Does not exist			
130	I-15 southbound off-ramp and Stoddard Wells Road	Existing–stop NB/SB	A	2.6	A	2.7	C	23.5	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		No-build–stop NB/SB; improvements–signal	N/A	N/A	N/A	N/A	B	14.3	B	12.2	A	9.1	A	8.2	B	10.2	A	9.0	A	9.6	A	8.6
131	I-15 northbound on-ramp and Stoddard Wells Road/ Frontage Road	Existing–stop EB/WB	A	3.7	A	3.7	A	5.9	A	4.9	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		No-build–stop EB/WB; improvements–stop EB/WB**	N/A	N/A	N/A	N/A	A	5.8	A	4.8	A	7.0	A	7.1	A	6.0	A	6.4	A	6.5	A	5.6
132	I-15 southbound on-ramp and Stoddard Wells Road	Existing–stop EB/WB	A	3.0	A	2.1	B	13.2	**E**	42.0	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	14.3	B	12.8	A	8.2	A	4.5	A	9.1	A	6.9	A	8.1	A	5.5

Source: Parsons

Notes:
1. Initial results do not reflect Palmdale access refinements
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-42. Year 2020 Initial Results[1] Intersection Level of Service Summary *(5 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD PARTIAL FREEWAY				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
133	Stoddard Wells Road and I-15 Frontage Road	Existing–stop EB/WB	A	5.6	A	1.2	D	30.7	E	48.0	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300
		Improvements–signal	N/A	N/A	N/A	N/A	C	23.3	C	26.1	B	13.8	B	14.0	B	14.4	B	14.9	B	16.3	B	15.6
134*	Stoddard Wells Road and SR 18	Signal	B	12.7	C	23.2	A	7.5	C	25.1	A	9.8	C	22.6	B	10.7	C	25.3	A	9.5	C	22.9
135*	Apple Valley Road and SR 18	Signal	C	33.1	D	40.2	D	42.7	D	45.0	C	32.4	D	40.1	D	35.4	D	38.4	C	32.3	D	40.0
136	I-15 southbound off-/on-ramps and Victorville Quarry Road	Existing–stop EB/WB; future–4-way stop	A	4.1	A	2.1	A	4.8	A	4.9	A	1.9	A	2.0	A	4.1	A	4.1	A	4.3	A	4.3
137	I-15 northbound off-/on-ramps and Stoddard Wells Rd (north)	Existing–stop NB/SB; future–4-way stop	A	4.3	A	2.3	C	15.6	F	134.9	A	2.5	A	3.4	A	4.7	A	5.0	A	4.6	A	5.1
138	I-15 southbound off-/on-ramps and Dale Evans Parkway	Existing–stop NB/SB; future–signal	A	4.7	A	3.1	A	7.2	B	10.3	A	8.8	C	21.8	A	9.6	C	16.5	B	10.1	C	21.5
139	I-15 northbound off-/on-ramps and Dale Evans Parkway	Existing–stop NB/SB; future–signal	A	4.3	A	3.1	A	8.6	A	8.2	B	10.5	B	10.6	B	13.2	C	15.9	C	16.0	B	12.2
140	Choco Road and Frontage Road	Signal	Does not exist				B*	18.7	B*	18.9	B	19.8	B	12.5	C	21.0	B	15.7	B	19.2	B	15.7
141	Choco Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	25.4	C	26.6	C	26.9	C	27.3	C	26.9	C	27.9
142	Choco Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	4.0	A	7.8	A	5.5	B	10.1	A	7.4	A	7.9
143	Choco Road and Falchion Road	Signal	Does not exist				C*	21.8	C*	22.5	C	22.1	C	23.2	C	21.5	C	21.4	C	21.6	C	22.8
144	Dale Evans Parkway and Air Expressway Boulevard	Signal	Does not exist				B*	19.8	C*	22.3	B	18.2	B	19.5	C	21.7	C	21.7	C	23.1	C	20.2
145	Dale Evans Parkway and westbound High Desert Corridor	Signal	Does not exist				Does not exist				A	6.8	A	7.1	A	7.7	A	9.4	A	8.6	A	9.7
146	Dale Evans Parkway and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	9.0	B	10.3	B	10.7	B	11.8	B	11.1	B	13.0
147*	Dale Evans Parkway and SR 18	Signal	B	17.8	C	21.0	C	29.4	D	36.0	C	20.8	C	28.2	C	24.4	C	29.9	C	20.8	C	28.2
148	Navajo Road and Waalew Road	4-way stop	Does not exist				A*	8.9	B*	10.0	A	2.2	A	2.7	A	4.3	A	5.8	A	4.1	A	4.5
149	High Desert Corridor and Waalew Road	Signal	Does not exist				Does Not Exist				A	7.7	A	6.9	B	10.7	B	10.8	A	8.9	A	8.4
150	Central Road and Waalew Road	4-way stop	Does not exist				A*	9.0	B*	10.6	A	3.8	A	4.4	A	5.0	A	5.3	A	6.8	A	7.0
151	High Desert Corridor and Central Road	Signal	Does not exist				Does not exist				A	8.9	A	9.8	B	13.5	A	9.1	B	11.0	B	11.3
152	Central Road and Thunderbird Road	Stop EB/WB	Does not exist				B*	11.8	B*	13.7	A	3.6	A	4.6	A	5.8	A	6.3	A	6.1	A	6.2
153*	Central Road and SR 18	Signal	C	25.5	C	25.5	C	27.3	C	24.6	C	24.9	C	26.0	C	25.9	C	25.4	C	24.9	C	26.0
154	Joshua Road and Cahuilla Road	4-way stop	Does not exist				A*	9.0	B*	10.6	A	2.7	A	3.0	A	4.4	A	5.5	A	4.6	A	5.4
155	Joshua Road and High Desert Corridor	Signal	Does not exist				Does not exist				C	28.3	C	23.0	C	28.6	C	22.7	C	27.8	C	25.1
156	Joshua Road and Thunderbird Road	Stop EB/WB	Does not exist				B*	14.2	D*	27.8	A	3.6	A	4.7	A	6.3	A	6.5	A	6.6	A	7.8
157	Joshua Road and Standing Rock Road	Stop EB/WB	Does not exist				B*	14.8	C*	19.2	A	5.4	A	6.8	A	6.8	A	7.5	A	7.6	A	10.0
158	Joshua Road and Yucca Loma Road	Existing–stop NB/SB; future–4-way stop	B*	10.3	A*	9.5	B*	12.3	D*	25.6	A	3.3	A	4.0	A	6.3	A	6.4	A	5.6	A	5.8
159	Joshua Road and Nisqually Road	4-way stop	Does not exist				B*	10.2	B*	14.8	A	3.1	A	3.1	A	5.3	A	6.1	A	4.8	A	4.9
160	High Desert Corridor and Standing Rock Road	Signal	Does not exist				Does not exist				B	10.4	B	14.1	B	13.3	B	11.2	B	12.1	B	13.5
161	High Desert Corridor and Yucca Loma Road	Signal	Does not exist				Does not exist				B	15.1	B	14.6	C	20.7	B	17.6	B	18.1	B	17.3
162	High Desert Corridor and Nisqually Road	Signal	Does not exist				Does not exist				A	9.7	A	7.0	B	13.9	B	12.4	B	10.3	B	10.3
163	Bear Valley Road and SR 18	Signal	A*	5.7	A*	9.0	B*	10.1	B*	13.8	A	9.0	A	7.9	B	15.1	B	11.1	B	10.9	B	10.2

Source: Parsons

Notes:
1. Initial results do not reflect Palmdale access refinements
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-43. Year 2020 Revised Palmdale Access Intersection Level of Service Summary *(1 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																		
1	SR 14 southbound off-ramp and West Avenue N	Existing/no-build–stop NB/SB; future build–signal	A	7.2	B	12.6	A	6.7	A	8.6	A	5.5	A	5.1	A	7.0	A	6.8
2	SR 14 northbound off-ramp and West Avenue N	Existing–stop NB/SB; future–signal	A	7.9	C	18.1	A	5.6	A	7.0	B	14.7	B	11.6	B	15.9	B	13.3
3	10th Street West and West Avenue O-8	Signal	C	23.5	C	24.9	C	27.9	C	27.0	C	26.5	C	22.2	C	26.4	C	20.5
4	10th Street West and Sam's Club access	Signal	B	16.5	B	14.1	B	15.8	A	8.3	B	13.2	B	13.3	B	14.3	B	13.0
5	10th Street West and SR 14 northbound on-ramp	Signal	Does not exist				Does not exist				B	14.2	A	9.5	B	14.2	A	9.5
6	10th Street West and SR 14 southbound off-ramp	Signal	B	13.2	B	11.4	C	20.2	B	16.9	B	19.9	B	19.0	C	20.0	B	16.7
7	10th Street West and Mall Ring Road	Signal	B	10.9	C	22.6	B	19.5	C	20.3	C	25.2	B	18.0	C	24.5	B	20.0
8	10th Street West and West Avenue P	Signal	C	31.3	C	30.3	C	32.0	C	34.6	C	25.8	C	26.2	C	25.4	C	26.7
9	Lowe's Driveway and West Avenue P	Signal	B	10.2	C	29.1	B	14.7	C	25.2	B	19.6	C	20.5	B	18.8	B	19.2
10	SR 14 southbound on-ramp and West Avenue P	Existing–stop NB/SB; future–signal	A	1.4	A	1.0	A	2.7	A	2.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	SR 14 northbound off-ramp and West Avenue P	Signal	B	14.3	C	20.6	A	8.4	C	20.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12*	10th Street West and West Palmdale Boulevard	Signal	C	29.9	C	34.6	C	32.3	D	37.8	C	31.2	D	40.3	C	33.5	D	37.6
13	SR 14 southbound off-/on-ramps and West Palmdale Boulevard	Signal	B	11.3	B	11.1	C	26.7	C	24.3	A	7.4	B	14.5	A	7.5	B	15.1
14	SR 14 northbound off-/on-ramps and East Palmdale Boulevard	Signal	A	7.4	B	10.1	B	11.3	B	10.8	C	27.3	C	23.7	C	29.0	C	22.4
15*	Division Street and East Palmdale Boulevard	Signal	C	27.9	C	28.0	D	37.8	D	38.0	C	22.5	C	24.7	C	22.3	C	24.6
16	SR 14 southbound off-ramp and West Avenue S	Signal	C	28.7	C	30.3	D	36.0	C	30.5	B	12.4	C	24.3	B	13.3	C	24.6
17	SR 14 northbound off-ramp and East Avenue S	Signal	B	16.9	B	18.9	C	28.9	C	27.0	B	12.3	C	23.6	B	13.2	C	25.5
18*	Sierra Highway and East Avenue P	Signal	C	33.4	C	34.6	D	39.4	D	51.5	C	33.8	D	38.8	C	33.8	D	38.8
19*	Sierra Highway and Technology Drive	Signal	B	14.3	B	16.8	D	43.6	**E**	78.5	B	13.1	B	16.7	B	13.1	B	16.7
20*	Sierra Highway and East Avenue Q	Signal	B	16.0	B	15.4	B	14.1	B	15.2	B	16.0	B	15.3	B	16.0	B	15.3
21*	5th Street East and East Palmdale Boulevard	Signal	C	22.1	C	23.8	B	17.9	C	24.0	C	23.1	C	26.3	C	22.8	C	26.5
22*	6th Street East and East Palmdale Boulevard	Signal	C	20.7	C	25.3	D	39.9	D	44.4	C	27.9	C	28.2	C	27.7	C	28.2
23*	Sierra Highway and East Palmdale Boulevard	Signal	C	25.5	C	27.3	D	39.8	**E**	71.4	C	26.8	C	29.6	C	26.9	C	29.4
24	10th Street East and East Avenue P	Existing–stop NB/SB; future–signal	**E***	39.0	**F***	>300	B*	16.6	B*	19.8	C	29.4	C	28.5	C	22.1	C	30.8
25	10th or 30th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	16.1	C	31.1	B	13.2	C	28.4
26	10th or 30th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	20.1	C	23.2	B	17.2	C	23.4
27	10th Street East and East Avenue Q	Existing–4-way stop; future–signal	B*	10.3	B*	12.6	C*	22.0	C*	23.2	C	27.0	C	24.4	C	27.6	C	25.5
28*	10th Street East and East Palmdale Boulevard	Signal	B	17.2	C	20.0	C	28.4	D	37.6	C	31.0	D	40.3	C	25.7	C	33.3
29*	15th Street East and East Avenue Q	4-way stop	B	10.5	B	10.8	A	9.6	B	11.0	A	9.3	A	10.0	A	9.3	A	10.0
30*	15th Street East and East Palmdale Boulevard	Stop NB/SB	D	25.2	**E**	36.1	**F**	>300	F	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
31	20th Street East and East Avenue P	Signal	Does not exist				C*	22.9	C*	25.3	C	23.4	C	28.3	C	28.3	C	29.4
32	20th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	32.8	C	23.2	C	31.9	C	25.5

Source: Parsons

Notes:
1. Proposed additional geometry improvements
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E
Level of service F

Table 4-43. Year 2020 Revised Palmdale Access Intersection Level of Service Summary *(2 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																		
33	20th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	27.3	C	28.4	C	29.9	C	26.9
34	20th Street East and East Avenue Q	Existing–4-way stop; future–signal	B*	11.2	B*	14.5	C*	22.8	C*	22.4	C	22.9	C	21.3	C	26.6	C	23.8
35*	20th Street East and East Palmdale Boulevard	Signal	B	19.9	C	22.9	C	32.6	**E**	58.0	C	25.7	D	39.4	C	25.7	D	39.4
36*	25th Street East and East Palmdale Boulevard	Signal	C	26.2	C	30.9	D	37.0	D	49.4	C	31.9	C	34.1	C	32.2	C	33.7
37*	30th Street East and East Avenue P	4-way stop; future–signal	B	12.6	C	15.1	B	13.1	C	16.6	C	28.7	C	23.4	C	29.0	C	25.0
38*	30th Street East and East Avenue Q	4-way stop; future–signal	B	11.6	B	11.6	C	18.6	**F**	70.0	C	29.9	C	29.3	C	31.7	C	30.1
39*	30th Street East and East Palmdale Boulevard	Signal	B	18.4	C	20.4	C	25.9	C	32.1	C	26.4	C	32.8	C	26.4	C	32.8
40*	40th Street East and East Avenue Q	Stop EB/WB	C	16.2	C	16.0	C	19.4	D	27.6	C	16.1	C	20.2	C	16.1	C	20.2
41*	40th Street East and East Palmdale Boulevard	Signal	C	21.9	C	23.7	C	32.8	D	52.7	C	29.1	C	33.7	C	29.1	C	33.7
42	50th Street East and East Avenue P	Existing–stop EB/WB; future–signal	B*	11.9	B*	12.9	B*	19.5	C*	24.2	C	21.8	C	21.0	C	23.2	C	30.0
43	50th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	27.2	C	28.2	C	29.1	C	22.9
44	50th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	26.0	C	21.5	C	24.6	C	21.7
45*	50th Street East and East Palmdale Avenue	Roundabout	B	14.0	A	8.9	**F**	132.4	**F**	96.1	**F**	52.9	**F**	95.7	**F**	138.4	**F**	141.8
46	70th Street East and East Avenue P	Signal	Does not exist				B*	16.3	B*	15.6	B	15.6	B	16.2	B	18.2	B	18.8
47*	70th Street and westbound High Desert Corridor	Signal	Does not exist				Does not exist				Does not exist				Does not exist			
48*	70th Street and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				Does not exist				Does not exist			
49*	70th Street East and East Palmdale Boulevard	Stop NB/SB	**F**	>300	C	20.9	**F**	>300	**F**	>300	B	12.0	C	22.9	B	13.3	C	16.1
50	90th Street East and East Avenue P	Signal	—	—	—	—	B*	15.2	B*	14.0	B	14.4	B	12.4	B	18.3	B	18.2
51	90th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				D	36.1	D	35.0	D	41.1	D	41.3
52	90th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	14.8	B	18.2	C	22.4	C	22.6
53	90th Street East and East Avenue Q	Signal	C	22.9	C	23.1	B*	17.7	B*	17.6	B	19.5	B	17.6	B	16.8	B	16.3
54*	90th Street East and East Palmdale Boulevard	Signal	C	23.9	C	24.1	C	31.6	D	52.7	D	36.1	D	35.1	D	36.1	D	35.1
55*	110th Street East and East Palmdale Boulevard	Signal	C	22.8	B	19.8	C	22.6	C	24.7	C	25.5	C	23.5	C	25.3	C	25.0
56	140th Street and East Palmdale Boulevard	Stop EB/WB	A*	9.3	A*	9.6	C*	15.2	**E***	42.3	A	8.9	A	5.6	B	14.1	**F**	>300
57	140th Street and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.8	B	19.5	B	10.5	C	26.5
58	140th Street and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.8	B	14.5	B	11.3	B	16.7
59	140th Street and East Avenue R	Stop EB/WB	Does not exist				B*	11.4	C*	17.5	A	2.7	A	4.2	B	11.4	**E**	39.2
60	170th Street East an East Palmdale Boulevard	Existing–4-way stop; future–stop EB/WB	A*	7.6	A*	8.1	A*	9.5	B*	13.6	A	2.7	A	3.6	A	6.3	A	9.9
61	170th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.2	A	9.1	B	13.0	A	9.3
62	170th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	7.1	A	6.1	B	10.2	B	11.3
63	170th Street East and East Avenue S	Stop EB/WB	Does not exist				B*	11.1	B*	12.1	A	4.2	A	3.4	A	6.1	A	6.1
64*	165th Street East and SR 138	Signal	C	20.6	C	21.7	**E**	57.2	D	38.9	C	31.4	C	24.9	D	44.9	C	31.7
65*	180th Street East and East Palmdale Boulevard	Stop EB/WB	A	8.6	A	8.7	B	11.1	C	17.5	A	8.6	A	8.9	A	9.5	B	10.3
66	210th Street and East Palmdale Boulevard	Stop EB/WB	Does not exist				B*	10.5	B*	11.6	A	2.8	A	3.4	A	5.9	A	6.8

Source: Parsons

Notes:
1. Proposed additional geometry improvements
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-43. Year 2020 Revised Palmdale Access Intersection Level of Service Summary *(3 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																		
67	210th Street and westbound High Desert Corridor	Signal	Does not exist				Does not exist				A	9.5	A	9.7	B	16.0	B	11.8
68	210th Street and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	11.5	B	10.2	A	7.2	B	14.7
69	210th Street and East Avenue S	Stop EB/WB	Does not exist				Does not exist				A	2.3	A	2.6	A	6.8	A	7.9
70*	SR 138 and SR 18	Stop WB, yield EB	B	10.0	B	11.7	**F**	104.7	**F**	>300	C	21.0	**F**	>300	C	24.6	**F**	>300
71	240th Street and East Palmdale Boulevard	Stop EB/WB	A*	8.7	A*	8.8	**F***	>300	**F***	>300	A	3.3	A	4.4	C	24.4	B	13.0
72	240th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.6	A	6.8	B	17.4	B	13.3
73	240th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	29.1	C	29.3	B	14.1	B	19.6
74	240th Street East and East Avenue R	Stop EB/WB	Does not exist				B*	12.7	C*	15.0	A	2.4	A	2.3	B	10.7	B	11.1
75	Oasis Road and El Mirage Road	Stop EB/WB	Does not exist				—	—	—	—	A	2.7	A	3.1	A	5.1	A	6.3
76	Oasis Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	17.9	B	19.2	B	17.0	C	22.3
77	Oasis Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	11.3	B	13.9	B	11.3	B	15.7
78	Sheep Creek Road and El Mirage Road	Stop NB/SB	Does not exist				**E***	40.5	**F***	>300	A	3.5	A	5.8	A	9.4	C	18.5
79	Sheep Creek Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	19.6	C	20.4	B	19.6	B	16.5
80	Sheep Creek Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.3	B	14.6	B	18.8	B	13.7
81	Sheep Creek Road and Holly Street	Stop EB/WB	Does not exist				B*	12.2	B*	13.7	A	6.6	B	15.2	A	7.4	B	12.5
82*	Sheep Creek Road and SR 18	Existing–stop NB/SB; future–signal	B	12.8	C	19.7	**F**	>300	**F**	>300	C	32.9	D	35.5	C	33.6	C	34.5
83	Caughlin Road and Air Base Road	Stop EB/WB	Does not exist				C*	17.4	C*	22.3	A	2.9	A	3.0	A	4.6	A	4.4
84	Caughlin Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	16.0	B	17.9	B	17.4	C	25.5
85	Caughlin Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	15.2	B	14.8	B	17.5	C	21.4
86	Caughlin Road and Rancho Road	Stop EB/WB	Does not exist				C*	16.1	**E***	39.1	A	3.9	A	4.1	A	6.6	A	9.4
87	Koala Road and Air Base Road	Signal	Does not exist				C*	21.6	C*	22.7	B	14.7	C	26.8	B	15.8	C	23.7
88	Koala Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				A	8.4	B	13.3	A	6.6	B	14.3
89	Koala Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	6.1	B	12.0	A	6.8	B	18.2
90	Koala Road and Rancho Road	Signal	Does not exist				B*	18.7	C*	20.4	C	20.4	C	28.8	C	21.8	D	37.7
91*	Aster Road and SR 18	Signal	C	25.6	C	21.2	C	25.0	C	24.5	C	32.4	D	35.3	C	33.7	D	36.1
92*	Bellflower Street and SR 18	Existing–stop NB/SB; future–signal	C	20.8	D	27.4	**E**	45.5	**F**	176.0	B	17.2	B	15.7	B	15.8	B	14.2
93*	U.S. 395 and Chamberlaine Way	Signal	C	26.1	C	26.7	C	29.8	C	24.0	C	33.0	C	30.3	C	33.8	C	28.9
94	U.S. 395 and Air Base Road	Signal	C*	30.3	C*	34.9	B*	18.4	C*	25.3	B	15.7	C	21.9	C	20.2	C	21.5
95	U.S. 395 and westbound High Desert Corridor	Signal	Does not exist				Does not exist				A	10.0	B	18.6	B	14.6	B	18.2
96	U.S. 395 and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	9.7	A	5.3	B	13.8	A	7.8
97	U.S. 395 and Rancho Road	Signal	C*	24.6	C*	26.4	C*	30.6	D*	46.5	B	17.7	C	25.7	C	21.2	C	28.6
98*	U.S. 395 and Mojave Drive	Signal	C	26.7	C	31.1	C	34.7	C	30.8	C	31.0	C	32.4	C	26.7	C	32.1
99*	U.S. 395 and SR 18	Signal	C	34.0	D	36.5	D	47.0	**E**	68.1	D	39.7	D	49.4	D	39.8	D	49.4
100	Phantom Street and Mustang Street	Signal	Does not exist				A*	9.5	B*	17.4	B	11.1	C	20.2	B	12.2	C	23.6

Source: Parsons

Notes:
1. Proposed additional geometry improvements
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E
Level of service F

Table 4-43. Year 2020 Revised Palmdale Access Intersection Level of Service Summary *(4 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																		
101	Phantom West and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	13.6	A	8.9	B	10.7	B	10.2
102	Phantom West and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	19.0	B	18.0	B	19.2	B	17.0
103	Phantom Street and Rancho Road	Signal	Does not exist				A*	9.2	B*	18.8	B	12.6	B	16.4	B	13.8	B	15.2
104*	Topaz Road and SR 18	Signal	D	43.3	C	27.5	C	21.8	C	25.8	D	36.5	C	33.7	D	36.5	C	33.6
105*	Amethyst Road and SR 18	Signal	C	28.8	C	30.4	C	26.8	C	31.0	C	30.0	D	36.1	C	30.4	C	34.7
106	Phantom East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				A	9.5	A	4.7	B	11.9	A	6.8
107	Phantom East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	8.3	A	6.6	B	10.5	A	9.2
108	El Evado Road and Air Expressway Boulevard	Signal	Does not exist				C*	22.8	C*	27.9	B	16.2	B	17.3	B	17.9	B	15.4
109*	Village Drive and Air Expressway Boulevard	Signal	B	17.5	B	15.0	B	14.0	B	16.2	B	14.2	B	16.1	B	14.7	B	15.7
110*	El Evado Road and SR 18	Signal	C	28.0	C	28.1	C	24.8	C	33.0	D	36.7	D	39.8	C	35.0	D	39.9
111	National Trails Highway and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	22.5	C	21.1	C	24.5	C	22.1
112	National Trails Highway and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	20.6	C	21.0	C	22.7	C	22.4
113*	National Trails Highway and Air Expressway Boulevard	Signal	B	18.5	B	18.7	B	19.6	B	14.8	B	15.8	B	15.8	B	15.9	B	15.6
114	I-15 southbound off-/on-ramps and Mojave Drive	Signal	A	8.3	B	11.4	B	12.6	B	12.8	B	12.7	B	12.2	B	14.4	B	13.5
115	I-15 northbound off-/on-ramps and Mojave Drive	Signal	B	19.5	B	13.5	B	19.4	B	16.3	B	12.3	B	12.8	B	12.8	B	14.3
116	I-15 southbound off-/on-ramps and Roy Rogers Drive	Signal	B	13.3	B	10.5	B	15.4	B	12.7	B	12.6	B	11.7	B	14.0	B	14.1
117	I-15 northbound off-/on-ramps and Roy Rogers Drive	Signal	C	20.7	C	21.0	C	20.2	C	23.1	B	19.6	C	21.4	C	22.1	C	24.1
118*	Amargosa Road and SR 18	Signal	C	28.2	D	39.9	D	35.4	**F**	88.3	C	24.8	C	32.4	C	25.0	C	33.1
119*	Kentwood Boulevard and SR 18	Signal	B	18.8	C	27.1	B	18.1	C	29.7	B	16.5	C	27.4	B	16.7	C	27.4
120	Park Avenue and SR 18	Signal	B	17.6	C	25.2	B	16.7	D	37.6	B	11.8	D	45.3	B	16.1	D	46.9
121	I-15 southbound off-ramp and Palmdale Road	Signal	A	8.8	C	25.1	C	26.0	C	29.1	A	5.2	C	23.1	A	9.3	D	42.0
122	I-15 northbound on-ramp and Palmdale Road	Signal	B	16.9	B	17.1	B	18.1	D	40.4	B	14.4	B	19.5	B	16.5	C	30.2
123	I-15 northbound off-ramp and Mariposa Road	Signal	B	14.1	B	13.5	B	12.9	B	11.6	B	11.3	B	12.6	B	11.5	B	12.5
124	I-15 southbound off-/on-ramps and National Trails Hwy/ D Street	Signal	B	11.2	A	9.7	B	14.2	B	15.7	A	9.6	A	8.7	B	10.4	B	10.4
125	I-15 northbound off-/on-ramps and National Trails Hwy/ D Street	Signal	B	14.4	B	11.4	C	21.9	C	20.4	B	10.2	B	15.0	B	11.9	B	16.5
126	I-15 southbound off-/on-ramps and E Street	Stop NB/SB	A	4.0	A	2.2	A	1.9	A	2.4	A	2.6	A	3.1	A	2.7	A	2.6
127	I-15 northbound off-/on-ramps and E Street	Stop NB/SB	A	4.1	A	2.1	A	4.4	A	4.5	A	2.3	A	2.5	A	4.6	A	4.6
128	Gateway and north Frontage Rd	Does not exist	Does not exist				Does not exist				Does not exist				Does not exist			
129	Gateway and south Frontage Rd	Does not exist	Does not exist				Does not exist				Does not exist				Does not exist			
130	I-15 southbound off-ramp and Stoddard Wells Road	Existing–stop NB/SB	A	2.6	A	2.7	C	23.5	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	14.0	A	9.1	A	9.3	B	17.6	B	10.3	B	18.6
131	I-15 northbound on-ramp and Stoddard Wells Road/ Frontage Road	Existing–stop EB/WB	A	3.7	A	3.7	A	5.9	A	4.9	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		No-build–stop EB/WB; improvements–stop EB/WB**	N/A	N/A	N/A	N/A	A	5.8	A	4.8	A	7.0	A	7.1	A	6.5	A	5.6
132	I-15 southbound on-ramp and Stoddard Wells Road	Existing–stop EB/WB	A	3.0	A	2.1	B	13.2	**E**	42.0	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	14.9	B	10.8	B	13.5	A	8.3	B	10.0	A	5.0

Source: Parsons

Notes:
1. Proposed additional geometry improvements
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-43. Year 2020 Revised Palmdale Access Intersection Level of Service Summary *(5 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																		
133	Stoddard Wells Road and I-15 Frontage Road	Existing–stop EB/WB	A	5.6	A	1.2	D	30.7	**E**	48.0	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	C	23.3	C	26.1	B	13.8	B	14.0	B	16.3	B	15.6
134*	Stoddard Wells Road and SR 18	Signal	B	12.7	C	23.2	A	7.5	C	25.1	A	9.8	C	22.6	A	9.5	C	22.9
135*	Apple Valley Road and SR 18	Signal	C	33.1	D	40.2	D	42.7	D	45.0	C	32.4	D	40.1	C	32.3	D	40.0
136	I-15 southbound off-/on-ramps and Victorville Quarry Road	Existing–stop EB/WB; future–4-way stop	A	4.1	A	2.1	A	4.8	A	4.9	A	1.9	A	2.0	A	4.3	A	4.3
137	I-15 northbound off-/on-ramps and Stoddard Wells Rd (north)	Existing–stop NB/SB; future–4-way stop	A	4.3	A	2.3	C	15.6	**F**	134.9	A	2.5	A	3.4	A	4.6	A	5.1
138	I-15 southbound off-/on-ramps and Dale Evans Parkway	Existing–stop NB/SB; future–signal	A	4.7	A	3.1	A	7.2	B	10.3	A	8.8	C	21.8	B	10.1	C	21.5
139	I-15 northbound off-/on-ramps and Dale Evans Parkway	Existing–stop NB/SB; future–signal	A	4.3	A	3.1	A	8.6	A	8.2	B	10.5	B	10.6	C	16.0	B	12.2
140	Choco Road and Frontage Road	Signal	Does not exist				B*	18.7	B*	18.9	B	19.8	B	12.5	B	19.2	B	15.7
141	Choco Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	25.4	C	26.6	C	26.9	C	27.9
142	Choco Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	4.0	A	7.8	A	7.4	A	7.9
143	Choco Road and Falchion Road	Signal	Does not exist				C*	21.8	C*	22.5	C	22.1	C	23.2	C	21.6	C	22.8
144	Dale Evans Parkway and Air Expressway Boulevard	Signal	Does not exist				B*	19.8	C*	22.3	B	18.2	B	19.5	C	23.1	C	20.2
145	Dale Evans Parkway and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	17.1	B	17.3	B	17.3	B	18.6
146	Dale Evans Parkway and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	19.3	B	18.8	C	20.2	C	21.5
147*	Dale Evans Parkway and SR 18	Signal	B	17.8	C	21.0	C	29.4	D	36.0	C	20.8	C	28.2	C	20.8	C	28.2
148	Navajo Road and Waalew Road	4-way stop	Does not exist				A*	8.9	B*	10.0	A	2.2	A	2.7	A	4.1	A	4.5
149	High Desert Corridor and Waalew Road	Signal	Does not exist				Does not exist				A	7.7	A	6.9	A	8.9	A	8.4
150	Central Road and Waalew Road	4-way stop	Does not exist				A*	9.0	B*	10.6	A	3.8	A	4.4	A	6.8	A	7.0
151	High Desert Corridor and Central Road	Signal	Does not exist				Does not exist				A	8.9	A	9.8	B	11.0	B	11.3
152	Central Road and Thunderbird Road	Stop EB/WB	Does not exist				B*	11.8	B*	13.7	A	3.6	A	4.6	A	6.1	A	6.2
153*	Central Road and SR 18	Signal	C	25.5	C	25.5	C	27.3	C	24.6	C	24.9	C	26.0	C	24.9	C	26.0
154	Joshua Road and Cahuilla Road	4-way stop	Does not exist				A*	9.0	B*	10.6	A	2.7	A	3.0	A	4.6	A	5.4
155	Joshua Road and High Desert Corridor	Signal	Does not exist				Does not exist				C	28.3	C	23.0	C	27.8	C	25.1
156	Joshua Road and Thunderbird Road	Stop EB/WB	Does not exist				B*	14.2	D*	27.8	A	3.6	A	4.7	A	6.6	A	7.8
157	Joshua Road and Standing Rock Road	Stop EB/WB	Does not exist				B*	14.8	C*	19.2	A	5.4	A	6.8	A	7.6	A	10.0
158	Joshua Road and Yucca Loma Road	Existing–stop NB/SB; future–4-way stop	B*	10.3	A*	9.5	B*	12.3	D*	25.6	A	3.3	A	4.0	A	5.6	A	5.8
159	Joshua Road and Nisqually Road	4-way stop	Does not exist				B*	10.2	B*	14.8	A	3.1	A	3.1	A	4.8	A	4.9
160	High Desert Corridor and Standing Rock Road	Signal	Does not exist				Does not exist				B	10.4	B	14.1	B	12.1	B	13.5
161	High Desert Corridor and Yucca Loma Road	Signal	Does not exist				Does not exist				B	15.1	B	14.6	B	18.1	B	17.3
162	High Desert Corridor and Nisqually Road	Signal	Does not exist				Does not exist				A	9.7	A	7.0	B	10.3	B	10.3
163	Bear Valley Road and SR 18	Signal	A*	5.7	A*	9.0	B*	10.1	B*	13.8	A	9.0	A	7.9	B	10.9	B	10.2
175	I-15 SB on-ramp and I-15 West Frontage Road	Signal	—	—	—	—	A	2.8	A	3.1	A	6.7	A	7.0	A	6.7	A	2.6

Source: Parsons

Notes:
1. Proposed additional geometry improvements
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

4.6.2 Design Year (2040) Results

The proposed traffic lane geometric configurations for 2040 conditions are illustrated on Figures 4-36 and 4-37. Figure 4-36 illustrates the lane configurations assumed for the no-build alternative analysis, while build alternative lane configurations are illustrated on Figure 4-37.

The intersection level of service analysis results for year 2040 are reported in Table 4-44 for the initial alternatives and Table 4-45 for the revised Palmdale access definition of the alternatives; and are based on the traffic volume forecasts discussed in section 3.8 and presented in Volume III and Volume V of this report.

For the ramp termini intersections reported in Tables 4-44 and 4-45, all ramp intersections for the build alternative perform at LOS D or better, assuming that traffic signals are installed at the I-15 and Stoddard Wells south interchange (intersections 130–133).

The same finding is reported in Tables 4-44 and 4-45 for the build alternative with tolls, except that intersection 16, the southbound SR 14 off-ramp termini at West Avenue S, performs at LOS E during the AM peak hour.

Table 4-44 also reports the intersection level of service performance of the modified build alternative with a reduced number of interchanges. The results reported in this table are not comparable with the other alternatives, because the modified build analysis for ramp terminal and adjacent intersections is based on demand volumes, whereas the analysis for the other alternatives is based on CORSIM served (operationally constrained) volumes.

Insofar as overall performance for the no-build and build alternatives, the number of study intersections projected to operate at LOS E or LOS F is summarized below.

Summary of Initial Results Study Intersection Level of Service Performance

	NO-BUILD		BUILD		BUILD WITH TOLLS	
	AM	PM	AM	PM	AM	PM
Number of intersections studied	115		159		159	
Intersections performing at LOS E or F	23	45	2	11	5	8
Percent performing at LOS E or F	20%	39%	1%	7%	3%	5%

Summary of Revised Palmdale Access Study Intersection Level of Service Performance

	NO-BUILD		BUILD		BUILD WITH TOLLS	
	AM	PM	AM	PM	AM	PM
Number of intersections studied	116		159		159	
Intersections performing at LOS E or F	23	45	2	8	5	8
Percent performing at LOS E or F	20%	39%	1%	5%	3%	5%

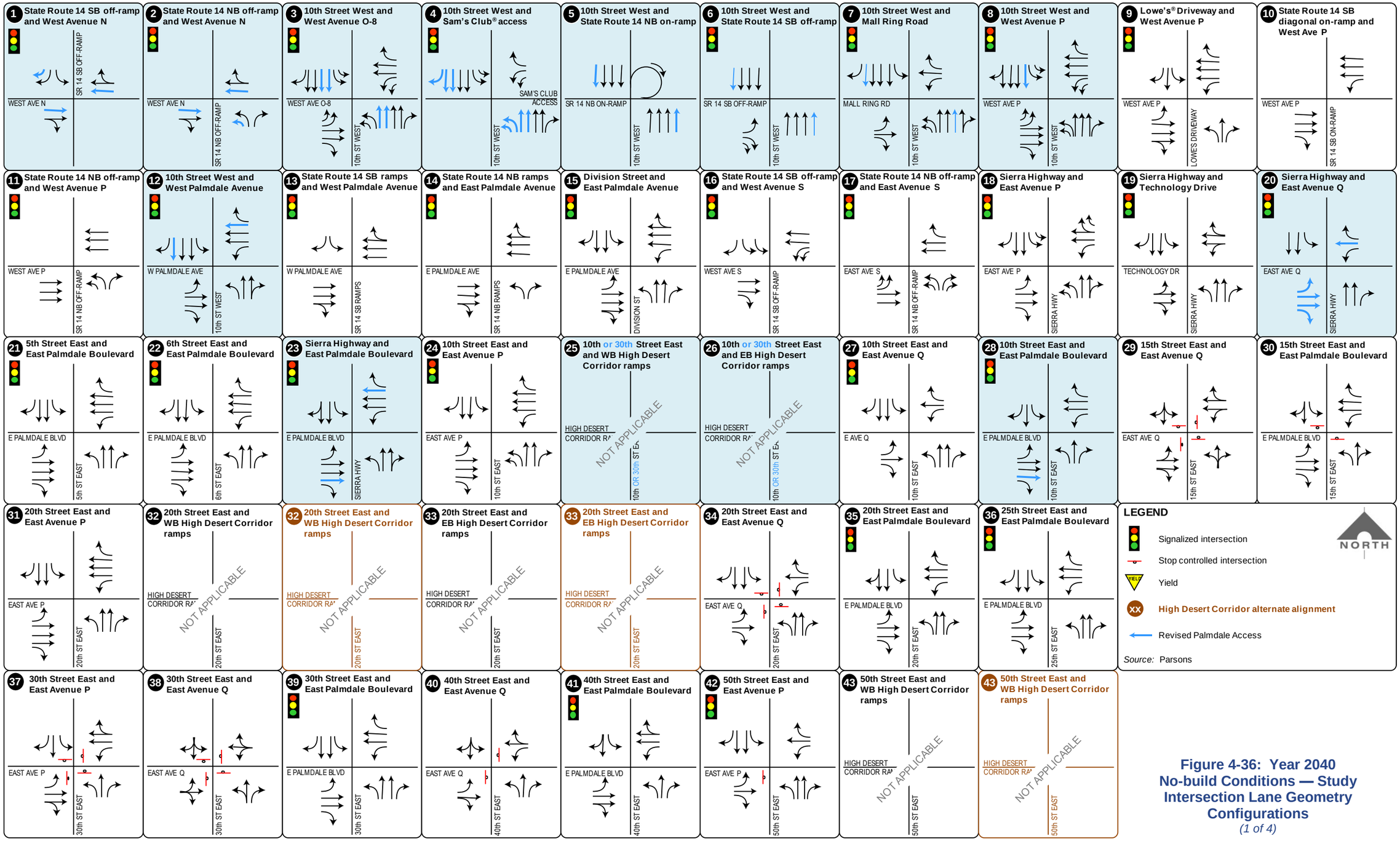


Figure 4-36: Year 2040 No-build Conditions — Study Intersection Lane Geometry Configurations
(1 of 4)

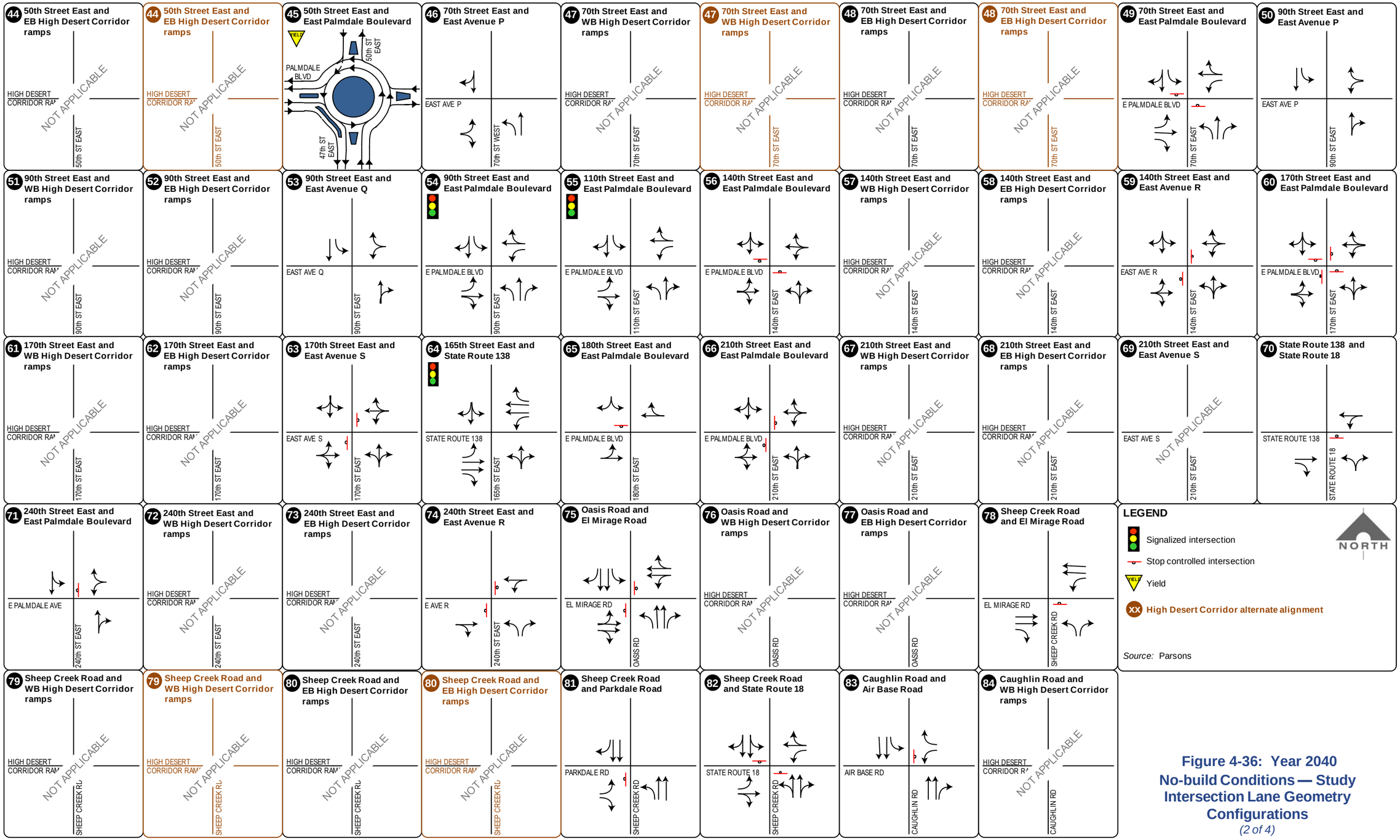


Figure 4-36: Year 2040 No-build Conditions — Study Intersection Lane Geometry Configurations
(2 of 4)

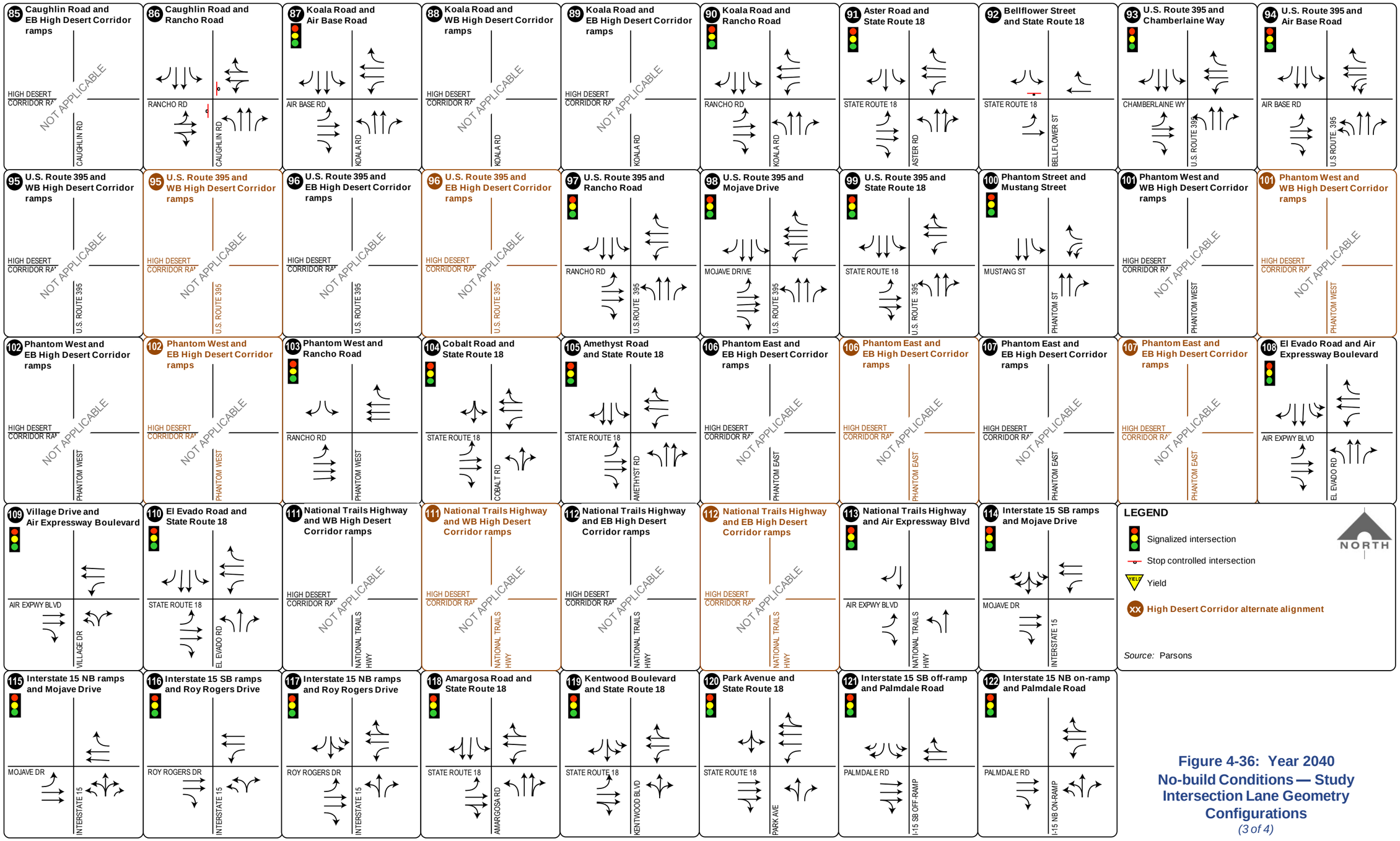


Figure 4-36: Year 2040 No-build Conditions — Study Intersection Lane Geometry Configurations
(3 of 4)

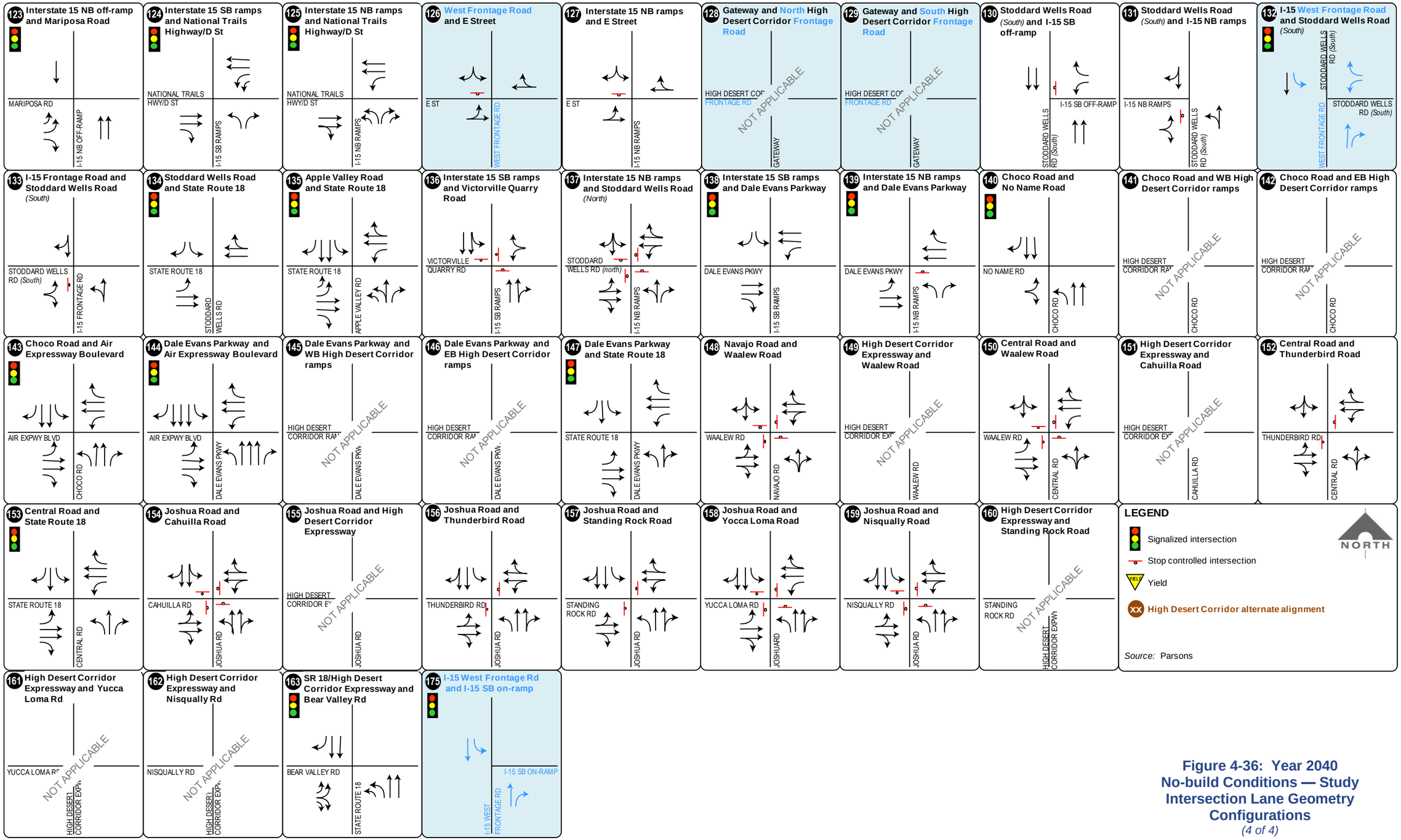


Figure 4-36: Year 2040 No-build Conditions — Study Intersection Lane Geometry Configurations
(4 of 4)

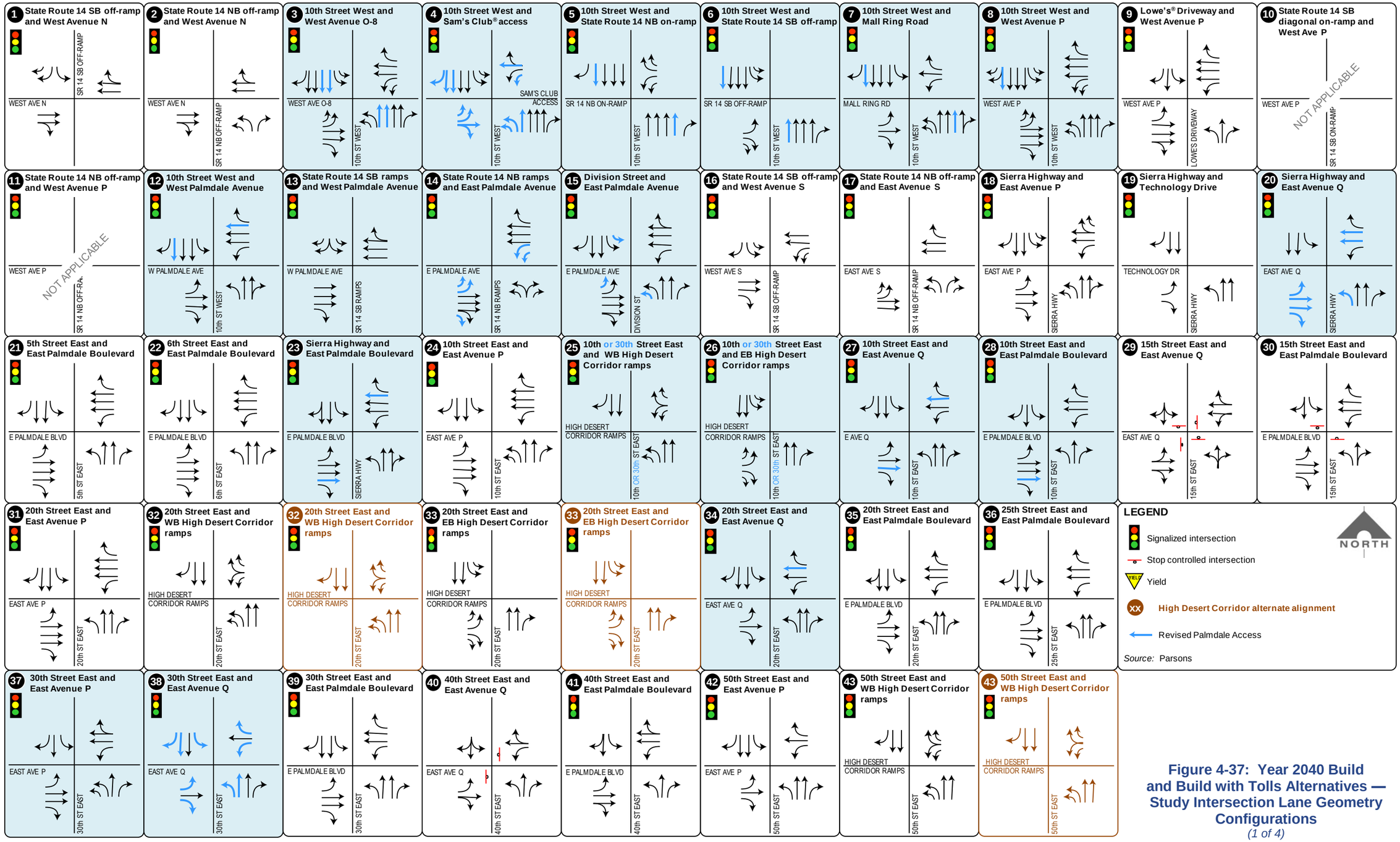


Figure 4-37: Year 2040 Build and Build with Tolls Alternatives — Study Intersection Lane Geometry Configurations
(1 of 4)

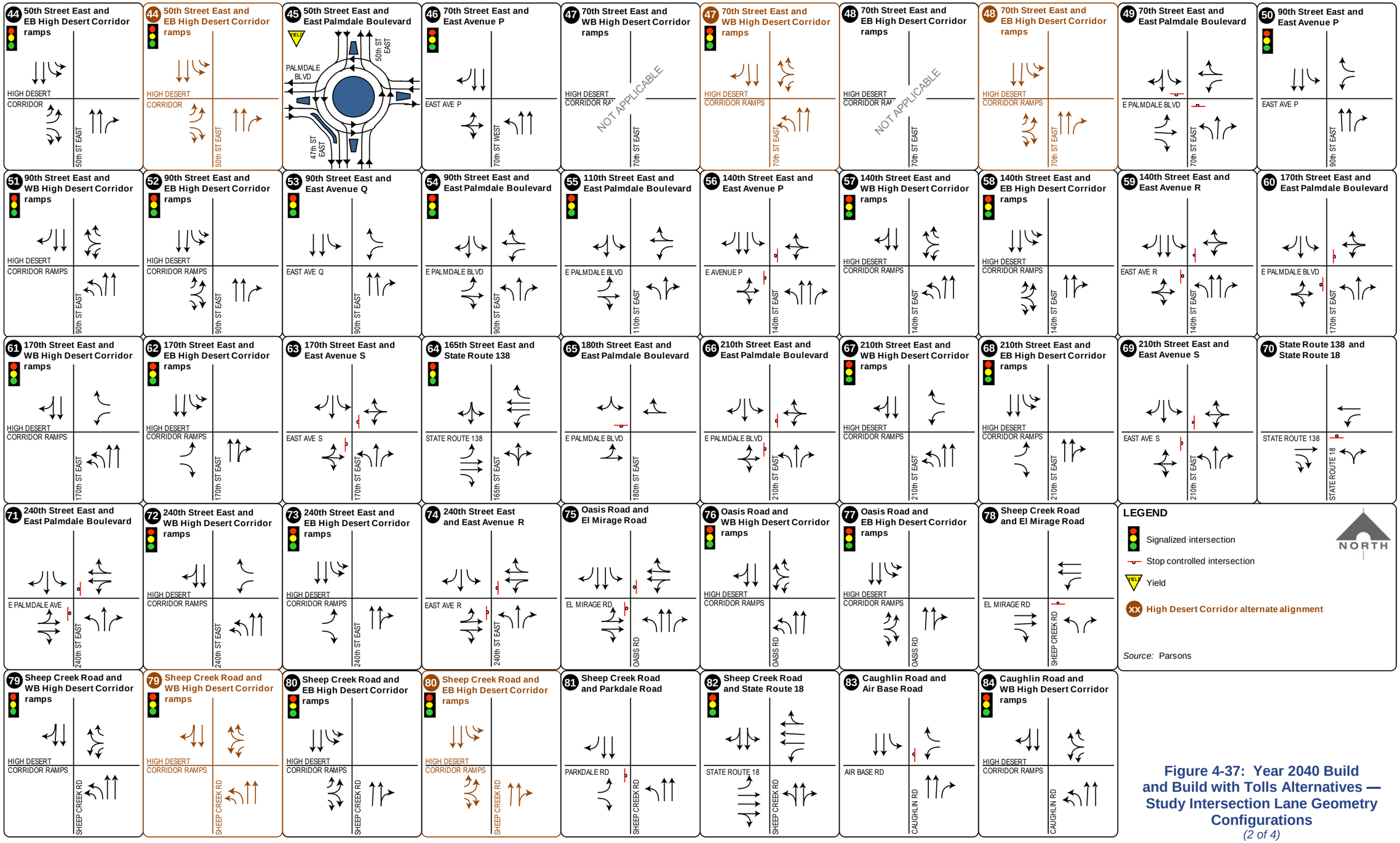


Figure 4-37: Year 2040 Build and Build with Tolls Alternatives — Study Intersection Lane Geometry Configurations
(2 of 4)

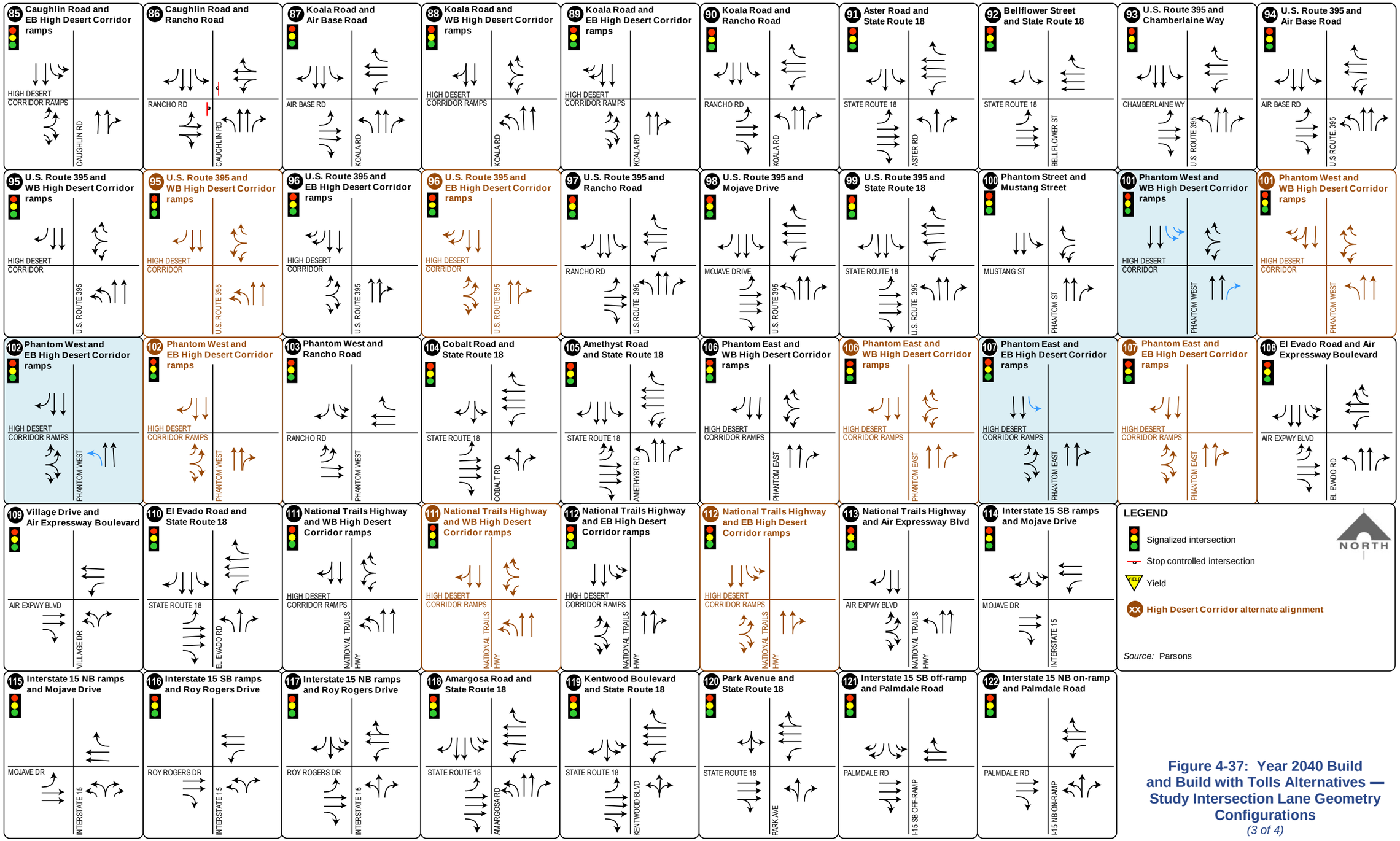


Figure 4-37: Year 2040 Build and Build with Tolls Alternatives — Study Intersection Lane Geometry Configurations
(3 of 4)

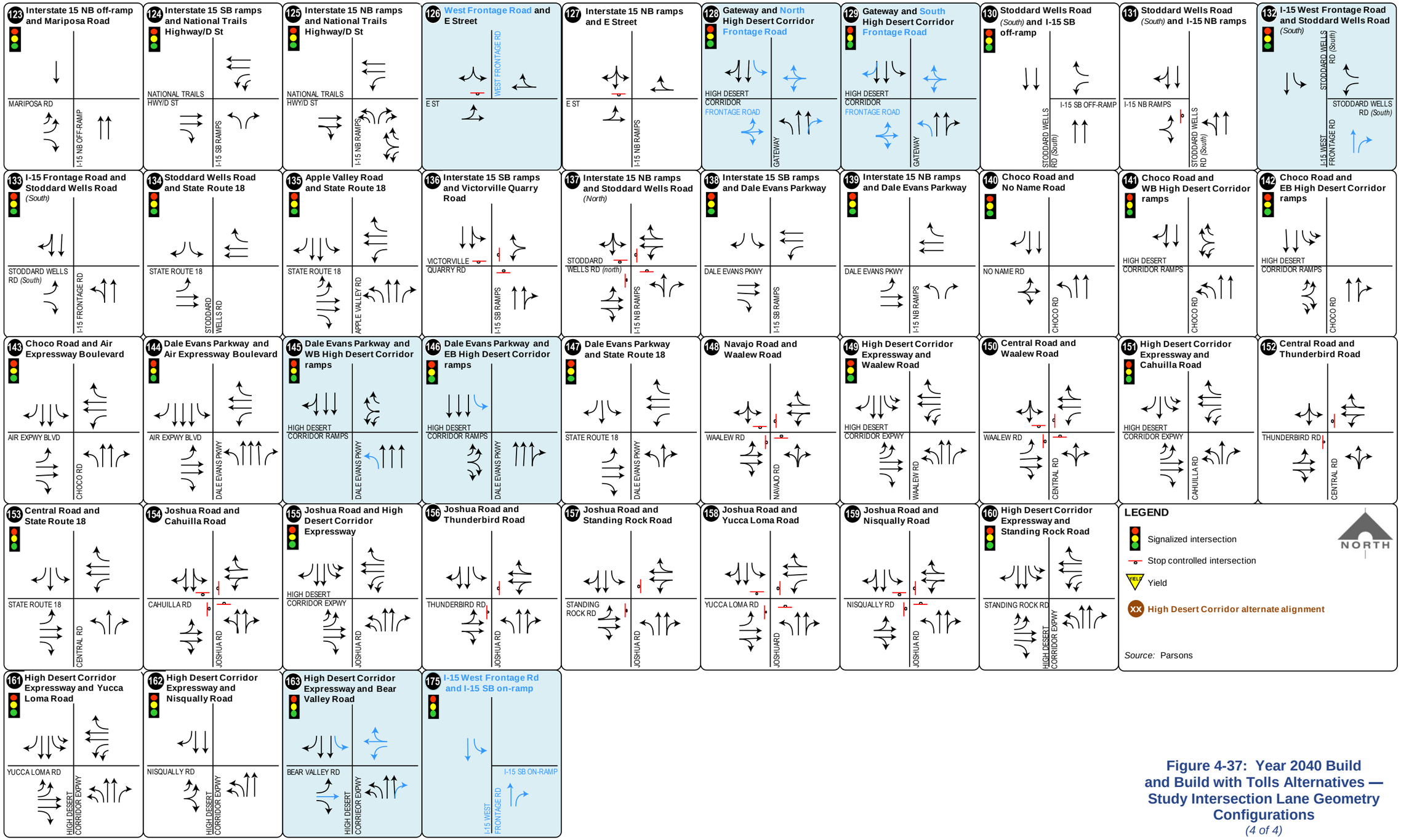


Figure 4-37: Year 2040 Build and Build with Tolls Alternatives — Study Intersection Lane Geometry Configurations
(4 of 4)

Table 4-44. Year 2040 Initial Results[1] Intersection Level of Service Summary *(1 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE (MODIFIED ALIGNMENT)*				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
1	SR 14 southbound off-ramp and West Avenue N	Existing–stop NB/SB; future–signal	A	7.2	B	12.6	A	5.4	E	69.7	A	5.6	A	6.0	B	12.9	B	16.9	A	5.6	A	5.3
2	SR 14 northbound off-ramp and West Avenue N	Existing–stop NB/SB; future–signal	A	7.9	C	18.1	B	10.4	C	23.8	B	10.9	B	16.4	B	12.2	B	17.9	B	10.9	B	13.4
3	10th Street West and West Avenue O-8	Signal	C	23.5	C	24.9	C	27.0	D	41.2	C	30.1	C	23.1	C	29.2	C	31.0	C	30.7	C	22.1
4	10th Street West and Sam's Club access	Signal	B	16.5	B	14.1	B	17.4	B	17.6	B	19.1	B	13.7	B	12.2	B	12.5	B	19.5	B	14.1
5	10th Street West and SR 14 northbound on-ramp	Signal	Does not exist				Does not exist				B	14.0	A	8.5	B	12.9	B	18.8	B	14.0	B	10.2
6	10th Street West and SR 14 southbound off-ramp	Signal	B	13.2	B	11.4	C	21.3	D	54.8	C	25.5	C	21.8	F	80.6	D	48.4	C	23.9	B	18.0
7	10th Street West and Mall Ring Road	Signal	B	10.9	C	22.6	C	22.1	D	42.3	C	33.2	C	20.8	C	23.8	C	34.1	C	31.2	C	23.1
8	10th Street West and West Avenue P	Signal	C	31.3	C	30.3	C	32.7	E	74.8	C	27.5	C	27.8	E	62.1	E	76.0	C	28.1	C	33.1
9	Lowe's Driveway and West Avenue P	Signal	B	10.2	C	29.1	B	18.2	E	65.7	B	18.9	B	19.6	C	22.2	C	34.1	B	19.8	B	18.9
10	SR 14 southbound on-ramp and West Avenue P	Existing–stop NB/SB ; future–signal	A	1.4	A	1.0	A	1.7	E	43.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	SR 14 northbound off-ramp and West Avenue P	Signal	B	14.3	C	20.6	A	8.5	E	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12*	10th Street West and West Palmdale Boulevard	Signal	C	29.9	C	34.6	C	33.1	D	37.7	D	35.3	D	40.8	C	32.9	D	37.8	C	33.4	D	37.8
13	SR 14 southbound off-/on-ramps and West Palmdale Boulevard	Signal	B	11.3	B	11.1	C	27.6	C	30.1	A	8.4	B	12.9	B	14.1	B	19.5	A	7.3	B	11.6
14	SR 14 northbound off-/on-ramps and East Palmdale Boulevard	Signal	A	7.4	B	10.1	A	7.6	B	17.3	A	7.8	B	13.6	B	10.4	C	24.4	A	8.6	B	14.4
15*	Division Street and East Palmdale Boulevard	Signal	C	27.9	C	28.0	E	64.1	E	71.4	D	35.3	F	83.7	C	33.2	E	63.0	C	33.0	E	66.3
16	SR 14 southbound off-ramp and West Avenue S	Signal	C	28.7	C	30.3	D	38.1	B	19.1	D	48.5	C	27.8	D	37.8	C	29.8	E	65.1	C	28.5
17	SR 14 northbound off-ramp and East Avenue S	Signal	B	16.9	B	18.9	B	11.8	D	41.3	B	14.9	C	25.4	B	18.9	C	31.8	B	19.2	C	26.1
18*	Sierra Highway and East Avenue P	Signal	C	33.4	C	34.6	D	45.1	E	58.5	D	36.5	D	51.9	C	34.7	D	41.2	C	34.5	D	42.1
19*	Sierra Highway and Technology Drive	Signal	B	14.3	B	16.8	D	50.9	F	115.4	B	14.1	B	18.0	B	13.9	B	17.4	B	13.9	B	17.7
20*	Sierra Highway and East Avenue Q	Signal	B	16.0	B	15.4	B	15.0	B	15.3	B	17.1	B	16.0	B	17.5	B	15.8	B	16.9	B	15.8
21*	5th Street East and East Palmdale Boulevard	Signal	C	22.1	C	23.8	C	21.4	C	31.4	C	25.7	C	28.7	C	24.9	C	27.0	C	25.0	C	27.3
22*	6th Street East and East Palmdale Boulevard	Signal	C	20.7	C	25.3	E	55.7	E	78.0	C	30.2	C	33.1	C	29.1	C	30.6	C	28.7	C	30.5
23*	Sierra Highway and East Palmdale Boulevard	Signal	C	25.5	C	27.3	F	82.1	F	94.6	C	34.1	D	42.8	C	31.0	D	35.4	C	30.9	D	35.1
24	10th Street East and East Avenue P	Existing–stop NB/SB ; future–signal	E*	39.0	F*	>300	B*	16.3	C*	20.8	C	27.1	C	30.2	C	24.0	C	26.5	C	21.1	C	22.2
25	10th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	21.7	C	34.8	C	24.5	C	22.3	C	22.6	C	28.8
26	10th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	13.6	C	30.6	C	23.9	C	25.7	B	13.6	C	23.6
27	10th Street East and East Avenue Q	Existing–4-way stop; future–signal	B*	10.3	B*	12.6	C*	22.7	C*	29.3	C	28.1	C	24.8	C	25.8	C	27.7	C	26.3	C	26.5
28*	10th Street East and East Palmdale Boulevard	Signal	B	17.2	C	20.0	C	31.3	D	50.6	C	34.3	E	69.1	C	30.1	D	47.4	C	29.1	D	49.5
29*	15th Street East and East Avenue Q	4-way stop	B	10.5	B	10.8	B	10.4	B	12.4	A	9.9	B	11.0	B	10.6	B	11.8	A	9.6	B	10.4
30*	15th Street East and East Palmdale Boulevard	Stop NB/SB	D	25.2	E	36.1	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300
31	20th Street East and East Avenue P	Signal	Does not exist				C*	22.9	C*	27.2	C	22.6	C	26.9	C	23.6	C	25.0	C	22.0	C	26.6
32	20th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				D	40.8	C	23.1	C	23.2	C	22.3	D	40.1	C	29.9

Source: Parsons

Notes:
1. Initial results do not reflect Palmdale access refinements.
2. Proposed additional geometry improvements.
3. Two-way stop control level of service reported for worst approach
4. 4-way stop reported for overall level of service.
5. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-44. Year 2040 Design Initial Results[1] Intersection Level of Service Summary *(2 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE (MODIFIED ALIGNMENT)*				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
33	20th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	25.8	C	26.4	B	18.6	B	19.8	C	26.5	C	24.7
34	20th Street East and East Avenue Q	Existing–4-way stop; future–signal	B*	11.2	B*	14.5	C*	23.8	C*	23.5	C	24.4	C	22.0	C	25.7	C	23.7	C	24.6	C	20.8
35*	20th Street East and East Palmdale Boulevard	Signal	B	19.9	C	22.9	C	34.1	E	63.8	C	28.4	D	53.9	C	28.0	D	45.4	C	26.4	D	42.7
36*	25th Street East and East Palmdale Boulevard	Signal	C	26.2	C	30.9	D	42.2	E	64.5	C	33.6	D	38.9	C	33.1	D	36.5	C	33.2	D	36.2
37*	30th Street East and East Avenue P	4-way stop	B	12.6	C	15.1	B	13.5	C	18.9	B	13.7	C	17.7	B	13.2	C	17.0	B	12.7	C	15.4
38*	30th Street East and East Avenue Q	4-way stop	B	11.6	B	11.6	E	46.0	F	145.3	C	23.2	F	84.0	C	20.4	F	65.4	C	18.2	F	51.8
39*	30th Street East and East Palmdale Boulevard	Signal	B	18.4	C	20.4	C	26.1	C	31.7	C	28.2	D	43.7	C	27.0	C	32.5	C	26.2	D	35.4
40*	40th Street East and East Avenue Q	Stop EB/WB	C	16.2	C	16.0	D	34.4	F	98.6	C	21.9	D	26.8	C	19.1	C	24.2	C	19.3	C	22.7
41*	40th Street East and East Palmdale Boulevard	Signal	C	21.9	C	23.7	D	39.1	E	71.6	C	29.4	D	38.3	C	27.8	C	33.2	C	28.4	D	35.4
42	50th Street East and East Avenue P	Existing–stop EB/WB; future–signal	B*	11.9	B*	12.9	C*	22.3	C*	27.2	C	22.6	B	18.9	C	22.2	C	23.7	C	22.7	C	20.0
43	50th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	34.4	C	28.7	C	22.7	C	24.0	C	34.4	C	29.8
44	50th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	27.8	C	24.1	C	33.1	C	24.6	C	25.9	C	25.0
45*	50th Street East and East Palmdale Avenue	Roundabout	B	14.0	A	8.9	F	>300	F	>300	F	270.2	F	134.6	F	93.6	F	77.4	F	119.5	F	56.7
46	70th Street East and East Avenue P	Signal	Does not exist				B*	16.9	B*	18.1	B	17.0	B	13.4	B	17.5	B	14.0	B	16.4	B	14.6
47*	70th Street and westbound High Desert Corridor	Signal	Does not exist				Does not exist				Does not exist				C	20.3	B	19.6	Does not exist			
48*	70th Street and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				Does not exist				B	13.7	B	15.2	Does not exist			
49*	70th Street East and East Palmdale Boulevard	Stop NB/SB	F	>300	C	20.9	F	>300	F	>300	C	15.6	F	60.1	F	>300	F	>300	B	14.0	E	35.0
50	90th Street East and East Avenue P	Signal	—	—	—	—	B*	17.9	B*	17.6	B	14.1	B	11.8	B	16.1	B	12.6	B	16.2	B	15.8
51	90th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				D	36.0	C	31.9	C	21.7	C	22.0	D	37.8	C	34.0
52	90th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	16.6	C	23.2	B	18.8	C	23.6	C	21.0	C	20.5
53	90th Street East and East Avenue Q	Signal	C	22.9	C	23.1	B*	16.2	B*	18.6	B	19.7	B	15.7	B	17.5	B	14.7	B	17.8	B	14.5
54*	90th Street East and East Palmdale Boulevard	Signal	C	23.9	C	24.1	D	46.3	E	76.2	D	35.2	D	36.8	D	35.1	D	37.2	C	34.8	D	35.0
55*	110th Street East and East Palmdale Boulevard	Signal	C	22.8	B	19.8	C	22.1	C	30.1	C	27.0	C	26.0	C	26.8	C	25.7	C	25.9	C	26.4
56	140th Street and East Palmdale Boulevard	Stop EB/WB	A*	9.3	A*	9.6	C*	24.9	F*	>300	A	6.8	A	6.2	F	55.9	F	>300	A	8.3	B	13.2
57	140th Street and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	12.7	B	19.8	B	14.7	B	17.4	B	14.7	B	19.6
58	140th Street and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	9.5	B	15.0	B	19.3	C	20.3	B	10.0	B	12.9
59	140th Street and East Avenue R	Stop EB/WB	Does not exist				B*	12.7	D*	29.3	A	3.6	A	4.7	B	14.5	C	22.8	B	11.8	C	22.8
60	170th Street East and East Palmdale Boulevard	Existing–4-way stop; future–stop EB/WB	A*	7.6	A*	8.1	B*	13.5	F*	70.0	A	2.4	A	4.7	B	11.1	C	18.8	A	4.5	E	36.2
61	170th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.7	A	8.3	C	22.9	B	19.2	B	12.2	A	8.0
62	170th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	7.4	A	5.6	B	10.8	B	16.0	A	9.4	A	8.7
63	170th Street East and East Avenue S	Stop EB/WB	Does not exist				B*	11.9	B*	14.4	A	4.4	A	4.0	C	18.0	C	22.6	A	4.6	A	5.4
64*	165th Street East and SR 138	Signal	C	20.6	C	21.7	F	109.7	E	56.8	D	36.6	C	29.5	C	33.3	C	29.5	D	54.0	D	52.9
65*	180th Street East and East Palmdale Boulevard	Stop EB/WB	A	8.6	A	8.7	B	13.5	C	22.7	A	9.5	B	10.6	A	9.4	B	10.6	B	10.7	B	13.9

Source: Parsons

Notes:
1. Initial results do not reflect Palmdale access refinements
2. Proposed additional geometry improvements.
3. Two-way stop control level of service reported for worst approach
4. 4-way stop reported for overall level of service.
5. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-44. Year 2040 Initial Results[1] Intersection Level of Service Summary *(3 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE (MODIFIED ALIGNMENT)*				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
66	210th Street and East Palmdale Boulevard	Stop EB/WB	Does not exist				B*	10.3	B*	11.9	A	2.7	A	3.5	B	10.2	B	12.2	A	3.8	A	7.9
67	210th Street and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.1	A	9.2	B	12.9	B	13.4	B	14.9	A	8.7
68	210th Street and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	13.2	B	10.9	C	21.3	B	18.7	A	9.8	B	13.4
69	210th Street and East Avenue S	Stop EB/WB	Does not exist				Does not exist				A	2.6	A	3.2	A	9.6	B	11.5	A	3.8	C	21.7
70*	SR 138 and SR 18	Stop WB, yield EB	B	10.0	B	11.7	**F**	>300	**F**	>300	D	30.2	**F**	>300	C	24.4	**F**	>300	**E**	39.1	**F**	>300
71	240th Street and East Palmdale Boulevard	Stop EB/WB	A*	8.7	A*	8.8	**F***	>300	**F***	>300	A	4.4	A	6.9	C	15.9	D	29.5	**F**	>300	**E**	38.7
72	240th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	14.2	A	6.3	B	15.0	C	21.3	B	13.6	B	11.7
73	240th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	34.8	C	24.9	B	19.2	B	19.8	B	19.8	C	21.2
74	240th Street East and East Avenue R	Stop EB/WB	Does not exist				**E***	41.7	**F***	183.1	A	2.4	A	2.7	B	10.6	B	10.7	B	12.9	C	22.9
75	Oasis Road and El Mirage Road	Stop EB/WB	Does not exist				**F***	>300	**F***	>300	A	2.4	A	3.5	B	11.1	C	21.6	A	3.5	A	6.3
76	Oasis Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	17.6	B	19.8	A	—	A	—	B	18.4	C	20.4
77	Oasis Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	9.1	B	13.9	A	—	A	—	A	9.2	B	14.4
78	Sheep Creek Road and El Mirage Road	Stop NB/SB	Does not exist				**F***	132.2	**F***	>300	A	4.3	A	5.3	B	12.8	B	13.7	B	12.1	C	19.2
79	Sheep Creek Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	17.8	C	21.8	C	20.8	B	19.4	C	20.1	C	21.0
80	Sheep Creek Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	13.4	B	17.7	B	19.7	C	20.5	B	16.1	B	18.7
81	Sheep Creek Road and Holly Street	Stop EB/WB	Does not exist				B*	13.5	B*	14.6	A	5.0	A	8.9	C	22.7	D	33.4	A	4.7	A	7.4
82*	Sheep Creek Road and SR 18	Existing–stop NB/SB; future–signal	B	12.8	C	19.7	**F**	>300	**F**	>300	D	36.6	**F**	201.1	C	34.9	**F**	162.8	D	54.4	**F**	291.0
83	Caughlin Road and Air Base Road	Stop EB/WB	Does not exist				C*	23.6	D*	25.7	A	2.8	A	3.0	C	15.7	B	14.9	A	2.5	A	2.6
84	Caughlin Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	16.2	C	22.6	B	14.6	B	14.7	B	13.9	C	25.8
85	Caughlin Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	13.6	B	19.6	B	17.3	B	19.6	B	14.1	C	21.0
86	Caughlin Road and Rancho Road	Stop EB/WB	Does not exist				**E***	35.8	**F***	58.8	A	6.3	B	14.0	C	21.1	**F**	50.3	A	5.1	A	7.2
87	Koala Road and Air Base Road	Signal	Does not exist				C*	20.5	C*	23.7	B	15.8	C	21.2	C	29.4	C	34.8	B	15.8	B	19.8
88	Koala Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				A	6.7	B	18.8	B	19.0	D	47.0	A	5.3	B	14.5
89	Koala Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	3.8	B	18.1	A	7.2	A	4.9	A	3.1	C	21.0
90	Koala Road and Rancho Road	Signal	Does not exist				C*	21.2	C*	22.3	B	17.2	C	31.8	C	24.4	C	28.8	B	17.4	C	32.9
91*	Aster Road and SR 18	Signal	C	25.6	C	21.2	B	19.4	C	22.4	C	20.5	C	21.0	C	21.0	C	20.9	C	20.4	C	20.1
92*	Bellflower Street and SR 18	Existing–stop NB/SB; future–signal	C	20.8	D	27.4	**F**	89.2	**F**	>300	C	30.2	C	30.3	C	28.7	C	28.4	C	27.2	C	30.0
93*	U.S. 395 and Chamberlaine Way	Signal	C	26.1	C	26.7	D	39.8	C	33.5	D	51.8	D	40.7	D	36.6	C	31.7	D	45.5	D	40.7
94	U.S. 395 and Air Base Road	Signal	C*	30.3	C*	34.9	D*	45.6	**E***	75.0	C	25.4	C	30.4	C	30.0	D	46.2	C	21.8	C	24.4
95	U.S. 395 and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	27.8	C	26.1	D	35.8	D	38.0	B	13.1	C	32.7
96	U.S. 395 and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	8.6	A	5.8	B	14.0	A	9.0	A	6.7	A	6.0
97	U.S. 395 and Rancho Road	Signal	C*	24.6	C*	26.4	D*	48.2	**F***	107.7	C	23.2	C	31.3	C	33.5	D	43.3	C	20.9	D	43.5
98*	U.S. 395 and Mojave Drive	Signal	C	26.7	C	31.1	D	38.7	C	34.3	D	36.2	D	40.1	C	33.7	D	36.3	C	34.1	C	34.6
99*	U.S. 395 and SR 18	Signal	C	34.0	D	36.5	**E**	61.1	F	90.6	D	42.2	**E**	64.1	D	39.3	D	49.9	D	39.7	D	47.0

Source: Parsons

Notes:
1. Initial results do not reflect Palmdale access refinements
2. Proposed additional geometry improvements.
3. Two-way stop control level of service reported for worst approach
4. 4-way stop reported for overall level of service.
5. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-44. Year 2040 Initial Results[1] Intersection Level of Service Summary *(4 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE (MODIFIED ALIGNMENT)*				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
100	Phantom Street and Mustang Street	Signal	Does not exist				A*	7.6	B*	16.7	B	11.2	B	11.3	B	13.8	C	29.8	B	11.2	B	11.0
101	Phantom West and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	15.7	B	12.4	C	22.6	B	18.3	B	13.5	B	11.4
102	Phantom West and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	16.9	C	24.4	C	22.2	B	16.6	B	17.1	C	23.9
103	Phantom Street and Rancho Road	Signal	Does not exist				B*	13.1	B*	19.5	B	12.1	B	16.3	B	18.9	C	24.9	B	12.4	B	13.2
104*	Topaz Road and SR 18	Signal	D	43.3	C	27.5	**F**	97.3	**F**	160.2	D	42.2	**E**	59.5	D	40.7	D	48.6	D	39.7	D	49.1
105*	Amethyst Road and SR 18	Signal	C	28.8	C	30.4	D	48.9	**F**	108.3	C	34.5	D	42.6	C	33.8	D	38.6	C	33.9	D	37.7
106	Phantom East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.2	A	6.5	A	—	A	—	B	12.3	A	6.2
107	Phantom East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.4	A	9.1	A	—	A	—	B	10.6	A	8.1
108	El Evado Road and Air Expressway Boulevard	Signal	Does not exist				C*	32.4	D*	39.5	B	16.0	B	16.5	C	30.0	C	33.8	B	17.2	B	14.8
109*	Village Drive and Air Expressway Boulevard	Signal	B	17.5	B	15.0	B	17.5	B	15.4	B	15.5	B	16.6	B	18.3	B	16.7	B	14.7	B	14.0
110*	El Evado Road and SR 18	Signal	C	28.0	C	28.1	D	40.9	**F**	80.9	D	39.0	D	46.6	D	37.6	D	39.9	D	37.5	D	39.3
111	National Trails Highway and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	24.4	C	20.4	D	42.8	**E**	65.6	C	25.1	C	22.1
112	National Trails Highway and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	21.3	C	25.6	C	29.2	**E**	68.3	C	21.0	C	24.7
113*	National Trails Highway and Air Expressway Boulevard	Signal	B	18.5	B	18.7	D	38.6	C	29.7	C	21.0	B	18.9	C	26.0	B	17.8	B	17.4	B	17.1
114	I-15 southbound off-/on-ramps and Mojave Drive	Signal	A	8.3	B	11.4	B	13.7	B	14.6	B	12.9	B	13.7	B	18.3	B	18.9	B	14.9	B	13.6
115	I-15 northbound off-/on-ramps and Mojave Drive	Signal	B	19.5	B	13.5	C	20.9	B	18.4	B	14.4	B	13.5	C	20.2	C	20.5	B	14.6	B	12.5
116	I-15 southbound off-/on-ramps and Roy Rogers Drive	Signal	B	13.3	B	10.5	C	26.5	B	13.3	B	14.7	B	11.8	B	17.8	B	17.8	B	14.6	B	11.7
117	I-15 northbound off-/on-ramps and Roy Rogers Drive	Signal	C	20.7	C	21.0	C	34.9	C	28.9	C	22.2	C	28.3	C	28.4	**E**	59.7	C	22.8	C	25.3
118*	Amargosa Road and SR 18	Signal	C	28.2	D	39.9	**F**	84.9	**F**	200.0	C	27.3	D	36.9	C	26.6	D	36.7	C	26.4	D	36.6
119*	Kentwood Boulevard and SR 18	Signal	B	18.8	C	27.1	C	22.2	D	49.9	B	15.4	C	27.5	B	15.1	C	25.6	B	15.2	C	25.1
120	Park Avenue and SR 18	Signal	B	17.6	C	25.2	C	23.5	C	20.5	A	8.5	B	19.1	C	26.2	**E**	64.9	A	9.0	C	21.5
121	I-15 southbound off-ramp and Palmdale Road	Signal	A	8.8	C	25.1	B	19.3	B	19.7	A	6.0	B	18.1	B	19.7	D	36.5	A	5.9	C	21.4
122	I-15 northbound on-ramp and Palmdale Road	Signal	B	16.9	B	17.1	C	20.8	C	22.6	B	18.7	C	23.3	C	29.7	D	50.4	B	16.1	C	24.5
123	I-15 northbound off-ramp and Mariposa Road	Signal	B	14.1	B	13.5	B	13.1	B	12.0	B	11.6	B	11.9	B	16.9	B	19.6	B	12.2	B	12.5
124	I-15 southbound off-/on-ramps and National Trails Hwy/D Street	Signal	B	11.2	A	9.7	B	14.1	B	18.9	B	11.1	B	12.1	B	15.7	B	15.8	B	11.3	B	11.2
125	I-15 northbound off-/on-ramps and National Trails Hwy/D Street	Signal	B	14.4	B	11.4	C	24.4	C	22.4	B	11.8	C	21.4	C	20.3	C	20.5	B	11.7	B	18.7
126	I-15 southbound off-/on-ramps and E Street	Stop NB/SB	A	4.0	A	2.2	A	4.3	A	4.3	A	2.6	A	2.2	A	9.2	A	9.1	A	2.0	A	2.2
127	I-15 northbound off-/on-ramps and E Street	Stop NB/SB	A	4.1	A	2.1	A	4.6	A	4.9	A	2.4	A	2.9	A	9.2	A	9.5	A	2.5	A	2.5
128	Gateway and north High Desert Corridor Frontage Road	Does not exist	Does not exist				Does not exist				Does not exist				Does not exist				Does not exist			
129	Gateway and south High Desert Corridor Frontage Road	Does not exist	Does not exist				Does not exist				Does not exist				Does not exist				Does not exist			
130	I-15 southbound off-ramp and Stoddard Wells Road	Existing–stop NB/SB	A	2.6	A	2.7	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	12.2	B	11.2	B	10.9	B	10.1	B	17.4	B	15.6	B	12.2	A	9.7
131	I-15 northbound on-ramp and Stoddard Wells Road/Frontage Road	Existing–stop EB/WB	A	3.7	A	3.7	C	15.1	D	33.9	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–stop EB/WB**	N/A	N/A	N/A	N/A	A	7.3	A	8.3	A	9.5	A	9.8	D	30.6	D	32.4	B	10.6	B	11.5
		Improvements–signal	N/A	N/A	N/A	N/A	B	15.6	B	16.5	B	14.5	B	14.5	C	26.3	D	37.2	B	14.3	B	14.9

Source: Parsons

Notes:
1. Initial results do not reflect Palmdale access refinements
2. Proposed additional geometry improvements.
3. Two-way stop control level of service reported for worst approach
4. 4-way stop reported for overall level of service.
5. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-44. Year 2040 Initial Results[1] Intersection Level of Service Summary *(5 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE (MODIFIED ALIGNMENT)*				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
132	I-15 southbound on-ramp and Stoddard Wells Road	Existing–stop EB/WB	A	3.0	A	2.1	B	10.2	D	29.4	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	13.2	B	10.5	B	10.0	A	4.9	A	9.9	A	7.7	A	9.2	A	4.6
133	Stoddard Wells Road and I-15 Frontage Road	Existing–stop EB/WB	A	5.6	A	1.2	**F**	118.2	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
134*	Stoddard Wells Road and SR 18	Signal	B	12.7	C	23.2	B	17.7	**F**	87.2	B	12.5	D	41.0	B	10.7	C	26.9	B	10.4	C	26.0
135*	Apple Valley Road and SR 18	Signal	C	33.1	D	40.2	**F**	81.3	**F**	150.3	D	50.0	**E**	72.2	D	44.1	D	52.4	D	42.4	D	51.2
136	I-15 southbound off-/on-ramps and Victorville Quarry Road	Existing–stop EB/WB; future–4-way stop	A	4.1	A	2.1	A	4.8	A	5.0	A	2.2	A	2.4	A	9.1	B	10.4	A	2.2	A	2.4
137	I-15 northbound off-/on-ramps and Stoddard Wells Road (north)	Existing–stop NB/SB; future–4-way stop	A	4.3	A	2.3	A	6.7	A	6.6	A	3.5	A	4.5	B	12.5	C	15.5	A	7.8	A	5.2
138	I-15 southbound off-/on-ramps and Dale Evans Parkway	Existing–stop NB/SB; future–signal	A	4.7	A	3.1	C	28.2	C	24.8	C	21.0	C	24.1	C	25.4	C	22.9	C	21.0	C	23.7
139	I-15 northbound off-/on-ramps and Dale Evans Parkway	Existing–stop NB/SB; future–signal	A	4.3	A	3.1	B	13.1	B	12.8	B	13.7	A	7.5	C	21.7	B	17.5	B	14.5	A	7.3
140	Choco Road and Frontage Road	Signal	Does not exist				B*	17.7	B*	17.1	B	16.7	B	13.1	C	20.2	B	18.7	B	18.3	B	12.6
141	Choco Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	25.8	D	36.0	C	22.6	B	16.9	C	27.3	C	34.7
142	Choco Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	4.0	A	6.0	B	15.6	B	18.8	A	6.6	A	6.1
143	Choco Road and Air Expressway Boulevard	Signal	Does not exist				C*	20.5	C*	22.1	C	24.0	C	22.5	B	12.6	B	13.9	C	20.3	C	22.0
144	Dale Evans Parkway and Falchion Road	Signal	Does not exist				B*	16.1	B*	18.7	B	18.4	B	19.0	B	19.1	C	25.3	C	20.6	B	19.5
145	Dale Evans Parkway and westbound High Desert Corridor	Signal	Does not exist				Does not exist				A	6.9	B	10.3	B	10.6	A	6.8	A	6.9	B	10.1
146	Dale Evans Parkway and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	9.6	B	13.1	B	14.0	B	12.4	A	9.6	B	12.7
147*	Dale Evans Parkway and SR 18	Signal	B	17.8	C	21.0	C	30.2	**E**	78.2	C	22.5	D	43.5	C	21.2	C	34.5	C	21.5	D	35.5
148	Navajo Road and Waalew Road	4-way stop	Does not exist				A*	9.1	B*	10.6	A	2.2	A	2.7	A	8.2	B	10.1	A	2.3	A	2.6
149	High Desert Corridor and Waalew Road	Signal	Does not exist				Does not exist				A	7.5	A	8.4	B	18.9	D	54.3	A	8.1	A	7.8
150	Central Road and Waalew Road	4-way stop	Does not exist				A*	9.7	B*	13.6	A	4.3	A	6.4	B	11.6	C	21.5	A	4.6	A	5.2
151	High Desert Corridor and Central Road	Signal	Does not exist				Does not exist				B	10.5	B	13.1	B	17.5	C	30.1	B	10.8	B	11.2
152	Central Road and Thunderbird Road	Stop EB/WB	Does not exist				C*	16.6	D*	33.5	A	4.4	A	5.2	B	13.4	C	21.4	A	4.2	A	5.6
153*	Central Road and SR 18	Signal	C	25.5	C	25.5	C	29.6	C	32.5	C	26.5	C	29.4	C	26.0	C	27.8	C	26.2	C	27.8
154	Joshua Road and Cahuilla Road	4-way stop	Does not exist				B*	10.3	B*	14.4	A	2.8	A	4.4	B	10.5	B	14.1	A	2.6	A	4.1
155	Joshua Road and High Desert Corridor	Signal	Does not exist				Does not exist				C	25.8	C	25.1	C	20.1	C	29.9	C	26.4	C	24.6
156	Joshua Road and Thunderbird Road	Stop EB/WB	Does not exist				C*	18.6	**F***	127.5	A	5.4	B	12.9	C	18.5	**F**	61.1	A	6.5	C	19.6
157	Joshua Road and Standing Rock Road	Stop EB/WB	Does not exist				C*	17.8	D*	28.8	A	7.0	C	16.3	C	20.3	**F**	70.1	A	9.0	C	16.8
158	Joshua Road and Yucca Loma Road	Existing–stop NB/SB; future–4-way stop	B*	10.3	A*	9.5	**F***	61.2	**F***	276.1	A	3.7	C	17.4	C	17.3	**F**	90.8	A	3.7	C	15.5
159	Joshua Road and Nisqually Road	4-way stop	Does not exist				C*	15.9	**E***	46.2	A	2.5	A	3.8	B	11.3	D	33.5	A	2.5	A	3.9
160	High Desert Corridor and Standing Rock Road	Signal	Does not exist				Does not exist				B	12.0	B	15.3	B	15.9	B	18.3	B	11.0	B	13.8
161	High Desert Corridor and Yucca Loma Road	Signal	Does not exist				Does not exist				B	17.3	B	17.4	C	21.2	C	22.1	B	17.3	B	17.9
162	High Desert Corridor and Nisqually Road	Signal	Does not exist				Does not exist				A	6.4	A	6.2	A	6.7	A	9.0	A	7.0	A	7.0
163	Bear Valley Road and SR 18	Signal	A*	5.7	A*	9.0	B*	12.6	B*	13.8	A	7.8	A	6.5	B	12.0	B	11.5	A	8.9	A	6.9

Source: Parsons

Notes:
1. Initial results do not reflect Palmdale access refinements
2. Proposed additional geometry improvements.
3. Two-way stop control level of service reported for worst approach
4. 4-way stop reported for overall level of service.
5. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-45. Year 2040 Revised Palmdale Access Intersection Level of Service Summary *(1 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																		
1	SR 14 southbound off-ramp and West Avenue N	Existing–stop NB/SB; future–signal	A	7.2	B	12.6	A	5.4	**E**	69.7	A	5.6	A	6.0	A	5.6	A	5.3
2	SR 14 northbound off-ramp and West Avenue N	Existing–stop NB/SB; future–signal	A	7.9	C	18.1	B	10.4	C	23.8	B	10.9	B	16.4	B	10.9	B	13.4
3	10th Street West and West Avenue O-8	Signal	C	23.5	C	24.9	C	27.0	D	41.2	C	26.3	C	22.2	C	30.7	C	22.1
4	10th Street West and Sam's Club access	Signal	B	16.5	B	14.1	B	17.4	B	17.6	B	16.0	B	12.5	B	19.5	B	14.1
5	10th Street West and SR 14 northbound on-ramp	Signal	Does not exist				Does not exist				B	12.8	A	9.4	B	14.0	B	10.2
6	10th Street West and SR 14 southbound off-ramp	Signal	B	13.2	B	11.4	C	21.3	D	54.8	C	21.9	C	20.2	C	23.9	B	18.0
7	10th Street West and Mall Ring Road	Signal	B	10.9	C	22.6	C	22.1	D	42.3	C	23.3	C	20.1	C	31.2	C	23.1
8	10th Street West and West Avenue P	Signal	C	31.3	C	30.3	C	32.7	**E**	74.8	C	29.0	C	28.7	C	28.1	C	33.1
9	Lowe's Driveway and West Avenue P	Signal	B	10.2	C	29.1	B	18.2	**E**	65.7	B	19.3	B	15.5	B	19.8	B	18.9
10	SR 14 southbound on-ramp and West Avenue P	Existing–stop NB/SB ; future–signal	A	1.4	A	1.0	A	1.7	**E**	43.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	SR 14 northbound off-ramp and West Avenue P	Signal	B	14.3	C	20.6	A	8.5	**E**	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12*	10th Street West and West Palmdale Boulevard	Signal	C	29.9	C	34.6	C	33.1	D	37.7	D	43.9	D	53.5	C	33.4	D	37.8
13	SR 14 southbound off-/on-ramps and West Palmdale Boulevard	Signal	B	11.3	B	11.1	C	27.6	C	30.1	A	8.0	B	16.2	A	7.3	B	11.6
14	SR 14 northbound off-/on-ramps and East Palmdale Boulevard	Signal	A	7.4	B	10.1	A	7.6	B	17.3	C	29.6	C	26.5	A	8.6	B	14.4
15*	Division Street and East Palmdale Boulevard	Signal	C	27.9	C	28.0	**E**	64.1	**E**	71.4	C	29.4	C	31.1	C	27.9	C	31.1
16	SR 14 southbound off-ramp and West Avenue S	Signal	C	28.7	C	30.3	D	38.1	B	19.1	D	48.5	C	27.8	**E**	65.1	C	28.5
17	SR 14 northbound off-ramp and East Avenue S	Signal	B	16.9	B	18.9	B	11.8	D	41.3	B	14.9	C	25.4	B	19.2	C	26.1
18*	Sierra Highway and East Avenue P	Signal	C	33.4	C	34.6	D	45.1	**E**	58.5	D	36.5	D	51.9	C	34.5	D	42.1
19*	Sierra Highway and Technology Drive	Signal	B	14.3	B	16.8	D	50.9	**F**	115.4	B	14.1	B	18.0	B	13.9	B	17.7
20*	Sierra Highway and East Avenue Q	Signal	B	16.0	B	15.4	B	15.0	B	15.3	B	17.1	B	16.0	B	16.9	B	15.8
21*	5th Street East and East Palmdale Boulevard	Signal	C	22.1	C	23.8	C	21.4	C	31.4	C	25.4	C	28.7	C	25.0	C	27.3
22*	6th Street East and East Palmdale Boulevard	Signal	C	20.7	C	25.3	**E**	55.7	**E**	78.0	C	29.4	C	32.3	C	28.7	C	30.5
23*	Sierra Highway and East Palmdale Boulevard	Signal	C	25.5	C	27.3	**F**	82.1	**F**	94.6	C	29.7	C	32.2	C	30.9	D	35.1
24	10th Street East and East Avenue P	Existing–stop NB/SB ; future–signal	**E***	39.0	**F***	>300	B*	16.3	C*	20.8	C	27.1	C	30.2	C	21.1	C	22.2
25	10th or 30th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	19.4	C	30.1	C	22.6	C	28.8
26	10th or 30th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	18.4	B	18.8	B	13.6	C	23.6
27	10th Street East and East Avenue Q	Existing–4-way stop; future–signal	B*	10.3	B*	12.6	C*	22.7	C*	29.3	C	28.1	C	24.8	C	26.3	C	26.5
28*	10th Street East and East Palmdale Boulevard	Signal	B	17.2	C	20.0	C	31.3	D	50.6	C	32.3	**E**	60.8	C	29.1	D	49.5
29*	15th Street East and East Avenue Q	4-way stop	B	10.5	B	10.8	B	10.4	B	12.4	A	9.9	B	11.0	A	9.6	B	10.4
30*	15th Street East and East Palmdale Boulevard	Stop NB/SB	D	25.2	**E**	36.1	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
31	20th Street East and East Avenue P	Signal	Does not exist				C*	22.9	C*	27.2	C	21.3	C	26.9	C	22.0	C	26.6
32	20th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				D	39.2	C	24.6	D	40.1	C	29.9

Source: Parsons

Notes:
1. Proposed additional geometry improvements.
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-45. Year 2040 Revised Palmdale Access Intersection Level of Service Summary *(2 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																		
33	20th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	25.6	C	26.6	C	26.5	C	24.7
34	20th Street East and East Avenue Q	Existing–4-way stop; future–signal	B*	11.2	B*	14.5	C*	23.8	C*	23.5	C	25.7	C	22.8	C	24.6	C	20.8
35*	20th Street East and East Palmdale Boulevard	Signal	B	19.9	C	22.9	C	34.1	**E**	63.8	C	31.6	D	43.2	C	26.4	D	42.7
36*	25th Street East and East Palmdale Boulevard	Signal	C	26.2	C	30.9	D	42.2	**E**	64.5	C	34.9	D	41.0	C	33.2	D	36.2
37*	30th Street East and East Avenue P	4-way stop	B	12.6	C	15.1	B	13.5	C	18.9	C	29.6	C	25.4	B	12.7	C	15.4
38*	30th Street East and East Avenue Q	4-way stop	B	11.6	B	11.6	**E**	46.0	**F**	145.3	C	31.0	C	28.9	C	18.2	**F**	51.8
39*	30th Street East and East Palmdale Boulevard	Signal	B	18.4	C	20.4	C	26.1	C	31.7	C	29.7	D	50.2	C	26.2	D	35.4
40*	40th Street East and East Avenue Q	Stop EB/WB	C	16.2	C	16.0	D	34.4	**F**	98.6	C	21.9	D	26.8	C	19.3	C	22.7
41*	40th Street East and East Palmdale Boulevard	Signal	C	21.9	C	23.7	D	39.1	**E**	71.6	C	29.4	D	38.3	C	28.4	D	35.4
42	50th Street East and East Avenue P	Existing–stop EB/WB; future–signal	B*	11.9	B*	12.9	C*	22.3	C*	27.2	C	26.6	C	28.7	C	22.7	C	20.0
43	50th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	33.6	C	28.7	C	34.4	C	29.8
44	50th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	27.4	C	24.5	C	25.9	C	25.0
45*	50th Street East and East Palmdale Avenue	Roundabout	B	14.0	A	8.9	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	119.5	**F**	56.7
46	70th Street East and East Avenue P	Signal	Does not exist				B*	16.9	B*	18.1	B	17.0	B	13.4	B	16.4	B	14.6
47*	70th Street and westbound High Desert Corridor	Signal	Does not exist				Does not exist				Does not exist				Does not exist			
48*	70th Street and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				Does not exist				Does not exist			
49*	70th Street East and East Palmdale Boulevard	Stop NB/SB	**F**	>300	C	20.9	**F**	>300	**F**	>300	C	15.6	**F**	60.1	B	14.0	E	35.0
50	90th Street East and East Avenue P	Signal	—	—	—	—	B*	17.9	B*	17.6	B	14.1	B	11.8	B	16.2	B	15.8
51	90th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				D	36.0	C	31.9	D	37.8	C	34.0
52	90th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	16.6	C	23.2	C	21.0	C	20.5
53	90th Street East and East Avenue Q	Signal	C	22.9	C	23.1	B*	16.2	B*	18.6	B	19.7	B	15.7	B	17.8	B	14.5
54*	90th Street East and East Palmdale Boulevard	Signal	C	23.9	C	24.1	D	46.3	**E**	76.2	D	35.2	D	36.8	C	34.8	D	35.0
55*	110th Street East and East Palmdale Boulevard	Signal	C	22.8	B	19.8	C	22.1	C	30.1	C	27.0	C	26.0	C	25.9	C	26.4
56	140th Street and East Palmdale Boulevard	Stop EB/WB	A*	9.3	A*	9.6	C*	24.9	**F***	>300	A	6.8	A	6.2	A	8.3	B	13.2
57	140th Street and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	12.7	B	19.8	B	14.7	B	19.6
58	140th Street and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	9.5	B	15.0	B	10.0	B	12.9
59	140th Street and East Avenue R	Stop EB/WB	Does not exist				B*	12.7	D*	29.3	A	3.6	A	4.7	B	11.8	C	22.8
60	170th Street East and East Palmdale Boulevard	Existing–4-way stop; future–stop EB/WB	A*	7.6	A*	8.1	B*	13.5	**F***	70.0	A	2.4	A	4.7	A	4.5	**E**	36.2
61	170th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.7	A	8.3	B	12.2	A	8.0
62	170th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	7.4	A	5.6	A	9.4	A	8.7
63	170th Street East and East Avenue S	Stop EB/WB	Does not exist				B*	11.9	B*	14.4	A	4.4	A	4.0	A	4.6	A	5.4
64*	165th Street East and SR 138	Signal	C	20.6	C	21.7	**F**	109.7	**E**	56.8	D	36.6	C	29.5	D	54.0	D	52.9
65*	180th Street East and East Palmdale Boulevard	Stop EB/WB	A	8.6	A	8.7	B	13.5	C	22.7	A	9.5	B	10.6	B	10.7	B	13.9
66	210th Street and East Palmdale Boulevard	Stop EB/WB	Does not exist				B*	10.3	B*	11.9	A	2.7	A	3.5	A	3.8	A	7.9

Source: Parsons

Notes:
1. Proposed additional geometry improvements.
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-45. Year 2040 Revised Palmdale Access Intersection Level of Service Summary *(3 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																		
67	210th Street and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.1	A	9.2	B	14.9	A	8.7
68	210th Street and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	13.2	B	10.9	A	9.8	B	13.4
69	210th Street and East Avenue S	Stop EB/WB	Does not exist				Does not exist				A	2.6	A	3.2	A	3.8	C	21.7
70*	SR 138 and SR 18	Stop WB, yield EB	B	10.0	B	11.7	**F**	>300	**F**	>300	D	30.2	**F**	>300	**E**	39.1	**F**	>300
71	240th Street and East Palmdale Boulevard	Stop EB/WB	A*	8.7	A*	8.8	**F***	>300	**F***	>300	A	4.4	A	6.9	**F**	>300	**E**	38.7
72	240th Street East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	14.2	A	6.3	B	13.6	B	11.7
73	240th Street East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	34.8	C	24.9	B	19.8	C	21.2
74	240th Street East and East Avenue R	Stop EB/WB	Does not exist				**E***	41.7	**F***	183.1	A	2.4	A	2.7	B	12.9	C	22.9
75	Oasis Road and El Mirage Road	Stop EB/WB	Does not exist				**F***	>300	**F***	>300	A	2.4	A	3.5	A	3.5	A	6.3
76	Oasis Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	17.6	B	19.8	B	18.4	C	20.4
77	Oasis Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	9.1	B	13.9	A	9.2	B	14.4
78	Sheep Creek Road and El Mirage Road	Stop NB/SB	Does not exist				**F***	132.2	**F***	>300	A	4.3	A	5.3	B	12.1	C	19.2
79	Sheep Creek Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	17.8	C	21.8	C	20.1	C	21.0
80	Sheep Creek Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	13.4	B	17.7	B	16.1	B	18.7
81	Sheep Creek Road and Holly Street	Stop EB/WB	Does not exist				B*	13.5	B*	14.6	A	5.0	A	8.9	A	4.7	A	7.4
82*	Sheep Creek Road and SR 18	Existing–stop NB/SB; future–signal	B	12.8	C	19.7	**F**	>300	**F**	>300	D	36.6	D	46.9	D	54.4	**F**	291.0
83	Caughlin Road and Air Base Road	Stop EB/WB	Does not exist				C*	23.6	D*	25.7	A	2.8	A	3.0	A	2.5	A	2.6
84	Caughlin Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	16.2	C	22.6	B	13.9	C	25.8
85	Caughlin Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	13.6	B	19.6	B	14.1	C	21.0
86	Caughlin Road and Rancho Road	Stop EB/WB	Does not exist				**E***	35.8	**F***	58.8	A	6.3	B	14.0	A	5.1	A	7.2
87	Koala Road and Air Base Road	Signal	Does not exist				C*	20.5	C*	23.7	B	15.8	C	21.2	B	15.8	B	19.8
88	Koala Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				A	6.7	B	18.8	A	5.3	B	14.5
89	Koala Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	3.8	B	18.1	A	3.1	C	21.0
90	Koala Road and Rancho Road	Signal	Does not exist				C*	21.2	C*	22.3	B	17.2	C	31.8	B	17.4	C	32.9
91*	Aster Road and SR 18	Signal	C	25.6	C	21.2	B	19.4	C	22.4	C	20.5	C	21.0	C	20.4	C	20.1
92*	Bellflower Street and SR 18	Existing–stop NB/SB; future–signal	C	20.8	D	27.4	**F**	89.2	**F**	>300	C	30.2	C	30.3	C	27.2	C	30.0
93*	U.S. 395 and Chamberlaine Way	Signal	C	26.1	C	26.7	D	39.8	C	33.5	D	51.8	D	40.7	D	45.5	D	40.7
94	U.S. 395 and Air Base Road	Signal	C*	30.3	C*	34.9	D*	45.6	**E***	75.0	C	25.4	C	30.4	C	21.8	C	24.4
95	U.S. 395 and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	27.8	C	26.1	B	13.1	C	32.7
96	U.S. 395 and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	8.6	A	5.8	A	6.7	A	6.0
97	U.S. 395 and Rancho Road	Signal	C*	24.6	C*	26.4	D*	48.2	**F***	107.7	C	23.2	C	31.3	C	20.9	D	43.5
98*	U.S. 395 and Mojave Drive	Signal	C	26.7	C	31.1	D	38.7	C	34.3	D	36.2	D	40.1	C	34.1	C	34.6
99*	U.S. 395 and SR 18	Signal	C	34.0	D	36.5	**E**	61.1	F	90.6	D	42.2	**E**	64.1	D	39.7	D	47.0
100	Phantom Street and Mustang Street	Signal	Does not exist				A*	7.6	B*	16.7	B	11.2	B	11.3	B	11.2	B	11.0
101	Phantom West and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	15.7	B	12.4	B	13.5	B	11.4

Source: Parsons

Notes:
1. Proposed additional geometry improvements.
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-45. Year 2040 Revised Palmdale Access Intersection Level of Service Summary *(4 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																		
102	Phantom West and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	16.9	C	24.4	B	17.1	C	23.9
103	Phantom Street and Rancho Road	Signal	Does not exist				B*	13.1	B*	19.5	B	12.1	B	16.3	B	12.4	B	13.2
104*	Topaz Road and SR 18	Signal	D	43.3	C	27.5	**F**	97.3	**F**	160.2	D	42.2	**E**	59.5	D	39.7	D	49.1
105*	Amethyst Road and SR 18	Signal	C	28.8	C	30.4	D	48.9	**F**	108.3	C	34.5	D	42.6	C	33.9	D	37.7
106	Phantom East and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.2	A	6.5	B	12.3	A	6.2
107	Phantom East and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	10.4	A	9.1	B	10.6	A	8.1
108	El Evado Road and Air Expressway Boulevard	Signal	Does not exist				C*	32.4	D*	39.5	B	16.0	B	16.5	B	17.2	B	14.8
109*	Village Drive and Air Expressway Boulevard	Signal	B	17.5	B	15.0	B	17.5	B	15.4	B	15.5	B	16.6	B	14.7	B	14.0
110*	El Evado Road and SR 18	Signal	C	28.0	C	28.1	D	40.9	**F**	80.9	D	39.0	D	46.6	D	37.5	D	39.3
111	National Trails Highway and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	24.4	C	20.4	C	25.1	C	22.1
112	National Trails Highway and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	21.3	C	25.6	C	21.0	C	24.7
113*	National Trails Highway and Air Expressway Boulevard	Signal	B	18.5	B	18.7	D	38.6	C	29.7	C	21.0	B	18.9	B	17.4	B	17.1
114	I-15 southbound off-/on-ramps and Mojave Drive	Signal	A	8.3	B	11.4	B	13.7	B	14.6	B	12.9	B	13.7	B	14.9	B	13.6
115	I-15 northbound off-/on-ramps and Mojave Drive	Signal	B	19.5	B	13.5	C	20.9	B	18.4	B	14.4	B	13.5	B	14.6	B	12.5
116	I-15 southbound off-/on-ramps and Roy Rogers Drive	Signal	B	13.3	B	10.5	C	26.5	B	13.3	B	14.7	B	11.8	B	14.6	B	11.7
117	I-15 northbound off-/on-ramps and Roy Rogers Drive	Signal	C	20.7	C	21.0	C	34.9	C	28.9	C	22.2	C	28.3	C	22.8	C	25.3
118*	Amargosa Road and SR 18	Signal	C	28.2	D	39.9	**F**	84.9	**F**	200.0	C	27.3	D	36.9	C	26.4	D	36.6
119*	Kentwood Boulevard and SR 18	Signal	B	18.8	C	27.1	C	22.2	D	49.9	B	15.4	C	27.5	B	15.2	C	25.1
120	Park Avenue and SR 18	Signal	B	17.6	C	25.2	C	23.5	C	20.5	A	8.5	B	19.1	A	9.0	C	21.5
121	I-15 southbound off-ramp and Palmdale Road	Signal	A	8.8	C	25.1	B	19.3	B	19.7	A	6.0	B	18.1	A	5.9	C	21.4
122	I-15 northbound on-ramp and Palmdale Road	Signal	B	16.9	B	17.1	C	20.8	C	22.6	B	18.7	C	23.3	B	16.1	C	24.5
123	I-15 northbound off-ramp and Mariposa Road	Signal	B	14.1	B	13.5	B	13.1	B	12.0	B	11.6	B	11.9	B	12.2	B	12.5
124	I-15 southbound off-/on-ramps and National Trails Hwy/D Street	Signal	B	11.2	A	9.7	B	14.1	B	18.9	B	11.1	B	12.1	B	11.3	B	11.2
125	I-15 northbound off-/on-ramps and National Trails Hwy/D Street	Signal	B	14.4	B	11.4	C	24.4	C	22.4	B	11.8	C	21.4	B	11.7	B	18.7
126	I-15 West Frontage Road and E Street	Stop NB/SB	A	4.0	A	2.2	A	2.9	A	2.8	A	3.3	A	3.1	A	3.0	A	2.8
127	I-15 northbound off-/on-ramps and E Street	Stop NB/SB	A	4.1	A	2.1	A	4.6	A	4.9	A	2.4	A	2.9	A	2.5	A	2.5
128	Gateway and north High Desert Corridor Frontage Road	Does not exist	Does not exist				Does not exist				Does not exist				Does not exist			
129	Gateway and south High Desert Corridor Frontage Road	Does not exist	Does not exist				Does not exist				Does not exist				Does not exist			
130	I-15 southbound off-ramp and Stoddard Wells Road	Existing–stop NB/SB	A	2.6	A	2.7	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	12.7	B	10.9	B	10.9	B	10.1	B	12.2	A	9.7
131	I-15 northbound on-ramp and Stoddard Wells Road/Frontage Road	Existing–stop EB/WB	A	3.7	A	3.7	C	15.1	D	33.9	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–stop EB/WB**	N/A	N/A	N/A	N/A	A	7.3	A	8.3	A	9.5	A	9.8	B	10.6	B	11.5
132	I-15 southbound on-ramp and Stoddard Wells Road	Existing–stop EB/WB	A	3.0	A	2.1	B	10.2	D	29.4	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	12.6	A	8.9	B	10.0	A	4.9	A	9.2	A	4.6

Source: Parsons

Notes:
1. Proposed additional geometry improvements.
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-45. Year 2040 Revised Palmdale Access Intersection Level of Service Summary *(5 of 5)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																		
133	Stoddard Wells Road and I-15 Frontage Road	Existing–stop EB/WB	A	5.6	A	1.2	**F**	118.2	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	15.6	B	16.5	B	14.5	B	14.5	B	14.3	B	14.9
134*	Stoddard Wells Road and SR 18	Signal	B	12.7	C	23.2	B	17.7	**F**	87.2	B	12.5	D	41.0	B	10.4	C	26.0
135*	Apple Valley Road and SR 18	Signal	C	33.1	D	40.2	**F**	81.3	**F**	150.3	D	50.0	**E**	72.2	D	42.4	D	51.2
136	I-15 southbound off-/on-ramps and Victorville Quarry Road	Existing–stop EB/WB; future–4-way stop	A	4.1	A	2.1	A	4.8	A	5.0	A	2.2	A	2.4	A	2.2	A	2.4
137	I-15 northbound off-/on-ramps and Stoddard Wells Road (north)	Existing–stop NB/SB; future–4-way stop	A	4.3	A	2.3	A	6.7	A	6.6	A	3.5	A	4.5	A	7.8	A	5.2
138	I-15 southbound off-/on-ramps and Dale Evans Parkway	Existing–stop NB/SB; future–signal	A	4.7	A	3.1	C	28.2	C	24.8	C	21.0	C	24.1	C	21.0	C	23.7
139	I-15 northbound off-/on-ramps and Dale Evans Parkway	Existing–stop NB/SB; future–signal	A	4.3	A	3.1	B	13.1	B	12.8	B	13.7	A	7.5	B	14.5	A	7.3
140	Choco Road and Frontage Road	Signal	Does not exist				B*	17.7	B*	17.1	B	16.7	B	13.1	B	18.3	B	12.6
141	Choco Road and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	25.8	D	36.0	C	27.3	C	34.7
142	Choco Road and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				A	4.0	A	6.0	A	6.6	A	6.1
143	Choco Road and Air Expressway Boulevard	Signal	Does not exist				C*	20.5	C*	22.1	C	24.0	C	22.5	C	20.3	C	22.0
144	Dale Evans Parkway and Falchion Road	Signal	Does not exist				B*	16.1	B*	18.7	B	18.4	B	19.0	C	20.6	B	19.5
145	Dale Evans Parkway and westbound High Desert Corridor	Signal	Does not exist				Does not exist				B	17.8	B	20.0	B	17.3	C	20.2
146	Dale Evans Parkway and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				B	19.4	C	21.1	B	18.4	C	21.6
147*	Dale Evans Parkway and SR 18	Signal	B	17.8	C	21.0	C	30.2	**E**	78.2	C	22.5	D	43.5	C	21.5	D	35.5
148	Navajo Road and Waalew Road	4-way stop	Does not exist				A*	9.1	B*	10.6	A	2.2	A	2.7	A	2.3	A	2.6
149	High Desert Corridor and Waalew Road	Signal	Does not exist				Does not exist				A	7.5	A	8.4	A	8.1	A	7.8
150	Central Road and Waalew Road	4-way stop	Does not exist				A*	9.7	B*	13.6	A	4.3	A	6.4	A	4.6	A	5.2
151	High Desert Corridor and Central Road	Signal	Does not exist				Does not exist				B	10.5	B	13.1	B	10.8	B	11.2
152	Central Road and Thunderbird Road	Stop EB/WB	Does not exist				C*	16.6	D*	33.5	A	4.4	A	5.2	A	4.2	A	5.6
153*	Central Road and SR 18	Signal	C	25.5	C	25.5	C	29.6	C	32.5	C	26.5	C	29.4	C	26.2	C	27.8
154	Joshua Road and Cahuilla Road	4-way stop	Does not exist				B*	10.3	B*	14.4	A	2.8	A	4.4	A	2.6	A	4.1
155	Joshua Road and High Desert Corridor	Signal	Does not exist				Does not exist				C	25.8	C	25.1	C	26.4	C	24.6
156	Joshua Road and Thunderbird Road	Stop EB/WB	Does not exist				C*	18.6	**F***	127.5	A	5.4	B	12.9	A	6.5	C	19.6
157	Joshua Road and Standing Rock Road	Stop EB/WB	Does not exist				C*	17.8	D*	28.8	A	7.0	C	16.3	A	9.0	C	16.8
158	Joshua Road and Yucca Loma Road	Existing–stop NB/SB; future–4-way stop	B*	10.3	A*	9.5	**F***	61.2	**F***	276.1	A	3.7	C	17.4	A	3.7	C	15.5
159	Joshua Road and Nisqually Road	4-way stop	Does not exist				C*	15.9	E*	46.2	A	2.5	A	3.8	A	2.5	A	3.9
160	High Desert Corridor and Standing Rock Road	Signal	Does not exist				Does not exist				B	12.0	B	15.3	B	11.0	B	13.8
161	High Desert Corridor and Yucca Loma Road	Signal	Does not exist				Does not exist				B	17.3	B	17.4	B	17.3	B	17.9
162	High Desert Corridor and Nisqually Road	Signal	Does not exist				Does not exist				A	6.4	A	6.2	A	7.0	A	7.0
163	Bear Valley Road and SR 18	Signal	A*	5.7	A*	9.0	B*	12.6	B*	13.8	A	7.8	A	6.5	A	8.9	A	6.9
175	I-15 West Frontage Road and I-15 SB on-ramp	Signal	—	—	—	—	A	2.4	A	1.8	A	4.4	A	1.9	A	4.3	A	2.3

Source: Parsons

Notes:

1. Proposed additional geometry improvements.
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

4.7 Traffic Performance of the Transportation Systems Management Alternative

4.7.1 Transportation System Management Alternative Description

The transportation system management alternative is a collection of lower cost roadway improvements through the project corridor that can be evaluated against the proposed project alternatives. The transportation system management alternative focuses on improvements that connect SR 14 with SR 138 and then extend east to connect with U.S. 395, I-15 and SR 18. The key elements under consideration for this alternative include:

- ***An eight-lane grade separated freeway from SR 14 to 30th Street East***
  For the purpose of the traffic study analysis, the eight-lane, grade-separated freeway portion of the alternative, from SR 14 to 30th Street East, along with improvements along SR 14 required to accommodate the freeway-to-freeway interchange, are assumed to be identical to that defined for the initial definition of the build alternative, which does not reflect the revised Palmdale access.

- ***A transition to a four-lane at-grade expressway from 30th Street East to Longview Road***
  The physical characteristics of this section are assumed to be identical to the four-lane expressway portion of SR 18 east of Dale Evans Parkway, as defined for the build alternative.

- ***A four-lane at-grade highway connecting to SR 138 and extending east to U.S. 395 along SR 18***
  The north−south portion of this segment is assumed to run along Longview Road. A roadway cross section similar to what currently exists along SR 138 (Pearblossom Highway) from Longview Road to 165th Street East is assumed. This cross section provides standard width shoulders, two 12-foot travel lanes per direction, and a median approximately 19 to 20 feet in width. A signalized T-intersection at SR 138 is assumed.

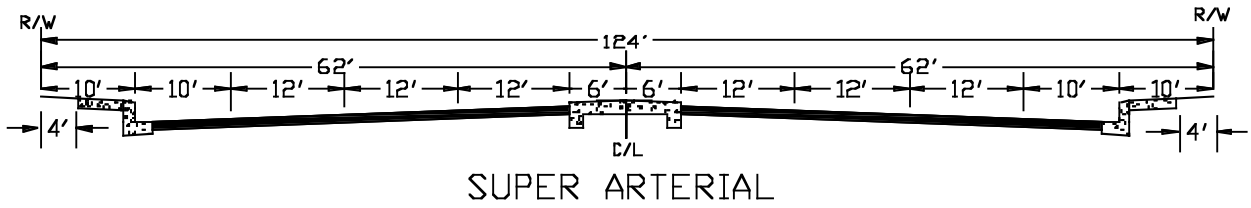
  Continuing east, SR 138 was widened to four lanes between Longview Road and 165th Street East in 2006/2007 as part of Caltrans' District 7 SR 138 Corridor Improvement Program. When complete, this program will widen SR 138 from Avenue T in the city of Palmdale to the junction of SR 18 in Llano. The transportation systems management alternative would continue the four-lane widening easterly along SR 18 to U.S. 395. A four-foot to 20-foot median is assumed to facilitate left turn movements to cross streets and driveways.

- ***A six-lane arterial highway along SR 18 (Palmdale Road) from U.S. 395 to I-15***
  City of Victorville roadway standards will be followed for the portion of Palmdale Road west of Caughlin Road to I-15. The City's General Plan circulation map designates this portion of Palmdale Road as a "super arterial" having a right-of-way of 124 feet. A typical roadway cross section for this type of road classification is illustrated as Figure 4-38.

- ***Minor roadway and signal improvements along SR 18 from I-15 to Bear Valley Road***

Except for the freeway portion between SR 14 and 30th Street East, these transportation system management roadway improvements would maintain at-grade intersections with local roads and driveway access.

The alignment and limits of these roadway improvement limits were previously illustrated on Figure 4-3.



Source: City of Victorville General Plan Circulation Map, City of Victorville Standards

Figure 4-38: Super Arterial Cross Section

4.7.2 Methodology

For the purpose of determining state freeway and highway levels of service, roadway facilities are divided into the following three categories:

- Two-way, two-lane highway segments
- Multi-lane highway segments
- Freeway segments.

The procedures used to determine level of service on these roadways are based on the level of service methodologies contained in the 2000 Highway Capacity Manual[41]. Level of service calculations differ for the various types of traffic facilities; however, the most common data used to assess the conditions of a particular facility are traffic volumes, traffic speeds and traffic density.

The level of service methodologies for freeways and highways take into account a variety of factors, such as peak hour traffic volumes, directional distribution of traffic, percentage of heavy vehicles, lane and should widths, terrain type, percentage of no-passing zones, and density of access points.

TWO-WAY, TWO-LANE HIGHWAY SEGMENT LEVELS OF SERVICE

As prescribed in Chapters 12 and 20 of the 2000 Highway Capacity Manual, the level of service for two-lane, two-way rural highway segments is determined based on the following two-measures of effectiveness:

- ***Percent time spent following (PTSF)***
  For two-lane highways, percent time spent following is a measure of the driver's freedom to maneuver and to freely select the speed at which they wish to travel on the highway segment. Percent time spent following also serves as an indicator of the comfort and convenience of travel on the highway segment.
- ***Average travel speed***
  Average travel speed is a measure of the mobility of the highway segment.

[41] HCM 2010 is not yet adopted for use on California state highways.

The two-lane, two-way highway level of service methodology categorizes highways into two categories for analysis:

1. Class I highways are those on which motorists expect to travel at relatively high speeds. Class I highways are primary routes that often serve long trips or serve as connecting links between facilities that serve long trips. Typically, highways that are part of major commute routes would be Class I facilities.
2. Class II highways are those on which motorist do not necessarily expect to travel at high speeds. Class II highways are not major arterials and often serve as scenic or recreational highways.

The level of service for a two-lane, two-way highway is determined based on the measures of effectiveness described above and on the highway's classification. On Class I highways, where mobility is critical, the level of service is defined in terms of both percent time spent following and average travel speed. On Class II highways, where mobility is less critical, the level of service is based only on the percent time spent following, regardless of the average travel speed on the highway. The correlation between the measures of effectiveness and highway level of service are shown in Table 4-46 for Class I highways, such as SR 18 and SR 138.

Table 4-46. Level of Service Criteria for Class I Two-lane Highways

LEVEL OF SERVICE	DESCRIPTION	PERCENT TIME SPENT FOLLOWING	AVERAGE TRAVEL SPEED (mph)
A	A condition of free flow, with low volumes and high speeds. Traffic density is low, with speeds controlled by driver desire, speed limits and physical road conditions.	≤35	>55
B	A condition of stable flow, with operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation.	>35 to 50	>50 to 55
C	A condition of stable flow, but speed and maneuverability are more adversely affected by higher traffic volumes. Most drivers are restricted in their freedom to select their own speed, change lanes, or pass.	>50 to 65	>45 to 50
D	Conditions approach unstable flow, with tolerable operating speeds being maintained, though considerably affected by changes in operating conditions. Fluctuation in volume and temporary restrictions may cause substantial drops in operating speeds. Drivers have little freedom to maneuver, and comfort and convenience are low, but conditions can be tolerated for short periods of time.	>65 to 80	>40 to 45
E	Represents operation at speeds lower than in level D, with volumes at or near the capacity of the highway.	>80	≤40
F	Represents forced-flow operations at low speeds, where volumes are below capacity. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of the downstream congestion. In the extreme, both speed and volume can drop to zero.		

Source: 2000 Highway Capacity Manual, Transportation Research Board

FREEWAY AND MULTI-LANE HIGHWAY SEGMENT LEVELS OF SERVICE

The freeway and multi-lane highway segment level of service evaluation for the transportation systems management alternative is based on the 2000 Highway Capacity Manual and Highway Capacity Software level of service methodologies for freeways and multi-lane highways. Both methodologies evaluate level of service in terms of the density of vehicles on the particular roadway segments in passenger cars per

lane per mile (pc/mi/ln). Density is a measure of the level of congestion on a particular roadway segment and provides an indication of the relative ease with which motorists can choose their own speed, make lane changes, and maneuver within the traffic stream. The level of service criteria for multi-lane highway segments are summarized in Table 4-47. The level of service thresholds for freeway mainline segments and ramp areas were previously reported in Table 4-1.

Figure 4-39 provides a visual comparison of the level of service thresholds for freeways, multi-lane highways and two-lane highways.

INTERSECTION ANALYSIS AND LEVELS OF SERVICE

A subset of the study intersections identified previously in Table 4-5 was selected for analysis of the transportation systems management alternative performance. The transportation systems management alternative study intersections are listed in Table 4-48 and illustrated on Figure 4-40.

Intersection level of service was computed for the transportation systems management alternative using TRAFFIX, version 8.0 software, as most of the intersections for this alternative are isolated from one another.

Table 4-49 reports the level of service definitions for unsignalized and signalized intersections.

4.7.3 TSM Alternative Performance

The transportation systems management alternative includes a short section of freeway along the High Desert Corridor build alignment, from SR 14 to approximately one-half mile east of 20th Street East. Mainline and ramp area performance is listed in Table 4-50.

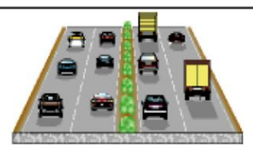
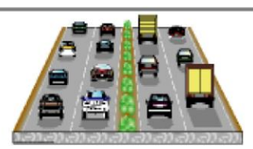
State highway segment analysis is appropriate for lengths of uninterrupted flow roadways in excess of two miles between signalized intersections. For the purpose of this analysis, all study intersections evaluated for the transportation systems management alternative are assumed to be signalized by year 2040. Based on the greater than two mile criteria, five segments were identified for the study. These segments are listed in Table 4-51 along with level of service performance data.

Table 4-47. Level of Service Criteria for Multi-lane Highways

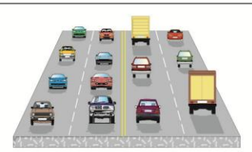
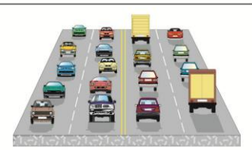
FREE-FLOW SPEED	CRITERIA	LEVEL OF SERVICE				
		A	B	C	D	E
60 mph	Maximum density (pc/mi/ln)	11	18	26	35	40
	Average speed (mph)	60.0	60.0	59.4	56.7	55.0
	Maximum service flow rate (pc/h/ln)	660	1,080	1,550	1,980	2,200
55 mph	Maximum density (pc/mi/ln)	11	18	26	35	41
	Average speed (mph)	55.0	55.0	54.9	52.9	51.2
	Maximum service flow rate (pc/h/ln)	600	990	1,430	1,850	2,100
50 mph	Maximum density (pc/mi/ln)	11	18	26	35	43
	Average speed (mph)	50.0	50.0	50.0	48.9	47.5
	Maximum service flow rate (pc/h/ln)	550	900	1,300	1,710	2,000
45 mph	Maximum density (pc/mi/ln)	11	18	26	35	45
	Average speed (mph)	45.0	45.0	45.0	44.4	42.2
	Maximum service flow rate (pc/h/ln)	490	810	1,170	1,550	1,900

Source: 2000 Highway Capacity Manual, Transportation Research Board, Washington DC, 2000
pc/mi/ln passenger cars per mile per lane
pc/h/ln passenger cars per hour per lane

LEVELS OF SERVICE
for Freeways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		70	Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. **No delays**
B		70	Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. **No delays**
C		67	Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful making lane changes. **Minimal delays**
D		62	Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. **Minimal delays**
E		53	Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. **Significant delays**
F		<53	Very congested traffic with traffic jams, especially in areas where vehicles have to merge. **Considerable delays**

LEVELS OF SERVICE
for Multi-Lane Highways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		60	Highest level of service. Traffic flows freely with little or no restrictions on maneuverability. **No delays**
B		60	Traffic flows freely, but drivers have slightly less freedom to maneuver. **No delays**
C		60	Density becomes noticeable with ability to maneuver limited by other vehicles. **Minimal delays**
D		57	Speed and ability to maneuver is severely restricted by increasing density of vehicles. **Minimal delays**
E		55	Unstable traffic flow. Speeds vary greatly and are unpredictable. **Minimal delays**
F		<55	Traffic flow is unstable, with brief periods of movement followed by forced stops. **Significant delays**

Source: 2000 HCM, Exhibit 21-3, Speed Flow Curves with LOS Criteria for Multi-Lane Highways

LEVELS OF SERVICE
for Two-Lane Highways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		55+	Highest quality of service. Free traffic flow with few restrictions on maneuverability or speed. **No delays**
B		50	Stable traffic flow. Speed becoming slightly restricted. Low restriction on maneuverability. **No delays**
C		45	Stable traffic flow, but less freedom to select speed, change lanes or pass. **Minimal delays**
D		40	Traffic flow becoming unstable. Speeds subject to sudden change. Passing is difficult. **Minimal delays**
E		35	Unstable traffic flow. Speeds change quickly and maneuverability is low. **Significant delays**
F			Heavily congested traffic. Demand exceeds capacity and speeds vary greatly. **Considerable delays**

Source: 2000 HCM, Exhibit 20-2, LOS Criteria for Two-Lane Highways in Class 1

Figure 4-39: Levels of Service for Freeways, Multi-lane Highways and Two-lane Highways

Table 4-48. List of Transportation System Management Alternative Study Intersections

NO.	INTERSECTION
13	SR 14 southbound off-/on-ramps and West Palmdale Blvd
14	SR 14 northbound off-/on-ramps and East Palmdale Blvd
15	Division Street and East Palmdale Blvd
21	5th Street East and East Palmdale Blvd
22	6th Street East and East Palmdale Blvd
23	Sierra Highway and East Palmdale Blvd
25	10th Street East and westbound High Desert Corridor*
26	10th Street East and eastbound High Desert Corridor*
28	10th Street East and East Palmdale Blvd
32	20th Street East and westbound High Desert Corridor
33	20th Street East and eastbound High Desert Corridor
35	20th Street East and East Palmdale Blvd
36	25th Street East and East Palmdale Blvd
39	30th Street East and East Palmdale Blvd
41	40th Street East and East Palmdale Blvd
43	50th Street East and westbound High Desert Corridor
45	50th Street East and East Palmdale Avenue
47	70th Street and westbound High Desert Corridor
49	70th Street East and East Palmdale Blvd
51	90th Street East and westbound High Desert Corridor
54	90th Street East and East Palmdale Blvd
55	110th Street East and East Palmdale Blvd
64	165th Street East and SR 138
70	SR 138 and SR 18
82	Sheep Creek Rd and SR 18
91	Aster Rd and SR 18

*Initial definition of alternative.

NO.	INTERSECTION
92	Bellflower Street and SR 18
99	U.S. 395 and SR 18
104	Cobalt Rd and SR 18
105	Amethyst Rd and SR 18
110	El Evado Rd and SR 18
118	Amargosa Rd and SR 18
119	Kentwood Blvd and SR 18
120	Park Avenue and SR 18
121	I-15 southbound off-ramp and Palmdale Rd
122	I-15 northbound on-ramp and Palmdale Rd
123	I-15 northbound off-ramp and Mariposa Rd
124	I-15 southbound off-/on-ramps and National Trails Hwy/D Street
125	I-15 northbound off-/on-ramps and National Trails Hwy/D Street
134	Stoddard Wells Rd and SR 18
135	Apple Valley Rd and SR 18
147	Dale Evans Pkwy and SR 18
153	Central Rd and SR 18
158	Joshua Rd and Yucca Loma Rd
163	Bear Valley Rd and SR 18
164	30th Street East and High Desert Corridor
165	40th Street East and High Desert Corridor
166	100th Street East and High Desert Corridor
167	110th Street East and High Desert Corridor
168	High Desert Corridor and East Palmdale Blvd
169	Longview Rd (HDC) and East Avenue R
170	Longview Rd (HDC) and East Avenue S
171	Longview Rd (HDC) and East Avenue T
172	Longview Rd (HDC) and SR 138
173	Largo Vista Rd and SR 138
174	Beekley Rd and SR 138

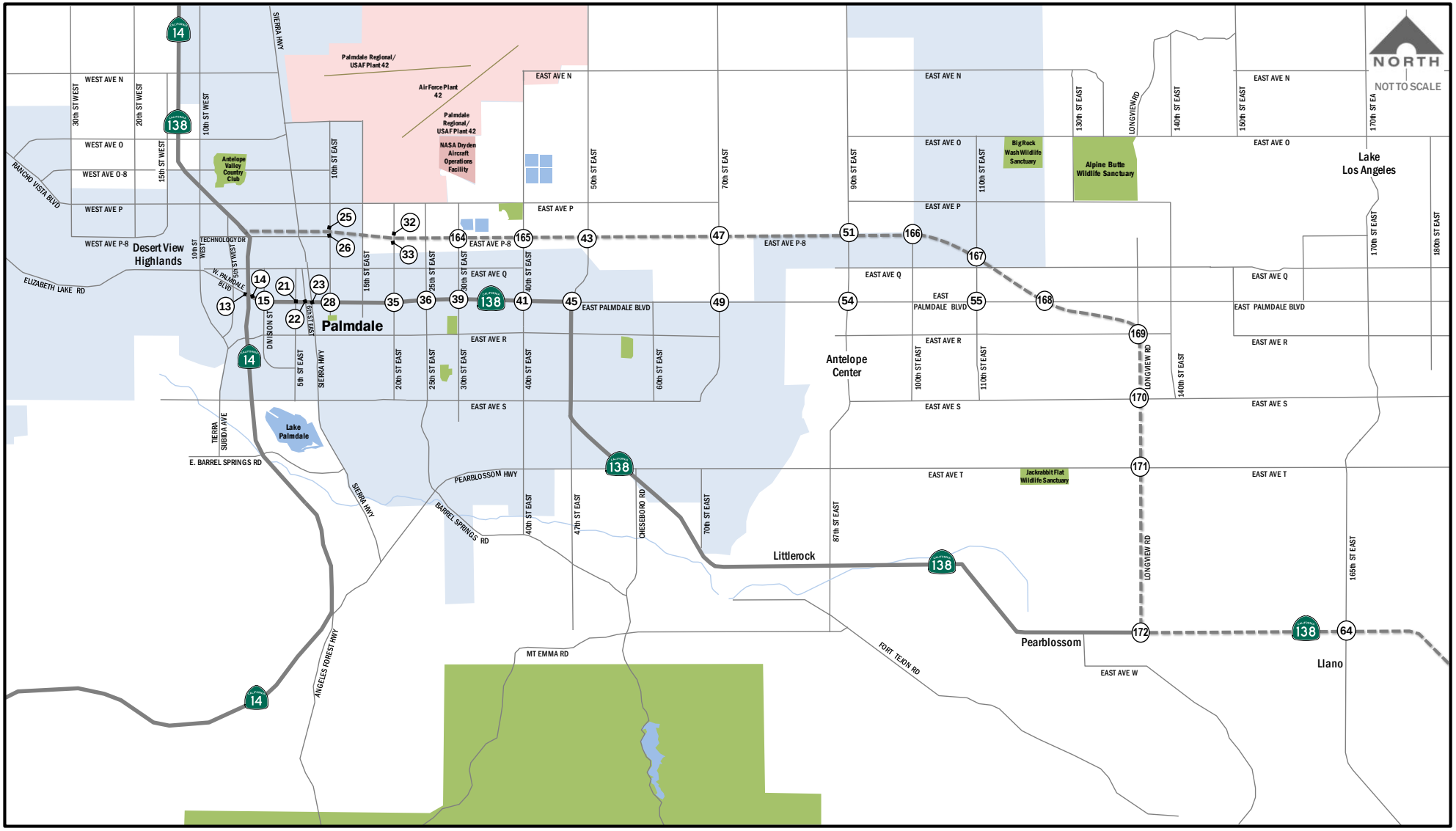


Figure 4-40: Transportation System Management Alternative Study Intersections *(1 of 3)*

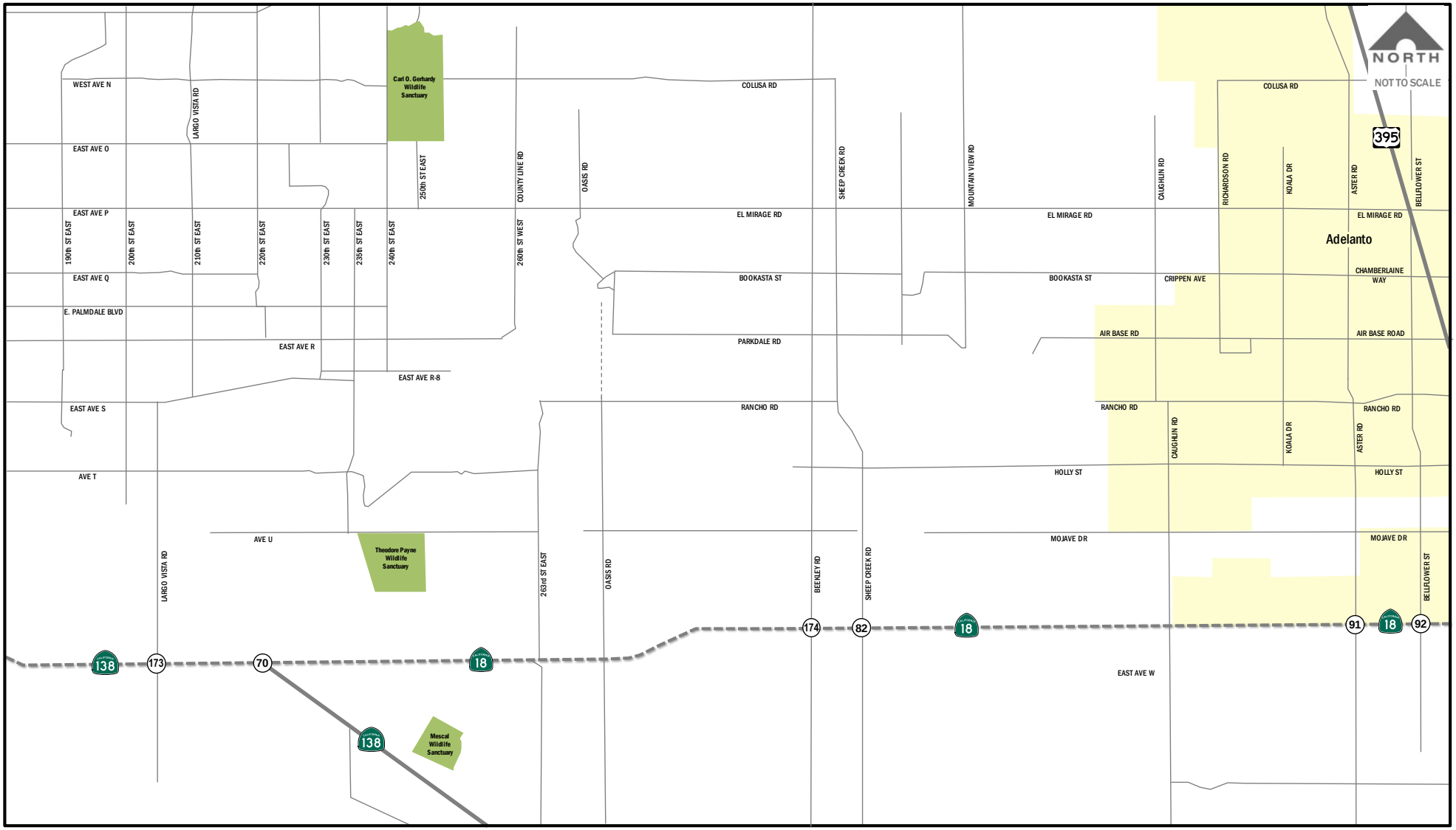


Figure 4-40: Transportation System Management Alternative Study Intersections *(2 of 3)*

Figure 4-40: Transportation System Management Alternative Study Intersections *(3 of 3)*

Table 4-49. Intersection Level of Service Definitions

LOS	DESCRIPTION	CONTROL DELAY PER VEHICLE (sec/veh)	
		UNSIGNALIZED	SIGNALIZED
A	Traffic flows with very little delay and optimal speeds. Most vehicles do not stop at all.	0–10	<10
B	Traffic flows with very little delay and speeds may be slightly reduced. Very infrequent and short waits at traffic signals. More vehicles stop at intersections than for LOS A.	>10–15	>10–20
C	Traffic speeds continue to slow. Some vehicles may stop at this level, although many vehicles still pass through the intersection without stopping.	>15–25	>20–35
D	Congestion becomes more noticeable. Many vehicles stop and the proportion of vehicles not stopping declines.	>25–35	>35–55
E	Low speeds and traffic backups at intersections. Often considered to be the limit of acceptable delay.	>35–50	>55–80
F	Very slow speeds and congestion. Long traffic backups. Very likely to wait for multiple greens to get through an intersection. This is considered to be unacceptable to most drivers.	>50	>80

Source: Highway Capacity Manual 2000

Table 4-50. Year 2040 Mainline and Ramp Junction Levels of Service

HIGH DESERT CORRIDOR SEGMENT	TYPE	TIME	2040 TSM	
			DENSITY (pc/h/ln)	LOS
EASTBOUND				
SR 14 to 10th Street East	Mainline	AM	15.9	B
10th Street East off-ramp	Diverge		21.0	C
10th Street E on-ramp	Merge		17.6	B
10th Street East to 20th Street East	Mainline		15.3	B
20th Street East off-ramp	Diverge		21.7	C
20th Street East on-ramp	Merge		14.2	B
SR 14 to 10th Street East	Mainline	PM	16.3	B
10th Street East off-ramp	Diverge		21.9	C
10th Street E on-ramp	Merge		18.7	B
10th Street East to 20th Street East	Mainline		15.8	B
20th Street East off-ramp	Diverge		25.4	C
20th Street East on-ramp	Merge		12.8	B
WESTBOUND				
SR 14 to 10th Street East	Mainline	AM	14.2	B
10th Street East off-ramp	Diverge		19.2	B
10th Street E on-ramp	Merge		17.4	B
10th Street East to 20th Street East	Mainline		14.1	B
20th Street East off-ramp	Diverge		14.5	B
20th Street East on-ramp	Merge		18.4	B
SR 14 to 10th Street East	Mainline	PM	19.7	C
10th Street East off-ramp	Diverge		23.6	C
10th Street E on-ramp	Merge		23.9	C
10th Street East to 20th Street East	Mainline		18.2	C
20th Street East off-ramp	Diverge		16.2	B
20th Street East on-ramp	Merge		24.4	C

Table 4-51. Year 2040 Highway Segment Level of Service

HIGHWAY SEGMENT		NO BUILD (2040)						TSM ALTERNATIVE (2040)					
		AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	SPEED	DENSITY	LOS	SPEED	DENSITY	LOS	SPEED	DENSITY	LOS	SPEED	DENSITY
SR 138													
Longview Rd to 165th Street East	EB	B	16.4	55	B	16.5	55	B	17.9	55	C	18.2	55
	WB	B	11.6	55	B	17.2	55	B	12.8	55	C	18.6	55
165th Street East to Largo Vista Rd	EB	C	23.8	55	C	21.5	55	D	27.0	55	C	24.4	55
	WB	B	12.4	55	D	26.4	55	B	13.6	55	D	30.3	54
SR 138/SR 18 junction to Sheep Creek Rd	EB	C	25.6	55	C	22.1	55	D	27.8	55	C	24.6	55
	WB	B	12.4	55	D	28.9	54	B	13.6	55	D	31.2	54
Sheep Creek Rd to Aster Rd	EB	A	7.0	55	A	7.4	55	B	15.2	55	B	15.5	55
	WB	A	5.2	55	A	8.3	55	A	9.2	55	B	17.4	55

PTSF = percent time spent following
ATS = average travel speed

The intersection level of service analysis was undertaken for 55 study intersections. The intersection lane configurations assumed for this analysis are illustrated on Figure 4-41, while the traffic volumes are listed in Volume II of this report. The results of this analysis are listed in Table 4-52.

4.8 Traffic Implications of High Speed Rail Feeder Service for the High Desert Corridor

Section 3.13 of this report provides a general description of the proposed high speed rail feeder service, ridership estimates for the Palmdale and Victorville train stations, vehicle trip generation volumes for the two stations, and freeway mainline and ramp volumes for the High Desert Corridor freeway/tollway, SR 14 and I-15.

Section 4.5 presents the operational performance of the freeway mainline and ramps for all alternatives, including the build freeway alternative with high speed rail feeder service and the build freeway with tolls and the feeder rail service. The generalized level of service performance along the freeway mainline components of the feeder rail service alternatives is illustrated on Figures 4-19, 4-20, 4-24, and 4-25 for the initial round of testing and on Figures 4-30 through 32 for the revised Palmdale access definition of the project. Tables 4-14 through 4-17, Tables 4-24 through 4-27, and Tables 4-36 through 4-41 report the detailed results of the CORSIM micro-traffic simulation for the freeway mainline segments and ramp junctions. **The operational analysis indicates that the performance of the freeway system is virtually unchanged when comparing the no feeder rail service alternatives with those which include rail feeder service.** These results reflect weekday, morning (0700 to 0800 hours) and afternoon (1700 to 1800 hours) time periods. Rail ridership for the Palmdale–Victorville–Las Vegas XpressWest service is projected to be significantly higher during the midday, on Fridays, weekends and holidays. The performance of the highway system is not addressed for those higher rail ridership time of the day and day of the week periods.

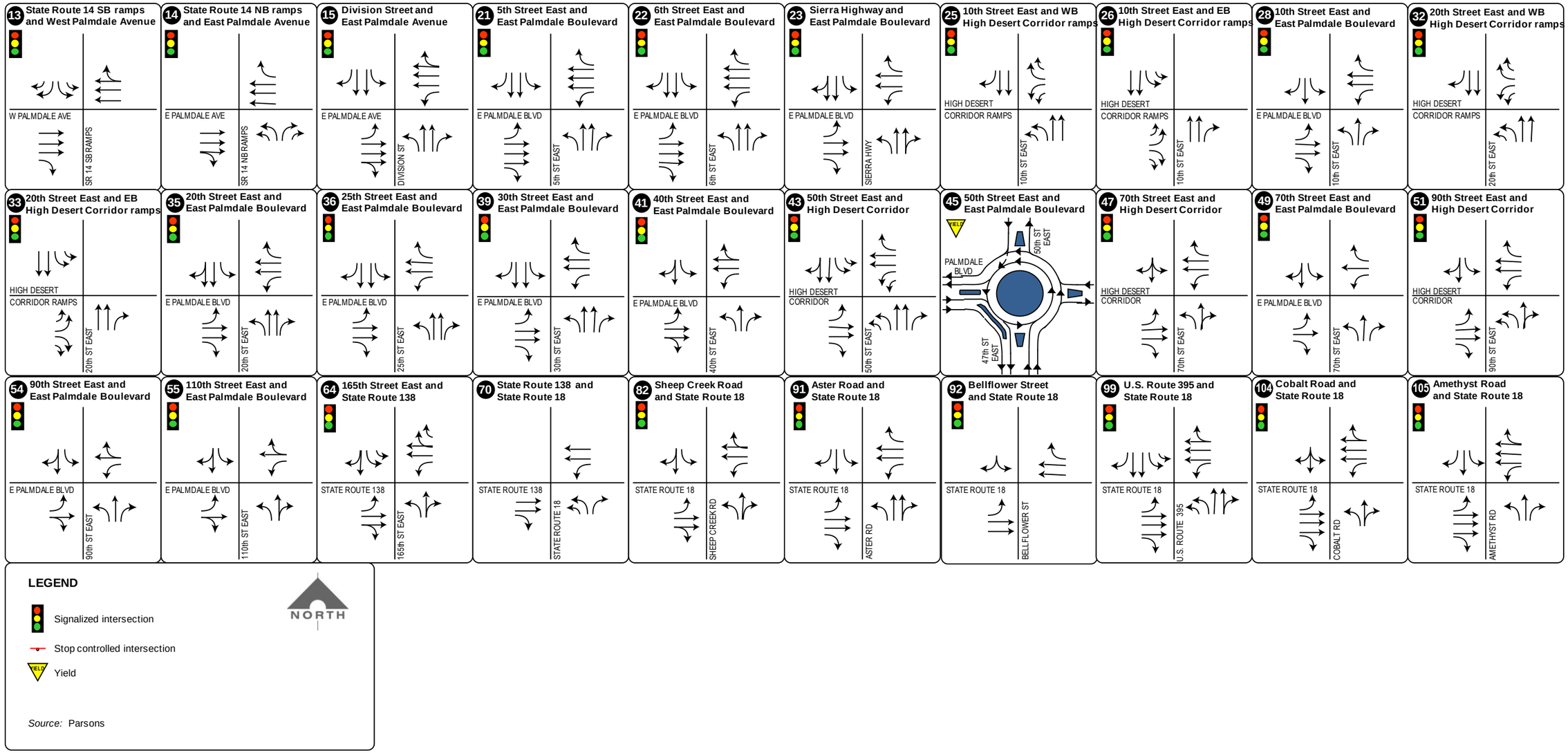


Figure 4-41: Year 2040 Transportation System Management Alternative — Study Intersection Lane Geometry Configurations *(1 of 2)*

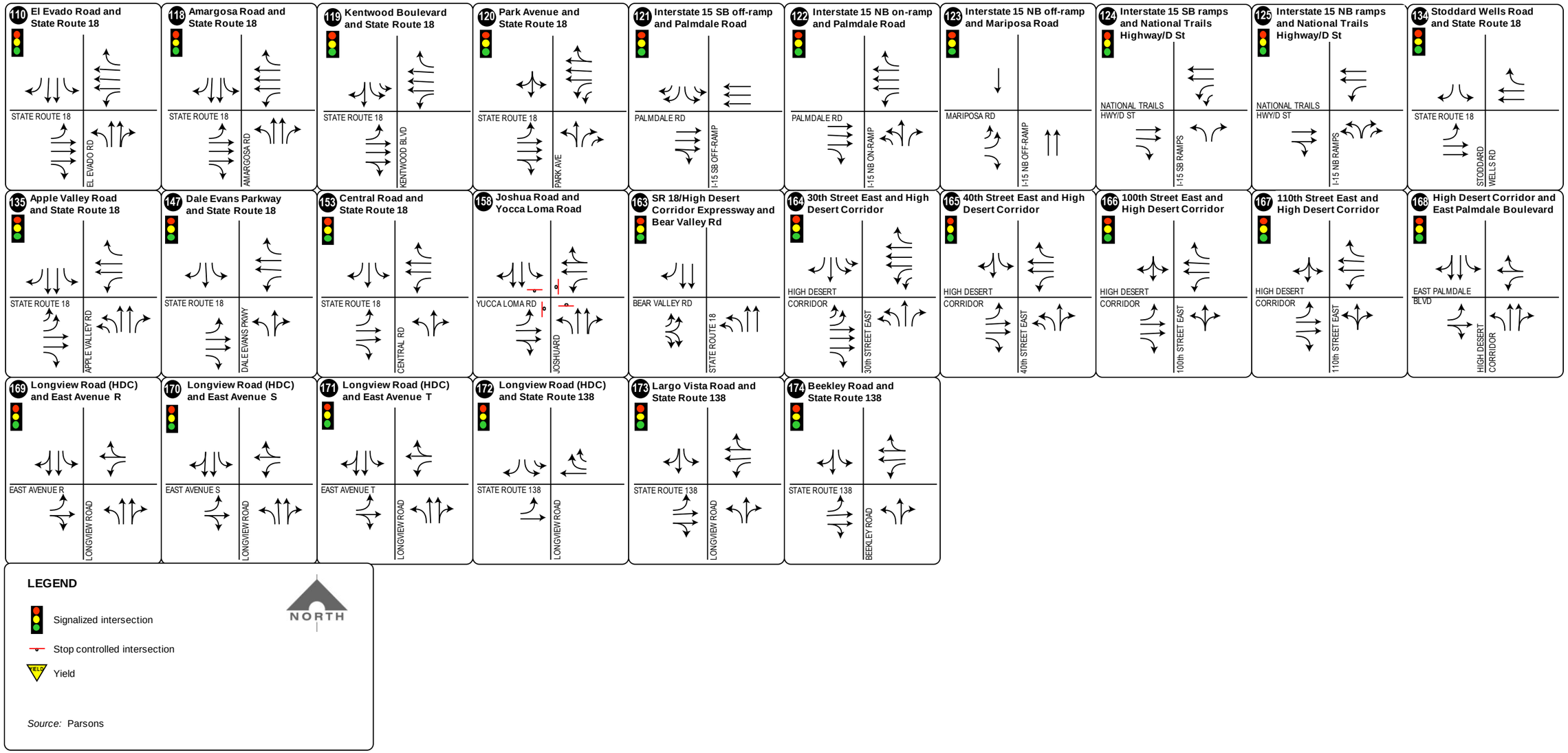


Figure 4-41: Year 2040 Transportation System Management Alternative — Study Intersection Lane Geometry Configurations *(2 of 2)*

Table 4-52. Year 2040 Transportation System Management Alternative Intersection Level of Service Summary *(1 of 2)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 TSM ALTERNATIVE†			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
13	SR 14 SB off-/on-ramps and W. Palmdale Blvd	Signal	B	11.3	B	11.1	C	27.6	C	30.1	B	13.7	C	21.5
14	SR 14 NB off-/on-ramps and E. Palmdale Blvd	Signal	A	7.4	B	10.1	A	7.6	B	17.3	B	11.3	F	96.1
15*	Division Street and E. Palmdale Boulevard	Signal	C	27.9	C	28.0	E	64.1	E	71.4	C	31.0	D	40.3
21*	5th Street East and E. Palmdale Boulevard	Signal	C	22.1	C	23.8	C	21.4	C	31.4	C	21.5	C	30.4
22*	6th Street East and E. Palmdale Boulevard	Signal	C	20.7	C	25.3	E	55.7	E	78.0	B	13.3	B	17.9
23*	Sierra Highway and E. Palmdale Boulevard	Signal	C	25.5	C	27.3	F	82.1	F	94.6	B	14.3	B	17.7
25	10th Street East and WB High Desert Corridor	Signal	Does not exist				Does not exist				C	21.1	C	25.5
26	10th Street East and EB High Desert Corridor	Signal	Does not exist				Does not exist				C	21.5	C	27.3
28*	10th Street East and E. Palmdale Boulevard	Signal	B	17.2	C	20.0	C	31.3	D	50.6	C	22.2	C	32.2
32	20th Street East and WB High Desert Corridor	Signal	Does not exist				Does not exist				B	12.1	C	23.4
33	20th Street East and EB High Desert Corridor	Signal	Does not exist				Does not exist				C	20.8	C	28.3
35*	20th Street East and E. Palmdale Boulevard	Signal	B	19.9	C	22.9	C	34.1	E	63.8	B	15.5	C	21.0
36*	25th Street East and E. Palmdale Boulevard	Signal	C	26.2	C	30.9	D	42.2	E	64.5	B	18.1	C	23.8
39*	30th Street East and E. Palmdale Boulevard	Signal	B	18.4	C	20.4	C	26.1	C	31.7	B	17.8	C	22.0
41*	40th Street East and E. Palmdale Boulevard	Signal	C	21.9	C	23.7	D	39.1	E	71.6	C	27.3	D	40.5
43	50th Street East and High Desert Corridor	Signal	Does not exist				Does not exist				D	42.7	E	55.9
45*	50th Street East and E. Palmdale Avenue	Roundabout	B	14.0	A	8.9	F	>300	F	>300	—	—	—	—
47*	70th Street and High Desert Corridor	Signal	Does not exist				Does not exist				B 18.2/D (36.5)			
49*	70th Street East and E. Palmdale Boulevard	Exist–stop NB/SB; fut–signal	F	>300	C	20.9	F	>300	F	>300	B	18.3	C	22.8
51	90th Street East and High Desert Corridor	Signal	Does not exist				Does not exist				B	18.4	D	55.0
54*	90th Street East and E. Palmdale Boulevard	Signal	C	23.9	C	24.1	D	46.3	E	76.2	B	19.3	C	23.1
55*	110th Street East and E. Palmdale Boulevard	Signal	C	22.8	B	19.8	C	22.1	C	30.1	C	21.8	C	20.6
64*	165th Street East and SR 138	Signal	C	20.6	C	21.7	F	109.7	E	56.8	D	51.8	F	199.2
70*	SR 138 and SR 18	Stop WB; Yield EB	B	10.0	B	11.7	F	>300	F	>300	C	26.4	F	85.4
82*	Sheep Creek Road and SR 18	Exist–stop NB/SB; fut–signal	B	12.8	C	19.7	F	>300	F	>300	C	34.7	F	139.9
91*	Aster Road and SR 18	Signal	C	25.6	C	21.2	B	19.4	C	22.4	B	15.4	B	15.2
92*	Bellflower Street and SR 18	Exist–stop NB/SB; fut–signal	C	20.8	D	27.4	F	89.2	F	>300	B	17.8	C	20.3
99*	U.S. 395 and SR 18	Signal	C	34.0	D	36.5	E	61.1	F	90.6	D	48.8	E	55.6

Source: Parsons

Notes:
1. Two-way stop control level of service reported for worst approach
2. 4-way stop reported for overall level of service.
3. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

**Proposed additional geometry improvements

Level of service E

Level of service F

Table 4-52. Year 2040 Transportation Systems Management Alternative Intersection Level of Service Summary *(2 of 2)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 TSM ALTERNATIVE†			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
104*	Cobalt Road and SR 18	Signal	D	43.3	C	27.5	F	97.3	F	160.2	C	33.1	B	18.9
105*	Amethyst Rd and SR 18	Signal	C	28.8	C	30.4	D	48.9	F	108.3	C	34.0	D	53.0
110*	El Evado Rd and SR 18	Signal	C	28.0	C	28.1	D	40.9	F	80.9	C	30.8	D	39.0
118*	Amargosa Rd and SR 18	Signal	C	28.2	D	39.9	F	84.9	F	200.0	C	27.0	D	53.1
119*	Kentwood Blvd and SR 18	Signal	B	18.8	C	27.1	C	22.2	D	49.9	B	13.0	C	21.7
120	Park Avenue and SR 18	Signal	B	17.6	C	25.2	C	23.5	C	20.5	B	11.6	B	17.9
121	I-15 SB off-ramp and Palmdale Rd	Signal	A	8.8	C	25.1	B	19.3	B	19.7	A	9.0	B	15.4
122	I-15 NB on-ramp and Palmdale Rd	Signal	B	16.9	B	17.1	C	20.8	C	22.6	C	22.0	E	57.2
123	I-15 NB off-ramp and Mariposa Rd	Signal	B	14.1	B	13.5	B	13.1	B	12.0	B	10.5	B	13.7
124	I-15 SB off-/on-ramps & National Trails Hwy/D St	Signal	B	11.2	A	9.7	B	14.1	B	18.9	B	11.1	B	12.1
125	I-15 NB off-/on-ramps & National Trails Hwy/D St	Signal	B	14.4	B	11.4	C	24.4	C	22.4	B	11.8	C	21.4
134*	Stoddard Wells Rd and SR 18	Signal	B	12.7	C	23.2	B	17.7	**F**	87.2	B	12.5	D	41.0
135*	Apple Valley Rd and SR 18	Signal	C	33.1	D	40.2	**F**	81.3	**F**	150.3	D	50.0	E	72.2
147*	Dale Evans Parkway and SR 18	Signal	B	17.8	C	21.0	C	30.2	**E**	78.2	C	22.5	D	43.5
153*	Central Rd and SR 18	Signal	C	25.5	C	25.5	C	29.6	C	32.5	C	26.5	C	29.4
158	Joshua Rd and Yucca Loma Rd	Exist–stop NB/SB; fut–4-way stop	B*	10.3	A*	9.5	**F***	61.2	**F***	276.1	A	3.7	C	17.4
163	Bear Valley Rd and SR 18	Signal	A*	5.7	A*	9.0	B*	12.6	B*	13.8	A	7.8	A	6.5
164	30th Street East and High Desert Corridor	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C	31.7	E	59.3
165	40th Street East and High Desert Corridor	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C	29.8	D	38.1
166	100th Street East and High Desert Corridor	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B	18.8	B	16.3
167	110th Street East and High Desert Corridor	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A	9.6	B	19.2
168	High Desert Corridor and E. Palmdale Blvd	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C	23.4	D	46.5
169	Longview Rd (HDC) and E. Avenue R	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A	9.7	B	19.5
170	Longview Rd (HDC) and E. Avenue S	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B	16.3	C	28.8
171	Longview Rd (HDC) and E. Avenue T	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C	21.3	D	43.6
172	Longview Rd (HDC) and SR 138	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C	32.0	D	38.4
173	Largo Vista Rd and SR 138	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	D	48.6	E	63.4
174	Beekley Rd and SR 138	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B	18.5	B	18.9

Source: Parsons

Notes:
1. Two-way stop control level of service reported for worst approach
2. 4-way stop reported for overall level of service.
3. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software
**Proposed additional geometry improvements

Level of service E

Level of service F

The traffic operational performance of key study intersections was reported earlier in Table 4-42 for the 2020 High Desert Corridor opening year and Table 4-44 for the 2040 High Desert Corridor design year. The operational performance for most of these intersections under the rail feeder service alternatives will be the same as reported for the build alternative and the build alternative with tolls. Key study intersections located near the Palmdale and Victorville train stations will be affected, however.

Figure 4-42 illustrates the location of the Palmdale XpressWest Station assumed for this traffic study. Locational options for the station, platform(s) and parking supplies are preliminary and are subject to change. The station platform(s) are assumed to be located immediately east of the Metrolink/Palmdale Transportation Center. Parking supplies are assumed to be located to the west of all rail trackage along with other ground transportation elements (passenger drop off, bus).[42]

The vast majority of rail passengers using the Palmdale station are assumed to arrive from the south along SR 14, exiting this facility at the Palmdale Boulevard interchange. Sierra Highway, Sixth Street East and Technology Drive will provide secondary access to the train station via Transportation Center Drive, as illustrated on Figure 4-43.

Tables 4-53 and 4-54 list the key study intersections in the immediate vicinity of the Palmdale Transportation Center, and the forecast level of service for those intersections, for the opening year (2020) and the design year (2040), respectively.

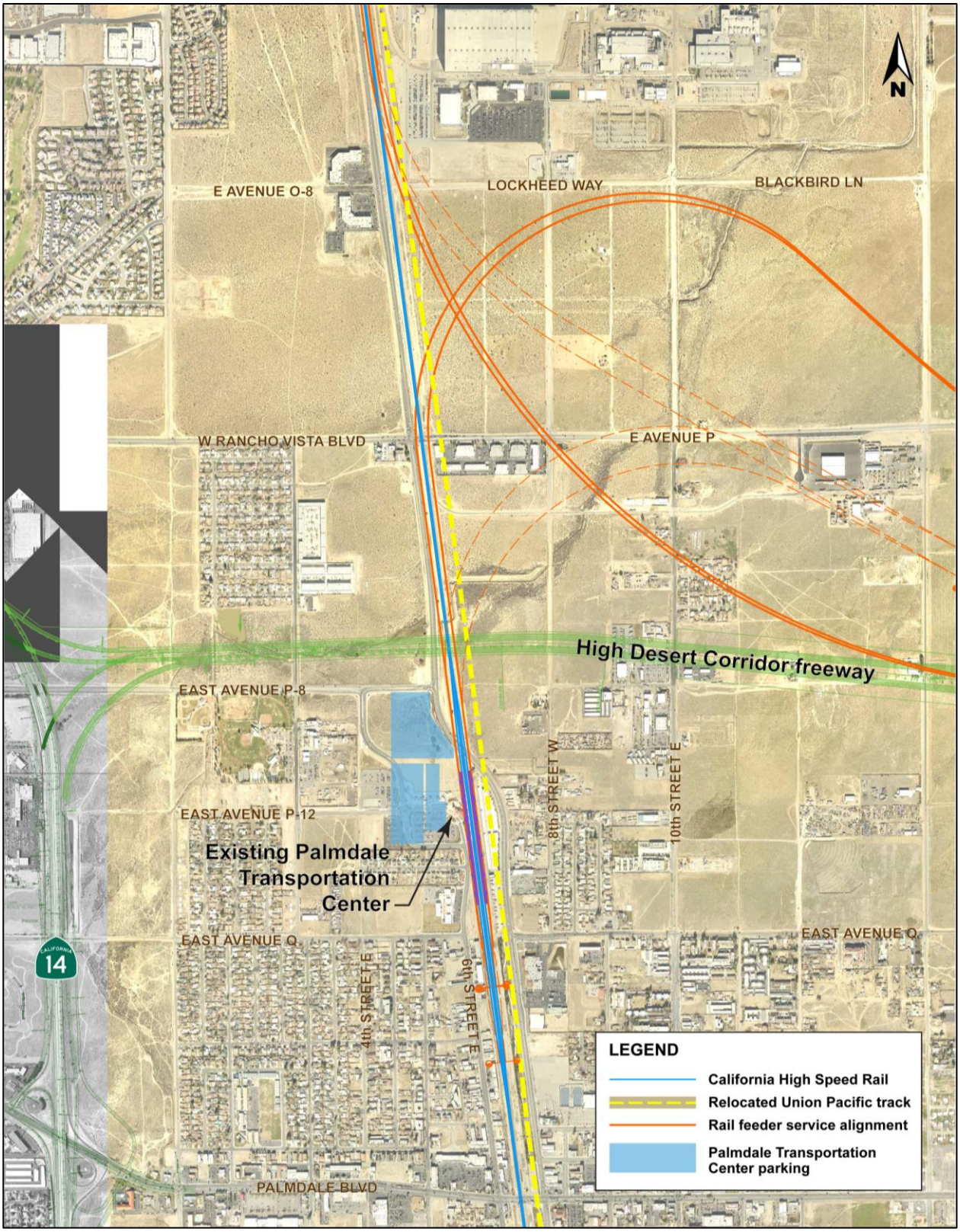
4.9 Local Roadway Access Modifications and Circulation Impacts

The build High Desert Corridor Freeway/Expressway project will construct freeway to freeway "system" interchanges at I-15 and SR 14, local "service" interchanges at north–south crossings of arterial streets, grade separations (overcrossings or undercrossings) of local streets having no freeway access, and at-grade, traffic signal-controlled intersections along the expressway portion of the project east of Dale Evans Parkway.

Within the Antelope Valley segment of the project, new local interchanges are currently proposed at 20th Street East, 30th Street East, 50th Street East, and 90th Street East. The resulting grade separations from the first viaduct include freeway undercrossings at Division Street (when paved), Third Street, Sierra Highway, Eighth Street and 10th Street. Additional grade separations are proposed at 15th Street, 25th Street, 40th Street, and 70th Street.

Within the High Desert segment, new local interchanges are currently proposed at 140th Street, 170th Street, 210th Street, and 240th Street in Los Angeles County; and a future Oasis Road, midway between Avenue P Road and Saint George Avenue, Sheep Creek Road and Caughlin Road in San Bernardino County. Additional freeway grade separations (overcrossing or undercrossing) are also proposed at 110th Street, Palmdale Boulevard, Longview Road and 165th Street. Grade separations may also be proposed at Avenue Q, 200th Street, 230th Street, Saint Anthony Avenue, Palmer Road, and Tanner Road at a later date when land development warrants additional north–south circulation capacity.

[42] Detailed station plans are not available. A parking requirement of 6,200 spaces is assumed for preliminary space planning.



Source: Parsons

Figure 4-42: Palmdale High Speed Train Station Location
(Option 2–Alternative B–Phase 1)

Figure 4-43: Study Intersections near Palmdale High Speed Train Station

Within the Victor Valley segment, new local interchanges are currently proposed at Caughlin Road, as mentioned previously, Koala Road, U.S. 395, Phantom Road West, Phantom Road East, National Trails Highway, Choco Road and Dale Evans Parkway. Additional grade separations are proposed at Bellflower Road, Adelanto Road, New Stoddard Wells Road and Apple Valley Road. Grade separations at Richardson Road, Beaver Road, Raccoon Avenue, Aster Road, Verbena Road, Evado Road/Majeta Avenue (south alternative alignment), Village Drive (south alternative alignment), Rancho Road (south alternative alignment), and Quarry Road may be proposed at a later date when local circulation needs warrant their construction. For the access-controlled, expressway portion of the project east of Dale Evans Parkway, at-grade, traffic signal controlled intersections are proposed at Waalew Road, Central Road, Joshua Road, Standing Rock Road and Yucca Loma Road.

Table 4-53. Year 2020 Intersection Level of Service near Palmdale and Victorville High Speed Train Stations

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 REVISED PALMDALE ACCESS ALTERNATIVE				OPEN YEAR 2020 REVISED PALMDALE ACCESS ALTERNATIVE WITH TOLL				OPEN YEAR 2020 REVISED PALMDALE ACCESS ALTERNATIVE WITH RAIL				OPEN YEAR 2020 REVISED PALMDALE ACCESS ALTERNATIVE WITH TOLL AND RAIL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
13	SR 14 SB off-/on-ramps and West Palmdale Blvd	Signal	B	11.3	B	11.1	C	26.7	C	24.3	A	7.4	B	14.5	A	7.5	B	15.1	A	8.0	B	14.3	A	7.4	B	15.2
14	SR 14 NB off-/on-ramps and East Palmdale Boulevard	Signal	A	7.4	B	10.1	B	11.3	B	10.8	C	27.3	C	23.7	C	29.0	C	22.4	C	27.6	C	23.6	C	28.7	C	22.6
15*	Division St and East Palmdale Blvd	Signal	C	27.9	C	28.0	D	37.8	D	38.0	C	22.5	C	24.7	C	22.3	C	24.6	C	23.0	C	25.1	C	22.9	C	25.0
19*	Sierra Hwy and Technology Drive	Signal	B	14.3	B	16.8	D	43.6	**E**	78.5	B	13.1	B	16.7	B	13.1	B	16.7	B	14.0	B	16.8	B	14.0	B	16.8
20*	Sierra Hwy and East Ave Q	Signal	B	16.0	B	15.4	B	14.1	B	15.2	B	16.0	B	15.3	B	16.0	B	15.3	B	16.0	B	15.3	B	16.0	B	15.3
21*	5th St East and East Palmdale Blvd	Signal	C	22.1	C	23.8	B	17.9	C	24.0	C	23.1	C	26.3	C	22.8	C	26.5	C	23.2	C	26.0	C	23.2	C	26.8
22*	6th St East and East Palmdale Blvd	Signal	C	20.7	C	25.3	D	39.9	D	44.4	C	27.9	C	28.2	C	27.7	C	28.2	C	27.7	C	28.3	C	27.7	C	28.3
23*	Sierra Hwy and East Palmdale Blvd	Signal	C	25.5	C	27.3	D	39.8	**E**	71.4	C	26.8	C	29.6	C	26.9	C	29.4	C	31.0	C	29.6	C	26.9	C	29.4
27*	10th St East and East Ave Q	Existing–4-way stop Future–signal	B*	10.3	B*	12.6	C*	22.0	C*	23.2	C	32.8	C	23.2	C	31.9	C	25.5	C	24.7	C	26.1	C	25.6	C	26.0
28*	10th St East and East Palmdale Blvd	Signal	B	17.2	C	20.0	C	28.4	D	37.6	C	27.3	C	28.4	C	29.9	C	26.9	C	31.0	D	40.3	C	25.7	C	33.3
32	20th St East and WB High Desert Corridor ramps	Signal	Does not exist				Does not exist				C	27.0	C	24.4	C	27.6	C	25.5	C	33.6	C	23.0	C	31.1	C	24.9
33	20th St East and EB High Desert Corridor ramps	Signal	Does not exist				Does not exist				C	31.0	D	40.3	C	25.7	C	33.3	C	27.6	C	28.2	C	29.9	C	26.2
138	I-15 SB off-/on-ramps and Dale Evans Pkwy	Existing–stop NB/SB Future–signal	A	4.7	A	3.1	A	7.2	B	10.3	C	21.0	C	22.9	C	20.5	C	22.9	A	7.2	C	20.3	A	6.9	C	15.5
139	I-15 NB off-/on-ramps and Dale Evans Pkwy	Existing–stop NB/SB Future–signal	A	4.3	A	3.1	A	8.6	A	8.2	C	20.3	B	16.3	C	20.2	B	16.4	A	8.3	B	11.8	B	11.8	A	7.2

Source: Parsons

Notes:
1. Two-way stop control level of service reported for worst approach
2. 4-way stop reported for overall level of service
3. Intersection level of service calculations are based on HCM 2000, except where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 4-54. Year 2040 Intersection Level of Service near Palmdale and Victorville High Speed Train Stations

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 REVISED PALMDALE ACCESS ALTERNATIVE				DESIGN YEAR 2040 REVISED PALMDALE ACCESS ALTERNATIVE WITH TOLL				DESIGN YEAR 2040 REVISED PALMDALE ACCESS ALTERNATIVE WITH RAIL				DESIGN YEAR 2040 REVISED PALMDALE ACCESS ALTERNATIVE WITH TOLL AND RAIL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
13	SR 14 SB off-/on-ramps and West Palmdale Blvd	Signal	B	11.3	B	11.1	C	27.6	C	30.1	A	8.0	B	16.2	A	7.3	B	11.6	A	8.6	B	16.0	A	8.0	B	14.8
14	SR 14 NB off-/on-ramps and East Palmdale Blvd	Signal	A	7.4	B	10.1	A	7.6	B	17.3	C	29.6	C	26.5	A	8.6	B	14.4	C	29.7	C	29.4	C	29.1	C	26.2
15*	Division St and East Palmdale Blvd	Signal	C	27.9	C	28.0	**E**	64.1	**E**	71.4	C	29.4	C	31.1	C	27.9	C	31.1	C	31.3	C	32.2	C	29.3	C	29.9
19*	Sierra Hwy and Technology Dr	Signal	B	14.3	B	16.8	D	50.9	**F**	115.4	B	14.1	B	18.0	B	13.9	B	17.7	B	14.7	B	17.7	B	14.6	B	16.8
20*	Sierra Hwy and East Ave Q	Signal	B	16.0	B	15.4	B	15.0	B	15.3	B	17.1	B	16.0	B	16.9	B	15.8	B	17.7	B	15.8	B	17.5	B	15.3
21*	5th St East and East Palmdale Blvd	Signal	C	22.1	C	23.8	C	21.4	C	31.4	C	25.4	C	28.7	C	25.0	C	27.3	C	25.5	C	28.7	C	24.9	C	26.0
22*	6th St East and East Palmdale Blvd	Signal	C	20.7	C	25.3	**E**	55.7	**E**	78.0	C	29.4	C	32.3	C	28.7	C	30.5	C	29.4	C	32.3	C	28.8	C	28.3
23*	Sierra Hwy and East Palmdale Blvd	Signal	C	25.5	C	27.3	**F**	82.1	**F**	94.6	C	29.7	C	32.2	C	30.9	D	35.1	C	29.7	C	32.2	C	27.5	C	29.6
27*	10th St East and East Ave Q	Existing–4-way stop Future–signal	B*	10.3	B*	12.6	C*	22.7	C*	29.3	C	28.1	C	24.8	C	26.3	C	26.5	C	25.3	C	27.5	C	24.5	C	26.1
28*	10th St East and East Palmdale Blvd	Signal	B	17.2	C	20.0	C	31.3	D	50.6	C	32.3	**E**	60.8	C	29.1	D	49.5	C	32.3	D	52.2	C	30.3	D	40.3
32	20th St East and WB High Desert Corridor ramps	Signal	Does not exist				Does not exist				D	39.2	C	24.6	D	40.1	C	29.9	D	38.3	C	24.9	D	37.3	C	28.8
33	20th St East and EB High Desert Corridor ramps	Signal	Does not exist				Does not exist				C	25.6	C	26.6	C	26.5	C	24.7	C	26.2	C	27.0	C	28.3	C	28.1
138	I-15 SB off-/on-ramps and Dale Evans Pkwy	Existing–stop NB/SB Future–signal	A	4.7	A	3.1	C	28.2	C	24.8	C	23.7	C	26.7	C	23.9	C	25.4	C	29.4	C	30.9	C	29.2	C	30.9
139	I-15 NB off-/on-ramps and Dale Evans Pkwy	Existing–stop NB/SB Future–signal	A	4.3	A	3.1	B	13.1	B	12.8	C	22.5	B	17.7	C	21.7	B	18.3	B	14.7	A	8.5	B	18.7	A	9.1

Source: Parsons

Notes:
1. Two-way stop control level of service reported for worst approach
2. 4-way stop reported for overall level of service
3. Intersection level of service calculations are based on HCM 2000, except where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

The locations of the local service interchanges, grade separations proposed for initial construction, and at-grade signalized intersections are illustrated on Figure 4-44.

Construction of the High Desert Corridor freeway/expressway will potentially sever a number of primarily north–south running local roads which are planned for future development. For the most part, these severed roads are "paper streets," which are located in relatively undeveloped areas. Local roads running parallel to the High Desert Corridor will provide access to north–south roads identified for interchanges or grade separations. As noted in the text above, additional grade separations may be proposed and constructed at a later date when land development warrants additional north–south circulation capacity.

Table 4-55 catalogs the proposed interchanges, grade separations and signalized intersections along the High Desert corridor freeway/expressway build alternative. Table 4-55 also lists the candidate grade separations identified in this traffic study report. These candidate locations may or may not be constructed at a later date when land development and local circulation needs warrant. The table also lists local roads that would be severed by the project.[43] Many of these local roads are "paper streets," as noted above. Cul-de-sac turnarounds would be constructed for most of the street closures. New frontage roads may also be constructed in a limited number of cases to mitigate street closures.

Geometric design drawings of the proposed High Desert Corridor new freeway and SR 18 realigned new freeway/expressway are included in Appendix B. These drawings detail the locations where local streets would be severed, cul-de-sac turnarounds constructed, and frontage roads provided.

Insofar as transit services, Antelope Valley Transit Authority Routes 3 and 10 cross the High Desert freeway at 10th Street East and Sierra Highway, respectively. Grade separated crossings are provided, as the freeway is on a viaduct structure; therefore, the route alignments will not be affected. The Lake Los Angeles Express route also crosses the High Desert freeway in the viaduct section and on Palmdale Boulevard in the vicinity of 120th Street East. This crossing of Palmdale Boulevard will be grade separated so the route alignment will not be affected.

Victor Valley Transit Authority (VVTA) routes 22, 32, 33 and the B–V Link also cross the proposed High Desert freeway alignment. Route 22, Helendale, runs along National Trails Highway, which will be grade separated. Route 33, Adelanto Circulator, crosses the freeway alignment along Bellflower Street, which will also be grade separated. The B–V Link connects Fort Irwin and Barstow with the San Bernardino Valley, and runs along I-15. None of these routes will be impacted by the alignment of the High Desert freeway.

Route 32, Adelanto–Victorville North, will be impacted by the proposed alignment of the High Desert freeway. A map illustrating the alignment of Route 32 is reproduced as Figure 4-45. The portion of the route running along Air Expressway Boulevard west of the Victorville Federal Correctional Complex would need to be rerouted if the High Desert freeway follows the Air Expressway alignment passing between the Correctional Complex and the Southern California Logistics Airport. In the event that alignment variation E is selected for the freeway (see Figure 4-44), running along the south side of the correctional complex, the High Desert freeway alignment will cross over Village Drive on a viaduct structure.

[43] The local roads to be severed vary by alignment alternative. Aerial photographs of the freeway alignment, included in Appendix B, should be examined for clarification of which roads will be potentially impacted.

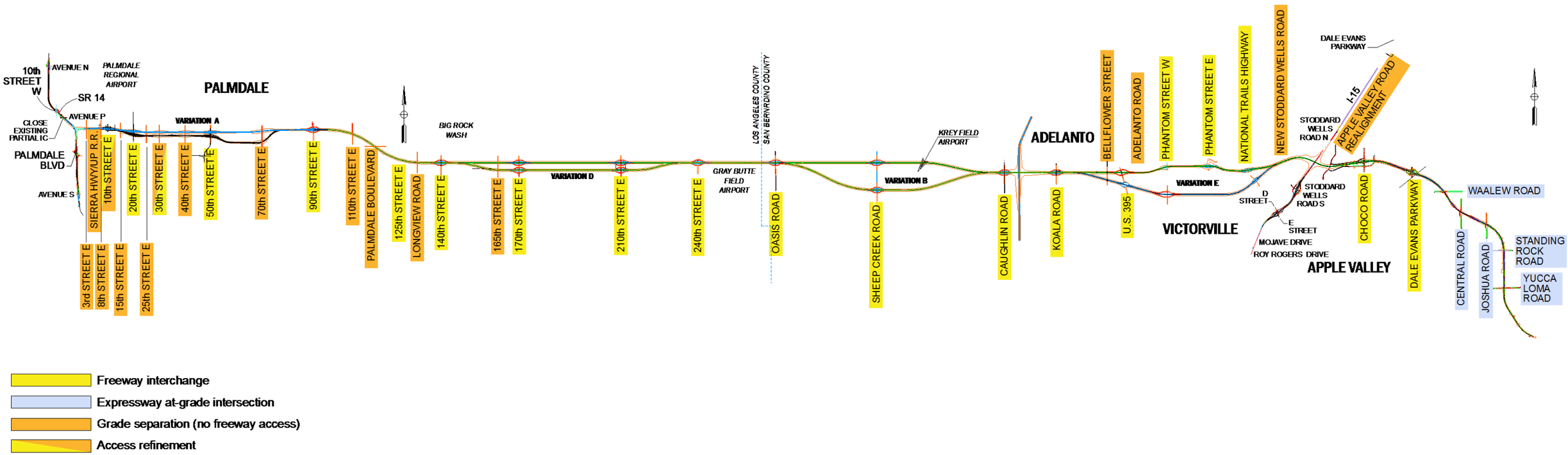


Figure 4-44: Proposed Locations of Interchanges, Grade Separations and At-grade Intersections along High Desert Corridor

Table 4-55. Roads Identified as Potential Grade Separations *(1 of 3)*

LOCATIONS	OVERCROSS	UNDERCROSS	LOCAL INTERCHANGE	FREEWAY-TO-FREEWAY INTERCHANGE	FREEWAY VIADUCT	OVERHEAD	ROADS* SEVERED	POTENTIAL GRADE SEPARATIONS	INTERCHANGE SPACING (MILES)
SR 14/High Desert Corridor				×					2.0
Division Street (when paved)		Part of viaduct			×**				
3rd Street East		Part of viaduct							
Sierra Highway		Part of viaduct							
Union Pacific Railroad		Part of viaduct				×			
8th Street East		Part of viaduct							
10th Street East		Part of viaduct							
15th Street East	×								
20th Street East	×		×						
25th Street East	×								1.0
30th Street East	×		×						
40th Street East	×								2.0
50th Street East	×		×						
70th Street East	×								4.0
Little Rock Creek					×				
90th Street East	×		×						
110th Street East	×								5.4
E. Avenue Q								×	
E. Palmdale Boulevard	×								
120th Street East							×		
125th Street East							×		
130th Street East							×		
Longview Road	×						×		
140th Street East	×		×						
150th Street East							×		3.1
165th Street East	×							×	
Big Rock Creek					×				
170th Street East	×		×						
171st Street East							×		4.0
172nd Street East							×		
175th Street East							×		
180th Street East							×		
187th Street East							×		
190th Street East									
200th Street East								×	
203th Street East							×		
205th Street East							×		
Largo Vista Road (210th Street East)	×		×						

Table 4-55. Roads Identified as Potential Grade Separations *(2 of 3)*

LOCATIONS	OVERCROSS	UNDERCROSS	LOCAL INTERCHANGE	FREEWAY-TO-FREEWAY INTERCHANGE	FREEWAY VIADUCT	OVERHEAD	ROADS* SEVERED	POTENTIAL GRADE SEPARATIONS	INTERCHANGE SPACING (MILES)
215th Street East							×		3.1
216th Street East							×		
217th Street East							×		
220th Street East							×		
225th Street East							×		
230th Street East								×	
235th Street East							×		
240th Street East	×		×						
245th Street East							×		3.1
250th Street East							×		
260th Street East							×		
Oasis Rd (future)	×		×						
St. George Avenue							×		4.2
St. Anthony/Parkdale Rd								×	
Primavera Rd (north of Parkdale Rd)							×		
San Jacinto Rd							×		
Cougar Rd							×		
Silver Rock Rd/Grey Mountain Rd							×		
Silver Lake Rd/Palmer Rd								×	
Keats Rd***							×		
Tanner Rd								×	
Meridian Rd***							×		
Sheep Creek Rd (Old Phelan Rd)	×		×						
El Medio Rd***							×		5.1
Boquina Street/Valle Vista Rd***							×		
Johnson Rd**							×		
Boquina Street/Paseo Rd***							×		
Unnamed Rd***							×		
Mountain View Rd							×		
Lessing Avenue							×		
Unnamed Rd							×		
Middleton Rd							×		
Caughlin Rd	×		×						
Vinton Rd							×		2.0
Richardson Rd								×	
Saratoga Street							×		
El Privelegio Rd									
Beaver Rd								×	
Koala Rd	×		×						

Table 4-55. Roads Identified as Potential Grade Separations *(2 of 3)*

LOCATIONS	OVERCROSS	UNDERCROSS	LOCAL INTERCHANGE	FREEWAY-TO-FREEWAY INTERCHANGE	FREEWAY VIADUCT	OVERHEAD	ROADS* SEVERED	POTENTIAL GRADE SEPARATIONS	INTERCHANGE SPACING (MILES)
Badger Avenue							×		2.5
Muskrat Avenue							×		
Panther Avenue							×		
Raccoon Avenue								×	
Aster Rd								×	
Verbena Rd								×	
Bellflower Street	×								
Palm Street							×		
Delicious Street							×		
Montezuma Street/Jonathan Street							×		
U.S. 395	×		×						
Pearmain Street							×		1.8
Adelanto Rd	×								
Mesa Linda Rd							×		
Adelanto Airport Rd							×		
Phantom Road West	×		×						
Phantom Road East		×	×						1.6
Turner Wash/Oro Grande		×							1.7
Village Drive		×							
Ossam Wash/Gasline Rd		×							
National Trail Highway		×	×						
Mojave River/BNSF		×****				×			2.8
Mojave Northern Railroad						×			
Bell Mountain Wash/Stoddard Wells Rd		×							
I-15/High Desert Corridor				×					
Apple Valley Rd									2.0
Choco Rd	×	×	×						
Dale Evans Parkway	×		×						2.0

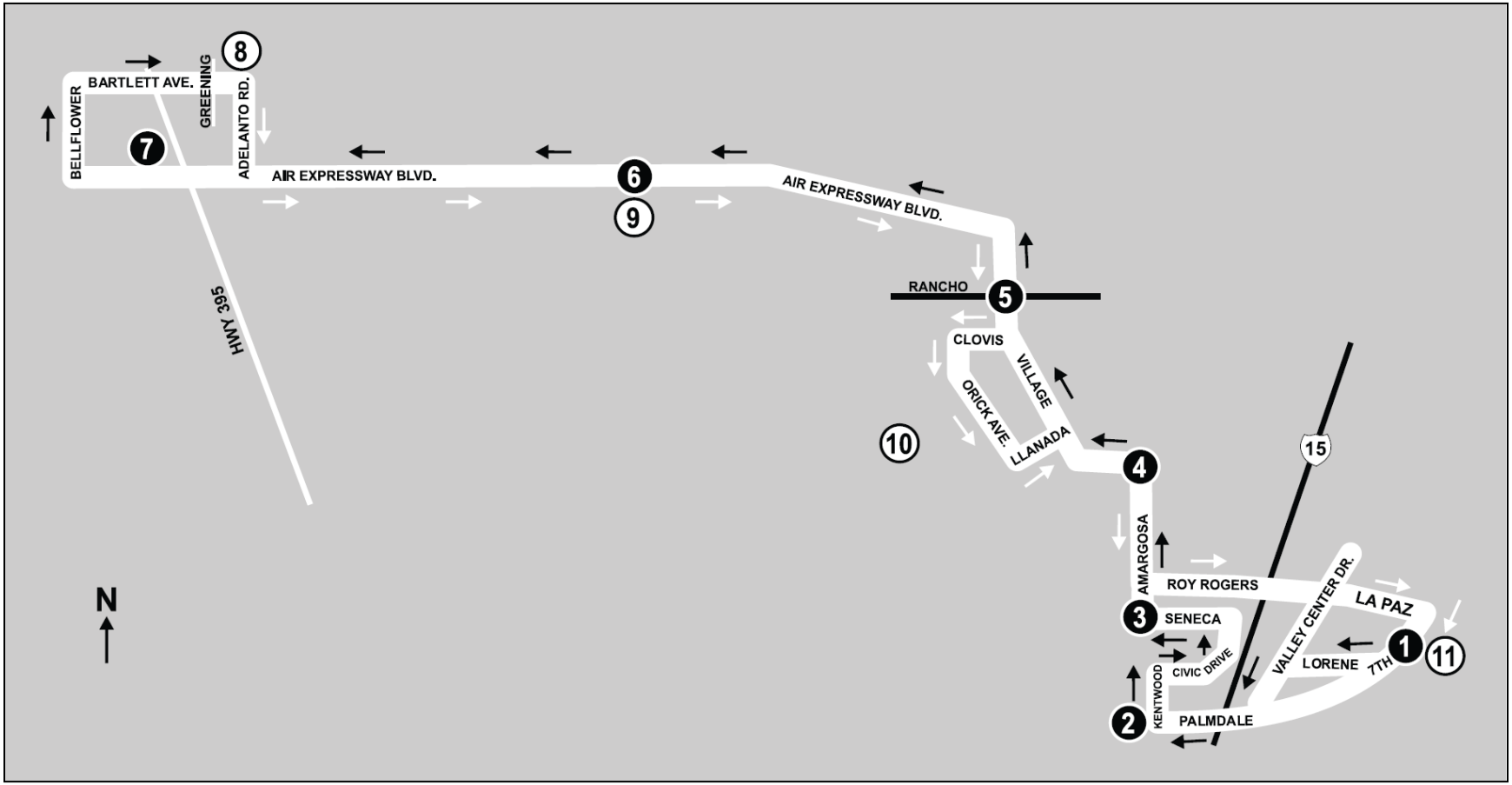
*Includes unconstructed/planned and "paper streets."

**Local streets between SR 14 and 10th Street East: SR 14, Division Street, 3rd Street East, Sierra Highway, UP railroad, 8th Street East, and 10th Street East. Overcrosses listed at these locations are independent structures over the freeway.

***Avoided in variation B

****Mojave River and BNSF will be one bridge, where Mojave River will be an undercrossing and BNSF will be an overhead underneath the freeway.

Note: Freeway portion for the above limit is generally 6 to 10 feet above original ground other than viaduct structures listed above and where at rough terrain.



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(X) Public timetable reference points

Figure 4-45: Route 32 — Adelanto/Victorville North Map

4.10 Freeway Access Modifications

The build alternatives will entail the construction of new and revised interchanges access points along I-15 and SR 14. Along I-15, a new freeway-to-freeway "system" interchange is proposed to connect the High Desert Corridor freeway with I-15. The interchange will be located in Victorville, California, north of Stoddard Wells Road, subject to approval by the Federal Highway Administration. Along SR 14, a new freeway-to-freeway system interchange is proposed to connect the High Desert Corridor freeway with SR 14. The interchange will be located in Palmdale, California, north of Palmdale Boulevard (existing SR 138), subject to approval by the California Transportation Commission.

The proposed I-15/High Desert Corridor interchange is the subject of a separate, stand alone report known as an *Interstate System Access Change Request* document or a *New Connection Report*. The contents of this document are based in large part on this traffic study and the High Desert Corridor project approval and environmental documents. This information is not repeated in this section 4.10 of the High Desert Corridor Traffic Study report.

A *New Connection Report* is not needed for the proposed SR 14/High Desert Corridor interchange. This system interchange is physically located one mile north of Palmdale Boulevard and one mile south of 10th Street West. A system of collector-distributor roads and braided ramps extends the operational spacing of the interchange to two miles or more in both northbound and southbound directions. To achieve this two mile spacing, a design guideline for the proximity of system to local interchanges, the on- and off-ramps serving the partial interchange at Rancho Vista Boulevard (West Avenue P) will need to be relocated.[44] The geometric layout plans for SR 14, illustrated on Figure 4-8, indicate that the northbound off-ramp and the southbound on-ramp will be relocated from Rancho Vista Boulevard to 10th Street West. The location of these two interchanges is illustrated on Figure 4-46. The graphic indicates the proximity of 10th Street West and Rancho Vista Boulevard (West Avenue P) to the adjacent Antelope Valley Regional Shopping center, along with the locations of intersections analyzed by this study effort.

The intersection level of service analysis reported in Table 4-45 indicates that the proposed relocation of ramps will maintain and/or improve level of service performance at the study intersections located in close proximity to the Antelope Valley Mall. A portion of Table 4-45 is reproduced as Table 4-56. The general improvement of traffic conditions, between the build versus no-build alternatives, results from Antelope Valley Mall related traffic being able to avoid the intersection of 10th Street West and Rancho Vista Boulevard when traveling to and from the south on SR 14.

4.11 Add-on Elements

4.11.1 Managed/High-occupancy Vehicle Lanes

Managed lanes are the operational designation of one or more lanes of traffic to limit use to designated vehicle user groups. These user groups can be those with high-occupancy (two or more persons per vehicle), express lanes which limit ingress and egress to longer distance trips, and/or HOT (high-occupancy toll) lanes which permit single occupant vehicles to utilize the high-occupancy vehicle (HOV) lane by paying a toll. These terms are often used interchangeably.

[44] While the ramp braids and collector-distributor roads will address traffic operational issues, the interchange spacing remains non-standard, requiring a mandatory design exception fact sheet.

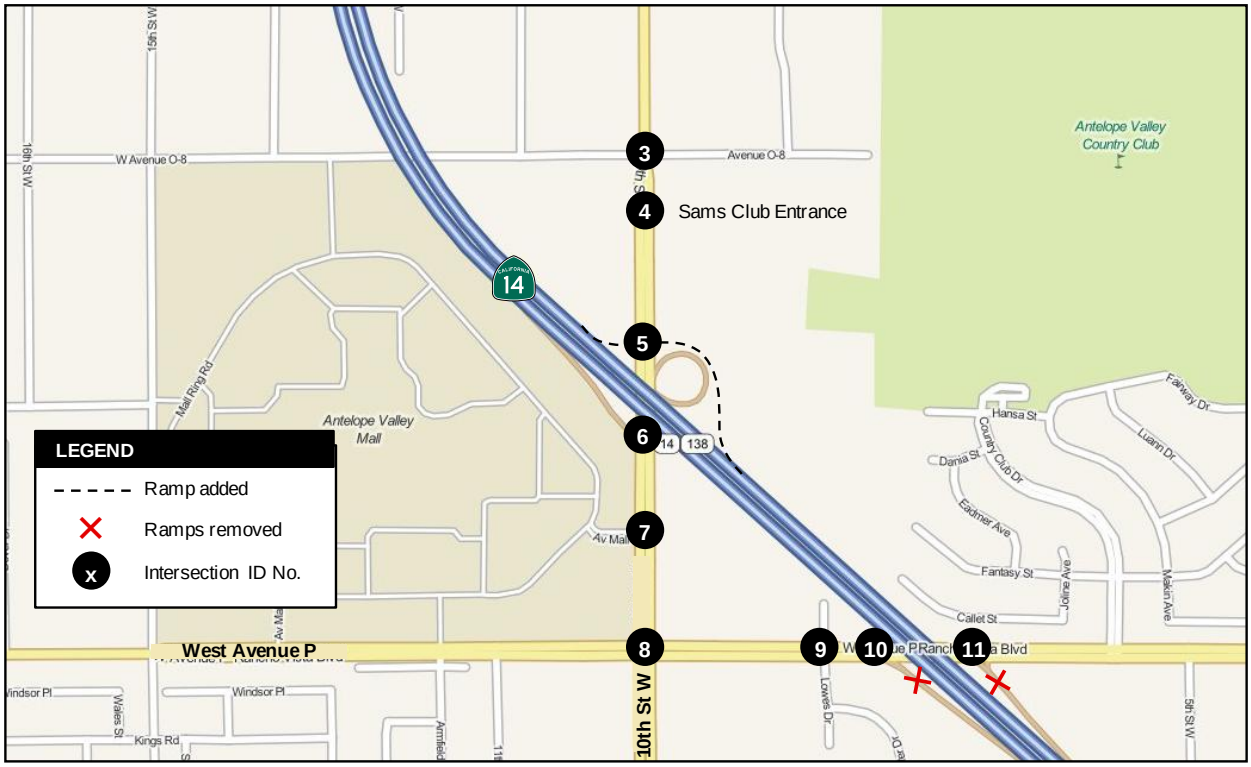


Figure 4-46. Freeway Access Modifications near Antelope Valley Mall

Table 4-56. Intersection Level of Service near Antelope Valley Mall

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
3	10th Street West and West Avenue O-8	Signal	C	23.5	C	24.9	C	27.0	D	41.2	C	26.3	C	22.2
4	10th Street West and Sam's Club access	Signal	B	16.5	B	14.1	B	17.4	B	17.6	B	16.0	B	12.5
5	10th Street West and SR 14 northbound on-ramp	Signal	Does not exist				Does not exist				B	12.8	A	9.4
6	10th Street West and SR 14 southbound off-ramp	Signal	B	13.2	B	11.4	C	21.3	D	54.8	C	21.9	C	20.2
7	10th Street West and Mall Ring Road	Signal	B	10.9	C	22.6	C	22.1	D	42.3	C	23.3	C	20.1
8	10th Street West and West Avenue P	Signal	C	31.3	C	30.3	C	32.7	E	74.8	C	29.0	C	28.7
9	Lowe's Driveway and West Avenue P	Signal	B	10.2	C	29.1	B	18.2	E	65.7	B	19.3	B	15.5
10	SR 14 southbound on-ramp and West Avenue P	Exi-Stop NB/SB Future-Signal	A	1.4	A	1.0	A	1.7	E	43.0	N/A	N/A	N/A	N/A
11	SR 14 northbound off-ramp and West Avenue P	Signal	B	14.3	C	20.6	A	8.5	E	55.4	N/A	N/A	N/A	N/A

As defined in section 4.1, the Antelope Valley segment of the High Desert Corridor extends from SR 14 to 100th Street East in Palmdale, a distance of approximately 10 miles. Under all build alternatives, the freeway would be four lanes wide in each direction from SR 14 to 50th Street East, and three lanes wide in each direction east of 50th Street. The design of the facility would allow for four mixed flow lanes plus one HOV lane per direction, with the additional lanes to be constructed in the median.

The High Desert segment would extend from 100th Street East in Palmdale to Caughlin Road in Adelanto. This portion of the corridor would provide three mixed flow lanes per direction.[45] A fourth mixed flow lane plus an HOV lane could be constructed in the median as traffic conditions warrant. This same cross section would continue in the Victor Valley segment from Caughlin Road to Dale Evans Parkway in Apple Valley.

[45]Four mixed flow lanes are proposed in the westbound direction between the Phantom West interchange and 210th Street East.

The facility continues east of Dale Evans Parkway as a four-lane expressway, providing two mixed-flow lanes in each direction. Right-of-way would be acquired to allow for construction of up to a 10-lane multimodal facility.

The portion of the High Desert Corridor freeway between 90th Street East in Palmdale and U.S. 395 in Adelanto may be tolled for some (single occupant and trucks) or all vehicle types, including high-occupancy vehicles.

4.11.2 Park-and-ride Lots

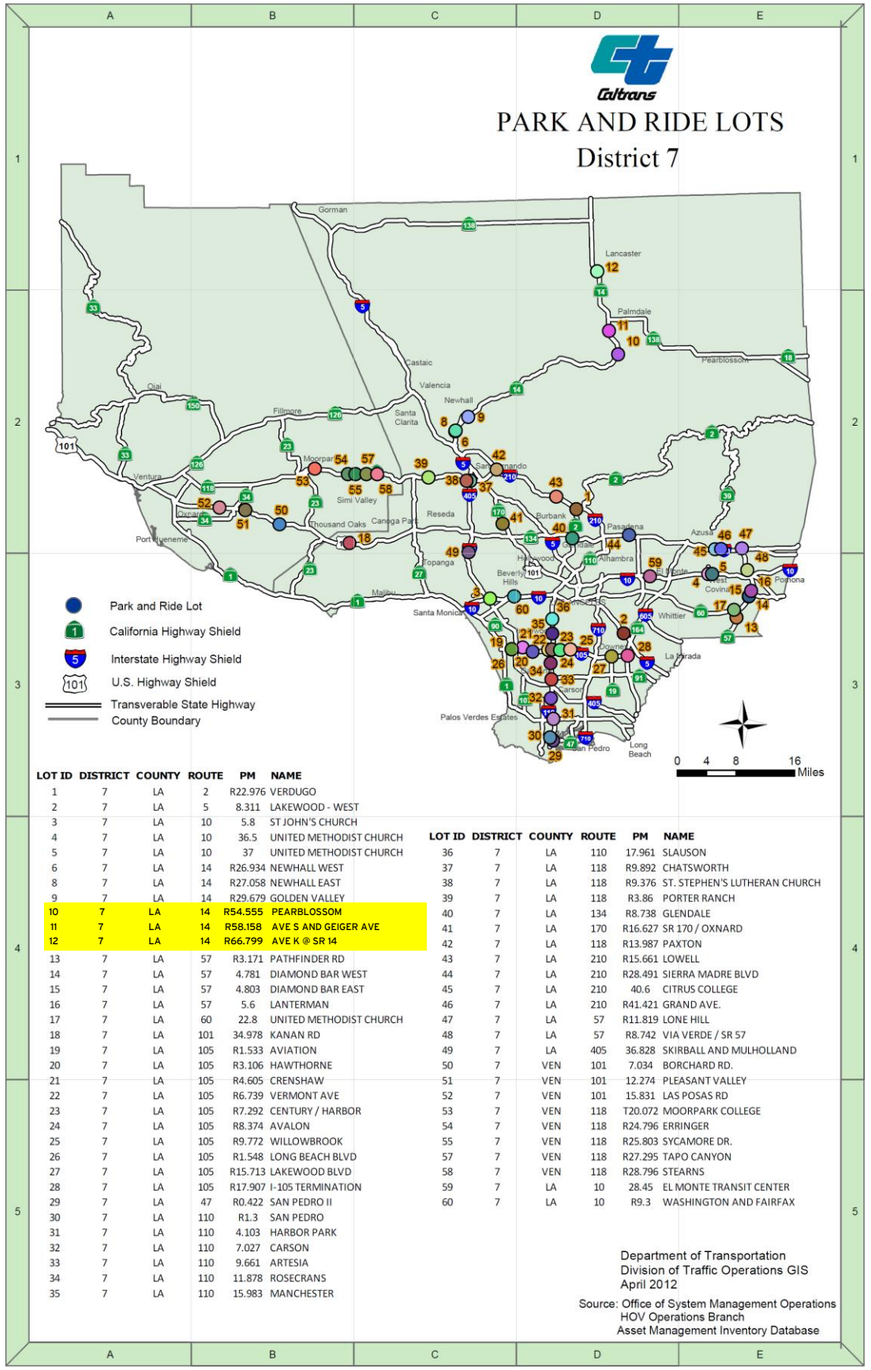
Caltrans has developed a park-and-ride program which supports transit service and carpooling. The goals of the program include increasing the person throughput on the state highway system, decreasing the number of vehicle trips, decreasing the greenhouse gas and air pollution associated with transportation, and decreasing congestion on transportation facilities.

The location of park-and-ride facilities located throughout Caltrans District 7 and 8 are illustrated on Figure 4-47, with lots located within the High Desert Corridor highlighted on the accompanying inventory of facilities.

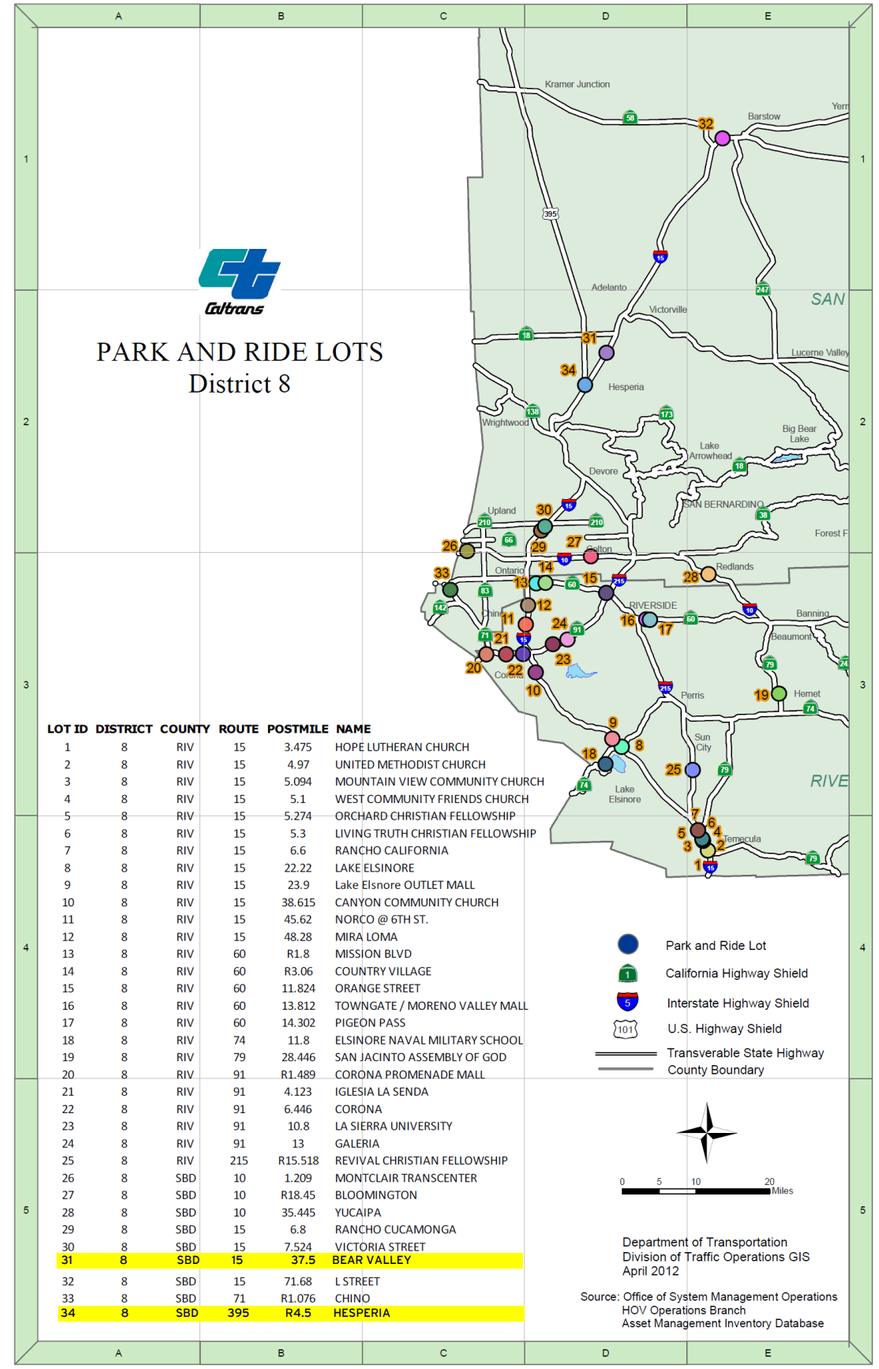
- Lot ID #10 District 7 is located within the SR 14 interchange with Sierra Highway, adjacent to the southbound on-ramp and the northbound off-ramp. The lot is owned by the State and has 213 spaces.
- Lot ID #11 District 7 is located along West Avenue S at Geiger Road. The facility has 430 spaces and is owned by the state. A short distance away, along East Avenue S, at 2nd/3rd Street East, a 1,082-space park-and-ride lot is situated. This lot is owned by the City of Palmdale. A third park-and-ride lot is located on West Avenue R-8 at Pelona Vista Park. This facility provides 445 spaces.
- Lot ID #12 District 7 is located at SR 14 and West Avenue K, within the southbound loop on-ramp. The lot has 118 spaces and owned by the State.
- Lot ID #31 District 8 is located at the I-15 interchange with Bear Valley Road. The 70-space lot is well utilized and is accessed from Amargosa Road, adjacent to the southbound I-15 on-ramp. The lot is owned by the State.
- Lot ID #34 District 8 is located adjacent to U.S. 395 at Joshua Street in Hesperia, immediately west of I-15. The 186 spaces in this lot are routinely well-utilized. The City of Hesperia and the State own and operate the lot.

In addition to the above auto-to-auto mode transfer facilities, auto to transit park-and ride facilities are located at the Victor Valley Transit Center in Victorville, along D Street east of I-15, and the Palmdale Transportation Center, located north of East Palmdale Boulevard.

As an add-on element to the High Desert Corridor project, two park-and-ride lots are recommended for construction in conjunction with the build freeway alternatives. One of these lots should be located in Palmdale adjacent to the High Desert Corridor interchange at 50th Street East, and the second lot should be located in Adelanto near the High Desert Corridor interchange at U.S. 395. Caltrans' *Park and Ride Program Resource Guide*, 2010, should be consulted by local sponsoring agencies, such as the Los Angeles County Metropolitan Transportation Authority, to advance the development of these recommended add-on elements.



LOT ID	DISTRICT	COUNTY	ROUTE	PM	NAME
1	7	LA	2	R22.976	VERDUGO
2	7	LA	5	8.311	LAKEWOOD - WEST
3	7	LA	10	5.8	ST JOHN'S CHURCH
4	7	LA	10	36.5	UNITED METHODIST CHURCH
5	7	LA	10	37	UNITED METHODIST CHURCH
6	7	LA	14	R26.934	NEWHALL WEST
8	7	LA	14	R27.058	NEWHALL EAST
9	7	LA	14	R29.679	GOLDEN VALLEY
10	7	LA	14	R54.555	PEARBLOSSOM
11	7	LA	14	R58.158	AVE S AND GEIGER AVE
12	7	LA	14	R66.799	AVE K @ SR 14
13	7	LA	57	R3.171	PATHFINDER RD
14	7	LA	57	4.781	DIAMOND BAR WEST
15	7	LA	57	4.803	DIAMOND BAR EAST
16	7	LA	57	5.6	LANTERMAN
17	7	LA	60	22.8	UNITED METHODIST CHURCH
18	7	LA	101	34.978	KANAN RD
19	7	LA	105	R1.533	AVIATION
20	7	LA	105	R3.106	HAWTHORNE
21	7	LA	105	R4.605	CRENSHAW
22	7	LA	105	R6.739	VERMONT AVE
23	7	LA	105	R7.292	CENTURY / HARBOR
24	7	LA	105	R8.374	AVALON
25	7	LA	105	R9.772	WILLOWBROOK
26	7	LA	105	R1.548	LONG BEACH BLVD
27	7	LA	105	R15.713	LAKEWOOD BLVD
28	7	LA	105	R17.907	I-105 TERMINATION
29	7	LA	47	R0.422	SAN PEDRO II
30	7	LA	110	R1.3	SAN PEDRO
31	7	LA	110	4.103	HARBOR PARK
32	7	LA	110	7.027	CARSON
33	7	LA	110	9.661	ARTESIA
34	7	LA	110	11.878	ROSECRANS
35	7	LA	110	15.983	MANCHESTER
36	7	LA	110	17.961	SLAUSON
37	7	LA	118	R9.892	CHATSWORTH
38	7	LA	118	R9.376	ST. STEPHEN'S LUTHERAN CHURCH
39	7	LA	118	R3.86	PORTER RANCH
40	7	LA	134	R8.738	GLENDALE
41	7	LA	170	R16.627	SR 170 / OXNARD
42	7	LA	118	R13.987	PAXTON
43	7	LA	210	R15.661	LOWELL
44	7	LA	210	R28.491	SIERRA MADRE BLVD
45	7	LA	210	40.6	CITRUS COLLEGE
46	7	LA	210	R41.421	GRAND AVE.
47	7	LA	57	R11.819	LONE HILL
48	7	LA	57	R8.742	VIA VERDE / SR 57
49	7	LA	405	36.828	SKIRBALL AND MULHOLLAND
50	7	VEN	101	7.034	BORCHARD RD.
51	7	VEN	101	12.274	PLEASANT VALLEY
52	7	VEN	101	15.831	LAS POSAS RD
53	7	VEN	118	T20.072	MOORPARK COLLEGE
54	7	VEN	118	R24.796	ERRINGER
55	7	VEN	118	R25.803	SYCAMORE DR.
57	7	VEN	118	R27.25	TAPO CANYON
58	7	VEN	118	R28.796	STEARNS
59	7	LA	10	28.45	EL MONTE TRANSIT CENTER
60	7	LA	10	R9.3	WASHINGTON AND FAIRFAX



LOT ID	DISTRICT	COUNTY	ROUTE	POSTMILE	NAME
1	8	RIV	15	3.475	HOPE LUTHERAN CHURCH
2	8	RIV	15	4.97	UNITED METHODIST CHURCH
3	8	RIV	15	5.094	MOUNTAIN VIEW COMMUNITY CHURCH
4	8	RIV	15	5.1	WEST COMMUNITY FRIENDS CHURCH
5	8	RIV	15	5.274	ORCHARD CHRISTIAN FELLOWSHIP
6	8	RIV	15	5.3	LIVING TRUTH CHRISTIAN FELLOWSHIP
7	8	RIV	15	6.6	RANCHO CALIFORNIA
8	8	RIV	15	22.22	LAKE ELSINORE
9	8	RIV	15	23.9	Lake Elsnore OUTLET MALL
10	8	RIV	15	38.615	CANYON COMMUNITY CHURCH
11	8	RIV	15	45.62	NORCO @ 6TH ST.
12	8	RIV	15	48.28	MIRA LOMA
13	8	RIV	60	R1.8	MISSION BLVD
14	8	RIV	60	R3.06	COUNTRY VILLAGE
15	8	RIV	60	11.824	ORANGE STREET
16	8	RIV	60	13.812	TOWNGATE / MORENO VALLEY MALL
17	8	RIV	60	14.302	PIGEON PASS
18	8	RIV	74	11.8	ELSINORE NAVAL MILITARY SCHOOL
19	8	RIV	79	28.446	SAN JACINTO ASSEMBLY OF GOD
20	8	RIV	91	R1.489	CORONA PROMENADE MALL
21	8	RIV	91	4.123	IGLESIA LA SENDA
22	8	RIV	91	6.446	CORONA
23	8	RIV	91	10.8	LA SIERRA UNIVERSITY
24	8	RIV	91	13	GALERIA
25	8	RIV	215	R15.518	REVIVAL CHRISTIAN FELLOWSHIP
26	8	SBD	10	1.209	MONTCLAIR TRANSCENTER
27	8	SBD	10	R18.45	BLOOMINGTON
28	8	SBD	10	35.445	YUCAIPA
29	8	SBD	15	6.8	RANCHO CUCAMONGA
30	8	SBD	15	7.524	VICTORIA STREET
31	8	SBD	15	37.5	BEAR VALLEY
32	8	SBD	15	71.68	L STREET
33	8	SBD	71	R1.076	CHINO
34	8	SBD	395	R4.5	HESPERIA

Figure 4-47: Locations of Caltrans District 7 and District 8 Park-and-ride Facilities

4.11.3 Intelligent Transportation System Strategies

The Los Angeles County Metropolitan Transportation Authority, Caltrans Districts 7 and 8, Caltrans New Technology and Research Program, Southern California Association of Governments and San Bernardino Associated Governments, as well as various cities and transportation agencies within the High Desert region are working to identify intelligent transportation systems application opportunities within the High Desert Corridor. To date, several programs have been developed to integrate and expand intelligent transportation systems in the region:

- ***Communication Network Development Program***
  Connects different agencies within the region to allow coordination in operating and managing the transportation system.
- ***Traffic and Incident Management Program***
  Integrates various state, regional, and local agencies serving Los Angeles County and San Bernardino County into a comprehensive, region-wide approach to traffic and incident management. Examples include census stations, system and/or incident detectors, coordinated incident management procedures, and freeway changeable message signs.
- ***Traveler Safety Program***
  Combines applications that address safety, such as weather stations, smart studs, and rock-fall detection systems.
- ***Informed Traveler Program***
  Uses advanced warning systems for the reduction of accidents and congestion. Examples include advanced traveler information system development, transportation operations center upgrades, and interactive commuter kiosks.
- ***Enhanced Emergency Response Program***
  Provides police, sheriff, fire ambulance, and other service providers with tools that determine quickly and accurately which routes will be most beneficial. Examples include workstations for emergency response providers and establishing emergency corridor routes.

Insofar as the High Desert Corridor project, the Traffic and Incident Management Program is the most applicable potential add-on element for the no-build, transportation systems management alternative, and the build freeway/expressway alternatives.

Intelligent transportation systems elements pertaining to I-15, SR 14, SR 18 and the High Desert Corridor freeway segments include:

- ***Closed circuit television to improve traffic surveillance***
  Closed circuit television is used primarily to monitor traffic conditions, to respond quickly to incidents, and to provide information to motorists.
- ***Vehicle detection system to improve traffic surveillance***
  Vehicle detection system loops are installed on mainline freeway lanes to allow Caltrans and the California Highway Patrol to monitor traffic volume, speed and congestion.
- ***Ramp metering to improve traffic management***
  Ramp metering can be added to existing as well as installed on new interchange ramps to regulate the flow of vehicles from the arterial streets on to the freeway system, to optimize flow and minimize turbulence caused by heavy traffic attempting to enter the right-hand lanes of the freeway.
- ***Changeable message signs to improve motorist information***
  These signs allow Caltrans and the California Highway Patrol to post travel times, incident alerts, construction/detour information and other real-time information to assist motorists in making route choice decisions.

- ***Adaptive traffic signal control to improve traffic management***
  Links Caltrans traffic management centers with city traffic management centers. Provides the capability to adapt traffic signal timing system-wide to respond dynamically to highly variable travel conditions.

Implementation of these potential ITS elements will require add-on investments in backbone communication links and systems such as fiber optics networks, custom software development and interagency agreements. Caltrans considers these types of intelligent transportation systems deployments to be **high risk.** As such, the specific definition of appropriate intelligent transportation systems add-on elements for the High Desert Corridor freeway system is beyond the purview of this investigation. Nevertheless, the installation of ramp metering equipment is being included in the design plans for the build freeway alternatives. The addition of ramp meters to existing interchanges along SR 14 and I-15 beyond the limits of the High Desert Corridor project should be considered as additional add-on investments.

Taken collectively, the add-on elements outlined above do not by themselves address the purpose of the High Desert Corridor project. As such, they do not represent a viable project alternative. The add-on elements, individually or collectively, can however, contribute to accommodating east–west travel in the High Desert region and reducing congestion.

4.12 Traffic Implications of Widening State Route 138 from Interstate 5 to State Route 14

Section 3.3 of this traffic study report addresses Highway Network Assumptions. The report indicates that the **Baseline 2035 System** is assumed as the background, no project condition, with the addition of select improvements as identified in section 3.3.

Consistent with Caltrans District 7, 8 and 12 practice, the remaining elements (non-RTIP) of the **Plan 2035 System** are not assumed as the background condition for environmental impact or design purposes. While projects listed in the regional transportation plan are financially constrained, projects assumed to be implemented in distant horizon years are not necessarily funded. As these far distant projects are subject to reprioritization every regional transportation plan cycle, Caltrans assumes a conservative posture with respect to facilities that are not programmed (funded) for relatively near-term construction.

The High Desert Corridor project is identified as RTP ID 1C0404 of the Southern California Association of Government's Amendment #4 to the *2008 Regional Transportation Plan*. One element of Project 1C0404 not addressed by the High Desert Corridor project is the "east–west expressway 3-lanes each direction on SR-138 from I-5 to SR-14." This element was not included in the *Baseline 2035 System* and was not, therefore, included as a background highway network assumption.

To determine the potential impact of improving SR 138 from I-5 to SR 14 on the design requirements for the High Desert Corridor new freeway/expressway, a sensitivity test was conducted. The results of this sensitivity test are reported in section 3.12 and this section 4.12.

Daily, morning and afternoon peak hour traffic forecasts were prepared for the 2035 highway network assuming the Southern California Association of Governments adopted *2008 Regional Transportation Plan* growth forecast for 2035 (now equal to a 2040 planning horizon). These results were presented in Tables 3-19, 3-20, and 3-21 alongside the forecasts prepared for the full-build High Desert Corridor

freeway/expressway alternative. The land use assumed for both scenarios was identical and the highway/transit networks were identical except for the SR 138 widening project between I-5 and SR 14.

Figure 4-48 illustrates the concentration of daily traffic, by way of bandwidths, on freeways and major arterial streets assuming the widening of SR 138 to a six-lane expressway between I-5 and SR 14. Daily two-direction traffic volumes are listed on the graphic for two scenarios. The top listed volume reflects the "bandwidths" for the SR 138 widening scenario. The bottom listed volume reflects the no-build condition for SR 138.

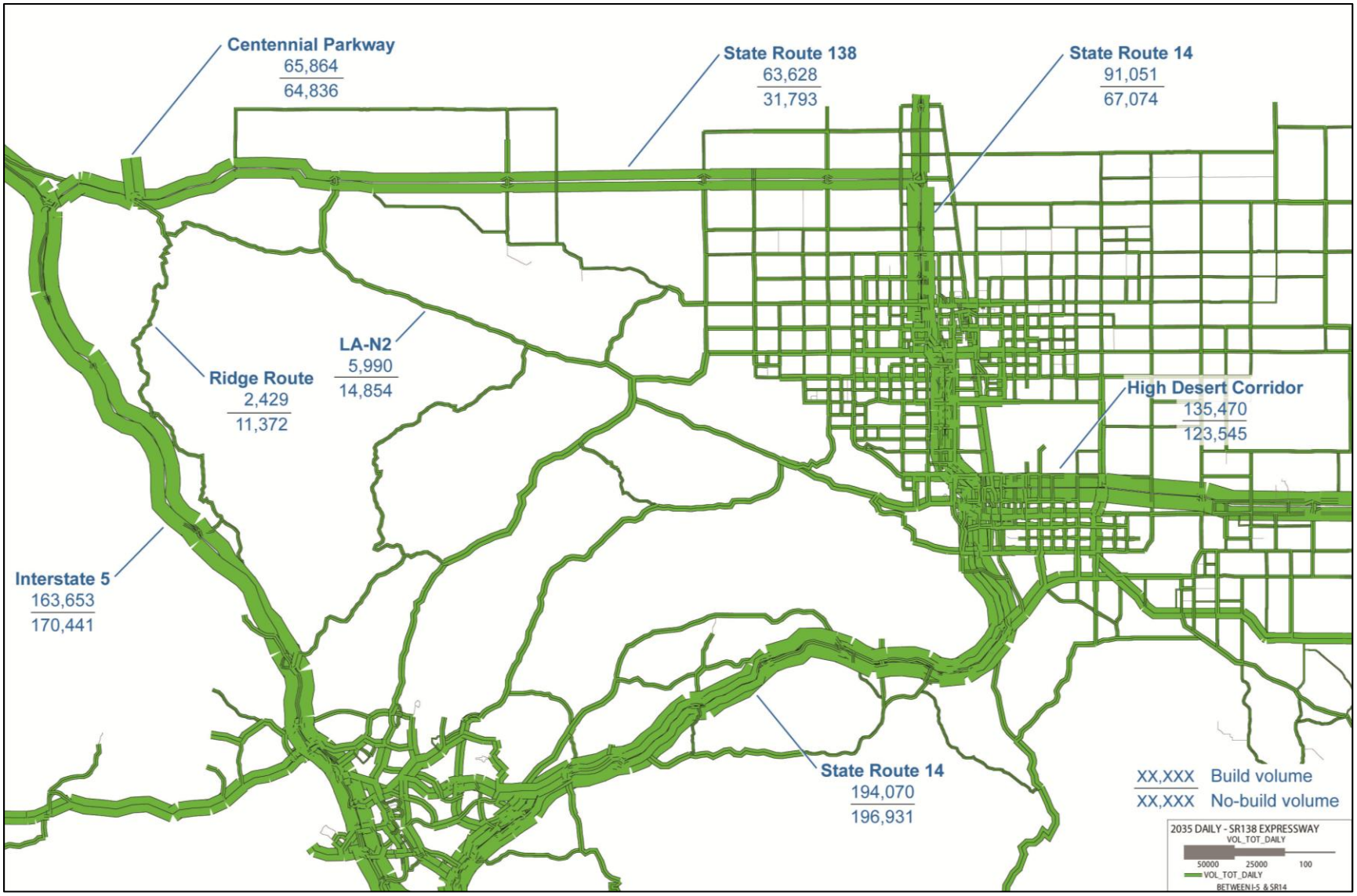
Under no-build conditions, traffic volumes are constrained along SR 138 east of the proposed Centennial Parkway. As a result, the Southern California Association of Governments model assigns traffic to alternative routes such as the old Ridge Route and Los Angeles County Road N-2. Also, due to less capacity along SR 138, the distribution of traffic is different between the two roadway scenarios. Under the build scenario, more Centennial Parkway traffic is destined to Lancaster and Palmdale compared to the no-build (widen SR 138) scenario.

Insofar as the traffic implications of widening SR 138 on the High Desert Corridor, Figure 4-42 indicates that daily traffic volumes on the High Desert Corridor freeway, west of 50th Street East, would be approximately 11,900 vehicles per day higher, a 9.7 percent increase. Figure 4-43 provides some additional evidence of this route choice pattern, focused on the High Desert Corridor. The graphic illustrates the difference in daily traffic volumes (assigned to the highway network by the Southern California Association of Governments model) between the SR 138 widening scenario and the no widening scenario. The High Desert Corridor full build freeway/expressway is assumed under both test scenarios. Only volume increases are plotted, with the magnitude of the volume illustrated by the bandwidths.

Tables 3-19, 3-20, and 3-21 provide a link-by-link accounting of the daily and peak hour traffic volumes forecast for the SR 14, High Desert Corridor and I-15 freeway mainline and ramps. Figure 4-49 illustrates that the influence of the SR 138 widening project is greater in the Antelope Valley segment of the High Desert Corridor and much less in the Victor Valley segment of the corridor. Peak hour volume differences are listed in Table 4-57 for a representative selection of mainline segments along the High Desert Corridor freeway.

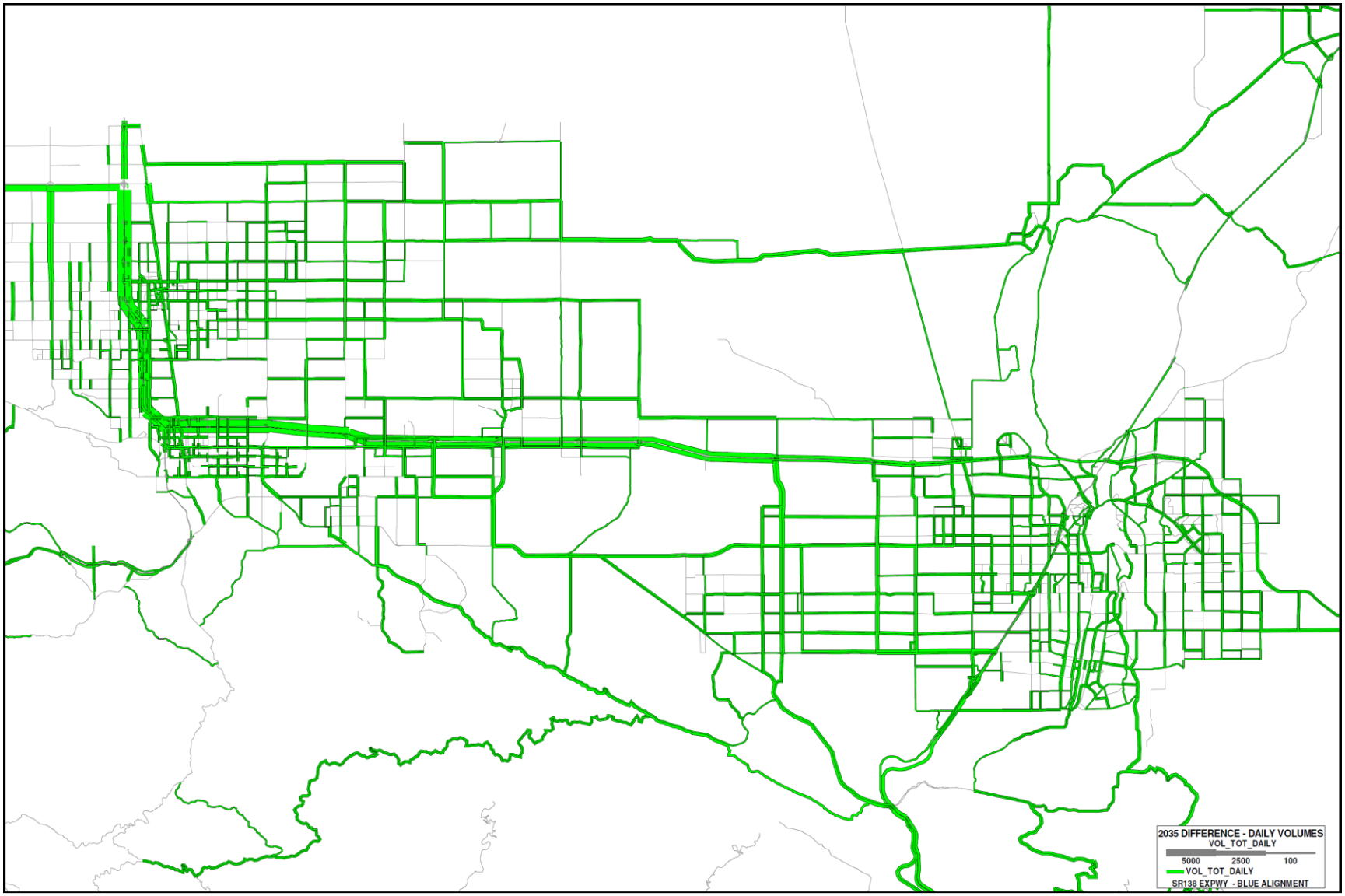
Table 4-20, pages 2 of 4 and 3 of 4, report the results of the level of service analysis for the year 2040 full build alternative. These tables indicate that the High Desert Corridor freeway is expected to operate at LOS B and C conditions, for the most part, throughout the length of the facility between SR 14 and I-15. It appears that traffic flowing to and from a widened SR 138 (between I-5 and SR 14) can therefore be accommodated along the High Desert Corridor freeway at LOS D or better.

When, and if needed, the High Desert Corridor freeway/expressway may be widened within its ultimate 10-lane cross section to accommodate increased volumes, which may result from widening SR 138 west of SR 14.



Source: Parsons

Figure 4-48: Year 2035 Daily Traffic Volumes on Freeways and Arterials *(SR 138 Widening Test Scenario)*



Source: Parsons

Figure 4-49: Year 2035 Difference in Daily Traffic Volumes between the Widen SR 138 Test Scenario and the No Widen Scenario

Table 4-57. Year 2035 Freeway Peak Hour Demand Volume Difference—SR 138 Widening Test Scenario

HIGH DESERT CORRIDOR SEGMENT DESCRIPTION	FULL BUILD ALTERNATIVE			FULL BUILD *WITH* SR 138 WIDENING			SR 138 WIDENING *MINUS* NO WIDENING		
	PEAK HOUR			PEAK HOUR			PEAK HOUR		
	AM	PM	DAILY	AM	PM	DAILY	AM	PM	DAILY
EB ML–SR 14 and 10th Street E.	4,955	5,830	68,865	5,940	6,905	76,380	985	1,075	7,515
WB ML–SR 14 and 10th Street E.	3,755	5,790	60,575	4,425	7,305	69,800	670	1,515	9,225
EB ML–10th Street E. and 20th Street E.	5,275	6,005	72,850	6,170	7,035	79,005	895	1,030	6,155
WB ML–10th Street E. and 20th Street E.	3,930	6,135	66,750	4,485	7,530	74,565	555	1,395	7,815
EB ML–20th Street E. and 50th Street E.	4,895	5,250	64,610	5,675	6,125	69,570	780	875	4,960
WB ML–20th Street E. and 50th Street E.	3,385	5,740	58,935	3,880	6,980	65,900	495	1,240	6,965
EB ML–70th Street E. and 90th Street E.	4,835	4,720	60,555	5,385	5,450	64,155	550	730	3,600
WB ML–70th Street E. and 90th Street E.	2,915	5,645	54,695	3,190	6,605	60,025	275	960	5,330
EB ML–90th Street E. and Longview Rd	4,825	4,550	58,560	5,395	5,125	62,330	570	575	3,770
WB ML–90th Street E. and Longview Rd	2,700	5,635	52,605	2,880	6,430	56,995	180	795	4,390
EB ML–Longview Rd and 170th Street E.	4,730	4,235	55,025	5,200	4,685	57,925	470	450	2,900
WB ML–Longview Rd and 170th Street E.	2,320	5,555	49,500	2,410	6,085	52,800	90	530	3,300
EB ML–170th Street E. and Largo Vista Rd	4,950	4,290	55,290	5,385	4,675	57,945	435	385	2,655
WB ML–170th Street E. and Largo Vista Rd	2,320	5,795	50,220	2,375	6,260	52,910	55	465	2,690
EB ML–Largo Vista Rd and 240th Street E.	5,070	4,305	55,830	5,505	4,675	58,425	435	370	2,595
WB ML–Largo Vista Rd and 240thStreet E.	2,325	6,115	52,350	2,375	6,495	54,910	50	380	2,560
EB ML–240th Street E. and Oasis Rd	5,290	4,490	58,090	5,545	4,725	59,830	255	235	1,740
WB ML–240th Street E. and Oasis Rd	2,475	6,395	54,530	2,490	6,690	56,905	15	295	2,375
EB ML–Oasis Rd and Sheep Creek Rd	5,265	4,465	57,350	5,395	4,665	58,720	130	200	1,370
WB ML–Oasis Rd and Sheep Creek Rd	2,475	6,350	53,670	2,490	6,545	55,945	15	195	2,275
EB ML–Sheep Creek Rd and Caughlin Rd	4,690	4,320	52,140	4,705	4,275	53,105	15	–45	965
WB ML–Sheep Creek Rd and Caughlin Rd	2,625	5,640	49,140	2,640	5,710	50,765	15	70	1,625
EB ML–Caughlin Rd and Koala Rd	4,055	3,635	43,750	4,070	3,655	44,460	15	20	710
WB ML–Caughlin Rd and Koala Rd	2,165	5,000	41,100	2,180	5,045	42,105	15	45	1,005
EB ML–Koala Rd and U.S. 395	4,695	4,020	49,485	4,740	4,035	49,990	45	15	505
WB ML–Koala Rd and U.S. 395	2,500	5,740	46,060	2,505	5,750	46,780	5	10	720
EB ML–U.S. 395 and Phantom West	5,250	4,505	57,225	5,270	4,560	57,175	20	55	–50
WB ML–U.S. 395 and Phantom West	2,855	6,235	55,820	2,875	6,245	56,470	20	10	650
EB ML–Phantom West and Phantom East	4,150	4,360	44,120	4,160	4,380	44,135	10	20	15
WB ML–Phantom West and Phantom East	2,815	5,035	42,465	2,805	5,045	43,495	10	10	1,030
EB ML–Phantom East and National Trails Hwy	4,150	5,295	55,135	4,200	5,350	54,980	50	55	–155
WB ML–Phantom East and National Trails Hwy	3,905	5,140	52,580	3,920	5,175	53,035	15	35	455
EB ML–Gateway Dr and I-15	4,045	5,070	52,730	4,100	5,085	52,575	55	15	155
WB ML–Gateway Dr and I-15	3,745	4,965	50,500	3,775	5,000	50,960	30	35	460
EB ML–I-15 and Choco Rd	2,295	2,500	21,905	2,320	2,520	21,895	25	20	–10
WB ML–I-15 and Choco Rd	1,730	3,050	22,445	1,740	3,075	22,810	10	25	365
EB ML–Choco Rd and Dale Evans Pkwy	2,195	2,260	19,790	2,215	2,285	19,775	20	25	15
WB ML–Choco Rd and Dale Evans Pkwy	1,500	2,830	20,270	1,510	2,875	20,460	10	45	190

As the SR 138 widening project by itself has relatively little impact on the design of the High Desert Corridor freeway/expressway, a **cumulative** impact scenario was tested as reported in section 4.13. The cumulative impact scenario includes the SR 138 widening project along with the Antelope Valley Inland Port and local land use projections. This cumulative scenario is examined using the microsimulation CORSIM model in addition to the macrosimulation Southern California Association of Governments' travel forecast model.

4.13 Traffic Implications of Antelope Valley Inland Port and Local Land Use Projections

4.13.1 General Description of Planning Variable Assumptions for Sensitivity Testing

Section 3.2 of this traffic study report addressed land use assumptions. The report indicates that the Southern California Association of Governments' (SCAG) *2008 Regional Transportation Plan Growth Forecasts* is the basis of the planning variables (population, households and employment) underlying the traffic volume forecasts reported in section 3.6. These traffic volume forecasts are reported in Tables 3-9 through 3-14 for the no-build and build alternatives addressed in this report.

In addition to the SCAG land use assumptions used for design and environmental impact analysis, an alternative land use data set was tested for a subset of the build alternatives reflecting the following:

- City of Palmdale growth assumptions, which accommodate higher levels of employment and lower levels of housing development. The "Antelope Valley Inland Port" development potential, located adjacent to the Palmdale Regional Airport, serving as an aerospace economic development cluster, and research and development and /or logistics distribution center.
- San Bernardino Associated Governments' projections of population, housing and employment for the Victor Valley portion of the study area—which are generally, but not uniformly, higher than the Southern California Association of Governments adopted 2008 growth forecast.
- Development of the Desert Gateway Specific Plan land use, set equal to 60 percent of the projected population and employment at buildout.

The results of this land use sensitivity test are reported in section 3.12 of this document insofar as traffic volumes, while the traffic operations analysis of this scenario is reported below.

Within the Antelope Valley portion of the High Desert corridor, the City of Palmdale growth assumptions would increase 2035 (2040) local employment by 55,498 jobs and decrease households by 42,016 compared to the Southern California Association of Governments regional forecasts. These changes include job increases associated with the Antelope Valley Inland Port, discussed in further detail below.

Within the Victor Valley portion of the High Desert Corridor, the San Bernardino Associated Governments' projections of population, housing and employment would yield the following net changes compared to the SCAG 2008 growth forecast:

- Population –1,329
- Households +1,332
- Employment +25,502

Insofar as the Antelope Valley Inland Port, realization of this land use potential would account for the vast majority of the difference reflected in the Palmdale growth assumptions compared with the SCAG 2008 growth forecast. Three SCAG traffic analysis zones numbered 364, 365 and 383, comprise the majority of vacant lands available for inland port development. The Palmdale/Antelope Valley Inland Port 2035 (2040) assumptions of population, housing and employment are listed below along with the SCAG projections for these three traffic analysis zones.

	Palmdale/Antelope Valley Inland Port	Southern California Association of Governments	Net Change
► Population	4,904	34,930	–30,026
► Households	1,378	10,580	–9,202
► Employment	65,641	18,134	+45,507

4.13.2 Antelope Valley Inland Port Assumptions

An inland port has been proposed for lands surrounding the Palmdale Regional Airport, to the west and southeast of the airport. These lands are designated for commercial use in Palmdale's General Plan. Significant levels of employment are envisioned, as noted above. No specific plan for the Antelope Valley Inland Port currently exists. Initially, the port was envisioned as a *satellite marine terminal* that would function as an extension of the Los Angeles/Long Beach marine-to-truck intermodal facilities. This vision of an inland port was guided by SCAG's regional objective of reducing truck-based vehicle miles traveled. Laden containers arriving at the marine ports would be transferred to rail (containers on flat cars), and shuttled to inland ports, where a second transfer to truck would occur, for travel to nearby distribution centers. Given the concentrations of distribution centers in the Los Angeles region, south of the San Gabriel Mountain range, inland ports located in the High Desert were not ideally located to support this satellite marine terminal concept.

As inland ports come in many varieties, the Antelope Valley Inland Port remains as a potential future development for lands surrounding the Palmdale Regional Airport. The Alliance California trade and logistics center, located adjacent to the San Bernardino International Airport, provides an example for modeling the Antelope Valley inland port. Alliance California has attracted aircraft-related business centers and commercial distribution centers. By virtue of its centralized location, this inland port has successfully attracted some 64 million square feet of development and more than 29,000 jobs since 2000.

For the purpose of analyzing the potential impacts of an Antelope Valley inland port development on the High Desert Corridor freeway/expressway project, the Antelope Valley inland port is defined as **an expansion of the existing Antelope Valley aerospace economic development cluster.**

The existing Antelope Valley aerospace economic cluster is comprised of Air Force Plant 42 in Palmdale, Edwards Air Force Base (specifically the Air Force Flight Test Center) located to the immediate north of Lancaster, and the Naval Air Weapons Station at China Lake. Collectively, nearly 30,000 military, federal civilians and private contract personnel are employed at this cluster. Top civilian contractors include Lockheed Martin, Northrop Grumman, Boeing, General Electric, Pratt and Whitney, and Rockwell International.

The U.S. Economic Development Agency defines clusters as "geographic concentrations of competing, complementary or interdependent firms that do business with each other and/or have common needs for talent, technology and infrastructure."

Within the aerospace industry, there are different types of clusters. In the United States, Seattle tends to focus on large aircraft assembly; Dallas-Ft. Worth produces state-of-the-art fighters; Wichita is known for corporate and general aviation aircraft; while Cincinnati produces some of the world's finest jet engines. The Antelope Valley has its own niche market; that being advanced military aircraft and weapons systems. Due to the enormous human and financial capital invested in clusters, they tend to be long-term in nature. Hence, once a major manufacturing plant is established, such as Plant 42, sub-tier suppliers tend to locate in close proximity to the plant increasing the density and efficiency of the overall cluster.

Clusters are important because they make firms more competitive – where the geographic proximity of competitors, customers, and suppliers promotes efficiencies, specialization, product improvements and innovation. Furthermore, since clusters tend to possess higher levels of talent and information, they also tend to attract higher levels of research and development. There is also evidence which suggests that members of a cluster tend to be more profitable than their non-member counterparts.[46]

The Los Angeles County Economic Development Corporation reports that "although employment has been on a downward trend, the (aerospace) cluster's share of total (Los Angeles) county employment has demonstrated some resilience since the recession." Also, "over half of the state's employment in this vitally important cluster, and more than seven percent of the nation's (aerospace) employment, occurs in Los Angeles County."[47]

Insofar as the prospects for future growth, the Aerospace Industries Association reports the following in their *2011 Year-End Review and Forecast:*

"The U.S. aerospace industry booked a relatively strong performance in 2011, remaining one of the most significant contributors to the national economy. Despite persistently sluggish market conditions around the globe, annual sales are expected to top $218 billion in 2011, marking the eighth consecutive year of growth. The industry's robust workforce also points to the vital role played by aerospace in the U.S. economy. Directly and indirectly, aerospace employs more than two million Americans. Strong aircraft orders and the rollout of major new products have contributed greatly to the industry's performance.

"At year's end, annual sales are expected to be up across the board in 2011. Civil and military aircraft, missiles and the space sector are all expected to top their respective 2010 totals. Given that the demand for aftermarket products and services is closely tied to upstream market conditions, the U.S. aircraft maintenance, repair and overhaul sector also experienced somewhat of a resurgence in 2011, capturing a significant share of the nearly $50 billion global maintenance, repair and overhaul market. Absent a major economic downturn, the U.S. maintenance, repair and overhaul market is expected to register a 3.8 percent compound annual growth rate over the next five years."[48]

The Aerospace Industries Association report also provides interesting trend statistics (Table 4-58, Figure 4-50 and Table 4-59) and the following assessment of the military aircraft sector.

"The U.S. civil rotorcraft market is diverse, with the bulk of new deliveries coming from mature production lines. The market encompasses emergency medical service providers, offshore oil and gas exploration, and law enforcement applications. Following two years of significant decreases in sales, U.S. civil helicopter shipments are expected to increase to 454 aircraft in 2011, representing an annual increase of 5.3 percent. This upward trajectory is expected to continue into 2012 as demand deferred during the economic downturn reaches the market.

"Future sales also look promising, as exemplified by the $35 billion contract awarded to Boeing to build 179 KC-46A refueling tankers.

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[46] *Aerospace Manufacturing and Jobs: The Evolving Role of Clusters in the Aerospace Industry*, Center for Aviation & Aerospace Leadership, http://thecaalblog.com/strategic-planning/aerospace-manufacturing-and-jobs-the-evolving-role-of-clusters-in-the-aerospace-industry.html

[47] *Industry Clusters in Los Angeles County, 2012*, Los Angeles Economic Development Corporation

[48] *2011 Year-end Review and Forecast*, Aerospace Industries Association, www.aia-aerospace.org/assets/YE_Analysis.pdf

Table 4-58. Aerospace Industry Sales by Product Group *(Calendar Years 2001–2012)*

YEAR	TOTAL SALES	AIRCRAFT			MISSILES	SPACE	RELATED PRODUCTS AND SERVICES
		TOTAL	CIVIL	MILITARY			
CURRENT DOLLARS (billions)							
2001	151.63	86.47	51.26	35.22	10.39	29.50	25.27
2002	152.35	79.49	41.34	38.15	12.85	34.62	25.39
2003	146.03	72.84	32.44	40.40	13.49	35.86	23.84
2004	156.48	79.13	32.52	46.61	17.46	35.70	24.20
2005	167.13	86.66	37.16	49.50	18.44	36.66	25.36
2006	182.58	98.28	45.85	52.44	20.26	37.56	26.48
2007	196.53	105.60	152.55	53.05	21.98	39.90	29.06
2008	199.49	102.90	48.18	54.71	23.20	43.22	30.18
2009	208.87	110.18	51.30	58.88	24.22	45.04	29.44
2010	210.55	110.51	48.16	62.35	25.06	45.30	29.68
2011 (P)	218.08	116.19	49.68	66.51	25.57	46.36	29.96
2012 (E)	217.65	116.75	51.71	65.05	25.12	45.14	30.63
CONSTANT DOLLARS* (billions)							
2001	147.73	84.25	49.94	34.31	10.12	28.74	24.62
2002	145.98	76.16	39.61	36.55	12.31	33.18	24.33
2003	136.34	68.01	30.29	37.72	12.59	33.48	22.26
2004	141.76	71.68	29.46	42.22	15.81	32.34	21.93
2005	145.83	75.62	32.43	43.19	16.09	31.99	22.13
2006	153.78	82.78	38.62	44.16	17.06	31.63	22.30
2007	160.54	86.26	42.93	43.33	17.95	32.59	23.74
2008	157.13	81.04	37.95	43.09	18.28	34.04	23.77
2009	160.58	84.70	39.44	45.27	18.62	34.63	22.63
2010	159.91	83.93	36.58	47.35	19.03	34.41	22.54
2011 (P)	162.57	86.62	37.04	49.58	19.06	34.56	22.33
2012 (E)	159.59	85.61	37.91	47.68	18.42	33.10	22.46

Source: Aerospace Industries Association, based on company reports; *The Budget of the United States Government,* National Aeronautics and Space Administration (NASA), U.S. Department of Commerce, and Department of Defense.

*Based on Aerospace Industries Association's aerospace composite price deflator (2000 = 100)

(P) Preliminary
(E) Estimate

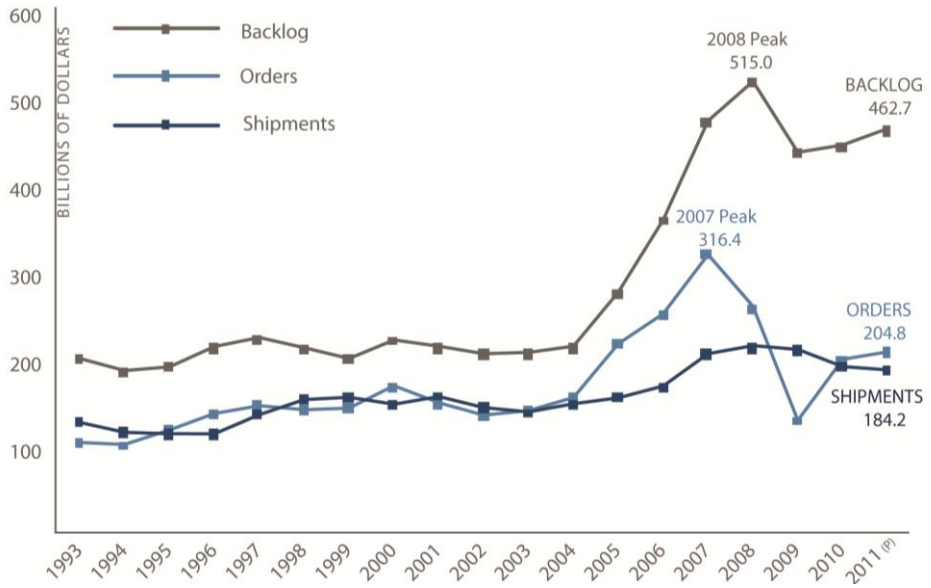


Figure 4-50: Aerospace Shipments, Orders and Backlog *(Years 1993–2011)*

Table 4-59. Aerospace Related Employment *(Calendar Years 2000–2011)*

YEAR	TOTAL EMPLOYMENT	AIRCRAFT, ENGINES, PARTS				GUIDED MISSILES, SPACE VEHICLES AND PARTS	SEARCH, DETECTION AND NAVIGATION INSTRUMENTS	PRODUCTION WORKERS
		TOTAL	AIRCRAFT	AIRCRAFT ENGINES AND ENGINE PARTS	OTHER AIRCRAFT PARTS AND EQUIPMENT			
ALL WORKERS (thousands)								
2000	666.1	438.4	242.7	98.1	97.6	78.4	149.4	301.4
2001	660.7	434.5	241.3	95.6	97.6	76.5	149.8	297.4
2002	618.4	396.7	220.2	87.9	88.6	73.6	148.1	263.3
2003	587.1	371.9	209.1	81.3	81.5	70.2	145.0	249.5
2004	592.0	369.9	207.2	79.2	83.5	71.6	150.5	244.2
2005	611.7	380.0	211.3	81.9	86.8	75.1	156.6	270.1
2006	631.8	398.5	221.7	84.4	92.4	75.5	157.7	326.9
2007	646.8	413.6	230.2	85.3	98.1	75.5	157.6	359.5
2008	659.8	428.9	237.4	87.2	104.3	77.6	153.3	303.0
2009	644.5	414.0	234.9	80.4	98.7	78.3	152.2	292.4
2010	624.0	402.5	228.5	76.4	97.6	74.7	146.8	276.4
2011 (P)	624.4	412.0	234.6	76.3	101.1	71.3	141.0	282.1
1Q10	626.0	401.7	229.2	76.5	96.0	75.9	148.3	281.1
2Q10	623.4	400.2	226.6	76.5	97.1	75.5	147.7	275.9
3Q10	624.9	403.7	229.1	76.7	97.9	74.6	146.6	275.1
4Q10	621.5	404.2	229.1	75.8	99.3	72.6	144.7	273.6
1Q11	620.9	406.1	230.9	65.2	99.9	71.6	143.2	275.3
2Q11	623.0	411.1	234.1	76.1	100.9	71.1	140.9	280.4
3Q11	629.2	418.9	238.8	77.5	102.6	71.3	139.0	287.7

Source: Aerospace Industries Association, based on data from the Bureau of Labor Statistics.
*Starting in 2008, the "production workers" series does not include: search, detection and navigation instruments.
(P) Preliminary

"While 2011 was a strong year for military aircraft, domestic purchases are expected to decline in the coming years due to federal deficit reduction measures. These measures are likely to become even more significant factors as much of the U.S. military aircraft fleet nears maximum service-life limits. Anecdotally, ground crews have pointed out that today's pilots are now flying the exact same equipment as did their fathers. The recent grounding of several combat wings due to equipment stress is impacting U.S. combat readiness. The current U.S. Air Force fleet, whose planes are on average more than 23 years old, is the oldest in USAF history. Many transport aircraft and aerial refueling tankers are more than 40 years old, and it is expected that some may reach the 70-80 year mark before they are finally retired."[49]

This aging of the U.S. military air fleet points toward a resurgence in aerospace research and development near the tail end of this decade as U.S. manufacturers and the government move beyond near-term budget reduction efforts.

4.13.3 Highway Network Assumptions

The highway network assumptions detailed in sections 3.3 and 4.12 were applied to the Antelope valley Inland Port and local land use projections sensitivity analysis. Widening SR 138 from I-5 to SR 14 was therefore included in the land use sensitivity test to reflect potential cumulative impacts on the design of the High Desert Corridor.

[49] *2011 Year-end Review and Forecast,* Aerospace Industries Association, www.aia-aerospace.org/assets/YE_Analysis.pdf

4.13.4 Traffic Forecast Volumes

Daily, morning and afternoon peak hour traffic forecasts were prepared for the 2035 highway network as noted above, assuming Antelope Valley Inland Port and local Palmdale and San Bernardino Associated Governments land use assumptions.

These results were presented in Tables 3-19, 3-20 and 3-21 alongside forecasts prepared for the full-build High Desert Corridor freeway/expressway alternative, based on Southern California Association of Governments 2008 growth forecasts for 2035 (2040).

Insofar as the traffic implications of these local land use assumptions, Figure 4-51 illustrates the difference in daily traffic volumes assigned to the highway network by the Southern California Association of Governments model between the local land use scenario and the SCAG 2008 RTP growth forecast scenario. The High Desert Corridor full build freeway/expressway is assumed under both test scenarios along with widening SR 138 from I-5 to SR 14. Only volume increases are plotted, with the magnitude of the volume illustrated by the bandwidths.

Tables 3-19, 3-20, and 3-21 provide a link-by-link accounting of the daily peak hour traffic volumes forecast for the SR 14, High Desert Corridor and I-15 freeway mainline and ramps. Figure 4-51 illustrates that the influence of the local land use assumptions is greater in the Antelope Valley segment of the High Desert Corridor and much less in the Victor valley segment of the corridor. Peak hour volume differences are listed in Table 4-60 for a representative selection of mainline segments along the High Desert Corridor freeway.

4.13.5 Freeway Mainline and Ramp Analysis Results

The traffic implications of Antelope Valley Inland Port and local land use projections were analyzed for design year (2040) traffic demand conditions using the CORSIM traffic simulation model. The results of the CORSIM analysis were presented earlier on Figure 4-22 and Tables 4-20 and 4-21 in section 4.5; but are discussed in this section.

Figure 4-22 illustrates the location of congestion as defined by level of service (LOS) E or F conditions. The graphic illustrates that freeway segments within the Antelope Valley portion of the High Desert Corridor are congested, assuming freeway design characteristics defined for the full build High Desert Corridor freeway/expressway alternative. Within the High Desert and Victor Valley portions of the corridor, the full build alternative would provide uncongested, LOS D or better, operations.

In Antelope Valley, SR 14 will experience high demand volumes along the SR 14 southbound to High Desert Corridor eastbound movement during the AM peak period, and along the High Desert Corridor westbound to SR 14 northbound movement during PM peak period.

Due to the very high demand exit volumes from southbound SR 14 to the eastbound High Desert Corridor direct connector ramp, motorists positioning themselves in the two right-most lanes leading to the connector ramp will form a queue that will extend northward beyond the limits of the CORSIM network. No traffic operational issues appear along High Desert Corridor and I-15 during the AM peak period, as the demand volumes are constrained along SR 14.

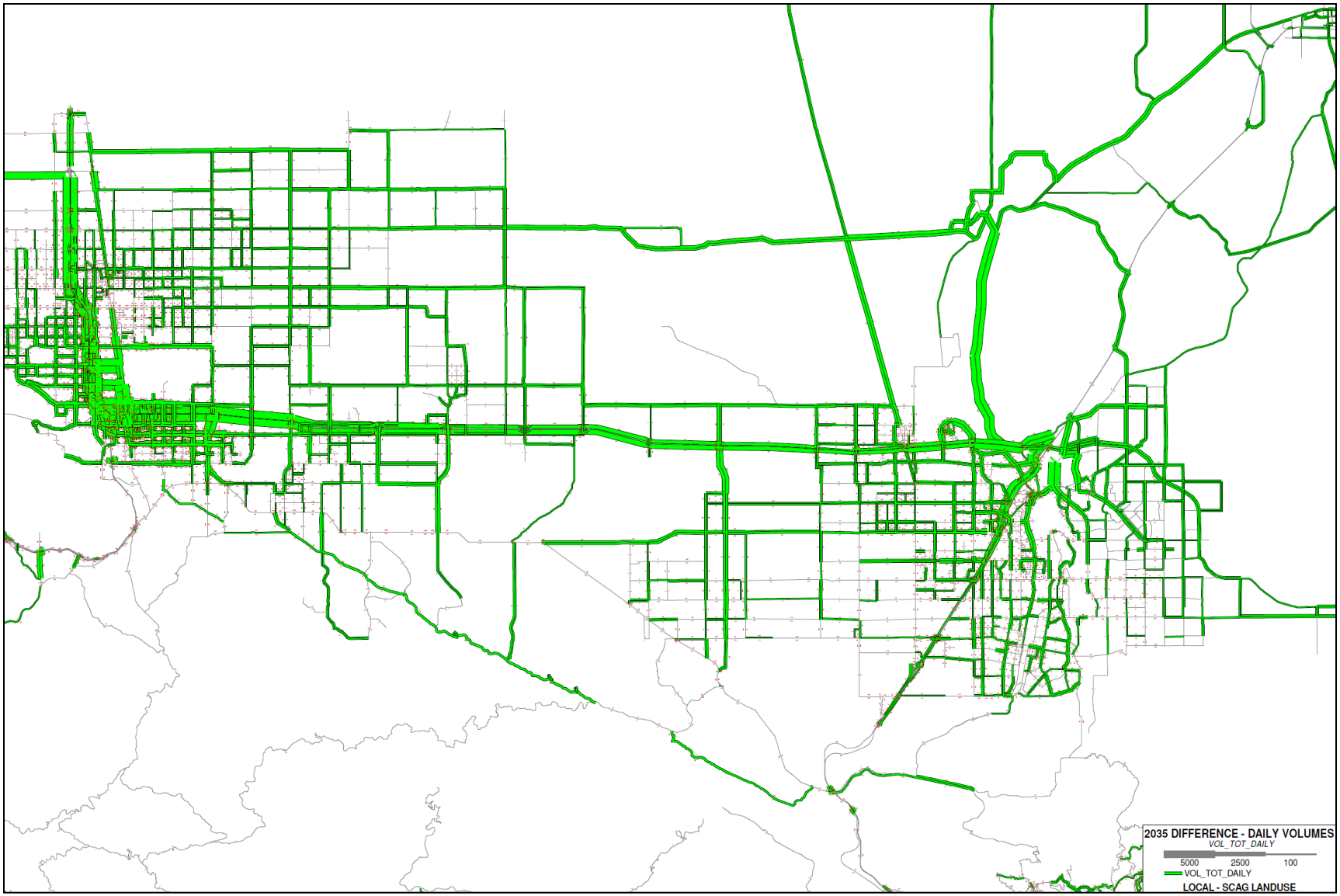


Figure 4-51: Year 2035 Difference in Daily Traffic Volumes between the Antelope Valley Inland Port and Local Land Use Test Scenario and the SCAG 2008 RTP Growth Scenario

Table 4-60. Year 2035 Freeway Peak Hour Demand Volume Difference—Antelope Valley Inland Port and Local Land Use

HIGH DESERT CORRIDOR SEGMENT DESCRIPTION	FULL BUILD ALTERNATIVE WITH SCAG LAND USE			LOCAL LAND USE WITH SR 138 WIDENING			LOCAL LAND USE MINUS SCAG LAND USE		
	PEAK HOUR			PEAK HOUR			PEAK HOUR		
	AM	PM	DAILY	AM	PM	DAILY	AM	PM	DAILY
EB ML–SR 14 and 10th Street E.	4,955	5,830	68,865	6,680	7,055	83,155	1,725	1,225	14,290
WB ML–SR 14 and 10th Street E.	3,755	5,790	60,575	4,430	7,820	75,130	675	2,030	14,555
EB ML–10th Street E. and 20th Street E.	5,275	6,005	72,850	6,795	7,280	87,105	1,520	1,275	14,255
WB ML–10th Street E. and 20th Street E.	3,930	6,135	66,750	4,625	8,060	80,405	695	1,925	13,655
EB ML–20th Street E. and 50th Street E.	4,895	5,250	64,610	6,065	6,335	77,240	1,170	1,085	12,630
WB ML–20th Street E. and 50th Street E.	3,385	5,740	58,935	4,070	7,260	69,555	685	1,520	10,620
EB ML–70th Street E. and 90th Street E.	4,835	4,720	60,555	5,425	5,650	68,275	590	930	7,720
WB ML–70th Street E. and 90th Street E.	2,915	5,645	54,695	3,490	6,610	60,865	575	965	6,170
EB ML–90th Street E. and LongviewRd	4,825	4,550	58,560	5,470	5,165	65,215	645	615	6,655
WB ML–90th Street E. and LongviewRd	2,700	5,635	52,605	3,015	6,665	58,000	315	1,030	5,395
EB ML–Longview Rd and 170th	4,730	4,235	55,025	5,235	4,580	59,650	505	345	4,625
WB ML–Longview Rd and 170th	2,320	5,555	49,500	2,535	6,370	53,410	215	815	3,910
EB ML–170th Street E. and Largo Vista Rd	4,950	4,290	55,290	5,390	4,600	58,900	440	310	3,610
WB ML–170th Street E. and Largo Vista Rd	2,320	5,795	50,220	2,485	6,420	53,650	165	625	3,430
EB ML–Largo Vista Rd and 240th Street E.	5,070	4,305	55,830	5,525	4,605	59,375	455	300	3,545
WB ML–Largo Vista Rd and 240th Street E.	2,325	6,115	52,350	2,470	6,635	55,990	145	520	3,640
EB ML–240th Street E. and Oasis Rd	5,290	4,490	58,090	5,650	4,750	61,630	360	260	3,540
WB ML–240th Street E. and Oasis Rd	2,475	6,395	54,530	2,580	6,770	57,830	105	375	3,300
EB ML–Oasis Rd and Sheep Creek Rd	5,265	4,465	57,350	5,500	4,695	60,625	235	230	3,275
WB ML–Oasis Rd and Sheep Creek Rd	2,475	6,350	53,670	2,575	6,715	56,865	100	365	3,195
EB ML–Sheep Creek Rd and Caughlin Rd	4,690	4,320	52,140	4,830	4,445	54,935	140	125	2,795
WB ML–Sheep Creek Rd and Caughlin Rd	2,625	5,640	49,140	2,655	5,700	52,670	30	60	3,530
EB ML–Caughlin Rd and Koala Rd	4,055	3,635	43,750	4,095	3,675	46,165	40	40	2,415
WB ML–Caughlin Rd and Koala Rd	2,165	5,000	41,100	2,010	4,960	43,700	–155	–40	2,600
EB ML–Koala Rd and U.S. 395	4,695	4,020	49,485	4,795	4,015	51,700	100	–5	2,215
WB ML–Koala Rd and U.S. 395	2,500	5,740	46,060	2,385	5,790	48,695	–115	50	2,635
EB ML–U.S. 395 and Phantom West	5,250	4,505	57,225	5,580	4,430	59,490	330	–75	2,265
WB ML–U.S. 395 and Phantom West	2,855	6,235	55,820	2,805	6,390	57,240	–50	155	1,420
EB ML–Phantom West and Phantom East	4,150	4,360	44,120	4,355	4,250	46,690	205	–110	2,570
WB ML–Phantom West and Phantom East	2,815	5,035	42,465	2,840	5,065	43,510	25	30	1,045
EB ML–Phantom East and National Trail Hwy	4,150	5,295	55,135	4,130	5,135	57,010	–20	–160	1,875
WB ML–Phantom East and National Trails Hwy	3,905	5,140	52,580	3,970	5,175	53,085	65	35	505
EB ML–Gateway Dr and I-15	4,045	5,070	52,730	3,945	4,860	52,785	–100	–210	55
WB ML–Gateway Dr and I-15	3,745	4,965	50,500	3,800	4,975	50,870	55	10	370
EB ML–I-15 and Choco Rd	2,295	2,500	21,905	2,150	2,405	21,525	–145	–95	–380
WB ML–I-15 and Choco Rd	1,730	3,050	22,445	1,725	3,095	23,105	–5	45	660
EB ML–Choco Rd and Dale Evans Pkwy	2,195	2,260	19,790	2,075	2,255	20,030	–120	–5	240
WB ML–Choco Rd and Dale Evans Pkwy	1,500	2,830	20,270	1,495	2,865	20,710	–5	35	440

Northbound SR 14 will experience similar operational constraints during the PM peak period. Inadequate mainline capacity on northbound SR 14 due to the mainline lane drop at Avenue N will result in a queue from the Avenue N off-ramp and that will spill back along High Desert Corridor to the 50th Street interchange. Extensive queues on SR 14 and High Desert Corridor will affect interchange and intersection operations at 10th Street, 20th Street and 50th Street along the High Desert Corridor. Mitigation strategies for these two freeways, other than improvements to parallel, major arterial streets in the vicinity, would be impractical. Improvements could include upgrading Avenue E and 90th Street to form an expressway bypass of the congested area (as recommended in the *North County Combined Highway Corridors Study*[50]*).*

The other impact would be that the peak period would spread to a longer duration during the morning and afternoon/evening.

[50] *North County Combined Highways Corridors Study,* Final Report, Parsons Transportation Group, June 24, 2004.

Chapter 5
COSTS AND BENEFITS OF THE BUILD ALTERNATIVES

The build alternatives would provide additional capacity between Antelope Valley and Victor Valley compared with the no-build alternative. A description of the build alternatives is provided in Chapter 4. This chapter identifies the costs and estimated benefits associated with implementing the build alternatives. The no-build alternative considered by this analysis is the Baseline 2035 System described in Section 3.3 without the addition of the High Desert Corridor new freeway/expressway improvements.

5.1 Cost Estimates

Cost estimates were developed by Caltrans for the *Project Report*. The preliminary cost estimate for the build alternatives is estimated to be $3.46 billion excluding project engineering and administration. This cost does not include the rail feeder service component.

Table 5-1 provides a summary of the capital cost for the build alternatives.

Table 5-1. Capital Cost for Build and Build with Tolls Alternatives *($ 2014)*

ELEMENT	BUILD ALTERNATIVE	BUILD WITH TOLLS ALTERNATIVE
Roadway	$2,437,400,000	$2,437,425,000
Structures	642,815,000	642,815,000
Right-of-Way	380,200,000	380,200,000
Project Capital Cost *(rounded)*	$3,460,415,000	$3,460,440,000

5.2 Benefits Estimates

Chapter 3 identified that with the build alternatives, traffic volumes could be expected to shift from congested freeway facilities (such as Interstate 210) and rural arterial streets to the High Desert Corridor freeway, thereby relieving congestion on a system-wide basis. Because the upgrade of the highway network linking State Route 14 with Interstate 15 has system-wide impacts, its benefits were computed using STEAM (Surface Transportation Efficiency Analysis Model) 2.01, a system-wide analysis tool.

As discussed in Section 3.5, the Federal Highway Administration introduced the first version of STEAM in 1997. STEAM was the first Federal Highway Administration impact analysis product to use input directly from the four-step travel demand modeling process for detailed, system wide analysis of alternative transportation investments on regional and corridor levels. The Federal Highway Administration released STEAM 2.0 in 2000 to expand the scope of the model to address environmental justice measures.

Inputs obtained for each alternative from the regional 4-step models include person-trip matrices by mode and purpose and vehicle-trip matrices for personal vehicles and internal truck travel, trip time and cost matrices skimmed from the highway and transit networks, and loaded highway network link volumes. The personal travel modes include auto, carpool, local and express bus, walk-accessed light and heavy rail

and drive-accessed heavy and light rail. Trip purposes include home based work, home based college, home based school (K-12), home based shop, home based other, and non-home based (work-other and other-other), as well as for external-internal and external-external (through) auto trips. To simplify the STEAM analysis, all trips are combined into one aggregate person-trip matrix for each of the modes, and one truck trip matrix. Vehicle occupancies and estimates of the proportions of zone-to-zone trips are obtained from manipulation of the available trip matrices.

Selected results categories produced through STEAM analysis include the following:

- Weekday vehicle-miles (millions)
- Average highway speed (mph)
- Annual fuel use (million gal)
- Annual user benefits
- Total agency revenues
- Emission benefits
- Other external benefits
- Total annual benefits
- Annualized capital costs
- Annual operating costs
- Total annualized costs
- Net annual worth
- Simple benefit-cost ratio

STEAM incorporates a sophisticated network speed and delay estimation technique based on off-line simulations which incorporate the dynamic effects of queuing and peak-spreading, day-to-day variations in traffic levels, as well as the impacts of incident delays, based on their expected occurrence. Accident costs are based on zone-to-zone vehicle-miles and link types, and divided into “perceived” costs, included in user benefit estimation, and “non-perceived” costs, which are included as external costs. Emissions are estimated using a trip-based approach that incorporates both en route and cold start components. Fuel consumption and greenhouse (carbon dioxide) emissions are estimated using zone-to-zone average speeds and fuel consumption rates for autos and trucks.

Benefits are estimated based on weekday travel estimates, annualized, and expanded through the lifetime of the investment. User benefits for new users attracted by time or cost savings to an alternative, relative to the base case, are evaluated at 50 percent the rate applied to former users, as suggested by consumer surplus theory. Negative benefits of patronage lost due to poorer travel conditions are estimated similarly. The analysis year is chosen to be representative of benefits over the entire analysis time period. Alternatively, the program may be applied for several different analysis years, from which it determines the total stream of benefits that are then annualized. Investment costs are also annualized and combined with representative annual public agency operating costs. The program includes a large library of default unit costs and parameter values that can be modified as desired.

The STEAM 2.0 speed models account for delays due to incidents, using data on the frequency, severity, and duration of incidents. Incidents account for a large share of total travel delays due to congestion, especially on freeways. The models also account for peak spreading that occurs when facilities become more congested. The traffic temporal distributions used in developing the models were based on data collected from 579 urban automatic traffic recorders across the nation. Separate temporal distributions were developed for freeways and arterials with low, moderate, and high ratios of average daily traffic to capacity.

The models further account for day-to-day variations in traffic. The relationship between delays due to congestion and traffic volumes are highly non-linear in nature, especially when the ratio of demand volume to capacity is close to 1.0. Lastly, the STEAM 2.0 speed models account for the decrease in highway capacity that occurs after demand volumes exceed capacity.

5.2.1 Travel Time Savings

Vehicle hours of travel were computed for each link in the highway system. Highway link travel speeds and volumes were output directly from the SCAG 2008 Regional Travel Demand Model TransCAD software to STEAM 2.0 using a custom design interface.

Consistent with U.S. Department of Transportation guidance for the valuation of travel time in economic analysis, Parsons assumed local personal travel to be valued at 50 percent of the local median wage rate. Business travel by truck and bus drivers was valued at 100 percent of the mean wage for these occupations, plus fringe benefits. Los Angeles County's mean wage for all occupations was reported by the State of California Employment Development Department to be $25.19 per hour for the first quarter of 2012; whereas, the average wage for San Bernardino employers was $21.48 for the first quarter of 2013. These were averaged and halved to produce a value of time equal to $11.67 per hour for local personal travel. The state reported that truck drivers (heavy) residing in Los Angeles County earned an average of $20.55 per hour during the same quarter of 2012. A fringe benefit rate of 50 percent of the mean wage was assumed by Parsons for bus and truck drivers, based on an equal mix of employees covered by teamsters (55.5 percent) and other (44.5 percent) labor agreements. The corresponding value of time for these business travelers was thus estimated to be $30.83 per hour.

Computation of benefits also took vehicle occupancy into account for local personal travel. Based on the SCAG 2008 RTP model, the vehicle occupancy for all trip purposes in Los Angeles and San Bernardino counties was computed for drive alone (1.0), car pools (2.0 and 3.5) and trucks (1.0 for all truck classes). These occupancies were assumed for peak and off-peak periods.

5.2.2 Crash Benefits

The frequency of accident occurrence is typically lower on freeways and expressways when compared to other types of regional roads and city streets. To compute benefits associated with the build alternative versus the no-build alternative, the number of vehicle miles traveled over the highway system was computed for each alternative, using the SCAG 2008 RTP Model and STEAM 2.0.

Rates of crash occurrences resulting in fatalities, personal injuries, and property damage only were obtained from the California Highway Patrol, Caltrans for Year 2009. Statewide rates listed in Table 5-2 are for state owned facilities, and do not include the majority of urban arterial, local and collector streets.

Table 5-2. California Crash Rates on State Highways *(Year 2009)**

NON-FREEWAY ALL FUNCTIONAL CLASSIFICATIONS	PROPERTY DAMAGE ONLY CRASH RATE (Fwy)	INJURY CRASH RATE (Fwy)	FATAL CRASH RATE (Fwy)
105	52.92	27.02	0.66

Source: California Highway Patrol, California Department of Transportation

*Crash rates per 100 million vehicle miles.

To develop a more comprehensive set of crash occurrence rates, statewide data available from the Nevada Department of Transportation was obtained and benchmarked to match California crash rates for similar type facilities (interstate rural, interstate urban, urban principal arterial, and principal arterial urban).

The resulting crash rates used for the STEAM 2.0 calculation of benefits are listed in Table 5-3.

Table 5-3. California Crash Rates by Functional Roadway Classification*

FUNCTIONAL CLASSIFICATION	PROPERTY DAMAGE ONLY CRASH RATE	INJURY CRASH RATE	FATAL CRASH RATE
Interstate urban	52.92	27.02	0.66
Other urban freeways and expressways	83.62	46.39	0.74
Urban principal arterials	148.57	98.57	0.87
Urban minor arterials	123.65	86.61	1.33
Urban collector streets	84.91	56.02	0.65
Urban local streets	97.32	42.98	0.56

Source: Parsons, based on Caltrans 2009 and Nevada Department of Transportation 2003 data.
*Crash rates per 100 million vehicle miles.

The values of loss associated with accidents were obtained from the National Safety Council (2009) and the California Life-Cycle Benefit/Cost Analysis Model (Cal-B/C). Periodically, the National Safety Council estimates the average cost of fatal and non-fatal injuries due to motor vehicle crashes. These estimates are made using a comprehensive or willingness to pay method.

After adjusting these estimates to year 2013 (third quarter) using the gross domestic product deflator, values of $4,900,000 per fatality, $68,700 per injury, and $10,400 per reported property damage only accident were derived.

Taking inflation into account, these estimates of accident costs compare favorably with values used in five computerized benefit-cost models, as reported in Table 5-4.

Table 5-4. Accident Cost Estimates

ACCIDENT TYPE	CSI* ($ 1993)	StratBENCOST** ($ 1996)	STEAM† ($ 1997)	RAILDEC‡ ($ 1997)	Cal-B/C¶ ($ 2012)
Fatality	$3,325,095	$3,521,359	$2,726,350	$3,613,137	$4,800,000
Injury	$ 7,890	$ 83,848	$ 59,718	$ 86,033	$ 67,400
Property damage only	$ 5,651	$ 5,806	$ 3,322	$ 5,957	$ 10,200

* Cambridge Systematics, Inc. (CSI), Approaches for Developing Nationwide Estimates of Congestion Delay, Accidents, Emissions, and Noise Impacts: Interim Report, 1995.
** NCHRP Project 2-18(3), Development of an Innovative Highway User Cost Estimation Procedure. Midrange of costs reported.
† FHWA, Surface Transportation Efficiency Analysis Model, 1997. Total of internal and external costs.
‡ Companion to StratBENCOST which estimates the reduction in accident costs as the change in highway accidents between the base and alternative (rail) case. StratBENCOST values inflated by 2.6 percent for all accident types.
¶ California Life-Cycle Benefit/Cost Analysis Model, version 5.0, February 2012.

STEAM 2.0 calculates separate internal and external accident costs. Internal accident costs are defined as costs inflicted upon and perceived by transportation facility users. External costs are defined as costs inflicted on users, but not perceived by users. Table 5-5 identifies the breakdown of these accident cost assumptions.

Table 5-5. Accident Cost Assumptions for STEAM *($ 2013)*

ACCIDENT TYPE	INTERNAL COST	EXTERNAL COST	TOTAL COST
Fatality	$4,165,000	$735,000	$4,900,000
Injury	$ 58,400	$ 10,300	$ 68,700
Property damage only	$ 8,840	$ 1,560	$ 10,400

Source: Parsons

5.2.3 Motor Vehicle Emissions and Costs

Motor vehicle emissions were calculated for the emissions listed in Table 5-6. Rates of motor vehicle emissions were obtained from the Cal-B/C for carbon monoxide (CO), nitrogen oxides (NO_X), and fine particulates (PM_{10}) assuming a vehicle model year of 2031 for the design year (2040) analysis and 2011 for the opening year (2020) analysis. The source of these emission rates is the California Air Resources Board EMFAC 2011 model. STEAM 2.0's default values for hydrocarbon emissions were also used in the analysis. These rates assume a Year 2010 vehicle model year and are based on the U.S. Environmental Protection Agency's Mobil 5a model results.

Table 5-6. Vehicle Pollution Emissions

EMISSION	DESCRIPTION	SOURCE	HARMFUL EFFECTS	SCALE
Carbon monoxide, CO	A toxic gas that undermines blood's ability to carry oxygen	Engine	Human health, climate change	Very local
Nitrogen oxides, NO_X	Various compounds; some are toxic, all contribute to ozone.	Engine	Human health, ozone precursor	Regional
Fine particulates, PM_{10}	Inhalable particles consisting of bits of fuel and carbon	Diesel engines and other sources	Human health, aesthetics	Local and regional
Hydrocarbons, HC	Unburned fuel; forms ozone	Fuel production and engines	Human health, ozone precursor	Regional

Monetary values for CO, PM_{10} and NO_X emissions were obtained from research by Donald McCubbin and Mark Delucchi reported in "The Social Cost of Health Effects of Motor-Vehicle Use in the United States," as updated for use in the Cal-B/C, and adjusting these estimates to 2013 using the gross domestic product deflator. Values reported for the Los Angeles/South Coast air basin (see Table 5-7) were used for the evaluation of benefits.

Table 5-7. Health Cost of Motor Vehicle Emissions *(2013 $/ton)*

EMISSION		VALUE
Carbon monoxide	CO	$ 148
Fine particulates	PM_{10}	$495,770
Nitrogen oxides	NO_X	$ 60,500
Hydrocarbons	HC	$ 8,679

Source: Parsons, based on California Life-Cycle Benefit/Cost Analysis Model, version 5.0, February 2012

The health cost of hydrocarbon emissions was taken from a second source that also valued fine particulates.[51] These values were indexed to the Cal-B/C values to estimate the per ton cost of hydrocarbon.

GLOBAL WARMING

Global warming refers to the warming of Earth's atmosphere due to the greenhouse effect. Incoming solar energy, including certain wavelengths of infrared radiation, passes through Earth's atmosphere and reaches the surface of Earth, thus warming it. Some of the infrared radiation emitted from Earth's surface returns back to the atmosphere where it is absorbed by certain atmospheric gases called greenhouse gases. The absorption of infrared by these green gases warms the atmosphere of Earth in a way similar to the way a greenhouse captures solar energy and warms the air inside it.

The major greenhouse gases include carbon dioxide, water vapor (H_2O), and methane (CH_4), as well as nitrous oxide (N_2O), fluorocarbons, and ozone. Carbon dioxide (CO_2) is the greenhouse gas that is of greatest concern due to its large atmospheric concentration with respect to other greenhouse gases and the large amounts emitted.

STEAM calculates changes in greenhouse gas emissions using carbon dioxide emission rates per gallon of motor fuel consumed. The following are the emissions factors used by STEAM listed in terms of pounds of carbon dioxide per gallon of fuel consumed:

- Gasoline 19.5 pounds per gallon
- Diesel 21.5 pounds per gallon

Estimates valuing the cost of carbon dioxide emissions vary widely. A fair amount of research has been devoted to calculating the "social cost of carbon" in terms of future damages. This is difficult, because the cost depends on how much carbon dioxide is emitted in the future; and therefore, how much global warming occurs. The Cal-B/C social cost of CO_2 was used for this analysis expressed in 2013 dollars using the GDP deflator. For the opening year (2020), this assumption translates to a $26.21 estimate for the first year of benefits and $39.06 per short ton for the 2040 design year.

VEHICLE OPERATING COSTS

Vehicle operating costs were calculated for the no-build alternative and the build transportation systems management/transit alternative using estimates of vehicle miles traveled produced by the SCAG 2008 Regional Transportation Model and STEAM 2.0. STEAM 2.0 calculates fuel consumption per gallon based on average link speeds and vehicle miles traveled per link.

Default values for the fuel consumption rates used in STEAM come from the Institute of Transportation Engineers "Transportation Planning Handbook," 1992. However, these rates were derived from a study published by Caltrans in 1983. Non-fuel volatile organic compounds are taken from a U.S. Department of Transportation publication, "Characteristics of Urban Transportation Supply," 1992, and are converted to 1997 dollars. These costs originated in the American Automobile Association publication, "Your Driving Costs."

[51] Gunnar Linberg, Benefit-Cost Analysis in a Multimodal Planning Process, "Exploring the Application of Benefit-Cost Methodologies to Transportation Decision Making," May 1995, Tampa, Florida.

For the evaluation of benefits, fuel consumption was based on estimates of average fuel consumption for years 2011 and 2031 obtained from the California Air Resources Board's Motor Vehicle Emission Inventory EMFAC2011 models. These rates, used in the Cal-B/C, are reported in Table 5-8.

Table 5-8. Fuel Consumption Rates *(gallons/mile)*

SPEED	AUTO	TRUCK
5	0.1439	0.2234
10	0.1074	0.1714
15	0.0832	0.1300
20	0.0670	0.1032
25	0.0559	0.0856
30	0.0485	0.738
35	0.0435	0.0663
40	0.0405	0.0617
45	0.0391	0.0596
50	0.0390	0.0596
55	0.0404	0.0617
60	0.0433	0.0662
65	0.0482	0.0738
70	0.0515	0.0810

Source: Cal-B/C, California Air Resources Board, EMFAC 2011, 2011 and 2031 average

The price-per-gallon of regular grade gasoline was assumed to be $3.65 per gallon based on prices prevailing in the Los Angeles/Long Beach and Riverside/San Bernardino metropolitan areas in November 2013. STEAM 2.0 separates fuel costs into tax and non-tax components, using the tax portion to compute "revenue transfers." The tax rate per gallon of gasoline was assumed to be 18.4 cents federal, 39.5 cents state excise, 2.0 cents underground storage tank fee, and 11.5 cents state and local sales tax, assuming an average rate of 8.25 percent for Los Angeles (8.75 percent) and San Bernardino (7.75 percent) counties. These taxes total 71.4 cents per gallon. Truck fuel costs were assumed to average $3.33 per gallon for the non-tax portion and $-0.738 for the tax component.

Non-fuel costs for vehicle maintenance and tire expense were assumed to be $0.056 per mile for automobiles based on research conducted by American Automobile Association [52], and $0.156 per mile for trucks based on research conducted for the Cal-B/C, version 5.0. Unlike Cal-B/C, the STEAM 2.0 model does not include mileage-based depreciation.

5.3 Summary of Benefits

The build alternatives will produce net savings in travel time and crash related expenses and increased emissions and non-fuel operating costs. These findings are summarized in Table 5-9 and are discussed below.

[52] American Automobile Association, *Your Driving Costs*, 2011 Edition

Table 5-9. Summary of High Desert Corridor Project Benefits

BENEFIT TYPE	HIGH DESERT CORRIDOR/SR 18 NEW FREEWAY/EXPRESSWAY BUILD ALTERNATIVE	HIGH DESERT CORRIDOR/SR 18 NEW FREEWAY WITH TOLLS ALTERNATIVE
User Benefits		
In-vehicle travel time	$542,285,500	$527,490,600
Fuel costs	11,256,800	3,923,800
Non-fuel operating costs	(20,440,000)	(23,912,500)
Internal accident costs	76,943,000	74,590,100
Revenue Transfers	$ 6,854,100	$ 9,831,200
Reduction in External Costs		
Emissions	$ (24,156,600)	$ (26,359,200)
Global warming	(3,652,900)	(5,254,400)
Noise	1,001,300	814,200
Accident	(481,200)	(768,900)
Other mileage based	—	—
Total Benefits $/year in 2040	**$589,609,900**	**$560,355,000**
Total Benefits $/year in 2020	**$378,237,100**	**$301,840,300**
Life Cycle Benefits 2020–2040 Total	**$9.97 B**	**$8.90 B**

Source: Parsons, based on STEAM 2.01.

5.3.1 In Vehicle Travel Time

Travel time benefits are significant, as motorists are able to shift routes to higher speed facilities and additionally benefit from increased network capacity. This category of user benefit constitutes the majority of total benefits computed for the build alternatives.

5.3.2 Fuel Costs

Fuel costs decrease with the build alternatives as a result of automobiles traveling at higher speeds. As indicated in Table 5-8, automobiles consume fuel at the lowest rates while traveling between 35 mph and 60 mph. (Benefit values may differ from directly computed energy costs.)

5.3.3 Non-fuel Operating Costs

Non-fuel operating costs are based on vehicle miles traveled. Vehicle miles traveled increases for the build alternatives as motorists seek higher speed routes; hence, non-fuel operating costs increase.

5.3.4 Accidents

As indicated in Table 5-3, crash rates for property damage and injuries are highest for urban principal arterials, and lowest for urban freeways and expressways. Table 3-7, reported earlier, indicates the proportion of vehicle miles traveled by functional roadway classification. The build alternatives shift more vehicle miles traveled to the High Desert Corridor freeway, resulting in a decrease in crashes of all types.

5.3.5 Revenue Transfers

Revenue transfers are the tax portion of fuel costs, which are collected or not collected as a result of increased or decreased fuel consumption. Fuel cost savings produce a net loss of revenue transfers. Increased fuel use produces additional tax revenue.

5.3.6 Emissions

Vehicle pollution costs are based on vehicle miles traveled and speed. Emission rates generally decline as speeds increase to 55 miles per hour, and then increase.

5.3.7 Global Warming

Global warming benefits (or disbenefits) computed by STEAM 2.0 are based on gallons of fuel consumed.

5.3.8 Total Benefits

Table 5-9 indicates that the 20-year life cycle benefits for the three build alternatives range from $8.90 billion for the new freeway with tolls option to $10.0 billion for the non-toll alternative.

5.4 Life Cycle Benefits and Costs

Benefits of the build alternatives will accrue over time as traffic volumes increase from the opening day (third quarter of 2020) to those forecast for 2040. A measurement of life-cycle benefits, assuming a straight line projection of traffic growth, is reported in Tables 5-10 and 5-11, with each table reporting life-cycle benefits and costs for an individual build alternative.

The benefits reported for 2020 represent one-half of one year; hence, the values are 50 percent of the full year estimation for 2020.

Revenues from tolls collected by the build with tolls alternative are included as a benefit for that alternative. Revenues are based on toll rates of $0.15/mile for autos and light trucks and $0.37/mile for heavy trucks. Opening year (12 month) revenue is estimated as $78.2 million. Life cycle (20-year) revenue is estimated at just under $2.0 billion, net of revenue collection expense.

Tables 5-10 and 5-11 reflect a 20.5-year analysis period covering both expenditures (costs) and benefits. Both benefits and costs are discounted to reflect the time value of resources (or money). This time value of money represents the opportunity cost that could be earned by using the dollars for some other investment.

Table 5-10. Build Alternative Life Cycle Benefits and Costs *($1,000)*

YEAR	TOTAL BENEFITS	TOTAL COSTS	PRESENT VALUE DISCOUNT	PRESENT VALUE BENEFITS	PRESENT VALUE COSTS
2014			1.0000		
2015		$ 95,100	0.9709		$ 92,333
2016		190,100	0.9426		179,094
2017		608,370	0.9151		556,719
2018		1,026,740	0.8885		912,258
2019		1,026,735	0.8626		885,662
2020	$ 189,119*	513,370	0.8375	$ 158,387	429,947
2021	388,806		0.8131	316,138	
2022	399,374		0.7894	315,266	
2023	409,943		0.7664	313,196	
2024	420,512		0.7441	312,903	
2025	431,080		0.7224	311,412	
2026	441,649		0.7014	310,921	
2027	452,218		0.6810	307,960	
2028	462,786		0.6611	305,948	
2029	473,355		0.6419	303,847	
2030	483,924		0.6232	301,581	
2031	494,492		0.6050	299,168	
2032	505,061		0.5874	296,673	
2033	515,629		0.5703	294,063	
2034	526,198		0.5537	291,356	
2035	536,767		0.5375	288,512	
2036	547,335		0.5219	285,654	
2037	557,904		0.5067	282,690	
2038	568,473		0.4919	279,632	
2039	579,041		0.4776	276,550	
2040	589,610		0.4637	273,402	
Totals	**$9,973,276**	**$3,460,415**		**$6,125,259**	**$3,056,013**

*Reflects 6 months of 2020

Table 5-11. Build with Tolls Alternative Life Cycle Benefits and Costs *($1,000)*

YEAR	TOTAL BENEFITS*	TOTAL COSTS	PRESENT VALUE DISCOUNT	PRESENT VALUE BENEFITS	PRESENT VALUE COSTS
2014			1.0000		
2015		$ 95,100	0.9709		$ 92,333
2016		190,100	0.9426		179,094
2017		608,370	0.9151		556,719
2018		1,026,740	0.8885		912,258
2019		1,026,735	0.8626		885,662
2020	$ 190,020**	513,395	0.8375	159,142	429,968
2021	394,788		0.8131	321,002	
2022	409,536		0.7894	323,288	
2023	424,282		0.7664	325,170	
2024	439,030		0.7441	326,682	
2025	453,778		0.7224	327,809	
2026	468,526		0.7014	328,624	
2027	483,273		0.6810	329,109	
2028	498,020		0.6611	329,241	
2029	512,768		0.6419	329,146	
2030	527,516		0.6232	328,748	
2031	542,263		0.6050	328,069	
2032	557,011		0.5874	327,188	
2033	571,758		0.5703	326,074	
2034	586,506		0.5537	324,748	
2035	601,253		0.5375	323,173	
2036	616,001		0.5219	321,491	
2037	630,749		0.5067	319,601	
2038	645,496		0.4919	317,519	
2039	660,243		0.4776	315,332	
2040	674,991		0.4637	312,993	
Totals	**$10,887,808**	**$3,460,440**		**$6,644,149**	**$3,056,034**

*Total benefits include toll revenues
**Reflects 6 months of 2020

Each year, the U.S. Office of Management and Budget updates discount rates in accord with Office of Management and Budget Circular No. A-94, "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs." States typically use the "Real interest rates on Treasury Notes and Bonds" for discounting highway investments. These rates do not include the effects of inflation.

The real interest rate for a 30-year bond has fallen steadily over the past decade. A rate of 3.0 percent was used for the economic analysis reported in this document.

Table 5-12 summarizes the results of the life-cycle benefits and costs. As noted above, this analysis covers a 26-year time period to encompass expenditures to acquire right-of-way and to construct the project, and benefits which accrue as a result of the project. The accumulation of benefits covers a 20.5-year time span.

Table 5-12. Summary of Life-Cycle Benefits and Costs

METRIC	BUILD ALTERNATIVE	BUILD WITH TOLLS ALTERNATIVE
Cost	$3,460,415,000	$ 3,460,440,000
Present value of costs	$3,056,013,000	$ 3,056,034,000
Total benefits (Q3 2020–2040)	$9,973,276,000	$10,887,808,000
Present value of benefits	$6,125,259,000	$ 6,644,149,000
Present value benefit/cost ratio	2.0	2.2
Payback period	10 years	9 years

The table indicates the following.

- The two build alternatives are cost effective.
- The present value benefit-to-cost ratio is high, with benefits outweighing costs by a two-to-one margin.
- The payback period is relatively short, ten years or less.

Chapter 6
SUMMARY

This project summary attempts to highlight the key steps and crucial factors in completing the High Desert Corridor Traffic Study. It is a complex and detailed study which involved many important processes and analytic techniques which do not lend themselves to a succinct summary. An attempt is made here to provide a broad overview of how and why the study was conducted and offer results and assessment which reflect expected project performance. However, the reader is strongly encouraged to see the full High Desert Corridor Traffic Study documents which contain full details of all analyses, processes and data. The following summary focuses on four key project steps, listed below.

Establish a thorough understanding of existing conditions by compiling data which includes roadway facility characteristics, intersection configurations, highway traffic volumes, intersection turning movements, signal timing, demographic data, transit services, bicycle routes, schools, and public service providers, to name just a portion. Existing Conditions analysis measuring the operational performance of transportation facilities was then undertaken and assessed.

With a solid appreciation of existing conditions and firm understanding of the project's goals and the study area needs, expected future conditions both with and without the project were projected and assessed. Future traffic volumes for all study roadways and intersections were projected using carefully developed future local area demographic data, observed travel patterns, and state-of-the-art computer traffic modeling.

Using projected future traffic volume data in combination with the design layouts for each project roadway alternative, a series of traffic operations analyses were performed for freeway segments and ramp facilities on the SR 14 and I-15 freeways and over 160 intersections and freeway ramp termini. In addition to the previous Existing Conditions analysis, operating levels of service (LOS) were measured for a No-build condition, Build conditions with five separate and different project alternatives, and Transportation Systems Management (TSM). The results of these analyses provide the data upon which effectiveness and efficiency of the project alternatives are measured.

Finally, with the completion of traffic operations performance testing and assessing their results, a project cost and benefit analysis was conducted utilizing carefully developed estimates of projected total project expenditures along with monetized values associated with environmental pollutants and roadway accident costs. These costs are then compared to benefits associated largely with travel time savings, improved safety, and reduced emissions.

6.1 Project Overview

The High Desert Corridor has a long history and has been the subject of numerous, previous studies. It was envisioned in the 1970's as a metropolitan bypass providing alternative travel from I-5 to communities to the east such as San Bernardino, Victorville, Barstow, and Las Vegas via I-15.

In April 2002, Caltrans Districts 7 and 8, in partnership with the Federal Highway Administration, the Southern California Association of Governments, the San Bernardino County Associated Governments, the Los Angeles County Metropolitan Transportation Authority, the County of Los Angeles, the County of San Bernardino, the City of Palmdale, the City of Lancaster, the City of Adelanto, the City of Hesperia,

the City of Victorville, and the Town of Apple Valley, completed a 10-year effort that culminated in the publication of the *Regionally Significant Transportation Investment Study* for the High Desert Corridor. The Regionally Significant Transportation Investment Study steering committee adopted as the locally preferred alternative the proposed east–west corridor depicted in Figure 6-1.

In 2006, the High Desert Corridor Joint Powers Authority was formed to oversee the financing and construction of a 63-mile stretch of freeway corridor from SR 14 in the Palmdale/Lancaster area through the High Desert cities of Adelanto, Victorville, and Apple Valley—the High Desert Corridor. Its members include the County of San Bernardino, the County of Los Angeles, the Town of Apple Valley and the Cities of Adelanto, Victorville, Lancaster and Palmdale.

In 2007 and 2009, environmental studies were begun on two small components of the High Desert Corridor. The City of Victorville, with oversight from Caltrans District 8, began work on the High Desert Corridor—Phase 1 project in 2007. This project extended between SR 395 and SR 18 on the eastern end of the corridor. On the western end, Caltrans District 7 began working in 2009 on a new alignment for SR 138 between SR 14 and 100th Street East. During the course of conducting these studies and coordinating with regulatory and resource agencies for the proposed projects, it was determined that they should be combined into one large project—the High Desert Corridor—which incorporates the two "end pieces" and fills the gap in between them.

The proposed project is located in the High Desert area of Los Angeles and San Bernardino counties, north of the San Gabriel/San Bernardino mountains. The proposed route would run primarily in an east–west direction between SR 14 and SR 18 and extend for approximately 63 miles.

For the purpose of this traffic study report, the overall project is divided into the following three segments, as illustrated on Figure 6-2.

- ***Antelope Valley segment***
  From SR 14 to 100th Street East in Palmdale, a distance of approximately 10 miles.
- ***High Desert segment***
  From Palmdale city limits to Adelanto city limits in unincorporated Los Angeles and San Bernardino counties, a distance of approximately 26 miles.
- ***Victor Valley segment***
  From west of Caughlin Road in Adelanto to SR 18 east of Joshua Road in Apple Valley, a distance of approximately 27 miles.

Graphics and/or text in this report are generally characterized according to these three segments are summarized and presented in much greater detail in Section 2 of this document.[1]

6.2 Project Purpose and Need

The High Desert Corridor will function as part of the collective transportation system serving local and regional travel needs in north Los Angeles County and San Bernardino County. This corridor will accommodate the substantially increased vehicle capacity demands. The geographic location of the proposed corridor makes it an alternate corridor with potential to avoid congestion in the Los Angeles Basin by routing traffic around congested Los Angeles freeways.

[1] Other project approval/environmental documents may define different limits when describing High Desert Corridor segments.

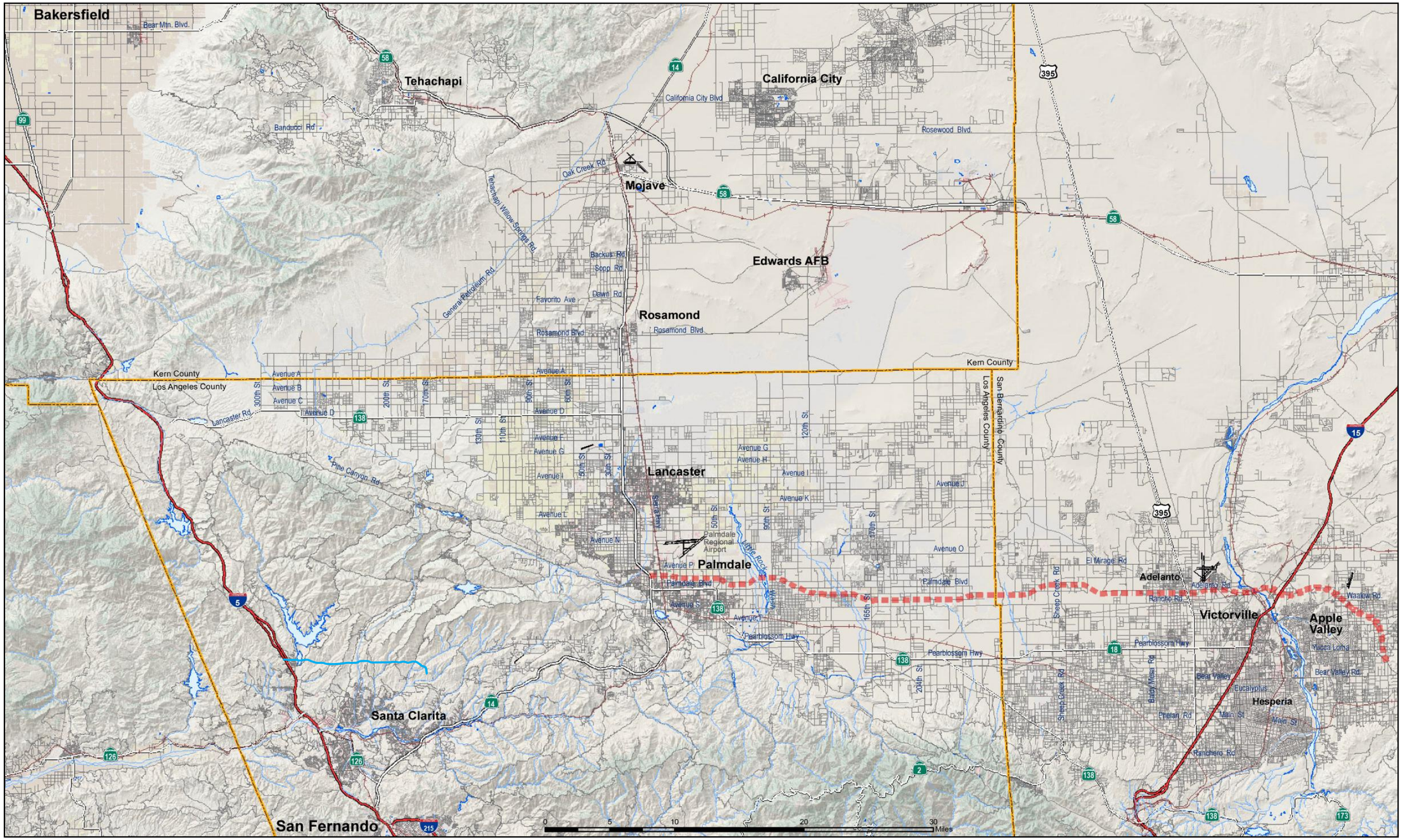
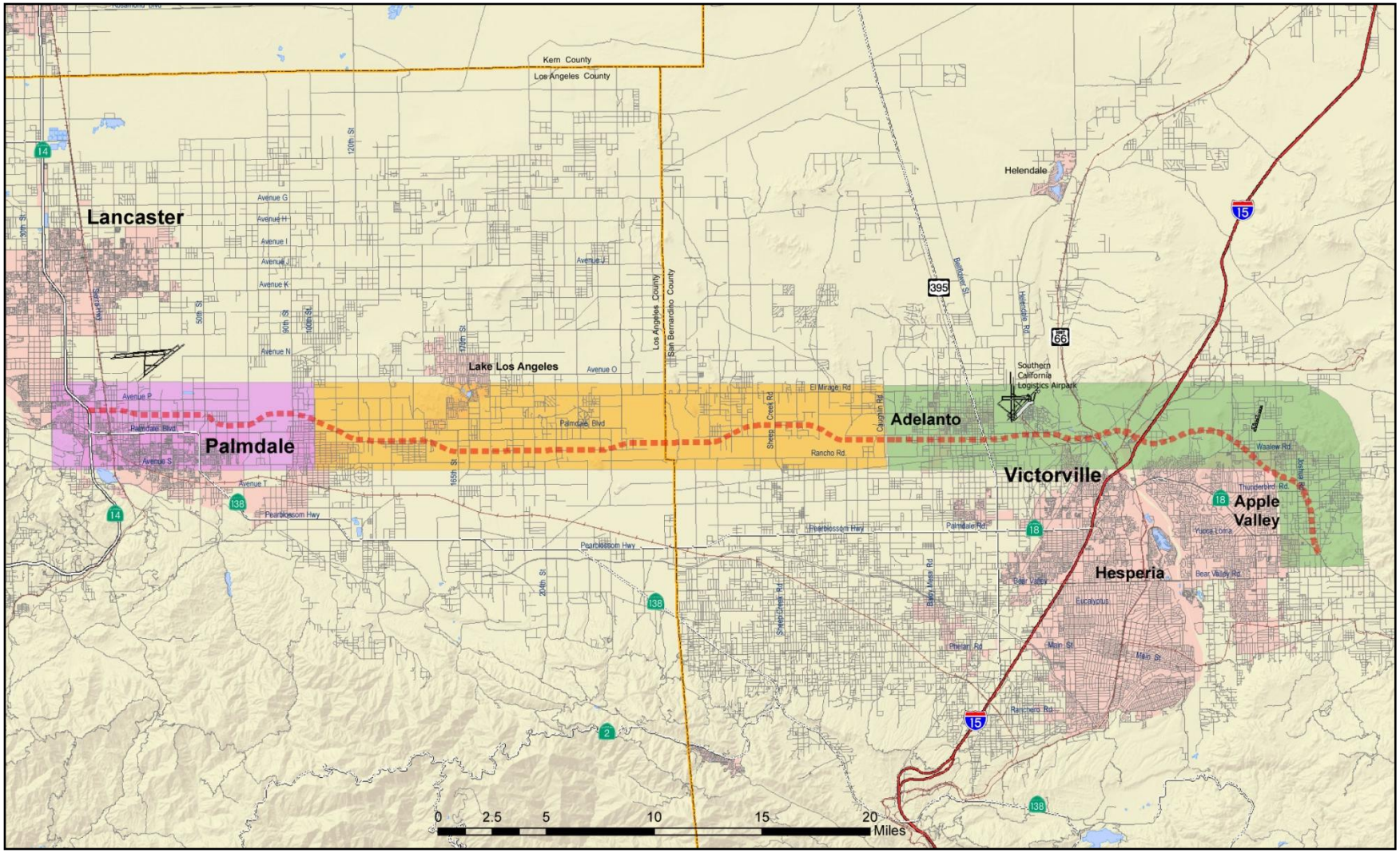


Figure 6-1: High Desert Corridor General Alignment



ANTELOPE VALLEY	HIGH DESERT	VICTOR VALLEY
Los Angeles County	**Los Angeles County–San Bernardino County**	**San Bernardino County**
Lancaster, Palmdale	Lake Los Angeles, El Mirage	Adelanto, Victorville, Apple Valley, Hesperia

Figure 6-2: High Desert Corridor Segments

Improvements to this corridor are considered necessary to provide for the existing and projected traffic demand attributed to residential growth and increasing commercial developments in the Antelope Valley, Victor Valley, and Apple Valley areas of Los Angeles and San Bernardino counties. This growth is resulting in inadequate capacity and accessibility along the existing east–west roadways as well as an increasing demand for goods movement and access to regional transportation facilities.

The purpose of the proposed project is to improve east–west mobility within the High Desert region of Southern California by addressing present and future travel demand and mobility needs within the Antelope and Victor valleys. The proposed action is intended to achieve the following objectives:

- Increase capacity of east–west transportation facilities to accommodate existing and future transportation demand
- Improve travel safety and reliability within the High Desert region
- Improve the regional goods movement network
- Provide improved access and connectivity to regional transportation facilities including airports and the existing and future passenger rail systems including the California High Speed Rail system and the proposed XpressWest High Speed Rail system.
- Contribute to State greenhouse gas reduction goals through the use of green energy features.

The specific needs to be addressed by the proposed action include:

- Recent and future population growth within the High Desert region
- Limited and unreliable east–west connectivity within the High Desert region
- Regional demands for goods movement to support the growth of the regional economy
- Future demands for the use of green energy including sustainability and green energy provisions in State law and policy.

The goals for the High Desert Corridor project include:

- Addressing current and future regional growth
- Improving east–west mobility
- Enhancing safety
- Improving connections between regional transportation facilities and efficient movement of goods.

6.3 Existing Conditions

6.3.1 Demographics and Land Use

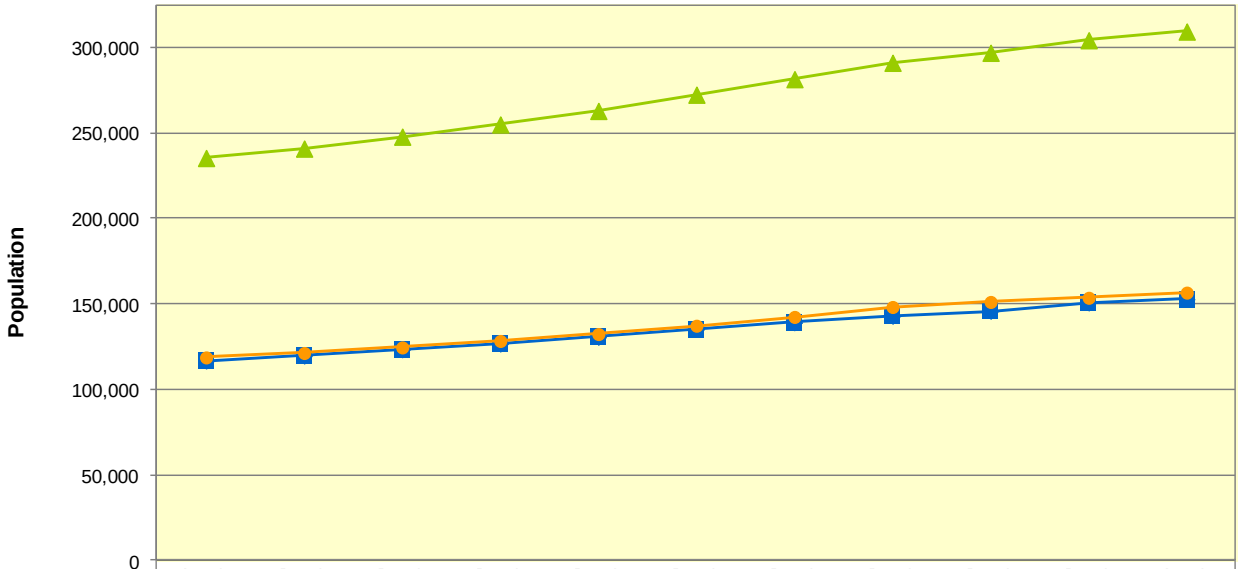
ANTELOPE VALLEY

Population and Housing

The Antelope Valley is located in northern Los Angeles County and the southeastern portion of Kern County, California and constitutes the western tip of the Mojave Desert. It is situated between the Tehachapi and the San Gabriel mountains. In recent decades, the valley has become a bedroom community to the greater Los Angeles area. Major housing tract development and population growth took off beginning in 1983 and the Antelope Valley is now home to more than 475,000 residents. The principal cities in the Antelope Valley are Palmdale and Lancaster.

Palmdale is separated from Los Angeles by the San Gabriel Mountain range. Over the last 25 years, this city has consistently been ranked in the top 25 fastest growing cities in the United States (based on percentage change). The population of Palmdale was 152,750 as of the 2010 U.S. Census, making it the sixth largest and fastest growing city in Los Angeles County. Figure 6-3 charts the recent population growth in Palmdale and Lancaster.

Lancaster is the fifth largest city in Los Angeles County and the ninth fastest growing city in the United States. It is separated from Bakersfield and the San Joaquin Valley by the Tehachapi Mountain Range to the north. The city of Lancaster has grown from 37,000 residents at the time of incorporation in 1977, to 156,633 residents as of the 2010 U.S. Census.



	Apr 1, 2000	Jan 1, 2001	Jan 1, 2002	Jan 1, 2003	Jan 1, 2004	Jan 1, 2005	Jan 1, 2006	Jan 1, 2007	Jan 1, 2008	Jan 1, 2009	Apr 1, 2010
Palmdale	116,670	119,599	123,308	126,645	130,547	135,179	139,105	142,873	145,777	150,682	152,750
Lancaster	118,718	121,313	124,574	128,362	132,388	137,268	142,417	148,231	151,181	153,613	156,633
Total	235,388	240,912	247,882	255,007	262,935	272,447	281,522	291,104	296,958	304,295	309,383
Housing											
Palmdale	37,096	37,641	38,341	38,991	39,906	41,262	42,780	43,959	44,825	46,161	46,544
Lancaster	41,745	42,105	42,719	43,512	44,376	45,784	48,004	49,975	50,609	51,168	51,835
Total	78,841	79,746	81,060	82,503	84,282	87,046	90,784	93,934	95,434	97,329	98,379

Source: E-8 Historical Population and Housing Estimates for Cities, Counties and the State, 2000–2010, November 2012

Figure 6-3: Population and Housing in Palmdale and Lancaster

Employment

The most important industry for Palmdale is the aerospace industry. However, in recent times, other manufacturing companies have relocated to Palmdale seeking more affordable land, close proximity to Palmdale Airport, and special tax breaks. Special tax breaks are granted for companies that relocate to the Antelope Valley Enterprise Zone and the Palmdale Federal Foreign Trade Zone. These are special zoning areas within the city that allow for various state and federal tax breaks and municipal grant incentives. These zones were put in effect to help Palmdale and Lancaster draw more jobs to the area so they would be less dependent on the Los Angeles Basin area for employment, thus relieving pollution and traffic congestion and stabilizing the local economy on several industries.

A number of world-class corporations and manufacturing firms have made Palmdale home, diversifying the local economy. A number of medical and related support offices are coming on-line to meet the needs

of the new Palmdale Regional Medical Center. The Antelope Valley Mall is the preeminent retail shopping destination in the region, with a wide variety of dining choices in its Restaurant Row.

Table 6-1 indicates area-wide employment by industry type.

Table 6-1. Antelope Valley Employment by Industry

	LOS ANGELES COUNTY	KERN COUNTY	TOTAL
Federal government	367	4,968	5,335
State government	1,981	2,004	3,985
Local government	13,285	3,121	16,406
Agriculture and mining	368	907	1,275
Utilities	334	403	737
Construction	2,736	393	3,129
Manufacturing	7,877	2,188	10,065
Wholesale trade	1,166	174	1,340
Retail trade	11,286	2,203	13,489
Transportation and warehousing	2,158	399	2,557
Management of companies and enterprises and administrative and support and waste management and remediation services	2,048	1,082	3,130
Information	829	143	972
Finance and insurance	3,027	325	3,352
Real estate and rental and leasing	786	225	1,011
Professional, scientific, and technical services	1,601	2,983	4,584
Educational services	758	216	974
Health care and social assistance	8,358	1,388	9,746
Arts, entertainment and recreation	553	361	914
Accommodation and food services	7,379	1,931	9,310
Other services (except public administration)	4,564	639	5,203
Not classified	237	66	304
Total Employment	**71,698**	**26,119**	**97,818**

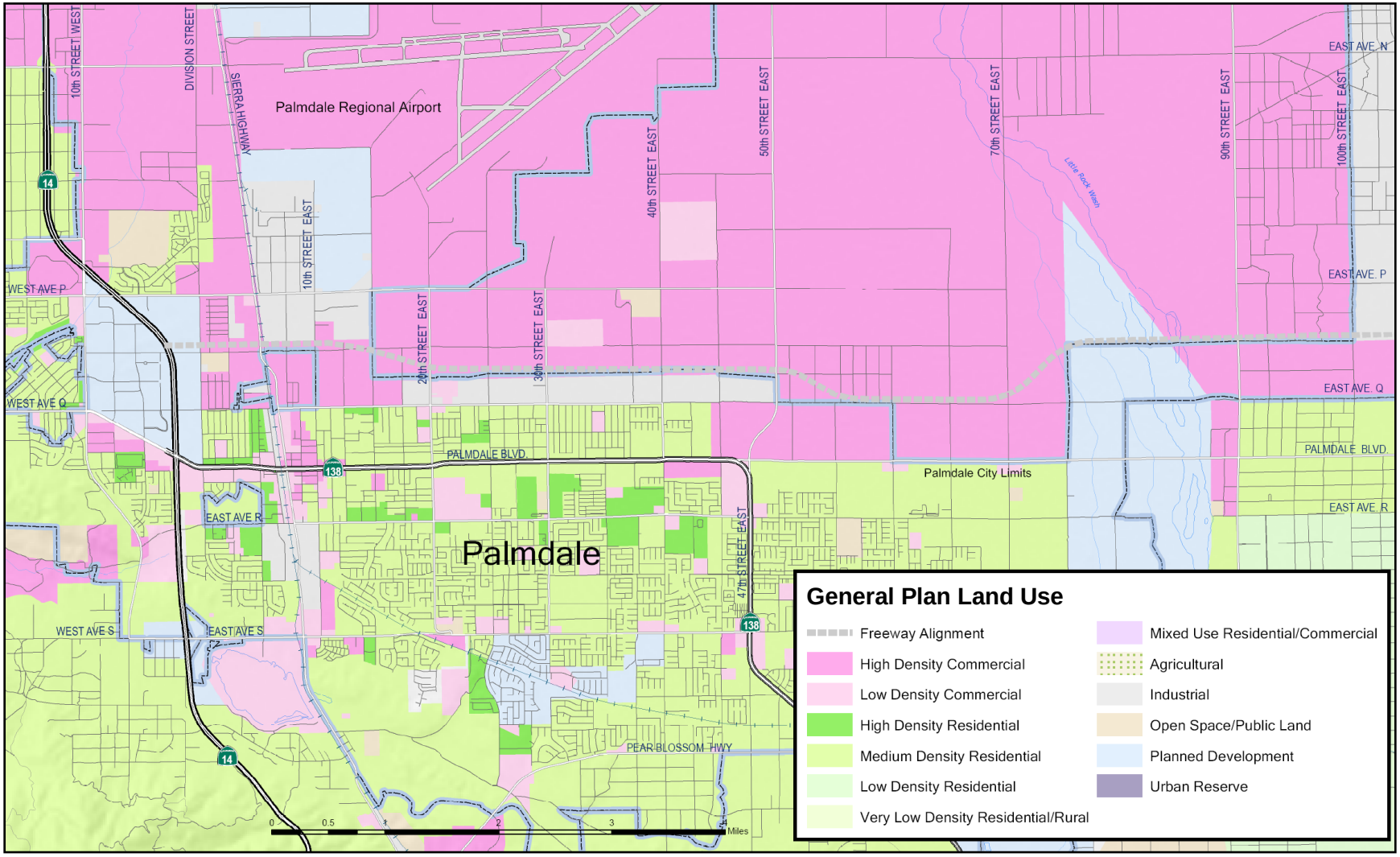
Source: 2013 Economic Roundtable Report, Greater Antelope Valley Economic Alliance

Land Use within Focused Study Area

Figure 6-4 illustrates the location and type of land uses within the portion of the City of Palmdale being addressed by this traffic study. The existing and planned land use, adopted by General Plan ordinance, indicates concentrations of commercial land uses along arterial streets such as Palmdale Boulevard (SR 138) and 10th Street West; industrial land uses located adjacent to the Los Angeles/Palmdale Regional Airport, and residential lands occupying most of the three-mile wide corridor running between Avenue Q and Pearblossom Highway (Avenue T) located east of SR 14. The majority of retail space is situated along 10th Street West where shopping centers are clustered in the vicinity of the Antelope Valley Mall, at Rancho Vista Boulevard/Avenue P.

Regional Transportation Facilities

Two transportation depots are located within the focused study area, the Los Angeles/ Palmdale Regional Airport and the Palmdale Transportation Center. The Palmdale Transportation Center is a multi-modal facility which serves as a Metrolink train station and a hub for connections between the Antelope Valley Transit Authority and commuter bus service, Santa Clarita Transit bus service, Greyhound bus service and Amtrak Thruway bus service. The Palmdale Transportation Center is also designated as a stop on the future California High Speed Rail line from San Francisco to San Diego.



Source: City of Palmdale

Figure 6-4: Land Use within the Antelope Valley

HIGH DESERT

Population and Housing

For the purpose of this traffic study report, the "High Desert" is defined as the unincorporated portions of Los Angeles and San Bernardino counties lying between the Palmdale/Lancaster and Adelanto/ Victorville/Hesperia/Apple Valley urbanized areas. The High Desert is highly rural in character. Lake Los Angeles (population 12,328), and Phelan (population 14,304), are the only communities characterized by the 2010 census as "places." The Bureau of Census does not individually report population or housing for the remaining unincorporated communities, which generally have fewer than 2,000 residents. The Southern California Association of Governments travel forecasting model estimates the 2003 population in the High Desert area at 33,646, indicating that the population outside these two designated places is extremely limited.

Employment

The High Desert area is almost entirely composed of unincorporated lands of Los Angeles and San Bernardino. The region is highly rural in character, with a very low density population pattern and sparse employment opportunities. The Southern California Association of Governments travel forecasting model estimates only 5,022 jobs in the entire region as of 2003. Nearly all residents are self-employed or are employed in jobs located in the Antelope and Victor Valley areas. The majority of current employment opportunities are located in the San Bernardino County portion of the High Desert area and nearly all future growth is expected to take place there.

Land Use within Focused Study Area

The land use along the proposed highway is rural in character and its zoning designation is predominately low density residential. General plans prepared for the High Desert area indicate that residents desire to maintain the rural character of their communities, and prefer that growth be focused in the adjacent urbanized areas to the east and west of their communities. Preservation of the rural character of the region is the common vision which unites the communities of the High Desert area. Nevertheless, it is anticipated that both population and employment will approximately double during the 2003 to 2035 (2040) time period considered in this study. Figure 6-5 illustrates the location and type of land uses within the portion of the study area.

Regional Transportation Facilities

Other than pass-through local service and some limited express bus stops, the High Desert portion of the study area is not directly served by regional transportation facilities. Such facilities are, however, located both to the east and west in the Antelope and Victor Valley areas, respectively.

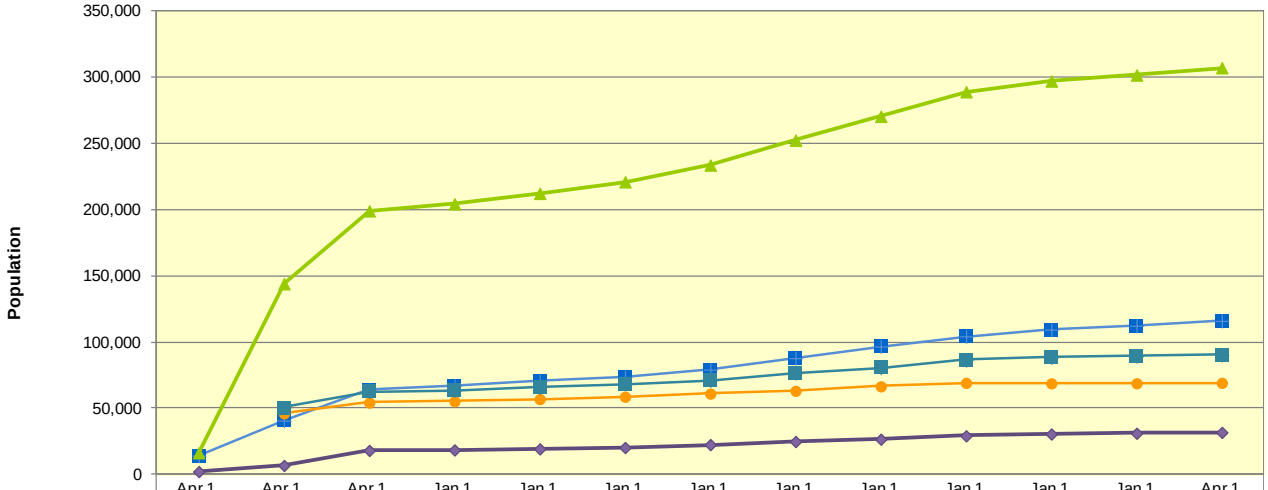
VICTOR VALLEY

Population and Housing

The Victor Valley is located in the southwest area of the Mojave Desert in San Bernardino County, north of the San Bernardino Mountains and Cucamonga Valley, and east of Antelope Valley. The valley has grown from the 1980's to a current population of about 350,000. In this region, there are four incorporated cities—Victorville, Hesperia, Apple Valley, and Adelanto.

Victorville, "Key City of the High Desert," is located northeast of Los Angeles and north of San Bernardino through the Cajon Pass. From the time of its incorporation in 1962, Victorville's population has grown to 115,903 residents. Figure 6-6 charts the recent population growth in the Victor Valley. Hesperia is just south of Victorville along I-15 and is the second largest city in Victor Valley and incorporated in 1988. Hesperia has grown more than 30 percent from 62,590 in 2000 to 90,173 in 2010.

Figure 6-5: Land Use in the High Desert Region



	Apr 1, 1980	Apr 1, 1990	Apr 1, 2000	Jan 1, 2001	Jan 1, 2002	Jan 1, 2003	Jan 1, 2004	Jan 1, 2005	Jan 1, 2006	Jan 1, 2007	Jan 1, 2008	Jan 1, 2009	Apr 1, 2010
Victorville	14,220	40,674	64,029	66,904	70,256	73,538	79,081	87,813	96,564	104,218	109,321	112,252	115,903
Apple Valley	*	46,079	54,239	55,269	56,890	58,665	61,005	63,117	66,490	69,127	68,776	68,828	69,135
Hesperia	*	50,418	62,590	63,572	65,704	68,350	70,956	76,548	80,648	86,332	88,356	89,364	90,173
Adelanto	2,164	6,791	18,130	18,512	19,327	20,326	22,528	24,855	26,617	29,181	30,526	31,087	31,765
Total	16,384	143,962	198,988	204,257	212,177	220,879	233,570	252,333	270,319	288,858	296,979	301,531	306,976
Housing Units													
Victorville		15,627	22,498	22,781	23,312	24,046	25,495	27,955	30,527	33,040	34,946	35,782	36,655
Apple Valley		16,672	20,163	20,513	20,909	21,448	22,193	22,985	24,425	25,631	25,792	25,962	26,117
Hesperia		17,359	21,352	21,503	21,816	22,390	22,953	24,628	26,030	27,973	28,650	28,949	29,004
Adelanto		2,754	5,547	5,575	5,711	5,912	6,411	7,047	7,722	8,560	8,840	8,952	9,086
Total		52,412	69,560	70,372	71,748	73,796	77,052	82,615	88,704	95,204	98,228	99,645	100,862

Source: E-8 Historical Population and Housing Estimates for Cities, Counties and the State, 2000–2010, State of California Department of Finance, November 2012

*Apple Valley and Hesperia were unincorporated in 1980—no population figures are available.

Figure 6-6: Population and Housing in Victorville, Hesperia, Apple Valley and Adelanto

The Town of Apple Valley is east of and adjoining the neighboring cities of Victorville and Hesperia and was incorporated in 1988. Apple Valley grew almost 22 percent from 54,239 in 2000 to 69,135 in 2010. Spring Valley Lake is an unincorporated census designated place, surrounded by Apple Valley. In 2010, it had a population of 8,220.

Adelanto is located adjacent and northwest of Victorville. Incorporated in 1970, Adelanto is the smallest of the cities in Victor Valley. In November of 1992, Adelanto became a charter city. Adelanto has grown more than 40 percent from 18,130 in 2000 to 31,765 in 2010.

Employment

Table 6-2 indicates area-wide employment by industry type.

The largest single employment concentration in Victor Valley is the Southern California Logistics Airport (SCLA) in Victorville. In July 2000, the Southern California Logistics Airport received the designation of "foreign trade zone" to entice companies that have foreign dealing to the vacant airport. There is also a 24-hour-a-day, seven-day-a-week, onsite U.S. Customs office. By having both the designation of being a foreign trade zone and an onsite U.S. Customs office, many companies have been enticed to open an office or warehouse at Southern California Logistics Airport.

Educational institutions are the largest employers as an industry with each city not only having elementary, middle, and high schools, but also with multiple institutions of higher learning. With all of these schools and school districts combined, education employs more than three times the labor force of the Southern California Logistics Airport.

Table 6-2. Victor Valley Employment by Industry

INDUSTRY SECTOR	NUMBER OF ESTABLISHMENTS	NUMBER EMPLOYED
Agriculture, forestry, fishing	142	468
Natural resources and mining	5	20
Construction	744	3,855
Manufacturing	347	4,169
Wholesale	278	2,027
Retail	1,921	22,259
Transportation, communications, utilities	324	3,005
Finance, insurance, real estate	781	4,583
Business and professional services	207	9,873
Education and health care services	978	18,581
Total all private sector	7,770	69,301
Total Government and non-profit	413	5,517
Total All Industries	8,183	74,818

Source: Claritas 2009 Data, www.victorvalleyca.com

Within Victor Valley, immediately south and adjacent to the Southern California Logistics Airport is a Federal Correctional Complex that employs more than 800 people to cover the three prisons located there. There is a medium I security complex for men, a medium II security complex for men with a satellite prison camp for low security female prisoners, and a United States penitentiary for high security male prisoners.

Three hospitals and medical centers employing more than 3,000 employees are located in the Victor Valley, including St. Mary's Medical Center, Desert Valley Hospital/Medical Group, and Victor Valley Community Hospital.

Land Use within Focused Study Area

Figure 6-7 illustrates the location and type of land uses within the Victor Valley portion of the study area. Both existing conditions and future plans indicate a continuation of this land use in the foreseeable future. The proposed project will run just south of the Southern California Logistics Airport and either north or south of the Victorville Federal Correctional Complex, both located between Adelanto and Victorville.

The land use surrounding the corridor of the proposed highway alignment is primarily industrial. At the eastern most extent of the proposed highway, the land use begins to change, with a mix of industrial zoning increasingly supplanted by low density residential as Apple Valley expands to the east.

Regional Transportation Facilities

While no commercial airlines fly into Victor Valley, the Southern California Logistics Airport does service many companies for air cargo and does have the ability to accept any current flying commercial and military aircraft. In fiscal year 2009, the Southern California Logistics Airport enplaned 227 metric tons of cargo compared with 1.95 million metric tons for the Los Angeles region. Southern California Logistics Airport does, however, service executive air travel. Also located within Victor Valley is an airport in Apple Valley and Hesperia. Both airports are open to the public, but neither has the ability to accept commercial aircraft. Insofar as public transportation, Victor Valley Transit Authority is the local bus operator servicing Victor Valley. It operates 18 local bus routes, and one express bus route connecting Victor Valley with Barstow.

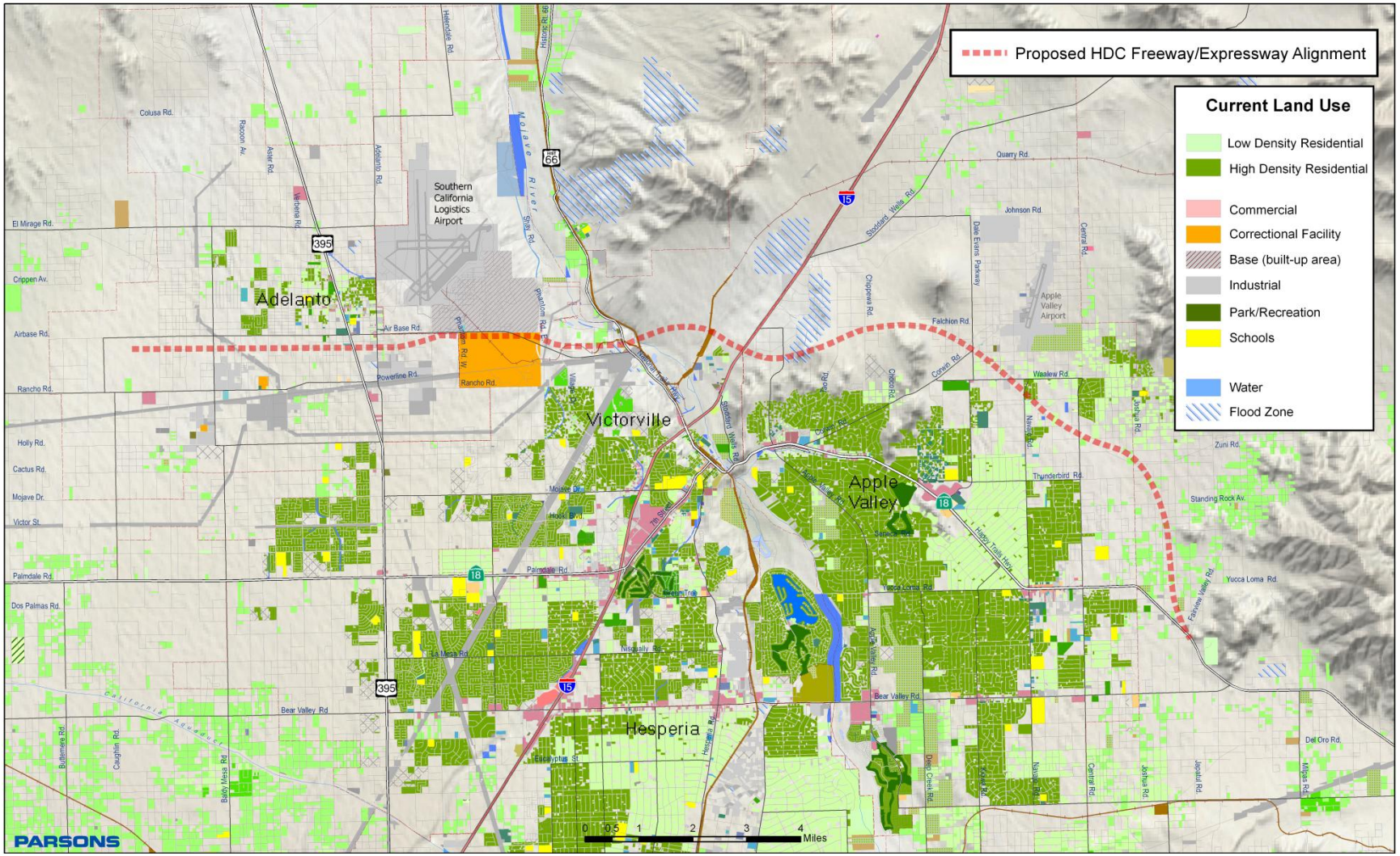


Figure 6-7: Land Use in Victor Valley

6.3.2 Regional and Local Roadway Facilities

ANTELOPE VALLEY

Regional Roadway Network

State Route 14

State Route 14 is a north–south state highway in southern California, approximately 116.6 miles in length. The southern portion of the highway is signed as Antelope Valley Freeway. The route connects I-5, near Santa Clarita, with U.S. Route 395, near Inyokern. Rapid suburban growth in Santa Clarita, Lancaster and Palmdale has made the Antelope Valley Freeway one of the most congested in southern California.

State Route 138

State Route 138 is an east–west state highway generally following the northern foothills of the San Gabriel Mountains of southern California from its junction with I-5 south of Gorman eastward to Mount Anderson Junction, its eastern junction with SR 18 south of Crestline in the San Bernardino Mountains. The route is approximately 105.4 miles long.

Interstate 5

Within California, I-5 is a major north–south route of the Interstate Highway System. This highway links the major California cities of San Diego, Los Angeles, Sacramento, and Redding. From its junction with SR 14, just south of Santa Clarita, I-5 crosses over the Newhall Pass through the Santa Susana Mountains into the San Fernando Valley. Between the Los Angeles Civic Center and SR 14, motorists traverse 28.7 miles of heavily used roadway.

Interstate 15

Within California, I-15 is a major north–south route through San Bernardino, Riverside, and San Diego Counties, and it has a length of 287 miles in the state. It is a major thoroughfare for traffic between Southern California, Las Vegas, Nevada, and points beyond. It is also the main route for traffic between San Diego and the Inland Empire.

State Route 58

State Route 58 is a 241-mile, east–west highway across the southern San Joaquin Valley, the Tehachapi Mountains, and the Mojave Desert. It runs between its western terminus at the junction of U.S. Route 101 and its eastern terminus at Barstow (junction I-15). It has junctions with SR 14 in Mojave. SR 58 is the only freeway to cross the Sierra Nevada range south of I-80, the only other freeway to cross the Sierra.

Local Roadway Network

State Route 138 (Palmdale Boulevard)

Palmdale Boulevard, also known as SR 138 from 10th Street West to 50th Street East, runs perpendicular to SR 14 (also known as the Antelope Valley Freeway). West of SR 14, Palmdale Boulevard is a four-lane regional arterial with a speed limit of 50 mph from 10th Street West to Fifth Street West, and 45 mph from Fifth Street West to the SR 14 southbound ramp terminal intersection. Just east of the SR 14 northbound ramp terminal intersection, the speed limit drops to 40 mph.

From SR 14 and traveling east to 25th Street East, Palmdale Boulevard services a highly concentrated general commercial area. East of 25th Street East to just beyond 35th Street East, Palmdale Boulevard is lined by mixed commercial and single family residential land uses and the speed limit changes to 45 mph. From 35th Street East to 50th Street East, Palmdale Boulevard is surrounded by mainly open space, but the land use is zoned for light industry, single family, and general commercial.

Other substantial local roadways and their surrounding land uses were examined and are discussed in great detail in Section 2 of this report and include: Avenue Q, Avenue P, 50th Street East, 40th Street East, 30th Street East, 25th Street East, 20th Street East, 10th Street East, Sierra Highway, and 10th Street West.

HIGH DESERT

Regional and Local Roadway Network

The High Desert portion of the corridor is currently served by a sparse network of county and local roads which are typically two lanes in width (one through travel lane per direction). Sporadic, short sections of roadway have been widened along frontages of newer land developments as a condition of approval.

Few of these roadways are continuous throughout the High Desert region. East Palmdale Boulevard is one of the longest east–west roadways, extending from Palmdale to 240th Street East; continuing east as El Mirage Road/East Avenue P. Sheep Creek Road is one of the longest north–south roadways, extending from SR 138 in Phelan to just north of El Mirage Road. The proposed project will construct a new freeway through the High Desert portion of the study area connecting Palmdale and Adelanto, just south of and roughly parallel to Palmdale Boulevard.

VICTOR VALLEY

Regional Roadway Network

Interstate 15 (Mojave Freeway)

Interstate 15 is a north–south freeway that divides the vicinity of Victorville into east and west sides for about 14 miles through the study area from Bear Valley Road on the south to Dale Evans Parkway on the north. Within this study segment, I-15 is also called the Mojave Freeway. For about 3.5 miles at the southern end of the study area, I-15 and Historic Route 66 share the same road, until reaching Palmdale Road (SR 18), where Route 66 continues on its own alignment to the northeast. At this same interchange, I-15 shares its designation with SR 18 for another 3.5 miles north until its interchange with Route 66 (National Trails Highway).

I-15 has eight interchanges along this study segment and services various landmarks along the way such as the Mall of Victor Valley at the Bear Valley Road interchange, the City Hall/ Sheriff/ Courthouse from the Palmdale Road interchange, the San Bernardino County Fairgrounds at the Roy Rogers Drive interchange and a landfill at the northern end. The interstate crosses over the Mojave River north of the interchange with Route 66. The land use is mostly vacant land, but includes some hotels or motels, camp grounds, gas stations and a few businesses. There exist some residential areas behind frontage land and at times residential areas with sound walls when close to the freeway.

U.S. Route 395

U.S. Route 395 generally runs in the north–south direction with its southern terminus at I-15 near Hesperia and its northern terminus at the border of Canada. U.S. Route 395 forms the western border of this portion of the study area for approximately seven miles. The southern end of the route consists of a few areas with residential frontage and property walls, but the land use is mostly vacant, rural land along the frontage with some scattered residential use set back behind the frontage. U.S. Route 395, north of the Palmdale Road intersection, creates the western border of Victorville. At this intersection, there is a gas station and a shopping center on the northeast corner.

Historic U.S. Route 66

Historic U.S. Route 66 was constructed in 1926 and passed through Victorville. Currently, the route follows I-15 for about 3.5 miles from Bear Valley Road north to the Palmdale Road interchange and then separates to what is known as Seventh Street and continues until just south of the Mojave River, where the route turns northwest and becomes known as the National Trails Highway.

The Seventh Street segment of Route 66 is still the primary street through Old Town Victorville. The land use consists of some schools, small businesses, gas stations, auto shops, an RV park, a shopping center and a Veteran Memorial Park. The National Trails Highway segment of Route 66 follows D Street northwest of Seventh Street. This segment general runs parallel to the BNSF Railroad and has land use that is mostly industrial, utilities, vacant or used by the railroad.

California State Route 18

California SR 18 begins its northwest end at SR 138 near Adelanto, approximately 24 miles west of I-15, and continues around and then south to SR 210 in San Bernardino. Within this study area, SR 18 has a western and an eastern segment. From the western terminus, SR 18 heads east named as Pearblossom Highway until becoming Palmdale Road and crossing U.S. Route 395 in Adelanto where the Victor Valley portion of the study area begins, four miles west of I-15. Through Apple Valley and within the study area of Victor Valley, SR 18 becomes an expressway (Happy Trails Highway). It joins with I-15 inside of Victorville at the Palmdale Road interchange, continuing north to the Route 66 interchange. The expressway begins again east of I-15, heading east and crossing over the Mojave River. It continues east and then south reaching the intersection of Yucca Loma and Navajo Roads.

The land use on the west segment is mixed with shopping centers, businesses, gas stations, auto shops, auto dealerships, restaurants, schools, vacant land, a power plant, some residential, mobile parks and utilities. The east segment starts near the BNSF Railroad and the Mojave River, coming off of D Street or Route 66. It passes the National Guard at Apple Valley Road followed by the St. Mary Regional Medical Center.

Local Roadway Network

A number of substantial local roadways and their surrounding land uses were examined and are discussed in great detail in Section 2 of this report and include: Adelanto Road, Air Expressway,Village Drive, Stoddard Wells Road, Apple Valley Road, Dale Evans Parkway, Corwin Road, Waalew Road, Yucca Loma Road, Bear Valley Road, Navajo Road, Central Road, and Joshua Road.

6.3.3 Existing Traffic Counts

Existing traffic volume information was collected along state routes and at representative intersections located throughout the study area. Traffic volumes along state routes are crucial, as the proposed High Desert Corridor freeway will funnel traffic to and from both SR 14 and I-15 at a focused location and will divert traffic away from local service interchanges along existing and future proposed east–west roadways. Traffic volumes along local east–west and north–south local roads will also shift directional patterns, as traffic flows to the new High Desert Corridor freeway (and away from Palmdale Boulevard and Palmdale Road) to take advantage of its higher speeds and to avoid traffic signal delays. Moreover, establishing a reliable accounting of existing traffic counts provides the basis for reflecting future traffic, whether it be greater or less than existing conditions, or simply diverted elsewhere.

STATE ROUTE 14

Traffic volumes on SR 14 within Los Angeles County were compiled by Caltrans' Division of Traffic Operations, Office of System Planning Management Traffic Data Branch for the year 2011. Annual average daily traffic (AADT) for selected locations along SR 14 were obtained. These counts represent total vehicles, passenger vehicles and trucks, averaged over 365 days of the year. Peak month and peak hour volumes were also included. Traffic volumes show that the morning peak hour is from 7:00 to 8:00 a.m. in both directions during the midweek, Tuesday through Thursday. The afternoon peak hour runs from 5:00 to 6:00 p.m., also during the midweek.

INTERSTATE 15

Traffic volumes on I-15 within San Bernardino County were compiled by Caltrans' Division of Traffic Operations for the year 2011. Annual average daily traffic for selected locations along I-15 were obtained. These counts represent total vehicles, passenger vehicles and trucks, averaged over 365 days of the year. Peak month and peak hour volumes are also included.

For the purpose of this traffic study, Parsons also conducted vehicle counts during all hours of the day for seven days from May 12 to May 18, 2011. These counts were collected at three locations:

1. South of Palmdale Road
2. South of D Street
3. South of Dale Evans Boulevard

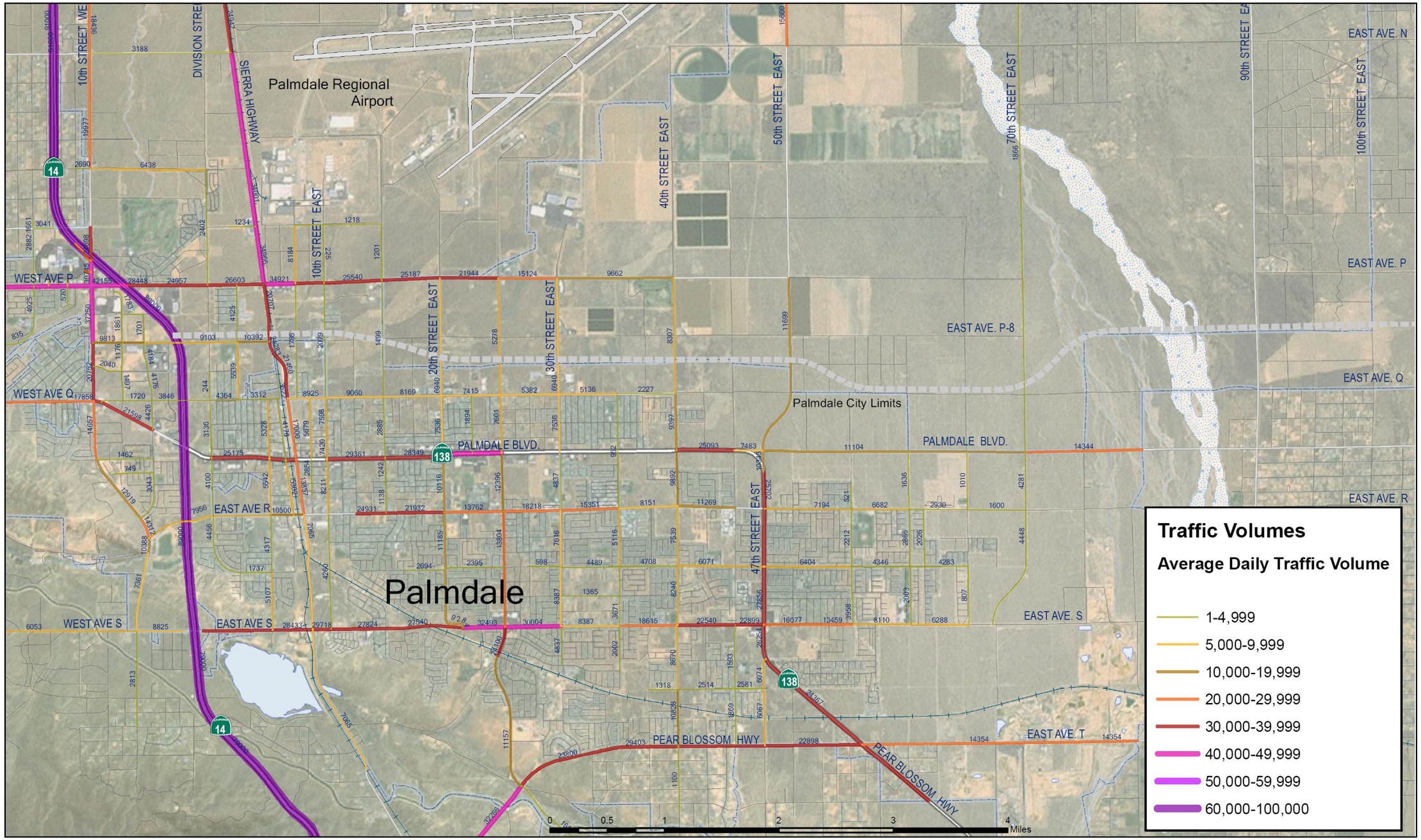
Figure 6-8 illustrates average daily traffic volumes on avenues and street segments located within the focused study portion of Antelope Valley. These traffic counts were assembled by the City of Palmdale traffic engineering staff from a variety of sources on different days of the week and months of the year. The traffic volumes are not "balanced" from one segment to the next, and may therefore include anomalies.

At a representative "screenline," just west of 15th Street, the graphic illustrates that each of the major arterials, East Avenue P, Palmdale Boulevard, East Avenue R and East Avenue S, all carry similar volumes of daily traffic, ranging from 25,000 to 30,000 vehicles per day. The north–south streets carry much less traffic, plus or minus 10,000 vehicles per day (VPD) along the screenline segments just south of Palmdale Boulevard.

The highest daily traffic traffic flows occur along 10th Street West, in the vicinity of the Antelope Mall, and along Sierra Highway to the north of East Avenue P.

6.3.4 Traffic Operational Analysis

A very detailed and complex traffic analysis for the study area for all project alternatives and options includes the existing and expected future operations on SR 14 and I-15 freeway mainline and freeway ramp segments. These include operations of traffic flows between two points on a limited-access freeway, as well as the weaving, merging and diverging movements which occur on the mainline between ramps. Further, the analysis includes signalized intersections at all freeway ramp connections to local streets and at numerous representative intersections throughout much of the study area (over 150 in total). Traffic operations of each interception were analyzed using current and future configurations, traffic, volumes, and signal timing/stop sign-control parameters.



Source: City of Palmdale

Figure 6-8: Existing Average Daily Traffic Volumes on Local Roads *(Year 2012)*

FREEWAY MAINLINE SEGMENT AND RAMP ANALYSIS

In addition to collecting traffic volume counts, travel time data were collected to identify congestion points and segments along the corridor and to provide data for calibrating a traffic simulation model. The analysis began with observations of traffic conditions during morning (7:00 to 9:00 a.m.) and afternoon (4:00 to 6:00 p.m.) peak periods.

Corridor analysis for existing conditions utilized the CORSIM traffic simulation model. CORSIM (corridor simulation) is a software package funded by the Federal Highway Administration (FHWA) and widely used for analyzing existing conditions and evaluating plans for new construction. Additionally, once the model is calibrated to more closely reflect existing travel patterns within a study area, it can be used to analyze both existing conditions and future scenarios by providing qualitative measures of performance.

Level of service (LOS) is the qualitative measure used to gauge the operational performance of a given roadway segment or intersection by describing the driver's experience within a traffic stream, generally in terms of service measures such as speed and travel time, freedom to maneuver, traffic interruptions and delay, and comfort and convenience. Six levels of service are defined by the Highway Capacity Manual (HCM) 2000. Letters designate each level—from LOS A (indicating traffic flows with little or no delay) to LOS F (indicating over-saturated conditions where traffic flow exceeds freeway capacity, generally resulting in long queues and delays). To determine freeway LOS, the density of each mainline segment was extracted from the CORSIM output and compared to the criteria for freeways listed on Table 6-3.

Along SR 14, the results show that the mixed flow lanes operate at the equivalent of LOS A or LOS B during the AM peak period, with only two segments operating at LOS C in the southbound direction. All HOV lane segments operate at the equivalent of LOS A—free flow conditions.

Table 6-3. Mainline and Ramp Level of Service Definitions

LOS	DESCRIPTION	DENSITY (pc/mi/ln)	
		MAINLINE	RAMPS
A	Describes free-flow operations. Free-flow speeds prevail.	<11	<10
B	Represents reasonably free-flow operations and free-flow speeds are maintained.	>11 and <18	>10 and <20
C	Provides for flow with speeds at or near the free-flow speed of the freeway.	>18 and <26	>20 and <28
D	Describes the level at which speeds begin to decline slightly with increasing flows and density begins to increase somewhat more quickly.	>26 and <35	>28 and <35
E	At this level's highest density value, it describes operation that is at capacity of the freeway.	>35 and <45	>35
F	Describes breakdown in vehicular flow and queues forming behind the breakdown points.	>45	Demand exceeds capacity

Source: Highway Capacity Manual 2000

During the PM peak period, the mixed flow lanes are slightly more congested, but virtually all segments operate at LOS B or LOS C. Speeds remain high, ranging from 56 to 63 mph. By virtue of the unconstrained speeds and good level of service in the mixed flow lanes, the HOV lanes are not well utilized, and operate at LOS A.

Along I-15, the results show that the freeway operates at the equivalent of LOS A or LOS B during both AM and PM peak periods. This performance relates to weekday peak periods. Midday on Fridays, the northbound level of service is worse, based on observation of traffic conditions. The same observation applies to Sunday afternoons for southbound level of service.

Freeway weave segments, as well as on-ramp merge and off-ramp diverge influence areas were also analyzed using the CORSIM simulation model. The analysis results of the weaving, merging, and diverging areas along the corridor are generally all acceptable during the AM and PM peak periods.

FREEWAY INTERCHANGE RAMP TERMINI AND INTERSECTION ANALYSIS

Level of service criteria were once again used in evaluating the performance of the freeway interchange ramp termini and other local intersections. The CORSIM software was again used for the intersection analysis, as both the SR 14 and I-15 freeways and the ramp intersections were modeled as an integrated system. Intersections in the vicinity of the Antelope Valley Mall, were analyzed using CORSIM. The remaining isolated intersections were analyzed using TRAFFIX version 8.0 software. Level of service definitions for ramp termini and local intersections are listed on Table 6-4.

A complete accounting of study area intersections is listed in Table 6-5 and illustrated on Figure 6-9.

The results indicate that all signalized study intersections operate at LOS D or better. Three stop sign controlled intersections operate at LOS E or F as follows:

- Rancho Vista Boulevard/East Avenue P and 10th Street East — LOS E (AM) and LOS F (PM)
- Palmdale Boulevard and 15th Street East — LOS E (PM)
- Palmdale Boulevard and 70th Street East — LOS F (AM)

In addition to the analysis of intersection operations using CORSIM and TRAFFIX computer software, traffic conditions were observed in the field. Field observation indicates that the intersection of 10th Street West and West Avenue P/Rancho Vista Boulevard (adjacent to the Antelope Valley Mall) is also congested during afternoon peak hours. This congestion creates traffic queues which spill back to the north along 10th Street West.

Table 6-4. Level of Service Definitions for Intersections

LOS	DESCRIPTION	CONTROL DELAY PER VEHICLE (sec/veh)	
		UNSIGNALIZED	SIGNALIZED
A	Traffic flows with very little delay and optimal speeds. Most vehicles do not stop at all.	0–10	<10
B	Traffic flows with very little delay and speeds may be slightly reduced. Very infrequent and short waits at traffic signals. More vehicles stop at intersections than for LOS A.	>10–15	>10–20
C	Traffic speeds continue to slow. Some vehicles may stop at this level, although many vehicles still pass through the intersection without stopping.	>15–25	>20–35
D	Congestion becomes more noticeable. Many vehicles stop and the proportion of vehicles not stopping declines.	>25–35	>35–55
E	Low speeds and traffic backups at intersections. Often considered to be the limit of acceptable delay.	>35–50	>55–80
F	Very slow speeds and congestion. Long traffic backups. Very likely to wait for multiple greens to get through an intersection. This is considered to be unacceptable to most drivers.	>50	>80

Source: Highway Capacity Manual 2000

Table 6-5. Study Area Intersections *(1 of 3)*

NO.	INTERSECTION
1	SR 14 southbound off-ramp and West Avenue
2	SR 14 northbound off-ramp and West Avenue N
3	10th Street West and West Avenue O-8
4	10th Street West and Sam's Club access
5	10th Street West and SR 14 northbound on-ramp
6	10th Street West and SR 14 southbound off-ramp
7	10th Street West and Mall Ring Road
8	10th Street West and West Avenue P
9	Lowe's Driveway and West Avenue P
10	SR 14 southbound on-ramp and West Avenue P
11	SR 14 northbound off-ramp and West Avenue P
12	10th Street West and West Palmdale Boulevard
13	SR 14 southbound off-/on-ramps and West Palmdale Boulevard
14	SR 14 northbound off-/on-ramps and East Palmdale Boulevard
15	Division Street and East Palmdale Boulevard
16	SR 14 southbound off-ramp and West Avenue S
17	SR 14 northbound off-ramp and East Avenue S
18	Sierra Highway and East Avenue P
19	Sierra Highway and Technology Drive
20	Sierra Highway and East Avenue Q
21	5th Street East and East Palmdale Boulevard
22	6th Street East and East Palmdale Boulevard
23	Sierra Highway and East Palmdale Boulevard
24	10th Street East and East Avenue P
25	10th Street East or 30th Street East and westbound High Desert Corridor
26	10th Street East or 30th Street East and eastbound High Desert Corridor
27	10th Street East and East Avenue Q
28	10th Street East and East Palmdale Boulevard
29	15th Street East and East Avenue Q
30	15th Street East and East Palmdale Boulevard
31	20th Street East and East Avenue P
32	20th Street East and westbound High Desert Corridor
33	20th Street East and eastbound High Desert Corridor

NO.	INTERSECTION
34	20th Street East and East Avenue Q
35	20th Street East and East Palmdale Boulevard
36	25th Street East and East Palmdale Boulevard
37	30th Street East and East Avenue P
38	30th Street East and East Avenue Q
39	30th Street East and East Palmdale Boulevard
40	40th Street East and East Avenue Q
41	40th Street East and East Palmdale Boulevard
42	50th Street East and East Avenue P
43	50th Street East and westbound High Desert Corridor
44	50th Street East and eastbound High Desert Corridor
45	50th Street East and East Palmdale Avenue
46	70th Street East and East Avenue P
47	70th Street and westbound High Desert Corridor
48	70th Street and eastbound High Desert Corridor
49	70th Street East and East Palmdale Boulevard
50	90th Street East and East Avenue P
51	90th Street East and westbound High Desert Corridor
52	90th Street East and eastbound High Desert Corridor
53	90th Street East and East Avenue Q
54	90th Street East and East Palmdale Boulevard
55	110th Street East and East Palmdale Boulevard
56	140th Street and East Palmdale Boulevard
57	140th Street and westbound High Desert Corridor
58	140th Street and eastbound High Desert Corridor
59	140th Street and East Avenue R
60	170th Street East an East Palmdale Boulevard
61	170th Street East and westbound High Desert Corridor
62	170th Street East and eastbound High Desert Corridor
63	170th Street East and East Avenue S
64	165th Street East and SR 138
65	180th Street East and East Palmdale Boulevard
66	210th Street and East Palmdale Boulevard
67	210th Street and westbound High Desert Corridor

Table 6-5. List of Study Intersections *(2 of 3)*

NO.	INTERSECTION
68	210th Street and eastbound High Desert Corridor
69	210th Street and East Avenue S
70	SR 138 and SR 18
71	240th Street and East Palmdale Boulevard
72	240th Street East and westbound High Desert Corridor
73	240th Street East and eastbound High Desert Corridor
74	240th Street East and East Avenue R
75	Oasis Road and El Mirage Road
76	Oasis Road and westbound High Desert Corridor
77	Oasis Road and eastbound High Desert Corridor
78	Sheep Creek Road and El Mirage Road
79	Sheep Creek Road and westbound High Desert Corridor
80	Sheep Creek Road and eastbound High Desert Corridor
81	Sheep Creek Road and Holly Street
82	Sheep Creek Road and SR 18
83	Caughlin Road and Air Base Road
84	Caughlin Road and westbound High Desert Corridor
85	Caughlin Road and eastbound High Desert Corridor
86	Caughlin Road and Rancho Road
87	Koala Road and Air Base Road
88	Koala Road and westbound High Desert Corridor
89	Koala Road and eastbound High Desert Corridor
90	Koala Road and Rancho Road
91	Aster Road and SR 18
92	Bellflower Street and SR 18
93	U.S. 395 and Chamberlaine Way
94	U.S. 395 and Air Base Road
95	U.S. 395 and westbound High Desert Corridor
96	U.S. 395 and eastbound High Desert Corridor
97	U.S. 395 and Rancho Road
98	U.S. 395 and Mojave Drive
99	U.S. 395 and SR 18
100	Phantom Street and Mustang Street
101	Phantom St West and westbound High Desert Corridor
102	Phantom St West and eastbound High Desert Corridor
103	Phantom Street and Rancho Road
104	Topaz Road and SR 18
105	Amethyst Road and SR 18
106	Phantom St East and westbound High Desert Corridor
107	Phantom St East and eastbound High Desert Corridor
108	El Evado Road and Air Expressway Boulevard
109	Village Drive and Air Expressway Boulevard
110	El Evado Road and SR 18
111	National Trails Highway and westbound High Desert Corridor
112	National Trails Highway and eastbound High Desert Corridor
113	National Trails Highway and Air Expressway Boulevard
114	I-15 southbound off-/on-ramps and Mojave Drive
115	I-15 northbound off-/on-ramps and Mojave Drive
116	I-15 southbound off-/on-ramps and Roy Rogers Drive
117	I-15 northbound off-/on-ramps and Roy Rogers Drive
118	Amargosa Road and SR 18
119	Kentwood Boulevard and SR 18
120	Park Avenue and SR 18
121	I-15 southbound off-ramp and Palmdale Road
122	I-15 northbound on-ramp and Palmdale Road
123	I-15 northbound off-ramp and Mariposa Road
124	I-15 southbound off-/on-ramps and National Trails Highway/D Street
125	I-15 northbound off-/on-ramps and National Trails Highway/D Street
126	West Frontage Road and E Street
127	I-15 northbound off-/on-ramps and E Street
128	Gateway and north Frontage Road
129	Gateway and south Frontage Road
130	I-15 southbound off-ramp and Stoddard Wells Road
131	I-15 northbound on-ramp and Stoddard Wells Road/Frontage Road
132	I-15 West Frontage Road and Stoddard Wells Road
133	Stoddard Wells Road and I-15 Frontage Road
134	Stoddard Wells Road and SR 18

Table 6-5. List of Study Intersections *(3 of 3)*

NO.	INTERSECTION
135	Apple Valley Road and SR 18
136	I-15 southbound off-/on-ramps and Victorville Quarry Road
137	I-15 northbound off-/on-ramps and Stoddard Wells Road (north)
138	I-15 southbound off-/on-ramps and Dale Evans Parkway
139	I-15 northbound off-/on-ramps and Dale Evans Parkway
140	Choco Road and Frontage Road
141	Choco Road and westbound High Desert Corridor
142	Choco Road and eastbound High Desert Corridor
143	Choco Road and Falchion Road
144	Dale Evans Parkway and Air Expressway Boulevard
145	Dale Evans Parkway and westbound High Desert Corridor
146	Dale Evans Parkway and eastbound High Desert Corridor
147	Dale Evans Parkway and SR 18

NO.	INTERSECTION
148	Navajo Road and Waalew Road
149	High Desert Corridor and Waalew Road
150	Central Road and Waalew Road
151	High Desert Corridor and Central Road
152	Central Road and Thunderbird Road
153	Central Road and SR 18
154	Joshua Road and Cahuilla Road
155	Joshua Road and High Desert Corridor
156	Joshua Road and Thunderbird Road
157	Joshua Road and Standing Rock Road
158	Joshua Road and Yucca Loma Road
159	Joshua Road and Nisqually Road
160	High Desert Corridor and Standing Rock Road
161	High Desert Corridor and Yucca Loma Road
162	High Desert Corridor and Nisqually Road
163	Bear Valley Road and SR 18
175	West Frontage Road and I-15 southbound on-ramp

6.3.5 Truck Traffic

The importance of truck traffic as part of the overall freight moving system in Southern California cannot be overstated. This report examined existing truck traffic conditions in the Los Angeles/Inland Empire region, essentially defined as San Bernardino and Riverside Counties.

ROUTE CHOICE TO ACCESS THE HIGH DESERT CORRIDOR

Truckers predominately choose SR 58 (Tehachapi) or I-5 (the Grapevine) to access Los Angeles and San Bernardino counties from Kern County and points north. The Grapevine's profile is relatively steady at six percent both up and down. On SR 58, the elevation of Tehachapi Pass is about the same, just over 4,000 feet. The Tehachapi profile illustrates that the grade is less steep, however, ranging between 2.4 and 2.8 percent along the adjacent railroad line.

If a trucker is traveling between Bakersfield (on I-5 or SR 99) and Lancaster, the route choice following SR 58 to SR 14 presents less of a gradient than following I-5 up and down the Grapevine to SR 138. In the winter, SR 58 is less subject to closure due to inclement weather than the Grapevine segment of I-5.

TRUCK VOLUMES

Relative to other state highway facilities in the Inland Empire region, truck volumes on east–west highways between I-5 and I-15 in the High Desert region are very low. Figure 6-10 illustrates the magnitude of four- and five-axle or greater truck volumes on state routes in the Inland Empire region. The 2009 Caltrans truck count report shows an average daily volume of 1,940 four- and five-axle trucks on SR 14 west of the interchange with SR 18 (three percent of the AADT); 616 four- and five-axle trucks on SR 18 east of U.S. Route 395 (3 percent of the AADT); and 461 four- and five-axle trucks on SR 138 west of the interchange with SR 14 (12 percent of the AADT).

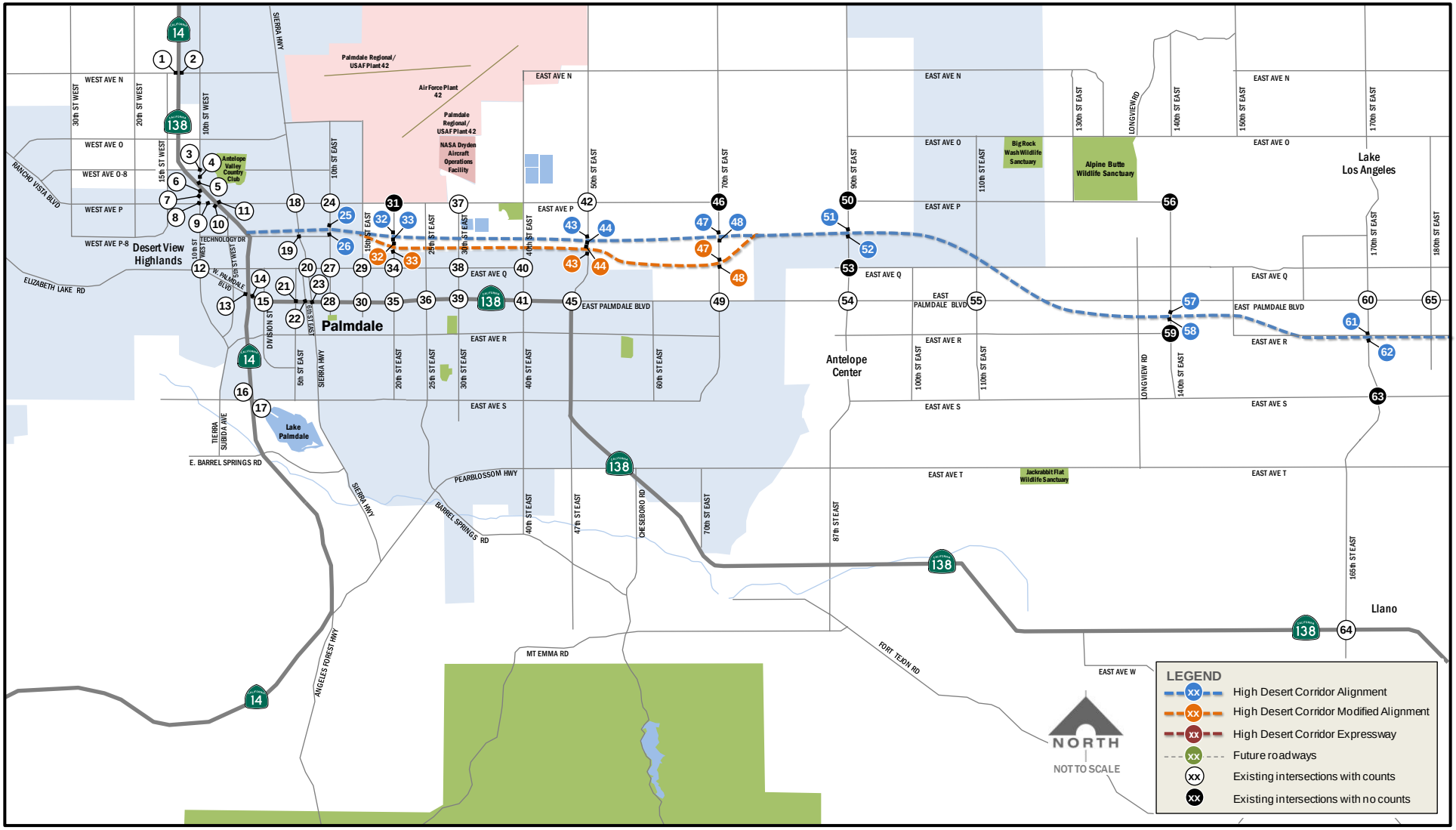


Figure 6-9: Locations of Study Intersections *(1 of 3)*

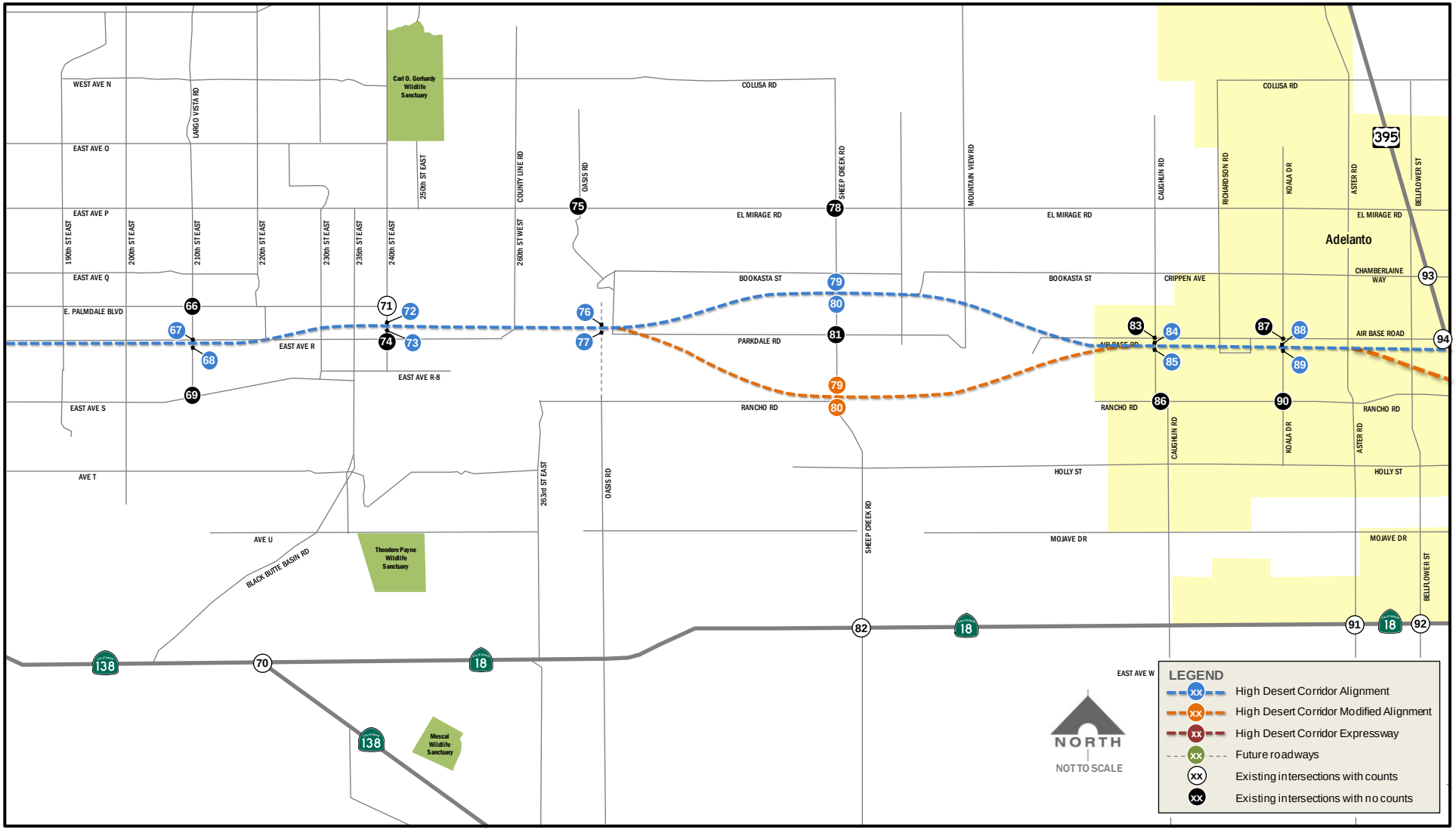
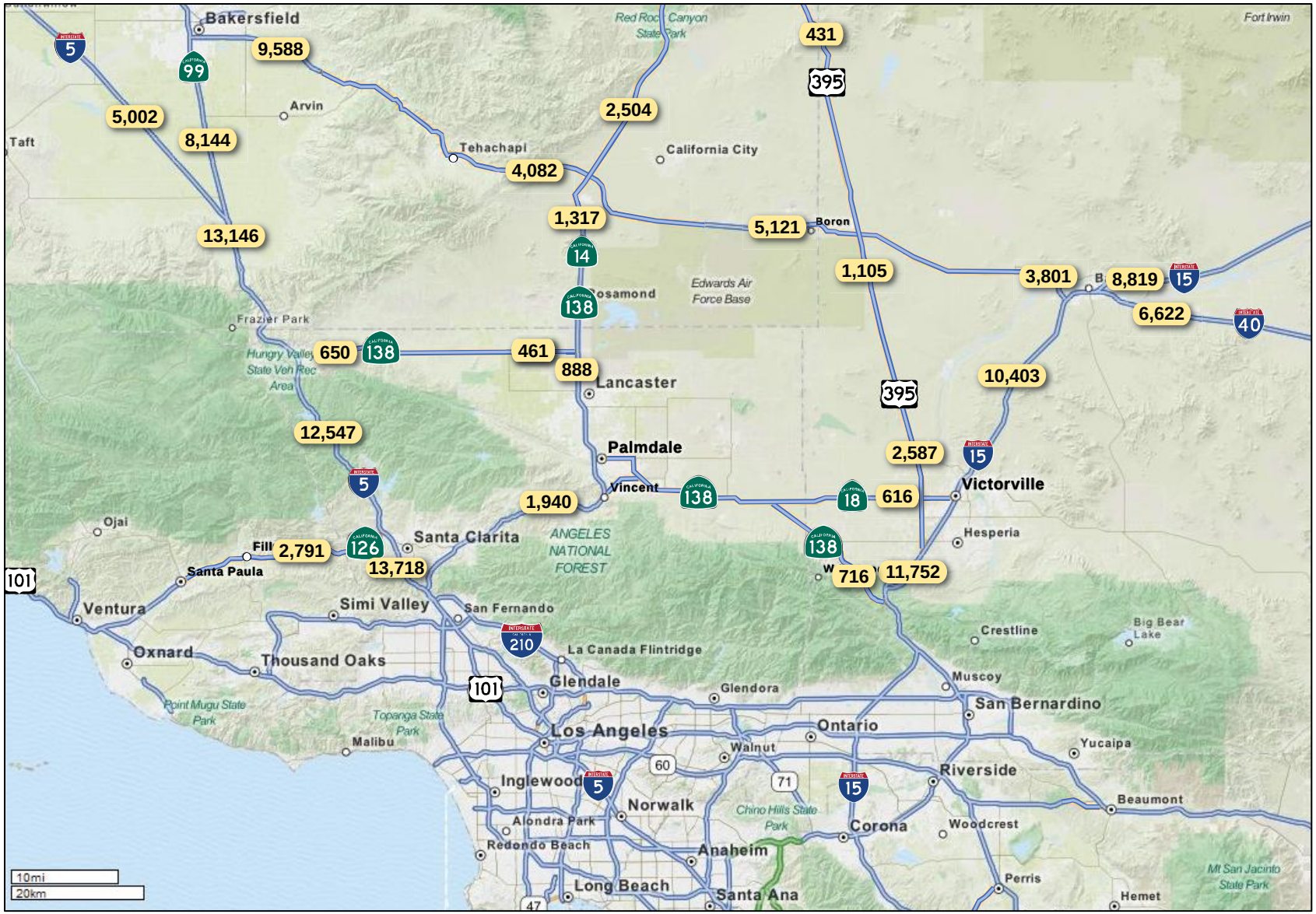


Figure 6-9: Locations of Study Intersections *(2 of 3)*

Figure 6-9: Locations of Study Intersections *(3 of 3)*



Source: Caltrans, 2009 Traffic Volumes on the State Highway System, Truck Data

Figure 6-10: Medium–Heavy (4-Axle) and Heavy–Heavy (5- and 6-Axle) Truck Volumes in the High Desert Corridor

Additional vehicle classification counts were conducted in the High Desert Corridor study area to supplement the truck volume data compiled by Caltrans. Table 6-6 summarizes the two-way traffic count data, following the Caltrans method of vehicle classification. Mid-weekday (Tuesday through Thursday) daily average count data is presented. This supplemental truck count data generally corresponds to the Caltrans truck data presented previously.

Table 6-6. Supplemental Truck Counts in High Desert Corridor from Truck Count Data
(Year 2011)

LOCATION TIME	ADT TOTAL	TOTAL TRUCKS	TOTAL TRUCK %	2- AND 3-AXLE VOLUME	2- AND 3-AXLE AS % OF ADT	4- AND 5+-AXLE VOLUME	4- AND 5+-AXLE AS % OF ADT
Palmdale Boulevard (SR 138) East of 25th Street East							
Weekday average	21,143	584	2.8%	401	1.9%	183	0.9%
Pearblossom Highway (SR 18) between SR 138 and 233rd Street							
Weekday average	4,271	419	9.8%	205	4.8%	215	5.0%
Palmdale Road (SR 18) between U.S. Route 395 and Amethyst Road							
Weekday average	17,807	1702	9.6%	1,597	9.0%	105	0.6%
Happy Trail Highway N (SR 18) west of Navajo Road							
Weekday average	14,935	1,696	11.4%	1,210	8.1%	486	3.3%
U.S. Route 395 north of Air Expressway Boulevard							
Weekday average	11,676	3,178	27.2%	1,522	13.0%	1,656	14.2%
U.S. Route 395 north of Palmdale Boulevard							
Weekday average	22,959	1,875	8.2%	879	3.8%	997	4.3%

Note: Weekday average of counts taken May 12 through May 18, 2011.

6.3.6 Public Transportation

ANTELOPE VALLEY

The Antelope Valley Transit Authority was created in 1992 by Los Angeles County and the cities of Lancaster and Palmdale to provide transit service to residents of Antelope Valley communities. The Antelope Valley Transit Authority provides three services: local fixed-route buses (including school routes), on-demand "Dial-A-Ride" paratransit vehicles, and longer distance commuter coach service. The Antelope Valley Transit Authority provides commuter bus service to Los Angeles and the San Fernando Valley. Rail service is available from the Antelope Valley to Santa Clarita, the San Fernando Valley and Los Angeles Basin cities on Monday through Saturday by Metrolink. Public transportation services revolve around the Palmdale Transportation Center as the major transfer center in Palmdale, and Lancaster City Park as the major transfer center in Lancaster.

The proposed alignment and grade separations of the proposed multimodal High Desert Corridor project will not affect access to these facilities or services.

VICTOR VALLEY

The Victor Valley Transit Authority provides local bus service for the communities of Adelanto, Apple Valley, Hesperia, Victorville, and San Bernardino County. The majority of the public transportation servicing the Victor Valley area revolves around the Victor Valley Transit Center.

The Victor Valley Transit Authority operates 11 different local fixed-routes bus schedules which run Monday through Saturday in addition to ADA complementary paratransit bus services in the Victor Valley. The NTC Commuter Route is a relatively new and popular service with a Monday-Friday schedule between Victorville and Fort Irwin.

Also offered is the B-V (Barstow to Victor Valley) Link Lifeline Services, which link Fort Irwin, Barstow, Apple Valley, Victorville and San Bernardino Valley. The current service operates on Monday, Wednesdays, and Fridays. The Amtrak Southwest Chief, which travels between Chicago and Los Angeles, provides the only train route through Victorville, with one train west to Los Angeles in the morning and one returning train in the evening.

The proposed alignment and grade separations of the proposed multimodal High Desert Corridor project will not affect access to these facilities or services.

6.4 Traffic Volume Forecasts

The traffic forecasts contained in this document were produced using the Southern California Association of Governments (SCAG) 2008 RTP Regional Transportation Model. The model is calibrated to year 2000 travel behavior and validated to year 2003 travel statistics. A complete description of the model is provided in a January 2008 report entitled *2003 Model Validation and Summary* which may be viewed at *www.scag.ca.gov/modeling/index.htm.*

The SCAG Regional Transportation Model covers the entire SCAG region which includes six counties and 187 cities located within those counties. The coverage of the SCAG regional model is illustrated on Figure 6-11 along with the boundaries of traffic analysis zones (TAZ).

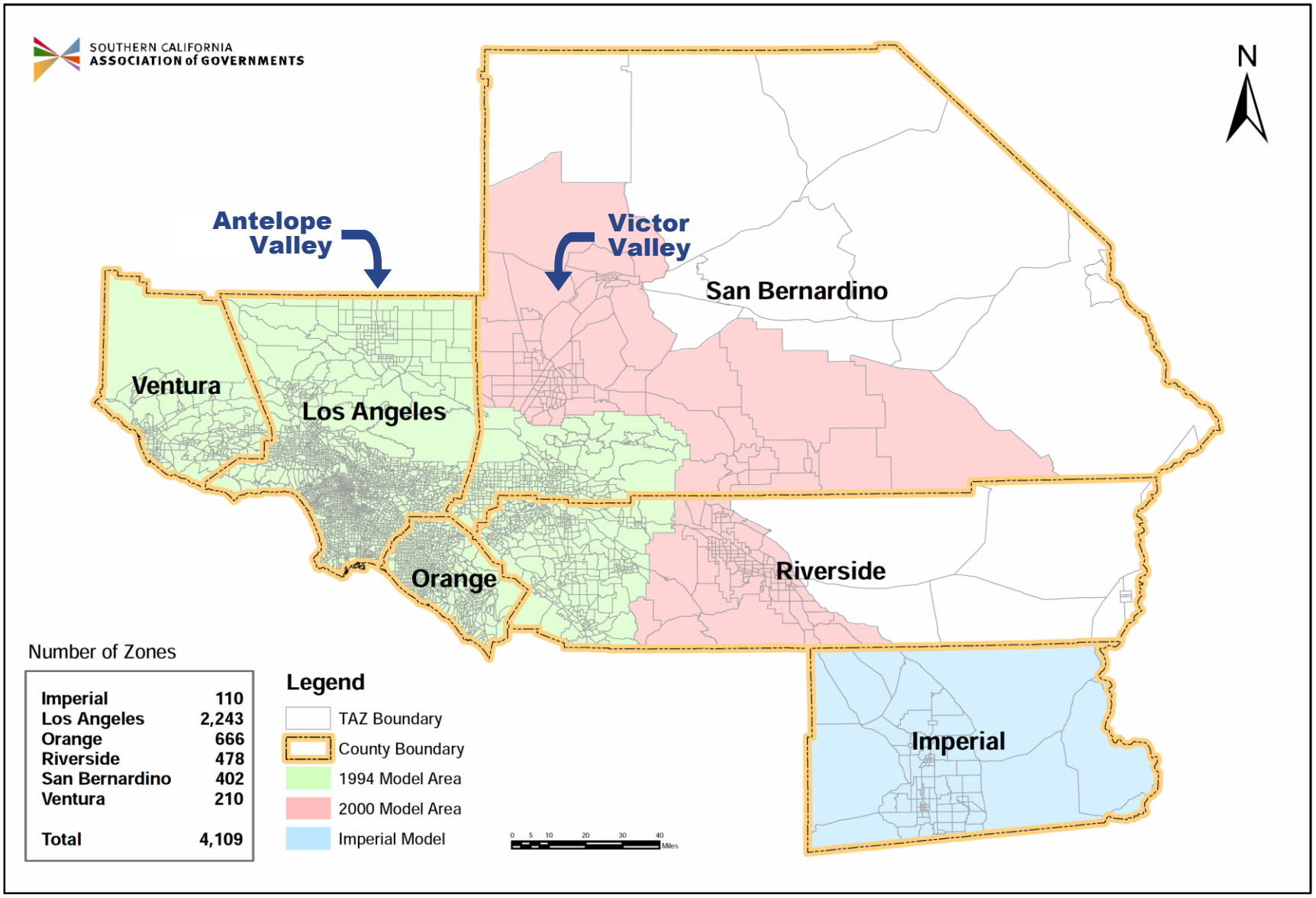
Traffic analysis zones provide the spatial unit (or geographical area) within which travel behavior and traffic generation are estimated. The regional model zone system contains 4,109 TAZs, 31 port related TAZs, 12 airport TAZs and 40 cordon stations (points of entry and exit along streets and highways at the perimeter of the modeling area).

6.4.1 User Defined Modifications

The SCAG Regional Transportation Model consists of numerous submodels which can be grouped according to the following major categories:

- Trip generation model
- Trip distribution model
- Mode choice model
- Assignment model.

The publication *User Guide for the SCAG Planning Model in TransCAD 5.0*, June 2008, details procedures for defining scenarios for testing land use and network modifications. Most aspects of the model are not eligible for (non-SCAG staff) user modifications.



Source: Southern California Associations of Governments, Year 2003 Model Validation and Summary: Regional Transportation Model, http://www.scag.ca.gov/modeling/

Figure 6-11: SCAG Traffic Analysis Zone System

For the *High Desert Corridor Traffic Study*, the following user-defined modifications were made to the SCAG model.

- Freeway ramp capacity
- Subdivision of traffic analysis zones
- Addition of roadway network detail
- Antelope Valley Mall employment reclassification
- Palmdale high-speed rail station characteristics
- XpressWest (formerly DesertXpress) high-speed passenger train characteristics
- Year 2030 peak hour vehicle trips generated for Victorville Station
- Truck trip characteristics for major distribution centers.

6.4.2 Land Use Assumptions

Insofar as Los Angeles County, the SCAG adopted 2008 Regional Transportation Plan growth forecast for year 2035 is 10 percent higher than the 2013 Department of Finance forecast for year 2040. The SCAG Draft 2012 Regional Transportation Plan growth forecast for year 2035 is seven percent higher than the 2013 Department of Finance forecast for 2035.

In San Bernardino County, the SCAG adopted Regional Transportation Plan population forecast for year 2035 is five percent higher than the 2013 Department of Finance forecast for year 2040. The SCAG draft 2012 Regional Transportation Plan population for year 2035 is one percent higher than the 2013 Department of Finance forecast 2035.

Given these findings of forecast consistency and the delayed (2013) release of the Department of Finance interim projections, the High Desert Corridor project development team elected to utilize the SCAG 2008 adopted Regional Transportation Plan growth forecast for year 2035 as the basis of the 2040(+) design year traffic volumes, along with the corresponding year 2035 highway and transit networks which meet air quality conformity determinations. Year 2040 screenline volumes as developed in this report are presented on Table 6-7 and illustrated on Figure 6-12.

6.4.3 Traffic Volume Forecast Comparison

As noted earlier, two subregional traffic studies have been conducted in the Victor Valley portion of the study area within the past five years. The most recent, the *High Desert Corridor SR-18 Realignment Traffic Analysis Report*, was prepared for the City of Victorville by PBAmericas, Inc., and was finalized in March 2010. The *Victor Valley Area Transportation Study* subregional transportation forecast model was applied to develop the traffic forecasts, taking into account two modifications. In order to account for trucking activity at the Southern California Logistics Airport, 25,300 additional truck trips were added to the Victor Valley Area Transportation Study truck trip tables, into and out of the Southern California Logistics Airport each weekday, representing full buildout of the Southern California Logistics Airport, as documented in the *Southern California Logistics Airport AM and PM Peak Hour Intersection Analysis* traffic impact report prepared for the City of Victorville by RBF Consulting. PBAmericas additionally added trips associated with the full buildout of the *Desert Gateway Specific Plan* to the *Victor Valley Area Transportation Study* traffic model. Full buildout of the *Desert Gateway Specific Plan* area would provide for 26,100 residential units, housing a population of 82,900, and some 22,590,000 square feet of office, commercial and industrial uses.

Table 6-7. Year 2040 High Desert Corridor Screenline Volumes

LOCATION	AM PEAK		MID PEAK		PM PEAK		NIGHT		DAILY	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
NO-BUILD ALTERNATIVE										
East Avenue G	2,962	548	2,571	1,633	3,403	5,751	1,112	864	10,048	8,796
El Mirage Road	5,050	1,067	5,573	4,602	4,478	8,684	1,803	1,794	16,903	16,148
High Desert Corridor	—	—	—	—	—	—	—	—	—	—
233rd Street East/SR 18	1,929	1,388	3,369	2,772	3,290	2,858	2,117	2,302	10,706	9,320
State Highway 138	5,235	2,072	7,489	6,518	4,723	7,507	5,082	6,473	22,529	22,571
Angeles Crest Highway	2,763	305	3,051	1,748	3,202	4,718	316	393	9,331	7,164
Total	**17,939**	**5,380**	**22,053**	**17,273**	**19,096**	**29,518**	**10,430**	**11,826**	**69,517**	**63,999**
NEW FREEWAY/EXPRESSWAY BUILD ALTERNATIVE										
East Avenue G	607	88	395	178	1,200	1,357	168	95	2,371	1,718
El Mirage Road	469	26	163	53	214	1,569	70	16	916	1,664
High Desert Corridor	15,628	5,293	18,951	15,945	16,904	24,436	7,877	8,715	59,360	54,388
233rd Street East/SR 18	595	243	381	593	626	1,425	258	317	1,860	2,579
State Highway 138	3,667	1,820	6,265	4,660	4,168	6,503	4,656	5,367	18,757	18,349
Angeles Crest Highway	1,670	291	1,260	604	1,742	2,877	243	350	4,914	4,122
Total	**22,636**	**7,761**	**27,415**	**22,033**	**24,854**	**38,167**	**13,272**	**14,860**	**88,178**	**82,820**
NEW FREEWAY/EXPRESSWAY BUILD ALTERNATIVE—ALTERNATE ALIGNMENT										
East Avenue G	612	90	402	176	1,211	1,423	171	96	2,396	1,785
El Mirage Road	563	28	164	55	256	1,683	73	17	1,055	1,783
High Desert Corridor	15,575	5,332	18,901	16,014	16,868	24,302	7,906	8,770	59,252	54,418
233rd Street East/SR 18	564	243	375	564	561	1,408	244	286	1,744	2,501
State Highway 138	3,687	1,773	6,253	4,627	4,202	6,470	4,635	5,329	18,777	18,200
Angeles Crest Highway	1,648	290	1,306	604	1,743	2,881	243	356	4,940	4,132
Total	**22,649**	**7,756**	**27,402**	**22,040**	**24,841**	**38,167**	**13,272**	**14,854**	**88,164**	**82,819**
NEW FREEWAY WITH TOLLS ALTERNATIVE										
East Avenue G	1,051	324	1,227	575	1,901	2,336	456	327	4,635	3,562
El Mirage Road	1,892	611	1,882	1,172	1,519	3,292	958	618	6,251	5,693
High Desert Corridor	11,848	3,278	12,259	10,203	12,303	19,842	4,037	4,639	40,447	37,962
233rd Street East/SR 18	844	774	1,250	1,660	1,165	1,688	1,224	1,512	4,483	5,634
State Highway 138	4,161	2,207	7,275	6,810	4,622	6,989	5,289	6,507	21,347	22,513
Angeles Crest Highway	2,255	322	2,624	929	2,580	3,224	321	397	7,780	4,872
Total	**22,051**	**7,516**	**26,517**	**21,349**	**24,090**	**37,371**	**12,285**	**14,000**	**84,943**	**80,236**
TRANSPORTATION SYSTEMS MANAGEMENT ALTERNATIVE										
East Avenue G	2,692	508	2,346	1,489	3,044	5,399	968	804	9,050	8,200
El Mirage Road	4,874	1,074	5,282	4,246	4,408	8,448	1,688	1,619	16,252	15,387
High Desert Corridor	—	—	—	—	—	—	—	—	—	—
233rd Street East/SR 18	2,816	1,721	4,798	3,913	4,264	3,934	2,836	3,005	14,714	12,573
State Highway 138	4,916	2,071	7,409	6,616	4,665	7,132	5,104	6,502	22,094	22,321
Angeles Crest Highway	2,815	157	2,895	1,589	1,999	5,175	229	286	7,938	7,207
Total	**18,113**	**5,531**	**22,730**	**17,853**	**18,380**	**30,088**	**10,825**	**12,216**	**70,048**	**65,688**

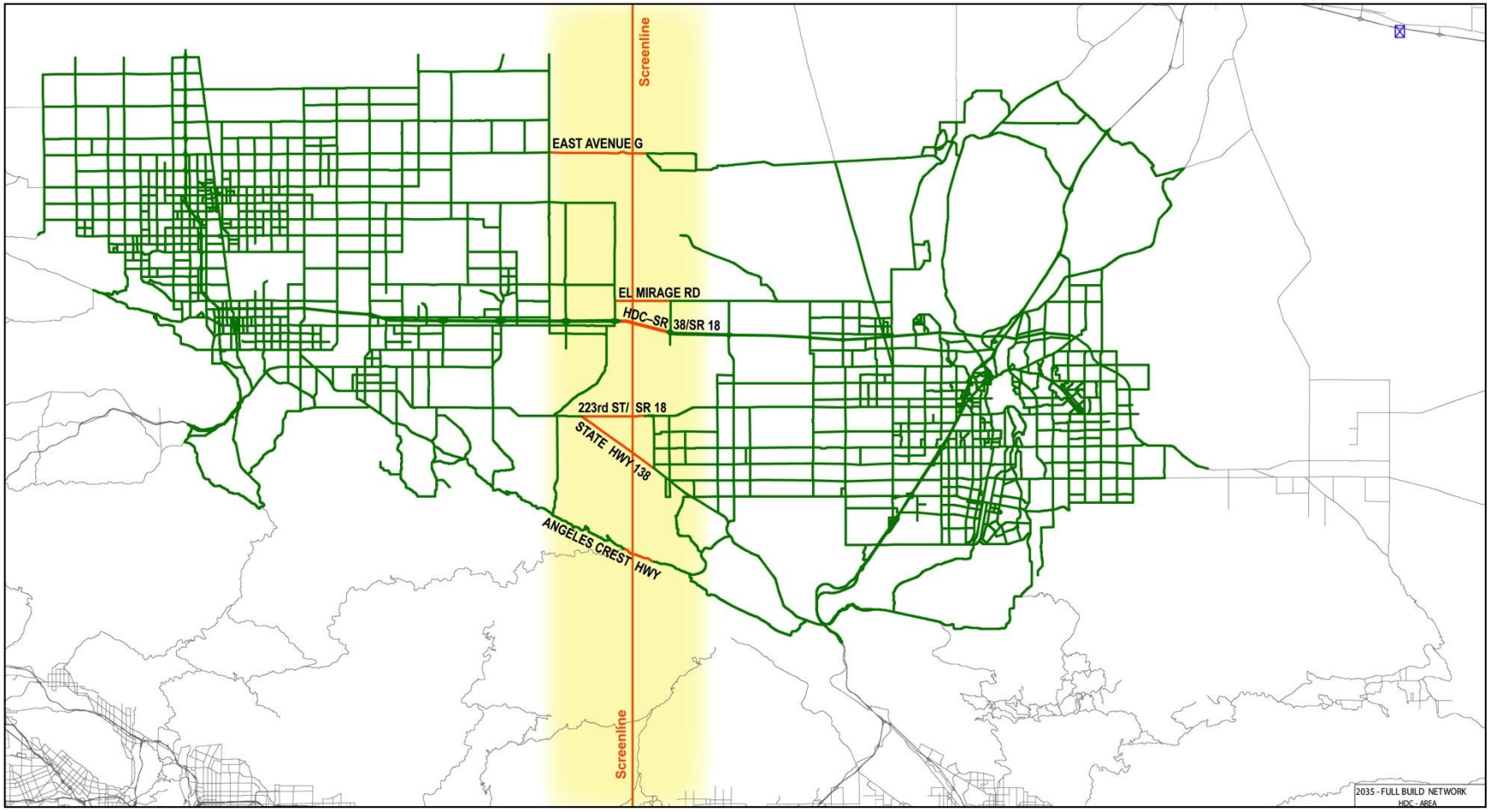


Figure 6-12: Los Angeles/San Bernardino County Screenline for Traffic Volume Comparison

As noted above, the High Desert Corridor SR-18 Realignment Traffic Study utilized the Victor Valley Area Transportation Study subregional travel forecast model. The Victor Valley Area Transportation Study was prepared for SANBAG by Kimley-Horn and Associates, Inc. and the final report was published in March 2008. The Victor Valley Area Transportation Study utilized an interim version of the SCAG regional model as a starting point, and disaggregated the model's zone system from 68 zones in the SCAG interim model to 582 zones in the Victor Valley Area Transportation Study model. The Victor Valley Area Transportation Study base year model was validated to year 2003 traffic counts. During the validation process, it was found that the afternoon PM peak period forecasts were more consistent with the traffic counts than total daily volume forecasts. To address this issue, it was determined that daily traffic volumes used in the *Victor Valley Area Transportation Study* would be developed by multiplying the afternoon peak period traffic volumes by a factor of 3.5, and by post processing the results to address anomalies.

Overall, the forecast results of the SCAG Regional Transportation Model and these subregional models are similar, taking into account that: (1) the roadway networks used in the model were different, as this traffic report reflects the full construction of the High Desert Corridor New Freeway/Expressway between I-15 and SR 14, whereas the subregional studies did not reflect construction of the High Desert Corridor west of U.S. Route 395; and (2) the land use assumptions are different, as identified in section 3.2 of this traffic report.

6.4.4 Freeway and Ramp Peak Hour and Daily Traffic Volumes

Daily, morning and afternoon peak period and peak hour forecasts were prepared for the 2020 and 2035 (2040) network scenarios. The AM peak hour, PM peak hour and average daily traffic volumes are "post-processed" to augment the direct model output with other methods to achieve reasonable levels of sensitivity. In this regard, post-processing allows the user to account for traffic model assignment validation adjustments and micro area diurnal (time of day) peak hour factors specific to individual freeway on- and off-ramps.

Individual ramp peak hour factors were determined by analyzing existing condition peak hour, peak period and daily traffic counts for interchanges serving primarily residential, employment, retail and mixed land uses. Engineering judgment was then applied to translate direct peak period model output to post-processed peak hour forecasts.

Subsequent to the analysis reported in Tables 3-9 through 3-13, the freeway access in Palmdale was revised based on design review and local input. The interchange proposed for the High Desert Corridor freeway at 10th Street East was deleted, a new High Desert Corridor interchange at 30th Street East was added, and a connector ramp from Palmdale Boulevard to eastbound High Desert Corridor was added. The traffic volume results of these refinements are reported in section 3.14 of this traffic study.

6.4.5 Intersection Turning Movement Forecast Volumes

Traffic volume forecasts were prepared for all study area intersections. The SCAG 2008 Regional Travel Forecast Model was used to create the forecasts for the design year (2040+) and the opening year (2020+) of the High Desert Corridor new freeway.

Volumes IV and V of this report reports the intersection turning movement traffic volumes assigned to the highway network by the SCAG model. These volumes have been post-processed to enhance accuracy.

Peak period forecasts have been factored to reflect single AM and PM 60-minute time slices (peak hour). The AM peak period traffic assignments cover three morning hours from 6:00 to 9:00 a.m. These three-hour forecasts were factored by 0.35 to arrive at the AM peak hour. The PM peak period traffic assignments cover a four-hour period from 3:00 to 7:00 p.m. These four-hour forecasts were factored by 0.27 to yield the PM peak hour forecast.

Volumes III and IV of this report contains nine sets of intersection turning movement forecasts covering five network alternatives for 2040 and four network alternatives for 2020. Each set of tables consists of two tables, with one table reporting AM peak hour volumes and the second table providing PM peak hour volumes. Volume V presents results for the refined definition of the build alternatives, as discussed below.

6.4.6 Revised Palmdale Access Forecasts

Subsequent to the forecasts prepared for the initial definition of the alternatives, the sensitivity tests, and the inclusion of high speed rail services within the High Desert Corridor, the proposed access to Palmdale was refined. The proposed High Desert Corridor interchange at 10th Street East was eliminated. An interchange at 30th Street East was added. Ramp access at West Palmdale Boulevard to northbound SR 14 was revised, and direct access to the eastbound High Desert Corridor freeway was added. Miscellaneous Palmdale circulation system improvements were also added to the definition of the no-build and build alternatives.

The Revised Palmdale Access forecasts were prepared using the SCAG 2008 RTP model for three 2020 network scenarios and three 2035 (2040) network scenarios as follows.

- 2020 No-build with Palmdale Circulation System Improvements
- 2020 Revised Palmdale Access Build
- 2020 Revised Palmdale Access Build with Tolls
- 2040 No-Build with Palmdale Circulation System Improvements
- 2040 Revised Palmdale Access Build
- 2040 Revised Palmdale Access Build with Tolls.

6.5 Project Traffic Operations Results Summary

6.5.1 Refined Project Description

ANTELOPE VALLEY SEGMENT

This 10-mile long project segment would construct a new freeway, expandable to four lanes in each direction, running in an east–west direction near Avenue P-8, between SR 14 and 100th Street East in Palmdale, California. A freeway-to-freeway interchange for SR 14/High Desert Corridor would be constructed with direct ramp connectors. New local interchanges are proposed at 20th Street East, 30th Street East, 50th Street East, and 90th Street East (Note: This traffic study initially analyzed an interchange at 10th Street East in lieu of the interchange at 30th Street East. The results of both access configurations are reported in this traffic study report.) New frontage roads would be built to mitigate street closures, where required. The existing partial interchange at SR 14/Rancho Vista Boulevard would be closed and a full interchange constructed at 10th Street West.

HIGH DESERT SEGMENT

The project would construct a new east–west freeway connecting Palmdale with Adelanto, three lanes in each direction, running parallel and approximately one-quarter mile south of Palmdale Boulevard. With right-of-way acquisition, the freeway could support an ultimate facility of four lanes plus a high-speed passenger rail line in each direction. The High Desert segment may serve as a toll facility, with proposed tolling limits extending from 90th Street East to U.S. Route 395. New local interchanges are currently proposed at Longview Road/140th Street, 170th Street, 210th Street, and 240th Street in Los Angeles County, and Oasis Road, Sheep Creek Road and Caughlin Road in San Bernardino County.
Alternatives to the above project description include the following.

- A slightly different centerline alignment between 180th Street East and 230th Street East. This version of the centerline alignment would run parallel and approximately one-half mile south of Palmdale Boulevard.
- A different centerline alignment between Saint George Avenue and just west of Caughlin Road. This version of the centerline alignment would pass Krey Field Airport on its south side.

VICTOR VALLEY SEGMENT

The project would construct a new east-west freeway, generally following the alignment of Air Expressway Boulevard between Caughlin Road in Adelanto and Dale Evans Parkway in Apple Valley. It would then continue southeasterly as an expressway, joining SR 18 just east of Joshua Road. Once constructed, the existing alignment of SR 18 west of Joshua Road would be relinquished, and the new freeway/expressway designated as SR 18 east of I-15. The freeway portion of the facility between Caughlin Road and I-15 would be six lanes wide, continuing to Dale Evans Parkway as a four- or six-lane facility, initially. Right-of-way would be acquired to support an ultimate facility of four lanes plus a high-speed passenger rail line in each direction. East of Dale Evans Parkway, an access-controlled, four-lane divided expressway would be constructed for the remaining extent of the project as it continues easterly toward the Apple Valley Airport before turning south-easterly to align with the existing SR 18, north of Bear Valley cutoff. This entire segment would be constructed within a minimum 300-foot right-of-way to provide for an ultimate 8-lane multi-modal facility.

A freeway-freeway interchange for I-15/High Desert Corridor/SR 18 would be constructed with direct ramp connectors. For the access-controlled, expressway portion of the project east of Dale Evans Parkway, at-grade, traffic signal controlled intersections are proposed at Waalew Road, Central Road, Joshua Road, Standing Rock Road and Yucca Loma Road.

Alternatives to the above project description include a different centerline alignment between Aster Road and Quarry Road. This version of the centerline alignment would run parallel to Rancho Road, approximately one-half mile south of Air Expressway Boulevard, to pass by the Victorville Federal Correctional Complex on the south side of this facility. The southern alignment would omit the local service interchange at Phantom Road east.

6.5.2 Project Alternatives

Several alternatives have been proposed to satisfy the purpose and need for this project. This traffic study report will be used in part to evaluate the performance of these alternatives. The following alternatives have been studied.

- ***Freeway/expressway alternative***
  This alternative is described more fully in section 1.4. In summary, the alternative consists of a combination, controlled-access freeway and expressway. It generally follows Avenue P-8 in Los Angeles County and runs just south of El Mirage Road in San Bernardino County. This alternative then extends to Air Expressway Road near I-15 and curves south, terminating at Bear Valley Road. Four physical alignment variations are under consideration and depicted on Figures 6-13 and 6-14.

  - Variation A
    - Located in the city of Palmdale, the freeway/expressway would dip slightly south of the main alignment, approximately between 15th Street East and Little Rock Wash.
  - Variation B (south)
    - East of the county line, the freeway/expressway would dip slightly south of the main alignment between Oasis Road and Caughlin Road.
  - Variation D
    - Near the community of Lake Los Angeles, the freeway/expressway would dip slightly south of the main alignment just south of Avenue R, approximately between 180th Street East and 230th Street East.
  - Variation E
    - Located near the cities of Adelanto and Victorville, the freeway/expressway would dip south of the federal prison.

  For the purpose of this traffic study report, alignment variations A and B do not affect traffic forecast volumes or traffic operations. The project description without or with these alignment variations is therefore treated as one. Throughout this document, the freeway/expressway alternative is referenced as the **build alternative.**

  For the purpose of this traffic study report, alignment variation E was tested along with a slightly different array of local service interchanges. This alternative was labeled **build alternative with reduced interchanges.** The interchanges at Oasis Road and Phantom St East Street were removed from this alternative; however, a local service interchange at 70th Street was added.

- ***Freeway/tollway alternative***
  This alternative follows the same route as the freeway/expressway alternative (including variations A, B, D and E), but would have sections operate as tollways. Details of this operating feature are being evaluated as part of the ongoing public–private partnership analysis. The incorporation of green technologies and a bike path will also be considered.

  For the purpose of this traffic study report, this alternative is labeled **build toll alternative.** The tolled portion of the project has been defined as extending from 90th Street East in Palmdale to U.S. Route 395 in Adelanto. Alignment variation E has not been tested by this traffic study.

- ***Freeway/expressway alternative with high-speed rail feeder service***
  This alternative is the same as the freeway/expressway alternative (including variations A, B, D and E) and includes a high-speed rail feeder service between Palmdale and Victorville. The location of the high-speed rail feeder service in relation to the High Desert Corridor is being evaluated considering design travel speeds, alignment of tracks, and connections to existing rail stations.

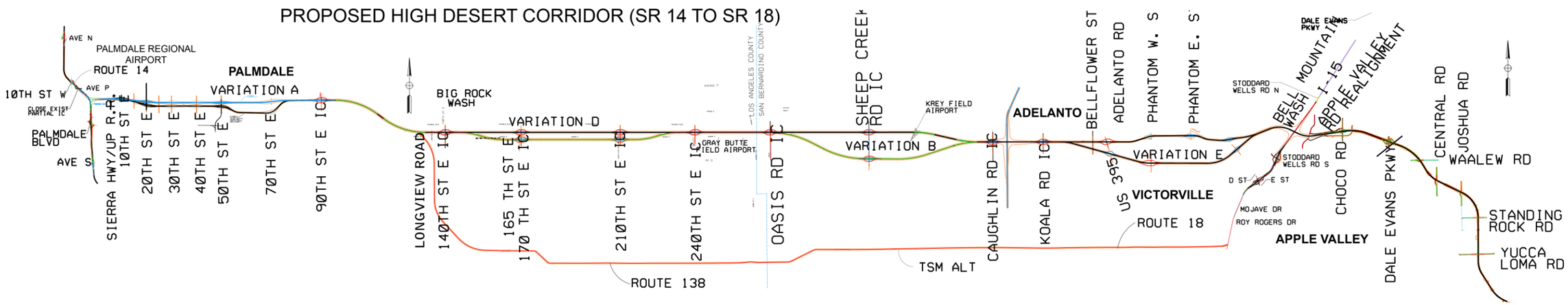
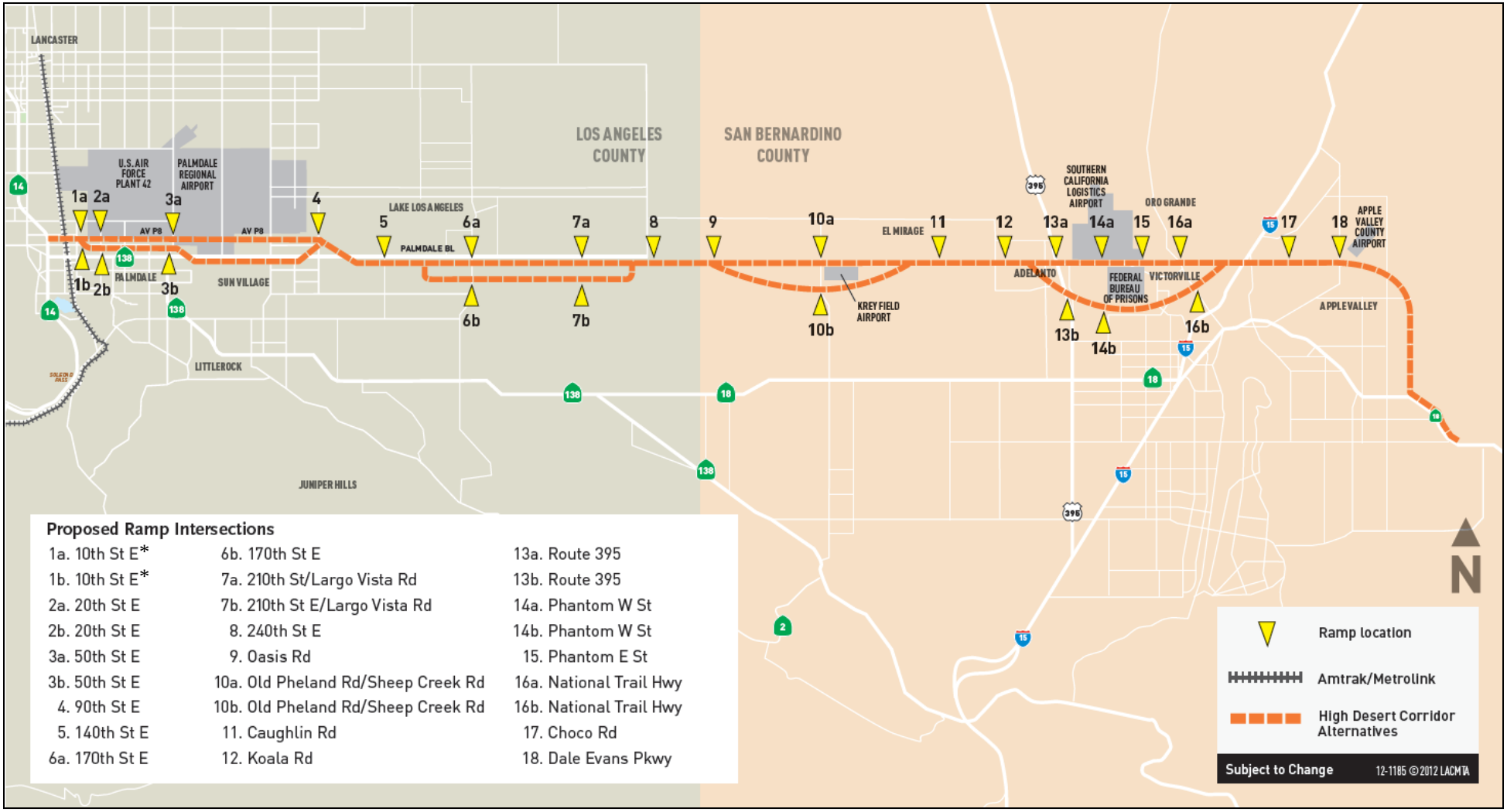


Figure 6-13: High Desert Corridor Project Scope



Source: metro.net, http://www.metro.net/projects/high-desert-corridor/
*Replaced by 30th Street East.

Figure 6-14: High Desert Corridor Alignments with Proposed Ramp Locations

- ***Freeway/tollway alternative with high speed rail feeder service***
  This alternative is the same as the freeway/tollway alternative (including variations A, B, D and E) and includes a high-speed rail feeder service between Palmdale and Victorville. Details of this operating feature are being evaluated as part of the ongoing public–private partnership analysis. The location of the high-speed rail feeder service in relation to the High Desert Corridor is being evaluated considering design travel speeds, alignment of tracks and connections to existing rail stations. The incorporation of green energy technologies and a bike path will also be considered.

- ***Transportation system/demand management alternative***
  The transportation system/demand management alternative is a collection of lower cost roadway improvements through the project corridor that can be evaluated against the proposed project alternatives. The transportation system/demand management alternative focuses on improvements that connect SR 14 with SR 138 and then extend east to connect with U.S. Route 395, I-15 and SR 18. The key elements under consideration for this alternative include:

  - An eight-lane grade-separated freeway from SR 14 to 30th Street East
  - A transition to a four-lane at-grade expressway from 30th Street East to Longview Road
  - A four-lane at-grade highway connecting to SR 138 and extending east to U.S. Route 395 along SR 18
  - A six-lane arterial highway along SR 18 (Palmdale Road) from U.S. Route 395 to I-15
  - Minor roadway and signal improvements along SR 18 from I-15 to Bear Valley Road

  Except for the freeway portion between SR 14 and 30th Street East, these transportation system demand management roadway improvements would maintain at-grade intersections with local roads and driveway access. Results of the TSM Alternative analysis are summarized in Section 6.5.5, and the alternative alignment shown on Figure 6-15.

  For the purpose of this traffic study report, this alternative is labeled **transportation systems management alternative.** Efforts to manage transportation demand are ongoing by SCAG and are assumed as background (no-build) conditions for all alternatives.

- ***Hybrid alternative***
  This alternative would consist of a combination of the previously identified alternatives, whose elements (transportation system demand management, freeway, expressway, tollway, high-speed rail feeder service, green energy technologies, bike path) would be pieced together to best fit the needs of each section of the corridor. The determination of which elements to use, and at which locations, would be based on the results of the traffic study, environmental studies and public input.

  For this purpose of this traffic report, the hybrid alternative is assumed to consist of elements defined for the freeway/expressway alternative extending from SR 14 to 90th Street East in Palmdale and from U.S. Route 395 to I-15 in Adelanto and Victorville, extending east to join with SR 18 east of the town of Apple Valley.

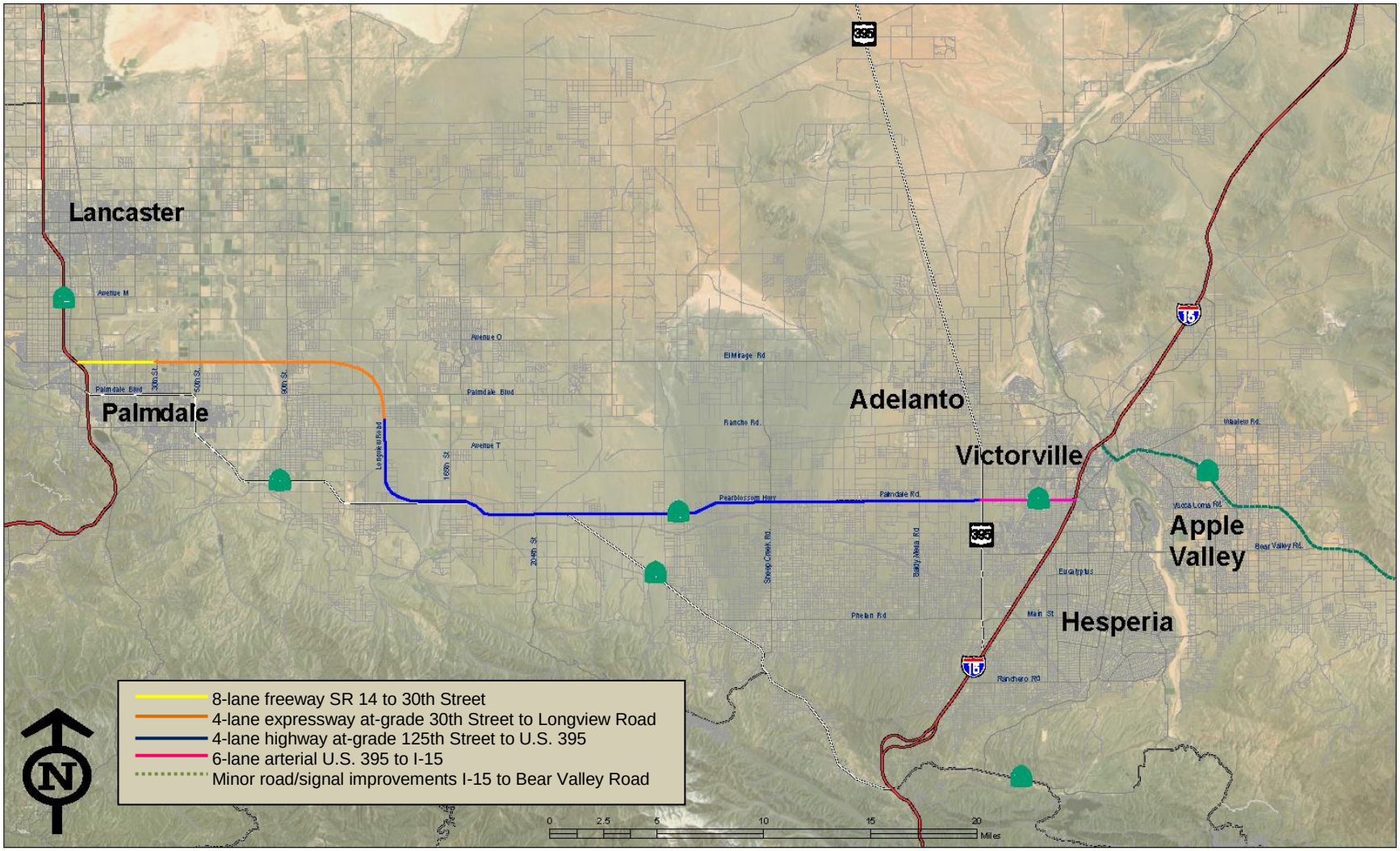


Figure 6-15: Transportation System Management Alternative

This alternative will be tested for year 2020 conditions as an interim improvement, intended to serve as Phase 1 of the ultimate build alternative (with alignment variations A, B, C and E). For the purpose of this traffic study report, this alternative is labeled **no toll partial build alternative.**

- ***No-build alternative***
  The no-build alternative consists of those transportation projects that are already planned and have committed funds to be constructed by or before 2040. Consequently, the no-build alternative represents future travel conditions in the High Desert Corridor study area without the High Desert Corridor project and is the baseline against which other transportation alternatives proposed for the study area will be assessed.

6.5.3 Traffic Operation Performance Results for Project Alternatives

The traffic operations analysis conducted for this report considers the overall performance of the highway network, the performance of the freeways affected by the project (specifically SR 14, the new High Desert Corridor freeway, and I-15), local street intersections impacted by the project, and local traffic circulation impacts. These areas of interest are addressed for the opening year of the project, 2020, and a horizon year of 2040, which constitutes the design year for new construction related to the High Desert Corridor project. The careful assessment and collection of existing conditions and data, combined with the detailed analysis and application of traffic forecasting knowledge and technologies, as outlined earlier, now allows for a powerful and effective tool with which to assess and measure potential project impacts.

The no-build and interim build alternatives were analyzed for opening year (2020) and design year (2040) traffic demand conditions using the CORSIM traffic simulation model. Consistent with the evaluation of existing conditions, model output was extracted on a link by link and ramp basis to include demand volumes, operationally constrained (CORSIM served) volumes, travel time, delay time, speed, density and level of service. Freeway and ramp traffic operational analysis was conducted for eleven network alternatives under SCAG land use assumptions, and one network alternative under local land use assumptions as a sensitivity test.

Two network scenarios addressed by the *High Desert Corridor Traffic Study* are not listed in freeway and ramp analysis results.

- ***2040 build alternative with reduced interchanges***
  The operational analysis of freeway mainline and ramp performance was not undertaken for this alternative due to the similarity of design year traffic volumes with those forecast for the Build alternative.
- ***Build alternative with reduced interchanges and high speed rail feeder service (2020 and 2040)***
  The operational analysis of freeway mainline and ramp performance was not undertaken for this alternative due to the similarity of opening and design year traffic volumes with those forecast for the build alternative.

Subsequent to the analysis of the above alternatives, the proposed access to Palmdale was refined. The proposed High Desert Corridor interchange at 10th Street East was eliminated. An interchange at 30th Street East was added. Ramp access at West Palmdale Boulevard to northbound SR 14 was revised, and direct access to the eastbound High Desert Corridor freeway was added. A number of interchange configurations were also refined based on additional design studies. As a result of these access revisions, the freeway and ramp analysis was recomputed for a subset of the initial test alternatives.

FREEWAY MAINLINE AND RAMP SEGMENT ANALYSIS RESULTS

Freeway segments and ramp facilities which do not meet an acceptable level of LOS D or better are illustrated below. Tables 6-8 and 6-9 and Figures 6-16 through 6-21 are associated with year 2020 results. Tables 6-10 and 6-11 and Figures 6-22 and through 6-27 are associated with year 2040 results. Tables 6-12 and 6-13 and Figures 6-28 through 6-31 are associated with year 2020 results with the addition of Palmdale access changes. Tables 6-14 and 6-15 and Figures 6-32 and 6-33 are associated with year 2040 results with the addition of Palmdale access changes.

FREEWAY MAINLINE AND RAMP ANALYSIS SUMMARY

The no-build alternative clearly has more segments along SR 14 operating at LOS E or F, compared to the build alternative(s), by 2040 particularly for the revised Palmdale access alternatives. A southbound auxiliary lane from the West Avenue N on-ramp(s) to the 10th Street West off-ramp along with a northbound auxiliary lane from the East Avenue S on-ramp to the Palmdale Boulevard off-ramp would address most of the congestion issues associated with the no-build alternative.

The build alternatives generally meet the LOS D or better design standard for all segments with few exceptions. The one notable exception is southbound SR 14 during the AM peak period assuming the SCAG land use projection. Under this scenario, traffic spills back from the uphill grade which begins south of the Avenue S interchange, approaching the Pearblossom Highway interchange. The uphill grade slows traffic, which when combined with on-ramp traffic, increases vehicle density.

With respect to traffic implications associated with the High Speed Rail Feeder Alternative, it should be noted that **the operational analysis indicates that the performance of the freeway system is virtually unchanged when comparing the no feeder rail service alternatives with those which include rail feeder service.** These results reflect weekday, morning (0700 to 0800 hours) and afternoon (1700 to 1800 hours) time periods. Rail ridership for the Palmdale–Victorville–Las Vegas XpressWest service is projected to be significantly higher during the midday, on Fridays, weekends and holidays. The performance of the highway system is not addressed for those higher rail ridership time of the day and day of the week periods.

RAMP TERMINI AND STUDY AREA INTERSECTION ANALYSIS RESULTS

The location of the ramp termini and study area intersections included as part of the analysis of opening year (2020) conditions were illustrated previously on Figure 6-9. For these future years, the number of intersections analyzed was expanded from the 89 investigated as part of the existing conditions to 163 for the initial alternatives and 164 for the revised Palmdale access definition of the alternatives. The new study area intersections include the addition of new interchange ramp termini intersections accessing the High Desert Corridor new freeway/expressway, along with intersections adjacent to these new ramp termini.

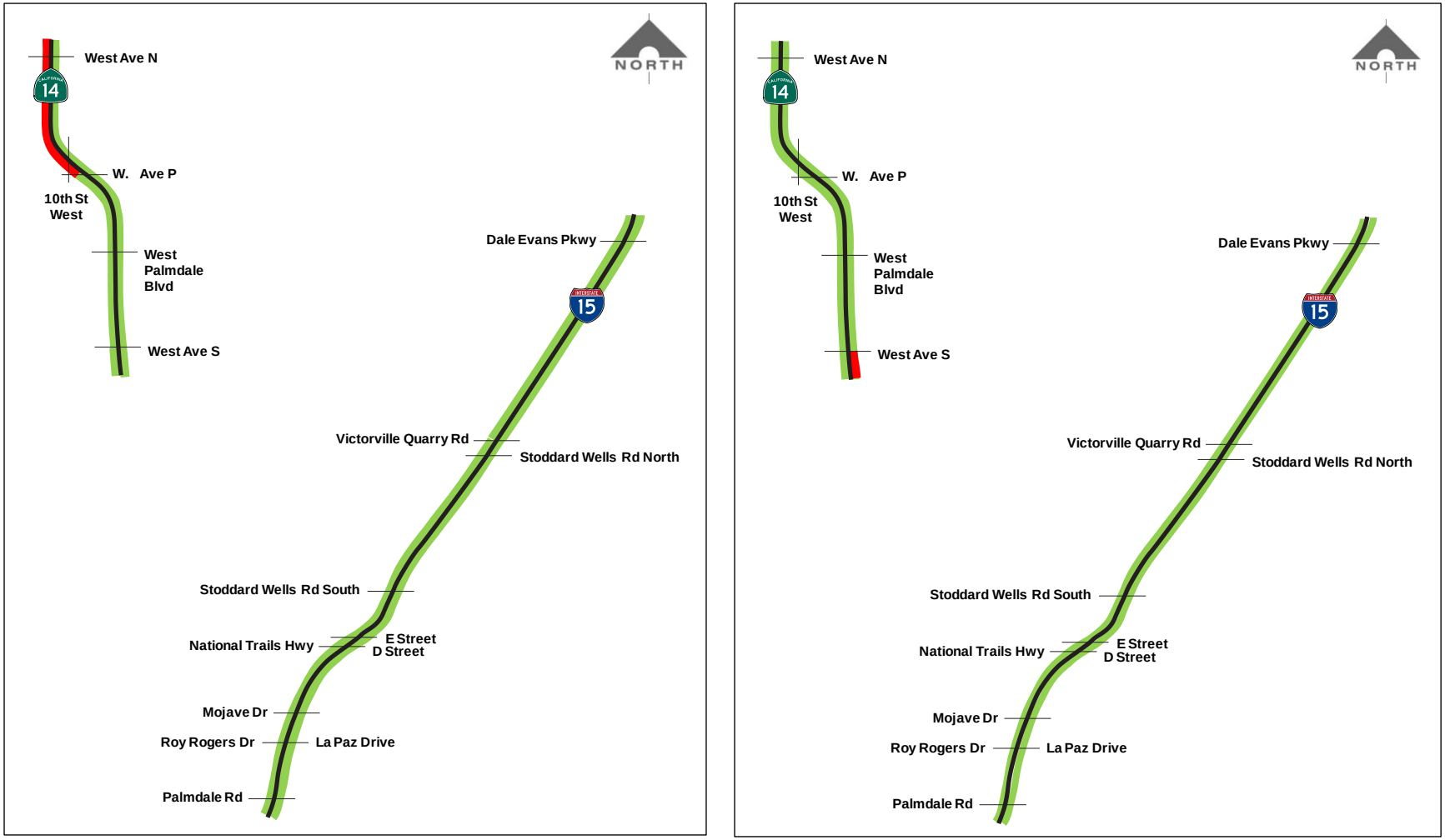
Ramp termini and intersections that are not expected to operate at LOS D or better for years 2020 and 2040 (both with and without revised Palmdale access) and for each alternative are reported in Tables 6-16 through 6-19.

Table 6-8. Year 2020 Freeway Mainline Level of Service Analysis Results Summary *(segments operating at LOS E or worse)*

	FREEWAY SEGMENT *(LOS)*					
	NO-BUILD	BUILD	BUILD TOLL	BUILD PARTIAL	BUILD FEEDER RAIL	BUILD TOLL + FEEDER RAIL
AM PEAK						
SR 14 NB	None	None	None	None	None	
SR 14 SB	SR 14 from north end of the network to West Avenue N off-ramp (*F*) West Avenue N off-ramp to West Avenue N loop on-ramp (*F*) West Avenue N loop on-ramp to West Avenue N direct on-ramp (*F*) West Avenue N direct on-ramp to 10th Street West off-ramp (*F*)	East Avenue S off-ramp to East Avenue S on-ramp (*E*) East Avenue S on-ramp to Angeles Forest Highway off-ramp (*F*)	East Avenue S on-ramp to Angeles Forest Highway off-ramp (*F*)	East Avenue S on-ramp to Angeles Forest Highway off-ramp (*F*)	East Avenue S off-ramp to East Avenue S on-ramp (*E*) East Avenue S on-ramp to Angeles Forest Highway off-ramp (*F*)	East Avenue S off-ramp to East Avenue S on-ramp (*E*) East Avenue S on-ramp to Angeles Forest Highway off-ramp (*F*)
HDC EB	N/A	None	None	None	None	None
HDC WB	N/A	None	None	None	None	None
I-15 NB	None	None	None	None	None	None
I-15 SB	None	None	None	None	None	None
PM PEAK						
SR 14 NB	SR 14 NB south end of the network to East Avenue South off-ramp (*F*)	None	None	None	West Avenue N off-ramp to West Avenue N loop on-ramp (*E*)	None
SR 14 SB	None	None	None	None	None	None
HDC EB	N/A	None	None	None	None	None
HDC WB	N/A	None	None	None	None	None
I-15 NB	None	None	None	None	None	None
I-15 SB	None	None	None	None	None	None

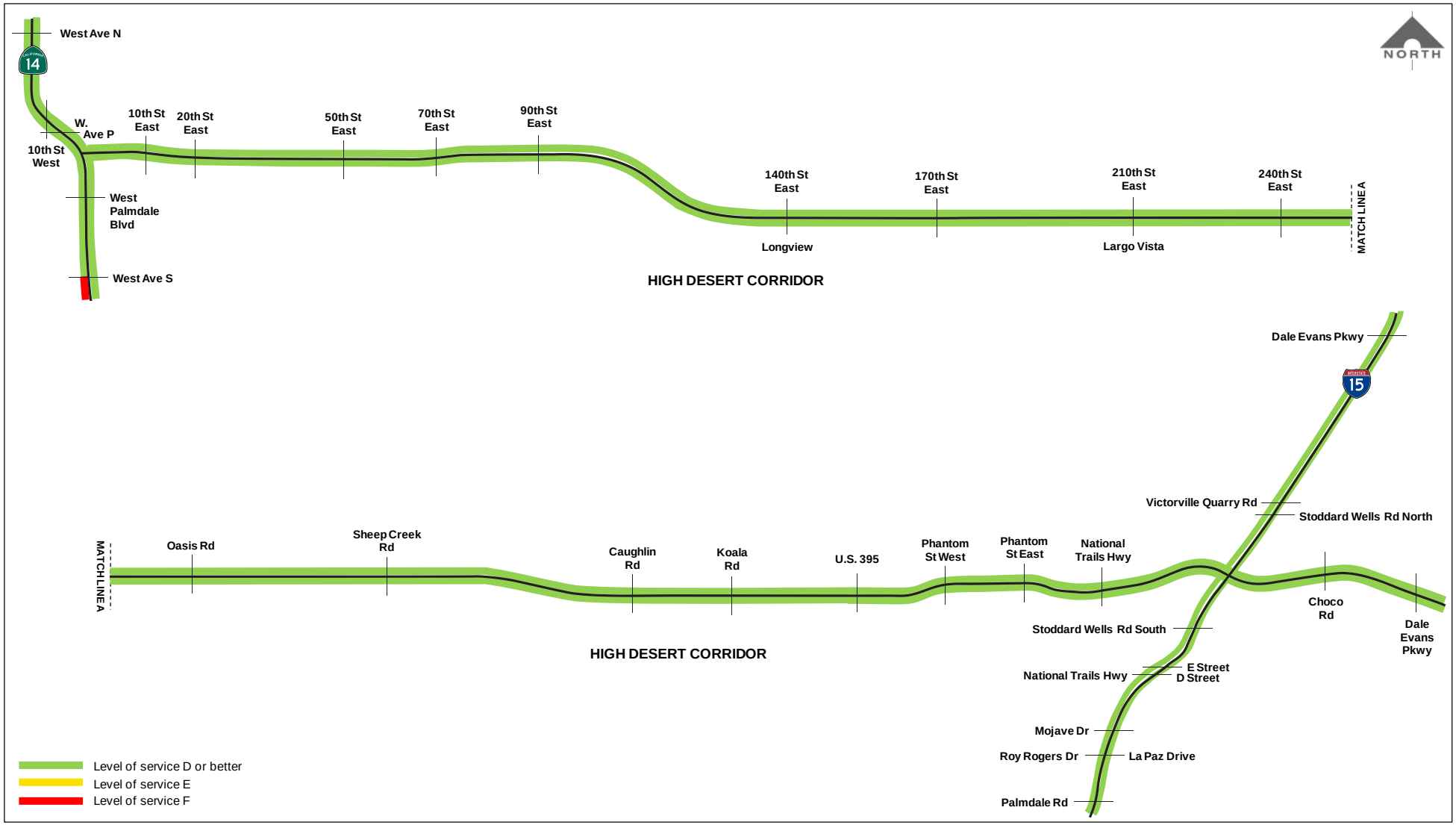
Table 6-9. Year 2020 Weaving and Ramp Merging/Diverging Level of Service Analysis Results Summary *(segments operating at LOS E or worse)*

	SEGMENT *(LOS–TYPE)*					
	NO-BUILD	BUILD	BUILD TOLL	BUILD PARTIAL	BUILD FEEDER RAIL	BUILD TOLL + FEEDER RAIL
AM PEAK						
SR 14 NB	None	None	None	None	None	None
SR 14 SB	West Avenue N loop (*E–merging)* West Avenue N direct (*E–merging)* West Rancho Vista Boulevard (*E–merging)* West Avenue N (*E–merging*) 10th Street West (*E–diverging)*	East Avenue S (*E–merging)* 10th Street West (*E–diverging)*	East Avenue S (*E–merging)*	None	East Avenue S (*E–merging)* 10th Street West (*E–diverging)*	East Avenue S (*E–merging)*
HDC EB	N/A	None	None	None	None	None
HDC WB	N/A	None	None	None	None	None
I-15 NB	None	None	None	None	None	None
I-15 SB	None	None	None	None	None	None
PM PEAK						
SR 14 NB	None	West Avenue N (*E–diverging)*	None	None	West Avenue N (*E/diverging)*	None
SR 14 SB	None	None	None	None	None	None
HDC EB	N/A	None	None	None	None	None
HDC WB	N/A	None	None	None	None	None
I-15 NB	None	Palmdale Road (*E–diverging)*	Palmdale Road (*E–diverging)*	Palmdale Road (*E–diverging)*	None	Palmdale Road (*E–diverging)*
I-15 SB	None	None	None	None	None	None



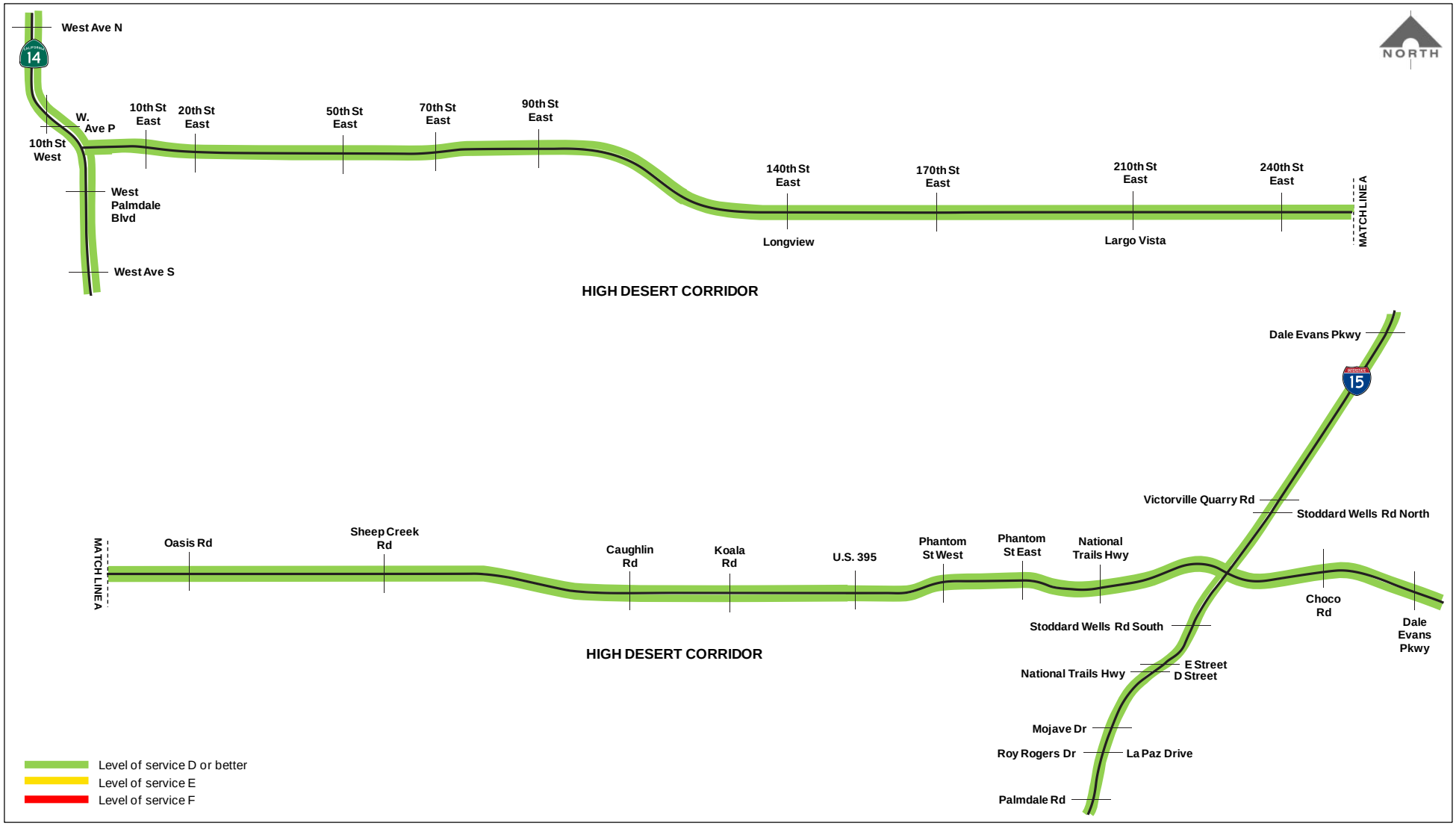
Level of service D or better
Level of service E
Level of service F

Figure 6-16: Year 2020 No-build Alternative Freeway Mainline Level of Service



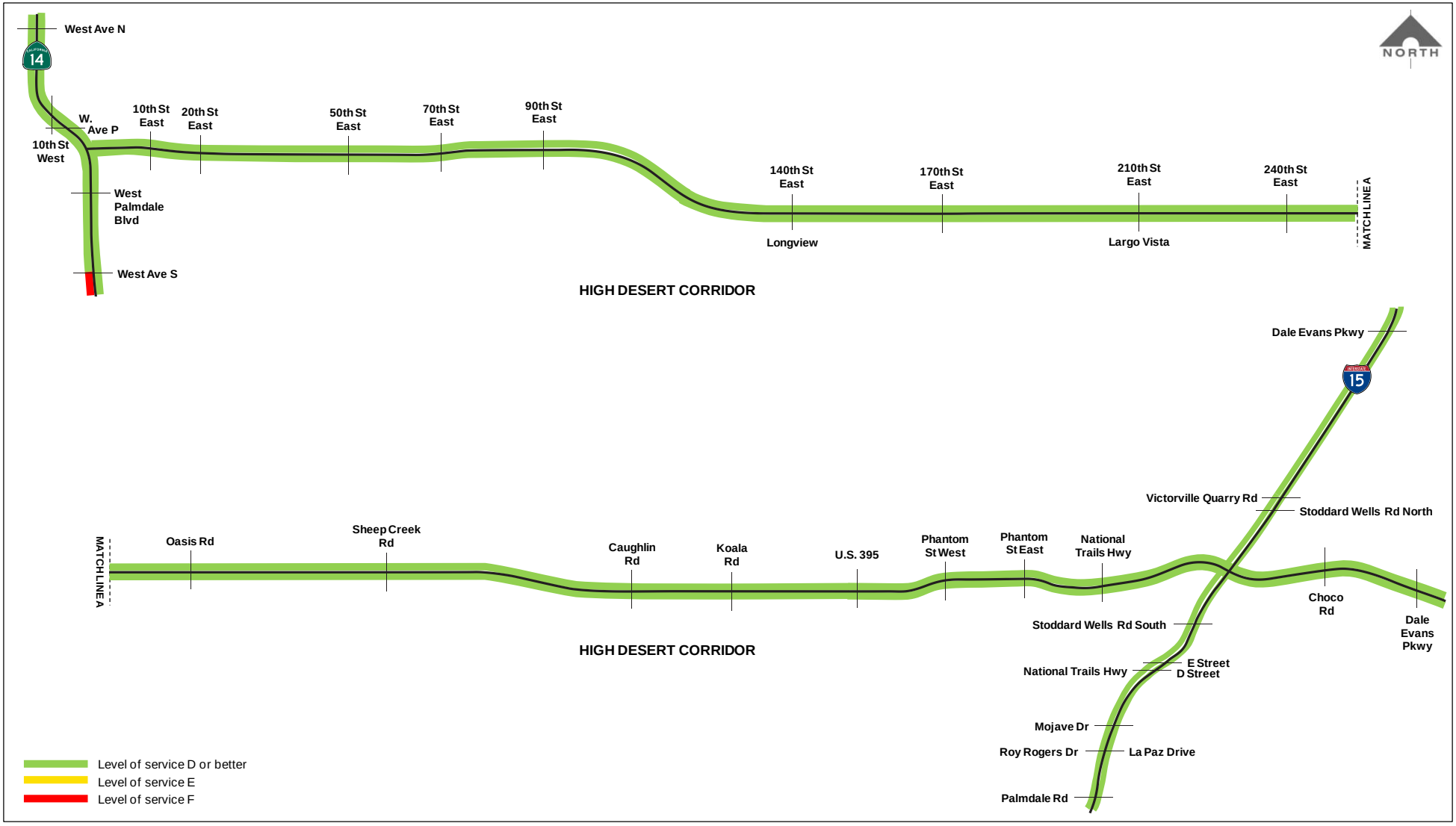
AM PEAK HOUR

Figure 6-17: Year 2020 Build Alternative Freeway Mainline Level of Service *(1 of 2)*



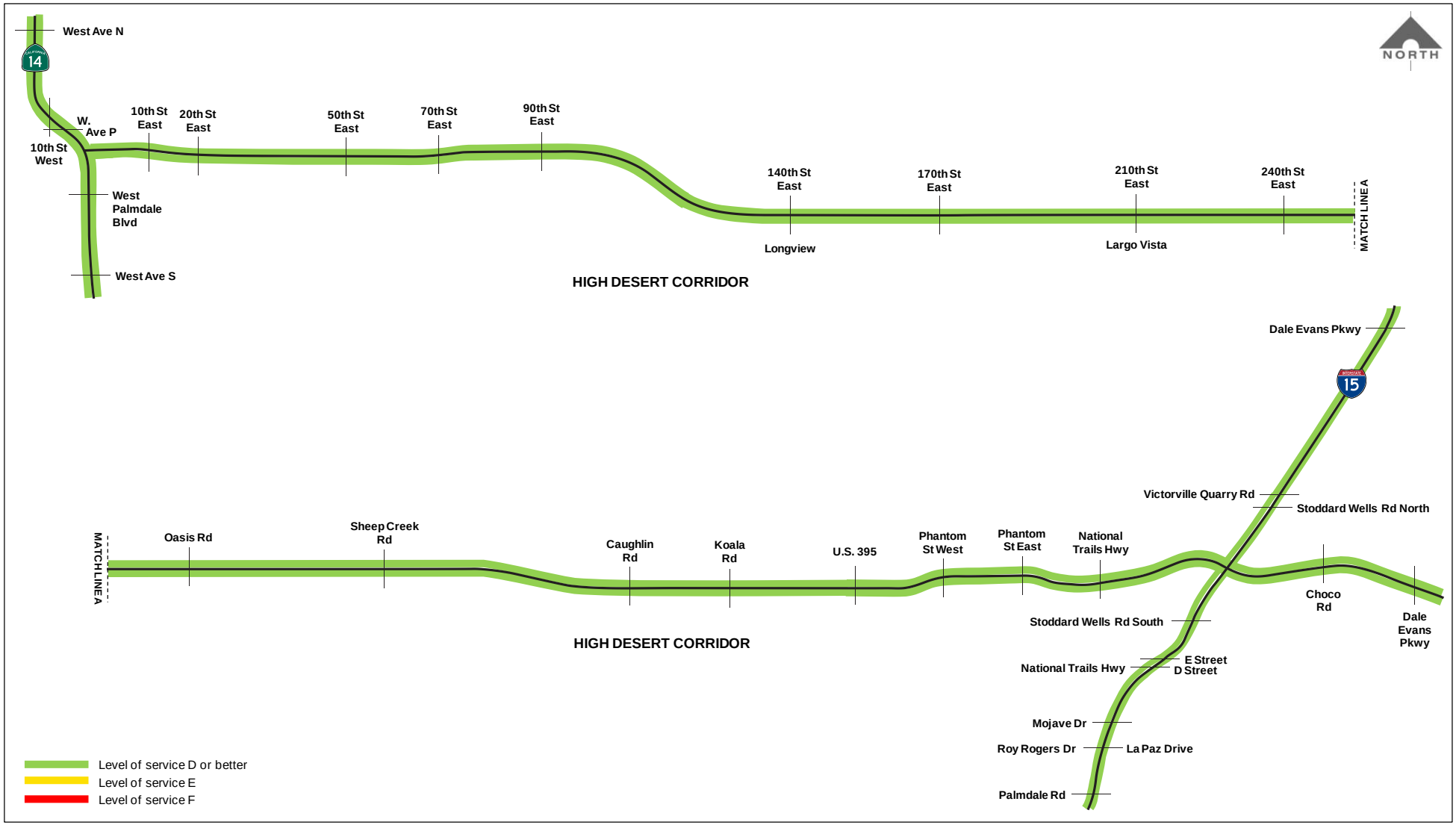
PM PEAK HOUR

Figure 6-17: Year 2020 Build Alternative Freeway Mainline Level of Service *(2 of 2)*



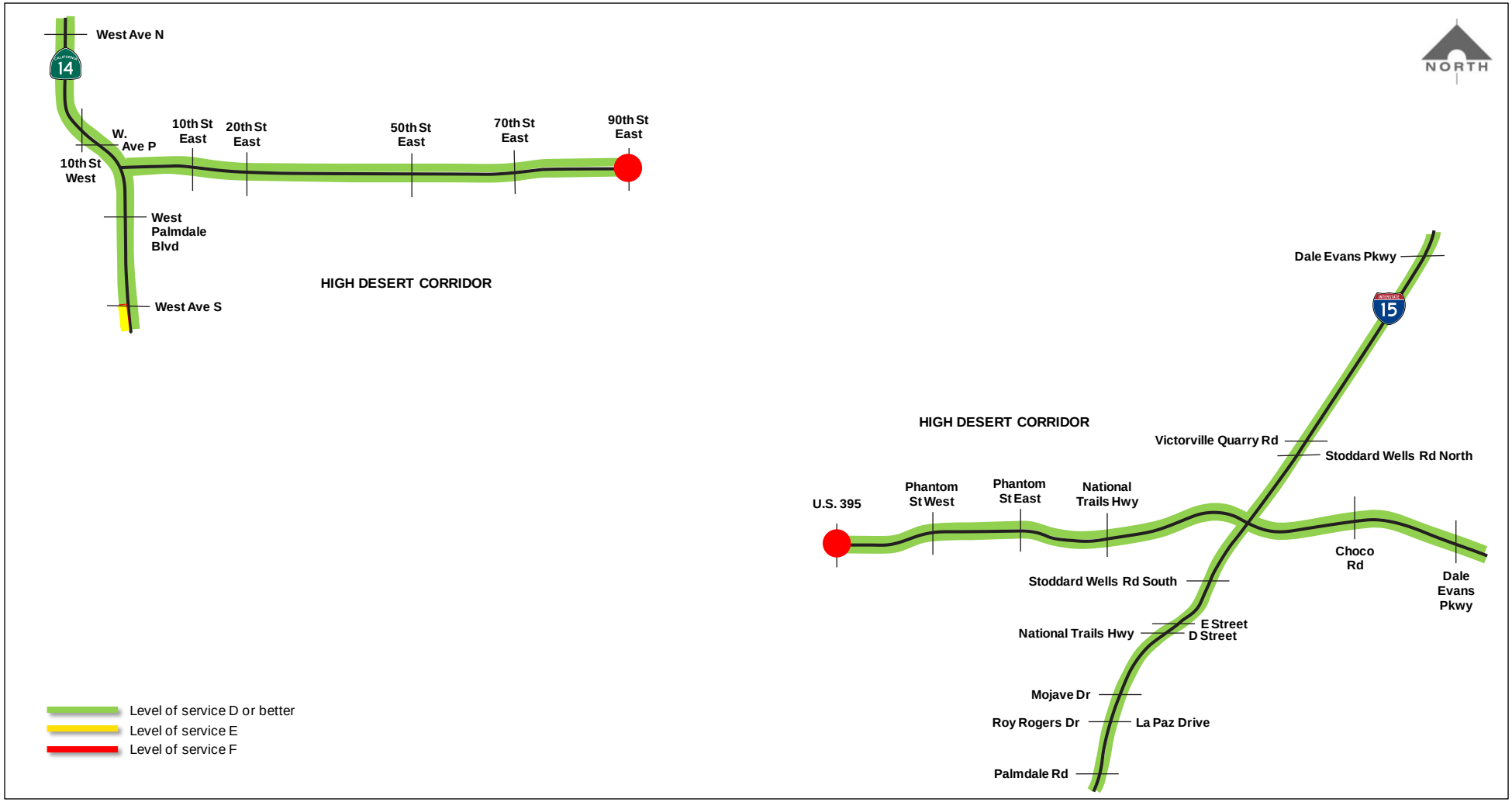
AM PEAK HOUR

Figure 6-18: Year 2020 Build Alternative with Tolls Freeway Mainline Level of Service *(1 of 2)*



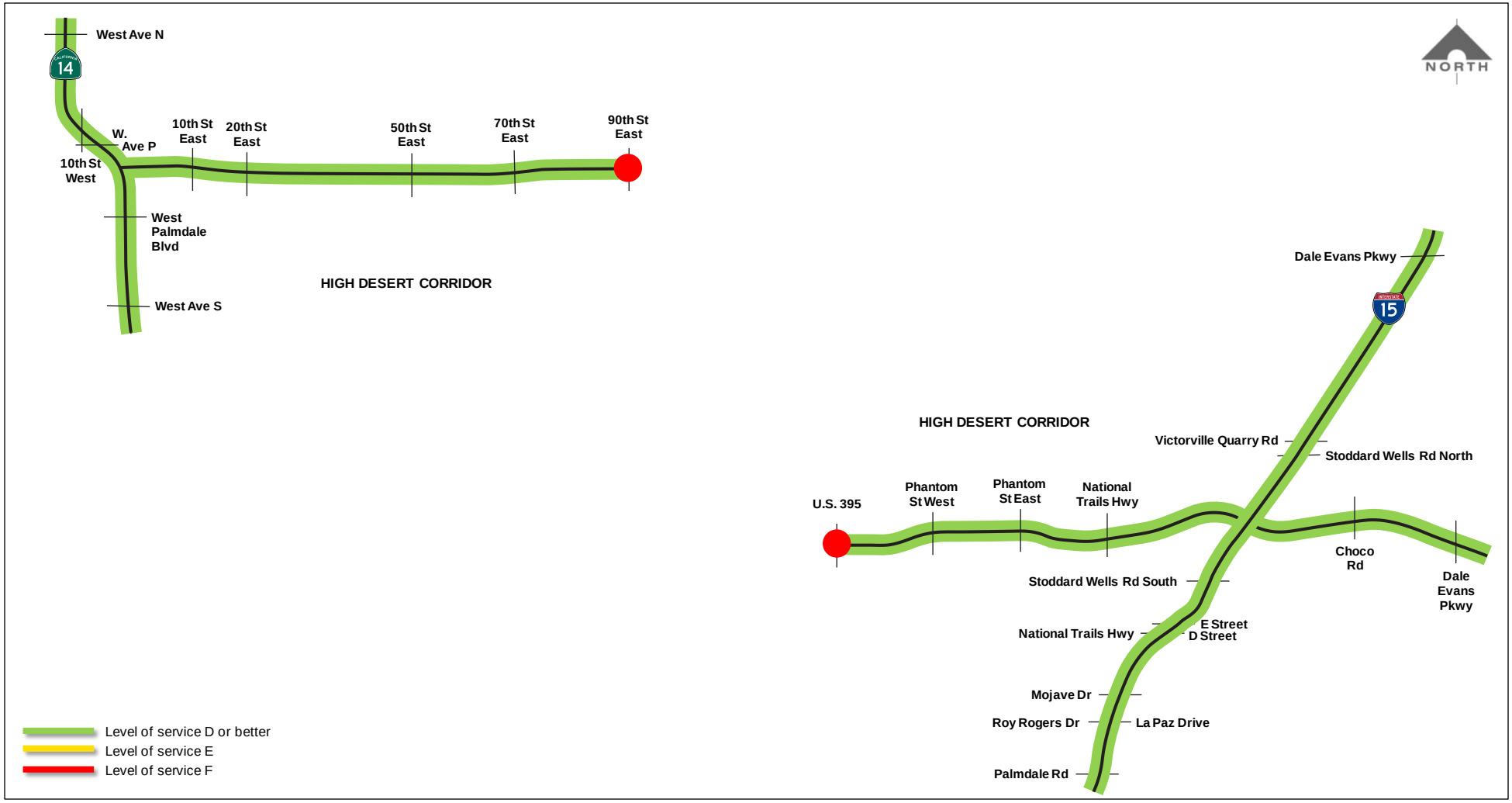
PM PEAK HOUR

Figure 6-18: Year 2020 Build Alternative with Tolls Freeway Mainline Level of Service *(2 of 2)*



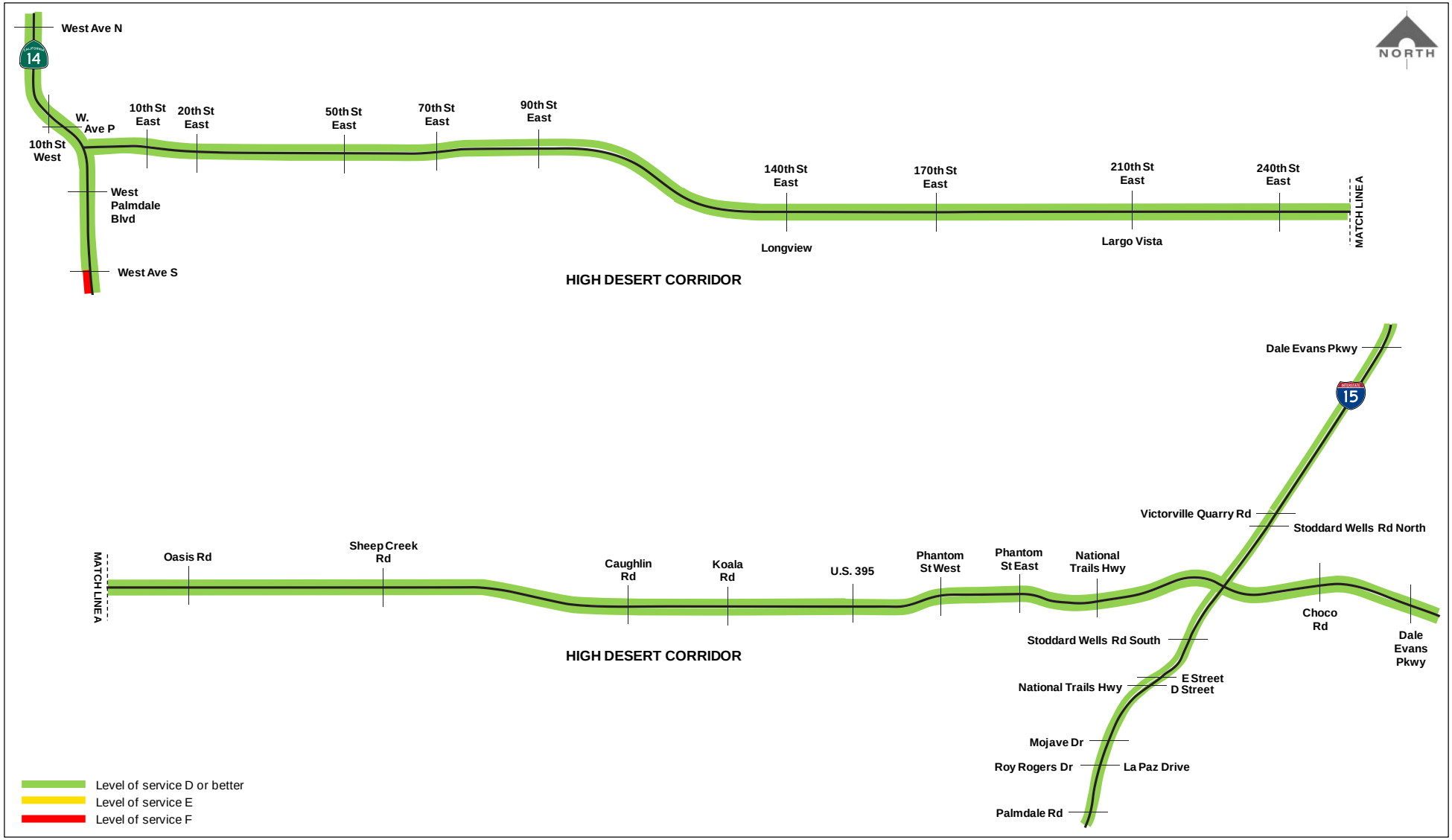
AM PEAK HOUR

Figure 6-19: Year 2020 Build Partial High Desert Corridor Freeway Mainline Level of Service *(1 of 2)*



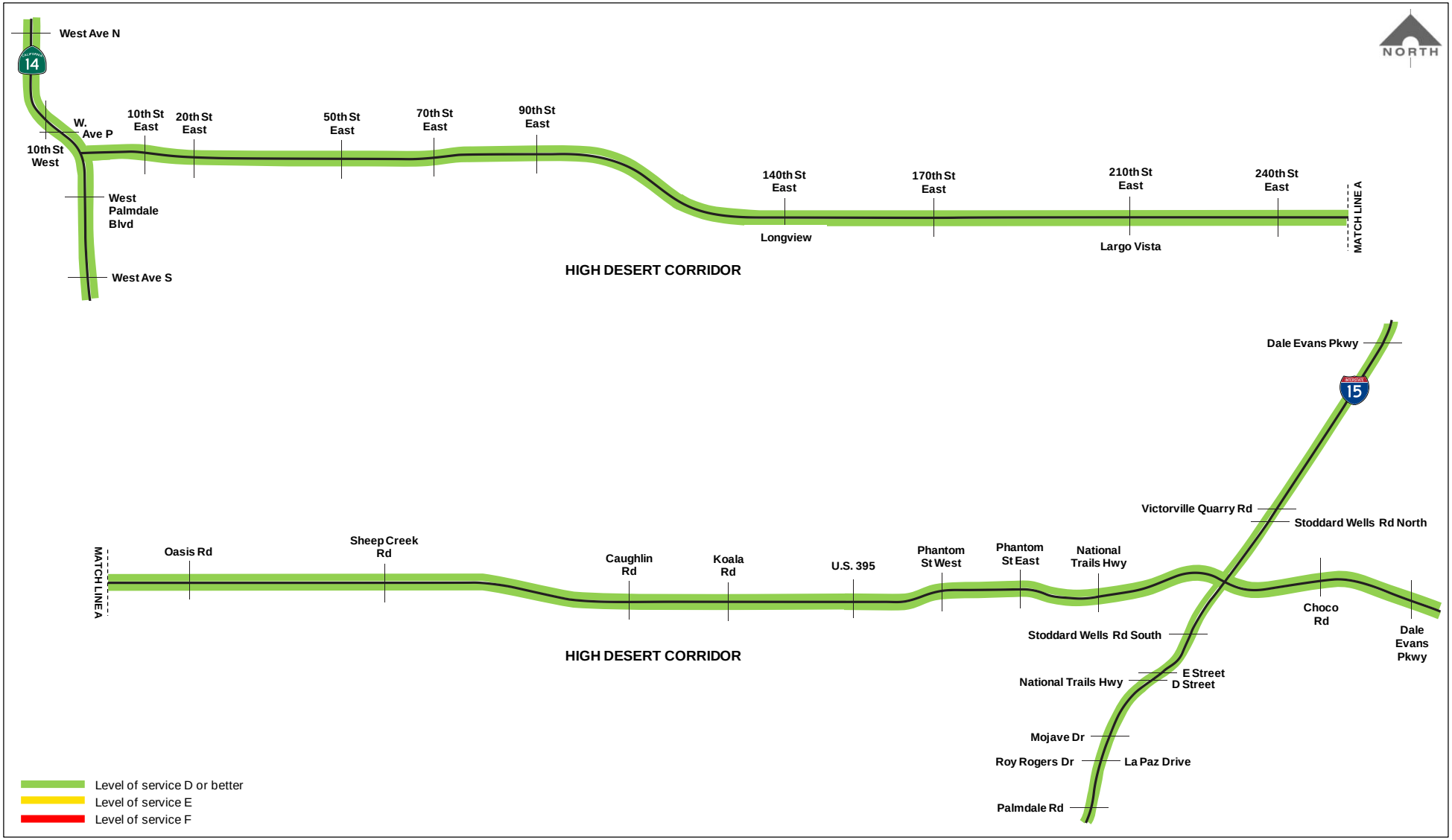
PM PEAK HOUR

Figure 6-19: Year 2020 Build Partial High Desert Corridor Freeway Mainline Level of Service *(2 of 2)*



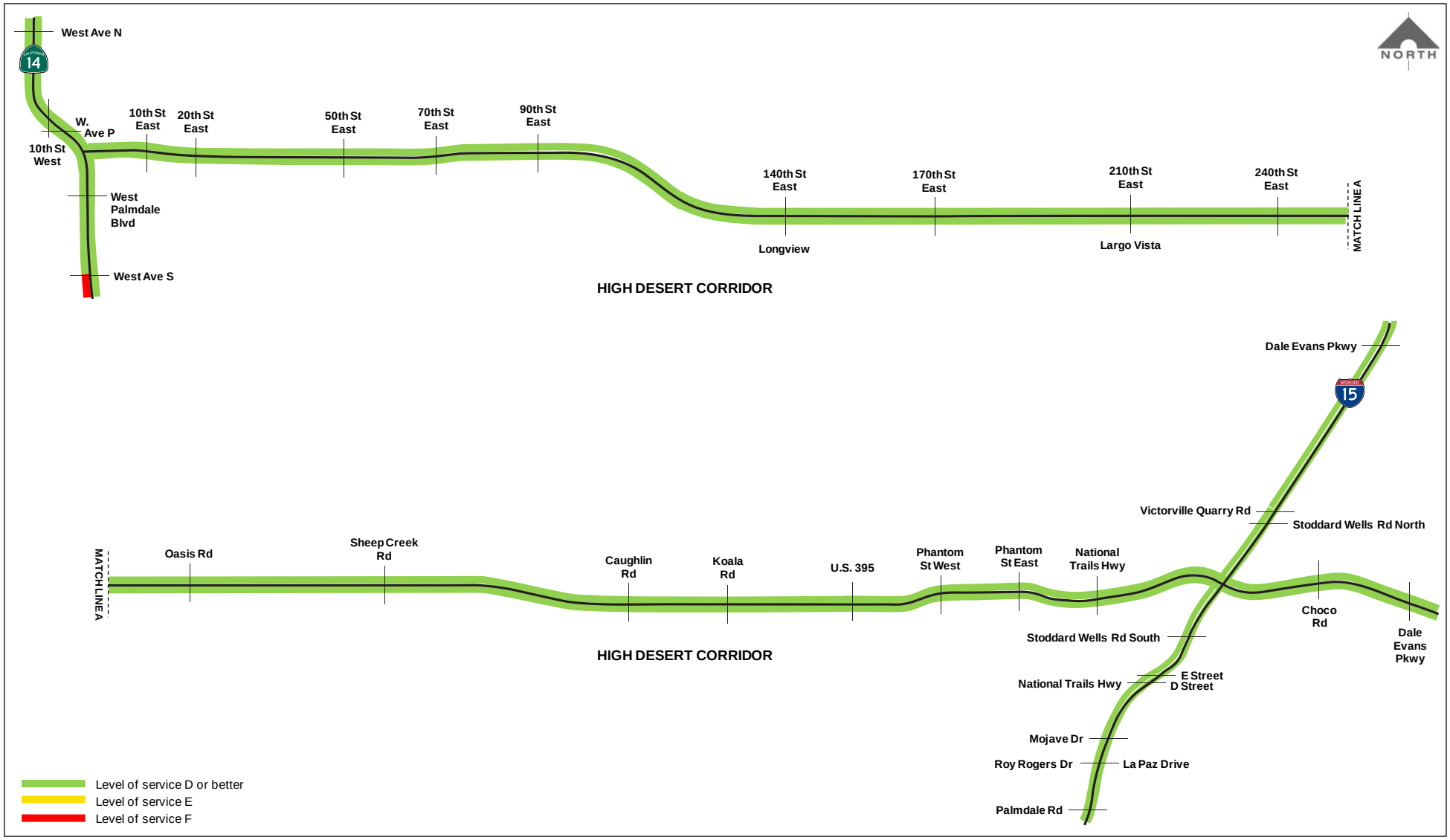
AM PEAK HOUR

Figure 6-20: Year 2020 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Level of Service *(1 of 2)*



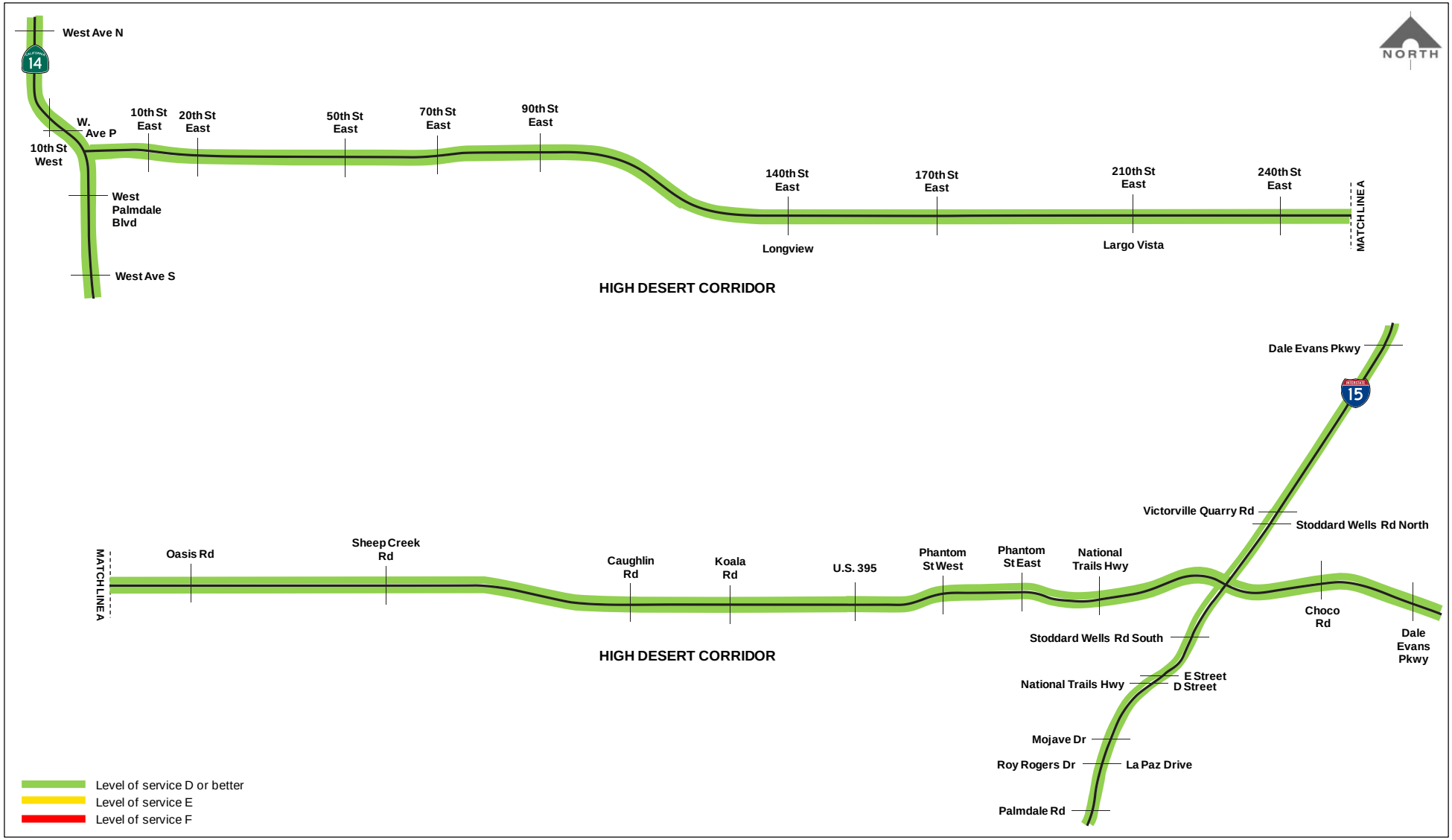
PM PEAK HOUR

Figure 6-20: Year 2020 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Level of Service *(2 of 2)*



AM PEAK HOUR

Figure 6-21: Year 2020 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

Figure 6-21: Year 2020 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Level of Service *(2 of 2)*

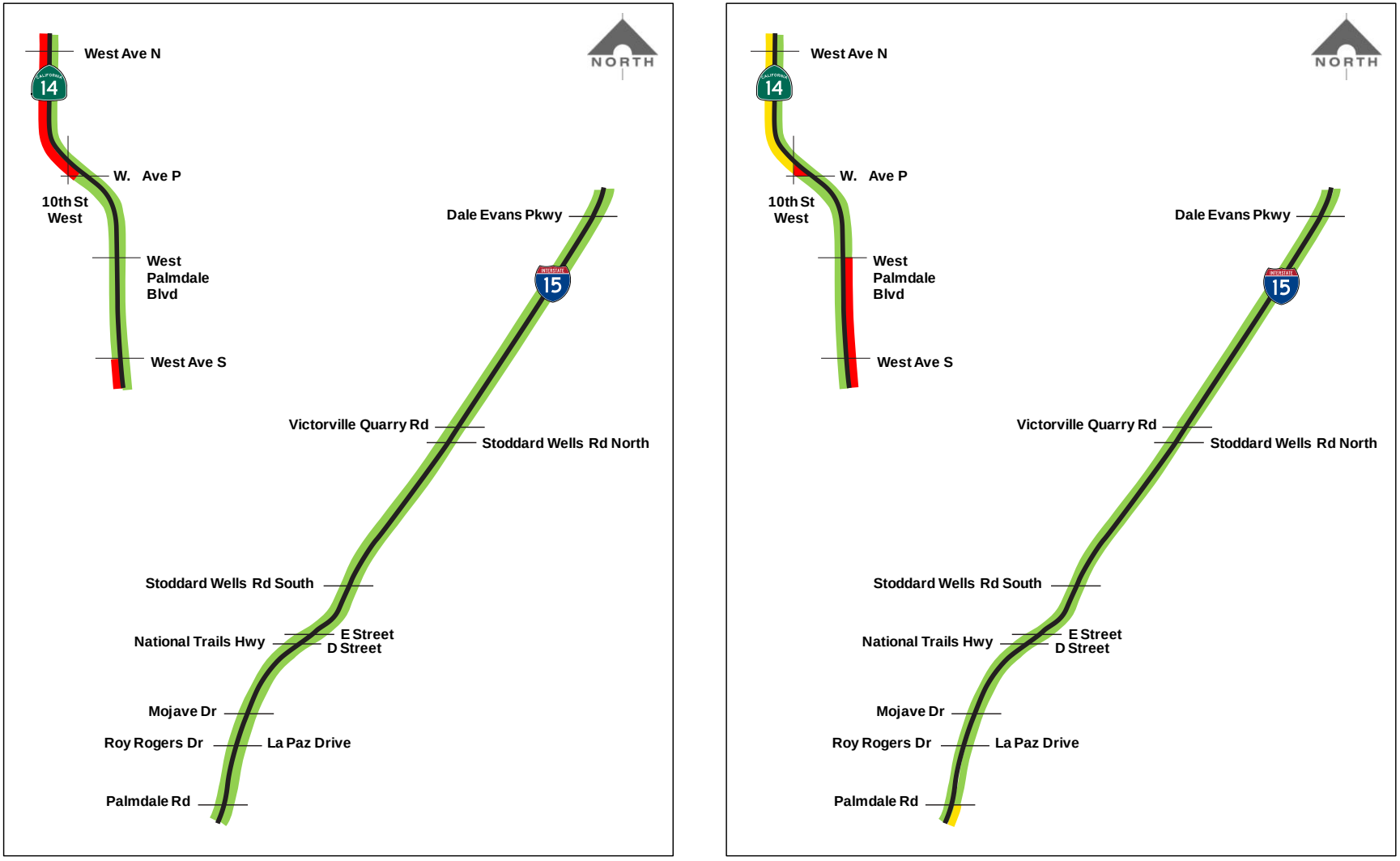
Table 6-10. Year 2040 Freeway Mainline Level of Service Analysis Results Summary *(segments operating at LOS E or worse)*

	FREEWAY SEGMENT *(LOS)*					
	NO-BUILD	BUILD	BUILD TOLL	BUILD FEEDER RAIL	BUILD TOLL+ FEEDER RAIL	BUILD LAND USE SENSITIVITY
AM PEAK						
SR 14 NB	None	None	None	None	None	None
SR 14 SB	SR 14 from north end of the network to West Avenue N off-ramp (*F*) West Avenue N off-ramp to West Avenue N loop on-ramp (*F*) West Avenue N loop on-ramp to West Avenue N direct on-ramp (*F*) West Avenue N direct on-ramp to 10th Street West off-ramp (*F*) East Avenue S on-ramp to SR 14 SB south end of the network (*E* overall; *F* mixed flow)	East Avenue S off-ramp to East Avenue S on-ramp (*F*) East Avenue S on-ramp to Angeles Forest Highway off-ramp (*F*)	East Avenue S off-ramp to East Avenue S on-ramp (*E*) East Avenue S on-ramp to Angeles Forest Highway off-ramp (*F*)	East Avenue S off-ramp to East Avenue S on-ramp (*E*) East Avenue S on-ramp to Angeles Forest Highway off-ramp (*F* overall and mixed flow; *E* HOV)	East Avenue S off-ramp to East Avenue S on-ramp (*E*) East Avenue S on-ramp to Angeles Forest Highway off-ramp (*F* overall and mixed flow; *E* HOV)	West Avenue M on-ramp to West Avenue N off-ramp (*F*) West Avenue N off-ramp to West Avenue N loop on-ramp (*F* overall and mixed flow; *E* HOV) West Avenue N loop on-ramp to West Avenue N direct on-ramp (*F* overall and mixed flow; *E* HOV) West Avenue N direct on-ramp to 10th Street West off-ramp (*F*) 10th Street West off-ramp to HCD off-ramp (*E* overall; *F* mixed flow)
HDC EB	N/A	West end of the network to SR 14 NB on-ramp (*E*)	West end of the network to SR 14 NB on-ramp (*E*)	West end of the network to SR 14 NB on-ramp (*E*)	West end of the network to SR 14 NB on-ramp (*E*)	West end of the network to SR 14 NB on-ramp (*E*)
HDC WB	N/A	None	None	None	None	None
I-15 NB	None	None	None	None	None	None
I-15 SB	None	None	None	None	None	None
PM PEAK						
SR 14 NB	Pearblossom Highway direct on ramp to East Avenue S off-ramp (*F*) East Avenue S off-ramp to East Avenue S on-ramp (*F*) East Avenue S on-ramp to West Palmdale Boulevard off-ramp (*F*)	Pearblossom Highway direct on ramp to East Avenue S off-ramp (*F*)	Pearblossom Highway direct on ramp to East Avenue S off-ramp (*F*)	Pearblossom Highway direct on ramp to East Avenue S off-ramp (*F* overall and mixed flow; *E* HOV)	Pearblossom Highway direct on ramp to East Avenue S off-ramp (*F* overall and mixed flow; *E* HOV)	Pearblossom Highway direct on ramp to East Avenue S off-ramp (*F*) 10th Street West off-ramp to HDC on-ramp (*D* overall; *E* mixed flow) HDC on-ramp to 10th Street West on-ramp (*F*) 10th Street West loop on-ramp to 10th Street West direct on-ramp (*F*) 10th Street West direct on-ramp to West Avenue N off-ramp (*F*)
SR 14 SB	West Avenue N direct on-ramp to 10th Street W off-ramp (*E*) HDC off-ramp to 10th Street W on-ramp (*F*)	None	None	None	None	West Avenue M on-ramp to West Avenue N off-ramp (*F*) West Avenue N off-ramp to West Avenue N loop on-ramp (*F*) West Avenue N loop on-ramp to West Avenue N direct on-ramp (*F*) West Avenue N direct on-ramp to 10th Street West off-ramp (*F*) 10th Street West off-ramp to HCD off-ramp (*E*)
HDC EB	N/A	None	West end of the network to SR 14 NB on-ramp (*E*)	None	West end of the network to SR 14 NB on-ramp (*E*)	West end of the network to SR 14 NB on-ramp (*E*)
HDC WB	N/A	None	SB off-ramp to SR 138 WB end of network (*E*)	None	10th Street E off-ramp to 10th Street E on-ramp (*E*) 10th Street E on-ramp to SR 14 SB on-ramp (*E*) SR 14 SB off-ramp to SR 138 west end of network (*E*)	140th Street E off-ramp to 140th Street E on-ramp (*E*) 50th Street E on-ramp to 20th Street E off-ramp (*F*) 20th Street E off-ramp to 20th Street E on-ramp (*F*) 20th Street E on-ramp to 10th Street E off-ramp (*F*) 10th Street E off-ramp to 10th Street E on-ramp (*F*) 10th Street E off-ramp to SR 14 SB off-ramp (*F*) SR 14 SB on-ramp to SR 138 WB west end of network (*F*)
I-15 NB	South of the network to Palmdale Road off-ramp (*E*) Palmdale Road loop off-ramp to Palmdale Road direct on-ramp (*E*)	South of the network to Palmdale Road off-ramp (*F*)	South of the network to Palmdale Road off-ramp (*E*)	South of the network to Palmdale Road off-ramp (*F*)	South of the network to Palmdale Road off-ramp (*E*)	South of the network to Palmdale Road off-ramp (*E*) Palmdale Road loop on-ramp to Palmdale Road direct on-ramp (*E*)
I-15 SB	None	None	None	None	None	None

Table 6-11. Year 2040 Weaving and Ramp Merging/Diverging Level of Service Analysis Results Summary

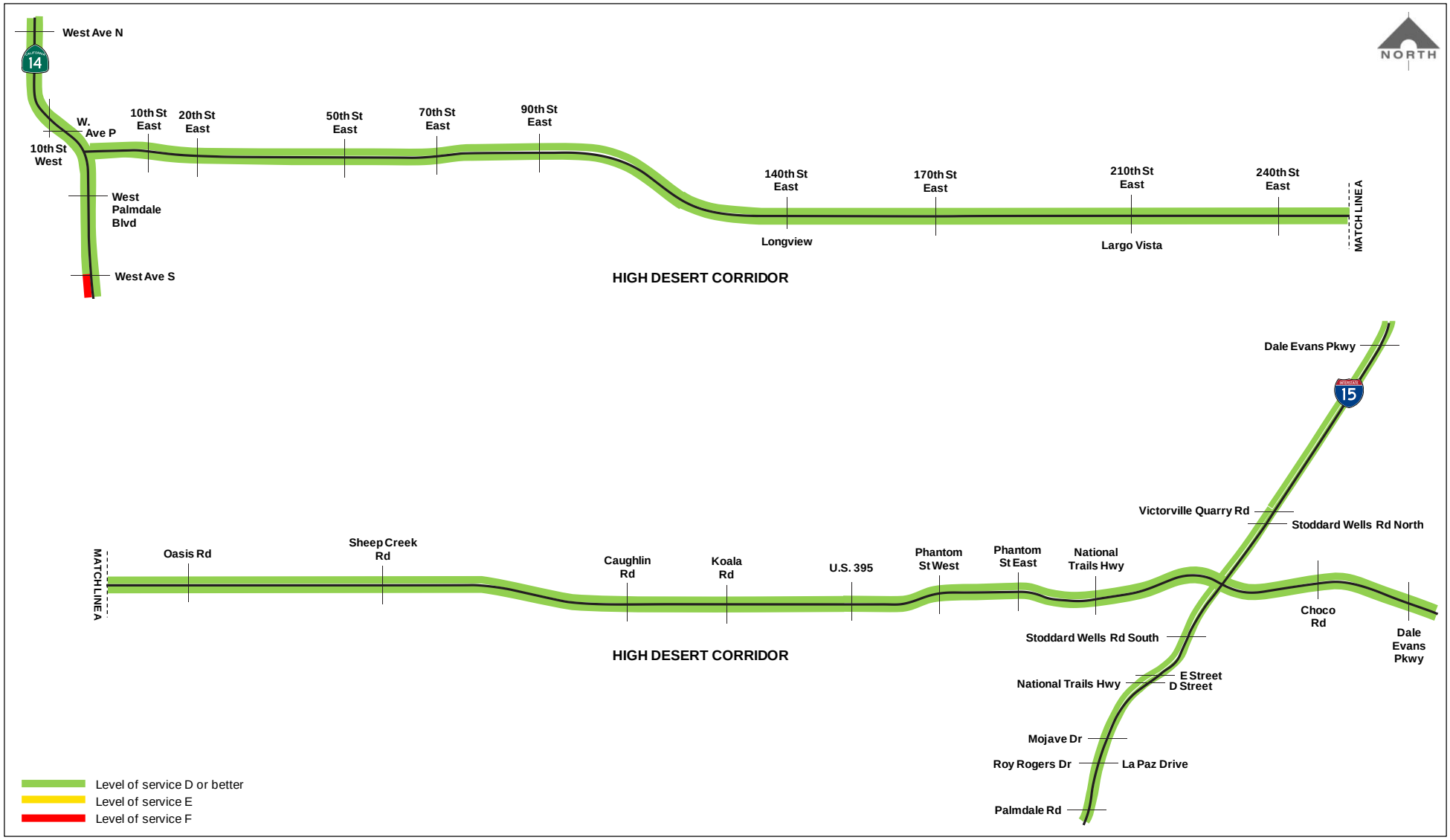
(segments operating at LOS E or worse)

	SEGMENT *(LOS–TYPE)*					
	NO-BUILD	**BUILD**	**BUILD TOLL**	**BUILD FEEDER RAIL**	**BUILD TOLL + FEEDER RAIL**	**BUILD LAND USE SENSITIVITY**
AM PEAK						
SR 14 NB	None	None	None	None	None	None
SR 14 SB	West Avenue N loop (*E–merging*) West Avenue N direct (*E–merging*) East Avenue S (*E–merging*) West Avenue N (*E–diverging*) 10th Street West (*E–diverging*)	East Avenue S (*E–merging*)	East Avenue S (*E–merging*)	East Avenue S (*E–merging*) 10th Street West (*E–diverging*)	East Avenue S (*E merging*)	West Avenue N loop (*E–merging*) West Avenue N direct (*E–merging*) West Avenue N (*E–diverging*) 10th Street West (*E–diverging*) SR 138 EB (*E–diverging*)
HDC EB	N/A	None	None	None	None	None
HDC WB	N/A	None	None	None	None	None
I-15 NB	None	None	None	None	None	None
I-15 SB	None	None	None	None	None	None
PM PEAK						
SR 14 NB	East Avenue S (*E–merging*) East Avenue S (*E–diverging*) West Palmdale Boulevard (*E–diverging*)	None	East Avenue S (*E–diverging*)	East Avenue S (*E–diverging*)	East Avenue S (*E–diverging*) 10th Street West (*E–diverging*)	SR 138 WB (*E–merging*) 10th Street West loop (*E–merging*) 10th Street direct (*E–merging*) East Avenue S (*E–diverging*)
SR 14 SB	West Avenue N direct (*E–merging*) West Rancho Vista Boulevard (*E–merging*) 10th Street West (*E–diverging*) West Palmdale Boulevard (*E–diverging*)	East Avenue S (*E–diverging*)	10th Street W (*E–diverging*)	None	None	West Avenue N loop (*E–merging*) West Avenue N direct (*E–merging*) West Avenue N (*E–diverging*) 10th Street West (*E–diverging*) SR 138 EB (*E–diverging*)
HDC EB	N/A	None	None	None	None	None
HDC WB	N/A	Phantom East Street direct (*E–merging*)	10th Street E (*E–merging*) SR 14 SB (*E–diverging*)	Phantom East Street direct (*E–merging*)	10th Street E (*E–merging*) Route 395 (*E–diverging*) SR 14 SB (*E–diverging*)	140th Street East (*E–merging*) 50th Street East (*E–merging*) 10th Street East (*E–merging*) 20th Street East (*E–diverging*) SR 14 EB (*E–diverging*) 20th Street East to 10th Street East (*F–weaving*)
I-15 NB	None	Palmdale Road loop (*E–merging*) Mojave Drive (*E–merging*) Palmdale Road (*E–diverging*)	Mojave Drive (*E–merging*) Palmdale Road (*E–diverging*)	Palmdale Road (*E–diverging*)	Mojave Drive (*E–merging*) Palmdale Road (*E–diverging*)	Palmdale Road loop (*E–merging*) Mojave Drive (*E–merging*) Palmdale Road (*E–diverging*)
I-15 SB	None	None	None	None	None	None



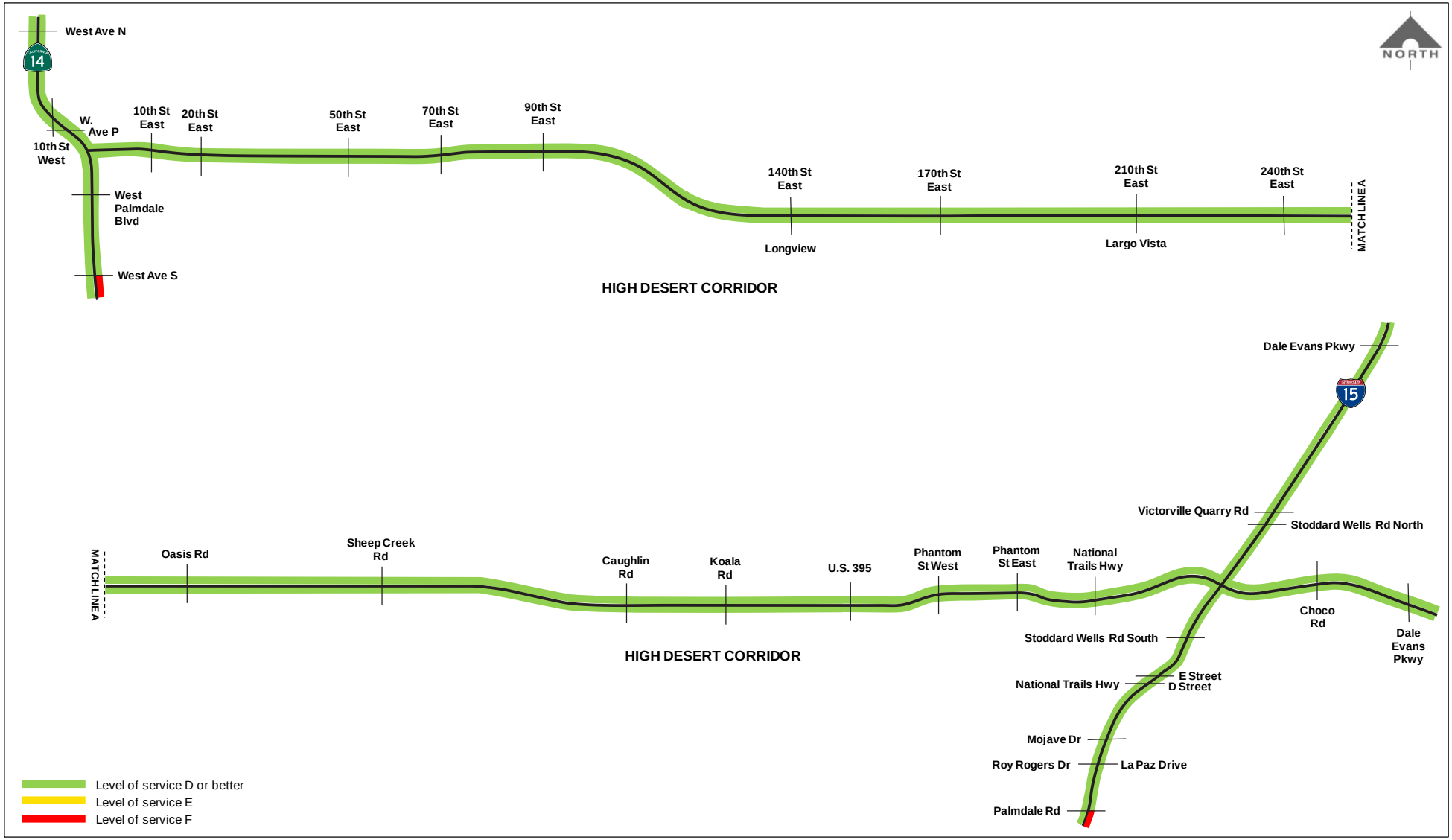
Level of service D or better
Level of service E
Level of service F

Figure 6-22: Year 2040 No-build Alternative Freeway Mainline Level of Service



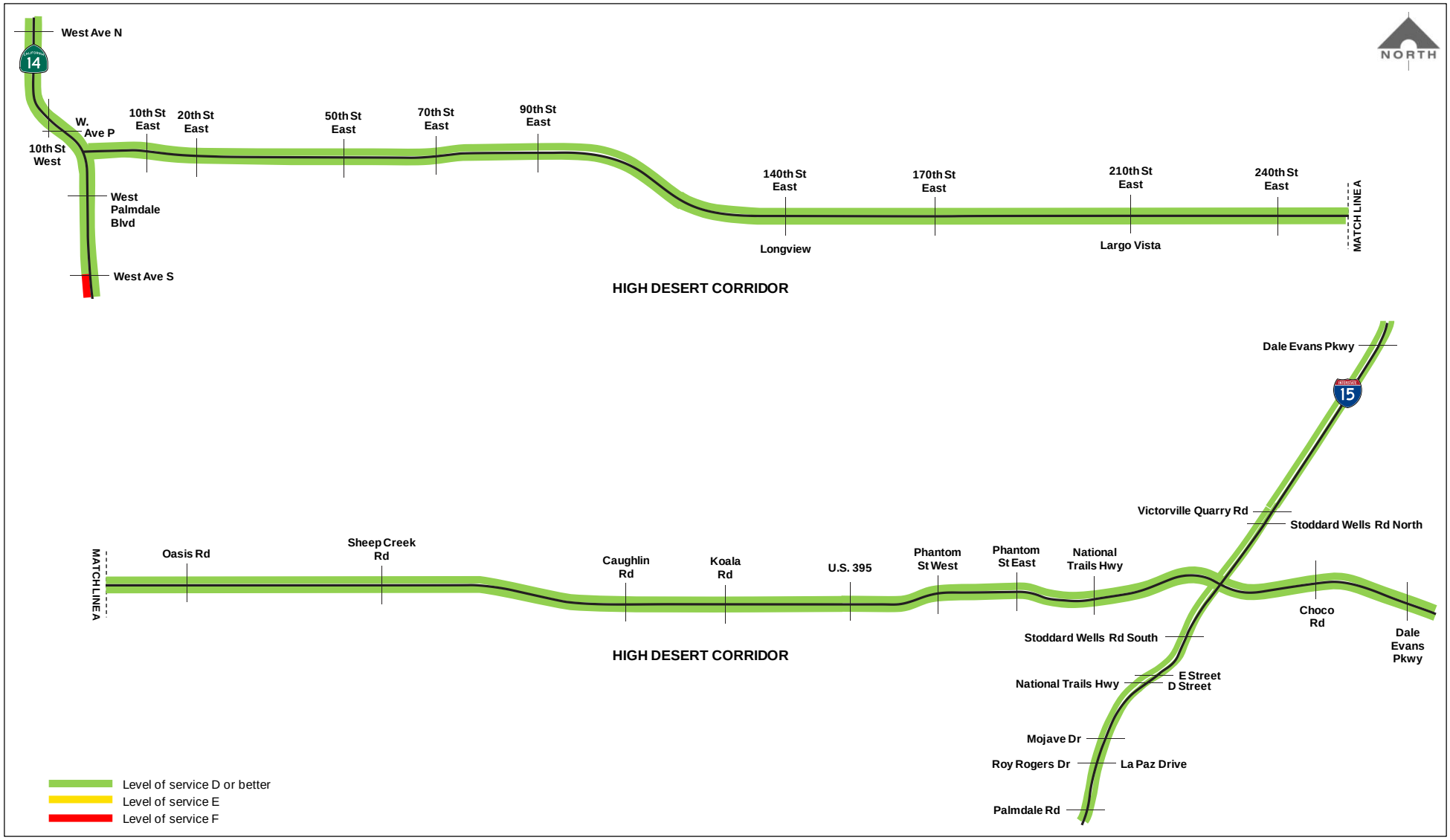
AM PEAK HOUR

Figure 6-23: Year 2040 Build Alternative Freeway Mainline Level of Service *(1 of 2)*



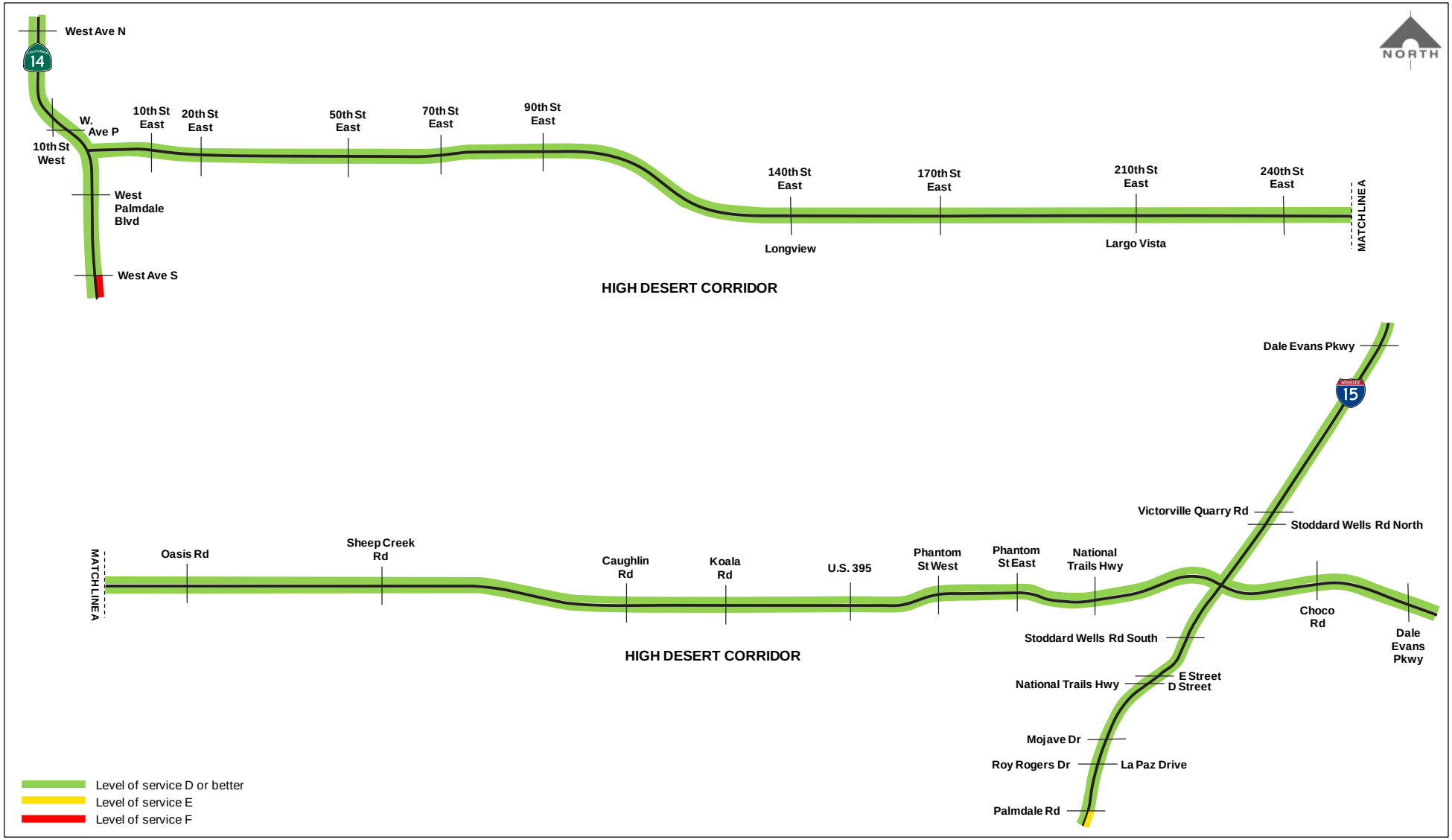
PM PEAK HOUR

Figure 6-23: Year 2040 Build Alternative Freeway Mainline Level of Service *(2 of 2)*



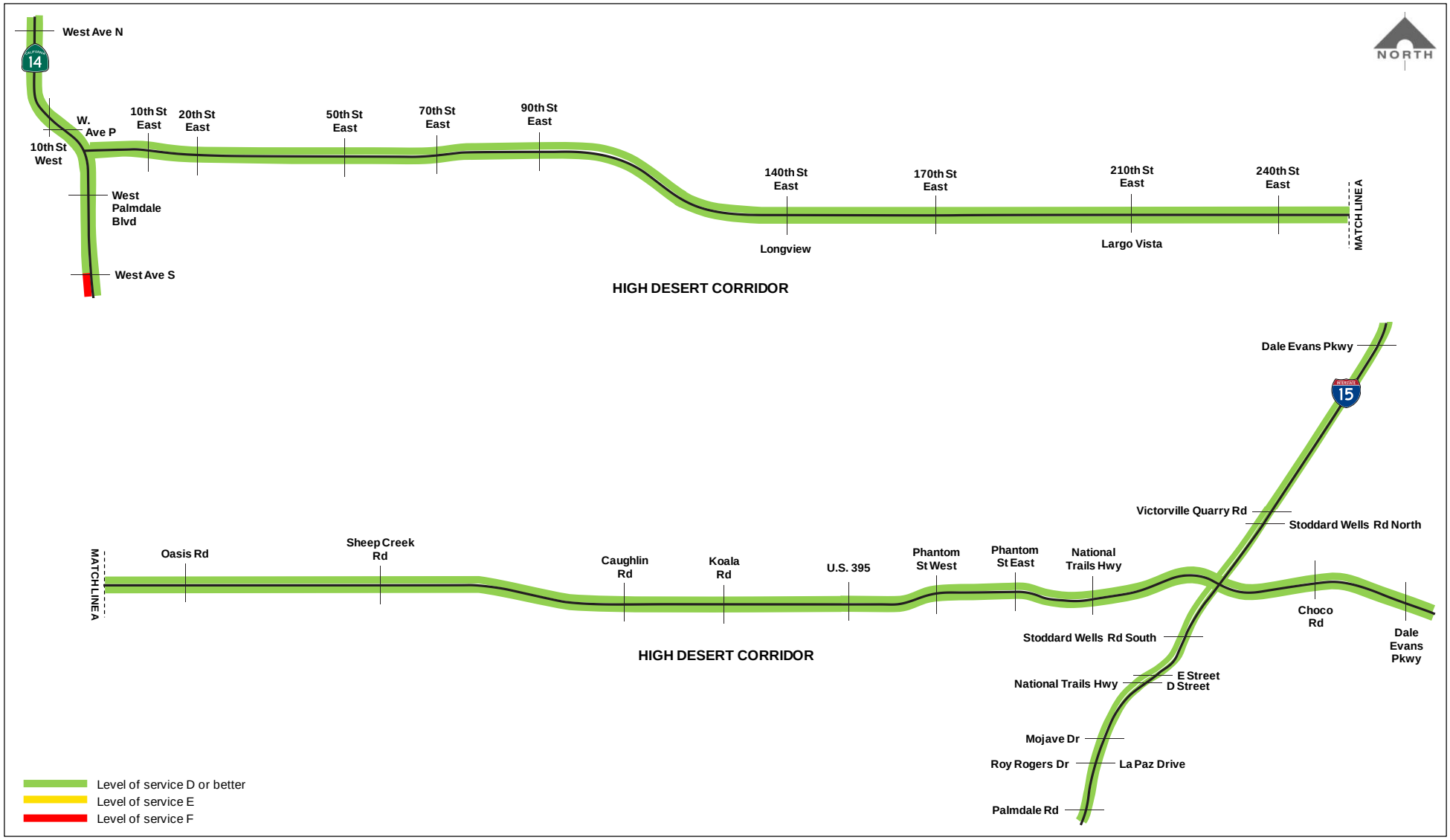
AM PEAK PERIOD

Figure 6-24: Year 2040 Build Alternative with Tolls Freeway Mainline Level of Service *(1 of 2)*



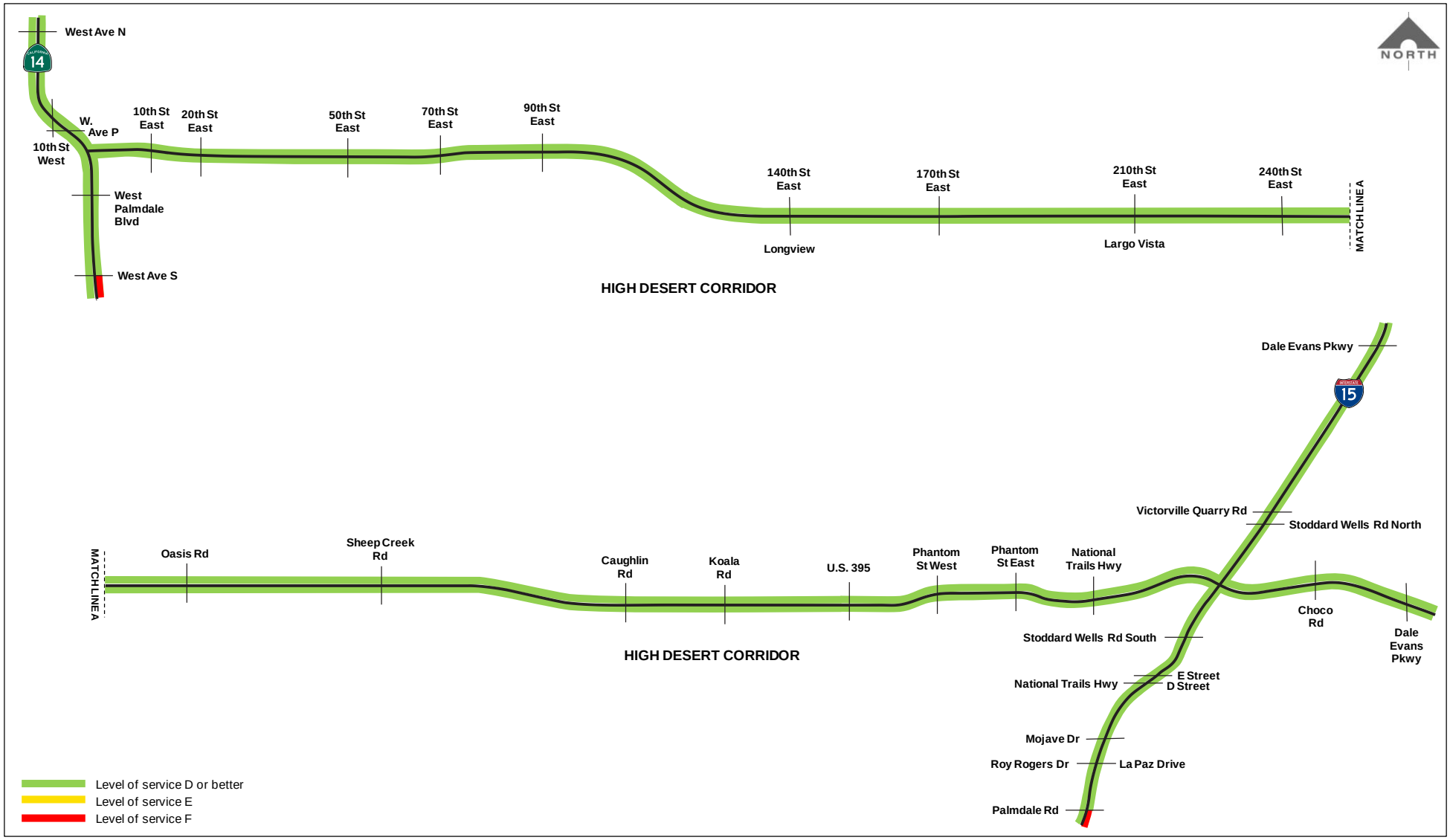
PM PEAK PERIOD

Figure 6-24: Year 2040 Build Alternative with Tolls Freeway Mainline Level of Service *(2 of 2)*



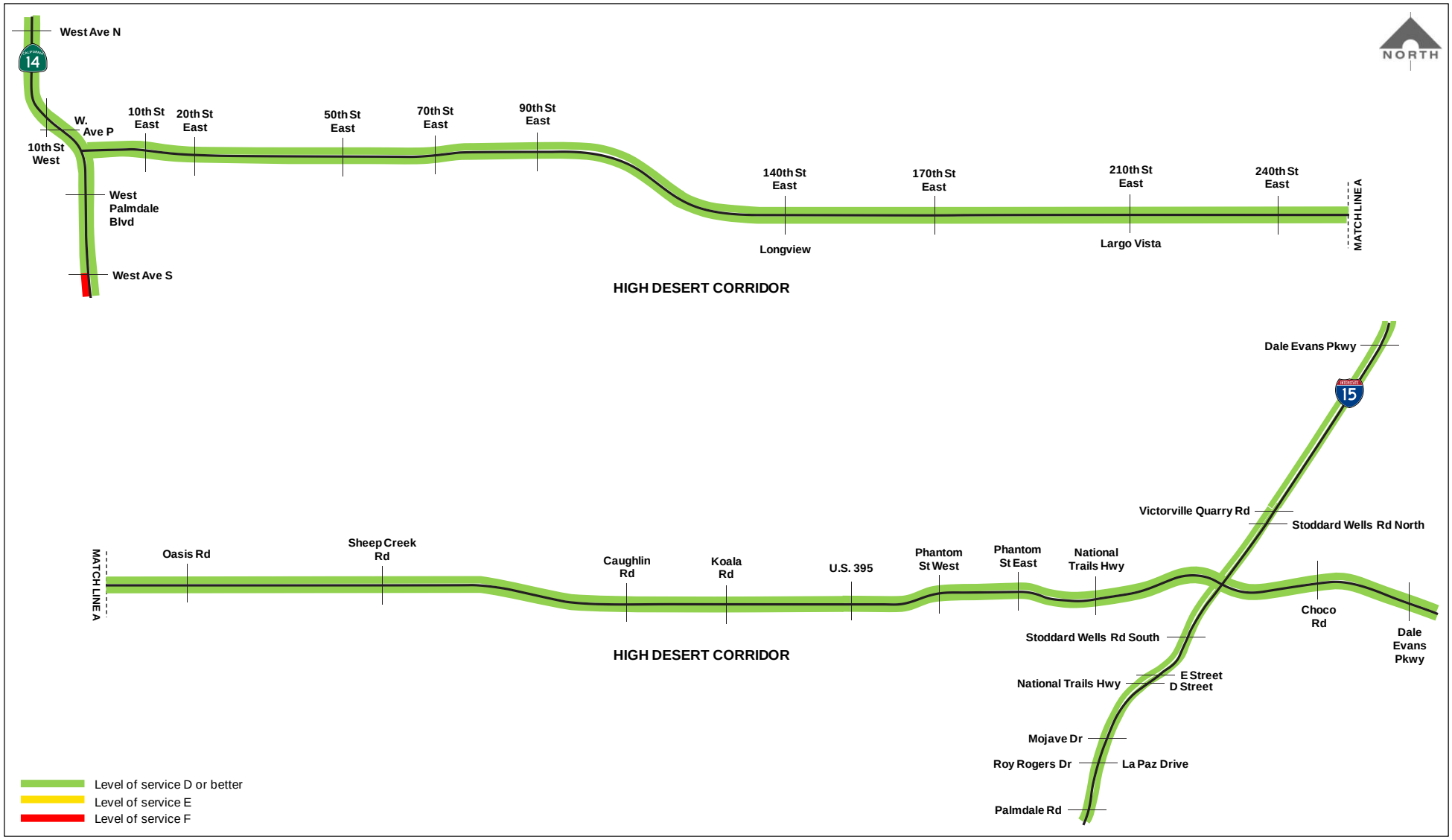
AM PEAK HOUR

Figure 6-25: Year 2040 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Level of Service *(1 of 2)*



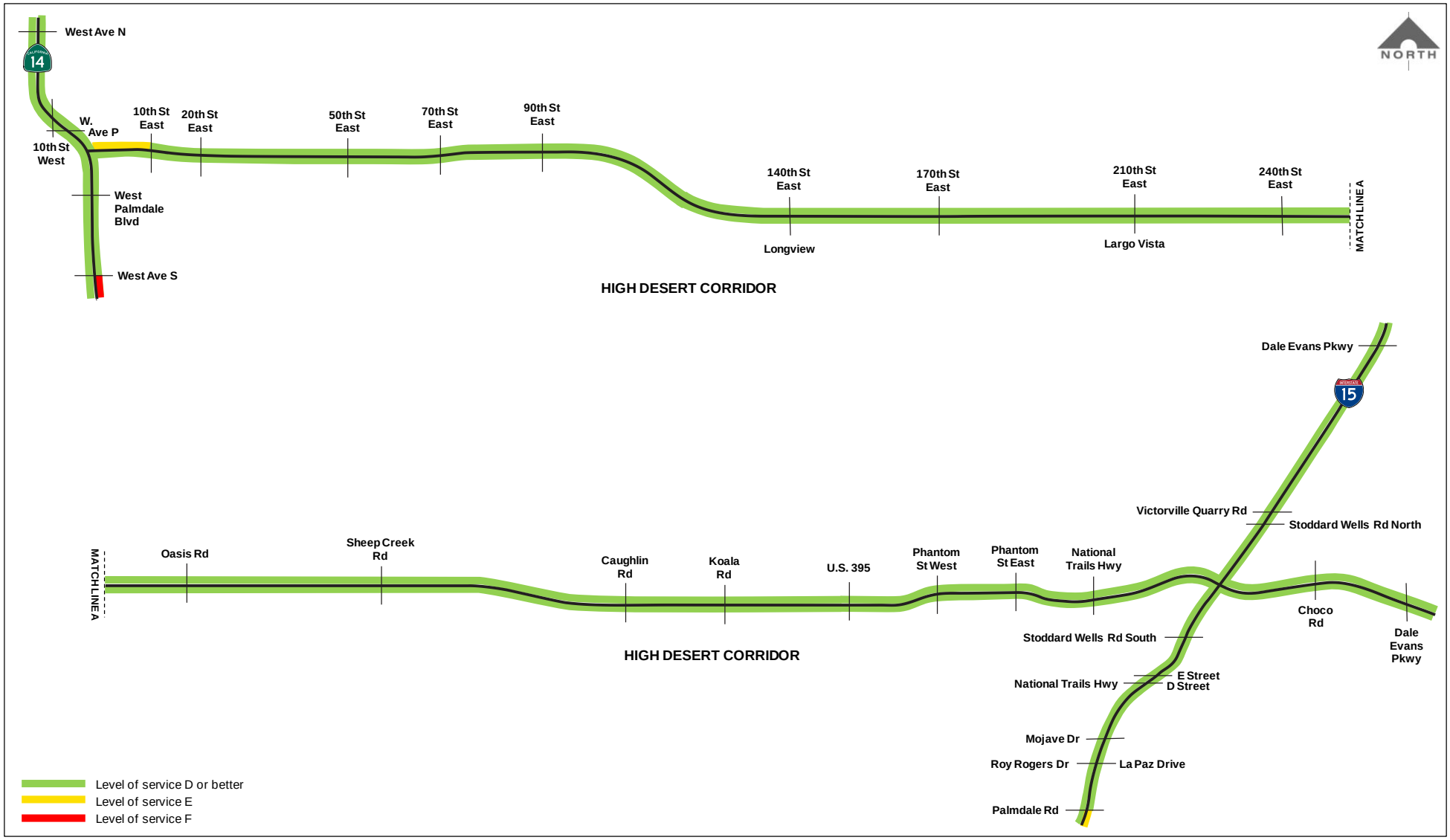
PM PEAK HOUR

Figure 6-25: Year 2040 Build Alternative with High Speed Rail Feeder Service Freeway Mainline Level of Service *(2 of 2)*



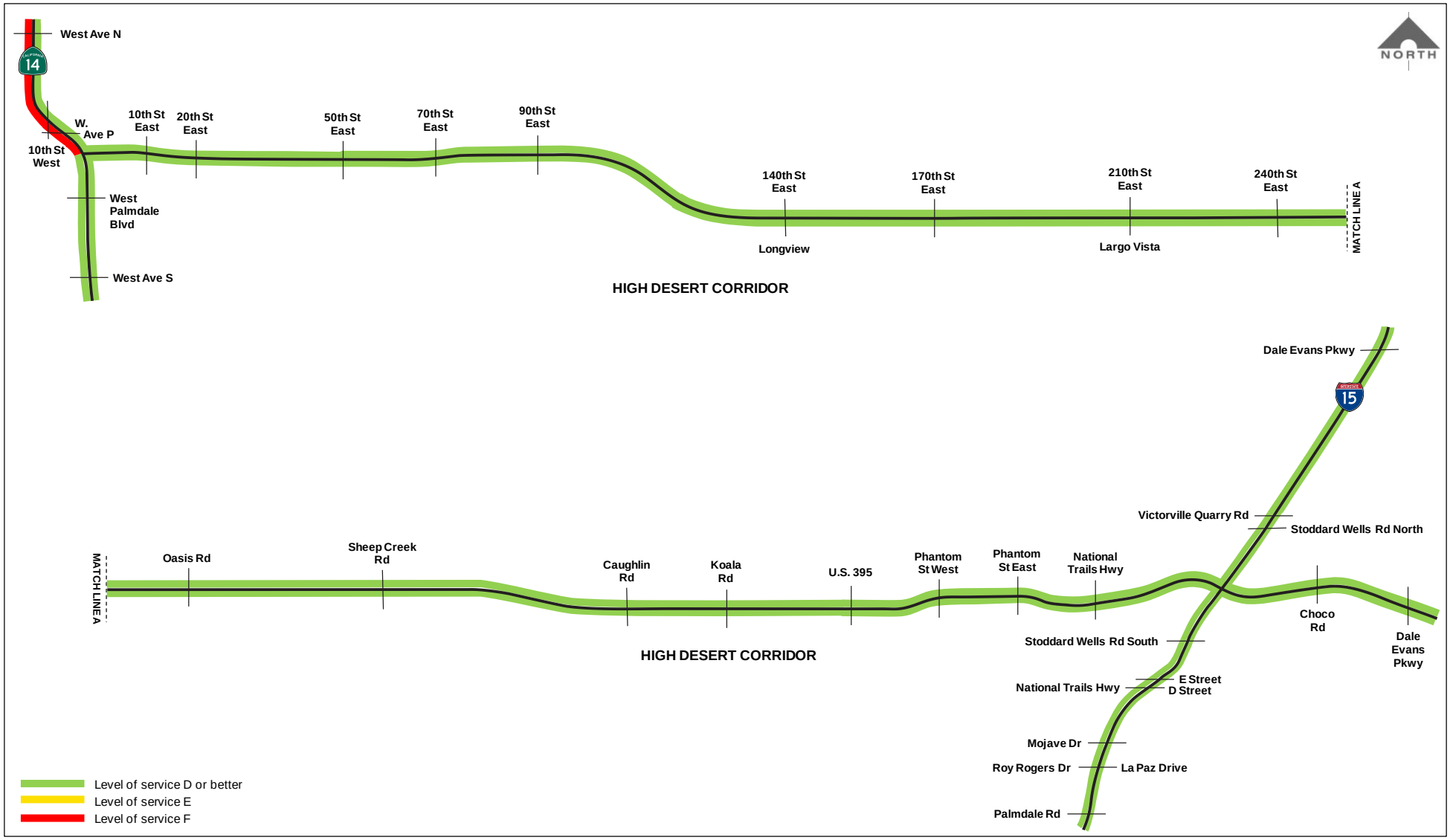
AM PEAK HOUR

Figure 6-26: Year 2040 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Level of Service *(1 of 2)*



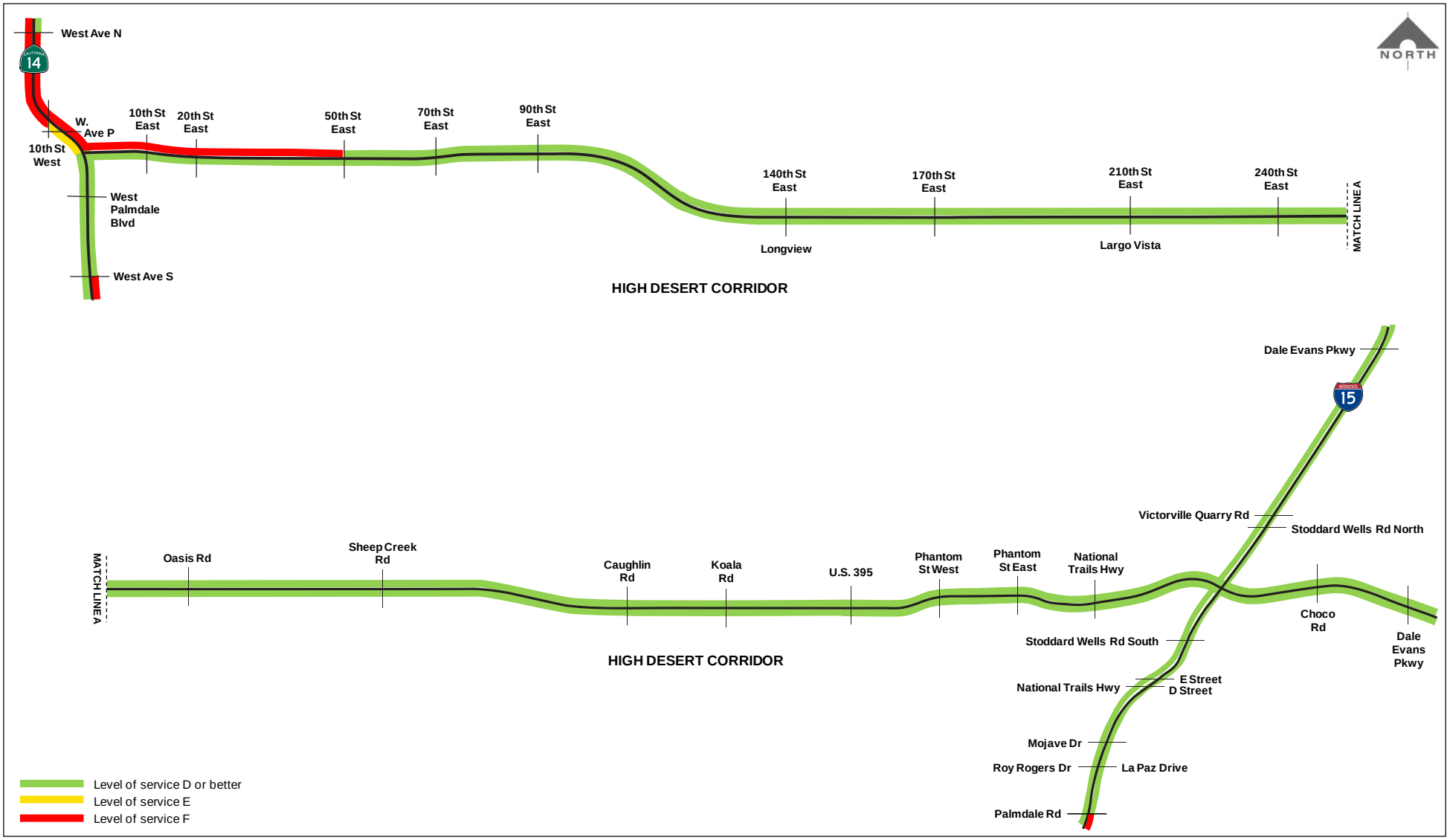
PM PEAK HOUR

Figure 6-26: Year 2040 Build Alternative with Tolls and High Speed Rail Feeder Service Freeway Mainline Level of Service *(2 of 2)*



AM PEAK HOUR

Figure 6-27: Year 2040 Build with Land Use Sensitivity Test Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

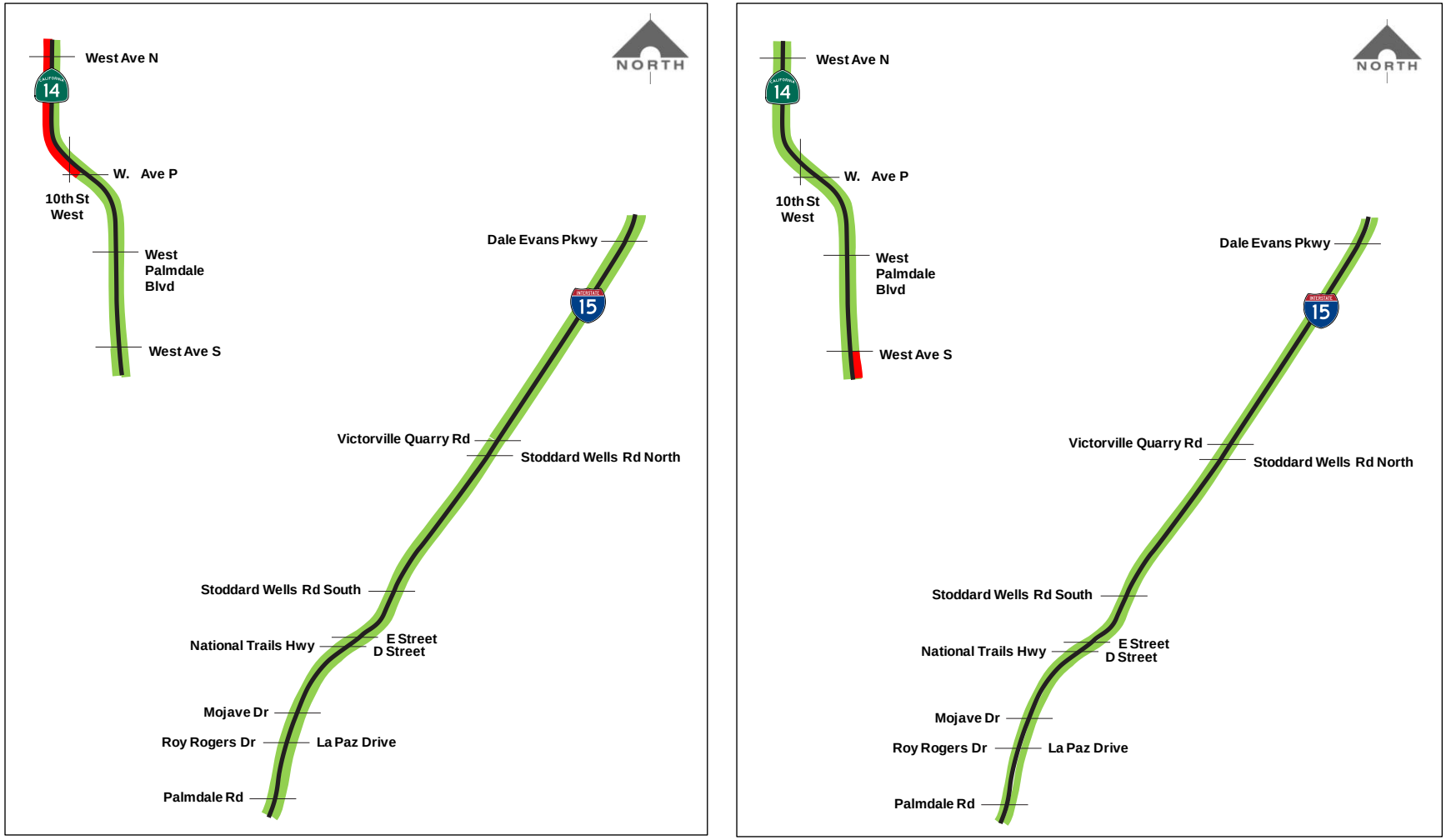
Figure 6-27: Year 2040 Build with Land Use Sensitivity Test Freeway Mainline Level of Service *(2 of 2)*

Table 6-12. Year 2020 Revised Palmdale Access Freeway Mainline Level of Service Analysis Results Summary *(segments operating at LOS E or worse)*

	FREEWAY SEGMENT *(LOS)*		
	NO-BUILD	BUILD	BUILD TOLL
AM PEAK			
SR 14 NB	None	None	None
SR 14 SB	SR 14 from north end of the network to West Avenue N off-ramp (*F*) West Avenue N off-ramp to West Avenue N loop on-ramp (*F*) West Avenue N loop on-ramp to West Avenue N direct on-ramp (*F*) West Avenue N direct on-ramp to 10th Street West off-ramp (*F*)	East Avenue S on-ramp to Angeles Forest Highway off-ramp (*E* overall; *F* mixed flow)	East Avenue S on-ramp to Angeles Forest Highway off-ramp (*E*)
HDC EB	N/A	None	None
HDC WB	N/A	None	None
I-15 NB	None	None	None
I-15 SB	None	None	None
PM PEAK			
SR 14 NB	South end of network to East Avenue S off-ramp (*F*)	None	None
SR 14 SB	None	None	None
HDC EB	N/A	None	None
HDC WB	N/A	None	None
I-15 NB	None	None	None
I-15 SB	None	None	None

Table 6-13. Year 2020 Revised Palmdale Access Weaving and Ramp Merging/Diverging Level of Service Analysis Results Summary *(segments operating at LOS E or worse)*

	SEGMENT *(LOS–TYPE)*		
	NO-BUILD	BUILD	BUILD TOLL
AM PEAK			
SR 14 NB	None	None	None
SR 14 SB	West Avenue N loop (*E–merging)* West Avenue N direct (*E–merging)* West Rancho Vista Boulevard (*E–merging)* West Avenue N (*E–merging)* 10th Street West (*E–diverging)*	None	None
HDC EB	N/A	None	None
HDC WB	N/A	None	None
I-15 NB	None	None	None
I-15 SB	None	None	None
PM PEAK			
SR 14 NB	None	None	West Avenue N (*E–diverging)*
SR 14 SB	None	None	None
HDC EB	N/A	None	None
HDC WB	N/A	None	None
I-15 NB	None	Palmdale Road (*E–diverging)*	Palmdale Road (*E–diverging)*
I-15 SB	None	None	None



AM

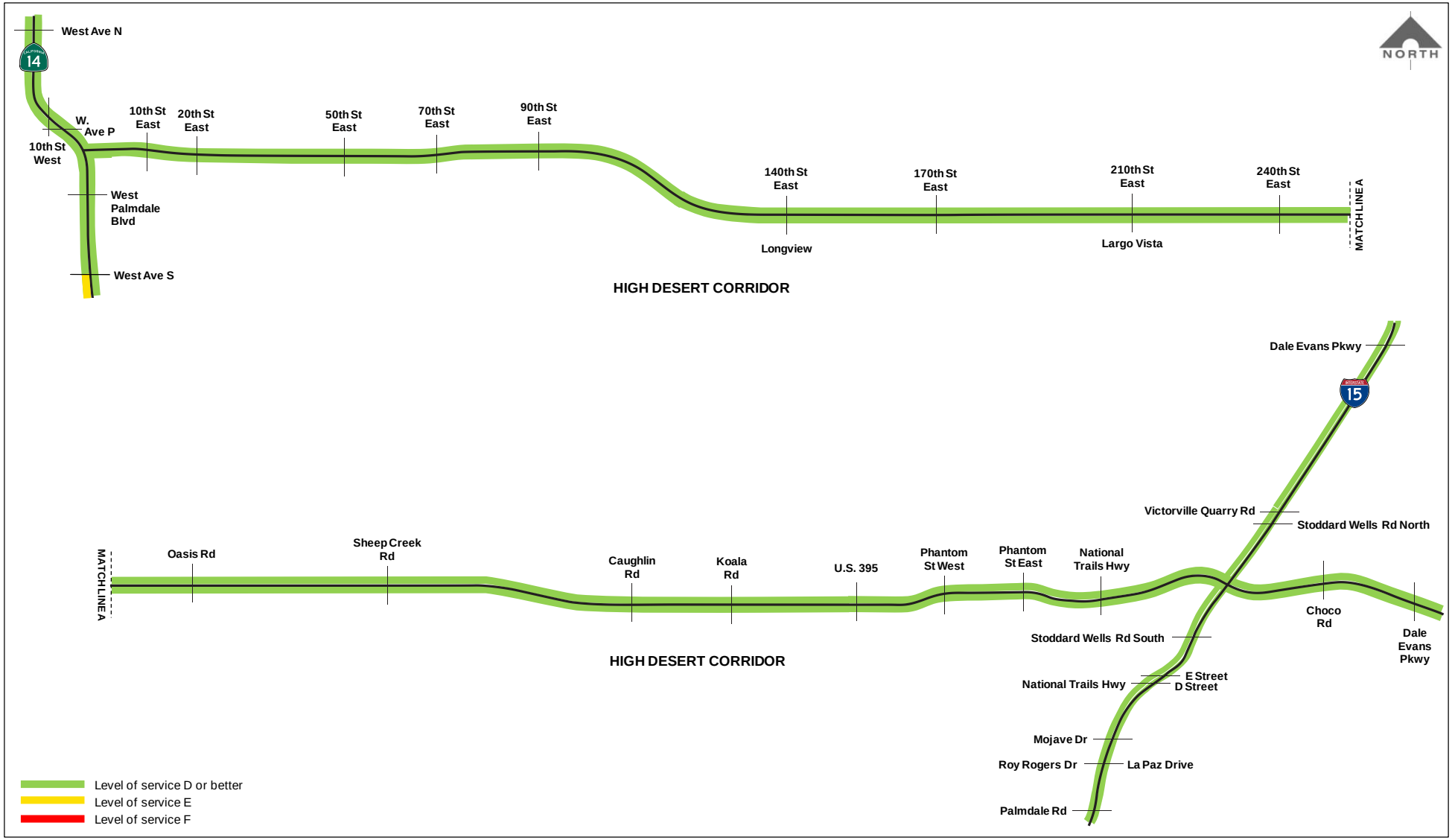
PM

Level of service D or better

Level of service E

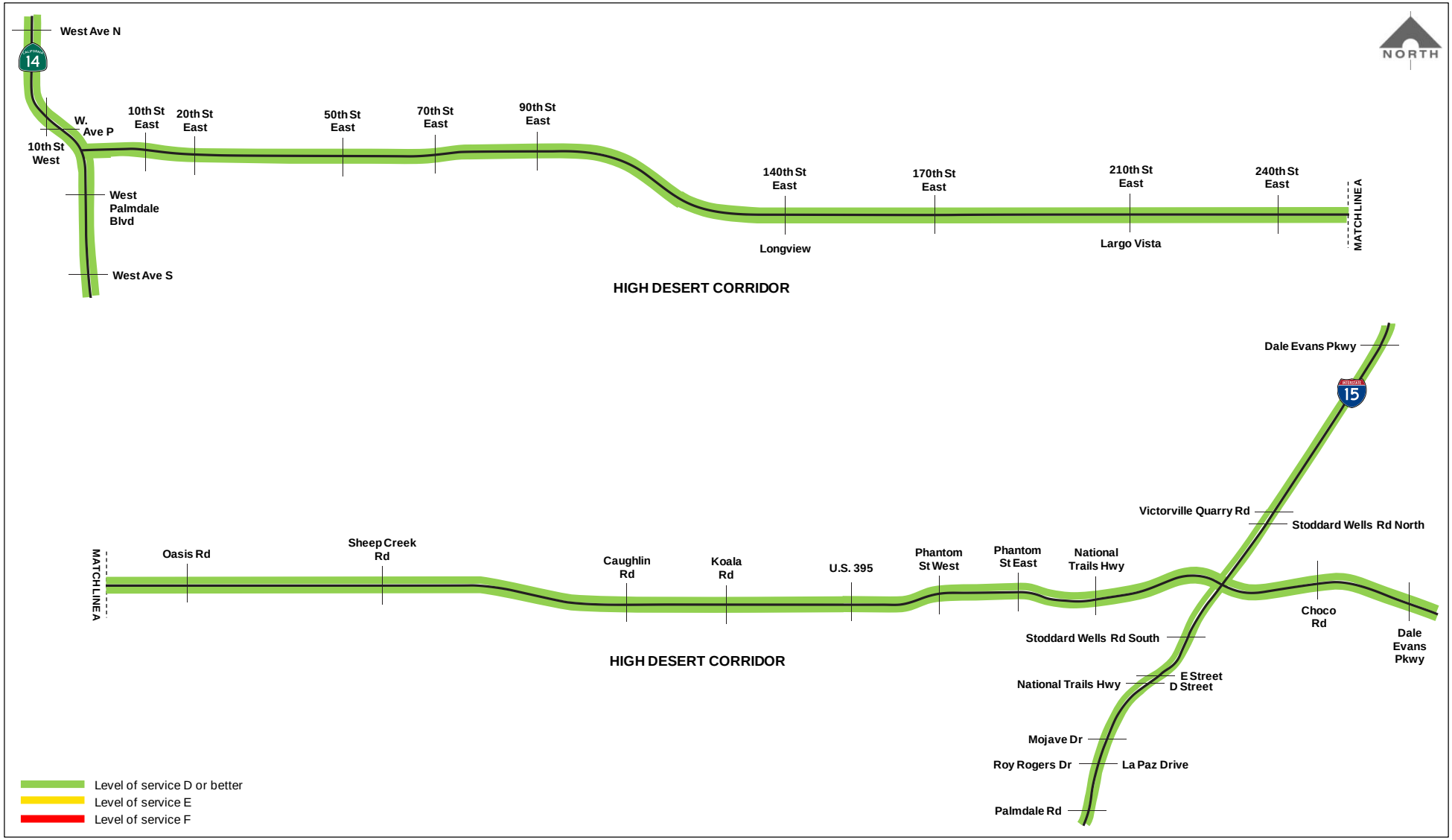
Level of service F

Figure 6-28: Year 2020 No-build Alternative with Revised Palmdale Access Freeway Mainline Level of Service



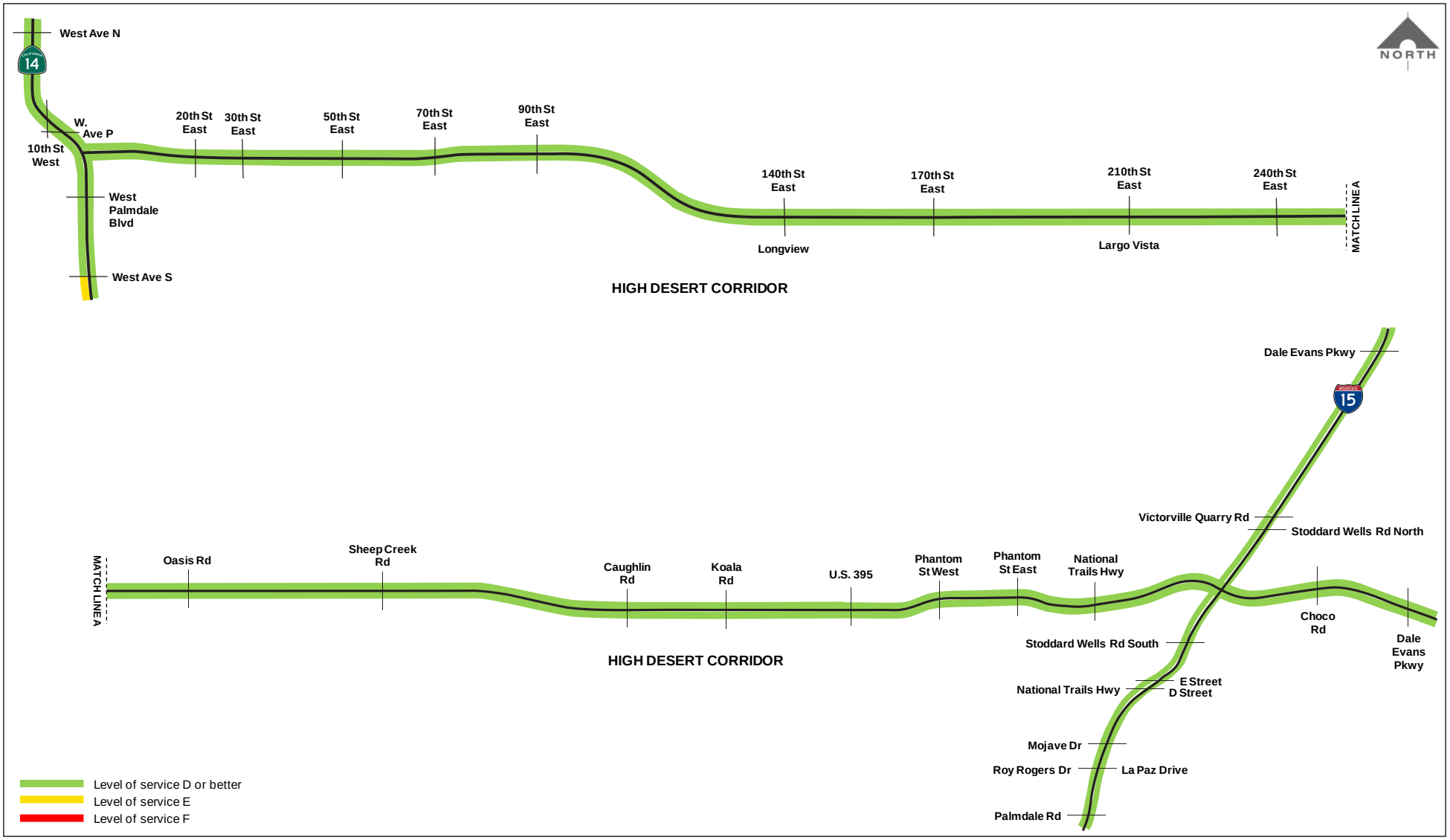
AM PEAK HOUR

Figure 6-29: Year 2020 Build Alternative with Revised Palmdale Access Freeway Mainline Level of Service *(1 of 2)*



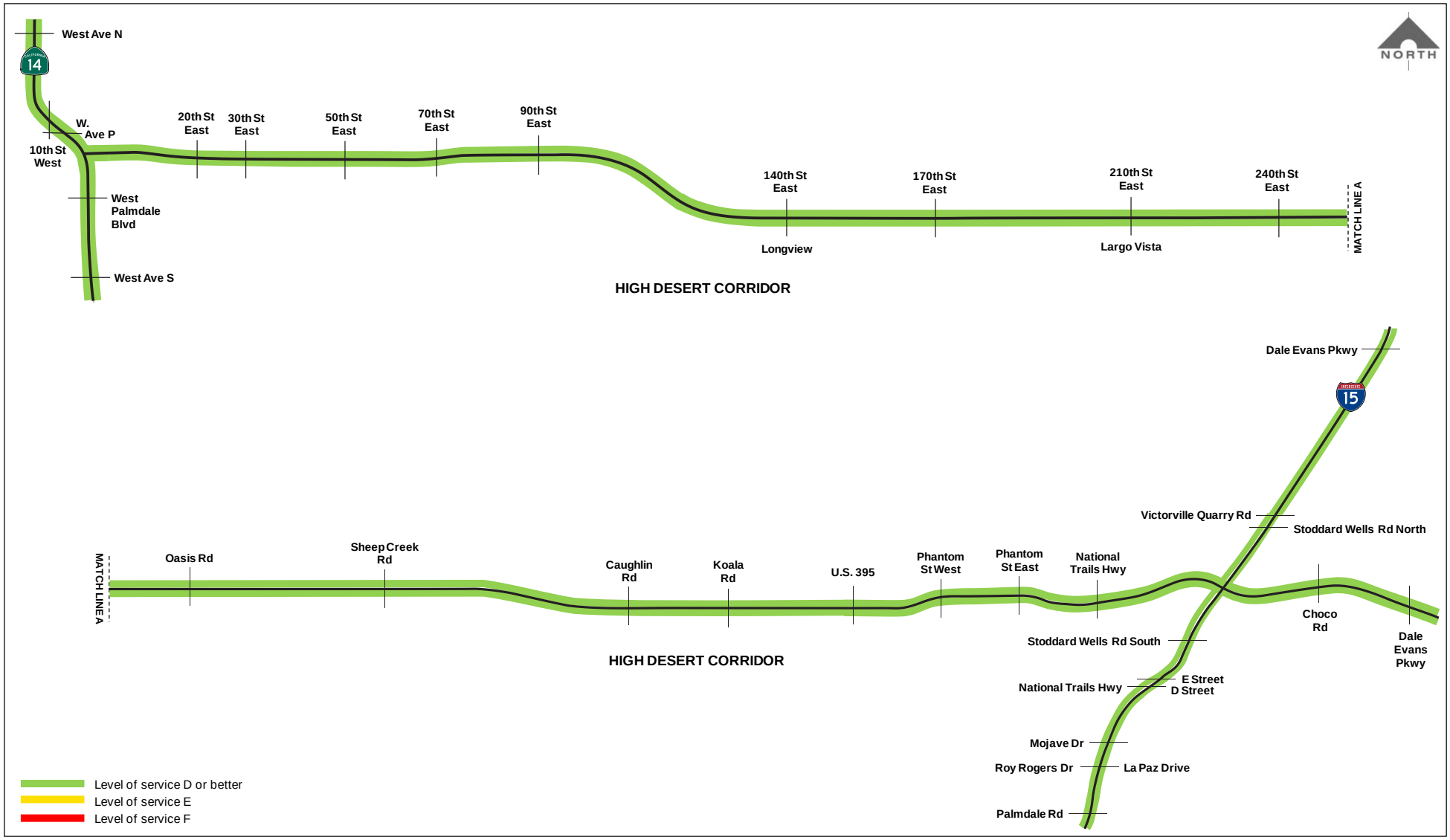
PM PEAK HOUR

Figure 6-29: Year 2020 Build Alternative with Revised Palmdale Access Freeway Mainline Level of Service *(2 of 2)*



AM PEAK HOUR

Figure 6-30: Year 2020 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Level of Service *(1 of 2)*



PM PEAK HOUR

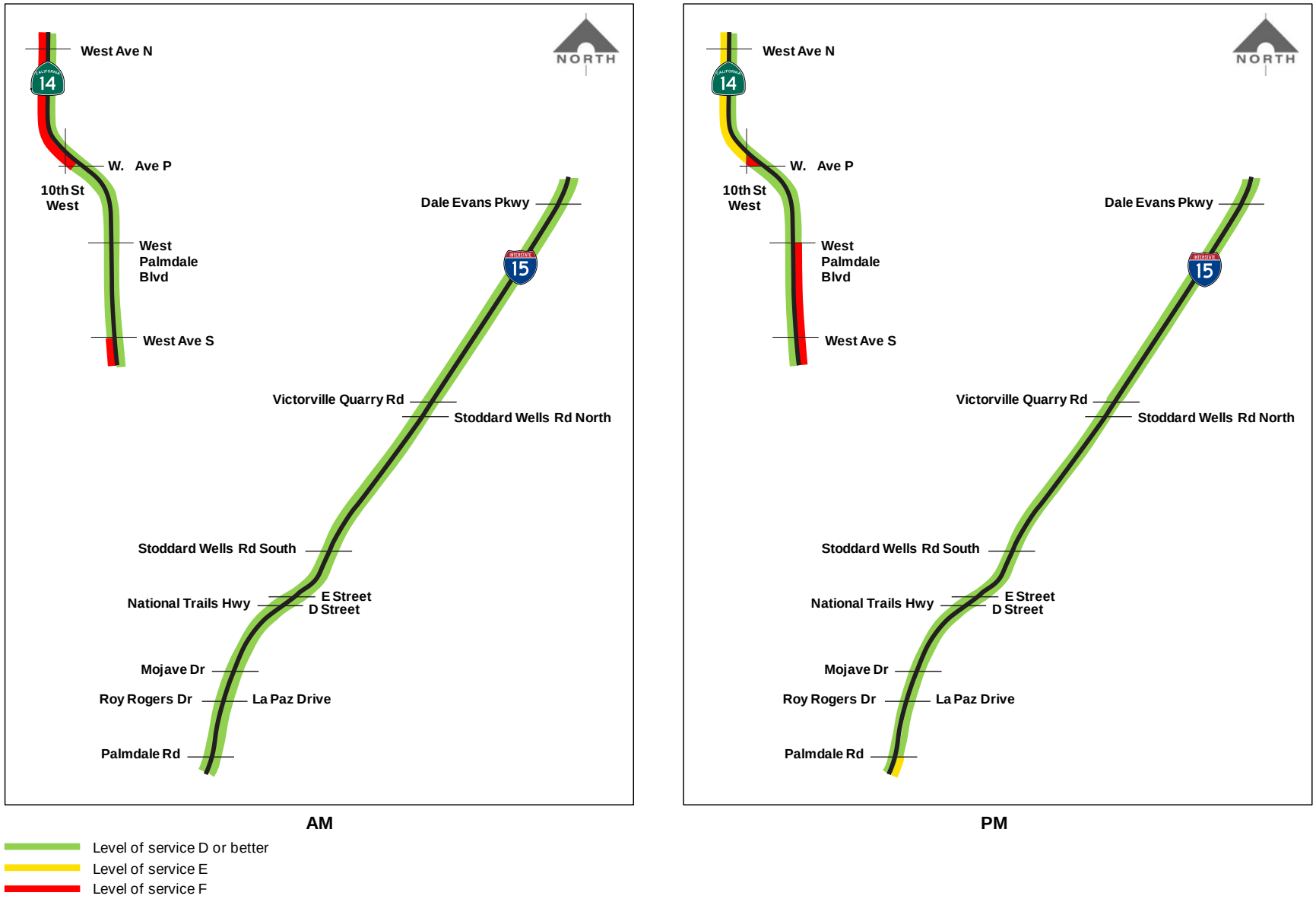
Figure 6-30: Year 2020 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Level of Service *(2 of 2)*

Table 6-14. Year 2040 Revised Palmdale Access Freeway Mainline Level of Service Analysis Results Summary *(segments operating at LOS E or worse)*

	SEGMENT *(LOS)*		
	NO-BUILD	**BUILD**	**BUILD TOLL**
AM PEAK			
SR 14 NB	None	None	None
SR 14 SB	SR 14 from north end of the network to West Avenue N off-ramp (*F*) West Avenue N off-ramp to West Avenue N loop on-ramp (*F*) West Avenue N loop on-ramp to West Avenue N direct on-ramp (*F*) West Avenue N direct on-ramp to 10th Street West off-ramp (*F*) East Avenue S on-ramp to SR 14 SB south end of the network (*E* overall; *F* mixed flow)	East Avenue S off-ramp to East Avenue S on-ramp (*F*) East Avenue S on-ramp to Angeles Forest Highway off-ramp (*F* overall and mixed flow; *E* HOV)	East Avenue S on-ramp to Angeles Forest Highway off-ramp (*F* overall and mixed flow; *E* HOV)
HDC EB	N/A	West end of the network to SR 14 NB on-ramp (*E*)	West end of the network to SR 14 NB on-ramp (*E*)
HDC WB	N/A	None	None
I-15 NB	None	None	None
I-15 SB	None	None	None
PM PEAK			
SR 14 NB	Pearblossom Hwy direct on-ramp to East Avenue S off-ramp (*F*) East Avenue S off-ramp to East Avenue S on-ramp (*F*) East Avenue S on-ramp to West Palmdale Blvd off-ramp (*F*)	Pearblossom Highway direct on-ramp to East Avenue S off-ramp (*F* overall and mixed flow; *E* HOV)	Pearblossom Highway direct on-ramp to East Avenue S off-ramp (*F* overall and mixed flow; *E* HOV)
SR 14 SB	West Avenue N direct on-ramp to 10th Street West off-ramp (*E*) HDC off-ramp to 10th Street West on-ramp (*F*)	None	None
HDC EB	N/A	West end of the network to SR 14 NB on-ramp (*E*)	West end of the network to SR 14 NB on-ramp (*E*)
HDC WB	N/A	SB off-ramp to SR 138 west end of network (*E*)	SB off-ramp to SR 138 west end of network (*E*)
I-15 NB	South end of network to Palmdale Road off-ramp (*E*)	South end of network to Palmdale Road off-ramp (E)	South end of network to Palmdale Road off-ramp (*F*)
I-15 SB	None	None	None

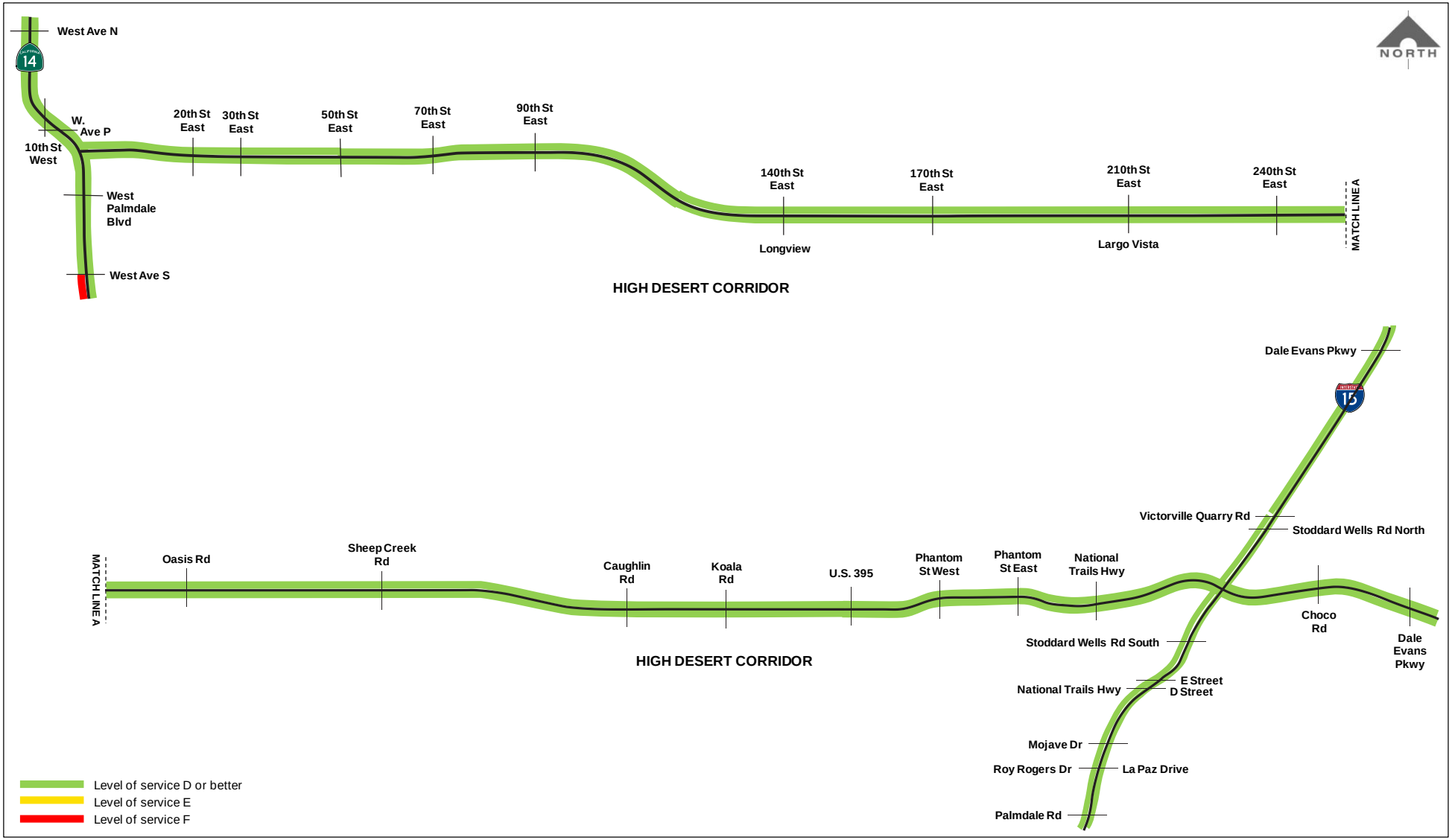
Table 6-15. Year 2040 Revised Palmdale Access Weaving and Ramp Merging/Diverging Level of Service Analysis Results Summary (*(segments operating at LOS E or worse)*

	SEGMENT *(LOS–TYPE)*			
	NO-BUILD		**BUILD**	**BUILD TOLL**
AM PEAK				
SR 14 NB	None		None	None
SR 14 SB	West Avenue N loop *(E–merging)* West Avenue N direct *(E–merging)* East Avenue S *(E–merging)*	West Avenue N (*E–diverging)* 10th Street West (*E–diverging)*	East Avenue S *(E–merging)*	East Avenue S *(E–merging)*
HDC EB	N/A		None	None
HDC WB	N/A		None	None
I-15 NB	None		None	None
I-15 SB	None		None	None
PM PEAK				
SR 14 NB	East Avenue S (*E–merging)* East Avenue S (*E–diverging)*	West Palmdale Boulevard *(E–diverging)*	East Avenue S *(E–diverging)*	East Avenue S *(E–diverging)*
SR 14 SB	West Avenue N direct *(E–merging)* West Rancho Vista Boulevard *(E–merging)*	10th Street West *(E–diverging)* West Palmdale Boulevard *(E–diverging)*	None	None
HDC EB	N/A		None	None
HDC WB	N/A		None	Route 395 *(E–diverging)* SR 14 SB *(E–diverging)*
I-15 NB	Mojave Drive *(E–merging)* Stoddard Wells Road S (*E–merging)* Palmdale Road *(E–diverging)*		Palmdale Road loop *(E–merging)* Mojave Drive *(E–merging)* Palmdale Road *(E–diverging)*	Palmdale Road loop *(E–merging)* Mojave Drive *(E–merging)* Palmdale Road *(E–diverging)*
I-15 SB	None		None	None



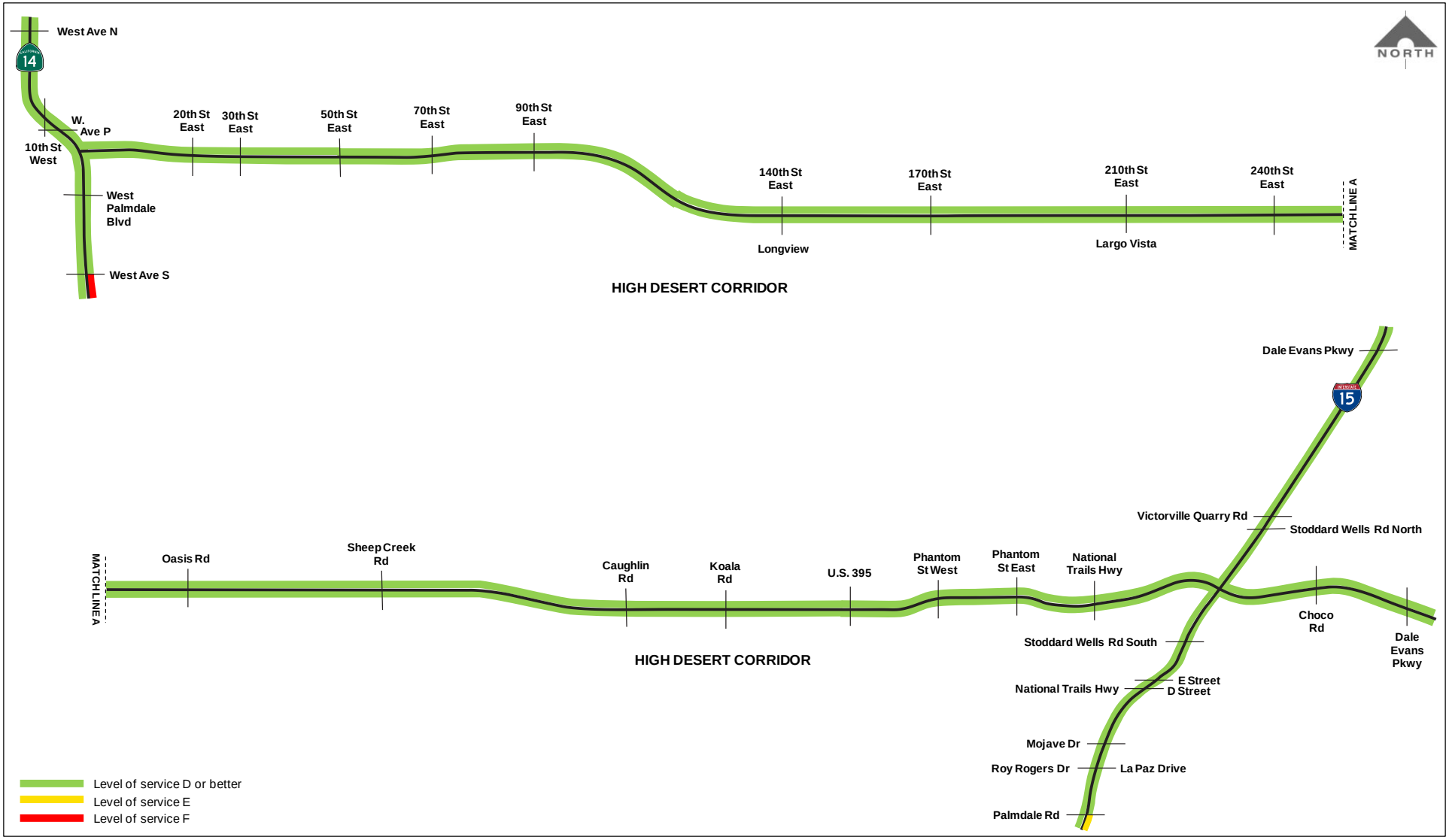
Level of service D or better
Level of service E
Level of service F

Figure 6-31: Year 2040 No-build Alternative with Revised Palmdale Access Freeway Mainline Level of Service



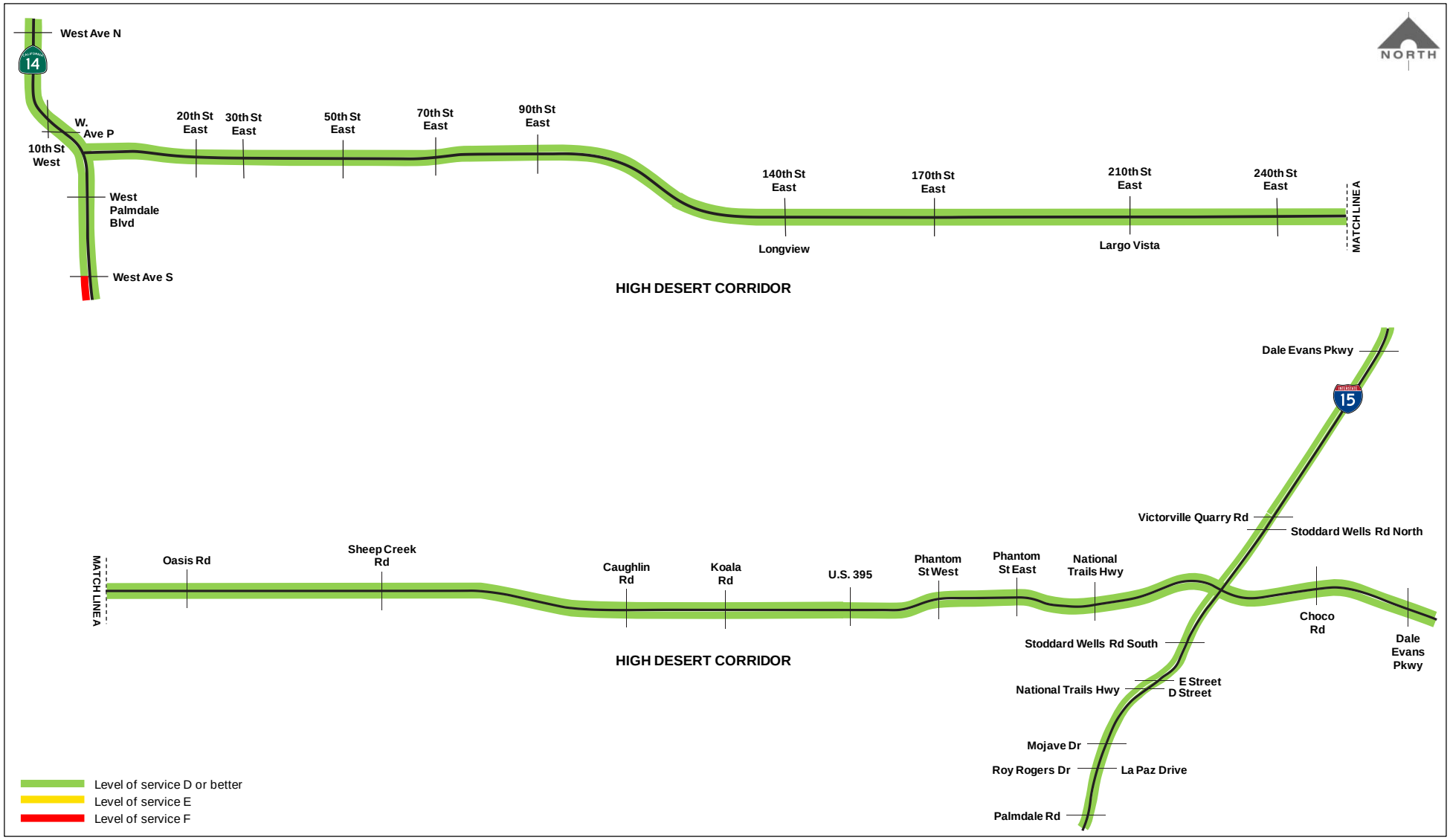
AM PEAK HOUR

Figure 6-32: Year 2040 Build Alternative with Revised Palmdale Access Freeway Mainline Level of Service *(1 of 2)*



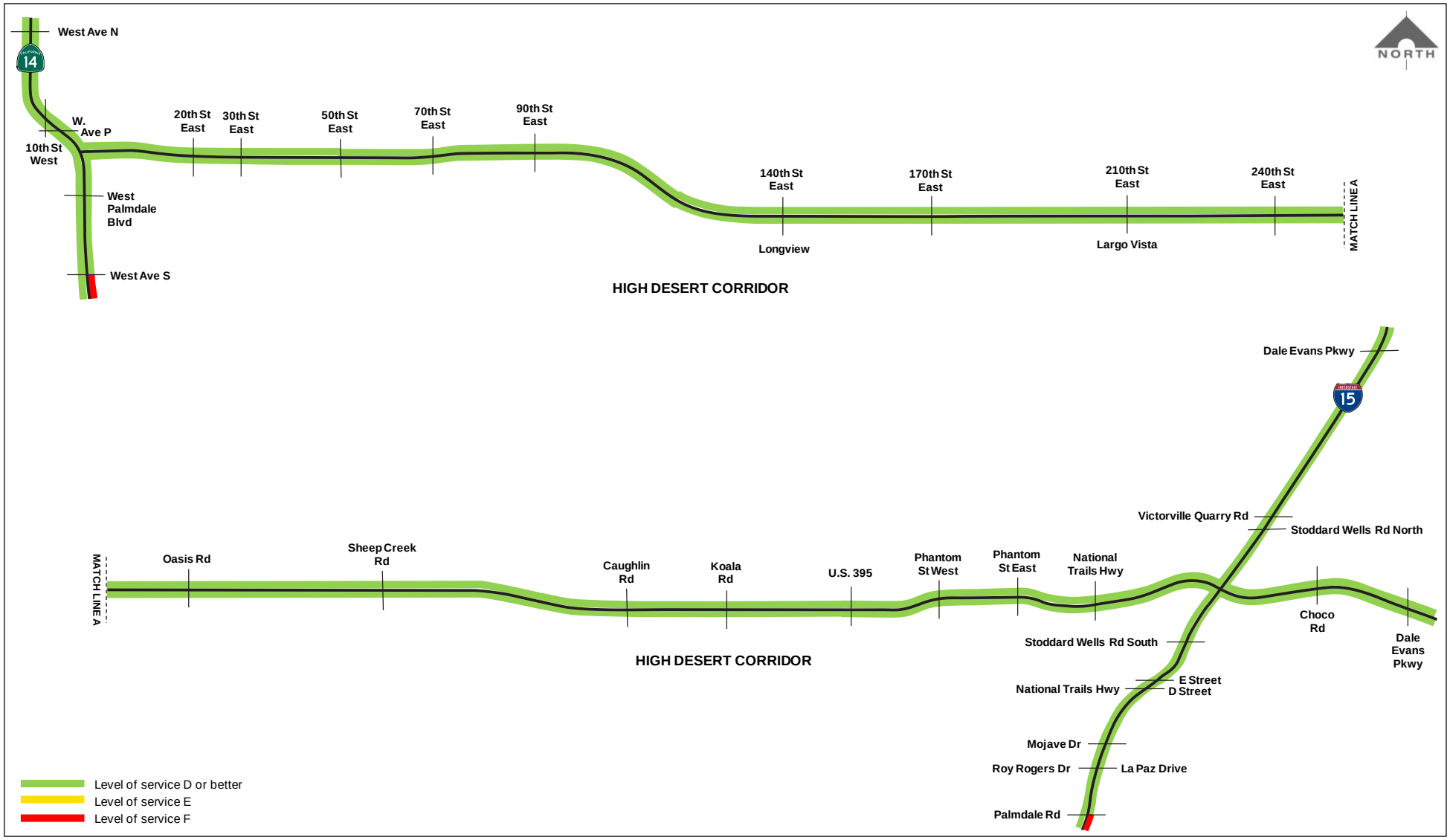
PM PEAK HOUR

Figure 6-32: Year 2040 Build Alternative with Revised Palmdale Access Freeway Mainline Level of Service *(2 of 2)*



AM PEAK PERIOD

Figure 6-33: Year 2040 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Level of Service *(1 of 2)*



PM PEAK PERIOD

Figure 6-33: Year 2040 Build Alternative with Tolls and Revised Palmdale Access Freeway Mainline Level of Service *(2 of 2)*

Table 6-16. Year 2020 Initial Results[1] Intersection Level of Service Summary *(intersections operating at LOS E or worse) (1 of 2)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD PARTIAL FREEWAY				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
19*	Sierra Highway and Technology Drive	Signal	B	14.3	B	16.8	D	43.6	**E**	78.5	B	13.1	B	16.7	B	13.1	B	16.7	B	13.1	B	16.7
23*	Sierra Highway and East Palmdale Boulevard	Signal	C	25.5	C	27.3	D	39.8	**E**	71.4	C	27.7	C	34.5	C	27.7	C	34.5	C	27.7	C	34.5
24	10th Street East and East Avenue P	Existing–stop NB/SB; future–signal	**E***	39.0	**F***	>300	B*	16.6	B*	19.8	C	29.4	C	28.5	C	33.5	C	29.4	C	22.1	C	30.8
30*	15th Street East and East Palmdale Boulevard	Stop NB/SB	D	25.2	**E**	36.1	**F**	>300	F	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
35*	20th Street East and East Palmdale Boulevard	Signal	B	19.9	C	22.9	C	32.6	**E**	58.0	C	25.7	D	39.4	C	25.7	D	39.4	C	25.7	D	39.4
45*	50th Street East and East Palmdale Avenue	Roundabout	B	14.0	A	8.9	**F**	132.4	**F**	96.1	**F**	52.9	**F**	95.7	**F**	80.8	**F**	74.9	**F**	138.4	**F**	141.8
49*	70th Street East and East Palmdale Boulevard	Stop NB/SB	**F**	>300	C	20.9	**F**	>300	**F**	>300	B	12.0	C	22.9	**E**	37.0	D	27.6	B	13.3	C	16.1
56	140th Street and East Palmdale Boulevard	Stop EB/WB	A*	9.3	A*	9.6	C*	15.2	**E***	42.3	A	8.9	A	5.6	C*	17.2	**F***	90.8	B	14.1	**F**	>300
59	140th Street and East Avenue R	Stop EB/WB	Does not exist				B*	11.4	C*	17.5	A	2.7	A	4.2	**F***	>300	**F***	>300	B	11.4	**E**	39.2
60	170th Street East and East Palmdale Boulevard	Existing–4-way stop; future–stop EB/WB	A*	7.6	A*	8.1	A*	9.5	B*	13.6	A	2.7	A	3.6	C	18.0	**F***	78.9	A	6.3	A	9.9
64*	165th Street East and SR 138	Signal	C	20.6	C	21.7	**E**	57.2	D	38.9	C	31.4	C	24.9	**E**	71.6	D	49.8	D	44.9	C	31.7
69	210th Street and East Avenue S	Stop EB/WB	Does not exist				Does not exist				A	2.3	A	2.6	**F***	>300	**F***	>300	A	6.8	A	7.9
70*	SR 138 and SR 18	Stop WB, yield EB	B	10.0	B	11.7	**F**	104.7	**F**	>300	C	21.0	**F**	>300	D	34.5	**F**	>300	C	24.6	**F**	>300
71	240th Street and East Palmdale Boulevard	Stop EB/WB	A*	8.7	A*	8.8	**F***	>300	**F***	>300	A	3.3	A	4.4	B*	13.7	C*	19.7	C	24.4	B	13.0
78	Sheep Creek Road and El Mirage Road	Stop NB/SB	Does not exist				**E***	40.5	**F***	>300	A	3.5	A	5.8	**F***	>300	F*	>300	A	9.4	C	18.5
82*	Sheep Creek Road and SR 18	Existing–stop NB/SB; future–signal	B	12.8	C	19.7	**F**	>300	**F**	>300	C	32.9	D	35.5	C	33.6	C	30.2	C	33.6	C	34.5
86	Caughlin Road and Rancho Road	Stop EB/WB	Does not exist				C*	16.1	**E***	39.1	A	3.9	A	4.1	B*	10.5	B*	11.8	A	6.6	A	9.4
92*	Bellflower Street and SR 18	Existing–stop NB/SB; future–signal	C	20.8	D	27.4	**E**	45.5	**F**	176.0	B	17.2	B	15.7	B	12.4	B	11.0	B	15.8	B	14.2
99*	U.S. 395 and SR 18	Signal	C	34.0	D	36.5	D	47.0	**E**	68.1	D	39.7	D	49.4	D	41.7	D	50.2	D	39.8	D	49.4
118*	Amargosa Road and SR 18	Signal	C	28.2	D	39.9	D	35.4	**F**	88.3	C	24.8	C	32.4	C	26.1	D	36.9	C	25.0	C	33.1

Table 6-16. Year 2020 Initial Results[1] Intersection Level of Service Summary *(intersections operating at LOS E or worse) (1 of 2)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD PARTIAL FREEWAY				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
130	I-15 southbound off-ramp and Stoddard Wells Road	Existing–stop NB/SB	A	2.6	A	2.7	C	23.5	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300
		No-build–stop NB/SB; improvements–signal	N/A	N/A	N/A	N/A	B	14.3	B	12.2	A	9.1	A	8.2	B	10.2	A	9.0	A	9.6	A	8.6
131	I-15 northbound on-ramp and Stoddard Wells Road/ Frontage Road	Existing–stop EB/WB	A	3.7	A	3.7	A	5.9	A	4.9	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300
		No-build–stop EB/WB; improvements–stop EB/WB**	N/A	N/A	N/A	N/A	A	5.8	A	4.8	A	7.0	A	7.1	A	6.0	A	6.4	A	6.5	A	5.6
132	I-15 southbound on-ramp and Stoddard Wells Road	Existing–stop EB/WB	A	3.0	A	2.1	B	13.2	E	42.0	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	14.3	B	12.8	A	8.2	A	4.5	A	9.1	A	6.9	A	8.1	A	5.5
133	Stoddard Wells Road and I-15 Frontage Road	Existing–stop EB/WB	A	5.6	A	1.2	D	30.7	E	48.0	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300
		Improvements–signal	N/A	N/A	N/A	N/A	C	23.3	C	26.1	B	13.8	B	14.0	B	14.4	B	14.9	B	16.3	B	15.6
137	I-15 northbound off-/on-ramps and Stoddard Wells Rd (north)	Existing–stop NB/SB; future–4-way stop	A	4.3	A	2.3	C	15.6	F	134.9	A	2.5	A	3.4	A	4.7	A	5.0	A	4.6	A	5.1

Source: Parsons

Notes:
1. Initial results do not reflect Palmdale access refinements
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 6-17. Year 2020 Revised Palmdale Access Intersection Level of Service Summary *(intersections operating at LOS E or worse) (1 of 2)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																		
19*	Sierra Highway and Technology Drive	Signal	B	14.3	B	16.8	D	43.6	**E**	78.5	B	13.1	B	16.7	B	13.1	B	16.7
23*	Sierra Highway and East Palmdale Boulevard	Signal	C	25.5	C	27.3	D	39.8	**E**	71.4	C	26.8	C	29.6	C	26.9	C	29.4
24	10th Street East and East Avenue P	Existing–stop NB/SB; future–signal	**E***	39.0	**F***	>300	B*	16.6	B*	19.8	C	29.4	C	28.5	C	22.1	C	30.8
30*	15th Street East and East Palmdale Boulevard	Stop NB/SB	D	25.2	**E**	36.1	**F**	>300	F	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
35*	20th Street East and East Palmdale Boulevard	Signal	B	19.9	C	22.9	C	32.6	**E**	58.0	C	25.7	D	39.4	C	25.7	D	39.4
38*	30th Street East and East Avenue Q	4-way stop; future–signal	B	11.6	B	11.6	C	18.6	**F**	70.0	C	29.9	C	29.3	C	31.7	C	30.1
45*	50th Street East and East Palmdale Avenue	Roundabout	B	14.0	A	8.9	**F**	132.4	**F**	96.1	**F**	52.9	**F**	95.7	**F**	138.4	**F**	141.8
49*	70th Street East and East Palmdale Boulevard	Stop NB/SB	**F**	>300	C	20.9	**F**	>300	**F**	>300	B	12.0	C	22.9	B	13.3	C	16.1
56	140th Street and East Palmdale Boulevard	Stop EB/WB	A*	9.3	A*	9.6	C*	15.2	**E***	42.3	A	8.9	A	5.6	B	14.1	**F**	>300
59	140th Street and East Avenue R	Stop EB/WB	Does not exist				B*	11.4	C*	17.5	A	2.7	A	4.2	B	11.4	**E**	39.2
64*	165th Street East and SR 138	Signal	C	20.6	C	21.7	**E**	57.2	D	38.9	C	31.4	C	24.9	D	44.9	C	31.7
70*	SR 138 and SR 18	Stop WB, yield EB	B	10.0	B	11.7	**F**	104.7	**F**	>300	C	21.0	**F**	>300	C	24.6	**F**	>300
71	240th Street and East Palmdale Boulevard	Stop EB/WB	A*	8.7	A*	8.8	**F***	>300	**F***	>300	A	3.3	A	4.4	C	24.4	B	13.0
78	Sheep Creek Road and El Mirage Road	Stop NB/SB	Does not exist				**E***	40.5	**F***	>300	A	3.5	A	5.8	A	9.4	C	18.5
82*	Sheep Creek Road and SR 18	Existing–stop NB/SB; future–signal	B	12.8	C	19.7	**F**	>300	**F**	>300	C	32.9	D	35.5	C	33.6	C	34.5
86	Caughlin Road and Rancho Road	Stop EB/WB	Does not exist				C*	16.1	**E***	39.1	A	3.9	A	4.1	A	6.6	A	9.4
92*	Bellflower Street and SR 18	Existing–stop NB/SB; future–signal	C	20.8	D	27.4	**E**	45.5	**F**	176.0	B	17.2	B	15.7	B	15.8	B	14.2
99*	U.S. 395 and SR 18	Signal	C	34.0	D	36.5	D	47.0	**E**	68.1	D	39.7	D	49.4	D	39.8	D	49.4
118*	Amargosa Road and SR 18	Signal	C	28.2	D	39.9	D	35.4	**F**	88.3	C	24.8	C	32.4	C	25.0	C	33.1
130	I-15 southbound off-ramp and Stoddard Wells Road	Existing–stop NB/SB	A	2.6	A	2.7	C	23.5	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	14.0	A	9.1	A	9.3	B	17.6	B	10.3	B	18.6

Table 6-17. Year 2020 Revised Palmdale Access Intersection Level of Service Summary *(intersections operating at LOS E or worse) (1 of 2)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				OPEN YEAR 2020 NO-BUILD CONDITION				OPEN YEAR 2020 BUILD ALTERNATIVE				OPEN YEAR 2020 BUILD ALTERNATIVE WITH TOLLS			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																		
131	I-15 northbound on-ramp and Stoddard Wells Road/Frontage Road	Existing–stop EB/WB	A	3.7	A	3.7	A	5.9	A	4.9	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		No-build–stop EB/WB; improvements–stop EB/WB**	N/A	N/A	N/A	N/A	A	5.8	A	4.8	A	7.0	A	7.1	A	6.5	A	5.6
132	I-15 southbound on-ramp and Stoddard Wells Road	Existing–stop EB/WB	A	3.0	A	2.1	B	13.2	**E**	42.0	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	14.9	B	10.8	B	13.5	A	8.3	B	10.0	A	5.0
133	Stoddard Wells Road and I-15 Frontage Road	Existing–stop EB/WB	A	5.6	A	1.2	D	30.7	**E**	48.0	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	C	23.3	C	26.1	B	13.8	B	14.0	B	16.3	B	15.6
137	I-15 northbound off-/on-ramps and Stoddard Wells Road (north)	Existing–stop NB/SB; future–4-way stop	A	4.3	A	2.3	C	15.6	**F**	134.9	A	2.5	A	3.4	A	4.6	A	5.1

Source: Parsons

Notes:
1. Proposed additional geometry improvements
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 6-18. Year 2040 Initial Results[1] Intersection Level of Service Summary *(intersections operating at LOS E or worse) (1 of 3)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE (MODIFIED ALIGNMENT)*				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
1	SR 14 southbound off-ramp and West Avenue N	Existing–stop NB/SB; future–signal	A	7.2	B	12.6	A	5.4	E	69.7	A	5.6	A	6.0	B	12.9	B	16.9	A	5.6	A	5.3
6	10th Street West and SR 14 southbound off-ramp	Signal	B	13.2	B	11.4	C	21.3	D	54.8	C	25.5	C	21.8	F	80.6	D	48.4	C	23.9	B	18.0
8	10th Street West and West Avenue P	Signal	C	31.3	C	30.3	C	32.7	E	74.8	C	27.5	C	27.8	E	62.1	E	76.0	C	28.1	C	33.1
9	Lowe's Driveway and West Avenue P	Signal	B	10.2	C	29.1	B	18.2	E	65.7	B	18.9	B	19.6	C	22.2	C	34.1	B	19.8	B	18.9
10	SR 14 southbound on-ramp and West Avenue P	Existing–stop NB/SB ; future–signal	A	1.4	A	1.0	A	1.7	E	43.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	SR 14 northbound off-ramp and West Avenue P	Signal	B	14.3	C	20.6	A	8.5	E	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15*	Division Street and East Palmdale Boulevard	Signal	C	27.9	C	28.0	E	64.1	E	71.4	D	35.3	F	83.7	C	33.2	E	63.0	C	27.9	C	31.1
18*	Sierra Highway and East Avenue P	Signal	C	33.4	C	34.6	D	45.1	E	58.5	D	36.5	D	51.9	C	34.7	D	41.2	C	34.5	D	42.1
19*	Sierra Highway and Technology Drive	Signal	B	14.3	B	16.8	D	50.9	F	115.4	B	14.1	B	18.0	B	13.9	B	17.4	B	13.9	B	17.7
22*	6th Street East and East Palmdale Boulevard	Signal	C	20.7	C	25.3	E	55.7	E	78.0	C	30.2	C	33.1	C	29.1	C	30.6	C	28.7	C	30.5
23*	Sierra Highway and East Palmdale Boulevard	Signal	C	25.5	C	27.3	F	82.1	F	94.6	C	34.1	D	42.8	C	31.0	D	35.4	C	30.9	D	35.1
24	10th Street East and East Avenue P	Existing–stop NB/SB ; future–signal	E*	39.0	F*	>300	B*	16.3	C*	20.8	C	27.1	C	30.2	C	24.0	C	26.5	C	21.1	C	22.2
28*	10th Street East and East Palmdale Boulevard	Signal	B	17.2	C	20.0	C	31.3	D	50.6	C	34.3	E	69.1	C	30.1	D	47.4	C	29.1	D	49.5
30*	15th Street East and East Palmdale Boulevard	Stop NB/SB	D	25.2	E	36.1	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300
35*	20th Street East and East Palmdale Boulevard	Signal	B	19.9	C	22.9	C	34.1	E	63.8	C	28.4	D	53.9	C	28.0	D	45.4	C	26.4	D	42.7
36*	25th Street East and East Palmdale Boulevard	Signal	C	26.2	C	30.9	D	42.2	E	64.5	C	33.6	D	38.9	C	33.1	D	36.5	C	33.2	D	36.2
38*	30th Street East and East Avenue Q	4-way stop	B	11.6	B	11.6	E	46.0	F	145.3	C	23.2	F	84.0	C	20.4	F	65.4	C	18.2	F	51.8
40*	40th Street East and East Avenue Q	Stop EB/WB	C	16.2	C	16.0	D	34.4	F	98.6	C	21.9	D	26.8	C	19.1	C	24.2	C	19.3	C	22.7
41*	40th Street East and East Palmdale Boulevard	Signal	C	21.9	C	23.7	D	39.1	E	71.6	C	29.4	D	38.3	C	27.8	C	33.2	C	28.4	D	35.4
45*	50th Street East and East Palmdale Avenue	Roundabout	B	14.0	A	8.9	F	>300	F	>300	F	270.2	F	134.6	F	93.6	F	77.4	F	119.5	F	56.7
49*	70th Street East and East Palmdale Boulevard	Stop NB/SB	F	>300	C	20.9	F	>300	F	>300	C	15.6	F	60.1	F	>300	F	>300	B	14.0	E	35.0

Table 6-18. Year 2040 Initial Results[1] Intersection Level of Service Summary *(intersections operating at LOS E or worse) (2 of 3)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE (MODIFIED ALIGNMENT)*				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
54*	90th Street East and East Palmdale Boulevard	Signal	C	23.9	C	24.1	D	46.3	E	76.2	D	35.2	D	36.8	D	35.1	D	37.2	C	34.8	D	35.0
60	170th Street East and East Palmdale Boulevard	Existing–4-way stop; future–stop EB/WB	A*	7.6	A*	8.1	B*	13.5	F*	70.0	A	2.4	A	4.7	B	11.1	C	18.8	A	4.5	E	36.2
64*	165th Street East and SR 138	Signal	C	20.6	C	21.7	F	109.7	E	56.8	D	36.6	C	29.5	C	33.3	C	29.5	D	54.0	D	52.9
70*	SR 138 and SR 18	Stop WB, yield EB	B	10.0	B	11.7	F	>300	F	>300	D	30.2	F	>300	C	24.4	F	>300	E	39.1	F	>300
71	240th Street and East Palmdale Boulevard	Stop EB/WB	A*	8.7	A*	8.8	F*	>300	F*	>300	A	4.4	A	6.9	C	15.9	D	29.5	F	>300	E	38.7
74	240th Street East and East Avenue R	Stop EB/WB	Does not exist				E*	41.7	F*	183.1	A	2.4	A	2.7	B	10.6	B	10.7	B	12.9	C	22.9
75	Oasis Road and El Mirage Road	Stop EB/WB	Does not exist				F*	>300	F*	>300	A	2.4	A	3.5	B	11.1	C	21.6	A	3.5	A	6.3
78	Sheep Creek Road and El Mirage Road	Stop NB/SB	Does not exist				F*	132.2	F*	>300	A	4.3	A	5.3	B	12.8	B	13.7	B	12.1	C	19.2
82*	Sheep Creek Road and SR 18	Existing–stop NB/SB; future–signal	B	12.8	C	19.7	F	>300	F	>300	D	36.6	F	201.1	C	34.9	F	162.8	D	54.4	F	291.0
86	Caughlin Road and Rancho Road	Stop EB/WB	Does not exist				E*	35.8	F*	58.8	A	6.3	B	14.0	C	21.1	F	50.3	A	5.1	A	7.2
92*	Bellflower Street and SR 18	Existing–stop NB/SB; future–signal	C	20.8	D	27.4	F	89.2	F	>300	C	30.2	C	30.3	C	28.7	C	28.4	C	27.2	C	30.0
94	U.S. 395 and Air Base Road	Signal	C*	30.3	C*	34.9	D*	45.6	E*	75.0	C	25.4	C	30.4	C	30.0	D	46.2	C	21.8	C	24.4
95	U.S. 395 and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	27.8	C	26.1	D	35.8	D	38.0	B	13.1	C	32.7
97	U.S. 395 and Rancho Road	Signal	C*	24.6	C*	26.4	D*	48.2	F*	107.7	C	23.2	C	31.3	C	33.5	D	43.3	C	20.9	D	43.5
99*	U.S. 395 and SR 18	Signal	C	34.0	D	36.5	E	61.1	F	90.6	D	42.2	E	64.1	D	39.3	D	49.9	D	39.7	D	47.0
104*	Topaz Road and SR 18	Signal	D	43.3	C	27.5	F	97.3	F	160.2	D	42.2	E	59.5	D	40.7	D	48.6	D	39.7	D	49.1
105*	Amethyst Road and SR 18	Signal	C	28.8	C	30.4	D	48.9	F	108.3	C	34.5	D	42.6	C	33.8	D	38.6	C	33.9	D	37.7
110*	El Evado Road and SR 18	Signal	C	28.0	C	28.1	D	40.9	F	80.9	D	39.0	D	46.6	D	37.6	D	39.9	D	37.5	D	39.3
111	National Trails Highway and westbound High Desert Corridor	Signal	Does not exist				Does not exist				C	24.4	C	20.4	D	42.8	E	65.6	C	25.1	C	22.1
112	National Trails Highway and eastbound High Desert Corridor	Signal	Does not exist				Does not exist				C	21.3	C	25.6	C	29.2	E	68.3	C	21.0	C	24.7
117	I-15 northbound off-/on-ramps and Roy Rogers Drive	Signal	C	20.7	C	21.0	C	34.9	C	28.9	C	22.2	C	28.3	C	28.4	E	59.7	C	22.8	C	25.3
118*	Amargosa Road and SR 18	Signal	C	28.2	D	39.9	F	84.9	F	200.0	C	27.3	D	36.9	C	26.6	D	36.7	C	26.4	D	36.6
120	Park Avenue and SR 18	Signal	B	17.6	C	25.2	C	23.5	C	20.5	A	8.5	B	19.1	C	26.2	E	64.9	A	9.0	C	21.5

Table 6-18. Year 2040 Initial Results[1] Intersection Level of Service Summary *(intersections operating at LOS E or worse) (3 of 3)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE (MODIFIED ALIGNMENT)*				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
HIGH DESERT CORRIDOR																						
130	I-15 southbound off-ramp and Stoddard Wells Road	Existing–stop NB/SB	A	2.6	A	2.7	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	12.2	B	11.2	B	10.9	B	10.1	B	17.4	B	15.6	B	12.2	A	9.7
131	I-15 northbound on-ramp and Stoddard Wells Road/Frontage Road	Existing–stop EB/WB	A	3.7	A	3.7	C	15.1	D	33.9	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300
		Improvements–stop EB/WB**	N/A	N/A	N/A	N/A	A	7.3	A	8.3	A	9.5	A	9.8	D	30.6	D	32.4	B	10.6	B	11.5
132	I-15 southbound on-ramp and Stoddard Wells Road	Existing–stop EB/WB	A	3.0	A	2.1	B	10.2	D	29.4	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	13.2	B	10.5	B	10.0	A	4.9	A	9.9	A	7.7	A	9.2	A	4.6
133	Stoddard Wells Road and I-15 Frontage Road	Existing–stop EB/WB	A	5.6	A	1.2	F	118.2	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	15.6	B	16.5	B	14.5	B	14.5	C	26.3	D	37.2	B	14.3	B	14.9
134*	Stoddard Wells Road and SR 18	Signal	B	12.7	C	23.2	B	17.7	F	87.2	B	12.5	D	41.0	B	10.7	C	26.9	B	10.4	C	26.0
135*	Apple Valley Road and SR 18	Signal	C	33.1	D	40.2	F	81.3	F	150.3	D	50.0	E	72.2	D	44.1	D	52.4	D	42.4	D	51.2
147*	Dale Evans Parkway and SR 18	Signal	B	17.8	C	21.0	C	30.2	E	78.2	C	22.5	D	43.5	C	21.2	C	34.5	C	21.5	D	35.5
156	Joshua Road and Thunderbird Road	Stop EB/WB	Does not exist				C*	18.6	F*	127.5	A	5.4	B	12.9	C	18.5	F	61.1	A	6.5	C	19.6
157	Joshua Road and Standing Rock Road	Stop EB/WB	Does not exist				C*	17.8	D*	28.8	A	7.0	C	16.3	C	20.3	F	70.1	A	9.0	C	16.8
158	Joshua Road and Yucca Loma Road	Existing–stop NB/SB; future–4-way stop	B*	10.3	A*	9.5	F*	61.2	F*	276.1	A	3.7	C	17.4	C	17.3	F	90.8	A	3.7	C	15.5
159	Joshua Road and Nisqually Road	4-way stop	Does not exist				C*	15.9	E*	46.2	A	2.5	A	3.8	B	11.3	D	33.5	A	2.5	A	3.9

Source: Parsons

Notes:
1. Initial results do not reflect Palmdale access refinements
2. Proposed additional geometry improvements.
3. Two-way stop control level of service reported for worst approach
4. 4-way stop reported for overall level of service.
5. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

Table 6-19. Year 2040 Revised Palmdale Access Intersection Level of Service Summary *(intersections operating at LOS E or worse) (1 of 2)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
1	SR 14 southbound off-ramp and West Avenue N	Existing–stop NB/SB; future–signal	A	7.2	B	12.6	A	5.4	E	69.7	A	5.6	A	6.0	A	5.6	A	5.3
8	10th Street West and West Avenue P	Signal	C	31.3	C	30.3	C	32.7	E	74.8	C	29.0	C	28.7	C	28.1	C	33.1
9	Lowe's Driveway and West Avenue P	Signal	B	10.2	C	29.1	B	18.2	E	65.7	B	19.3	B	15.5	B	19.8	B	18.9
10	SR 14 southbound on-ramp and West Avenue P	Existing–stop NB/SB ; future–signal	A	1.4	A	1.0	A	1.7	E	43.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	SR 14 northbound off-ramp and West Avenue P	Signal	B	14.3	C	20.6	A	8.5	E	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15*	Division Street and East Palmdale Boulevard	Signal	C	27.9	C	28.0	E	64.1	E	71.4	C	29.4	C	31.1	C	33.0	E	66.3
16	SR 14 southbound off-ramp and West Avenue S	Signal	C	28.7	C	30.3	D	38.1	B	19.1	D	48.5	C	27.8	E	65.1	C	28.5
18*	Sierra Highway and East Avenue P	Signal	C	33.4	C	34.6	D	45.1	E	58.5	D	36.5	D	51.9	C	34.5	D	42.1
19*	Sierra Highway and Technology Drive	Signal	B	14.3	B	16.8	D	50.9	F	115.4	B	14.1	B	18.0	B	13.9	B	17.7
22*	6th Street East and East Palmdale Boulevard	Signal	C	20.7	C	25.3	E	55.7	E	78.0	C	29.4	C	32.3	C	28.7	C	30.5
23*	Sierra Highway and East Palmdale Boulevard	Signal	C	25.5	C	27.3	F	82.1	F	94.6	C	29.7	C	32.2	C	30.9	D	35.1
24	10th Street East and East Avenue P	Existing–stop NB/SB ; future–signal	E*	39.0	F*	>300	B*	16.3	C*	20.8	C	27.1	C	30.2	C	21.1	C	22.2
28*	10th Street East and East Palmdale Boulevard	Signal	B	17.2	C	20.0	C	31.3	D	50.6	C	32.3	E	60.8	C	29.1	D	49.5
30*	15th Street East and East Palmdale Boulevard	Stop NB/SB	D	25.2	E	36.1	F	>300	F	>300	F	>300	F	>300	F	>300	F	>300
35*	20th Street East and East Palmdale Boulevard	Signal	B	19.9	C	22.9	C	34.1	E	63.8	C	31.6	D	43.2	C	26.4	D	42.7
36*	25th Street East and East Palmdale Boulevard	Signal	C	26.2	C	30.9	D	42.2	E	64.5	C	34.9	D	41.0	C	33.2	D	36.2
38*	30th Street East and East Avenue Q	4-way stop	B	11.6	B	11.6	E	46.0	F	145.3	C	31.0	C	28.9	C	18.2	F	51.8
40*	40th Street East and East Avenue Q	Stop EB/WB	C	16.2	C	16.0	D	34.4	F	98.6	C	21.9	D	26.8	C	19.3	C	22.7
41*	40th Street East and East Palmdale Boulevard	Signal	C	21.9	C	23.7	D	39.1	E	71.6	C	29.4	D	38.3	C	28.4	D	35.4
45*	50th Street East and East Palmdale Avenue	Roundabout	B	14.0	A	8.9	F	>300	F	>300	F	>300	F	>300	F	119.5	F	56.7
49*	70th Street East and East Palmdale Boulevard	Stop NB/SB	F	>300	C	20.9	F	>300	F	>300	C	15.6	F	60.1	B	14.0	E	35.0
54*	90th Street East and East Palmdale Boulevard	Signal	C	23.9	C	24.1	D	46.3	E	76.2	D	35.2	D	36.8	C	34.8	D	35.0
56	140th Street and East Palmdale Boulevard	Stop EB/WB	A*	9.3	A*	9.6	C*	24.9	F*	>300	A	6.8	A	6.2	A	8.3	B	13.2
60	170th Street East and East Palmdale Boulevard	Existing–4-way stop; future–stop EB/WB	A*	7.6	A*	8.1	B*	13.5	F*	70.0	A	2.4	A	4.7	A	4.5	E	36.2
64*	165th Street East and SR 138	Signal	C	20.6	C	21.7	F	109.7	E	56.8	D	36.6	C	29.5	D	54.0	D	52.9
70*	SR 138 and SR 18	Stop WB, yield EB	B	10.0	B	11.7	F	>300	F	>300	D	30.2	F	>300	E	39.1	F	>300
71	240th Street and East Palmdale Boulevard	Stop EB/WB	A*	8.7	A*	8.8	F*	>300	F*	>300	A	4.4	A	6.9	F	>300	E	38.7
74	240th Street East and East Avenue R	Stop EB/WB	Does not exist				E*	41.7	F*	183.1	A	2.4	A	2.7	B	12.9	C	22.9
75	Oasis Road and El Mirage Road	Stop EB/WB	Does not exist				F*	>300	F*	>300	A	2.4	A	3.5	A	3.5	A	6.3
78	Sheep Creek Road and El Mirage Road	Stop NB/SB	Does not exist				F*	132.2	F*	>300	A	4.3	A	5.3	B	12.1	C	19.2
82*	Sheep Creek Road and SR 18	Existing–stop NB/SB; future–signal	B	12.8	C	19.7	F	>300	F	>300	D	36.6	D	46.9	D	54.4	F	291.0
86	Caughlin Road and Rancho Road	Stop EB/WB	Does not exist				E*	35.8	F*	58.8	A	6.3	B	14.0	A	5.1	A	7.2

Table 6-19. Year 2040 Revised Palmdale Access Intersection Level of Service Summary *(intersections operating at LOS E or worse) (2 of 2)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 BUILD ALTERNATIVE				DESIGN YEAR 2040 BUILD ALTERNATIVE WITH TOLL			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
92*	Bellflower Street and SR 18	Existing–stop NB/SB; future–signal	C	20.8	D	27.4	**F**	89.2	**F**	>300	C	30.2	C	30.3	C	27.2	C	30.0
94	U.S. 395 and Air Base Road	Signal	C*	30.3	C*	34.9	D*	45.6	**E***	75.0	C	25.4	C	30.4	C	21.8	C	24.4
97	U.S. 395 and Rancho Road	Signal	C*	24.6	C*	26.4	D*	48.2	**F***	107.7	C	23.2	C	31.3	C	20.9	D	43.5
99*	U.S. 395 and SR 18	Signal	C	34.0	D	36.5	**E**	61.1	F	90.6	D	42.2	**E**	64.1	D	39.7	D	47.0
104*	Topaz Road and SR 18	Signal	D	43.3	C	27.5	**F**	97.3	**F**	160.2	D	42.2	**E**	59.5	D	39.7	D	49.1
105*	Amethyst Road and SR 18	Signal	C	28.8	C	30.4	D	48.9	**F**	108.3	C	34.5	D	42.6	C	33.9	D	37.7
110*	El Evado Road and SR 18	Signal	C	28.0	C	28.1	D	40.9	**F**	80.9	D	39.0	D	46.6	D	37.5	D	39.3
118*	Amargosa Road and SR 18	Signal	C	28.2	D	39.9	**F**	84.9	**F**	200.0	C	27.3	D	36.9	C	26.4	D	36.6
130	I-15 southbound off-ramp and Stoddard Wells Road	Existing–stop NB/SB	A	2.6	A	2.7	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	12.7	B	10.9	B	10.9	B	10.1	B	12.2	A	9.7
131	I-15 northbound on-ramp and Stoddard Wells Road/Frontage Road	Existing–stop EB/WB	A	3.7	A	3.7	C	15.1	D	33.9	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–stop EB/WB**	N/A	N/A	N/A	N/A	A	7.3	A	8.3	A	9.5	A	9.8	B	10.6	B	11.5
132	I-15 southbound on-ramp and Stoddard Wells Road	Existing–stop EB/WB	A	3.0	A	2.1	B	10.2	D	29.4	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	12.6	A	8.9	B	10.0	A	4.9	A	9.2	A	4.6
133	Stoddard Wells Road and I-15 Frontage Road	Existing–stop EB/WB	A	5.6	A	1.2	**F**	118.2	**F**	>300	**F**	>300	**F**	>300	**F**	>300	**F**	>300
		Improvements–signal	N/A	N/A	N/A	N/A	B	15.6	B	16.5	B	14.5	B	14.5	B	14.3	B	14.9
134*	Stoddard Wells Road and SR 18	Signal	B	12.7	C	23.2	B	17.7	**F**	87.2	B	12.5	D	41.0	B	10.4	C	26.0
135*	Apple Valley Road and SR 18	Signal	C	33.1	D	40.2	**F**	81.3	**F**	150.3	D	50.0	**E**	72.2	D	42.4	D	51.2
147*	Dale Evans Parkway and SR 18	Signal	B	17.8	C	21.0	C	30.2	**E**	78.2	C	22.5	D	43.5	C	21.5	D	35.5
156	Joshua Road and Thunderbird Road	Stop EB/WB	Does not exist				C*	18.6	**F***	127.5	A	5.4	B	12.9	A	6.5	C	19.6
158	Joshua Road and Yucca Loma Road	Existing–stop NB/SB; future–4-way stop	B*	10.3	A*	9.5	**F***	61.2	**F***	276.1	A	3.7	C	17.4	A	3.7	C	15.5
159	Joshua Road and Nisqually Road	4-way stop	Does not exist				C*	15.9	E*	46.2	A	2.5	A	3.8	A	2.5	A	3.9

Source: Parsons

Notes:
1. Proposed additional geometry improvements.
2. Two-way stop control level of service reported for worst approach
3. 4-way stop reported for overall level of service.
4. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

Level of service E

Level of service F

RAMP TERMINI AND STUDY AREA INTERSECTION ANALYSIS SUMMARY

All ramp termini intersections perform at LOS D or better for Year 2020, except for stop sign controlled intersections at the I-15 and Stoddard Wells Road south interchange. The level of service improves to LOS A or B with the installation of traffic signals at these locations (intersections 130-133). For the ramp termini intersections reported in Year 2040, all ramp intersections for the build alternative perform at LOS D or better, assuming that traffic signals are installed at the I-15 and Stoddard Wells south interchange (intersections 130–133). The same finding is the case with respect to the build alternative with tolls, except that intersection 16, the southbound SR 14 off-ramp termini at West Avenue S, performs at LOS E during the AM peak hour.

For the remaining study area intersections, the no-build alternative performs poorly when compared to the build alternative. For the no-build 2020 opening year scenario, 115 intersections are analyzed. During the AM peak hour, nine intersections (eight percent) are projected to operate at LOS E or LOS F. During the PM peak hour, this number increases to 20 intersections, equal to 17 percent of the intersections studied.

The build alternative performs much better. Only two of 164 intersections studied perform at LOS E or LOS F during the AM peak hour, while five intersections perform poorly during the PM peak hour. These poorly performing intersections are listed below.

- #30—15th Street East and East Palmdale Boulevard (AM, PM)
- #45—50th Street East and East Palmdale Boulevard (AM, PM)
- #56—140th Street East and East Palmdale Boulevard (PM–Toll Alternative)
- #59—140th Street East and East Avenue R (PM–Toll Alternative)
- #70—SR 138 and SR 18 (PM)

The partial build alternative performs much better than the no-build alternative, but worse than the build alternative, insofar as the intersection level of service.

Insofar as overall performance for the no-build and build alternatives, the number of study intersections projected to operate at LOS E or LOS F is summarized below.

Summary of Study Intersection Year 2040 Level of Service Performance *(Initial Results)*

	NO-BUILD		BUILD		BUILD WITH TOLLS	
	AM	PM	AM	PM	AM	PM
Number of intersections studied	115		159		159	
Intersections performing at LOS E or F	23	45	2	11	5	7
Percent performing at LOS E or F	20%	39%	1%	7%	3%	4%

Summary of Study Intersection Year 2040 Level of Service Performance
(Revised Palmdale Access Results)

	NO-BUILD		BUILD		BUILD WITH TOLLS	
	AM	PM	AM	PM	AM	PM
Number of intersections studied	116		159		159	
Intersections performing at LOS E or F	23	45	2	8	5	7
Percent performing at LOS E or F	20%	39%	1%	5%	3%	4%

The operational performance for most intersections under the rail feeder service alternatives will be the same as reported for the build alternative and the build alternative with tolls. Key study intersections located near the Palmdale and Victorville train stations will be affected, however.

6.5.4 Transportation System Management Alternative

The transportation system management (TSM) alternative is a collection of lower cost roadway improvements through the project corridor that can be evaluated against the proposed project alternatives. The transportation system management alternative focuses on improvements that connect SR 14 with SR 138 and then extend east to connect with U.S. 395, I-15 and SR 18. The key elements under consideration for this alternative include:

- ***An eight-lane grade separated freeway from SR 14 to 30th Street East***
  For the purpose of the traffic study analysis, the eight-lane, grade-separated freeway portion of the alternative, from SR 14 to 30th Street East, along with improvements along SR 14 required to accommodate the freeway-to-freeway interchange, are assumed to be identical to that defined for the initial definition of the build alternative, which does not reflect the revised Palmdale access.

- ***A transition to a four-lane at-grade expressway from 30th Street East to Longview Road***
  The physical characteristics of this section are assumed to be identical to the four-lane expressway portion of SR 18 east of Dale Evans Parkway, as defined for the build alternative.

- ***A four-lane at-grade highway connecting to SR 138 and extending east to U.S. 395 along SR 18***
  The north−south portion of this segment is assumed to run along Longview Road. A roadway cross section similar to what currently exists along SR 138 (Pearblossom Highway) from Longview Road to 165th Street East is assumed. This cross section provides standard width shoulders, two 12-foot travel lanes per direction, and a median approximately 19 to 20 feet in width. A signalized T-intersection at SR 138 is assumed.

  Continuing east, SR 138 was widened to four lanes between Longview Road and 165th Street East in 2006/2007 as part of Caltrans' District 7 SR 138 Corridor Improvement Program. When complete, this program will widen SR 138 from Avenue T in the city of Palmdale to the junction of SR 18 in Llano. The transportation systems management alternative would continue the four-lane widening easterly along SR 18 to U.S. 395. A four-foot to 20-foot median is assumed to facilitate left turn movements to cross streets and driveways.

- ***A six-lane arterial highway along SR 18 (Palmdale Road) from U.S. 395 to I-15***
  City of Victorville roadway standards will be followed for the portion of Palmdale Road west of Caughlin Road to I-15. The City's General Plan circulation map designates this portion of Palmdale Road as a "super arterial" having a right-of-way of 124 feet. A typical roadway cross section for this type of road classification is illustrated as Figure 4-38.

- ***Minor roadway and signal improvements along SR 18 from I-15 to Bear Valley Road***

FREEWAY AND MULTI-LANE HIGHWAY SEGMENT LEVELS OF SERVICE

The freeway and multi-lane highway segment level of service evaluation for the transportation systems management alternative is based on the 2000 Highway Capacity Manual and Highway Capacity Software level of service methodologies for freeways and multi-lane highways.

INTERSECTION ANALYSIS AND LEVELS OF SERVICE

A subset of the study intersections identified previously was selected for analysis of the transportation systems management alternative performance. The transportation systems management alternative study intersections are listed in Table 6-20.

Intersection level of service was computed for the transportation systems management alternative using TRAFFIX, version 8.0 software, as most of the intersections for this alternative are isolated from one another.

Table 6-20. List of Transportation System Management Alternative Study Intersections

NO.	INTERSECTION
13	SR 14 southbound off-/on-ramps and West Palmdale Blvd
14	SR 14 northbound off-/on-ramps and East Palmdale Blvd
15	Division Street and East Palmdale Blvd
21	5th Street East and East Palmdale Blvd
22	6th Street East and East Palmdale Blvd
23	Sierra Highway and East Palmdale Blvd
25	10th Street East and westbound High Desert Corridor*
26	10th Street East and eastbound High Desert Corridor*
28	10th Street East and East Palmdale Blvd
32	20th Street East and westbound High Desert Corridor
33	20th Street East and eastbound High Desert Corridor
35	20th Street East and East Palmdale Blvd
36	25th Street East and East Palmdale Blvd
39	30th Street East and East Palmdale Blvd
41	40th Street East and East Palmdale Blvd
43	50th Street East and westbound High Desert Corridor
45	50th Street East and East Palmdale Avenue
47	70th Street and westbound High Desert Corridor
49	70th Street East and East Palmdale Blvd
51	90th Street East and westbound High Desert Corridor
54	90th Street East and East Palmdale Blvd
55	110th Street East and East Palmdale Blvd
64	165th Street East and SR 138
70	SR 138 and SR 18
82	Sheep Creek Rd and SR 18
91	Aster Rd and SR 18

*Initial definition of alternative.

NO.	INTERSECTION
92	Bellflower Street and SR 18
99	U.S. 395 and SR 18
104	Cobalt Rd and SR 18
105	Amethyst Rd and SR 18
110	El Evado Rd and SR 18
118	Amargosa Rd and SR 18
119	Kentwood Blvd and SR 18
120	Park Avenue and SR 18
121	I-15 southbound off-ramp and Palmdale Rd
122	I-15 northbound on-ramp and Palmdale Rd
123	I-15 northbound off-ramp and Mariposa Rd
124	I-15 southbound off-/on-ramps and National Trails Hwy/D Street
125	I-15 northbound off-/on-ramps and National Trails Hwy/D Street
134	Stoddard Wells Rd and SR 18
135	Apple Valley Rd and SR 18
147	Dale Evans Pkwy and SR 18
153	Central Rd and SR 18
158	Joshua Rd and Yucca Loma Rd
163	Bear Valley Rd and SR 18
164	30th Street East and High Desert Corridor
165	40th Street East and High Desert Corridor
166	100th Street East and High Desert Corridor
167	110th Street East and High Desert Corridor
168	High Desert Corridor and East Palmdale Blvd
169	Longview Rd (HDC) and East Avenue R
170	Longview Rd (HDC) and East Avenue S
171	Longview Rd (HDC) and East Avenue T
172	Longview Rd (HDC) and SR 138
173	Largo Vista Rd and SR 138
174	Beekley Rd and SR 138

TSM ALTERNATIVE PERFORMANCE

Ramp area performance is listed in Table 6-21 and mainline freeway segment performance is listed in Table 6-22. None of the analyzed freeway mainline segments or ramp elements were found to operate at an unacceptable level of service for the TSM Alternative. TSM intersections which are not expected to operate at LOS D or better in year 2040 are shown in Table 6-23.

Table 6-21. Year 2040 TSM Alternative Mainline and Ramp Junction Levels of Service

HIGH DESERT CORRIDOR SEGMENT	TYPE	TIME	2040 TSM	
			DENSITY (pc/h/ln)	LOS
EASTBOUND				
SR 14 to 10th Street East	Mainline	AM	15.9	B
10th Street East off-ramp	Diverge		21.0	C
10th Street E on-ramp	Merge		17.6	B
10th Street East to 20th Street East	Mainline		15.3	B
20th Street East off-ramp	Diverge		21.7	C
20th Street East on-ramp	Merge		14.2	B
SR 14 to 10th Street East	Mainline	PM	16.3	B
10th Street East off-ramp	Diverge		21.9	C
10th Street E on-ramp	Merge		18.7	B
10th Street East to 20th Street East	Mainline		15.8	B
20th Street East off-ramp	Diverge		25.4	C
20th Street East on-ramp	Merge		12.8	B
WESTBOUND				
SR 14 to 10th Street East	Mainline	AM	14.2	B
10th Street East off-ramp	Diverge		19.2	B
10th Street E on-ramp	Merge		17.4	B
10th Street East to 20th Street East	Mainline		14.1	B
20th Street East off-ramp	Diverge		14.5	B
20th Street East on-ramp	Merge		18.4	B
SR 14 to 10th Street East	Mainline	PM	19.7	C
10th Street East off-ramp	Diverge		23.6	C
10th Street E on-ramp	Merge		23.9	C
10th Street East to 20th Street East	Mainline		18.2	C
20th Street East off-ramp	Diverge		16.2	B
20th Street East on-ramp	Merge		24.4	C

Table 6-22. Year 2040 TSM Alternative Highway Segment Level of Service

HIGHWAY SEGMENT		NO BUILD (2040)						TSM ALTERNATIVE (2040)					
		AM PEAK			PM PEAK			AM PEAK			PM PEAK		
		LOS	SPEED	DENSITY	LOS	SPEED	DENSITY	LOS	SPEED	DENSITY	LOS	SPEED	DENSITY
SR 138													
Longview Rd to 165th Street East	EB	B	16.4	55	B	16.5	55	B	17.9	55	C	18.2	55
	WB	B	11.6	55	B	17.2	55	B	12.8	55	C	18.6	55
165th Street East to Largo Vista Rd	EB	C	23.8	55	C	21.5	55	D	27.0	55	C	24.4	55
	WB	B	12.4	55	D	26.4	55	B	13.6	55	D	30.3	54
SR 138/SR 18 junction to Sheep Creek Rd	EB	C	25.6	55	C	22.1	55	D	27.8	55	C	24.6	55
	WB	B	12.4	55	D	28.9	54	B	13.6	55	D	31.2	54
Sheep Creek Rd to Aster Rd	EB	A	7.0	55	A	7.4	55	B	15.2	55	B	15.5	55
	WB	A	5.2	55	A	8.3	55	A	9.2	55	B	17.4	55

PTSF = percent time spent following
ATS = average travel speed

Table 6-23. Year 2040 TSM Alternative Intersection Level of Service Summary *(intersections operating at LOS E or worse)*

ID NO.	INTERSECTION	TYPE OF CONTROL	EXISTING CONDITION				DESIGN YEAR 2040 NO-BUILD CONDITION				DESIGN YEAR 2040 TSM ALTERNATIVE†			
			AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
14	SR 14 NB off-/on-ramps and E. Palmdale Blvd	Signal	A	7.4	B	10.1	A	7.6	B	17.3	B	11.3	**F**	96.1
15*	Division Street and E. Palmdale Boulevard	Signal	C	27.9	C	28.0	**E**	64.1	**E**	71.4	C	31.0	D	40.3
22*	6th Street East and E. Palmdale Boulevard	Signal	C	20.7	C	25.3	**E**	55.7	**E**	78.0	B	13.3	B	17.9
23*	Sierra Highway and E. Palmdale Boulevard	Signal	C	25.5	C	27.3	**F**	82.1	**F**	94.6	B	14.3	B	17.7
35*	20th Street East and E. Palmdale Boulevard	Signal	B	19.9	C	22.9	C	34.1	**E**	63.8	B	15.5	C	21.0
36*	25th Street East and E. Palmdale Boulevard	Signal	C	26.2	C	30.9	D	42.2	**E**	64.5	B	18.1	C	23.8
41*	40th Street East and E. Palmdale Boulevard	Signal	C	21.9	C	23.7	D	39.1	**E**	71.6	C	27.3	D	40.5
43	50th Street East and High Desert Corridor	Signal	Does not exist				Does not exist				D	42.7	E	55.9
45*	50th Street East and E. Palmdale Avenue	Roundabout	B	14.0	A	8.9	**F**	>300	**F**	>300	—	—	—	—
49*	70th Street East and E. Palmdale Boulevard	Exist–stop NB/SB; fut–signal	**F**	>300	C	20.9	**F**	>300	**F**	>300	B	18.3	C	22.8
54*	90th Street East and E. Palmdale Boulevard	Signal	C	23.9	C	24.1	D	46.3	**E**	76.2	B	19.3	C	23.1
64*	165th Street East and SR 138	Signal	C	20.6	C	21.7	**F**	109.7	**E**	56.8	D	51.8	**F**	199.2
70*	SR 138 and SR 18	Stop WB; Yield EB	B	10.0	B	11.7	**F**	>300	**F**	>300	C	26.4	**F**	85.4
82*	Sheep Creek Road and SR 18	Exist–stop NB/SB; fut–signal	B	12.8	C	19.7	**F**	>300	**F**	>300	C	34.7	**F**	139.9
92*	Bellflower Street and SR 18	Exist–stop NB/SB; fut–signal	C	20.8	D	27.4	**F**	89.2	**F**	>300	B	17.8	C	20.3
99*	U.S. 395 and SR 18	Signal	C	34.0	D	36.5	**E**	61.1	**F**	90.6	D	48.8	**E**	55.6
104*	Cobalt Road and SR 18	Signal	D	43.3	C	27.5	**F**	97.3	**F**	160.2	C	33.1	B	18.9
105*	Amethyst Rd and SR 18	Signal	C	28.8	C	30.4	D	48.9	**F**	108.3	C	34.0	D	53.0
110*	El Evado Rd and SR 18	Signal	C	28.0	C	28.1	D	40.9	**F**	80.9	C	30.8	D	39.0
118*	Amargosa Rd and SR 18	Signal	C	28.2	D	39.9	**F**	84.9	**F**	200.0	C	27.0	D	53.1
122	I-15 NB on-ramp and Palmdale Rd	Signal	B	16.9	B	17.1	C	20.8	C	22.6	C	22.0	**E**	57.2
134*	Stoddard Wells Rd and SR 18	Signal	B	12.7	C	23.2	**B**	17.7	**F**	87.2	B	12.5	D	41.0
135*	Apple Valley Rd and SR 18	Signal	C	33.1	D	40.2	**F**	81.3	**F**	150.3	D	50.0	**E**	72.2
147*	Dale Evans Parkway and SR 18	Signal	B	17.8	C	21.0	C	30.2	**E**	78.2	C	22.5	D	43.5
158	Joshua Rd and Yucca Loma Rd	Exist–stop NB/SB; fut–4-way stop	B*	10.3	A*	9.5	**F***	61.2	**F***	276.1	A	3.7	C	17.4
164	30th Street East and High Desert Corridor	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C	31.7	**E**	59.3
173	Largo Vista Rd and SR 138	Exist–stop NB/SB; fut–signal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	D	48.6	**E**	63.4

Source: Parsons

Notes: 1. Two-way stop control level of service reported for worst approach
2. 4-way stop reported for overall level of service.
3. Intersection level of service calculations are based on HCM 2000, excepted where noted with *

*Intersection level of service was calculated using TRAFFIX software

**Proposed additional geometry improvements

Level of service E

Level of service F

6.5.5 Local Roadway Access Modifications and Circulation Impacts

The High Desert Corridor Freeway/Expressway build project will construct freeway to freeway "system" interchanges at I-15 and SR 14, local "service" interchanges at north–south crossings of arterial streets, grade separations (overcrossings or undercrossings) of local streets having no freeway access, and at-grade, traffic signal-controlled intersections along the expressway portion of the project east of Dale Evans Parkway.

Within the Antelope Valley segment of the project, new local interchanges are currently proposed at 20th Street East, 30th Street East, 50th Street East, and 90th Street East. The resulting grade separations from the first viaduct include freeway undercrossings at Division Street (when paved), Third Street, Sierra Highway, Eighth Street and 10th Street. Additional grade separations are proposed at 15th Street, 25th Street, 40th Street, and 70th Street.

Within the High Desert segment, new local interchanges are currently proposed at 140th Street, 170th Street, 210th Street, and 240th Street in Los Angeles County; and a future Oasis Road, midway between Avenue P Road and Saint George Avenue, Sheep Creek Road and Caughlin Road in San Bernardino County. Additional freeway grade separations (overcrossing or undercrossing) are also proposed at 110th Street, Palmdale Boulevard, Longview Road and 165th Street. Grade separations may also be proposed at Avenue Q, 200th Street, 230th Street, Saint Anthony Avenue, Palmer Road, and Tanner Road at a later date when land development warrants additional north–south circulation capacity.

Within the Victor Valley segment, new local interchanges are currently proposed at Caughlin Road, as mentioned previously, Koala Road, U.S. 395, Phantom Road West, Phantom Road East, National Trails Highway, Choco Road and Dale Evans Parkway. Additional grade separations are proposed at Bellflower Road, Adelanto Road, New Stoddard Wells Road and Apple Valley Road. Grade separations at Richardson Road, Beaver Road, Raccoon Avenue, Aster Road, Verbena Road, Evado Road/Majeta Avenue (south alternative alignment), Village Drive (south alternative alignment), Rancho Road (south alternative alignment), and Quarry Road may be proposed at a later date when local circulation needs warrant their construction. For the access-controlled, expressway portion of the project east of Dale Evans Parkway, at-grade, traffic signal controlled intersections are proposed at Waalew Road, Central Road, Joshua Road, Standing Rock Road and Yucca Loma Road.

The locations of the local service interchanges, grade separations proposed for initial construction, and at-grade signalized intersections are illustrated on Figure 6-34.

Construction of the High Desert Corridor freeway/expressway will potentially sever a number of primarily north–south running local roads which are planned for future development. For the most part, these severed roads are "paper streets," which are located in relatively undeveloped areas. Local roads running parallel to the High Desert Corridor will provide access to north–south roads identified for interchanges or grade separations. As noted in the text above, additional grade separations may be proposed and constructed at a later date when land development warrants additional north–south circulation capacity.

Insofar as transit services, Antelope Valley Transit Authority Routes 3 and 10 cross the High Desert freeway at 10th Street East and Sierra Highway, respectively. Grade separated crossings are provided, as the freeway is on a viaduct structure; therefore, the route alignments will not be affected. The Lake Los Angeles Express route also crosses the High Desert freeway in the viaduct section and on Palmdale Boulevard in the vicinity of 120th Street East. This crossing of Palmdale Boulevard will be grade separated so the route alignment will not be affected.

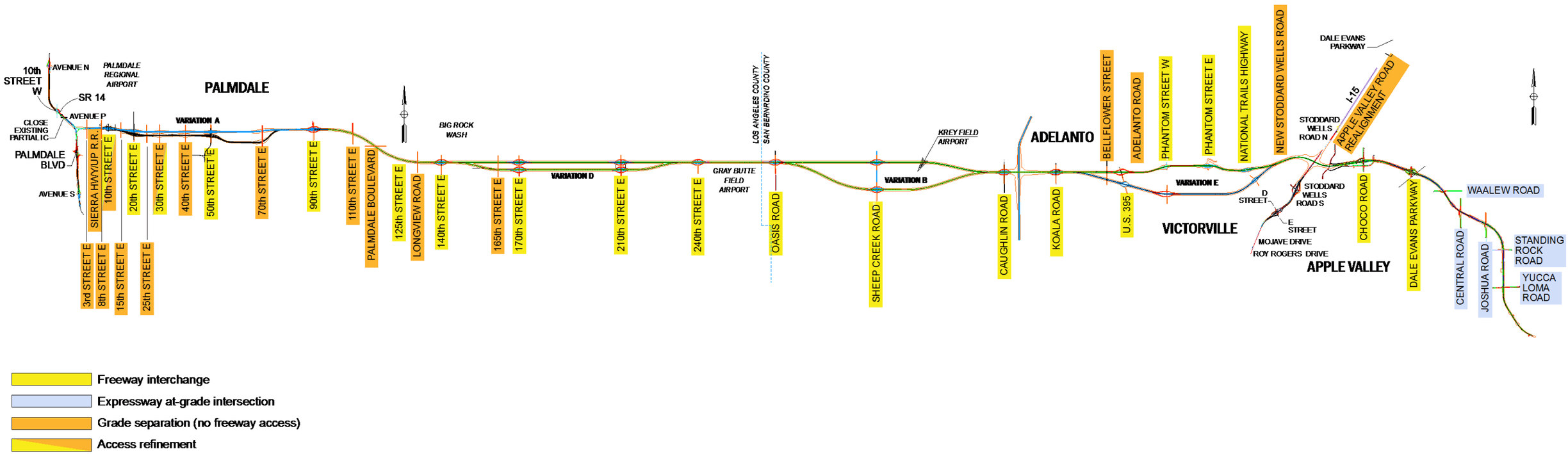


Figure 6-34: Proposed Locations of Interchanges, Grade Separations and At-grade Intersections along High Desert Corridor

Victor Valley Transit Authority (VVTA) routes 22, 32, 33 and the B–V Link also cross the proposed High Desert freeway alignment. Route 22, Helendale, runs along National Trails Highway, which will be grade separated. Route 33, Adelanto Circulator, crosses the freeway alignment along Bellflower Street, which will also be grade separated. The B–V Link connects Fort Irwin and Barstow with the San Bernardino Valley, and runs along I-15. None of these routes will be impacted by the alignment of the High Desert freeway.

Route 32, Adelanto–Victorville North, will be impacted by the proposed alignment of the High Desert freeway. The portion of the route running along Air Expressway Boulevard west of the Victorville Federal Correctional Complex would need to be rerouted if the High Desert freeway follows the Air Expressway alignment passing between the Correctional Complex and the Southern California Logistics Airport. In the event that alignment variation E is selected for the freeway, running along the south side of the correctional complex, the High Desert freeway alignment will cross over Village Drive on a viaduct structure.

6.6 Cost and Benefit of the Build Alternative

Cost estimates were developed by Caltrans for the *Project Report*. The preliminary cost estimate for the build alternatives is estimated to be $3.46 billion excluding project engineering and administration. This cost does not include the rail feeder service component.

Table 6-24 provides a summary of the capital cost for the build alternatives.

Table 6-24. Capital Cost for Build and Build with Tolls Alternatives *($ 2014)*

ELEMENT	BUILD ALTERNATIVE	BUILD WITH TOLLS ALTERNATIVE
Roadway	$2,437,400,000	$2,437,425,000
Structures	642,815,000	642,815,000
Right-of-Way	380,200,000	380,200,000
Project Capital Cost *(rounded)*	$3,460,415,000	$3,460,440,000

6.6.1 Benefits Estimates

In the case of the build alternatives, traffic volumes are expected to shift from congested freeway facilities (such as Interstate 210) and rural arterial streets to the High Desert Corridor freeway, thereby relieving congestion on a system-wide basis. Because the upgrade of the highway network linking State Route 14 with Interstate 15 has system-wide impacts, its benefits were computed using STEAM (Surface Transportation Efficiency Analysis Model) 2.01, a system-wide analysis tool, developed by The Federal Highway Administration (FHWA).

Selected results categories produced through STEAM analysis include the following:

- Weekday vehicle-miles (millions)
- Average highway speed (mph)
- Annual fuel use (million gal)
- Annual user benefits
- Total agency revenues

- Emission benefits
- Other external benefits
- Total annual benefits
- Annualized capital costs
- Annual operating costs
- Total annualized costs
- Net annual worth
- Simple benefit-cost ratio

STEAM incorporates a sophisticated network speed and delay estimation technique based on off-line simulations which incorporate the dynamic effects of queuing and peak-spreading, day-to-day variations in traffic levels, as well as the impacts of incident delays, based on their expected occurrence. Accident costs are based on zone-to-zone vehicle-miles and link types, and divided into "perceived" costs, included in user benefit estimation, and "non-perceived" costs, which are included as external costs. Emissions are estimated using a trip-based approach that incorporates both en route and cold start components. Fuel consumption and greenhouse (carbon dioxide) emissions are estimated using zone-to-zone average speeds and fuel consumption rates for autos and trucks.

Benefits are estimated based on weekday travel estimates, annualized, and expanded through the lifetime of the investment. User benefits for new users attracted by time or cost savings to an alternative, relative to the base case, are evaluated at 50 percent the rate applied to former users, as suggested by consumer surplus theory. Negative benefits of patronage lost due to poorer travel conditions are estimated similarly.

The STEAM 2.0 speed models account for delays due to incidents, using data on the frequency, severity, and duration of incidents. Incidents account for a large share of total travel delays due to congestion, especially on freeways. The models also account for peak spreading that occurs when facilities become more congested.

6.6.2 Travel Time Savings

Vehicle hours of travel were computed for each link in the highway system. Highway link travel speeds and volumes were output directly from the SCAG 2008 Regional Travel Demand Model TransCAD software to STEAM 2.0 using a custom design interface. Consistent with U.S. Department of Transportation guidance for the valuation of travel time in economic analysis, Parsons assumed local personal travel to be valued at 50 percent of the local median wage rate. Business travel by truck and bus drivers was valued at 100 percent of the mean wage for these occupations, plus fringe benefits.

6.6.3 Crash Benefits

The frequency of accident occurrence is typically lower on freeways and expressways when compared to other types of regional roads and city streets. To compute benefits associated with the build alternative versus the no-build alternative, the number of vehicle miles traveled over the highway system was computed for each alternative, using the SCAG 2008 RTP Model and STEAM 2.0.

The values of loss associated with accidents were obtained from the National Safety Council (2009) and the California Life-Cycle Benefit/Cost Analysis Model (Cal-B/C). Periodically, the National Safety Council estimates the average cost of fatal and non-fatal injuries due to motor vehicle crashes. These estimates are made using a comprehensive or willingness to pay method.

After adjusting these estimates to year 2013 (third quarter) using the gross domestic product deflator, values of $4,900,000 per fatality, $68,700 per injury, and $10,400 per reported property damage only accident were derived.

6.6.4 Motor Vehicle Emissions and Other Costs

PARTICULATES

Rates of motor vehicle emissions were obtained from the Cal-B/C for carbon monoxide (CO), nitrogen oxides (NO_X), and fine particulates (PM_{10}) assuming a vehicle model year of 2031 for the design year (2040) analysis and 2011 for the opening year (2020) analysis. The source of these emission rates is the California Air Resources Board EMFAC 2011 model. STEAM 2.0's default values for hydrocarbon emissions were also used in the analysis.

GLOBAL WARMING

Global warming refers to the warming of Earth's atmosphere due to the greenhouse effect. Incoming solar energy, including certain wavelengths of infrared radiation, passes through Earth's atmosphere and reaches the surface of Earth, thus warming it. Estimates valuing the cost of carbon dioxide emissions vary widely. The Cal-B/C social cost of CO_2 was used for this analysis expressed in 2013 dollars using the GDP deflator.

VEHICLE OPERATING COSTS

Vehicle operating costs were calculated for the no-build alternative and the build transportation systems management/transit alternative using estimates of vehicle miles traveled produced by the SCAG 2008 Regional Transportation Model and STEAM 2.0. STEAM 2.0 calculates fuel consumption per gallon based on average link speeds and vehicle miles traveled per link.

6.6.5 Summary of Benefits

The build alternatives will produce net savings in travel time and crash related expenses and increased emissions and non-fuel operating costs. These findings are summarized in Table 6-25 which indicates that the 20-year life cycle benefits for the three build alternatives range from $8.90 billion for the new freeway with tolls option to $10.0 billion for the non-toll alternative.

Travel time benefits are significant, as motorists are able to shift routes to higher speed facilities and additionally benefit from increased network capacity. This category of user benefit constitutes the majority of total benefits computed for the build alternatives. Fuel costs decrease with the build alternatives as a result of automobiles traveling at higher speeds. Vehicle miles traveled increases for the build alternatives as motorists seek higher speed routes; hence, non-fuel operating costs increase. The build alternatives shift more vehicle miles traveled to the High Desert Corridor freeway, resulting in a decrease in crashes of all types.

Revenue transfers are the tax portion of fuel costs, which are collected or not collected as a result of increased or decreased fuel consumption. Fuel cost savings produce a net loss of revenue transfers. Increased fuel use produces additional tax revenue. Vehicle pollution costs are based on vehicle miles traveled and speed. Emission rates generally decline as speeds increase to 55 miles per hour, and then increase.

Table 6-25. Summary of High Desert Corridor Project Benefits

BENEFIT TYPE	HIGH DESERT CORRIDOR/SR 18 NEW FREEWAY/EXPRESSWAY BUILD ALTERNATIVE	HIGH DESERT CORRIDOR/SR 18 NEW FREEWAY WITH TOLLS ALTERNATIVE
User Benefits		
In-vehicle travel time	$542,285,500	$527,490,600
Fuel costs	11,256,800	3,923,800
Non-fuel operating costs	(20,440,000)	(23,912,500)
Internal accident costs	76,943,000	74,590,100
Revenue Transfers	$ 6,854,100	$ 9,831,200
Reduction in External Costs		
Emissions	$ (24,156,600)	$ (26,359,200)
Global warming	(3,652,900)	(5,254,400)
Noise	1,001,300	814,200
Accident	(481,200)	(768,900)
Other mileage based	—	—
Total Benefits $/year in 2040	**$589,609,900**	**$560,355,000**
Total Benefits $/year in 2020	**$378,237,100**	**$301,840,300**
Life Cycle Benefits 2020–2040 Total	**$9.97 B**	**$8.90 B**

Source: Parsons, based on STEAM 2.01.

6.6.6 Life Cycle Benefits and Costs

Benefits of the build alternatives will accrue over time as traffic volumes increase from the opening day (third quarter of 2020) to those forecast for 2040. A measurement of life-cycle benefits, assuming a straight line projection of traffic growth, is reported, with each table reporting life-cycle benefits and costs for an individual build alternative.

Revenues from tolls collected by the build with tolls alternative are included as a benefit for that alternative. Revenues are based on toll rates of $0.15/mile for autos and light trucks and $0.37/mile for heavy trucks. Opening year (12 month) revenue is estimated at $78.2 million. Life cycle (20-year) revenue is estimated at just under $2.0 billion, net of revenue collection expense.

Tables 6-26 and 6-27 reflect a 20.5-year analysis period covering both expenditures (costs) and benefits. Both benefits and costs are discounted to reflect the time value of resources (or money). This time value of money represents the opportunity cost that could be earned by using the dollars for some other investment.

Table 6-28 summarizes the results of the life-cycle benefits and costs. As noted above, this analysis covers a 26-year time period to encompass expenditures to acquire right-of-way and to construct the project, and benefits which accrue as a result of the project. The accumulation of benefits covers a 20.5-year time span.

The table indicates the following.

- The two build alternatives are cost effective.
- The present value benefit-to-cost ratio is high, with benefits outweighing costs by more than a two-to-one margin.
- The payback period is relatively short, ten years or less.

Table 6-26. Build Alternative Life Cycle Benefits and Costs *($1,000)*

YEAR	TOTAL BENEFITS	TOTAL COSTS	PRESENT VALUE DISCOUNT	PRESENT VALUE BENEFITS	PRESENT VALUE COSTS
2014			1.0000		
2015		$ 95,100	0.9709		$ 92,333
2016		190,100	0.9426		179,094
2017		608,370	0.9151		556,719
2018		1,026,740	0.8885		912,258
2019		1,026,735	0.8626		885,662
2020	$ 189,119*	513,370	0.8375	$ 158,387	429,947
2021	388,806		0.8131	316,138	
2022	399,374		0.7894	315,266	
2023	409,943		0.7664	313,196	
2024	420,512		0.7441	312,903	
2025	431,080		0.7224	311,412	
2026	441,649		0.7014	310,921	
2027	452,218		0.6810	307,960	
2028	462,786		0.6611	305,948	
2029	473,355		0.6419	303,847	
2030	483,924		0.6232	301,581	
2031	494,492		0.6050	299,168	
2032	505,061		0.5874	296,673	
2033	515,629		0.5703	294,063	
2034	526,198		0.5537	291,356	
2035	536,767		0.5375	288,512	
2036	547,335		0.5219	285,654	
2037	557,904		0.5067	282,690	
2038	568,473		0.4919	279,632	
2039	579,041		0.4776	276,550	
2040	589,610		0.4637	273,402	
Totals	**$9,973,276**	**$3,460,415**		**$6,125,259**	**$3,056,013**

*Reflects 6 months of 2020

Table 6-27. Build with Tolls Alternative Life Cycle Benefits and Costs *($1,000)*

YEAR	TOTAL BENEFITS*	TOTAL COSTS	PRESENT VALUE DISCOUNT	PRESENT VALUE BENEFITS	PRESENT VALUE COSTS
2014			1.0000		
2015		$ 95,100	0.9709		$ 92,333
2016		190,100	0.9426		179,094
2017		608,370	0.9151		556,719
2018		1,026,740	0.8885		912,258
2019		1,026,735	0.8626		885,662
2020	$ 190,020**	513,395	0.8375	159,142	429,968
2021	394,788		0.8131	321,002	
2022	409,536		0.7894	323,288	
2023	424,282		0.7664	325,170	
2024	439,030		0.7441	326,682	
2025	453,778		0.7224	327,809	
2026	468,526		0.7014	328,624	
2027	483,273		0.6810	329,109	
2028	498,020		0.6611	329,241	
2029	512,768		0.6419	329,146	
2030	527,516		0.6232	328,748	
2031	542,263		0.6050	328,069	
2032	557,011		0.5874	327,188	
2033	571,758		0.5703	326,074	
2034	586,506		0.5537	324,748	
2035	601,253		0.5375	323,173	
2036	616,001		0.5219	321,491	
2037	630,749		0.5067	319,601	
2038	645,496		0.4919	317,519	
2039	660,243		0.4776	315,332	
2040	674,991		0.4637	312,993	
Totals	**$10,887,808**	**$3,460,440**		**$6,644,149**	**$3,056,034**

*Total benefits include toll revenues
**Reflects 6 months of 2020

Table 6-28. Summary of Life-Cycle Benefits and Costs

METRIC	BUILD ALTERNATIVE	BUILD WITH TOLLS ALTERNATIVE
Cost	$3,460,415,000	$ 3,460,440,000
Present value of costs	$3,056,013,000	$ 3,056,034,000
Total benefits (Q3 2020–2040)	$9,973,276,000	$10,887,808,000
Present value of benefits	$6,125,259,000	$ 6,644,149,000
Present value benefit/cost ratio	2.0	2.2
Payback period	10 years	9 years

Appendix A
TOLLING FORECAST METHODOLOGY

Appendix A
TOLLING FORECAST METHODOLOGY

A.1 Introduction

Two of the High Desert Corridor Build Alternatives analyzed include a toll component. This Appendix describes the toll specifications of these two alternatives and how the tolling procedure is developed and applied within the context of using the Southern California Association of Governments (SCAG) travel demand model. Application of the SCAG model for the toll alternatives is the same as it is for the non-toll alternatives, except as noted herein.

A.2 Tollway Specifications

Two of the alternatives analyzed include a toll component. Specifically, the Blue Alignment is analyzed as a toll facility over a portion of its alignment in both 2020 and 2040. The limits of the proposed tollway on the Blue Alignment are 90th Street East in Palmdale to Highway 395 in Victorville, which spans a distance of approximately 32 miles.

A review of toll rates on other tollway facilities in Southern California led to the formulation of a range of toll rates to be evaluated for the High Desert Corridor. Initially, it was assumed that High Desert Corridor average toll rates per mile for autos would be comparable to the Transportation Corridor Agencies toll roads. It was further assumed that tolls for trucks operating on the High Desert Corridor facility would have toll rates that are, when compared to the auto toll, lower than ratio of truck toll-to-auto toll experienced on Transportation Corridor Agencies toll roads.

The initially proposed toll rates for the High Desert Corridor tollway facility, along with toll rates for other Southern California facilities, are shown in Table A-1. Existing tolls are expressed as per-mile averages to facilitate comparison among the different toll facilities. Table A-1 also contains a set of proposed final toll rates for the High Desert Corridor. The initial toll rates were subsequently revised downward during sensitivity testing because they proved too much of a deterrent to using the tolled portion of the High Desert Corridor facility. Higher toll revenue generation could be achieved with lower toll rates.[1]

Other characteristics of the tollway facility and assumptions pertaining to its operation include, for purposes of this study, the following:

- All vehicles are tolled.
- The rates do not vary by time of day.
- An electronic toll system (no toll booths) would be in place. Tolls for regular users would be collected by transponders, while non-regular users would pay tolls through video collection and video enforcement.
- Toll rates would evolve annually in-line with consumer price index assumptions for the 2018 (2020) and 2035 (2040) travel demand model runs.[2]

[1] This is further detailed in the section titled “Final Toll Rate Specification”.
[2] The 2035 SCAG land use forecast was considered to represent the 2040 transportation demand for this study. Please refer to Chapter 3 of the traffic report for additional details.

Table A-1. 2010 Toll Rates for Selected Southern California Toll Roads

Toll Road		Length	Toll for entire trip			Average Toll/mile		
		(miles)	2-Axle	3-4 Axles	5+ Axles	2-Axle	3-4 Axles	5+ Axles
SR-73 Catalina View	Off Peak	17	$4.00	$8.00	$16.00	$0.24	$0.47	**$0.94**
	Peak	17	$4.75	$9.50	$19.00	$0.28	$0.56	**$1.12**
SR-241 Windy Ridge		10.3	$2.25	$4.50	$9.00	$0.22	$0.44	**$0.87**
SR-241 Tomato Springs	Off Peak	11.7	$2.00	$4.00	$8.00	$0.17	$0.34	**$0.68**
	Peak	11.7	$2.25	$4.50	$9.00	$0.19	$0.38	**$0.77**
SR-91	Off Peak	10	$1.30	N.A.	N.A.	$0.13	N.A.	N.A.
	Peak	10	$9.90	N.A.	N.A.	$0.99	N.A.	N.A.
SR-125		11	$3.85	$7.70	$11.55	$0.35	$0.70	**$1.05**
I-15 Express Lanes	Off Peak	8	$0.50	N.A.	N.A.	$0.06	N.A.	N.A.
	Peak	8	$8.00	N.A.	N.A.	$1.00	N.A.	N.A.
High Desert Corridor (Proposed Initial)		*32*	*$6.40*	*$11.20*	*$16.00*	*$0.20*	*$0.35*	*$0.50*
High Desert Corridor (Proposed Final)		*32*	*$4.80*	*$4.80*	*$12.00*	*$0.15*	*$0.15*	*$0.375*

Note: The initial rates for High Desert Corridor were adjusted downward because, during model sensitivity testing, they proved too much of a deterrent to using the tolled portion of the facility.

A.3 Tolling Procedure within the SCAG Model Environment

This section describes how the tollway specification described in the previous section is implemented within the SCAG modeling environment. The discussion focuses on network coding procedures and representation of the toll values in the model stream.

A.3.1 Model Attributes

The same SCAG travel model, land use, trip generation and distribution used for the non-toll Build Alternatives—described in Chapter 3—are used for the two toll-based alternatives. As stated in Chapter 3, most aspects of the model are not eligible for (non-SCAG staff) user modifications. The model has certain built-in link attributes (characteristics that describe a road segment) to account for toll facilities. Despite the limitation of generally not being able to modify the SCAG model, the values for these link attributes may be varied in an attempt to represent the toll specifications. Some of the key attributes, in context of the tolling parameters above, include the following:

- **Toll flag –** Each roadway segment is coded with a value that determines whether it is a toll road, HOT road, or neither
- **Truck prohibition flag –** Each roadway segment is coded with a value that determines whether or not trucks are prohibited
- **Functional classification –** Each roadway segment is coded with a value that specifies its functional class (e.g., freeway, arterial, collector, etc.). A special classification exists for truck-only segments.
- **Service time –** Roadway segments classified as toll (based on the value of the toll flag attribute) have a non-zero service time value which presumably reflects deceleration and queuing effects at the location of toll payment
- **Toll lanes –** The number of lanes describing the toll segment
- **Toll –** The value of the toll (non-zero for toll-classified roadway segments)

In addition, the SCAG travel model uses a toll value of time parameter. The purpose of this parameter is to convert tolls expressed as a monetary value into an equivalent travel time value.

A.3.2 Toll Facility Coding

Coding of the toll facilities into the SCAG travel model developed into an iterative process, with different coding techniques tested. This is because care is taken to ensure that no unintended effects result from the coding procedures, which would skew the model results. While each coding procedure has unique characteristics, all tested procedures include a common, or "core," component. Development of the coding procedures is discussed below in two parts—the first part discusses the "core" procedures common to all, and the second part discusses the variations that uniquely define each attempt at achieving proper coding of the toll specifications.

BASIC OR "CORE" REPRESENTATION

Unlike existing toll facilities in the SCAG modeling region, such as State Route 91 in Orange County where tolls are specified at the actual toll plaza locations and thus make for non-uniform toll rates along the facility, it is desired for tolls to be expressed uniformly (i.e., with a uniform toll rate per mile) throughout the tolled portion of the High Desert Corridor. This uniform toll approach is appropriate for this phase of the study because exact locations for toll collection have not been determined and it also prevents bias in the assignment of trips between the tolled portion of the corridor and alternative (non-tolled) corridors.

Uniform tolls are achieved on the tolled portion of the High Desert Corridor by designating toll collection points immediately downstream of each access point along the facility and then multiplying the toll per mile (from Table A-1) by the length of the roadway segment(s) between access (or toll collection) points. *In effect, the total cost of traversing the entire tolled portion of the High Desert Corridor is pro-rated by the distance traveled such that a uniform toll per mile is maintained for each trip on the tollway, regardless of its length.* Figure A-1 illustrates this concept.

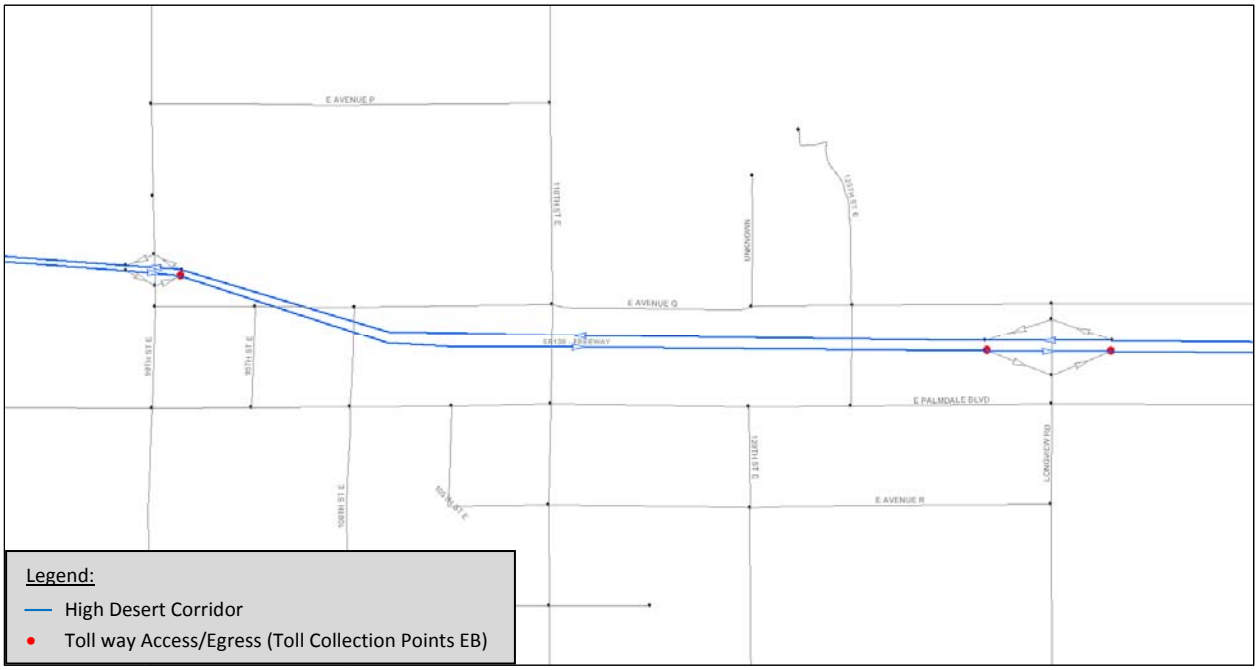


Figure A-1: Application of Uniform Tolling on High Desert Corridor

Figure A-1 depicts the west end of the proposed tollway, with toll collection points shown for vehicles traveling eastbound on the High Desert Corridor. The distance between the start of the tollway (at the interchange with East 90th Street) and the next access point (eastbound off-ramp at Palmdale Boulevard) is 4.14 miles, and the distance of the next segment (between ramps at the Palmdale Boulevard interchange) is 0.63 mile. The proposed initial toll per mile for two-axle vehicles (Table A-1) is $0.20. Thus, two-axle vehicles would be tolled at $0.828 (4.14 miles × $0.20/mile) for traversing the first segment and $0.126 (0.63 mile × $0.20/mile) for traversing the second segment.

As also indicated by Table A-1, the average toll per mile on the High Desert Corridor varies according to the vehicle axle count. The SCAG travel model does not explicitly define its vehicle classes according to the number of axles. Instead, the model recognizes the following six vehicle-classes, using gross vehicle weight to differentiate heavy duty truck (HDT) classes:

- Passenger cars
  - Drive-alone
  - 2-person carpool
  - 3+person carpool
- Heavy duty trucks (HDT)
  - Light-HDT – 8,500 to 14,000 pounds gross vehicle weight
  - Medium-HDT – 14,000 to 33,000 pounds gross vehicle weight
  - Heavy-HDT – over 33,000 pounds gross vehicle weight

While passenger cars can easily be categorized as two-axles for purposes of assigning the proper toll rate, HDT are not as straight-forward. Depending upon tractor and trailer configuration, HDT may range from three axles to seven or more. It was decided that all HDT would be assigned the 5+ axle toll rate, and all other vehicles would be assigned the 2-axle toll rate.[3]

Because the proposed toll rates vary by axle count, the application of the uniform tolling procedure (Figure A-1) needs to also account for this difference. This is accomplished by splitting the roadway segment immediately downstream of each access point into two separate-but-parallel routes. One branch is designated for passenger cars only by setting the truck prohibition flag attribute on this link to prohibit trucks, and the other branch is designated for trucks only by setting its functional classification to "truck only." Separate toll rates can therefore be assigned to each branch. Furthermore, this splitting of roadway segments into separate branches is performed over only a very short distance so as not to inflate the capacity of the roadway, which could skew the assignment of vehicles to the modeled roadway network.[4] This link splitting concept is illustrated in Figure A-2.

Note that in Figure A-2, the "truck only" branch is further sub-divided into two consecutive segments. This is done simply to ensure that only one link connects the same pair of nodes.

[3] Data and observation of the High Desert Corridor, including land uses served by the corridor, suggest that the majority of heavy duty trucks operating on the corridor are/will be of the 5+axle type.

[4] A roadway link is first split into two such that the original link length (and therefore distance between tollway access/egress points) is preserved, with one of the split links being very short in length (e.g. about 250 feet). This very short link is further divided to provide two equally short branches—one for passenger cars and the other for heavy-HDT. Class-specific tolls can then be assigned to the specific branches. This branching technique does have the possibility of yielding congested travel times that are, at least in theory, different than without branching, as a result of capacity differences. This could, in turn, affect the assignment of vehicles to the roadway network. The use of very short links as described makes for negligible impact on travel time resulting from providing separate capacities on each branch, such that the integrity of the traffic assignment is preserved.

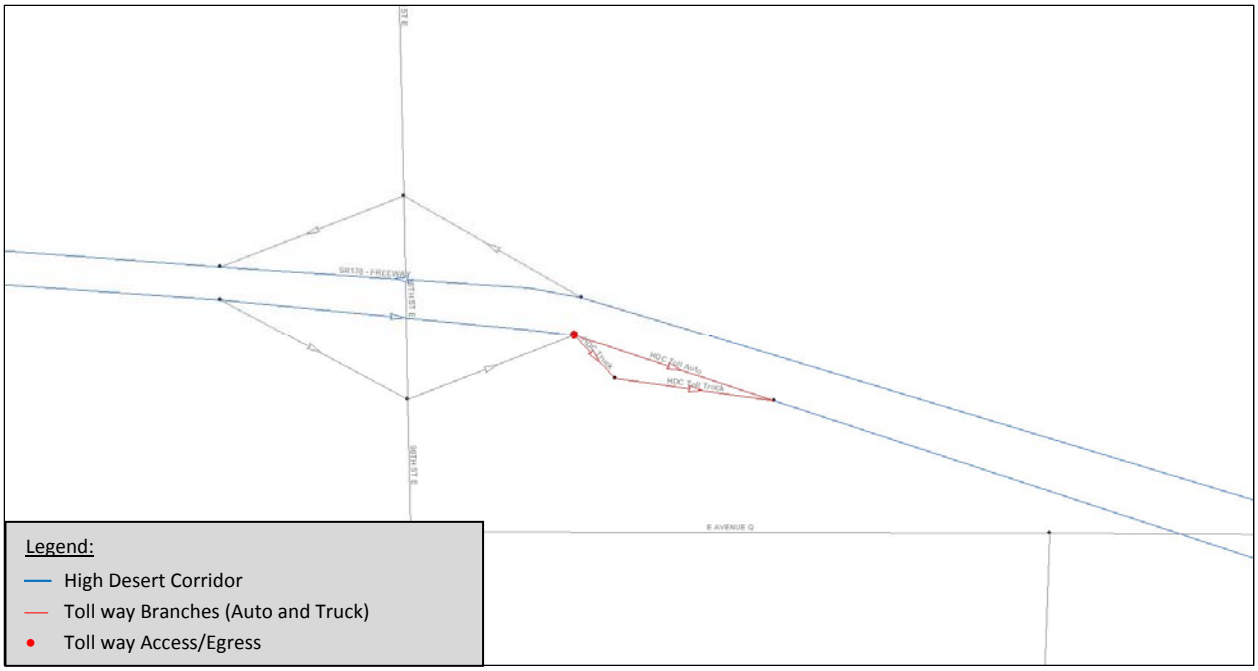


Figure A-2: Splitting of Links to Capture Different Tolling Rates on High Desert Corridor

CODING VARIANTS

A host of different procedures for coding the toll alternatives were tested before adopting a final set. The unsuccessful, abandoned methods may be generalized into two types—using tolls directly and converting the tolls to represent a link travel time penalty. These two methods along with the adopted method are discussed below. Again, each procedure tested utilized the basic or "core" modifications to the SCAG model roadway network discussed above and illustrated in Figure A-2.

Three general methods include:

- **Toll Flag/Toll Value Approach (Abandoned) –** With this method, each tolled link is "flagged" using the toll flag link attribute (i.e., the toll flag link attribute is activated for one link on each branch in Figure A-2 and subsequent branches downstream on the tollway). Appropriate tolls are then input to the toll link attribute for each flagged link. Existing toll facilities, such as State Route 91 in Orange County, are coded this way. Replicating this procedure on the High Desert Corridor's proposed tollway proved troublesome. Following numerous model runs, it was concluded that activation of the toll flag was having a deleterious effect on High Desert Corridor volumes. Initially it was thought that perhaps the volume fluctuations were due to traffic assignment closure criteria considerations, but subsequent tests designed to control for traffic assignment closure proved this was not the reason. Ultimately, model results that made use of the toll flag attribute for new toll facilities were judged to be too unreliable and this method was thus abandoned.
- **Link Penalty Approach (Abandoned) –** Under this method, the toll flag and all other toll-related link attributes are not used (i.e., they are not changed from the base network). The applicable tolls on each segment are converted to an equivalent amount of travel time based on a value of time setting, and expressed in a link penalty field (there are eight such fields comprising four time periods and each direction). It was thought that during iterations of the traffic assignment step, the link penalty (time-based toll) would be combined with the link travel time to

yield updated link travel times. By not using the toll flag and other toll-related link attributes discussed above, this procedure represents a significant deviation from the way in which existing toll facilities are coded in the SCAG model. Initial results under this method were encouraging. However, subsequent sensitivity testing in which the toll was varied ultimately proved problematic. Model runs were conducted using the following toll per mile scenarios on the High Desert Corridor for the sensitivity testing: 0 cent, 1 cent, 10 cents, 15 cents, and 20 cents. A review of link volumes, travel times, and volume-to-capacity ratios revealed no difference between 10, 15, and 20 cent-per-mile toll rates, which did not seem logical. The prevailing thought is that the SCAG model might be capping the link penalty attribute's contribution in the volume-delay function at the time equivalent of 10 cents per mile.

- **Turn Penalty Approach (Adopted) –** This procedure is very similar to the link penalty method above, except that the value of the link penalty is expressed as a turn penalty instead. Turn penalties are measures of cost, used to represent impedance between specific pairs of links. A typical application of turn penalties is to express some amount of delay (or prohibition) for a particular movement at an intersection, such as due to a traffic control device. Turn penalties are added directly to the link cost variable in the network file that is used in the link volume-delay function. Thus, the advantage of this approach is that the tolls can still be expressed as equivalent time values, but without the introduction or modification of another link attribute (such as the link penalty field above) which risks modifying the volume-delay function evaluation. Under this turn penalty approach, the time-equivalent value of the toll at each toll collection point (both auto and truck branches) is expressed as a turn penalty. The calculation of congested travel time via the volume-delay function is undisturbed, and the turn penalty value (toll) is then added to the link congested travel time for travel path evaluation and trip assignment. Sensitivity testing revealed that this procedure produced results that were both reasonable and logical, and this became the adopted method for representing the tolls.

A.3.3 Calculation of Tolls as a Time-Based Penalty

The High Desert Corridor proposed tolling structure in Table A-1 is expressed in year 2010 dollars. Incorporating the tolling structure into coding of the toll alternatives for the SCAG travel model requires two processing steps:

1. Adjusting the tolls (expressed in 2010 dollars) to be the same-year dollars used elsewhere in the SCAG travel model, such as auto operating cost, transit fare, etc.
2. Converting the monetary toll to a time-based toll, based on value of time.

In step 1, the tolls are adjusted to reflect 1989 dollars, which is what the SCAG travel model uses. The adjustment is made by multiplying the tolls by the ratio of 1989-to-2010 consumer price indices (CPI) for the Los Angeles metropolitan statistical area, as reported by United States Department of Labor's Bureau of Labor Statistics. In 1989, the CPI value for this region was 128.3 and the 2010 CPI value was 225.9. So the initially proposed $0.20 toll per mile in 2010 dollars is equivalent to $0.114 per mile in 1989 dollars ($0.20 × (128.3/225.9)).

In Step 2, the monetary cost of the toll is converted to a time-based cost, using appropriate values of time. As reported in section A.3.1 Model Attributes, the SCAG travel model has a toll value of time parameter that equates to about $5.28 per hour (in 2010 dollars). This value of time equates to a 2.27 minute per mile time penalty for autos traversing the High Desert Corridor tollway, based on the initially proposed $0.20 per mile average toll rate (Table A-1). The free-flow travel time over the 32-mile length of the tollway is 28 minutes without tolling considerations; with toll, using this value of time, it effectively adds

another 73 minutes of travel time, pushing the total free-flow travel time on the tollway to 101 minutes. This results in negligible use of the tollway by motorists.

By contrast, a recent study for Caltrans of another proposed toll facility used $80 per hour (in 2010 dollars) for heavy trucks. That particular value of time is for the I-710 freight corridor, which serves a relatively high proportion of truckers who are draying their loads between the Port of Long Beach/Los Angeles and the Los Angeles basin. Values of time for these short-haul truckers are, arguably, expected to be higher than their long-haul counterparts. This is because short-haul truckers are paid by the hour, whereas long-haul drivers are paid by the mile, and the ability to complete an additional drayage movement in a given day makes for an increased value of time for the short-haul drivers relative to their long-haul counterparts.

The value of time used on the tolled portion of the High Desert Corridor is consistent with that reported in Chapter 5 of this traffic study, which addresses the costs and benefits of the project alternatives. That text is repeated here:

> Consistent with U.S. Department of Transportation guidance for the valuation of travel time in economic analysis, Parsons assumed local personal travel to be valued at 50 percent of the local median wage rate. Business travel by truck and bus drivers was valued at 100 percent of the mean wage for these occupations, plus fringe benefits. Los Angeles County's mean wage for all occupations was reported by the State of California Employment Development Department to be $25.025 per hour for the full year of 2010; whereas, the average wage for San Bernardino employers was $17.90. These were averaged and halved to produce a value of time equal to $10.73 per hour for local personal travel. The state reported that local and long distance truck drivers residing in the two counties earned an average of $20.32 per hour during 2010. A fringe benefit rate of 50 percent of the mean wage was assumed by Parsons for bus and truck drivers, based on an equal mix of employees covered by teamsters (55.5 percent) and other (44.5 percent) labor agreements. The corresponding value of time for these business travelers was thus estimated to be $30.478.
>
> Computation of benefits also took vehicle occupancy into account for local personal travel. Based on the SCAG 2008 RTP model, the average daily vehicle occupancy for all trip purposes in Los Angeles and San Bernardino counties is estimated to be 1.40 persons per vehicle. This average occupancy is appropriate for both peak and off-peak periods.

Thus, the values of time (in 2010 dollars) used for motorists traveling the tolled portion of the High Desert Corridor are as follows:

- **Automobiles –** $15.022 per hour ($10.73 × 1.40)
- **Trucks –** $30.478 per hour

It should be noted that these are deterministic average values, as value of time in and of itself is rather heterogeneous across the population. Some of the factors affecting individuals' value of time include trip purpose, trip length, congestion levels, and socio-economic characteristics associated with the user.

The two steps together result in the following equation for expressing the toll for a roadway segment as an equivalent amount of time for use in the SCAG travel model:

$$t = (\text{length} \times \text{toll rate} \times \text{CPI adj. factor} \times 60) / (\text{value of time} \times \text{CPI adj. factor})$$

where: t = equivalent time value, minutes
length = link length, miles
toll rate = average toll per mile (from Table A-1), in 2010 dollars
CPI adj. factor = 0.568 (ratio of the 1989-to-2010 consumer price indices for Los Angeles metropolitan statistical area)
value of time = auto or truck value of time, in 2010 dollars

Thus, the proposed final average toll rates per mile on the High Desert Corridor (Table A-1) are expressed as equivalent travel time, as follows:

- **Automobiles –** $0.15 per mile toll equates to 0.60 minute of additional travel time
- **Heavy Trucks –** $0.375 per mile toll equates to 0.74 minute of additional travel time

Over the roughly 32-mile length of the proposed tollway, the tolls represent about 19 minutes of additional travel time for automobiles ($4.80 toll) and 23 minutes for heavy trucks ($12 toll).

A.3.4 Value of Travel Time Reliability and Safety

As traffic congestion becomes increasingly common in large metropolitan areas, many drivers become used to congestion—to the point that they expect (and plan) for some delay, particularly during peak times. But the level of delay experienced at a particular time is not necessarily constant from one day to the next. When traffic delays are much worse than drivers expect, additional driver (and passenger) discomfort and cost can manifest itself through being tardy to work, meetings, appointments, picking up kids from child-care, etc. In the case of shippers, unexpected delay can disrupt just-in-time delivery and manufacturing processes, and ultimately result in financial loss.

Increasingly, motorists are placing value on the consistency or dependability in travel times from one day to the next, because it allows them to make better use of their own time. The measure of consistency in day-to-day travel times for a given period is referred to as travel time reliability. Thus, the value of travel time reliability is the willingness to pay for a reduction in the day-to-day variability of travel times for a particular type of trip. Additionally, there is evidence that people choose toll roads for reliability, even when there are no obvious travel time savings.[5]

In addition to the value motorists may place on travel time reliability, safety may also figure into their travel decisions. The proposed High Desert Corridor would be a limited-access facility through desert terrain. Corridor users may feel more at-ease knowing that as a toll facility, there would presumably be greater frequency of patrol, and thus they are less likely to feel stranded or unsafe if a vehicle- breakdown occurs.

The values that motorists may place on travel time reliability and safety when traversing the corridor are not characteristics that are captured by the SCAG travel model, or most models for that matter. Thus, it becomes desirable to try to account for these aspects that are unique to the toll alternatives. These un-included attributes are lumped together as a "tollway bonus." This bonus term is a time-value indicating how the perceived reliability of travel time and safety afforded tollway users makes it a more attractive option. This increased attractiveness is translated into minutes of travel time savings along the facility, with the magnitude of the bonus proportional to the tollway distance traveled.

[5] Transportation Revenue Forecasting: Theory and Models, Moshe Ben-Akiva, Massachusetts Institute of Technology, Transportation Systems Analysis: Demand & Economics, 1.201/11/545/ESD.210, Fall 2008

Based on professional judgment and a review of shortest path information output by the travel model for various origin-destination pairs, a tollway distance pro-rated bonus of up to five minutes was assigned to automobile trips and up to ten minutes for heavy truck trips.[6] This means that a 35-minute automobile trip across the entire tolled portion of the High Desert Corridor without the bonus would translate into a 30-minute trip with the bonus, all other things being equal. Similarly, an 18-minute automobile trip across exactly half the tolled portion of the High Desert Corridor without the bonus would translate into a 15.5-minute trip (18 minutes less 2.5 minutes) with the bonus (recall, the bonus is pro-rated by tollway distance traveled). The shorter trip times are more attractive, reflecting the perceived travel time reliability and safety gains inherent to the tollway.

So, while the toll exacts a time penalty in the context of the toll modeling procedures, the tollway bonus has the opposite effect; it reduces the impact of the time penalty. On a per mile basis, the final toll rate for automobiles ($0.15/mile) results in 0.60 minute of travel time penalty, while the tollway bonus produces a travel time savings of 0.16 minute. Thus, the net travel time impact is an additional 0.44 minute per mile of tollway traveled, or about 14 minutes for an automobile traversing the approximately 32-mile full length of the tollway.

Table A-2 displays both the final toll (converted to time) and the tollway bonus components on a segment-by-segment basis—for both automobiles and heavy trucks—over the tolled portion of the High Desert Corridor. In the model application, the two components are effectively added together to yield the value of the turn penalty applied to each applicable segment. The resulting auto and heavy truck turn penalties are applied to the respective auto and truck branches (Figure A-2).

Table A-2. Segment (Turn) Penalties Applied to the Tolled Portion of High Desert Corridor

High Desert Corridor (Tolled Portion)		EB	WB	Toll (Equivalent Minutes of Travel Time)				Toll Way Bonus (Minutes)				Turn Penalty (Toll + Toll Way Bonus), Minutes			
				EB		WB		EB		WB		EB		WB	
Between	And	Segment Length (Miles)	Segment Length (Miles)	Auto Toll	Hvy Truck Toll	Auto Toll	Hvy Truck Toll	5 Min. Bonus	10 Min. Bonus	5 Min. Bonus	10 Min. Bonus	Turn Penalty Auto	Turn Penalty Hvy Truck	Turn Penalty Auto	Turn Penalty Hvy Truck
90th St E (east ramps)	Palmdale Blvd (west ramps)	4.14	4.11	2.480	3.056	2.462	3.034	-0.648	-1.297	-0.645	-1.290	1.832	1.760	1.817	1.744
Palmdale Blvd (west ramps)	Palmdale Blvd (east ramps)	0.64	0.64	0.377	0.465	0.377	0.465	-0.100	-0.200	-0.100	-0.201	0.277	0.265	0.277	0.264
Palmdale Blvd (east ramps)	170th St E (west ramps)	2.89	2.86	1.731	2.134	1.713	2.111	-0.453	-0.905	-0.449	-0.898	1.279	1.228	1.265	1.214
170th St E (west ramps)	170th St E (east ramps)	0.74	0.76	0.437	0.539	0.449	0.554	-0.116	-0.232	-0.119	-0.239	0.321	0.307	0.330	0.315
170th St E (east ramps)	Largo Vista (west ramps)	3.39	3.38	2.031	2.503	2.025	2.495	-0.531	-1.062	-0.530	-1.061	1.500	1.441	1.495	1.434
Largo Vista (west ramps)	Largo Vista (east ramps)	0.63	0.62	0.371	0.458	0.365	0.450	-0.099	-0.197	-0.097	-0.195	0.273	0.260	0.268	0.256
Largo Vista (east ramps)	240th St E (west ramps)	2.44	2.46	1.462	1.801	1.474	1.816	-0.382	-0.764	-0.386	-0.772	1.080	1.037	1.088	1.044
240th St E (west ramps)	240th St E (east ramps)	0.58	0.57	0.341	0.421	0.336	0.413	-0.091	-0.182	-0.089	-0.179	0.251	0.239	0.246	0.235
240th St E (east ramps)	Oasis Rd (west ramps)	3.07	3.08	1.839	2.266	1.845	2.274	-0.481	-0.961	-0.483	-0.967	1.359	1.305	1.362	1.307
Oasis Rd (west ramps)	Oasis Rd (east ramps)	0.36	0.36	0.210	0.258	0.210	0.258	-0.056	-0.113	-0.056	-0.113	0.153	0.146	0.153	0.145
Oasis Rd (east ramps)	Sheep Creek Rd (west ramps)	3.29	3.29	1.971	2.429	1.971	2.429	-0.515	-1.030	-0.516	-1.033	1.456	1.398	1.455	1.396
Sheep Creek Rd (west ramps)	Sheep Creek Rd (east ramps)	0.31	0.28	0.180	0.221	0.162	0.199	-0.049	-0.097	-0.044	-0.088	0.131	0.124	0.118	0.111
Sheep Creek Rd (east ramps)	Caughlin Rd (west ramps)	4.81	4.81	2.882	3.551	2.882	3.551	-0.753	-1.506	-0.755	-1.510	2.129	2.045	2.127	2.041
Caughlin Rd (west ramps)	Caughlin Rd (east ramps)	0.21	0.21	0.120	0.148	0.120	0.148	-0.033	-0.066	-0.033	-0.066	0.087	0.082	0.087	0.082
Caughlin Rd (east ramps)	Koala Rd (west ramps)	1.83	1.82	1.090	1.344	1.084	1.336	-0.287	-0.573	-0.286	-0.571	0.804	0.770	0.799	0.765
Koala Rd (west ramps)	Koala Rd (east ramps)	0.23	0.23	0.132	0.162	0.132	0.162	-0.036	-0.072	-0.036	-0.072	0.096	0.090	0.096	0.090
Koala Rd (east ramps)	Hwy 395 (west ramps)	2.37	2.38	1.420	1.750	1.426	1.757	-0.371	-0.742	-0.374	-0.747	1.049	1.007	1.052	1.010
	Totals:	31.93	31.86	19.076	23.505	19.034	23.454	-5.000	-10.000	-5.000	-10.000	14.076	13.505	14.034	13.454

Note: The time-equivalent tolls reflect the Table A-1 proposed final per-mile toll rates of $0.15 for autos and $0.375 for heavy trucks.

[6] The decision to use five minutes for automobile trips is based on shortest path information involving key origin-destination pairs likely to use the full length of the tolled portion of the High Desert Corridor. These key pairs show the shortest path, in some cases, to include only a short segment of the tolled portion of the corridor, whereas traversing the entire tolled portion for these same pairs would be less than five minutes longer. As a practical matter, it is not logical for users to avoid the tollway altogether for such a small modeled time savings relative to their overall travel times. Hence, by assigning a tollway bonus of up to five minutes, these modeling effects are diminished. Heavy trucks are allowed a maximum 10 minute bonus, which is twice the auto bonus, consistent with truck value of time being twice that of automobiles.

A.3.5 Composite Assignment

This particular combination of tollway bonuses specified for autos and heavy trucks results in one unintended effect, which is easily mitigated. Specifically, whereas trucks can be restricted from using auto links, autos are not necessarily restricted from using truck links. And when trucks are allowed the up-to ten minute bonus, a "tipping-point" is reached whereby autos start to use the truck branch (as referred to in Figure A-2) because it offers a shorter path when taking into account both the toll and the tollway bonus. This does not occur when the bonus for trucks is less than 10 minutes. The following illustrates this point, using the eastbound entrance point to the tollway at 90th Street East (Figure A-2) and traveling east to the next toll collection point, which is a distance of 4.14 miles.

Time Penalty, Toll Auto branch $_{\text{5-minute bonus}}$ = auto toll expressed as time + auto tollway bonus

$$= \frac{4.14\ miles\ x\ \frac{\$0.15}{mile}\ x\ 0.568\ x\ \frac{60\ minutes}{hr}}{\frac{\$15.022}{hr}\ x\ 0.568} + \left[\left(\frac{4.14\ \text{miles}}{31.93\ \text{miles}}\right) \text{x}\ (-5\ \text{minutes})\right]$$

= 2.480 minutes - 0.648 minutes

= 1.832 minutes

Time Penalty, Toll Truck branch $_{\text{9-minute bonus}}$ = truck toll expressed as time + truck tollway bonus

$$= \frac{4.14\ miles\ x\ \frac{\$0.375}{mile}\ x\ 0.568\ x\ \frac{60\ minutes}{hr}}{\frac{\$30.478}{hr}\ x\ 0.568} + \left[\left(\frac{4.14\ \text{miles}}{31.93\ \text{miles}}\right) \text{x}\ (-9\ \text{minutes})\right]$$

= 3.056 minutes – 1.167 minutes

= 1.889 minutes

Time Penalty, Toll Truck branch $_{\text{10-minute bonus}}$ = truck toll expressed as time + truck tollway bonus

$$= \frac{4.14\ miles\ x\ \frac{\$0.375}{mile}\ x\ 0.568\ x\ \frac{60\ minutes}{hr}}{\frac{\$30.478}{hr}\ x\ 0.568} + \left[\left(\frac{4.14\ \text{miles}}{31.93\ \text{miles}}\right) \text{x}\ (-10\ \text{minutes})\right]$$

= 3.056 minutes – 1.297 minutes

= 1.759 minutes

In the above example, note that when the maximum tollway bonus for trucks is nine minutes (pro-rated over the length of the tollway), the time penalty on the truck branch is greater than the time penalty on the auto branch (1.889 minutes versus 1.832 minutes). This results in the auto branch path being more attractive to autos. However, when the pro-rated tollway bonus for trucks is increased to 10 minutes, the time penalty on the truck branch is now less than the time penalty on the auto branch, thereby making the truck branch path more attractive to autos (recall: autos can travel on the truck branch). This phenomenon occurs throughout the tolled portion of the corridor when the pro-rated truck bonus is allowed to be 10 minutes, not just for the example segment shown here. A review of traffic assignments confirms this, as no autos are assigned to any of the auto toll branches when the pro-rated truck tollway bonus is 10 minutes.

This unintended consequence is remedied by performing two separate traffic assignments and reporting a composite of the results. The two assignment runs are identical except in the following regard: one run uses a maximum pro-rated tollway bonus for trucks equal to nine minutes and the other run uses a maximum pro-rated bonus for trucks equal to 10 minutes. The resulting assigned volumes for the three passenger car classes (drive-alone, 2-person carpool, and 3+person carpool) are taken from the nine-minute pro-rated bonus for trucks assignment, while the three heavy-duty truck classes (light, medium, and heavy) are taken from the 10-minute pro-rated bonus assignment. This composite volume procedure allows trucks to receive the full intended bonus (up to 10 minutes instead of up to nine minutes) without compromising the assignment of auto volumes.

A.4 Final Toll Rate Specification

The High Desert Corridor toll rates shown in Table A-1 include both proposed initial and final rates. This section explains the basis for the adjustments leading to the final rates. All supporting model runs discussed in this section use the adopted turn penalty-based coding procedure (discussed in Section A.3 Tolling Procedure within the SCAG Model Environment).

The overall process of migrating from the proposed initial to the proposed final toll rates on the High Desert Corridor, as listed in Table A-1, is summarized as follows:

1. Because of the difficulties encountered in the testing leading up to the adopted coding procedures, sensitivity testing of different toll rates began at the outset of using these final procedures. Toll rates of $0.10, $0.15, and $0.20 per mile for autos (with two-and-a-half times those rates for heavy trucks) were initially tested using the 2040 planning horizon year.
2. Analysis of initial results for these runs indicated that the coding approach was working properly. More detailed analysis, specifically looking at shortest path routing for selected origin-destination pairs served by the corridor, revealed that some trips that would be expected to use the entire corridor were, in fact, only using a portion of the corridor in order to gain a marginal travel time savings (even with the toll accounted for). This is not logical with user preferences regarding travel time reliability and non-monetary factors such as comfort and safety inherent to a toll facility relative to freeways. Therefore, one additional scenario was created in which the travel time bonus concept (discussed in the previous section) was introduced. This new model run is based on the $0.15 per mile toll rate model run, adding the bonus to it.
3. The $0.15 per mile average toll rate for autos ($0.375 per mile for heavy trucks) is chosen among the different tolling increment options because it provides higher toll revenue while also achieving desirable levels of service on the toll facility. Both the $0.10 and $0.20 per mile toll strategies yield approximately the same toll revenue, as doubling the toll results in roughly halving the volume forecast on the toll facility. The chosen $0.15 per mile auto and $0.375 per mile heavy truck rates are also still consistent with the range of current toll rates in Southern California. (Arguably, the rates are on the low side of the spectrum, but this corridor is also located in a relatively more rural area where congestion, which can support higher toll rates, isn't as impactful.) The tollway bonus of five minutes for autos and 10 minutes for heavy trucks, both pro-rated over the distance traveled on the toll facility, is adopted concurrent with the $0.15/$0.375 per mile auto/heavy truck toll rates.

The steps in the above process are discussed in greater detail below.

Table A-3 illustrates forecast traffic volumes at varying toll rates for six network roadways crossing the same Los Angeles/San Bernardino County screenline location as reported in Chapter 3 (refer to Figure 3-18 for illustration of screenline location). The no-build and build blue alignment alternatives reported in Table 3-6 are repeated in Table A-3, for reference. The following key points are evident, in reviewing Table A-3:

- With increasing toll rates, volumes on the High Desert Corridor decrease. This is logical, as the toll by itself serves as a detriment to using the facility, all other things equal. Under the build blue alignment alternative without tolls, two-way daily volumes on the High Desert Corridor are forecast to be 113,700 vehicles per day (vpd). The introduction of the $0.10 per mile toll for autos (and corresponding $0.25 per mile for trucks) lowers the daily volume forecast to 76,900 vehicles per day. Doubling that toll rate cuts the forecast nearly in half, to 39,000 vehicles per day. In both

cases, volume decreases in the AM and PM peak periods combined account for about 43 percent of the daily decrease.

- With increasing toll, total screenline volumes decrease, but only slightly. This is also reasonable, as the screenline captures nearly all east–west travel in the study area. Introduction of the most stringent toll rate tested—$0.20 per mile for autos and $0.50 per mile for heavy trucks—results in about a 9,300 vehicles per day (five percent) decrease in screenline volume, compared to the build blue alignment alternative without toll. The redistribution of traffic volume from High Desert Corridor to the other routes shown, as a result of the toll, is greatest on adjacent facilities and dissipates the further away from the High Desert Corridor.
- Comparing the two $0.15 per mile auto toll ($0.375 per mile truck toll)—with and without the tollway bonus—reveals that the bonus attracts traffic volume to the proposed High Desert Corridor without much change (less than one percent) in total east–west flow across the screenline. This is in line with expectations, as the bonus is intended to attract motorists who have only a marginally shorter travel time (as reported by the model) utilizing otherwise attractive alternative routes, such as those captured by the screenline. The bonus is not intended to attract new users to the study area. The very slight increase in screenline total volume reported with the bonus is likely due to trips shifting from routes other than those represented by the screenline and further away from the High Desert facility, such as State Route 58 to the north and freeway routes south of the San Gabriel Mountains.

A detailing of daily volumes along the entire length of the High Desert Corridor for these same model runs is presented in Table A-4, and the change in volume relative to the no toll strategy is presented in Table A-5. Table A-4 exhibits a characteristic similar to that of Table A-3; that is, volumes on the corridor decrease with increasing tolls. Both Table A-4 and Table A-5 confirm that this change in volume in response to the tolls introduced occurs throughout the corridor, not just at the screenline. In fact, volume changes are greatest in the middle of the High Desert Corridor, and these changes dissipate closer to the corridor termini. This is to be expected, given that no toll is proposed at either end of the High Desert Corridor under any of the toll strategies examined.

An inspection of the toll sensitivity on the AM peak period was also performed to confirm that the volume changes in response to variations in toll were primarily due to the toll and not initially due to congestion relief. Table A-6 affirms that for the no-toll scenario, the AM peak period volume-to-capacity ratios along the entire corridor are 0.85 or less for all but one segment (eastbound, east of Highway 395, which has a ratio of 0.90). The drop in AM peak period volume-to-capacity ratios for the different tolling strategies tested, coupled with the relatively low volume-to-capacity ratios for the no-toll alternative, suggest that the tolls are chiefly responsible for the dissipating congestion on the corridor.

The decision to use $0.15 per mile for autos/$0.375 per mile for heavy trucks is based on the estimated toll revenue generated and operating performance of the facility. This rate structure provides the optimum toll revenue among the toll strategies tested, as evidenced in Table A-7. The $0.10 and $0.20 per mile toll strategies yield roughly the same toll revenue, as doubling the toll rate results in reducing the demand by approximately one-half. As reported previously, these are not the final forecasts revenues as reported elsewhere in this study; they are intended for comparison among the toll strategies only.

Table A-3. 2040 High Desert Corridor Screenline Volumes, Toll Sensitivity Tests

LOCATION	AM PEAK		MID PEAK		PM PEAK		NIGHT		DAILY	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
NO BUILD ALTERNATIVE										
East Avenue G	2,962	548	2,571	1,633	3,403	5,751	1,112	864	10,048	8,796
El Mirage Road	5,050	1,067	5,573	4,602	4,478	8,684	1,803	1,794	16,903	16,148
HDC—SR 138/SR 18	—	—	—	—	—	—	—	—	—	—
233rd Street East/SR 18	1,929	1,388	3,369	2,772	3,290	2,858	2,117	2,302	10,706	9,320
State Highway 138	5,235	2,072	7,489	6,518	4,723	7,507	5,082	6,473	22,529	22,571
Angeles Crest Highway	2,763	305	3,051	1,748	3,202	4,718	316	393	9,331	7,164
Total	***17,939***	***5,380***	***22,053***	***17,273***	***19,096***	***29,518***	***10,430***	***11,826***	***69,517***	***63,999***
SR 138/SR 18 NEW FREEWAY/EXPRESSWAY BUILD ALTERNATIVE—BLUE ALIGNMENT										
East Avenue G	607	88	395	178	1,200	1,357	168	95	2,371	1,718
El Mirage Road	469	26	163	53	214	1,569	70	16	916	1,664
HDC—SR 138/SR 18	15,628	5,293	18,951	15,945	16,904	24,436	7,877	8,715	59,360	54,388
233rd Street East/SR 18	595	243	381	593	626	1,425	258	317	1,860	2,579
State Highway 138	3,667	1,820	8,265	4,660	4,168	6,503	4,656	5,367	18,757	18,349
Angeles Crest Highway	1,670	291	1,260	604	1,742	2,877	243	350	4,914	4,122
Total	***22,636***	***7,761***	***27,415***	***22,033***	***24,854***	***38,167***	***13,272***	***14,860***	***88,178***	***82,820***
SR 138/SR 18 NEW FREEWAY WITH TOLLS ALTERNATIVE (Toll Rates: 10 cents per mile autos, 25 cents per mile trucks)										
East Avenue G	1,039	318	1,030	682	1,757	2,437	397	378	4,223	3,815
El Mirage Road	2,105	667	2,001	1,324	1,814	3,991	1,030	688	6,950	6,670
HDC—SR 138/SR 18	11,071	3,410	11,786	10,363	11,896	19,654	3,813	4,901	38,566	38,328
233rd Street East/SR 18	1,314	744	1,523	1,605	1,435	2,063	1,336	1,566	5,608	5,978
State Highway 138	4,754	2,141	8,076	6,441	5,263	6,544	5,344	5,978	23,437	21,104
Angeles Crest Highway	1,918	285	1,970	746	2,172	3,082	263	354	6,323	4,467
Total	***22,201***	***7,565***	***26,386***	***21,161***	***24,337***	***37,771***	***12,183***	***13,865***	***85,107***	***80,362***
SR 138/SR 18 NEW FREEWAY WITH TOLLS ALTERNATIVE (Toll: 15 cents per mile autos, 37.5 cents per mile trucks, up to 5 min. bonus for HDC toll users)										
East Avenue G	1,171	337	1,078	839	1,829	2,591	673	658	4,751	4,425
El Mirage Road	2,307	809	2,068	1,693	2,058	4,090	1,072	749	7,505	7,341
HDC—SR 138/SR 18	10,537	3,077	11,418	9,399	11,362	19,220	3,099	4,141	36,416	35,837
233rd Street East/SR 18	1,382	824	1,615	1,734	1,546	2,074	1,621	1,859	6,164	6,491
State Highway 138	4,781	2,212	8,104	6,667	5,254	6,517	5,358	6,048	23,497	21,444
Angeles Crest Highway	1,976	287	2,067	797	2,214	2,924	284	373	6,541	4,381
Total	***22,154***	***7,546***	***26,350***	***21,129***	***24,263***	***37,416***	***12,107***	***13,828***	***84,874***	***79,919***
SR 138/SR 18 NEW FREEWAY WITH TOLLS ALTERNATIVE (Toll Rates: 15 cents per mile autos, 37.5 cents per mile trucks)										
East Avenue G	1,623	469	1,665	1,294	2,199	3,072	893	922	6,380	5,757
El Mirage Road	3,261	1,047	3,776	3,260	2,796	4,661	1,641	1,681	11,474	10,649
HDC—SR 138/SR 18	8,345	2,295	8,331	6,133	9,591	17,207	1,543	1,533	27,810	27,168
233rd Street East/SR 18	1,565	1,043	2,055	2,216	1,816	2,257	2,224	2,623	7,660	8,139
State Highway 138	4,921	2,312	8,029	7,068	5,308	6,866	5,423	6,581	23,681	22,827
Angeles Crest Highway	2,187	304	2,297	964	2,412	3,189	284	374	7,180	4,831
Total	***21,902***	***7,470***	***26,153***	***20,935***	***24,122***	***37,252***	***12,008***	***13,714***	***84,185***	***79,371***
SR 138/SR 18 NEW FREEWAY WITH TOLLS ALTERNATIVE (Toll Rates: 20 cents per mile autos, 50 cents per mile trucks)										
East Avenue G	2,012	547	2,008	1,570	2,673	3,703	925	936	7,618	6,756
El Mirage Road	3,740	1,469	4,888	4,291	3,605	5,524	2,571	2,663	14,804	13,947
HDC—SR 138/SR 18	6,786	1,232	5,401	3,399	7,218	14,530	223	210	19,628	19,371
233rd Street East/SR 18	1,737	1,481	2,939	3,243	2,298	2,482	2,548	2,905	9,522	10,111
State Highway 138	4,957	2,311	8,006	6,923	5,312	6,828	5,436	6,598	23,711	22,660
Angeles Crest Highway	2,468	322	2,646	1,325	2,661	3,503	284	374	8,059	5,524
Total	***21,700***	***7,362***	***25,888***	***20,751***	***23,767***	***36,570***	***11,987***	***13,686***	***83,342***	***78,369***

Note: The forecast data reported for the tolling strategies are interim model results meant to facilitate a useful comparison among these alternatives; they are not final results. Differences between these interim and the final results, though not materially significant, are due in part to slightly more relaxed closure criteria in the traffic assignment step. This was done in an effort to reduce the time needed for the model to process. Also, the tollway bonus model run reported here does use the same bonus for autos and heavy trucks. In the final implementation, the truck bonus is twice the auto bonus as reported elsewhere.

Table A-4. 2040 High Desert Corridor Average Weekday Volumes, Toll Sensitivity Tests

Proposed High Desert Corridor			Link Daily Volume for Varying Auto Tolls per Mile (Heavy Truck Tolls are 2.5 Times the Auto Toll Rate Shown)														
			Eastbound					Westbound					Two-Way				
Between	And	Segment Length (Miles)	$0.00	$0.10	$0.15 w/ bonus	$0.15	$0.20	$0.00	$0.10	$0.15 w/ bonus	$0.15	$0.20	$0.00	$0.10	$0.15 w/ bonus	$0.15	$0.20
SR 14	10th St E (west ramps)	1.00	69,331	63,583	62,728	60,442	57,765	63,185	58,798	57,790	55,851	53,236	132,516	122,381	120,518	116,293	111,001
10th St E (west ramps)	10th St E (east ramps)	0.21	62,778	56,713	55,694	53,250	50,450	60,284	55,686	54,844	52,789	50,014	123,062	112,399	110,538	106,039	100,464
10th St E (east ramps)	20th St E (west ramps)	0.85	73,192	66,778	65,745	62,792	59,649	68,978	63,920	62,955	60,415	57,392	142,170	130,698	128,700	123,207	117,041
20th St E (west ramps)	20th St E (east ramps)	0.20	62,132	55,203	54,220	51,092	47,672	55,328	50,141	48,898	46,157	43,049	117,460	105,344	103,118	97,249	90,721
20th St E (east ramps)	50th St E (west ramps)	2.82	64,014	56,821	55,772	52,526	48,989	57,024	51,463	50,209	47,371	44,196	121,038	108,284	105,981	99,897	93,185
50th St E (west ramps)	50th St E (east ramps)	0.27	54,359	46,018	44,984	41,521	37,722	48,073	41,169	39,835	36,708	33,298	102,432	87,187	84,819	78,229	71,020
50th St E (east ramps)	90th St E (west ramps)	3.85	62,885	52,604	51,356	46,978	42,627	56,359	47,282	45,718	41,669	37,664	119,244	99,886	97,074	88,647	80,291
90th St E (west ramps)	90th St E (east ramps)	0.25	57,922	44,953	42,519	34,994	28,729	51,398	40,989	38,997	33,066	25,719	109,320	85,942	81,516	68,060	54,448
90th St E (east ramps)	Palmdale Blvd (west ramps)	4.34	60,757	45,359	42,662	35,000	28,729	54,267	41,371	39,091	33,067	25,719	115,024	86,730	81,753	68,067	54,448
Palmdale Blvd (west ramps)	Palmdale Blvd (east ramps)	0.29	52,867	34,630	32,760	26,222	17,966	45,800	33,254	31,014	23,899	15,377	98,667	67,884	63,774	50,121	33,343
Palmdale Blvd (east ramps)	170th St E (west ramps)	3.26	54,825	36,847	35,138	27,894	18,333	50,355	34,474	32,719	24,578	15,551	105,180	71,321	67,857	52,472	33,884
170th St E (west ramps)	170th St E (east ramps)	0.36	51,681	33,906	30,998	24,022	15,068	48,092	34,104	31,325	22,849	14,310	99,773	68,010	62,323	46,871	29,378
170th St E (east ramps)	Largo Vista (west ramps)	3.64	54,861	36,081	33,069	24,288	15,184	51,853	37,257	34,520	24,907	15,487	106,714	73,338	67,589	49,195	30,671
Largo Vista (west ramps)	Largo Vista (east ramps)	0.45	54,162	35,571	32,544	24,040	15,089	51,230	36,964	34,221	24,882	15,487	105,392	72,535	66,765	48,922	30,576
Largo Vista (east ramps)	240th St E (west ramps)	2.54	55,282	36,044	33,020	24,334	15,284	52,771	37,646	34,861	25,286	16,209	108,053	73,690	67,881	49,620	31,493
240th St E (west ramps)	240th St E (east ramps)	0.54	54,876	31,977	28,950	21,290	13,985	51,777	34,903	32,065	23,090	15,173	106,653	66,880	61,015	44,380	29,158
240th St E (east ramps)	Oasis Rd (west ramps)	3.11	57,855	38,566	36,416	27,810	19,627	54,993	38,329	35,837	27,169	19,371	112,848	76,895	72,253	54,979	38,998
Oasis Rd (west ramps)	Oasis Rd (east ramps)	0.36	56,132	37,008	34,909	26,383	18,257	53,314	36,838	34,375	25,730	18,001	109,446	73,846	69,284	52,113	36,258
Oasis Rd (east ramps)	Sheep Creek Rd (west ramps)	3.28	56,132	37,008	34,909	26,383	18,257	53,553	36,979	34,707	25,730	18,001	109,685	73,987	69,616	52,113	36,258
Sheep Creek Rd (west ramps)	Sheep Creek Rd (east ramps)	0.30	49,692	30,419	28,388	20,950	14,138	49,294	29,995	27,336	19,903	13,218	98,986	60,414	55,724	40,853	27,356
Sheep Creek Rd (east ramps)	Caughlin Rd (west ramps)	4.81	53,436	32,302	29,839	21,248	14,157	52,776	31,546	28,661	20,162	13,295	106,212	63,848	58,500	41,410	27,452
Caughlin Rd (west ramps)	Caughlin Rd (east ramps)	0.22	46,701	28,672	26,952	19,094	12,582	45,453	27,046	24,798	16,132	9,761	92,154	55,718	51,750	35,226	22,343
Caughlin Rd (east ramps)	Koala Rd (west ramps)	1.83	47,218	28,675	26,952	19,096	12,582	46,182	27,201	25,016	16,150	9,864	93,400	55,876	51,968	35,246	22,446
Koala Rd (west ramps)	Koala Rd (east ramps)	0.23	45,014	28,675	26,952	19,096	12,582	43,645	27,201	25,016	16,150	9,864	88,659	55,876	51,968	35,246	22,446
Koala Rd (east ramps)	Hwy 395 (west ramps)	2.37	53,701	34,497	32,190	23,381	16,007	51,979	32,713	30,083	21,337	13,232	105,680	67,210	62,273	44,718	29,239
Hwy 395 (west ramps)	Hwy 395 (east ramps)	0.21	42,075	33,391	31,605	23,374	16,007	40,005	31,343	29,590	21,325	13,232	82,080	64,734	61,195	44,699	29,239
Hwy 395 (east ramps)	Phantom St (west ramps)	1.79	61,438	55,201	54,075	50,103	46,966	60,155	54,503	53,685	50,259	47,913	121,593	109,704	107,760	100,362	94,879
Phantom St (west ramps)	Phantom St (east ramps)	0.15	46,199	40,156	39,122	35,654	32,913	43,441	38,759	38,011	35,048	32,988	89,640	78,915	77,133	70,702	65,901
Phantom St (east ramps)	El Evado Rd (west ramps)	1.30	48,078	42,299	41,346	37,970	35,335	44,998	40,342	39,602	36,669	34,687	93,076	82,641	80,948	74,639	70,022
El Evado Rd (west ramps)	El Evado Rd (east ramps)	0.20	37,121	32,855	32,221	29,557	27,366	35,747	32,433	31,919	29,747	28,171	72,868	65,288	64,140	59,304	55,537
El Evado Rd (east ramps)	Unnamed (west ramps)	2.50	41,973	37,733	37,120	34,619	32,641	40,508	37,198	36,679	34,477	32,859	82,481	74,931	73,799	69,096	65,500
Unnamed (west ramps)	Unnamed (east ramps)	0.13	35,045	30,996	30,370	28,166	26,407	34,730	31,562	31,042	29,084	27,563	69,775	62,558	61,412	57,250	53,970
Unnamed (east ramps)	I-15 (west ramps)	1.07	35,045	30,996	30,370	28,166	26,407	34,730	31,562	31,042	29,084	27,563	69,775	62,558	61,412	57,250	53,970

Note: The note under Table A-3 applies here as well. The green shading denotes the tolled portion of the facility.

Table A-5. 2040 High Desert Corridor Average Weekday Volume Differences Relative to No Toll, Toll Sensitivity Tests

Proposed High Desert Corridor			Link Average Weekday Daily Volume Changes Relative to No Toll for Varying Auto Tolls per Mile (Heavy Truck Tolls are 2.5 Times the Auto Toll Rate Shown)														
			Eastbound					Westbound					Two-Way				
Between	And	Segment Length (Miles)	$0.00	$0.10	$0.15 w/ bonus	$0.15	$0.20	$0.00	$0.10	$0.15 w/ bonus	$0.15	$0.20	$0.00	$0.10	$0.15 w/ bonus	$0.15	$0.20
SR 14	10th St E (west ramps)	1.00	-	(5,748)	(6,603)	(8,889)	(11,566)	-	(10,533)	(11,541)	(13,480)	(16,095)	-	(16,281)	(18,144)	(22,369)	(27,661)
10th St E (west ramps)	10th St E (east ramps)	0.21	-	(6,065)	(7,084)	(9,528)	(12,328)	-	(7,092)	(7,934)	(9,989)	(12,764)	-	(13,157)	(15,018)	(19,517)	(25,092)
10th St E (east ramps)	20th St E (west ramps)	0.85	-	(6,414)	(7,447)	(10,400)	(13,543)	-	(9,272)	(10,237)	(12,777)	(15,800)	-	(15,686)	(17,684)	(23,177)	(29,343)
20th St E (west ramps)	20th St E (east ramps)	0.20	-	(6,929)	(7,912)	(11,040)	(14,460)	-	(11,991)	(13,234)	(15,975)	(19,083)	-	(18,920)	(21,146)	(27,015)	(33,543)
20th St E (east ramps)	50th St E (west ramps)	2.82	-	(7,193)	(8,242)	(11,488)	(15,025)	-	(12,551)	(13,805)	(16,643)	(19,818)	-	(19,744)	(22,047)	(28,131)	(34,843)
50th St E (west ramps)	50th St E (east ramps)	0.27	-	(8,341)	(9,375)	(12,838)	(16,637)	-	(13,190)	(14,524)	(17,651)	(21,061)	-	(21,531)	(23,899)	(30,489)	(37,698)
50th St E (east ramps)	90th St E (west ramps)	3.85	-	(10,281)	(11,529)	(15,907)	(20,258)	-	(15,603)	(17,167)	(21,216)	(25,221)	-	(25,884)	(28,696)	(37,123)	(45,479)
90th St E (west ramps)	90th St E (east ramps)	0.25	-	(12,969)	(15,403)	(22,928)	(29,193)	-	(16,933)	(18,925)	(24,856)	(32,203)	-	(29,902)	(34,328)	(47,784)	(61,396)
90th St E (east ramps)	Palmdale Blvd (west ramps)	4.34	-	(15,398)	(18,095)	(25,757)	(32,028)	-	(19,386)	(21,666)	(27,690)	(35,038)	-	(34,784)	(39,761)	(53,447)	(67,066)
Palmdale Blvd (west ramps)	Palmdale Blvd (east ramps)	0.29	-	(18,237)	(20,107)	(26,645)	(34,901)	-	(19,613)	(21,853)	(28,968)	(37,490)	-	(37,850)	(41,960)	(55,613)	(72,391)
Palmdale Blvd (east ramps)	170th St E (west ramps)	3.26	-	(17,978)	(19,687)	(26,931)	(36,492)	-	(20,351)	(22,106)	(30,247)	(39,274)	-	(38,329)	(41,793)	(57,178)	(75,766)
170th St E (west ramps)	170th St E (east ramps)	0.36	-	(17,775)	(20,683)	(27,659)	(36,613)	-	(17,577)	(20,356)	(28,832)	(37,371)	-	(35,352)	(41,039)	(56,491)	(73,984)
170th St E (east ramps)	Largo Vista (west ramps)	3.64	-	(18,780)	(21,792)	(30,573)	(39,677)	-	(17,604)	(20,341)	(29,954)	(39,374)	-	(36,384)	(42,133)	(60,527)	(79,051)
Largo Vista (west ramps)	Largo Vista (east ramps)	0.45	-	(18,591)	(21,618)	(30,122)	(39,073)	-	(17,198)	(19,941)	(29,280)	(38,675)	-	(35,789)	(41,559)	(59,402)	(77,748)
Largo Vista (east ramps)	240th St E (west ramps)	2.54	-	(19,238)	(22,262)	(30,948)	(39,998)	-	(17,636)	(20,421)	(29,996)	(39,073)	-	(36,874)	(42,683)	(60,944)	(79,071)
240th St E (west ramps)	240th St E (east ramps)	0.54	-	(22,899)	(25,926)	(33,586)	(40,891)	-	(19,973)	(22,811)	(31,786)	(39,703)	-	(42,872)	(48,737)	(65,372)	(80,594)
240th St E (east ramps)	Oasis Rd (west ramps)	3.11	-	(19,289)	(21,439)	(30,045)	(38,228)	-	(19,526)	(22,018)	(30,686)	(38,484)	-	(38,815)	(43,457)	(60,731)	(76,712)
Oasis Rd (west ramps)	Oasis Rd (east ramps)	0.36	-	(19,124)	(21,223)	(29,749)	(37,875)	-	(19,294)	(21,757)	(30,402)	(38,131)	-	(38,418)	(42,980)	(60,151)	(76,006)
Oasis Rd (east ramps)	Sheep Creek Rd (west ramps)	3.28	-	(19,124)	(21,223)	(29,749)	(37,875)	-	(19,153)	(21,425)	(30,402)	(38,131)	-	(38,277)	(42,648)	(60,151)	(76,006)
Sheep Creek Rd (west ramps)	Sheep Creek Rd (east ramps)	0.30	-	(19,273)	(21,304)	(28,742)	(35,554)	-	(19,697)	(22,356)	(29,789)	(36,474)	-	(38,970)	(43,660)	(58,531)	(72,028)
Sheep Creek Rd (east ramps)	Caughlin Rd (west ramps)	4.81	-	(21,134)	(23,597)	(32,188)	(39,279)	-	(21,890)	(24,775)	(33,274)	(40,141)	-	(43,024)	(48,372)	(65,462)	(79,420)
Caughlin Rd (west ramps)	Caughlin Rd (east ramps)	0.22	-	(18,029)	(19,749)	(27,607)	(34,119)	-	(19,655)	(21,903)	(30,569)	(36,940)	-	(37,684)	(41,652)	(58,176)	(71,059)
Caughlin Rd (east ramps)	Koala Rd (west ramps)	1.83	-	(18,543)	(20,266)	(28,122)	(34,636)	-	(20,017)	(22,202)	(31,068)	(37,354)	-	(38,560)	(42,468)	(59,190)	(71,990)
Koala Rd (west ramps)	Koala Rd (east ramps)	0.23	-	(16,339)	(18,062)	(25,918)	(32,432)	-	(17,813)	(19,998)	(28,864)	(35,150)	-	(34,152)	(38,060)	(54,782)	(67,582)
Koala Rd (east ramps)	Hwy 395 (west ramps)	2.37	-	(19,204)	(21,511)	(30,320)	(37,694)	-	(20,988)	(23,618)	(32,364)	(40,469)	-	(40,192)	(45,129)	(62,684)	(78,163)
Hwy 395 (west ramps)	Hwy 395 (east ramps)	0.21	-	(8,684)	(10,470)	(18,701)	(26,068)	-	(10,732)	(12,485)	(20,750)	(28,843)	-	(19,416)	(22,955)	(39,451)	(54,911)
Hwy 395 (east ramps)	Phantom St (west ramps)	1.79	-	(6,237)	(7,363)	(11,335)	(14,472)	-	(6,935)	(7,753)	(11,179)	(13,525)	-	(13,172)	(15,116)	(22,514)	(27,997)
Phantom St (west ramps)	Phantom St (east ramps)	0.15	-	(6,043)	(7,077)	(10,545)	(13,286)	-	(7,440)	(8,188)	(11,151)	(13,211)	-	(13,483)	(15,265)	(21,696)	(26,497)
Phantom St (east ramps)	El Evado Rd (west ramps)	1.30	-	(5,779)	(6,732)	(10,108)	(12,743)	-	(7,736)	(8,476)	(11,409)	(13,391)	-	(13,515)	(15,208)	(21,517)	(26,134)
El Evado Rd (west ramps)	El Evado Rd (east ramps)	0.20	-	(4,266)	(4,900)	(7,564)	(9,755)	-	(4,688)	(5,202)	(7,374)	(8,950)	-	(8,954)	(10,102)	(14,938)	(18,705)
El Evado Rd (east ramps)	Unnamed (west ramps)	2.50	-	(4,240)	(4,853)	(7,354)	(9,332)	-	(4,775)	(5,294)	(7,496)	(9,114)	-	(9,015)	(10,147)	(14,850)	(18,446)
Unnamed (west ramps)	Unnamed (east ramps)	0.13	-	(4,049)	(4,675)	(6,879)	(8,638)	-	(3,483)	(4,003)	(5,961)	(7,482)	-	(7,532)	(8,678)	(12,840)	(16,120)
Unnamed (east ramps)	I-15 (west ramps)	1.07	-	(4,049)	(4,675)	(6,879)	(8,638)	-	(3,483)	(4,003)	(5,961)	(7,482)	-	(7,532)	(8,678)	(12,840)	(16,120)

Note: The note under Table A-3 applies here as well. The green shading denotes the tolled portion of the facility.

Table A-6. 2040 High Desert Corridor Average Weekday AM Peak Period Volume-to-Capacity Ratios, Toll Sensitivity Tests

Proposed High Desert Corridor		AM Period Volume-to-Capacity Ratio					
		Eastbound			Westbound		
Between	And	$0.00	$0.10	$0.20	$0.00	$0.10	$0.20
SR 14	10th St E (west ramps)	0.60	0.56	0.51	0.47	0.48	0.44
10th St E (west ramps)	10th St E (east ramps)	0.55	0.50	0.44	0.44	0.45	0.40
10th St E (east ramps)	20th St E (west ramps)	0.64	0.59	0.52	0.51	0.51	0.46
20th St E (west ramps)	20th St E (east ramps)	0.57	0.51	0.45	0.40	0.36	0.31
20th St E (east ramps)	50th St E (west ramps)	0.59	0.53	0.46	0.41	0.37	0.32
50th St E (west ramps)	50th St E (east ramps)	0.71	0.63	0.53	0.42	0.36	0.29
50th St E (east ramps)	90th St E (west ramps)	0.80	0.70	0.59	0.50	0.43	0.35
90th St E (west ramps)	90th St E (east ramps)	0.76	0.61	0.45	0.41	0.31	0.18
90th St E (east ramps)	Palmdale Blvd (west ramps)	0.80	0.62	0.45	0.42	0.31	0.18
Palmdale Blvd (west ramps)	Palmdale Blvd (east ramps)	0.71	0.50	0.31	0.34	0.20	0.04
Palmdale Blvd (east ramps)	170th St E (west ramps)	0.75	0.54	0.32	0.35	0.21	0.04
170th St E (west ramps)	170th St E (east ramps)	0.74	0.50	0.30	0.29	0.21	0.02
170th St E (east ramps)	Largo Vista (west ramps)	0.79	0.54	0.31	0.30	0.21	0.02
Largo Vista (west ramps)	Largo Vista (east ramps)	0.79	0.53	0.31	0.29	0.21	0.02
Largo Vista (east ramps)	240th St E (west ramps)	0.81	0.56	0.32	0.30	0.21	0.02
240th St E (west ramps)	240th St E (east ramps)	0.79	0.50	0.27	0.30	0.19	0.02
240th St E (east ramps)	Oasis Rd (west ramps)	0.85	0.61	0.37	0.31	0.20	0.07
Oasis Rd (west ramps)	Oasis Rd (east ramps)	0.82	0.59	0.34	0.30	0.19	0.06
Oasis Rd (east ramps)	Sheep Creek Rd (west ramps)	0.82	0.59	0.34	0.30	0.19	0.06
Sheep Creek Rd (west ramps)	Sheep Creek Rd (east ramps)	0.73	0.46	0.24	0.28	0.16	0.05
Sheep Creek Rd (east ramps)	Caughlin Rd (west ramps)	0.77	0.48	0.24	0.32	0.18	0.05
Caughlin Rd (west ramps)	Caughlin Rd (east ramps)	0.68	0.42	0.20	0.27	0.16	0.03
Caughlin Rd (east ramps)	Koala Rd (west ramps)	0.70	0.42	0.20	0.27	0.16	0.03
Koala Rd (west ramps)	Koala Rd (east ramps)	0.66	0.42	0.20	0.25	0.16	0.03
Koala Rd (east ramps)	Hwy 395 (west ramps)	0.80	0.56	0.31	0.34	0.20	0.03
Hwy 395 (west ramps)	Hwy 395 (east ramps)	0.61	0.54	0.31	0.29	0.19	0.03
Hwy 395 (east ramps)	Phantom St (west ramps)	0.90	0.85	0.73	0.41	0.36	0.29
Phantom St (west ramps)	Phantom St (east ramps)	0.66	0.60	0.51	0.32	0.28	0.22
Phantom St (east ramps)	El Evado Rd (west ramps)	0.67	0.61	0.52	0.35	0.31	0.25
El Evado Rd (west ramps)	El Evado Rd (east ramps)	0.49	0.44	0.38	0.31	0.27	0.22
El Evado Rd (east ramps)	Unnamed (west ramps)	0.51	0.46	0.39	0.40	0.36	0.31
Unnamed (west ramps)	Unnamed (east ramps)	0.41	0.37	0.32	0.35	0.32	0.27
Unnamed (east ramps)	I-15 (west ramps)	0.41	0.37	0.32	0.35	0.32	0.27

Note: The note under Table A-3 applies here as well. The green shading denotes the tolled portion of the facility. The $0.15 toll strategy was omitted from this sensitivity test, but spot-checking revealed results that were in-between the $0.10 and $0.20 toll strategies, as expected.

Table A-7. 2040 High Desert Corridor Average Weekday Toll Revenue Generated, Toll Sensitivity Tests

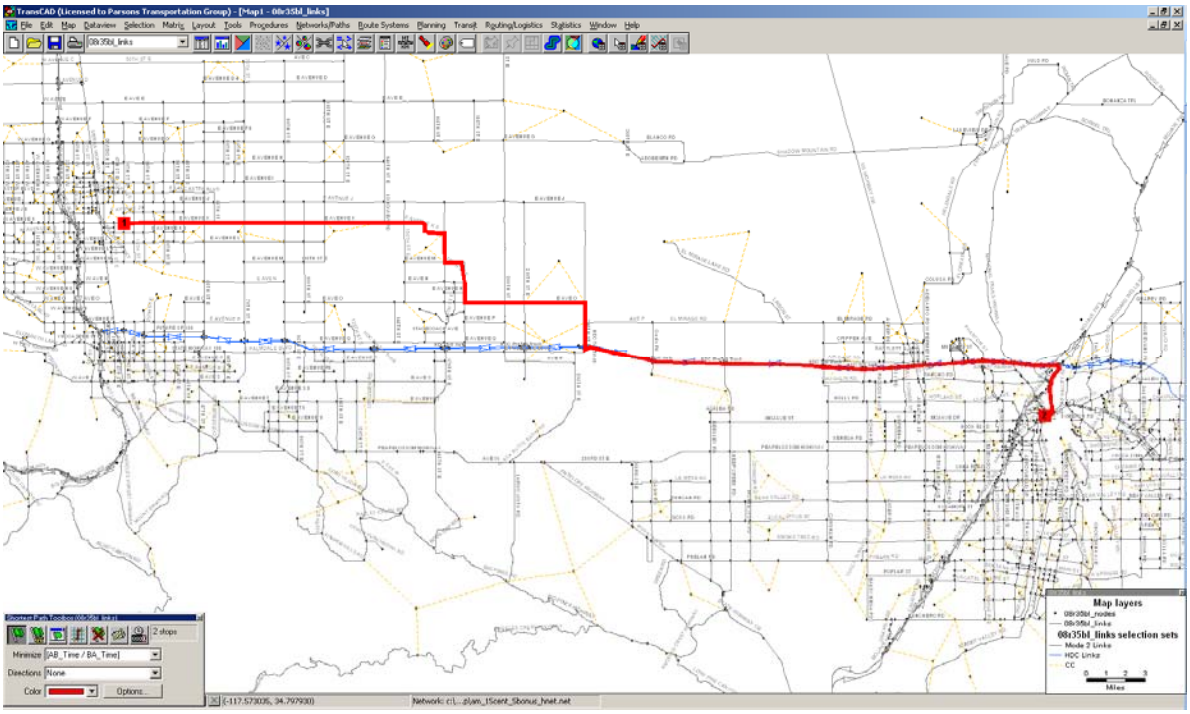
Proposed High Desert Corridor (Tolled Portion)			Average Weekday Toll Revenue Generated for Varying Auto Tolls per Mile (Heavy Truck Tolls are 2.5 Times the Auto Toll Rate				
Between	And	Segment Length (Miles)	$0.00	$0.10	$0.15 w/ bonus	$0.15	$0.20
90th St E (east ramps)	Palmdale Blvd (west ramps)	4.34	-	$ 37,641	$ 53,221	$ 44,312	$ 47,261
Palmdale Blvd (west ramps)	Palmdale Blvd (east ramps)	0.29	-	$ 1,969	$ 2,774	$ 2,180	$ 1,934
Palmdale Blvd (east ramps)	170th St E (west ramps)	3.26	-	$ 23,251	$ 33,182	$ 25,659	$ 22,092
170th St E (west ramps)	170th St E (east ramps)	0.36	-	$ 2,448	$ 3,365	$ 2,531	$ 2,115
170th St E (east ramps)	Largo Vista (west ramps)	3.64	-	$ 26,695	$ 36,904	$ 26,860	$ 22,328
Largo Vista (west ramps)	Largo Vista (east ramps)	0.45	-	$ 3,264	$ 4,507	$ 3,302	$ 2,752
Largo Vista (east ramps)	240th St E (west ramps)	2.54	-	$ 18,717	$ 25,863	$ 18,905	$ 15,998
240th St E (west ramps)	240th St E (east ramps)	0.54	-	$ 3,578	$ 4,896	$ 3,561	$ 3,120
240th St E (east ramps)	Oasis Rd (west ramps)	3.11	-	$ 23,914	$ 33,706	$ 25,648	$ 24,257
Oasis Rd (west ramps)	Oasis Rd (east ramps)	0.36	-	$ 2,658	$ 3,741	$ 2,814	$ 2,611
Oasis Rd (east ramps)	Sheep Creek Rd (west ramps)	3.28	-	$ 24,268	$ 34,251	$ 25,640	$ 23,785
Sheep Creek Rd (west ramps)	Sheep Creek Rd (east ramps)	0.30	-	$ 1,812	$ 2,508	$ 1,838	$ 1,641
Sheep Creek Rd (east ramps)	Caughlin Rd (west ramps)	4.81	-	$ 30,711	$ 42,208	$ 29,877	$ 26,409
Caughlin Rd (west ramps)	Caughlin Rd (east ramps)	0.22	-	$ 1,226	$ 1,708	$ 1,162	$ 983
Caughlin Rd (east ramps)	Koala Rd (west ramps)	1.83	-	$ 10,225	$ 14,265	$ 9,675	$ 8,215
Koala Rd (west ramps)	Koala Rd (east ramps)	0.23	-	$ 1,285	$ 1,793	$ 1,216	$ 1,033
Koala Rd (east ramps)	Hwy 395 (west ramps)	2.37	-	$ 15,929	$ 22,138	$ 15,897	$ 13,859
Total Toll Revenue Generated (Average Weekday)		31.93	-	$ 229,592	$ 321,030	$ 241,079	$ 220,394

Note: The note under Table A-3 applies here as well.

Lastly, incorporating the tollway bonus of up to five minutes for autos and 10 minutes for heavy trucks, both pro-rated by the distance traveled on the toll facility, is viewed as conservative. That is to say, the bonus does have the effect of shifting certain travel from non-tollway facilities to the High Desert Corridor—only where the differences in travel times are marginal and thus motorists would "give-up" the marginal time savings for the comfort, safety, and reliability of the tollway—but not all such travel.

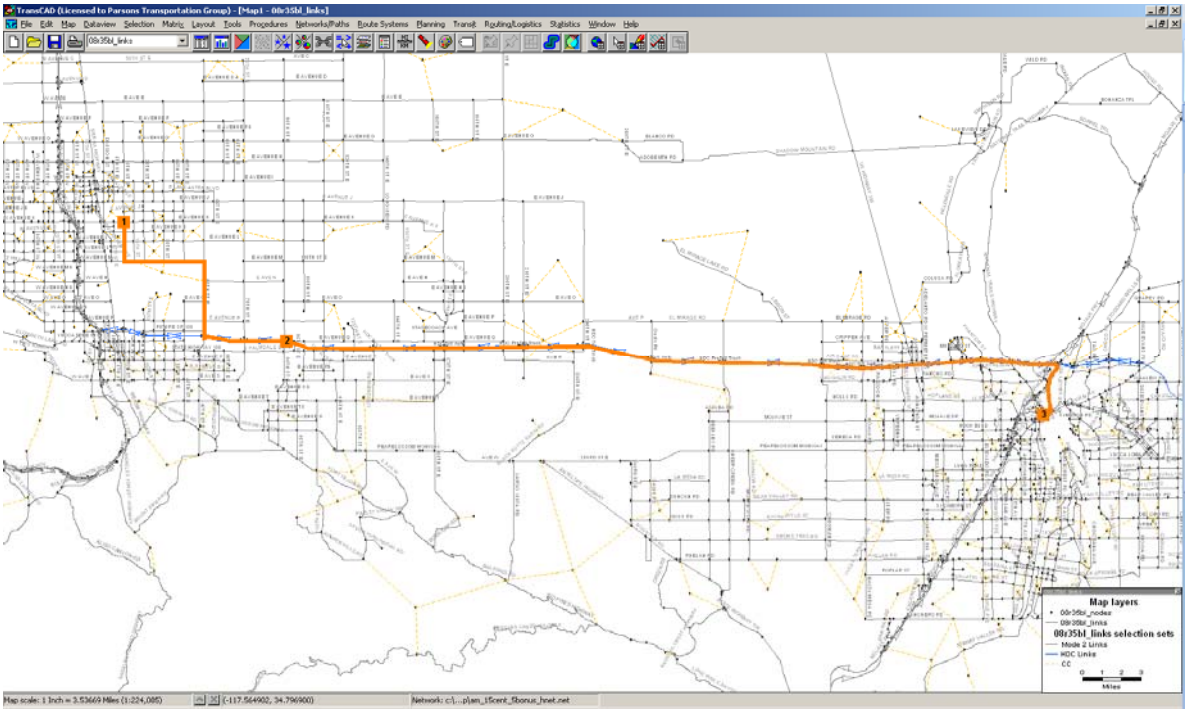
Figure A-3 and Figure A-4 together illustrate one example origin-destination pair between the Palmdale and Victorville areas where the tollway bonus has a rather conservative effect. Figure A-3 shows the shortest path routing for automobile trips between the selected origin and destination, based on the $0.15 per mile toll rate and allowing up to five minutes of tollway bonus. Note that the path "enters" the tollway at 240th Street East, which is approximately at the mid-point of the facility. The peak impedance for this path is 76.1 minutes, which consists of 68.8 minutes of actual travel time, 9.9 minutes of toll (toll converted to time based on value of time), and –2.6 minutes of tollway bonus). Figure A-4 shows a path traversing the entire length of the tollway—and thereby eligible for the maximum five minutes of bonus—for this same origin–destination pair. Note that this path yields a total peak impedance of 76.8 minutes (62.7 minutes of actual travel time, 19.1 minutes of toll, and –5.0 minutes of bonus), which is 0.7-minute longer than the shortest path (Figure A-3), and thereby illustrating that the tollway bonus does not direct all trips to the tollway.

The final results for both the 2020 and 2040 tollway alternatives, using the proposed tolling rate structure of $0.15 per mile with up to five minute tollway bonus for autos and $0.375 per mile and up to ten minute tollway bonus for heavy trucks, are presented in Chapter 3.



The red line illustrates the shortest path between the two locations shown. The total impedance is: 76.1 minutes (68.8 minutes travel time + 9.9 minutes toll - 2.6 minutes bonus). $0.15 per mile toll rate with up to 5 minute tollway bonus in effect.

Figure A-3: Example of Tollway Bonus Effect on Travel Path: Shortest Path, 2040 High Desert Corridor Toll Alternative

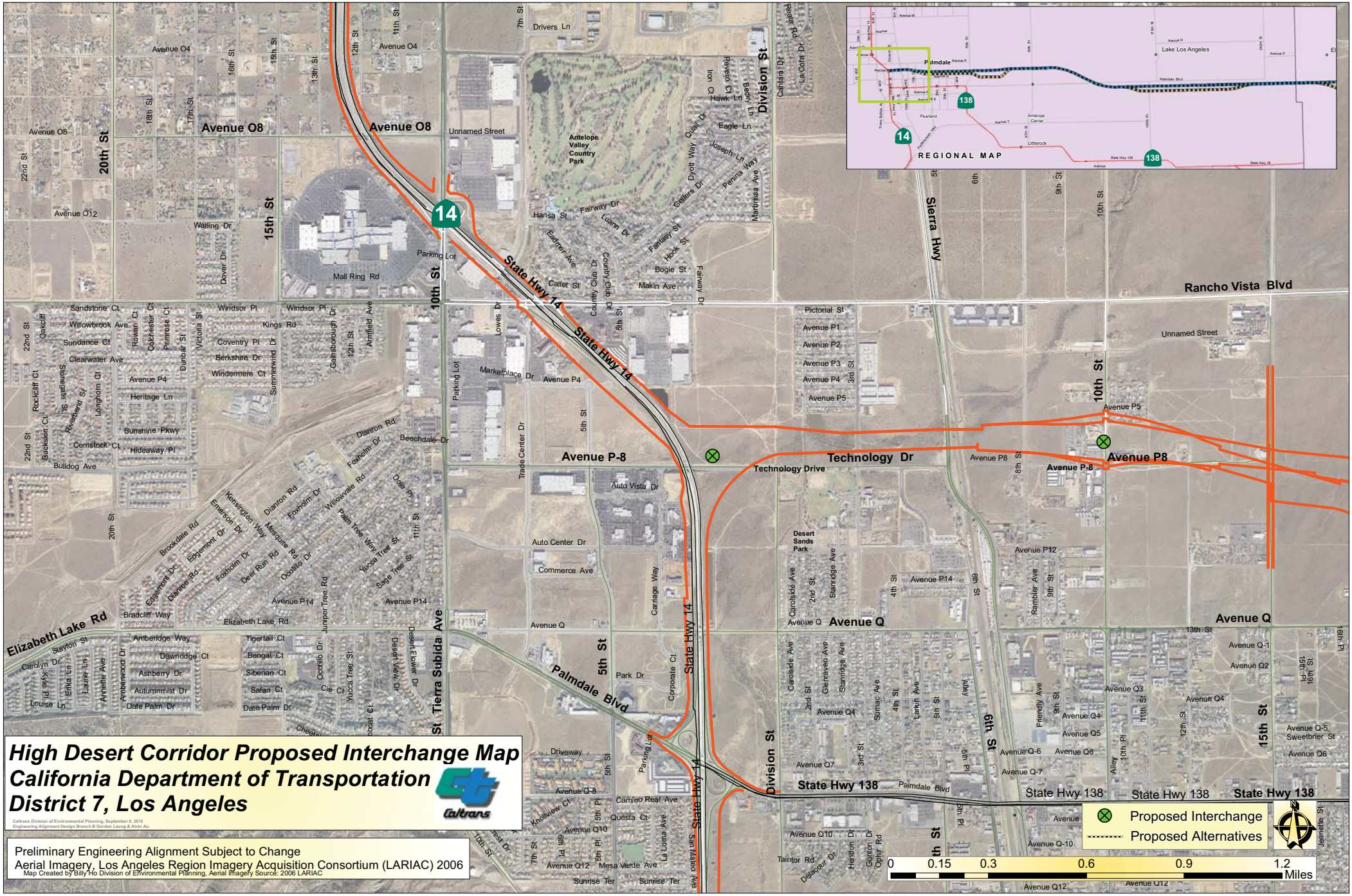


The orange line illustrates the shortest path between the two locations shown subject to the constraint that the path also utilizes the full length of the tollway. The total impedance is: 76.8 minutes (62.7 minutes travel time + 19.1 minutes toll – 5.0 minutes bonus). $0.15 per mile toll rate with up to 5 minute tollway bonus in effect.

Figure A-4: Example of Tollway Bonus Effect on Travel Path: Path Utilizing Entire Tollway, 2040 High Desert Corridor Toll Alternative

Appendix B
AERIAL PHOTOGRAPHS SHOWING THE HIGH DESERT CORRIDOR ALIGNMENT

SR-14, 10th St, & 15th St Interchanges



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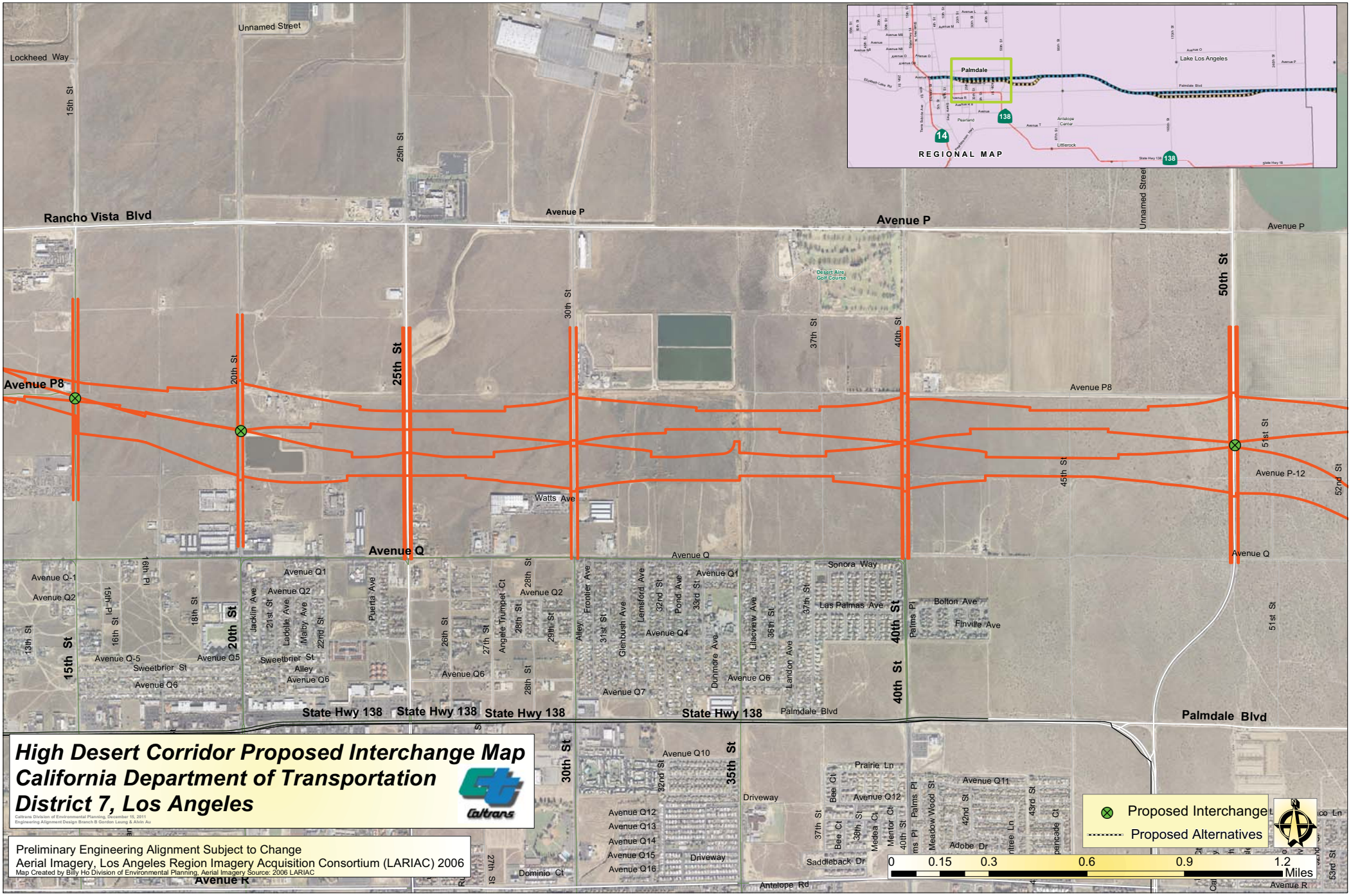
20th, 25th, 30th, 40th, & 50th St Interchanges



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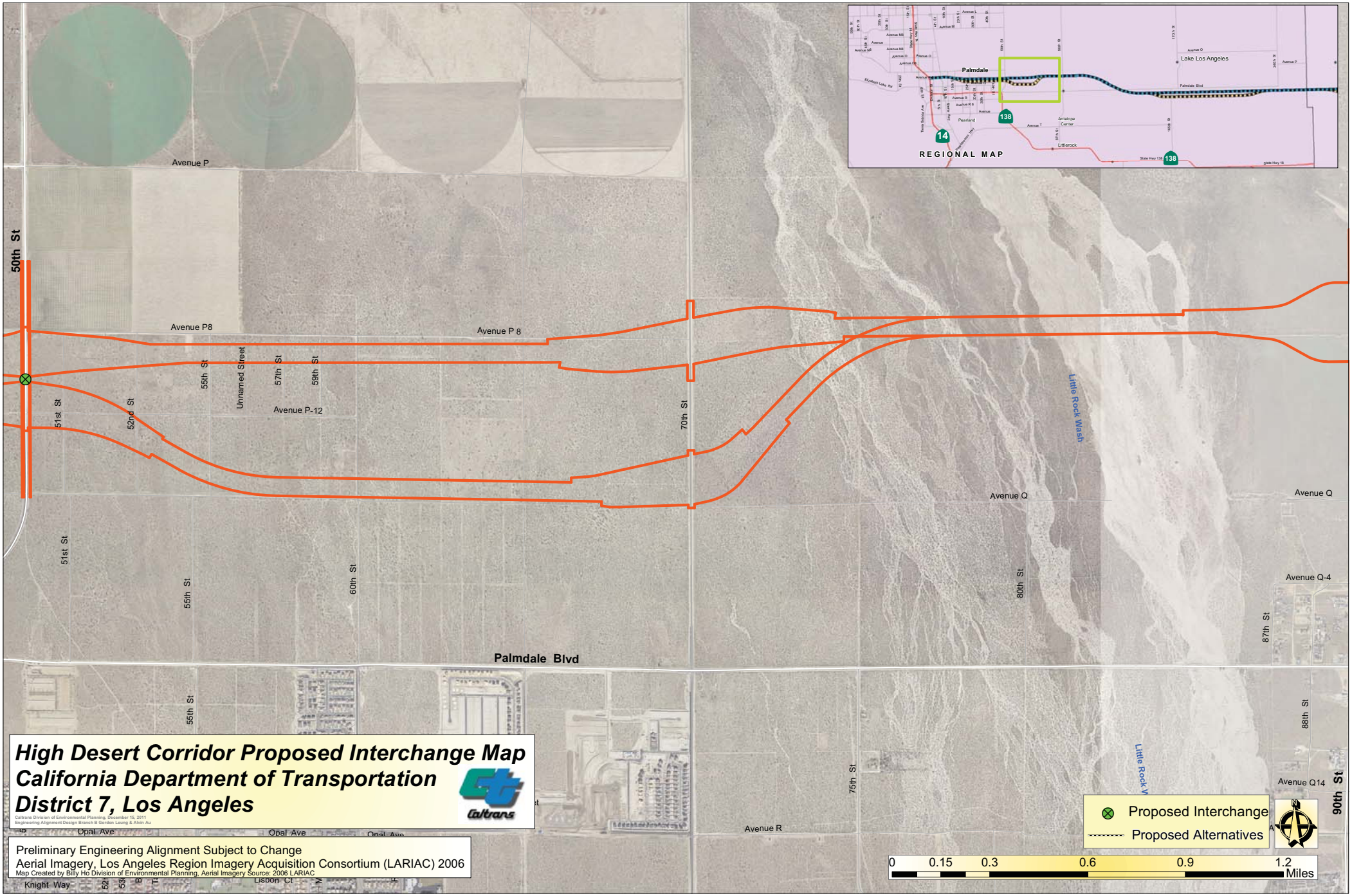
50th & 70th St Interchanges



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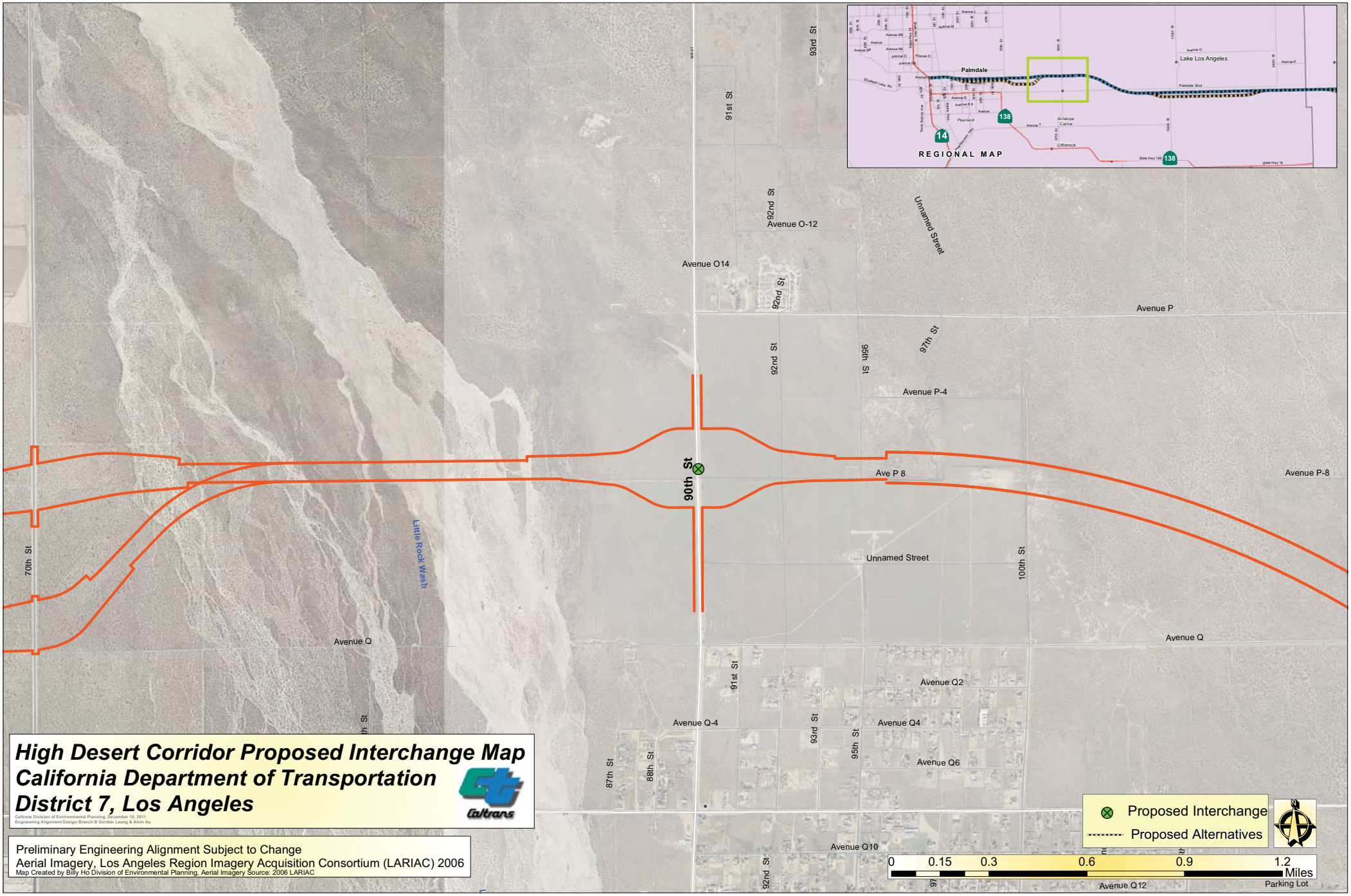
90th St Interchange



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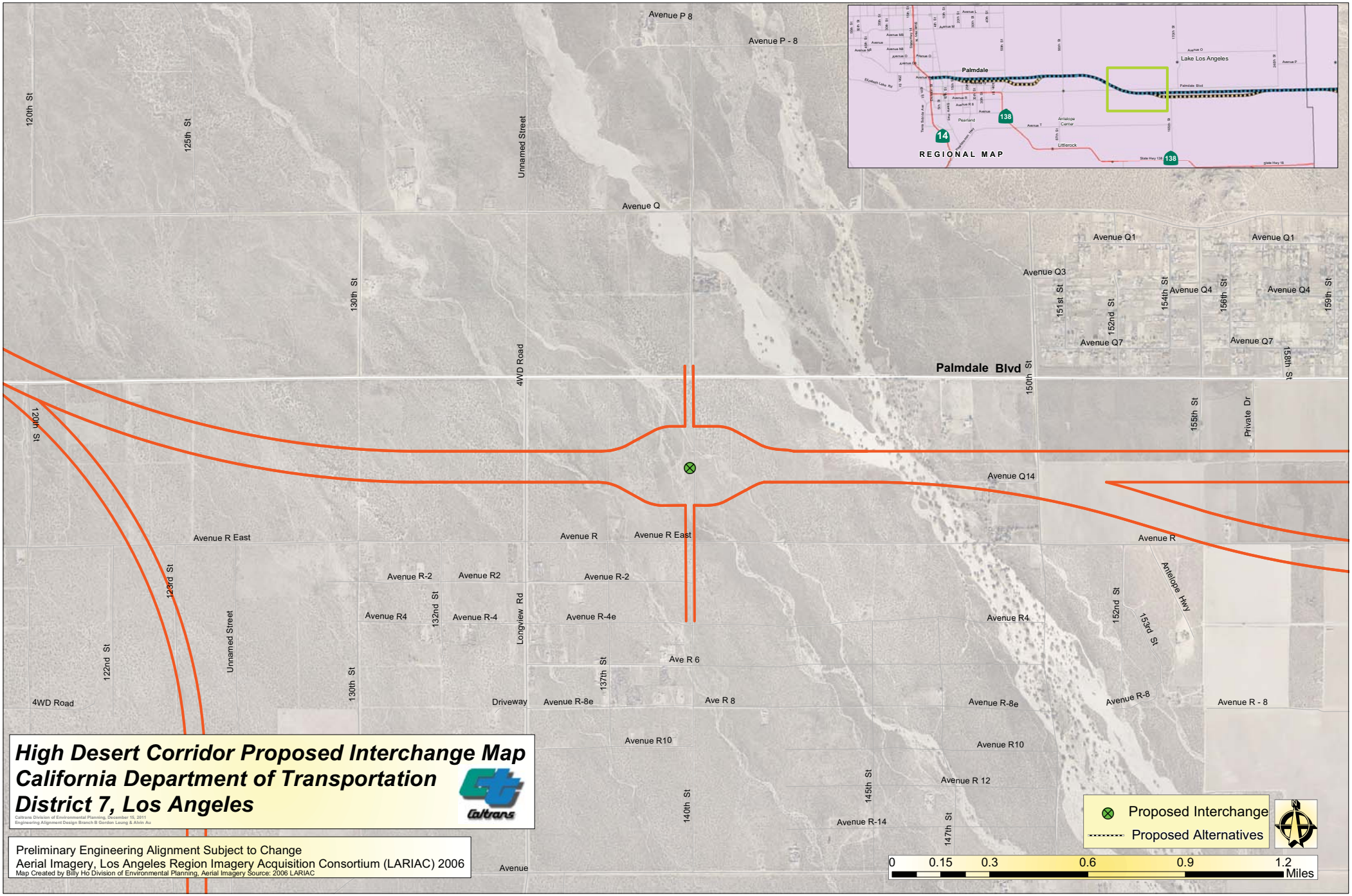
140th St Interchange



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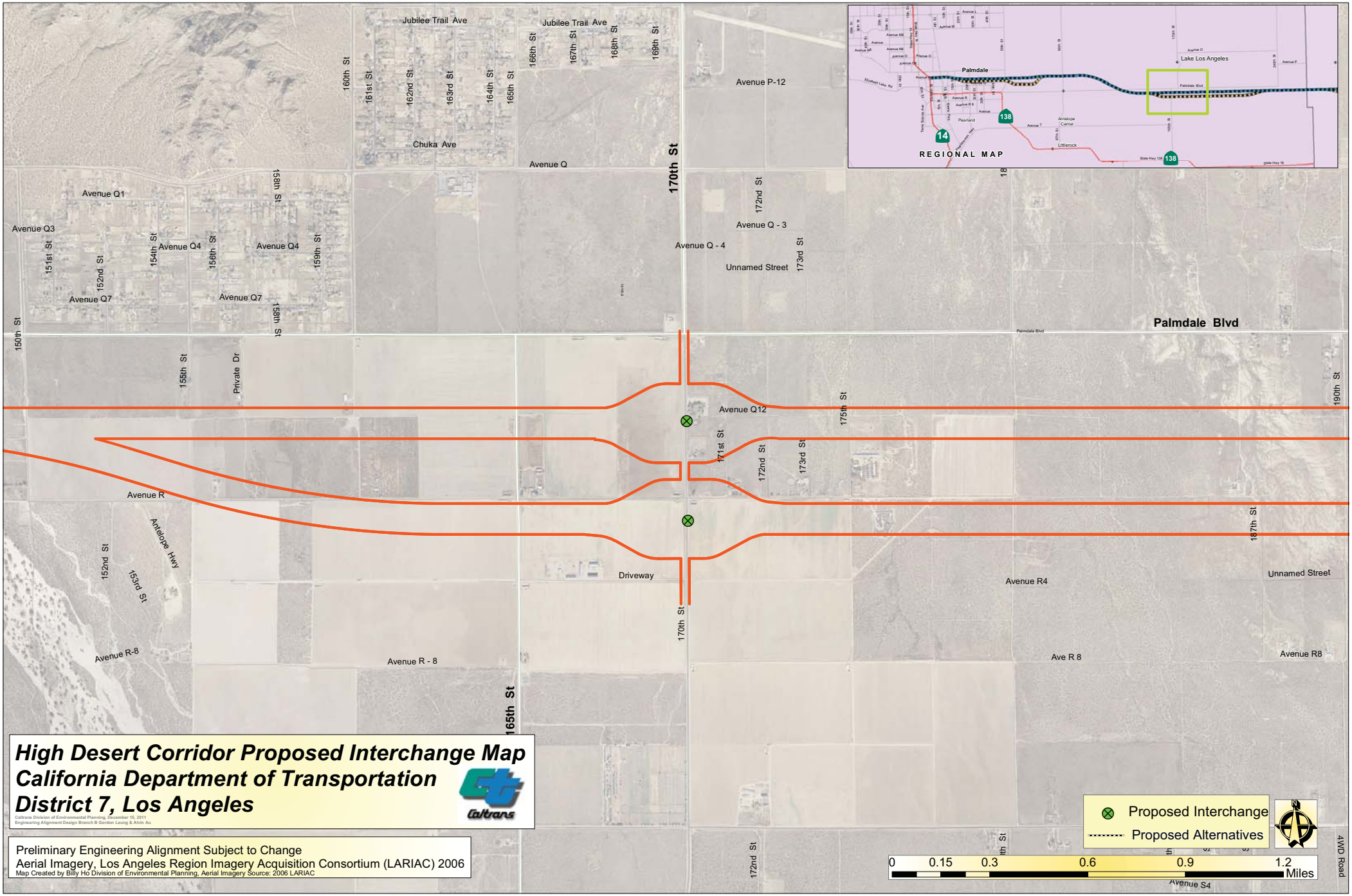
170th St Interchange



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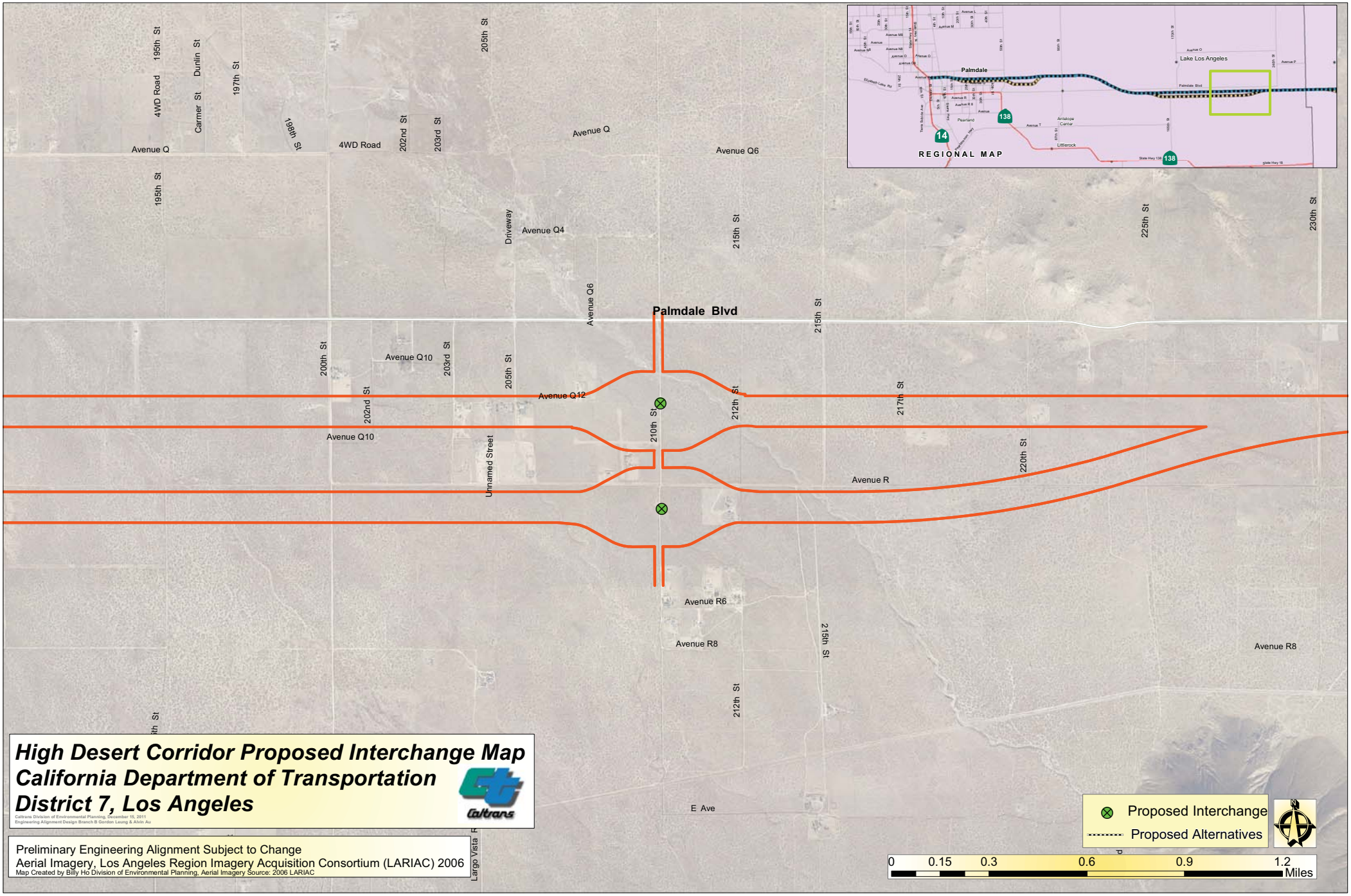
210th St Interchange



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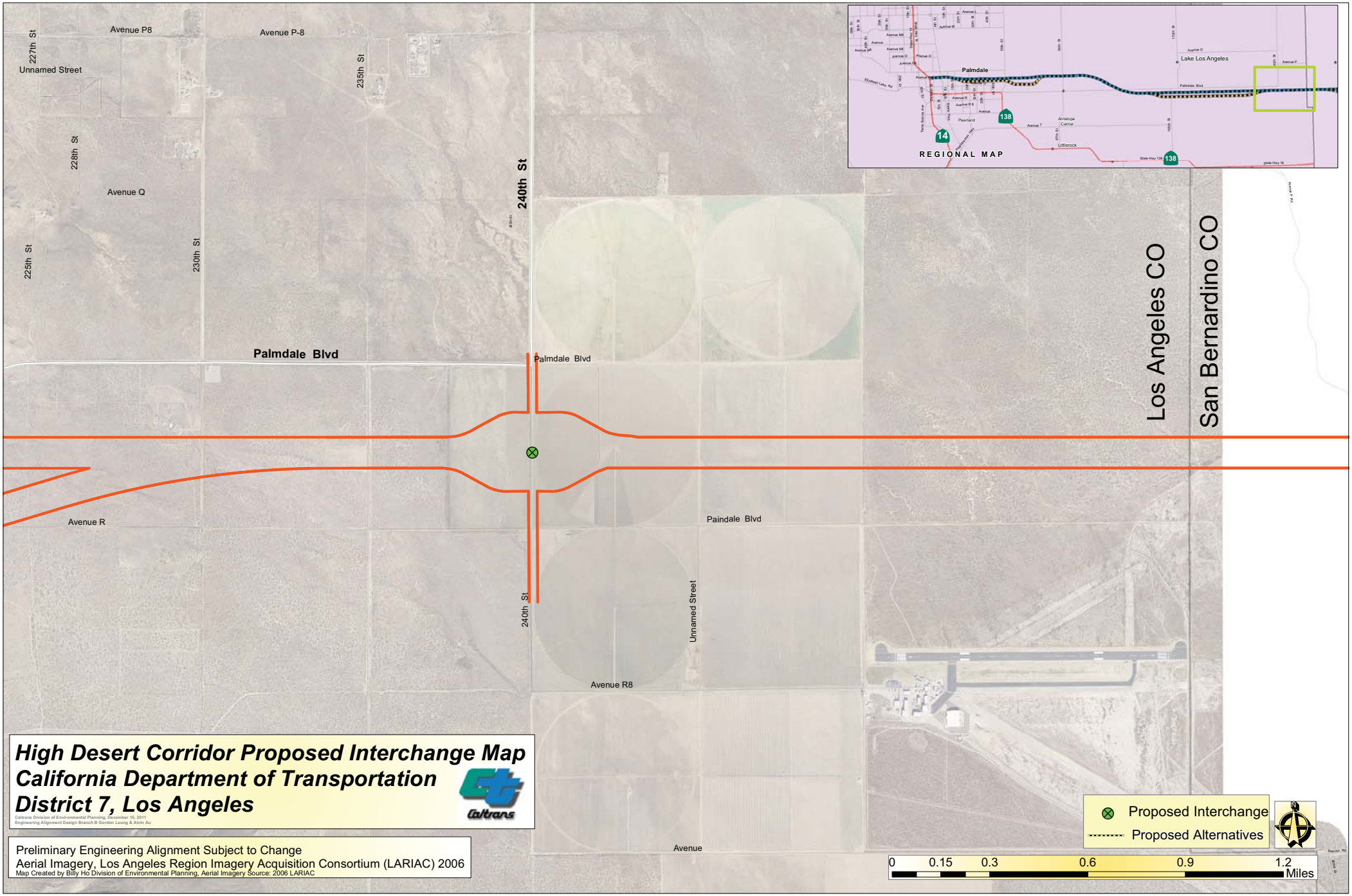
240th St Interchange



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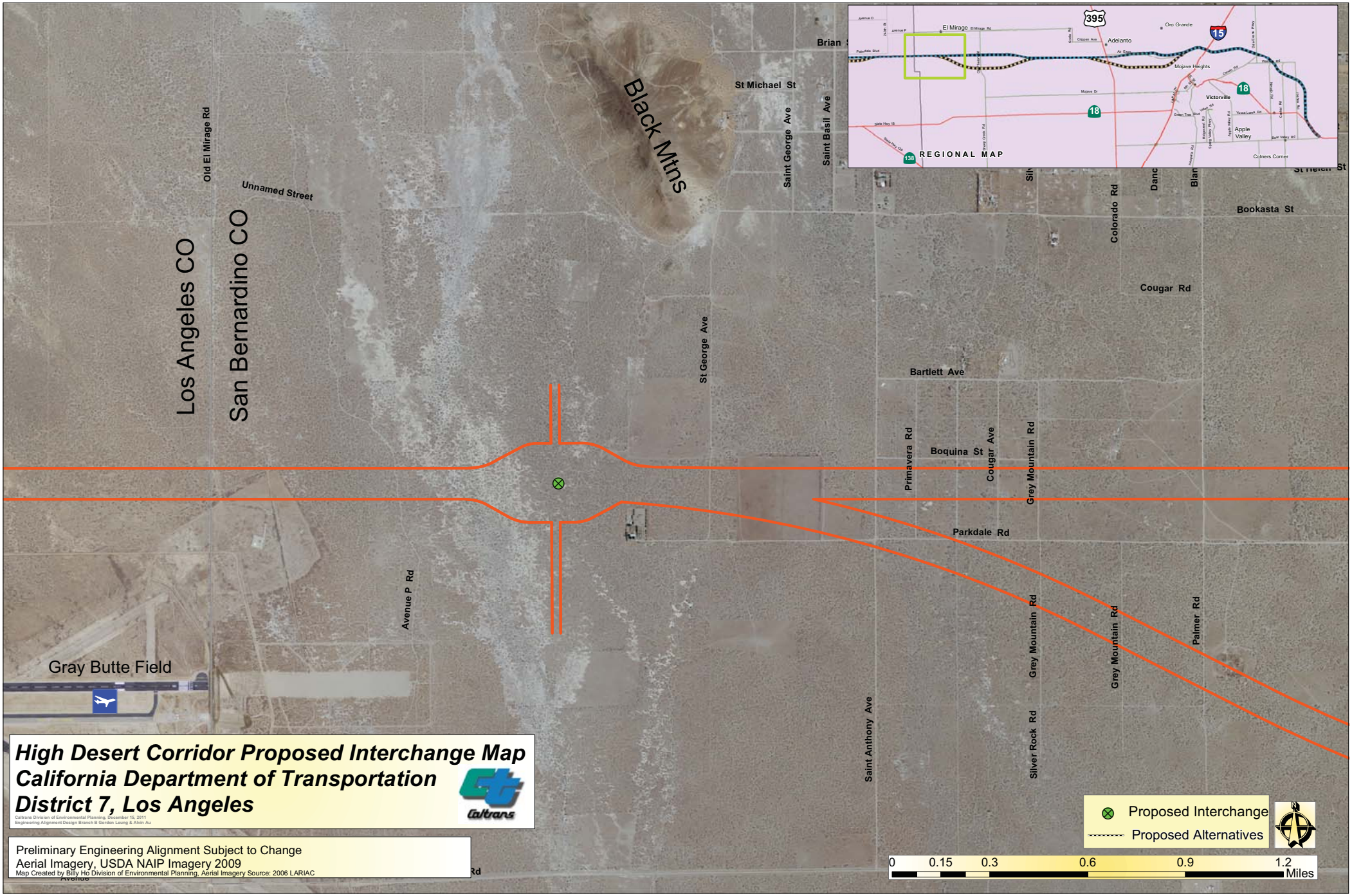
Oasis Rd Interchange



High Desert Corridor Proposed Interchange Map
California Department of Transportation
District 7, Los Angeles

Caltrans Division of Environmental Planning, December 19, 2011
Engineering Alignment Design Branch B Gordon Leung & Alvin Au

Preliminary Engineering Alignment Subject to Change
Aerial Imagery, USDA NAIP Imagery 2009
Map Created by Billy Ho Division of Environmental Planning, Aerial Imagery Source: 2006 LARIAC

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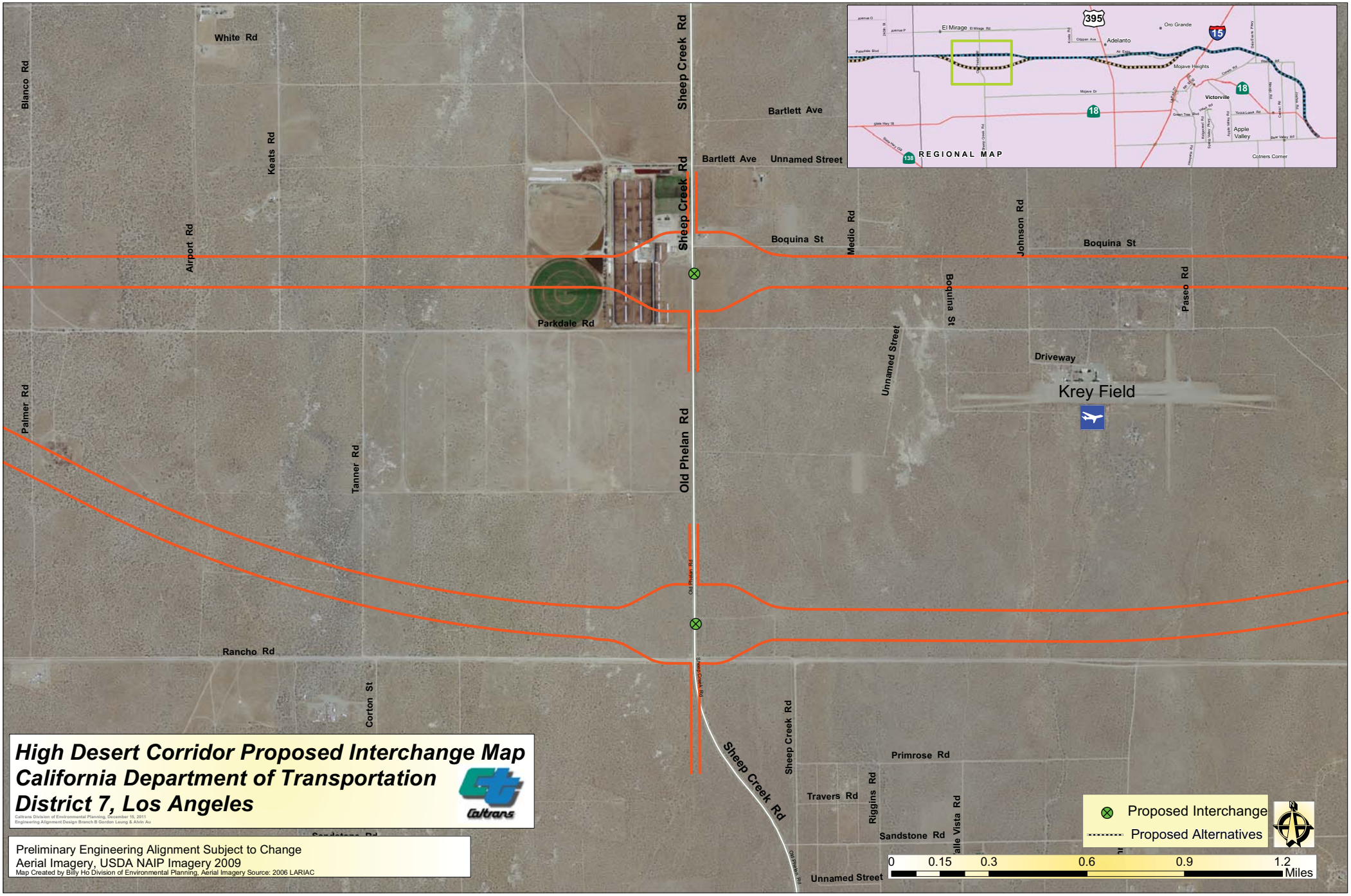
Old Phelan Rd / Sheep Creek Rd Interchange



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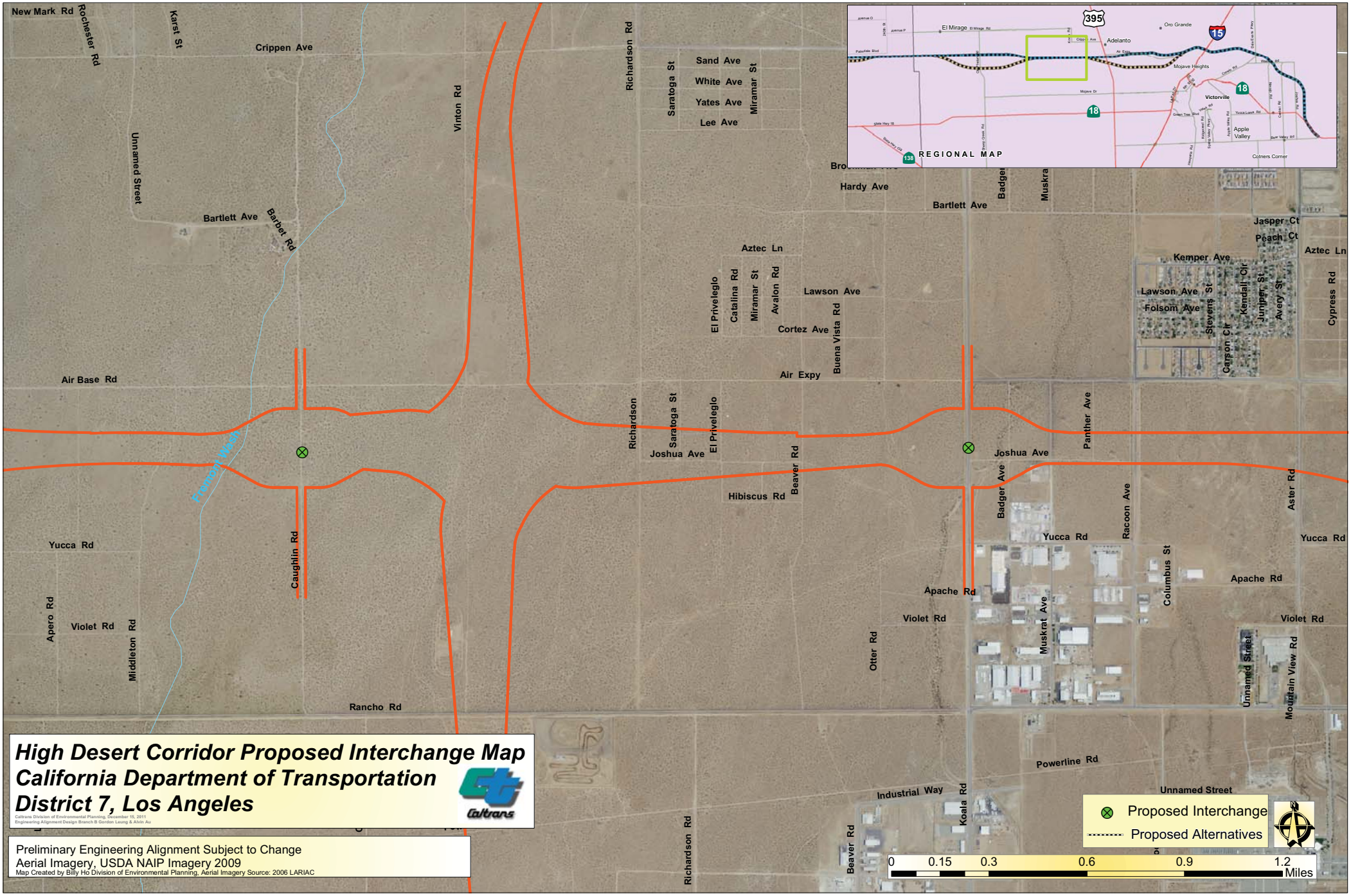
Caughlin Rd & Koala Rd Interchange



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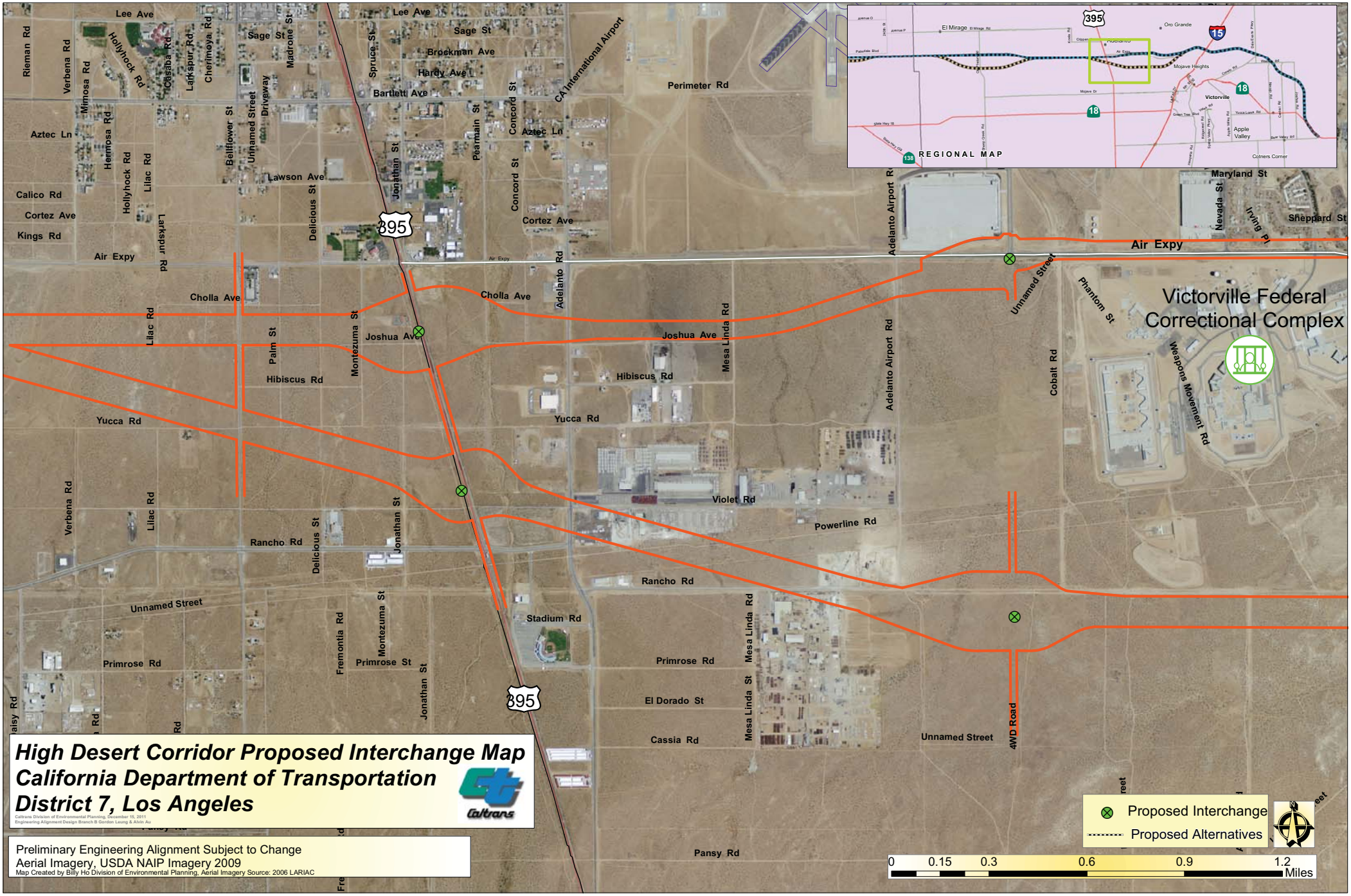
US 395 & Phantom Rd West Interchange



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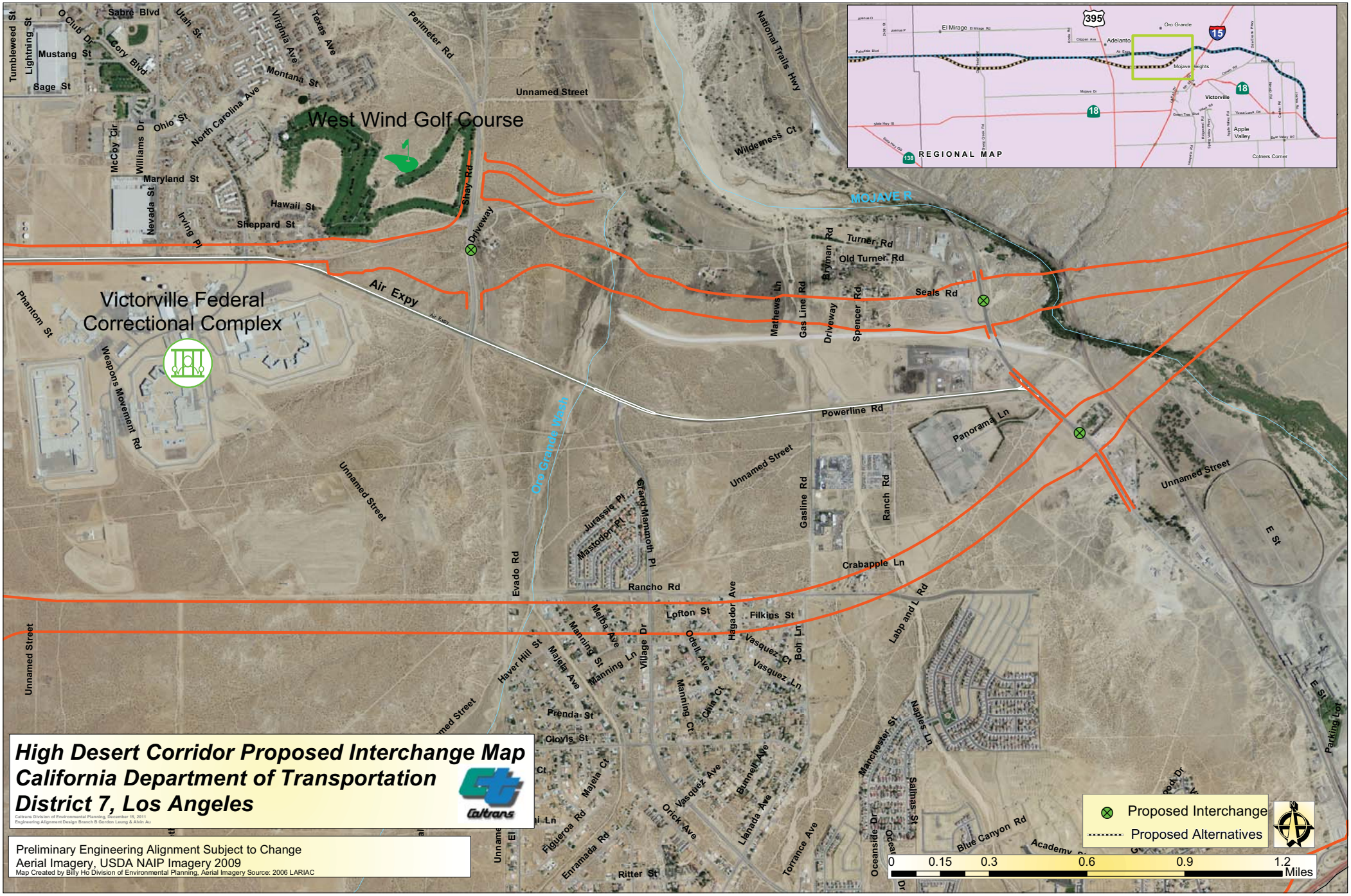
Phantom Rd East & National Trails Hwy Interchange



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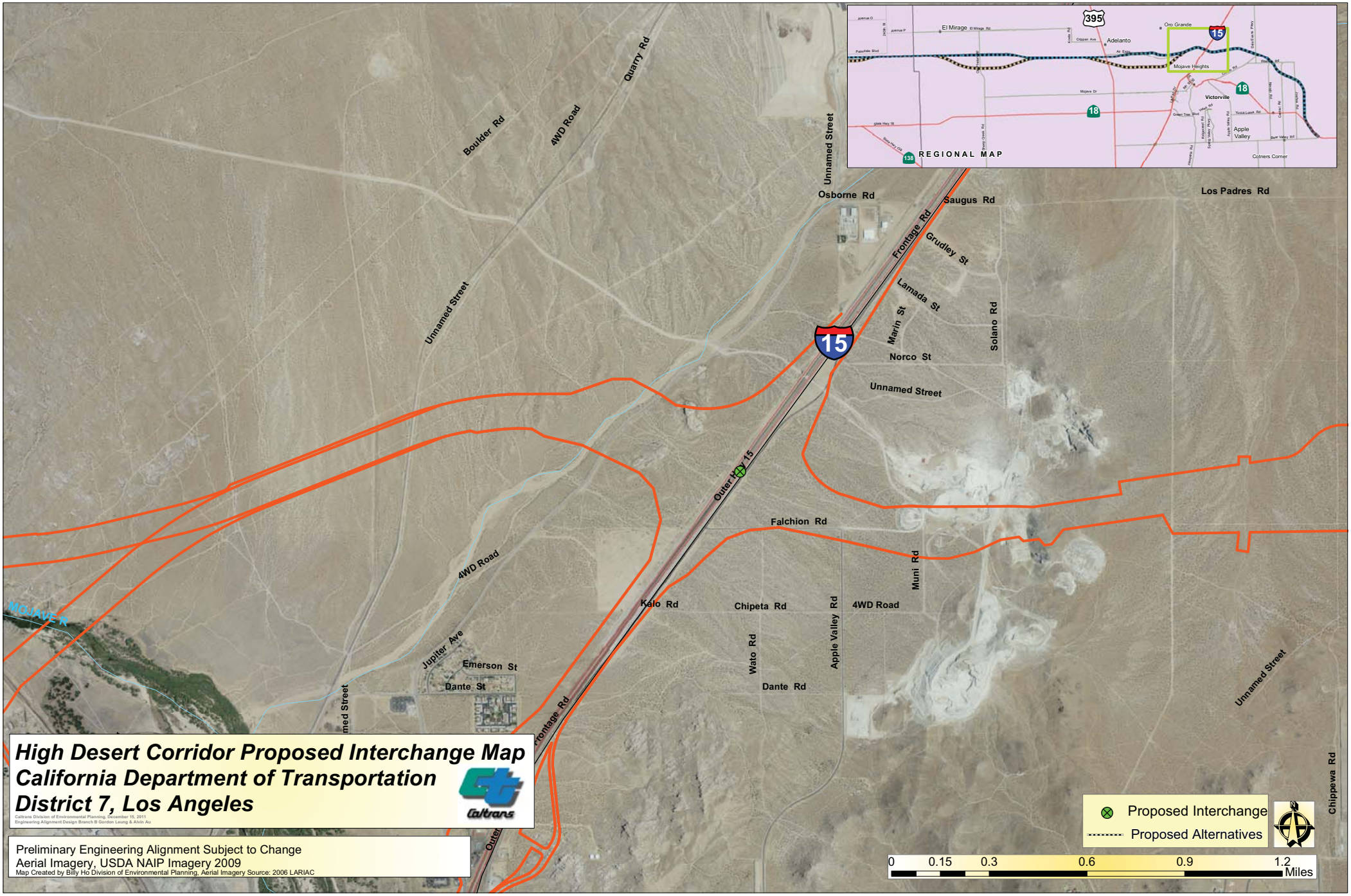
I-15 Interchange



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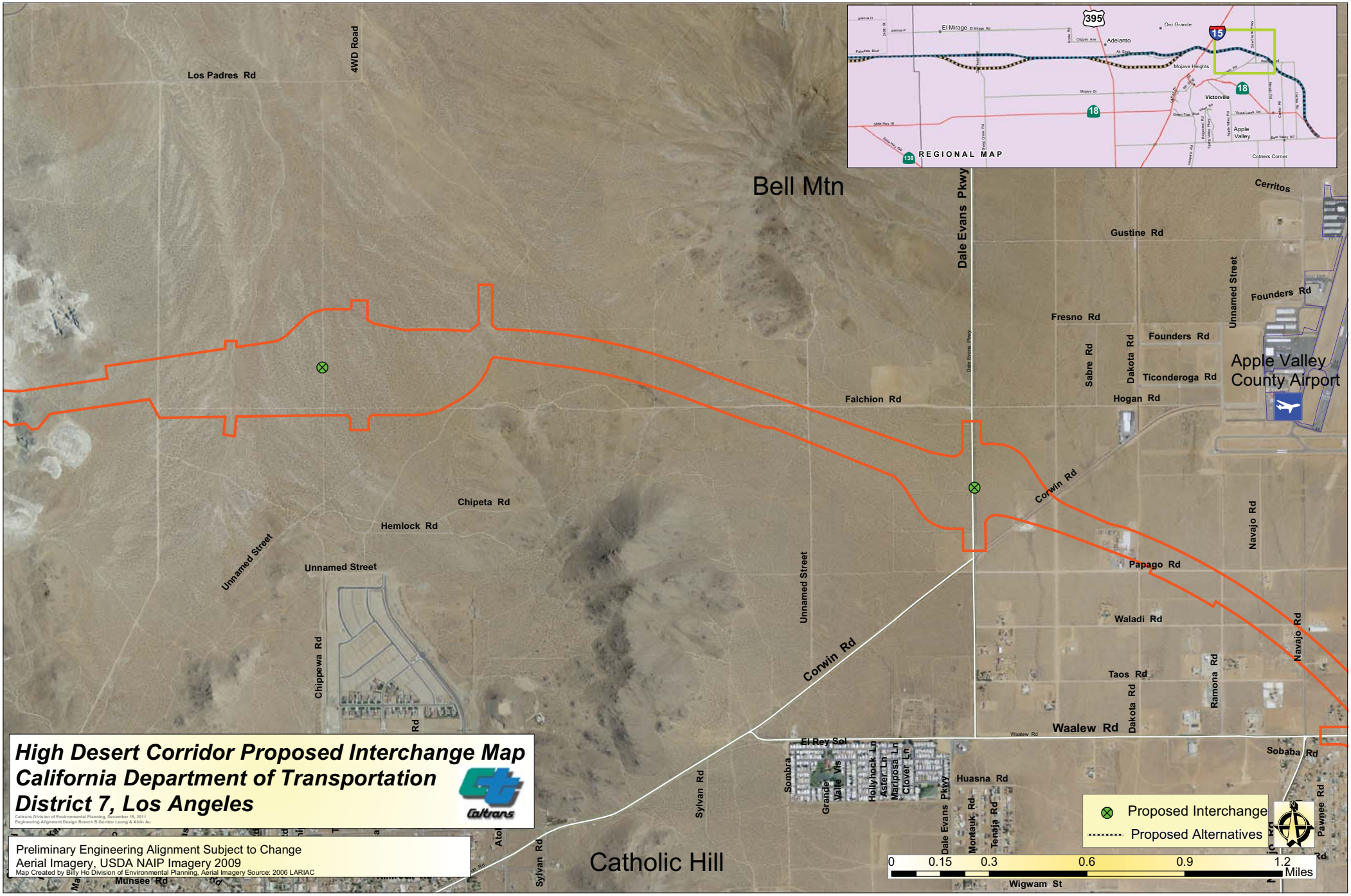
Chippewa Rd (Choco Rd) & Dale Evans Pkwy



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