3.2 Transportation

3.2.1 Introduction

This section describes the regulatory setting and the affected environment for transportation, the impacts on transportation that would result from the project, and the mitigation measures that would reduce these impacts.

Growth-inducing impacts and cumulative impacts are discussed in Sections 3.18, Regional Growth, and 3.19, Cumulative Impacts, respectively. Safety and security impacts potentially associated with traffic and circulation are evaluated in Section 3.11, Safety and Security. Additional information about transportation is provided in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

The HST program incorporates several project engineering and design features intended to avoid or reduce the potential impacts of implementing the new HST System between Fresno and Bakersfield. The *Final Program Environmental Impact Report Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System* (Statewide Program EIR/EIS) (Authority and FRA 2005) presents those features, which include but are not limited to, where feasible, locating the proposed project parallel to existing transportation features such as freeways and freight railroads. The intent of these engineering and design elements is to maintain the basic integrity of the existing surface transportation system so that the proposed project enhances mobility without causing substantial increases in traffic or travel time. As discussed in Section 3.1.5 and the Executive Summary, the analysis in this chapter includes revisions based on design refinements and analytical refinements. Gray shading is used as a guide to help the reader navigate the revisions.

3.2.2 Laws, Regulations, and Orders

Federal, state, and local laws, regulations, and orders that pertain to transportation and traffic resources under the project are presented below.

3.2.2.1 Federal

Procedures for Considering Environmental Impacts (64 Federal Register 101, 28545)

These FRA procedures state that an EIS should consider possible impacts on all modes of transportation, including passenger and freight rail, as well as potential impacts on roadway traffic congestion.

3.2.2.2 State

California Government Code Section 65080

The State of California requires each transportation planning agency to prepare and adopt a regional transportation plan (RTP) directed at achieving a coordinated and balanced regional transportation system.

California Streets and Highways Code (Section 1 et seq.)

The code provides the standards for administering the statewide streets and highways system. Designated state route and interstate highway facilities are under the jurisdiction of the California Department of Transportation (Caltrans), except where facility management has been delegated to the county transportation authority.

3.2.2.3 Regional and Local

Caltrans governs the state highways in the study area; local city or county public works departments or the Congestion Management Agencies (CMAs) govern all other roads. In Fresno County, the Council of Fresno County Governments (Fresno COG) serves as the CMA. The Kings County Association of Governments (KCAG) and Tulare County Association of Governments (TCAG) are the regional transportation authorities for the two counties, and the Kern Council of Governments (Kern COG) is the CMA for Kern County. Table 3.2-1 lists relevant regional and local transportation plans and policies that guide regional and local transportation planning, funding, and project implementation. The local plans and policies were considered in the preparation of this analysis.

Table 3.2-1
Regional and Local Plans and Policies

Policy Title	Summary
San Joaquin Corridor Strategic Plan (Caltrans 2008b)	The *San Joaquin Corridor Strategic Plan* (Caltrans 2008b) formalizes the short- (3 to 5 years), medium- (6 to 10 years), and long-term (11 to 25 years) vision for passenger rail service through the Central Valley.
Fresno County	
2011 Fresno Regional Transportation Plan (Fresno COG 2010a)	Provides for an integrated multimodal transportation system that serves the needs of a growing and diverse population for transportation access to jobs, housing, recreation, commercial, and community services. Maintains and improves the safety and efficiency of existing facilities as the basic system that would meet existing and future travel demand. The Fresno RTP has established LOS D as the minimum system-wide LOS traffic standard for Fresno County.
City of Fresno General Plan (City of Fresno Planning and Development Department 2002)	Provides a complete and continuous street and highway system throughout the Fresno metropolitan area that is safe for vehicle users, bicyclists, and pedestrians. Promotes continued growth of rail passenger and freight travel through a safe, efficient, and convenient rail system that is integrated with other modes of travel. Preserves all existing rail lines and railroad alignments to provide for existing and future transportation. Provides quality, convenient, and reliable public transportation service through an efficient and effective public transportation system.
City of Fresno Traffic Study Report Guidelines (City of Fresno [2006] 2009)	State that all intersections and roadway segments will operate at a LOS D, or better. Exceptions are made for roadway segments adopted in the Master General Plan EIR (or its Statement of Overriding Considerations) to operate at LOS E or F.
Kings County	
Kings County Association of Governments, 2011 Kings County Regional Transportation Plan (KCAG 2010)	Provides a vision for transportation in Kings County through 2035.

Table 3.2-1
Regional and Local Plans and Policies

Policy Title	Summary
Kings County General Plan. Amended 2010 (Kings County Community Development Agency 2010)	The general plan establishes policies and goals to ensure the efficient movement of people and goods, accommodate land uses, and improve air quality. The plan identifies a standard of LOS D for all intersections in the county.
Hanford General Plan Update (City of Hanford 2002)	The general plan establishes policies and goals to maintain a circulation system that is consistent with land uses and is safe and efficient for vehicles as well as for bicycles and pedestrians. The plan also seeks to provide adequate parking, encourage alternative means of transportation, and contribute towards air quality improvements. The plan has established LOS C as the general standard for street and highway improvements, with a peak hour LOS of D, or better, where physical constraints exist.
City of Corcoran General Plan (City of Corcoran 2007)	The general plan establishes policies and goals to ensure the efficient movement of people and goods, promote compatibility between transportation modes and land use, and reduce the adverse air quality impacts of transportation. The plan also seeks to provide adequate parking, encourage alternative means of transportation, and contribute towards air quality improvements. The plan has established LOS C as the general standard for street and highway improvements, with a peak hour LOS of D or better where physical constraints exist.
Kern County	
Kern Council of Governments Regional Transportation Plan (Kern COG 2010a)	Specifies how approximately $5.3 billion in anticipated federal, state, and local transportation funds will be spent in Kern County during the next 25 years. Includes approximately $112 million in transit-oriented projects, primarily to improve bus service in the Bakersfield metropolitan area and in other parts of the county.
Kern County Congestion Management Plan (Kern COG 2010b)	The CMP includes performance measures to evaluate system performance and promotes alternative transportation strategies and consistency between land use decisions and regional transportation planning. The plan has established LOS E as the minimum system-wide LOS traffic standard.
Kern County General Plan (Kern County Planning Department 2009)	The general plan established policies and goals to make sure transportation facilities are provided to support planned development and avoid traffic degradation, provide mobility to all users, accommodate planned land use, reduce environmental impacts without reducing quality of life, and coordinate with Caltrans and Kern County cities. The plan established a standard of LOS D for all roads within the county.
Metropolitan Bakersfield General Plan (City of Bakersfield and Kern County 2007)	The plan includes policy and goals to provide a safe and efficient street and highway system for all people and goods, promote alternative transportation, minimize the impacts of truck traffic, provide streets that create a positive image of the city, and support designated land uses. The city has designated LOS C as the standard for intersections and roadway segments.

Table 3.2-1
Regional and Local Plans and Policies

Policy Title	Summary
Tulare County	
Tulare County Association of Governments, 2011 Tulare County Regional Transportation Plan (TCAG 2010)	Provides a vision for transportation in Tulare County through 2035.

3.2.3 Methods for Evaluating Impacts

Information on roadway modifications, crossings, and closures as a result of the proposed HST alternatives is presented in Appendix 2-A, Road Crossings. Information on railroad modifications, crossings, and closures as a result of the proposed HST alternatives is presented in Appendix 2-B, Railroad Crossings. The sections below present data-collecting efforts, the evaluation of those impacts, and the results of that evaluation. Both regional and local transportation authorities supplied planned projects and traffic data for existing and forecasted scenarios.

3.2.3.1 Traffic Operation Standards

This section describes transportation operating conditions in terms of level of service (LOS) and delay (full descriptions follow). LOS is the primary unit of measure for stating the operating quality of a roadway or intersection and is qualitative, with a ranking system of "A" through "F," where LOS A signifies the best and LOS F, the worst operating conditions (Caltrans 2010a). The Transportation Research Board's *Highway Capacity Manual* (HCM) procedures are followed in calculating the LOS. LOS thresholds for roadways, signalized intersections, and unsignalized intersections are described below (TRB [2000] 2002).

Roadways

The LOS indicators for the roadway system are based on (1) traffic volume for designated roadway sections during a typical day and (2) the practical vehicular capacity of that segment. These two measures for each monitored roadway segment are expressed as a ratio, the volume-to-capacity (V/C) ratio. The V/C ratio is then converted to a letter and expressed as LOS A through F. LOS A identifies the best operating conditions along a roadway section, with free-flow traffic, low volumes, and little or no restrictions on maneuverability. LOS F represents forced traffic flow with high traffic densities, slow travel speeds, and often stop-and-go conditions. Table 3.2-2 defines and describes the LOS criteria used for analysis in this section.

Some road segments may have multiple V/C ratios due to variances in road design within that specific segment, for example, a road segment that reduces from two to one lane. Within the Road Segment analysis table within the section, such an occurrence is represented by the use of the phrase "followed by."

Table 3.2-2
Roadway Segment Level of Service

LOS	V/C Ratio	Definition
A	0.00 – 0.60	Free-flow speeds prevail. Vehicles are almost unimpeded in their ability to maneuver within the traffic stream.
B	0.61 – 0.70	Reasonably free-flow speeds are maintained. The ability to maneuver within traffic is only slightly restricted.
C	0.71 – 0.80	Flow with speeds at or near free-flow speed of the roadway. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.
D	0.81 – 0.90	Speeds begin to decline slightly with increasing flows. In this range, density begins to increase somewhat more quickly with increasing flow. Freedom to maneuver within the traffic stream is noticeably limited.
E	0.91 – 1.00	Operation at capacity with no usable gaps in the traffic stream. Any disruption to the traffic stream has little or no room to dissipate.
F	> 1.00	Breakdown of the traffic flow with long queues of traffic. Unacceptable conditions.
Source: Transportation Research Board (TRB), *Highway Capacity Manual 2000* [2000] 2002.		

Intersections

Table 3.2-3 quantitatively defines LOS and average vehicular delay times for signalized intersections. A capacity of 1,900 passenger cars per lane per hour of signal green time was used, along with a lost time of 4 seconds per signal phase.[1] In downtown areas, high bus and pedestrian volumes can substantially affect the intersection LOS. Table 3.2-4 presents the LOS and average vehicular delay used for unsignalized intersections.

Table 3.2-3
Level of Service and Average Vehicular Delay Definitions for Signalized Intersections

LOS	Average Vehicular Delay (seconds)	Definition
A	< 10	Very low control delay. Occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all.
B	> 10 and < 20	Occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A.
C	> 20 and < 35	Occurs when a given green phase does not serve queued vehicles and overflow occurs. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

[1] Signal phase is a time period during which a particular movement or combination of movements at a traffic signal is allowed to proceed.

Table 3.2-3
Level of Service and Average Vehicular Delay Definitions for Signalized Intersections

LOS	Average Vehicular Delay (seconds)	Definition
D	> 35 and < 55	The influence of congestion becomes more noticeable. Many vehicles stop and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55 and < 80	High delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.
F	> 80	Oversaturation of the intersection often occurs. Arrival flow rates exceed the capacity of the lane groups. Also, high v/c ratios occur with many individual cycle failures.
Source: Transportation Research Board (TRB), *Highway Capacity Manual 2000* [2000] 2002.		

Table 3.2-4
Level of Service and Average Vehicular Delay Definition for Unsignalized Intersections

LOS	Average Vehicular Delay (seconds)
A	< 10
B	> 10 and < 15
C	> 15 and < 25
D	> 25 and < 35
E	> 35 and < 50
F	> 50
Source: Transportation Research Board (TRB), *Highway Capacity Manual 2000* [2000] 2002.	

3.2.3.2 Baseline Operational Analysis

In accordance with CEQA requirements, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project. Those conditions, in turn, *"will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant"* (CEQA Guidelines §15125[a]).

For a project such as the HST project that would not commence operation for approximately 10 years and would not reach full operation for approximately 25 years, use of only existing conditions as a baseline for traffic LOS impacts would be misleading. It is substantially more likely that existing background traffic volumes (and background roadway changes due to other programmed traffic improvement projects) will change between today and 2020/2035 than it is for existing traffic conditions to remain precisely unchanged over the next 10 to 25 years. For example, as stated in Section 3.2.5.1, Regional Transportation Plans (RTPs) include funded transportation projects that are programmed to be constructed by 2035. Ignoring the fact that

these projects would be in place before the HST project reaches maturity (i.e., the point/year at which HST-related traffic generation would reach a maximum), and evaluating the HST project's traffic impact without recognizing that the RTP improvements would change the underlying background conditions to which HST project traffic would be added, would create a hypothetical comparison, and, for these reasons, would be misleading.

For this reason, the LOS traffic analysis in this section uses a dual-baseline approach, which recently was directly endorsed by the California Supreme Court in *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (2013) 57 Cal.4th 439, 454. That is, the HST project's LOS traffic impacts for all intersections and roadway segments are evaluated both against existing conditions and against background (i.e., No Project) conditions as they are expected to be in 2035. Impact results for both baselines (and mitigation where required) are presented in this section in summary format; further details (including mitigation) are presented in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

This approach informs the public of potential project impacts (and associated mitigation) under both baselines, reserving extensive detail for the supporting technical report. This approach improves readability for the public of a technically complex subject—traffic-modeling analysis. Very detailed analysis results, including extensive LOS calculation tables, are contained in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

This approach also is particularly apt for a project like HSR, which has two components that could affect traffic: alignment construction (which would occur in the near term) and HST station traffic (which would occur in the longer term).

More specifically, construction of the alignment alone could reconfigure the existing roadway network, permanently redirecting existing traffic. This could cause traffic impacts at intersections and segments that receive the redirected existing traffic even without the addition, if any, of future HST station traffic. The existing conditions baseline is particularly helpful for evaluating these impacts, and mitigation based on the existing conditions baseline is appropriate.

On the other hand, HST station traffic (i.e., traffic from passengers arriving at/departing from the HST station) would not commence for some years in the future, and would rise over time. That station traffic could affect additional intersections and segments beyond those impacted by construction of the rail corridor. Background conditions in 2035 (to coincide with maximum projected HST station traffic) are particularly helpful to understanding these impacts, and mitigation based on those 2035 conditions (to be implemented at HST station opening) is appropriate.

Some intersections and/or segments could be a mix – *i.e.*, a mitigation measure might be required in the near term to address existing traffic redirected by construction. Additional mitigation measures may be required to address significant impacts associated with the addition of station traffic in the future. Mitigation measures may be implemented incrementally to address these two conditions.

It is important to note that in accurately predicting future expected 2035 conditions, Fresno, Kings, Tulare, and Kern counties have developed transportation travel demand models that define the future (2035) No Project conditions. The individual counties maintain these models, which are used to predict the impact of travel growth and to evaluate potential transportation improvements.

The year 2035 No Project condition volumes for the study area stations and HMFs were determined by using the growth factors obtained from the individual county models. The growth factors were applied to the existing volumes to arrive at the future No Project volumes for the study area intersections. The intersection and roadway segment analysis provides a commonly used evaluation of vehicular traffic impacts from a specific source, such as a station or HMF.

To obtain existing conditions information, traffic analysts conducted traffic counts for existing daily operating conditions for roadways that are outside the range of the regional model along the BSNF Alternative, Hanford West Bypass 1 and Bypass 2, Hanford West Bypass 1 Modified and Hanford West Bypass 2 Modified, Corcoran Elevated, Corcoran Bypass, Allensworth Bypass, Wasco-Shafter Bypass, Bakersfield South and Bakersfield Hybrid alternatives. This helped to determine the current adequacy of the roads and to provide a baseline for comparing future roadway segments that may be affected by the project alignment.

Lastly, transportation-related impacts that are temporary, such as potential impacts from temporary road closures during construction, are evaluated only against existing conditions and are not LOS-based.

3.2.3.3 Operational/Project Impacts

Vehicle Trip Generation at the Stations

The forecasted daily trips to/from each of the stations were distributed on the transportation network based on the results of the travel demand model and on access to and from the proposed station areas. As with the existing-conditions analysis, the Synchro software[2] was used to define the future traffic operating conditions on study area roads and intersections for level of service and delay for the 2035 No Project and 2035 Plus Project conditions. The results provided the change (or no change) in operating conditions (both as compared to existing conditions and as compared to 2035 No Project conditions) used to determine the severity of the project impact. Trip generation estimated that 12% of the total daily boarding trips would occur during the peak hour and that 25% of the total daily alighting trips would occur during the peak hour. Table 3.2-5 summarizes the daily, AM peak hour, and PM peak-hour vehicle trips generated by the proposed HST stations.

Table 3.2-5
Year 2035 Forecast Vehicle Trip Generation at HST Stations[3]

Station	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Fresno	4,838	557	286	843	286	557	843
Kings/Tulare Regional Station—East	1,912	220	111	331	111	220	331
Kings/Tulare Regional Station—West	1,912	220	111	331	111	220	331
Bakersfield	4,523	585	293	878	293	585	878
Source: Cambridge Systematics 2007.							

[2] Synchro is a macroscopic analysis and optimization software application. Synchro implements the Intersection Capacity Utilization method for determining intersection capacity.

[3] The additional trip generation amounts reported in this Final EIR/EIS compared to those reported in the Revised DEIR/Supplemental DEIS is due to a technical error found in the Revised DEIR/Supplemental DEIS in the generation accounting.

Vehicle Trip Generation at the Heavy Maintenance Facility Sites

Trip generation for the HMF sites was based on the estimated number of employees, work shifts, and parking requirements for the proposed facility. The employees were classified based on their operational function as maintenance shop employees, management, crew and support, or maintenance-of-way employees. The *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014) provides more information on the HMF trip generation. The report demonstrates that the facility would be expected to generate approximately 3,000 daily trips; 300 trips would occur during each AM and PM peak-hour period.

3.2.3.4 Methods for Evaluating Impacts under NEPA

Pursuant to Council on Environmental Quality NEPA regulations (40 CFR 1500-1508), project effects are evaluated based on the criteria of context and intensity. Context means the affected environment in which a proposed project occurs. Intensity refers to the severity of the effect, which is examined in terms of the type, quality, and sensitivity of the resource involved, location and extent of the effect, duration of the effect (short- or long-term), and other considerations. Beneficial effects are identified and described. When there is no measurable effect, impact is found not to occur. The intensity of adverse effects is the degree or magnitude of a potential adverse effect, described as negligible, moderate, or substantial. Context and intensity are considered together when determining whether an impact is significant under NEPA. Thus, it is possible that a significant adverse effect may still exist when, on balance, the impact has negligible intensity, or even if the impact is beneficial.

An impact with *negligible* intensity on transportation is defined as a worsening in transportation service levels that is measureable but not perceptible to the transportation system user. An impact with *moderate* intensity on transportation is defined as a worsening in transportation service levels that is measurable and perceptible to the transportation service user but does not meet the thresholds for an impact with substantial intensity. An impact with *substantial* intensity on transportation is defined as an adverse effect on transportation service levels. A project impact is considered to have substantial intensity under NEPA if the following occurs:

Operational Phase

A project impact is considered to have substantial intensity under NEPA if the following occurs:

- For roadway segments and intersections (signalized and unsignalized), the addition of project-related traffic results in a reduction in LOS[4] below D
- For roadway segments that are projected to operate at LOS E or F under baseline conditions, the addition of project-related traffic results in an increase in the V/C ratio of 0.04 or more
- For signalized intersections that are projected to operate at LOS E or F under baseline conditions, the addition of project-related traffic increases average delay at an intersection by 4 seconds or more
- For unsignalized intersections projected to operate at LOS E or F under baseline conditions, the addition of project-related traffic increases delay by 5 seconds or more (measured as average delay for all-way stop and for worst movement for a multi-way stop intersection), and

[4] LOS analysis was completed only for intersections that would be affected by HST project operations (including station traffic and permanent road closures or realignments). Traffic congestion from project construction would be temporary, so an LOS analysis would not be appropriate. Impacts from project construction focus on maintaining safety and access during construction.

if the intersection satisfies one or more traffic signal warrants[5] for more than one hour of the day

Construction Phase

The project would have an impact with substantial intensity on the environment under NEPA if it were to do any of the following:

- Result in inadequate emergency access.
- Substantially increase hazards due to a design feature (such as sharp curves or dangerous intersections) or incompatible uses (such as farm equipment), or create safety risks for pedestrians and bicyclists.

3.2.3.5 CEQA Significance Criteria

Operational Phase

The traffic impact criteria used in evaluating traffic LOS for roadway segments, and signalized and unsignalized intersections during the project operation phase are presented below.

For roadway segments, the significance criteria are based on the change in V/C ratio, as follows:

- An impact is considered to be significant if the addition of project-related traffic results in a reduction in LOS below LOS D.
- For segments that are projected to operate at LOS E or F under baseline conditions, an impact is considered to be significant if the addition of project-related traffic results in an increase in the V/C ratio of 0.04 or more.

For signalized intersections, the significance criteria are based on an increase in delay based on LOS, as follows:

- An impact is considered to be significant if the addition of project-related traffic results in a reduction in LOS below LOS D.
- For intersections that are projected to operate at LOS E or F under baseline conditions, an impact is considered to be significant if the addition of project-related traffic increases average delay at an intersection by 4 seconds or more.

For unsignalized intersections, the significance criteria are based on an increase in delay for the worst movement for a multi-way stop and on the average intersection delay for an all-way stop, as follows:

- An impact is considered to be significant if the addition of project-related traffic results in a reduction in LOS below LOS D.
- For intersections projected to operate at LOS E or F under baseline conditions, an impact is considered to be significant if the addition of project-related traffic increases delay by 5 seconds or more, and if the intersection satisfies one or more traffic signal warrants for more than 1 hour of the day.

[5] Traffic signal warrants define minimum conditions under which signal installation may be justified.

The project would also have a significant effect on the environment if it would do any of the following:

- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.
- Result in inadequate emergency access.
- Substantially increase hazards due to a design feature (such as sharp curves or dangerous intersections) or from incompatible uses (such as farm equipment).

Construction Phase

The project would have a significant effect on the environment if it would do any of the following:

- Result in inadequate emergency access.
- Substantially increase hazards due to a design feature (such as sharp curves or dangerous intersections) or from incompatible uses (such as farm equipment), or create safety risks for pedestrians and bicyclists.

3.2.3.6 Study Area for Analysis

The alternatives have the greatest potential to have long-term impacts on traffic at and near the proposed stations, which would attract and concentrate traffic that is entering or exiting the station parking lots and drop-off areas. Therefore, the primary study area for traffic analysis consists of the potentially affected intersections and roadways surrounding each of the proposed station sites, as identified in the figures in this section. The study areas for the analysis were defined for each of the station area sites in consultation with representatives at the public works and transportation planning agencies for Fresno, Kings, Tulare, and Kern counties; the cities of Fresno and Bakersfield; and Caltrans (District 6). Traffic around the HMF sites also could be affected by the project, so the study area also includes the vicinity of the HMFs.

The extent of each station study area was established by considering the potential for impacts on roadway segments and at intersections from new station-related traffic. Between stations, the HST corridor would cross most local roadways on separated grade or elevated tracks, allowing for continued passage of vehicles, bicycles, and pedestrians, and avoiding or minimizing traffic impacts. For the instances where alterations to the road network are proposed, local impacts on traffic were studied.

In short, the study area for impacts extends as far away from the project locations as meaningful traffic changes are detectable without undue speculation.

3.2.4 Affected Environment

This section describes the affected environment related to transportation. The greatest potential for project-related transportation impacts is associated with traffic around HST stations. Therefore, the study area consists of four sub-areas where stations may be constructed. The existing conditions in the four station areas (Fresno, Kings/Tulare Regional Station–West [west of Hanford], Kings/Tulare Regional Station–East [east of Hanford], and Bakersfield) are summarized by transportation mode or facility, including existing traffic volumes and operating conditions, transit facilities and services, air travel, non-motorized facilities, parking, and area freight and goods movement. Applicable plans, primarily RTPs and General Plan Transportation Elements, were reviewed to identify planned and programmed transportation improvements that should be considered in the setting, and to identify impacts.

There is one regional plan pertaining to transportation within the Fresno to Bakersfield Section study area; the *San Joaquin Corridor Strategic Plan* (Caltrans 2008b).

3.2.4.1 Regional Transportation System

Chapter 1.0, Project Purpose, Need, and Objectives, records the deficits of the existing transportation conditions, including limitations of the connectivity between the Central Valley and other metropolitan areas of the state. The following subsections summarize the transportation network and facilities in the Fresno to Bakersfield Section.

Highways and Roadways

The region contains several state routes as well as other regionally significant roadways that serve as connections to population centers outside of the Fresno to Bakersfield Corridor. Figures 3.2-1 through 3.2-5 illustrate state routes and other regionally important roadways in this corridor.

Air Travel

The Fresno Yosemite International Airport (FAT) is 4.5 miles northeast of the proposed station site in downtown Fresno. With respect to the proposed HST service, the airport began providing commercial passenger flights as of July 2010 to San Francisco, Los Angeles, and San Diego. The Fresno Chandler Executive Airport is considered a "reliever" general aviation airport (noncommercial planes). The Sierra Sky Park Airport is a privately owned airport open for public use (noncommercial planes).

As mentioned in Section 1.2.4.3, Modal Connections; Section 2.4.1, No Project Alternative; and Section 3.2.5, Environmental Consequences, the capacity of FAT is not a limitation. The airport has an adopted Airport Master Plan (AMP) that defines planned improvements to meet future demand in terms of projected enplanements.

The Hanford Municipal Airport can accommodate business jets and general aviation but does not provide any commercial flight service. It is located approximately 1.5 miles southeast of the Hanford business district, off E. Hanford-Armona Road.

Bakersfield Meadows Field provides commercial service to San Francisco and Los Angeles. It is located about 4.6 miles northwest of the proposed Bakersfield HST station site. The Bakersfield Municipal Airport is a general aviation airport (noncommercial) located approximately 3.5 miles south of downtown Bakersfield.

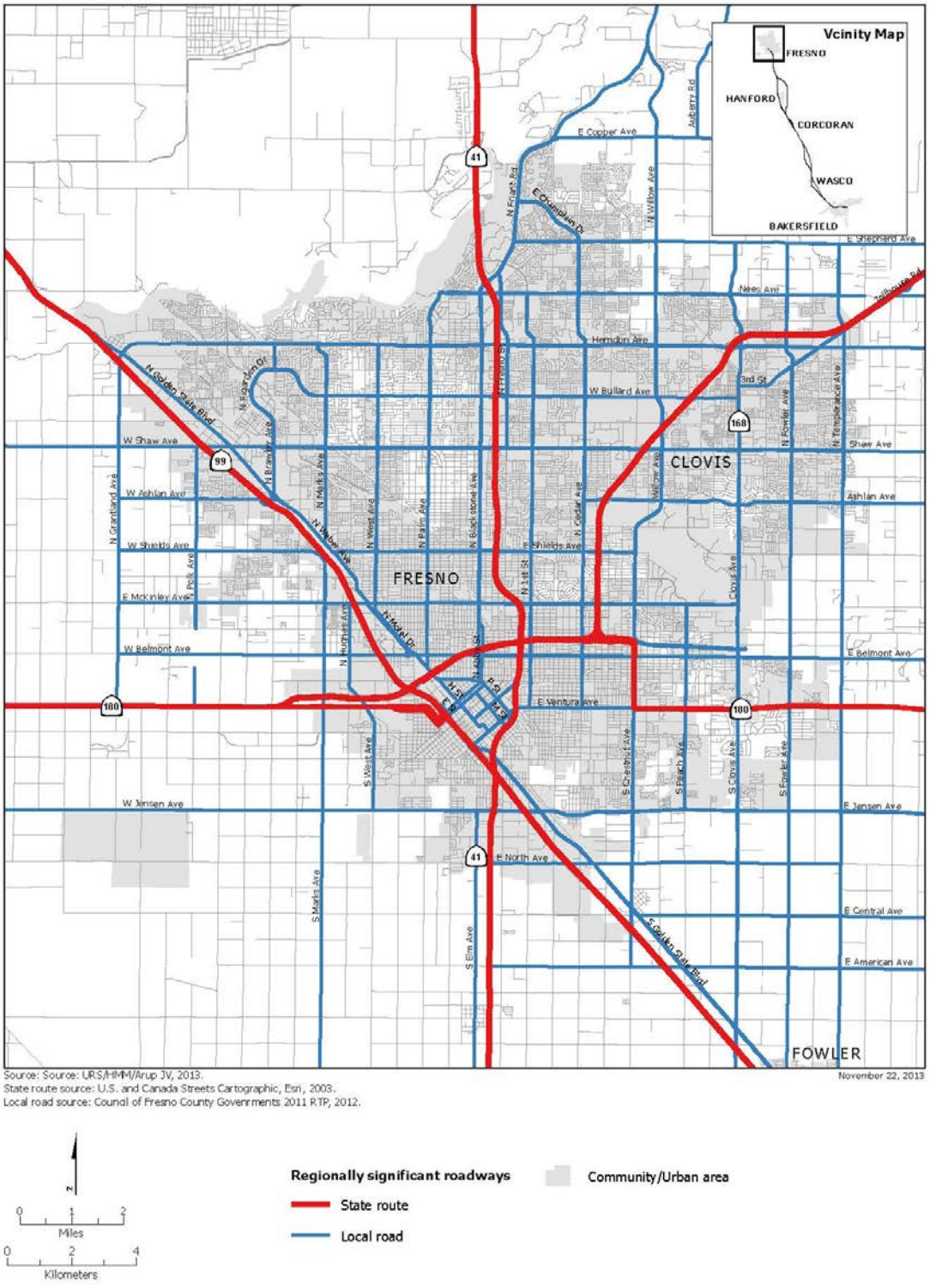

Figure 3.2-1
Regionally significant roads in Fresno

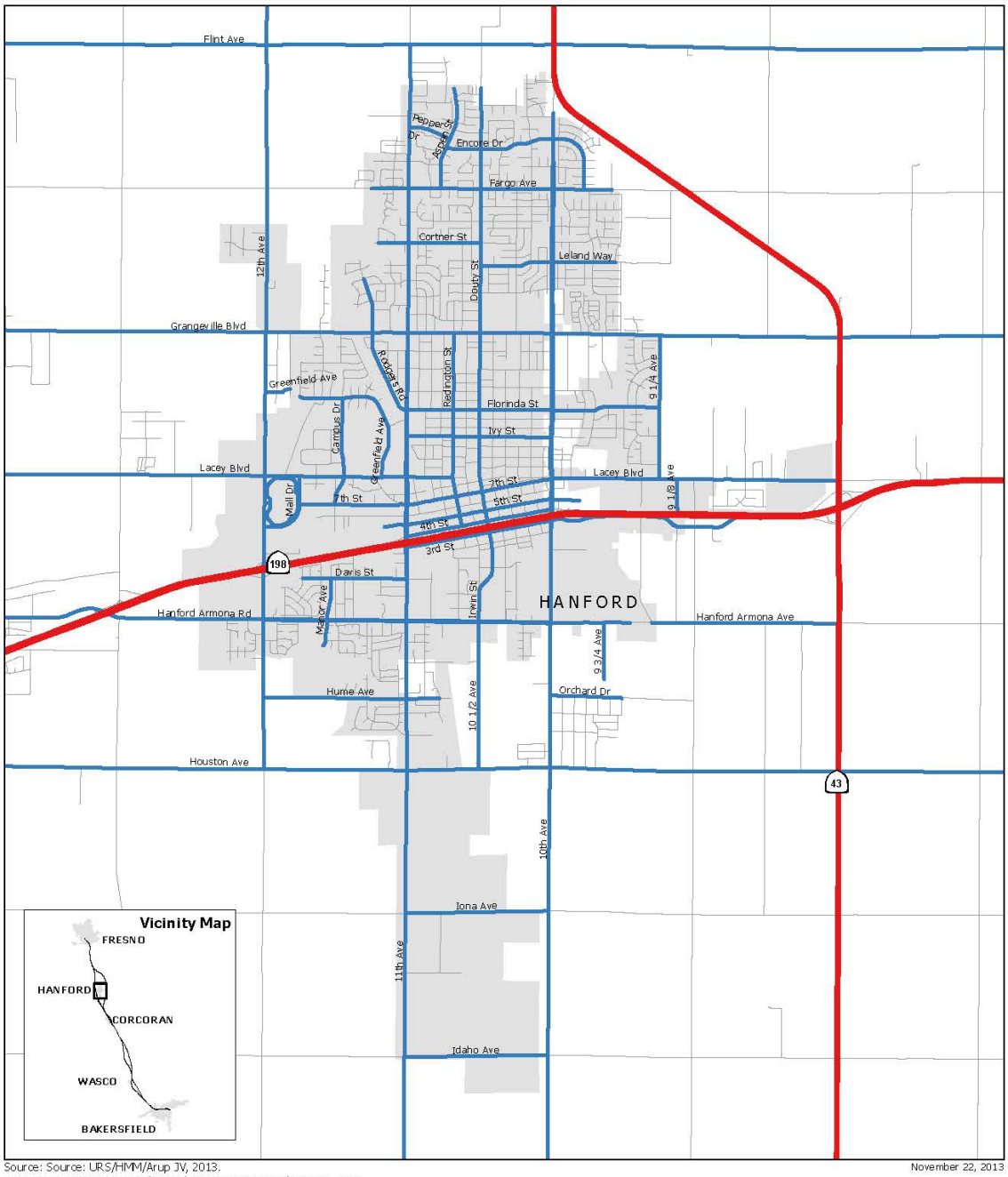

Figure 3.2-2
Regionally significant roads in Hanford

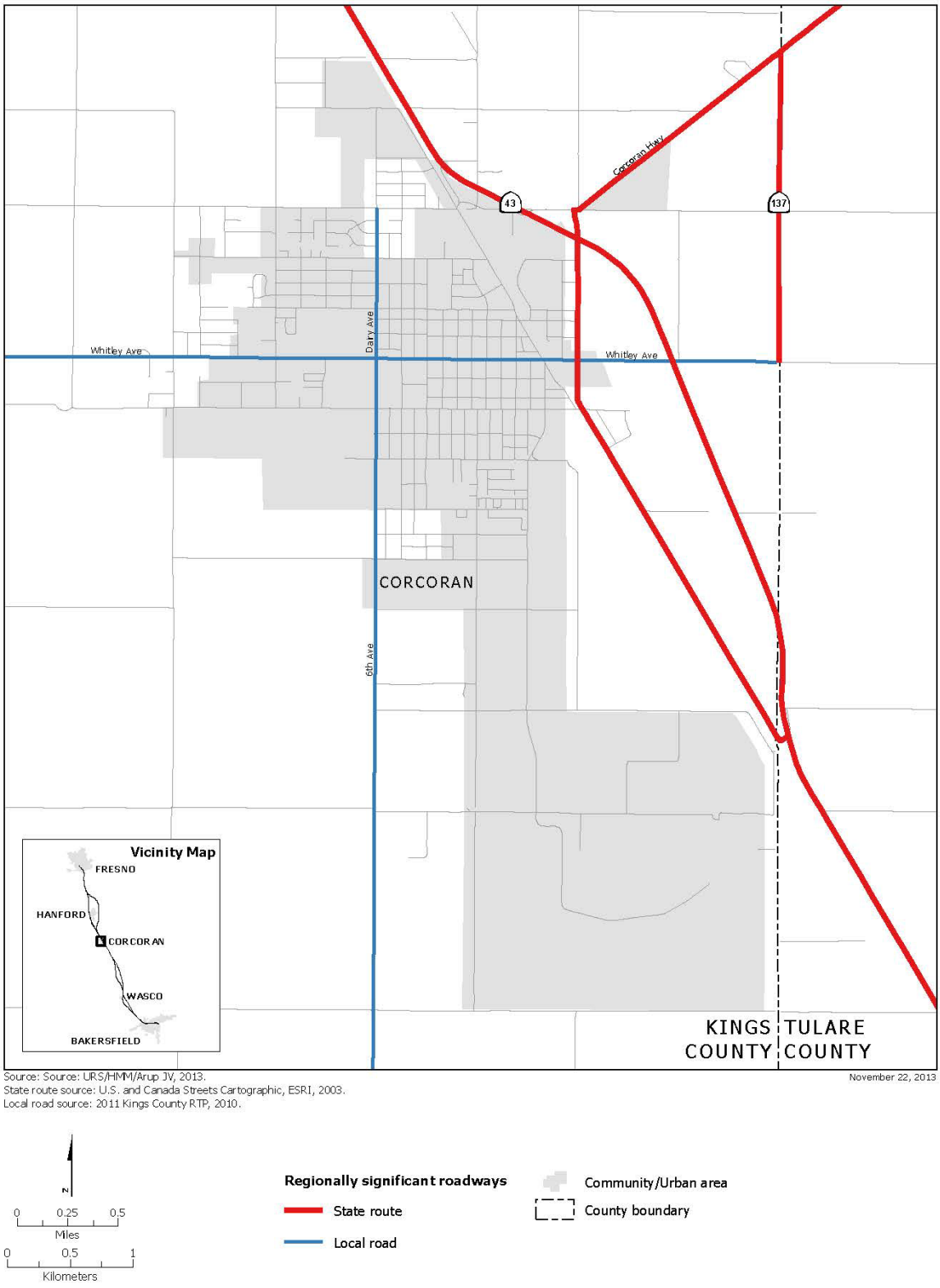

Figure 3.2-3
Regionally significant roads in Corcoran

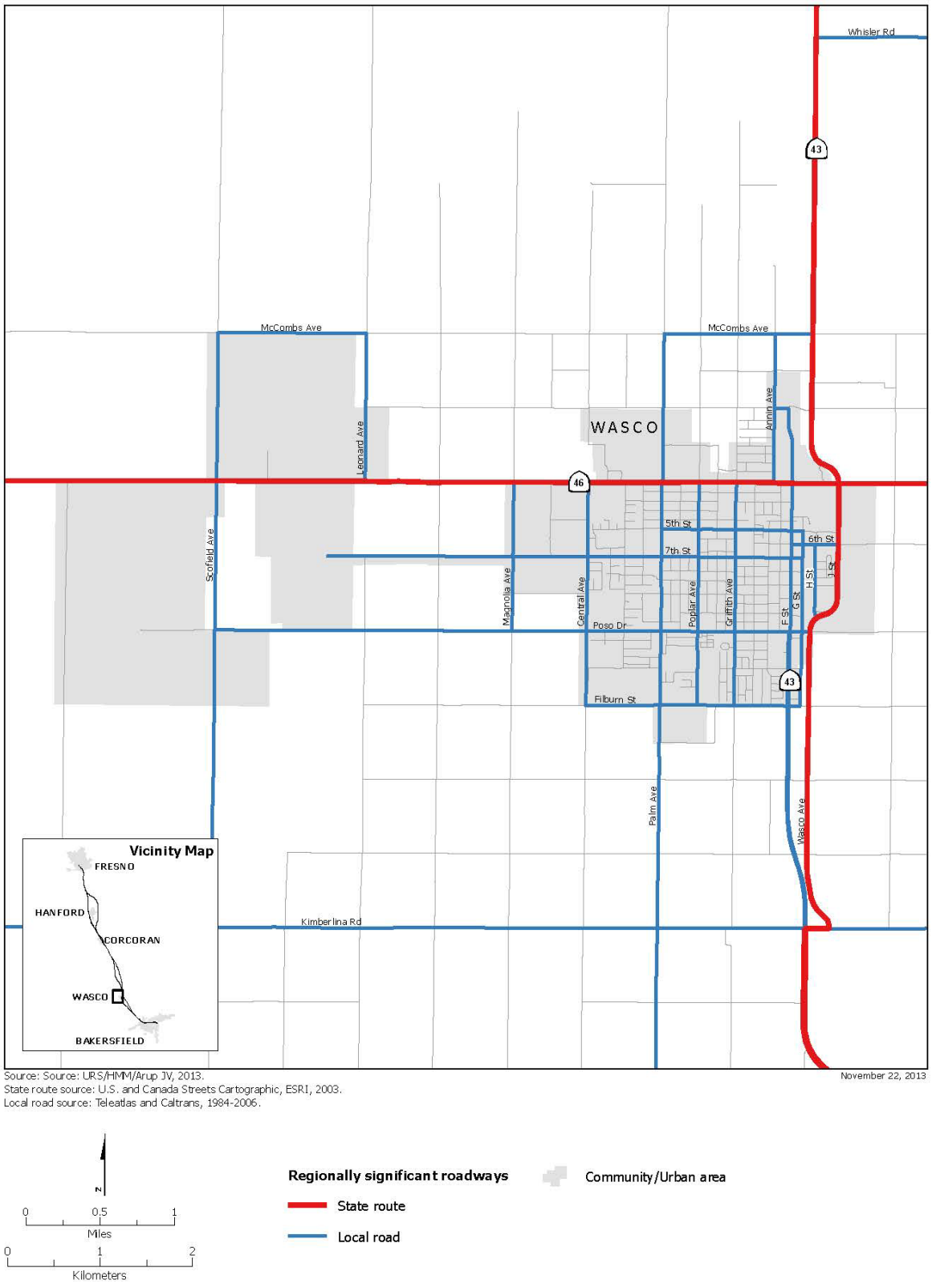

Figure 3.2-4
Regionally significant roads in Wasco

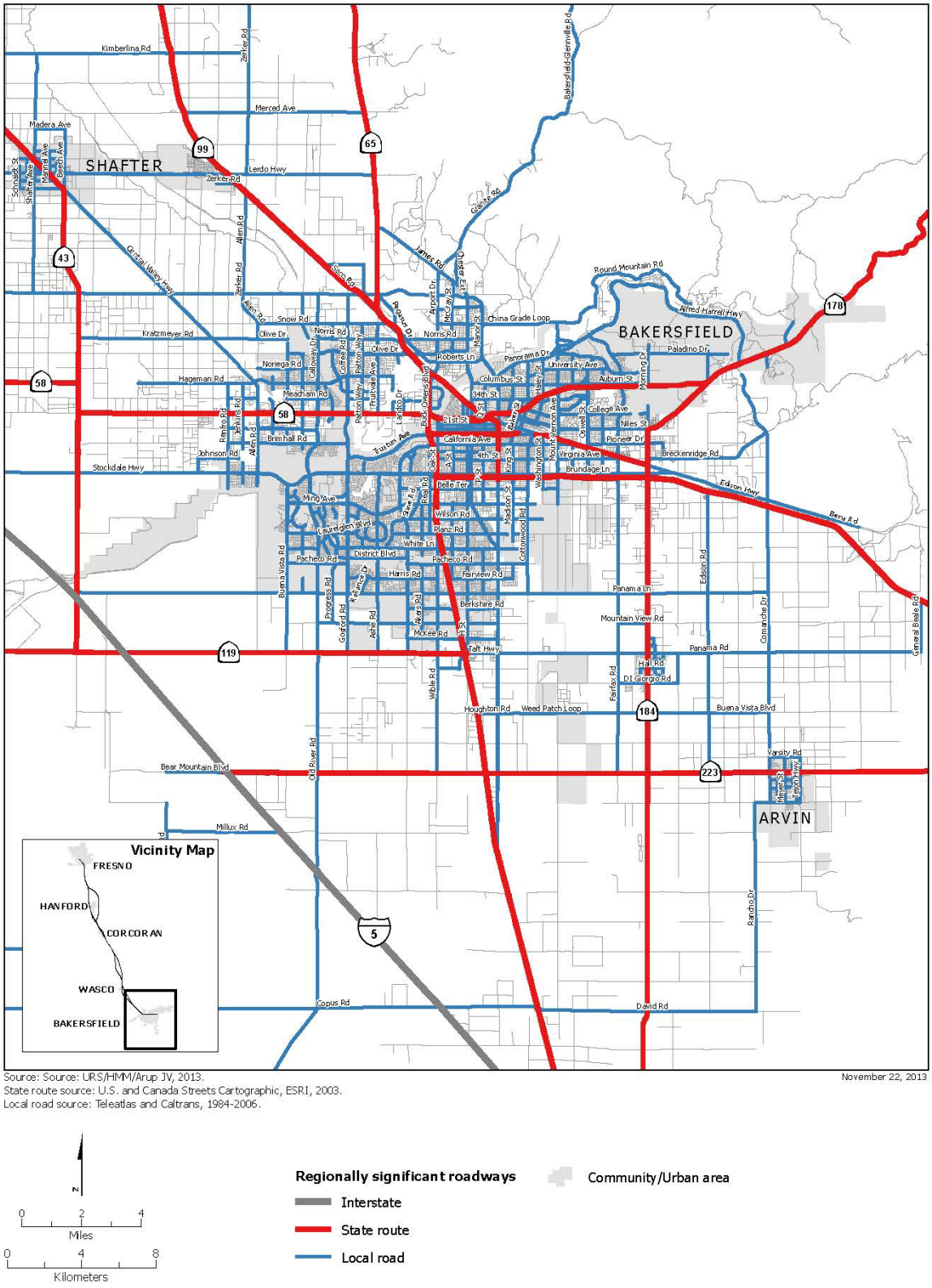

Figure 3.2-5
Regionally significant roads in Bakersfield

Rail Freight

The BNSF Railway provides freight rail service to Fresno and Bakersfield, and the UPRR serves Fresno, Hanford, and Bakersfield. The San Joaquin Valley Railroad (State Railways Incorporated) operates a regional rail freight service between Tulare, Fresno, and Kings counties on 125 track miles of leased UPRR branch lines connecting outlying areas to mainline carriers (Caltrans 2008b). The frequency of freight service varies, but it has been reported in Fresno at 42 to 47 trains per day for the BNSF Railway, 25 to 30 per day for the UPRR, and 1 per day in Hanford for the San Joaquin Valley Railroad (Fresno COG 2010b).

- BNSF is the primary owner of the railroad right-of-way used within the San Joaquin Valley. The railroad owns 276 route miles of the San Joaquin Corridor from Bakersfield to Port Chicago. The railroad along this corridor is primarily single track, with 26.1 miles of double track divided among five segments, totaling 302.1 track miles.
- The UPRR owns a 49-mile section of the San Joaquin Corridor on UPRR track from Sacramento to Stockton, with 9.3 miles of double track in two segments, and a 39-mile section between Oakland and Port Chicago.
- The San Joaquin Valley Railroad (SJVRR) is one of several short-line railroad companies. It operates about 207 miles of track on several lines in California's Central Valley/San Joaquin Valley, primarily near Fresno and Bakersfield. The SJVRR has trackage rights over the UPRR from Fresno – Goshen Junction – Famoso – Bakersfield – Algoso. The SJVRR also operates for the Tulare Valley Railroad (TVRR) from Calwa to Corcoran and Famoso. Currently, the SJVRR interchanges with the BNSF Railway at Fresno and Bakersfield, and with the UPRR at Fresno and Goshen Junction (Caltrans 2008b).

Route mile versus track mile

Route miles may have one or multiple sets of parallel tracks, whereas 'track mile' is used to describe the literal number of miles of single track. A track mile would be double the length for a two-track section, where as a route mile would not count both tracks. For example, 1 mile of double-track operation measures as 1 route mile, but 2 track miles.

Sometimes freight railroads only build single track with short distances of double track where oncoming trains can bypass each other before returning to single track.

Passenger Rail Service

Amtrak's San Joaquin route runs several times a day between the San Francisco Bay Area, Sacramento, and Bakersfield, with bus connections to Southern California. Other stops include Martinez, Stockton, Modesto, Merced, Fresno, Hanford, Corcoran, Turlock, Madera, and Wasco. It is possible to use the San Joaquin line to connect to other destinations. The Bakersfield Station provides bus connections to Santa Barbara, Los Angeles, Las Vegas, and Palm Springs. Currently, the San Joaquin route operates four trips daily in each direction from Oakland to Bakersfield, and two trips daily in each direction from Sacramento to Bakersfield (Caltrans 2008b).

Intercity Passenger Bus Service

The primary bus service in the region is Greyhound, which provides service to locations nationwide. Greyhound Trailways also provides charter service to Yosemite Valley. Transportes InterCalifornias provides additional regional bus service in the Fresno area. This service provides daily bus round-trip service from Fresno to Stockton, San Jose, and Los Angeles with connecting services onward to Santa Ana, San Ysidro, and Tijuana. Certain areas of the region are also served by Orange Belt Trailways and by Airport Bus of Bakersfield, which serves areas between Bakersfield and Los Angeles.

3.2.4.2 Fresno Station Area

This section discusses existing transportation conditions around the proposed Fresno Station in more detail than the previous regional discussion because of the potential changes in local traffic conditions related to a downtown HST station. The study area extends north of the HST station to McKinley Ave, which is the northern extent of where changes in HST traffic are predicted.

Highways and Roadways

The proposed Fresno HST alternative station sites are located in the area bounded by Merced and Santa Clara streets to the southeast, and by G and H streets. The study area is regionally served by State Route (SR) 41, SR 99, and SR 180, and locally by a connecting grid pattern of expressways, arterials, collector roads, and local roads.

There are 71 roadway segments in the vicinity of the Fresno HST Station. Figures 3.2-6a to 3.2-6c show the study intersections in the area; Figure 3.2-7 shows the existing roadway designations; and Figures 3.2-8a to 3.2-8c show the average daily traffic (ADT), number of lanes, and speed for these roadway segments. The methodology explained in Section 3.2.3 was used to evaluate the existing operating conditions for the study area roads, and determined that all 71 roadway segments currently operate at LOS D or better except for the roadway segment of Tulare Street between SR 41 ramps and N. First Street (LOS F). More details on LOS analysis for roadway segments are included in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

Intersections

There are 136 intersections (#119 would be created under Plus Project conditions) in the vicinity of the Fresno Station study area, as shown on Figures 3.2-6a to 3.2-6c. Figures 3.2-9a to 3.2-9c show the existing intersection operating conditions in terms of level of service. The methodology explained in Section 3.2.3 was used to evaluate the existing operating conditions for the study area intersections. With the exception of nine intersections shown in Table 3.2-6, the 127 remaining study area intersections currently operate at LOS D, or better. More details on LOS analysis at the study intersections are included in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

Table 3.2-6
Intersections Operating at LOS E or F near the Proposed Fresno Station

Int ID	Intersection	Control	Existing Conditions			
			AM Peak		PM Peak	
			Delay (seconds)	LOS	Delay (seconds)	LOS
6	SR 99 Northbound Ramps/Ventura Ave	One-way Stop	**> 50.0**	**F**	34.5	D
7	E St/Ventura Ave	Two-way Stop	32.1	D	**35.7**	**E**
33-0	Divisadero St/SR 41 Northbound Ramps/Tulare St	Signalized	**> 80.0**	**F**	**> 80.0**	**F**
63	H St /Divisadero St	Signalized	**74.7**	**E**	33.7	C
80	N. Blackstone Ave/SR 180 Westbound Ramps	Signalized	**> 80.0**	**F**	17.4	B
89	M St/San Benito St/SR 41 NB On-Ramp	Two-way Stop	11.7	B	**> 50.0**	**F**
106	Stanislaus St/SR 99 NB On-Ramp	One-way Stop	-	B	**-**	**E**
121	West McKinley Ave/SR 99 NB Ramp	Two-way Stop	35.1	E	**> 50.0**	**F**
129	W Belmont Ave/SR 99 SB Ramps	Two-way Stop	18.7	C	**35.7**	**E**

Source: Authority and FRA 2014.Delay is in average delay per vehicle at signalized intersections and maximum average delay per vehicle at stop-controlled approaches.

Intersections with LOS E or F in the AM or PM are in **Bold**.

Acronyms and Abbreviations:

ID = identification
LOS = level of service
SR = state route

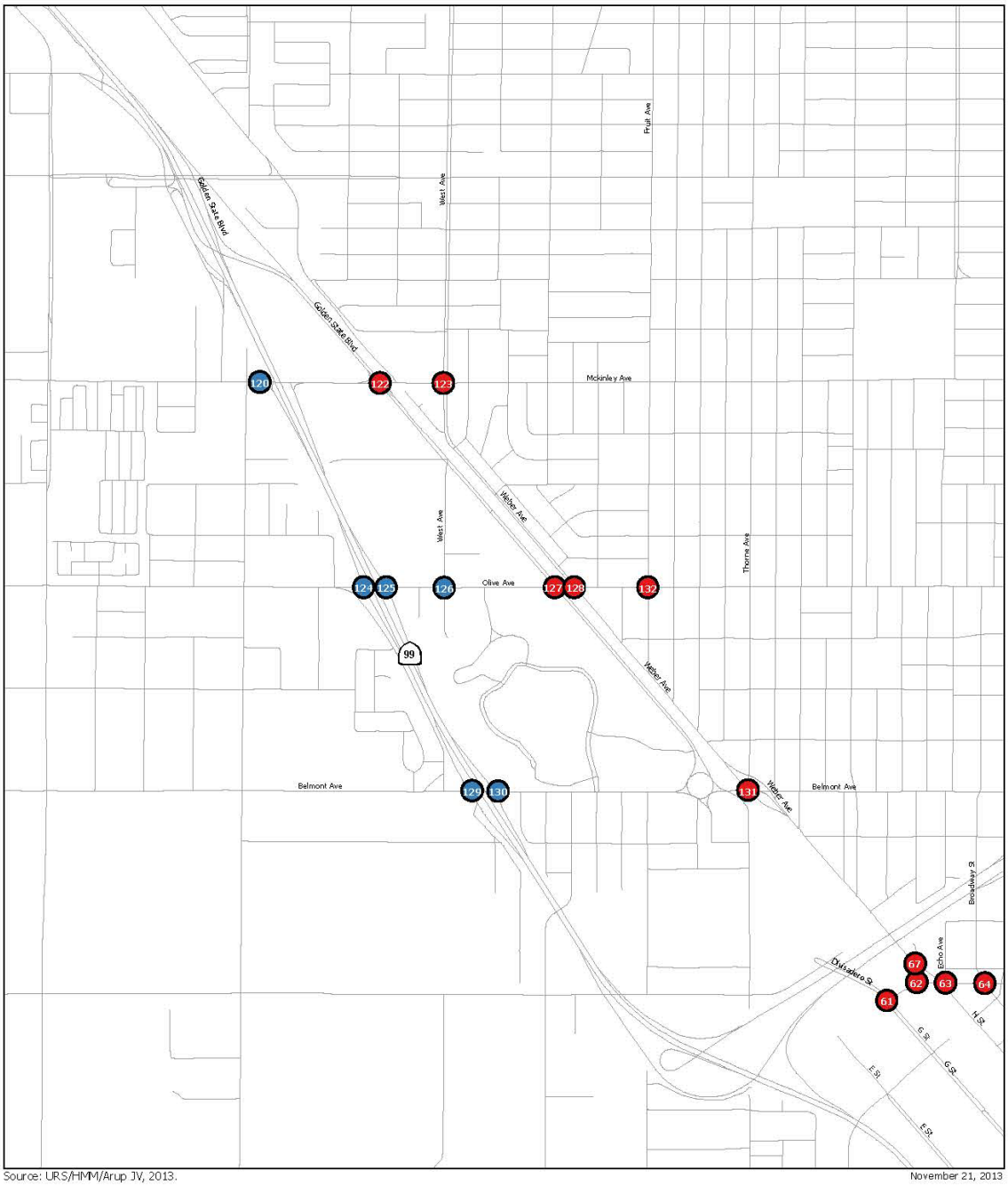

Figure 3.2-6a
Study intersections–Fresno Station area

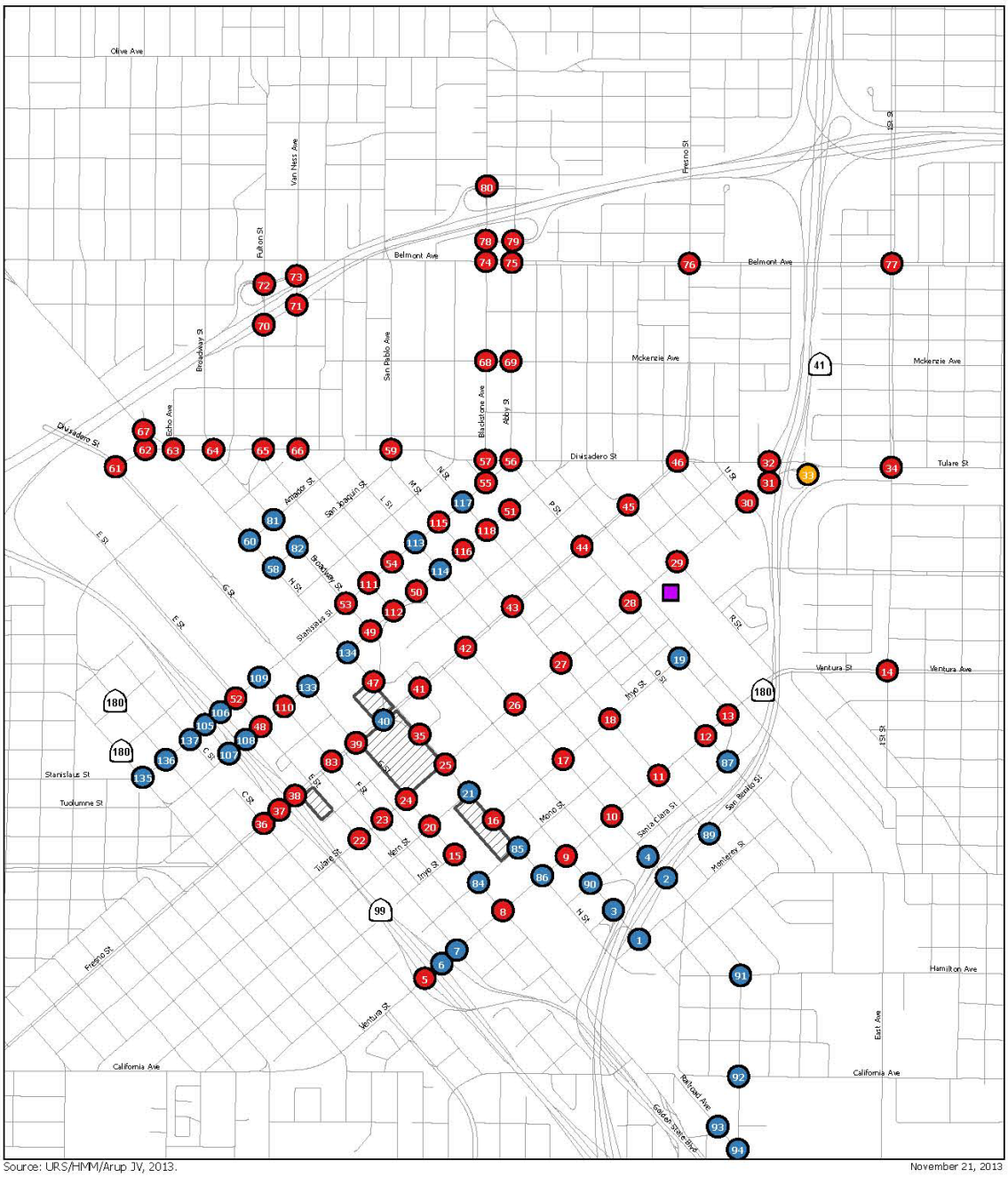

Figure 3.2-6b
Study intersections–Fresno Station area

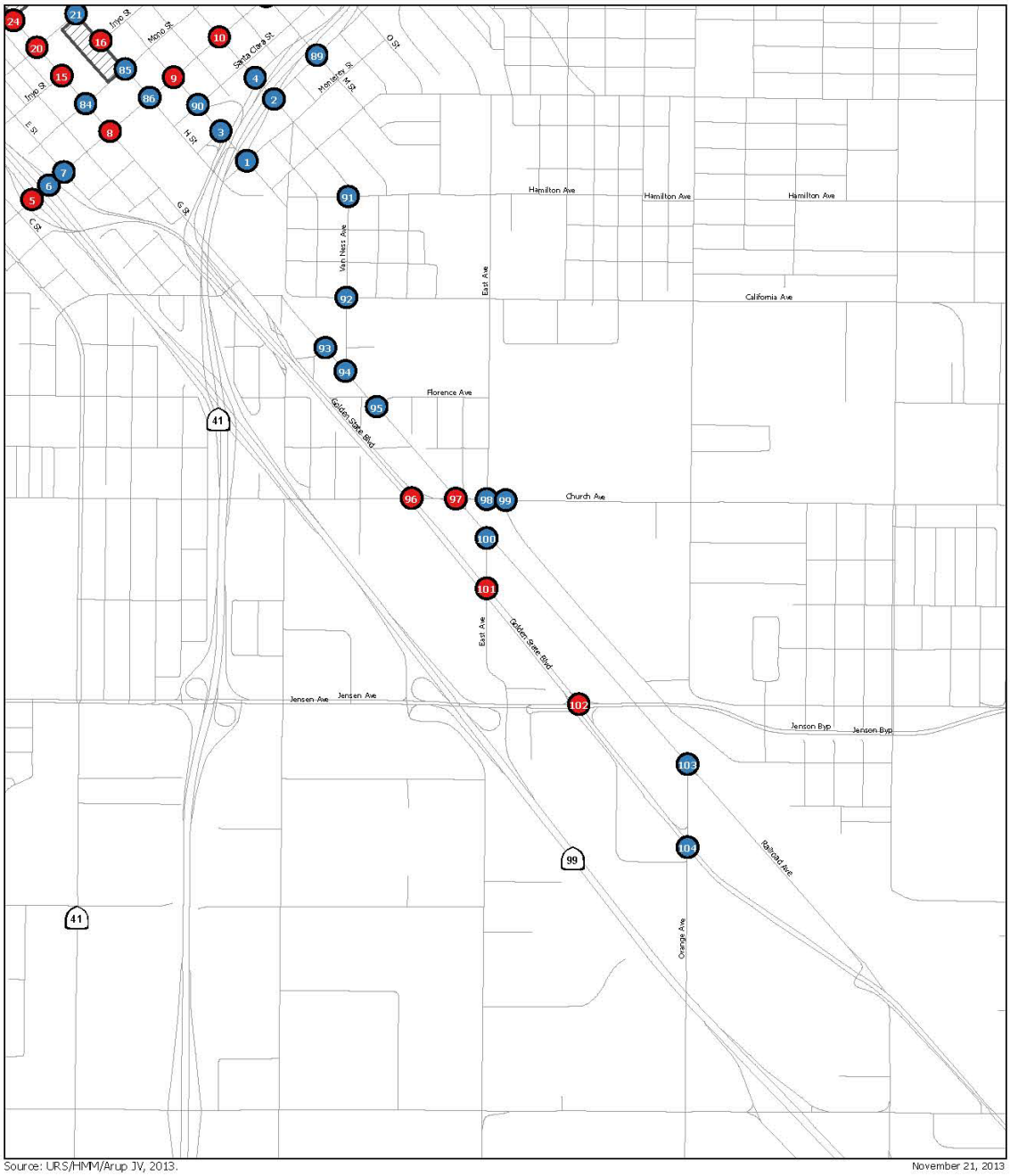

Figure 3.2-6c
Study intersections–Fresno Station area

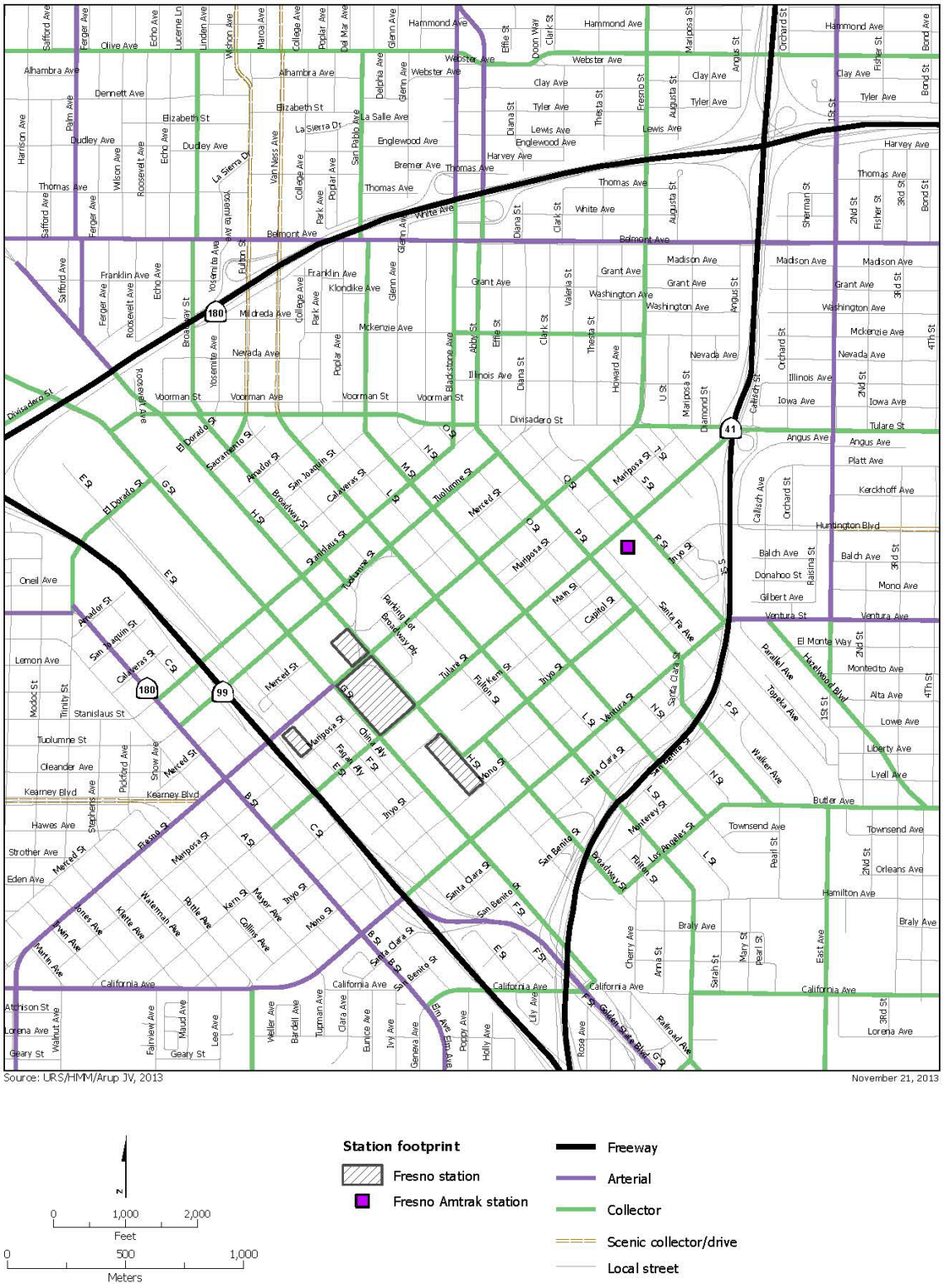

Figure 3.2-7
Roadway classifications–Fresno Station area

Figure 3.2-8a
Average daily traffic, number of lanes, and speed–Fresno Station area

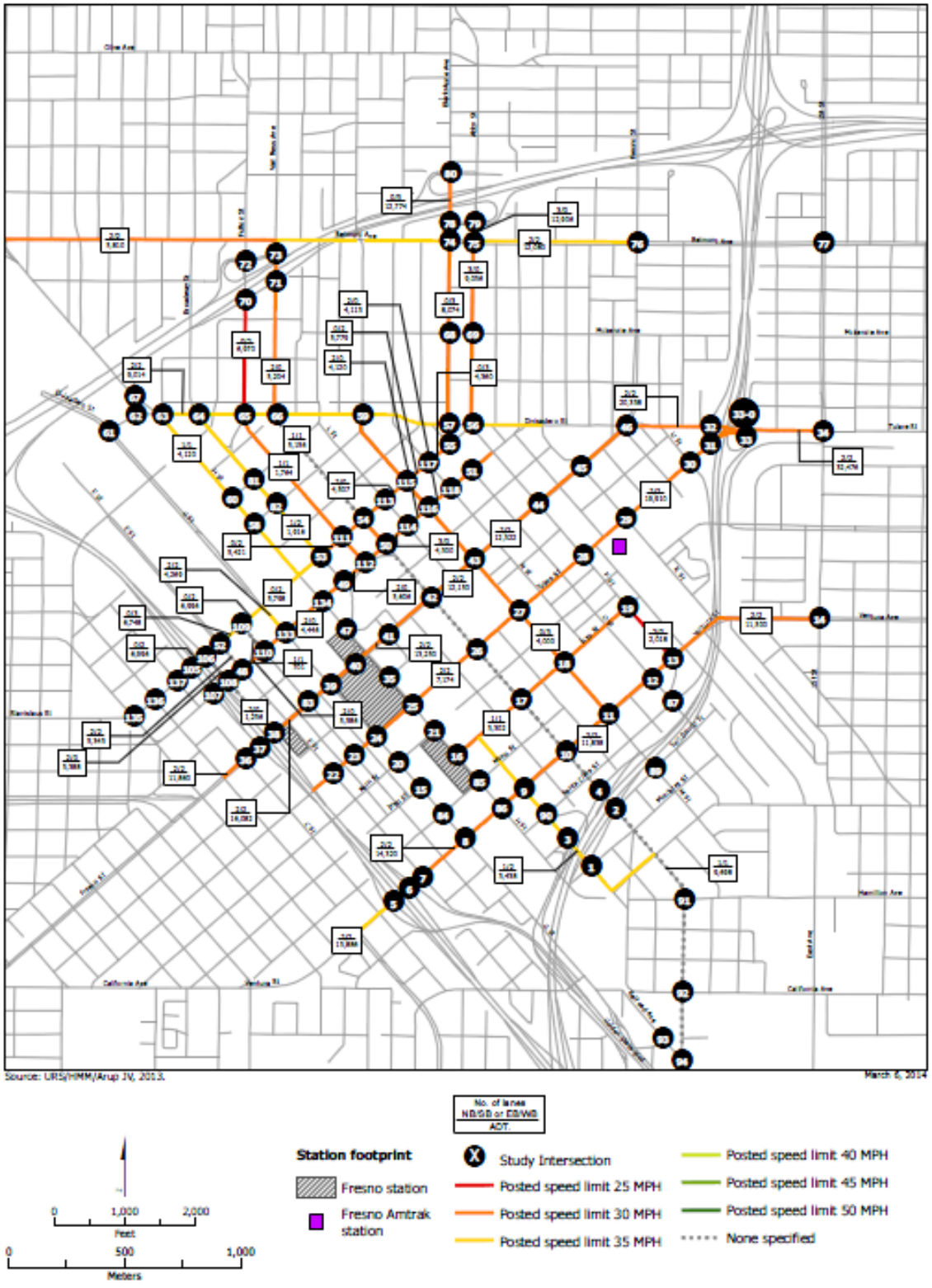

Figure 3.2-8b
Average daily traffic, number of lanes, and speed–Fresno Station area

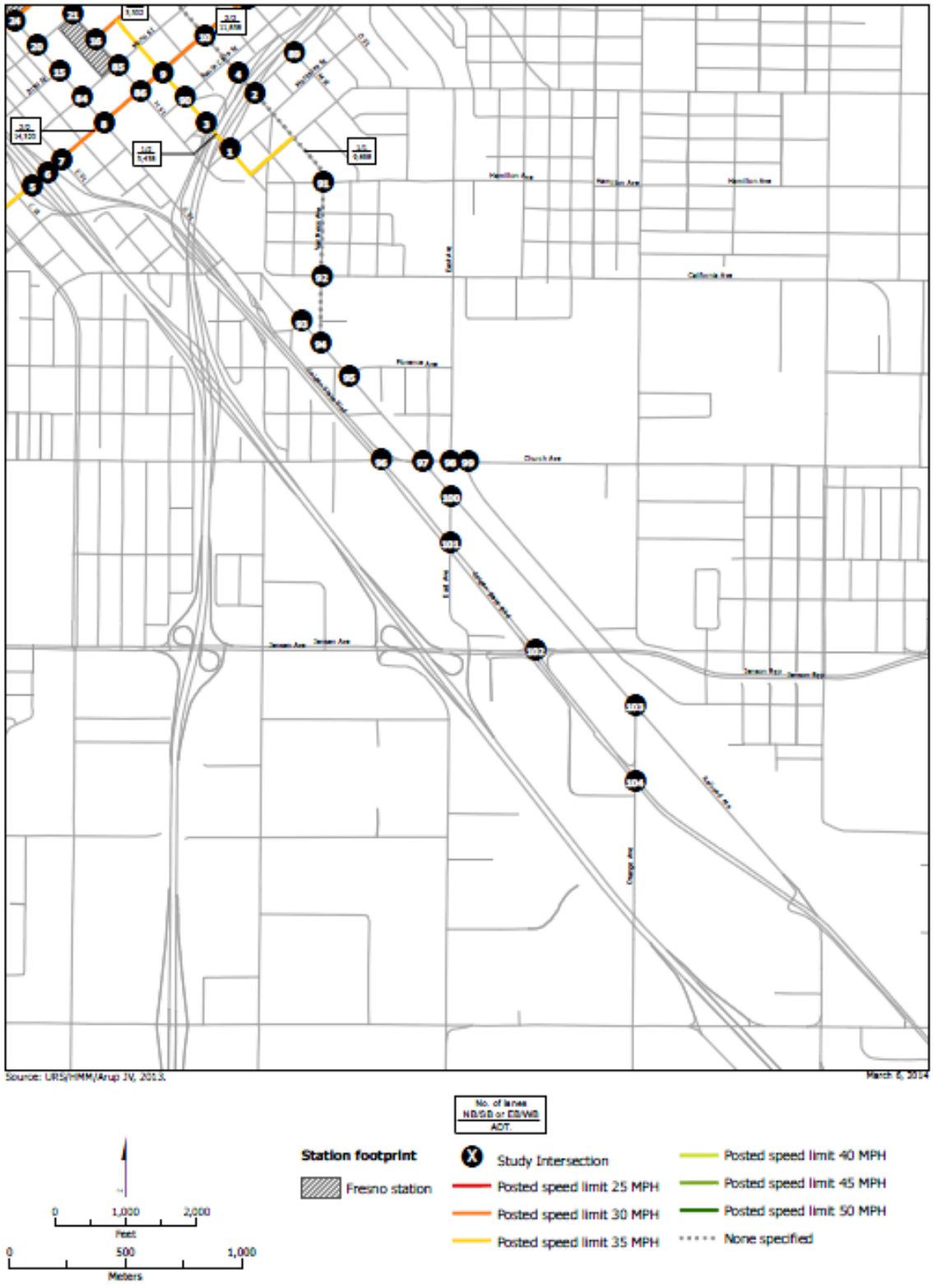

Figure 3.2-8c
Average daily traffic, number of lanes, and speed–Fresno Station area

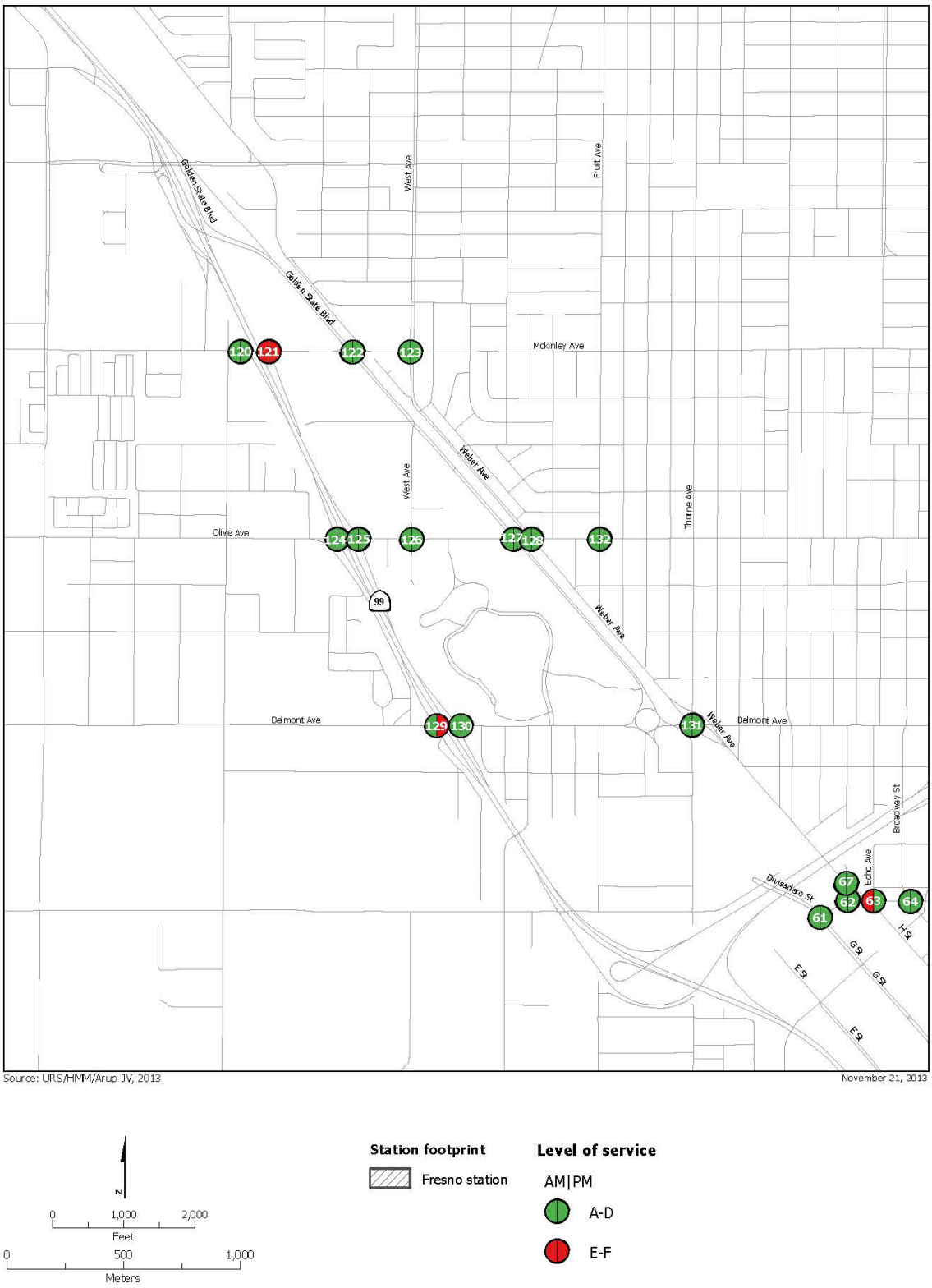

Figure 3.2-9a
Intersection level of service–Fresno Station area

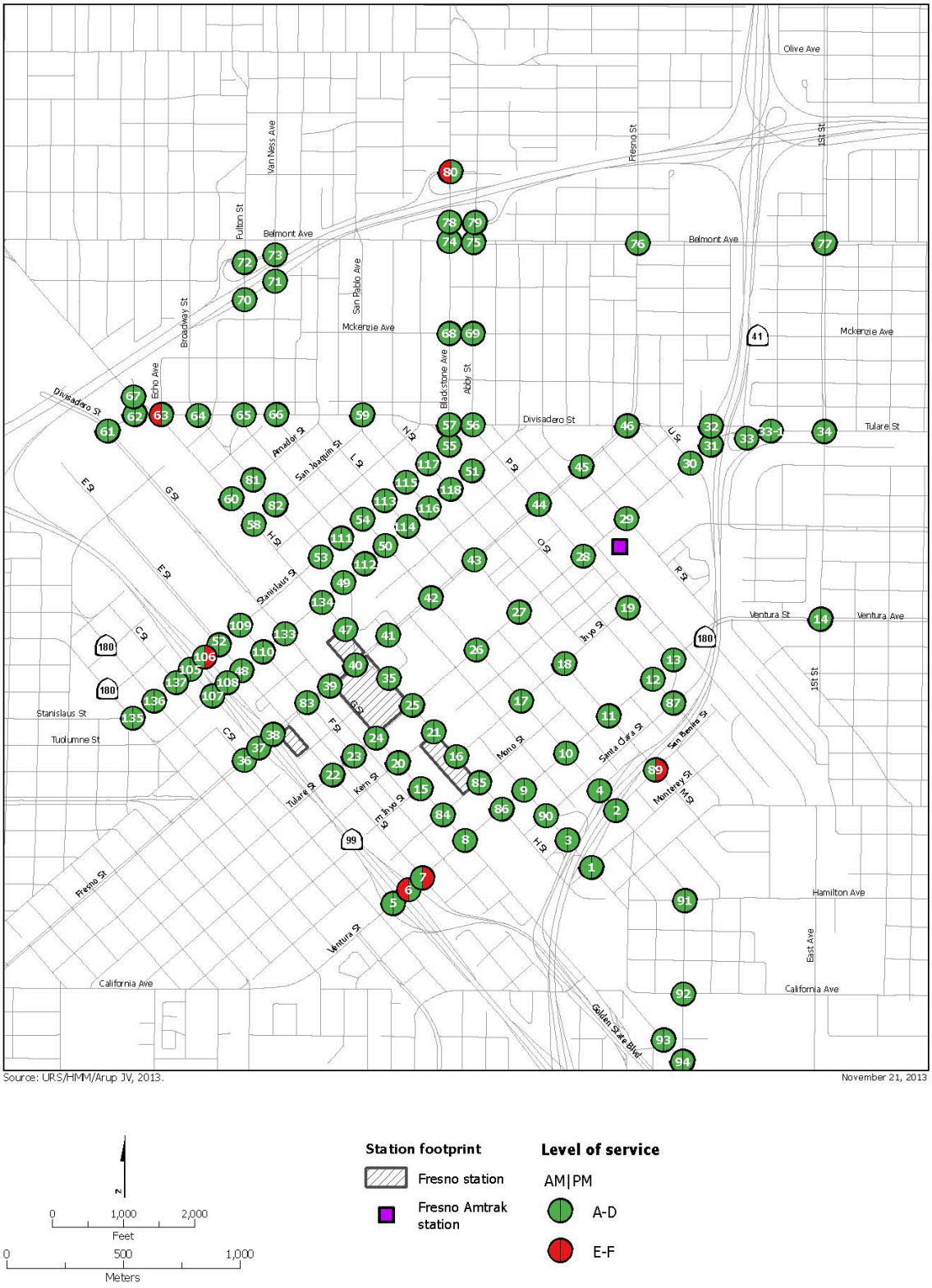

Figure 3.2-9b
Intersection level of service–Fresno Station area

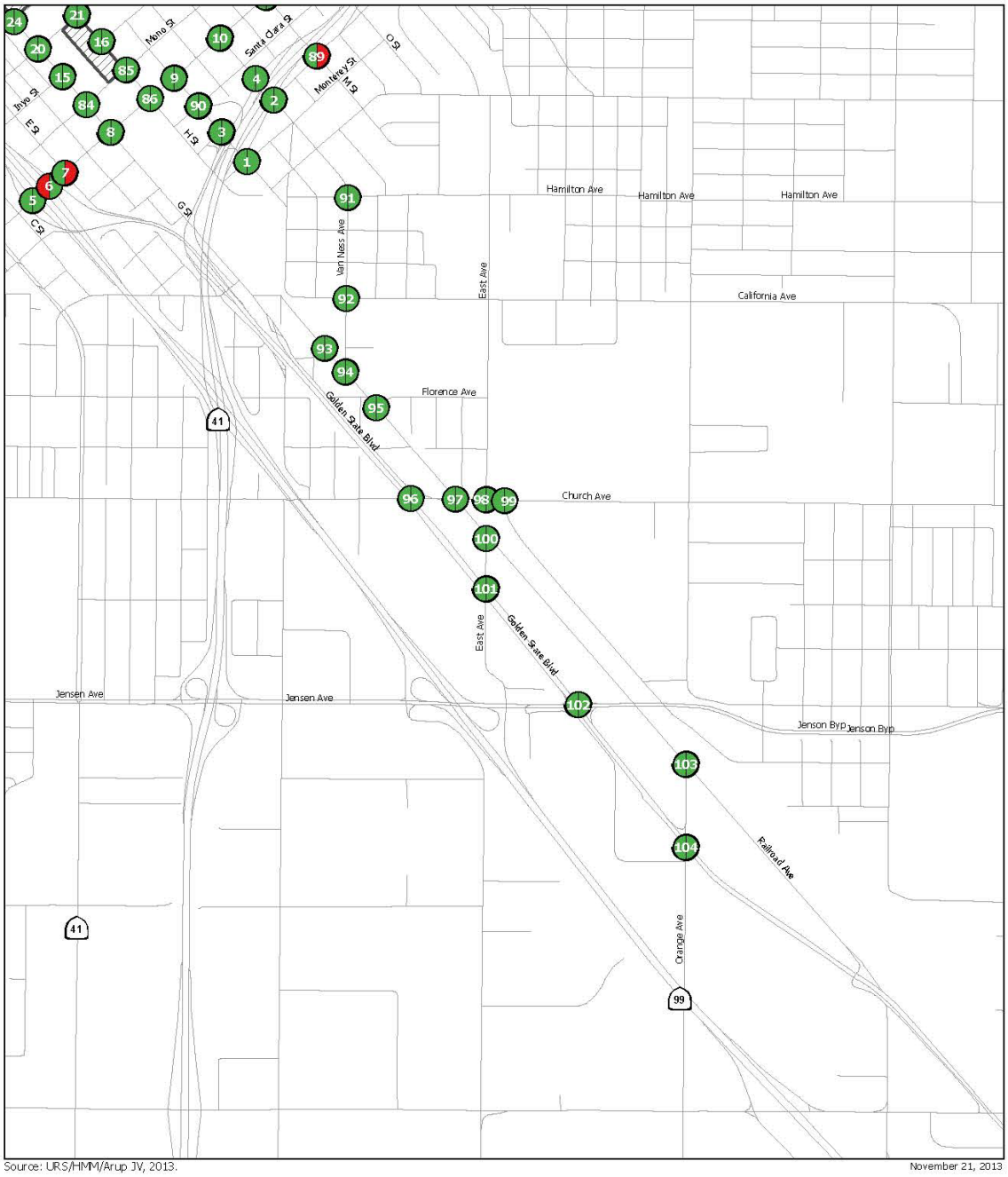

Figure 3.2-9c
Intersection level of service–Fresno Station area

The Council of Fresno County Governments' 2011 Regional Transportation Plan (RTP) is the plan for future transportation improvements to the regional and local roadway system (Fresno COG 2010a). The nearest project in the RTP is on H Street between Belmont Avenue and Ventura Street, which is identified for widening from two to four lanes.

Transit

The Fresno Area Express (FAX) is the city of Fresno's transit line; it has 13 routes that serve the proposed HST station area. FAX serves the greater Fresno Metropolitan Area with a fleet of over 100 buses. Service includes 20 fixed-route bus lines and paratransit service (City of Fresno 2002). The existing routes that would serve the proposed Downtown Fresno Station are summarized in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014) and the weekday service frequencies are listed in Table 3.2-7. The Greyhound bus line also serves the proposed station area.

Table 3.2-7
City of Fresno Bus Routes and Weekday Service Frequency

Bus Routes – Fresno	Weekday Service Frequency (minutes)
Route 20 – N Hughes / N Marks / E Olive	30
Route 22 – N West Ave / E Tulare Ave	30
Route 26 – N Palm / Peach Ave	30
Route 28 – CSUF / Manchester Center / W Fresno	15
Route 30 – Pinedale / N Blackstone / W Fresno	15
Route 32 – N Fresno / Manchester Center / W Fresno	30
Route 33 – Olive / Belmont Crosstown	30
Route 34 – Northeast Fresno / N 1st / W Fresno	15
Route 35 – Olive Crosstown	30
Route 38 – N Cedar / Jensen / Hinton Center	15
Route 39 – Clinton Ave Crosstown	30
Route 41 – N Marks Ave / Shields Ave / VMC	30
Route 45 – Ashlan Crosstown	60
Source: Authority and FRA 2014.	

Non-Motorized Facilities

The City of Fresno's bicycle master plan includes objectives to establish and promote an accessible bikeway system throughout the metropolitan area (City of Fresno 2010). Two existing bikeways are within 1 mile of the proposed Fresno HST Station, along Huntington Boulevard and B Street. There are no existing bike lanes or routes connecting to or located in the immediate vicinity of the

station sites. Sidewalks are present on most of the streets in the vicinity of the station site alternatives.

Parking Facilities

There are 10 city-owned and operated parking lots and garages in the Fresno downtown area that provide event, monthly, and/or daily parking. There are approximately 4,700 parking spaces within these 10 lots and garages. Most are in the vicinity of H Street and Van Ness Avenue, approximately 0.5 mile from the proposed station sites.

3.2.4.3 Kings/Tulare Regional Station–East Alternative

This section discusses existing transportation conditions around the Kings/Tulare Regional Station—East Alternative because of the potential changes in local traffic conditions generated by the HST station.

Highways and Roadways

The Kings/Tulare Regional Station—East site is located in rural agricultural lands 3 miles east of Hanford. The site is adjacent to the San Joaquin Valley Railroad and northeast of (and would be accessed from) the SR 43 and SR 198 interchange. SR 198 is two lanes in each direction west of SR 43, and one lane in each direction east of SR 43. SR 43 is one lane in each direction within the study area.

The Kings/Tulare Regional Station—East study area includes 13 roadway segments. The study intersections are shown on Figure 3.2-10. Figure 3.2-11 shows the existing roadway designations for this area, and Figure 3.2-12 shows the average daily traffic (ADT), number of lanes, and speed for these roadway segments. A summary of the roadway segments is included in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

Intersections

The Kings/Tulare Regional Station—East study area includes nine study intersections, as shown in Figure 3.2-10. Figure 3.2-13 shows the existing LOS for each intersection. Three of the nine intersections function at LOS E or F, as shown in Table 3.2-8. A summary of LOS analysis at the study intersections is included in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

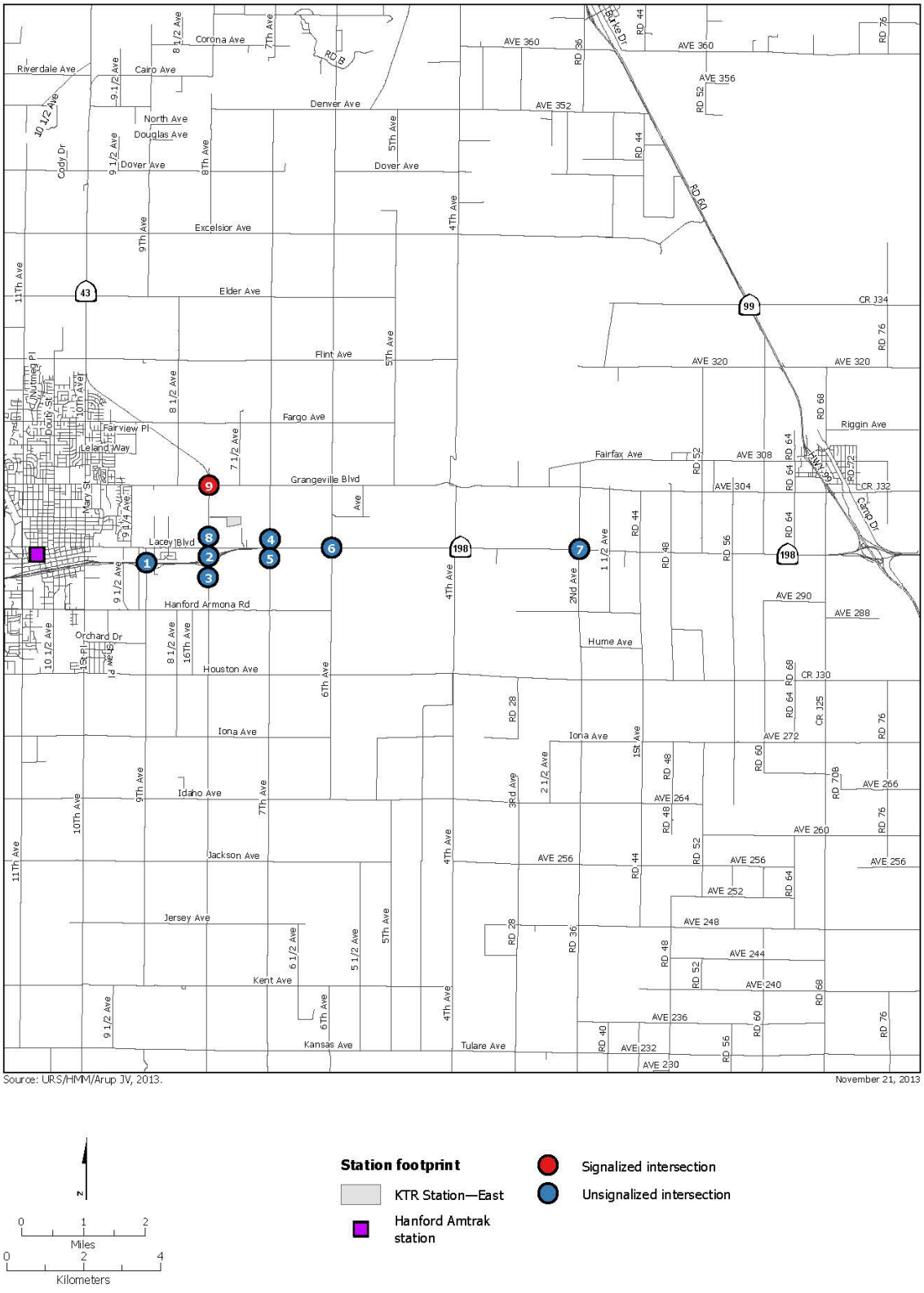

Figure 3.2-10
Study intersections: Kings/Tulare Regional Station—East area

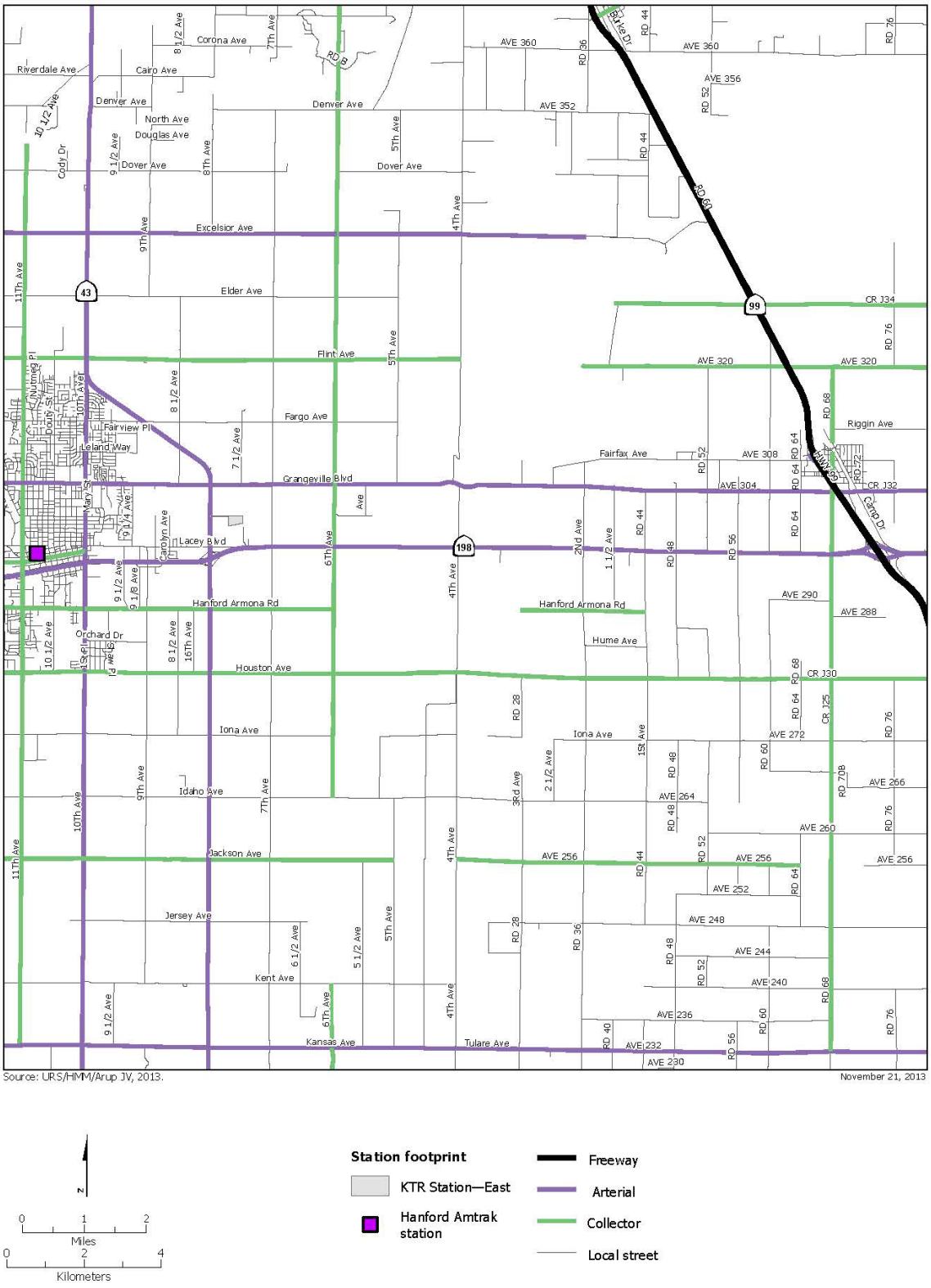

Figure 3.2-11
Roadway classifications: Kings/Tulare Regional Station—East area

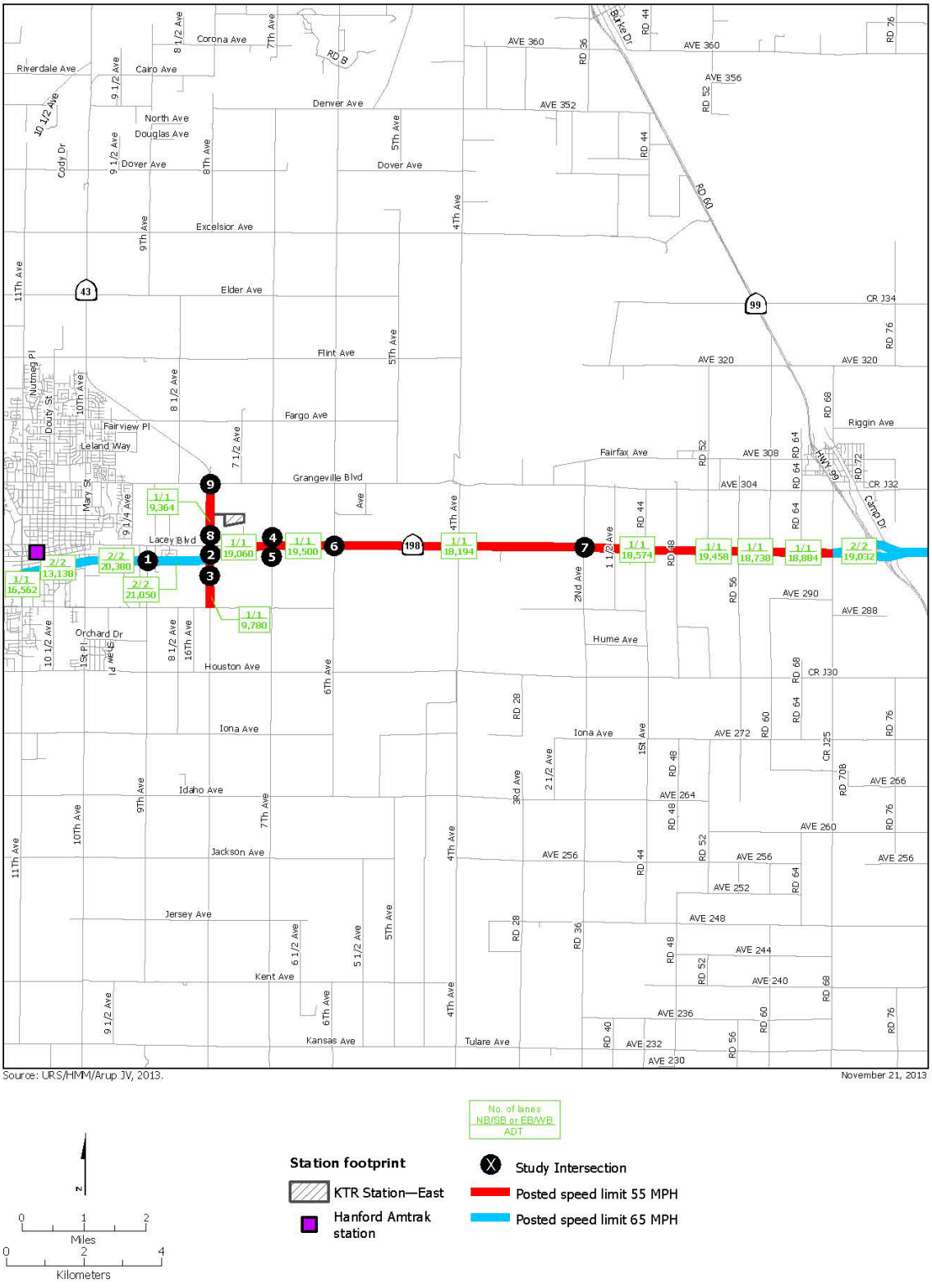

Figure 3.2-12
Average daily traffic, number of lanes, and speed: Kings/Tulare Regional Station—East area

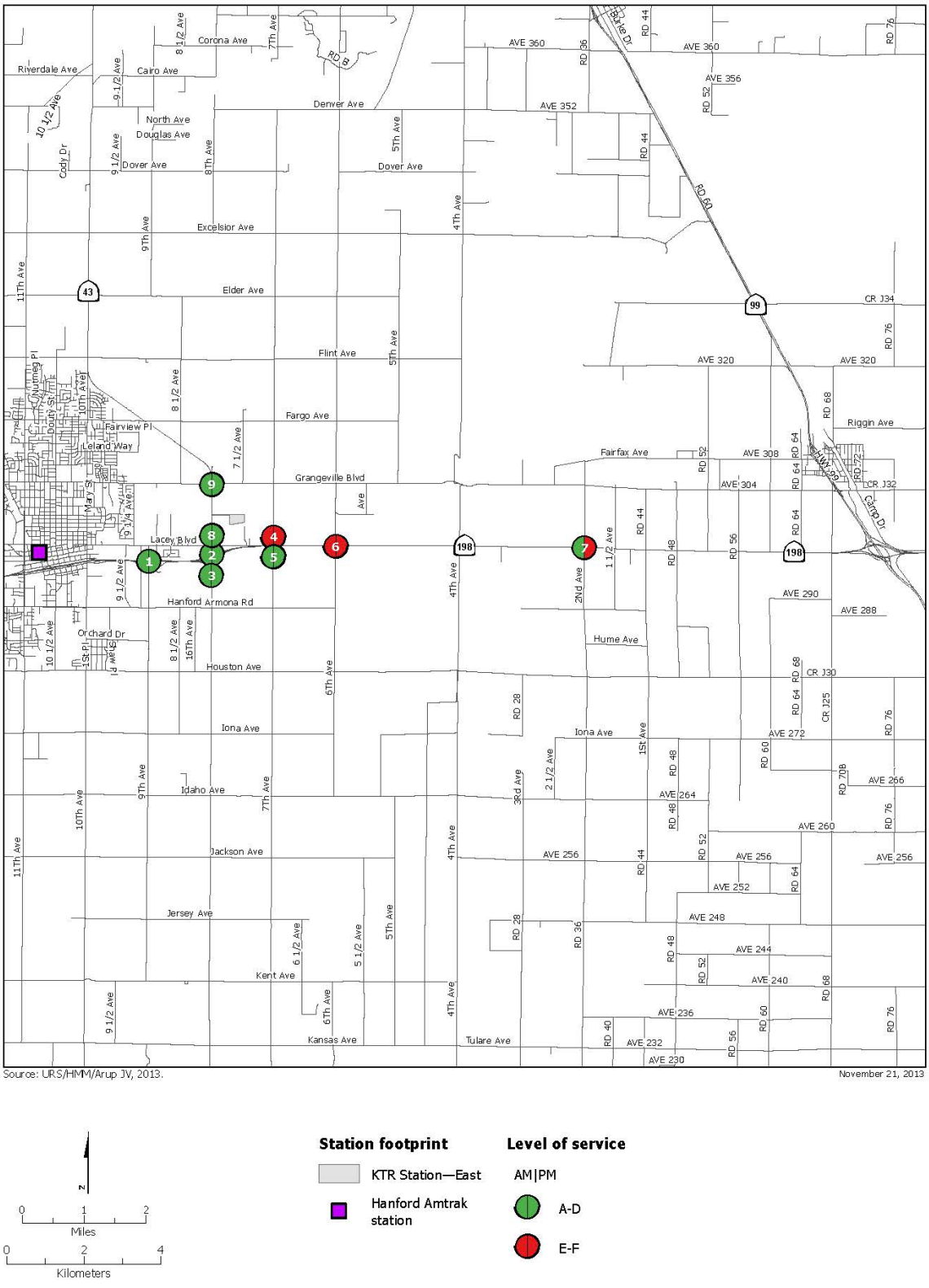

Figure 3.2-13
Intersection level of service: Kings/Tulare Regional Station—East area

Table 3.2-8
Intersections Operating at LOS E or F near the Kings/Tulare Regional Station—East Alternative (Potential)

Int ID	Intersection	Control	Existing Conditions			
			AM Peak		PM Peak	
			Delay (seconds)	LOS	Delay (seconds)	LOS
4	7th Avenue/SR 198	Two-Way Stop	**> 50.0**	**F**	**> 50.0**	**F**
6	6th Avenue/SR 198	Two-Way Stop	**> 50.0**	**F**	**> 50.0**	**F**
7	2nd Avenue/SR 198	Two-Way Stop	29.6	D	**> 50.0**	**E**

Source: Authority and FRA 2014.

Delay is in average delay per vehicle at signalized intersections and maximum average delay per vehicle at stop-controlled approaches.

Intersections with LOS E or F in the AM or PM are in **Bold**.

Acronyms and Abbreviations:

ID = identification
LOS = level of service
SR = state route

Transit

Kings Area Rural Transit (KART) operates a regional bus system with routes that begin and end at its intermodal transfer facility on Seventh Street, just west of the Amtrak Hanford station. KART also operates the Hanford-Corcoran bus route that travels from the intermodal transfer facility to SR 43 (in the vicinity of the Kings/Tulare Regional Station—East area), and then south to Corcoran. Greyhound and Orange Belt Trailways have limited bus service connecting to the intermodal facility.

Non-Motorized Facilities

The Kings/Tulare Regional Station—East study area, located northeast of the SR 198 and SR 43 interchange, is in a rural area with no existing bike or pedestrian facilities.

Parking Facilities

There are no existing parking facilities near the Kings/Tulare Regional Station—East study area.

3.2.4.4 Kings/Tulare Regional Station—West Alternative

This section discusses existing transportation conditions around the Kings/Tulare Regional Station—West site because of the potential changes in local traffic conditions generated by the HST station.

Highways and Roadways

The Kings/Tulare Regional Station—West site is located in rural agricultural lands less than 0.5 miles west of Hanford. The site is adjacent to the San Joaquin Valley Railroad and east of (and

would be accessed from) 13th Avenue. The station site is north of the SR 198, 13th Avenue, Hanford-Armona Road interchange. Within the study area, SR 198 consists of two lanes in each direction.

The Kings/Tulare Regional Station—West study area includes 13 roadway segments. The study intersections are shown on Figure 3.2-14. Figure 3.2-15 shows the existing roadway designations for this area, and Figure 3.2-16 shows the average daily traffic (ADT), number of lanes, and speed for these roadway segments. A summary of the roadway segments is included in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

Intersections

The Kings/Tulare Regional Station—West study area includes 23 study intersections, as shown in Figure 3.2-14. Figure 3.2-17 shows the existing LOS for each intersection. Four of the 23 intersections function at LOS E or F, as shown in Table 3.2-9. A summary of LOS analysis at the study intersections is included in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

Table 3.2-9
Intersections Operating at LOS E or F near the Kings/Tulare Regional Station—West Alternative (Potential)

Int ID	Intersection	Control	Existing Conditions			
			AM Peak		PM Peak	
			Delay (seconds)	LOS	Delay (seconds)	LOS
1	14th Avenue/Hanford Armona Road	Two-way Stop	31.6	D	**36.0**	**E**
5	13th Avenue/Lacey Boulevard	All-way Stop	20.7	C	**40.5**	**E**
12	Mall Drive/Lacey Boulevard	Signalized	23.6	C	**66.9**	**E**
18	South Redington Street/ W. 4th Street	Two-way Stop	**< 80**	**F**	*	**F**

Source: Authority and FRA 2014.

* Volumes at the intersection exceed theoretical capacity. As a result, average delay cannot be predicted.

Delay is in average delay per vehicle at signalized intersections and maximum average delay per vehicle at stop-controlled approaches.

Intersections with LOS E or F in the AM or PM are in **Bold**.

Acronyms and Abbreviations:

ID = identification
LOS = level of service
SR = state route

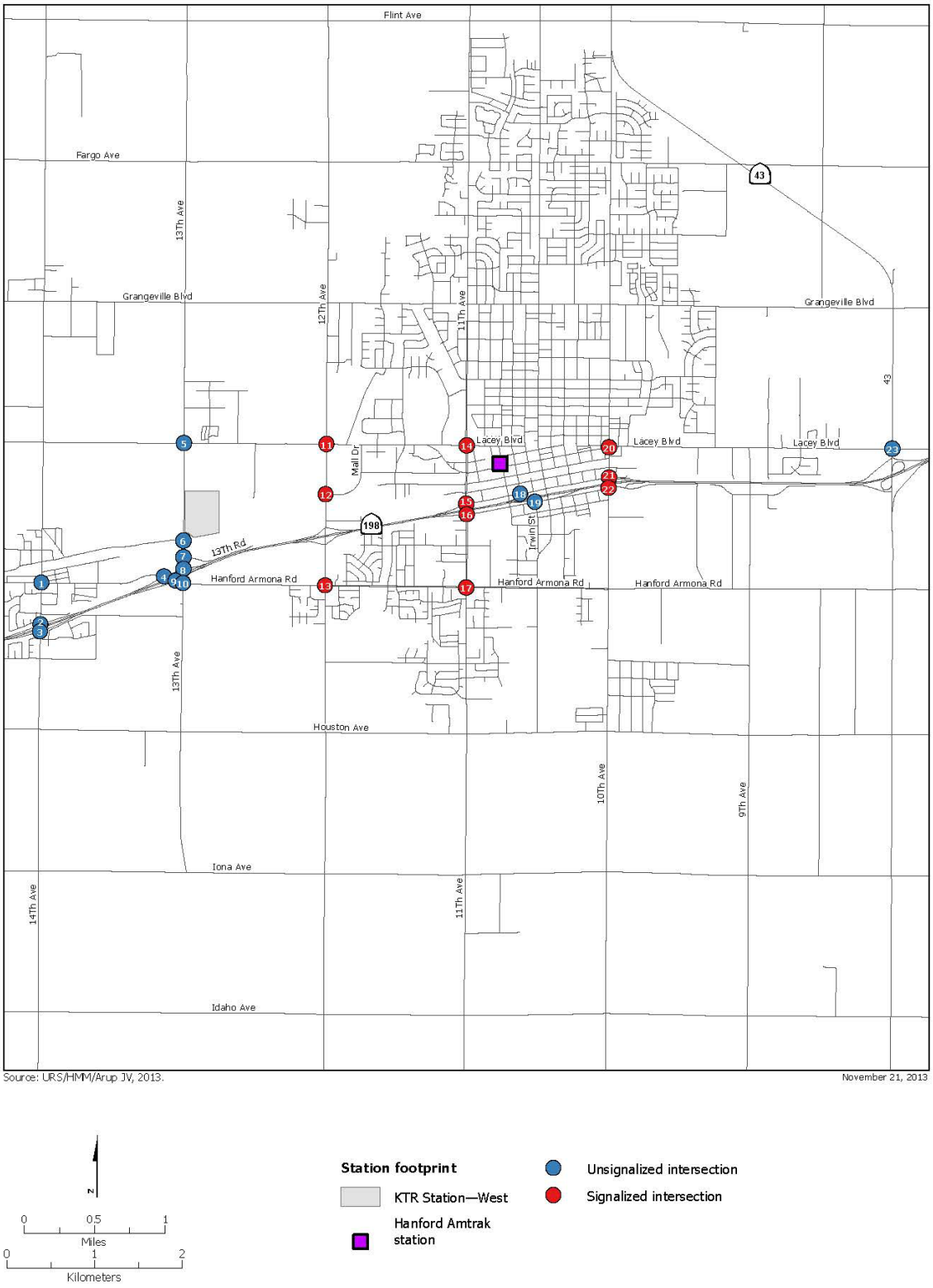

Figure 3.2-14
Study intersections: Kings/Tulare Regional Station—West area

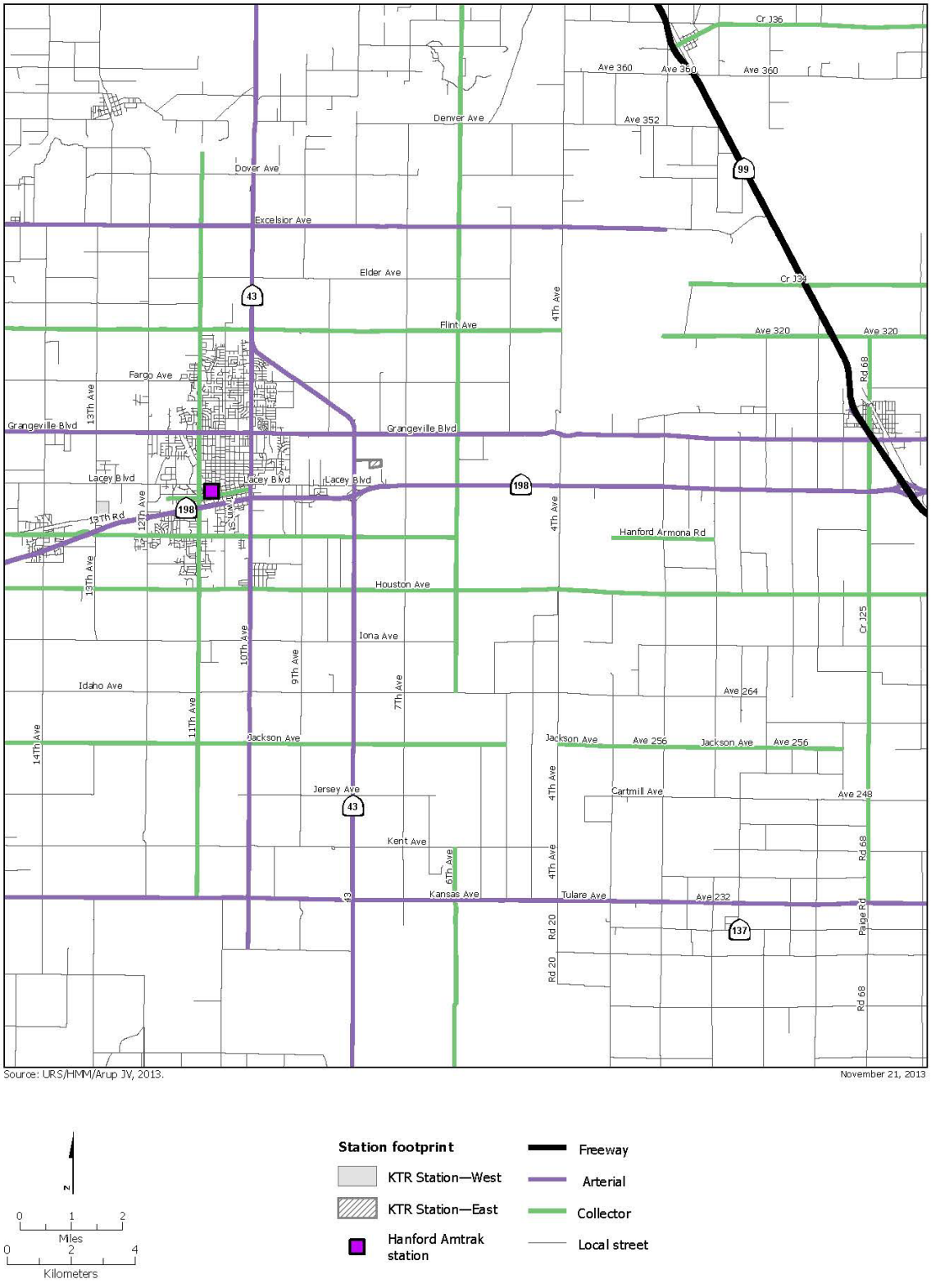

Figure 3.2-15
Roadway classifications: Kings/Tulare Regional Station—West area

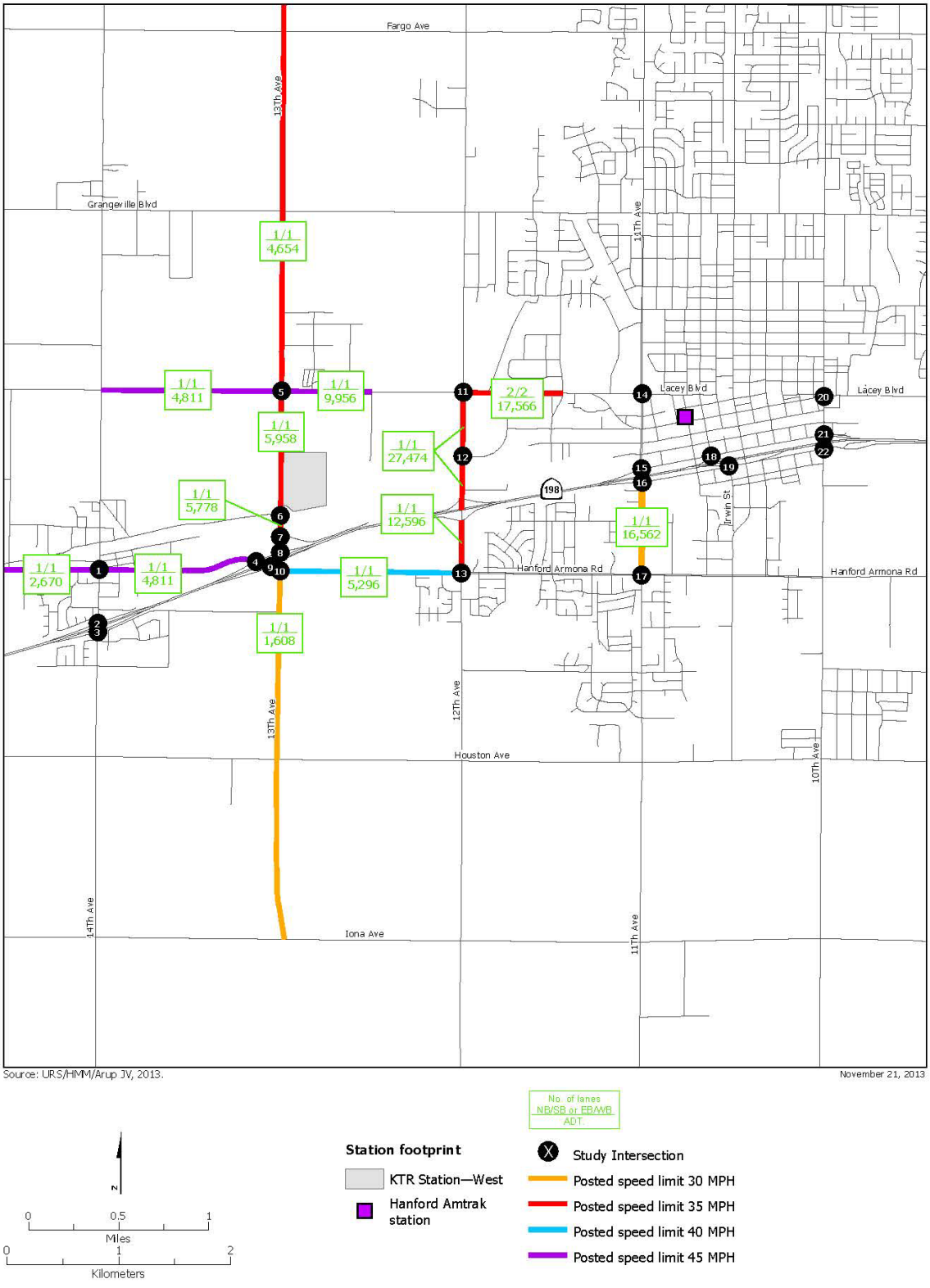

Figure 3.2-16
Average daily traffic, number of lanes, and speed: Kings/Tulare Regional Station—West

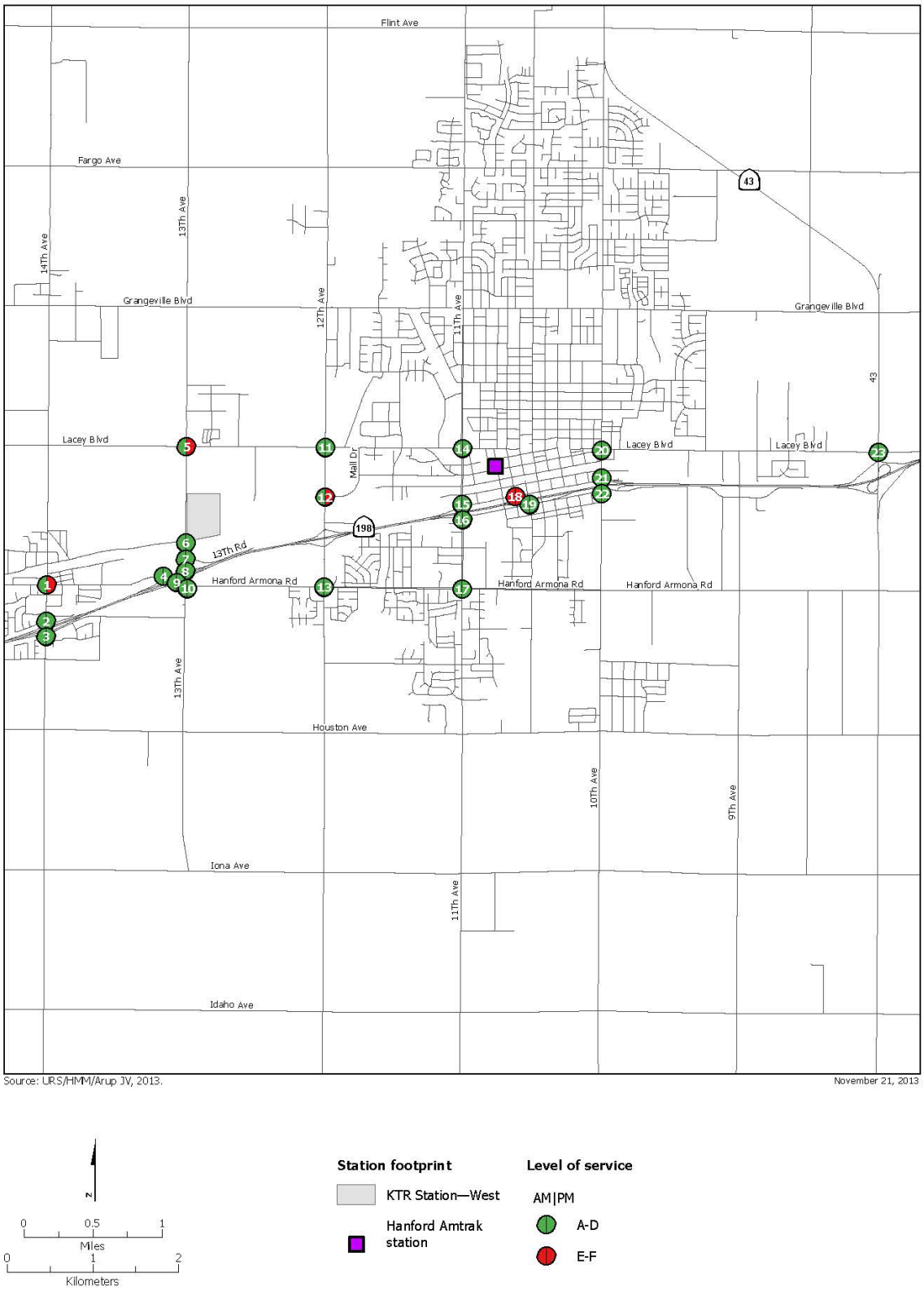

Figure 3.2-17
Intersection level of service: Kings/Tulare Regional Station—West area

Transit

Kings Area Rural Transit (KART) operates a regional bus system with routes that begin and end at its intermodal transfer facility on Seventh Street, just west of the Amtrak Hanford station. KART also operates the Hanford-Corcoran bus route that travels from the intermodal transfer facility to SR 43 (in the vicinity of the Kings/Tulare Regional Station—West area), and then south to Corcoran. Greyhound and Orange Belt Trailways have limited bus service connecting to the intermodal facility.

Non-Motorized Facilities

The Kings/Tulare Regional Station—West study area, located north of the SJVRR and east of 13th Avenue, is in a rural area with no existing bike or pedestrian facilities.

Parking Facilities

There are no existing parking facilities near the Kings/Tulare Regional Station—West study area.

3.2.4.5 Bakersfield Station Area

This section discusses existing transportation conditions around the potential Bakersfield Station because of the potential changes in local traffic conditions generated by the downtown HST station.

Highways and Roadways

The proposed Bakersfield Station sites are located in the area west of Union Street, between Truxtun and California avenues. Each of these roadways has two to three lanes in each direction, generally with divided medians except near intersections. Union Street has an undercrossing at the BNSF Railway line. The site and vicinity include the Bakersfield Amtrak station and a BNSF freight service yard.

Several new freeway corridors are included in the *Metropolitan Bakersfield General Plan*, although these projects are not funded and may still require adoption of the corridors (City of Bakersfield and Kern County 2007). The planned freeways nearest to the proposed Bakersfield Station sites, which may potentially cross the proposed BNSF Alternative, are the Crosstown Freeway (also called the Centennial Corridor), which would extend from SR 178 to SR 99; the Westside Parkway (a continuation of the Crosstown Freeway) from SR 99 to Interstate 5; and the widening of SR 58 from SR 99 to Cottonwood Road.

The Bakersfield Station study area is generally bounded by the highways of SR 204 and SR 178 to the north, SR 58 to the south and SR 99 to the west, and by Mount Vernon Avenue to the east. These freeways, as they serve as the connectors to intra and interregional destinations. East of the station area, Mount Vernon Avenue is designated as an arterial roadway, providing north-south access for local traffic to SR 178 and SR58. Union Avenue (SR 204) serves as the major north-south traffic connection within downtown Bakersfield.

The Bakersfield Station study area includes 50 roadway segments. The study intersections are shown on Figure 3.2-18. Figure 3.2-19 shows the existing roadway designations for the area; and Figure 3.2-20 shows the ADT, number of lanes, and speed for these roadway segments. All but five (Road Segments #16, #17, #23, #31, and #32) of the 50 roadway segments operate at LOS C or better. More details on LOS analysis of the roadway segments are included in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report (*Authority and FRA 2014).

Intersections

The Bakersfield Station study area includes 72 intersections. Figure 3.2-18 shows the intersections analyzed in the Bakersfield Station area. Figure 3.2-21 shows the existing intersection operating conditions in terms of level of service. All but 19 of the 72 intersections operate at LOS C or better, as shown in Table 3.2-10. More details on LOS analysis at the study intersections are included in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

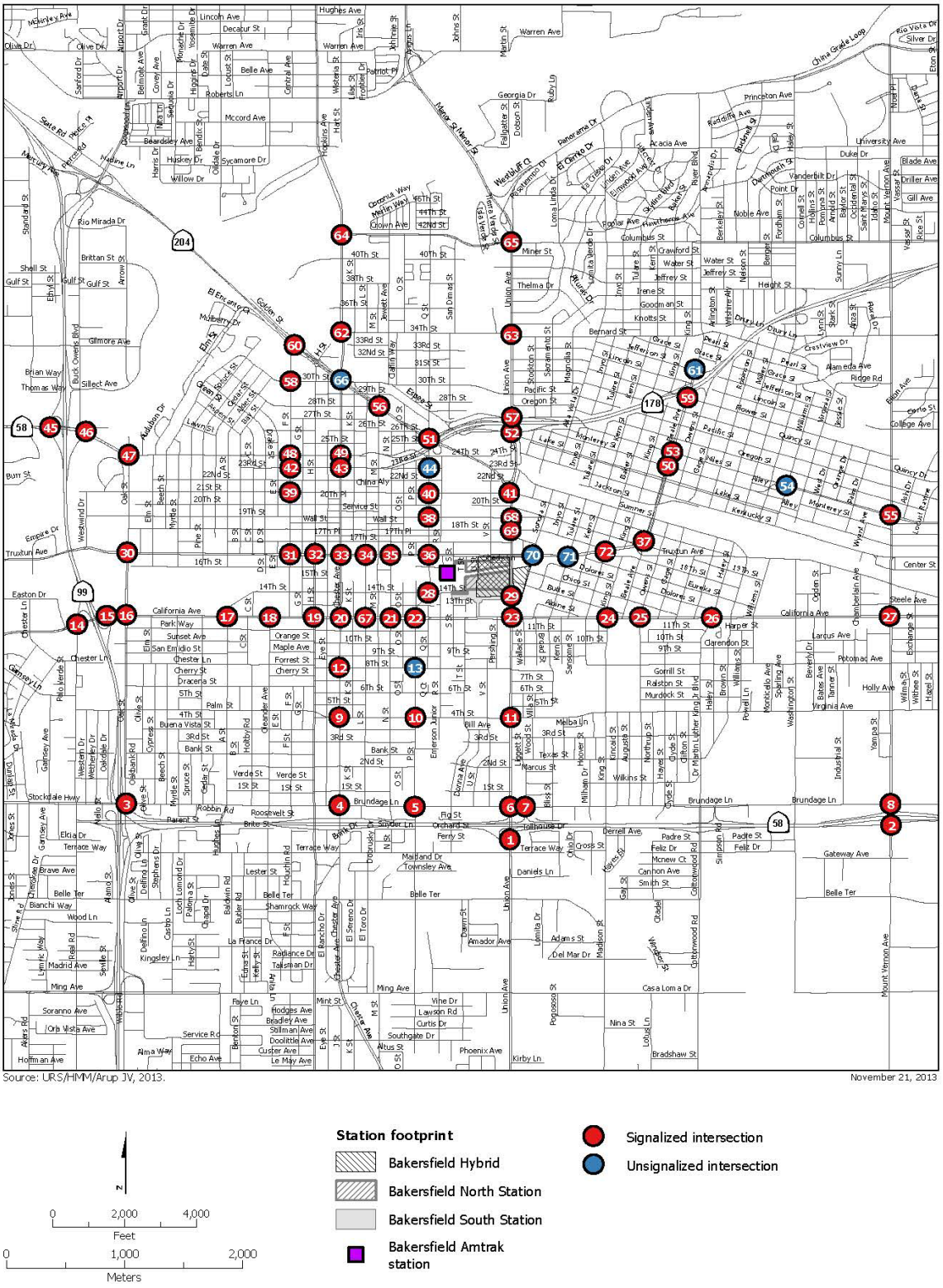

Figure 3.2-18
Study intersections—Bakersfield Station area

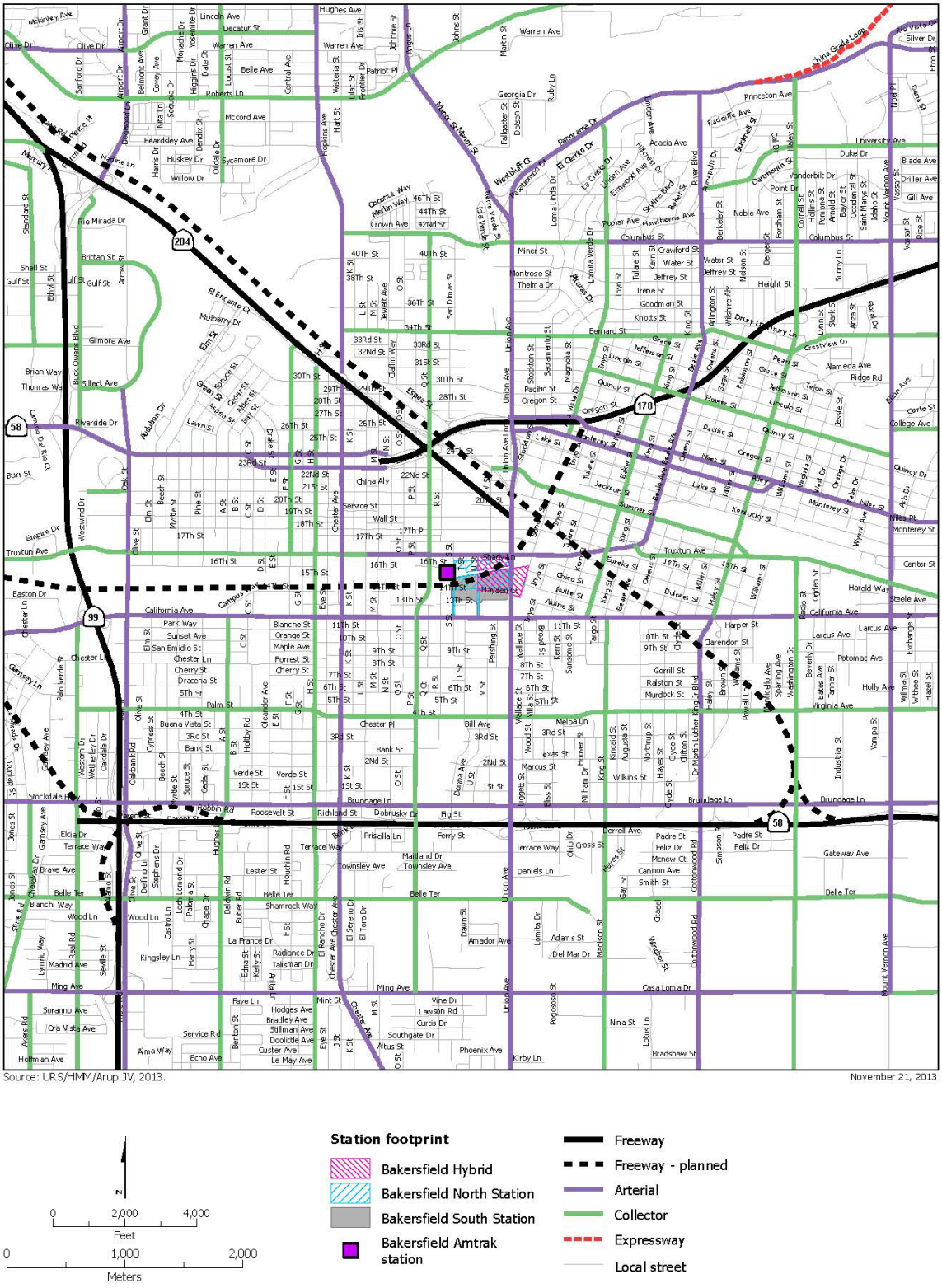

Figure 3.2-19
Roadway classifications—Bakersfield Station area

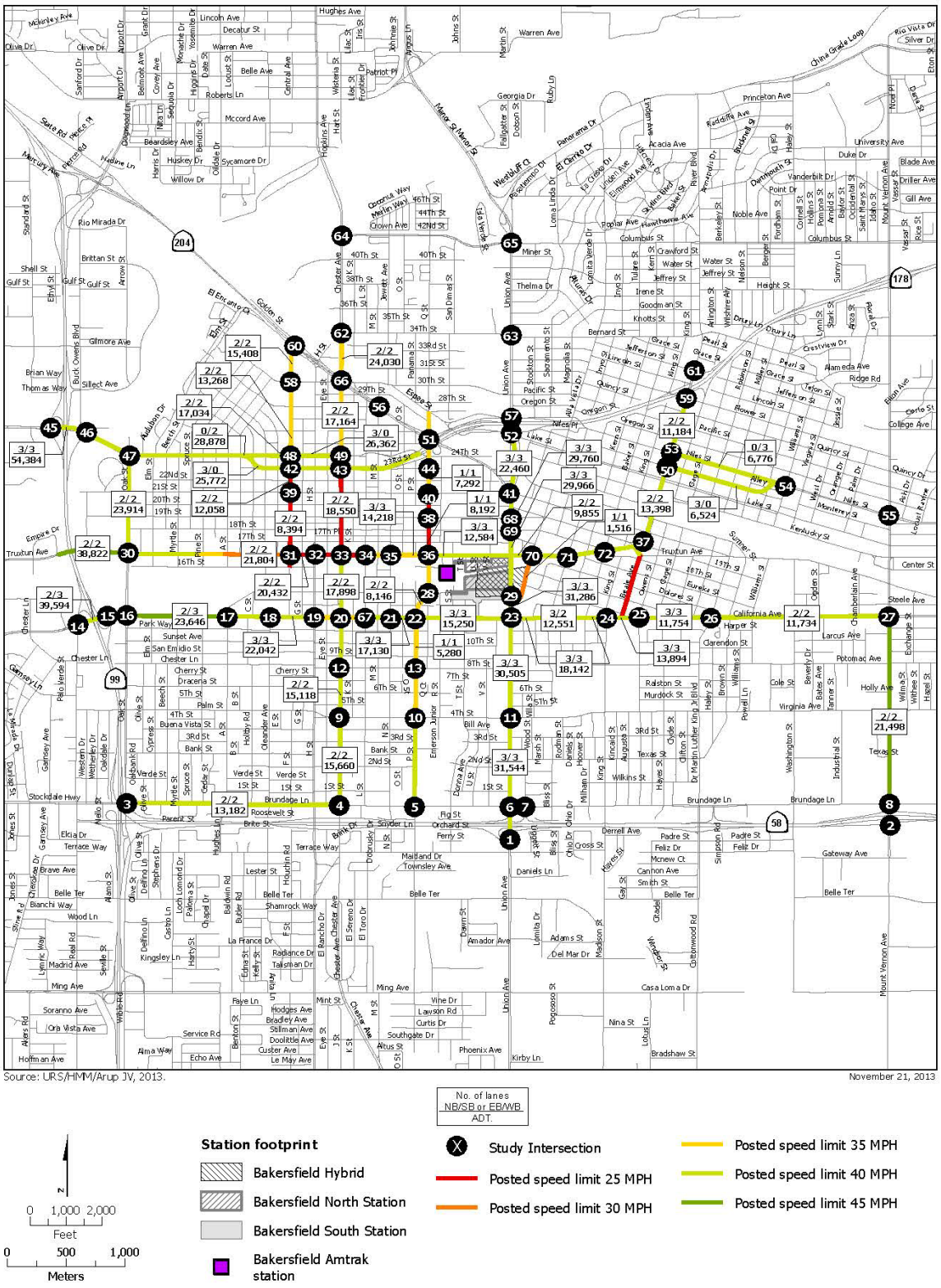

Figure 3.2-20
Average daily traffic, number of lanes, and speed—Bakersfield Station area

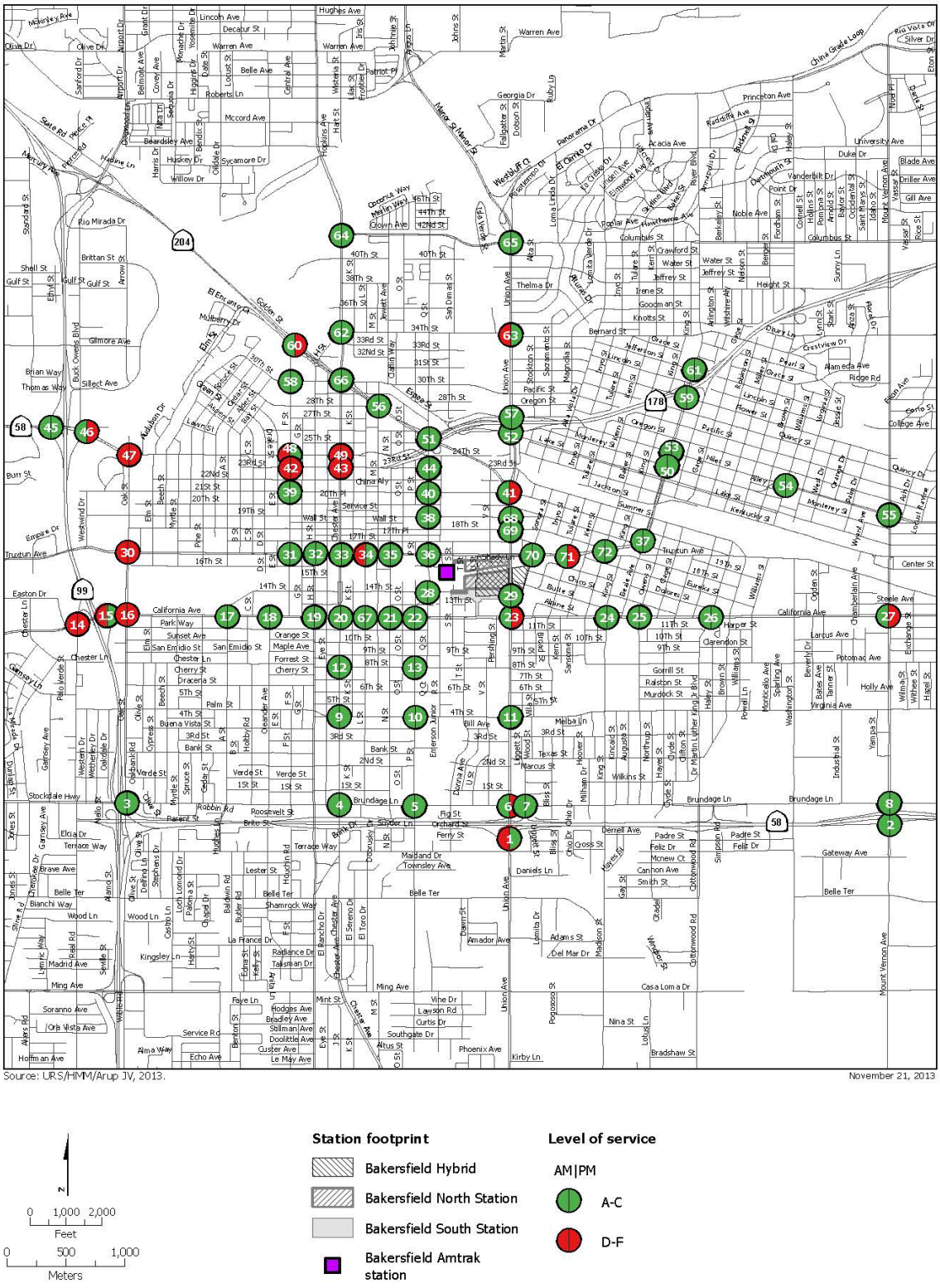

Figure 3.2-21
Intersection level of service—Bakersfield Station area

Table 3.2-10
Intersections Operating at LOS D, E or F near the Proposed Bakersfield Station

Int ID	Intersection	Control	Existing Conditions			
			AM Peak		AM Peak	
			Delay (seconds)	LOS	Delay (seconds)	LOS
1	S. Union Ave./Eastbound SR 58 Ramps	Signalized	**> 80.0**	**F**	12.5	B
6	S. Union Ave/E. Brundage Ln.	Signalized	33.7	C	**35.8**	**D**
14	Real Rd./California Ave.	Signalized	**48.2**	**D**	**60.7**	**E**
15	SR 99 Ramps/California Ave.	Signalized	**73.8**	**E**	22.9	C
16	Oak St/California Ave.	Signalized	**75.2**	**E**	**63.5**	**E**
23	Union Ave/California Ave.	Signalized	32.2	C	**37.3**	**D**
27	Mt Vernon Ave/California Ave.	Signalized	22.8	C	**45.8**	**D**
30	Oak St/Truxtun Ave.	Signalized	**> 80.0**	**F**	**72.0**	**E**
34	L St/Truxtun Ave.	Signalized	**37.6**	**D**	29.9	C
41	Union Ave/Golden State Ave/1st St	Signalized	25.8	C	**> 80.0**	**F**
42	F St/23rd St	Signalized	**45.6**	**D**	**44.7**	**D**
43	Chester Ave./23rd St	Signalized	**61.3**	**E**	**> 80.0**	**F**
46	SR 178/SR 99 Ramps/Buck Owens Blvd	Signalized	31.0	C	**58.8**	**E**
47	Oak St/SR 178	Signalized	**> 80.0**	**F**	**72.3**	**E**
48	F St/24th St	Signalized	**45.0**	**D**	31.8	C
49	Chester Ave./24th St	Signalized	**60.4**	**E**	**59.0**	**E**
60	F St/Golden State Ave.	Signalized	24.5	C	**45.8**	**D**
63	Union Ave/34th St/Bernard St	Signalized	**53.6**	**D**	31.2	C
71	Truxtun Ave./Tulare St	Two-way Stop	16.9	C	**>50.0**	**F**

Note: The Metropolitan Bakersfield General Plan (City of Bakersfield and Kern County 2007) has designated LOS C as the standard for intersections and roadway segments.

Intersections with LOS D-F in the AM or PM are in **Bold**.
Source: Authority and FRA 2014.

Transit

Public transportation in metropolitan Bakersfield includes local and regional buses, Amtrak trains, and paratransit services. The largest local bus transit system operator is Golden Empire Transit (GET). GET operates 18 routes throughout the metropolitan area and carries approximately 24,000 passengers per day. This amounts to 1% of total travel in the city of Bakersfield.

Intercity bus operators are Greyhound, Orange Belt Trailways, Airport Bus of Bakersfield, and Kern County. Kern Regional Transit provides service between Bakersfield and rural communities, such as Lamont and the Kern River Valley, while the private carriers serve other major cities. Paratransit providers include the taxicab system and various social service agencies that provide specialized transportation to their clients.

Golden Empire Transit District

The main bus service operating within the city of Bakersfield is the Golden Empire Transit (GET) District. The district was formed in 1973 and serves the Bakersfield metropolitan area—160 square miles (414.4 square kilometers) with a population of 437,236. GET has an active fleet of 81 buses plus 19 GET-A-Lift buses that are fueled by compressed natural gas, an alternative fuel that helps reduce pollution emissions. All buses are equipped with wheelchair lifts and bike racks.

Each weekday, approximately 24,000 citizens ride one of GET's 81 buses. The latest survey shows 56% of the riders have no other mode of transportation. Table 3.2-11 below illustrates the bus routes for GET (Golden Empire Transit District 2011).

Table 3.2-11
Proposed Bakersfield HST Station Bus Routes and Weekday Service Frequency

Bus Routes – Bakersfield	Frequency (min) Weekdays
Route 1 – Olive Drive / Bakersfield College	40
Route 2 – Chester Ave / Oildale	20
Route 3 – Downtown	30
Route 4 – Bakersfield College / Downtown	20
Route 5 – Bakersfield College / Valley Plaza	20
Route 6 – Valley Plaza / East Hills	60
Route 7 – Stockdale High / Kern Medical Center	30
Route 8 – Foothill High / Valley Plaza	30
Route 9 – Foothill / Half Moon	30
Route 16 – (replaced by Route 10)	40
Route 11 – Cal State / Bakersfield College	30
Route 12 – Westchester	45
Route 14 – Rosedale / Cal State	45
Route 15 – Mervyn's / Valley Plaza	60
Route 17 – Crosstown Express	30
Source: Authority and FRA 2014.	

Non-Motorized Facilities

There are no existing bike facilities in the immediate vicinity of the Bakersfield Station sites. The nearest existing or planned bike lanes are on Chester Avenue, P and Q streets, and Twenty-first Street (City of Bakersfield and Kern County 2010). Pedestrian sidewalks are present on Truxtun, Union, and California avenues in the vicinity of the proposed station sites.

Parking Facilities

There are four parking lots located in the vicinity of the proposed station sites. All four parking lots are approximately 0.5 mile, or less, from the proposed station sites.

3.2.4.6 Heavy Maintenance Facility Alternatives

Traffic volumes along the study roadway segments around each of the proposed HMF sites were collected from the travel-demand model. Based on these traffic volumes, LOS was calculated for the roadway segments. Full information is provided in Section 5.4.4.2 of the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

The results of the analysis indicated that three intersections operate at LOS E or F under existing conditions. Of these, all three intersections are in the vicinity of the proposed Fresno HMF site. Table 3.2-12 summarizes the LOS and delay information for these locations. All other intersections and road segments in the vicinity of proposed HMF locations operate under existing conditions at LOS D, or better, conditions.

Table 3.2-12
Intersections Operating at LOS E or F around the Proposed HMF Locations under Existing Conditions

Inter-section ID	Intersection	Intersection Control	Existing Conditions			
			AM Peak Hour		PM Peak Hour	
			Delay (s)	LOS	Delay (s)	LOS
Fresno Works–Fresno HMF						
2	SR 99 SB off-ramp / E. Central Ave	Unsignalized[a]	**<50**	**F**	25.1	D
4	SR 99 NB off-ramp / S. Chestnut Ave	Unsignalized[a]	**<50**	**F**	20.9	C
11	Clovis Ave / SR 99 SB on-ramp	Unsignalized[a]	**46.9**	**E**	**37.9**	**E**

Source: Authority and FRA 2014.

[a] One-way or two-way stop-controlled intersection. LOS and delay reported for the worst movement.

Intersections with LOS E or F in the AM or PM are in **Bold**.

Acronyms and Abbreviations:

ID = identification
LOS = level of service
SR = state route

3.2.5 Environmental Consequences

3.2.5.1 Overview

This section describes the impacts related to transportation for the project and alternatives. Chapter 1.0, Project Purpose, Need, and Objectives, provides additional information regarding the status of the No Project Alternative, including the regional transportation system (which has been determined to underserve the Central Valley). As demonstrated in Chapter 2.0, Alternatives, the No Project Alternative would lead to inevitable congestion on regional roadways, despite planned improvements, because anticipated growth would outpace roadway expansion. By contrast, all HST alternatives would provide beneficial transportation impacts beyond providing an additional travel mode and connection to local and regional transit. The change from vehicles to HST would reduce regional and interregional daily auto trips and corresponding vehicle delay and congestion.

Some localized effects would result from the project, such as local road closures and intersection impacts, at the Fresno, Kings/Tulare, and Bakersfield station areas. Local roads that serve the proposed station sites would have increased traffic as people redirect their travel routes.

Under Existing Plus Project conditions, no road segments and 13 intersections would be impacted in the Fresno Station area[6]; 7 roadway segments and 4 intersections would be impacted in the Kings/Tulare Regional Station–East area; no roadway segments and 6 intersections would be impacted in the Kings/Tulare Regional Station–West area; no road segments and 4 intersections would be impacted in the Bakersfield Station–North area; no road segments and 5 intersections would be impacted in the Bakersfield Station–South area; and no road segments and 5 intersections would be impacted in the Bakersfield Station–Hybrid Alternative area in either the AM or PM.

Under Future (2035) Plus Project conditions, 5 road segments and 31 intersections would be impacted in the Fresno Station area; no roadway segments and 6 intersections would be impacted in the Kings/Tulare Regional Station–East area, and no roadway segments and 7 intersections would be impacted in the Kings/Tulare Regional Station–West area. No road segments and 10 intersections would be impacted in the Bakersfield Station–North area; no road segments and 9 intersections would be impacted in the Bakersfield Station–South area; and no road segments and 10 intersections would be impacted in the Bakersfield Station–Hybrid Alternative area in either the AM or PM.

The proposed changes at the roadways and streets under each HST alternative in the various station areas are listed and described in Appendix 2-A, Table 2-A-1, and are depicted by county on Figures 3.2-22 through 3.2-25.

Figures 3.2-26a through 3.2-28 show the Future [2035] Plus Project intersection LOS for the various station areas.

[6] Two Downtown Fresno station alternatives were carried forward in both the Draft EIR/EIS and the Revised DEIR/Supplemental DEIS: one at Mariposa Street and the other at Kern Street. On May 3, 2012, the Authority Board certified the Final EIR/EIS of the Merced to Fresno Section and selected the Mariposa Alternative as the Fresno station location. In September 2012, the FRA issued a Record of Decision (ROD) that included this station site. The Revised DEIR/Supplemental DEIS also considered two options and separate analysis of the potential Tulare Street underpass and Tulare Street overpass of the HST alignment. The selection of the Marisposa Alternative as the Fresno station also included selection of the Tulare Street Underpass Option; subsequently all analysis of the Tulare Street Overpass Option was removed from the Final EIR/EIS.

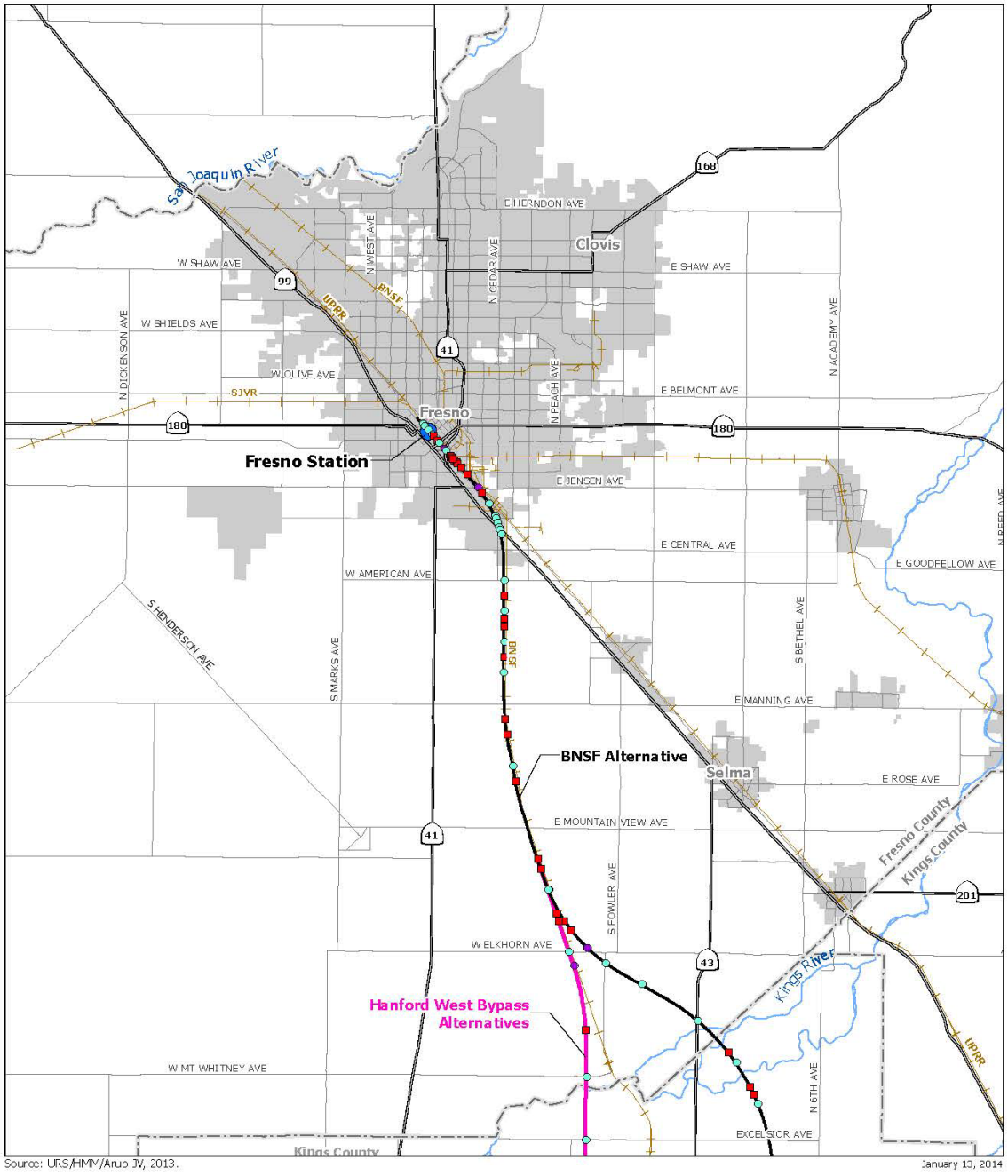

Figure 3.2-22
Fresno County HST Alternatives

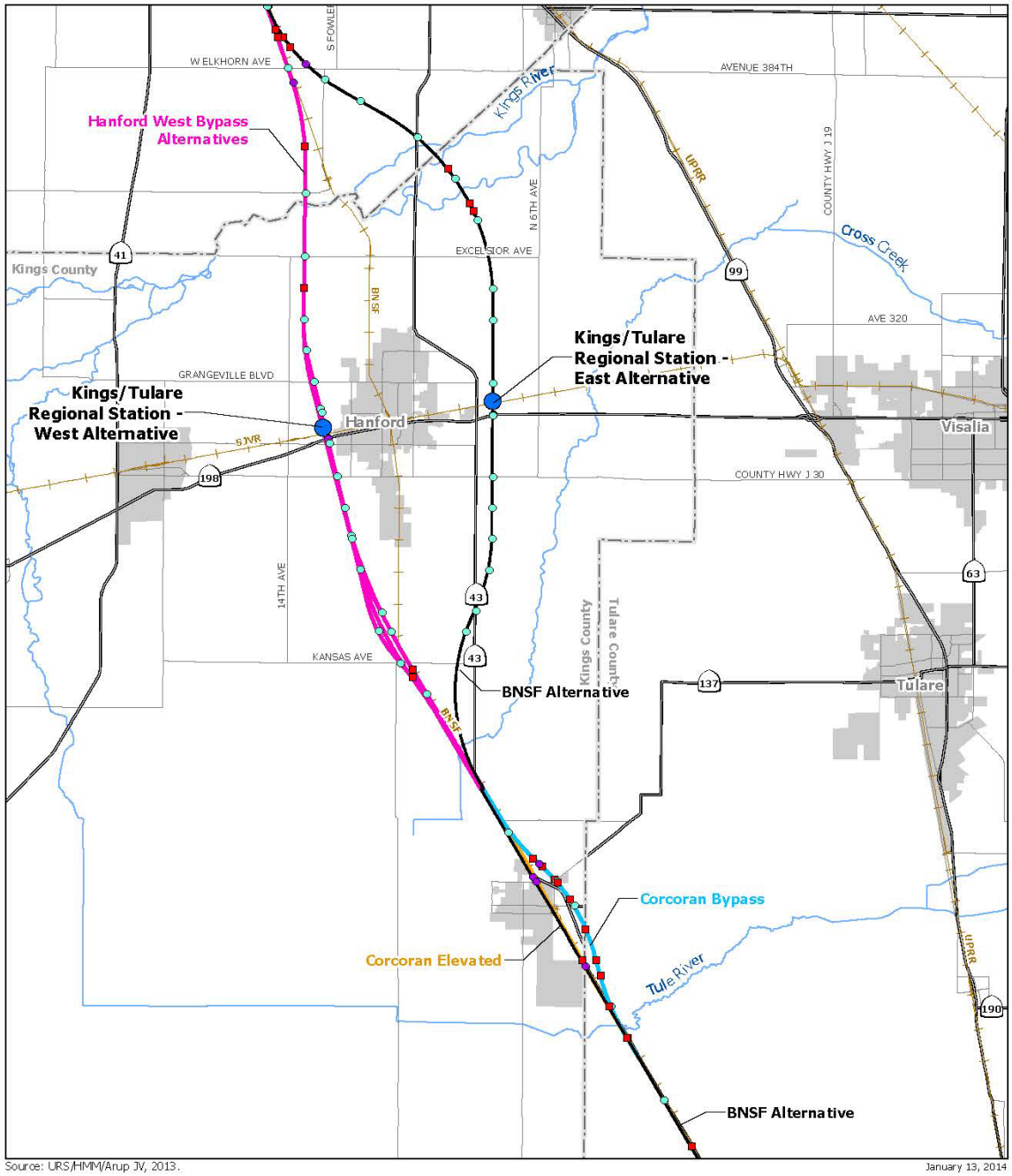

Figure 3.2-23
Kings County HST Alternatives

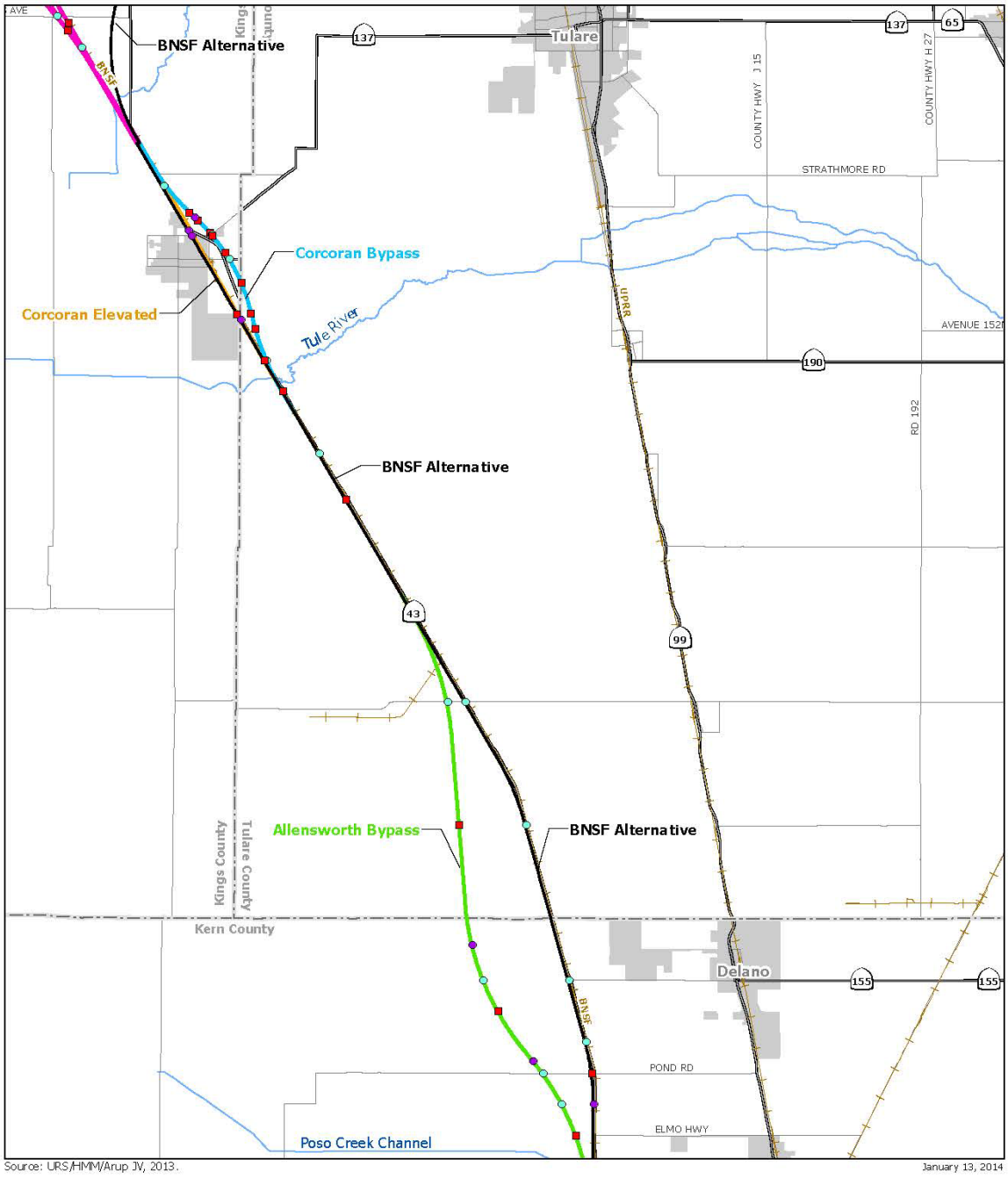

Figure 3.2-24
Tulare County HST Alternatives

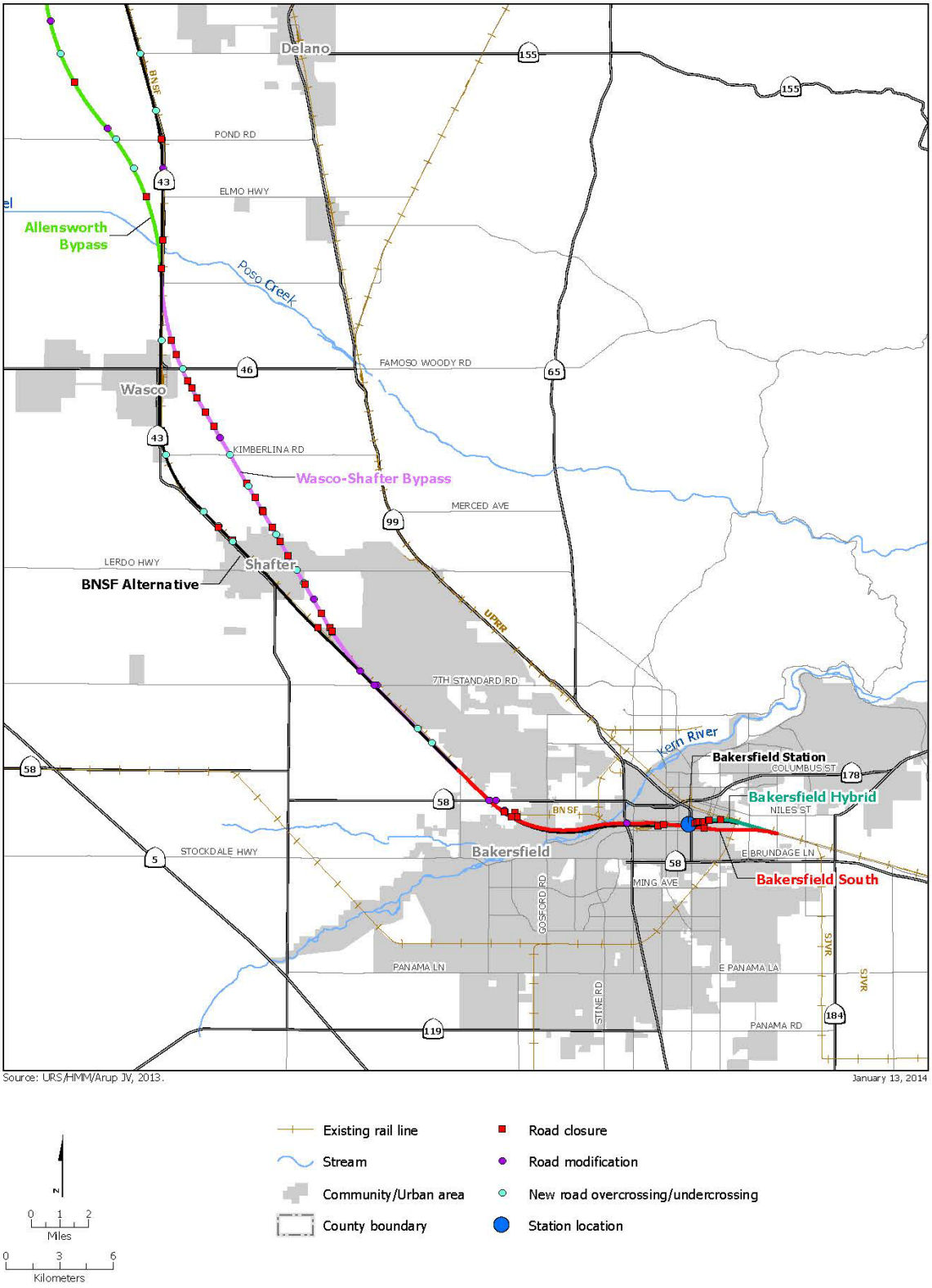

Figure 3.2-25
Kern County HST Alternatives

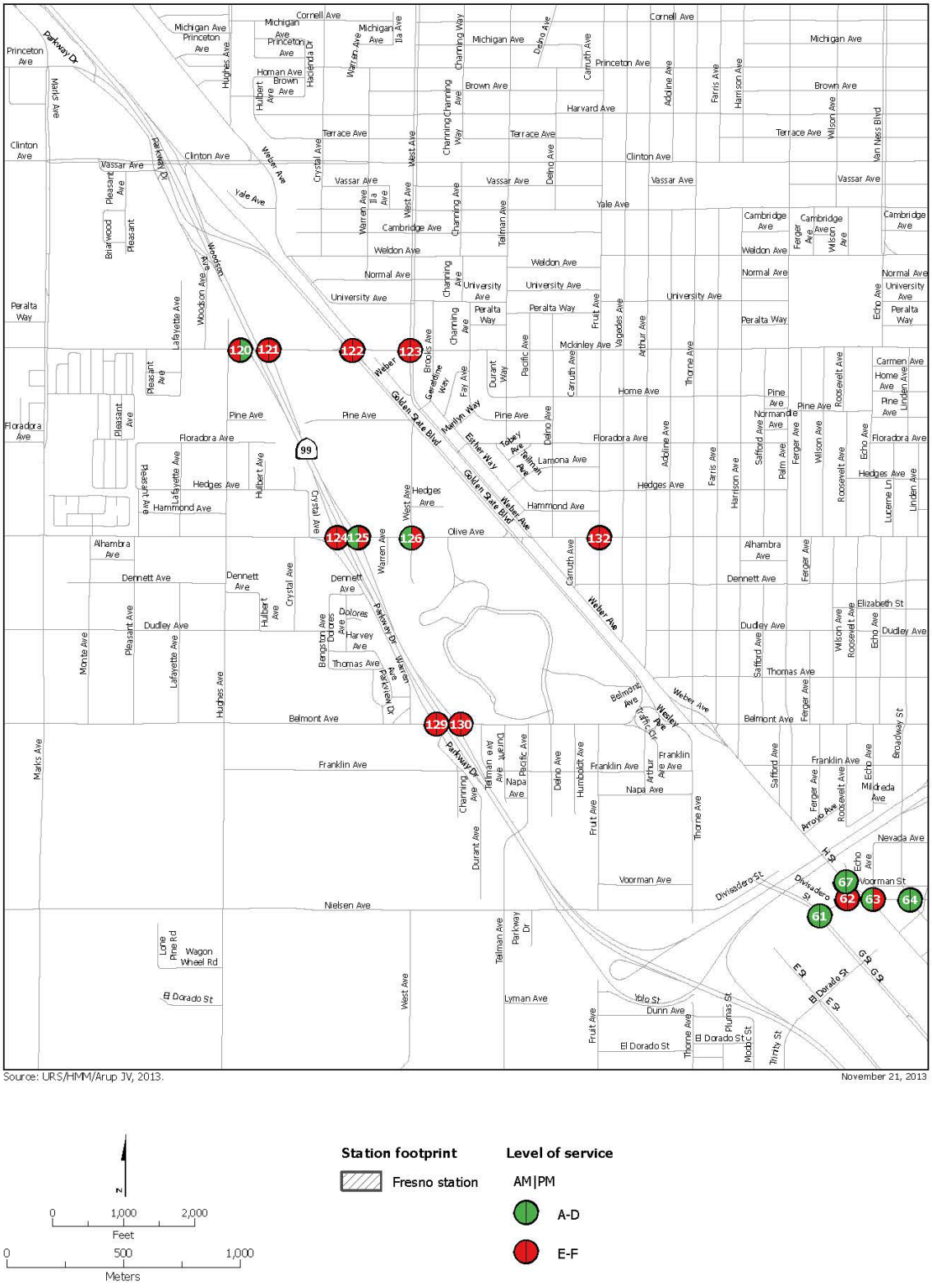

Figure 3.2-26a
Future (2035) Plus Project intersection LOS in the Fresno Station area

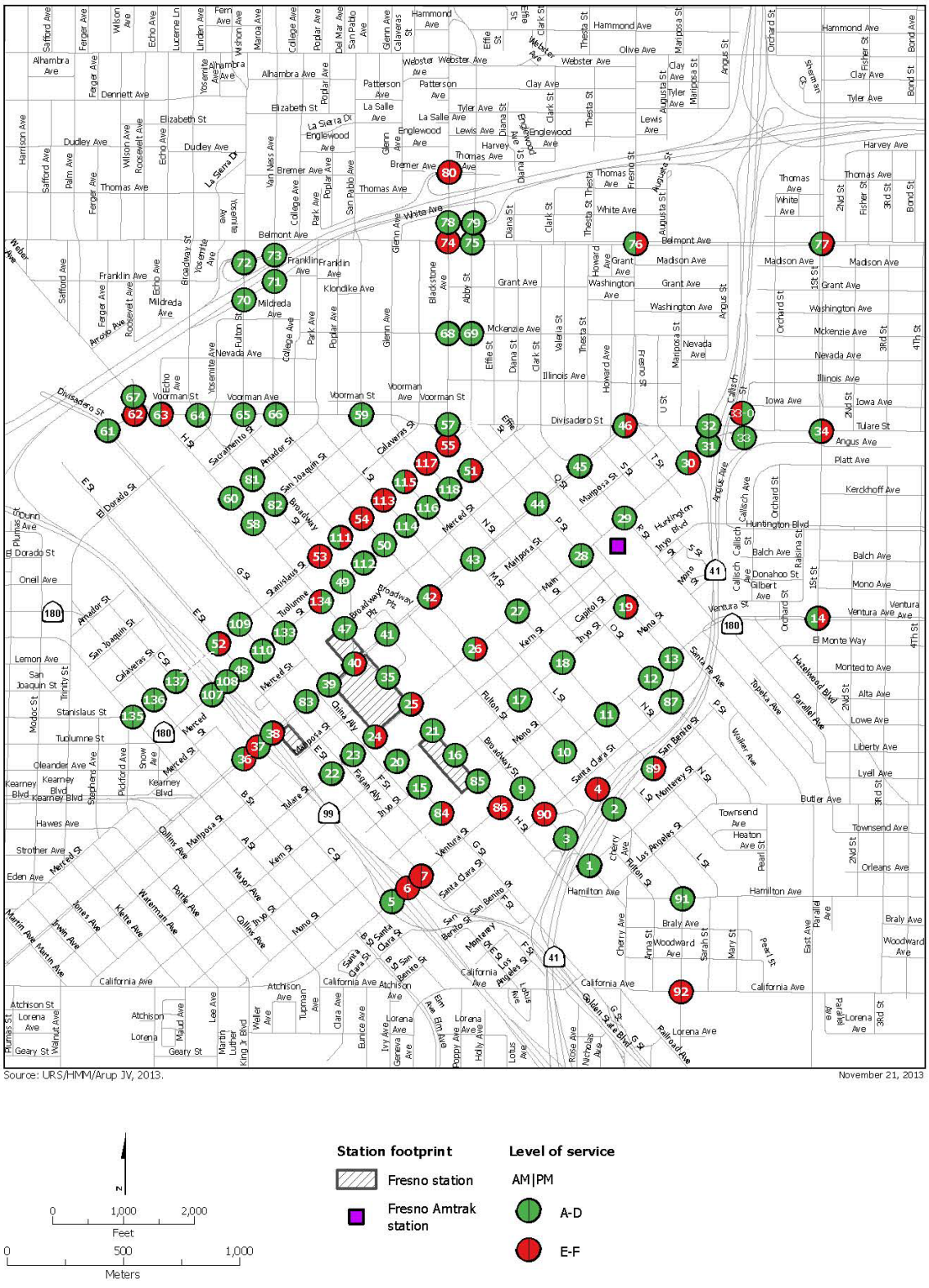

Figure 3.2-26b
Future (2035) Plus Project intersection LOS in the Fresno Station area

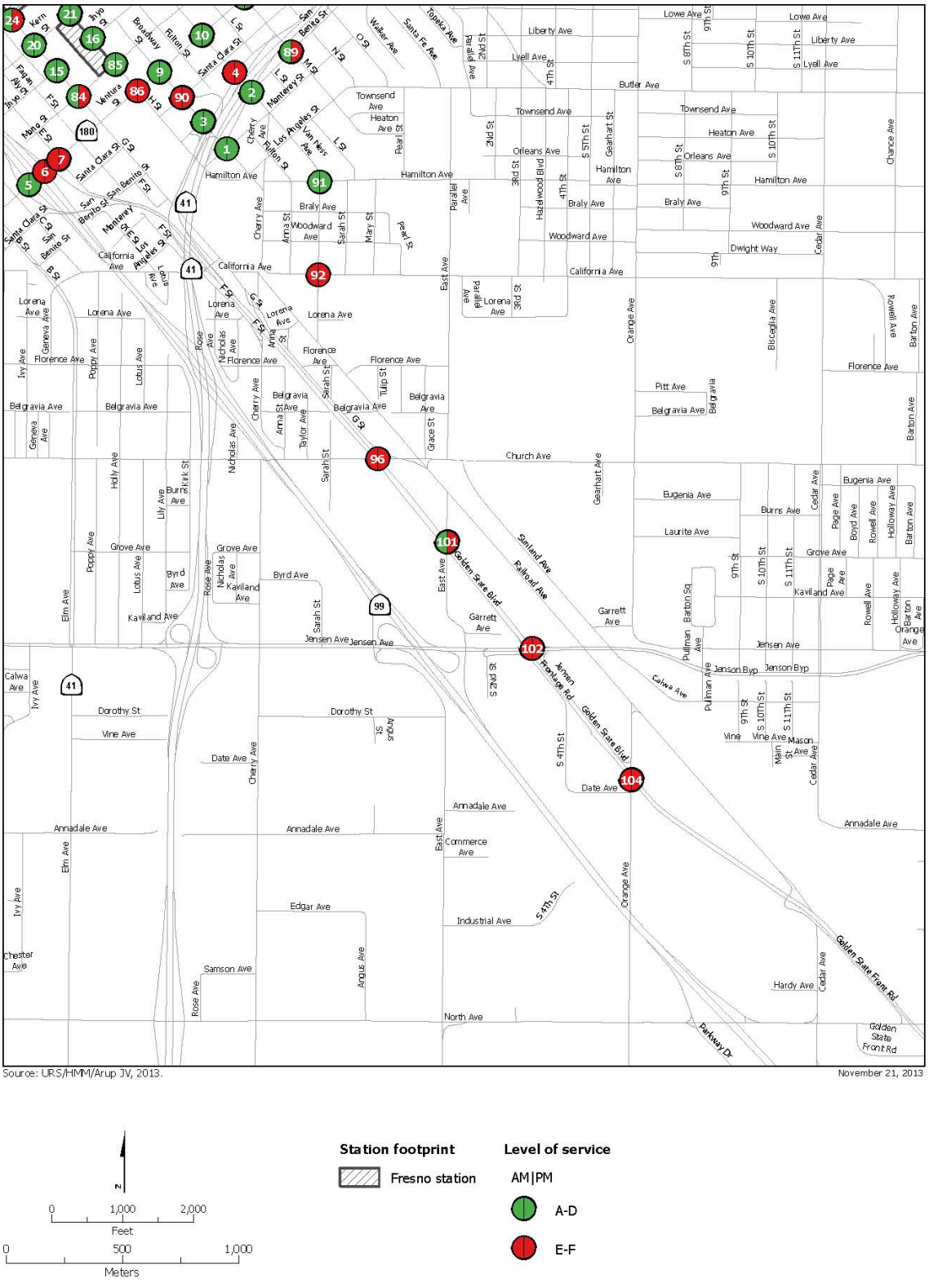

Figure 3.2-26c
Future (2035) Plus Project intersection LOS in the Fresno Station area

Comparing the Existing Plus Project with the Future (2035) Plus Project conditions, no road segments and four intersections (#33-0, #37, #63 and #114) in the Fresno Station Area would have impacts under the Existing Plus Project scenario, but are not impacted under the Future (2035) Plus Project scenario. Five road segments (#4, #14, #21, #56, #54, and #58) and 19 intersections (#7, #25, #30, #38, #42, #46, #52, #53, #55, #74, #84, #90, #92, #96, #105, #106, #111, #115, and #125) in the Fresno Station area would have impacts under the Future (2035) Plus Project scenario, but are not impacted under the Existing Plus Project scenario. No road segments and nine intersections (#4, #6, #54, #80, #86, #117, #124, #129, and #130) are impacted under both the Future (2035) Plus Project scenario and the Existing Plus Project scenario.

Seven roadway segments (#6, #7, #8, #9, #10, #11, and #12) and no intersections in the Kings/Tulare Regional Station–East area would have impacts under the Existing Plus Project scenario, but are not impacted under the Future (2035) Plus Project scenario. No roadway segments and two intersections (#1 and #2) in the Kings/Tulare Regional Station–East area would have impacts under the Future (2035) Plus Project scenario, but are not impacted under the Existing Plus Project scenario. Four roadway segments (#4, #6, #7, and #8) and no intersections in the Kings/Tulare Regional Station–East Area are impacted under both the Future (2035) Plus Project scenario and the Existing Plus Project scenario.

No roadway segments and no intersections in the Kings/Tulare Regional Station–West area would have impacts under the Existing Plus Project scenario but not under the Future (2035) Plus Project scenario. No roadway segments but one intersection (#6) in the Kings/Tulare Regional Station–West area would have impacts under the Future (2035) Plus Project scenario but not under the Existing Plus Project scenario. No roadway segments but 5 intersections (#1, #4, #5, #9, #18, and #23) in the Kings/Tulare Regional Station–West area would have impacts under both the Future (2035) Plus Project and the Existing Plus Project scenario.

No road segments are impacted under the Existing Plus Project or Future (2035) Plus Project scenarios. Two intersections (#1 and #29) in the Bakersfield Station–South and Bakersfield Station–Hybrid areas, and no road segments and one intersection (#1) in the Bakersfield Station—North area would have impacts under the Existing Plus Project scenario, but are not impacted under the Future (2035) Plus Project scenario. Seven intersections (#6, #16, #23, #42, #51, #56, and #60) in the Bakersfield Station–North and Bakersfield Station–Hybrid areas, and no road segments and six intersection (#6, #16, #42, #51, #56, and #60) in the Bakersfield Station—South area would have impacts under the Future (2035) Plus Project scenario, but are not impacted under the Existing Plus Project scenario. Three intersections (#15, #14, and #71) in the Bakersfield Station–North, Bakersfield Station–South, and Bakersfield Station–Hybrid areas would have impacts under both the Future (2035) Plus Project and Existing Plus Project scenarios. All HST alternatives would have the same potential to affect local commercial airport traffic, the existing commuter and local transit system, freight traffic, parking facilities, and pedestrian and bicycle facilities, particularly around stations. The connectivity that all project alternatives would provide between local and regional transit and the statewide HST System would result in beneficial impacts for commuters and local residents.

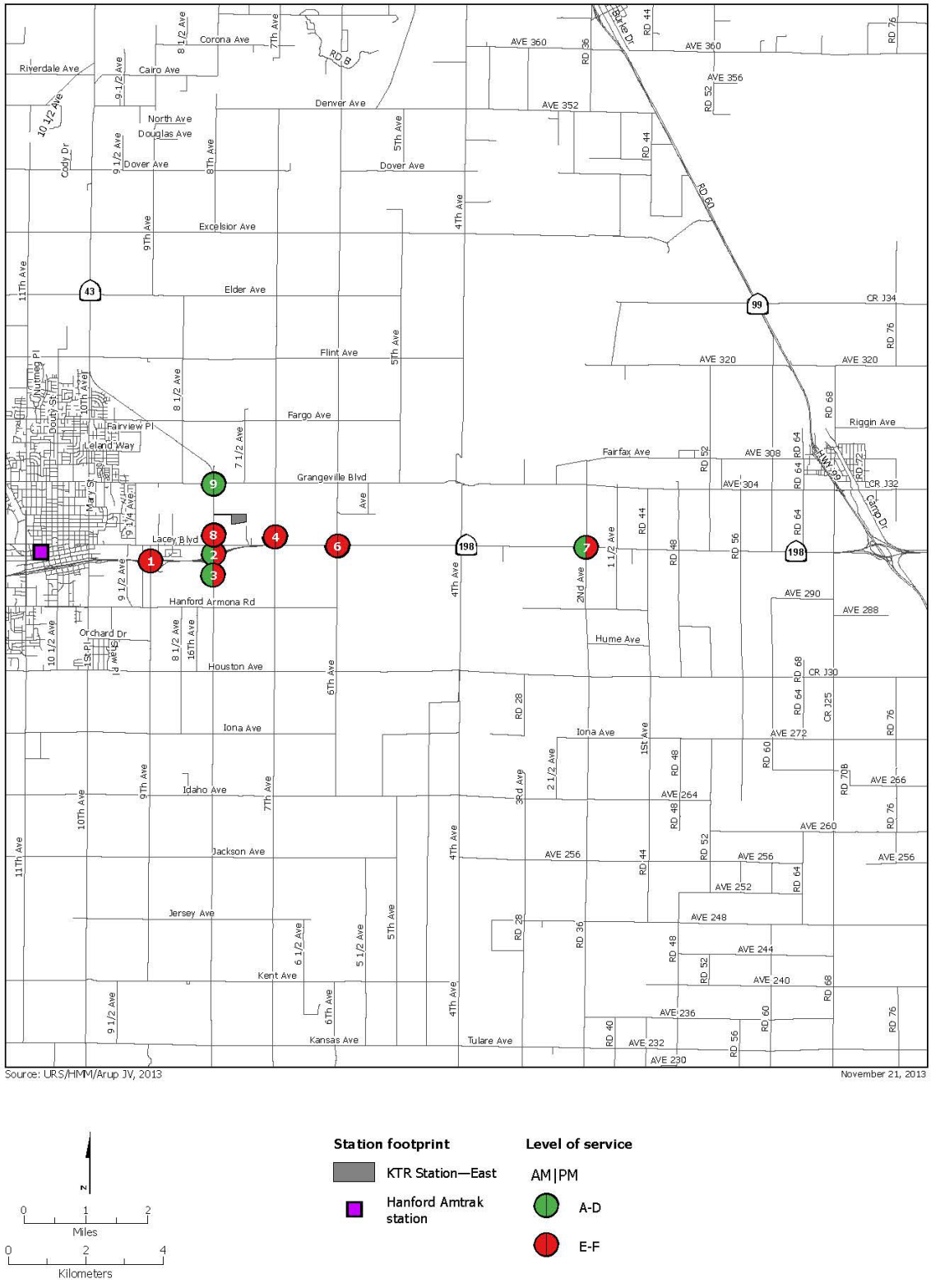

Figure 3.2-27
Future (2035) Plus Project intersection LOS in the Kings/Tulare Regional Station—East Alternative

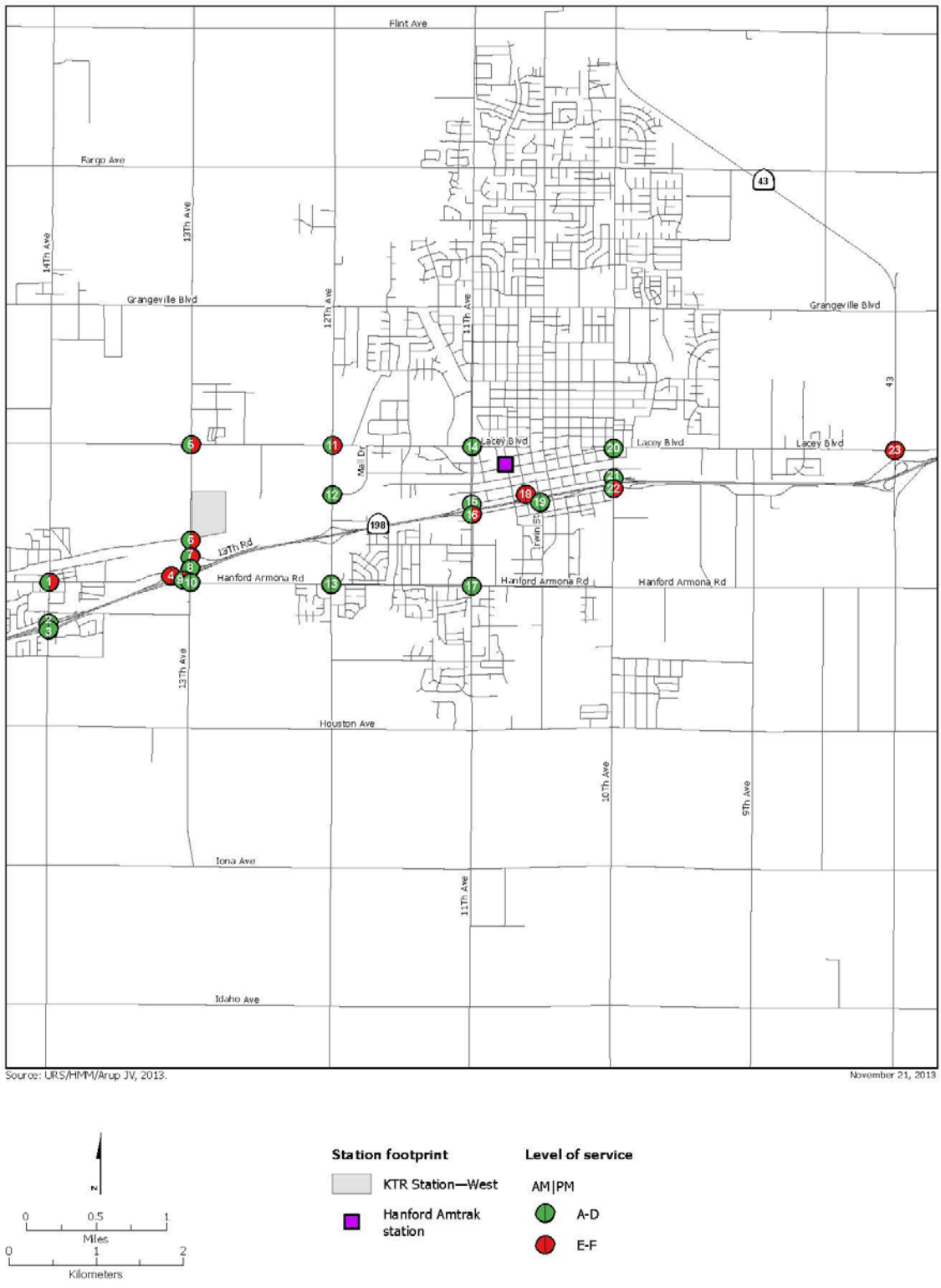

Figure 3.2-28
Future (2035) Plus Project intersection LOS in the Kings/Tulare Regional Station—West Alternative

All of the proposed HMF sites would have similar impacts; however, there is some differentiation between each site's impacts on surrounding roadway segments under Existing Plus Project conditions. Under Future (2035) Plus Project road segment conditions, only an intersection at the Kings County (Hanford) Station (#1) would be impacted. The Fresno HMF would affect two intersections (#1 and #11) under Existing Plus Project conditions and two intersections (#2 and #11) under Future (2035) Plus Project conditions. The Kings County (Hanford) HMF would result in impacts on no intersections under Existing Plus Project conditions and on two intersections (#1 and #3) under Future (2035) Plus Project conditions. The Wasco station would impact two intersections (#1 and #2) under Existing Plus Project conditions and one intersection (#1) under Future (2035) Plus Project conditions. The Kern Council of Governments (Shafter East and West) HMF would result in impacts on no intersections under Existing Plus Project conditions and on one intersection (#1) under Future (2035) Plus Project conditions.

Along with the permanent project impacts discussed above, there could be potential traffic disruption during construction. Disruptions would be reduced through avoidance and minimization measures and any effects are expected to be short term and temporary.

3.2.5.2 No Project Alternative

The No Project Alternative represents the year 2035 traffic conditions without the HST project. The regional transportation planning authorities identified in Section 3.2.2 (Fresno COG, KCAG, TCAG, and Kern COG) are responsible for transportation planning and funding, and the forecasted growth in traffic conditions in the year 2035 is based on their regional forecasts for land use and traffic growth. Specific development projects that will contribute to growth in traffic are identified in Section 3.19. Table 2.5-2 in Chapter 2, Alternatives, lists planned transportation improvements by the regional and local transportation authorities and agencies that will improve future No Project Alternative conditions. The No Project Alternative was developed from the following sources of information:

- State Transportation Implementation Program (STIP).
- RTPs, financially constrained projects for all modes of travel.
- Airport master plans (AMPs).
- Intercity passenger rail plans.

The following is an analysis of the No Project Alternative for transportation movements; the description of anticipated projects and capacity are outlined in Section 2.4 of Chapter 2.0, Alternatives. The transportation facility analysis incorporated the anticipated changes in travel patterns for the projected increase in population and employment. As stated in Chapter 2.0, between 2009 and 2035, VMT is projected to increase by 58% in Fresno County, 46% in Kings County, 67% in Tulare County and 75% in Kern County. According to a statewide transportation projection conducted by Cambridge Systematics, VMT's in the four-county region is projected to increase from approximately 48 million in 2009 to almost 80 million per year in 2035 (Cambridge Systematics 2012). This establishes the background for the following assessment of the transportation infrastructure.

Highway and Roadway Element

Planned highway improvements under the No Project Alternative will partially address the growth in travel, but will not add substantial capacity to the system for intercity travel. The region's residents will experience congested travel conditions that will persist for longer periods of time, as more drivers adjust their time of travel to avoid the most heavily congested commute hours. These improvements represent incremental solutions to capacity constraints on the regional road network, but would not provide the needed capacity to address anticipated regional growth and

meet Caltrans traffic movement minimum standards. The specific levels of service for the No Project Alternative are reported at key locations with respect to the project corridor.

The forecasted growth in population and traffic that will increase future traffic volumes and the planned improvements that would help reduce congestion were included in estimating the future No Project Alternative conditions, as previously presented in Tables 3.2-5 through 3.2-10 (see Section 3.2.5.1). These tables include intersections and roadway segments that are projected to operate at a LOS of E or F in 2035 under the No Project Alternative, meaning they would be operating at a level of service that is at or below a locally acceptable condition regardless of whether the HST is constructed.

Aviation Element

Chapter 1, Project Purpose, Need, and Objectives, describes the trends statewide and at the Fresno Yosemite International Airport (FAT) and Bakersfield (BFL) airports. Although enplanements have grown in number nationally and statewide (at major airports) within the proposed HST service area, FAT and BFL currently serve San Francisco and Los Angeles international airports with a limited number of flights each day. However, the 2006 *Fresno Yosemite International Airport Master Plan* (AMP) projects a growth in future airport usage to 852,000 enplanements by 2025 (a 40% increase). Total aircraft operations are estimated to increase 20%.

As population within the six-county service area increases, operations at FAT and BFL are expected to increase. As stated in Chapter 1, Project Purpose, Need, and Objectives, passenger demand at these airports is low because of market forces of airfares, automobile use, and alternative airports in the Bay Area, Sacramento, and Los Angeles regions (Fresno COG 2010a). Possibly as many as 300,000 passengers a year who might use intrastate air service, if available and competitively priced, instead are using automobiles to reach their destination or another state airport. These projections indicate the potential for growth in future operations at these airports.

Intercity Common Carrier Element

Conventional Passenger Rail

Planned improvements to the San Joaquin Amtrak route are anticipated to reduce travel time to fewer than 6 hours between Bakersfield and Oakland at an average speed of 51.2 mph with the potential to reach speeds of upwards of 79 mph (Caltrans 2008a). The trends in intercity passenger rail service in northern California show that reliable train service, cost-effective prices, and additional train service frequencies between business centers results in increased ridership. This is well exemplified by the Capital Corridor (Sacramento to Oakland and San Jose service), where ridership has increased from approximately 300,000 in 1994 to 1.6 million passengers in 2009 due to increased reliability in on-time performance and an increased number of trains (3 to 16 round trips per day) (Hicks 1994; CCJPA 2010). Also, the San Joaquin service ridership increased from approximately 559,000 in 1994 to approximately 930,000 in 2009 and to just over 1 million in 2011, even though track capacity constraints limited the number of trains that could be operated.

Intercity Passenger Bus Service

Greyhound and Trailways bus lines provide scheduled bus service through the San Joaquin Valley along SR 99. While intercity bus service is likely to increase in the future, there are no documented plans for service expansion. Continued service is an element of the No Project Alternative, though these bus lines serve only a very small portion of the intercity travel market. Without changes, it is expected that demand would remain steady and incremental growth of

ridership would occur; however, some service reliability would be sacrificed due to increased congestion anticipated on SR 99.

Freight Rail Element

While the national trend for freight rail traffic has been growing, with a 31.4% increase in ton-miles of freight activity between 1997 and 2007 (Bureau of Transportation Statistics 2010), the local lines between Fresno and Bakersfield have not fluctuated greatly. As noted in Chapter 1.0, UPRR operates 25 to 30 freight trains per day, and BNSF Railway operates 42 to 47 freight trains per day through Fresno. While trucking is the dominant mode for moving freight in the study area, rail accounted for 11% of the total tonnage of freight movement through the region in 2000.

Both railroads are currently operating near capacity. According to the 2009 Goods Movement Study (Caltrans 2010b), without major improvements (such as additional sections of double-track), freight activity may exceed capacity by 2035, with the addition of a limited number of train movements. UPRR and BNSF railroads have historically added capacity when needed to meet market demands in other regions and UPRR has conveyed a desire to do so in areas of California. These future improvements are expected to continue to provide sufficient capacity.

The freight railroads would also gain capacity from planned improvements for the expansion of Amtrak San Joaquin service, as defined in the State Rail Plan. Additionally, they will benefit from the grade separations currently programmed by the counties.

Future improvements that are part of the No Project Alternative are also included in the HST alternatives as part of the future 2035 baseline. The No Project Alternative, described in more detail in Chapter 2.0, Alternatives, includes roadways and other modes of transportation, including aviation, freight rail, and conventional passenger rail elements.

No Project Alternative Roadway Segment and Intersection Impacts

No Project Alternative roadway segment and intersection analysis was performed for the Fresno Station, Kings/Tulare Regional Station–East and Kings/Tulare Regional Station–West alternatives, Bakersfield Station, and HMF site alternatives, incorporating the transportation improvements identified in this section in the vicinity of each location. The No Project condition traffic volumes were determined by using the growth factors obtained from the individual county models. The results of the analysis compared to the existing and No Project conditions are summarized here and detailed analysis and results for the same are presented in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

Fresno Station Alternative

In the vicinity of the Fresno station, 74 of the 131 analyzed intersections would operate at LOS E or F during the AM and/or PM peak hours under No Project conditions, while only eight intersections operate at LOS E or F under existing conditions. Twenty-seven of the 71 analyzed roadway segments would operate at LOS E or F under No Project conditions, while only one segment operates at LOS E or F under existing conditions.

Kings/Tulare Regional Station–East Alternative

At the Kings/Tulare Regional Station–East, 2 of the 13 roadway segments and 5 of the 9 intersections analyzed would operate at LOS E or F during the AM and/or PM peak hours under No Project conditions, while 7 roadway segments and 3 intersections would operate at LOS E or F during the AM and/or PM peak hours under existing conditions.

Kings/Tulare Regional Station–West Alternative

At the Kings/Tulare Regional Station–West, none of the 13 roadway segments and 10 of the 23 intersections analyzed would operate at LOS E or F during the AM and/or PM peak hours under No Project conditions, while no roadway segments and 4 intersections would operate at LOS E during the AM and/or PM peak hours or F under existing conditions.

Bakersfield Station Alternative

At the Bakersfield Station, 4 of the 50 roadway segments and 24 of the 72 intersections analyzed would operate at LOS E or F during the AM and/or PM peak hours under No Project conditions, while 5 of the roadway segments and 11 of the intersections would operate at LOS E or F during the AM and/or PM peak hours under existing conditions.

Heavy Maintenance Facility Sites

Roadway segments and intersections were also evaluated at the four potential HMF study area locations (five total alternative stations). In the vicinity of the potential HMF site in Fresno, three intersections would operate at LOS E or F conditions in the AM and/or PM peak hours under existing conditions, and five intersections under No Project future conditions. At the potential HMF site in Hanford, one intersection and one road segment would operate at LOS E under No Project conditions. At the HMF site in Wasco, one intersection would operate at LOS F under No Project conditions, and in Shafter, one intersection and one roadway segment would operate at LOS F under No Project conditions.

3.2.5.3 High-Speed Train Alternatives

This section presents the impacts of the proposed HST alternatives on transportation facilities and conditions. Construction impacts represent temporary effects limited to the construction period of any one portion or segment of the project. Project operation impacts describe effects that do not go away when construction is completed; these include both effects from permanent road closures and reconfigurations, and effects from HST station vehicle traffic once the HST System is open for use. Section 3.2.6 describes construction and operation avoidance and minimization measures.

The construction schedule is presented in Chapter 2.0, Project Alternatives. A construction management plan would be prepared during final design that outlines transportation detours, plans to accommodate emergency service routes, and outreach activities to manage expectations and traffic constraints, among other items. This type of plan is a standard practice that would incorporate review and comments by affected local agencies.

The HST System would provide a new regional surface transportation system that complements and connects with existing transportation modes. At a regional level, HST service would reduce regional VMT by providing motorists an alternative to reliance on existing interregional and intercity freeways and highways. The HST System would be grade-separated from freeways, highways, and roads, allowing vehicular traffic to pass under or over the rail corridor.

Throughout the design and implementation of the project, the Authority would continue to work with local and regional transportation agencies to do the following:

- Develop and implement transit-oriented development strategies around the HST stations.
- Coordinate transit services and increase service and/or add routes, as necessary, to serve the HST station areas.

Consistency with Regional Plans and Policies

The Authority would comply with applicable federal and state laws and regulations regarding transportation facilities. The HST project is generally consistent with the plans and policies in Table 3.2-1, although proposed HST routes identified in the plans and policies may vary from what is proposed in this EIR/EIS. The HST project is consistent with the RTPs for Fresno, Kings, Tulare, and Kern counties, which call for development of an integrated multimodal transportation system and expanded transit service, including further development of passenger rail and HST service. The HST project is also consistent with the Fresno County Congestion Management Program, which is managed by the Fresno COG and is integrated with the Fresno County RTP. The Congestion Management Program objectives, which are supported by the HST project, include the development of a multimodal transportation system and the reduction in VMT by encouraging alternative modes of transportation. The Fresno, Kings, Tulare, and Kern counties RTPs all recognize the HST as an important state program benefiting the San Joaquin Valley by connecting it to major metropolitan areas.

Construction Period Impacts

The common construction impacts resulting from all HST alternatives are temporary impacts on local circulation and emergency access, which are organized by the location in which they occur, as follows:

- Urban areas where stations and some mainline construction would occur.
- HMF alternatives.
- Areas adjacent to freeways and/or existing rail lines where existing overcrossings would be modified or relocated, and in some instances, where the freeway would be relocated.
- Rural areas where mainline roadbed and minor road overcrossings would be built.
- Rural areas where transmission lines would be constructed, improved, or reconductored (new conductors installed).

Because construction impacts would be temporary (primarily related to temporary road closures, detours, and safety access), these impacts are considered against existing conditions, which would not be likely to change. The Authority and FRA have considered avoidance and minimization measures consistent with the Statewide and Bay Area to Central Valley Program EIR/EIS commitments. During project design and construction, the Authority and FRA would implement measures to reduce impacts on circulation.

Impact TR #1 - Construction (Not Including Stations) Impacts on Circulation and Emergency Access

In urban areas, project-related construction traffic would contribute to interference with pedestrians, bicyclists, and transit where existing sidewalks, paths, and transit stops need to be temporarily closed or relocated to allow for construction of new facilities. Similarly, construction activities may create a temporary operational hazard or loss of access to community facilities, although emergency access would be maintained. This includes heavy truck traffic, as materials are brought to the project site and as demolished or excavated materials are hauled out.

Construction activities could require temporary lane or road closures and underground utility work. Construction activities could also lead to both temporary disruption of transportation system operations and possible damage to elements of the roadway system, such as pavement and bridges. Effects would have moderate intensity under NEPA and impacts would be less than significant under CEQA, and because project construction traffic would be temporary, any associated delays would not be significant.

The Authority and FRA have considered avoidance and minimization measures consistent with the Statewide and Bay Area to Central Valley Program EIR/EIS commitments. During project design and construction, the Authority and FRA would implement measures to reduce any associated delays on transportation. (See Section 3.2.6, Project Design Feature #8: Construction Transportation Plan.)

All truck traffic, either for excavation or for transporting construction materials to the site, would use the designated truck routes within each city. A detailed Construction Transportation Plan, a standard industry practice included in all large construction projects, would be developed for the project before beginning any construction activities. Cities would review the Construction Transportation Plan. (See Section 3.2.6, Project Design Feature #8: Construction Transportation Plan.)

Trips for construction workers would be limited during peak hours for freeway and street traffic. The proposed project may involve building remote parking areas for these workers, with shuttles to bring them to and from the construction area if the remote parking areas are distant from the project site. Early construction of remote parking lots as the first phase of construction would make them available for construction workers to use for the remainder of the project.

The movement of heavy construction equipment, such as cranes, bulldozers, and dump trucks, to and from the site would generally occur during off-peak hours on designated truck routes. Heavy construction equipment would remain onsite until no longer needed; such equipment would not be moved repeatedly to and from the construction site over public streets.

The construction of the HST stations, platforms, and track alignment would require temporary construction easements (TCEs). The TCE may require the temporary closure of parking areas, roadway travel lanes, pedestrian facilities, bicycle lanes, and paths. Any closure or removal of parking areas, roadways, pedestrian facilities, bicycle lanes, and paths during construction would be temporary, and every attempt would be made to minimize their removal or shorten the length of time that these facilities are inoperable. Upon completion of construction, all parking areas, roadway lanes, pedestrian facilities, and bicycle lanes would be restored. For TCEs that cross railroad property, the Authority would attempt to avoid affecting railroad operations, to the extent possible. Permission for temporary access on railroad property may be necessary during construction. In order to avoid affecting railroad operations during construction, the contractor would be responsible for reaching agreement on the timing and duration of activities prior to implementing a TCE on railroad property. However, because construction conditions may vary, there is a possibility for disruption to or temporary delay of railroad operations. In particular, impacts to rail operations are expected to occur in downtown Fresno at several railroad crossing locations. Because the timing and duration of activities would be predetermined in agreement with the railroad, the railroad would be able to adapt their operations during construction activities. Avoidance and minimization measures for the protection of freight and passenger rail (such as industry-standard repairing any freight rail track damaged) during construction are described further in Design Feature #10 in Section 3.2.6, Project Design Features.

Overall, because additional trips resulting from construction of the project, and temporary road/lane modifications necessary during construction, would be short term and temporary, and would not substantially increase hazards, safety risks, or incompatible uses, or result in lack of emergency access, Impact TR #1 effects would have moderate intensity under NEPA and impacts would be less than significant under CEQA. The Project Design Features listed in Section 3.2.6 would further reduce these impacts.

Impact TR #2 - Impacts on Circulation from Fresno Station Construction

Approximately 170 peak-hour trips would be added to the Fresno roadway system during construction of the proposed project. While the actual construction schedule is not known and cannot be known until closer to the beginning of construction, an analysis (see Appendix I, *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014) was conducted to assess impacts, focusing on the impacts of construction-related trips (material hauling, worker trips, etc.). Based on this analysis, the addition of construction traffic from the proposed project is projected to be noticeable at the following intersection in Fresno:

- N. Blackstone Avenue/SR 180 Westbound Ramps.

Depending on the specifics of the construction activities, other intersections could notice increased traffic. However, these construction impacts are based on a worst-case assessment that would be reduced through avoidance and minimization measures, and any impacts would be short term and temporary. Moreover, these impacts would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Because additional trips resulting from the construction of the project would be short term and temporary and would not substantially increase hazards, safety risks, or incompatible uses, the effects would have moderate intensity under NEPA. Impacts would be less than significant under CEQA.

Impact TR #3 - Impacts on Circulation from Kings/Tulare Regional Station–East Alternative Construction

Approximately 170 peak-hour trips would be added to the Kings/Tulare Regional Station–East Alternative area roadway system during construction of the proposed project. This additional traffic would be noticeable at the following intersections:

- Seventh Street/SR 198.
- Sixth Street/SR 198.
- Second Avenue/SR 198.
- SR 43/Lacey Boulevard.

Depending on the specifics of the construction activities, other intersections could notice increased traffic. However, these construction impacts are based on a worst-case assessment that would be reduced through avoidance and minimization measures, and any impacts would be short term and temporary. Moreover, these impacts would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Because additional trips resulting from the construction of the project would be short term and temporary and would not substantially increase hazards, safety risks, or incompatible uses, the effects would have moderate intensity under NEPA. Impacts would be less than significant under CEQA.

Construction of the Kings/Tulare Regional Station–East Alternative would require the extension of sanitary sewer and water (utility) infrastructure. A proposed commercial development located at the southwest corner of SR-43 and East Lacey Boulevard would be required to extend the water and sewer infrastructure from Avenue 9 ¼ to the project site to serve that project. The Authority would extend the utilities eastward along East Lacey Boulevard to within the BNSF Alternative right-of-way, and then north to the Kings/Tulare Regional Station–East. Road cuts and the excavation of utility tranches along East Lacey Boulevard would occur within the existing right-of-way. Utility pipelines would be carried beneath SR 43 without trenching across the highway. This would be done by pipe-jacking or microtunneling methods, which would involve tunneling under SR 43 without disturbing the road surface or requiring lane closures.

Construction activities within East Lacey Boulevard would require staged, temporary encroachments. There is adequate right-of-way along East Lacey Boulevard to allow for vehicle

detour routes around construction areas, although intermittent full lane closures of a directional lane could occur. As a result, the project may cause minor traffic delays during the construction and installation of underground infrastructure. However, the delays would be short-term, and any potential construction related impacts would be reduced through avoidance and minimization measures such as limiting closures to the hours that are least disruptive, and impacts would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Therefore, effects would have negligible intensity under NEPA. Impacts would be less than significant under CEQA.

Impact TR #4 - Impacts on Circulation from Kings/Tulare Regional Station–West Alternative Construction

Approximately 170 peak-hour trips would be added to the Kings/Tulare Regional Station–West Alternative area roadway system during construction of the proposed project. This additional traffic would be noticeable at the following intersections:

- 13th Avenue/Hanford-Armona/SR 198.
- 14th Avenue/SR 198.
- 13th Avenue/Lacey Boulevard.

Depending on the specifics of the construction activities, other intersections could notice increased traffic. However, these construction impacts are based on a worst-case assessment that would be reduced through avoidance and minimization measures, and any impacts would be short term and temporary. Moreover, these impacts would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Because additional trips resulting from the construction of the project would be short term and temporary and would not substantially increase hazards, safety risks, or incompatible uses, the effects would have moderate intensity under NEPA. Impacts would be less than significant under CEQA.

Impact TR #5 - Impacts on Circulation from Bakersfield Station Alternatives Construction

Approximately 170 peak-hour trips would be added to the Bakersfield Station area roadway system during construction of the proposed project. This additional traffic would be noticeable at the following intersections:

- S. Union Avenue/Eastbound SR 58 Ramps.
- Oak Street/California Avenue.

Depending on the specifics of the construction activities, other intersections could notice increased traffic. Because additional trips resulting from construction of the project would be short term and temporary, and would not substantially increase hazards, safety risks, or incompatible uses, the effects would have moderate intensity under NEPA and impacts would be less than significant under CEQA. Moreover, any delays from this additional traffic would not substantially increase hazards or incompatible uses, create safety risks, or result in inadequate emergency access. Because additional trips resulting from the construction of the project would be short term and temporary and would not substantially increase hazards, safety risks, or incompatible uses, the effects would have moderate intensity under NEPA. Impacts would be less than significant under CEQA.

Impact TR #6 - Impacts on Circulation from Heavy Maintenance Facility Alternatives Construction

Impacts during construction to roadways at HMF alternative sites would be temporary. Worker vehicles entering and leaving the job sites at the beginning and end of shifts have the potential to

increase delays on roadways and at intersections. Use of heavy equipment and delivery or removal of materials by trucks also has the potential to add traffic, especially if they occur during AM or PM peak periods. However, the HMF sites are generally located on roadways that have relatively low volumes of traffic. Because additional trips resulting from construction of the project would be short term and temporary and on roads with low traffic volumes, and would not substantially increase hazards, safety risks, or incompatible uses, or result in inadequate emergency access, the effects would have moderate intensity under NEPA and impacts would be less than significant under CEQA.

Impact TR #7 - Impacts on Circulation from Rural Area Construction

In rural areas, the primary traffic impacts during construction would occur at locations where overcrossings are needed to carry minor roadways over the tracks. At these locations, the affected roadway would either be rerouted onto a temporary alignment or temporarily closed. Temporary closures are viable where, as here, traffic volumes on the affected roadway are very low and a detour route is available that does not require an extraordinary amount of additional travel. Traffic volumes on local roads are generally less than 500 vehicles per day. Because detours would be limited in rural areas and would affect few travelers, only small effects to traffic circulation would occur. Moreover, closure and rerouting would not create operational hazards, incompatible uses or safety risks. Because local traffic would be rerouted during construction, the construction would affect roads with very low traffic volumes, and because road closures and detours would not be permanent and would not create operational hazards, incompatible uses or safety risks, the effects on circulation would have negligible intensity under NEPA. Impacts would be considered less than significant under CEQA.

Impact TR #8 - Regional Transportation Impacts from Construction Material Hauling

An analysis of construction material hauling was conducted to assess the impacts of moving ballast for construction of the HST tracks. The ballast material would be brought from sites all over the state, and it could be transported by rail and/or truck. As such, there is the possibility of transportation impacts on freeways, local streets, and at-grade railroad crossings.

The effects of the trains (up to one new train per day at each crossing) are expected to be negligible under NEPA and the impacts less than significant under CEQA. Most of the trains would be travelling 50 to 100 miles per trip over mostly rural areas. In these rural locations, the road crossings have low traffic volumes, so the number of vehicles affected (by having to wait at a crossing) would be relatively small. The overall average delay increase for all vehicles would be less than 1 second. The intensity of the impacts of the trains (up to one new train per day at each crossing) is expected to have negligible intensity under NEPA and would be considered less than significant under CEQA. Truck trips would cause an increase in traffic volumes on affected highways ranging from 0.05% to 0.5% of ADT on regional highways and would be temporary. Neither truck trips nor train trips would require roadway modifications or be of such frequency or type that would create operational hazards, incompatible uses or safety risks. For these reasons, these impacts would be an effect with negligible intensity under NEPA. Impacts would be less than significant under CEQA.

Impact TR #9 - Construction (Not Including Stations) Impacts on School Districts

This impact discusses transportation safety for school children and accessibility to schools during project construction; additional school impacts are discussed in Section 3.11, Safety. A list of educational facilities within 0.25 miles of alignment alternative construction is located in Table 3.11-6 in Section 3.11, Safety; the facilities would be most susceptible to temporary transportation impacts from project construction.

In urban areas, the construction of project-related facilities, including HST stations and HMFs, could interfere with student walking and bicycle routes because of the temporary closure of roadways, sidewalks, transit stops, crosswalks, and paths. Construction-related road closures and the resulting delays and the tempo of these activities could interfere with parent/guardian pick-up and drop-off, though emergency access to schools would be maintained. This includes heavy truck traffic, as materials are brought to the project site and as demolished or excavated materials are hauled out. Construction activities could require temporary lane or road closures and underground utility work. Effects would have moderate intensity under NEPA. Impacts would be less than significant under CEQA. Existing or planned Safe Routes to Schools would not be impacted by construction activities. Because project construction traffic would be temporary, any associated delays would not be significant. The Authority and FRA have considered avoidance and minimization measures consistent with the Statewide and Bay Area to Central Valley Program EIR/EIS commitments. (See Section 3.2.6, Project Design Features.)

In rural areas, the primary traffic impacts during construction would occur at locations where overcrossings are needed to carry minor roadways over the tracks. At these locations, the affected roadway would either be rerouted onto a temporary alignment or temporarily closed. Temporary closures would be viable if traffic volumes on the affected roadway were very low and a detour route was available that did not require an extraordinary amount of additional travel and substantial out-of-direction travel times and distances for school buses and emergency access to schools would be maintained. Traffic volumes on local roads are generally less than 500 vehicles per day. Because detours would be limited in rural areas and would affect few travelers, only minor effects to traffic circulation would occur. Existing or planned Safe Routes to Schools would not be impacted by construction activities. The Authority and FRA have considered avoidance and minimization measures consistent with the Statewide and Bay Area to Central Valley Program EIR/EIS commitments. (See Section 3.2.6, Project Design Features.)

Project Impacts

In the regional setting, the HST alternatives would result in changes to both vehicle movement and volume on the regional highway system and changes to the aviation enplanements. The HST alternatives would also result in permanently closing roadways and creating HST overcrossings at at-grade intersections. The following sections describe changes to intersection and roadway segment levels of service and delay. Effects and impacts on existing transit, non-motorized travel, and parking are also evaluated.

Impact TR #10 – Impacts on Regional Transportation System

All HST alternatives would provide benefits to the regional transportation system by reducing vehicle trips on the freeways through the diversion of intercity vehicle passenger trips to high-speed rail. This reduction in future vehicle trips would improve the future LOS of the regional roadway system (and reduce overall VMT) compared to the No Project Alternative. As compared to existing conditions, the HST alternatives also would divert trips from regional road facilities, thereby improving regional roadway LOS. Likewise, some intrastate commercial air trips would be diverted to HST. Information about these vehicle and air travel impacts is discussed below. The reduction of vehicle and air trips would meet the purpose and need of the HST project. Hence this would be a beneficial aspect of the project and is consistent with project goals.

Regional Change to the Aviation System

Chapter 1.0, Project Purpose, Need, and Objectives, describes air travel service at Fresno-Yosemite International Airport and Meadows Field Airport in Bakersfield. Fares for travel from these airports to San Francisco or Los Angeles are relatively high, especially with respect to the cost of travel by automobile. The HST alternatives would divert some trips from air travel,

primarily from FAT. The Statewide High-Speed Rail ridership model projected where trips would be diverted and whether the diversions would be from automobiles or airplane trips; an estimated 23% of passengers at the Fresno and Bakersfield airports would be diverted to HST within the San Joaquin Valley (Authority 2012). The diversion of air travel would meet the purpose and need of the HST project. Hence, this would be a beneficial aspect of the project and is consistent with the goals set for the project.

Changes in Conventional Passenger Rail Service

With the introduction of HST service, it is expected that Amtrak San Joaquin rail service would likely adjust to function more in the role of a feeder service to the HST System in the Fresno to Bakersfield area, providing passengers with the opportunity to connect to cities not served by HST. Initially, as HST service becomes available, it would be expected that many San Joaquin riders would shift to HST service (for example, for Fresno to Bay Area trips). However as HST ridership increases, it is likely that Amtrak San Joaquin rail service would improve as the San Joaquin line would connect and/or provide direct service to existing markets between HST stations and/or markets not served by HST. Also, during Phase 1 of HST operations, before the extension to Sacramento (Phase 2), the San Joaquin route would provide important connecting service to municipalities north of Merced.

Although underneath the elevated structure and originally anticipated to require relocation, the Corcoran Amtrak Station would remain in place. Also, the Wasco Amtrak Station and passenger platform would remain in place. No disruption to Amtrak service would occur. Therefore, the impacts to commercial rail passenger services and existing facilities are expected to result in effects of negligible intensity under NEPA and less than significant impacts under CEQA.

Changes in Intercity Bus Service

As with the Amtrak San Joaquin service, intercity bus service is likely to change as a result of the introduction of HST service. Many riders could switch to HST service, although the bus service pricing might help retain some riders. However, there would also be a potential new market providing feeder service to HST. The bus service providers (including Greyhound and Amtrak Thruway) are likely to revise their current operation to better address this market.

Pedestrian and Bicycle Impacts

Regional pedestrian and bicycle usage is largely concentrated in the urban areas along the corridor; impacts in the Fresno, Kings/Tulare Regional, and Bakersfield station areas are discussed in the station sections below. Along some segments, the HST is proposed to operate on an elevated structure that would not restrict pedestrian and bicycle movement. The HST project would also be grade-separated across roadways throughout the corridor (including new freight rail separations) and these separations would improve pedestrian and bicycle safety, which would be beneficial under NEPA. Impacts would be less than significant under CEQA.

Altering Freight Rail Transportation

As the HST alternatives do not encroach on the freight rail corridors, they would not have a direct effect on current and anticipated freight operations. After construction, freight operation would continue as it currently does and train miles would not change due to the HST. The HST alternatives would, in some locations, restrict the ability of the UPRR and BNSF to construct new spur lines for potential future customers.

The freight railroads would benefit from planned grade separations in several locations, depending on which alternative is selected. These improvements would enhance the speed and capacity of the rail corridor.

Changes in Vehicle Movement on Regional Highway System

Total vehicle miles traveled would be reduced, overall, with the HST System in operation. Table 3.2-13 lists traffic conditions represented by total vehicle miles, forecasted to the 2035 study year. The change in vehicle miles travelled (VMT) represents total number of vehicle miles driven that would be removed from regional roadways. Using the estimate of diverted auto trips for the Fresno, Kings/Tulare Regional, and Bakersfield stations, the combined reduction of auto trips was estimated in terms of reduced VMT in 2035 (with VMT reductions based on HST fares at 50% of airfare). This is a net benefit to transportation and traffic operations because a reduction in VMT helps maintain or potentially improve the operating conditions of regional roadways. The reduction of VMT on regional roadways is considered beneficial to the project. The project impacts and mitigations are identified based on 50% of airfare VMT, as it reflects the worst-case scenario for traffic circulation. With HST fares at 83% of airfare, there would be a reduced benefit in terms of VMT reductions.

Table 3.2-13
Vehicle Miles Traveled

County	VMT with No Project (2035) [a]	VMT with HST (2035)[a]	Reduction in VMT No Project to HST (2035)[a]
Fresno	27,368,000	24,364,000 to 25,366,000	11% to 7%
Kings	3,137,000	2,663,000 to 2,821,000	15% to 10%
Tulare	10,112,000	9,649,000 to 9,803,000	5% to 3%
Kern	39,240,000	35,149,000 to 36,513,000	10% to 7%
Total (four counties)	79,857,000	71,825,000 to 74,503,000	10% to 7%

Source: Cambridge Systematics 2012.

Note: Totals may not add up exactly because of rounding.

[a] The values in the table represent the ranges of VMT based on the range of HST ticket prices of 50% to 83% of airfare.

The statewide travel demand model provided an estimate of 2035 statewide daily VMT for the HST alternatives. Information for Fresno, Kings, Tulare, and Kern counties is presented in Table 3.2-13. The VMT reduction is due to reduced vehicle trips in and out of the Fresno/Bakersfield region, as those trips divert to the HST. The VMT attributed toward trips staying within the four-county region is not expected to change. VMT information was provided for the No Project and with project conditions (for 50% of airfare and 83% of airfare), and the difference was calculated to estimate the VMT savings. Compared to future background conditions, an approximate 10% overall reduction in VMT is projected for the four counties for 50% of airfare and approximately 7% for 83% of airfare. It can be noted from this table that VMT benefit for 83% airfare is lower than the 50% airfare VMT.

Impact TR #11 - Changes in Vehicle Movements and Flow on Highways and Roadways

All alternatives would result in impacts on highways and roadways between Fresno and Bakersfield. The impacts include crossing over or shifting existing roads, road closures, and freeway operations. These impacts are described by Alternative in the following subsections. ADT provided below was compiled from data provided within the Station Area existing conditions analysis and within the Transportation Demand Model (Authority and FRA 2014).

BNSF Alternative

Roadway Crossings – Chapter 2.0, Project Alternatives, describes the type of changes that would take place at each roadway crossed by the proposed HST alignments. Specifically, the proposed BNSF Alternative is described in Section 2.4.2 and other alternative alignments in Section 2.4.3. The majority of the track would be at-grade, crossing local roads and highways where a separated grade roadway crossing would be constructed, or some local roads and streets would be diverted or closed. A detailed list of each roadway crossing and the proposed changes at the roadways and streets are listed and described in Appendix 2-A, Table 2-A-1, and are depicted on Figures 3.2-22 through 3.2-25. Proposed changes at highway crossings are described in Sections 2.4.2 and 2.4.3. The following is a summary of the BNSF Alternative with respect to extended at-grade and elevated segments.

Within Fresno County, 20 of 24 miles of the track would be at-grade. At the Fresno Station, the BNSF Alternative would be at-grade and follow the UPRR until E. Jensen Avenue. Crossings would be maintained or extended at Stanislaus (which would become a two-way crossing and Tuolumne would be closed), Fresno, Tulare, and Ventura streets, E. Church Avenue, and E. Jenson bypass. SR 41 would pass over the HST. Kern and Mono streets, E. California Street south through E. Belgravia Street, S. East Avenue, and S. Orange Avenue would be closed at or near the HST right-of-way. An elevated segment of the HST would begin over Golden State Boulevard and SR 99, returning to grade at the BNSF Railway at E. Malaga Avenue; roads crossing the alignment in this segment would remain open with the exception of E. Malaga Avenue, which would be closed and traffic redirected to E. Central and E. American avenues. The alignment continues generally at grade within Fresno County except at an elevated crossing of the BNSF Railway tracks near E. Conejo Avenue. Within Fresno County, the BNSF Alternative would close 27 roadways, as described below and in Table 2-A-1 of Appendix 2-A, Road Crossings.

In Kings County, 18 of 28 miles of track would be at-grade. South of Fresno, the alignment would leave the BNSF Railway to travel east of Hanford, on the east side of SR 43. Near Jersey Avenue in Hanford, SR 43 would cross beneath the at-grade HST. In addition to the elevated structure that would travel over the Kings River complex, there would be a 2.5-mile elevated portion of the HST on the east side of Hanford that crosses over the San Joaquin Valley Railroad and SR 198, from just south of Fargo Avenue to just north of Hanford-Armona Road. The alignment continues at-grade east of Hanford, until a 3-mile-long elevated crossing from north of Cross Creek and the BNSF Railway to just north of Nevada Avenue. It continues at-grade on the east side of Corcoran, until again becoming elevated to cross the BNSF Railway south of Corcoran. Within Kings County, the BNSF Alternative would close three roadways, as described below and in Table 2-A-1 of Appendix 2-A, Road Crossings.

Eighteen of 22 miles of track would be at-grade in Tulare County, on the east side of the BNSF Railway right-of-way. Elevated segments are at the Tule River and Alpaugh Railroad spur. Local roads would be maintained, avoided, or realigned but capacity retained. Within Tulare County, the BNSF Alternative would close four roadways, as described below and in Table 2-A-1 of Appendix 2-A, Road Crossings.

In Kern County, 25 of 44 miles of track would be at-grade. The BNSF Alternative would generally follow the BNSF Railway right-of-way. There would be four elevated segments within Kern County, between approximately the following local roads:

- Sherwood Avenue and Whisler Road, north of Wasco.
- SR-46 and Kimberlina Road, Wasco.
- North Shafter Avenue and Cherry Avenue, Shafter.
- Country Breeze Place and the proposed Bakersfield Station, Bakersfield.

As a result, most Kern County local roads would remain open, but 12 roads are proposed for closure as listed below and in Table 2-A-1 of Appendix 2-A, Road Crossings.

Road Closures – Along the BNSF Alternative, 46 local public roads would be closed and traffic diverted to adjacent roads. The following public road closures are currently proposed at the HST right-of-way:

- Tuolumne Street, Fresno County. (4,446 ADT)
- Kern Street, Fresno County. (1,416 ADT)
- Mono Street, Fresno County. (510 ADT)
- Golden State Boulevard off-ramps, Fresno County. (3,710 ADT)
- E. California Street, Fresno County. (411 ADT)
- S. Cherry Avenue, Fresno County. (3559 ADT)
- S. Railroad Avenue, Fresno County. (2,094 ADT)
- E. Lorena Avenue, Fresno County.
- S. Van Ness Avenue, Fresno County.
- E. Florence Avenue, Fresno County.
- S. Sarah Avenue, Fresno County.
- E. Belgravia Avenue, Fresno County.
- S. East Avenue, Fresno County. (928 ADT)
- S. Orange Avenue, Fresno County. (956 ADT)
- E. Malaga Avenue, Fresno County.
- E. Jefferson Avenue, Fresno County. (524 ADT)
- E. Morton Avenue, Fresno County.
- E. Clayton Avenue, Fresno County.
- E. Sumner Avenue, Fresno County.
- E. Springfield Avenue, Bowles, Fresno County.
- E. Dinuba Avenue, Fresno County. (434 ADT)
- E. Rose Avenue, Fresno County. (1,579 ADT)
- E. Kamm Avenue, Fresno County. (74 ADT)
- S. Willow Avenue, Fresno County. (1,337 ADT)
- S. Topeka Avenue, Fresno County.
- E. Clarkson Avenue, Fresno County.
- S. Minnewawa Avenue, Fresno County. (2,935 ADT)
- Ninth Avenue, Kings County. (240 ADT)
- Jersey Avenue, Kings County. (228 ADT)
- Lansing Avenue, Rural Kings County.
- Avenue 144, Rural Tulare County. (1,250 ADT)
- Avenue 136, Rural Tulare County.
- Angiola Drive, Tulare County.
- Palmer Avenue, Tulare County.
- Pond Road, Kern County. (7,581 ADT)
- Blankenship Avenue, Kern County.
- Taussig Avenue, Kern County
- Wasco Avenue, Kern County. (2,402 ADT)
- Madera Avenue, Kern County. (120 ADT)
- Mettler Avenue, Kern County. (260 ADT)
- Reina Road, Kern County. (1,559 ADT)
- Glenn Street, Bakersfield, Kern County.
- Palm Avenue, Bakersfield, Kern County. (5,877 ADT)
- F Street, Bakersfield, Kern County.
- Chico Street, Bakersfield, Kern County.
- Dolores Street, Bakersfield, Kern County.

Traffic volumes on local roads are generally less than 500 vehicles per day, although some road segments may have larger volumes. Emergency vehicle access will be maintained as road segments that would be permanently closed are typically short (less than 1 mile) and access to properties adjacent to these closed roads would be readily available from other roads. Road crossings in rural areas would occur approximately every 2 miles. Because rerouting would be limited in rural areas and would affect few travelers, only small effects to traffic circulation would occur the effects on circulation would have negligible intensity under NEPA. Impacts would be considered less than significant under CEQA.

Hanford West Bypass 1 and 2 Alternatives

Roadway Crossings – The Hanford West Bypass 1 and 2 Alternatives would cross agricultural lands within the urban area of Armona-Hanford. Several grade-separated crossings are proposed to maintain traffic flow. Elevated crossings are proposed at E. Elkhorn Avenue, Excelsior Avenue, Glendale Avenue, Hanford-Armona Road, Houston Avenue, Iona Avenue, Jackson Avenue, Kansas Avenue, and Lansing Avenue. Undercrossings are proposed at E. Conejo Avenue, Grangeville Boulevard, W. Lacey Boulevard, 12th Avenue, Idaho Avenue, and Kent Avenue South. Clovis Avenue would be realigned under both alternatives. A detailed list of the proposed roadway crossings is provided in Chapter 2.0, Alternatives, Appendix 2-A, Tables 2-A-2 and 2-A-4. Road closures are listed below.

Road Closures – Along the Hanford West Bypass 1 and 2, eight local roads would be closed with both the at-grade and below-grade options. The following road closures are proposed:

- E. Kamm Avenue, Fresno County. (74 ADT)
- S. Peach Avenue, Fresno County.
- E. Clarkson Avenue, Fresno County.
- S. Minnewawa Avenue, Fresno County. (2,935 ADT)
- E. Davis Avenue, Fresno County.
- E. Barrett Avenue, Fresno County.
- Elder Avenue, Kings County. (8 ADT)
- S. 10th Avenue, Kings County. (444 ADT)

Seven roads would be closed on the corresponding segment of the BNSF alignment. Traffic volumes on local roads are generally less than 500 vehicles per day, although some road segments may have larger volumes. Emergency vehicle access will be maintained as road segments that would be permanently closed are typically short (less than 1 mile) and access to properties adjacent to these closed roads would be readily available from other roads. Road crossings in rural areas would occur approximately every 2 miles. Because rerouting would be limited in rural areas and would affect few travelers, only small effects on traffic circulation would occur, and the effects on circulation would have negligible intensity under NEPA. Impacts would be considered less than significant under CEQA.

Hanford West Bypass 1 Modified and Bypass 2 Modified Alternatives[7]

Roadway Crossings – The Hanford West Bypass 1 Modified and Hanford West Bypass 2 Modified alternatives would cross agricultural lands within the urban area of Armona-Hanford. Several grade-separated crossings are proposed to maintain traffic flow. Elevated crossings are proposed at E. Elkhorn Avenue, Excelsior Avenue, Glendale Avenue, Hanford-Armona Road, Houston Avenue, Iona Avenue, Jackson Avenue, Kansas Avenue, and Lansing Avenue. Undercrossings are proposed at E. Conejo Avenue, Grangeville Boulevard, W. Lacey Boulevard,

[7] As discussed in Section 2.0, Alternatives, the Hanford West Bypass 1 Modified and Bypass 2 Modified alternatives were added to the project after the release of the Revised DEIR/Supplemental DEIS.

12th Avenue, Idaho Avenue, and Kent Avenue South. Clovis Avenue would be realigned under both alternatives. A detailed list of the proposed roadway crossings is provided in Chapter 2.0, Alternatives, Appendix 2-A, Tables 2-A-3 and 2-A-5. Road closures are listed below.

Road Closures – Along the Hanford West Bypass 1 Modified and Hanford West Bypass 2 Modified alternatives, eight local roads would be closed with both the at-grade and below-grade options. The following road closures are proposed:

- E. Kamm Avenue, Fresno County. (74 ADT)
- S. Peach Avenue, Fresno County.
- E. Clarkson Avenue, Fresno County.
- S. Minnewawa Avenue, Fresno County. (2,935 ADT)
- E. Davis Avenue, Fresno County.
- E. Barrett Avenue, Fresno County.
- Elder Avenue, Kings County.
- S. 10th Avenue, Kings County.

Seven roads would be closed on the corresponding segment of the BNSF alternative. Traffic volumes on local roads are generally less than 500 vehicles per day, although some road segments may have larger volumes. Emergency vehicle access will be maintained as road segments that would be permanently closed are typically short (less than 1 mile) and access to properties adjacent to these closed roads would be readily available from other roads. Road crossings in rural areas would occur approximately every 2 miles. Because rerouting would be limited in rural areas and would affect few travelers, only small effects on traffic circulation would occur, and the effects on circulation would have negligible intensity under NEPA. Impacts would be considered less than significant under CEQA.

Corcoran Elevated Alternative

Roadway Crossings – This alignment alternative would pass through the city of Corcoran on the eastern side of the BNSF Railway on an elevated structure (same as the BNSF Alternative, except elevated). With the elevated structure, local roads would be avoided or realigned/maintained except for the closure of the Santa Fe Avenue off-ramp east of SR 43. SR 43 would be realigned to the east. A detailed list of the proposed roadway crossings is provided in Chapter 2.0, Alternatives, Appendix 2-A, Table 2-A-6. Road closures are listed below.

Road Closures – Along the Corcoran Elevated Alternative, one local road would be closed. The following road closures are proposed:

- Santa Fe Avenue off-ramp, Corcoran, Kings County. (8,773 ADT)

Two roads would be closed on the corresponding segment of the BNSF alignment. Traffic volumes on local roads are generally less than 500 vehicles per day, although some road segments may have larger volumes. Emergency vehicle access will be maintained as road segments that would be permanently closed are typically short (less than 1 mile) and access to properties adjacent to these closed roads would be readily available from other roads. Road crossings in rural areas would occur approximately every 2 miles. Because rerouting would be limited in rural areas and would affect few travelers, only small effects on traffic circulation would occur, and the effects on circulation would have negligible intensity under NEPA. Impacts would be considered less than significant under CEQA.

Corcoran Bypass Alternative

Roadway Crossings – The Corcoran Bypass Alternative would go around the urban area of Corcoran, at-grade. Several grade-separated crossings are proposed to maintain current traffic

conditions. Elevated crossings are proposed at Cross Creek and Tule River, and Idaho, Jackson, Kent, Kansas, 5-½, Nevada, Waukena, and Whitley avenues, SR 43, and Avenue 144 would be maintained or realigned. A detailed list of the proposed roadway crossings is provided in Chapter 2.0, Alternatives, Appendix 2-A, Table 2-A-7. Road closures are listed below.

Road Closures – Along the Corcoran Bypass Alternative, seven local roads would be closed and traffic diverted to adjacent roads. The following road closures are proposed:

- Newark Avenue, Corcoran, Kings County.
- 5-½ Avenue, Corcoran, Kings County. (1,262 ADT)
- Niles Avenue, Corcoran, Kings County. (620 ADT)
- Fifth Avenue, Corcoran, Kings County. (752 ADT)
- Orange Avenue, Corcoran, Kings County. (3,749 ADT)
- Oregon Avenue, Corcoran, Kings County. (914 ADT)
- Avenue 136, rural Tulare County.

Two roads would be closed on the corresponding segment of the BNSF alignment. Traffic volumes on local roads are generally less than 500 vehicles per day, although some road segments may have larger volumes. Emergency vehicle access will be maintained as road segments that would be permanently closed are typically short (less than 1 mile) and access to properties adjacent to these closed roads would be readily available from other roads. Road crossings in rural areas would occur approximately every 2 miles. Because rerouting would be limited in rural areas and would affect few travelers, only small effects on traffic circulation would occur, and the effects on circulation would have negligible intensity under NEPA. Impacts would be considered less than significant under CEQA.

Allensworth Bypass Alternative

Roadway Crossings – The Allensworth Bypass Alternative goes around the state park and urban area of Allensworth. Crossings of the HST are proposed to maintain most existing roads and current traffic conditions. A detailed list of the proposed roadway crossings is provided in Chapter 2.0, Alternatives, Appendix 2-A, Table 2-A-8. Road closures are listed below.

Road Closures – Along the Allensworth Bypass Alternative, there would be four roadway closures. The following road closures are proposed:

- Avenue 24, rural Tulare County.
- Woollomes Avenue, rural Kern County.
- Elmo Highway, rural Kern County.
- Blankenship Avenue, rural Kern County. (90 ADT)

Four roads would be closed on the corresponding segment of the BNSF alignment. Traffic volumes on local roads are generally less than 500 vehicles per day, although some road segments may have larger volumes. Emergency vehicle access will be , although some road segments may have larger volumes. Emergency vehicle access will be maintained as road segments that would be permanently closed are typically short (less than 1 mile) and access to properties adjacent to these closed roads would be readily available from other roads. Road crossings in rural areas would occur approximately every 2 miles. Because rerouting would be limited in rural areas and would affect few travelers, only small effects on traffic circulation would occur, and the effects on circulation would have negligible intensity under NEPA. Impacts would be considered less than significant under CEQA.

Wasco-Shafter Bypass Alternative

Roadway Crossings – The Wasco-Shafter Bypass Alternative goes around the urban areas of Wasco and Shafter and remains at-grade as opposed to the BNSF portion of the alignment that is elevated as it passes through Wasco and Shafter. Crossings of the HST route would be maintained or constructed at Poso Creek/SR 46, Poplar Avenue (realignment is necessary), Kimberlina Road, Shafter Avenue, Beech Avenue, E. Lerdo Highway, Cherry Avenue, and Kratzmeyer Road. A detailed list of the proposed roadway crossings is provided in Chapter 2.0, Alternatives, Appendix 2-A, Table 2-A-9. Road closures are listed below.

Road Closures – Along the Wasco-Shafter Bypass Alternative, 20 roads would be closed and traffic diverted to adjacent roads. The following road closures are currently proposed:

- Taussig Avenue, Rural Kern County.
- McCombs Avenue, Wasco, Kern County. (232 ADT)
- Gromer Avenue, Wasco, Kern County.
- Sixth Street, Wasco, Kern County.
- Root Avenue, Wasco, Kern County.
- Poso Avenue, Wasco, Kern County. (3,684 ADT)
- Filburn Avenue, Wasco, Kern County. (2,423 ADT)
- Jackson Avenue, Wasco, Kern County. (4,182 ADT)
- Dresser Avenue, rural Kern County.
- Jack Avenue, Shafter, Kern County.
- Mannel Avenue, Shafter, Kern County.
- Merced Avenue, Shafter, Kern County.
- Madera Avenue, Shafter, Kern County.
- Fresno Avenue, Shafter, Kern County.
- E. Tulare Avenue, Shafter, Kern County.
- E. Los Angeles Street, Shafter, Kern County.
- Orange Street, rural Kern County.
- Burbank Street, rural Kern County.
- Mendota Street, rural Kern County.
- Reina Road, rural Kern County. (1,559 ADT)

Five roads would be closed on the corresponding segment of the BNSF alignment. Traffic volumes on local roads are generally less than 500 vehicles per day, although some road segments may have larger volumes. Emergency vehicle access will be maintained as road segments that would be permanently closed are typically short (less than 1 mile) and access to properties adjacent to these closed roads would be readily available from other roads. Road crossings in rural areas would occur approximately every 2 miles. Because rerouting would be limited in rural areas and would affect few travelers, only small effects on traffic circulation would occur, and the effects on circulation would have negligible intensity under NEPA. Impacts would be considered less than significant under CEQA.

Bakersfield South Alternative

Roadway Crossings – From the Rosedale Highway (SR 58) in Bakersfield, the Bakersfield South Alternative Alignment parallels the BNSF Alternative at varying distances to the north. At Chester Avenue, the Bakersfield South Alternative curves south, and parallels California Avenue. As with the BNSF Alternative, the Bakersfield South Alternative would begin at-grade and become elevated starting at Country Breeze Place through Bakersfield to its terminus at Oswell Street. A detailed list of the proposed roadway crossings is provided in Chapter 2.0, Alternatives, Appendix 2-A, Table 2-A-10. Road closures are listed below.

Road Closures – Along the Bakersfield South Alternative, three roads would be closed and traffic diverted to adjacent roads. The following road closures are proposed:

- Glenn Street, Bakersfield, Kern County.
- Palm Avenue, Bakersfield, Kern County. (5,877 ADT)
- Butte Street, Bakersfield, Kern County.

Five roads would be closed on the corresponding segment of the BNSF alignment. Traffic volumes on local roads are generally less than 500 vehicles per day, although some road segments may have larger volumes. Emergency vehicle access will be maintained as road segments that would be permanently closed are typically short (less than 1 mile) and access to properties adjacent to these closed roads would be readily available from other roads. Road crossings in rural areas would occur approximately every 2 miles. Because rerouting would be limited in rural areas and would affect few travelers, only small effects on traffic circulation would occur, the effects on circulation would have negligible intensity under NEPA. Impacts would be considered less than significant under CEQA.

Bakersfield Hybrid Alternative

Roadway Crossings – From Rosedale Highway (SR 58) in Bakersfield, the Bakersfield Hybrid Alternative is the same alignment as the Bakersfield South Alternative, which parallels the BNSF Alternative at varying distances to the north. At approximately A Street, the Bakersfield Hybrid Alternative diverges from the Bakersfield South Alternative, crosses over Chester Avenue and the BNSF right-of-way in a southeasterly direction, then curves back to the northeast to parallel the BNSF Railway tracks towards Kern Junction. After crossing Truxtun Avenue, the alignment curves to the southeast to parallel the UPRR tracks and Edison Highway to its terminus at Oswell Street. As with the BNSF and Bakersfield South alternatives, the Bakersfield Hybrid Alternative would begin at-grade and become elevated starting at Country Breeze Place through Bakersfield to Oswell Street. A detailed list of the proposed roadway crossings is provided in Chapter 2.0, Alternatives, Appendix 2-A, Table 2-A-11. Road closures are listed below.

Road Closures – Along the Bakersfield Hybrid Alternative, 11 roads would be closed and traffic diverted to adjacent roads. The following road closures are proposed:

- Glenn Street, Bakersfield, Kern County.
- Palm Avenue, Bakersfield, Kern County. (5,877 ADT)
- Eye Street, Bakersfield, Kern County.
- Chico Street, Bakersfield, Kern County.
- Inyo Street, Bakersfield, Kern County. (1,514 ADT)
- Dolores Street, Bakersfield, Kern County.
- Kern Street, Bakersfield, Kern County.
- Eureka Street, Bakersfield, Kern County.
- King Street, Bakersfield, Kern County.
- E. 18th Street, Bakersfield, Kern County.
- E. 21th Street, Bakersfield, Kern County. (473 ADT)

Five roads would be closed on the corresponding segment of the BNSF alignment. Traffic volumes on local roads are generally less than 500 vehicles per day, although some road segments may have larger volumes. Emergency vehicle access will be maintained as road segments that would be permanently closed are typically short (less than 1 mile) and access to properties adjacent to these closed roads would be readily available from other roads. Road crossings in rural areas would occur approximately every 2 miles. Because rerouting would be limited in rural areas and would affect few travelers, only small effects to traffic circulation would occur, and the effects on

circulation would have negligible intensity under NEPA. Impacts would be considered less than significant under CEQA.

Impact TR #12 – Loss of Property Access as a Result of Road Closures

All alternatives would result in impacts on highways and roadways between Fresno and Bakersfield. The impacts include crossing over or shifting existing roads, road closures, and freeway operations. Road closures are listed previously within Impact TR #11.

Because of potential property access issues (i.e., potential to result in lack of property access), the road closure effects on the loss of property access are considered to have moderate intensity under NEPA. Impacts would have a significant impact under CEQA.

Impact TR #13 – Impacts on the Local Roadway Network due to Station Activity

Fresno Station

Two Downtown Fresno station alternatives were carried forward in both the Draft EIR/EIS and the Revised DEIR/Supplemental DEIS, one at Mariposa Street and the other at Kern Street. On May 3, 2012, the Authority Board certified the Merced to Fresno Section Final EIR/EIS and selected the Mariposa Alternative as the Fresno station location. The FRA issued a Record of Decision (ROD) that included this station site, in September 2012. The Revised DEIR/Supplemental DEIS also considered two options and separate analysis of the potential Tulare Street underpass and Tulare Street overpass of the HST Alignment. The selection of the Mariposa Alternative as the Fresno Station also included selection of the Tulare Street Underpass Option; subsequently all analysis of the Tulare Street Overpass Option was removed from the Final EIR/EIS.

The Fresno Station would be in Downtown Fresno, less than 0.5 mile east of SR 99 on the BNSF Alternative. The station would be centered on Mariposa Street and bordered by Fresno Street on the north, Tulare Street on the south, H Street on the east, and G Street on the west.

The Fresno Station would require closure of Divisadero Street, Kern Street, and Mono Street at the proposed HST and UPRR alignment. In conjunction with the street closures, the following intersection modifications would also occur:

- Fresno Street at H Street: Existing grade-separation with ramps would be replaced with an at-grade intersection with full directionality.
- Fresno Street at G Street: Existing at-grade intersection would be replaced with a grade-separation (no turning movements would be allowed).
- Ventura Street at H Street: Existing at-grade intersection would be replaced with a grade-separation (no turning movements would be allowed).
- Ventura Street at G Street: Existing at-grade intersection would be replaced with a grade-separation (no turning movements would be allowed).
- S. East Avenue at E. Church Avenue: Existing at-grade intersection would be replaced with a grade-separation (no turning movements would be allowed).
- S. Sunland Avenue at E. Church Avenue: Existing at-grade intersection would be replaced with a grade-separation (S. East Avenue will intersect with E. Church Avenue on the crossing structure).

Roadway segment and intersection analysis of AM and PM peak hours used the traffic impact criteria described earlier in this section. Below, the roadway segment analysis is presented

followed by the intersection analysis. For roadway segments and intersections, scenarios are evaluated and compared for Existing Conditions, future No Project (year 2035), and Future with Project (year 2035). Because the significance criteria described earlier focus on roadways and intersections that are predicted to operate (under project conditions) at LOS E and F, or are already operating at LOS E and F, only the roadways and intersections that meet those criteria are listed. All other roadways and intersections are and would continue to operate at LOS D or better under project conditions, are not significantly impacted, do not require mitigation, and are not listed in this section. All roadways and intersections evaluated are included in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014).

Fresno Stations Roadway Segment Impacts – Table 3.2-14 presents the results of the roadway segment analysis for Existing Plus Project conditions. As shown in the table, one of the roadway segments projected to operate at LOS E or F under Existing Conditions is projected to continue to operate at LOS E or F and does not result in an increased delay that violates the significance criteria. None of the roadway segments are projected to be substantially impacted by the project, resulting in an effect with negligible intensity under NEPA and in a less-than-significant impact under CEQA.

Table 3.2-14
Existing Plus Project Roadway Segment Analysis
Downtown Fresno Station

No	Roadway Segment	Number of Lanes	Divided/ Undivided	V/C		LOS		Impact
				Existing	Existing + Project	Existing	Existing + Project	
23	Tulare Street between SR 41 Ramps and N. First Street	2/2	Divided followed by Undivided	1.02 followed by 1.08	1.03 followed by 1.08	F	F	No

Source: Authority and FRA 2014.

Notes:

Under Existing Plus Project conditions, roadway segment 49, Tuolumne Street, is closed between G Street and H Street.

Roadway segments 36 through 41 would be closed under project conditions.

Acronyms and Abbreviations:

LOS = level of service
SR = State Route
V/C = volume-to-capacity (ratio)

Table 3.2-15 presents the results of the roadway segment analysis for Future (2035) Plus Project conditions and compares these conditions against Future (2035) No Project conditions . The table shows all road segments that would function at an LOS E or F under Future (2035) No Project or Future (2035) Plus Project conditions (or both), 5 roadway segments would have an impact under Future (2035) No Project conditions (either falling below LOS D or by increasing an existing LOS E or F segment by V/C of 0.04 or more). The identified effects to roadway segments surrounding the Fresno Station would have substantial intensity under NEPA. Impacts would be significant under CEQA.

Table 3.2-15
Future (2035) Plus Project Roadway Segment Analysis
Downtown Fresno Station

No	Roadway Segment	Number of Lanes	Divided/ Undivided	V/C		LOS		Impact
				Future (2035) No Project	Future (2035) +Project	Future (2035) No Project	Future (2035) +Project	
7	Stanislaus St, between Van Ness Ave and O St	1/1	Undivided	1.37	1.41	F	F	Yes
10	E. Belmont Ave, between N. Fresno St and N. Abby St	2/2	Divided	0.95	0.95	E	E	No
11	Stanislaus St, between Broadway St, and E St	1/2 before F St and 2/2 after F St	Undivided	1.16 followed by 0.87	1.16 followed by 0.87	F/D	F/D	No
12	Tuolumne Street, between Broadway Street, and E. Street	'3/0 before F St., 1/1 up to G St., closed between G St. and H St. and 1/1 after H St.	Un-divided	0.70 followed by 1.35	0.70 followed by 1.35	D/F	D/F	No
14	Fresno Street, between P Street and M Street	2/2	Divided	0.99	1.04	E	F	Yes
17	Fresno St, between G St and SR 99 NB Ramps	2/2	Divided	0.98	0.98	E	E	No
21	Tulare St, between R St and U St	2/2	Undivided	1.10	1.14	F	F	Yes
22	Divisadero St, between N. Fresno St and SR 41 Ramps	2/2	Divided followed by Undivided	1.04 followed by 1.09	1.06 followed by 1.12	F/F	F/F	No
23	Tulare St, between SR 41 Ramps and N. 1st St	2/2	Divided followed by Undivided	1.18 followed by 1.24	1.18 followed by 1.25	F/F	F/F	No
31	Van Ness Ave, between Ventura Ave and SR 41 Ramps	2/1	Undivided	0.89	0.93	D	E	No
34	N. Blackstone Ave, between SR 180 EB Ramps and E. Belmont Ave	0/3	One-way	1.26	1.26	F	F	No
35	N. Abby St, between SR 180 EB Ramps and E. Belmont Ave	3/0	One-way	0.72	0.76	D	E	No
49	Tuolumne St, between G St and H St	Will Not Exist						No

Table 3.2-15
Future (2035) Plus Project Roadway Segment Analysis
Downtown Fresno Station

No	Roadway Segment	Number of Lanes	Divided/ Undivided	V/C		LOS		Impact
				Future (2035) No Project	Future (2035) +Project	Future (2035) No Project	Future (2035) +Project	
50	Stanislaus St, between Broadway St and Fulton St	1/1	Undivided	1.46	1.44	F	F	No
54	Stanislaus St, between L St and M St	1/1	Undivided	0.92	0.92	E	E	No
56	Stanislaus St, between M St and N St	1/1	Undivided	1.10	1.17	F	F	Yes
58	Van Ness Ave, south of Tuolumne Street	1/1	Undivided	1.28	1.41	F	F	Yes
60	W. McKinley Ave, between SR 99 Ramps & Golden State Blvd	2/2	Undivided	1.41	1.41	F	F	No
61	W. McKinley Ave, between Golden State Blvd & N. West Ave	2/2	Undivided	1.43	1.43	F	F	No
62	W. McKinley Ave, east of N. West Ave	2/2	Undivided	1.07	1.07	F	F	No
63	Golden State Blvd, between W. McKinley Ave & N. West Ave	2/2	Divided	1.07	0.11	F	C	No
64	Golden State Blvd, between N. West Ave & W. Olive Ave	2/2	Divided	1.08	0.11	F	C	No
65	N. Weber Ave, between W. Olive Ave & N. Brooks Ave	1/1	Un-divided	1.32	0.66	F	D	No
67	W. Olive Ave, east of N. Weber Ave	2/2	Undivided	1.69	1.69	F	F	No
70	W. Belmont Ave, between N. Arthur Ave & SR 99 Ramps	2/2	Undivided	1.08	1.08	F	F	No
71	Belmont Ave, east of N. Weber Ave	2/2	Undivided	1.21	1.21	F	F	No

Source: Authority and FRA 2014.

Notes:

Under future conditions, roadway segment 49, Tuolumne St, is closed between G St and H St.

Roadway segments 36 through 41 would be closed under project conditions.

Roadway segments with impacts are shaded in gray.

Acronyms and Abbreviations:

LOS = level of service
SR = State Route
V/C = volume-to-capacity (ratio)

Fresno Intersection Impacts – Table 3.2-16 presents the results for intersection analysis for the Fresno station area under Existing Plus Project conditions and compares these results with those under Existing conditions. The *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014) provides more information on LOS and delay calculations. The table shows all intersections that would function at an LOS E or F under Existing or Existing Plus Project conditions (or both); the project traffic would affect 13 intersections under Existing Plus Project conditions in either the AM or PM, which would result in an effect with substantial intensity under NEPA. Impacts would be significant under CEQA.

Table 3.2-16
Existing Plus Project, Intersection Operating Conditions
Downtown Fresno Station

No.	Intersection	AM Peak						PM Peak					
		Existing		Existing Plus Project		Increase in Delay	Impact	Existing		Existing Plus Project		Increase in Delay	Impact
		Delay(s)	LOS	Delay(s)	LOS			Delay(s)	LOS	Delay(s)	LOS		
4	Van Ness Avenue/SR 41 Southbound Ramp	24.5	C	48.0	E	23.5	Yes	13.3	B	14.4	B	1.1	No
6	SR 99 NB Ramps/Ventura Ave	137.2	F	150.7	F	13.5	Yes	34.5	D	33.8	D	-0.7	No
7	E St/Ventura Ave	32.1	D	34.2	D	2.1	No	35.7	E	32.0	D	-3.7	No
33-0	Divisadero St/ SR 41 NB Ramps/ Tulare St	142.0	F	148.8	F	6.8	Yes	375.5	F	393.9	F	18.4	Yes
37	SR 99 Southbound Ramps/Fresno Street	18.2	B	30.6	C	12.4	No	23.7	C	70.0	E	46.3	Yes
54	Van Ness Avenue/Stanislaus Street	10.5	B	26.6	C	16.1	No	11.9	C	97.2	E	85.3	Yes
63	H St/Divisadero St	60.0	E	213.7	F	153.7	Yes	32.1	C	33.6	C	1.5	No
80	N. Blackstone Ave/CA 180 WB Ramps	171.1	F	248.4	F	77.3	Yes	17.5	B	22.5	C	5.0	No
86	H St/Ventura St	34.7	D	112.8	F	78.1	Yes	28.6	D	443.8	F	415.2	Yes
89	M St/San Benito–SR 41 NB On-ramp	11.7	B	11.7	B	0.0	No	218.0	F	218.0	F	0.0	No
114	Tuolumne St/L St	16.4	C	37.8	E	21.4	Yes	13.2	B	13.8	B	0.6	No

Table 3.2-16
Existing Plus Project, Intersection Operating Conditions
Downtown Fresno Station

No.	Intersection	AM Peak						PM Peak					
		Existing		Existing Plus Project		Increase in Delay	Impact	Existing		Existing Plus Project		Increase in Delay	Impact
		Delay(s)	LOS	Delay(s)	LOS			Delay(s)	LOS	Delay(s)	LOS		
117	Stanislaus St/N St	28.1	D	50.3	F	22.2	Yes	14.9	B	99.7	F	84.4	Yes
121	W. McKinley Ave/SR 99 NB Ramp	35.1	E	35.1	E	0.0	No	218.6	F	218.2	F	-0.4	No
124	W. Olive Ave/SR 99 SB Ramps	12.7	B	15.0	B	2.3	No	24.3	C	37.3	E	13.0	Yes
129	W. Belmont Ave/SR 99 SB Ramps	18.7	C	23.8	C	5.1	No	35.7	E	51.3	F	15.6	Yes
130	W. Belmont Ave/SR 99 NB Ramps	12.0	B	12.5	B	0.5	No	33.8	D	37.1	E	3.3	Yes

Source: Authority and FRA 2014 .

Notes:

Intersections 8, 39, 40, 62, 88, 93-95, 97-100, 103, 105, 106, 127, 128, and 131 would not exist under project conditions.

Intersections with impacts in either the AM or PM are shaded in gray.

Acronyms and Abbreviations:

LOS = level of service
SR = State Route

Table 3.2-17 presents the results of the intersection analysis for Future (2035) Plus Project conditions and compares the results against those for the Future (2035) No Project conditions. The *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014) provides more information on LOS and delay calculations. The table shows all intersections that would function at an LOS E or F under Future (2035) No Project or Future (2035) Plus Project conditions (or both); the project traffic would affect 31 intersections under Future (2035) Plus Project conditions in either the AM or PM, which would result in an effect with substantial intensity under NEPA. Impacts would be significant under CEQA.

Table 3.2-17
Future (2035) with Project, Intersection Operating Conditions
Downtown Fresno Station

Int ID	Intersection	Future (2035) No Project		Future (2035) Plus Project		Increase in Delay	Impact	Future (2035) No Project		Future (2035) Plus Project		Increase in Delay	Impact
		AM Peak		AM Peak				PM Peak		PM Peak			
		Delays	LOS	Delays	LOS			Delays	LOS	Delays	LOS		
4	Van Ness Ave / SR 41 Southbound Ramp	*	F	*	F	*	Yes	*	F	*	F	*	Yes
6	SR 99 Northbound Ramps / Ventura Ave	*	F	*	F	*	Yes	*	F	*	F	*	Yes
7	E St / Ventura Ave	*	F	*	F	*	Yes	*	F	*	F	*	Yes
14	N. 1st Street/Ventura Avenue	21.0	C	21.0	C	0.0	No	58.6	E	59.4	E	0.8	No
19	P St / Inyo St	14.7	B	14.7	B	0.0	No	41.6	E	41.6	E	0.0	No
24	G St / Tulare St	24.3	C	23.1	C	-1.2	No	101.0	F	110.1	F	9.1	No
25	H ST / Tulare St	22.4	C	25.5	C	3.1	No	25.7	C	113.6	F	87.9	Yes
26	Van Ness Ave / Tulare St	33.7	C	34.4	D	0.7	No	59.6	E	62.2	E	2.6	No
30	U St / Tulare St	11.3	B	11.0	B	-0.3	No	60.4	E	67.8	E	7.4	Yes
33-0	Divisadero Street / SR 41 NB Ramps / Tulare Street	72.9	E	72.6	E	-0.3	No	37.1	D	37.3	D	0.2	No
34	N. 1st St / Tulare St	33.2	C	33.2	C	0.0	No	80.9	F	81.0	F	0.1	No
36	C St / Fresno St	21.0	C	21.0	C	0.0	No	70.6	E	70.8	E	0.2	No
37	SR 99 Southbound Ramps / Fresno St	51.1	D	68.9	E	10.6	Yes	36.1	D	43.5	D	7.4	No
38	SR 99 Northbound Ramps / Fresno St	22.6	C	29.1	C	6.5	No	58.8	E	67.7	E	8.9	Yes
42	Van Ness Ave / Fresno St	39.9	D	41.0	D	1.1	No	55.3	D	83.1	F	27.8	Yes

Table 3.2-17
Future (2035) with Project, Intersection Operating Conditions
Downtown Fresno Station

Int ID	Intersection	Future (2035) No Project		Future (2035) Plus Project		In-crease in Delay	Im-pact	Future (2035) No Project		Future (2035) Plus Project		In-crease in Delay	Im-pact
		AM Peak		AM Peak				PM Peak		PM Peak			
		Delays	LOS	Delays	LOS			Delays	LOS	Delays	LOS		
46	Fresno St / Divisadero St	36.1	D	34.6	C	-1.5	No	116.0	F	128.5	F	12.5	Yes
52	E St / Stanislaus St	28.6	C	30.2	C	1.6	No	91.2	F	100.9	F	9.7	Yes
53	Broadway St / Stanislaus St	63.5	E	208.7	F	145.2	Yes	256.5	F	258.3	F	1.8	No
54	Van Ness Ave / Stanislaus St	101.7	F	130.4	F	28.7	Yes	185.9	F	224.9	F	39.0	Yes
55	N. Blackstone Avenue / Stanislaus Street	159.5	F	263.5	F	104.0	Yes	132.2	F	161.8	F	29.6	Yes
61	G St / Divisadero St	23.2	C	7.8	A	15.4	No	61.6	E	19.1	B	-42.5	No
62	N. Roosevelt Ave / E. Divisadero Ave	-	F	Would not Exist		-	No	-	F	Would not Exist		-	No
63	H St / Divisadero St	22.6	C	22.4	C	-0.2	No	189.4	F	190.7	F	1.3	No
74	N. Blackstone Ave / E. Belmont Ave	82.4	F	92.8	F	10.4	Yes	126.4	F	132.1	F	5.7	Yes
76	Fresno St / E. Belmont St	35.3	D	36.0	D	0.7	No	133.0	F	135.0	F	2.0	No
77	N. 1st St / E. Belmont St	36.6	D	36.9	D	0.3	No	87.5	F	88.9	F	1.4	No
80	N. Blackstone Ave / CA 180 Westbound Ramps	314.6	F	516.8	F	202.2	Yes	268.6	F	291.6	F	23.0	Yes
84	G St / Mono St	10.9	B	16.7	C	5.8	No	21.6	C	*	F	*	Yes
86	H St / Ventura St	115.4	F	*	F	*	Yes	*	F	*	F	*	Yes
89	M St / San Benito – SR 41 Northbound On-ramp	16.5	C	16.5	C	0.0	No	*	F	*	F	*	No

Table 3.2-17
Future (2035) with Project, Intersection Operating Conditions
Downtown Fresno Station

Int ID	Intersection	Future (2035) No Project		Future (2035) Plus Project		In-crease in Delay	Im-pact	Future (2035) No Project		Future (2035) Plus Project		In-crease in Delay	Im-pact
		AM Peak		AM Peak				PM Peak		PM Peak			
		Delays	LOS	Delays	LOS			Delays	LOS	Delays	LOS		
90	Broadway Street/Santa Clara Street	43.1	E	56.0	F	12.9	Yes	23.4	C	35.2	E	11.8	Yes
92	S. Van Ness Ave / E. California Ave	63.1	F	*	F	*	Yes	*	F	*	F	*	Yes
96	Golden State Blvd / E. Church Ave	41.8	D	65.3	E	23.5	Yes	185.5	F	261.3	F	75.8	Yes
98	S. East Ave / E. Church Ave	260	F	Will Not Exist		*	No	*	F	Will Not Exist		*	No
99	S. Sunland Ave / E. Church Ave	56.8	F	Will Not Exist		*	No	16.3	C	Will Not Exist		*	No
100	S. East Ave / S. Railroad Ave	11.5	B	Will Not Exist		*	No	36.7	E	Will Not Exist		*	No
101	S. East Ave / Golden State Blvd	38.8	D	39.4	D	0.6	No	19.4	B	72.3	E	52.9	Yes
102	Golden State Blvd / E. Jensen Ave	160.5	F	186	F	25.5	Yes	358.2	F	427.5	F	69.3	Yes
104	S. Golden State Blvd / S. Orange Ave	66.4	F	42	E	-24.4	No	*	F	*	F	*	No
105	Stanislaus St/ SR 99 SB Off-Ramp	74.3	E	107.6	F	33.3	Yes	19.9	B	148.4	F	128.5	Yes
106	Stanislaus St/ SR 99 SB Off-Ramp	12.6	B	13.4	B	0.8	No	89.9	F	102.2	F	12.3	Yes
111	Stanislaus St / Fulton St	30.5	C	30.7	C	0.2	No	280.7	F	286.0	F	5.3	Yes
113	Stanislaus St / L St	25.8	C	25.8	C	0.0	No	165.2	F	165.2	F	0.0	No
115	Stanislaus St / M St	13.1	B	53.8	D	40.7	Yes	63.2	E	75.7	E	12.5	Yes
117	Stanislaus St / N St	25.5	A	120.5	F	95.0	Yes	173.1	F	191.0	F	17.9	Yes
120	W. McKinley Ave /SR 99 SB Ramp	127.3	F	127.3	F	0	No	22.7	C	22.7	C	0	No

Table 3.2-17
Future (2035) with Project, Intersection Operating Conditions
Downtown Fresno Station

Int ID	Intersection	Future (2035) No Project		Future (2035) Plus Project		Increase in Delay	Impact	Future (2035) No Project		Future (2035) Plus Project		Increase in Delay	Impact
		AM Peak		AM Peak				PM Peak		PM Peak			
		Delays	LOS	Delays	LOS			Delays	LOS	Delays	LOS		
121	W. McKinley Ave / SR 99 NB Ramp	35.1	E	35.1	E	0.0	No	218.6	F	218.2	F	-0.4	No
122	W. McKinley Ave/ Golden State Blvd	312.8	F	128.0	F	-184.8	No	357.0	F	97.7	F	-259.3	No
123	W. McKinley Ave / N. West Ave	144.5	F	144.5	F	*	No	292.8	F	292.8	F	0	No
124	W. Olive Ave / SR 99 SB Ramps	342.2	F	395.1	F	52.9	Yes	332.0	F	365.6	F	33.6	Yes
125	W. Olive Ave / SR 99 NB Ramps	21.4	C	24.5	C	3.1	No	249.7	F	267.9	F	18.2	Yes
126	W. Olive Ave / N. West Ave	25.3	D	25.7	D	0.4	No	34.0	D	36.0	E	2.0	No
127	W. Olive Ave / Golden State Blvd	150.2	F	Will Not Exist		8	No	415.3	F	Will Not Exist		*	No
128	W. Olive Ave / N. Weber Ave	153.5	F	Will Not Exist		*	No	713.0	F	Will Not Exist		*	No
129	W. Belmont Ave/ SR 99 Southbound Ramps	*	F	*	F	*	Yes	*	F	*	F	*	Yes
130	W. Belmont Ave/ SR 99 Northbound Ramps	*	F	*	F	*	Yes	*	F	*	F	*	Yes
131	W. Belmont Ave/ N. Weber Ave	108.8	F	Will Not Exist		*	No	268.1	F	Will Not Exist		*	No
132	Olive Ave /Fruit Ave	330.9	F	206.6	F	-124.3	No	*	F	*	F	*	No

Source: Authority and FRA 2014.

* Volumes at the intersection exceed theoretical capacity. As a result, average delay cannot be predicted.

Notes:

Intersections 8, 39, 40, 62, 88, 93-95, 97-100, 103, 127, 128, and 131 would not exist under with project conditions.

Intersections with impacts in either the AM or PM are shaded in gray.

Acronyms and Abbreviations:

LOS = level of service
SR = State Route

Fresno Parking Impacts – The city of Fresno currently has a large amount of excess public parking within 0.5 mile of the Fresno station site, as described in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014). Based on discussions with the City, the FRA, and the Authority, the future parking capacity in the station area would meet the projected 2035 parking demand through a combination of new parking structures near the station and reliance on existing public spaces (see discussion immediately below). This would take advantage of the substantial public parking available in the vicinity of the station site. This would result in a negligible impact under NEPA because the substantial parking available for use combined with new HST station parking facilities would not cause a perceptible worsening of parking availability. Impacts would be less than significant under CEQA.

It is conservatively estimated that 5,850 parking spaces would be required for the Fresno stations in 2020, and 7,400 would be required in 2035. Based on (and in combination with) the amount of excess public parking within 0.5 mile of the station, it is estimated that 2035 parking demand can be met with a total of 5,000 parking spaces provided in four new parking structures built adjacent to the station by 2035. All four structures would not be necessary when the station opens in 2020. Instead, parking would be provided as demand requires. When Fresno Station opens in 2020, a combination of parking structures and surface parking lots with about 3,500 spaces would be constructed adjacent to the station. Combined with existing excess available parking downtown, this would meet the 2020 parking demand.

Because the HST project includes a plan to provide adequate station parking, effects on the existing downtown parking conditions are expected to have negligible intensity under NEPA. Impacts would be less than significant under CEQA.

Fresno Area Transit Impacts – At the Fresno Station, the proposed project is projected to add approximately 700 daily passengers who would use transit service in Fresno. Projections indicate that the proposed project would add approximately 105 peak-hour passengers to the city's transit service (Cambridge Systematics 2007). Approximately eight transit routes currently serve the Fresno Station area as part of the Fresno Area Express (FAX). To support this service, the City of Fresno has plans to incorporate a signal priority Bus Rapid Transit system.

The addition of approximately 105 passengers on existing transit routes averages approximately 13 additional passengers on each route serving the Fresno Station area (assuming equal distribution). The addition of these passengers to the existing transit routes during the peak hour is considered to be an effect with negligible intensity under NEPA because there is a measurable but not perceptible increase in peak-hour ridership on existing transit routes. Impacts would be less than significant under CEQA.

Fresno Pedestrian and Bicycle Impacts – The proposed project would not close any of the existing or planned bicycle routes or pedestrian access/routes in the immediate vicinity of the Fresno Stations. An estimated 400 passengers would use the station area by walking/bicycling on a daily basis. Approximately 60 passengers during the peak hour would arrive or leave the station area either walking or on bike (Cambridge Systematics 2007). Impacts on bicycle and pedestrian facilities would be considered to have negligible intensity under NEPA because no existing or planned bicycle or pedestrian routes/access would be closed and the station would cause a measurable but not perceptible increase of route usage in the vicinity of the station. Impacts would be less than significant under CEQA.

The station would include bike racks, pedestrian connections to the existing sidewalks, and bike lanes/facilities where they can be accommodated on the streets. All new pedestrian and bikeways would be grade-separated from HST alignments. There would be additional pedestrian and bike trips during the peak hour (an average of about one pedestrian/bike per 1 minute) in the Fresno Station area. This would result in an effect with beneficial intensity on pedestrian/bike facilities

under NEPA because although existing bicycle and pedestrian facilities would receive a measurable increase in usage and trips, new facilities constructed as part of the station would bring the increases to a non-perceptible level. Impacts would be less than significant under CEQA.

Fresno Area Freight Impacts – Because the proposed HST service would operate on an elevated structure through the Fresno Station area, it would not create any conflicts or impacts on UPRR freight operations. Pedestrian structures may cross over the freight rail line to provide access to the HST station, but the structures would be designed to meet freight height clearances. The effects would have negligible intensity under NEPA because the HST would be elevated and therefore would not interrupt or worsen UPPR freight operations. Impacts would be less than significant under CEQA.

Kings/Tulare Regional Station–East Alternative

One potential site was studied for the Kings/Tulare Regional Station–East. Primary access would be from SR 43.

Kings/Tulare Regional Station–East Alternative Roadway Segment Impacts – Table 3.2-18 lists the Existing Plus Project conditions for roadway segments. Seven roadway segments operate below LOS D under existing conditions. Seven of these segments would be impacted when the project is added to existing conditions. These effects are considered to have moderate intensity under NEPA. Impacts would be significant under CEQA. In 2035, completed roadway improvements, described in the Kings County RTP, would improve the area road network and cause a decrease in the number of road segments operating at LOS E or F under Future No Build condition. No roadway segments would operate below LOS D under No Project conditions, and no roadway segments would be affected by the addition of project traffic to a LOS below D.

Kings/Tulare Regional Station–East Alternative Intersection Impacts – Tables 3.2-19 and 3.2-20 present the Existing Plus Project and Future Plus Project (2035) conditions for intersections. Four intersections listed in Table 3.2-19 operate below LOS D. All four would have increased delays of more than 4 seconds, and two of them would also have a decline in LOS below D. Table 3.2-20 shows that six intersections would be impacted in either the AM or PM period, or both, under Existing Plus Project Conditions in 2035. These effects are considered to be of moderate intensity under NEPA and to be a significant impact under CEQA.

Table 3.2-18
Existing Plus Project, Roadway Segment Analysis, Kings/Tulare Regional Station–East Alternative

No.	Roadway Segment	V/C		Lanes (NE/SW)	Divided/ Undivided	LOS		Impact
		Existing	Existing Plus Project			Existing	Existing Plus Project	
6	SR 198 between SR 198 ramps and 7th Ave	0.71 followed by 1.13	0.76 followed by 1.20	1/2 followed by 1/1	Divided / Undivided	C followed by F	C followed by F	Yes
7	SR 198 between 7th Ave and 6th Ave	1.15	1.22	1/1	Undivided	F	F	Yes
8	SR 198 between 6th Ave and 2nd Ave	1.08	1.14	1/1	Undivided	F	F	Yes
9	SR 198 between 2nd Ave and Road 48	1.10	1.16	1/1	Undivided	F	F	Yes
10	SR 198 between Road 48 and Road 56 / 17th Ave	1.15	1.21	1/1	Undivided	F	F	Yes
11	SR 198 between Road 56 / 17th Ave and County Road 60	1.11	1.17	1/1	Undivided	F	F	Yes
12	SR 198 between County Road 60 and County Road J25 / Road 68	1.12	1.18	1/1	Undivided	F	F	Yes

Source: Authority and FRA 2014.

Note: Road segments with impacts are shaded in gray.

Acronyms and Abbreviations:

Ave = Avenue
LOS = level of service
NE = northeast
No. = number
SR = State Route
SW = southwest
V/C = volume-to-capacity (ratio)

Table 3.2-19
Existing Plus Project, Intersection Analysis, Kings/Tulare Regional Station–East Alternative

Int ID	Intersection	Existing		Existing Plus Project Conditions		Increase in Delay	Impact	Existing		Existing Plus Project Conditions		Increase in Delay	Impact
		AM Peak		AM Peak				PM Peak		PM Peak			
		Delay (s)	LOS	Delay (s)	LOS			Delay (s)	LOS	Delay (s)	LOS		
4	7th Ave / SR 198	239.0	F	572.3	F	333.3	Yes	141.0	F	228.3	F	87.3	Yes
6	6th Ave / SR 198	51.3	F	77.2	F	25.9	Yes	72.8	F	105.8	F	33.0	Yes
7	2nd Ave / SR 198	29.6	D	46.4	E	16.8	Yes	55.8	F	82.7	F	26.9	Yes
8	SR 43 / Lacey Blvd	32.1	D	74.6	F	42.5	Yes	27.4	D	78.0	F	50.6	Yes

Source: Authority and FRA 2014.

Acronyms and Abbreviations:
Ave = Avenue
INT ID = intersection identification
LOS = level of service
SR = State Route
V/C = volume-to-capacity (ratio)

Table 3.2-20
Future (2035) Plus Project, Intersection Operating Conditions, Kings/Tulare Regional Station–East Alternative

Int ID	Intersection	Future (2035) No Project		Future (2035) Plus Project		Increase in Delay	Impact	Future (2035) No Project		Future (2035) Plus Project		Increase in Delay	Impact
		AM Peak		AM Peak				PM Peak		PM Peak			
		Delays	LOS	Delays	LOS			Delays	LOS	Delays	LOS		
1	9th Ave / SR 198	241.2	F	235.6	F	-5.6	No	43.1	F	57.4	F	14.3	Yes
3	8th Ave / SR 198 Westbound Ramps	19.6	C	100.9	F	81.3	Yes	21.2	C	41.5	F	20.3	Yes
4	7th Ave / SR 198	*	F	*	F	*	Yes	*	F	*	F	*	Yes
6	6th Ave / SR 198	139.0	F	244.2	F	105.2	Yes	*	F	*	F	*	Yes
7	2nd Ave / SR 198	84.3	F	285.9	F	201.6	Yes	44.3	E	232.7	F	188.4	Yes
8	SR 43 / Lacey Blvd	36.6	E	202.4	F	165.8	Yes	52.8	F	899.3	F	846.5	Yes

Source: Authority and FRA 2014.

* Volumes at the intersection exceed theoretical capacity. As a result, average delay cannot be predicted.

Acronyms and Abbreviations:
Ave = Avenue
INT ID = intersection identification
LOS = level of service
SR = State Route

Kings/Tulare Regional Station–East Alternative Parking Impacts – The proposed station would include passenger drop-off area at the entrances to the station or in the parking area. Station parking areas would accommodate approximately 1,600 vehicles at the Kings/Tulare Regional Station–East. These parking facilities would be designed to accommodate demand and to avoid overflow parking on nearby area streets. Since the HST project includes a plan to provide adequate station parking, minimal impacts on the existing downtown parking conditions are expected. This effect would have negligible intensity under NEPA and would be a less-than-significant impact under CEQA because the new HST station parking facilities would not cause a perceptible worsening of parking availability on nearby streets or the downtown area.

As discussed in Section 3.13, Station Planning, Land Use, and Development, the FRA's and Authority's goals for the Kings/Tulare Regional Station–East include creating a station that serves as a regional transportation hub to provide quick transit connections from the station to the downtown areas of Hanford, Visalia, and Tulare; the Authority and FRA have approved $600,000 in planning funds to assist local jurisdictions around the Kings/Tulare Regional Station–East to plan to make these goals a reality. As part of this effort, the Authority may provide a portion of the Kings/Tulare Regional Station–East parking in downtown Hanford, Visalia, and/or Tulare with shuttles to the main station. Reducing the number of spaces provided at the station would allow for more open space areas around the station, discourage growth at the station, encourage revitalization of the downtowns, and reduce the development footprint of the station. Location of station parking in downtown areas would be done in consultation with local communities to avoid traffic congestion.

Kings/Tulare Regional Station–East Alternative Area Transit Impacts – There is no existing transit service at the proposed Kings/Tulare Regional Station–East site because it is an undeveloped area, but the station design includes a bus transit pullout and loading area to accommodate future transit service. This effect would have negligible intensity under NEPA and a less-than-significant impact under CEQA because there are no existing transit routes serving the area, and the station would construct facilities for any future transit systems.

Kings/Tulare Regional Station–East Alternative Pedestrian and Bicycle Impacts – The proposed project would not require the closure of any of the existing or planned bicycle routes or pedestrian access routes in the immediate vicinity of Kings/Tulare Regional Station–East. The Kings/Tulare Regional Station–East is not expected to have the same level of demand or use by bicyclists and pedestrians as the stations in Fresno and Bakersfield because it is not close to the community; however, both pedestrian and bicycle access would be accommodated. All new pedestrian paths and bikeways would be grade-separated from HST alignments. There would be an addition of these pedestrian and bike trips during the peak hour (an average of about one pedestrian/bike per 1 minute) in the Kings/Tulare Regional Station–East area. This would result in an effect with beneficial intensity on pedestrian/bike facilities under NEPA and a less-than-significant impact under CEQA.

Kings/Tulare Regional Station–East Alternative Area Freight Impacts – As the proposed HST service would operate on an elevated structure through the Kings/Tulare Regional Station–East area, it would not create any conflicts with or impacts on UPRR freight operations. Pedestrian structures may cross over the freight rail line to provide access to the HST station, but the structures would be designed to meet freight height clearances. This effect would have negligible intensity under NEPA because freight rail service would be grade-separated and therefore would not be interrupted or worsened by the HST station. Impacts would be less than significant under CEQA.

Kings/Tulare Regional Station–West Alternative

One potential site was studied for the Kings/Tulare Regional Station–West Alternative. Primary access would be from 13th Avenue in unincorporated Kings County.

Kings/Tulare Regional Station–West Alternative Area Roadway Segment Impacts – There are no roadway segments that operate below LOS D under existing conditions. No road segments would be affected when the project is added to existing conditions. In 2035, two road roadway segments (#10 and #12) would operate below LOS D under No Project conditions, and no road segments would be affected by adding project traffic. These effects would have negligible intensity under NEPA. Impacts would be less than significant under CEQA.

Kings/Tulare Regional Station–West Alternative Intersection Impacts – Tables 3.2-21 and 3.2-22 present Existing Plus Project and Future Plus Project conditions (2035) for intersections, respectively. Under the Existing Plus Project scenario (Table 3.2-21) six intersections would be impacted in either the AM or PM period, or both. In 2035 (see Table 3.2-22), seven intersections would be affected in either the AM or PM period, or both. These effects are considered to have moderate intensity under NEPA. Impacts would be significant under CEQA.

Table 3.2-21
Existing Plus Project, Intersection Analysis, Kings/Tulare Regional Station–West Alternative

Int ID	Intersection	Existing		Existing Plus Project Conditions		Increase in Delay	Impact	Existing		Existing Plus Project Conditions		Increase in Delay	Impact
		AM Peak		AM Peak				PM Peak		PM Peak			
		Delay (s)	LOS	Delay (s)	LOS			Delay (s)	LOS	Delay (s)	LOS		
1	14th Avenue/ Hanford Armona Road	31.6	D	47.2	E	15.6	Yes	36.0	E	68.1	F	32.1	Yes
4	Hanford-Armona Road/13th Avenue/SR 198 WB On-Ramp	25.5	D	123.3	F	97.8	Yes	24.5	C	188.7	F	164.2	Yes
5	13th Avenue/ Lacey Boulevard	20.7	C	22.8	C	2.1	No	40.5	E	46.0	E	5.5	Yes
9	13th Avenue/SR 198 EB Ramps	13.0	B	18.7	C	5.7	No	21.2	C	94.6	F	73.4	Yes
12	Mall Drive/ Lacey Boulevard	23.6	C	23.5	C	-0.1	No	66.9	E	66.8	E	-0.1	No
18	South Redington Street/ W. 4th Street	174.7	F	195.3	F	20.6	Yes	*	F	*	F	*	Yes
23	8th Avenue/ E. Lacey Boulevard	32.1	D	35.6	E	3.5	Yes	27.4	D	29.9	D	2.5	No

Source: Authority and FRA 2014.
* Volumes at the intersection exceed theoretical capacity. As a result, average delay cannot be predicted.
Acronyms and Abbreviations:
INT ID = intersection identification
LOS = level of service
SR = State Route

Table 3.2-22
Future (2035) with Project, Intersection Operating Conditions, Kings/Tulare Regional Station–West Alternative

Int ID	Intersection	No-Build AM Peak		Future Plus Project Conditions AM Peak		Increase in Delay	Impact	No-Build PM Peak		Future Plus Project Conditions PM Peak		Increase in Delay	Impact
		Delay (s)	LOS	Delay (s)	LOS			Delay (s)	LOS	Delay (s)	LOS		
1	14th Avenue/ Hanford Armona Rd	86.8	F	150.2	F	63.4	Yes	189.8	F	370.0	F	180.2	Yes
4	Hanford-Armona Road/13th Avenue/SR 198 WB On-Ramp	630.0	F	*	F	-	Yes	646.9	F	*	F	-	Yes
5	13th Avenue/ Lacey Boulevard	195.6	F	213.3	F	17.7	Yes	281.9	F	290.8	F	8.9	Yes
6	13th Avenue/ Front Street	23.8	C	51.3	F	27.5	Yes	32.1	C	72.5	F	40.4	Yes
9	13th Avenue/SR 198 EB Ramps	30.0	D	119.4	F	89.4	Yes	913.5	F	*	F	*	Yes
18	South Redington Street/W. 4th Street	*	F	*	F	*	Yes	*	F	*	F	*	No
23	8th Avenue/E. Lacey Boulevard	85.5	F	102.2	F	16.7	Yes	44.3	E	49.8	E	5.5	Yes

Source: Authority and FRA 2014.
* Volumes at the intersection exceed theoretical capacity. As a result, average delay cannot be predicted.

Acronyms and Abbreviations:

EB = eastbound
INT ID = intersection identification
LOS = level of service
SR = State Route
WB = westbound

Kings/Tulare Regional Station–West Alternative Parking Impacts – The proposed station would include a passenger drop-off area at the entrances to the station or in the parking area. Station parking areas at the Kings/Tulare Regional Station–West would accommodate approximately 1,600 vehicles. These parking facilities would be designed to accommodate demand and to avoid overflow parking on nearby area streets. Since the HST project includes a plan to provide adequate station parking, minimal impacts on the existing downtown parking conditions are expected. This effect would have negligible intensity under NEPA because the new HST station parking facilities would not cause a perceptible worsening of parking availability on nearby streets or in the downtown area. Impacts would be less than significant under CEQA.

As discussed in Section 3.13, Station Planning, Land Use, and Development, the goals of the FRA and Authority for the Kings/Tulare Regional Station–West include creating a station that serves as

a regional transportation hub to provide quick transit connections from the station to the downtown areas of Hanford, Visalia, and Tulare. The Authority and FRA have approved $600,000 in planning funds to assist local jurisdictions around the Kings/Tulare Regional Station–West to plan to make these goals a reality. As part of this effort, the Authority may provide a portion of the Kings/Tulare Regional Station–West parking in downtown Hanford, Visalia, and/or Tulare. Reducing the number of spaces provided at the station would allow for more open space areas around the station, discourage growth at the station, encourage revitalization of the downtowns, and reduce the development footprint of the station. Location of station parking in downtown areas would be done in consultation with local communities to avoid traffic congestion.

Kings/Tulare Regional Station–West Alternative Area Transit Impacts – There is no existing transit service at the Kings/Tulare Regional Station–West Alternative site because it is an undeveloped area, but the station design includes a bus transit pullout and loading area to accommodate future transit service. This effect would have negligible intensity under NEPA because there are no existing transit routes serving the area, and the station would accommodate future planning for facilities for transit systems. Impacts would be less than significant under CEQA.

Kings/Tulare Regional Station–West Alternative Pedestrian and Bicycle Impacts – The proposed project would not require the closure of any of the existing or planned bicycle routes or pedestrian access routes in the immediate vicinity of the Kings/Tulare Regional Station–West. The Kings/Tulare Regional Station–West is not expected to have the same level of demand or use by bicyclists and pedestrians as the stations in Fresno and Bakersfield because it is not close to the community; however, both pedestrian and bicycle access would be accommodated. This effect would have negligible intensity under NEPA because no existing or planned bicycle or pedestrian routes/access would be closed and the station would cause a measurable, but imperceptible increase of route usage in the vicinity of the station. Impacts would be less than significant under CEQA.

Kings/Tulare Regional Station–West Alternative Area Freight Impacts – The proposed HST service would operate on an at-grade or below-grade structure option through the Kings/Tulare Regional Station–West area. Based upon the chosen option, the existing SJVR will either be elevated above or depressed above-grade. However, neither of the potential scenarios would create any conflicts or impacts on SJVR freight operations. Pedestrian structures may cross over or under the freight rail line to provide access to the HST station, but the structures would be designed to meet freight height clearances. The resulting effect would have negligible intensity under NEPA because freight rail service would be grade-separated and therefore not be interrupted or worsened by the HST station. Impacts would be less than significant under CEQA.

Bakersfield Station Alternatives

Three station locations in Bakersfield were studied:

- North Alternative
- South Alternative
- Hybrid Alternative

Travel patterns to and from the proposed stations with either the North Alternative or the South Alternative would be same, with the exception of two roadway segments on Union Avenue (Segments #13 and #14), and the intersection of Union Avenue and Hayden Court (Intersection #29), as noted in the following and listed in the accompanying Tables 3.2-23 and 3.2-24 and as listed in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014). Travel patterns to and from the Hybrid Alternative are listed in Tables 3.2-25 and 3.2-26.

Bakersfield North and South Alternative Roadway Segment Impacts – Table 3.2-23 presents the results of the roadway segment analysis for Existing Plus Project conditions and compares these conditions against existing conditions for the North and South Alternatives. None of the roadway segments are projected to be substantially impacted by the project, resulting in an effect with negligible intensity under NEPA and in a less-than-significant impact under CEQA.

Table 3.2-23
Existing Plus Project, Roadway Segment Analysis, Bakersfield Station–North and Bakersfield–South Alternatives

No.	Roadway Segment	V/C			Lanes (NE/SW)	Divided/ Undivided	LOS			Impact
		Existing	Existing Plus Project (South)	Existing Plus Project (North)			Existing	Existing Plus Project (South)	Existing Plus Project (North)	
16	SR 178 between Oak Street and Buck Owens Boulevard/SR 99 NB Ramps	0.91	0.91	*	3/3	Divided	E	E	*	No
17	SR 178 between 23rd Street and Chester Avenue	0.96	0.96	*	0/3	One way	E	E	*	No
23	Truxtun Ave between Oak Street and Bahamas Drive	0.97	0.98	*	2/2	Divided	E	E	*	No
31	23rd Street between 24th Street and F Street	1.29 on connector (up to D Street) and 0.86 after D Street	1.29 on connector (up to D St) and 0.86 after D Street	*	2/0 on connector (up to D Street) and 3/0 after D Street	n/a	F/D	F/D	*	No

*Same as South Alternative

Note: The Metropolitan Bakersfield General Plan (City of Bakersfield and Kern County 2007) has designated LOS C as the standard for intersections and roadway segments. The following road segments would have an LOS D Existing Plus Project operating condition for the South or North Alternative: California Avenue, between Real Road and Oak Street (#1) (LOS C under Existing condition), 23rd Street, between F Street and Chester Avenue (#32) and Oak Street, between SR 178 and Truxtun Avenue (#33).

Source: Authority and FRA 2014.

Acronyms and Abbreviations:
INT ID = intersection identification
LOS = level of service
n/a = not applicable
NB = northbound
SR = State Route
V/C = volume-to-capacity (ratio)

Table 3.2-24 presents the results of the roadway segment analysis for Future (2035) Plus Project conditions and compares these conditions against Future (2035) No Project conditions for the North and South alternatives. None of the roadway segments are projected to be substantially impacted by the project, resulting in an effect with negligible intensity under NEPA and a less-than-significant impact under CEQA.

Table 3.2-24
Future (2035) Plus Project, Roadway Segment Analysis, Bakersfield Station–North and Bakersfield–South Alternatives

No.	Roadway Segment	V/C			Lanes	Divided/ Un-divided	LOS			Im-pact
		Future (2035) No Project	Future (2035) Plus Project (South)	Future (2035) Plus Project (North)			Future (2035) No Project	Future (2035) Plus Project (South)	Future (2035) Plus Project (North)	
16	SR 178 between Oak Street and Buck Owens Boulevard/SR 99 NB Ramps	1.23	1.23	*	3/3	Divided	F	F	*	No
17	SR 178 between 23rd Street and Chester Avenue	1.39	1.39	*	0/3	One way	F	F	*	No
23	Truxtun Avenue between Oak Street and Bahamas Drive	1.54	1.55	*	2/2	Divided	F	F	*	No
31	23rd Street between 24th Street and F Street	1.75 on connector (up to D Street) and 1.16 after D Street.	1.75 on connector (up to D Street) and 1.16 after D Street	*	2/0 on connector (up to D Street) and 3/0 after D Street.	One way	F/D	F/D	*	No
32	23rd Street, between F Street and Chester Avenue	1.13	1.13	*	4/0	One way	F	F	*	No
33	Oak Street between SR 178 and Truxtun Avenue	1.16	1.17	*	2/2	Undivided	F	F	*	No
43	Q Street between 23rd Street and 19th Street	1.16	1.16	*	1/1	Un-divided	F	F	*	No
44	Q Street between 19th Street and Truxtun Avenue	1.33	1.33	*	1/1	Un-divided	F	F	*	No

*Same as South Alternative

Note: The Metropolitan Bakersfield General Plan (City of Bakersfield and Kern County 2007) has designated LOS C as the standard for intersections and roadway segments. The following road segments would have a Future Plus Project operating condition of LOS D for the South or North Alternative : California Avenue, between Real Road and Oak Street (#1).

Source: Authority and FRA 2014.

Acronyms and Abbreviations:
LOS = level of service
NB = northbound
No. = Number
SR = State Route
V/C = volume-to-capacity (ratio)

Bakersfield Hybrid Alternative Roadway Segment Impacts – Table 3.2-25 presents the results of the roadway segment analysis for Existing Plus Project conditions and compares these conditions against existing conditions for the Hybrid Alternative. None of the roadway segments are projected to be substantially impacted by the project, resulting in an effect with negligible intensity under NEPA and a less-than-significant impact under CEQA.

Table 3.2-25
Existing Plus Project, Roadway Segment Analysis, Bakersfield Station–Hybrid

No.	Roadway Segment	Lanes (NE/SW)	Divided/ Undivided	V/C		LOS		Impact
				Future (2035) No Project	Future (2035) Plus Project	Future (2035) No Project	Future (2035) Plus Project	
16	SR 178, between Oak St and Buck Owens Blvd/SR 99 NB Ramps	3/3	Divided	0.91	0.91	E	E	No
17	SR 178, between 23rd St and Chester Ave	0/3	One way	0.96	0.96	E	E	No
23	Truxtun Ave, between Oak St and Bahamas Dr.	2/2	Divided	0.97	0.98	E	E	No
31	23rd St, between 24th St and F St	2/0 on connector (up to D St) and 3/0 after D St	n/a	1.29 on connector (up to D St) and 0.86 after D St	1.29 on connector (up to D St) and 0.86 after D St	F/D	F/D	No

Note: The Metropolitan Bakersfield General Plan (City of Bakersfield and Kern County 2007) has designated LOS C as the standard for intersections and roadway segments. The following road segments would have an Existing Plus Project operating condition of LOS D for the Hybrid Alternative : California Avenue, between Real Road and Oak Street (#1) (LOS C under Existing condition), 23rd Street, between F Street and Chester Avenue (#32) and Oak Street, between SR 178 and Truxtun Avenue (#33).

Source: Authority and FRA 2014.

Acronyms and Abbreviations:
Ave = Avenue
Blvd = Boulevard
Dr = Drive
LOS = level of service
NB = northbound
No. = Number
SR = State Route
St = Street
V/C = volume-to-capacity (ratio)

Table 3.2-26 presents the results of the roadway segment analysis for Future (2035) Plus Project conditions and compares these conditions against Future (2035) No Project conditions for the Hybrid Alternative. None of the roadway segments are projected to be substantially impacted by the project, resulting in an effect with negligible intensity under NEPA and a less-than-significant impact under CEQA.

Table 3.2-26
Future (2035) Plus Project, Roadway Segment Analysis, Bakersfield Station– Hybrid

No.	Roadway Segment	Lanes (NE/SW)	Divided/ Undivided	V/C		LOS		Impact
				Future (2035) No Project	Future (2035) Plus Project	Future (2035) No Project	Future (2035) Plus Project	
16	SR-178 between Oak St and Buck Owens Blvd/SR-99 NB Ramps	3/3	Divided	1.23	F	F	F	No
17	SR 178, between 23rd St and Chester Ave	0/3	One way	1.39	1.39	F	F	No
23	Truxtun Ave between Oak St and Bahamas Dr	2/2	Divided	1.54	1.55	F	F	No
31	23rd St, between 24th St and F St	2/0 on connector (up to D St) and 3/0 after D St	One way	1.75 on connector (up to D St) and 1.16 after D St	1.75 on connector (up to D St) and 1.16 after D St	F	F	No
32	23rd St, between F St and Chester Ave	4/0	One way	1.13	1.13	F	F	No
33	Oak St, between SR 178 and Truxtun Ave	2/2	Undivided	1.16	1.17	F	F	No
43	Q Street between 23rd Street and 19th Street	1/1	Undivided	1.16	1.16	F	F	No
44	Q Street between 19th Street and Truxtun Avenue	1/1	Undivided	1.33	1.33	F	F	No

Note: The Metropolitan Bakersfield General Plan (City of Bakersfield and Kern County 2007) has designated LOS C as the standard for intersections and roadway segments. The following road segments would have a Future No Build and Future Plus Project operating condition of LOS D for the Hybrid Alternative: California Avenue, between Real Road and Oak Street (#1).

Source: Authority and FRA 2014.

Acronyms and Abbreviations:
Ave = Avenue
Blvd = Boulevard
Dr = Drive
LOS = level of service
NB = northbound
No. = Number
SR = State Route
St = Street
V/C = volume-to-capacity (ratio)

Bakersfield North and South Station Intersection Impacts – Table 3.2-27 lists Existing and Existing Plus Project conditions. The impacts on these intersections are the same for both the South and North alternatives, except for Union Avenue/Hayden Court (#29). Project traffic added to Existing conditions would result in a predicted four intersections (1, 15, 41, and 71) for the North Alternative and five intersections (1, 15, 29, 41, and 71) for the South Alternative that are significantly impacted in the AM or PM (or both). There would be 10 intersections under the Future (2035) conditions that would be similarly impacted, as shown in Table 3.2-28. The impacts

on these intersections are the same for both the South and North alternatives, except for Union Avenue/California Avenue (#23). As shown in Table 3.2-27, 10 intersections (6, 15, 16, 23, 41, 42, 51, 56, 60, and 71) would be affected by the project traffic, which would result in an effect with substantial intensity under NEPA and which would be a significant impact under CEQA.

As shown in Figure 3.2-29 and within the *Fresno to Bakersfield Section: Transportation Analysis Technical Report (Authority and FRA 2014)*under Existing Plus Project conditions, intersections east of the Bakersfield station area will not be impacted and will maintain an LOS of D or better. Mount Vernon is the most easterly roadway that will carry any measurable increase in intersection delay.

Bakersfield Hybrid Station Intersection Impacts – Table 3.2-29 lists Existing and Existing Plus Project conditions. Project traffic added to existing conditions would result in a predicted five intersections (1, 15, 29, 41, and 71) significantly impacted in the AM or PM (or both). There would be 10 intersections under the Future (2035) conditions that would be similarly impacted, as shown in Table 3.2-30. As shown in Table 3.2-30, 11 intersections (6, 15, 16, 23, 29, 41, 42, 51, 56, 60, and 71) would be affected with the project traffic, which would result in an effect with substantial intensity under NEPA and a significant impact under CEQA.

As shown in Figure 3.2-30 and within the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014), under Existing Plus Project conditions, intersections east of the Bakersfield station area will not be impacted and will maintain an LOS of D or better. Mount Vernon is the most easterly roadway that will carry any measurable increase in intersection delay.

Bakersfield Parking Impacts – The proposed station would include a passenger drop-off area at the entrances to the station or in the parking area. The station parking areas would accommodate approximately 2,300 parking spaces at the Bakersfield Station. These parking facilities would be designed to accommodate demand and to avoid overflow parking on nearby area streets. Since the HST project includes a plan to provide adequate station parking, minimal impacts on the existing downtown parking conditions are expected. These effects would have negligible intensity under NEPA and would be a less-than-significant impact under CEQA.

Existing parking lots will be directly affected by the project, but to a limited degree, including parking at the Bakersfield Convention Center and McMurtrey Aquatic Center/Ice Center of Bakersfield lot and the Kern County Human Services building. The Bakersfield Convention Center and McMurtrey Aquatic Center/Ice Center of Bakersfield lot has a total of 660 parking spaces; 332 parking spaces (50.3%) would be removed for the BNSF Alternative, 482 parking spaces (73%) would be removed for the Bakersfield South Alternative, and 423 parking spaces (64.1%) would be removed for the Bakersfield Hybrid Alternative. The Kern County Human Services building has a total of 766 parking spaces and the Bakersfield South Alternative footprint would remove 390 spaces (50.9%). To minimize the potential for permanent parking loss affecting these facilities' ability to meet the city of Bakersfield's minimum parking requirements, the HST would ensure existing parking that is removed will be replaced so all existing parking demand will be met with off-street parking. Parking replacement will be achieved through the utilization of existing vacant lots within the close vicinity of these facilities or dedicated shared use of parking spaces constructed as part of the Bakersfield Station. This effect would have negligible intensity under NEPA and would be a less-than-significant impact under CEQA, but would require the Authority to work with the City of Bakersfield to provide suitable replacement parking or parking alternatives for the convention center and other facilities.

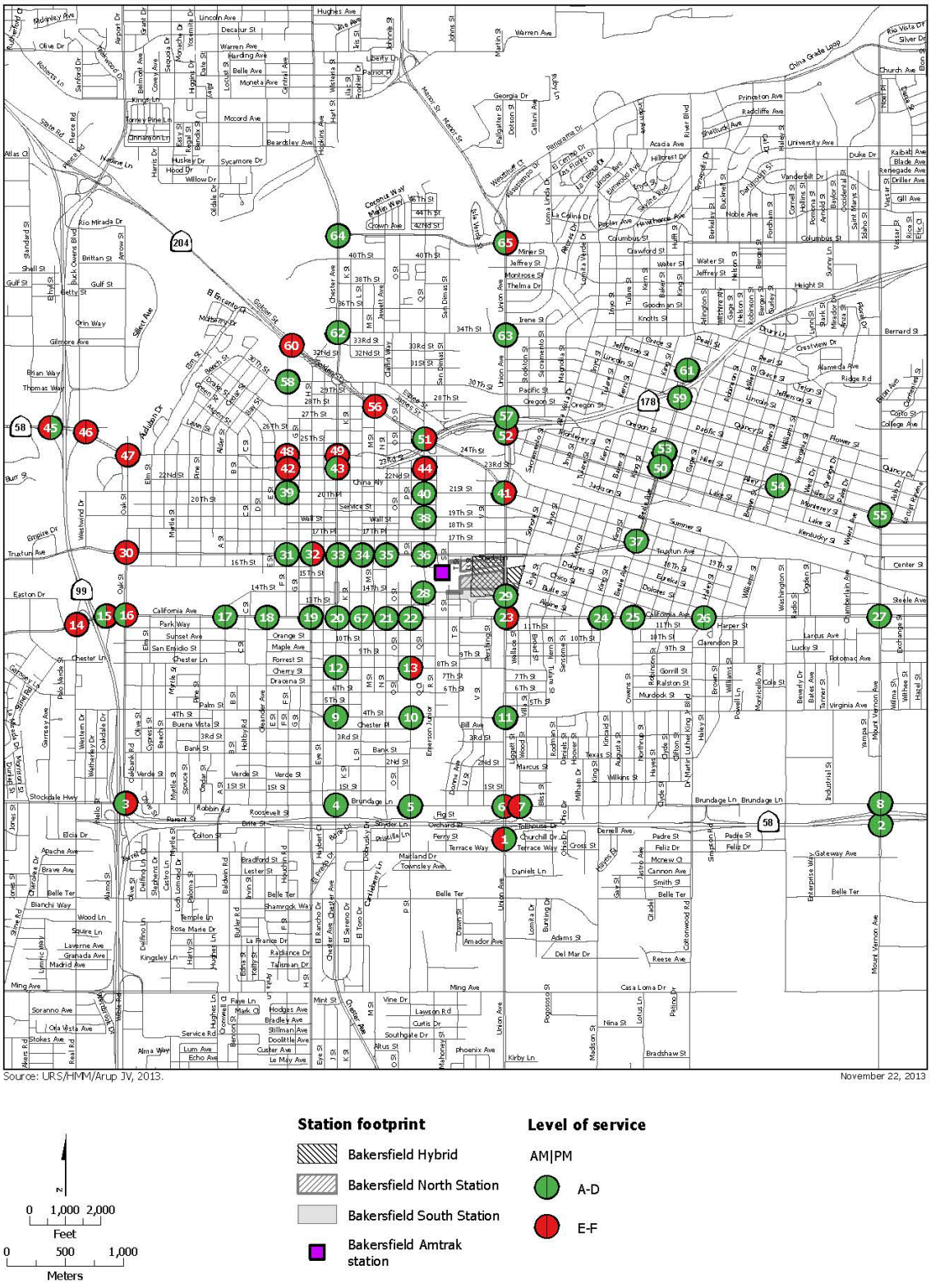

Figure 3.2-29
Future (2035) Plus Project intersection LOS in the Bakersfield Station—North and South Alternatives

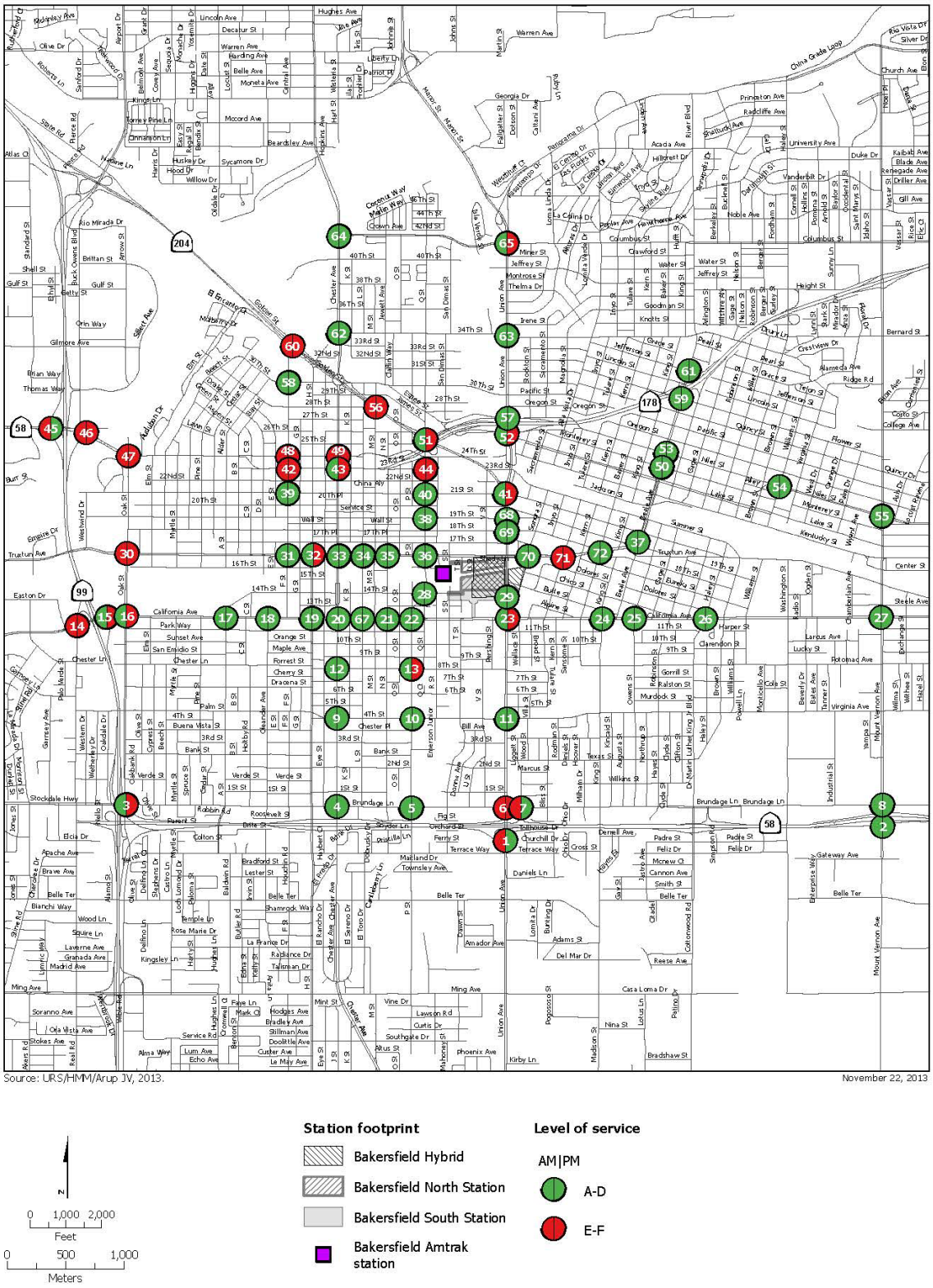

Figure 3.2-30
Future (2035) Plus Project intersection LOS in the Bakersfield Station—Hybrid Alternative

Table 3.2-27
Existing Plus Project, Intersection Operating Conditions, Bakersfield Station–North and Bakersfield–South Alternatives

Int ID	Intersection	Existing		Existing Plus Project South			Existing Plus Project North				Existing		Existing Plus Project South			Existing Plus Project North			
		AM Peak		AM Peak			AM Peak				PM Peak		PM Peak			PM Peak			
		Delay (s)	LOS	Delay (s)	LOS	In-crease in Delay	Delay (s)	LOS	In-crease in Delay	Im-pact	Delay (s)	LOS	Delay (s)	LOS	In-crease in Delay	Delay (s)	LOS	In-crease in Delay	Im-pact
1	S. Union Ave / Eastbound SR 58 Ramps	35.4	D	62.2	E	26.8	*	*	*	Yes	12.5	B	15.6	B	3.1	*	*	*	No
14	Real Rd / California Ave	48.2	D	52.3	D	4.1	*	*	*	No	60.7	E	60.1	E	-0.6	*	*	*	No
15	SR 99 Ramps / California Ave	73.8	E	93.8	F	20.0	*	*	*	Yes	22.9	C	26.7	C	3.8	*	*	*	No
16	Oak St / California Ave	75.2	E	77.0	E	1.8	*	*	*	No	63.5	E	66.5	E	3.0	*	*	*	No
29	Union Ave / Hayden Court	19.2	B	72.1	E	52.9	20.1	C	0.9	Yes	18.9	B	31.1	C	12.2	19.2	B	0.3	No
30	Oak St / Truxtun Ave	111.9	F	115.1	F	3.2	*	*	*	No	72.0	E	73.9	E	1.9	*	*	*	No
41	Union Ave / Golden State Ave / 21st St	25.8	C	28.2	C	2.4	*	*	*	No	89.4	F	119.7	F	30.3	*	*	*	Yes
43	Chester Ave / 23rd St	61.3	E	61.3	E	0.0	*	*	*	No	90.7	F	90.6	F	-0.1	*	*	*	No
46	SR 178 / SR 99 Ramps / Buck Owens Blvd	31.0	C	31.3	C	0.3	*	*	*	No	58.8	E	60.5	E	1.7	*	*	*	No
47	Oak St / SR 178	84.6	F	85.0	F	0.4	*	*	*	No	72.3	E	73.2	E	0.9	*	*	*	No
49	Chester Ave / 24th St	60.4	E	61.2	E	0.8	*	*	*	No	59.0	E	58.9	E	-0.1	*	*	*	No
71	Truxtun Ave / Tulare St	16.9	C	18.1	C	1.2	*	*	*	No	61.6	F	83.0	F	21.4	*	*	*	Yes

Table 3.2-27
Existing Plus Project, Intersection Operating Conditions, Bakersfield Station–North and Bakersfield–South Alternatives

Int ID	Intersection	Existing		Existing Plus Project South		Increase in Delay	Existing Plus Project North		Increase in Delay	Impact	Existing		Existing Plus Project South		Increase in Delay	Existing Plus Project North		Increase in Delay	Impact
		AM Peak		AM Peak			AM Peak				PM Peak		PM Peak			PM Peak			
		Delay (s)	LOS	Delay (s)	LOS		Delay (s)	LOS			Delay (s)	LOS	Delay (s)	LOS		Delay (s)	LOS		

Source: Authority and FRA 2014.

*Same as South Alternative

Note: The Metropolitan Bakersfield General Plan (City of Bakersfield and Kern County 2007) has designated LOS C as the standard for intersections and roadway segments. The following intersections would have an LOS D Existing Plus Project intersection operating condition for the South or North Alternative (AM or PM): S. Union Ave/E. Brundage Ln (#6) (LOS C under Existing AM Peak and PM Peak), Chester Ave/California Ave (#20) (LOS C/C under Existing AM Peak/PM Peak and LOS C/D under Existing plus Project AM Peak/PM Peak and), Union Ave/California Ave (#23) (LOS C under Existing AM Peak), Mt. Vernon Ave/California Ave (#27) (LOS D under PM conditions only), L St/Truxtun Ave (#34) (LOS D under AM conditions only), F St/23rd St (#42), F St/24th St (#48) (LOS D under AM conditions only), F St/Golden State Ave (#60) (LOS D under PM conditions only) and Union Ave/34th St/Bernard St (#.63) (LOS D under AM conditions only).

Acronyms and Abbreviations:
Ave = Avenue
Blvd = Boulevard
Dr = Drive
Int ID = Intersection Identification
LOS = level of service
SR = State Route
St = Street
V/C = volume-to-capacity (ratio)

Table 3.2-28
Future (2035) with Project, Intersection Operating Conditions, Bakersfield Station–North and Bakersfield–South Alternatives

Int ID	Intersection	No-Build AM Peak		Future Plus Project South AM Peak		Delay	Future Plus Project North AM Peak		Delay	Im-pact	No-Build PM Peak		Future Plus Project South PM Peak		Delay	Future Plus Project North PM Peak		Delay	Impact
		Delay (s)	LOS	Delay (s)	LOS		Delay (s)	LOS			Delay (s)	LOS	Delay (s)	LOS		Delay (s)	LOS		
6	S. Union Ave / E. Brundage Lane	49.8	D	58.3	E	8.5	*	*	*	Yes	42.5	D	53.5	D	11.0	*	*	*	No
14	Real Rd / California Ave	59.8	E	60.6	E	0.8	*	*	*	No	72.5	E	70.9	E	-1.6	*	*	*	No
15	SR 99 Ramps/ California Ave	65.1	E	85.8	F	20.7	*	*	*	Yes	27.2	C	35.2	D	8.0	*	*	*	No
16	Oak St / California Ave	54.3	D	59.2	E	4.9	*	*	*	Yes	76.3	E	95.2	F	18.9	*	*	*	Yes
23	Union Ave / California Ave	39.0	D	47.2	D	8.2	56.6	E	17.6	Yes	43.6	D	50.2	D	6.6	55.7	E	12.1	Yes
30	Oak St / Truxtun Ave	221.7	F	222.6	F	0.9	*	*	*	No	222.2	F	224.2	F	2.0	*	*	*	No
41	Union Ave / Golden State Av / 21st St	35.6	D	38.9	D	3.3	*	*	*	No	54.6	D	61.2	E	6.6	*	*	*	Yes
42	F St/ 23rd St	83.2	F	95.8	F	12.6	*	*	*	Yes	52.2	D	52.7	D	0.5	*	*	*	No
43	Chester Ave / 23rd St	49.3	D	49.4	D	0.1	*	*	*	No	64.6	E	64.7	E	0.1	*	*	*	No
44	Q St/ 23rd St	18.0	C	18.0	C	0.0	*	*	*	No	*	F	*	F	*	*	*	*	No
46	SR 178 / SR 99 Ramps / Buck Owens Blvd	34.7	C	35.4	D	0.7	*	*	*	No	61.0	E	62.8	E	1.8	*	*	*	No
47	Oak St/ SR 178	258.7	F	258.6	F	-0.1	*	*	*	No	331.6	F	331.8	F	0.2	*	*	*	No
49	Chester Ave / 24th St	39.4	D	39.4	D	0.0	*	*	*	No	72.6	E	72.6	E	0.0	*	*	*	No
51	Q St / Golden State Ave	24.2	C	24.8	C	0.6	*	*	*	No	86.2	F	92.6	F	6.4	*	*	*	Yes
56	M St / 28th St/ Golden State Ave	102.6	F	108.3	F	5.7	*	*	*	Yes	375.4	F	382.3	F	6.9	*	*	*	Yes
58	F St / 30th St	23.7	C	23.7	C	0.0	*	*	*	No	63.2	E	63.6	E	0.4	*	*	*	No
60	F St / Golden State Ave	172.0	F	178.1	F	6.1	*	*	*	Yes	432.9	F	440.1	F	7.2	*	*	*	Yes
71	Truxtun Ave/Tulare St	55.2	F	59.0	F	3.8	*	*	*	No	79.1	F	90.0	F	10.9	*	*	*	Yes

Table 3.2-28

Future (2035) with Project, Intersection Operating Conditions, Bakersfield Station–North and Bakersfield–South Alternatives

Int ID	Intersection	No-Build AM Peak		Future Plus Project South AM Peak		Delay	Future Plus Project North AM Peak		Delay	Im-pact	No-Build PM Peak		Future Plus Project South PM Peak		Delay	Future Plus Project North PM Peak		Delay	Impact
		Delay (s)	LOS	Delay (s)	LOS		Delay (s)	LOS			Delay (s)	LOS	Delay (s)	LOS		Delay (s)	LOS		
	*Same as South Alternative																		

Note: The Metropolitan Bakersfield General Plan (City of Bakersfield and Kern County 2007) has designated LOS C as the standard for intersections and roadway segments. The following intersections would have a Future Plus Project intersection operating condition of LOS D for the South or North Alternative (AM or PM): S. Union Avenue/Eastbound SR 58 ramps (#1) (LOS C under Future No Build AM Peak), Mt. Vernon Avenue/E. Brundage Lane (#8), Union Avenue/Hayden Court (#29) (South Alternative only)) (LOS B under Future No Build AM Peak and C under Future No Build PM Peak), L St/Truxtun Avenue (#34), Q Street/Truxtun Avenue (#36), F Street/24th Street (#48), Union Avenue/Espee Street (#52), Beale Avenue/Niles Street (#53) (C under Future No Build AM Peak), Mt. Vernon Avenue/Niles Street (#55) (C under Future No Build PM Peak), Union Ave/34th St/Bernard St (#63), Union Avenue/W. Columbus Street (#65), and Truxtun Avenue/Baker Street (#72).

* = Volumes at the intersection exceed theoretical capacity. As a result, average delay cannot be predicted.

Source: Authority and FRA 2014.

Acronyms and Abbreviations:
Ave = Avenue
Blvd = Boulevard
Dr = Drive
Int ID = Intersection Identification
LOS = level of service
SR = State Route
St = Street

Table 3.2-29
Existing Plus Project, Intersection Operating Conditions, Bakersfield Hybrid Station

Int. ID	Intersection	Existing		Existing Plus Project Hybrid Alternative		In-crease in Delay	Impact	Existing		Existing Plus Project Hybrid Alternative		In-crease in Delay	Impact
		AM Peak		AM Peak				PM Peak		PM Peak			
		Delay (s)	LOS	Delay (s)	LOS			Delay (s)	LOS	Delay (s)	LOS		
1	S. Union Ave/Eastbound SR 58 Ramps	35.4	D	62.2	E	26.8	Yes	12.5	B	14.4	B	1.9	No
14	Real Rd/California Ave	48.2	D	52.3	D	4.1	No	48.2	D	52.3	D	4.1	No
15	SR 99 Ramps/California Ave	73.8	E	93.8	F	20.0	Yes	22.9	C	26.7	C	3.8	No
16	Oak St/California Ave	75.2	E	77.0	E	1.8	No	63.5	E	66.5	E	3.0	No
29	Union Ave/Hayden Ct	19.2	B	134.0	F	114.8	Yes	18.9	B	41.0	D	22.1	No
30	Oak St/Truxtun Ave	111.9	F	115.1	F	3.2	No	72.0	E	73.9	E	1.9	No
41	Union Ave/Golden State Ave/21st St	25.8	C	28.2	C	2.4	No	89.4	F	119.7	F	30.3	Yes
43	Chester Ave/23rd St	61.3	E	61.3	E	0.0	No	90.7	F	90.6	F	-0.1	No
46	SR 178/SR 99 Ramps/Buck Owens Blvd	31.0	C	31.3	C	0.3	No	58.8	E	60.5	E	1.7	No
47	Oak St/SR 178	84.6	F	85.0	F	0.4	No	72.3	E	73.2	E	0.9	No
49	Chester Ave/24th St	60.4	E	61.2	E	0.8	No	59.0	E	58.9	E	-0.1	No
71	Truxtun Ave/ Tulare St	16.9	C	18.1	C	1.2	No	61.6	F	83.0	F	21.4	Yes

**Note: The Metropolitan Bakersfield General Plan (City of Bakersfield and Kern County 2007) has designated LOS C as the standard for intersections and roadway segments. The following intersections would have an LOS D Existing Plus Project intersection operating condition for the South or North Alternative (AM or PM): S. Union Ave/E. Brundage Ln (#6) (LOS C under AM Existing conditions), Real Road/California Avenue (#14), Chester Avenue/California Avenue (#20) (LOS C under PM Existing conditions), Union Ave/California Ave (#23) (LOS C under AM Existing conditions), Mt. Vernon Ave/California Ave (#27), L St/Truxtun Ave (#34), F St/23rd St (#42), F St/24th St (#48), F St/Golden State Ave (#60) and Union Ave/34th St/Bernard St (#63).

Source: Authority and FRA 2014.

Acronyms and Abbreviations:
Ave = Avenue
Blvd = Boulevard
Ct = Court
Int ID = Intersection Identification
Ln = Lane
LOS = level of service
SR = State Route
St = Street

Table 3.2-30
Future (2035) with Project, Intersection Operating Conditions, Bakersfield Hybrid Station

Int. ID	Intersection	No Build		Future plus Project Hybrid Alternative		In-crease in Delay	Impact	No Build		Future plus Project Hybrid Alternative		In-crease in Delay	Impact
		AM Peak		AM Peak				PM Peak		PM Peak			
		Delay (s)	LOS	Delay (s)	LOS			Delay (s)	LOS	Delay (s)	LOS		
6	S. Union Ave/E. Brundage Ln	49.8	D	58.3	E	8.5	Yes	42.5	D	53.5	E	11.0	Yes
14	Real Rd/California Ave	59.8	E	60.6	E	0.8	No	72.5	E	70.9	E	-1.6	No
15	SR 99 Ramps/California Ave	65.1	E	85.8	F	20.7	Yes	27.2	C	35.2	D	8.0	No
16	Oak St/California Ave	54.3	D	59.2	E	4.9	Yes	76.3	E	95.2	E	18.9	Yes
23	Union Ave/California Ave	39.0	D	61.6	E	22.6	Yes	43.6	D	58.4	E	14.8	Yes
29	Union Ave/Hayden Ct	19.1	B	147.7	F	128.6	Yes	20.2	C	62.2	E	42.0	Yes
30	Oak St/Truxtun Ave	221.7	F	222.6	F	0.9	No	222.2	F	224.2	F	2.0	No
32	H St/Truxtun Ave	24.2	C	24.6	C	0.4	No	63.9	E	65.3	E	1.4	No
41	Union Ave/Golden State Ave/21st St	35.6	D	38.9	D	3.3	No	54.6	D	61.2	E	6.6	Yes
42	F Street/23rd Street	83.2	F	95.8	F	12.6	Yes	52.2	D	52.7	D	0.5	No
43	Chester Ave/23rd St	49.3	D	49.4	D	0.1	No	64.6	E	64.7	E	0.1	No
44	Q St/23rd St	18.0	C	18.0	F	0.0	No	*	F	*	F	*	No
46	SR 178/SR 99 Ramps/Buck Owens Blvd	34.7	C	35.4	D	0.7	No	61.0	E	62.8	E	1.8	No
47	Oak St/SR 178	258.7	F	258.6	F	-0.1	No	331.6	F	331.8	F	0.2	No
49	Chester Ave/24th St	39.4	D	39.4	D	0.0	No	72.6	E	72.6	E	0.0	No
51	Q St/Golden State Ave	24.2	C	24.8	C	0.6	No	86.2	F	92.6	F	6.4	Yes
56	M St/28th St/Golden State Ave	102.6	F	108.3	F	5.7	Yes	375.4	F	382.3	F	6.9	Yes
58	F Street/30th Street	23.7	C	23.7	C	0.0	No	63.2	E	63.6	E	0.4	No
60	F St/Golden State Ave	172.0	F	178.1	F	6.1	Yes	432.9	F	440.1	F	7.2	Yes
71	Truxtun Ave/ Tulare St	55.2	F	59.0	F	3.8	No	79.1	F	90.0	F	10.9	Yes

Table 3.2-30
Future (2035) with Project, Intersection Operating Conditions, Bakersfield Hybrid Station

Int. ID	Intersection	No Build AM Peak Delay (s)	No Build AM Peak LOS	Future plus Project Hybrid Alternative AM Peak Delay (s)	Future plus Project Hybrid Alternative AM Peak LOS	In-crease in Delay	Impact	No Build PM Peak Delay (s)	No Build PM Peak LOS	Future plus Project Hybrid Alternative PM Peak Delay (s)	Future plus Project Hybrid Alternative PM Peak LOS	In-crease in Delay	Impact
* Volumes at the intersection exceed theoretical capacity. As a result, average delay cannot be predicted.													
Note: The Metropolitan Bakersfield General Plan (City of Bakersfield and Kern County 2007) has designated LOS C as the standard for intersections and roadway segments. The following intersections would have a Future Plus Project intersection operating condition of LOS D for the Hybrid Alternative (AM or PM): S. Union Ave/Eastbound SR 58 Ramps (#1) (C under Future No Build AM Peak), Mt. Vernon Ave/E. Brundage Lane(#8), F Street/Truxtun Ave (#31), H Street/Truxtun Ave (#32), L St/Truxtun Ave (#34), Q St/Truxtun Ave (#36), F St/24th St (#48), Union Ave/Espee St (#52), Beale Ave/Niles St (#53) (C under Future No Build AM Peak), Mt. Vernon Ave/Niles St (#55) (C under Future No Build PM Peak), Union Ave/34th St/Bernard St (#63), Union Ave/Columbus St (#65) and Truxtun Ave/Baker St (#72).												
Source: Authority and FRA 2014.													
Acronyms and Abbreviations: Ave = Avenue Blvd = Boulevard Ct = Court Int ID = Intersection Identification Ln = Lane LOS = level of service SR = State Route St = Street													

Bakersfield Area Transit Impacts – The project is projected to add approximately 900 daily passengers to transit service in the Bakersfield area, including approximately 135 peak-hour passengers. Under existing conditions, approximately 17 transit routes serve the Bakersfield Station area, and the addition of approximately 135 passengers on existing transit routes in the Bakersfield Station area averages about 8 additional passengers per route, assuming equal distribution. The existing transit fleet is expected to be able to accommodate the per/route increases associated with the BNSF Alternative. The resulting effect would have negligible intensity under NEPA because there is a measurable but not perceptible increase in peak-hour ridership on existing transit routes. Impacts would be less than significant under CEQA.

Bakersfield Pedestrian and Bicycle Impacts – The proposed project would not require the closure of any of the existing or planned bicycle routes or pedestrian access routes in the immediate vicinity of Bakersfield stations. An estimated 500 passengers would access the Bakersfield Station on foot or by bicycle each day. Approximately 75 passengers would arrive or depart the station area during the peak hour. The addition of pedestrian and bike trips during the peak hour (an average of about one pedestrian per bike per 1 minute) in the Bakersfield Station areas would not substantially affect existing pedestrian and bike facilities. This effect would have negligible intensity under NEPA because no existing or planned bicycle or pedestrian routes/access would be closed and the station would cause a measurable, but imperceptible increase of route usage in the vicinity of the station. Impacts would be less than significant under CEQA.

Bakersfield Area Freight Impacts – The proposed HST service would operate on an elevated structure through the Bakersfield Station area, so it would not create any conflicts or impacts on UPRR freight operations. Pedestrian structures may cross over the freight rail line to provide

access to the HST station, but the structures would be designed to meet freight height clearances. The resulting effect would have negligible intensity under NEPA because freight rail service would be grade-separated and therefore would not be interrupted or worsened by the HST station. Impacts would be less than significant under CEQA.

Impact TR #14 – Impacts on the Local Roadway Network due to Heavy Maintenance Facility Alternatives

Five alternative locations were evaluated for traffic impacts for the proposed HMFs, each of which is described in Chapter 2.0, Alternatives. One site is in Fresno County, one site in Kings County–Hanford, and three alternative sites are in Kern County (Wasco, Shafter East, and Shafter West). The following summarizes the traffic conditions with and without HMF operations.

Existing Plus Project, Roadway Segment Analysis (HMF Sites) – Table 3.2-31 shows the projected traffic conditions at the roadway segments in the vicinity of the impacted HMF sites for the AM and PM peak hours under both the Existing and Existing Plus Project conditions. None of the roadways are functioning, or would function under project conditions, at LOS E or F. These effects are considered to have negligible intensity under NEPA and to have a less-than-significant impact under CEQA.

Future (2035) Plus Project, Roadway Segment Analysis (HMF Sites) – Table 3.2-32 shows the projected traffic conditions for the roadway segments evaluated at the impacted HMF sites for the AM and PM peak hours under both the Future (2035) No Project and Future (2035) Plus Project conditions. As shown in the table, 12 of the studied segments would notice traffic changes from the HMF project-added traffic. One segment would be adversely affected at the Hanford HMF: SR 43, between SR 198 and Houston Avenue, would have a V/C ratio increase of 0.08 and an LOS decrease to F. One segment would be adversely affected at the Shafter HMF: Santa Fe Way, between Burbank Street and 7th Standard Road, would have a V/C ratio increase of 0.08. These two effects are considered to have substantial intensity under NEPA. Impacts would be significant under CEQA.

Existing Plus Project, Intersection Analysis (HMF Sites) – Table 3.2-33 shows the projected traffic conditions at the intersections around the affected HMF sites for the AM and PM peak hours under both the Existing and Existing Plus Project conditions. Three of the studied intersections (Fresno HMF #2 and #11 and Wasco HMF #1) would be adversely affected by additional traffic from the HMF sites where there is either a change in LOS to E or F or where an intersection is operating at LOS E or F, and the delay would increase by 4 seconds or more. These three effects are considered to have substantial intensity under NEPA. Impacts would be significant under CEQA.

Future Plus Project, Intersection Analysis (HMF Sites) – Table 3.2-34 shows the projected traffic conditions at the intersections around the affected HMF sites for the AM and PM peak hours under both the Future (2035) No Project and Future (2035) Plus Project conditions. As shown in the table, seven of the studied intersections would be adversely affected by the additional traffic from the HMF project: three intersections at the Fresno HMF (#2, #6, and #11), two intersections at the Hanford HMF (#1 and #3), one intersection at the Wasco HMF (#1), and one intersection at the Shafter area HMF (#1). These effects are considered to have substantial intensity under NEPA. Impacts would be significant under CEQA.

Table 3.2-31
HMF Roadway Segment Analysis (Existing Plus Project)

	No.	Roadway Segment	V/C Existing	Lanes (NE/SW)	Divided/Undivided	LOS Existing	Existing Plus Project V/C	LOS Existing Plus Project	Impact
Fresno	1	Central Ave between S. Cedar Ave and S. Maple Ave	0.20	1/1	Undivided	C	0.24	C	No
	2	E. American Ave between S. Cedar Ave and S. Chestnut Ave	0.06	1/1	Undivided	C	0.15	C	No
	3	E. Adams Ave between S. Cedar Ave and S. Chestnut Ave	0.11	1/1	Undivided	C	0.11	C	No
Hanford	1	On SR 43 between SR 198 and Houston Ave	0.57	1/1	Undivided	D	0.64	D	No
	2	On SR 43 between Houston Ave and Idaho Ave	0.44	1/1	Undivided	D	0.51	D	No
	3	On Houston Ave between SR 43 and 7th Ave	0.25	1/1	Undivided	C	0.28	C	No
	4	On Idaho Ave between SR 43 and 7th Ave	0.04	1/1	Undivided	C	0.05	C	No
Wasco	1	On SR 43 North of SR 46	0.21	1/1	Undivided	A	0.27	A	No
	2	On SR 46 between F St and Wasco Ave	0.61	1/1	Undivided	B	0.68	B	No
	3	On SR 46 East of Wasco Ave	0.44	1/1	Undivided	A	0.49	A	No
	4	On Wasco Ave between SR 46 and 6th St	0.16	1/1	Undivided	A	0.25	A	No
Shafter (East and West)	1	On Santa Fe Way between Burbank St and 7th Standard Rd	0.54	1/1	Undivided	A	0.62	B	No

Source: Authority and FRA 2014.
Acronyms and Abbreviations:
Ave = Avenue
LOS = level of service
NE = Northeast
No. = Number
SR = State Route
St = Street
SW = Southwest
V/C = volume-to-capacity (ratio)

Table 3.2-32
HMF Roadway Segment Analysis (Future [2035] Plus Project)

	No.	Roadway Segment	Future (2035) No Project V/C	Lanes (NE/SW)	Divided/ Undivided	Future (2035) No Project LOS	Future (2035) Plus Project V/C	Future (2035) Plus Project LOS	Impact
Fresno	1	Central Ave, between S. Cedar Ave and S. Maple Ave	0.18	2/2	Undivided	D	0.20	D	No
	2	E. American Ave, between S. Cedar Ave and S. Chestnut Ave	0.04 then 0.09	2/2 till maple then 1/1 after	Undivided	C	0.08 then 0.17	C	No
	3	E. Adams Ave between S. Cedar Ave and S. Chestnut Ave	0.16	1/1	Undivided	C	0.16	C	No
Hanford	1	On SR 43 between SR 198 and Houston Ave	0.98	1/1	Undivided	E	1.06	F	Yes
	2	On SR 43 between Houston Ave and Idaho Ave	0.78	1/1	Undivided	D	0.85	D	No
	3	On Houston Ave between SR 43 and 7th Ave	0.19	1/1	Undivided	C	0.22	C	No
	4	On Idaho Ave between SR 43 and 7th Ave	0.02	1/1	Undivided	C	0.03	C	No
Wasco	1	On SR 43 North of SR 46	0.66	1/1	Undivided	B	0.72	C	No
	2	On SR 46 between F St and Wasco Ave	0.58	2/2	Undivided	A	0.62	B	No
	3	On SR 46 East of Wasco Ave	0.66	1/1	Undivided	B	0.70	B	No
	4	On Wasco Ave between SR 46 and 6th St	0.51	1/1	Undivided	A	0.59	A	No
Shafter (East and West)	1	On Santa Fe Way between Burbank St and 7th Standard Rd	1.67	1/1	Undivided	F	1.75	F	Yes

Source: Authority and FRA 2014.
Acronyms and Abbreviations:
Ave = Avenue
LOS = level of service
NE = Northeast
No. = Number
SR = State Route
St = Street
SW = Southwest
V/C = volume-to-capacity (ratio)

Table 3.2-33
HMF Intersection Analysis (Existing Plus Project)

	Int ID	Intersection	AM				PM			
			Existing		Existing Plus Project		Existing		Existing Plus Project	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Fresno	2	SR 99 SB off-ramp / E. Central Avenue	197.2	F	248.9	F	25.1	D	29.9	D
	4	SR 99 NB off-ramp / S. Chestnut Avenue	371.9	F	371.9	F	20.9	C	20.9	C
	11	Clovis Avenue / SR 99 SB on-ramp	46.9	E	169.7	F	37.9	E	266.7	F
Wasco	1	Wasco Avenue / Paso Robles Highway	18	C	33.7	D	22.7	C	64.9	F

* Volumes at the intersection exceed theoretical capacity. As a result, average delay cannot be predicted.
Note: Gray highlighting indicates an impact.
Source: Authority and FRA 2014.
Acronyms and Abbreviations:
Int ID = Intersection Identification
LOS = level of service
No. = Number
SR = State Route

Table 3.2-34
HMF Intersection Analysis (Future [2035] Plus Project)

	Int ID	Intersection	AM				PM			
			Future (2035) No Project		Future (2035) Plus Project		Future (2035) No Project		Future (2035) Plus Project	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Fresno	2	SR 99 SB off-ramp / E. Central Avenue	366.2	F	422.9	F	308.2	F	366.6	F
	6	SR 99 SB off-ramp / E. American Avenue	16.1	C	17.7	C	274.8	F	335.5	F
	11	Clovis Ave / SR 99 SB on-ramp	747.4	F	*	F	*	F	*	F
Hanford	1	SR 43 and Houston Avenue	26.4	C	38.1	D	48.2	D	65.8	E
	3	SR 43 and Idaho Avenue	25.2	D	30.7	D	47.9	E	84.8	F
Wasco	1	Wasco Ave / Paso Robles Highway	*	F	*	F	*	F	*	F
Shafter (East and West)	1	Santa Fe Way / Burbank Street	484.7	F	*	F	62.1	F	520.9	F

* Volumes at the intersection exceed theoretical capacity. As a result, average delay cannot be predicted.
Source: Authority and FRA 2014.
Note: Gray highlighting indicates an impact.
Acronyms and Abbreviations:
Int ID = Intersection Identification
LOS = level of service
SR = State Route

Impact TR #15 – Impacts on the City of Corcoran Local Roadway Network due to Road Closures

City of Corcoran Roadway Segment Impacts – Tables 3.2-35 and 3.2-36 list the Existing Plus Project and Future (2035) Plus Project conditions for roadway segments. No roadway segments operate below LOS D under existing conditions, and no segments would be impacted when the project is added to existing conditions. In 2035, no roadway segments would operate below LOS D under No Project conditions, and none would be affected by the addition of project traffic. These effects are considered to have negligible intensity under NEPA. Impacts would be less than significant under CEQA.

Table 3.2-35
Existing Plus Project Roadway Segments Level-of-Service Summary Analysis for Corcoran

No	Roadway Segment	V/C		Lanes (NE/SW)	Divided/ Undivided	LOS		Impact
		Existing	Existing Plus Project			Existing	Existing Plus Project	
1	Brokaw Ave, between Van Dorsten Ave and Chittenden Ave	0.11	0.11	1/1	Undivided	C	C	No
2	Pickerell Ave, between SR 43 and Whitley Ave	0.07	0.07	1/1	Undivided	C	C	No
3	Whitley Ave, between Van Dorsten Ave and Chittenden Ave	0.37	0.37	1/1	Undivided	D	D	No
4	Sherman Ave, west of Santa Fe Ave	0.17	0.17	1/1	Undivided	C	C	No

Source: Authority and FRA 2014.

Acronyms and Abbreviations:
Ave = Avenue
LOS = level of service
NE = Northeast
SR = State Route
SW = Southwest
V/C = volume-to-capacity (ratio)

Table 3.2-36
Future Plus Project Roadway Segments Level-of-Service Summary Analysis for Corcoran

No	Roadway Segment	V/C		Lanes (NE/SW)	Divided/ Undivided	LOS		Impact
		Future (2035) No Project	Future (2035) Plus Project			Future (2035) No Project	Future (2035) Plus Project	
1	Brokaw Ave, between Van Dorsten Ave and Chittenden Ave	0.09 and 0.18	0.09 and 0.18	2/2, and 1/1 between Norboe Ave and Otis Ave	Undivided	C	C	No
2	Pickerell Ave, between SR 43 and Whitley Ave	0.34	0.34	1/1	Undivided	C	C	No
3	Whitley Ave, between Van Dorsten Ave and Chittenden Ave	0.50	0.71	1/1	Undivided	D	D	No
4	Sherman Ave, west of Santa Fe Ave	0.43	0.09	1/1	Undivided	D	C	No

Source: Authority and FRA 2014.

Acronyms and Abbreviations:
Ave = Avenue
LOS = level of service
NE = Northeast
No. = Number
SR = State Route
SW = Southwest
V/C = volume-to-capacity (ratio)

City of Corcoran Intersection Impacts – Tables 3.2-37 and 3.2-38 list the Existing Plus Project and Future (2035) Plus Project conditions for intersections. No intersections listed in Table 3.2-37 operate below LOS D, and none would be impacted when the project is added to existing conditions. In 2035, no intersections would operate below LOS D under No Project conditions, and one intersection (#3, Whitley Avenue/Pickerell Avenue) would be affected by the addition of project traffic in the AM and PM. This effect is considered to be of moderate intensity under NEPA because the increase in delay caused by the road closures would cause a measureable and perceptible worsening of intersection operating LOS to the transportation system user. Impacts would be significant under CEQA.[8]

[8] There was an inadvertent typo in the Revised DEIR/Supplemental DEIS, page 3.2-124, which stated that this impact would be less than significant. The actual table of impacts in the Revised DEIR/Supplemental DEIS (Table 3.2-43), however, correctly listed the impact as significant, as does the CEQA summary table (Table 3.2-54) in this Final EIR/EIS.

Table 3.2-37
Existing Plus Project Intersection Operating Conditions — Corcoran Study Intersections

Int ID	Intersection	Existing		Existing Plus Project		Increase in Delay	Impact	Existing		Existing Plus Project		Increase in Delay	Impact
		AM Peak		AM Peak				PM Peak		PM Peak			
		Delay (s)	LOS	Delay (s)	LOS			Delay (s)	LOS	Delay (s)	LOS		
1	Brokaw Ave/Chittenden Ave	9.7	A	8.7	A	-1.0	No	10.3	B	8.8	A	-1.5	No
2	Whitley Ave/Chittenden Ave	11.1	B	11.6	B	0.5	No	14.0	B	13.7	B	-0.3	No
3	Whitley Ave/Pickerell Ave	9.9	A	11.6	B	2.7	No	10.5	B	13.3	B	2.8	No
4	Sherman Ave/Santa Fe Ave	9.3	A	8.4	A	-0.9	No	9.5	A	8.4	A	-0.11	No

Source: Authority and FRA 2014.

Acronyms and Abbreviations:
Ave = Avenue
Int ID = Intersection Identification
LOS = level of service

Table 3.2-38
Future (2035) Plus Project Intersection Operating Conditions — Corcoran Study Intersections

Int ID	Intersection	Future (2035) No Project		Future (2035) Plus Project		Increase in Delay	Impact	Future (2035) No Project		Future (2035) Plus Project		Increase in Delay	Impact
		AM Peak		AM Peak				PM Peak		PM Peak			
		Delays	LOS	Delays	LOS			Delays	LOS	Delays	LOS		
1	Brokaw Ave/ Chittenden Ave	9.7	A	9.5	A	-0.2	No	10.1	B	8.8	A	-1.3	No
2	Whitley Ave/ Chittenden Ave	10.5	B	13.5	B	3.0	No	15.6	C	15.2	C	-0.4	No
3	Whitley Ave/ Pickerell Ave	13.6	B	60.4	F	46.8	Yes	19.0	C	*	F	*	Yes
4	Sherman Ave/ Santa Fe Ave	13.6	B	8.4	A	-5.2	No	40.7	E	8.3	A	32.4	No

Source: Authority and FRA 2014.

* Volumes at the intersection exceed theoretical capacity. As a result, average delay cannot be predicted.

Acronyms and Abbreviations:
Ave = Avenue
Int ID = Intersection Identification
LOS = level of service

Impact TR #16 - Impacts on School Districts Local Roadway Network

Road closures and modified traffic routing along HST tracks could result in increased response times for emergency responders to schools and increases in school bus travel distances and

times. Existing roads would either remain unchanged where elevated track would cross them or would be modified into overcrossings or undercrossing where at-grade track would conflict with them. Road segments that would be permanently closed are typically short (less than 1 mile). Road crossings in rural areas would occur approximately every 2 miles. Because the project design would include coordination with emergency responders and school districts to incorporate roadway modifications that maintain existing traffic patterns and fulfill response route and access needs, effects on the response times by service providers would have negligible intensity under NEPA. Impacts would be less than significant under CEQA.

3.2.6 Project Design Features

The Authority and FRA have considered avoidance and minimization measures consistent with the Statewide and Bay Area to Central Valley Program EIR/EIS commitments (Authority and FRA 2005, [2008] 2010). During project design and construction, the Authority and FRA would implement measures to reduce impacts on transportation. These measures are considered to be part of the project and are described in the following text.

1) **Off-Street Parking for Construction-Related Vehicles.** Identify adequate off-street parking for all construction-related vehicles throughout the construction period. If adequate parking cannot be provided on the construction sites, designate a remote parking area and use a shuttle bus to transfer construction workers to the job site.

2) **Maintenance of Pedestrian Access.** Prepare specific construction management plans to address maintenance of pedestrian access during the construction period. Actions to limit pedestrian access would include, but not be limited to, sidewalk closures, bridge closures, crosswalk closures or pedestrian rerouting at intersections, placement of construction-related material within pedestrian pathways or sidewalks, and other actions that may affect the mobility or safety of pedestrians during the construction period. If sidewalks are maintained along the construction site frontage, provide covered walkways. Pedestrian access will be maintained where feasible (i.e., meeting design, safety, ADA requirements).

3) **Maintenance of Bicycle Access.** Prepare specific construction management plans to address maintenance of bicycle access during the construction period. Actions to limit bicycle access would include, but not be limited to, bike lane closures or narrowing, closure or narrowing of streets that are designated bike routes, bridge closures, placement of construction-related materials within designated bike lanes or along bike routes, and other actions that may affect the mobility or safety of bicyclists during the construction period. Bicycle access will be maintained where feasible (i.e., meeting design, safety, ADA requirements).

4) **Restriction on Construction Hours.** Limit construction material deliveries between 7 AM and 9 AM and between 4 PM and 6 PM on weekdays. The number of construction employees arriving or departing the site between the hours of 7 AM to 8:30 AM and 4:30 PM to 6 PM would be limited. Limits will be determined as part of the Construction Transportation Plan.

5) **Construction Truck Routes.** Deliver all construction-related equipment and materials on the appropriate truck routes. Prohibit heavy construction vehicles from accessing the site via other routes. Truck routes will be established away from schools, day care centers, and residences, or at a location with the least impact if the Authority determines those areas are unavoidable.

6) **Protection of Public Roadways during Construction.** Repair any structural damage to public roadways, returning any damaged sections to their original structural condition. Survey the condition of the public roadways along truck routes providing access to the proposed project site both before construction and after construction is complete. Complete a before- and after-survey report and submit to the Authority for review, indicating the location and extent of any damage.

7) **Maintenance of Public Transit Access and Routes.** Coordinate with the appropriate transit jurisdiction before limiting access to public transit and limiting movement of public transit vehicles. Potential actions that would impact access to transit include, but are not limited to, relocating or removing bus stops, limiting access to bus stops or transfer facilities, or otherwise restricting or constraining public transit operations. Public transit access and routing will be maintained where feasible.

8) **Construction Transportation Plan.** The design-builder will prepare a detailed Construction Transportation Plan (CTP) for the purpose of minimizing the impact of construction and construction traffic on adjoining and nearby roadways. The CTP will be prepared in close consultation with the pertinent city or county, and will be reviewed and approved by the Authority before commencing any construction activities. This plan will address, in detail, the activities to be carried out in each construction phase, with the requirement of maintaining traffic flow during peak travel periods. Such activities include, but are not limited to, the routing and scheduling of materials deliveries, materials staging and storage areas, construction employee arrival and departure schedules, employee parking locations, and temporary road closures, if any. The plan will provide traffic controls pursuant to the *California Manual on Uniform Traffic Control Devices* sections on temporary traffic controls (Caltrans 2012) and will include a traffic control plan that includes, at a minimum, the following elements:

- Temporary signage to alert drivers and pedestrians to the construction zone.
- Flag persons or other methods of traffic control.
- Traffic speed limitations in the construction zone.
- Temporary road closures and provisions for alternative access during the closure.
- Detour provisions for temporary road closures. Alternating one-way traffic will be considered as an alternative to temporary closures where practicable and where it would result in better traffic flow than would a detour.
- Identified routes for construction traffic.
- Provisions for safe pedestrian and bicycle passage, or convenient detour.
- Provisions to minimize access disruption to residents, businesses, customers, delivery vehicles, and buses to the extent practicable. Where road closures are required during construction, limit closures to the hours that are least disruptive to access for the adjacent land uses.
- Provisions for farm equipment access.
- Provisions for 24-hour access by emergency vehicles.
- Safe vehicular and pedestrian access to local businesses and residences during construction. The plan will provide for scheduled transit access where construction would otherwise impede such access. Where an existing bus stop is within the work zone, the design-builder will provide a temporary bus stop at a convenient location away from where construction is occurring. Adequate measures will be taken to separate students and parents walking to and from the temporary bus stop from the construction zone.
- Advance notification to the local school district of construction activities and rigorously maintained traffic control at all school bus loading zones, to ensure the safety of school children. Review existing or planned *Safe Routes to Schools* with school districts and emergency responders to incorporate roadway modifications

that maintain existing traffic patterns and fulfill response route and access needs during project construction and HST operations.
- Identification and assessment of the potential safety risks of project construction to children, especially in areas where the project is located near homes, schools, day care centers, and parks.
- Promotion of child safety within and near the project area. For example, crossing guards could be provided in areas where construction activities are located near schools, day care centers, and parks.
- CTPs will consider and account for the potential for overlapping construction from reasonably foreseeable projects.
- CTPs will also include Project Design Features 1–7 and 9–13 of this document.

9) **Construction during Special Events.** Provide a mechanism to prevent roadway construction activities from reducing roadway capacity during major athletic events or other special events that attract a substantial number of visitors. Mechanisms include the presence of police officers directing traffic, special-event parking, use of within-the-curb parking, or shoulder lanes for through-traffic, traffic cones, and so on. Through such mechanisms, roadway capacity would be maintained**.**

10) **Protection of Freight and Passenger Rail during Construction.** Repair any structural damage to freight or public railways, and return any damaged sections to their original structural condition. If necessary, during construction, a "shoofly" track would be constructed to allow existing train lines to bypass any areas closed for construction activities. Upon completion, tracks would be opened and repaired; or new mainline track would be constructed, and the "shoofly" would be removed.

11) **Additional Features in the Cities of Fresno and Bakersfield.** In addition to the measures listed above, the Authority will also include the following in the cities of Fresno and Bakersfield:

- Maintain detection at signalized intersections where alignment changes or widening are necessary, in order that the traffic signal does not need to be placed on recall (fixed timing).

- Changeable message signs (CMS) will be employed to advise motorists of lane closures or detours ahead. The CMSs will be deployed seven days before the start of construction at that location.

- Where project construction would cause delays on major roadways during the construction period, the project will provide for a network of CMS locations to provide adequate driver notification. For example, construction-related delays at the railroad grade separations that lead to SR 99 interchanges will require CMS placement to the east to allow drivers to make alternate route decisions. In the case of work on Shaw Avenue, recommended placement would be a CMS at Shaw Avenue just east of SR 41 and a CMS at Shaw Avenue just east of Palm Avenue. Similar CMS usage will be required along Ashlan Avenue, Clinton Avenue, McKinley Avenue, Olive Avenue, and Belmont Avenue.

- The Authority, in conjunction with the City of Fresno Public Works Department and City of Bakersfield Public Works Department, will develop a traffic management plan for the surface transportation network to minimize potential impacts on public safety services.

- During project construction, alignment of roadways to be grade-separated and freeway overpasses to be reconstructed will be offset from the existing alignment to facilitate staged construction, wherever possible.

The Authority will also include the following measures specific to the city of Fresno:

- Clinton Avenue over SR 99 and Ashlan Avenue over the UPRR will be offset from their existing alignments to allow for the existing roadway to remain open while the new structure is being built. It is recognized by the city that this type of staging may necessitate temporary ramps to and from SR 99 during various phases of construction. Four travel lanes will be maintained from 7 a.m. to 9 a.m. and from 4 p.m. to 6 p.m. on Shaw Avenue from Cornelia to Blythe Avenue (at UPRR), on Ashlan Avenue from Parkway to Valentine Avenue (at UPRR), and on Clinton Avenue from Marks Avenue to Weber Avenue (at SR 99).

- The Veterans Boulevard overpass and construction of new alignments of Golden State Boulevard and Bullard Avenue will be completed and open to traffic prior to the closure of the Carnegie Avenue at-grade railroad crossing.

- One lane of traffic in each direction must be maintained at all times for Olive Avenue and McKinley Avenue for construction of the proposed grade separations. No full closures of these crossings will occur, with the exception of short duration closures of less than 72 hours not more than once per month.

- During any Belmont Avenue closures that are determined to be necessary, the adjacent crossings of Olive Avenue and Divisadero Street will remain open with no lane closures at the two crossings.

- Two of the three crossings will remain open at any given time at the existing railroad crossings at Divisadero, Tuolumne, and Stanislaus.

12) **Off Peak Hour Employee Work Shift Changes at HMF.** Work shifts for the HMF facilities will be timed to not coincide with local peak hour periods. When the HMF employees arrive and depart, they will do so during a non-peak period for local traffic, and total volumes on the roads during shift changes will be less than the volumes that occur during the local peak periods.

3.2.7 Mitigation Measures

The mitigation measures below are intended to compensate for impacts that cannot be minimized or avoided. None of these mitigation measures will result in secondary significant impacts. All the measures are physically feasible, and road widening mitigation measures are depicted and analyzed in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014). In addition, the various cities and/or counties may implement some of these mitigation measures before the construction of the HST System because of planned development adjacent to affected intersections or roadways.

Tables 3.2-39 to 3.2-53, which list intersection and road segment impacts and mitigation, present impacts and mitigation for both the Existing Plus Project and Future Plus Project baseline scenarios. As stated in Section 3.2.3.2, Baseline Operational Analysis, mitigation under both scenarios is not required. The LOS traffic analysis in this section uses a dual-baseline approach, which is particularly appropriate for a project like the HST, which has two components that could affect traffic: alignment construction (which would occur in the near term) and HST station traffic (which would occur in the long term).

Mitigation for impacts that result only from alignment construction will be implemented prior to construction of the HST guideway because these impacts would result from direct changes made to the existing roadway network (from construction of the alignment, station, or any other needed structures [i.e., overcrossing/undercrossing]). More specifically, construction of the alignment alone would reconfigure the existing roadway network, permanently redirecting existing traffic. This could cause traffic LOS impacts at intersections and road segments that receive the redirected existing traffic, even without the addition, if any, of future HST station traffic. Mitigation for these impacts under the Existing Plus Project scenario will be implemented prior to construction of the alignment.

On the other hand, HST station traffic (i.e., traffic from passengers arriving at or departing from the HST station) would not commence for some years in the future, and would rise over time. That station traffic could affect additional intersections and segments beyond those impacted by construction of the rail corridor. Background conditions in 2035 (to coincide with maximum projected HST station traffic) are particularly helpful to understanding these impacts, and mitigation based on those 2035 conditions (to be implemented at the opening of the HST station) is appropriate.

Of the mitigation measures listed in Tables 3.2-39 to 3.2-53 (which list the duplicative dual-baseline mitigation), the specific mitigation measure required to be constructed (under which baseline), and when it must be constructed (either at the time of alignment construction or at the time of station opening), will be specified in the Mitigation Monitoring and Enforcement Program (MMEP) that is to be adopted as a requirement of the project by the Authority and FRA when the project is approved.

The following mitigation measures are designed to reduce transportation system impacts to intersections and roadways that are significant under CEQA and have substantial intensity under NEPA to less-than-significant levels under CEQA and less-than-substantial intensity under NEPA.

3.2.7.1 Mitigation Measures for Potential Permanent Road Closures

TR-MM#1: Access Maintenance for Property Owners. If a proposed permanent road closure restricts current access to a property, the Authority will provide alternative access via connections to existing roadways. If adjacent road access is not available, the Authority will prepare new road connections, if feasible. Alternative access shall maintain maintains the viability of the property use as it was used prior to the initiation of HST project construction. If alternative road access is not feasible for a permanent loss of property access, the property will be acquired by the Authority. This mitigation measure would be effective, given the listed approaches available to address all potential scenarios encountered. Impacts associated with permanent road closures will be reduced to a negligible intensity under NEPA and a less-than-significant impact under CEQA with Mitigation Measure TR MM#1.

Impacts of Mitigation: If the project requires the replacement of property access due to a permanent loss from the project, mitigation may result in impacts on the physical environment. Those impacts would include emissions and fugitive dust from construction equipment, construction-related noise, construction-related road closures or traffic delays and impacts on biological and cultural resources that may be present on the site of the new property access route. Any new or expanded roadways would be designed and constructed to be consistent with local land use plans if feasible and with the avoidance and minimization measures and construction period mitigation measures discussed in Section 3.2, Transportation; Section 3.3, Air Quality and Global Climate Change; Section 3.4, Noise and Vibration; Section 3.7, Biological Resources; and Section 3.17, Cultural and Paleontological Resources. For this reason, it is expected that the impacts of mitigation would be less than significant under CEQA, and the impacts would have negligible intensity under NEPA.

If the only need for mitigation is the purchasing of the property by the Authority, this mitigation measure would result in no physical impacts except potential impacts if the property use and facilities change as a result of the lack of access, which changes and potential impacts are too speculative to analyze at this point.

3.2.7.2 Mitigation Measures for Intersection and Roadway Impacts

TR MM#2: Modify Signal Phasing. Modify traffic signal phasing sequence to improve operations at a signalized intersection, in consultation with the appropriate jurisdiction to ensure the peak hour re-timing of the signal.

TR MM#3: Add Signal to Intersection to Improve LOS/Operation. Add traffic signals to affected non-signalized intersections surrounding the proposed HST station locations to improve LOS and intersection operation.

TR MM#4: Restripe Intersections. Restripe specific intersections surrounding the proposed HST station locations to improve LOS and intersection operation.

TR MM#5: Revise Signal Cycle Length. Revise signal cycle length at specific intersections surrounding the proposed HST station locations to improve LOS and intersection operation in consultation with the local appropriate jurisdiction.

TR MM#6: Widen Approaches to Intersections. Widen approaches to allow for additional turning or through-lanes to improve LOS and intersection operation.

TR MM#7: Add Exclusive Turn Lanes to Intersections. Add exclusive turn lanes at specific intersections to improve LOS and intersection operation.

TR MM#8: Add New Lanes to Roadway. Add additional roadway lanes to improve LOS and intersection operation.

Impacts Resulting from Implementation of Mitigation Measures: Mitigation Measures TR MM#2 to MM#5 generally would involve little to no physical disturbance that could cause any impacts. Modifying signal phasing and revising signal cycle length is done electronically to the existing signals. Restriping intersections generally involves just painting existing pavement. Adding signals to existing intersections generally would be done within the existing pavement or disturbed graded right-of-way. For these reasons, impacts from these mitigation measures would be less than significant under CEQA, and the impacts would be of negligible intensity under NEPA.

Impacts may occur as a result of implementing Mitigation Measures TR MM#6 through TR MM#8, the location of these Mitigation Measures are depicted in the *Fresno to Bakersfield Section: Transportation Analysis Technical Report* (Authority and FRA 2014). The development footprint mitigation measures to be implemented were overlaid over the existing inventory of agricultural, biological, geological, historical and cultural, recreation, and public utility resources, and over the socioeconomic and hazardous material data used for analysis in this Fresno to Bakersfield Section EIR/EIS to ensure that the potential impacts have been adequately analyzed. No significant impacts were determined to occur as a result of the construction and implementation of the mitigation measures described below. Road widening may result in the loss of existing on-street parking and Class II bikeways; however, the HST Authority will coordinate with local jurisdictions to ensure minimum parking requirements are met and non-vehicle transportation routes are maintained.

Mitigation measures TR MM#2 through TR MM#8 would be used to address station area intersection and road segments impacts, as discussed below.

Mitigation Measures for Intersection and Roadway Impacts around HST Station Areas

Fresno Station Area

The following tables include mitigation for impacted intersections and roadways in the Fresno Station area. These mitigation measures are for impacts under Existing Plus Project (Table 3.2-39) and Future (2035) Plus Project conditions (Table 3.2-40).

Table 3.2-39
Existing Plus Project Mitigation Measures – Fresno Station Area

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Intersections[a]		
4 – Van Ness Ave/SR 41 SB Ramp	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
6 – SR 99 NB Ramps/Ventura Ave	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
33-0 – Divisadero St/SR 41 NB Ramps/Tulare St	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the westbound approach to provide one exclusive left-turn lane, two through-lanes, and one exclusive right-turn lane at the intersection.
37 – SR 99 SB Ramps/Fresno St	**TR MM#5:** Revise Signal Cycle Length.	Re-time the existing signal in PM.
54 – Van Ness Ave/Stanislaus St	**TR MM#5:** Revise Signal Cycle Length.	Re-time the existing signal in PM.
63 – H St/Divisadero St	**TR MM#5:** Revise Signal Cycle Length.	Re-time the existing signal in AM.
80 – North Blackstone Ave/SR 180 WB Ramps	**TR MM#4:** Restripe Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Restripe the eastbound approach to provide one exclusive left-turn lane and one shared left-turn/right-turn/ through-lane at the intersection.
86 – H St/Ventura St	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
114 – Tuolumne St/L St	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
117 – Stanislaus St/N St	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
124 – West Olive Ave/SR 99 SB Ramps	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
129 – West Belmont Ave/SR 99 SB Ramps	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection with a protected westbound left-turn phase.
130 – West Belmont Ave/SR 99 NB Ramps	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.

Table 3.2-39
Existing Plus Project Mitigation Measures – Fresno Station Area

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Roadways[b]		
No roadway segments are impacted under this scenario.		

[a] Impacts provided in Table 3.2-16.
[b] Impacts provided in Table 3.2-14.
Acronyms and Abbreviations:
Ave = Avenue
LOS = level of service
NB = Northbound
SR = State Route
SB = Southbound
ST = Street
WB = Westbound

Table 3.2-40 presents the specific mitigation measures recommended for affected locations surrounding the Downtown Fresno Stations under Future (2035) Plus Project conditions. These mitigation measures are applicable to all project alternatives.

Table 3.2-40
Future (2035) Plus Project Mitigation Measures – Fresno Station Area

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Intersections[a]		
4 – Van Ness Ave/SR 41 SB Ramp	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
6 – SR 99 NB Ramps/Ventura Ave	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
7 – E St/Ventura Ave	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install traffic signal at the intersection.
25 – H St/Tulare St	**TR MM#2:** Modify Signal Phasing;	Re-time the existing signal in PM.
30 – U St/Tulare St	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Install southbound left-turn lane. Restripe southbound shared through-/left lane to through-lane.
37 – SR 99 Southbound Ramps/ Fresno St	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the eastbound approach to provide two exclusive through-lanes and one exclusive right-turn lane at the intersection.
38 – SR 99 NB Ramps/Fresno St	**TR MM#4:** Restripe Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Restripe westbound right-turn lane to a shared through-/right-turn lane.
42 – Van Ness Ave/Fresno St	**TR MM#4:** Restripe Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Install southbound right lane, restripe shared southbound lane to southbound through-lane.

Table 3.2-40
Future (2035) Plus Project Mitigation Measures – Fresno Station Area

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
46 – Fresno St/Divisadero St	**TR MM#4:** Restripe Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Install westbound left-turn lane and restripe shared through-/left lane to through-lane.
52 – E Street/Stanislaus St	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the eastbound approach to provide one exclusive left-turn lane, one exclusive through-lane, and one exclusive right-turn lane at the intersection.
53 – Broadway St/Stanislaus St	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the eastbound approach to provide one exclusive left-turn lane, one exclusive through-lane, and one exclusive right-turn lane at the intersection.
54 – Van Ness Ave/Stanislaus St	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the westbound approach to provide one exclusive left-turn lane, one exclusive through-lane, and one shared through-/right-turn lane at the intersection.
55 – N. Blackstone Ave/Stanislaus St	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the westbound approach to provide one exclusive left-turn lane, one exclusive through-lane, and one shared through-/right-turn lane at the intersection.
74 – N. Blackstone Ave/E. Belmont Ave	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Install eastbound right-turn lane. Restripe shared southbound through-/left-turn to left-turn lane. Restripe shared southbound through-right lane to through-lane. Install southbound right-turn lane.
80 – N. Blackstone Ave/SR 180 Westbound Ramps	**TR MM#4:** Restripe Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Restripe shared eastbound lane to eastbound through- and eastbound right-turn lane.
84 – G St/Mono S	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
86 – H St/Ventura St	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
90 – Broadway St/Santa Clara St	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
92 – S. Van Ness Ave/E. California Ave	**TR MM#3:** Add Signal to Intersection to Improve LOS/ Operation. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Install a traffic signal at the intersection; also provide exclusive left-turn lanes in both northbound and southbound directions, and change phasing on the northbound left and southbound left to protected plus permissive.
96 – Golden State Blvd/E. Church Ave	**TR MM#2:** Modify signal phasing. **TR MM#6:** Add Exclusive Turn Lanes to Intersections.	Provide an exclusive right-turn lane in the northbound direction, and change signal phasing on all approaches to provide a protected plus permissive left-turn phase.

Table 3.2-40
Future (2035) Plus Project Mitigation Measures – Fresno Station Area

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
101 – S. East Ave/Golden State Blvd	**TR MM#2:** Modify signal phasing.	Increase cycle length in the PM Peak Hour, only.
102 – Golden State Blvd/E. Jensen Ave	**TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Provide an exclusive right-turn lane for both northbound and southbound approaches.
105 – Stanislaus St/99 SB Off	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the southbound approach to provide one shared left-turn/through-lane and one exclusive right-turn lane at the intersection.
106 – Stanislaus St/99 NB On	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the southbound approach to provide one shared left-turn/through-lane and one exclusive right-turn lane at the intersection.
111 – Stanislaus St/ Fulton St	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the southbound approach to provide one shared left-turn/through-lane and one exclusive right-turn lane at the intersection.
115 – Stanislaus St/M St	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the southbound approach to provide one shared left-turn/through-lane, and one exclusive right-turn lane at the intersection.
117 – Stanislaus St/N St	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the westbound approach to provide one exclusive left-turn lane, one exclusive through-lane, and one shared through-/right-turn lane at the intersection.
124 – West Olive Ave/SR 99 SB Ramps	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen southbound approach to provide an exclusive left-turn lane.
125 – West Olive Ave/SR 99 NB Ramps	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen northbound approach to provide an exclusive left-turn lane.
129 – West Belmont Ave/SR 99 Southbound Ramps	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install traffic signal at the intersection.
130 – West Belmont Ave/SR 99 NB Ramps	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install traffic signal at the intersection.
Roadway Segments[b]		
7 – Stanislaus St, between Van Ness Ave and O St	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.
14 – Fresno Street, between P Street and M Street	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.
21 – Tulare St, between R St and U St	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.

Table 3.2-40
Future (2035) Plus Project Mitigation Measures – Fresno Station Area

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
56 – Stanislaus St, , between M St and N St	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.
58 – Van Ness Ave, south of Tuolumne Street	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.

[a] Impacts provided in Table 3.2-17.
[b] Impacts provided in Table 3.2-15.
Acronyms and Abbreviations:
Ave = Avenue
LOS = level of service
NB = Northbound
SR = State Route
SB = Southbound
ST = Street
WB = Westbound

Kings/Tulare Regional Station–East Alternative Area

Table 3.2-41 includes mitigation for affected intersections and roadways in the Kings/Tulare Regional Station–East area. These mitigation measures are for impacts under Existing Plus Project conditions. Table 3.2-42 lists mitigation measures for the Kings/Tulare Regional Station area for Future (2035) Plus Project conditions.

Table 3.2-41
Existing Plus Project Mitigation Measures – Kings/Tulare Regional Station–East Alternative

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Intersections[a]		
4 – Seventh Ave/SR 198	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
6 – Sixth Ave/SR 198	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
7 – Second Ave/SR 198	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
8 – SR 43/Lacey Blvd	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.

Table 3.2-41
Existing Plus Project Mitigation Measures – Kings/Tulare Regional Station–East Alternative

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Roadway Segments[b]		
6 – SR 198 between SR 198 Ramps and 7th Ave	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.
7 – SR 198 between 7th Ave and 6th Ave	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.
8 – SR 198 between 6th Ave and 7th Ave	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.
9 – SR 198 between 2nd Ave and Road 48	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.
10 – SR 198 between Road 48 and Road 56/17th Ave	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.
11 – SR 198 between Road 56/17th Avenue and County Road 60	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.
12 – SR 198 between County Road 60 and County Road J25/Road 68	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.

[a] Impacts provided in Table 3.2-19.

[b] Impacts provided in Table 3.2-18.

Acronyms and Abbreviations:
Ave = Avenue
Blvd = Boulevard
LOS = level of service
SR = State Route

Table 3.2-42
Future (2035) Plus Project Mitigation Measures – Kings/Tulare Regional Station–East Alternative

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Intersections[a]		
1 – Ninth Ave/SR 198	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
3 – SR 43/SR 198 Eastbound Ramps	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
4 – Seventh St/SR 198	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.

Table 3.2-42
Future (2035) Plus Project Mitigation Measures – Kings/Tulare Regional Station–East Alternative

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
6 – Sixth St/SR 198	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
7 – Second Ave/SR 198	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
8 – SR 43/Lacey Blvd	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
Roadway Segments		
No roadway segments are impacted under this scenario**.**		

[a] Impacts provided in Table 3.2-25.

Acronyms and Abbreviations:
Ave = Avenue
Blvd = Boulevard
LOS = level of service
SR = State Route

Kings/Tulare Regional Station–West Alternative Area

Table 3.2-43 includes mitigation for affected intersections and roadways in the Kings/Tulare Regional Station–West area. These mitigation measures are for impacts under Existing Plus Project conditions. Table 3.2-44 lists mitigation measures for the Kings/Tulare Regional Station area for Future (2035) Plus Project conditions.

Table 3.2-43
Existing Plus Project Mitigation Measures – Kings/Tulare Regional Station–West Alternative

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Intersections[a]		
1 – 14th Ave/Hanford-Armona Rd	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
4 – Hanford-Armona Rd/13th Ave/SR 198 WB On-Ramp	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
5 – 13th Avenue/ Lacey Boulevard	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
9 – 13th Ave/SR 198 EB Ramps	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
18 – S. Redington St/W. 4th St	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.

Table 3.2-43
Existing Plus Project Mitigation Measures – Kings/Tulare Regional Station–West Alternative

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
23 – SR 43/E. Lacey Blvd	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
Roadway Segments		
No roadway segments are impacted under this scenario.		

[a] Impacts provided in Table 3.2-21.
Acronyms and Abbreviations:
Ave = Avenue
Blvd = Boulevard
EB = Eastbound
LOS = level of service
SR = State Route
WB = Westbound

Table 3.2-44
Future (2035) Plus Project Mitigation Measures – Kings/Tulare Regional Station–West Alternative

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Intersections[a]		
1 – 14th Ave/ Hanford-Armona Rd	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
4 – Hanford-Armona Rd/13th Ave/SR 198 WB On-Ramp	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
5 – 13th Avenue/ Lacey Blvd	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
6 – 13th Ave/Front St	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
9 – 13th Ave/SR 198 EB Ramps	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
18 – S. Redington St/W. 4th St	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
23 – SR 43/E Lacey Blvd	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
Roadway Segments		
No roadway segments are impacted under this scenario.		

[a] Impacts provided in Table 3.2-22.

Acronyms and Abbreviations:
Ave = Avenue
Blvd = Boulevard

Table 3.2-44
Future (2035) Plus Project Mitigation Measures – Kings/Tulare Regional Station–West Alternative

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
EB = Eastbound LOS = level of service Rd = Road SR = State Route WB = Westbound		

Bakersfield Station Area

Table 3.2-45 presents mitigation measures for impacted intersections for the three Bakersfield station site alternatives. The mitigation measures are the same for all alternative station locations with the exception of mitigation measures for intersection #29, which applies only to the South and Hybrid Alternatives. No mitigation for roadways is required. Table 3.2-46 lists mitigation measures for Future (2035) Plus Project conditions.

Table 3.2-45
Existing Plus Project Mitigation Measures – Bakersfield Stations*

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Intersections[a]		
1 – S. Union Ave/EB SR 58 Ramps	**TR MM#5:** Revise Signal Cycle Length.	Re-time the existing signal in AM.
15 – SR 99 NB Ramps/ California Ave	**TR MM#5:** Revise Signal Cycle Length.	Re-time the existing signal in AM.
29 – Hayden Ct/Union Ave **(South Alternative only)**	**TR MM#5:** Revise Signal Cycle Length.	Re-time the existing signal in AM.
29 – Hayden Ct/Union Ave **(Hybrid Alternative only)**	**TR MM#5:** Revise Signal Cycle Length.	Add an exclusive right turn lane on the eastbound approach to provide one exclusive left-turn lane, one shared through-/right-turn lane, and one exclusive right-turn lane at the intersection.
41 – Union Ave/Golden State Ave/21st St	**TR MM#5:** Revise Signal Cycle Length.	Re-time the existing signal in PM.
71 – Truxtun Ave/Tulare St	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
Roadway Segments[b]		
No roadway segments are impacted under this scenario.		
*Measures apply to the Bakersfield Station–North, Bakersfield Station–South, and Bakersfield Station–Hybrid Alternative sites except for #29, as noted. [a] Impacts provided in Tables 3.2-27 and 3.2-29. [b] Impacts provided in Tables 3.2-23 and 3.2-25. Acronyms and Abbreviations: Ave = Avenue		

Table 3.2-45
Existing Plus Project Mitigation Measures – Bakersfield Stations*

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Ct = Court EB = Eastbound LOS = level of service NB = Northbound SR = State Route St = Street		

Table 3.2-46
Future (2035) Plus Project Mitigation Measures – Bakersfield Stations*

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Intersections[a]		
6 – Union Ave/E. Brundage Lane	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the westbound approach to provide an additional exclusive left-turn lane at the intersection.
15 – SR 99 NB Ramps/ California Ave	**TR MM#4:** Restripe Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Restripe the northbound approach to provide one exclusive left-turn lane, one shared left-turn/through-/right-turn lane, and one exclusive right-turn lane at the intersection.
16 – Oak St/California Ave	**TR MM#5:** Revise Signal Cycle Length.	Modify the existing traffic signal to provide protected left-turn phases for the northbound and southbound approaches at the intersection.
23 – Union Ave/California Ave **(North and Hybrid Alternatives only)**	**TR MM#5:** Revise Signal Cycle Length.	Re-time the signal in AM and PM
41 – Union Ave/Golden State Ave/21st St	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the northbound approach to provide an additional through-lane to go on Union Ave.
42 – F St/23rd St	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the eastbound approach to provide one exclusive left turn lane, two exclusive through lanes, and one shared through-/right-turn lane at the intersection.

Table 3.2-46
Future (2035) Plus Project Mitigation Measures – Bakersfield Stations*

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
51 – Q St/Golden State Ave	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the eastbound approach to provide an additional exclusive left-turn lane at the intersection.
56 – M St/28 St/Golden State Ave	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the northbound approach (M St) to provide an additional exclusive left-turn lane (going to Golden State Ave and 21st St) at the intersection.
60 – F St/Golden State Ave	**TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Widen the eastbound approach (F St) to provide an additional exclusive left-turn lane at the intersection.
71 – Truxtun Ave/Tulare St	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install traffic signal.
Roadway Segments[b]		
No roadway segments are impacted under this scenario.		

*Measures apply to the Bakersfield Station–North, Bakersfield Station–South, and Bakersfield Station–Hybrid Alternative Station locations except for #23, as noted.
[a] Impacts provided in Table 3.2-28 and 3.2-30.
[b] Impacts provided in Table 3.2-24 and 3.2-26.
Acronyms and Abbreviations:
Ave = Avenue
LOS = level of service
NB = Northbound
SR = State Route
St = Street

3.2.7.3 Mitigation Measures for Intersection and Roadway Impacts Around Heavy Maintenance Facility Sites

Mitigation measures identified to address the roadway impacts around the HMF site alternatives are listed in Tables 3.2-47 through 3.2-52 for each site.

Table 3.2-47
Existing Plus Project Mitigation Measures – Fresno Heavy Maintenance Facility Site

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Intersections[a]		
2 - SR 99 SB Off-Ramp/E Central Ave.	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
11 - Clovis Avenue/SR 99 Southbound On-Ramp	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
Roadway Segments[b]		
No roadway segments are impacted under this scenario.		

[a] Impacts provided in Table 3.2-33.
[b] Impacts provided in Table 3.2-31.
Acronyms and Abbreviations:
LOS = level of service
SR = State Route

Table 3.2-48
Future (2035) Plus Project Mitigation Measures – Fresno Heavy Maintenance Facility Site

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Intersections[a]		
2 – SR 99 SB Off-Ramp/E. Central Ave	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
6 – SR 99 SB Off-Ramp/E. American Ave	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
11 – S. Clovis Ave/SR 99 SB On-Ramp	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
Roadway Segments[b]		
No roadway segments are impacted under this scenario.		

[a] Impacts provided in Table 3.2-34.
[b] Impacts provided in Table 3.2-32.
Acronyms and Abbreviations:
Ave = Avenue
LOS = level of service
SB = Southbound
SR = State Route

Table 3.2-49
Existing Plus Project Mitigation Measures – Hanford Heavy Maintenance Facility Site

Location Affected	Mitigation Measure	Specific Actions Recommended
Intersections[a]		
No intersections are impacted under this scenario.		
Roadway Segments[b]		
7 – SR 198 between 7th Ave and 6th Ave	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.
8 – SR 198 between 6th Ave and 2nd Ave	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.
9 – SR 198 between 2nd Ave and Road 48	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.

[a] Impacts provided in Table 3.2-33.

[b] Impacts provided in Table 3.2-31.

Acronyms and Abbreviations:

LOS = level of service

SR = State Route

Table 3.2-50
Future (2035) Plus Project Mitigation Measures – Hanford Heavy Maintenance Facility Site

Location Affected	Mitigation Measure	Specific Actions Recommended
Intersections[a]		
1 – SR 43/Houston Ave	**TR MM#5:** Revise Signal Cycle Length.	Change eastbound and westbound phasing from split to permissive.
3 – SR 43/Idaho Ave	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
Roadway Segments[b]		
1 – On SR 43 between SR 198 and Houston Ave	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.

[a] Impacts provided in Table 3.2-34.

[b] Impacts provided in Table 3.2-32.

Acronyms and Abbreviations:
Ave = Avenue
SR = State Route

Table 3.2-51
Existing Plus Project and Future (2035) Plus Project Mitigation Measures - Wasco Heavy Maintenance Facility Site

Location Affected	Mitigation Measure	Specific Actions Recommended
Intersections[a]		
Existing Plus Project 1 – Wasco Ave/Paso Robles Hwy (SR 46)	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
Future (2035) Plus Project 1 – Wasco Ave/Paso Robles Hwy (SR 46)	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
Roadway Segments[b]		
No roadway segments are impacted under this scenario.		

[a] Impacts provided in Table 3.2-32 and Table 3.2-34.

[b] Impacts provided in Table 3.2-31 and Table 3.2-33.

Acronyms and Abbreviations:
Ave = Avenue
HWY = Highway
LOS = level of service
SR = State Route

Table 3.2-52
Future (2035) Plus Project Mitigation Measures - Shafter Heavy Maintenance Facility Site

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Intersections[a]		
1 – Santa Fe Way/Burbank St	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
Roadway Segments[b]		
1 – On Santa Fe Way between Burbank St and 7th Standard Rd	**TR MM#8:** Add New Lanes to Roadway.	Widen the roadway to provide one additional lane in each direction.

[a] Impacts provided in Table 3.2-34.

[b] Impacts provided in Table 3.2-32.

Acronyms and Abbreviations:
LOS = level of service
Rd = Road
SR = State Route
St = Street

3.2.7.4 Mitigation Measures for Intersection and Roadway Impacts Around The City of Corcoran

Mitigation measures identified to address the roadway and intersection impacts around the city of Corcoran are listed in Table 3.2-53.

Table 3.2-53
Future (2035) Plus Project Mitigation Measures – City of Corcoran

Location Affected	Mitigation Measure(s)	Specific Actions Recommended
Intersections[a]		
3 – Whitley Avenue/Pickerell Avenue	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal at the intersection.
Roadway Segmentsb		
No roadway segments are impacted under this scenario.		

[a] Impacts provided in Table 3.2-38.
[b] Impacts provided in Table 3.2-36.
LOS = level of service

The foregoing tables of intersection and segment impacts and mitigation present impacts and mitigation for both the Existing Plus Project and Future Plus Project baseline scenarios. As stated earlier, mitigation for both baseline scenarios is not required (mitigation for only one is required); the dual-baseline approach is just two different analytical ways of evaluating the same potential impact. It is substantially more likely that existing background traffic volumes (and background roadway changes due to other programmed traffic improvement projects) would change between today and 2020/2035 than it is that existing traffic conditions would remain perfectly unchanged over the next 10 to 25 years. Accordingly, mitigation for the Future Plus Project impact scenario would be more appropriate.

3.2.8 NEPA Impact Summary

This section summarizes effects identified in Section 3.2.5, Environmental Consequences, and evaluates whether they are substantial according to NEPA. Under NEPA, project effects are evaluated based on the criteria of context and intensity.

Many of the anticipated NEPA effects are similar to all the project alternatives because they would occur in association with the Fresno Stations, the Kings-Tulare Regional Station–East and –West, and the Bakersfield station alternatives, which are common elements to the project alternatives.

NEPA impacts with moderate intensity during construction are anticipated on circulation in the vicinity of the Fresno stations, the Kings/Tulare Regional Station–East and –West, and the Bakersfield Station areas and HMF sites. Construction effects resulting from the project would be temporary and would occur over multiple years. Construction activities would remain primarily within the project's permanent acquired right-of-way; however, work outside of the right-of-way may be necessary for construction access, equipment or materials staging, utility relocation, construction of overhead structures, and other requirements that may temporarily affect traffic. The Authority and FRA have considered avoidance and minimization measures consistent with

the Statewide and Bay Area to Central Valley Program EIR/EIS commitments. During project design and construction, the Authority and FRA would implement measures to reduce impacts on transportation. These measures are considered to be part of the project and are described in the preceding text. Depending on the specifics of the construction activities, other intersections could be affected. These construction effects are based on a worst-case assessment, however, and the impacts are expected to be short term and temporary. Moreover, these effects would not substantially increase hazards or incompatible uses or result in inadequate emergency access.

The HST project would also result in impacts with substantial intensity in the vicinity of the Fresno, Kings/Tulare Regional, and Bakersfield stations. Local roadways and intersections would be affected by project-related traffic, either from the addition of station-generated traffic and/or from the diverted traffic near proposed road closures. Project-related traffic would reduce acceptable levels of services for both roadway segments and intersections based on the threshold criteria identified in Section 3.2.3.4. After applying the mitigation measures discussed in the previous sections, the project impacts would be considered to have moderate intensity under NEPA. However, because these impacts would occur in the congested areas of the cities of Fresno and Bakersfield, which could extend the duration of peak periods of congestion, the effect on the local circulation would be considered significant under NEPA.

Additional impacts are anticipated in conjunction with the local road closures that are necessary as part of each project alternative in urban and rural areas. All of the road closures are expected to result in NEPA effects ranging from negligible to moderate intensity. In the rural areas, the roads proposed for closure have very low traffic volumes and necessary traffic diversions can be accomplished without causing effects with substantial intensity on travelers. Because these effects would occur in rural areas with low traffic volumes that are generally less than 500 vehicles per day (vpd), they would not be considered to have substantial intensity under NEPA. In the urban areas, the road closures are expected to result in NEPA impacts with moderate intensity. However, because these impacts would occur in the congested urban areas of the cities of Fresno and Bakersfield, which could extend the duration of peak periods of congestion, these project impacts are considered to be significant under NEPA.

Intersection impacts with substantial intensity have also been identified for each of the HMF sites. Because these impacts occur in rural locations with low traffic volumes and minimal peak congestion periods, the impacts would not be considered substantial under NEPA.

All HST alternatives would provide benefits to the regional transportation system by reducing vehicle trips on the freeways through the diversion of intercity trips from road trips to high-speed rail. This reduction in future vehicle trips would improve the future LOS of the regional roadway system (and reduce overall VMT) compared with the No Project Alternative. Compared with existing conditions, the HST alternatives would also divert trips from regional road facilities, thereby improving regional roadway LOS. Likewise, interstate commercial air trips would be diverted to HST trips. The overall reduction of vehicle and air trips and the improvement to regional roadway LOS would contribute to the beneficial effect of the project.

3.2.9 CEQA Significance Conclusions

Impacts, mitigation measures, and the level of significance after mitigation are summarized in Table 3.2-54. With the incorporation of mitigation, all impacts would be less than significant under CEQA.

Table 3.2-54
Summary of Potential Impacts on Transportation Resources

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure(s)[9]	CEQA Level of Significance after Mitigation
TR #12 Loss of Property Access as a Result of Road Closures (relative to the corresponding segment of the BNSF Alternative). • BNSF – 46 roads. • Hanford West Bypass 1 and Bypass 2 Alternatives – 8 roads (one more than BNSF) • Hanford West Bypass 1 and Bypass 2 Modified Alternatives – 8 roads (one more than BNSF) • Corcoran Elevated Alternative – 1 road. (one less than BNSF) • Corcoran Bypass Alternative - 7 roads. (five more than BNSF) • Allensworth Bypass Alternative – 4 roads. (no difference)	Significant	**TR MM#1:** Access Maintenance for Property Owners.	Less than Significant
TR #12 Loss of Property Access as a Result of Road Closures (relative to the corresponding segment of the BNSF Alternative). (continued) • Wasco-Shafter Bypass Alternative – 20 roads. (15 more than BNSF) • Bakersfield South Alternative – 3 roads. (2 less than BNSF) • Bakersfield Hybrid Alternative – 11 roads. (6 more than BNSF)	Significant	**TR MM#1:** Access Maintenance for Property Owners.	Less than Significant

[9] See sections 3.2.3.2 and 3.2.7 for a more detailed explanation of mitigation selection (dual baseline) and timing.

Table 3.2-54
Summary of Potential Impacts on Transportation Resources

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure(s)[9]	CEQA Level of Significance after Mitigation
TR #13 HST Station Area Existing Plus Project Roadway Impacts. Fresno – 0. Kings/Tulare Regional Station–East – 7. Kings/Tulare Regional Station–West – 0. Bakersfield – 0 (North and South), 0 (Hybrid).	Significant[10]	**TR MM#8:** Add New Lanes to Roadway.	Less than Significant
TR #13 HST Station Area Future (2035) Plus Project Roadway Impacts. Fresno – 5. Kings/Tulare Regional Station–East – 0. Kings/Tulare Regional Station–West – 0. Bakersfield – 0 (North and South), 0 (Hybrid).	Significant	**TR MM#8:** Add New Lanes to Roadway.	Less than Significant
TR #13 HST Station Area Existing Plus Project Intersection Impacts. Fresno – 13 intersections Kings/Tulare Regional Station–East – 4. Kings/Tulare Regional Station–West – 6. Bakersfield: North – 5, South – 5, and Hybrid – 5.	Significant	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Less than Significant

[10] The Existing Plus Project results presented in this summary table do not represent new impacts since the Revised DEIR/Supplemental DEIS. These impacts were reported in the main text of the Revised DEIR/Supplemental DEIS, but have been added here to carry forward the dual-baseline reporting approach that is employed throughout the chapter.

Table 3.2-54
Summary of Potential Impacts on Transportation Resources

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure(s)[9]	CEQA Level of Significance after Mitigation
TR #13 HST Station Area Future (2035) Plus Project Intersection Impacts. Fresno – 31 intersections. Kings/Tulare Regional Station–East – 6. Kings/Tulare Regional Station–West – 7. Bakersfield: North – 10, South – 9, and Hybrid – 10.	Significant	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation. **TR MM#4:** Restripe Intersections. **TR MM#5**: Revise Signal Cycle Length. **TR MM#6:** Widen Approaches to Intersections. **TR MM#7:** Add Exclusive Turn Lanes to Intersections.	Less than Significant
TR #14 HMF Site Future (2035) Plus Project Roadway Impacts. Hanford – 1. Shafter – 1.	Significant	**TR MM#8:** Add New Lanes to Roadway.	Less than Significant
TR #14 HMF Site Existing Plus Project Intersection Impacts. Fresno – 2. Wasco – 1.	Significant	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Less than Significant
TR #14 HMF Site Future (2035) Plus Project Intersection Impacts. Fresno – 3. Hanford – 2. Wasco – 1. Shafter – 1.	Significant	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation. **TR MM#5**: Revise Signal Cycle Length.	Less than Significant
TR #15 City of Corcoran Road Network Impacts.	Significant	**TR MM#3:** Add Signal to Intersection to Improve LOS/Operation.	Less than Significant

Acronyms and Abbreviations:
CEQA = California Environmental Quality Act
HMF = heavy maintenance facility
HST = high-speed train
LOS = level of service
MM = Mitigation Measure

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