CALIFORNIA HIGH-SPEED TRAIN
Project Report

Fresno County – SR 99
Olive Avenue – Ashlan Avenue – Herndon Avenue

March 2013

CALIFORNIA
High-Speed Rail Authority

U.S. Department of Transportation
Federal Railroad Administration

Caltrans and California High-Speed Rail Authority
PROJECT REPORT - March 2013

ON SR 99, IN FRESNO COUNTY
FROM OLIVE AVENUE TO ASHLAN AVENUE AND AT HERNDON AVENUE

06 - Fre - 99, 23.5/26.6, 30.8/31.3

This Project Report has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

REGISTERED CIVIL ENGINEER — *DATE* 3/15/2013

REGISTERED PROFESSIONAL ENGINEER
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I have reviewed the right of way information contained in this Project Report and the R/W Data Sheet attached hereto, and find the data to be complete, current, and accurate:

Don Grebe (Acting)
CHIEF, CENTRAL REGION – RIGHT OF WAY

APPROVAL RECOMMENDED:

Garth Fernandez
PROJECT MANAGER

APPROVED:

Sharri Bender-Ehlert
DISTRICT DIRECTOR

PROJECT REPORT

06-FRE-99-PM 23.5/26.6 & PM 30.8/31.3: SR 99 Realignment from Olive Avenue to Ashlan Avenue, and Ramp Modifications at Herndon Avenue in Fresno County

1. INTRODUCTION

The California High-Speed Rail Authority (Authority), a state governing board formed in 1996, is responsible for planning, designing, constructing, and operating the California High-Speed Train (HST). The proposed California HST System will connect the major population centers of Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego. The Merced to Fresno HST Section is a critical Phase 1 link connecting the Bay Area HST Section to the Fresno to Bakersfield, Bakersfield to Palmdale, and Palmdale to Los Angeles HST sections. Several project alternatives were developed and considered for the Merced-Fresno section.

Through project definition, scoping, alternative analysis, and EIR/EIS evaluations, the preferred "Hybrid Alternative" was selected for the project. On December 13, 2011, the Authority Board agreed with the staff recommendation to carry forward the "Hybrid Alternative" route as the preferred alignment for the Merced to Fresno section.

Between San Joaquin River and the Fresno HST Station, the preferred HST alignment would be mostly in parallel and adjacent to the Union Pacific Railroad (UPRR) tracks on the west side. Immediately south of the river, the profile of HST alignment would be elevated and the HST would be supported by an elevated viaduct structure. After crossing over UPRR tracks and Herndon Avenue, the profile of HST would descend and eventually become at-grade near the future planned Veterans Boulevard (a City of Fresno-sponsored project). Then the profile of HST would continue to be at-grade until Roeding Park, where the profile would lower to below grade and enter a "trench" section.

This project is needed to create adequate space for the proposed HST facilities in between the UPRR and Caltrans right of way (see Attachment 1 for the project location). The project proposes to realign the section of SR 99 from Olive Avenue to Ashlan Avenue to the west, and similarly realign the on-ramp to northbound (NB) SR 99 from Herndon Avenue (see Attachment 2 for the project vicinity). Associated with the SR 99 realignment, the existing Clinton Avenue Interchange including the Clinton Avenue overcrossing is reconstructed. To meet the HST horizontal and vertical clearance requirements, the two existing rail grade separations over UPRR tracks, Clinton Avenue and Ashlan Avenues, will be replaced. Various local streets on the west side of SR 99 are modified or re-routed to accommodate the proposed modifications to the State Highway System (SHS).

A HST alternative alignment, Design Option 8 - SR 99 Bypass alternative was considered developed in response to comments by Caltrans during HST coordination efforts. An HST alignment would run approximately 400 to 450 feet west of UPRR right-of-way (or up to 300 feet west of SR 99) to avoid the relocation of SR99. This option was removed from further consideration because of the inability to minimize or eliminate the relocations to SR 99 and the increased impacts on the community by the new HST corridor.

Two alternatives, L-1 (tight diamond) and modified L-8 (one-quadrant cloverleaf), have been considered for the proposed interchange configuration at Clinton Avenue which are summarized below:

- L-1 (tight diamond) alternative: This alternative provides ramp connections at Clinton Avenue via a diagonal ramp at each of the four quadrants in the interchange. As part of this alternative, the existing SB ramps at Dakota Avenue, Shields Avenue and Princeton Avenue are proposed to be eliminated to meet Caltrans Highway Design Manual (HDM) interchange spacing standards. The preliminary project capital cost estimate is 190 million.

- Modified L-8 (one-quadrant cloverleaf) alternative: This alternative is identical to the L-1 alternative, with the exception that "hook" ramps are provided in the southwestern quadrant of the interchange to serve the movements in the SB direction, and "hook" ramps are provided at Shields Avenue in the SB direction. The SB ramps at Dakota Avenue and Princeton Avenue are proposed to be eliminated. This alternative was considered and dismissed due to less than desirable traffic operations and higher project right of way impacts.

Funding for the HST system will come from a mix of federal, state, and private sources and will benefit from innovative program delivery models that allow the private sector to design, build, and operate the system. Delivery approaches partially rely on the private sector to perform the final design and to provide operations, ultimately resulting in a concession to operate the full system and private capital to support construction of future phases.

The agencies are currently negotiating an interagency agreement to have Caltrans design and construct the SR 99 realignment project. The Herndon ramps will be included in the Design-Build contract.

2. RECOMMENDATION

It is recommended that the Project Report be approved.

3. BACKGROUND

3.1 Project History

3.1.1 Environmental

Various levels of planning and environmental review have been accomplished to date, including a statewide program EIR/EIS completed in 2005 and 2008 (Bay Area to Central Valley) in conformance with NEPA and CEQA requirements. The Authority and FRA initiated the project-level preliminary engineering and environmental review for the Central Valley subsection, including those sections between Merced and Fresno. The draft EIR/EIS for the Merced to Fresno Section was circulated for public review in August 2011 and the final documents were circulated in April 2012. On May 3, 2012, the CHSRA Board certified the Final EIR document.

3.1.2 Legislation

In November 2008, California voters approved Proposition 1A, which provided $9.95 billion in bond funding to support the planning and preliminary engineering for the HST system. In February 2010, the federal government awarded the Authority $2.25 billion in American Recovery and Reinvestment Act (ARRA) funding. The ARRA funding will provide for the completion of environmental reviews, engineering documents, ROW purchases, and construction of tracks, signaling systems, stations, and other associated roadway and freeway work.

3.1.3 Planning

Because of the number of anticipated California HST Project encroachments on Caltrans facilities, it was decided that a system-wide plan of interaction and coordination with Caltrans should be developed and documented. In November 2009, the Authority entered into a *Master Agreement for High-Speed Train System Project Development within Caltrans Right-of-Way* (Master Agreement) with Caltrans (Authority and FRA 2009).

The Authority and Caltrans agreements include guidelines to develop Project Reports where modifications and improvements by High-Speed Train project affect Caltrans facilities. This report is prepared to provide information for modifications of SR99 facilities, in North Fresno, from W Olive Avenue to San Joaquin River.

3.2 Community Interaction

Pursuant to the requirements of NEPA and CEQA, the Authority and FRA, as lead agencies, conducted a public and agency involvement program as part of the environmental review process. This chapter describes the public and agency involvement efforts conducted in the preparation of the Project EIR/EIS. The public and agency involvement program includes the following efforts:

- Public involvement and outreach - informational materials including fact sheets; informational and scoping meetings, including town hall meetings, public and agency scoping meetings, meetings with individuals and groups, presentations; and briefings.
- Agency involvement - agency scoping meetings, interagency working group, meetings with agency representatives, and other agency consultation.
- Notification and circulation of the Project EIR/EIS.

The material includes information about HSTs, the proposed HST route, the Authority's updated Final Business Plan, newsletters, press releases, board of directors meetings, recent developments, and status of the environmental review process, Authority contact information, and related links. Authority Board of Directors meetings are open to the public, and one of the first items on the meeting agenda is to provide an opportunity for public comment on any public agenda item.

On February 24, 2009, a Notice of Preparation (NOP) was distributed to the State Clearinghouse; elected officials; local, regional, and state agencies; and the interested public. A Notice of Intent (NOI) was published in the Federal Register on March 16, 2009, notifying the public of FRA's intention to prepare an EIS for the Merced to Bakersfield section of the HST System (74 FR 11172, March 16, 2009). The Authority and FRA subsequently determined that the environmental impacts of the HST System from Merced to Bakersfield would be more appropriately assessed in two separate EIR/EIS documents, one from Merced to Fresno and another from Fresno to Bakersfield. A Notice of Preparation (SCH Number 2009091125) and Notice of Intent (74 FR 50868, October 1, 2009) for the Project EIR/EIS, amending the environmental process were issued on September 29, 2009, and October 1, 2009, respectively.

3.2.1 Environmental Resource Agency Meetings and Consultation

The Authority and FRA consulted with cooperating federal, state, and local agencies under NEPA and with trustee and responsible agencies under CEQA regarding specific resource areas associated with these agencies. To date, the Authority and FRA have held four statewide agency meetings. On June 13, 2007, and April 8, 2008, the Authority and FRA held statewide agency group meetings to discuss agency participation and coordination efforts for the project-level EIR/EIS documents for the HST Project. On July 29, 2009, the Authority and FRA held a statewide agency group meeting to provide an update on the project environmental review process, the status of project-level EIR/EIS reports, and project-level scoping comments from state and federal agencies. At this meeting, the Authority also requested agency review and comment on the EIR/EIS methodologies posted on the Authority web site. On December 13, 2010, the Authority held a statewide meeting to provide an update on the Central Valley sections of the HST System, including the Merced to Fresno Section.

3.3 Existing State Highway Facilities

SR 99 between Ashlan Avenue and Olive Avenue in Fresno is a north-south, six-lane highway adjacent to the western side of the UPRR railyard. There is full interchange access at Ashlan Avenue, Clinton Avenue and Olive Avenue. There is partial interchange access at the following locations:

- SB off-ramp at Dakota Avenue
- SB on- and off-ramps at Shields Avenue
- SB on- and off-ramps at Princeton Avenue
- SB on- and NB off-ramps at McKinley Avenue

The distances between the full and partial interchanges are as follows:

- SB SR 99:

- Ashlan Avenue to Dakota Avenue - 0.8 mile
- Dakota Avenue to Shields Avenue - 0.7 mile
- Shields Avenue to Princeton Avenue - 0.3 mile
- Princeton Avenue to Clinton Avenue - 0.3 mile
- Clinton Avenue to McKinley Avenue - 0.6 mile
- McKinley Avenue to Olive Avenue - 0.6 mile

- NB SR 99:
  - Olive Avenue to McKinley Avenue - 0.6 mile
  - McKinley Avenue to Clinton Avenue - 0.6 mile
  - Clinton Avenue to Ashlan Avenue - 2.1 miles

In the SB direction there is one auxiliary lane between the Motel Drive on-ramp and the Dakota Drive off-ramp. There are no other auxiliary lanes within the project limits.

To the North of Ashlan Ave, SR99 continues as a six-lane highway up to Herndon Ave, where it transitions to a 4-lane highway, and crossing over Fresno-Madera County line at San Joaquin River. Full interchange ramp access (NB and SB) are provided to and from Herndon Ave.

- SB off-ramp and NB on-Ramp access provided along N Golden State Blvd
- Direct NB off Ramp to Herndon Ave
- SB on-ramp through N Parkway Drive

Ashlan Avenue Interchange

The Ashlan Avenue interchange is a modified Type L-9 interchange with tight diamond on-ramps. The westbound (WB) Ashlan to SB SR 99 loop ramp movement is separated from the main interchange footprint. The interchange features are as follows:

- SR 99 - six-lane highway with 12-foot-wide lanes, 6- to 12-foot-wide inside shoulders, and 12-foot-wide outside shoulders.
- SB off-ramp to Ashlan Avenue - single-lane off-ramp with a two-lane ramp body.
- Eastbound (EB) Ashlan Avenue to SB SR 99 on-ramp - single-lane on-ramp
- WB Ashlan Avenue to SB SR 99 on-ramp - single-lane on-ramp, via Golden State Boulevard and Motel Drive.
- NB off-ramp to Ashlan Avenue - single-lane off-ramp with a two-lane ramp body.
- WB Ashlan to NB SR 99 on-ramp - single-lane on-ramp.
- EB Ashlan to NB SR 99 on-ramp - single lane loop on-ramp.
- Ashlan Avenue overcrossing is a four-span, 360-foot-long reinforced concrete box structure.

Ashlan Avenue is a five-lane arterial through the interchange with single-lane left-turn pockets at the intersections. The alignment is skewed approximately 45 degrees at the SR 99 crossing. The ramp intersections are four-leg signalized intersections with approximately 0.25-mile separation. N. Parkway Drive (western frontage road) is the southern leg of the SB ramp intersection. Golden State Boulevard is the north leg of the NB ramp intersection.

Clinton Avenue Interchange

The Clinton Avenue interchange is a modified Type L-8 interchange configuration for SB SR 99. The interchange is a modified tight diamond configuration for NB SR 99. The interchange configurations are modified to incorporate SB off-ramp and NB on-ramp access between SR 99 to the north and Motel Drive to the south. These ramps do not connect directly to or from SR 99. They connect between Motel Drive, to the south, and the Clinton Avenue interchange ramps. In addition, the position of the Motel Drive ramp connections provides traffic circulation between Clinton Avenue and Motel Drive via the ramp intersections. North Parkway Drive (west frontage road) extends through the interchange and intersects with the SB on- and off-ramps. This also provides access between Clinton Avenue and the frontage road. The interchange features include the following:

- SR 99 - six-lane highway with 12-foot-wide lanes, 6- to 12-foot-wide inside shoulders, and 12-foot-wide outside shoulders.
- SB off-ramp to Clinton Avenue - single-lane off-ramp connecting via Vassar Avenue (the ramp also continues as the SB slip-ramp to Motel Drive).
- SB on-ramp from Clinton Avenue - single-lane on-ramp connecting to SR 99 via Vassar Avenue and N. Parkway Drive.
- NB off-ramp to Clinton Avenue - single-lane off-ramp with a four-lane ramp body. The ramp is expanded to accommodate the slip-ramp between Motel Drive and Clinton Avenue.
- NB on-ramp from Clinton and Motel Drive - single-lane on-ramp. The slip-ramp from Motel Drive merges with the NB on-ramp prior to connecting with SR 99.
- The Clinton Avenue overcrossing - a five-span, 330 foot-long, reinforced concrete box structure.

Clinton Avenue is a five-lane arterial through the interchange with single-lane left-turn pockets at the intersections. There are two signalized ramp intersections with Clinton Avenue. (1) A T-intersection with Vassar Avenue serving as the SB ramp intersection (the SB SR 99 traffic access Clinton Avenue via Vassar Avenue) and (2) the four-leg NB ramp intersection. The intersections are approximately 0.2 mile apart. In addition, Vassar Avenue forms a five-leg intersection with the SB SR 99 off-ramp, Parkway Drive (west frontage road) and the SB slip-ramp to Motel Drive. This intersection is stop-controlled.

Golden State Boulevard/Motel Drive (Ramp Connections)

The Golden State Boulevard/Motel Drive partial interchange connections consist of two independent sets of slip ramps. The northern ramp connections are SB on- and NB off-ramps at Motel Drive in the vicinity of Ashlan Avenue interchange (the original Golden State Boulevard alignment). The southern connections are two branching local ramps incorporated into the Clinton Avenue interchange. These ramps maintain continuity to and from Golden State Boulevard via the SR 99 mainline.

Dakota Avenue, Shields Avenue, Princeton Avenue and McKinley Avenue Partial Interchanges
The Dakota, Shields and Princeton Avenue interchanges (Type L-6configurations) provide low-speed "button-hook" ramp connections between the highway and the parallel frontage road. In this case, only the SB directions are provided because of the close proximity of the UPRR adjacent to SR 99. These consist of the following:

- The SR 99 SB off-ramp to Dakota Avenue provides direct access to Dakota Avenue and N. Parkway Drive. This is an isolated ramp with no other interchange movements. The intersection is stop-controlled.
- The SR 99 SB off- and on-ramps to and from Shields Avenue provide direct access to and from Shields Avenue and N. Parkway Drive. There are no ramps in the NB direction. The intersection is stop-controlled.
- The SR 99 SB off- and on-ramps to and from Princeton Avenue provide direct access to and from Princeton Avenue and N. Parkway Drive. There are no ramps in the NB direction. The intersection is stop-controlled.

The McKinley Avenue interchange (Type L-1 configuration) provides tight diamond ramp connections; the SR99 SB on-ramp and the SR99 NB off-ramp from and to McKinley Avenue. The on ramp intersection is uncontrolled and the off ramp intersection is stop controlled. No other ramp access is provided.

Herndon Ave Ramps
The SR 99 interchange access to Herndon Avenue includes SB off-ramp, and NB on-ramp along N Golden State Blvd. As a result of the High Speed Rail alignment, as well as realignment of N Golden State Blvd., the SB off-ramp and NB on-ramps will be slightly shifted to the west.

4. NEED AND PURPOSE/HST PROJECT OBJECTIVES

4.1 Project Purpose and Objectives

The need and purpose of the State-Wide High-Speed Train Project, as well as those for the Merced-Fresno Section, specifically, are explained in the FEIR/EIS documents for the Merced-Fresno Section.

The following sections present excerpts for project Need and Purpose, from the FEIR/EIS documents.

4.1.1 Need (excerpt from CHSRP Draft EIR)

The need for an HST system exists statewide, with regional areas contributing to this need. The Merced to Fresno Section is an essential component of the statewide HST System. The capacity of California's intercity transportation system, including the central part of the San Joaquin Valley region, is insufficient to meet existing and future travel demands. The current and projected future system congestion will continue to result in deteriorating air quality, reduced reliability, and increased travel times. The current transportation system has not kept pace with the increase in population, economic activity, and tourism within the state, including that in the central part of the San Joaquin Valley region. The interstate highway system, commercial airports, and conventional passenger rail system serving the intercity travel market are operating at or near capacity and will require large public investments for maintenance and expansion to meet existing demand and future growth over the next 25 years and beyond. Moreover, the feasibility of expanding many major highways and key airports is uncertain; some needed expansions might be impractical or are constrained by physical, political, and other factors. The need for improvements to intercity travel in California, including intercity travel between the central part of the San Joaquin Valley, the Bay Area, Sacramento, and Southern California relates to the following issues:

- Future growth in demand for intercity travel, including the growth in demand within the central part of the San Joaquin Valley region.
- Capacity constraints that will result in increasing congestion and travel delays, including those in the central part of the San Joaquin Valley region.
- Unreliability of travel stemming from congestion and delays, weather conditions, accidents, and other factors that affect the quality of life and economic well-being of residents, businesses, and tourism in California, including the central part of the San Joaquin Valley region.
- Reduced mobility as a result of increasing demand on limited modal connections between major airports, transit systems, and passenger rail in the state, including the central part of the San Joaquin Valley region.
- Poor and deteriorating air quality and pressure on natural resources and agricultural lands as a result of expanded highways and airports and urban development pressures, including those within the central part of the San Joaquin Valley region.

This region contributes significantly to the statewide need for a new intercity transportation service that will connect it with the major population and economic centers and to other regions of the state. The major population, economic, and political centers are located on the coasts of Northern and Southern California and in the Sacramento Valley.

4.1.2 Purpose (excerpt from CHSRP Draft EIR)

The purpose of the proposed HST System is to provide a reliable mode of travel that links the state's major metropolitan areas and delivers predictable, consistent travel times. A further objective is to provide an interface with commercial airports, mass transit, and the highway network and relieve capacity constraints of the existing transportation system as increases in intercity travel demand in California occur, in a manner sensitive to and protective of California's unique natural resources.

This proposal is consistent with recent expressions of federal transportation policy, most notably the current Federal Transportation Act, MAP-21, Transportation Equity Act for the 21st Century (TEA-21) and its predecessor, the Intermodal Surface Transportation Efficiency Act (ISTEA). They encourage public transportation investment that increases national productivity and domestic and international competition while improving safety, social, and environmental conditions. Specifically, these policies encourage investments that offer benefits such as the following:

- Link major forms of transportation.
- Improve public transportation systems and services.
- Provide better access to seaports and airports.
- Enhance efficient operation of transportation facilities and service.

The Authority's statutory mandate is to plan, build, and operate an HST system coordinated with California's existing transportation network, particularly intercity rail and bus lines, commuter rail lines, urban rail lines, highways, and airports. The Authority has responded to this mandate by adopting the following objectives and policies for the proposed HST System:

- Provide intercity travel capacity to supplement critically overused interstate highways and commercial airports.
- Meet future intercity travel demand that will be unmet by present transportation systems and increase capacity for intercity mobility.
- Maximize intermodal transportation opportunities by locating stations to connect with local transit systems, airports, and highways.
- Improve the intercity travel experience for Californians by providing comfortable, safe, frequent, and reliable high-speed travel.
- Provide a sustainable reduction in travel time between major urban centers. Increase the efficiency of the intercity transportation system.
- Maximize the use of existing transportation corridors and rights-of-way, to the extent feasible.
- Develop a practical and economically viable transportation system that can be implemented in phases by 2020 and generate revenues in excess of operations and maintenance costs.
- Provide intercity travel in a manner sensitive to and protective of the region's natural and agricultural resources and reduce emissions and vehicle miles traveled for intercity trips.

The approximately 65-mile-long corridor between Merced and Fresno is an essential part of the statewide HST System. The Merced to Fresno Section is the location where the HST would intersect and connect with the Bay Area and Sacramento branches of the HST System; it would provide a potential location for the heavy maintenance facility (HMF) where the HSTs would be assembled and maintained as well as a test track for the trains; it would provide Merced and Fresno access to a new transportation mode and would contribute to increased mobility throughout California. Figure 1-1 shows how this section would connect the San Joaquin Valley to the rest of the statewide HST System via Merced County, Madera County, and the northern part of the City of Fresno.

4.1.3 Objectives of Highway Modifications

The objective of the highway modifications is to relocate the existing SR 99 mainline and any associated ramps laterally to create adequate space for the proposed HST facilities. The proposed modifications to the SHS would maintain the existing established traffic flows and circulation patterns to the greatest extent possible, or provide alternative circulation patterns that are acceptable to the owning agencies. As required by Caltrans, the proposed changes to the SHS would provide the same physical and operational characteristics as the existing highway.

To construct the proposed HST alignment at this location, SR 99 between Ashlan Avenue and Clinton Avenue would be moved approximately 80 to 100 feet to the west. The realigned SR 99 would have six mixed-flow through lanes and one auxiliary lane in each direction between Ashlan Avenue and Clinton Avenue.

The SB on- and off-ramps at Dakota Avenue, Shields Avenue, and Princeton Avenue have non-standard ramp spacing in accordance with Caltrans HDM, and therefore would need to be eliminated to meet standards. The SR 99 interchange at Clinton Avenue would be modified, and the Clinton Avenue structures over SR 99 and UPRR tracks would be replaced to accommodate the proposed HST facilities. The ramps at the Clinton Avenue interchange would be reconstructed to connect with the realigned SR 99 mainline, and similarly the NB off-ramp and SB on-ramp to and from Motel Drive/Golden State Boulevard (at the Ashlan Avenue interchange) would be reconstructed.

In addition, portions of the adjacent streets would be reconstructed to accommodate the freeway and interchange realignment. These include Parkway Drive, Dakota Avenue, Valentine Avenue, Vassar Avenue, Pleasant Avenue, Woodson Avenue, Motel Drive and Golden State Boulevard.

Also, as a result of the closure of the SB off-ramps at Dakota, Shields and Princeton Avenues, even after mitigating the project impact for the overall movements, the existing SB off-ramp through traffic movement at Ashlan Avenue will increase. Since LOS at this intersection is already at LOS F, during the PS&E phase, Caltrans will consider other improvements such as widening of the SB off-ramp terminal intersection with Ashlan Avenue for more through and left turn movements.

4.2 HST Regional and System Planning-Consistency with Caltrans and Local Plans

The California HST Project has been planned to accommodate the existing and future SHS facilities. In addition to the existing facilities, the following planned projects have been identified and included as part of the HST project planning efforts:

- On SR 99 from the Ashlan Avenue overcrossing to 0.2 mile north of the Grantland Avenue undercrossing, widen the four-lane freeway to six lanes, as described in the Fresno Council of Governments (COG) 2011 Regional Transportation Plan (RTP) (Caltrans, Project ID FRE071202; scheduled project completion 2012).
- A new Veterans Boulevard interchange at SR 99 and grade separation at UPRR/Golden State Boulevard is identified in the Fresno COG 2011 RTP (City of Fresno, Project ID FRE091302; scheduled project completion TBD).
- The ramps at the following interchanges will be metered to assure consistency with the Statewide Ramp Metering Development Plan dated 2011:
  - Olive Ave
  - McKinley Ave
  - Clinton Ave
  - Ashlan Ave
  - Herndon Ave

4.3 State Highway Traffic

4.3.1 Study Area and Periods

A traffic analysis was conducted to evaluate the proposed modifications to SR 99 from Ashlan Avenue to Olive Avenue. The study area included the freeway (refer to Figure 4-1) and local intersections (refer to Figure 4-2).

The study area included 17 intersections between Ashlan Avenue and Olive Avenue. Because the proposed modifications will eliminate several freeway ramps in the study area, local traffic will need to be re-routed to access and leave SR 99. The study area intersections were selected based on anticipated re-routing patterns. The study area also included NB and SB segments of SR 99 from Shaw Avenue to McKinley Avenue. The freeway segments were selected to determine the impacts caused by the mainline and ramp modifications.

Future year (2035) no-build and build conditions were analyzed. The 2035 a.m. and p.m. peak-hour traffic volumes were analyzed for intersection and freeway segment analyses. The build conditions reflect the proposed geometry, which originally included two different interchange configurations being considered for the SR 99/Clinton Avenue interchange. The analysis is reported for the L-1 (tight diamond) alternative (the modified L-8 configuration was determined to not me a viable alternative from a traffic operations standpoint).

4.3.2 Current Traffic

Caltrans provided existing traffic counts for the mainline, ramps, and local street intersections. Existing data were collected for the study intersections from the following sources:

- Caltrans intersection counts in May 2010.
- West Area Transportation Study (Fehr & Peers, Inc. 2010).

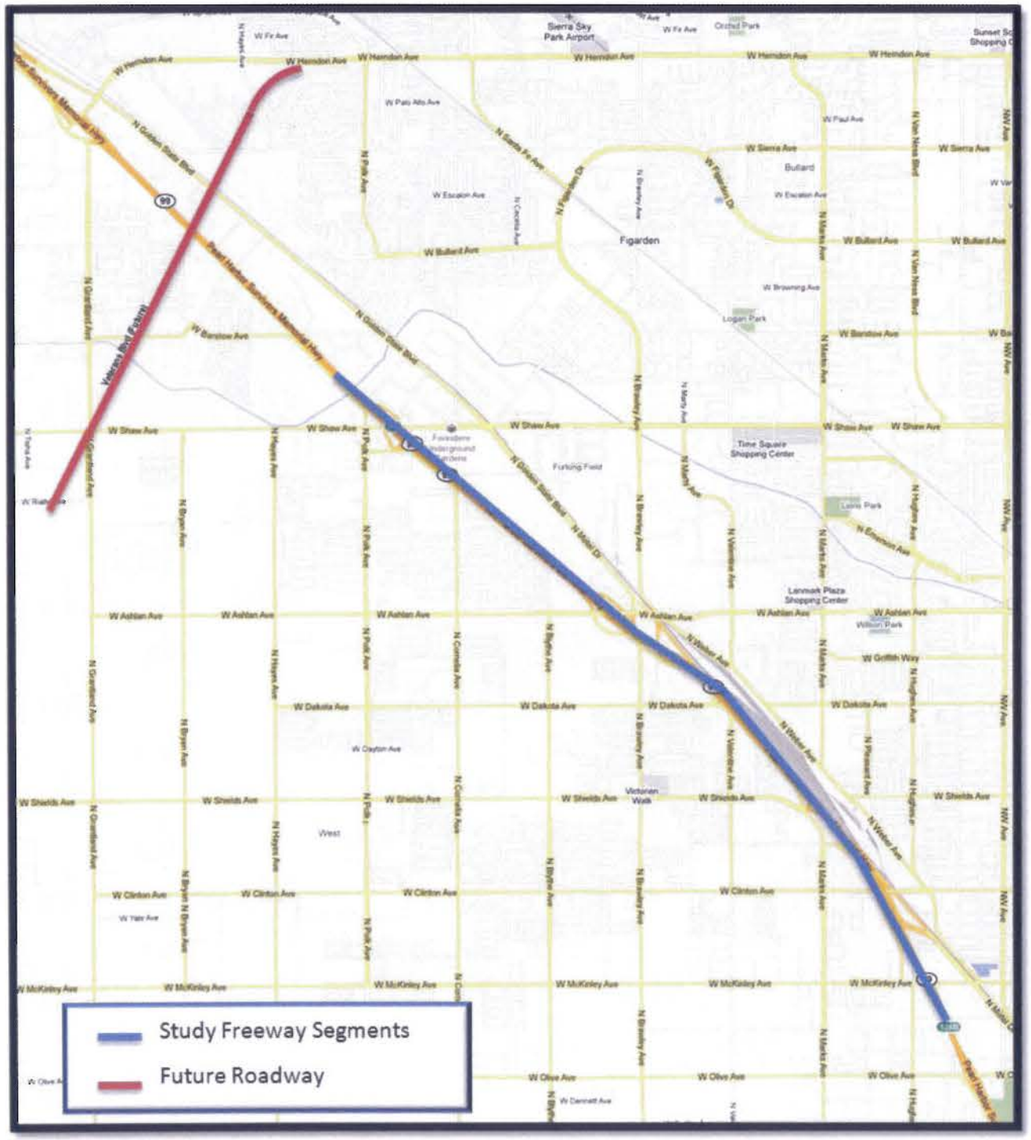


FIGURE 4-1
FREEWAY STUDY AREA

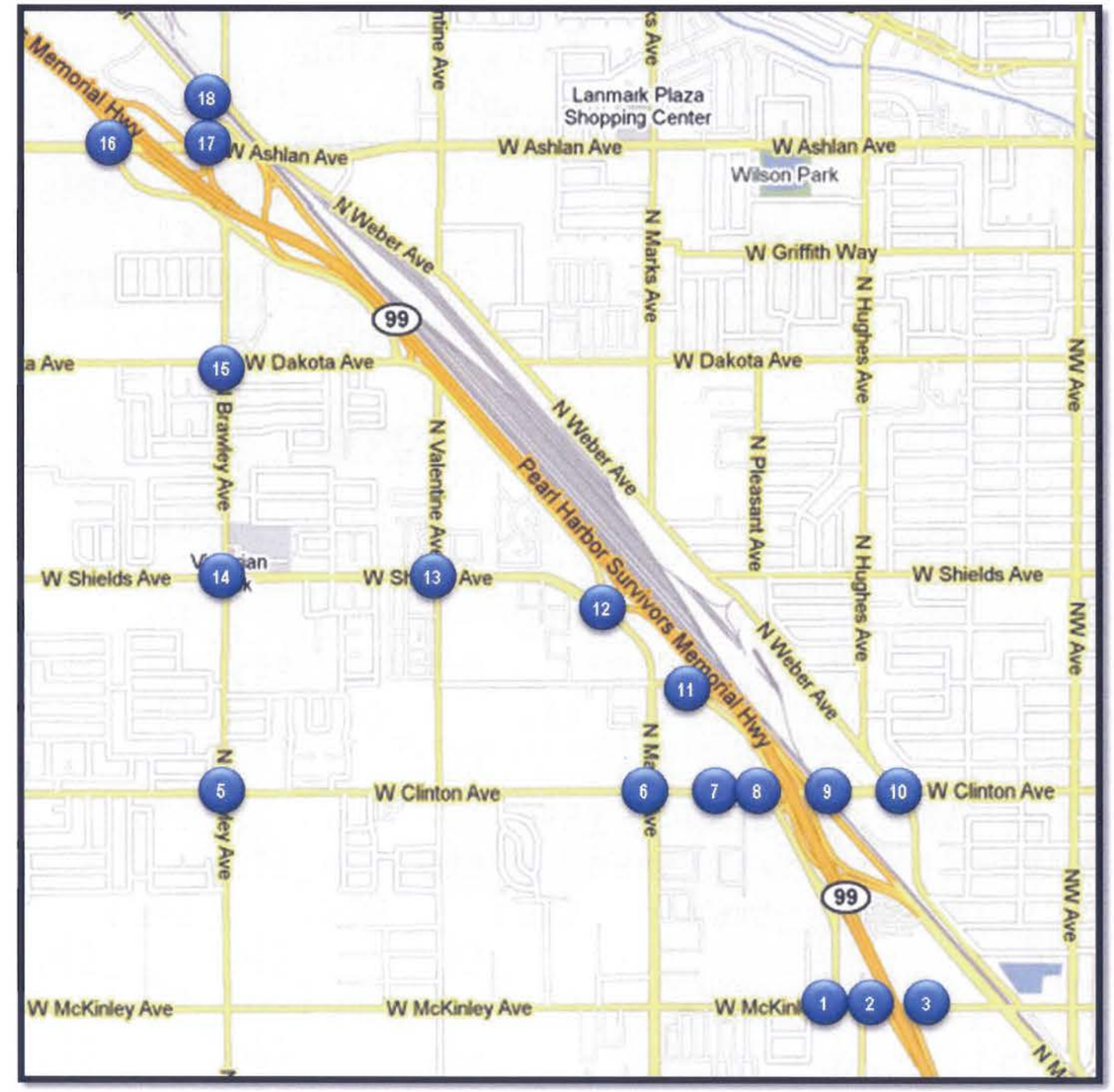


FIGURE 4-2
LOCAL INTERSECTION STUDY AREA

- Veterans Boulevard Traffic Study (Fehr & Peers, Inc. 2008).
- Fresno-Madera Freeway/Interchange Deficiency Study (Fehr & Peers, Inc. 2008).
- Archived traffic counts in 2008 from local data collection firms.
- New traffic counts at several locations in July 2010 and March 2011.

4.3.3 Traffic Forecasts and Future Operations

This section discusses traffic forecasts for two future scenarios: a no-build alternative and a build alternative (Design Option 6A - L-1 (tight diamond) alternative at Clinton Avenue). The build alternatives are described in greater detail in Section 5. The following sections discuss the traffic forecasting process and analysis results.

Freeway Segments and Ramps

Future freeway traffic demands were a critical input to the traffic modeling that was conducted for this study. Travel demands were forecast for SR 99 mainline and ramps, from south of McKinley Avenue to north of Shaw Avenue.

Caltrans provided existing counts and travel demand model forecasts for 2003 and 2035 on all ramps. Mainline counts and travel demand model forecasts were provided between the Princeton Avenue ramps, and a balancing process was used to calculate all other mainline segments. Using the available data, a series of post-processing adjustment calculations was used to develop freeway and ramp forecasts.

The traffic analysis for the freeway was based on the methodologies in the *Highway Capacity Manual* (HCM). The basic analysis included assessments of the future level of service (LOS) for the a.m. and p.m. peak hours by using the HCM procedures for basic, merge, diverge, and weave sections. A freeway truck factor of 6% was assumed in the analysis. This truck factor is based on existing Caltrans truck data on SR 99 in the vicinity of the project.

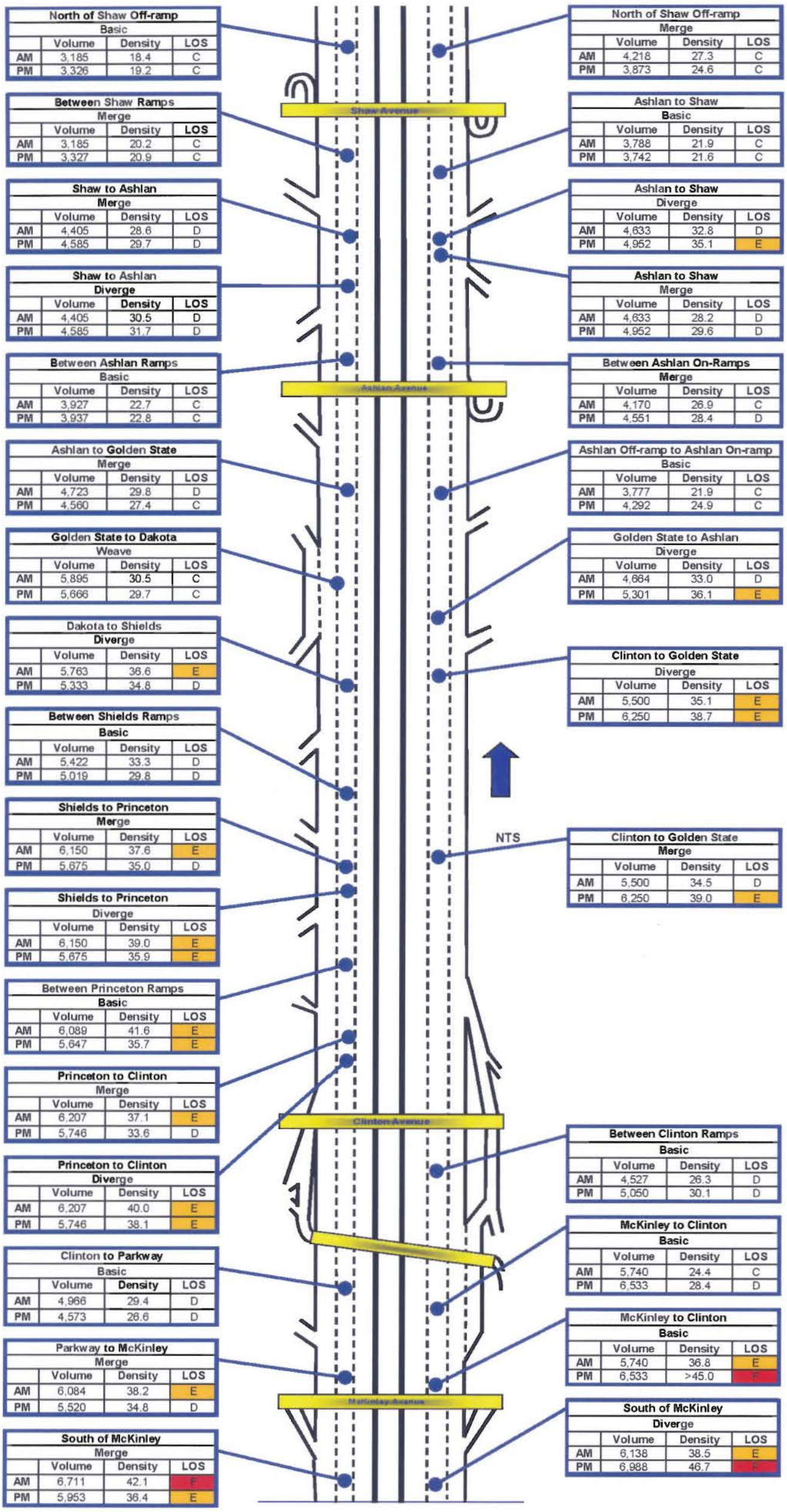
The 2035 freeway traffic forecasts and LOS analysis are provided in Figures 4-3 and 4-4.

For northbound SR 99, the freeway operations results with the 2035 Build scenario are as follows:

- South of Ashlan Avenue, operations for the Build scenario are the same or better than the No-Build scenario.
- North of Ashlan Avenue, operations for the 2035 No-Build and Build scenarios are the same since the mainline improvements end south of Ashlan Avenue.

For southbound SR 99, the freeway operations results with the 2035 Build scenario are as follows:

- North of Ashlan Avenue, operations are for the No-Build and Build scenarios are the same since the mainline improvements end south of Ashlan Avenue.
- Operations from Ashlan Avenue to Clinton Avenue improve in the Build scenario due to the addition of the auxiliary lane and the elimination of several southbound ramps. Overall, the peak period LOS improves from approximately LOS E in the No-Build scenario to LOS C in the Build scenario.



North of Shaw Off-ramp			
Basic			
	Volume	Density	LOS
AM	3,185	18.4	C
PM	3,326	19.2	C

Between Shaw Ramps			
Merge			
	Volume	Density	LOS
AM	3,185	20.2	C
PM	3,327	20.9	C

Shaw to Ashlan			
Merge			
	Volume	Density	LOS
AM	4,405	28.6	D
PM	4,585	29.7	D

Shaw to Ashlan			
Diverge			
	Volume	Density	LOS
AM	4,405	30.5	D
PM	4,585	31.7	D

Between Ashlan Ramps			
Basic			
	Volume	Density	LOS
AM	3,927	22.7	C
PM	3,937	22.8	C

Ashlan to Golden State			
Merge			
	Volume	Density	LOS
AM	4,723	29.8	D
PM	4,560	27.4	C

Golden State to Dakota			
Weave			
	Volume	Density	LOS
AM	5,895	30.5	C
PM	5,666	29.7	C

Dakota to Shields			
Diverge			
	Volume	Density	LOS
AM	5,763	36.6	E
PM	5,333	34.8	D

Between Shields Ramps			
Basic			
	Volume	Density	LOS
AM	5,422	33.3	D
PM	5,019	29.8	D

Shields to Princeton			
Merge			
	Volume	Density	LOS
AM	6,150	37.6	E
PM	5,675	35.0	D

Shields to Princeton			
Diverge			
	Volume	Density	LOS
AM	6,150	39.0	E
PM	5,675	35.9	E

Between Princeton Ramps			
Basic			
	Volume	Density	LOS
AM	6,089	41.6	E
PM	5,647	35.7	E

Princeton to Clinton			
Merge			
	Volume	Density	LOS
AM	6,207	37.1	E
PM	5,746	33.6	D

Princeton to Clinton			
Diverge			
	Volume	Density	LOS
AM	6,207	40.0	E
PM	5,746	38.1	E

Clinton to Parkway			
Basic			
	Volume	Density	LOS
AM	4,966	29.4	D
PM	4,573	26.6	D

Parkway to McKinley			
Merge			
	Volume	Density	LOS
AM	6,084	38.2	E
PM	5,520	34.8	D

South of McKinley			
Merge			
	Volume	Density	LOS
AM	6,711	42.1	F
PM	5,953	36.4	E

North of Shaw Off-ramp			
Merge			
	Volume	Density	LOS
AM	4,218	27.3	C
PM	3,873	24.6	C

Ashlan to Shaw			
Basic			
	Volume	Density	LOS
AM	3,788	21.9	C
PM	3,742	21.6	C

Ashlan to Shaw			
Diverge			
	Volume	Density	LOS
AM	4,633	32.8	D
PM	4,952	35.1	E

Ashlan to Shaw			
Merge			
	Volume	Density	LOS
AM	4,633	28.2	D
PM	4,952	29.6	D

Between Ashlan On-Ramps			
Merge			
	Volume	Density	LOS
AM	4,170	26.9	C
PM	4,551	28.4	D

Ashlan Off-ramp to Ashlan On-ramp			
Basic			
	Volume	Density	LOS
AM	3,777	21.9	C
PM	4,292	24.9	C

Golden State to Ashlan			
Diverge			
	Volume	Density	LOS
AM	4,664	33.0	D
PM	5,301	36.1	E

Clinton to Golden State			
Diverge			
	Volume	Density	LOS
AM	5,500	35.1	E
PM	6,250	38.7	E

Clinton to Golden State			
Merge			
	Volume	Density	LOS
AM	5,500	34.5	D
PM	6,250	39.0	E

Between Clinton Ramps			
Basic			
	Volume	Density	LOS
AM	4,527	26.3	D
PM	5,050	30.1	D

McKinley to Clinton			
Basic			
	Volume	Density	LOS
AM	5,740	24.4	C
PM	6,533	28.4	D

McKinley to Clinton			
Basic			
	Volume	Density	LOS
AM	5,740	36.8	E
PM	6,533	>45.0	F

South of McKinley			
Diverge			
	Volume	Density	LOS
AM	6,138	38.5	E
PM	6,988	46.7	F

FIGURE 4-3
Freeway Operations Summary – 2035 No-Build Alternative Conditions

Source: CH2M HILL

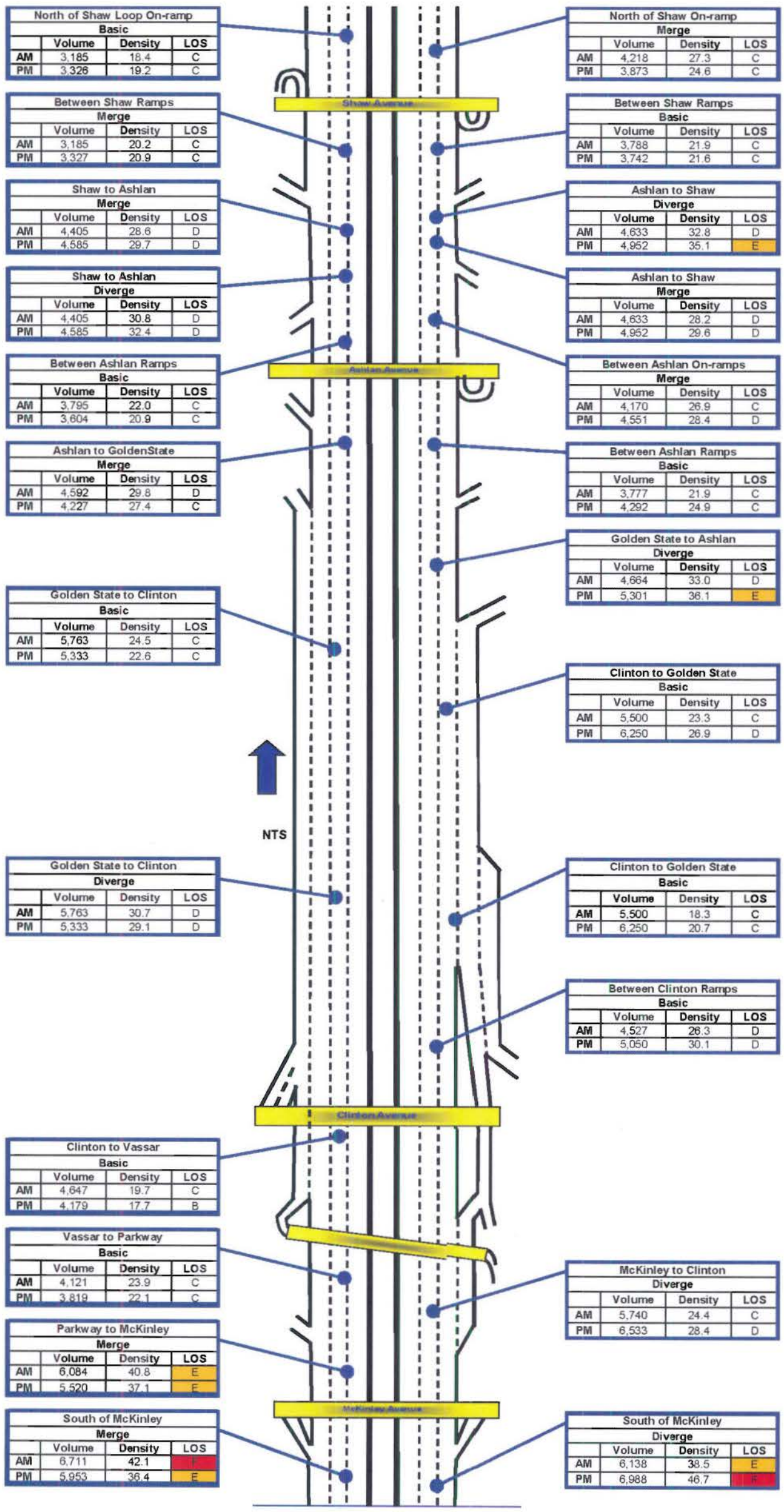


FIGURE 4-4
Freeway Operations Summary – 2035 Build Alternative Conditions
(Tight Diamond (L-1) Interchange Modification at Clinton Avenue)

Source: CH2M HILL

- The analysis indicates an impact south of where the existing southbound Parkway Drive on-ramp is located. Operations in the Build scenario are slightly worse than No-Build scenario because the redistribution of traffic creates a concentrated merge at the southbound Clinton Avenue on-ramp. A potential mitigation would be to add a southbound auxiliary lane where the southbound on-ramp from Clinton Avenue enters the mainline, and then continue this auxiliary lane to Olive Avenue.

Intersection Analysis

Traffic analysis for the intersections was based on the methodologies in the HCM. Intersection operations were assessed using the Synchro software package (version 7), using the "HCM reports" function. Existing conditions geometrics were assumed for the intersection analysis where project improvements are not anticipated, along with optimized, actuated traffic signal timing for future conditions. A local street truck factor of 3 percent and a saturation flow rate of 1,800 vehicles/hour/lane (based on typical traffic engineering values) were assumed in the analysis.

To forecast future-year intersection traffic volumes under the no-build and build alternatives, existing traffic counts were adjusted to future conditions by adapting the growth rates at adjacent freeway ramps to the intersections on each arterial. After the adjacent growth rates were applied to the intersection volumes, adjustments were made to each intersection to account for volume balancing and redistribution patterns anticipated under the build alternative. Attachment 3 provides a final set of 2035 intersection traffic volumes under the build alternative. These volumes were the basis for the intersection analysis.

Intersection Impact Criteria

The Authority has determined impact criteria to be used in the evaluation of intersections. These criteria will govern if a Project-related impact would exist with the implementation of the project. The traffic impact criteria for signalized and unsignalized intersections are defined below.

For signalized intersections, the recommended thresholds of significance 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 the no-build conditions, an impact is considered to be significant if the addition of project-related traffic results in an increase in average critical delay at an intersection by 4 seconds.

For unsignalized intersections, the recommended thresholds of significance are based on an increase in delay for the worst movement for a multi-way stop and 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 that are projected to operate at LOS E or F under the no-build conditions, an impact is considered to be significant if the addition of project-related traffic results in an increase in delay by 5 seconds or more and the intersection satisfies one or more traffic signal warrants. The increase in delay is measured for the overall intersection at all-way stop-controlled intersections, and for the worst movement at one- or two-way stop-controlled intersections.

Intersection Analysis Results

Tables 4-1 is a summary of intersection delay and LOS for the no-build and build scenarios in 2035 for the AM and PM peak hours.

The table also includes data on Intersection Capacity Utilization (ICU). ICU is an additional metric that gives insight into how an intersection is functioning and how much extra capacity is available (values less than 1.0) or if an intersection is over capacity (values greater than 1.0). At the bottom of the table, the average ICU values for the signalized and unsignalized intersections are reported to give an indication of how the scenarios compare from an intersection capacity standpoint.

In the 2035 No-Build scenario, 11 of the 17 study intersections are projected to operate at LOS F due to background growth that is independent of the build conditions. In addition, the numerous unsignalized intersections are projected to deteriorate to LOS F because the peak hour volumes are projected to rise above the operational limits of a stop-controlled intersection. Many of these unsignalized intersections may meet traffic signal warrants based on traffic volume in the future, and the LOS will improve with signalization.

With the build scenario, traffic will redistribute due to the mainline SR 99 improvements, which include the elimination of three southbound SR 99 ramps between Ashlan Avenue and Clinton Avenue and the new alignment for the Clinton Avenue/southbound SR 99 ramp terminal intersection.

With these ramp changes, intersection operations are projected to degrade at many of the intersections west of SR 99. This is directly due to the fact that several SB ramps will be removed. The increase in average ICU ranges from 3 to 9 percent, which is consistent with the additional travel expected on local streets.

TABLE 4-1
Intersection Operations Summary

		2035 No-Build Conditions									2035 Build Conditions										Proposed Mitigation	2035 Build Conditions with Mitigation						
	Intersection	AM Peak Hour					PM Peak Hour				AM Peak Hour					PM Peak Hour												
		Control	Volume (veh)	Delay (sec)	LOS	ICU	Volume (veh)	Delay (sec)	LOS	ICU	Control	Volume (veh)	Delay (sec)	LOS	ICU	Volume (veh)	Delay (sec)	LOS	ICU	Impact?		Control	Delay (sec)	LOS	ICU	Delay (sec)	LOS	ICU
1	McKinley Avenue and Woodson Avenue	U*	795	15	C	0.48	1030	20	C	0.47	U*	839	13	B	0.61	1074	18	C	0.69	No		U*						
2	McKinley Avenue and SR-99 SB Ramp	U*	1500	13	B	0.61	1395	11	B	0.59	U*	1471	12	B	0.59	1373	11	B	0.57	No		U*						
3	McKinley Avenue and SR-99 NB Ramp	U*	1465	160	F	0.61	1530	177	F	0.59	U*	1436	125	F	0.59	1508	144	F	0.57	No		U*						
5	Clinton Avenue and Brawley Avenue	S	2890	26	C	0.63	3960	42	D	0.82	S	3232	43	D	0.80	4236	63	E	0.94	Yes	Add second southbound left turn lane.	S	29	C	0.68	44	D	0.83
6	Clinton Avenue and Marks Avenue	S	3950	163	F	1.26	3535	108	F	1.08	S	5171	288	F	1.51	4639	203	F	1.29	Yes	Add an exclusive NBR and restripe SB approach to include two SBL and one shared through-right	S	161	F	1.16	93	F	1.01
7	Clinton Avenue and Vassar Avenue	U*	2087	High	F	1.14	2585	High	F	0.86	U*	4370	High	F	0.94	4030	34	D	0.74	No		U*						
8	Clinton Avenue and SR-99 SB Ramps	Does not Exist									S	5642	74	E	0.97	4799	20	B	0.82	Yes	Add exclusive EBR	S	49	D	1.01	19	B	0.94
9	Clinton Avenue and SR-99 NB Ramps	S	4160	28	C	0.67	4040	23	C	0.65	S	4758	27	C	0.97	3677	21	C	0.82	No		S						
10	Clinton Avenue and Weber Avenue	S	4515	107	F	1.07	3775	97	F	1.04	S	5080	138	F	1.15	3400	106	F	1.05	Yes	Add second SBL and EBL	S	88	F	1.15	41	D	0.87
11	Princeton Avenue and SR-99 SB Ramp/Parkway Drive	U*	98	9	A	0.18	79	9	A	0.22	Intersection removed as part of the project improvements																	
12	Shields Avenue and SR-99 SB Ramp/Parkway Drive	U	1013	150	F	0.98	1088	103	F	0.91	Intersection removed as part of the project improvements																	
13	Shields Avenue and Valentine Avenue	U	1575	209	F	0.95	1830	195	F	0.88	U	1369	52	F	0.83	1930	109	F	0.87	No		U						
14	Shields Avenue and Brawley Ave	U	1355	23	C	0.66	2175	155	F	0.88	U	1376	28	D	0.68	2238	193	F	0.85	Yes	Signalize	S	10	A	0.68	18	B	0.85
15	Dakota Avenue and Brawley Avenue	U	1910	245	F	1.20	2145	339	F	1.32	U	2113	294	F	1.33	2694	708	F	1.65	Yes	Signalize, add SBL and SBR, restripe NB approach to include an exclusive NBL and shared through-right	S	25	C	0.97	43	D	1.08
16	Ashlan Avenue and SR-99 SB Ramp/Parkway Drive	S	6095	766	F	1.81	7180	547	F	1.41	S	6363	736	F	1.81	7803	579	F	1.48	Yes	Add second NBR	S	515	F	1.54	496	F	1.48
17	Ashlan Avenue and SR-99 NB Ramp/Brawley Avenue	S	3765	74	E	0.99	4290	75	E	0.89	S	3765	74	E	0.99	4290	75	E	0.89	No		S						
18	Brawley Avenue and Golden State Boulevard	U*	1765	811	F	0.78	1895	1422	F	0.80	U*	1765	811	F	0.78	1895	1422	F	0.80	No		U*						
				Signalized Avg ICU		1.07		Signalized Avg ICU ɔd Avg ICU		0.98			Signalized Avg ICU		1.17		Signalized Avg ICU ɔd Avg ICU		1.04					Signalized Avg ICU	1.02		Signalized Avg ICU	0.97
				Unsignalized Avg ICU		0.76		Unsignalized Avg ICU ɔd Avg ICU		0.75			Unsignalized Avg ICU		0.79		Unsignalized Avg ICU ɔd Avg ICU		0.84					Unsignalized Avg ICU	0.72		Unsignalized Avg ICU	0.71

U = Unsignalized, S = Signalized
*Two-way stop controlled intersection, Delay reported for worst-case stop-controlled movement only

4.3.4 Traffic Impacts/Mitigation

Intersection impacts were identified based on the impact criteria described previously. Future operational deficiencies are a result of the projected growth and the impact of the SR 99 realignment, so potential mitigations may be developed as part of plans to address future growth.

The following seven intersections were found to be impacted by the proposed build condition:

- #5 Clinton Avenue and Brawley Avenue
- #6 Clinton Avenue and Marks Avenue
- #8 Clinton Avenue and SB SR 99 ramps
- #10 Clinton Avenue and Weber Avenue
- #14 Shields Avenue and Brawley Avenue (unsignalized)
- #15 Dakota Avenue and Brawley Avenue (unsignalized)
- #16 Ashlan Avenue and SR 99 SB ramp/Parkway Drive (signalized)

Potential mitigation at these intersections includes roadway widening, additional turn bays, re-striping, and traffic signal improvements:

- Clinton Avenue and Brawley Avenue: Add a second SB left-turn lane.
- Clinton Avenue and Marks Avenue: Add an exclusive NB right-turn lane, and restripe the SB approach to include two SB left-turn lanes and one shared through-right lane.
- Clinton Avenue and SB SR 99 ramps: This is a new intersection, but an additional eastbound right-turn lane would be needed in addition to the geometry needed for the 2020 Build scenario.
- Clinton Avenue and Weber Avenue: Add a second SB and EB left-turn lane.
- Shields Avenue and Brawley Avenue: Signalize. Note that any signalization improvement would be completed only when the future traffic volumes met warrants for a signal.
- Dakota Avenue and Brawley Avenue: Signalize, add a SB left- and right-turn lane, and restripe the NB approach to include an exclusive left-turn lane and a shared through-right lane. Note that any signalization improvement would be completed only when the future traffic volumes met warrants for a signal.
- Ashlan Avenue and SR 99 SB ramp/Parkway Drive. Add a second NB right-turn lane.

The analysis results of these potential mitigation measures are also summarize in Table 4-1.

Accident Analysis

The actual accident rates for SR 99 for the 3-year period (July 1, 2007 to June 30, 2010) from PM 23.9 to 26.6 and at PM 31.3 (Southbound off-ramp to Motel Drive/Herndon Avenue) were compared to the statewide average accident rates for similar facilities. Following are accident data from Caltrans' Traffic Accident Surveillance and Analysis System (TASAS) Table B summarized in Table 4-2.

TABLE 4-2

Actual and Average Accident Rates from 7/1/2007 to 6/30/2010

Direction/ Location	Number of Accidents				Accident Rates					
					Actual			Average		
	Total	F*	I**	F+I***	F*	F+I***	Total	F*	F+I***	Total
NB & SB SR 99 Mainline (PM 23.9 to 26.6)	206	2	53	55	0.007	0.20	**0.76**	0.008	0.26	0.83
SB on from McKinley Ave (PM 23.72)	0	0	0	0	0	0	**0**	0.002	0.26	0.75
SB on from Clinton Ave (PM24.10)	2	0	1	1	0	0.11	**0.21**	0.002	0.14	0.45
NB off to Clinton Ave (PM 24.22)	12	0	3	3	0	0.19	**0.77**	0.004	0.26	0.85
Old SR 99 (NB) to Clinton Ave (PM 24.27)	0	0	0	0	0	0	**0**	0.003	0.20	0.65
Seg NB off to Clinton Ave (PM 24.27)	0	0	0	0	0	0	**0**	0.004	0.42	1.20
Seg SB off to old SR 99 (PM 24.37)	0	0	0	0	0	0	**0**	0.005	0.20	0.60
Seg Clinton Ave to Old SR 99 (PM 24.38)	0	0	0	0	0	0	**0**	0.002	0.16	0.55
Seg SB off to Clinton Ave (PM 24.42)	0	0	0	0	0	0	**0**	0.004	0.28	0.95
SB off to Clinton Ave/ Old SR 99 (PM 24.45)	3	0	1	2	0	0.24	**0.72**	0.002	0.09	0.30
Seg NB on from Clinton Ave (PM 24.61)	1	1	0	1	0.38	0.38	**0.38**	0.02	0.26	0.75
Seg NB on from Old SR 99 (PM 24.61)	0	0	0	0	0	0	**0**	0.003	0.20	0.65

TABLE 4-2

Actual and Average Accident Rates from 7/1/2007 to 6/30/2010

Direction/ Location	Number of Accidents				Accident Rates					
					Actual			Average		
	Total	F*	I**	F+I***	F*	F+I***	Total	F*	F+I***	Total
NB on from Clinton/Old SR 99 (PM 24.65)	2	0	1	1	0	0.19	**0.39**	0.002	0.06	0.20
SB on from Princeton Ave (PM 24.66)	0	0	0	0	0	0	**0**	0.002	0.14	0.45
SB off to Princeton Ave (PM 24.74)	9	0	1	1	0	3.04	**27.36**	0.004	0.28	0.95
SB on from Shields Ave (PM 24.94)	2	0	0	0	0	0	**0.41**	0.002	0.26	0.75
SB off to Shields Ave (PM 25.07)	3	0	1	1	0	1.01	**3.04**	0.004	0.28	0.95
SB off to Dakota Ave (PM 25.81)	7	0	2	2	0	1.40	**4.91**	0.004	0.28	0.95
SB Off-Ramp to Motel Dr / Herndon Ave (PM 31.3)	3	0	0	0	0.000	0.00	**0.44**	0.005	0.20	0.60

Note: Accident rates on mainline are per million vehicle miles.

* Fatalities

** Injuries

*** Fatalities plus injuries

Mainline SR 99

A total of 206 accidents were reported within the proposed project limits in both directions of SR 99, including 2 fatalities and 53 injuries. As shown in Table 2, the actual accident rate on SR 99 is 0.76, which is lower than the statewide average of 0.83 for a similar type facility. The accident rates for fatal and injury accidents are also lower than comparable state averages.

During the three-year period, the types of accidents that occurred on SR 99 were as follows: 72 rear-ends (35.0%); 61 hit objects (29.6%); 57 sideswipes (27.7%); 6 broadsides (2.9%); 5 overturns (2.4%); 3 other factors (1.5%) and 2 auto-pedestrian (1.0%).

The majority of the accidents took place in the left, right or interior lanes, with only 42 or 20.4% of the accidents occurring in the left or right shoulder areas or the recovery areas beyond the shoulders, where the proposed design feature #2 in this Fact Sheet is located. Rear-end and sideswipe accidents account for 62.7% of all the accidents, which are generally congestion-related. As the volumes within the roadway project limit increase in the future, there is no evidence through the historical data that the number of accidents at the non-standard feature locations will increase. It should be noted that 133 or 64.6% of the accidents occurred in the southbound direction of SR 99, where traffic operations are expected to improve as a result of the proposed elimination of the Dakota Avenue, Shields Avenue and Princeton Avenue ramps.

Southbound Off Ramp to Motel Drive/Herndon Avenue

A total of 3 accidents were reported along the SB off-ramp to Motel Drive/Herndon Avenue with no injuries or fatalities. The actual accident rate on the SB off-ramp to Motel Drive/Herndon Avenue is 0.44 which is lower than the statewide average of 0.60 for a similar type facility. The accidents involved passenger cars and included a wrong way movement, impaired driving and run off the road, and a broadside-failure to yield collision. These accidents are consistent with the types of vehicle movements at the ramp split and intersection approach of the existing facility. The proposed ramp reconstruction will maintain or improve upon the existing operational conditions and is anticipated to not increase the accident frequency.

In general the historic accident data do not suggest an existing deficiency on this ramp.

Interchange Ramps to and from SR 99, Clinton Avenue to Ashlan Avenue

A total of 44 accidents were reported at 16 different ramp locations within these limits. With exception of 5 locations, all have accident rates lower than the statewide average for a similar type of facility, as shown in Table 2. In addition, the proposed improvements are anticipated to provide improved operational conditions through improvement to standards or elimination of the ramp, thereby helping to reduce the accident frequency at the locations.

The 5 ramp locations that have actual accident rates higher than the statewide rate are as follows:

Southbound Off Ramp to Clinton Avenue (PM 24.45)

A total of 3 accidents were reported with no fatalities. The actual accident rate on the off-ramp is 0.72 which is higher than the statewide average of 0.30 for a similar type facility.

The types of accidents involve passenger cars that were speeding and involved in rear-end and sideswipe type collisions. These accidents are consistent with short weaving distances, number of ramps and turning roadways, and short acceleration/deceleration distances of the existing facilities. The proposed ramp reconstruction will provide improved operational conditions and is anticipated to reduce the accident frequency at this location to less than the statewide rate.

Northbound On Ramp from Clinton Avenue/Old SR 99 (Motel Drive) (PM 24.65)

A total of 2 accidents were reported at this location with no fatalities. The actual accident rate on the on-ramp is 0.39 which is higher than the statewide average of 0.20 for a similar type facility.

The types of accidents involve passenger cars and pickup trucks that made improper turns and were under the influence of alcohol, resulting in broadside type collisions. These accidents are consistent with short weaving distances, number of ramps and turning roadways, and short accelerations/decelerations distances of the existing facilities.

The proposed ramp reconstruction will provide improved operational conditions and is anticipated to reduce the accident frequency at this location to less than the statewide rate.

Southbound Off Ramp to Princeton Avenue (PM 24.74)
A total of 9 accidents were reported at this location with no fatalities. The actual accident rate on the on-ramp is 27.36 which is higher than the statewide average of 0.95 for a similar type facility.

The types of accidents involved mostly passenger cars that were speeding, made improper turns and were under the influence of alcohol, resulting in the vehicles hitting objects, including signs, curbs, traffic islands and other vehicles. These accidents are consistent with configuration of the turning roadways, and short separation distances of the existing facilities.

The proposed project eliminates this ramp and provides improved access to the adjacent Clinton Avenue Interchange.

Southbound Off Ramp to Shields Avenue (PM 25.07)
A total of 3 accidents were reported at this location with no fatalities. The actual accident rate on the on-ramp is 3.04 which is higher than the statewide average of 0.95 for a similar type facility.

The types of accidents involved a passenger car, motorcycle and truck that were speeding, made improper turns resulting in the vehicles hitting objects, including curbs, fences and embankment slopes. These accidents are consistent with configuration of the turning roadways, and short separation distances of the existing facilities.

The proposed project eliminates this ramp and provides improved access to the adjacent Clinton Avenue Interchange.

Southbound Off Ramp to Dakota Avenue (PM 25.81)
A total of 7 accidents were reported at this location with no fatalities. The actual accident rate on the on-ramp is 4.91 which is higher than the statewide average of 0.95 for a similar type facility.

The types of accidents involved passenger cars, motorcycles and pickup trucks that made improper turns and were under the influence of alcohol resulting in the vehicles hitting objects, including curbs, fences and lights and signs. These accidents are consistent with configuration of the turning roadways, and short separation distances of the existing facilities.

The proposed project eliminates this ramp and provides improved access to the adjacent Clinton Avenue Interchange.

Northbound Off Ramp to Clinton Avenue (PM 24.22)

A total of 12 accidents were reported with no fatalities. The actual accident rate on the off-ramp is 0.77 which is lower than the statewide average of 0.85 for a similar type facility. The types of accidents involve mostly passenger cars that were speeding and involved in rear-end, sideswipe and broadside type collisions. These accidents are consistent with the types of vehicle movements at the intersection approach of the existing facility. The proposed ramp reconstruction will maintain or improve upon the existing operational conditions and is anticipated to not increase the accident frequency.

5. ALTERNATIVES

5.1 Viable Alternatives

The following discusses the alternative considered for the project.

5.1.1 L-1 (Tight Diamond) Alternative

The alternative includes a westerly shift/realignment of the section of SR 99 from Clinton Avenue to Ashlan Avenue and a similar westerly shift/realignment of the northbound on-ramp from Herndon Avenue. Associated with the SR 99 realignment, the existing Clinton Avenue Interchange including the Clinton Avenue overcrossing is reconstructed, and the two rail grade separations over UPRR tracks, Clinton Avenue and Ashlan Avenues need to be replaced. Additionally, the project includes closure of ramps at Dakota Avenue, Shields Avenue, and Princeton Avenue in the southbound direction of SR 99, a decision supported by Caltrans and City of Fresno. Various local streets on the west side of SR 99 are modified or re-routed to accommodate the proposed modifications to the State Highway System (SHS).

SR 99 mainline:

- Realign the segment of SR 99 between Ashlan Avenue and Clinton Avenue to the west to accommodate the proposed HST facilities, and add an auxiliary lane between Ashlan Avenue and Clinton Avenue in both directions. Replace the median barrier throughout this segment.
- Construct a new auxiliary lane on SB SR 99 between McKinley Avenue and Clinton Avenue, and also between McKinley Avenue and Olive Avenue.
- Widen the McKinley Avenue undercrossing to accommodate the auxiliary lane addition.
- Clinton Avenue Interchange and the Golden State Boulevard/McKinley Ramps:
- Replace the Clinton Avenue overcrossing at SR 99 and the Fresno Yard overhead structure over the UPRR tracks. There are eight (8) lanes on the new Clinton Avenue overcrossing, accommodating two (2) left-turn lanes to the SB on-ramp and two (2) left-turn lanes to the NB on-ramp in addition to the two (2) through lanes in each direction. There are six (6) lanes on the new Fresno Yard overhead, providing storage capacity for the two (2) left-turn lanes to the SB on-ramp in addition to the two (2) through lanes in each direction. Bike lanes are provided in both directions and pedestrian sidewalks are provided on the north side of Clinton Avenue within the project limits. To satisfy the vertical clearance requirement for the future high-speed rail, the profile of Clinton Avenue is raised and thus requiring reconstruction between Vassar Avenue and Weber Avenue.
- Replace the existing southbound (SB) "hook" on-ramp from Clinton Avenue via Vassar Avenue with a new SB three-lane on-ramp with standard shoulders with a direct connection from Clinton Avenue.
- Realign the single-lane SB off-ramp to Motel Drive near Clinton Avenue with standard shoulders.
- Replace the existing SB "hook" off-ramp with standard shoulders from SR 99 to Clinton Avenue. Widen the ramp from one lane to two lanes. Four lanes are provided at the intersection for channelization.
- Realign and restripe the NB off-ramp from SR 99 to Clinton Avenue.
- Replace the single-lane NB on-ramp from Clinton Avenue to SR 99 with a two-lane on-ramp (between the ramp intersection and the ramp gore) west of the current location.
- Shift the NB on-ramp from Golden State Boulevard/McKinley Avenue to SR 99 to the west.

Ashlan Avenue Interchange and the Motel Drive Ramps:

- Replace the Ashlan Avenue overhead structure over the UPRR tracks to accommodate the future high-speed rail facilities. The new structure is located approximately 40′ north of the existing structure, and it accommodates four through lanes and a pedestrian sidewalk on the north side. To satisfy the vertical clearance requirement for the future high-speed rail, Ashlan Avenue is raised and thus requiring reconstruction between Marty Avenue and the ramp intersection east of the Ashlan Avenue overcrossing over SR 99.
- Reconstruct a portion of the NB off-ramp from SR 99 to Ashlan Avenue to meet the new grades on Ashlan Avenue.
- Realign a portion of the SB on-ramp from Motel Drive to SR 99 near Ashlan Avenue. The existing overcrossing over SR 99 is not affected.
- Reconstruct the NB off-ramp from SR 99 to Motel Drive near Ashlan Avenue.

Herndon Avenue/Golden State Boulevard Ramps:

- Realign and reconstruct the NB on-ramp from Golden State Boulevard to SR 99 near Herndon Avenue.
- Replace in-kind a portion of the SB off-ramp from SR 99 to Golden State Boulevard near Herndon Avenue.
- Add a second NBR lane at N Parkway Drive and Ashlan Avenue intersection. In addition, Caltrans will also consider widening of the SB off-ramp terminal intersection with Ashlan Avenue.

Other City of Fresno Streets:

- Shift Motel Drive to the west near Ashlan Avenue to accommodate the future high-speed rail facilities.
- Extend Pleasant Avenue to the east to meet with Woodson Avenue while eliminating the connection from Parkway Drive to Vassar Avenue.
- Construct cul-de-sacs for streets that will no longer connect to SR 99, such as Parkway Drive, Vassar Avenue, and Princeton Avenue.
- Partially realign Valentine Avenue to merge with Dakota Avenue.
- Shift Golden State Boulevard to the west between Ashlan Avenue and Herndon Avenue to accommodate the future High-Speed Rail facilities (included in a separate project).

Caltrans standards are used for development of the preliminary engineering within state right of way. County standards or American Association of State Highway and Transportation Officials guidelines will be used for local facilities. Table 5-1 shows the design exceptions identified during the preliminary engineering phase.

TABLE 5-1
Design Exceptions Identified and Approved during the Preliminary Engineering Phase *

Design Criteria	Standard	Non-Standard Features
Design Speed	*Advisory: Index 101.1* 45 miles per hour (mph)	The design speed for Ashlan Avenue is 40 mph.
Horizontal Clearance: High Speed Rail Clearance	*Advisory: Index 309.1(4)* 52 feet from rail facility to ultimate edge of the traveled way	The distance from the rail facilities to the ultimate edge of pavement on SR 99 varies from 8 to 37 feet.
Angle of Intersection	*Advisory: Index 403.3* Skew angle 75 to 90 degrees	The skew angle at the intersection of Clinton Avenue and on-ramp to NB SR 99 is 55° 45'.
Interchange Spacing	***Mandatory**: Index 501.3* 1.0 mile in urban areas	0.6 mile between Clinton Avenue and McKinley Avenue interchanges. 0.6 mile between McKinley Avenue and Olive Avenue Interchanges.
Weaving Length	***Mandatory**: Index 504.7* 2,000 feet in urban areas	1230 feet between McKinley Avenue and Olive Avenue Interchanges.
Grade at Ramp Overcrossing	*Advisory: Index 504.3(3)* Grade on the overcrossing at the ramp terminals should be 4% or less	Intersection of Clinton Avenue and SB SR 99 off-ramp: grade is 4.95%. Intersection of Ashlan Avenue and NB SR 99 off-ramp: grade is 4.3%.
Lane Requirement on Single-Lane Off-ramp	*Advisory: Index 504.3(5)* An additional lane should be provided when the length of a single lane ramp exceeds 1,000 feet	The length of the Motel Drive/McKinley Avenue off-ramp is 2,846 feet.
Superelevation		
Superelevation Rate	***Mandatory**: Index 202.2, Table 202.2* 12% for curves with radii under 625 feet 2% for curves with radii between 4,500 feet to 19,999 feet	On-ramp from Clinton Avenue to SB SR 99: 4% for a curve with a radius of 230 feet. Off-ramp from NB SR 99 to Clinton Avenue: 2% adverse for a curve with a radius of 5000 feet.
Length of Superelevation Transition and Runoff	*Advisory: Index 202.5(1), Index 202.5(2)* Superelevation transition and runoff lengths per Figure 202.5A 2/3 of superelevation runoff on the tangent and 1/3 within the curve	SR 99 mainline station 132+00 to 132+74: transition length is 150 feet; standard is 250 feet. ½ runoff on the tangent and ½ within the curve. SR 99 mainline station 236+54 to 237+30: runoff length is 154 feet; standard is 210 feet. ½ runoff on the tangent and ½ within the curve. On-ramp from Clinton Avenue to SB SR 99 station 142+46 to 143+64: transition length is 118 feet; standard is 285 feet. Off-ramp from SB SR 99 to Herndon Avenue station 100+00 to 101+50 and 102+98 to 104+48: runoff length is 150 feet; standard is 210 feet. . 1/5 runoff on the tangent and 4/5 within the curve.
Cross Sections		
Median width	*Advisory: Index 305.1(1)(a)* 36 feet	22 to 35 feet from station 138+00 to 237+30.
Vertical clearance	***Mandatory**: Index 309.2 (1)(a)* Minimum vertical clearance over the roadbed of State facility is 16'6"	Vertical clearance of North Fresno Undercrossing over the SB off-ramp to Golden State Blvd/Motel Dr is 15'2".
Side Slope	*Advisory: Index 304.1* Fill slopes should be 4:1 or flatter.	Side slope for infiltration basin located south of Clinton Ave overcrossing between Clinton SB on-ramp and SB off-ramp to Motel Dr/Golden State Blvd is 3:1. Side slope for infiltration basin located west of SR 99 mainline between east of Parkway Dr and north of Dakota Ave is 3:1.

* Advisory Design Exception Approval 07-06-12 ; Mandatory Design Exception Approval 10-9-12)

5.2 Rejected Alternatives

The following discusses the alternatives considered and rejected.

5.2.1 No-Build Alternative

Realignment of the SR 99 (i.e. Project), is part of the Merced-Fresno Section of the State-wide High Speed Train project.

The Authority and FRA completed a Final EIR/EIS evaluation for the Merced-Fresno section in September of 2012. The Final EIR/EIS for the Merced-Fresno Section considered "No Project/No Action" alternative (i.e. No Build). The evaluated No Project/No Action alternative of the Merced-Fresno Section did not meet the project Purpose and Need and was therefore rejected.

5.2.2 Modified L-8 Alternative

The Modified L-8 Alternative is similar to the Tight Diamond Alternative discussed above. They are identical in the design of the SR 99 mainline realignment, the reconstructed Clinton Avenue overcrossing at SR 99 and Clinton Avenue structure over UPRR tracks, and the reconstructed Ashlan Avenue structure over UPRR tracks, but they differ in the proposed configuration of the Clinton Avenue interchange and the proposed disposition of the partial interchanges on SR 99 between Clinton Avenue and Ashlan Avenue. The differences are as follows:

- Replace in-kind the one-lane SB off-ramp with standard shoulders from SR 99 to serve Motel Drive and Clinton Avenue. Build a new one-lane loop ramp that will split off to Clinton while the rest of the ramp will become Motel Drive
- Construct "hook" ramps at Shields Avenue in the SB direction of SR 99

The preliminary costs of the alternative was similar to the Tight Diamond interchange alternative described above, with exception of the additional right of way impacts noted below.

The alternative was rejected for the following reasons:

1. The impacts of the northbound loop off ramp to Clinton Avenue. The configuration has excessive impacts on the properties in the northeast quadrant of the Clinton Avenue Interchange. The configuration required acquisition of 2 to 3 additional parcels, including as many as 10 businesses and the Rescue the Children's home. It also had geometric challenges in horizontal, vertical and super elevation needs that would require design exceptions.
2. The impacts of improving the Shields Avenue ½ interchange ramps, the northbound off and northbound on ramps. first the ½ interchange connections is considered undesirable and would require multiple design exceptions for interchange configuration, acceleration and deceleration distances, and horizontal and super elevation geometrics. The right of way impact changed from a partial take to a total take on a large hotel property located in the south east quadrant.
3. Traffic operations of the alternative in the vicinity of the combined Clinton Avenue interchange and Shields Avenue ½ interchange were less than desirable.

6. CONSIDERATIONS REQUIRING DISCUSSION

6.1 Hazardous Waste

Site reconnaissance along the HST alternative alignments in the Merced to Fresno Section evaluated the study area and adjoining properties for potential hazardous substances use, storage, disposal, or accidental release. The reconnaissance team searched for tank and drum storage areas; transformers or electrical equipment; evidence of soil or pavement staining, stressed vegetation; ponds, pits, lagoons, or sumps; suspicious odors; fill and depressions; and any other condition indicative of potential contamination. A records review and the site reconnaissance helped identify sites of potential environmental concern.

The site reconnaissance team identified several properties that contained active remediation/treatment units that typically consisted of a fenced enclosure containing groundwater wells and pumps, filters, storage tanks, and electrical subpanels. The study area includes several urban areas and associated public utilities. The UPRR corridor has several subterranean utilities, including a Pacific Gas & Electric natural gas pipeline, Kinder-Morgan petroleum pipeline, and telecommunications cables.

The Authority and FRA have considered avoidance and minimization measures consistent with commitments in the Program EIR/EIS documents. Materials and wastes would be handled, transported, and disposed of in accordance with applicable state and federal regulations, such as RCRA, CERCLA, the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act (see Section 3.3, Air Quality, for regulations applying to hazardous air pollutants). During the property acquisition process, analysis of properties acquired for construction of the HST will be conducted, including title searches and determination of which properties require further assessment for hazardous material contamination. Where current site conditions or documented past land use practices provide a reason to believe that an unusual buildup of potentially hazardous materials has occurred, the Authority will conduct a Phase 1 environmental site assessment in accordance with standard ASTM methodologies to characterize the site. The determination of what parcels require soil testing and where testing should occur would be informed by the Phase 1 environmental site assessment and made in conjunction with state and local agency officials. Testing and appropriate remediation would be conducted prior to construction. Remediation activities may include removal of contamination, in situ treatment, or soil capping. Nominal design variances, such as the addition of a plastic barrier beneath the ballast material to limit the potential release of volatile subsurface contaminants, may be implemented in conjunction with site investigation and remediation. All work within 1,000 feet of a landfill would require methane protection measures, including gas detection systems and personnel training, pursuant to Title 27, the hazardous materials contingency plan, and BMPs.

The Authority is aware that undocumented contamination could be encountered during construction activities and is committed to work closely with local agencies to resolve any such conflicts. A construction management plan will be developed that will include provisions for the disturbance of undocumented contamination. In addition, demolition plans will be prepared for the safe dismantling and removal of building components and debris. The demolition plans will include a plan for lead and asbestos abatement. Further, an SPCC plan or, for smaller quantities, a spill prevention and response plan, will be implemented that prescribes BMPs to follow to clean up any hazardous material release. During operation of the HST, hazardous materials monitoring plans, such as a hazardous materials business plan and an SPCC plan, will be implemented.

To the extent feasible, the Authority is committed to identifying, avoiding, and minimizing hazardous substances in the material selection process for construction, operation, and maintenance of the HST System. Moreover, the Authority will evaluate the full inventory of hazardous materials employed on an annual basis and replace hazardous substances with nonhazardous materials to the extent possible. These standards and material specifications would aid in promoting safety for passengers and employees.

6.2 Right of Way Issues

The California HST Project EIR/EIS would obtain environmental clearance for the state right-of-way needed to widen SR 99 from approximately 140 feet to 216 feet for the future expansion to the SR 99 mainline, as well as any right of way needed to modify the SHS to accommodate the proposed HST facilities. Right of way acquisition is expected to occur for properties along the preferred HST alternative. The Draft Relocation Impact Report (DRIR), dated June 2012, was prepared for the Project EIR/EIS. Project right-of-way costs are approximately $30 million. In addition, the project will involve Railroad ROW, and Utility relocations as discussed here. Additional ROW and Utility information are provided in Attachments 8, and 12, respectively).

6.2.1 Railroads

The project will replace existing structures over the Union Pacific Rail Road. For the next phase of the project, the Authority will negotiate and provide master agreements for Construction and Maintenance (i.e. C&M agreement) of structures over Rail Road ROW.

6.2.2 Utilities

The project will involve several utilities, many of which will require permanent relocation and ROW easements. The following utilities have been identified within the proposed state right-of-way between Ashlan Avenue and Clinton Avenue:

- A 12-inch power line that parallels the west side of SR 99.
- An 18-inch storm drain owned by Fresno Metropolitan Flood Control District next to the SB off-ramp at Ashlan Avenue.
- An 8-inch sewer line owned by the City of Fresno that parallels east side of the SB off-ramp at Ashlan Avenue.
- A 24-inch storm drain that parallels North Parkway Drive at Ashlan Avenue.
- A 14-inch waterline owned by the City of Fresno that parallels the SB off-ramp at Ashlan Avenue, crosses SR 99, and then runs along the west side of North Parkway Drive. The waterline becomes a 12-inch waterline approximately 1,700 feet north of Shields Avenue and continues to run along west side of North Parkway Drive.
- Another 12-inch waterline owned by the City of Fresno that parallels the west side of North Parkway Drive at Clinton Avenue.
- A 10-inch sewer line owned by the City of Fresno that parallels the east side of North Parkway Drive at Dakota Avenue.

- A 6-inch sewer line owned by the City of Fresno that parallels North Parkway Drive at Shields Avenue.
- A 45-inch sewer line owned by the City of Fresno that crosses SR 99 at West Princeton Avenue.
- A 16-inch waterline owned by the City of Fresno that crosses SR 99 at Clinton Avenue.
- An 18-inch storm drain that parallels Clinton Avenue on the west side of SR 99.
- ATT fiber Optic Line in State Right-of-way

Attachment 12 provides additional/available utility data and plans.

6.3 Environmental Issues

Attachment 11 summarizes potential impacts on environmental resources, as described in the Project Final EIR/EIS, at two locations where the proposed project would affect the state highway system (SHS), the SR 99 On/Off-ramps to Herndon Avenue and the SR 99 Realignment from Ashlan Avenue to Clinton Avenue. With Project design features and mitigation measures described in the EIR/EIS, and listed in Section 5 of Attachment 11, impacts on environmental resources at these two SHS modification locations would be negligible under NEPA and less than significant under CEQA.

6.4 Air Quality Conformity

Projects requiring federal funding that are in areas designated as nonattainment or maintenance for the National Ambient Air Quality Standards are subject to EPA's Conformity Rule. The two types of federal conformity are general conformity (GC), which applies to the HST Project due to FRA funding, and transportation conformity, which does not apply to the HST Project, but could apply to future actions related to the project's minor expansions or realignments of local roadways affected by the HST Project. The Draft Conformity Determination for the Merced to Fresno Section is included in the Project FEIR/EIS documents.

The SR 99 realignment project is included in the Fresno 2011 RTP (California High-Speed Rail Project-SR 99 Realignment and Add Auxiliary Lane, p. 1 of the 2011 Formal Amendment No. 1 Change Report) and therefore is included in the RTP's air quality conformity determination.

6.5 Stormwater and Water Quality

The closest water body identified as impaired by the state and included in the 303(d) list is the San Joaquin River, which is located about 0.25 miles northwest of the Herndon On/Off-ramps. Water quality impacts resulting from operations or construction of the project will be mitigated by incorporating stormwater BMPs as part of the design.

Implementation of permanent treatment BMPs will mitigate permanent water quality impacts. The Storm Water Data Report evaluates the BMPs. The strategy is to install treatment BMPs wherever they are feasible, based on site constraints, with the objective of treating the paved area runoff to the maximum extent practicable. The treatment BMPs are evaluated individually in accordance with the guidelines provided in Caltrans' Stormwater Quality Handbook; Project Planning and Design Guide (PPDG; Caltrans 2010). Preference is given to installation of low-impact development BMPs, such as infiltration devices, biofiltration strips/swales, and other earthen-type BMPs. According to the PPDG, infiltration devices are the first choice to be considered when selecting treatment BMPs for Caltrans projects. Therefore, the priority for treatment would be infiltration devices, followed by other earthen-type BMPs.

Temporary construction-related water quality impacts will be mitigated by installation of construction site BMPs. These BMPs will provide source control and limit erosion and sediment transport. Examples of appropriate structural BMPs include temporary hydraulic mulch and fiber rolls. Nonstructural BMPs will also minimize the potential for water quality impacts. Examples of appropriate nonstructural BMPs include spill prevention and control, material management, waste management, and street sweeping.

6.6 Project Lead Agencies

For the High-Speed Train project, EIR/EIS documents will be prepared for each section of the project. FRA is the lead federal agency for NEPA, and California High -Speed Rail Authority is the Lead state agency for CEQA.

6.7 Noise Abatement

More detailed and focused noise studies associated with the realignment of SR 99 will be carried out during the future phase of the project. For information on noise and vibration studies, design features and mitigations considered in the environmental evaluations of the project to-date, see Attachment 11.

7. OTHER CONSIDERATIONS AS APPROPRIATE

7.1 Public Meeting/Hearing Process

On February 24, 2009, a NOP was distributed to the State Clearinghouse; elected officials; local, regional, and state agencies; and the interested public. A NOI was published in the *Federal Register* (E9-5579) on March 16, 2009. The Authority and FRA subsequently determined that the environmental impacts of the HST System from Merced to Bakersfield would be more appropriately assessed in two separate EIR/EIS documents, one for the Merced to Fresno Section and another for the Fresno to Bakersfield section. A NOP and NOI for the Merced to Fresno Section amending the environmental process were issued on September 29, 2009 (State Clearinghouse Number 2009091125) October 1, 2009 (*Federal Register* E9-23749), respectively.

7.2 Permits

Caltrans and the Authority are currently negotiating an interagency agreement which will identify the agencies' responsibility to obtain permits. The agreement will be finalized for the next phase of the project and will be based on the Authority and FRA agreements with environmental resource agencies to facilitate the environmental permitting required during final design and construction. These agreements—a Memorandum of Understanding and a Memorandum of Agreement or Programmatic Agreement—will clearly identify the Authority's responsibilities in meeting the permitting requirements of the federal, state, and regional environmental resource agencies.

A list of key agencies and permits they regulate, to be provided by the Authority, are presented in Table 7-1.

TABLE 7-1
Key Regulatory Agencies and Project Permits to be applied/provided by the Authority

Agency	Permit
Federal	
U.S. Army Corps of Engineers (USACE)	Section 404 Permit for Discharge of Dredge or Fill Materials into Waters of the U.S., including wetlands Section 408 Major-Minor Determination of federal levee system modification (as applicable)
U.S. Advisory Council on Historic Preservation via the California State Historic Preservation Office	Section 106 Consultation (National Historic Preservation Act of 1966)
U.S. Fish and Wildlife Service	Section 7 Consultation and Biological Opinion
National Marine Fisheries Service	Section 7 Consultation and Biological Opinion
State	
California Department of Fish and Wildlife	California Endangered Species Act permits Section 1602 Lake and Streambed Alteration Agreement Section 2081 Incidental Take Permit
Regional	
State Water Quality Control Board	Clean Water Act Section 401 Water Quality Certification
San Joaquin Valley Air Quality Control Board	Indirect Source Review (Rule 9510) for NO_x and PM_{10}

7.3 Cooperative and Other Agreements

7.3.1 Post PA/ED Agreement

For the next phase of the project, Caltrans and the Authority will negotiate agreements for PS&E, ROW and Construction of the project. During the next phase of the project, Caltrans will execute a freeway agreement with the City of Fresno and Fresno County, and a cooperative agreement with Fresno Metropolitan Flood Control District (FMFCD).

7.3.2 Joint Use Maintenance Agreement

For the next phase of the project, Caltrans and the Authority will negotiate details of Joint Use Maintenance agreements for the project.

7.4 Transportation Management Plan for Use during Construction

The McKinley Avenue, Clinton Avenue, Ashlan Avenue, Dakota Avenue, Shields Avenue, Princeton Avenue interchanges and ramps serving between the local and regional facilities will be reconstructed or eliminated as part of the project. Additionally, SR 99 is an integral part of Golden State Boulevard, which runs north–south along the UPRR right-of-way. The ramps making this connection to maintain this street continuity will also be reconstructed. The proposed modifications are within the urban and suburban areas of the City of Fresno.

Drivers tend to avoid the disruption caused by construction, which causes additional traffic on the surrounding streets and interchanges. The Shaw Avenue, Herndon Avenue, McKinley Avenue and Olive Avenue interchanges would experience increased traffic congestion. Also, the ability for traffic to bypass the construction zones would be affected by the UPRR. The local street crossings of UPRR are located at Olive, McKinley, Clinton, Ashlan, Shaw, and Herndon Avenues, which are also interchange locations. The increased traffic impacts to the surrounding streets and interchanges that result from project construction operations can be minimized by notifying the public and planning alternative routes around and through the construction zones.

During the design stage, a detailed Construction Transportation Plan for the purpose of minimizing the impact of construction and construction traffic on adjoining and nearby roadways will be provided. The Construction Transportation Plan will be prepared in close consultation with the pertinent city or county, and will be reviewed and approved by the Authority prior to 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 would include a traffic control plan that includes, at 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 practical and where it would result in better traffic flow than 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 practical. Where road closures are required during construction, limit 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
- Project Design Features 1-7 and 9-10 listed in Section 3.2, Transportation, of the Merced to Fresno EIR/EIS.

7.5 Stage Construction

Highway facilities are typically constructed in multiple stages to accommodate traffic flows and allow safe and cost effective construction operations. The number of stages needed depends on how restrictive the highway corridor is and the volume of traffic through the construction zones and on alternate routes. Construction and modification of the SR 99 mainline and interchanges, local streets, and other structures would require the following stages:

1. Utility and local street modifications to clear the right-of-way for new highway facility.
2. Partial construction (in stages) of streets and structures to provide access across SR 99 and railroad right-of-way.
3. Partial construction (in stages) of SR 99 mainline and interchanges to accommodate traffic through the construction areas.

Construction on SR 99 would require a two primary stages operation, separate from the utility relocations:

Stage 1

- Construction:
  1. Construct Clinton Avenue Interchange
  2. Construct auxiliary lane between Clinton Avenue and Olive Avenue
  3. Construct local streets
  4. Construct temporary pavement as necessary
- Traffic:
  1. Maintain two lanes in each direction on Clinton Avenue
  2. Maintain existing number of lanes and shift SR 99 traffic to accommodate Clinton's structure construction

Stage 2

- Construction:
  1. Construct Ashlan Avenue Overhead
  2. Construct SR 99 mainline
  3. Construct all Ashlan Avenue ramps
  4. Construct temporary pavement as necessary
- Traffic:
  1. Maintain two lanes in each direction on Ashlan Avenue
  2. Maintain existing number of lanes and shift SR 99 traffic to accommodate mainline construction

Utility and local street construction would comply with local improvement standards for accommodating traffic around and through construction sites. All staging would be consistent with the TMP developed in support of the project. Construction operations for the HST project would be accomplished through the TMP and well-planned contractor construction operations. A system of protective barriers, construction area signage, and advance planning of construction sequencing for the structure and roadway construction would be provided to accommodate traffic through and around the project. The construction stages, and traffic handling during construction on SR99 as well as on local roads have been coordinated with Caltrans District representatives.

7.6 Maintenance of HST Structures

There are no HST structures within Caltrans ROW for this project.

7.7 Graffiti

The agencies are currently in discussions to update the existing agreement for the continued delivery of the California HST System and the State Highway System (SHS) improvements.

The walls of retained fill also can be targets for graffiti. The final design process will include coordination with local jurisdictions and take into consideration all applicable design guidelines as part of a collaborative process related to construction. Retaining walls can incorporate textured surfaces and artistic patterns that discourage graffiti and add visual interest to the landscape; in addition, surface coatings can be applied to facilitate cleaning and the removal of graffiti. Mitigation measures VQ-MM#5 and VQ-MM#6 in Section 3.16, Aesthetics and Visual Resources, of the Merced to Fresno EIR/EIS include measures related to minimize and remove graffiti from HST structures.

7.8 Involvement with Navigable Water

There are no navigable waters affected by this project.

7.9 Value Analysis

The Merced-Fresno High Speed Train Project included a section-wide Value Analysis effort. More detailed and focused Value Analysis consideration as applicable to the SR 99 Modifications between Olive Avenue and Ashlan Avenue and at Herndon will be carried out during the PS&E phase of the projects.

7.10 Resources Conservation

Section 2.2.4 of Attachment 11 to this Project Report discusses the environmental consequences of the HST Project on Public Utilities and Energy, and concludes that permanent and temporary impacts on energy would be negligible under NEPA and less than significant under CEQA. The impact conclusion for energy is based on analysis found in Section 3.6.4.2, Energy, of the MF HST Final EIR/EIS which evaluates existing electricity consumption in the project area, and Section 3.6.5.3, Alternatives, which discusses the construction and operational energy impacts of the HST Project. In addition, Section 3.3, Air Quality and Global Climate Change, discusses the mitigation measures (including a Voluntary Emissions Reduction Agreement with the San Joaquin Valley Air Pollution Control District, SJVAPCD) in place to reduce fossil fuel use during construction of the project, and also the overall reduction in fuel usage that will result from decreased passenger vehicle VMTs because of switching mode of transportation from vehicles to the High Speed Train.

As discussed in Section 2.8.1 of the FEIR/EIS, General Approach, the Authority has entered into an MOU with FRA, the US Department of Housing and Urban Development, FTA, and EPA titled "Achieving an Environmentally Sustainable high-Speed Train System in California", which outlines sustainable methods to be used in building the project including the following :

- Minimize the use of nonrenewable resources.
- Minimize the impacts on the natural environment.
- Protect environmental diversity.
- Emphasize using renewable resources in a sustainable manner. An example of this approach would be the use of material recycling for project construction (asphalt, concrete, or Portland Cement Concrete [PCC], excavated soil, etc.).

7.11 Title VI Considerations

Section 2.2.10, Socioeconomics, Communities, and Environmental Justice, of Attachment 11 to the PR concludes that none of the impacts on communities (including EJ communities) within the study area would be considered substantial under NEPA or significant under CEQA. This conclusion is based on Section 3.12 of the FEIR/EIS which analyzes potential effects on community and EJ populations. Section 8.1 of the FEIR/EIS outlines public outreach efforts to low-income and minority populations and communities of concern which included engaging EJ-related interest groups, and providing project and public materials in Spanish, as well as providing Spanish, Lao and Hmong language interpreters at public meetings and hearings. In addition, design of the Project avoided certain facilities that serve disadvantaged populations, such as a shelter in the vicinity of the SR 99 realignment.

8. PROGRAMMING

8.1 Scheduling

The following represents the project PS&E through Contract Acceptance Milestone schedule, as coordinated with Caltrans.

Table-8-1
Key Milestone Schedule

Milestone	Delivery Date (Month/Year)
PS&E to DOE (M377)	11/2014
PS&E to HQ (M380)	03/2015
R/W Certification (M410)	07/2015
Ready to List (M460)	07/2015
Approve Contract (M500)	12/2015
Contract Acceptance (M600)	04/2018

8.2 Funding

The project will be using variety of identified and future funding sources, including:

- Federal funds under the American Recovery and Reinvestment Act (ARRA)
- California voter approved State Bonds

Table 8.2 shows Caltrans' Capital and Support cost estimate.

Table-8-2
Capital and Support Cost

Project Cost Component	Fiscal Years							
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
Capital Costs								
Construction				$32,000	$49,000	$30,000		$111,000
Right of Way & Utility Relocation	$5,000	$13,000	$14,000	$18,000	$16,000	$9,000	$5,000	$80,000
Total Capital Costs	**$5,000**	**$13,000**	**$14,000**	**$50,000**	**$65,000**	**$39,000**	**$5,000**	**$191,000**
Support / Labor Costs								
Design Phase (incl. Haz. Waste -332)	$2,500	$6,700	$5,900	$700				$15,800
Right of Way Phase	$500	$1,800	$2,000	$300	$400	$300	$200	$5,500
Construction Phase				$2,400	$5,800	$4,700	$700	$13,600
Total Support / Labor Costs	**$3,000**	**$8,500**	**$7,900**	**$3,400**	**$6,200**	**$5,000**	**$900**	**$34,900**
Total Costs	**$8,000**	**$21,500**	**$21,900**	**$53,400**	**$71,200**	**$44,000**	**$5,900**	**$225,900**

All Costs X $1,000 Right of Way cost is escalated to 2015

9. REVIEWS

The proposed modifications to the SHS has been developed in cooperation with Caltrans and the Authority.

All comments on the previous reports and design submittals have been reviewed and addressed. Caltrans Functional Units continue to participate in the HST Project development process including attendance at coordination meetings and focused technical working group meetings.

Focused meetings were held with the City of Fresno to discuss the design options for the HST alignment between Ashlan Avenue and Clinton Avenue. Design options presented to the City included closures of SR99 SB ramps at Shields, Dakota, and Princeton Avenues. The City provided their support for the closure of these ramps, as long as modifications at Ashlan and Clinton interchange can mitigate the impact of the closures. Project traffic analyses as well as mitigation measures at Clinton and Ashlan as included in the project, consider closure of the ramps at Shields, Dakota and Princeton Avenues.

10. PROJECT PERSONNEL

The key project personnel representing Caltrans, Authority, and Regional Consultant are noted in the following tables.

Table-10-1
Key Caltrans Project Personnel

Name	Title	Phone Number
Garth Fernandez	Project Manager, District 6 Program/Project Management	(559) 243-8012
Thanh Nguyen	Senior Transportation Engineer, Central Region Design I	(559) 243-3813
Harpreet Binning	Design Oversight Engineer, Central Region Design I	(559) 243-3459
Kirsten Helton	Senior Environmental Planner, Central Region Environmental Division	(559) 445-6461
Tom Fisher	Senior Transportation Engineer, Central Region Hydraulics	(559) 243-3498
Ramon Lopez	Transportation Engineer, Central Region Hydraulics	(559) 243-3499
Brad Cole	Senior Landscape Architect, Central Region Landscape Architecture	(559) 230-3134
Marissa Nishikawa	Senior Transportation Engineer, Central Region NPDES Storm Water Management	(559) 243-8007
Andrew Pochwatka	Transportation Engineer, Central Region NPDES Storm Water Management	(559) 243-3417
Michael Weber	Area Construction Senior, Central Region Construction	(559) 651-8314
Albert Lee	Branch Chief, District 6 Traffic Operations	(559) 488-4111
Winter Yeung	Transportation Engineer, District 6 Traffic Operations	(559) 444-2483
Steven McDonald	Senior Transportation Engineer, District 6 Technical Planning	(559) 488-4334
Marco Sanchez	Branch Chief, District 6 Maintenance - SHOPP Management	(559) 444-2559
Mike Janzen	HQ Design Reviewer, HQ Office of Geometric Design Standards	(559) 243-3887
Fritz Hoffman	Senior Bridge Engineer, HQ Division of Engineering Services	(916) 227-8483
Michael Downs	Structure Technical Liaison Engineer, HQ Division of Engineering Services	(916) 227-9365

Table-10-2
Key Authority and Consultant Project Personnel

Name	Title	Phone Number
Diana Gomez	California High Speed Rail Authority – Regional Director	(559) 801-1164
Jennifer Nishikawa	California High Speed Rail Authority - Central Valley Project Engineer	(559) 708-0744
Bobby Pentorali	California High Speed Rail Authority – Project Engineer	(559) 801-2020
Peter Valentine	Authority Project Management Team (PMT), Regional Manager	(916) 567-2558
Bryan Porter	Authority PMT, Environmental Manager	(916) 384-9522
Karin Lilienbecker	Consultant Environmental Manager, Merced-Fresno Section of HST	(530) 229-3228
Kirstin Skadberg	Consultant Environmental/Permitting Lead, Merced-Fresno Section of HST	(619) 272-7251
Glenn Manorek	Consultant Highway Lead Engineer, Merced-Fresno Section of HST	(916) 286-0250
Robert Henderson	Consultant Hydraulics/Hydrology Lead Engineer, Merced-Fresno Section of HST	(714) 435-6143
Richard Wenzel	Consultant Project Manager, Merced-Fresno Section of HST	(510) 735-4324
Farid Nobari	Consultant Deputy Project Manager/Engineering, Merced-Fresno Section of HST	(916) 335-5395

11. LIST OF ATTACHMENTS

Attachment 1 - Location Map

Attachment 2 - Project Vicinity

Attachment 3 - Existing and Forecast Traffic Volumes

Attachment 4 - L-1 (Tight Diamond) Alternative

Attachment 5 - Structure Plans

Attachment 6 - Construction Staging Concept Plan

Attachment 7 - Cost Estimate

Attachment 8 - Right-of-Way Data Sheets

Attachment 9 - Risk Register

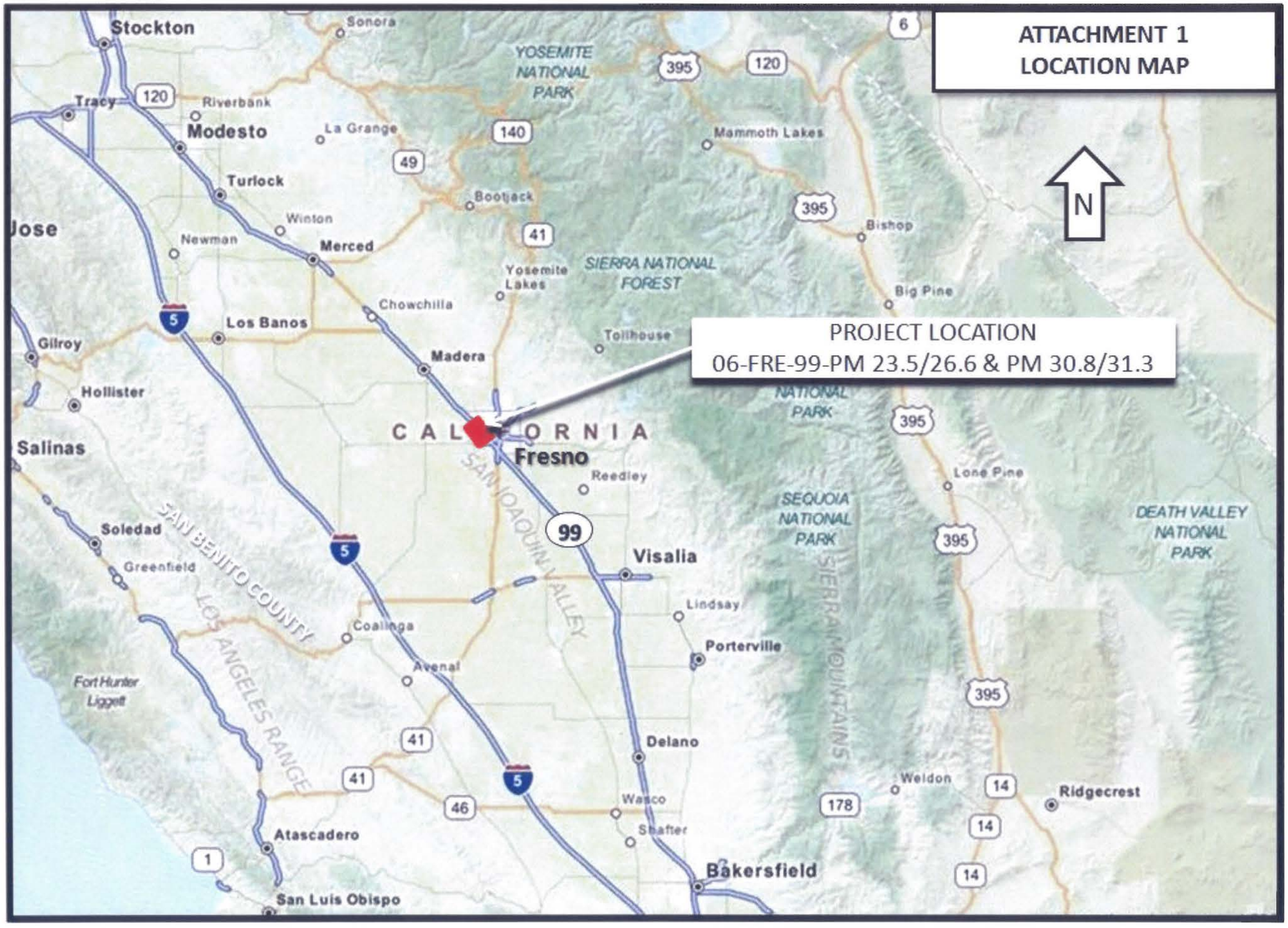
Attachment 10 - Storm Water Data Report

Attachment 11 - Environmental Impacts

Attachment 12 - Composite Utility Plans

Attachment 13 - Transportation Management Plan (TMP)

Attachment 1
Location Map

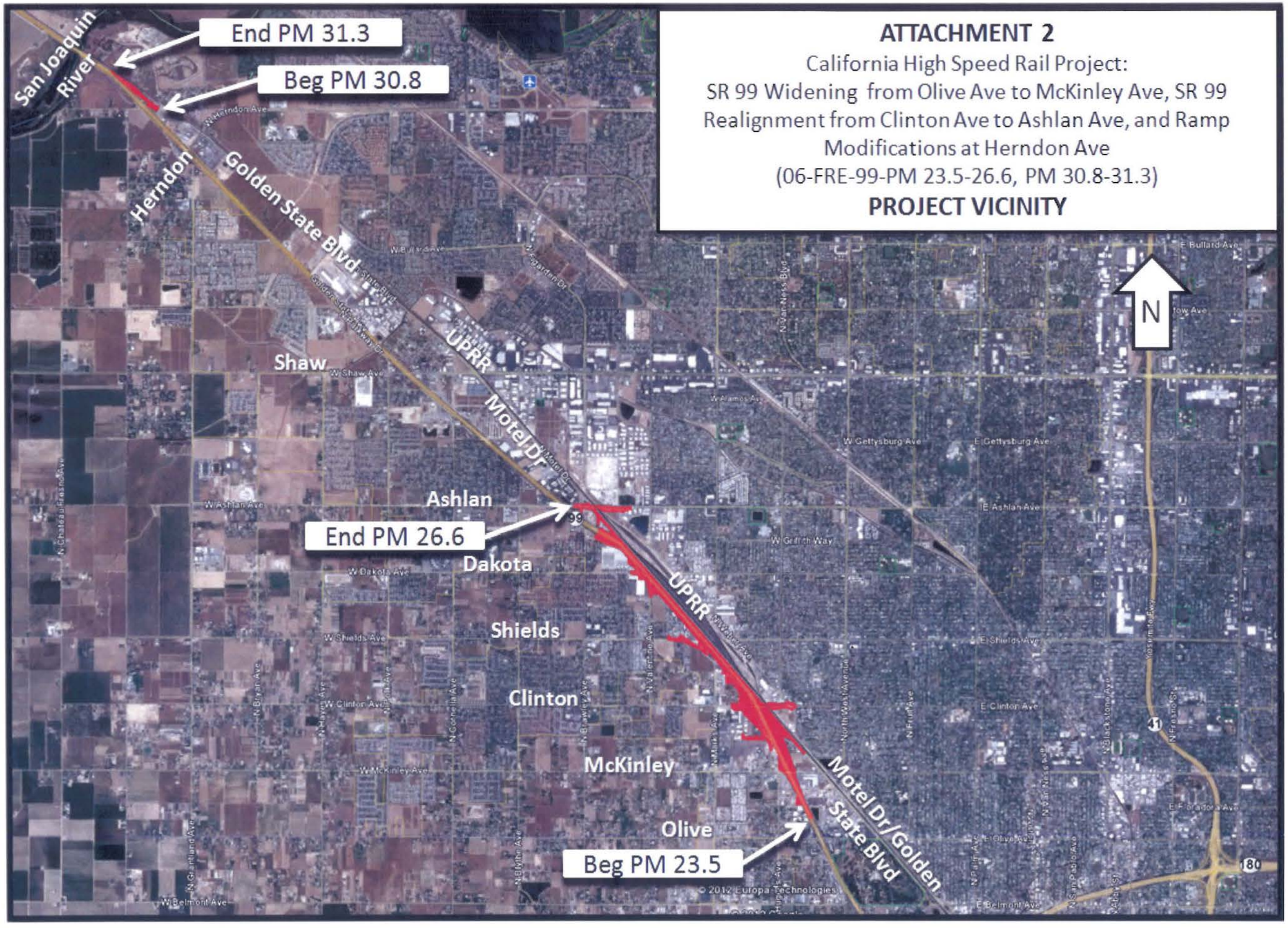

ATTACHMENT 1
LOCATION MAP
PROJECT LOCATION
06-FRE-99-PM 23.5/26.6 & PM 30.8/31.3
N
Stockton
Sonora
YOSEMITE NATIONAL PARK
Tracy
Riverbank
Modesto
La Grange
Mammoth Lakes
Turlock
Bootjack
Winton
Newman
Merced
Bishop
Yosemite Lakes
SIERRA NATIONAL FOREST
Big Pine
Chowchilla
Los Banos
Tollhouse
Gilroy
Madera
Hollister
Salinas
CALIFORNIA
Fresno
Reedley
Lone Pine
SEQUOIA NATIONAL PARK
DEATH VALLEY NATIONAL PARK
Soledad
SAN BENITO COUNTY
Greenfield
Visalia
SAN JOAQUIN VALLEY
Lindsay
Coalinga
LOS ANGELES RANGE
Porterville
Avenal
Fort Hunter Liggett
SIERRA MOUNTAINS
Delano
Weldon
Ridgecrest
Wasco
Shafter
Atascadero
Bakersfield
San Luis Obispo
6
120
395
140
49
41
5
99
46
1
178
14

Attachment 2
Project Vicinity

ATTACHMENT 2

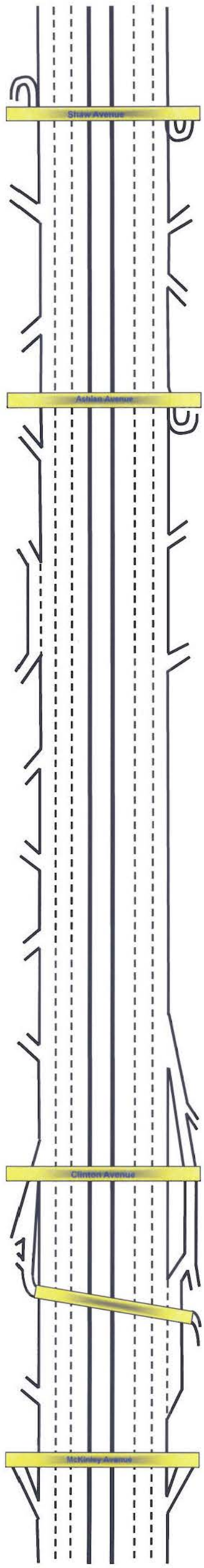
California High Speed Rail Project:
SR 99 Widening from Olive Ave to McKinley Ave, SR 99 Realignment from Clinton Ave to Ashlan Ave, and Ramp Modifications at Herndon Ave
(06-FRE-99-PM 23.5-26.6, PM 30.8-31.3)

PROJECT VICINITY

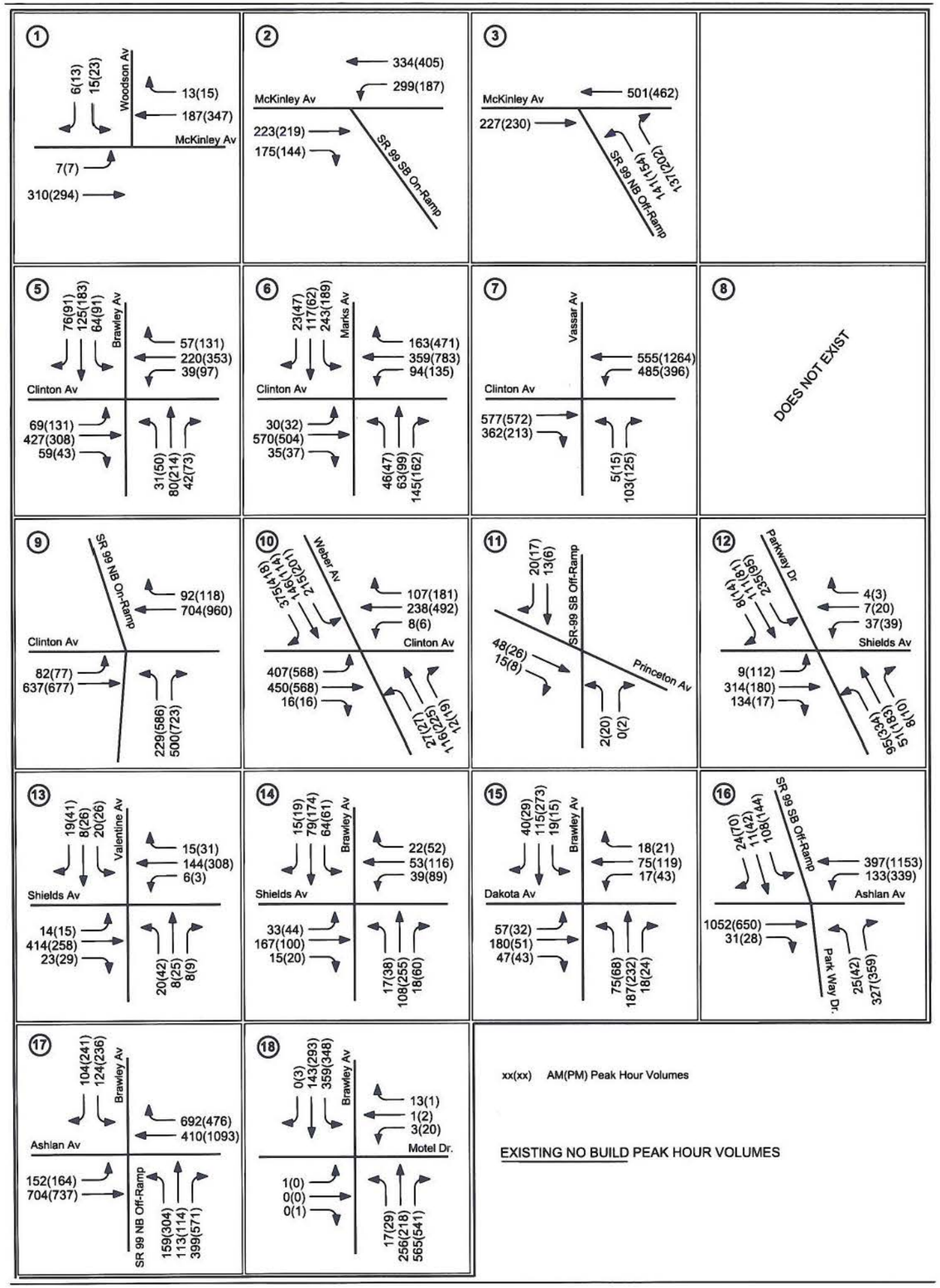


Attachment 3
Existing and Forecast Traffic Volumes

Existing AM	Existing PM	Existing ADT	Location
2,027	1,885	29,309	SB SR 99 West of Shaw Onramp
0	1	11	SB SR 99 Shaw Onramp
2,027	1,886	29,320	SB SR 99 between Shaw Offramp and Shaw Onramp
745	619	6,368	SB SR 99 Shaw Onramp
2,772	2,505	35,687	SB SR 99 between Shaw Onramp and Ashlan Offramp
287	496	4,500	SB SR 99 Ashlan Offramp
2,485	2,009	31,187	SB SR 99 between Ashlan Offramp and Ashlan Onramp
489	235	3,991	SB SR 99 Ashlan Onramp
2,974	2,244	35,178	SB SR 99 between Ashlan Onramp and Golden State Onramp
1,080	996	11,931	SB SR 99 Golden State Onramp
4,054	3,240	47,109	SB SR 99 between Golden State Onramp and Dakota Offramp
93	246	1,747	SB SR 99 Dakota Offramp
3,961	2,994	45,362	SB SR 99 between Dakota Offramp and Shields Offramp
51	64	1,223	SB SR 99 Shields Offramp
3,910	2,930	44,139	SB SR 99 between Shields Offramp and Shields Onramp
473	296	3,593	SB SR 99 Shields Onramp
4,383	3,226	47,732	SB SR 99 between Shields Onramp and Princeton Offramp
33	12	232	SB SR 99 Princeton Offramp
4,350	3,214	47,500	SB SR 99 between Princeton Offramp and Princeton Onramp
40	39	564	SB SR 99 Princeton Onramp
4,390	3,253	48,064	SB SR 99 between Princeton Onramp and Clinton/Vassar Offramp
247	214	2,399	SB SR 99 Clinton Offramp Combined
67	102	790	SB SR 99 Clinton Offramp
180	112	1,610	SB SR 99 Vassar Offramp
4,143	3,039	45,665	SB SR 99 between Clinton Offramp and Parkway Onramp
665	524	5,556	SB SR 99 Parkway Onramp
4,808	3,563	51,221	SB SR 99 between Parkway Onramp and McKinley Onramp
474	331	5,296	SB SR 99 McKinley Onramp
5,282	3,894	56,517	SB SR 99 South of McKinley Onramp

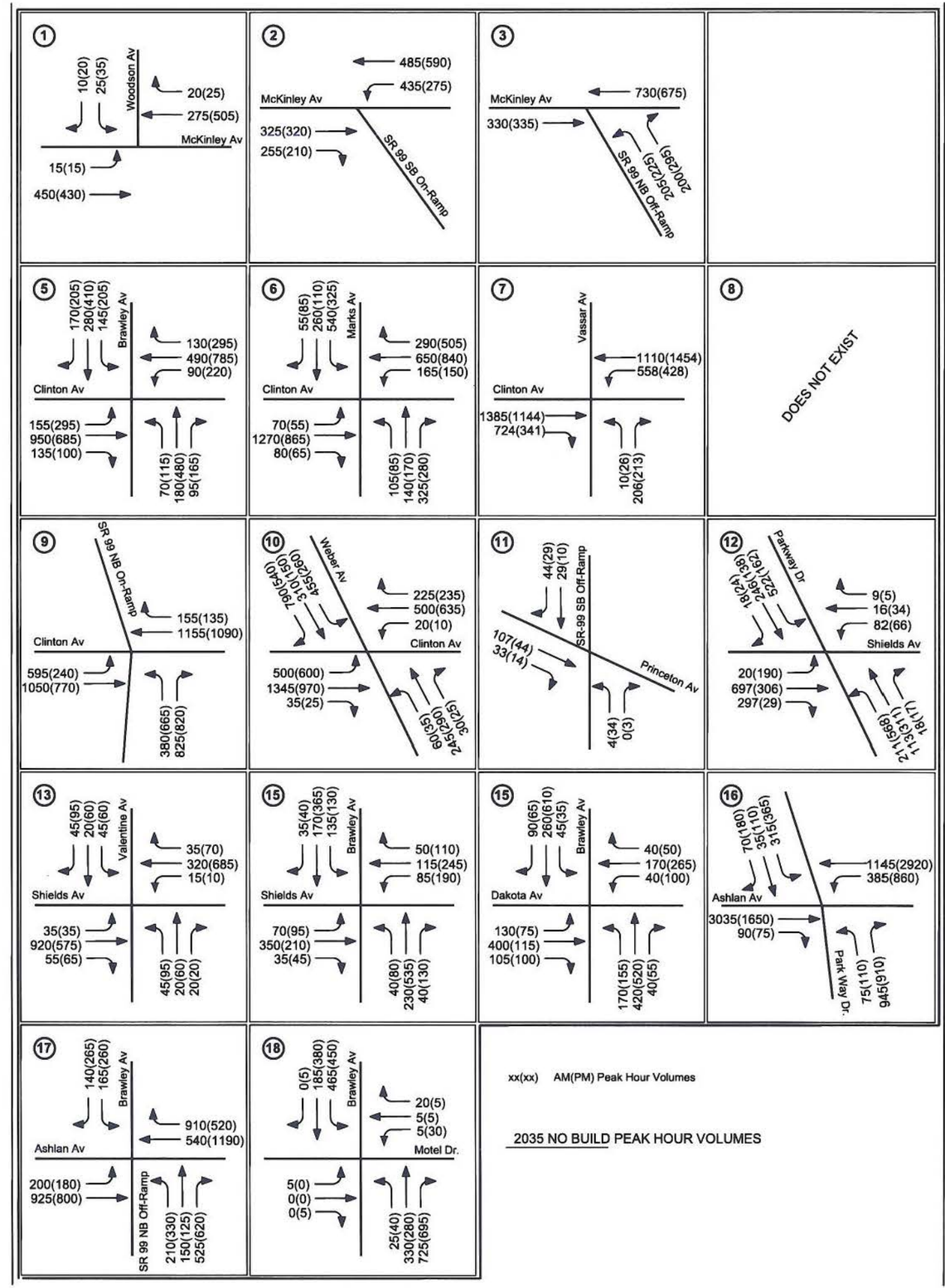


	Existing AM	Existing PM	Existing ADT
NB SR 99 between Shaw Offramp and Shaw Onramp	2,060	2,196	30,475
NB SR 99 Shaw Onramp	161	79	1,779
NB SR 99 between Shaw Offramp and Shaw Onramp	1,899	2,117	28,696
NB SR 99 Shaw Offramp	295	396	3,971
NB SR 99 between Ashlan Onramp and Shaw Offramp	1,899	2,117	28,696
NB SR 99 Ashlan Onramp	164	151	1,810
NB SR 99 between Ashlan Onramp and Ashlan Onramp	2,030	2,362	30,857
NB SR 99 Ashlan Onramp	161	73	1,093
NB SR 99 between Ashlan Offramp and Ashlan Onramp	1,869	2,289	29,763
NB SR 99 Ashlan Offramp	515	867	6,458
NB SR 99 between Golden State Offramp and Ashlan Offramp	2,384	3,156	36,221
Golden State off	691	888	11,279
NTS			
NB SR 99 between Motel Onramp and Golden State Offramp	3,075	4,044	47,500
NB SR 99 Clinton/Motel Onramp Combined	290	453	4,270
NB SR 99 Motel Onramp	116	258	2,149
NB SR 99 Clinton Onramp	174	195	2,121
NB SR 99 between Clinton and Motel	2,785	3,591	43,230
NB SR 99 Clinton Offarmp	729	1,309	11,713
NB SR 99 Motel	25	91	667
NB SR 99 between McKinley Off and Clinton Off	3,514	4,900	54,943
NB SR 99 McKinley Offramp	284	356	3,678
	9,080	9,150	115,138
NB SR 99 between South of McKinley	3,798	5,256	58,621



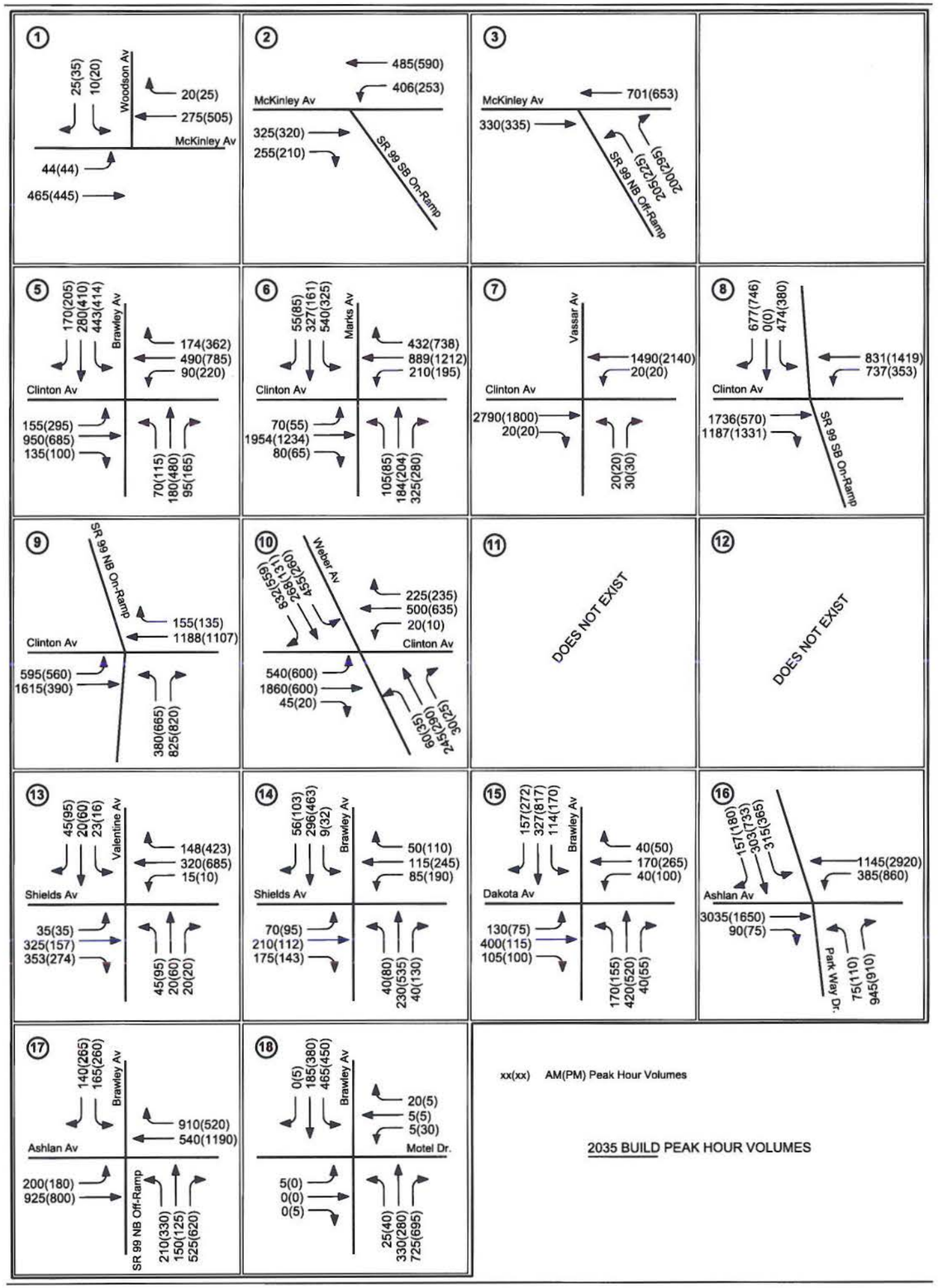
xx(xx) AM(PM) Peak Hour Volumes

EXISTING NO BUILD PEAK HOUR VOLUMES

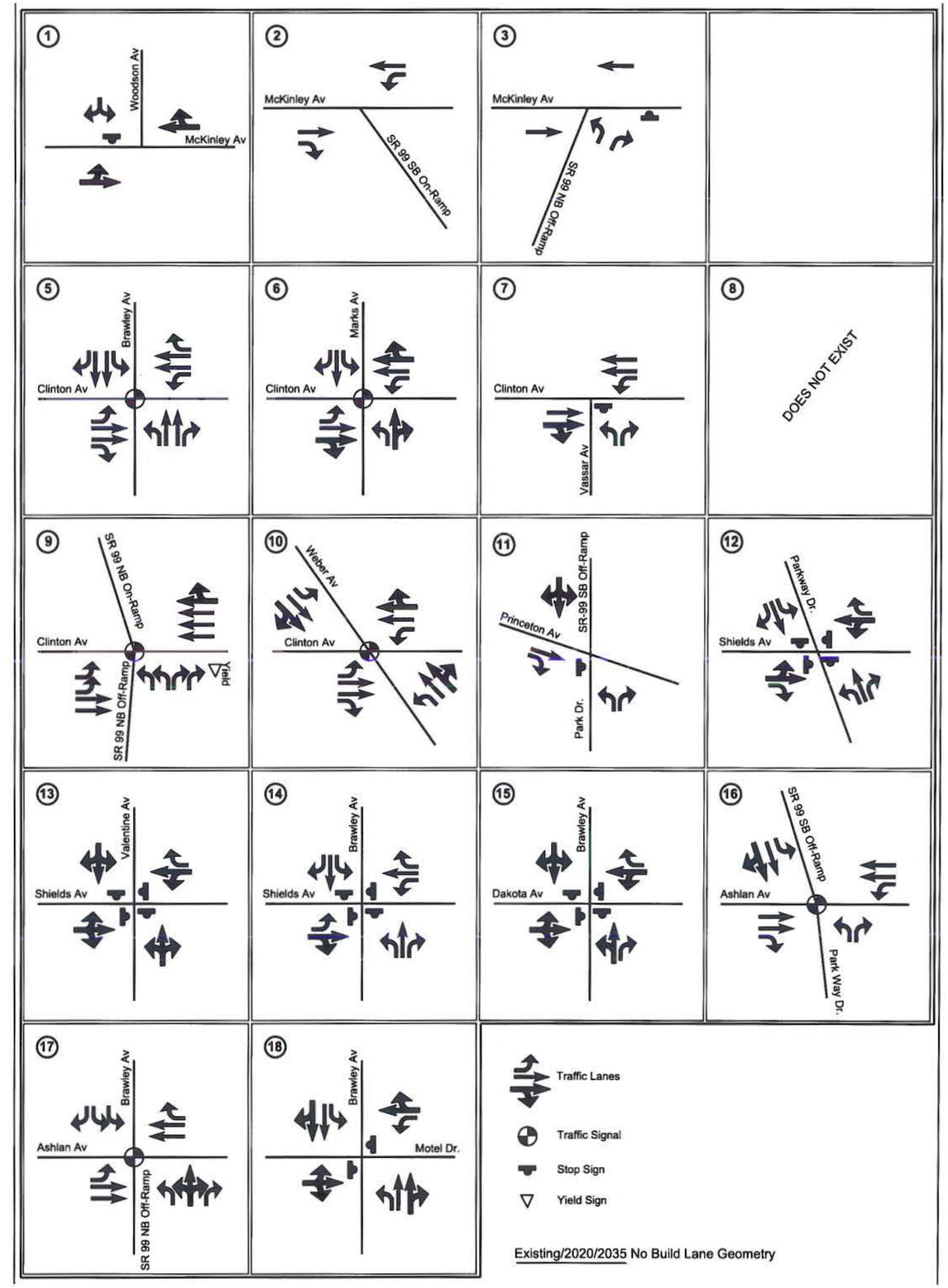


xx(xx) AM(PM) Peak Hour Volumes

2035 NO BUILD PEAK HOUR VOLUMES



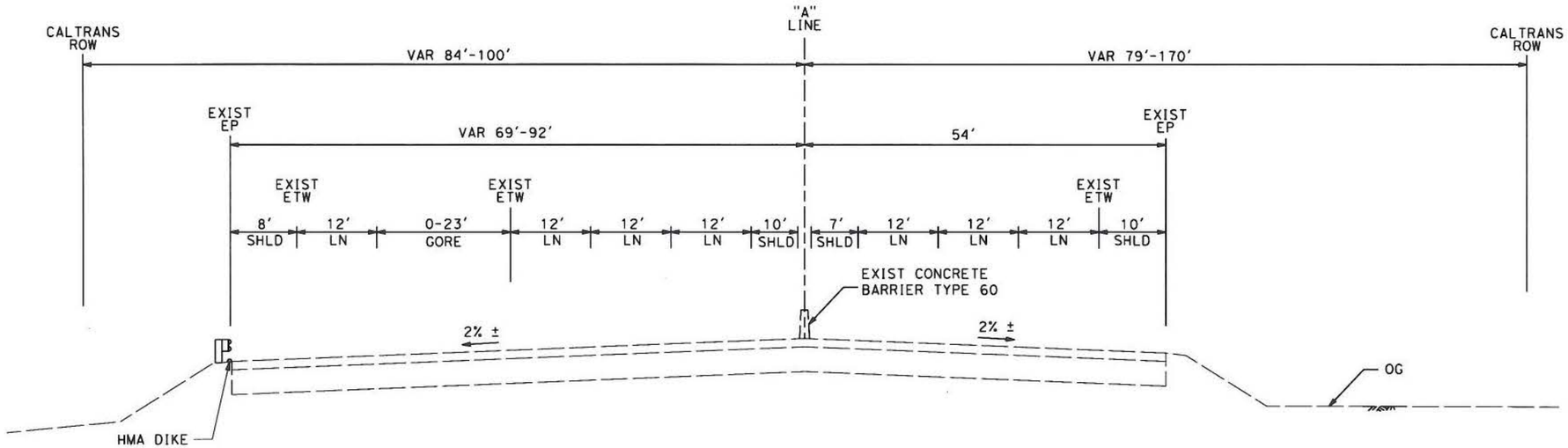
2035 BUILD PEAK HOUR VOLUMES



Existing/2020/2035 No Build Lane Geometry

Existing/2020/2035 Build Lane Geometry

Attachment 4
L-1 (Tight Diamond) Alternative



SB "A" 90+20 TO 92+68

NB "A" 90+00 TO 119+55

NOTES:

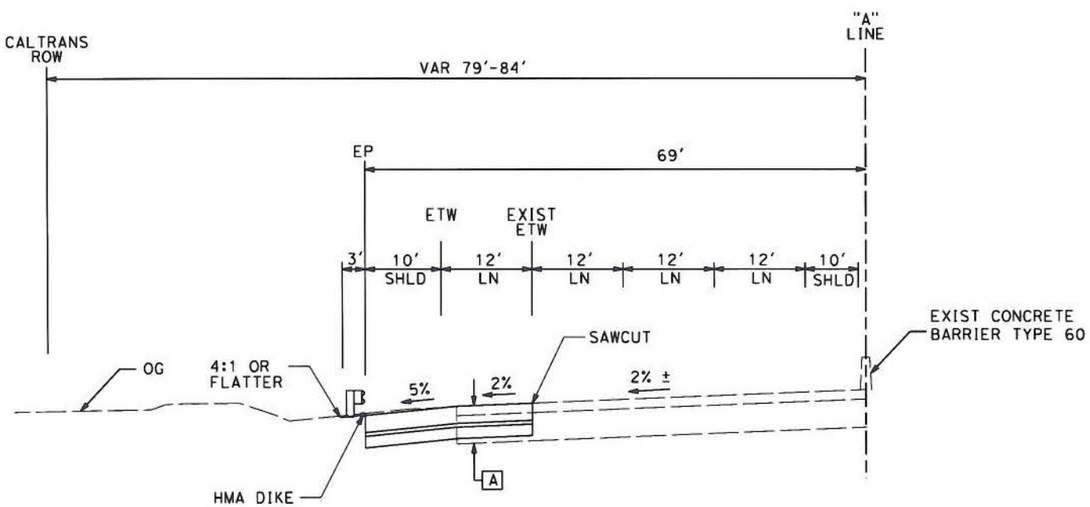
1. DIMENSIONS OF THE STRUCTURAL SECTIONS ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. SUPERELEVATION AS SHOWN OR AS DIRECTED BY THE ENGINEER.
3. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.
4. SEE TRACK PLAN FOR DETAILS WITHIN HIGH SPEED TRAIN RIGHT OF WAY.

A: 1.0' CRCP, 0.25' HMA, 0.7' AS

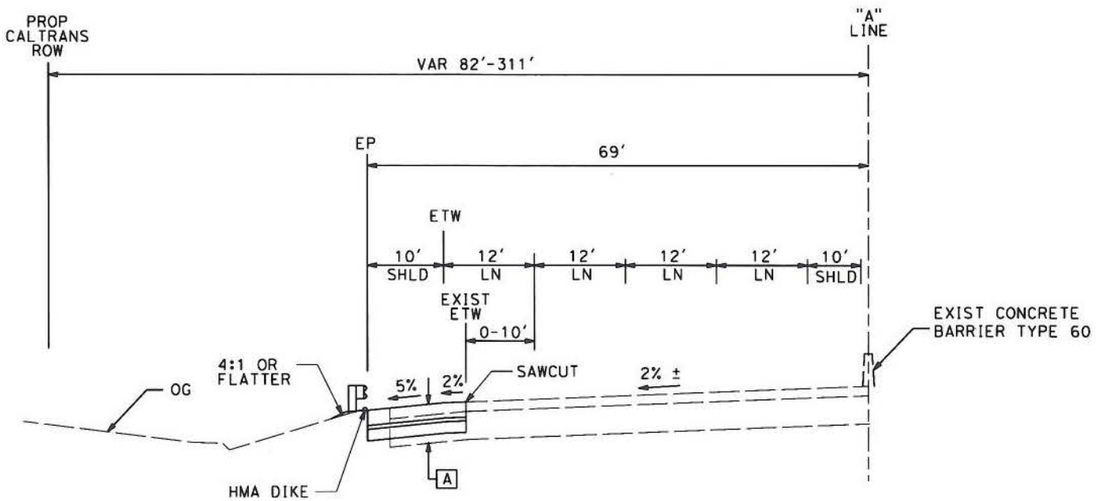
B: 0.65' HMA, 0.90' AB, 0.95' AS

C: 0.45' HMA, 1.35' AB

D: 0.25' HMA, 0.60' AB



SB "A" 92+68 TO 98+50



SB "A" 98+50 TO 102+40

ROUTE 99

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - HIGHWAY

CONTRACT NO.
DRAWING NO. CV-R0001-R99
SCALE AS SHOWN
SHEET NO.

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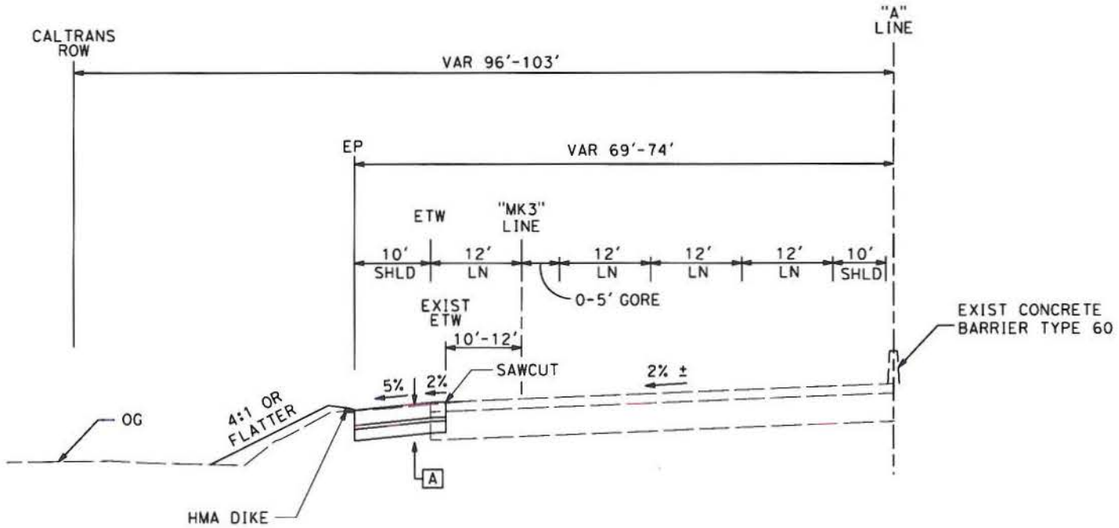
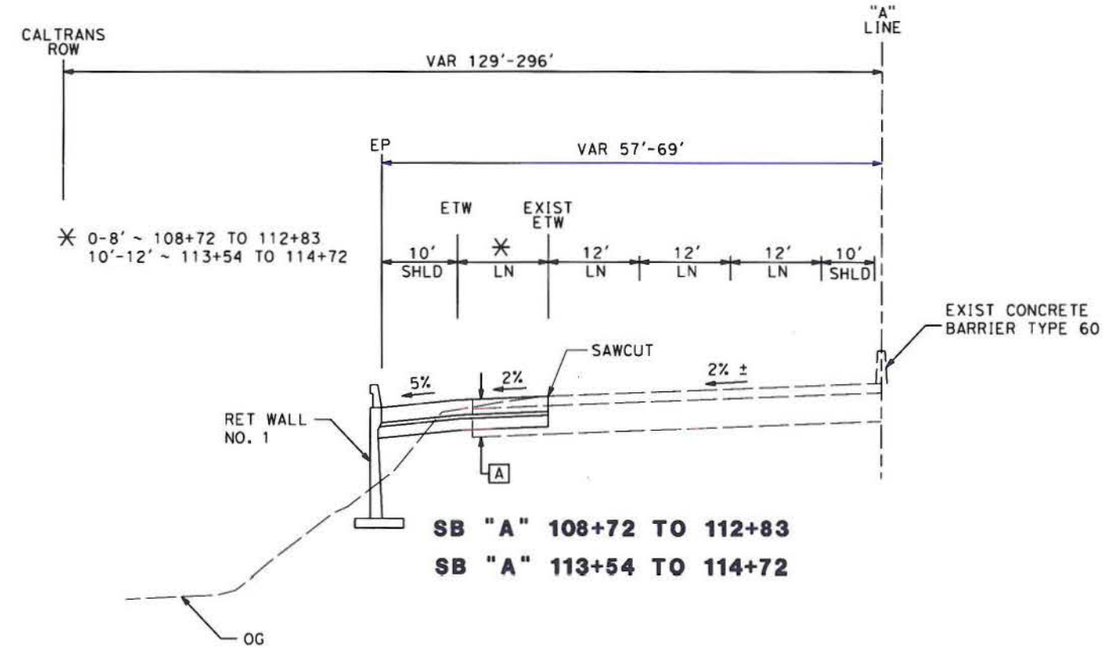
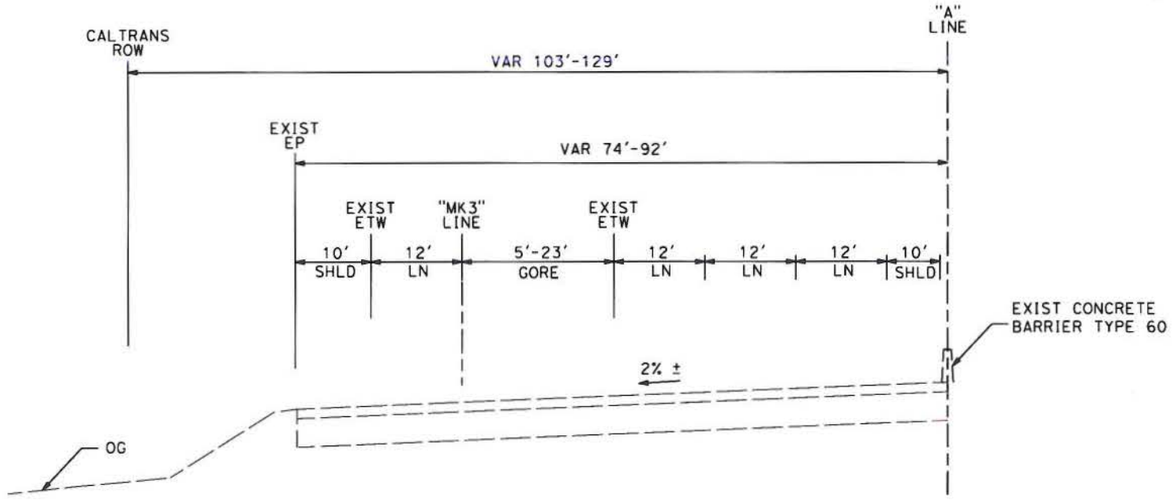


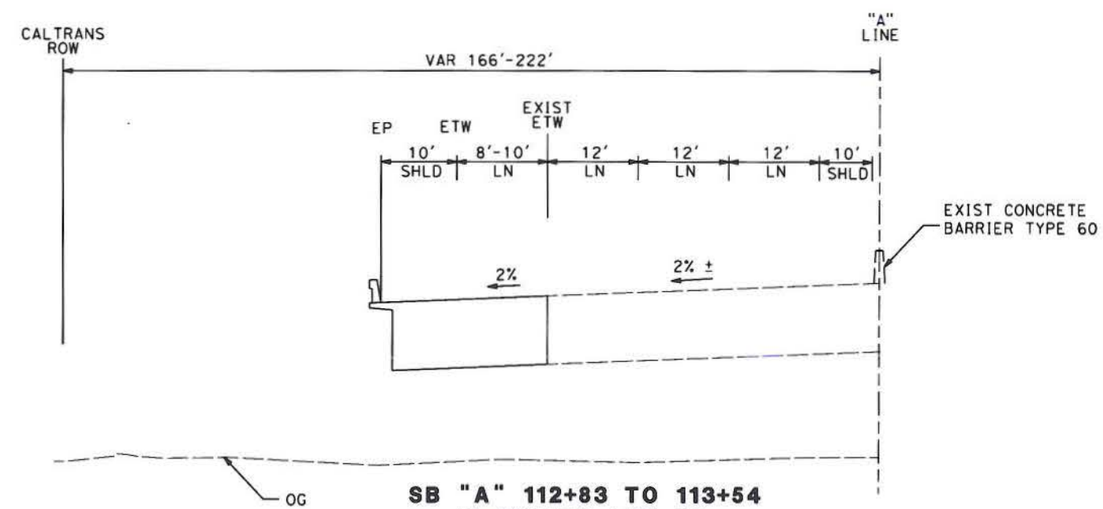
SB "A" 102+40 TO 104+95



SB "A" 108+72 TO 112+83
SB "A" 113+54 TO 114+72



SB "A" 104+95 TO 108+72



SB "A" 112+83 TO 113+54
McKINLEY AVE UC

ROUTE 99

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PROPOSED PRELIMINARY DESIGN

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

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PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - HIGHWAY

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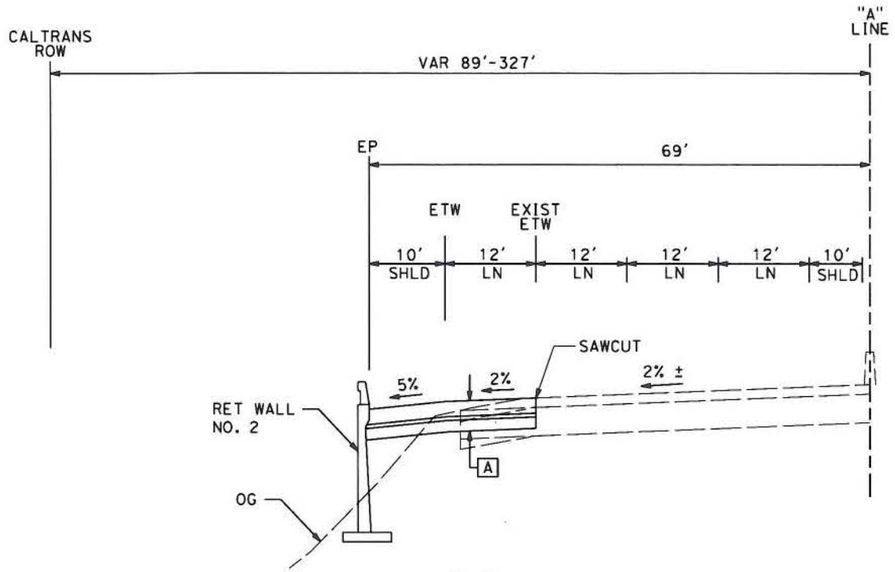
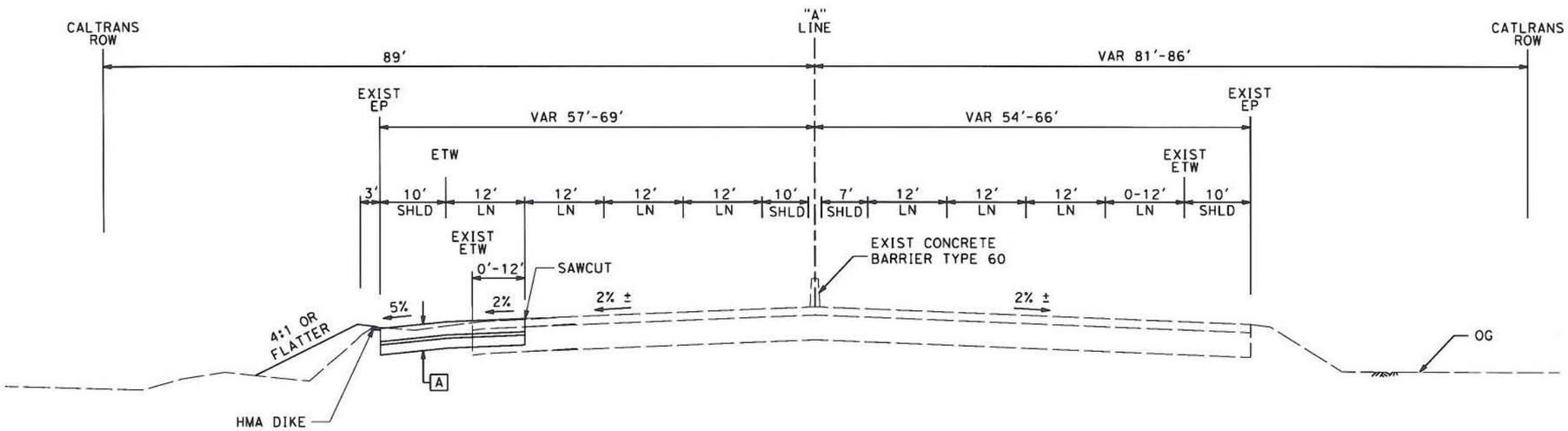


SB "A" 114+72 TO 119+60



SB "A" 119+60 TO 123+41 **NB "A" 119+55 TO 123+15**

ROUTE 99

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - HIGHWAY

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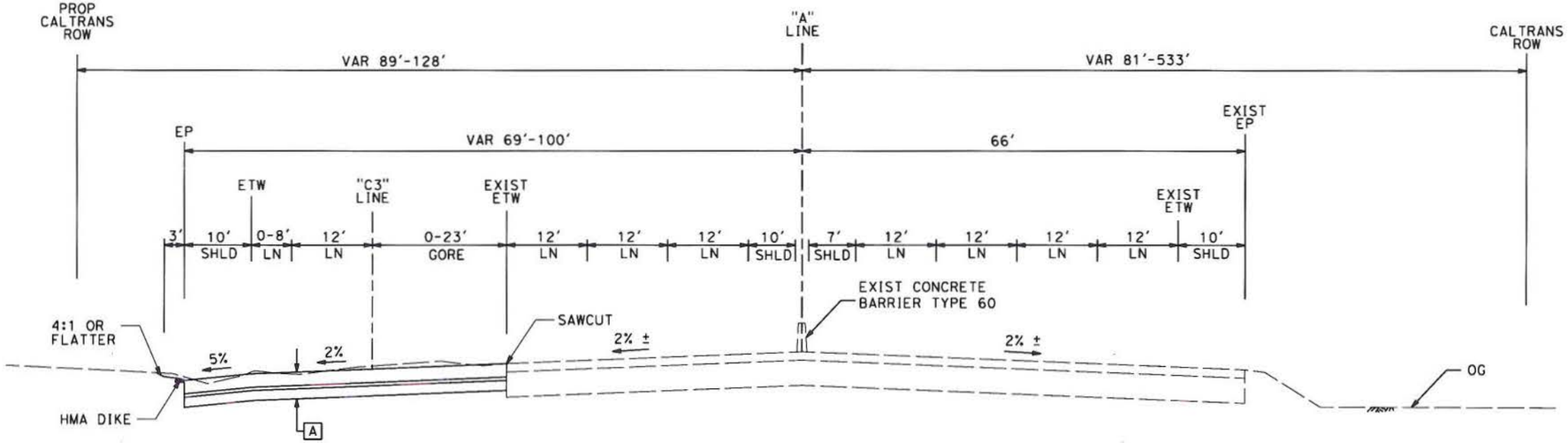
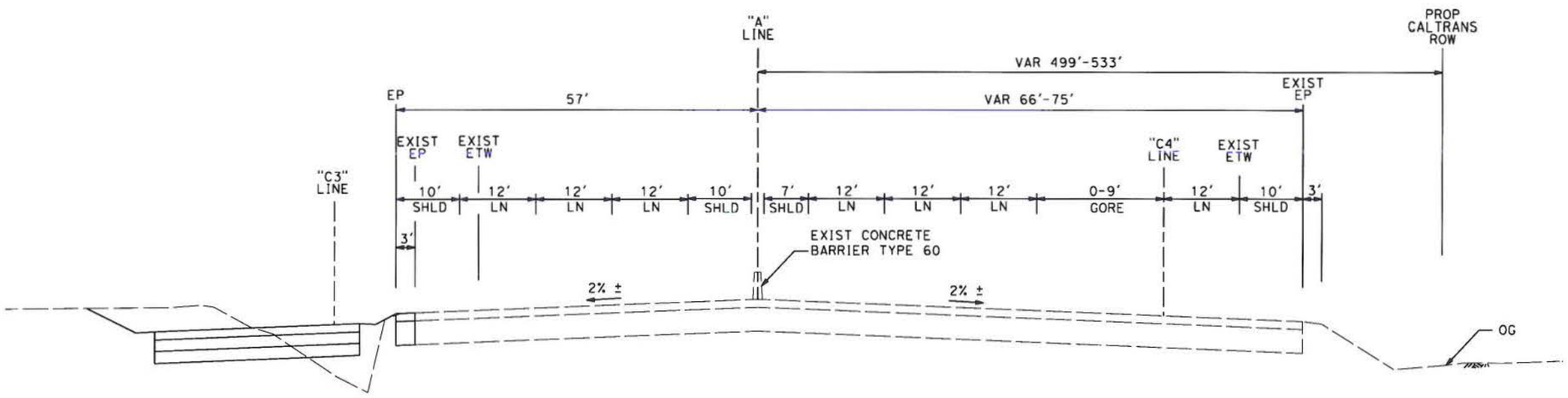


SB "A" 123+41 TO 129+32 **NB "A" 123+15 TO 130+00**



SB "A" 129+32 to 131+23 **NB "A" 130+00 TO 131+23**

ROUTE 99

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - HIGHWAY

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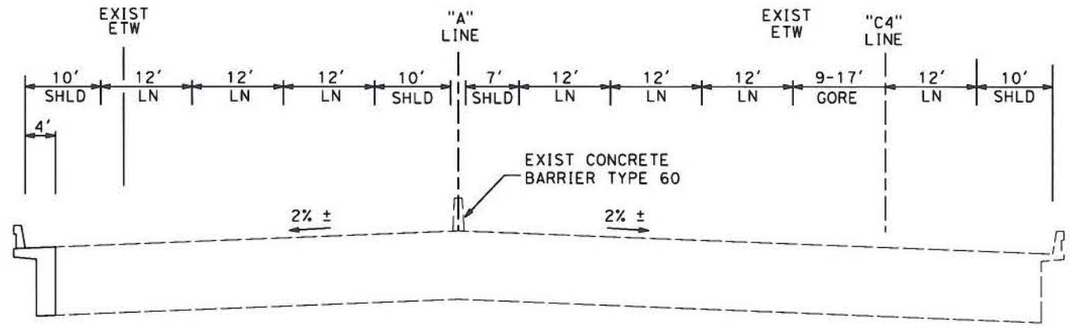
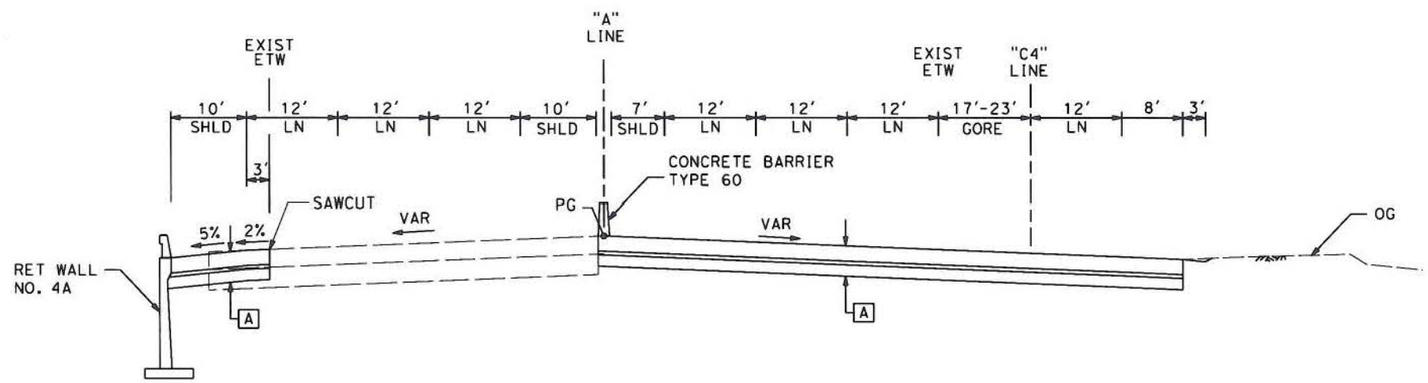


"A" 131+23 TO 132+00
NORTH FRESNO UC



SB "A" 132+00 TO 134+00 **NB "A" 132+00 TO 132+69**

ROUTE 99

REV	DATE	BY	CHK	APP	DESCRIPTION

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DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - HIGHWAY

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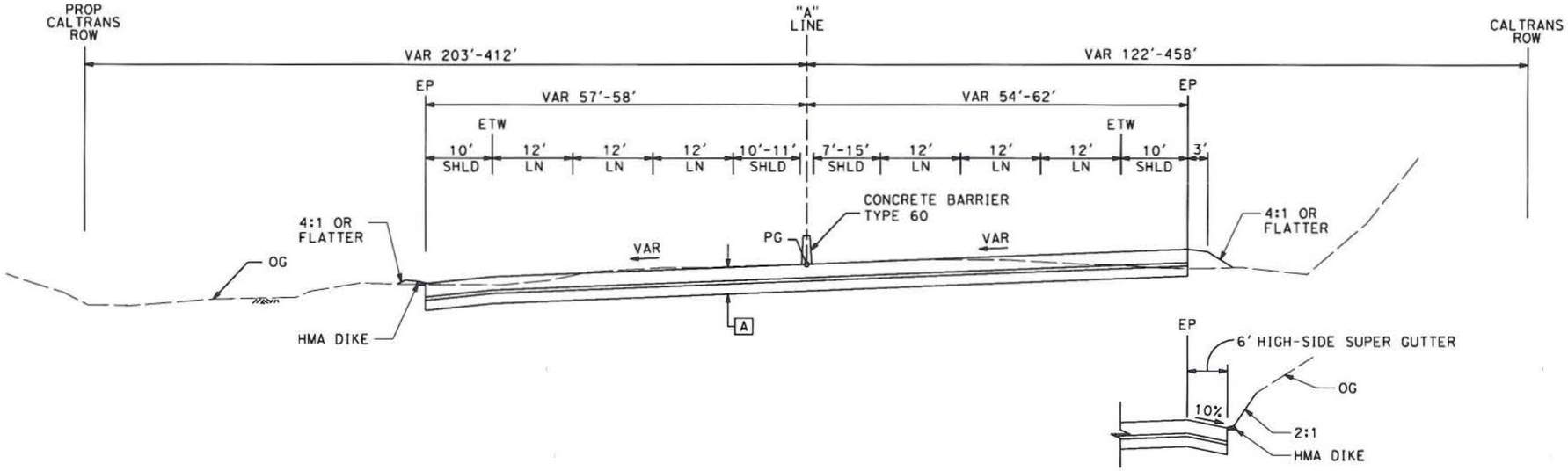
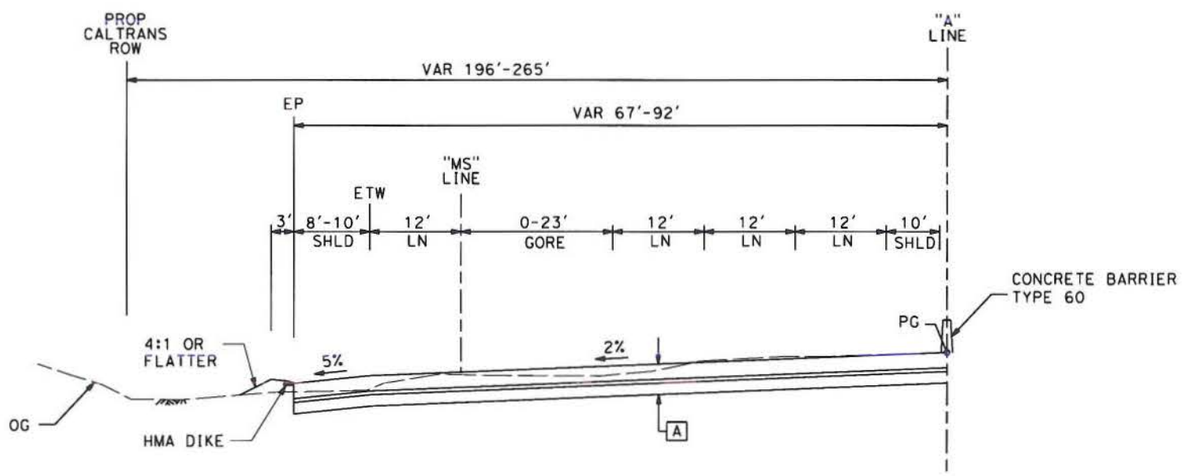


NB "A" 135+95 TO 148+05

SB "A" 134+00 TO 146+00

NB "A" 132+69 TO 152+22



SB "A" 146+00 TO 148+85

ROUTE 99

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DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - HIGHWAY

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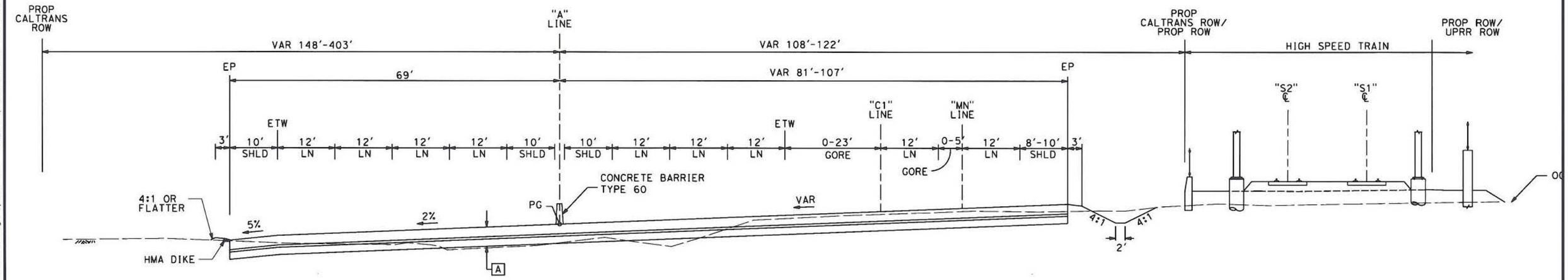
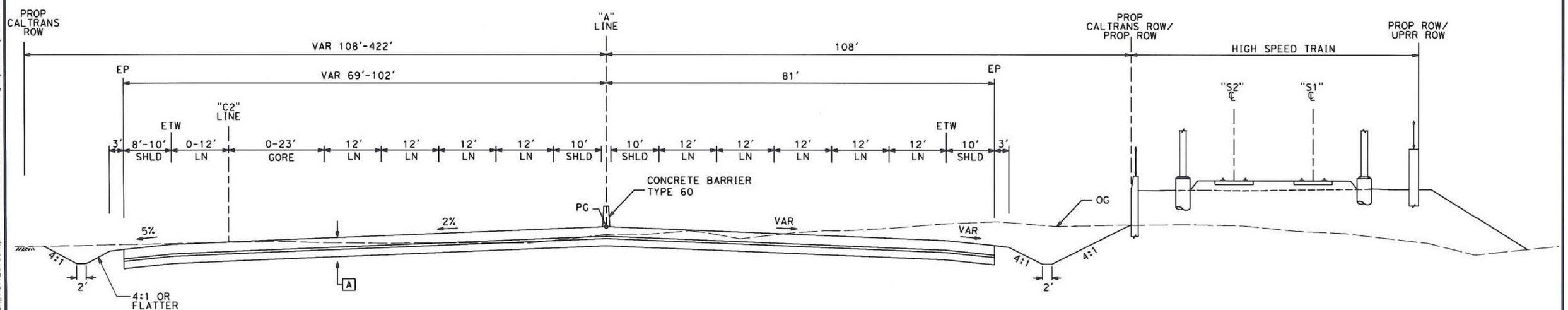


SB "A" 148+85 TO 157+21 **NB "A" 152+22 TO 158+14**



SB "A" 157+21 TO 161+31 **NB "A" 158+14 TO 168+14**

ROUTE 99

REV	DATE	BY	CHK	APP	DESCRIPTION

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DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - HIGHWAY

CONTRACT NO.
DRAWING NO. CV-R0007-R99
SCALE AS SHOWN
SHEET NO.

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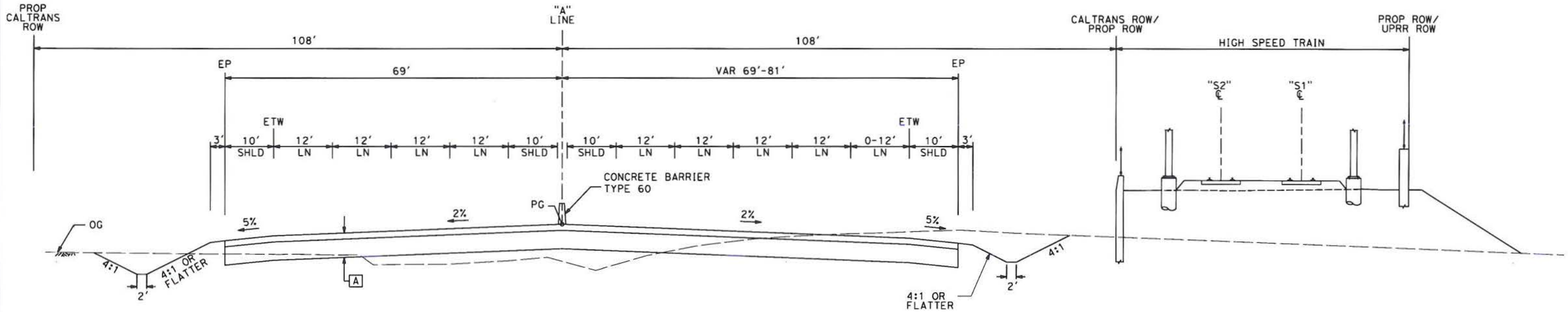
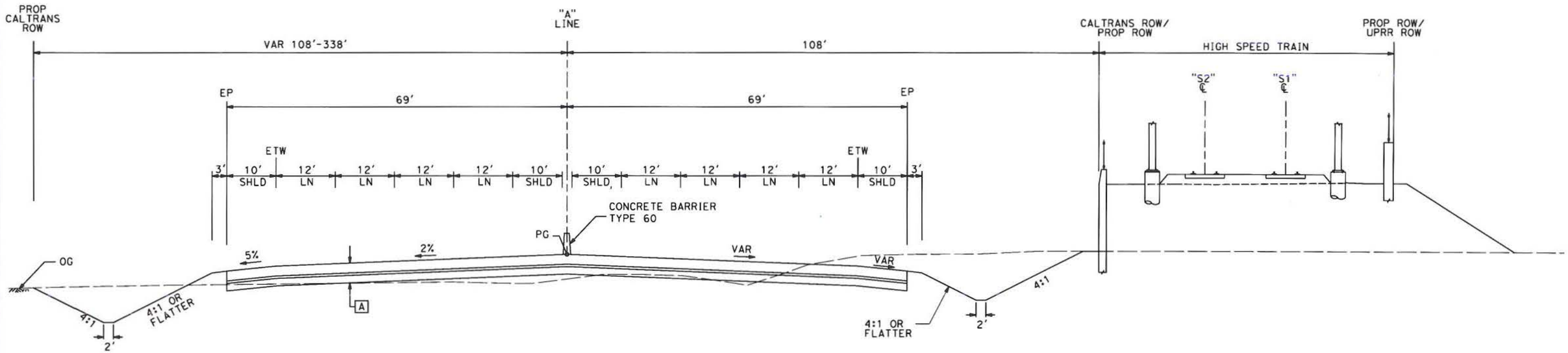


SB "A" 161+31 TO 174+14 **NB "A" 168+14 TO 174+14**



SB "A" 174+14 TO 219+06 **NB "A" 174+14 TO 221+20**

ROUTE 99

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - HIGHWAY

CONTRACT NO.
DRAWING NO. CV-R0008-R99
SCALE AS SHOWN
SHEET NO.

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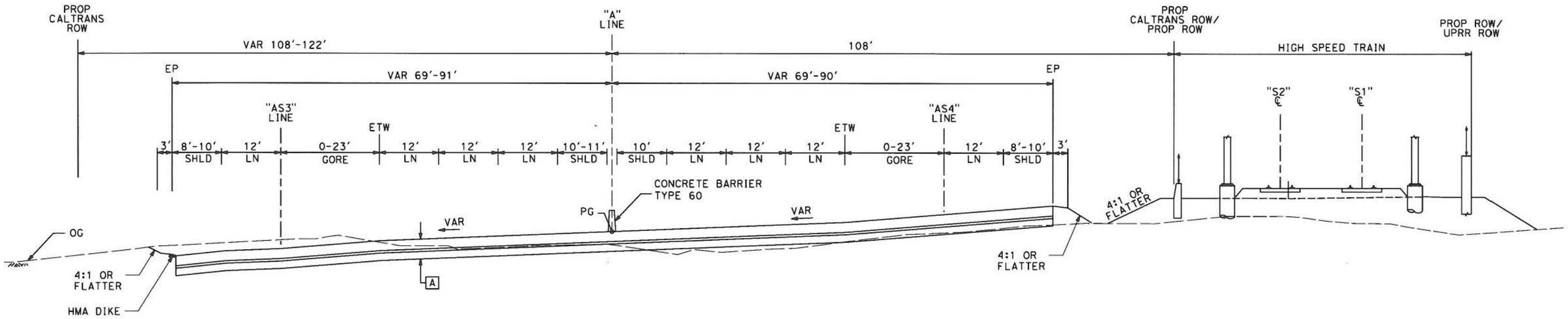
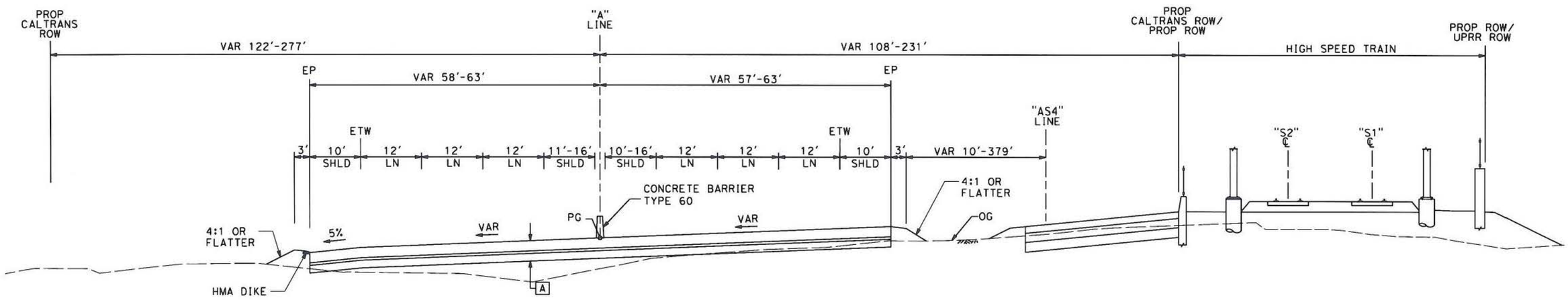


SB "A" 219+06 TO 225+38 **NB "A" 221+20 TO 223+86**



SB "A" 225+38 TO 237+30 **NB "A" 223+86 TO 237+30**

ROUTE 99

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc. 2020 L Street, Suite 300 Sacramento, CA 95811

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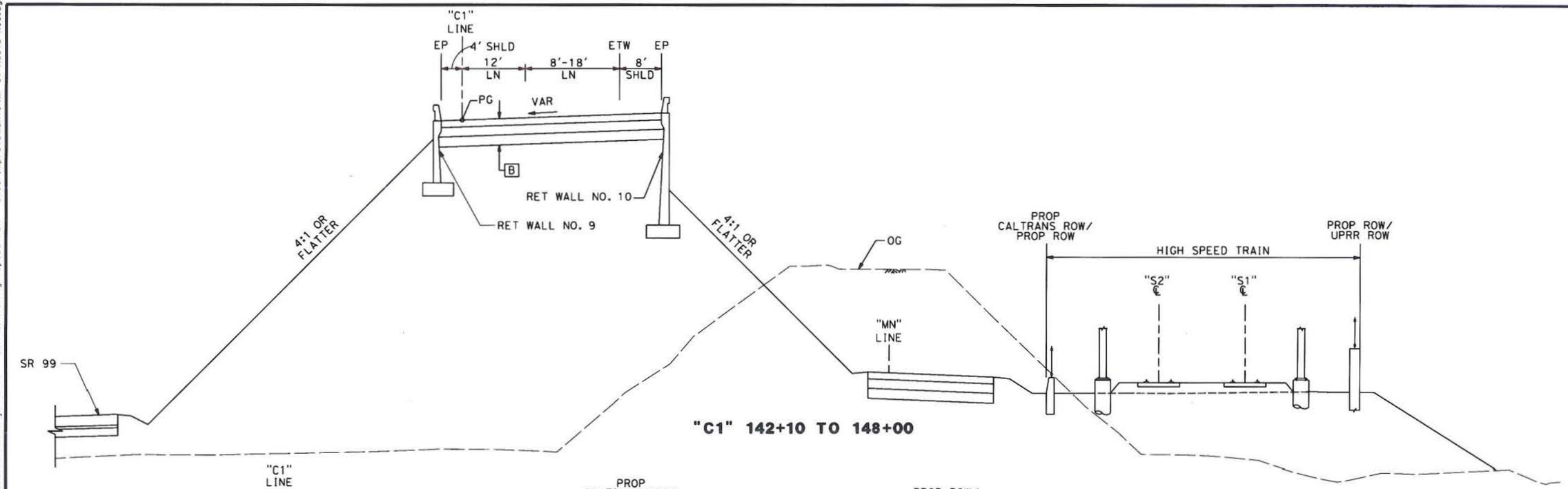
CALIFORNIA HIGH-SPEED RAIL AUTHORITY

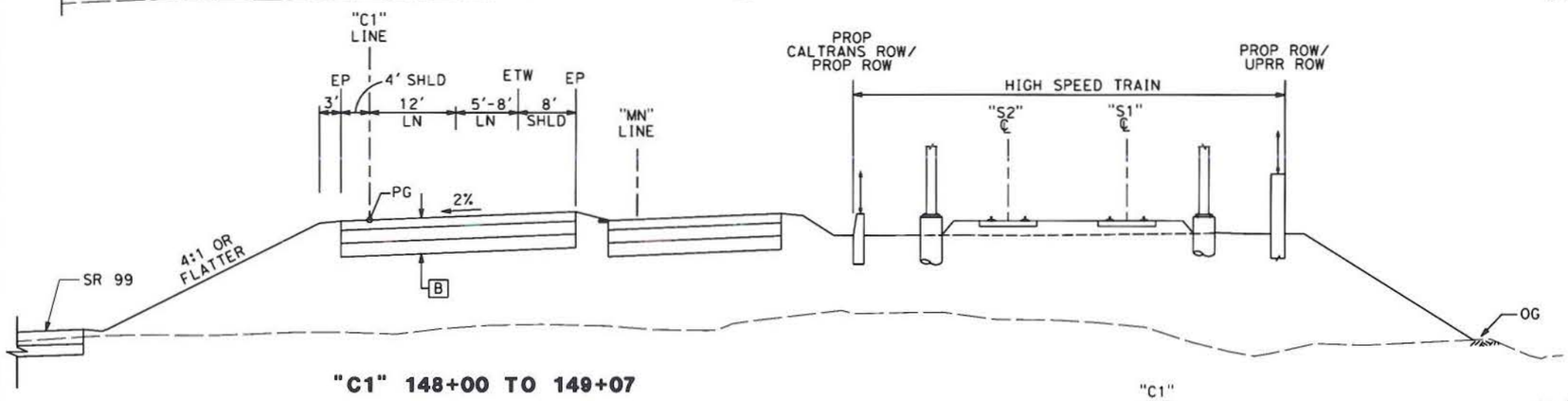
CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - HIGHWAY

CONTRACT NO.
DRAWING NO. CV-R0009-R99
SCALE AS SHOWN
SHEET NO.

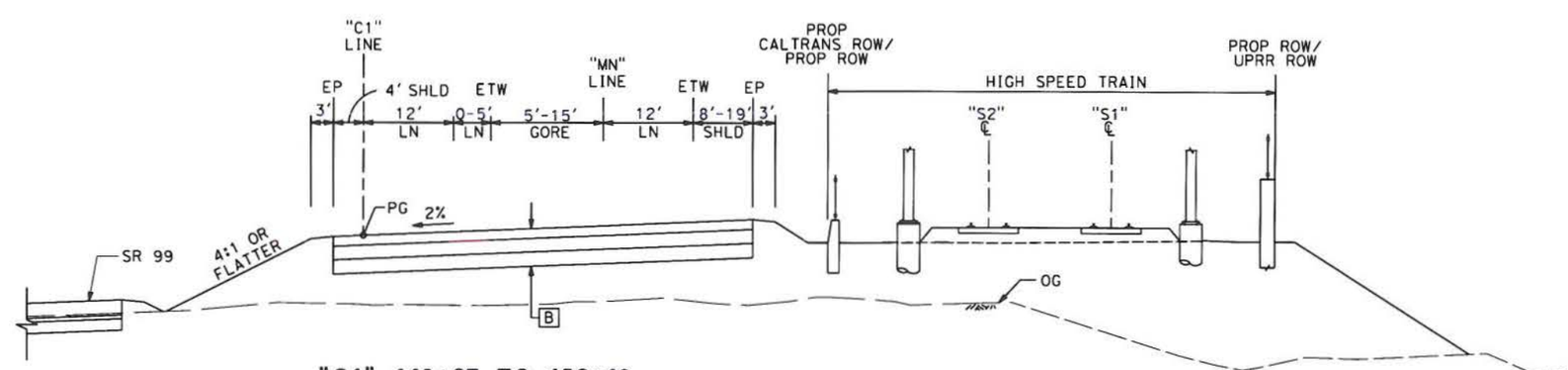
ychiu 12/1/2011 10:45:25 AM CAHSRP-R1.TBL CHSR_half_block.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\WF-CV-R3009-R99.dgn



"C1" 142+10 TO 148+00



"C1" 148+00 TO 149+07



C1 LINE
NB ON RAMP AT W CLINTON AVE

"C1" 149+07 TO 152+18

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - RAMP "C1"

CONTRACT NO.
DRAWING NO. CV-R0010-R99
SCALE AS SHOWN
SHEET NO.

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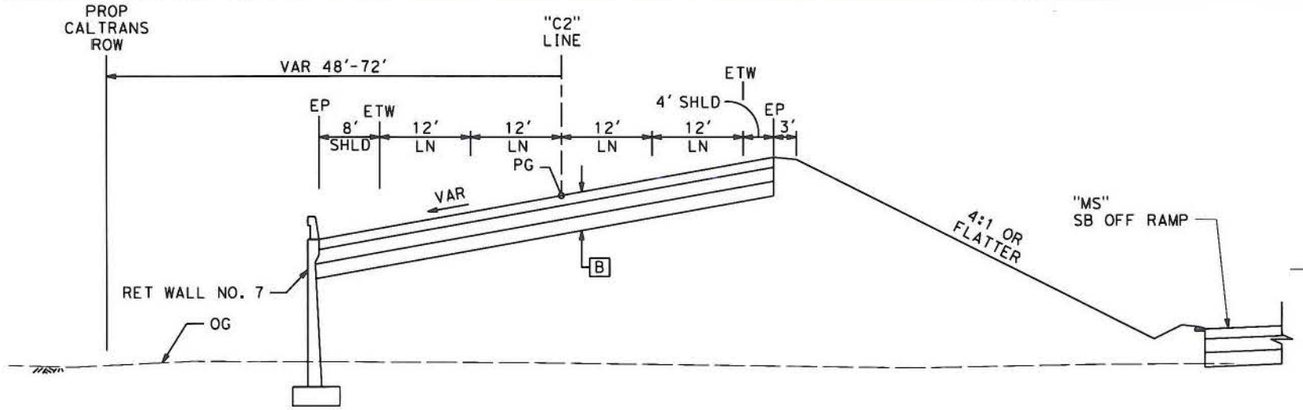
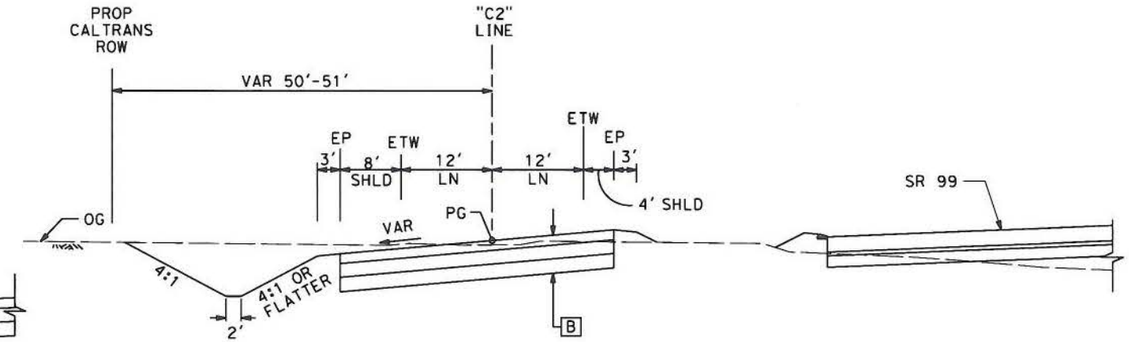
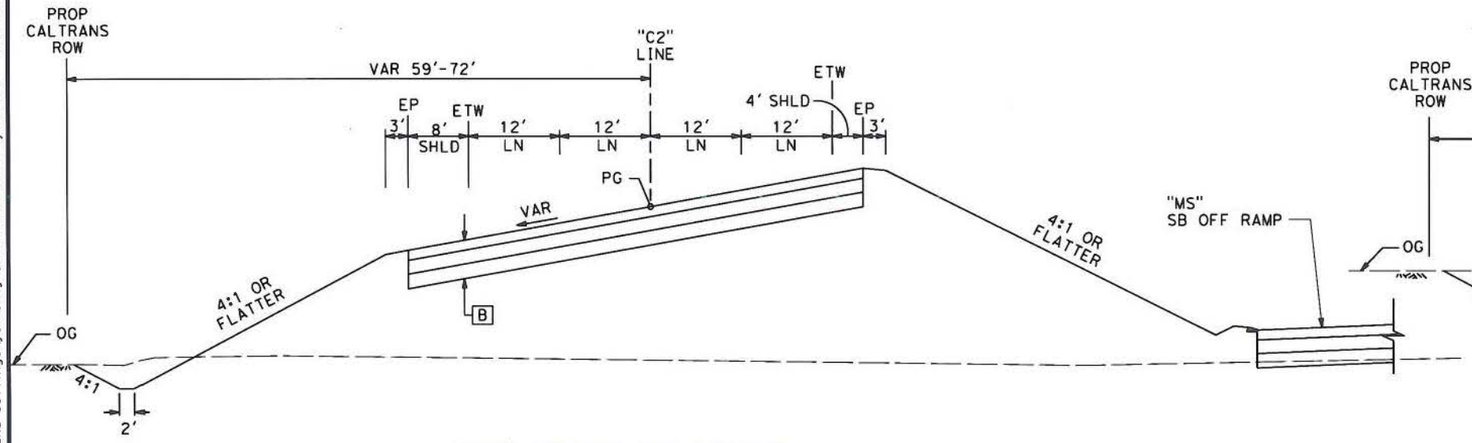


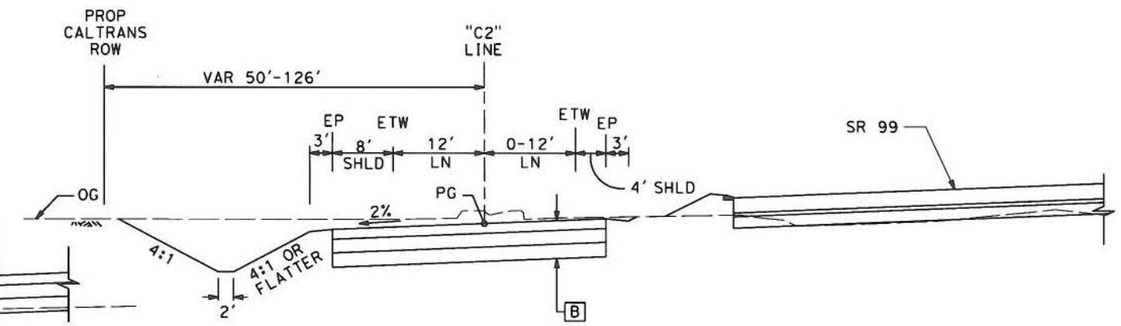
"C2" 144+66 TO 147+50



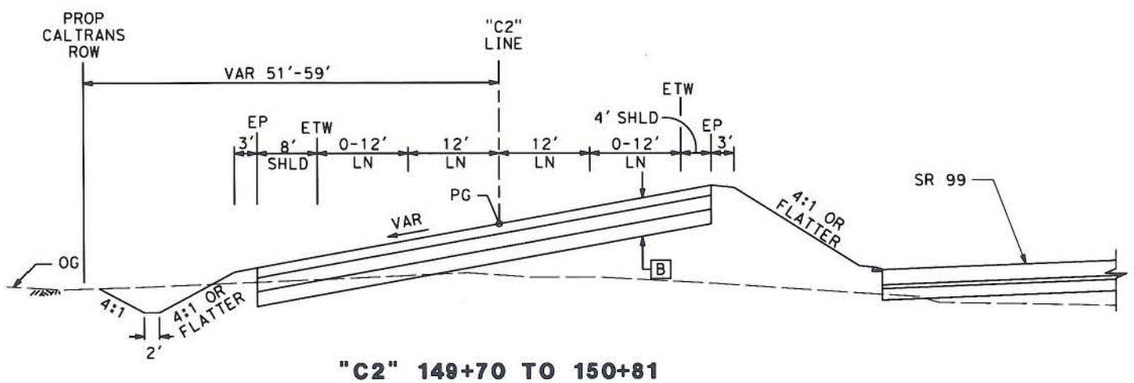
"C2" 150+81 TO 154+31



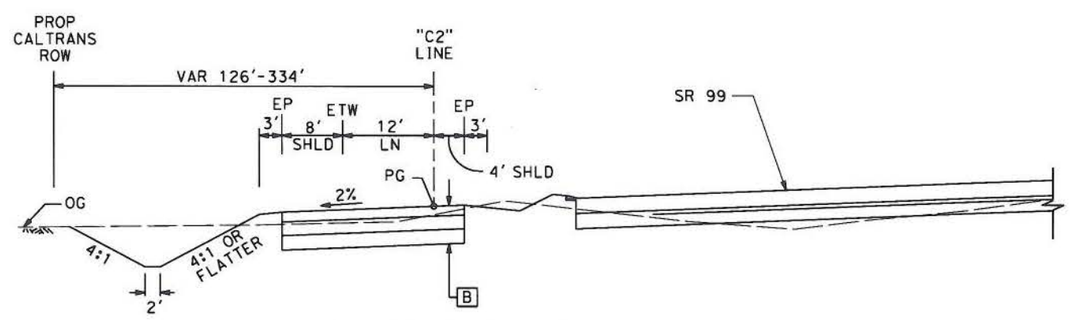
"C2" 147+50 TO 149+70



"C2" 154+31 TO 155+51



"C2" 149+70 TO 150+81



"C2" 155+51 TO 157+21

"C2" LINE
SB OFF RAMP AT CLINTON AVE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - RAMP "C2"

CONTRACT NO.
DRAWING NO. CV-R0011-R99
SCALE AS SHOWN
SHEET NO.

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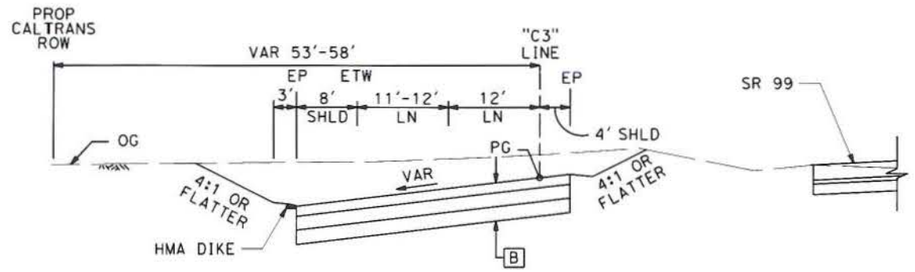
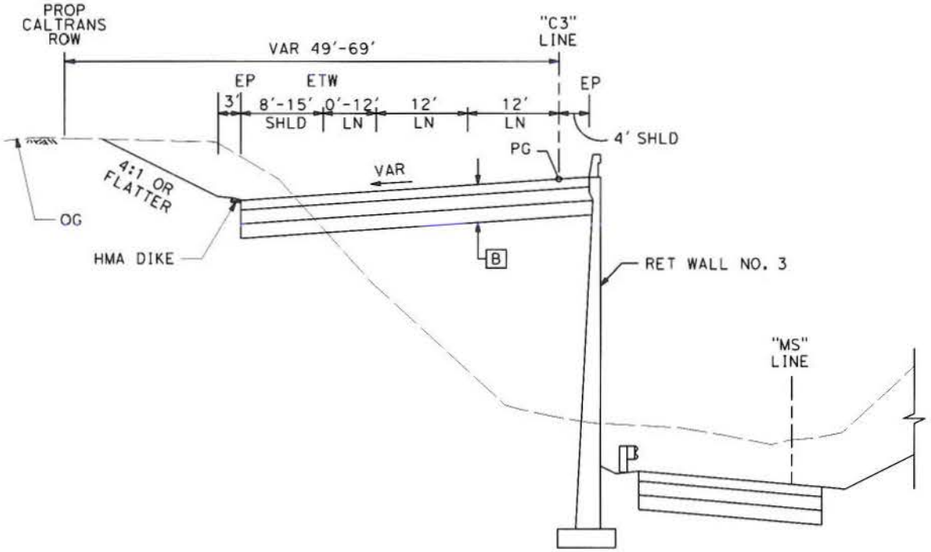
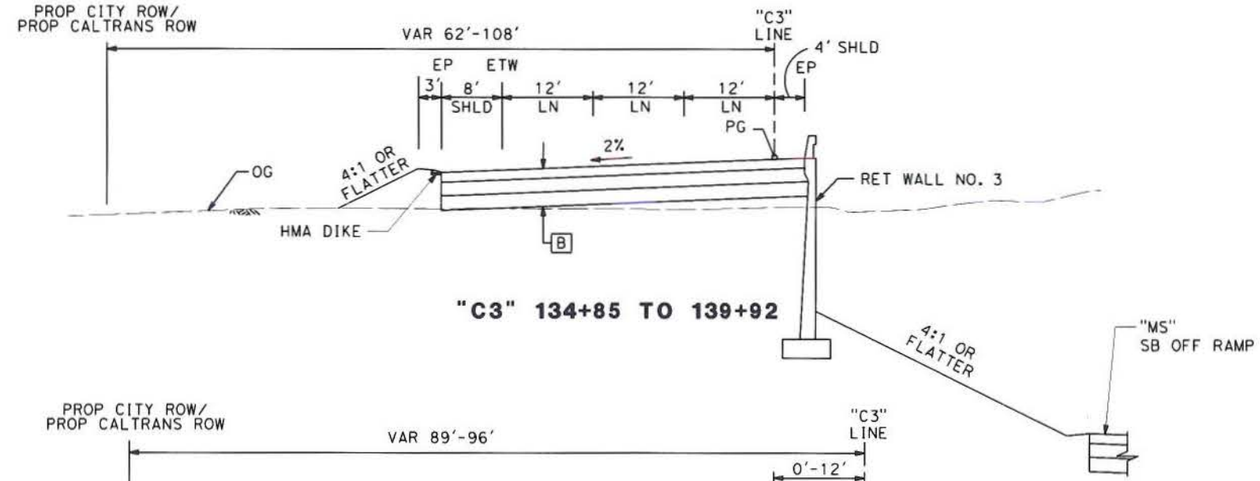


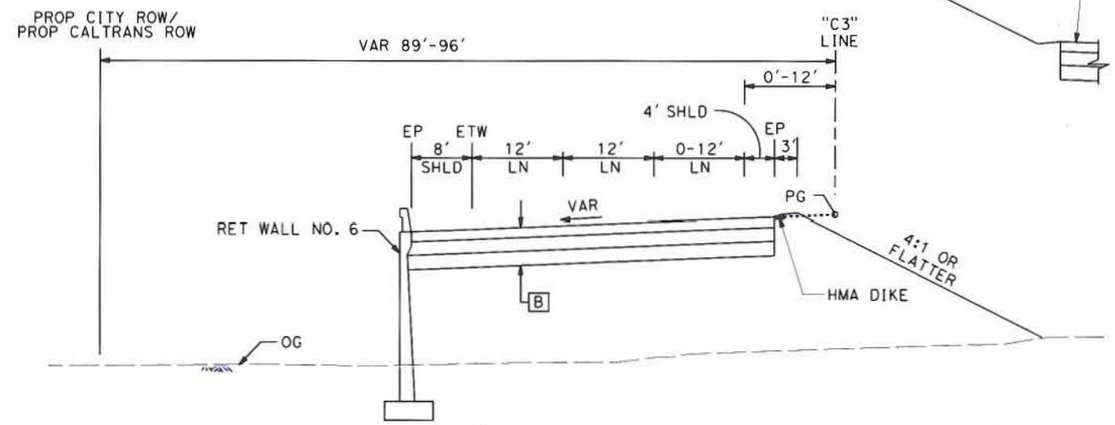
"C3" 129+44 TO 130+64



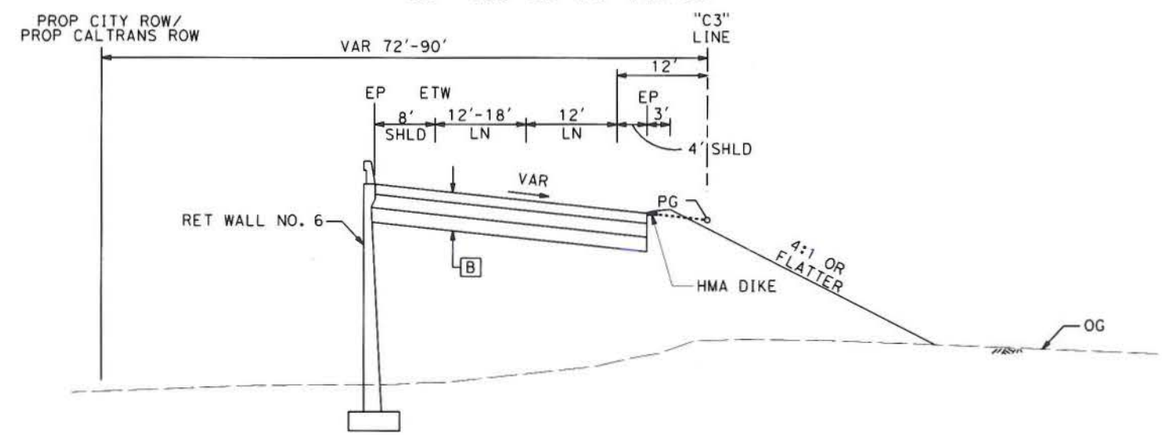
"C3" 130+64 TO 134+85



"C3" 134+85 TO 139+92



"C3" 139+92 TO 141+33



"C3" 141+33 TO 143+64

C3 LINE
SB ON RAMP AT W CLINTON AVE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - RAMP "C3"

CONTRACT NO.
DRAWING NO. CV-R0012-R99
SCALE AS SHOWN
SHEET NO.

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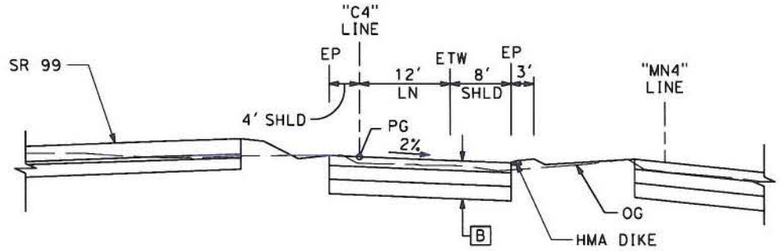
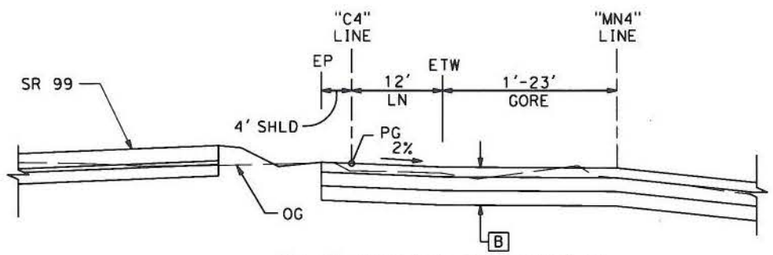
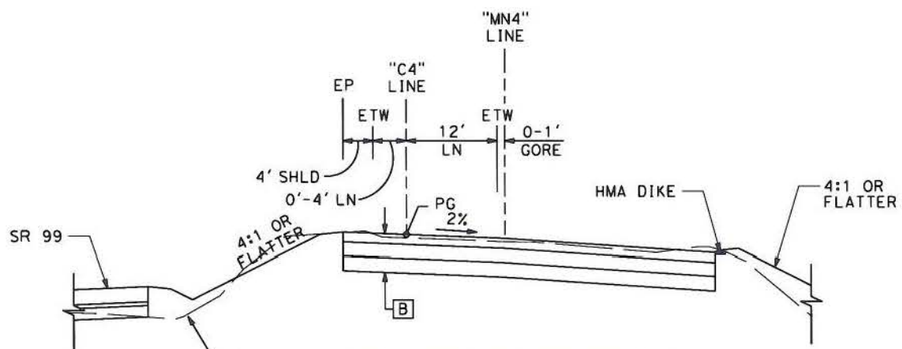


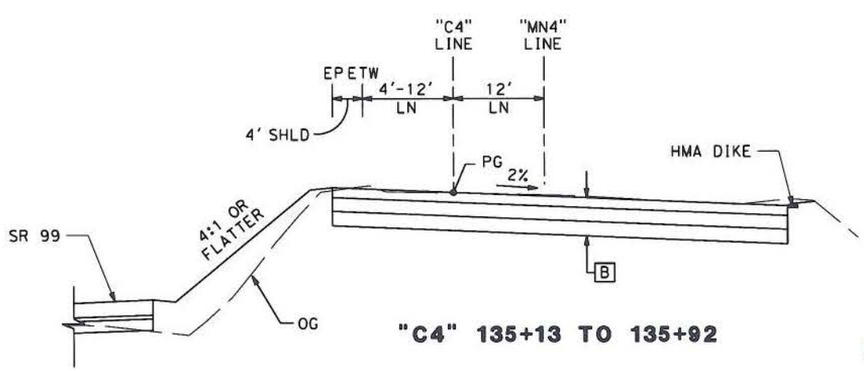
"C4" 132+69 TO 133+22



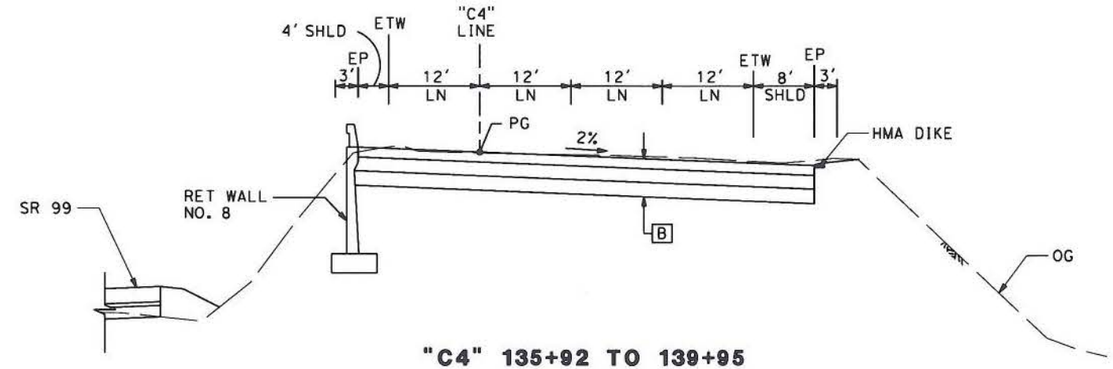
"C4" 133+22 TO 134+72



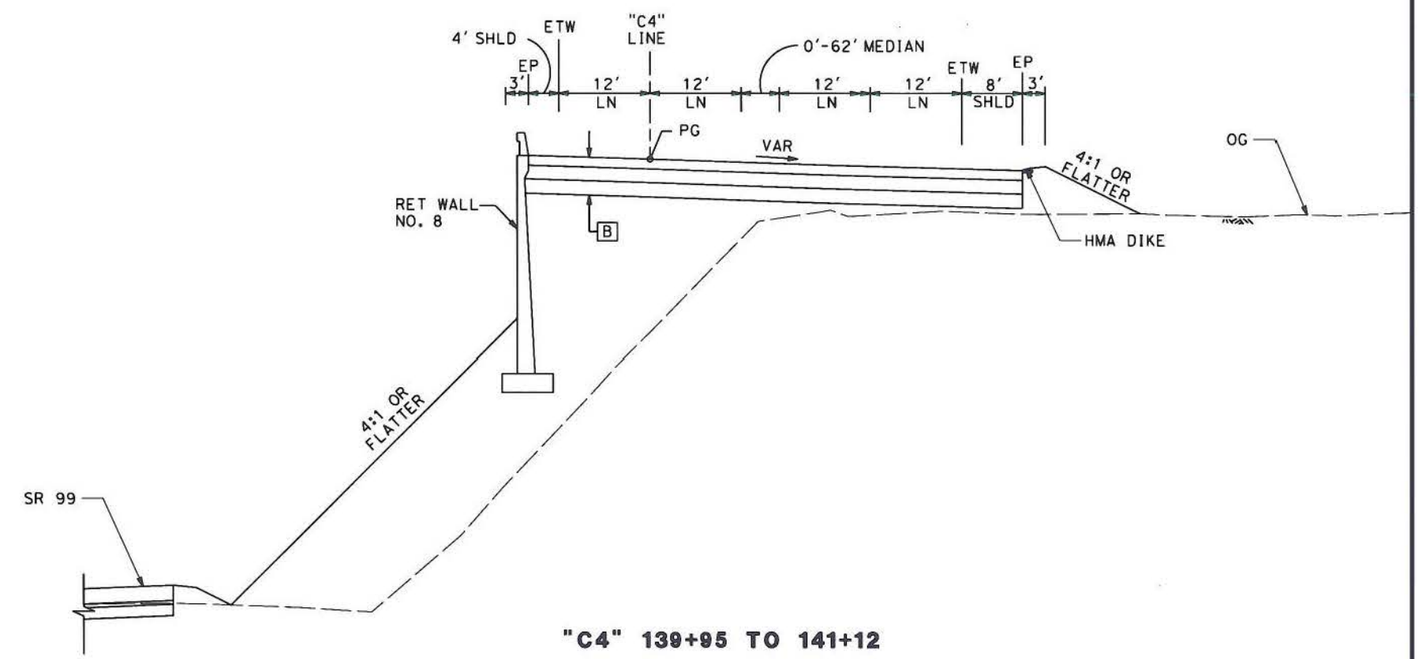
"C4" 134+72 TO 135+13



"C4" 135+13 TO 135+92



"C4" 135+92 TO 139+95



"C4" 139+95 TO 141+12

C4 LINE
NB OFF RAMP AT W CLINTON AVE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - RAMP "C4"

CONTRACT NO.
DRAWING NO. CV-R0013-R99
SCALE AS SHOWN
SHEET NO.

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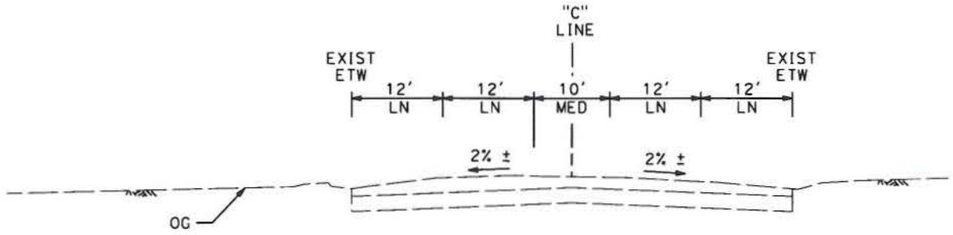
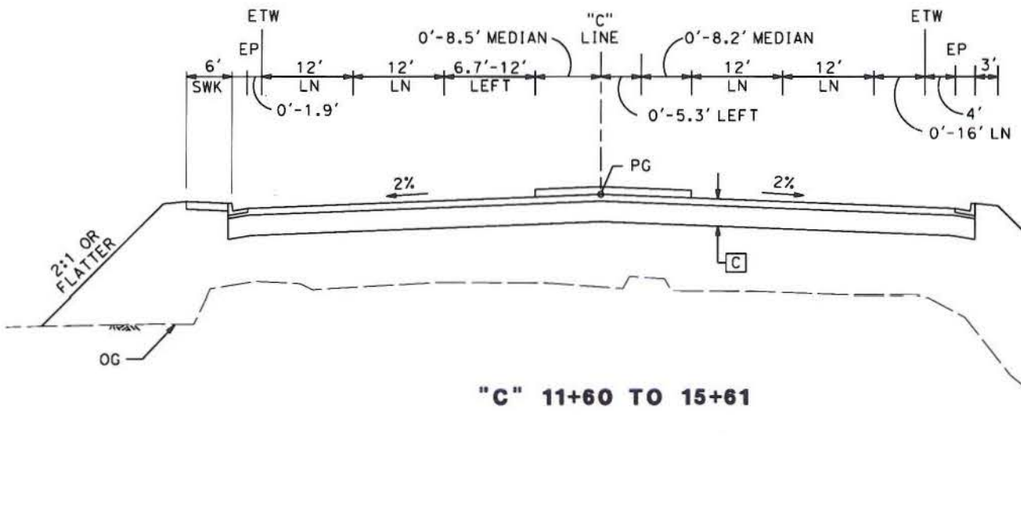
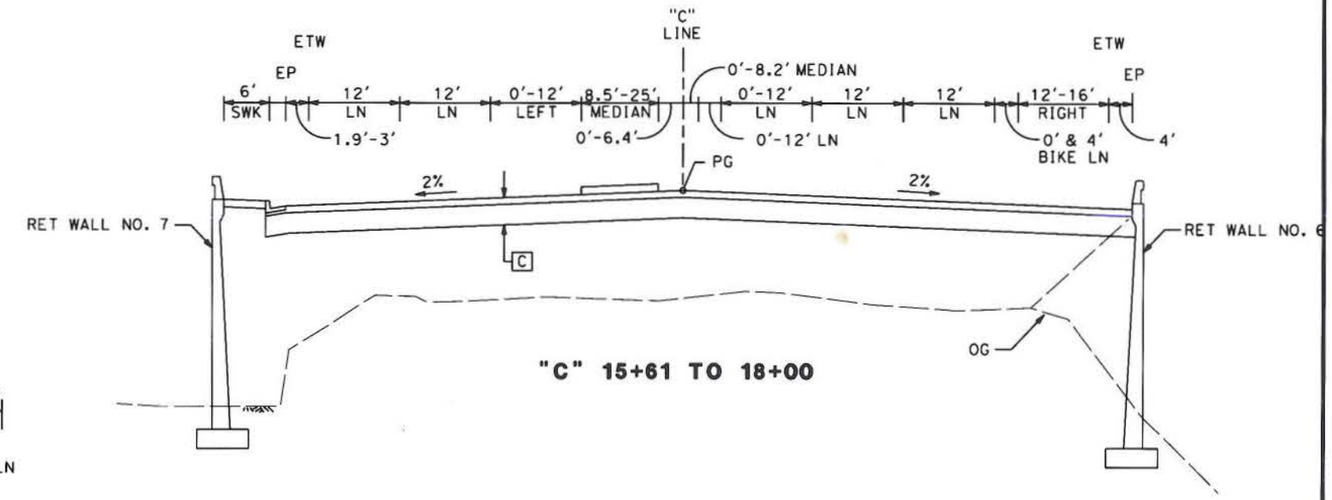


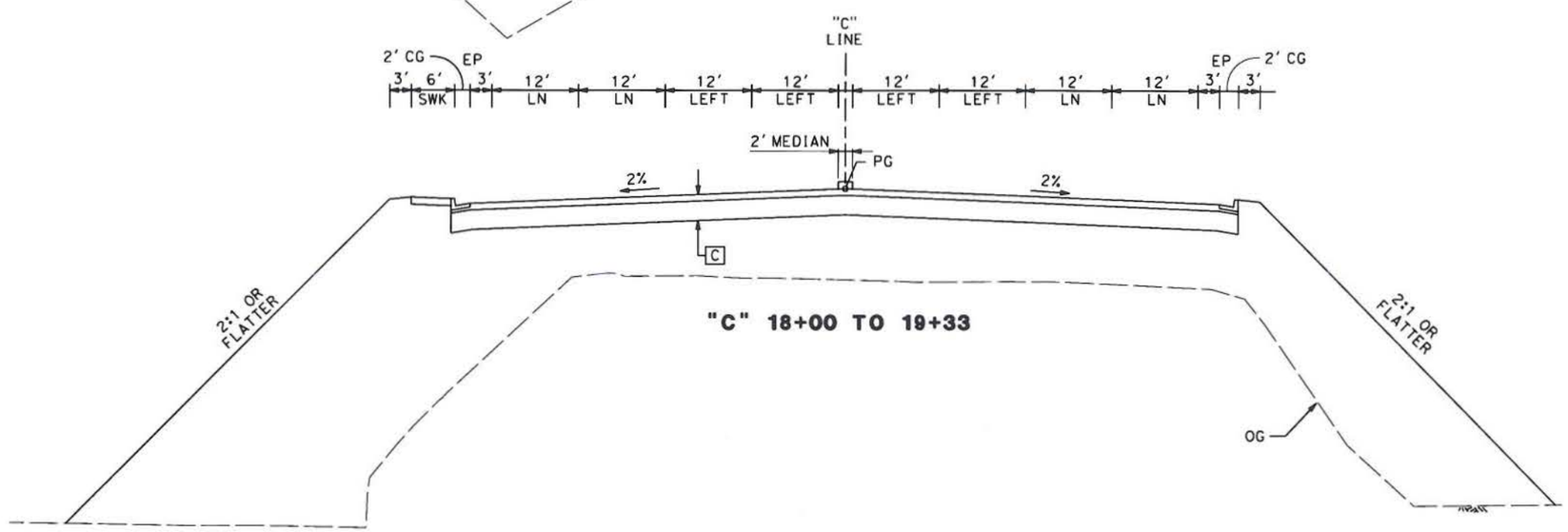
"C" 10+00 TO 11+60



"C" 11+60 TO 15+61



"C" 15+61 TO 18+00



"C" 18+00 TO 19+33

C LINE
W CLINTON AVE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - W CLINTON AVE

CONTRACT NO.
DRAWING NO. CV-R0014-R99
SCALE AS SHOWN
SHEET NO.

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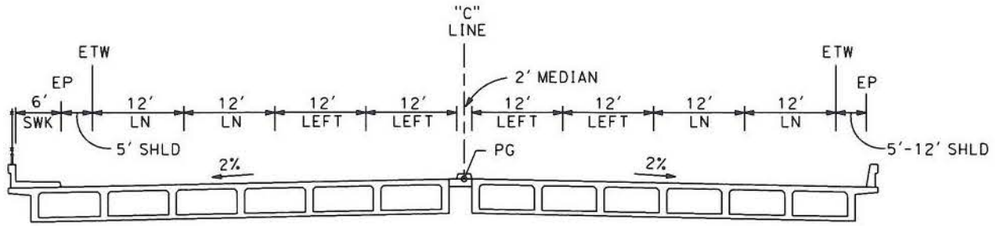
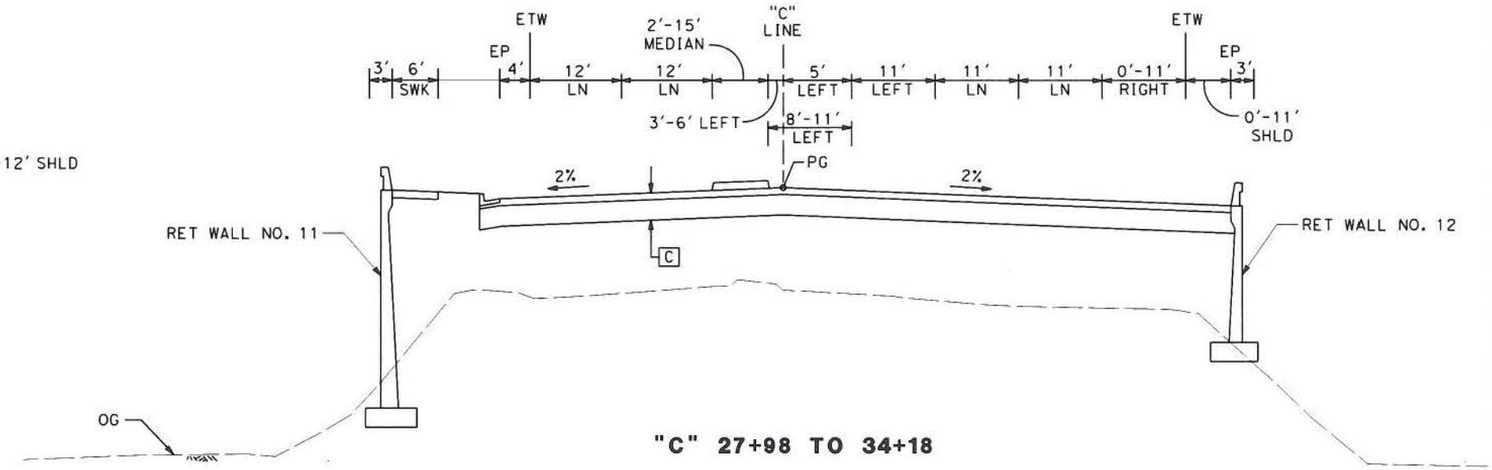
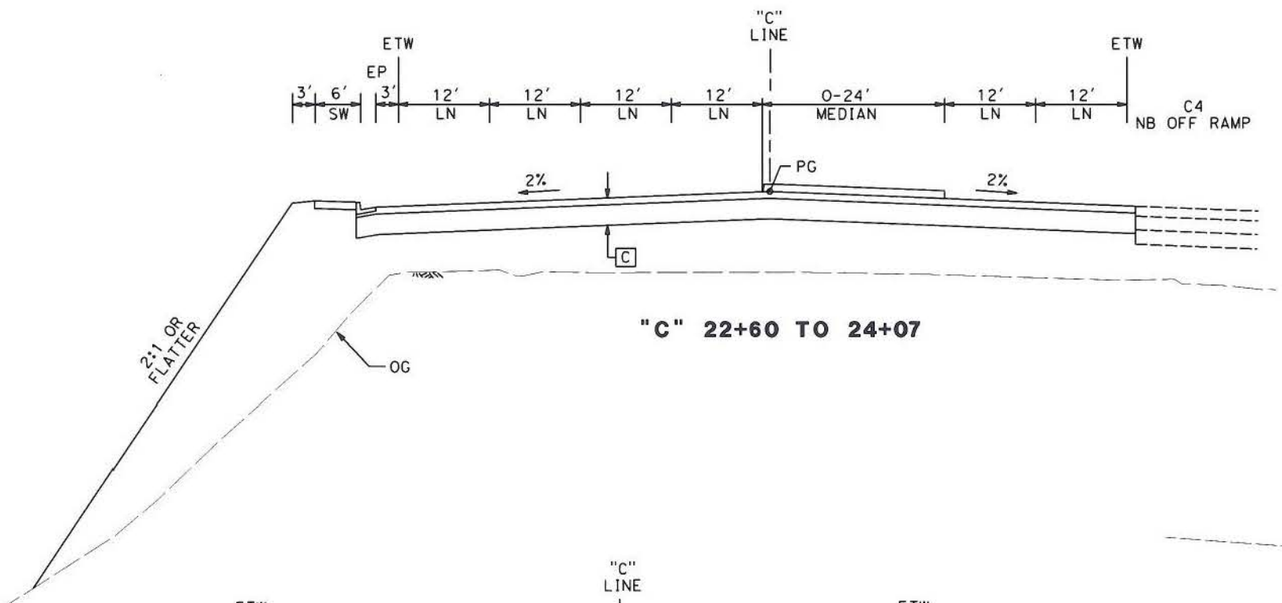


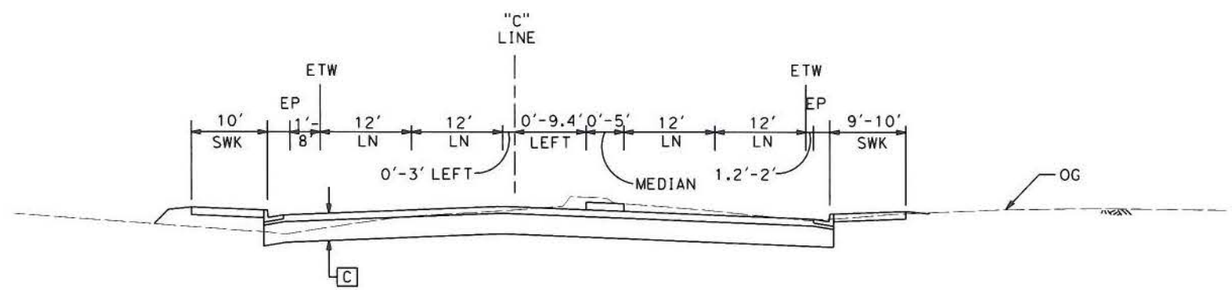
"C" 19+33 TO 22+60
W CLINTON AVE OC



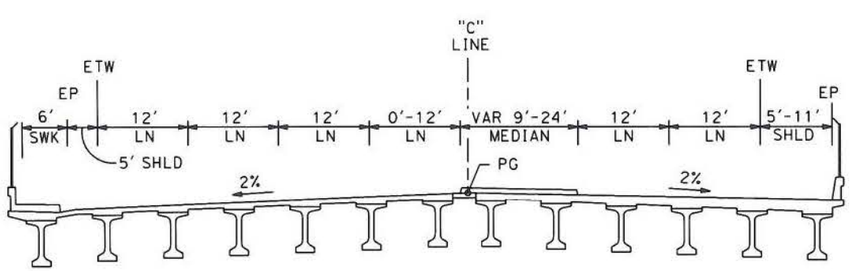
"C" 27+98 TO 34+18



"C" 22+60 TO 24+07



"C" 34+18 TO 37+09



"C" 24+07 TO 27+98
FRESNO YARD OH

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - W CLINTON AVE

CONTRACT NO.
DRAWING NO. CV-R0015-R99
SCALE AS SHOWN
SHEET NO.

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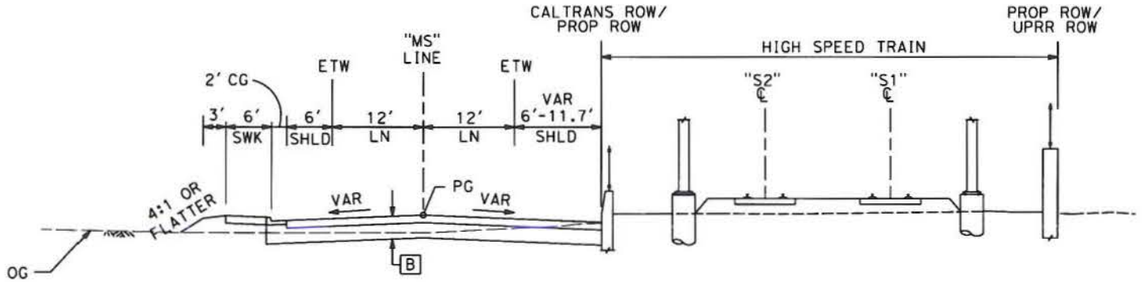
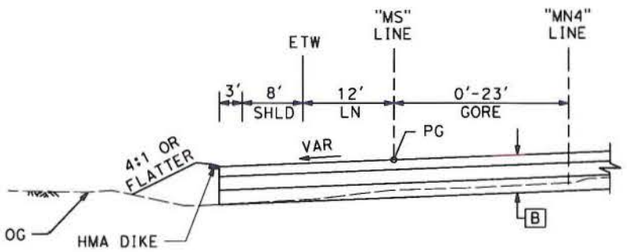
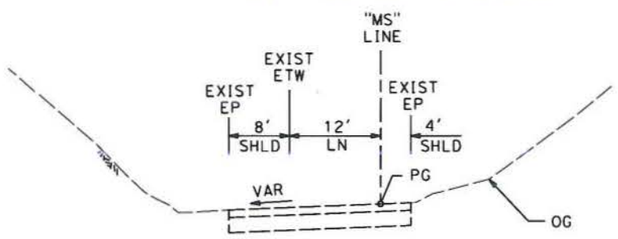


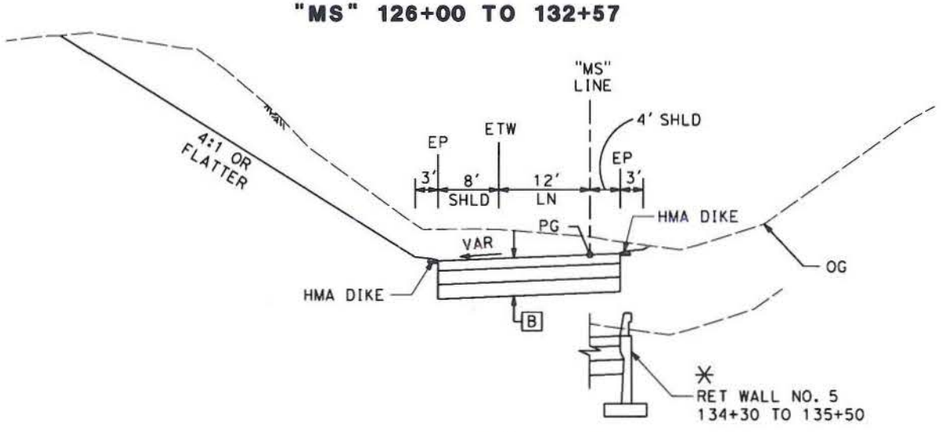
"MS" 113+93 TO 120+50



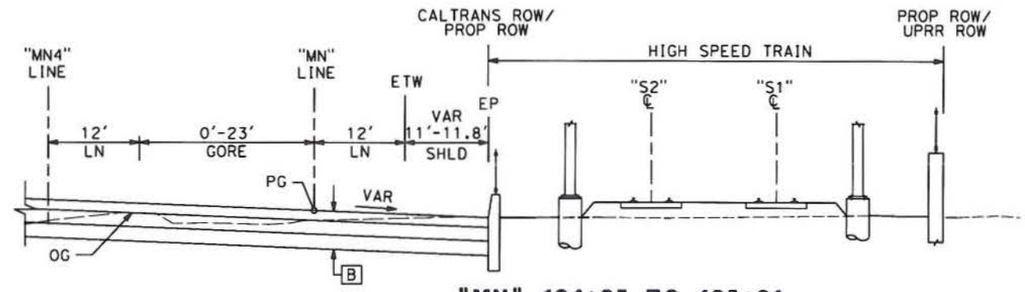
"MS" 120+50 TO 123+06



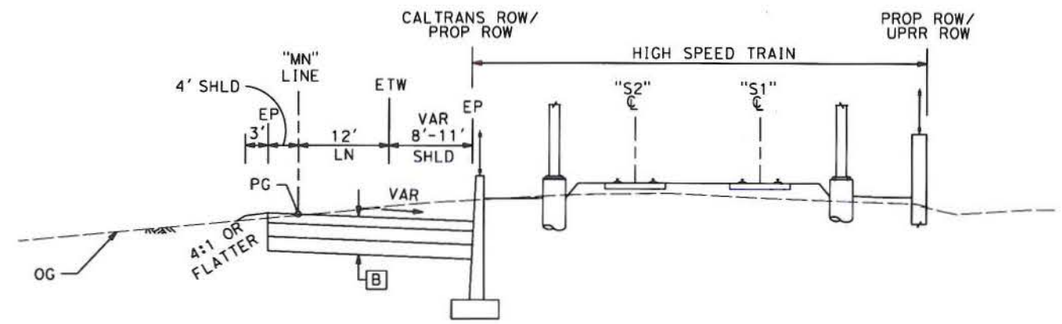
"MS" 126+00 TO 132+57



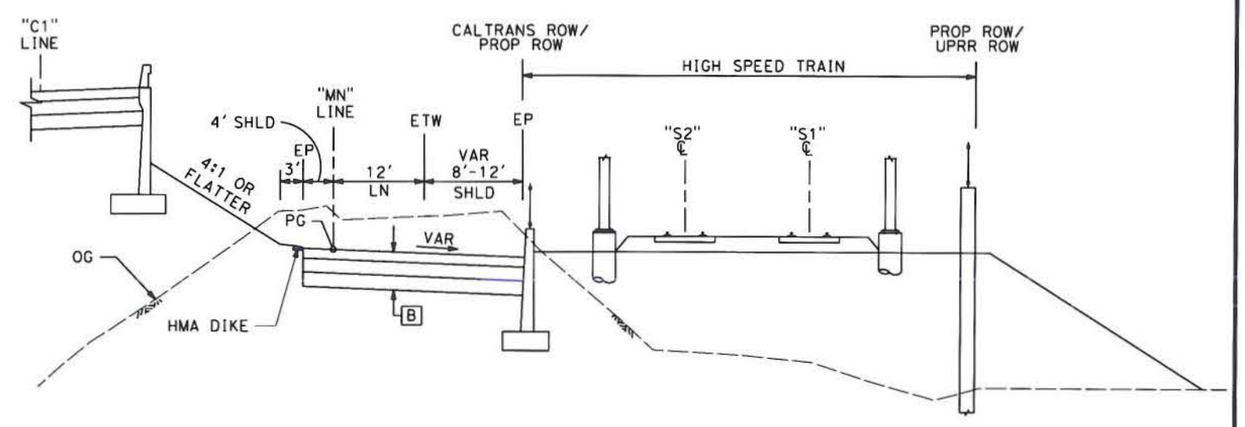
"MS" 123+06 TO 126+00
"MS" 132+57 TO 146+11



"MN" 124+25 TO 125+21



"MN" 125+21 TO 139+00



"MN" 139+00 TO 149+07

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

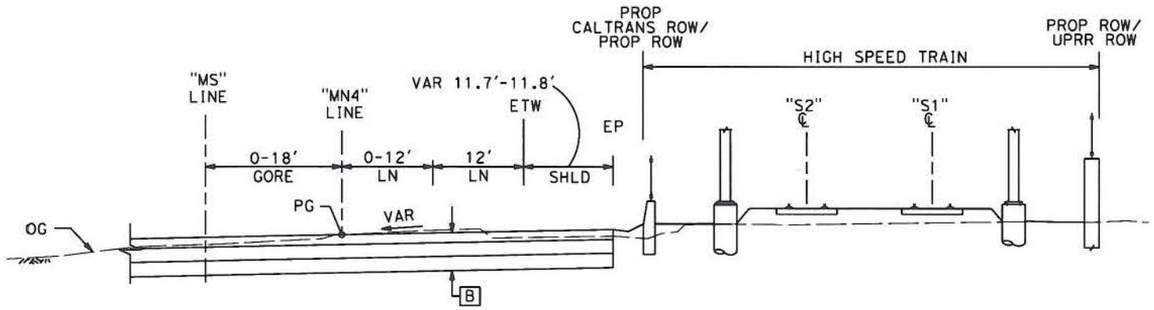
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

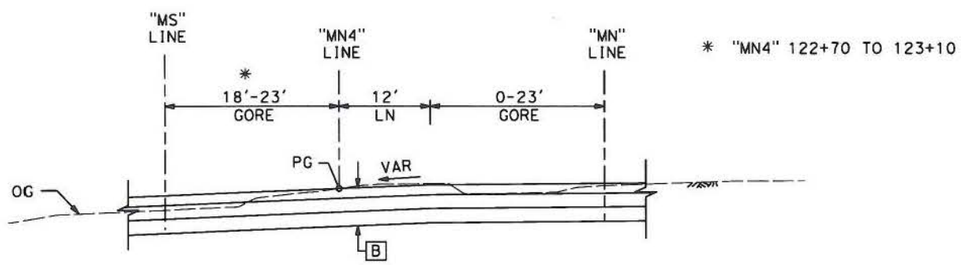
CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - RAMP "MS", "MN"

CONTRACT NO.
DRAWING NO. CV-R0016-R99
SCALE AS SHOWN
SHEET NO.

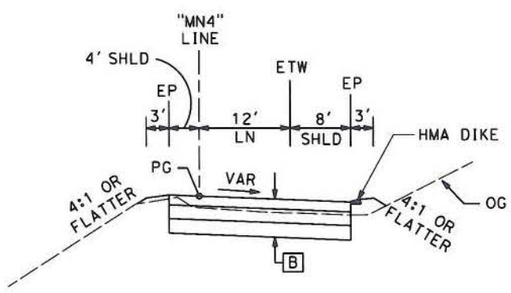
ychiu 11/16/2011 3:34:56 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R3016-R99.dgn



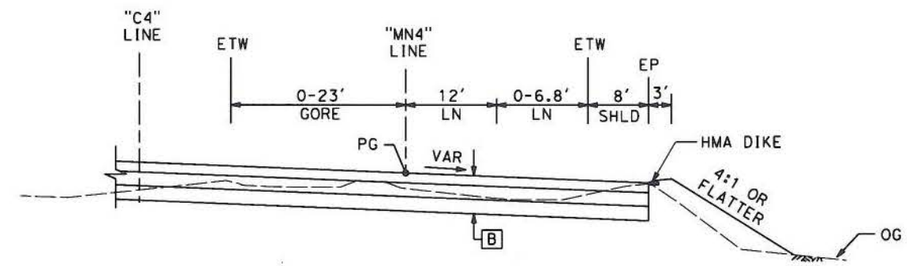
"MN4" 120+47 TO 122+70



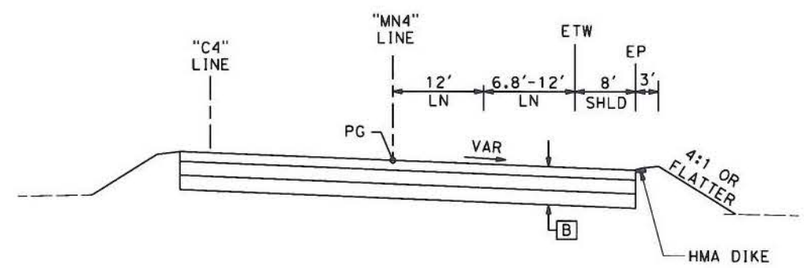
"MN4" 122+70 TO 123+62



"MN4" 123+62 TO 132+27



"MN4" 132+27 TO 134+18



"MN4" 134+18 TO 134+97

MN4 LINE
GOLDEN STATE BLVD NB OFF RAMP

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

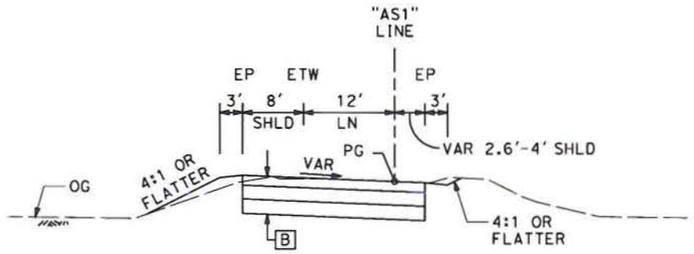
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95814
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

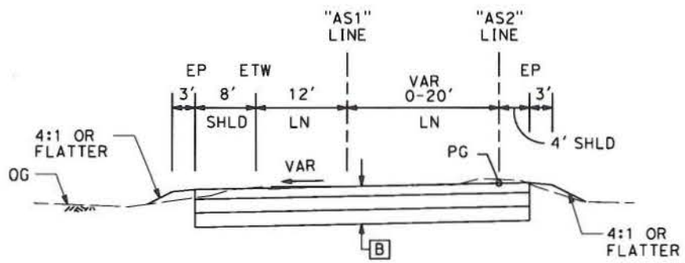
CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - RAMP "MN4"

CONTRACT NO.
DRAWING NO. CV-R0017-R99
SCALE AS SHOWN
SHEET NO.

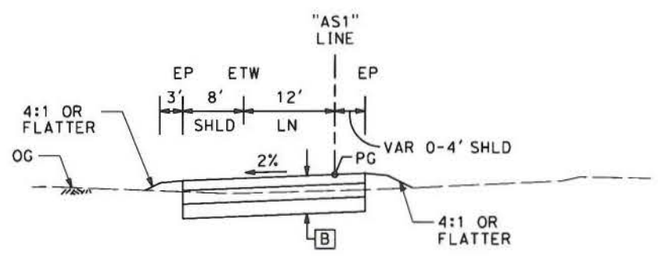
ychiu 11/16/2011 3:35:04 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R3017-R99.dgn



"AS1" 238+39 TO 239+48

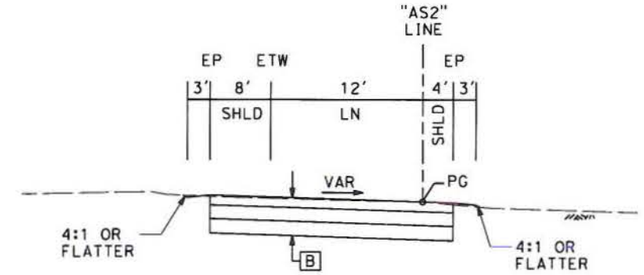


"AS1" 239+48 TO 240+47



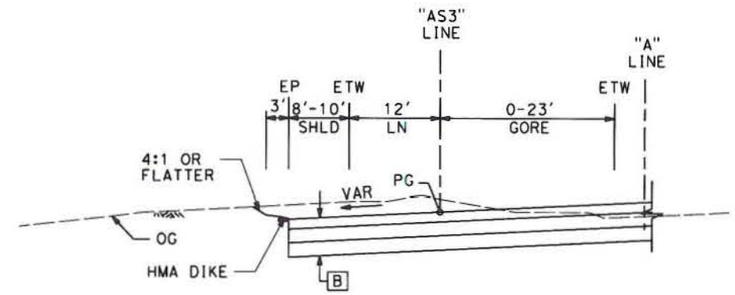
"AS1" 240+47 TO 242+38

AS1 LINE
SB ON RAMP AT ASHLAN AVE

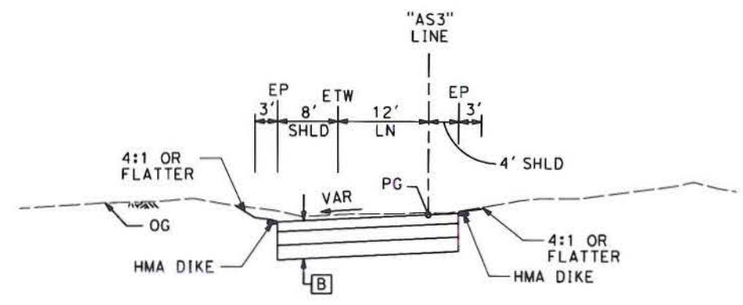


"AS2" 240+40 TO 241+01

AS2 LINE
SB ON RAMP AT ASHLAN AVE



"AS3" 219+06 TO 225+34



"AS3" 225+34 TO 233+28

AS3 LINE
SB ON RAMP AT ASHLAN AVE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - RAMP "AS1", "AS2", "AS3"

CONTRACT NO.
DRAWING NO. CV-R0018-R99
SCALE AS SHOWN
SHEET NO.

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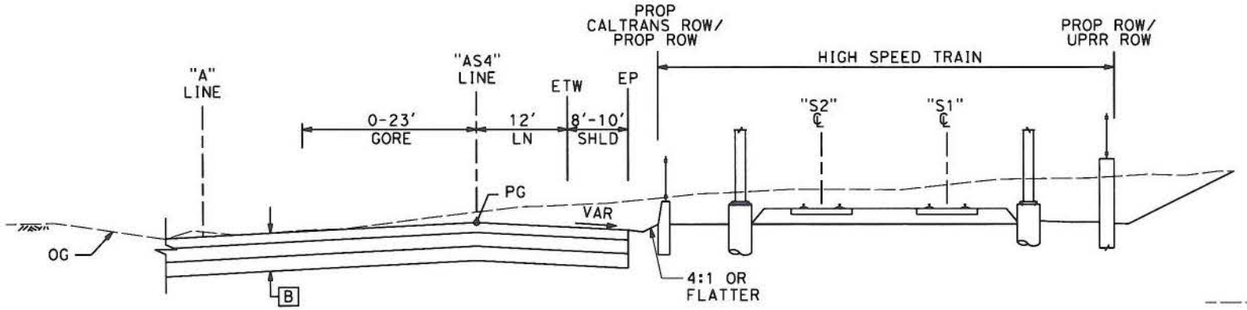
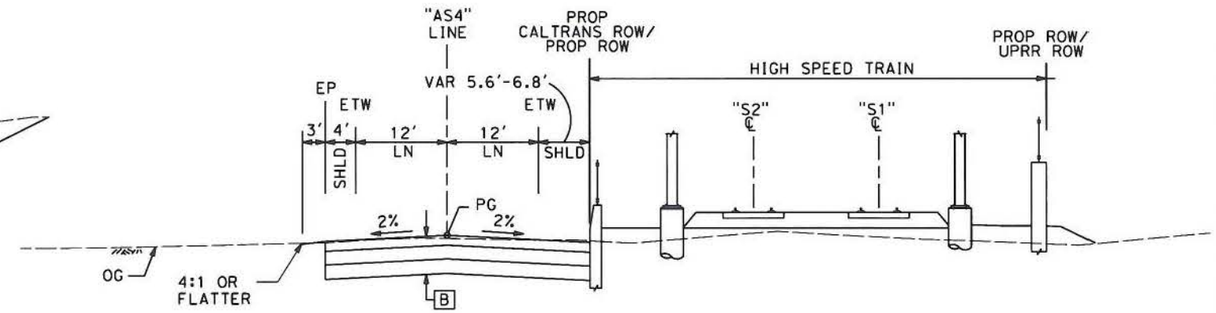
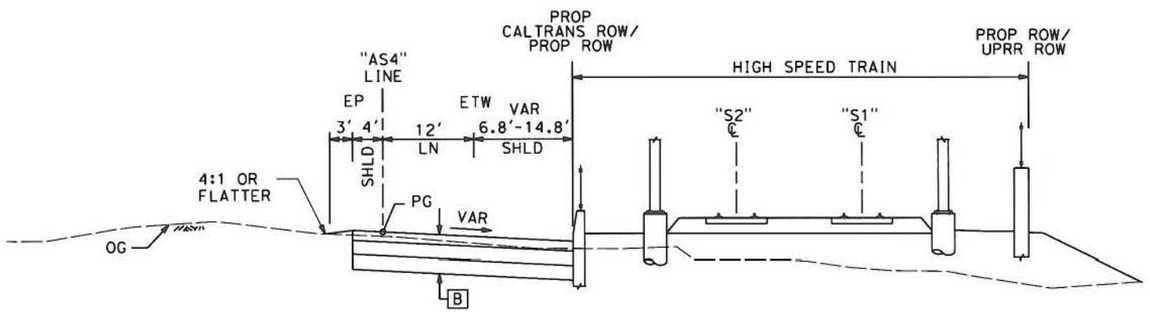


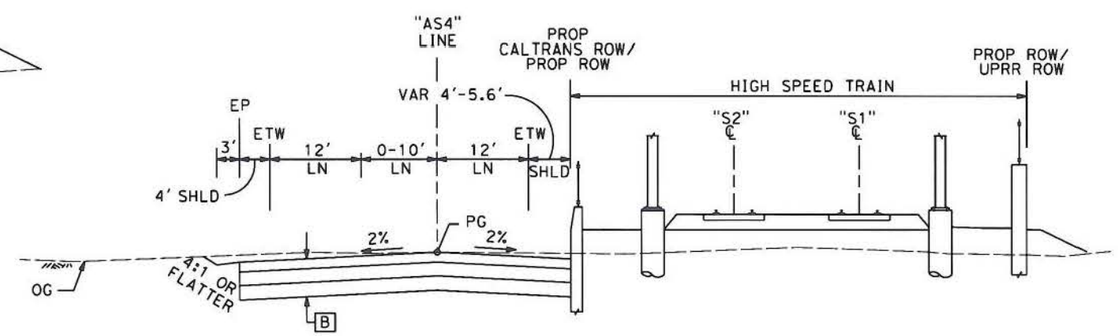
"AS4" 221+20 TO 223+87



"AS4" 233+50 TO 235+00



"AS4" 223+87 TO 233+50



"AS4" 235+00 TO 237+72

AS4 LINE
NB OFF RAMP AT ASHLAN AVE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

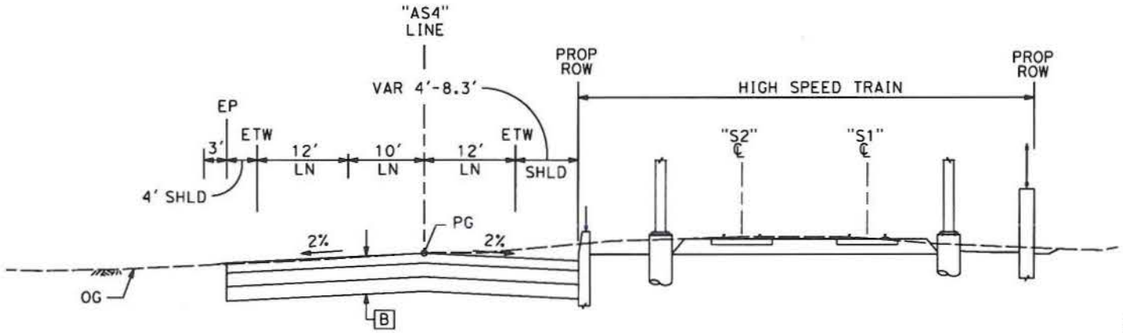
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

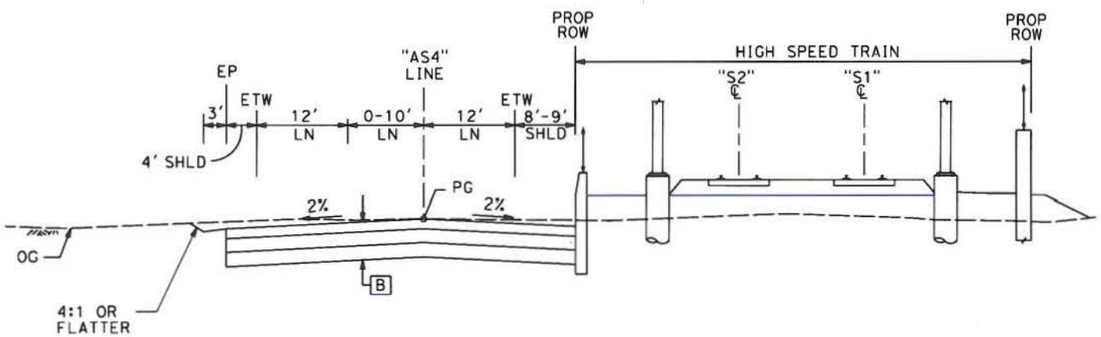
CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - RAMP "AS4"

CONTRACT NO.
DRAWING NO. CV-R0019-R99
SCALE AS SHOWN
SHEET NO.

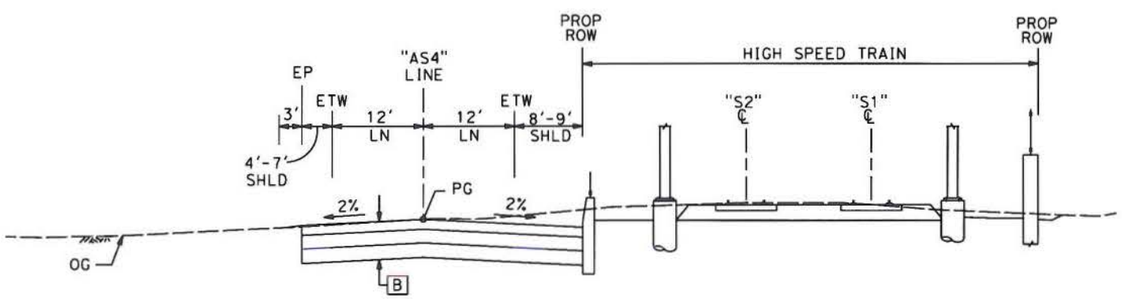
ychiu 11/16/2011 3:35:19 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R3019-R99.dgn



"AS4" 237+72 TO 243+78

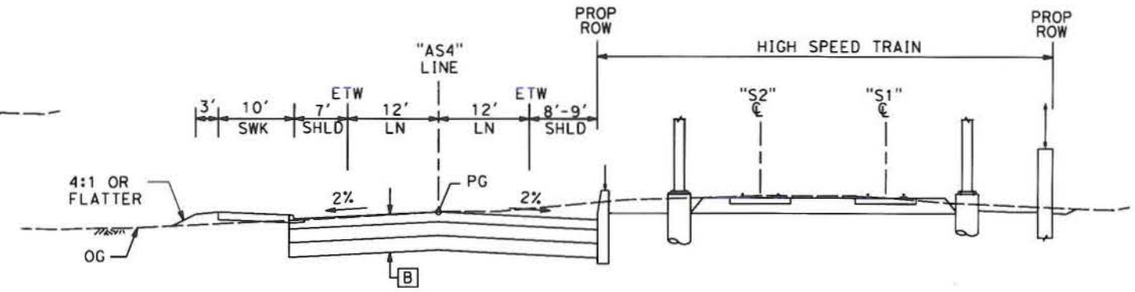


"AS4" 243+78 TO 245+19

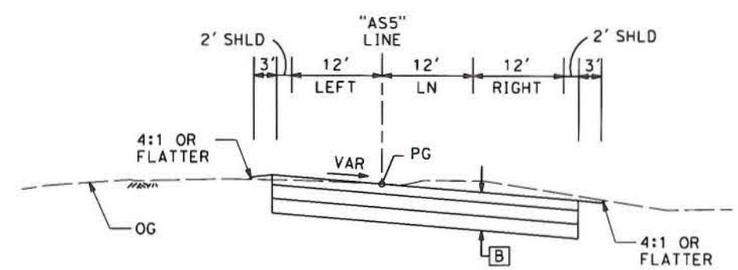


"AS4" 245+19 TO 247+50

AS4 LINE
NB OFF RAMP AT ASHLAN AVE



"AS4" 247+50 TO 248+00



"AS5" 248+00 TO 250+66

AS5 LINE
NB OFF RAMP AT ASHLAN AVE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

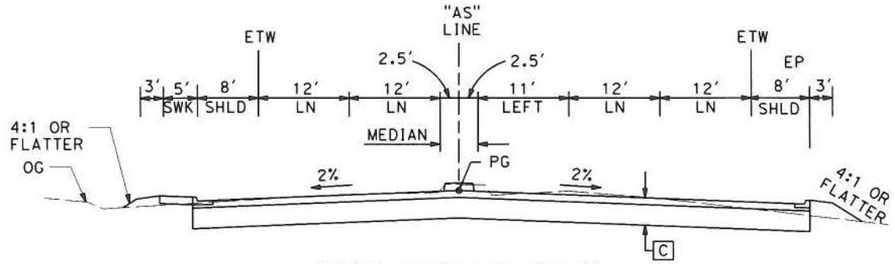
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

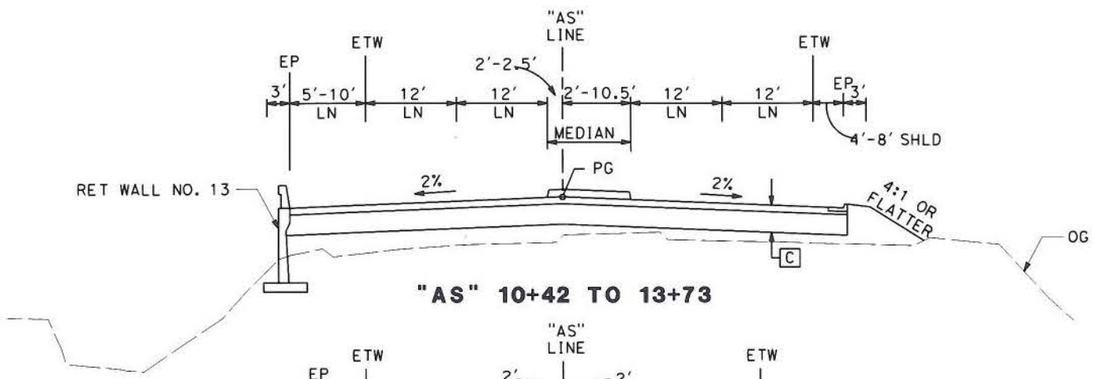
CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - RAMP "AS4", "AS5"

CONTRACT NO.
DRAWING NO. CV-R0020-R99
SCALE AS SHOWN
SHEET NO.

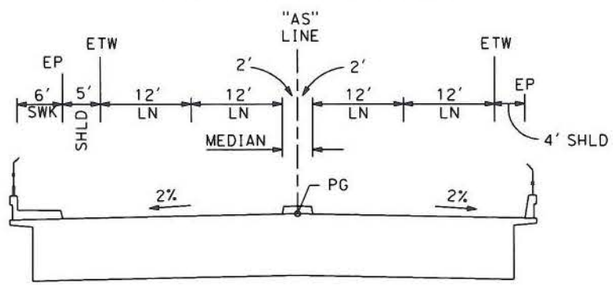
11/16/2011 3:35:26 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R3020-R99.dgn
ychiu



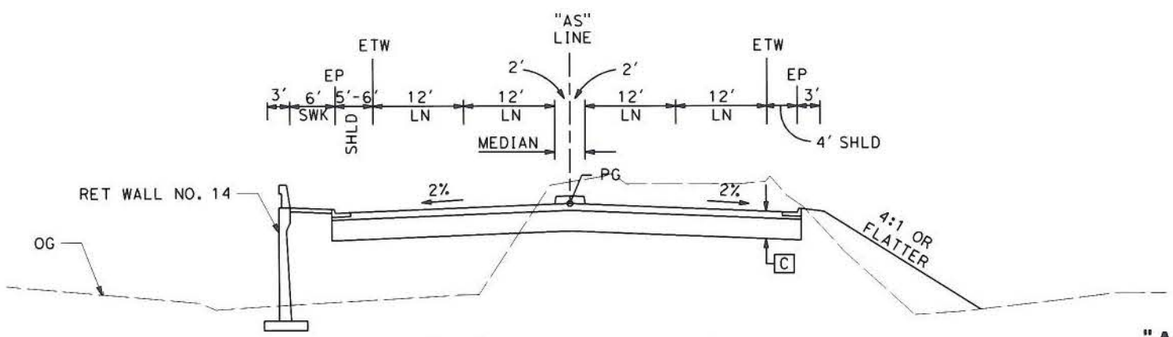
"AS" 7+30 TO 10+42



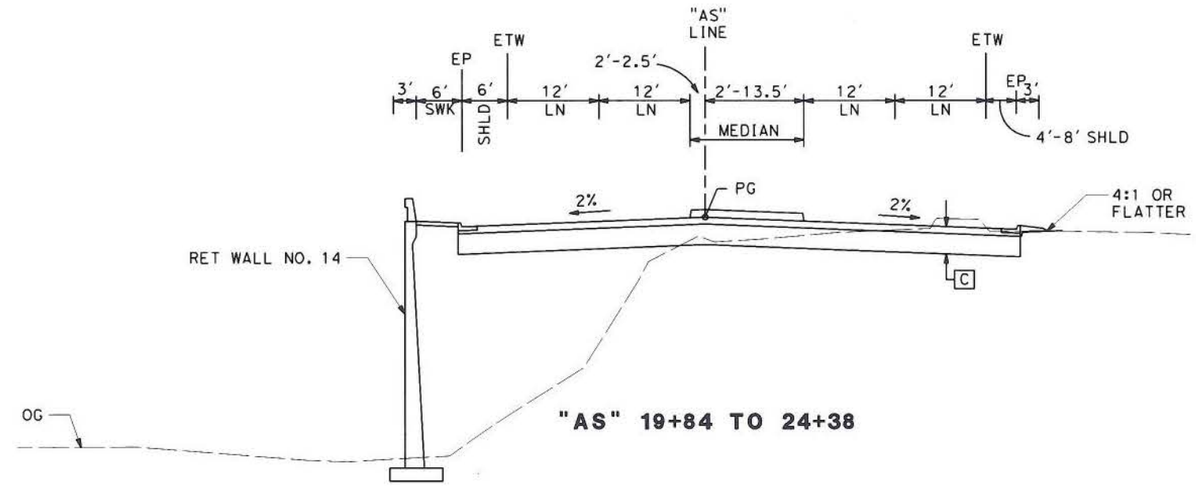
"AS" 10+42 TO 13+73



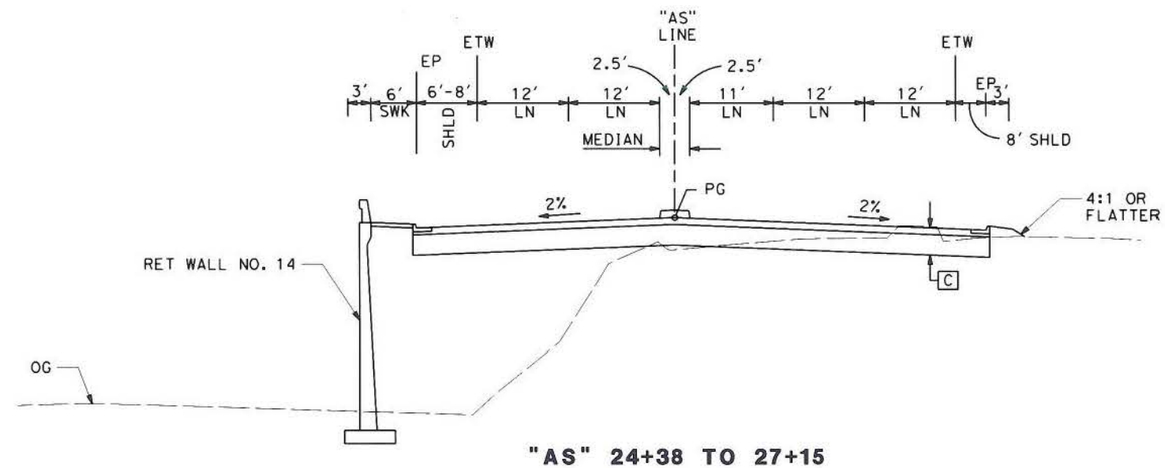
"AS" 13+73 TO 19+28
ASHLAN AVE OH



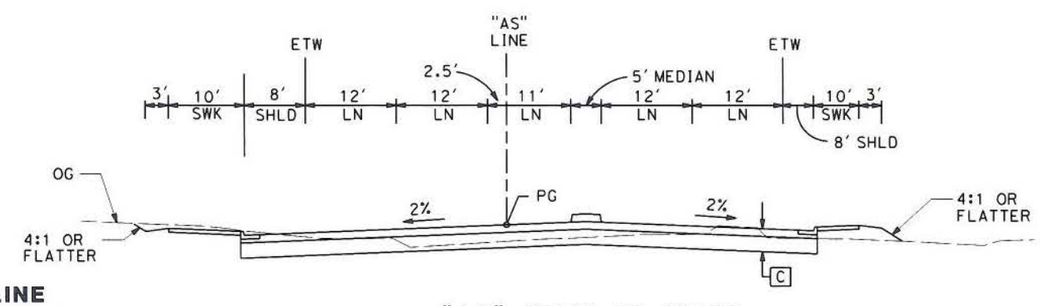
"AS" 19+28 TO 19+84



"AS" 19+84 TO 24+38



"AS" 24+38 TO 27+15



"AS" 27+15 TO 30+35

"AS" LINE
ASHLAN AVE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - ASHLAN AVE

CONTRACT NO.
DRAWING NO. CV-R0021-R99
SCALE AS SHOWN
SHEET NO.

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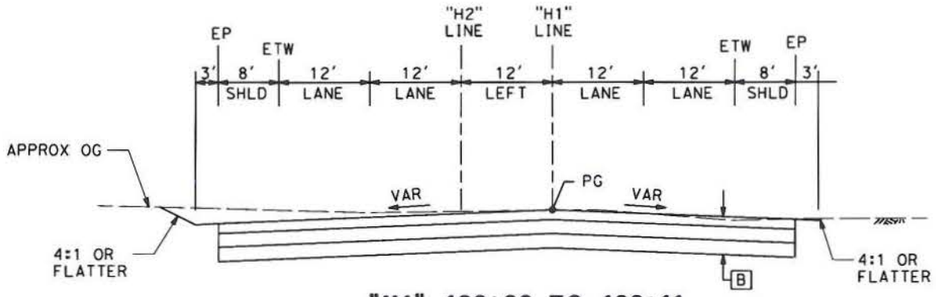
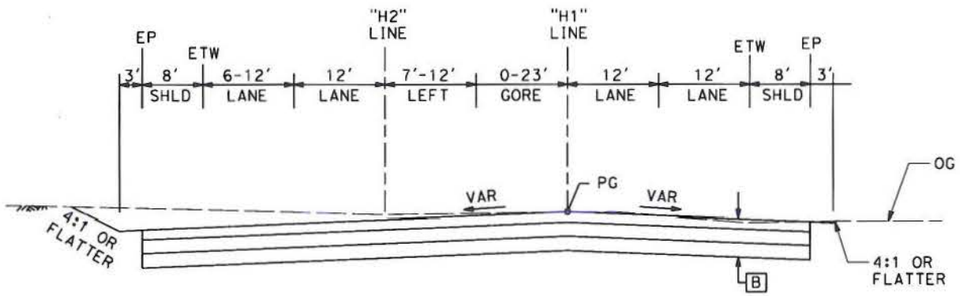
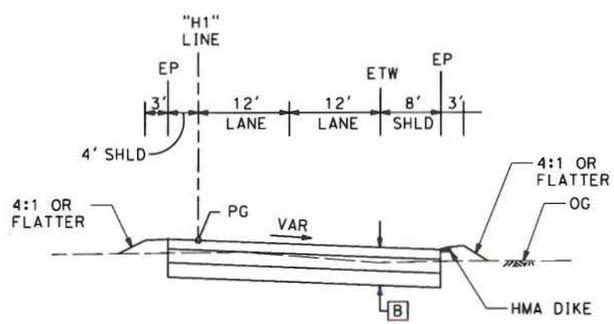


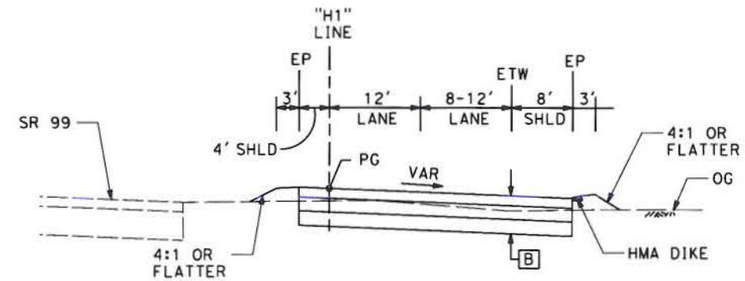
"H1" 100+00 TO 100+11



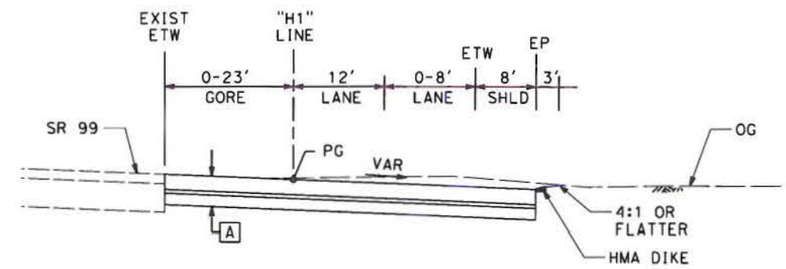
"H1" 100+11 TO 101+89



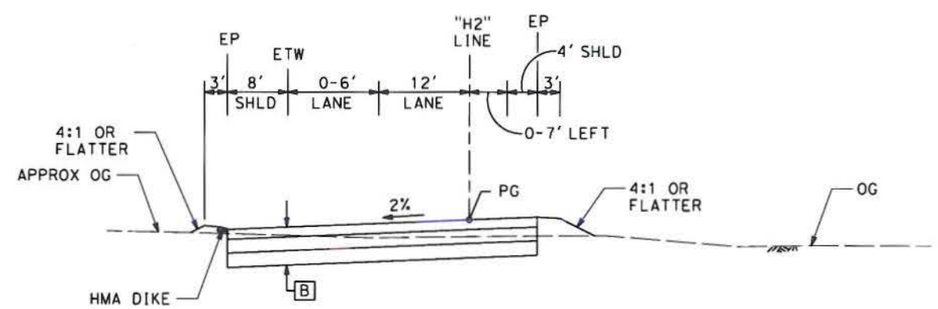
"H1" 101+89 TO 115+27



"H1" 115+27 TO 117+08



"H1" 117+08 TO 124+27



"H2" 101+95 TO 104+51

H1 LINE
NB ON RAMP AT HERNDON AVE

H2 LINE
SB OFF RAMP AT HERNDON AVE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

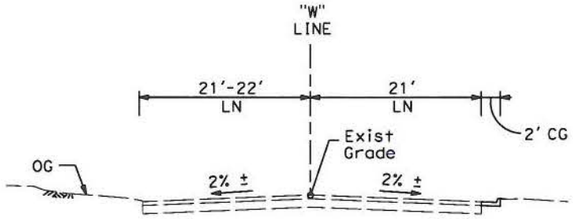
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

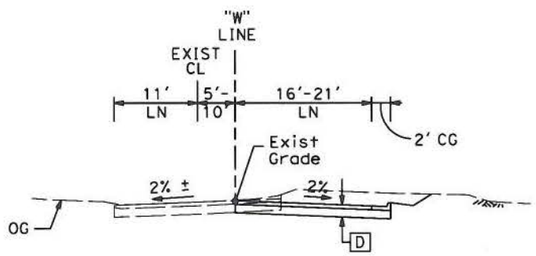
CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - RAMP "H1", "H2"

CONTRACT NO.
DRAWING NO. CV-R0022-R99
SCALE AS SHOWN
SHEET NO.

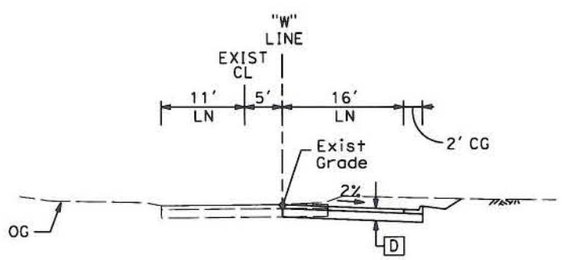
ychiu 11/16/2011 3:35:49 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R3022-R99.dgn



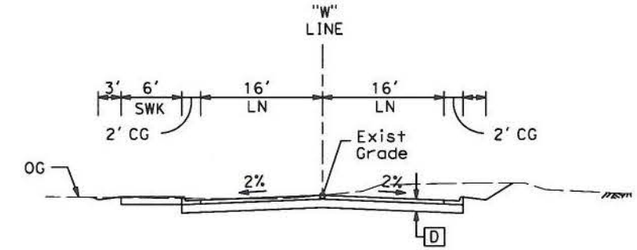
"W" 11+63 TO 12+40



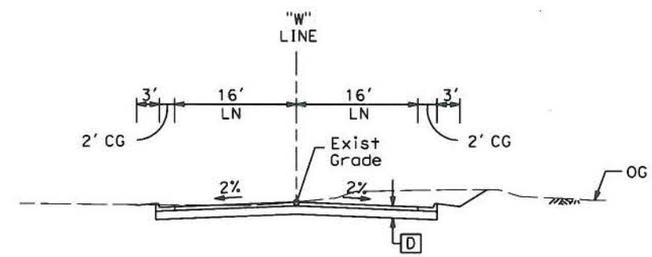
"W" 12+40 TO 14+65



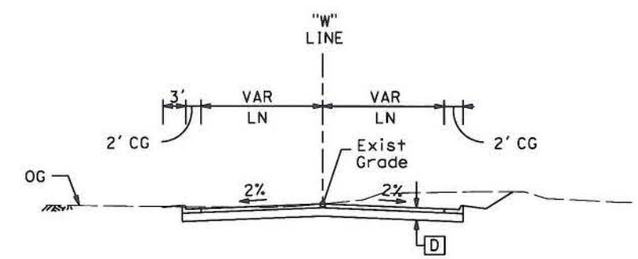
"W" 14+65 TO 16+78



"W" 16+78 TO 17+46



"W" 17+46 TO 19+14



"W" 19+14 TO 19+75

"W"LINE
WOODSON AVE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

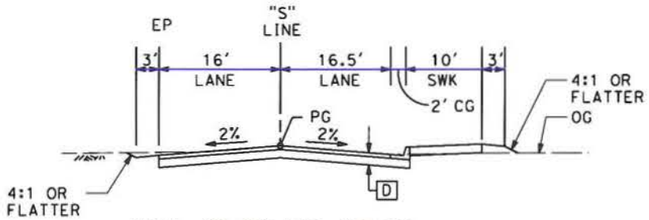
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - LOCAL ROAD "W"

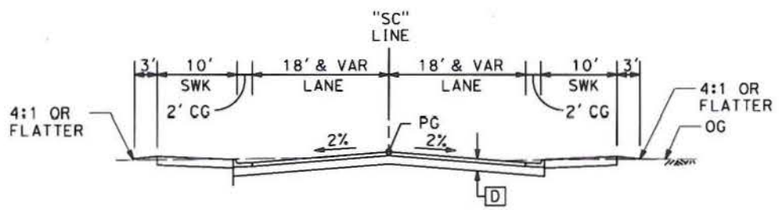
CONTRACT NO.
DRAWING NO. CV-R0023-R99
SCALE AS SHOWN
SHEET NO.

ychiu 11/16/2011 3:35:57 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R3023-R99.dgn



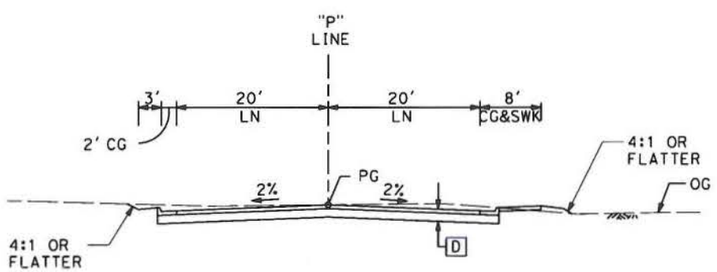
"S" 10+00 TO 14+82

S LINE
SHIELDS AVE



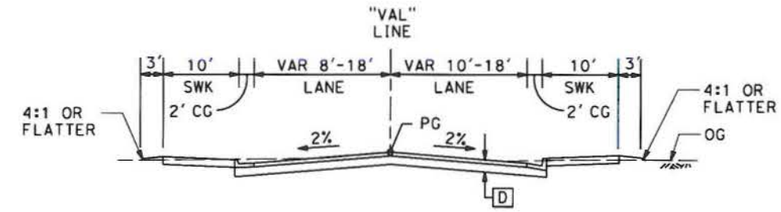
"SC" 10+00 TO 11+66

SC LINE

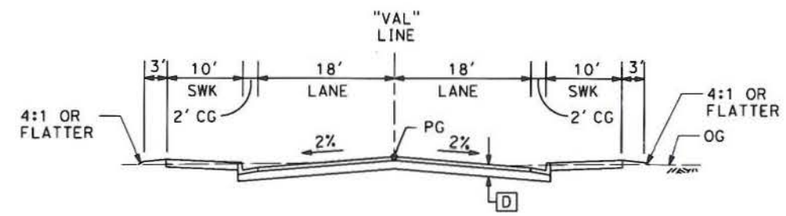


"P" 11+00 TO 20+30

P LINE
PLEASANT AVE

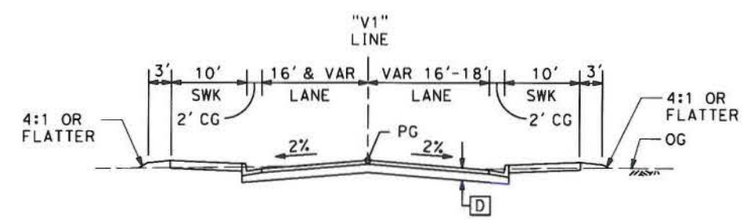


"VAL" 20+36 TO 22+51
"VAL" 31+17 TO 34+16



"VAL" 22+51 TO 31+17

VAL LINE
VALENTINE AVE



"V1" 10+00 TO 14+47

V1 LINE
NORTH PARKWAY DR

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - LOCAL ROAD "S", "SC", "P", "VAL", "V1"

CONTRACT NO.
DRAWING NO. CV-R0024-R99
SCALE AS SHOWN
SHEET NO.

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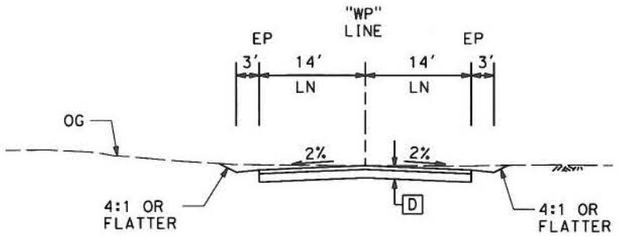
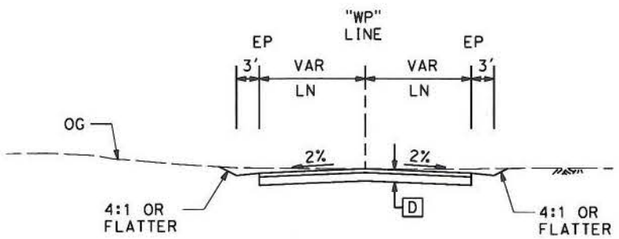
ychiu

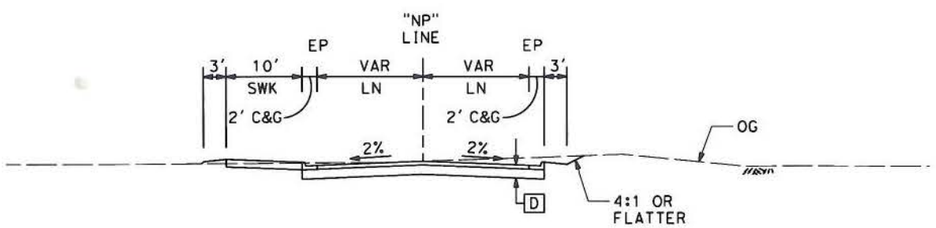


"WP" 8+91 TO 9+37

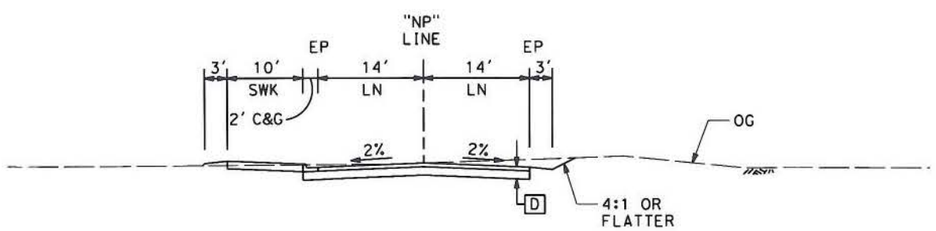


"WP" 9+37 TO 10+00

WP LINE
W PRINCETON AVE

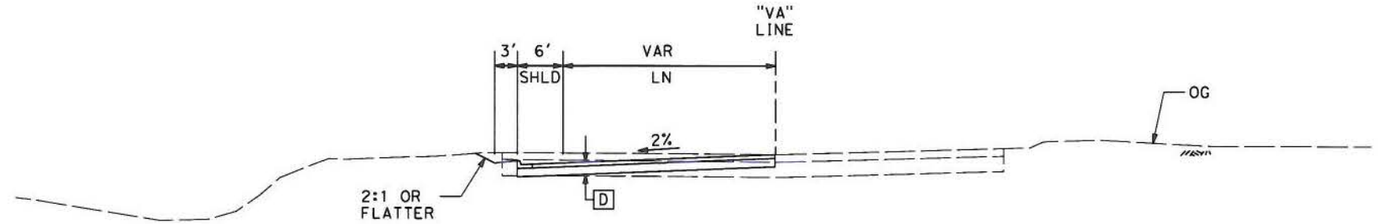


"NP" 10+00 TO 10+63

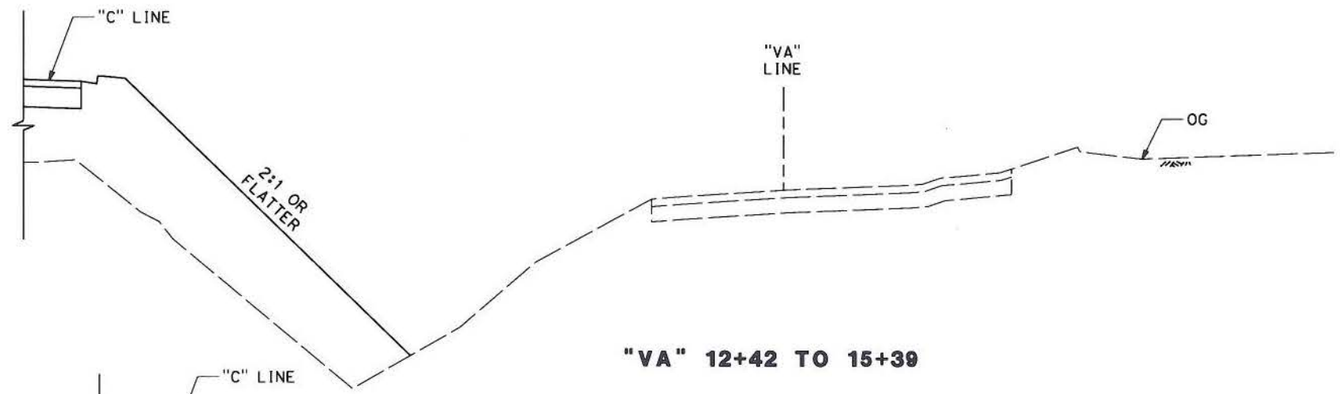


"NP" 10+63 TO 11+56

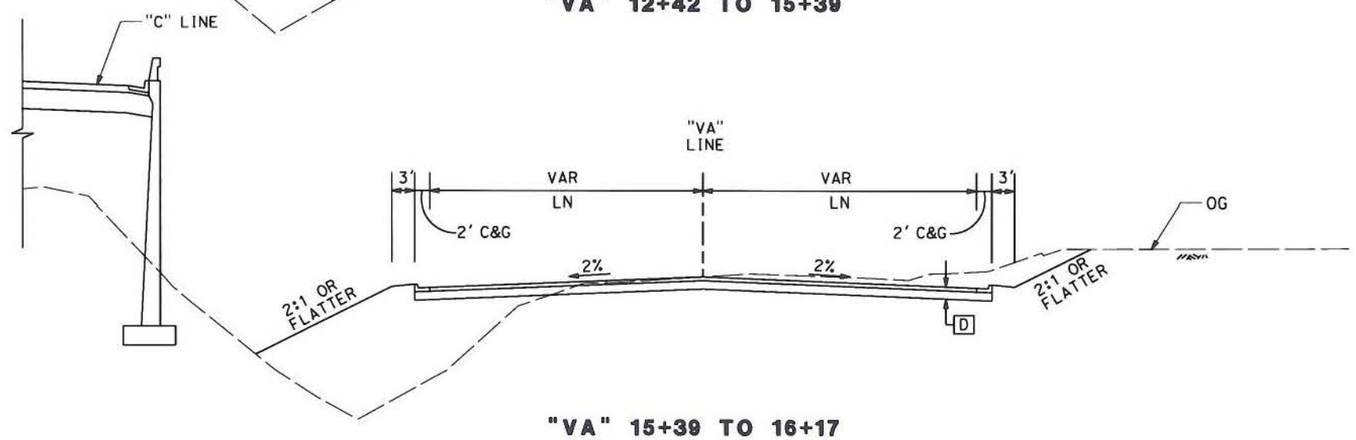
NP LINE
N PARKWAY DR



"VA" 10+00 TO 12+42



"VA" 12+42 TO 15+39



"VA" 15+39 TO 16+17

VA LINE
VASSAR AVE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

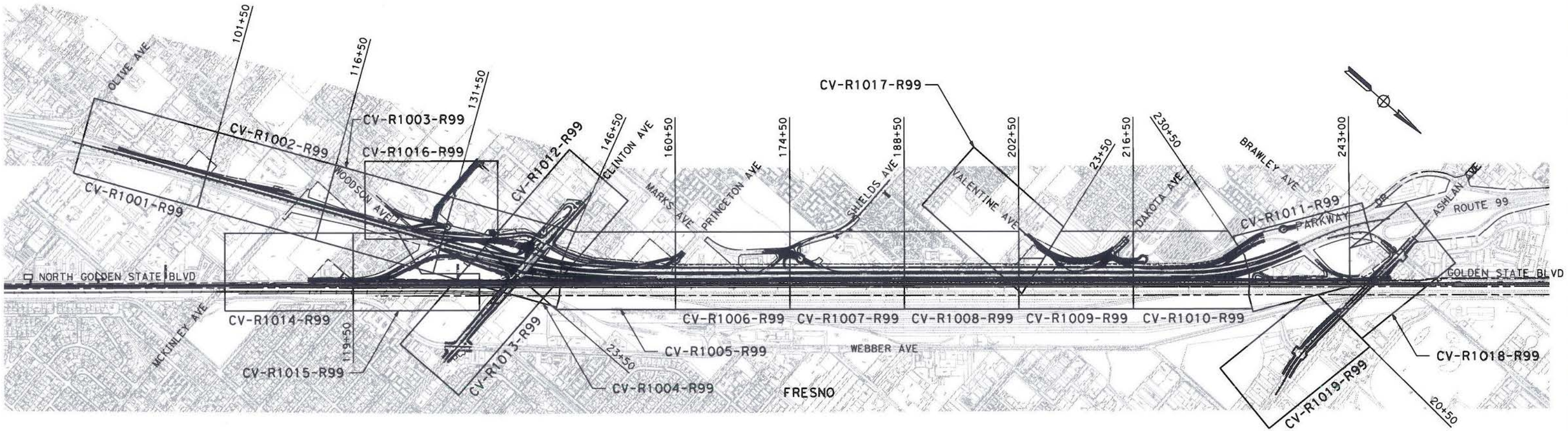
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

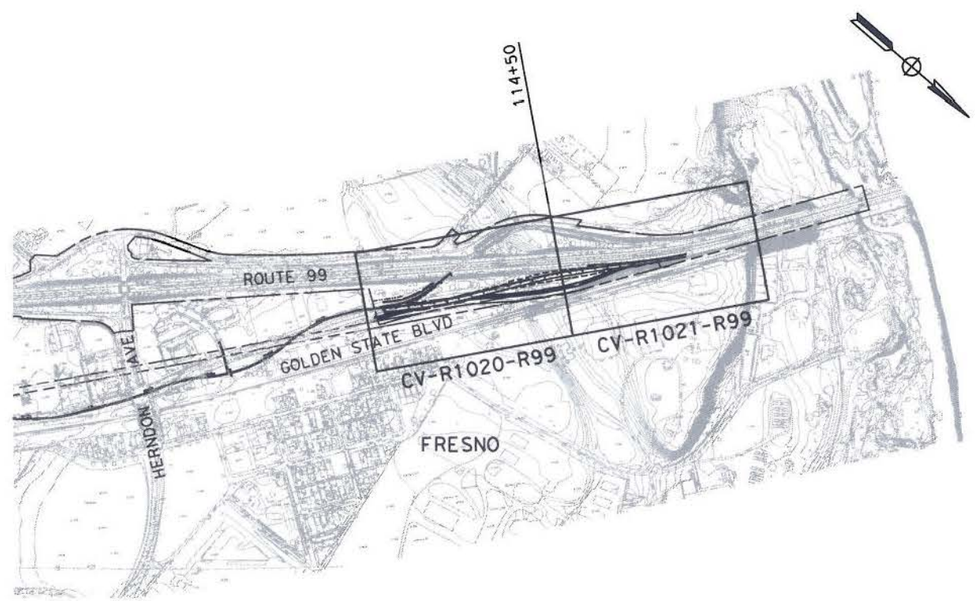
CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
TYPICAL SECTIONS
SR 99 - LOCAL ROAD "WP", "NP", "VA"

CONTRACT NO.
DRAWING NO. CV-R0025-R99
SCALE AS SHOWN
SHEET NO.

ychiu 11/16/2011 3:31:45 PM CAHSRP-R1.TBL CHSR_half_block.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R3025-R99.dgn





600 0 600 1200
1"=600'
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
KEY MAP
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-R0002
SCALE AS SHOWN
SHEET NO.

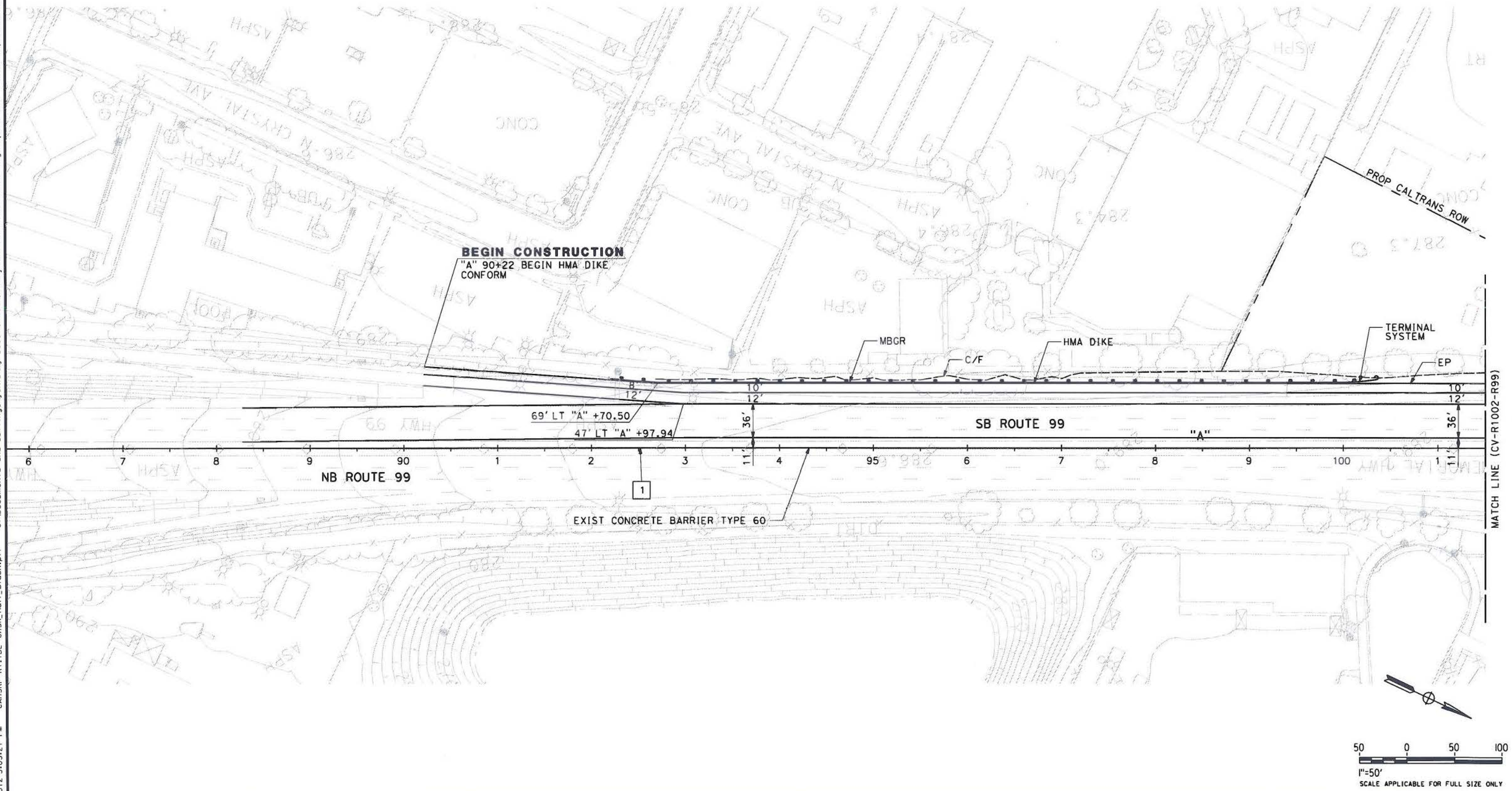
ychiu 1/2/2013 1:41:13 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\1S-CV-R0002-R99.Prc

LINE DATA

NO.	BEARING	DISTANCE
1	N 25°25'58" W	4814.16'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - HIGHWAY

CONTRACT NO.
DRAWING NO. CV-R1001-R99
SCALE AS SHOWN
SHEET NO.

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ychiu

CURVE DATA

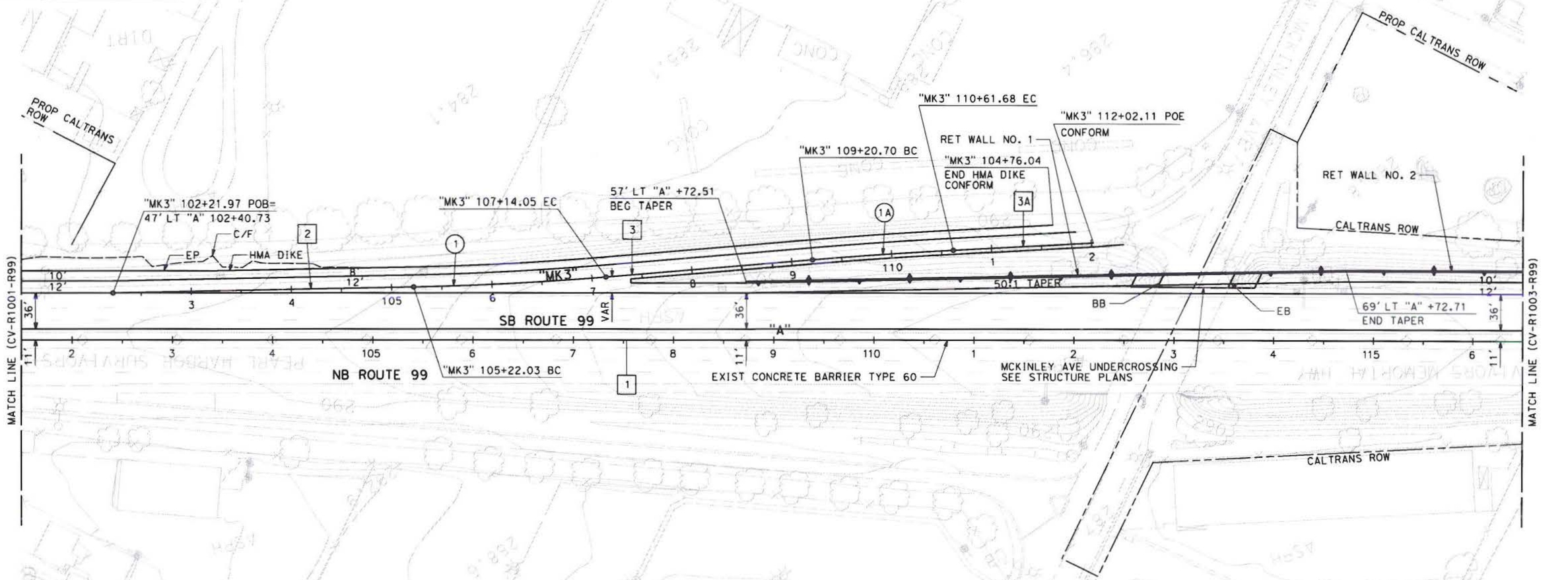
NO.	R	Δ	T	L
1	3000.00'	03°11'29"	83.57'	167.10'
1A	4500.00'	01°47'42"	70.50'	140.98'

LINE DATA

NO.	BEARING	DISTANCE
1	N 25°25'58" W	4814.16'
2	N 26°34'15" W	300.06'
3	N 30°14'18" W	206.65'
3A	N 28°26'36" W	140.42'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



RETAINING WALL DATA

NO.	LOCATIONS		LENGTH	MAX HEIGHT
	BEGIN	END		
1	58.50' LT "A" 108+72.48	66.30' LT "A" 112+62.47	390'	8'
2	68.81' LT "A" 113+87.94	70.50' LT "A" 120+90.00	701'	10'

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - HIGHWAY

CONTRACT NO.
DRAWING NO. CV-R1002-R99
SCALE AS SHOWN
SHEET NO.

CURVE DATA

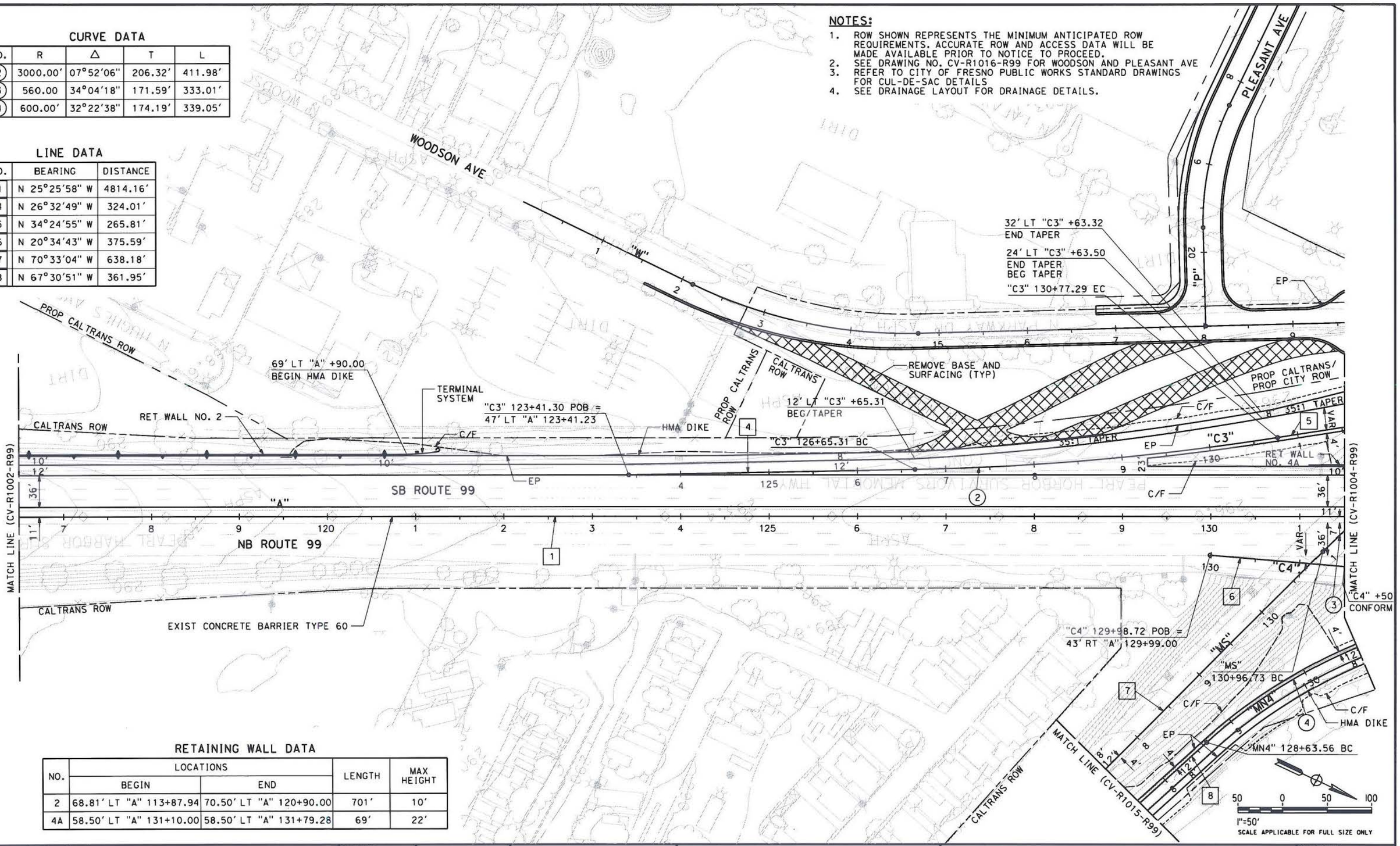
NO.	R	Δ	T	L
2	3000.00'	07°52'06"	206.32'	411.98'
3	560.00	34°04'18"	171.59'	333.01'
4	600.00'	32°22'38"	174.19'	339.05'

LINE DATA

NO.	BEARING	DISTANCE
1	N 25°25'58" W	4814.16'
4	N 26°32'49" W	324.01'
5	N 34°24'55" W	265.81'
6	N 20°34'43" W	375.59'
7	N 70°33'04" W	638.18'
8	N 67°30'51" W	361.95'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE DRAWING NO. CV-R1016-R99 FOR WOODSON AND PLEASANT AVE
3. REFER TO CITY OF FRESNO PUBLIC WORKS STANDARD DRAWINGS FOR CUL-DE-SAC DETAILS
4. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



RETAINING WALL DATA

NO.	LOCATIONS		LENGTH	MAX HEIGHT
	BEGIN	END		
2	68.81' LT "A" 113+87.94	70.50' LT "A" 120+90.00	701'	10'
4A	58.50' LT "A" 131+10.00	58.50' LT "A" 131+79.28	69'	22'

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - HIGHWAY, RAMPS

CONTRACT NO.
DRAWING NO. CV-R1003-R99
SCALE AS SHOWN
SHEET NO.

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ychiu

CURVE DATA

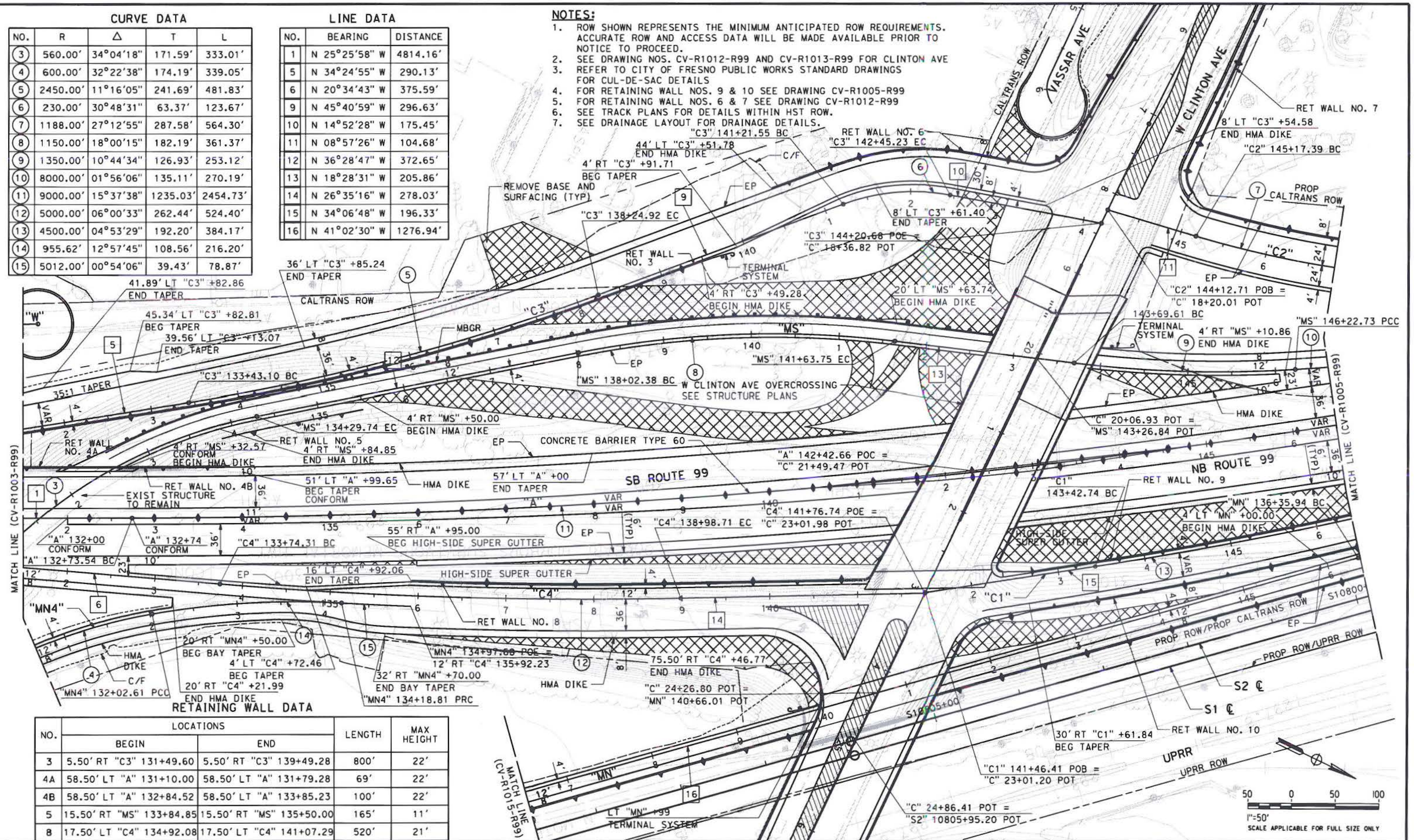
NO.	R	Δ	T	L
3	560.00'	34°04'18"	171.59'	333.01'
4	600.00'	32°22'38"	174.19'	339.05'
5	2450.00'	11°16'05"	241.69'	481.83'
6	230.00'	30°48'31"	63.37'	123.67'
7	1188.00'	27°12'55"	287.58'	564.30'
8	1150.00'	18°00'15"	182.19'	361.37'
9	1350.00'	10°44'34"	126.93'	253.12'
10	8000.00'	01°56'06"	135.11'	270.19'
11	9000.00'	15°37'38"	1235.03'	2454.73'
12	5000.00'	06°00'33"	262.44'	524.40'
13	4500.00'	04°53'29"	192.20'	384.17'
14	955.62'	12°57'45"	108.56'	216.20'
15	5012.00'	00°54'06"	39.43'	78.87'

LINE DATA

NO.	BEARING	DISTANCE
1	N 25°25'58" W	4814.16'
5	N 34°24'55" W	290.13'
6	N 20°34'43" W	375.59'
9	N 45°40'59" W	296.63'
10	N 14°52'28" W	175.45'
11	N 08°57'26" W	104.68'
12	N 36°28'47" W	372.65'
13	N 18°28'31" W	205.86'
14	N 26°35'16" W	278.03'
15	N 34°06'48" W	196.33'
16	N 41°02'30" W	1276.94'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE DRAWING NOS. CV-R1012-R99 AND CV-R1013-R99 FOR CLINTON AVE
3. REFER TO CITY OF FRESNO PUBLIC WORKS STANDARD DRAWINGS FOR CUL-DE-SAC DETAILS
4. FOR RETAINING WALL NOS. 9 & 10 SEE DRAWING CV-R1005-R99
5. FOR RETAINING WALL NOS. 6 & 7 SEE DRAWING CV-R1012-R99
6. SEE TRACK PLANS FOR DETAILS WITHIN HST ROW.
7. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



RETAINING WALL DATA

NO.	LOCATIONS		LENGTH	MAX HEIGHT
	BEGIN	END		
3	5.50' RT "C3" 131+49.60	5.50' RT "C3" 139+49.28	800'	22'
4A	58.50' LT "A" 131+10.00	58.50' LT "A" 131+79.28	69'	22'
4B	58.50' LT "A" 132+84.52	58.50' LT "A" 133+85.23	100'	22'
5	15.50' RT "MS" 133+84.85	15.50' RT "MS" 135+50.00	165'	11'
8	17.50' LT "C4" 134+92.08	17.50' LT "C4" 141+07.29	520'	21'

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - HIGHWAY, RAMPS

CONTRACT NO.
DRAWING NO. CV-R1004-R99
SCALE AS SHOWN
SHEET NO.

7/18/2012 2:07:41 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\15-CV-R1004-R99_7-1
ychiu

CURVE DATA

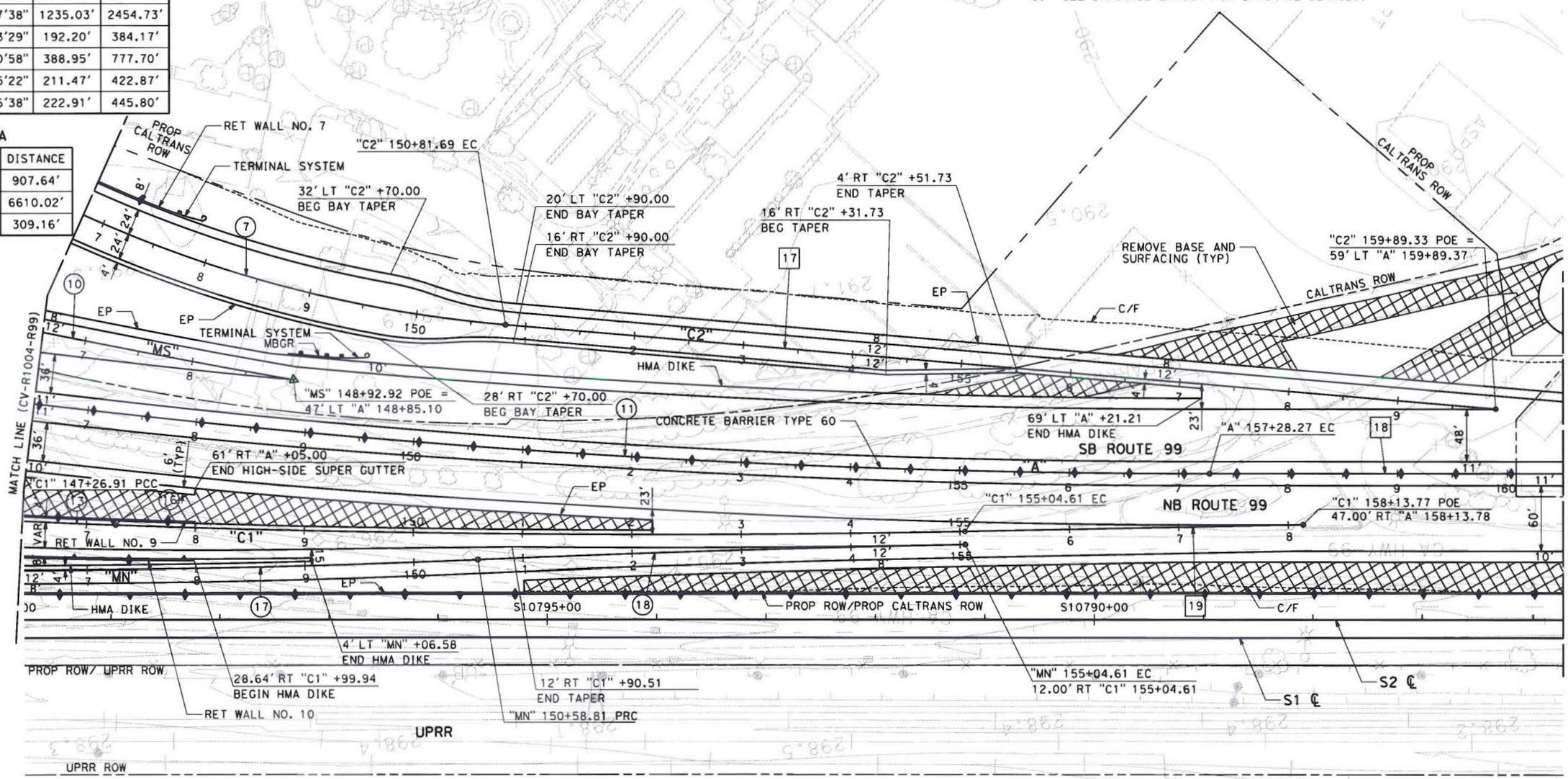
NO.	R	Δ	T	L
7	1188.00'	27°12'55"	287.58'	564.30'
10	8000.00'	01°56'06"	135.11'	270.19'
11	9000.00'	15°37'38"	1235.03'	2454.73'
13	4500.00'	04°53'29"	192.20'	384.17'
16	14000.00'	03°10'58"	388.95'	777.70'
17	10000.00'	02°25'22"	211.47'	422.87'
18	20000.00'	01°16'38"	222.91'	445.80'

LINE DATA

NO.	BEARING	DISTANCE
17	N 36°10'22" W	907.64'
18	N 41°03'36" W	6610.02'
19	N 42°11'15" W	309.16'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE TRACK PLANS FOR DETAILS WITHIN HST ROW.
3. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



RETAINING WALL DATA

NO.	LOCATIONS		LENGTH	MAX HEIGHT
	BEGIN	END		
7	44.64' LT "C" 14+48.15	33.50' LT "C2" 147+50.00	564'	18'
9	10.00' LT "C1" 142+37.16	5.50' LT "C1" 148+00.00	563'	16'
10	44.00' RT "C1" 142+14.31	30.14' RT "C1" 148+00.00	589'	20'

50 0 50 100
1"=50'
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - HIGHWAY, RAMPS

CONTRACT NO.
DRAWING NO. CV-R1005-R99
SCALE AS SHOWN
SHEET NO.

ychiu 7/17/2012 5:22:26 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\1S-CV-R1005-R99_7-1

CURVE DATA

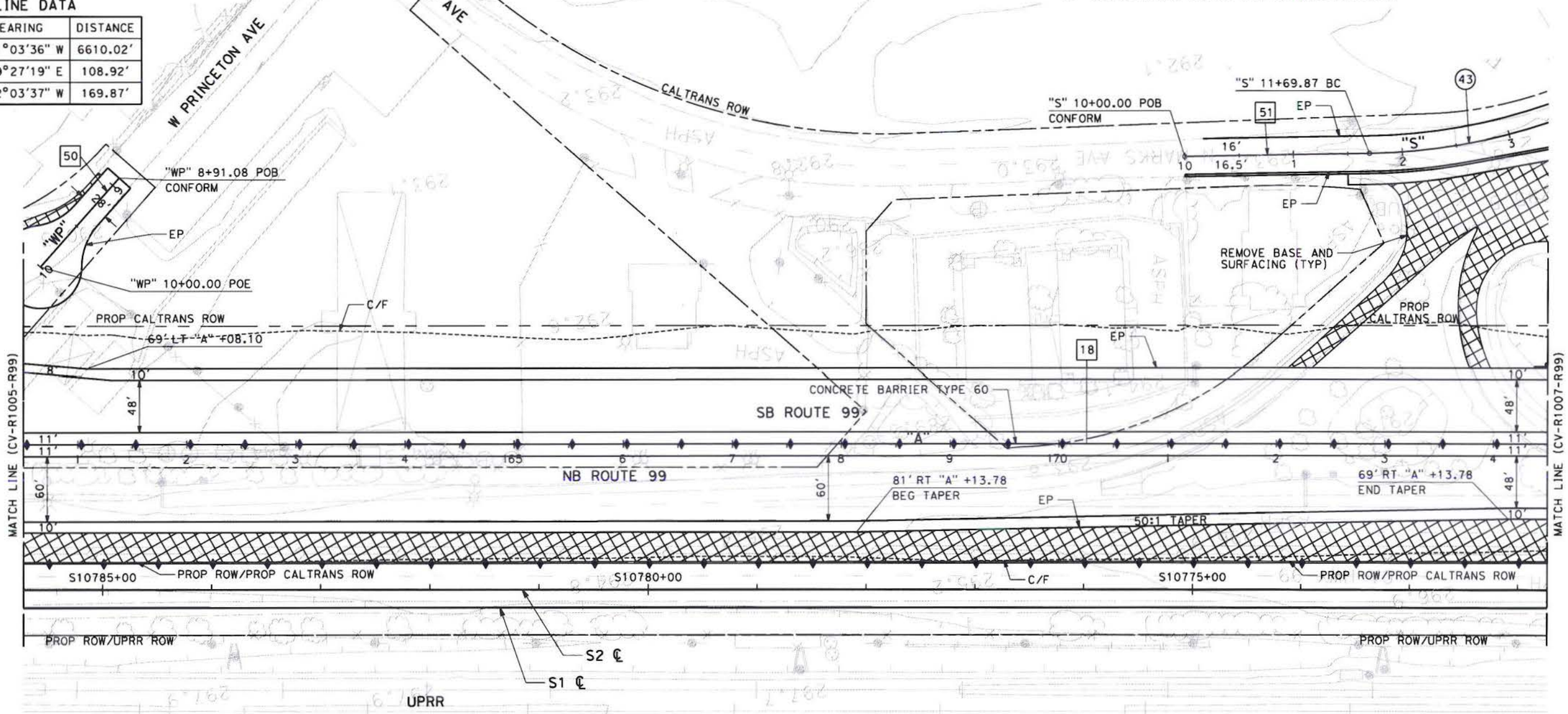
NO.	R	Δ	T	L
43	550.00'	24°14'15"	118.10'	232.66'

LINE DATA

NO.	BEARING	DISTANCE
18	N 41°03'36" W	6610.02'
50	S 89°27'19" E	108.92'
51	N 42°03'37" W	169.87'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. REFER TO CITY OF FRESNO PUBLIC WORKS STANDARD DRAWINGS FOR CUL-DE-SAC DETAILS
3. SEE TRACK PLANS FOR DETAILS WITHIN HST ROW.
4. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - HIGHWAY, LOCAL ROADS

CONTRACT NO.
DRAWING NO. CV-R1006-R99
SCALE AS SHOWN
SHEET NO.

ychiu 11/17/2011 9:31:04 AM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\1S-CV-R1006-R99.dgn

CURVE DATA

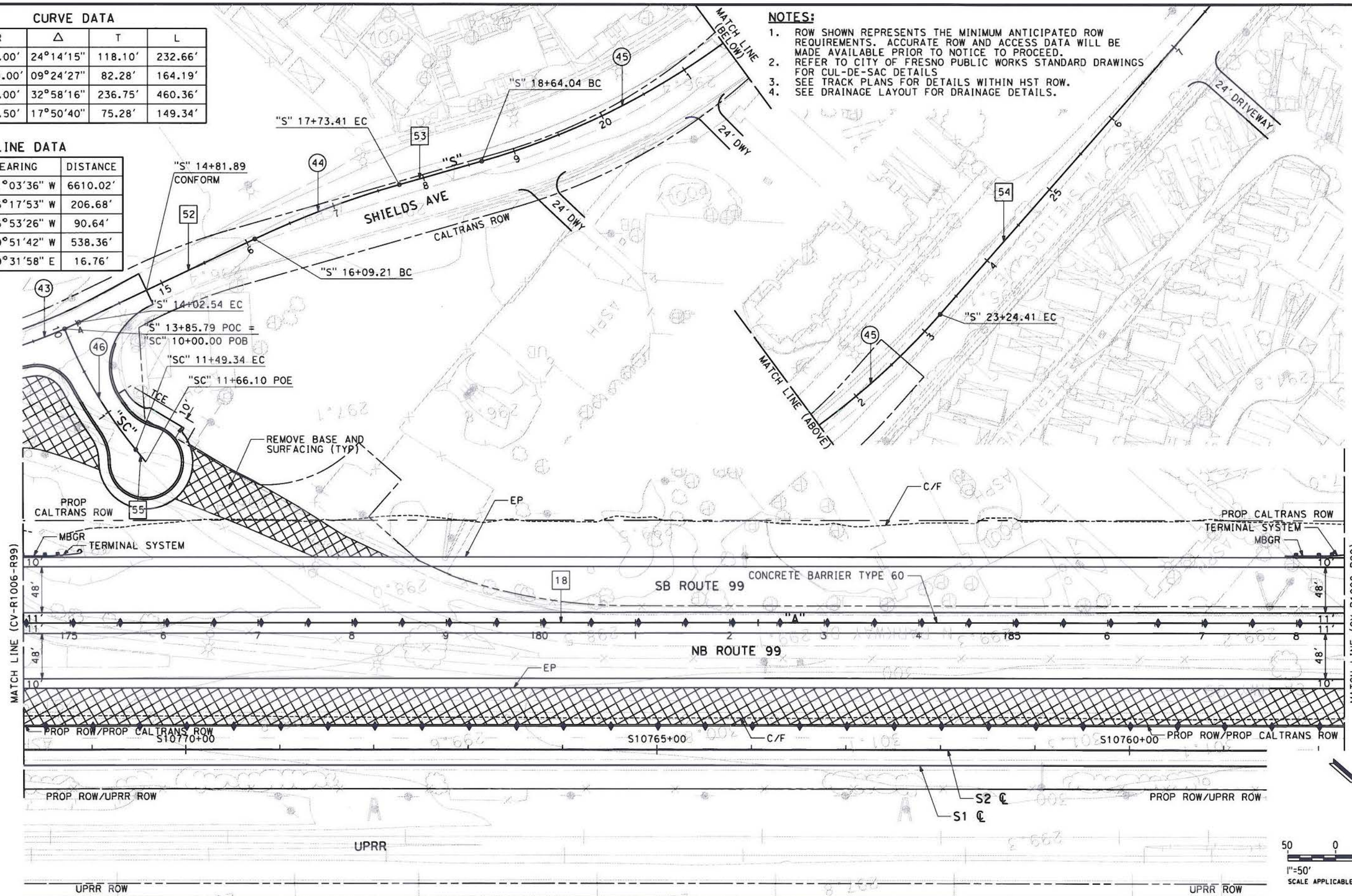
NO.	R	Δ	T	L
43	550.00'	24°14'15"	118.10'	232.66'
44	1000.00'	09°24'27"	82.28'	164.19'
45	800.00'	32°58'16"	236.75'	460.36'
46	479.50'	17°50'40"	75.28'	149.34'

LINE DATA

NO.	BEARING	DISTANCE
18	N 41°03'36" W	6610.02'
52	N 66°17'53" W	206.68'
53	N 56°53'26" W	90.64'
54	N 89°51'42" W	538.36'
55	N 09°31'58" E	16.76'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. REFER TO CITY OF FRESNO PUBLIC WORKS STANDARD DRAWINGS FOR CUL-DE-SAC DETAILS
3. SEE TRACK PLANS FOR DETAILS WITHIN HST ROW.
4. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - HIGHWAY, LOCAL ROADS

CONTRACT NO.
DRAWING NO. CV-R1007-R99
SCALE AS SHOWN
SHEET NO.

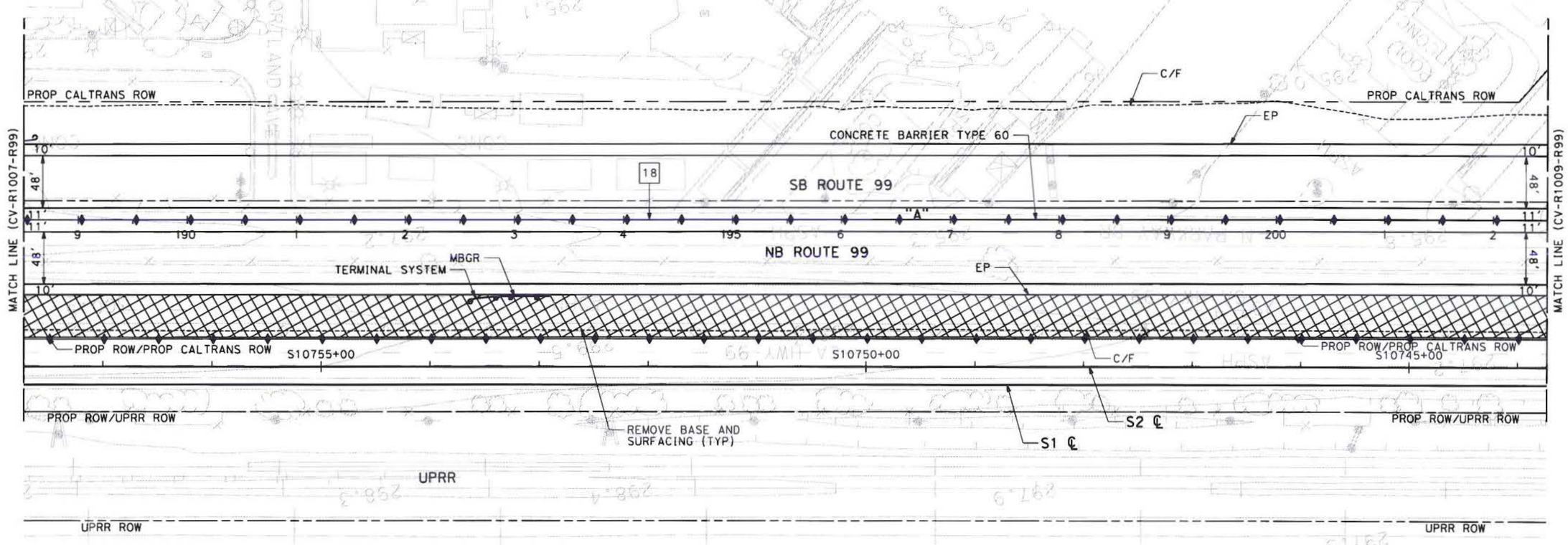
ychiu 11/16/2011 2:18:17 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\1S-CV-R1007-R99.dgn

LINE DATA

NO.	BEARING	DISTANCE
18	N 41°03'36" W	6610.02'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE TRACK PLANS FOR DETAILS WITHIN HST ROW.
3. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



50 0 50 100
1"=50'
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - HIGHWAY

CONTRACT NO.
DRAWING NO. CV-R1008-R99
SCALE AS SHOWN
SHEET NO.

ychiu 11/16/2012 1:8:39 PM CAHSRP-R1.TBL ChSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\15-CV-R1008-R99.dgn

CURVE DATA

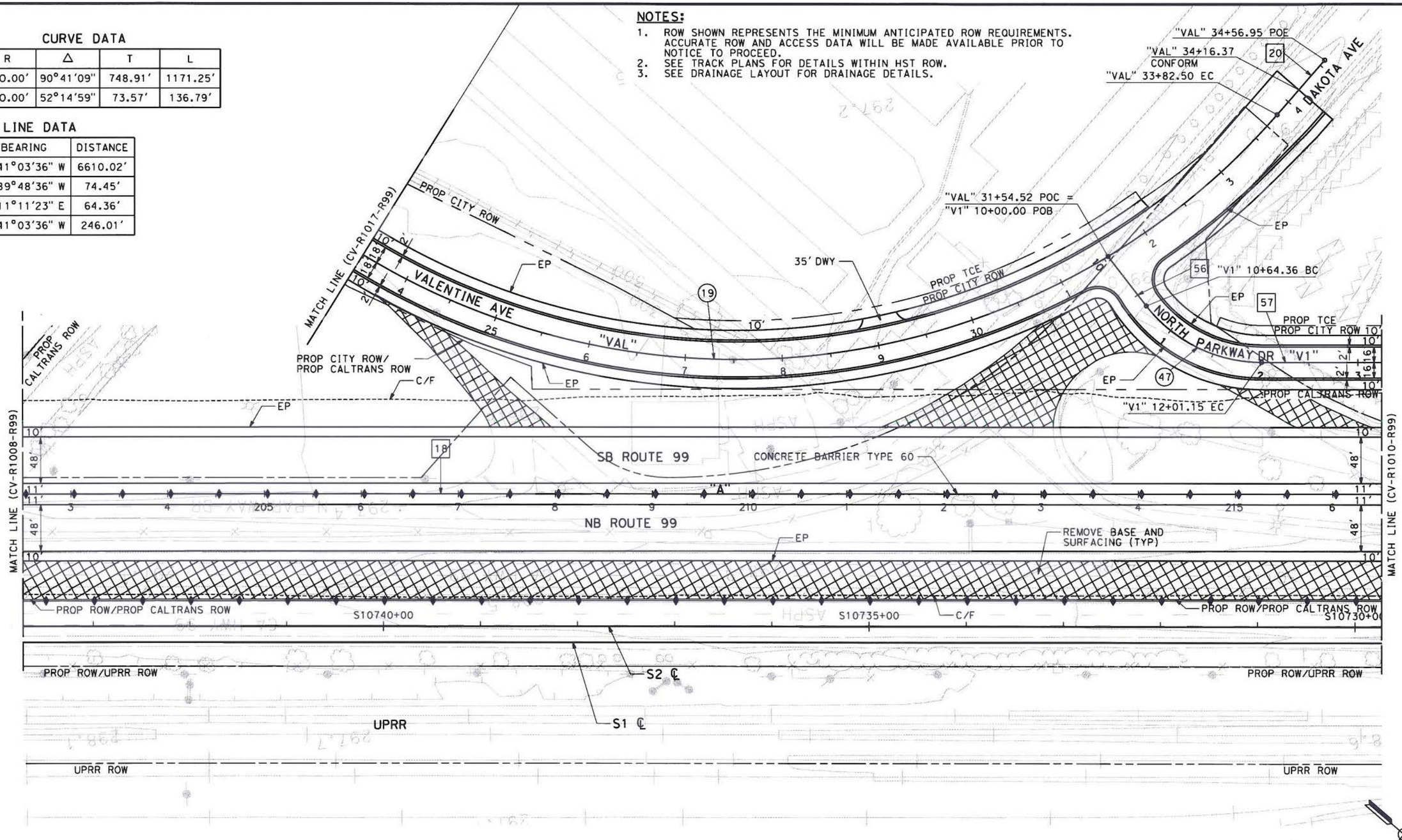
NO.	R	Δ	T	L
19	740.00'	90°41'09"	748.91'	1171.25'
47	150.00'	52°14'59"	73.57'	136.79'

LINE DATA

NO.	BEARING	DISTANCE
18	N 41°03'36" W	6610.02'
20	N 89°48'36" W	74.45'
56	N 11°11'23" E	64.36'
57	N 41°03'36" W	246.01'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE TRACK PLANS FOR DETAILS WITHIN HST ROW.
3. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - HIGHWAY, LOCAL ROADS

CONTRACT NO.
DRAWING NO. CV-R1009-R99
SCALE AS SHOWN
SHEET NO.

11/16/2011 2:18:46 PM CAHSRP-R1.TBL CHSR_half_block.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\15-CV-R1009-R99.dgn ychiu

CURVE DATA

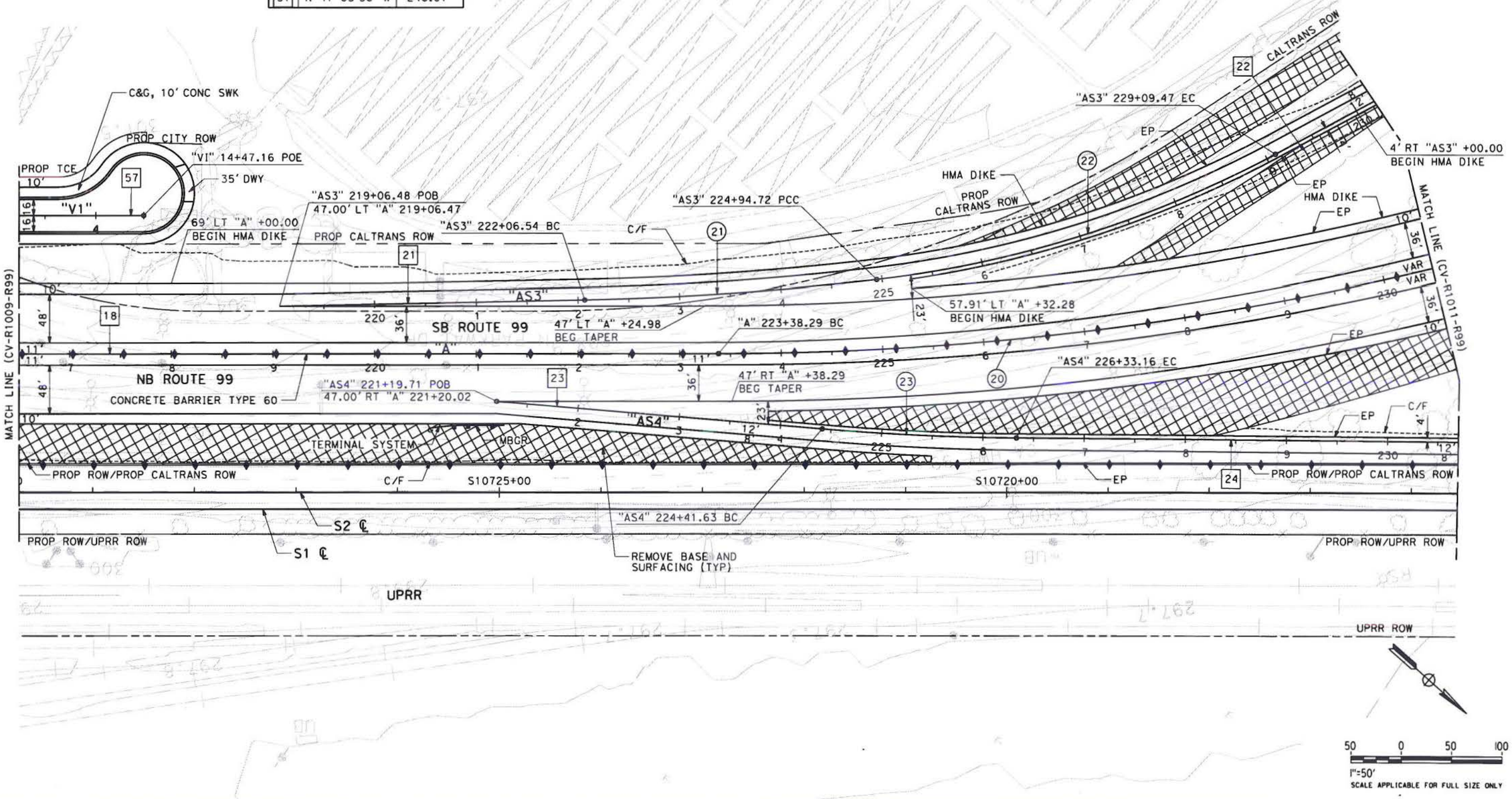
NO.	R	Δ	T	L
20	3000.00'	25°07'25"	668.48'	1315.46'
21	3000.00'	05°30'14"	144.20'	288.18'
22	1100.00'	21°36'12"	209.87'	414.75'
23	2500.00'	04°23'45"	95.95'	191.80'

LINE DATA

NO.	BEARING	DISTANCE
18	N 41°03'36" W	6610.02'
21	N 42°12'21" W	300.06'
22	N 69°18'46" W	282.03'
23	N 36°11'28" W	321.65'
24	N 40°35'13" W	1061.42'
57	N 41°03'36" W	246.01'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. REFER TO CITY OF FRESNO PUBLIC WORKS STANDARD DRAWINGS FOR CUL-DE-SAC DETAILS
3. SEE TRACK PLANS FOR DETAILS WITHIN HST ROW.
4. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

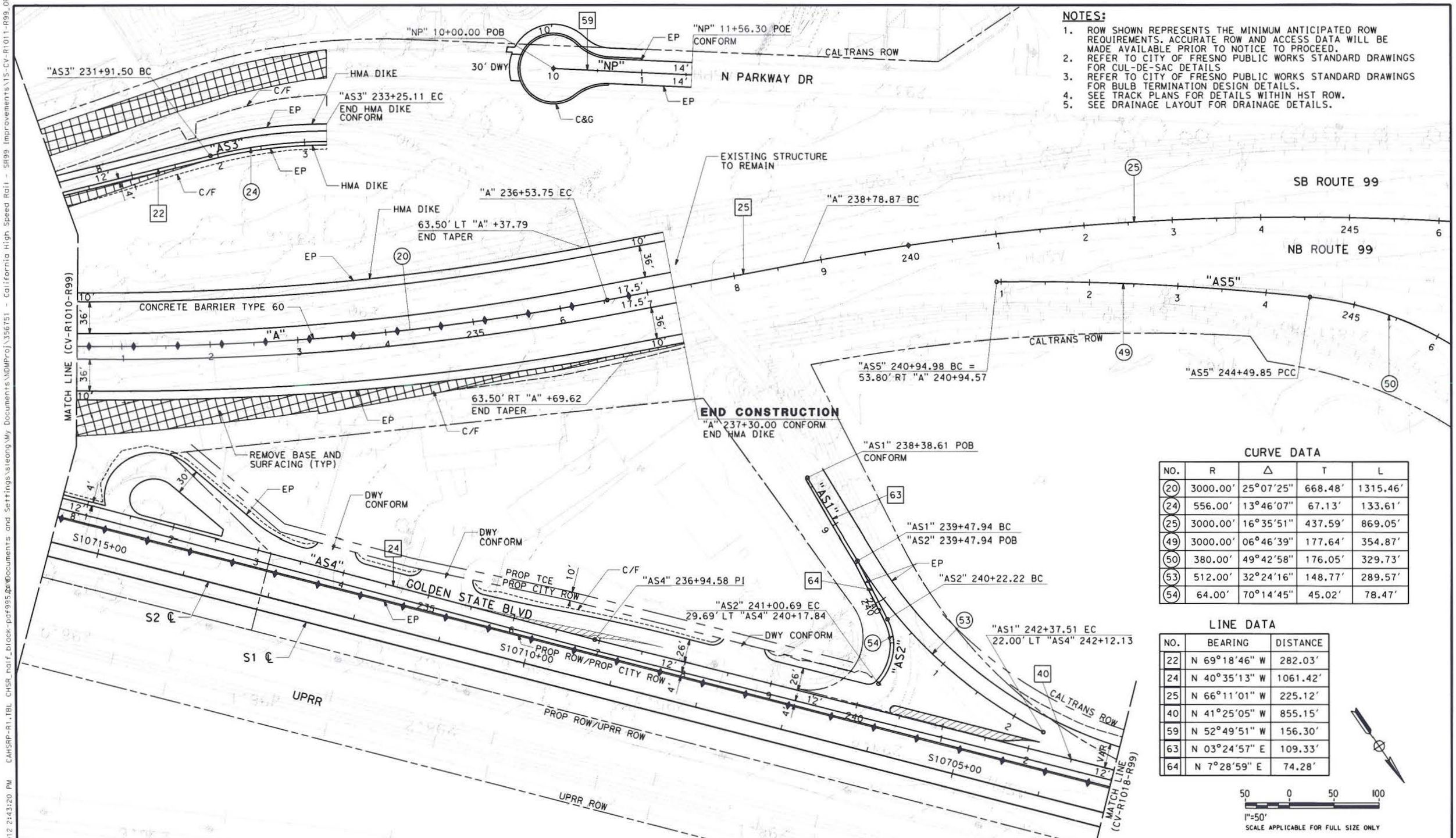
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - HIGHWAY, RAMPS, LOCAL ROADS

CONTRACT NO.
DRAWING NO. CV-R1010-R99
SCALE AS SHOWN
SHEET NO.

2/16/2012 5:37:45 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\15-CV-R1010-R99_OPT ychiu



NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. REFER TO CITY OF FRESNO PUBLIC WORKS STANDARD DRAWINGS FOR CUL-DE-SAC DETAILS
3. REFER TO CITY OF FRESNO PUBLIC WORKS STANDARD DRAWINGS FOR BULB TERMINATION DESIGN DETAILS.
4. SEE TRACK PLANS FOR DETAILS WITHIN HST ROW.
5. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.

CURVE DATA

NO.	R	Δ	T	L
20	3000.00'	25°07'25"	668.48'	1315.46'
24	556.00'	13°46'07"	67.13'	133.61'
25	3000.00'	16°35'51"	437.59'	869.05'
49	3000.00'	06°46'39"	177.64'	354.87'
50	380.00'	49°42'58"	176.05'	329.73'
53	512.00'	32°24'16"	148.77'	289.57'
54	64.00'	70°14'45"	45.02'	78.47'

LINE DATA

NO.	BEARING	DISTANCE
22	N 69°18'46" W	282.03'
24	N 40°35'13" W	1061.42'
25	N 66°11'01" W	225.12'
40	N 41°25'05" W	855.15'
59	N 52°49'51" W	156.30'
63	N 03°24'57" E	109.33'
64	N 7°28'59" E	74.28'

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - HIGHWAY, RAMPS, LOCAL ROADS

CONTRACT NO.
DRAWING NO. CV-R1011-R99
SCALE AS SHOWN
SHEET NO.

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sleong

NOTES:

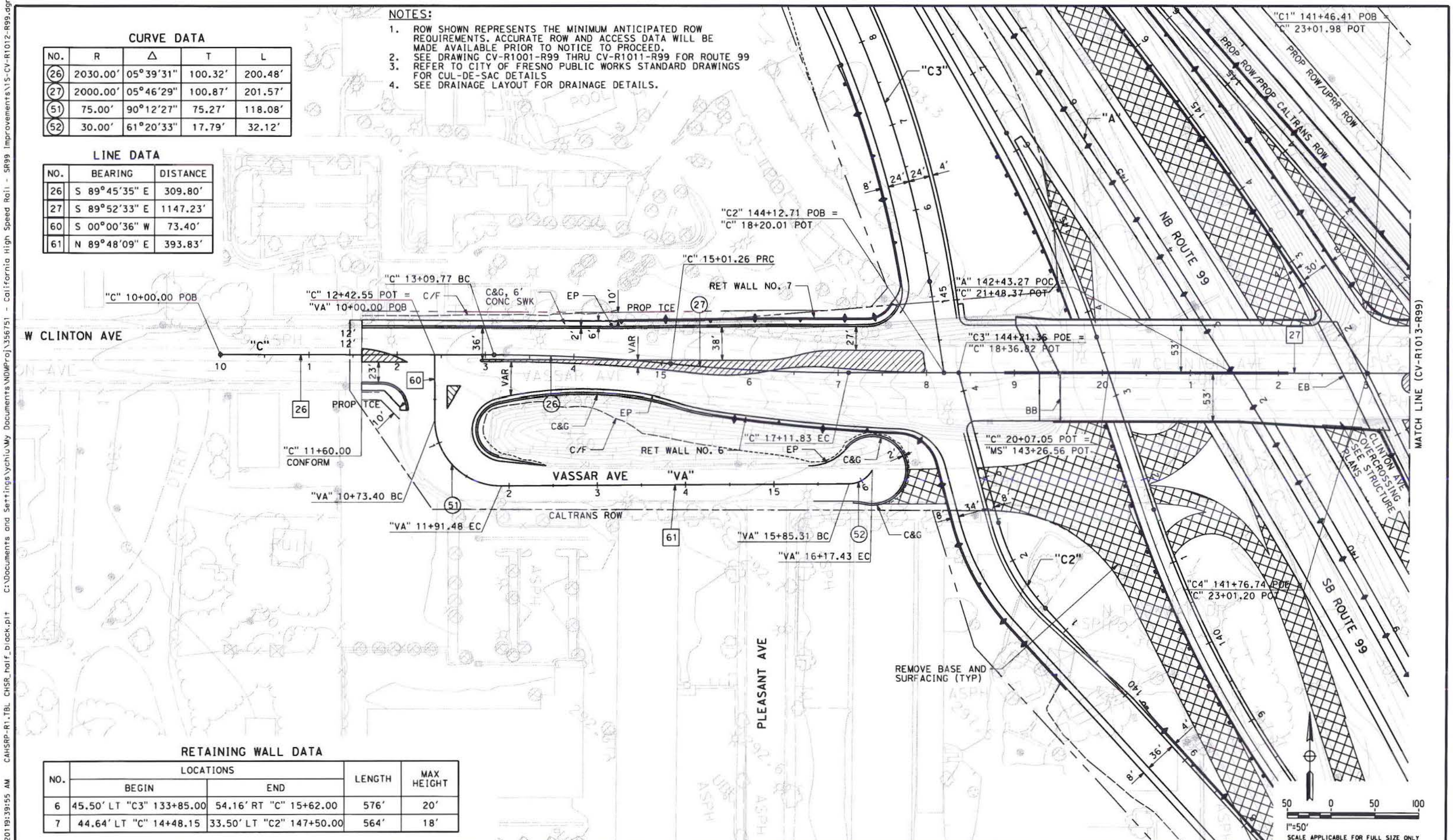
1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE DRAWING CV-R1001-R99 THRU CV-R1011-R99 FOR ROUTE 99
3. REFER TO CITY OF FRESNO PUBLIC WORKS STANDARD DRAWINGS FOR CUL-DE-SAC DETAILS
4. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.

CURVE DATA

NO.	R	Δ	T	L
26	2030.00'	05°39'31"	100.32'	200.48'
27	2000.00'	05°46'29"	100.87'	201.57'
51	75.00'	90°12'27"	75.27'	118.08'
52	30.00'	61°20'33"	17.79'	32.12'

LINE DATA

NO.	BEARING	DISTANCE
26	S 89°45'35" E	309.80'
27	S 89°52'33" E	1147.23'
60	S 00°00'36" W	73.40'
61	N 89°48'09" E	393.83'



RETAINING WALL DATA

NO.	LOCATIONS		LENGTH	MAX HEIGHT
	BEGIN	END		
6	45.50' LT "C3" 133+85.00	54.16' RT "C" 15+62.00	576'	20'
7	44.64' LT "C" 14+48.15	33.50' LT "C2" 147+50.00	564'	18'

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - W CLINTON AVE

CONTRACT NO.
DRAWING NO. CV-R1012-R99
SCALE AS SHOWN
SHEET NO.

ychiu 11/17/2011 9:39:55 AM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\15-CV-R1012-R99.dgn

CURVE DATA

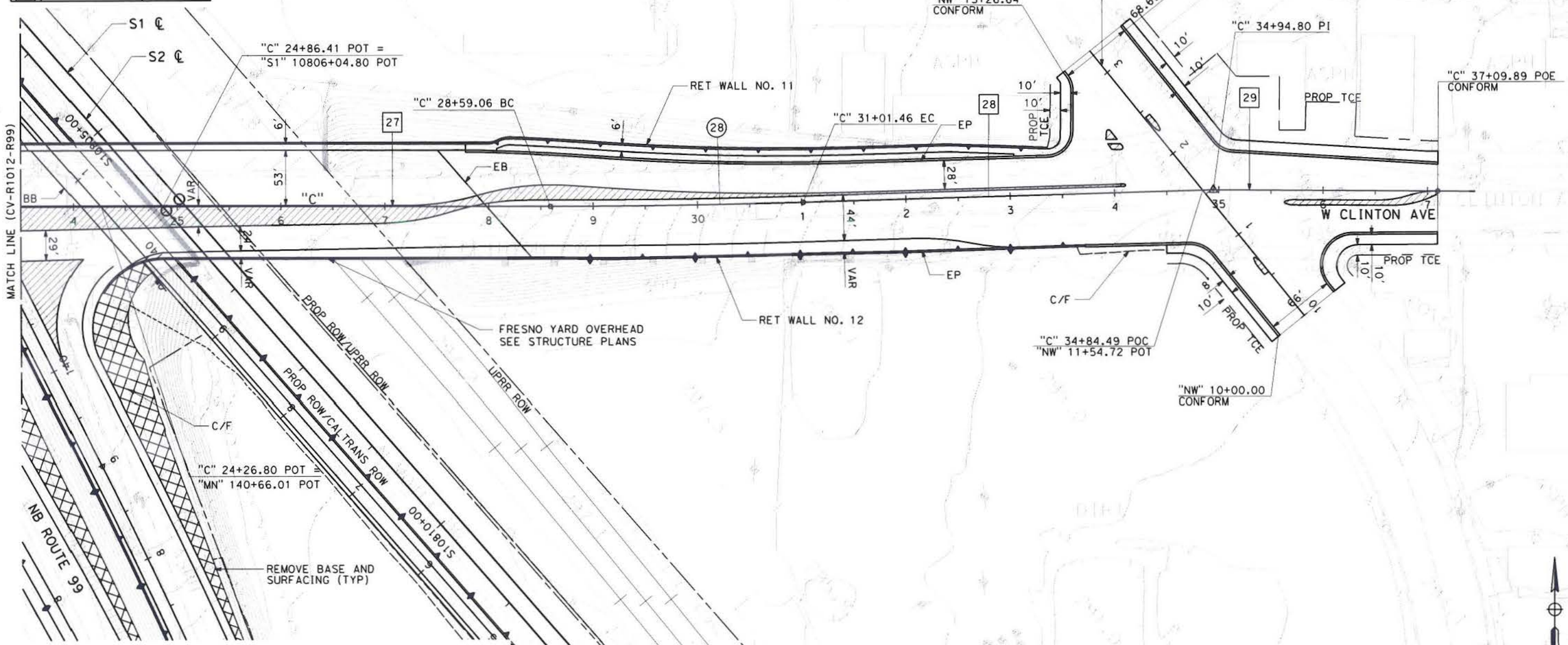
NO.	R	Δ	T	L
28	8000.00'	01°44'10"	121.21'	242.40'

LINE DATA

NO.	BEARING	DISTANCE
27	S 89°52'33" E	1147.23'
28	N 88°23'17" E	393.33'
29	S 89°35'22" E	215.09'
50	N 38°48'41" W	326.64'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE DRAWING CV-R1001-R99 THRU CV-R1011-R99 FOR ROUTE 99
3. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



RETAINING WALL DATA

NO.	LOCATIONS		LENGTH	MAX HEIGHT
	BEGIN	END		
11	61.50' LT "C" 27+77.61	45.69' LT "C" 33+37.15	559'	20'
12	50.55' RT "C" 28+71.70	50.57' RT "C" 33+70.00	500'	10'

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - W CLINTON AVE

CONTRACT NO.
DRAWING NO. CV-R1013-R99
SCALE AS SHOWN
SHEET NO.

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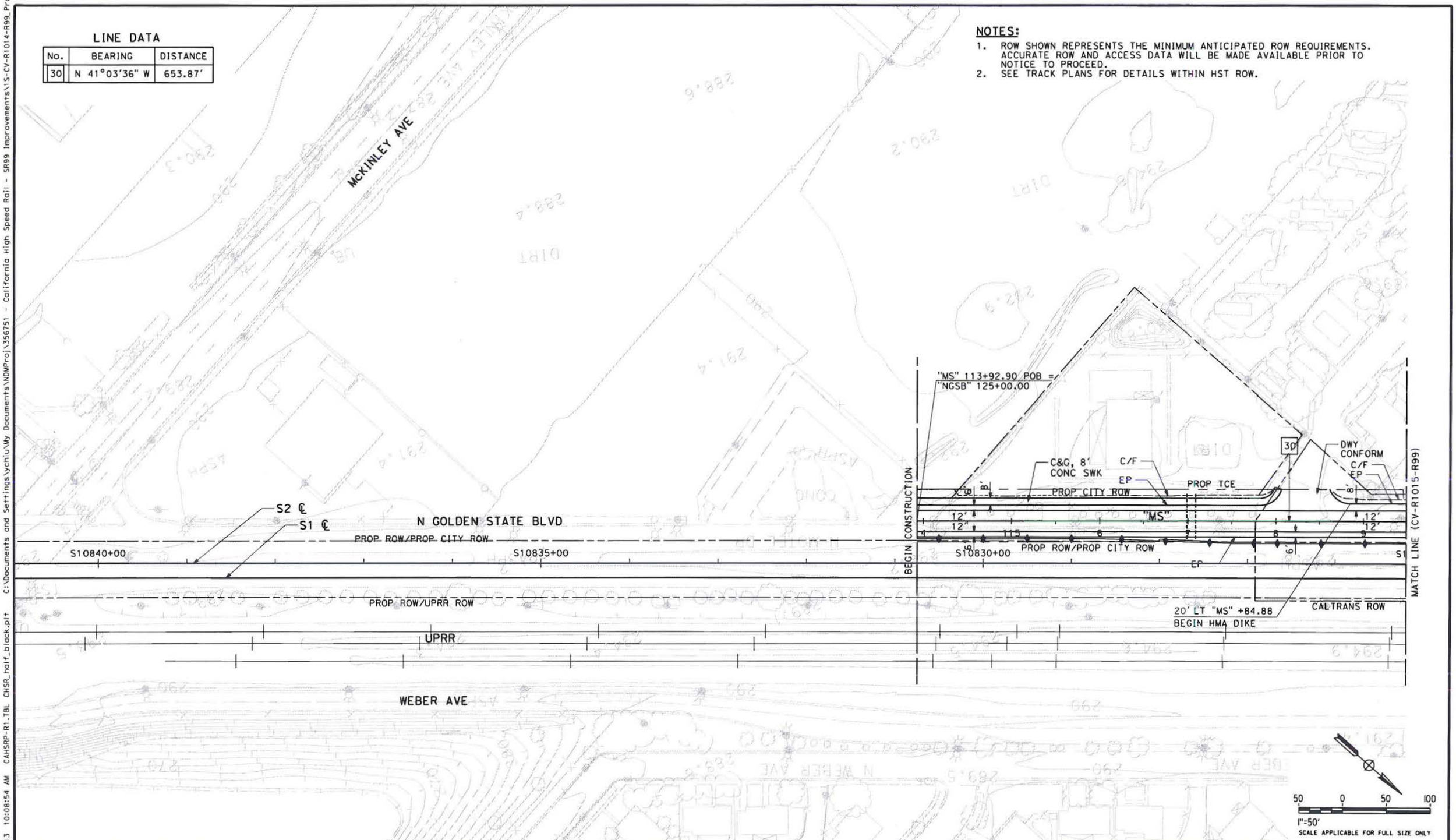
sleong

LINE DATA

No.	BEARING	DISTANCE
30	N 41°03'36" W	653.87'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE TRACK PLANS FOR DETAILS WITHIN HST ROW.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - N GOLDEN STATE BLVD

CONTRACT NO.
DRAWING NO. CV-R1014-R99
SCALE AS SHOWN
SHEET NO.

ychiu 1/2/2013 10:08:54 AM CAHSRP-R1.TBL CHSR_half_block.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\15-CV-R1014-R99_Prc

CURVE DATA

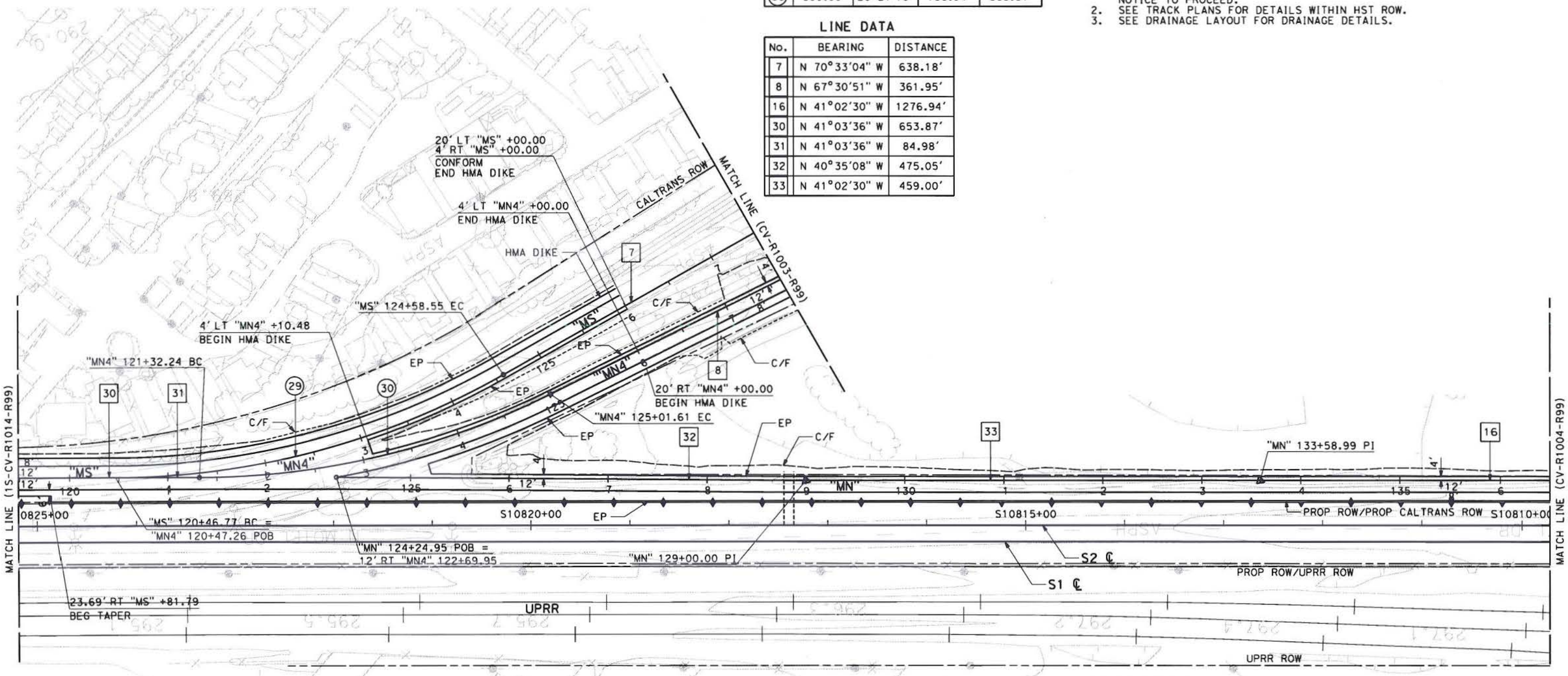
No.	R	Δ	T	L
29	800.00'	29°29'28"	210.56'	411.78'
30	800.00'	26°27'15"	188.04'	369.37'

LINE DATA

No.	BEARING	DISTANCE
7	N 70°33'04" W	638.18'
8	N 67°30'51" W	361.95'
16	N 41°02'30" W	1276.94'
30	N 41°03'36" W	653.87'
31	N 41°03'36" W	84.98'
32	N 40°35'08" W	475.05'
33	N 41°02'30" W	459.00'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE TRACK PLANS FOR DETAILS WITHIN HST ROW.
3. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - RAMPS

CONTRACT NO.
DRAWING NO. CV-R1015-R99
SCALE AS SHOWN
SHEET NO.

11/16/2012 2:21:12 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\1S-CV-R1015-R99.dgn
ychiu

CURVE DATA

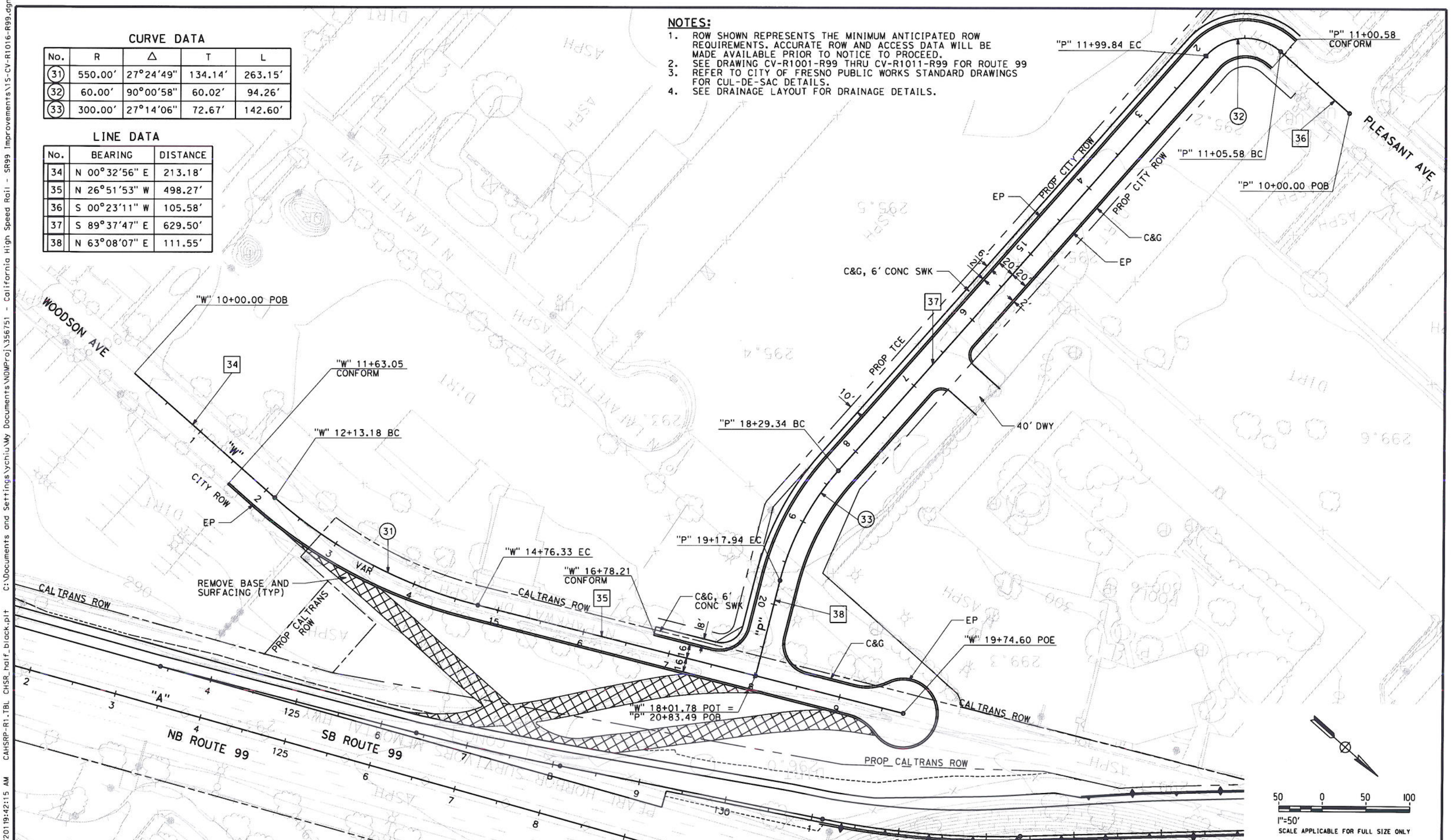
No.	R	Δ	T	L
31	550.00′	27°24′49"	134.14′	263.15′
32	60.00′	90°00′58"	60.02′	94.26′
33	300.00′	27°14′06"	72.67′	142.60′

LINE DATA

No.	BEARING	DISTANCE
34	N 00°32′56" E	213.18′
35	N 26°51′53" W	498.27′
36	S 00°23′11" W	105.58′
37	S 89°37′47" E	629.50′
38	N 63°08′07" E	111.55′

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE DRAWING CV-R1001-R99 THRU CV-R1011-R99 FOR ROUTE 99
3. REFER TO CITY OF FRESNO PUBLIC WORKS STANDARD DRAWINGS FOR CUL-DE-SAC DETAILS.
4. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



REV	DATE	BY	CHK	APP	DESCRIPTION

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DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

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2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - LOCAL ROADS

CONTRACT NO.
DRAWING NO. CV-R1016-R99
SCALE AS SHOWN
SHEET NO.

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CURVE DATA

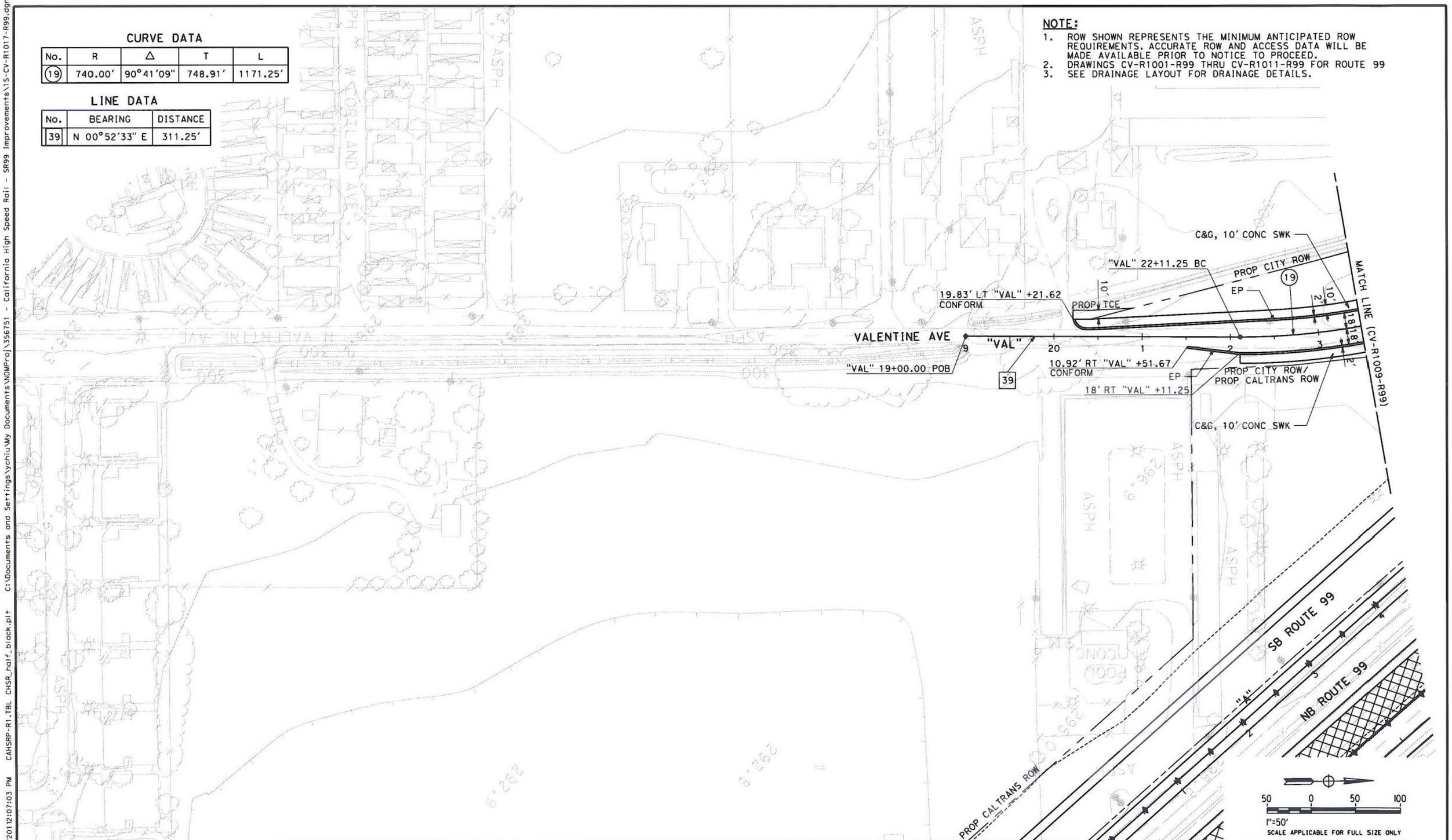
No.	R	Δ	T	L
19	740.00'	90°41'09"	748.91'	1171.25'

LINE DATA

No.	BEARING	DISTANCE
39	N 00°52'33" E	311.25'

NOTE:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. DRAWINGS CV-R1001-R99 THRU CV-R1011-R99 FOR ROUTE 99
3. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - LOCAL ROADS

CONTRACT NO.
DRAWING NO. CV-R1017-R99
SCALE AS SHOWN
SHEET NO.

ychiu 11/16/2012 12:07:03 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\1S-CV-R1017-R99.dgn

CURVE DATA

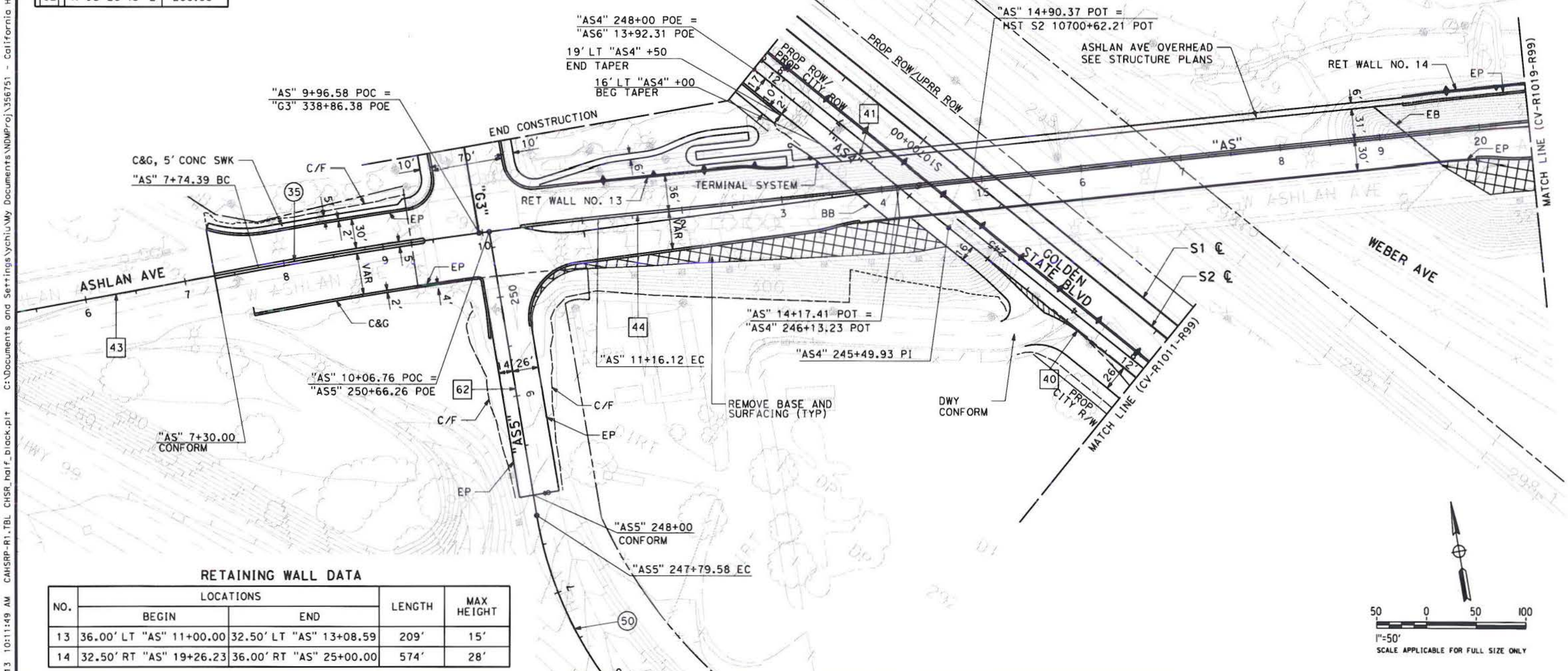
No.	R	Δ	T	L
35	4350.00'	04°30'04"	170.95'	341.73'
50	380.00'	49°42'58"	176.05'	329.73'

LINE DATA

No.	BEARING	DISTANCE
40	N 41°25'05" W	855.15'
41	N 41°02'30" W	250.27'
43	N 89°31'40" E	335.69'
44	S 85°58'16" E	1401.78'
62	N 00°23'45" E	286.68'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE TRACK PLANS FOR DETAILS WITHIN HST ROW.
3. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



RETAINING WALL DATA

NO.	LOCATIONS		LENGTH	MAX HEIGHT
	BEGIN	END		
13	36.00' LT "AS" 11+00.00	32.50' LT "AS" 13+08.59	209'	15'
14	32.50' RT "AS" 19+26.23	36.00' RT "AS" 25+00.00	574'	28'

REV	DATE	BY	CHK	APP	DESCRIPTION

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CHECKED BY L. HEUSTON
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DATE 11/22/11

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2020 L Street, Suite 300
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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - ASHLAN AVE

CONTRACT NO.
DRAWING NO. CV-R1018-R99
SCALE AS SHOWN
SHEET NO.

1/2/2013 10:11:49 AM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\15-CV-R1018-R99_Prc ychiu

CURVE DATA

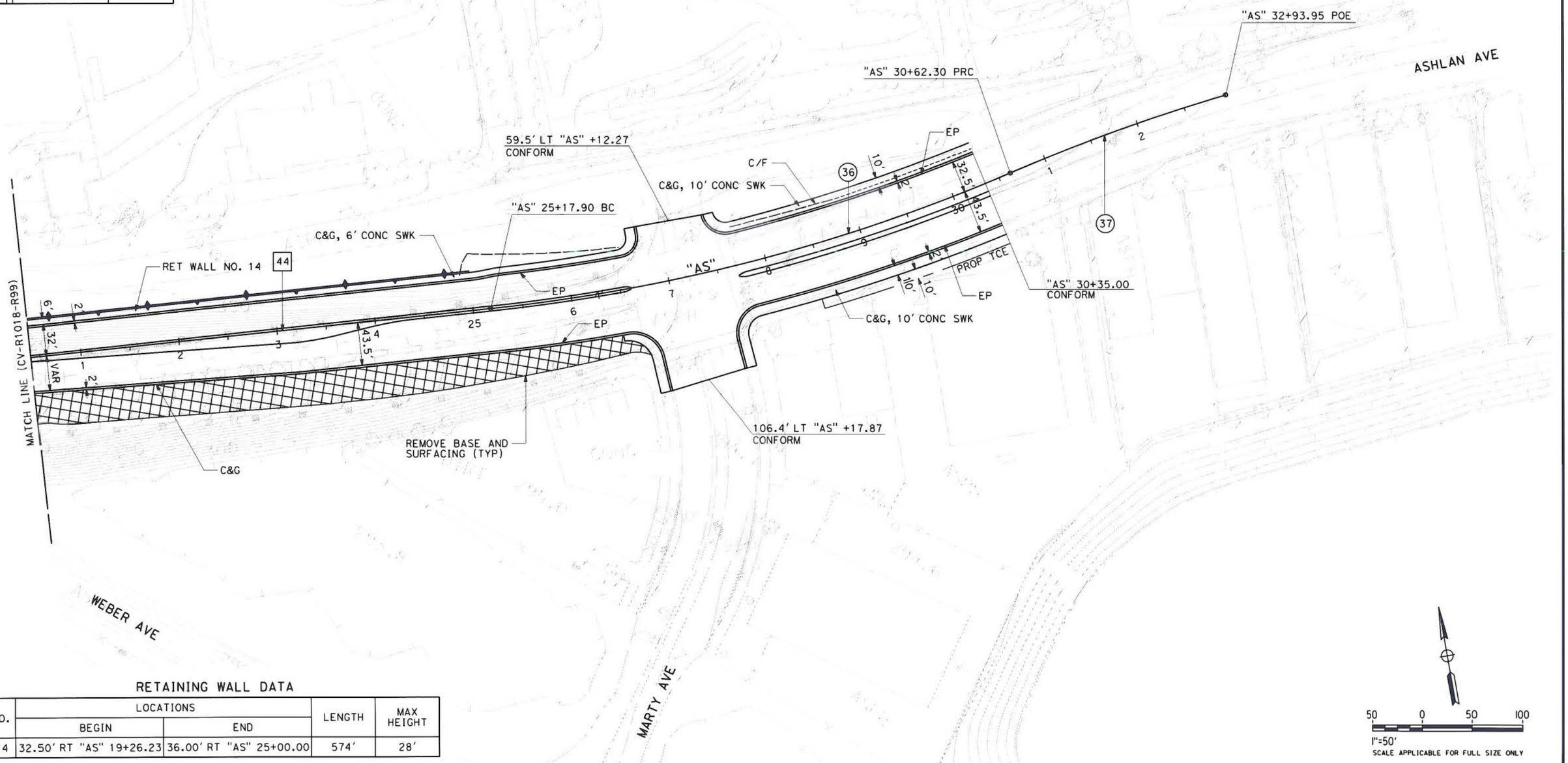
No.	R	Δ	T	L
36	1800.00′	17°19′44"	274.30′	544.40′
37	1950.00′	06°48′22"	115.96′	231.64′

LINE DATA

No.	BEARING	DISTANCE
44	S 85°58′16" E	1401.78′

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



RETAINING WALL DATA

NO.	LOCATIONS		LENGTH	MAX HEIGHT
	BEGIN	END		
14	32.50′ RT "AS" 19+26.23	36.00′ RT "AS" 25+00.00	574′	28′

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY R. MITRY
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

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2020 L Street, Suite 300
Sacramento, CA 95811
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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - ASHLAN AVE

CONTRACT NO.
DRAWING NO. CV-R1019-R99
SCALE AS SHOWN
SHEET NO.

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CURVE DATA

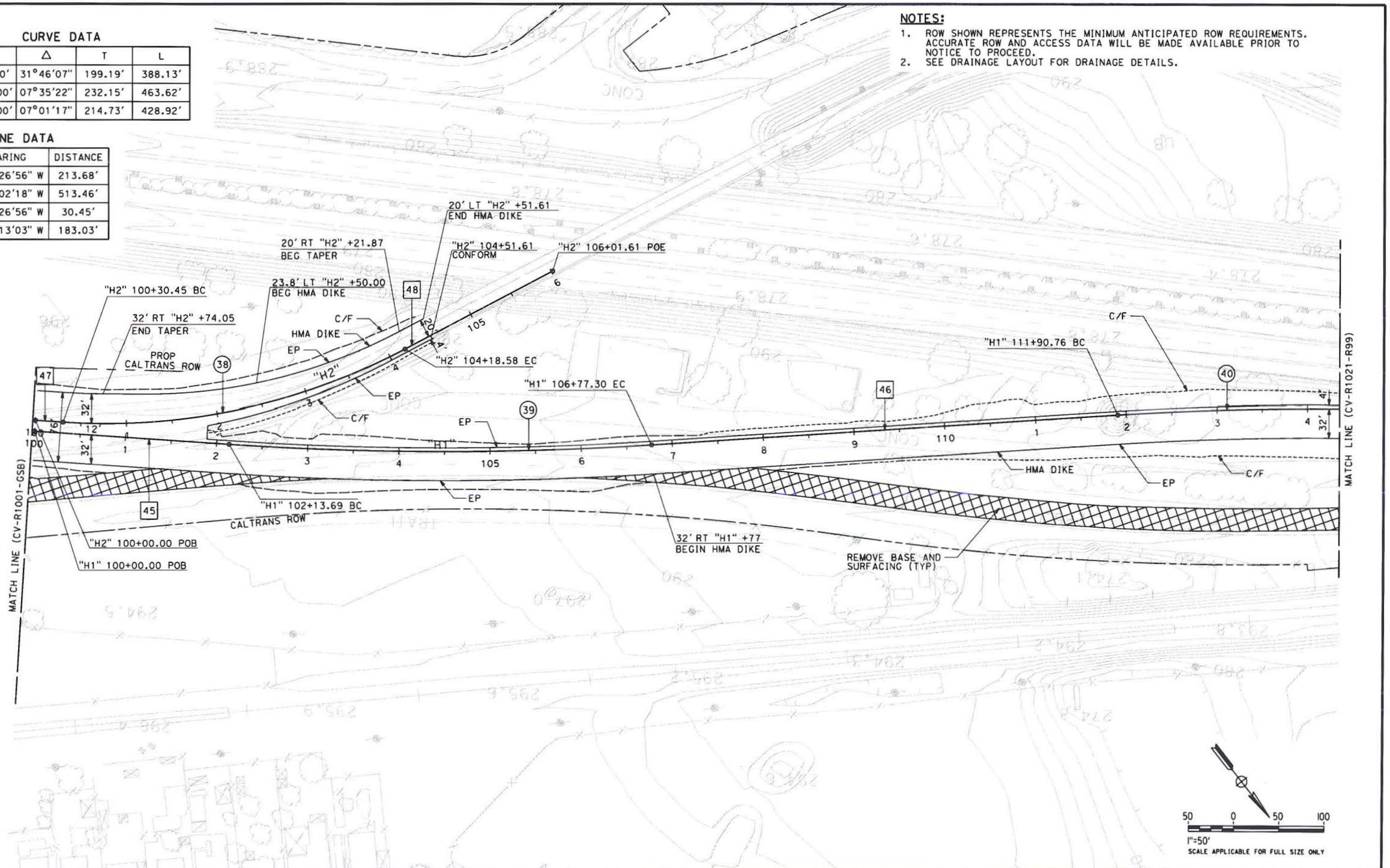
No.	R	Δ	T	L
38	700.00'	31°46'07"	199.19'	388.13'
39	3500.00'	07°35'22"	232.15'	463.62'
40	3500.00'	07°01'17"	214.73'	428.92'

LINE DATA

No.	BEARING	DISTANCE
45	N 47°26'56" W	213.68'
46	N 55°02'18" W	513.46'
47	N 47°26'56" W	30.45'
48	N 79°13'03" W	183.03'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



REV	DATE	BY	CHK	APP	DESCRIPTION

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DRAWN BY R. MITRY
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DATE 11/22/11

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - RAMPS

CONTRACT NO.
DRAWING NO. CV-R1020-R99
SCALE AS SHOWN
SHEET NO.

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ychiu

CURVE DATA

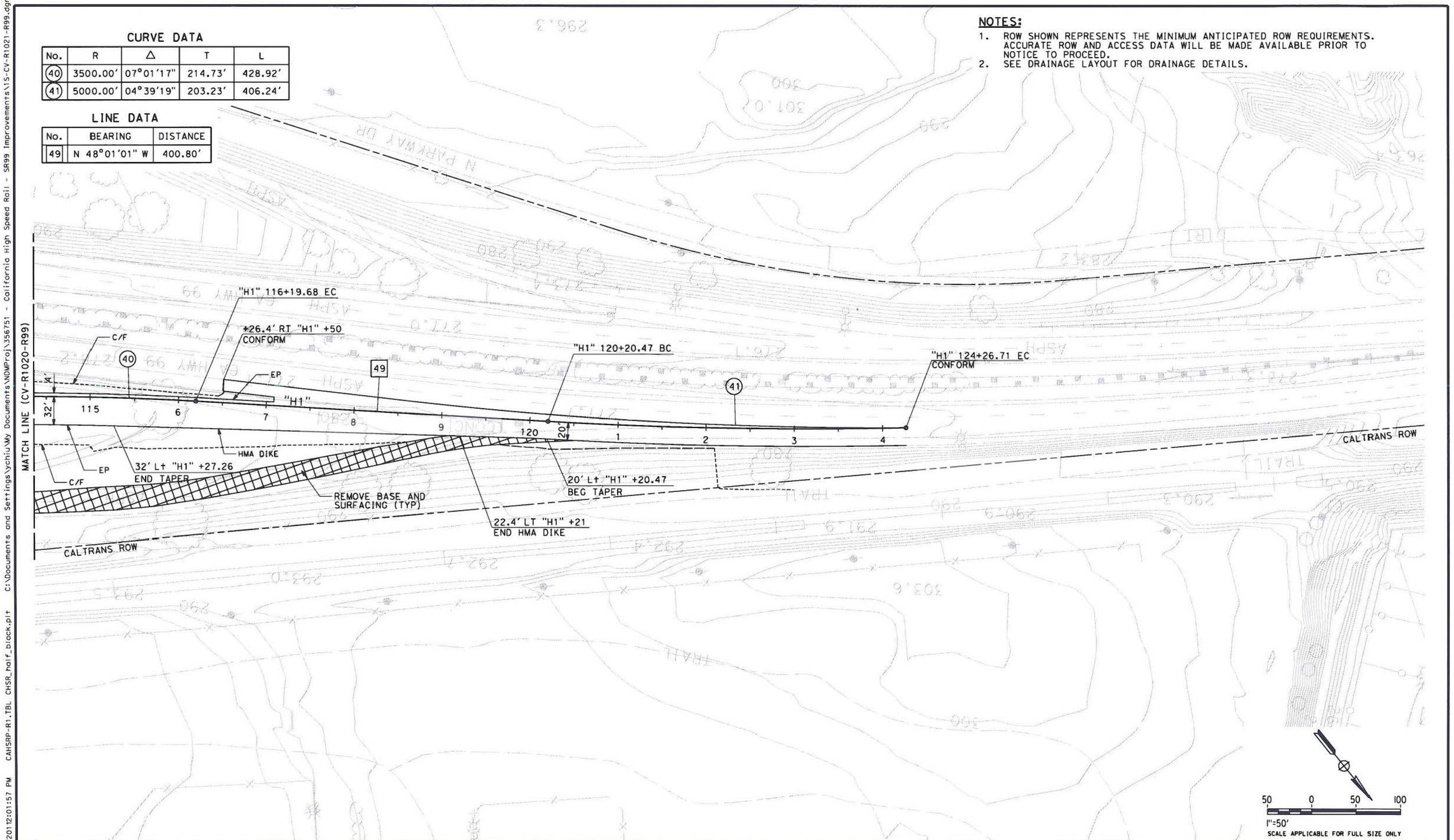
No.	R	Δ	T	L
40	3500.00'	07°01'17"	214.73'	428.92'
41	5000.00'	04°39'19"	203.23'	406.24'

LINE DATA

No.	BEARING	DISTANCE
49	N 48°01'01" W	400.80'

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SEE DRAINAGE LAYOUT FOR DRAINAGE DETAILS.



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DATE 11/22/11

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
LAYOUTS
SR 99 - RAMPS

CONTRACT NO.
DRAWING NO. CV-R1021-R99
SCALE AS SHOWN
SHEET NO.

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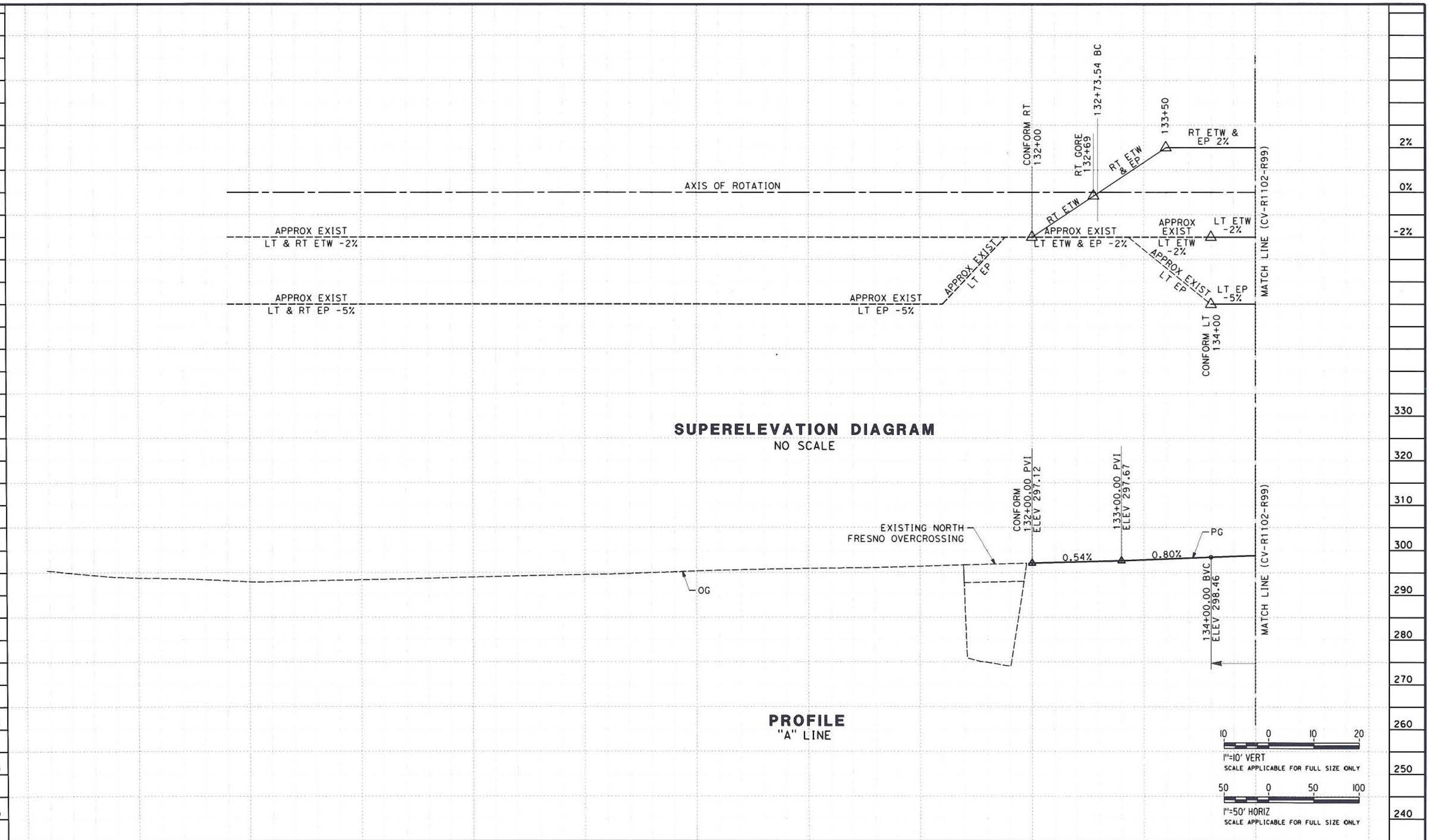

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - HIGHWAY "A"

CONTRACT NO.
DRAWING NO. CV-R1101-R99
SCALE AS SHOWN
SHEET NO.

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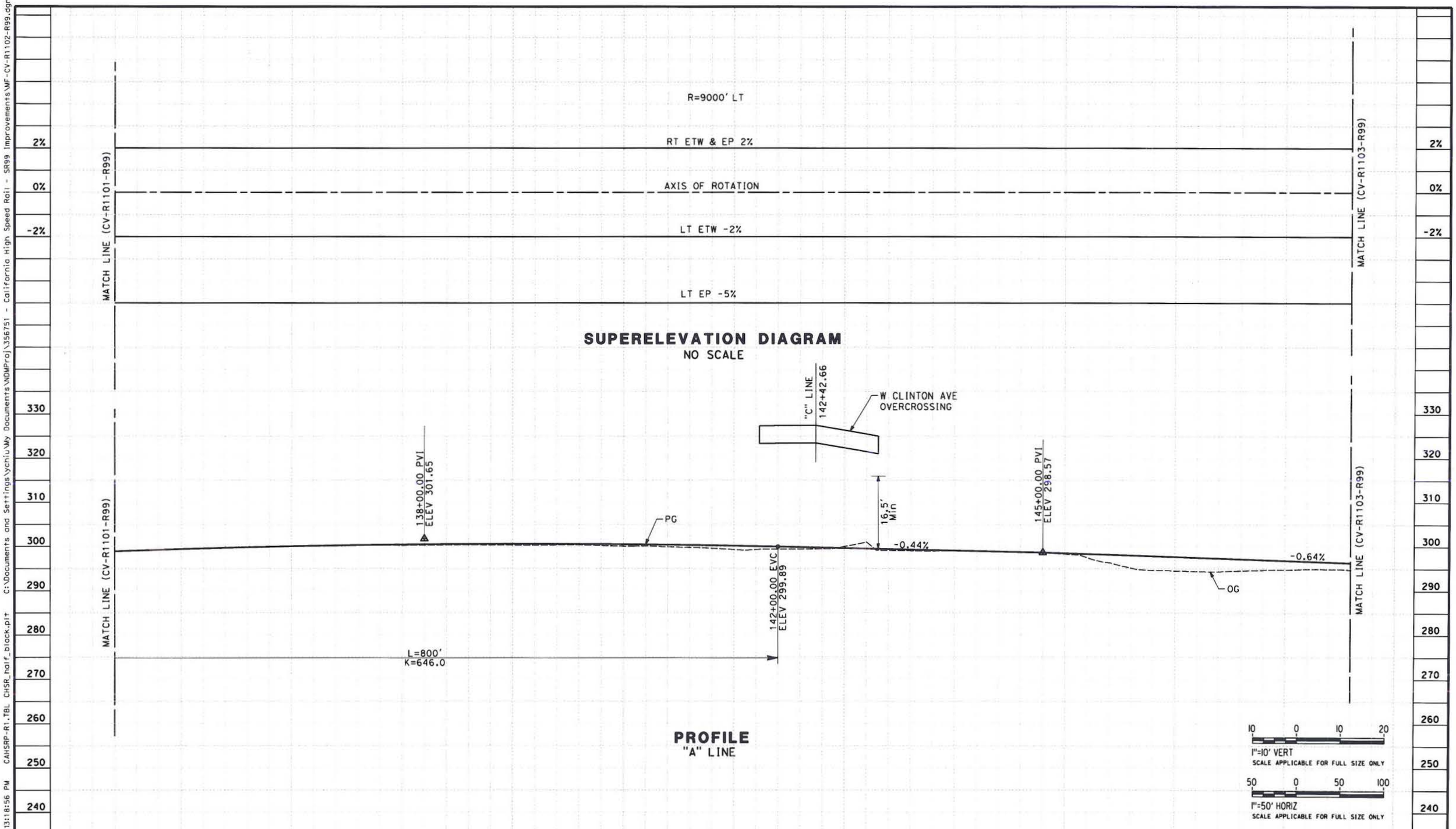

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SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - HIGHWAY "A"

CONTRACT NO.
DRAWING NO. CV-R1102-R99
SCALE AS SHOWN
SHEET NO.

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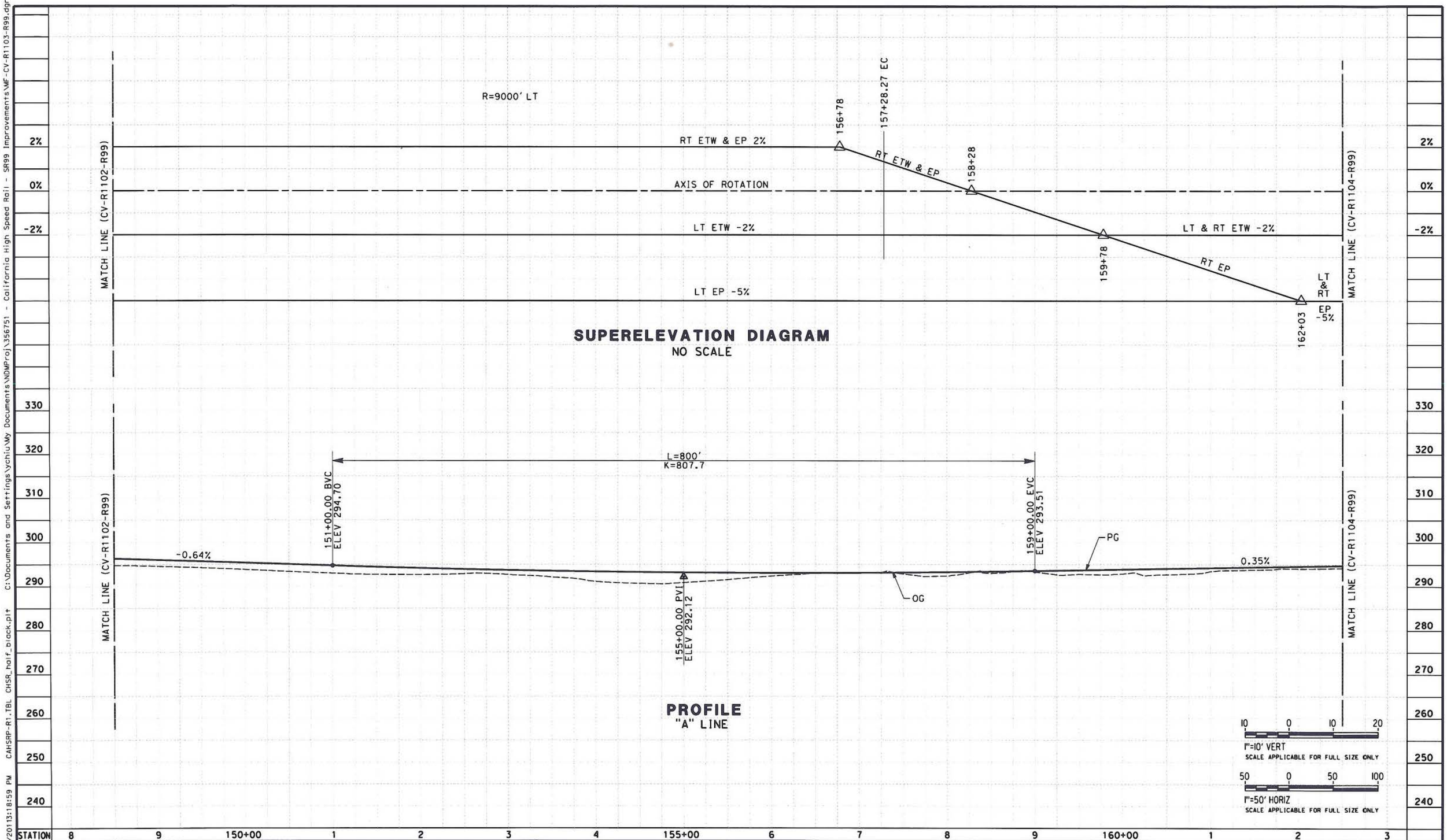

SUPERELEVATION DIAGRAM
NO SCALE

PROFILE
"A" LINE

REV	DATE	BY	CHK	APP	DESCRIPTION

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Sacramento, CA 95811

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - HIGHWAY "A"

CONTRACT NO.
DRAWING NO. CV-R1103-R99
SCALE AS SHOWN
SHEET NO.

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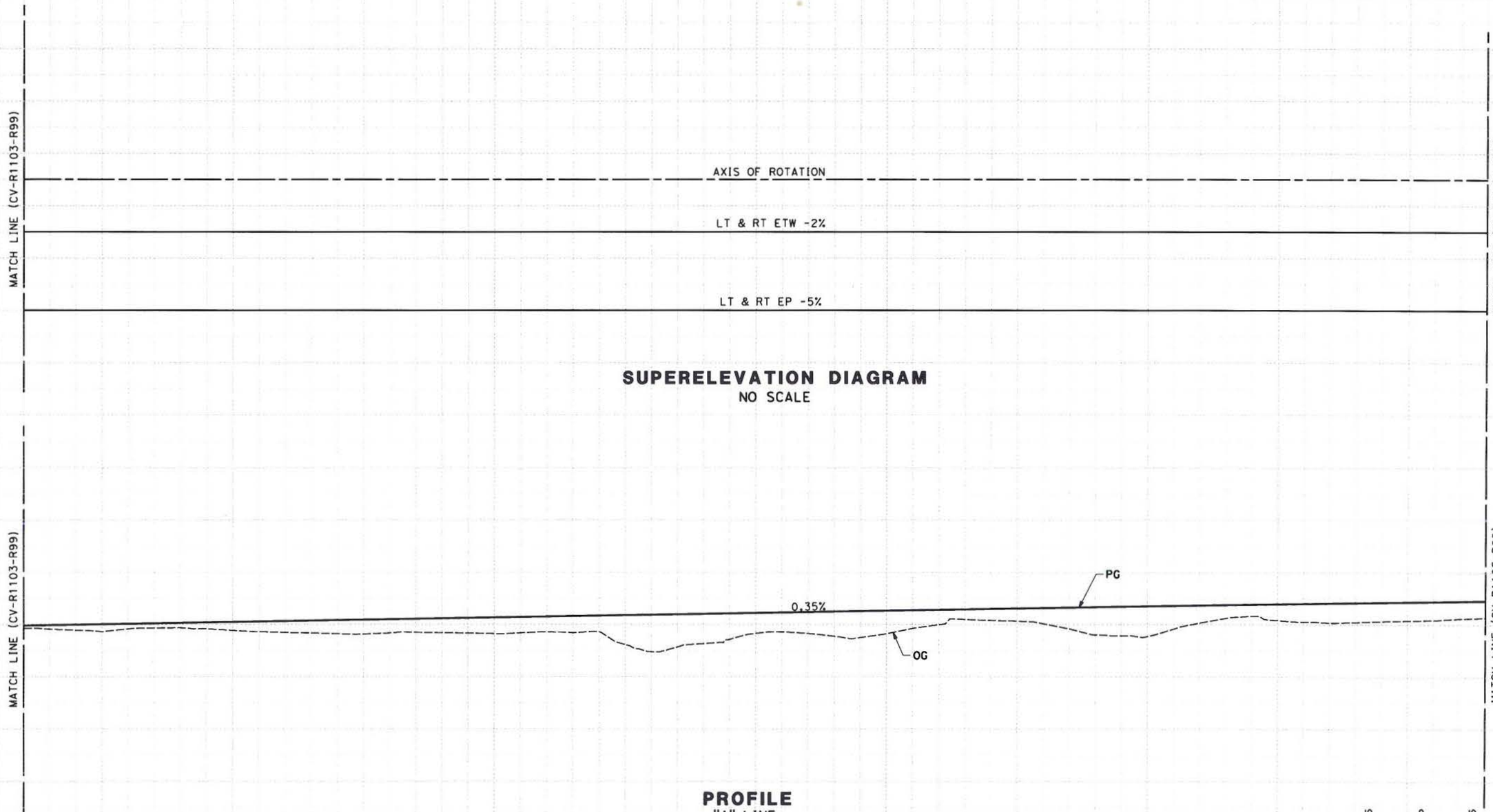
ychiu



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2020 L Street, Suite 300
Sacramento, CA 95811

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - HIGHWAY "A"

CONTRACT NO.
DRAWING NO. CV-R1104-R99
SCALE AS SHOWN
SHEET NO.

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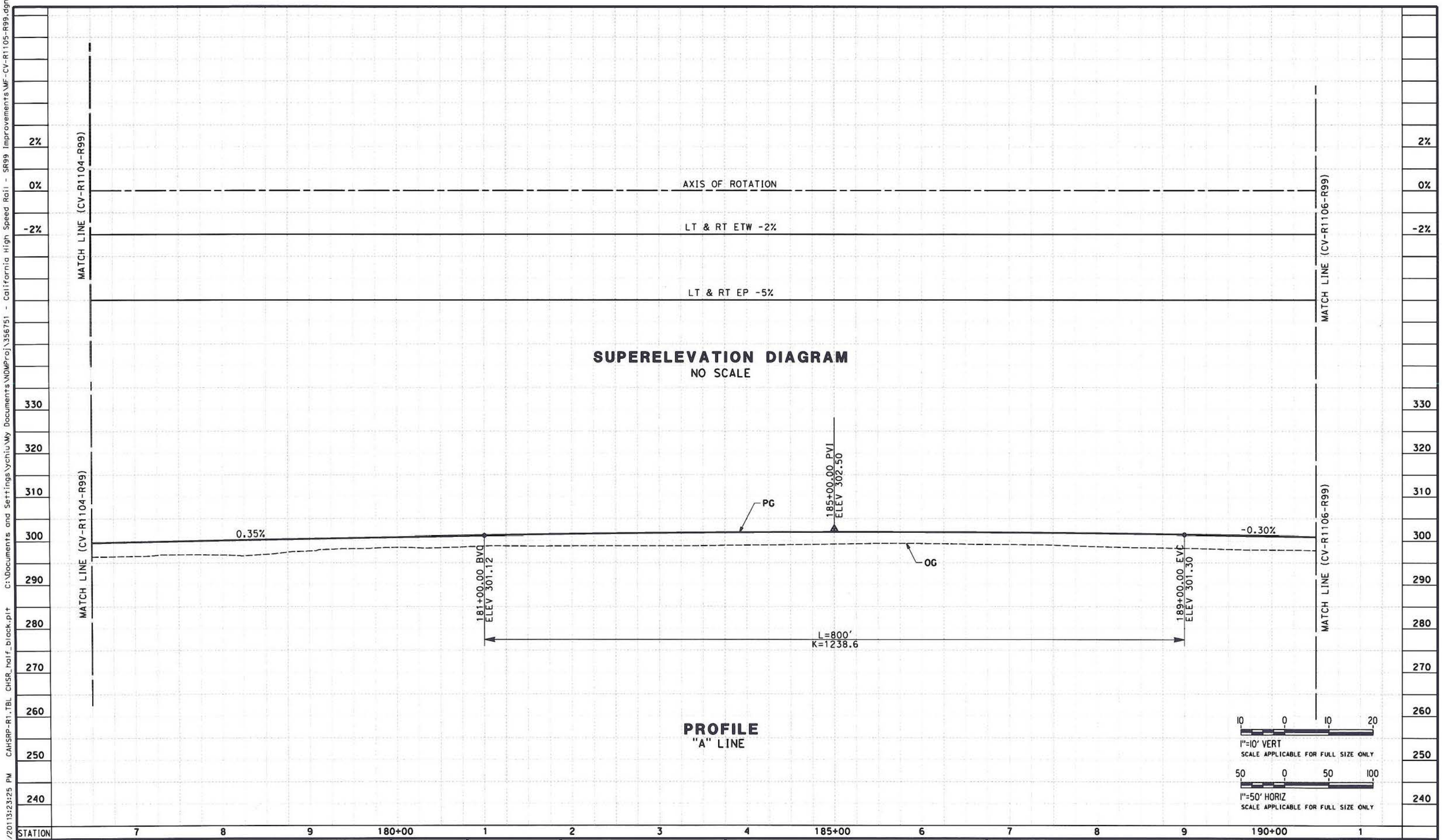

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DATE 11/22/11

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - HIGHWAY "A"

CONTRACT NO.
DRAWING NO. CV-R1105-R99
SCALE AS SHOWN
SHEET NO.

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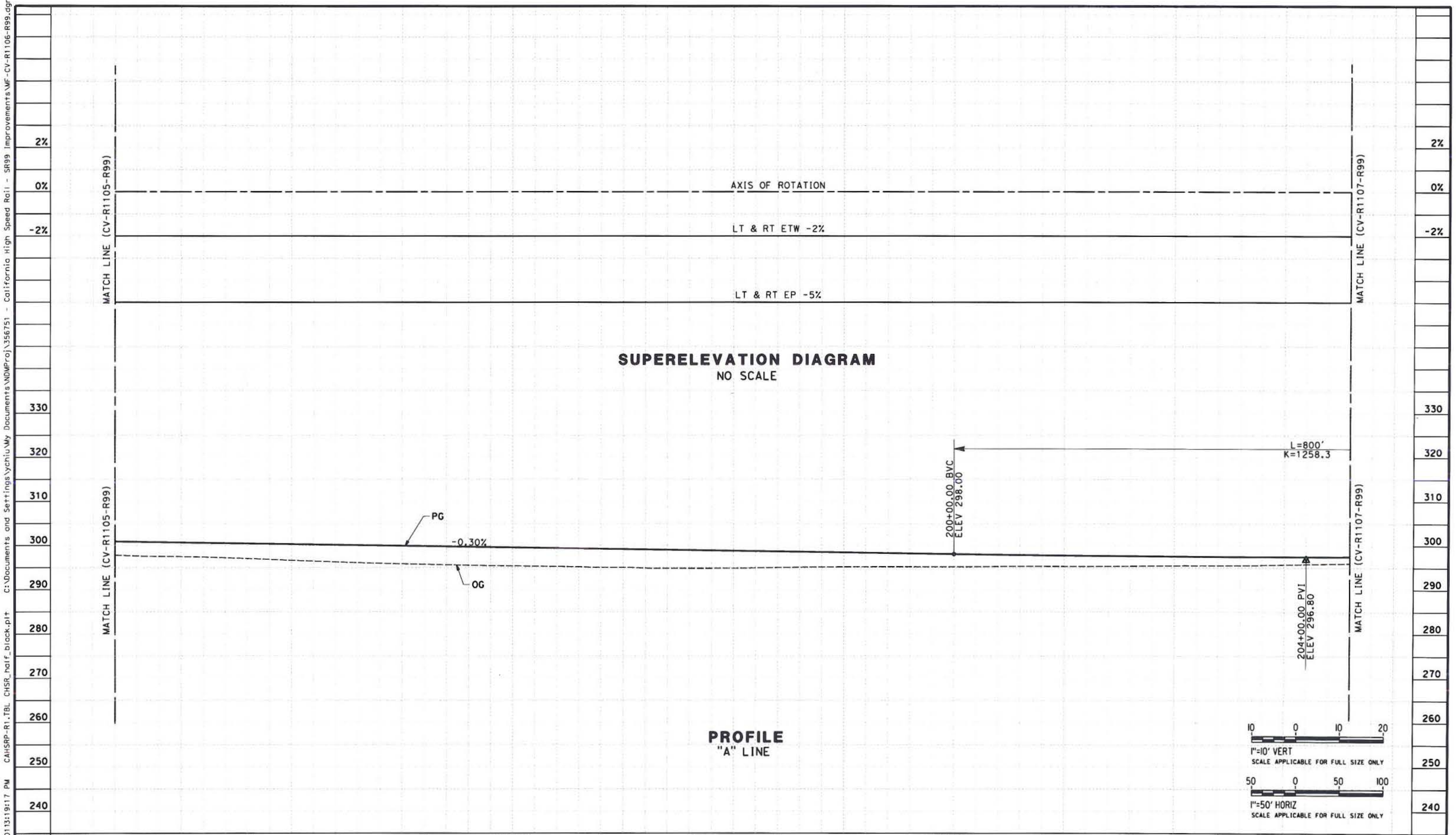

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DATE 11/22/11

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Sacramento, CA 95811
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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - HIGHWAY "A"

CONTRACT NO.
DRAWING NO. CV-R1106-R99
SCALE AS SHOWN
SHEET NO.

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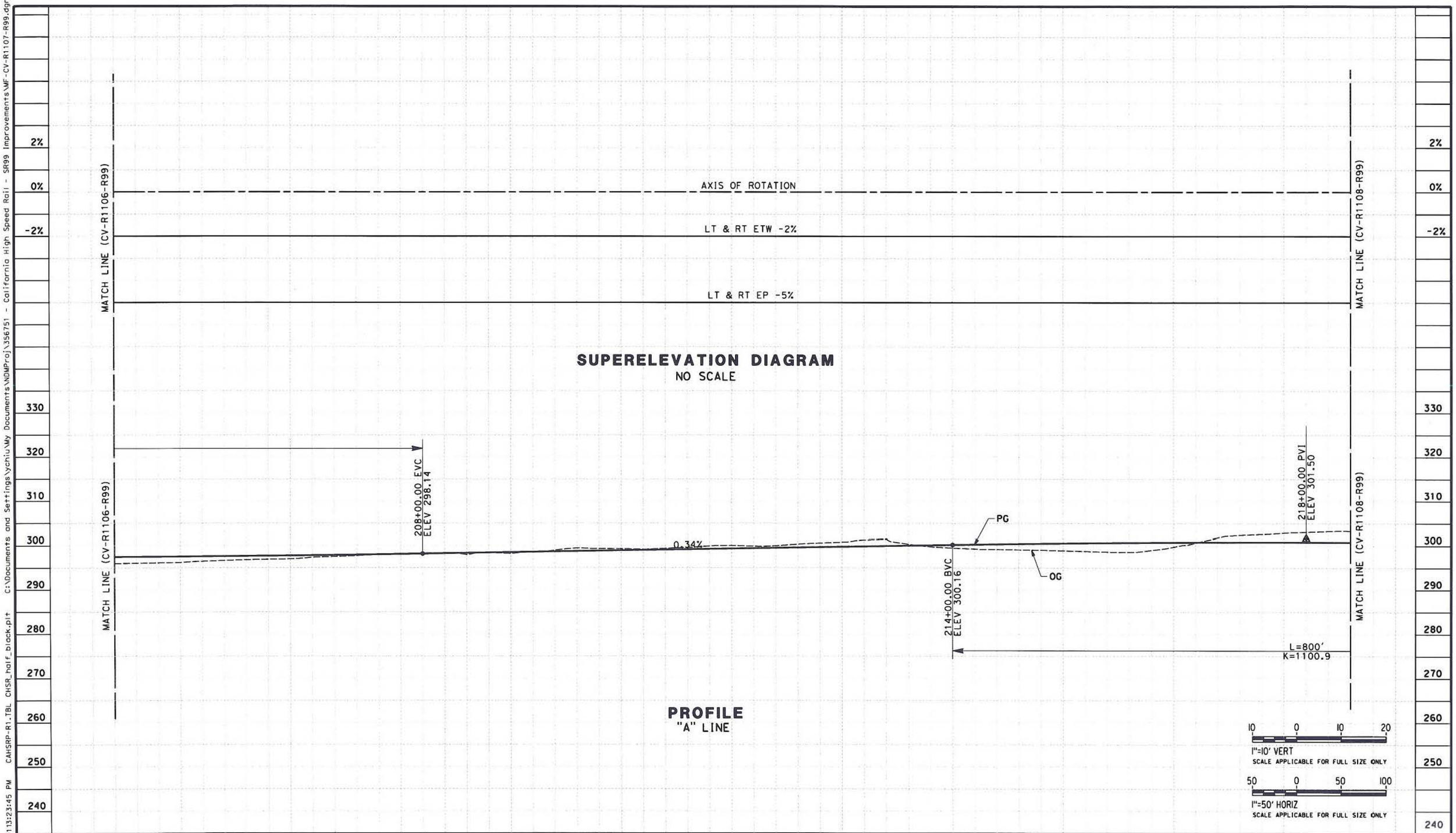

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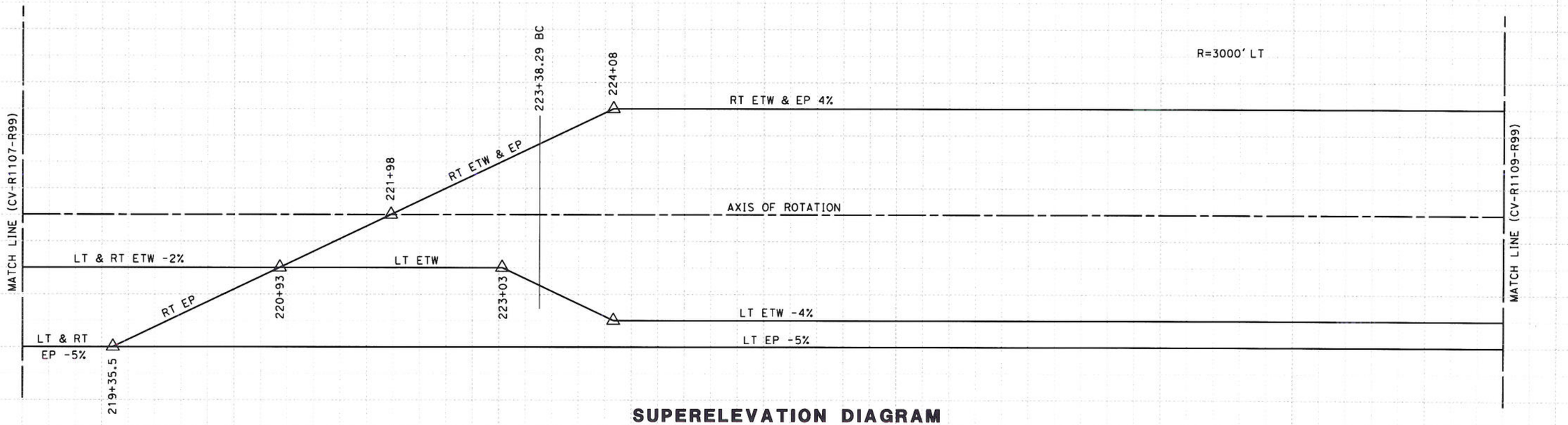
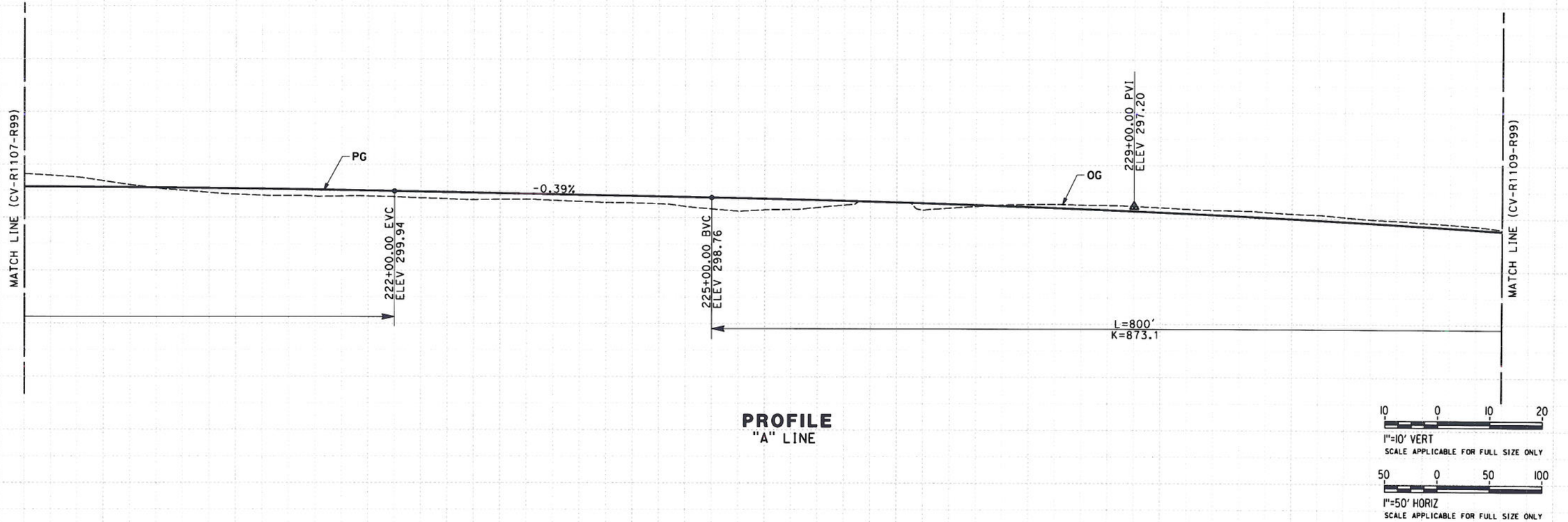
CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - HIGHWAY "A"

CONTRACT NO.
DRAWING NO. CV-R1107-R99
SCALE AS SHOWN
SHEET NO.



SUPERELEVATION DIAGRAM
NO SCALE



PROFILE
"A" LINE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

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2020 L Street, Suite 300
Sacramento, CA 95811
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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - HIGHWAY "A"

CONTRACT NO.
DRAWING NO. CV-R1108-R99
SCALE AS SHOWN
SHEET NO.

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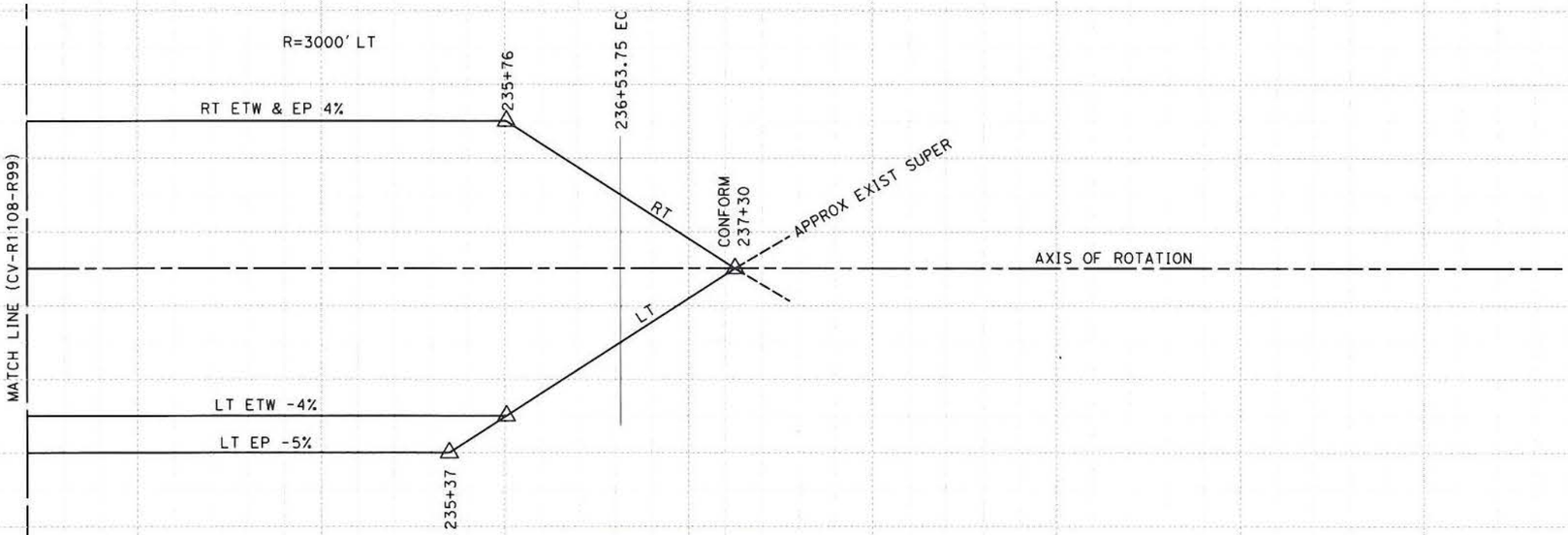
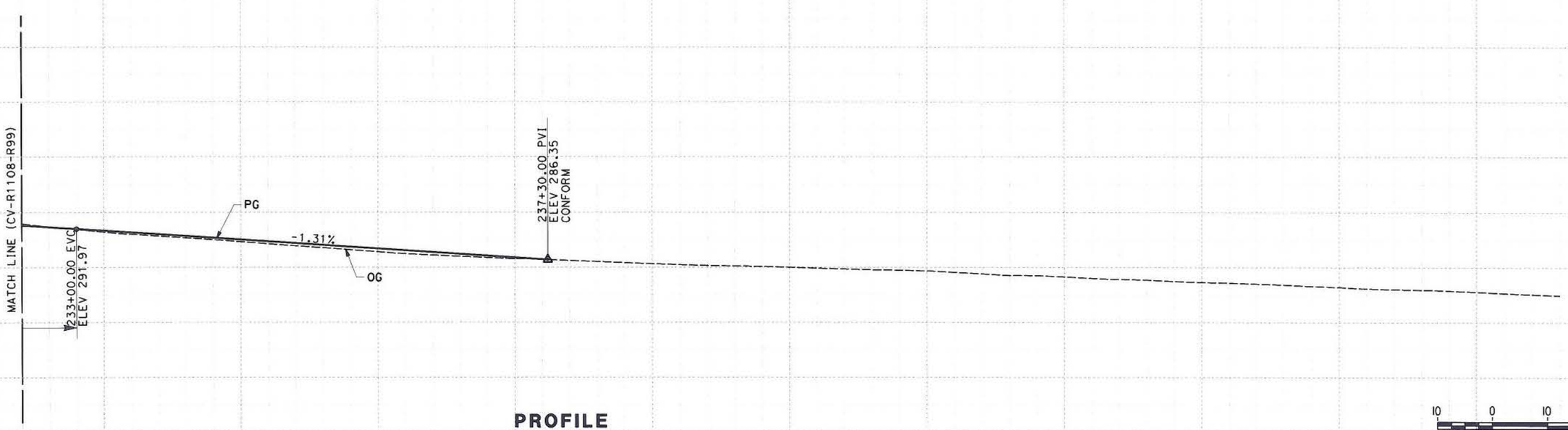


SUPERELEVATION DIAGRAM
NO SCALE



PROFILE
"A" LINE

10 0 10 20
1"=10' VERT
SCALE APPLICABLE FOR FULL SIZE ONLY

50 0 50 100
1"=50' HORIZ
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

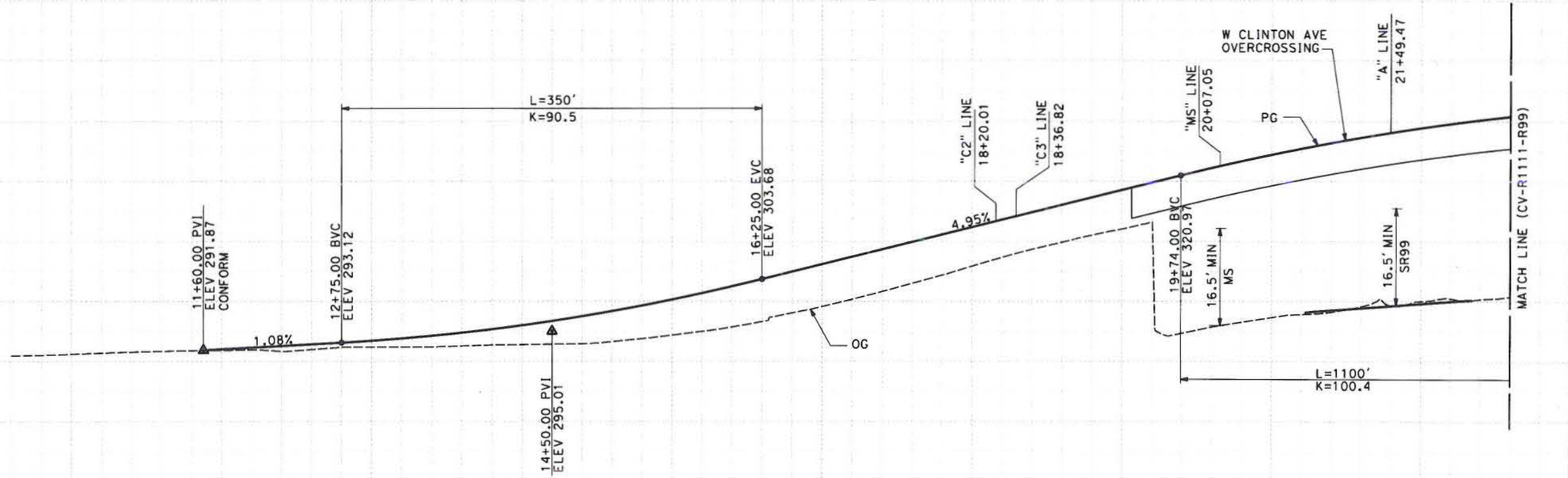
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - HIGHWAY "A"

CONTRACT NO.
DRAWING NO. CV-R1109-R99
SCALE AS SHOWN
SHEET NO.

sleong 2/13/2012 2:28:31 PM CAHSRP-R1.TBL CHSR_half_black-pdf995 C:\Documents and Settings\sleong\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R1109-R99_DF

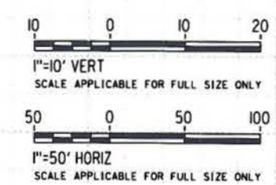


SUPERELEVATION DIAGRAM

NO SCALE

PROFILE

"C" LINE



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DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

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AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - W CLINTON AVE "C"

CONTRACT NO.
DRAWING NO. CV-R1110-R99
SCALE AS SHOWN
SHEET NO.

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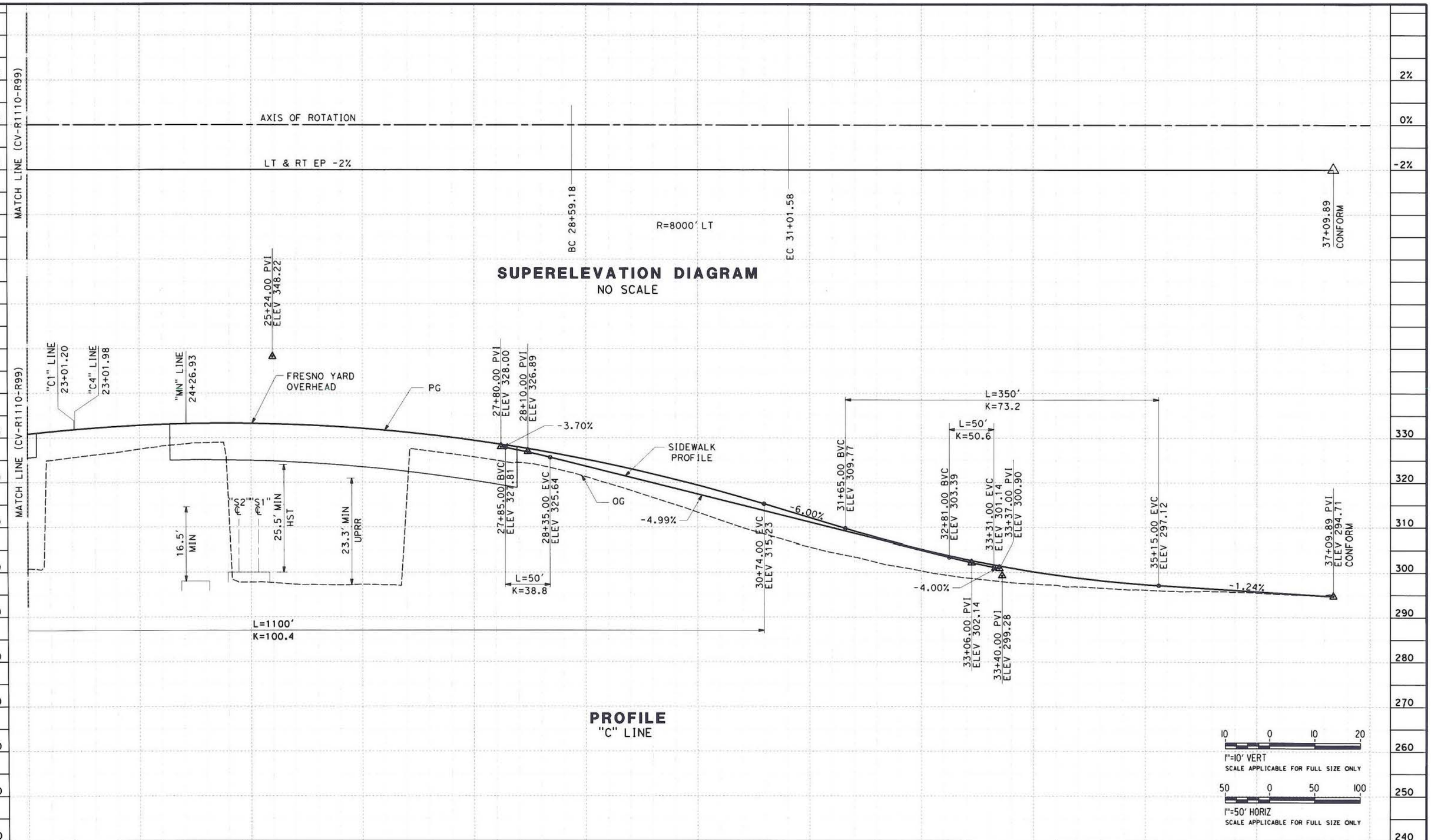

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - W CLINTON AVE "C"

CONTRACT NO.
DRAWING NO. CV-R1111-R99
SCALE AS SHOWN
SHEET NO.

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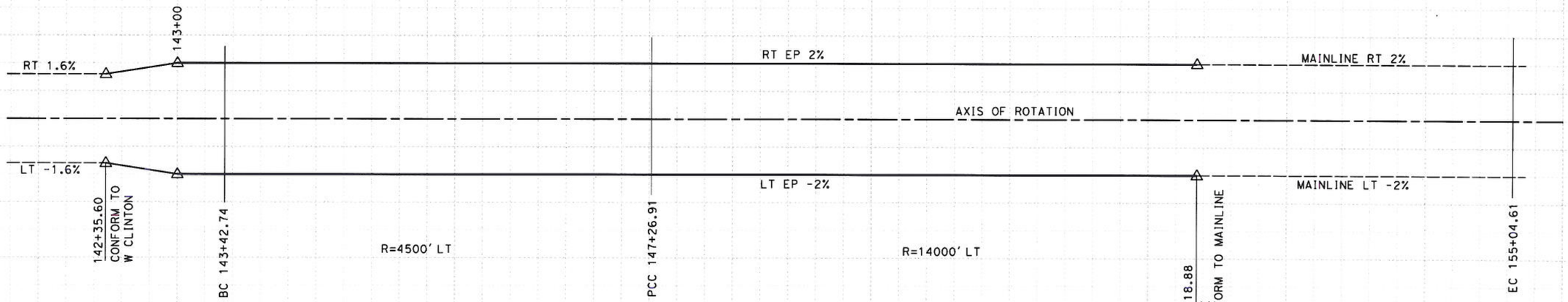
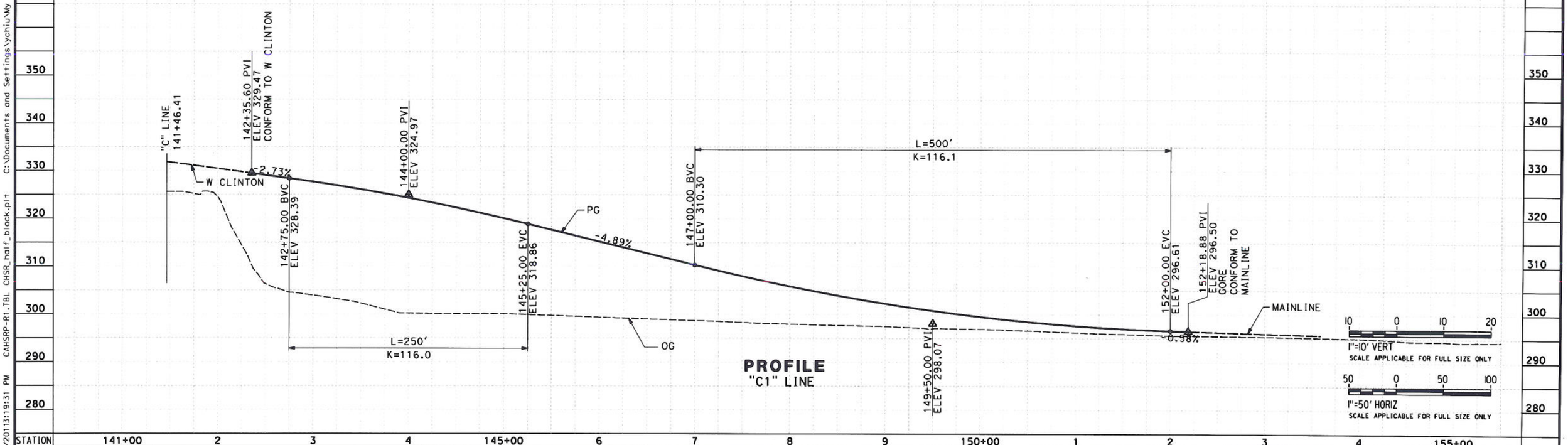


SUPERELEVATION DIAGRAM

NO SCALE



PROFILE

"C1" LINE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "C1"

CONTRACT NO.
DRAWING NO. CV-R1112-R99
SCALE AS SHOWN
SHEET NO.

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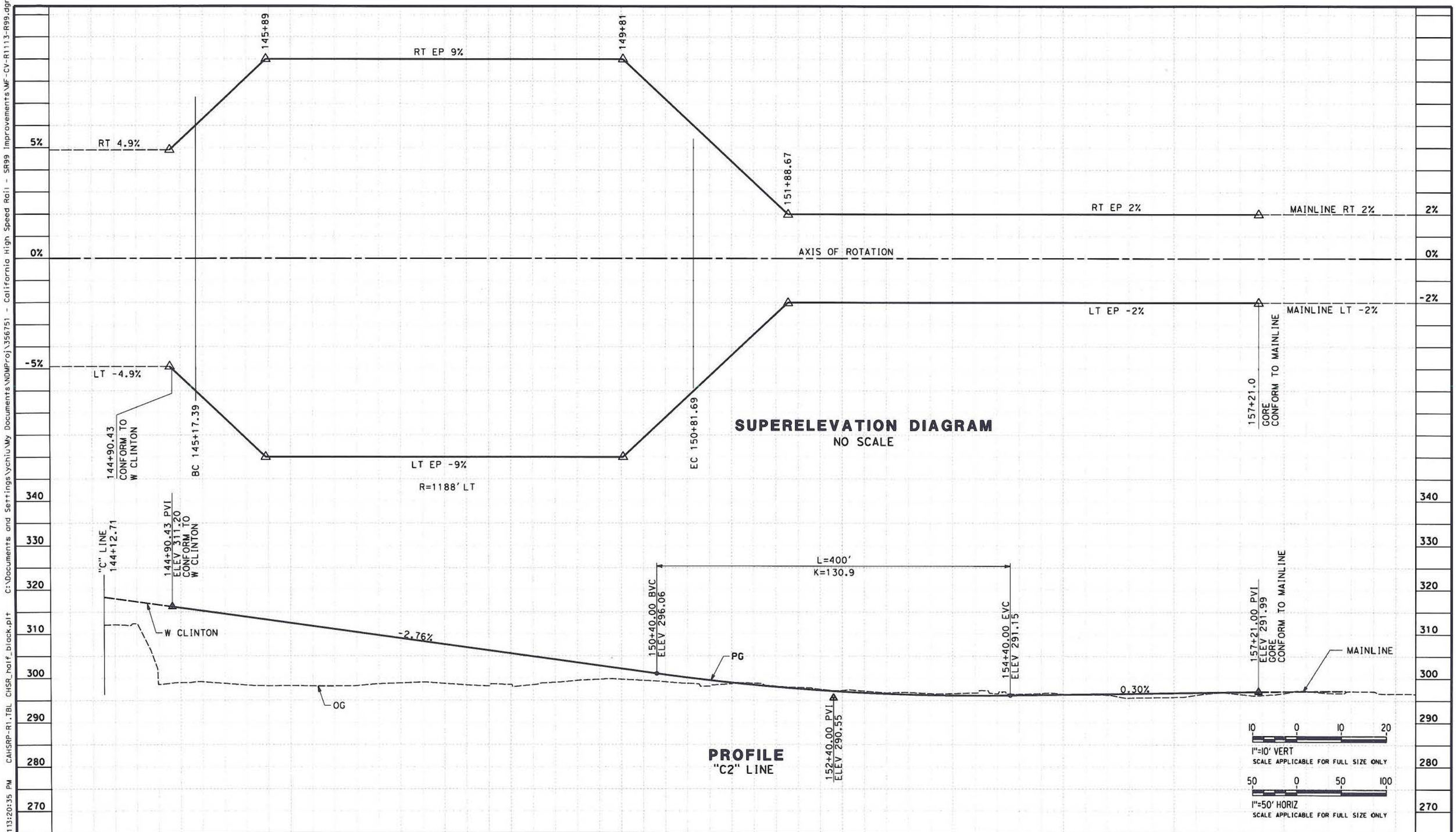
ychiu



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

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2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "C2"

CONTRACT NO.
DRAWING NO. CV-R1113-R99
SCALE AS SHOWN
SHEET NO.

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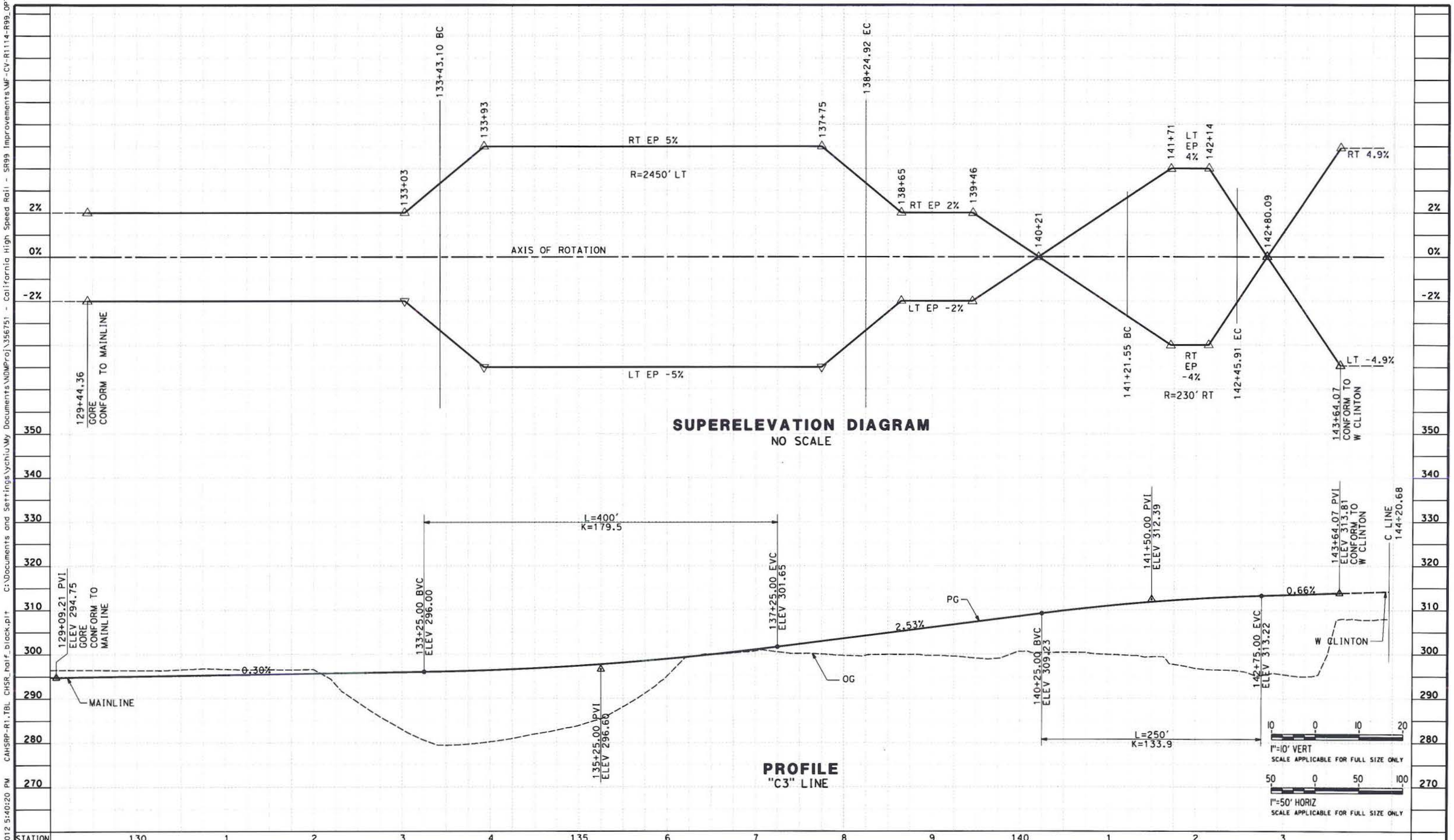

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "C3"

CONTRACT NO.
DRAWING NO. CV-R1114-R99
SCALE AS SHOWN
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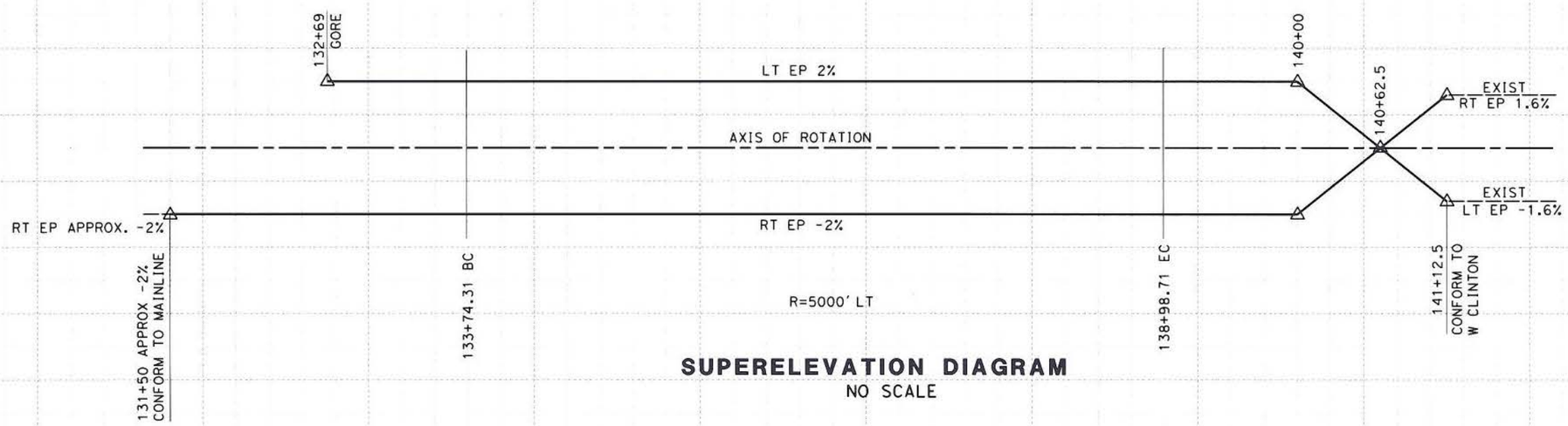
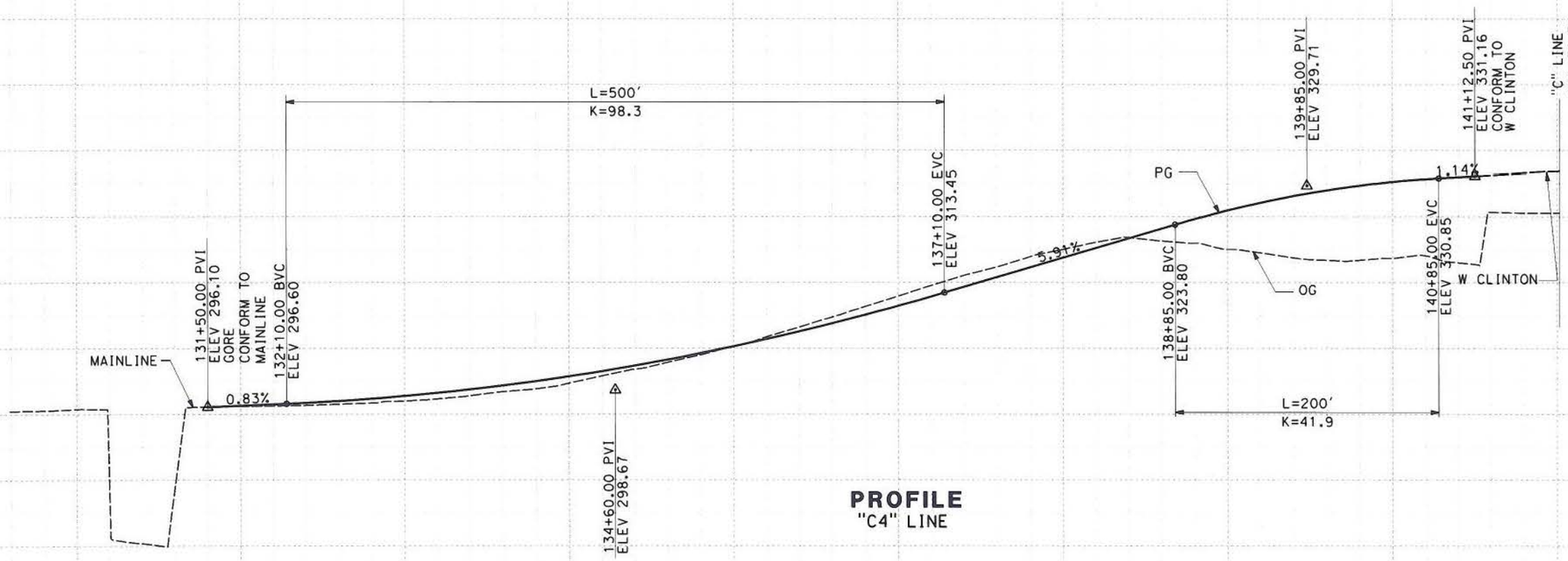


SUPERELEVATION DIAGRAM

NO SCALE



PROFILE

"C4" LINE

10 0 10 20
1"=10' VERT
SCALE APPLICABLE FOR FULL SIZE ONLY

50 0 50 100
1"=50' HORIZ
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
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CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "C4"

CONTRACT NO.
DRAWING NO. CV-R1115-R99
SCALE AS SHOWN
SHEET NO.

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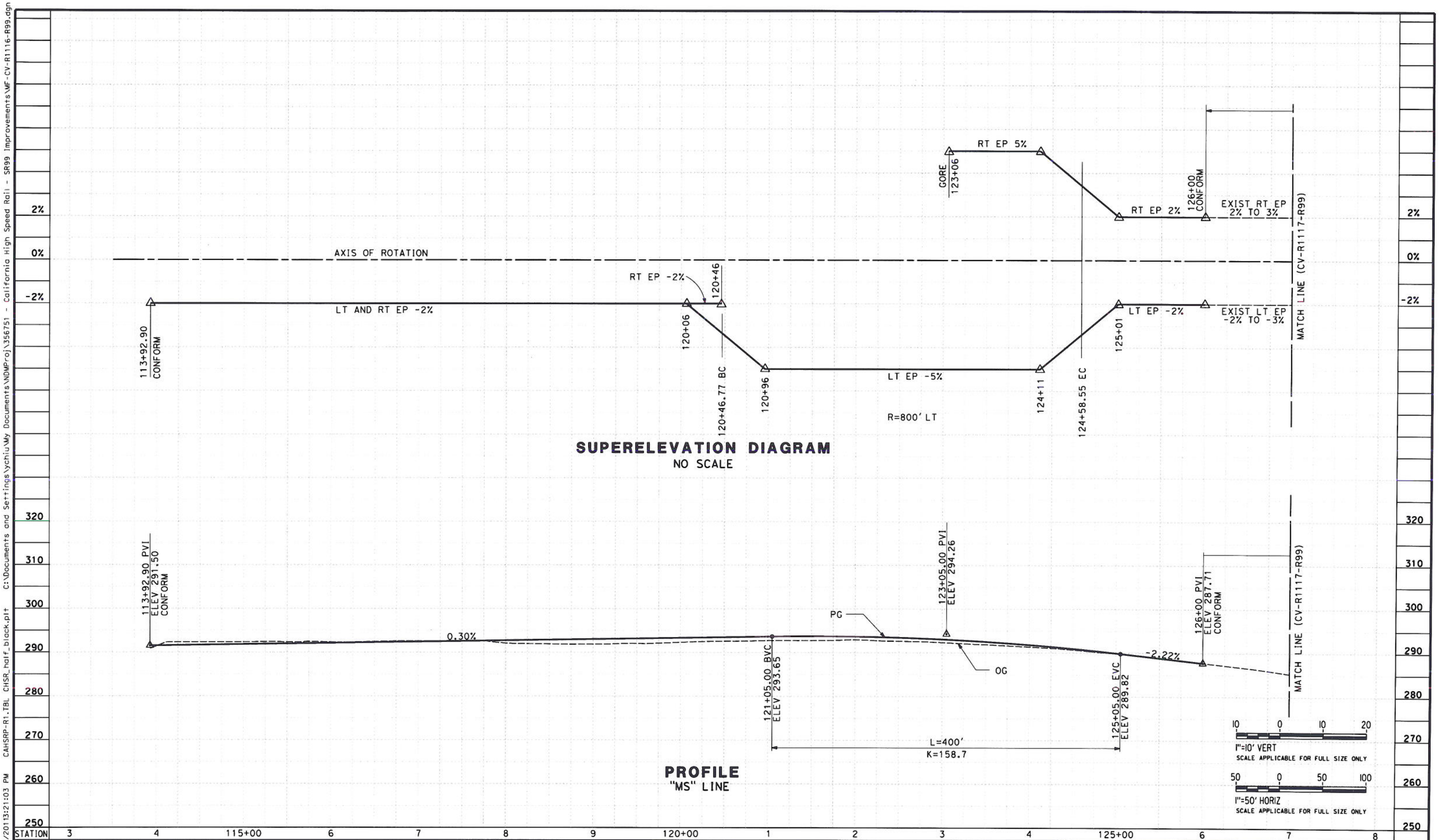

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

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AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "MS"

CONTRACT NO.
DRAWING NO. CV-R1116-R99
SCALE AS SHOWN
SHEET NO.

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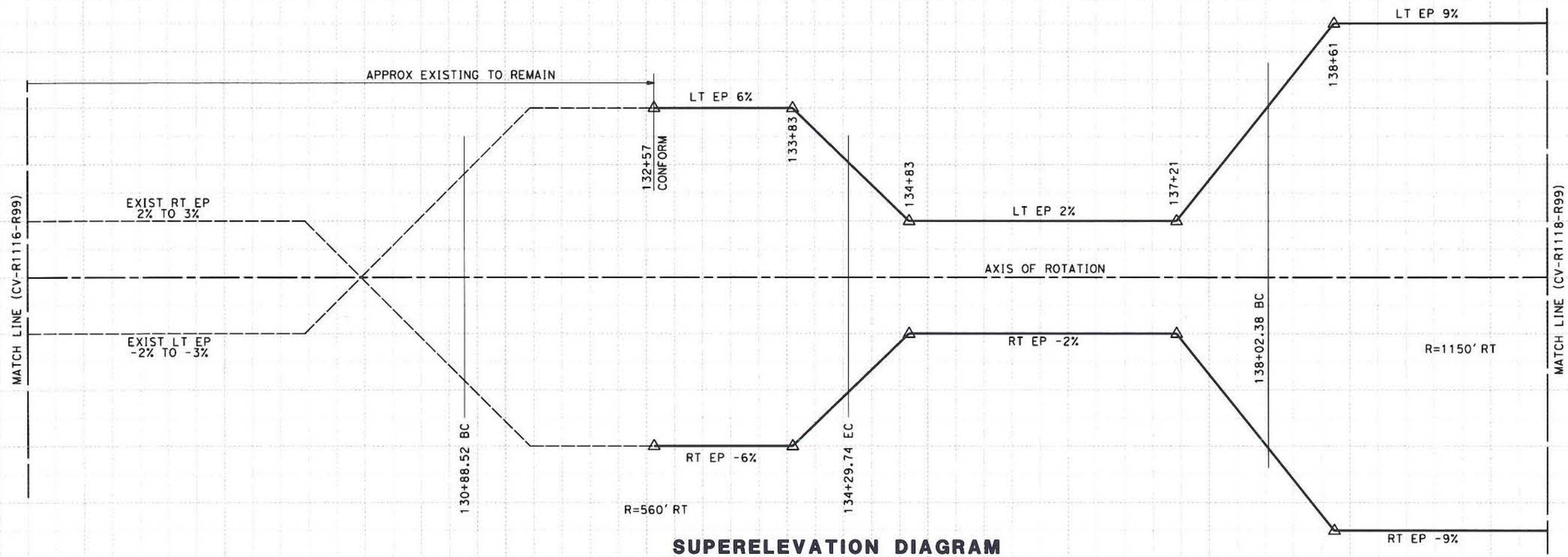
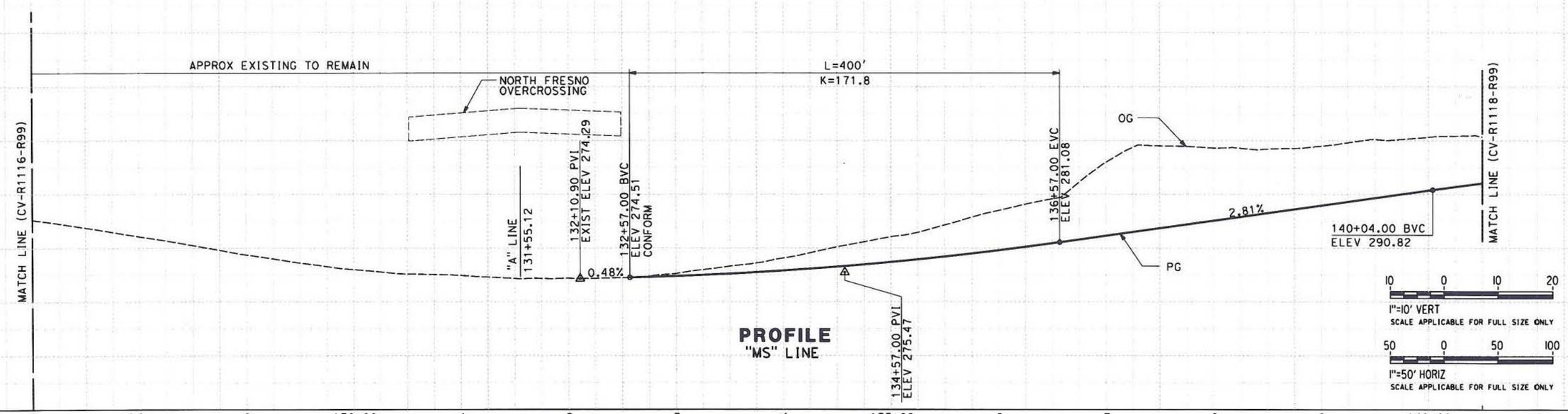


SUPERELEVATION DIAGRAM

NO SCALE



PROFILE

"MS" LINE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "MS"

CONTRACT NO.
DRAWING NO. CV-R1117-R99
SCALE AS SHOWN
SHEET NO.

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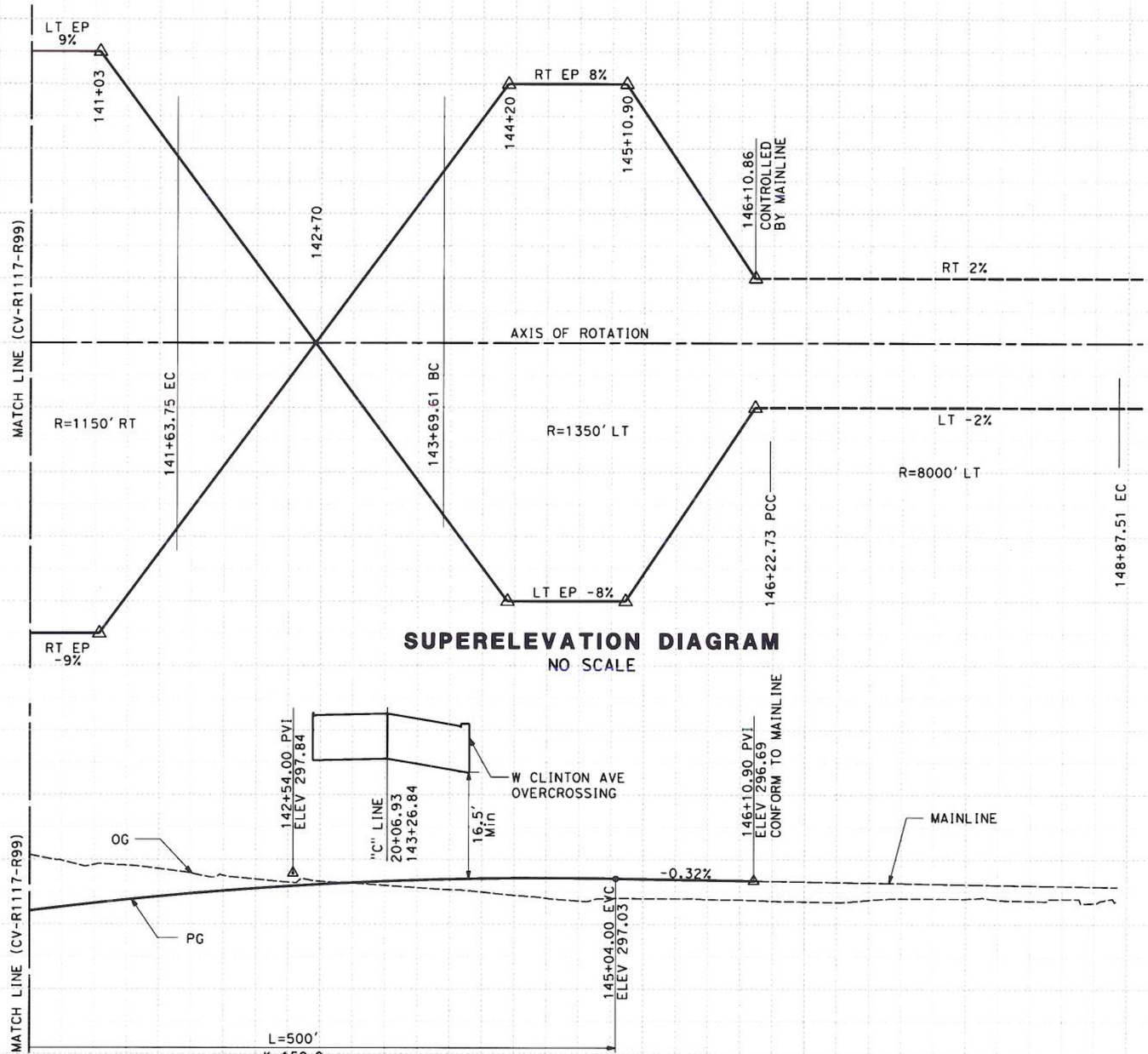

SUPERELEVATION DIAGRAM
NO SCALE

PROFILE
"MS" LINE

10 0 10 20
1"=10' VERT
SCALE APPLICABLE FOR FULL SIZE ONLY

50 0 50 100
1"=50' HORIZ
SCALE APPLICABLE FOR FULL SIZE ONLY

STATION 8 9 140+00 1 2 3 4 145+00 6 7 8 9 150+00

9% 0% -9% 320 310 300 290 280 270 260 250

2% 0% -2% 320 310 300 290 280 270 260 250

REV	DATE	BY	CHK	APP	DESCRIPTION

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CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

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2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "MS"

CONTRACT NO.
DRAWING NO. CV-R1118-R99
SCALE AS SHOWN
SHEET NO.

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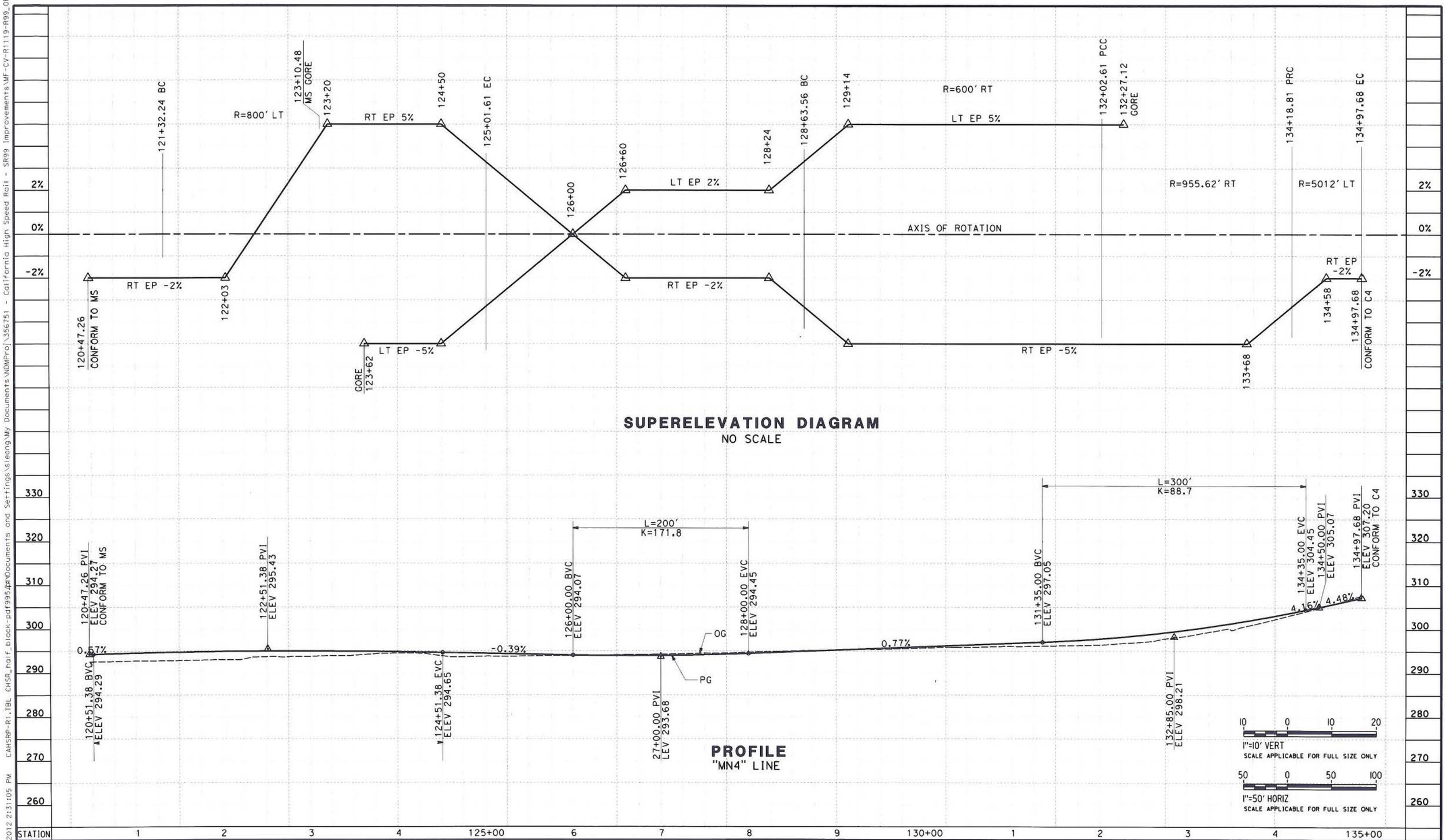

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IN CHARGE F. NOBARI
DATE 2/17/12

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AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "MN4"

CONTRACT NO.
DRAWING NO. CV-R1119-R99
SCALE AS SHOWN
SHEET NO.

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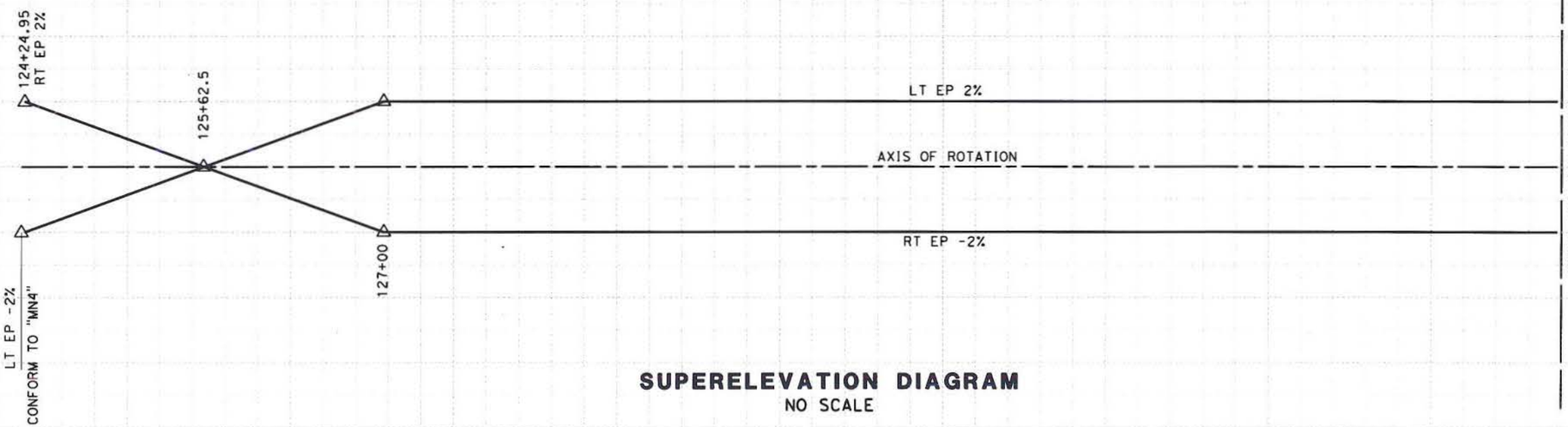
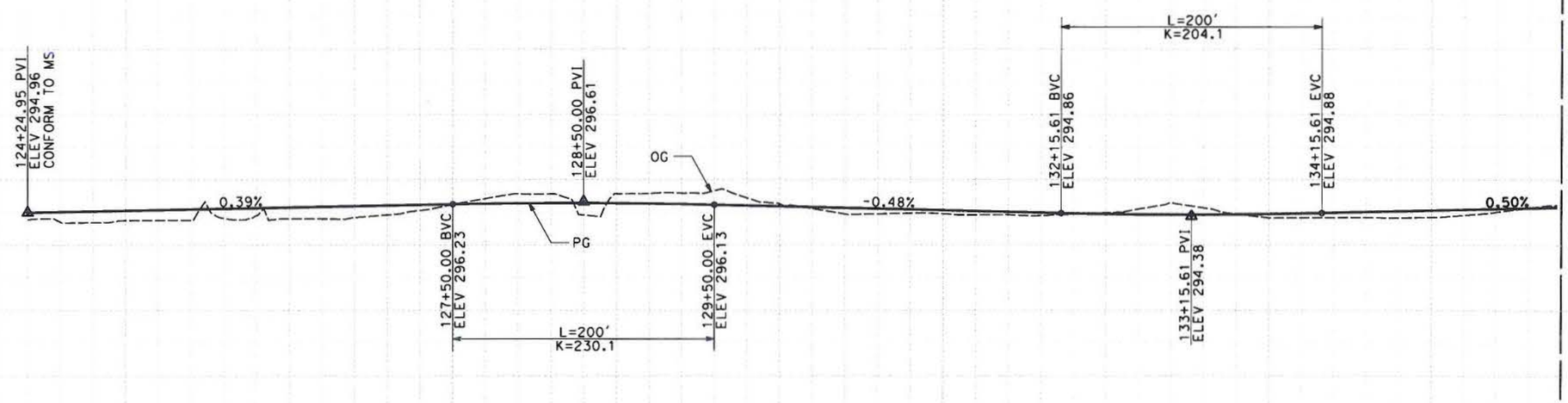
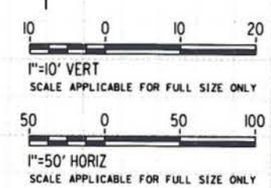


SUPERELEVATION DIAGRAM
NO SCALE



PROFILE
"MN" LINE



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "MN"

CONTRACT NO.
DRAWING NO. CV-R1120-R99
SCALE AS SHOWN
SHEET NO.

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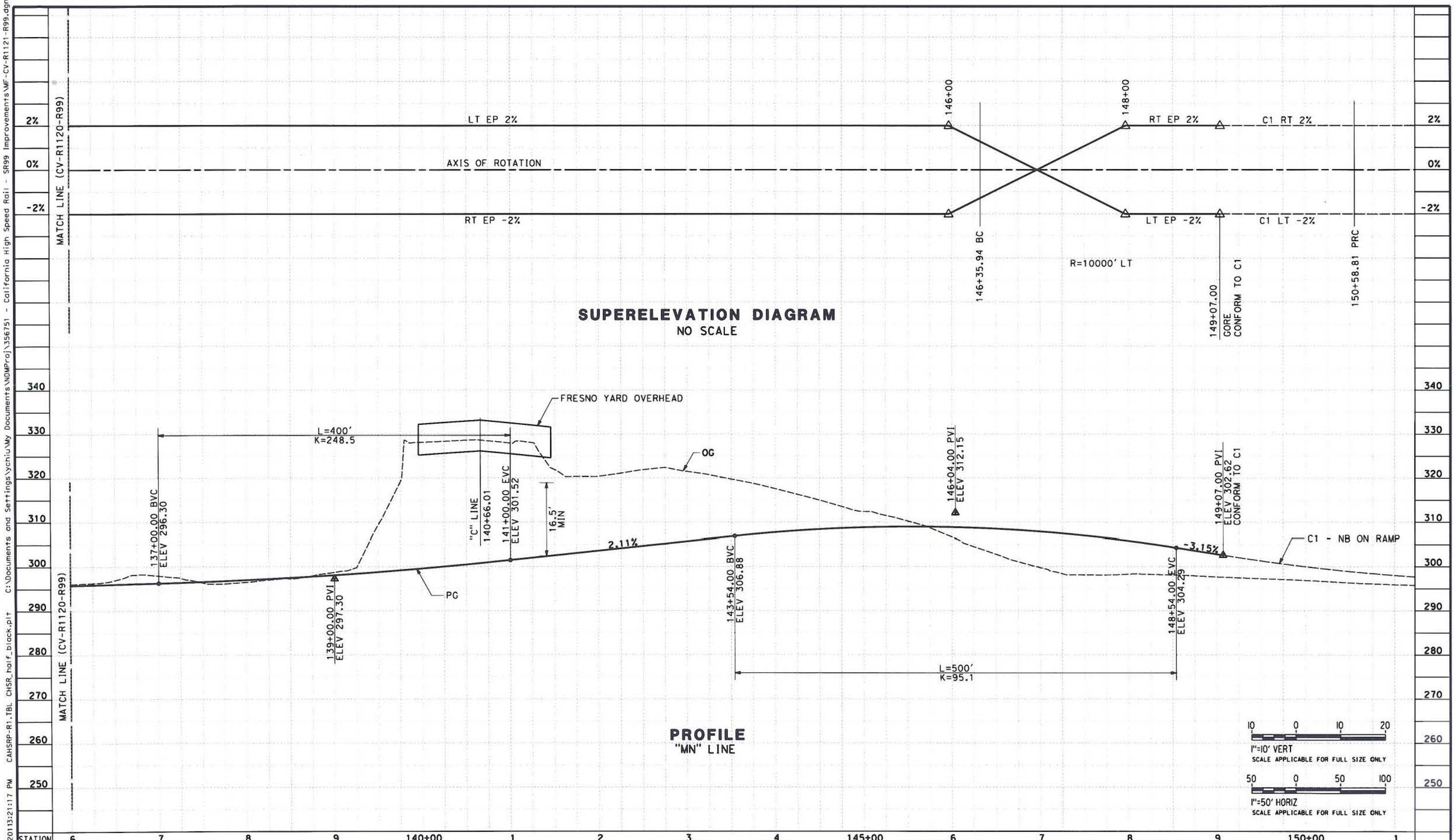

REV	DATE	BY	CHK	APP	DESCRIPTION

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DATE 11/22/11

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2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "MN"

CONTRACT NO.
DRAWING NO. CV-R1121-R99
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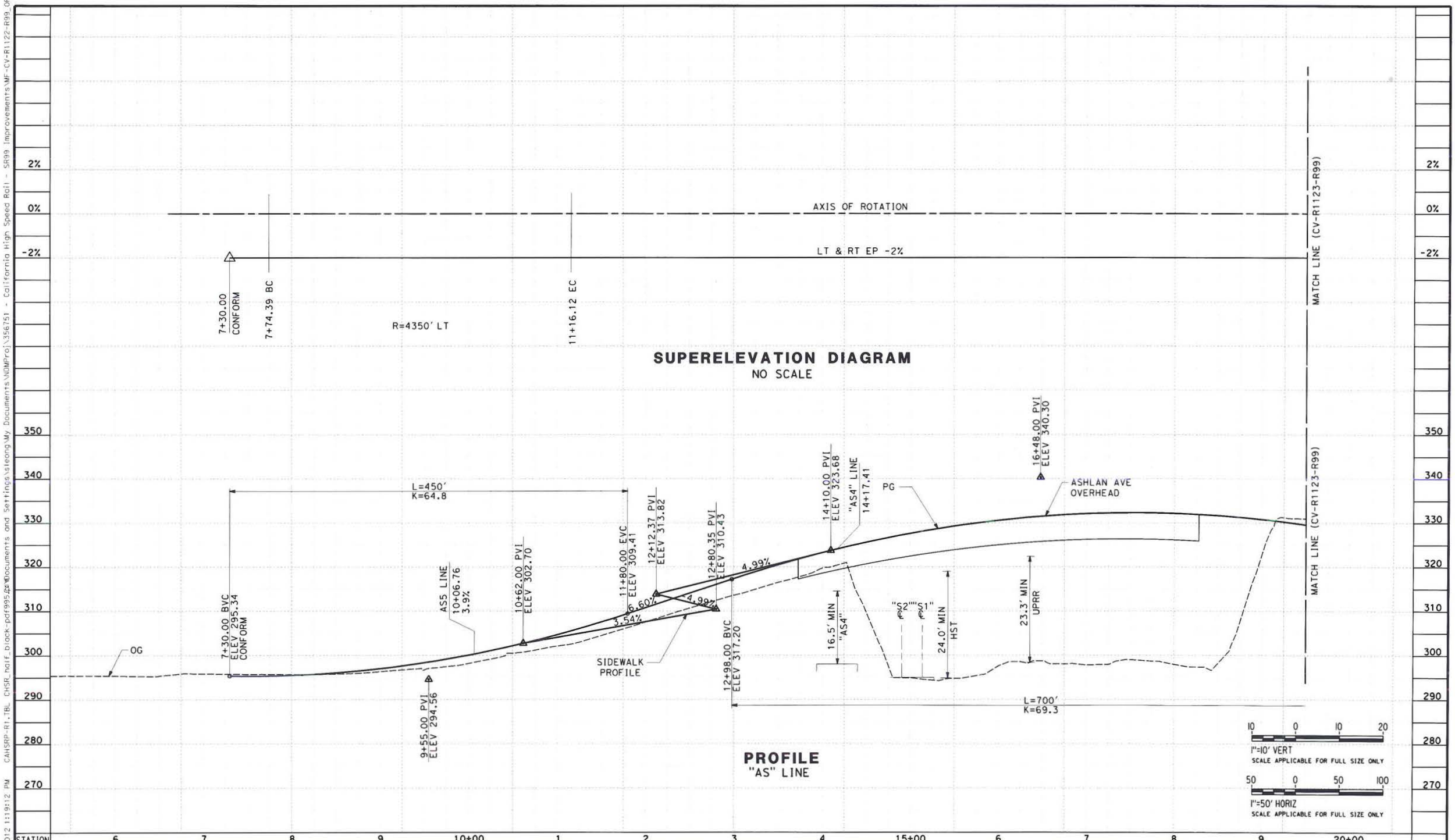

REV	DATE	BY	CHK	APP	DESCRIPTION

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CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

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2020 L Street, Suite 300
Sacramento, CA 95811

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - ASHLAN AVE "AS"

CONTRACT NO.
DRAWING NO. CV-R1122-R99
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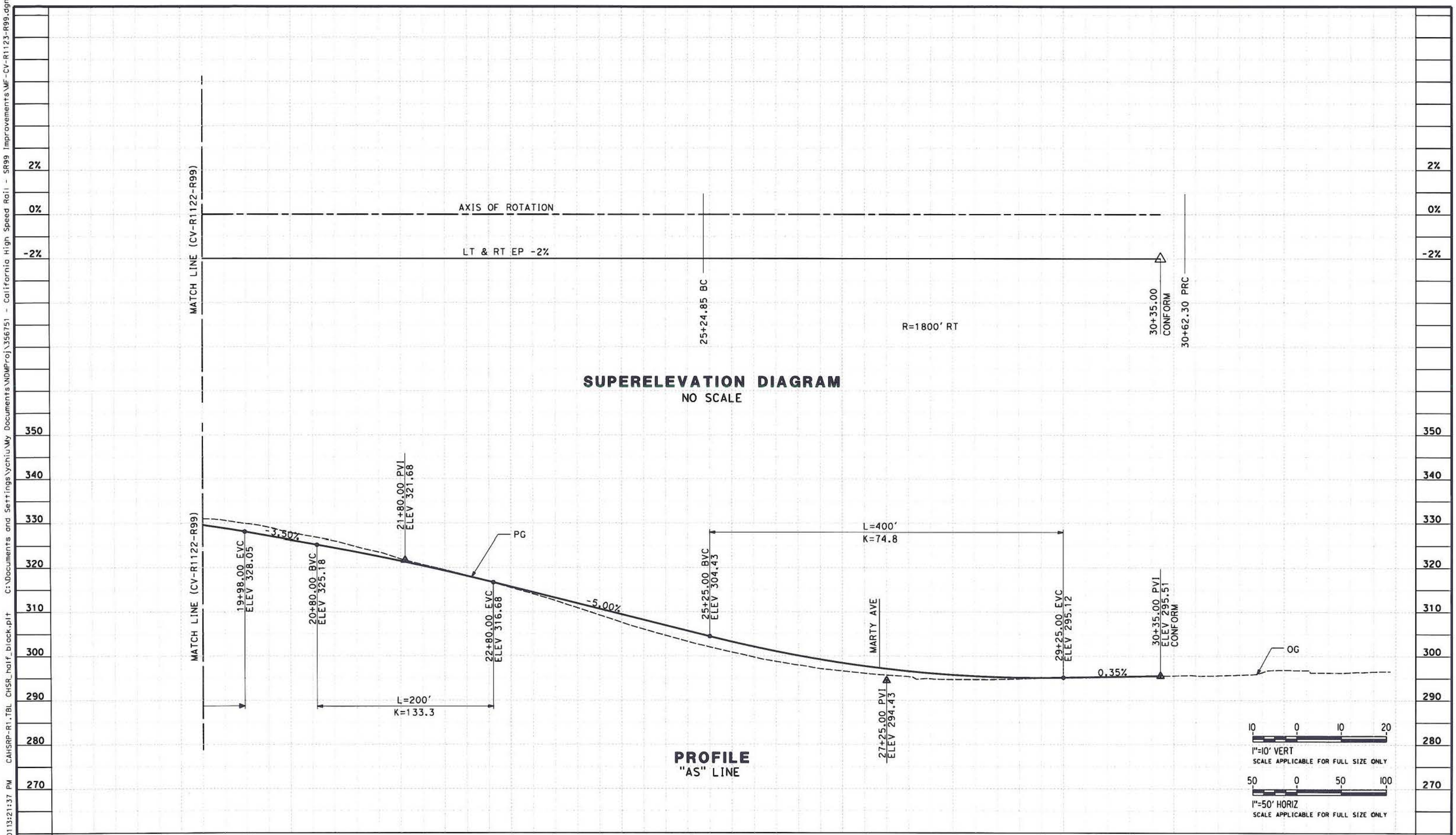

REV	DATE	BY	CHK	APP	DESCRIPTION

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CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

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2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - ASHLAN AVE "AS"

CONTRACT NO.
DRAWING NO. CV-R1123-R99
SCALE AS SHOWN
SHEET NO.

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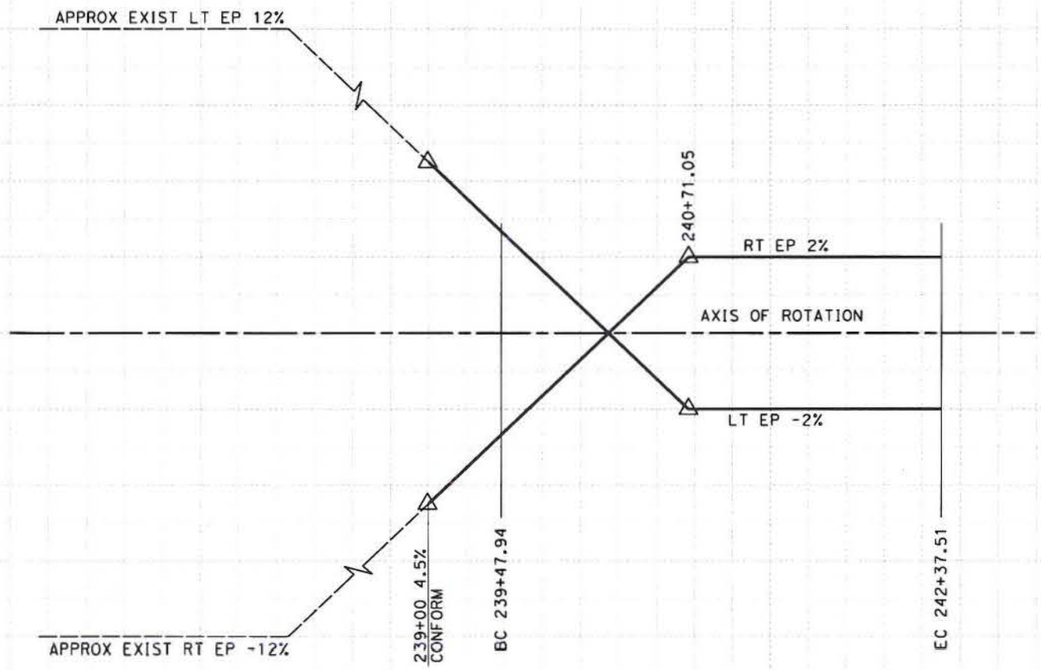
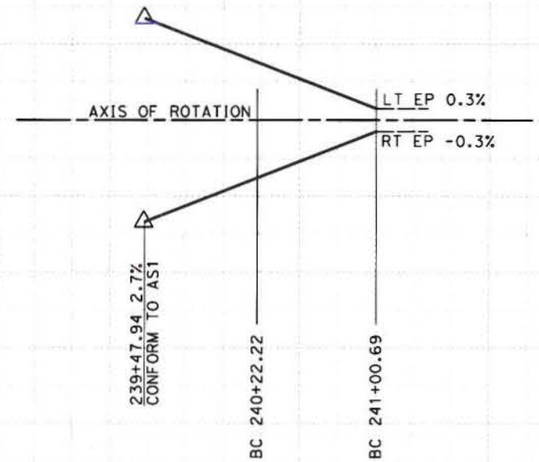


SUPERELEVATION DIAGRAM
NO SCALE



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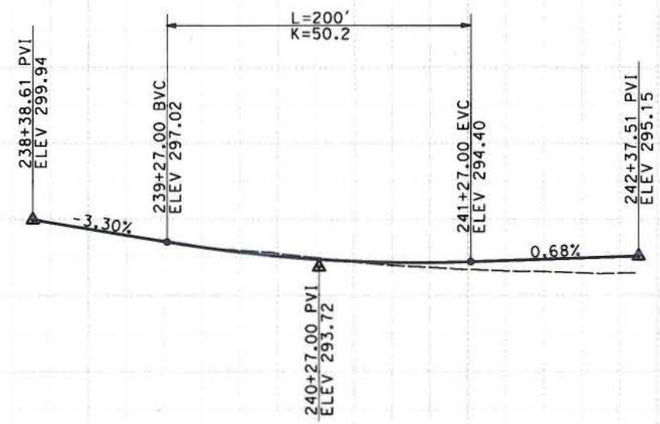
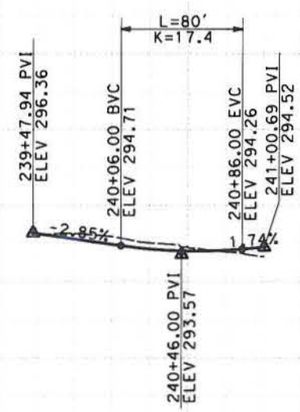
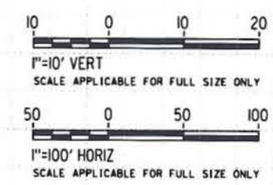


PROFILE
"AS1" LINE



PROFILE
"AS2" LINE



STATION 7 8 9 240+00 1 2 3 8 9 240+00 1 2

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY J. MATSUI-DRURY
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "AS1", "AS2"

CONTRACT NO.
DRAWING NO. CV-R1124-R99
SCALE AS SHOWN
SHEET NO.

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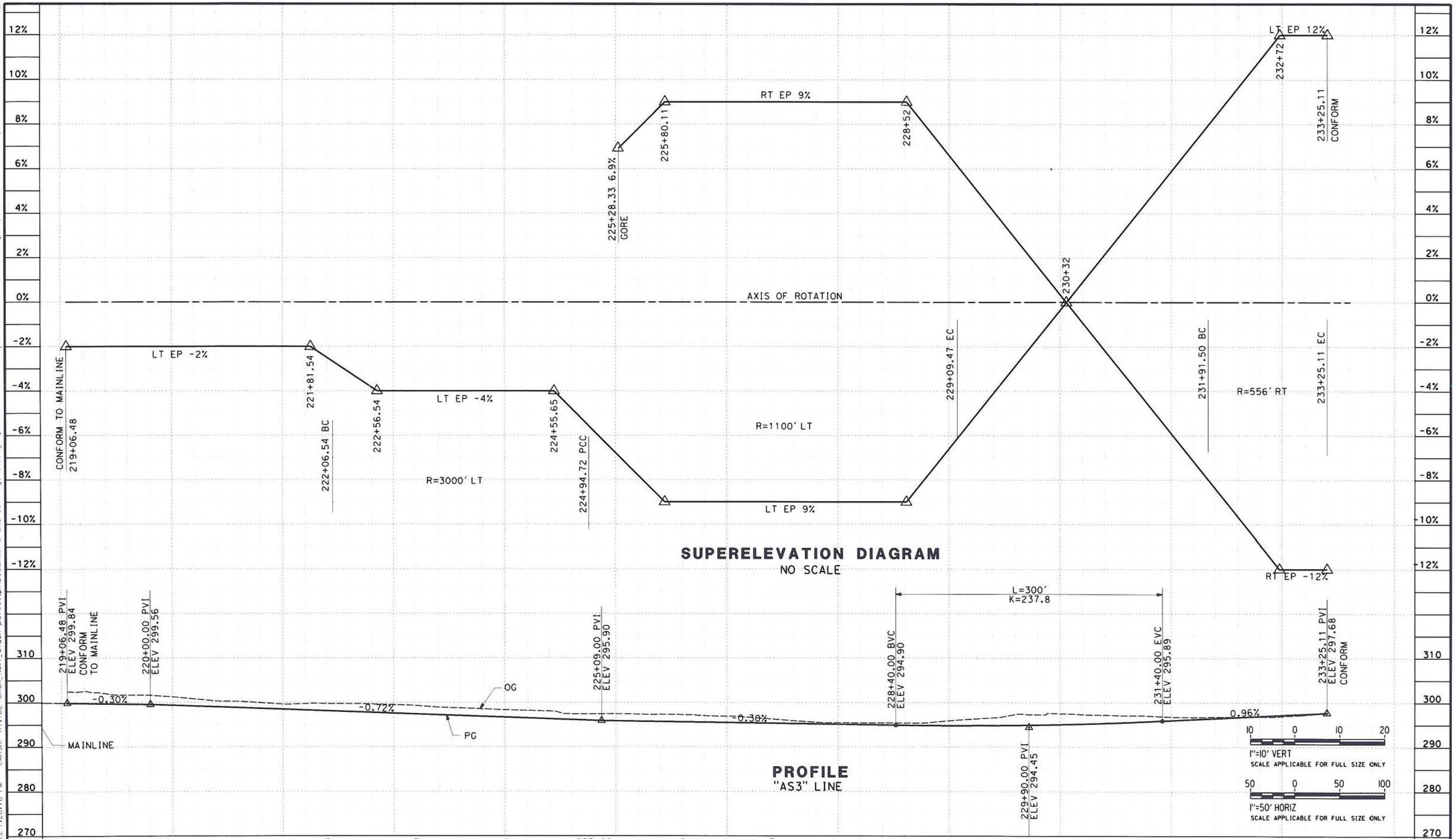

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CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

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NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "AS3"

CONTRACT NO.
DRAWING NO. CV-R1125-R99
SCALE AS SHOWN
SHEET NO.

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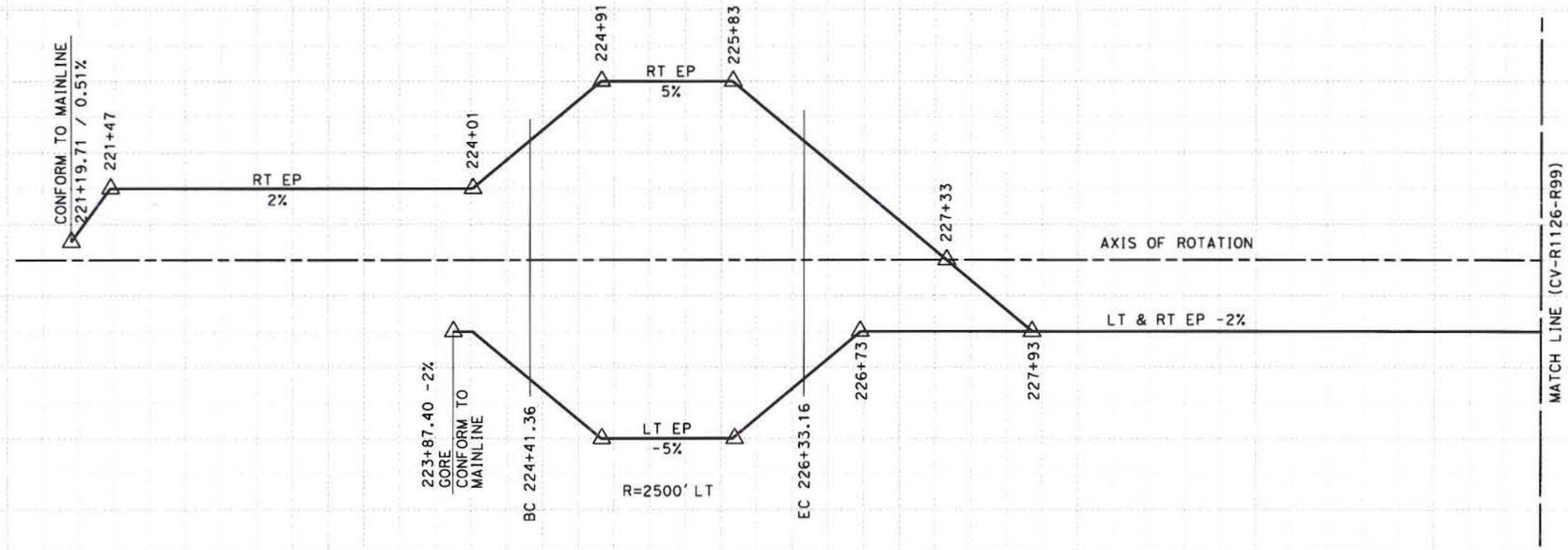
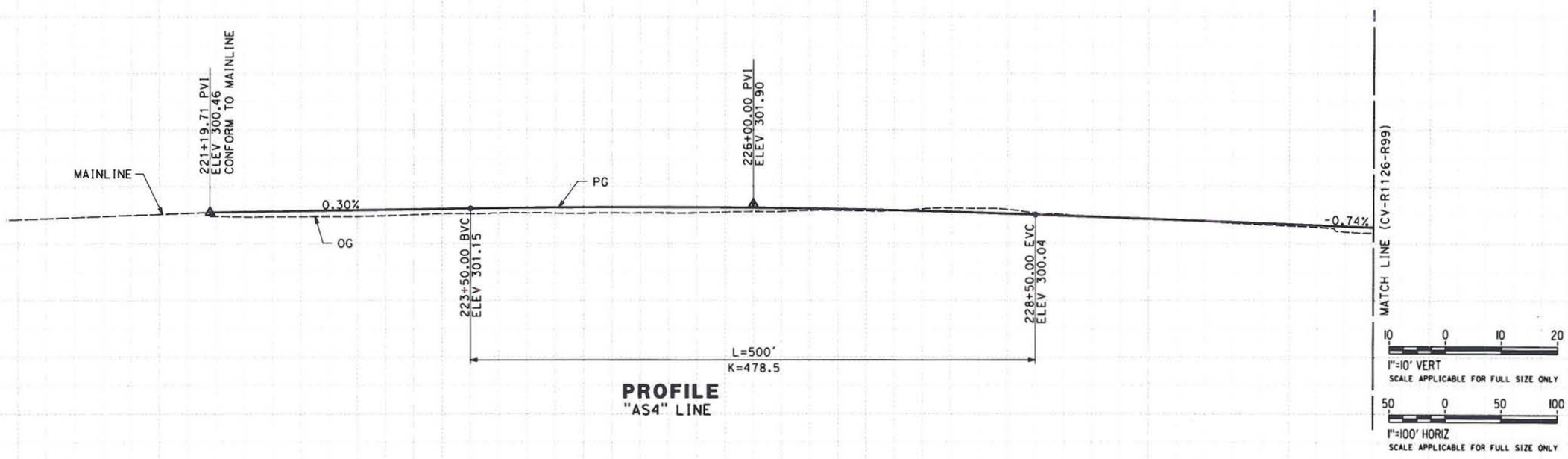


SUPERELEVATION DIAGRAM

NO SCALE



PROFILE

"AS4" LINE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

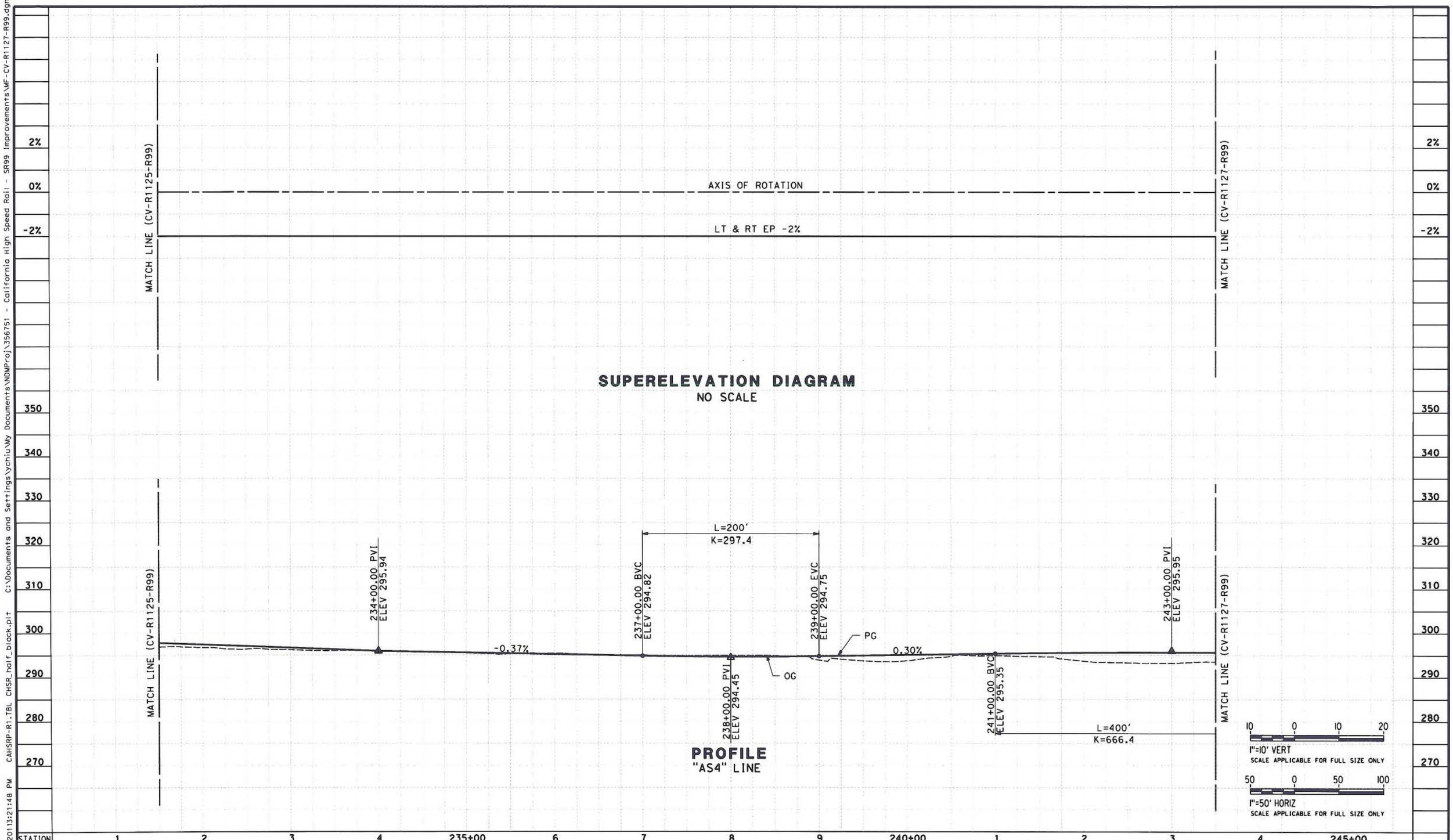
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 -RAMP "AS4"

CONTRACT NO.
DRAWING NO. CV-R1126-R99
SCALE AS SHOWN
SHEET NO.

11/16/2011 3:21:45 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R1126-R99.dgn
ychiu



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "AS4"

CONTRACT NO.
DRAWING NO. CV-R1127-R99
SCALE AS SHOWN
SHEET NO.

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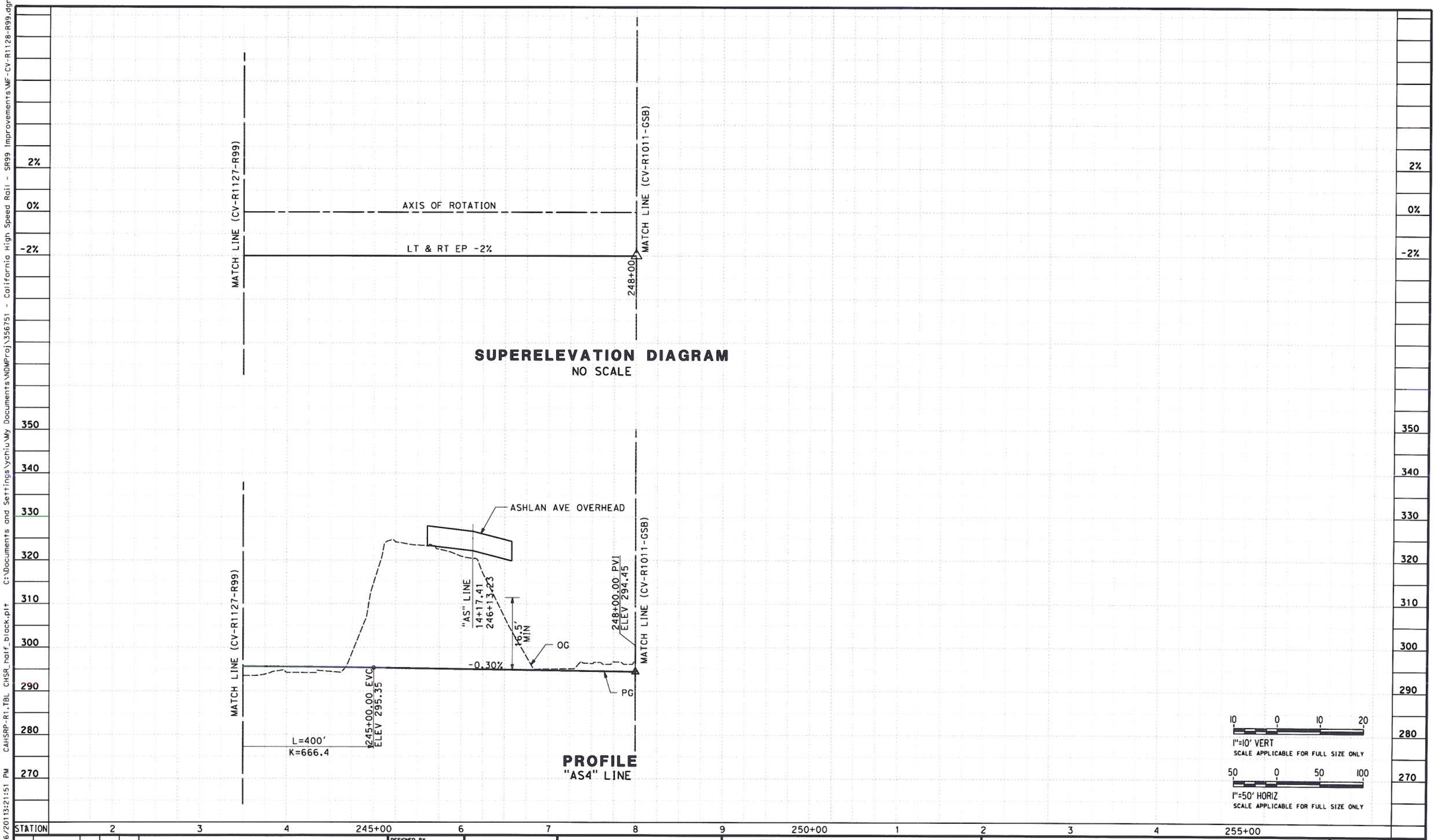
SUPERELEVATION DIAGRAM
NO SCALE

PROFILE
"AS4" LINE



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "AS4"

CONTRACT NO.
DRAWING NO. CV-R1128-R99
SCALE AS SHOWN
SHEET NO.

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ychiu

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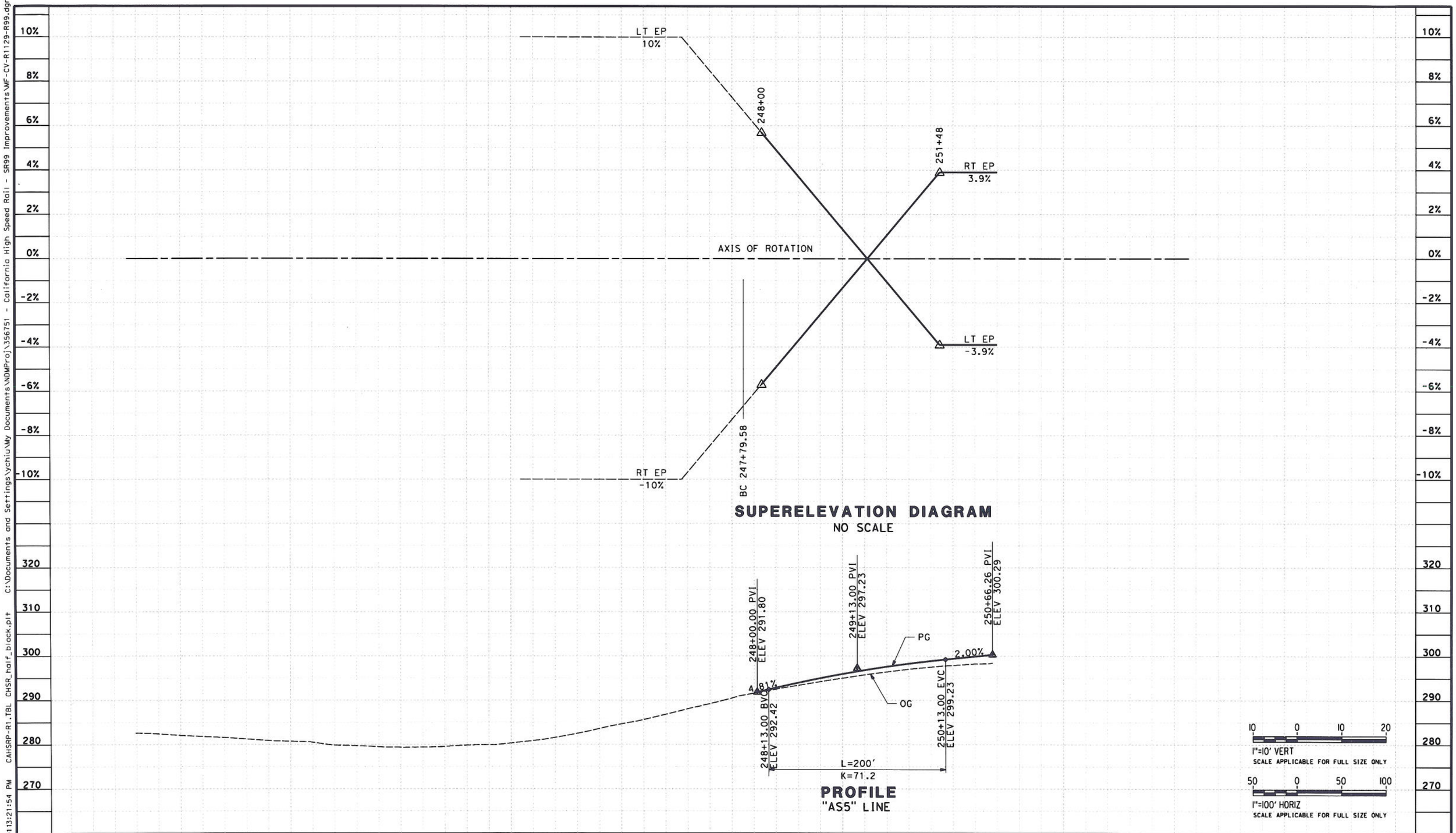


REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY J. MATSUI-DRURY
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

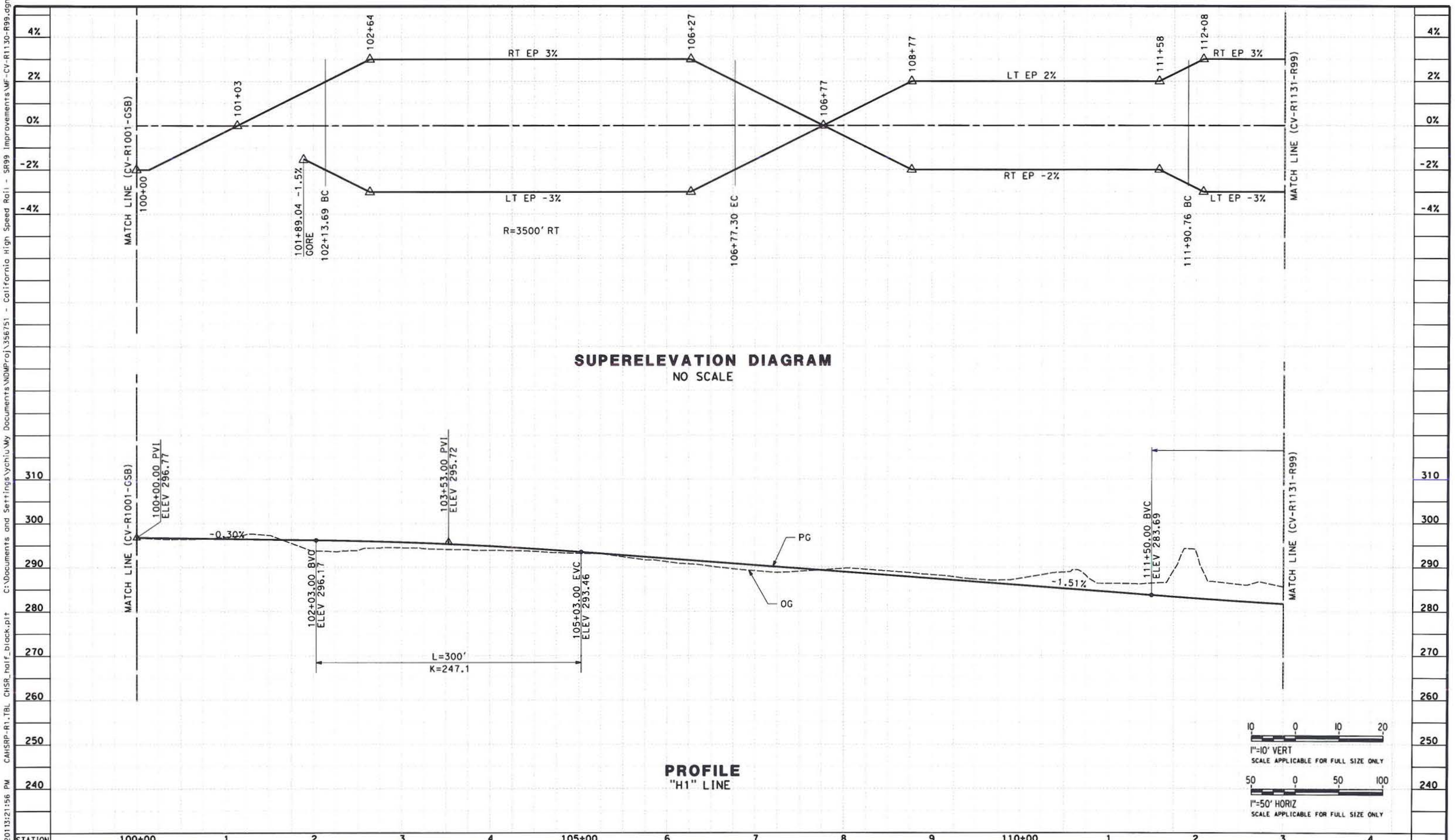
NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "AS5"

CONTRACT NO.
DRAWING NO. CV-R1129-R99
SCALE AS SHOWN
SHEET NO.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "H1"

CONTRACT NO.
DRAWING NO. CV-R1130-R99
SCALE AS SHOWN
SHEET NO.

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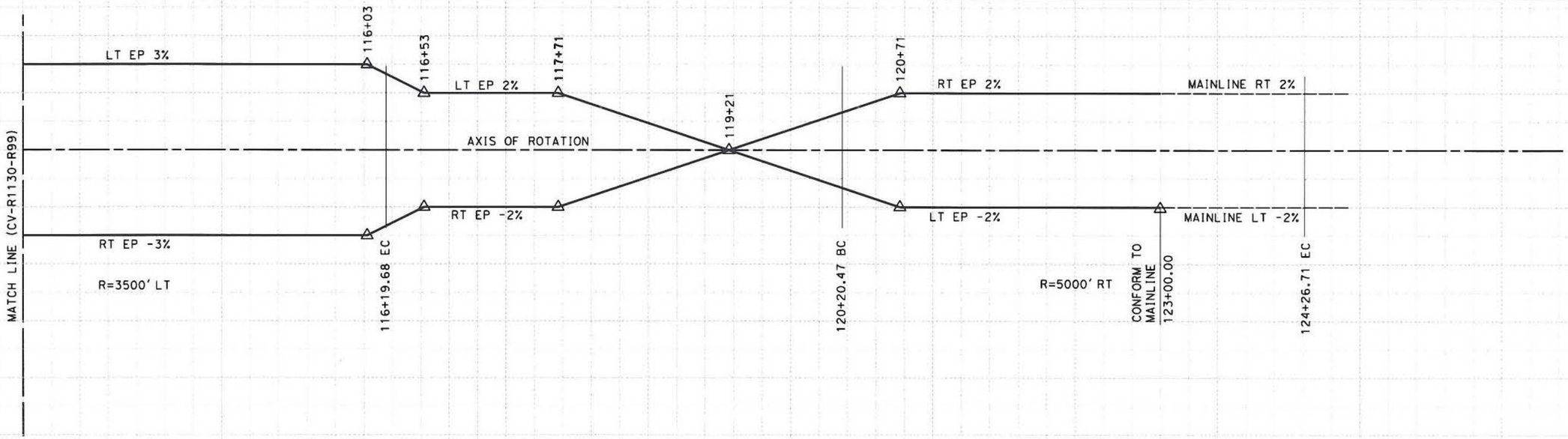
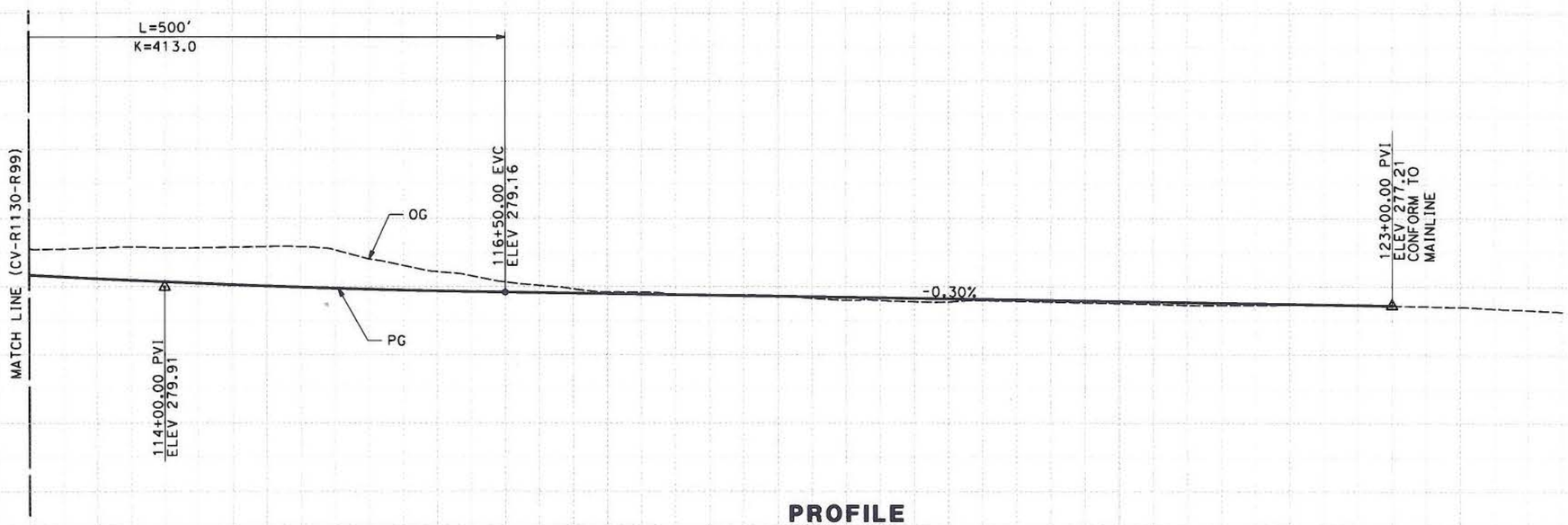


SUPERELEVATION DIAGRAM
NO SCALE



PROFILE
"H1" LINE

10 0 10 20
1"=10' VERT
SCALE APPLICABLE FOR FULL SIZE ONLY

50 0 50 100
1"=50' HORIZ
SCALE APPLICABLE FOR FULL SIZE ONLY

STATION 3 4 115+00 6 7 8 9 120+00 1 2 3 4 125+00 6 7

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "H1"

CONTRACT NO.
DRAWING NO. CV-R1131-R99
SCALE AS SHOWN
SHEET NO.

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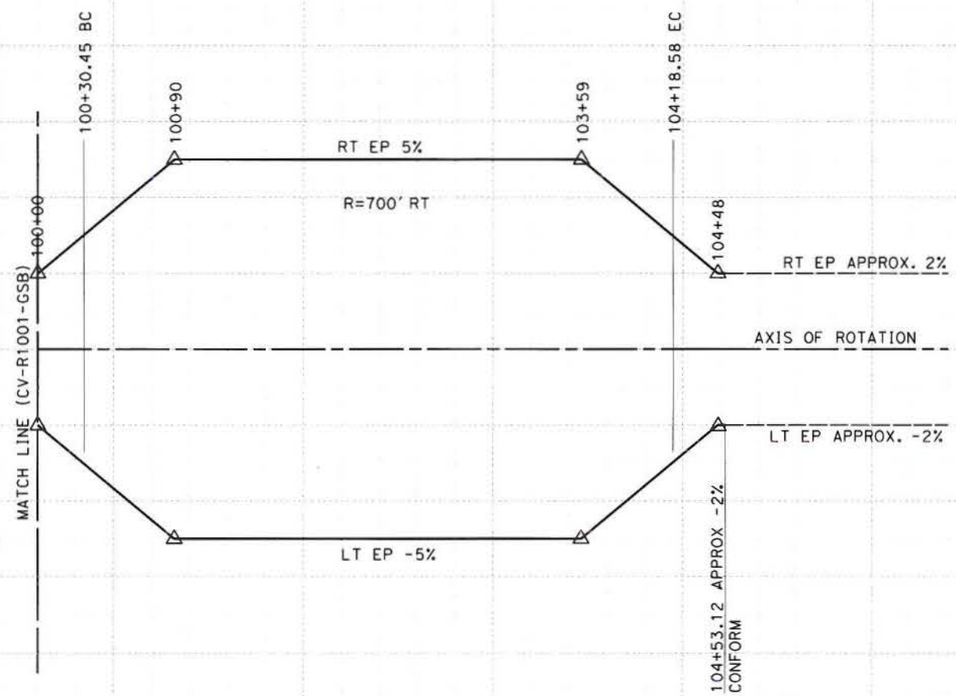
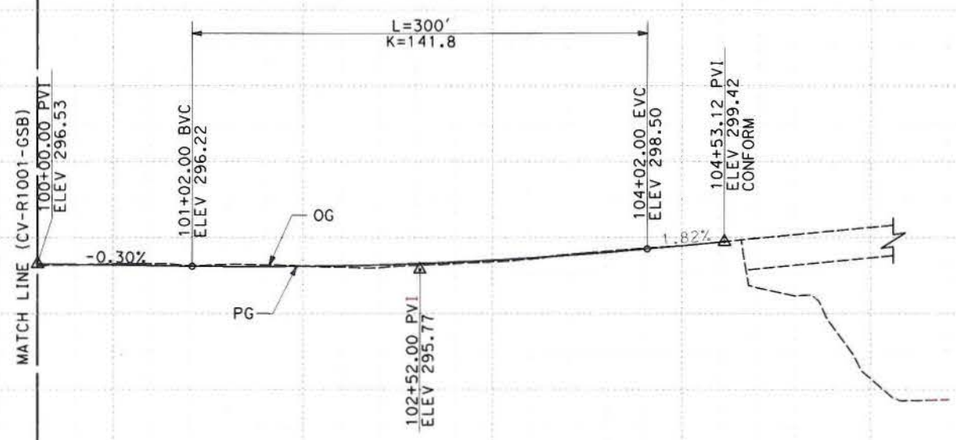


SUPERELEVATION DIAGRAM

NO SCALE



PROFILE

"H2" LINE

10 0 10 20
1"=10' VERT
SCALE APPLICABLE FOR FULL SIZE ONLY

50 0 50 100
1"=50' HORIZ
SCALE APPLICABLE FOR FULL SIZE ONLY

STATION 7 8 9 100+00 1 2 3 4 105+00 6 7 8

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - RAMP "H2"

CONTRACT NO.
DRAWING NO. CV-R1132-R99
SCALE AS SHOWN
SHEET NO.

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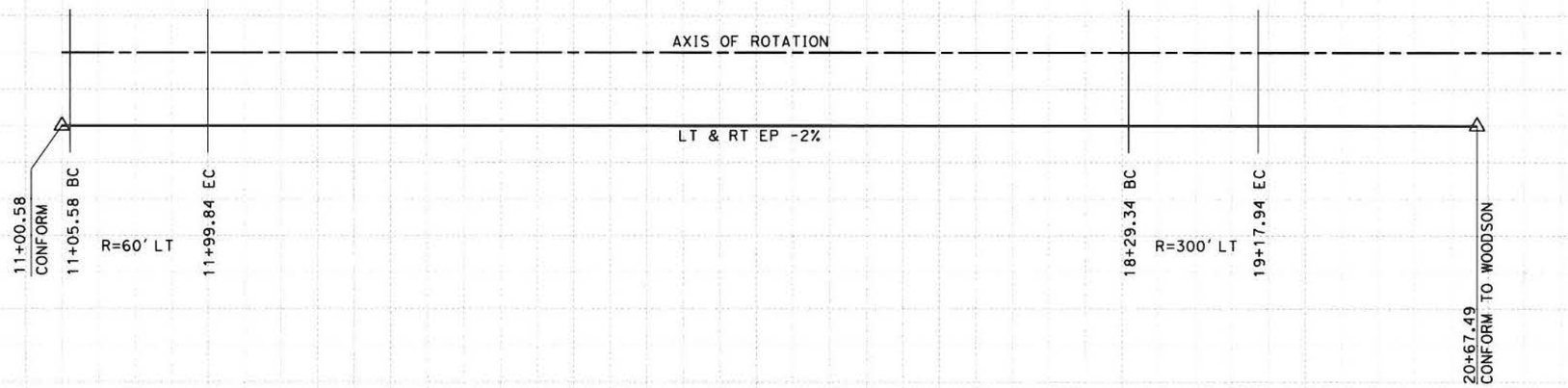
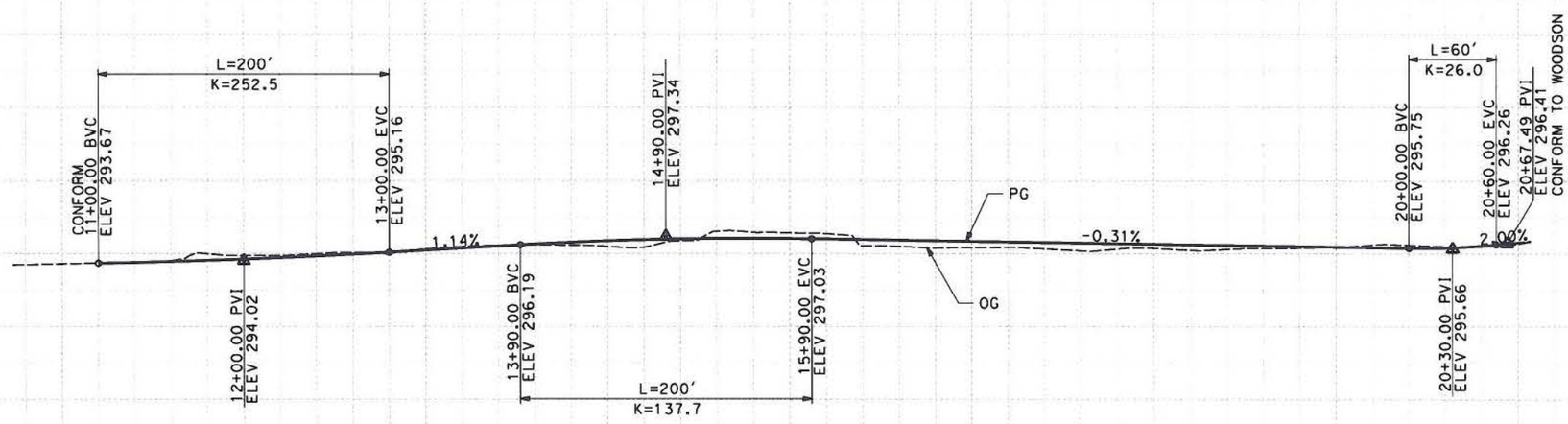


SUPERELEVATION DIAGRAM
NO SCALE



PROFILE
"P" LINE

10 0 10 20
1"=10' VERT
SCALE APPLICABLE FOR FULL SIZE ONLY

50 0 50 100
1"=50' HORIZ
SCALE APPLICABLE FOR FULL SIZE ONLY

STATION 9 10+00 1 2 3 4 15+00 6 7 8 9 20+00 1 2 3

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

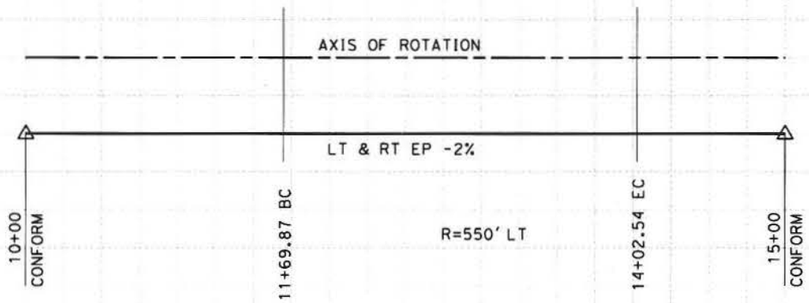
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

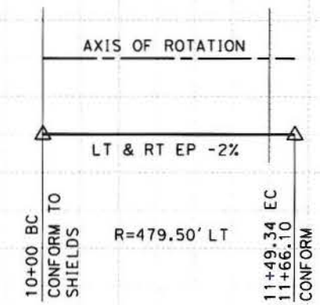
CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - PLEASANT AVE "P"

CONTRACT NO.
DRAWING NO. CV-R1133-R99
SCALE AS SHOWN
SHEET NO.

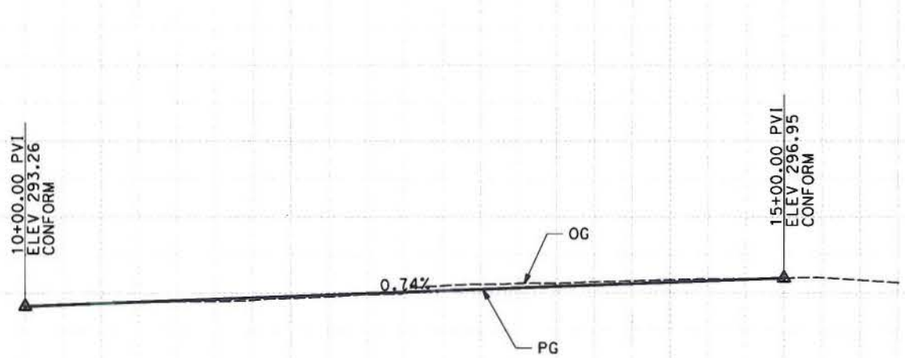
ychiu 11/16/2013 2:22:12 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R1133-R99.dgn



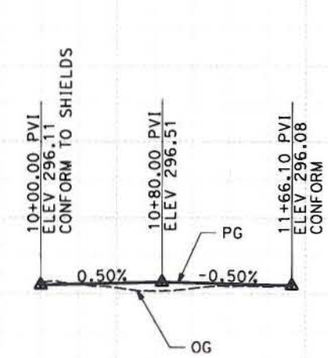
SUPERELEVATION DIAGRAM
NO SCALE



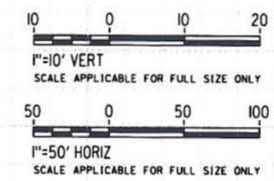
SUPERELEVATION DIAGRAM
NO SCALE



PROFILE
"S" LINE



PROFILE
"SC" LINE



STATION 10+00 1 2 3 4 15+00 6 10+00 1 2 3 4

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

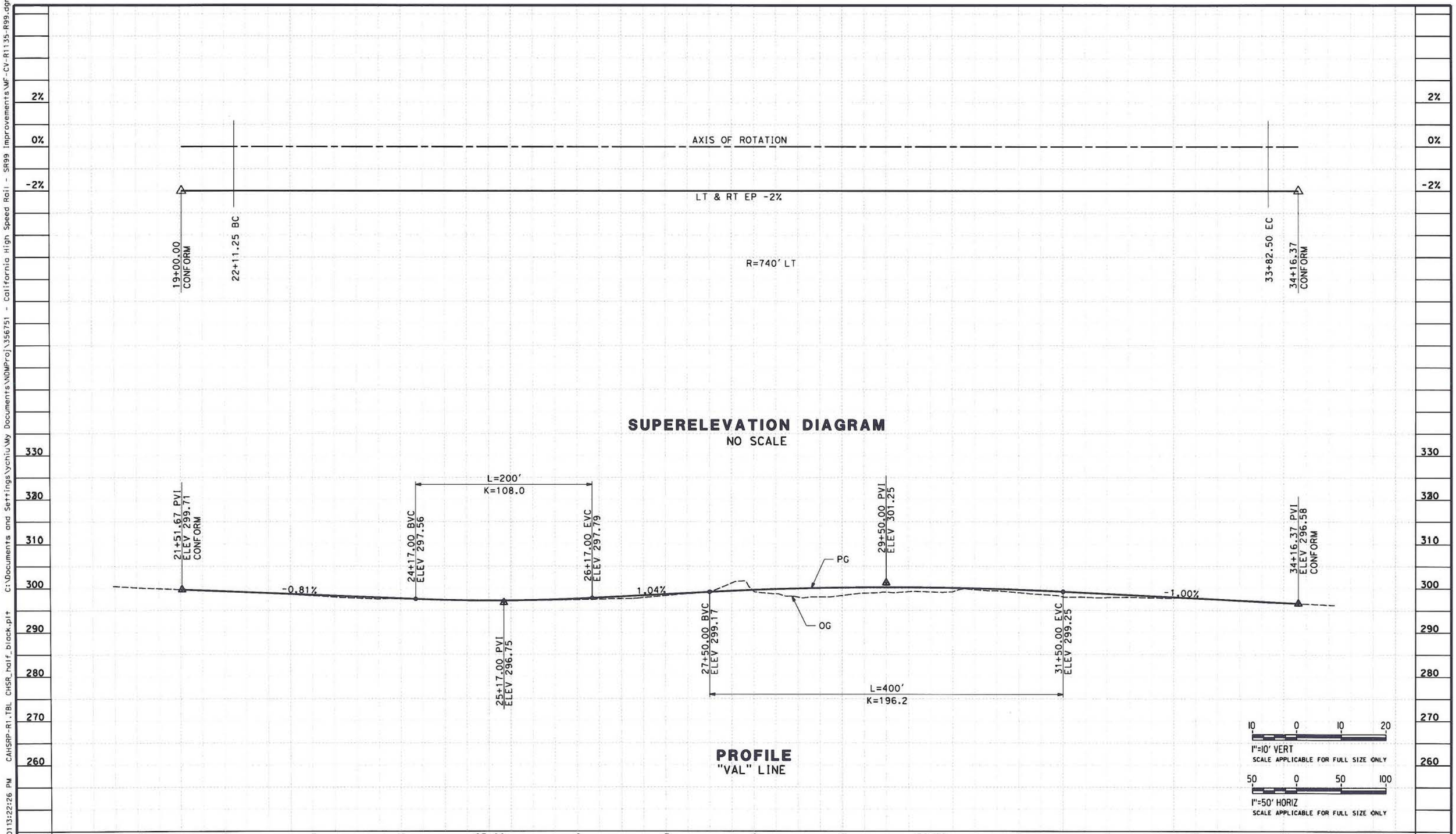
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - SHIELDS AVE "S", "SC"

CONTRACT NO.
DRAWING NO. CV-R1134-R99
SCALE AS SHOWN
SHEET NO.

11/16/2011 3:22:19 PM CAHSRP-R1.TBL CHSR_half_block.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R1134-R99.dgn
ychiu



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

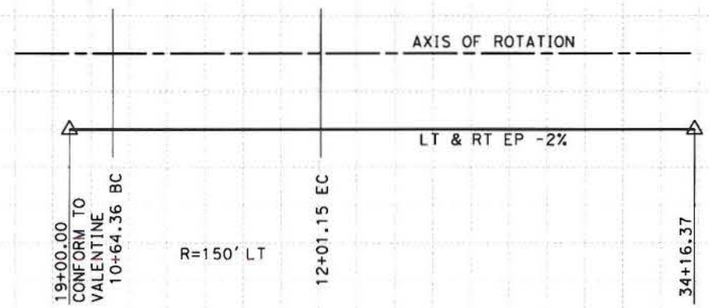
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

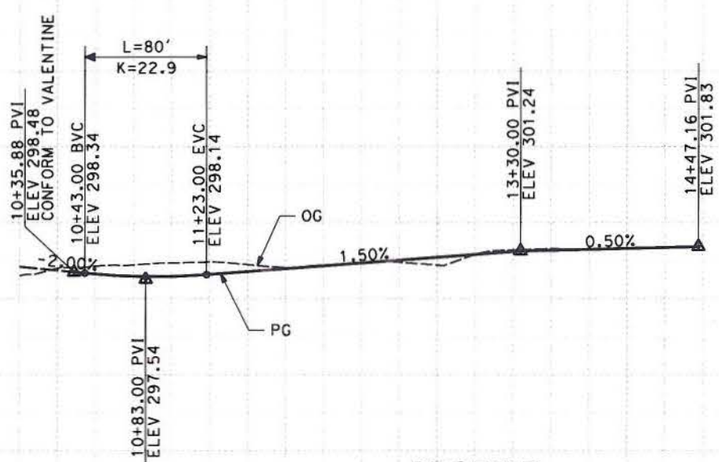
CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - VALENTINE AVE "VAL"

CONTRACT NO.
DRAWING NO. CV-R1135-R99
SCALE AS SHOWN
SHEET NO.

ychiu 11/16/2013 2:22:26 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R1135-R99.dgn



SUPERELEVATION DIAGRAM
NO SCALE



PROFILE
"V1" LINE

10 0 10 20
1"=10' VERT
SCALE APPLICABLE FOR FULL SIZE ONLY

50 0 50 100
1"=50' HORIZ
SCALE APPLICABLE FOR FULL SIZE ONLY

STATION 6 7 8 9 10+00 1 2 3 4 15+00 6 7 8 9 20+00

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MANOREK
DRAWN BY B. CHAN
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

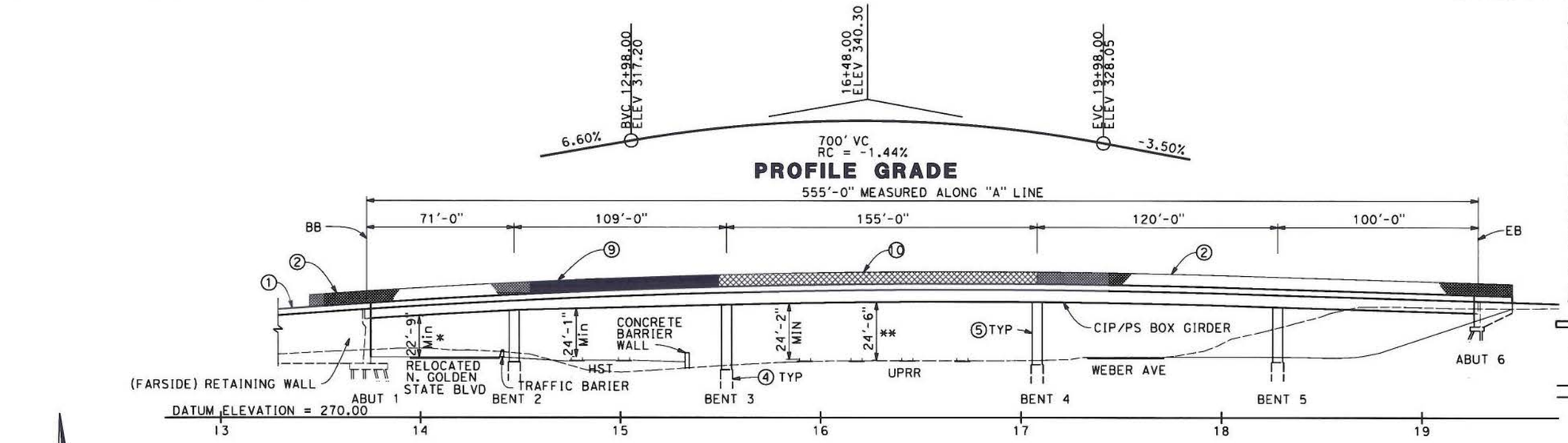
CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
ROADWAY
PROFILE AND SUPERELEVATION
SR 99 - N PARKWAY DR "V1"

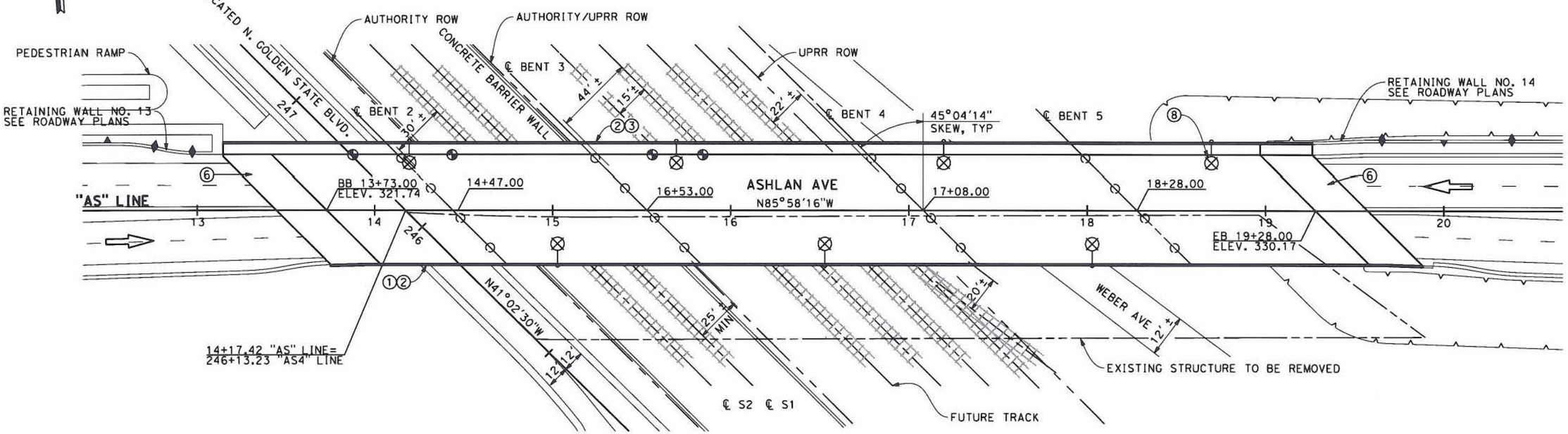
CONTRACT NO.
DRAWING NO. CV-R1136-R99
SCALE AS SHOWN
SHEET NO.

ychiu 11/16/2013 1:18:37 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Documents and Settings\ychiu\My Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\MF-CV-R1136-R99.dgn

Attachment 5
Structure Plans



ELEVATION
SCALE: 1" = 30'



PLAN
SCALE: 1" = 30'

NOTES:

1. CONCRETE BARRIER (TYPE 26 MODIFIED)
2. CHAIN LINK RAILING (TYPE 7 MODIFIED)
3. CONCRETE BARRIER (TYPE 736 MODIFIED)
4. 6'-0" DIA CIDH PILE
5. 5'-6" DIA COLUMN
6. STRUCTURE APPROACH, TYPE N(30S)
7. EXISTING UPRR ROW TO BE CONFIRMED ON SITE
8. ELECTROLIERS
9. AR FENCE WITH SOLID PLATE
10. AR FENCE

LEGEND:

- INDICATES DIRECTION OF TRAFFIC
- INDICATES APPROXIMATE POINT OF MINIMUM VERTICAL CLEARANCE
- INDICATES RAILROAD AND HIGH-SPEED TRAIN TRACK
- * TEMPORARY FALSEWORK CLEARANCE = 20'-10" FALSEWORK DEPTH = 1'-10 1/2"
- ** TEMPORARY FALSEWORK CLEARANCE = 21'-2" FALSEWORK DEPTH = 3'-5"

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY P. WALKER
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

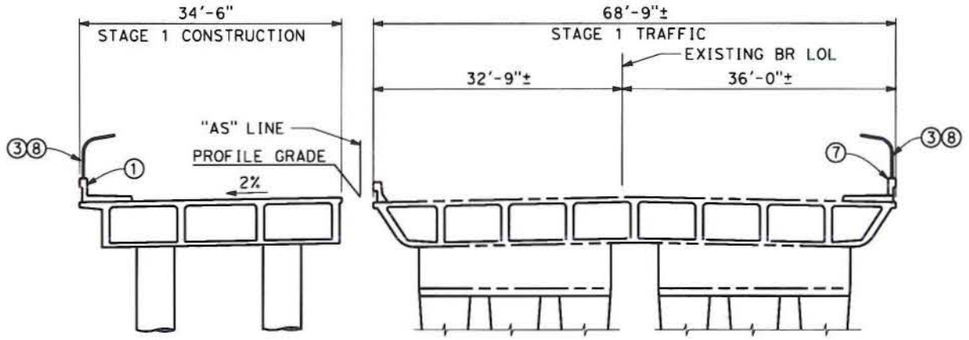
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

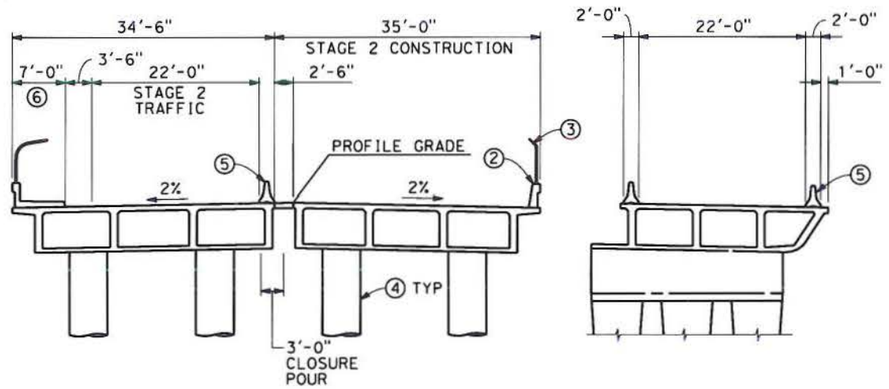
CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
ASHLAN AVE OVERHEAD
GENERAL PLAN

CONTRACT NO.
DRAWING NO. ST-I1008
SCALE AS SHOWN
SHEET NO.

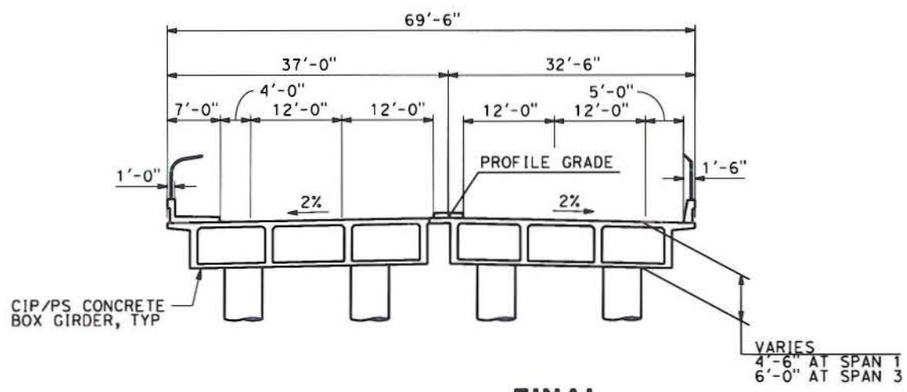
pwalker 2/16/2012 10:16:43 AM CAHSRP-R1.TBL CHSR_half_black.plt C:\Users\pwalker\Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\X-1S-ST-K1001-R99.DGN



STAGE 1
SCALE: 1"=10'



STAGE 2
SCALE: 1"=10'



FINAL
SCALE: 1"=10'

NOTES:

① CONCRETE BARRIER (TYPE 26 MODIFIED)
② CONCRETE BARRIER (TYPE 736 MODIFIED)
③ CHAIN LINK RAILING (TYPE 7 MODIFIED)
④ 5'-6" DIA CONCRETE COLUMN
⑤ TEMPORARY RAILING TYPE K
⑥ PEDESTRIAN WALKWAY
⑦ EXISTING BARRIER
⑧ AR FENCE

STAGING NOTES:

STAGE 1:

CONSTRUCT NORTH PORTION OF ASHLAN OVERHEAD.

STAGE 2:

SHIFT ASHLAN AVE WB TRAFFIC TO NEWLY CONSTRUCTED NORTH PORTION OF OVERHEAD.

REMOVE NORTH PORTION OF EXISTING OVERHEAD.

CONSTRUCT SOUTH PORTION OF OVERHEAD.

FINAL STAGE:

SHIFT EB TRAFFIC TO NEW OVERHEAD.

REMOVE REMAINING SOUTH PORTION OF EXISTING OVERHEAD.

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY P. WALKER
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
ASHLAN AVE OVERHEAD
TYPICAL SECTION

CONTRACT NO.
DRAWING NO. ST-I1009
SCALE AS SHOWN
SHEET NO.

pwalker 2/15/2012 5:06:43 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Users\pwalker\Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\X-1S-ST-K1002-R99.DGN

PILE DATA TABLE (PRELIMINARY)

LOCATION	PILE TYPE	NOMINAL RESISTANCE (kips)		APPROXIMATE PILE CUT-OFF ELEV. (FT)	APPROXIMATE DESIGN TIP ELEV. (FT)	EMBEDDED PILE LENGTH (FT)
		COMPRESSION	TENSION			
ABUTMENT 1	CLASS 140 ALT. "X"	280	0	293.00±	TBD	TBD
BENT 2	6' DIA. CIDH	2200	0	296.00±	TBD	TBD
BENT 3	6' DIA. CIDH	2670	0	293.00±	TBD	TBD
BENT 4	6' DIA. CIDH	2770	0	296.00±	TBD	TBD
BENT 5	6' DIA. CIDH	2510	0	296.00±	TBD	TBD
ABUTMENT 6	CLASS 140 ALT. "X"	280	0	313.00±	TBD	TBD

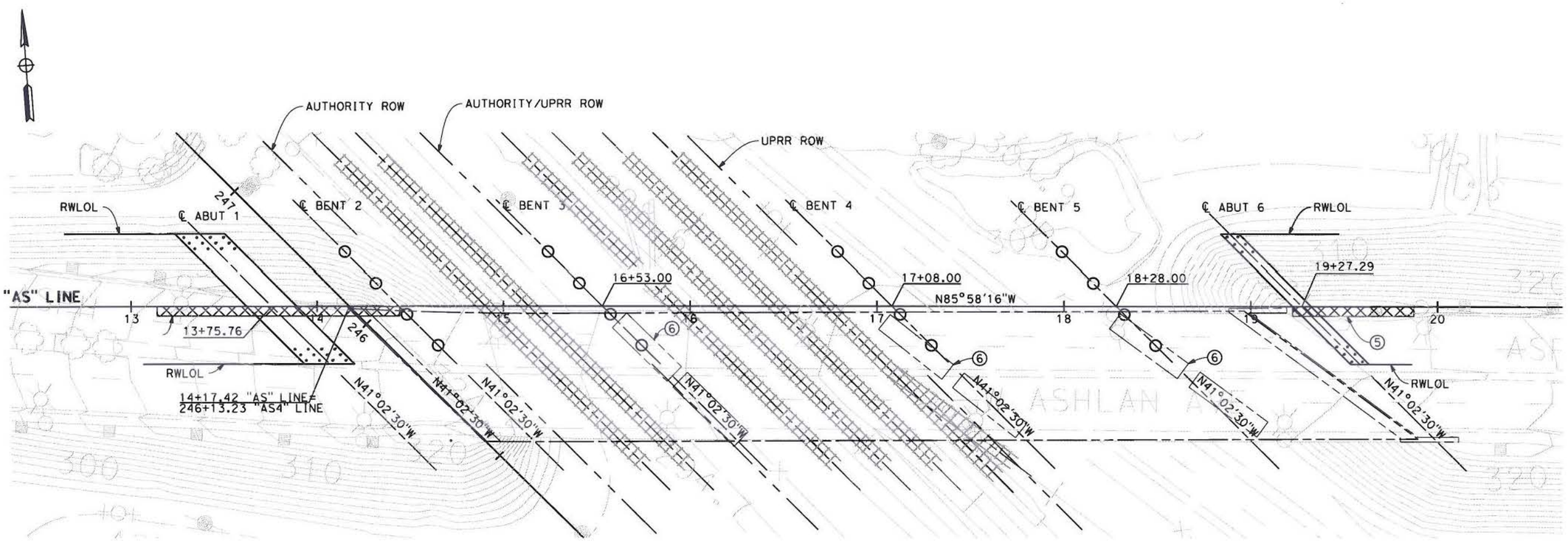
NOTE: DESIGN TIP ELEVATIONS ARE TO BE DETERMINED BY CONTRACTOR

LEGEND:

- XXX.XX — INDICATES BOTTOM OF FOOTING ELEVATION
- INDICATES NEW PILE
- INDICATES NEW BATTER PILE
- INDICATES CIDH PILE
- INDICATES EXISTING STRUCTURE

NOTES:

1. EXISTING BRIDGE, SUBSTRUCTURE, AND UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY CONTROLLING DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UNDERGROUND AND OVERHEAD UTILITIES TO BE DETERMINED AND RELOCATED AS NEEDED PRIOR CONSTRUCTION.
3. RIGHT OF WAY LIMITS ARE APPROXIMATE AND TO BE CONFIRMED BY THE CONTRACTOR.
4. REMOVE EXISTING SUBSTRUCTURE 2' MINIMUM BELOW FINISHED GRADE.
5. TEMPORARY SHORING
6. EXISTING SPREAD FOOTINGS



PLAN

SCALE: 1" = 30'

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY P. WALKER
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
ASHLAN AVE OVERHEAD
FOUNDATION PLAN

CONTRACT NO.
DRAWING NO. ST-I1010
SCALE AS NOTED
SHEET NO.

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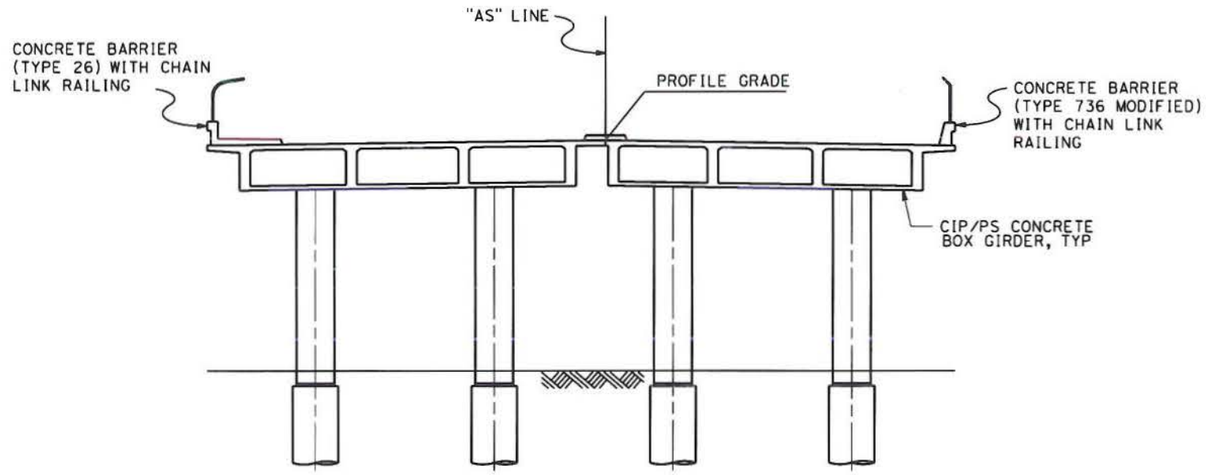

BENT ELEVATION
SCALE: 1"=10'

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY M. MIYAMOTO
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
ASHLAN AVE OVERHEAD
BENT ELEVATION

CONTRACT NO.
DRAWING NO. ST-I1011
SCALE AS SHOWN
SHEET NO.

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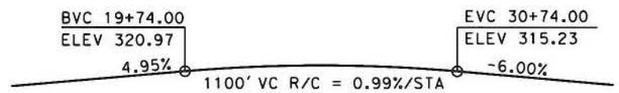
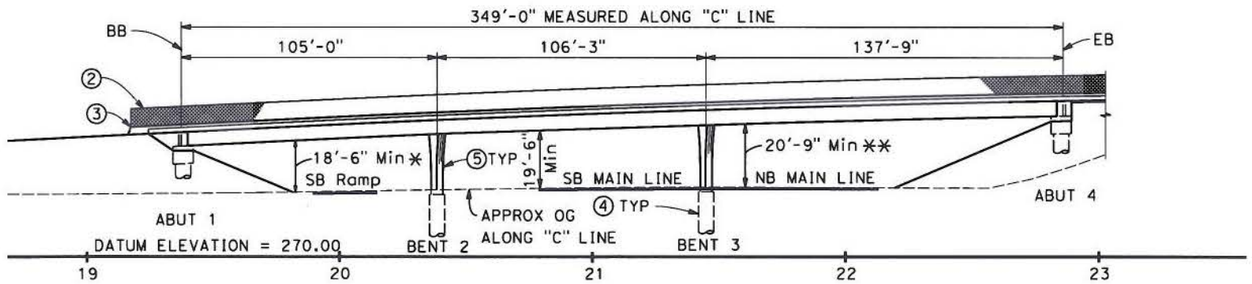
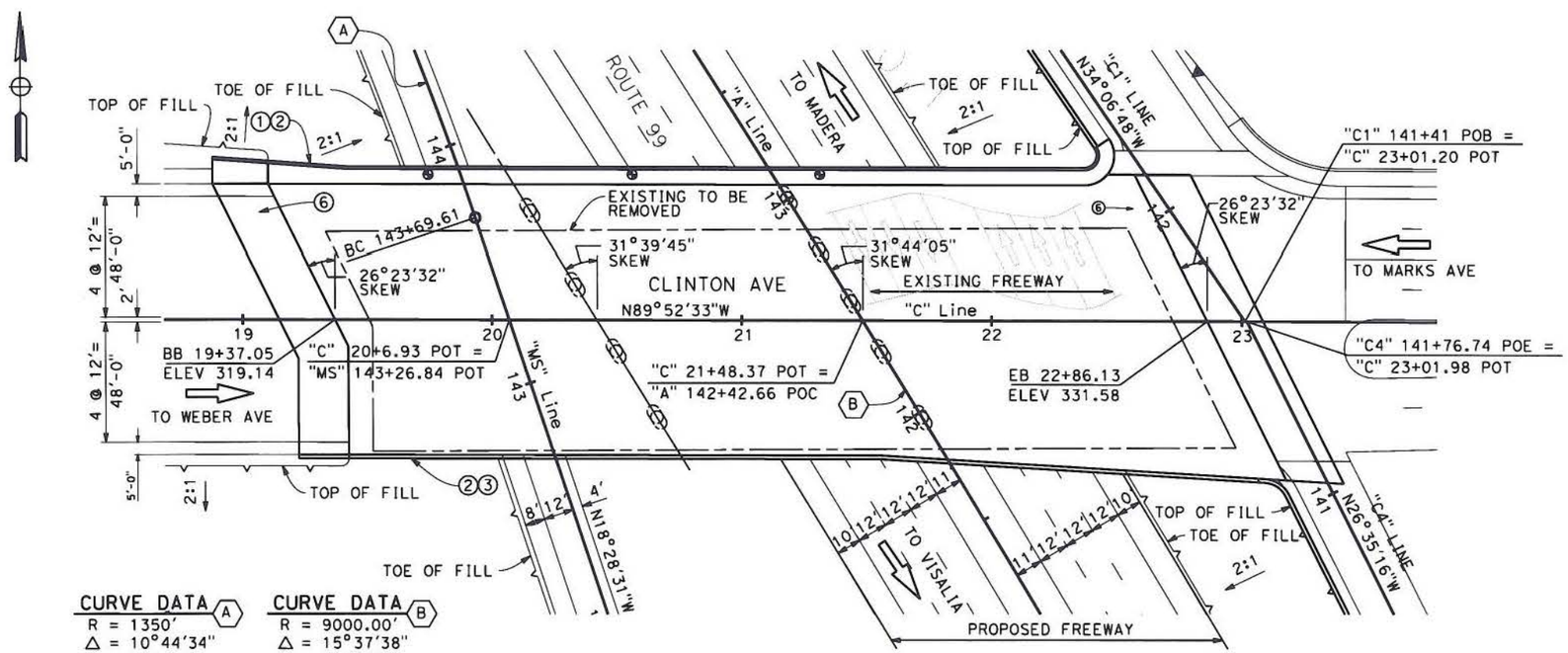


PROFILE GRADE
NO SCALE



ELEVATION
SCALE: 1"=30'



CURVE DATA (A)
R = 1350'
Δ = 10°44'34"
L = 253.12'
T = 126.93'

CURVE DATA (B)
R = 9000.00'
Δ = 15°37'38"
L = 2454.73'
T = 1235.03

PLAN
SCALE: 1"=30'

NOTES:

① CONCRETE BARRIER (TYPE 26 MODIFIED)
② CHAIN LINK RAILING (TYPE 7 MODIFIED)
③ CONCRETE BARRIER (TYPE 736 MODIFIED)
④ 6'-0" DIA CIDH PILE
⑤ 4' X 6' OBLONG COLUMN
⑥ STRUCTURE APPROACH, TYPE N(30S)
* TEMPORARY FALSEWORK CLEARANCE = 16'-6" FALSEWORK DEPTH = 2'-0"
** TEMPORARY FALSEWORK CLEARANCE = 17'-6" FALSEWORK DEPTH = 3'-3"

LEGEND:

INDICATES DIRECTION OF TRAFFIC
INDICATES APPROXIMATE POINT OF MINIMUM VERTICAL CLEARANCE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY P. WALKER
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 12/08/11

PROPOSED PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300 Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
CLINTON AVE OVERCROSSING
GENERAL PLAN

CONTRACT NO.
DRAWING NO. ST-I1012
SCALE AS SHOWN
SHEET NO.

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STAGING NOTES:

STAGE 1:

SHIFT CLINTON AVE EB & WB TRAFFIC TO SOUTHERLY PORTION OF CLINTON AVE OC.

REMOVE NORTH PORTION OF CLINTON AVE OC.

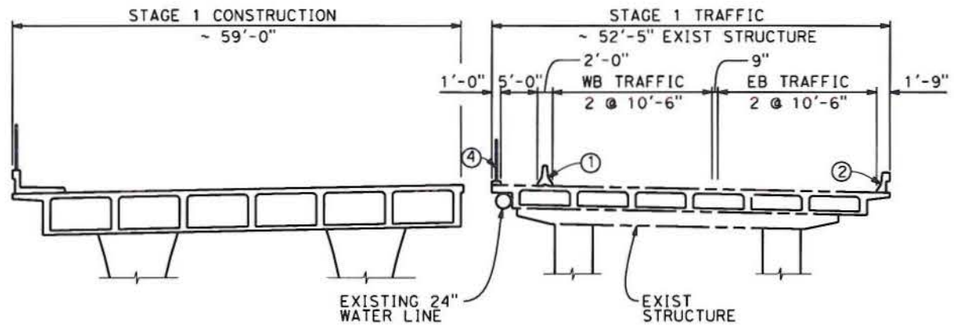
CONSTRUCT NORTH PORTION OF CLINTON AVE OC.

STAGE 2:

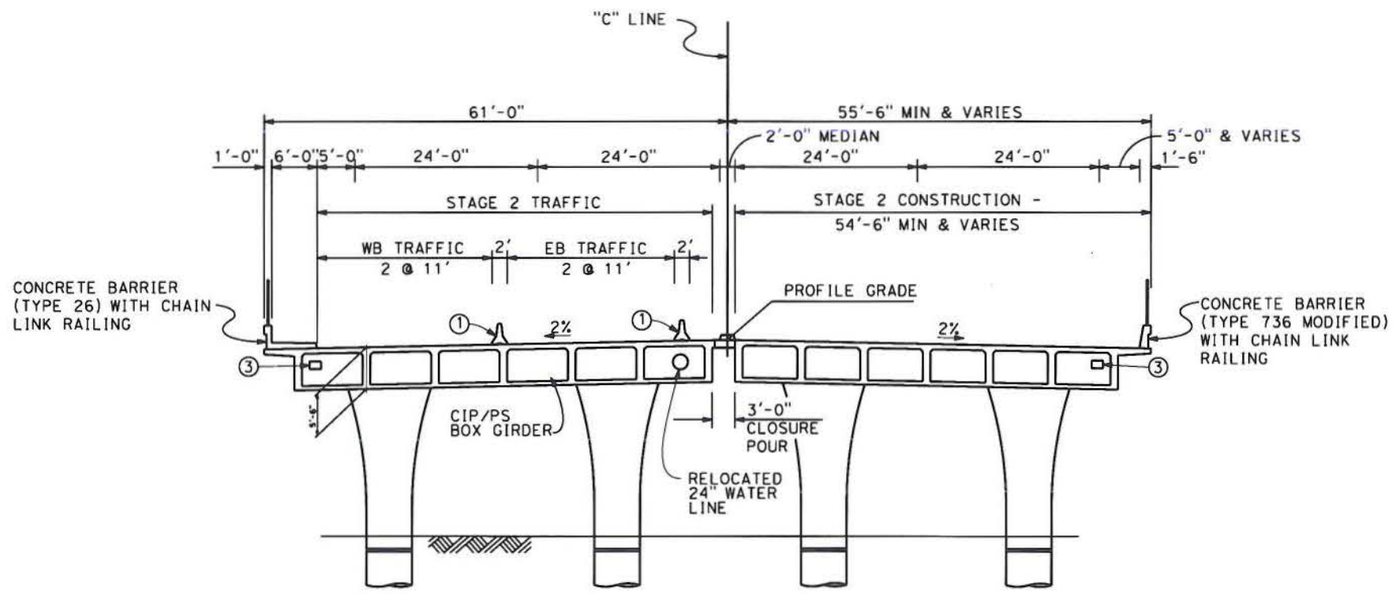
SHIFT CLINTON AVE EB & WB TRAFFIC TO NEWLY CONSTRUCTED CLINTON AVE OC.
REMOVE REMAINING PORTION OF CLINTON AVE OC.

CONSTRUCT SOUTH PORTION OF CLINTON AVE OC.

PLACE CLOSURE POUR.



STAGE CONSTRUCTION
SCALE: 1"=10'



TYPICAL SECTION
SCALE: 1"=10'

① TEMPORARY RAILING TYPE K
② EXISTING BARRIER
③ FUTURE UTILITY OPENING
④ TEMPORARY CHAIN-LINK FENCE

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY P. WALKER
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 12/08/11

PROPOSED PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
CLINTON AVE OVERCROSSING
TYPICAL SECTION

CONTRACT NO.
DRAWING NO. ST-11013
SCALE AS SHOWN
SHEET NO.

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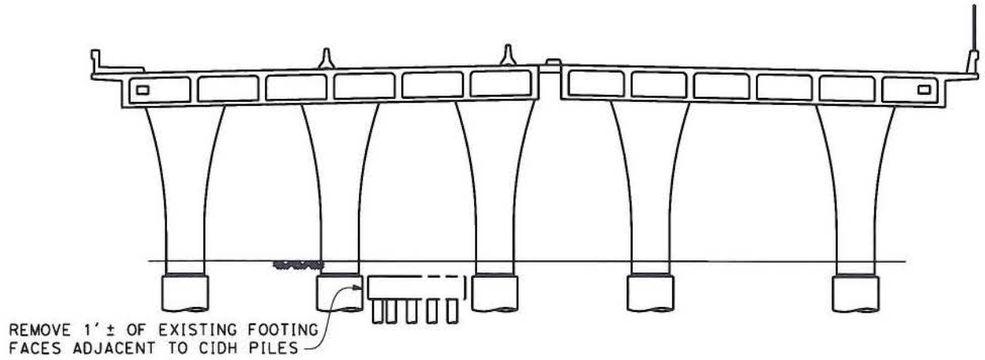


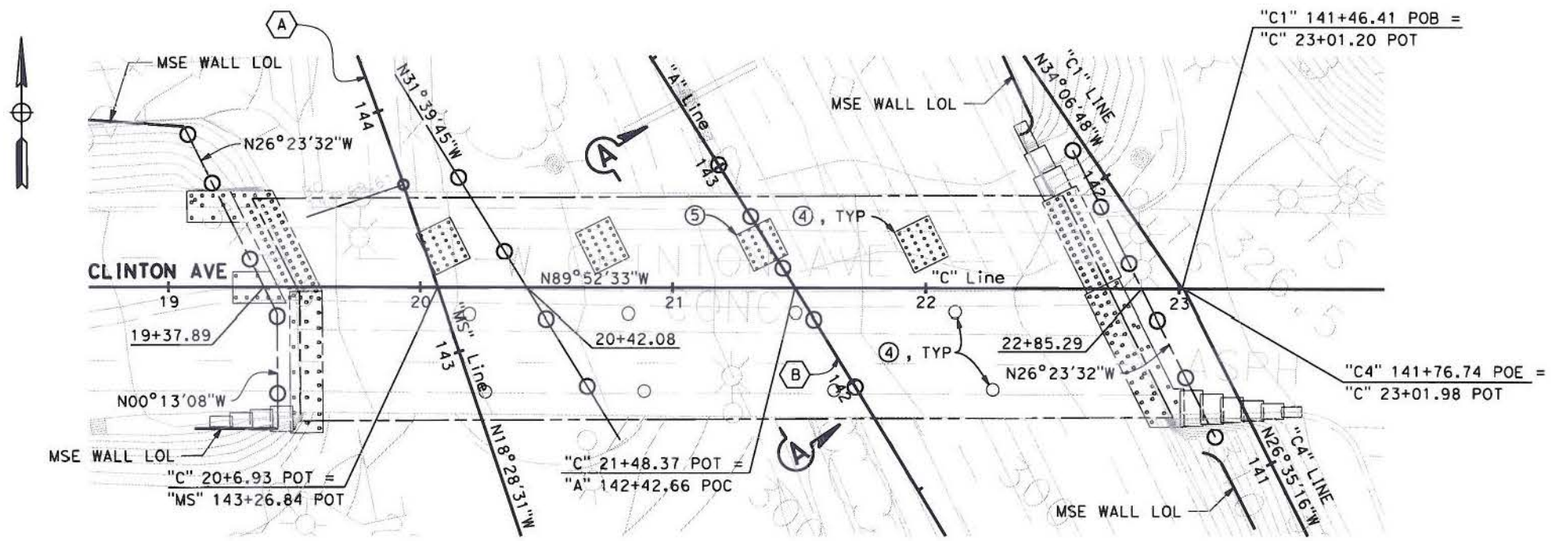
SECTION A-A
NO SCALE

LEGEND:

XXX.XX	INDICATES BOTTOM OF FOOTING ELEVATION
○	INDICATES CIDH PILE
— —	INDICATES EXISTING STRUCTURE
□	INDICATES EXISTING PILE
▷	INDICATES EXISTING BATTER PILE

NOTES:

1. EXISTING BRIDGE, SUBSTRUCTURE, AND UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY CONTROLLING DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UNDERGROUND AND OVERHEAD UTILITIES TO BE DETERMINED, AND RELOCATED AS NEEDED PRIOR TO CONSTRUCTION.
3. RIGHT OF WAY LIMITS ARE APPROXIMATE AND TO BE CONFIRMED BY THE CONTRACTOR.
4. REMOVE EXISTING SUBSTRUCTURE 2' MINIMUM BELOW FINISHED GRADE.
5. PARTIAL REMOVAL OF EXISTING BENT 3 FOOTING



PLAN
SCALE: 1"=30'-0"

CURVE DATA (A)
R = 1350'
Δ = 10°44'34"
L = 253.12'
T = 126.93'

CURVE DATA (B)
R = 9000.00'
Δ = 15°37'38"
L = 2454.73'
T = 1235.03'

PILE DATA TABLE (PRELIMINARY)

LOCATION	PILE TYPE	NOMINAL RESISTANCE (kips)		APPROXIMATE PILE CUT-OFF ELEV. (FT)	APPROXIMATE DESIGN TIP ELEV. (FT)	EMBEDDED PILE LENGTH (FT)
		COMPRESSION	TENSION			
ABUTMENT 1	6' DIA. CIDH	2100	0	295.00±	TBD	TBD
BENT 2-3	6' DIA. CIDH	4150	0	295.00±	TBD	TBD
ABUTMENT 4	6' DIA. CIDH	2100	0	295.00±	TBD	TBD

NOTE: DESIGN TIP ELEVATIONS ARE TO BE DETERMINED BY CONTRACTOR

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY P. WALKER
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 12/08/11

PROPOSED PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
CLINTON AVE OVERCROSSING
FOUNDATION PLAN

CONTRACT NO.
DRAWING NO. ST-I1014
SCALE AS SHOWN
SHEET NO.

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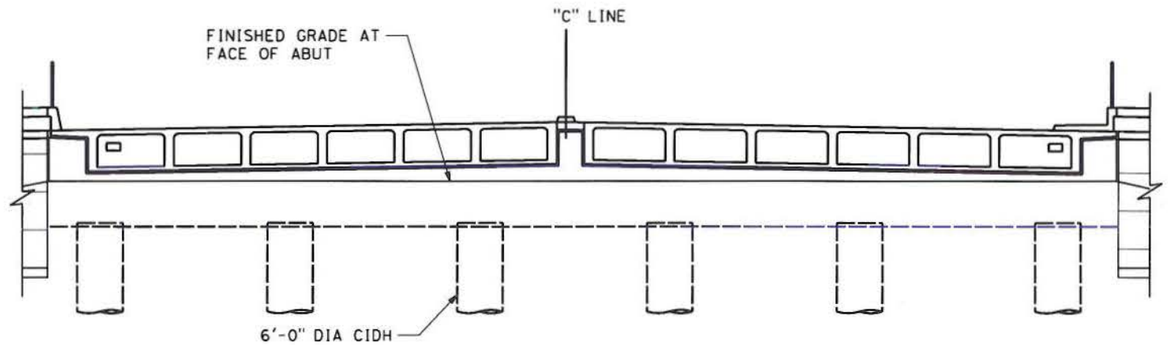
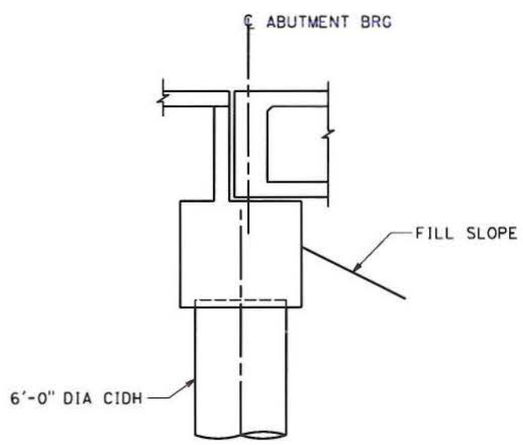


ABUTMENT ELEVATION
SCALE: 1" = 10'



ABUTMENT SECTION
SCALE: 1" = 5'-0"

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY P. WALKER
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 12/08/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
CLINTON AVE OVERCROSSING
CONSTRUCTION DETAIL NO. 1

CONTRACT NO.
DRAWING NO. ST-I1015
SCALE AS SHOWN
SHEET NO.

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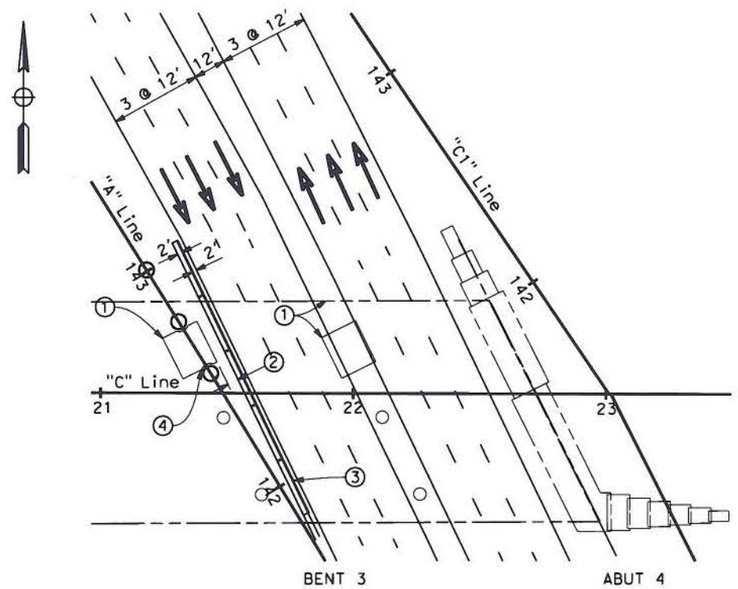
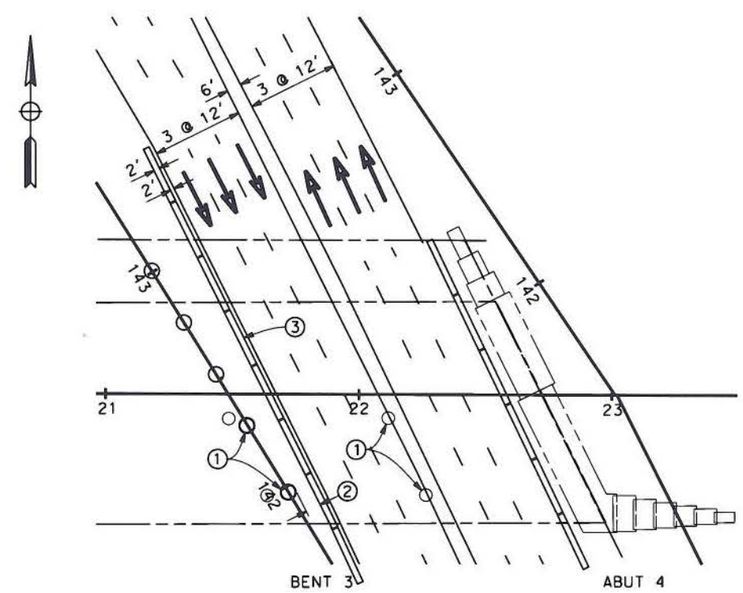


STAGE 1 PLAN AT BENT 3

SCALE: 1"=30'



STAGE 2 PLAN AT BENT 3

SCALE: 1"=30'

NOTES:

1. REMOVE SUPERSTRUCTURE, AND SUBSTRUCTURE TO 2' BELOW FG, DURING NIGHT CLOSURES
2. 6'-6" MINIMUM TO K-RAIL
3. TEMPORARY RAILING TYPE K
4. REMOVE PORTION OF EXISTING FOOTING

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY P. WALKER
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 12/08/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
CLINTON AVE OVERCROSSING
CONSTRUCTION DETAIL NO. 2

CONTRACT NO.
DRAWING NO. ST-I1016
SCALE: AS SHOWN
SHEET NO.

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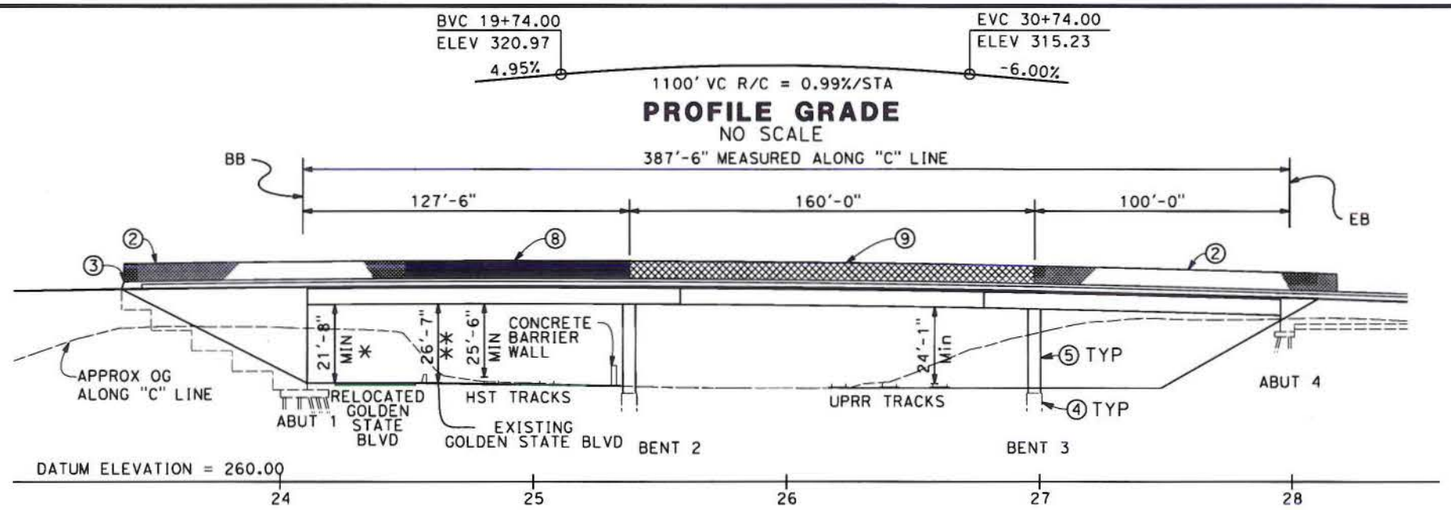


NOTES:

1. CONCRETE BARRIER (TYPE 26 MODIFIED)
2. CHAIN LINK RAILING (TYPE 7 MODIFIED)
3. CONCRETE BARRIER (TYPE 736 MODIFIED)
4. 6'-0" DIA CIDH PILE
5. 5'-6" DIA COLUMN
6. STRUCTURE APPROACH, TYPE N(30S)
7. EXISTING UPRR ROW TO BE CONFIRMED ON SITE
8. AR FENCE WITH SOLID PLATE
9. AR FENCE

* TEMPORARY FALSEWORK CLEARANCE = 19'-9"
FALSEWORK DEPTH = 1'-10"

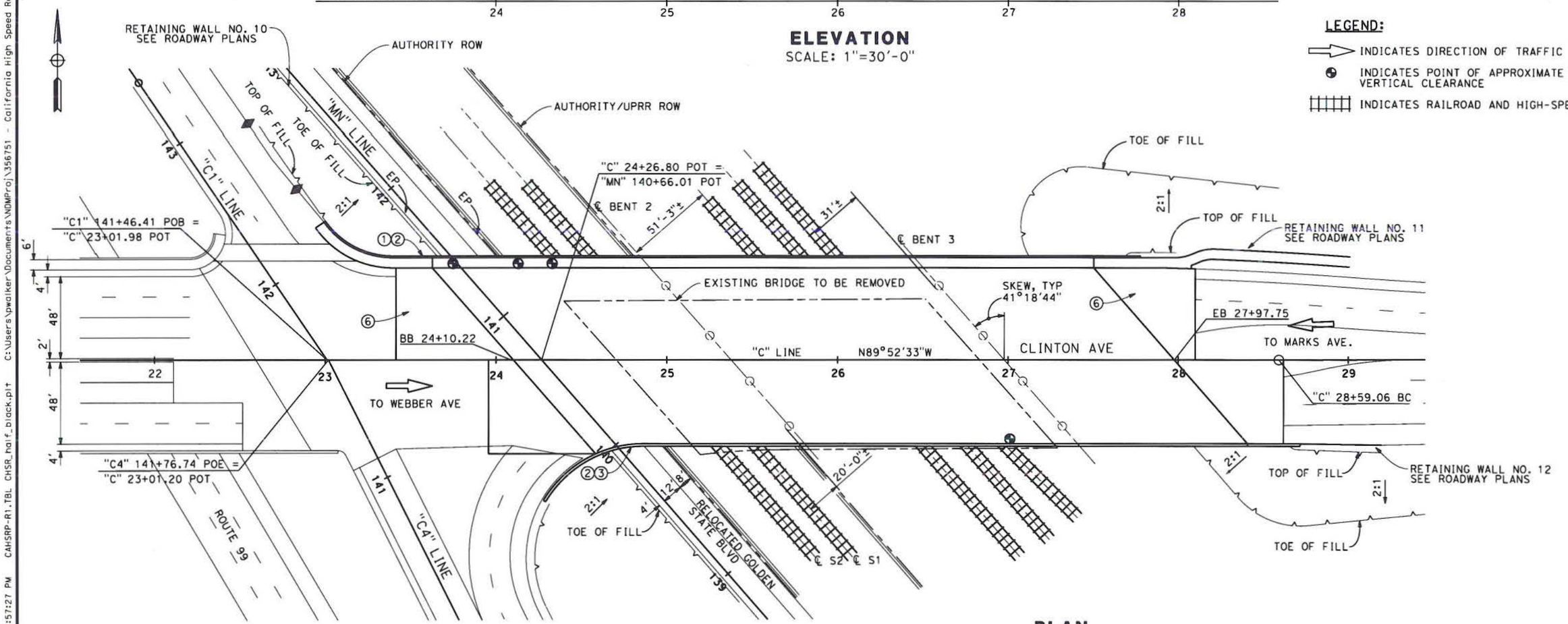
** TEMPORARY FALSEWORK CLEARANCE = 24'-8"
FALSEWORK DEPTH = 1'-10"

LEGEND:

INDICATES DIRECTION OF TRAFFIC

INDICATES POINT OF APPROXIMATE MINIMUM VERTICAL CLEARANCE

INDICATES RAILROAD AND HIGH-SPEED TRAIN TRACK



PLAN
SCALE: 1"=30'-0"

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY P. WALKER
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
FRESNO YARD OVERHEAD (CLINTON/UPRR)
GENERAL PLAN

CONTRACT NO.
DRAWING NO. ST-I1017
SCALE AS SHOWN
SHEET NO.

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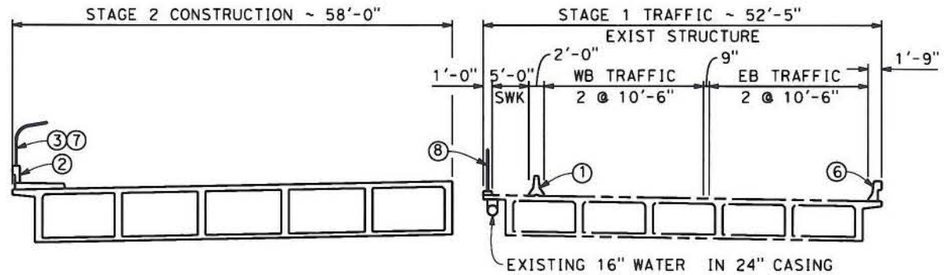
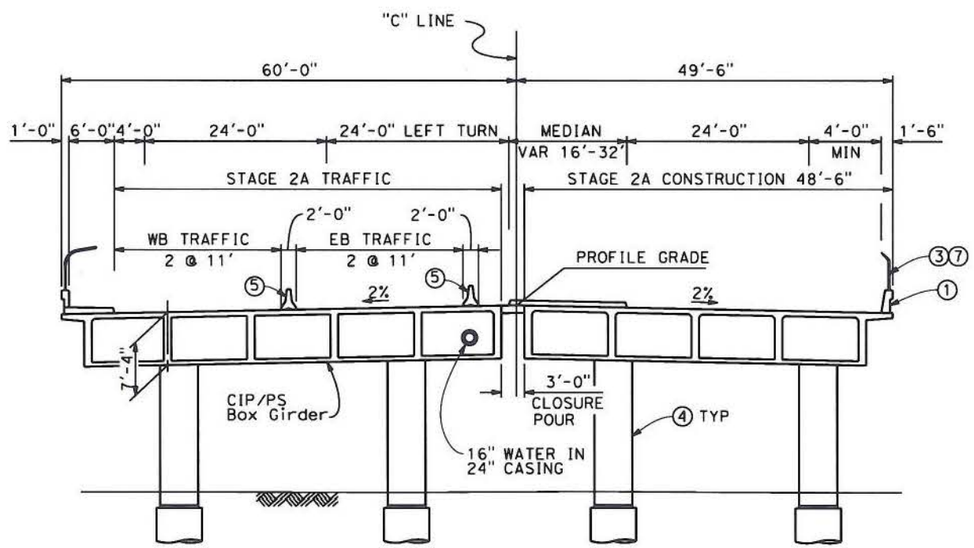
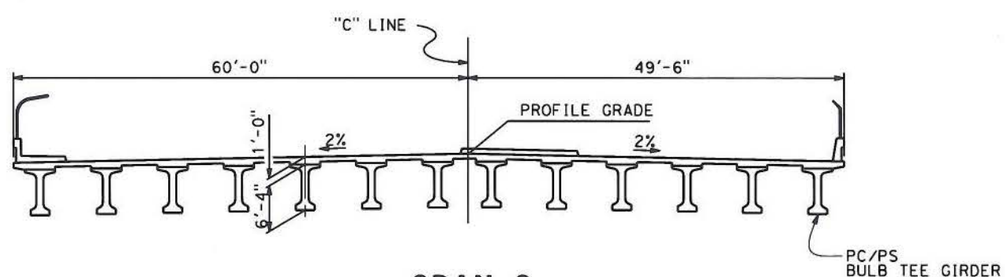


STAGE 1
SCALE: 1"=10'-0"



STAGE 2
SCALE: 1"=10'-0"



SPAN 2
SCALE: 1"=10'-0"

NOTES:

1. CONCRETE BARRIER (TYPE 26 MODIFIED)
2. CONCRETE BARRIER (TYPE 736 MODIFIED)
3. CHAIN LINK RAILING (TYPE 7 MODIFIED)
4. 5'-6" DIA COLUMN
5. TEMPORARY RAILING TYPE K
6. EXISTING BARRIER
7. AR FENCE
8. TEMPORARY CHAIN-LINK FENCE

STAGING NOTES:

STAGE 1:

SHIFT CLINTON AVE EB & WB TRAFFIC TO SOUTHERLY PORTION OF FRESNO YARD OH.

REMOVE NORTH PORTION OF FRESNO YARD OH.

CONSTRUCT NORTH PORTION OF FRESNO YARD OH.

STAGE 2:

SHIFT CLINTON AVE EB & WB TRAFFIC TO NEWLY CONSTRUCTED FRESNO YARD OH.

REMOVE REMAINING PORTION OF FRESNO YARD OH.

CONSTRUCT SOUTH PORTION OF FRESNO YARD OH.

CLOSURE POUR.

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY P. WALKER
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 12/08/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
FRESNO YARD OVERHEAD (CLINTON/UPRR)
TYPICAL SECTION

CONTRACT NO.
DRAWING NO. ST-I1018
SCALE AS SHOWN
SHEET NO.

pwalker 12/2/2011 2:58:42 PM CAHSRP-R1.TBL CHSR_half_block.plt C:\Users\pwalker\Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\X-1S-ST-K1014-R99.DGN

PILE DATA TABLE (PRELIMINARY)

LOCATION	PILE TYPE	NOMINAL RESISTANCE (kips)		APPROXIMATE PILE CUT-OFF ELEV. (FT)	APPROXIMATE DESIGN TIP ELEV. (FT)	EMBEDDED PILE LENGTH (FT)
		COMPRESSION	TENSION			
ABUTMENT 1	CLASS 140 ALT. "X"	280	0	294.00±	TBD	TBD
BENT 2	6' DIA. CIDH	6270	0	294.00±	TBD	TBD
BENT 3	6' DIA. CIDH	5440	0	294.00±	TBD	TBD
ABUTMENT 4	CLASS 140 ALT. "X"	280	0	317.00±	TBD	TBD

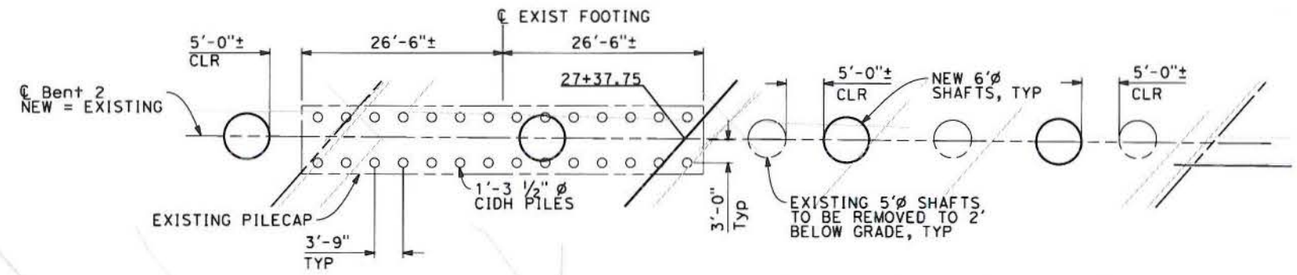
NOTE: DESIGN TIP ELEVATIONS ARE TO BE DETERMINED BY CONTRACTOR

LEGEND:

- XXX.XX — INDICATES BOTTOM OF FOOTING ELEVATION
- INDICATES NEW PILE
- INDICATES NEW BATTER PILE
- INDICATES CIDH PILE
- INDICATES EXISTING STRUCTURE

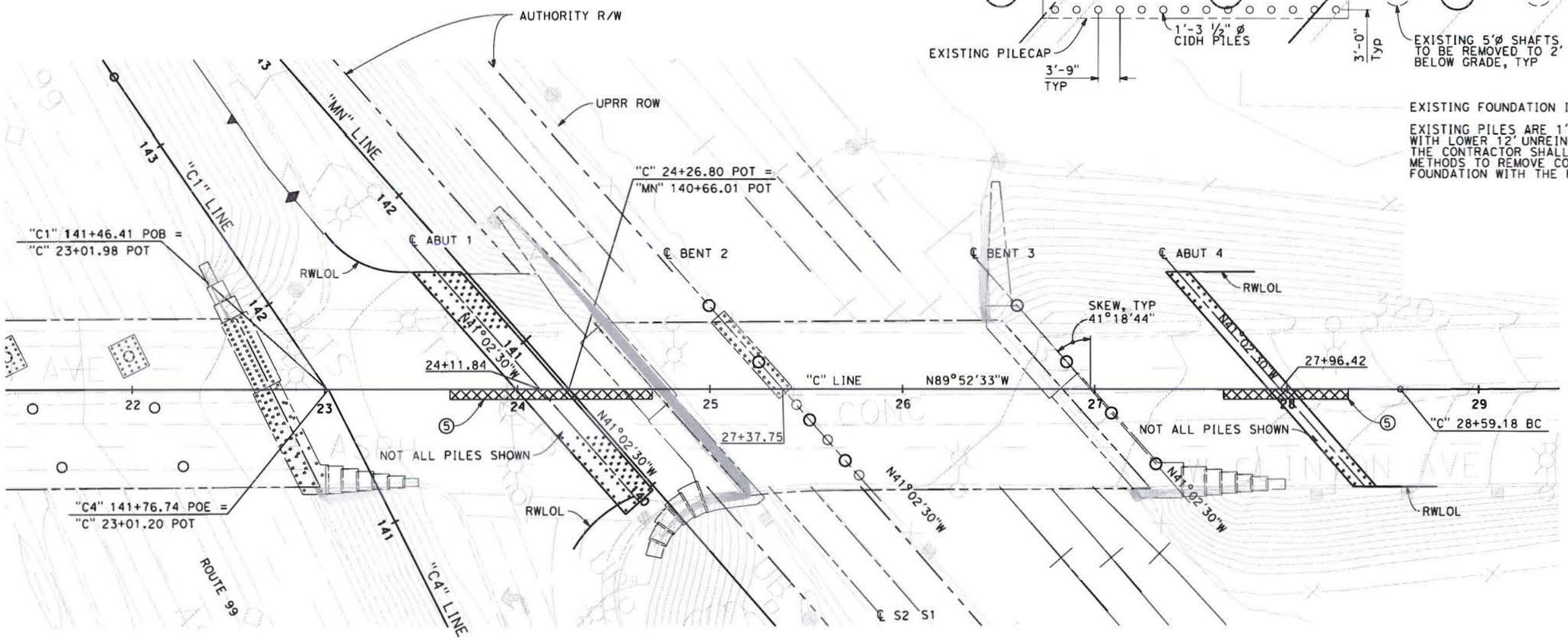
NOTES:

1. EXISTING BRIDGE SUBSTRUCTURE AND UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY CONTROLLING DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UNDERGROUND AND OVERHEAD UTILITIES TO BE DETERMINED AND RELOCATED AS NEEDED PRIOR CONSTRUCTION.
3. RIGHT OF WAY LIMITS ARE APPROXIMATE AND TO BE CONFIRMED BY THE CONTRACTOR.
4. REMOVE EXISTING SUBSTRUCTURE 2' MINIMUM BELOW FINISHED GRADE.
5. TEMPORARY SHORING



EXISTING FOUNDATION INFORMATION SHOWN IS APPROXIMATE.

EXISTING PILES ARE 1'-3 1/2" CIDH PILES, 21' IN LENGTH, WITH LOWER 12' UNREINFORCED. IN ADVANCE OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL, PROPOSED METHODS TO REMOVE CONFLICTING PORTIONS OF THE EXISTING FOUNDATION WITH THE PROPOSED NEW FOUNDATION.



PLAN
SCALE: 1"=30'-0"

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY P. WALKER
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 12/08/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

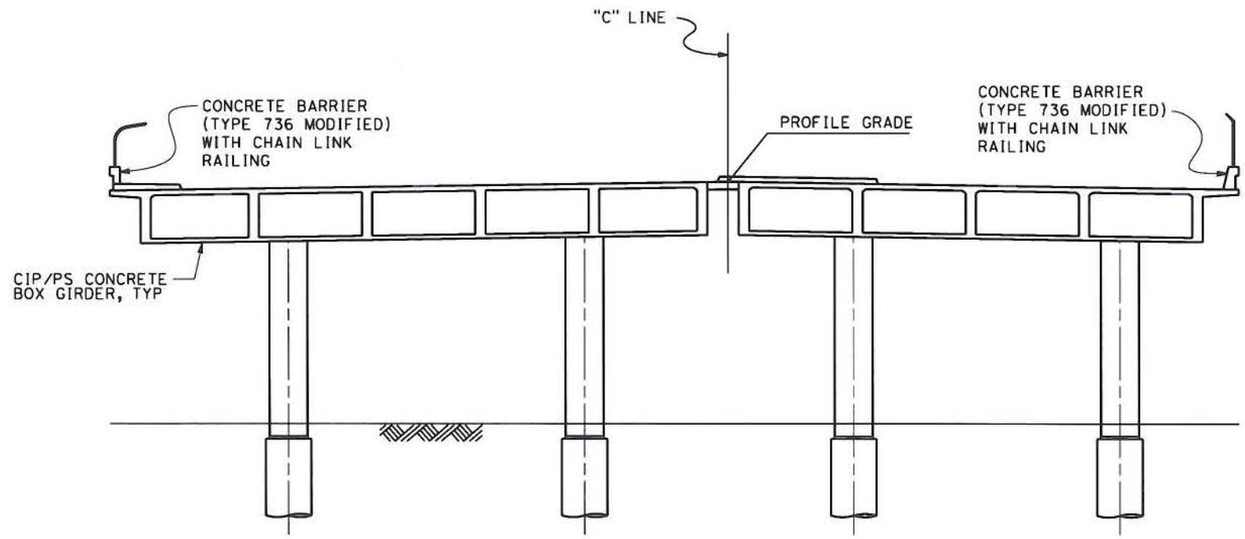
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
FRESNO YARD OVERHEAD (CLINTON/UPRR)
FOUNDATION PLAN

CONTRACT NO.
DRAWING NO. ST-I1019
SCALE AS SHOWN
SHEET NO.

pwalker 12/2/2011 2:42:19 PM CAHSRP-R1.TBL CHSR_half_black.plt C:\Users\pwalker\Documents\NDMProj\356751 - California High Speed Rail - SR99 Improvements\X-1S-ST-K1015-R99.DGN



BENT ELEVATION
SCALE: 1"=10'-0"

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY M. MIYAMOTO
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 12/08/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
FRESNO YARD OVERHEAD (CLINTON/UPRR)
BENT ELEVATION

CONTRACT NO.
DRAWING NO. ST-I1020
SCALE AS SHOWN
SHEET NO.

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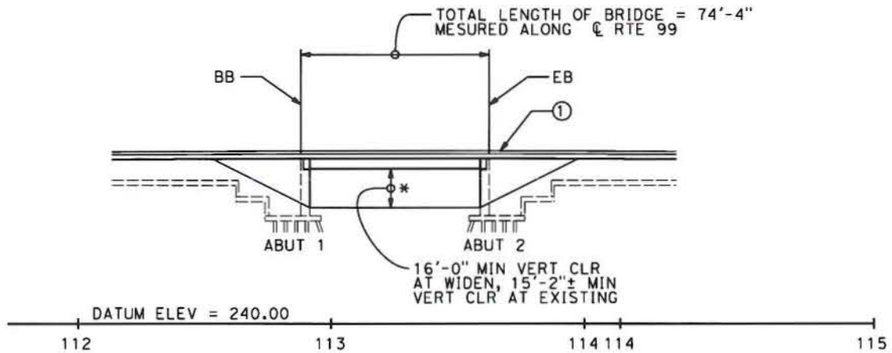
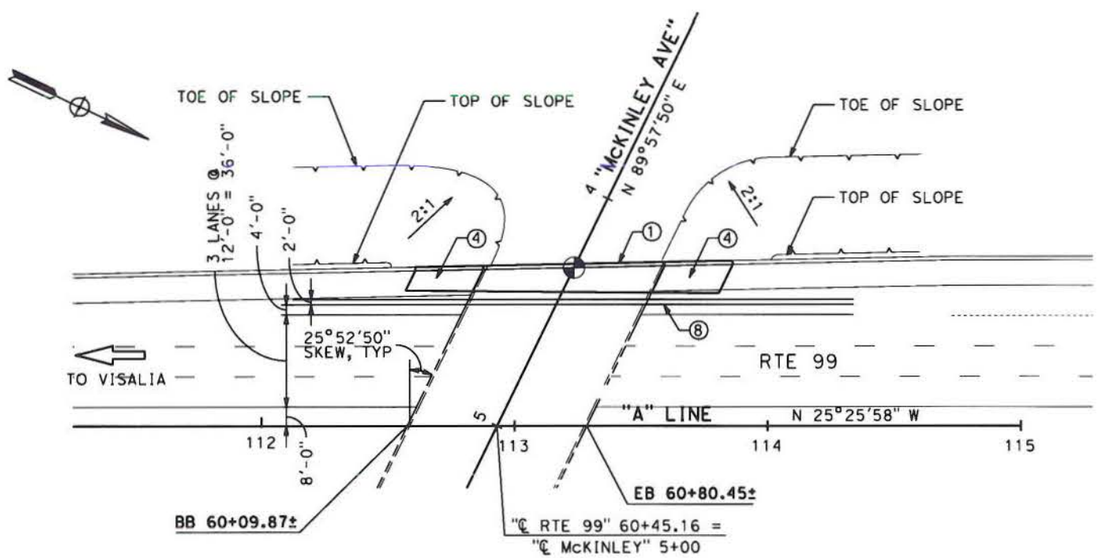


MIRRORED ELEVATION
SCALE: 1"=30'



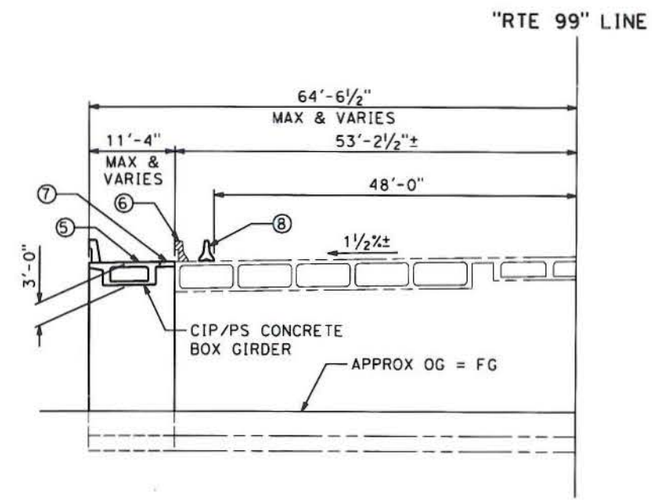
PLAN
SCALE: 1"=30'

NOTES:

① CONCRETE BARRIER (TYPE 736 MODIFIED)
② FOR UTILITY INFORMATION, SEE UTILITY BASE MAP PLANS
③ PAINT "McKINLEY AVE UC" AMD "BR NO 43-181 R/L"
④ STRUCTURE APPROACH, TYPE N (305)
⑤ MATCH EXISTING GRADE AND X-SLOPE
⑥ REMOVE EXISTING RAILING
⑦ 2'-0" CLOSURE POUR
⑧ TEMPORARY RALING (TYPE K)
* STRUCTURE TO BE CAST ON FALSEWORK AND LOWERED INTO PLACE

LEGEND:

INDICATES DIRECTION OF TRAFFIC
INDICATES APPROXIMATE POINT OF MIN VERTICAL CLEARANCE
INDICATES CLEARANCE LINE
INDICATES EXISTING STRUCTURE
INDICATES CONCRETE REMOVAL



TYPICAL SECTION
SCALE: 1"=10'

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY M. MIYAMOTO
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 12/08/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
MCKINLEY BLVD UNDERCROSSING (WIDEN)
GENERAL PLAN

CONTRACT NO.
DRAWING NO. ST-I1021
SCALE AS SHOWN
SHEET NO.

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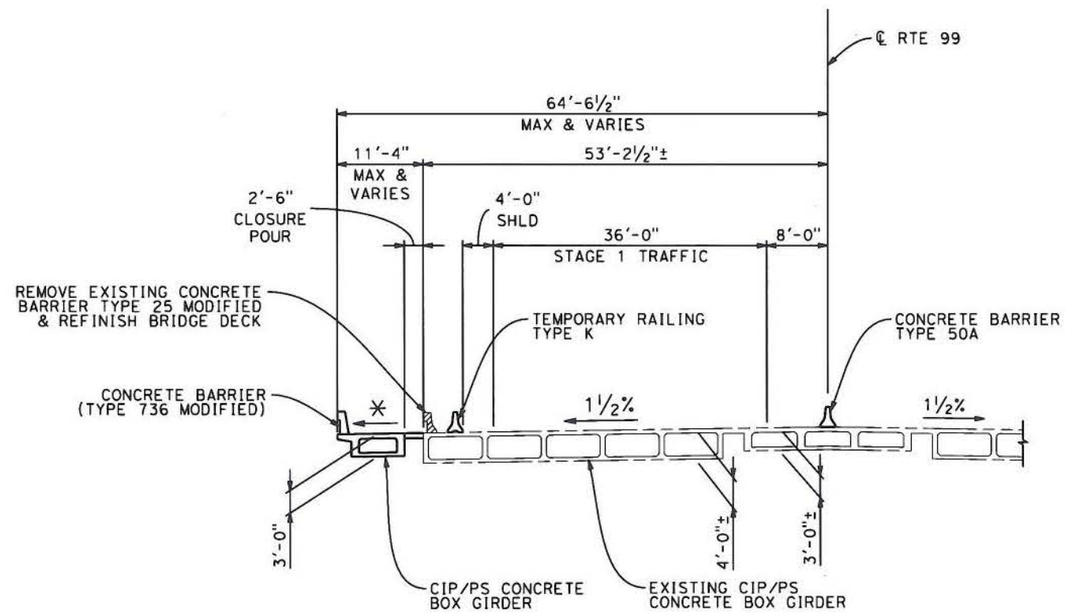

NOTES:

* MATCH EXISTING GRADE AND X-SLOPE

TYPICAL SECTION
SCALE: 1" = 10'-0"

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY M. MIYAMOTO
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 12/08/11

PROPOSED PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
MCKINLEY BLVD UNDERCROSSING (WIDEN)
TYPICAL SECTION

CONTRACT NO.
DRAWING NO. ST-I1022
SCALE AS SHOWN
SHEET NO.

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PILE DATA TABLE (PRELIMINARY)

LOCATION	PILE TYPE	NOMINAL RESISTANCE (kips)		APPROXIMATE PILE CUT-OFF ELEV. (FT)	APPROXIMATE DESIGN TIP ELEV. (FT)	EMBEDDED PILE LENGTH (FT)
		COMPRESSION	TENSION			
ABUTMENT 1	CLASS 140 ALT. "X"	280	0	N/A	TBD	TBD
ABUTMENT 2	CLASS 140 ALT. "X"	280	0	N/A	TBD	TBD

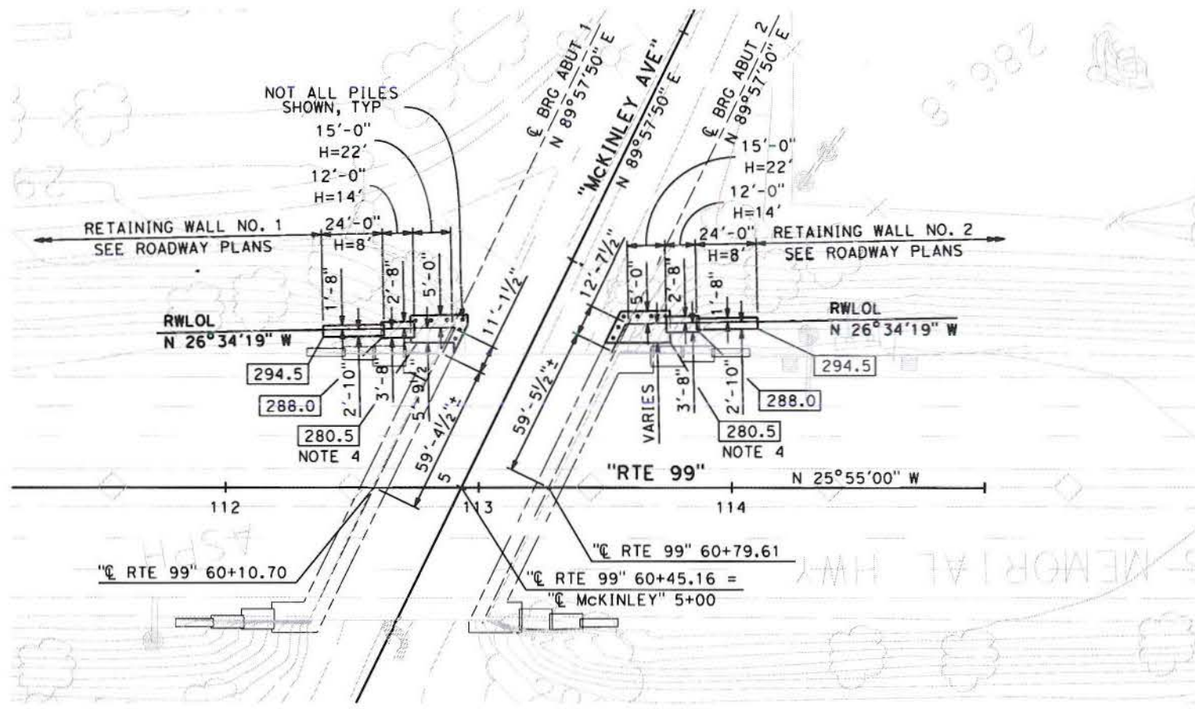
NOTE: DESIGN TIP ELEVATIONS ARE TO BE DETERMINED BY CONTRACTOR

LEGEND:

- INDICATES BOTTOM OF FOOTING ELEVATION
- O INDICATES PC/PS PILE
- INDICATES EXISTING STRUCTURE

NOTES:

1. EXISTING BRIDGE, SUBSTRUCTURE, AND UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY CONTROLLING DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXISTING UNDERGROUND AND OVERHEAD UTILITIES TO BE DETERMINED AND RELOCATED AS NEEDED PRIOR TO CONSTRUCTION.
3. RIGHT OF WAY LIMITS ARE APPROXIMATE AND TO BE CONFIRMED BY THE CONTRACTOR
4. MATCH EXISTING FOOTING ELEVATION



PLAN
SCALE: 1"=30'

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY D. FREDERICKS
DRAWN BY M. MIYAMOTO
CHECKED BY H. STRANDGAARD
IN CHARGE F. NOBARI
DATE 12/08/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
MERCED TO FRESNO
PACKAGE 1A
ROADWAY
MCKINLEY BLVD UNDERCROSSING (WIDEN)
FOUNDATION PLAN

CONTRACT NO.
DRAWING NO. ST-I1023
SCALE AS SHOWN
SHEET NO.

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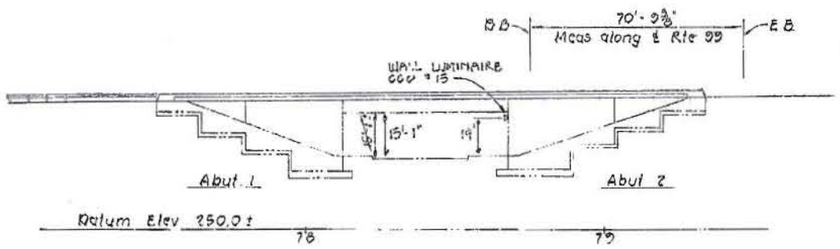
DIST.	COUNTY	ROUTE	POST MILES - TOTAL PROJECT	SHEET	TOTAL SHEETS
06	Fre	99	21.3/27.3	114	140

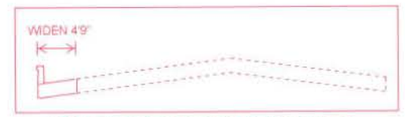
CHIEF, OFFICE OF STRUCTURES DESIGN — REGISTERED CIVIL ENGINEER NUMBER 11428

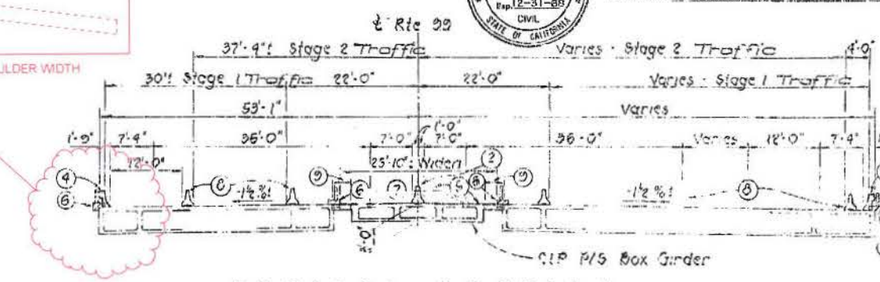
DATE APPROVED February 2, 1987

REGISTERED PROFESSIONAL ENGINEER — J E ROBERTS No. 11428 Exp. 12-31-88 CIVIL — STATE OF CALIFORNIA



ELEVATION
1" = 20'

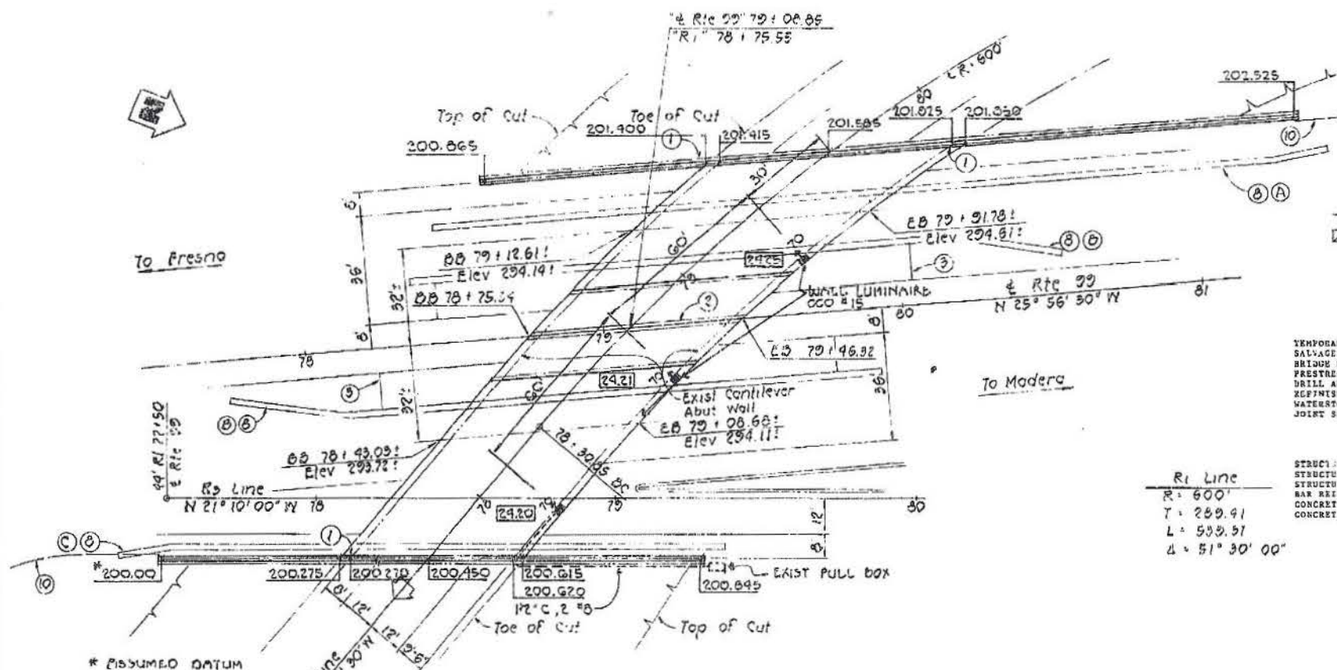




TYPICAL SECTION
1" = 10'

1. Paint "N Fresno UC" (Color No 42-182 BL).
2. Concrete Barrier Type 50A.
3. Approach Slab Type 2, See "Road Plans".
4. Concrete Barrier Type 25 Modified
5. Match exist Grade & X-Slope.
6. Remove exist curb & salvage steel railing.
7. Exist Profile Grade.
8. Temporary Railing (Type K) (A) L = 300'-0" (B) L = 220'-0" (C) L = 200'-0"
9. 2'-11"± Closure Pour.

---- Indicates exist structure.
▨ Indicates concrete removal.
⊕ Indicates point of min vert clr.
10. MBGR, see 'Road Plans'



* ASSUMED DATUM

[24.21] : INDICATES LUMINAIRE I.D. NUMBER.

PLAN
1" = 20'

℄ Line	
R =	600'
T =	259.91
L =	533.51
Δ =	51° 30' 00"

APPROXIMATE QUANTITIES

TEMPORARY RAILING (TYPE K)	1,180	LF
SALVAGE METAL BRIDGE RAILING	670	LF
BRIDGE REMOVAL (PORTION), LOCATION B	LUMP	SUM
PRESTRESSING CAST-IN-PLACE CONCRETE	LUMP	SUM
DRILL AND BOND DOWEL	150	LF
REFINISH BRIDGE DECK	216	SQFT
WATERSTOP	92	LF
JOINT SEAL (TYPE 3-NR 1")	22	LF

FINAL PAY QUANTITIES

STRUCTURE EXCAVATION (BRIDGE)	30	CY
STRUCTURE BACKFILL (BRIDGE)	10	CY
STRUCTURAL CONCRETE, BRIDGE	130	CY
BAR REINFORCING STEEL (BRIDGE)	24,100	LB
CONCRETE BARRIER (TYPE 25 MODIFIED)	450	LF
CONCRETE BARRIER (TYPE 50A)	71	LF

INDEX TO PLANS

SHEET NO.	TITLE
1	GENERAL PLAN
2	FOUNDATION PLAN
3	ABUTMENT DETAILS
4	TYPICAL SECTION
5	GIRDER LAYOUT
6	LOG OF TEST BORINGS

STANDARD PLANS DATED JULY 1984

A62-C	EXCAVATION AND BACKFILL - BRIDGE
B0-1	BRIDGE DETAILS
B0-5	BRIDGE DETAILS
B0-13	BRIDGE DETAILS
B6-21	JOINT SEALS
B7-1	BOX GIRDER DETAILS
B8-5	CAST-IN-PLACE PRESTRESSED GIRDER DETAILS
B11-50	TEMPORARY RAILING (TYPE K)
B11-53	CONCRETE BARRIER TYPE 25
A76-A	CONCRETE BARRIER TYPE 50

AS BUILT 21 1-26-89
CORRECTIONS BY RA YAEGER
CONTRACT NO. 06-085404
DATE 12-6-88

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

Standard Plan Sheet No.
Detail No.

For General Notes, see "Foundation Plan" sheet.

Registered Engineer 1/87 25712	DESIGN	J Roberts	J Stoner 4/86	LOAD FACTOR DESIGN	LIVE LOADING: HS20-44 AND ALTERNATIVE AND PERMIT DESIGN LOAD	State of CALIFORNIA DEPARTMENT OF TRANSPORTATION	STRUCTURES - DESIGN 12
RC Nov 1/87 13523	DETAILS	J Uyeno	Ken Yeung 9/86	LAYOUT	Ken Yeung 4/86		Ken Yeung 34742
	QUANTITIES	Amor Bato 5-86	T FLORES 9/86	SPECIFICATIONS	Fred J C Massey		PROJECT ENGINEER — REGISTERED CIVIL ENGINEER

BRIDGE NO. 42-182 R
POST MILE 24.2

NORTH FRESNO UNDERCROSSING (WIDEN)

GENERAL PLAN

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 06200
WO 085401

Disregard prints bearing earlier revision dates

REVISION DATES (MM/DD/YR) (STATE ONLY)

SHEET 1 OF 6

114

AS BUILT PLANS
Contract No. 06-085404
Date Completed 12/06/88
Document No.

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA, PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.

Attachment 6
Construction Staging Concept Plan

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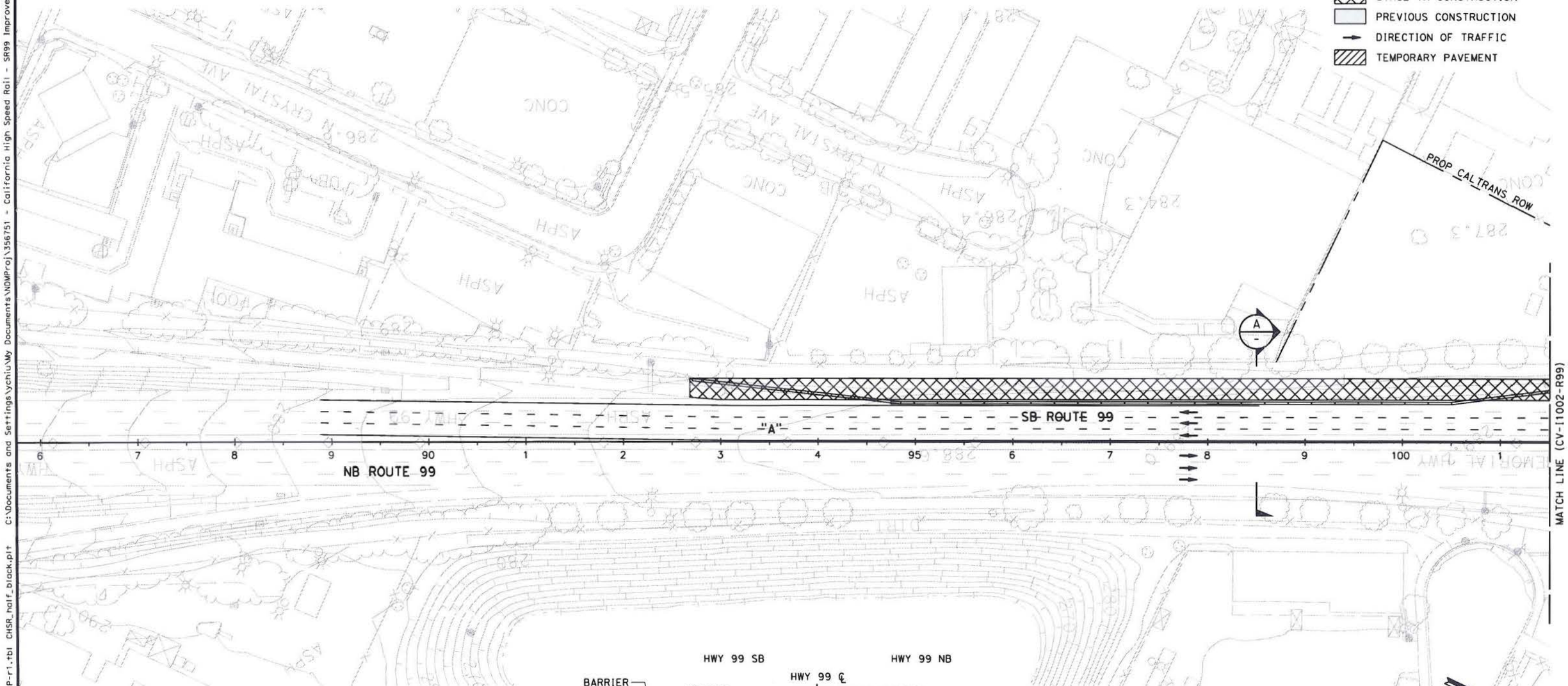
ychiu

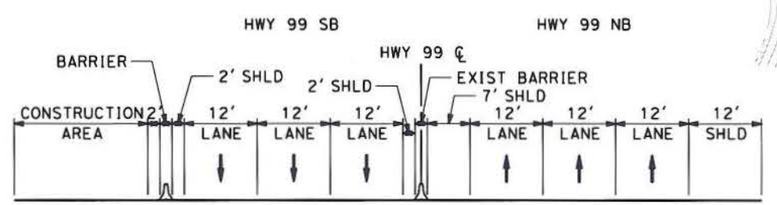
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.

LEGEND:

- STAGE 1A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT





SECTION A

50 0 50 100
1"=50'
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1001-R99
SCALE AS SHOWN
SHEET NO.

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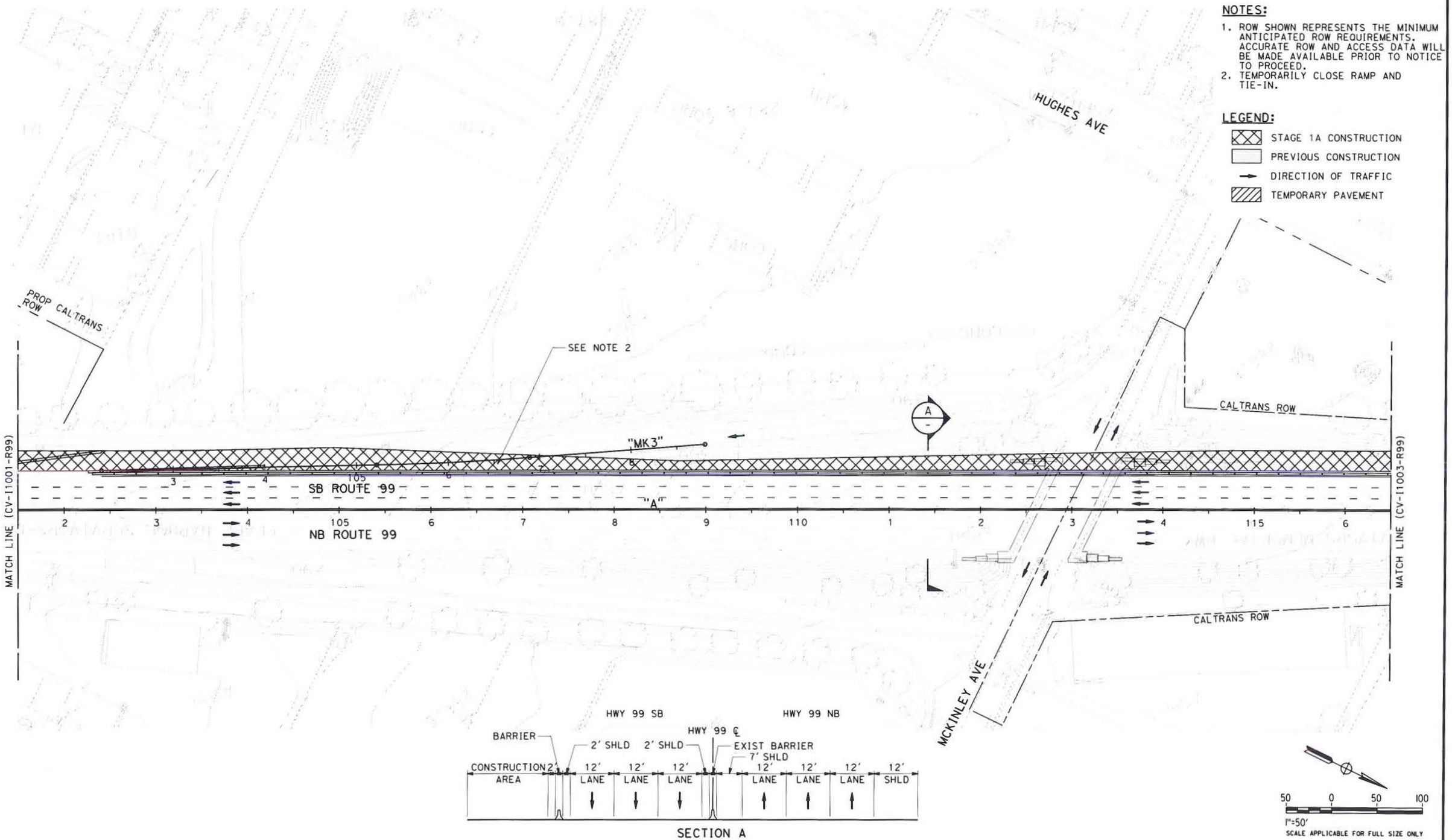

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. TEMPORARILY CLOSE RAMP AND TIE-IN.

LEGEND:

- STAGE 1A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1002-R99
SCALE AS SHOWN
SHEET NO.

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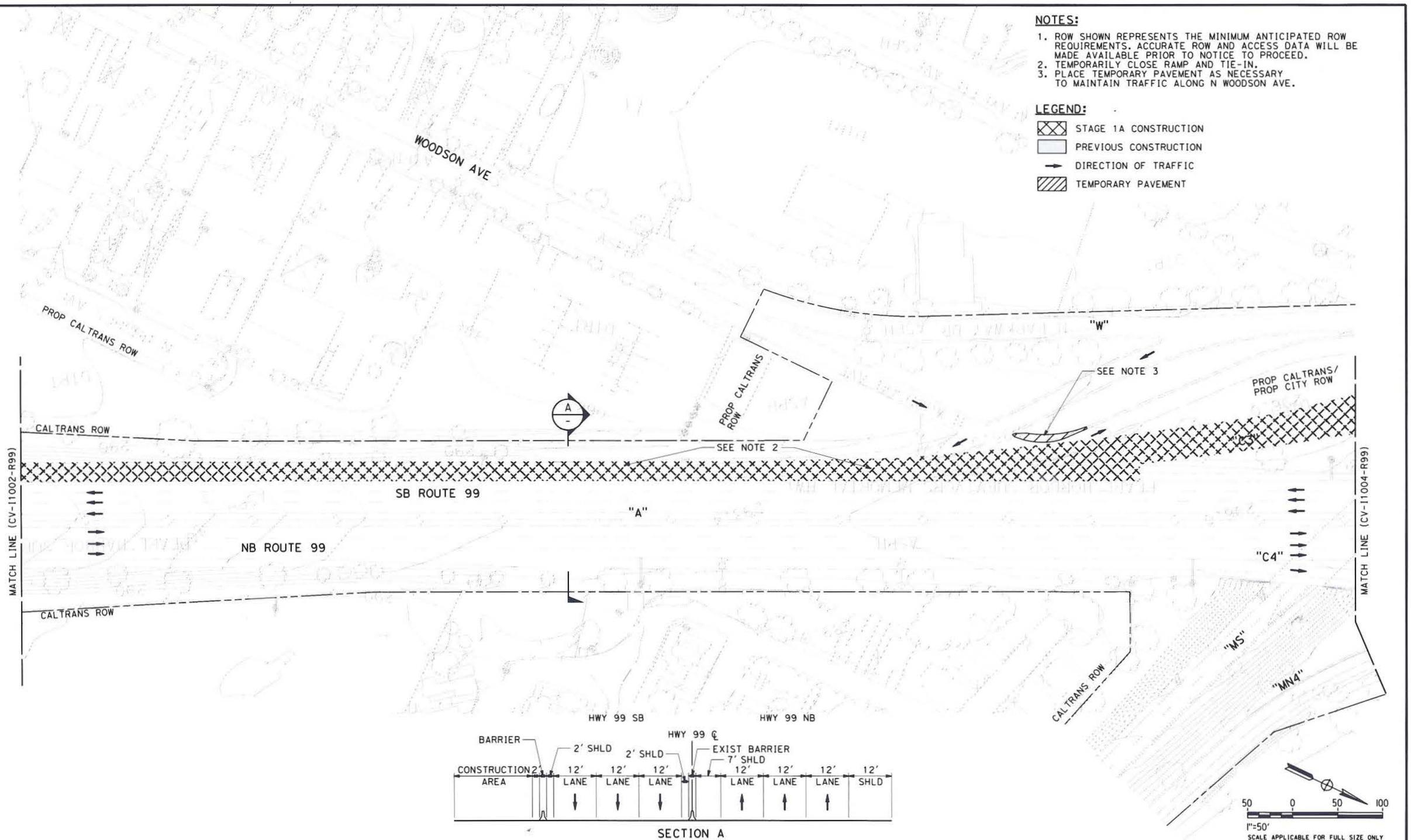
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. TEMPORARILY CLOSE RAMP AND TIE-IN.
3. PLACE TEMPORARY PAVEMENT AS NECESSARY TO MAINTAIN TRAFFIC ALONG N WOODSON AVE.

LEGEND:

- STAGE 1A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1A
SR 99 RE-ALIGNMENT

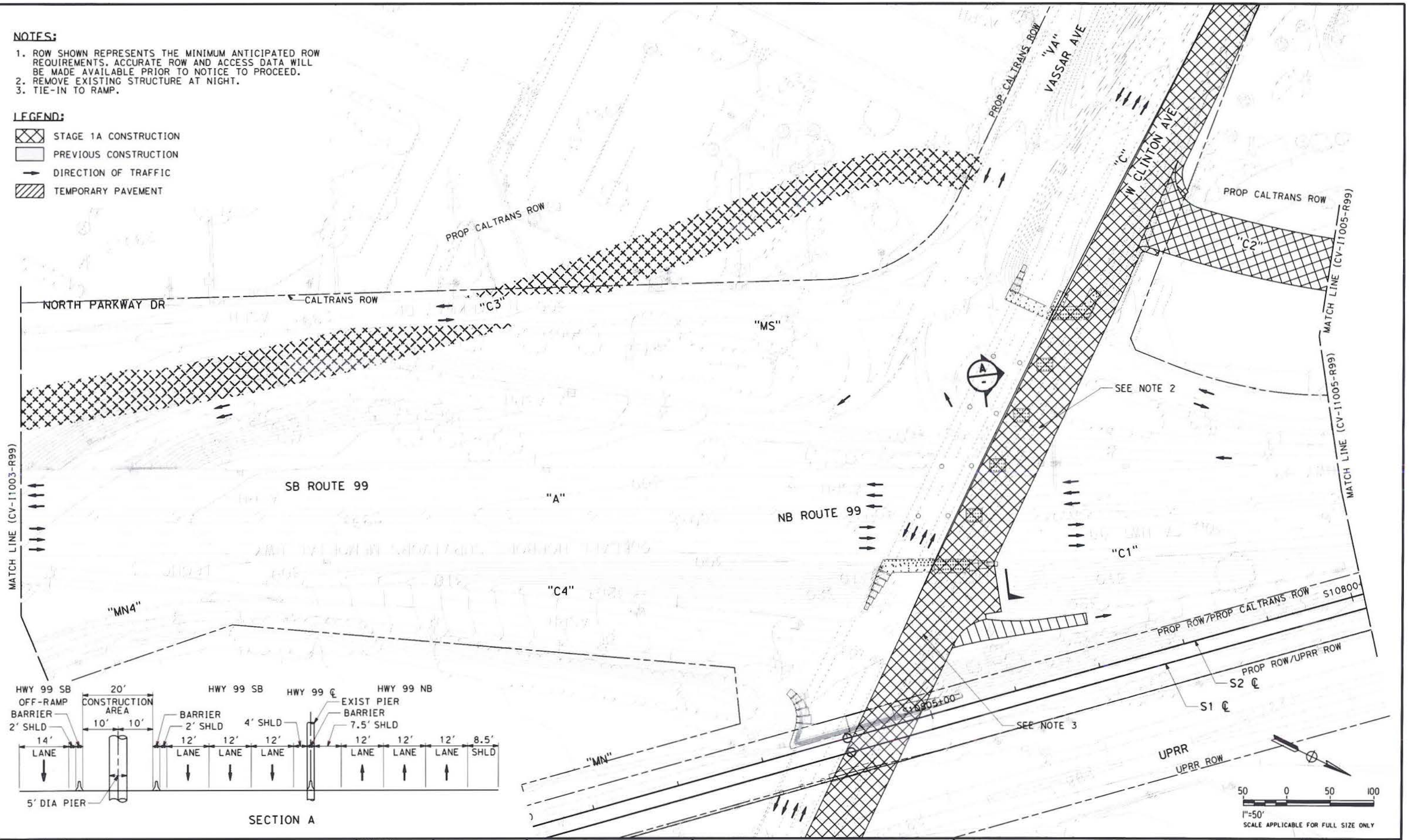
CONTRACT NO.
DRAWING NO. CV-11003-R99
SCALE AS SHOWN
SHEET NO.

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. REMOVE EXISTING STRUCTURE AT NIGHT.
3. TIE-IN TO RAMP.

LEGEND:

- STAGE 1A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1004-R99
SCALE AS SHOWN
SHEET NO.

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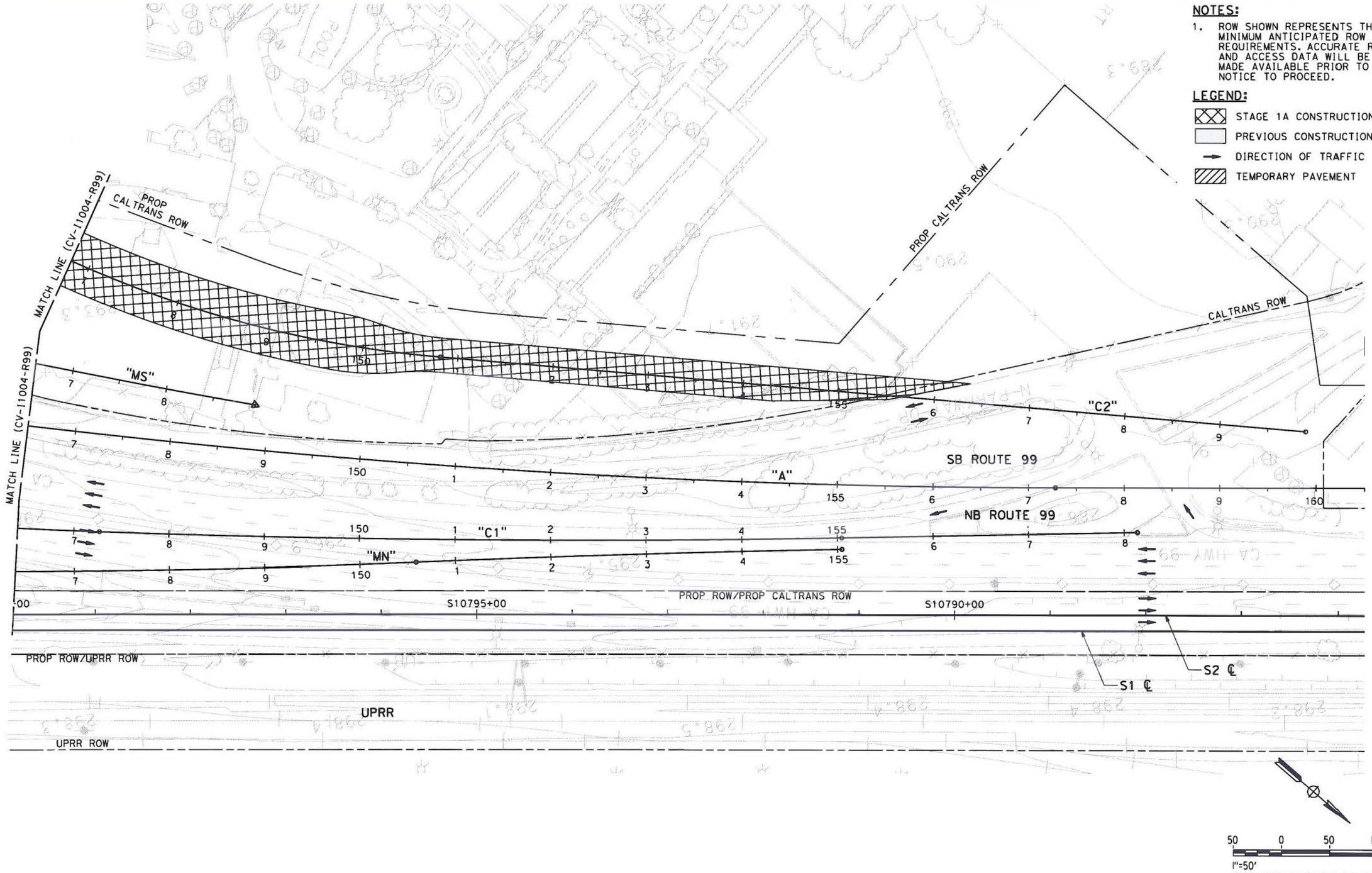

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.

LEGEND:

- STAGE 1A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT

REV	DATE	BY	CHK	APP	DESCRIPTION

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1A
SR 99 RE-ALIGNMENT

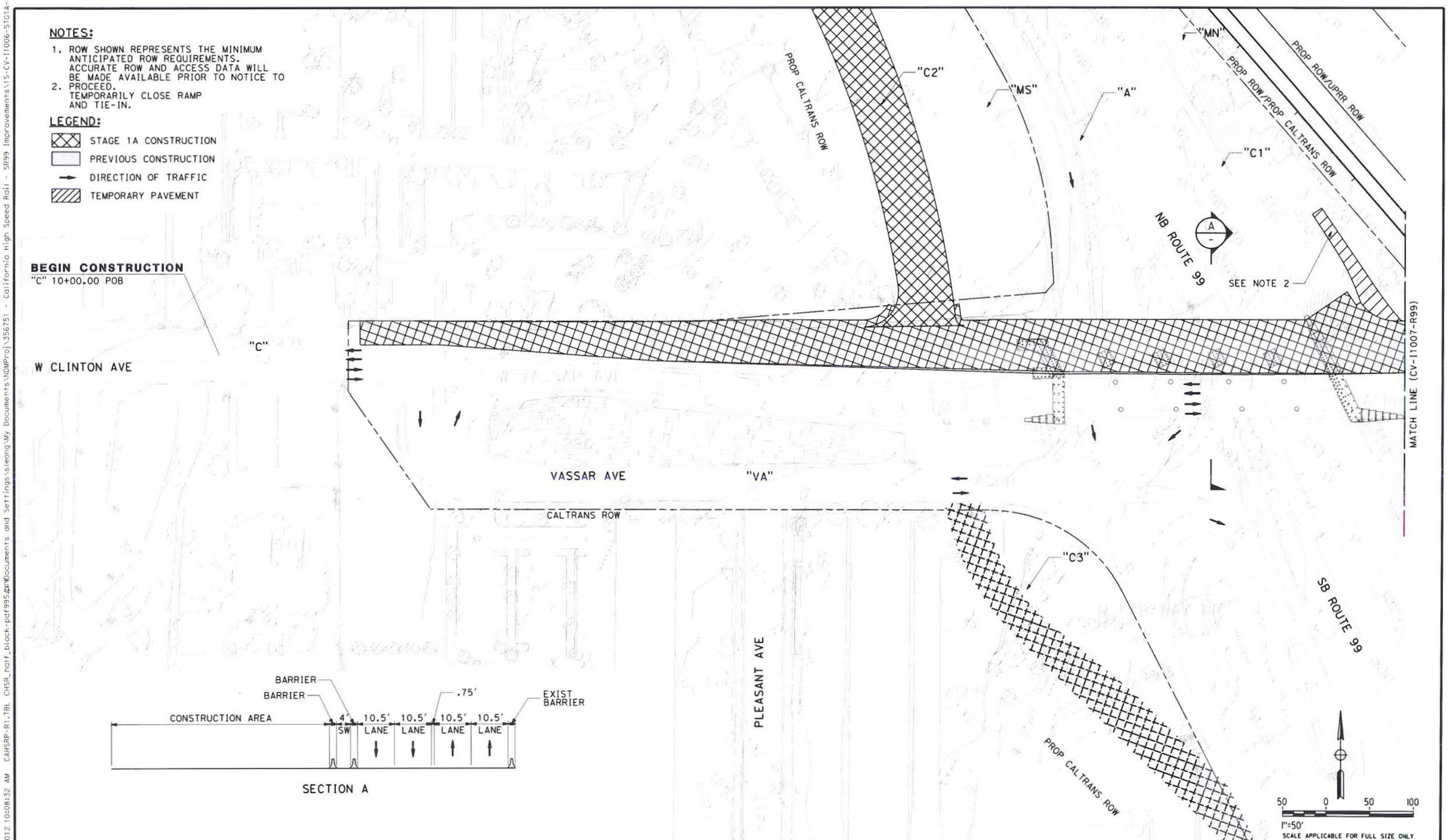
CONTRACT NO.
DRAWING NO. CV-11005-R99
SCALE AS SHOWN
SHEET NO.

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. TEMPORARILY CLOSE RAMP AND TIE-IN.

LEGEND:

- STAGE 1A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1006-R99
SCALE AS SHOWN
SHEET NO.

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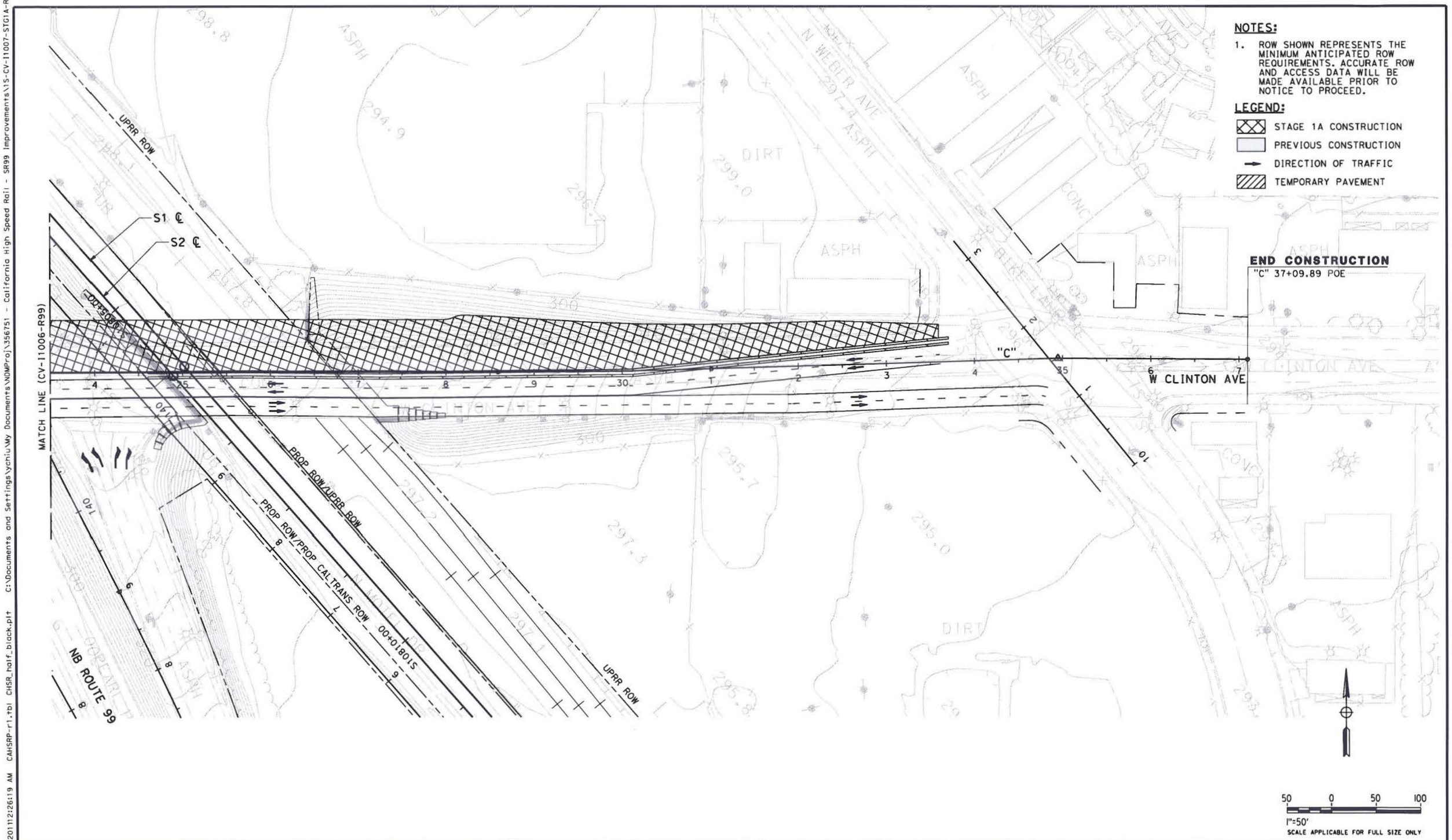

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1007-R99
SCALE AS SHOWN
SHEET NO.

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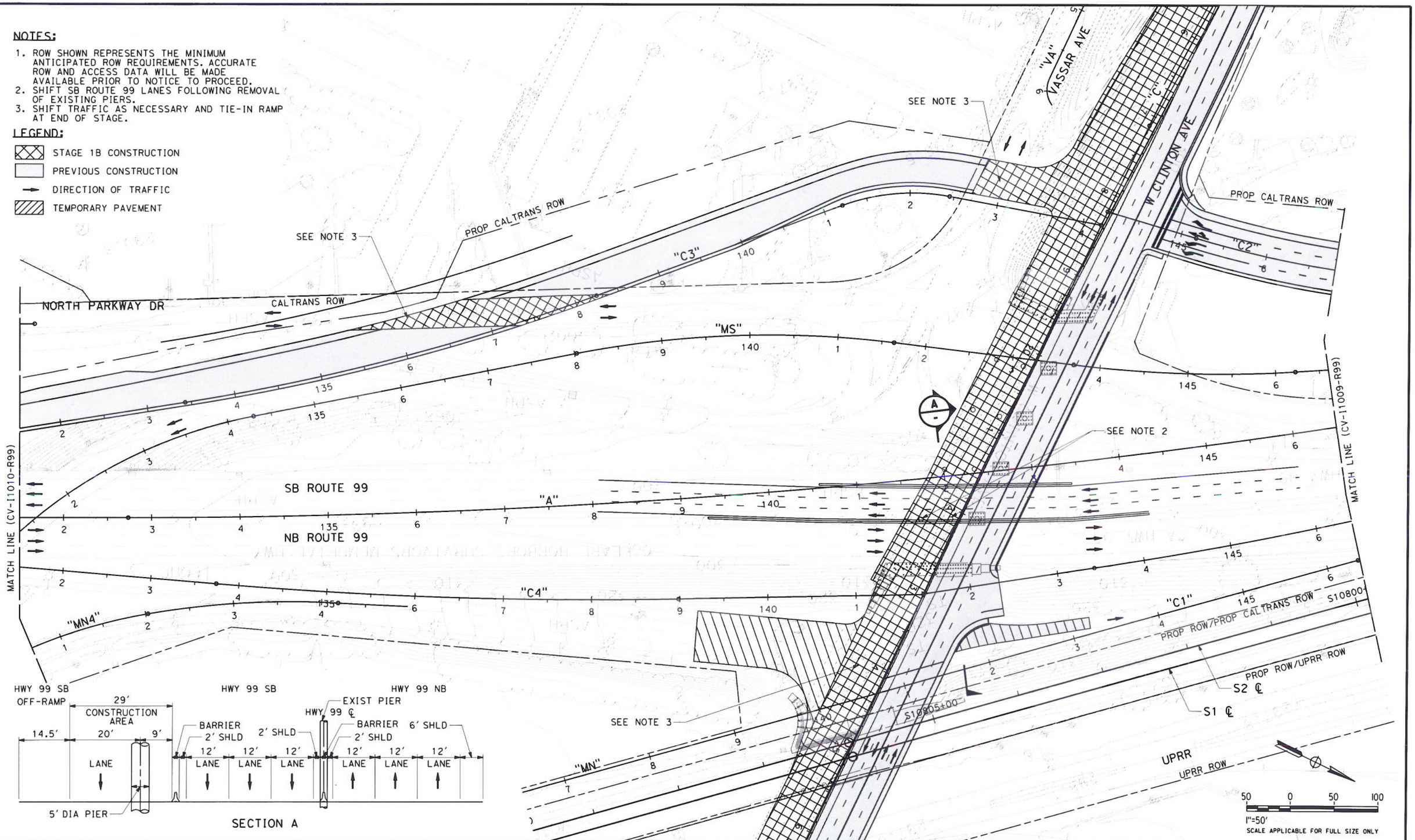
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SHIFT SB ROUTE 99 LANES FOLLOWING REMOVAL OF EXISTING PIERS.
3. SHIFT TRAFFIC AS NECESSARY AND TIE-IN RAMP AT END OF STAGE.

LEGEND:

- STAGE 1B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1008-R99
SCALE AS SHOWN
SHEET NO.

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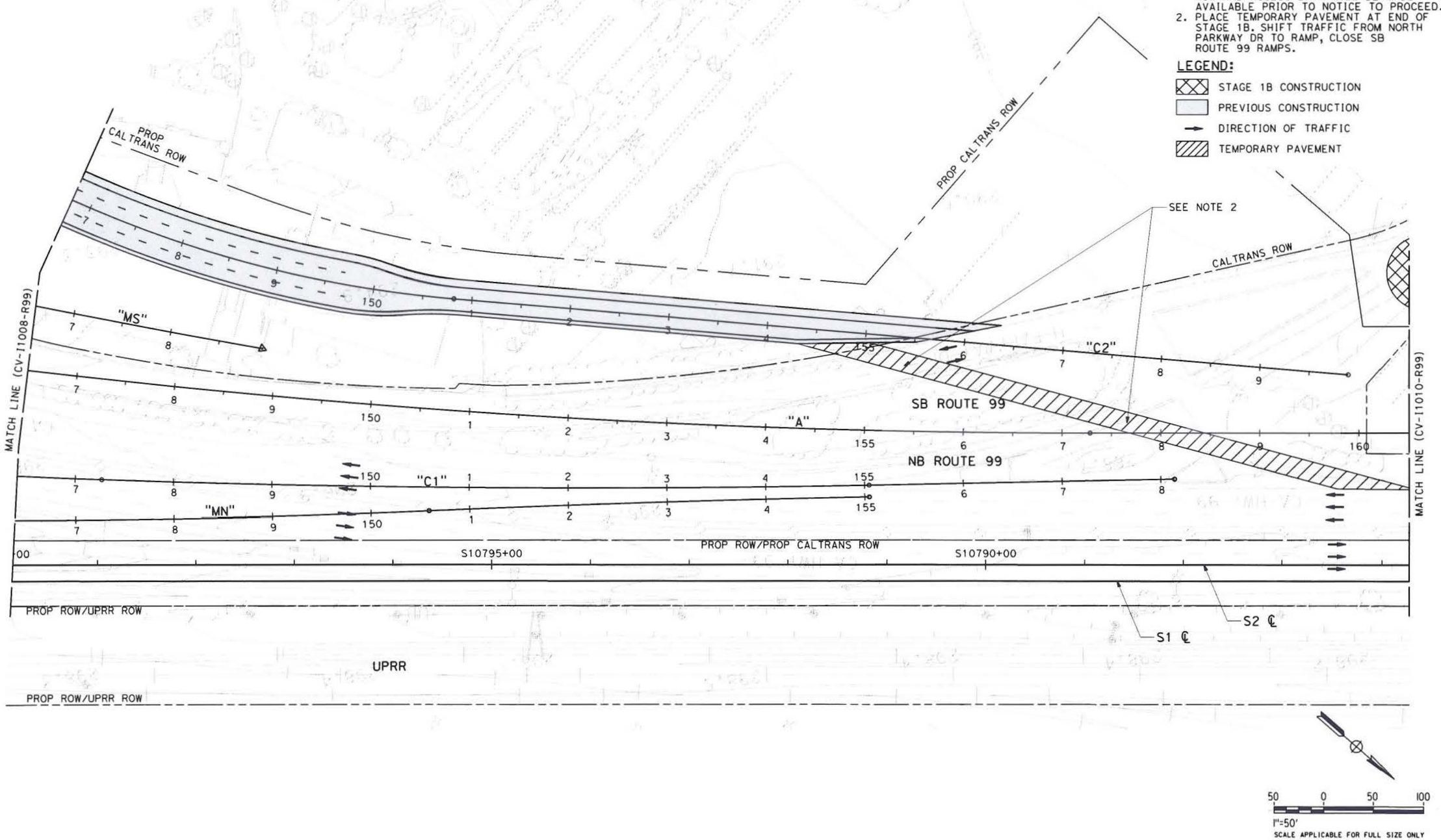
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. PLACE TEMPORARY PAVEMENT AT END OF STAGE 1B. SHIFT TRAFFIC FROM NORTH PARKWAY DR TO RAMP, CLOSE SB ROUTE 99 RAMPS.

LEGEND:

- STAGE 1B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

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DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

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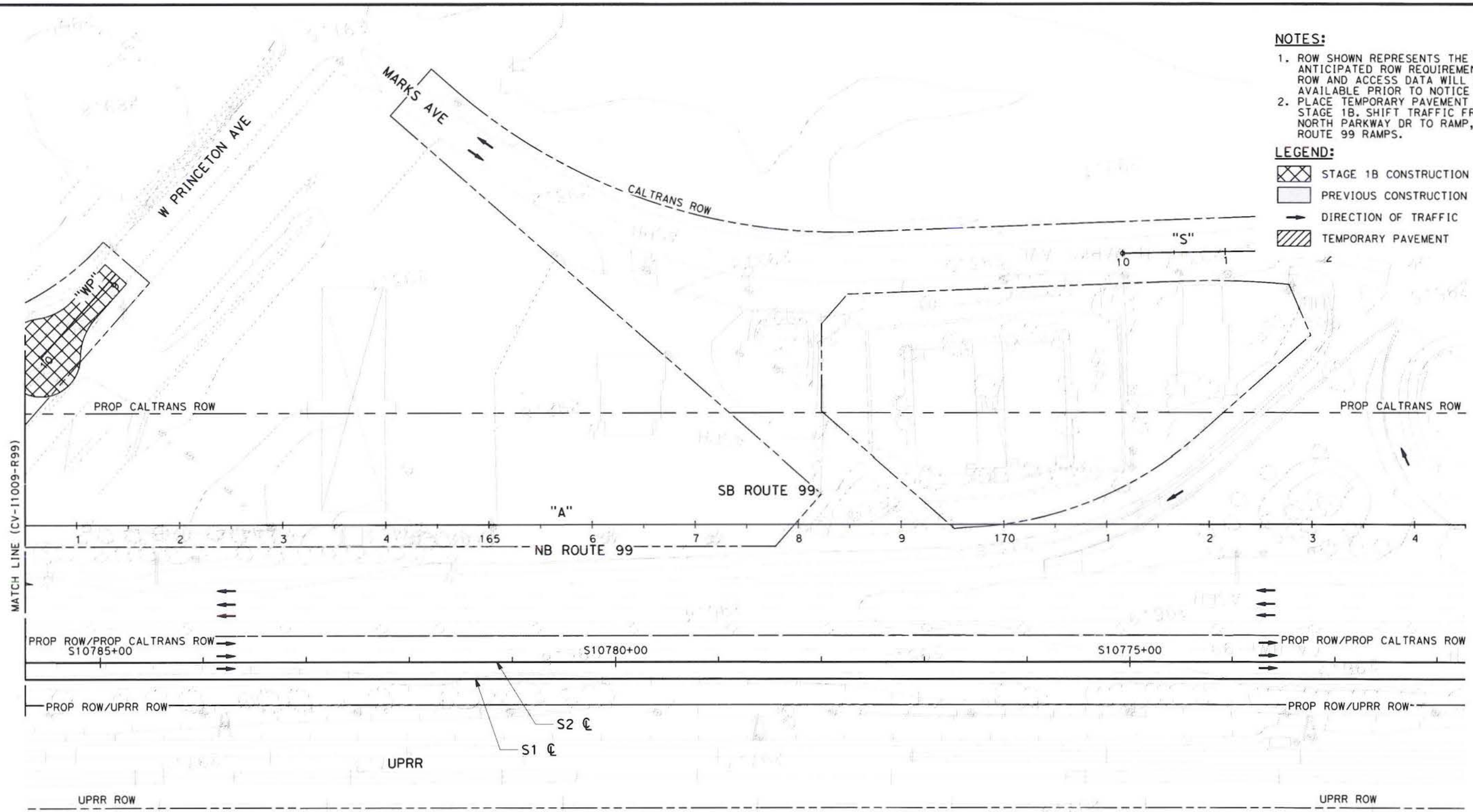
AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1009-R99
SCALE AS SHOWN
SHEET NO.



NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. PLACE TEMPORARY PAVEMENT AT END OF STAGE 1B. SHIFT TRAFFIC FROM NORTH PARKWAY DR TO RAMP, CLOSE SB ROUTE 99 RAMPS.

LEGEND:

- STAGE 1B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT

50 0 50 100

1"=50'

SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
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CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

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AECOM Technical Services, Inc.
2020 L Street, Suite 300
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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1010-R99
SCALE AS SHOWN
SHEET NO.

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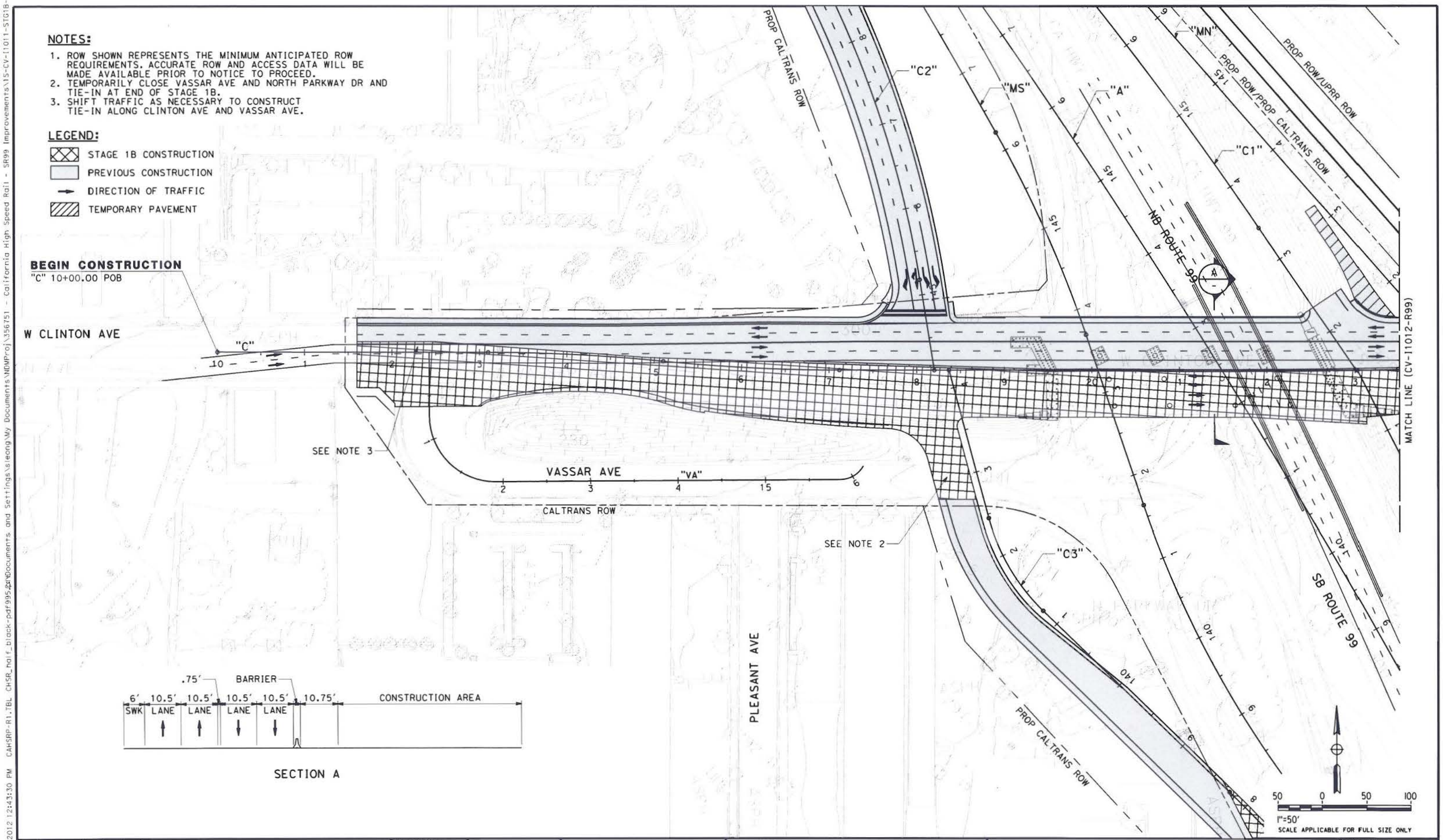
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. TEMPORARILY CLOSE VASSAR AVE AND NORTH PARKWAY DR AND TIE-IN AT END OF STAGE 1B.
3. SHIFT TRAFFIC AS NECESSARY TO CONSTRUCT TIE-IN ALONG CLINTON AVE AND VASSAR AVE.

LEGEND:

- STAGE 1B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



SECTION A

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

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2020 L Street, Suite 300
Sacramento, CA 95811

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1011-R99
SCALE AS SHOWN
SHEET NO.

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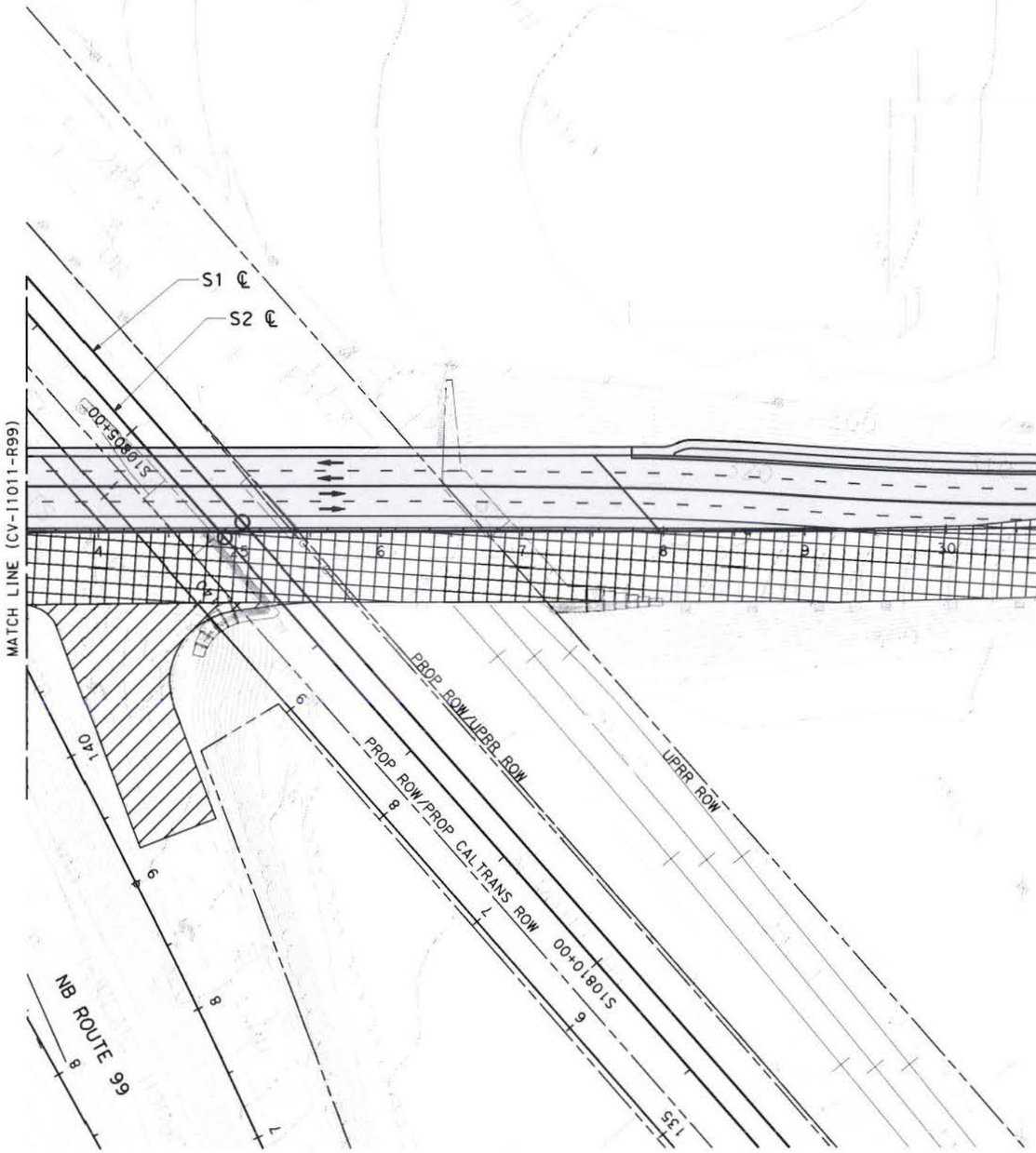

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SHIFT TRAFFIC AS NECESSARY TO CONSTRUCT TIE-IN.

LEGEND:

- STAGE 1B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT

END CONSTRUCTION
"C" 37+09.89 POE

50 0 50 100
1"=50'
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1012-R99
SCALE AS SHOWN
SHEET NO.

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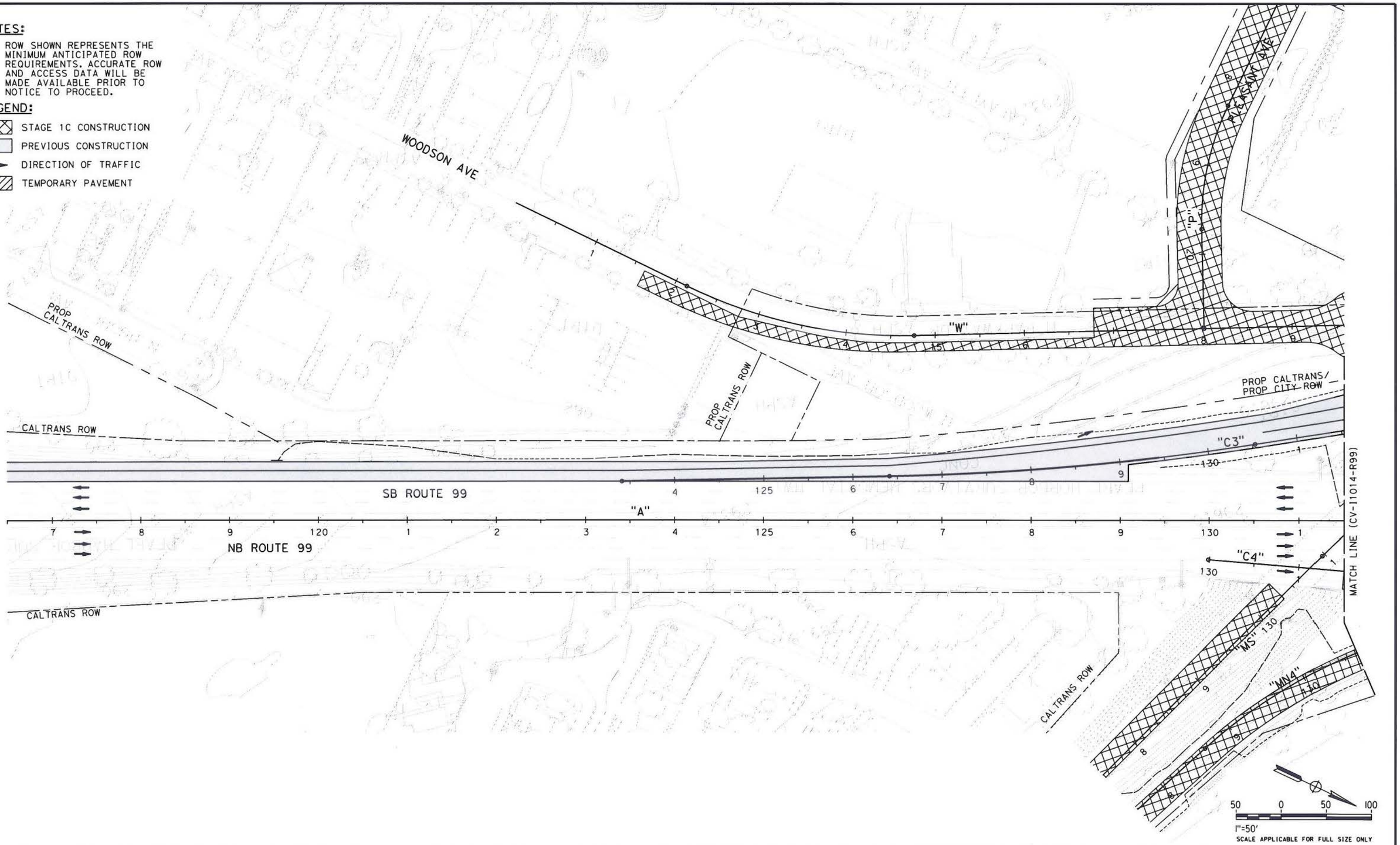
steong

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.

LEGEND:

- STAGE 1C CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

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DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

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AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

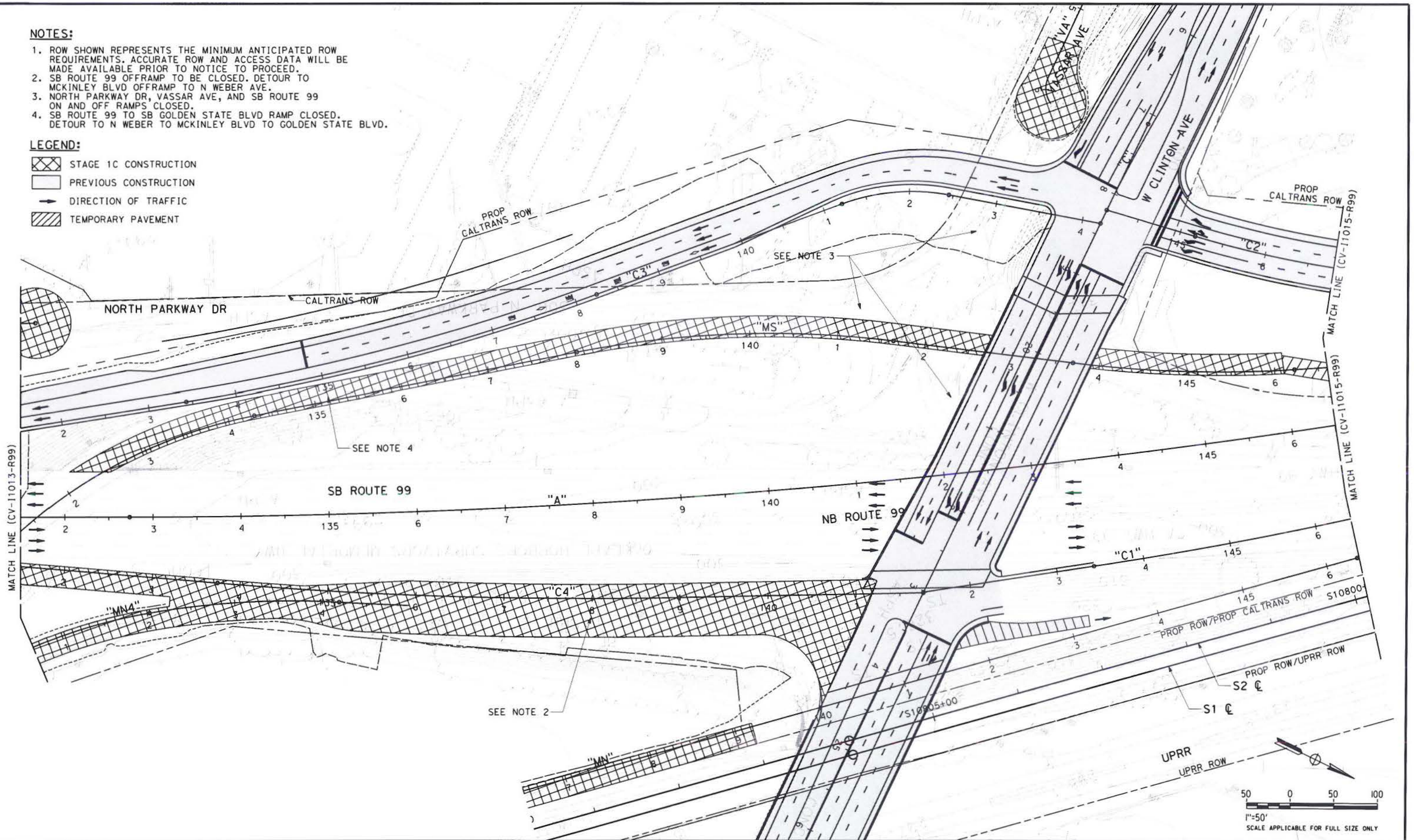
CONTRACT NO.
DRAWING NO. CV-I1013-R99
SCALE AS SHOWN
SHEET NO.

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SB ROUTE 99 OFFRAMP TO BE CLOSED. DETOUR TO MCKINLEY BLVD OFFRAMP TO N WEBER AVE.
3. NORTH PARKWAY DR, VASSAR AVE, AND SB ROUTE 99 ON AND OFF RAMPS CLOSED.
4. SB ROUTE 99 TO SB GOLDEN STATE BLVD RAMP CLOSED. DETOUR TO N WEBER TO MCKINLEY BLVD TO GOLDEN STATE BLVD.

LEGEND:

- STAGE 1C CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1014-R99
SCALE AS SHOWN
SHEET NO.

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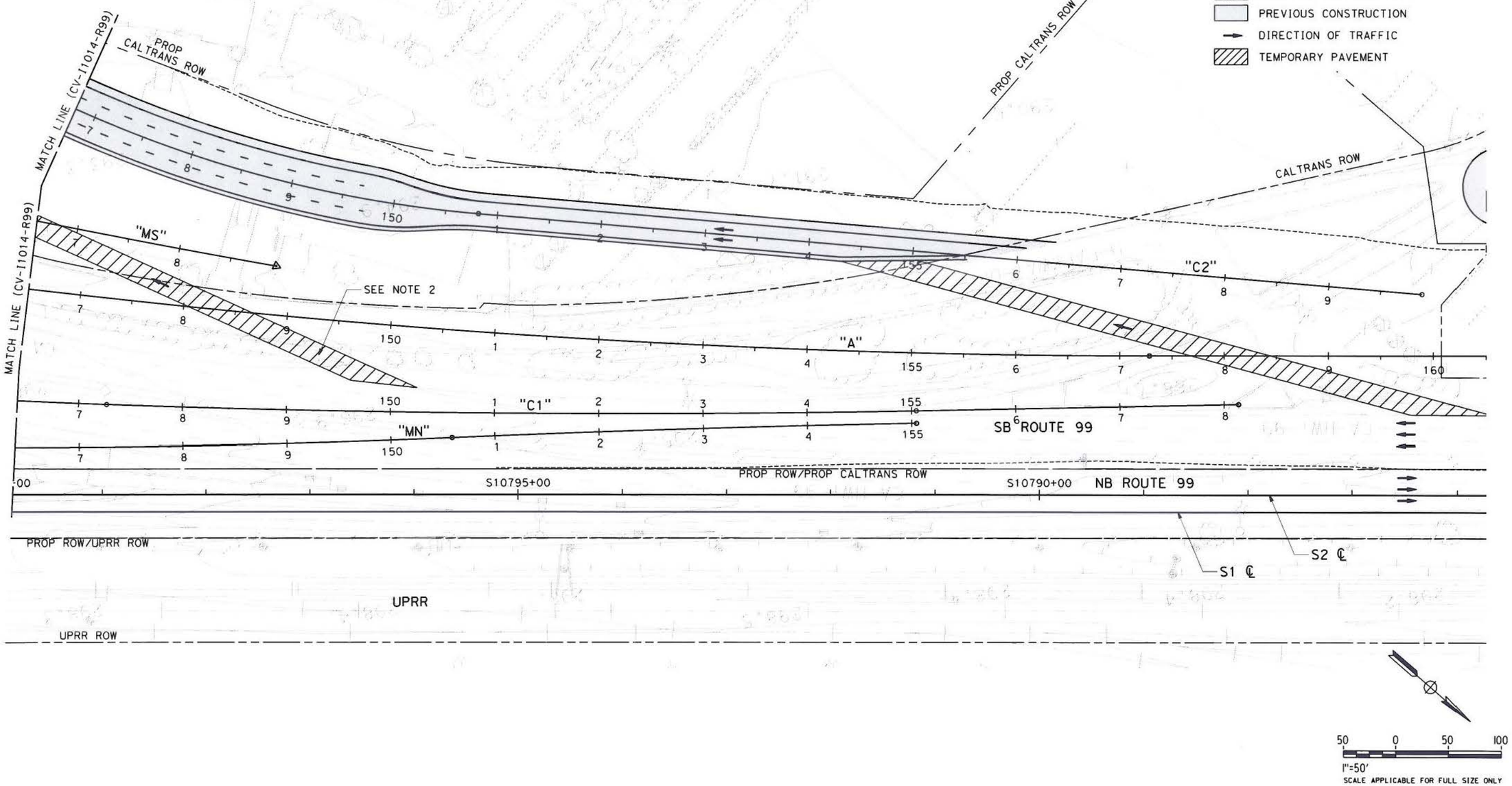
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. PLACE TEMPORARY PAVEMENT AT END OF STAGE.
3. NORTH PARKWAY DR AND SB ROUTE 99 ON AND OFF RAMPS CLOSED.

LEGEND:

- STAGE 1C CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



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DRAWN BY R. MEZA
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IN CHARGE F. NOBARI
DATE 2/17/12

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2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1015-R99
SCALE AS SHOWN
SHEET NO.

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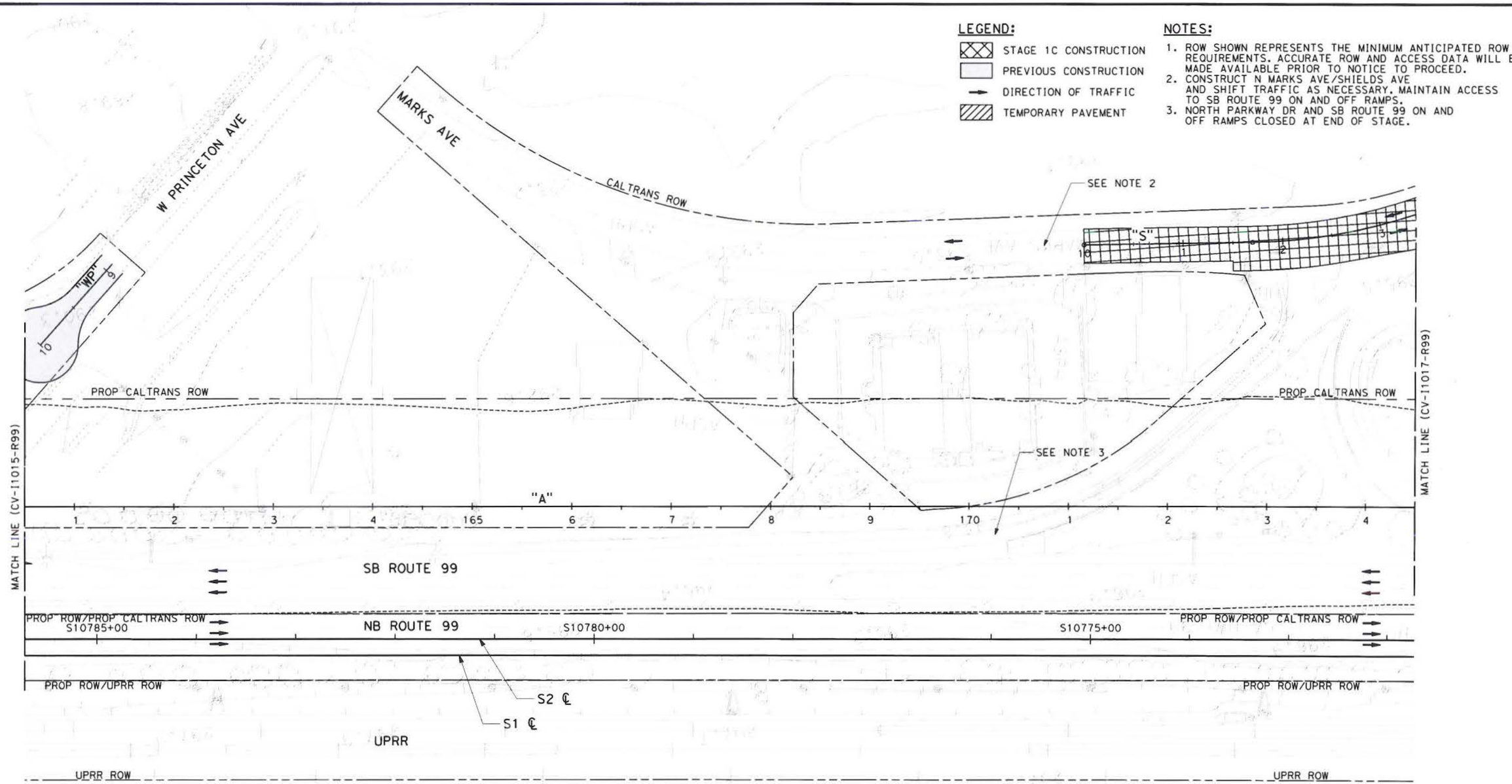
sleong

LEGEND:

- STAGE 1C CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. CONSTRUCT N MARKS AVE/SHIELDS AVE AND SHIFT TRAFFIC AS NECESSARY. MAINTAIN ACCESS TO SB ROUTE 99 ON AND OFF RAMPS.
3. NORTH PARKWAY DR AND SB ROUTE 99 ON AND OFF RAMPS CLOSED AT END OF STAGE.



50 0 50 100
1"=50'
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

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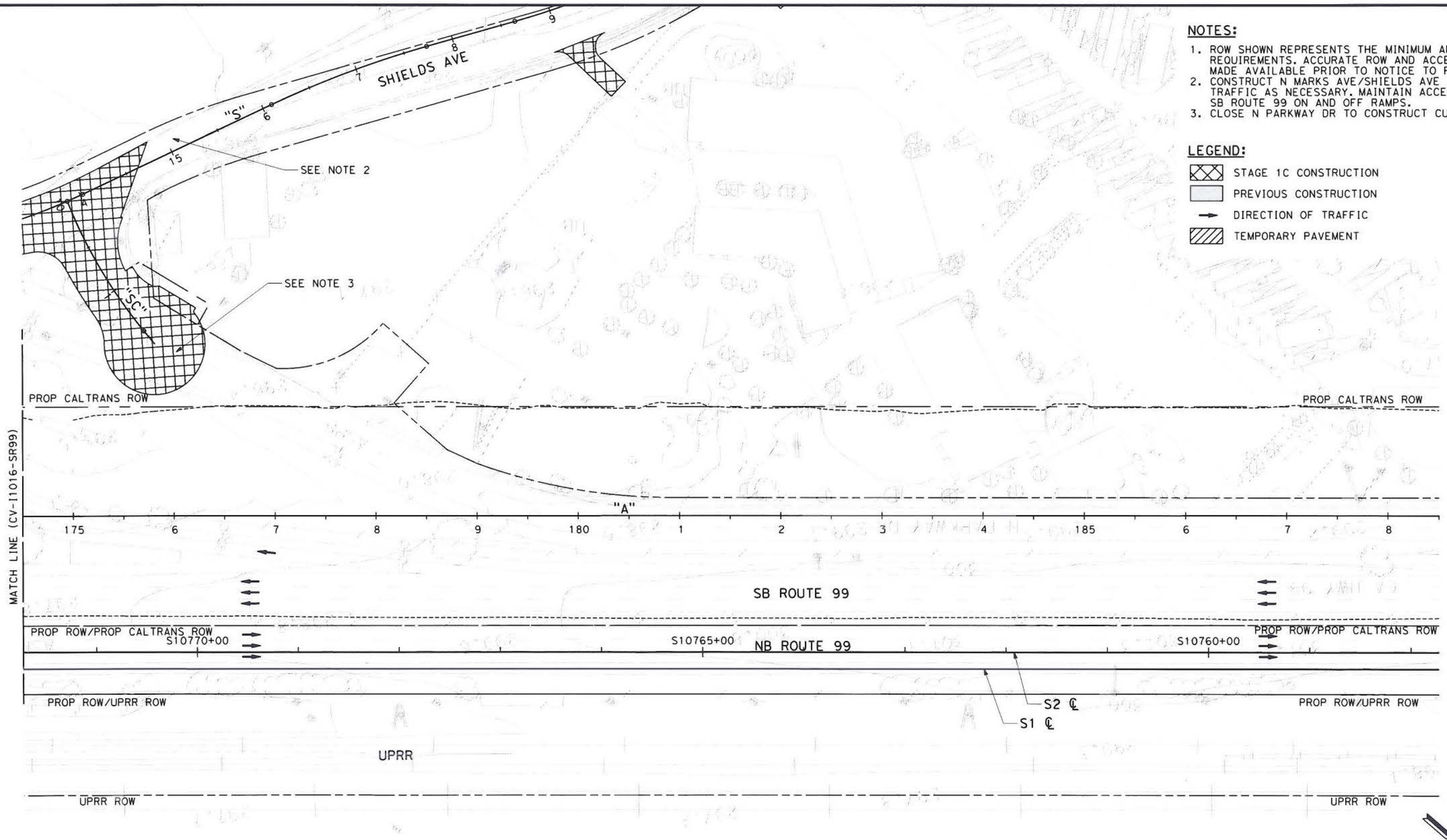
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1016-R99
SCALE AS SHOWN
SHEET NO.



NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. CONSTRUCT N MARKS AVE/SHIELDS AVE AND SHIFT TRAFFIC AS NECESSARY. MAINTAIN ACCESS TO SB ROUTE 99 ON AND OFF RAMPS.
3. CLOSE N PARKWAY DR TO CONSTRUCT CUL-DE-SAC.

LEGEND:

- STAGE 1C CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT

50 0 50 100

1"=50'

SCALE APPLICABLE FOR FULL SIZE ONLY

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CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

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2020 L Street, Suite 300
Sacramento, CA 95811

CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1017-R99
SCALE AS SHOWN
SHEET NO.

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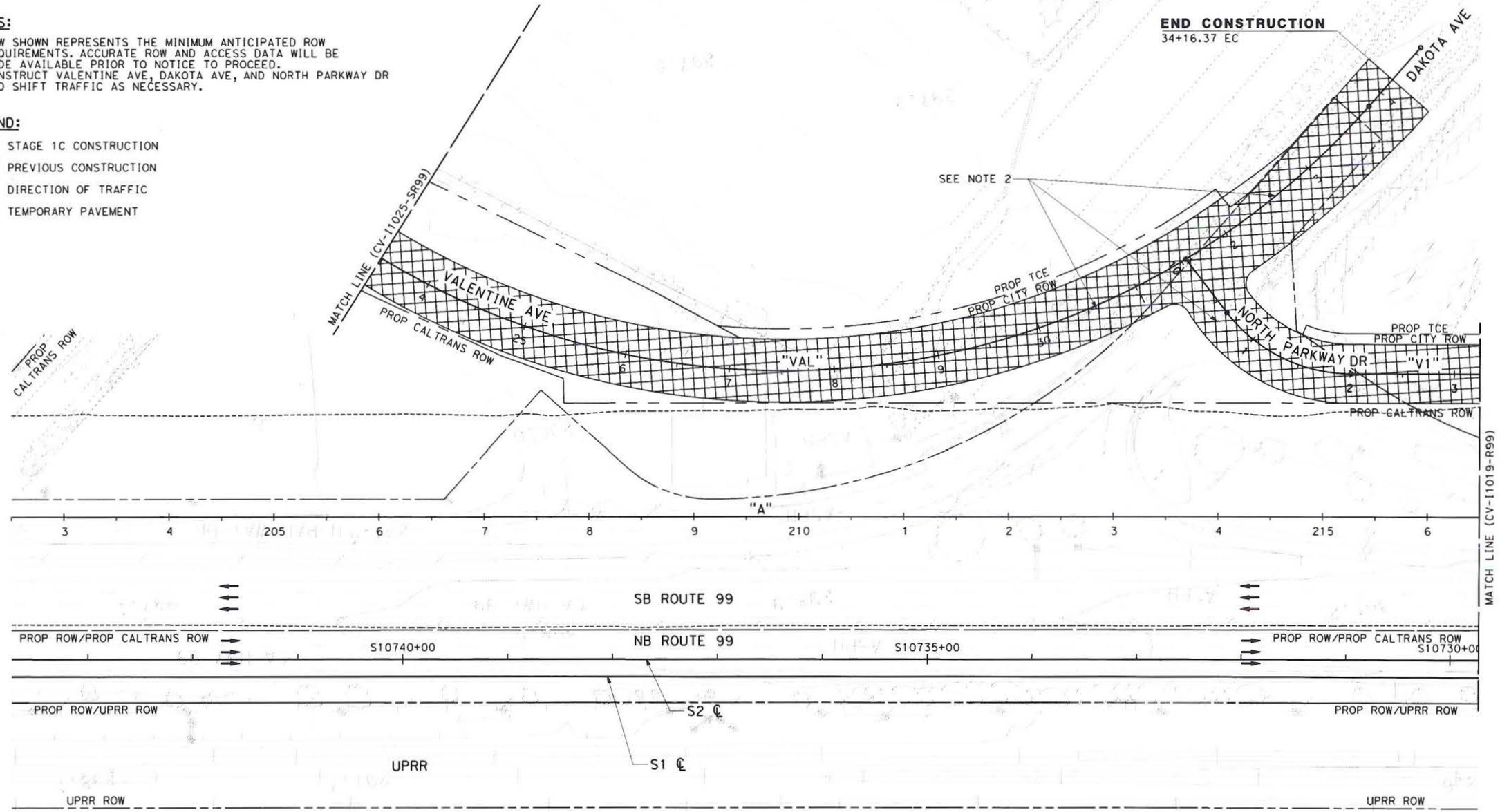
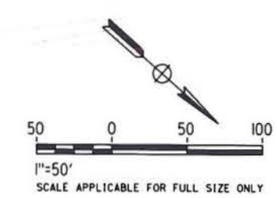
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. CONSTRUCT VALENTINE AVE, DAKOTA AVE, AND NORTH PARKWAY DR AND SHIFT TRAFFIC AS NECESSARY.

LEGEND:

- STAGE 1C CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT





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2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1018-R99
SCALE AS SHOWN
SHEET NO.

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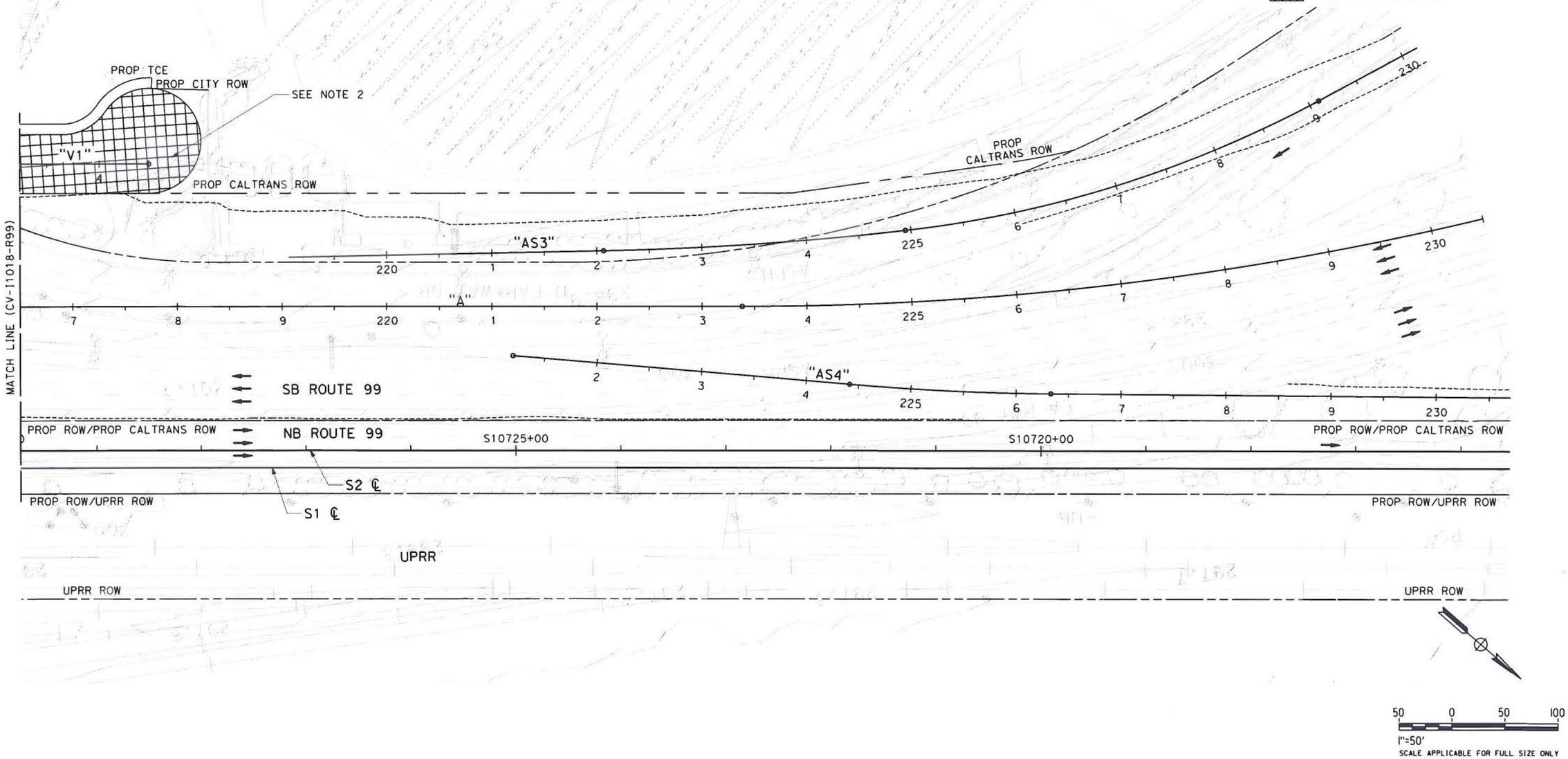
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. CONSTRUCT NORTH PARKWAY DR CUL-DE-SAC AND SHIFT TRAFFIC AS NECESSARY.

LEGEND:

- STAGE 1C CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



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CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

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AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

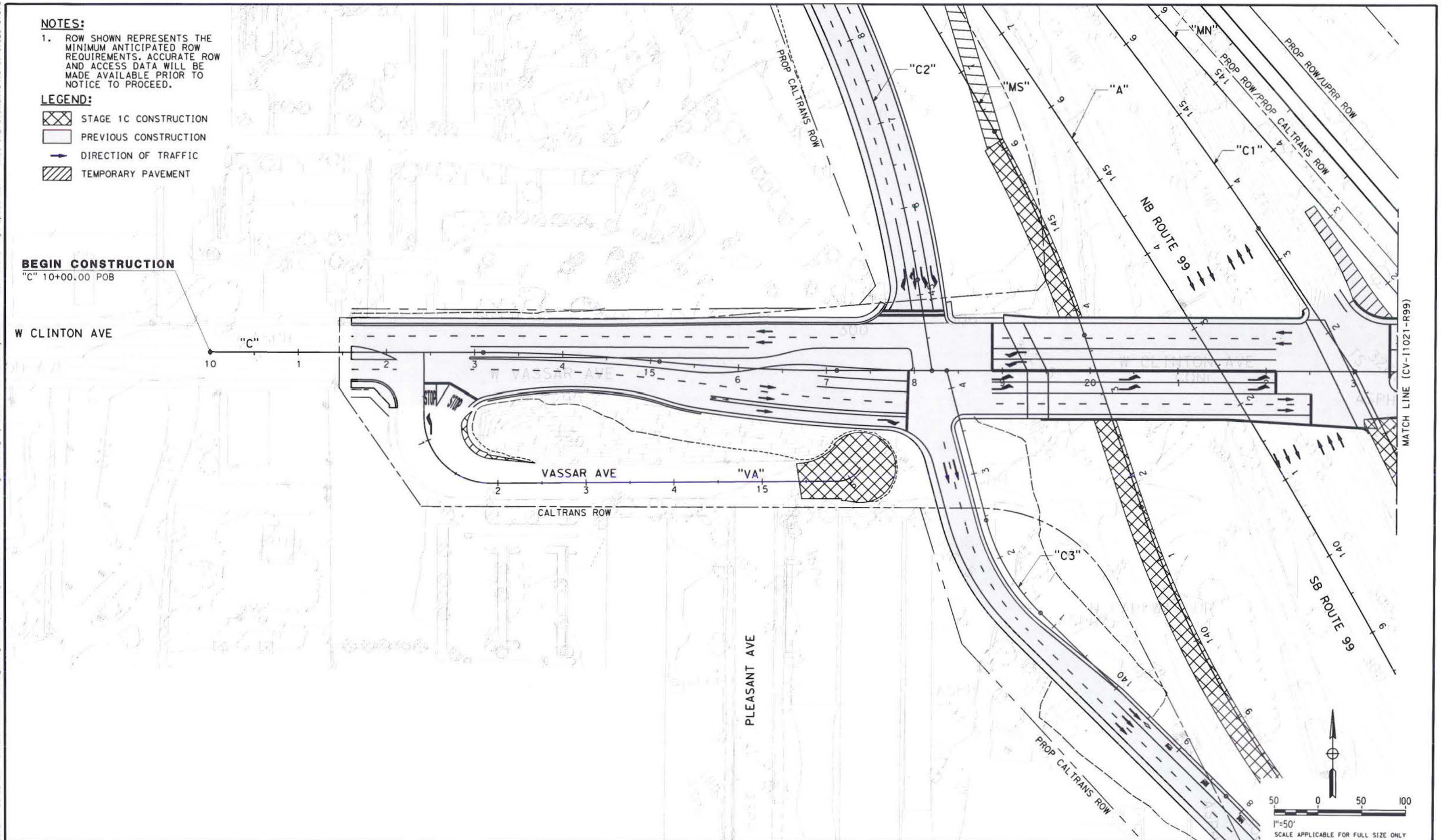
CONTRACT NO.
DRAWING NO. CV-I1019-R99
SCALE AS SHOWN
SHEET NO.

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.

LEGEND:

- STAGE 1C CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1020-R99
SCALE AS SHOWN
SHEET NO.

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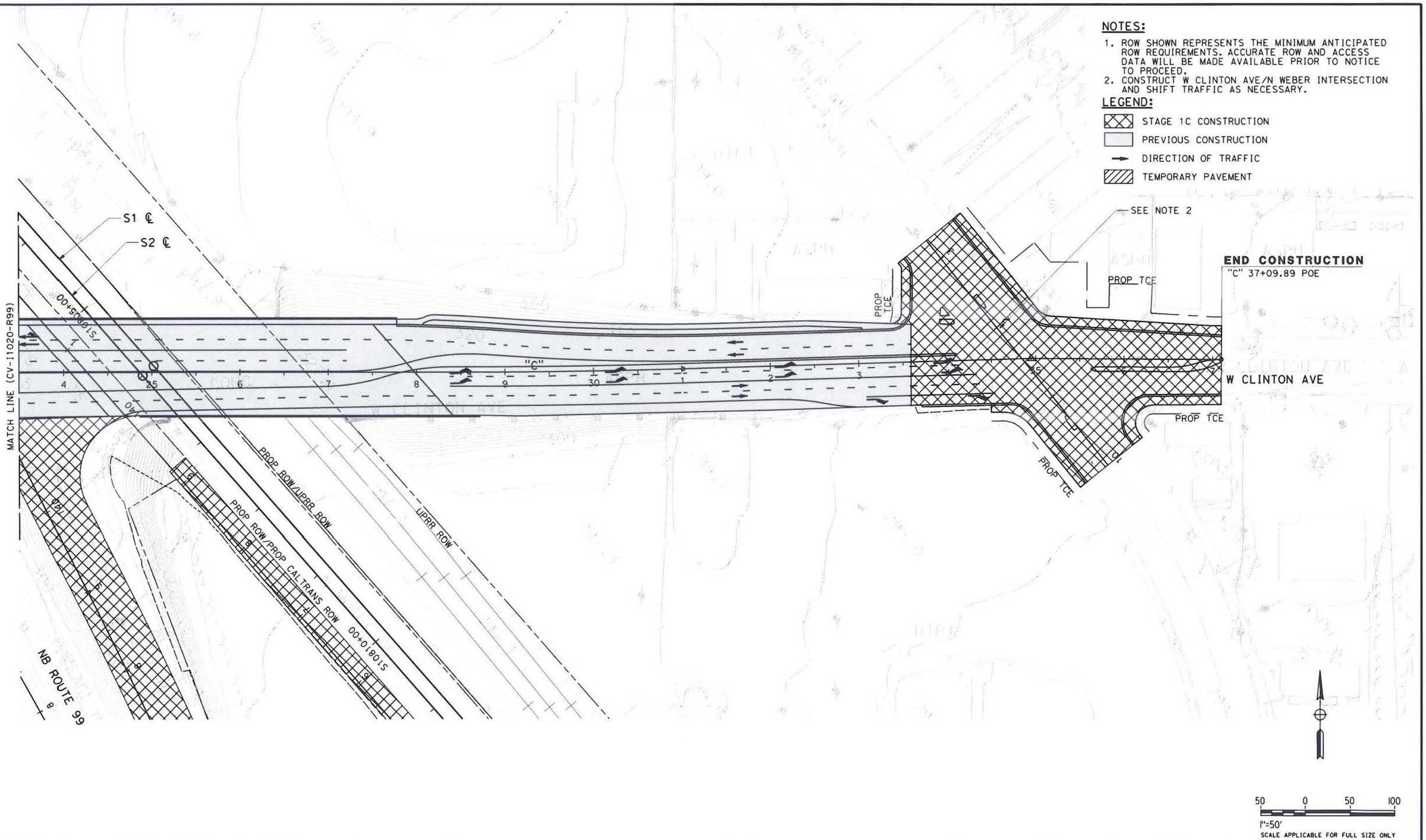

REV	DATE	BY	CHK	APP	DESCRIPTION

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

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SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1021-R99
SCALE AS SHOWN
SHEET NO.

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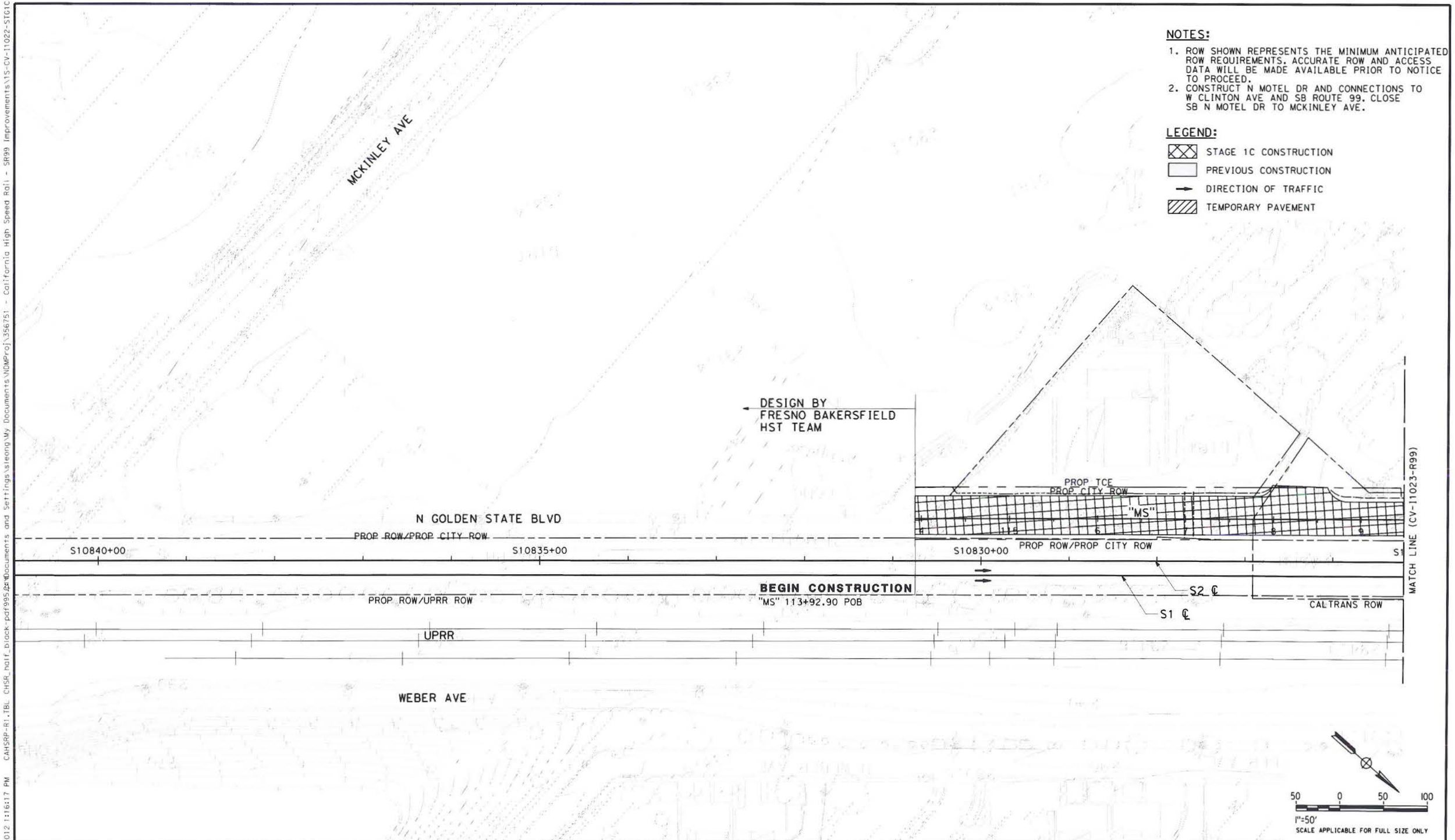

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. CONSTRUCT N MOTEL DR AND CONNECTIONS TO W CLINTON AVE AND SB ROUTE 99. CLOSE SB N MOTEL DR TO MCKINLEY AVE.

LEGEND:

- STAGE 1C CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
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DATE 2/17/12

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SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1022-R99
SCALE AS SHOWN
SHEET NO.

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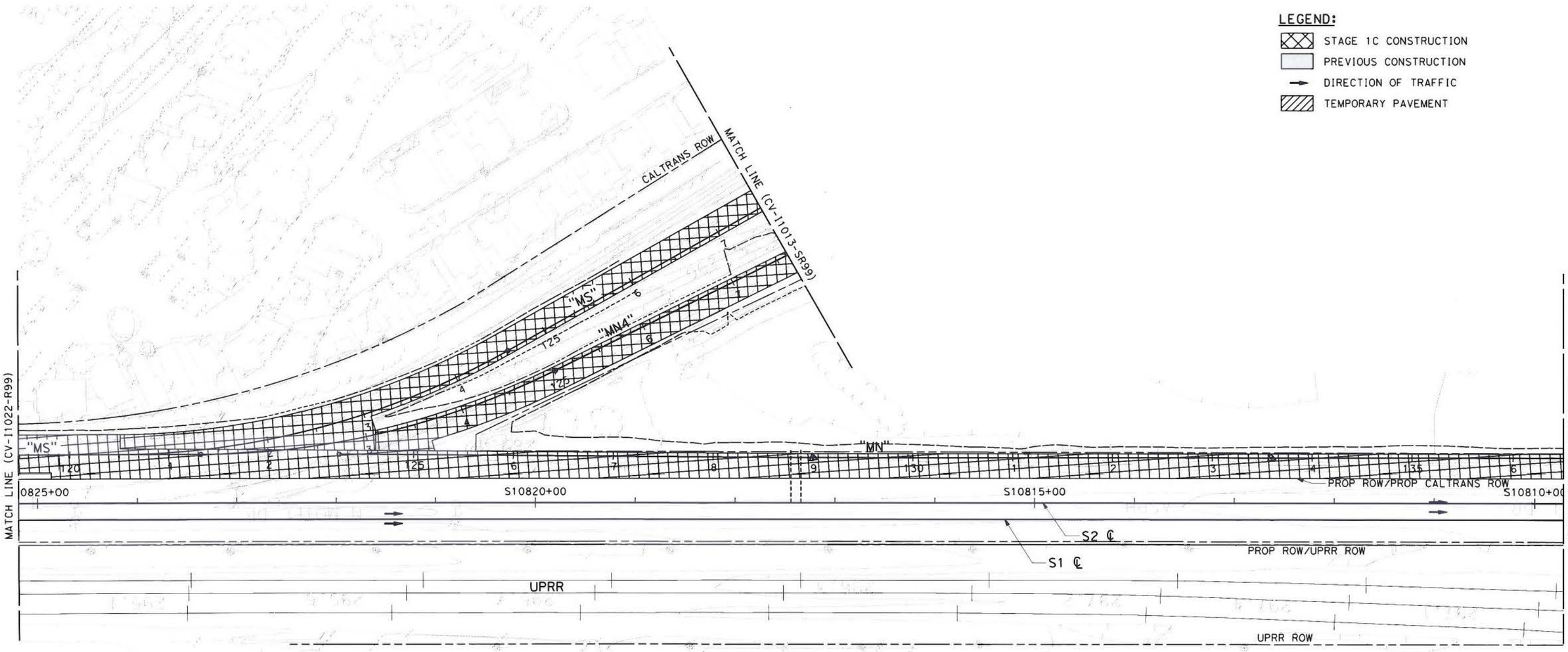
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. CONSTRUCT N MOTEL DR AND SB ROUTE 99 CONNECTION TO N MOTEL DR AND N MOTEL DR CONNECTION TO W CLINTON AVE. CLOSE SB N MOTEL DR TO MCKINLEY AVE.

LEGEND:

- STAGE 1C CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



50 0 50 100

1"=50'

SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

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PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

CONTRACT NO.

DRAWING NO. CV-11023-R99

SCALE AS SHOWN

SHEET NO.

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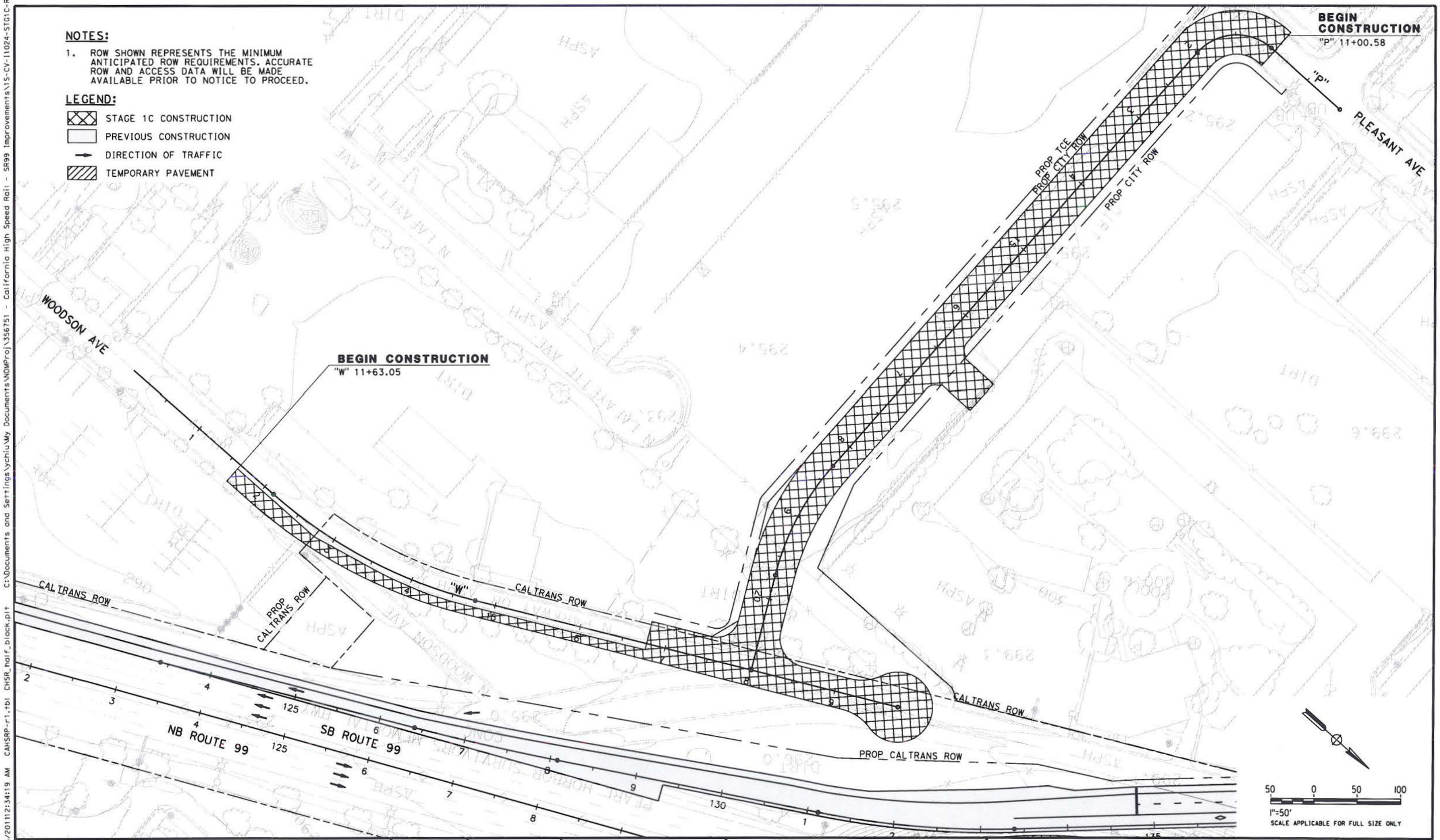
ychiu

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.

LEGEND:

- STAGE 1C CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

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SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-11024-R99
SCALE AS SHOWN
SHEET NO.

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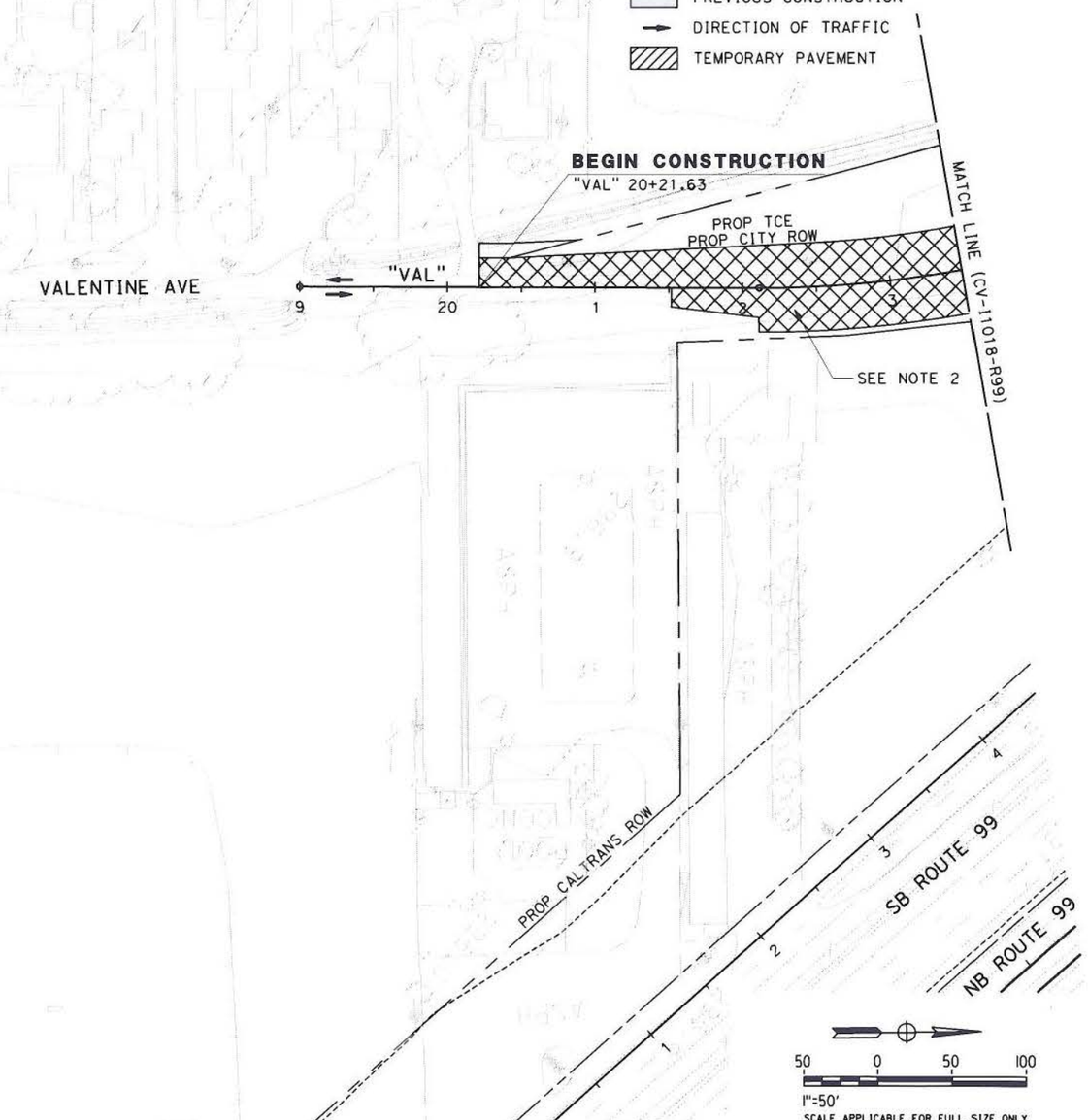
sleong

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. CONSTRUCT VALENTINE AVE AND SHIFT TRAFFIC AS NECESSARY. MAINTAIN ACCESS TO DRIVEWAYS.

LEGEND:

- STAGE 1C CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



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SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 1C
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1025-R99
SCALE AS SHOWN
SHEET NO.

NOTES:

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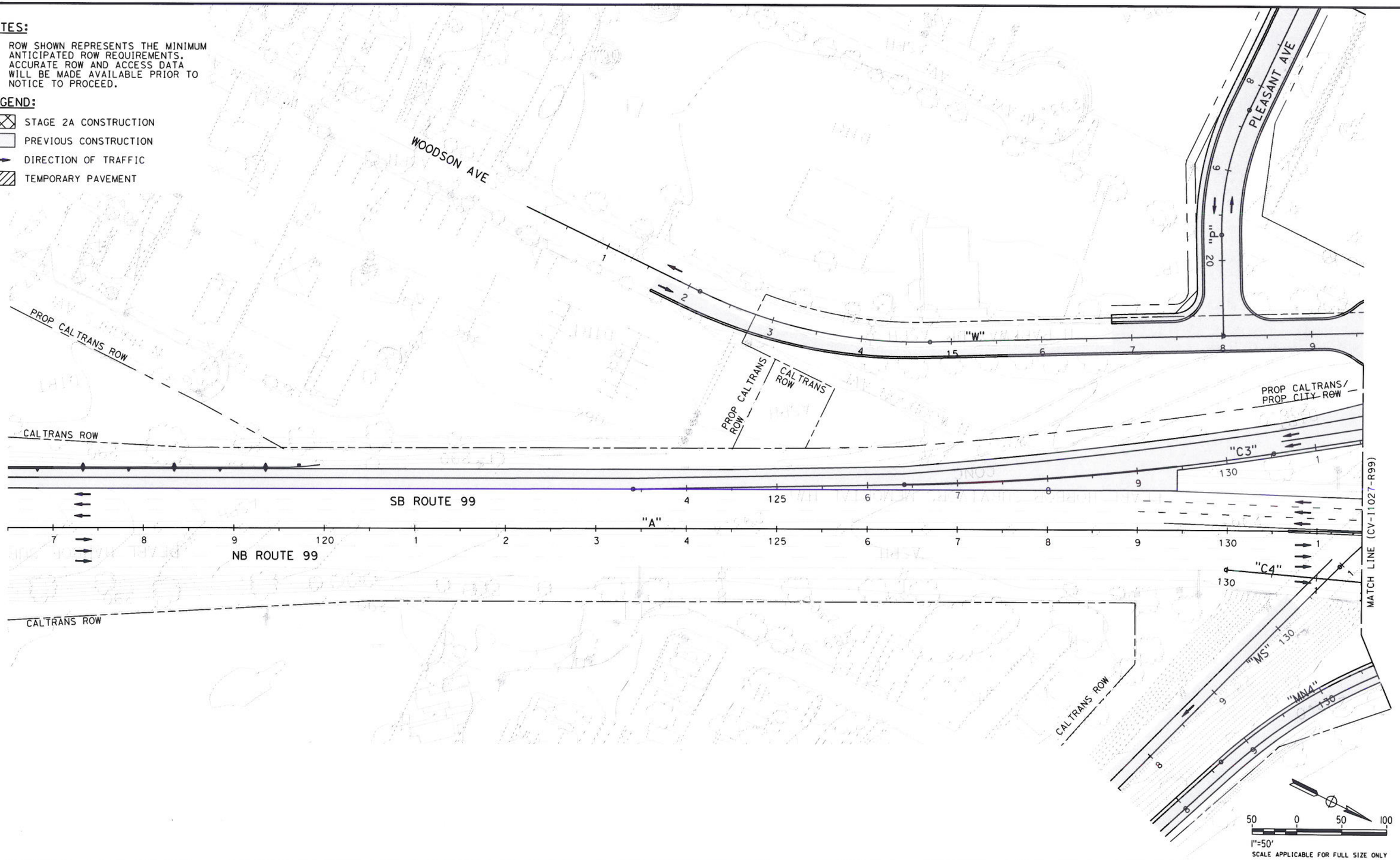
LEGEND:

- STAGE 2A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



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SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1026-R99
SCALE AS SHOWN
SHEET NO.

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NOTES:

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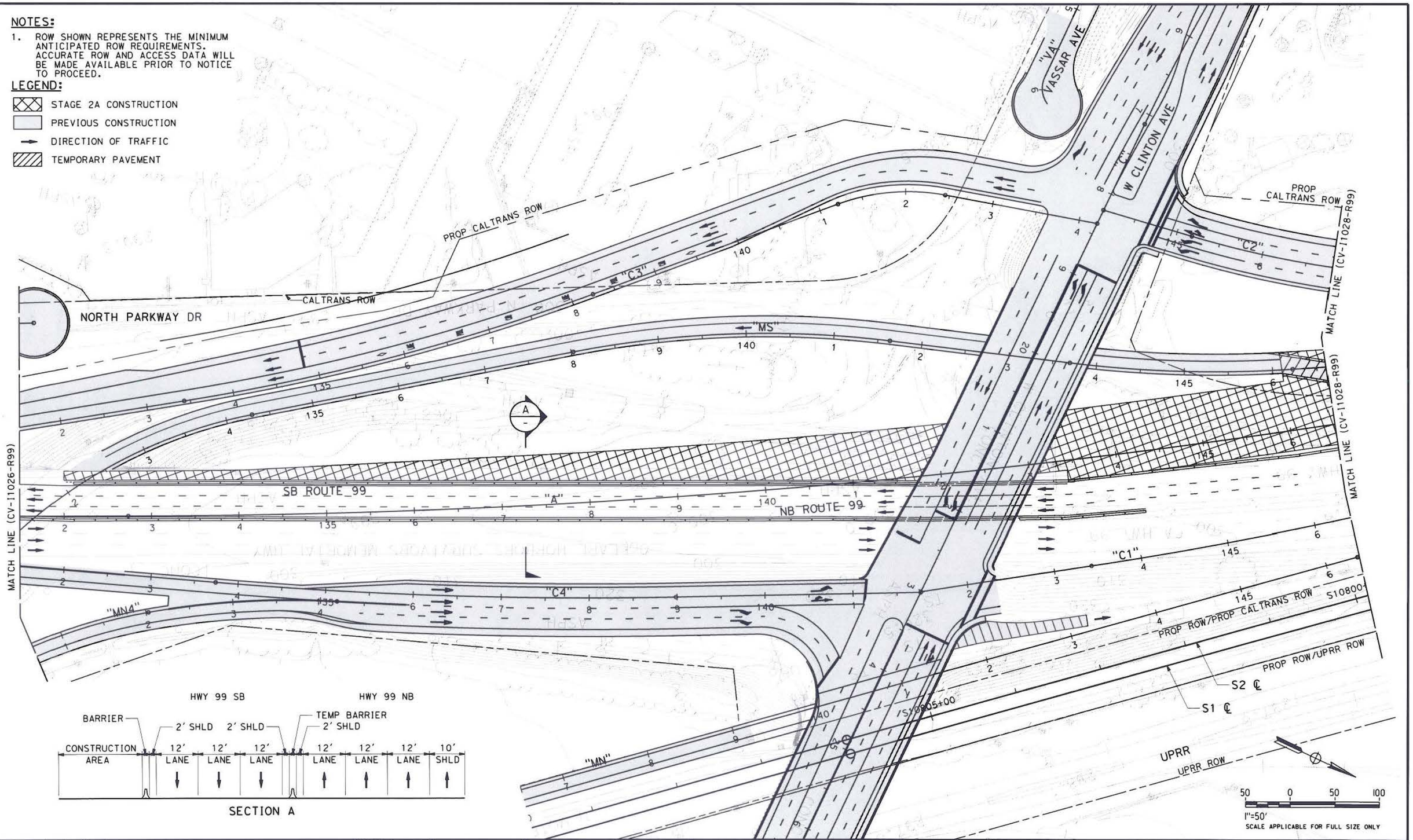
LEGEND:

- STAGE 2A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1027-R99
SCALE AS SHOWN
SHEET NO.

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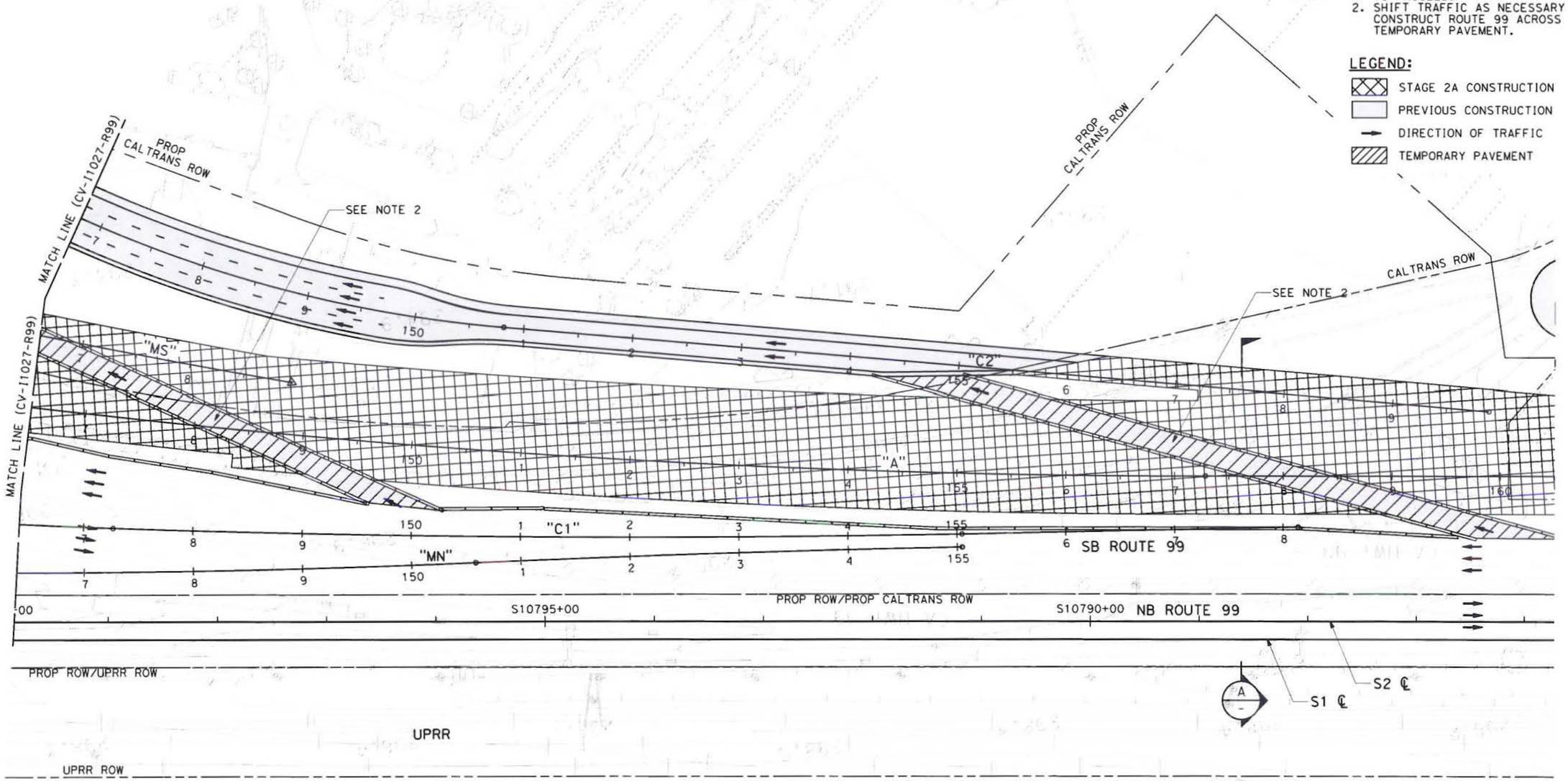
sleong

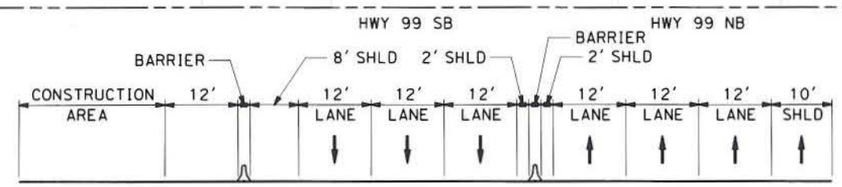
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANCITIPATED ROW REQUIRMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SHIFT TRAFFIC AS NECESSARY TO CONSTRUCT ROUTE 99 ACROSS TEMPORARY PAVEMENT.

LEGEND:

- STAGE 2A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT





SECTION A

50 0 50 100
1"=50'
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
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DATE 2/17/12

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2020 L Street, Suite 300
Sacramento, CA 95811
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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1028-R99
SCALE AS SHOWN
SHEET NO.

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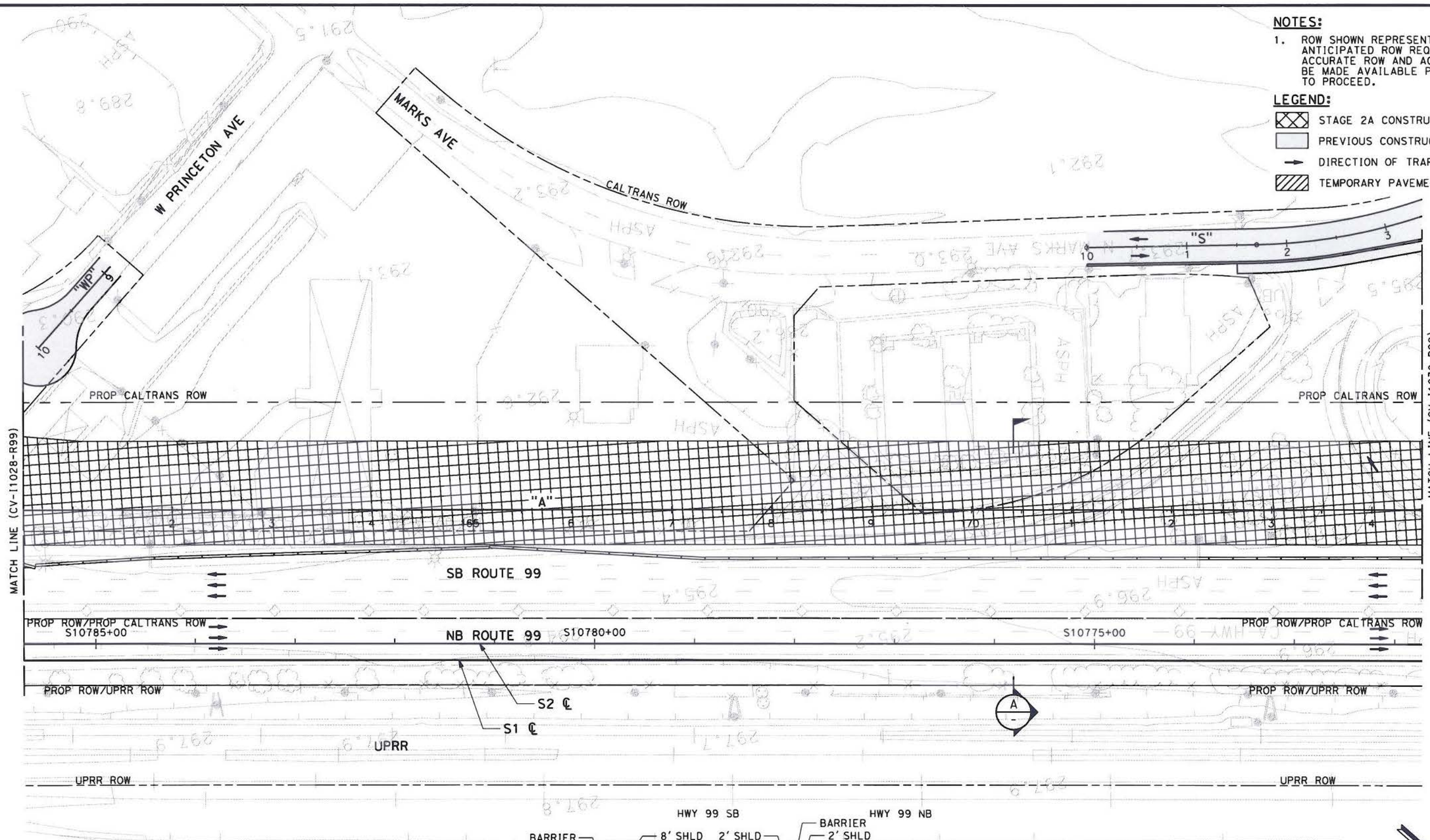
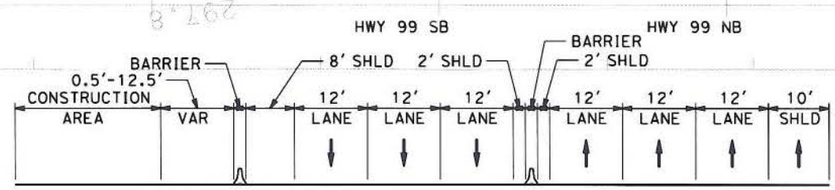
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.

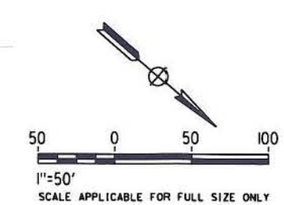
LEGEND:

- STAGE 2A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT





SECTION A



REV	DATE	BY	CHK	APP	DESCRIPTION

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DATE 11/22/11

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1029-R99
SCALE AS SHOWN
SHEET NO.

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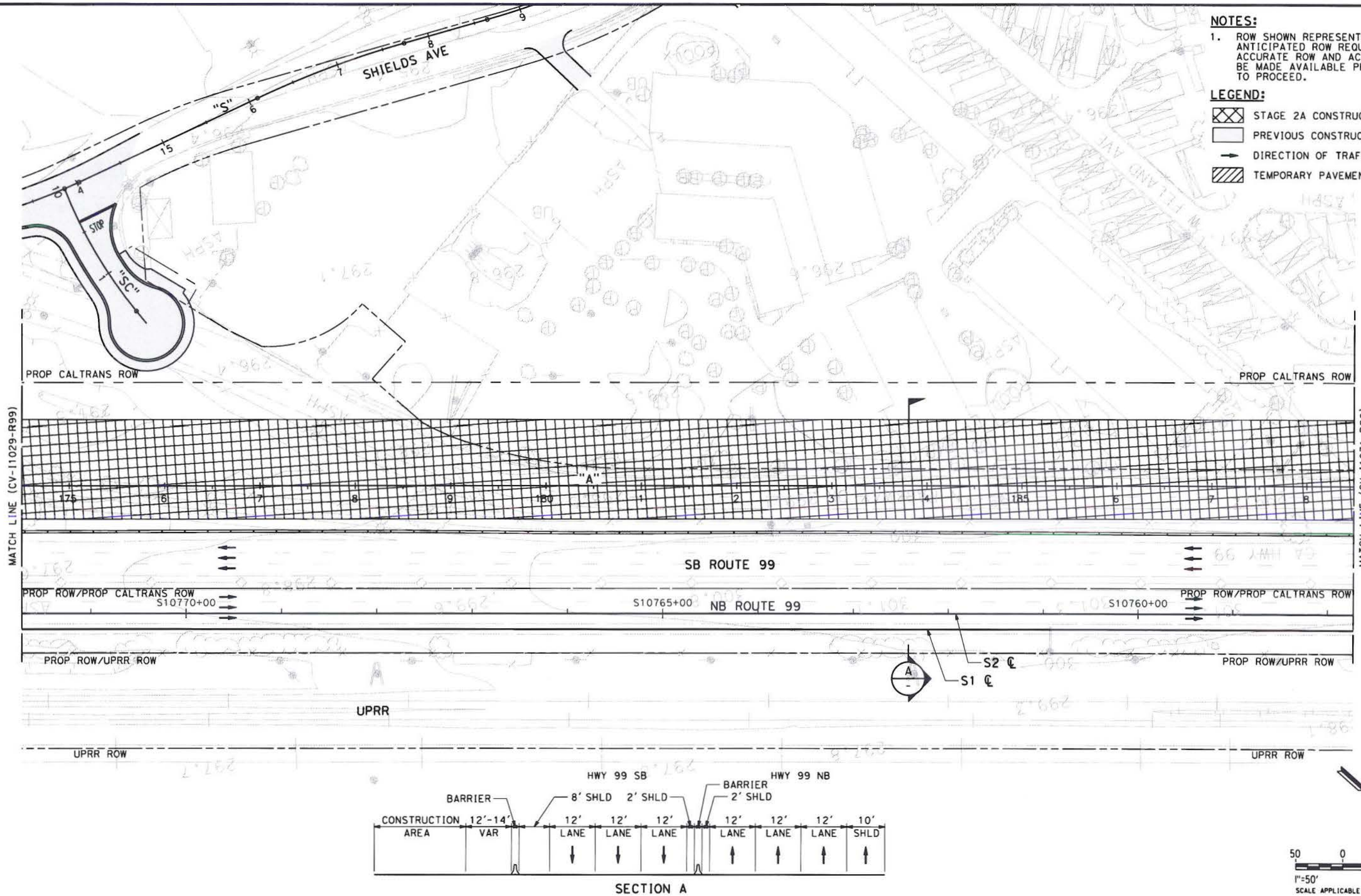

NOTES:

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LEGEND:

- STAGE 2A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT

REV	DATE	BY	CHK	APP	DESCRIPTION

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SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1030-R99
SCALE AS SHOWN
SHEET NO.

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NOTES:

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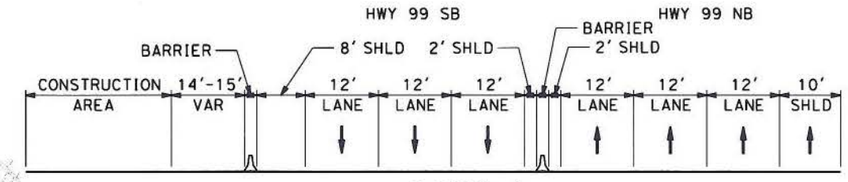
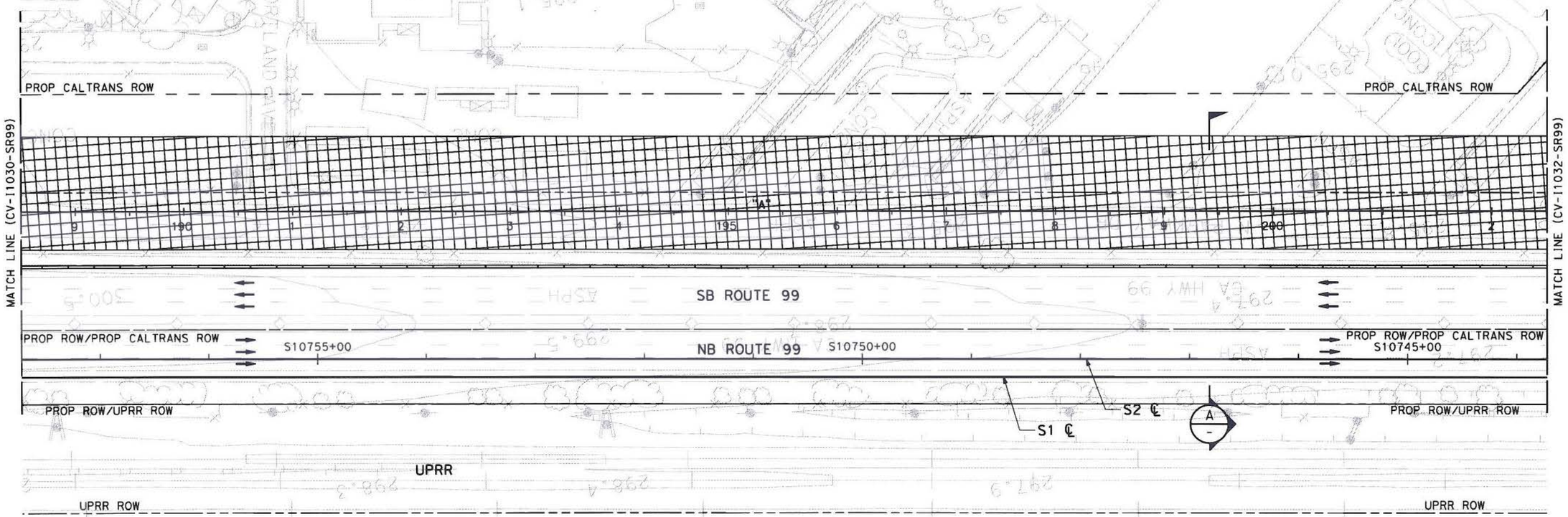
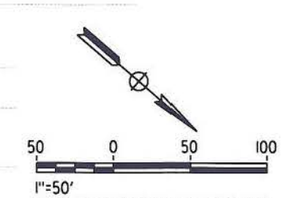
LEGEND:

- STAGE 2A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



SECTION A





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CONTRACT NO.
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NOTES:

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LEGEND:

- STAGE 2A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
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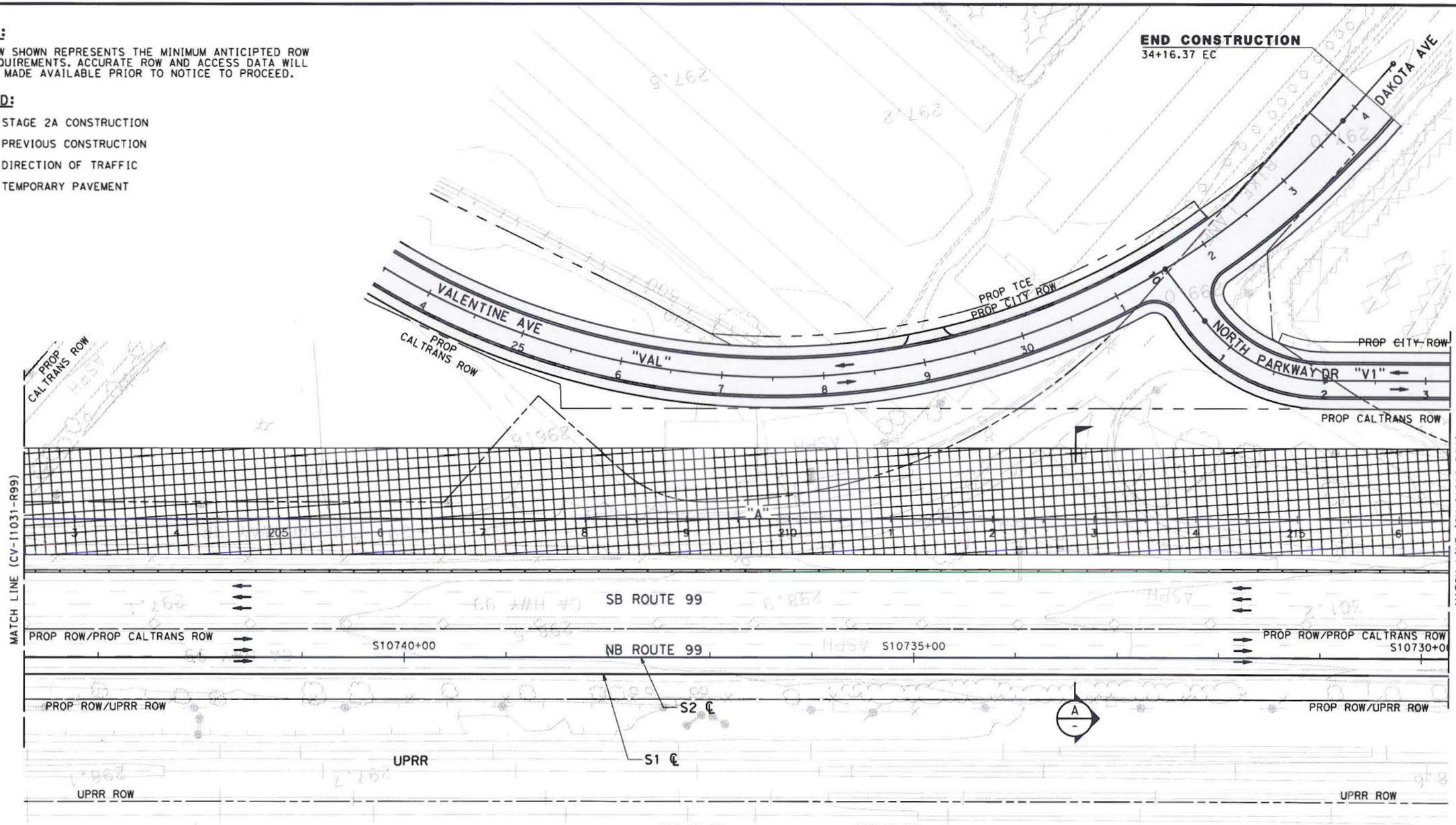
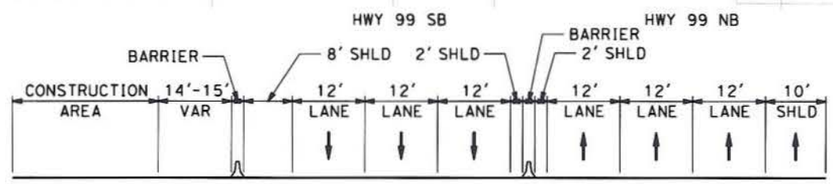
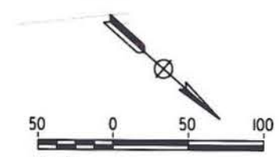




SECTION A



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PACKAGE 1A
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STAGE 2A
SR 99 RE-ALIGNMENT

CONTRACT NO.
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ychiu

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NOTES:

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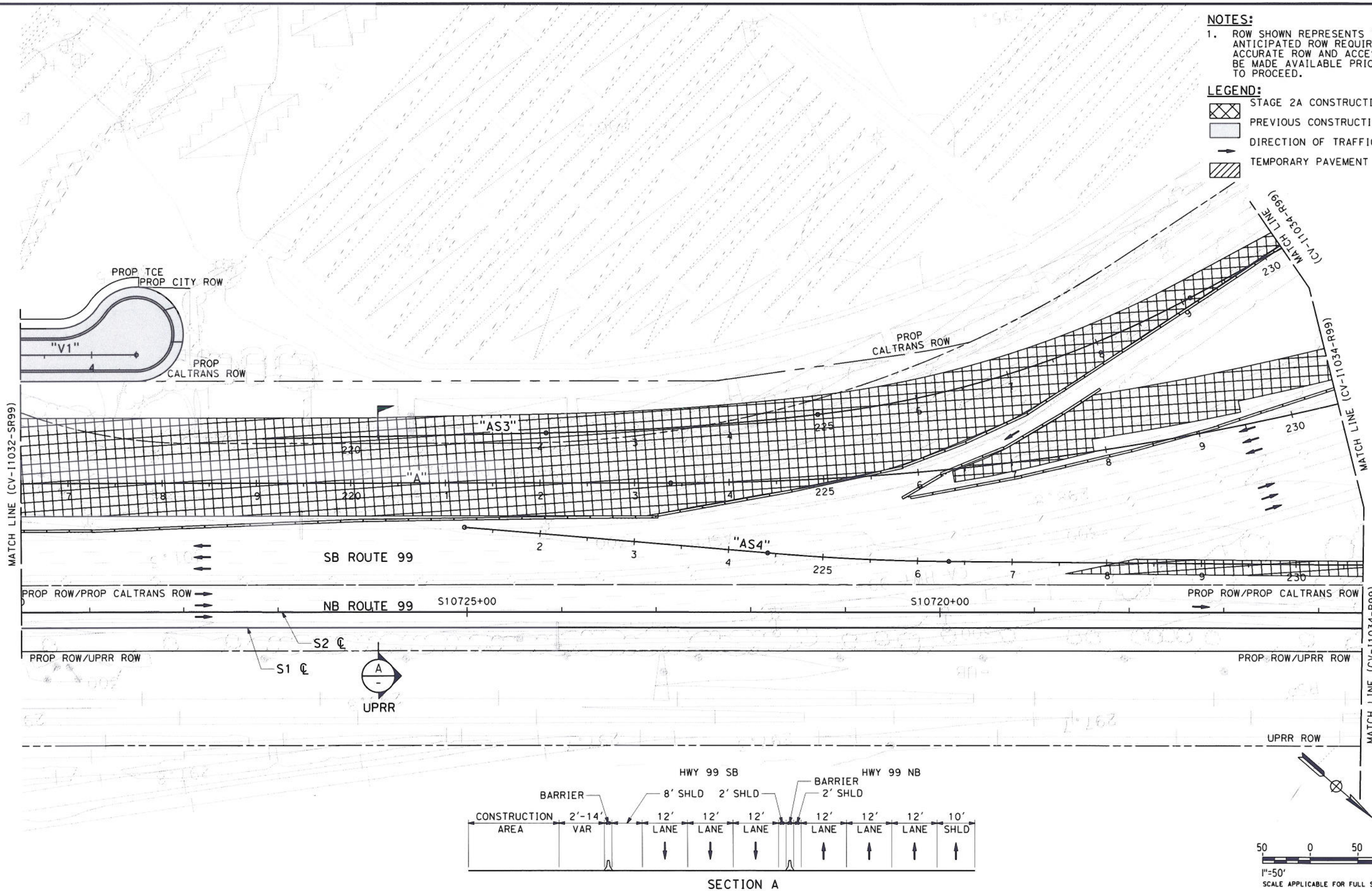
LEGEND:

- STAGE 2A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1033-R99
SCALE AS SHOWN
SHEET NO.

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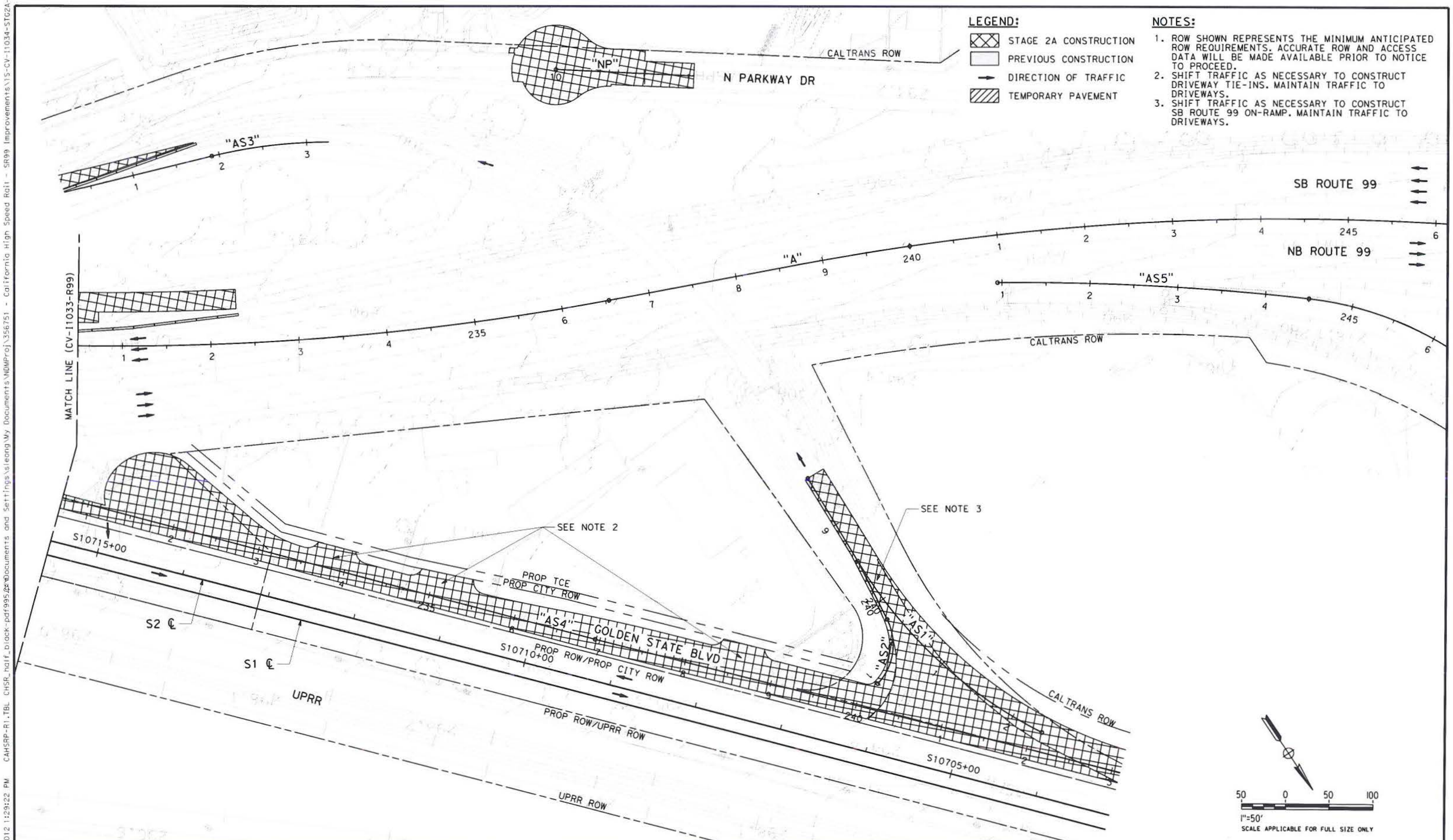

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
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IN CHARGE F. NOBARI
DATE 2/17/12

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2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1034-R99
SCALE AS SHOWN
SHEET NO.

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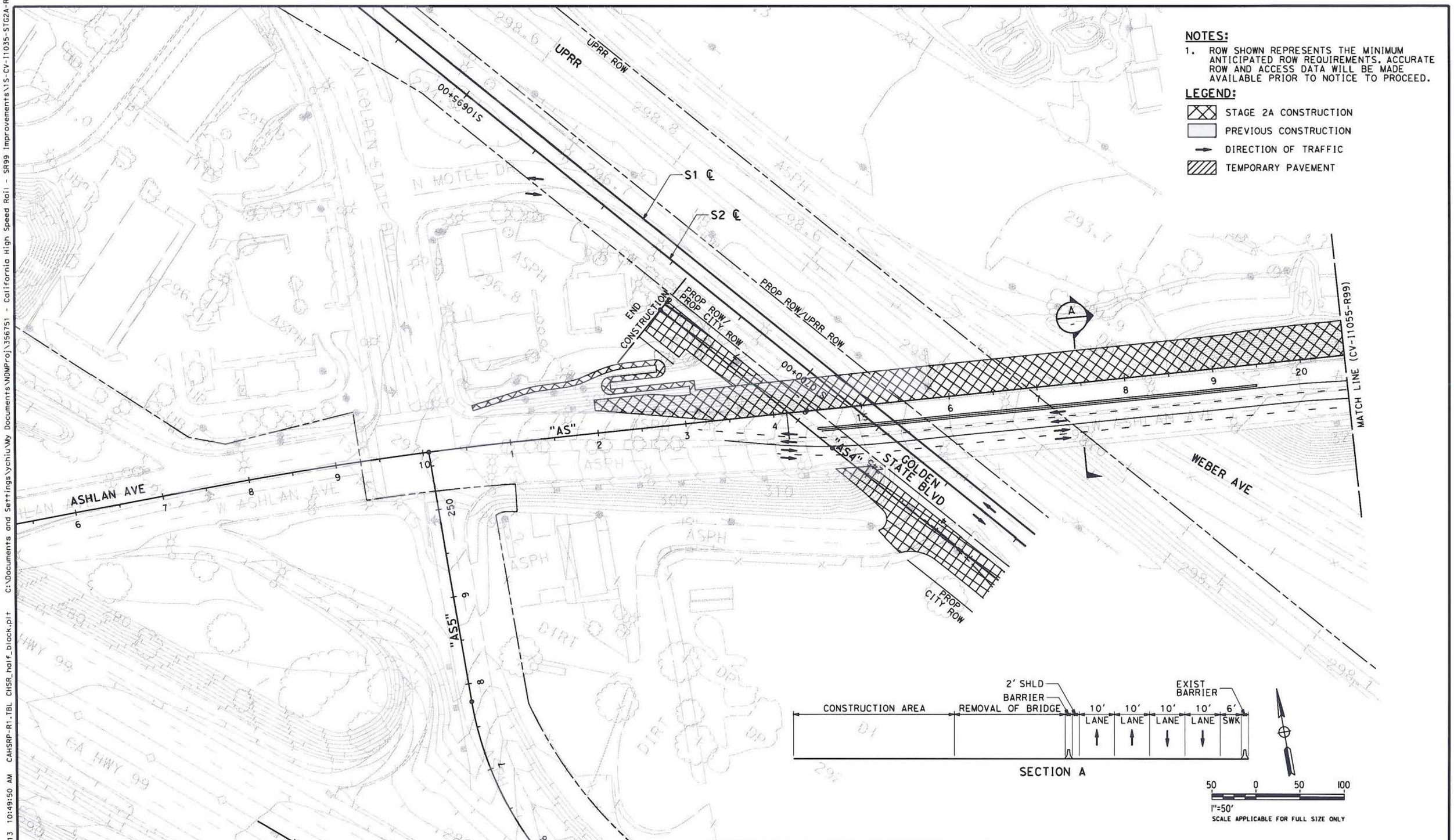

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1035-R99
SCALE AS SHOWN
SHEET NO.

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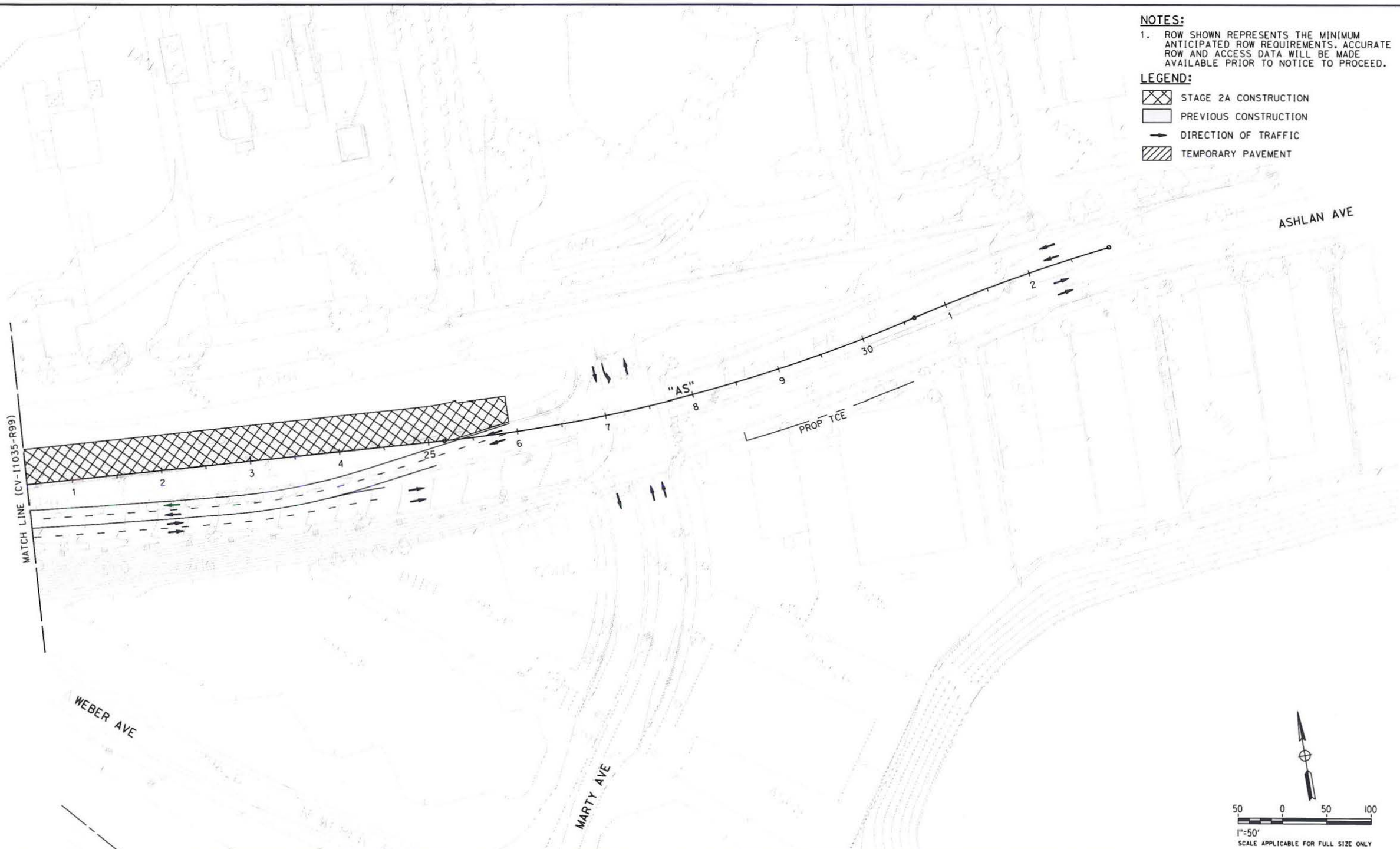

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.

LEGEND:

- STAGE 2A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
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IN CHARGE F. NOBARI
DATE 2/17/12

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2A
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1036-R99
SCALE AS SHOWN
SHEET NO.

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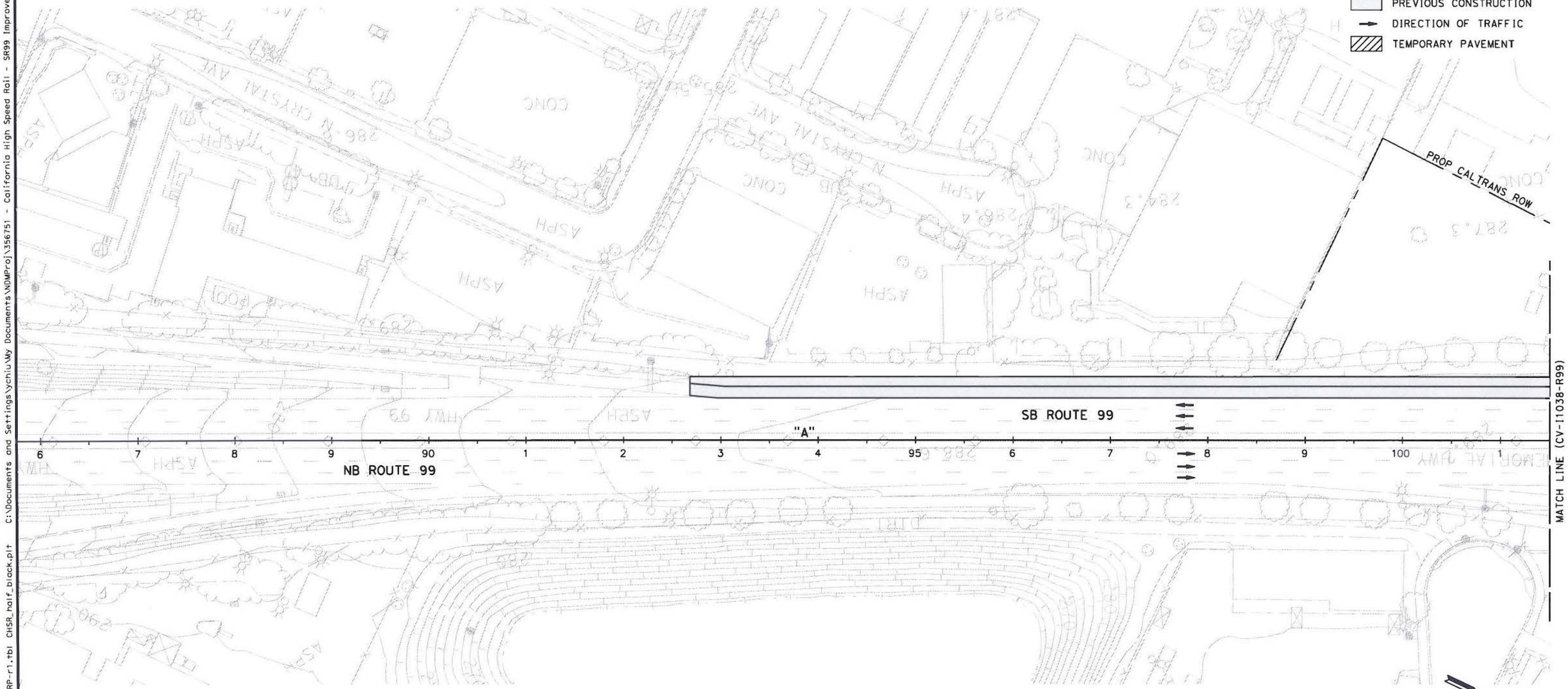
ychiu

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.

LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

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2020 L Street, Suite 300
Sacramento, CA 95811
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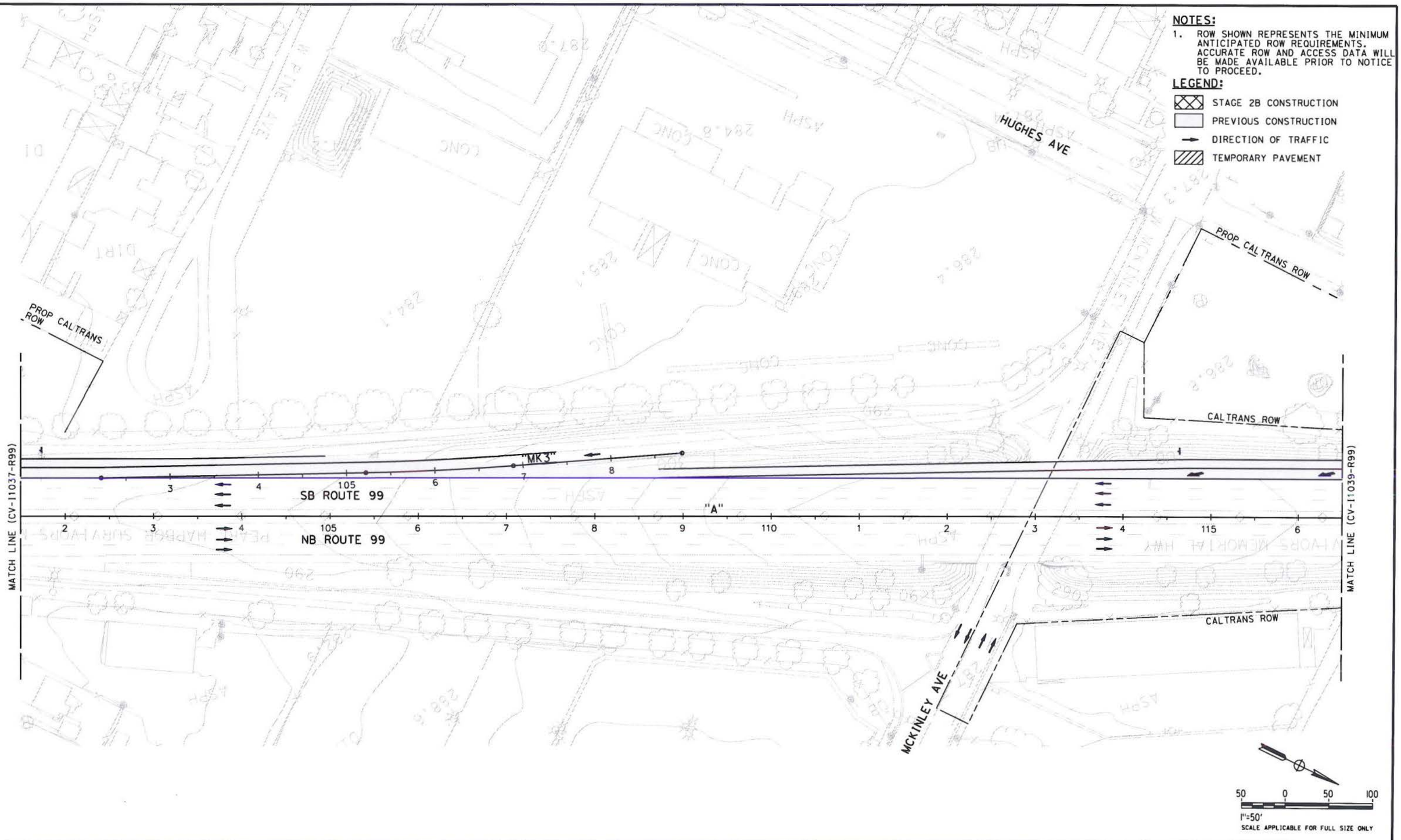
CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-11037-R99
SCALE AS SHOWN
SHEET NO.



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CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

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Sacramento, CA 95811
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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1038-R99
SCALE AS SHOWN
SHEET NO.

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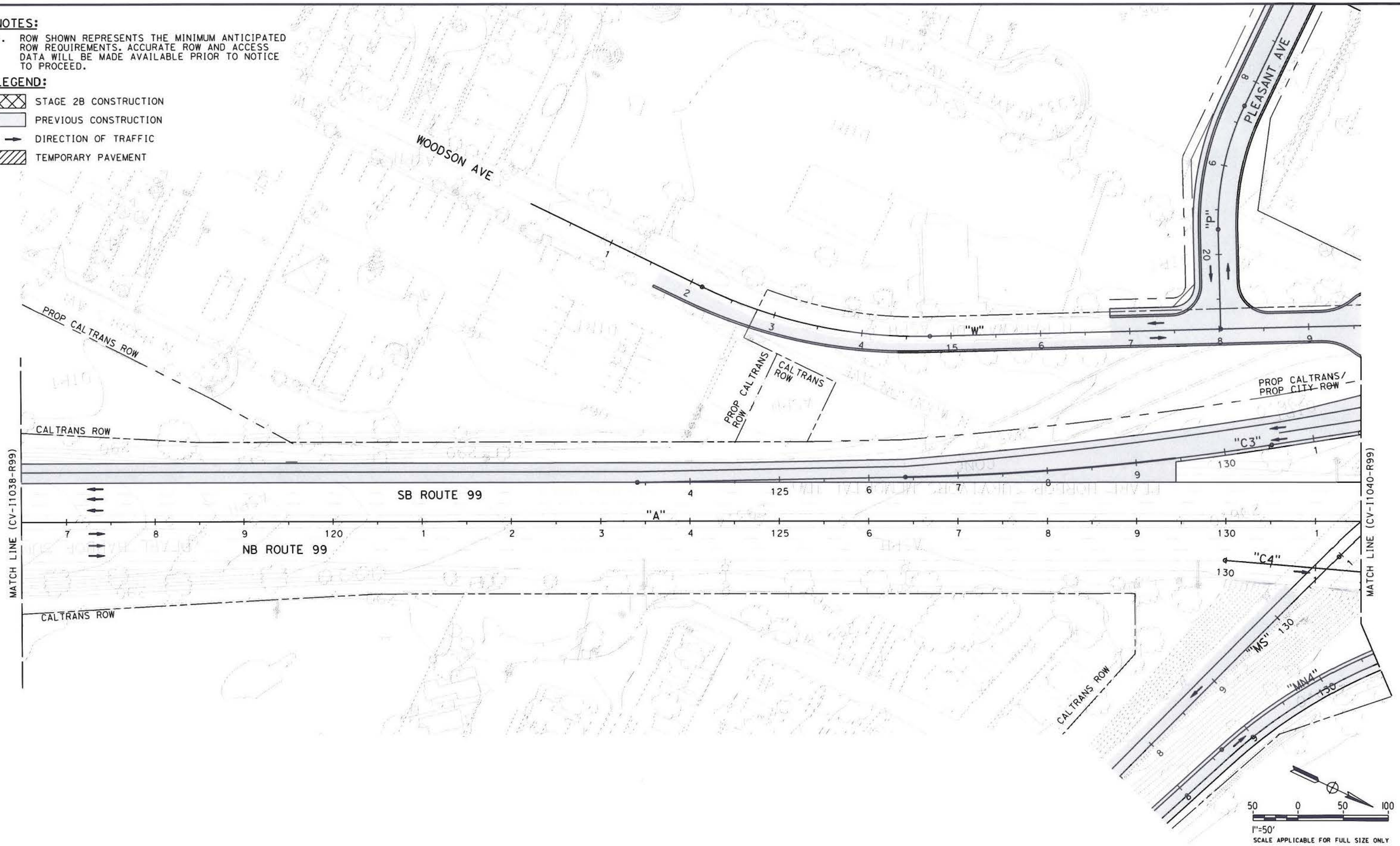
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.

LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1039-R99
SCALE AS SHOWN
SHEET NO.

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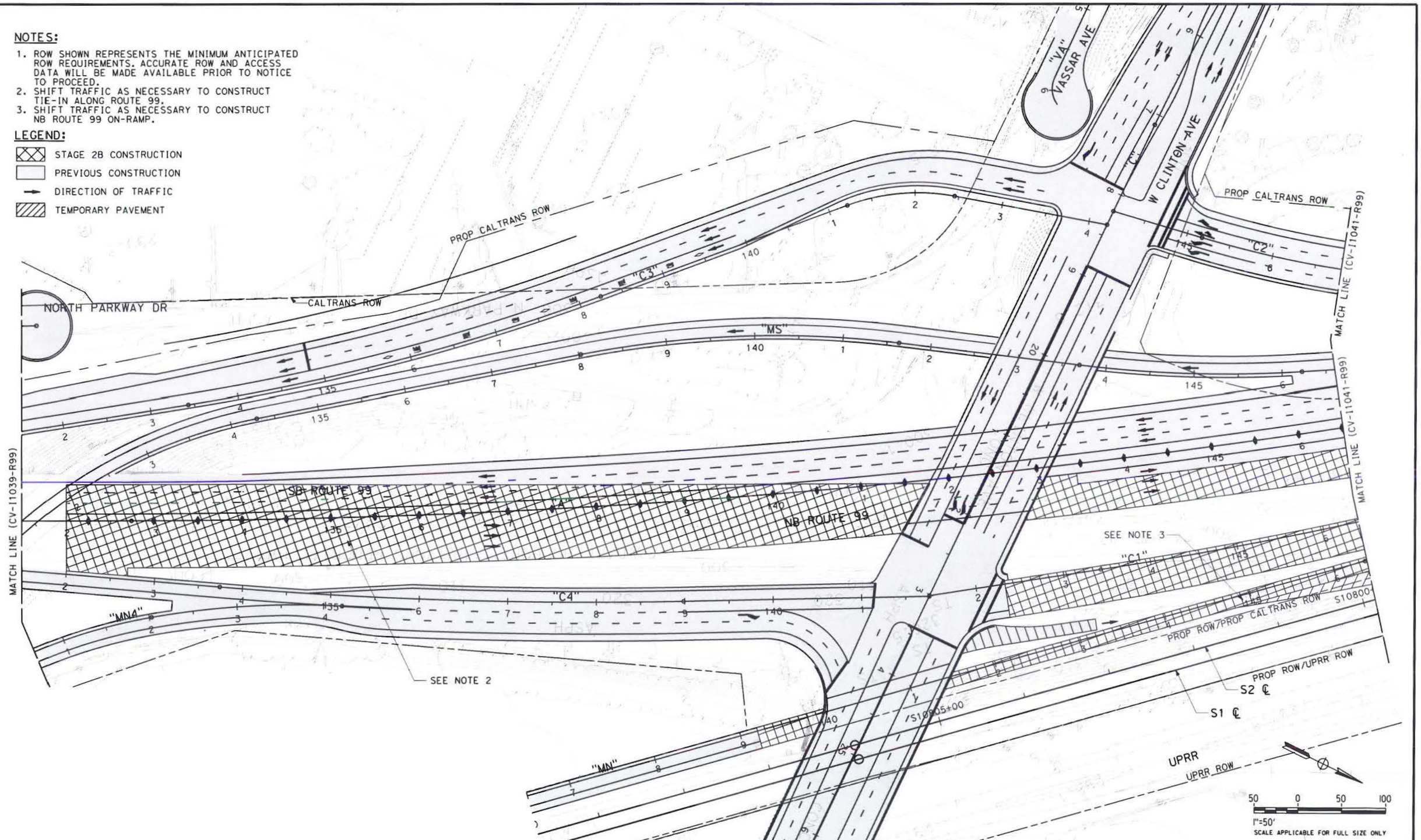
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SHIFT TRAFFIC AS NECESSARY TO CONSTRUCT TIE-IN ALONG ROUTE 99.
3. SHIFT TRAFFIC AS NECESSARY TO CONSTRUCT NB ROUTE 99 ON-RAMP.

LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

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Sacramento, CA 95811
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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1040-R99
SCALE AS SHOWN
SHEET NO.

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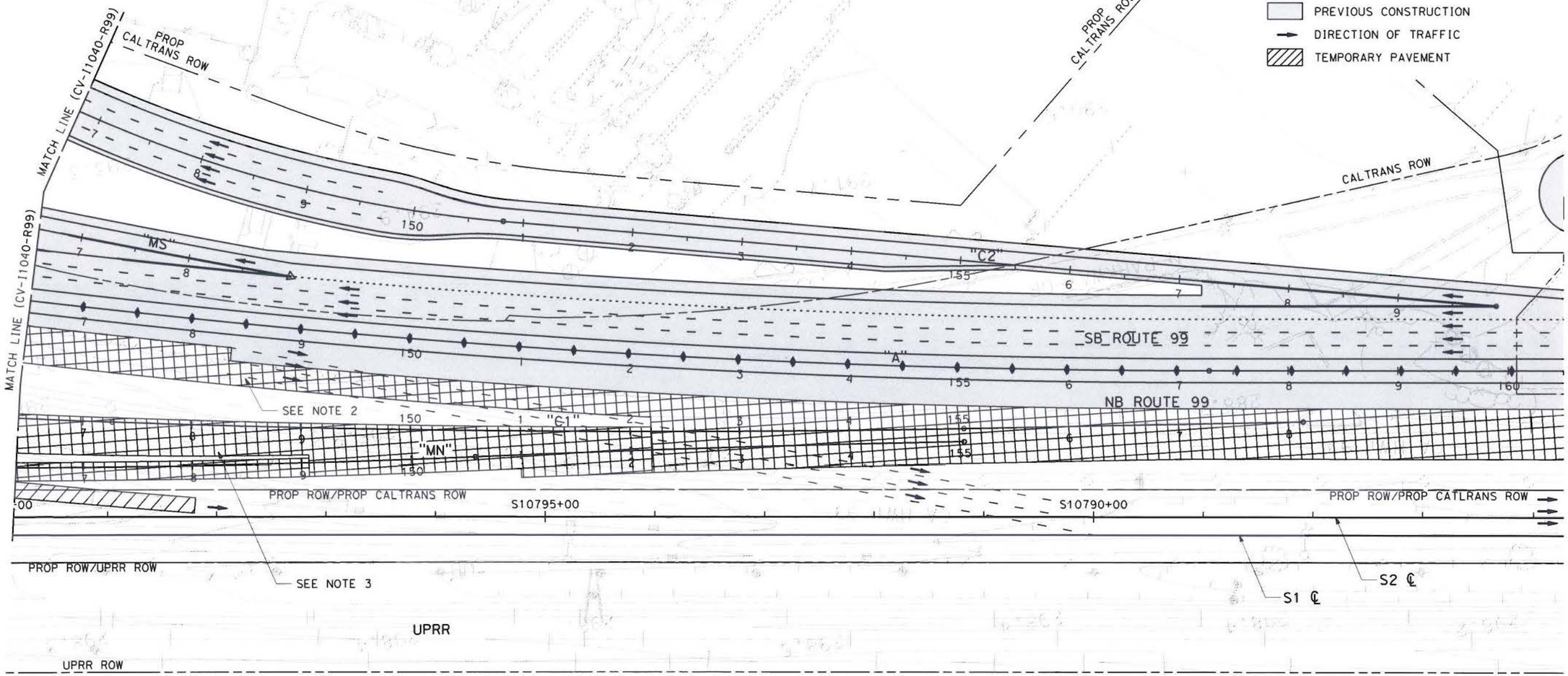
NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SHIFT TRAFFIC AS NECESSARY TO CONSTRUCT TIE-IN ALONG ROUTE 99.
3. SHIFT TRAFFIC AS NECESSARY TO CONSTRUCT NB ROUTE 99 ON-RAMP.

LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



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1"=50'

SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
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DATE 2/17/12

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.

DRAWING NO. CV-I1041-R99

SCALE AS SHOWN

SHEET NO.

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ychiu

NOTES:

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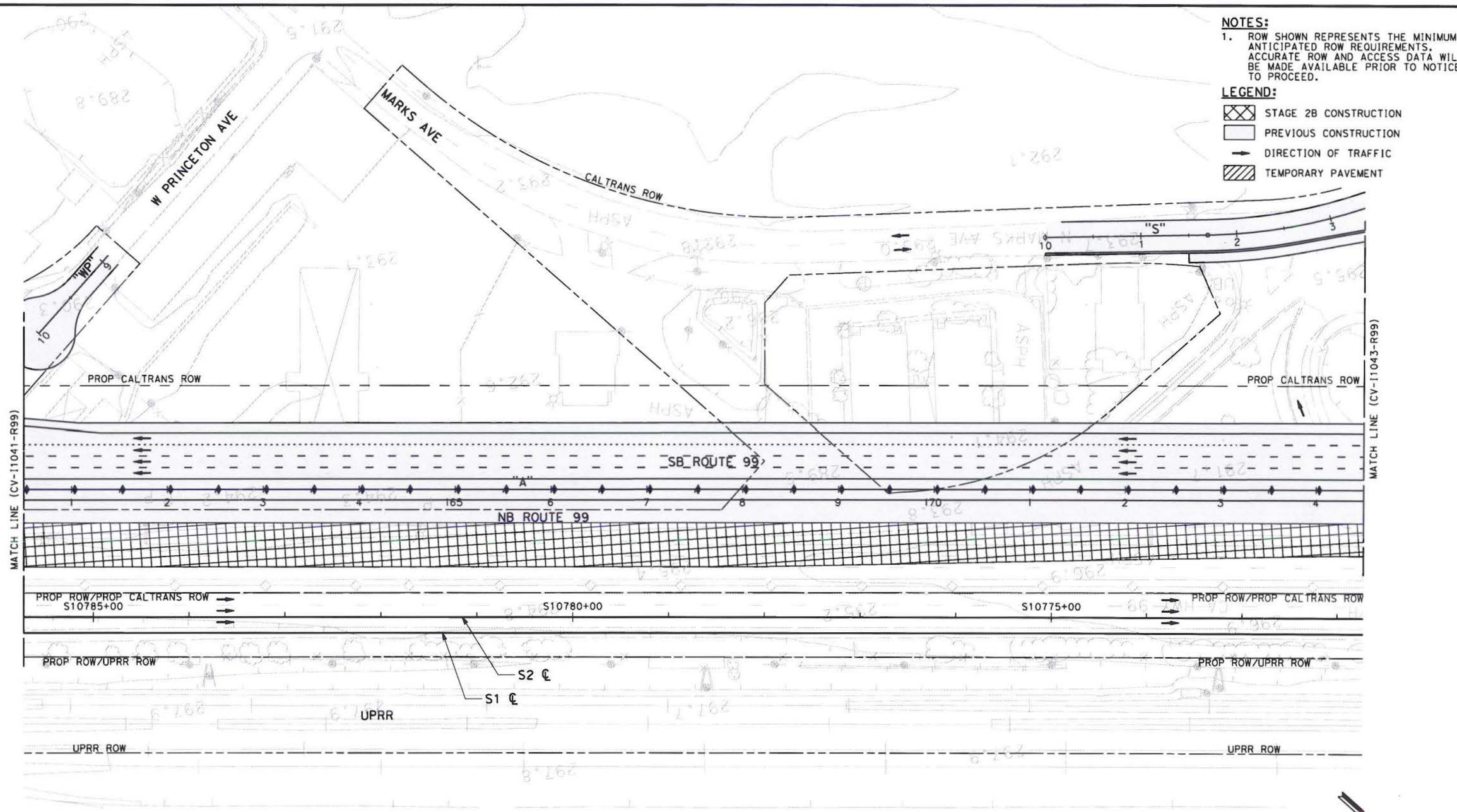
LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



50 0 50 100

1"=50'

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REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
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CHECKED BY L. HEUSTON
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DATE 11/22/11

PROPOSED PRELIMINARY DESIGN

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AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

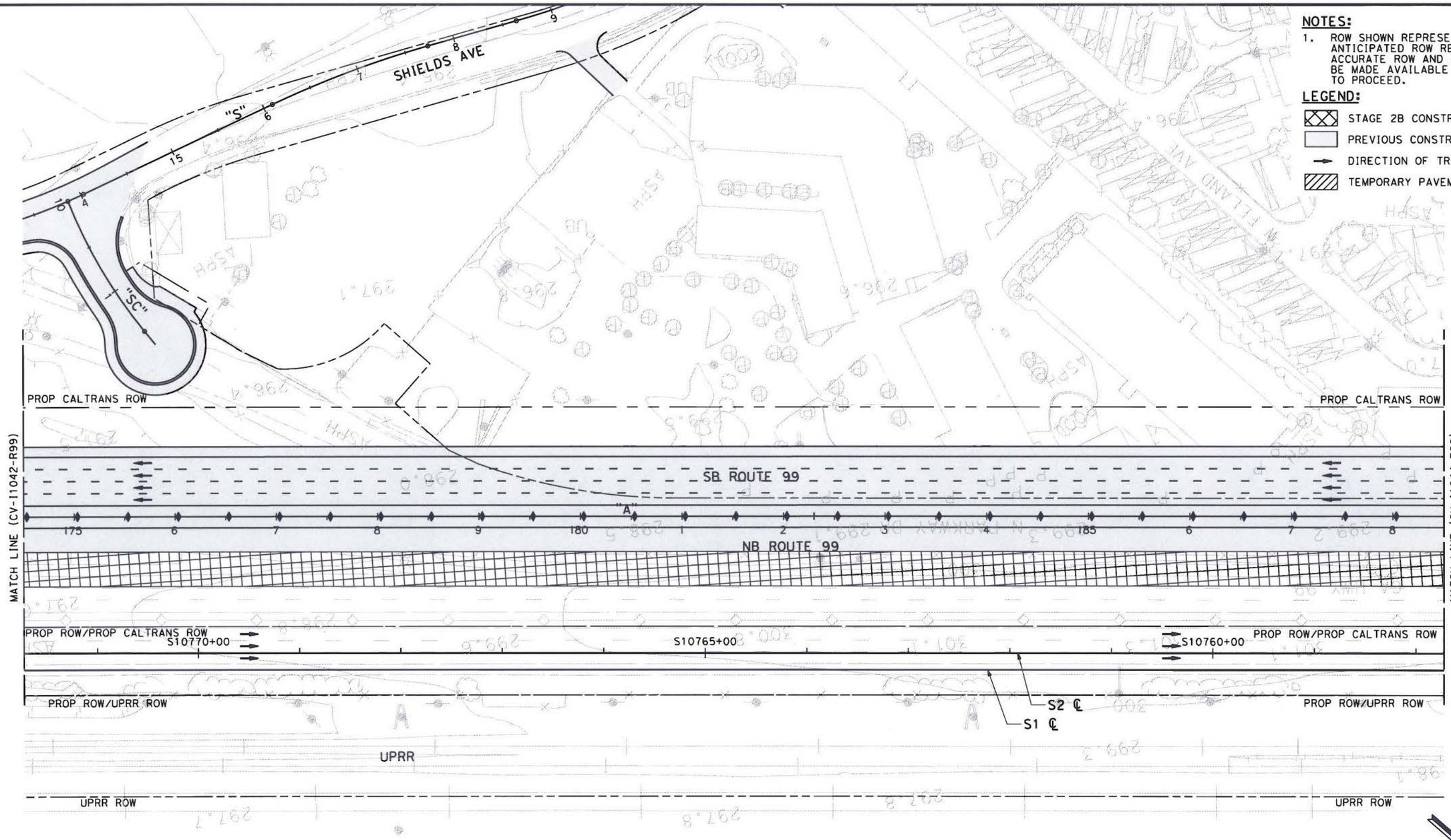
CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.

DRAWING NO. CV-I1042-R99

SCALE AS SHOWN

SHEET NO.



NOTES:

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LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
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50 0 50 100

1"=50'

SCALE APPLICABLE FOR FULL SIZE ONLY

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1043-R99
SCALE AS SHOWN
SHEET NO.

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ychiu

NOTES:

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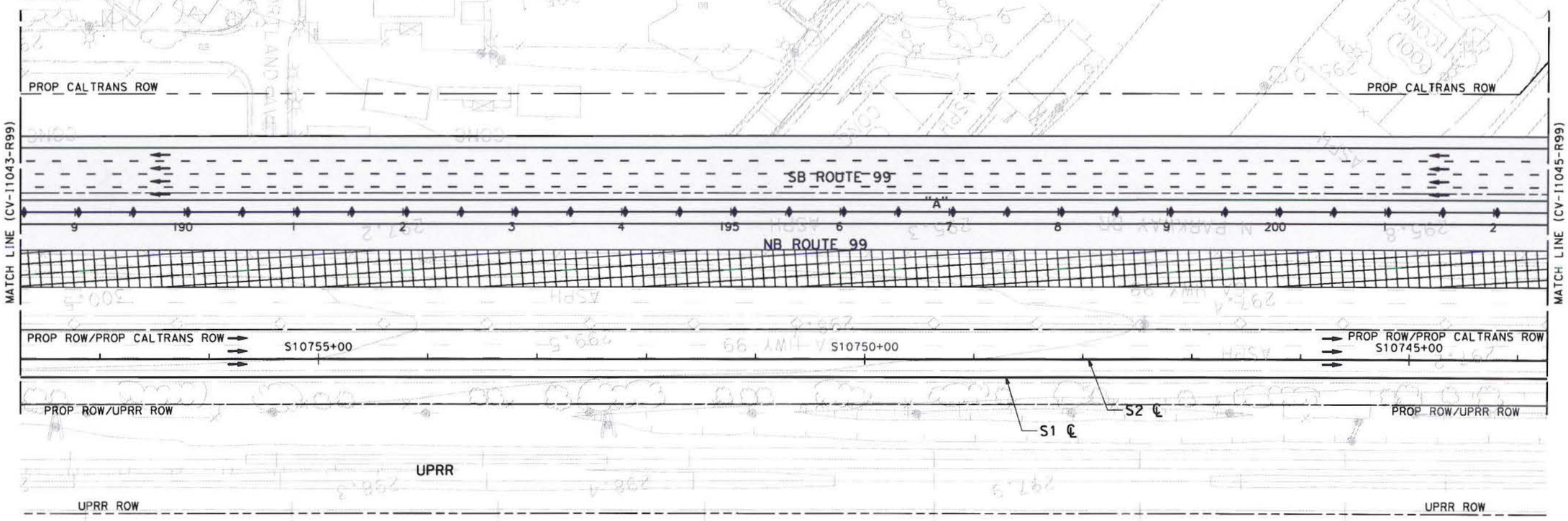
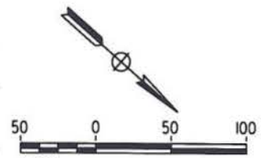
LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT





1"=50'
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

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IN CHARGE F. NOBARI
DATE 11/22/11

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1044-R99
SCALE AS SHOWN
SHEET NO.

NOTES:

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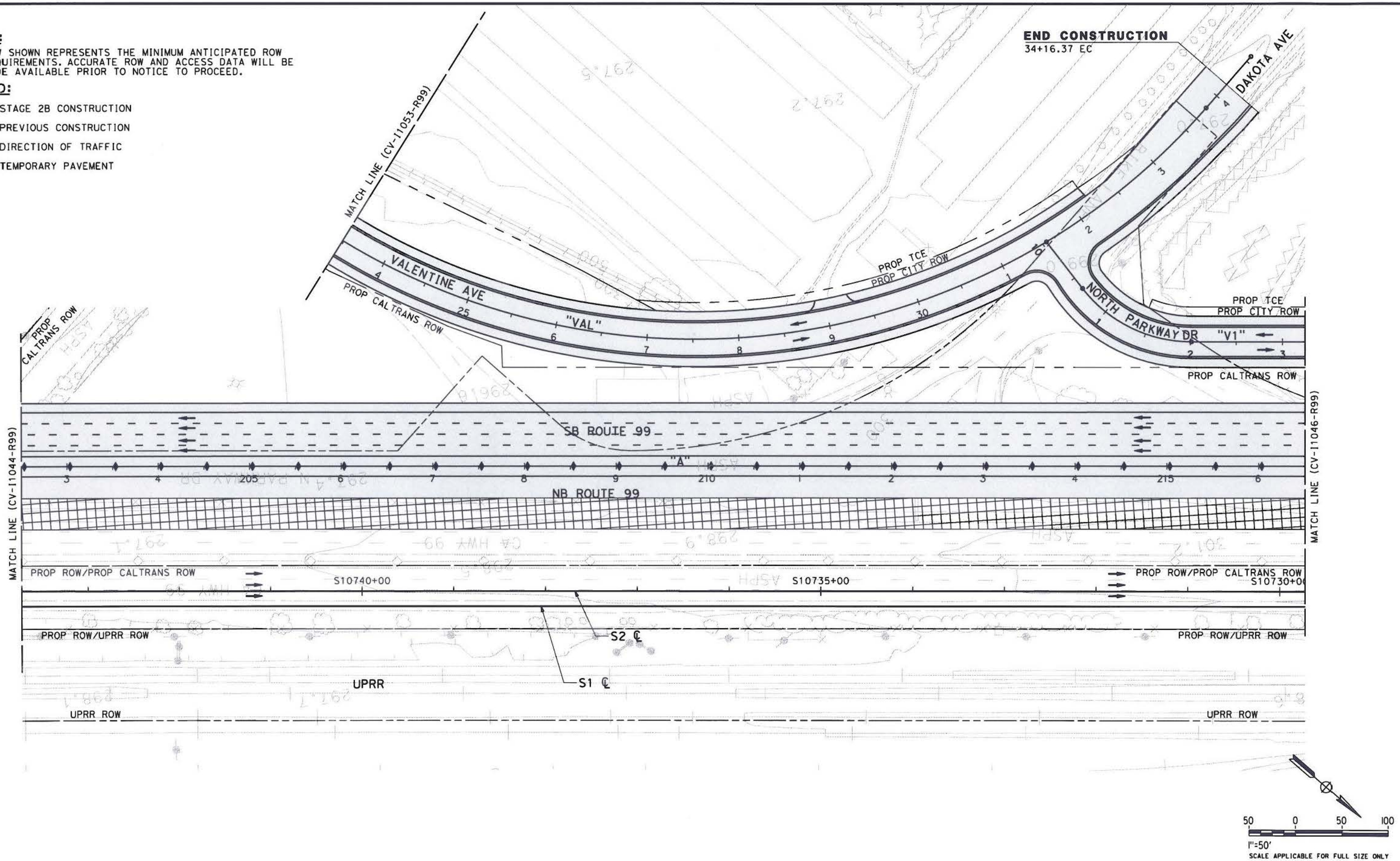
LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

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DRAWN BY R. MEZA
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IN CHARGE F. NOBARI
DATE 11/22/11

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2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1045-R99
SCALE AS SHOWN
SHEET NO.

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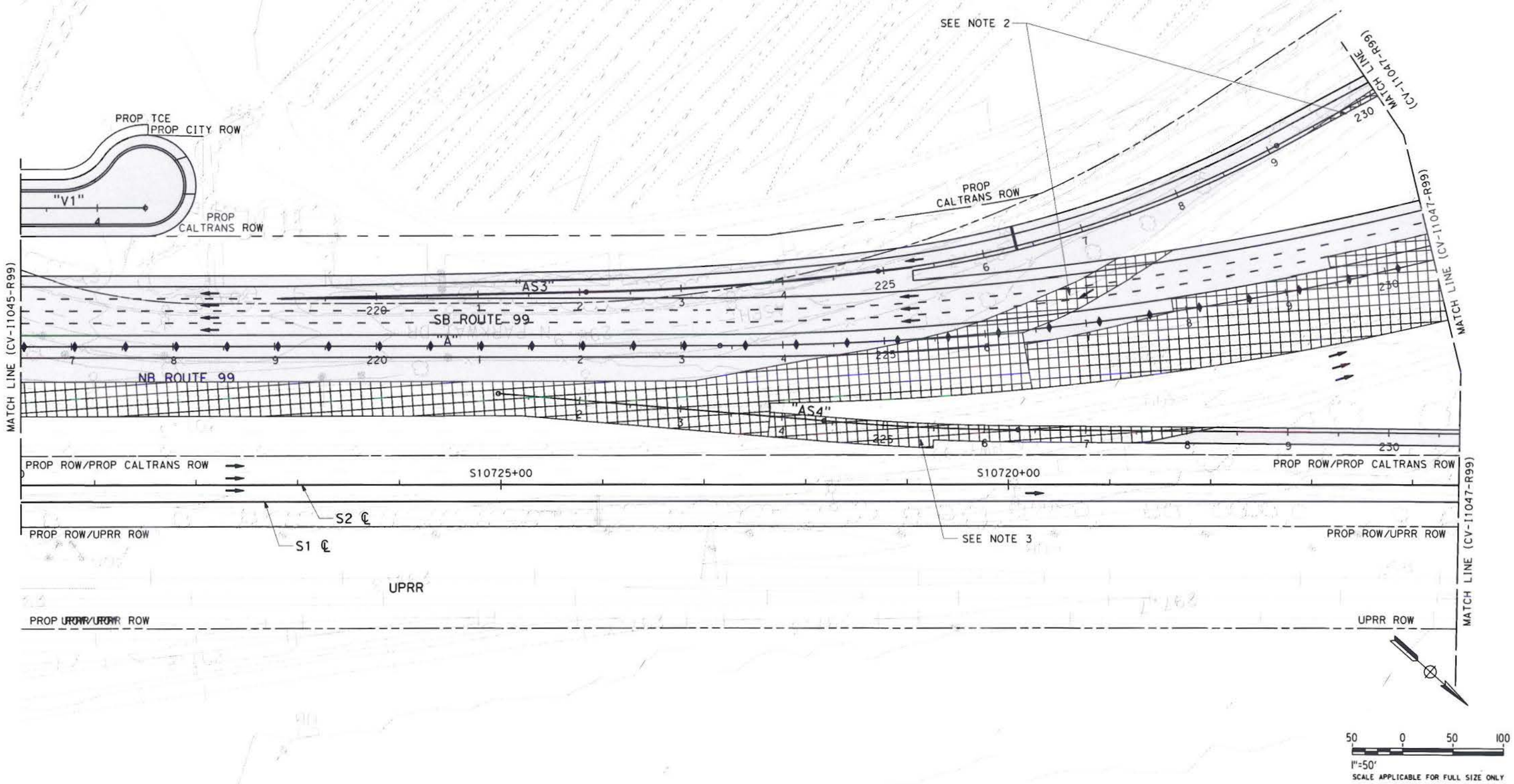
LEGEND:

- STAGE 2A CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. SHIFT TRAFFIC AS NECESSARY TO CONSTRUCT TIE-IN AT EXISTING AND PROPOSED SB ROUTE 99 ON-RAMP.
3. SHIFT TRAFFIC AS NECESSARY TO CONSTRUCT TIE-IN AT NB ROUTE 99 OFF-RAMP.



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CALIFORNIA HIGH-SPEED RAIL AUTHORITY

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SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1046-R99
SCALE AS SHOWN
SHEET NO.

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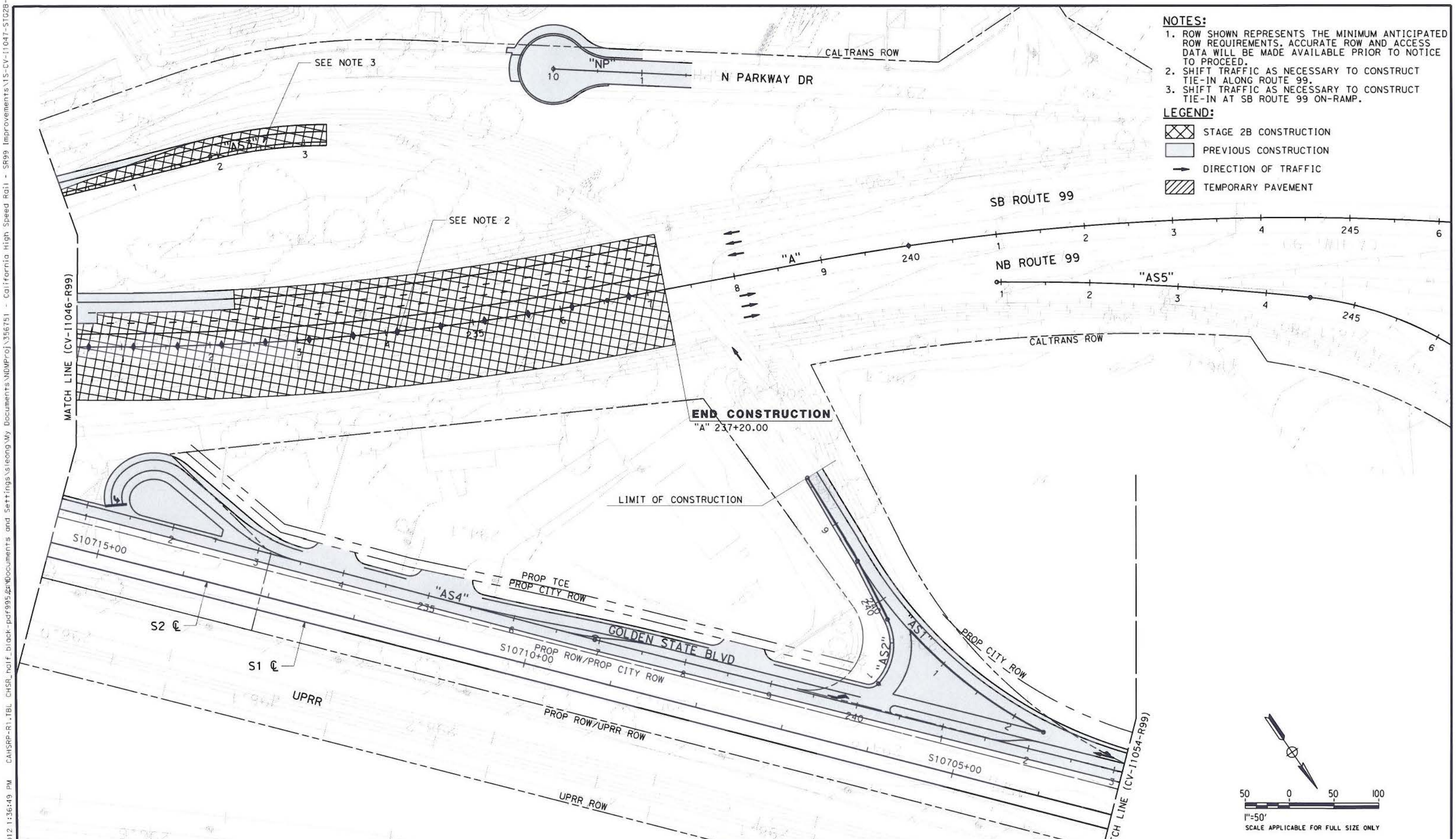

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DATE 2/17/12

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Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1047-R99
SCALE AS SHOWN
SHEET NO.

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NOTES:

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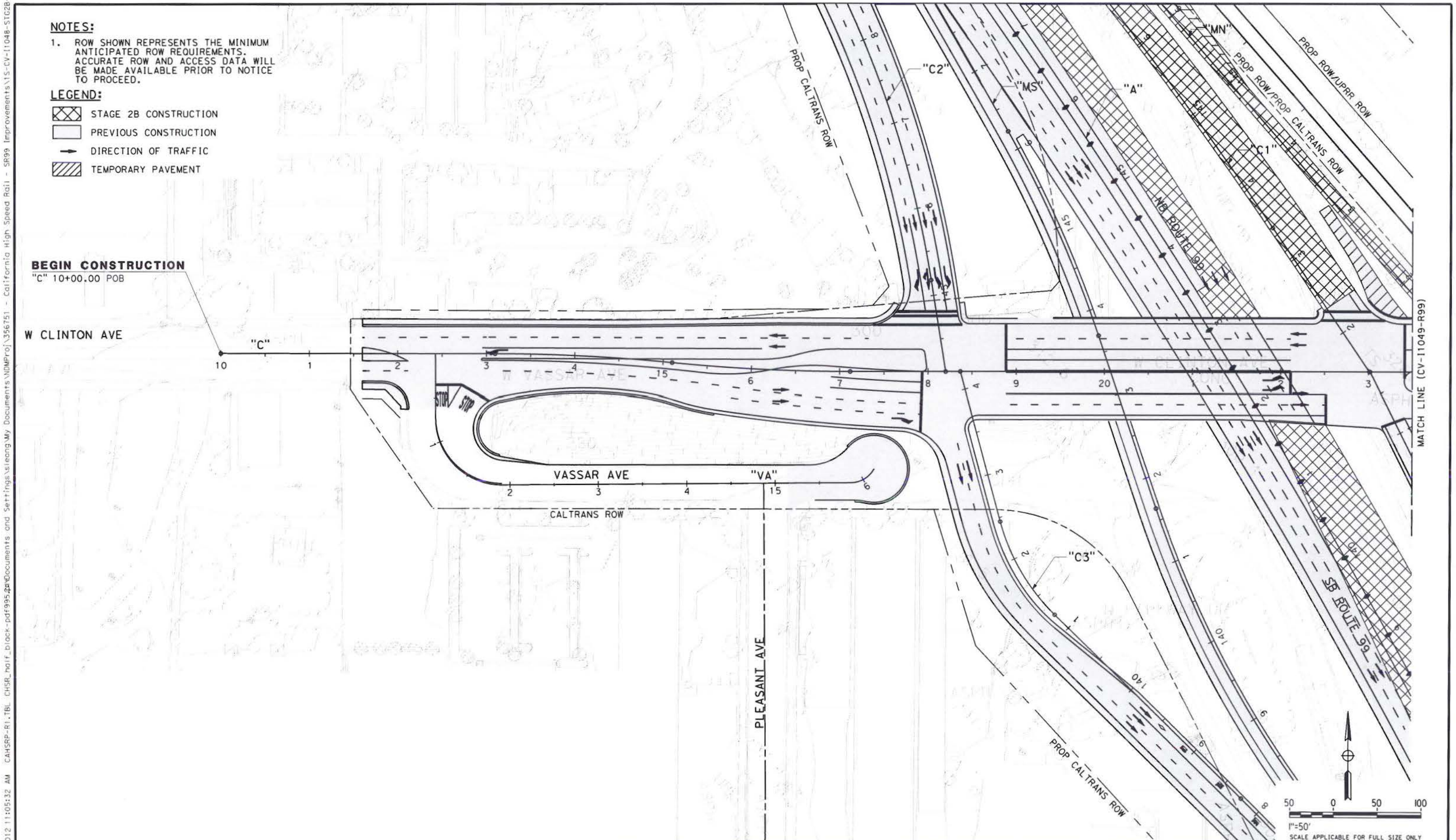
LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

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CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1048-R99
SCALE AS SHOWN
SHEET NO.

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NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENT. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.

LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT

50 0 50 100
1"=50'
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 2/17/12

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
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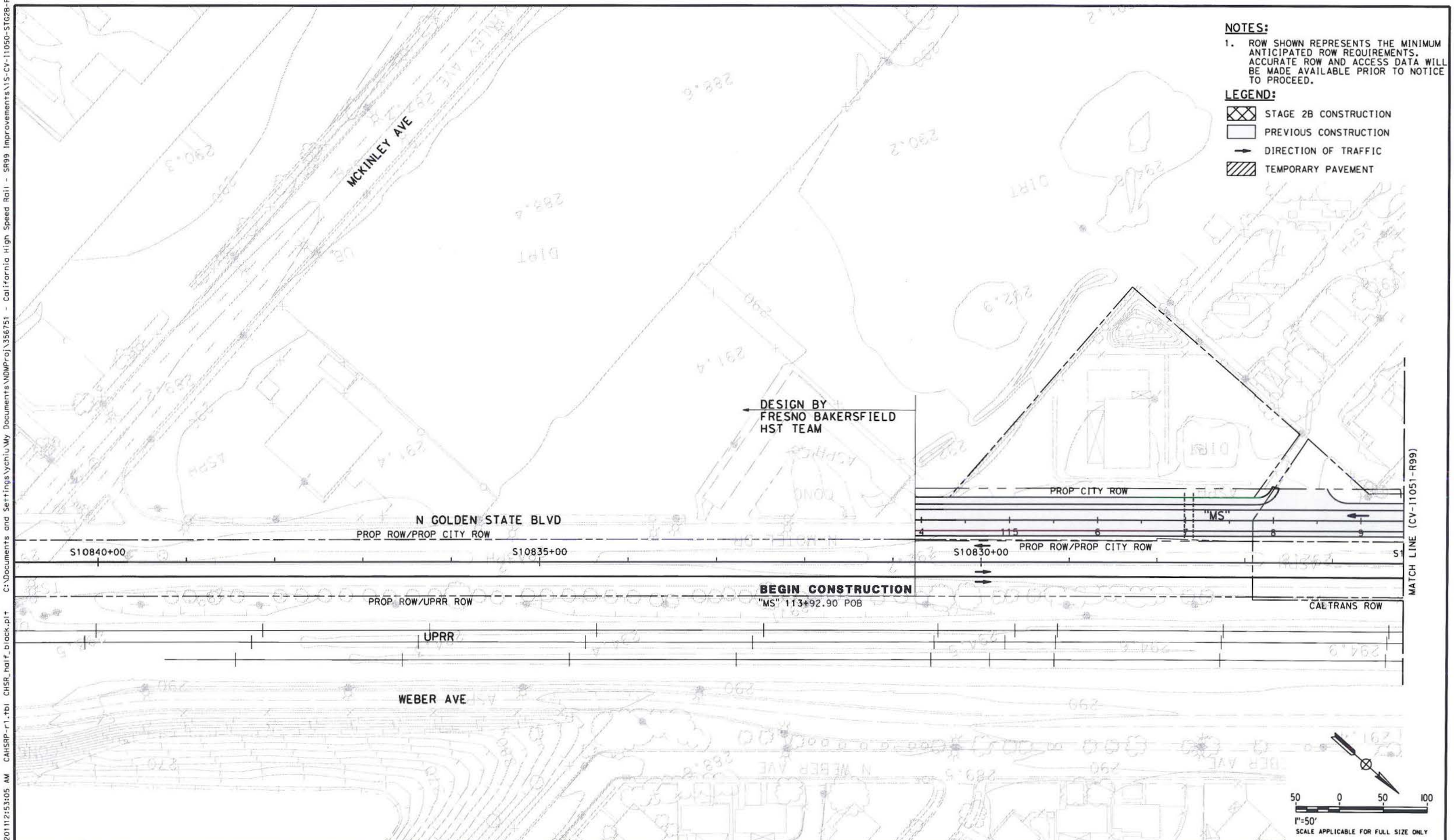
SHEET NO.



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REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

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Sacramento, CA 95811

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CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1050-R99
SCALE AS SHOWN
SHEET NO.

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NOTES:

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LEGEND:

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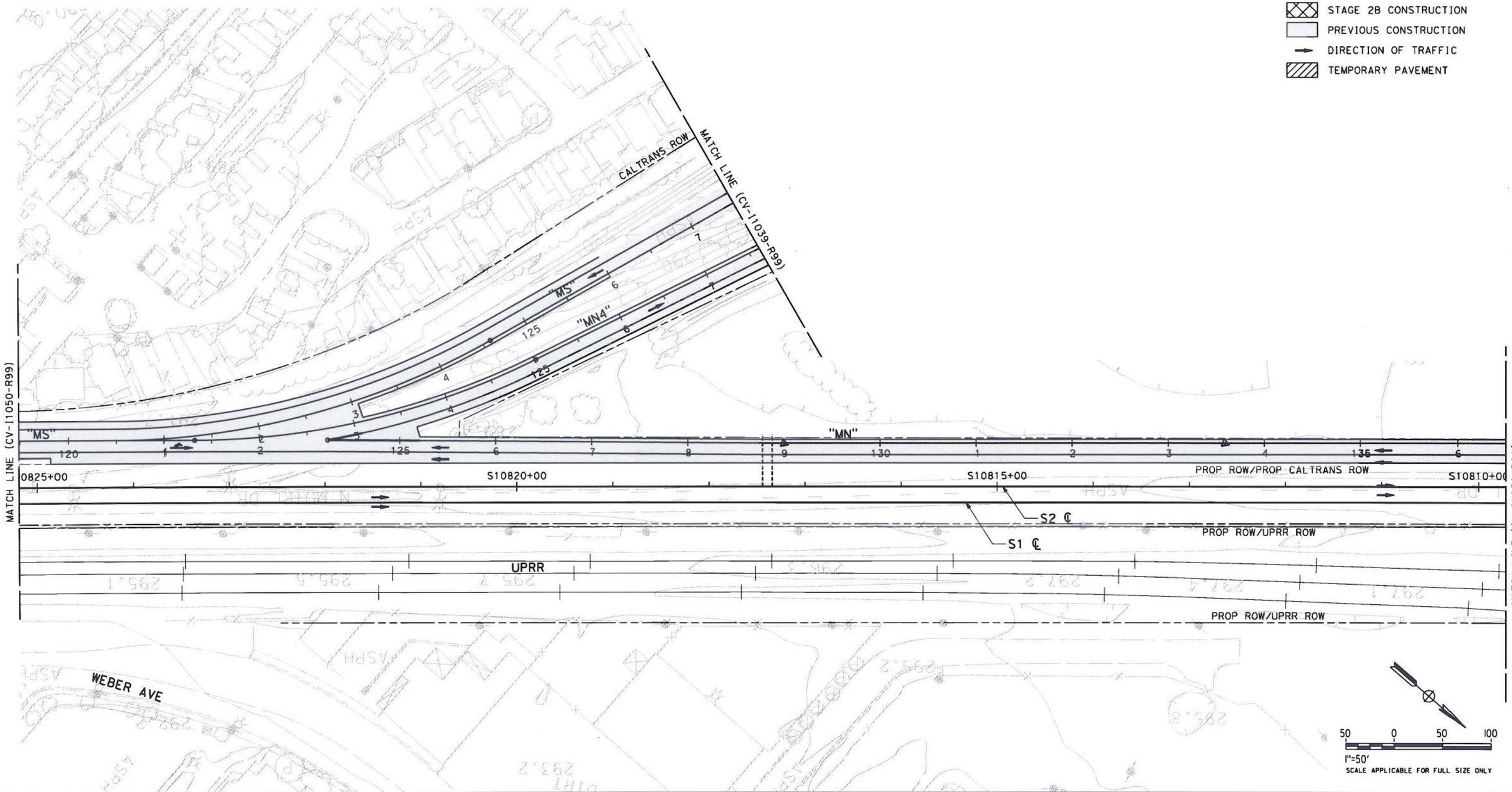
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



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DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

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2020 L Street, Suite 300
Sacramento, CA 95811

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CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-11051-R99
SCALE AS SHOWN
SHEET NO.

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NOTES:

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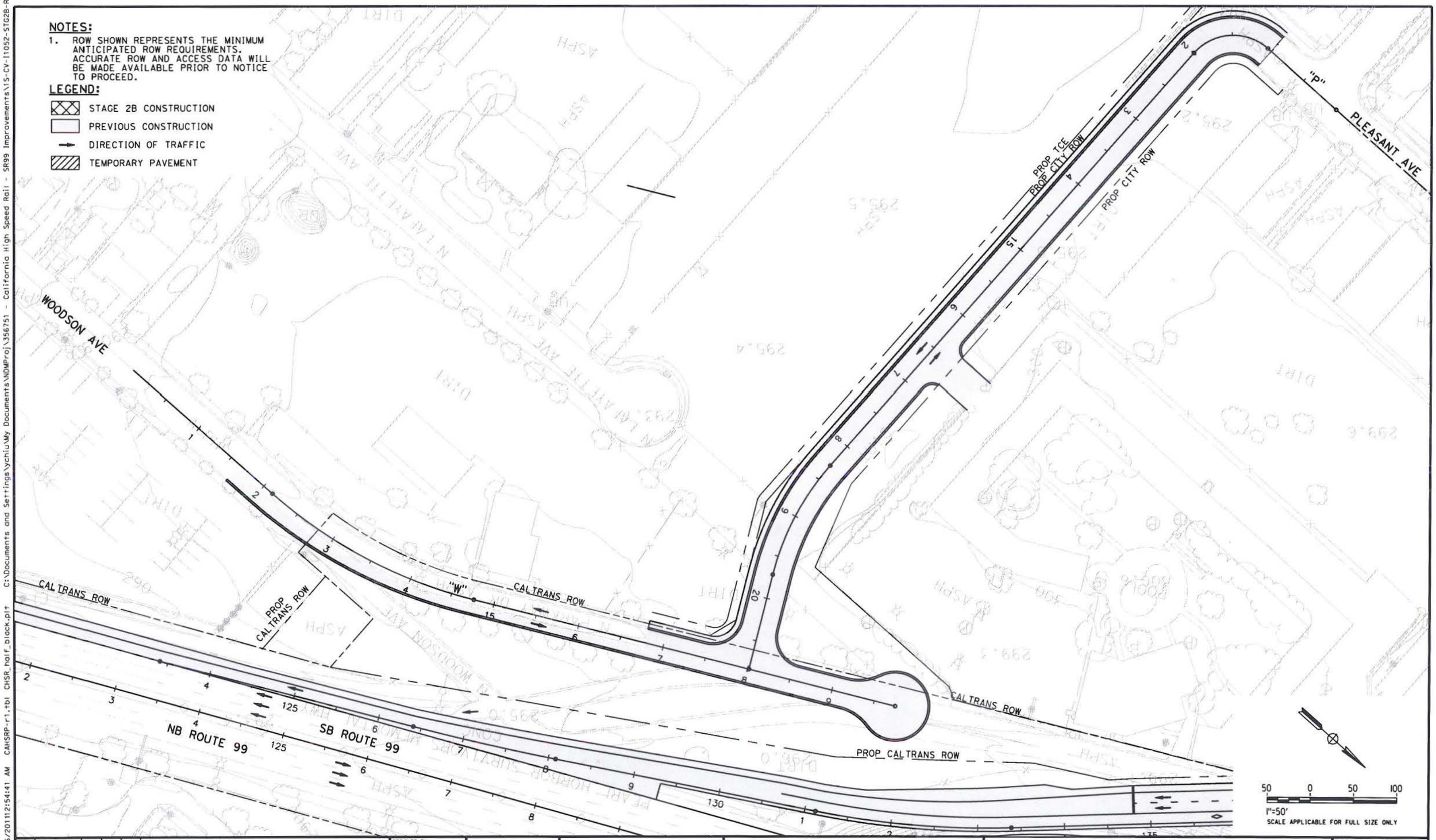
LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



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DESIGNED BY C. BENSON
DRAWN BY R. MEZA
CHECKED BY L. HEUSTON
IN CHARGE F. NOBARI
DATE 11/22/11

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2020 L Street, Suite 300
Sacramento, CA 95811
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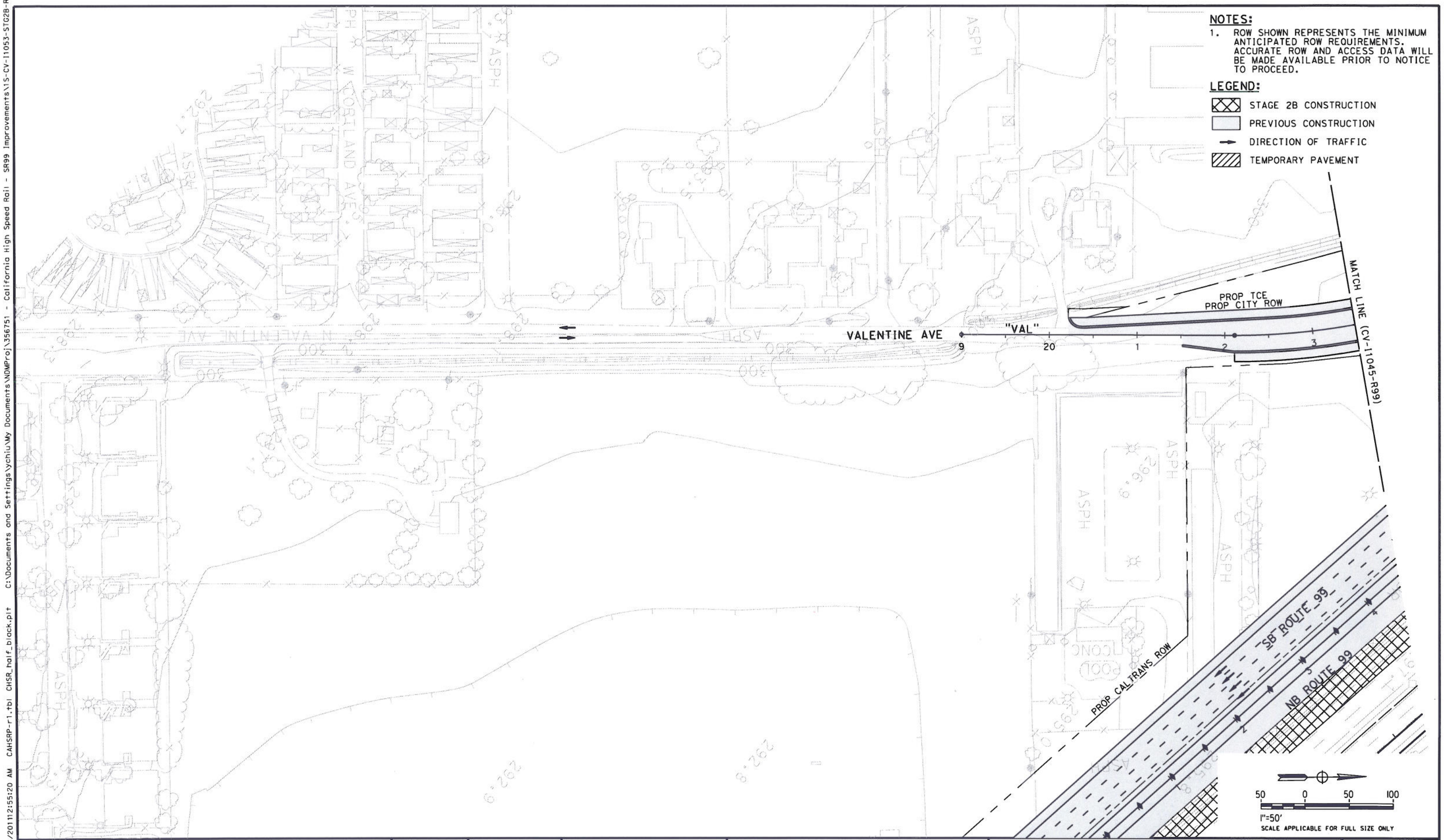
CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
CONSTRUCTION STAGING
STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1052-R99
SCALE AS SHOWN
SHEET NO.



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DATE 11/22/11

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Sacramento, CA 95811
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STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1053-R99
SCALE AS SHOWN
SHEET NO.

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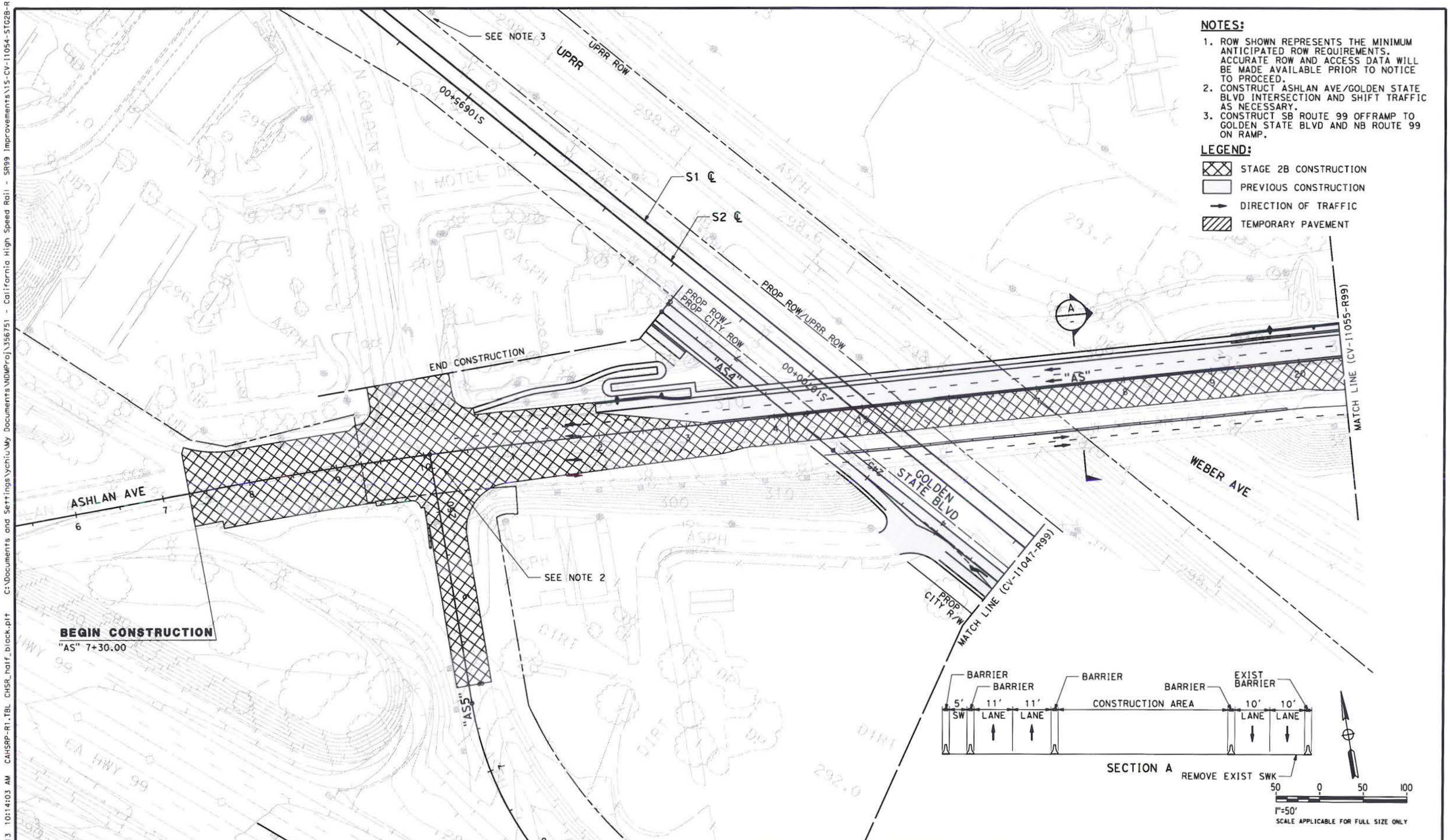

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. CONSTRUCT ASHLAN AVE/GOLDEN STATE BLVD INTERSECTION AND SHIFT TRAFFIC AS NECESSARY.
3. CONSTRUCT SB ROUTE 99 OFFRAMP TO GOLDEN STATE BLVD AND NB ROUTE 99 ON RAMP.

LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT

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STAGE 2B
SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1054-R99
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NOTES:

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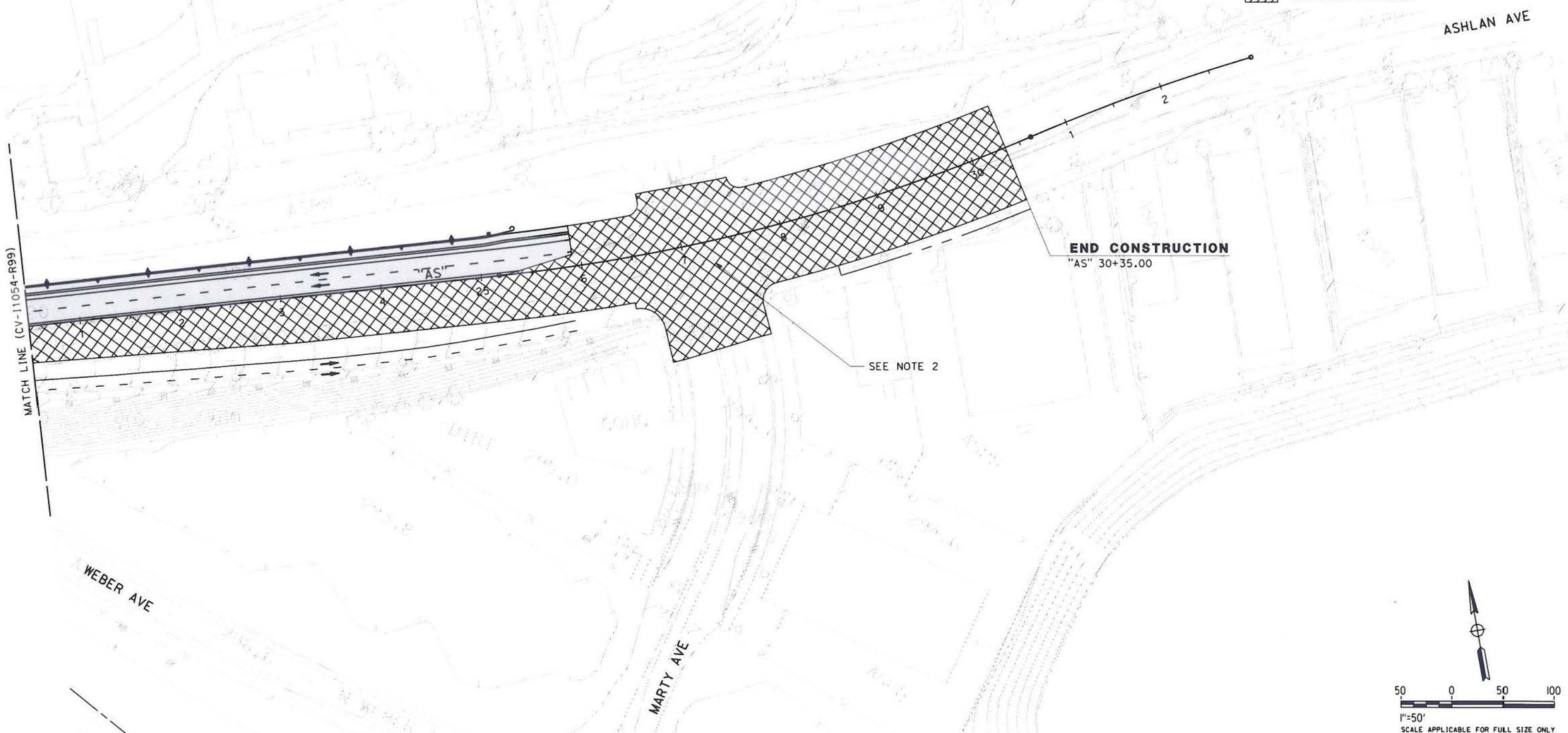
2. CONSTRUCT ASHLAN AVE/MARTY AVE INTERSECTION AND SHIFT TRAFFIC AS NECESSARY.

LEGEND:

- STAGE 2B CONSTRUCTION
- PREVIOUS CONSTRUCTION
- DIRECTION OF TRAFFIC
- TEMPORARY PAVEMENT



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IN CHARGE F. NOBARI
DATE 2/17/12

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SR 99 RE-ALIGNMENT

CONTRACT NO.
DRAWING NO. CV-I1055-R99
SCALE AS SHOWN
SHEET NO.

Attachment 7
Cost Estimate

PRELIMINARY PROJECT CONSTRUCTION COST ESTIMATE SUMMARY

District-County-Route	06-FRE-99
PM	23.5/31.3
EA	06-2HT000
Program Code	20.10730.100

PROJECT DESCRIPTION:

Limits In Fresno County, Olive Avenue Interchange to Ashlan Avenue Interchange and Herndon Avenue Ramps

Proposed Improvement (Scope) SR 99 Realignment, Auxiliary Lane, Ramps Modification

Alternative L-1 (Tight Diamond)

SUMMARY OF PROJECT CONSTRUCTION COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 80,760,000.00
TOTAL STRUCTURE ITEMS	$ 30,192,000.00
SUBTOTAL CONSTRUCTION COSTS	$ 110,952,000.00
TOTAL RIGHT OF WAY ITEMS	*$ 79,485,000.00 (Escalated to 2015)
	* PROVIDED BY CALTRANS
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ **190,437,000.00**

Reviewed by District Program Manager _____
(Signature)

Approved by Project Manager _____ Date: _____
(Signature)

Phone No. _____

PRELIMINARY PROJECT CONSTRUCTION COST ESTIMATE SUMMARY

District-County-Route	06-FRE-99
KP(PM)	23.5/31.3
EA	06-2HT000

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation	210,000	CY	$ 5.00	$ 1,050,000	
Develop Water Supply	1	LS	$ 50,000.00	$ 50,000	
Clearing and Grubbing	1	LS	$ 150,000.00	$ 150,000	
				Subtotal Earthwork	$ 1,250,000
Section 2 Pavement Structural Section					
Continuously Reinforced Concrete Pavement	165,500	CY	$ 175.00	$ 28,962,500	
Hot Mix Asphalt	54,000	TON	$ 90.00	$ 4,860,000	
Aggregate Base	42,500	CY	$ 30.00	$ 1,275,000	
Aggregate Sub Base	33,500	CY	$ 25.00	$ 837,500	
Remove Concrete Pavement	62,500	SQYD	$ 5.00	$ 312,500	
				Subtotal Pavement Structural Section	$ 36,247,500
Section 3 Drainage and BMPs					
Storm Drains & BMPs	1	LS	$ 2,280,000.00	$ 2,280,000	
				Subtotal Drainage and BMPs	$ 2,280,000

PRELIMINARY PROJECT CONSTRUCTION COST ESTIMATE SUMMARY

District-County-Route	06-FRE-99
KP(PM)	23.5/31.3
EA	06-2HT000

Section 4 Specialty Items

Retaining Wall Type A	78,000	SF	$ 95.00	$ 7,410,000
Barriers and Guardrails	15,000	FT	$ 60.00	$ 900,000
Replacement Planting	1	LS	$ 600,000.00	$ 600,000
Temporary Construction Site BMPs	1	LS	$ 1,020,000.00	$ 1,020,000
Erosion Control	1	LS	$ 510,000.00	$ 510,000

Subtotal Specialty Items $ 10,440,000

Section 5 Traffic Items

Street Lighting	1	LS	$ 50,000.00	$ 50,000
Highway Lighting	1	LS	$ 50,000.00	$ 50,000
Traffic Delineation Items	1	LS	$ 600,000.00	$ 600,000
Traffic Signals and Interconnect	1	LS	$ 600,000.00	$ 600,000
Overhead Sign Structure	1	LS	$ 500,000.00	$ 500,000
Roadside Signs	1	LS	$ 75,000.00	$ 75,000
Traffic Control Systems	540	DAYS	$ 5,000.00	$ 2,700,000
Temporary K-Rail	14,600	FT	$ 10.00	$ 146,000

Subtotal Traffic Items $ 4,721,000

TOTAL SECTIONS 1 thru 5 $ 54,938,500

PRELIMINARY PROJECT CONSTRUCTION COST ESTIMATE SUMMARY

District-County-Route	06-FRE-99
KP(PM)	23.5/31.3
EA	06-2HT000

				Item Cost	Section Cost
Section 6 Minor Items					
Subtotal Sections 1thru 5	$ 54,938,500	x 5%	= $	2,746,925	$ 2,746,925
			TOTAL MINOR ITEMS		
Section 7 Roadway Mobilization					
Subtotal Sections 1 thru 6	$ 57,685,425	x 10%	= $	5,768,543	$ 5,768,543
			TOTAL ROADWAY MOBILIZATION		
Section 8 Roadway Additions					
Supplemental Work:	$ 57,685,425	x 10%	= $	5,768,543	$ 5,768,543
Contingencies:	$ 57,685,425	x 20%	= $	11,537,085	$ 11,537,085

TOTAL ROADWAY ADDITIONS $ 17,305,628

TOTAL ROADWAY ITEMS $ 80,759,595

(Subtotal Sections 1 thru 8)

USE $ 80,760,000

Estimate Prepared By	Glenn Manorek/CH2M HILL	Phone No.	916-920-0300	Date	5/4/2012
Estimate Checked By	John O'Reilly/CH2M HILL	Phone No.	916-920-0300	Date	5/4/2012

PRELIMINARY PROJECT CONSTRUCTION COST ESTIMATE SUMMARY

District-County-Route	06-FRE-99
KP(PM)	23.5/31.3
EA	06-2HT000

II. STRUCTURE ITEMS

Bridge Name	Clinton Avenue Overcrossing		Cost per ft^2	
New Bridge - (FT^2)	42,000	$	240.00 $	10,080,000
Total Cost for Structure	(Includes 10% Mobilization & 25% Contingency)			
Bridge Name	Fresno Yard Overhead		Cost per ft^2	
New Bridge - (FT^2)	43,300	$	240.00 $	10,392,000
Total Cost for Structure	(Includes 10% Mobilization & 25% Contingency)			
Bridge Name	Ashlan Avenue Overhead		Cost per ft^2	
New Bridge - (FT^2)	38,600	$	240.00 $	9,264,000
Total Cost for Structure	(Includes 10% Mobilization & 25% Contingency)			
Bridge Name	North Fresno Undercrossing		Cost per ft^2	
New Bridge - (FT^2)	400	$	300.00 $	120,000
Total Cost for Structure	(Includes 10% Mobilization & 25% Contingency)			
Bridge Name	McKinley Blvd Undercrossing		Cost per ft^2	
New Bridge - (FT^2)	1,400	$	240.00 $	336,000
Total Cost for Structure	(Includes 10% Mobilization & 25% Contingency)			

TOTAL STRUCTURES ITEMS $ 30,192,000
(Sum of Structures Items plus Railroad Items)
USE $ 30,192,000

Estimate Prepared By Glenn Manorek/CH2M HILL Phone No. 916-920-0300 Date 5/4/2012

PRELIMINARY PROJECT CONSTRUCTION COST ESTIMATE SUMMARY

District-County-Route	06-FRE-99
KP(PM)	23.5/31.3
EA	06-2HT000

III. RIGHT OF WAY ITEMS

		Current Value (Future Use)	Escalation Rate/year	Escalated Value
A. Acquisition, including excess lands, damages to remainder(s) and Goodwill	$	36,520,313		
B. Utility Relocation (State/Project Sponsor share)	$	38,884,956		
C. Relocation Assistance	$	1,374,680		
D. Clearance/Demolition	$	1,732,992		
E. Title and Escrow Fees	$	420,673		
F. Ad Signs	$	551,250		

TOTAL RIGHT OF WAY $ 79,484,864
(Current Value)

TOTAL RIGHT OF WAY ITEMS $ N/A
(Escalated Value)

ROUNDED $ 79,485,000

Anticipated Date of Right of Way Certification
(Date to which Values are Escalated) _____

F. Construction Contract Work

Brief Description of Work:

_____

Right of Way Branch Cost Estimate for Work $ _____

Estimate Prepared By Glenn Manorek/CH2M HILL Phone No. 916-920-0300 Date 5/4/2012

Attachment 8
Right-of-Way Data Sheets

State of California Business, Transportation and Housing Agency

Memorandum

To: GARTH FERNANDEZ

Attn CHRIS GARDNER

Date: 1/7/2013

File: **CD** 06 **EA** 2HT000 **Alt** 1 UPDATE
Co FRE **RTE** 99

DESCRIPTION:
HIGH SPEED TRAIN SYSTEM

From: **Department of Transportation**
Division of Right of Way Central Region

Subject: **RIGHT OF WAY DATA SHEET**

We have completed an estimate of the right of way costs for the above-referenced project based on the Right of Way Data Sheet Request Form dated 1/4/2013

The following assumptions and limiting conditions were identified:

Appraisal
The High Speed Rail estimate is for the re-alignment of Highway 99 in Fresno from Mckinely to Ashlan Ave. Most of the parcels are zoned for either commercial or industrial use. Right of Way has estimated the minimal acquisitions and damages according to the mapping provided. For example, where access issues occur, Right of Way has taken into account that the Department will try to mimimize all issues that are present and try to accommodate all businesses that are being or will be affected. The TCE's will have minimal impact to the effected parcels and the businesses will be able to operate normally during and after construction. For parcels where the partial acquisition would result in a heavily damaged or unusable remainder, a full acquisition was estimated. Numerous long-term hotel residents and mini-storage tenants will require relocation assistance. Railroad leadtime of 24 months shall begin upon delivery of bridge site plans. It is anticipated that in order to meet the scheduled Right of Way Cert date, a cert 3 with work-around will be necessary.

Utility
A field review of the project was done on 04/20/2012. During the field review, several businesses and utilities were noticed to be in the way of the project. Pacific Gas and Electric has several facilities that were noticed to be in the way of the proposed project. PG&E has both transmission and distribution facilities through out the limits of the project. There is also a gas line that appears to belong PG&E. AT&T has both telephone and fiber optic that may need to be relocated. It appears that there is a cell tower in the way of the project. On the cell tower there are several other telephone companies that are leasing from AT&T's cell tower. Several irrigation boxes were also noticed to be within this area. Mapping provided by Design does not identify what is in conflict or needed to be relocated therefore, estimate is based on what was seen and assumed to be in the field.

Right of Way Lead Time will require a minimum of 24 months after we receive Certified Appraisal Maps and/or Utility Conflict Plans, obtained necessary environmental clearance and applicable freeway agreements have been approved.

Nicholas G Dumas

NICHOLAS G DUMAS
Assistant Region Division Chief, Right of Way
(559)445-6195

EA: 06-2HT000 CO/RTE/PM-PM (Rte 1 and Rte 2) : FRE/99/- & //- Request Date: 1/4/2013
ALT: 1 UPDATE Revised Date:

Right Of Way Cost Estimate

	Current Year 2012	Contingency Rate	Right of Way Escalation Rate	Escalated Year 2014
Acquisition:	$33,125,000	25%	5%	$36,520,313
Mitigation:	$0	25%	5%	$0
State Share of Utilities:	$36,652,800	20%	3%	$38,884,956
Expert Witness:	$0	25%	5%	$0
Relocation Assistance:	$1,246,875	25%	5%	$1,374,680
Demolition and Clearance:	$1,571,875	25%	5%	$1,732,992
Title and Escrow:	$381,563	25%	5%	$420,673
Ad Signs:	$500,000	25%	5%	$551,250
Total Current Value: If RW Cost Est fields are blank, Costs = $0	$73,478,113			$79,484,863

Estimated Construction Contract Work (CCW): 0 R/W LEAD TIME/Mo. 24

Cost Break Down

Pot Hole	25,000
Mitigation	
Land	0
Bank	0
Permit Fees	0

RR Involvement

Railroad Facilities or Right of Way Affected?	Yes
Const/Maint Agreement:	Yes
Service Contract:	Yes
Right of Entry:	Yes
Clauses:	Yes
Estimated Lead-time:	24

Parcel Data

# of Parcel Type X:	0		
# of Parcel Type A: less than $10,000 non-complex	11		
# of Parcel Type B: more than $10,000 non-complex	18		
# of Parcel Type C: complex, special valuation	6		
# of Parcel Type D: most complex and time consuming	11	# of Duals Needed:	
Totals:	46	Totals:	0

# of Excess Parcels: 6

Utilities

U4-1: Owner Expense	5
U4-2: State Expense, Conventional no Fed Aid	0
U4-3: State Expense, Freeway no Fed Aid	0
U4-4: State Expense, both with Fed Aid	5
U5-7: Utility verification, no relocation/potholing	0
U5-8: Utility verification, w/ some relocation/potholing	0
U5-9: Utility verifications, relocation/potholing required	10

Misc R/W Work

# of RAP Displacements:	116
# of Clearance/Demos:	15
# of Const Permits:	0
# of Condemnations:	10

EA: 06-2HT000 ALT: 1 UPDATE

Parcel Area

Total R/W Required:	28.85
Total Excess Area:	5.99

General Description of R/W and Excess Lands Required (zoning, use, major improvements, critical or sensitive parcels, etc.):

The High Speed Rail estimate is for the re-alignment of Highway 99 in Fresno from Mckinely to Ashlan Ave. Most of the parcels are zoned for either commercial or industrial use. Right of Way has estimated the minimal acquisitions and damages according to the mapping provided. For example, where access issues occur, Right of Way has taken into account that the Department will try to mimimize all issues that are present and try to accommodate all businesses that are being or will be affected. The TCE's will have minimal impact to the effected parcels and the businesses will be able to operate normally during and after construction. For parcels where the partial acquisition would result in a heavily damaged or unusable remainder, a full acquisition was estimated. Numerous long-term hotel residents and mini-storage tenants will require relocation assistance. Railroad leadtime of 24 months shall begin upong delivery of bridge site plans. It is anticipated that in order to meet the scheduled Right of Way Cert date, a cert 3 with work-around will be necessary.

General Description of Utility Involvement:

The purpose of this project is to realign portion of State Route (SR) 99 and ramps from the Clinton Avenue Interchange to the Ashlan Ave. Interchange (PM 23.3 to 26.55), to accommodate the proposed High Speed Train facilities between the Union Pacific Railroad and State Right of Way. In addition to the SR 99 realignment, the existing Clinton Ave. Interchange, including the Clinton Ave. OC, is proposed to be reconstructed. Two rail grade separations over the UPRR tracks at Clinton Ave. and Ashland Ave. are proposed to be replaced. The project also proposes to close SB on/off ramps at Dakota Ave. and Shields Ave. and the SB onramp from Princeton Ave. Various local streets on the west side of SR 99, including the McKinley Ave. SB on-ramp.

Is there a significant effect on assessed valuation: No

Were any previously unidentified sites with hazardous waste or material found: No

Are RAP displacements required: Yes

# of single family: 3 # of muliti-family: 104 # of business/nonprofit: 9 # of farms: 0

Sufficient replacement housing will be available without last resort housing:

Are material borrow or disposal sites required: No

Are there potential relinquishments or abandonments: No

Are there any existing or potential airspace sites: No

Are environmental mitigation parcels required: No

Data for evaluation provided by:

Estimator:	Gordon Waktins	1/4/2013
Railroad Liaison Agent:	Maria Toles	1/4/2013
Utiltiy Relocation Coordinator:	Rosa Rubalcaba	9/21/2012

I have personally reviewed this Right of Way Sheet and all supporting information. I find this Data Sheet complete and current, subject to the limiting conditions set forth.

Nicholas G Dumas

NICHOLAS G DUMAS
Assistant Region Division Chief, Right of Way

Date
ENTERED PMCS 1/4/2013
BY: H YANG

Attachment 9
Risk Register

STATE OF CALIFORNIA – DEPARTMENT OF TRANSPORTATION

RISK REGISTER CERTIFICATION (ACCOUNTABILITY CHECKPOINTS)

Form PM-001/CR (Rev. 1/17/2013)

The risk register is to be approved and signed-off by the deputies listed below for all scalability levels. By signing this form, you are certifying that you have reviewed the risks documented in the register and agree that they have been managed to the extent possible by the PDT.

Project Information

District – EA/EFIS	06-2HT00 / 0600020014
Project Description	HST- Fresno to Merced
Project Risk Manager (Same as PM for Risk Level 1&2 Projects)	Garth Fernandez
Project Manager (PM)	

PA&ED (Required)

KIM E. ANDERSON Chief, Central Region Project Development	For	Date: 3/28/13
CHRISTINE COX-KOVACEVICH Chief, Central Region Environmental		Date: 4/2/13
BRIAN EVERSON Chief, Central Region Program/Project Management		Date: 4/8/13
SPIROS KARIMBAKAS Deputy District Director, Program/Project Management		Date: 4/8/13

Prior to PS&E (Required)

KIM E. ANDERSON Chief, Central Region Project Development	N/A	Date:
MARK DER MATOIAN Chief, Central Region Construction	N/A	Date:
DONALD E. GREBE Acting Chief, Central Region Right of Way	N/A	Date:
CHRISTINE COX-KOVACEVICH Chief, Central Region Environmental	N/A	Date:
BRIAN EVERSON Chief, Central Region Program/Project Management	N/A	Date:
SPIROS KARIMBAKAS Acting Deputy District Director, Program/Project Management	N/A	Date:
Project Manager		Date:

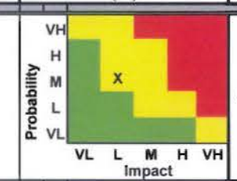
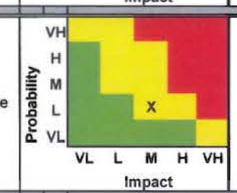
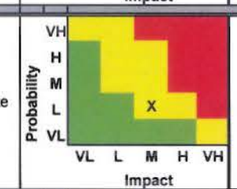
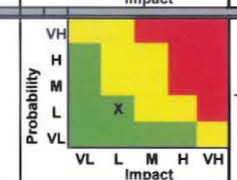
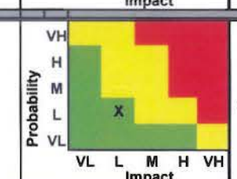
Dist - E.A 06-2HT00 **Project Name** Merced-Fresno High Speed Train Project/Fresno County SR99 Realignment and Herndon Ramps

Co-Rte-PM Fre-99

Date 1/9/2013

Project Mngr Garth Fernandez **Telephone Number** (559) 243-8012

PROJECT RISK REGISTER

Priority	Identification						Qualitative Analysis				Risk Response Plan		Monitoring and Control	
	Status	ID #	Date Identified Project Phase	Functional Assignment	Risk Name	Risk Statement	Type	Probability	Impact	Risk Matrix	Strategy	Response Actions including advantages and disadvantages	Responsibility (Risk Manager)	Last date changes made to risk and Comments
	Active Dormant Retired		PID PA&ED PS&E Construction				Scope Schedule Cost Quality	Very High High Moderate Low Very Low	Very High High Moderate Low Very Low		Avoidance Transference Mitigation Acceptance N/A			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(15)	(16)	(17)	(18)
	Active	1	PA&ED	PM	Rail Road Master Agreement.	The Master Agreement between CHSRA and the UPRR for the two UPRR overhead structures is not reached. If this agreement is not in place in a timely manner it could cause delay to the Caltrans project or require redesign.	Scope Schedule Cost	Moderate	Low		Acceptance	Maintain close coordination with Authority on terms of the Master Agreement until finalized.		
	Active	2	PA&ED	R/W	Utility easements	Utility companies identify the need for easements after r/w acquisition, which requires additonal acquisition and could cause delay to the Caltrans project.	Schedule Cost	Low	Moderate		Mitigation	Establish and maintain early coordination with all affected utility companies on relocation requirements and agreements, during the next phase of the project.		
	Active	3	PA&ED	R/W	Utility impact and relocation	Existing utility plans represent the best available data. Not all utility locations have been finalized. If utility companies do not provide information on utility location or do not provide relocation plans in a timely manner it could cause delay to the Caltrans project.	Schedule Cost	Low	Moderate		Mitigation	Establish and maintain early coordination with all affected utility companies on relocation requirements and agreements, during the next phase of the project.		
	Active	4	PA&ED	Design	Local Agency Sidewalk planning	Project replaces Clinton interchange including bridge over SR99, with sidewalk on one side, matching existing conditions. If after the bridge site submittal, the the City of Fresno requires sidewalk on both sides, at thier own expense, it could cause delay to the general plan and potentially Caltrans project.	Scope Cost	Low	Low		Transference	Coordinate with the City and Authority on any additional improvements that may be required, beyond the existing conditions, and project funding sources to be used.		
	Active	5	PA&ED	Design	Local Agency Aesthetic Requirement	Project includes several retaining wall and roadway bridges within the City of Fresno. Details of aesthetics requirements for these facilities have not yet been finalized with the City. If details are not finalized prior to the Caltrans Milestone PS&E to District OE, it could cause delay to the Caltrans project.	Scope Cost	Low	Low		Acceptance	Coordinate with the City and Authority on details of aesthetic requirements in the next phase of the project.		

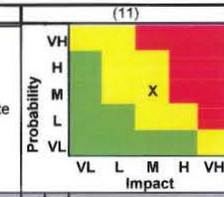
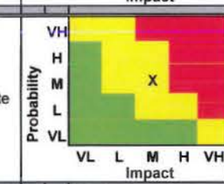
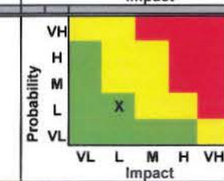
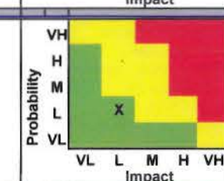
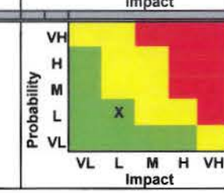
Dist - E.A 06-2HT00 **Project Name** Merced-Fresno High Speed Train Project/Fresno County SR99 Realignment and Herndon Ramps

Co-Rte-PM Fre-99

Date 1/9/2013

Project Mngr Garth Fernandez **Telephone Number** (559) 243-8012

PROJECT RISK REGISTER

Priority	Identification						Qualitative Analysis				Risk Response Plan		Monitoring and Control	
	Status	ID #	Date Identified Project Phase	Functional Assignment	Risk Name	Risk Statement	Type	Probability	Impact	Risk Matrix	Strategy	Response Actions including advantages and disadvantages	Responsibility (Risk Manager)	Last date changes made to risk and Comments
	Active Dormant Retired		PID PA&ED PS&E Construction				Scope Schedule Cost Quality	Very High High Moderate Low Very Low	Very High High Moderate Low Very Low		Avoidance Transference Mitigation Acceptance N/A			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(15)	(16)	(17)	(18)
	Active	6	PA&ED	Environmental	Haz Mat Testing	Haz Mat Testing has not been completed and Caltrans will be responsible in next phase. Results of which may affect cost, scope and schedule if significant Haz waste is discovered.	Scope Cost	Moderate	Moderate		Transference	Reflect the assignment to Caltrans in the inter-agency agreement, and closely communicate the haz mat test status and mitigations with the Authority.		
	Active	7	PA&ED	Environmental	Cultural Surveys	Cultural Survey of affected ROW has not been completed and will be completed by the CHSRA in next phase. Results of which may affect cost, scope and schedule of the Caltrans project.	Scope Cost	Moderate	Moderate		Transference	Closely communicate the future cultural Survey results, status and mitigations.		
	Active	8	PA&ED	Permitting	Program permitting requirements	Since SR99 realignment is part of the HSR program and not a stand-alone Caltrans project, some of the permitting requirements may be under a different regulatory agency permit agreement than typical Caltrans. Any delay in permitting could cause delay to the Caltrans project	Scope	Low	Low		Transference	Closely coordinate with Authority-Regulatory Agency/permitting requirements, throughout next phase of the project. A list of permits that Authority will remain in charge will be produced to manage the risk.		
	Active	9	PA&ED	Construction	Retaining Wall heights, locations, and construction stages	General constructability reviews have been conducted to maintain traffic during construction. If a fatal flaw in the constructability of the Caltrans project is identified at a late stage in the design, rework may be required, which could cause delay to the Caltrans project.	Scope	Low	Low		Acceptance	More detailed construction staging consideration, including location and height of retaining walls, will have to be coordinated with the city of Fresno, during next phase of the project.		
	Active	10	PA&ED	Construction	Coordination with other contracts	Project limits interface with ongoing Design Build Construction Contractor activities, which depending on construction schedules, will require close coordination and cooperation between the contractors. Any change in either CHSRA CP1 or Caltrans Contract may require a contract change order, which could cause delay delay or	Cost	Low	Low		Mitigation	During final design, and pre-award phase, closely coordinate with Authority Design-Build contactor to identify and document the required coordination and cooperation with the SR99 contractor.		

Attachment 10
Storm Water Data Report

Dist-County-Route: 06-Fresno-99
Post Mile Limits: PM 23.0/26.2, 30.8/31.3
Project Type: High Speed Train, Roadway Realignment
Project ID (or EA): 0600020014 (06-2HT00)
Program Identification: 730.00
Phase: ☐ PID
☒ PA/ED
☐ PS&E

Regional Water Quality Control Board(s): Central Valley Region 5 (Fresno Office)

Is the Project required to consider Treatment BMPs? Yes ☒ No ☐
If yes, can Treatment BMPs be incorporated into the project? Yes ☒ No ☐
If No, a Technical Data Report must be submitted to the RWQCB at least 30 days prior to the projects RTL date. List RTL Date:

Total Disturbed Soil Area: 98.9 ac Risk Level: 2
Estimated: Construction Start Date: December 1, 2015 Construction Completion Date: April 30, 2018
Notification of Construction (NOC) Date to be submitted: November 1, 2015

Erosivity Waiver Yes ☐ Date: No ☒
Notification of ADL reuse (if Yes, provide date) Yes ☐ Date: No ☒
Separate Dewatering Permit (if yes, permit number) Yes ☐ Permit # No ☒

This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.

Wilfred Hsu, Registered Project Engineer — Date: 2-11-13

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:

FOR *Garth Fernandez, Project Manager* — Date: 2-28-13

Bill Moses, Designated Maintenance Representative — Date: 3/5/2013

Brad Cole, Designated Landscape Architect Representative — Date: 3/4/13

[Stamp Required for PS&E only) *Marissa Nishikawa, Regional Design SW Coordinator or Designee* — Date: 3/5/2013

Attachment 11
Environmental Impacts

U.S. Department of Transportation
Federal Railroad Administration

Record of Decision

California High-Speed Train Merced to Fresno Section

1.0 Introduction

This is the Record of Decision (ROD) of the Federal Railroad Administration (FRA), an operating administration of the U.S. Department of Transportation (DOT), and the lead Federal agency for the California High-Speed Train (HST) Merced to Fresno Section (Project) (Figure 1). The Project Proponent is the California High-Speed Rail Authority (Authority), the lead agency for state environmental reviews under the California Environmental Quality Act (CEQA) and joint lead agency with FRA for Federal environmental reviews under the National Environmental Policy Act (NEPA). The Authority proposes to construct and operate the Project subject to the approval of the appropriate Federal agencies. These agencies include FRA and the Federal cooperating agencies—the U.S. Army Corps of Engineers (USACE) and the Bureau of Reclamation. Other Federal agencies with specific review or permitting roles include the U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS).

To comply with NEPA and CEQA, FRA and the Authority issued a joint Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Merced to Fresno Section of the California HST Project in August 2011 and a joint Final EIR/EIS in April 2012. Consistent with 40 Code of Federal Regulations (C.F.R.) 1506.2, the Final EIR/EIS is one document that covers both state and federal environmental requirements. Because this ROD contains only the decision of FRA, a Federal agency, based on the Draft and Final EIR/EIS, the documents will be referred to as the "Draft EIS" and the "Final EIS." In making its decision, FRA considered the information and analysis contained in the 2011 Draft EIS and 2012 Final EIS (collectively, "EIS Documents"). FRA also considered public and agency comments received during the public comment period for the Draft EIS and the waiting period following the Final EIS. Based on the analysis of the Project's potential environmental effects (both adverse and beneficial) in the EIS Documents and substantive agency and public comments, FRA selects the north-south Hybrid Alternative and the Downtown Merced Station and Downtown Fresno Mariposa Street Station alternatives, as described further in Section 4.0, Alternatives, below.

Figure 1
California HST System Initial Study Corridors

FRA has prepared the ROD in accordance with the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 C.F.R. Section 1505.2) and FRA's Procedures for Considering Environmental Impacts (64 Federal Register [FR] 28545, May 26, 1999) (FRA Environmental Procedures). Specifically, this ROD:

- Provides background on the NEPA process leading to the Final EIS, including a summary of public involvement and agency coordination.
- States and reaffirms the Project's purpose and need.
- Identifies the alternatives considered in the EIS Documents.
- Summarizes the alternatives previously considered in the alternatives analysis process and not carried forward for study in the Draft EIS.
- Identifies the Selected Alternative.
- Identifies the Environmentally Preferable Alternative.
- Summarizes environmental benefits and adverse effects.
- Summarizes the comments received on the Final EIS.
- Discusses the measures to avoid and minimize environmental harm and requires a monitoring and enforcement program for all mitigation measures.
- Presents the FRA Decision, determinations, and findings on the proposed Project and identifies and discusses the factors that were balanced by FRA in making its decision.

1.1 California HST System

The Authority is responsible for planning, designing, constructing, and operating the California HST System. Its state statutory mandate is to develop a high-speed rail system that coordinates with the state's existing transportation network, which includes intercity rail and bus lines, regional commuter rail lines, urban rail and bus transit lines, highways, and airports.

The California HST System will provide intercity, high-speed service on more than 800 miles of track throughout California, connecting the major population centers of Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego, as shown in Figure 1. The Authority and FRA prepared two programmatic (Tier 1) EIR/EIS documents to select preferred alignments and station locations to advance for project-level analysis in Tier 2 EIR/EISs. See Chapter 1 of the Merced to Fresno Section Final EIS for a more detailed description of the HST System, history of Tier 1 documents, and HST system phasing. Figure 1 shows the proposed California HST System that resulted from the Tier 1 EIR/EISs and Tier 1 decisions. The HST System will use state-of-the-art, electrically powered, high-speed, steel-wheel-on-steel-rail technology, including contemporary safety, signaling, and automated train-control systems, with trains capable of operating up to 220 miles per hour (mph) over a fully grade-separated, dedicated guideway alignment.

The Authority plans two phases: Phase 1 (to be constructed in stages dependent on funding availability) will connect San Francisco to Los Angeles/Anaheim via Pacheco Pass and the Central Valley through a combination of dedicated high-speed rail infrastructure blended with existing urban systems, with a state statute mandated express travel time from San Francisco to Los Angeles of 2 hours and 40 minutes or less. Phase 2 will extend the system from Los Angeles to San Diego and from Merced to Sacramento. The HST System could have more than 200 trains per day after full build-out of Phase 2. The California High-Speed Rail Program Revised 2012 Business Plan[1] describes in more detail how Phase 1 of the HST System will be implemented and recognizes current budgetary and funding realities, which will result in both Phase 1 and Phase 2 being constructed over a longer period of time than originally anticipated.

The California HST System as approved through Tier 1 decisions has been divided into nine individual sections for more detailed, second-tier analysis. The nine sections were identified by certain operating characteristics including the requirement that they terminate at or proximate to station locations in larger urban centers. The individual project sections tier from decisions made during the programmatic decision and are units of the whole system that can be combined together as necessary due to funding and constructability constraints.

The Merced to Fresno Section is one of the nine individual sections undergoing Tier 2 environmental review for Phases 1 and 2 of the California HST System. As described in the October 1, 2009, Notice of Intent (NOI) for the Merced to Fresno Section (74 FR 50869), FRA identified the Project termini as the station sites in downtown Fresno and Merced. This is consistent with the Tier 1 decisions and permits full analysis and consideration of the potential impacts of construction and operation of the Merced to Fresno Section of the California HST System.

1.2 Merced to Fresno Section

FRA and the Authority, as joint lead agencies for NEPA compliance, commenced the environmental review process for the Project in 2009. The Authority held scoping meetings for the Project in March 2009. The Draft EIS was issued in August 2011 and the 60-day public review period closed on October 13, 2011. The Draft EIS presented the purpose and need for the Project; the reasonable range of alternatives for rail alignment, station site, heavy maintenance facility (HMF), and a connection to the east-west running San Jose to Merced Section also known as "wye connections"; the existing environmental setting; potential effects (both beneficial and adverse) from construction and operation; and mitigation measures to reduce or eliminate potential adverse environmental effects.

The Draft EIS informed decision-makers, interested parties, and the public about the various alternatives and potential impacts. FRA and the Authority held public hearings

[1]. Authority. 2012. *California High-Speed Rail Program Revised 2012 Business Plan*. Sacramento, Calif. April 2012. Available at http://www.cahighspeedrail.ca.gov/Business_Plan_reports.aspx.

in Merced, Madera, and Fresno to provide opportunities for all of the public to comment on the Draft EIS verbally and in writing. FRA and the Authority received 895 comment submittals on the Draft EIS.

FRA and the Authority considered the information presented in and the comments received on the Draft EIS when preparing the Final EIS. During a hearing by the Authority Board of Directors in December 2011, the Authority designated the Hybrid as the Preferred Alternative. The Final EIS, published April 20, 2012, identified the Hybrid as the Preferred Alternative and included minor design modifications to proposed alternatives resulting from public and agency comments on the Draft EIS and an evaluation of the potential environmental effects of the Preferred Alternative.

Following the identification of the Preferred Alternative in the Final EIS, the USACE and EPA concurred (on March 26, 2012,[2] and March 23, 2012,[3] respectively)—based upon the analyses incorporated in the Draft EIS and the subsequent Final EIS, as well as documents submitted as part of the Section 404 permitting process, and the biological assessment of ecosystems impacts and cultural and community impacts—that the Hybrid Alternative is the least environmentally damaging practicable alternative (LEDPA), consistent with USACE's permit program (33 C.F.R. Part 320–331) and EPA's Section 404(b)(1) Guidelines (40 C.F.R. 230–233).[4]

Table 1 summarizes the major NEPA milestones of the Project.

[2] Response to February 22, 2012 Checkpoint C Package, and the March 9, 2012 response for the proposed Merced to Fresno segment of the California HST Project. Letter from Michael S. Jewell, Chief, Regulatory Division to Mark McLoughlin, Authority. Sacramento, CA. March 26, 2012.

[3] Response to Checkpoint C – Request for Agreement on Preliminary Least Environmentally Damaging Practicable Alternative and Draft Mitigation Plan for California HST Project Merced to Fresno Section. Letter from Connell Dunning, Transportation Team Supervisor, Environmental Review Office, Communities and Ecosystems Division, to David Valenstein, FRA, and Tom Fellenz, Authority. San Francisco, CA. March 23, 2012.

[4] For more information about the integration of NEPA with Clean Water Act Section 404 permitting, please see Section 2.2. For more information about the identification of the LEDPA and the integration of USACE's 404 permit into the NEPA process, please see Section 4.4.

Table 1: Summary of Major NEPA Milestones

Milestone	Date
Notice of Intent (NOI)	February and October[5] 2009
Public Scoping Meetings	March 2009
Notice of Availability Published and Circulation of Draft EIS/Draft Section 4(f) Evaluation	August 2011
Public Hearings: Merced, Madera, and Fresno	September 2011
Notice of Availability and Publication of Final EIS and Final Section 4(f) Evaluation	April 2012

1.3 Initial Project Construction

The Authority identified the Central Valley as the highest construction priority, and FRA selected this Project for construction funding. Recognizing funding limitations, and to maximize potential interim use of the HST System in the Central Valley, the Authority will phase construction of the Project.

The Authority will use the design/build project delivery method to construct the HST System in the Central Valley. When using design/build, one contractor (or team of contractors) is selected to provide design and construction services under a single contract. Construction within the Merced to Fresno Section is anticipated to commence in 2013 after the Authority selects a design/build contractor(s) as part of an ongoing procurement process.

This ROD will allow the Authority to move forward with construction and related activities for the Selected Alternative within the Merced to Fresno Section, a portion of which (between Avenue 17 and Los Angeles Street) is funded for construction.

2.0 Federal Agency Actions

The specific roles and responsibilities of the Federal agencies involved in the Project, including lead, cooperating,[6] and permitting agencies, are further described below. Table 2 identifies permit and approvals anticipated for these agencies.

[5] The original NOI was filed for the Merced to Bakersfield Section in February 2009; it was amended in October 2009 for the Merced to Fresno Section.

[6] The Bureau of Reclamation is a cooperating agency but does not have jurisdiction over a permit or approval for this section.

Table 2: Federal Permits or Approvals Anticipated

Agency	Permit/Approval
FRA	• FRA funding approval • FRA regulations related to HST operation and safety • Section 4(f) of the U.S. Transportation Act of 1966 • National Historic Preservation Act Section 106 Consultation • Clean Air Act General Conformity Determination
USACE	• Clean Water Act Section 404 Permit for discharge of dredge or fill materials into waters of the United States, including wetlands • Rivers and Harbors Act Section 408 Permit for the use, including modifications or alterations, of any flood control facility built by the USACE • 33 C.F.R. 208.10 Permit for encroachment on a local flood control facility built by the USACE that does not include modifications to the facility
USFWS	• Endangered Species Act Section 7 Consultation and Biological Opinion
NMFS	• Endangered Species Act Section 7 Consultation and Biological Opinion

2.1 Federal Railroad Administration

Under 49 United States Code (U.S.C.) 20101 et seq., FRA has authority over the safety of railroads. FRA will exercise jurisdiction over railroad safety issues during design and operation of the Project. FRA also administers the High-Speed Intercity Passenger Rail grant program. Based on the evaluation of applications submitted to FRA and the two Tier 1 EIRs/EISs and subsequent RODs, FRA selected the Authority to receive grant funds for preliminary engineering and environmental reviews for Phase 1 of the California HST System, and final design and construction of the California HST System between Madera, a city located within the Merced to Fresno Section, and Bakersfield (Kern County) in the Fresno to Bakersfield Section.

Section 4(f) of the DOT Act of 1966 (49 U.S.C. 303) prohibits DOT and its modal administrations, including FRA, from undertaking a transportation project or providing Federal funding or discretionary approvals for a project that results in the use (unless the use has *de minimis* impacts) of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites, unless there is no feasible and prudent alternative to the use of the resource and the action includes all possible planning to minimize harm to the property resulting from use. Section 4(f) also protects historic sites of national, state, or local significance located on public or private

land. FRA's Environmental Procedures contains FRA processes and protocols for analyzing the potential use of Section 4(f) protected properties. FRA's Section 4(f) Determination is included as Section 9.2 of this ROD.

Section 106 of the National Historic Preservation Act of 1966 (NHPA) (16 U.S.C. 470f), requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the ACHP that are available at 36 C.F.R. Part 800. Under the NHPA, significant cultural resources, referred to as historic properties, include any prehistoric or historic district, site, building, structure, object, or landscape included in, or eligible for inclusion in, the National Register of Historic Places (NRHP). A Programmatic Agreement (PA) among FRA, ACHP, the California State Historic Preservation Officer (SHPO), and the Authority regarding compliance with Section 106 of the NHPA for the HST System was executed on July 22, 2011.[7] In accordance with the PA, a Memorandum of Agreement (MOA) for the treatment of adverse effects on historic properties in the Merced to Fresno Section of the HST System was executed on August 31, 2012 (see Appendix A). The City of Madera, the City of Fresno, and Fresno County, as well as the following Federally-recognized Native American tribes: Cold Springs Rancheria of Mono Indians, Santa Rosa Rancheria Tachi Tribe, the North Fork Rancheria of Mono Indians, and the California Valley Miwok Tribe; and the following non-Federally recognized Native American tribes: North Fork Mono Tribe, and the Chowchilla Tribe of Yokuts, have accepted the Authority and FRA's invitation(s) to be consulting parties to the MOA and treatment plan(s). [8]

Pursuant to the Clean Air Act (CAA) Section 176(c) requirements, EPA promulgated 40 C.F.R. 51 Subpart W and 40 C.F.R. Part 93, Subpart B, "Determining Conformity of General Federal Actions to State or Federal Implementation Plans" (58 FR 63214, November 30, 1993, as amended, 75 FR 17253, April 5, 2010). These regulations, commonly referred to as the General Conformity Rule, apply to all Federal actions, including those by FRA, except for those Federal actions that are excluded from review (e.g., stationary source emissions) or related to transportation plans, programs, and projects under Title 23 or the Federal Transit Act, which are subject to the Transportation Conformity Rule.

A conformity determination under the General Conformity Rule is required if the Federal agency determines the following: the action will occur in a nonattainment or maintenance area; that one or more specific exemptions do not apply to the action; the action is not included in the Federal agency's "presumed to conform" list; the emissions from the proposed action are not within the approved emissions budget for an applicable

[7] Authority and FRA. 2012. *Programmatic Agreement*. Appendix 3.17-A of the *California HST Merced to Fresno Section Final Project EIR/EIS. Volume II: Technical Appendices*. Sacramento, CA, and Washington, D.C. April 2012.

[8] Signatures of potentially concurring parties are currently being sought.

facility; and the total direct and indirect emissions of a pollutant (or its precursors), are at or above the *de minimis* levels established in the General Conformity regulations. The proposed Project is subject to review under the General Conformity Rule; therefore, FRA prepared a Conformity Determination consistent with the applicable regulatory requirements. The final General Conformity Determination was issued on September 18, 2012.

2.2 U.S. Army Corps of Engineers

USACE is responsible for issuing permits under the Clean Water Act (CWA) Section 404 (33 U.S.C. 1344) (Section 404) and the Rivers and Harbors Act Section 14 (33 U.S.C. 408) (Section 408).[9] USACE is required to comply with NEPA and issue its own Record of Decision before it can issue a permit under Section 404 or Section 408.

As a first step in Project permitting, the Authority, FRA, USACE, and EPA executed a Memorandum of Understanding (MOU or NEPA/404/408 MOU) in November 2010. The MOU outlines a process to integrate the requirements of NEPA with the requirements of Section 404 and Section 408. The purpose of the MOU is to ensure the analysis underlying the EIS Documents for each HST section is sufficient to support USACE's Preliminary LEDPA determination and for USACE to issue a NEPA decision document.

Consistent with the MOU, FRA and the Authority initiated the CWA Section 404 permitting process with USACE on August 3, 2011. As part of the CWA Section 404 permitting process, FRA and the Authority prepared a Wetland Delineation Report (2011) and submitted it to USACE for issuance of a preliminary jurisdictional determination, which USACE issued on November 3, 2011. Jurisdictional determinations and issuance of a permit for the discharge of fill material into waters of the United States associated with construction and operation of the Project will be part of the CWA Section 404 permit process administered by USACE.[10]

Pursuant to NEPA, Section 404, and Section 408, USACE and EPA issued letters identifying the Hybrid Alternative as the preliminary LEDPA on March 26, 2012, and March 23, 2012, respectively. The Section 404 process continues with submittal of a permit application to USACE and development of a mitigation plan. The Section 408

[9] CWA Section 404 sets forth a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. USACE may only issue a Section 404 permit for a project alternative that USACE determines is the Least Environmentally Damaging Practicable Alternative (LEDPA). Section 408 permit decisions will be made for alteration/modification of completed Federal flood risk management facilities and any associated operation and maintenance, and real estate permissions or instruments (as applicable).

[10] For CWA section 404(b)(1) compliance, USACE must take into consideration the context of the geographic area of the proposed action and the type of project being proposed. USACE has determined that the overall project purpose (as stated above) allows for a reasonable range of practicable alternatives to be analyzed and is acceptable as the basis for the USACE 404(b)(1) alternatives analysis.

process continues with USACE's evaluation of potential Project impacts on flood protection facilities. USACE will issue a NEPA decision after a preliminary review of impacts on facilities under its jurisdiction. Subsequently, the Authority will submit permit applications for facilities under Section 408 jurisdiction to USACE.

2.3 U.S. Fish and Wildlife Service

Concurrently with the NEPA process, FRA initiated the Endangered Species Act (ESA) Section 7 (16 U.S.C. 1536) consultation process, pursuant to 50 C.F.R. Part 402. Section 7 of the Federal ESA requires Federal agencies to consult with USFWS and/or NMFS, depending on the type of species or habitat affected, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered fish, wildlife, or plant species or result in the destruction or adverse modification of designated critical habitat for any such species. Impacts associated with threatened and endangered species, including critical habitat, occupied habitat, and suitable habitat for special-status species, is addressed through a coordination process that is outlined under Section 7 of the Federal ESA. If a project may have an impact on a resource under Section 7, a study that describes the impacts, known as a Biological Assessment (BA), is required to be submitted to the appropriate agency with jurisdiction over the resource (USFWS, and/or NMFS). After the appropriate agency has accepted the BA, the agency will render a Biological Opinion (BO). A BO is the agency's opinion as to whether a project is likely to jeopardize the continued existence of an ESA-listed species or result in the destruction or adverse modification of a species' critical habitat.

Because the Project is likely to have an impact under Section 7, FRA prepared a BA for the Project and consulted with USFWS, as required. FRA's informal and formal Section 7 consultation with USFWS has been ongoing and was instrumental in scoping the biological resource analysis for the EIS Documents, as well as for the BA. FRA developed and submitted the Draft BA to USFWS in October 2011, which evaluated direct, indirect, and cumulative effects of the Project on Federally listed, threatened, endangered, or proposed listed species and their designated habitat.

Following USFWS review and additional consultation and coordination, USFWS issued a BO for the Project on September 14, 2012. In the BO, USFWS concluded that the Project, as proposed, is not likely to jeopardize the continued existence of the listed wildlife and plant species potentially occurring in the Project action area. Consistent with Section 7 requirements, the BO stipulates several reasonable and prudent conservation measures to avoid or reduce potential impacts. The BO is included as Appendix B. This BO also includes an incidental take statement authorizing activities associated with the first phase of construction in the Central Valley, as described in Section 1.3.

2.4 National Marine Fisheries Service

Because the Project might impact protected aquatic species under NMFS jurisdiction, in addition to the Section 7 consultation with USFWS described above, FRA is required to consult with NMFS.

FRA submitted a Draft BA to NMFS in October 2011. In addition to the BO issued by USFWS, NMFS issued a BO for the Project on April 17, 2012. NMFS concluded in its BO that the Project would not likely jeopardize the continued existence of the listed species. NMFS anticipates that the Project would result in the incidental take of California Central Valley steelhead and Central Valley spring-run Chinook salmon.[11] Consistent with Section 7 requirements, the BO stipulates several reasonable and prudent conservation measures to avoid or reduce potential impacts. This BO is included as Appendix B. The BO also includes an incidental take statement authorizing activity associated with construction and operation of the Project.

3.0 Purpose and Need

As established in the Final Program EIS, the purpose of the California HST System is to provide a reliable high-speed electric-powered train system that links the major metropolitan areas of California, delivering predictable and consistent travel times. A further objective is to provide an interface with commercial airports, mass transit, and the highway network and to relieve capacity constraints of the existing transportation system as increases in intercity travel demand in California occur, in a manner sensitive to and protective of California's unique natural resources.[12]

The purpose of this Project is to implement the Merced to Fresno Section of the California HST System to provide the public with electric-powered high-speed rail service that provides predictable and consistent travel times between major urban centers and connectivity to airports, mass transit systems, and the highway network in the south San Joaquin Valley and to connect the northern and southern portions of the system.

The capacity of California's intercity transportation system, including the central part of the San Joaquin Valley region, is insufficient to meet existing and future travel demands. The current and projected future system congestion will continue to result in deteriorating air quality, reduced reliability, and increased travel times. The current transportation system has not kept pace with the increase in population, economic activity, and tourism within the state, including in the central part of the San Joaquin Valley region. The interstate highway system, commercial airports, and conventional passenger rail system serving the intercity travel market are operating at or near capacity

[11] Within the Project action area, these species potentially occur only in the San Joaquin River.

[12] Authority and FRA. 2005. *Final Program EIR/ EIS for the Proposed California HST System*. Sacramento, CA, and Washington, DC. August 2005.

and will require large public investments for maintenance and expansion to meet existing demand and future growth over the next 25 years and beyond. Moreover, the feasibility of expanding many major highways and key airports is uncertain; some needed expansions might be impractical or are constrained by physical, political, and other factors. The need for improvements to intercity travel in California, including intercity travel between the central part of the San Joaquin Valley, the San Francisco Bay Area, Sacramento, and Southern California, relates to the following issues:

- Future growth in demand for intercity travel, including the growth in demand within the central part of the San Joaquin Valley region.
- Capacity constraints that will increase congestion and travel delays, including those in the central part of the San Joaquin Valley region.
- Unreliability of travel stemming from congestion and delays, weather conditions, accidents, and other factors that affect the quality of life and economic wellbeing of residents, businesses, and tourism in California, including the central part of the San Joaquin Valley region.
- Reduced mobility as a result of increasing demand on limited modal connections between major airports, transit systems, and passenger rail in the state, including the central part of the San Joaquin Valley region.
- Poor and deteriorating air quality and pressure on natural resources and agricultural lands as a result of expanded highways and airports and urban development pressures, including those within the central part of the San Joaquin Valley region.

4.0 Alternatives

This section summarizes the alternatives analysis process and the alternatives evaluated in the EIS Documents and describes the Selected and Environmentally Preferable alternatives.

4.1 Alternatives Considered in the Alternatives Analysis Process and Not Carried Forward for Consideration in the EIS Documents

FRA and the Authority have undertaken an extensive, public screening process for alternatives to study in the EIS Documents. The potential alternatives considered but eliminated from detailed study were presented in the *Preliminary Alternatives Analysis Report* (April 2010), the *Alternatives Analysis Report* (August 2010), and the *Supplemental Alternatives Analysis Report* (May 2011) and are summarized in Chapter 2 of the EIS Documents. Several potential alternatives either failed to adequately meet the project purpose, need, and objectives, failed to offer a substantial environmental advantage over one or more of the alternatives studied in the EIS Documents, or were deemed infeasible from a cost, technical, or engineering perspective and therefore were eliminated from further analysis in the EIS Documents.

4.2 Alternatives Considered in the EIS Documents

The EIS Documents included three alignment alternatives: UPRR/SR 99 Alternative, BNSF Alternative, and the Hybrid Alternative (Figure 2). The No Action Alternative was also analyzed in the EIS Documents. The EIS Documents also included the Downtown Merced HST Station, two station alternatives for Downtown Fresno (the Kern Street Station Alternative and Mariposa Street Station Alternative), five HMF alternatives, and two wye alternatives. These alternatives are described in detail in Chapter 2 of the Final EIS. The alternatives analyzed in the EIS Documents are those that FRA and the Authority considered reasonable and feasible.

4.2.1 HST Alignment Alternatives

No Action Alternative

The No Action Alternative would result in no construction and no operation of the HST System. As a result, it would not meet the Project's purpose, need, and objectives.

The No Action Alternative is the basis for comparison of the Project alternatives in the Environmental Documents. The No Action Alternative represents the state's transportation system (highway, air, bus, conventional rail) as it is currently and as it would be after implementation of programs or projects that are currently projected in regional transportation plans, have identified funds for implementation, and are expected to be in place by 2035, as well as any major planned land use changes. The entire San Joaquin Valley is projected to grow at a rate higher than any other region in California. The three counties—Merced, Madera, and Fresno—are projected to continue to grow at an average rate of 3% per year. By 2035, the population in the study area is projected to grow from 1,365,911 to 2,298,075, for a net increase of 60%. Accommodating this new population would require land acquisition and the construction of new infrastructure, including roadways, electric power generation, water and wastewater facilities, schools, hospitals, and commercial and industrial facilities. To support this growth, development would consume an estimated 91,000 acres because, according to current planning trends, these counties would develop at a density of approximately 10 persons per acre.

UPRR/SR 99 Alternative

The alignment for the UPRR/SR 99 Alternative traverses urban downtown areas in the cities of Merced, Madera, and Fresno. It is generally adjacent to SR 99 and the UPRR railway. The HST alignment is designed to follow the existing UPRR corridor adjacent to the UPRR mainline right-of-way and to avoid the existing UPRR operations right-of-way and active rail spurs to the greatest extent possible. In several locations, the HST alignment is elevated to cross over the UPRR operational right-of-way. In these instances, the alternative maintains required horizontal and vertical clearance over UPRR operational right-of-way to avoid or minimize impacts on other UPRR right-of-

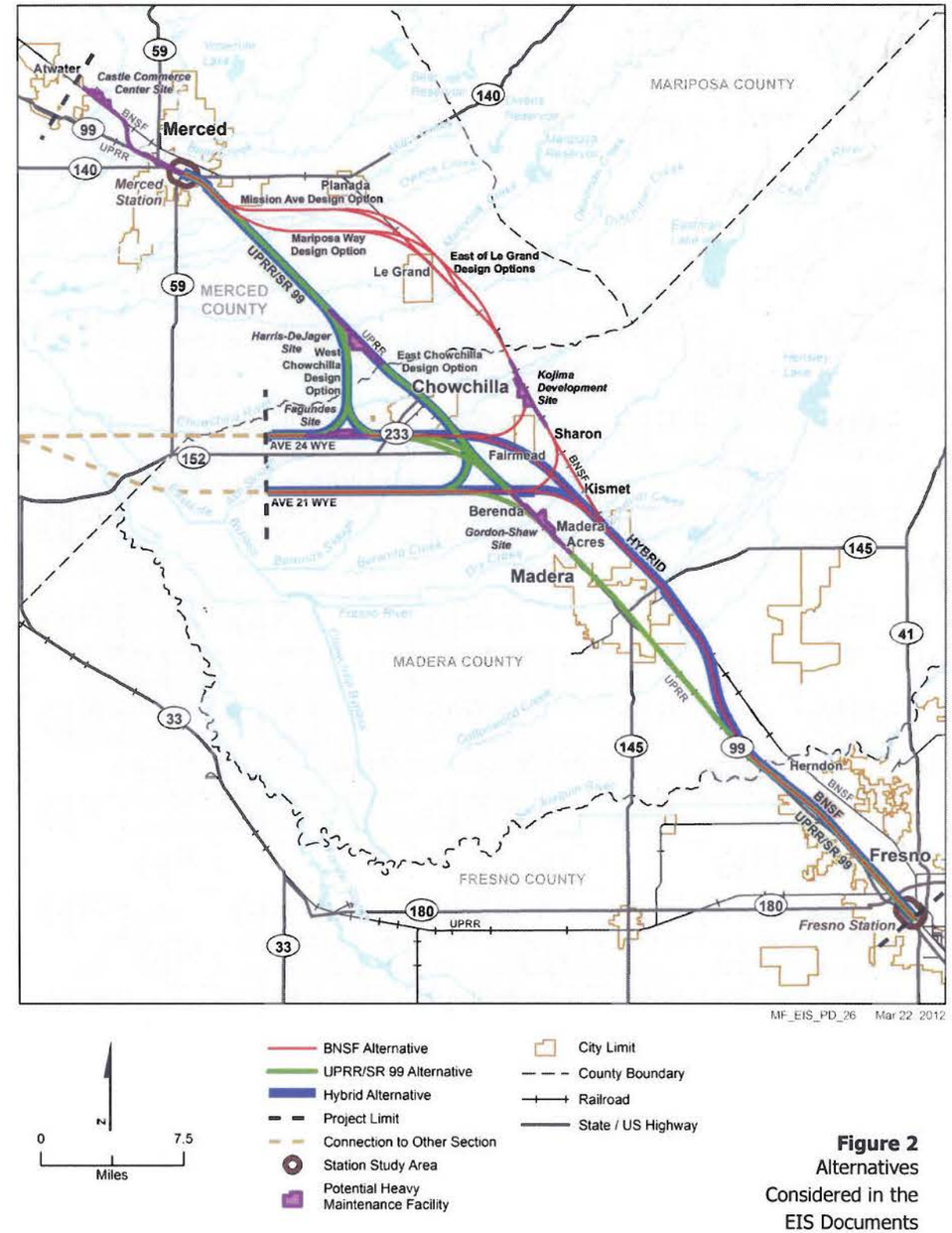


Figure 2 Alternatives Considered in the EIS Documents

way, spurs, and facilities. Similarly, the HST alignment follows the SR 99 corridor and, therefore, crosses over SR 99 in some locations and under SR 99 in Merced. As the alignment travels through rural areas, it affects existing local frontage roads used by small communities and farm operations. Where these frontage roads parallel the HST alignment, they would be shifted and reconstructed to maintain their function. Where roads are perpendicular to the proposed HST, overcrossings or undercrossings are planned approximately every two miles, while other roads would be closed.

The north-south alignment of the UPRR/SR 99 Alternative would begin at the HST station in Downtown Merced, located on the west side of the UPRR right-of-way. South of the station and leaving Downtown Merced, the HST alignment would be at-grade and cross under SR 99. As the HST alignment approaches Chowchilla, the UPRR/SR 99 Alternative has two primary design options: the East Chowchilla design option, which would pass Chowchilla on the east side of town, following the Ave 24 Wye alignment, and the West Chowchilla design option, which would travel south at a distance of three to four miles west of Chowchilla before turning back to rejoin the UPRR/SR 99 transportation corridor. Both of the Ave 21 and the Ave 24 Wye options would connect in the vicinity of Chowchilla; these wye options are described below in Section 4.2.4. The HST alignment would continue south on the east side of the UPRR corridor south of Dry Creek and remain on an elevated profile for 8.9 miles through Madera. After crossing over Cottonwood Creek and Avenue 12, the HST alignment would transition to an at-grade profile and continue to be at-grade until north of the San Joaquin River. The UPRR/SR 99 Alternative would continue toward Fresno, crossing the San Joaquin River, and rise over the UPRR railway on an elevated guideway supported by straddle bents. The HST alignment would then cross over the existing Herndon Avenue and descend into an at-grade profile. The alignment would continue west of and parallel to the UPRR right-of-way. Advancing south from Clinton Avenue between Clinton Avenue and Belmont Avenue, the two-track HST alignment would run at-grade adjacent to the western boundary of the UPRR right-of-way and then enter the station in Fresno.

BNSF Alternative

The alignment for the BNSF Alternative traverses from north to south, crossing the cities of Merced, Le Grand, Madera, and Fresno. The north-south alignment of the BNSF Alternative would begin at the HST station in Merced. South of Merced, there are two design options that traverse east to the BNSF in the vicinity of the community of Le Grand. The BNSF alternative would remain at-grade through Merced and would cross under SR 99 at the south end of the city. Just south of the SR 99/East Childs Avenue interchange, the BNSF Alternative would cross over SR 99 and UPRR once more as it begins to curve to the east, crossing over the E Mission Avenue interchange. It would then travel east to the vicinity of Le Grand where it would turn south and travel adjacent to the BNSF tracks. Continuing southeast along the west side of BNSF, the HST alternative would begin to curve just before Plainsburg Road through a predominantly rural and agricultural area. One mile south of Le Grand, the HST alignment would cross

Deadman and Dutchman creeks. The HST alignment would deviate from the BNSF corridor just southeast of S White Rock Road, and would remain at-grade for another seven miles, except at the bridge crossings, and would continue on the west side of the BNSF corridor through the community of Sharon. The HST alignment would continue at-grade through the community of Kismet until reaching the crossing at Dry Creek. The BNSF Alternative would cross Dry Creek and continue at-grade through agricultural areas along the west side of the BNSF corridor through the community of Madera Acres north of the City of Madera. Between Le Grand and Madera, the proposed Ave 21 or Ave 24 Wye alignments would connect with this north-south portion of the alternative. The wye alignments are described below in Section 4.2.4. The HST alignment would continue at-grade on the west side of the BNSF corridor, crossing over the Fresno River and SR 145. This would involve raising the HST tracks over the existing SR 145 undercrossing. South of Avenue 15 east of Madera, the alignment would transition toward the UPRR corridor. The alignment would follow the east side of the UPRR corridor near Avenue 9 south of Madera and then would continue along nearly the same route as the UPRR/ SR 99 Alternative over the San Joaquin River to enter the community of Herndon. The HST alignment for the BNSF Alternative in the Fresno vicinity would be the same as for the UPRR/SR 99 Alternative.

Hybrid Alternative

From north to south, generally, the Hybrid Alternative would follow the UPRR/SR 99 alignment with either the West Chowchilla design option and Ave 24 Wye or the East Chowchilla design option and Ave 21 Wye; at the wye connection, it would join the BNSF Alternative through Madera and would continue south over the San Joaquin River on to the Fresno station. The HST alignments in the Merced vicinity for the Hybrid Alternative and design options are the same as for the UPRR/SR 99 Alternative. Approaching the Chowchilla city limits, the Hybrid Alternative would follow one of two wye options. In the vicinity of Madera and south to Fresno, the Hybrid Alternative is the same as the BNSF Alternative, and throughout the Fresno vicinity, both the Hybrid and BNSF Alternatives are the same as the UPRR/SR 99 Alternative

4.2.2 Station Alternatives

The Downtown Merced and Downtown Fresno stations would each occupy several blocks, to include the station plazas, drop-offs, multimodal transit center, and parking structures. The stations would include the platforms and associated building for passenger services and concessions, and back-of-house functions and access structures. Both the Merced and Fresno stations would have additional platform tracks, with the platforms at-grade.

Downtown Merced Station

The Downtown Merced Station would be between Martin Luther King Jr. Way to the northwest and G Street to the southeast, approximately seven blocks west of the existing Amtrak station. The station would be accessible from both sides of the UPRR, but the

primary station house would front 16th Street. The major access points from SR 99 include V Street, R Street, Martin Luther King Jr. Way, and G Street. Primary access to the parking facility would be from W 15th Street and W 14th Street, just one block east of SR 99. The closest access to the parking facility from the SR 99 freeway would be R Street, which has a full interchange with the freeway. The site proposal includes a parking structure that would have the potential for up to six levels with a capacity of approximately 2,250 cars and an approximate height of 50 feet. During Phase 1 of the HST System (see Section 1.1), when parking demand would be higher at the station, additional parking would be provided either at existing sites distributed throughout the community or at a second structure.

Fresno Mariposa Street Station Alternative

The Mariposa Street Station Alternative is located in Downtown Fresno, less than one half mile east of SR 99. 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 station building would be approximately 75,000 square feet, with a maximum height of approximately 64 feet. The two-level station would be at-grade, with passenger access provided both east and west of the HST guideway and the UPRR tracks, which would run parallel with one another adjacent to the station. The first level would contain the public concourse, passenger service areas, and station and operation offices. The second level would include the mezzanine, a pedestrian overcrossing above the HST guideway and the UPRR railway tracks, and an additional public concourse area. Entrances would be located at both G and H Streets. The eastern entrance would be at the intersection of H Street and Mariposa Street, with platform access provided via the pedestrian overcrossing. This entrance would provide a "front door" connection with Downtown Fresno on an axis that also includes the County Courthouse and City Hall several blocks to the east. The main western entrance would be located at G Street and Mariposa Street.

The Mariposa Street Station Alternative includes the potential for up to three parking structures occupying a total of 5.5 acres. Two of the three potential parking structures would each sit on two acres, and each would have a capacity of approximately 1,500 cars. The third parking structure would be slightly smaller in footprint (1.5 acres), with five levels and a capacity of approximately 1,100 cars. An additional two-acre surface parking lot would provide approximately 300 parking spaces. Currently, Downtown Fresno has a large amount of excess public parking within a mile of the proposed HST station. Based on discussions with the City of Fresno, the balance of spaces needed to satisfy the estimated year 2035[13] parking demand (7,400 total spaces) would be accommodated by existing public spaces, without the need for additional parking lots or structures.

[13] During Phase 2 of the California HST System (see Section 1.1).

Fresno Kern Street Station Alternative

The Kern Street Station Alternative for the HST station is also situated in Downtown Fresno and would be centered on Kern Street between Tulare Street and Inyo Street. This station would include the same components as the Mariposa Street Station Alternative, but under the Kern Street Station Alternative, the station would not encroach on the historic Southern Pacific Railroad depot just north of Tulare Street and would not require relocation of existing Greyhound facilities. The station building would be approximately 75,000 square feet, with a maximum height of approximately 64 feet. The station building would have two levels housing the same facilities as the Mariposa Street Station Alternative (i.e., UPRR tracks, HST tracks, mezzanine, and station office). The approximately 18.5-acre site would include 13 acres dedicated to the station, bus transit center, short-term parking, and kiss-and-ride accommodations. Two of the three potential parking structures would each sit on two acres and each would have a capacity of approximately 1,500 cars. The third structure would be slightly smaller in footprint (1.5 acres) and have a capacity of approximately 1,100 cars. Like the Mariposa Street Station Alternative, the balance of the spaces needed to satisfy the estimated year 2035 parking demand (7,400 total spaces) would be accommodated by existing public spaces, and the majority of station facilities would be sited east of the HST tracks.

4.2.3 Heavy Maintenance Facility

One HMF site will be required for operation of the entire HST System. The HMF, to be located within the Central Valley, would serve two functions: (1) support train arrival, assembly, testing, and commissioning to operations and (2) become the state's system-wide heavy maintenance workshop. It is anticipated that permanent emergency standby generators will be located at the HMF. The EIS Documents evaluated five different locations for the HMF site (as shown in Figure 2):

- Castle Commerce Center, accessible by all HST alternatives.
- Harris-DeJager, accessible along the UPRR/SR 99 and Hybrid alternatives if coming from the Ave 21 Wye. (This site was withdrawn from consideration by the property owners on October 27, 2011.)[14]
- Fagundes, accessible by all HST alternatives, via the Ave 24 Wye.
- Gordon-Shaw, accessible along the UPRR/SR 99 Alternative.
- Kojima Development, accessible along the BNSF Alternative if coming from the Ave 21 Wye.

4.2.4 Wyes

The connection between the east-west alignment of the San Jose to Merced Section (i.e., Pacheco Pass connection) and the north-south alignment of the Merced to Fresno

[14] Kopshever, Jim. 2011. E-mail from Jim Kopshever, Harris-DeJager site property owner, to Peter Valentine, regarding withdrawal of site from consideration for use as an HMF, October 27, 2011.

Section would require a railroad wye. Two railroad wye locations (see Figure 2) were considered in the EIS Documents. These include the Ave 24 Wye (generally following the south side of Avenue 24) and the Ave 21 Wye (generally following the north side of Avenue 21). Based on input from regulatory agencies, FRA and the Authority have determined that a previously studied SR 152 east-west alignment and related wyes merit detailed study as well. Although the Final EIS identifies the possibility of the SR152 wye, full environmental analysis of this wye option as well as additional analysis on the Ave 24 and Ave 21 options, where necessary, will occur in the San Jose to Merced Project EIR/EIS.

4.3 Selected Alternatives

4.3.1 Alignment Alternative

The Selected Alternative is the Hybrid Alternative with the Downtown Merced Station and Downtown Fresno Mariposa Street Station Alternative. Chapter 7 of the Final EIS identified the Hybrid Alternative as the preferred north-south alignment for the Merced to Fresno Section, as shown in Figure 3. In identifying a preferred north-south alignment alternative, FRA was guided by the project purpose and need and project objectives found in the Final EIS Chapter 1, Project Purpose, Need, and Objectives, as well as the objectives and criteria developed for and recorded in the *Merced to Fresno Section Preliminary Alternatives Analysis Report*[15] and *Supplemental Alternatives Analysis Report.*[16] For the Merced to Fresno Section, these objectives and criteria primarily include impacts on biological resources, agricultural resources, cultural resources, impacts on urban environments (e.g. noise and parks), and cost.

The Hybrid Alternative will result in the least or similar effects on biological resources compared to the other build alternatives. It will have the fewest effects on waters of the United States, including impacts on seasonal wetlands and direct impacts on vernal pools, whereas the BNSF Alternative would have resulted in substantially more permanent effects on waters of the United States. Overall, direct conversion of conservation habitats, habitats to support special-status wildlife species, and wildlife corridors are minimized through the selection of the Hybrid Alternative.

The Hybrid Alternative effects on prime farmland resources is similar to the UPRR/SR 99 Alternative, which would have up to a third fewer acres removed from production over the BNSF Alternative. While the UPRR/SR 99 Alternative would have the fewest effects on farmlands, the Hybrid Alternative counters this difference with the

[15] Authority and FRA. 2010. *Preliminary Alternatives Analysis Report, Merced to Fresno Section HST Project EIR/EIS.* Available at http://www.cahighspeedrail.ca.gov/lib_Merced_Fresno.aspx. Prepared by AECOM and CH2M HILL. Sacramento, CA, and Washington, DC. April 7, 2010

[16] Authority and FRA. 2010. *Supplemental Alternatives Analysis Report, Merced to Fresno Section HST Project EIR/EIS.* Available at http://www.cahighspeedrail.ca.gov/lib_Merced_Fresno.aspx. Prepared by AECOM and CH2M HILL. Sacramento, CA, and Washington, DC. August 5, 2010

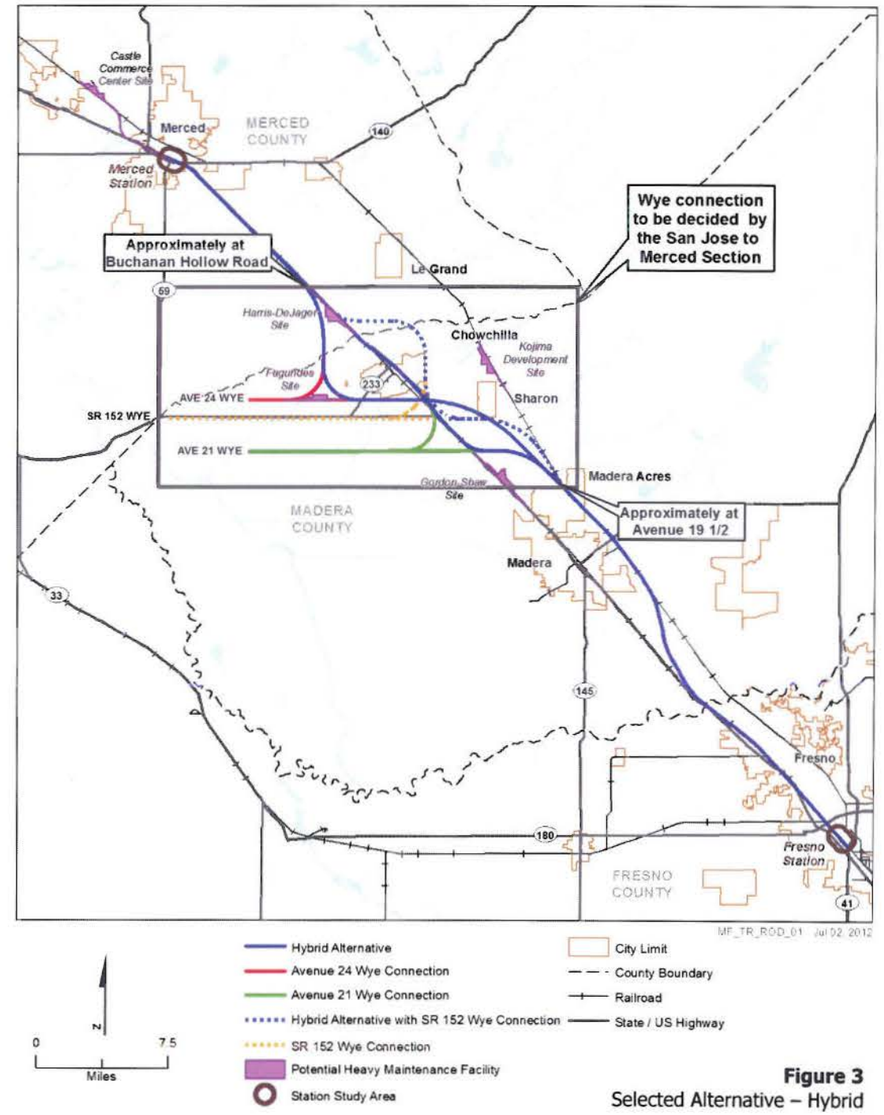


Figure 3
Selected Alternative – Hybrid

advantage of avoiding more community resources than the other alternatives. The Hybrid Alternative will result in fewer effects on community resources than either of the other two alternatives but substantially less than the UPRR/SR 99 Alternative, for which impacts would be exacerbated during construction for resources such as noise, dust, and air quality, as well as reduced access to parks and businesses. Additionally, the Hybrid Alternative was found to result in the least harm to Section 4(f) resources. Overall, in balancing the effects on natural and community resources, the Hybrid Alternative will minimize environmental impacts the most among the three action alternatives.

Consistent with the purpose and need to construct, operate, and maintain an electric-powered high-speed train system, the Hybrid Alternative's performance is comparable to if not better than the other alternatives. In terms of HST System travel time, the Hybrid Alternative offers the second-best travel time, taking only 30 seconds longer between San Francisco and Los Angeles, a minute more between Merced and Fresno, and the same amount of time between San Francisco and Merced compared to the UPRR/SR 99 Alternative. The BNSF Alternative would have the same travel time as the Hybrid Alternative between San Francisco and Los Angeles but otherwise would take as much as four minutes longer than the UPRR/SR 99 Alternative. The Hybrid Alternative is shorter in length than the BNSF Alternative and has less elevated guideway and fewer impacts on adjacent infrastructure than the UPRR/SR 99 Alternative. This difference translates into fewer emissions during construction and less disturbance on local traffic patterns and traffic circulation in adjacent communities.

Consistent with the NEPA/404/408 MOU, permitting criteria were also considered in the selection of the alternatives. These considerations are consistent with the criteria used in the Section 404(b)(1), implementing regulations (40 C.F.R. 230–233), including minimizing impacts on waters of the United States and other sensitive environmental resources. As a result of the analyses incorporated in the EIS Documents as well as NEPA/404/408 MOU documentation, USACE and EPA concurred (on March 26, 2012,[17] and March 23, 2012,[18] respectively) that the Hybrid Alternative is the LEDPA, consistent with USACE's permit program (33 C.F.R. Parts 320–331) and EPA's Section 404(b)(1) Guidelines (40 C.F.R. Part 230).

Overall, the Hybrid Alternative best balances the minimization of impacts on the environment, farmland, and communities. It would avoid the greater impacts on the environment and rural communities in Merced County that would occur with the BNSF Alternative and it would avoid the greater impacts on more urban areas, such as in the City of Madera, along the UPRR/SR 99 Alternative. A summary of the environmental effects associated with the Selected Alternative is provided in Section 5.0, below. The Hybrid Alternative also best meets the regulatory and permitting criteria under Sections 404 and 408.

[17] USACE, 2012.
[18] EPA, 2012.

4.3.2 Station Alternatives

Chapter 7 of the Final EIS also describes the Downtown Merced HST station, between Martin Luther King Jr. Way and G Street, and the Downtown Fresno Mariposa Street Station Alternative as preferred station locations, as shown in Figures 4 and 5, respectively. The Downtown Merced Station is consistent with the City of Merced's future land use plans for the downtown area and the intent to strengthen connectivity with the city's transit center. The City of Fresno's Fulton Corridor Specific Plan (2011) specifies that the Mariposa Street Station Alternative would better serve the planned transit improvements for the downtown area.[19]

4.3.3 Heavy Maintenance Facility

The HMF site will be located in the Central Valley. While the EIS contains a thorough analysis of the potential impacts of the HMF alternatives in the Merced to Fresno Section, FRA and the Authority are also examining possible HMF alternatives in the Fresno to Bakersfield and San Jose to Merced sections. As only one HMF site will be required for full HST operations, FRA and the Authority will select the HMF site once all three Central Valley HST section EIS processes are complete. FRA and the Authority are conducting additional environmental analysis of the HMF as necessary, as part of the San Jose to Merced and Fresno to Bakersfield Section EISs.

4.3.4 Wyes

The Hybrid Alternative would eventually connect to an HST wye with one of three associated east-west alignments (along Avenue 24, Avenue 21, and SR 152) (see Figure 3). The wyes and east-west alignments would connect the selected Hybrid Alternative with the San Jose to Merced Section north of Madera Acres at approximately Avenue 19½, depending on the eventual selection of the east-west connection and wye. All alignments within the area denoted by the rectangle on Figure 3 will be carried forward for further study and consideration as part of the San Jose to Merced Section Draft EIS. A decision on the east-west alignment within this area is anticipated to occur at the conclusion of the San Jose to Merced Section EIS process.

4.4 Environmentally Preferable Alternative

CEQ regulations implementing NEPA require that an agency identify the alternative or alternatives considered to be environmentally preferable, which is defined as "the alternative that will promote the national environmental policy as expressed in the NEPA, Section 101" (440 C.F.R. 1505.2). This means the alternative that causes the least damage to the physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources.

[19] City of Fresno. Fulton Corridor Specific Plan. October 14, 2011. Available at http://fresnodowntownplans.com/project/details/fcsp.

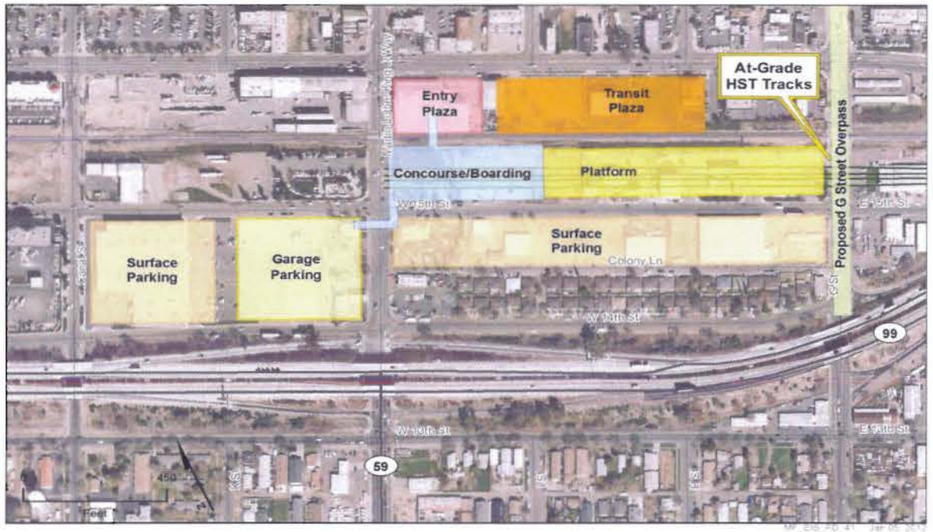
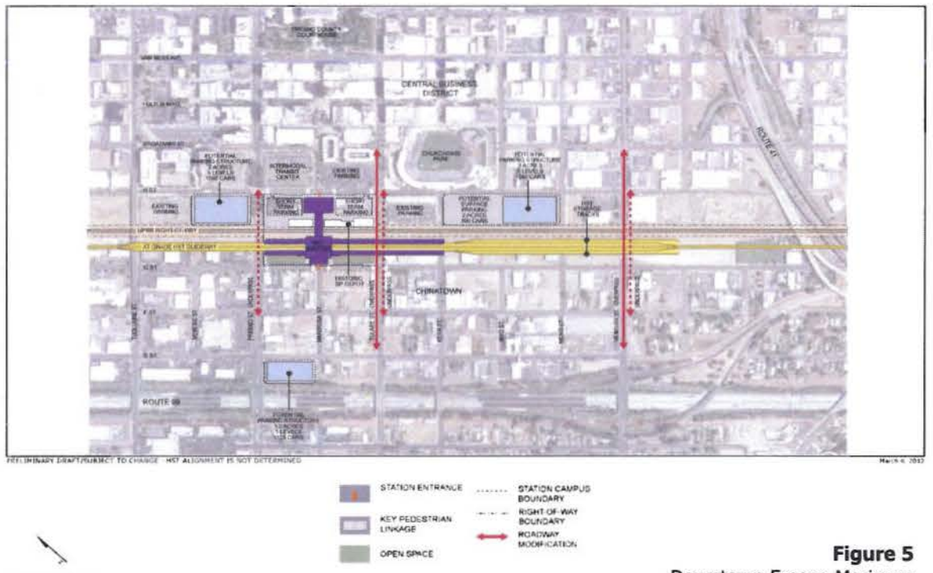


Figure 4
Downtown Merced Station



NOT TO SCALE

Source: URS (2011).

Figure 5
Downtown Fresno Mariposa Street Station Alternative

In determining an environmentally preferable alternative, FRA considered all action alternatives, as well as the No Action Alternative. FRA weighed and balanced the physical environmental effects associated with the action alternatives as well as those associated with the No Action Alternative. FRA determined that the adverse environmental effects associated with the Hybrid Alternative were less substantial than the consequences associated with the No Action Alternative in terms of air quality, energy, and traffic, and thus identified an action alternative as environmentally preferable. Final selection of the Hybrid Alternative as the Environmentally Preferred alternative over the UPRR/SR 99 and the BNSF alternatives involved the above noted advantages as well as the comparably relatively low community, farmland, and biological effects, including lower impacts on jurisdictional wetlands. Based on consideration of these factors, FRA identified the Hybrid Alternative as the Environmentally Preferable Alternative.

The Hybrid Alternative would result in fewer effects on community resources than either of the other two alternatives but substantially less than the UPRR/SR 99 Alternative, for which impacts would be exacerbated during construction for resources such as noise, dust, and air quality, as well as reduced access to parks and businesses. Overall, in balancing the effects on natural and community resources, the Hybrid Alternative would minimize environmental impacts the most. Of the three alignment alternatives, the Hybrid Alternative is the LEDPA for issuance of the necessary Section 404 permits.

For the HST station in Merced, the Authority only developed one alternative, in close cooperation with the City of Merced to consider environmental and community factors, and it is thus considered the Environmentally Preferable Alternative. For the Downtown Fresno Station, two alternatives were considered and the environmental impacts were similar. Both stations would affect eligible historic structures listed on the NRHP. Other effects include noise, which would be mitigated, as well as temporary impacts on businesses and transportation circulation during construction. However, due to the City of Fresno's planning and the orientation of the Downtown Fresno City Center, the preferred Mariposa Street Station Alternative offers substantially more opportunities for transit-oriented development. As a result, the Mariposa Street Station Alternative was determined to be the Environmentally Preferable Alternative.

5.0 Summary of Potential Effects

Construction and operation of the Selected Alternative has the potential to affect a variety of natural and social resources. Some impacts will be beneficial, others will be adverse. Those impacts that are adverse can be further categorized as impacts that are significant and those that are not significant. Under NEPA, determining the significance of an impact requires consideration of both context and intensity.[20]

[20] The context of an impact is the setting of the affected environment in which the impact occurs. Intensity refers to the severity of the impact, which includes consideration of the type, quality, and

To fully understand the potential range of impacts of the Selected Alternative, the Final EIS analyzed all potential impacts resulting from construction and operation of the HST. A full discussion of the potential impacts of the Selected Alternative, organized by resource area, can be found in Chapter 3 of the Final EIS. Most potential impacts will not be significant when considering the context and intensity of the impact. Potential impacts of the Selected Alternative will not rise to the level of significance in the following resource areas: electromagnetic fields and electromagnetic interference; public utilities and energy; hydrology and water resources; geology, soils, and seismicity; hazardous materials and waste; and station planning, land use, and development. In determining that the Selected Alternative will not result in significant impacts on these resources, implementation of project design features and best management practices (BMP) are presumed and will be required as part of project implementation as described further in Section 6.0. Although not discussed below, FRA considered these adverse but not significant impacts in reaching its decision.

Some potential adverse impacts would be significant were it not for implementation of mitigation measures that effectively avoid or reduce the impact. Other impacts would be significant even after mitigation measures are implemented. Finally, some impacts of the Selected Alternative will be beneficial. The following sections summarize the significant adverse impacts, the adverse impacts that would be significant if not for the implementation of mitigation, and the beneficial impacts that may occur with construction and operation of the Selected Alternative.

5.1 Transportation

The Selected Alternative will benefit the regional transportation system by diverting intercity trips from the regional roadway system and commercial air flights to high-speed rail. Diverting trips to high-speed rail will reduce the overall number of vehicle trips on the regional roadway system, improve future levels of service, and reduce overall vehicle miles traveled.

The Selected Alternative will cause traffic impacts in congested urban areas due to realignment of SR 99, increased traffic around HST stations, and road closures. Specifically, realignment of SR 99 will change traffic circulation patterns due to closure of interchange ramps, thereby increasing traffic at intersections in the vicinity of the freeway shift and impacting freeway operations. HST stations and road closures in Merced and Fresno will increase traffic at local roadways and intersections nearby, reducing acceptable levels of service in those locations. Traffic mitigation measures to improve operations at key intersection and roadway segments will include lane widening, modification to signals, additional lanes, and restriping. Although all of these impacts will be reduced with the implementation of such measures, the Selected

sensitivity of the resource involved, as well as the location, extent, and duration of the effect (40 C.F.R. 1508.27).

Alternative may result in extending the duration of peak periods of congestion in already-congested urban areas, and these impacts are considered significant.

5.2 Air Quality and Climate Change

Operation of the HST will benefit statewide and regional air quality. The HST will result in a permanent net benefit to air quality because it will lower emissions of mobile source air toxics, greenhouse gases, volatile organic compounds (VOCs), nitrogen oxides (NO_x), sulfur dioxide, carbon monoxide, and particulate matter smaller than or equal to 10 microns and 25 microns in diameter (PM_{10}, and $PM_{2.5}$) by diverting trips from modes with higher emissions (commercial air flights and automobile trips) to high-speed rail, which has lower emissions.

Construction of the HST will create temporary air quality impacts. Construction emissions of VOCs and NO_x are expected to cause or contribute substantially to violations of air quality standards in the San Joaquin Valley Air Basin (SJVAB). If ballast material is hauled from quarries located in the South Coast Air Basin (SCAB), NO_x may exceed air quality standards in the SCAB. With mitigation, air quality impacts in these two air basins will be reduced and will not be significant.

Specifically, the Authority will mitigate construction emissions in the SJVAB by providing funds for the San Joaquin Valley Air Pollution Control District (SJVAPCD) Emission Reduction Incentive Program[21] to fund grants for projects that achieve emission reductions, thus offsetting impacts on air quality related to the Selected Alternative. Purchase of offset emissions through a Voluntary Emission Reduction Agreement (VERA) with the SJVAPCD for these pollutants will reduce construction emission impacts in the SJVAB to less than significant. If ballast is hauled from the SCAB, the Authority will mitigate construction emissions in the SCAB by purchasing NO_x offsets from the South Coast Air Quality Management District, reducing these impacts to less than significant as well.

5.3 Noise

The Selected Alternative will cause severe noise impacts for up to 525 sensitive receivers, such as residences, without mitigation. Sound barriers will eliminate most significant noise impacts. However, some receivers are located outside of areas where barriers can be effective, or a sound barrier will not fully eliminate the severe noise impact. Because the degree of noise level change in residential areas, including in rural areas, is expected to affect such a high number of receivers, noise impacts resulting from operation of the HST will be significant.

[21] SJVAPCD. 2011. Emission Reduction Incentive Program. Available at www.valleyair.org/Grant_Programs/GrantPrograms.htm.

The realignment of SR 99 in Fresno will create noise impacts for surrounding sensitive receivers. However, with sound barriers and building insulation as mitigation, the number of noise impacts would be reduced.

With full implementation of the *Proposed California HST Project Noise and Vibration Mitigation Guidelines*,[22] most significant noise impacts will be eliminated. However, where sound barriers are used, even with the implementation of such mitigation, significant noise effects will remain for some receivers because they are located outside of the area where the barrier will be fully effective or the sound barrier will not fully mitigate the effect (i.e., noise is reduced by five decibels but would still be significant). Furthermore, significant noise effects will remain for receivers mitigated only with indoor sound insulation or with implementation of noise easements.

5.4 Public Utilities and Energy

The statewide and regional impact on energy use from operation of the HST will be beneficial. While the HST System will require electricity to operate, it will result in a permanent net reduction in energy use because it will divert trips from transportation modes with higher energy use (commercial air flights and automobiles) to high-speed rail, which has lower energy use.

The Selected Alternative will not cause any significant adverse impacts on public utilities or energy.

5.5 Biological Resources and Wetlands

The Selected Alternative will not cause significant impacts on biological resources or wetlands after mitigation measures are implemented. The Selected Alternative will not result in significant impacts on wildlife movement, critical habitat, essential fish habitat, or mitigation banks. Other resource impacts that would be significant prior to mitigation, and the mitigation measures identified to reduce impacts to less than significant, are described below.

Riparian habitat will be temporarily affected during construction and there will be permanent impacts as a result of the Selected Alternative. Restoration of riparian habitat shortly after construction disturbance will mitigate construction period impacts to less than significant. The Authority will compensate for permanent impacts on riparian habitat, determined in consultation with the appropriate agencies (e.g., California Department of Fish and Game [CDFG]), by restoring nearby areas to suitable habitat through permittee-responsible mitigation and/or by purchasing credits in a mitigation bank. This mitigation measure will result in less than significant permanent impacts on riparian habitat.

[22] Authority and FRA. 2012. *Proposed California HST Project Noise and Vibration Mitigation Guidelines.* Appendix 3.4-A of the *California HST Merced to Fresno Section Final Project EIR/EIS. Volume II: Technical Appendices.* Sacramento, CA, and Washington, D.C. April 2012.

The Selected Alternative may result in an incremental regional effect and measureable adverse loss of **special-status plant species** populations. Measures to mitigate impacts on special-status plant species include developing and implementing a plan to address monitoring, salvage, relocation, and propagation of special-status plant species during and after construction; the purchase of credits from an existing mitigation bank; and/or conducting a special-status plant re-establishment program within the same watershed or in proximity to the impact area. Mitigation measures and compliance with the Section 7 BO and the Incidental Take Permit will mitigate temporary and permanent impacts on special-status plant species to less than significant.

The Selected Alternative may result in an incremental regional effect and measurable adverse loss of **jurisdictional waters and wetlands**. Measures to mitigate impacts on jurisdictional waters and wetlands include monitoring of construction impacts, restoration of disturbed areas after construction, compensation for permanent impacts, and implementation of a Habitat Mitigation and Monitoring Plan. Mitigation measures and compliance with the CWA, regulatory agency permit conditions, and the Streambed Alteration Agreement (pursuant to Section 1600 of the California Fish and Game Code) will mitigate impacts on jurisdictional waters and wetlands to less than significant both temporarily during the construction period and permanently.

The Selected Alternative will result in an incremental regional effect and measurable adverse loss of **special-status wildlife species** populations. Measures to mitigate impacts on special-status wildlife populations include implementation of a Habitat Mitigation and Monitoring Plan, submittal of post-construction compliance reports to regulatory agencies, and compensation through habitat replacement or monetary contributions, among others. Mitigation measures and compliance with the Section 7 BO and the Incidental Take Permit will mitigate impacts on special-status wildlife species to less than significant temporarily during the construction period and permanently.

The Selected Alternative will potentially impact some of the species and habitat present at **Camp Pashayan** within the San Joaquin River Ecological Reserve and could contribute to an incremental regional and measurable loss of populations. Minimization and mitigation measures and project design features at the San Joaquin River developed in ongoing coordination with CDFG will result in less than significant impacts on biological resources at Camp Pashayan.

5.6 Hydrology and Water Resources

Currently, groundwater supports many existing water uses along the Selected Alternative. As a result of the Selected Alternative, some of these uses will no longer exist. The elimination of some water uses will reduce regional groundwater drawdown, which will be a beneficial effect to groundwater supplies in the region.

The Selected Alternative will not cause any significant adverse impacts on hydrology or water resources.

5.7 Safety and Security

Operating on a fully grade-separated, dedicated track alignment, using contemporary safety, signaling, and automated train control systems, the HST System, including the Selected Alternative, would provide a safe and reliable means of intercity travel. Design of the system also would avoid conflicts with other vehicles, existing rail systems, pedestrians, and bicyclists and allow the trains to operate year-round under different weather conditions. Overall, the HST would provide a safety benefit. The Selected Alternative will also improve safety where existing at-grade railroad crossings are replaced with grade-separated crossings, resulting in a beneficial effect on safety at railroad crossings in local communities.

The demand for local emergency services may increase in the Downtown Merced and Downtown Fresno station areas due to the number of additional people present at the stations. The Authority will monitor service levels in the vicinity of the stations to establish baseline service demands and will fund the Authority's fair share of services above the average baseline service demand level, based on projected passenger use. The resulting impact on emergency providers will be less than significant.

5.8 Socioeconomics, Communities, and Environmental Justice

Project construction will temporarily benefit regional economic conditions through increased sales tax revenues and job creation due to project spending. Jobs will be created through construction of the Selected Alternative and through other sectors that provide materials, equipment, and services. Construction will also benefit employment for low-income and minority communities (also called communities of concern) with the implementation of mitigation measures such as special recruitment, training, and other employment programs.

Permanent benefits include improved mobility within the region, improved traffic conditions on freeways, improvements in regional air quality, new employment opportunities, and increased tax revenues in the region. Benefits of the Selected Alternative will likely accrue to a greater degree in minority and low-income communities because they comprise a large percentage of the population in the project area.

The Selected Alternative will result in adverse effects on minority and low-income populations. With mitigation, the effects of noise impacts on communities of concern in Merced and Fresno and visual impacts, displacements, and relocations on communities of concern in the City of Madera and Madera Acres will not be appreciably more severe or greater in magnitude than those effects on the general population. Therefore, impacts on these communities of concern are not considered disproportionate.

In the community of Fairmead, even with the implementation of mitigation measures, visual impacts, displacements, and relocations may result in significant impacts on

communities of concern. Visual impacts of the elevated guideway may reduce property values due to the size of the structure and its proximity to the small community. In addition, residents may need to relocate outside of Fairmead because there are not enough replacement properties available within the community. The Authority will implement mitigation measures such as considering relocation of structures on existing properties or nearby vacant parcels, constructing replacement housing on vacant lots, and implementing design measures to minimize the potential for physical deterioration around and under the elevated HST structure.

The offsetting benefits associated with the Selected Alternative are considered as part of the environmental justice analysis. The Selected Alternative will provide benefits to all populations, including communities of concern. Because much of the study area population includes communities of concern, the benefits of the Selected Alternative are likely to accrue to a greater degree to the communities of concern. To offset any disproportionate effects, special recruitment, training, and job set-aside programs will be developed so that communities of concern are able to benefit from the jobs created by the Selected Alternative.

5.9 Station Planning, Land Use, and Development

The Selected Alternative will result in beneficial effects on regional land use and development. Increased density around the HST stations will minimize sprawl, promote transit-oriented development, and revitalize the downtown areas of Merced and Fresno. Concentrated and infill development may also assist in preserving agricultural lands and natural resources in the region. The Selected Alternative will fulfill local and regional plans that promote infill and redevelopment opportunities and encourage reduced automobile dependency and the use of alternative transportation modes.

The Selected Alternative will not cause significant adverse impacts on land use or development.

5.10 Agricultural Lands

The Selected Alternative will convert between 1,273 and 1,426 acres of important farmland to a transportation use, causing significant loss of farmland in the project area. Mitigation measures will preserve land for agriculture and consolidate remnant parcels so that they remain in agricultural production. To support farmland preservation, the Authority will enter into a contract with the California Department of Conservation (DOC) to provide agricultural land mitigation services. On behalf of the Authority, DOC's California Farmland Conservancy Program will establish permanent agricultural conservation easements on land of similar acreage, location, and quantity to that affected by the Selected Alternative. The new conservation easements will prevent the future loss of currently unprotected farmland to development. However, these mitigation measures will not create new farmland or replace the converted farmland in an area of high

production agricultural soils that are threatened by development encroachment. Therefore, the farmland loss is considered a significant impact.

5.11 Parks, Recreation, and Open Space

Construction of the Selected Alternative will require permanent acquisition of 0.6 acre of the San Joaquin River Ecological Reserve property at Camp Pashayan to install piers for elevating the guideway, representing an impact of 2% of the Camp Pashayan total area. This impact, in addition to temporarily limiting access to a small portion of Camp Pashayan for up to four years, will result in significant impacts on the park. The Authority will compensate CDFG, the park owner, for construction staging in the park through an allowance or additional property to accommodate for displaced park use during construction. However, even with this mitigation, the impact on the park will remain significant in the context of the local region and due to the duration of the construction use.

The projected increase in noise to Roeding Park resulting from the Selected Alternative will be significant without mitigation. Construction of a sound barrier will reduce the noise impact on Roeding Park to less than significant.

5.12 Aesthetics and Visual Resources

The HST stations will improve visual quality in the Merced and Fresno downtown urban centers. The architecture of the HST stations and landscape improvements proximate to the stations will enhance visual quality. Indirect impacts of the HST stations could reach beyond the immediate station area and increase the overall visual quality of the larger downtown areas, which are areas of high viewer sensitivity in which the visual changes will be long in duration. These impacts will create beneficial visual effects in downtown Merced and Fresno.

The Selected Alternative will create significant adverse visual effects in certain areas west of SR 99 where elevated HST structures and road overcrossings of the HST will remove orchards and fields, block views, and degrade the visual quality in the area. Mitigation measures such as planting trees and other vegetation to screen the structures will reduce the visual effect, but the change will remain significant.

Traction power substations will potentially alter the visual character of adjacent lands and/or potentially block views toward areas beyond the HST alignment. Mitigation with physical or vegetative screening and location selection will result in less than significant visual impacts from the substations.

5.13 Cultural and Paleontological Resources

The Selected Alternative will affect resources in known archaeological sites and may affect archaeological sites that are presently unknown or undiscovered. Mitigation measures, such as halting construction if a previously undiscovered archaeological site is

revealed, conducting archaeological monitoring near identified or sensitive sites, and planning intentional site burial and preservation in place if avoidance is not feasible, will reduce impacts on archaeological resources to less than significant.

The Selected Alternative will physically affect built cultural resources, resulting in significant impacts on historic properties. Even with treatment measures such as relocating historic structures, preparing and submitting nominations for historic registers, documenting historic resources, preparing structural reports, creating interpretive exhibits, and planning to prepare for inadvertent damage, the impacts will remain significant.

Destruction of fossil deposits during construction will result in significant impacts on paleontological resources without mitigation. Mitigation measures such as monitoring, implementing a paleontological plan, and halting construction when paleontological resources are found will reduce impacts to less than significant.

6.0 Commitments

Consistent with 40 C.F.R. 1505.2(c), all practicable means to avoid or minimize environmental harm caused by the Selected Alternative have been identified and included as mitigation measures in the Mitigation Monitoring and Enforcement Plan (MMEP), included as Appendix C.[23] The MMEP describes mitigation measures that will avoid, minimize, or compensate for potential adverse environmental impacts that result from constructing and operating the Merced to Fresno Section of the California HST System. These measures were developed by FRA and the Authority in consultation with appropriate agencies, as well as with input from the public. The Authority has also proposed mitigation measures that were determined necessary to comply with CEQA. For the purposes of compliance with NEPA, measures that are specific to CEQA are described in the MMEP as "voluntary." The Authority adopted the measures listed as voluntary mitigation in the MMEP to comply with CEQA, and they are included in FRA's MMEP to provide the comprehensive mitigation strategy for the Selected Alternative. The Authority is required to comply with all mitigation measures adopted with the ROD, including those specific to CEQA and those addressing Federal laws and requirements.

The mitigation measures in the MMEP contain formal commitments required for project approval. Therefore, in designing, constructing, and operating the Selected Alternative, the Authority is required to adhere to and provide appropriate funding for all mitigation measures in Appendix C. The Authority will implement an Environmental Management System consisting of strategic planning, policies and procedures, organizational structure, staffing and responsibilities, milestones, schedule, and resources devoted to achieving the Authority's environmental commitments. The Environmental Management System will also track the implementation of environmental requirements

[23] FRA will monitor the implementation of environmental commitments in the MMEP consistent with CEQ regulations and guidance.

and compliance reports. This system will rely on data from the design/build contractor, regional consultants, permitting activities, monitoring, inspections, and other compliance activities. This database will be managed by the Authority, and agency partners, including FRA, will receive regular updates from meetings and reports that will demonstrate compliance activities and progress relevant to their regulatory requirements.

In addition to mitigation measures, the Selected Alternative incorporates many design features and BMPs that are identified in the Final EIS and included in detail in the technical reports. As a result of applying these design features and BMPs, the Selected Alternative will avoid significant impacts in several resource areas. In addition, the regulatory requirements for many activities provide additional assurance that significant impacts on the environment will not occur. The applicable regulatory requirements and project design features that are part of the Selected Alternative are described in more detail in the MMEP (Appendix C). Like the mitigation measures (Appendix C), the project design features are a condition of project approval and must be implemented by the Authority during design, construction, and operation of the Selected Alternative.

7.0 Summary of Comments on the Final EIS

During the 30-day waiting period following publication of the Final EIS, FRA received 12 comment letters. In addition to the comment letters received by the FRA during the 30-day waiting period, the Authority received a combination of 26 comment letters and emails, as well as hearing from speakers at the Authority Board hearing held on May 2, 2012, focusing primarily on CEQA-related issues. Staff responses were prepared on May 3, 2012 for the comments received by the Authority. These staff responses are available for the public on the Authority's website: http://www.cahighspeedrail.ca.gov/final-eir-m-f.aspx. All substantive comments received in the waiting period referenced issues that were previously addressed in detail in Volume IV of the Final EIS or by the Authority staff responses and therefore do not require any further response here. No issues were identified in the comments that were not previously addressed.

The range and types of comments received during the waiting period included concerns and questions regarding the following topics:

- Range of alternatives considered
- Technology to be used for the project
- Notification of availability of the environmental document
- Process for decision making regarding the wye connections
- Coordination with UPRR and the associated impacts on freight service
- Location of barriers and walls and the required/adequate distances and clearances
- Right-of-way and relocation assistance

- Mitigation measures for agricultural lands
- Adequacy of the water analysis, specifically the demand during construction, water demand estimates, and the preparation of a water supply assessment
- Environmental Justice, specifically the determination of disproportionate impacts on environmental justice populations, construction duration estimates, residential and business displacements by community, mitigation measures, and implementation of Title VI of the Civil Rights Act
- Sprawl inducement, land use, station area development, and California Senate Bill 375
- Utility relocation and associated impacts
- Emissions from hauling materials outside SJVAB, specifically adequately addressing hauling from outside the project area, hauling ballast, and the inclusion of water trucks in construction emission calculations
- Mitigation measures for air quality
- Staging areas and batch plants
- Noise and vibration, specifically noise monitoring sites and mitigation measures
- Operation of Amtrak and the HST
- Project funding
- Biological performance standards, specifically wildlife surveys, baseline, and performance standards
- Forestiere Underground Gardens and historic property impacts
- Coordination with local school districts and associated impacts on school districts, school bus routes, and poverty-level students
- Road closures and detours
- Safety and security; derailment
- Maintenance access and emergency responses
- Independent utility

In issuing this ROD, FRA has considered all comments received on the Final EIS, as well as the comments previously received on the Draft EIS.

8.0 Corrections to the Final EIS

FRA and the Authority prepared an errata sheet to identify minor corrections to the Final EIS and issued it on April 27, 2012. The errata sheet identifies the location of the correction in the Final EIS, the incorrect text, the corrected text, and the reason for the correction. None of these corrections materially affected the FRA's decision. These corrections are noted in an errata sheet in Appendix D and pertain to the following chapters of the Final EIS: cover sheet; Summary; Alternatives; Transportation; Air Quality and Global Climate Change; Public Utilities and Energy; Biological Resources

and Wetlands; Hazardous Materials and Wastes; Socioeconomics, Communities, and Environmental Justice; Agricultural Lands; Parks, Recreation, and Open Space; Aesthetics and Visual Resources; Cultural and Paleontological Resources; Cumulative Impacts; Preferred Alternative and Station; and Public and Agency Involvement. Changes made to mitigation measures in the errata have been incorporated into the MMEP, included as Appendix C.

As discussed in Section 1.3, the Authority proposes to use the design/build method of project delivery. As the Selected Alternative proceeds into final design, project design modifications may occur. FRA and the Authority will consider whether project design modifications could result in new environmental impacts of a type or severity not analyzed in the EIS Documents. Where appropriate, FRA and the Authority will evaluate the modification to determine whether it would result in a substantial change that requires a supplemental Final EIS consistent with 40 C.F.R. 1502.9(c).

9.0 Decision

FRA finds that the Hybrid Alternative, Merced Downtown Station, and Fresno Mariposa Street Station Alternative best fulfill the purpose and need and objectives for the Project while balancing impacts on the natural and human environment. FRA considered the physical and operational characteristics and potential environmental consequences associated with the HST alternatives. FRA, as lead agency, consulted with the joint lead agency and cooperating agencies and considered the EIS Documents, including the analysis of the No Action Alternative, all action alternatives, and all public and agency comments received during the review periods in identifying the Selected Alternative. The cooperating agencies may issue their own decision documents, as appropriate, consistent with their statutory and regulatory responsibilities.

9.1 Section 106

Section 106 of the NHPA (16 U.S.C. 470f) requires that any Federal agency having direct or indirect jurisdiction over a proposed Federal or Federally assisted undertaking take into account the effect of the undertaking on any district, site, building, structure, or other object that is listed or eligible for listing on the NRHP.

FRA, the SHPO, the Authority, and the Advisory Council for Historic Preservation executed a Programmatic Agreement (PA) for the California High-Speed Rail Program on July 22, 2011. The PA sets forth a process for consistent application of Section 106, including consultation, for all project sections. The PA outlines a uniform approach for the identification of cultural resources located within the Area of Potential Effect (APE), as well as the evaluation, assessment of effects, and treatment of cultural resources potentially affected by each undertaking. The PA stipulates that Memoranda of Agreement (MOA) be developed for each undertaking where the FRA determines there would be an adverse effect to Historic Properties.

An MOA for the treatment of adverse effects to historic properties for the Merced to Fresno Section of the HST System was developed and executed among FRA, the Authority, and the SHPO on August 31, 2012 (Appendix A). The MOA summarizes the results of the Section 106 process and the treatment measures agreed to among the Selected Alternative's consulting and concurring parties. The treatment measures are elaborated upon in detail in two primary attachments to the MOA: the Archaeological Treatment Plan and the Built Environment Treatment Plan.

The City of Madera, City of Fresno, County of Fresno, California Valley Miwok Tribe, Cold Springs Rancheria of Mono Indians, North Fork Rancheria of Mono Indians, Santa Rosa Rancheria Tachi Tribe, North Fork Mono Tribe, and the Chowchilla Tribe of Yokuts were consulted in the development of the MOA and treatment plans. The City of Madera, the City of Fresno, and Fresno County, as well as the following Federally-recognized Native American tribes: Cold Springs Rancheria of Mono Indians, Santa Rosa Rancheria Tachi Tribe, the North Fork Rancheria of Mono Indians, and the California Valley Miwok Tribe; and the following non-Federally recognized Native American tribes: North Fork Mono Tribe and the Chowchilla Tribe of Yokuts, have accepted the Authority and FRA's invitations to be consulting parties to the MOA and treatment plans. [24]

9.2 Section 4(f) Determination

The Final EIS included an evaluation required by Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. 303). The alternatives evaluation process conducted as part of the Merced to Fresno Section EIS process concluded that in accordance with 49 U.S.C. 303(c), there was no feasible and prudent HST alternative within the study area that did not result in a use of a Section 4(f) resource. Further, the least harm analysis determined that the Selected Alternative is the alternative with the least overall harm to Section 4(f) resources. FRA also identified the appropriate measures to minimize harm to 4(f) properties as part of the EIS and 4(f) Evaluation in cooperation with the agencies that have jurisdiction over each 4(f) resource. These measures have been incorporated into the MMEP (Appendix C), and the Authority will implement them as a condition of project approval.

FRA finds that there is no feasible and prudent alternative to the permanent use of two historic resources, the Weber Avenue Overcrossing Bridge and the Belmont Avenue Subway and Traffic Circle in Fresno, because these sites will be permanently incorporated into the Selected Alternative.

- The Weber Avenue Overcrossing Bridge (NRHP-eligible) in Fresno is in the direct path of the Selected Alternative, the construction of which will result in the physical destruction, damage, or alteration of this historic property. This will be a permanent use under Section 4(f).
- The Belmont Avenue Subway and Traffic Circle (recommended as NRHP-eligible) in Fresno, which is located just southeast of Roeding Park, is in the

[24] Signatures of potentially concurring parties are currently being sought.

direct path of the Selected Alternative and associated roadway improvements, and the construction of the Selected Alternative will result in the elimination of this historic property. This will be a permanent use under Section 4(f).

FRA found that the Selected Alternative resulted in a *de minimis* impact under 49 U.S.C. 303(d) to Camp Pashayan. FRA and the Authority worked with CDFG, the agency with jurisdiction over the resource, to develop mitigation measures and determine concurrence with FRA's findings. FRA received written concurrence with its *de minimis* determination about project effects on Camp Pashayan from CDFG on September 10, 2012, included as Appendix E.

9.3 General Conformity

As part of the environmental review of the Selected Alternative, FRA conducted a general conformity evaluation pursuant to 40 C.F.R. Part 51, Subpart W and 40 C.F.R. Part 93 Subpart B, which can be found in the Merced to Fresno Section project library at Authority's website.[25] The general conformity regulations apply to the Selected Alternative because the project area is located in an area that is designated as a severe nonattainment area for the 8-hour ozone standard, nonattainment for $PM_{2.5}$, and, in the urban areas of Fresno County, a maintenance area for CO. FRA conducted the general conformity evaluation following all regulatory criteria and procedures and in coordination with EPA, SJVAB, and the California Air Resources Board. As a result of this review, FRA concluded, based on the fact that project-generated emissions will either be fully offset (for construction phase) or less than zero (for operational phase), that the Selected Alternative's emissions can be accommodated in the State Implementation Plan (SIP) for the SJVAB. FRA has determined that the Selected Alternative as designed will conform to the approved SIP, based on the following findings:

- A commitment from the Authority that all construction-phase NO_x and VOC emissions for the years that the conformity applicability thresholds will be exceeded will be offset through a VERA with SJVAPCD.
- The Authority and the SJVAPCD will enter into a contractual agreement to mitigate the Selected Alternative's NO_x and VOC emissions (in the years of exceedance) by providing funds for the SJVAPCD's Emission Reduction Incentive Program to fund grants for projects that achieve the necessary emission reductions.
- The SJVAPCD will seek and implement the necessary emission reduction measures, using Authority funds.
- The SJVAPCD will serve in the role of administrator of the emissions reduction projects and verifier of the successful mitigation effort.

[25]The Authority library for the Merced to Fresno Section is located online at www.cahighspeedrail.ca.gov/lib_Merced_Fresno.aspx.

Therefore, FRA concludes that the Selected Alternative, as designed, conforms to the purpose of the approved SIP and is consistent with all applicable requirements.

9.4 Section 7 Endangered Species Finding

Since the Selected Alternative will result in a "take" of special status fish species under Section 7 of the ESA, NMFS and USFWS prepared BOs to identify the effect and extent of the take and propose conservation measures to avoid and/or minimize potential adverse effects of the Selected Alternative.

Based upon these findings, summarized below, FRA determines that the Selected Alternative is consistent with Section 7 of the ESA.

9.4.1 Biological Opinion Issued by NMFS

NMFS cannot accurately estimate the number of individual fish subject to take from the Selected Alternative. Therefore, NMFS is using an environmental surrogate to estimate the level of take to Central Valley spring-run Chinook salmon or Central Valley steelhead that may occur. NMFS utilizes the area of sound pressure wave impacts extending into the water column during pile driving as a surrogate for the number of fish subject to take. Take may also occur during handling of stranded individuals during dewatering activities prior to construction work. This level of take is anticipated to be less than 10% of those individuals handled.

FRA and the Authority have proposed conservation measures including performing fish surveys, limiting the construction window, and measures to limit effects during construction. Given this, NMFS has determined that the level of take resulting from the construction of the Selected Alternative is not likely to jeopardize the continued existence of Central Valley spring-run Chinook salmon or Central Valley steelhead. However, NMFS has incorporated several reasonable and prudent measures to further minimize incidental take of Federally listed fish species. NMFS also proposes conservation recommendations including BMPs to protect aquatic and riparian habitat outside of the work zone including implementation of measures from the 1602 permit and the stormwater pollution prevention plan.

9.4.2 Biological Opinion Issued by USFWS

USFWS has determined that even with the implementation of the proposed conservation measures, there is a likelihood of take of San Joaquin kit fox, central California tiger salamander, conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, and valley elderberry beetle from the Selected Alternative. USFWS has also concluded that there will be adverse effects to the Colusa grass, San Joaquin Valley Orcutt grass, hairy Orcutt grass, Greene's tuctoria, and succulent owl's clover. USFWS has also stated that it cannot accurately estimate the number of individual listed species subject to take from the Selected Alternative. Therefore, USFWS is using the amount of habitat affected by the Selected Alternative as a surrogate to estimate the level of take.

USFWS has concluded that the Selected Alternative is not likely to jeopardize the continued existence of any listed species because the amount of anticipated take is of such a limited scale, relative to the status of these species in and around the action area and range-wide. In addition, USFWS has concluded that the Selected Alternative will not result in adverse modification of designated critical habitat.

USFWS has incorporated terms and conditions and conservation recommendations to further minimize incidental take of listed plant and wildlife species affected by the Selected Alternative.

9.5 Wetlands Finding

In addition to NEPA and other environmental laws, FRA is also required to make findings pursuant to Executive Order 11990, Protection of Wetlands, and the U.S. Department of Transportation Wetlands Order, DOT Order 5660.1A.

It is anticipated that impacts on waters of the United States may occur as a result of the Selected Alternative. However, as noted in Section 2.2 above, in March 2012 USACE identified the Selected Alternative as the LEDPA. Design requirements and permit conditions will require contractors to avoid impacts on jurisdictional waters wherever feasible.

In addition to the Section 404 permit, the Authority will submit water quality certification applications, prepared pursuant to Section 401 to the State Water Resources Control Board (SWRCB) for the Selected Alternative. To the maximum extent practicable, the Authority will implement pre- and post-construction BMPs for sediment and erosion control. If avoidance of impacts on jurisdictional waters is not feasible, mitigation will be determined by USACE and SWRCB and reflected in permits and other authorizations issued for the Selected Alternative.

Based upon these findings, FRA determines that the Selected Alternative is consistent with Executive Order 11990 and DOT Order 5660.1A.

9.6 Floodplains

DOT Order 5620.2 implements Executive Order 11988, Floodplain Management. These orders state that FRA may not approve an alternative involving a significant encroachment on a floodplain unless FRA can make a finding that the proposed encroachment is the only practicable alternative. The major purposes of Executive Order 11988 are to avoid Federal support for floodplain development; to prevent uneconomic, hazardous, or incompatible use of floodplains; to restore and preserve the natural and beneficial floodplain values; and to be consistent with the standards and criteria of the National Floodplain Insurance Program.

FRA concludes that the Selected Alternative will not result in any substantial adverse impact on natural and beneficial values of the floodplains, will not result in a substantial change in flood risks or damage, and will not have a substantial potential for

interruption or termination of emergency service and evacuation routes. Based upon these findings, FRA determines that the Selected Alternative is consistent with requirements of Executive Order 11988.

9.7 Environmental Justice Finding

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. DOT Order 5610.2(a), "Department of Transportation Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," 77 FR 27534 (May 10, 2012), imposes similar obligations on DOT operating administrations to promote the principles of Executive Order 12898 and incorporate such principles in all programs, policies, and activities, including the NEPA process.

Moderate noise impacts and displacements and relocations in the cities of Merced and Fresno will be predominantly borne by communities of concern. With mitigation, the effects of displacements and relocations on communities of concern will not be substantial and will not be appreciably more severe or greater in magnitude than the adverse effect on the general population. Benefits will likely accrue to a greater degree to communities of concern because they comprise a large percentage of the population in the study areas and in the community. These benefits will include improved mobility within the region, improved traffic conditions on freeways, improvements in air quality within the region, and new employment opportunities during construction and operation. Jobs created by construction and operation of the Selected Alternative will likely be filled by workers in the region. The new jobs will not result in any benefits that will accrue to a greater degree to the communities of concern unless they have the necessary skills or they receive training or participate in some other type of program that enables employment.

10.0 Conclusion

FRA has reached a decision that most closely aligns with FRA's statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors and based on the information contained in the EIS Documents. FRA selects the Hybrid Alternative, Merced Downtown Station, and Fresno Mariposa Street Station Alternative for the Project in this ROD. FRA has selected these alternatives because they: 1) best satisfy the Purpose, Need, and Objectives for the proposed action, and 2) minimize impacts on the natural and human environment by utilizing an existing transportation corridor where practicable and incorporating other mitigation measures. Accordingly, the Hybrid Alternative, Merced Downtown Station, and Fresno Mariposa Street Station Alternative have been selected based on processes in compliance with NEPA and other applicable requirements.

Joseph C. Szabo
Administrator
Federal Railroad Administration

Date 9/18/12

Appendices:

Appendix A: Memorandum of Agreement for the Treatment of Adverse Effects on Historic Properties under Section 106 of the National Historic Preservation Act
Appendix B: Biological Opinion (USFWS and NMFS)
Appendix C: Mitigation Monitoring and Enforcement Plan (MMEP)
Appendix D: Corrections to the Final EIS (Errata Sheet)
Appendix E: CDFG Concurrence of FRA's Section 4(f) Finding of *De Minimis* Impact on Camp Pashayan

RECEIVED
MAY - 3 2012
STATE CLEARING HOUSE

Notice of Determination

Appendix D

To:
☒ Office of Planning and Research

U.S. Mail:	*Street Address:*
P.O. Box 3044	1400 Tenth St., Rm 113
Sacramento, CA 95812-3044	Sacramento, CA 95814

☐ County Clerk
County of: _____
Address: _____

From:
Public Agency: California High-Speed Rail Authority
Address: 770 L Street, Suite 800
Sacramento, CA 95814
Contact: Tom Fellenz, Acting CEO
Phone: (916) 324-1541

Lead Agency (if different from above):
_____
Address: _____
_____
Contact: _____
Phone: _____

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2009091125

Project Title: California High-Speed Train Project Merced to Fresno Section

Project Applicant: California High-Speed Rail Authority

Project Location (include county): Merced, Madera, and Fresno Counties (see attached)

Project Description:
Please see attached page.

This is to advise that the California High-Speed Rail Authority has approved the above
(☒ Lead Agency or ☐ Responsible Agency)

described project on May 3, 2012 and has made the following determinations regarding the above
(date)
described project.

1. The project [☒ will ☐ will not] have a significant effect on the environment.
2. ☒ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☐ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [☒ were ☐ were not] made a condition of the approval of the project.
4. A mitigation reporting or monitoring plan [☒ was ☐ was not] adopted for this project.
5. A statement of Overriding Considerations [☒ was ☐ was not] adopted for this project.
6. Findings [☒ were ☐ were not] made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval, or the negative Declaration, is available to the General Public at:
Please see attached.

Signature (Public Agency): Thomas C Fellenz Title: Acting CEO

Date: May 3, 2012 Date Received for filing at OPR: _____

Authority cited: Sections 21083, Public Resources Code.
Reference Section 21000-21174, Public Resources Code.

Revised 2011

NOTICE OF DETERMINATION (ATTACHMENT)

Project Title

California High-Speed Train (HST) Project Merced to Fresno Section

Project Description and Location

The Merced to Fresno HST project would involve construction and operation of a dedicated, electrified and fully grade separated high speed rail system between downtown Fresno (including a station at Mariposa Street) and downtown Merced (including a station between MLK Way and G Street), and operation of high-speed trains on that system. Specifically, the alignment known as the "Hybrid" was approved. This alignment generally follows the existing UPRR tracks leaving north from Fresno. North of the San Joaquin River, the alignment crosses northeast toward the existing BNSF tracks to the northeast of Madera. Approaching Merced, this alignment follows the existing UPRR tracks from approximately Buchanan Hollow Road all the way into the city of Merced. The approval at this time does not include portions of the Merced to Fresno HST section north of the city of Madera and south of Buchanan Hollow Road in Merced County. The approval at this time does not include approval of a heavy maintenance facility.

Location of Final EIR and Record of Project Approval

The Final EIR with comments and responses and record of project approval is available to the general public at:

California High-Speed Rail Authority Office
770 L Street, Suite 800
Sacramento, CA 95814

ATTACHMENT 11

AS SUMMARIZED FROM CALIFORNIA HIGH-SPEED TRAIN, MERCED TO FRESNO PROJECT FINAL EIR/EIS

For Environmental Impacts Associated with Encroachments on and Modifications to the State Highway System

Prepared by:

AECOM
CH2M HILL

June 18, 2012

California High-Speed Rail Authority and Federal Railroad Administration (Authority and FRA). 2012. *Merced to Fresno Section Environmental Impacts Associated with Encroachments on and Modifications to the State Highway System Technical Report, California High-Speed Train Project Final Project Environmental Impact Statement/Environmental Impact Report.* Sacramento, CA and Washington, DC. Prepared by AECOM and CH2M HILL. June 2012.

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Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ACS	American Community Survey
APE	Area of Potential Effect
AREMA	American Railway Engineers and Maintenance-of-Way Association
AST	aboveground storage tank
Authority	California High-Speed Rail Authority
BMPs	best management practices
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CEDD	California Employment Development Department
CEQA	California Environmental Quality Act
CO	carbon monoxide
EIR/EIS	Environmental Impact Report/ Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FMMP	Farmland Mapping & Monitoring Program
FRA	Federal Railroad Administration
FSZ	Farmland Security Zone
GHG	greenhouse gas
HST	high-speed train
IBC	International Building Code
LOS	level of service
LUST	leaking underground storage tank
MOA	Memorandum of Agreement
NAICS	North American Industry Classification System
NEPA	National Environmental Policy Act
NO_x	nitrous oxides
NRHP	National Register of Historic Places
O_3	ozone
PEC	Potential Environmental Concern

PG&E	Pacific Gas & Electric Company
$PM_{2.5}$	particulate matter smaller than or equal to 2.5 microns in diameter
PM_{10}	particulate matter smaller than or equal to 10 microns in diameter
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SFHA	special flood hazard area
SHS	state highway system
SJVAB	San Joaquin Valley Air Basin
SO_2	sulfur dioxide
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VOC	volatile organic compound

Environmental Impacts Associated with Encroachments on and Modifications to the State Highway System

1.0 Introduction

1.1 Relationship of the HST Project to the State Highway System

The initial draft of Attachment 11 was submitted to the California Department of Transportation (Caltrans) in June 2011, providing information about each of the three alignment alternatives being considered in the Merced to Fresno Section High-Speed Train (HST) Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (Authority and Federal Railroad Administration [FRA] 2012a)—the Union Pacific Railroad (UPRR)/State Route (SR) 99 Alternative, the Burlington Northern Santa Fe (BNSF) Alternative, and the Hybrid Alternative—as well as wyes connecting the Merced to Fresno Section of the HST Project to the San Jose to Merced Section of the HST System. In December 2011, the California High-Speed Rail Authority (Authority) Board selected the Hybrid Alternative as the Preferred Alternative for the Project. On May 3, 2012, Board certified the Final EIR/EIS and approved the north-south portions of the Hybrid Alternative and the Merced and Fresno Station locations of the Project. The decision on the wye connection will be carried forward for further analysis in the San Jose to Merced Section Project EIR/EIS process.

This version of Attachment 11 contains only information about the state highway system (SHS) impact locations within the Hybrid Alternative because the other two alternatives are no longer being considered. Figure 1-1 shows all of the locations included in the June 2011 version of this report, with SHS impact locations discussed in this report shown as yellow and blue symbols, and locations no longer being considered as gray symbols.

The Merced to Fresno Section of the California HST Project consists of a north-south HST alignment between Merced and Fresno, and HST stations in Merced and Fresno. The wye connections (i.e., north and south connections to the Merced to Fresno Section from the San Jose to Merced Section) will be selected at a future date. For the remainder of this report, the Hybrid Alternative will be referred to as the HST Project. The Merced to Fresno HST Project alignment would cross state highway facilities along SR 99, SR 59, SR 152, SR 145, and SR 233. Table 1-1 identifies the location of the crossings for the approved HST Project and whether the crossing would be an HST structure that would cross over the state highway facility or whether there would be a roadway bridge where the HST would cross under either a local roadway or the state highway facility. Locations where an HST structure is anticipated to encroach on the SHS by placing piers or straddle bents for the HST overcrossing within the SHS right-of-way are considered encroachments, and locations where the HST Project design would modify an SHS facility to accommodate the HST alignment, either through rebuilding a local road SHS overcrossing or realignment of the SHS roadway, are considered SHS modifications.

Depending on the HST guideway type proposed at these crossings (aerial, at-grade, or below-grade), the HST guideway would require a construction easement, easement for columns within a state facility, modification or replacement of overcrossings or interchanges, or in the case of SR 99 in the City of Fresno, realignment of a state route. These locations have been described in the three Authority project reports prepared for the Project (one for each county—Merced, Madera, and Fresno), and impacts associated with these locations have been evaluated in the Merced to Fresno Section HST Project Final EIR/EIS (Authority and FRA 2012a).

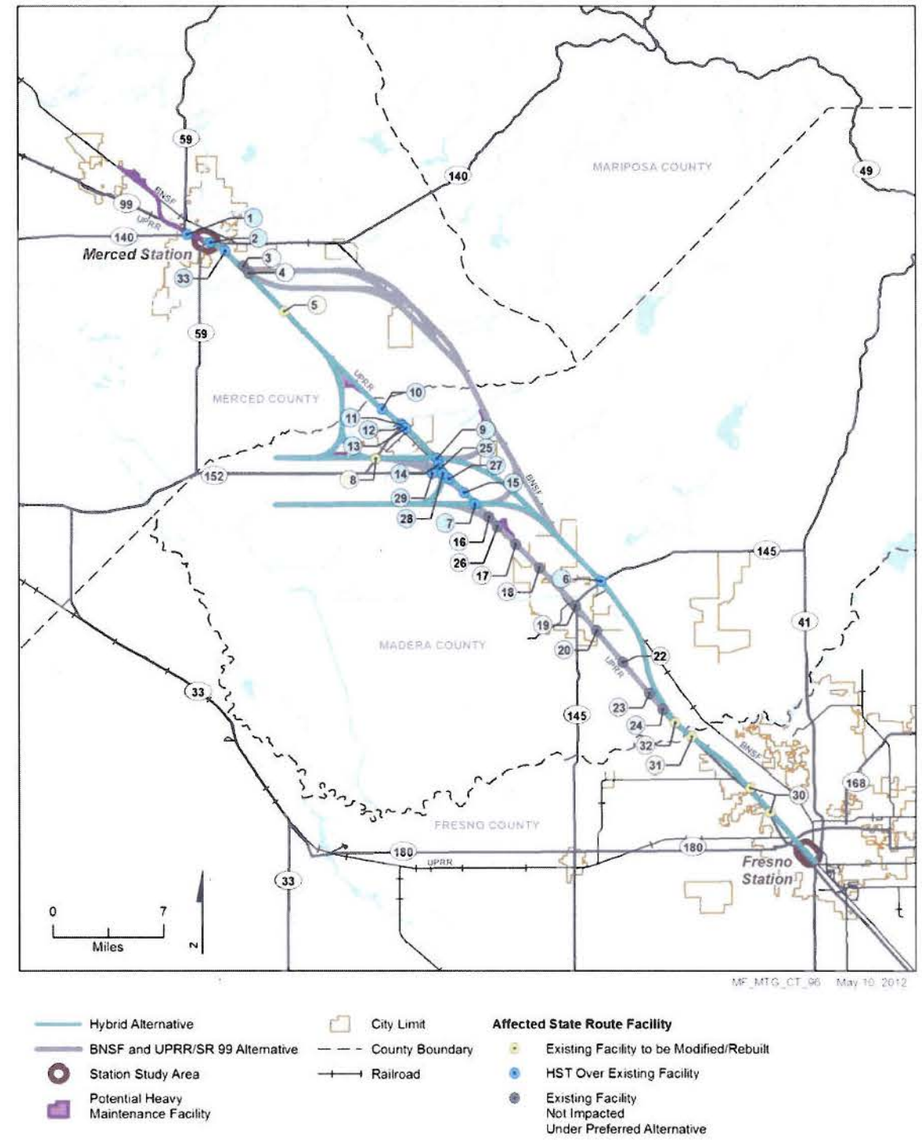


Figure 1-1
Location of State Highway System Facilities Affected by HST Alternatives

(Note: Location 21 intentionally omitted.)

Table 1-1
Locations of HST Impacts on the State Highway System

Location No.	Location	Requirements		Proposed Structure Type
		Modify	Encroachment	
1	SR 59 Mainline Crossover near W 15th Street (PM 14.9[a]) (Merced County)		x	HST Structure – Concrete Box Girder
2	SR 99 Mainline Crossover near 15th Street Undercrossing (PM 14.2) (Merced County)		x	HST Structure – CIP[b] Concrete Box Girder
5[c]	SR 99/Plainsburg (PM0.0-4.6) and Arboleda (PM 4.6-10.5) Interchanges (Merced County)	x		Roadway Bridge – CIP Concrete Box Girder
6	SR 145 Undercrossing near Road 28½ (PM 12.1) (Madera County)		x	Roadway Bridge- CIP Concrete Box Girder
7	SR 99 Mainline Crossover near Avenue 21 (PM 19.8) (Madera County)		x	Roadway Bridge – CIP Concrete Box Girder
8	SR 233 Overcrossing near Avenue 23½ (PM 1.1) (Madera County)	x		Roadway Bridge – CIP Concrete Box Girder
9	SR 99 Mainline Crossover near Avenue 24 (PM 23.7) (Madera County)		x	Roadway Bridge – Concrete Box Girder
10	SB[d] SR 99 On- and Off-Ramps near Chowchilla Blvd (PM 28.5) (Madera County)		x	HST Structure – Concrete Box Girder
11	SB SR 99 Off-Ramp (PM 3.8) (Madera County)		x	HST Structure – Concrete Box Girder
12	SR 233 Mainline Crossover near SR 99/SR 233 Junction (PM 3.8) (Madera County)		x	HST Structure – Concrete Box Girder
13	SB SR 99 On-Ramp (PM 4.0) (Madera County)		x	HST Structure – Concrete Box Girder
14	SR 99 Mainline Crossover near SR 99/SR 152 Junction (PM 23.2) (Madera County)		x	HST Structure – CIP Concrete Box Girder
15	SR 99 Avenue 21½/Road 20 Interchange (PM 20.8) (Madera County)		x	HST Structure – Steel Composite Twin Boxes with Concrete Straddle Bent

Location No.	Location	Requirements		Proposed Structure Type
		Modify	Encroachment	
25	SR 99 near SR 152 Junction (PM 22.7) (Madera County)		x	A2-21WC-EL and A2-21WC-AG: HST Structure- Concrete Box Girder (SR152), CIP Concrete Box Girder (SR 99, 1st crossing), Steel Composite Twin Boxes with Concrete Straddle Bent (SR 99, 2nd crossing)
27	SR 99 Mainline Crossover near Road 19 (PM 22.1) (Madera County)		x	HST Structure – Concrete Box Girder
28	SR 99/SR 152 Junction (PM 15.5) (Madera County)		x	HST Structure – Steel Composite Twin Boxes with Concrete Straddle Bent
29	SR 152 near Road 18 (PM 15.0) (Madera County)		x	HST Structure – CIP Concrete Box Girder
30	SR 99 Realignment from Ashlan Avenue and SR 99 Widening from McKinley Avenue to Olive Avenue (PM 23.5-26.6) (Fresno County)	x		Roadway Bridge – CIP Concrete Box Girder
31	SR 99 On/Off-Ramps to Herndon Ave (PM 30.8-31.3) (Fresno County)	x		HST Structure – Concrete Box Girder
32	SR 99/Avenue 7 Overcrossing (PM 0.99R) (Madera County)	x		Roadway Bridge – CIP Concrete Box Girder
33	SR 99/W Childs Ave Interchange (PM 13.09) (Merced County)		x	HST Structure

[a] PM = post mile
[b] CIP = cast in place
[c] Missing Location Numbers have been deleted because they do not occur under the HST Project.
[d] = southbound

The proposed Veteran's Boulevard Project, located between Herndon Avenue and Shaw Avenue in the City of Fresno, will be constructed in two phases. Phase 1 of the project is included in the HST Project. Phase 1 includes the northern portion of the Veteran's Boulevard improvements and continues as far south as the Veteran's Boulevard/North Golden State Boulevard interchange, but does not encroach or affect the SHS right of way. Phase 2 of the project, which includes the Veteran's Boulevard/SR 99 interchange, will be managed by the City of Fresno and will not be included in the Merced HST Project and therefore is not discussed in this report.

1.2 Objectives of this Report

Potential impacts associated with construction and operation of the proposed HST Project on the SHS have been assessed as part of the Merced to Fresno HST Project Final EIR/EIS analysis. This document

extracts information provided in the Final EIR/EIS for each of the locations that will require right-of-way encroachment or modification of the SHS, and describes existing conditions and potential direct or indirect impacts that apply to each of the affected state highway facilities that would be crossed by the HST System. Mitigation measures, which are fully described in the Final EIR/EIS, are also listed in Section 5 of this document.

The severity of potential impacts is discussed with respect to the significance criteria described for each resource in the Merced to Fresno Project Final EIR/EIS. Under the California Environmental Quality Act (CEQA), impacts are described as "significant" if they exceed the impact threshold identified for a given resource. Under the National Environmental Policy Act (NEPA), project impacts are evaluated based on the criteria of context and intensity. Context means the affected environment in which a proposed project occurs. The severity of the impact is examined in terms of the type, quality, and sensitivity of the resource involved; the location and extent of the impact; the duration of the impact (short- or long-term); and other considerations of context. Intensity means the degree or magnitude of a potential adverse impact where the impact is determined to be negligible, moderate, or substantial. Analysis methodology and CEQA thresholds for each resource are described in the Project EIR/EIS.

1.3 Role and Obligations of a Responsible Agency

As a Responsible Agency, Caltrans' role is different from situations where it is the Lead Agency. There are two key differences: (1) Caltrans is obligated to use the Final EIR certified by the Lead Agency when considering the project (except in the unlikely situation where Caltrans sues the Lead Agency, alleging that the EIR is inadequate); and (2) Caltrans cannot prepare a subsequent EIR for the project unless the circumstances set out in State CEQA Guidelines Section 15162 apply.

CEQA Guidelines Section 15096(a) provides that "[a] Responsible Agency complies with CEQA by considering the EIR or Negative Declaration prepared by the Lead Agency and by reaching its own conclusions on whether and how to approve the project involved." Before reaching a decision on the project, the Responsible Agency must consider the environmental effects of the project as documented in the Final EIR certified by the Lead Agency (Guidelines Section 15096(f)), and is responsible for mitigating or avoiding only the direct or indirect environmental effects of those parts of the project which it decides to carry out, finance, or approve (Guidelines Section 15096(g)). The Responsible Agency's ability to prepare a subsequent EIR is limited by the provisions of Section 15162 (Guidelines Section 15096(f)).

CEQA Guidelines Section 15162 (codifying Public Resources Code Section 21166) acts to limit the need to prepare additional environmental analysis when a project has already been analyzed in a certified Final EIR. The seminal court decision interpreting this section opined that

> *"In a case in which an initial EIR has been certified, section 21166 comes into play precisely because in-depth review of the project has already occurred, the time for challenging the sufficiency of the original CEQA document has long since expired, and the question before the agency is whether circumstances have changed enough to justify repeating a substantial portion of the process.* (Benton v. Board of Supervisors (1991) 226 Cal.App.3d 1467, 1479-1480)

Section 15162, subsection (a) establishes the following restrictions on preparing a subsequent EIR:

> *(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:*
>
> *(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;*

> *(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or*
>
> *(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:*
>
> > *(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;*
> >
> > *(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;*
> >
> > *(C) Mitigation measures or alternatives previously found not to be feasible will in fact be feasible, and will substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or (D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR will substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.*

The following report sets forth the significance findings of the Final EIR/EIS for the Merced to Fresno HST Project, and related mitigation measures and design features, as they apply to impacts on the SHS.

1.4 Report Organization

The report has been organized into six sections to address the locations that would be potentially affected by the project.

- Section 1 discusses the relationship of the HST project to the SHS, the objectives of the report, the report organization, and a general HST project description.
- Section 2 describes the locations (shown as blue dots in Figure 1-1) where the project would encroach on the SHS right-of-way by requiring placement of columns or straddle bents for overcrossing structures within the right-of-way. In this section, environmental impacts similar between all locations are described first, followed by specific information about locations that would result in impacts not similar between all.
- Section 3 discusses in detail the locations (shown as yellow dots in Figure 1-1) in Merced and Madera counties where state facilities would require modification as a result of the Merced to Fresno HST project. In this section, environmental impacts similar between all locations are described first, followed by specific information for each location about impacts not similar between all.
- Section 4 discusses the impacts associated with the realignment of SR 99 between Clinton Avenue and Ashlan Avenue in the City of Fresno, which is included as part of the HST project.
- Section 5 lists project design features that help avoid impacts on resources and proposed mitigation measures included in the Merced to Fresno HST Project EIR/EIS that are applicable to locations where the HST would affect an SHS facility.
- Section 6 lists documents referred to in the other sections of this report.

Maps showing the location of environmental resources, overlain with the locations of encroachments and potential impacts on the SHS by the HST, are provided in Appendix A. The Project Mitigation Monitoring

and Reporting Program is presented in Appendix B. A list of special status plant and wildlife species in the Project area is provided in Appendix C (formerly published as Appendix 3.7-A of the Merced to Fresno HST EIR/EIS), and a visual resources impact analysis matrix for SHS modification locations can be found in Appendix D.

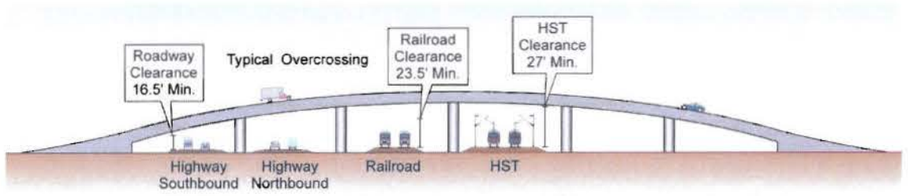
1.5 Project Description

1.5.1 Locations Where the HST Project Would Affect the SHS

The Merced to Fresno Section HST Project consists of a north-south HST alignment between Merced and Fresno, and possible wye connections to the San Jose to Merced Section that would cross state highway facilities along SR 99, SR 59, SR 152, SR 145, and SR 233. The Merced to Fresno Section can connect to the San Jose to Merced Section of the California HST System via different wye options, which would join the Merced to Fresno Section in the vicinity of Chowchilla. The Final EIR/EIS for the Merced to Fresno HST section analyzed one wye option that follows Avenue 21, and one that follows Avenue 24. A subsequent environmental review process will further analyze these as well as another wye that follows SR 152. The HST Project and wye options are illustrated in Figure 1-1.

In several locations, the proposed HST alignment would cross the SHS on a structure. In other locations, a roadway bridge is proposed over an SHS facility in order to accommodate grade separation of the HST alignment from intersecting roadways. Figure 1-2 shows the change from the existing typical condition of an overcrossing of SR 99 and the UPRR alignment to the same overcrossing extending to also cross the HST alignment. The HST right-of-way would be approximately 50 feet in locations where the profile is aerial, and 100 feet where at-grade. In constrained areas such as within the City of Fresno, the at-grade right-of-way can be reduced to 60 feet. The HST Project would encroach on state highway facilities maintained by Caltrans District 6 and District 10, located between Franklin Road at SR 99 in Merced County, south through Madera County, and into Fresno County, ending at Clinton Avenue in the City of

(a) Typical Overcrossing of Divided Highway and Railroad



(b) Typical Overcrossing of Divided Highway, Railroad, and HST

Figure 1-2
Example of Lengthening an Overcrossing on a Divided Highway

Fresno. Any HST impacts on the SHS south of this location will be discussed in a project report for the Fresno to Bakersfield Section of the HST System.

As previously stated, Section 2 of this report describes the locations listed in Table 1-1 and shown in Figure 1-1 where the HST alignment is anticipated to encroach on the SHS by placing piers or straddle bents for HST overcrossing structures within the SHS right-of-way. At these locations, no modifications to a SHS facility would be required. These locations are in Merced and Madera counties.

Sections 3 and 4 of this report describe the locations listed in Table 1-1 and shown in Figure 1-1 where SHS facilities would need to be modified to accommodate the HST alignment, either through rebuilding a local road overcrossing or realignment of an SHS roadway.

1.5.2 Planned Construction Scenario

Typical construction methods for HST bridges over SHS facilities would be single box segmental girder bridge construction techniques; however, other construction methods that the contractor may consider are cast-in-place concrete box girders or installation of precast concrete girders, steel girders, or trusses. For single box segmental girder bridge construction, there are two primary techniques that a contractor would likely use for this type of construction. The first technique utilizes precast bridge segments approximately 10 feet in length. The segments would be lifted into place one at a time using a crane. Two segments, or 20 feet of the bridge structure, could be erected per day. Traffic would need to be rerouted underneath the structure as each section is put in place. An alternative would be to use an overhead erection gantry truss spanning between the two piers. Although this method would be more costly, it would increase the construction rate to approximately six segments, or 60 feet per day. Using this method, the entire span could be constructed adjacent to the roadway and either launched off the nearby pier or suspended with an erection gantry. Using this technique, the entire span could be erected within 1 day, but longer road closures would be required.

Several structures would require the construction of straddle bents straddling SR 99 or other roadways. These straddle bents would likely be constructed using typical cast-in-place concrete procedures; however, it is also possible to build the bent caps using the techniques described above. After the straddle bents are in place, construction of the structure could be completed as described above.

The Merced to Fresno Section is a portion of the American Recovery and Reinvestment Act funding application, which requires construction of the HST System to begin by fall 2012 and to be completed by September 2017. Therefore, design/build contractors for this section would have a period of 5 years to complete the design, secure permits that have not already been secured by the Authority, and construct the selected alternative. Most construction is expected to take place between 2014 and 2016.

2.0 Potential Impacts Associated with Encroachment of HST Overcrossings on the SHS

Locations where the HST would cross over an SHS facility on structure are shown in Figure 2-1. For these locations, the only direct impact to SHS property would be a right-of-way impact where columns or straddle bents would be placed in the median or shoulders of a highway alignment, or adjacent to overcrossings. At these locations, there would be no modification of the SHS facility. The highways that would experience HST right-of-way impacts are SR 99, SR 59, SR 145, SR 233, and SR 152. In addition to the right-of-way impacts, some indirect impacts on SHS facilities are anticipated and discussed in this environmental review. Impacts discussed in this section are confined to the area within the SHS right-of-way. Impacts caused by HST facilities outside of the SHS right-of-way are discussed in the Final EIR/EIS and will be mitigated as part of that project. Supporting documentation is available with the published Final EIR/EIS which is available on the Authority web site (http://www.cahighspeedrail.ca.gov/final-eir-m-f.aspx).

The following resources would not be affected by HST overcrossing structures within the SHS right-of-way and are not discussed further in this section:

- Electromagnetic fields and electromagnetic interference
- Station planning
- Land use and development
- Agricultural land
- Parks
- Recreation and open space

2.1 Affected Environment

The locations where the HST would cross the SHS occur within the SR 99 corridor, with one crossing over SR 59, one over SR 152 and one over SR 145. In general, the SR 99 corridor can be characterized as a major transportation corridor, which includes an interregional freeway and the UPRR rail alignment. Most of the SHS crossings would occur in rural areas where the SR 99 corridor is generally surrounded by agricultural land uses, and to a lesser extent, residential and industrial development.

Where the HST Project would cross the SHS facility in the cities of Merced, Madera, and Fresno, there are instances where parks and noise/vibration-sensitive receptors are within 1,000 feet of the alignment and the SHS facility. Likewise, hazardous materials sites of potential environmental concern along the HST Project and the SHS facility are primarily located within city boundaries. Public utilities in the vicinity of the Merced to Fresno Section include natural gas lines, petroleum and fuel pipelines, and communication infrastructure; these are generally confined to existing roadways and railroad rights-of-way. There are no known historic architectural resources in the locations where the HST Project would encroach on an SHS facility. The soils along the HST Project are composed primarily of middle to late Pleistocene Age deposits and were determined to have a moderate impact for paleontological resources.

Sensitive biological resources along the HST Project include vernal pools, seasonal wetlands, coastal valley and freshwater marshes, natural watercourses, and constructed watercourses. The SR 99 corridor crosses a wildlife movement corridor at the Eastman Lake-Bear Creek Essential Connectivity Area, which crosses SR 99 and the HST Project just north of the boundary between Merced and Madera counties. Likewise, the HST Project is located in the San Joaquin River Basin, which contains watercourses including improved flood control or drainage channels, river and stream channels, and sloughs. The HST Project would cross several waterways in this vicinity, including, Miles Creek, Owens Creek, Duck Slough, Dutchman Creek, Chowchilla River, Ash Slough, Berenda Creek, and Dry Creek (refer to Figure A-8 in Appendix A).

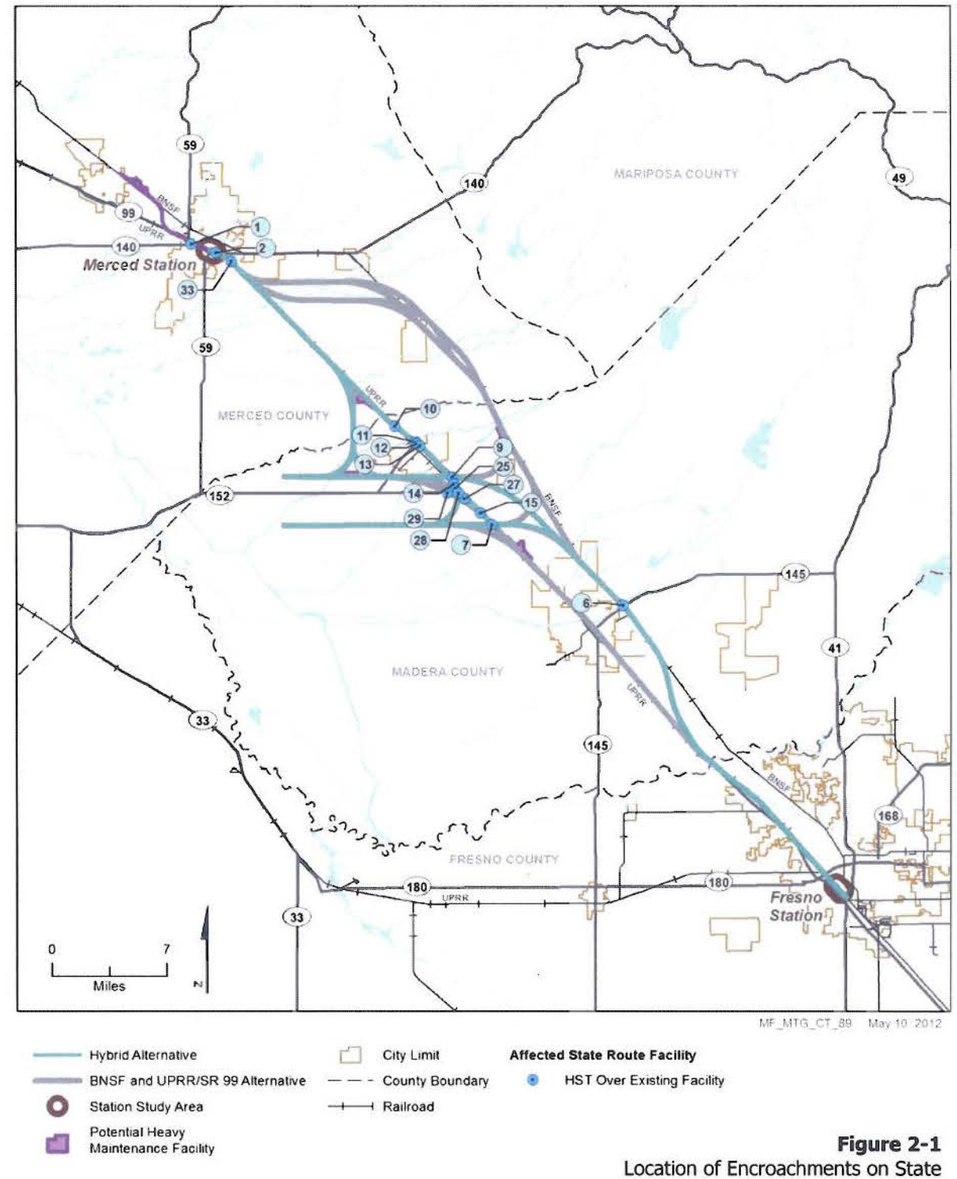


Figure 2-1
Location of Encroachments on State Highway System Facilities by HST Alternatives

The HST structures proposed to cross SHS facilities would occur in the communities of Merced, Chowchilla, Fairmead, Madera, and Fresno, which are characterized as having low-income and minority populations.

2.2 Environmental Consequences

2.2.1 Transportation

Impacts associated with construction of straddle bents or piers within the SHS right-of-way, which would typically affect operations of the SHS facility and roads in the vicinity, would be temporary. Construction activities would require temporary closure of traffic lanes, reduction of lane widths, reduced speed limits, temporary on- and off-ramp closures, detours, and temporary closure of the freeway for placement of structural elements of installation or removal of falsework. The duration of these impacts could range from several hours in the case of a freeway closure to months in the case of lane-width reductions. Standard construction procedures related to traffic management would be used, including preparation of a detailed traffic control plan for each affected location prior to beginning any construction activities. These plans would identify when and where temporary closures and detours would occur, with the requirement of maintaining traffic flow during peak travel periods. Impacts caused by temporary roadway closures associated with construction would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Because standard construction practices would be used to manage traffic during construction, hazards and incompatible uses would not increase and inadequate emergency access would not occur, so the impacts would be moderate under NEPA and would be less than significant under CEQA. Vehicle trips for construction workers would generally occur outside of the peak hours for freeways and street traffic and are not anticipated to result in impacts on the traffic or transportation system.

Avoidance and minimization measures would be incorporated to reduce impacts caused by intersection delays, temporary roadway closures, construction-related safety hazards, and other disruptions of transportation system operations to negligible under NEPA and less than significant under CEQA.

Significant traffic impacts typically associated with project operation are related to permanent road closures and changes in traffic at local intersections. Because placement of piers within the SHS for HST overcrossings would not be associated with these types of impacts, permanent impacts at the HST overcrossing locations would be negligible under NEPA and less than significant under CEQA. Detailed traffic studies were carried out in areas where the HST project is anticipated to affect existing traffic, including the Merced and Fresno station areas, the SR 99 realignment area in Fresno, and potential heavy maintenance facility (HMF) sites. This analysis is presented in the Merced to Fresno HST transportation Technical Report (Authority and FRA 2012b).

2.2.2 Air Quality and Global Climate Change

The HST project would be located in the San Joaquin Valley Air Basin (SJVAB), which encompasses the southern two-thirds of California's Central Valley. Three general classes of air pollutants are of concern for this project: criteria pollutants, toxic air contaminants, and greenhouse gases (GHGs). Criteria pollutants are those for which U.S. Environmental Protection Agency (EPA) and the State of California have set ambient air quality standards or that are chemical precursors to compounds for which ambient standards have been set.

Projects requiring approval of federal funding that are in areas designated as nonattainment or maintenance for the National Ambient Air Quality Standards are subject to EPA's Conformity Rule. The two types of federal conformity are general conformity (GC), which applies to the HST Project due to FRA funding, and transportation conformity, which does not apply to the HST, but could apply to future actions related to the project's minor expansions or realignments of local roadways. The Draft Conformity

Determination for the Merced to Fresno Section is included in the Project Final EIR/EIS as Appendix 3.3-B. The applicable Project area is in an area designated as extreme nonattainment for the 8-hour ozone (O_3) standard, nonattainment for particulate matter smaller than or equal to 2.5 microns in diameter ($PM_{2.5}$), and maintenance for particulate matter smaller than or equal to 10 microns in diameter (PM_{10}) and carbon monoxide (CO). The GC threshold values for this area, according to 40 Code of Federal Regulations Part 93, are 10 tons per year for volatile organic compounds (VOCs), 10 tons per year for nitrogen oxides (NO_x), and 100 tons per year for sulfur dioxide (SO_2), $PM_{2.5}$, PM_{10}, and CO.

Construction-phase emissions in the SJVAB are greater than the GC threshold(s) for:

- VOCs for the years 2014, 2015, and 2019
- NO_x for the years 2013 to 2020

During construction, programmatic emissions reduction measures would be applied as part of the Project, including watering exposed surfaces and unpaved roads three times daily, reducing vehicle speeds on unpaved roads to 15 mph, and checking that haul trucks are covered. With the implementation of these program measures, however, VOC and NO_x impacts would still exceed GC thresholds for most of the construction period. The Authority would purchase offset emissions through a Voluntary Emission Reduction Agreement (VERA) with the San Joaquin Valley Air Pollution Control District (SJVAPCD) for these pollutants and thereby would reduce impacts to negligible under NEPA and less than significant under CEQA after mitigation. Local impacts from concrete batch plants would be reduced to negligible (NEPA) and less than significant (CEQA) by locating them at least 1,000 feet from sensitive land uses.

To conservatively estimate amortized GHG emissions, the HST Project life is conservatively assumed to be only 25 years (although the actual project life will be much longer). The estimated amortized GHG construction emissions would be less than 3,700 metric tons of carbon dioxide equivalent (CO_{2e}) per year. The increase in GHG emissions generated during construction would be offset by the net GHG reductions in operation (because of car and plane trips removed in the Merced to Fresno area) in 2 to 4 months.

The statewide and regional impact on air quality from operation of the HST would be negligible (NEPA) and less than significant (CEQA), and slightly beneficial for the HST Project. The HST Project would result in a net benefit to air quality because it would result in lower mobile source air toxic, GHG, VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$ emissions than the No Project Alternative because vehicle miles traveled would be reduced by travelers switching to the HST. Localized impacts resulting from changes in traffic patterns would be negligible as demonstrated by the CO and PM hot-spot analyses prepared for the Final EIR/EIS.

2.2.3 Noise and Vibration

In the vicinity of the locations where the HST would cross an SHS facility or structure, traffic on SR 99 and freight trains on the UPRR railway dominate the noise exposure. Sources of vibrations include UPRR freight trains, Amtrak passenger trains, and truck traffic on SR 99. The placement of piers within the SHS for HST overcrossings would not result in changes to traffic that would result in increased noise. No sensitive receptors have been identified within Caltrans right-of-way at the HST overcrossing locations; therefore, no temporary or permanent noise impacts are anticipated to be associated with operation of the HST Project. By implementing noise mitigation measures for HST noise effects, noise and vibration impacts would be negligible under NEPA and less than significant under CEQA.

2.2.4 Public Utilities and Energy

Public utilities in the vicinity of the Merced to Fresno Section, including natural gas lines, petroleum and fuel pipelines, and communication infrastructure, are generally confined to existing roadways and railroad rights-of-way. Specifically, petroleum and fuel pipelines, as well as a natural gas line, are located along the SR 99 corridor. Therefore, in locations where the HST alignment would cross SHS mainlines or on- and off-ramps, there is a potential for impacts on utilities.

The construction of HST overcrossing structures within the SHS facilities could result in temporary interruption of services and accidents. Letters and newspaper notices would be used to notify utility customers of scheduled outages. Probing for existing utilities before the start of construction would reduce the risk of accidental service interruptions. Construction and demolition waste would be recycled to divert it from landfills. Because the HST Project would conflict with existing utilities, they would be either relocated outside the HST right-of-way, or, if they remain in the right-of-way, would be reinforced to withstand the weight of ballast material and trains.

With mitigation measures identified in the Final EIR/EIS, permanent and temporary impacts on public utilities and energy would be negligible under NEPA and would be less than significant under CEQA.

2.2.5 Biological Resources and Wetlands

The methodology used to assess potential impacts on biological resources and wetlands for the HST Project is described in the *Central Valley Biological Resources and Wetlands Survey Plan* (Survey Plan) (Authority 2010a). Implementation of the methodology took into account comments received from natural resources management agencies. The methodology explains how background data were collected on special-status species, waters of the United States and the state (including wetlands), California Department of Fish and Game lakes and streambeds, and sensitive natural communities. The Survey Plan also describes the studies conducted to identify and map wetlands and other waters, locate areas occupied by special-status plant species, and to identify habitats potentially used by special-status wildlife species. Appendix C provides a list of special-status plant and wildlife species with the potential to occur in the Project vicinity.

Potential HST overcrossing structures within SHS rights-of-way near biological resources include Location No. 3 (SR 99/E Mission Avenue interchange) – constructed water basin.

For temporary impacts during construction, some activities would result in direct temporary losses of plant communities and cover types, or indirect effects such as noise, motion, startle, and dust generation, which would influence wildlife utilization of affected areas. Because the effects are expected to be temporary and short term in nature and because the area of impact would be restored to the original conditions (through contouring and landscaping), the effects would be moderate under NEPA and less than significant under CEQA after mitigation. This effect determination recognizes there would be an adverse effect on by wildlife, but over time habitat would be restored. With the mitigation measures identified in the Final EIR/EIS, impacts would be reduced to the extent practicable. Project period impacts are anticipated to be negligible under NEPA and less than significant under CEQA.

2.2.6 Hydrology and Water Resources

Construction of straddle bents or piers within the SHS right-of-way would require construction activities such as grading and the use of laydown and construction staging areas that could alter existing drainage patterns and redirect stormwater runoff. Soil-disturbing activity during construction (excavation and grading) can lead to erosion and sedimentation resulting from the exposure of bare soils, which are more likely to erode than vegetated areas that provide infiltration, retention, and dispersion. In addition, construction activities could result in accidental releases of construction-related hazardous materials, including petroleum products and high-pH stormwater from concrete that could affect surface water quality.

The HST Project would cross the SHS near water bodies in three locations. These locations, all near Ash Slough, are as follows:

- Location No. 11 (SR 99 off-ramp)
- Location No. 12 (SR 233 crossover near SR 99/SR 233 junction)
- Location No. 13 (SB SR 99 on-ramp)

Construction of the HST alignment would result in temporary impacts on existing drainage systems, local groundwater quantity from dewatering, and water quality. Installation of support piers has the potential to affect hydrology by diverting water during construction, and could provide a direct path for construction-related contaminants to reach surface water.

Effects during construction on drainage and stormwater runoff patterns, and groundwater quality, would be reduced with implementation of best management practices (BMPs) and adherence to water quality regulations, as described in Section 5.1. A Construction Stormwater Pollution Prevention Plan (SWPPP) would be prepared and implemented for construction activities as part of project design (see Section 5.1, Project Design Features) and the project would also comply with the Central Valley Regional Water Quality Control Board (RWQCB) waste discharge requirement for dewatering and other low threat discharges. All temporary changes to stormwater drainage patterns and runoff resulting from the HST encroachments would be minimal and would have negligible impacts under NEPA and a less than significant impact under CEQA because they would be temporary, would not alter drainage sufficiently to displace a volume large enough to increase flood risk, and construction would not occur in stream or river channels during the winter storm season. Direct impacts on surface water from operation of the project could include changes to the hydrology and connectivity of natural water bodies in the study area.

Designing water body crossings to maintain existing hydraulic capacity and connectivity would ensure that no operational impacts on hydrology and floodplains would occur, as described in Section 5.1, Project Design Features. Project stormwater system design would accommodate project runoff and would provide stormwater quality treatment for the new and replaced roads and highways, train stations, and HMFs. In certain locations, track would be elevated above the flood level on sections of elevated guideway supported by piers, thereby avoiding permanent floodplain and stream crossing impacts. Placing at-grade track sections on embankments with culverts adequately sized and placed would avoid intensifying flood or drainage problems in other locations. Impacts on surface water capacity, connectivity, and quality would have negligible impacts under NEPA and would be less than significant under CEQA.

Project facilities would result in changes to existing drainage, as well as increased runoff from Project impervious surfaces. Increased stormwater runoff from the Project or substantial alteration of the existing drainage pattern could cause flooding, erosion, or sedimentation. The HST alignment could result in changes to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways. During the detailed design phase, features would be included in the Project to provide adequate stormwater capacity and to allow the Project to remain operational during flood events. In addition, compliance with an Industrial Stormwater Pollution Prevention Plan would reduce degradation of surface water quality. With design features for stormwater management and flood protection in place, impacts on existing drainage patterns would be negligible under NEPA and would be less than significant under CEQA.

2.2.7 Geology, Soils and Seismicity

Because of flat topography, competent soils, and groundwater at depths of 50 feet or more in the HST Project vicinity, only a limited number of environmental consequences are possible during construction relative to geology, soils, and seismicity. The risk areas are located near streams and river crossings where soils tend to be softer and groundwater is often closer to the ground surface. Potential construction impacts include localized deposits of low-strength soils resulting in slumps or slope failures, ground settlement, soil erosion, and difficult excavations in localized areas because of hardpan and shallow groundwater.

With implementation of normal design standards and guidelines in addition to standard safety practices during construction (see Section 5.1, Project Design Features), these risks would be negligible under NEPA and less than significant under CEQA. Accelerated soil erosion, including loss of topsoil, caused by wind or water erosion could occur as a result of construction of the project on erosion-prone soils. With implementation of standard construction practices, these impacts would be negligible under NEPA and would be less than significant under CEQA. Potential project impacts are similar to construction impacts

(slumps or slope failures, soil settlement, and erosion), but longer in duration. Other potential project impacts include differential track movement due to shrink-swell of soils, corrosion of steel structures due to corrosive soils, and seismically induced ground shaking. Design measures would be implemented to reduce these impacts to negligible under NEPA and less than significant under CEQA.

2.2.8 Hazardous Materials and Wastes

The only direct impact to SHS property would be a right-of-way impact where columns or straddle bents would be placed in the median or shoulders of a highway alignment, or adjacent to overcrossings. At these locations, there could be inadvertent disturbance of hazardous materials or waste as a result of trenching and other ground-disturbing Project construction activities. Surface and near-surface soils along heavily used roadways have the potential to contain elevated concentrations of lead (EPA 2009). Lead-based materials that would require specialized procedures and equipment, as well as handling by appropriately certified personnel, might be found in soils along the roadways. Although lead is no longer used in gasoline formulations, lead emissions from automobiles (aerially deposited lead) are a recognized source of contamination in soils along roadways. Standard BMPs would be used at any location with positive results for lead to protect human health and the environment (See Section 5.1, Project Design Features).

Construction of the HST overcrossing structures within the SHS would occur on some parcels known or suspected to contain contaminated soil or groundwater. Project construction activities could disturb undocumented soil or groundwater contamination, including at conceivable Potential Environmental Concern (PEC) sites. There are potential environmental concerns near Location No. 2 (SR 99 mainline crossover near 15th Street undercrossing) in the City of Merced, with two schools within a 1-mile radius.

Adverse impacts could result if construction activities inadvertently dispersed contaminated material into the environment. For example, dewatering activities during construction could cause contaminated groundwater to migrate farther in the groundwater table or cause contaminated groundwater to be released into streams. In addition, inadvertent disturbance of asbestos-containing materials (ACM) could result in airborne asbestos fibers. Potential hazards to human health include ignition of flammable liquids or vapors, inhalation of toxic vapors in confined spaces such as trenches, and skin contact with contaminated soil or water. The disturbance of undocumented contamination would be a moderate impact under NEPA and a significant impact under CEQA because of the possibility for resulting hazards to the environment and human health. There are various established procedures to reduce the potential that construction on PEC sites results in impacts on human health or the environment. Where effects on PEC sites cannot be avoided, preconstruction activities would address the requirements for constructing at PEC sites in coordination with regulatory agencies. Depending on proposed project activities, such as the need for subsurface ground disturbance and the known extent and type of contamination, requirements for constructing at contaminated sites could include further evaluation of the level of contamination and associated potential risks to human health and the environment. With the incorporation of standard BMPs, avoidance measures, and coordination with regulatory agencies, the potential effects from construction on, or in proximity to, contaminated sites would be negligible under NEPA and would be less than significant under CEQA. A construction management plan will be prepared that prescribes activities for workers to follow in areas with suspected presence of undocumented soil or groundwater contamination based on visual observation or smell. The construction management plan will include (but is not intended to be limited to) provisions for daily briefings of the construction staff before work regarding what to look for; a list of contact persons in case of an encounter with undocumented contamination; provisions for immediate notification of construction management; notification of the applicable local enforcement agency of the find; consultation with that agency; and protocols for further action. In such instances, construction activities would cease until it is determined, in coordination with regulatory agencies, that work can proceed without the risk of injury to persons or the environment. With the implementation of these standard precautions, the potential effects of inadvertent disturbance to hazardous materials or wastes would be negligible under NEPA and would be less than significant under CEQA.

Operation and maintenance of the HST Project would involve the transport, use, storage, and disposal of small quantities of hazardous materials or wastes associated with the routine maintenance of stations and other facilities. The HST would be dedicated to passenger transport and is not intended for the transport of freight or hazardous substances. Therefore, no impact from the HST would result from transporting hazardous materials or hazardous wastes. Along the track and at the stations, effects would be negligible under NEPA and less than significant under CEQA. With the mitigation measures, construction and operations impacts on hazardous materials and wastes would be negligible under NEPA and would be less than significant under CEQA.

2.2.9 Safety and Security

Safety of construction workers and the public could be compromised during construction of straddle bents or piers within the SHS right-of-way and could result in accidents at the construction sites and in temporary increases in risks to motor vehicle, pedestrian, and bicycle safety from traffic detours, as well as increased response times by law enforcement, fire, and emergency services personnel. However, standard implementation of a construction safety and health plan during construction would reduce risks to human health during construction and, therefore, impacts would be negligible under NEPA and would be less than significant under CEQA.

Temporary lane closures, detours, and the movement of construction vehicles would occur during Project construction and potentially create a distraction to automobile drivers, pedestrians, and cyclists. Distraction and unfamiliarity with detours could lead to accidents. In addition, construction-related road closures, detours, and localized automobile congestion could increase the response time for law enforcement, fire, and emergency services personnel. Emergency evacuation times could also increase. With implementation of standard design features, a construction transportation plan, and operating and emergency response plans, the effect on motor vehicle, pedestrian and bicycle safety, as well as the effect on increased response times for emergency responders and their access to elevated tracks, is anticipated to be negligible under NEPA and would be less than significant under CEQA.

Safety and security impacts associated with operation of the HST Project include train accidents such as train-to-train collisions, collisions with vehicles or other trains entering the HST corridor, and train derailments. As a result of implementing standard design practices, the effects on train accidents would be negligible under NEPA and less than significant under CEQA.

2.2.10 Socioeconomics, Communities, and Environmental Justice

The HST structures proposed to cross SHS facilities would occur in the communities of Merced, Chowchilla, Fairmead, Madera, and Fresno, which are characterized as having low-income and minority populations.

Displacement and property acquisition impacts would be negligible because all HST overcrossing structures are proposed to be located within the existing SHS facilities right-of-way. HST overcrossing structures proposed to cross SHS facilities would result in temporary impacts on communities, such as temporary impacts on minority and low-income populations caused by dust, noise, and visual changes.

Construction of the HST Project would result in effects on communities of concern; however, the construction impacts would not be disproportionately high and adverse because mitigation measures and project design features have been identified that would reduce the effects for most of the environmental elements, resulting in a moderate impact (see Section 5.1, Project Design Features). For the remaining elements, project construction would not result in adverse effects on communities of concern that are greater in magnitude than those effects on the general population. Construction has the potential to result in beneficial effects related to employment for communities of concern, after implementation of mitigation. Additionally, outreach will continue during the design process to seek input on impacts and mitigation, and therefore, collectively, these impacts would not be considered substantial under NEPA.

The impacts of the HST Project on community interactions in the cities of Merced and Fresno during construction would be moderate because the construction would not divide or affect the integrity of neighborhoods within the communities. Because the impacts would occur on the edges of communities and would not interfere with interaction or divide the communities, none of the impacts to the communities within the study area would be considered substantial under NEPA or significant under CEQA.

2.2.11 Aesthetics and Visual Resources

The visual impacts of overcrossing structures over SHS facilities would primarily affect motorists on SR 99, SR 59, SR 145, SR 233, and SR 152. Two types of structural supports would be used for overcrossings: columns and straddle bents. For this project, there are four scenarios for determining level and degree of impact:

1. If a change in the visual quality of one or more categories occurred (for example, high to moderately high, or moderate to low) in an area where people with high viewer sensitivity would experience the change, the impact is considered to be significant for the CEQA determination and a substantial impact for the NEPA assessment.
2. If viewers with moderate to low sensitivity observed a change of one visual quality category, the impact is considered to be less than significant for the CEQA determination and moderate (with moderate viewer sensitivity) or a negligible impact (with low viewer sensitivity) for the NEPA assessment.
3. If a change in visual quality of two or more categories occurred (for example, from high to moderate) in an area where people with high or moderate viewer sensitivity would experience the change, the impact is considered to be significant for the CEQA determination and a substantial impact for the NEPA assessment.
4. If viewers with low sensitivity observed a change in two or more visual quality categories, the impact is considered to be less than significant for the CEQA determination and a negligible impact for the NEPA assessment.

In many locations where the HST alignment would encroach on components of the SHS, the HST alignments would alter visual quality, but not enough to be considered significant for the CEQA determination or result in a substantial impact for the NEPA assessment. Changes to the visual quality of each Key View Point (KVP) that was used to assess how the HST alignment would encroach on components of the SHS was determined by applying the Federal Highway Administration's visual impact assessment methodology and using the visual analyst's professional judgment and familiarity with the Merced to Fresno Section of the HST System. The analyst also reviewed engineering drawings of project components and examined the simulations of the KVPs in this document. Appendix D contains rating sheets for all of the KVPs for which simulations were developed to assist in identifying impacts.

2.2.11.1 Columns

Typical visual impacts of overcrossing structures with columns over SHS facilities are depicted in Figure 2.2-2. Visual changes would be noticeable to viewers near the HST System, but these changes would occur in an existing transportation corridor and would be compatible with the other visual elements in that corridor (railroad tracks, freeway infrastructure, and power lines). The existing and simulated views shown in Figures 2.2-1 and 2.2-2 show a view to the east from the eastbound lane of SR 152, west of Road 18. The SR 152/SR 99 interchange is beyond a cluster of trees along the horizon. The Ave 24 Wye would be elevated in this area and cross over SR 152, requiring removal of some orchard trees. The view also is toward the overcrossing from the roadway. The encroachment of the Ave 24 Wye and

Figure 2.2-1
Existing View: View to the east from the eastbound lane of SR 152, west of Road 18. The SR 152/SR 99 interchange is beyond the cluster of trees along the horizon.

Figure 2.2-2
Simulated View: The Ave 24 Wye would be elevated in this area.

alteration of overall cohesion in the view would reduce visual quality from moderately low to low. The number of viewers with this view from the elevated freeway would be high, but viewer sensitivity is anticipated to be low, mainly because viewers are likely to be traveling at relatively high speeds and the duration of view would be brief. Because of this brief view, and because the change in overall visual character would not be substantially altered, the Project in this location would have a negligible effect under NEPA on visual resources, and the impact on aesthetics and visual resources from this location would be less than significant under CEQA.

Construction equipment, earthmoving activities, construction of structures, and concrete plant operations may temporarily degrade the visual aesthetics for adjacent viewers. Construction can cause dust, and material stockpiles can create an untidy appearance, collectively degrading the visual unity and intactness of the surroundings. Construction activities would cease after completion; therefore, impacts from these activities are considered temporary and, with implementation of the mitigation measures, negligible under NEPA and less than significant under CEQA.

2.2.11.2 Straddle Bents

Straddle bent support piers would appear on either side of the highway, approximately 120 feet apart, and would be approximately 10 feet in diameter. The span between straddle bents as they extend along the roadway would be approximately 110 feet, and the bottom of the guideway would be approximately 18 feet above the highway.

Visual changes would be noticeable to viewers near the HST System, but these changes would occur in an existing transportation corridor and would be compatible with the other visual elements in that corridor (railroad tracks, freeway infrastructure, and power lines). Like the view shown in Figure 2.2-2, the number of viewers with this view from the elevated freeway would be high, but viewer sensitivity is anticipated to be low, mainly because viewers are likely to be traveling at relatively high speeds and the duration of view would be brief. Because of the relatively brief view, and because the change in overall visual character would not be substantially altered, the project in this location would have a negligible effect under NEPA on visual resources, and the impact on aesthetics and visual resources from this location would be less than significant under CEQA.

Construction activities would be similar to those described above for the construction of overcrossings on columns. Impacts from these activities are considered temporary and, with implementation of the mitigation measures listed, would be negligible under NEPA and less than significant under CEQA.

2.2.12 Cultural Resources and Paleontological Resources

Soil excavation or compaction resulting from the use of heavy machinery on the construction site itself or in staging areas may affect the integrity of artifact-bearing deposits associated with known and as-yet undiscovered archaeological sites. Unknown or unrecorded archaeological resources, including subsurface buried archaeological deposits, may exist, but are currently unknown. Construction areas involving ground disturbance could contain unknown historical resources or properties. Disturbance and removal of archaeological resources could result in adverse effects on archaeological resources under Section 106 of the National Historic Preservation Act and could cause substantial adverse changes in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5. This is considered a potentially significant impact under CEQA and is a substantial impact impact under NEPA. With the mitigation, these impacts would be reduced to negligible under NEPA and less than significant under CEQA. No historic architectural resources are located within SHS right-of-way in the vicinity of HST overcrossing locations; therefore no impacts on historical architectural resources are anticipated.

The HST Project would occur on sediments largely composed of middle to late Pleistocene Age deposits. As a result, potential construction-related effects on unique paleontological resources could be a substantial impact under NEPA and significant under CEQA. With the mitigation, listed in Section 5.2 of

this report, temporary and permanent impacts would be reduced to negligible under NEPA and less than significant under CEQA.

3.0 High-Speed Train Modifications of the State Highway System

This section describes potential environmental impacts from modifications to the SHS resulting from construction of the HST Project at the locations listed in Table 3-1 and shown in Figure 3-1. Potential impacts related to the realignment of SR 99 in Fresno are discussed in Section 4.0.

Table 3-1
HST Modifications of the SHS

Location	Description	Type of Modification
5	SR 99/Plainsburg and Arboleda Interchanges (Merced County)	Reconstruct Overcrossing
8	SR 233 Overcrossing near Avenue 23½ (Madera County)	New Overcrossing
31	SR 99 On/Off-ramps to Herndon Avenue (Fresno County)	Reconstruct On/Off-ramps
32	Location No. 32 – SR 99/Avenue 7 Overcrossing (Madera County)	Reconstruct Overcrossing

Two options are being considered for construction of HST-related projects that would affect SHS facilities. The first option is to build overcrossing structures one half at a time within the existing footprint, keeping roads open during construction, and using appropriate traffic mitigation practices. Because negotiation with the counties regarding limiting or closing local facilities has not yet occurred to support this option, a second option has been developed. The second option would consist of building a new overcrossing adjacent to the existing structure, then connecting it to local facilities. Because the second option represents the "worst case scenario" from an environmental perspective, it is the option discussed in this report.

Results included in this attachment are consistent with the Merced to Fresno Section Final EIR/EIS, and represent a summary of the information in that document. For direct impacts, the property acquisition footprint was used, which includes Project features plus adjacent land required to be acquired that could be used for staging or laydown during construction. The Merced to Fresno Final EIR/EIS includes information about the regional context and the impacts and mitigation measures for the entire Merced to Fresno Section, including the affected SHS facilities along SR 99 and SR 233 within Merced and Madera counties. In the following sections, information extracted from the EIR/EIS analysis is summarized for each of the affected SHS facilities, including direct and indirect impacts, and mitigation measures. Information describing the affected environment for each SHS facility modification is also included.

The following resources would not be affected by proposed HST modifications of the SHS, and are not discussed further in this section:

- Electromagnetic fields and electromagnetic interference
- Parks
- Recreation, and open space

3.1 Impacts Similar for all High-Speed Train Modifications of the State Highway System

This section describes the affected environment and environmental consequences for resources that are affected similarly for each of the locations discussed in this section where SHS facilities would need to be

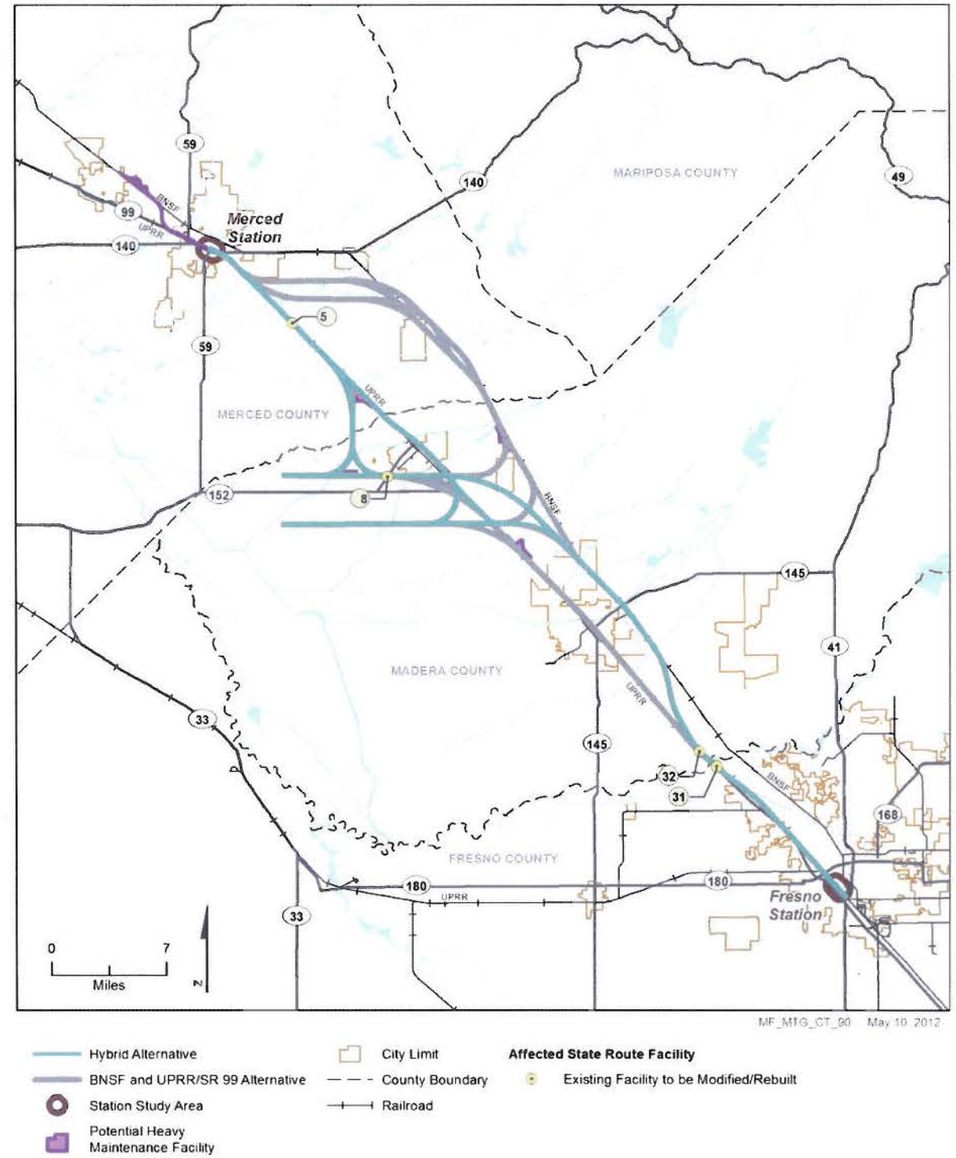


Figure 3-1
Location of HST Modifications of the State Highway System Facilities by HST Alternatives

modified in order to construct the HST Project. Resources that would not be affected similarly at these locations (transportation, noise and vibration, etc.) are discussed in Section 3.2. The realignment of SR 99 in Fresno is discussed in Section 4.0.

3.1.1 Affected Environment

3.1.1.1 Air Quality and Global Climate Change

The proposed project would be located in the SJVAB, which encompasses the southern two-thirds of California's Central Valley. Three general classes of air pollutants are of concern for this project: criteria pollutants, toxic air contaminants, and GHGs. Criteria pollutants are those for which EPA and the State of California have set ambient air quality standards or that are chemical precursors to compounds for which ambient standards have been set.

Projects requiring federal funding that are in areas designated as nonattainment or maintenance for the National Ambient Air Quality Standards are subject to EPA's Conformity Rule. The two types of federal conformity are general conformity (GC), which applies to the HST Project due to FRA funding, and transportation conformity, which does not apply to the HST Project, but could apply to future actions related to the project's minor expansions or realignments of local roadways affected by the HST Project. The Draft Conformity Determination for the Merced to Fresno Section is included in the Project Final EIR/EIS as Appendix 3.3-B. The applicable project area is in an area designated as extreme nonattainment for the 8-hour O_3 standard, nonattainment for $PM_{2.5}$, and maintenance for PM_{10} and CO. The GC threshold values for this area, according to 40 Code of Federal Regulations Part 93, are 10 tons per year for VOC, 10 tons per year for NO_x, and 100 tons per year for SO_2, $PM_{2.5}$, PM_{10}, and CO.

3.1.1.2 Public Utilities and Energy

Pacific Gas and Electric Company (PG&E) provides electricity to much of California, from approximately Bakersfield to the Oregon border. PG&E also is the only natural gas service provider for the region and is responsible for maintaining the infrastructure for natural gas distribution within the study area. There is a natural gas line along the SR 99 corridor. A high-pressure petroleum pipeline owned by Kinder Morgan and a natural gas distribution line parallel to SR 99 are also in the study area.

The primary telecommunications service carrier and provider in the study area is AT&T (AT&T Knowledge Ventures, LLP 2007). The study area also contains telecommunications lines (cable and telephone and fiber optic lines) that are owned or leased by other utility providers. A underground telephone line and a fiber optic line are located parallel to SR 99 in the study area.

In Madera County, several entities supply water, including the Chowchilla Water District, the City of Chowchilla Domestic Water System, Madera Irrigation District, the City of Madera Domestic Water System, Madera County, and others. Generally, groundwater is used for domestic use and surface water is used for agricultural irrigation. Madera County operates and administers small public water systems that provide drinking water to more than 7,000 residents and several commercial and public users. Stormwater in the study areas that does not percolate to the groundwater table is conveyed via roadside ditches.

3.1.1.3 Geology, Soils, and Seismicity

The SR 99 corridor is characterized by a very flat ground surface, with the primary changes in ground surface elevation occurring at between 20 and 24 river and stream crossings. Overall, soils are stable, but localized deposits of loose coarse-grain soil and soft fine-grain soil can be encountered, particularly near streams and rivers. Groundwater is generally located below 50 feet, except north of Merced and near rivers and streams. Soils along the SR 99 corridor should be relatively easy to excavate, although groundwater control could require special consideration at some locations.

The characteristics of near-surface soils include medium to high shrink-swell characteristics, medium to high corrosivity to uncoated steel and concrete, and moderate to high wind and water erosion potential. The primary hazard for the SHS facilities is strong ground shaking. The level of shaking is generally similar along the alignment and is sufficient to cause slumps in slopes; liquefaction of saturated, loose, cohesionless soil; and liquefaction-related effects. These effects are expected to be more prevalent near rivers and streams where slopes are steeper and groundwater tends to be shallower. There are no active faults that cross the study area or are located within 25 miles of the SHS facilities. There are no active oil, gas, or geothermal wells in the immediate area, but there are two active sand and gravel producers near the City of Fresno.

3.1.1.4 Hazardous Materials and Waste

The locations along the HST Project that would require modifications of the SHS to accommodate the HST alignment are in agricultural areas, where numerous enterprises have historically stored, handled, and applied pesticides and herbicides on row crops and orchards. Pesticide residues might persist in soils within the study area. However, routine application of these materials would not generally accumulate to levels sufficient to cause concern. There could be inadvertent disturbance of hazardous materials or waste as a result of trenching and other ground-disturbing project construction activities. Surface and near-surface soils along heavily used roadways have the potential to contain elevated concentrations of lead (EPA 2009). Lead-based materials that would require specialized procedures and equipment, as well as handling by appropriately certified personnel, might be found in soils along the roadways. Although lead is no longer used in gasoline formulations, past lead emissions from automobiles (aerially deposited lead) are a recognized source of contamination in soils along roadways. Standard BMPs would be used at any location with positive results for lead to protect human health and the environment (See Section 5.1, Project Design Features).

Although most hazardous materials and wastes are transported without incident, spills and other accidental releases have been documented within the study area. Smaller hazardous materials spills and accidental releases that are cleaned up immediately are not considered PEC sites; therefore, most of the incident reports in hazardous materials databases are not classified as PEC sites. Most of the documented PECs for the HST Project are located within the cities of Merced and Fresno, where the alignment would diverge and converge with the HST stations. Most of the PEC sites within the study area are located within one of these two cities.

One SHS modification is in the City of Fresno in the vicinity of documented PEC sites (Location 31 - SR 99 On/Off-ramps to Herndon Avenue). Potential hazardous materials and waste impacts at this location are discussed in Section 3.2.3.2.

3.1.1.5 Safety and Security

The locations along the HST alignment that would require modifications of the SHS to accommodate the HST Project are in rural areas of Merced and Madera counties and are surrounded by agricultural lands. Modifications to local intersections of rural roads with SR 99, SR 145, and SR 233 would either include introducing an overcrossing where there was previously an at-grade crossing, or lengthening an existing overcrossings or undercrossing to accommodate the HST track. In cases where the existing facilities have non-standard features, such as spacing between adjacent intersections that is less than the minimum requirement, the non-standard design would also be corrected as part of the SHS modification.

Because of the rural character of the area surrounding the SHS modifications, vehicular, pedestrian, and bicycle traffic on the affected local roads is minimal, and there are no emergency service facilities within several miles of any of the SHS modification locations.

3.1.2 Environmental Consequences

3.1.2.1 Air Quality and Global Climate Change

For the HST Project, construction-phase emissions in SJVAB are greater than the GC threshold(s) for:

- VOCs for the years 2014, 2015, and 2019
- NO_x for the years 2013 to 2020

During construction, programmatic emissions reduction measures would be applied as part of the Project, including watering exposed surfaces and unpaved roads three times daily, reducing vehicle speeds on unpaved roads to 15 mph, and checking that haul trucks are covered. With the implementation of these program measures, VOC and NO_x impacts would still exceed GC thresholds for most of the construction period (see Section 5.1 Project Design Features). The Authority will purchase offset emissions through a Voluntary Emission Reduction Agreement (VERA) with the SJVAPCD for these pollutants and thereby reduce impacts to negligible under NEPA and less than significant under CEQA after mitigation. Local impacts from concrete batch plants would be reduced to negligible and less than significant by locating them at least 1,000 feet from sensitive land uses.

To conservatively estimate amortized GHG emissions, the HST Project life is conservatively assumed to be only 25 years (although the actual project life will be much longer). The estimated amortized GHG construction emissions would be less than 3,700 metric tons CO_2e per year. The increase in GHG emissions generated during construction would be offset by the net GHG reductions in operation (because of car and plane trips removed in the Merced to Fresno area) in 2 to 4 months. Changes to the SHS locations are incorporated in this estimate.

Operation of the modified SHS facilities associated with the Merced to Fresno HST Project would not affect air quality because there would be no change in capacity resulting from the modifications. Because there would be no change in capacity, there would also be no increase in GHG emissions as a result of the modifications. As a result, air quality impacts associated with operation of the modified SHS facilities would be negligible under NEPA and less than significant under CEQA.

3.1.2.2 Public Utilities and Energy

Construction could require the temporary shutdown of utility lines, such as water, electricity, or gas, to safely move or extend these lines. The shutdown could interrupt utility services to industrial, commercial, agricultural, and residential customers. Project design and phasing would reduce the duration of a shutdown to the minimum time necessary to conduct construction work safely (see Section 5.1, Project Design Features). Because of the short duration, this effect would be negligible under NEPA. Under CEQA, this impact would be considered less than significant.

During construction, there is a potential for accidental disruption of utility systems, including overhead utility lines (such as telephone and cable television) and buried utility lines (such as water, wastewater, and natural gas lines. Such accidents could impair the health and safety of nearby workers and residents and could result in property damage. Letters and newspaper notices would be used in order to notify utility customers of scheduled outages. Probing for existing utilities before the start of construction would reduce the risk of accidental service interruptions. With mitigation, these impacts would be reduced to negligible under NEPA and less than significant under CEQA.

Clearing of vegetation, removal of existing asphalt and gravel, and demolition of existing structures during construction would generate waste. Because local landfills have sufficient capacity to accommodate these types of waste materials and as a standard construction practice the contractor would divert construction and demolition wastes, the effect is considered to be negligible under NEPA. Under CEQA, the impact is considered to be less than significant. No effects on utilities would occur as a result of these modifications on SHS facilities.

3.1.2.3 Geology, Soils, and Seismicity

Because of flat topography, competent soils, and groundwater at depths of 50 feet or more in the HST project vicinity, only a limited number of environmental consequences are possible during construction relative to geology, soils, and seismicity. The risk areas are located near streams and river crossings where soils tend to be softer and groundwater is often closer to the ground surface. Potential construction impacts include localized deposits of low-strength soils resulting in slumps or slope failures, ground settlement, soil erosion, and difficult excavations in localized areas because of hardpan and shallow groundwater. Where geologic hazards exist, well-proven methods outlined in standard guidance and engineering standards are available to address these hazards. Risks from unstable soils, settlement, and erosion are considered to be negligible under NEPA and would be less than significant under CEQA because of the incorporation of appropriate construction BMPs and standard engineering design measures (see Section 5.1 Project Design Features).

Potential project impacts are similar to construction impacts (slumps or slope failures, soil settlement, and erosion), but longer in duration. The engineering design would incorporate guidelines issued by the American Association of State Highway and Transportation Officials (AASHTO), American Railway Engineers and Maintenance-of-Way Association (AREMA), Caltrans, and International Building Code (IBC). With proper incorporation of these guidelines, the effects on public health from geologic hazards would be negligible under NEPA and would be less than significant impact under CEQA.

3.1.2.4 Hazardous Materials and Waste

Modifications to the SHS will require the demolition of roadways containing asbestos and lead-based materials that will require specialized procedures and equipment, and appropriately certified personnel. ACM might be found in roadway materials, such as the material used before the 1980s for expansion joints in the pavement. Although lead is no longer used in gasoline formulations, lead emissions from automobiles (aerially deposited lead) are a recognized source of contamination in soils along roadways. Surface and near-surface soils along heavily used roadways have the potential to contain elevated concentrations of lead (EPA 2009). The roadways intended for demolition that were constructed before 1980 will be surveyed for asbestos, while those constructed before 1971 will be surveyed for lead. A demolition plan will be prepared for any location with positive results for asbestos or lead. The plan will specify how to appropriately contain, remove, and dispose of the asbestos- and lead-containing material while meeting all requirements and implementing BMPs to protect human health and the environment.

In addition to roadway demolition, trenching and other ground-disturbing project construction activities could disturb undocumented soil or groundwater contamination. Adverse impacts could result if construction activities inadvertently dispersed contaminated material into the environment. For example, dewatering activities during construction could cause contaminated groundwater to migrate farther in the groundwater table or cause contaminated groundwater to be released into streams. In addition, inadvertent disturbance of ACM could result in airborne asbestos fibers. The Authority will prepare a construction management plan that prescribes activities for workers to follow in areas with suspected presence of undocumented soil or groundwater contamination based on visual observation or smell. The construction management plan will include (but is not intended to be limited to) provisions for daily briefings of the construction staff before work regarding what to look for; a list of contact persons in case of a possible encounter with undocumented contamination; provisions for immediate notification of construction management; notification of the applicable local enforcement agency of the find; consultation with that agency; and protocols for further action. In such instances, construction activities will cease until it is determined, in coordination with regulatory agencies, that work can proceed without the risk of injury to persons or the environment. With the implementation of these standard precautions, the potential effects of inadvertent disturbance to hazardous materials or wastes will be negligible under NEPA and will be less than significant under CEQA (see Section 5.2 for a list of avoidance and minimization measures consistent with the commitments in the Program EIR/EIS documents). One SHS modification location is located near documented PEC sites (Location 31 [SR 99 On/Off-ramps to Herndon Avenue]). Potential hazardous materials and waste impacts at this location are discussed in detail in Section 3.2.3.2.

3.1.2.5 Safety and Security

Safety of construction workers and the public could be compromised during construction and could result in accidents at construction sites and in temporary increases in risks to motor vehicle, pedestrian, and bicycle safety from traffic detours, as well as increased response times by law enforcement, fire, and emergency services personnel. However, standard implementation of a construction safety and health plan during construction would reduce risks to human health during construction and, therefore, impacts would be negligible under NEPA and would be less than significant under CEQA.

Temporary lane closures, detours, and the movement of construction vehicles would occur during project construction and potentially create a distraction to automobile drivers, pedestrians, and cyclists. Distraction and unfamiliarity with detours could lead to accidents. In addition, construction-related road closures, detours, and localized automobile congestion could increase the response time for law enforcement, fire, and emergency services personnel. Emergency evacuation times could also increase. With implementation of standard design features (see Section 5.1), a construction transportation plan, and operating and emergency response plans, the effect on motor vehicle, pedestrian and bicycle safety as well as increased response times for emergency responders and their access to elevated tracks is anticipated to be negligible under NEPA and would be less than significant under CEQA.

3.2 Impacts That Are Not Similar for all High-Speed Train Modifications of the State Highway System

3.2.1 Location No. 5 – SR 99/Plainsburg and Arboleda Interchanges (Merced County)

The HST Project would be at-grade and parallel to the west of UPRR and SR 99 rights-of-way, respectively, in the vicinity of the SR 99/Plainsburg and Arboleda interchanges. Currently, there are at-grade intersections at SR 99 from Arboleda/Le Grand Road to Plainsburg/Sandy Mush Road. In 2012, Caltrans is planning to begin construction of the easterly realignment of SR 99 with new interchanges at Arboleda/Le Grand Road and Plainsburg/Sandy Mush Road. As part of the Caltrans project, a frontage road would be constructed on the existing SR 99 residual pavement resulting from the realigned highway in order to accommodate lost access from the at-grade SR 99 intersections within the Caltrans project corridor.

After completion of the Caltrans project, the HST Project would effectively cut off local access to the existing frontage road from the west of the HST guideway and UPRR at-grade alignments. Therefore, the proposed modifications to the highway and local road system would necessitate the relocation of the constructed frontage road to the west of the HST alignment in order to maintain its utility (see Figure 3.2.1-1). In addition, relocating the frontage road to the west would involve constructing overcrossing structures to grade separate Sandy Mush Road and Le Grand Road over the HST and UPRR tracks. The minimum vertical clearance requirement over the HST guideway and UPRR tracks would likely require raising the profile of Sandy Mush Road at the Plainsburg interchange and Le Grand Road at the Arboleda interchange, which would affect the southbound on- and off-ramp termini at both interchanges. Further, more-detailed preliminary engineering would be required to evaluate the need to modify the Plainsburg interchange overcrossing and the Arboleda interchange overcrossing to accommodate the raised profile grades.

3.2.1.1 Affected Environment

Transportation

In the vicinity of the SR 99/Plainsburg and Arboleda interchanges, the SR 99 alignment passes through a rural area where local surface streets cross SR 99 via at-grade intersections or on overcrossing structures. Local roads in the HST Project vicinity that could be affected by the interchange construction are Arboleda Drive, Ranch Road, East Le Grand Road, Plainsburg Road, and Sandy Mush Road. Table 4.3-

1 of the transportation Technical Report (Authority and FRA 2012b) indicates that the highest traffic volume for local roads in this vicinity is South Arboleda Drive, with an AM peak hour volume of 144 and PM peak hour volume of 168 with level of service (LOS) A.

Noise and Vibration

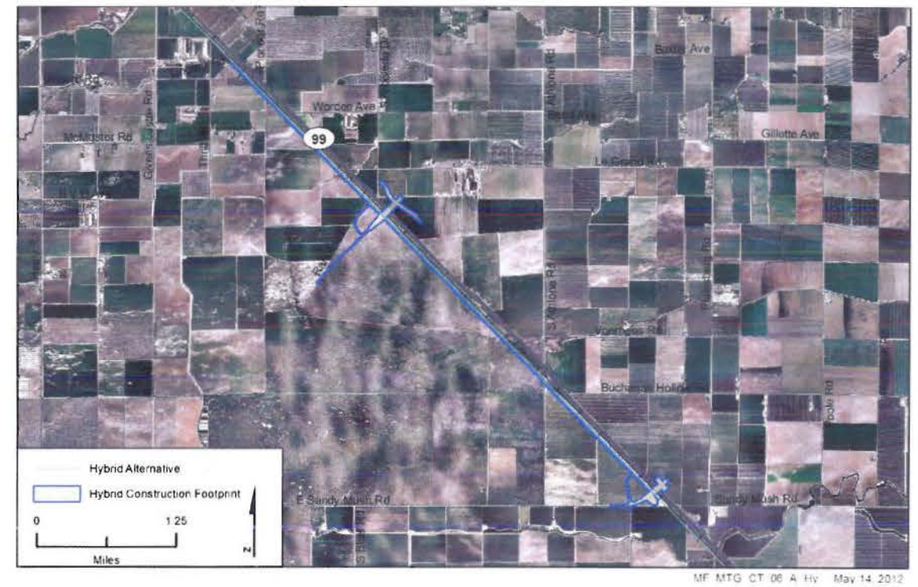


Figure 3.2.1-1
Location No. 5 - SR 99/Plainsburg and Arboleda Interchanges Project Vicinity
(HST Project + Ave 21 Wye Option shown)

Land uses surrounding the SR 99/Plainsburg and Arboleda interchanges are primarily agricultural, with some parcels of residential use. In the vicinity of the SR 99/Plainsburg and Arboleda interchanges, the closest sensitive receptors are residential properties, located at the corner of South Athlone Road and Voorhees Road approximately 0.2 mile east of the realigned frontage road connecting the two intersections (about half-way between the two interchanges and across SR 99 from the HST Project), and one located at the corner of South Arboleda Drive and Worden Ave, approximately 0.6 mile east of the project. Traffic on SR 99 and freight trains on the UPRR tracks dominate the noise exposure in this area. Sources of vibration include UPRR freight trains, Amtrak passenger trains, and truck traffic on SR 99.

Biological Resources and Wetlands

Wetlands

Vernal pools are located adjacent to Dutchman Creek, approximately 1.5 miles to the west of the intersection of SR 99 and Sandy Mush Road and extending north along SR 99 to Arboleda Drive. Jurisdictional wetlands, including Deadman Creek, are located approximately 1.7 miles to the east, 1.5 miles to the west, and 1 mile to the south of SR 99 and Sandy Mush Road.

Wildlife Species

There are no critical habitat areas identified for threatened or endangered wildlife species within 1 mile of the project.

Plant Species

There are no critical habitat areas identified for threatened or endangered plant species within 1 mile of the project.

Wildlife Movement Corridors

The Sandy Mush Road linkage (alternatively called the Merced to Madera corridor (Linkage 18 in Penrod et al. 2003) generally follows Dutchman Creek and Deadman Creek from the Sandy Mush Road area east to the vernal pool complexes northeast of Chowchilla. The area may provide suitable habitat for plants and wildlife, including several special-status species, such as the San Joaquin kit fox. This wildlife movement corridor is important because it is considered a choke point and important link between areas of high-value habitat west and east of SR 99 (Endangered Species Recovery Program 2006, U.S. Fish and Wildlife Service [USFWS] 1998). This linkage is ranked as a high priority by Penrod et al. (2003) and represents areas where connectivity and linkages between isolated habitat on the San Joaquin Valley floor and natural lands in the surrounding foothills should be promoted (USFWS 1998).

The Sandy Mush linkage is currently bisected by SR 99 and by the UPRR and BNSF railways, perforated only by small bridges at Dutchman Creek and Deadman Creek in both crossing areas. The UPRR line and SR 99 cross both creeks via a parallel series of three bridges (one for the rail line, one for southbound traffic, and one for northbound traffic). Each bridge is approximately 50 feet wide and is separated by small open areas ranging from approximately 30 feet (SR 99 crossing of Dutchman Creek) to approximately 300 feet (along Deadman Creek between the UPRR bridge and the southbound SR 99 bridge). Linking the natural areas in the Sandy Mush Road area with the San Joaquin kit fox population east of SR 99 is listed as a recovery action in the *Draft Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998).

Hydrology and Water Resources

There is an irrigation canal parallel to Plainsburg Road north of Sandy Mush Road. Dutchman Creek is located approximately 0.3 mile south of SR 99 and Sandy Mush Road. Dutchman Creek is not listed or proposed for listing on the 303(d) list of impaired waters (Central Valley RWQCB 2008). The project is located in a special flood hazard area (SFHA) within the Merced groundwater subbasin.

Socioeconomics, Communities, and Environmental Justice

The SR 99/Plainsburg and Arboleda interchanges are located in unincorporated Merced County, along the SR 99 corridor. Table 3.2.1-1 shows existing and projected population characteristics for Merced County and the State of California. The SR 99/Plainsburg and Arboleda interchanges are primarily surrounded by agricultural lands. In Merced County, the highest contribution to employment is from agriculture (California Employment Development Department [CEDD] 2010a and 2010b).

According to the U.S. Census Bureau (2000), the median age in Merced County in 2000 was close to 30 years; average household size was 3.2 people; married couples accounted for about 54 percent of all households; and the percentage of the population with a disability was about 22 percent for all age categories.

Table 3.2.1-1
Existing and Projected Population Characteristics for Evaluation of the SR 99/Plainsburg and Arboleda Interchanges

Area	Population			Change in Population 2010–2035 (%)	Average Annual Growth Rate 2010–2035 (%)
	2000	2010	2035		
Merced County	210,554	258,495	465,500	80.1%	3.2%
California	33,873,086	38,648,090	51,747,374	33.9%	1.4%

Source: California Department of Finance (2010).

Within Merced County, the Hispanic population comprised the largest percentage of the population (above 50 percent). The Caucasian, non-Hispanic population represents about 35 percent of the population. The percentage of individuals living below the poverty level in Merced ranged from about 21.7 percent based on 2000 Census data to 21.8 percent based on the American Community Survey (ACS) data for cities and counties (U.S. Census Bureau 2009). The ACS data indicate that median household incomes have increased in Merced County; however, the number of individuals living below the poverty level also has increased. The majority of the low-income populations are located in the urban areas, primarily in the City of Merced.

Station Planning, Land Use, and Development

The SR 99/Plainsburg and Arboleda interchanges are located in Merced County along the SR 99 corridor. Land use surrounding the project area is agricultural, with two parcels of residential use.

Agricultural Lands

The project is located in an agricultural area, and lands in the project vicinity are under Williamson Act contracts. Agricultural lands surrounding the project include unique farmland and farmland of statewide importance, as defined by the Farmland Mapping and Monitoring Program (FMMP). Prime farmland is located east of the South Arboleda Drive/East Le Grand Road intersection and south of the Plainsburg Road/SR 99 intersection, along Dutchman Creek.

Aesthetics and Visual Resources

The SR 99/Plainsburg and Arboleda interchanges are located within the Merced-Chowchilla Landscape Unit. The site is in a flat, open agricultural area. The general character of this area is heavily influenced by agricultural land use and transportation infrastructure (SR 99, the UPRR railroad tracks, at-grade crossings, and a number of side roads). The overall visual quality of the areas near the interchanges is moderately low (see Appendix D). At the location of the two proposed overcrossings, there are currently two at-grade crossings of SR 99—one at Sandy Mush Road and one at Arboleda Drive. In this area, SR 99 is two lanes in either direction, separated by a median, parts of which are planted in oleander shrubs, which screen views to the other side of SR 99 in both directions. East of SR 99, the area is developed with vineyards and orchards. Transmission lines and the UPRR railroad tracks parallel the west side of SR 99, and the land is generally fallow.

The majority of viewers near the interchanges would be drivers traveling along SR 99 who have views from SR 99. Because they travel at relatively high speeds, they have views of short duration and have lower viewer exposure for fixed objects in the surrounding landscape. Their viewer sensitivity is, therefore, considered to be low. There are several residences in the general area of the interchanges that might have views of the interchanges that are considered to have high viewer sensitivity. These viewers have views of SR 99 and the interchanges.

Cultural Resources and Paleontological Resources

There are no known historical or archaeological resources within the HST Project Area of Potential Effect (APE) in the vicinity of the SR 99/Plainsburg and Arboleda interchanges. The geology of the project site is lower member Modesto Formation, which has moderate paleontological sensitivity.

3.2.1.2 Environmental Consequences

Transportation

Local roads in the vicinity of the SR 99/Plainsburg and Arboleda interchanges have AM and PM peak hour volumes of less than 170 with LOS A; therefore, only small effects on traffic circulation would be expected during construction of the HST Project. To minimize any potential impacts, standard construction procedures related to traffic management would be used, including preparation of a detailed traffic control plan for each affected location before beginning any construction activities. These plans would identify when and where temporary closures and detours would occur, with the requirement of maintaining traffic flow during peak travel periods. Impacts due to temporary roadway closures associated with construction would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Vehicle trips for construction workers would generally occur outside of the peak hours for freeways and street traffic and are not anticipated to result in impacts on the traffic or transportation system.

These avoidance and minimization measures (see Section 5.2) would be incorporated during construction to reduce impacts due to intersection delays, temporary roadway closures, construction-related safety hazards, and other disruptions of transportation system operations to negligible under NEPA and less than significant under CEQA.

Design of the SR 99/Plainsburg and Arboleda interchanges includes reconfiguration of local roads and intersections to maintain connectivity; therefore, no permanent road closures would be required for the modifications. There would be no permanent adverse impacts on local traffic and transportation in the vicinity of the SR 99/Plainsburg and Arboleda interchanges because facilities and operations would be improved through grade separation of two intersections within the project vicinity. The project would not increase capacity and, therefore, would not have an adverse affect on the LOS on local roads. As a result, impacts associated with project operation would be negligible under NEPA and less than significant under CEQA.

Noise and Vibration

Land use in the vicinity of the SR 99/Plainsburg and Arboleda interchanges is primarily agricultural; there are two residences in the project vicinity. For residential land use, the potential for temporary construction noise impact would be limited to locations within approximately 141 feet of the alignment, and the potential for noise impact from nighttime construction could extend to residences as far as 446 feet away. Neither of the sensitive receptors is within this distance of the project footprint. As a result, construction impacts would be negligible under NEPA and less than significant under CEQA.

Changes in the horizontal and vertical alignment of local rural roads associated with the SR 99/Plainsburg and Arboleda interchanges would move noise sources closer to one sensitive receptor. However, because the noise environment surrounding the location is dominated by traffic on SR 99 and freight trains on the UPRR tracks, there would be no increase in capacity as a result of the modifications, and the sensitive receptor is 0.6 mile away from the project footprint, it is not likely that any noise increases resulting from local road alignment shifts would be noticeable. There would be no vibration impacts in the project area because of the limited propagation of vibration through the soils in the project corridor and the low vehicle input force. Therefore, noise and vibration impacts associated with the SR 99/Plainsburg and Arboleda interchanges would be negligible under NEPA and less than significant under CEQA.

Biological Resources and Wetlands

Because of lack of access to properties, no surveys for special-status wildlife species have been conducted. In accordance with the *Central Valley Biological Resources and Wetlands Survey Plan* (Authority 2010), the Final EIR/EIS determinations regarding the effects on special-status wildlife species reflect the conservative approach that if suitable habitat is present, then the special-status wildlife species associated with that habitat are also assumed to be present. Habitats of concern include a number of sensitive biological communities in the project region.

Sensitive biological communities identified within the HST Project study area include vernal pools and other seasonal wetlands, riparian, natural watercourses, constructed watercourses, and California annual grassland. These habitat types and the number of acres of each type of habitat found within the SR/99 Plainsburg and Arboleda interchange footprints are listed in Tables 3.2.1-2 and 3.2.1-3. Within this area, aquatic communities affected would include 0.20 acre of vernal pools, 0.05 acre of Fremont cottonwood forested wetlands, 0.03 acre of natural watercourses, and 0.79 acre of constructed watercourses. Terrestrial communities affected would include 0.08 acre of Great Valley riparian forest and 0.12 acre of other riparian forest. The SR 99/Plainsburg and Arboleda interchange project footprint also falls within the Sandy Mush Road linkage wildlife movement corridor.

Table 3.2.1-2
Potentially Affected Sensitive Aquatic Communities

HST Project	Vernal Pools	Other Seasonal Wetlands[b]	Fremont Cottonwood Forested Wetlands	Coastal and Valley Freshwater Marsh	Natural Watercourses	Constructed Basins	Constructed Watercourses	Open waters
Acres of Impact	0.20	0	0.05	0	0.03	0	0.79	0

Table 3.2.1-3
Potentially Affected Terrestrial Communities

HST Project	Developed Areas	Agricultural Lands	Ruderal Vegetation	California Annual Grassland	Great Valley Mixed Riparian Forest	Other Riparian	Eucalyptus Woodlands
Acres of Impact	5.18	83.21	0.35	4.51	0.08	0.12	0

Direct impacts on biological communities would occur as a result of the removal of vegetation and wildlife habitat during construction activities within and adjacent to the construction footprint, and from the disturbance (trampling and crushing) of plants by vehicular and construction-related traffic in the area. Vegetated areas requiring removal as part of construction (access and laydown areas) would be restored after construction activities are completed.

Indirect impacts on biological communities would include the following:

- Erosion, siltation, and drainage runoff into sensitive biological communities and potentially jurisdictional waters

- Soil and water contamination from construction equipment leaks
- Construction-related dust affecting plants by reducing their photosynthetic capability (especially during flowering periods)
- Invasion by exotic species
- Increased risk of fire (e.g., construction equipment use and smoking by construction workers) in adjacent open spaces

During the project period, the biological communities that occur within the construction footprint are anticipated to be directly disturbed for maintenance and the introduction of other hardscape, fencing, and landscape features. The existing resource values would be permanently removed during site preparation and continue to be during the life of the Project.

Direct impacts on wildlife movement corridors would include the temporary impact of barriers placed during construction, which would affect the ability of wildlife to move freely within the Sandy Mush wildlife linkage. Indirect impacts on wildlife movement corridors would result from concentrated heavy vehicle and equipment use. Construction-related activities occurring at or in the vicinity of wildlife movement corridors may result in indirect disruption of wildlife movement through lighting, noise, motion, and startle effects. Construction activities would also potentially affect wildlife in adjacent habitats by interfering with movement patterns or by causing wildlife to temporarily avoid areas adjacent to the construction areas. Preconstruction surveys would be performed as appropriate within the Project area for nesting birds, bat roosts, and noninundated wetlands and heavily degraded vernal pools that could be suitable habitat for vernal pool branchiopods. With mitigation, temporary and permanent impacts would be negligible under NEPA and less than significant under CEQA.

Hydrology and Water Resources

Modifications at the SR 99/Plainsburg and Arboleda interchanges would permanently affect about 0.20 acre of vernal pools, 0.30 acre of a natural watercourse, and 0.79 acre of a constructed watercourse. The project would result in minimal increases in impervious area.

Modifications to the SR 99/Plainsburg and Arboleda interchanges would result in temporary impacts on existing drainage, irrigation distribution systems, and water quality. Indirect effects could include localized flooding and erosion or siltation due to alteration of existing drainage patterns. Soil-disturbing activity during construction (excavation and grading) could lead to erosion and sedimentation due to the exposure of bare soils which are more likely to erode than vegetated areas that provide infiltration, retention, and dispersion. In addition, construction activities could result in accidental releases of construction-related hazardous materials, including petroleum products and high-pH stormwater from concrete that could affect surface water quality. Effects during construction on drainage and stormwater runoff patterns, as well as groundwater quality, would be reduced with implementation of BMPs and adherence to water quality regulations, as described in Section 5.1. A Construction SWPPP would be prepared and implemented for construction activities as part of project design (see Section 5.1, Project Design Features), and the project would also comply with the Central Valley RWQCB Waste Discharge Requirement for Dewatering and Other Low Threat Discharges. All temporary changes to stormwater drainage patterns and runoff resulting from the SHS modifications would be minimal and would have negligible impacts under NEPA and a less than significant impact under CEQA because they would be temporary, would not alter drainage sufficiently to displace a volume large enough to increase flood risk, and construction would not occur in stream or river channels during the winter storm season.

Project facilities would result in changes to existing drainage, as well as increased runoff from project impervious surfaces. Direct impacts on surface water from operation of the project could include changes to the hydrology and connectivity of natural water bodies in the study area. Increased stormwater runoff from the project or substantial alteration of the existing drainage pattern could result in changes to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways. During the detailed design phase, features would be included in the Project to provide adequate stormwater capacity and to

allow the Project to remain operational during flood events. In addition, compliance with an Industrial SWPPP would reduce degradation of surface water quality. With design features for stormwater management and flood protection (see Section 5.1), impacts on existing drainage patterns would be negligible under NEPA and less than significant under CEQA.

Socioeconomics, Communities, and Environmental Justice

The construction of the SR 99/Plainsburg and Arboleda interchanges will occur in Merced County, which is characterized as having low-income and minority populations. Construction would result in temporary impacts on communities, such as temporary impacts on minority and low-income populations caused by dust, noise, and visual changes.

Construction of the SR 99/Plainsburg and Arboleda interchanges would result in effects on communities of concern; however, the construction impacts would not be disproportionately high and adverse because mitigation measures and project design features have been identified that would reduce the effects for most of the environmental elements, resulting in a moderate impact (see Section 5.1, Project Design Features). The remaining elements would not result in adverse effects on communities of concern that are greater in magnitude than those effects on the general population. Additionally, as committed to in the Final EIR/EIS, project outreach will continue during design to seek input on impacts and mitigation, and therefore, collectively, these impacts would not be considered substantial under NEPA.

The average unemployment rate for Merced, Madera, and Fresno counties was 17.8 percent in 2010, with 104,367 unemployed (CEDD 2010a). A study by the Eberhardt School of Business (2009) indicates that CEDD reported a loss of 32,300 construction jobs in the San Joaquin Valley between June 2006 and August 2009. As with any large construction project, an influx of population is expected; however, because of the high unemployment level and the number of construction workers who have been lost based on the Eberhardt study, many of these new construction jobs could be filled by residents in the region. The construction of the HST Project has the potential to result in beneficial effects related to employment for communities of concern, with the implementation of mitigation.

The impacts of the HST Project on community interactions in the vicinity during construction would have a moderate impact because the construction would not divide or affect the integrity of neighborhoods within the communities. Although access to some neighborhoods would be disrupted and detoured for short periods of time during construction, there would be continued access to neighborhoods. Because the impact occurs in a rural area and the SR 99/Plainsburg and Arboleda interchanges do not interfere with interaction or divide the communities, these impacts are not substantial under NEPA or significant under CEQA.

Anticipated acquisitions for the SR 99/Plainsburg and Arboleda interchanges are presented in Table 3.2.1-4. A total of 31 parcels and approximately 94 acres of land would be partially acquired for the project. One single-family residence (identified as the displaced unit in the Agricultural/Residential land use category) in Merced County would be displaced. The displacement would affect an estimated four people. (The number of displaced residents was estimated using an average of 3.32 people per residential unit in Merced County.)

The HST Project would not result in the displacement of substantial amounts of housing or people that would necessitate the construction of replacement housing. There are a suitable number of relocation opportunities in the study area. The project will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. This act and its amendments provide mandatory rules and requirements on how federal, state, and local agencies compensate for impacts on property owners or tenants who need to relocate if they are displaced by a federally funded project. At the regional level, overall impacts of property acquisitions would be moderate under NEPA and less than significant under CEQA.

Table 3.2.1-4
Potential Acquisitions and Displacements for Evaluation of the SR 99/Plainsburg and Arboleda Interchanges

Land Use[a]	Acquisitions/Displacements			
	Number of Parcels	Acquisition Type	Acreage	Number of Units
Agricultural	11	Partial	58.74	0
Agricultural/Residential	7	Partial	23.36	3
Municipal	10	Partial	4.05	0
Utility/Railroad	3	Partial	8.33	0
Total	**31**	**-**	**94.48**	**1**

[a] Only land uses with acquisitions/displacements are included.

Station Planning, Land Use and Development

Construction of the SR 99/Plainsburg and Arboleda interchanges would result in conversion of existing land uses to transportation-related land uses, both permanently and during the construction period. The SR 99/Plainsburg and Arboleda interchanges would follow the existing transportation corridor where the land use patterns are already related to transportation; therefore, impacts related to land use patterns would be minimized. Land use alterations or land use pattern impacts during the construction period are considered negligible under NEPA and less than significant under CEQA.

Agricultural Lands

Table 3.2.1-5 presents estimates of the permanent conversion of important farmlands and agricultural zoned lands that would occur as a result of modifications for the SR 99/Plainsburg and Arboleda interchanges. A total of 89 acres of Important Farmlands and 18 acres of Williamson Act land would be affected. No impacts on Farmland Security Zone (FSZ) land would occur. Construction period impacts would include temporary conversion of important farmlands to nonagricultural use and temporary noise. These impacts would be negligible under NEPA.

Permanent conversion of agricultural land to nonagricultural use is considered a substantial adverse impact under NEPA and a significant effect under CEQA because these lands are intended to be protected. However, the project would be developed and implemented in compliance with federal, state, and local farmland programs and policies and the Farmland Conservation Program.

Table 3.2.1-5
Farmland Types Potentially Affected for Evaluation of the SR 99/Plainsburg and Arboleda Interchanges

	Important Farmlands					
	Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Williamson Act Land	FSZ Land
Acres of Impact	17	16	29	27	8	0

Aesthetics and Visual Resources

The proposed HST and modifications to the SHS would not substantially alter the existing visual character or visual quality of areas in the vicinity of the SR 99/Plainsburg and Arboleda interchanges. The The proposed HST would lie near the existing UPRR and SR 99 transportation corridor and would be elevated in the southern half of the landscape unit under the East Chowchilla design option. In general, with the HST Project in place, the visual quality of views within the landscape unit would remain as it is. The HST Project would not substantially alter the landscape unit's existing visual character. In this landscape unit the level of change in visual quality from the project, combined with the level of viewer sensitivity, would generally result in an impact with negligible intensity under NEPA and a less than significant impact under CEQA.

The project will include avoidance and minimization measures consistent with the Program EIR/EIS documents. As part of final design and the construction management plan, the Authority will work with local jurisdictions to develop appropriate visual/aesthetic treatments (see Section 5.1, Project Design Features). These treatments will need to reflect reasonable costs and meet engineering design parameters. Appropriate treatments will vary by location, but will be compatible with the context of areas adjacent to them. Along with a number of more-specific design guidelines and solutions (see Section 5.1, Project Design Features), mitigation will include design of the proposed facilities so that they are attractive and appropriately integrated into their settings, reduce potential view blockage and blight (such as in residential neighborhoods or downtown core areas), and minimize light/shadow impacts.

Temporary adverse impacts would result from temporary activities during construction, including pile driving, partial or total road and lane closures, detours (vehicular and pedestrian), partial/limited access, delivery of materials and equipment, and potentially the establishment of a concrete batch plant. Most of the construction staging sites would be located adjacent to the proposed HST alignment, in areas where land uses are generally rural or industrial. Equipment and earthmoving activities are not visually intrusive in these types of settings; therefore, there would be a negligible effect under NEPA and a less than significant impact under CEQA on aesthetics and visual resources.

Cultural Resources and Paleontological Resources

There are no known historical architectural resources at this site; therefore, such resources would not be affected.

There are known and could be unknown archeological resources in the vicinity of the project that could be adversely affected during construction. Soil excavation or compaction resulting from the use of heavy machinery on the construction site or in staging areas may affect the integrity of artifact-bearing deposits associated with undiscovered archaeological sites. Disturbance and removal of archaeological resources could result in adverse effects on archaeological resources under Section 106 and could cause substantial adverse changes in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 and therefore would be a substantial impact under NEPA and a significant impact under CEQA. If intact archaeological deposits are discovered during construction, all work within 50 feet of the resources will halt, and the project proponent will consult with a qualified archaeologist to assess the significance of the find, according to Section 15064.5. All significant cultural materials recovered will be, as necessary and at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, and documentation according to current professional standards as determined in the project Memorandum of Agreement. See Section 5.2 for a list of mitigation measures. Mitigation would reduce this impact to less than significant under CEQA.

Because the site has moderate paleontological sensitivity, there is a potential for substantial impacts on paleontological resources under NEPA and a potential for significant impacts under CEQA. However, with the mitigation measures identified in Section 5.2, impacts on cultural and paleontological resources would not be significant under NEPA and would be less than significant under CEQA.

3.2.2 Location No. 8 – SR 233 Overcrossing near Avenue 23½ (Madera County)

The HST Project and Ave 24 Wye both cross SR 233 in parallel with Avenue 24, west of the City of Chowchilla. A new overcrossing structure is proposed to carry SR 233 over the HST alignment in this location (See Figure 3.2.2-1). The construction footprint is large enough for a temporary roadway to be constructed around the overcrossing. The temporary roadway would re-route SR 233 traffic around the construction site and illustrates a worst-case scenario. The footprint may be reduced by modifying the construction techniques. The proposed HST alignment right-of-way would be 100 feet wide in at-grade sections and 50 feet wide in sections constructed on structures. Vertical clearance over SR 233 would conform to standards. The new roadway would be reconnected to the existing roads, and existing driveways would be reconstructed to provide access to adjacent private properties.

3.2.2.1 Affected Environment

Transportation

In the vicinity of the SR 233 Overcrossing near Avenue 23½, SR 233 passes through a rural area where local surface streets serve farms and small groups of houses (See Figure 3.2.2-1). Local roads in the project vicinity that could be affected by the interchange construction are Road 14, Avenue 23½, and Camellia Court. Table 4.3-1 of the transportation Technical Report (Authority and FRA 2012b) indicates that Road 14 has an AM peak hour traffic volume of 22 and PM peak hour volume of 27 with LOS A. Intersections in the vicinity of the SR 233 Overcrossing modifications were analyzed in the transportation Technical Report as part of the Fagundes HMF traffic study. Selection of the Fagundes HMF would be the worst-case scenario for traffic in this vicinity (note that the HMF decision will be made as part of the San Jose to Merced EIR/EIS). Tables 6.11-7 and 6.11-8 of the Merced to Fresno HST transportation Technical Report indicate that even if the Fagundes site were selected, traffic at SR 233/Ave 24 ½ would have LOS B during the AM and PM peak hours (Authority and FRA 2012b).

Noise and Vibration

Land uses surrounding the SR 233 Overcrossing near Avenue 23½ are primarily agricultural and residential. The closest sensitive receptors are residential properties, located adjacent to the project to the south of the project footprint. Traffic on SR 233 characterizes the noise exposure in this area. Sources of vibration include truck traffic on SR 233.

Biological Resources and Wetlands

Wetlands

The nearest jurisdictional wetlands are located approximately 0.75 mile to the southwest near the intersection of SR 233 and Avenue 23, and 1 mile to the east at the Berenda Slough.

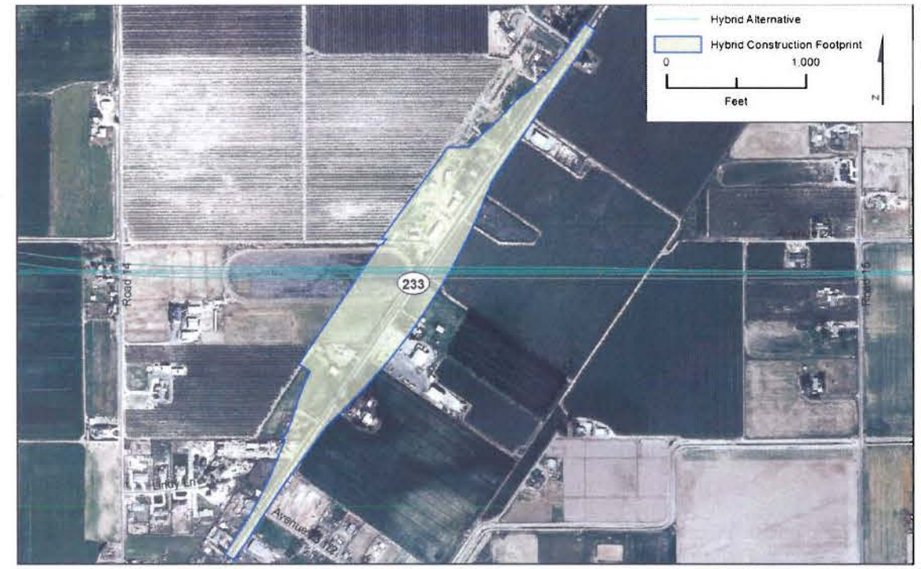


Figure 3.2.2-1
Location No. 8 - SR 233 Overcrossing near Avenue 23½ Project Vicinity

Wildlife Species

There are no critical habitat areas identified for threatened or endangered wildlife species within 1 mile of the project.

Plant Species

There are no critical habitat areas identified for threatened or endangered plant species within 1 mile of the project.

Wildlife Movement Corridors

There are no wildlife movement corridors within 1 mile of the project.

Hydrology and Water Resources

The closest water body to the SR 233 Overcrossing near Avenue 23½ is Berenda Slough, about 1 mile to the east. The project is located within the Chowchilla groundwater subbasin, but is not located in an SFHA.

Socioeconomics, Communities, and Environmental Justice

The SR 233 Overcrossing near Avenue 23½ is located in unincorporated Madera County, just west of the City of Chowchilla. Table 3.2.2-1 shows existing and projected population characteristics for Madera County and the State of California. The SR 233 Overcrossing near Avenue 23½ is primarily surrounded by agricultural lands.

Table 3.2.2-1
Existing and Projected Population Characteristics for Evaluation of the SR 233 Overcrossing near Avenue 23½

Area	Population			Change in Population 2010–2035 (%)	Average Annual Growth Rate 2010–2035 (%)
	2000	2010	2035		
Madera County	123,109	153,655	313,250	103.9%	4.2%
California	33,873,086	38,648,090	51,747,374	33.9%	1.4%
Source: California Department of Finance (2010).					

According to the U.S. Census Bureau (2000), the median age in Madera County in 2000 was close to 30 years; average household size was 3.2 people; married couples accounted for about 54 percent of all households; and the percentage of the population with a disability was about 22 percent for all age categories.

Within Madera County, the Hispanic population comprised the largest percentage of the population (above 50 percent). The Caucasian, non-Hispanic population represents about 35 percent of the population. The percentage of individuals living below the poverty level in Madera County was about 21.4 percent based on 2000 Census data and from 19.3 percent based on the ACS data for cities and counties. The ACS data (U.S. Census Bureau 2009) indicate that median household incomes have increased in the Madera County. The majority of the low-income populations are located in the urban area of Madera.

Station Planning, Land Use and Development

The area surrounding the SR 233 Overcrossing near Avenue 23 ½ is located in Madera County east of the City of Chowchilla. Land use is agricultural, with some residential and commercial uses.

Agricultural Lands

The project is located in an agricultural area, and lands in the project vicinity are under Williamson Act contracts. Agricultural lands surrounding the project include unique farmland and farmland of statewide importance, as defined by the FMMP. Prime farmland is located in the vicinity of the SR 233/Avenue 23 intersection.

Aesthetics and Visual Resources

The SR 233 Overcrossing near Avenue 23½ is within the West of SR 99 Landscape Unit. The project site is in a flat, open area, in agricultural use but with residences in the vicinity. At the location of the proposed overcrossing, SR 233 is a two-lane road with transmission lines running along the western side, and driveways from adjacent farm residences connect at intervals on the east and west sides of the road. The road is lined with various species of palm trees that give this area is most distinctive feature. The visual quality under existing conditions ranges from moderate to moderately low within the landscape unit.

Viewers include nearby residents who are assumed to have high viewer sensitivity and would have views of the overpass area, and motorists on SR 233 who would have views from the highway and, due to moderate speeds (and many of whom would be local residents), are assumed to have low to moderate viewer sensitivity.

Cultural Resources and Paleontological Resources

There is one known historical resource within the HST Project APE in the vicinity of the SR 233 Overcrossing near Avenue 23½, Robertson Boulevard Tree Row. This resource extends 11 miles south

from Downtown Chowchilla along SR 233 Southwest. The tree row consists of Canary Island palm and ornamental shade trees that Orlando Robertson, founder of Chowchilla, planted in 1912 as part of the development of the Chowchilla town center. The tree row is a California Point of Historical Interest. Robertson Boulevard Tree Row is considered eligible for listing on the National Register of Historic Places (NRHP).

The geology of the project site is Modesto Formation, which is Late Pleistocene in age and has moderate paleontological sensitivity. No known archeological resources have been identified in this area.

3.2.2.2 Environmental Consequences

Transportation

Avenue 14 in the vicinity of the proposed SR 233 overcrossing near Avenue 23½ has an AM peak hour volume of 22 and a PM peak hour volume of 27 with LOS A. The SR 233/Ave 24 ½ intersection would have LOS B during AM and PM peak hours even if the Fagundes HMF were selected as part of the San Jose to Merced EIR/EIS; therefore, only small effects on traffic circulation would be expected during construction of the HST Project. To minimize any potential impacts, standard construction procedures related to traffic management would be used, including preparation of a detailed traffic control plan for each affected location before beginning any construction activities. These plans would identify when and where temporary closures and detours would occur, with the requirement of maintaining traffic flow during peak travel periods. Impacts due to temporary roadway closures associated with construction would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Vehicle trips for construction workers would generally occur outside of the peak hours for freeways and street traffic and are not anticipated to result in impacts on the traffic or transportation system.

These avoidance and minimization measures would be incorporated during construction to reduce impacts caused by intersection delays, temporary roadway closures, construction-related safety hazards, and other disruptions of transportation system operations to negligible under NEPA and less than significant under CEQA.

There would be no permanent adverse impacts on local traffic and transportation in the vicinity of the SR 233 Overcrossing near Avenue 23½ because the modification would entail construction of an overcrossing over the HST alignment along an existing stretch of road. No permanent road closures would be required for the modifications. The project would not increase capacity, and, therefore, would not have an adverse effect on the LOS on local roads. As a result, impacts associated with project operation would be negligible under NEPA and less than significant under CEQA.

Noise and Vibration

Land uses in the vicinity of the SR 233 Overcrossing near Avenue 23½ are primarily agricultural and residential; there are several residences in the project vicinity. For residential land use, the potential for temporary construction noise impact would be limited to locations within approximately 141 feet of the alignment, and the potential for noise impact from nighttime construction could extend to residences as far as 446 feet away. There are sensitive receptors in the project vicinity within each of these distances; therefore, construction impacts could be substantial under NEPA and significant under CEQA. With the construction mitigation measures, noise impacts during construction would be negligible under NEPA and less than significant under CEQA.

Changes in the vertical alignment of the SR 233 associated with the overcrossing could affect nearby sensitive receptors but no change in traffic, and in general, the change in noise due to the increased elevation would be less than the noise increase caused by the HST Project. This area is a potential location for implementation of noise mitigation for the HST Project. There would be no vibration impacts in the project area because of the limited propagation of vibration through the soils in the project corridor and the low vehicle input force. If mitigation measures are implemented for HST noise effects, noise and vibration impacts associated with operation of the SR 233 overcrossing near Avenue 23½ would be negligible under NEPA and less than significant under CEQA.

Biological Resources and Wetlands

Sensitive biological communities identified within the HST Project study area include vernal pools and other seasonal wetlands, riparian, natural watercourses, constructed watercourses, and California annual grassland. These habitat types and the number of acres of each type of habitat found within the SR 233 Overcrossing near Avenue 23½ footprint are listed in Tables 3.2.2-2 and 3.2.2-3. Within this area, aquatic communities affected would include 0.01 acre of constructed watercourse and 0.03 acre of constructed basin would be affected. No sensitive terrestrial communities would be affected.

Table 3.2.2-2
Location No. 8 - Potentially Affected Sensitive Aquatic Communities

HST Project	Vernal Pools [b]	Other Seasonal Wetlands [b]	Fremont Cottonwood Forested Wetlands	Coastal and Valley Freshwater Marsh	Natural Watercourses	Constructed Basins	Constructed Watercourses	Open waters [b]
Acres of Impact	0	0	0	0	0	0.03	0.01	0

Table 3.2.2-3
Location No. 8 - Potentially Affected Terrestrial Communities

HST Project	Developed Areas	Agricultural Lands	Ruderal Vegetation	California Annual Grassland	Great Valley Mixed Riparian Forest	Other Riparian	Eucalyptus Woodlands
Acres of Impact	11.07	19.60	1.46	0	0	0	0

Direct impacts on biological communities would occur as a result of the removal of vegetation and wildlife habitat during construction activities within and adjacent to the construction footprint, and from the disturbance (trampling and crushing) of plants by vehicular and construction-related traffic in the area. Vegetated areas requiring removal as part of construction (access and laydown areas) would be restored after construction activities are completed.

Indirect impacts on biological communities adjacent to the project site could include the following:

- Erosion, siltation, and drainage runoff into sensitive biological communities and potentially jurisdictional waters
- Soil and water contamination from construction equipment leaks
- Construction-related dust that affects plants by reducing their photosynthetic capability (especially during flowering periods)
- Invasion by exotic species
- Increased risk of fire (e.g., construction equipment use and smoking by construction workers) in adjacent open spaces

During the project period, the biological communities that occur within the construction footprint are anticipated to be directly disturbed for maintenance and the introduction of other hardscape, fencing, and

landscape features. The existing resource values would be permanently removed during site preparation and continue to be during the life of the Project. Preconstruction surveys would be performed as appropriate within the Project area for nesting birds, bat roosts, and noninundated wetlands and heavily degraded vernal pools that could be suitable habitat for vernal pool branchiopods. With mitigation, temporary and permanent impacts are expected to be negligible under NEPA and less than significant under CEQA.

Hydrology and Water Resources

The SR 233 Overcrossing near Avenue 23½ would not permanently affect any natural or constructed watercourses, and would result in minimal increases in impervious area.

Construction of the SR 233 Overcrossing near Avenue 23½ would result in temporary impacts on existing drainage, irrigation distribution systems, and water quality. Indirect effects could include localized flooding and erosion or siltation due to alteration of existing drainage patterns. Soil-disturbing activity during construction (excavation and grading) could lead to erosion and sedimentation due to the exposure of bare soils, which are more likely to erode than vegetated areas that provide infiltration, retention, and dispersion. In addition, construction activities could result in accidental releases of construction-related hazardous materials including petroleum products and high-pH stormwater from concrete that could impact surface water quality. Effects during construction on drainage and stormwater runoff patterns, as well as groundwater quality, would be reduced with implementation of BMPs and adherence to water quality regulations, as described in Section 5.1, Project Design Features. A Construction SWPPP would be prepared and implemented for construction activities as part of project design, and the project would also comply with the Central Valley RWQCB waste discharge requirement for dewatering and other low threat discharges. All temporary changes to stormwater drainage patterns and runoff resulting from the SHS modifications would be minimal and would have a negligible impact under NEPA and a less than significant impact under CEQA because they would be temporary, would not alter drainage sufficiently to displace a volume large enough to increase flood risk, and construction would not occur in stream or river channels during the winter storm season.

Project facilities would result in changes to existing drainage, as well as increased runoff from project impervious surfaces. Direct impacts on surface water from operation of the project could include changes to the hydrology and connectivity of natural water bodies in the study area. Increased stormwater runoff from the project or substantial alteration of the existing drainage pattern could result in changes to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways. During the detailed design phase, features would be included in the project to provide adequate stormwater capacity and to allow the project to remain operational during flood events. In addition, compliance with an Industrial SWPPP would reduce degradation of surface water quality. With design features for stormwater management and flood protection, impacts on existing drainage patterns would have a negligible impact under NEPA and would be less than significant under CEQA.

Socioeconomics, Communities, and Environmental Justice

The construction of the SR 233 overcrossing near Avenue 23½ would occur in Chowchilla, which is characterized as having low-income and minority populations. Construction would result in temporary impacts on communities, such as temporary impacts on minority and low-income populations caused by dust, noise, and visual changes.

Construction of the SR 233 overcrossing near Avenue 23½ would result in effects on communities of concern; however, the construction impacts would not be disproportionately high and adverse because mitigation measures and project design features have been identified that would reduce the effects for most of the environmental elements, resulting in a moderate impact (see Section 5.1, Project Design Features). The remaining elements would not result in adverse effects on communities of concern that are greater in magnitude than those effects on the general population. Additionally, project outreach will continue during design to seek input on impacts and mitigation, and therefore, collectively, these impacts would not be considered substantial under NEPA.

The average unemployment rate for Merced, Madera, and Fresno counties was 17.8 percent in 2010, with 104,367 unemployed (CEDD 2010a). A study by Eberhardt School of Business (2009) indicates that CEDD reported a loss of 32,300 construction jobs in the San Joaquin Valley between June 2006 and August 2009. As with any large construction project, an influx of population is expected; however, because of the high unemployment level and the number of construction workers that have been lost based on the Eberhardt study, many of these new construction jobs could be filled by residents in the region. The construction of the HST Project has the potential to result in beneficial effects related to employment for communities of concern, with the implementation of mitigation.

The impacts of the HST Project on community interactions in the vicinity during construction would have a moderate impact because the construction would not divide or affect the integrity of neighborhoods within the communities. Although access to some neighborhoods would be disrupted and detoured for short periods of time during construction, there would be continued access to neighborhoods. Because the impact occurs in a rural area and the SR 233 Overcrossing near Avenue 23½ modification does not interfere with interaction or divide the communities, these impacts are not substantial under NEPA or significant under CEQA.

Anticipated acquisitions for the SR 233 overcrossing modification are presented in Table 3.2.2-4. The project would require acquisition of 29 parcels (7 full and 22 partial acquisitions) totaling approximately 32 acres. Six single-family residential units would be acquired in Madera County, potentially displacing approximately 20 people. (The number of displaced residents was estimated using an average of 3.28 people per residential unit in Madera County.) One commercial unit would be acquired, resulting in potential displacement of approximately 12 employees. (The number of displaced employees was computed by using averages of the number of employees per establishment for all North American Industry Classification System (NAICS) codes by county and by zip code. For Madera County, there would be an estimated displacement of 12 employees per establishment.)

Table 3.2.2-4
Potential Acquisitions and Displacements for Evaluation of the SR 233 Overcrossing

Land Use[a]	Acquisitions/Displacements			
	Number of Parcels	Acquisition Type	Acreage	Number of Units
Agricultural	5	Full	12.45	3
Agricultural	11	Partial	5.16	0
Agricultural/Residential	5	Partial	3.33	7
Agricultural/Com	1	Partial	0.46	0
Commercial	1	Full	1.07	1
Municipal	1	Partial	8.93	0
Single-family Residence	1	Full	0.52	2
Single-family Residence	4	Partial	0.21	0
Total	**29**	**-**	**32.12**	**13**

[a]Only land uses with acquisitions/displacements are included

The HST Project would not result in the displacement of substantial amounts of housing or people that would necessitate the construction of replacement housing. There are a suitable number of relocation opportunities in the study area. The project will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. This act and its amendments provide mandatory rules and requirements on how federal, state, and local agencies compensate for impacts on property owners or

tenants who need to relocate if they are displaced by a federally funded project. At the regional level, overall impacts of property acquisitions would be moderate under NEPA and less than significant under CEQA.

Station Planning, Land Use and Development

Construction of the SR 233 overcrossing would result in conversion of existing land uses to transportation-related land uses, both permanently and during the construction period. The SR 233 overcrossing would follow the existing transportation corridor, and the land use patterns are already related to transportation; therefore, impacts related to land use patterns would be minimal. Land use alterations or land use pattern impacts during the construction period are considered negligible under NEPA and less than significant under CEQA.

Agricultural Lands

Table 3.2.2-5 presents estimates of the permanent conversion of important farmlands and agricultural zoned lands for the SR 233 Overcrossing near Avenue 23½. Construction period impacts would include temporary conversion of important farmlands to nonagricultural use and temporary noise. These impacts would be negligible under NEPA. A total of 9 acres of important farmlands would be affected. No impacts on Williamson Act or FSZ land would occur.

Table 3.2.2-5
Farmland Types Potentially Affected for Evaluation of the SR 233 Overcrossing near Avenue 23½

	Important Farmlands					
	Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Williamson Act Land	FSZ Land
Acres of Impact	0	9	0	0	0	0

Permanent conversion of agricultural land to nonagricultural use is considered a substantial adverse impact under NEPA and a significant effect under CEQA because these lands are intended to be protected. However, the project would be developed and implemented in compliance with federal, state, and local farmland programs and policies and the Farmland Conservation Program.

Aesthetics and Visual Resources

The HST Project would largely alter the existing visual character in the vicinity of the proposed SR 233 overcrossing where viewer sensitivity is high. The proposed SR 233 overcrossing would include construction of a new overcrossing structure over the HST alignment. The overcrossing would change the form, scale, and continuity of the landscape. Visual quality would be reduced from moderate to low with the SR 233 overcrossing. Drivers on SR 233 and residents somewhat distant from the overcrossing are assumed to have moderate viewer sensitivity. The visual quality under existing conditions ranges from moderate to moderately low within the landscape unit. With the project, the visual quality in views would be low. In this landscape unit generally, the level of change in visual quality from the project, combined with the level of viewer sensitivity, would result in a substantial effect under NEPA within this landscape unit, and the impact on aesthetics and visual resources from the HST Project would be significant under CEQA.

Mitigation measures would apply to the portion of the HST Project in the vicinity of the SR 233 Overcrossing near Avenue 23½ modification, including providing landscape treatments along the HST Project overcrossings. With mitigation, visual impacts would remain substantial under NEPA and significant under CEQA.

Cultural Resources and Paleontological Resources

Construction of the SR 233 overcrossing would result in the physical demolition, destruction, damage, or substantial alteration of Robertson Boulevard Tree Row. This would result in the loss of the historic property from its local context and would render the historic property incapable of conveying its significance. As a result of the impact, the historic property may no longer be eligible for the NRHP. Therefore, the proposed project would cause a direct adverse effect under Section 106, substantial adverse change that would result in a significant impact under CEQA, and a substantial impact under NEPA.

There are no known archaeological resources at this site. However, soil excavation or compaction resulting from the use of heavy machinery on the construction site or in staging areas may affect the integrity of artifact-bearing deposits associated with undiscovered archaeological sites. Disturbance and removal of archaeological resources could result in adverse effects on archaeological resources under Section 106 and could cause substantial adverse changes in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 and is therefore a substantial impact under NEPA and a significant impact under CEQA. If intact archaeological deposits are discovered during construction, all work within 50 feet of the resources will halt, and the project proponent will consult with a qualified archaeologist to assess the significance of the find, according to CEQA Guidelines Section 15064.5. All significant cultural materials recovered will be, as necessary and at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, and documentation according to current professional standards as determined in the project MOA. See Section 5.2 for a list of mitigation measures. Mitigation would reduce this impact to less than significant under CEQA.

Because the site has moderate paleontological sensitivity, there is a potential for substantial impacts on paleontological resources under NEPA and a potential for significant impacts under CEQA. However, with the mitigation measures identified in Section 5.2, impacts on cultural and paleontological resources would not be substantial NEPA and would be less than significant under CEQA.

3.2.3 Location No. 31 – SR 99 On/Off-ramps to Herndon Avenue (Fresno County)

The HST Project would cross from the east side of the UPRR alignment to the west side just south of the San Joaquin River, pass over the SR 99/Herndon Avenue on/off-ramps, and continue along the west side of the UPRR alignment (see Figure 3.2.3-1). The HST would be aerial along this part of the alignment and 50 feet wide in sections constructed on structures. The existing SR 99 on/off-ramps to Herndon Avenue would be realigned to accommodate the HST. The new roadway would be reconnected to the existing roads, and existing driveways would be reconstructed to provide access to adjacent private properties.

3.2.3.1 Affected Environment

Transportation

In the vicinity of the SR 99 on/off-ramps to Herndon Avenue, the SR 99 alignment passes through a suburban area where local surface streets cross SR 99 either via at-grade intersections, or on overcrossing structures. Local roads in the project vicinity that could be affected by the interchange construction are West Herndon Avenue, North Golden State Boulevard, and North Weber Avenue.

Noise and Vibration

Land uses surrounding the proposed SR 99 on/off-ramps modification are primarily agricultural, industrial, commercial, and residential. In the vicinity of the existing SR 99 On/Off-ramps to Herndon Avenue, there are several sensitive receptors (residences) to the north and south of SR 99 in the vicinity of the project footprint. Traffic on SR 99 and freight trains on the UPRR tracks dominate the noise exposure. Sources of vibrations include UPRR freight trains, Amtrak passenger trains, and truck traffic on SR 99.

Biological Resources and Wetlands

Wetlands

The nearest jurisdictional wetlands are located approximately 0.3 mile to the north, at the San Joaquin

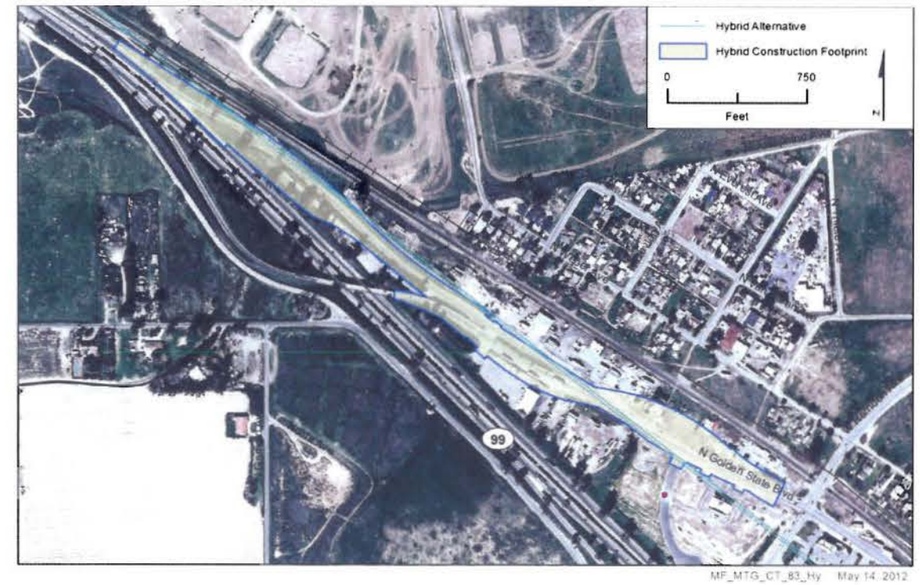


Figure 3.2.3-1
Location No. 31 - SR 99 On/Off-ramps to Herndon Avenue Project Vicinity

River.

Wildlife Species

There are no critical habitat areas identified for threatened or endangered wildlife species within 1 mile of the project.

Plant Species

There are no critical habitat areas identified for threatened or endangered plant species within 1 mile of the project.

Wildlife Movement Corridors

There are no wildlife movement corridors within 1 mile of the project.

Hydrology and Water Resources

The San Joaquin River is located about 0.3 mile to the north of the project site. The San Joaquin River is not listed on the 303(d) list of impaired waters (Central Valley RWQCB 2008). The project is located within the Kings groundwater subbasin, but is not located in an SFHA.

Hazardous Materials and Wastes

The SR 99 on/off-ramps to Herndon Avenue are located in the City of Fresno north of Herndon Avenue between SR 99 and the UPRR alignment. This area consists of commercial and industrial uses, including the following three PEC sites, which are located just to the southwest of the on/off-ramps, on Herndon Avenue between SR 99 and the UPRR tracks: Johnny Quik/Chevron (Conceivable PEC), E-Z Trip Auto/Klein's Truck Stop (Conceivable PEC), and Herndon Shell (Current High Risk PEC).

Socioeconomics, Communities, and Environmental Justice

The SR 99 on/off-ramps to Herndon Avenue are located in the City of Fresno along the SR 99 corridor. Table 3.2.3-1 shows existing and projected population characteristics for Fresno County and the State of California. The project is surrounded by industrial commercial and residential land uses.

Table 3.2.3-1
Existing and Projected Population Characteristics for Evaluation of the SR 99 On/Off-ramps to Herndon Avenue

Area	2000	2009	2035	Change in Population 2009–2035 (%)	Average Annual Growth Rate 2009–2035 (%)
Fresno County	799,407	953,761	1,519,325	59.3%	2.4%
California	33,873,086	38,648,090	51,747,374	33.9%	1.4%
Source: California Department of Finance (2010).					

According to the U.S. Census Bureau (2000), the median age in Fresno County in 2000 was close to 30 years; average household size was 3.2 people; married couples accounted for about 54 percent of all households; and the percentage of the population with a disability was about 22 percent for all age categories.

Within Fresno County, the Hispanic population comprised the largest percentage of the population (above 50 percent). The Caucasian, non-Hispanic population represents about 35 percent of the population. The percentage of individuals living below the poverty level in Fresno County was about 22.9 percent based on 2000 Census data and from 22.5 percent based on the ACS data for cities and counties. The ACS data (U.S. Census Bureau 2009) indicate that median household incomes have increased in the Fresno County. The majority of the low-income populations are located in the City of Fresno.

Station Planning, Land Use and Development

The area surrounding the SR 99/Herndon interchange is located in the City of Fresno along the SR 99 corridor. Land use surrounding the project is commercial.

Agricultural Lands

The HST Project is located in an agricultural area, and the closest lands under Williamson Act contract are located 0.2 mile to the southwest. Agricultural lands surrounding the Project include farmland of statewide importance, as defined by the FMMP. Prime farmland is located to the west of SR 99.

Aesthetics and Visual Resources

The SR 99 on/off-ramps to Herndon Avenue site is located within the Fresno Landscape Unit. Within the immediate area of the interchange are truck stops, motels, and various fast-food restaurants that serve highway travelers. Visual quality near the proposed SR 99 on/off-ramps is moderate.

Cultural Resources and Paleontological Resources

According to an account provided by a member of the Dumna Wo-Wah tribe, human remains were uncovered during past construction activities at a location south of the San Joaquin River and possibly within the APE. Although specific locations for burials could not be determined, finds of human remains were reported to the tribal member by construction workers who built various facilities in the area. Archaeological testing of the purported presence of human remains is not possible at this time because the area has been developed as a commercial business. Stipulation VI.C.1 of the Programmatic Agreement states that "known archaeological properties that cannot be evaluated prior to approval of an undertaking will be presumed NRHP eligible." Under this stipulation, this potentially sensitive area is treated as eligible for listing in the NHRP. The geology of the project site is Pleistocene non-marine, which has low paleontological sensitivity.

3.2.3.2 Environmental Consequences

Transportation

Only small effects on traffic circulation would be expected during construction of the HST Project. To minimize any potential impacts, standard construction procedures related to traffic management would be used, including preparation of a detailed traffic control plan for each affected location before beginning any construction activities. These plans would identify when and where temporary closures and detours would occur, with the requirement of maintaining traffic flow during peak travel periods. Impacts caused by temporary roadway closures associated with construction would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Vehicle trips for construction workers would generally occur outside of the peak hours for freeways and street traffic and are not anticipated to result in impacts on the traffic or transportation system.

These avoidance and minimization measures would be incorporated during construction to reduce impacts due to intersection delays, temporary roadway closures, construction-related safety hazards, and other disruptions of transportation system operations to negligible under NEPA and less than significant under CEQA. There would be no permanent adverse impacts on local traffic and transportation in the vicinity of the SR 99 on/off-ramps to Herndon Avenue because the modification would entail realigning existing on and off-ramps. No permanent road closures would be required for the modifications. The Project would not increase capacity and, therefore, would not have an adverse effect on the LOS on local roads. As a result, impacts associated with project operation would be negligible under NEPA and less than significant under CEQA.

Noise and Vibration

Land uses in the vicinity of the SR 99 on/off-ramps to Herndon Avenue are primarily agricultural, industrial, commercial and residential; there are several residences in the project vicinity. For residential land use, the potential for temporary construction noise impact would be limited to locations within approximately 141 feet of the alignment and the potential for noise impact from nighttime construction could extend to residences as far as 446 feet away. There are sensitive receptors in the project vicinity within each of these distances; therefore, construction impacts could be substantial under NEPA and significant under CEQA. With construction mitigation measures, noise impacts during construction would be negligible under NEPA and less than significant under CEQA.

The realignment of the SR 99 on/off-ramps to Herndon Avenue would result in only minor changes in horizontal alignment that are not likely to affect nearby sensitive receptors because the noise environment surrounding the location is dominated by traffic on SR 99 and freight trains on the UPRR tracks. There would be no vibration impacts in the project area because of the limited propagation of vibration through the soils in the project corridor and the low vehicle input force. Therefore noise and vibration impacts would be negligible under NEPA and less than significant under CEQA.

Biological Resources and Wetlands

No sensitive aquatic or terrestrial communities are found within the SR 99 on/off-ramps to Herndon Avenue footprint; therefore, no impacts on these communities are anticipated as a result of construction and operation of this SHS modification.

Indirect impacts on biological communities adjacent to the project site could include the following:

- Erosion, siltation, and drainage runoff into sensitive biological communities and potentially jurisdictional waters
- Soil and water contamination from construction equipment leaks
- Construction-related that affects plants by reducing their photosynthetic capability (especially during flowering periods)
- Invasion by exotic species
- An increased risk of fire (e.g., construction equipment use and smoking by construction workers) in adjacent open spaces

During the Project period, the biological communities that occur within the construction footprint are anticipated to be directly disturbed for maintenance and the introduction of other hardscape, fencing, and landscape features. The existing resource values would be permanently removed during site preparation and continue to be during the life of the Project. Preconstruction surveys would be performed as appropriate within the Project area for nesting birds, bat roosts, and noninundated wetlands and heavily degraded vernal pools that could be suitable habitat for vernal pool branchiopods. With mitigation, temporary and permanent impacts are expected to be negligible under NEPA and less than significant under CEQA.

Hydrology and Water Resources

The SR 99 on/off-ramps to Herndon Avenue modification would not permanently affect any natural or constructed watercourses and would result in only minimal increases in impervious surfaces.

Construction of the SR 99 on/off-ramps to Herndon Avenue project would result in temporary impacts on existing drainage, irrigation distribution systems, and water quality. Indirect effects could include localized flooding and erosion or siltation due to alteration of existing drainage patterns. Soil-disturbing activity during construction (excavation and grading) can lead to erosion and sedimentation due to the exposure of bare soils which are more likely to erode than vegetated areas that provide infiltration, retention, and dispersion. In addition, construction activities could result in accidental releases of construction-related hazardous materials, including petroleum products and high-pH stormwater from concrete that could impact surface water quality. Effects during construction on drainage and stormwater runoff patterns, as well as groundwater quality, would be reduced with implementation of BMPs and adherence to water quality regulations, as described in Section 5.1, Project Design Features. A Construction SWPPP would be prepared and implemented for construction activities as part of project design and the project would also comply with the Central Valley RWQCB waste discharge requirement for dewatering and other low threat discharges. All temporary changes to stormwater drainage patterns and runoff resulting from the SHS modifications would be minimal and would have negligible impacts under NEPA and a less than significant impact under CEQA because they would be temporary, would not alter drainage sufficiently to displace a volume large enough to increase flood risk, and construction would not occur in stream or river channels during the winter storm season. Changes to stormwater drainage and runoff could have a substantial impact under NEPA and a significant impact under CEQA. Implementation of a Construction SWPPP and compliance with the Central Valley RWQCB waste discharge requirement for dewatering and other low threat discharges would reduce these impacts to negligible under NEPA and less than significant under CEQA.

Project facilities would result in changes to existing drainage, as well as increased runoff from project impervious surfaces. Direct impacts on surface water from operation of the Project could include changes to the hydrology and connectivity of natural water bodies in the study area. Increased stormwater runoff from the project or substantial alteration of the existing drainage pattern could result in changes to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.. During the detailed design phase, features would be included in the Project to provide adequate stormwater capacity and to allow the Project to remain operational during flood events. With design features for stormwater management and flood protection, impacts on existing drainage patterns would have a negligible impact under NEPA and would be less than significant under CEQA.

Hazardous Materials and Wastes

Modifications to the SHS would require the demolition of roadways containing asbestos and lead-based materials that would require specialized procedures and equipment, and appropriately certified personnel. ACM might be found in roadway materials, such as the material used before the 1980s for expansion joints in the pavement. Although lead is no longer used in gasoline formulations, lead emissions from automobiles (aerially deposited lead) are a recognized source of contamination in soils along roadways. Surface and near-surface soils along heavily used roadways have the potential to contain elevated concentrations of lead (EPA 2009). The roadways intended for demolition that were constructed before 1980 would be surveyed for asbestos, while those constructed before 1971 would be surveyed for lead. A demolition plan would be prepared for any location with positive results for asbestos or lead. The plan would specify how to appropriately contain, remove, and dispose of the asbestos and lead-containing material while meeting all requirements and BMPs to protect human health and the environment.

In addition to roadway demolition, trenching and other ground-disturbing project construction activities could disturb undocumented soil or groundwater contamination. Adverse impacts could result if construction activities inadvertently dispersed contaminated material into the environment. For example, dewatering activities during construction could cause contaminated groundwater to migrate farther in the groundwater table or cause contaminated groundwater to be released into streams. In addition, inadvertent disturbance of ACM could result in airborne asbestos fibers.

The Authority will prepare a construction management plan that prescribes activities for workers to follow in areas with suspected presence of undocumented soil or groundwater contamination based on visual observation or smell. The construction management plan will include (but is not intended to be limited to) provisions for daily briefings of the construction staff prior to work regarding what to look for; a list of contact persons in case of a possible encounter with undocumented contamination; provisions for immediate notification of construction management; notification of the applicable local enforcement agency of the find; consultation with that agency; and protocols for further action. In such instances, construction activities would cease until it is determined, in coordination with regulatory agencies, that work can proceed without the risk of injury to persons or the environment. With the implementation of these standard precautions, the potential effects of inadvertent disturbance to hazardous materials or wastes would have a negligible impact under NEPA and would be less than significant under CEQA (see Section 5.2 for a list of avoidance and minimization measures consistent with the commitments in the Program EIR/EIS documents).

Three PEC sites are located just to the southwest of the SR 99 on/off-ramps to Herndon Avenue project site, on Herndon Avenue between SR 99 and the UPRR: Johnny Quik/Chevron (Conceivable PEC), E-Z Trip Auto/Klein's Truck Stop (Conceivable PEC), and Herndon Shell (Current High Risk PEC). There are various established procedures to reduce the potential that construction on such sites results in impacts on human health or the environment. Where effects on PEC sites cannot be avoided, preconstruction activities would address the requirements for constructing at PEC sites in coordination with regulatory agencies. Depending on proposed project activities, such as the need for subsurface ground disturbance, and the known extent and type of contamination, requirements for constructing at contaminated sites could include further evaluation of the level of contamination and associated potential risks to human health and the environment. With the incorporation of standard BMPs, avoidance measures, and coordination with regulatory agencies, the potential effects from construction on, or in proximity to,

contaminated sites would have a negligible impact under NEPA and would be less than significant under CEQA.

Socioeconomics, Communities, and Environmental Justice

The construction of the SR 99 on/off-ramps to Herndon Avenue would occur in the City of Fresno, which is characterized as having low-income and minority populations. Construction would result in temporary impacts on communities, such as temporary impacts on minority and low-income populations caused by dust, noise, and visual changes.

Construction of the SR 99 on/off-ramps to Herndon Avenue would result in effects on communities of concern; however, the construction impacts would not be disproportionately high and adverse because mitigation measures and project design features have been identified that would reduce the effects for most of the environmental elements, resulting in a moderate impact (see Section 5.1, Project Design Features). The remaining elements would not result in adverse effects on communities of concern that are greater in magnitude than those effects on the general population. Additionally, project outreach will continue during design to seek input on impacts and mitigation, and therefore, collectively, these impacts would not be considered substantial under NEPA.

The average unemployment rate for Merced, Madera, and Fresno counties was 17.8 percent in 2010, with 104,367 unemployed (CEDD 2010a). A study by Eberhardt School of Business (2009) indicates that CEDD reported a loss of 32,300 construction jobs in the San Joaquin Valley between June 2006 and August 2009. As with any large construction project, an influx of population is expected; however, because of the high unemployment level and the number of construction workers that have been lost based on the Eberhardt study, many of these new construction jobs could be filled by residents in the region. The construction of the HST Project has the potential to result in beneficial effects related to employment for communities of concern, with the implementation of mitigation.

The impacts of the HST Project on community interactions in the vicinity during construction would have a moderate impact because the construction would not divide or affect the integrity of neighborhoods within the communities. Although access to some neighborhoods would be disrupted and detoured for short periods of time during construction, there would be continued access to neighborhoods. Because the construction of the of the SR 99 on/off-ramps to Herndon Avenue does not interfere with interaction or divide the communities, these impacts are not substantial under NEPA or significant under CEQA.

Anticipated acquisitions for the SR 99 on/off-ramps to Herndon Avenue are presented in Table 3.2.3-2. The project would require acquisition of 12 parcels (5 full and 7 partial acquisitions) totaling approximately 15 acres. Seven commercial units would be acquired, resulting in potential displacement of approximately 112 employees. (The number of displaced employees was determined by using averages of the number of employees per establishment for all NAICS codes by county and by zip code. For Fresno there would be an estimated displacement of 16 employees per establishment.) No residential displacements are anticipated for this project.

Table 3.2.3-2
Potential Acquisitions and Displacements for Evaluation of the SR 99 On/Off-ramps to Herndon Avenue

	Acquisitions/Displacements			
Land Use[a]	Number of Parcels	Acquisition Type	Acreage	Number of Units
Commercial	3	Full	1.01	2
Commercial	4	Partial	0.80	5
Municipal	1	Partial	13.17	0
Vacant	1	Full	0.35	0

	Acquisitions/Displacements			
Land Use[a]	Number of Parcels	Acquisition Type	Acreage	Number of Units
Vacant	3	Partial	0.10	0
Total	**12**	**-**	**15.43**	**7**

[a]Only land uses with acquisitions/displacements are included

The HST Project would not result in the displacement of substantial amounts of housing or people that would necessitate the construction of replacement housing. Residential displacements occur in all three counties and, as described above, there are a suitable number of relocation opportunities in the cities and counties in the study area. The project will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. This act and its amendments provide mandatory rules and requirements on how federal, state, and local agencies compensate for impacts on property owners or tenants who need to relocate if they are displaced by a federally funded project. At the regional level, overall impacts of property acquisitions would be moderate under NEPA and less than significant under CEQA.

Station Planning, Land Use and Development

Modification of the on- and off-ramps at SR 99 and Herndon Avenue would result in conversion of existing land uses to transportation-related land uses, both permanently and during the construction period. Land use patterns surrounding the interchange are already related to transportation; therefore, impacts related to land use patterns would be minimal. Land use alterations or land use pattern impacts during the construction period are considered negligible under NEPA and less than significant under CEQA.

Agricultural Lands

No permanent conversion of important farmlands or agricultural zoned lands would occur for the SR 99 on/off-ramps to Herndon Avenue modifications. There would be no impacts on Williamson Act or FSZ land. Therefore impacts on agricultural lands for the SR 99 on/off-ramps to Herndon Avenue would be negligible under NEPA and less than significant under CEQA.

Aesthetics and Visual Resources

The HST elevated guideway would be visible from residential and commercial areas approximately 1 mile south of the San Joaquin River along SR 99. Because of its location within an established corridor containing rail and other transportation facilities, the elevated HST guideway would not appear out of character with the landscape near the interchange of SR 99 and West Herndon Avenue. The immediate area of the interchange includes truck stops, motels, and various fast-food restaurants that serve highway travelers. Because of its location within an established corridor containing rail and other transportation facilities, the elevated HST guideway would not appear out of character with the existing landscape. Trees in the residential neighborhoods would partially screen the HST from the view of some nearby residents. The proposed HST would not lower the visual quality of the area viewed by nearby residences with high viewer sensitivity and people with moderate to low viewing sensitivity (highway travelers, business customers and employees) enough to have a significant impact under NEPA and a less than significant impact under CEQA. No mitigation measures would apply to the portion of the HST Project in the vicinity of the SR 99 on/off-ramps to Herndon Avenue.

Temporary adverse impacts would result from temporary activities during construction, including pile driving, partial or total road and lane closures, detours (vehicular and pedestrian), partial/limited access, delivery of materials and equipment, and potentially the establishment of a concrete batch plant. Most of the staging sites would be located adjacent to the proposed HST alignment, in areas that are generally

rural or industrial in nature. Equipment and earthmoving activities are not visually intrusive in these types of settings; therefore, temporary construction activities would have a negligible effect under NEPA and a less than significant impact under CEQA on aesthetics and visual resources.

Cultural Resources and Paleontological Resources

The HST Project has the potential to affect one potential, but as-yet unconfirmed, prehistoric site (the potential burial site). This resource is subject to construction period impacts, which would be considered an adverse effect under Section 106, an impact with a substantial impact under NEPA, and a significant impact under CEQA.

Soil excavation or compaction resulting from the use of heavy machinery on the construction site or in staging areas may affect the integrity of artifact-bearing deposits associated with undiscovered archaeological sites. Disturbance and removal of archaeological resources could result in adverse effects on archaeological resources under Section 106 and could cause substantial adverse changes in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 and is therefore a substantial impact under NEPA and a significant impact under CEQA. If intact archaeological deposits are discovered during construction, all work within 50 feet of the resources will halt, and the project proponent will consult with a qualified archaeologist to assess the significance of the find, according to CEQA Guidelines Section 15064.5. All significant cultural materials recovered will be, as necessary and at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, and documentation according to current professional standards as determined in the Project MOA. See Section 5.2 for a list of mitigation measures. Mitigation would reduce this impact to less than significant under CEQA.

3.2.4 Location No. 32 – SR 99/Avenue 7 Overcrossing (Madera County)

The HST Project approaches the UPRR and SR 99 rights-of-way from the northeast in the vicinity of Ave 7. The HST at-grade profile alignment crosses below Avenue 7, which would require raising the profile of Avenue 7 and reconstructing the UPRR overcrossing to meet the minimum vertical clearance requirements for the HSTs. In addition to the new overcrossing at Avenue 7, realignment of a local access road connecting to Road 33 would be required (see Figure 3.2.4-1).

Figure 3.2.4-1
Footprint near SR 99 Avenue 7

3.2.4.1 Affected Environment

Transportation

In the vicinity of the SR 99/Avenue 7 Overcrossing, the SR 99 alignment passes through a rural area where local surface streets cross SR 99 via at-grade intersections or on overcrossing structures. Local roads in the project vicinity that could be affected by the interchange construction include Avenue 7 and Road 33. Table 4.3-1 of the transportation Technical Report (Authority and FRA 2012b) indicates that the highest traffic volume for local roads in this vicinity is Avenue 7, with an AM peak hour volume of 216 and a PM peak hour volume of 246 with LOS A.

Noise and Vibration

Land uses surrounding the SR 99/Avenue 7 Overcrossing are agricultural, with one residential parcel. In the vicinity of the overcrossing, the only sensitive receptor is a residential property, located approximately 0.25 mile northeast of the overcrossing. Traffic on SR 99 and freight trains on the UPRR line dominate the noise exposure in this area. Sources of vibration include UPRR freight trains, Amtrak passenger trains, and truck traffic on SR 99.

Biological Resources and Wetlands

Wetlands

The nearest jurisdictional wetlands are located approximately 0.3 mile to the south, at the San Joaquin River.

Wildlife Species

There are no critical habitat areas identified for threatened or endangered wildlife species within 1 mile of the project.

Plant Species

There are no critical habitat areas identified for threatened or endangered plant species within 1 mile of the project.

Wildlife Movement Corridors

There are no wildlife movement corridors within 1 mile of the project.

Hydrology and Water Resources

The San Joaquin River is located about 0.3 mile to the south of the project site. The San Joaquin River is not listed on the 303(d) List of Impaired Waters (Central Valley RWQCB 2008). The project is located within the Kings groundwater subbasin, but is not located in an SFHA.

Socioeconomics, Communities, and Environmental Justice

The SR 99/Avenue 7 Overcrossing is located in a suburban area known as Madera Acres. Table 3.2.4-1 shows existing and projected population characteristics for Madera County and the State of California.

Table 3.2.4-1
Existing and Projected Population Characteristics for Evaluation of the SR 99/Avenue 7 Overcrossing

Area	Population			Change in Population 2010–2035 (%)	Average Annual Growth Rate 2010–2035 (%)
	2000	2010	2035		
Madera County	123,109	153,655	313,250	103.9%	4.2%
California	33,873,086	38,648,090	51,747,374	33.9%	1.4%

Source: California Department of Finance (2010).

According to the U.S. Census Bureau (2000), the median age in Madera County in 2000 was close to 30 years; average household size was 3.2 people; married couples accounted for about 54 percent of all households; and the percentage of the population with a disability was about 22 percent for all age categories.

Within Madera County, the Hispanic population comprised the largest percentage of the population (above 50 percent). The Caucasian, non-Hispanic population represents about 35 percent of the population. The percentage of individuals living below the poverty level in Madera County was about 21.4 percent based on 2000 Census data and from 19.3 percent based on the ACS data for cities and counties (U.S. Census Bureau 2009). The ACS data indicate that median household incomes have increased in the Madera County. The majority of the low-income populations are located in the urban area of Madera.

Station Planning, Land Use and Development

Land uses surrounding the SR 99/Avenue 7 Overcrossing are agricultural, with one residential parcel nearby to the northeast.

Agricultural Lands

The Project is located in an agricultural area, and lands in the vicinity of the Project footprint are under Williamson Act contracts. Agricultural lands surrounding the Project include unique farmland and farmland of statewide importance, as defined by the FMMP.

Aesthetics and Visual Resources

The SR 99/Avenue 7 Overcrossing includes land along the HST Project between Madera Acres and SR 99, where the guideway would be rejoined adjacent to the UPRR corridor. The visual quality of existing views at Location 32, and generally within the Madera Acres–SR 99 Landscape Unit, is moderately high. The landscape is primarily agricultural in character, verdant and intact, and has high unity. Agricultural production is on a relatively large scale on large parcels, and includes vineyards and orchards interspersed with seasonal fallow fields. The area has a very low population. Avenue 7 crosses SR 99 and provides people in vehicles an elevated view over the farmland and to the foothills in the background. A local road (Rd 33) intersects with Avenue 7 just east of the overcrossing's touch-down point. No evening light sources exist in the area other than vehicle traffic.

Cultural Resources and Paleontological Resources

The soils in this area are part of the Great Valley Sequence, which are of Recent (Holocene) age, and are too young to contain significant paleontological resources and therefore are considered to have a low sensitivity for paleontological resources. No historic architectural or archaeological resources have been identified within the APE in this area.

3.2.4.2 Environmental Consequences

Transportation

Local roads in the vicinity of the SR 99/Avenue 7 Overcrossing have AM and PM peak hour volumes of less than 250 with LOS A; therefore, only small effects on traffic circulation would be expected during construction of the HST project. To minimize any potential impacts, standard construction procedures related to traffic management would be used, including preparation of a detailed traffic control plan for each affected location prior to beginning any construction activities. These plans would identify when and where temporary closures and detours would occur, with the requirement of maintaining traffic flow during peak travel periods. Impacts due to temporary roadway closures associated with construction would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Vehicle trips for construction workers would generally occur outside of the peak hours for freeways and street traffic and are not anticipated to result in impacts on the traffic or transportation system.

These avoidance and minimization measures would be incorporated during construction to reduce impacts caused by intersection delays, temporary roadway closures, construction-related safety hazards, and other disruptions of transportation system operations to negligible under NEPA and less than significant under CEQA.

Design of the SR 99/Avenue 7 Overcrossing includes reconfiguration of local roads and intersections to maintain connectivity; therefore, no permanent road closures would be required for the modifications. There would be no permanent adverse impacts on local traffic and transportation in the vicinity of the SR 99/Avenue 7 Overcrossing because the modification would entail only the lengthening of an existing overcrossing. The Project would not increase capacity and, therefore, would not have an adverse affect on the LOS on local roads. As a result, impacts associated with Project operation would be negligible under NEPA and less than significant under CEQA.

Noise and Vibration

Land use in the vicinity of the SR 99/Avenue 7 Overcrossing is primarily agricultural, with one residence in the project vicinity. For residential land uses, the potential for temporary construction noise impact

would be limited to locations within approximately 141 feet of the alignment, and the potential for noise impacts from nighttime construction could extend to residences as far as 446 feet away. The sensitive receptor is not within this distance of the project footprint. As a result, construction impacts would be negligible under NEPA and less than significant under CEQA.

Changes in the horizontal and vertical alignment of Avenue 7 would result in only minor changes in horizontal alignment that are not likely to affect nearby sensitive receptors because these changes would take place on the far side of SR 99 from the sensitive receptor and because the noise environment surrounding the location is dominated by traffic on SR 99 and freight trains on the UPRR tracks. There would be no vibration impacts in the project area because of the limited propagation of vibration through the soils in the project corridor and the low vehicle input force. Therefore noise and vibration impacts would be negligible under NEPA and less than significant under CEQA.

Biological Resources and Wetlands

No sensitive aquatic or terrestrial communities are found within the SR 99/Avenue 7 Overcrossing; therefore, no impacts on these communities are anticipated as a result of construction and operation of this SHS modification.

Indirect impacts on biological communities adjacent to the project site could include the following:

- Erosion, siltation, and drainage runoff into sensitive biological communities and potentially jurisdictional waters
- Soil and water contamination from construction equipment leaks
- Construction-related that affects plants by reducing their photosynthetic capability (especially during flowering periods)
- Invasion by exotic species
- An increased risk of fire (e.g., construction equipment use and smoking by construction workers) in adjacent open spaces

During the project period, the biological communities that occur within the construction footprint are anticipated to be directly disturbed for maintenance and the introduction of other hardscape, fencing, and landscape features. The existing resource values would be permanently removed during site preparation and continue to be during the life of the Project. Preconstruction surveys would be performed as appropriate within the Project area for nesting birds, bat roosts, and noninundated wetlands and heavily degraded vernal pools that could be suitable habitat for vernal pool branchiopods. With mitigation, temporary and permanent impacts are expected to be negligible under NEPA and less than significant under CEQA.

Hydrology and Water Resources

The SR 99/ Avenue 7 modification would not permanently affect any natural or constructed watercourses, and would result in only minimal increases in impervious surfaces.

Construction of the SR 99/Avenue 7 Overcrossing would result in temporary impacts on existing drainage, irrigation distribution systems, and water quality. Indirect effects could include localized flooding and erosion or siltation caused by alteration of existing drainage patterns. Soil-disturbing activity during construction (i.e., excavation and grading) can lead to erosion and sedimentation due to the exposure of bare soils, which are more likely to erode than vegetated areas that provide infiltration, retention, and dispersion. In addition, construction activities could result in accidental releases of construction-related hazardous materials, including petroleum products and high-pH stormwater from concrete that could affect surface water quality. Effects during construction on drainage and stormwater runoff patterns, as well as groundwater quality, would be reduced with implementation of BMPs and adherence to water

quality regulations, as described in Section 5.1, Project Design Features. A Construction SWPPP would be prepared and implemented for construction activities as part of project design, and the project would also comply with the Central Valley RWQCB waste discharge requirement for dewatering and other low threat discharges. All temporary changes to stormwater drainage patterns and runoff resulting from the SHS modifications would be minimal and would have impacts with a negligible impact under NEPA and a less than significant impact under CEQA because they would be temporary, would not alter drainage sufficiently to displace a volume large enough to increase flood risk, and construction would not occur in stream or river channels during the winter storm season. Changes to stormwater drainage and runoff could have a substantial impact under NEPA and a significant impact under CEQA. Implementation of a Construction SWPPP and compliance with the Central Valley RWQCB waste discharge requirement for dewatering and other low threat discharges would reduce these impacts to negligible under NEPA and less than significant under CEQA.

Project facilities would result in changes to existing drainage, as well as increased runoff from project impervious surfaces. Direct impacts on surface water from operation of the project could include changes to the hydrology and connectivity of natural water bodies in the study area. Increased stormwater runoff from the project or substantial alteration of the existing drainage pattern could result in changes to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.. During the detailed design phase, features would be included in the Project to provide adequate stormwater capacity and to allow the Project to remain operational during flood events. With design features for stormwater management and flood protection, impacts on existing drainage patterns would have a negligible impact under NEPA and would be less than significant under CEQA.

Socioeconomics, Communities, and Environmental Justice

The construction of the SR 99/Avenue 7 Overcrossing would occur in the community of Madera Acres in Merced County, which is characterized as having low-income and minority populations. Construction would result in temporary impacts on communities, such as temporary impacts on minority and low-income populations caused by dust, noise, and visual changes.

Construction of the of the SR 99/Avenue 7 Overcrossing would result in effects on communities of concern; however, the construction impacts would not be disproportionately high and adverse because mitigation measures and project design features have been identified that would reduce the effects for most of the environmental elements, resulting in a moderate impact (see Section 5.1, Project Design Features). The remaining elements would not result in adverse effects on communities of concern that are greater in magnitude than those effects on the general population. Additionally, project outreach will continue during design to seek input on impacts and mitigation, and therefore, collectively, these impacts would not be considered substantial under NEPA.

The average unemployment rate for Merced, Madera, and Fresno counties was 17.8 percent in 2010, with 104,367 unemployed (CEDD 2010a). A study by Eberhardt School of Business (2009) indicates that CEDD reported a loss of 32,300 construction jobs in the San Joaquin Valley between June 2006 and August 2009. As with any large construction project, an influx of population is expected; however, because of the high unemployment level and the number of construction workers that have been lost based on the Eberhardt study, many of these new construction jobs could be filled by residents in the region. The construction of the HST Project has the potential to result in beneficial effects related to employment for communities of concern, with the implementation of mitigation.

The impacts of the HST Project on community interactions in the vicinity during construction would have a moderate impact because the construction would not divide or affect the integrity of neighborhoods within the communities. Although access to some neighborhoods would be disrupted and detoured for short periods of time during construction, there would be continued access to neighborhoods. Because the construction of the SR 99/Avenue 7 Overcrossing does not interfere with interaction or divide the communities, these impacts are not substantial under NEPA or significant under CEQA.

Anticipated acquisitions for the SR 99/Avenue 7 Overcrossing are presented in Table 3.2.4-2. The project would require acquisition of six parcels (one full and five partial acquisitions) totaling approximately 32 acres. No residential or commercial displacements are anticipated for this project.

Table 3.2.4-2
Potential Acquisitions and Displacements for Evaluation of the SR 99/Avenue 7 Overcrossing

	Acquisitions/Displacements			
Land Use[a]	Number of Parcels	Acquisition Type	Acreage	Number of Units
Agricultural	3	Partial	19.88	0
Municipal	1	Partial	9.47	0
Utility/Railroad	1	Full	1.33	0
Utility/Railroad	1	Partial	1.68	0
Total	**6**	**-**	**32.36**	**0**

[a]Only land uses with acquisitions/displacements are included

The HST Project would not result in the displacement of substantial amounts of housing or people that would necessitate the construction of replacement housing. Residential displacements occur in all three counties and, as described above, there are a suitable number of relocation opportunities in the cities and counties in the study area. The project will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. This act and its amendments provide mandatory rules and requirements on how federal, state, and local agencies compensate for impacts on property owners or tenants who need to relocate if they are displaced by a federally funded project. At the regional level, overall impacts of property acquisitions would be moderate under NEPA and less than significant under CEQA.

Station Planning, Land Use and Development

The SR 99/Avenue 7 Overcrossing would result in conversion of existing land uses to transportation-related land uses, both permanently and during the construction period. Avenue 7 would follow the existing transportation corridor where the land use patterns are already adjacent to transportation, including an existing overcrossing; therefore, impacts related to land use patterns would be minimized. Land use alterations or land use pattern impacts during the construction period are considered negligible under NEPA and less than significant under CEQA.

Agricultural Lands

Table 3.2.4-3 presents estimates of the permanent conversion of important farmlands and agricultural zoned lands for the SR 99/Avenue 7 Overcrossing project. A total of 24 acres of important farmlands would be affected. No impacts on Wiliamson Act or FSZ land would occur. Construction period impacts would include temporary conversion of important farmlands to nonagricultural use.

Table 3.2.4-3
Farmland Types Potentially Affected for Evaluation of the SR 99/Avenue 7 Overcrossing

	Important Farmlands					
	Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Williamson Act Land	FSZ Land
Acres of Impact	3	20	1	0	0	0

Permanent conversion of agricultural land to nonagricultural use is considered a substantial adverse impact under NEPA and a significant effect under CEQA, because these lands are intended to be protected. However, the project would be developed and implemented in compliance with federal, state, and local farmland programs and policies and the Farmland Conservation Program.

Aesthetics and Visual Resources

The SR 99/ Avenue 7 Overcrossing modification would result in an impact with negligible under NEPA and a less than significant impact under CEQA, as determined by the level of change in the landscape character and visual quality from the project, combined with the level of viewer sensitivity. The HST Project would pass approximately 0.2 mile east of the existing Avenue 7 overcrossing of SR 99. The HST would pass through a vineyard and orchard, and would be overcrossed by Avenue 7 immediately beyond the existing intersection with Road 33, which is near the bottom of the ramp.

The SR 99/Avenue 7 overcrossing project, along with the HST at-grade guideway and its overhead contact system, would somewhat change the visual character of this view, and the intactness and unity of views to the east from SR 99. The overcrossing of SR 99 would need to be extended to also cross over the HST alignment. The HST alignment would run perpendicular to and under Avenue 7 and disrupt the continuity of the existing landscape when combined with the cuts into the overcrossing's embankment. Long-distance views toward the horizon, where foothills are a backdrop in a diverse agricultural landscape, would be partially blocked by the arc of the overcrossing. The overcrossing and HST would be seen in some areas by drivers of rural roads, but as with rural residents, their numbers would be low and infrequent; therefore, viewer sensitivity is assumed to be low. Visual quality would be reduced from moderately high to moderate with the project. Figure 3.2.4-2 shows a simulation of the realigned Ave 7 looking east from the UPRR overcrossing (see Figure 3.2.4-3 for the position of the view point).

Existing View Simulated View

Figure 3.2.4-2
SR 99 and Avenue 7 Existing and Simulated Views

Left, Existing View: View to the east from the Avenue 7 overpass of SR 99. The variety of agricultural crops visible from this location is typical of the surrounding landscape.
Right, Simulated View: The at-grade BNSF Alternative would be crossed over by Avenue 7 at this viewpoint, and would rejoin the elevated the HST approximately 1 mile south of this location.

Figure 3.2.4-3
Location No. 32 - Location and Orientation of View

Cultural Resources and Paleontological Resources

There are no known archaeological or historical resources at this site. However, soil excavation or compaction resulting from the use of heavy machinery on the construction site or in staging areas may affect the integrity of artifact-bearing deposits associated with undiscovered archaeological sites. Disturbance and removal of archaeological resources could result in adverse effects on archaeological resources under Section 106 and could cause substantial adverse changes in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 and is therefore a substantial impact under NEPA and a significant impact under CEQA. If intact archaeological deposits are discovered during construction, all work within 50 feet of the resources will halt, and the project proponent will consult with a qualified archaeologist to assess the significance of the find, according to CEQA Guidelines Section 15064.5. All significant cultural materials recovered will be, as necessary and at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, and documentation according to current professional standards as determined in the Project MOA. See Section 5.2 for a list of mitigation measures. Mitigation would reduce this impact to less than significant under CEQA.

Because the site has low paleontological sensitivity, construction activities are not expected to significantly affect paleontological resources.

4.0 Location 30 - SR 99 Realignment from Ashlan Avenue to Clinton Avenue (Fresno County)

In Fresno County, the HST Project is on an elevated structure that parallels Golden State Boulevard north of Ashlan Avenue, then continues along the west side of the UPRR railyard over Clinton Avenue. The existing SR 99 mainline facilities between Clinton Avenue and Ashlan Avenue are a north-south six-lane highway adjacent to the west side of the UPRR railyard, with southbound on- and off-ramps at Shields Avenue, and on-ramps at Dakota Avenue and Princeton Avenue. In order to facilitate the proposed HST alignment, SR 99 would be realigned and shifted approximately 80 feet to the west, between Clinton Avenue and Ashlan Avenue. The location of this realignment is shown on Figure 4-1. The proposed SR 99 mainline would maintain six mixed-flow through lanes and add one auxiliary lane in each direction between Clinton Avenue and Ashlan Avenue.

The southbound on- and off-ramps are non-standard design features and would be eliminated at Dakota Avenue, Shields Avenue, and Princeton Avenue. The SR 99 interchange at Clinton Avenue would be modified, and the Clinton Avenue bridge overcrossings at SR 99 and UPRR would be replaced to accommodate the HST guideway aerial structures. The proposed modification of the Clinton Avenue interchange is a tight diamond configuration with capacity considerations for adjusted traffic volumes resulting from the closures of the southbound ramps at Dakota Avenue, Shields Avenue, and Princeton Avenue. The northbound off-ramp and southbound on-ramp at Ashlan Avenue interchange would be reconstructed at the conform point to SR 99.

Currently, a frontage road, Parkway Drive, runs north-south along the west side of SR 99. The SR 99 realignment would eliminate the frontage road from Clinton Avenue to 1,300 feet south of Ashlan Avenue. Local roads would be improved if necessary to provide access to existing businesses along Parkway Drive at Dakota Avenue and Valentine Avenue. South of Clinton Avenue, local roads at Vassar Avenue, Pleasant Avenue, and Woodson Avenue would also be improved to provide new access due to the modification of the Clinton Avenue southbound on-ramp to SR 99 and the removal of Parkway Drive. Figure 4-2 illustrates the modifications for SR 99 realignment from Ashlan Avenue to Clinton Avenue.

4.1 Affected Environment and Environmental Consequences

4.1.1.1 Affected Environment

The following resources would not be affected by proposed HST modifications of the SHS, and are not discussed further in this section: electromagnetic fields and electromagnetic interference, agricultural lands, and parks, recreation, and open space.

Transportation

The SR 99 realignment follows a portion of the SR 99 alignment in the northwest region of the City of Fresno. Southbound on- and off-ramps at Dakota Avenue, Shields Avenue, and Princeton Avenue, and a northbound off-ramp and southbound on-ramp at the Ashlan Avenue interchange are within the SR 99 realignment footprint. In addition, the frontage road, Parkway Drive, which runs parallel to the west of SR 99, is located within the realignment footprint between Clinton Avenue to approximately 1,300 feet south of Ashlan Avenue. Other local roads that would also be affected by the SR 99 realignment are Valentine Avenue, Vassar Avenue, Pleasant Avenue, and Woodson Avenue.

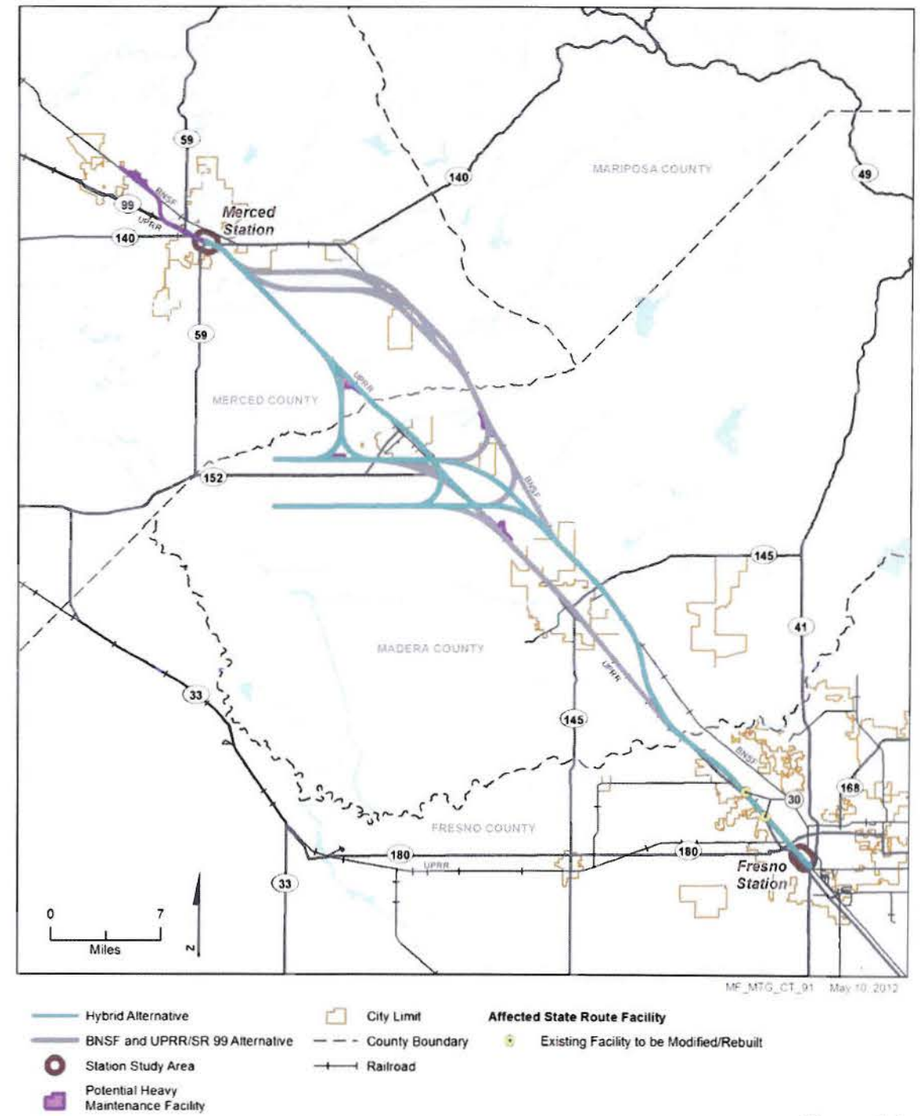


Figure 4-1
Location of HST Modifications of SR 99 Realignment from Ashlan Avenue to Clinton Avenue

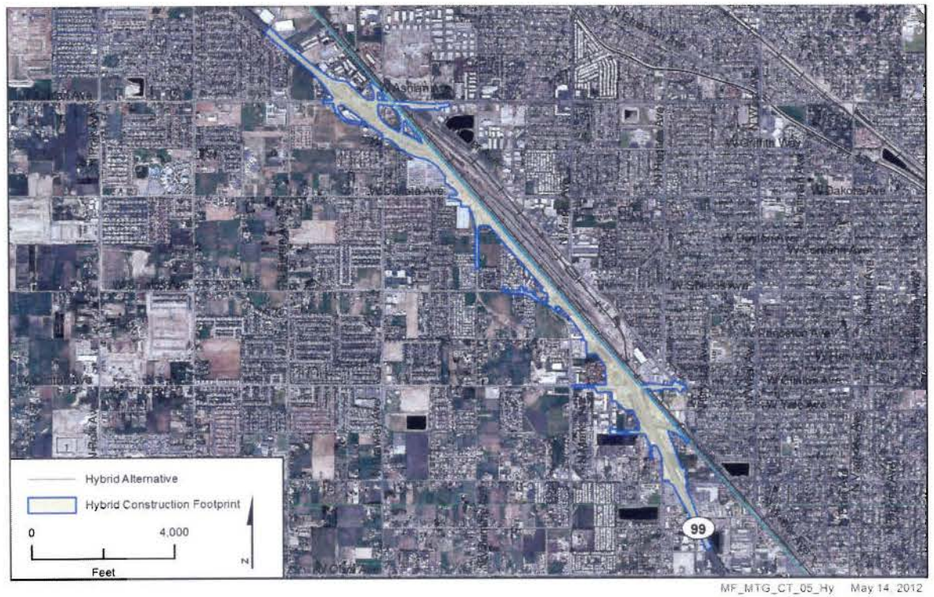


Figure 4-2
Location No. 30 - SR 99 Realignment from Clinton Avenue to Ashlan Avenue

Air Quality and Global Climate Change

The proposed modification would be located in the SJVAB, which encompasses the southern two-thirds of California's Central Valley. Three general classes of air pollutants are of concern for this project: criteria pollutants, toxic air contaminants, and GHGs. Criteria pollutants are those for which EPA and the State of California have set ambient air quality standards or that are chemical precursors to compounds for which ambient standards have been set.

At the regional level, the SR 99 Realignment modification is included in the Fresno 2011 Regional Transportation Plan (RTP; Council of Fresno County Governments 2010) (Listed as: California High-Speed Rail Project-SR 99 Realignment and Add Auxiliary Lane, p. 1 of the 2011 Formal Amendment No. 1 Change Report) and therefore is included in the RTP's air quality conformity determination.

According to the CO hot spot analysis, the modification would not exceed the CO National Ambient Air Quality Standards for the intersections evaluated. The modification is not an air quality concern for particulate matter and, therefore, meets the requirement for a PM_{10} and $PM_{2.5}$ conformity analysis. The SR 99 realignment modification demonstrates conformity at the project level.

Noise and Vibration

In the vicinity of the SR 99 realignment from Ashlan Avenue to Clinton Avenue, traffic on SR 99 and freight trains on the UPRR tracks dominate the noise exposure. Sources of vibrations include UPRR freight trains, Amtrak passenger trains, and truck traffic on SR 99. Potential noise effects resulting from the SR 99 realignment from Ashlan Avenue to Clinton Avenue would be associated with moving SR 99 closer to sensitive receptors, because no change in capacity would result from the modifications. Land uses surrounding the SR 99 realignment from Ashlan Avenue to Clinton Avenue are primarily residential, commercial, and industrial.

Public Utilities and Energy

PG&E provides electricity to much of California, from approximately Bakersfield to the Oregon border. PG&E also is the only natural gas service provider for the region and is responsible for maintaining the infrastructure for natural gas distribution within the study area of both alignments. A high-pressure petroleum pipeline owned by Kinder Morgan and a natural gas distribution line are parallel to SR 99 in the study area.

The primary telecommunications service carrier and provider in the study area is AT&T (AT&T Knowledge Ventures, LLP 2007). The study area also contains telecommunications lines (cable and telephone) and fiber optic lines that are owned or leased by other utility providers. A underground telephone line and a fiber optic line are located parallel to SR 99 in the study area.

The City of Fresno's existing water system consists of about 1,740 miles of transmission and distribution pipelines, 250 groundwater wells, a 30-million-gallon-per-day surface water treatment facility, storage facilities, and booster pump facilities. The distribution system is divided into four quasi-pressure zones to help regulate system pressures (West Yost Associates 2008). Within the city, a system of groundwater wells pump water into a citywide distribution system. The groundwater, a bicarbonate-type water, generally meets primary and secondary drinking water requirements for municipal water users. Approximately 20 million gallons per day of treated surface water from the treatment facility supplements groundwater supplies. There are numerous sewer and water lines that cross the HST footprint.

Biological Resources and Wetlands

Wetlands

There is a constructed watercourse within the project footprint parallel to Valentine Avenue that is considered a jurisdictional wetland; and there are additional wetlands within 1 mile of the existing SR 99 realignment project.

Wildlife Species

There are no critical habitat areas identified for threatened or endangered wildlife species within 1 mile of the project.

Plant Species

There are no critical habitat areas identified for threatened or endangered plant species within 1 mile of the project.

Wildlife Movement Corridors

There are no wildlife movement corridors within 1 mile of the project.

Hydrology and Water Resources

There is a constructed watercourse parallel to Valentine Avenue within the project footprint. The modification is located within the Kings groundwater subbasin.

Geology, Soils, and Seismicity

The SR 99 realignment vicinity is characterized by a very flat ground surface, with the primary changes in ground surface elevation occurring at the 20 to 24 river and stream crossings. Overall, soils are stable, although localized deposits of loose coarse-grain soil and soft fine-grain soil can be encountered, particularly near streams and rivers. No appreciable difference in soil type was identified going from north to south. Groundwater is generally located below 50 feet, except north of Merced and near rivers and streams. Soils along this corridor should be relatively easy to excavate, although groundwater control could require special consideration at some locations.

The characteristics of near-surface soils include medium to high shrink-swell characteristics, medium to high corrosivity to uncoated steel and concrete, and moderate to high wind and water erosion potential. The primary hazard for the overall HST alignment is strong ground shaking. The level of shaking is generally similar along the alignment and is sufficient to cause slumps in slopes; liquefaction of saturated, loose, cohesionless soil; and liquefaction-related effects. These effects are expected to be more prevalent near rivers and streams where slopes are steeper and groundwater tends to be shallower. There are no active faults that cross the study area or are located within 25 miles of the corridor. There are no active oil, gas, or geothermal wells in the immediate area, but there are two active sand and gravel producers near the City of Fresno.

Hazardous Materials and Wastes

The study area within the City of Fresno is a dense commercial/industrial zone that has several sites with known contamination. The sites are in various stages of investigation or remediation. There are three historical PECs, two conceivable PECs, and one current PEC within the study area (see Table 4.1-1). Most of these sites involve the release of petroleum hydrocarbons to soil or groundwater.

Table 4.1-1
Potential Environmental Concerns within Study Area for Evaluation of the SR 99 Realignment from Ashlan Avenue to Clinton Avenue

Historical		
Private garage	4011 W Ashlan Avenue, Fresno	LUST cleanup site, gasoline release to soil, case closed 2007.
Fuels 4 U	1921 Motel Drive, Fresno	UST removal/closure of 5 tanks; former contaminated site/cleanup complete.
Auto Parts Distributor	2021 Weber Avenue, Fresno	LUST cleanup site, UST removal, gasoline release to groundwater, case closed 2003.
Conceivable		
Snappy Food Store	4095 Golden State Boulevard/Motel Drive, Fresno	Fueling station; potential petroleum hydrocarbon contamination if UST or AST leaks or spills occur.
Unocal Fresno Bulk Plant (Fuel refinery and storage)	3220 S Parkway, Fresno	Fueling station; potential petroleum hydrocarbon contamination if UST or AST leaks or spills occur.
Current		
Seiberts Oil Company	2837 N Parkway Drive, Fresno	Tank removals in 1998 discovered gasoline and diesel contamination of soil. Excavated soils classified as hazardous waste and sent to Kettleman Landfill. Supplemental site investigation for contaminated soils completed in 2009; soils contaminated with petroleum hydrocarbons still exist, and may eventually contaminate groundwater.

Notes:
AST = aboveground storage tank
LUST = leaking underground storage tank
UST = underground storage tanks

The Siebert Oil Company site is considered to present a manageable level of risk because the nature of potential contamination is better known, based on existing investigation data. The contaminant is not, relatively, as toxic or difficult to treat.

Safety and Security

The SR 99 realignment modification is located in an industrial/commercial area in the northeast region of the City of Fresno. Realignment of SR 99 in this area would include closing a local frontage road, and modification of adjacent surface streets to maintain access. In cases where the existing facilities in the project vicinity have non-standard features, the non-standard design will be corrected as part of this SHS modification.

Because of the industrial character of the area surrounding the SR 99 realignment, pedestrian traffic on the affected local roads is minimal, and there are no designated bike paths within the project vicinity. There are no emergency service facilities within several miles of the realignment site.

Socioeconomics, Communities, and Environmental Justice

The SR 99 realignment is located in the City of Fresno along the SR 99 corridor. Table 4.1-2 shows existing and projected population characteristics for Fresno County and the State of California. The project is surrounded by industrial, commercial, and residential land uses.

Table 4.1-2
Existing and Projected Population Characteristics for Evaluation of the SR 99 Realignment from Ashlan Avenue to Clinton Avenue

Area	2000	2009	2035	Change in Population 2009–2035 (%)	Average Annual Growth Rate 2009–2035 (%)
Fresno County	799,407	953,761	1,519,325	59.3%	2.4%
California	33,873,086	38,648,090	51,747,374	33.9%	1.4%

Source: California Department of Finance (2010).

According to the U.S. Census Bureau (2000), the median age in Fresno County in 2000 was close to 30 years; average household size was 3.2 people; married couples accounted for about 54 percent of all households; and the percentage of the population with a disability was about 22 percent for all age categories.

Within Fresno County, the Hispanic population comprised the largest percentage of the population (above 50 percent). The Caucasian, non-Hispanic population represents about 35 percent of the population. The percentage of individuals living below the poverty level in Fresno County was about 22.9 percent based on 2000 Census data and from 22.5 percent based on the ACS data for cities and counties. The ACS data (U.S. Census Bureau 2009) indicate that median household incomes have increased in the Fresno County. The majority of the low-income populations are located in the City of Fresno.

Station Planning, Land Use, and Development

The SR 99 realignment from Ashlan Avenue to Clinton Avenue modification is located in Fresno County, along the SR 99 corridor within the City of Fresno. Land uses surrounding the project are industrial, commercial, and residential.

Aesthetics and Visual Resources

The HST modifications of the SR 99 realignment from Ashlan Avenue to Clinton Avenue would be located within the Fresno Landscape Unit. The project site is urban in character, with a number of uses of varying densities—commercial, industrial, and residential—adjacent to the transportation corridor in which both the SHS and HST projects are proposed. Railyards are adjacent to the east of a substantial portion of SR

99 in this area, with only a few residential areas within 0.1 mile of the highway and rail corridor. The SR 99 realignment from Ashlan Avenue to Clinton Avenue would be in an area of moderately low visual quality.

The majority of viewers would be drivers on SR 99 and adjacent local roadways, for whom viewer sensitivity is assumed to be low. Nearby sensitive viewers of the project site include people residing in a senior citizen facility with a direct view toward both projects, and residences with mostly partial views toward both projects. Residents are assumed to have high viewer sensitivity.

Cultural Resources and Paleontological Resources

There are no known historical or archaeological resources within the Merced to Fresno HST Project APE in the vicinity of the SR 99 realignment. The realignment site is underlain by unknown quaternary deposits that have low paleontological sensitivity.

4.1.1.2 Environmental Consequences

Transportation

Project-related construction traffic could contribute to increased travel delays and interference with pedestrians, bicyclists, and transit vehicles. Also, construction traffic may create an operational hazard or result in inadequate emergency access or loss of access to community facilities. During the construction period, impacts might result from a substantial increase in heavy truck traffic as materials are brought to the project site and demolished or excavated materials are hauled away. Construction activities could require temporary lane or road closures and underground utility work. Construction activities could also cause temporary disruption of transportation system operations and possible damage to components of the roadway system such as pavement and bridges.

All truck traffic, either for excavation or for transporting construction materials to the site, would use designated truck routes. The Authority will develop a detailed construction access plan for the project prior to beginning any construction activities. The construction access plan will be reviewed and approved by the City of Fresno. The movement of heavy construction equipment such as cranes, bulldozers, and dump trucks to and from the site would occur during off-peak hours on designated truck routes. Heavy construction equipment would generally remain onsite until that job is completed; such equipment would not be moved repeatedly to and from the construction site via public streets.

Trips for construction workers would generally occur outside of the 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 too far from project site. Construction of the remote parking lots as the first phase of construction would make them available for use by construction workers throughout the project.

Avoidance and minimization measures would be incorporated to reduce construction impacts to negligible under NEPA and less than significant under CEQA. With mitigation measures, including development of a Construction Transportation Plan and maintenance of access for pedestrians, bicycles and public transit during construction, temporary construction impacts on transportation as a result of the SR 99 realignment would be negligible under NEPA and less than significant under CEQA.

A traffic assessment was conducted to evaluate the many proposed options for geometric improvements to SR 99 in Fresno (from Ashlan Avenue to Clinton Avenue). The analysis addressed both freeway operations and the traffic conditions at intersections in the study area adjacent to the proposed realignment. The SR 99 realignment would affect northbound and southbound SR 99.

For existing plus project conditions, freeway operations results for northbound SR 99 are as follows:

- South of Ashlan Avenue, operations under existing plus project conditions are the same or better than existing conditions.

- North of Ashlan Avenue, operations under existing plus project and existing conditions are the same because the mainline improvements end south of Ashlan Avenue.

For existing plus project conditions, freeway operations results for southbound SR 99 are as follows:

- North of Ashlan Avenue, operations under existing plus project and existing conditions are the same because the mainline improvements end south of Ashlan Avenue.
- Operations from Ashlan Avenue to Clinton Avenue improve under existing plus project conditions because of the addition of the auxiliary lane and the elimination of several southbound ramps. Overall, the peak period LOS improves from LOS D under existing conditions to LOS B under existing plus project conditions.

Therefore, this would be a negligible impact under NEPA, and it would be less than significant under CEQA.

For future (2035) plus project conditions, freeway operations results for northbound SR 99 are as follows:

- Up to Ashlan Avenue, operations under future (2035) plus project conditions are the same or better than under future (2035) No Project conditions.
- North of Ashlan Avenue, operations under future (2035) plus project and future (2035) No Project conditions are the same because the mainline improvements end south of Ashlan Avenue.

For future (2035) plus project conditions, freeway operations results for southbound SR 99 are as follows:

- North of Ashlan Avenue, operations under future (2035) plus project and future (2035) No Project conditions are the same because the mainline improvements end south of Ashlan Avenue.
- Operations from Ashlan Avenue to Clinton Avenue improve under future (2035) plus project conditions because of adding the auxiliary lane and eliminating several southbound ramps. Overall, the peak period LOS improves from LOS E under future (2035) No Project conditions to LOS C under future (2035) plus project conditions.
- The analysis indicates a significant impact south of the existing southbound parkway on-ramp. Operations under future (2035) plus project conditions are worse than future (2035) No Project conditions because the redistribution of traffic creates a concentrated merge at the southbound Clinton Avenue on-ramp. Therefore, this would be a substantial impact under NEPA, and it would be a significant impact under CEQA.

The following signalized intersections would have impacts with the SR 99 realignment modification:

Existing Plus project:

- Clinton Ave/Weber Ave
- Dakota Ave/Brawley Ave

Future Plus Project:

- Clinton Avenue and Brawley Avenue
- Clinton Avenue and Marks Avenue
- Clinton Avenue and SR 99 SB Ramps
- Clinton Avenue and Weber Avenue
- Shields Avenue and Brawley Avenue
- Dakota Avenue and Brawley Avenue
- Ashlan Avenue and SR-99 SB Ramp/Parkway Drive

A southbound auxiliary lane (identified as mitigation measure TR #6 in the Final EIR/EIS and in Section 5.2 of this attachment) would be added to SR 99 to reduce impacts resulting from the SR 99 realignment, which will reduce impacts identified for the SR 99 realignment to negligible under NEPA and less than significant under CEQA.

Air Quality and Global Climate Change

The SR 99 realignment project is included in the Fresno 2011 RTP (Listed as: California High-Speed Rail Project-SR 99 Realignment and Add Auxiliary Lane, p. 1 of the 2011 Formal Amendment No. 1 Change Report) and therefore is included in the RTP's air quality conformity determination. The regional impact on air quality from operation of the SR 99 realignment would be negligible under NEPA and less than significant under CEQA.

According to the CO hot spot analysis, the project would not exceed the CO National Ambient Air Quality Standards for the intersections evaluated. The project is not an air quality concern for particulate matter and, therefore, meets the requirement for a PM_{10} and $PM_{2.5}$ conformity analysis. Localized impacts resulting from changes in traffic patterns would be negligible, as demonstrated by the CO and PM hot-spot analyses. The SR 99 realignment would have a negligible mobile source air toxic impact under NEPA and would be less than significant under CEQA. In addition, after implementing Naturally Occurring Asbestos Survey (NOA) surveys, an asbestos impact would be negligible under NEPA and less than significant under CEQA.

Noise and Vibration

Land uses in the vicinity of the SR 99 realignment are primarily residential, commercial, and industrial. For residential land use, the potential for temporary construction noise impact would be limited to locations within approximately 141 feet of the alignment. However, the potential for noise impact from nighttime construction could extend to residences as far as 446 feet away. There are sensitive receptors within each of these distances of the project; therefore construction impacts could be substantial under NEPA and significant under CEQA. With construction mitigation measures, noise impacts during construction would be negligible under NEPA and less than significant under CEQA.

The proposed change in SR 99 would shift the roadway approximately 80 feet to the west, closer to a number of residences. The project also would include the addition of an auxiliary lane in each direction. The changes in the horizontal and alignment of SR 99 would move noise sources closer to sensitive receptors. In the Fresno vicinity, severe noise impacts are projected at residences, churches, and parks. However, because the noise environment surrounding the locations is dominated by traffic on SR 99 and freight trains on the UPRR tracks, primarily moderate impacts on sensitive receptors are anticipated.

A detailed assessment of potential noise impact from the highway was completed. The proposed changes would shift SR 99 closer to the residences west of SR 99, which would result in increased noise levels. Noise impacts are projected to occur along the SR 99 relocation for 221 residences and 1 hotel. The noise impacts shown in Table 4.1-3 would be substantial under NEPA and would be significant under CEQA.

This area is a potential location for implementation of noise mitigation for the HST Project. There would be no vibration impacts in the Project area because of the limited propagation of vibration through the soils in the Project corridor and the low vehicle input force. If noise mitigation measures are implemented, in accordance with Caltrans and HST noise policies, noise and vibration impacts associated with operation of the SR 99 realignment would be negligible under NEPA and less than significant under CEQA.

Public Utilities and Energy

Construction could require the temporary shutdown of utility lines, such as water, electricity, or gas, to safely move or extend these lines. The shutdown could interrupt utility services to industrial, commercial, agricultural, and residential customers. Project design and phasing would reduce the duration of a shutdown to the minimum time necessary to conduct construction work safely. Because of the short

duration, this effect would be negligible under NEPA (see Section 5.1, Project Design Features). Under CEQA, this impact would be considered less than significant.

During construction, there is a potential for accidental disruption of utility systems, including overhead utility lines, such as telephone and cable television, and buried utility lines, such as water, wastewater, and natural gas lines. Such accidents could impair the health and safety of nearby workers and residents and could result in property damage. Probing for existing utilities prior to start of construction would reduce the risk of accidental service interruptions.

Clearing of vegetation, removal of existing asphalt and gravel, and demolition of existing structures during construction would generate waste. Because the local landfills have sufficient capacity to accommodate the waste generated, the effect is considered to be negligible under NEPA and would be less than significant under CEQA.

Energy efficiency is assumed for the offsite production of construction materials (Authority and FRA 2005). This assumption is based on the cost of nonrenewable resources and the economic incentive for efficiency. Standard BMPs would be implemented onsite so that non-renewable energy would not be consumed in a wasteful, inefficient, or unnecessary manner. The indirect use of energy for construction would be negligible under NEPA and would be less than significant under CEQA.

Biological Resources and Wetlands

Sensitive aquatic communities within the SR 99 realignment footprint (see Table 4.1-4) include 1.39 acres of constructed basin, 0.21 acre of constructed watercourse, and 0.29 acre of open water. These communities would be affected as a result of construction and operation of this SHS modification. No sensitive terrestrial communities would be affected (see Table 4.1-5).

Table 4.1-4
Location No. 30 - Potentially Affected Sensitive Aquatic Communities

HST Project	Vernal Pools[b]	Other Seasonal Wetlands[b]	Fremont Cottonwood Forested Wetlands	Coastal and Valley Freshwater Marsh	Natural Watercourses	Constructed Basins	Constructed Watercourses	Open waters[b]
Acres of Impact	0	0	0	0	0	1.39	0.21	0.29

Table 4.1-5
Location No. 30 - Potentially Affected Terrestrial Communities

HST Project	Developed Areas	Agricultural Lands	Ruderal Vegetation	California Annual Grassland	Great Valley Mixed Riparian Forest	Other Riparian	Eucalyptus Woodlands
Acres of Impact	186.70	0.54	14.41	0	0	0	0

Direct impacts on biological communities typically would occur as a result of the removal of vegetation and wildlife habitat during construction activities within and adjacent to the construction footprint, and from the disturbance (trampling and crushing) of plants by vehicular and construction-related traffic in

the area. However, as previously noted, no sensitive biological communities are within the SR 99 realignment project footprint. Any vegetated area requiring removal as part of construction (access and laydown areas) would be restored after construction activities are completed.

Indirect impacts on biological communities would include the following:

- Erosion, siltation, and drainage runoff into sensitive biological communities and potentially jurisdictional waters
- Soil and water contamination from construction equipment leaks
- Construction-related dust that affects plants by reducing their photosynthetic capability (especially during flowering periods)
- Invasion by exotic species
- An increased risk of fire (e.g., construction equipment use and smoking by construction workers).

During the project period, the biological communities that occur within the construction footprint are anticipated to be directly disturbed for maintenance and the introduction of other hardscape, fencing, and landscape features. The existing resource values would be permanently removed during site preparation and continue to be during the life of the Project. Preconstruction surveys would be performed as appropriate within the project area for nesting birds, bat roosts, and noninundated wetlands and heavily degraded vernal pools that could be suitable habitat for vernal pool branchiopods. Because of the dominant urban landscape, impacts to biological resources and wetlands would be negligible under NEPA and less than significant under CEQA.

Hydrology and Water Resources

Indirect effects during construction could include localized flooding and erosion or siltation caused by alteration of existing drainage patterns. Soil-disturbing activity during construction (excavation and grading) can lead to erosion and sedimentation due to the exposure of bare soils, which are more likely to erode than vegetated areas that provide infiltration, retention, and dispersion. In addition, construction activities could result in accidental releases of construction-related hazardous materials, including petroleum products and high-pH stormwater from concrete that could impact surface water quality. Effects during construction on drainage and stormwater runoff patterns, as well as groundwater quality, would be reduced with implementation of BMPs and adherence to water quality regulations, as described in Section 5.1, Project Design Features. A Construction SWPPP would be prepared and implemented for construction activities as part of project design (see Section 5.1, Project Design Features) and the project would also comply with the Central Valley RWQCB waste discharge requirement for dewatering and other low threat discharges. All temporary changes to stormwater drainage patterns and runoff resulting from the HST encroachments would be minimal and would have negligible impacts under NEPA and a less than significant impact under CEQA because they would be temporary, would not alter drainage sufficiently to displace a volume large enough to increase flood risk, and construction would not occur in stream or river channels during the winter storm season.

Project facilities would result in changes to existing drainage, as well as increased runoff from project impervious surfaces. Direct impacts on surface water from operation of the project could include stormwater runoff from the project or substantial alteration of the existing drainage pattern, and could cause flooding, erosion, or sedimentation, which could result in changes to the hydrology, hydraulics, and connectivity of natural watercourses, including floodways.. During the detailed design phase, features would be included in the project to provide adequate stormwater capacity and to allow the project to remain operational during flood events. With design features for stormwater management and flood protection, impacts on existing drainage patterns would have negligible impacts under NEPA and would be less than significant under CEQA.

Geology, Soils, and Seismicity

Because of flat topography, competent soils, and groundwater at depths of 50 feet or more, only a limited number of environmental consequences are possible during construction relative to geology, soils, and seismicity. The risk areas are located near streams and river crossings where soils tend to be softer and groundwater is often closer to the ground surface. Potential construction impacts include localized deposits of low-strength soils resulting in slumps or slope failures, ground settlement, soil erosion, and difficult excavations in localized areas due to hardpan and shallow groundwater. Where geologic hazards exist, well-proven methods outlined in standard guidance and engineering standards are available to address these hazards. Risks from unstable soils, settlement, and erosion are considered to have negligible impacts under NEPA and would be less than significant under CEQA because of the incorporation of appropriate construction BMPs and standard engineering design measures. Potential project impacts are similar to construction impacts (slumps or slope failures, soil settlement, and erosion), but longer in duration. The engineering design would incorporate guidelines issued by AASHTO, AREMA, Caltrans, and IBC. With proper incorporation of these guidelines, the effects on public health from geologic hazards would be negligible under NEPA and to a less than significant impact under CEQA

The likelihood of a large seismic event occurring during construction is considered low because of the relatively short duration of construction relative to the frequency of large earthquakes. With implementation of normal design standards, guidelines, and standard safety practices during construction (see Section 5.1, Project Design Features), these risks would be negligible under NEPA and would be less than significant under CEQA.

Hazardous Materials and Wastes

Modifications to the SHS would require the demolition of roadways containing asbestos and lead-based materials that would require specialized procedures and equipment, and appropriately certified personnel. ACM might be found in roadway materials, such as the material used before the 1980s for expansion joints in the pavement. Although lead is no longer used in gasoline formulations, lead emissions from automobiles (aerially deposited lead)are a recognized source of contamination in soils along roadways. Surface and near-surface soils along heavily used roadways have the potential to contain elevated concentrations of lead (EPA 2009). The roadways intended for demolition that were constructed before 1980 would be surveyed for asbestos, while those constructed before 1971 would be surveyed for lead. A demolition plan would be prepared for any location with positive results for asbestos or lead. The plan would specify how to appropriately contain, remove, and dispose of the asbestos and lead-containing material while meeting all requirements and BMPs to protect human health and the environment.

In addition to roadway demolition, trenching and other ground-disturbing project construction activities could disturb undocumented soil or groundwater contamination. Construction of the proposed project would occur on some parcels known or suspected to contain contaminated soil or groundwater. Adverse impacts could result if construction activities inadvertently dispersed contaminated material into the environment. For example, dewatering activities during construction could cause contaminated groundwater to migrate farther in the groundwater table or cause contaminated groundwater to be released into streams. In addition, inadvertent disturbance of ACM could result in airborne asbestos fibers.

The Authority will prepare a construction management plan that prescribes activities for workers to follow in areas with suspected presence of undocumented soil or groundwater contamination based on visual observation or smell. The construction management plan will include (but is not intended to be limited to) provisions for daily briefings of the construction staff prior to work regarding what to look for; a list of contact persons in case of a possible encounter with undocumented contamination; provisions for immediate notification of construction management; notification of the applicable local enforcement agency of the find; consultation with that agency; and protocols for further action. In such instances, construction activities would cease until it is determined, in coordination with regulatory agencies, that work can proceed without the risk of injury to persons or the environment. With the implementation of these standard precautions, the potential effects of inadvertent disturbance to hazardous materials or

wastes would be negligible under NEPA and would be less than significant under CEQA (see Section 5.2 for a list of avoidance and minimization measures consistent with the commitments in the Program EIR/EIS documents).

Safety and Security

The overall effect of the SR 99 realignment would be to improve safety by correcting non-standard design features of the existing facility.

Safety of construction workers and the public could be compromised during construction and could result in accidents at construction sites and in temporary increases in risks to motor vehicle, pedestrian, and bicycle safety from traffic detours, as well as increased response times by law enforcement, fire, and emergency services personnel. However, standard implementation of a construction safety and health plan during construction would reduce risks to human health during construction and, therefore, impacts would be negligible under NEPA and would be less than significant under CEQA.

Temporary lane closures, detours, and the movement of construction vehicles would occur during project construction and potentially create a distraction to automobile drivers, pedestrians, and cyclists. Distraction and unfamiliarity with detours could lead to accidents. In addition, construction-related road closures, detours, and localized automobile congestion could increase the response time for law enforcement, fire, and emergency services personnel. Emergency evacuation times could also increase.

With implementation of standard design features, a Construction Transportation Plan, and operating and emergency response plans, the effect on motor vehicle, pedestrian and bicycle safety as well as on increased response times for emergency responders and their access to elevated tracks is anticipated to be negligible under NEPA and would be less than significant under CEQA.

Socioeconomics, Communities, and Environmental Justice

The construction of the SR 99 realignment from Ashlan Avenue to Clinton Avenue would occur in the City of Fresno, which has low-income and minority populations. Construction would result in temporary impacts on communities, such as temporary impacts on minority and low-income populations caused by dust, noise, and visual changes.

Construction of the of the SR 99 realignment from Ashlan Avenue to Clinton Avenue would result in effects on communities of concern; however, the construction impacts would not be disproportionately high and adverse because mitigation measures and project design features have been identified that would reduce the effects for most of the environmental elements, resulting in a moderate effect (see Section 5.1, Project Design Features). The remaining elements would not result in adverse effects on communities of concern that are greater in magnitude than those effects on the general population. Additionally, project outreach will continue during design to seek input on impacts and mitigation, and therefore, collectively, these impacts would not be considered substantial under NEPA.

The average unemployment rate for Merced, Madera, and Fresno counties was 17.8 percent in 2010, with 104,367 unemployed (CEDD 2010a). A study by Eberhardt School of Business (2009) indicates that CEDD reported a loss of 32,300 construction jobs in the San Joaquin Valley between June 2006 and August 2009. As with any large construction project, an influx of population is expected; however, because of the high unemployment level and the number of construction workers that have been lost based on the Eberhardt study, many of these new construction jobs could be filled by residents in the region. The construction of the HST Project has the potential to result in beneficial effects related to employment for communities of concern, with the implementation of mitigation.

The impacts of the HST Project on community interactions in the vicinity during construction would have a moderate impact because the construction would not divide or affect the integrity of neighborhoods within the communities. Although access to some neighborhoods would be disrupted and detoured for short periods of time during construction, there would be continued access to neighborhoods. Because the construction of the of the SR 99 realignment from Ashlan Avenue to Clinton Avenue does not

interfere with interaction or divide the communities, these impacts are not substantial under NEPA or significant under CEQA.

Anticipated acquisitions for the SR 99 realignment from Ashlan Avenue to Clinton Avenue are presented in Table 4.1-6. The project would require full acquisition of 20 parcels totaling approximately 11 acres. Partial acquisition of 76 parcels totaling approximately 192 acres would also be required. Approximately 37 commercial units (30 in the Commercial land use category, 1 in the Commercial/ Multifamily Residential land use category, 1 in the Commercial/Residential land use category, and 5 in the Health/Hospital land use category) with displacement of an estimated 671 employees. (The number of displaced employees was computed by using averages of the number of employees per establishment for all NAICS codes by county and by zip code. For Fresno there would be an estimated displacement of 16 employees per establishment.) A total of 40 multifamily residential units and 1 single-family residential unit (3 from Commercial/ Multifamily Residential, 1 from Commercial/Residential, and 36 from Multifamily Residential land use categories) would potentially be displaced. This would result in approximately 126 residents potentially displaced. (The number of displaced residents was estimated using an average of 3.07 people per residential unit in Fresno.)

Table 4.1-6
Potential Acquisitions and Displacements for Evaluation of the SR 99 Realignment from Ashlan Avenue to Clinton Avenue

	Acquisitions/Displacements			
Land Use[a]	Number of Parcels	Acquisition Type	Acreage	Number of Units
Agricultural	1	Partial	0.06	0
Agricultural/Residential	1	Partial	0.08	0
Commercial	8	Full	6.47	7
Commercial	37	Partial	15.17	25
Commercial/Multi-family Residential	1	Partial	1.94	4
Commercial/Residential	1	Partial	1.23	1
Health/Hospital	1	Partial	9.20	5
Industrial	2	Partial	0.13	0
Multifamily Residential	1	Full	0.19	0
Multifamily Residential	2	Partial	4.77	37
Municipal	1	Full	1.01	0
Municipal	7	Partial	153.96	0
Single-family Residential	4	Partial	0.23	0
Utility/Railroad	4	Partial	0.74	0
Vacant	10	Full	3.67	0
Vacant	15	Partial	4.68	0
Total	**96**	**-**	**203.53**	**79**

[a]Only land uses with acquisitions/displacements are included.

The HST Project would not result in the displacement of substantial amounts of housing or people that would necessitate the construction of replacement housing. There are a suitable number of relocation opportunities in the study area. The project will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. This act and its amendments provide mandatory rules and requirements on how federal, state, and local agencies compensate for impacts on property owners or tenants who need to relocate if they are displaced by a federally funded project. At the regional level, overall impacts of property acquisitions would be moderate under NEPA and less than significant under CEQA.

Station Planning, Land Use, and Development

Construction of the SR 99 realignment would result in the conversion of existing land uses to transportation-related land uses, both permanently and during the construction period. For the most part, these modifications would follow existing transportation corridors where the land use patterns are already related to transportation; therefore, impacts related to land use patterns would be minimized. Land use alterations or land use pattern impacts during the construction period are considered negligible under NEPA and less than significant under CEQA.

The acquired land would constitute a small portion of residential, commercial, and industrial land uses and would not result in material changes in regional or local land uses, or development patterns. The footprint of the project is not anticipated to result in negative impacts on land use patterns. The project would not cause a substantial change in land use patterns or intensity that is incompatible with adjacent land uses. In addition, the function or interaction of adjacent land uses would not change. These effects are considered moderate under NEPA and less than significant under CEQA.

Aesthetics and Visual Resources

The proposed HST Project would substantially alter the existing visual character within the Fresno Landscape Unit only where the HST alignment would encroach established sensitive areas and would be highly visible, visual quality would degrade and visual character would be altered. However, most areas would maintain their visual quality and character.. Views in the highly developed SR 99 corridor between Ashlan Avenue and Clinton Avenue are comparable to views in the Downtown Fresno area, where the HST Project would result in a negligible effect under NEPA and less than significant under CEQA. No mitigation measures would apply to the portion of the HST Project in the vicinity of the SR 99 realignment.

Temporary adverse impacts would result from temporary activities during construction, including pile driving, partial or total road and lane closures, detours (vehicular and pedestrian), partial/limited access, delivery of materials and equipment, and potentially the establishment of a concrete batch plant. Most of the staging sites would be located adjacent to the proposed HST alignment, in areas that are generally rural or industrial in nature. Equipment and earthmoving activities are not visually intrusive in these types of settings; therefore, there would be a negligible effect and a less than significant impact on aesthetics and visual resources.

Cultural Resources and Paleontological Resources

There are no known archaeological or historical resources at this site. However, soil excavation or compaction resulting from the use of heavy machinery on the construction site or in staging areas may affect the integrity of artifact-bearing deposits associated with undiscovered archaeological sites. Disturbance and removal of archaeological resources could result in adverse effects on archaeological resources under Section 106 and could cause substantial adverse changes in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 and is therefore a substantial impact under NEPA and a significant impact under CEQA. If intact archaeological deposits are discovered during construction, all work within 50 feet of the resources will halt, and the project proponent will consult with a qualified archaeologist to assess the significance of the find, according to CEQA Guidelines

Section 15064.5. All significant cultural materials recovered will be, as necessary and at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, and documentation according to current professional standards as determined in the project MOA. See Section 5.2 for a list of mitigation measures. Mitigation would reduce this impact to less than significant under CEQA.

Because the site has low paleontological sensitivity, construction activities are not expected to significantly affect paleontological resources.

5.0 Project Design Features and Mitigation Measures

Project design features and mitigation measures described in the Merced to Fresno Project Final EIR/EIS for each resource area that avoid or minimize impacts on resources have been excerpted and included in this section. Section 5.1 describes the various project design features that will reduce the HST Project's impacts. Table 5-1 lists each potential impact, the level of impact before mitigation, the prescribed mitigation measure or measures for that impact, and the impact level after mitigation. Specific details regarding each mitigation measure can be found in the Merced to Fresno HST Project Final EIR/EIS (Authority and FRA 2012a). Note that, because this text is excerpted directly from the Merced to Fresno HST Project Final EIR/EIS, references to Sections refer to sections in the EIR/EIS.

5.1 Project Design Features

5.1.1 Transportation

The Authority and FRA have considered avoidance and minimization measures consistent with the commitments in the Program EIR/EIS documents. 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**. Provide 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. Pedestrian access-limiting actions 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 should be maintained unless maintaining access would be unsafe for pedestrians.

3) **Maintenance of Bicycle Access**. Prepare specific construction management plans to address maintenance of bicycle access during the construction period. Bicycle access-limiting actions 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 should be maintained unless maintaining access would be unsafe for bicyclists.

4) **Restriction on Construction Hours**. Construction activities, such as material deliveries and construction employees arriving and departing the site, would generally occur outside the AM and PM peak periods of travel on weekdays in areas that experience congestion during those hours.

5) **Construction Truck Routes**. Deliver all construction-related equipment and materials on the local-government-designated truck routes. Prohibit heavy construction vehicles from accessing the site via other routes.

6) **Protection of Public Roadways and Railways (freight and passenger rail) during Construction**. Repair any structural damage to public roadways and railways (freight and passenger

rail), 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. For railways, a "shoofly" track would be constructed within the right-of-way, where necessary, 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. 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 or 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 would be maintained where feasible.

8) **Construction Transportation Plan**. The design-builder will prepare a detailed Construction Transportation Plan for the purpose of minimizing the impact of construction and construction traffic on adjoining and nearby roadways. The Construction Transportation Plan will be prepared in close consultation with the pertinent city or county, and will be reviewed and approved by the Authority prior to 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 would include a traffic control plan that includes, at 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 practical and where it would result in better traffic flow than 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 practical. Where road closures are required during construction, limit 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

- Project Design Features 1-7 and 9-10.

9) **Construction during Special Events.** Provide a mechanism to prevent roadway construction activities from reducing roadway capacity below pre-project capacity during major athletic events or other special events that attract a substantial number of visitors. Mechanisms to maintain roadway capacity include police officers directing traffic, special event parking, and use of traffic cones and within-the-curb parking or shoulder lanes for through traffic.

10) **Additional Features in the cities of Merced and Fresno.** In addition to the measures listed above, the Authority will also perform the following in the cities of Merced and Fresno:

- During construction, vehicle detection will be maintained on the existing, temporary, and/or new roadway alignment for all intersection approaches that have existing detection.
- Changeable message signs (CMSs) will be employed to advise motorists of lane closures or detours ahead. The CMSs will be deployed 7 days prior to 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 freeway interchanges will require CMS placement to the east to allow drivers to make alternate route decisions. In the case of work on Shaw Avenue in Fresno, recommended placement would be a CMS at Shaw Avenue just east of State Route 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 the City of Merced, will develop a traffic management plan on the surface transportation network to ensure minimum public safety service levels.
- During project construction, the alignment of roadways will be grade-separated and freeway overpasses to be reconstructed will be offset from the existing alignment to facilitate staged construction wherever possible.
- In Fresno in particular, Clinton Avenue over SR 99 and Ashlan Avenue over UPRR will be offset from their existing alignments to allow for the existing roadway to remain open while the new structure is being built. 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.
- 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.
- With regard to the existing railroad crossings at Divisadero, Tuolumne, and Stanislaus streets, two of the three crossings will remain open during construction.

5.1.2 Air Quality

The Authority and FRA have considered avoidance and minimization measures consistent with the 2005 Statewide Program EIR/EIS commitments. During project design and construction, the Authority and FRA

would implement measures to reduce impacts on air quality. These measures are considered to be part of the project and are summarized below:

- Trucks will be covered to reduce significant fugitive dust emissions while hauling soil and other similar material.
- All trucks and equipment will be washed before exiting the construction site.
- Exposed surfaces and unpaved roads will be watered three times daily.
- Vehicle travel speed on unpaved roads will be reduced to 15 miles per hour.
- Any dust-generating activities will be suspended when wind speed exceeds 25 mph.
- All disturbed areas, including storage piles, that are not being actively used for construction purposes will be effectively stabilized for dust emissions using water or a chemical stabilizer/suppressant, or covered with a tarp or other suitable cover or vegetative ground cover.
- All onsite unpaved roads and offsite unpaved access roads will be effectively stabilized for dust emissions using water or a chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities will be effectively controlled for fugitive dust emissions by an application of water or by presoaking. With the demolition of buildings up to six stories in height, all exterior surfaces of the buildings will be wetted during demolition.
- All materials transported offsite will be covered or effectively wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container will be maintained.
- All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, piles will be effectively stabilized for fugitive dust emissions using sufficient water or a chemical stabilizer/suppressant.
- Within urban areas, trackout will be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- Any site with 150 or more vehicle trips per day will prevent carryout and trackout.
- Use of low-VOC paint that contains less than 10% of VOC contents. (VOC, 10%). A Super-compliant or Clean Air paint that has a lower a VOC content than those required by South Coast AQMD Rule 1113, will also be used when available

5.1.3 Noise

The Authority and the FRA have considered avoidance and minimization measures consistent with the Statewide and Bay Area to Central Valley Program EIR/EIS commitments. FTA and FRA have guidelines for minimizing noise and vibration impacts (FRA 2005 and FTA 2006) at sensitive receptors that will be followed during construction.

5.1.4 EMI/EMF

Existing standards and regulations address many of the impacts identified in this analysis. The project would comply with applicable federal and state laws and regulations. Similarly, project design will follow the EMCPP to avoid EMI/EMC conflicts and to ensure the HST operational safety. Appendix 3.5-A, Applicability of Laws, Regulations, and Design Standards for EMI/EMF, in Volume II, provides a matrix that indicates relevant standards and regulations for the impacts discussed in Section 3.5.5, Environmental Consequences.

5.1.5 Public Services and Utilities

Mitigation strategies presented in the Program EIR/EIS documents have been refined and adapted for this project-level EIR/EIS. The project design incorporates precautions to avoid existing utilities and design elements that minimize electricity consumption (e.g., using regenerative braking, and energy-saving equipment and facilities). Refer to Section 3.8, Hydrology and Water Resources, for project design features for stormwater management and treatment.

5.1.6 Biological Resources and Wetlands

The Authority and FRA have considered avoidance and minimization measures consistent with commitments in the Program EIR/EIS Documents. The Merced to Fresno Section includes project design features such as those that minimize effects from crossing the San Joaquin River, effectively manage and reduce runoff and discharges, and facilitate wildlife movement.

5.1.6.1 Project Design Options for the San Joaquin River

A program-level environmental document on the SJRRP has been prepared (*Draft Program EIS/EIR for the San Joaquin River Restoration Program* [Reclamation and DWR 2011]). The location of the project crossing is in Reach 1, which has been identified as the reach where spawning may occur. During an initial coordination meeting with Reclamation and the DWR on June 6, 2011, it was determined that the project design would not conflict with the SJRRP; however, this will be further evaluated as part of the permitting process, including ESA Section 7 consultation with NMFS. The Authority would continue to coordinate with the SJRRP.

Since the release of the Merced to Fresno Section Draft EIR/EIS, additional coordination has occurred under Section 7 of the Federal Endangered Species Act with the USFWS and NMFS for the preparation and submittal of the Biological Assessments (BAs). This coordination, particularly with NMFS, has resulted in two project design options for the crossing of the San Joaquin River.

- One design option for the river crossing utilizes a continuation (as on upland areas) of the spacing of the columns of the elevated structure as it approaches the river crossing within the inundated river channel. The proposed configuration or span arrangement utilizes piers/foundations at a spacing of 110 feet and results in the placement of 3 piers within the wetted perimeter of the typical low flow channel of the river. Construction would require work in the river channel for placement of the piers.
- A second design option has a configuration that uses a combination of the typical precast segmental construction up to the north bank of the river with a two-span (320- to 160-foot) steel truss superstructure spanning the main portion of the low flow channel. This second design minimizes the need to enter the wetted perimeter of the low-flow river channel. Construction would require temporary work in the river channel, including for placement of temporary piers.

As required, the construction of foundations within the edge of the active waterway will use construction methods such as the installation of sheet pile cofferdams to isolate the activity from the water column to minimize the potential for adverse effects on anadromous fish within the construction footprint. In addition, for the installation of both temporary and permanent steel casings for cast-in-drilled-hole pile

construction, sheet piling for cofferdams, and pipe or H-piling for falsework, vibratory pile hammers will be used to minimize underwater acoustic impacts.

The number of foundation elements is directly related to the span arrangement necessary to meet the requirements for bridge hydraulics. Since the future crossing would be located upstream of the two existing bridge structures that carry SR 99 and the UPRR, the hydraulic effect of the placement of new piers within the river corridor on downstream structures and the geomorphology of the channel will be considered during the design of the final configuration of the structure. The HST crossing would be designed with the planned increase in river flows and would not conflict with the goals of the restoration flows.

Regardless of the design option, the HST crossing will be designed with due consideration for the anticipated increases in river flows resulting from the implementation of the SJRRP and to minimize any appreciable changes in scour, sediment transport and deposition, or changes in geomorphic processes that could alter habitat conditions in a manner that will impede the reestablishment of these species. The Authority, in partnership with the design-build team, will design and conduct a hydraulics/hydrology analysis with appropriate modeling tools and incorporate site-specific data, including the needed geotechnical investigations, to establish the design requirements, including sizing and siting of features, as well as construction techniques that are compatible with habitat conditions that support salmonid utilization of the San Joaquin River within the area impacted by the proposed HST crossing.

The design will be evaluated in consultation with NMFS, CDFG, Reclamation, and the USACE.

5.1.6.2 Project Design Features for Stormwater Management and Treatment

During the detailed design phase, the design-build team will evaluate each receiving stormwater system's capacity to accommodate project runoff. As necessary, this phase will include the following:

- Design onsite stormwater management measures, such as detention or selected upgrades to the receiving system, to provide adequate capacity.
- Design and construct onsite stormwater management facilities to capture runoff and provide treatment prior to discharge for pollutant-generating surfaces, including station parking areas, access roads, new road over- and underpasses, reconstructed interchanges, and new or relocated roads and highways.
- Consider the use of constructed wetland systems, biofiltration and bioretention systems, wet ponds, organic mulch layers, planting soil beds, and vegetated systems (biofilters) such as vegetated swales and grass filter strips.
- Use portions of the HMF site for onsite infiltration of runoff, if feasible, or for stormwater detention if not. Incorporate vegetated setbacks from streams.

5.1.6.3 Project Design Features for Flood Protection

Design of the project will allow the HST to remain operational during flood events and will minimize increases in 100-year flood elevations, including the following:

- In SFHAs, raise the track at least 4 feet above the 100-year flood elevation.
- Minimize development within the floodplain as appropriate. Avoid placement of facilities in the floodplain (e.g., at the Castle Commerce Center HMF site and the Gordon-Shaw HMF) or raise the ground with fill above the base-flood elevation.

Crossing design will maintain a floodwater surface elevation of no greater than 0.1 foot above current levels (zero rise within designated floodways). The following design considerations will minimize the effects of pier placement in the floodways:

- Design site crossings to be as nearly perpendicular to the channel as feasible to minimize bridge length.
- Orient piers to be parallel to the expected high water flow direction to minimize flow disturbance.
- Elevate bridge crossings at least 3 feet above the high water surface elevation to provide adequate clearance for floating debris or as required by local agencies. (The Central Valley Flood Protection Board requires that the bottom members [soffit] of a proposed bridge be at least 3 feet above the calculated water surface elevation for the design flood. The required clearance may be reduced to 2 feet on minor streams at sites where significant amounts of stream debris are unlikely.)
- Conduct engineering analyses of channel scour depths at each crossing to evaluate the necessary embedment depth for bridge piers. Implement scour-control measures to reduce erosion potential.
- Use quarry stone, cobblestone, or their equivalent for erosion control along rivers and streams, complemented with native riparian plantings or other natural stabilization alternatives that will restore and maintain a natural riparian corridor, where feasible.
- Place bedding materials under stone protection at locations where the underlying soils require stabilization resulting from streamflow velocity.

5.1.6.4 Construction Stormwater Pollution Prevention Plan

The SWRCB Construction General Permit (2009-0009 DWQ) (SWRCB 2009) establishes three erosion risk levels that are based on site erosion and receiving-water risk factors. A preliminary analysis indicates that most of the project will fall under Erosion Risk Level 1, the lowest risk level. The portion of the project vicinity draining to the San Joaquin River will fall under Erosion Risk Level 2. Erosion Risk Level 2 measures also will be carried out anywhere in the project vicinity where construction activities are conducted within or immediately adjacent to sensitive environmental areas such as streams, wetlands, and vernal pools.

The Construction General Permit requires preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which will identify BMPs to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements, stormwater management, and channel dewatering for affected stream crossings. These BMPs could include measures to provide permeable surfaces where feasible and to retain and treat stormwater on site. Other BMPs include strategies to manage the overall amount and quality of stormwater runoff. Typical BMPs include:

- Practices to minimize the contact of construction materials, equipment, and maintenance supplies with stormwater.
- Limiting fueling and other activities using hazardous materials to areas distant from surface water, providing drip pans under equipment, and daily checks for vehicle condition.
- Practices to reduce erosion of exposed soil, including soil stabilization, watering for dust control, perimeter silt fences, placement of rice straw bales, and sediment basins.
- Practices to maintain water quality including silt fences, stabilized construction entrances, grass buffer strips, ponding areas, organic mulch layers, inlet protection, and Baker tanks and sediment traps to settle sediment.
- Practices to capture and provide proper offsite disposal of concrete washwater, including isolation of runoff from fresh concrete during curing to prevent it from reaching the local drainage system, and possible treatment with dry ice or other acceptable means to reduce the alkaline character of the runoff (high pH) that typically results from new concrete.

- Development of a spill prevention and emergency response plan to manage potential fuel or other spills.
- Use of diversion ditches to intercept offsite surface runoff.
- Where feasible, avoidance of areas that may have substantial erosion risk, including areas with erosive soils and steep slopes.
- Where feasible, limiting construction to dry periods when flows in water bodies are low or absent.

5.1.6.5 Central Valley Regional Water Quality Board, Order No. 5-00-175, Waste Discharge Requirements General Order for Dewatering and Other Low Threat Discharges to Surface Waters

This order is a permit that covers construction dewatering discharges and some other listed discharges that do not contain significant quantities of pollutants, and that either: (1) are 4 months or less in duration, or (2) have an average dry-weather discharge that does not exceed 0.25 million gallons per day.

5.1.6.6 Maintain Pre-Project Hydrology

Avoid increasing existing peak stormwater flows from the project site. This will be accomplished by emphasizing onsite retention of stormwater runoff using measures such as flow dispersion, infiltration, and evaporation, supplemented by detention, where required. Additional flow control measures could be implemented where local regulations or drainage requirements dictate.

5.1.6.7 Industrial Stormwater Pollution Prevention Plan

The stormwater general permit (97-03-DWQ) (SWRCB 2000) requires the preparation of an SWPPP and a monitoring plan for industrial facilities, including vehicle maintenance facilities associated with transportation operations. The permit includes performance standards for pollution control.

5.1.6.8 Air Quality Fugitive Dust Control

Fugitive dust control measures are administered through Rule 8011. According to Rule 8011, the San Joaquin Valley Air Pollution Control District (SJVAPCD) requires the implementation of control measures for fugitive dust emission sources. These measures are not considered mitigation measures because they are required by law.

5.1.6.9 Wildlife-dedicated Crossings

Crossing structures dedicated to facilitating wildlife movement will be included in the design, as discussed in Chapter 2, Alternatives.

5.1.7 Hydrology and Water Resources

The Authority and FRA have considered avoidance and minimization measures consistent with commitments in the Program EIR/EIS documents. During project design and construction, the Authority and FRA will ensure the measures outlined below are implemented to reduce impacts on water resources discussed in Section 3.8.5, Environmental Consequences. Appendix C of the *Merced to Fresno Section Hydraulics* and Floodplain Technical Report (Authority and FRA 2012c) provides a matrix that lists relevant standards and regulations for these impacts. These measures and standards are discussed in greater detail in support documents prepared for the preliminary design, including the following:

- HST *Technical Memorandum 2.6.5. Hydraulics and Hydrology Design Guidelines* (Authority 2010a).

- Merced to Fresno Section Hydraulics and Floodplain Technical Report (project-wide, and for Construction Package 1A) (Authority and FRA 2012c).
- Merced to Fresno Section Stormwater Management Plan (project-wide, and for Construction Package 1A) (Authority and FRA 2012d).

These measures are considered to be part of the project and are described in the following text. Additionally, the project would require an Individual Section 404 Permit from USACE. This permit would have conditions to further minimize water quality impacts.

5.1.7.1 Project Design Features for Stormwater Management and Treatment

During the detailed design phase, evaluate each receiving stormwater system's capacity to accommodate project runoff. As necessary, design onsite stormwater management measures, such as detention or selected upgrades to the receiving system, to provide adequate capacity. Design and construct onsite stormwater management facilities to capture runoff and provide treatment prior to discharge for pollutant-generating surfaces, including station parking areas, access roads, new road over- and underpasses, reconstructed interchanges, and new or relocated roads and highways. Use low-impact development (LID) techniques to retain runoff onsite and to reduce offsite runoff, to the extent practical. Consider the use of constructed wetland systems, biofiltration and bioretention systems, wet ponds, organic mulch layers, planting soil beds, and vegetated systems (biofilters) such as vegetated swales and grass filter strips. Use portions of the HMF site for onsite infiltration of runoff, if feasible, or for stormwater detention, if not. Incorporate vegetated set-backs from streams, such as Canal Creek and Berenda Creek.

5.1.7.2 Project Design Features for Flood Protection

Design the project both to remain operational during flood events and to minimize increases in 100-year flood elevations, including the following:

- Establish track elevation to prevent saturation and infiltration of stormwater into the sub-ballast. During the design storm, maintain 2 feet of freeboard between the sub-ballast and the water surface elevation.
- Minimize development within the floodplain as appropriate. Avoid placement of facilities in the floodplain (e.g., at the Castle Commerce Center HMF site and the Gordon-Shaw HMF) or raise the ground with fill above the base-flood elevation.

Design of the crossings would maintain a floodwater surface elevation of no greater than 0.1 foot above current levels (zero rise within designated floodways). The following design considerations would minimize the effects of pier placement in the floodways:

- Design site crossings to be as nearly perpendicular to the channel as feasible to minimize bridge length.
- Orient piers to be parallel to the expected high water flow direction to minimize flow disturbance.
- Elevate bridge crossings at least 3 feet above the high water surface elevation to provide adequate clearance for floating debris or as required by local agencies. (The CVFPB requires that the bottom members [soffit] of a proposed bridge be at least 3 feet above the design floodplain. The required clearance may be reduced to 2 feet on minor streams at sites where significant amounts of stream debris are unlikely.)
- Conduct engineering analyses of channel scour depths at each crossing to evaluate the depth for burying the bridge piers and abutments. Implement scour-control measures to reduce erosion potential.

- Use quarry stone, cobblestone, or their equivalent for erosion control along rivers and streams, complemented with native riparian plantings or other natural stabilization alternatives that would restore and maintain a natural riparian corridor, where feasible.
- Place bedding materials under the stone protection at locations where the underlying soils require stabilization resulting from streamflow velocity.

5.1.7.3 Construction Stormwater Pollution Prevention Plan

The SWRCB Construction General Permit (Order No. 2009-0009-DWQ, NPDES No. CAS000002) (SWRCB 2009) establishes three erosion risk levels that are based on site erosion and receiving-water risk factors. A preliminary analysis indicates that most of the project would fall under Erosion Risk Level 1, the lowest risk level. The portion of the project vicinity draining to the San Joaquin River would fall under Erosion Risk Level 2. Erosion Risk Level 2 measures also would be carried out anywhere in the project vicinity where construction activities are conducted within or immediately adjacent to sensitive environmental areas such as streams, wetlands, and vernal pools.

The Construction General Permit requires preparation and implementation of a SWPPP, which would provide BMPs to minimize potential short-term increases in sediment transport caused by construction, including erosion control requirements, stormwater management, and channel dewatering for affected stream crossings. These BMPs could include measures to provide permeable surfaces where feasible and to retain and treat stormwater onsite. Other BMPs include strategies to manage the overall amount and quality of stormwater runoff. The Construction SWPPP will include measures to address the following:

- Hydromodification management to ensure maintenance of pre-project hydrology by emphasizing onsite retention of stormwater runoff using measures such as flow dispersion, infiltration, and evaporation, supplemented by detention, where required. Additional flow control measures could be implemented where local regulations or drainage requirements dictate.
- Practices to minimize the contact of construction materials, equipment, and maintenance supplies with stormwater.
- Limiting fueling and other activities using hazardous materials to areas distant from surface water, providing drip pans under equipment, and daily checks for vehicle condition.
- Practices to reduce erosion of exposed soil, including soil stabilization, watering for dust control, perimeter silt fences, placement of rice straw bales, and sediment basins.
- Practices to maintain water quality including silt fences, stabilized construction entrances, grass buffer strips, ponding areas, organic mulch layers, inlet protection, and Baker tanks and sediment traps to settle sediment.
- Practices to capture and provide proper offsite disposal of concrete washwater, including isolation of runoff from fresh concrete during curing to prevent it from reaching the local drainage system, and possible treatment with dry ice or other acceptable means to reduce the alkaline character of the runoff (high pH) that typically results from new concrete.
- Development of a spill prevention and emergency response plan to handle potential fuel or other spills.
- Use of diversion ditches to intercept offsite surface runoff.
- Where feasible, avoidance of areas that may have substantial erosion risk, including areas with erosive soils and steep slopes.
- Where feasible, limit construction to dry periods when flows in water bodies are low or absent.

5.1.7.4 Central Valley Regional Water Quality Board, Order No. 5-00-175 (NPDES No. CAG995001), Waste Discharge Requirements General Order for Dewatering and Other Low Threat Discharges to Surface Waters

This order is a permit that covers construction dewatering discharges and some other listed discharges that do not contain significant quantities of pollutants, and that either (1) are 4 months or less in duration, or (2) have an average dry-weather discharge that does not exceed 0.25 million gallons per day.

The CVFPB regulates specific river, creek, and slough crossings for flood protection. These crossings must meet the provisions of Title 23 of the CCR. Title 23 requires that new crossings maintain hydraulic capacity through such measures as in-line piers, adequate streambank height (freeboard), and measures to protect against streambank and channel erosion. Section 208.10 requires that improvements, including crossings, be constructed in a manner that does not reduce the channel's capacity or functionality, or that of any federal flood control project. The CVFPB reviews encroachment permit applications for approval of a new channel crossing or other channel modification. For a proposed crossing or placement of a structure near a federal flood control project, the CVFPB coordinates review of the encroachment permit application with USACE pursuant to assurance agreements with USACE and the USACE Operation and Maintenance Manuals under Title 33 CFR, Section 208.10 and Title 33 U.S.C., Section 408. Under Section 408 of the Rivers and Harbors Act, USACE must approve any proposed modification that involves a federal flood control project. A Section 408 permit would be required if construction modifies a federal levee. A Section 208.10 permit would be required where the project encroaches on a federal facility but does not modify it.

5.1.7.5 Industrial Stormwater Pollution Prevention Plan

The stormwater general permit (Order No. 97-03-DWQ, NPDES No. CAS000001) requires preparation of a SWPPP and a monitoring plan for industrial facilities, including vehicle maintenance facilities associated with transportation operations. The permit includes performance standards for pollution control. The HMF would meet the stormwater treatment requirements of the Industrial General Permit.

5.1.8 Geology and Soils

No project-level mitigation measures would be required. Project design would incorporate existing design measures and BMPs based upon federal and state regulations and based on the Program EIR/EIS documents. Table 5-1 in the *Merced to Fresno Section Geology and Soils Technical Report* (Authority and FRA 2012e) provides a matrix that lists relevant standards and regulations for the impacts identified above in Section 3.9.5, Environmental Consequences. Site-specific explorations would be carried out as design work progresses so that the Authority can incorporate site-specific engineering solutions that adhere to standard engineering design practices and codes into the design to reduce risks associated with geology, soils, and seismicity. Versions of the standard engineering design guidelines and standards applicable at the time this document was prepared (2011) are described below; the versions of these guidelines and standards applicable at the time of final design and construction will be used.

- **2010 AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specifications (5th Edition) and the 2009 AASHTO Guide Specifications for LRFD Seismic Bridge Design**: These documents provide guidance for characterization of soils, as well as methods to be used in the design of bridge foundations and structures, retained cuts and retained fills, at-grade segments, and buried structures. These design specifications would provide minimum specifications for evaluating the seismic response of the soil and structures. (AASHTO 2009, 2010)
- **Federal Highway Administration (FHWA) Circulars and Reference Manuals:** These documents provide detailed guidance on the characterization of geotechnical conditions at sites, methods for performing foundation design, and recommendations on foundation construction. These guidance documents include methods for designing retaining walls used for retained cuts and

retained fills, foundations for elevated structures, and at-grade segments. Some of the documents include guidance on methods of mitigating geologic hazards that are encountered during design.

- **AREMA Manual:** These guidelines deal with rail systems. Although they cover many of the same general topics as AASHTO, they are more focused on best practices for rail systems. The manual includes principles, data, specifications, plans, and economics pertaining to the engineering, design, and construction of railways. (AREMA 2009)
- **California Building Code (CBC):** CBC is based on 2009 IBC. This code contains general building design and construction requirements relating to fire and life safety, structural safety, and access compliance.
- **IBC and ASCE 7:** These codes and standards provide minimum design loads for buildings and other structures. They would be used for the design of the maintenance facilities and stations. Sections in IBC and ASCE-7 provide minimum requirements for geotechnical investigations, levels of earthquake ground shaking, minimum standards for structural design, and inspection and testing requirements. (ICC 2006 and ASCE 2010)
- **Caltrans Design Standards:** Caltrans has specific minimum design and construction standards for all aspects of transportation system design, ranging from geotechnical explorations to construction practices. Caltrans design standards include state-specific amendments to the AASHTO LRFD Bridge Design Specifications and Guide Specifications for LRFD Seismic Bridge Design. These amendments provide specific guidance for the design of deep foundations used to support elevated structures, for design of mechanically stabilized earth (MSE) walls used for retained fills, and for design of various types of cantilever (e.g., soldier pile, secant pile, and tangent pile) and tie-back walls used for retained cuts.
- **ASTM International:** ASTM has developed standards and guidelines for all types of material testing, from soil compaction testing to concrete strength testing. The ASTM standards also include minimum performance requirements for materials. Most of the guidelines and standards cited above use ASTM or a corresponding series of standards from AASHTO to assure that quality is achieved in the constructed project. (ASTM 2012)

To manage geologic, soils, and seismic hazards, projects implement specific design measures to reduce and avoid impacts during construction and operation. These practices include the following:

- **Limit Groundwater Withdrawal:** Control the amount of groundwater withdrawal, re-inject groundwater at specific locations, or use alternate foundations to offset the potential for settlement. This control is important for locations with retained cuts in areas of high groundwater and where existing buildings are located near the depressed track section.
- **Monitor Slopes:** Incorporate slope monitoring into final design where a potential for long-term instability exists from gravity or seismic loading. This practice is important near at-grade sections where slope failure could result in loss of track support or where slope failure could result in additional earth loading to foundations supporting elevated structures.
- **Suspend Operations Before and After Earthquake:** Use motion-sensing instruments to provide ground-motion data; implement a control system to shut down HST operations temporarily during or after an earthquake to reduce risks. Monitoring is appropriate for any location where high ground motions could damage the HST track system. Candidate locations would include elevated guideways, retained earth, retained cut, and at-grade segments.
- **Conduct Geotechnical Inspections:** Prior to and throughout construction, conduct geotechnical inspections to verify that no new, unanticipated conditions are encountered and to determine the locations of unstable soils in need of improvement.

- **Improve Unstable Soils:** For unstable soils the risk of ground failure can be minimized or avoided by various methods. If the soft or loose soils are shallow, they can be excavated and replaced with competent soils. Where unsuitable soils are deeper, ground improvement methods such as stone columns, cement deep soil mixing (CDSM), or jet grouting could be used. Alternately, if sufficient construction time is available, preloading in combination with prefabricated vertical drains (wicks) and staged construction can be used to gradually improve the strength of the soil without causing bearing capacity failures. Both over-excavation and ground improvement methods have been successfully used to improve similar soft or loose soils. The application of these methods is most likely at stream and river crossings, where soft soils could occur; however, localized deposits could occur at other locations along the alignment. The ground improvement or over-excavation methods may also be necessary at the start of approach fills for elevated track sections or retained earth segments of the alignment if the earth loads exceed the bearing capacity of the soil. Alternately, at these locations earth fills might be replaced by light-weight fill such as extruded polystyrene (geofoam), or short columns and cast-in-drill hole (CIDH) piles might be used to support the transition from the elevated track to the at-grade alignment.

- **Improve Settlement-Prone Soils:** Settlement-prone soils are improved prior to facility construction. Ground improvement is used to transfer new earth loads to deeper, more competent soils. Another alternative is to use preloads and surcharges with wick drains to accelerate settlement within areas that are predicted to undergo excessive settlement. By using the preload and surcharge with wick drains, settlement will be forced to occur. The application of these methods is most likely at stream and river crossings, where soft soils are more likely to occur. Where groundwater is potentially within 50 feet of the ground surface, any below-ground excavations use well points in combination with sheetpile walls to limit the amount of settlement of adjacent properties from temporary water drawdown. Alternately, water can be re-injected to make up for localized water withdrawal.

- **Prevent Water and Wind Erosion:** Many engineering methods exist for controlling water and wind erosion of soils. These include use of straw bales and mulches, revegetation, and covering areas with geotextiles. Where the rate of water runoff could be high, rip rap and rip rap check dams could be used to slow down the rate of water runoffs. Other BMPs for water are discussed in Section 3.8 Hydrology and Water Resources. Implementation of these methods is important where large sections of earth would be exposed during construction, such as for retained-cut segments.

- **Modify or Remove and Replace Soils with Shrink-Swell Potential and Corrosion Characteristics:** One option is to excavate and replace soils that represent the highest risk. In locations where shrink-swell potential is marginally unacceptable, soil additives would be mixed with existing soil to reduce the shrink-swell potential. The decision whether to remove or treat the soil is made on the basis of specific shrink-swell potential or corrosivity characteristics of the soil, the additional costs for treatment versus excavation and replacement, as well as the long-term performance characteristics of the treated soil. This practice is important for at-grade segments of the alignment because these are most likely to be affected by shrink-swell potential or corrosive soils.

- **Evaluate and Design for Large Seismic Ground Shaking:** Conduct detailed seismic studies to establish the most up-to-date estimation of levels of ground motion. Use updated Caltrans seismic design criteria in the design of any structures supported in or on the ground. These design procedures and features reduce the potential that moments, shear forces, and displacements that result from inertial response of the structure lead to collapse of the structure. In critical locations, pendulum base isolators can reduce the levels of inertial forces. New composite materials can enhance seismic performance.

- **Secondary Seismic Hazards:** As discussed above, various ground improvement methods can be implemented to reduce the potential for liquefaction, liquefaction-induced lateral spreading or flow of slopes, or post-earthquake settlement. Ground improvement around CIDH piles improves the lateral capacity of the CIDH during seismic loading. CDSM or jet grouting develop resistance to lateral flow or spreading of liquefied soils.

5.1.9 Hazardous Materials and Wastes

The Authority and FRA have considered avoidance and minimization measures consistent with commitments in the Program EIR/EIS documents. Materials and wastes would be handled, transported, and disposed of in accordance with applicable state and federal regulations, such as RCRA, CERCLA, the Hazardous Materials Release Response Plans and Inventory Law, and the Hazardous Waste Control Act (see Section 3.3, Air Quality, for regulations applying to hazardous air pollutants). During the property acquisition process, analysis of properties acquired for construction of the HST will be conducted, including title searches and determination of which properties require further assessment for hazardous material contamination. Where current site conditions or documented past land use practices provide a reason to believe that an unusual buildup of potentially hazardous materials has occurred, the Authority will conduct a Phase 1 environmental site assessment in accordance with standard ASTM methodologies to characterize the site. The determination of what parcels require soil testing and where testing should occur would be informed by the Phase 1 environmental site assessment and made in conjunction with state and local agency officials. Testing and appropriate remediation would be conducted prior to construction. Remediation activities may include removal of contamination, in situ treatment, or soil capping. Nominal design variances, such as the addition of a plastic barrier beneath the ballast material to limit the potential release of volatile subsurface contaminants, may be implemented in conjunction with site investigation and remediation. All work within 1,000 feet of a landfill would require methane protection measures, including gas detection systems and personnel training, pursuant to Title 27, the hazardous materials contingency plan, and BMPs.

The Authority is aware that undocumented contamination could be encountered during construction activities and is committed to work closely with local agencies to resolve any such conflicts. A construction management plan will be developed that will include provisions for the disturbance of undocumented contamination. In addition, demolition plans will be prepared for the safe dismantling and removal of building components and debris. The demolition plans will include a plan for lead and asbestos abatement. Further, an SPCC plan or, for smaller quantities, a spill prevention and response plan, will be implemented that prescribes BMPs to follow to clean up any hazardous material release. During operation of the HST, hazardous materials monitoring plans, such as a hazardous materials business plan and an SPCC plan, will be implemented.

To the extent feasible, the Authority is committed to identifying, avoiding, and minimizing hazardous substances in the material selection process for construction, operation, and maintenance of the HST System. Moreover, the Authority will evaluate the full inventory of hazardous materials employed on an annual basis and replace hazardous substances with nonhazardous materials to the extent possible. These standards and material specifications would aid in promoting safety for passengers and employees.

Existing standards and regulations address many of the impacts identified in this analysis. Table 6-4 in the *Merced to Fresno Section Hazardous Materials/Wastes Technical Report* (Authority and FRA 2012) provides a matrix that indicates relevant standards and regulations for these impacts.

5.1.10 Safety and Security

Project design would incorporate engineering measures and best management practices based on federal and state regulations and on Program EIR/EIS documents. The standard engineering design guidelines and regulatory requirements include the following:

- Final design includes development of a detailed construction transportation plan that would involve coordination with local jurisdictions on emergency vehicle access. The plan would also include a traffic control plan that addresses temporary road closures, detour provisions, allowable routes, and alternative access.

- Engineering design and construction phases include preliminary hazard analysis, collision hazard analysis, and threat and vulnerability assessment methods.

- Preliminary hazard analyses follow the U.S. Department of Defense's System Safety Program Plan Requirements (MIL-STD-882D) (U.S. Department of Defense 2000) to identify and evaluate the facility hazards and vulnerabilities so that the design can address and either eliminate or minimize them.
- Threat and vulnerability assessments establish provisions for the deterrence and detection of, as well as the response to, criminal and terrorist acts for rail facilities and system operations. Provisions include security education and employee training specific to terrorism awareness, right-of-way fencing, intrusion detection, closed-circuit televisions, and other design features to reduce criminal and terrorist activities. Intrusion detection technology could also alert to the presence of inert objects, such as toppled tall structures or derailed freight trains, and could stop HST operations to avoid collisions.
- Construction Safety and Health Plans (CSHPs) establish the minimum safety and health guidelines for contractors of, and visitors to, construction projects. CSHPs require contractors to develop and implement site-specific measures that address regulatory requirements to protect human health and property at construction sites.
- Fire/Life Safety Programs (FLSPs) implement the requirements set forth in the Federal Rail Safety Act. FLSPs address the safety of passengers and employees during emergency response. The FLSP also would address the needs of disabled persons. An FLSP is coordinated with local emergency response organizations to provide them with an understanding of the rail system, facilities, and operations, and to obtain their input for modifications to emergency response operations and facilities, such as evacuation routes.
- System Security Plans address design features intended to maintain security at the stations within the track right-of-way, at stations, and onboard trains. The design standards and guidelines require emergency walkways on both sides of the tracks for both elevated and at-grade sections. Adequate space would be provided along at-grade sections of the alignment to allow emergency response access. Ground access would be available from elevated tracks where access to ground equipment is required. This ground access could be used in the event of an emergency. Additional ground access would be considered, consistent with fire and rescue procedures and where practical operational standards include a system-specific police force.
- Standard operating procedures and emergency operating procedures include industry best practices, such as the FRA-mandated Roadway Worker Protection Program. They address the day-to-day operation and emergency situations to maintain the safety of employees, passengers, and the public.
- System Safety Program Plans (SSPPs) incorporate FRA requirements and are implemented upon FRA approval. These plans are based on the principles outlined in *The Manual for Development of System Safety Program Plans for Commuter Railroads* (American Public Transportation Association 2006) and address project design, construction, testing, and operation.
- Rail systems must comply with *Highway-Rail Grade Crossing Guidelines for High-Speed Passenger Rail* (FRA 2009) and future safety regulations the FRA develops for high-speed passenger rail.
- Worker safety in the workplace is generally governed by the Occupational Health and Safety Act of 1970, which established the Occupational Safety and Health Administration (OSHA). The State of California, under an agreement with OSHA, operates an occupational safety and health program in accordance with Section 18 of the Occupational Safety and Health Act of 1970.In California, OSHA enforcement of workplace requirements is performed by Cal OSHA. Under Cal OSHA regulations, as of July 1, 1991, every employer in California must establish, implement, and maintain an injury and illness prevention program.
- HST urban design guidelines (Authority 2011) require implementing the principles of crime prevention through environmental design. This is a design method that focuses on reducing opportunities for

crime through the design and management of the physical environment. Four basic principles of crime prevention through environmental design would be considered during station and site planning: territoriality (designing physical elements that express ownership of the station or site); natural surveillance (arranging physical features to maximize visibility); improve sightlines (provide clear views of surrounding areas); and access control (physical guidance of people coming and going from a space).

5.1.11 Socioeconomics, Communities, and Environmental Justice

The Authority has considered avoidance and minimization measures that are consistent with commitments in the Program EIR/EIS documents. The Authority must comply with the Uniform Relocation Act.

The provisions of the Uniform Relocation Act apply to all acquisitions of real property or displacements of persons resulting from federal or federally assisted programs and projects. The Uniform Relocation Act provides for the fair and equitable treatment of those displaced persons. The Uniform Relocation Act requires that the owning agency notify all affected owners of the acquiring agency's intent to acquire an interest in their property, including a written offer letter of just compensation specifically describing those property interests and assign a right-of-way specialist to each property owner to assist them with the process. The Uniform Relocation Act also provides for benefits to displaced individuals to assist them both financially and with advisory services to help them relocate their residences or businesses. Benefits are available to both owner occupants and tenants of either residential or business properties.

The Uniform Relocation Act requires provision of relocation benefits to all eligible persons regardless of race, color, religion, sex, or national origin. Benefits to which eligible owners or tenants may be entitled will be determined on an individual basis and explained in detail by an assigned right-of-way specialist.

Similarly, the project must adhere to California Relocation Assistance Act requirements. Just compensation is measured by the "fair market value" of the property, which is considered to be "the highest price on the date of valuation that would be agreed to by a seller, being willing to sell, but under no particular or urgent necessity for so doing, nor obliged to sell; and a buyer, being ready, willing and able to buy but under no particular necessity for so doing, each dealing with the other with the full knowledge of all the uses and purposes for which the property is reasonably adaptable and available." (Code of Civil Procedure Section 1263.320a.).

The Authority has developed more detailed information about how it plans to comply with the Uniform Act and the California Relocation Assistance Act. The Authority has developed three detailed relocation assistance documents modeled after Caltrans versions. The documents are listed below and included in Appendix 3.12-A:

- Your Rights and Benefits as a Displacee under the Uniform Relocation Assistance Program (Residential).
- Your Rights and Benefits as a Displacee under the Uniform Relocation Assistance Program (Mobile Home).
- Your Rights and Benefits as a Displaced Business, Farm or Nonprofit Organization under the Uniform Relocation Assistance Program.

5.1.12 Station Planning, Land Use, and Development

Between the Program EIR/EIS documents and the project EIR/EIS, refined planning (i.e., *HST Station Area Development: General Principles and Guidelines* [Authority 2008]) has resulted in fewer anticipated conflicts regarding land use and planning. The program design strategies of involving the local jurisdictions in the development of station planning and alignment design considerations, identification of

issues, and avoidance measures and solutions, as well as providing information to assist the local jurisdictions to accommodate the proposed HST and TOD opportunities around stations in the updates of local general plans, collectively reduce the potential for land use conflicts. By working with the local jurisdictions it is possible to identify any potential land use conflicts and work to avoid or minimize the issues. The Authority would continue to engage the local jurisdictions in continued planning and TOD opportunities. The alignments for all three alternatives follow existing transportation corridors to the extent possible in order to reduce land use impacts related to conversion of existing land uses to a transportation-related use. Many related impacts on other resources would be mitigated by measures that work to further reduce the likelihood of impacts on land uses. For example, mitigation measures for transportation are found in Section 3.2.6, community resources in Section 3.12.6, agricultural lands in Section 3.14.6, and parks in Section 3.15.6. The regional growth discussion in Section 3.18.6 provides information on how growth would occur with and without the HST Project.

5.1.13 Agricultural Lands

The Authority will assign a representative to act as a single point of contact to assist each confined animal facility owner during the process of obtaining new or amended permits or other regulatory compliance necessary for the continued operation or relocation of the facility. The Authority will consider and may provide compensation when acquisition of confined animal site would either require relocation of the facility or amendment of its existing regulatory permits.

During the HST testing phase, the Authority will fund a program to undertake original research on the wind and noise effects of HST operations on agricultural activities. The Authority will engage qualified researchers within the University of California or California State University system to undertake this research. The researcher will be selected by the Authority through a request for proposal process. The research will include monitoring of noise and wind effects at representative points along the test track. The research period will include the testing phase and extend 2 years after commencement of revenue service. The Authority will publicly distribute a report of the findings of the research program.

The research will include, but is not limited to, the following subjects:

- Generated wind speed, duration, and area of influence from HST trainsets at typical operational speeds.
- Effects of HST-generated wind on the effectiveness of honeybee pollination.
- Dust production as a result of typical HST operations, including entrainment and dispersal patterns of dust in the HST slipstream.
- Generated noise levels and duration from HST trainsets at typical operational speeds.
- Noise contours depicting modeled noise levels at distance from the tracks.
- Practical methods for reducing effects on agriculture.

5.1.14 Parks, Recreation and Open Space

No Project Design Features listed.

5.1.15 Aesthetics and Visual Resources

The Authority has adopted design standards and Design Guidelines that are established to create a minimum aesthetic quality to a long lasting infrastructure. Many of these elements are articulated in Table 3.16-2 found in Section 3.16.5.3 High-Speed Train Alternatives. The Authority's *Urban Design*

Guidelines for the California High Speed Train Project (Authority 2011a) briefly discusses the principles of context-sensitive solutions to guide the design of stations. This approach is equally applicable to elevated guideways and will be employed to mitigate visual impacts through context-sensitive design. *Aesthetic Guidelines for Non-Station Structures* (TM 200-06) (Authority 2011b) will also guide design of the HST components. These standards and guidelines work to minimize and avoid aesthetic effects on the adjacent surroundings where possible.

5.1.16 Cultural and Paleontological Resources

No project design features listed.

5.1.17 Regional Growth

No project design features listed.

5.2 Mitigation Measures

Mitigation measures described in the Merced to Fresno Project Final EIR/EIS for each resource area have been excerpted and briefly summarized in Table 5-1. The table lists each potential impact, the level of impact before mitigation, the prescribed mitigation measure, and the impact level after mitigation. Only impacts and mitigation measures applicable to the SHS facilities modifications identified in this report have been included. Specific details regarding each mitigation measure can be found in the Merced to Fresno HST Project EIR/EIS (Authority and FRA 2012a).

As discussed in section 1.3 of this report, Caltrans will be responsible for implementing those mitigation measures that relate to its actions on this project.

Table 5-1
Summary of Mitigation Measures

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
TRANSPORTATION			
Project Impacts			
TR #1: Permanent Road Closures.			
UPRR/SR 99 Alternative – 19 to 28 closures BNSF Alternative – 28 to 42 closures Hybrid Alternative – 30 to 36 closures	Significant	**TR MM#1:** Access Maintenance for Property Owners.	Less Than Significant
TR #2: Fresno Area between Herndon Avenue and Shaw Avenue Intersection Impacts.			
All Alternatives			
Existing plus Project	Significant	**TR MM#4:** Add Signal to	Less Than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Intersection to Improve LOS/Operation; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	
Future (2035) plus Project	Significant	**TR MM#3:** Modify Signal Phasing; **TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#6:** Modify Signal Timing; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections; **TR MM#10:** Grade Separate Through Movements.	Less Than Significant
TR #3: Fresno Area between Herndon Avenue and Shaw Avenue Roadway Impacts.			
Future (2035) plus Project	Significant	**TR MM#11:** Add Lanes to the Segment.	Less Than Significant
TR #4: Fresno Area between McKinley Avenue and SR 180 Roadway Impacts. All Alternatives			
Future (2035) plus Project	Significant	**TR MM#11:** Add Lanes to the Segment.	Less Than Significant
TR #5: Fresno Area between McKinley Avenue and SR 180 Intersection Impacts. All Alternatives			
Existing plus Project	Significant	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Less Than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Future (2035) plus Project	Significant	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Less Than Significant
TR #6: SR 99 Relocation Freeway Impacts. All Alternatives			
Future (2035) plus Project	Significant	**TR MM#2:** Add Southbound Auxiliary Lane to SR 99.	Less Than Significant
TR #7: SR 99 Relocation Intersection Impacts. All Alternatives			
Existing plus Project	Significant	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Less Than Significant
Future (2035) plus Project	Significant	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Less Than Significant
TR #8: HST Station Area Roadway Impacts. All Alternatives			
Existing plus Project Merced – 2 segments (Option A); 1 segment (Option B)	Significant	**TR MM#11:** Add Lanes to the Segment.	Less Than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Future (2035) plus Project Merced – 6 segments (Option A) 8 segments (Option B) Fresno –7 segments (Tulare St Underpass Option; 10 segments (Tulare St Overpass Option)	Significant	**TR MM#11:** Add Lanes to the Segment.	Less Than Significant
TR #9: HST Station Area Intersection Impacts. All Alternatives			
Existing plus Project Merced – 7 intersections (Option A), 6 intersections (Option B) Fresno – 6 intersections (Tulare St Underpass Option), 5 intersections (Tulare St Overpass Option)	Significant	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#6:** Modify Signal Timing; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections; **TR MM#9**: Convert Two-Way Stop to Four-Way Stop.	Less Than Significant
Future (2035) plus Project Merced – 20 intersections (Option A), 19 intersections (Option B) Fresno – 38 intersections (Tulare St Underpass Option), 36 intersections (Tulare St Overpass Option)	Significant	**TR MM#3:** Modify Signal Phasing; **TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#6:** Modify Signal Timing; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections; **TR MM#9:** Convert Two-Way Stop to Four-Way Stop.	Less Than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
TR #10: HMF Site Intersection Impacts.			
Existing plus Project Castle Commerce Center HMF – 8 intersections (Options A and B) Harris-DeJager HMF – 1 intersection Fagundes HMF – 3 intersections Gordon-Shaw HMF – 1 intersection Kojima Development HMF – 2 intersections	Significant	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections; **TR MM#9:** Convert Two-Way Stop to Four-Way Stop.	Less Than Significant
Future (2035) plus Project Castle Commerce Center HMF – 25 intersections (Option A), 22 intersections (Option B) Harris-DeJager HMF – 1 intersection Fagundes HMF – 4 intersections Gordon-Shaw HMF – 5 intersections Kojima Development HMF – 6 intersections	Significant	**TR MM#3:** Modify Signal Phasing; **TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#6:** Modify Signal Timing; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections; **TR MM#9:** Convert Two-Way Stop to Four-Way Stop.	Less Than Significant
AIR QUALITY AND GLOBAL WARMING			
Construction Period Impacts			
Regional Impacts **AQ#1:** Construction of the HST alternatives would exceed the CEQA emissions thresholds for VOC and NO_x. Therefore, it could potentially cause violations of NO_2 and O_3 air quality standards or contribute substantially to NO_2 and O_3 existing or projected air quality violations.	Significant for VOC and NO_x	**AQ-MM#1:** Reduce Criteria Exhaust Emissions from Construction Equipment; **AQ-MM#2:** Reduce Criteria Exhaust Emissions from On-Road Construction Equipment; **AQ-MM#4**: Offset Emissions Through the VERA Program.	Less than significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Regional Impacts **AQ#2:** Material hauling outside the SJVAB would exceed CEQA emission thresholds for NO_x in the BAAQMD, and the SCAQMD for certain hauling scenarios. Therefore, it could potentially cause violations of NO_2 and O_3 air quality standards or contribute substantially to NO_2 and O_3 existing or projected air quality violations in those air districts.	Significant for NO_x in the Bay Area AQMD, and the South Coast AQMD	**AQ-MM#2:** Reduce Criteria Exhaust Emissions from On-Road Construction Equipment **AQ-MM#5:** Purchase offsets for emissions mitigation associated with hauling ballast material in certain air districts.	Less than significant
Compliance with Air Quality Plans **AQ#3:** Construction of the HST alternatives would exceed the CEQA emissions thresholds for VOC and NO_x. Therefore, it would conflict with the 1-hour Ozone Attainment Plan and the 8-hour Ozone Attainment Plan.	Significant for O_3 precursors (VOC and NO_x)	**AQ-MM#1:** Reduce Criteria Exhaust Emissions from Construction Equipment; **AQ-MM#2:** Reduce Criteria Exhaust Emissions from On-Road Construction Equipment; **AQ-MM#4**: Offset Emissions Through the VERA Program.	Less than significant
Localized Impacts **AQ# 4**: Construction of the alignment may expose sensitive receptors to temporary substantial pollutant concentrations from concrete batch plants.	Significant	**AQ-MM#3:** Reduce the Potential Impact of Concrete Batch Plants.	Less than significant
Project Impacts			
Localized Impacts Local Impacts: Localized Hot-Spot Analysis of HMF **AQ#5:** Operation of the HMF (Castle Commerce Center, Gordon-Shaw, and Kojima Development HMF sites) may expose sensitive receptors to substantial TAC pollutant concentrations. Significant for TAC.	Significant	**AQ-MM#6:** Reduce the Potential Impact of Air Toxics; **AQ-MM#7:** Reduce the Potential Impact of Stationary Sources.	Less than significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Localized Impacts Local Impacts: Localized Hot-Spot Analysis of HMF **AQ#6:** Operation of the HMF may cause the total PM_{10} and $PM_{2.5}$ ambient concentrations to exceed CAAQS due to the existing exceedances in the area. Significant for PM_{10} and $PM_{2.5}$.	Significant	**AQ-MM#7:** Reduce the Potential Impact of Stationary Sources.	Significant
NOISE AND VIBRATION			
Construction Period Impacts			
N&V#1: Construction Noise	Significant	**N&V-MM#1:** Construction noise mitigation measures.	Less than significant
N&V#2: Construction Vibration	Significant	**N&V-MM#2:** Construction vibration mitigation measures.	Less than significant
Project Impacts			
N&V#3: Severe Operational Noise Impacts UPRR: 1,024 to 1,149 residences, 6 to 8 hotels, 3 to 4 churches, 1 school, 1 park, 1 outdoor movie theater, 1 hospital BNSF: 541 to 859 residences, 3 hotels, 1 park, 1 church Hybrid: 509 to 520 residences, 3 hotels, 1 park, 1 church Shift in SR 99: 221 residences, 1 hotel	Significant	**N&V-MM#3:** Implement noise and vibration mitigation guidelines; **N&V-MM#4:** Vehicle noise specification; **N&V-MM#5:** Special trackwork at crossovers and turnouts. **N&V-MM#6:** Additional noise analysis during final design.	Significant in some locations as decided in coordination with local communities that choose not to have sound barriers or would prefer lower barriers, and significant where barriers are not fully effective at reducing noise to moderate Less than significant where implementation of one or more measures reduces noise to moderate
N&V#4: Operational Vibration Impacts	Significant	**N&V-MM#7:** Implement noise and vibration mitigation guidelines	Significant if mitigation is not feasible based on cost-benefit criteria
ELECTROMAGNETIC FIELDS AND ELECTROMAGNETIC INTERFERENCE			
No significant impacts would occur.			
PUBLIC UTILITIES AND ENERGY			
Construction Period Impacts			

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
No significant impacts would occur during the construction period.			
Project Impacts			
PUE#1. Conflicts with Existing Substations The BNSF and Hybrid alternatives and the Ave 21 Wye could conflict with existing substations.	Significant	**PUE-MM#1:** Redesign project features to avoid substation; **PUE-MM#2:** Move existing substation.	Less than significant
BIOLOGICAL RESOURCES AND WETLANDS			
Common Mitigation Measures			
The following mitigation measures effectively mitigate multiple resources and are common to overlapping impacts (e.g., special-status wildlife and wildlife movement corridors). Common mitigation measures apply to many of the construction period and project period impact categories.	N/A	**Bio-MM#1:** Designate Project Biologist(s), Contractor's Biologist(s), and Project Biological Monitor(s); **Bio-MM#2:** Regulatory Agency Access; **Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#9:** Mono-Filament Netting; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#11:** Entrapment Prevention; **Bio-MM#12:** Work Stoppage; **Bio-MM#13:** 'Take' Notification and Reporting; **Bio-MM#14:** Post-Construction Compliance Reports.	N/A

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Construction-Period Mitigation Measures			
Plant Communities and Land Cover Types			
Bio#1: Construction of the HST alternatives would introduce noxious weeds.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan.	Less than Significant
Bio#2: Construction of the HST alternatives would disturb Great Valley mixed riparian forest and other riparian habitat.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#15:** Restore Temporary Riparian Impacts;	Less than Significant
Special-Status Plants			
Bio#3: Construction of the HST alternatives would disturb suitable habitat that has potential to support special-status plant species.	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#14:** Post-Construction Compliance	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Reports; **Bio-MM#17:** Conduct Pre-Construction Surveys for Special-Status Plant Species; **Bio-MM#18:** Prepare and Implement Plan for Salvage, Relocation, and/or Propagation of Special-Status Plant Species.	
Special-Status Wildlife – Invertebrates			
Bio#4: Construction of the HST alternatives would disturb suitable habitat that has potential to support vernal pool branchiopods	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#12:** Work Stoppage; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#19:** Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna; **Bio-MM#20:** Seasonal Vernal Pool Work Restriction; **Bio-MM#21:** Implement and Monitor Vernal Pool Protection; **Bio-MM#44:** Restore Temporary Impacts on Jurisdictional Waters; **Bio-MM#45:** Monitor Construction Activities within Jurisdictional Waters.	Less than Significant
Bio#5: Construction of the HST alternatives would disturb suitable habitat that has	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#4:** Prepare and	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
potential to support the valley elderberry longhorn beetle.		Implement a Weed Control Plan; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#11:** Entrapment Prevention; **Bio-MM#12:** Work Stoppage; **Bio-MM#13:** 'Take' Notification and Reporting; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#22:** Implement Conservation Guidelines During the Construction Period for Valley Elderberry Longhorn Beetle.	
Special-Status Wildlife-Amphibians			
Bio#6: Construction of the HST alternatives would disturb California tiger salamander habitat.	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#9:** Mono-Filament Netting; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#11:** Entrapment	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Prevention; **Bio-MM#12:** Work Stoppage; **Bio-MM#13:** 'Take' Notification and Reporting; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#15:** Restore Temporary Riparian Impacts; **Bio-MM#19:** Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna; **Bio-MM#20:** Seasonal Vernal Pool Work Restriction; **Bio-MM#21:** Implement and Monitor Vernal Pool Protection; **Bio-MM#23:** Translocation of California Tiger Salamanders; **Bio-MM#24:** Erect Amphibian Exclusion Fencing; **Bio-MM#44:** Restore Temporary Impacts on Jurisdictional Waters; **Bio-MM#45:** Monitor Construction Activities within Jurisdictional Waters	
Bio#7: Construction of the HST alternatives would disturb western spadefoot toad habitat.	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#9:** Mono-Filament Netting; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#12:** Work Stoppage; **Bio-MM#13:** 'Take' Notification and Reporting; **Bio-MM#14:** Post-Construction Compliance	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Reports; **Bio-MM#15:** Restore Temporary Riparian Impacts; **Bio-MM#19:** Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna; **Bio-MM#20:** Seasonal Vernal Pool Work Restriction; **Bio-MM#21:** Implement and Monitor Vernal Pool Protection; **Bio-MM#24:** Erect Amphibian Exclusion Fencing; **Bio-MM#25:** Conduct Emergence and Larval Surveys for Western Spadefoot Toad; **Bio-MM#44:** Restore Temporary Impacts on Jurisdictional Waters; **Bio-MM#45:** Monitor Construction Activities within Jurisdictional Waters	
Special-Status Wildlife – Reptiles			
Bio#8: Construction of the HST alternatives would disturb habitat that supports the western pond turtle.	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#12:** Work Stoppage; **Bio-MM#13:** 'Take' Notification and Reporting; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#15:** Restore Temporary Riparian Impacts; **Bio-MM#26:** Conduct Western Pond Turtle Pre-Construction Surveys and Relocation; **Bio-MM#27:** Conduct	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Western Pond Turtle Monitoring; **Bio-MM#28:** Implement Western Pond Turtle Avoidance and Relocation; **Bio-MM#44:** Restore Temporary Impacts on Jurisdictional Waters; **Bio-MM#45:** Monitor Construction Activities within Jurisdictional Waters; **Bio-MM#53:** Implement Western Pond Turtle Mitigation Measures.	
Special-Status Wildlife-Birds and Raptors			
Bio#10: Construction of the HST alternatives would disturb nesting Swainson's hawk.	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#12:** Work Stoppage; **Bio-MM#13:** 'Take' Notification and Reporting; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#29:** Conduct Pre-Construction Surveys and Monitoring for Raptors; **Bio-MM#31:** Raptor Protection on Power Lines; **Bio-MM#32:** Conduct Pre-Construction Surveys for Swainson's Hawks; **Bio-MM#33:** Swainson's Hawk Nest Avoidance; **Bio-MM#34:** Monitor Removal of Nest Trees for Swainson's Hawk.	Less than Significant
Bio#11: Construction of the HST alternatives would disturb breeding birds, including raptors.	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#5:** Prepare and	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Implement a Biological Resources Management Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#12:** Work Stoppage; **Bio-MM#13:** 'Take' Notification and Reporting; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#29:** Conduct Pre-Construction Surveys and Monitoring for Raptors; **Bio-MM#30:** Delineate Active Nest Exclusion Areas for Other Breeding Birds; **Bio-MM#31:** Raptor Protection on Power Lines.	
Bio#12: Construction of the HST alternatives would disturb or cause the loss of burrowing owls and their habitat.	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#13:** 'Take' Notification and Reporting; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#35:** Conduct Pre-Construction Surveys for Burrowing Owls; **Bio-MM#36:** Burrowing Owl Avoidance and Minimization.	Less than Significant
Special-Status Wildlife – Mammals			
Bio#13: Construction of the HST alternatives would disturb breeding	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program;	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
or nonbreeding bats.		**Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#12:** Work Stoppage; **Bio-MM#13:** 'Take' Notification and Reporting; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#37:** Conduct Pre-Construction Surveys for Special-Status Bat Species; **Bio-MM#38:** Bat Avoidance and Relocation; **Bio-MM#39:** Bat Exclusion and Deterrence.	
Bio#14: Construction of the HST alternatives would disturb American badger dens.	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#11:** Entrapment Prevention; **Bio-MM#12:** Work Stoppage; **Bio-MM#40:** Conduct Pre-Construction Surveys for American Badger; **Bio-MM#41:** American Badger Avoidance; **Bio-MM#44:** Restore Temporary Impacts on Jurisdictional Waters; **Bio-MM#45:** Monitor Construction Activities within	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Jurisdictional Waters.	
Bio#15: Construction of the HST alternatives would disturb San Joaquin kit fox dens.	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#11:** Entrapment Prevention; **Bio-MM#12:** Work Stoppage; **Bio-MM#13:** 'Take' Notification and Reporting; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#42:** Conduct Pre-Construction Surveys for San Joaquin Kit Fox; **Bio-MM#43:** Minimize Impacts on San Joaquin Kit Fox; **Bio-MM#44:** Restore Temporary Impacts on Jurisdictional Waters; **Bio-MM#45:** Monitor Construction Activities within Jurisdictional Waters.	Less than Significant
Habitats of Concern			
Special-Status Plant Communities			
Bio#16: Construction of the HST alternatives would temporarily convert special-status plant communities (e.g., Great Valley mixed riparian forest, coastal and valley freshwater marsh, vernal pools).	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas;	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Bio-MM#10: Vehicle Traffic; **Bio-MM#15:** Restore Temporary Riparian Impacts; **Bio-MM#19:** Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna; **Bio-MM#20:** Seasonal Vernal Pool Work Restriction; **Bio-MM#21:** Implement and Monitor Vernal Pool Protection; **Bio-MM#44:** Restore Temporary Impacts on Jurisdictional Waters; **Bio-MM#45:** Monitor Construction Activities within Jurisdictional Waters	
Jurisdictional Waters			
Bio#17: Construction of the HST alternatives would have indirect impacts on jurisdictional waters.	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#15:** Restore Temporary Riparian Impacts; **Bio-MM#19:** Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna; **Bio-MM#20:** Seasonal Vernal Pool Work Restriction; **Bio-MM#21:** Implement and Monitor Vernal Pool Protection; **Bio-MM#44:** Restore Temporary Impacts on Jurisdictional Waters; **Bio-MM#45:** Monitor Construction Activities within	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Jurisdictional Waters	
Critical Habitat			
Bio#18: Construction of the HST alternatives would disturb critical habitat.	Significant	HST impacts associated with threatened and endangered species, including critical habitat, occupied habitat, and suitable habitat for special-status species is addressed through the coordination process, outlined under Section 7 of the federal ESA. After a Biological Assessment has been accepted, the USFWS will render a Biological Opinion. The individual mitigation measures addressed for special-status species are anticipated to result in compliance with appropriate mitigation for Conservancy fairy shrimp, vernal pool tadpole shrimp, vernal pool fairy shrimp, San Joaquin Orcutt grass, Greene's tuctoria, and succulent owl's clover critical habitat. **Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#15:** Restore	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Temporary Riparian Impacts; **Bio-MM#17:** Conduct Pre-Construction Surveys for Special-Status Plant Species; **Bio-MM#18:** Prepare and Implement Plan for Salvage, Relocation, and/or Propagation of Special-Status Plant Species; **Bio-MM#19:** Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna; **Bio-MM#20:** Seasonal Vernal Pool Work Restriction; **Bio-MM#21:** Implement and Monitor Vernal Pool Protection; **Bio-MM#44:** Restore Temporary Impacts on Jurisdictional Waters; **Bio-MM#45:** Monitor Construction Activities within Jurisdictional Waters	
Mitigation Banks/Reserves			
Bio#20: Construction of the BNSF Alternative would disturb portions of the Great Valley Conservation Bank.	Significant	**Bio-MM#3:** Prepare and Implement a Worker Environmental Awareness Program; **Bio-MM#5:** Prepare and Implement a Biological Resources Management Plan; **Bio-MM#6:** Prepare and Implement a Restoration and Revegetation Plan; **Bio-MM#7:** Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field); **Bio-MM#8:** Equipment Staging Areas; **Bio-MM#10:** Vehicle Traffic; **Bio-MM#15:** Restore Temporary Riparian Impacts; **Bio-MM#17:** Conduct Pre-Construction Surveys for Special-Status Plant Species; **Bio-MM#18:** Prepare and Implement Plan for Salvage, Relocation, and/or Propagation of Special-Status Plant Species; **Bio-MM#19:** Conduct Pre-Construction Sampling and	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Assessment for Vernal Pool Fauna; **Bio-MM#20:** Seasonal Vernal Pool Work Restriction; **Bio-MM#21:** Implement and Monitor Vernal Pool Protection; **Bio-MM#44:** Restore Temporary Impacts on Jurisdictional Waters; **Bio-MM#45:** Monitor Construction Activities within Jurisdictional Waters	
Bio#21: Construction of the HST alternatives would disturb Camp Pashayan (San Joaquin River Ecological Reserve).	Significant	**Bio-MM#15:** Restore Temporary Riparian Impacts; **Bio-MM#17:** Conduct Pre-Construction Surveys for Special-Status Plant Species; **Bio-MM#18:** Prepare and Implement Plan for Salvage, Relocation, and/or Propagation of Special-Status Plant Species; **Bio-MM#19:** Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna; **Bio-MM#20:** Seasonal Vernal Pool Work Restriction; **Bio-MM#21:** Implement and Monitor Vernal Pool Protection; **Bio-MM#44:** Restore Temporary Impacts on Jurisdictional Waters. **Bio-MM#45:** Monitor Construction Activities within Jurisdictional Waters; **PK-MM#4** Acquire Property for Camp Pashayan.	Less than Significant
PROJECT MITIGATION MEASURES			
Plant Communities and Land Cover Types			
Bio#22: Project period impacts from the HST alternatives would permanently convert Great Valley mixed riparian forest and other riparian habitat (Coastal and Valley Freshwater Marsh and vernal pools addressed in Bio#16).	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#49:** Compensate for Permanent Riparian Impacts; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters (addresses riparian habitat); **Bio-MM#60:** Offsite Habitat Restoration, Enhancement, and Preservation.	
Special-Status Plant Species			
Bio#23: Project period impacts from the HST alternatives would permanently convert suitable habitat that has potential to support special-status plant species.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#50:** Compensate for Impacts on Special-Status Plant Species; **Bio-MM#51:** Implement Conservation Guidelines During the Project Period for Valley Elderberry Longhorn Beetle; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement, and Preservation.	Less than Significant
Special-Status Wildlife – Invertebrates			
Bio#24: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support vernal pool branchiopods.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement,	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		and Preservation.	
Bio#25: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support valley elderberry longhorn beetle.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#51:** Implement Conservation Guidelines During the Project Period for Valley Elderberry Longhorn Beetle; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement, and Preservation.	Less than Significant
Special-Status Wildlife – Amphibians			
Bio#26: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support California tiger salamander.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#52:** Compensate for Impacts on California Tiger Salamander; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement, and Preservation.	Less than Significant
Bio#27: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support western spadefoot toad.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#25:** Conduct Emergence and Larval Surveys for Western Spadefoot Toad; **Bio-MM#52:** Compensate for Impacts on California Tiger Salamander; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement, and Preservation.	
Special-Status Wildlife – Reptiles			
Bio#28: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support western pond turtle.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#49:** Compensate for Permanent Riparian Impacts; **Bio-MM#53:** Implement Western Pond Turtle Mitigation Measures; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement, and Preservation.	Less than Significant
Special-Status Wildlife – Birds and Raptors			
Bio#30: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support nesting Swainson's hawk.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#49:** Compensate for Permanent Riparian Impacts; **Bio-MM#54:** Compensate for Loss of Swainson's Hawk Foraging Habitat; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Restoration, Enhancement, and Preservation.	
Bio#31: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support burrowing owls.	Significant	**Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#55:** Compensate for Loss of Burrowing Owl Foraging and Breeding Habitat.	Less than Significant
Bio#32: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support breeding birds, including raptors and burrowing owls.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#49:** Compensate for Permanent Riparian Impacts; **Bio-MM#54:** Compensate for Loss of Swainson's Hawk Foraging Habitat; **Bio-MM#55:** Compensate for Loss of Burrowing Owl Foraging and Breeding Habitat. **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement, and Preservation.	Less than Significant
Special-Status Wildlife – Mammals			
Bio#33: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support special-status bats.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#49:** Compensate for Permanent Riparian Impacts; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement and Preservation.	
Bio#34: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support American badger dens.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#47:** Install Wildlife Fencing; **Bio-MM#48:** Construction in Wildlife Movement Corridors; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement, and Preservation; **N & V-MM#3:** Implement Proposed California High-Speed Train Project Noise and Vibration Mitigation Guidelines.	Less than Significant
Bio#35: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support San Joaquin kit fox dens.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#47:** Install Wildlife Fencing; **Bio-MM#48:** Construction in Wildlife Movement Corridors; **Bio-MM#56:** Compensate for Destruction of Natal Dens; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement, and Preservation; **N & V-MM#3:** Implement	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		Proposed California High-Speed Train Project Noise and Vibration Mitigation Guidelines.	
Habitats of Concern			
Special-Status Plant Communities			
• **Bio#36: Project period impacts from the HST alternatives would permanently convert special-status plant communities (Great Valley Mixed Riparian and other riparian addressed in Bio#22).**	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#49:** Compensate for Permanent Riparian Impacts; **Bio-MM#51:** Implement Conservation Guidelines During the Project Period for Valley Elderberry Longhorn Beetle; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement, and Preservation.	Less than Significant
Jurisdictional Waters			
Bio#37: Project period impacts from the HST alternatives would permanently convert jurisdictional waters.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#49:** Compensate for Permanent Riparian Impacts; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement, and Preservation.	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Critical Habitat			
Bio#38: Project period impacts from the HST alternatives would include critical habitat for vernal pool species.	Significant	**Bio-MM#4:** Prepare and Implement a Weed Control Plan; **Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#49:** Compensate for Permanent Riparian Impacts; **Bio-MM#50:** Compensate for Impacts on Special-Status Plant Species; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Off-Site Habitat Restoration, Enhancement, and Preservation.	Less than Significant
Mitigation Banks/Reserves			
Bio#40: All of the HST alternatives would affect Camp Pashayan (within the San Joaquin River Ecological Reserve).	Significant	**PK-MM#1:** Compensate for Staging in Park Property for Construction; **PK-MM#4:** Acquire Property for Camp Pashayan	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Bio#41: Project period impacts from the BNSF Alternative would affect portions of the Great Valley Conservation Bank.	Significant	**Bio-MM#14:** Post-Construction Compliance Reports; **Bio-MM#49:** Compensate for Permanent Riparian Impacts; **Bio-MM#50:** Compensate for Impacts on Special-Status Plant Species; **Bio-MM#57:** Conduct Delineation of Jurisdictional Waters and State Streambeds; **Bio-MM#58:** Prepare and Implement a Habitat Mitigation and Monitoring Plan; **Bio-MM#59:** Compensate for Permanent Impacts on Jurisdictional Waters; **Bio-MM#60:** Offsite Habitat Restoration, Enhancement, and Preservation. **PK-MM#1:** Compensate for Staging in Park Property for Construction; **PK-MM#2:** Acquire Park Property.	Less than Significant
HYDROLOGY AND WATER RESOURCES			
No significant impacts have been identified.			
GEOLOGY, SOILS, AND SEISMICITY			
No significant impacts have been identified.			
HAZARDOUS MATERIALS AND WASTES			
Construction Period Impacts			
HMW#1. Handling of Extremely Hazardous Materials within 0.25 mile of a School The UPRR/SR 99 Alternative would impact 15 schools; the BNSF Alternative would impact 12 to 13 schools; and the Hybrid Alternative would impact 12 schools.	Significant	**HMW-MM#1:** No use of extremely hazardous substances or a mixture thereof in a quantity equal to or greater than the state threshold quantity (Health and Safety Code Section 25532) within 0.25 mile of a school.	Less than significant
Project Impacts			
No significant impacts during the project period have been identified.			

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
SAFETY AND SECURITY			
Construction Period Impacts			
No significant impacts during the construction period have been identified.			
Project Impacts			
S&S #1: Ave 24 Wye north-bound leg connecting to the BNSF Alternative (Road 21 overpass) presents security risk to correctional facilities.	Significant	**S&S-MM#1**: Revise design to avoid safety risk to correctional facilities from roadway overpass.	Less than significant
S&S #2: Increased demand for fire, rescue, and emergency services at stations and HMF.	Significant	**S&S-MM#2:** Monitor response of local fire, rescue, and emergency service providers to incidents at stations and the HMF and provide a fair share cost of service.	Less than significant
SOCIOECONOMICS, COMMUNITIES, AND ENVIRONMENTAL JUSTICE			
SO#1: Division of Merced Estates Mobile Home Park. The guideway between the Castle Commerce Center HMF and the Merced HST station would bisect an existing mobile home community, displacing approximately 50% of the homes.	Significant	**SO-MM#3:**Implement measures to reduce impacts associated with the division of existing communities; **SO-MM#5:**Continue outreach to disproportionately and negatively affected environmental justice communities of concern; **SO-MM#6:** Investigate avoidance of displacements or consider other replacement housing options in Franklin-Beachwood, Le Grand, and Fairmead.	Significant
SO#2: Displacement of Community Facilities. The guideway between the Castle Commerce Center HMF and the Merced HST station would require the acquisition of three community facilities.	Significant	**SO-MM#4:**Replace community facilities; **SO-MM#5:** Continue outreach to disproportionately and negatively affected environmental justice communities of concern.	Less than significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
SO#3: Displacement of Community Facility. All of the HST alternatives would result in the acquisition of a homeless shelter in the City of Merced.	Significant	**SO-MM#4:**Replace community facilities; **SO-MM#5:** Continue outreach to disproportionately and negatively affected environmental justice communities of concern.	Less than significant
STATION PLANNING, LAND USE, AND DEVELOPMENT			
No significant impacts have been identified.			
AGRICULTURAL LAND			
Construction Period Impacts			
No significant impacts during the construction period have been identified.			
Project Impacts			
Ag#1: Permanent Conversion of Agricultural Land to Nonagricultural Use. The UPRR/SR 99 Alternative would affect 1,027 to 1,149 acres of Important Farmland, compared to 1,417 to 1,483 acres under the BNSF Alternative and 1,273 to 1,426 acres under the Hybrid Alternative. Castle Commerce Center HMF – 110 acres Harris-DeJager – 313 acres Fagundes – 168 acres Gordon-Shaw – 313 acres Kojima Development – 246 acres	Significant	**Ag-MM#1:** Preserve the total amount of Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland.	Significant
PARKS, RECREATION, AND OPEN SPACE			
Construction Period Impacts			
PK#1 Sharon Avenue Linear Park (City of Madera) Temporary Closure. At Sharon Avenue Linear Park, the UPRR/SR 99 Alternative would require temporary closure of the	Significant	**PK-MM#1:** Compensate for Staging in Park Property for Construction	Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
park during construction, including temporary access restrictions.			
PK#2 County Road 27¾ Linear Park (City of Madera) Construction Use. At Road 27¾ Linear Park, the UPRR/SR 99 Alternative would require temporary closure of the park during construction.	Significant	**PK-MM#1:** Compensate for Staging in Park Property for Construction	Significant
PK#3 Vern McCullough Fresno River Trail (City of Madera) Construction Use. During construction, the UPRR/SR 99 Alternative could jeopardize the construction project timeline for the planned extension of the Vern McCullough Fresno River Trail extension or result in closure or disruption of use. If the trail extension were built before the HST Project, the trail would need to be closed for safety purposes (due to overhead work); this effect would be significant under NEPA. However, at this time, is not certain whether the trail extension or the HST guideway would be constructed first. The Authority will coordinate closely with the City of Madera regarding the timing of construction of both projects so as to allow for a suitable arrangement that would allow this planned trail extension to be built.	Significant	**PK-MM#1:** Compensate for Staging in Park Property for Construction	Less than significant
PK#4 Camp Pashayan (City of Fresno). At Camp Pashayan, all three HST alternatives would (1) require temporary use during construction, (2) result in similar visual changes because of the use of construction equipment, (3) decrease the visual buffer from the adjacent	Significant	**PK-MM#1:** Compensate for Staging in Park Property for Construction	Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
UPPR right-of-way because of the removal of vegetation, and (4) generate similar noise and dust, and possible access restrictions because of construction activities in adjacent areas of the park.			
Project Impacts			
PK#5 Riverside Park (City of Madera). At Riverside Park, the UPRR/SR 99 Alternative would permanently acquire 0.4 acre of area at the west end of the park.	Significant	**PK-MM#2:** Acquire Park Property	Less than Significant
PK#6 County Road 27¾ Linear Park (City of Madera). At County Road 27¾ Linear Park, the UPRR/SR 99 Alternative would acquire 1.0 acre of area for the alignment.	Significant	**PK-MM#2:** Acquire Park Property	Less than Significant
PK#7 Camp Pashayan Park. At Camp Pashayan, all three HST alternatives would acquire 0.6 acre of park area for support columns and easement for elevated structure.	Significant	**PK-MM#4:** Acquire Property for Camp Pashayan	Less than Significant
PK#8 Roeding Park (City of Fresno). At Roeding Park, all three alternatives would have noise impacts on the eastern portions of the park.	Significant	**PK-MM#5:** Address Noise at Roeding Park with City of Fresno	Less than Significant It is possible that the City of Fresno would view the projected noise levels as acceptable and preferable to the implementation of mitigation measures. In this case, the impacts on Roeding Park would remain significant.
PK#9 Joe Stefani Elementary School. At Joe Stefani Elementary School, an HMF at Castle Commerce Center would require the acquisition of the entire school property (14.5 acres) for project construction.	Significant	**PK-MM#2:** Acquire Park Property	Significant
AESTHETICS AND VISUAL QUALITY			
VQ#1: Visual	Significant	**VQ-MM#1:** Minimize Visual	Less than significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Disturbance during Construction. For all alternatives, construction activities would cause visual impacts in urban areas.		Disruption from Construction.	
VQ#2: Nighttime Lighting during Construction. Nighttime lighting would be more frequent under the UPRR/SR 99 Alternative, although all alternatives would affect Merced and Fresno urban areas.	Significant	**VQ-MM#2**: Minimize Light Disturbance from Construction.	Less than significant
VQ#3: Lower Visual Quality in the Chowchilla–Madera Landscape Unit. The UPRR/SR 99 Alternative would create a permanent elevated guideway in front of the church and a residential neighborhood in Fairmead. No other alternative would have this effect.	Significant	**VQ-MM#3:** Incorporate Design Criteria for Elevated and Station Elements that can Adapt to Local Context;	Significant
VQ#4: Lower Visual Quality in the Madera Landscape Unit. The UPRR/SR 99 Alternative would create a permanent elevated guideway as the tallest structure in the downtown historical core. No other alternative would have this effect.	Significant	**VQ-MM#3:** Incorporate Design Criteria for Elevated and Station Elements that can Adapt to Local Context; **VQ-MM#3b:** Screen Elevated Guideways Adjacent to Residential Areas.	Significant
VQ#5: Lower Visual Quality in the West of SR 99 Landscape Unit. Each alternative using the Ave 24 Wye design option would degrade the visual quality with a large overcrossing of SR 233, which is a locally designated scenic and historical corridor.	Significant	**VQ-MM#5:** Provide Landscape Treatments along the HST Project Overcrossings and Retained Fill Elements of the HST.	Significant
VQ#6: Lower Visual Quality in the West of SR 99 Landscape Unit. Each alternative using the Ave 21 Wye design option would	Significant	**VQ-MM#5:** Provide Landscape Treatments along the HST Project Overcrossings and Retained Fill Elements of the HST.	Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
degrade the visual quality with a large road overcrossing of the HST that would remove orchards and fields and block views.			
VQ#7: Lower Visual Quality in the Merced–Le Grand Landscape unit. The BNSF Alternative would require roadway overcrossings, which would be supported by relatively large mounds of earth retained by walls. Construction of the overcrossings would remove orchards and block views in a locally designated scenic corridor. No other alternative has this effect at this location.	Significant	**VQ-MM#5:** Provide Landscape Treatments along the HST Project Overcrossings and Retained Fill Elements of the HST.	Significant
VQ#8: Lower Visual Quality in the Le Grand Landscape Unit. Visual quality would degrade from any of the BNSF design options through or east of Le Grand. This effect does not occur under other alternatives.	Significant	**VQ-MM#3:** Incorporate Design Criteria for Elevated and Station Elements that can Adapt to Local Context; **VQ-MM#4:** Replant Unused Portions of Lands Acquired for the HST.	Significant
VQ#9: Lower Visual Quality in the Le Grand–Madera Acres Landscape Unit. The BNSF Alternative would require an overcrossing at Buchanan Hollow Road and Santa Fe Avenue, which would block panoramic views toward the Sierra Nevada Mountains. This effect does not occur under the UPRR/SR 99 and the Hybrid alternatives.	Significant	**VQ-MM#5:** Provide Landscape Treatments along the HST Project Overcrossings and Retained Fill Elements of the HST.	Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
VQ#10: Lower Visual Quality in the Madera Acres Landscape Unit. The three elevated Wye options would degrade residential neighborhoods and would require a large overcrossing of the HST alternative and the existing BNSF tracks. This effect does not occur under the UPRR/SR 99, the at-grade BNSF, or the Hybrid Alternatives.	Significant	**VQ-MM#4:** Replant Unused Portions of Lands Acquired for the HST. **VQ-MM#5:** Provide Landscape Treatments along the HST Project Overcrossings and Retained Fill Elements of the HST.	Significant
VQ#11: Sound Barrier and Retaining Wall Would Block Views. All the alternatives equally would require the use of sound barriers along the guideway and overcrossing retaining walls in urbanized areas, potentially blocking existing views, depending on the barrier or wall height, location, and materials.	Significant	**VQ-MM#6:** Provide Sound Barrier Treatments. **VQ-MM#5:** Provide Landscape Treatments along the HST Project Overcrossings and Retained Fill Elements of the HST.	Significant
VQ#12: Traction Power Distribution Stations Would Alter Visual Character or Block Views. All of the alternatives would require the placement of stations at approximately 30-mile intervals along the alignment, which would potentially alter the visual character of adjacent lands and/or potentially block views toward areas beyond the alignment, depending on the size and location of the stations.	Significant	**VQ-MM#7:** Screen Traction Power Distribution Station.	Less than significant
CULTURAL AND PALEONTOLOGICAL RESOURCES			
Arch#1: Effect on Significant Prehistoric and Historic-Era Archaeological Resources During Construction The HST alternatives would affect archaeological	Significant	**Arch-MM#1:** Conduct Archaeological Training; **Arch-MM #2:** Halt Work in the Event of an Archaeological Discovery; **Arch-MM#3:** Plan an Intentional Site Burial Preservation In-Place;	Less than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
resources as follows: UPRR/SR 99: 10-11 resources; BNSF: 6-7 resources; HMF 3 resources; and Hybrid: 8-9 resources. (See Table 3.17-6 for list of specific resources impacted)		**Arch-MM#4:** Conduct Archaeological Monitoring in Proximity to Identified Sites or Areas of Sensitivity	
Pale#2: Effect on Paleontological Resources during Construction The HST alternatives have the potential for significant impacts due to excavations in sediments with moderate and high paleontological sensitivity (Table 3.17-8) Hybrid: Less than BNSF and more than UPRR/SR 99.	Significant	**Pale-MM#1:** Engage a Paleontological Resources Specialist to Direct Monitoring during Construction; **Pale-MM#2:** Prepare and Implement a PRMMP; **Pale-MM#3:** Halt to Construction when Paleontological Resources Are Found	Less than Significant
Hist#1: Effect on Historically Significant Built-Environment Resources During Construction The UPRR/SR 99 Alternative would cause substantial adverse change to up to 14 historical resources, and the BNSF and Hybrid alternatives would cause substantial adverse change to up to 12 historical resources (includes Roeding Park – see below). – Merced Beverage and Supply Company – Madera Southern Pacific Railroad Station (UPRR/SR 99 Alternative only) – Valley Feed & Fuel Co. (UPRR/ SR 99 Alternative only) – Robertson Blvd. Tree Row – Weber Avenue Overcrossing	Significant	**Hist-MM#1:** Avoid Adverse Vibration Effects; **Hist-MM#2:** Develop Protection and Stabilization Measures; **Hist-MM#3:** Minimize Adverse Effects through Relocation of Historic Structures; **Hist-MM#5:** Prepare and Submit NRHP Nominations; **Hist-MM#6:** Prepare and Submit CRHR Nominations; **Hist-MM#7:** Prepare and Submit HABS/ HAER/ HALS Documentation; **Hist-MM#8:** Prepare Historic Structure Reports; **Hist-MM#9**: Prepare Interpretive Exhibits; **Hist-MM#10:** Plan Repair of Inadvertent Damage	Significant and Unavoidable

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
– Belmont Avenue Subway and Traffic Circle – Southern Pacific Railroad Depot – Bank of America – 1528-1548 Tulare St – Haruji Ego Family Bldg – Pacific Coast Seeded Raisin/Del Monte Plant No. 68 – Hobbs Parsons Produce Bldg – Komoto's Department Store and Hotel			
Hist#2: Effect on Historically Significant Built-Environment Resources During Construction The UPRR/SR 99, BNSF, and Hybrid alternatives would cause substantial adverse change to Roeding Park.	Significant	**Hist-MM#1:** Avoid Adverse Vibration Effects; **Hist-MM#2:** Develop Protection and Stabilization Measures; **Hist-MM#5:** Prepare and Submit NRHP Nominations; **Hist-MM#6:** Prepare and Submit CRHR Nominations; **Hist-MM#7:** Prepare and Submit HABS/ HAER/ HALS Documentation; **Hist-MM#8:** Prepare Historic Structure Reports; **Hist-MM#9**: Prepare Interpretive Exhibits; **Hist-MM#10:** Plan Repair of Inadvertent Damage; **N&V-MM#1**: Construction Noise Mitigation Measures	Less than Significant with mitigation
Hist#3: Effect on Historically Significant Built-Environment Resources During Operation The UPRR/SR 99, BNSF and Hybrid Alternatives would cause substantial adverse change to 1 historical resource.	Significant	**PK-MM#5:** Address Noise at Roeding Park with City of Fresno **Hist-MM#4:** Minimize Adverse Noise Effects	Less than Significant with mitigation. It is possible that the City of Fresno would view the projected noise levels as acceptable and preferable to the implementation of mitigation measures. In this case, the impacts on Roeding Park, both as a park and a historic resource, would remain significant under CEQA.

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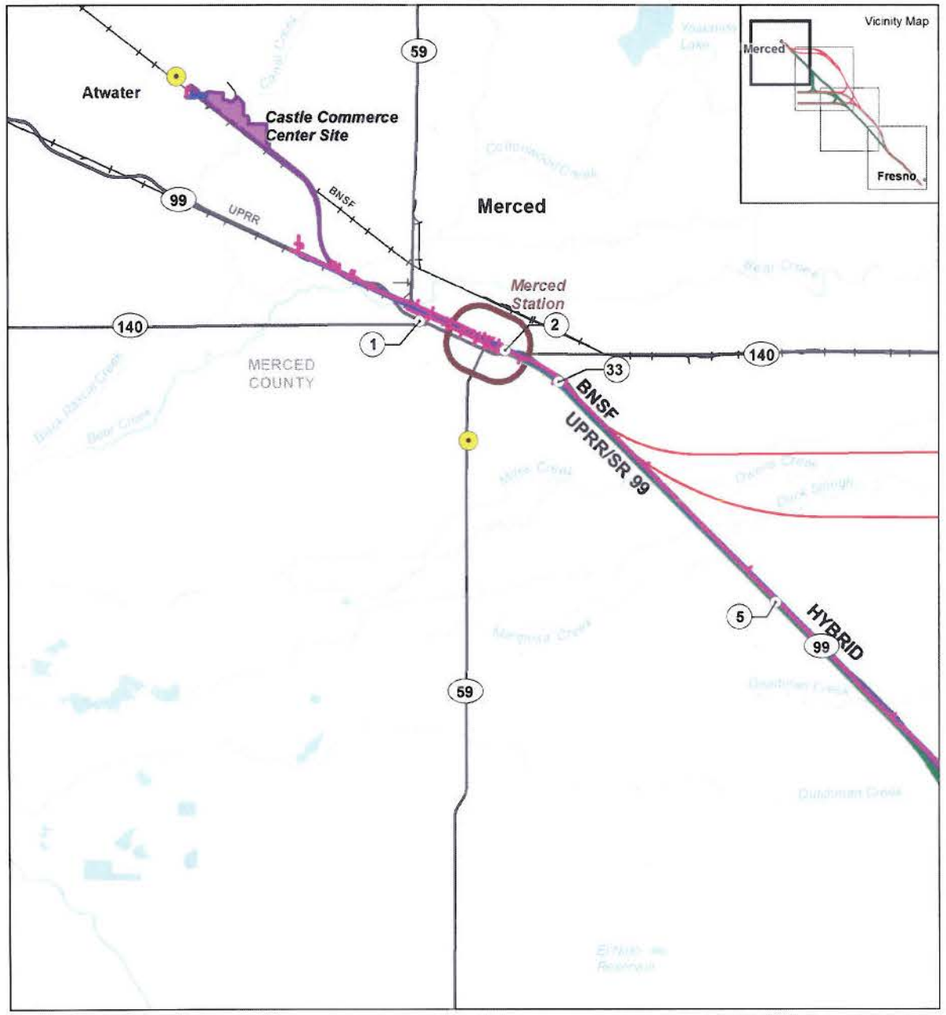
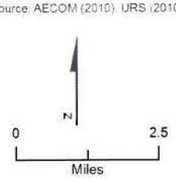
APPENDIX A

Figures



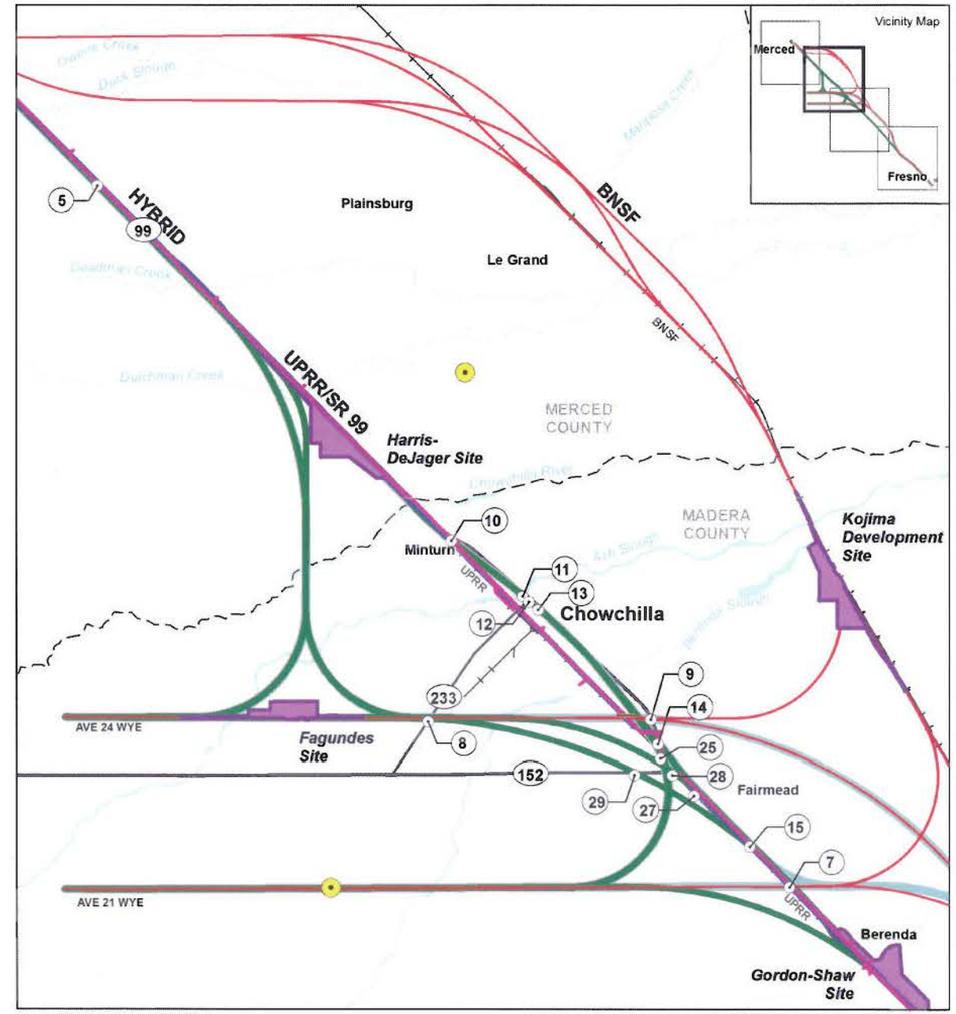
Source: AECOM (2010); URS (2010)

MF_MTG_CT_48-51_a May 09, 2012



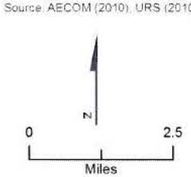
- UPRR/SR 99 Alternative
- BNSF Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Natural Gas Line
- Petroleum and Fuel Pipeline
- Electrical Transmission Line
- Substation
- Affected State Route Facility

Figure A-1
Locations of HST Impacts on the SHS System—
High-Risk Utilities in the Merced Project Vicinity



Source: AECOM (2010); URS (2010)

MF_MTG_CT_48-51_b May 09, 2012



- UPRR/SR 99 Alternative
- BNSF Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Natural Gas Line
- Petroleum and Fuel Pipeline
- Electrical Transmission Line
- Substation
- Affected State Route Facility

Figure A-2
Locations of HST Impacts on the SHS System—
High-Risk Utilities in the Chowchilla Project Vicinity

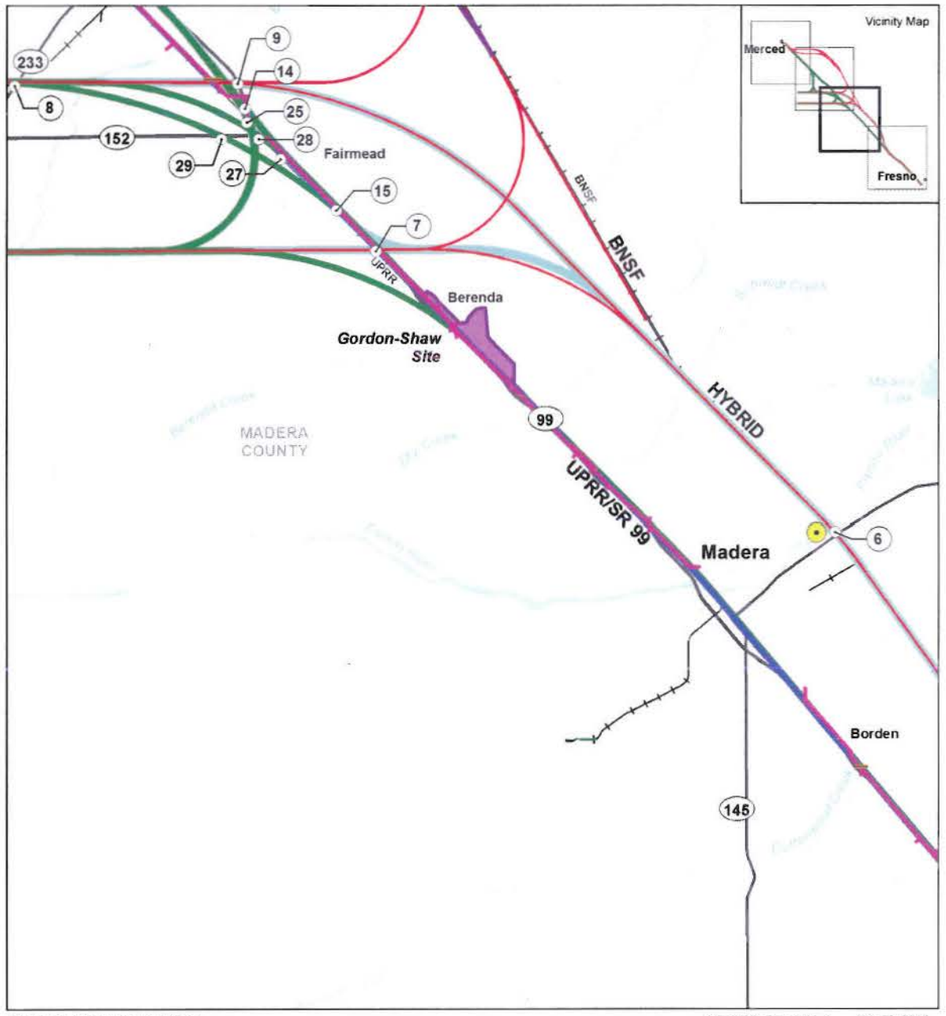


Figure A-3
Locations of HST Impacts on the SHS System—
High-Risk Utilities in the Madera Project Vicinity

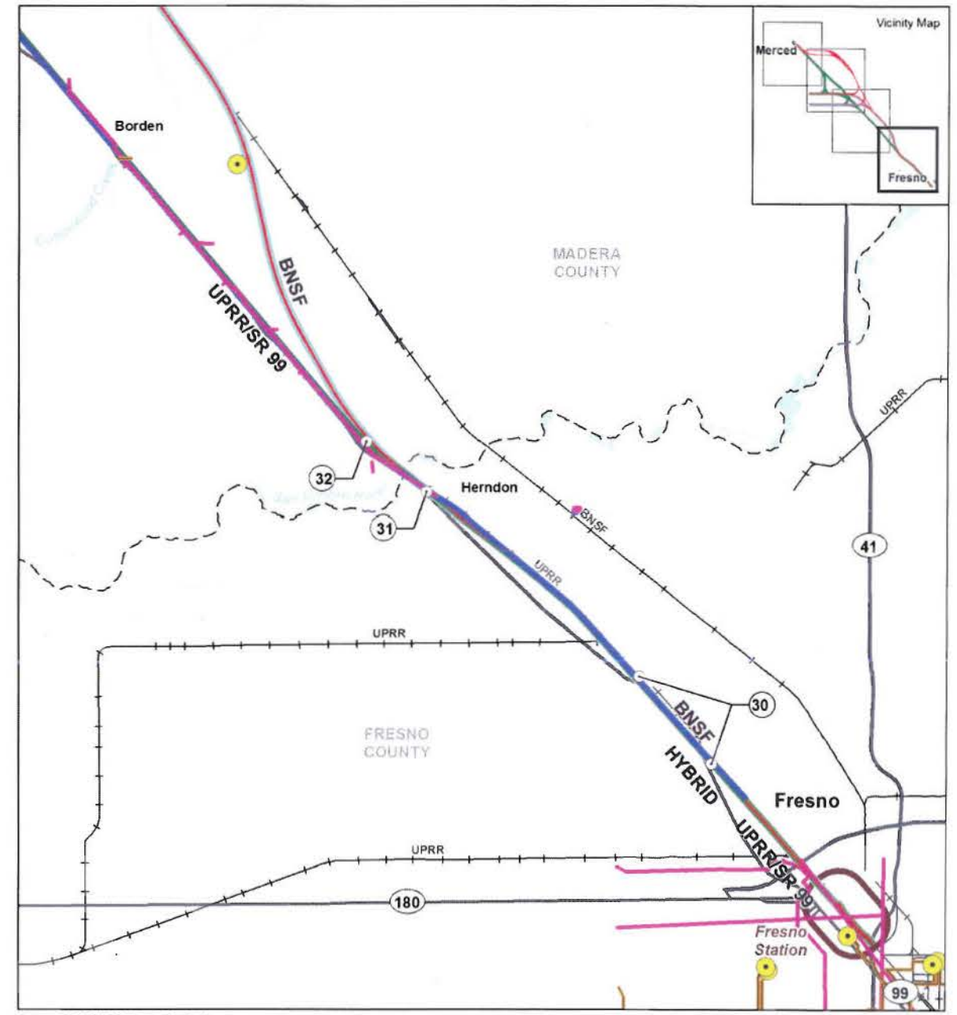
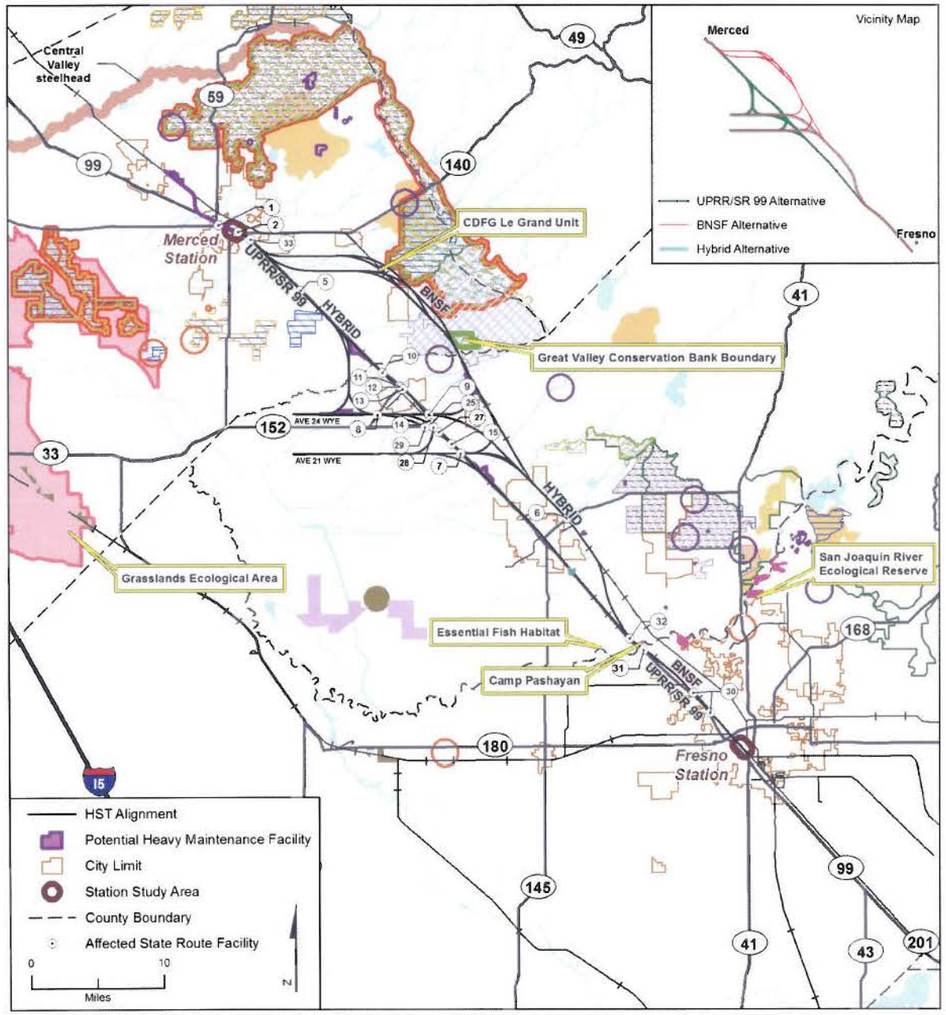


Figure A-4
Locations of HST Impacts on the SHS System—
High-Risk Utilities in the Fresno Project Vicinity



Source: U.S Fish & Wildlife Service, ESRP (2009), CNDDB (2003), Conservation Land Group (2010), Lopez (2010) MF_MTG_CT_09 May 09, 2012

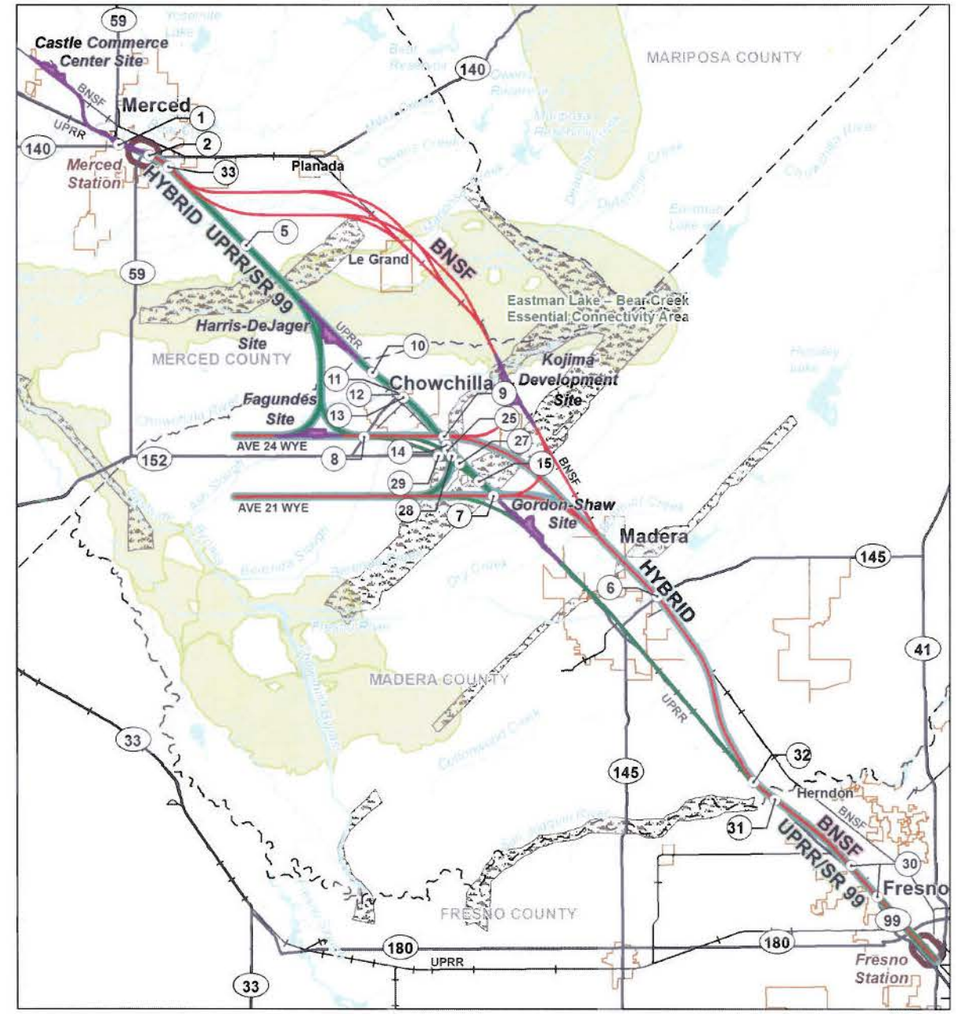
Critical Habitat
- Hoover's spurge
- San Joaquin Valley Orcutt grass
- hairy Orcutt grass
- succulent owl's-clover
- Greene's tuctoria
- Conservancy fairy shrimp
- vernal pool fairy shrimp
- vernal pool tadpole shrimp
- Colusa grass
- Central Valley steelhead
- California tiger salamander

Caltrans Observed Data
- vernal pool

Mitigation Banks/Reserves
- San Joaquin River Ecological Reserve
- CDFG Le Grand Unit
- Great Valley Conservation Bank Boundary
- Grasslands Ecological Area

Special-Status Plant Communities
- Northern Claypan Vernal Pool
- Northern Hardpan Vernal Pool
- Valley Sacaton Grassland
- Valley Sink Scrub

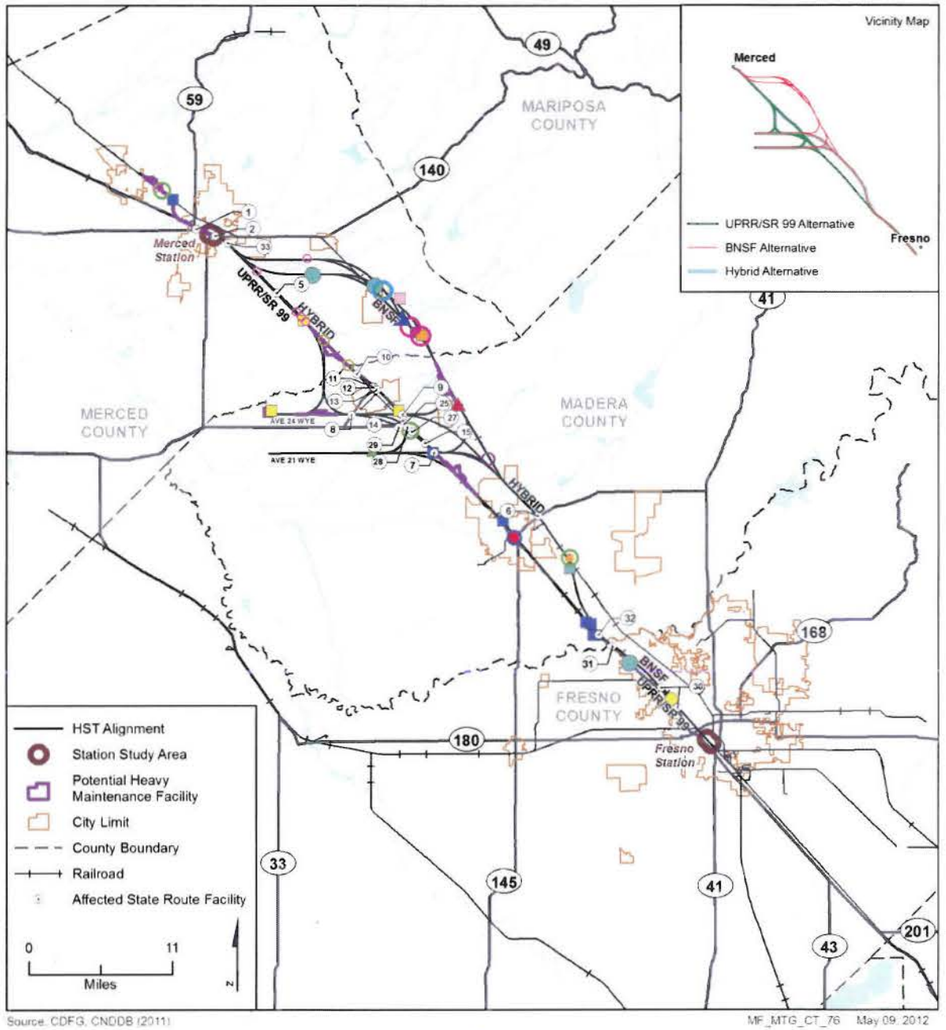
Figure A-5
Locations of HST Impacts on the SHS System—Critical Habitat



Source: Spencer et al. (2010), Huber (2007) MF_MTG_CT_52 May 09, 2012

- BNSF Alternative
- UPRR/SR 99 Alternative
- Hybrid Alternative
- Station Study Area
- Potential Heavy Maintenance Facility
- City Limit
- County Boundary
- Railroad
- Essential Connectivity Area
- Modeled Wildlife Corridors
- Affected State Route Facility

Figure A-6
Locations of HST Impacts on the SHS System—Wildlife Movement Corridors



Source: CDFG, CNDDB (2011)

Observed Special-Status Species

Wildlife
- California tiger salamander
- bald eagle
- loggerhead shrike
- northern harrier
- golden eagle
- yellow-headed blackbird

Plant
- Sanford's arrowhead

CNDDB Reported Special-Status Species

Wildlife
- California linderiella
- California tiger salamander
- Fresno kangaroo rat
- San Joaquin kit fox
- Swainson's hawk
- Yuma myotis
- moestan blister beetle
- molestan blister beetle
- vernal pool fairy shrimp
- vernal pool tadpole shrimp
- western spadefoot

Plant
- heartscale
- lesser saltscale
- succulent owl's-clover
- San Joaquin Valley Orcutt grass

Figure A-7
Locations of HST Impacts on the SHS System—
Threatened and Endangered Species Observed and Reported

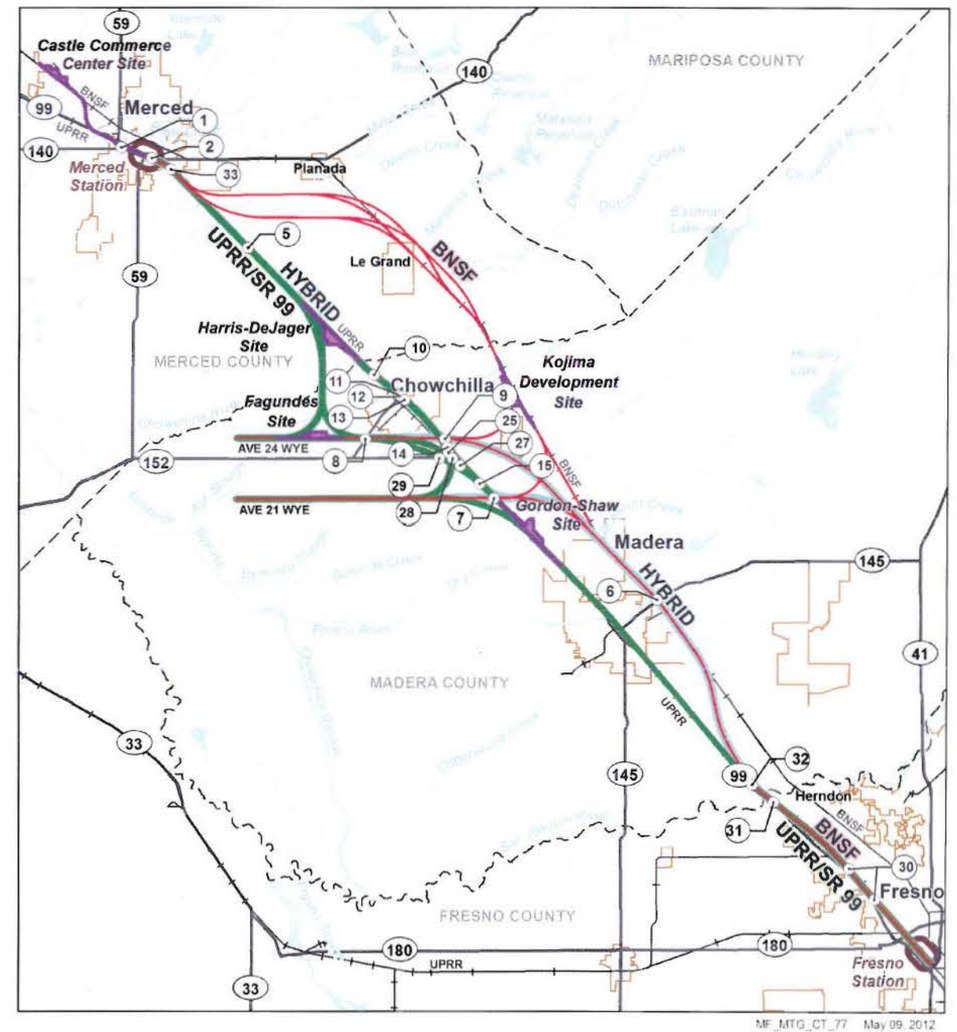
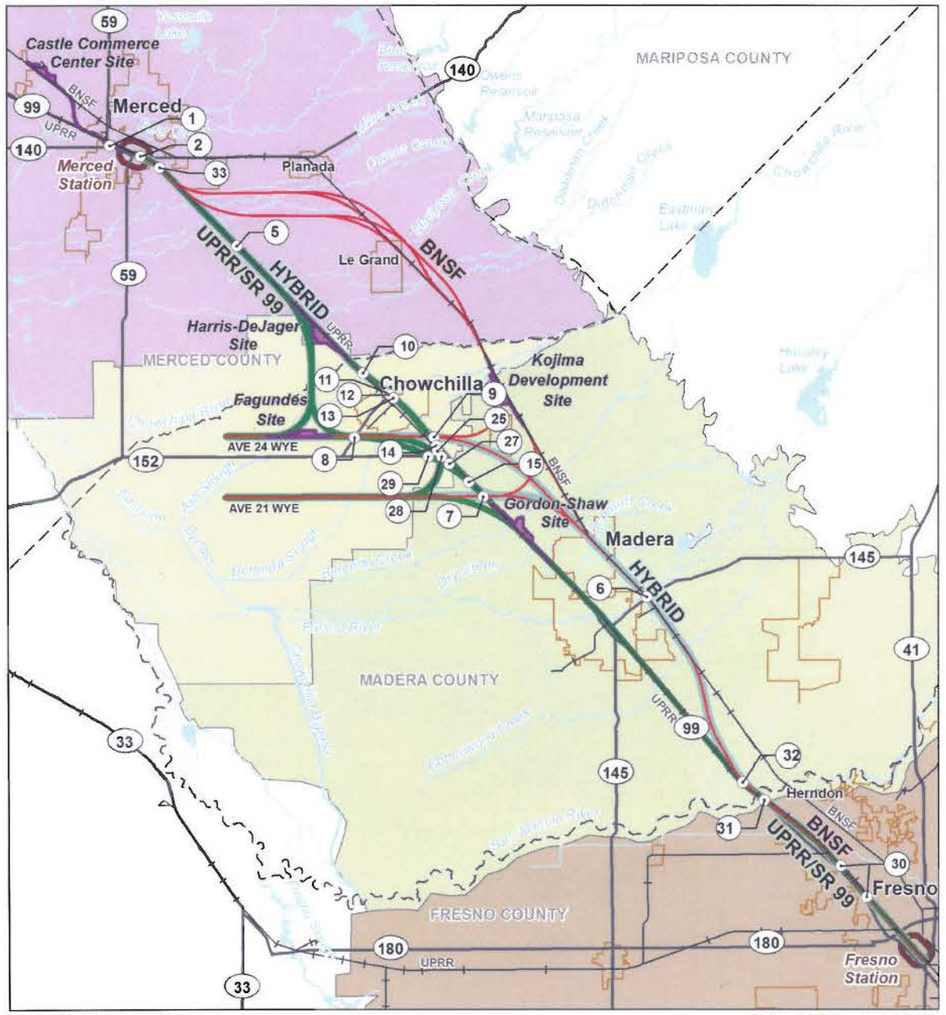


Figure A-8
Locations of HST Impacts on the SHS System—
Regional Hydrology

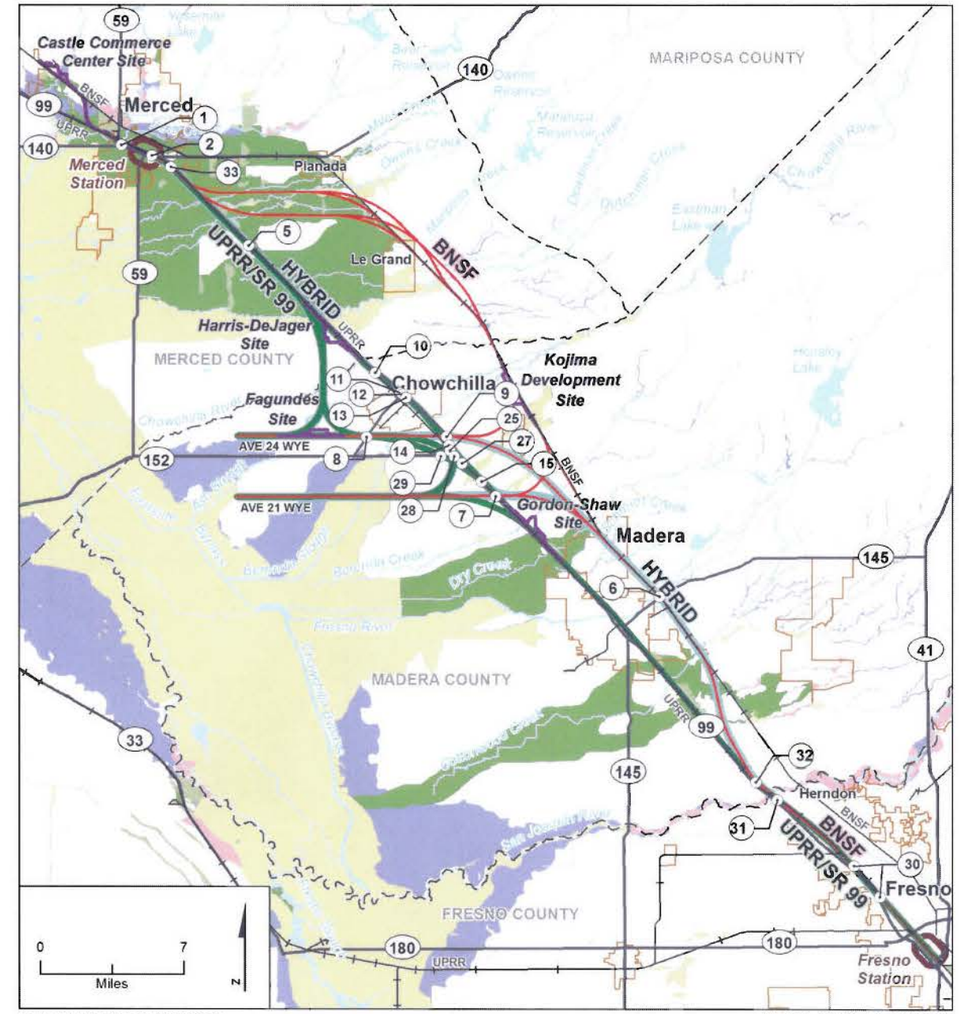


UPRR/SR 99 Alternative
BNSF Alternative
Hybrid Alternative
Potential Heavy Maintenance Facility
City Limit
Station Study Area
County Boundary
Existing Railroad
Affected State Route Facility

California DWR San Joaquin Valley Groundwater Basins
Merced Subbasin
Chowchilla Subbasin
Madera Subbasin
Kings Subbasin

0 7 Miles

Figure A-9
Locations of HST Impacts on the SHS System—
Groundwater Subbasins in the Project Vicinity



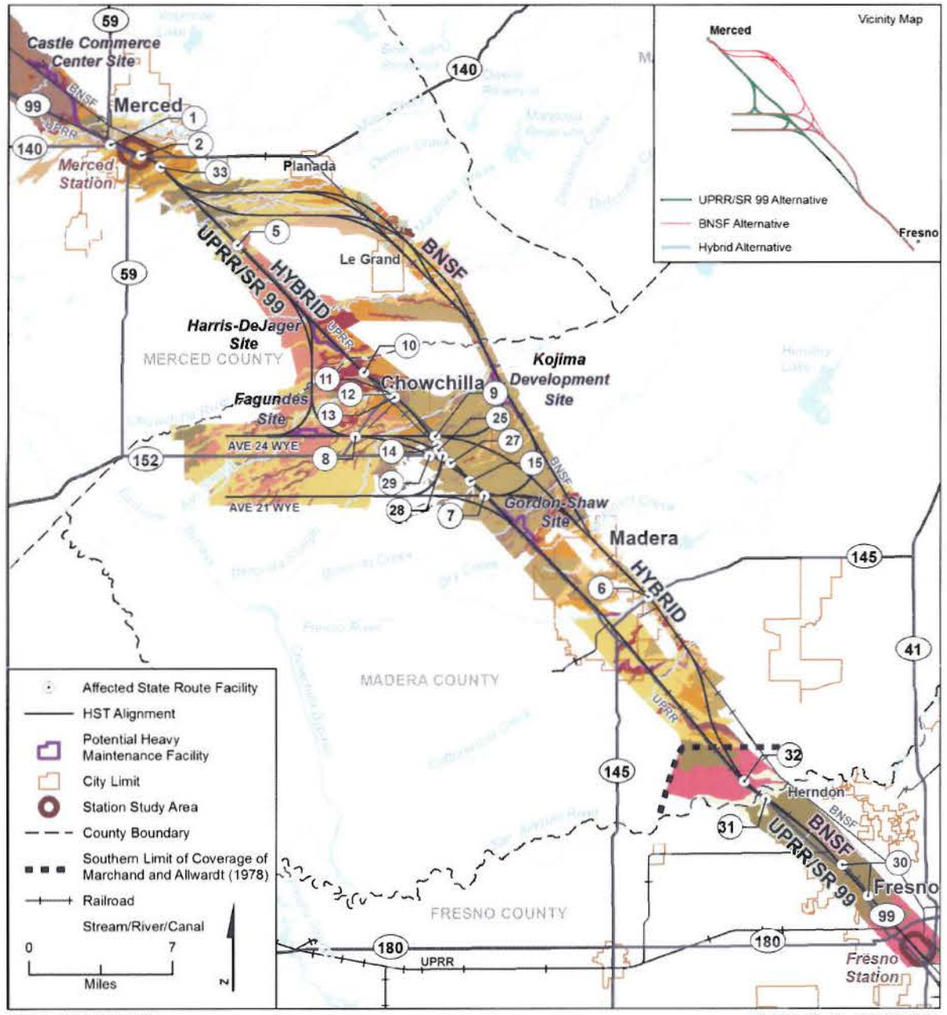
UPRR/SR 99 Alternative
BNSF Alternative
Hybrid Alternative
Potential Heavy Maintenance Facility
City Limit
Station Study Area
County Boundary
Existing Railroad
Affected State Route Facility

SFHA Special Flood Hazard Zone Designation

A	Areas with a 1% annual chance of flooding. No depths or base flood elevations have been determined for this zone.
AE	Areas with a 1% annual chance of flooding. Base flood elevations have been determined for this zone.
AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. Base flood elevations derived from detailed analyses are shown by FEMA for selected intervals within this zone.
AO	River or stream flood hazard areas and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. Average flood depths derived from detailed analyses are shown by FEMA within this zone.

California DWR 200-Year Floodplain

Figure A-10
Locations of HST Impacts
on the SHS System— Flood Zones
in the Project Vicinity



Source: USGS (1965, 1978)

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Coverage of Marchand and Allwardt (1978)

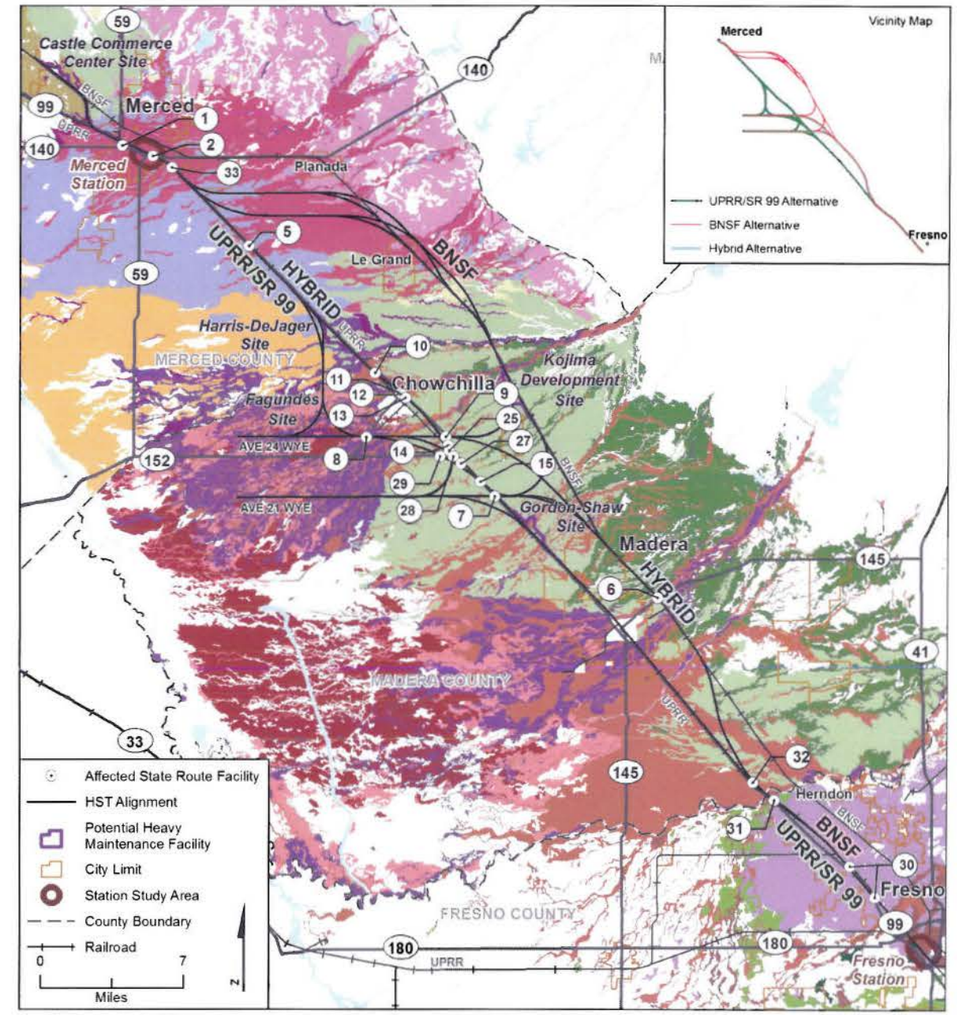
Youngest to Oldest

- hal, Post-Modesto
- mh, Undifferentiated post-Modesto and Modesto Formation
- m2, Modesto Formation - Upper member
- m2b, Modesto Formation - Upper member
- m2e, Modesto Formation - Upper member
- m1, Modesto Formation - Lower member
- m1b, Modesto Formation - Lower member
- m1e, Modesto Formation - Lower member
- r3, Riverbank Formation, upper unit
- rg, North Merced Riverbank
- rg, Riverbank Formation, upper unit
- r2, Riverbank Formation, middle unit
- t2, Turlock Lake Formation
- Qtnm, North Merced Gravel
- Tl, Laguna Formation
- Tm, Mehrten Formation

Coverage of Matthews and Burnet (1965)

- Qsc, Great Valley Sequence - Stream Deposits
- Qf, Great Valley Sequence - Fans
- Qc, Pleistocene nonmarine

Figure A-11
Locations of HST Impacts on the SHS System— Surficial Geology within the Study Area



Source: NRCS (1962a,b; 1971)

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Merced County Associations

- Delhi-Atwater association
- Fresno-Traver association
- Hanford-Grangeville association
- Lewis-Landlow-Burchell association
- Pachappa-Grangeville association
- Redding-Pentz-Peters association
- Rossi-Waukena association
- San Joaquin-Madera association
- Whitney-Rocklin-Montpellier association
- Wyman-Yokohl-Marguerite association

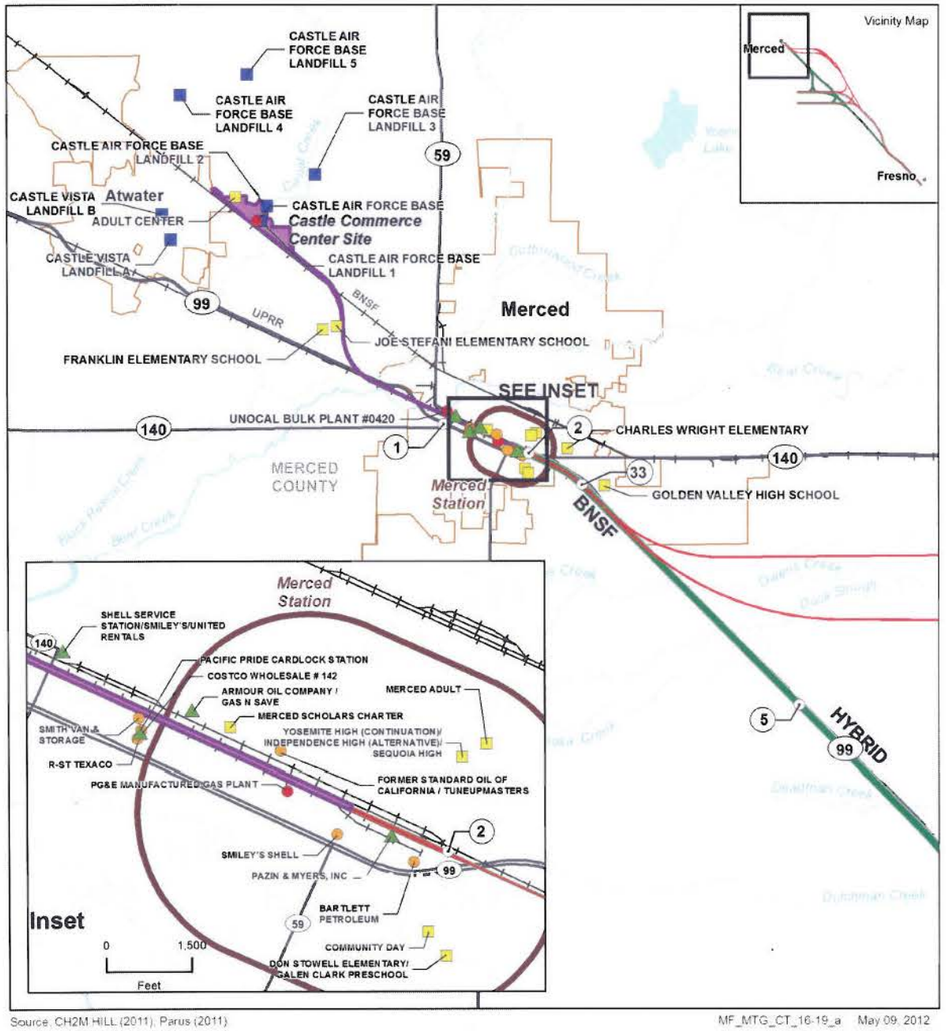
Madera County Associations

- Cometa-Whitney association
- Fresno-El Peco association
- Hanford-Tujunga association
- Pachappa-Grangeville association
- San Joaquin-Madera association
- Traver-Chino association

Fresno County Associations

- Greenfield-Atwater association
- Hanford-Delhi-Hesperia association
- Hanford-Hesperia association
- Hanford-Tujunga association
- San Joaquin-Exeter-Ramona association

Figure A-12
Locations of HST Impacts on the SHS System— Soil Associations within the Study Area



Source: CH2M HILL (2011), Parus (2011).

MF_MTG_CT_16-19_a May 09, 2012

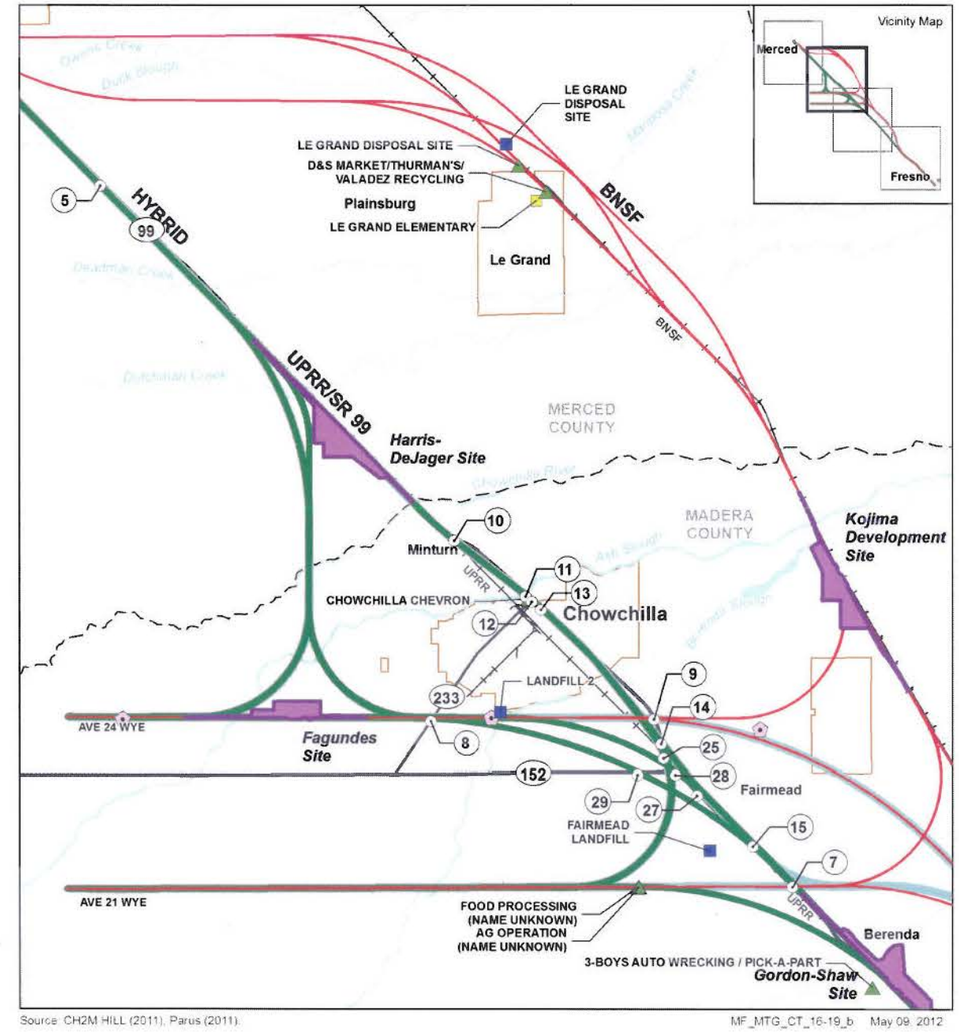
N
0 2.5
Miles

- UPRR/SR 99 Alternative
- BNSF Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Affected State Route Facility
- Oil Well
- Landfill
- School
- Conceivable Potential Environmental Concern

Current Potential Environmental Concern

- Medium Risk
- High Risk

Figure A-13
Locations of HST Impacts on the SHS System—Locations of Conceivable and Current PECs in the Merced Project Vicinity



Source: CH2M HILL (2011), Parus (2011).

MF_MTG_CT_16-19_b May 09, 2012

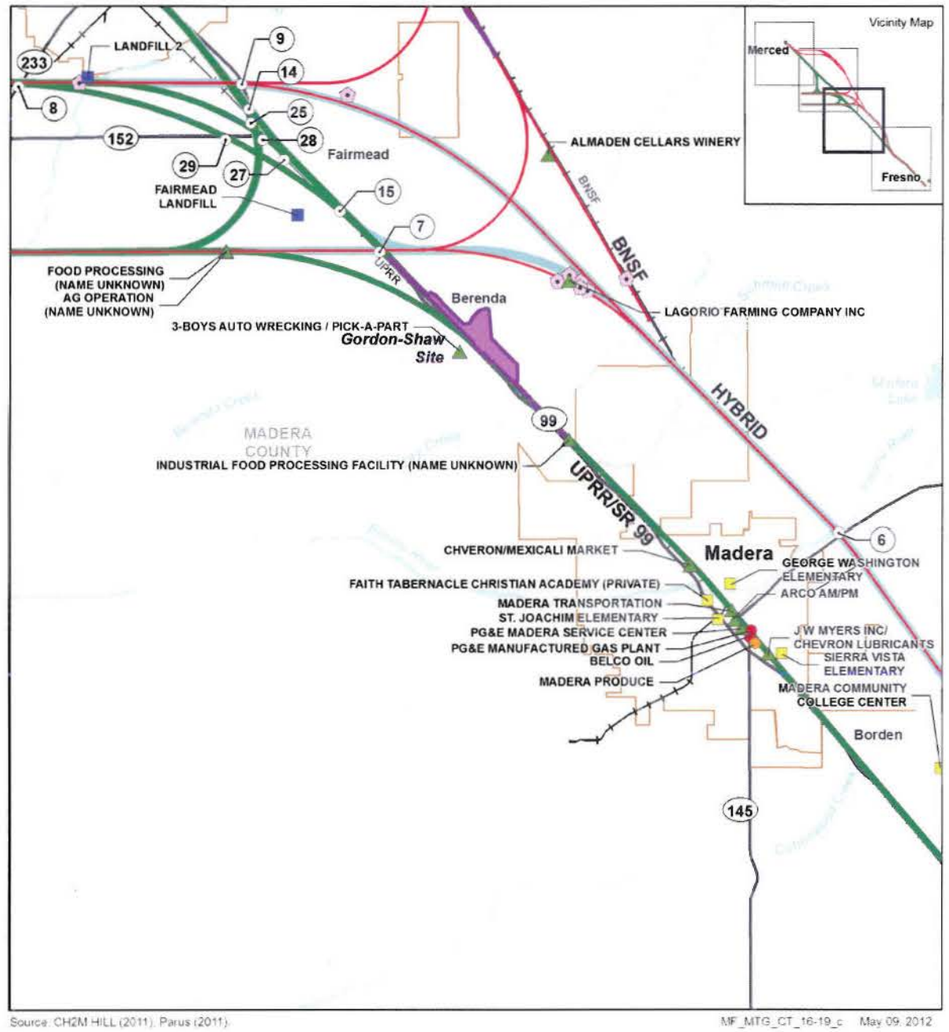
N
0 2.5
Miles

- UPRR/SR 99 Alternative
- BNSF Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Affected State Route Facility
- Oil Well
- Landfill
- School
- Conceivable Potential Environmental Concern

Current Potential Environmental Concern

- Medium Risk
- High Risk

Figure A-14
Locations of HST Impacts on the SHS System—Locations of Conceivable and Current PECs in the Chowchilla Project Vicinity



Source: CH2M HILL (2011); Parus (2011).

MF_MTG_CT_16-19_c May 09, 2012

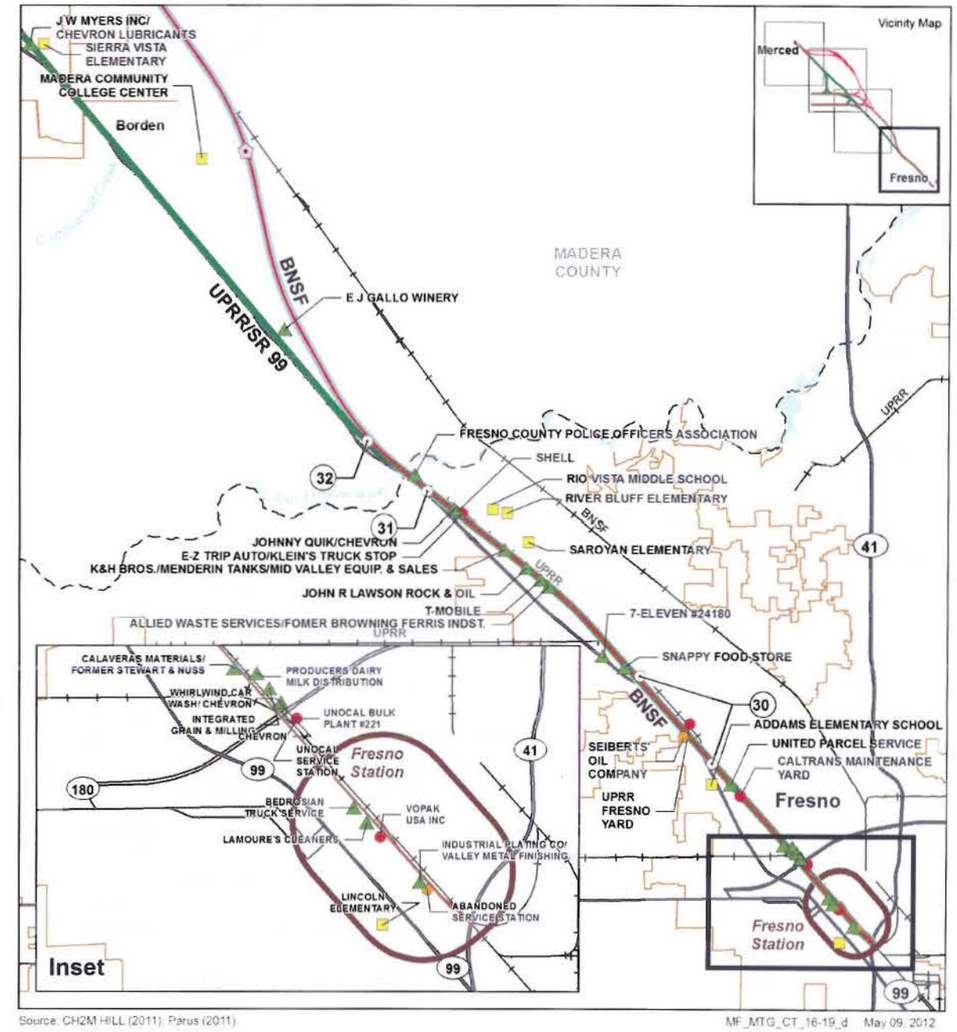
N
0 2.5
Miles

- UPRR/SR 99 Alternative
- BNSF Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Affected State Route Facility
- Oil Well
- Landfill
- School
- Conceivable Potential Environmental Concern

Current Potential Environmental Concern

- Medium Risk
- High Risk

Figure A-15
Locations of HST Impacts on the SHS System—
Locations of Conceivable and Current PECs in the
Madera Project Vicinity



Source: CH2M HILL (2011); Parus (2011).

MF_MTG_CT_16-19_d May 09, 2012

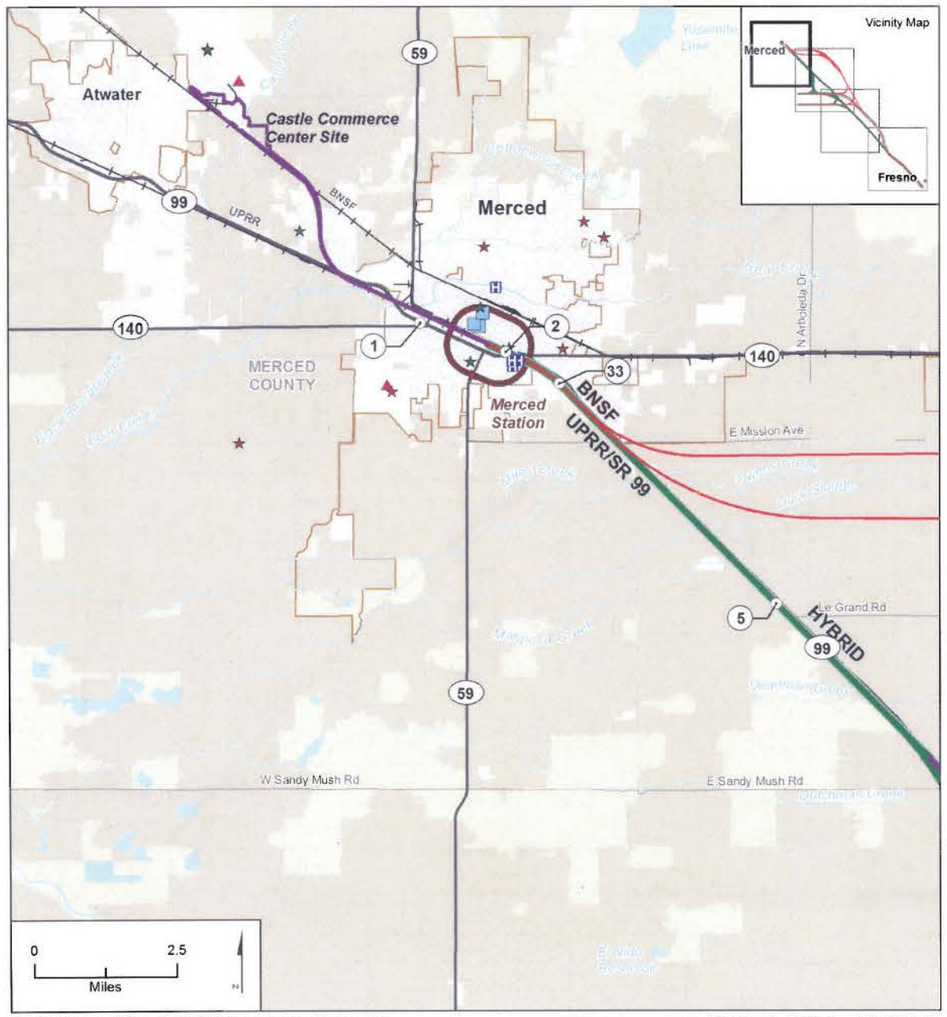
N
0 2.5
Miles

- UPRR/SR 99 Alternative
- BNSF Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Affected State Route Facility
- Oil Well
- Landfill
- School
- Conceivable Potential Environmental Concern

Current Potential Environmental Concern

- Medium Risk
- High Risk

Figure A-16
Locations of HST Impacts on the SHS System—
Locations of Conceivable and Current PECs in the
Fresno Project Vicinity



Source: Cal Fire (2007a,b,c) and City of Merced Fire Department (2009)

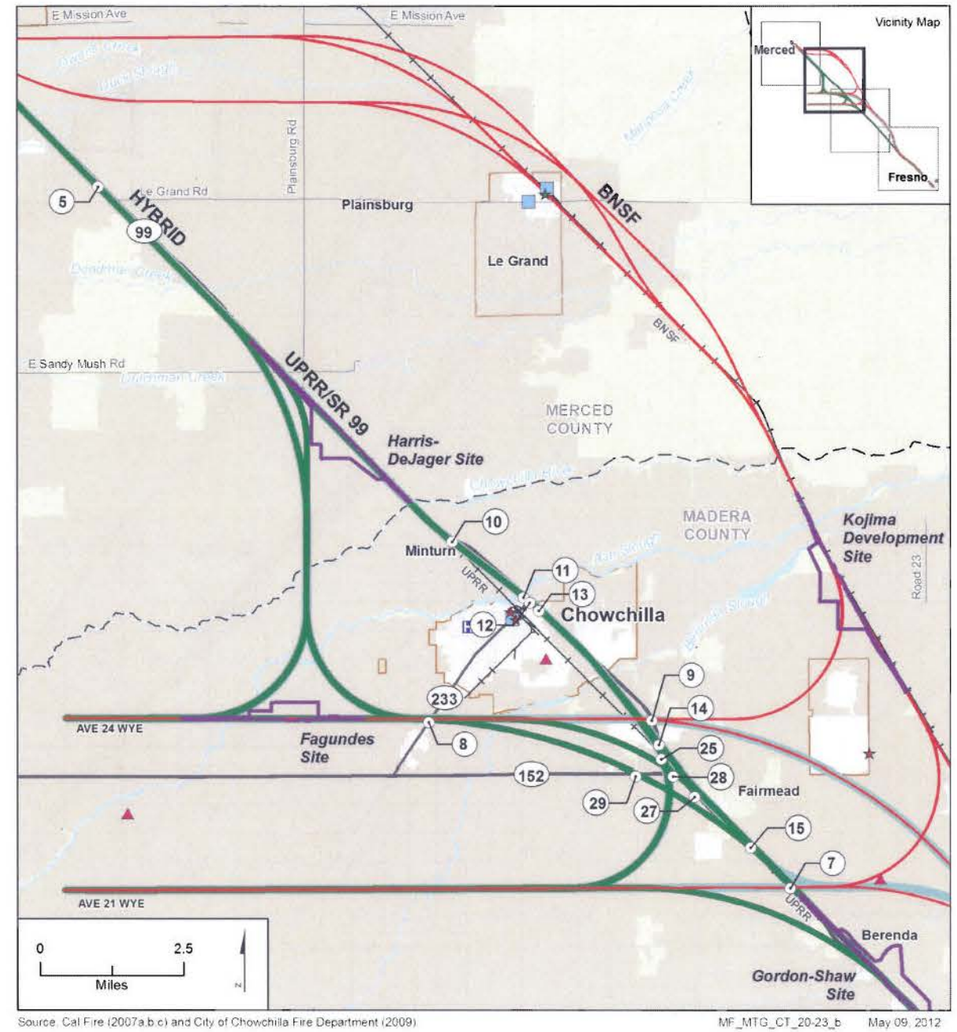
MF_MTG_CT_20-23_a May 09, 2012

UPRR/SR 99 Alternative
BNSF Alternative
Hybrid Alternative
Potential Heavy Maintenance Facility
Station Study Area
City Limit
County Boundary
Railroad

Affected State Route Facility
Government (City Hall, Courthouse, Jail, Post Office, Library)
Hospital
Fire Station
Public Service (Police Station, Sheriff Department)
Airport/Heliport

Fire Severity Zone
Very High
High
Moderate
Non-Wildland/Non-Urban
Urban Unzoned

Figure A-17
Locations of HST Impacts on the SHS System—Safety and Security Existing Conditions in the Merced Project Vicinity



Source: Cal Fire (2007a,b,c) and City of Chowchilla Fire Department (2009)

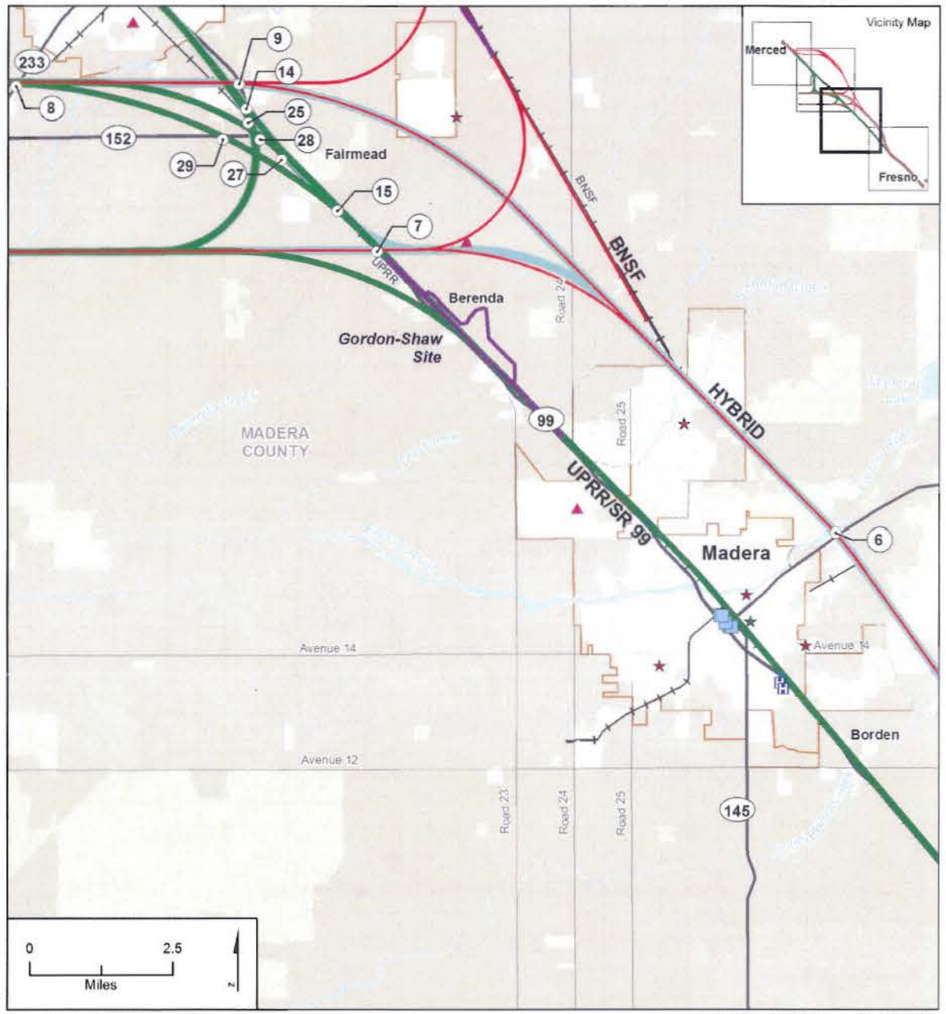
MF_MTG_CT_20-23_b May 09, 2012

UPRR/SR 99 Alternative
BNSF Alternative
Hybrid Alternative
Potential Heavy Maintenance Facility
Station Study Area
City Limit
County Boundary
Railroad

Affected State Route Facility
Government (City Hall, Courthouse, Jail, Post Office, Library)
Hospital
Fire Station
Public Service (Police Station, Sheriff Department)
Airport/Heliport

Fire Severity Zone
Very High
High
Moderate
Non-Wildland/Non-Urban
Urban Unzoned

Figure A-18
Locations of HST Impacts on the SHS System—Safety and Security Existing Conditions in the Chowchilla Project Vicinity



Source: Cal Fire (2007a,b,c)

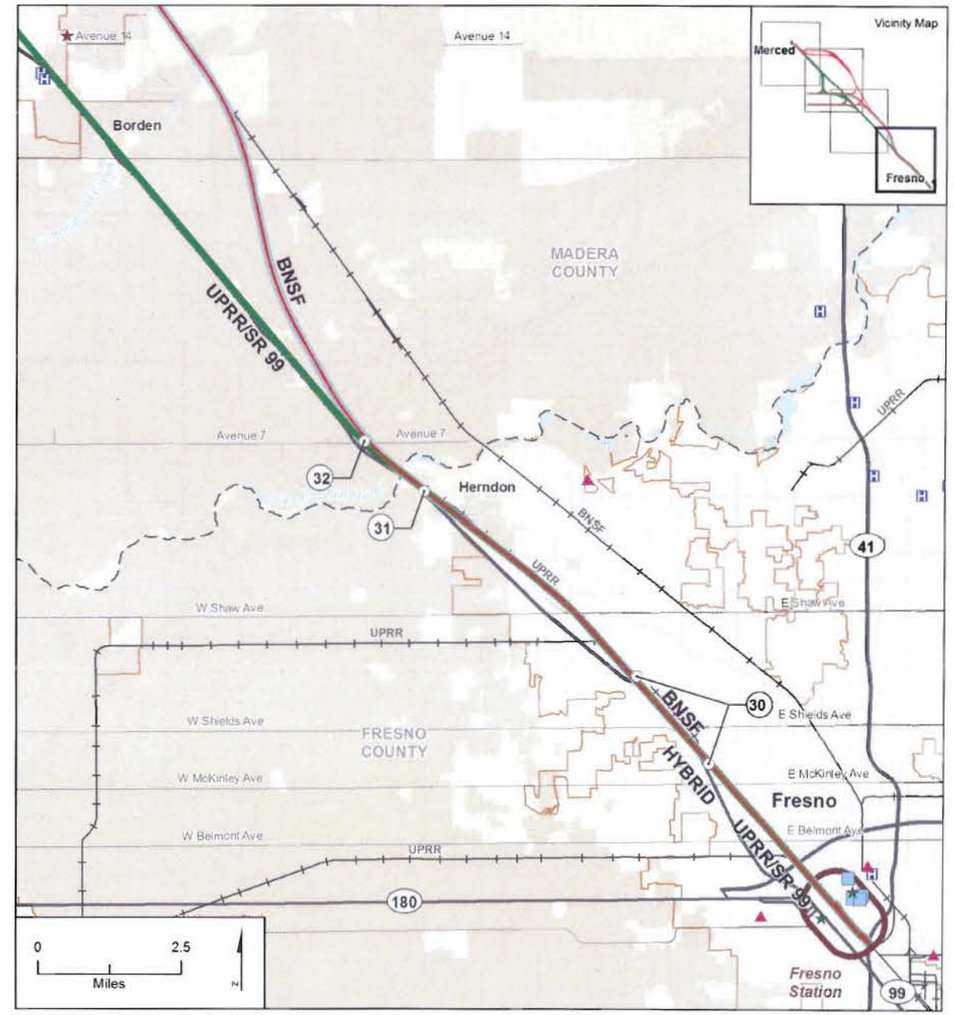
MF_MTG_CT_20-23_c May 09, 2012

UPRR/SR 99 Alternative
BNSF Alternative
Hybrid Alternative
Potential Heavy Maintenance Facility
Station Study Area
City Limit
County Boundary
Railroad

Affected State Route Facility
Government (City Hall, Courthouse, Jail, Post Office, Library)
Hospital
Fire Station
Public Service (Police Station, Sheriff Department)
Airport/Heliport

Fire Severity Zone
Very High
High
Moderate
Non-Wildland/Non-Urban
Urban Unzoned

Figure A-19
Locations of HST Impacts on the SHS System—Safety and Security Existing Conditions in the Madera Project Vicinity



Source: Cal Fire (2007a,b,c) and City of Fresno Fire Department (2009)

MF_MTG_CT_20-23_d May 09, 2012

UPRR/SR 99 Alternative
BNSF Alternative
Hybrid Alternative
Potential Heavy Maintenance Facility
Station Study Area
City Limit
County Boundary
Railroad

Affected State Route Facility
Government (City Hall, Courthouse, Jail, Post Office, Library)
Hospital
Fire Station
Public Service (Police Station, Sheriff Department)
Airport/Heliport

Fire Severity Zone
Very High
High
Moderate
Non-Wildland/Non-Urban
Urban Unzoned

Figure A-20
Locations of HST Impacts on the SHS System—Safety and Security Existing Conditions in the Fresno Project Vicinity

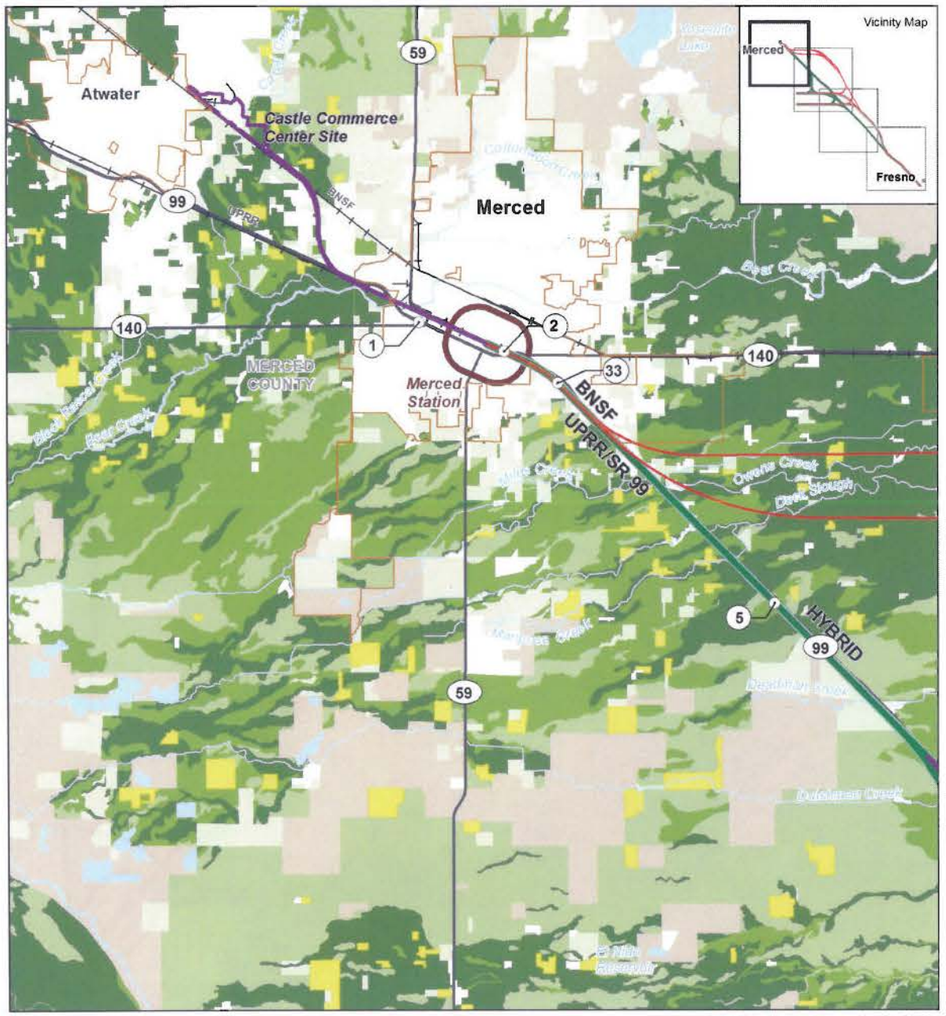


Figure A-21
Locations of HST Impacts on the SHS System—
Important Farmland and Grazing Land in the
Merced Project Vicinity

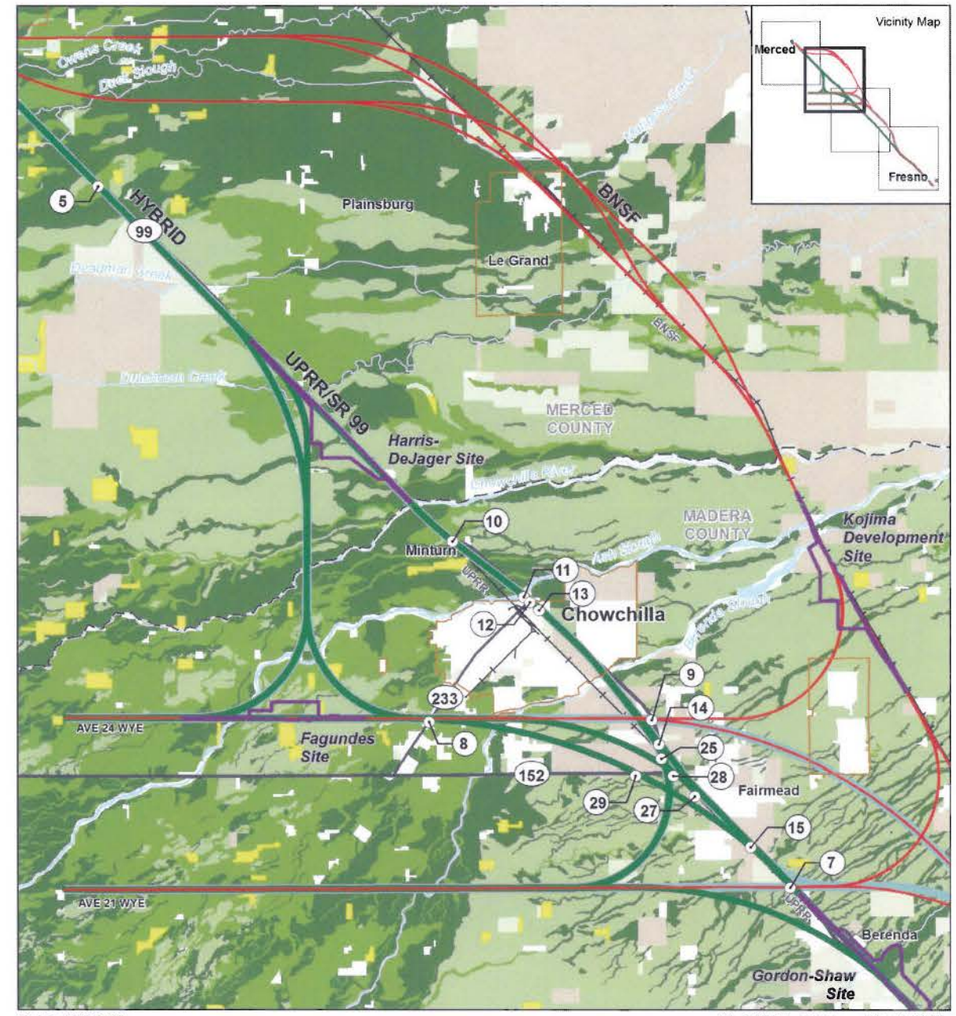
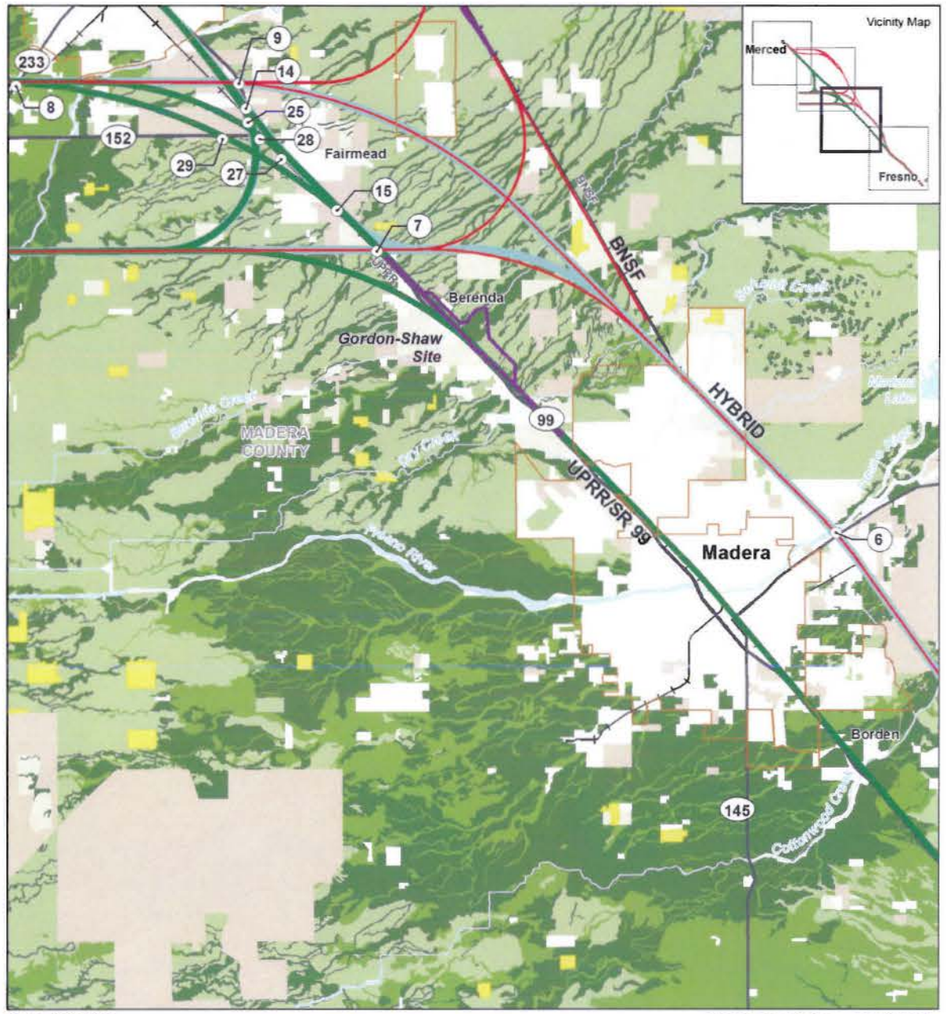
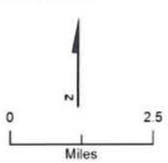


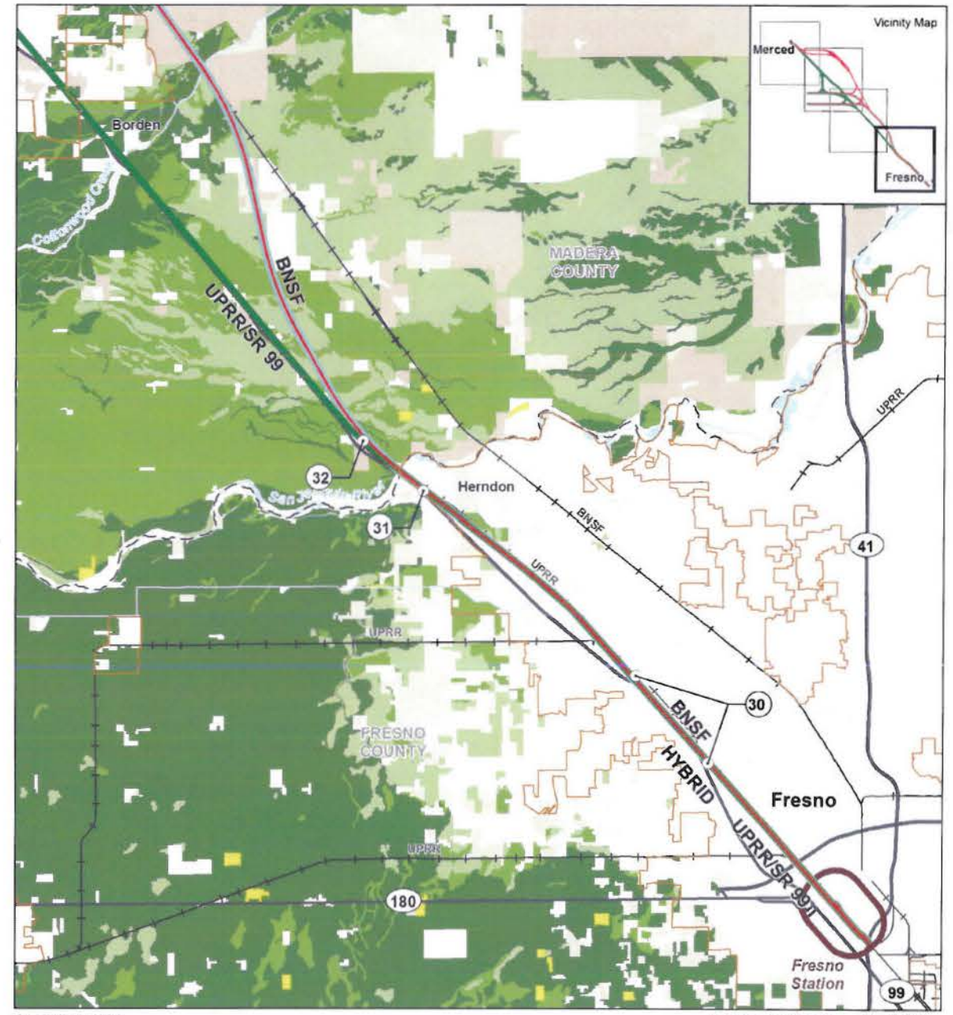
Figure A-22
Locations of HST Impacts on the SHS System—
Important Farmland and Grazing Land in the
Chowchilla Project Vicinity

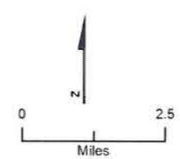




- UPRR/SR 99 Alternative
- BNSF Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Affected State Route Facility
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance
- Grazing Land
- Confined Animal Agriculture

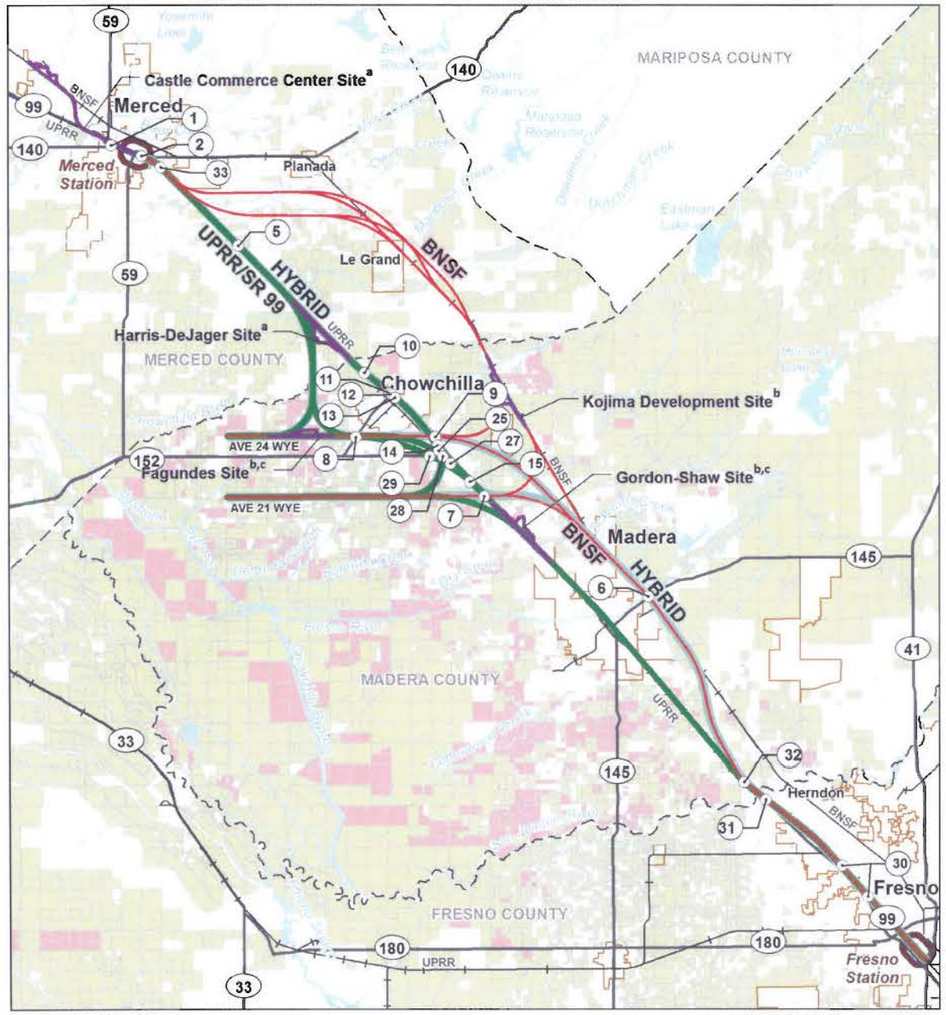
Figure A-23
Locations of HST Impacts on the SHS System—
Important Farmland and Grazing Land in the
Madera Project Vicinity





- UPRR/SR 99 Alternative
- BNSF Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Affected State Route Facility
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance
- Grazing Land
- Confined Animal Agriculture

Figure A-24
Locations of HST Impacts on the SHS System—
Important Farmland and Grazing Land in the
Fresno Project Vicinity



Source: (DOC, 2007 – 2009)

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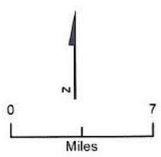
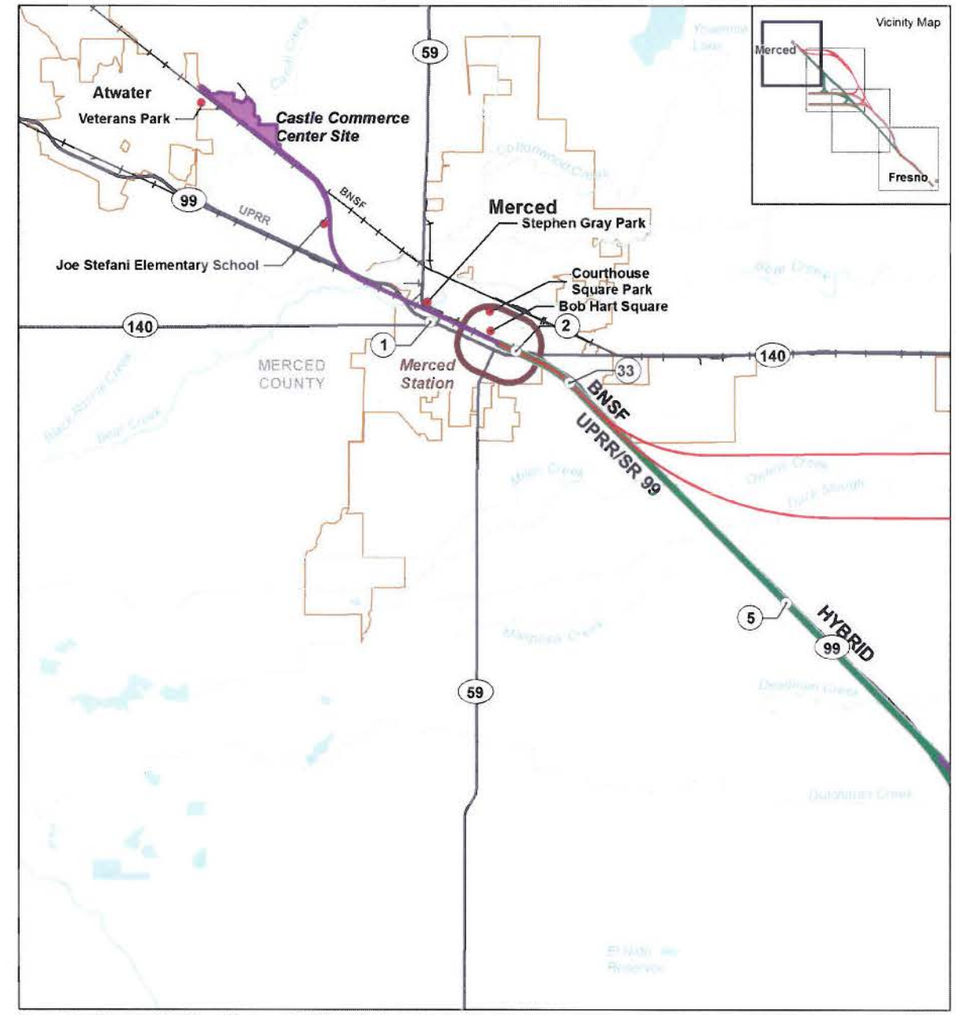


- UPRR/SR 99 Alternative
- BNSF Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- City Limit
- Station Study Area
- County Boundary
- Railroad
- Farmland Security Zone
- Williamson Act

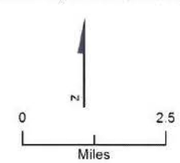
[a] The study area for the track between Castle Commerce Center and Merced Station includes land under Williamson Act contracts.
[b] Includes land under Farmland Security Zone contracts.
[c] Includes land under Williamson Act contracts.

Figure A-25
Locations of HST Impacts on the SHS System—Protected Lands in the Project Vicinity



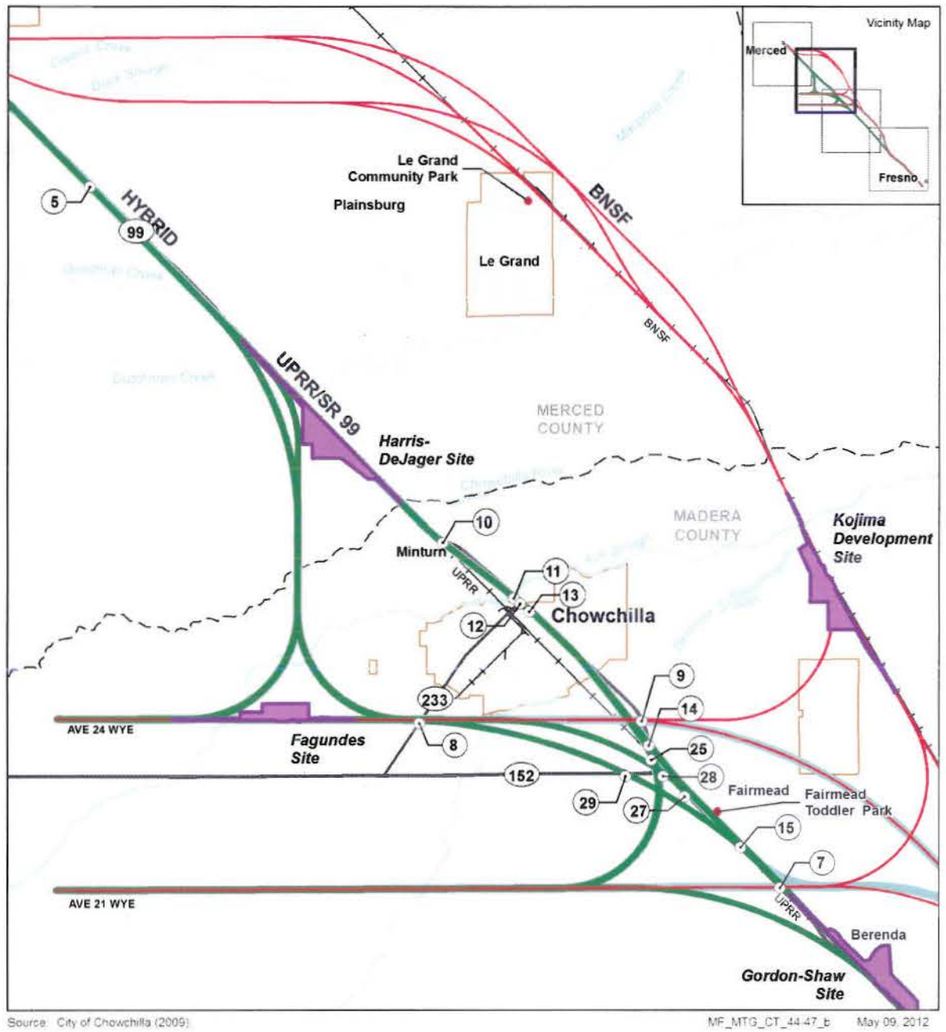
Source: City of Atwater (2000); City of Merced (1997, 2003, 2004); Merced County (1990)

MF_MTG_CT_44-47_a May 09, 2012



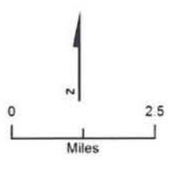
- UPRR/SR 99 Alternative
- BNSF Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Affected State Route Facility
- Park, Recreation, and Open Space
- Planned Extention of Vern McCullough Fresno River Trail

Figure A-26
Locations of HST Impacts on the SHS System—Parks, Recreation, and Open Space in the Merced Project Vicinity



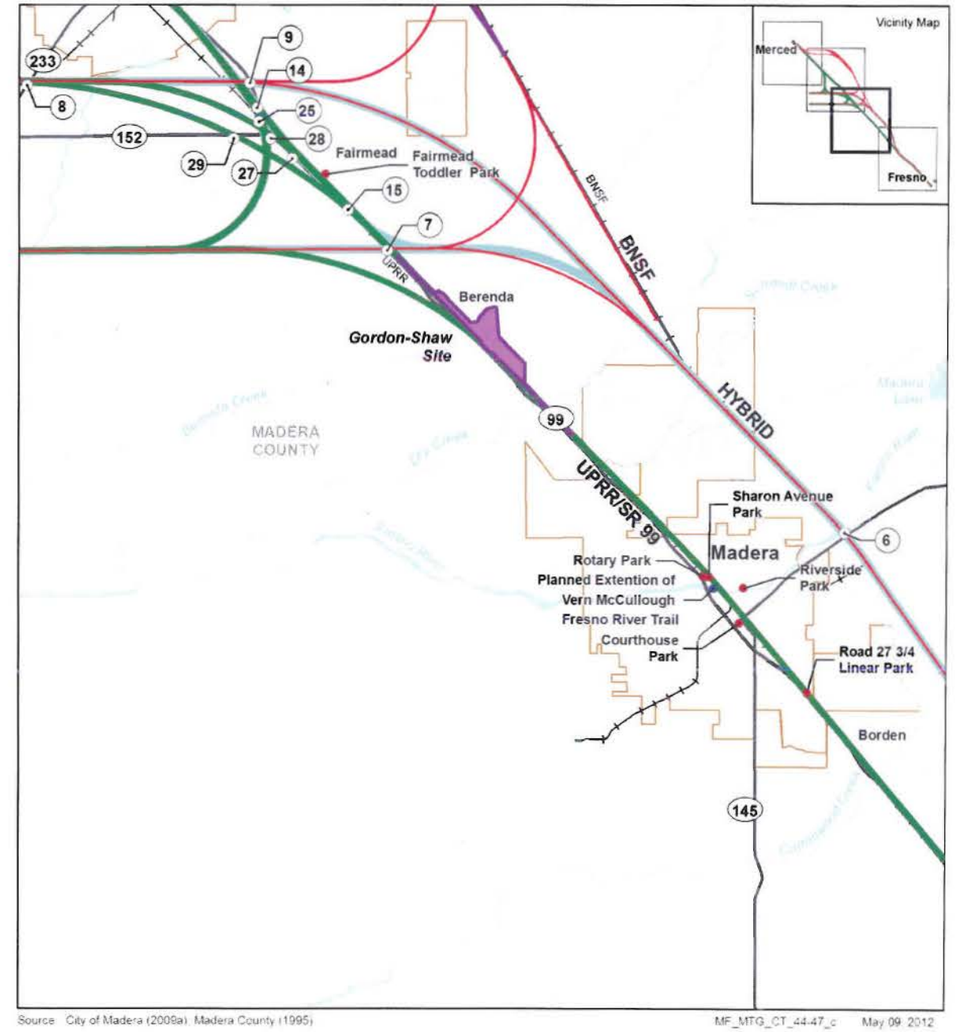
Source: City of Chowchilla (2009)

MF_MTG_CT_44:47_b May 09, 2012



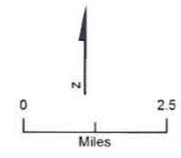
- UPRR/SR 99 Alternative
- BNSF Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Affected State Route Facility
- Park, Recreation, and Open Space
- Planned Extention of Vern McCullough Fresno River Trail

Figure A-27
Locations of HST Impacts on the SHS System—Parks, Recreation, and Open Space in the Chowchilla Project Vicinity



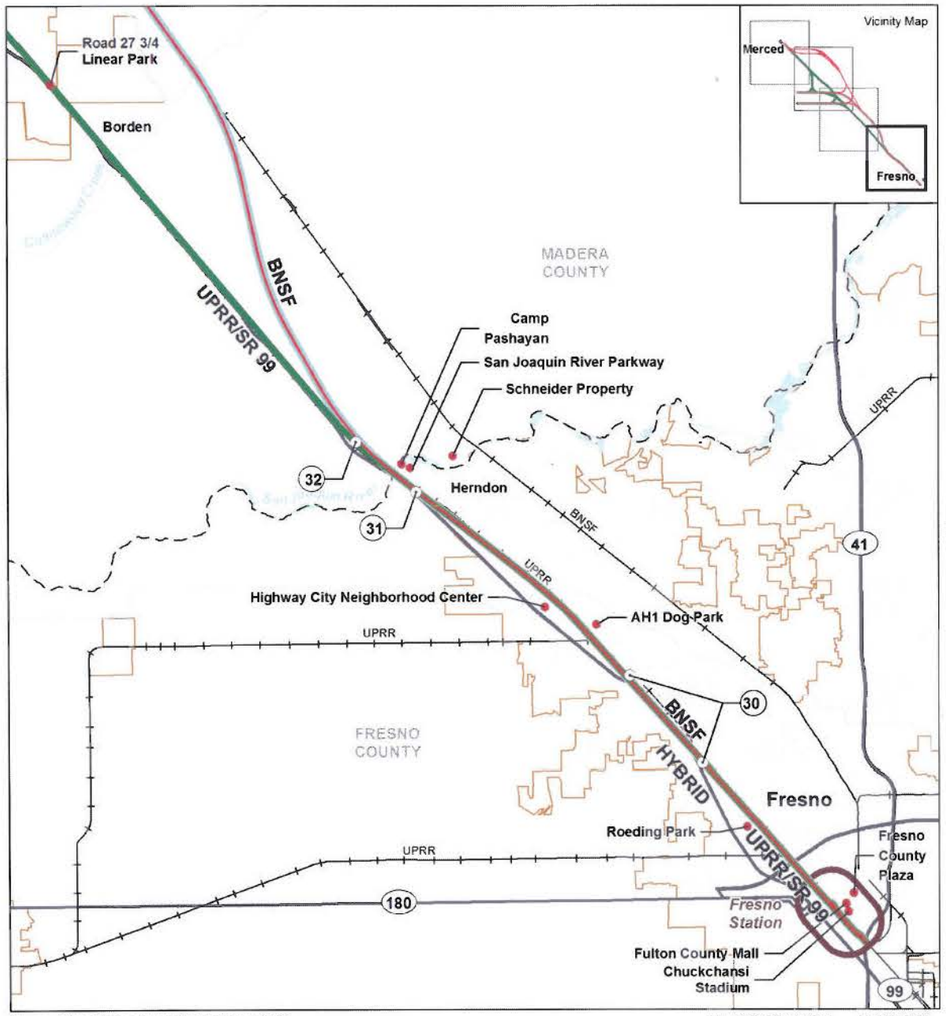
Source: City of Madera (2009a); Madera County (1995)

MF_MTG_CT_44:47_c May 09, 2012



- UPRR/SR 99 Alternative
- BNSF Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Affected State Route Facility
- Park, Recreation, and Open Space
- Planned Extention of Vern McCullough Fresno River Trail

Figure A-28
Locations of HST Impacts on the SHS System—Parks, Recreation, and Open Space in the Madera Project Vicinity



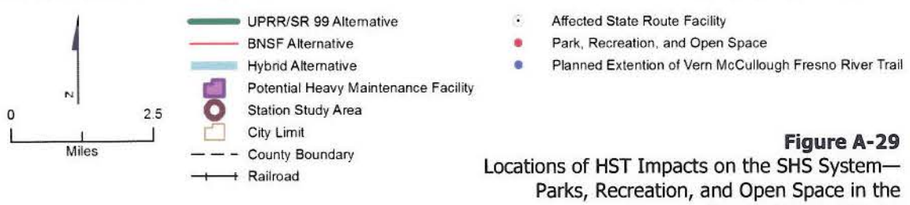
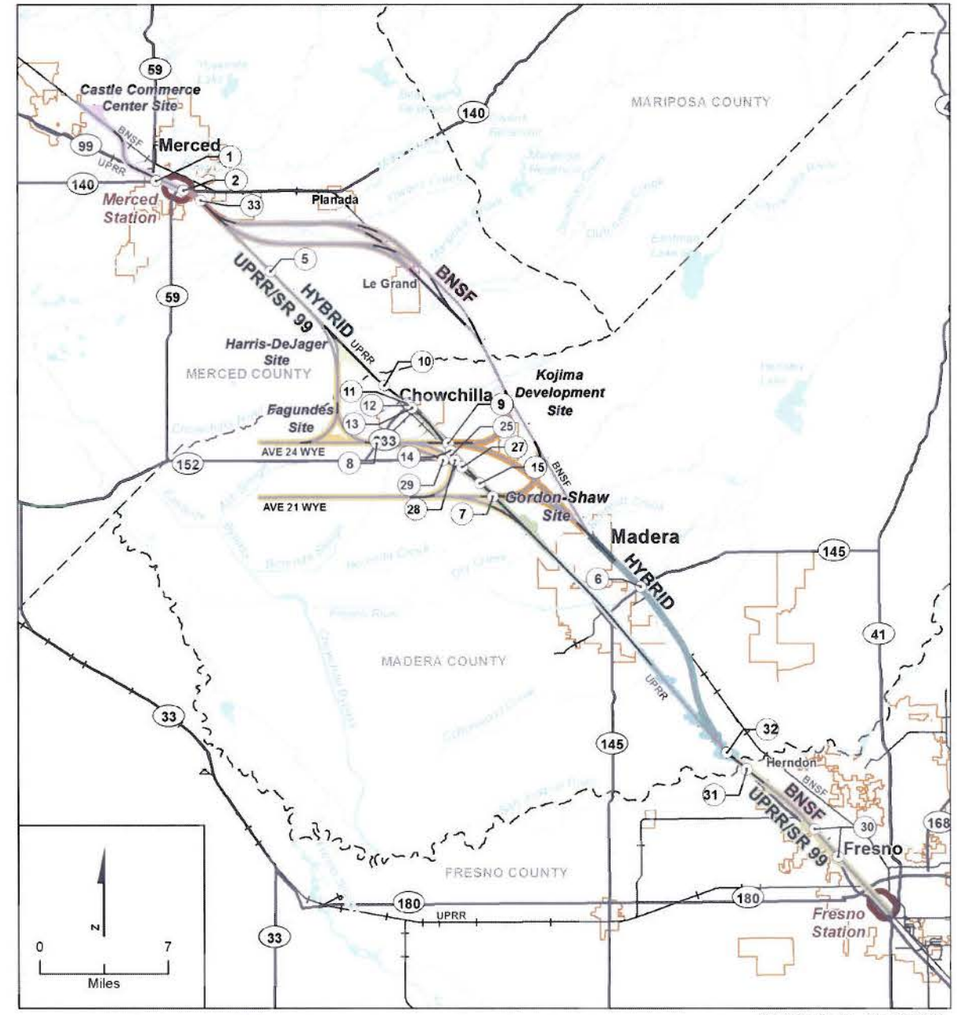


Figure A-29
Locations of HST Impacts on the SHS System—Parks, Recreation, and Open Space in the Fresno Project Vicinity



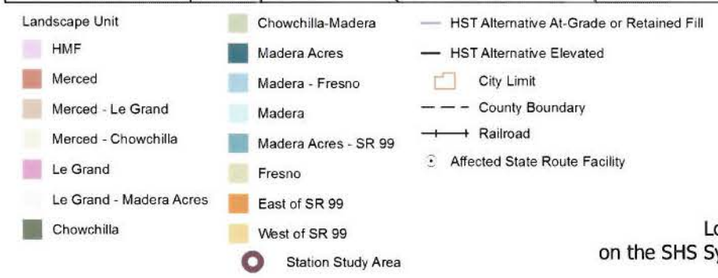


Figure A-30
Locations of HST Impacts on the SHS System—Landscape Units

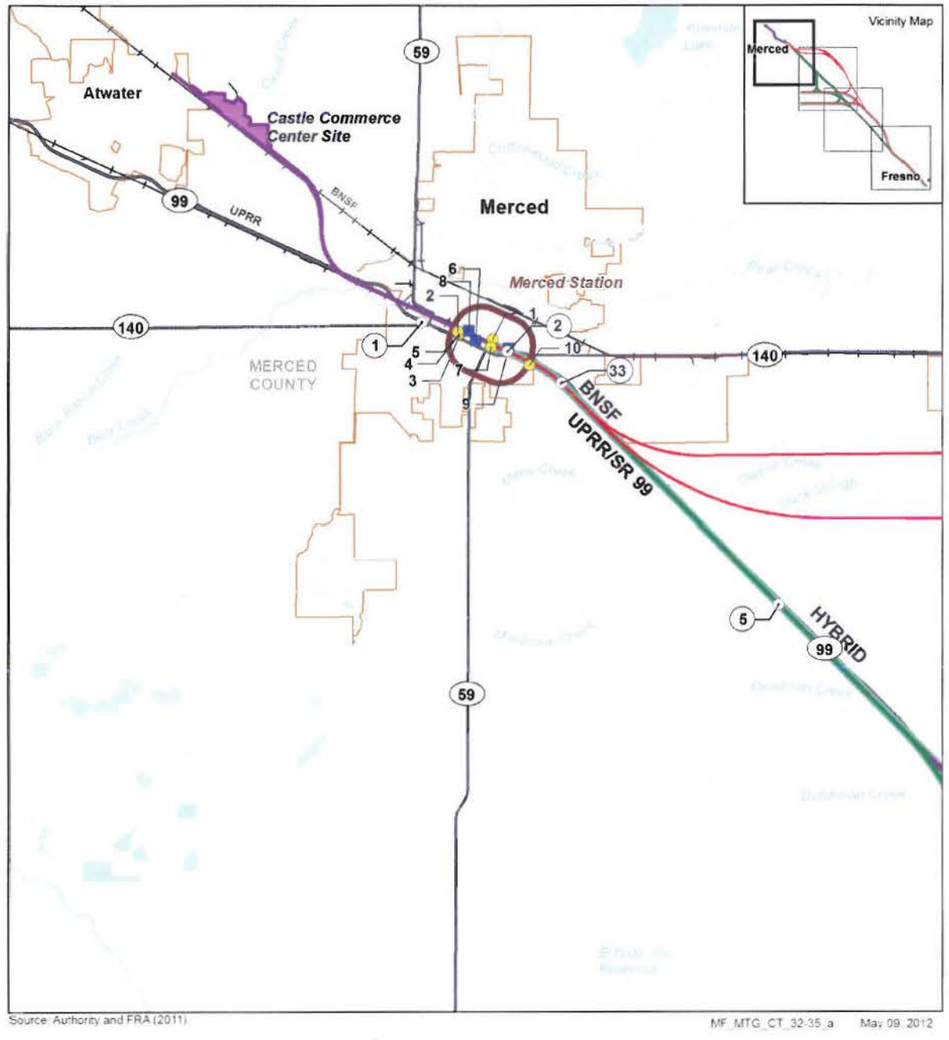


Figure A-31
Locations of HST Impacts on the SHS System—
Cultural Resources in the Merced Vicinity

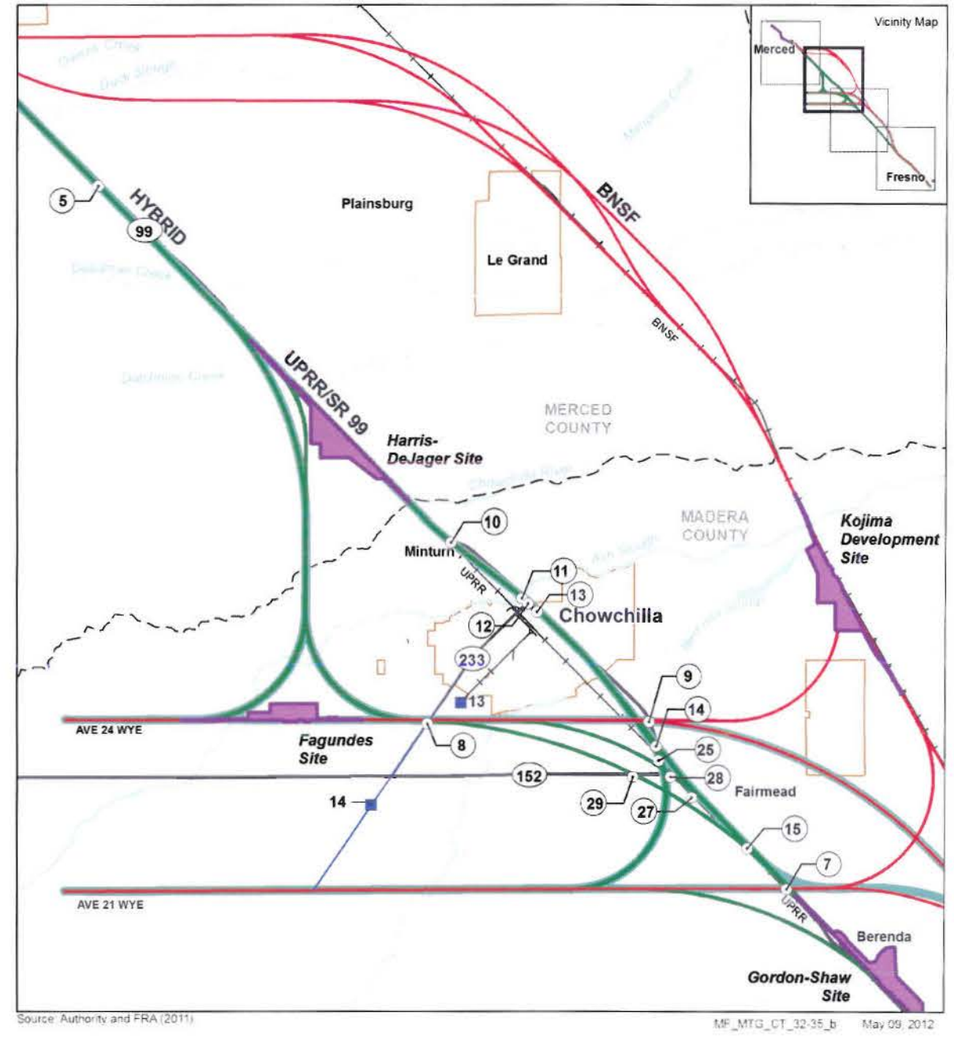
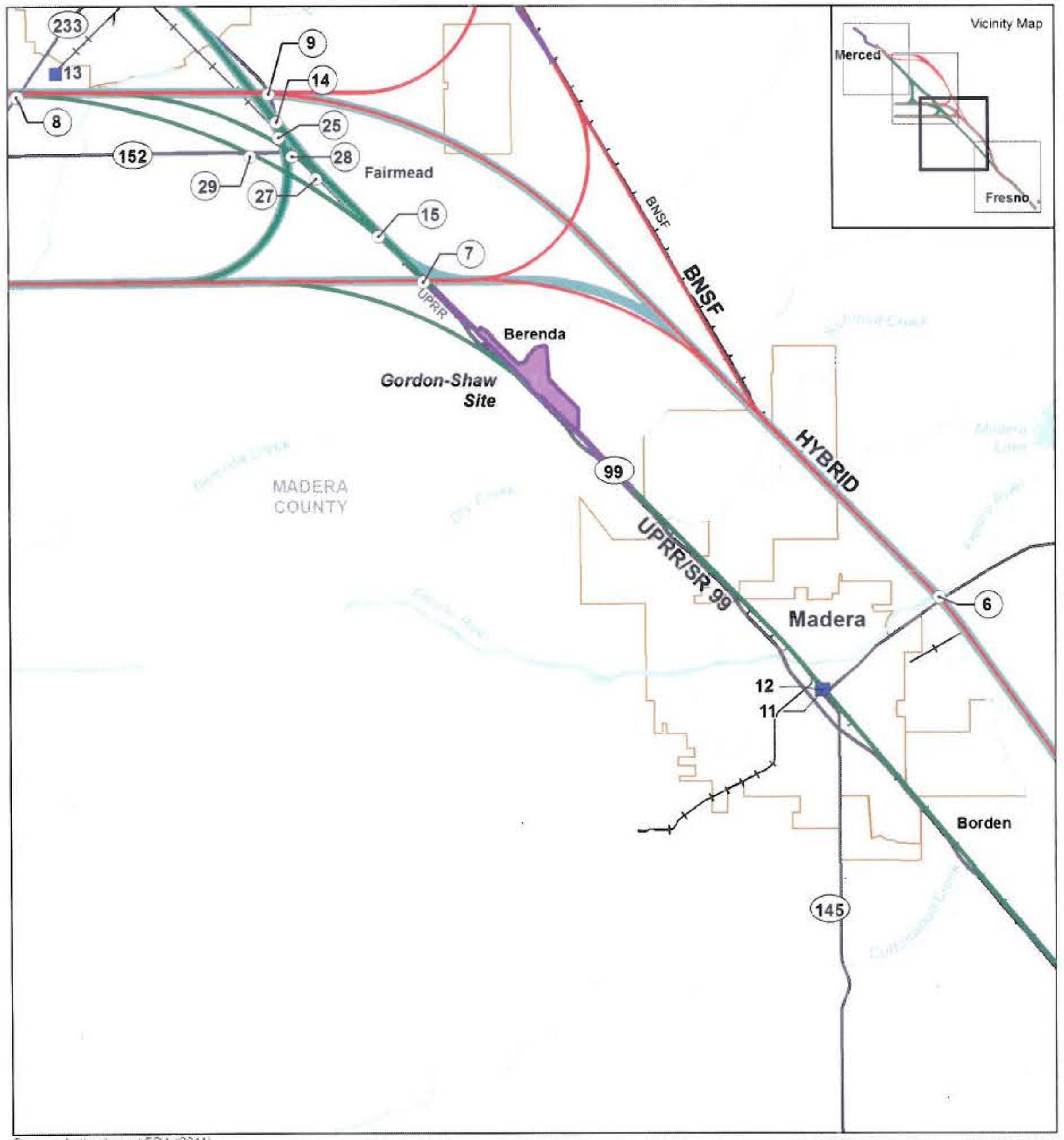


Figure A-32
Locations of HST Impacts on the SHS System—
Cultural Resources in the Chowchilla Vicinity



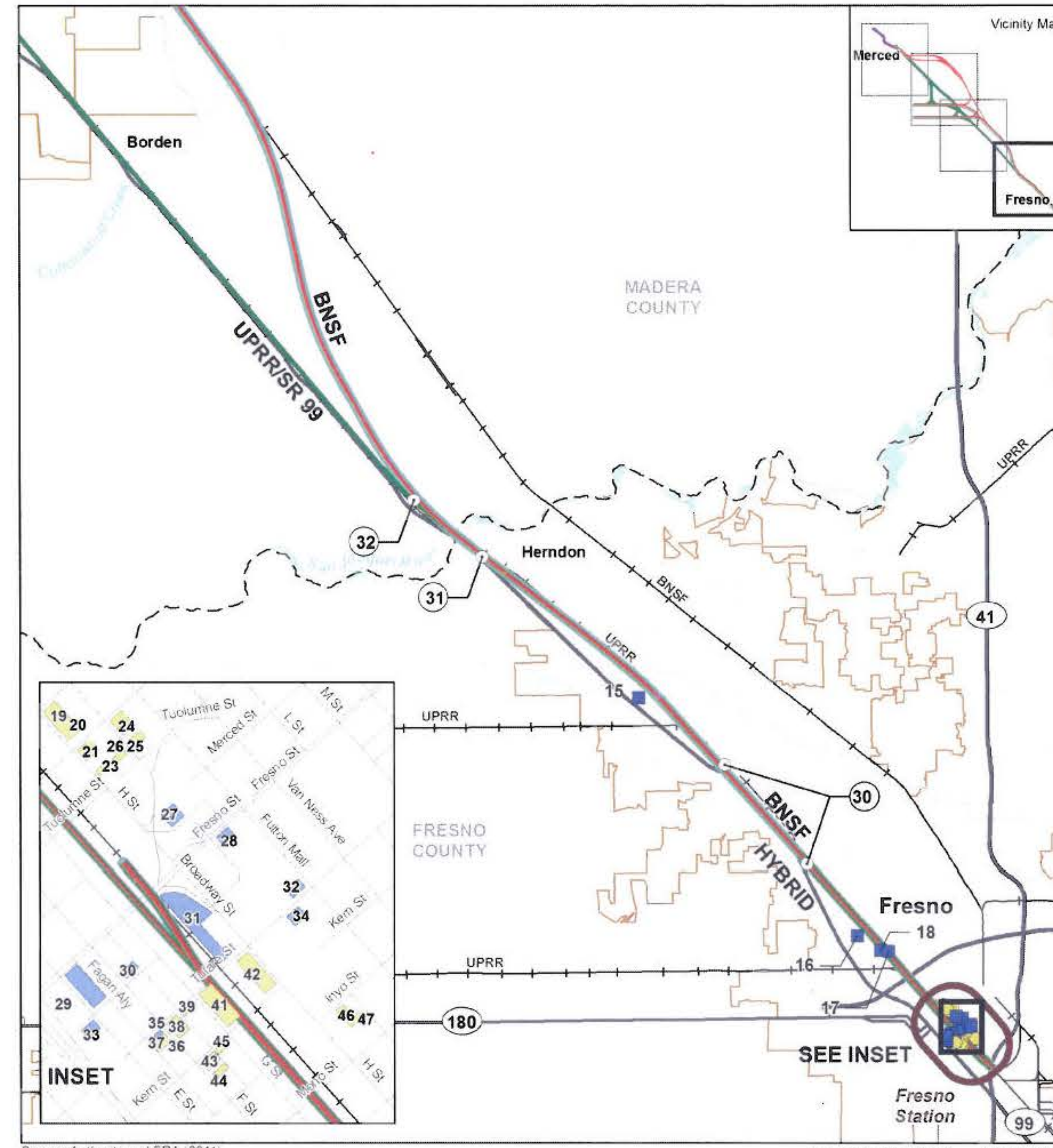
Source: Authority and FRA (2011)

MF_MTG_CT_32-35_c May 09, 2012

0 2.5 Miles

- BNSF Alternative
- UPRR/SR 99 Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Affected State Route Facility
- Potentially Affected CEQA Historical Resource
- Potentially Affected NRHP Listed or Eligible Historic Property

Figure A-33
Locations of HST Impacts on the SHS System—Cultural Resources in the Madera Vicinity



Source: Authority and FRA (2011)

MF_MTG_CT_32-35_d May 09, 2012

0 2.5 Miles

- BNSF Alternative
- UPRR/SR 99 Alternative
- Hybrid Alternative
- Potential Heavy Maintenance Facility
- Station Study Area
- City Limit
- County Boundary
- Railroad
- Affected State Route Facility
- Potentially Affected CEQA Historical Resource
- Potentially Affected NRHP Listed or Eligible Historic Property

Figure A-34
Locations of HST Impacts on the SHS System—Cultural Resources in the Fresno Vicinity

APPENDIX B

Mitigation Monitoring and Reporting Program

CALIFORNIA HIGH-SPEED TRAIN

Project Environmental Impact Report / Environmental Impact Statement

Mitigation Monitoring and Reporting Program

Merced to Fresno Section

May 2012

CALIFORNIA
High-Speed Rail Authority

U.S. Department of Transportation
Federal Railroad Administration

The California Environmental Quality Act (CEQA) requires that a Lead Agency establish a program to monitor and report on mitigation measures that it has adopted as part of the environmental review process. CEQA (Public Resources Code Section 21081.6 (a) (1)) requires that a Mitigation Monitoring and Reporting Program (MMRP) be adopted at the time that the agency determines to carry out a project for which an Environmental Impact Report (EIR) has been prepared to ensure that mitigation measures identified in the environmental document are fully implemented during project implementation, including the design, pre-construction construction, and post-construction phases.

Based on coordination with the resource agencies, local agencies, and stakeholders, various design features have been proposed as part of the project to minimize impacts. However, adverse effects may still occur. Mitigation measures that would reduce or eliminate potentially adverse significant environmental impacts associated with the Hybrid Alternative for the Merced to Fresno Section High-Speed Train (HST) Project have been identified throughout the Environmental Impact Report/Environmental Impact Statement (EIR/EIS).

The MMRP for the Merced to Fresno Section of the California HST Project is presented as a table that includes the mitigation measures identified in the Final EIR/EIS and is organized by environmental issue, following the topical areas addressed in the EIR/EIS. The California High-Speed Rail Authority (Authority) may refine the means by which it will implement a mitigation measure, as long as the alternative means ensure compliance during project implementation. The MMRP describes implementation and monitoring procedural guidance, responsibilities, and timing for each mitigation measure identified in the EIR/EIS, including:

Significant Impact: Provides a brief description of the impact expected to occur from the proposed project as identified in the Final EIR/EIS.

Mitigation Measure: Provides the mitigation measure and monitoring requirements as identified the Final EIR/EIS.

Implementing Party/Monitoring /Reporting Party: Identifies the entity that will be responsible for directly implementing the mitigation measures, monitoring, and reporting. Implementation can be the responsibility of the Authority or its Contractor. Monitoring will generally be the responsibility of the Contractor, with oversight provided by the Authority during construction. Long-term mitigation monitoring responsibilities will be transitioned from the Contractor to the Authority upon final contract acceptance. The following roles are utilized in the MMRP:

- Mitigation Manager: Contractor's representative responsible for overseeing project mitigation to verify that mitigation is carried out as specified in this MMRP. Reports the status of each mitigation measure to Authority in accordance with this MMRP.
- Project Biological Monitor: The Project Biological Monitor will be approved by and report directly to the Project Biologist. The Project Biological Monitor will be onsite during all ground-disturbing activities that have the potential to affect biological resources and will be the principal agent(s) in the direct implementation of the MMRP and compliance assurance.
- Project Biologist: The Project Biologist will represent the construction management team, report directly to the construction management team, and will be responsible for reporting and overseeing the biological resources mitigation measures
- Contractor's Biologist: The Contractor's Biologist is responsible for implementing mitigation measures in compliance with the terms and conditions outlined in the MMRP and U.S. Fish and Wildlife (USFWS), U.S. Army Corps of Engineers (USACE), State Water Resource Control Board (SWRCB), and California Department of Fish and Game (CDFG) permits.

- Qualified Professional Archaeologist: Contractor's archaeologist who meets the Secretary of the Interior (SOI) Standards of Archaeology. The Qualified Professional Archaeologist shall be responsible for training contractor staff, implementing mitigation, and coordinating the status of the archaeological mitigation with the Authority in accordance with this MMRP.
- Archaeological Monitor: Contractor's field crew responsible for field monitoring of archaeological mitigation in accordance with this MMRP. The contractor shall determine how many Archaeological Monitors are needed to satisfy the mitigation requirements.
- Post Construction Contractor: Hired by the Authority to perform post construction activities associated with traffic monitoring and implementing defined additional measures if traffic congestion thresholds are met.
- Authority: Designated Authority representative responsible for implementing or monitoring and reporting mitigation measures as specified in this MMRP

Mitigation Timing (Implementation Schedule/Reporting Schedule): Not all mitigation actions will occur at the same time. Depending upon the measure, it may be undertaken prior to construction, during construction, or during project operations. Measures may also be undertaken in conjunction with different construction packages or at such time as project operations reach a certain level. This column of the table identifies the stage of the project during which the mitigation action will be taken and when reporting is to occur, if reporting is required.

Implementation Mechanism or Tool: Identifies the actions required to implement the measures, including any required agreements and/or conditions.

As the lead agency and proponent of this project, the Authority will implement the mitigation measures through its own actions, those of its contractors, and actions taken in cooperation with other agencies and entities. The Authority is ultimately accountable for the overall administration of the mitigation monitoring program and for assisting relevant individuals and parties in their oversight and reporting responsibilities. The responsibilities of mitigation implementation, monitoring, and reporting extend to several entities as discussed above; however, the Authority will bear the primary responsibility for verifying that the mitigation measures are implemented.

The Authority defines the mitigation measures required for the project. When project work is undertaken by the Authority's contractor, the Contractor shall implement the mitigation measures that are pertinent to their scope of work. The Contractor shall monitor construction activities to ensure that the mitigation measures are being properly implemented and accurately report their activity and results to the Authority. The Authority will periodically check the Contractor's activity, reports, and effectiveness of mitigation activities.

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
Transportation[1]								
TR #1: Permanent Road Closures.	**TR MM#1: Access Maintenance for Property Owners.** Maintain access for owners to property within the construction area to a level that maintains pre-project viability of the property for its pre-project use. If a proposed road closure restricts current access to a property, provide alternative access via connections to existing roadways. If adjacent road access is not available, prepare new road connections, if feasible. If alternative road access is not feasible, the property will be acquired.	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify noticing obligations are met.		X			Prepare advanced noticing prior to construction/maintain weekly reporting schedule	Contract Requirements/Specifications
TR #2: Fresno Area between Herndon Avenue and Shaw Avenue Intersection Impacts –Existing Plus Project.	**TR MM#4: Add Signal to Intersection to Improve LOS/Operation**. Add traffic signals to affected unsignalized intersections in order to improve LOS and intersection operation. • Cornelia Avenue/Shaw Avenue	**Implementing Party:** Authority. **Monitoring/Reporting Party:** Authority		X			Annual intersection LOS analysis. Installation of signal when warrant criteria are met.	Memorandum of Understanding with the City of Fresno
	TR MM#7: Widen Approaches to Intersections. Widen approaches in order to improve LOS and intersection operation. • Blythe Avenue/Shaw Avenue – eastbound approach	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#8: Add Exclusive Turn Lanes to Intersections. Add exclusive turn lanes at specific intersections in order to improve LOS and intersection operations. The traffic impacts associated at the identified intersections would be addressed by: • Signalizing the intersection at Cornelia Ave./Shaw Ave. and widening the approach at Blythe Avenue/Shaw Avenue to provide second left-turn lane	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
TR #2: Fresno Area between Herndon Avenue and Shaw Avenue Intersection Impacts – Future (2035) Plus Project.	**TR MM#3: Modify Signal Phasing.** Modify traffic signal phasing sequence to improve operations at a signalized intersection. • Veterans Boulevard/Golden State Boulevard Connector – modify northbound and southbound right-turn as free movements	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdiction. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#4: Add Signal to Intersection to Improve LOS/Operation. This mitigation is only necessary when signal warrants are met, and such warrants for certain of the intersections requiring this mitigation are met after 2020, as described in the Final EIR/EIS. Such intersections shall be monitored on an annual basis and signal installed when warrants are met. • Golden State Boulevard/Santa Ana Avenue • Cornelia Avenue/Shaw Avenue • Cornelia Avenue/Golden State Boulevard	**Implementing Party:** Authority. **Monitoring/Reporting Party:** Authority.			X		Annual signal warrant analysis. Installation of signal when warrant criteria are met.	Memorandum of Understanding with the City of Fresno
	TR MM#5: Restripe Intersections. Restripe specific intersections surrounding proposed HST station locations in order to improve LOS and	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions.		X			Prepare construction management	Contract Requirements/Specifications

[1] Information displayed in the "Mitigation Timing" column for Transportation mitigations derived from MMRP Traffic Memo.

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	intersection operations. • Figarden Drive/Bullard Avenue – westbound approach to provide two left-turn lanes, one through lane and one right-turn lane • Veterans Boulevard/Bullard Avenue – eastbound approach to provide one left-turn lane and two right-turn lanes; northbound approach to provide three left-turn lanes and one through lane • Veterans Boulevard/Golden State Boulevard Connector – eastbound approach to provide one left-turn lane and four through lanes	**Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.					plan/maintain weekly reporting schedule	
	TR MM#6: Modify Signal Timing. Modify signal timing (to optimize cycle length and/or splits) at specific intersections surrounding proposed HST station locations in order to improve LOS and intersection operations. • Veterans Boulevard/Bullard Avenue • Veterans Boulevard/Golden State Boulevard Connector	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#7: Widen Approaches to Intersections. Widen approaches in order to improve LOS and intersection operation. • Golden State Boulevard/Santa Ana Avenue – northbound approach on Golden State Boulevard and widen downstream on Santa Ana Avenue • Cornelia Avenue/Shaw Avenue – westbound approach, northbound approach, and southbound approach; widen downstream on Cornelia Avenue • Blythe Avenue/Shaw Avenue – eastbound approach • Veterans Boulevard/Golden State Boulevard Connector – westbound approach	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#8: Add Exclusive Turn Lanes to Intersections. Add exclusive turn lanes at specific intersections in order to improve LOS and intersection operations. The traffic impacts associated at the identified intersections would be addressed as follows: • Golden State Boulevard/Santa Ana Avenue – northbound approach on Golden State Boulevard to provide dual left-turn lanes and one through lane; widen downstream on Santa Ana Avenue to two receiving lanes from one receiving lane • Cornelia Avenue/Shaw Avenue – restripe eastbound approach to provide one left-turn lane, two through lanes, and one right-turn lane; westbound approach to provide two left-turn lanes, two through lanes, and one right-turn lane; northbound approach to provide one left-turn lane, one through lane, and one channelized right-turn; and southbound approach to provide one left-turn lane, one through lane, and one right-turn lane; downstream on Cornelia Avenue to two receiving lanes from one receiving lane • Blythe Avenue/Shaw Avenue – eastbound approach to provide a second left-turn lane • Veterans Boulevard/Golden State Boulevard Connector – westbound approach to provide additional left-turn lane and a through lane	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	TR-MM#9: Convert Two-Way- Stop to Four-Way Stop. Convert two-way stop controlled intersection to an all-way stop controlled intersection.	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	
	TR MM#10: Grade Separate Through Movements. Modify the intersection to provide an overpass for through movements to improve LOS and intersection operations. The traffic impacts associated at the identified intersections would be addressed by (per Final EIR/S Table 3.2-53): • signalizing the intersection, widening the northbound approach to provide dual left-turn lanes and one through lane, and widening downstream of Santa Ana Avenue from one receiving lane to two receiving lanes to accommodate the dual left-turn lanes from northbound approach on Golden State Boulevard for the Golden State Boulevard/Santa Ana Avenue intersection • signalizing the intersection, restriping eastbound approach to provide one left-turn lane, two through lanes, and one right-turn lane, widening westbound approach to provide two left-turn lanes, two through lanes and one right-turn lane, widening northbound approach to provide one left-turn lane, one through lane, and one channelized right-turn, widening southbound approach to provide one left-turn lane, one through lane, and one right-turn lane, and widening downstream on Cornelia Avenue form one receiving lane to two receiving lanes to accommodate the second left-tune lane from westbound approach on Shaw Avenue for the Cornelia Avenue/Shaw Avenue intersection • widening eastbound approach to provide a second left-turn lane at Blythe Avenue/Shaw Avenue • signalizing the intersection at Cornelia Avenue/Golden State Boulevard • restriping westbound approach to provide two left-turn lanes, one through lane and one right-turn lane for the Figarden Drive/Bullard Avenue intersection • grade separating through movement on Veterans Boulevard, restriping eastbound approach to provide one left-turn lane and two right-turn lanes, restriping northbound approach to provide three left-turn lanes and one through lane, and modifying the signal timing at the Veterans Boulevard/Bullard Avenue intersection • restriping eastbound approach to provide one left-turn lane and four through lanes, widening westbound approach to provide additional left-turn lane and a through lane, and modify northbound and southbound right-turn as free movements at the Veterans Boulevard/Golden State Boulevard connector.	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
TR #3: Fresno Area between Herndon Avenue and Shaw Avenue Roadway Impacts – Future (2035) Plus Project.	**TR MM#11: Add Lanes to the Segment.** Add travel lanes to the roadway segment in order to increase capacity and improve roadway operations. • Veterans Boulevard between Golden State Boulevard and Bullard Avenue – one lane in each direction	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdiction. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
TR #4: Fresno Area between McKinley Avenue and SR 180 Roadway Impacts – Future (2035) Plus Project.	**TR MM#11: Add Lanes to the Segment.** Add travel lanes to the roadway segment in order to increase capacity and improve roadway operations. The traffic impacts associated at the identified roadway segments would be addressed by (per FEIR/S Table 3.2-55): • adding one lane in each direction along West Olive Avenue between SR 99 ramps and North West Avenue • adding one lane in each direction along West Belmont Avenue between North Arthur Avenue and SR 99 ramps	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdiction. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
TR #5: Fresno Area between McKinley Avenue and SR 180 Intersection Impacts – Existing Plus Project.	**TR MM#4: Add Signal to Intersection to Improve LOS/Operation.** The traffic impacts associated at the identified roadway segments would be addressed by (per FEIR/S Table 3.2-55): • Signalizing the intersection at the West Olive Avenue/SR 99 southbound ramps • Signalizing the intersection and providing at West Belmont Avenue/SR 99 southbound ramps a protected phasing for westbound left-turn movement • Signalizing the intersection at West Belmont Avenue/SR 99 northbound ramps	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdiction. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
TR #5: Fresno Area between McKinley Avenue and SR 180 Intersection Impacts – Future (2035) Plus Project.	**TR MM#4: Add Signal to Intersection to Improve LOS/Operation.** Signalize and improve the following intersections as described above for TR MM#4: • West Olive Avenue/North West Avenue • West Belmont Avenue/ SR 99 southbound ramps • West Belmont Avenue/ SR 99 northbound ramps	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdiction. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#7: Widen Approaches to Intersections. Widen approaches in order to improve LOS and intersection operation. • West Olive Avenue/SR 99 southbound ramps – southbound approach • West Olive Avenue/SR 99 northbound ramps – northbound approach	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdiction. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#8: Add Exclusive Turn Lanes to Intersections. The traffic impacts associated at the identified intersections would be addressed by (per Final EIR/S Table 3.2-55):	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdiction. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	• widening the southbound approach to provide additional left-turn lane at West Olive Avenue/SR 99 southbound ramps • widening the northbound approach to provide exclusive left-turn lane at West Olive Avenue/SR 99 northbound ramps • signalizing the intersection at West Olive Avenue/North West Avenue • signalizing the intersection at West Belmont Avenue/ SR 99 southbound ramps • signalizing the intersection at West Belmont Avenue/ SR 99 northbound ramps							
TR #6: SR 99 Relocation Freeway Impacts – Future (2035) Plus Project.	**TR MM#2: Add Southbound Auxiliary Lane to SR 99.** Add southbound auxiliary lane south of the Clinton Avenue on-ramp to Olive Avenue.	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions and Caltrans. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
TR #7: SR 99 Relocation Intersection Impacts – Existing Plus Project.	**TR MM#4: Add Signal to Intersection to Improve LOS/Operation** Signalize and improve the following intersection as described above for TR MM#4: • Dakota Avenue/Brawley Avenue	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#5: Restripe Intersections. Restripe the following intersection as described above for TR MM#5: • Dakota Avenue/Brawley Avenue – northbound approach include exclusive left-turn lane and shared through-right-turn lane	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#7: Widen Approaches to Intersections. Widen the following intersections as described above for TR MM#7: • Clinton Avenue/Weber Avenue – southbound approach; eastbound approach • Dakota Avenue/Brawley Avenue – southbound approach	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdiction. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#8: Add Exclusive Turn Lanes to Intersections. The traffic impacts associated at the identified intersections associated with the SR 99 realignment would be addressed by (per Final EIR/S Table 3.2-56): • widening southbound approach to provide second left-turn lane and widening northbound approach to provide second left-turn lane for the Clinton Avenue/Weber Avenue intersection • signalizing the intersection, restriping northbound approach to include exclusive left-turn lane and shared through-right-turn lane, and widening southbound approach to include exclusive left-turn, through, and exclusive right-turn lanes for the Dakota Avenue/Brawley Avenue intersection	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdiction. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
TR #7: SR 99 Relocation Intersection Impacts – Future (2035) Plus Project.	**TR MM#4: Add Signal to Intersection to Improve LOS/Operation** Signalize and improve the following intersections as described above for TR MM#4: • Shields Avenue/Brawley Avenue • Dakota Avenue/Brawley Avenue -	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#5: Restripe Intersections. Restripe the following intersections as described above for TR MM#5: • Clinton Avenue/Marks Avenue – southbound approach to include two left-turn lanes and one shared through-right-turn lane • Dakota Avenue/Brawley Avenue – northbound approach to include exclusive left-turn lane and shared through-right-turn lane; westbound approach to include exclusive left-turn lane and shared through-right-turn lane	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#7: Widen Approaches to Intersections. Widen approaches in order to improve LOS and intersection operation. • Clinton Avenue/Brawley Avenue – southbound approach • Clinton Avenue/Marks Avenue – southbound approach • Clinton Avenue/SR 99 southbound ramps – eastbound approach • Clinton Avenue/Weber Avenue – southbound approach; eastbound approach • Dakota Avenue/Brawley Avenue – southbound approach; eastbound approach • Ashlan Avenue - SR 99 southbound ramps/Parkway Drive – northbound approach	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#8: Add Exclusive Turn Lanes to Intersections. The traffic impacts associated at the identified intersections would be addressed by (per Final EIR/S Table 3.2-57): • widening southbound approach to provide second left-turn lane at the Clinton Avenue/Brawley Avenue intersection • widening northbound approach to provide exclusive northbound right-turn lane and restriping southbound approach to include two left-turn lanes and one shared through-right-turn lane at the Clinton Avenue/Marks Avenue intersection • widening eastbound approach to provide exclusive eastbound right-turn lane at the Clinton Avenue/SR 99 southbound ramps intersection • widening southbound approach to provide second left-turn lane and widening eastbound approach to provide second left-turn lane at the	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X			Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Clinton Avenue/Weber Avenue intersection • signalizing the intersection at Shields Avenue/Brawley Avenue • Signalizing the intersection, restriping northbound approach to include exclusive left-turn lane and shared through-right-turn lane, restriping westbound approach to include exclusive left-turn lane and shared through-right-turn lane, widening southbound approach to include exclusive left-turn, through, and exclusive right-turn lanes, and widening eastbound approach to include exclusive left-turn and shared through-right-turn lane at the Dakota Avenue/Brawley Avenue intersection • Adding second northbound right-turn lane at Ashland Avenue – SR 99 southbound ramps/Parkway Drive							
TR #8: HST Station Area Roadway Impacts – Existing Plus Project.	**TR MM#11: Add Lanes to the Segment.** Merced Station • M Street between 13th Street and 16th Street – adding one travel lane in each direction • V Street west of 13th Street (Option A only) - adding one travel lane in each direction Fresno Station • n/a	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.				X	Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
TR #8: HST Station Area Roadway Impacts – Future (2035) Plus Project.	**TR MM#11: Add Lanes to the Segment.** Merced Station • Main Street between Yosemite Parkway and G Street – add one travel lane in each direction • 16th Street between R Street and Martin Luther King Jr. Way – add one travel lane in each direction • V Street west of 13th Street to 16th Street (Option B only) – add one travel lane in each direction • M Street between 13st Street and 16th Street – add one travel lane in each direction • Martin Luther King Jr. Way between Childs Avenue and 13th Street – add one travel lane in each direction • S Street between 13th Street and 16th Street – add one travel lane in each direction Fresno Station • H Street between East Divisadero Street and Stanislaus Street – add one travel lane in each direction • Stanislaus Street between Broadway Street and E Street – add one travel lane in each direction • Fresno Street between Van Ness Avenue and Broadway Street (Tulare Street Overpass Option only) – add one travel lane in each direction • Fresno Street between G Street and SR 99 northbound ramps – add one travel lane in each direction • Tulare Street between Broadway Street and Van Ness Avenue (Tulare Street Underpass Option only) – add one travel lane in each direction	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X		X	Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	• Divisadero Street between North Fresno Street and SR 41 ramps – add one travel lane in each direction • Van Ness Avenue between Ventura Avenue and SR 41 ramps (Tulare Street Overpass Option only) – add one travel lane in each direction • Stanislaus Street between E Street and F Street (Tulare Street Overpass Option only) – add one travel lane in each direction • F Street between Stanislaus Street and Tuolumne Street (Tulare Street Overpass Option only) – add one travel lane in each direction • Stanislaus Street between G Street and H Street (Tulare Street Overpass Option only) – add one travel lane in each direction • Stanislaus Street between Broadway Street and Fulton Street – add one travel lane in each direction • Stanislaus Street between L Street and M Street (Tulare Street Underpass Option only) – add one travel lane in each direction							
TR #9: HST Station Area Intersection Impacts – Existing Plus Project.	**TR MM#4: Add Signal to Intersection to Improve LOS/Operation.** Signalize and improve the following intersections as described above for TR MM#4: Merced Station • 16th/SR 59 • 13th Street/G Street • SR 99 northbound off-ramps/SR 140 Fresno Station • H Street/Ventura Street (Tulare Street Underpass Option Only) • Stanislaus Street/F Street • Stanislaus Street/N Street	**Implementing Party:** Contractor (post-construction contractor) **Monitoring/Reporting Party:** Authority will monitor and report intersection monitoring and signal construction			X	X	Contractor (post-construction contractor) will monitor intersection and then construct new signal based on warrant, in coordination with local jurisdictions. Authority will monitor signal construction and coordinate with local jurisdictions.	Memorandum of Understanding with the City of Fresno
	TR MM#5: Restripe Intersections. Restripe the following intersections as described above for TR MM#5: Merced Station • 16th Street/Canal Street – eastbound approach from one shared-through left lane and one exclusive right-turn lane to one exclusive left-turn lane and a shared through-right lane Fresno Station • SR 99 northbound ramps/Ventura Avenue – northbound approach to provide one exclusive left-turn lane and one shared through/right-turn lane at the intersection	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X		X	Construction	Contract Requirements/Specifications
	TR MM#6: Modify Signal Timing. Modify signal timing at the following intersections as described above for TR MM#6:	**Implementing Party:** Contractor in coordination with affected jurisdiction. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X		X	Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Merced Station • n/a Fresno Station • Divisadero Street/SR 41 northbound ramps/Tulare Street – re-time existing signal • H Street/Divisadero Street – re-time existing signal in AM • North Blackstone Avenue/SR 180 westbound ramps – re-time existing signal in AM							
	TR MM#7: Widen Approaches to Intersections. Widen approaches as described above for TR MM#7: Merced Station • 15th Street/M Street intersection (Option A only) – eastbound approach; westbound approach • 14th Street/Martin Luther King Jr. Way intersection – southbound approach Fresno Station • n/a	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X		X	Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#8: Add Exclusive Turn Lanes to Intersections. Merced Station The traffic impacts associated with the Merced Station at the identified roadway segments would be addressed by (per Table 3.2-59): • adding one travel lane in each direction on Main Street between Yosemite Parkway and G Street • adding one travel lane in each direction on 16th Street between R Street and Martin Luther King Jr. Way • adding one travel lane in each direction on V Street west of 13th Street to 16th Street (Option B only) • adding one travel lane in each direction on M Street between 13st Street and 16th Street • adding one travel lane in each direction on Martin Luther King Jr. Way between Childs Avenue and 13th Street • adding one travel lane in each direction on S Street between 13th Street and 16th Street Fresno Station The traffic impacts associated with the Fresno Station at the identified roadway segments would be addressed by (per Final EIR/S Table 3.2-60): • add one travel lane in each direction on H Street between East Divisadero Street and Stanislaus Street • adding one travel lane in each direction on Stanislaus Street between	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X		X	Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Broadway Street and E Street • adding one travel lane in each direction on Fresno Street between Van Ness Avenue and Broadway Street (Tulare Street Underpass Option only) • adding one travel lane in each direction on Fresno Street between G Street and SR 99 northbound ramps • adding one travel lane in each direction on Tulare Street between Broadway Street and Van Ness Avenue (Tulare Street Underpass Option only) • adding one travel lane in each direction on Divisadero Street between North Fresno Street and SR 41 ramps • adding one travel lane in each direction on Van Ness Avenue between Ventura Avenue and SR 41 ramps (Tulare Street Overpass Option only) • adding one travel lane in each direction on Stanislaus Street between E Street and F Street (Tulare Street Overpass Option only) • adding one travel lane in each direction on F Street between Stanislaus Street and Tuolumne Street (Tulare Street Overpass Option only) • adding one travel lane in each direction on Stanislaus Street between G Street and H Street (Tulare Street Overpass Option only) • adding one travel lane in each direction on Stanislaus Street between Broadway Street and Fulton Street • adding one travel lane in each direction on Stanislaus Street between L Street and M Street (Tulare Street Underpass Option only)							

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
TR #9: HST Station Area Intersection Impacts – Future (2035) Plus Project.	**TR MM#3: Modify Signal Phasing.** Modify signal phasing as described in TR MM#3 above: Merced Station • 16th Street/Martin Luther King Jr. Way – change northbound/southbound split phasing to protected phasing Fresno Station • Broadway Avenue/Ventura Avenue - provide protected left turn phases for the northbound and southbound approaches • Van Ness Avenue/Ventura Street - provide protected left-turn phases for the northbound and southbound approaches • E Street/Tulare Street (Tulare Street Overpass Option only) – provide protected left-turn phases for the eastbound and westbound approaches • F Street/Tulare Street (Tulare Street Underpass Option only) – provide protected left-turn phases for all approaches • H Street/Tulare Street (Tulare Street Underpass Option only) – provide protected left-turn phases for all approaches • U Street/Tulare Street – provide protected left-turn phases for the eastbound and westbound approaches • Fresno Street/Divisadero Street – provide split phases for the eastbound and westbound approaches • E Street/Stanislaus Street (Tulare Street Overpass Option only) – provide split phasing on eastbound and westbound approaches • Broadway Street/Stanislaus Street (Tulare Street Overpass Option only) – provide permissive phase on northbound and southbound approaches • South Van Ness Avenue/East California Avenue – provide protected plus permissive left-turn phasing for northbound and southbound approaches • Golden State Boulevard/East Church Avenue – provide protected plus permissive left-turn phase on all approaches	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X		X	Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#4: Add Signal to Intersection to Improve LOS/Operation. Add signals as described in TR MM#4 above: Merced Station • 16th Street/SR 59 – providing signal phasing to "overlap" northbound right-turn movement with westbound left-turn movement and westbound right-turn with southbound left-turn movement • 15th Street/M Street – meets signal warrant between 2020 and 2025 • SR 99 southbound ramps/Martin Luther King Jr. Way • SR 99 northbound ramps/Martin Luther King Jr. Way • 14th Street/Martin Luther King Jr. Way • 13th Street/G Street • SR 99 southbound off-ramp/14st Street/G Street • SR 99 northbound off-ramp/Yosemite Parkway • 13th Street/M Street – meets signal warrant between 2020 and 2025 • 14th Street/M Street – meets signal warrant between 2020 and 2025	**Implementing Party:** Contractor (post-construction contractor) **Monitoring/Reporting Party:** Authority will monitor and report intersection monitoring and signal construction			X	X	Contractor (post-construction contractor) will monitor intersection and then construct new signal based on warrant, in coordination with local jurisdictions. Weekly/monthly reporting as needed to document completion of improvements.	Intersections will have to be monitored once a year to determine if/when the warrant is met.

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	• 15th Street/Canal Street – meets signal warrant between 2020 and 2025 • 11th Street/Martin Luther King Jr. Way – meets signal warrant between 2020 and 2025 • Main Street/H Street – meets signal warrant between 2020 and 2025 Fresno Station • SR 99 northbound ramps/Ventura Avenue • E Street/Ventura Avenue • H Street/San Joaquin Street • H Street/Amador Street • Broadway Street/Amador Street • H Street/Ventura Street (Tulare Street Underpass Option only) • G Street/Mono Street (Tulare Street Underpass Option only) • South Van Ness Avenue/East California Street							
	TR MM#5: Restripe Intersections. Restripe intersections as described in TR MM#5 above: Merced Station • 13th Street - SR 99 southbound off-ramp/V Street – southbound approach from left-turn, through, shared through-right-turn lane to left-turn lane, and shared through-right-turn lane • 13th Street/G Street – northbound approach from single lane to shared left-through and right-turn lane; westbound approach from an exclusive right-turn lane to a shared through-right-turn lane • SR 99 northbound off-ramp/Yosemite Parkway – eastbound approach to provide a second through lane • Motel Drive/Glen Avenue/Yosemite Parkway – southbound approach to provide exclusive right-turn lane and restriping eastbound approach from exclusive right-turn lane to a shared though-right-turn lane; eastbound approach from exclusive right-turn lane to a shared though-right-turn lane Fresno Station • Van Ness Avenue/SR 41 northbound ramp – eastbound approach to provide one exclusive left-turn lane and on shared left/through/right-turn lane • SR 99 northbound ramps/Fresno Street (Tulare Street Underpass Option) – eastbound approach to provide two exclusive left-turn lanes and one exclusive through lane • SR 99 northbound ramps/Fresno Street (Tulare Street Overpass Option) – westbound approach to provide one through lane, one shared through/right-turn lane, and one exclusive right-turn lane • E Street/Stanislaus Street (Tulare Street Overpass Option only) – westbound approach to provide one shared left/though lane, one through lane, and one shared through/right-turn lane; southbound approach to provide one shared left/through lane and one exclusive right-turn lane • Broadway Street/Stanislaus Street (Tulare Street Overpass Option only) – southbound approach to provide shared left/through lane and on exclusive	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X		X	Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	right-turn lane • H Street/Divisadero Street – westbound approach to provide one shared through/right/left-turn lane and two exclusive right-turn lanes • Van Ness Avenue/SR 180 eastbound ramps – northbound approach to provide one exclusive through lane, one shared through/right-turn lane, and one exclusive right-turn lane • North Abby Street/SR 180 eastbound ramps – northbound approach to provide one shared left/through lane, one exclusive through lane, one shared through/right-turn lane, and one exclusive right-turn lane • Fresno Street/F Street (Tulare Street Underpass Option) – northbound approach to provide one exclusive left-turn lane, on exclusive through lane, and one shared through/right-turn lane • Fresno Street/F Street (Tulare Street Overpass Option) – northbound approach to provide one exclusive left-turn lane, one exclusive through lane, and one shared through/right-turn lane • Tuolumne Street/F Street (Tulare Street Overpass Option only) – eastbound approach to provide one exclusive left-turn lane, one shared left/through lane and one exclusive right-turn lane						
	TR MM#6: Modify Signal Timing. Modify signal timing as described in TR MM#6 above: Merced Station • 16th Street/V Street • Main Street/G Street - optimizing cycle length Fresno Station • South East Avenue/Golden State Boulevard - increasing the cycle length (in the PM Peak Hour only)	**Implementing Party:** Contractor in coordination with affected jurisdiction. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X		X	Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications
	TR MM#7: Widen Approaches to Intersections. Widen approaches as described in TR MM#7 above: Merced Station • 16th Street/SR 59 – northbound approach; westbound approach • 13th Street – SR 99 southbound off-ramp/V Street – SR 99 southbound off-ramp • Childs Avenue/Martin Luther King Jr. Way – southbound approach • 13th Street/G Street – eastbound approach • SR 99 northbound off-ramp/Yosemite Parkway – westbound approach Fresno Station • Broadway Avenue/Ventura Avenue (Tulare Street Underpass Option) - northbound approach • Broadway Avenue/Ventura Avenue (Tulare Street Overpass Option) - eastbound approach	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X		X	Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	• H Street/Kern Street (Tulare Street Underpass Option only) – eastbound approach • E Street/Tulare Street intersection (Tulare Street Overpass Option only) – southbound approach; westbound approach • F Street/Tulare Street (Tulare Street Underpass Option only) – northbound approach; southbound approach; westbound approach • H Street/Tulare Street (Tulare Street Underpass Option only) – westbound approach; northbound approach; southbound approach • Van Ness Avenue/Tulare Street (Tulare Street Underpass Option only) – westbound approach • SR 99 southbound ramps/Fresno Street – eastbound approach • Van Ness Avenue/Fresno Street (Tulare Street Underpass Option) – southbound approach • Van Ness Avenue/Fresno Street (Tulare Street Overpass Option) – northbound approach; eastbound approach • Van Ness Avenue/Tuolumne Street –eastbound approach • Van Ness Avenue/Stanislaus Street (Tulare Street Underpass Option only) – westbound approach • H Street/Amador Street – southbound approach • H Street/Divisadero Street –northbound approach; southbound approach • Van Ness Avenue/Divisadero Street – eastbound approaches; westbound approach • H Street/Roosevelt Street – westbound approach (H Street) • North Blackstone Avenue/East McKenzie Avenue – westbound approach • Van Ness Avenue/SR 180 westbound ramps – eastbound approach • North Blackstone Avenue/East Belmont Avenue – southbound approach • North Blackstone Avenue/SR 180 westbound ramps – eastbound approach • Fresno Street/F Street (Tulare Street Underpass Option) – westbound approach; eastbound approach • Fresno Street/F Street (Tulare Street Overpass Option) –westbound approach; eastbound approach • South Van Ness Avenue/East California Street – northbound approach; southbound approach • Stanislaus Street/F Street (Tulare Street Overpass Option only) – northbound approach • Stanislaus Street/L Street – northbound approach • Stanislaus Street/M Street – southbound approach • Stanislaus Street/N Street – westbound approach						
	TR MM#8: Add Exclusive Turn Lanes to Intersections. Add turn lanes as described in TR MM#8 above: <u>Merced Station</u> • 16th Street/SR 59 - northbound approach to add second right-turn lane; westbound approach to add second left-turn lane • 13th Street – SR 99 southbound off-ramp/V Street – SR 99 southbound off-ramp to add exclusive right-turn lane • Childs Avenue/Martin Luther King Jr. Way – southbound approach on	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.		X		X	Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Childs Avenue to provide exclusive right-turn lane • 13th Street/G Street – northbound approach from single lane to shared left-through and right-turn lane; westbound approach from an exclusive right-turn lane to a shared through-right-turn lane; eastbound approach to provide a second through lane • Motel Drive/Glen Avenue/Yosemite Parkway – southbound approach to provide exclusive right-turn lane and restriping eastbound approach from exclusive right-turn lane to a shared though-right-turn lane; eastbound approach from exclusive right-turn lane to a shared though-right-turn lane <u>Fresno Station</u> • Van Ness Avenue/SR 41 northbound ramp – eastbound approach to provide one exclusive left-turn lane and on shared left/through/right-turn lane • Broadway Avenue/Ventura Avenue (Tulare Street Underpass Option) – northbound approach to add one exclusive right-turn, one left-turn lane, and one through lane • Broadway Avenue/Ventura Avenue (Tulare Street Overpass Option) – eastbound approach to add two exclusive left-turn lanes, two through lanes, and one exclusive right-turn lane; provide protected left-turn phases for the northbound and southbound approaches • H Street/Kern Street (Tulare Street Underpass Option only) – eastbound approach to provide one exclusive left-turn lane and one exclusive right-turn lane • E Street/Tulare Street intersection (Tulare Street Overpass Option only) – southbound approach to provide one exclusive left-turn lane and one shared through/right-turn lane; westbound approach to provide one exclusive left-turn lane, one through lane, and one exclusive right-turn lane • F Street/Tulare Street (Tulare Street Underpass Option only) – northbound approach to provide one exclusive left-turn and one shared through/right-turn lane; southbound approaches to provide one exclusive left-turn lane and one shared through/right-turn lane; westbound approach to provide one exclusive right-turn lane, one exclusive left-turn lane, and one through lane • H Street/Tulare Street (Tulare Street Underpass Option only) –westbound approach to provide one exclusive right-turn lane, on exclusive left-turn lane, and two through lanes; northbound approach to provide one exclusive right-turn lane, one exclusive left-turn lane, and two through lanes; and southbound approach to provide one exclusive right-turn lane, one exclusive left-turn lane, and two through lanes • Van Ness Avenue/Tulare Street (Tulare Street Underpass Option only) – westbound approach to provide one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane • SR 99 southbound ramps/Fresno Street – eastbound approach to provide two exclusive through lanes and one exclusive through lanes and one exclusive right-turn lane						

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	• SR 99 northbound ramps/Fresno Street (Tulare Street Underpass Option) – eastbound approach to provide two exclusive left-turn lanes and one exclusive through lane • SR 99 northbound ramps/Fresno Street (Tulare Street Overpass Option) – westbound approach to provide one through lane, one shared through/right-turn lane, and one exclusive right-turn lane • Van Ness Avenue/Fresno Street (Tulare Street Underpass Option) – southbound approach to provide one exclusive left-turn lane, one exclusive through lane, and one exclusive right turn lane • Van Ness Avenue/Fresno Street (Tulare Street Overpass Option) – northbound approach to provide two exclusive left-turn lanes, one through lane, and one shared through/right-turn lane; eastbound approach to provide two exclusive left-turn lanes, one through lane, and one shared through/right-turn lane • Van Ness Avenue/Tuolumne Street –eastbound approach to provide one exclusive left-turn lane, one through lane and one exclusive right-turn lane • E Street/Stanislaus Street (Tulare Street Overpass Option only) – westbound approach to provide one shared left/though lane, one through lane, and one shared through/right-turn lane; southbound approach to provide one shared left/through lane and one exclusive right-turn lane • Broadway Street/Stanislaus Street (Tulare Street Overpass Option only) – southbound approach to provide shared left/through lane and on exclusive right-turn lane • Van Ness Avenue/Stanislaus Street (Tulare Street Underpass Option only) – westbound approach to provide one exclusive left-turn lane, one through lane and one shared through/right-turn lane • H Street/Amador Street – southbound approach to provide on exclusive left-turn lane and one through lane • H Street/Divisadero Street –northbound approach to provide two exclusive left-turn lanes and one shared through/right-turn lane; southbound approach to provide additional left-turn lane (on H Street) • Van Ness Avenue/Divisadero Street – eastbound approaches to provide one shared left/through lane, one exclusive through lane, and one exclusive right-turn lane; westbound approach to provide one shared left/through lane, one exclusive through lane, and one exclusive right-turn lane • H Street/Roosevelt Street – westbound approach (H Street) to provide one shared through/right-turn lane, one exclusive through lane, and one exclusive left-turn lane • North Blackstone Avenue/East McKenzie Avenue – westbound approach to provide one exclusive left0turn lane and one exclusive through lane • Van Ness Avenue/SR 180 eastbound ramps – northbound approach to provide one exclusive through lane, one shared through/right-turn lane, and one exclusive right-turn lane • Van Ness Avenue/SR 180 westbound ramps – eastbound approach to provide one additional exclusive left-turn lane • North Blackstone Avenue/East Belmont Avenue – southbound approach to provide one exclusive left-turn lane, two exclusive through lanes, and one shared through/right-turn lane • North Abby Street/SR 180 eastbound ramps – northbound approach to						

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	provide one shared left/through lane, one exclusive through lane, one shared through/right-turn lane, and one exclusive right-turn lane • North Blackstone Avenue/SR 180 westbound ramps – eastbound approach to provide one additional exclusive right-turn lane • Fresno Street/F Street (Tulare Street Underpass Option) – northbound approach to provide one exclusive left-turn lane, on exclusive through lane, and one shared through/right-turn lane; westbound approach to provide one exclusive left-turn lane, two through lanes and one exclusive right-turn lane; and eastbound approach to provide two exclusive left-turn lanes, one through lane, and one shared through/right-turn lane • Fresno Street/F Street (Tulare Street Overpass Option) – northbound approach to provide one exclusive left-turn lane, one exclusive through lane, and one shared through/right-turn lane; westbound approach to provide one exclusive left-turn lane, one through lane, one shared through/right-turn lane, and one exclusive right-turn lane; eastbound approach to provide two exclusive left-turn lanes, one through lane, and one shared through/right-turn lane • South Van Ness Avenue/East California Street – northbound approach to provide exclusive left-turn lane; southbound approach to provide exclusive left-turn lane • Golden State Boulevard/East Church Avenue – exclusive right-turn lane in the northbound direction • Golden State Boulevard/East Jensen Avenue – exclusive right-turn lane for both northbound and southbound approaches • Stanislaus Street/F Street (Tulare Street Overpass Option only) – northbound approach to provide one exclusive left-turn lane and two exclusive right-turn lanes • Tuolumne Street/F Street (Tulare Street Overpass Option only) – eastbound approach to provide one exclusive left-turn lane, one shared left/through lane and one exclusive right-turn lane • Stanislaus Street/L Street – northbound approach to provide one exclusive left-turn lane and one shared through/right-turn lane • Stanislaus Street/M Street – southbound approach to provide one shared left/through lane and one exclusive right-turn lane • Stanislaus Street/N Street – westbound approach to provide one exclusive left-turn lane, one through lane and one shared through/right-turn lane							
	TR MM#9: Convert Two-Way Stop to Four-Way Stop. Convert two-way stop controlled intersection to an all-way stop controlled intersection. • signalizing the intersection, widening northbound approach to add second right-turn lane, widening westbound approach to add second left-turn lane, providing signal phasing to "overlap" northbound right-turn movement with westbound left-turn movement and westbound right-turn with southbound left-turn movement at 16th Street/SR 59 • restriping the southbound approach from left-turn, through, shared through-right-turn lane to left-turn lane, and shared through-right-turn lane and widening SR 99 southbound off-ramp to add exclusive right-turn lane at 13th Street – SR 99 southbound off-ramp/V Street • modifying the signal timing at 16th Street/V Street • signalizing the intersection at 15th Street/M Street (meets signal warrant between 2020 and 2025)	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.	X				Prepare construction management plan/maintain weekly reporting schedule	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	• widening the southbound approach on Childs Avenue to provide exclusive right-turn lane at Childs Avenue/Martin Luther King Jr. Way • signalizing the intersection at SR 99 southbound ramps/Martin Luther King Jr. Way • signalizing the intersection at SR 99 northbound ramps/Martin Luther King Jr. Way • signalizing the intersection at 14th Street/Martin Luther King Jr. Way • signalizing the intersection, restriping northbound approach from single lane to shared left-through and right-turn lane, widening eastbound approach to provide a second through lane, and restriping westbound approach from an exclusive right-turn lane to a shared through-right-turn lane at 13th Street/G Street • signalizing the intersection at SR 99 southbound off-ramp/14st Street/G Street • signalizing the intersection, restriping eastbound approach to provide a second through lane, and widening westbound approach to add a second through lane at SR 99 northbound off-ramp/Yosemite Parkway • restriping southbound approach to provide exclusive right-turn lane and restriping eastbound approach from exclusive right-turn lane to a shared though-right-turn lane at Motel Drive/Glen Avenue/Yosemite Parkway • converting two-way stop controlled intersection to an all-way stop controlled intersection at 14th Street/O Street (Option A only) • signalizing the intersection at 13th Street/M Street (meets signal warrant between 2020 and 2025) • signalizing the intersection at 14th Street/M Street (meets signal warrant between 2020 and 2025) • signalizing the intersection at 15th Street/Canal Street (meets signal warrant between 2020 and 2025) • signalizing the intersection at 11th Street/Martin Luther King Jr. Way (meets signal warrant between 2020 and 2025) • signalizing the intersection at Main Street/H Street (meets signal warrant between 2020 and 2025) • optimizing cycle length at Main Street/G Street The traffic impacts associated with the Fresno Station at the identified intersections would be addressed by: • restriping the eastbound approach to provide one exclusive left-turn lane and on shared left/through/right-turn lane at the intersection of Van Ness Avenue/SR 41 northbound ramp • signalizing the intersection at SR 99 northbound ramps/Ventura Avenue • signalizing the intersection at Broadway Avenue/Ventura Avenue • widening the northbound approach to add one exclusive right-turn, one left-turn lane, and one through lane and modifying the signal phasing to provide protected left-turn phases for the northbound and southbound approaches for Broadway Avenue/Ventura Avenue (Tulare Street Underpass Option) • widening the eastbound approach to add two exclusive left-turn lanes, two through lanes, and one exclusive right-turn lane and modifying the signal phasing to provide protected left-turn phases for the northbound and southbound approaches for Broadway Avenue/Ventura Avenue (Tulare Street Overpass Option)							

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	• modifying the existing traffic signal phasing to provide protected left-turn phases for the northbound and southbound approaches for Van Ness Avenue/Ventura Street intersection • widening the east bound approach to provide one exclusive left-turn lane and one exclusive right-turn lane at the intersection at H Street/Kern Street (Tulare Street Underpass Option only) • widening the southbound approach to provide one exclusive left-turn lane and one shared through/right-turn lane; widening the westbound approach to provide one exclusive left-turn lane, one through lane, and one exclusive right-turn lane; and modifying the signal phasing to provide protected left-turn phases for the eastbound and westbound approaches for E Street/Tulare Street intersection (Tulare Street Overpass Option only) • widening the northbound approach to provide one exclusive left-turn, and one shared through/right-turn lane; widening the southbound approaches to provide one exclusive left-turn lane, and one shared through/right-turn lane; widening the westbound approach to provide one exclusive right-turn lane, one exclusive left-turn lane, and one through lane; and modifying the signal phasing to provide protected left-turn phases for all approaches for F Street/Tulare Street (Tulare Street Underpass Option only) • widening westbound approach to provide one exclusive right-turn lane, on exclusive left-turn lane, and two through lanes; widening northbound approach to provide one exclusive right-turn lane, one exclusive left-turn lane, and two through lanes; and widening southbound approach to provide one exclusive right-turn lane, one exclusive left-turn lane, and two through lanes for H Street/Tulare Street (Tulare Street Underpass Option only) • widening the westbound approach to provide one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane at the intersection of Van Ness Avenue/Tulare Street (Tulare Street Underpass Option only) • modifying the existing traffic signal phasing to provide protected left0turn phases for the eastbound and westbound approaches at U Street/Tulare Street • widening the eastbound approach to provide two exclusive through lanes and one exclusive through lanes and one exclusive right-turn lane at the intersection of SR 99 southbound ramps/Fresno Street • restriping the eastbound approach to provide two exclusive left-turn lanes and one exclusive through lane at SR 99 northbound ramps/Fresno Street (Tulare Street Underpass Option) • restriping the westbound approach to provide one through lane, one shared through/right-turn lane, and one exclusive right-turn lane at SR 99 northbound ramps/Fresno Street (Tulare Street Overpass Option) • widening the southbound approach to provide one exclusive left-turn lane, one exclusive through lane, and one exclusive right turn lane at the intersection of Van Ness Avenue/Fresno Street (Tulare Street Underpass Option) • widening the northbound approach to provide two exclusive left-turn lanes, one through lane, and one shared through/right-turn lane and widening the eastbound approach to provide two exclusive left-turn lanes, one through lane, and one shared through/right-turn lane at the intersection of Van Ness Avenue/Fresno Street (Tulare Street Overpass Option)						

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	• modifying the existing traffic signal to provide split phases for the eastbound and westbound approaches at the intersection of Fresno Street/Divisadero Street • widening eastbound approach to provide one exclusive left-turn lane, one through lane and one exclusive right-turn lane at Van Ness Avenue/Tuolumne Street • restriping the westbound approach to provide one shared left/though lane, one through lane, and one shared through/right-turn lane; restriping the southbound approach to provide one shared left/through lane and one exclusive right-turn lane; and modifying signal phasing to provide split phasing on eastbound and westbound approaches at E Street/Stanislaus Street (Tulare Street Overpass Option only) • restriping the southbound approach to provide shared left/through lane and one exclusive right-turn lane and modifying the signal phasing to provide permissive phase on northbound and southbound approaches at Broadway Street/Stanislaus Street (Tulare Street Overpass Option only) • widening westbound approach to provide one exclusive left turn lane, one through lane and one shared through/right-turn lane at Van Ness Avenue/Stanislaus Street (Tulare street Underpass Option only) • signalizing the intersection at H Street/San Joaquin Street • signalizing the intersection and widening southbound approach to provide on exclusive left-turn lane and one through lane at H Street/Amador Street • restriping the westbound approach to provide one shared through/right/left-turn lane and two exclusive right-turn lanes; widening the northbound approach to provide two exclusive left-turn lanes and one shared through/right-turn lane; and widening the southbound approach to provide additional left turn lane (on H Street) at H Street/Divisadero Street • widening the eastbound approaches to provide one shared left/through lane, one exclusive through lane, and one exclusive right-turn lane and widening the westbound approach to provide one shared left/through lane, one exclusive through lane, and one exclusive right-turn lane at the intersection of Van Ness Avenue/Divisadero Street • widening the westbound approach (S Street) to provide one shared through/right-turn lane, one exclusive through lane, and one exclusive left0turn lane at H Street/Roosevelt Street • widening the westbound approach to provide one exclusive left turn lane and one exclusive through lane at North Blackstone Avenue/East McKenzie Avenue • restriping the northbound approach to provide one exclusive through lane, one shared through/right0turn lane, and one exclusive right-turn lane at the intersection of Van Ness Avenue/SR 180 eastbound ramps • widening the eastbound approach to provide one additional exclusive left-turn lane at the intersection of Van Ness Avenue/SR 180 westbound ramps • widening the southbound approach to provide one exclusive left-turn lane, two exclusive through lanes, and one shared through/right-turn lane at the intersection of North Blackstone Avenue/East Belmont Avenue • restriping the northbound approach to provide one shared left/through lane, one exclusive through lane, one shared through/right-turn lane, and one exclusive right-turn lane at the intersection of North Abby Street/SR 180 eastbound ramps						

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	• widening the eastbound approach to provide one additional exclusive right-turn lane at the intersection of North Blackstone Avenue/SR 180 westbound ramps • signalizing the intersection at Broadway Street/Amador Street • restriping the northbound approach to provide one exclusive left-turn lane, on exclusive through lane, and one shared through/right-turn lane; widening the westbound approach to provide one exclusive left-turn lane, two through lanes and one exclusive right-turn lane; and widening the eastbound approach to provide two exclusive left-turn lanes, one through lane, and one shared through/right-turn lane at Fresno Street/F Street (Tulare Street Underpass Option) • restriping the northbound approach to provide one exclusive left-turn lane, one exclusive through lane, and one shared through/right-turn lane; widening the westbound approach to provide one exclusive left-turn lane, one through lane, one shared through/right-turn lane, and one exclusive right-turn lane; widening the eastbound approach to provide two exclusive left-turn lanes, one through lane, and one shared through/right-turn lane at Fresno Street/F Street (Tulare Street Overpass Option) • signalizing the intersection at H Street/Ventura Street (Tulare Street Underpass Option only) • signalizing the intersection at G Street/Mono Street (Tulare Street Underpass Option only) • signalizing the intersection; widening northbound approach to provide exclusive left-turn lane; widening southbound approach to provide exclusive left-turn lane; and modifying signal phasing on northbound and southbound approaches to provide protected plus permissive left-turn phasing at the intersection of South Van Ness Avenue/East California Street • providing an exclusive right-turn lane in the northbound direction and modifying signal phasing on all approaches to provide protected plus permissive left turn phase at Golden State Boulevard/East Church Avenue • increasing the cycle length (in the PM Peak Hour only) at South East Avenue/Golden State Boulevard • providing an exclusive right-turn lane for both northbound and southbound approaches at Golden State Boulevard/East Jensen Avenue • widening the northbound approach to provide one exclusive left-turn lane and two exclusive right-turn lanes at Stanislaus Street/F Street (Tulare Street Overpass Option only) • restriping the eastbound approach to provide one exclusive left-turn lane, one shared left/through lane and one exclusive right0turn lane at Tuolumne Street/F Street (Tulare Street Overpass Option only) • widening the northbound approach to provide one exclusive left-turn lane and one shared through/right-turn lane at Stanislaus Street/L Street • widening the southbound approach to provide one shared left/through lane and one exclusive right-turn lane at Stanislaus Street/M Street • widening the westbound approach to provide one exclusive left-turn lane, one through lane and one shared through/right-turn lane at Stanislaus Street/N Street						
	TR MM#9: Convert Two-Way Stop to Four-Way Stop. Convert two-way stop controlled intersection to an all-way stop controlled intersection.	**Implementing Party:** Contractor will prepare construction plans and provide copies to affected jurisdictions.				X	Prepare construction management	Contract Requirements/Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing: Pre-Construction	Mitigation Timing: Construction	Mitigation Timing: Post-Construction	Mitigation Timing: Operations	Mitigation Timing: Implementation Schedule/ Reporting Schedule	Implementation Mechanism or Tool
	Merced Station • 14th Street/O Street (Option A only) Fresno Station • n/a	**Monitoring/Reporting Party:** Mitigation Manager will verify compliance as identified in construction plans.					plan/maintain weekly reporting schedule	
Air Quality and Global Climate Change								
AQ#1: Regional Impacts. Construction of the HST alternatives would exceed the CEQA emissions thresholds for volatile organic compound (VOC) and nitrogen oxide (NOx). Therefore, it could potentially cause violations of nitrogen dioxide (NO_2) and ozone (O_3) air quality standards or contribute substantially to NO_2 and O_3 existing or projected air quality violations	**AQ-MM#1: Reduce Criteria Exhaust Emissions from Construction Equipment.** This mitigation measure will apply to heavy-duty construction equipment used during the construction phase. All off-road construction diesel equipment will use the cleanest reasonably available equipment (including newer equipment and/or tailpipe retrofits), but in no case less clean than the average fleet mix, as set forth in CARB's Non-Road/Off-Road 2007 database. The contractor will document efforts it undertook to locate newer equipment (such as, in order of priority, Tier 4, Tier 3 or Tier 2 equipment) and/or tailpipe retrofit equivalents. The contractor shall provide documentation of such efforts, including correspondence with at least two construction equipment rental companies. A copy of each unit's certified tier specification and any required CARB or SJVAPCD operating permit will be made available at the time of mobilization of each piece of equipment. The contractor shall keep a written record (supported by equipment hours meters where available) of equipment usage during project construction for each piece of equipment.	**Implementing Party:** Contractor **Monitoring/Reporting Party:** Mitigation Manager will verify that appropriate measures are incorporated into construction specifications.		X			Daily Recording/Weekly Reporting	A copy of each unit's certified tier specification and any required California Air Resources Board (CARB) or San Joaquin valley Air Pollution Control District (SJVAPCD) operating permit will be made available at the time of mobilization of each piece of equipment. When non-retrofitted Tier 3 engines are utilized, the contractor will document that no Tier 4 equipment or emissions equivalent retrofit equipment is available or practicable for a particular equipment type. Documentation will be provided in such instances by the contractors and at least two construction equipment rental companies.
	AQ-MM#2: Reduce Criteria Exhaust Emissions from On-Road Construction Equipment. This mitigation measure applies to on-road trucks used to haul construction materials, including fill, ballast, rail ties, and steel. Material hauling trucks will consist of an average fleet mix of equipment model year 2010 or newer, to the extent reasonably practicable. The contractor shall provide documentation of efforts to secure such fleet mix. The contractor shall keep a written record of equipment usage during project construction for each piece of equipment.	**Implementing Party:** Contractor **Monitoring/Reporting Party:** Mitigation Manager will verify compliance of this measure during construction.		X			Prior to construction/weekly reporting	Contract Requirements/ Specifications
	AQ-MM#4: Offset Project Construction Emissions through a SJVAPCD Voluntary Emission Reduction Agreement (VERA). The Authority and SJVAPCD will enter into a contractual agreement to mitigate the project's actual emissions that exceed thresholds by providing funds for the district's Emission Reduction Incentive Program[2](SJVAPCD, 2011) to fund grants for projects that achieve emission reductions, thus offsetting project-related impacts on air quality. The project will reduce actual construction emissions that exceed significance/General Conformity thresholds for NOx and VOC through the VERA program. At a minimum, mitigation/offsets shall occur in the year of impact, or as otherwise permitted by 40 CFR Part 93	**Implementing Party:** Contractor and Authority **Monitoring/Reporting Parties:** Authority & SJVAPCD		X			Prior to construction/weekly reporting	The Authority and SJVAPCD will enter into a contractual agreement to mitigate the project's emissions by providing funds for the district's Emission Reduction Incentive Program to fund grants for projects that achieve emission reductions, thus offsetting project-related impacts on air quality.

[2] See www.valleyair.org/Grant_Programs/GrantPrograms.htm

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing: Pre-Construction	Mitigation Timing: Construction	Mitigation Timing: Post-Construction	Mitigation Timing: Operations	Implementation Schedule/ Reporting Schedule	Implementation Mechanism or Tool
	Section 93.163.							
	AQ-MM#2: Reduce Criteria Exhaust Emissions from On-Road Construction Equipment. This measure is described above.	**Implementing Party:** Contractor **Monitoring/Reporting Party:** Mitigation Manager will verify this measure is implemented during construction.		X			Construction/Weekly reporting	Contract Requirements/ Specifications
AQ#2: Regional Impacts. Material hauling outside the SJVAB would exceed CEQA emission thresholds for NOx in the Bay Area Air Quality Management District (AQMD), East Kern APCD, Mojave Desert AQMD, and the SCAQMD for certain hauling scenarios. Therefore, it could potentially cause violations of NO_2 and O_3 air quality standards or contribute substantially to NO_2 and O_3 existing or projected air quality violations in those air districts.	**AQ-MM#5: Purchase Offsets and Offsite Emission Mitigation for Emissions Associated with Hauling Ballast Material in the BAAQMD and SCAQMD Air Districts.** Actual NO_X emissions from ballast hauling shall be reported to the South Coast AQMD and offsets purchased from the South Coast AQMD for actual emissions exceeding the thresholds. In the Bay Area AQMD, actual NO_X emissions above the district's significance threshold will be mitigated through an offsite emission mitigation program to achieve emission reduction due to material hauling in Bay Area AQMD. Potential offsite mitigation programs include the Bay Area AQMD's Carl Moyer Memorial Air Quality Standards Attainment Program (CMP) or other air district emission reduction incentive programs.	**Implementing Party:** The Authority **Monitoring/Reporting Party:** Mitigation Manager will review plans to confirm compliance with this measure.	X	X			Prior to construction/weekly reporting	Authority to coordinate the purchase of offsets with pertinent AQMDs.
	AQ-MM#1: Reduce Criteria Exhaust Emissions from Construction Equipment This measure is described above.	**Implementing Party:** Contractor will incorporate appropriate measures into construction specifications. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance during construction.		X			Construction/weekly reporting	A copy of each unit's certified tier specification and any required California Air Resources Board (CARB) or San Joaquin valley Air Pollution Control District (SJVAPCD) operating permit will be made available at the time of mobilization of each piece of equipment. When non-retrofitted Tier 3 engines are utilized, the contractor will document that no Tier 4 equipment or emissions equivalent retrofit equipment is available or practicable for a particular equipment type. Documentation will be provided in such instances by the contractors and at least two construction equipment rental companies.
AQ#3: Compliance with Air Quality Plans. Construction of the HST alternatives would exceed the CEQA emissions thresholds for VOC and NOx. Therefore, it would conflict with the 1-hour Ozone Attainment Plan and the 8-hour Ozone Attainment Plan.	**AQ-MM#2: Reduce Criteria Exhaust Emissions from On-Road Construction Equipment** This measure is described above.	**Implementing Party:** Contractor will incorporate appropriate measures into construction specifications. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance during construction.		X			Construction/weekly reporting	Contract Requirements/Specifications
	AQ-MM#4: Offset Project Construction Emissions through a SJVAPCD Voluntary Emission Reduction Agreement (VERA). This measure is described above.	**Implementing Party:** Contractor **Monitoring/Reporting Parties:** Authority & SJVAPCD		X			Construction/weekly reporting	The Authority and SJVAPCD will enter into a contractual agreement to mitigate the project's emissions by providing funds for the district's Emission Reduction Incentive Program to fund grants for projects that achieve emission reductions, thus offsetting project-related impacts on air quality.
	AQ-MM#5: Reduce the Potential Impact of Concrete Batch Plants.	**Implementing Party:** Contractor will identify location of concrete batch plants on construction plans and verify	X	X			Construction/weekly	Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Concrete batch plants will be sited at least 1,000 feet from sensitive receptors, including daycare centers, hospitals, senior care facilities, residences, parks, and other areas where people may congregate.	location is away from sensitive receptors. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance during construction.					reporting	Requirements/Specifications
AQ# 4: Local Impacts. Construction of the alignment may expose sensitive receptors to temporary substantial pollutant concentrations from concrete batch plants.	**AQ-MM#5: Reduce the Potential Impact of Concrete Batch Plants.** Concrete batch plants will be sited at least 1,000 feet from sensitive receptors, including daycare centers, hospitals, senior care facilities, residences, parks, and other areas where people may congregate.	**Implementing Party:** Contractor will identify location of concrete batch plants on construction plans and verify location is away from sensitive receptors. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance during construction.	X	X			Construction/weekly reporting	Contract Requirements/Specifications
Noise and Vibration								
N&V#1: Construction Noise	**N&V-MM#1: Construction noise mitigation measures.** Monitor construction noise to verify compliance with the limits. Provide the contractor the flexibility to meet the FTA construction noise limits in the most efficient and cost-effective manner. The contractor would have the flexibility of either prohibiting certain noise-generating activities during nighttime hours or providing additional noise control measures to meet the noise limits. To meet required noise limits, the following noise control mitigation measures will be implemented as necessary, for nighttime and daytime: • Install a temporary construction site sound barrier near a noise source. • Avoid nighttime construction in residential neighborhoods. • Locate stationary construction equipment as far as possible from noise-sensitive sites. • Re-route construction-related truck traffic along roadways that will cause the least disturbance to residents. • During nighttime work, use smart back-up alarms, which automatically adjust the alarm level based on the background noise level, or switch off back-up alarms and replace with spotters. • Use low-noise emission equipment. • Implement noise-deadening measures for truck loading and operations. • Monitor and maintain equipment to meet noise limits. • Line or cover storage bins, conveyors, and chutes with sound-deadening material. • Use acoustic enclosures, shields, or shrouds for equipment and facilities. • Use high-grade engine exhaust silencers and engine-casing sound insulation. • Prohibit aboveground jackhammering and impact pile driving during nighttime hours. • Minimize the use of generators to power equipment. • Limit use of public address systems. • Grade surface irregularities on construction sites. • Use moveable sound barriers at the source of the construction activity. • Limit or avoid certain noisy activities during nighttime hours.	**Implementing Party:** Contractor to incorporate measures into specifications. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance during construction.		X			Construction/weekly reporting	Contract Requirements/ Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	To mitigate noise related to pile driving, the use of an augur to install the piles instead of a pile driver would reduce noise levels substantially. If pile driving is necessary, limit the time of day that the activity can occur.							
N&V#2: Construction Vibration	**N&V-MM#2: Construction vibration mitigation measures.** Building damage from construction vibration is only anticipated from impact pile driving at very close distances to buildings. If piling is more than 25 to 50 feet from buildings, or if alternative methods such as push piling or augur piling can be used, damage from construction vibration is not expected to occur. Other sources of construction vibration do not generate high enough vibration levels for damage to occur. When a construction scenario has been established, preconstruction surveys will be conducted at locations within 50 feet of piling to document the existing condition of buildings in case damage is reported during or after construction. Damaged buildings would be repaired or compensation paid.	**Implementing Party:** Contractor to incorporate measure into specifications. **Monitoring/Reporting Party:** Mitigation Manager will verify compliance during construction.	X	X	X		Ongoing monitoring during construction/post-construction monitoring as needed to assess damage to buildings	Contract Requirements/Specifications
N&V#3: Severe Operational Noise Impacts	**N&V-MM#3: Implement California High-Speed Train Project Noise and Vibration Mitigation Guidelines.** California High-Speed Train Project Noise and Vibration Mitigation Guidelines (Guidelines) will be applied for ballast and tie track along the alignment. These Noise Guidelines will also be applied for slab track along the alignment. The Guidelines are included as Attachment 1 to these CEQA Findings. Various options exist to address the potentially severe noise effects from HSTs and from shifting SR 99. With input from local jurisdictions and balancing technological factors, such as structural and seismic safety, cost, number of affected receptors, and effectiveness, mitigation measures from among those identified in the Guidelines and summarized below will be selected and implemented. The mitigation measure or suite of mitigation measures for severe noise impacts will be designed to reduce the noise level from HST operations from "severe" to "moderate" according to the provisions of the FRA noise and vibration manual (FRA 2005). The Guidelines include the following mitigation measures for severe operational noise impacts: • Install sound barriers. Depending on the height and location relative to the tracks, sound barriers can achieve between 5 and 15 dB of noise reduction. The primary requirements for an effective sound barrier are that the barrier must (1) be high enough and long enough to break the line-of-sight between the sound source and the receiver, (2) be of an impervious material with a minimum surface density of 4 pounds per square foot, and (3) not have any gaps or holes between the panels or at the bottom. Because many materials meet these requirements, aesthetics, durability, cost, and maintenance considerations usually determine the selection of materials for sound barriers. Depending on the situation, sound barriers can become visually intrusive. Typically, the sound barriers style is selected with input from the local jurisdiction to reduce the visual effect of barriers on adjacent lands uses. For example, sound barriers could be solid or transparent, of various colors, materials, and surface treatments. • The maximum sound barrier height would be 14 feet for at-grade sections; however, all sound barriers would be designed to be as low as possible while still achieving a substantial noise reduction.	**Implementing Party:** Contractor to identify noise barriers in construction plans. **Monitoring/Reporting Party:** Mitigation Manager will review construction plans to verify compliance with measure.	X	X	X		Construction/weekly reporting	Noise and Vibration Mitigation Guidelines

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Berm and berm/wall combinations are the preferred types of sound barriers where space and other environmental constraints permit. Work with the communities to determine how the use and height of sound barriers would be determined using jointly developed performance criteria. Other solutions may result in higher numbers of residual impacts than reported herein. Options may be to reduce the height of sound barriers and combine barriers with sound insulation or to accept higher than the FRA's current noise thresholds. • Install building sound insulation. Sound insulation of residences and institutional buildings to improve the outdoor-to-indoor noise reduction is a mitigation measure that can be provided when the use of sound barriers is not feasible in providing a reasonable level (5 to 7 dB) of noise reduction. Although this approach has no effect on noise in exterior areas, it may be the best choice for sites where sound barriers are not feasible or desirable and for buildings where indoor sensitivity is of most concern. Substantial improvements in building sound insulation (on the order of 5 to 10 dB) can often be achieved by adding an extra layer of glazing to windows, by sealing holes in exterior surfaces that act as sound leaks, and by providing forced ventilation and air conditioning so that windows do not need to be opened. Establish performance criteria to balance existing noise events and ambient roadway noise conditions as factors for determining mitigation measures. • Acquire easements on properties severely affected by noise. Another option for mitigating noise impacts is for the Authority to acquire easements on residences likely to be affected by HST operations in which the homeowners would accept the future noise conditions. This approach is usually taken only in isolated cases where other mitigation options are infeasible, impractical, or too costly.							
	N&V-MM#4: Vehicle Noise Specification. In the procurement of an HST vehicle technology, the Authority will require bidders to meet the federal regulations (40 CFR Part 201.12/13 or other applicable) at the time of procurement for locomotives (currently a 90-dB level standard) and rail cars (currently a 93-dB level standard for cars operating at speeds of greater than 45 mph). Depending on the available technology, this could significantly reduce the number of impacts throughout the corridor.	**Implementing Party:** Contractor **Monitoring/Reporting Party:** Mitigation Manager and Authority	X				Prior to construction/weekly reporting	HST vehicle technology procurement
	N&V-MM#5: Special Trackwork at Crossovers and Turnouts. Because the impacts of HST wheels over rail gaps at turnouts increases HST noise by approximately 6 dB over typical operations, turnouts can be a major source of noise impact. If the turnouts cannot be moved from sensitive areas, the project can use special types of trackwork that eliminate the gap.	**Implementing Party:** Contractor/Authority **Monitoring/Reporting Party:** Mitigation Manager to report noncompliance/noise issues				X	Post Construction/Operations Monitoring. Authority to coordinate with local jurisdictions to address noise-related issues.	
	N&V-MM#6: Additional Noise Analysis During Final Design. If final design of the track base or final vehicle specifications results in changes to the assumptions underlying the noise analysis, reassess noise impacts and recommendations for mitigation and provide supplemental environmental documentation, as required by CEQA and NEPA.	**Implementing Party:** Final Design Team **Monitoring/Reporting Party:** Mitigation Manager in coordination with Authority.	X	X			Prepare construction management plan/weekly reporting	Noise impact re-assessment during final project design
N&V#3: Severe Operational Noise	**N&V-MM#4: Vehicle Noise Specification.** In the procurement of an HST vehicle technology, the Authority will require bidders to meet the federal	**Implementing Party:** Contractor **Monitoring/Reporting Party:** Mitigation Manager and	X				Prior to construction/weekly	HST vehicle technology procurement

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
Impacts	regulations (40 CFR Part 201.12/13 or other applicable) at the time of procurement for locomotives (currently a 90-dB level standard) and rail cars (currently a 93-dB level standard for cars operating at speeds of greater than 45 mph). Depending on the available technology, this could significantly reduce the number of impacts throughout the corridor.	Authority					reporting	
	N&V-MM#5: Special Trackwork at Crossovers and Turnouts. Because the impacts of HST wheels over rail gaps at turnouts increases HST noise by approximately 6 dB over typical operations, turnouts can be a major source of noise impact. If the turnouts cannot be moved from sensitive areas, the project can use special types of trackwork that eliminate the gap.	**Implementing Party:** Contractor/Authority **Monitoring/Reporting Party:** Mitigation Manager to report noncompliance/noise issues				X	Post Construction/Operations Monitoring. Authority to coordinate with local jurisdictions to address noise-related issues.	
	N&V-MM#6: Additional Noise Analysis During Final Design. If final design of the track base or final vehicle specifications results in changes to the assumptions underlying the noise analysis, reassess noise impacts and recommendations for mitigation and provide supplemental environmental documentation, as required by CEQA and NEPA.	**Implementing Party:** Final Design Team **Monitoring/Reporting Party:** Mitigation Manager in coordination with Authority.	X	X			Prepare construction management plan/weekly reporting	Noise impact re-assessment during final project design
Public Utilities and Energy								
PUE #1: Conflicts with Existing Substations.	**PUE-MM#1: Redesign to avoid substation.** Roadway modifications associated with the Hybrid Alternative would affect a substation. The final project design will avoid these conflicts through refinements of project features.	**Implementing Party:** Contractor **Monitoring/Reporting Party:** Mitigation Manager/Authority in coordination with affected utility provider.	X				Prepare construction management plan/weekly reporting	Condition of Design/Build Contract
Biological Resources								
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program. Prior to ground-disturbing activities, the Mitigation Manager or designee will prepare and implement a WEAP for construction crews. WEAP training materials will include the following: discussion of the federal ESA, CESA, BGEPA, and the MBTA; consequences and penalties for violation or noncompliance with these laws and regulations and project permits; identification and value of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities; hazardous substance spill prevention and containment measures; the contact person in the event of the discovery of a dead or injured wildlife species; and review of mitigation measures. In the WEAP, the Mitigation Manager will detail construction timing in relation to habitat and species' life stage requirements and discuss project maps, showing areas of planned minimization and avoidance measures. A fact sheet prepared by the Mitigation Manager conveying this information will be prepared for distribution to the construction crews and to other individuals who enter the construction footprint. Upon completion of the WEAP training, construction crews will sign a form stating that they attended the training and understand and will comply with the information presented. Construction crews will be informed during the WEAP training that, to the extent possible, travel within the marked project site will be restricted to established roadbeds. Established roadbeds include all pre-existing and project-constructed unimproved, as well as improved roads.	**Implementing Party:** Contractor's Biologist and Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to maintain records of Worker Environmental Awareness training and provide written documentation to the Authority.	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract
	Bio-MM#4: Prepare and Implement a Weed Control Plan. Prior to ground-disturbing activities, the Contractor will prepare and implement a Weed	**Implementing Party:** Contractor's Biologist	X	X			Prior to construction/monthly	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Control Plan to minimize or avoid the spread of weeds during ground-disturbing activities. The Weed Control Plan will address the following: • Schedule for conducting noxious weed surveys to be conducted in coordination with the Biological Resources Management Plan (BRMP). • Success criteria for noxious and invasive weed control as established by a qualified biologist. The success criteria will be linked to the HMMP for compensatory mitigation sites, and the standards for onsite work during construction will limit invasive species to less than 5% and non-native herbaceous species to less than 25%. If these success criteria have not been met by the end of the BRMP monitoring and implementation period, monitoring and control efforts will continue and remedial actions will be identified and implemented until success criteria are met. Based on monitoring results, additional or revised measures may be needed to ensure the introduction and spread of noxious weeds is not promoted by the construction and operation of the HST. Provisions to ensure that the development of the Weed Control Plan will be coordinated with development of the Restoration and Revegetation Plan (RRP) so that the RRP incorporates measures to reduce the spread and establishment of noxious weeds and incorporates percent cover of noxious weeds into revegetation performance standards. Identify weed control treatments including permitted herbicides, and manual and mechanical methods for application. Restrict herbicide application from use in environmentally sensitive areas (ESAs). • Determine timing of the weed control treatment for each plant species. • Identify fire prevention measures. The Contractor will implement the Weed Control Plan during the construction period and require that maintenance crews follow the guidelines in the Weed Control Plan during the project period. The Authority or its designee will appoint the responsible party during the operations period. A monthly memorandum will be prepared by the Project Biologist to document the progress of the Plan and its implementation.	**Reporting Party/Monitoring Party:** Project Biologist in coordination with the Authority					memorandum to document the progress of the Weed Control Plan and implementation	
	Bio-MM#5: Prepare and Implement a Biological Resources Management Plan. During final design, and prior to construction, the Project Biologist will prepare the Biological Resources Management Plan (BRMP), and assemble the biological resources mitigation measures. In the BRMP, the Project Biologist will include terms and conditions from applicable permits and agreements and make provisions for monitoring assignments, scheduling, and responsibility. The BRMP will also include habitat replacement and revegetation, protection during ground-disturbing activities, performance (growth) standards, maintenance criteria, and monitoring requirements for temporary and permanent native plant community impacts. The BRMP will form the parameters for the biology mitigation measures from this EIR/EIS, including terms and conditions as applicable from the USFWS, USACE, SWRCB, and CDFG permits. The BRMP will be prepared for all phases of project implementation, but may be exclusively prepared for each construction package. The goal of the BRMP is to assist the Project Biologist with an organized reporting tool to ensure the mitigation measures and terms and conditions are implemented in a timely manner and are reported on. These include all	**Implementing Party:** Contractor's Biologist **Monitoring/Reporting Party:** Project Biologist to verify completion of the BRMP and provide written documentation to the Authority.	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	avoidance, minimization, repair, mitigation, and compensatory actions stated in the mitigation measures or terms and conditions from the permits referenced above. These measures and conditions are tracked through final design, implementation, and post-construction phases. Specific performance standards are habitat-based and are related to success of onsite or offsite repair of temporary impacts, or more permanent impacts that are compensated at an offsite location. Habitat based mitigation applies to compensatory mitigation or permittee-responsible mitigation for impacts on special-status plants, special-status wildlife, special-status plant communities, or jurisdictional waters and are generally addressed in the Bio-MM#58 as part of the HMMP. Performance standards are targets for determining the effectiveness of the mitigation and assessing the need for adaptive management (e.g., mitigation design or maintenance revisions). Success criteria are formal criteria that must be met after a specific timeframe to meet regulatory requirements of the permitting agencies. These are habitat-based performance standards that include consideration for the establishment of a species or habitat. Since species are nested within habitats, the performance standards are primarily based on vegetation, substrate, and hydrology conditions. The performance standards for the establishment of any temporary or permanent impacts on these resources are recognized in those resource categories, but are more specifically covered in the specific performance standards/guidelines shown in Bio-MM#56. The overarching goal is to neutralize the impacts with respect to species and habitat impacted. The BRMP will help the long-term perpetuation of biological resources within the temporarily disturbed areas, as well as protect adjacent targeted habitats. The BRMP will contain but not be limited to the following information: a. Specific measures for the protection of special-status species. b. Identification (on construction plans) of the locations and quantity of habitats to be avoided or removed, including locations where habitats are to be restored. c. Procedures for vegetation analyses of temporarily impacted habitats to approximate their relative composition, as well as procedures for site preparation, irrigation, planting, and maintenance. This information may be used to determine the requirements of the revegetation areas for both onsite temporary impacts and offsite compensatory sites. d. Sources of plant materials and methods of propagation. e. Specific parameters for determining the amount of replacement habitat for temporary disturbance areas identified consistent with mitigation ratios and permit conditions. f. Specification of parameters for maintenance and monitoring of re-established habitats, including weed control measures, frequency of field checks, and monitoring reports for temporary disturbance areas. g. Specification of performance standards for the re-established plant communities within the construction limits. h. Remedial measures, such as a form of adaptive management, to be taken if performance standards are not met. i. Methodologies and requirements for monitoring the restoration/replacement efforts, which will be a combination of qualitative and quantitative data consistent with mitigation measures and permit conditions. j. Measures to preserve topsoil and control erosion.							

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	k. Design of protective fencing around ESAs and ERAs and the construction staging areas. l. Specification of location and quantities of gallinaceous guzzlers (catch basin/artificial watering structures) if needed; specification of monitoring of water levels in guzzlers. m. Location of trees to be protected as wildlife habitat (roosting sites) and locations for planting replacement trees. n. Specification of the purpose, type, frequency, and extent of chemical use for insect and disease control operations as part of vegetative maintenance within sensitive habitat areas. o. Specific construction monitoring programs for habitats of concern and special-status species, as needed. p. Specific measures for the protection of vernal pool habitat and riparian areas. These measures may include but are not limited to: erosion and siltation control measures, protective fencing guidelines, dust control measures, grading techniques, construction area limits, and biological monitoring requirements. q. Provisions for biological monitoring during ground-disturbing activities to confirm compliance and success of protective measures. The monitoring procedures will: (1) identify specific locations of wildlife habitat and sensitive species to be monitored, (2) identify the frequency of monitoring and the monitoring methodology (for each habitat and sensitive species to be monitored), (3) list required qualifications of biological monitor(s), and (4) identify reporting requirements.							
	Bio-MM#6: Prepare and Implement a Restoration and Revegetation Plan. During final design, the Contractor's Biologist will prepare a restoration and revegetation plan (RRP) for upland communities and verified by the Project Biologist. This is a complement for site restoration in addition to the temporary effects for riparian plant communities (Bio-MM#15) and for jurisdictional waters (Bio-MM#43). In the RRP, address impacts on habitat subject to temporary ground disturbances that will require decompaction or regrading, if appropriate. The standards for onsite work during construction will limit invasive species to less than 5% and nonnative herbaceous species to less than 25% unless otherwise called out in the final approved seed mix. The Project Biologist will approve the seed mix. During ground-disturbing activities, the Contractor will implement the RRP in temporarily disturbed areas. The Project Biologist will prepare and submit compliance reports to document implementation. The RRP compliance reports will be prepared and submitted to the Mitigation Manager.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction. Follow reporting requirements as established by agency permit conditions.	Condition of Design/Build Contract. Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). Prior to ground-disturbing activities, to the extent practicable, the Project Biologist will verify that environmentally sensitive areas (ESAs) and environmentally restricted areas (ERAs) are delineated as appropriate. ESAs are areas within the construction zones containing suitable habitat for special-status species and habitats of concern that may allow construction activities, but have restrictions based on the presence of special-status species or habitats of concern at the time of construction. ERAs are areas outside the construction footprint that must be protected in-place during all construction activities. Prior to ground-disturbing activities, the Contractor's Biologist will include all ESAs and ERAs on final construction plans (including grading and landscape plans). Prepare, review and approve the map of all ESAs and ERAs on the design drawings and work to update the map as necessary. Prior to ground-disturbing activities, the Contractor will mark ESAs and ERAs with high visibility temporary fencing to prevent encroachment of construction personnel and equipment onto sensitive areas. Designate the two categories, ESA and ERA, differently in the field (e.g., different colored flagging/fencing). Use sub-meter accurate GPS equipment to delineate all ESAs and ERAs. Remove ESA and ERA fencing when construction is complete or the resource has been cleared according to agency permit conditions and construction drawings and specifications. The Project Biologist will submit memoranda regarding the field delineation of all ESAs/ERAs to the Mitigation Manager. These areas will receive ongoing monitoring during site preparation and construction activities.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#8: Equipment Staging Areas. Prior to ground-disturbing activities, the Contractor will locate staging areas for construction equipment outside sensitive biological resources including habitat for special-status species, habitats of concern(e.g., wetlands, waters of the U.S., riparian communities), and wildlife movement corridors, to the maximum extent possible. The Project Biologist will submit memoranda to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#9: Mono-Filament Netting. During ground-disturbing activities, the Project Biologist will verify that plastic mono-filament netting (erosion-control matting) or similar material is not used in erosion control materials; substitutes include coconut hair matting or tackified hydroseeding compounds. The Project Biologist will submit memoranda to the Mitigation Manager documenting compliance monthly, or as appropriate, through the life of the project construction.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X			During ground-disturbing activities and Construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. During ground-disturbing activities, the Contractor will restrict project-related vehicle traffic, within the construction area, to established roads, construction areas, and other designated areas. Establish vehicle traffic locations disturbed by previous activities to prevent further adverse effects. Observe a 20 mph speed limit for construction areas with potential special-status species habitat. Clearly flag and mark access routes and prohibit off-road traffic. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance on a weekly basis.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#11: Entrapment Prevention. The Contractor's biologist will cover all excavated, steep-sided holes or trenches, more than 8 inches deep, at the close of each working day with plywood or similar materials, or provide a minimum of one escape ramp per 10 feet of trenching constructed of earth fill. The Contractor's Biologist will thoroughly inspect such holes or trenches for trapped animals before leaving the construction site each day. The Contractor's Biologist will screen all culverts, or similar enclosed structures, with a diameter of 4 inches or greater to prevent use by wildlife. The Contractor's Biologist will ensure that cleared and stored material at the construction site for common and special-status wildlife species before the material is subsequently used or moved. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance on a weekly basis.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During construction/submit weekly reports.	Condition of Design/Build Contract
	Bio-MM#12: Work Stoppage. During ground-disturbing activities, the Project Biologist or Biological Monitor will halt work in the event that a special-status wildlife species gains access to the construction footprint. This work stoppage will be coordinated with the resident engineer and/or the Authority or its designee. At this direction the Contractor will suspend ground-disturbing activities in the immediate construction area that could reasonably result in a "take" of special-status wildlife species. The Contractor will continue the suspension until the individual leaves voluntarily, is relocated to a release area using USFWS- and/or CDFG-approved handling techniques and relocation methods, or as required by USFWS or CDFG. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work stoppage and subsequent action.	**Implementing Party:** Project Biologist or Project Biological Monitor **Reporting Party:** Project Biologist in coordination with the Authority **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work stoppage and subsequent action.	Condition of Design/Build Contract
	Bio-MM#13: 'Take' Notification and Reporting. The Contractor's Biologist in coordination with the Project Biologist and Mitigation Manager will notify the USFWS and/or CDFG immediately in the case of an accidental death or injury to a federal or state listed species during project-related activities. The Authority or its designee will be notified prior to the notification to the agencies. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist, Project Biologist, Mitigation Manager **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Following incident, immediately report to USFWS and/or CDFG. Prepare report and document in weekly/monthly report.	Condition of Design/Build Contract
	Bio-MM#14: Post-Construction Compliance Reports. After each construction period is completed, the Project Biologist will submit post-construction compliance reports consistent with the appropriate agency (e.g., UFSWS, NMFS and CDFG) protocols, including compliance with resource agency permits (i.e., Section 7 of FESA, Section 2081 of CESA and Section 401 and 404 of FCWA and 1600 of Fish and Game Code). The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance. The frequency of the memorandum compilation and submission will be consistent with regulatory compliance permits.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract Weed Control Plan
Bio#1:	**Bio-MM#5: Prepare and Implement a Biological Resources**	**Implementing Party:** Project Biologist	X				Following implementation	Condition of Design/Build Contract.

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
Construction of the HST alternatives would introduce noxious weeds.	**Management Plan.** See description above.	**Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority.					and reporting schedule as established by agency permit conditions.	Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract Weed Control Plan
Bio#2: Construction of the HST alternatives would disturb Great Valley mixed riparian forest and other riparian habitat.	**Bio-MM#5: Prepare and Implement a Biological Resources Management Plan.** See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#6: Prepare and Implement a Restoration and Revegetation Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction. Follow reporting requirements as established by agency permit conditions.	Condition of Design/Build Contract. Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist, **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#15: Restore Temporary Riparian Impacts. During post-construction, the Contractor's Biologist will revegetate all disturbed riparian areas using appropriate plants and seed mixes. The Project Biologist will monitor restoration activities consistent with provisions in the Habitat Mitigation and Monitoring Plan (HMMP). The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance and other reporting requirements in the 1600 Streambed Alteration Agreement.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract Habitat Mitigation and Monitoring Plan (HMMP) and Memorandum documenting compliance and other reporting requirements in the 1600 Streambed Alteration Agreement.
	Bio-MM#3: Prepare and Implement a Worker Environmental	**Implementing Party:** Mitigation Manager	X	X			Training of all	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Awareness Program. See description above.	**Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to the Authority					crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	
Bio#3: Construction of the HST alternatives would disturb suitable habitat that has potential to support special-status plant species.	**Bio-MM#4: Prepare and Implement a Weed Control Plan.** See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
	Bio-MM#5: Prepare and Implement a Biological Resources Management Plan. See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority.	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#6: Prepare and Implement a Restoration and Revegetation Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction. Follow reporting requirements as established by agency permit conditions.	Condition of Design/Build Contract. Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#14: Post-Construction Compliance Reports. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#18: Prepare and Implement Plan for Salvage, Relocation, and/or Propagation of Special-Status Plant Species. The Contractor's Biologist will prepare a plan prior to ground-disturbing activities to address monitoring, salvage, relocation, and propagation of special-status plant species.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist	X		X		Pre-construction and prior to ground-disturbing activities. Follow reporting requirements as	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	The plan will be submitted to the Project Biologist for concurrence. The relocation or propagation of plants and seed will be performed at a suitable mitigation site, as appropriate per species. Documentation will include provisions that address the techniques, location, and procedures required for the successful establishment of the plant populations. The plan will include provisions for performance that address survivability requirements, maintenance, monitoring, implementation, and the annual reporting requirements. Permit conditions issued by the appropriate resource agencies (e.g., USFWS, CDFG) will guide the development of the plan and performance standards. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Monitoring Party:** Mitigation Manager in coordination with the Authority					established by regulatory compliance permits.	
	Bio-MM#19: Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna. Prior to ground-disturbing activities, the Project Biologist will conduct pre-construction, non-protocol surveys in seasonally inundated habitats (seasonal wetland, noninundated wetlands) within the construction footprint. The Project Biologist will conduct general aquatic surveys at a suitable interval after the first significant storm event of the rainy season (October 15 to June 1), as feasible prior to ground-disturbing activities. The sampling is an assessment of the hydrological, biological and ecological conditions of each seasonal wetland and open waters. This assessment will determine the quality and suitability of seasonal wetlands for special-status species (e.g., vernal pool branchiopods, western spadefoot toads, and California tiger salamanders) and later assist in determining which materials (e.g., soils, viable plant seeds, vernal pool cysts) may be collected. The sampling is an assessment that will be useful in understanding the species present and will help guide the implementation of performance standards to be consistent with Bio-MM#20: Implement and Monitor Vernal Pool Protection, for vernal pool special-status species (e.g., vernal pool branchiopods, western spadefoot toads, and California tiger salamanders).The Project Biologist will submit a report within 1 month of completing the field work and submit to the Mitigation Manager and Authority or its designee. The report will provide the documentation and the results of the sampling, including the results of the data collected and compared with the performance standards. All project construction personnel will be trained to recognize and avoid special-status species and their habitat (Bio-MM#3). The Weed Control Plan prepared and implemented (Bio-MM#4) will ensure that noxious weeds to not invade areas disturbed by project construction activities. The Plan will have specific success criteria in terms of future presence of invasive and non-native plant species in restored areas. Implementation of The Weed Control Plan will be integrated with the RRP (Bio-MM#6), and will be implemented and reported as part of the overall BRMP (Bio-MM#5). Prior to project construction ESAs and ERAs, which will include riparian areas adjacent to project construction, will be identified and delineated (Bio-MM#7) to prevent impacts to sensitive areas outside the approved project footprint. Construction equipment will be staged in non-sensitive areas (Bio-MM#8). During project construction vehicle routes and speeds will be controlled to minimize impact on sensitive habitats (Bio-MM#10). Riparian areas temporarily impacted through construction will be through a long-term restoration and monitoring program (Bio-MM#15). A plan will be implemented within the construction footprint and other areas potentially affected by construction activity to guide the salvage, relocation, and propagation	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to ground-disturbing activities Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract Plan for monitoring, salvage, relocation, and propagation of special-status plant species and Memorandum documenting compliance

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	special-status plant species (Bio-MM#18). This examination will include sampling and assessment of vernal pools (Bio-MM#19), which will provide baseline data necessary for formulation of performance standards necessary for subsequent mitigation of impacts to vernal pools and other aquatic resources. All of these activities will be documented though post-construction compliance reports (Bio-MM#14).							
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program. See description above.	**Implementing Party:** Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract
Bio#4: Construction of the HST alternatives would disturb suitable habitat that has potential to support vernal pool branchiopods	**Bio-MM#4: Prepare and Implement a Weed Control Plan.** See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
	Bio-MM#5: Prepare and Implement a Biological Resources Management Plan. See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority.	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#6: Prepare and Implement a Restoration and Revegetation Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction. Follow reporting requirements as established by agency permit conditions.	Condition of Design/Build Contract. Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#12: Work Stoppage. See description above.	**Implementing Party:** Project Biologist or Project Biological Monitor **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work stoppage and subsequent action.	Condition of Design/Build Contract
	Bio-MM#14: Post-Construction Compliance Reports. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#20: Seasonal Vernal Pool Work Restriction. For seasonal avoidance of special-status vernal pool branchiopods and vernal pool-dependent species (e.g., California tiger salamander), the Contractor will not work within 250 feet of aquatic habitats suitable for these species (e.g., vernal pools and other seasonal wetlands) from October 15 to June 1 (corresponding to the rainy season), or as determined through informal or formal consultation with the USFWS or USACE. Ground-disturbing activities may begin once the habitat is no longer inundated for the season. If any work remains to be completed after October 15, exclusion fencing and erosion control measures will be placed at the vernal pools and other seasonal wetlands by the Contractor's Biologist. The fencing will act as a buffer between ground-disturbing activities and the vernal pools and other seasonal wetlands as determined through consultations with USFWS/USACE. The Project Biologist will document compliance through a memorandum to the Mitigation Manager during the establishment of the fencing activities.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction and during construction. Seasonal restrictions: October 15 to June 1 (corresponding to the rainy season), or as determined through informal or formal consultation with the USFWS or USACE. Report within 1 month of completing the field work	Condition of Design/Build Contract
	Bio-MM#21: Implement and Monitor Vernal Pool Protection. If temporary impacts can be avoided, the vernal pool(s) will be protected by erecting exclusion fencing. The Contractor's Biologist, under the supervision of the Project Biologist, will erect and maintain the exclusion fencing. For temporary impacts on vernal pools and other seasonal wetlands that cannot be avoided, the Contractor's Biologist will apply geotextile fabric and a layer of gravel over the affected vernal pool(s) prior to ground-disturbing activities to protect the contours in cases where the area may be excluded from the permanent construction footprint. The Contractor will implement this measure within temporary impact areas within the construction footprint. Resource agency consultations with the USFWS/USACE will occur as needed and based on permit conditions. • If temporary impacts occur over a full wet-dry season cycle and the vernal pool(s) cannot be avoided, the vernal pool(s) will be protected by erecting exclusion fencing by the Contractor's Biologist. • If temporary impacts occur within the dry season (approximately June 1 to October 15) and the vernal pool(s) cannot be fenced, geotextile fabric and rinsed gravel should be placed within and cover the vernal pool(s) to minimize damage to the soils. The Contractor's Biologist in coordination with the Project Biologist will collect a representative sampling of soils from the vernal pool(s) prior to initiating ground-disturbing activities within	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction/Post Construction monitoring and reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	vernal pools. The representative soil sample(s) will contain viable plant seeds and vernal pool branchiopod cysts to be preserved from the vernal pool(s). These samples may be incorporated into other vernal pools, as applicable, with USFWS and/or CDFG consultation. If temporary impacts take more than two full wet-dry season cycles, the above-described soil storage and/or offsite mitigation will be implemented.							
	Bio-MM#44: Restore Temporary Impacts on Jurisdictional Waters. During or post-construction, the Contractor will restore disturbed jurisdictional waters using stockpiled and segregated soils. The Contractor's Biologist will conduct revegetation using appropriate plants and seed mixes, and conduct maintenance monitoring consistent with the provisions in the HMMP. The Project Biologist will document compliance with memorandum submitted to the Mitigation Manager.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		Construction and Post-construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#45: Monitor Construction Activities within Jurisdictional Waters. During ground-disturbing activities, the Project Biological Monitor will conduct monitoring within jurisdictional waters, including monitoring of the installation of protective devices (silt fencing, sandbags, fencing, etc.), installation and/or removal of creek crossing fill, construction of access roads, vegetation removal, and other associated construction activities. The Project Biological Monitor will conduct biological monitoring to document adherence to habitat avoidance and minimization measures addressed in the project mitigation measures and as listed in the USFWS, CDFG, SWRCB, and USACE permits conditions. The Project Biological Monitor will report and document compliance consistent with requirements in the permitting documents, including frequency and timing and submittals. All project construction personnel will be trained to recognize and avoid special-status species and their habitat (Bio-MM#3). The Weed Control Plan prepared and implemented (Bio-MM#4) will ensure that noxious weeds to not invade areas disturbed by project construction activities. The Plan will have specific success criteria in terms of future presence of invasive and non-native plant species in restored areas. Implementation of The Weed Control Plan will be integrated with the RRP (Bio-MM#6), and will be implemented and reported as part of the overall BRMP (Bio-MM#5). Prior to project construction ESAs and ERAs, which will include riparian areas adjacent to project construction, will be identified and delineated (Bio-MM#7) to prevent impacts to sensitive areas outside the approved project footprint. Construction equipment will be staged in non-sensitive areas (Bio-MM#8). During project construction vehicle routes and speeds will be controlled to minimize impact on sensitive habitats (Bio-MM#10). During construction, biological monitors will be empowered to temporarily halt construction activity to prevent impacts to observed special-status species (Bio-MM#12). Construction activity will be restricted in the vicinity of vernal pools during the period in which they are inundated (Bio-MM#19). In those instances where work must occur in proximity to pools, fencing and sedimentation protection will be installed. In instances where temporary impacts to vernal pools are unavoidable, soil from the pool will be collected to salvage viable plant seeds and vernal pool branchiopod cysts for use in subsequent mitigation (Bio-MM#20). Temporarily impacted wetlands will be restored using salvaged, stockpiled soils and appropriate seed mixes. Construction activity in wetland areas will be monitored to ensure that measures are taken to prevent impacts to adjacent wetlands and to assure adherence to relevant conditions of Resource Agency-	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		During ground-disturbing activities and Construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	issued permits (Bio-MM#44). All of these activities will be documented though post-construction compliance reports (Bio-MM#14).							
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program. See description above.	**Implementing Party:** Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract
Bio#5: Construction of the HST alternatives would disturb suitable habitat that has potential to support the valley elderberry longhorn beetle.	**Bio-MM#4: Prepare and Implement a Weed Control Plan.** See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
	Bio-MM#5: Prepare and Implement a Biological Resources Management Plan. See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority.	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#6: Prepare and Implement a Restoration and Revegetation Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction. Follow reporting requirements as established by agency permit conditions.	Condition of Design/Build Contract. Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#11: Entrapment Prevention. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#12: Work Stoppage. See description above.	**Implementing Party:** Project Biologist or Project Biological Monitor **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work stoppage and subsequent action.	Condition of Design/Build Contract
	Bio-MM#13: 'Take' Notification and Reporting. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist, Mitigation Manager **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Following incident, immediately report to USFWS and/or CDFG. Prepare report and document in weekly/monthly report.	Condition of Design/Build Contract
	Bio-MM#14: Post-Construction Compliance Reports. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#22: Implement Conservation Guidelines During the Construction Period for Valley Elderberry Longhorn Beetle. Prior to and during ground-disturbing activities, the Contractor will implement the avoidance and minimization measures. These measures include establishing and maintaining appropriate buffer areas around elderberry plants, surveying for beetle boreholes in affected shrubs, restricting the use of chemicals that might harm beetles, and mowing. After ground-disturbing activities are completed, restore any damage to buffer areas containing elderberry shrubs. In areas where encroachment on the 100-foot buffer has been approved by USFWS, the Contractor will provide a minimum setback of at least 20 feet from the dripline of each Mexican elderberry plant. In buffer areas, ground-disturbing activities should be minimized, and any damaged area should be restored following construction by the Contractor. The Contractor will erect signage every 50 feet along the edge of the avoidance area with the following information: "This area is habitat of the valley elderberry longhorn beetle, a federally threatened species, and must not be disturbed. This species is protected by the Federal ESA of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained by the Contractor for the duration of ground-disturbing activities. To prevent encroachment, these buffer areas must continue to be protected per USFWS protocol (after ground-disturbing activities) from adverse effects of the project during the construction phase. The Contractor will include protective measures such as fencing, signage, weeding, and trash removal to enforce the protection of the valley elderberry longhorn beetle and its associated habitat. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance on a weekly basis or at other appropriate intervals.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to ground-disturbing activities, during ground-disturbing activities, and after ground-disturbing activities. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program.	**Implementing Party:** Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written	X	X			Training of all crew/construction personnel prior to start of	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing: Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	Implementation Mechanism or Tool
	See description above.	documentation to the Authority					construction. Provide weekly/monthly reporting as required by permit conditions.	
Bio#6: Construction of the HST alternatives would disturb California tiger salamander habitat.	**Bio-MM#4: Prepare and Implement a Weed Control Plan.** See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
	Bio-MM#5: Prepare and Implement a Biological Resources Management Plan. See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority.	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#6: Prepare and Implement a Restoration and Revegetation Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction. Follow reporting requirements as established by agency permit conditions.	Condition of Design/Build Contract. Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#9: Mono-Filament Netting. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X			During ground-disturbing activities and Construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#11: Entrapment Prevention. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
		the Authority						
	Bio-MM#12: Work Stoppage. See description above.	**Implementing Party:** Project Biologist or Project Biological Monitor **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work stoppage and subsequent action.	Condition of Design/Build Contract
	Bio-MM#13: 'Take' Notification and Reporting. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist, Mitigation Manager **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Following incident, immediately report to USFWS and/or CDFG. Prepare report and document in weekly/monthly report.	Condition of Design/Build Contract
	Bio-MM#14: Post-Construction Compliance Reports. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#15: Restore Temporary Riparian Impacts. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract Habitat Mitigation and Monitoring Plan (HMMP) 1600 Streambed Alteration Agreement.
	Bio-MM#20: Seasonal Vernal Pool Work Restriction. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction and during construction. Seasonal restrictions: October 15 to June 1 (corresponding to the rainy season), or as determined through informal or formal consultation with the USFWS or USACE. Report within 1 month of completing the field work	Condition of Design/Build Contract
	Bio-MM#21: Implement and Monitor Vernal Pool Protection. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction/Post Construction monitoring and reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#22: Implement Conservation Guidelines During the Construction Period for Valley Elderberry Longhorn Beetle. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to ground-disturbing activities, during ground-disturbing activities, and after ground-disturbing activities.	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
							Follow reporting requirements as established by regulatory compliance permits.	
	Bio-MM#23: Translocation of California Tiger Salamanders. Prior to ground-disturbing activities, the Project Biologist or designee will conduct a pre-construction survey and relocate any California tiger salamanders from within the construction footprint in accordance with the *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander* (USFWS 2003). The relocation will occur for any individuals within the construction footprint per coordination with the USFWS. The Project Biologist will conduct pit trapping. The Contractor's Biologist will work in coordination with the Project Biologist when installing amphibian exclusion fencing specified in Bio-MM#24. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance on a weekly basis or at other appropriate intervals.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction surveys. Prior to ground-disturbing activities. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander
	Bio-MM#24: Erect Amphibian Exclusion Fencing. The Contractor's Biologist will install exclusion barriers (i.e. silt fences) to influence the movement of California tiger salamander, including other amphibian species, within impacted areas. They can be used to both exclude California tiger salamander, including other amphibian species, from ground-disturbing areas as well as to guide breeding adults toward pre-identified mitigation ponds. Exclusion fencing will be maintained by the Contractor throughout the California tiger salamander's entire active period (November to April) or until all ground-disturbing activities are completed, whichever occurs first. Exclusion fencing must be trenched into the soil at least 4 inches in depth with the soil compacted against both sides of the fence for its entire length to prevent amphibians from passing under the fence. Barriers must be inspected by the Contractor's Biologist at least twice weekly on non-consecutive days and after any significant rain event (defined as a 0.75 inch downpour or 1.5 inches of rain in any 24-hour period). Barriers will be installed by the Contractor with turn-arounds at any access openings needed in the fencing, in order to redirect amphibians away from openings. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction. Prior to ground-disturbing activities. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract
	Bio-MM#44: Restore Temporary Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		Construction and Post-construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#45: Monitor Construction Activities within Jurisdictional Waters. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		During ground-disturbing activities and Construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program. See description above.	**Implementing Party:** Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract
Bio#7: Construction of the HST alternatives would disturb western spadefoot toad habitat.	**Bio-MM#4: Prepare and Implement a Weed Control Plan.** See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
	Bio-MM#5: Prepare and Implement a Biological Resources Management Plan. See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority.	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#6: Prepare and Implement a Restoration and Revegetation Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction. Follow reporting requirements as established by agency permit conditions.	Condition of Design/Build Contract. Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#9: Mono-Filament Netting. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X			During ground-disturbing activities and Construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#11: Entrapment Prevention. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#12: Work Stoppage. See description above.	**Implementing Party:** Project Biologist or Project Biological Monitor **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work stoppage and subsequent action.	Condition of Design/Build Contract
	Bio-MM#13: 'Take' Notification and Reporting. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist, Mitigation Manager **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Following incident, immediately report to USFWS and/or CDFG. Prepare report and document in weekly/monthly report.	Condition of Design/Build Contract
	Bio-MM#14: Post-Construction Compliance Reports. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#15: Restore Temporary Riparian Impacts. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract Habitat Mitigation and Monitoring Plan (HMMP) 1600 Streambed Alteration Agreement.
	Bio-MM#19: Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to ground-disturbing activities Follow reporting requirements as established by regulatory compliance permits.	
	Bio-MM#20: Seasonal Vernal Pool Work Restriction. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction and during construction. Seasonal restrictions: October 15 to June 1 (corresponding to the rainy season), or as determined through informal or formal consultation with the USFWS or USACE. Report within 1 month of completing the field work	Condition of Design/Build Contract
	Bio-MM#21: Implement and Monitor Vernal Pool Protection.	**Implementing Party:** Contractor's Biologist	X	X	X		Prior to construction/Post	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	See description above.	**Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority					Construction monitoring and reporting as determined by regulatory agency permit conditions.	
	Bio-MM#22: Implement Conservation Guidelines During the Construction Period for Valley Elderberry Longhorn Beetle. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to ground-disturbing activities, during ground-disturbing activities, and after ground-disturbing activities. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#24: Erect Amphibian Exclusion Fencing. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction surveys. Prior to ground-disturbing activities. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander
	Bio-MM#25: Conduct Emergence and Larval Surveys for Western Spadefoot Toad. The Project Biologist or designee (qualified herpetologist) will conduct pre-construction emergence and larval surveys for western spadefoot toad during the fall and winter rainy season. Emergence surveys will be conducted within the appropriate time period(s) after precipitation events as evaluated by a qualified herpetologist and will be partially in tandem with California tiger salamander surveys. Potential breeding depressions, including vernal pools, will be surveyed for western spadefoot toad larvae concurrently with special-status vernal pool branchiopod and California tiger salamander pre-construction surveys. Adults found within the construction footprint during emergence surveys will be relocated to an appropriate area adjacent to another pool suitable for breeding. Pre-construction surveys will help identify the proper implementation of mitigation measures, identify state and federal permit requirements, and inform the accurate implementation of mitigation requirements. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance after surveys are complete.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction surveys. Prior to ground-disturbing activities. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract
	Bio-MM#45: Monitor Construction Activities within Jurisdictional Waters. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		During ground-disturbing activities and Construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#46: Install Wildlife Fencing. Prior to operation of the HST, the Contractor's Biologist will install free-ranging mammal-proof fencing along portions of the proposed project consistent with final design. The Project Biologist will verify that the installation is consistent with the designated terms and conditions in the applicable permits. The Project Biologist will prepare and	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager in coordination with the Authority			X		Prior to operation of the HST	Submit a memorandum documenting compliance.

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	submit a memorandum to the Mitigation Manager documenting compliance.							
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program. See description above.	**Implementing Party:** Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract
Bio#8: Construction of the HST alternatives would disturb habitat that supports the western pond turtle.	**Bio-MM#5: Prepare and Implement a Biological Resources Management Plan.** See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#6: Prepare and Implement a Restoration and Revegetation Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction. Follow reporting requirements as established by agency permit conditions.	Condition of Design/Build Contract. Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#9: Mono-Filament Netting. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X			During ground-disturbing activities and Construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#12: Work Stoppage. See description above.	**Implementing Party:** Project Biologist or Project Biological Monitor **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
							stoppage and subsequent action.	
	Bio-MM#13: 'Take' Notification and Reporting. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist, Mitigation Manager **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Following incident, immediately report to USFWS and/or CDFG. Prepare report and document in weekly/monthly report.	Condition of Design/Build Contract
	Bio-MM#14: Post-Construction Compliance Reports. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#15: Restore Temporary Riparian Impacts. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract Habitat Mitigation and Monitoring Plan (HMMP) and Memorandum documenting compliance and other reporting requirements in the 1600 Streambed Alteration Agreement.
	Bio-MM#26: Conduct Western Pond Turtle Pre-Construction Surveys and Relocation. Prior to ground-disturbing activities, conduct pre-construction surveys for western pond turtles to determine the presence or absence of western pond turtles within the construction footprint. If western pond turtles are found within the construction footprint, conduct daily clearance surveys prior to the initiation of any construction activities. If a western pond turtle nest will be affected by ground-disturbing activities, relocate the eggs according to relocation protocol coordinated with CDFG for all life stages of western pond turtles. Relocate hatchling and adult turtles outside of the construction footprint in suitable habitat. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction surveys. Prior to ground-disturbing activities. Clearance surveys during construction. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract
	Bio-MM#27: Conduct Western Pond Turtle Monitoring. During ground-disturbing activities, the Project Biologist will observe all construction activities within habitat that supports populations of western pond turtles. If ESAs are deemed necessary, the Project Biologist will conduct a clearance survey for western pond turtles prior to the time the fence is installed. If necessary, conduct daily clearance surveys prior to construction. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X			During ground-disturbing activities and Daily clearance surveys during construction. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract
	Bio-MM#28: Implement Western Pond Turtle Avoidance and Relocation. Prior to ground-disturbing activities, if a western pond turtle nesting area is present and will be affected by ground-disturbing activities as determined by the Project Biologist, the Contractor will avoid western pond turtle nesting areas. If avoidance is not feasible, as determined by the Authority or its designee, the Project Biologist will coordinate with CDFG to identify where to relocate western pond turtles. The Project Biologist will coordinate specific trapping and relocation protocols with CDFG for adults, hatchlings, and eggs prior to ground-disturbing activities. The Contractor will not move eggs or hatchlings without prior coordination with the Project Biologist and concurrence from CDFG. The Project Biologist will submit a	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to ground-disturbing activities and during ground-disturbing activities and construction. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	memorandum to the Mitigation Manager documenting compliance on a weekly basis or as determined appropriate pending construction progress.							
	Bio-MM#44: Restore Temporary Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		Construction and Post-construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#45: Monitor Construction Activities within Jurisdictional Waters. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		During ground-disturbing activities and Construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program. See description above.	**Implementing Party:** Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract
Bio#10: Construction of the HST alternatives would disturb nesting Swainson's hawk.	**Bio-MM#5: Prepare and Implement a Biological Resources Management Plan.** See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority.	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#12: Work Stoppage. See description above.	**Implementing Party:** Project Biologist or Project Biological Monitor **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work stoppage and subsequent	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
							action.	
	Bio-MM#13: 'Take' Notification and Reporting. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist, Mitigation Manager **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Following incident, immediately report to USFWS and/or CDFG. Prepare report and document in weekly/monthly report.	Condition of Design/Build Contract
	Bio-MM#14: Post-Construction Compliance Reports. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#29: Conduct Pre-Construction Surveys and Monitoring for Raptors. Prior to ground-disturbing activities, the Project Biologist or designee will conduct pre-construction surveys for nesting raptors if construction and habitat removal activities are scheduled to occur during the breeding season (February 1 to August 15). The Project Biologist or designee will conduct surveys in areas within 300 feet of the construction footprint. Modify the required survey dates based on local conditions. If breeding raptors with active nests are found, establish a 300-foot buffer around the nest and phase construction activities within the buffer(s) until the young have fledged from the nest or the nest is abandoned. Approve construction activities within the buffer area, pending site conditions that will not jeopardize the nest. The Project biologist will conduct pre-construction surveys for bald and golden eagle nests within ¼ mile of the construction footprint. If nesting bald or golden eagles are identified, the Contractor's Biologist in coordination with the Project Biologist will establish a 1,000-foot buffer area. The Project Biologist or designee will adjust the 1,000-foot buffer as needed to reflect existing conditions including ambient noise, topography, and disturbance with the approval of the USFWS or CDFG, as appropriate. The Project Biologist or designee will conduct regular monitoring of the nest to determine success/failure and to confirm that project activities are not conducted within the buffer(s) until the nesting cycle is complete or the nest fails. The Project Biologist or designee will document the results of the surveys and the ongoing monitoring, and provide a copy of the monitoring reports for impact areas to the respective agencies. The Project Biologist or designee will approve ground-disturbing activities within the buffer area, pending site conditions that will not jeopardize the nest. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction surveys, prior to ground-disturbing activities, and during construction	Condition of Design/Build Contract
	Bio-MM#31: Raptor Protection on Power Lines. During final design, the Contractor will verify that the catenary system and masts are designed to be raptor-safe, in accordance with *the Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee 2006). The Project Biologist will check the final design drawings and submit a memorandum to the Mitigation Manager documenting compliance	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Final design, completed prior to construction.	Condition of Design/Build Contract
	Bio-MM#32: Conduct Pre-Construction Surveys for Swainson's Hawks. The Project Biologist or designee will conduct pre-construction surveys for Swainson's hawks during the nesting season (March 1 through September 15) within the construction footprint and within a 0.5-mile buffer. The Project	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with	X				Pre-construction surveys at least 30 days prior to ground-disturbing activities and construction	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Biologist or designee will conduct the pre-construction nest surveys at least 30 days prior to ground-disturbing activities and phase with project construction. The pre-construction surveys will determine the status (i.e., active, inactive) of the nest and then will be used to set up nest avoidance strategies (Bio-MM#33). The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance with the measure.	the Authority						
	Bio-MM#33: Swainson's Hawk Nest Avoidance. If active Swainson's hawk nests (defined as a nest used one or more times in the last 5 years) are found within 0.5 mile of the construction footprint during the nesting season (March 1 to September 15), the Contractor's Biologist will implement buffers restricting construction activities, following CDFG's *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (Buteo swainsoni) in the Central Valley of California* (CDFG 1994). Adjustments to the buffer(s) will require prior approval by CDFG as coordinated by the Project Biologist. The buffers and nest condition will then be monitored (see Bio-MM#34). The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance on a weekly basis.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Nesting season (March 1 – September 15)	Condition of Design/Build Contract
	Bio-MM#34: Monitor Removal of Nest Trees for Swainson's Hawks. Prior to ground-disturbing activities, the Project Biologist or designee will monitor nest trees for Swainson's hawks in the construction footprint that are not removed. If a nest tree for a Swainson's hawk must be removed, the Contractor will obtain a Management Authorization (including conditions to offset the loss of the nest tree) from the CDFG, as described in CDFG's Staff Reporting Regarding Mitigation for Impacts to Swainson's Hawks (Buteo swainsoni) in the Central Valley of California (CDFG 1994). The Management Authorization will specify the tree removal period, generally between October 1 and February 1. If ground-disturbing activities or other project-related activities may cause nest abandonment by a Swainson's hawk or forced fledging within the specified buffer area, monitoring of the nest site (funded by the Authority) by the Project Biologist will be required to determine if the nest is abandoned. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance on a weekly basis during the appropriate season.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to ground-disturbing activities, during construction.	Condition of Design/Build Contract
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program. See description above.	**Implementing Party:** Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract
Bio#11: Construction of the HST alternatives would disturb breeding birds, including raptors.	**Bio-MM#5: Prepare and Implement a Biological Resources Management Plan.** See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
		the Authority					permit conditions	
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#12: Work Stoppage. See description above.	**Implementing Party:** Project Biologist or Project Biological Monitor **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work stoppage and subsequent action.	Condition of Design/Build Contract
	Bio-MM#13: 'Take' Notification and Reporting. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist, Mitigation Manager **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Following incident, immediately report to USFWS and/or CDFG. Prepare report and document in weekly/monthly report.	Condition of Design/Build Contract
	Bio-MM#14: Post-Construction Compliance Reports. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#29: Conduct Pre-Construction Surveys and Monitoring for Raptors. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction surveys, prior to ground-disturbing activities, and during construction	Condition of Design/Build Contract
	Bio-MM#30: Conduct Pre-Construction Surveys and Delineate Active Nest Exclusion Areas For Other Breeding Birds. In the event active bird nests are encountered during the pre-construction survey, the Project Biologist or designee will determine the nest avoidance buffer zones as appropriate. The Project Biologist or designee will coordinate with the Contractor's Biologist to establish the suitable buffers consistent with the intent of the MBTA and as determined by the Project Biologist. The Project Biologist or designee will delineate nest avoidance buffers established for ground nesting birds in a manner that does not create predatory bird perch points in close proximity (150 feet) to the active nest site. The Project Biological Monitor will monitor active bird nests weekly or more frequently pending status of nest and status of fledgling development. The Contractor's Biologist will maintain the nest avoidance buffer zone until nestlings have fledged or the nest is abandoned. The Project Biologist	**Implementing Party:** Contractor's Biologist, Project Biologist, Project Biological Monitor, Mitigation Manager **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Pre-construction surveys and during construction	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing: Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	Implementation Mechanism or Tool
	will submit a memorandum to the Mitigation Manager documenting compliance.							
	Bio-MM#31: Raptor Protection on Power Lines. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Final design, completed prior to construction.	Condition of Design/Build Contract
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program. See description above.	**Implementing Party:** Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract
Bio#12: Construction of the HST alternatives would disturb or cause the loss of burrowing owls and their habitat.	**Bio-MM#5: Prepare and Implement a Biological Resources Management Plan.** See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#13: 'Take' Notification and Reporting. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist, Mitigation Manager **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Following incident, immediately report to USFWS and/or CDFG. Prepare report and document in weekly/monthly report.	Condition of Design/Build Contract
	Bio-MM#14: Post-Construction Compliance Reports. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#35: Conduct Pre-Construction Surveys for Burrowing Owls. Prior to ground-disturbing activities, the Project Biologist or designee will conduct pre-construction surveys in accordance with CDFG's *Staff Report on*	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with	X	X			Prior to ground-disturbing activities, the winter (December 1 through	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Burrowing Owl Mitigation (CDFG 1995). The Project Biologist or designee will conduct these surveys at appropriate timeframes within suitable habitat located in the construction footprint and a 500-foot buffer. Results of the surveys will be used to inform Bio-MM#36.. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance on a weekly basis.	the Authority					January 31) and breeding season (April 15 through July 15)	
	Bio-MM#36: Burrowing Owl Avoidance and Minimization. Implement burrowing owl avoidance and minimization measures following CDFG's *Staff Report on Burrowing Owl Mitigation* (CDFG 1995). • The Contractor will not disturb occupied burrowing owl burrows during the nesting season (February 1 through August 31) unless it is verified that either the birds have not begun egg-laying and incubation, or that juveniles from the occupied burrows are foraging independently and are capable of independent survival as determined by the Project Biologist or designee. Eviction outside the nesting season may be permitted pending evaluation of eviction plans and receipt of formal written approval from the CDFG authorizing the eviction. • Unless otherwise authorized by CDFG, the Contractor's Biologist will establish a 250-foot buffer (as an environmentally sensitive area) between the construction work area and nesting burrowing owls during the nesting season. The Contractor will maintain this protected area until August 31 or a time set at CDFG's discretion and based upon monitoring evidence, until the young owls are foraging independently. • Unless otherwise authorized by CDFG, the Contractor's Biologist will establish a 160-foot buffer (as an environmentally sensitive area) between the construction work area and occupied burrows during the non-breeding season (September 1 through January 31). The Contractor will maintain this protected area until January 31 or at CDFG's discretion and based upon monitoring evidence, until the young owls are foraging independently. If burrowing owls must be moved away from the construction footprint, the Contractor's Biologist will undertake the passive relocation measures in accordance with CDFG's (1995) guidelines. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance on a weekly basis.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Preconstruction burrow identification, during construction.	Condition of Design/Build Contract
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program. See description above.	**Implementing Party:** Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract
Bio#13: Construction of the HST alternatives would disturb breeding or nonbreeding bats.	**Bio-MM#5: Prepare and Implement a Biological Resources Management Plan.** See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#7: Delineate Environmentally Sensitive Areas and	**Implementing Party:** Contractor's Biologist, Project	X	X			Prior to construction/Post	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Environmentally Restricted Areas (on plans and in-field). See description above.	Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority					construction. Follow reporting requirements as established by agency permit conditions	
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#12: Work Stoppage. See description above.	**Implementing Party:** Project Biologist or Project Biological Monitor **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work stoppage and subsequent action.	Condition of Design/Build Contract
	Bio-MM#13: 'Take' Notification and Reporting. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist, Mitigation Manager **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Following incident, immediately report to USFWS and/or CDFG. Prepare report and document in weekly/monthly report.	Condition of Design/Build Contract
	Bio-MM#14: Post-Construction Compliance Reports. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#37: Conduct Pre-Construction Surveys for Special-Status Bat Species. Prior to any ground-disturbing activities, the Project Biological Monitor or designee will conduct a visual and acoustic pre-construction survey for roosting bats. Include a minimum of one day and one evening in the visual pre-construction survey. The Project Biologist, in coordination with the Mitigation Manager, will contact CDFG if any hibernation roosts or active nurseries are identified within the construction footprint, as appropriate. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Project Biological Monitor, Project Biologist, Mitigation Manager **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-construction surveys, prior to ground-disturbing activities	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#38: Bat Avoidance and Relocation. During ground-disturbing activities, the Contractor will avoid active hibernation roosts. If avoidance of the hibernation roost is not feasible, the Contractor's Biologist will prepare a relocation plan and coordinate the construction of an alternative bat roost with CDFG. The Contractor will implement the Bat Roost Relocation Plan prior to the commencement of construction activities. Remove roosts with approval from CDFG before hibernation begins (October 31), or after young are flying (July 31), using exclusion and deterrence techniques described in Bio-MM#39 below. The timeline to remove vacated roosts is between August 1 and October 31. All effort to avoid disturbance to maternity roosts will be made during construction activities. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#39: Bat Exclusion and Deterrence. During ground-disturbing activities, if non-breeding or non-hibernating individuals or groups of bats are found within the construction footprint, the bats will be safely excluded by either opening the roosting area to change lighting and airflow conditions, or by installing one-way doors, or other appropriate methods specified by CDFG. The Contractor will leave the roost undisturbed by project-related activities for a minimum of one week after implementing exclusion and/or eviction activities. The Contractor will not implement exclusion measures to evict bats from established maternity roosts or occupied hibernation roosts. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		During ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program. See description above.	**Implementing Party:** Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract
Bio#14: Construction of the HST alternatives would disturb American badger dens.	**Bio-MM#5: Prepare and Implement a Biological Resources Management Plan.** See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#6: Prepare and Implement a Restoration and Revegetation Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction. Follow reporting requirements as established by agency permit conditions.	Condition of Design/Build Contract. Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#11: Entrapment Prevention. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#12: Work Stoppage. See description above.	**Implementing Party:** Project Biologist or Project Biological Monitor **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work stoppage and subsequent action.	Condition of Design/Build Contract
	Bio-MM#40: Conduct Pre-Construction Surveys for American Badger. Prior to ground-disturbing activities, the Project Biologist or designee will conduct pre-construction surveys for American badger den sites within suitable habitats in the construction footprint. The Project Biologist will conduct these surveys no more than 30 days before the start of ground-disturbing activities and phase with project build out. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#41: American Badger Avoidance. The Contractor's Biologist will establish a 50-foot buffer around occupied American badger dens. The Contractor will establish a 200-foot buffer around badger maternity dens through the pup-rearing season (February 15 through July 1). Adjustments to the buffer(s) will require prior approval by CDFG as coordinated by the Project Biologist. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction per approval by CDFG	Condition of Design/Build Contract
	Bio-MM#44: Restore Temporary Impacts on Jurisdictional Waters.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		Construction and Post-construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#45: Monitor Construction Activities within Jurisdictional Waters.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		During ground-disturbing activities and Construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program. See description above.	**Implementing Party:** Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract
Bio#15: Construction of the HST alternatives would disturb San Joaquin kit fox dens.	**Bio-MM#5: Prepare and Implement a Biological Resources Management Plan.** See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/Post construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#11: Entrapment Prevention. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#12: Work Stoppage. See description above.	**Implementing Party:** Project Biologist or Project Biological Monitor **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Submit a memorandum to the Mitigation Manager documenting compliance within 1 day of the work stoppage and subsequent action.	Condition of Design/Build Contract
	Bio-MM#13: 'Take' Notification and Reporting. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist, Mitigation Manager **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Following incident, immediately report to USFWS and/or CDFG. Prepare report and document in weekly/monthly report.	Condition of Design/Build Contract
	Bio-MM#14: Post-Construction Compliance Reports.	**Implementing Party:** Project Biologist			X		Post-construction	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	See description above.	**Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority						
	Bio-MM#42: Conduct Pre-Construction Surveys for San Joaquin Kit Fox. The USFWS' *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 1999b) will be implemented as follows for construction related impacts. Prior to the start of ground-disturbing activities, the Project Biologist or designee will conduct pre-construction surveys in accordance with the USFWS' *San Joaquin Kit Fox Survey Protocol for the Northern Range* (USFWS 1999c). The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Pre-construction surveys and prior to ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#43: Minimize Impacts on San Joaquin Kit Fox. The Contractor's Biologist will Implement USFWS' Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 1999b) to minimize ground disturbance-related impacts on this species. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction surveys and prior to ground-disturbing activities	Condition of Design/Build Contract USFWS' Standard Measures for Protection of the San Joaquin Kit Fox
	Bio-MM#44: Restore Temporary Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		Construction and Post-construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#45: Monitor Construction Activities within Jurisdictional Waters. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		During ground-disturbing activities and Construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#16: Construction of the HST alternatives would temporarily convert special-status plant communities (e.g., Great Valley mixed riparian forest, coastal and valley freshwater marsh, vernal pools).	**Bio-MM#5: Prepare and Implement a Biological Resources Management Plan.** See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#6: Prepare and Implement a Restoration and Revegetation Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction. Follow reporting requirements as established by agency permit conditions.	Condition of Design/Build Contract. Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction and Construction	Final construction plans (including grading and landscape plans) and Memorandum regarding the field delineation of all ESAs/ERAs
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#19: Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to ground-disturbing activities Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract Plan for monitoring, salvage, relocation, and propagation of special-status plant species and Memorandum documenting compliance
	Bio-MM#20: Seasonal Vernal Pool Work Restriction. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction and during construction. Seasonal restrictions: October 15 to June 1 (corresponding to the rainy season), or as determined through informal or formal consultation with the USFWS or USACE. Report within 1 month of completing the field work	Condition of Design/Build Contract
	Bio-MM#21: Implement and Monitor Vernal Pool Protection. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction/Post Construction monitoring and reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#44: Restore Temporary Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		Construction and Post-construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#45: Monitor Construction Activities within Jurisdictional Waters. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with		X	X		During ground-disturbing activities and Construction Follow reporting as	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
		the Authority					determined by regulatory agency permit conditions.	
	Bio-MM#3: Prepare and Implement a Worker Environmental Awareness Program. See description above.	**Implementing Party:** Mitigation Manager **Monitoring/Reporting Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Training of all crew/construction personnel prior to start of construction. Provide weekly/monthly reporting as required by permit conditions.	Condition of Design/Build Contract
Bio#17: Construction of the HST alternatives would have indirect impacts on jurisdictional waters.	**Bio-MM#4: Prepare and Implement a Weed Control Plan.** See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
	Bio-MM#5: Prepare and Implement a Biological Resources Management Plan. See description above.	**Implementing Party:** Project Biologist **Monitoring/Reporting Party:** Mitigation Manager to verify completion of the BRMP and provide written documentation to Authority	X				Following implementation and reporting schedule as established by agency permit conditions.	Condition of Design/Build Contract. Biological Resources Management Plan (BRMP) and Construction plans
	Bio-MM#6: Prepare and Implement a Restoration and Revegetation Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction. Follow reporting requirements as established by agency permit conditions.	Condition of Design/Build Contract. Restoration and Revegetation Plan (RRP) for upland communities and Compliance reports to document implementation and performance standards
	Bio-MM#7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field) See description above..	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction and Construction	Memorandum documenting compliance
	Bio-MM#8: Equipment Staging Areas. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract
	Bio-MM#10: Vehicle Traffic. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			During ground-disturbing activities. Report on weekly basis.	Condition of Design/Build Contract
	Bio-MM#15: Restore Temporary Riparian Impacts. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract Habitat Mitigation and Monitoring Plan (HMMP) and Memorandum documenting compliance and other reporting requirements in the 1600

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
								Streambed Alteration Agreement.
	Bio-MM#19: Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to ground-disturbing activities Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract Plan for monitoring, salvage, relocation, and propagation of special-status plant species and Memorandum documenting compliance
	Bio-MM#20: Seasonal Vernal Pool Work Restriction. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction and during construction. Seasonal restrictions: October 15 to June 1 (corresponding to the rainy season), or as determined through informal or formal consultation with the USFWS or USACE. Report within 1 month of completing the field work	Condition of Design/Build Contract
	Bio-MM#21: Implement and Monitor Vernal Pool Protection. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction/Post Construction monitoring and reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#44: Restore Temporary Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		Construction and Post-construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#44: Monitor Construction Activities within Jurisdictional Waters. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		During ground-disturbing activities and Construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#15: Restore Temporary Riparian Impacts. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction. Follow reporting requirements as established by agency permit conditions	Condition of Design/Build Contract Habitat Mitigation and Monitoring Plan (HMMP) and Memorandum documenting compliance and other reporting requirements in the 1600 Streambed Alteration Agreement.
Bio#21: Construction of the HST alternatives would disturb Camp Pashayan	**Bio-MM#17: Conduct Pre-Construction Surveys for Special-Status Plant Species.** The Project Biologist will conduct pre-construction surveys for special-status plant species in suitable habitat areas, subject to ground-disturbing activities. The surveys will be conducted in the appropriate season prior to ground-disturbing activities for salvage and relocation activities. The	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Pre-construction and Prior to ground-disturbing activities	Plan for monitoring, salvage, relocation, and propagation of special-status plant species and Memorandum documenting compliance

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
(San Joaquin River Ecological Reserve).	Project Biologist will use the results of the Special-Status Plants Survey Report (prepared as part of the Biological Resources Technical Report), including mapping of locations of special-status plant species, to determine focused locations for the pre-construction surveys, as appropriate. The Project Biologist will work with the Contractor's Biologist to mark and avoid locations of all special-status plant species observed where feasible or incorporate the species into the relocation/compensation program defined in Bio-MM#50: Compensate for Impacts on Special-Status Plant Species. Prior to ground-disturbing activities, the Contractor will protect any populations of special-status plant species identified during the surveys within 100 feet of the construction footprint as ERAs. As appropriate, the Contractor's Biologist will update the special-status or habitats of concern mapping within the construction limits, based upon resource agency permits. The Contractor's Biologist will determine the locations of special-status plant species on construction drawings and identified as ESAs within the construction footprint. Plant populations within 100 feet of the construction limits will be fenced as ERAs by the Contractor's Biologist. Terms and conditions from Section 7 and Section 2081 agreements will be incorporated as appropriate. The Project Biologist will provide verification and report through memorandum to the Mitigation Manager.							
	Bio-MM#18: Prepare and Implement Plan for Salvage, Relocation and/or Propagation of Special-Status Plant Species. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X		X		Pre-construction and prior to ground-disturbing activities. Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract
	Bio-MM#19: Conduct Pre-Construction Sampling and Assessment for Vernal Pool Fauna. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to ground-disturbing activities Follow reporting requirements as established by regulatory compliance permits.	Condition of Design/Build Contract Plan for monitoring, salvage, relocation, and propagation of special-status plant species and Memorandum documenting compliance
	Bio-MM#20: Seasonal Vernal Pool Work Restriction. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction and during construction. Seasonal restrictions: October 15 to June 1 (corresponding to the rainy season), or as determined through informal or formal consultation with the USFWS or USACE. Report within 1 month of completing the field work	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#21: Implement and Monitor Vernal Pool Protection. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction/Post Construction monitoring and reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#44: Restore Temporary Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		Construction and Post-construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	Bio-MM#45: Monitor Construction Activities within Jurisdictional Waters. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority		X	X		During ground-disturbing activities and Construction Follow reporting as determined by regulatory agency permit conditions.	Condition of Design/Build Contract
	PK-MM#4: Acquire Park Property for Camp Pashayan. Final design will continue to seek to minimize right-of-way impacts and pier placement in Camp Pashayan. Mitigation will include in-lieu fee for property impacts associated with pier installation as well as revegetation of disturbed areas with native plantings (consistent with CDFG vegetation/landscaping plans for the reserve).	**Implementing Party:** Contractor's Biologist and Authority **Monitoring/Reporting Party:** Mitigation Manager in coordination with the Authority	X				Prior to construction/monthly reporting	The Authority will work with the California Department of Fish and Game to prepare and execute an agreement to acquire the property.
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#22: Project period impacts from the HST would permanently convert Great Valley mixed riparian forest and other riparian habitat (Coastal and Valley Freshwater Marsh and vernal pools addressed in Bio-IMPACT#16).	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Condition of Design/Build Contract
	Bio-MM#49: Compensate for Permanent Riparian Impacts. The Authority will compensate for permanent impacts on Great Valley mixed riparian forest and other riparian habitats, determined in consultation with the appropriate agencies (e.g., CDFG), by restoring nearby areas to suitable habitat through permittee-responsible mitigation and/or by purchasing credits in a mitigation bank. Other relevant regulatory permits addressing riparian impacts include the CDFG 1600 Streambed Alteration Agreement, the USACE Section 404 Permit, and the SWRCB 401 Permit. The HMMP will provide the planning details as referenced in Bio-MM#58. Bio-MM#56 provides documentation and reporting requirements. Compensation will be based on the following ratios (acres of mitigation to acres of impact): • Great Valley Mixed Riparian Forest: 2:1 • Other Riparian: 2:1	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Prior to operation	Post-construction compliance reports consistent with the appropriate agency-issued permits

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State Streambeds. The Authority or its designee, prior to final design, will conduct a jurisdictional delineation, documenting jurisdictional waters and state streambeds consistent with USACE, SWRCB, and CDFG guidance. As part of the delineation, determine the functions and values of the jurisdictional waters using accepted methods such as the CRAM so that the functions and values have been replaced and that no net loss of jurisdictional waters and state streambed values occurs. Develop habitat replacement guidelines to identify and quantify habitats that are to be removed and identify the locations for restoring or relocating habitats. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Prior to ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. As part of the USFWS, USACE, SWRCB, and CDFG permit applications and prior to ground-disturbing activities, the Authority or its designee will prepare an HMMP to mitigate for temporary and permanent impacts on jurisdictional waters and state streambeds. The HMMP will detail performance standards, including percent cover of native species, survivability, canopy cover requirements, wildlife utilization, the acreage basis, restoration ratios, and the combination of onsite and/or offsite mitigation. Preference shall be given to conduct the mitigation within the same watershed where the impact occurs. The Authority or its designee will conduct work with the USACE, SWQCB, and CDFG to develop appropriate avoidance, minimization, mitigation, and monitoring measures to be incorporated into the HMMP. The intent of the HMMP is to mitigate for the lost functions and values of impacts on jurisdictional waters and state streambeds consistent with resource agency requirements and conditions presented in Sections 404 and 401 of the CWA and Section 1600 of the CFGC. It is also anticipated that since listed species such as California tiger salamander, colusa grass, and vernal pool branchiopods are nested within these habitats, the HMMP will also serve to mitigate for listed species through Section 7 of ESA and CESA 2081. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance. In the HMMP, the applicant or its designee shall incorporate the following standard requirements consistent with USACE, SWRCB, and CDFG guidelines: • Description of the project impact/site. • Goal(s) (i.e., functions and values) of the compensatory mitigation project. • Description of the proposed compensatory mitigation site. • Implementation plan for the proposed compensatory mitigation site. • Maintenance activities during the monitoring period. • Monitoring plan for the compensatory mitigation site. • Completion of compensatory mitigation. • Contingency measures. Additionally, the following will be included at a minimum for the implementation plan: • Site analysis for appropriate soils and hydrology. • Site preparation specifications based on site analysis, including but not limited to grading and weeding. • Soil and plant material salvage from impact areas, as appropriate to the timing of impact and restoration as well as the location of restoration sites.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits.	Documentation Reports demonstrating compliance with HMMP

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	• Specifications for plant and seed material appropriate to the locality of the mitigation site. • Specifications for site maintenance to establish the habitats, including but not limited to weeding and temporary irrigation. Habitat restoration, enhancement, and/or establishment activities will be conducted on some of the compensatory (i.e., selected permittee-responsible) mitigation sites to achieve the mitigation goals. A detailed design of the mitigation habitats will be created in coordination with the permitting agencies and be described in the HMMP. It is recognized that several HMMPs will be developed consistent with the selected mitigation sites and the resources mitigated at each. The primary engineering and construction contractors will ensure, through coordination with the Project Biologist, that construction is implemented in a manner that minimizes disturbance of such areas to the extent feasible. Temporary fencing will be used during construction to avoid sensitive biological resources that are adjacent to construction areas and can be avoided. Performance standards are targets for determining the effectiveness of the mitigation and assessing the need for adaptive management (e.g., mitigation design or maintenance revisions). Success criteria are formal criteria that must be met after a specific timeframe to meet regulatory requirements of the permitting agencies. Where applicable, replacement planting/seeding will be implemented if monitoring demonstrates that performance goals or success criteria are not met during a particular monitoring interval. The criteria for measuring performance will be used to determine whether the habitat improvement is trending toward sustainability (i.e., reduced human intervention) and to assess the need for adaptive management. These criteria must be met for the habitat improvement to be declared successful, both during a particular monitoring year and at the end of the establishment period. These performance criteria will be developed in consultation with the permitting agencies. The criteria include: • Percent survival of planted trees (65–85%). • Percent survival of transplanted trees (60–85%). • Percent relative canopy cover (5–35%). • Percent cover of invasive species (<1%). • Percent cover of nonnative herbaceous plants (<10–25%). • Percent absolute cover of native species (>50–80%). • Percent relative cover of native species (>50%). • Percent total cover of plant species (20–75%). • Percent relative cover of wetland indicator species (75–90%). • Water level within +/-6 inches (or other measurement) of design. • Species composition and community diversity, relative to reference sites, and/or as described in the guidelines issued by permitting agencies (e.g., USFWS conservation guidelines for valley elderberry longhorn beetle). Performance goals and success criteria will be provided for each of the years of monitoring and will be specific to habitat types at each permittee-responsible mitigation site. The monitoring schedule will be detailed in the site-specific HMMPs. To be deemed successful, the site may be required to meet the success							

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	criteria only in selected years. However, if success criteria are not met in specific years, remedial measures, including regrading, adjustment to modify the hydrological regime, and/or replacement planting or seeding, must be implemented and that year's monitoring must be repeated the following year until the success criteria are met. The success criteria specified must be reached without human intervention (e.g., irrigation, replacement plantings) aside from maintenance practices described in the site-specific HMMPs for maintenance during the establishment period. Where the HST alignment affects an existing mitigation bank, the Authority or its designee will modify the mitigation ratio to meet the vernal pool mitigation requirement. The Authority or its designee will relocate the affected portion of the mitigation bank or compensate the landowner in accordance with the Uniform Relocation and Real Property Policy Act of 1970, as amended. The Project Biologist will oversee the implementation of all HMMP elements and monitor consistent with the prescribed maintenance and performance monitoring requirements. The Project Biologist will prepare annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits. In addition, the Project Biologist will document compliance and submit to the Mitigation Manager.							

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. The Authority or its designee will mitigate permanent wetland impacts through compensation determined in consultation with the USACE, SWRCB, USFWS, and CDFG, in order to be consistent with the HMMP (Bio-MM#56). Regulatory compliance for jurisdictional waters includes relevant terms and conditions from the USACE 404 Permit, SWRCB 401 Permit, and CDFG 1600 Streambed Alteration Agreement. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance. Performance standards for jurisdictional waters are generally described in Bio-MM#56. It is important to recognize that Bio-MM#56 includes standards that apply to several resource areas (e.g., jurisdictional waters, riparian habitat, California tiger salamander habitat). Compensation could include one of the following: • Purchase of credits from an agency-approved mitigation bank. • Fee-title-acquisition of natural resource agency-related property. • Purchase or establishment of a conservation easement with an endowment for long-term management of the property-specific conservation values. • In-lieu fee contribution determined through negotiation and consultation with the various natural resource regulatory agencies. Base compensation for permanent impacts on the following ratios (acres of mitigation to acres of impact), pending agency confirmation: • Vernal pools and other seasonal wetlands: 2:1 Preservation and 1:1 Creation. • Coastal and Valley Freshwater Marsh: 1:1. • Other Wetlands: Between 1.1:1 and 1.5:1 (1:1 onsite and 0.1 to 0.5:1 offsite), based on function and values lost. • Ratios determined in consultation with the appropriate agencies.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions
	Bio-MM#60: Offsite Habitat Restoration, Enhancement, and Preservation. Prior to site preparation at the mitigation site, the Authority or its designee will consider the offsite habitat restoration, enhancement, or preservation program, and identify short-term temporary and/or long-term permanent effects on the natural landscape. A determination will be made on any effects from the physical alteration of the site to onsite biological resources, including plant communities, land cover types, and the distribution of special-status plants and wildlife. Appropriate seasonal restrictions (e.g., breeding season) may be applicable if appropriate habitats exist onsite. Activities resulting in the physical alteration of the site include grading/modifications to onsite topography, stockpiling, storage of equipment, installation of temporary irrigation, removal of invasive species, and drainage feature treatments. In general, the long-term improvements to	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	habitat functions and values will offset temporary effects during restoration, enhancement, or preservation activities. The offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite. Potential effects on site-specific hydrology and the downstream resources will be evaluated as a result of implementation of the restoration-related activity. Site-specific BMPs and an SWPPP will be implemented as appropriate. The Authority or its designee will report on compliance with permitting requirements. The Project Biologist will be responsible for the monitoring and tracking of the program and will prepare a memorandum of compliance and submit to the Mitigation Manager.							
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager to verify completion of this measure and provide written documentation to Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#23: Project period impacts from the HST alternatives would permanently convert suitable habitat that has potential to support special-status plant species.	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Condition of Design/Build Contract
	Bio-MM#50: Compensate for Impacts on Special-Status Plant Species. Prior to Final Design and during the permitting process, the Authority will comply with CESA and the federal ESA by implementing the following measures: Purchase credits from an existing mitigation bank or conduct a special-status plant re-establishment program within the same watershed or in proximity to the impact area at a 1:1 ratio. The success of the special status plant species program is related to the success of the vernal pools. Restored areas must be similar in species composition and ecosystem function to the reference habitat to be considered completed and successful at the end of the monitoring period. In general, this means that data collected on restored or enhanced pools must fall within the range of data obtained from reference pools. General performance standards and guidelines are presented in Bio-MM#58. Mitigate the impacts on special-status plants in accordance with the USFWS Biological Opinion and/or CDFG 2081(b). The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist in coordination with the Authority **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to final design	Memorandum documenting compliance
	Bio-MM#51: Implement Conservation Guidelines During the Project Period for Valley Elderberry Longhorn Beetle. The Authority or its designee will conduct compensatory mitigation for the valley elderberry longhorn beetle, including transplantation and replacement of elderberry shrubs, and maintenance for replacement shrubs, following the USFWS' Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999a). Performance standards for valley elderberry longhorn beetle habitat are generally described in Bio-MM#58. It is important to recognize that Bio-MM#58 includes standards that apply to	**Implementing Party:** Contractor's Biologist in coordination with the Authority **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Prior to Operations	Memorandum documenting compliance

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	several resource areas (e.g., jurisdictional waters, riparian habitat, California tiger salamander habitat).The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.							
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State Streambeds. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Prior to ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits.	Documentation Reports demonstrating compliance with HMMP
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#24: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support vernal pool branchiopods.	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Condition of Design/Build Contract
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State Streambeds. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Prior to ground-disturbing activities	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits.	Documentation Reports demonstrating compliance with HMMP
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#25: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support valley elderberry longhorn beetle.	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Condition of Design/Build Contract
	Bio-MM#51: Implement Conservation Guidelines During the Project Period for Valley Elderberry Longhorn Beetle. See description above.	**Implementing Party:** Contractor's Biologist in coordination with the Authority **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X			Memorandum documenting compliance
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
								and federal ESA as they apply to their jurisdiction and resources onsite
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#26: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support California tiger salamander.	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Condition of Design/Build Contract
	Bio-MM#52: Compensate for Impacts on California Tiger Salamander. The Authority or its designee will determine compensatory mitigation for the temporary and permanent loss of suitable upland and aquatic breeding habitat through agency consultation with the USFWS and CDFG. Compensatory mitigation could include one of the following: • Purchase of credits from an agency-approved mitigation bank. • Fee-title-acquisition of natural resource regulatory agency-approved property. • Purchase or establishment of a conservation easement with an endowment for long-term management of the property-specific conservation values. • In-lieu fee contribution determined through negotiation and consultation with the various natural resource regulatory agencies. • Implementation of USFWS Biological Opinion and/or CDFG 2081(b). The Project Biologist will submit a memorandum documenting compliance to the Mitigation Manager.	**Implementing Party:** Contractor's Biologist in coordination with the Authority **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Memorandum documenting compliance with agency-issued BO and 2081 Determination.
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State Streambeds. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Prior to ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits.	Documentation Reports demonstrating compliance with HMMP
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#27: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support western spadefoot toad.	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Memorandum documenting compliance
	Bio-MM#25: Conduct Emergence and Larval Surveys for Western Spadefoot Toad. The Project Biologist or designee (qualified herpetologist) will conduct pre-construction emergence and larval surveys for western spadefoot toad during the fall and winter rainy season. Emergence surveys will be conducted within the appropriate time period(s) after precipitation events as evaluated by a qualified herpetologist and will be partially in tandem with California tiger salamander surveys. Potential breeding depressions, including vernal pools, will be surveyed for western spadefoot toad larvae concurrently with special-status vernal pool branchiopod and California tiger salamander pre-construction surveys. Adults found within the construction footprint during emergence surveys will be relocated to an appropriate area adjacent to another pool suitable for breeding. Pre-construction surveys will help identify the proper implementation of mitigation measures, identify state and federal permit requirements, and inform the accurate implementation of mitigation requirements. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance after surveys are complete.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction surveys. Prior to ground-disturbing activities. Follow reporting as determined by regulatory permit conditions.	Condition of Design/Build Contract
	Bio-MM#52: Compensate for Impacts on California Tiger Salamander. See description above.	**Implementing Party:** Contractor's Biologist in coordination with the Authority **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Memorandum documenting compliance with agency-issued B) and 2081 Determination.
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State Streambeds. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Prior to ground-disturbing activities	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits.	Documentation Reports demonstrating compliance with HMMP
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#28: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support western pond turtle.	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Condition of Design/Build Contract
	Bio-MM#49: Compensate for Permanent Riparian Impacts. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Prior to operation	Post-construction compliance reports consistent with the appropriate agency-issued permits
	Bio-MM#53: Implement Western Pond Turtle Mitigation Measures. The Authority or its designee will mitigate the impacts on western pond turtle in accordance with the USFWS Biological Opinion and/or CDFG 2081(b). The Project Biologist will submit a memorandum documenting compliance to the Mitigation Manager.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X			Memorandum documenting compliance with BO and 2081 Determination
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State Streambeds.	**Implementing Party:** Contractor's Biologist, Project Biologist	X				Prior to ground-disturbing activities	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	See description above.	**Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority						
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits.	Documentation Reports demonstrating compliance with HMMP
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#30: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support nesting Swainson's hawk.	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Condition of Design/Build Contract
	Bio-MM#49: Compensate for Permanent Riparian Impacts. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Prior to operation	Post-construction compliance reports consistent with the appropriate agency-issued permits
	Bio-MM#54: Compensate for Loss of Swainson's Hawk Foraging Habitat. To compensate for the loss of Swainson's hawk foraging habitat, the Authority or its designee will provide compensatory mitigation that follows the ratios recommended by CDFG's (1994) Staff Report Regarding Mitigation for Impacts to Swainson's hawks in the Central Valley. The Project Biologist will submit a memorandum documenting compliance to the Mitigation Manager.	**Implementing Party:** Contractor's Biologist in coordination with the Authority **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to operation	Memorandum documenting compliance

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	The ratios are based on the distance from the construction footprint to the closest active nest site (which for this species is defined as a nest used one or more times in the last 5 years), as follows: • Compensate where impacts on foraging habitat occur within 1 mile of an active nest tree, at a 1:1 ratio on agricultural lands or other suitable foraging habitat; or at a 0.5:1 ratio where habitat can be managed for prey production. • Compensate where impacts on foraging habitat occur within 5 miles, but more than 1 mile from an active nest tree, at a 0.75:1 ratio. • Compensate where impacts on foraging habitat occur within 10 miles, but more than 5 miles from an active nest tree, at a 0.5:1 ratio. Mitigate the impacts on special-status plants in accordance with the USFWS Biological Opinion and/or CDFG 2081(b).							
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State Streambeds. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Prior to ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits.	Documentation Reports demonstrating compliance with HMMP
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite
	Bio-MM#14: Post-Construction Compliance Reports. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Memorandum documenting compliance

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
Bio#31: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support burrowing owls.	**Bio-MM#55: Compensate for Loss of Burrowing Owl Foraging and Breeding Habitat.** The Authority or its designee will provide base compensatory mitigation for the temporary and permanent loss of foraging and breeding habitat on the number of western burrowing owl pairs or individuals affected. Compensation will be at a 6.5:1 ratio (acres of habitat: number of pairs or individuals). Mitigate each occupied burrow destroyed by enlarging or enhancing existing unsuitable burrows at a 2:1 ratio based on CDFG's (1995) *Staff Report on Burrowing Owl Mitigation*. The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist in coordination with the Authority **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Memorandum documenting compliance with CDFG guidance
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#32: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support breeding birds, including raptors and burrowing owls.	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Condition of Design/Build Contract
	Bio-MM#49: Compensate for Permanent Riparian Impacts. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Prior to operation	Post-construction compliance reports consistent with the appropriate agency-issued permits
	Bio-MM#54: Compensate for Loss of Swainson's Hawk Foraging Habitat. See description above.	**Implementing Party:** Contractor's Biologist in coordination with the Authority **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Memorandum documenting compliance
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State Streambeds. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Prior to ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits.	Documentation Reports demonstrating compliance with HMMP
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#33: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support special-status bats.	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	HMMP
	Bio-MM#49: Compensate for Permanent Riparian Impacts. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Prior to operation	Post-construction compliance reports consistent with the appropriate agency-issued permits
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State Streambeds. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Prior to ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits.	Documentation Reports demonstrating compliance with HMMP
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
		the Authority						consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#34: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support American badger dens.	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Memorandum documenting compliance
	Bio-MM#47: Install Wildlife Fencing Prior to operation of the HST, the Contractor's Biologist will install free-ranging mammal-proof fencing along portions of the proposed project consistent with final design. The Project Biologist will verify that the installation is consistent with the designated terms and conditions in the applicable permits. The Project Biologist will prepare and submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Post-construction	Memorandum documenting compliance
	Bio-MM#48: Construction in Wildlife Movement Corridors. Before ground-disturbing activities, the Contractor's Biologist will submit a construction avoidance and minimization plan for the Eastman Lake-Bear Creek ECA to the Project Biologist for concurrence. During ground-disturbing activities, the Contractor will keep the Eastman Lake-Bear Creek ECA riparian corridors (including Deadman and Dutchman creeks) free of all equipment, storage materials, construction materials, and any significant potential impediments. The Contractor will minimize ground-disturbing activities within the Eastman Lake-Bear Creek ECA riparian corridors (Deadman and Dutchman creeks) during nighttime hours to the extent practicable. In addition, keep nighttime illumination (e.g., for security) from spilling into the ECA or shield nighttime lighting to avoid illumination spilling into the ECA. Inspections will verify compliance and the Project Biologist will report through an appropriate memorandum to the Mitigation Manager.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Post-construction	Memorandum documenting compliance
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State Streambeds. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Prior to ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation	Documentation Reports demonstrating compliance with HMMP

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
							prescribed in the resource agency permits.	
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#35: Project period impacts from the HST alternatives would permanently convert suitable habitat that has the potential to support San Joaquin kit fox dens.	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Condition of Design/Build Contract
	Bio-MM#47: Install Wildlife Fencing. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Condition of Design/Build Contract
	Bio-MM#48: Construction in Wildlife Movement Corridors. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Pre-construction and during construction	Condition of Design/Build Contract
	Bio-MM#56: Compensate for Destruction of Natal Dens. The Authority or its designee will mitigate the destruction of kit fox natal dens by the purchase of suitable, approved habitat (USFWS and CDFG). Replace habitat at a minimum of 1:1 acre of habitat in order to provide additional protection and habitat in a location consistent with the recovery of the species. Mitigate the impacts on San Joaquin kit fox in accordance with the USFWS Biological Opinion and/or CDFG 2081(b). The Project Biologist will submit a memorandum to the Mitigation Manager documenting compliance.	**Implementing Party:** Contractor's Biologist in coordination with the Authority **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Prior to operation	Memorandum documenting compliance with BO and 2081 Determination
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State	**Implementing Party:** Contractor's Biologist, Project	X				Prior to ground-disturbing	Condition of Design/Build Contract

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Streambeds. See description above.	Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority					activities	
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits.	Documentation Reports demonstrating compliance with HMMP
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#36: Project period impacts from the HST alternatives would permanently convert special-status plant communities (Great Valley Mixed Riparian and other riparian addressed in Bio#22).	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Condition of Design/Build Contract
	Bio-MM#49: Compensate for Permanent Riparian Impacts. See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Prior to operation	Post-construction compliance reports consistent with the appropriate agency-issued permits
	Bio-MM#51: Implement Conservation Guidelines During the Project Period for Valley Elderberry Longhorn Beetle. See description above.	**Implementing Party:** Contractor's Biologist in coordination with the Authority **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		During construction	Memorandum documenting compliance

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State Streambeds. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Prior to ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as described earlier) and/or other documentation prescribed in the resource agency permits.	Documentation Reports demonstrating compliance with HMMP
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite
	Bio-MM#4: Prepare and Implement a Weed Control Plan. See description above.	**Implementing Party:** Contractor's Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X			Prior to construction/monthly memorandum to document the progress of the Weed Control Plan and implementation	Condition of Design/Build Contract
Bio#37: Project period impacts from the HST alternatives would permanently convert jurisdictional waters.	**Bio-MM#14: Post-Construction Compliance Reports.** See description above.	**Implementing Party:** Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority			X		Post-construction	Condition of Design/Build Contract
	Bio-MM#57: Conduct Delineation of Jurisdictional Waters and State Streambeds. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X				Prior to ground-disturbing activities	Condition of Design/Build Contract
	Bio-MM#58: Prepare and Implement a Habitat Mitigation and Monitoring Plan. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist	X	X	X	X	Annual monitoring reports for 5 years (or less if success criteria are met as	Documentation Reports demonstrating compliance with HMMP

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
		Monitoring Party: Mitigation Manager in coordination with the Authority					described earlier) and/or other documentation prescribed in the resource agency permits.	
	Bio-MM#59: Compensate for Permanent Impacts on Jurisdictional Waters. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to Operation	Documentation of compliance with permit conditions
	Bio-MM#60: Offsite Habitat Restoration, Enhancement and Preservation. See description above.	**Implementing Party:** Contractor's Biologist, Project Biologist **Reporting Party:** Project Biologist **Monitoring Party:** Mitigation Manager in coordination with the Authority	X	X	X		Pre-Construction, Construction, Post-Construction	Offsite habitat restoration, enhancement, and preservation program will be designed, implemented, and monitored consistent with the terms and conditions of the USACE Section 404 Permit, CDFG 1600 Streambed Alteration Agreement, and CESA and federal ESA as they apply to their jurisdiction and resources onsite
	PK-MM#1: Compensate for Staging in Park Property for Construction. Options will include preparing a plan for alternative public recreation resources during the period of closure, and preparing signs and newsletters describing the project, its schedule, and the alternative public recreational opportunities. Alternative parks and recreational resources will include the installation of recreational facilities, trails, and landscaping on lands currently owned by the city but not already developed, or it will include temporary park development on open lands until the park can be reopened. Landscaping replacement will include replacement grass areas, tree replacement on a ratio of two 5-inch caliber trees for every tree removed and two shrubs for every shrub removed. All other facilities will be replaced or moved on a one-for-one ratio, including play equipment, benches, and the like.	**Implementing Party:** Contractor's Biologist **Monitoring/Reporting Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction/Post construction. Authority to coordinate with local jurisdictions.	The Authority and contractor will work with respective jurisdictions to develop a staging plan.
Bio#40: All of the HST alternatives would affect Camp Pashayan (within the San Joaquin River Ecological Reserve).	**PK-MM#1: Compensate for Staging in Park Property for Construction.** See description above.	**Implementing Party:** Contractor's Biologist **Monitoring/Reporting Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction/Post construction. Authority to coordinate with local jurisdictions.	The Authority and contractor will work with respective jurisdictions to develop a staging plan.
	PK-MM#4: Acquire Park Property for Camp Pashayan. Final design will continue to seek to minimize right-of-way impacts and pier placement in Camp Pashayan. Mitigation will include in-lieu fee for property impacts associated with pier installation as well as revegetation of disturbed areas with native plantings (consistent with CDFG vegetation/landscaping plans for the reserve).	**Implementing Party:** Contractor's Biologist and Authority **Monitoring/Reporting Party:** Mitigation Manager in coordination with the Authority	X				Prior to construction/monthly reporting	The Authority will work with the California Department of Fish and Game to prepare and execute an agreement to acquire the property.

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
Hydrology and Water Resources								
No significant impacts on hydrology and water resources have been identified.								
Geology, Soils, and Seismicity								
With implementation of standard engineering design measures and BMPs, impacts for elevated structures, retained cuts, retained fills, and at-grade segments of each alternative would be less than significant. Therefore, mitigation measures are not required.								
Hazardous Materials and Wastes								
HMW#1: Handling of Extremely Hazardous Materials within 0.25 mile of a School	**HMW-MM#1: Limit use of extremely hazardous materials near schools.** The contractor shall not handle an extremely hazardous substance (as defined in California Public Resources Code Section 21151.4) or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code within 0.25 mile of a school. Signage would be used to delimit all work areas within 0.25 mile of a school and the contractor would be required to monitor all use of extremely hazardous substances. Impacts to sensitive receptors are covered in **SO-MM#1**.	**Implementing Party:** Contractor **Monitoring/Reporting Party:** Mitigation Manager to verify compliance during construction.		X			Construction/Monthly reporting	Contract Requirements/Specifications
Safety and Security								
S&S #2: Increased demand for fire, rescue, and emergency services at stations and HMF.	**S&S-MM#2: Monitor response of local fire, rescue, and emergency service providers to incidents at stations and the HMF and provide a fair share of cost of service.** Upon approval of the Merced to Fresno Section, the Authority will monitor service levels in the vicinity of the Merced and Fresno stations, in order to determine baseline service demands. "Service levels" consist of the monthly volume of calls for fire and police protection, as well as city- or fire protection district-funded EMT/ambulance calls that occur within the station and HMF site service areas. Prior to operation of the stations for HST service, the Authority will enter into an agreement with the public service providers of fire, police, and emergency services to fund the Authority's fair share of services above the average baseline service demand level for the station and HMF service areas (as established during the monitoring period). The fair share will be based on projected passenger use for the first year of operations, with a growth factor for the first 5 years of operation. This cost-sharing agreement will include provisions for ongoing monitoring and future negotiated amendments as the stations are expanded or passenger use increases. Such amendments will be made on a regular basis for the first 5 years of station operation, as will be provided in the agreement. To make sure that services are made available, impact fees will not constitute the sole funding mechanism, although impact fees may be used to fund capital improvements or fixtures (for example, police substation, additional fire vehicles, onsite defibrillators) necessary to service delivery. After the first 5 years of operation, the Authority will enter into a new or revised agreement with the public service providers of fire, police, and emergency services to fund the Authority's fair share of services. The fair share will take into account the volume of ridership, past record and trends in service demand at the stations and HMF site, new local revenues derived from station area development, and any services that the Authority may be providing at the station.	**Implementing Party:** Authority **Monitoring/Reporting Party:** Authority	X	X	X	X	Monitoring of service levels during construction in the vicinity of the Merced and Fresno stations to determine baseline service demands. Prior to operation of the stations for HST service	Authority to fund through fair share of services agreement.

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
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Socioeconomics, Communities, and Environmental Justice								
SO#1:	**SO-MM#3: Implement measures to reduce impacts associated with the division of existing communities.** Minimize impacts associated with the Castle Commerce Center HMF guideway to the Merced Estate mobile home park. Make every effort to locate suitable replacement housing for displaced residents. In cases where residents wish to remain in their neighborhoods, the purchase and development of infill lots or other real estate, relocation of existing buildings to vacant lots, and coordination with city staff regarding zoning and permit issues may be required. This mitigation measure will be effective in minimizing the impacts of the project by reducing the distance that residences, businesses and community facilities are relocated.	**Implementing Party:** Authority in coordination with affected jurisdiction **Monitoring/Reporting Party:** Authority	X		X		Prior to acquisitions	Outreach efforts - recruitment, training, and job set-aside programs
	SO-MM#5: Continue outreach to disproportionately and negatively affected environmental justice communities of concern. The Authority will continue to conduct substantial environmental justice outreach activities in adversely affected neighborhoods to obtain resident feedback on potential impacts and suggestions for mitigation measures. Input from these communities will be used to refine project features during the design phase and facilitate the identification of the highest priority mitigation measures developed for the Merced to Fresno section. In addition, to offset any disproportionate effects, the Authority will develop special recruitment, training, and job set-aside programs so that minority and low-income populations are able to benefit from the jobs created by the project. This type of outreach is common for large infrastructure projects with long construction periods and has been found to be effective.	**Implementing Party:** Authority **Monitoring/Reporting Party:** Authority	X		X		Prior to acquisitions	Relocation Mitigation Plan
	SO-MM#6: Avoid displacements or consider housing options in Franklin-Beachwood, Le Grand, Fairmead, and rural areas. Displaced residents in these minority communities and rural areas may be unable to relocate within the same community because comparable replacement housing may not be available or limited at the time of acquisition. During property acquisition in these communities and rural areas, the Authority will consider all comparable replacement housing options to allow displaced residents to remain in their communities, including but not limited to the following: • Construct new housing on vacant lots within the communities. • For any large parcels, relocate the residential structure or structures on the property if that is feasible and would move them outside the project area. • Move the residential structures to nearby vacant parcels. This mitigation measure will be effective by minimizing the distances that residences or businesses have to relocate within these communities and by working to keep them within their current community.	**Implementing Party:** Authority **Monitoring/Reporting Party:** Authority	X		X		Prior to acquisitions and During property acquisitions	Relocation Mitigation Plan
	SO-MM#4: Implement measures to reduce impacts associated with the relocation of community facilities. Minimize impacts associated with the acquisition of the homeless shelter in Merced by conducting outreach and coordinating with the facility prior to acquisition. Coordinate with the respective parties prior to land acquisition to reconfigure or relocate facilities, as necessary, to minimize disruption to activities. To reduce disruption to the use of these community facilities, the Authority will make sure that reconfiguring of land uses or buildings or relocating of community facilities is completed before	**Implementing Party:** Authority **Monitoring/Reporting Party:** N/A	X	X			Final design and Prior to acquisitions	Outreach efforts - recruitment, training, and job set-aside programs

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
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	the demolition of any existing structures. Work with the City of Merced and Merced City School District to facilitate the construction of the facilities prior to demolition of the existing structures. During the design process, the Outreach Team will conduct targeted outreach efforts for these facilities to understand and determine their needs for siting criteria. This mitigation measure will be effective in minimizing the impacts of the project by completing new facilities prior to relocation being necessary, and by involving affected facilities in the process of identifying new locations for their facilities.							
SO#3: Displacement of Community Facility. Acquisition of a homeless shelter in the City of Merced.	**SO-MM#5: Continue outreach to disproportionately and negatively affected environmental justice communities of concern.** The Authority will continue to conduct substantial environmental justice outreach activities in adversely affected neighborhoods to obtain resident feedback on potential impacts and suggestions for mitigation measures. Input from these communities will be used to refine project features during the design phase and facilitate the identification of the highest priority mitigation measures developed for the Merced to Fresno section. In addition, to offset any disproportionate effects, the Authority will develop special recruitment, training, and job set-aside programs so that minority and low-income populations are able to benefit from the jobs created by the project. This type of outreach is common for large infrastructure projects with long construction periods and has been found to be effective.	**Implementing Party:** Authority **Monitoring/Reporting Party:** Authority	X	X			Prior to acquisitions	Outreach efforts - recruitment, training, and job set-aside programs
	SO-MM#5: Continue outreach to disproportionately and negatively affected environmental justice communities of concern. The Authority will continue to conduct substantial environmental justice outreach activities in adversely affected neighborhoods to obtain resident feedback on potential impacts and suggestions for mitigation measures. Input from these communities will be used to refine project features during the design phase and facilitate the identification of the highest priority mitigation measures developed for the Merced to Fresno section. In addition, to offset any disproportionate effects, the Authority will develop special recruitment, training, and job set-aside programs so that minority and low-income populations are able to benefit from the jobs created by the project. This type of outreach is common for large infrastructure projects with long construction periods and has been found to be effective.	**Implementing Party:** Authority **Monitoring/Reporting Party:** Authority	X	X			Prior to acquisitions	Outreach efforts - recruitment, training, and job set-aside programs
Station Planning, Land Use, and Development								
No impacts on land use have been identified that would be significant or potentially significant under CEQA. All three alternatives and the HMF sites are consistent with local and regional land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect. The alternatives and the HMF sites would not cause significant changes in land use patterns or intensities that would be incompatible with adjacent land uses. Station effects related to increased density and TOD are considered beneficial and would result in infill development and redevelopment of the downtown centers, which would reduce pressures on the surrounding agricultural lands.								
Agricultural Lands								
Ag#1: Permanent Conversion of Agricultural Land to Nonagricultural Use.	**Ag-MM#1: Preserve the Total Amount of Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland.** The Authority will enter into an agreement with the DOC California Farmland Conservancy Program to implement the preservation of farmland. The Authority will fund the California Farmland Conservancy Program's work to identify suitable agricultural land for mitigation of impacts and to fund the purchase of agricultural conservation easements from willing sellers. The performance standards for this measure are to preserve Important Farmland in an amount commensurate with the quantity and quality of the converted farmlands, within the same agricultural regions as the impacts occur, at a	**Implementing Party:** Authority & California Farmland Conservancy **Monitoring/Reporting Party:** Authority	X				Prior to construction/Monthly reporting Prior to construction	The Authority will enter into an agreement with the DOC California Farmland Conservancy Program to implement the preservation of farmland. The Authority and California Farmland Conservancy Program will develop selection criteria under this agreement to guide the pursuit and purchase of conservation easements.

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	replacement ratio of not less than 1:1. The California Farmland Conservancy Program will work with local, regional, or statewide entities whose purpose includes the acquisition and stewardship of agricultural conservation easements. The Authority and California Farmland Conservancy Program will develop selection criteria under this agreement to guide the pursuit and purchase of conservation easements. These will include, but are not limited to, provisions to ensure that the easements will conform to the requirements of Public Resources Code Section 10252 and to prioritize the acquisition of willing seller easements on lands that are adjacent to other protected agricultural lands or that would support the establishment of greenbelts and urban separators. This mitigation measure would be effective given the nationwide and local success of farmland preservation programs using agricultural conservation easements and the experience of the DOC California Farmland Conservancy program. However, because the mitigation does not anticipate the creation of new farmland (conversion of natural lands to agriculture), the Authority and FRA are not claiming that the mitigation measure would reduce impacts to a less than significant level.							
Electromagnetic Fields and Electromagnetic Interference								
The project would comply with applicable federal and state regulations and implement design strategies as outlined in the Final Statewide Program EIR/EIS (Authority and FRA 2005). No significant impacts would occur during construction nor operation of the Project Alternatives or HMFs.								
Parks, Recreation, and Open Space								
PK#4: Camp Pashayan (City of Fresno) Construction Impacts	**PK-MM#1: Compensate for Staging in Park Property for Construction.** The Authority will coordinate with the respective jurisdictions to establish appropriate compensation in terms of allowance or additional property to accommodate for displaced park use during construction. Options will include preparing a plan for alternative public recreation resources during the period of closure, and preparing signs and newsletters describing the project, its schedule, and the alternative public recreational opportunities. Alternative parks and recreational resources will include the installation of recreational facilities, trails, and landscaping on lands currently owned by the city but not already developed, or it will include temporary park development on open lands until the park can be reopened. Landscaping replacement will include replacement grass areas, tree replacement on a ratio of two 5-inch caliber trees for every tree removed and two shrubs for every shrub removed. All other facilities will be replaced or moved on a one-for-one ratio, including play equipment, benches, and the like.	**Implementing Party:** Contractor's Biologist **Monitoring/Reporting Party:** Mitigation Manager in coordination with the Authority	X	X	X		Prior to construction/Post construction. Authority to coordinate with local jurisdictions.	The Authority and contractor will work with respective jurisdictions to develop a staging plan.
PK#7: Camp Pashayan Park. At Camp Pashayan, 0.6 acre of park area would be acquired for support columns and easement for elevated structure.	**PK-MM#4: Acquire Park Property for Camp Pashayan.** Final design will continue to seek to minimize right-of-way impacts and pier placement in Camp Pashayan. Mitigation will include in-lieu fee for property impacts associated with pier installation as well as revegetation of disturbed areas with native plantings (consistent with CDFG vegetation/landscaping plans for the reserve).	**Implementing Party:** Contractor's Biologist and Authority **Monitoring/Reporting Party:** Mitigation Manager in coordination with the Authority	X				Prior to construction/monthly reporting	The Authority will work with the California Department of Fish and Game to prepare and execute an agreement to acquire the property.
PK#8: Roeding Park	**PK-MM#5: Address Noise at Roeding Park with City of Fresno.** To	**Implementing Party:** Contractor to identify sound barriers	X				Design and Construction	The Authority will work with the

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
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(City of Fresno) Noise Impacts on the eastern portions of the park	mitigate the noise impacts, a sound barrier approximately 2,800 feet in length will be constructed. It is assumed that a sound barrier will be 10 to 14 feet tall and have aesthetic treatment. A 10-foot-high sound barrier will reduce noise to 64 dBA at 250 feet inside the park and residual noise effects will occur. A 14-foot-high sound barrier will reduce noise effects to within 1 dB of no impact. Aesthetic treatment of the sound barrier will be selected with input from the community.	in construction plans. **Monitoring/Reporting Party:** Mitigation Manager to review plans to verify compliance with this measure.						City of Fresno as the resource owner to address noise impacts. It is possible that the City of Fresno would view the projected noise levels as acceptable and preferable to the implementation of mitigation measures.
Aesthetics and Visual Resources								
VQ#1: Visual Disturbance during Construction. Construction activities would cause visual impacts in urban areas.	**VQ-MM#2: Minimize Light Disturbance During Construction.** Where construction lighting will be required during nighttime construction, shield such lighting and direct it downward in such a manner that the light source is not visible offsite, and so that the light does not fall outside the boundaries of the project site to avoid light spillage offsite.	**Implementing Party:** Contractor **Monitoring/Reporting Party:** Mitigation Manager to verify compliance during construction.	X	X			Construction/Weekly reporting	Contract Requirements/ Specifications
VQ#2: Nighttime Lighting during Construction. Nighttime lighting would affect Merced and Fresno urban areas.	**VQ-MM#3: Incorporate Design Criteria for Elevated and Station Elements That Can Adapt to Local Context.** During final design of elevated guideways and the Merced and Fresno stations, the Authority will coordinate with local jurisdictions on the design of these facilities so that they are designed appropriately to fit in with the visual context of the areas near them. This will include the following activities: • For stations: During the station design process, establish a local consultation process with the City of Merced and the City of Fresno to identify and integrate local design features into the station design through a collaborative context-sensitive solutions approach. The process will include activities to solicit community input in their respective station areas. This effort will be coordinated with the station area planning process that will be undertaken by those cities under their station area planning grants. • For elevated guideways in cities or unincorporated communities: During the elevated guideway design process, establish a process with the city or county with jurisdiction over the land along the elevated guideway to advance the final design through a collaborative context-sensitive solutions approach. Participants in the consultation process will meet on a regular basis to develop a consensus on the urban design elements to be incorporated into the final guideway designs. The process will include activities to solicit community input in the affected neighborhoods. Actions taken to help achieve integration with the local design context during the context-sensitive solutions process will include the following: • Design HST stations and associated structures such as elevators, escalators, and walkways to be attractive architectural elements or features that add visual interest to the streetscapes near them. • Design HST station parking structures and adjacent areas to integrate visually into the areas where they would be located. Where the city has adopted applicable downtown design guidelines, the parking structures and adjacent areas will be designed to be compatible with the policies and principles of those guidelines.	**Implementing Party:** Contractor **Monitoring/Reporting Party:** Mitigation Manager to review plans to verify compliance with measure.	X				Final design and Construction/Monthly reporting	Established local consultation process with City of Merced and City of Fresno

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
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	• For the elevated guideways and columns, incorporate architectural elements, such as graceful curved or tapered sculptural forms and decorative surfaces, to provide visual interest. Include decorative texture treatments on large-scale concrete surfaces such as parapets and other portions of elevated guideways. Include a variety of texture, shadow lines, and other surface articulation to add visual and thematic interest. Closely coordinate the design of guideway columns and parapets with station and platform architecture to promote unity and coherence where guideways lie adjacent to stations. • Integrate trees and landscaping into the station streetscape and plaza plans where possible to soften and buffer the appearance of guideways, columns, and elevated stations. This will be consistent with the principles of crime prevention through environmental design. • For the stations, structures, and related open spaces: incorporate design features that provide interest and reflect the local design context. These features could include landscaping, lighting, and public art.							
VQ #11. Sound Barrier and Retaining Wall Would Block Views.	**VQ-MM#5: Provide Landscape Treatments along the HST Project Overcrossings and Retained Fill Elements of the HST.** Upon the completion of construction, the Authority will plant the surface of the ground supporting the overpasses (slope-fill overpasses) and retained fill elements with vegetation consistent with the surrounding landscape in terms of vegetative type, color, texture, and form. During final design, the Authority will consult with the affected cities and counties regarding the landscaping program for planting the slopes of the overcrossings and retained fill. Plant species will be selected on the basis of their mature size and shape, growth rate, and drought tolerance. No species that is listed on the Invasive Species Council of California's list of invasive species will be planted. The landscaping will be continuously maintained and appropriate irrigation systems will be installed, if needed. Where wall structures supporting the overpasses or retained fill are proposed, the structure will employ architectural details and low-maintenance trees and other vegetation to screen the structure, minimize graffiti, and reduce the effects of large walls. Surface coatings will be applied on wood and concrete to facilitate cleaning and the removal of graffiti. Any graffiti or visual defacement or damage of fencing and walls will be painted over or repaired within a reasonable time after notification.	**Implementing Party:** Contractor/Authority **Monitoring/Reporting Party:** Mitigation Manager to review plans to verify compliance with measure.			X		Pre and Post Construction/monthly reporting	Contract Requirements/ Specifications
	VQ-MM#6: Provide Sound Barrier Treatments. The Authority will design a range of sound barrier treatments for visually sensitive areas, such as those where residential views of open landscaped areas would change or in urban areas where sound barriers would adversely affect the existing character and setting. The Authority will develop the treatments during final design and integrate them into the final project design. The treatments will include, but are not limited to, the following: • Sound barriers along elevated guideways may incorporate transparent materials, where sensitive views would be adversely affected by solid sound barriers. • Sound barriers will use non-reflective materials and will be of a neutral color. • Surface design enhancements and vegetation appropriate to the visual context of the area will be installed with the sound barriers. Vegetation will	**Implementing Party:** Contractor **Monitoring/Reporting Party:** Mitigation Manager to review construction plans to verify compliance with this measure.		X			Construction/monthly reporting	Contract Requirements/ Specifications

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
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	be installed consistent with the provisions of VQ-MM#5. Surface enhancements will be consistent with the design features and will include architectural elements (i.e. stamped pattern, surface articulation, and decorative texture treatment as determined acceptable to the local jurisdiction. Surface coatings will be used on wood and concrete sound barriers to facilitate cleaning and the removal of graffiti.							
	VQ-MM#7: Screen Traction Power Distribution Station. Upon completion of station construction, the Authority will screen the traction power substations (located at approximately 30-mile intervals along any of the HST alternatives) from public view through the use of landscaping or solid walls/fences. This will consist of context-appropriate landscaping of a type and scale that does not draw attention to the station. Plant species will be selected on the basis of their mature size and shape, growth rate, hardiness, and drought tolerance. No species that is listed on the Invasive Species Council of California's list of invasive species will be planted. The landscaping will be continuously maintained and appropriate irrigation systems will be installed within the landscaped areas. Walls will be constructed of cinder-block or similar material and will be painted a neutral color to blend in with the surrounding context. If a chain-link or cyclone fence is used, it will include wood slats in the fencing. Any graffiti or visual defacement or damage of fencing and walls will be painted over or repaired within a reasonable period as agreed between the Authority and local jurisdiction.	**Implementing Party:** Contractor/Authority **Monitoring/Reporting Party:** Mitigation Manager to review construction plans to verify compliance with this measure.			X		Post Construction	Contract Requirements/ Specifications
VQ IMPACT #12. Traction Power Distribution Stations Would Alter Visual Character or Block Views.	**VQ-MM#7: Screen Traction Power Distribution Station.** Upon completion of station construction, the Authority will screen the traction power substations (located at approximately 30-mile intervals along any of the HST alternatives) from public view through the use of landscaping or solid walls/fences. This will consist of context-appropriate landscaping of a type and scale that does not draw attention to the station. Plant species will be selected on the basis of their mature size and shape, growth rate, hardiness, and drought tolerance. No species that is listed on the Invasive Species Council of California's list of invasive species will be planted. The landscaping will be continuously maintained and appropriate irrigation systems will be installed within the landscaped areas. Walls will be constructed of cinder-block or similar material and will be painted a neutral color to blend in with the surrounding context. If a chain-link or cyclone fence is used, it will include wood slats in the fencing. Any graffiti or visual defacement or damage of fencing and walls will be painted over or repaired within a reasonable period as agreed between the Authority and local jurisdiction.	**Implementing Party:** Contractor/Authority **Monitoring/Reporting Party:** Mitigation Manager to review construction plans to verify compliance with this measure.			X		Post Construction	Contract Requirements/ Specifications
Cultural and Paleontological Resources								
Arch#1: Effect on Significant Prehistoric and Historic-Era Archaeological Resources During Construction	**Arch-MM#1: Conduct Archaeological Training.** Prior to ground-disturbing activities within the project alternatives, a qualified professional archaeologist, who meets the SOI's Standards for Archaeology, will develop a training program and printed material to be presented to construction personnel. The purpose of this training and accompanying materials will be to familiarize construction personnel with the relevant legal (Section 106/NEPA/CEQA) context for cultural resources of the project and with the types of cultural sites, features, and artifacts that could be uncovered during construction activities. These training sessions will be conducted prior to commencing construction within discrete portions of the project alternatives or as needed as construction crews and supervisors may change. The archaeological training program is further detailed in the ATP, which is being developed with input from all	**Implementing Party:** Qualified Professional Archaeologist **Monitoring/Reporting Party:** Qualified Professional Archaeologist	X				Prior to ground-disturbing activities/weekly monitoring	Worker Environmental Awareness Program training ATP MOA An Unanticipated Discoveries Plan is a part of the ATP and has been developed, in coordination with the

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
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	consulting parties, including: • Merced County • City of Merced • City of Merced Design Review Board/Commission and Historic Preservation Commission • Fresno County • City of Fresno • City of Fresno Historic Preservation Program • Fresno County Landmarks and Records Advisory Commission • Madera County • City of Madera • California SHPO • ACHP In addition, consultation is being undertaken with participating parties and entities that have expressed a formal interest in being involved with the project, including Native American tribes. The ATP will reflect the input of all parties. The ATP is a living document, monitored by all of the consulting parties so that compliance activities and mitigation commitments can be tracked. The ATP will be also be tied to the MOA, which will also contain compliance and tracking stipulations tied to each specific mitigation item. The combination of the ATP and the MOA, along with ongoing coordination with the consulting parties, tracks and measures the commitments.							consulting parties, to detail the specific procedures to be followed if archaeological materials are found during construction. Implement an ADRP if the circumstances warrant an ADRP. The Authority will provide the ADRP, as an element of the treatment plan prepared for the section, to the MOA signatories and MOA concurring parties for review and comment. Programmatic Agreement (PA)
	Arch-MM#2: Halt Work in the Event of an Archaeological Discovery. If any cultural resources are discovered during ground-disturbing activities, all work within 50 feet of the resources will halt, and the project proponent will consult with a qualified archaeologist to assess the significance of the find and any work may proceed on other parts of the project site while mitigation for historical resources or unique archaeological resources is being carried out. An Unanticipated Discoveries Plan will be developed in coordination with the consulting parties to detail the specific procedures to be followed if archaeological materials are found during construction. This plan is a part of the ATP, which is also being developed through a consultative process. The California State Lands Commission (CSLC) will be notified if the find is a cultural resource on or in the submerged lands of California, consequently under the jurisdiction of the CSLC. The project proponent will comply with all applicable rules and regulations promulgated by CSLC with respect to cultural resources located in submerged lands, and in accordance with the Programmatic Agreement (PA). If human remains are encountered, the project proponent will comply with applicable laws and regulations regarding notification and disposition of the remains. If the coroner determines that the remains are Native American, the coroner will notify the Native American Heritage Commission (NAHC). If any find is determined to be significant, the project proponent and the archaeologist will meet to determine the appropriate avoidance measures or other appropriate mitigation in conjunction with the State Historic Preservation Officer (SHPO) and the MOA signatories. All significant cultural materials recovered will be, as necessary and at the discretion of the consulting	**Implementing Party:** Qualified Professional Archaeologist, in consultation with the California State Lands Commission, the Native American Heritage Commission, and the State Historic Preservation Office, as appropriate. **Monitoring/Reporting Party:** Archaeological Monitor, in coordination with Authority, SHPO and appropriate consulting agencies		X			Construction	ATP MOA

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	archaeologist, subject to scientific analysis, professional museum curation, and documentation according to current professional standards as determined in the project MOA. In considering any suggested mitigation proposed by the consulting archaeologist to mitigate impacts on historical resources or unique archaeological resources, a determination will be made whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If, in consultation with the consulting archaeologist, it is determined that a significant archaeological resource is present and that the resource could be adversely affected by the proposed project, one of the following actions may be followed, as feasible: • If prudent and feasible, redesign the project to avoid any adverse effect on the significant archaeological resource. • Implement Arch-MM#3, Intentional Site Burial for Site Preservation. • Implement an archaeological data recovery program (ADRP) (unless the archaeologist determines that the archaeological resource is of greater interpretive use than research significance and that interpretive use of the resource is feasible). If the circumstances warrant an ADRP, such a program will be conducted. Together with a project archaeologist, the scope of the ADRP will be determined. The archaeologist will prepare a draft ADRP, which will identify the scientific/historical research questions that are applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes will address the applicable research questions. The Authority will provide the ADRP, as an element of the treatment plan prepared for the section, to the MOA signatories and MOA concurring parties for review and comment. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods will not be applied to portions of the archaeological resources if nondestructive methods are practical. Performance tracking of this mitigation measure will be based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.							
	Arch-MM#3: Plan an Intentional Site Burial Preservation In-Place. If project engineering concludes that avoidance is not feasible, a process to determine whether the site can be preserved through intentional site burial will be considered. When complete avoidance is not possible, preservation in-place is the preferred form of mitigation for an "historical resource of an archaeological nature" because it retains the relationships between artifact and context, and may avoid conflicts with groups associated with the site, pursuant to PRC 15126.4(b)(3)(A). The process, presented in overview below, is specified in detail in the ATP, which is being developed in coordination with all of the project's consulting parties. To intentionally bury a site, it will be necessary to conduct test excavations to determine the vertical and horizontal extent of the identified resources discovered as planning proceeds or through accidental discovery. If excavations have not yet been conducted for the purpose of evaluating the site for eligibility in accordance with Section 106 of the NHPA, the Authority will contract with a qualified archaeologist to conduct a formal excavation of the	**Implementing Party:** Qualified Professional Archaeologist **Monitoring/Reporting Party:** Qualified Professional Archaeologist, in coordination with the Authority, SHPO and appropriate consulting agencies	X	X	X		Prior to construction/Weekly reporting	ATP MOA

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	site to delineate the site boundaries and to determine the site's eligibility for the CRHR or NRHP. If found to be eligible and avoidance is not possible, consideration will be given to intentional site burial. The contracted archaeologist will, in addition to the formal delineation of the site boundaries, prepare and implement a design plan to dictate the conditions of the intentional site burial according to the recommendations discussed in the National Park Service Technical Brief Number 5, Intentional Site Burial: A Technique to Protect Against National or Mechanical Loss (Thorne 1991). Among the requirements of an effective capping, the mechanical process of burying the site must be designed in a manner that will make sure that the site matrix is protected during the placement process and during the operation of the HST. Preconstruction testing can be used to determine the construction equipment and fill material load limits that are allowable without causing compression or warpage of the artifact and feature components of the site. If the preconstruction testing determines that compression or warpage of the site is probable and the mitigation will not effectively reduce the effects of the project to less than significant levels, additional mitigation, such as data recovery, will be necessary. Furthermore, if it is determined that the engineering requirements of the construction and operation of the HST at the location of the site prohibit the effective avoidance of the site, or if the surrounding conditions prohibit the protection or preservation of the archaeological components, the mitigation of data recovery will be the only feasible mitigation (see Arch-MM#2). In addition, the Authority will make provisions with the contracted archaeologist to monitor the site after the burial process is completed. Performance tracking of this mitigation measure will be based upon successful implementation and the approval of the documentation by the SHPO and appropriate consulting parties.							
	Arch-MM#4: Conduct Archaeological Monitoring in Proximity to Identified Sites or Areas of Sensitivity. Ground-disturbing activities that have the potential to affect archaeological remains may occur in areas that have been identified as either the location of a known archaeological site, or in an area known to be sensitive for the presence of buried cultural resources. The Authority will retain the services of a qualified archaeological monitor who will be present during all ground-disturbing construction activities occurring in native sediments/soils. The process for archaeological monitoring, presented in overview below, will be specified in detail in the ATP, developed in coordination with all of the project's consulting parties. In the event that cultural resources are exposed during construction, following guidelines presented in the ATP, the archaeological monitors will be empowered to temporarily halt activities in the immediate vicinity of the discovery while it is evaluated for significance. If the archaeologist determines that the cultural resources exposed are unique archaeological resources as defined by Section 21083.2 of CEQA, then the archaeologist will conduct additional excavations to avoid impacts on these resources by the development. If they are not "unique," then no further mitigation will be required. Unique cultural resources will be determined based on the criteria set forth in Section 21083.2 of CEQA. The Authority will seek Native American	**Implementing Party:** Qualified Professional Archaeologist **Monitoring/Reporting Party:** Archaeological Monitor, in coordination with the Authority, SHPO and appropriate consulting agencies	X	X	X		Construction/Weekly reporting	ATP MOA

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	input and consultation under terms and conditions specified in the ATP and MOA. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.							
	Pale-MM#1: Engage a Paleontological Resources Specialist to Direct Monitoring during Construction. At least 120 days prior to construction, a paleontological resources specialist (PRS) will be designated for the project and will be responsible for determining where and when paleontological resources monitoring should be conducted. Paleontological resources monitors (PRMs) will be selected by the PRS based on their qualifications, and the scope and nature of their monitoring will be determined and directed based on the Paleontological Resource Monitoring and Mitigation Plan (PRMMP). The PRS will be responsible for developing and implementing the Worker Environmental Awareness Program training. All management and supervisory personnel and construction workers involved with ground-disturbing activities will be required to take this training prior to beginning work on the project and will be provided with the necessary resources for response in case paleontological resources are found during construction. The PRS will document any discoveries, as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in CEQA Guidelines Section 15064.5.	**Implementing Party:** A paleontological resources specialist (PRS) & paleontological resources monitors **Monitoring/Reporting Party:** Authority	X	X			Identify PRS at least 120 days prior to construction The PRS will document any discoveries, as needed, evaluate the potential resource, and assess the significance of the find.	Paleontological Resource Monitoring and Mitigation Plan (PRMMP)
Pale#2: Effect on Paleontological Resources during Construction	**Pale-MM#2: Prepare and Implement a PRMMP.** Paleontological monitoring and mitigation measures are restricted to those construction-related activities that will result in the disturbance of paleontologically sensitive sediments. The PRMMP will include a description of when and where construction monitoring will be required; emergency discovery procedures; sampling and data recovery procedures; procedures for the preparation, identification, analysis, and curation of fossil specimens and data recovered; preconstruction coordination procedures; and procedures for reporting the results of the monitoring and mitigation program. In general, the monitoring program will reflect site-specific construction of the selected option. The PRMMP will be consistent with Society of Vertebrate Paleontology guidelines (SVP 1995) for the mitigation of construction-related impacts on paleontological resources. The PRMMP will also be consistent with the SVP (1996a, b) conditions for receivership of paleontological collections and any specific requirements of the designated repository for any fossils collected.	**Implementing Party:** Paleontological resources monitor **Monitoring/Reporting Party:** Authority	X	X			Construction	PRMMP Worker Environmental Awareness Program training
	Pale-MM#3: Halt Construction when Paleontological Resources Are Found. If fossil or fossil-bearing deposits are discovered during construction, regardless of the individual making a paleontological discovery, construction activity in the immediate vicinity of the discovery will cease. This requirement will be spelled out in both the PRMMP and the Worker Environmental Awareness Program. Construction activity may continue elsewhere provided that it continues to be monitored as appropriate. If the discovery is made by someone other than a PRM or the PRS, a PRM or the PRS will immediately be notified.	**Implementing Party:** The person that makes a paleontological discovery and/or the PRM or PRS **Monitoring/**Reporting Party: Mitigation Manager and PRM/PRS to halt construction and notify Authority of discovery.	X	X			Construction/weekly reporting	A Built Environment Treatment Plan (BETP) provides additional detail on the methodology for the avoidance of adverse vibration effects, and how that will be implemented during the project.
	Hist-MM#1: Avoid Adverse Vibration Effects. The HST Project will develop construction methods to avoid indirect adverse effects or substantial adverse change to any historic properties (Section 106) or historical resources (CEQA) from vibration caused by construction activities. Vibration from impact pile-driving during construction could cause the physical destruction, damage,	**Implementing Party:** Contractor **Monitoring/Reporting Party:** Authority, in consultation with the SHPO and appropriate consulting agencies.	X	X	X		Preconstruction surveys and Construction	BETP PA

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	or alteration of historic properties or historical resources if the pile-driving is within 25 to 50 feet of the building. Because this impact pile-driving could cause adverse effects or substantial adverse changes, alternative construction methods causing less than 0.12 peak particle velocity of one inch per second (0.12 PPV in/sec) measured at the receptor would be developed for construction activities near historic properties or historical resources if they are determined to be extremely susceptible to vibration damage. If piling is more than 50 feet from buildings, or if alternative methods such as push piling or auger piling can be used, damage from construction vibration should not be an issue. Preconstruction surveys conducted at locations within 50 feet of piling would document existing condition of buildings in case there is an issue during or after construction. The mitigation measure described above is consistent with FRA's High-Speed Ground Transportation Noise and Vibration Impact Assessment (2005) for evaluation of noise and vibration impacts associated with HSTs. A BETP will be prepared that provides additional detail on the methodology for the avoidance of adverse vibration effects, and how that will be implemented during the project. The BETP is being developed in coordination with the project's consulting parties to verify that all parties have a role in the generation of this plan. Performance tracking of this mitigation measure is based upon successful implementation and the approval of the documentation by the SHPO and appropriate consulting parties.							
Hist#1: Effect on Historically Significant Built-Environment Resources During Construction	**Hist-MM#2: Develop Protection and Stabilization Measures.** The BETP will identify historic properties/historical resources that will require protection and/or stabilization prior to the start of construction of the project. Properties subject to this mitigation activity include any that are physically affected, and/or relocated, and/or in close enough proximity to require protection. This mitigation will be used to confirm that adverse effects on historic properties/historical resources will be either avoided entirely, or minimized to the extent possible. This mitigation will be developed in consultation with the landowner and land-owning agencies, as well as the SHPO and the MOA signatories, as required by the PA. Such measures will include, but will not be limited to, vibration monitoring of construction in the vicinity of historic properties; cordoning off of resources, such as traffic, equipment storage, and personnel, from construction activities; shielding of resources from dust or debris; and stabilization of buildings adjacent to construction. For buildings that are to be moved, such measures will include stabilization of buildings and structures before, during, and after relocation; protection of buildings and structures during temporary storage; and relocation at a new site and during subsequent rehabilitation. Moving buildings could result in minor impacts on air emissions from equipment and vehicles and minor effects on developed or undeveloped sites. Protection and stabilization measures proposed for impacted resources will be presented in more detail in the BETP, a plan that is being developed with critical input from all of the project's consulting parties. Performance tracking of this mitigation measure is based upon successful implementation and the approval of the documentation by the SHPO and appropriate consulting parties	**Implementing Party:** Contractor and Authority, in consultation with the landowner, land-owning agencies, SHPO, and the MOA signatories, as required by the Programmatic Agreement (PA). **Monitoring/Reporting Party:** Authority, in consultation with the SHPO and appropriate consulting agencies	X	X			Preconstruction surveys and Construction/weekly reporting	BETP PA Historic Structure Report (HSR) and the relocation plan
	Hist-MM#3: Minimize Adverse Effects through Relocation of Historic Structures. The BETP will identify historic properties/historical resources that	**Implementing Party:** Contractor **Monitoring/Reporting Party:** Authority, in consultation	X	X			Preconstruction surveys and Construction/weekly	BETP

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	will be relocated to help avoid destruction and minimize the direct adverse effect of their physical damage or alteration. The plan for relocation and implementation of relocation will take place prior to construction. The relocation of the historic properties/historical resources will take into account the historic site and layout (i.e., the orientation of the buildings to the cardinal directions), as well as their potential re-use. All structures will be thoroughly recorded in a Historic Structure Report (HSR) (see below), and the relocation plan will provide for stabilization of the structures before, during, and after the move. The project's consulting parties will provide input to develop the relocation of historic structures section of the BETP in an effort to provide a comprehensive and thorough approach that would best meet the needs of the parties as well as the resources. Relocating historic structures has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful relocation of resources and the approval of the process by the SHPO and appropriate consulting parties.	with the SHPO and appropriate consulting agencies					reporting	Photographs and nomination document
	Hist-MM#5: Prepare and Submit NRHP Nominations. The BETP will identify specific historic properties/historical resources for nomination to the NRHP Program of the National Park Service (NPS). Properties subject to this mitigation will be treated in consultation with the landowner, or land-owning agencies, and the CEQA lead agency (i.e., the Authority). Current photographs of the property used in the nomination(s) will be taken prior to the start of project construction. The nomination document may also use other current and/or historic images prepared as part of other mitigation activities. Preparing and submitting NRHP nominations has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.	**Implementing Party:** Authority **Monitoring/Reporting Party:** Authority, in consultation with the SHPO and appropriate consulting agencies	X	X			Prior to construction/monthly reporting	BETP Photographs and nomination document
	Hist-MM#6: Prepare and Submit CRHR Nominations. The BETP identifies specific historical resources for nomination to the CRHR Program at the California OHP. Current photographs of the resource used in the nomination(s) will be made prior to the start of construction. The nomination document may also use current and/or historic images prepared as part of other mitigation activities. Properties subject to this mitigation will be treated in consultation with the landowner, or land-owning agencies, and the CEQA lead agency (i.e., the Authority). Preparing and submitting CRHR nominations has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.	**Implementing Party:** Authority **Monitoring/Reporting Party:** Authority, in consultation with the SHPO and appropriate consulting agencies	X	X			Prior to construction	BETP Photographs and recordation document per National Parks Service (NPS) HABS/HAER/HALS guidelines (up to Level II HABS written data standards)
	Hist-MM#7: Prepare and Submit HABS/ HAER/ HALS Documentation. The BETP identifies specific historical resources that would be physically altered, damaged, relocated, or destroyed by the project and that may be documented in compliance with the HABS/HAER/HALS programs. Consultation with the SHPO, NPS, and the consulting parties will be required if any of the resources must be documented to these standards. Prior to the start of construction, in consultation with the Western Regional	**Implementing Party:** Authority, in consultation with the Western Regional Office of the NPS **Monitoring/Reporting Party:** Authority, in consultation with the SHPO and appropriate consulting agencies	X				Prior to construction	BETP HSR

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	Office of the NPS, Oakland, California, large-format (4-inch by 5-inch, or larger, negative-size) black and white photographs will be taken of these historic properties/historical resources showing them in context, as well as details of character-defining features. The photographs will be processed for archival permanence in accordance with HABS/HAER/HALS photographic specifications. Each view will be fully captioned and, if necessary, perspective corrected. Oblique aerial photography will be considered as a photographic recordation option in these coordination efforts. The recordation will follow the NPS HABS/HAER/HALS guidelines, and the report format, views, and other documentation details will be coordinated with the NPS. It is anticipated that the recordation of historic properties will be completed to Level II HABS written data standards and will include archival and digital reproduction of historic images, plans, and drawings, if available. Copies of the documentation will be offered to the appropriate local governments, historical societies and agencies, and libraries. The documentation will also be offered in printed and electronic form to any repository or organization upon which SHPO, the Authority, and local agency with jurisdiction over the property, through consultation, may agree. The electronic copy of the report may also be placed on an agency or organization's web site. Preparing and submitting HABS/HAER/HALS documentation has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.							
	Hist-MM#8: Prepare Historic Structure Reports. The BETP identifies historic properties/historical resources that would be physically altered, damaged, or relocated that would be subject to an HSR. The HSR will be prepared prior to the start of construction. The HSR will follow the general guidelines for such reports as described in the California OHP publication, "Historic Structure Report Format" (OHP n.d.). The scope of each HSR will be developed in consultation with the land-owning agencies, the SHPO, and appropriate consulting parties. The HSR will include documentation of existing landscaping, if appropriate. The HSRs may be used in the ongoing planning process and re-use of the properties, and may be coordinated with the other mitigation documentation activities, such as HABS/HAER records. Preparing HSRs has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties.	**Implementing Party:** Authority **Monitoring/Reporting Party:** Authority, in consultation with the SHPO and appropriate consulting agencies	X				Prior to construction	BETP Interpretive exhibits Informative permanent metal plaques
	Hist-MM#9: Prepare Interpretive Exhibits. Some historic properties/historical resources may be identified in the BETP for historic interpretation. Interpretive exhibits will provide information regarding the specific historic property or historical resource. The interpretive exhibits will utilize images, narrative history, drawings, or other material produced for the mitigation described above, including the HABS/HAER reports, NRHP and CRHR nominations, or other archival sources. The interpretive exhibits may be in the form of, but are not limited to, interpretive display panels and/or printed material for dissemination to the public. The interpretive exhibits may be installed at local libraries, historical societies, or public buildings.	**Implementing Party:** Authority **Monitoring/Reporting Party:** Authority, in consultation with the SHPO and appropriate consulting agencies			X		Post-construction/annual reporting	BETP Photographic documentation Plan for repairs to historic properties

Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Mitigation Timing					Implementation Mechanism or Tool
			Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	
	All historic properties/historical resources demolished by the project will be the subject of informative permanent metal plaques that will be installed at the site of the demolished historic property, or at nearby public locations. The plaques will provide a brief history of the property, its engineering/architectural features and characteristics, and the reasons for and date of its demolition. Preparing interpretive exhibits has proven to be effective in achieving the stewardship goals of Section 106 and CEQA review. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties							
	Hist-MM#10: Plan Repair of Inadvertent Damage. The BETP provides a plan for the repair of inadvertent damage to historic properties/historical resources. The plan will be developed prior to construction, and it states that damage resulting from the project to any of the historic properties/historical resources near construction activities will be repaired in accordance with the SOI's Standards for Rehabilitation. The HSR, and/or HABS/HAER, recordation will photographically document the condition of historic properties/historical resources prior to the start of construction to establish the baseline condition for assessing damage. A copy of this photographic documentation will be provided to the landowner or land-owning agencies. Prior to implementation, plans for any repairs to historic properties will be submitted for SHPO review and comment to verify conformance with the SOI's Standards for Rehabilitation. Performance tracking of this mitigation measure is based upon successful repair of any damage to historic properties/historical resources and approval of that work by the SHPO and appropriate consulting parties.	**Implementing Party:** Authority **Monitoring/Reporting Party:** Authority, in consultation with the SHPO and appropriate consulting agencies		X	X		Prior to construction	Historic American Building Survey (HABS)/Historic American Engineering Record (HAER)/ Conformance with SOI's Standards of Rehabilitation
	PK-MM#5: Address Noise at Roeding Park with City of Fresno To mitigate the noise impacts, a sound barrier approximately 2,800 feet in length will be constructed. It is assumed that a sound barrier will be 10 to 14 feet tall and have aesthetic treatment. A 10-foot-high sound barrier will reduce noise to 64 dBA at 250 feet inside the park and residual noise effects will occur. A 14-foot-high sound barrier will reduce noise effects to within 1 dB of no impact. Aesthetic treatment of the sound barrier will be selected with input from the community.	**Implementing Party:** Contractor to identify sound barriers in construction plans. **Monitoring/Reporting Party:** Mitigation Manager to review plans to verify compliance with this measure.	X				Design and Construction	The Authority will work with the City of Fresno as the resource owner to address noise impacts. It is possible that the City of Fresno would view the projected noise levels as acceptable and preferable to the implementation of mitigation measures.
Hist#2: Effect on Historically Significant Built-Environment Resources During Operation	**Hist-MM#4: Minimize Adverse Operational Noise Effects.** The BETP will identify historic properties/historical resources that will be subject to treatment to help minimize indirect adverse effects caused by operational noise of the HST Project. Properties subject to this mitigation will be identified in the BETP and will be treated in consultation with the landowner, or land-owning agencies, and the CEQA lead agency (Authority). Preliminary project design options, such as noise walls, have been developed to help reduce noise impacts and follow FRA methodologies for noise abatement. The measures proposed to help minimize adverse effects caused by operational noise will be presented in more detail in the BETP, a plan that is being developed with critical input from all of the project's consulting parties. Performance tracking of this mitigation measure is based upon successful implementation and approval of the documentation by the SHPO and appropriate consulting parties. Design options implemented as part of mitigation measures, such as noise walls, have the potential to cause additional impacts, such as visual and setting alterations. Additional environmental studies will be conducted to address these potential impacts as necessary.	**Implementing Party:** Contractor, in consultation with the landowner, or land-owning agencies, and the CEQA lead agency **Monitoring/Reporting Party:** Authority	X	X	X		Preconstruction and Construction	BETP PA Historic American Building Survey (HABS)/Historic American Engineering Record (HAER)/ Historic American Landscape Survey (HALS) programs

			Mitigation Timing					
Significant Impact	Mitigation Measure	Implementing Party and Monitoring /Reporting Party	Pre-Construction	Construction	Post-Construction	Operations	Implementation Schedule/ Reporting Schedule	Implementation Mechanism or Tool
	These options will be further developed during project design and will be implemented during construction. Historic properties/historical resources subject to this mitigation measure will be thoroughly recorded in the appropriate format of the Historic American Building Survey (HABS)/Historic American Engineering Record (HAER)/ Historic American Landscape Survey (HALS) programs (see Hist-MM#7) prior to construction of the HST Project. The mitigation measure described above is consistent with FRA's High-Speed Ground Transportation Noise and Vibration Impact Assessment (2005) for evaluation of noise and vibration impacts associated with HSTs.							

APPENDIX C

Special-Status Plant and Wildlife Species with Potential to Occur in the Project Vicinity

Table 3.7-A1-1
Special-Status Plant Species with Potential to Occur in the Project Vicinity

Scientific Name Common Name	Federal Status [a]	State Status [b]	CNPS[c]	Potential to Occur			
				UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
Alismataceae							
Sagittaria sanfordii Sanford's arrowhead	--	--	List 1B.2	High	High	High	Castle Commerce Center: High Harris-DeJager: High Fagundes: High Gordon-Shaw: High Kojima Development: High
Apiaceae							
Eryngium racemosum Delta button celery	--	E	List 1B.1	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Eryngium spinosepalum spiny-sepaled button-celery	--	--	List 1B.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima – Moderate
Asteraceae							
Calycadenia hooveri Hoover's calycadenia	--	--	List 1B.3	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes - Moderate Gordon-Shaw: Moderate Kojima – Moderate

Scientific Name Common Name	Federal Status [a]	State Status [b]	CNPS[c]	Potential to Occur			
				UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	--	--	List 1B.1	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima - Moderate
Pseudobahia bahiifolia Hartweg's golden sunburst	E	E	List 1B.1	Moderate	Moderate	Moderate	Castle Commerce Center: Unlikely Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely Fagundes: Unlikely Kojima Development: Moderate
Trichocoronis wrightii var. wrightii Wright's trichocoronis	--	--	List 2.1	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Brassicaceae							
Lepidium latipes var. *heckardii* Heckard's pepper-grass	--	--	List 1B.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely Kojima Development: Moderate
Tropidocarpum capparideum caper-fruited tropidocarpum	--	--	List 1B.1	High	High	High	Castle Commerce Center: Unlikely Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely

Scientific Name Common Name	Federal Status [a]	State Status [b]	CNPS[c]	Potential to Occur			
				UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
							Kojima Development: Moderate
Campanulaceae							
Downingia pusilla dwarf downingia	--	--	List 2.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Chenopodiaceae							
Atriplex cordulata heartscale	--	--	List 1B.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely Kojima Development: Moderate
Atriplex depressa brittlescale	--	--	List 1B.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Atriplex joaquiniana San Joaquin spearscale	--	--	List 1B.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate

Scientific Name Common Name	Federal Status [a]	State Status [b]	CNPS[c]	Potential to Occur			
				UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
Atriplex minuscule lesser saltscale	--	--	List 1B.1	High	High	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Atriplex persistens vernal pool smallscale	--	--	List 1B.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Atriplex subtilis subtle orache	--	--	List 1B.2	High	High	Moderate	Castle Commerce Center: Unlikely Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely Kojima Development: Moderate
Atriplex vallicola Lost Hills crownscale	--	--	List 1B.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Euphorbiaceae							
Chamaesyce hooveri Hoover's spurge *Critical Habitat*	T	--	List 1B.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate

Scientific Name Common Name	Federal Status [a]	State Status [b]	CNPS[c]	Potential to Occur			
				UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
							Kojima Development: Moderate
Fabaceae							
Astragalus tener var. *tener* alkali milk-vetch	--	--	List 1B.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Hydrophyllaceae							
Phacelia ciliata var. opaca Merced phacelia	--	--	List 1B.2	Moderate	High	Moderate	Castle Commerce Center: Unlikely Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely Kojima Development: Moderate
Malvaceae							
Sidalcea keckii Keck's checkerbloom *Critical Habitat*	E	--	List 1B.1	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Onagraceae							
Clarkia rostrata beaked clarkia	--	--	List1B.3	Moderate	Moderate	Moderate	Castle Commerce Center: Unlikely Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely

Scientific Name Common Name	Federal Status [a]	State Status [b]	CNPS[c]	Potential to Occur			
				UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
							Kojima Development: Moderate
Poaceae							
Agrostis hendersonii Henderson's bent grass	--	--	List 3.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Imperata brevifolia California satintail	--	--	List 2.1	High	High	High	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Neostapfia colusana Colusa grass *Critical Habitat*	T	E	List 1B.1	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Orcuttia inaequalis San Joaquin Valley Orcutt grass *Critical Habitat*	T	E	List 1B.1	High	High	High	Castle Commerce Center: High Harris-DeJager: High Fagundes: High Gordon-Shaw: High Kojima Development: High
Orcuttia pilosa hairy Orcutt grass *Critical Habitat*	E	E	List 1B.1	Moderate	High	High	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate

Scientific Name Common Name	Federal Status [a]	State Status [b]	CNPS[c]	Potential to Occur			
				UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
							Gordon-Shaw: Moderate Kojima Development: Moderate
Tuctoria greenei Greene's tuctoria *Critical Habitat*	E	R	List 1B.1	Moderate	High	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Polemoniaceae							
Navarretia myersii ssp. *myersii* pincushion navarretia	--	--	List 1B.1	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Navarretia nigelliformis ssp. *radians* shining navarretia	--	--	List 1B.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Navarretia prostrata prostrate vernal pool navarretia	--	--	List 1B.1	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Ranunculaceae							
Delphinium recurvatum recurved larkspur	--	--	List 1B.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Unlikely

Scientific Name Common Name	Federal Status [a]	State Status [b]	CNPS[c]	Potential to Occur			
				UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
							Fagundes: Unlikely Gordon-Shaw: Unlikely Kojima Development: Moderate
Myosurus minimus ssp. *apus* little mousetail	--	--	List 3.1	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Scrophulariaceae							
Castilleja campestris ssp. *Succulenta* succulent owl's-clover *Critical Habitat*	T	E	List 1B.2	Moderate	High	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: High
Cordylanthus palmatus palmate-bracted bird's-beak	E	E	List 1B.1	Moderate	Moderate	Moderate	Castle Commerce Center: Unlikely Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely Kojima Development: Moderate
Gratiola heterosepala Boggs Lake hedge-hyssop	--	E	List 1B.2	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate

Scientific Name Common Name	Federal Status [a]	State Status [b]	CNPS[c]	Potential to Occur			
				UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives

Notes:

Potential to Occur Designations (further definitions included in the Biological Resources and Wetlands Technical Report (Authority and FRA 2011a):

No Potential: No historic range or habitat within the habitat study area

Future Potential: Potential following the San Joaquin River Restoration Program

Unlikely Potential: No suitable habitat and presumed extirpated within the habitat study area

Low Potential: Low or marginal quality habitat within habitat study area

Moderate Potential: Potential current range and moderate habitat within the habitat study area

High Potential: Presumed extant, observed or otherwise expected

-- = No status designation.

[a] Federal status:

E (Endangered) = Listed as endangered under the Federal ESA.

T (Threatened) = Listed as threatened under the Federal ESA.

[b] State status:

E (Endangered) = Listed as endangered under the CESA.

T (Threatened) = Listed as threatened under the CESA.

R (Rare) = Listed as rare under the CESA.

CNPS

LIST 1A = Presumed extinct in California.

LIST 1B = Rare, threatened, or endangered in California and elsewhere.

LIST 2 = Rare, threatened, or endangered in California, but more common elsewhere.

LIST 3 = More information about this plant (Review List).

.1 = Seriously endangered in California; .2 = Fairly endangered in California; .3 = Not very endangered in California

[d] Source: CDFG (2003), CNPS (2011), USFWS (2011).

Part 2

Special-Status Wildlife Species with Potential to Occur in the Project Vicinity

Table 3.7-A2-1
Special-Status Wildlife Species with Potential to Occur in the Project Vicinity

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
Invertebrates						
Branchinecta conservatio Conservancy fairy shrimp	E	--	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely Kojima Development: Moderate
Branchinecta lynchi vernal pool fairy shrimp	T	--	Moderate	High	High	Castle Commerce Center: High Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely Kojima Development: High
Lepidurus packardi vernal pool tadpole shrimp	E	--	Moderate	High	Moderate	Castle Commerce Center: High Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely Kojima Development: Moderate
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	T	--	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
Fish						
Lampetra hubbsi Kern brook lamprey	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Oncorhynchus mykiss Central Valley steelhead	T	SSC	Low (but moderate in the foreseeable future)	Low (but moderate in the foreseeable future)	Low (but moderate in the foreseeable future)	Castle Commerce Center: Low (but moderate in the foreseeable future) Harris-DeJager: Low (but moderate in the foreseeable future) Fagundes: Low (but moderate in the foreseeable future) Gordon-Shaw: Low (but moderate in the foreseeable future) Kojima Development: Low (but moderate in the foreseeable future)
Oncorhynchus tshawytscha Central Valley spring-run Chinook salmon	T	T	Future	Future	Future	Castle Commerce Center: Future Harris-DeJager: Future Fagundes: Future Gordon-Shaw: Future Kojima Development: Future

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
Oncorhynchus tshawytscha Chinook salmon - Central Valley fall / late fall-run ESU (evolutionary significant unit)	--	SSC	Low (but high in the foreseeable future)	Low (but high in the foreseeable future)	Low (but high in the foreseeable future)	Castle Commerce Center: Low (but high in the foreseeable future) Harris-DeJager: Low (but high in the foreseeable future) Fagundes: Low (but high in the foreseeable future) Gordon-Shaw: Low (but high in the foreseeable future) Kojima Development: Low (but high in the foreseeable future)
Mylopharodon conocephalus hardhead	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Lavinia symmetricus symmetricus ssp. *1* San Joaquin roach	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Amphibians						
Ambystoma californiense California tiger salamander	T	T/SSC	Moderate	High	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely Kojima Development: Moderate

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
Spea hammondii western spadefoot toad	--	SSC	Moderate	High	Moderate	Castle Commerce Center: Unlikely Harris-DeJager: Unlikely Fagundes: Unlikely Gordon-Shaw: Unlikely Kojima Development: Moderate
Reptiles						
Actinemys marmorata western pond turtle	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Birds						
Anseriformes						
Dendrocygna bicolor fulvous whistling-duck	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Aythya americana redhead	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
Pelecaniformes						
Pelecanus erythrorhynchos American white pelican	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Ciconiiformes						
Ixobrychus exilis least bittern	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Falconiformes						
Elanus leucurus white-tailed kite	--	FP	High	High	High	Castle Commerce Center: High Harris-DeJager: High Fagundes: High Gordon-Shaw: High Kojima Development: High
Haliaeetus leucocephalus bald eagle	BGEPA	E/FP	Moderate	High	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
Circus cyaneus northern harrier	--	SSC	High	High	High	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Buteo swainsoni Swainson's hawk	--	T	High	Moderate	High	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Aquila chrysaetos golden eagle	BGEPA	FP	Moderate	High	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Falco peregrinus anatum American peregrine falcon	BCC	--	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Gruiformes						
Grus canadensis canadensis lesser sandhill crane	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
						Kojima Development: Moderate
Grus canadensis tabida greater sandhill crane	--	T/FP	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Charadriiformes						
Charadrius alexandrines snowy plover	T[1]	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Charadrius montanus mountain plover	PT/BCC	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Numenius phaeopus whimbrel	BCC	--	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Unlikely Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Numenius americanus long-billed curlew	BCC	--	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Unlikely Fagundes: Moderate

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
						Gordon-Shaw: Moderate Kojima Development: Moderate
Limosa fedoa marbled godwit	BCC	--	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Unlikely Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Calidris canutus red knot	BCC	--	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Unlikely Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Limnodromus griseus short-billed dowitcher	BCC	--	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Unlikely Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Chlidonias niger black tern	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Strigiformes						
Athene cunicularia burrowing owl	BCC	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
						Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Asio otus long-eared owl	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Asio flammeus short-eared owl	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Apodiformes						
Calypte costae Costa's hummingbird	BCC	--	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Passeriformes						
Lanius ludovicianus loggerhead shrike	BCC	SSC	High	High	High	Castle Commerce Center: High Harris-DeJager: High Fagundes: High Gordon-Shaw: High Kojima Development: High

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
Pica nuttalli yellow-billed magpie	BCC	--	High	High	High	Castle Commerce Center: High Harris-DeJager: High Fagundes: High Gordon-Shaw: High Kojima Development: High
Progne subis purple martin	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Dendroica petechia brewsteri yellow warbler	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Icteria virens yellow-breasted chat	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Pipilo maculatus spotted towhee	BCC	--	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
Pooecetes gramineus affinis Oregon vesper sparrow	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Vireo bellii pusillus least Bell's vireo	E/BCC	E	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Ammodramus savannarum grasshopper sparrow	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Melospiza melodia song sparrow ("Modesto" population)	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Unlikely Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Agelaius tricolor tricolored blackbird	BCC	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
Xanthocephalus xanthocephalus yellow-headed blackbird	--	SSC	High	High	High	Castle Commerce Center: High Harris-DeJager: High Fagundes: High Gordon-Shaw: High Kojima Development: High
Carduelis lawrencei Lawrence's goldfinch	BCC	--	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Mammals						
Lasiurus blossevillii western red bat	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Antrozous pallidus pallid bat	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Eumops perotis californicus western mastiff bat	--	SSC	High	High	High	Castle Commerce Center: High Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate

Common Name Scientific Name	Federal Status [a]	State Status	Potential to Occur			
			UPRR/SR 99 Alternative	BNSF Alternative	Hybrid Alternative	Heavy Maintenance Facility Alternatives
						Kojima Development: Moderate
Vulpes macrotis mutica San Joaquin kit fox	E	T	Moderate	High	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate
Taxidea taxus American badger	--	SSC	Moderate	Moderate	Moderate	Castle Commerce Center: Moderate Harris-DeJager: Moderate Fagundes: Moderate Gordon-Shaw: Moderate Kojima Development: Moderate

Notes:
-- = No status designation.
[a] Federal status:
PT (Proposed Threatened) = Federally proposed for listing as Threatened under Federal ESA
E (Endangered) = Listed as endangered under Federal ESA.
T (Threatened) = Listed as threatened under the Federal ESA.
[b] State status:
E (Endangered) = Listed as endangered under the CESA.
T (Threatened) = Listed as threatened under the CESA.
R (Rare) = Listed as rare under the CESA
FP (Fully Protected) = Classified as fully protected by CDFG
SSC (California Species of Special Concern) = Listed as a Species of Special Concern by CDFG
[d] Source: CDFG (2003), USFWS (1998, 2005, and 2011), BCC = Birds of Conservation Concern (USFWS 2008), BGEPA = Bald and Golden Eagle Protection Act of 1999.

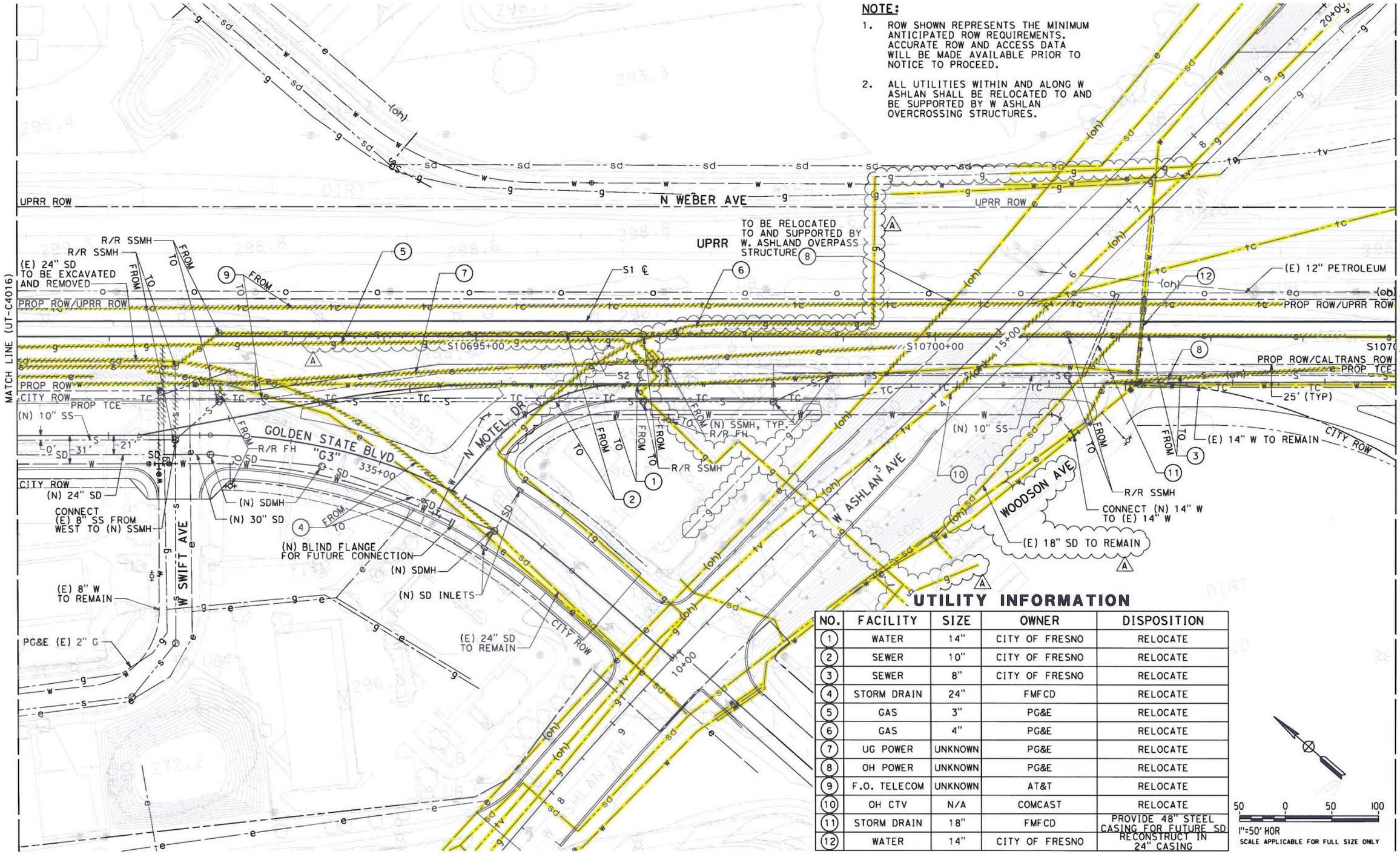
Attachment 12
Composite Utility Plans

SUMMARY OF PROTECTION AND RELOCATION FOR UTILITIES IMPACTED BY CALIFORNIA HIGH SPEED RAIL AND RECONSTRUCTION OF SR99 WEST ASHLAN AVE TO WEST CLINTON AVE

Utility ID #	COMPOSITE UTILITY PLAN NO.		CHSR STATIONING				CALTRANS STATIONING				APPROXIMATE LOCATION	UTILITY TYPE	PIPE DIA.	CROSSING ANGLE	WORK WITHIN CHSR R/W	WORK WITHIN NEW CALTRANS R/W
1	UT-C	4017 Thru 4024	S	10690	+	00			+		Parallel to and within CHSR R/W	UG Telecomm	N/A		Relocate to outside CHSR R/W	Relocated to within SR99 R/W
			S	10806	+	00			+							
2	UT-C	4017 Thru 4018	S	10690	+	00			+		Parallel to and within CHSR R/W	Sewer	8"		Relocate to outside CHSR R/W	Relocated to within SR99 R/W
			S	10710	+	50			+							
3	UT-C	4017	S	10690	+	00			+		Parallel to and within CHSR R/W	Gas	3"		Relocate to outside CHSR R/W	Relocated to within SR99 R/W
			S	10697	+	00			+							
4	UT-C	4017	S	10690	+	00			+		Parallel to and within CHSR R/W	Storm Drain	24"		Relocate to outside CHSR R/W	Relocated to within GSB R/W
			S	10695	+	30			+							
5	UT-C	4017	S	10690	+	00			+		Parallel to and within CHSR R/W	Water	14"		Relocate to outside CHSR R/W	Relocated to within SR99 and GSB R/W
			S	10702	+	25			+							
6	UT-C	4017	S	10690	+	00			+		Parallel to and within CHSR R/W	Overhead Electric	N/A		Relocate to outside CHSR R/W	Relocated to within SR99 and GSB R/W
			S	10699	+	70			+							
7	UT-C	4017	S	10696	+	00			+		Mostly parallel to and within CHSR R/W, crossing at Sta 10699+35	Gas	4"		Relocate to outside CHSR R/W	Relocated to within SR99 and GSB R/W
			S	10699	+	35			+							
8	UT-C	4017 Thru 4018	S	10701	+	80			+		Mostly parallel to and within CHSR R/W	Overhead Electric	N/A		Relocate to outside CHSR R/W	Relocated to within SR99 and GSB R/W
			S	10705	+	35			+							
9	UT-C	4017	S	10700	+	00			+		Crossing CHSR R/W	Overhead Electric	N/A	65°	Relocate to and be supported by the new Ashlan Ave Overpass	Relocate to and be supported by the new Ashlan Ave Overpass
10	UT-C	4017	S	10700	+	90			+		Crossing CHSR R/W	Overhead TV	N/A	60°	Relocate to and be supported by the new Ashlan Ave Overpass	Relocate to and be supported by the new Ashlan Ave Overpass
11	UT-C	4017	S	10717	+	80			+		Crossing CHSR R/W	Storm Drain	18"		Reinstall in casing	To remain
12	UT-C	4017	S		+		SR99	231	+	45	Crossing SR99's SB on-ramp from Ashlan Ave	Water	14"	85°		Water line to be protected in place
13	UT-C	4019	S				SR99	220	+	70	Parallel to SR99 and turn southerly	Overhead Electric	N/A			Relocate to outside SR99 travel lanes
	UT-C		S					213	+	70						
14	UT-C	4019 Thru 4020	S				SR99	214	+	20	In SR99 and N Valentine Ave	Overhead TV	N/A			Relocate to outside SR99 travel lanes and in N Valentine Ave R/W
			S					206	+	80						
15	UT-C	4020	S				SR99	208	+	10	Withn SR99 R/W	Overhead Electric	N/A			Relocate to outside SR99 travel lanes
			S					206	+	80						
16	UT-C	4019 Thru 4020	S				SR99	212	+	10	Parallel to and within SR99 R/W	Water	14"			Relocate to outside SR99 travel lanes
			S					177	+	85						
17	UT-C	4019	S				SR99	220	+	10	Parallel to and within SR99 R/W, turn southerly	Gas	4"			Relocate to outside SR99 travel lanes
			S					214	+	15						
18	UT-C	4019	S				SR99	217	+	65	Withn SR99 R/W	Irrigation	30"			Relocate to within the proposed City of Fresno cul-de-sac
			S					214	+	15						
19	UT-C	4019	S		+				+		Parallel to W Dakota Ave	Overhead TV	N/A			Relocate to within W Dakota Ave R/W
20	UT-C	4019	S	10732	+	75			+		Crossing CHSR R/W	Overhead Electric	N/A		Install in underground casing	
21	UT-C	4019	S	10733	+	00			+		Crossing CHSR R/W	Irrigation	42"		Reinstall in casing	
22	UT-C	4021	S				SR99	190	+	65	Withn SR99 R/W	Gas	2"			Relocate to outside SR99 travel lanes
	UT-C		S					178	+	80						
23	UT-C	4022	S	10778	+	25			+		Crossing CHSR R/W	Sewer	45"	85°	Reconstruct in casing from SMH to SMH	protect in-place
24	UT-C	4023	S				SR99	157	+	65	Crossing SR99's SB off-ramp to Clinton Ave	Gas	2"			Relocate to outside SR99 off-ramp
			S					155	+	50						
25	UT-C	4024	S				SR99	146	+	30	Within SR99 R/W	Water	12"			Relocate to outside SR99 travel lanes
			S					137	+	00						
26	UT-C	4024	S				SR99	146	+	80	Within SR99 R/W	Overhead Electric	N/A			Relocate to outside SR99 travel lanes
			S					141	+	00						
27	UT-C	4024	S				North Parkway Dr	142	+	90	Crossing and parallel to North Parkway Dr	Gas	2"			Relocate to with N Parkway Dr R/W
			S					138	+	60						
28	UT-C	4024	S		+		SR99	143	+	00	Crossing CHSR & SR99	Overhead Electric	N/A	60°	Relocate to and be supported by new Clinton Ave overpass	Relocate to and be supported by new Clinton Ave overpass
29	UT-C	4024	S		+		SR99	142	+	65	Crossing CHSR & SR99	Overhead TV	N/A	60°	Relocate to and be supported by new Clinton Ave overpass	Relocate to and be supported by new Clinton Ave overpass
30	UT-C	4024	S		+		SR99	142	+	35	Crossing CHSR & SR99	Water	16"	60°	Relocate to and be supported by new Clinton Ave overpass	Relocate to and be supported by new Clinton Ave overpass
31	UT-C	4024	S		+		SR99 off-ramp	143	+	20	Crossing CHSR & SR99	Gas	3"	60°	Relocate to and be supported by new Clinton Ave overpass	Relocate to and be supported by new Clinton Ave overpass
32	UT-C	4024	S		+		SR99	141	+	90	Crossing CHSR & SR99	Telecomm	N/A	60°	Relocate to and be supported by new Clinton Ave overpass	Relocate to and be supported by new Clinton Ave overpass
33	UT-C	4024	S		+		SR99	140	+	70	Crossing CHSR & SR99	Irrigation	30"	75°	Relocate to and be supported by new Clinton Ave overpass	Relocate to and be supported by new Clinton Ave overpass
34	UT-C	4024	S				North Parkway Dr	139	+	90	East of N Parkway Dr	Sewer	6"			Relocate to within N Parkway Dr R/W
			S					137	+	55						

NOTE:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. ALL UTILITIES WITHIN AND ALONG W ASHLAN SHALL BE RELOCATED TO AND BE SUPPORTED BY W ASHLAN OVERCROSSING STRUCTURES.



UTILITY INFORMATION

NO.	FACILITY	SIZE	OWNER	DISPOSITION
1	WATER	14"	CITY OF FRESNO	RELOCATE
2	SEWER	10"	CITY OF FRESNO	RELOCATE
3	SEWER	8"	CITY OF FRESNO	RELOCATE
4	STORM DRAIN	24"	FMFCD	RELOCATE
5	GAS	3"	PG&E	RELOCATE
6	GAS	4"	PG&E	RELOCATE
7	UG POWER	UNKNOWN	PG&E	RELOCATE
8	OH POWER	UNKNOWN	PG&E	RELOCATE
9	F.O. TELECOM	UNKNOWN	AT&T	RELOCATE
10	OH CTV	N/A	COMCAST	RELOCATE
11	STORM DRAIN	18"	FMFCD	PROVIDE 48" STEEL CASING FOR FUTURE SD
12	WATER	14"	CITY OF FRESNO	RECONSTRUCT IN 24" CASING

50 0 50 100
1"=50' HOR
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION
A	06/27/12	LD	MH	DM	REVISED GAS LINES, SD LINE

DESIGNED BY M. HU
DRAWN BY L. DIFUNTORUM
CHECKED BY J. MAHER
IN CHARGE D. MINISTER
DATE 12/14/2012

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
UTILITIES
COMPOSITE UTILITY PLAN
STA. 10690+00 TO STA. 10705+00

CONTRACT NO.
DRAWING NO. UT-C4017
SCALE AS SHOWN
SHEET NO.

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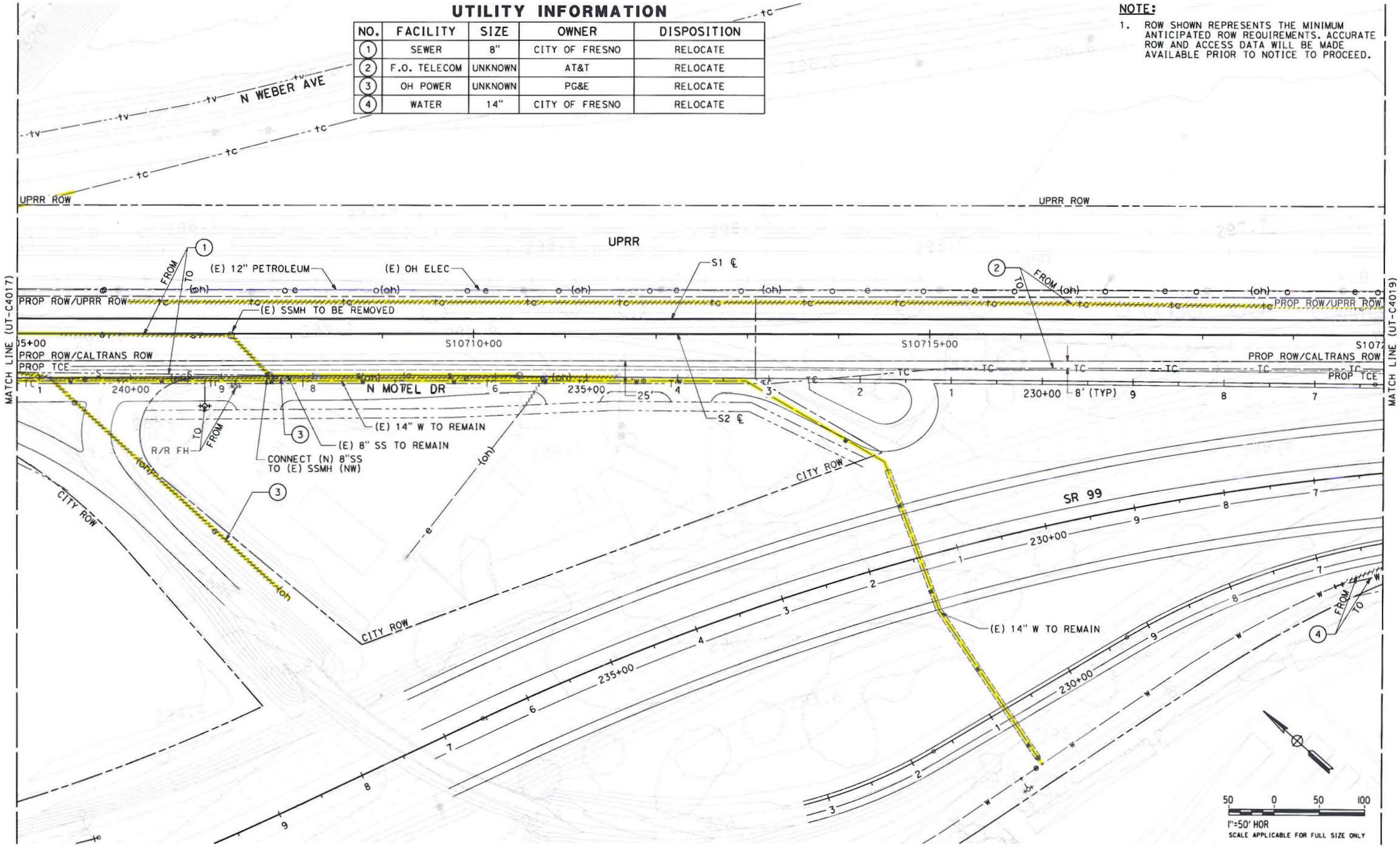
UTILITY INFORMATION

NO.	FACILITY	SIZE	OWNER	DISPOSITION
1	SEWER	8"	CITY OF FRESNO	RELOCATE
2	F.O. TELECOM	UNKNOWN	AT&T	RELOCATE
3	OH POWER	UNKNOWN	PG&E	RELOCATE
4	WATER	14"	CITY OF FRESNO	RELOCATE

NOTE:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.



1"=50' HOR
SCALE APPLICABLE FOR FULL SIZE ONLY

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY M. HU
DRAWN BY L. DIFUNTORUM
CHECKED BY J. MAHER
IN CHARGE D. MINISTER
DATE 01/09/2012

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
UTILITIES
COMPOSITE UTILITY PLAN
STA. 10705+00 TO STA.10720+00

CONTRACT NO.
DRAWING NO. UT-C4018
SCALE AS SHOWN
SHEET NO.

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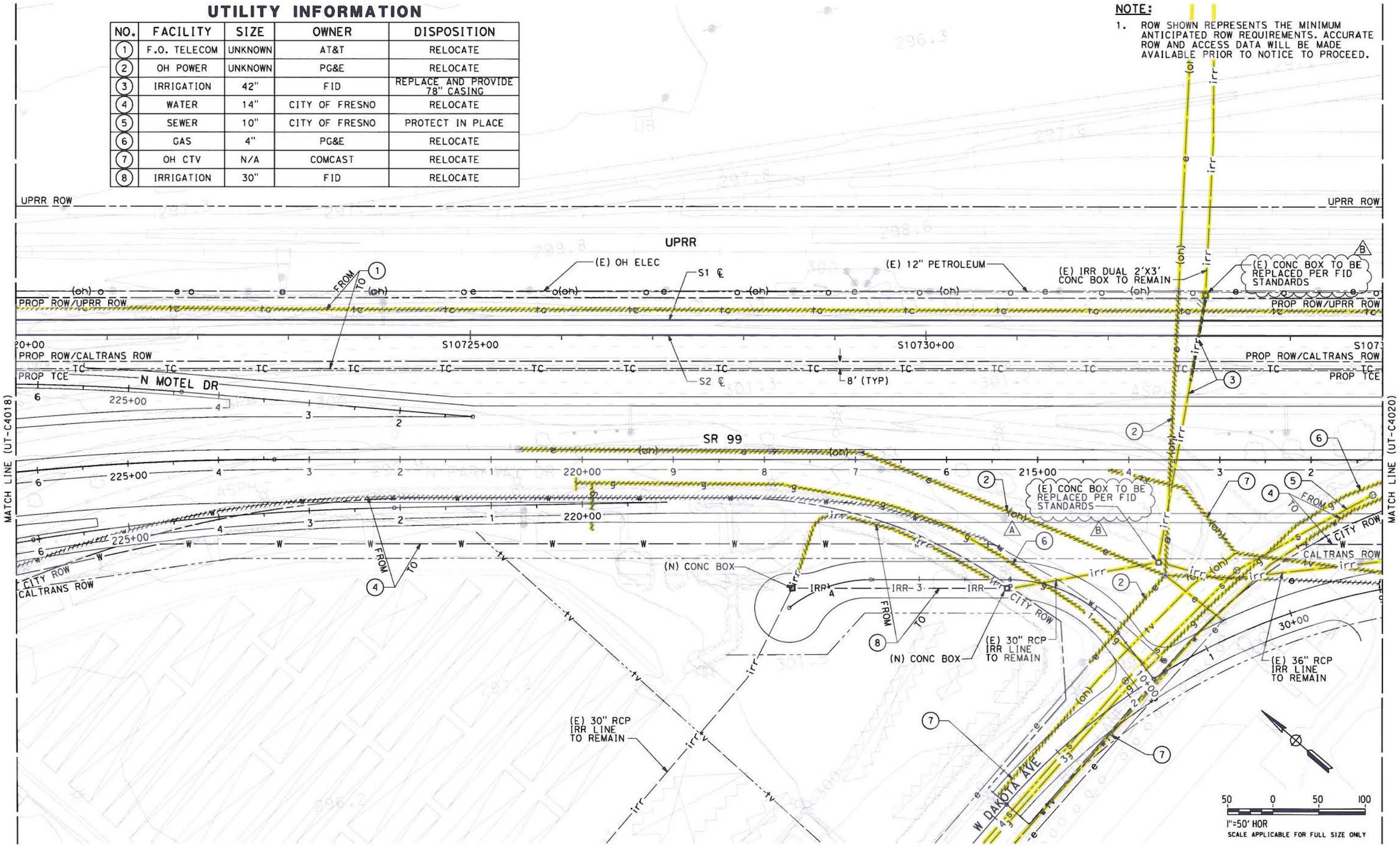
UTILITY INFORMATION

NO.	FACILITY	SIZE	OWNER	DISPOSITION
1	F.O. TELECOM	UNKNOWN	AT&T	RELOCATE
2	OH POWER	UNKNOWN	PG&E	RELOCATE
3	IRRIGATION	42"	FID	REPLACE AND PROVIDE 78" CASING
4	WATER	14"	CITY OF FRESNO	RELOCATE
5	SEWER	10"	CITY OF FRESNO	PROTECT IN PLACE
6	GAS	4"	PG&E	RELOCATE
7	OH CTV	N/A	COMCAST	RELOCATE
8	IRRIGATION	30"	FID	RELOCATE

NOTE:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.



REV	DATE	BY	CHK	APP	DESCRIPTION
B	07/05/12	LD	MH	DM	REVISED IRRIGATION FACILITIES
A	06/27/12	LD	MH	DM	REVISED GAS LINE

DESIGNED BY M. HU
DRAWN BY L. DIFUNTORUM
CHECKED BY J. MAHER
IN CHARGE D. MINISTER
DATE 01/09/2012

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
UTILITIES
COMPOSITE UTILITY PLAN
STA. 10720+00 TO STA. 10735+00

CONTRACT NO.
DRAWING NO. UT-C4019
SCALE AS SHOWN
SHEET NO.

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UTILITY INFORMATION

NO.	FACILITY	SIZE	OWNER	DISPOSITION
1	F.O. TELECOM	UNKNOWN	AT&T	RELOCATE
2	GAS	4"	PG&E	RELOCATE
3	OH POWER	UNKNOWN	PG&E	RELOCATE
4	OH CTV	N/A	COMCAST	RELOCATE
5	WATER	14"	CITY OF FRESNO	RELOCATE

NOTE:

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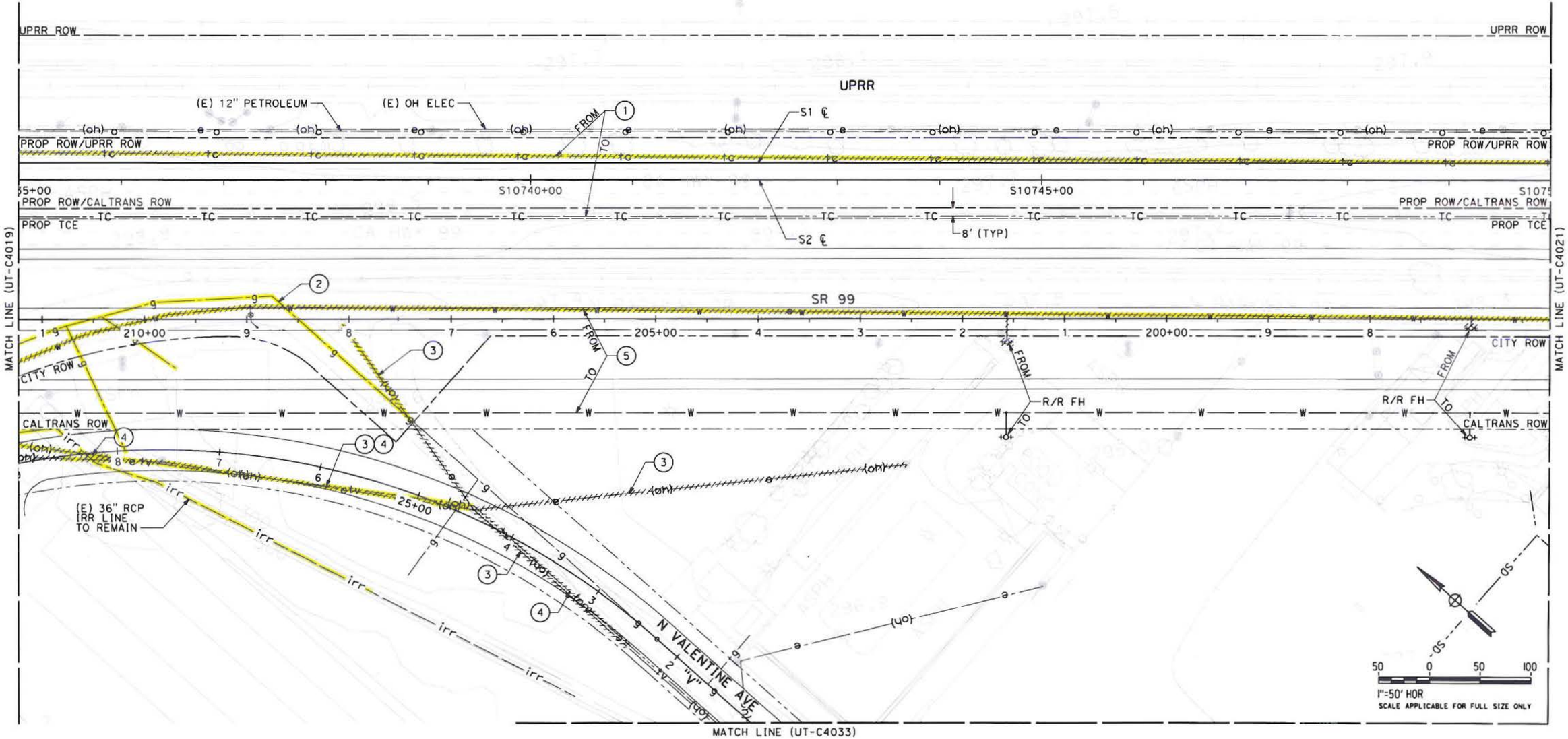

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY M. HU
DRAWN BY L. DIFUNTORUM
CHECKED BY J. MAHER
IN CHARGE D. MINISTER
DATE 01/09/2012

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AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
UTILITIES
COMPOSITE UTILITY PLAN
STA. 10735+00 TO STA. 10750+00

CONTRACT NO.
DRAWING NO. UT-C4020
SCALE AS SHOWN
SHEET NO.

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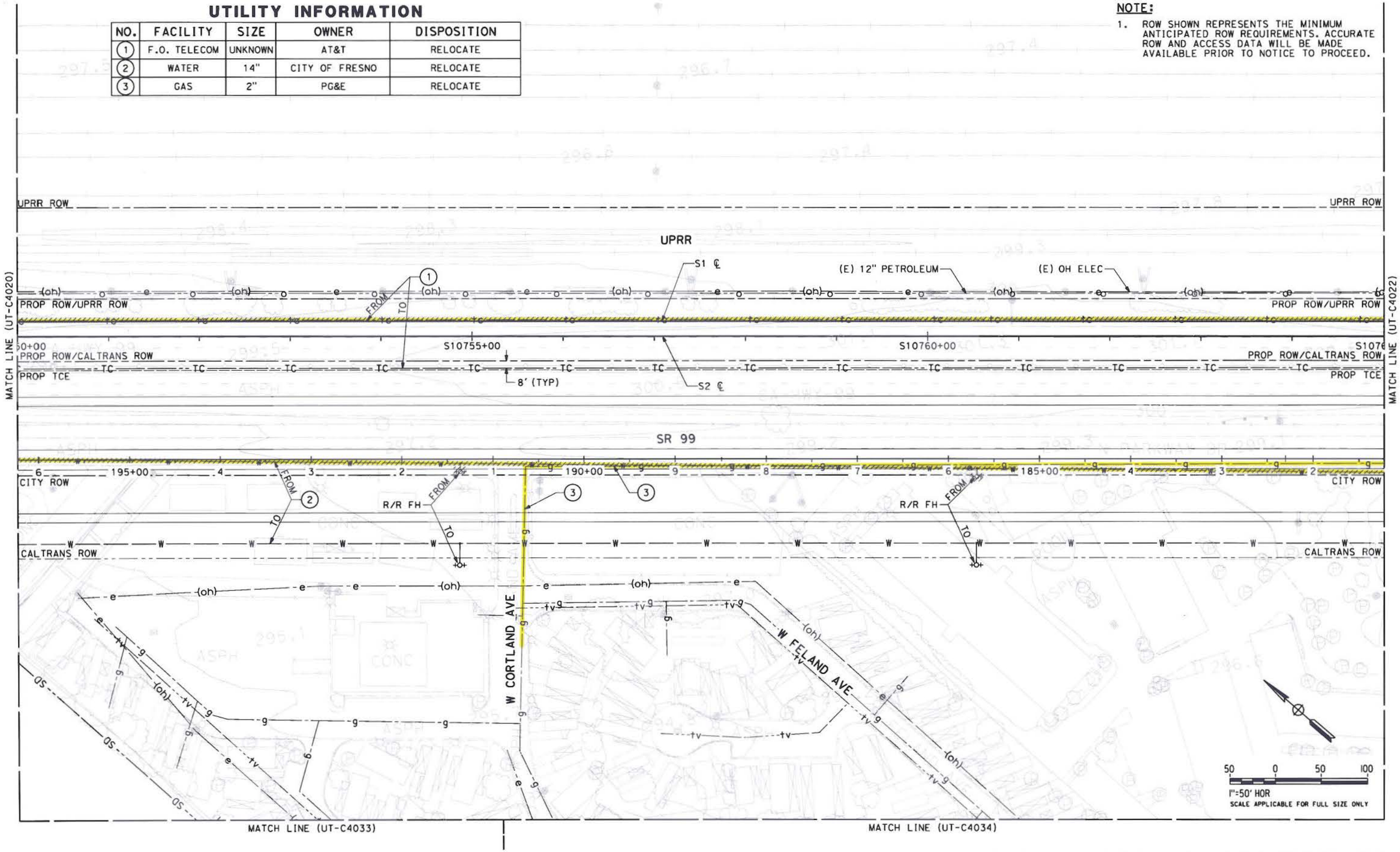
UTILITY INFORMATION

NO.	FACILITY	SIZE	OWNER	DISPOSITION
1	F.O. TELECOM	UNKNOWN	AT&T	RELOCATE
2	WATER	14"	CITY OF FRESNO	RELOCATE
3	GAS	2"	PG&E	RELOCATE

NOTE:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY M. HU
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CHECKED BY J. MAHER
IN CHARGE D. MINISTER
DATE 01/09/2012

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
UTILITIES
COMPOSITE UTILITY PLAN
STA. 10750+00 TO STA. 10765+00

CONTRACT NO.
DRAWING NO. UT-C4021
SCALE AS SHOWN
SHEET NO.

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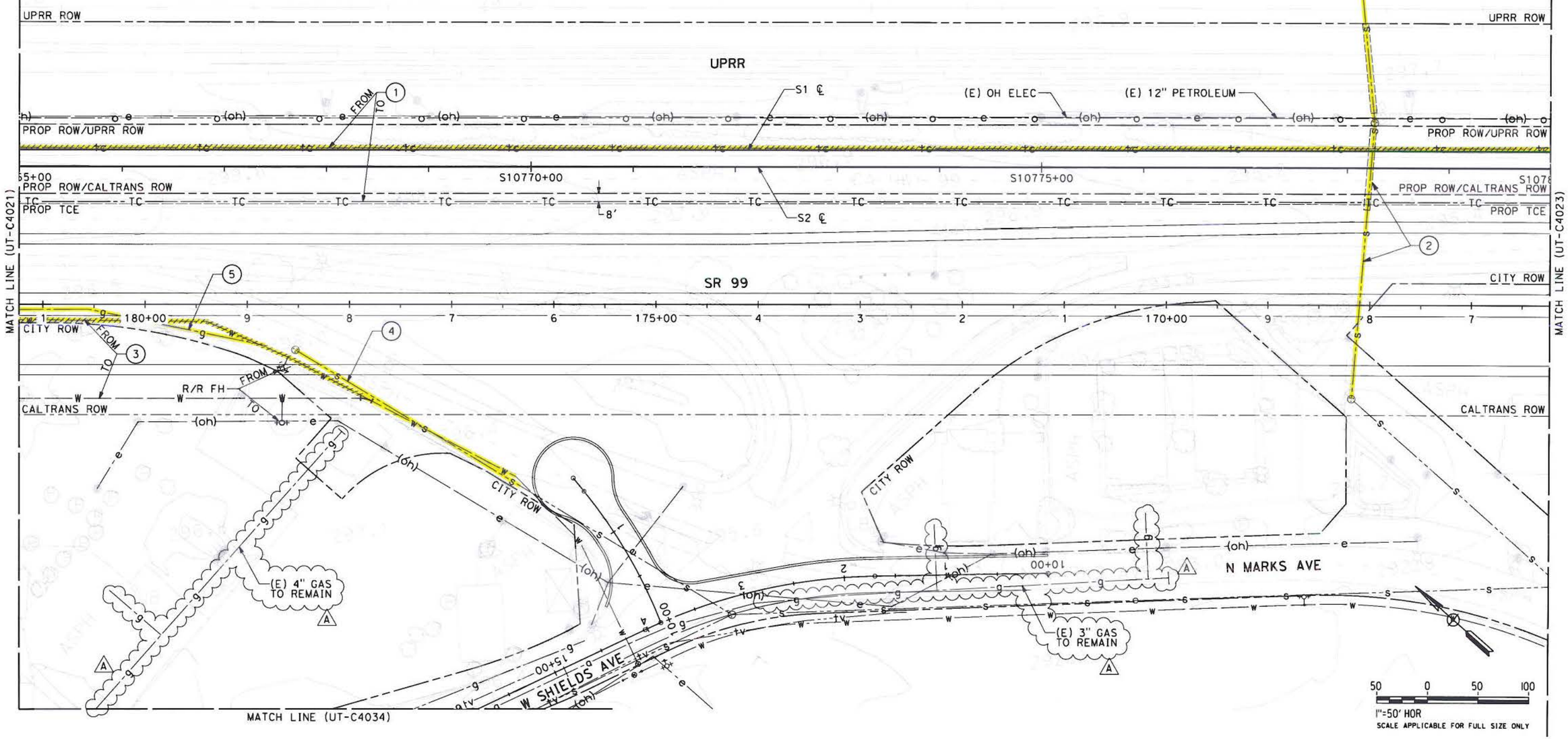
UTILITY INFORMATION

NO.	FACILITY	SIZE	OWNER	DISPOSITION
1	F.O. TELECOM	UNKNOWN	AT&T	RELOCATE
2	SEWER	45"	CITY OF FRESNO	RECONSTRUCT FROM SSMH TO SSMH. PROVIDE 84" CASING
3	WATER	12"	CITY OF FRESNO	RELOCATE
4	SEWER	6"	CITY OF FRESNO	PROTECT IN PLACE
5	GAS	2"	PG&E	RELOCATE

NOTE:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.



REV	DATE	BY	CHK	APP	DESCRIPTION
A	06/27/12	LD	MH	DM	REVISED GAS LINES

DESIGNED BY M. HU
DRAWN BY L. DIFUNTORUM
CHECKED BY J. MAHER
IN CHARGE D. MINISTER
DATE 01/09/2012

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
UTILITIES
COMPOSITE UTILITY PLAN
STA. 10765+00 TO STA. 10780+00

CONTRACT NO.
DRAWING NO. UT-C4022
SCALE AS SHOWN
SHEET NO.

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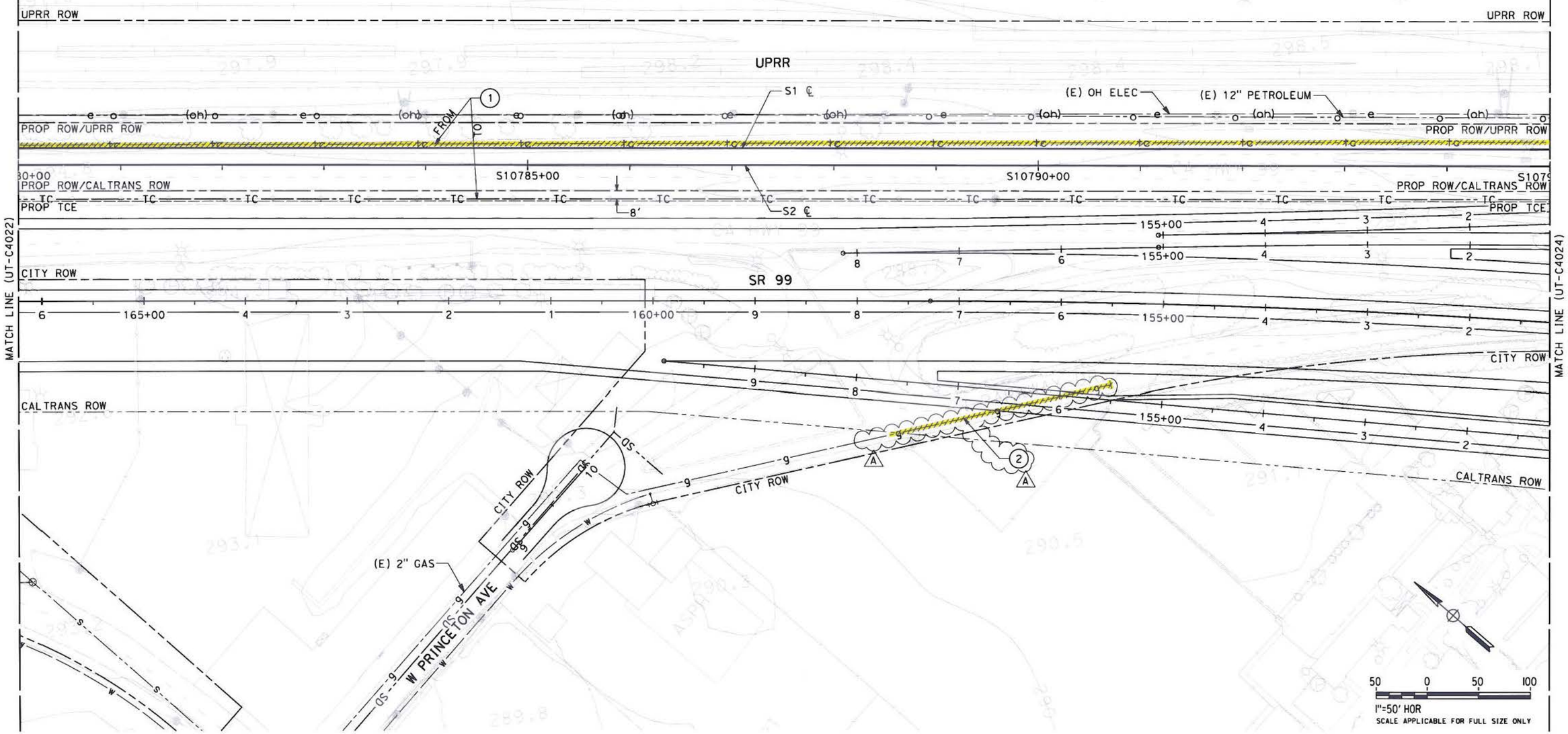
UTILITY INFORMATION

NO.	FACILITY	SIZE	OWNER	DISPOSITION
1	F.O. TELECOM	UNKNOWN	AT&T	RELOCATE
2	GAS	2"	PG&E	RELOCATE

A

NOTE:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.



REV	DATE	BY	CHK	APP	DESCRIPTION
A	06/27/12	LD	MH	DM	REVISED GAS LINE

DESIGNED BY M. HU
DRAWN BY L. DIFUNTORUM
CHECKED BY J. MAHER
IN CHARGE D. MINISTER
DATE 01/09/2012

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95811
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
UTILITIES
COMPOSITE UTILITY PLAN
STA. 10780+00 TO STA. 10795+00

CONTRACT NO.
DRAWING NO. UT-C4023
SCALE AS SHOWN
SHEET NO.

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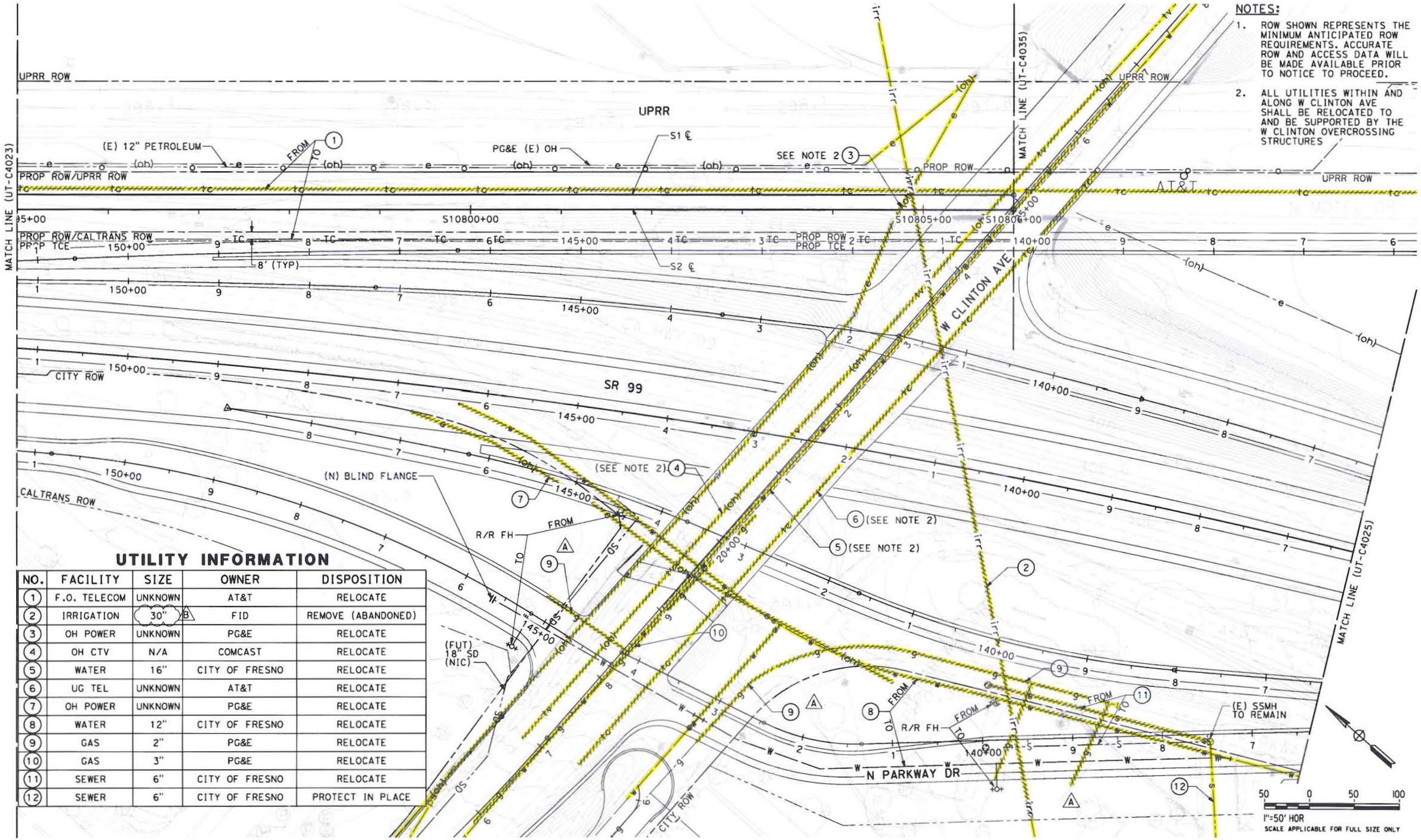

NOTES:

1. ROW SHOWN REPRESENTS THE MINIMUM ANTICIPATED ROW REQUIREMENTS. ACCURATE ROW AND ACCESS DATA WILL BE MADE AVAILABLE PRIOR TO NOTICE TO PROCEED.
2. ALL UTILITIES WITHIN AND ALONG W CLINTON AVE SHALL BE RELOCATED TO AND BE SUPPORTED BY THE W CLINTON OVERCROSSING STRUCTURES

UTILITY INFORMATION

NO.	FACILITY	SIZE	OWNER	DISPOSITION
1	F.O. TELECOM	UNKNOWN	AT&T	RELOCATE
2	IRRIGATION	30" B	FID	REMOVE (ABANDONED)
3	OH POWER	UNKNOWN	PG&E	RELOCATE
4	OH CTV	N/A	COMCAST	RELOCATE
5	WATER	16"	CITY OF FRESNO	RELOCATE
6	UG TEL	UNKNOWN	AT&T	RELOCATE
7	OH POWER	UNKNOWN	PG&E	RELOCATE
8	WATER	12"	CITY OF FRESNO	RELOCATE
9	GAS	2"	PG&E	RELOCATE
10	GAS	3"	PG&E	RELOCATE
11	SEWER	6"	CITY OF FRESNO	RELOCATE
12	SEWER	6"	CITY OF FRESNO	PROTECT IN PLACE

REV	DATE	BY	CHK	APP	DESCRIPTION
B	07/05/12	LD	MH	DM	REVISED FID PIPE FROM 60" TO 30"
A	06/27/12	LD	MH	DM	REVISED GAS LINES

DESIGNED BY M. HU
DRAWN BY L. DIFUNTORUM
CHECKED BY J. MAHER
IN CHARGE D. MINISTER
DATE 01/09/2012

PROPOSED PRELIMINARY DESIGN

NOT FOR CONSTRUCTION

AECOM Technical Services, Inc.
2020 L Street, Suite 300
Sacramento, CA 95814
CH2MHILL

CALIFORNIA HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
SIERRA SUBDIVISION
PACKAGE 1A
UTILITIES
COMPOSITE UTILITY PLAN
STA. 10795+00 TO STA. 10806+00

CONTRACT NO.
DRAWING NO. UT-C4024
SCALE AS SHOWN
SHEET NO.

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Attachment 13
Transportation Management Plan (TMP)

Department of Transportation
District 6

TRANSPORTATION MANAGEMENT PLAN DATA SHEET

06-Fre 99-PM 23.5/26.6 & 30.8/31.3

REALIGN SR 99 FROM ASHLAN TO CLINTON, WIDEN TO OLIVE AND IMPROVE RAMPS AT HERNDON AVENUE

PROJECT/EA NO: 0600020014-0/2HT000

February 11, 2013

Prepared For: THANH M. NGUYEN, Design Senior
Office of Design I, Branch M

Prepared By: JOSE FERNANDEZ, JR.

Concurred By:

ALBERT M. LEE, P.E., T.E.
District 6 – Traffic Operations Chief

Approved By:

JOSE FERNANDEZ, JR., P.E.
District 6 – TMP Manager

This Transportation Management Plan (TMP) data sheets are prepared in response to a request from Office of Design I, Branch M dated January 25, 2013. The project is in Fresno County in the City of Fresno on State Route 99 from 0.2 mile north of Olive Avenue Overcrossing to Ashlan Avenue Overcrossing and from 0.2 mile south of Herndon Avenue Overcrossing to 0.3 mile north of Herndon Avenue Overcrossing. It proposes to realign SR 99 from Ashlan Avenue to Clinton Avenue, widen from Clinton Avenue to Olive Avenue and improve ramps at Herndon Avenue. The estimated cost for implementing the Transportation Management Plan is $1,067,000.

Attached is the TMP Data Sheet for the above referenced project. Per Deputy Directive 60, TMP must be considered at the early stage of all projects and activities performed on the State Highway System. The following items shall be included in the project initiation document (PID):

1) The TMP Data Sheet shall be attached to the project initiation document (PID).

2) Any costs associated with the traffic impact mitigation measures listed in the TMP Data Sheet shall be included in the PID estimate.

3) The following statements shall be included in the body of the PID:

"Preliminary traffic impacts and mitigation for this project have been outlined in the attached Transportation Management Plan Data Sheet (TMP Data Sheet). Costs associated with the traffic impact mitigation measures listed in the TMP Data Sheet have been included in this documents estimate."

"A TMP for this project is required and should be requested when the design is complete enough to determine specific traffic impacts, but yet early enough to make design changes/additions required for traffic mitigation."

"Lane closure charts and detailed TMP will be provided during PS&E stage."

"Lane closures are not allowed when the traffic volume is beyond the capacity of the remaining lanes. Nighttime work outside peak hours is anticipated for this project. Ramp and local road closures will be involved. Approval and concurrence from the County of Fresno or City of Fresno for the local road closures during construction operation needs to be provided before a detailed TMP can be issued. Full/complete freeway closure will be limited at night and will require implementation of a temporary detour route. The District Public Information Officer will be involved to ensure that a public information campaign with adequate advance notification is developed and implemented."

If you have any questions, please feel free to contact Albert Lee at 559-488-4111 or Jose Fernandez at 559-444-2492.

Attachments:
- TMP Data Sheet

DISTRICT 6 - TRANSPORTATION MANAGEMENT PLAN

DATA SHEET

(TMP Elements and Costs)

CO/RTE	FRE	99	*PM*	23.5/26.6	*PROJ. NO.*	600020014-0
	FRE	99		30.8/31.3	*EA. NO.*	2HT000
PROJECT NAME	REALIGN SR 99 FROM ASHLAN TO CLINTON, WIDEN TO OLIVE AND IMPROVE RAMPS AT HERNDON AVENUE					
PROJECT LIMIT	In Fresno County in the City of Fresno on State Route 99 from 0.2 mile north of Olive Avenue Overcrossing to Ashlan Avenue Overcrossing and from 0.2 mile south of Herndon Avenue Overcrossing to 0.3 mile north of Herndon Avenue Overcrossing					
PROJECT DESCRIPTION	Realign SR 99 from Ashlan Avenue to Clinton Avenue, Widen from Clinton Avenue to Olive Avenue					

A) ***The project includes the following:***
(Check all that applicable type of facility closures.)

- [x] Highway or Freeway Lanes
- [x] Highway or Freeway Shoulders
- [ ] Freeway Connectors
- [x] Full/Complete Freeway/Highway Closure
- [x] Freeway Off-ramps
- [x] Freeway On-ramps
- [x] Local Streets

B) ***Are there any construction strategies that can restore existing number of lanes?***
[ ] No [x] Yes *(Check all applicable strategies.)*

- [x] Temporary Roadway Widening
  Structure Involvement? [x] Yes [ ] No (If yes, notify Project Manager)
- [x] Lane Restriping (Temporary narrow lane widths)
- [x] Roadway Realignment (Detour around work area)
- [x] Median and/or Right Shoulder Utilization
- [ ] Use of HOV lane as Temporary Mixed Flow Lane
- [ ] Staging Alternatives (Explain Below)

C) ***Calculated Delay***
(To be performed if construction strategies in Item B do not mitigate congestion resulting from Item A or on all projects along Interstate 5 and Route 99)

1. Estimated Maximum Individual delay _____ minutes
2. Existing or Acceptable Individual Vehicle Delay _____ minutes
3. Estimated Individual Vehicle Delay Requiring Mitigation _____ minutes
4. Estimate Delay Cost (Most Applicable)
   - [ ] Extended Weekend Closure
   - [ ] Weekly (7 days)
5. Estimated Duration of Project Related Delays _____ # of Days
6. Cost of Construction Related delays _____

TMP Estimates based on X-Number of Working Days requiring Lane/Shoulder/Ramp/Freeway/Highway Closures: 600 Working Days

Total Working Days to Construct the Project: 600 Working Days

TMP DATASHEET

Date: February 11, 2013
Design Senior: Thanh Nguyen
Branch: M *Office of Design:* I

Cnty/Rte: FRE 99
PM: 23.5/26.6 30.8/31.3
Project/EA No: 600020014-0 2HT000

D) ***Preliminary TMP Elements and cost:*** (Identify all elements and estimated costs that will be used to mitigate congestion resulting from the proposed construction activities.)

1. Public Information (BEES #066063)
- [x] Brochures & Mailers $10,000
- [x] Press Release/Media Alerts $55,000
- [x] Paid Advertisements $60,000
- [ ] Public Information Center/Kiosks
- [x] Telephone Hotline $2,000
- [x] Planned Lane Closure Website $0
- [x] Project Website $0
- [x] Public Meetings $5,000
- [x] Freight Travel Information $0

2. Motorist Information Strategies
- [x] Traffic Radio Announcements $0
- [ ] Fixed CMS
- [x] Portable CMS (BEES #128650) $420,000
- [ ] Temporary Motorist Information Signs
- [x] Ground Mounted Signs (Detour) SEE NOTE 7
- [ ] Dynamic Speed Message Sign
- [ ] Highway Advisory Radio
- [x] CT Hwy Infom. Network (CHIN) $0

3. Incident Management
- [x] Transportation Management Center $0
- [ ] Traffic Management Team (TMT)
- [ ] Intelligent Transportation Systems
- [ ] Traff. Surveillance (Loop & CCTV)
- [ ] Helicopter Surveillance
- [ ] Tow/Freeway
- [x] COZEEP (BEES #066062) $515,000

4. Construction Strategies (In Addition to Elements Identified on Item B)
- [x] Lane Requirement Chart $0
- [x] Construction Staging $0
- [x] Traffic Handling Plans $0
- [x] Full Facility Closures $0
- [x] Local Road Closures $0
- [ ] Lane Modifications
- [ ] One-Way Reversing Operation

4. Construction Strategies (In Addition to Elements Identified on Item B)
- [ ] Two-way Traffic On One Side
- [ ] Reversible Lanes
- [x] Ramp/Connector Closure $0
- [x] Night Work $0
- [ ] Extended Weekend Work
- [ ] Ped/Bicycle Access Improvements
- [ ] Maintain Business Access
- [x] A + B Bidding SEE NOTE 8
- [ ] Innovative Construction Techniques
- [x] Coordination w/ Adj. Construction Site $0
- [ ] Speed Limit Reduction
- [ ] Traffic Screens

5. Demand Management
- [ ] HOV Lane/Ramps
- [ ] Variable Work Hours
- [ ] Telecommuting
- [ ] Truck/Heavy Vehicle Restrictions
- [ ] Rideshare Promotions
- [ ] Ramp Metering
- [ ] Transit Incentives
- [ ] Shuttle Services
- [ ] Ridesharing/Carpooling Incentives
- [ ] Park & Ride Promotion

6. Alternative Route Strategies
- [ ] Off-site Detours/Use of Alt. Rtes
- [ ] Signal Timing/Coord. Improvements
- [ ] Temporary Traffic Signals
- [ ] Signal Retiming
- [ ] Street/Intersection Improvements
- [ ] Turn Restrictions
- [ ] Parking Restrictions

7. Other Considerations
- [ ] Application of New Technologies
- [ ] Other

TOTAL ESTIMATED COST OF TMP $1,067,000

PROJECT NOTES:

1. Current dollar values used. Inflation was not factored into the estimate.
2. There are no noise restrictions / moratoriums for night work.
3. Traffic Control/Maintain Traffic costs was not provided. Please consult with the OE or construction office for this estimate.
4. Portable CMS specified for this project by this estimate is designed for congestion relief as outlined by DD-60. Portable CMS required for other purposes should be included under other specifications.
5. COZEEP specified for this project by this estimate is designated for congestion relief as outlined by DD-60. COZEEP required for other purposes should be included under other specifications.
6. The TMP is a living document that is subject to change if material changes take place in the final version of the project phase or if changes are required during construction to respond to excessive levels of congestion.
7. The estimated cost of the ground mounted signs (detour) depends on the Design Engineer's and Office of Traffic Design's Estimates.
8. Daily Road User Cost will be calculated during the PS&E Phase.

PREPARED BY:	OFFICE OF TRAFFIC OPERATIONS	DATE:
J. D. Fernandez, Jr.		February 11, 2013