



CALIFORNIA HIGH-SPEED RAIL PROJECT
PROGRAM SUMMARY REPORT



JULY 10, 2009

PAGE INTENTIONALLY LEFT BLANK

Contents

Introduction.....	3
1.0 Project Description.....	5
Overall Program.....	5
Master Summary Schedule	7
2.0 The Team	11
The California High-Speed Rail Authority	11
The Management Team	12
3.0 Program Management.....	17
Program Delivery Planning and Management	18
Technical Standards Development.....	19
Environmental Review Approach.....	19
High-Speed Rail Engineering Standards.....	20
Regulatory Approvals	22
U.S and State Environmental Regulatory Agencies	22
U.S. Department of Transportation / Federal Railroad Administration.....	22
California Public Utilities Commission	23
California Department of Transportation.....	23
Regional Consultant Oversight and Management.....	23
EIR/EIS Management to NOD/ROD.....	23
Engineering Management to 30% Design – Preliminary Engineering	24
Procurement	25
Construction Management	25
4.0 Implementation Plan	27
Project Approval Process.....	27

Environmental Review.....	27
Engineering.....	28
Agency Agreements and Permitting	30
Right-of-Way Preservation and Acquisition.....	30
Procurement / Construction	31
5.0 Work Progress and Costs.....	41
Program Summary	42
Program Management.....	43
Regional Projects	62
Los Angeles to Orange County.....	63
Los Angeles to Palmdale	68
Palmdale to Bakersfield	76
Bakersfield to Fresno	81
Fresno to Merced	86
Merced to San Jose	91
San Jose to San Francisco.....	97
Merced to Sacramento	102
Altamont Corridor.....	107
Los Angeles to San Diego.....	112
6.0 Next Steps.....	117
Final Design and Construction.....	117
Testing, Commissioning and Training.....	117
Passenger and Revenue Service.....	118

Introduction

The proposed California High-Speed Train Project is a large and complex public works project on a scale comparable with the construction of Interstate 5 in California in the 1960's and 1970's. It is likely to be the first contemporary all-new high-speed train operating on dedicated right-of-way in the United States. This project requires the combined talents of a wide variety of public agencies and experienced rail professionals. This *Program Summary Report* presents a high-level outline of the project, the organization, and the approach to the development of the high-speed train system. This report also provides a benchmark for the progress to date, details the fiscal year 2009/2010 work program and costs, and outlines the work and costs to complete the environmental documents and 30% preliminary engineering design to reach the Notice of Determination and Record of Decision (NOD/ROD) for the project sections by 2013.

This report is arranged to provide the reader with an overview of the project, a discussion of the team managing and designing the project, the Program Management approach, the plan to implement the project to NOD/ROD and completion of 30% preliminary engineering and construction, a summary of the work progress and costs, and an overview of the steps to take the project through procurement and construction and into full operation. This report will be updated on an annual basis as the project requires.

PAGE INTENTIONALLY LEFT BLANK

1.0 Project Description

Overall Program

The proposed California high-speed train system encompasses more than 800 route miles and will provide intercity travel in California between the major metropolitan centers of Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego. The system is envisioned as a state-of-the-art, electrically-powered, high-speed, steel-wheel-on-steel-rail technology, including state-of-the-art safety, signaling, and automated train-control systems. This train technology has proven to be the safest and most reliable form of transportation known, based on extensive revenue operating experience in Europe and Asia.

California High-Speed Train System



The California high-speed train will be capable of operating speeds up to 220 mph and designed for an ultimate speed of 250 mph on a fully grade-separated alignment with an expected trip time from San Francisco to Los Angeles of two hours and forty minutes, or less. Interface with commercial airports, mass transit, and the highway network is provided as part of the system. The system will be capable of many patterns of service. The current system ridership forecast is 102.4 million passengers and 340 trains in 2035.

The California high-speed train will operate primarily on exclusive track with portions of the route shared with other passenger rail operation in the Caltrain Corridor in the San Francisco Bay area. The route will be constructed at-grade, in an open trench, in a tunnel, or on an elevated guideway, depending on the terrain and physical constraints encountered. Extensive portions of the system will lie within, or adjacent to, existing rail or highway right-of-way (rather than new alignment) to reduce potential environmental impacts and minimize land acquisition.

Depending on the alignment and station design options, pursuant to the previously completed Program Environmental Impact Reports/Environmental Impact Statements (EIR/EIS)^{1,2}, the cost to implement the full statewide California high-speed train system is anticipated to be more than \$40 billion (2006 dollars). As directed by the California High-Speed Rail Authority (Authority), regional sections of the project will be delivered in phases. The first phase of the project, covering the regions from Orange County (Anaheim) to San Francisco, is estimated to have a construction cost of \$33 to \$34 billion (2008 dollars).

The Program costs include all aspects of managing, designing and building the proposed high-speed rail system. This includes construction of the high-speed train system (track, stations, buildings, bridges, tunnels, power systems, signaling, etc.), right-of-way, environmental studies and mitigation, design, value engineering, management, rolling stock (trains), testing, commissioning, operations, and all work required to provide a completely operational system ready for revenue service.

Due to these unique design characteristics and the size of undertaking, the California High-Speed Train Project (CHSTP) has been divided into eight regional sections to allow for more effective program management. A significant milestone in the development of the regional section projects is the need for completion of the Notice of Determination (NOD) and Record of Decision (ROD). The NOD marks the conclusion of the Final EIR documentation under the California Environmental Quality Act (CEQA) guidelines and the filing and posting of the NOD by the Authority begins a 30-day statute of limitations on court challenges to the regional project approvals under CEQA. The ROD marks the conclusion of the Final EIS documentation under the National Environmental Policy Act (NEPA) and documents the acceptance of the environmental analysis and recommendations.

¹ Final Program Environmental Impact Report / Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System, August 2005.

² Final Bay Area to Central Valley High-Speed Train (HST) Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS), May 2008.

The Authority's Program Management and Regional Consultants are preparing joint regional project EIR/EIS documents in compliance with both the CEQA and the NEPA, for the Authority and the Federal Railroad Administration (FRA). The Authority is the state lead agency for the purposes of compliance with CEQA, and the FRA is the lead federal agency for the purpose of compliance with NEPA.

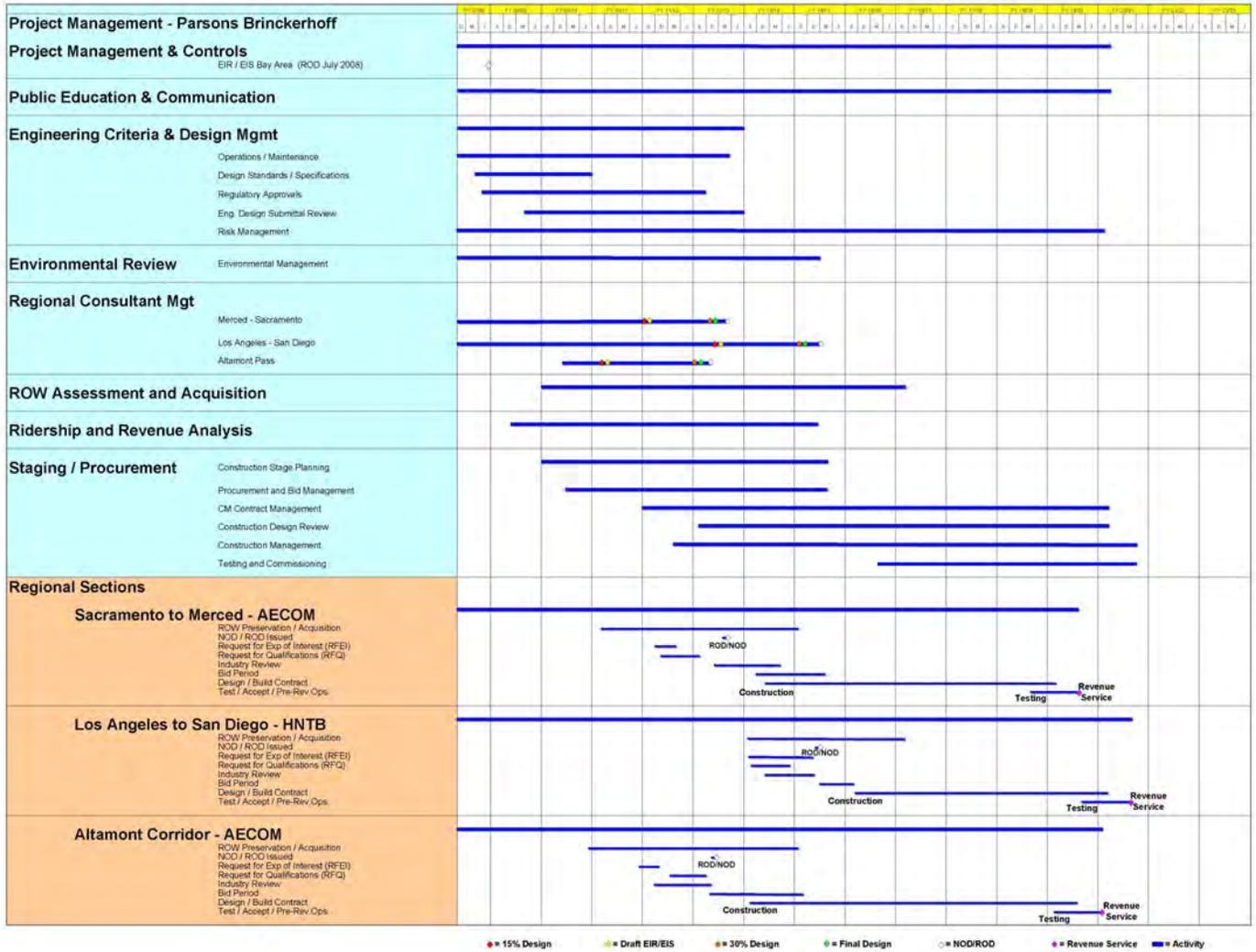
Upon receipt of the NOD and ROD for a given regional section, permitting activities, right-of-way negotiations, land acquisition, final design, and construction for that section can begin.

Master Summary Schedule

The Master Summary Schedule presented on the following pages represents a summary-level management plan for the development of the project work required to move the California high-speed train project thru the EIR and EIS process and on to construction and revenue service. Shown on the Master Summary Schedule are the milestones for the NODs and RODs for the regional section projects. These are critical project milestones that must be met to move the CHSTP from planning and preliminary engineering to the stage where right-of-way acquisition can be completed and "camera-ready" procurement documents for bidding under a design-build (DB) or public-private-partnership (PPP) delivery approach are available.

To implement the California high-speed train system, the Authority has developed an organization and team of world-class experts with a proven track record for delivering large high-speed rail programs throughout the country and the world. A discussion of this team is in the following section.

California High-Speed Train Project Following Phases Master Summary Schedule



PAGE INTENTIONALLY LEFT BLANK

2.0 The Team

This section discusses the California high-speed train project (CHSTP) program organization and team, all of which is led by the California High-Speed Rail Authority.

The California High-Speed Rail Authority

Established in 1996, the California High-Speed Rail Authority (Authority) is the state entity responsible for planning, constructing, and operating a high-speed train system serving California's major metropolitan areas. The Authority has a nine-member policy board and a core staff to implement the high-speed train system in California. The staff currently consists of an Executive Director, two Deputy Directors, a Chief Engineer, a Project Management Oversight Manager (expected by June 2009), Finance Manager, Government Relations Manager, and a support staff that includes the Program Management Team.

The Authority is supported by the California Attorney General's office, which provides legal support on all matters including review of the environmental deliverables up to and including the Final Environmental Report (EIR) and the Notice of Determination (NOD) on behalf of the Authority. The California high-speed train project also directly involves the Federal Railroad Administration (FRA). The FRA will be the federal lead agency under the National Environmental Policy Act (NEPA) responsible for technical and legal review of the regional project Environmental Impact Statements (EISs). All environmental deliverables up to and including the Final EIS and Record of Decision (ROD) will be subject to FRA review and approval.

With voter approval of AB 3034 (Proposition 1A) on November 4, 2008, the Authority now has \$9 billion in bond funding for the 800-mile statewide network. This bond funding also provides \$950 million to finance capital improvements to commuter and intercity rail as well as local transit lines that will connect existing infrastructure to the high-speed train system.

Given that the Authority is responsible for all of the environmental, planning and engineering work required to bring the project to operations, the Authority has engaged the services of several teams of private firms, including a Program Manager, under contract with the Authority to accomplish these goals.

The Management Team

Over the past decade, operating with a small core staff, the Authority has efficiently prepared the way for construction of the first and only contemporary, all-new high-speed train operating on dedicated right-of-way in the United States. The Authority has enlisted first-rate skilled and qualified resources needed to plan, construct and operate a world-class transportation infrastructure project of this magnitude, by pulling together nearly 100 of the world's most notable private engineering and planning firms to assist in:

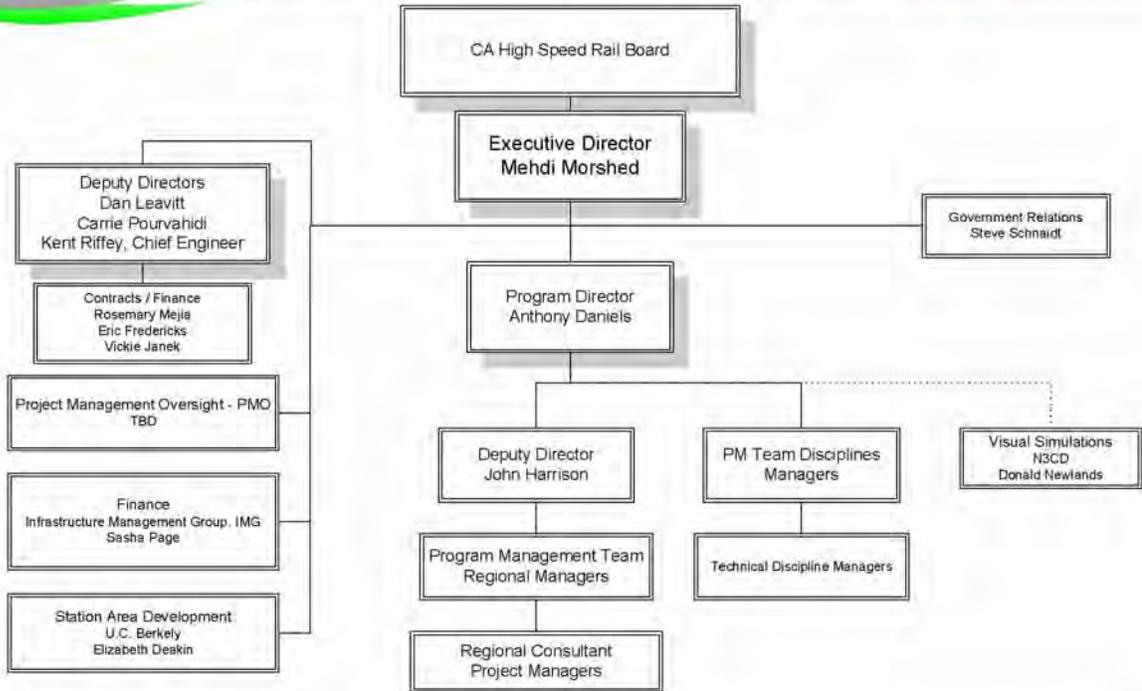
- Program Management
- Project Engineering
- Economic Consulting
- Energy Consulting
- Environmental Services
- Infrastructure Design
- Systems, Operations and Ridership
- Right-of-Way and Land Use
- Specialty Engineering
- Transportation Planning
- Constructability Reviews
- Procurement
- Construction Management
- Testing and Commissioning
- Revenue Service Start-up

The experts that these firms have assigned to the project have guided the planning, construction, and/or operation of high-speed train systems around the world, representing hundreds of billions of dollars in infrastructure development.

In 2006, the Authority engaged the services of a Program Manager, Parsons Brinckerhoff, to provide the program management services necessary to oversee and manage the California High-Speed Rail Program. This includes development of engineering design criteria and standards to guide the design, construction and operation of the of the high-speed train system. The Program Manager also to provides complete program-level management and oversight of eight regional consulting firms who are performing the detailed planning, preparing the project-level environmental documents, and performing the preliminary engineering design. This is accomplished by engaging each of the regional consultants with regional managers from within the program management team. The regional manager will provide the program management services necessary for managing the project-level environmental process and preliminary engineering design by the regional consultants, and management of procurement, construction management, testing commissioning, and revenue start-up activities.

The overall project organization is illustrated on the chart on the following page.

California High Speed Rail - Overall Organization



Program Management Team

Parsons Brinckerhoff, as the Program Manager, manages the work elements related to the regional consulting firms performing preliminary engineering, and environmental studies and reports, as well as providing the overall program management required to implement California high-speed rail system. As a result, Parson Brinckerhoff's Program Management Team (PMT) has established the standards for project controls, design work, environmental protocols, and revenue and ridership analysis, and manages the regional consulting firms under direct contract with the Authority. The PMT reviews and confirms the work of the regional consulting firms to ensure consistency with the established standards so that the system will be built to a common standard necessary to ensure the system will function as intended. Once the project milestones are reached for design and environmental approval, the PMT will create "camera-ready" documents for procurement to be used during final design, construction, and start-up.

Regional Consultants

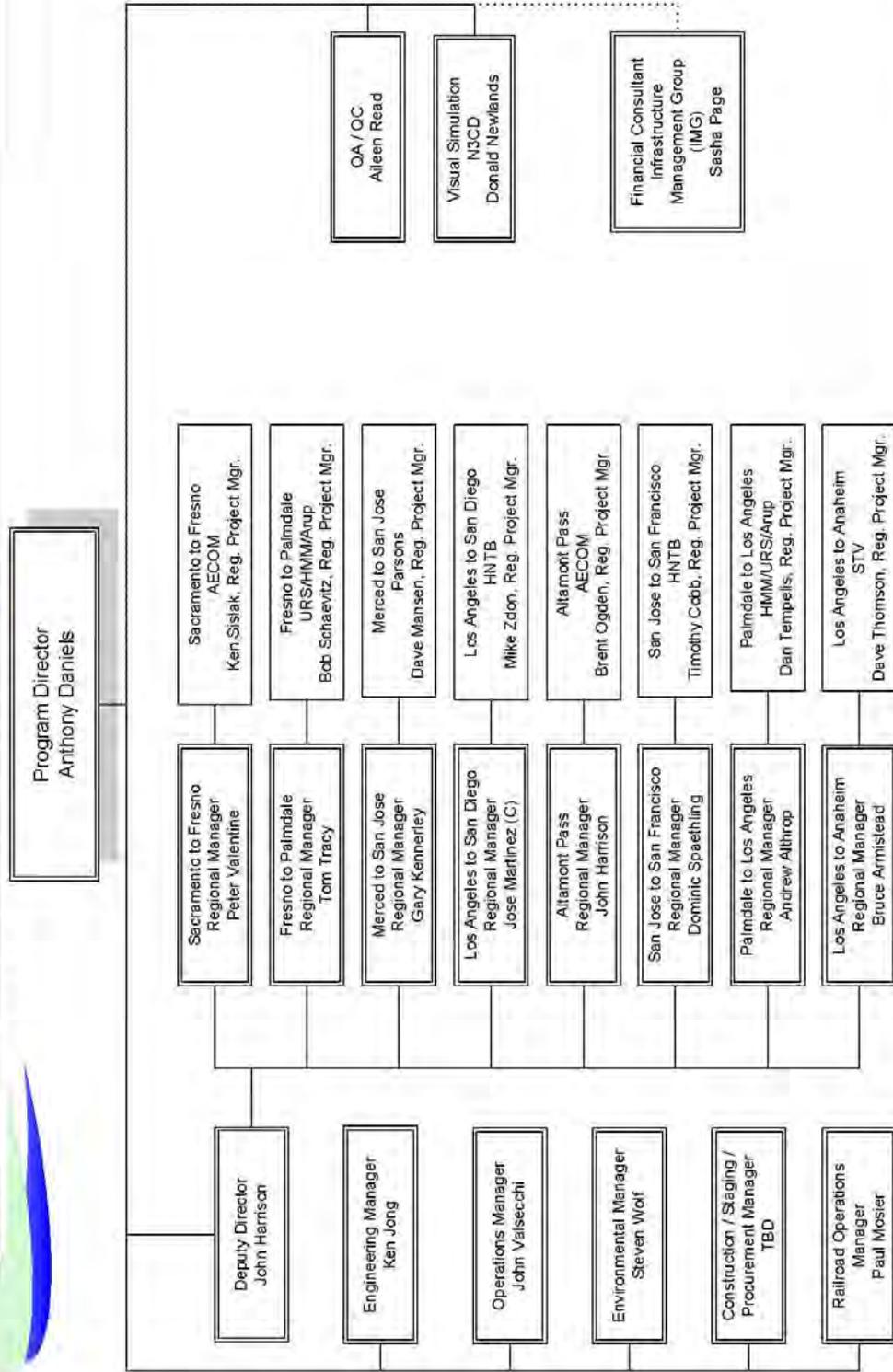
The Authority has divided the Program into ten regional sections to better manage the planning and design required to complete the Program and has engaged the services of the following eight distinct Regional Consultant teams to perform this work:

- Los Angeles to Orange County – STV, Inc.
- Los Angeles to Palmdale – Joint Venture of Hatch Mott MacDonald (lead firm), URS Corporation, and ARUP
- Palmdale to Bakersfield - Joint Venture of URS Corporation (lead firm), Hatch Mott MacDonald, and ARUP
- Bakersfield to Fresno - Joint Venture of URS Corporation (lead firm), Hatch Mott MacDonald, and ARUP
- Fresno to Merced – AECOM Transportation (Sacramento based team)
- Merced to Sacramento – AECOM Transportation (Sacramento based team)
- Merced to San Jose – Parsons Corporation
- San Jose to San Francisco – HNTB Corporation (San Francisco based team)
- Altamont Corridor – AECOM Transportation (Oakland based team)
- Los Angeles to San Diego – HNTB Corporation (San Diego based team)

The function of each Regional Consultant is to provide the planning, environmental, and engineering services necessary to obtain a NOD and ROD for their respective sections of the project. From that point forward, the PMT will take the project into procurement, construction, commissioning and start-up.

The Project Management Team Organization, including the Regional Consultants, is shown on the following page. A discussion of Program Management is in the following section.

Program Management Team



PAGE INTENTIONALLY LEFT BLANK

3.0 Program Management

Driving a complex and very large undertaking like the California High-Speed Train Project (CHSTP) to completion requires thoughtful planning, timely execution, regular monitoring, and pro-active management by a team of professionals with experience in program management and in the successful delivery of very large infrastructure projects in the United States and abroad.

Management of the overall Program becomes increasingly challenging as delivery activities overlap and schedules compress. A successful management team considers and manages a number of separate, often concurrent, activities for different geographical sections and delivery phases of the system, including:

- Development of engineering design criteria and standards to guide the design, construction and operation of the of the high-speed train system.
- Planning, environmental review and permitting; preliminary engineering, land acquisition, and negotiations with existing railroads and public entities.
- Procurement documents, design, construction, testing and commissioning, and training.
- Revenue service operation and maintenance of the high-speed rail system.

To address the management challenges, the California High-Speed Rail Authority (Authority) established the matrix organization structure, presented in the previous section, consisting of the Program Management Team (PMT) and multiple Regional Consultants to guide, support and deliver the CHSTP. The PMT has responsibility for establishing Program-level and system-wide requirements that ensure quality, safety and reliability, and consistency across all the Regional Consultants that are preparing the regional project environmental and preliminary engineering studies for the eight regions that make up the 800-mile long high-speed rail network planned for California. Dividing the 800-mile route into eight segments provides manageable projects that can be supported by timely regulatory review, assessment and approvals.

The PMT is responsible for activities that take the Program from environmental assessment through preliminary engineering and final design and on to construction and revenue service, including:

- Program Delivery Planning and Management
- Technical Standards Development
- Regulatory Approvals
- Regional Consultant Oversight and Management
- Procurement
- Construction Management

Program Delivery Planning and Management

Program planning and project development for the California high-speed rail system adheres to a prescriptive regulatory process to ensure that required issues are assessed, impacts are identified, and mitigation is included in the final project. The major milestones can be divided into three categories: planning, implementation, and revenue service.

Planning

- Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS)^{3,4}, Conceptual Engineering (*COMPLETED*)
- Draft Regional Project EIR/EIS, 15% Design – Preliminary Engineering (*IN-PROGRESS*)
- Final Regional Project EIR/EIS, 30% Design – Preliminary Engineering
- Notice of Determination (NOD) / Record of Decision (ROD)

Implementation

- Procurement Documents
- Permitting
- Land Acquisition and Right-of-Way Preservation
- Design and Construction
- Testing, Commissioning, and Training

Revenue Service

- Revenue Service Operations
- Maintenance

In order to plan the system, including sizing stations, power systems, maintenance facilities and other system requirements for preliminary engineering and for evaluating the impacts and mitigations required in the regional project EIR/EIS work, certain key input is required. Primarily, the key driver of the direction for the Program is the ridership forecasts, which are determined by considerations, such as time to travel between cities, number of stations and stops, operating hours, train ticket prices, distribution of California's population, and the demand for travel between the cities connected by the California high-speed rail network. The ridership forecast work is performed by the PMT. For purposes of developing the ridership forecasts, a detailed state-wide travel model with more than 4,600 zones was developed for inter-regional travel, and the existing regional travel models in the San Francisco Bay Area and the Los Angeles Basin were adapted to forecast local intra-regional travel. In the latest published ridership projections included in the "*California High-Speed Train Business Plan*" dated November 2008, 13 scenarios were tested with train fares at

³ Final Program Environmental Impact Report / Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System, August 2005.

⁴ Final Bay Area to Central Valley High-Speed Train (HST) Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS), May 2008.

different levels compared with competing modes for driving costs and airfares. Results are summarized for 14 regions in the state, and can be found in the 2008 Business Source Document "*Ridership and Revenue*". While the Los Angeles Basin to the San Francisco Bay Area is the largest single revenue market for high-speed rail, intermediate San Joaquin Valley markets generate more riders and revenue, as does travel to and from San Diego and Sacramento..

Technical Standards Development

To ensure consistency across the system, the approach for environmental review, as well as high-speed rail environmental and engineering standards need to be defined for application by the Regional Consultants.

Environmental Review Approach

The 800-mile, high-speed train system will require the preparation of eight EIR/EIS documents to address the environmental approvals needed before final design and construction can begin. With eight regional teams working, standard methods are essential for determining baseline conditions, assessing environmental impacts, identifying mitigation measures, and presenting this information in the EIR/EIS. The PMT has prepared technical guidance documents for the implementation of each of the environmental milestones needed for final approval of the eight regional project EIR/EISs from the initiation of the project beginning with the preparing of the Notice of Preparation/Notice of Intent (NOP/NOI) and public scoping meetings to the final project approvals included in the NOD/ROD. These technical memos, guidance, and policy documents are listed in Section 5.0. Work Progress and Costs.

The PMT will prepare the Statewide Air Quality Analysis for each of the Regional Consultants to assess the potential effects of the high-speed train project on greenhouse gas and global warming. Policy documents and statewide criteria needed to determine when noise and traffic mitigation measures will be required for the CHSTP will also be developed by the PMT.

The Alternative Analysis (AA) process is a significant step of the EIR/EIS. The PMT has developed a detailed process by which the Regional Consultants develop the project alternatives and design options that are feasible and reasonable to meet the purpose of the CHSTP and also avoid or minimize impacts. These alternatives are then reviewed by the PMT, Authority, Attorney General, and Federal Railroad Administration (FRA) to determine which should be prepared through the environmental and preliminary design process. The AA phase requires outreach to the public, stakeholders, and agencies to allow for their involvement in developing these alternatives and establishing a consensus with the approval agencies and local communities. The PMT provides the guidance and management of the AA process to ensure that the efforts conducted are the same for each of the regional teams. The PMT responsibilities include review and approval of the Initial Alternative Screening Memos, Draft and Final AA Reports, and agency coordination meetings presenting the results of the AA process.

High-Speed Rail Engineering Standards

There are three key considerations that define the technical requirements of the CHSTP. These include:

- A regulatory framework that sets the mandatory safety requirements to ensure public safety of the system, which is further discussed in the *Regulatory Approvals* section of this document.
- System performance objectives that define what service levels are required of the system, including intercity trip times, which are outlined in the governing legislation⁵ included in the *California Streets and Highways Code* as Chapter 20, Division 3.
- Design standards, and operations and maintenance plans that guide final design, construction, and revenue service operations, which are further expanded in the following sections.

Design Standards and Operations & Maintenance Plans

Developed to meet the federal and state safety regulations and provide for the performance objectives of the California high-speed train system, project design standards and operations & maintenance plans guide the final design, construction, and revenue service operations of the high-speed rail system.

At the program management level, the engineering efforts are focused on five key areas of activity, all of which are required to confirm that the designed high-speed rail system delivers the performance objectives. These key areas include:

Design of system-wide elements where consistency across the network is critical. This includes elements such as the traction power and distribution systems, and train control systems.

Design criteria and standards to guide the preliminary engineering, final design, and construction.

Maintenance plan to determine maintenance facility requirements.

A concept of operations to determine operational facilities and approach.

Rolling stock (train vehicle) performance specifications

Technical areas of PMT focus for each of these areas are as follows:

System-wide Design Elements

- CHSTP requirements and design for a network-wide 2x25 kV traction power supply system and coordination with the California Public Utilities Commission (CPUC) for approvals process.
- Standard designs for overhead contact system to ensure a consistent application across the CHSTP network.
- Train control system specifications that provide Authority requirements for performance, capacity, and safety and for consistent application across the CHSTP network.

Design Criteria and Standards

⁵ Assembly Bill 3034 (Proposition 1A, November 2008)

- Design criteria that supports FRA safety standards and requirements, and the Petition for Rule of Particular Applicability (RPA), including track alignment, bridge and viaduct design, tunnel design, building facility structural design, earthworks, drainage design, safety and security, geotechnical investigations and design, seismic considerations, traction power facility equipment, traction power system analysis, overhead contact system configuration, positive train control, system architecture and design requirements, system interfaces, and supervisory control and data acquisition (SCADA).
- Design criteria development is documented as Technical Memoranda, Directive Drawings, and Standard Drawings. These documents include assessment of existing high-speed rail systems, analysis of what is appropriate for the California high-speed rail system, and design guidance for 15% and 30% preliminary engineering, final design and construction. Directive Drawings expand on specific written criteria set forth in the broader guidance of a technical memorandum, and can be issued for use prior to final release of a technical memorandum to expedite design development. A listing of specific documents and planned completion dates is included in Section 5.0. Work Progress and Costs.
- Design criteria and standards that ensure all subsystems deliver a reliable and safe high-speed rail system commensurate with high-speed rail industry standards, are integrated at the design criteria level, and provide a consistent design approach to be applied to each CHSTP section.
- CHSTP Design Manual is the primary design reference for final design and construction.

Maintenance Plan

- Program-wide maintenance concept plans for use in defining maintenance facilities, including locations, size, and activities of each facility.
- Rolling stock inspection and maintenance plan includes activities, and frequency intervals (time or mileage as appropriate) typical for high-speed rail rolling stock for purposes of determining rolling stock facility requirements including types of facilities, activities at each of the facilities including major equipment, required frequency of inspection and maintenance, approximate location for each of the facility types, approximate size of each facility type, and rolling stock sitting time at each location.
- Maintenance of track infrastructure, known as maintenance-of-way (MOW), inspection and maintenance activities and frequency intervals (time or mileage as appropriate) typical for high-speed rail infrastructure for purposes of determining MOW facility requirements, including activities at each site, equipment requirements, and approximate size and locations.

Operational Planning and Concept of Operations

- Operational planning support to confirm programmatic level studies and make regional project recommendations to optimize system performance for ridership and revenue.
- Operational concepts for the CHSTP, including operational objectives, mainline configuration, control of operations, rolling stock maintenance and repair.
- Operating design criteria including operating routes, operating speed and restrictions, design level of service, operating hours, operating schedule and station dwell times, normal and contingency modes of operations, recovery time, headways, and trainset length and seating requirements.

Rolling Stock

- Rolling stock specifications to support procurement and acceptance of trainsets that meet Authority performance and safety requirements including maximum operating speed, acceleration rate and braking rates (service and emergency), leading dimensions and clearances, trainset make-up, number of seats, number of trainsets, distributed power versus locomotive hauled, line voltage, tilting versus non-tilting, radial steering trucks, HVAC requirements, coupling systems (internal and external), carbody materials, energy management systems, compliant versus non-compliant designs, signal and train control technologies, and communications requirements.

Regulatory Approvals

U.S and State Environmental Regulatory Agencies

The environmental regulatory approvals have been started by the PMT with statewide environmental resource agency coordination meetings. These meetings are expected to be held three times a year with the federal and state resource agencies such as the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. EPA, CA Department of Fish and Game, State Historic Preservation Office (SHPO), and others. The PMT role in this coordination is to standardize the technical review requirements for each of the approval agencies by preparing either Memorandums of Agreement or Understanding, or Programmatic Agreements between these agencies and the Authority and FRA. To date a 404 Memorandum of Understanding has been prepared between the FRA and U.S. Army Corps of Engineers, and a Programmatic Agreement between the Authority and SHPO on the Section 106 Cultural Resource approval process. The PMT will continue its meetings and consultation with these agencies to identify measures to minimize their review and approval of the eight regional section project-level EIR/EISs.

U.S. Department of Transportation / Federal Railroad Administration

In April 2009, the U.S. Department of Transportation published “*A Vision for High-Speed Rail in America*” to build a network of high-speed rail corridors across America. Within this document, the U.S. DOT identified the “Need for High-Speed Rail Safety Standards” as one of five challenges inherent in advancing this new passenger rail vision. This Vision document also states that:

“...the systems approach required to ensure safety of new high-speed rail corridors will necessitate consideration of additional changes in several regulations, including equipment, system safety, and collision and derailment prevention” and that this “opportunity to revise its safety approach in a manner that accelerates the development of high-speed rail while preserving and improving upon a strong safety regime...will be a challenge for the [FRA] as it seeks to administer its critical safety responsibility.”

It is important to note that existing federal regulations support train speeds up to 150 mph and that introduction of modern high-speed rail revenue service operations in California and the United State depends on successful completion of a Rule of Particular Applicability (RPA) for the CHSTP. The RPA and Notice of Proposed Rule Making (NPRM) is the federal process for introducing and adopting new safety regulations into the *Code of Federal Regulations*.

With California at the forefront of modern high-speed rail development in the United States, the Authority has taken the opportunity to move forward with the FRA and define how best to implement a system design

approach and develop the required federal safety regulations and standards for high-speed rail with operating speeds up to 220 mph. Since September 2008, the Authority and its staff have met with FRA several times to discuss and advance how the CHSTP will demonstrate compliance with existing federal regulations and, more importantly, how to develop high-speed rail safety regulations to be included in future federal safety regulations. This approach is further detailed in a draft Technical Memorandum, TM 0.9 Process to Support Development of a CHSTP Draft Rule of Particular Applicability, which is currently under review by FRA.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) General Order (GO) 95 provides safety-related rules for electrified overhead line construction on transportation systems. As with the federal regulations and high-speed rail at 220 mph, there exists a similar challenge with GO 95 in that it does not address the 2x25kV traction power supply system required for modern high-speed rail. Following several meetings with CPUC Consumer Protection & Safety Division, it was determined that an application requesting a variance to the GO 95 is required to allow installation and operation of the 2x25kV traction power supply system required for high-speed rail operations.

California Department of Transportation

The CHSTP crosses the state highway right-of-way at more than 100 locations including interstates and state routes. As the owner and maintainer of the state's highway network, Caltrans acceptance of this encroachment into the highway right-of-way is required. The process for requesting approval is well outlined in the *Caltrans Project Development Procedures Manual*. To streamline and possibly expedite the review and approval process, the Authority is currently discussing a possible statewide MOU with Caltrans to set forth guidelines for securing Caltrans approval.

Regional Consultant Oversight and Management

EIR/EIS Management to NOD/ROD

The PMT is responsible for the management of the EIR/EIS process by each of the Regional Consultants through to the final approval of each regional project with the NOD/ROD. The standard methods and guidance prepared by the PMT are implemented and managed by the PMT to ensure that each Regional Consultant will:

- Conduct public scoping meetings with presentation materials intended to inform the public of the CHSTP and have them understand the environmental process.
- Have adequate public, stakeholder, and agency outreach during the environmental process.
- Provide outreach to non-english speaking communities or groups.
- Conduct the AA process with the same level of detail and public/agency involvement needed to select the most reasonable and feasible options, which will avoid or minimize potential impact.
- Use the same study area limits to identify environmental baseline conditions.
- Use the same criteria and significance thresholds to identify potential impacts.
- Identify similar measures to avoid, minimize, and/or mitigate impacts.

During the preparation of the environmental deliverables and EIR/EIS documents by the Regional Consultants, the PMT provides the technical and quality assurance/quality control (QA/QC) review to ensure that the guidance and standard methods prepared by the PMT and adopted by the Authority and FRA are followed.

Engineering Management to 30% Design – Preliminary Engineering

There are two primary purposes for continuing oversight of the Regional Consultants by a central PMT engineering group: design consistency across the high-speed rail system and teams, and compliance with requirements.

Design Consistency

While it is common engineering practice, and necessary, to break out large projects into sections for development, design, and construction, it is critical that all Regional Consultants are guided by a consistent set of design criteria and standards to ensure the CHSTP will operate as a single system. Design consistency is achieved by issuance of design criteria to be applied by all Regional Consultant teams as they develop the 15% Design and 30% Design submittals.

- 15% Design – Preliminary engineering to support a regional project EIR/EIS, provide a more detailed construction cost estimate, and conform with all requirements and commitments included in decision documents (FRA ROD; Authority resolution, CEQA findings, and Mitigation Monitoring and Report Plan) and the Final Statewide Programmatic EIR/EIS for the CHSTP, and the Final Program EIR/EIS for the San Francisco Bay Area to Central Valley portion of the high-speed train system. Generally, the level of engineering detail will be sufficient to determine the required footprint for the CHSTP facilities and identify environmental impacts.
- 30% Design – Preliminary engineering to support procurement of final design and construction services, provide a more detailed and accurate construction cost estimate and in conformance with the regional project Final Environmental Documents. Generally, the level of engineering detail will identify all elements of the project to be constructed, but leave construction details and final placement for development during final design.

Compliance with Requirements

The engineering-related requirements generally fall into two categories, technical design requirements and safety requirements. Compliance with the technical design requirements is critical in ensuring that the California high-speed rail system provides the performance mandated by the guiding legislation⁶ and set forth by the Authority in policy documents. Compliance with the safety requirements, which will be embodied in the RPA for the CHSTP, is critical to securing FRA and CPUC certification to operate the California high-speed train in revenue service. Compliance reviews are further discussed in detail in *Section 4.0 Implementation Plan*.

⁶ Assembly Bill 3034 (Proposition 1A, November 2008)

Procurement

Project delivery strategies currently under discussion will be further assessed and procurement documents will be prepared and ready for distribution when the regional project NODs / RODs are approved by the Authority and FRA. Procurement documents will be compiled by the PMT and will reflect a coordinated effort by the Authority staff, legal and financial experts, design and construction management consultants, and technical specialists. The procurement documents will include the following sections:

- Definitions and Terms
- Proposal Requirements and Conditions
- Award and Execution of Contract
- Scope of the Work
- Control of the Work
- Control of Materials
- Legal Requirements and Responsibility to the Public
- Prosecution and Progress
- Measurement and Payment

A significant element of the procurement package is the technical guidance and engineering definition generated by the PMT and Regional Consultants, and required to support the Scope of the Work. These documents include the following:

- 30% Design - Preliminary Engineering (Forms the basis for developing final design plans and for establishing a baseline construction cost estimate.)
- Design Criteria / CHSTP Design Manual
- Directive Drawings
- Standard Drawings
- Standard Specifications and Special Provisions

Due to the size of the Program, procurement documents will likely include a range of contract types (e.g., Design/Build, Design/Build/Operate, Design/Build/Operate/Maintain) depending on the overall delivery strategy and schedule. For example, civil works may be let out on a Design/Build basis by segment while systems works such as trains and signaling may be let out on a system-wide basis as part of a larger operating agreement. Regardless, the contracting strategy will reflect the needs of the delivery schedule and operations and maintenance of a safe and reliable high-speed system.

Construction Management

Following receipt of the NODs / RODs and issuance of the procurement documents, projects will move on to the final design and construction stage. At this point, the role of PMT will focus on oversight of the design and construction contractors to ensure compliance with the design criteria, standard drawings, and preliminary engineering documents.

Given the number and value of active construction projects and contracts required to deliver the California high-speed train system, multiple construction management teams will be required to oversee and manage the individual construction projects. The PMT Construction Manager (CM) will monitor and actively manage these construction management teams to confirm construction progress, budgets, schedules, quality, and compliance with standards and specifications. This will ensure that a Program-wide perspective is maintained for on-time delivery of revenue service, including development of schedule recovery plans as needed. During this phase, the design and construction contractor will likely bring forward alternative approaches and designs that provide economic benefits to the Authority. The PMT CM will institute a change control process to evaluate requested design variations against the published California high-speed rail design criteria and standards to confirm any impacts to safety, reliability, and overall achievement of the system performance objectives. Where necessary, the PMT CM will also provide additional support to the construction management teams or take on special assignments to ensure delivery of the construction to meet schedule and revenue service target dates.

It is critical that construction management input be provided at the early stages in the development of the program documents to ensure a high level of efficiency and effectiveness during procurement for design and construction services, as well as during the construction activity itself. Areas where construction management input is critical includes review of Regional Consultant 15% Design submittal packages for constructability issues and review of Regional Consultant 30% Design submittal packages for both constructability and biddability issues. The PMT CM will provide key input into the development of the procurement documents including review of Program-level engineering deliverables such as the CHSTP Design Manual, Directive Drawings, Standard Drawings, and Standard Specifications for appropriateness and effectiveness in supporting the procurement of services, design, and construction of the CHSTP.

A discussion of the Implementation Plan for the project is in the following section.

4.0 Implementation Plan

As outlined in the discussion on *Program Delivery Planning and Management* in Section 3.0, there is a prescriptive federal and state regulatory process for project development of large transportation infrastructure. This Implementation Plan addresses the basic elements needed to deliver the California High-Speed Train Project (CHSTP). The basic elements of the plan include a project approval process, which includes environmental review and preliminary engineering, agency agreements and permitting, right-of-way preservation and acquisition, and procurement/construction. The work tasks and deliverables of the Implementation Plan are as follows:

Project Approval Process

Environmental Review

- **Notice of Preparation / Notice of Intent .** The initial stage of the CHSTP is to define the logical termini of the different sections of the 800-mile, statewide, high-speed train system. For each of these sections a regional project environmental document will be prepared supported by 15% preliminary engineering. The notices Notice of Preparation/Notice of Intent (NOP/NOI) to begin the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) environmental and preliminary design process are prepared, distributed, and advertised.
- **Public/Agency Scoping.** Public scoping meetings are conducted to explain the environmental process and present the initial alternatives and design options from the statewide program-level Environmental Impact Report/Environmental Impact Statement (EIR/EIS).
- **Alternatives Analysis.** Based on the comments received at the scoping meetings, the initial alternatives and design options are modified and/or eliminated, and new alternatives are developed that respond to the public concerns to avoid or minimize potential impacts. Conceptual design is prepared for these alternatives to determine the potential right-of-way and environmental impacts.
- **Public/Stakeholder/Agency Outreach.** During the Alternatives Analysis and Environmental Analysis process, outreach is made to the public and stakeholders in the project study area. Coordination with planning, transportation, and environmental resource agencies is conducted as a series of regular meetings to present and update the information prepared during the EIR/EIS process.
- **Project Definition.** The results of the Alternatives Analysis process defines the alternatives and design options that are feasible and reasonable to be carried through the environmental process. 15% Design - Preliminary Engineering is prepared for each of these alternatives to allow for the impact analysis to be conducted. 15% Design – Preliminary Engineering is further described in the Engineering section of this document.
- **Environmental Technical Reports.** Detailed studies for the major environmental disciplines are prepared to define the existing baseline conditions, assess potential impacts, and identify mitigation measures.
- **EIR/EIS Sections.** The baseline and impact analysis for the environmental disciplines, such as biology, air quality, noise, and community impact, are summarized for the different EIR/EIS sections.
- **Administrative Draft EIR/EIS.** The Administrative Draft EIR/EIS is prepared for the California High-Speed Rail Authority (Authority) and the Federal Railroad Administration (FRA) technical and legal review before it is approved for public circulation.

- **Draft EIR/EIS for public circulation.** The completed Draft EIR/EIS is circulated for public and agency comment for a period of 60 calendar days.
- **Public Hearing.** A public hearing is conducted to present the results of the high-speed train regional project environmental assessment and take oral and written comments.
- **Response to Comments.** Written responses are prepared for each of the comments received. These are circulated to the public as part of the Final EIR/EIS
- **Selection of Preferred Alternative.** Based on the information presented in the Draft EIR/EIS and the public and agency comments received, the Authority and the FRA select the preferred alternative and/or design option.
- **Mitigation Monitoring and Reporting Plan.** The mitigation measures to be provided by the CHSTP are presented in detail along with an implementation, monitoring, and reporting plan.
- **NOD/ROD.** The final notices are prepared and advertised that detail the mitigation and monitoring requirements of the regional project final EIR/EIS.
- **Final EIR/EIS.** The Final EIR/EIS is prepared and circulated for public and agency review. The 30% Design - Preliminary Engineering is completed and included for the preferred alternative and/or design option. 30% Design – Preliminary Engineering is further described in the Engineering section of this document.

Engineering

15% Design – Preliminary Engineering. The PMT has prepared design basis documents that define the major components and key performance objectives for the design, construction and operation of the high-speed train as an integrated system. To ensure consistency throughout the CHSTP, each of the Regional Consultants has responsibility to develop the preliminary engineering to a 15% level in conformance with the design basis. A detailed listing of the required elements of the 15% design scope is shown in the Design Scope Matrix included at the end of this Section 4.0.

This 15% level of design is the level necessary to support the regional project EIR/EIS, other applicable laws and regulations, and to provide sufficient design information to generate a construction cost estimate. The role of the PMT is to verify the Regional Consultant’s progress and performance with respect to the following parameters:

- **Design consistency.** Design conforms to the design basis, applicable codes of practice, design guidelines and standards, design requirements adopted as part of the environmental review, and criteria prepared for high-speed train operational and performance requirements.
- **Regulatory and Performance.** Design complies with FRA railroad safety and CPUC regulations.
- **Construction Cost.** Design is sufficient to enable estimation of unit costs, quantities, construction staging, and implementation methods to allow for construction cost estimates accurate enough to support a maximum 25% contingency.
- **Review and Acceptance.** Design complies with CHSTP design criteria and standards, and with applicable state and federal regulations and guidelines.

The verification of the Regional Consultants performance will be achieved through a series of “In –Progress Reviews” conducted at key stages of completion by specific design elements as indicated below:

- Alignment and Typical Sections
- Structures, Viaducts, Tunnels
- Stations, Maintenance Facilities, including Storage
- Traction Power
- Utility relocations, Maintenance-of -Way Facilities and Tracksides Access
- System Integration / Draft 15% Design

The Draft 15% Design review, which includes a final system integration review, will be performed on a submittal that includes the required design elements and incorporates/addresses all comments received during the in-progress reviews.

30 % Design – Preliminary Engineering. While the purpose of the 15% Design – Preliminary Engineering effort is to assess alternatives and identify environmental impacts and mitigation leading to a preferred alternative, the 30% Design – Preliminary Engineering is required to support the procurement process for final design and construction services. 30% Design – Preliminary Engineering is to be initiated when there is a high confidence level in the preference for a single alignment alternative. The 30% Design is guided by the previously developed 15% Design documents and provides the additional detail required for a contractor to develop bid documents. The listing of 30% design scope guidelines is currently in draft form and is shown with the 15% design scope in the Design Scope Matrix at the end of this Section 4.0. The 30% design scope portion of the Design Scope Matrix is “under development” as of this writing, and should be considered as information only.

Similar to the 15% Design reviews, the PMT will review the 30% Design documents to verify design consistency and compliance with the CHSTP technical requirements, compliance with federal and state regulatory requirements, and sufficiency of design to generate the 30% Design level Construction Cost Estimate.

Similar to the 15% Design review, verification of the 30% Design will be achieved through a series of “In-Progress Reviews” conducted at key stages of completion by specific design elements to confirm compliance. The 30% Design documents will also undergo a detailed constructability and bid-ability review prior to release for use as a part of the procurement package.

Agency Agreements and Permitting

The PMT will be preparing statewide agency agreements with environmental resource agencies to support the environmental permitting requiring during final design and construction. These agreements, Memorandum of Understanding (MOU), Agreement (MOA), or Programmatic Agreements (PA), will clearly identify the roles and responsibilities of the Regional Consultant teams in meeting the permitting requirements of the federal, state, and regional environmental resource agencies. The PMT will manage and review the permitting process which begins during the preparation of the Final EIR/EIS. The major environmental permits that each of the HST Projects will require are:

- Section 404 permit under the Clean Water Act
- Section 401 water quality certification permit
- Section 4(f) and Section 6(f) Approvals
- NPDES Permits
- USF&WS Section 7 Consultation and Biological Opinion
- California ESA permits
- California Department of Fish and Game (DFG) Section 1602 Lake and Streambed Alteration Agreement
- Caltrans Encroachment Permits

Right-of-Way Preservation and Acquisition

The PMT will, with the Regional Consultants, lead the task of right-of-way preservation and acquisition. This work will include identification of “at-risk” parcels, preparation of survey documents and legal descriptions, and negotiation for acquisition.

Identification of “at-risk” parcels. The Authority can currently protect rights-of-way and preserve land for the future high-speed rail alignments using the Program EIR/EIS approvals, as available funding permits. This might be considered in areas where development is rapidly occurring or where potential changes in land use could significantly increase construction costs.

Survey documents and legal descriptions. As the affected parcels are identified, specific data with respect to ownership, easements, parcel size, parcel requirements by the CHSTP need to be gathered and documented as a legal description to support negotiations.

Negotiation. Specific land acquisition by segment can begin upon receipt of the regional project NOD and ROD. Right-of-way acquisitions will conform to the *Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as amended, and other state and federal provisions required at the time of acquisition. As part of the right-of-way process and where shared use with existing railroad corridors

is confirmed, the Authority will negotiate terms of access for shared rights-of-way with railroad owners and operators on issues such as shared maintenance and operating costs, mitigation of existing operations to allow high-speed train operations, liability indemnification, insurance requirements, and other legal and operational matters.

Procurement / Construction

The PMT will lead the task of procurement for all purchases and construction of the project. This work will include development of legal, commercial, and technical elements for bid documents. It will also include bid evaluation and overall construction management.

Legal Provisions for Bid Documents. While it is anticipated that the Authority will have legal and contract support from State resources as well as standard contract language for use with the procurement documents, the PMT will support development of legal provisions specific to the differences between standard state contractual language and procedures with the requirements for alternative project delivery, particularly with respect to liability and indemnification.

Commercial Provisions for Bid Documents. In addition to supporting development of standard commercial provisions, such as progress reporting, and measurement and payment policies, the PMT will review with the Authority commercial provisions that have been used on other projects to improve construction quality, reduce construction costs, promote worker safety, minimize disruption to the public and stakeholders, and improve project schedules.

Technical specifications and drawings for Bid Documents. The majority of these documents will have already been produced by the PMT and the Regional Consultants. These technical documents include the 30% Design submittals, the CHSTP Design Manual, CHSTP Standard Specifications, CHSTP Standard Drawings, and Directive Drawings.

Bid Evaluation. The PMT will assist the Authority in the bid evaluation process including development of an evaluation manual and conducting a training seminar for the Bid Evaluation Team members. The PMT is available to support the technical review of bid documents, particularly for elements that might affect the performance requirements of the high-speed rail system. The PMT will provide technical support to the Authority in negotiations with the proposer which the Authority intends to enter into a contract.

Construction Management. The PMT will provide oversight of the Project-level construction management efforts as well as be available to support construction management efforts where required to maintain project quality and schedule. In this oversight function, the PMT will verify that the constructed projects will support the performance objectives set for the California High-Speed Train Project by the Authority.

A discussion regarding the schedule and cost for implementing the program is found in the following section.

Design Scope Matrix

DESIGN SCOPE MATRIX	15% Design Scope	30% Design Scope
General	<p>Engineering design to support a project-level EIR/EIS, provide a more detailed construction cost estimate, and conform to all requirements and commitments included in decision documents (FRA ROD, Authority resolution, CEQA findings and MMRP, the Final Statewide Programmatic EIR/EIS for the California High-Speed Train Project and the Bay Area to Central Valley Program EIR/EIS).</p> <p>These are minimum requirements. Additional detailed studies are to be completed where necessary</p>	<p>30% Design Scope generally includes an update of the 15% Design Scope elements leading to an overall project-level 30% design that provides :</p> <ul style="list-style-type: none"> ○ Plan set with appropriate information for design build procurement; ○ Detailed construction cost estimate; ○ Detailed construction schedule; ○ Permitting applications and approval requirements for construction; ○ Identification of agreements and memoranda of understanding with third parties for construction; ○ Design that conforms to requirements and commitments included in decision documents (FRA ROD; Authority Resolution, etc. <p>These are minimum requirements. Additional detailed design, technical studies, and investigations are to be completed where necessary.</p> <ul style="list-style-type: none"> - General Drawings to include: <ul style="list-style-type: none"> ▪ Cover ▪ Drawing Index ▪ Symbols ▪ Abbreviations ▪ General Notes
Infrastructure		
Survey and Mapping	<ul style="list-style-type: none"> ● Update alignment with available off-the-shelf (i.e., Intermap) planimetric and terrain mapping (3-foot vertical accuracy) 	<ul style="list-style-type: none"> ● Prepare Design Level mapping (i.e. 2- foot contours base mapping with 1-foot vertical accuracy)
Alignment (Plan and Profile)	<ul style="list-style-type: none"> - Alignment drawings at a scale appropriate to the context. Drawing scale is to be <ul style="list-style-type: none"> ○ 1"=200' scale for undeveloped areas ○ 1"=200' in developed areas ○ 1"=100' in constrained urban areas ○ 1"=50' for stations and special study areas) on rectified aerial photo base <p>These are recommended scales and are to be confirmed with the Environmental Manager and Regional Manager.</p> <ul style="list-style-type: none"> - Develop typical sections that identify clearances to water bodies, roadways, structures, access points, wayside equipment, etc. - Define Draft right of way limits 	<ul style="list-style-type: none"> - Update alignment with design-level mapping prepared for 30% design <ul style="list-style-type: none"> ○ 1"=100' scale for undeveloped areas ○ 1"=100' in developed areas ○ 1"=100' in constrained urban areas ○ 1"=50' for stations and special study areas - Other scales can be used as confirmed with the Regional Manager. - Develop typical sections that includes the entire alignment by station limits - Drawings to include: <ul style="list-style-type: none"> ▪ Key Map ▪ Typical Sections ▪ Horizontal Alignment Geometry Data ▪ Demolition Plans ▪ Alignment Plan and Profile

Infrastructure (continued)	15% Design Scope	30% Design Scope
Trackwork	<ul style="list-style-type: none"> - Identify type and location of turnouts, crossovers and special trackwork 	<ul style="list-style-type: none"> - Identify limits of track structure along the alignment - Confirm type and location of turnouts, crossovers and special trackwork - Drawings to include: <ul style="list-style-type: none"> ▪ Included with the Alignment Plan and Profile
Temporary Construction Facilities	<ul style="list-style-type: none"> - Develop design to a level where the feasibility of construction can be confirmed i.e., plan and profile level studies - Identify construction methods/staging/laydown/tunnel mucking/shaft and access requirements, and assess and identify suitable disposal sites for each alternative consistent the requirements of the decision documents and the two Final Program EIR/EISs (Statewide and Bay Area to Central Valley) - Identify roadway/highway traffic control requirements - Identify other railroad operator requirements - Determine temporary construction easements 	<ul style="list-style-type: none"> - Confirm feasibility of construction for the 30% Design elements i.e., plan and profile level studies - Confirm construction methods, staging, laydown, tunnel mucking, shaft and access requirements - Identify and assess and suitable disposal sites - Develop roadway/highway traffic control requirements. - Confirm and address other operator requirements - Drawings to include: <ul style="list-style-type: none"> ▪ Temporary Construction easements to be included in the Right-of-Way Drawings
Stations	<ul style="list-style-type: none"> - Develop general station programs and identify and design potential sites including at a minimum: <ul style="list-style-type: none"> o Station Platforms o Preliminary Station layout o Station facilities (ticketing, waiting areas, etc.) o Vertical and horizontal passenger circulation o Parking facility footprint, height, access and egress o Traffic circulation and intermodal connections o Pick up, drop off, access, and egress roadways and facilities 	<ul style="list-style-type: none"> - Finalize station and site layouts for selected site including: <ul style="list-style-type: none"> o Platforms o Station facilities (ticketing, waiting areas, concourses, restrooms, etc.) o Station Security o Vertical and horizontal passenger circulation o Parking facility footprint, height, access and egress. o Traffic circulation and intermodal connections o Pick-up, drop off, access, and egress roadways and facilities. - Prepare elevations and sections of station buildings - Drawings to include: <ul style="list-style-type: none"> ▪ Station Site Plan ▪ Station Platform Layout ▪ Typical Sections and Elevations ▪ Architectural Drawings ▪ Parking and Circulation Layout ▪ Parking and Circulation Sections ▪ Landscaping Concept

Infrastructure (continued)	15% Design Scope	30% Design Scope
Bridges, Elevated Structures, Grade Separations	<ul style="list-style-type: none"> - Develop approximate length, width, height, and depth of structures based on alignment design - Identify appropriate types of bridges and structures for consideration - Identify transition structures i.e. at-grade to bridge, at-grade to tunnel, bridge to tunnel, retaining walls, etc. - Prepare Advanced Planning Study (APS) level of analysis and documentation - Identify need for scour protection and preliminary requirements - Identify site constraints including, hydrology, salt spray and water, problematic soils, geologic problems, etc. 	<ul style="list-style-type: none"> - Prepare Type Selection level of analysis and documentation including structural calculations - Confirm a viable and economic structure design that meets design criteria including geotechnical and environmental resource site conditions - Drawings to include: <ul style="list-style-type: none"> ▪ General Plan ▪ Bridge Plan and Profile ▪ Log of Test Borings (existing and new) ▪ Typical Sections ▪ Construction Staging Concept - It is anticipated that the D/B Contractor will perform site specific geotechnical investigations and prepare final geotechnical design reports for design and construction. See Geotechnical scope for preliminary engineering level geotechnical exploration program guidance.
Tunnels	<ul style="list-style-type: none"> - Determine basic tunnel configuration, tunnel location alternatives and lengths - Confirm number of tracks and approximate tunnel diameter - Identify major seismic considerations - Locate faults and avoid fault crossings in tunnels - Assess need for pilot tunnels - Determine portal location options and length - Determine ventilation requirements as required to define tunnel size and any major ventilation facilities - Assess fire and life safety requirements and develop project footprint needs for as required (i.e. structures, equipment/ operation rooms, access, shafts, egress, etc) - Identify local requirements for first responders - Assess constructability including methods, access, temporary construction areas, muck disposal, etc. 	<ul style="list-style-type: none"> - Prepare Type Selection level of analysis and documentation including confirmation of: <ul style="list-style-type: none"> o Tunnel locations and lengths o Number of tracks and approximate tunnel diameter o Major seismic considerations including faults locations, avoid fault crossings in tunnel o Need for pilot tunnels o Portal location options and length o Fire and life safety requirements (i.e. structures, equipment/ operation rooms, access, shafts, egress, etc) o Local requirements for first responders o Constructability including methods, access, temporary construction areas, muck disposal, etc. - Confirm a viable and economic tunnel design that meets design criteria including known geotechnical and environmental resource site conditions - Drawings to include: <ul style="list-style-type: none"> ▪ General Plan ▪ Layout and Elevation ▪ Typical Sections ▪ Log of Test Borings (existing and new) ▪ Portal Layout, Sections, Elevations ▪ Mechanical (Conceptual) ▪ Construction Staging Concept - It is anticipated that the D/B Contractor will perform site specific geotechnical investigations and prepare final geotechnical design reports for design and construction. See Geotechnical scope for preliminary engineering level geotechnical exploration program guidance.

Infrastructure (continued)	15% Design Scope	30% Design Scope
Buildings	<ul style="list-style-type: none"> - Develop footprint based on general program of functions for the following: <ul style="list-style-type: none"> o Operations Control Center and redundant line facilities o Maintenance facilities (Heavy and Light Maintenance) o Lineside facilities for maintenance-of-way o Access, parking, utility services for the above facilities as required to define right-of-way requirements o Employee considerations as appropriate 	<ul style="list-style-type: none"> - Confirm footprint based on general program of functions for the following: <ul style="list-style-type: none"> o Operations Control Center and redundant line facilities o Maintenance facilities (Level 1/2/3/4/5 Maintenance Facilities as applicable) o Lineside facilities for maintenance-of-way o Access, parking, utility services for the above facilities as required to define right-of-way requirements. o Assess foundation requirements for buildings - See Section on Maintenance for Rolling Stock and MOW facilities
Grading	<ul style="list-style-type: none"> - Determine cut and fill slope limits based on 2:1 side slopes (typical) - Identify retaining structures as required to reduce ROW requirements and/or mitigate impacts - Determine retaining wall type, locations, lengths and heights - Identify temporary construction requirements 	<ul style="list-style-type: none"> - Confirm cut and fill slope limits based on geotechnical recommendations - Confirm retaining structures as required to reduce ROW requirements and/or mitigate impacts including wall type, locations, lengths and heights - Confirm temporary construction requirements - Drawings to include: <ul style="list-style-type: none"> ▪ Contour Grading and Drainage Concept ▪ Retaining Wall locations and Typical to be included with the Alignment Drawings
Hydrology / Hydraulics / Drainage	<ul style="list-style-type: none"> - Prepare Hydrology and Hydraulic studies required for environmental impact studies including: <ul style="list-style-type: none"> Type, location and cost of major drainage facilities or modifications as well as their footprint and costs Assess and incorporate rise in tidal waters (and expansion of tidal waters) due to climate change (global warming) Environmental methodologies for hydrology and design practices to reduce impacts or improve water quality - Prepare a floodplain impacts assessment (i.e Location Hydraulic Study) - Review stormwater runoff water quality issues and identify best management practices 	<ul style="list-style-type: none"> - Confirm Hydrology and Hydraulic studies completed including: <ul style="list-style-type: none"> Type, location and cost of major drainage facilities or modifications as well as their footprint and costs Assess and incorporate rise in tidal waters (and expansion of tidal waters) due to global warming Environmental methodologies for hydrology and design practices to reduce impacts or improve water quality Design to consider storm water runoff water quality issues and reflect best management practices - Confirm floodplain impacts and mitigation - Drawings to include: <ul style="list-style-type: none"> ▪ Corridor Drainage Areas

Infrastructure (continued)	15% Design Scope	30% Design Scope
Utilities	<ul style="list-style-type: none"> - Contact utility companies for data collection - Identify conflicts, ownership and rights for major utilities affected by the alignment. - Identify planned new High-Risk utilities that could conflict with alternatives. - Identify possible relocation/mitigation options, responsibilities and costs for high risk utilities. 	<ul style="list-style-type: none"> - Confirm conflicts, ownership and rights for major utilities affected by the alignment. - Confirm planned new High-Risk utilities that could conflict with alternatives. - Confirm relocation/mitigation options, responsibilities and costs for high risk utilities. - Drawings to include: <ul style="list-style-type: none"> ▪ Existing Utilities – Composite Plan ▪ Utility Relocations, as required
Geotechnical	<ul style="list-style-type: none"> - Research available literature and geotechnical studies within the project limits for use to identify and resolve geotechnical related design and cost issues - Prepare preliminary Geotechnical design recommendations based on available geotechnical data - Geotechnical investigation plan recommendations to support 15% Design - Subsurface investigations for special circumstances where additional geotechnical information is required to establish the project footprint or to establish a reasonable construction cost estimate 	<ul style="list-style-type: none"> - Develop geotechnical investigation workplan and recommendations to support 30% Design - Perform subsurface investigations for special circumstances where existing published geotechnical data does not exist and supplemental geotechnical information is required to validate the preferred alignment, establish the location and type of aerial or underground guideway, and to establish the construction cost estimate. Level of effort is to be reviewed with Regional Manager and Engineering Manager. - Prepare preliminary geotechnical design memos and reports: <ul style="list-style-type: none"> ▪ Geotechnical Baseline Report ▪ Geotechnical Design Report ▪ Preliminary Foundation Report - Drawings to include: <ul style="list-style-type: none"> ▪ None
Seismic	<ul style="list-style-type: none"> - Not required for 15% Design Scope 	<ul style="list-style-type: none"> - Engineered seismic design to support an overall project-level 30% design : <ul style="list-style-type: none"> Research available literature for faults and seismicity issues and obtain LIDAR survey data at fault crossings. Confirm that 30% Design meets Project Seismic Design Criteria via Type Selection Report Locations of expected damage, severity of damage, and means of inspection and repair - Documentation that Seismic Repair Criteria satisfied. - Drawings to include: <ul style="list-style-type: none"> ▪ None

Infrastructure (continued)	15% Design Scope	30% Design Scope
Right-of-Way	<ul style="list-style-type: none"> - Identify adjacent parcels and ownership for alternatives - Identify adjacent parcels and estimated costs for: <ul style="list-style-type: none"> o Full and partial takes o Permanent easements o Construction areas o Temporary staging areas and easements 	<ul style="list-style-type: none"> - Confirm areas required for ROW acquisition and easements - Identify sites that have a high risk of impacting the project (i.e., areas of large excavation with contaminated soils, areas of de-watering with groundwater contamination) in both existing rail ROW and potential acquisition properties - Confirm parcels and estimated costs for: <ul style="list-style-type: none"> o Full and partial takes o Permanent easements o Construction areas o Temporary staging areas and easements - Prepare right of way requirements report - Drawings to include: <ul style="list-style-type: none"> ▪ Proposed Right-of-Way, Permanent and Temporary Easements
Construction Cost Estimate	<ul style="list-style-type: none"> - Develop quantities per CHSTP 15% Design Construction Cost Guidelines - Prepare construction cost estimates per CHSTP Construction Cost Guidelines (cost categories consistent with FRA and FTA guidelines) 	<ul style="list-style-type: none"> - Develop quantities per CHSTP 30% Design Construction Cost Guidelines - Drawings to include: <ul style="list-style-type: none"> ▪ None
Systems		
Traction Power	<ul style="list-style-type: none"> - Identify site locations, access, and parking for substations. - Determine facilities for power between substation to the railway - Coordinate preliminary CHSTP load requirements with CPUC 	<ul style="list-style-type: none"> - Confirm site locations, access, and parking for Supply, Switching and Paralleling Stations. - Confirm Arrangements for connections between Supply, Switching and Paralleling Stations and OCS and Negative Feeders - Confirm preliminary CHSTP load at each Supply Station with applicable Utility Company - Drawings to include: <ul style="list-style-type: none"> General Traction Power <ul style="list-style-type: none"> ▪ Symbols ▪ Abbreviations ▪ General Notes ▪ Master Line Diagrams For each Supply, Switching and Paralleling Station <ul style="list-style-type: none"> ▪ Site Layout ▪ Substation Equipment Arrangement Layout ▪ Access Roadway Layout and Profile ▪ Typical Sections

Systems (continued)	15% Design Scope	30% Design Scope
PUC / Electric Power Connections	<ul style="list-style-type: none"> - Identify power supply points in coordination with the Utility Companies - Identify needed facilities and site options, including high voltage transmission or tie lines, to connect substations to commercial power lines 	<ul style="list-style-type: none"> - Confirm power supply points and connection requirements in coordination with the Utility Companies - Confirm HV Utility connection type, - Direct connection to an existing HV Line, Loop through connection to an existing HV Line, connection to an extension to an existing HV Line , etc. - Drawings to include: <ul style="list-style-type: none"> ▪ Site Layout ▪ Equipment Arrangement Layout ▪ Access Roadway Layout and Profile ▪ Typical Sections
Overhead Contract System (OCS)	<ul style="list-style-type: none"> - Develop conceptual design for OCS for design speeds 	<ul style="list-style-type: none"> - Develop conceptual design for pole layout for OCS. - Co-ordinate insulated overlaps with feeding arrangements at supply, switching and parallel stations - Drawings to include: <ul style="list-style-type: none"> ▪ OCS Tension Section / Overlap Layout ▪ OCS Pole Layout
Communications	<ul style="list-style-type: none"> - Determine communications technology - Identify footprint and access requirements for communication facilities 	<ul style="list-style-type: none"> - Confirm communications technology - Confirm footprint and access requirements for communication facilities - Drawings to include: <ul style="list-style-type: none"> ▪ Fiber Optic Duct Bank , Trackside, and Communications Equipment Layout
Trackside Services	<ul style="list-style-type: none"> - Identify requirements for equipment houses, signal houses, troughs, wayside equipment, etc. 	<ul style="list-style-type: none"> - Identify requirements for equipment houses, signal houses, duct banks, wayside equipment, etc. - Drawings to include: <ul style="list-style-type: none"> ▪ To be combined with the Communications Drawings.
Rolling Stock		
Technology	<ul style="list-style-type: none"> - Identify Rolling Stock performance requirements to meet CHSTP requirements including operating speed, capacity - Review available technology from HSR systems in the U.S., Europe and Asia 	<ul style="list-style-type: none"> - Develop performance and safety requirements for CHSTP Rolling Stock - Review requirements with Manufacturers to confirm feasibility - Develop performance specifications for use in Rolling Stock Manufacturer procurement documents - Deliverable to include: <ul style="list-style-type: none"> ▪ Performance Specification for Procurement:
Clearances	<ul style="list-style-type: none"> - Develop vehicle clearance requirements that is inclusive of potential vehicle technologies for the CHSTP 	<ul style="list-style-type: none"> - Develop of Performance Specification will confirm that specified vehicle clearance requirements are inclusive of potential vehicle providers

Operations	15% Design Scope	30% Design Scope
Operations Facilities	<ul style="list-style-type: none"> - Identify activities and functional requirements for an operations center - Review requirements for redundancy of the operations facilities - Identify potential locations and develop size of operations facilities 	<ul style="list-style-type: none"> - Confirm activities and functional requirements for an operations center - Confirm requirements for redundancy of the operations facilities - Confirm locations and size of operations facilities - Drawings to include for Central Control Facility: <ul style="list-style-type: none"> ▪ Site Plan ▪ Site Layout and Typical Sections ▪ Building Floor Plan ▪ Building Elevations
Operations Concept	<ul style="list-style-type: none"> - Identify train performance characteristics that meet CHSTP performance requirements including operating speed and capacity - Identify operational parameters to provide a train service that supports the projected ridership - Develop a train dispatch schedule using computer based train simulation models to confirm operational feasibility and number of trainsets 	<ul style="list-style-type: none"> - Confirm operational parameters to provide a train service that supports the projected ridership - Develop operational rules for use in preparing the FRA Rule of Particular Applicability that will allow revenue service operations including worker safety, operational conditions, and perturbation management. - Deliverable to include: <ul style="list-style-type: none"> ▪ CHSTP Concept of Operations

Maintenance	15% Design Scope	30% Design Scope
Rolling Stock	<ul style="list-style-type: none"> - Develop list of activities and functions for a Heavy Maintenance/Repair facility - Develop list of activities and functionality for the Light/Medium maintenance facilities located near terminal stations - Determine facility requirements for rolling stock maintenance facilities - Develop track layout and access requirements for central maintenance and repair facility (Heavy Maintenance /Repair) and terminal maintenance facilities (Light/Medium Maintenance) - Identify potential hazardous waste generators, special requirements for storage, and current best practices for disposal 	<ul style="list-style-type: none"> - Confirm list of activities and functions for a Heavy Maintenance/Repair facility - Confirm list of activities and functionality for the layup, storage, and periodic maintenance facilities located near terminal stations - Finalize facility requirements for rolling stock maintenance facilities - Finalize track layout and access requirements for central maintenance and repair facility (Heavy Maintenance /Repair) and terminal maintenance facilities (Lay-up, Storage and Periodic Maintenance) - Drawings to include: <ul style="list-style-type: none"> For Lay-up, Storage, Periodic Maintenance, and Heavy Maintenance Facilities ▪ Site Plan ▪ Track Layout ▪ Building Floor Plans ▪ Building Elevations ▪ Typical Sections
Maintenance of Way	<ul style="list-style-type: none"> - Determine maintenance-of-way (MOW) activities and access requirements based on expected CHSTP infrastructure - Identify and develop siding locations for MOW maintenance facilities - Identify and develop HST railway access points from local roads including easement requirements - Identify requirements for continuous longitudinal access for inspection and maintenance - Identify effects on maintenance of adjacent railroads. - Identify requirements for emergency access and incident response 	<ul style="list-style-type: none"> - Confirm maintenance-of-way (MOW) activities and access requirements based on expected CHSTP infrastructure - Finalize siding locations for MOW maintenance facilities - Finalize maintenance equipment, storage requirements - Finalize HST railway maintenance access points from local roads including easement - Drawings to include: <ul style="list-style-type: none"> For Lay-up, Storage, Periodic Maintenance, and Heavy Maintenance Facilities ▪ Track Layout and Sections ▪ Building Floor Plans ▪ Building Elevations <p>Access points and roads to be included on Right-of-Way Drawings</p>

5.0 Work Progress and Costs

This section illustrates Program implementation by presenting the annual work progress, estimated costs, and deliverables for program management, and work within each regional section. The annual work progress estimated costs presented in this section represent our best estimation at this time.

The work and costs are shown as progress against time by quarter in each fiscal year, with each fiscal year beginning on July 1. Sustained progress of the work is critical for each regional section to get to Notice of Determination/Record of Decision (NOD/ROD), to complete of 30% preliminary engineering, and to reach the goal of Construction Bid Advertisement.

Preceded by a Program Summary and a discussion of Program Management Services, this section addresses program management and work on the Regional Projects by the Regional Consultants.

Program Summary

The Program Summary Table^{7,8} below shows the progress of work as cost by fiscal year by the Program Manager and by each of the Regional sections. The overall Program Management activities are summarized into one work activity in the table, but includes all of the activities described under Program Management in the following section. The work of each Regional section is shown as a single work activity representing the project-level environmental work and preliminary engineering get to NOD/ROD and completion of 30% Preliminary Engineering, and to reach the goal of Construction Bid Advertisement.

Program Summary Table

Contract Region	Cost by Fiscal Year (\$ Million)						Total
	Thru 2008 - 09	2009 - 10	2010 - 11	2011 - 12	2012 - 13	2013 - 14	
Program Management	\$21.9	\$25.8	\$32.0	\$36.0	\$40.0		\$155,655,202
LA-Orange Co.	\$8.7	\$12.0	\$8.0				\$28,700,000
LA - Palmdale	\$6.5	\$20.0	\$24.0	\$22.0	\$1.8		\$74,288,000
Palmdale - Bakersfield	\$0.2	\$8.0	\$15.0	\$7.0	\$6.6		\$36,881,000
Bakersfield - Fresno	\$5.1	\$12.0	\$35.0	\$19.2	\$0.9		\$72,105,000
Fresno - Merced	\$3.3	\$9.0	\$17.4	\$10.9			\$40,645,000
Merced - San Jose	\$1.5	\$15.0	\$20.0	\$13.9	\$0.6		\$51,000,000
San Jose - San Francisco	\$2.0	\$20.0	\$26.0	\$6.5	\$0.5		\$55,000,000
Merced - Sacramento	\$0.5	\$1.0	\$9.7	\$14.0	\$17.6		\$42,755,000
Altamont Pass	\$1.0	\$3.0	\$16.6	\$20.0	\$12.5	\$0.5	\$53,600,000
LA-San Diego	\$2.8	\$3.0	\$21.9	\$38.0	\$20.0	\$9.1	\$94,805,692
							\$705,434,894
Annual % Complete	7.6%	18.3%	32.0%	26.6%	14.2%	1.4%	
Cumulative % Complete	7.6%	25.8%	57.8%	84.4%	98.6%	100.0%	
Annual Cost (\$ Million)	\$53.5	\$128.8	\$225.6	\$187.5	\$100.5	\$9.6	
Cumulative Cost (\$ Million)	\$53.5	\$182.3	\$407.9	\$595.4	\$695.8	\$705.4	

⁷ Values in the Program Summary Table are based on the information included in the Draft Consultant and Program Budget Projections thru FY 12 – 13, submitted to the Authority on April 16, 2009, with time scales and budgets adjusted based on FY 2009 – 10 budget negotiations in June 2009.

⁸ Value in Program Summary Table for Program Management in FY 2012 – 13 includes activities related to system and construction procurement and construction management.

Program Management

As described in previous sections, Program Management services include oversight of project-level environmental clearance, right-of-way acquisition, preliminary engineering design, construction and equipment procurement, and testing and commissioning of the system. Program Management is also leading the development of all technical criteria required to design the system, and to secure the ability to bring true high-speed train technology to the United States for the first time. Work is focusing on completing Phase 1 of the system, between Los Angeles/Anaheim and San Francisco. The first phase is expected to be open for revenue service in 2020. The annual work progress and costs for Program Management are shown in Work Progress and Cost Table below:

WORK PROGRESS AND COST TABLE
Program Management Team

Work / Milestone	% of Work Complete and Progress by Quarter of Fiscal Year																			
	Thru 2008 - 09				2009 - 10				2010 - 11				2011 - 12				2012 - 13			
	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
Project Management & Controls	3%	3%	4%	4%	4%	4%	6%	6%	6%	7%	7%	6%	6%	4%	6%	4%	6%	4%	6%	4%
EIR / EIS Bay Area (ROD July 08)	100%																			
Public Education & Communication	14%	12%	10%	10%	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Engineering Criteria & Design Mgmt																				
Engineering Management	3%	3%	4%	4%	4%	4%	5%	5%	6%	6%	6%	6%	6%	6%	6%	6%	6%	5%	5%	4%
Operations / Maintenance	7%	7%	7%	8%	8%	9%	9%	8%	9%	8%	7%	5%	3%	2%	1%	1%	1%			
Design Standards	8%	8%	8%	8%	7%	7%	7%	8%	11%	11%	8%	6%	3%							
Regulatory Approvals	5%	5%	5%	5%	5%	5%	5%	5%	7%	8%	8%	8%	7%	7%	7%	5%	3%			
Standard / Directive Drawings	9%	9%	10%	10%	3%	5%	7%	7%	7%	7%	6%	6%	6%	5%	3%					
Standard Specifications			3%	4%			3%	4%	10%	15%	15%	13%	12%	11%	10%					
Rolling Stock Specifications/Procurement		2%	4%	4%	4%	5%	5%	7%	7%	8%	7%	7%	6%	6%	6%	6%	6%	6%	4%	
Cost Estimates		5%	6%	6%	7%	7%	8%	8%	8%	7%	7%	7%	4%	3%	3%	3%	3%	3%	3%	2%
Design Submittal Review (from RC)			2%	2%	2%	2%	3%	4%	4%	5%	6%	7%	8%	9%	9%	9%	9%	9%	7%	3%
Risk Management			3%	5%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	5%	3%
Environmental Review																				
Environmental Management			2%	3%	4%	6%	7%	8%	9%	9%	8%	8%	8%	7%	6%	5%	5%	5%		
Statewide Agency Coordination		1%	2%	2%	2%	2%	2%	4%	6%	8%	8%	8%	8%	8%	7%	7%	7%	7%	7%	4%
Regional Consultant Mgt																				
LA-Orange Co.	10%	10%	10%	10%	10%	9%	8%	8%	8%	7%	6%	4%								
LA - Palmdale			3%	4%	4%	5%	6%	7%	8%	8%	8%	8%	6%	6%	6%	6%	6%	6%	3%	
Palmdale - Bakersfield			1%	3%	5%	7%	8%	9%	10%	10%	9%	5%	5%	5%	4%	5%	5%	5%	4%	
Bakersfield - Fresno			2%	5%	6%	8%	8%	10%	12%	14%	12%	8%	5%	3%	2%	2%	3%			
Fresno - Merced			4%	5%	5%	5%	6%	6%	10%	11%	11%	10%	8%	8%	7%	4%				
Merced to San Jose				3%	5%	5%	6%	6%	9%	12%	11%	11%	11%	9%	6%	4%	1%			
San Jose - San Francisco			2%	3%	8%	10%	11%	11%	12%	12%	11%	8%	5%	2%	2%	2%	1%			
Merced - Sacramento				1%	1%	1%	1%	1%	5%	8%	8%	8%	8%	7%	8%	7%	8%	8%	9%	8%
Altamont Pass				2%	2%	1%	2%	1%	7%	10%	10%	10%	9%	7%	7%	7%	6%	6%	5%	5%
LA-San Diego		1%	1%	1%	1%	1%	1%	1%	5%	8%	9%	9%	10%	10%	10%	10%	5%	5%	5%	4%
ROW Assessment and Acquisition							2%	3%	2%	2%	2%	4%	6%	7%	7%	9%	11%	13%	16%	16%
Ridership and Revenue	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Staging / Procurement																				
Construction Stage Planning					10%	10%	15%	15%	15%	15%	10%	10%								
Procurement and Bid Management							3%	4%	4%	5%	5%	5%	9%	10%	9%	10%	9%	10%	9%	10%
Bid Evaluation											3%	5%	7%	7%	10%	10%	10%	15%	17%	17%
CM Contract Development													10%	10%	15%	15%	15%	15%	10%	10%
CM Contract Management															13%	13%	15%	13%	15%	15%
Construction Design Review																			50%	50%
Regional Construction Mgt																				
LA-Orange Co.													17%	17%	17%	17%	17%	17%	17%	17%
LA - Palmdale																	33%	67%		
Palmdale - Bakersfield															20%	20%	20%	20%	20%	20%
Bakersfield - Fresno													9%	18%	18%	18%	18%	18%	18%	18%
Fresno - Merced													9%	18%	18%	18%	18%	18%	18%	18%
Merced to San Jose																			100%	
San Jose - San Francisco													14%	14%	17%	19%	17%	19%		
Annual % Complete	14.4%				18.8%				27.2%				22.2%				17.4%			
Cumulative % Complete	14.4%				33.2%				60.3%				82.6%				100.0%			
Annual Cost (\$ Million)	\$21.9				\$25.8				\$32.0				\$36.0				\$40.0			
Cumulative Cost (\$ Million)	\$21.9				\$47.7				\$79.7				\$115.7				\$155.7			

Notes: 1. Fiscal year begins July 1. Quarters end in September, December, March and June.
2. Work progress is shown as planned % complete in each quarter of the fiscal year.

Based on the work depicted in the Work Progress and Cost Table for the Program Management Team on the previous page, and the Deliverables Checklists on the following pages, the Program Management Team deliverables are summarized below.

Deliverables Summary

Program Management Deliverable Summary (FY 08/09 thru FY 12/13)	
Description of Work and Deliverables	Quantity
Environmental Analysis Methodologies	5
Environmental Guidelines and Policies	9
Environmental Permitting	4
Tech Memos – Engineering Management	12
Tech Memos -- Infrastructure	58
Tech Memos -- Systems	19
Tech Memos – Operations and Maintenance	6
Tech Memos – Rolling Stock	3
Tech Memos – Regulatory Approvals	7
Directive Drawings -- Infrastructure	50
Directive Drawings -- Systems	33
Directive Drawings – Operations and Maintenance	9
Standard Drawings -- Infrastructure	68
Standard Drawings -- Systems	64

Based on the work depicted in Work Progress and Cost Table for Program Management, the deliverables for the major work elements for the Program Management Team from November 2006 through June 2009 are described below and on the following pages.

I. Program Management

Mobilization & Reporting

- Mobilized in Authority offices Nov '06, distributed standard reporting & billing templates, project directory, initial project accounting system, & other administrative directives. Organized engineering, outreach, environmental staff in Sacramento, San Francisco, Los Angeles, Orange County, & San Diego. Executed over a dozen subcontractors.
- Prepared 30 monthly progress reports for PM Team and 29 Executive Summary reports of regional consultant teams & other consultants' reports.

Project Team Development and Coordination

- Contract negotiation help for 8 regional consultant teams' multi-year work program, and for annual budgets, scopes, & schedules; also for various other smaller contracts. Managed nearly two dozen negotiations by June '09.
- Developed communications and organizational protocols for the Authority governing relationships among regional teams, PM team, and Authority staff. Conducted kick-off meetings with regional consultant teams.
- Monthly coordination meetings of Authority and PM Team senior staff, and Regional Consultant Team managers began in Feb '07. By Jun '09 will have held 18 Senior Program Management Team meetings. Provided minutes and action items list for each.

Project Controls / Scheduling

- Developed and maintained centralized secure document sharing and storage site in PB's ProjectSolve system. Site is organized by discipline and by EIR/EIS segment to allow easy maintenance of the administrative record.
- Prepared work breakdown structure & issued document control procedures, QA/QC procedures, risk management plan, and assembled with protocols, project summary, schedule, and administrative material into Project Management Plan.
- Reviewed and critiqued Regional Consultant and PM teams' QA/QC processes in '07.
- Developed PM Team annual work program schedules and initial master schedule to cover work of Regional Consultant teams. In '09 completed detailed work breakdown structure for each Regional Consultant team to complete 15% engineering, reach Record of Decision/Notice of Decision (ROD/NOD), & complete 30% engineering to allow bid document preparation. By June '09, will have assembled a complete set of common detailed schedules for all segments, the PM Team work, and the Authority activities.

Railroad / Agency Relations

- Led the Authority's development of an agreed-on approach with the Federal Railroad Administration to the development of a Rule of Particular Applicability to set the conditions under which 220 mph train operations would be allowed.
- Helped open Authority - BNSF discussions re: HS trains along their rights of way and develop confidentiality agreement with BNSF. Similar approaches made to the UPRR.

- Helped Authority develop working relationships with rail passenger agencies operating in Bay Area, Central Valley, LA Basin, and San Diego. Helped develop the MOU with Caltrain to jointly develop the plan for the Peninsula service, and other less detailed MOUs.
- Defined requirements for station & maintenance facilities to local and regional agencies.

Financial Planning & Program Strategy

- Helped prepare capital & operating costs & revenues of 20 segment variants for Board review, provided advice on financial plan for initial phase Bay Area – Anaheim.
- Devised phasing and staging plans for initial phase to allow early completion of high-speed test track section and other feasible early improvements.
- Identified contacts at potential private sector financing partners, participated in two dozen interviews of interested companies, helped develop material for March '08 Request for Expressions of Interest (RFEI), presented project overview, work plan, schedule, technical considerations at RFEI meeting attended by nearly 100 participants.
- Prepared 2008 Business Plan source documents: Ridership and Revenue, Engineer Elements; helped edit other documents. Helped structure and edit Summary Business Plan.
- Helped identify early start opportunities eligible for Federal programs.

Other Activities

- Made presentations of the project to Spring '08 UIC World High-Speed Rail Conference, industry associations and companies, public service groups, media events.
- Provided advice and information on public / policy issues, including regional economic and job creation impacts, energy savings and greenhouse gas emission reductions, comparative situations of HS trains elsewhere, clean renewable electric power sources, proposed legislation.
- Helped develop answers to questions from State and Federal legislators, executive branch, and regional/local agencies. Respond to comments and requests for information from Authority website, emails, phone calls; answer queries re; employment, contracting, and business opportunities.

II. Public Education & Outreach

Project Explanatory Materials

- Wrote and produced newsletters, handout materials, project fact sheets by geographical section, talking points, maps, and similar collateral material.
- Managed production of HSR project videos in English and Spanish, updated as needed.
- Revamped Authority website, added FAQs, website comment/question page, & other features.
- Produced more than a dozen animated clips, 100 stills of CAHSR in various California locales.

Media Relations & Monitoring

- Handled requests for project briefings, radio – TV appearances and feature programs,
- Prepared press releases – Authority activities, Legislative oversight hearings, HS train events, world speed record, etc.
- Helped organize editorial board meetings throughout the state.
- Monitored and distributed high-speed rail-related articles and news coverage.

EIR/EIS Outreach

- Coordinated with Regional Consultant outreach groups to ensure accuracy of message and coordination with statewide efforts.
- Participated in events such as OCTA Mobility 21, National Rail Day, EcoCity Summit Conference, Chamber of Commerce luncheons, service organization meetings and neighborhood events.
- Local and State Elected Officials Relations
- Sought support at local and state level for AB 3034 strengthening legislative oversight and clarifying numerous matters related to the CAHSR project.
- Conducted briefings on aspects of project to key legislators and staff, responses to specific inquiries.

III. Engineering Criteria and Design Review

Engineering Management

- Held weekly & bi-weekly coordination telecons and meetings with PM engineering team, PM regional managers, Regional Consultant engineering managers.
- Conducted several technical workshops with Japan Railway Technical Services and JRRT experts on infrastructure design, system requirements, operations & maintenance practices.
- Completed 11 of 12 Technical Memoranda re: standardizing terms & acronyms, report and drawing formats and units of measure, scope of work for 15% and 30% design, Tech Memo review protocol, basis of design, project development processes, coordination with Caltrans, risk register, design submittal protocol, and programmatic cost updates.
- Completed outline of Design Manual.
- Completed 2 of 2 standard drawings re: general abbreviations and symbols.

Infrastructure

- Completed 25 of 60 Technical Memoranda, re: general design, track alignment, stations, bridges, tunnels, utilities, geotechnical studies, and seismic studies. All of the Technical Memoranda required for 15% design guidance will be completed by the end of June 2009.
- Completed 27 of 33 directive drawings re: operating and maintenance divisions, structure gauge, typical cross-sections, intrusion protection, aesthetic guidelines for aerial structures, station platforms, and basic tunnel configuration. All of the directive drawings required for 15% design guidance will be completed by the end of June 2009.
- Completed 2 standard drawings for track. All of the standard drawings required for 15% design guidance will be completed by the end of June 2009.

Systems

- Completed 10 of 19 Technical Memoranda, re: general traction power, traction power load flow, overhead catenary system, and communications. All of the Technical Memoranda required for 15% design guidance will be completed by the end of June 2009.
- Completed 12 of 20 directive drawings re: traction power facility sites, overhead catenary system configuration, & pantograph clearances. All of the directive drawings required for 15% design guidance will be completed by the end of June 2009.
- Completed 10 of 53 standard drawings for traction power and overhead catenary systems. All of the standard drawings required for 15% design guidance will be completed by the end of June 2009.

FRA / CPUC Regulatory

- Held working meetings with FRA and CPUC established work plan for submittals of materials for agency review, documentation needs, assistance required. Prepared draft outline of FRA Rule of Particular Applicability.
- Completed 5 of 7 Technical Memoranda, covering flow of information, approvals, and work leading to revenue service, criteria applicability, comparison of international and US rail standards, and outlines of safety plans.

Rolling Stock

- Completed Technical Memoranda re: characteristics of selected high-speed train technologies in service, only one needed for 15% design.

Operations & Maintenance Planning

- Completed 5 of 6 Technical Memoranda, including conceptual operations feasibility study LA – Anaheim, Phase 1 and Full System operations plans, & requirements for rolling stock maintenance facilities and maintenance of way facilities. All of the Technical Memoranda required for 15% design guidance will be completed by the end of June 2009.
- 9 of 9 directive drawings re: maintenance of rolling stock facilities, maintenance of way facilities.

Other Activity

- Completed review of Los Angeles to Anaheim Segment -- 10% Design Submittal.
- Completed methodology for 15% Design Level capital cost estimating.
- Prepared outlines of bid document performance specifications for rolling stock, train controls, and operations.

IV. Environmental Criteria and Management

Standard documentation and technical methodologies

- Prepared Technical Memo on Alternatives Analysis Methods For Project-Level EIR/EIS.
- Defined and distributed analysis methodologies for project-Level EIR/EIS work for the 18 required sections.
- Conducted regional team workshops on the use of document templates and the Alternatives Analysis Process.
- Prepared standard EIR/EIS Section templates for regional consultants' use for 16 of the required sections including: Transportation, Air Quality, Noise & Vibration, EMF/EMI, Biological Resources and Wetlands, Geology, Soils, & Geological Resources, Hazardous Materials, Socioeconomic, Communities, & Environmental Justice, Local Growth, Station Planning, & Land Use, Aesthetics & Visual Quality, Public Utilities & Energy, Agricultural Land, Hydrology & Water Resources, Cultural Resources, Safety & Security, Section 4(f) and Section 6(f) Evaluations.
- Prepared Document Format Guide, Scoping Guidelines for Project-Level EIR/EIS - Technical Memo, Multi-Lingual Guidelines for Public/Stakeholder Outreach, Guidance on Application of Advanced Mitigation Measures to other Projects Affected by HST, Noise Mitigation Policy, Statewide Traffic Impact Significance Criteria, Parking Policy.

Programmatic Bay Area – Central Valley EIR/EIS support

- Organized and drove the completion of Draft and Final EIR/EIS documents.
- Helped organize and respond to public and agency comments on Draft & Final EIR/EIS; helped draft mitigation commitments and other final EIR decision materials.

Organization of process and segments of work

- Prepared Technical Memorandum on Independent Utility/Logical Termini of HST Sections, Public/Stakeholder/Agency Coordination Plan For Project-Level EIR/EIS.
- Drafted strategy for funding staff positions at resource agencies, USACOE 404 Permit Memorandum of Understanding, and SHPO Programmatic Agreement

V. Regional Consultant Team Management

All segments

- Participated and presented at numerous informational and outreach meetings with local agencies and elected officials, community groups, and other stakeholders.

LA – Orange County

- Managed Regional Consultant Team and reviewed materials in the preparation of EIR/EIS notices, conduct of the scoping meetings, and review of the Scoping Summary Report.
- Managed the development of the project alternatives/design options and provided guidance and review for the Alternatives Analysis Report, and reviewed existing baseline condition reports.
- Helped conduct Interagency Coordination Meetings, local /regional technical working group reviews of options, reviewed Purpose & Need Statement and agency coordination plans.

LA- Palmdale

- Managed Regional Consultant Team and reviewed materials in the preparation of EIR/EIS notices, conduct of the scoping meetings, and review of the Scoping Summary Report.
- Managed the development of the project alternatives/design options and provided guidance and review for the Alternatives Analysis Report for the LA Union Station to SR 134 sub section of the HST Project, and reviewed existing baseline condition reports.
- Helped conduct Interagency Coordination Meetings, local /regional technical working group reviews of options, reviewed Purpose & Need Statement and agency coordination plans.

San Diego – LA

- Managed concept reviews of LAUS – San Diego alignment, extension from San Diego to San Ysidro, and regional decision to establish multi-modal facility at Lindbergh Field.
- Helped develop regional Southern California MOU with Authority to jointly review alignment options and station locations, and coordinate service.
- Participated in local /regional technical working group concept reviews, reviewed draft NOI/NOP materials.

Palmdale – Bakersfield

- Managed and reviewed the Regional Consultant Team preparation of the NOI/NOP.

Bakersfield – Merced

- Managed Regional Consultant Team and reviewed materials in the preparation of EIR/EIS notices, conduct of the scoping meetings, and review of the Scoping Summary Report.
- Managed the development of project alternatives/design options and provided guidance and review for the Alternatives Analysis Report for the Visalia / Hanford area and the Fresno freight consolidation review, and Merced to Fresno section, and reviewed existing baseline condition reports.
- Helped conduct local /regional technical working group reviews of options, reviewed Purpose & Need Statement and agency coordination plans.

Merced – Sacramento

- Managed Regional Consultant Team in the preparation of draft NOI/NOP materials.

Merced – San Jose

- Managed Regional Consultant Team and reviewed materials in the preparation of EIR/EIS notices, conduct of the scoping meetings, and review of the Scoping Summary Report.
- Review of the initial screening of the project alternatives.

San Jose – San Francisco

- Managed Regional Consultant Team and reviewed materials in the preparation of EIR/EIS notices, conduct of the scoping meetings, and review of the Scoping Summary Report.
- Helped conduct local /regional technical working group reviews of options, reviewed Purpose & Need Statement and agency coordination plans.

Altamont Corridor

- Helped Authority and Regional Consultant Team lead multi-agency/stakeholder Altamont Working Group through concept alternative alignments and service concepts to an agreed-upon project description.
- Managed Regional Consultant Team in the preparation of draft NOI/NOP materials.

VI. Other Activities

Ridership and Revenue Forecasts

- Developed riders and revenue forecasts for Phase 1 San Francisco / Merced – Anaheim, with base fares, HSR fares higher proportionately to air fares, increased parking costs at HSR stations, alternative station at Fullerton, and several services on smaller segments. Added information on station boardings, mode of access, and segment volumes.
- Prepared estimates of ridership and revenue with higher auto and air costs, and a variety of fare assumptions for inclusion in 2008 Business Plan.
- Developed forecasts with added information for improved Phase 1 and full system operating pattern with higher average 2008 operating cost for auto and air travel.

Benefit / Cost Estimates

- Prepared estimate of benefits and costs and B/C ratio for full system based on ridership, revenue, and cost information as of mid-2008.

Right of Way Acquisition Strategy and Needs

- Initial memo on constraints and possible approaches to ROW acquisition.

For a detailed list of Program Management Team deliverables for fiscal year 2008 – 2009 and beyond, see the PMT Deliverables Checklists tables on the following pages.

PMT Deliverables Checklist: PMT Environmental

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
PMT Environmental	Deliverable Format No of Sheets Plan Report etc	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		Project-Level Environmental Analysis Methodologies - Version 1	Report	X																	
Project-Level Environmental Analysis Methodologies - Version 2	Report			X																	
Project-Level Environmental Analysis Methodologies - Version 3	Report					X															
Project-Level Environmental Analysis Methodologies - Version 4	Report									X											
Alternatives Analysis Methods For Project-Level EIR/EIS	Report	X																			
Document Format Guide	Report				X																
Scoping Guidelines for Project-Level EIR/EIS	Report				X																
Multi-Lingual Guidelines for Public/Stakeholder Outreach	Report				X																
Guidance on Application of Advanced Mitigation Measures to other Projects Affected by HST	Report				X																
Noise Mitigation Policy	Report					X															
Statewide Traffic Impact Significance Criteria	Report																				
Parking Policy	Report					X															
Independent Utility/Logical Termini of HST Sections	Report			X																	
Public/Stakeholder/Agency Coordination Plan For Project-Level EIR/EIS	Report				X																
Strategy for Funding Staff Positions at Resource Agencies	Report				X																
USACOE 404 Permit MOU	Report				X																
SHPO Programmatic Agreement	Report					X															
Design Needed for Environmental Permitting	Report					X															
EIR/EIS Section Templates																					
Transportation	Report			X																	
Air Quality	Report			X																	
Noise & Vibration	Report			X																	
EMF/EMI	Report			X																	
Biological Resources and Wetlands	Report			X																	
Geology, Soils, & Geological Resources	Report			X																	
Hazardous Materials	Report			X																	
Socioeconomic, Communities, & Environmental Justice	Report			X																	
Local Growth, Station Planning, & Land Use	Report			X																	
Aesthetics & Visual Quality	Report			X																	
Public Utilities & Energy	Report			X																	
Agricultural Land	Report			X																	
Hydrology & Water Resources	Report			X																	
Cultural Resources	Report			X																	
Safety & Security	Report			X																	
Section 4(f) and Section 6(f) Evaluations	Report			X																	

PMT Deliverables Checklist: Engineering Technical Memoranda

California High Speed Train Project	Target Completion Date Dark Green - Completed Light Green - Complete in FY 08/09 Yellow - Complete in FY 09/10 White - beyond FY 09/10	FY 07/08				FY 08/09				FY 09/10				FY 10/11							
		J	S	D	A	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M
		Technical Memorandum																			
Program Management																					
TM 0.0 CHSTP Tech Memo Style Guide	Completed																				
TM 0.0a Terms and Acronyms	Completed					X															
TM 0.1 15% Design Scope - R1	Completed					X															
TM 0.2 Tech Memo Review Protocol	Completed							X													
TM 0.3 Basis of Design R1	Completed					X															
TM 0.3 Basis of Design Policy	30-Jun-09											X									
TM 0.4 Project Development Process - R0	Completed					X															
TM 0.5 Coordination with Caltrans - R0	Completed							X													
TM 0.6 RM TM No. 1 -- Initial Risk Register - R0	Completed	X																			
TM 0.7 Design Submittal Protocol - R0	Completed							X													
TM 0.8 Programmatic Cost Update Methodology and Back-up - R0	Completed							X													
TM 0.9 Draft RPA Protocol	30-Jun-10																			X	
GENERAL DESIGN - INFRASTRUCTURE																					
TM 1.1.0 Design Criteria - Initial Release - Alignment and Platforms - R0	Completed	X																			
TM 1.1.1 Design Standards and Codes of Practice	30-Sep-09												X								
TM 1.1.2 Design Life	30-Sep-09												X								
TM 1.1.4 Mapping & Surveys Design	Completed						X														
TM 1.1.5 CADD Standards	Completed							X													
TM 1.1.6 Alignment Std for Shared Use Corridor - LA to Anaheim	Completed						X														
TM 1.1.7 Shared Use Corridor HST Criteria -- Caltrain Corridor	30-Jun-10																			X	
TM 1.1.8 Divisions, Track Designation, Mileposts and Stationing	30-Jun-09											X									
TM 1.1.9 Flooding and Drainage	30-Jun-10																			X	
TM 1.1.10 Structure Gauge	30-Jun-09											X									
TM 1.1.16 Shared Use Corridor HST Criteria	Completed					X															
TM 1.1.18 Design Variance Guidelines	Completed						X														
TM 1.1.19 Cost Estimating 15% Methodology - R0	30-Jun-09											X									
TM 1.1.21 Typical Cross Sections - R0	Completed										X										
TM 1.1.22 Cost Estimating 30% Methodology - R0	30-Jun-10																			X	
TRACK ALIGNMENT																					
TM 2.1.2 Alignment Design	Completed											X									
TM 2.1.3 Turnouts	30-Jun-09											X									
TM 2.1.5 Track Design	31-Mar-10																			X	
TM 2.1.6 Ballastless Track	31-Dec-09												X								
TM 2.1.7 Intrusion Protection	Completed									X											
TM 2.1.8 Station and Yard Track	31-Dec-09												X								
STATION DESIGN																					
TM 2.2.2 Station Functional Requirements	30-Jun-09											X									
TM 2.2.3 Parking & Site Configuration	30-Jun-09											X									
TM 2.2.4 Station Platform Geometric Design	Completed							X													
BRIDGE DESIGN																					
TM 2.3.1 Aesthetic Guidelines for HS Aerial Structures	30-Jun-09											X									
TM 2.3.2 Loadings	30-Jun-09											X									
TM 2.3.3 Design Guidelines for Bridges and Viaducts	30-Sep-09												X								
TUNNEL DESIGN																					
TM 2.4.2 Basic Tunnel Configuration	30-Jun-09											X									
TM 2.4.5 Tunnel Structural Design	31-Mar-10																			X	
TM 2.4.6 Portals, Entrances, Ramps	31-Mar-10																			X	
TM 2.4.8 Service and Maintenance Requirements	30-Jun-10																			X	

California High Speed Train Project	Target Completion Date Dark Green - Completed Light Green - Complete in FY 08/09 Yellow - Complete in FY 09/10 White - beyond FY 09/10	FY 07/08				FY 08/09				FY 09/10				FY 10/11			
		J	S	D	A	J	S	D	M	J	S	D	M	J	S	D	M
Technical Memorandum																	
BUILDING STRUCTURAL DESIGN																	
TM 2.5.1 Structural Design of HSR Facilities and Buildings	30-Jun-10																X
DRAINAGE AND GRADING																	
TM 2.6.3 Hydrology	31-Dec-09																X
TM 2.6.4 Floodplain	30-Sep-09																X
TM 2.6.5 Hydraulic Design	31-Mar-10																X
TM 2.6.7 Earthwork	30-Sep-09																X
UTILITIES																	
TM 2.7.4 Utility Requirements for 15% Design Submittal	Completed																X
SAFETY AND SECURITY																	
TM 2.8.1 Safety and Security	30-Sep-09																X
GEOTECHNICAL STUDIES																	
TM 2.9.1 Geotechnical Investigation Guidelines	30-Jun-09																X
TM 2.9.2 Geotechnical Reporting Guidelines	30-Jun-09																X
TM 2.9.3 Geologic and Seismic Hazard Evaluation Guidelines	30-Jun-09																X
TM 2.9.4 Prelim Active/Capable Fault Locations and Design Considerations	30-Sep-09																X
TM 2.9.5 Prelim Design Earthquake Guidelines for 30% Design	31-Mar-10																X
TM 2.9.6 Interim Ground Motions for MCE, DBE & LDBE for 30% Design	31-Mar-10																X
TM 2.9.7 Acceleration Response Spectra for Final Design	31-Dec-10																X
TM 2.9.9 Final Ground Motions for MCE, DBE & LDBE for Final Design	31-Dec-10																X
TM 2.9.10 Geotechnical Analysis and Design Criteria for Final Design	31-Dec-10																X
SEISMIC STUDIES																	
TM 2.10.1 Seismic Performance Criteria and Design Basis	30-Jun-09																X
TM 2.10.2 Technical Advisory Panel Work Plan	30-Jun-09																X
TM 2.10.3 Technical Advisory Panel Summary	30-Jun-10																X
TM 2.10.4 Interim Seismic Design Criteria (15% Design)	31-Dec-09																X
TM 2.10.5 Structures Advanced Planning Level Studies Development Procedures (15% Design)	30-Sep-09																X
TM 2.10.6 Initial Fault Crossing Design Criteria and Guidance (15% Design)	31-Mar-10																X
TM 2.10.7 Final Seismic Design Criteria (30% Design and Final Design)	30-Sep-10																X
TM 2.10.8 Structures Type Selection Level Studies Development Procedures (30% Design)	30-Sep-10																X
TM 2.10.9 Final Fault Crossing Design Criteria and Guidance (30% Design and Final Design)	31-Dec-10																X
TM 2.10.10 Rail-Structure Interaction Analysis Guidelines (30% Design and Final Design)	31-Dec-10																X
TM 2.10.11 Passenger Comfort Design Criteria for Structures (30% Design and Final Design)	31-Dec-10																X
TRACTION POWER -- GENERAL																	
TM 3.1.1.1 Traction Power 2x25kV Autotransformer Electrification System	Completed																X
TM 3.1.1.3 Traction Power Facility Sites	Completed																X
TM 3.1.1.5 OCS/NF Feeds	30-Jun-09																X
TRACTION POWER SYSTEM ANALYSIS																	
TM 3.1.3.1 Initial Segment	Completed																X
TM 3.1.3.2 Full System	30-Sep-09																X
TRACTION POWER FACILITIES																	
TM 3.1.5.3 Utility Power Supply	31-Dec-09																X

California High Speed Train Project	Target Completion Date Dark Green - Completed Light Green - Complete in FY 08/09 Yellow - Complete in FY 09/10 White - beyond FY 09/10	FY 07/08				FY 08/09				FY 09/10				FY 10/11			
		J	S	D	A	J	S	D	M	J	S	D	M	J	S	D	M
Technical Memorandum																	
OVERHEAD CONTACT SYSTEM																	
TM 3.2.1 OCS Configuration	30-Jun-09									X							
TM 3.2.2 OCS Structural Requirements	30-Jun-10															X	
TM 3.2.3 Pantograph Clearances	30-Jun-09									X							
TM 3.2.5 OCS Electrical Requirements	30-Jun-09									X							
TM 3.2.6 25 KV Grounding and Bonding	30-Jun-09									X							
TM 3.2.7 OCS Mechanical Requirements	30-Jun-09									X							
TRAIN CONTROL																	
TM 3.3.1 Suitability for US Safety Requirements	30-Jun-10															X	
TM 3.3.3 Positive Train Control	31-Dec-09											X					
COMMUNICATIONS																	
TM 3.4.1 Topology	31-Dec-09											X					
TM 3.4.3 Network Management System	31-Mar-10												X				
TM 3.4.4 Communications Backbone Technology and Communications Protocol	30-Jun-10															X	
TM 3.4.10 Electromagnetic Compatibility Design Criteria	30-Jun-09									X							
TM 3.4.12 SCADA Requirements for Traction Electrification System and Equipment	31-Mar-10												X				
OPERATIONS																	
TM 4.1 Los Angeles to Anaheim - Concept Level Operational Feasibility Study	Completed									X							
TM 4.2 Train Service Plan - Phase 1	Completed										X						
TM 4.3 Train Service Plan - Full Build	30-Jun-09											X					
TM 4.4 O&M Cost Model - R0	30-Sep-09												X				
MAINTENANCE																	
TM 5.1 Rolling Stock Maintenance Plan and Facility Requirements	30-Jun-09											X					
TM 5.2 MOW Maintenance Plan and Facility Requirements	30-Jun-09											X					
ROLLING STOCK																	
TM 6.1 Selected Train Technologies	Completed							X									
TM 6.2 Intro of Euro/Asian Rolling Stock to California	30-Sep-09											X					
TM 6.6 Vehicle Parameters DELETE	31-Dec-09												X				
REGULATORY APPROVALS																	
Start of Revenue Service Flowchart (included with TM 0.4 Project Development Process R0)	Completed							X									
TM 7.2 FRA Criteria Applicability Memo	30-Jun-09											X					
TM 7.3 International Rail Standards Comparison	30-Jun-09											X					
TM 7.4 Hazard Identification and Mitigation	30-Sep-09												X				
TM 7.5 FRA System Overview	31-Dec-09												X				
TM 7.6 Product Safety Plan Outline	30-Jun-09											X					
TM 7.7 RSPP Safety Plan Outline Outline	30-Jun-09											X					

Deliverables Checklist: Directive Drawings

Directive Drawings by TM	Target Completion Date Dark Green - Completed Light Green - Complete in FY 08/09 Yellow - Complete in FY 09/10 White - beyond FY 09/10	2009												2010											
		D J F M A M J J A S O N D												J F M A M J J A S O N D											
		D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
TM 1.1.8 Divisions, Track Designation, Mileposts and Stationing	30-May-09																								
Operating Divisions	31-May-09																								
Maintenance Divisions	31-May-09																								
TM 1.1.10 Structure Gauge	30-May-09																								
Static Envelope and Gauge Requirements	31-May-09																								
125 mph Dynamic Envelope and Gauge Requirements	31-May-09																								
220 mph Dynamic Envelope and Gauge Requirements	31-May-09																								
TM 1.1.16 Shared Use Corridor HST Criteria (Caltrain)	30-Jun-10																								
4-Track Typical Section - At Grade	31-Aug-09																								
4-Track Typical Section - Aerial Structure	31-Aug-09																								
4-Track Typical Section - Tunnel	31-Aug-09																								
4-Track Typical Section - Trench	31-Aug-09																								
Typical Section - Station	31-Aug-09																								
TM 1.1.21 Typical Cross Sections - R0	7-Apr-09																								
At-Grade - Double Track	31-Mar-09																								
At-Grade - Four Track	31-Mar-09																								
At-Grade - Stations	31-Mar-09																								
Aerial - Double Track	31-Mar-09																								
Aerial - Single Track	31-Mar-09																								
Tunnel - Bored - Double Track	31-Mar-09																								
Tunnel - Bored - Single Track	31-Mar-09																								
Tunnel - Cut and Cover - Double Track	30-Jun-09																								
Tunnel - Cut and Cover - Single Track	30-Jun-09																								
Trench - Double Track	31-Mar-09																								
Trench - Single Track	31-Mar-09																								
TM 2.1.3 Turnouts	30-Jun-09																								
110 mph Turnouts at Stations	30-Sep-09																								
150 mph Turnouts at Wye	30-Sep-09																								
60 mph Turnouts at Mainline Crossovers	30-Sep-09																								
TM 2.1.5 Track Design (Ballasted)	31-Mar-10																								
Typical Trackbed	30-Nov-09																								
Typical Direct Fixation	30-Nov-09																								
TM 2.1.6 Ballastless Track	31-Dec-10																								
Typical Trackbed	31-Jan-10																								
Typical Direct Fixation	31-Jan-10																								
TM 2.1.7 Intrusion Protection	25-Oct-08																								
Barrier	31-May-09																								
Berms	31-May-09																								
Swales	31-May-09																								
TM 2.2.4 Station Platform Geometric Design	16-May-08																								
Center Platform - Section and Layout	30-Jun-09																								
Side Platform - Section and Layout	30-Jun-09																								
TM 2.3.1 Aesthetic Guidelines for HS Aerial Structures	30-Jun-09																								
Typical Superstructure Section	31-May-09																								
Typical Column Section	31-May-09																								
TM 2.4.2 Basic Tunnel Configuration	30-Jun-09																								
Tunnel Opening by Maximum Operating Speed (250 mph)	30-Jun-09																								
Tunnel Opening by Maximum Operating Speed (220 mph)	30-Jun-09																								
Tunnel Opening by Maximum Operating Speed (180 mph)	30-Jun-09																								
Tunnel Opening by Maximum Operating Speed (150 mph)	30-Jun-09																								
Typical Walkways	30-Sep-09																								
Typical Duct bank Configuration	30-Sep-09																								
Typical Cross Passages	30-Sep-09																								
Typical Ventilation	30-Sep-09																								
Typical Emergency Egress	30-Sep-09																								
Typical Lighting Requirements	30-Sep-09																								

Directive Drawings by TM	Target Completion Date Dark Green - Completed Light Green - Complete in FY 09/09 Yellow - Complete in FY 09/10 White - beyond FY 09/10	2009					2010							
		D	J	F	M	A	M	J	J	A	S	O	N	D
TM 2.4.5 Tunnel Structural Design	30-Jun-10													
Typical Lining	31-Jan-10											X		
Typical Waterproofing	31-Jan-10											X		
Dividing Wall for Double Track Tunnel	31-Jan-10											X		
TM 2.4.6 Portals, Entrances, Ramps	30-Jun-10													
Typical Entrance Portal Design	30-Nov-09									X				
Maintenance Access	30-Nov-09									X				
TM 3.1.1.3 Traction Power Facility Sites	2-May-08													
Typical Supply Station	31-May-09					X								
Typical Switching Station	31-May-09					X								
Typical Paralleling Station	31-May-09					X								
TM 3.1.3.2 Full System - Traction Power	30-Sep-09													
Traction Power Schematic – LA to Anaheim	31-Aug-09								X					
Traction Power Schematic – LA to Palmdale	31-Aug-09								X					
Traction Power Schematic – Palmdale to Bakersfield	31-Aug-09								X					
Traction Power Schematic – Bakersfield to Merced	31-Aug-09								X					
Traction Power Schematic – Merced to San Jose	31-Aug-09								X					
Traction Power Schematic – San Jose to San Francisco	31-Aug-09								X					
Traction Power Schematic – Merced to Sacramento	30-Sep-09								X					
Traction Power Schematic – LA to San Diego	30-Sep-09								X					
TM 3.1.5.3 Utility Power Supply	31-Dec-09													
Utility Connection Requirements - So Cal Edison	30-Nov-09									X				
Utility Connection Requirements - PG&E	30-Nov-09									X				
Utility Connection Requirements - SDG&E	31-Dec-09										X			
Utility Connection Requirements - SMUD	31-Dec-09										X			
Utility Connection Requirements - Other	30-Nov-09									X				
TM 3.2.1 OCS Configuration	30-Jun-09													
Typical OCS Configuration - 125 mph - Cantilever	31-May-09					X								
Typical OCS Configuration - 125 mph - Headspan	31-May-09					X								
Typical OCS Configuration - 125 mph - Portal Structure	31-May-09					X								
Maximum Span and Tension Section Lengths - 125 mph	31-May-09					X								
Typical OCS Configuration - 220 mph - Cantilever	30-Jun-09					X								
Typical OCS Configuration - 220 mph - Headspan	30-Jun-09					X								
Typical OCS Configuration - 220 mph - Portal Structure	30-Jun-09					X								
Maximum Span and Tension Section Lengths - 220 mph	30-Jun-09					X								
Sectionalizing Diagram – LA to Anaheim	30-Sep-09								X					
Sectionalizing Diagram – LA to Palmdale	30-Sep-09								X					
Sectionalizing Diagram – Palmdale to Bakersfield	30-Sep-09								X					
Sectionalizing Diagram – Bakersfield to Merced	30-Sep-09								X					
Sectionalizing Diagram – Merced to San Jose	30-Sep-09								X					
Sectionalizing Diagram – San Jose to San Francisco	30-Sep-09								X					
Sectionalizing Diagram – Merced to Sacramento	30-Nov-09									X				
Sectionalizing Diagram – LA to San Diego	30-Nov-09									X				
TM 3.2.3 Pantograph Clearances	30-Jun-09													
Clearance Envelope and Contract Wire Criteria	30-Jun-09					X								
TM 5.1 Rolling Stock Maintenance Plan and Facility Requirements	30-Jun-09													
Heavy Maintenance Facility (Level 4/5) - Conceptual Layout	31-May-09					X								
Los Angeles Maintenance Facility (Level 1/2/3) - Conceptual Layout	31-May-09					X								
San Francisco Maintenance Facility (Level 1/2/3) - Conceptual Layout	31-May-09					X								
Anaheim Lay up and Storage Facility (Level 1/2) - Conceptual Layout	31-May-09					X								
Sacramento Lay up and Storage Facility (Level 1/2) - Conceptual Layout	30-Jun-09								X					
San Diego Lay up and Storage Facility (Level 1/2) - Conceptual Layout	30-Jun-09								X					
TM 5.2 MOW Maintenance Plan and Facility Requirements	30-Jun-09													
Typical MOW Equipment and Storage Yard	30-Jun-09					X								
Typical MOW Siding	30-Jun-09					X								
Typical MOW Access Requirements	30-Jun-09	X				X								

Deliverables Checklist: Standard Drawings

CALIFORNIA HIGH-SPEED TRAIN PROJECT ENGINEERING MANAGEMENT TEAM		FY 09/10												FY 10/11												
Standard Drawings	Target Completion Date Dark Green - Completed Light Green - Complete in FY 09/10 Yellow - Complete in FY 09/10 White - beyond FY 09/10	FY 09/10												FY 10/11												
		J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
General																										
Abbreviations - General	30-Jun-09	X																								
Symbols - General	30-Jun-09	X																								
Track																										
Clearance Envelopes	30-Jun-09	X																								
Structure Gauges	30-Jun-09	X																								
Typical Roadbed Sections	31-Dec-09					X																				
Data for Standard Rail Sections	31-Aug-10														X											
Data for Standard Wheel Flanges, Treads and Gages	31-Aug-10														X											
Concrete Ties Details	30-Sep-10														X											
Direct Fixation Details	30-Sep-10														X											
Transition Zones between Different Track Modules	30-Sep-10														X											
Fastening Assemblies	30-Sep-10														X											
Standard Turnouts No. 8 through No. 20 (Solid, Railbound or S	30-Nov-10																				X					
Standard Turnout and Crossover Data - Reference AREMA	30-Nov-10																				X					
High-Speed Turnouts (Movable Point Frogs)	30-Nov-10																				X					
High-Speed Turnout and Crossover Data	31-Mar-10								X																	
Switch Machine Placement and Switch Rod Typical Layouts	31-Dec-10																						X			
Movable Point Frogs, Switch Machine Placement and Switch P	31-Dec-10																						X			
Gauge Plate Details for Frog Areas	31-Dec-10																						X			
Guard Rail Placement and Details	28-Feb-11																							X		
Switch Rods, Plates and Stands	28-Feb-11																							X		
Standard Bolted Joint - Reference AREMA	28-Feb-11																							X		
Rail Expansion Joint and Insulated Joint	28-Feb-11																							X		
Bumping Post	31-Mar-10								X																	
Drainage																										
Track Underdrain and Side Ditch Details	31-Mar-10								X																	
Precast Reinforced Concrete Box Culverts	31-Mar-10								X																	
Box Culvert Wingwalls	31-May-10									X																
Precast Reinforced Concrete Pipe Design Data	31-Dec-10																						X			
Pipe Culvert Headwalls, Endwalls and Wingwalls	31-May-10									X																
Pipe Coupling and Joint Details	31-Dec-10																						X			
Retaining Walls																										
Cast-in-Place Retaining Walls Details No.1	28-Feb-11																							X		
Cast-in-Place Retaining Walls Details No.2	28-Feb-11																							X		
Cast-in-Place Retaining Walls Details No.3	28-Feb-11																							X		
Cast-in-Place Walls Drainage and Utility Openings	30-Apr-11																								X	
Approved Proprietary Retaining Wall Systems	30-Apr-11																								X	
Sound Walls																										
Masonry Block on Footing Details	30-Sep-10																						X			
Masonry Block on Pile Cap Details	30-Sep-10																						X			
Access Gate Details	30-Sep-10																						X			
Bridges																										
Bridge General Details No.1	30-Sep-10																						X			
Bridge General Details No.2	30-Sep-10																						X			
Bridge General Details No.3	30-Sep-10																						X			
Pile Details	30-Nov-10																						X			
Joint Seals	31-Dec-10																						X			
Box Girder Details	30-Nov-10																						X			
Utility Openings and Access Stairs	28-Feb-11																							X		
Concrete Barriers	28-Feb-11																							X		
Electrical and Communication Conduits	28-Feb-11																							X		
Stations																										
End Taper Location and Offsets	31-Jan-10								X																	
Under Platform Edge Safety Zone	30-Nov-09						X																			
Platform Edge Fence	30-Sep-09					X																				
Station Barrier Wall	31-Aug-10																						X			
General Signs at Station	30-Sep-10																						X			
Station Identifiers Signs	30-Sep-10																						X			
Information Display Case	31-Oct-10																						X			
Station Directional Signs	31-Oct-10																						X			
Regulatory and Warning Signs	31-Oct-10																						X			
Monument Station Site Sign at Station Entry	30-Nov-10																						X			
Access and Parking Directional Signs	31-Dec-10																							X		
Parking Signs	31-Dec-10																							X		
Markings and Warning Tactiles	31-Aug-10																						X			
VMS Board Pole Mounting Details	31-Mar-11																								X	
Post Foundation and Sign Mounting Details	31-Mar-11																								X	

CALIFORNIA HIGH-SPEED TRAIN PROJECT ENGINEERING MANAGEMENT TEAM		FY 09/10					FY 10/11				
Standard Drawings	Target Completion Date Dark Green - Completed Light Green - Complete in FY 08/09 Yellow - Complete in FY 09/10 White - beyond FY 09/10	J	J	J	J	J	J	J	J	J	J
		A	S	O	N	D	F	M	A	M	J
Traction Power											
Symbols	30-Jun-09	X									
Abbreviations	30-Jun-09	X									
General Notes	30-Jun-09	X									
Typical Duct Bank and Manhole Details	31-Oct-10								X		
Typical Grounding Details	31-Dec-10									X	
Typical Fencing Details	31-Aug-10								X		
Overhead Contact System											
Symbols	30-Jun-09	X									
Abbreviations	30-Jun-09	X									
General Notes	30-Jun-09	X									
Overhead Contact System, Clearance Envelope and Contract	30-Jun-09	X									
Typical OCS Configuration - 125 mph	30-Jun-09	X									
Typical OCS Configuration - 220 mph	30-Jun-09	X									
Conductor Data Sheet	30-Jun-09	X									
Maximum Span and Tension Section Lengths - 125 mph	30-Jun-09	X									
Maximum Span and Tension Section Lengths - 220 mph	30-Jun-09	X									
Typical OCS Support Structure - At Grade, 125 mph	30-Sep-09			X							
Typical OCS Support Structure - Elevated, 125 mph	30-Sep-09			X							
Typical OCS Support Structure - Tunnel, 125 mph	30-Sep-09			X							
Typical OCS Support Structure - Cut and Cover, 125 mph	30-Nov-09				X						
Typ. OCS Support Str. - Cut and Cover, Two Track, 125 mph	30-Nov-09				X						
Typical OCS Support Structure - At Grade Turnout, 125 mph	31-Dec-09					X					
Typical OCS Support Structure - At Grade 3 Tracks, 125 mph	31-Dec-09					X					
Typical OCS Support Structure - At Grade, 220 mph	31-Oct-09			X							
Typical OCS Support Structure - Elevated, 220 mph	31-Oct-09			X							
Typ. OCS Support Structure - Tunnel Alt. 1, 2 Track, 220 mph	31-Oct-09			X							
Typ. OCS Support Structure - Tunnel Alt. 2, 2 Track, 220 mph	31-Oct-09			X							
Typical OCS Support Structure - Cut and Cover, 220 mph	31-Dec-09					X					
Typ. OCS Support Str. - Cut and Cover, Two Track, 220 mph	31-Dec-09					X					
Typical OCS Support Structure - At Grade Turnout, 220 mph	30-Nov-09				X						
Typical OCS Support Structure - At Grade 3 Tracks, 220 mph	30-Nov-09				X						
Typical Uninsulated Overlap - 3 Span, 125 mph	31-Jan-10						X				
Typical Uninsulated Overlap - 4 Span, 125 mph	31-Jan-10						X				
Typical Uninsulated Overlap - 5 Span, 125 mph	31-Jan-10						X				
Typical Uninsulated Overlap Cantilever Arr. - 3 Span, 125 mph	31-Jan-10						X				
Typ. Uninsulated Overlap Cantilever Arr. - 4 & 5 Span, 125 mph	31-Jan-10						X				
Typical Insulated Overlap - 3 Span, 125 mph	28-Feb-10						X				
Typical Insulated Overlap - 4 Span, 125 mph	28-Feb-10						X				
Typical Insulated Overlap - 5 Span, 125 mph	28-Feb-10						X				
Typ. Insulated Overlap Cantilever Arr. - 3 Span, 125 mph	28-Feb-10						X				
Typ. Insulated Overlap Cantilever Arr. - 4 & 5 Span, 125 mph	28-Feb-10						X				
Typical Uninsulated Overlap - 4 & 5 Span, 220 mph	28-Feb-10						X				
Typ. Uninsulated Overlap Cantilever Arrangement - 220 mph	31-Mar-10						X				
Typical Insulated Overlap - 4 & 5 Span, 220 mph	31-Mar-10						X				
Typ. Insulated Overlap Cantilever Arrangement - 220 mph	31-Mar-10						X				
Typical Balance Weight Arrangement - 125 mph	30-Apr-10							X			
Typical Mid Point Arrangement - 125 mph	30-Apr-10							X			
Typical Balance Weight Arrangement - 220 mph	30-Apr-10							X			
Typical Mid Point Arrangement - 220 mph	30-Apr-10							X			
Typical Crossover Arrangement - 125 mph	31-May-10								X		
Typical Crossover - 220 mph	31-May-10								X		
Typical Pole Foundation - Drilled Pier	30-Jun-10									X	
Typical Downguy Anchor - Drilled Pier	30-Jun-10									X	
Typical Pole - Wide Flange with Base Plate	30-Jun-10									X	

CALIFORNIA HIGH-SPEED TRAIN PROJECT ENGINEERING MANAGEMENT TEAM		FY 09/10					FY 10/11				
Standard Drawings	Target Completion Date Dark Green - Completed Light Green - Complete in FY 08/09 Yellow - Complete in FY 09/10 White - beyond FY 09/10	J	J	J	J	J	J	J	J	J	J
		A	S	O	N	D	F	M	A	M	J
Traction Power											
Symbols	30-Jun-09	X									
Abbreviations	30-Jun-09	X									
General Notes	30-Jun-09	X									
Typical Duct Bank and Manhole Details	31-Oct-10								X		
Typical Grounding Details	31-Dec-10									X	
Typical Fencing Details	31-Aug-10								X		
Overhead Contact System											
Symbols	30-Jun-09	X									
Abbreviations	30-Jun-09	X									
General Notes	30-Jun-09	X									
Overhead Contact System, Clearance Envelope and Contact	30-Jun-09	X									
Typical OCS Configuration - 125 mph	30-Jun-09	X									
Typical OCS Configuration - 220 mph	30-Jun-09	X									
Conductor Data Sheet	30-Jun-09	X									
Maximum Span and Tension Section Lengths - 125 mph	30-Jun-09	X									
Maximum Span and Tension Section Lengths - 220 mph	30-Jun-09	X									
Typical OCS Support Structure - At Grade, 125 mph	30-Sep-09			X							
Typical OCS Support Structure - Elevated, 125 mph	30-Sep-09			X							
Typical OCS Support Structure - Tunnel, 125 mph	30-Sep-09			X							
Typical OCS Support Structure - Cut and Cover, 125 mph	30-Nov-09				X						
Typ. OCS Support Str. -Cut and Cover, Two Track, 125 mph	30-Nov-09				X						
Typical OCS Support Structure - At Grade Turnout, 125 mph	31-Dec-09					X					
Typical OCS Support Structure -At Grade 3 Tracks, 125 mph	31-Dec-09					X					
Typical OCS Support Structure - At Grade, 220 mph	31-Oct-09			X							
Typical OCS Support Structure - Elevated, 220 mph	31-Oct-09			X							
Typ. OCS Support Structure -Tunnel Alt.1, 2 Track, 220 mph	31-Oct-09			X							
Typ. OCS Support Structure -Tunnel Alt.2, 2 Track, 220 mph	31-Oct-09			X							
Typical OCS Support Structure - Cut and Cover, 220 mph	31-Dec-09					X					
Typ. OCS Support Str. -Cut and Cover, Two Track, 220 mph	31-Dec-09					X					
Typical OCS Support Structure - At Grade Turnout, 220 mph	30-Nov-09			X							
Typical OCS Support Structure - At Grade 3 Tracks, 220 mph	30-Nov-09			X							
Typical Uninsulated Overlap - 3 Span, 125 mph	31-Jan-10					X					
Typical Uninsulated Overlap - 4 Span, 125 mph	31-Jan-10					X					
Typical Uninsulated Overlap - 5 Span, 125 mph	31-Jan-10					X					
Typical Uninsulated Overlap Cantilever Arr. - 3 Span, 125 mph	31-Jan-10					X					
Typ. Uninsulated Overlap Cantilever Arr. - 4 & 5 Span, 125 mph	31-Jan-10					X					
Typical Insulated Overlap - 3 Span, 125 mph	28-Feb-10					X					
Typical Insulated Overlap - 4 Span, 125 mph	28-Feb-10					X					
Typical Insulated Overlap - 5 Span, 125 mph	28-Feb-10					X					
Typ. Insulated Overlap Cantilever Arr. - 3 Span, 125 mph	28-Feb-10					X					
Typ. Insulated Overlap Cantilever Arr. - 4 & 5 Span, 125 mph	28-Feb-10					X					
Typical Uninsulated Overlap - 4 & 5 Span, 220 mph	28-Feb-10					X					
Typ. Uninsulated Overlap Cantilever Arrangement - 220 mph	31-Mar-10					X					
Typical Insulated Overlap - 4 & 5 Span, 220 mph	31-Mar-10					X					
Typ. Insulated Overlap Cantilever Arrangement - 220 mph	31-Mar-10					X					
Typical Balance Weight Arrangement - 125 mph	30-Apr-10						X				
Typical Mid Point Arrangement - 125 mph	30-Apr-10						X				
Typical Balance Weight Arrangement - 220 mph	30-Apr-10						X				
Typical Mid Point Arrangement - 220 mph	30-Apr-10						X				
Typical Crossover Arrangement - 125 mph	31-May-10							X			
Typical Crossover - 220 mph	31-May-10							X			
Typical Pole Foundation - Drilled Pier	30-Jun-10								X		
Typical Downguy Anchor - Drilled Pier	30-Jun-10								X		
Typical Pole - Wide Flange with Base Plate	30-Jun-10								X		

CALIFORNIA HIGH-SPEED TRAIN PROJECT ENGINEERING MANAGEMENT TEAM		FY 09/10					FY 10/11																				
Standard Drawings	Target Completion Date Dark Green - Completed Light Green - Complete in FY 09/10 Yellow - Complete in FY 09/10 White - Beyond FY 09/10	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	
		Command, Control and Signaling																									
TBD	30-Jun-11																										X
Communications																											
Symbols	31-Aug-09				X																						
Abbreviations	31-Aug-09				X																						
General Notes	31-Oct-09					X																					
Typical Fiber Optic Duct Bank Configurations	31-Jan-10									X																	
Fiber Optic Manholes and Pull Boxes	31-Jan-10									X																	
Communications Equipment Enclosures	31-Jan-10									X																	
GSM-R	31-Aug-10																										X
Visual Message System Mounting and Foundation	30-Sep-10																										X
VMS Subsystem and Equipment Details	31-Oct-10																										X
PAS Subsystem and Equipment Details	30-Nov-10																										X
CCTV Subsystem and Equipment Details	31-Dec-10																										X
Right of Way (ROW)																											
Chain Link Access Control Fence	31-Jul-10																										X
Intrusion Detection Details	31-Dec-09									X																	
Intrusion Protection Details	31-Dec-09									X																	
High Security Area Expanded Metal Mesh Fence	31-Aug-10																										X
Control Point Signs	31-Jan-11																										X
One Tenth mile and Mile Post Markers	31-Mar-11																										X
Attend to Derailing Switch and Deraill Signs	30-Apr-11																										X

Regional Projects

The work on the Regional Projects by the Regional Consultants is in each of the following regional sections:

- Los Angeles to Orange County
- Los Angeles to Palmdale
- Palmdale to Bakersfield
- Bakersfield to Fresno
- Fresno to Merced
- Merced to San Jose
- San Jose to San Francisco
- Merced to Sacramento
- Altamont Pass Corridor
- Los Angeles to San Diego

All elements of work for the Regional Consultants match the definitions and descriptions in section 4.0 Implementation Plan, and are summarized as follows:

Summary of Regional Consultant Work Elements	
Work and Deliverables	Description
15% Preliminary Engineering	<ul style="list-style-type: none"> • Engineering supporting the project-specific EIR/EIS • Issued at Draft EIR/EIS
Draft EIR/EIS	<ul style="list-style-type: none"> • Scoping • Alternatives Analysis • Environmental Technical Reports • Public Outreach • Agency Coordination • Administrative Draft EIR/EIS • Draft EIR/EIS
Final EIR/EIS	<ul style="list-style-type: none"> • Response to comments on Draft EIR/EIS • Public Outreach • Agency Coordination • Final EIR/EIS
30% Preliminary Engineering	<ul style="list-style-type: none"> • Engineering required to define project in Final EIR/EIS • Design will be used for bid documents
Notice of Determination (NOD) / Record of Decision (ROD)	<ul style="list-style-type: none"> • Findings and Statement of Overriding Considerations • Preparation and approval NOD/ROD documents • Mitigation and Monitoring Plan
Agreements, Permitting and ROW	<ul style="list-style-type: none"> • Ongoing Agency Input • Agency Agreements • Permitting • Identification of “at-risk” parcels • Prepare survey documents and legal descriptions • Negotiation
Procurement / Construction	<ul style="list-style-type: none"> • Legal Provisions for Bid Documents • Commercial Provisions for Bid Documents • Technical specifications and drawings (from 30% PE) for Bid Documents • Bid Evaluation • Construction Management

Los Angeles to Orange County

Part of Phase 1 of the project, the Los Angeles to Orange County section is approximately 30 miles long and follows the existing LOSSAN rail corridor, increasing the connectivity and accessibility between the two areas. The design will incorporate fully grade-separated tracks and a state-of-the-art signaling and communications system. In addition to Los Angeles Union Station, stations in this section are to be located at Anaheim and Norwalk or Fullerton.

- Regional Consultant team led by STV, Inc.
- Scheduled NOD/ROD and Construction Bid Advertisement date March 2011.

The annual work progress and costs for this Regional section are shown in the Work Progress and Cost Table below:

Work Progress and Cost Table
Contract Section: Los Angeles to Orange County

Work / Milestone	% of Work Complete and Progress by Quarter of Fiscal Year																			
	Thru 2008 - 09				2009 - 10				2010 - 11				2011 - 12				2012 - 13			
	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Preliminary Engineering	11%	11%	11%	11%	11%	11%	11%	12%	11%											
Draft EIR/EIS	17%	15%	15%	17%	15%	12%	9%													
Final EIR/EIS								25%	25%	25%	25%									
30% Preliminary Engineering							17%	17%	17%	17%	17%	15%								
NOD/ROD											100%	◆								
Agreements, Permitting and ROW				5%	10%	15%	15%	15%	15%	15%	10%									
Procurement / Construction												◆	▶							
Annual % Complete	39.8%				34.6%				25.6%											
Cumulative % Complete	39.8%				74.4%				100.0%											
Annual Cost (\$ Million)	\$8.7				\$12.0				\$8.0											
Cumulative Cost (\$ Million)	\$8.7				\$20.7				\$28.7											

Estimated Total Budget \$28,700,000

- Notes:**
1. Fiscal year begins July 1. Quarters end in September, December, March and June.
 2. See Section 4.0 - Implementation Plan, for a description of the Work and Milestones.
 3. Work progress is shown as planned % complete in each quarter of the fiscal year.
- ◆ Represents NOD / ROD and Construction Bid Advertisement Milestones.

Based on the work depicted in the Work Progress and Cost Table above, the deliverables are summarized on the following page. A detailed list of deliverables is shown in the Regional Consultants Deliverables table on the next pages. A summary schedule for this Regional section is on the pages following the Regional Consultants Deliverables table.

Deliverables Summary

LA to Orange Co. Deliverables Summary	
Description of Work and Deliverables	Quantity
Public Outreach/Coordination – Notices/Reports	9
Technical Reports – Existing Conditions/Impacts	22
EIR/EIS Sections - Existing Conditions/Impacts	36
EIR/EIS Documents – Draft/Final	4
Mitigation Monitoring & Reporting Plan	1
NOD/ROD	2
15% Preliminary Engineering Plan Sheets	650
15% Submittals – In Progress/ Final	12
30% Preliminary Engineering Plan Sheets	1300
30% Submittals – In Progress/ Final	12

Deliverables Detail

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
LOS ANGELES to ORANGE COUNTY	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		Draft EIR/EIS																			
Notice of Intent (NOI)/Notice of Preparation (NOP)	Notices	Previously Completed																			
Submit Final Public Participation Plan	Plan	X																			
Submit Scoping Report	Report	X																			
Purpose & Need Statement	Report			X																	
SAFETEA-LU Agency Coordination Plan	Plan			X																	
Public/Stakeholder/Agency Involvement Plan for Project-Level EIR/EIS	Plan			X																	
Initial Identification of Alternatives	Report	X																			
Authority/FRA Alternatives Workshop	Workshop	X																			
Submit Draft Alternatives Analysis Report	Report	X																			
Submit Final Alternatives Analysis Report	Report			X																	
Project Definition/Description	Report					X															
Technical Reports - Baseline																					
T.R. - Traffic and Transit	Report					X															
T.R. - Air Quality	Report					X															
T.R. - Noise and Vibration	Report			X																	
T.R. - Biological Resources and Wetland	Report			X																	
T.R. - Hydrology and Water Resources	Report			X																	
T.R. - Geology, Soils and Seismicity	Report					X															
T.R. - Hazardous Materials	Report					X															
T.R. - Communities and Environmental Justice	Report					X															
T.R. - Aesthetics and Visual Quality	Report					X															
T.R. - Cultural Resources and Paleontology	Report			X																	
Authority/FRA Review of Baseline Technical Report	Report					X															
Revise Baseline T.R.	Report					X															
Final Authority/FRA Review	Review					X															
Final Revision of Baseline T.R.	Report					X															
Technical Reports - Impacts																					
T.R. - EIR/EIS Affected Environment	Report					X															
T.R. - EIR/EIS Impacts	Report					X															
Definition of Station and Need Assessment Report	Report			X																	
Public Meeting/Workshop re Issues and Opportunities	Workshop			X																	
Submit Station Area Development Plan	Plan			X																	
Submit Administrative Draft EIR/EIS	Report					X															
Authority/FRA Review of Administrative Draft	Review					X															
Submit revised Draft for Legal Review	Report					X															
Submit revised Draft based on Legal Review	Report							X													
Print and Distribute Draft EIR/EIS	Report							X													
Public Review/Hearings	Review									X	X	X	X								
15% Preliminary Engineering																					
Alignment Plan and Profile	120			X																	
Construction Assessment Memorandum	Report					X															
Station Design Development	50			X																	
Preliminary Bridge Plans	75					X															
Grading/Earthwork	20			X																	
Hydrology/Hydraulics/Drainage Reports	75					X															
Utilities	90					X															
Tunnels	15					X															
Geotechnical	Report					X															
Right of Way	75					X															

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
LOS ANGELES to ORANGE COUNTY	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		15% Preliminary Engineering																			
Traction Power	25					X															
Overhead Contact System	75					X															
Medium Maintenance Facility, Preliminary Plans	30					X															
Design Submittal - Full Package	650					X															
Construction Cost Estimate	Estimate					X															
Final EIR/EIS																					
Prepare and Submit Draft Final EIR/EIS	Report					X															
Authority/FRA review of Draft Final EIR/EIS	Review					X															
Submit Draft Final EIR/EIS	Report								X												
Submit Findings and Statements of Overriding Conditions	Report									X											
Submit Final EIR/EIS	Report									X											
30% Preliminary Engineering																					
Alignment Plan and Profile	680									X											
Construction Assessment Memorandum	Report												X								
Station Design Development	75									X											
Preliminary Bridge Plans	830									X											
Grading/Earthwork	490									X											
Hydrology/Hydraulics/Drainage Reports	235									X											
Utilities	350									X											
Tunnels	35									X											
Geotechnical	Report									X											
Right of Way	345									X											
Traction Power	125									X											
Overhead Contact System	530									X											
Medium Maintenance Facility, Preliminary Plans	1200									X											
Design Submittal - Full Package	4895												X								
Construction Cost Estimate	Estimate												X								
NOD/ROD																					
Authority Board Certification of EIR/EIS	Certification													X							
Submit Draft NOD	Report													X							
Authority/FRA Review of Draft NOD	Review													X							
Submit revised Draft NOD	Report													X							
Submit Draft ROD	Report													X							
Authority/FRA Review of Draft ROD	Review													X							
Submit revised Draft ROD	Report													X							
FRA Clearance and Signature	Review													X							

Regional Project Summary Schedule	FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
Los Angeles to Orange County	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Design	■				■				■											
Draft EIR/EIS	■				■															
Hearings / Preferred Alternative									■											
Final EIR/EIS									■											
30% Engineering Design									■											
NOD / ROD													◆							
Agreements, Permitting, ROW	■				■				■				■				■			
Procurement/Construction					■				■				■				■			

◆ Project Milestone

Notes:

- The above is a summary level schedule. See the Regional Consultant’s annual work plan submitted to the Authority for a detailed schedule of work tasks.
- The Alternatives Analysis task is included in the Draft EIR/EIS task.
- Issuance of the NOD & ROD allows construction bids to be advertised.
- Procurement reflects early action activities in preparation for bid selection including pre-qualifying contractors, and preparing commercial, legal and technical terms and conditions.
- Pre-construction activities will take place in parallel with ROW acquisition activities.
- Construction delivery method is anticipated to be either Design-Build or PPP.

Deliverables Summary

LA to Palmdale Deliverables Summary	
Description of Work and Deliverables	Quantity
Public Outreach/Coordination – Notices/Reports	9
Technical Reports – Existing Conditions/Impacts	22
EIR/EIS Sections - Existing Conditions/Impacts	36
EIR/EIS Documents – Draft/Final	4
Mitigation Monitoring & Reporting Plan	1
NOD/ROD	2
15% Preliminary Engineering Plan Sheets	335
15% Submittals – In Progress/ Final	12
30% Preliminary Engineering Plan Sheets	578
30% Submittals – In Progress/ Final	12

Deliverables Detail

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
LA to PALMDALE	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		Draft EIR/EIS															
Notice of Intent (NOI)/Notice of Preparation (NOP)	Notices	X															
Submit Final Public Participation Plan	Plan	X															
Submit Scoping Report	Report	X															
Purpose & Need Statement	Report			X													
SAFETEA-LU Agency Coordination Plan	Plan			X													
Public/Stakeholder/Agency Involvement Plan for Project-Level EIR/EIS	Plan			X													
Authority/FRA Alternatives Workshops (3 No.)	Workshop			X	X												
Submit Alternatives Analysis Reports																	
i) LAUS to SR-134	Report			X													
ii) SR-134 to Sylmar	Report			X													
iii) Sylmar to Palmdale	Report				X												
Alternatives Analysis Drawings	128			X	X												
Project Definition/Description	Report					X											
Alternatives Definition Drawings	42					X											
Technical Reports - Baseline																	
T.R. - Traffic and Transit	Report					X											
T.R. - Air Quality	Report					X											
T.R. - Noise and Vibration	Report					X											
T.R. - EMI/EMF	Report					X											
T.R. - Public Utilities and Energy	Report					X											
T.R. - Biological Resources and Wetland	Report					X											
T.R. - Hydrology and Water Resources	Report					X											
T.R. - Geology, Soils and Seismicity	Report					X											
T.R. - Hazardous Materials and Waste	Report					X											
T.R. - Safety and Security	Report					X											
T.R. - Communities and Environmental Justice	Report					X											
T.R. - Local Growth, Station Planning and Land Use	Report					X											
T.R. - Agricultural Land	Report					X											
T.R. - Park, Recreation and Open Space	Report					X											
T.R. - Aesthetics and Visual Quality	Report					X											
T.R. - Cultural Resources and Paleontology	Report					X											
Authority/FRA Review of Baseline Technical Report	Review					X											
Revise Baseline T.R.	Report						X										
Final Authority/FRA Review	Review						X										
Final Revision of Baseline T.R.	Report						X										
Technical Reports - Impacts																	
T.R. - Traffic and Transit	Report					X											
T.R. - Air Quality	Report					X											
T.R. - Noise and Vibration	Report					X											
T.R. - EMI/EMF	Report					X											
T.R. - Public Utilities and Energy	Report					X											
T.R. - Biological Resources and Wetland	Report					X											

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
LA to PALMDALE	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		Draft EIR/EIS															
T.R. - Hydrology and Water Resources	Report								X								
T.R. - Geology, Soils and Seismicity	Report								X								
T.R. - Hazardous Materials and Waste	Report								X								
T.R. - Safety and Security	Report								X								
T.R. - Communities and Environmental Justice	Report								X								
T.R. - Local Growth, Station Planning and Land Use	Report								X								
T.R. - Agricultural Land	Report								X								
T.R. - Park, Recreation and Open Space	Report								X								
T.R. - Aesthetics and Visual Quality	Report								X								
T.R. - Cultural Resources and Paleontology	Report								X								
Authority/FRA Review of Baseline Technical Reports	Review								X								
Revise Baseline T.R.	Report								X								
Final Authority/FRA Review	Review												X				
Final Revision of Baseline T.R.	Report												X				
Station Area Planning																	
Burbank - Tech Memo (incl. drgs)	T.Memo								X								
Burbank - Station Assessment Report	Report								X								
Sylmar/Santa Clarita - Tech Memo (incl. drgs)	T.Memo								X								
Sylmar/Santa Clarita - Station Assessment Report	Report								X								
Palmdale - Tech Memo (incl. drgs)	T.Memo												X				
Palmdale - Station Assessment Report	Report												X				
Definition of Station and Need Assessment Report	Report								X								
Project Description	Report												X				
Submit Administrative Draft EIR/EIS	Report												X				
Authority/FRA Review of Administrative Draft	Review												X				
Submit revised Draft for Legal Review	Report												X				
Submit revised Draft based on Legal Review	Report															X	
Print and Distribute Draft EIR/EIS	Report															X	
Public Review/Hearings	Review															X	
15% Preliminary Engineering																	
Alignment Plan and Profile	86												X				
Existing Structures Survey Reports	Report								X								
Temporary Construction Facilities	20												X				
Temporary Construction Facilities	Report												X				
Construction Assessment Memorandum	T.Memo								X								
Construction Phasing & Staging Concept Report	Report												X				
Station Design Development	42												X				
Station Needs Assessment Report	Report												X				
Station Traffic Control and Parking Requirements Report	Report												X				

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
LA to PALMDALE	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		15% Preliminary Engineering															
Bridges and Elevated Structures	54								X								
Initial Advance Planning Study Report - Standard Structures	Report					X											
Initial Advance Planning Study Report - Special Structures	Report					X											
Grade Crossings Report	Report					X											
Tunnels	24								X								
Tunnel Design and Construction Report	Report								X								
Tunnel Systems and Fire/Life Safety Report	Report					X											
Tunnel Aerodynamics Report	Report					X											
Buildings	6								X								
Grading/Earthwork	13								X								
Preliminary Strategy for borrow areas Report	Report								X								
Hydrology Report	Report								X								
Floodplain Impacts Assessment Report	Report							X									
Stormwater Management Report	Report								X								
Hydrology, Hydraulics and Drainage Report	Report								X								
Utilities	27								X								
Utility Conflicts and Relocations Report	Report								X								
Planned High Risk Utilities Tech Memo	T.Memo								X								
Geotechnical	7								X								
Geohazard Report	Report								X								
Geotechnical Summary Report	Report								X								
Geotechnical Investigation Plan Tech Memo	T.Memo								X								
Geotechnical Data Report	Report								X								
Geotechnical Design Report	Report								X								
Geotechnical and Seismic Investigations Report	Report								X								
Right of Way	Report								X								
Traction Power	15								X								
Public Utility Company	9								X								
Overhead Contact System	10								X								
Communications	10								X								
Trackside Services	8								X								
Maintenance Facilities	4								X								
Maintenance of Way Requirements Report	Report								X								
Design Submittal - Full Package	335								X								
Authority/FRA Review of Design Submittal	Review									X							
Design Submittal - Final Issue	335									X							
Construction Cost Estimating Plan	Plan									X							
Construction Cost Estimate Reports:																	
Earthworks, Drainage and Utilities	Report								X								

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
LA to PALMDALE	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		15% Preliminary Engineering															
Structures	Report								X								
Tunnels	Report								X								
Stations	Report								X								
Right of Way	Report								X								
Construction Cost Estimate	Estimate									X							
Final EIR/EIS																	
Prepare and Submit Draft Final EIR/EIS	Report											X					
Authority/FRA review of Draft Final EIR/EIS	Review											X					
Submit Draft Final EIR/EIS	Report												X				
Submit Findings and Statements of Overriding Conditions	Report															X	
Submit Final EIR/EIS	Report															X	
30% Preliminary Engineering																	
Alignment Plan and Profile	86 (rev)															X	
Temporary Construction Facilities	30 (new) 20 (rev)															X	
Temporary Construction Facilities	Report															X	
Stations	29 (new) 42 (rev)															X	
Bridges and Elevated Structures	35 (new) 54 (rev)															X	
Tunnels	22 (new) 24 (rev)															X	
Buildings	2 (new) 6 (rev)															X	
Grading/Earthwork	6 (new) 13 (rev)															X	
Hydrology/Hydraulics/Drainage Reports	Report															X	
Utilities	21 (new) 27 (rev)															X	
Geotechnical	7 (rev)															X	
Geotechnical Data Report	Report															X	
Geotechnical Design Report	Report															X	
Right of Way	74 (new)															X	
Traction Power	15 (rev)															X	
Public Utility Company	9 (rev)															X	
Overhead Contact System	8 (new) 10 (rev)															X	
Communications	6 (new) 10 (rev)															X	
Trackside Services	8 (new) 8 (rev)															X	
Maintenance Facilities	4 (new) 4 (rev)															X	
Design Submittal - Full Package	245(new)333(rev)															X	
Construction Cost Estimate	Estimate																X
Authority/FRA Review of Design Submittal	Review															X	
Design Submittal - Final Issue	578															X	
NOD/ROD																	
Submit Draft Mitigation Monitoring Plan	Report											X					
Authority/FRA review of Draft MMP	Review											X					

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
LA to PALMDALE	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		NOD/ROD															
Submit Revised Draft Mitigation Monitoring Plan	Report																X
Authority/FRA review of Revised Draft MMP	Review																X
Authority Board Certification of EIR/EIS	Certification																X
Submit Draft NOD	Report																X
Authority/FRA Review of Draft NOD	Review																X
Submit revised Draft NOD	Report																X
Submit Draft ROD	Report																X
Authority/FRA Review of Draft ROD	Review																X
Submit revised Draft ROD	Report																X
FRA Clearance and Signature	Review																X

Regional Project Summary Schedule	FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
Los Angeles to Palmdale	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Design																				
Draft EIR/EIS																				
Hearings / Preferred Alternative																				
Final EIR/EIS																				
30% Engineering Design																				
NOD / ROD																				
Agreements, Permitting, ROW																				
Procurement/Construction																				

◆ Project Milestone

Notes:

- The above is a summary level schedule. See the Regional Consultant’s annual work plan submitted to the Authority for a detailed schedule of work tasks.
- The Alternatives Analysis task is included in the Draft EIR/EIS task.
- Issuance of the NOD & ROD allows construction bids to be advertised.
- Procurement reflects early action activities in preparation for bid selection including pre-qualifying contractors, and preparing commercial, legal and technical terms and conditions.
- Pre-construction activities will take place in parallel with ROW acquisition activities.
- Construction delivery method is anticipated to be either Design-Build or PPP.

Palmdale to Bakersfield

Part of Phase 1 of the project, the Palmdale to Bakersfield section is approximately 85 miles long, roughly following SR-14 and SR-58 through the Tehachapi Mountains. This section serves as the vital link, connecting to stations at Palmdale and Bakersfield, providing connectivity and accessibility of the Central Valley to the Los Angeles area.

- Regional Consultant Joint Venture team of URS Corporation, Hatch Mott MacDonald, and ARUP
- Scheduled NOD/ROD and Construction Bid Advertisement date September 2012.

The annual work progress and costs for this Regional section are shown in the Work Progress and Cost Table below:

Work Progress and Cost Table
Contract Section: Palmdale to Bakersfield

Work / Milestone	% of Work Complete and Progress by Quarter of Fiscal Year																			
	Thru 2008 - 09				2009 - 10				2010 - 11				2011 - 12				2012 - 13			
	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Preliminary Engineering					5%	10%	11%	12%	15%	15%	15%	12%	5%							
Draft EIR/EIS				5%	12%	12%	10%	10%	10%	10%	10%	10%	6%	5%						
Final EIR/EIS													10%	35%	35%	20%				
30% Preliminary Engineering												10%	17%	17%	17%	17%	12%	10%		
NOD/ROD																	100%	◆		
Agreements, Permitting and ROW Procurement / Construction				5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	10%	10%	10%	10%	5%	◆
Annual % Complete	1.1%				23.1%				37.7%				19.1%				19.0%			
Cumulative % Complete	1.1%				24.2%				61.9%				81.0%				100.0%			
Annual Cost (\$ Million)	\$0.2				\$8.0				\$15.0				\$7.0				\$6.6			
Cumulative Cost (\$ Million)	\$0.2				\$8.2				\$23.2				\$30.2				\$36.9			
Estimated Total Budget																\$36,881,000				

- Notes:**
1. Fiscal year begins July 1. Quarters end in September, December, March and June.
 2. See Section 4.0 - Implementation Plan, for a description of the Work and Milestones.
 3. Work progress is shown as planned % complete in each quarter of the fiscal year.
- ◆ Represents NOD / ROD and Construction Bid Advertisement Milestones.

Based on the work depicted in the Work Progress and Cost Table above, the deliverables are summarized on the following page. A detailed list of deliverables is shown in the Regional Consultants Deliverables table on the next pages. A summary schedule for this Regional section is on the pages following the Regional Consultants Deliverables table.

Deliverables Summary

Palmdale to Bakersfield Deliverables Summary	
Description of Work and Deliverables	Quantity
Public Outreach/Coordination – Notices/Reports	9
Technical Reports – Existing Conditions/Impacts	22
EIR/EIS Sections - Existing Conditions/Impacts	36
EIR/EIS Documents – Draft/Final	4
Mitigation Monitoring & Reporting Plan	1
NOD/ROD	2
15% Preliminary Engineering Plan Sheets	950
15% Submittals – In Progress/ Final	12
30% Preliminary Engineering Plan Sheets	1425
30% Submittals – In Progress/ Final	12

Deliverables Detail

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
PALMDALE to BAKERSFIELD	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		Draft EIR/EIS																			
Notice of Intent (NOI)/Notice of Preparation (NOP)	Notices				X																
Submit Final Public Participation Plan	Plan	X				X				X				X				X			
Submit Scoping Report	Report						X														
Purpose & Need Statement	Report					X															
SAFETEA-LU Agency Coordination Plan	Plan					X															
Public/Stakeholder/Agency Involvement Plan for Project-Level EIR/EIS	Plan					X															
Initial Identification of Alternatives	Report							X													
Authority/FRA Alternatives Workshop	Workshop							X													
Submit Draft Alternatives Analysis Report	Report								X												
Submit Final Alternatives Analysis Report	Report								X												
Project Definition/Description	Report								X												
Technical Reports - Baseline		--																			
T.R. - Traffic and Transit	Doc Section								X												
T.R. - Air Quality	Doc Section									X											
T.R. - Noise and Vibration	Doc Section									X											
T.R. - Biological Resources and Wetland	Doc Section										X										
T.R. - Hydrology and Water Resources	Doc Section							X													
T.R. - Geology, Soils and Seismicity	Doc Section									X											
T.R. - Hazardous Materials	Doc Section							X													
T.R. - Communities and Environmental Justice	Doc Section									X											
T.R. - Aesthetics and Visual Quality	Doc Section										X										
T.R. - Cultural Resources and Paleontology	Doc Section										X										
Authority/FRA Review of Baseline Technical Report	Report										X										
Revise Baseline T.R.	Report										X										
Final Authority/FRA Review	Review											X									
Final Revision of Baseline T.R.	Report											X									
Technical Reports - Impacts		--																			
T.R. - EIR/EIS Affected Environment	Doc Section													X							
T.R. - EIR/EIS Impacts	Doc Section													X							
Definition of Station and Need Assessment Report	Report												X								
Public Meeting/Workshop re Issues and Opportunities	Workshop										X										
Submit Station Area Development Plan	Report										X										
Submit Administrative Draft EIR/EIS	Draft EIR/EIS													X							
Authority/FRA Review of Administrative Draft	Draft EIR/EIS													X							
Submit revised Draft for Legal Review	Draft EIR/EIS														X						
Submit revised Draft based on Legal Review	Draft EIR/EIS														X						
Print and Distribute Draft EIR/EIS	Draft EIR/EIS														X						
Public Review/Hearings	Hearings															X					
15% Preliminary Engineering																					
Alignment Plan and Profile	90											X									
Construction Assessment Memorandum	Tech Memo											X									
Station Design Development	NA														X						
Preliminary Bridge Plans	25														X						
Tunnels	50											X									
Grading/Earthwork	25											X									
Hydrology/Hydraulics/Drainage Reports	Report									X											
Utilities	40											X									

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
PALMDALE to BAKERSFIELD	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		15% Preliminary Engineering																			
Geotechnical	Report									X											
Right of Way	140															X					
Traction Power	(100)											X									
Overhead Contact System	NA																				
Heavy Maintenance Facility, Preliminary Plans	NA																				
Design Submittal - Full Package	100																X				
Construction Cost Estimate	Spreadsheet															X					
Final EIR/EIS																					
Prepare and Submit Draft Final EIR/EIS	Final EIR/EIS																X				
Authority/FRA review of Draft Final EIR/EIS	Final EIR/EIS																X				
Submit Draft Final EIR/EIS	Final EIR/EIS																X				
Submit Findings and Statements of Overriding Conditions	Final EIR/EIS																			X	
Submit Final EIR/EIS	Final EIR/EIS																			X	
30% Preliminary Engineering																					
Alignment Plan and Profile	400																			X	
Construction Assessment Memorandum	Report																			X	
Station Design Development	NA																				X
Preliminary Bridge Plans	50																				X
Tunnels	100																				X
Grading/Earthwork	(300)																				X
Hydrology/Hydraulics/Drainage Reports	Report																			X	
Utilities	80																				X
Geotechnical	80																				X
Right of Way	(400)																				X
Traction Power	5																				X
Overhead Contact System	5																			X	
Heavy Maintenance Facility, Preliminary Plans	NA																				
Design Submittal - Full Package	550																				X
Construction Cost Estimate	Spreadsheet																				X
NOD/ROD																					
Authority Board Certification of EIR/EIS	--																				X
Submit Draft NOD	Misc Doc																				X
Authority/FRA Review of Draft NOD	Misc Doc																				X
Submit revised Draft NOD	Misc Doc																				X
Submit Draft ROD	Misc Doc																				X
Authority/FRA Review of Draft ROD	Misc Doc																				X
Submit revised Draft ROD	Misc Doc																				X
FRA Clearance and Signature	--																				X

Regional Project Summary Schedule	FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
Palmdale to Bakersfield	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Design																				
Draft EIR/EIS																				
Hearings / Preferred Alternative																				
Final EIR/EIS																				
30% Engineering Design																				
NOD / ROD																				
Agreements, Permitting, ROW																				
Procurement/Construction																				

◆ Project Milestone

Notes:

- The above is a summary level schedule. See the Regional Consultant’s annual work plan submitted to the Authority for a detailed schedule of work tasks.
- The Alternatives Analysis task is included in the Draft EIR/EIS task.
- Issuance of the NOD & ROD allows construction bids to be advertised.
- Procurement reflects early action activities in preparation for bid selection including pre-qualifying contractors, and preparing commercial, legal and technical terms and conditions.
- Pre-construction activities will take place in parallel with ROW acquisition activities.
- Construction delivery method is anticipated to be either Design-Build or PPP.

Bakersfield to Fresno

Part of Phase 1 of the project, the Bakersfield to Fresno section is approximately 115 miles long. This is a sub-section of the Merced to Bakersfield EIR/EIS section, and will generally follow the Burlington Northern Santa Fe (BNSF) or Union Pacific (UP) railroad routes through the corridor. Through this section, the HST will reach maximum speeds of over 200 mph. Stations in this section are to be located in Bakersfield and Fresno, with a potential station located in the Visalia/Tulare/Hanford area. The work in this section is being performed in coordination with the Fresno to Merced sub-section for the Merced to Bakersfield EIR/EIS.

- Regional Consultant Joint Venture team of URS Corporation, Hatch Mott MacDonald, and ARUP
- Scheduled NOD/ROD and Construction Bid Advertisement date March 2012.

The annual work progress and costs for this Regional section are shown in the Work Progress and Cost Table below:

Work Progress and Cost Table
Contract Section: Bakersfield to Fresno

Work / Milestone	% of Work Complete and Progress by Quarter of Fiscal Year																			
	Thru 2008 - 09				2009 - 10				2010 - 11				2011 - 12				2012 - 13			
	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Preliminary Engineering				10%	12%	12%	12%	14%	15%	15%	10%									
Draft EIR/EIS				10%	10%	10%	10%	10%	10%	10%	10%	10%								
Final EIR/EIS												10%	30%	30%	30%					
30% Preliminary Engineering											20%	20%	20%	20%	20%					
NOD/ROD																100%				
Agreements, Permitting and ROW				8%	5%	5%	5%	5%	5%	5%	5%	10%	10%	10%	10%	10%	7%			
Procurement / Construction																				
Annual % Complete	7.3%				32.4%				45.2%				13.9%				1.2%			
Cumulative % Complete	7.3%				39.7%				84.9%				98.8%				100.0%			
Annual Cost (\$ Million)	\$5.1				\$12.0				\$35.0				\$19.2				\$0.9			
Cumulative Cost (\$ Million)	\$5.1				\$17.0				\$52.0				\$71.2				\$72.1			
Estimated Total Budget																\$72,105,000				

- Notes:
- Fiscal year begins July 1. Quarters end in September, December, March and June.
 - See Section 4.0 - Implementation Plan, for a description of the Work and Milestones.
 - Work progress is shown as planned % complete in each quarter of the fiscal year.
 - Work coordinated with Fresno to Merced Section for Merced to Bakersfield EIR/EIS.
- ◆ Represents NOD / ROD and Construction Bid Advertisement Milestones.

Based on the work depicted in the Work Progress and Cost Table above, the deliverables are summarized on the following page. A detailed list of deliverables is shown in the Regional Consultants Deliverables table on the next pages. A summary schedule for this Regional section is on the pages following the Regional Consultants Deliverables table.

Deliverables Summary

Bakersfield to Fresno Deliverables Summary	
Description of Work and Deliverables	Quantity
Public Outreach/Coordination – Notices/Reports	9
Technical Reports – Existing Conditions/Impacts	22
EIR/EIS Sections - Existing Conditions/Impacts	36
EIR/EIS Documents – Draft/Final	4
Mitigation Monitoring & Reporting Plan	1
NOD/ROD	2
15% Preliminary Engineering Plan Sheets	1280
15% Submittals – In Progress/ Final	12
30% Preliminary Engineering Plan Sheets	2000
30% Submittals – In Progress/ Final	12

Deliverables Detail

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
BAKERSFIELD to FRESNO	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		Draft EIR/EIS															
Notice of Intent (NOI)/Notice of Preparation (NOP)	Plan			X													
Submit Final Public Participation Plan	Report	X				X				X				X			
Submit Scoping Report	Report			X													
Purpose & Need Statement	Report			X													
SAFETEA-LU Agency Coordination Plan	Plan			X													
Public/Stakeholder/Agency Involvement Plan for Project-Level EIR/EIS	Plan					X											
Initial Identification of Alternatives - Bakersfield	Report					X											
Initial Identification of Alternatives - Bakersfield-Fresno	Report					X											
Initial Identification of Alternatives - Fresno	Report					X											
Initial Identification of Alternatives - Fresno-Merced	Report					X											
Authority/FRA Alternatives Workshop - Bakersfield	Workshop					X											
Authority/FRA Alternatives Workshop - Bakersfield-Fresno	Workshop					X											
Authority/FRA Alternatives Workshop - Fresno	Workshop					X											
Authority/FRA Alternatives Workshop - Fresno-Merced	Workshop					X											
Submit Alternatives Analysis Report	Report						X										
Project Definition/Description	Report					X											
Technical Reports - Baseline																	
T.R. - Traffic and Transit	Report						X										
T.R. - Air Quality	Report							X									
T.R. - Noise and Vibration	Report							X									
T.R. - Biological Resources and Wetland	Report									X							
T.R. - Hydrology and Water Resources	Report						X										
T.R. - Geology, Soils and Seismicity	Report								X								
T.R. - Hazardous Materials	Report						X										
T.R. - Communities and Environmental Justice	Report							X									
T.R. - Aesthetics and Visual Quality	Report										X						
T.R. - Cultural Resources and Paleontology	Report									X							
Authority/FRA Review of Baseline Technical Report	Report									X							
Revise Baseline T.R.	Report									X							
Final Authority/FRA Review	Report									X							
Final Revision of Baseline T.R.	Report									X							
Technical Reports - Impacts																	
T.R. - EIR/EIS Affected Environment	Report											X					
T.R. - EIR/EIS Impacts	Report											X					
Definition of Station and Need Assessment Report	Report										X						
Public Meeting/Workshop re Issues and Opportunities	Report									X							
Submit Station Area Development Plan	Report									X							
Submit Administrative Draft EIR/EIS	Report												X				
Authority/FRA Review of Administrative Draft	Report												X				
Submit revised Draft for Legal Review	Report												X				
Submit revised Draft based on Legal Review	Report												X				
Print and Distribute Draft EIR/EIS	Report												X				
Public Review/Hearings	Report															X	

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
BAKERSFIELD to FRESNO	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		15% Preliminary Engineering															
Alignment Plan and Profile	120									X							
Construction Assessment Memorandum	Tech Memo									X							
Station Design Development	10											X					
Preliminary Bridge Plans	20											X					
Tunnels	1-5									X							
Grading/Earthwork	120									X							
Hydrology/Hydraulics/Drainage Reports	Report					X											
Utilities	60									X							
Geotechnical	Report					X											
Right of Way	160												X				
Traction Power	(120)									X							
Overhead Contact System	NA																
Heavy Maintenance Facility, Preliminary Plans	NA																
Design Submittal - Full Package	140												X				
Construction Cost Estimate	Spreadsheet												X				
Final EIR/EIS																	
Prepare and Submit Draft Final EIR/EIS	Report															X	
Authority/FRA review of Draft Final EIR/EIS	Report															X	
Submit Draft Final EIR/EIS	Report															X	
Submit Findings and Statements of Overriding Conditions	Report															X	
Submit Final EIR/EIS	Report															X	
30% Preliminary Engineering																	
Alignment Plan and Profile	500															X	
Construction Assessment Memorandum	Report															X	
Station Design Development	Report															X	
Preliminary Bridge Plans	50															X	
Tunnels	1-5															X	
Grading/Earthwork	(500)															X	
Hydrology/Hydraulics/Drainage Reports	Report													X			
Utilities	100															X	
Geotechnical	100															X	
Right of Way	(500)															X	
Traction Power	5															X	
Overhead Contact System	5													X	X		
Heavy Maintenance Facility, Preliminary Plans	NA																
Design Submittal - Full Package	700															X	
Construction Cost Estimate	Spreadsheet															X	

Regional Project Summary Schedule	FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
Bakersfield to Fresno	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Design																				
Draft EIR/EIS																				
Hearings / Preferred Alternative																				
Final EIR/EIS																				
30% Engineering Design																				
NOD / ROD																				
Agreements, Permitting, ROW																				
Procurement/Construction																				

◆ Project Milestone

Notes:

- The above is a summary level schedule. See the Regional Consultant’s annual work plan submitted to the Authority for a detailed schedule of work tasks.
- The Alternatives Analysis task is included in the Draft EIR/EIS task.
- Issuance of the NOD & ROD allows construction bids to be advertised.
- Procurement reflects early action activities in preparation for bid selection including pre-qualifying contractors, and preparing commercial, legal and technical terms and conditions.
- Pre-construction activities will take place in parallel with ROW acquisition activities.
- Construction delivery method is anticipated to be either Design-Build or PPP.

Fresno to Merced

Part of Phase 1 of the project, the Fresno to Merced section is approximately 60 miles long. This is a sub-section of the Merced to Bakersfield EIR/EIS section, and will generally follow the Burlington Northern Santa Fe (BNSF) or Union Pacific (UP) railroad routes through the corridor. Through this section, the HST will reach maximum speeds of over 200 mph. A station is to be located in Merced. Additionally, the Heavy Maintenance Facility is planned to be in this section, as well as the “Central Valley Wye,” providing the link from the Central Valley to the San Francisco Bay Area. The work in this section is being performed in coordination with the Bakersfield to Fresno sub-section for the Merced to Bakersfield EIR/EIS.

- Regional Consultant team led by AECOM Transportation
- Scheduled NOD/ROD and Construction Bid Advertisement date March 2012.

The annual work progress and costs for this Regional section are shown in the Work Progress and Cost Table below:

Work Progress and Cost Table
Contract Section: Fresno to Merced

Work / Milestone	% of Work Complete and Progress by Quarter of Fiscal Year																			
	Thru 2008 - 09				2009 - 10				2010 - 11				2011 - 12				2012 - 13			
	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Preliminary Engineering				20%	20%	20%	20%	20%												
Draft EIR/EIS			10%	10%	12%	12%	12%	12%	12%	10%	10%									
Final EIR/EIS											25%		40%	35%						
30% Preliminary Engineering									25%	25%			25%	25%						
NOD/ROD													100%	◆						
Agreements, Permitting and ROW			8%		5%	5%	5%	5%	5%	5%	5%	10%	10%	10%	10%	10%	7%			
Procurement / Construction														◆						
Annual % Complete	8.7%				22.0%				42.3%				27.1%							
Cumulative % Complete	8.7%				30.7%				73.0%				100.0%							
Annual Cost (\$ Million)	\$3.3				\$9.0				\$17.4				\$10.9							
Cumulative Cost (\$ Million)	\$3.3				\$12.3				\$29.7				\$40.6							

Estimated Total Budget \$40,645,000

- Notes:
1. Fiscal year begins July 1. Quarters end in September, December, March and June.
 2. See Section 4.0 - Implementation Plan, for a description of the Work and Milestones.
 3. Work progress is shown as planned % complete in each quarter of the fiscal year.
 4. Work coordinated with Bakersfield to Fresno Section for Merced to Bakersfield EIR/EIS.
- ◆ Represents NOD / ROD and Construction Bid Advertisement Milestones.

Based on the work depicted in the Work Progress and Cost Table above, the deliverables are summarized on the following page. A detailed list of deliverables is shown in the Regional Consultants Deliverables table on the next pages. A summary schedule for this Regional section is on the pages following the Regional Consultants Deliverables table.

Deliverables Summary

Fresno to Merced Deliverables Summary	
Description of Work and Deliverables	Quantity
Public Outreach/Coordination – Notices/Reports	9
Technical Reports – Existing Conditions/Impacts	22
EIR/EIS Sections - Existing Conditions/Impacts	36
EIR/EIS Documents – Draft/Final	4
Mitigation Monitoring & Reporting Plan	1
NOD/ROD	2
15% Preliminary Engineering Plan Sheets	562
15% Submittals – In Progress/ Final	12
30% Preliminary Engineering Plan Sheets	756
30% Submittals – In Progress/ Final	12

Deliverables Detail

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
FRESNO to MERCED	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		Draft EIR/EIS															
Notice of Intent (NOI)/Notice of Preparation (NOP)	Notices		X														
Submit Final Public Participation Plan	Plan					X											
Submit Scoping Report	Report			X													
Purpose & Need Statement	Report			X													
SAFETEA-LU Agency Coordination Plan	Plan			X													
Public/Stakeholder/Agency Involvement Plan for Project-Level EIR/EIS	Plan					X											
Initial Identification of Alternatives	Report					X											
Authority/FRA Alternatives Workshop	Workshop					X											
Submit Draft Alternatives Analysis Report	Report					X											
Submit Final Alternatives Analysis Report	Report					X											
Project Definition/Description	Report						X										
Technical Reports - Baseline	Reports							X									
T.R. - Traffic and Transit	Report							X									
T.R. - Air Quality	Report							X									
T.R. - Noise and Vibration	Report							X									
T.R. - Biological Resources and Wetland	Report								X								
T.R. - Hydrology and Water Resources	Report					X											
T.R. - Geology, Soils and Seismicity	Report					X											
T.R. - Hazardous Materials	Report					X											
T.R. - Communities and Environmental Justice	Report					X											
T.R. - Aesthetics and Visual Quality	Report					X											
T.R. - Cultural Resources and Paleontology	Report							X									
Authority/FRA Review of Baseline Technical Report	Report								X								
Revise Baseline T.R.	Report									X							
Final Authority/FRA Review	Review									X							
Final Revision of Baseline T.R.	Report									X							
Technical Reports - Impacts	Reports										X						
T.R. - EIR/EIS Affected Environment	Report										X						
T.R. - EIR/EIS Impacts	Report										X						
Definition of Station and Need Assessment Report	Report					X											
Public Meeting/Workshop re Issues and Opportunities	Workshop					X											
Submit Station Area Development Plan	Plan								X								
Submit Administrative Draft EIR/EIS	Report										X						
Authority/FRA Review of Administrative Draft	Review										X						
Submit revised Draft for Legal Review	Report											X					
Submit revised Draft based on Legal Review	Report											X					
Print and Distribute Draft EIR/EIS	Report											X					
Public Review/Hearings	Review															X	
15% Preliminary Engineering																	
Alignment Plan and Profile	136							X									
Construction Assessment Memorandum	Report								X								
Station Design Development	30								X								
Preliminary Bridge Plans	40								X								

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
FRESNO to MERCED	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		15% Preliminary Engineering															
Grading/Earthwork	40								X								
Hydrology/Hydraulics/Drainage Reports	120								X								
Utilities	60								X								
Geotechnical	Report							X									
Right of Way	180								X								
Traction Power	10								X								
Overhead Contact System	20								X								
Heavy Maintenance Facility, Preliminary Plans	10								X								
Design Submittal - Full Package	Plans									X							
Construction Cost Estimate	Estimate									X							
Final EIR/EIS																	
Prepare and Submit Draft Final EIR/EIS	Report															X	
Authority/FRA review of Draft Final EIR/EIS	Review															X	
Submit Draft Final EIR/EIS	Report															X	
Submit Findings and Statements of Overriding Conditions	Report																X
Submit Final EIR/EIS	Report																X
30% Preliminary Engineering																	
Alignment Plan and Profile	Plans											X					
Construction Assessment Memorandum	Report											X					
Station Design Development	Plans												X				
Preliminary Bridge Plans	Plans												X				
Grading/Earthwork	Plans												X				
Hydrology/Hydraulics/Drainage Reports	Report															X	
Utilities	Plans												X				
Geotechnical	Report											X					
Right of Way	Plans											X					
Traction Power	Plans												X				
Overhead Contact System	Plans															X	
Heavy Maintenance Facility, Preliminary Plans	Plans															X	
Design Submittal - Full Package	Plans																X
Construction Cost Estimate	Estimate																X
NOD/ROD																	
Authority Board Certification of EIR/EIS	Certification																X
Submit Draft NOD	Report																X
Authority/FRA Review of Draft NOD	Review																X
Submit revised Draft NOD	Report																X
Submit Draft ROD	Report																X
Authority/FRA Review of Draft ROD	Review																X
Submit revised Draft ROD	Report																X
FRA Clearance and Signature	Review																X

Regional Project Summary Schedule	FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
Fresno to Merced	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Design																				
Draft EIR/EIS																				
Hearings / Preferred Alternative																				
Final EIR/EIS																				
30% Engineering Design																				
NOD / ROD																				
Agreements, Permitting, ROW																				
Procurement/Construction																				

◆ Project Milestone

Notes:

- The above is a summary level schedule. See the Regional Consultant’s annual work plan submitted to the Authority for a detailed schedule of work tasks.
- The Alternatives Analysis task is included in the Draft EIR/EIS task.
- Issuance of the NOD & ROD allows construction bids to be advertised.
- Procurement reflects early action activities in preparation for bid selection including pre-qualifying contractors, and preparing commercial, legal and technical terms and conditions.
- Pre-construction activities will take place in parallel with ROW acquisition activities.
- Construction delivery method is anticipated to be either Design-Build or PPP.

Merced to San Jose

Part of Phase 1 of the project, the Merced to San Jose section is approximately 120 miles long, through the Pacheco Pass, connecting the San Francisco Bay Area to the Central Valley (at the Central Valley Wye). A station is to be located in Gilroy. This section will also support train service south of San Jose to Gilroy, which would increase connectivity and accessibility for the South Bay and the three County Monterey Bay area. Between Merced and Gilroy, the HST will reach maximum speeds of over 200 mph.

- Regional Consultant team led by Parsons Corporation
- Scheduled NOD/ROD and Construction Bid Advertisement date February 2012.

The annual work progress and costs for this Regional section are shown in the Work Progress and Cost Table below:

Work Progress and Cost Table
Contract Section: Merced to San Jose

Work / Milestone	% of Work Complete and Progress by Quarter of Fiscal Year																			
	Thru 2008 - 09				2009 - 10				2010 - 11				2011 - 12				2012 - 13			
	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Preliminary Engineering				5%	15%	16%	16%	16%	16%	16%										
Draft EIR/EIS			2%	9%	10%	12%	12%	12%	12%	12%	12%	7%								
Final EIR/EIS												40%	40%	20%						
30% Preliminary Engineering									10%	20%	20%		20%	20%	10%					
NOD/ROD													50%	50%						
Agreements, Permitting and ROW Procurement / Construction					10%	10%	4%	4%	4%	4%	4%	10%	10%	10%	10%	10%	10%			
Annual % Complete	3.0%				29.7%				38.6%				27.5%				1.2%			
Cumulative % Complete	3.0%				32.6%				71.3%				98.8%				100.0%			
Annual Cost (\$ Million)	\$1.5				\$15.0				\$20.0				\$13.9				\$0.6			
Cumulative Cost (\$ Million)	\$1.5				\$16.5				\$36.5				\$50.4				\$51.0			
Estimated Total Budget																\$51,000,000				

- Notes:
1. Fiscal year begins July 1. Quarters end in September, December, March and June.
 2. See Section 4.0 - Implementation Plan, for a description of the Work and Milestones.
 3. Work progress is shown as planned % complete in each quarter of the fiscal year.
- ◆ Represents NOD / ROD and Construction Bid Advertisement Milestones.

Based on the work depicted in the Work Progress and Cost Table above, the deliverables are summarized on the following page. A detailed list of deliverables is shown in the Regional Consultants Deliverables table on the next pages. A summary schedule for this Regional section is on the pages following the Regional Consultants Deliverables table.

Deliverables Summary

Merced to San Jose Deliverables Summary	
Description of Work and Deliverables	Quantity
Public Outreach/Coordination – Notices/Reports	9
Technical Reports – Existing Conditions/Impacts	22
EIR/EIS Sections - Existing Conditions/Impacts	36
EIR/EIS Documents – Draft/Final	4
Mitigation Monitoring & Reporting Plan	1
NOD/ROD	2
15% Preliminary Engineering Plan Sheets	1056
15% Submittals – In Progress/ Final	12
30% Preliminary Engineering Plan Sheets	2880
30% Submittals – In Progress/ Final	12

Deliverables Detail

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
MERCED to SAN JOSE	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		Draft EIR/EIS															
Notice of Intent (NOI)/Notice of Preparation (NOP)	Notices			X													
Submit Final Public Participation Plan	Plan			X													
Submit Scoping Report	Report			X													
Purpose & Need Statement	Report			X													
SAFETEA-LU Agency Coordination Plan	Plan			X													
Public/Stakeholder/Agency Involvement Plan for Project-Level EIR/EIS	Plan			X													
Initial Identification of Alternatives	Report					X											
Authority/FRA Alternatives Workshop	Workshop					X											
Submit Draft Alternatives Analysis Report	Report						X										
Submit Final Alternatives Analysis Report	Report						X										
Project Definition/Description	Report					X											
Technical Reports - Baseline																	
T.R. - Traffic and Transit	Report										X						
T.R. - Air Quality	Report											X					
T.R. - Noise and Vibration	Report							X									
T.R. - Biological Resources and Wetland	Report							X									
T.R. - Hydrology and Water Resources	Report							X									
T.R. - Geology, Soils and Seismicity	Report							X									
T.R. - Hazardous Materials	Report							X									
T.R. - Communities and Environmental Justice	Report							X									
T.R. - Aesthetics and Visual Quality	Report							X									
T.R. - Cultural Resources and Paleontology	Report										X						
Authority/FRA Review of Baseline Technical Report	Report						X										
Revise Baseline T.R.	Report							X									
Final Authority/FRA Review	Review							X									
Final Revision of Baseline T.R.	Report							X									
Technical Reports - Impacts																	
T.R. - EIR/EIS Affected Environment	Report										X						
T.R. - EIR/EIS Impacts	Report											X					
Definition of Station and Need Assessment Report	Report											X					
Public Meeting/Workshop re Issues and Opportunities	Workshop											X					
Submit Station Area Development Plan	Report												X				
Submit Administrative Draft EIR/EIS	Report											X					
Authority/FRA Review of Administrative Draft	Review											X					
Submit revised Draft for Legal Review	Report											X					
Submit revised Draft based on Legal Review	Report												X				
Print and Distribute Draft EIR/EIS	Report												X				
Public Review/Hearings	Review												X				
15% Preliminary Engineering																	
Alignment Plan and Profile	450						X										
Construction Assessment Memorandum	Report							X									
Station Design Development	38							X									
Preliminary Bridge Plans	225							X									

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
MERCED to SAN JOSE	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		15% Preliminary Engineering															
Preliminary Tunnel Plans	35								X								
Grading/Earthwork (shown on drainage plans)	-								X								
Hydrology/Hydraulics/Drainage Reports	125								X								
Utilities	125								X								
Geotechnical	Report						X										
Right of Way (shown on Alignment plans)	-								X								
Traction Power	30								X								
Overhead Contact System	20								X								
Maintenance Facility, Preliminary Plans	8								X								
Design Submittal - Full Package	Plans												X				
Construction Cost Estimate	Estimate												X				
Final EIR/EIS																	
Prepare and Submit Draft Final EIR/EIS	Report																X
Authority/FRA review of Draft Final EIR/EIS	Review																X
Submit Draft Final EIR/EIS	Report																X
Submit Findings and Statements of Overriding Conditions	Report																X
Submit Final EIR/EIS	Report																X
30% Preliminary Engineering																	
Alignment Plan and Profile	538																X
Stage Construction Plans	280																
Construction Assessment Memorandum	Report																X
Station Design Development	26																X
Bridge Plans	500																X
Tunnel Plans	165																X
Grading/Earthwork	335																X
Hydrology/Hydraulics/Drainage Reports and Plans	240												X				
Utilities	240																X
Geotechnical	Report																X
Right of Way	220																X
Traction Power	147																X
Overhead Contact System	165																X
Maintenance Facility Plans	24																X
Design Submittal - Full Package	Plans																X
Construction Cost Estimate	Estimate																X

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
MERCED to SAN JOSE	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		NOD/ROD															
Draft Findings & Statement of Overriding Considerations	Report																X
Authority/FRA Review of Draft Findings & SOC	Review																X
Submit revised Findings & SOC	Report																X
Authority Board Certification of EIR/EIS	Certification																X
Submit Draft NOD	Report																X
Authority/FRA Review of Draft NOD	Review																X
Submit revised Draft NOD	Report																X
Submit Draft ROD	Report																X
Authority/FRA Review of Draft ROD	Review																X
Submit revised Draft ROD	Report																X
FRA Clearance and Signature	Approval																X

Regional Project Summary Schedule	FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
Merced to San Jose	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Design																				
Draft EIR/EIS																				
Hearings / Preferred Alternative																				
Final EIR/EIS																				
30% Engineering Design																				
NOD / ROD																				
Agreements, Permitting, ROW																				
Procurement/Construction																				

◆ Project Milestone

Notes:

- The above is a summary level schedule. See the Regional Consultant’s annual work plan submitted to the Authority for a detailed schedule of work tasks.
- The Alternatives Analysis task is included in the Draft EIR/EIS task.
- Issuance of the NOD & ROD allows construction bids to be advertised.
- Procurement reflects early action activities in preparation for bid selection including pre-qualifying contractors, and preparing commercial, legal and technical terms and conditions.
- Pre-construction activities will take place in parallel with ROW acquisition activities.
- Construction delivery method is anticipated to be either Design-Build or PPP.

San Jose to San Francisco

Part of Phase 1 of the project, the San Jose to San Francisco section is approximately 50 miles long and connects two major economic, financial, and cultural centers along the “Peninsula” of the San Francisco Bay Area. In addition to providing a number of important linkages within the region, it provides connectivity and accessibility beyond, to the Central Valley and on to Southern California. Stations are planned in San Francisco at the Transbay Transit Center, in Millbrae, and in San Jose at the Intermodal Diridon Station. A potential station located at either Redwood City or Palo Alto is also being investigated.

- Regional Consultant team led by HNTB Corporation
- Scheduled NOD/ROD and Construction Bid Advertisement date December 2011.

The annual work progress and costs for this Regional section are shown in the Work Progress and Cost Table below:

Work Progress and Cost Table
Contract Section: San Jose to San Francisco

Work / Milestone	% of Work Complete and Progress by Quarter of Fiscal Year																			
	Thru 2008 - 09				2009 - 10				2010 - 11				2011 - 12				2012 - 13			
	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Preliminary Engineering			1%	4%	15%	15%	17%	17%	16%	15%										
Draft EIR/EIS			6%	12%	15%	15%	15%	15%	12%	10%										
Final EIR/EIS											25%	40%	20%	15%						
30% Preliminary Engineering								10%	15%	15%	15%	15%	15%	15%						
NOD/ROD													100%	◆						
Agreements, Permitting and ROW			8%		8%	8%	8%	7%	10%	10%	10%	13%	4%	4%	4%	4%	2%			
Procurement / Construction													◆							
Annual % Complete	5.2%				40.2%				42.6%				11.0%				1.1%			
Cumulative % Complete	5.2%				45.4%				88.0%				99.0%				100.0%			
Annual Cost (\$ Million)	\$2.0				\$20.0				\$26.0				\$6.5				\$0.5			
Cumulative Cost (\$ Million)	\$2.0				\$22.0				\$48.0				\$54.5				\$55.0			
Estimated Total Budget																\$55,000,000				

- Notes:
1. Fiscal year begins July 1. Quarters end in September, December, March and June.
 2. See Section 4.0 - Implementation Plan, for a description of the Work and Milestones.
 3. Work progress is shown as planned % complete in each quarter of the fiscal year.
- ◆ Represents NOD / ROD and Construction Bid Advertisement Milestones.

Based on the work depicted in the Work Progress and Cost Table above, the deliverables are summarized on the following page. A detailed list of deliverables is shown in the Regional Consultants Deliverables table on the next pages. A summary schedule for this Regional section is on the pages following the Regional Consultants Deliverables table.

Deliverables Summary

San Jose to San Francisco Deliverables Summary	
Description of Work and Deliverables	Quantity
Public Outreach/Coordination – Notices/Reports	9
Technical Reports – Existing Conditions/Impacts	22
EIR/EIS Sections - Existing Conditions/Impacts	36
EIR/EIS Documents – Draft/Final	4
Mitigation Monitoring & Reporting Plan	1
NOD/ROD	2
15% Preliminary Engineering Plan Sheets	1079
15% Submittals – In Progress/ Final	12
30% Preliminary Engineering Plan Sheets	1079
30% Submittals – In Progress/ Final	12

Deliverables Detail

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
SAN JOSE to SAN FRANCISCO	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		Draft EIR/EIS															
Notice of Intent (NOI)/Notice of Preparation (NOP)	Notices	X															
Submit Final Public Participation Plan	Plan					X											
Submit Scoping Report	Report			X													
Purpose & Need Statement	Report			X													
SAFETEA-LU Agency Coordination Plan	Plan			X													
Public/Stakeholder/Agency Involvement Plan for Project-Level EIR/EIS	Plan					X											
Initial Identification of Alternatives	Report					X											
Authority/FRA Alternatives Workshop	Workshop					X											
Submit Draft Alternatives Analysis Report	Report					X											
Submit Final Alternatives Analysis Report	Report						X										
Project Definition/Description	Report							X									
Technical Reports - Baseline	Reports					X											
T.R. - Traffic and Transit	Report					X											
T.R. - Air Quality	Report					X											
T.R. - Noise and Vibration	Report					X											
T.R. - Biological Resources and Wetland	Report							X									
T.R. - Hydrology and Water Resources	Report					X											
T.R. - Geology, Soils and Seismicity	Report					X											
T.R. - Hazardous Materials	Report					X											
T.R. - Communities and Environmental Justice	Report					X											
T.R. - Aesthetics and Visual Quality	Report					X											
T.R. - Cultural Resources and Paleontology	Report					X											
Authority/FRA Review of Baseline Technical Report	Report							X									
Revise Baseline T.R.	Report								X								
Final Authority/FRA Review	Review								X								
Final Revision of Baseline T.R.	Report								X								
Technical Reports - Impacts	Reports									X							
T.R. - EIR/EIS Affected Environment	Report									X							
T.R. - EIR/EIS Impacts	Report									X							
Definition of Station and Need Assessment Report	Report					X											
Public Meeting/Workshop re Issues and Opportunities	Workshop					X											
Submit Station Area Development Plan	Plan					X											
Submit Administrative Draft EIR/EIS	Report									X							
Authority/FRA Review of Administrative Draft	Review									X							
Submit revised Draft for Legal Review	Report									X							
Submit revised Draft based on Legal Review	Report									X							
Print and Distribute Draft EIR/EIS	Report									X							
Public Review/Hearings	Review										X						
15% Preliminary Engineering																	
Alignment Plan and Profile	218								X								
Construction Assessment Memorandum	Report								X								
Station Design Development	168								X								
Preliminary Bridge and Tunnel Plans	1139								X								

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12			
SAN JOSE to SAN FRANCISCO	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		15% Preliminary Engineering															
Grading/Earthwork	0								X								
Hydrology/Hydraulics/Drainage Reports	Report					X											
Utilities	63					X											
Geotechnical	Report					X											
Right of Way	13								X								
Traction Power	29								X								
Overhead Contact System	346								X								
Systems and MOW Facilities	102								X								
Design Submittal - Full Package (sheets per Alternative)	2078									X							
Construction Cost Estimate	Estimate									X							
Final EIR/EIS																	
Prepare and Submit Draft Final EIR/EIS	Report												X				
Authority/FRA review of Draft Final EIR/EIS	Review												X				
Submit Draft Final EIR/EIS	Report												X				
Submit Findings and Statements of Overriding Conditions	Report															X	
Submit Final EIR/EIS	Report															X	
30% Preliminary Engineering																	
Alignment Plan and Profile	463															X	
Construction Assessment Memorandum	Report															X	
Station Design Development	396															X	
Preliminary Bridge and Tunnel Plans	1443															X	
Grading/Earthwork	100															X	
Hydrology/Hydraulics/Drainage Reports	Report															X	
Utilities	113															X	
Geotechnical	Report															X	
Right of Way	100															X	
Traction Power	29															X	
Overhead Contact System	346															X	
Systems and MOW Facilities	102															X	
Design Submittal - Full Package (sheets per Alternative)	3092																X
Construction Cost Estimate	Estimate																X
NOD/ROD																	
Authority Board Certification of EIR/EIS	Certification																X
Submit Draft NOD	Report																X
Authority/FRA Review of Draft NOD	Review																X
Submit revised Draft NOD	Report																X
Submit Draft ROD	Report																X
Authority/FRA Review of Draft ROD	Review																X
Submit revised Draft ROD	Report																X
FRA Clearance and Signature	Review																X

Regional Project Summary Schedule	FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
San Jose to San Francisco	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Design																				
Draft EIR/EIS																				
Hearings / Preferred Alternative																				
Final EIR/EIS																				
30% Engineering Design																				
NOD / ROD																				
Agreements, Permitting, ROW																				
Procurement/Construction																				

◆ Project Milestone

Notes:

- The above is a summary level schedule. See the Regional Consultant’s annual work plan submitted to the Authority for a detailed schedule of work tasks.
- The Alternatives Analysis task is included in the Draft EIR/EIS task.
- Issuance of the NOD & ROD allows construction bids to be advertised.
- Procurement reflects early action activities in preparation for bid selection including pre-qualifying contractors, and preparing commercial, legal and technical terms and conditions.
- Pre-construction activities will take place in parallel with ROW acquisition activities.
- Construction delivery method is anticipated to be either Design-Build or PPP.

Merced to Sacramento

Part of Phase 2 of the project, the Merced to Sacramento section is approximately 110 miles long, and will generally follow the Burlington Northern Santa Fe (BNSF) or Union Pacific (UP) railroad routes through the corridor. Through much of this section, the HST will reach maximum speeds of over 200 mph. Stations in this section are planned to be located in Modesto, Stockton and Sacramento.

- Regional Consultant team led by AECOM Transportation
- Scheduled NOD/ROD and Construction Bid Advertisement date February 2013.

The annual work progress and costs for this Regional section are shown in the Work Progress and Cost Table below:

Work Progress and Cost Table
Contract Section: Merced to Sacramento

Work / Milestone	% of Work Complete and Progress by Quarter of Fiscal Year																			
	Thru 2008 - 09				2009 - 10				2010 - 11				2011 - 12				2012 - 13			
	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Preliminary Engineering					5%	9%	9%		9%	9%	9%	9%	9%	9%	9%	9%	5%			
Draft EIR/EIS					5%	9%	9%		9%	9%	9%	9%	9%	9%	9%	9%	5%			
Final EIR/EIS													25%	25%			25%	25%		
30% Preliminary Engineering												8%	16%	16%	16%	16%	16%	12%		
NOD/ROD																	100%			
Agreements, Permitting and ROW								5%	5%	10%	10%	10%	10%	10%	10%	10%	10%	10%		
Procurement / Construction																				
Annual % Complete	1.0%				4.0%				22.6%				32.2%				40.4%			
Cumulative % Complete	1.0%				4.9%				27.5%				59.6%				100.0%			
Annual Cost (\$ Million)	\$0.5				\$1.0				\$9.7				\$14.0				\$17.6			
Cumulative Cost (\$ Million)	\$0.5				\$1.5				\$11.2				\$25.2				\$42.8			
Estimated Total Budget																\$42,755,000				

- Notes:
1. Fiscal year begins July 1. Quarters end in September, December, March and June.
 2. See Section 4.0 - Implementation Plan, for a description of the Work and Milestones.
 3. Work progress is shown as planned % complete in each quarter of the fiscal year.
- ◆ Represents NOD / ROD and Construction Bid Advertisement Milestones.

Based on the work depicted in the Work Progress and Cost Table above, the deliverables are summarized on the following page. A detailed list of deliverables is shown in the Regional Consultants Deliverables table on the next pages. A summary schedule for this Regional section is on the pages following the Regional Consultants Deliverables table.

Deliverables Summary

Merced to Sacramento Deliverables Summary	
Description of Work and Deliverables	Quantity
Public Outreach/Coordination – Notices/Reports	9
Technical Reports – Existing Conditions/Impacts	22
EIR/EIS Sections - Existing Conditions/Impacts	36
EIR/EIS Documents – Draft/Final	4
Mitigation Monitoring & Reporting Plan	1
NOD/ROD	2
15% Preliminary Engineering Plan Sheets	684
15% Submittals – In Progress/ Final	12
30% Preliminary Engineering Plan Sheets	1328
30% Submittals – In Progress/ Final	12

Deliverables Detail

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13				FY 13/14			
MERCED to SACRAMENTO	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		Draft EIR/EIS																							
Notice of Intent (NOI)/Notice of Preparation (NOP)	Notices							X																	
Submit Final Public Participation Plan	Plan					X																			
Submit Scoping Report	Report							X																	
Purpose & Need Statement	Report							X																	
SAFETEA-LU Agency Coordination Plan	Plan							X																	
Public/Stakeholder/Agency Involvement Plan for Project-Level EIR/EIS	Plan							X																	
Initial Identification of Alternatives	Report									X															
Authority/FRA Alternatives Workshop	Workshop										X														
Submit Draft Alternatives Analysis Report	Report										X														
Submit Final Alternatives Analysis Report	Report											X													
Project Definition/Description	Report											X													
Technical Reports - Baseline																									
T.R. - Traffic and Transit	Report										X														
T.R. - Air Quality	Report										X														
T.R. - Noise and Vibration	Report										X														
T.R. - Biological Resources and Wetland	Report										X														
T.R. - Hydrology and Water Resources	Report										X														
T.R. - Geology, Soils and Seismicity	Report										X														
T.R. - Hazardous Materials	Report										X														
T.R. - Communities and Environmental Justice	Report										X														
T.R. - Aesthetics and Visual Quality	Report										X														
T.R. - Cultural Resources and Paleontology	Report										X														
Authority/FRA Review of Baseline Technical Report	Report										X														
Revise Baseline T.R.	Report											X													
Final Authority/FRA Review	Review											X													
Final Revision of Baseline T.R.	Report											X													
Technical Reports - Impacts																									
T.R. - EIR/EIS Affected Environment	Report											X													
T.R. - EIR/EIS Impacts	Report												X												
Definition of Station and Need Assessment Report	Report											X													
Public Meeting/Workshop re Issues and Opportunities	Workshop															X									
Submit Station Area Development Plan	Plan												X												
Submit Administrative Draft EIR/EIS	Report																X								
Authority/FRA Review of Administrative Draft	Review																X								
Submit revised Draft for Legal Review	Report																X								
Submit revised Draft based on Legal Review	Report																X								
Print and Distribute Draft EIR/EIS	Report																X								
Public Review/Hearings	Review																X								
15% Preliminary Engineering																									
Alignment Plan and Profile	136												X												
Construction Assessment Memorandum	Report												X												
Station Design Development	30												X												
Preliminary Bridge Plans	40												X												
Grading/Earthwork	40												X												
Hydrology/Hydraulics/Drainage Reports	120												X												
Utilities	60												X												
Geotechnical	Report												X												
Right of Way	180												X												
Traction Power	10												X												
Overhead Contact System	20												X												
Heavy Maintenance Facility, Preliminary Plans	10												X												
Design Submittal - Full Package	Plans												X												
Construction Cost Estimate	Estimate												X												

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13				FY 13/14															
MERCED to SACRAMENTO	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J												
		Final EIR/EIS																																			
Prepare and Submit Draft Final EIR/EIS	Report																									X											
Authority/FRA review of Draft Final EIR/EIS	Review																									X											
Submit Draft Final EIR/EIS	Report																													X							
Submit Findings and Statements of Overriding Conditions	Report																													X							
Submit Final EIR/EIS	Report																													X							
30% Preliminary Engineering																																					
Alignment Plan and Profile	Plans																									X											
Construction Assessment Memorandum	Report																									X											
Station Design Development	Plans																													X							
Preliminary Bridge Plans	Plans																													X							
Grading/Earthwork	Plans																													X							
Hydrology/Hydraulics/Drainage Reports	Report																																	X			
Utilities	Plans																													X							
Geotechnical	Report																													X							
Right of Way	Plans																													X							
Traction Power	Plans																													X							
Overhead Contact System	Plans																																	X			
Maintenance Facility, Preliminary Plans	Plans																																	X			
Design Submittal - Full Package	Plans																																	X			
Construction Cost Estimate	Estimate																																	X			
NOD/ROD																																					
Authority Board Certification of EIR/EIS	Certification																																	X			
Submit Draft NOD	Report																																	X			
Authority/FRA Review of Draft NOD	Review																																	X			
Submit revised Draft NOD	Report																																	X			
Submit Draft ROD	Report																																	X			
Authority/FRA Review of Draft ROD	Review																																	X			
Submit revised Draft ROD	Report																																	X			
FRA Clearance and Signature	Review																																	X			

Regional Project Summary Schedule	FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
Merced to Sacramento	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Design																				
Draft EIR/EIS																				
Hearings / Preferred Alternative																				
Final EIR/EIS																				
30% Engineering Design																				
NOD / ROD																				
Agreements, Permitting, ROW																				
Procurement/Construction																				

◆ Project Milestone

Notes:

- The above is a summary level schedule. See the Regional Consultant’s annual work plan submitted to the Authority for a detailed schedule of work tasks.
- The Alternatives Analysis task is included in the Draft EIR/EIS task.
- Issuance of the NOD & ROD allows construction bids to be advertised.
- Procurement reflects early action activities in preparation for bid selection including pre-qualifying contractors, and preparing commercial, legal and technical terms and conditions.
- Pre-construction activities will take place in parallel with ROW acquisition activities.
- Construction delivery method is anticipated to be either Design-Build or PPP.

Altamont Corridor

The Altamont Corridor Project will provide an improved rail corridor between the northern San Joaquin Valley and the San Francisco Bay Area to support passenger service between the Bay Area, the Tri Valley area, and the Northern San Joaquin Valley. Potential stations include Stockton, Tracy, Livermore, Fremont (vicinity), Milpitas and San Jose. As appropriate, near term improvements will be useable by the current ACE service. The ultimate alignment will be grade-separated, electrified, and fully compatible with HST equipment.

- Regional Consultant team led by AECOM Transportation
- Scheduled NOD/ROD and Construction Bid Advertisement date April 2013.

The annual work progress and costs for this Regional section are shown in the Work Progress and Cost Table below:

Work Progress and Cost Table
Contract Section: Altamont Corridor

Work / Milestone	% of Work Complete and Progress by Quarter of Fiscal Year																											
	Thru 2008 - 09				2009 - 10				2010 - 11				2011 - 12				2012 - 13				2013 - 14							
	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J				
15% Preliminary Engineering				1%	5%	5%	10%	10%	16%	16%	16%	16%	5%															
Draft EIR/EIS				3%	5%	5%	5%	5%	12%	12%	12%	12%	10%	10%	9%													
Final EIR/EIS													20%	20%			20%	20%	20%									
30% Preliminary Engineering													20%	25%			25%	25%	5%									
NOD/ROD																	100%											
Agreements, Permitting and ROW Procurement / Construction									5%	5%			10%	10%	10%	10%	10%	10%	10%	10%	10%							
Annual % Complete	2.2%				6.5%				30.2%				37.4%				21.3%				2.5%							
Cumulative % Complete	2.2%				8.7%				38.8%				76.2%				97.5%				100.0%							
Annual Cost (\$ Million)	\$1.0				\$3.0				\$16.6				\$20.0				\$12.5				\$0.5							
Cumulative Cost (\$ Million)	\$1.0				\$4.0				\$20.6				\$40.6				\$53.1				\$53.6							
Estimated Total Budget \$53,600,000																												

- Notes:
1. Fiscal year begins July 1. Quarters end in September, December, March and June.
 2. See Section 4.0 - Implementation Plan, for a description of the Work and Milestones.
 3. Work progress is shown as planned % complete in each quarter of the fiscal year.
- ◆ Represents NOD / ROD and Construction Bid Advertisement Milestones.

Based on the work depicted in the Work Progress and Cost Table above, the deliverables are summarized on the following page. A detailed list of deliverables is shown in the Regional Consultants Deliverables table on the next pages. A summary schedule for this Regional section is on the pages following the Regional Consultants Deliverables table.

Deliverables Summary

Altamont Deliverables Summary	
Description of Work and Deliverables	Quantity
Public Outreach/Coordination – Notices/Reports	9
Technical Reports – Existing Conditions/Impacts	22
EIR/EIS Sections - Existing Conditions/Impacts	36
EIR/EIS Documents – Draft/Final	4
Mitigation Monitoring & Reporting Plan	1
NOD/ROD	2
15% Preliminary Engineering Plan Sheets	970
15% Submittals – In Progress/ Final	12
30% Preliminary Engineering Plan Sheets	1450
30% Submittals – In Progress/ Final	12

Deliverables Detail

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
ALTAMONT CORRIDOR	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		Draft EIR/EIS																			
Notice of Intent (NOI)/Notice of Preparation (NOP)	Notices					X															
Submit Final Public Participation Plan	Plan					X															
Submit Scoping Report	Report						X														
Purpose & Need Statement	Report							X													
SAFETEA-LU Agency Coordination Plan	Plan							X													
Public/Stakeholder/Agency Involvement Plan for Project-Level EIR/EIS	Plan							X													
Initial Identification of Alternatives	Report								X												
Authority/FRA Alternatives Workshop	Workshop								X												
Submit Draft Alternatives Analysis Report	Report									X											
Submit Final Alternatives Analysis Report	Report									X											
Project Definition/Description	Report									X											
Technical Reports - Baseline	Reports										X										
T.R. - Traffic and Transit	Report										X										
T.R. - Air Quality	Report										X										
T.R. - Noise and Vibration	Report										X										
T.R. - Biological Resources and Wetland	Report												X								
T.R. - Hydrology and Water Resources	Report										X										
T.R. - Geology, Soils and Seismicity	Report										X										
T.R. - Hazardous Materials	Report										X										
T.R. - Communities and Environmental Justice	Report										X										
T.R. - Aesthetics and Visual Quality	Report										X										
T.R. - Cultural Resources and Paleontology	Report										X										
Authority/FRA Review of Baseline Technical Report	Report										X										
Revise Baseline T.R.	Report											X									
Final Authority/FRA Review	Review											X									
Final Revision of Baseline T.R.	Report											X									
Technical Reports - Impacts	Reports											X									
T.R. - EIR/EIS Affected Environment	Report												X								
T.R. - EIR/EIS Impacts	Report																X				
Definition of Station and Need Assessment Report	Report						X														
Public Meeting/Workshop re Issues and Opportunities	Workshop							X													
Submit Station Area Development Plan	Plan											X									
Submit Administrative Draft EIR/EIS	Report																X				
Authority/FRA Review of Administrative Draft	Review																X				
Submit revised Draft for Legal Review	Report																X				
Submit revised Draft based on Legal Review	Report																X				
Print and Distribute Draft EIR/EIS	Report																X				
Public Review/Hearings	Review																X				
15% Preliminary Engineering																					
Alignment Plan and Profile	136											X									
Construction Assessment Memorandum	60											X									
Station Design Development	30											X									
Preliminary Bridge Plans	40											X									
Grading/Earthwork	40											X									
Hydrology/Hydraulics/Drainage Reports	120											X									
Utilities	60											X									
Geotechnical	Report											X									
Right of Way	180																X				
Traction Power	10											X									

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13			
ALTAMONT CORRIDOR	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		15% Preliminary Engineering																			
Overhead Contact System	20											X									
Heavy Maintenance Facility, Preliminary Plans	10											X									
Design Submittal - Full Package	Plans															X					
Construction Cost Estimate	Estimate															X					
Final EIR/EIS																					
Prepare and Submit Draft Final EIR/EIS	Report																X				
Authority/FRA review of Draft Final EIR/EIS	Review																X				
Submit Draft Final EIR/EIS	Report																			X	
Submit Findings and Statements of Overriding Conditions	Report																			X	
Submit Final EIR/EIS	Report																			X	
30% Preliminary Engineering																					
Alignment Plan and Profile	Plans															X					
Construction Assessment Memorandum	Report																X				
Station Design Development	Plans																X				
Preliminary Bridge Plans	Plans																X				
Grading/Earthwork	Plans																X				
Hydrology/Hydraulics/Drainage Reports	Report															X					
Utilities	Plans															X					
Geotechnical	Report															X					
Right of Way	Plans																			X	
Traction Power	Plans																X				
Overhead Contact System	Plans																X				
Heavy Maintenance Facility, Preliminary Plans	Plans																X				
Design Submittal - Full Package	Plans																			X	
Construction Cost Estimate	Estimate																			X	
NOD/ROD																					
Authority Board Certification of EIR/EIS	Certification																			X	
Submit Draft NOD	Report																			X	
Authority/FRA Review of Draft NOD	Review																			X	
Submit revised Draft NOD	Report																			X	
Submit Draft ROD	Report																			X	
Authority/FRA Review of Draft ROD	Review																			X	
Submit revised Draft ROD	Report																			X	
FRA Clearance and Signature	Review																			X	

Regional Project Summary Schedule	FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13				FY 13/14			
Altamont Corridor	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Design																								
Draft EIR/EIS																								
Hearings / Preferred Alternative																								
Final EIR/EIS																								
30% Engineering Design																								
NOD / ROD																								
Agreements, Permitting, ROW																								
Procurement/Construction																								

◆ Project Milestone

Notes:

- The above is a summary level schedule. See the Regional Consultant’s annual work plan submitted to the Authority for a detailed schedule of work tasks.
- The Alternatives Analysis task is included in the Draft EIR/EIS task.
- Issuance of the NOD & ROD allows construction bids to be advertised.
- Procurement reflects early action activities in preparation for bid selection including pre-qualifying contractors, and preparing commercial, legal and technical terms and conditions.
- Pre-construction activities will take place in parallel with ROW acquisition activities.
- Construction delivery method is anticipated to be either Design-Build or PPP.

Los Angeles to San Diego

Part of Phase 2 of the project, the Los Angeles to San Diego section is approximately 170 miles long, and will be routed through the Inland Empire. Stations in this section are planned to be located in City of Industry, the vicinity of the Ontario Airport, Riverside, Murrieta, Escondido, University City and San Diego.

- Regional Consultant team led by HNTB Corporation
- Scheduled NOD/ROD and Construction Bid Advertisement date November 2013.

The annual work progress and costs for this Regional section are shown in the Work Progress and Cost Table below:

Work Progress and Cost Table
Contract Section: Los Angeles to San Diego

Work / Milestone	% of Work Complete and Progress by Quarter of Fiscal Year																								
	Thru 2008 - 09				2009 - 10				2010 - 11				2011 - 12				2012 - 13				2013 - 14				
	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	
15% Preliminary Engineering					10%	10%	10%	10%	10%	10%	10%	10%	10%	10%											
Draft EIR/EIS	3%	3%	3%	3%	6%	6%	6%	6%	8%	8%	8%	8%	8%	8%	8%	8%									
Final EIR/EIS													15%	15%	15%	20%	20%	10%	5%						
30% Preliminary Engineering													20%	20%	20%	20%	20%								
NOD/ROD																						50%	50%	◆	
Agreements, Permitting and ROW													10%	10%			15%	15%	15%	15%	10%	10%			
Procurement / Construction																								◆	
Annual % Complete	3.0%				2.8%				26.9%				40.5%				21.4%				5.3%				
Cumulative % Complete	3.0%				5.8%				32.7%				73.2%				94.7%				100.0%				
Annual Cost (\$ Million)	\$2.8				\$3.0				\$21.9				\$38.0				\$20.0				\$9.1				
Cumulative Cost (\$ Million)	\$2.8				\$5.8				\$27.7				\$65.7				\$85.7				\$94.8				
Estimated Total Budget																\$94,805,692									

- Notes:**
1. Fiscal year begins July 1. Quarters end in September, December, March and June.
 2. See Section 4.0 - Implementation Plan, for a description of the Work and Milestones.
 3. Work progress is shown as planned % complete in each quarter of the fiscal year.
- ◆ Represents NOD / ROD and Construction Bid Advertisement Milestones.

Based on the work depicted in the Work Progress and Cost Table above, the deliverables are summarized on the following page. A detailed list of deliverables is shown in the Regional Consultants Deliverables table on the next pages. A summary schedule for this Regional section is on the pages following the Regional Consultants Deliverables table.

Deliverables Summary

LA to San Diego Deliverables Summary	
Description of Work and Deliverables	Quantity
Public Outreach/Coordination – Notices/Reports	9
Technical Reports – Existing Conditions/Impacts	22
EIR/EIS Sections - Existing Conditions/Impacts	36
EIR/EIS Documents – Draft/Final	4
Mitigation Monitoring & Reporting Plan	1
NOD/ROD	2
15% Preliminary Engineering Plan Sheets	2200
15% Submittals – In Progress/ Final	12
30% Preliminary Engineering Plan Sheets	2915
30% Submittals – In Progress/ Final	12

Deliverables Detail

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 09/10				FY 10/11				FY 11/12				FY 12/13				FY 13/14			
LOS ANGELES to SAN DIEGO (via the Inland Empire)	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
		Draft EIR/EIS																			
Notice of Intent (NOI)/Notice of Preparation (NOP)	Notices	X																			
Submit Final Public Participation Plan	Plan	X																			
Submit Scoping Report	Report			X																	
Purpose & Need Statement	Report			X																	
SAFETEA-LU Agency Coordination Plan	Plan	X																			
Public/Stakeholder/Agency Involvement Plan for Project-Level EIR/EIS	Plan							X													
Initial Identification of Alternatives	Report									X											
Authority/FRA Alternatives Workshop	Workshop									X											
Submit Draft Alternatives Analysis Report	Report									X											
Submit Final Alternatives Analysis Report	Report									X											
Project Definition/Description	Report									X											
Technical Reports - Baseline	Reports													X							
T.R. - Traffic and Transit	Report													X							
T.R. - Air Quality	Report													X							
T.R. - Noise and Vibration	Report													X							
T.R. - Biological Resources and Wetland	Report													X							
T.R. - Hydrology and Water Resources	Report									X											
T.R. - Geology, Soils and Seismicity	Report									X											
T.R. - Hazardous Materials	Report									X											
T.R. - Communities and Environmental Justice	Report									X											
T.R. - Aesthetics and Visual Quality	Report									X											
T.R. - Cultural Resources and Paleontology	Report													X							
Authority/FRA Review of Baseline Technical Report	Report													X							
Revise Baseline T.R.	Report													X							
Final Authority/FRA Review	Review													X							
Final Revision of Baseline T.R.	Report													X							
Technical Reports - Impacts	Reports													X							
T.R. - EIR/EIS Affected Environment	Report													X							
T.R. - EIR/EIS Impacts	Report													X							
Definition of Station and Need Assessment Report	Report									X											
Public Meeting/Workshop re Issues and Opportunities	Workshop									X											
Submit Station Area Development Plan	Plan											X									
Draft and Final EIR/EIS & Preliminary Engineering																					
Draft EIR/EIS																					
Submit Administrative Draft EIR/EIS	Report													X							
Authority/FRA Review of Administrative Draft	Review													X							
Submit revised Draft for Legal Review	Report													X							
Submit revised Draft based on Legal Review	Report													X							
Print and Distribute Draft EIR/EIS	Report													X							
Public Review/Hearings	Review																	X			
15% Preliminary Engineering																					
Alignment Plan and Profile	338													X							
Construction Assessment Memorandum	Report													X							
Station Design Development	30													X							
Preliminary Bridge and Tunnel Plans	200													X							
Grading/Earthwork	338													X							
Hydrology/Hydraulics/Drainage Reports	Dwgs, Reports													X							
Utilities	338													X							
Geotechnical	Report													X							

CALIFORNIA HIGH-SPEED TRAIN PROJECT REGIONAL CONSULTANT DELIVERABLES		FY 09/10				FY 10/11				FY 11/12				FY 12/13				FY 13/14					
LOS ANGELES to SAN DIEGO (via the Inland Empire)	Format (Report, Plan, No. of Drawings, etc.)	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J		
		15% Preliminary Engineering																					
Right of Way	338																						
Traction Power	64																						
Overhead Contact System	431																						
Communications and Signals	79																						
Maintenance Facility, Preliminary Plans	40																						
Design Submittal - Full Package	Plans																						
Construction Cost Estimate	Estimate																						
Final EIR/EIS																							
Prepare and Submit Draft Final EIR/EIS	Report																						
Authority/FRA review of Draft Final EIR/EIS	Review																						
Submit Draft Final EIR/EIS	Report																						
Submit Findings and Statements of Overriding Conditions	Report																						
Submit Final EIR/EIS	Report																						
30% Preliminary Engineering																							
Alignment Plan and Profile	362																						
Construction Assessment Memorandum	Report																						
Station Design Development	28																						
Preliminary Bridge and Tunnel Plans	250																						
Grading/Earthwork	338																						
Hydrology/Hydraulics/Drainage Reports	Report																						
Utilities	338																						
Geotechnical	Report																						
Right of Way	338																						
Traction Power	78																						
Overhead Contact System	1036																						
Communications and Signals	99																						
Maintenance Facility, Preliminary Plans	48																						
Design Submittal - Full Package	Plans																						
Construction Cost Estimate	Estimate																						
Certification of EIR / EIS and ROD																							
Authority Board Certification of EIR/EIS	Certification																						
Submit Draft NOD	Report																						
Authority/FRA Review of Draft NOD	Review																						
Submit revised Draft NOD	Report																						
Submit Draft ROD	Report																						
Authority/FRA Review of Draft ROD	Review																						
Submit revised Draft ROD	Report																						
FRA Clearance and Signature	Review																						

Regional Project Summary Schedule	FY 08/09				FY 09/10				FY 10/11				FY 11/12				FY 12/13				FY 13/14			
Los Angeles to San Diego	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J	S	D	M	J
15% Design					■				■				■											
Draft EIR/EIS													■											
Hearings / Preferred Alternative																	■							
Final EIR/EIS																	■							
30% Engineering Design													■											
NOD / ROD																					■ ◆			
Agreements, Permitting, ROW													■											
Procurement/Construction																	■							

◆ Project Milestone

Notes:

- The above is a summary level schedule. See the Regional Consultant’s annual work plan submitted to the Authority for a detailed schedule of work tasks.
- The Alternatives Analysis task is included in the Draft EIR/EIS task.
- Issuance of the NOD & ROD allows construction bids to be advertised.
- Procurement reflects early action activities in preparation for bid selection including pre-qualifying contractors, and preparing commercial, legal and technical terms and conditions.
- Pre-construction activities will take place in parallel with ROW acquisition activities.
- Construction delivery method is anticipated to be either Design-Build or PPP.

6.0 Next Steps

Sections 4.0 and 5.0 address the activities and progress for delivery of the California High-Speed Train Project (CHSTP) from regional section EIR/EIS and preliminary engineering, through procurement of final design and construction services. This section outlines the Program Management Team (PMT) responsibilities during the final steps of the Program leading to revenue service operations of the California high-speed train system.

Final Design and Construction

Due to the system design approach that is required for the development and delivery of a safe and reliable high-speed train system, the procurement of final design and construction services will also need to take into account the overall strategy for eventual operation and maintenance of the system. Due to the large size of the Program, design and construction will be accomplished by dividing the Program into individual construction projects. These projects will cover a multitude of facilities and elements of the high-speed train system, including line construction (station civil and alignment preparation), track, train controls/communications/central control facility, traction power and distribution, rolling stock storage and maintenance facilities, and maintenance-of-way facilities. The PMT will provide oversight and management of the individual projects to ensure that the accepted constructed project meets the requirements to support the overall Program-level performance objectives.

Testing, Commissioning and Training

As the construction is completed, the systems, processes, high-speed trains, and operation must be tested, commissioned and certified that they are ready for use in passenger service. Testing and commission of the system will need to satisfy the regulatory requirements of the federal and state regulatory agencies, principally the Federal Railroad Administration (FRA) and the California Public Utilities Commission. Federal requirements are expected to be codified in a Rule of Particular Applicability (RPA) issued by the FRA specific to the California high-speed rail system.

One of the key components to undergo testing and commissioning is the trainset and how it interfaces with the infrastructure and systems. Based on input from high-speed train manufacturers, the PMT has developed a CHSTP *Trainset Procurement Plan* identifying the key milestones dates to meet the 2020 start of revenue service operations. The key milestones include: completion of the vehicle performance specification, manufacturer procurement, vehicle prototype development and testing, and vehicle production rates and commissioning schedule. As the trainsets are delivered to the site, each will require static testing to ensure all features work as designed. Once that is complete, they will undergo dynamic testing, which involves evaluating the train while underway where track construction is complete, powered and available for train operations under a testing scenario. System interfaces, such as pantograph interface and wear, automatic train control, electrical clearances between the train and static physical structures, signaling, and communications throughout the entire testing section, will be checked and confirmed.

With regards to training, the CHSTP is introducing an entirely new system of transportation in the United States. The PMT will develop and implement a program to hire and train personnel for crews, stations,

maintenance, security, and operations, to work with these new systems and processes in preparation for passenger service. Hiring and training will be staged over time, increasing staff incrementally to the required number of personnel in advance of opening day to provide a first-class and safe operation.

Passenger and Revenue Service

At 800-miles long, the scale of the California high-speed rail system makes it impractical to construct and initiate revenue service all at once. Construction of such a transportation network is an enormous undertaking, the like of which has not been seen in this state or country, and it must be carried out with great care and considerable thought. Building a network of this size will tax the state's resources, such as its financial, human and material needs, and the Authority must deal with both environmental and engineering challenges. Like all the other high-speed rail networks implemented throughout the world, the California system must be built in stages.

As the Authority is pursuing project delivery alternatives that involve private investment under a public-private partnership (P3) arrangement, external considerations could affect a Passenger and Revenue Service plan. Construction staging and revenue service may be subject to alternative delivery strategies particularly related to how the strategy could address and improve cash flow, safety, reliability, operations, and maintenance from the perspective of a private investor. While an outline delivery plan exists for Program financial planning purposes, the PMT will continue to review and update the *Passenger and Revenue Service Plan* to reflect P3 opportunities. The plan will also consider many other factors including: potential for early utilization of segments; local and regional participation in the early construction and funding; ability to serve many regions; significant operating surplus to encourage private partners in the construction and operation; development of a high-speed segment of approximately 100 miles, for building, testing, and commissioning the high-speed trainsets, equipment and systems; and potential to expedite completion of the initial phase between San Francisco and Anaheim.

PAGE INTENTIONALLY LEFT BLANK

