

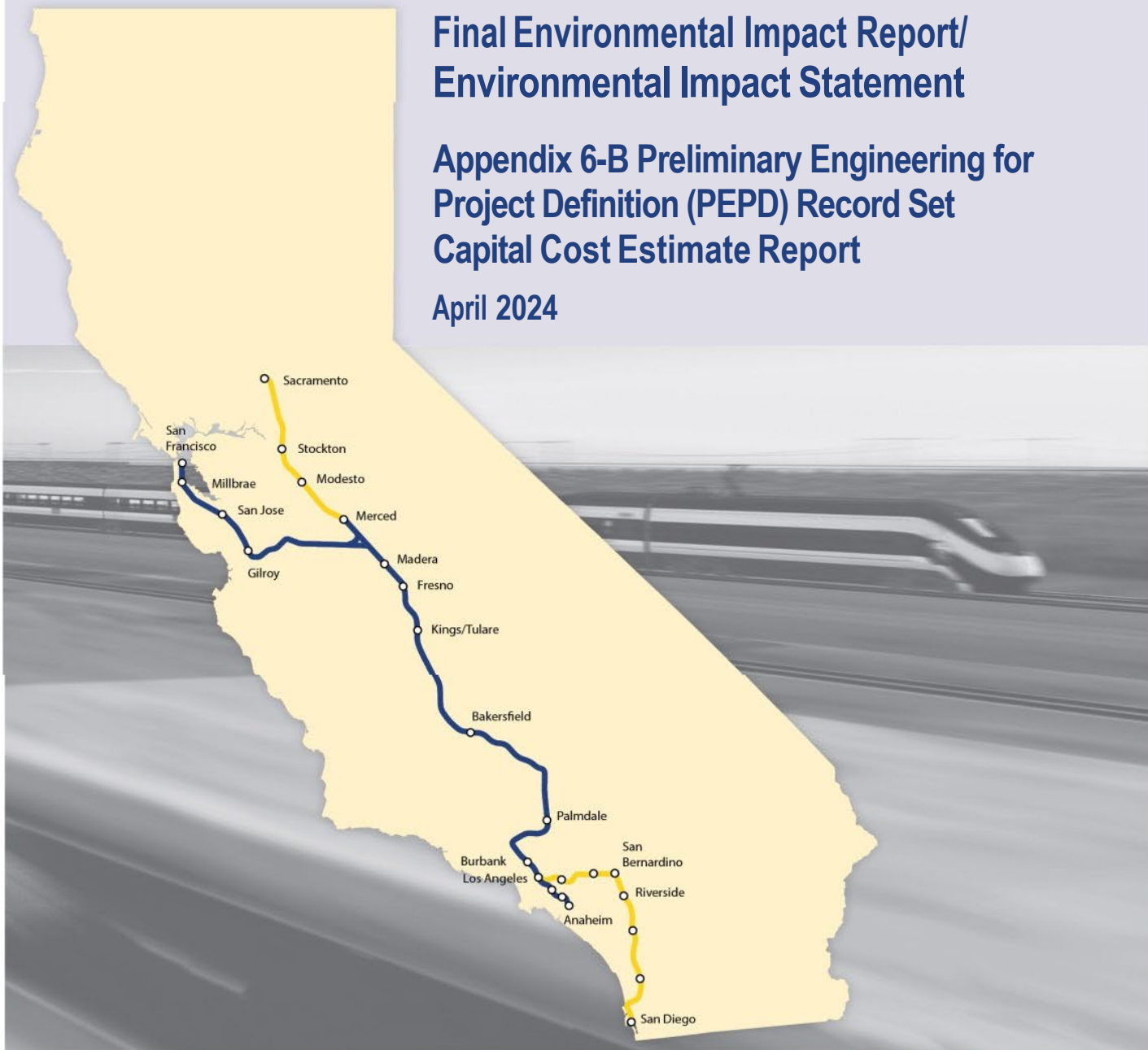
California High Speed Rail Authority

Palmdale to Burbank Project Section

Final Environmental Impact Report/
Environmental Impact Statement

Appendix 6-B Preliminary Engineering for
Project Definition (PEPD) Record Set
Capital Cost Estimate Report

April 2024



The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by the State of California pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated July 23, 2019, and executed by the Federal Railroad Administration and the State of California.

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Since publication of the Palmdale to Burbank Section Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS), the following substantive changes have been made to this appendix:

- Section 2.6, Estimate Assumptions and Exclusions, has been revised to include the following text: "All cost categories include unallocated contingencies, including relocation of the Antelope Valley-East Kern Water Treatment Plant. Category SCC 90 represents only unallocated monies."
- Appendix D, List of Documents, has been revised to include the AVEK Water Treatment Plant Utility Relocation, Acton CA, Budgetary Estimate.

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1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this report is to present the Capital Cost Estimating Methodology (CCEM) in the preparation of reasonably reliable and accurate capital cost estimates for the PEPD Design level.

This document describes the methodology for preparation of estimated capital cost for the California High-Speed Rail Project (CHSRP) Palmdale to Burbank PEPD document. In addition, it presents the summary of Capital Cost Estimates along with detailed FRA Standard Cost Categories (SCC) and sub-categories or cost elements. Refinement of these cost estimates will be on-going during the advancement of engineering during subsequent project development phases.

The primary objectives of this report are:

- Identify the methods and processes used to develop the capital cost estimate during PEPD Design Level Phase;
- Identify the source documents and/or methodology used for pricing work;
- Specify how estimating assumptions have been documented during the course of the estimate development;
- Describe Unit Price Elements;
- Define the approach and methodology with respect to FRA Standard Cost Categories (SCC);
- Present estimates have been developed for each complete alignment alternative for the Palmdale to Burbank Project Section.

The estimating approach has been done in a manner that (1) allows consistent application to each alternative to facilitate comparisons; (2) provides the proper foundation for more detailed estimates as selected alternative(s) are further evaluated; and (3) provides the basis for subsequent construction package procurement level estimates with additional guidelines for a more detailed capital cost estimate.

Considering CHSRP's size, complexity, phased design, and number of participants, it is important that the CCEM is flexible enough to be applied at each point in the project development process to appropriately support the tracking, monitoring and control of cost changes through each of the program's design and implementation phases. This document addresses only the capital cost estimating requirements for the PEPD Design level. Additional guidelines have been developed for the preparation of capital cost estimates for subsequent phases of the CHSRP.

1.2 Statement of Technical Issue

The document is intended to address the preparation of a program cost estimate, including construction, acquisition of right-of-way, vehicles, and professional services during execution of the project.

The CCEM is intended to provide guidelines for accurately and consistently estimating the costs of capital infrastructure and systems for the PEPD Design level. It also provides a framework for defining the scope and technical basis for the estimates, the roles and responsibilities for specific estimating tasks among the project participations, and the structure, organization, and format for reporting capital costs for all geographic sections of CHSRP.

1.3 General Information

1.3.1 Definition of Terms

Technical terms, acronyms, or other cost estimating terminology specifically used for capital cost estimating purposes, unless otherwise indicated, will follow the standard definition of terms published by the Association for the Advancement of Cost Engineering (AACE) International in their Recommend Practice No. 10S-90 – Cost Engineering Terminology.

The following acronyms used in this document have specific connotations with regard to California High Speed Rail system.

Acronyms

AACE	Association for the Advancement of Cost Engineering
CCEM	Capital Cost Estimating Methodology
Authority	California High-Speed Rail Authority
CHSRP	California High-Speed Rail Project
ENR	Engineering News Record
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HST	High Speed Train
LCCA	Life Cycle Cost Analysis
O&M	Operating and Maintenance
PMT	Program Management Team
RC	Regional Consultant(s)
SCC	Standard Cost Categories
TM	Technical Memorandum
WBS	Work Breakdown Structure

1.3.2 Units

The California High-Speed Rail Project is based on U.S. Customary Units consistent with guidelines prepared by the California Department of Transportation and defined by the National Institute of Standards and Technology (NIST). U.S. Customary Units are officially used in the United States and are also known in the US as “English” or “Imperial” units. In order to avoid confusion, all formal references to units of measure shall be made in terms of U.S. Customary Units.

Guidance for units of measure terminology, values, and conversions can be found in the Caltrans Metric Program Transitional Plan, Appendix B U.S. Customary General Primer (<http://www.dot.ca.gov/hq/oppd/metric/TransitionPlan/Appendice-B-US-Customary-General-Primer.pdf>). Caltrans Metric Program Transitional Plan, Appendice B can also be found as an attachment to the CHSRP Mapping and Survey Technical Memorandum.

2.0 CAPITAL COST ESTIMATING METHODOLOGY

Estimating methodologies are not static and must be flexible enough to adjust to the needs of the project's stage in the development process. The development process is described by the overall level of engineering design associated with the major development stages defined for the CHSRP:

Development Stage	Engineering Design Completion			
Programmatic EIR/S	0% - 5%			
Project EIR/S	5% - 15%			
PEPD Design Level	15% - 30%			
Procurement Level		30% - 90%		
Design-Build			90% - 100%	
	0	15%	30%	90% 100%

Each development stage is represented by a range of engineering design completion and influenced by ongoing updates to the ridership demand forecast and associated revisions to estimated system capacity, service design and operating plans. Because of this variability, the appropriate estimating methods or procedures at a given milestone will be based on the actual levels of project engineering and scope definition present at that time. Because the program will be designed in multiple segments, the level of engineering design completed for major high-speed rail system elements will be at different levels at any point in time. The goal of using established estimating methodologies is to assure that project estimates are prepared in a consistent and uniform manner, organized and standardized in methods, and formatted in order to facilitate estimate review and reporting.

2.1 Estimating Format

A consistent format is developed for the reporting, estimating, and managing of the project's capital costs. This document recommends using standard cost categories (SCC) established by the Federal Railroad Administration (FRA) as part of American Recovery and Reinvestment Act (ARRA) grant application requirements. Preparation of capital costs in SCC format is adopted throughout the PEPD Design phase.

2.2 Estimating Software

Commercially available database software systems are used depending on the type of work elements. For example, Timberline is used for surface heavy construction work elements and HCSS is used for underground work elements. However, in order to provide uniformity between numerous work elements and sections of the corridor and to provide consistent platform for reporting and analysis requirements, the cost data are exported to Microsoft Excel. This will better enable the review, edit consolidation and reporting of estimate components over the course and provide more flexibility to make adjustments.

2.3 FRA Standard Cost Category (SCC)

The methodology used for generating capital cost estimates has been consistent with FRA guidelines for estimating capital costs. The heart of the FRA guidance is the SCC, which enables FRA-funded projects to develop budget baselines that summarize to the SCC. This cost structure is used for capital cost detail and summary sheets and is described below. Where the level of design does not support quantity measurements, parametric estimating techniques were utilized.

2.3.1 Work Breakdown Structure (WBS)

This involves the development of the Work Breakdown Structure (WBS) that is applied to cost estimating and cost reporting. The WBS for estimating includes a coding system that is used for estimating elements. The WBS for reporting includes the development of a coding system that allows the cost estimates to be sorted and presented by categories and subcategories as prescribed by the FRA.

The WBS for capital cost estimates for the PEPD Design level is based upon the FRA Standard Cost Categories is presented in Appendix A.

The primary WBS for quantities and unit prices are Unit Price Element's (UPE's). UPE's were originally developed as an estimating tool to assist in the development of conceptual level cost estimates and provide a method for translating typical construction items into a unit-based unit of measurement. The scope and definition of UPE's are developed by the Regional Consultant based on the unique design present in their project section.

2.3.2 Estimated Unit Costs

The development of construction unit costs for each of the construction activities that is identified and quantified from the design documents. The development of individual or composite estimated unit costs is accomplished through the use of historical bid data and by unit cost analysis, as appropriate, using labor, equipment and material rates. Unit costs are expressed in current year dollars and are adjusted to reflect any regional variations.

These methods are used either individually or in combination. For the PEPD Design level, when limited engineering details are available, the historical bid price method is typically used.

2.3.2.1 Historical Bid Price Method

Historical bid prices are typically used to develop costs for common construction elements. When using this method, the time of bid and conditions of the historical project used for pricing is considered and factors applied as needed:

- Adjust bid prices where the bid date is older than 12 months from the current date by using an appropriate escalation factor
- Adjust bid prices to reflect conditions of the project, such as type of terrain, geographical location, soil, traffic and other related factors. For location factor adjustments, the City Cost Index as published by RS Means is used.

Sources for historical bid prices that are used may come from local, regional, statewide and national levels, as well as from international high-speed rail projects with unique high-speed elements. Historical unit prices that are used for the CHSRP will be verified for appropriateness and documented as to their source as well as any adjustments for site, escalation or location factors.

2.3.2.2 Unit Cost Analysis Method

The estimated unit cost analysis method is typically used to develop costs for complex construction elements including but not limited to viaducts, retained earth systems, tunneling and underground structures. This method allows for unit costs to be developed based on current local construction and market conditions, such as changes which might affect productivity or the cost of labor or materials. The following steps are required in order to develop a unit price using this method:

- Analyze the proposed construction conditions
- Estimate production rates where applicable
- Obtain materials prices using local available sources
- Determine labor and equipment rates where applicable
- Calculate direct unit price using the above factors

The following sources are used to obtain basic cost data that is input into the database estimating program in order to develop any needed construction unit prices:

- Labor Rates – RS Means national wages adjusted by City Cost Index factor, Federal Davis-Bacon Wage Determination and/or California Department of Industrial Relations Prevailing Wage Determinations.
- Equipment Rates – RS Means and/or Corp of Engineers Construction Equipment Ownership and Operating Expense Schedule, Region VII.
- Material Prices - Material and supply prices for locally available material are obtained from local supplier quotes, if possible. Secondary sources of material cost data may be taken from RS Means, Engineering News-Report (ENR) or other published resource.

A list of prototypical work elements and the units of measure are estimated for PEPD Design level with corresponding estimated unit cost. Appendix A presents the list of variable cost elements within each FRA SCC 10's to 60's series. When required, additional project-specific work elements reflecting unique site conditions and configurations are identified and their estimated costs are developed in addition to prototypical unit costs. Examples of these project-specific unit costs include very high and/or long span iconic bridge structures, grade separations, specific roadway improvements, unique utility relocations, staged construction to accommodate existing rail or vehicular traffic, or restrictive site access conditions in urban areas.

2.3.3 Quantity Takeoffs

The task of quantity takeoffs involves preparation of estimated quantities either by direct measurement and calculation of construction elements that are shown in design drawings, sketches, electronically calculated from CADD files or established as an allowance quantity based on professional experience and judgment. Quantity take-offs have been prepared by the Regional Consultant and are presented in the Palmdale to Burbank PEPD quantities document "EEPB_PEPD_UPE_master_table_v13" and "EEPB_PEPD_BACKUP_v7"

2.3.4 Allocated and Unallocated Contingencies

Contingency, in the statistical sense, is the estimated percentage by which a calculated value may differ from its true or final value and is typically included in an estimate as an allowance for the level of engineering design completion or to address imperfections in the estimating methods used at the various project development stages. Contingency is typically added to a particular item or group of items by the use of percentage multipliers. Contingency is generally greatest for the early stage of project development and decreases with advancement in the level of engineering design and pricing detail. During the preliminary design of the high-speed rail project, the limited level of design information that is available requires the use of contingency allowances that are allocated against specific construction or procurement cost categories. The percentage selected for a given cost category are generally based on level of definition of the scope of work involved and substantiated by professional judgment and experience relative to level of uncertainty and historical cost variability typically seen for work within a particular cost category. For the purposes of this estimating program, contingency is assigned into two major categories – allocated and unallocated.

Allocated contingency is added to each cost category based on an assessment of the quality of design information; means and methods; and site accessibility available for individual items of work. This contingency typically falls in a range of 10% to 25%. The exact percentage selected for each cost category is based on professional judgment and experience related to the cost variability typically seen for items of work within a particular cost category. The contingency is generally higher for underground elements reflecting the additional exposure for unknowns as well as the construction complexity. It is also higher for stations, terminals, storage yard facilities and utilities since their design progress is still in the conceptual level and identification of all the utilities are not determined. The percentages shown in Table 2-1 are the values that are normally used; however, slightly higher or lower values are used if a project-specific condition warrant.

Unallocated contingency is typically included to address uncertainties that are more global in nature like schedule delays, changes in contracting environment, or other such issues that are not associated with individual construction activities. Unallocated contingencies will be estimated at 5 percent of the total construction costs.

Table 2-1 Allocated Contingency Percentages by Cost Category

Cost Category No.	Description	Allocated Contingency Percentage
10 Track Structures and Track		
10.01	Track structure: Viaduct	15%
10.02	Track structure: Major/Movable bridges	15%
10.03	Track structure: Under grade bridges	15%
10.04	Track structure: Culverts and drainage structures	15%
10.05	Track structure: Cut and Fill (> 4' height/depth)	20%
10.06	Track structure: At-grade (grading and subgrade stabilization)	10%
10.07	Track structure: Tunnel	25%
10.08	Track structure: Retaining walls and systems	15%
10.09	Track new construction: Conventional ballasted	15%
10.10	Track new construction: Non-ballasted	15%
10.11	Track rehabilitation: Ballast and surfacing	15%
10.12	Track rehabilitation: Ditching and drainage	15%
10.13	Track rehabilitation: Component replacement (rail, ties, etc)	15%
10.14	Track: Special track work (switches, turnouts, insulated joints)	15%
10.15	Track: Major interlocking	15%
10.16	Track: Switch heaters (with power and control)	15%
10.17	Track: Vibration and noise dampening	15%
10.18	Other linear structures including fencing, sound walls	15%
20 Stations, Terminals, Intermodal		25%
30 Support Facilities: Yards, Shops, Admin. Bldgs		25%
40 Sitework, Right of Way, Land, Existing Improvements		
40.01	Demolition, clearing, site preparation	25%
40.02	Site utilities, utility relocation	25%
40.03	Hazardous material, contaminated soil removal/mitigation, ground water treatments	15%
40.04	Environmental mitigation: wetlands, historic/archeology, parks	20%
40.05	Site structures including retaining walls, sound walls	25%
40.06	Temporary facilities and other indirect costs during construction	10%

40.07	Purchase or lease of real estate	20%
40.08	Highway/pedestrian overpass/grade separations	20%
40.09	Relocation of existing households and businesses	0%
50 Communications & Signaling		15%
60 Electric Traction		15%
70 Vehicles		0%
80 Professional Services		0%

2.3.5 Environmental Mitigation

An allowance to account for the cost of environmental mitigation that relates to hydrology and water resources; wetland impact; hazardous material and waste; historic/archeology; safety and security; noise, vibration and air quality during construction and permanent aesthetic is included in the total capital cost. This allowance is based on 3% of the total cost of track structures, track work, station buildings, roadway modification and highway grade separation.

2.3.6 Right-of-Way Cost Estimate

This involves preparing estimated quantities of impacted properties, either permanent takes or temporary easements, which result from construction, operation, and maintenance of proposed high-speed rail alignment alternatives. In order to arrive at the estimated cost, professional experience and judgment in the area of property valuation, business damages, and legal and administrative issues as they relate to the estimation of right-of-way costs have been applied. The values used in the cost estimate were developed by the Regional consultant to reflect the design changes

“10_P2K_DRAFT_PEPD_Rev01_Right_of_Way_Requirements_Report_Volume_I_of_IV.”

2.3.7 Vehicle Estimate

The costs for the Palmdale to Burbank section do not include acquisition of high-speed train vehicles. Acquisition of trainsets is considered to be a system-wide procurement and is not associated with construction of individual sections of the CHSRP System. Consistent with the Revised 2016 Business Plan, the cost of vehicles was determined by using publicly available data regarding recent sales of comparable equipment to other CHSRP projects around the world and by informal consultations with the manufacturers.

2.3.8 Program Implementation/Professional Services Add-ons

Program Implementation costs are included to represent the costs of engineering, project and construction management, contract administration, permits and fees, training/start-up/testing and any force account work. These add-on costs are calculated as a percentage of construction costs only (applied individually and not cumulatively and excluding vehicle procurement and right-of-way costs) and presented under Professional Services cost category in the estimate. The management and administration cost associated with right-of-way and rolling stock are included with the respective items.

Preliminary Engineering	2.0%
Program Management	3.0%
Final Design	6.0%
Construction Management	4.0%
Agency Costs	0.5%
Total	15.5%

In addition, an allowance for system start-up and pre-revenue testing is added to the Professional Services cost category in the amount of 6% of the Train Controls, Communications and Electrification construction costs.

2.3.9 Escalation

Estimates are prepared in Base Year dollars with the Base Year defined as the current calendar year. Unit costs are updated annually or as required. For cost estimates with a base year that is older than the current calendar by one or more years, actual historical construction cost index values are used to calculate the escalation rate to be applied to bring a cost from the period in question to the present.

2.3.10 Finance Charge

Finance charges are not included in the capital cost estimates.

2.4 Estimate Validation

Following preparation of the PEPD Design level estimates, cost estimates are subjected to a validation process including reviews by subject matter experts in the areas of engineering and construction.

2.5 Estimate Reconciliation

Reconciliations are made between current cost estimates and cost estimates that were developed in previous design phases. The goal of reconciliation is to identify and document significant changes that may have occurred since the preparation of the prior capital cost estimate. Significant changes are identified in the reconciliation under one of three categories that best reflects the cause for the change: Quantity, Unit Price, or Scope, as applicable.

2.6 Estimate Assumption and Exclusions

- All costs are in 2018\$ Q3
- Allocated Contingency is included in all costs.
- ROW costs have been included based on current ROW report as referenced in the list of documents from the RC.
- UPEs 20.07.xxx are moved to 40.08 SCC minor in order to be compatible with FRA Standard Cost Categories for Capital Projects/Programs.

- Subsection “Alternate” Complete contains alternative wide Soft Costs that cannot be assigned to a specific subsection such as professional services, temporary facilities, Environmental Mitigation allowances, and unallocated contingency in the Appendix C detailed estimate tables.
- All cost categories include unallocated contingencies, including relocation of the Antelope Valley-East Kern Water Treatment Plant. Category SCC 90 represents only unallocated monies.
- Capital cost estimates were adjusted between publication of the Draft EIR/EIS and what is presented in the Final EIR/EIS. The adjustments take into account a) updated assumptions on inflation escalation and cost increases for materials such as rebar and concrete, b) refinements to the project scope regarding the provision of electrical power and tunnel ventilation, and c) commensurate increases in professional services and unallocated contingency, calculated as a percentage of the total estimate.

There may be some minor rounding variances due to allocation of indirect costs back into total costs on very large sum.

APPENDIX A WORK BREAKDOWN STRUCTURE (WBS)

WORK BREAKDOWN STRUCTURE (FRA STANDARD COST CATEGORIES)

10 TRACK STRUCTURES & TRACK	
10.01	Track structure: Viaduct
10.02	Track structure: Major/Movable bridge
10.03	Track structure: Under grade Bridges
10.04	Track structure: Culverts and drainage structures
10.05	Track structure: Cut and Fill (> 4' height/depth)
10.06	Track structure: At-grade (grading and subgrade stabilization)
10.07	Track structure: Tunnel
10.08	Track structure: Retaining walls and systems
10.09	Track new construction: Conventional ballasted
10.10	Track new construction: Non-ballasted
10.11	Track rehabilitation: Ballast and surfacing
10.12	Track rehabilitation: Ditching and drainage
10.13	Track rehabilitation: Component replacement (rail, ties, etc)
10.14	Track: Special track work (switches, turnouts, insulated joints)
10.15	Track: Major interlockings
10.16	Track: Switch heaters (with power and control)
10.17	Track: Vibration and noise dampening
10.18	Other linear structures including fencing, sound walls
20 STATIONS, TERMINALS, INTERMODAL	
20.01	Station buildings: Intercity passenger rail only
20.02	Station buildings: Joint use (commuter rail, intercity bus)
20.03	Platforms
20.04	Elevators, escalators
20.05	Joint commercial development
20.06	Pedestrian / bike access and accommodation, landscaping, parking lots
20.07	Automobile, bus, van accessways including roads
20.08	Fare collection systems and equipment
20.09	Station security

30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS

30.01	Administration building: Office, sales, storage, revenue counting
30.02	Light maintenance facility
30.03	Heavy maintenance facility
30.04	Storage or maintenance-of-way building/bases
30.05	Yard and yard track

40 SITEWORK, RIGHT OF WAY, LAND, EXISTING IMPROVEMENTS

40.01	Demolition, clearing, site preparation
40.02	Site utilities, utility relocation
40.03	Hazardous material, contaminated soil removal/mitigation, ground water treatments
40.04	Environmental mitigation: wetlands, historic/archeology, parks
40.05	Site structures including retaining walls, sound walls
40.06	Temporary facilities and other indirect costs during construction
40.07	Purchase or lease of real estate
40.08	Highway/pedestrian overpass/grade separations
40.09	Relocation of existing households and businesses

50 COMMUNICATIONS & SIGNALING

50.01	Wayside signaling equipment
50.02	Signal power access and distribution
50.03	On-board signaling equipment
50.04	Traffic control and dispatching systems
50.05	Communications
50.06	Grade crossing protection
50.07	Hazard detectors: dragging equipment high water, slide, etc.
50.08	Station train approach warning system

60 ELECTRIC TRACTION

60.01	Traction power transmission: High voltage
60.02	Traction power supply: Substations
60.03	Traction power distribution: Catenary and third rail
60.04	Traction power control

70 VEHICLES

70.00	Vehicle acquisition: Electric locomotive
70.01	Vehicle acquisition: Non-electric locomotive

70.02	Vehicle acquisition: Electric multiple unit
70.03	Vehicle acquisition: Diesel multiple unit
70.04	Vehicle acquisition: Loco-hauled passenger cars w/ ticketed space
70.05	Vehicle acquisition: Loco-hauled passenger cars w/o ticketed space
70.06	Vehicle acquisition: Maintenance of way vehicles
70.07	Vehicle acquisition: Non-railroad support vehicles
70.08	Vehicle refurbishment: Electric locomotive
70.09	Vehicle refurbishment: Non-electric locomotive
70.10	Vehicle refurbishment: Electric multiple unit
70.11	Vehicle refurbishment: Diesel multiple unit
70.12	Vehicle refurbished: Passenger loco-hauled car w/ ticketed space
70.13	Vehicle refurbished: Non-passenger loco-hauled car w/o ticketed space
70.14	Vehicle refurbishment: Maintenance of way vehicles
70.15	Spare parts

80 PROFESSIONAL SERVICES (applies to Cats. 10-60)

80.01	Service Development Plan/Service Environmental
80.02	Preliminary Engineering/Project Environmental
80.03	Final design
80.04	Project management for design and construction
80.05	Construction administration & management
80.06	Professional liability and other non-construction insurance
80.07	Legal; Permits; Review Fees by other agencies, cities, etc.
80.08	Surveys, testing, investigation
80.09	Engineering inspection
80.10	Start up

90 UNALLOCATED CONTINGENCY

100 FINANCE CHARGES

APPENDIX B TYPICAL UNIT COST ELEMENTS

No.	DESCRIPTION	UNIT
10.01	Track structure: Viaduct	
10.01.122	Elevated Structure - 1 Track (20' Avg. Pier Ht)	Route Mile
10.01.123	Elevated Structure - 1 Track (30' Avg. Pier Ht)	Route Mile
10.01.124	Elevated Structure - 1 Track (40' Avg. Pier Ht)	Route Mile
10.01.125	Elevated Structure - 1 Track (50' Avg. Pier Ht)	Route Mile
10.01.126	Elevated Structure - 1 Track (60' Avg. Pier Ht)	Route Mile
10.01.127	Elevated Structure - 1 Track (70' Avg. Pier Ht)	Route Mile
10.01.222	Elevated Structure - 2 Track (20' Avg. Pier Ht)	Route Mile
10.01.223	Elevated Structure - 2 Track (30' Avg. Pier Ht)	Route Mile
10.01.224	Elevated Structure - 2 Track (40' Avg. Pier Ht)	Route Mile
10.01.225	Elevated Structure - 2 Track (50' Avg. Pier Ht)	Route Mile
10.01.226	Elevated Structure - 2 Track (60' Avg. Pier Ht)	Route Mile
10.01.227	Elevated Structure - 2 Track (70' Avg. Pier Ht)	Route Mile
10.01.242	Elevated Structure - 4 Track (20' Avg. Pier Ht)	Route Mile
10.01.243	Elevated Structure - 4 Track (30' Avg. Pier Ht)	Route Mile
10.01.244	Elevated Structure - 4 Track (40' Avg. Pier Ht)	Route Mile
10.01.245	Elevated Structure - 4 Track (50' Avg. Pier Ht)	Route Mile
10.01.246	Elevated Structure - 4 Track (60' Avg. Pier Ht)	Route Mile
10.01.247	Elevated Structure - 4 Track (70' Avg. Pier Ht)	Route Mile
10.01.322	Elevated Structure (LS) - 1 Track (20' Avg. Pier Ht)	Route Mile
10.01.323	Elevated Structure (LS) - 1 Track (30' Avg. Pier Ht)	Route Mile
10.01.324	Elevated Structure (LS) - 1 Track (40' Avg. Pier Ht)	Route Mile
10.01.325	Elevated Structure (LS) - 1 Track (50' Avg. Pier Ht)	Route Mile
10.01.326	Elevated Structure (LS) - 1 Track (60' Avg. Pier Ht)	Route Mile
10.01.327	Elevated Structure (LS) - 1 Track (70' Avg. Pier Ht)	Route Mile
10.01.422	Elevated Structure (LS) - 2 Track (20' Avg. Pier Ht)	Route Mile
10.01.423	Elevated Structure (LS) - 2 Track (30' Avg. Pier Ht)	Route Mile
10.01.424	Elevated Structure (LS) - 2 Track (40' Avg. Pier Ht)	Route Mile
10.01.425	Elevated Structure (LS) - 2 Track (50' Avg. Pier Ht)	Route Mile
10.01.426	Elevated Structure (LS) - 2 Track (60' Avg. Pier Ht)	Route Mile
10.01.427	Elevated Structure (LS) - 2 Track (70' Avg. Pier Ht)	Route Mile
10.01.431	Elevated Structure (LS-Tall) - 2-Single Tracks (110' Avg. Pier Ht)	Route Mile

No.	DESCRIPTION	UNIT
10.01.432	Elevated Structure (LS-Tall) - 2-Single Tracks (120' Avg. Pier Ht)	Route Mile
10.01.512	Elevated Structure Straddle over 2 RR - 1 Track (20' Avg. Pier Ht)	Route Mile
10.01.513	Elevated Structure Straddle over 2 RR - 1 Track (30' Avg. Pier Ht)	Route Mile
10.01.514	Elevated Structure Straddle over 2 RR - 1 Track (40' Avg. Pier Ht)	Route Mile
10.01.515	Elevated Structure Straddle over 2 RR - 1 Track (50' Avg. Pier Ht)	Route Mile
10.01.522	Elevated Structure Straddle over 2 RR - 2 Track (20' Avg. Pier Ht)	Route Mile
10.01.523	Elevated Structure Straddle over 2 RR - 2 Track (30' Avg. Pier Ht)	Route Mile
10.01.524	Elevated Structure Straddle over 2 RR - 2 Track (40' Avg. Pier Ht)	Route Mile
10.01.525	Elevated Structure Straddle over 2 RR - 2 Track (50' Avg. Pier Ht)	Route Mile
10.01.612	Elevated Structure Straddle over 4 RR - 1 Track (20' Avg. Pier Ht)	Route Mile
10.01.613	Elevated Structure Straddle over 4 RR - 1 Track (30' Avg. Pier Ht)	Route Mile
10.01.614	Elevated Structure Straddle over 4 RR - 1 Track (40' Avg. Pier Ht)	Route Mile
10.01.615	Elevated Structure Straddle over 4 RR - 1 Track (50' Avg. Pier Ht)	Route Mile
10.01.622	Elevated Structure Straddle over 4 RR - 2 Track (20' Avg. Pier Ht)	Route Mile
10.01.623	Elevated Structure Straddle over 4 RR - 2 Track (30' Avg. Pier Ht)	Route Mile
10.01.624	Elevated Structure Straddle over 4 RR - 2 Track (40' Avg. Pier Ht)	Route Mile
10.01.625	Elevated Structure Straddle over 4 RR - 2 Track (50' Avg. Pier Ht)	Route Mile
10.01.944	Elevated Structure - 2 Track w/ 2 Single Trenches	Route Mile
10.02	Track structure: Major/Movable bridge	
10.02.013	Bridge Structure - 3 span with 1 Track	Route Mile
10.02.023	Bridge Structure - 3 span with 2 Track	Route Mile
10.02.043	Bridge Structure - 3 span with 4 Track	Route Mile
10.05	Track structure: Cut and Fill (> 4' height/depth)	
10.05.111	At-Grade Track-bed in Cut - 1 Track (5' Avg. Exc Depth)	Route Mile

No.	DESCRIPTION	UNIT
10.05.112	At-Grade Track-bed in Cut - 1 Track (10' Avg. Exc Depth)	Route Mile
10.05.113	At-Grade Track-bed in Cut - 1 Track (15' Avg. Exc Depth)	Route Mile
10.05.114	At-Grade Track-bed in Cut - 1 Track (20' Avg. Exc Depth)	Route Mile
10.05.121	At-Grade Track-bed in Cut - 2 Track (5' Avg. Exc Depth)	Route Mile
10.05.122	At-Grade Track-bed in Cut - 2 Track (10' Avg. Exc Depth)	Route Mile
10.05.123	At-Grade Track-bed in Cut - 2 Track (15' Avg. Exc Depth)	Route Mile
10.05.124	At-Grade Track-bed in Cut - 2 Track (20' Avg. Exc Depth)	Route Mile
10.05.126	At-Grade Track-bed in Cut - 2 Track (40' Avg. Exc Depth)	Route Mile
10.05.128	At-Grade Track-bed in Cut - 2 Track (60' Avg. Exc Depth)	Route Mile
10.05.130	At-Grade Track-bed in Cut - 2 Track (80' Avg. Exc Depth)	Route Mile
10.05.132	At-Grade Track-bed in Cut - 2 Track (100' Avg. Exc Depth)	Route Mile
10.05.211	At-Grade Track-bed in Fill - 1 Track (5' Avg. Fill Ht)	Route Mile
10.05.212	At-Grade Track-bed in Fill - 1 Track (10' Avg. Fill Ht)	Route Mile
10.05.213	At-Grade Track-bed in Fill - 1 Track (15' Avg. Fill Ht)	Route Mile
10.05.214	At-Grade Track-bed in Fill - 1 Track (20' Avg. Fill Ht)	Route Mile
10.05.221	At-Grade Track-bed in Fill - 2 Track (5' Avg. Fill Ht)	Route Mile
10.05.222	At-Grade Track-bed in Fill - 2 Track (10' Avg. Fill Ht)	Route Mile
10.05.223	At-Grade Track-bed in Fill - 2 Track (15' Avg. Fill Ht)	Route Mile
10.05.224	At-Grade Track-bed in Fill - 2 Track (20' Avg. Fill Ht)	Route Mile
10.05.226	At-Grade Track-bed in Fill - 2 Track (40' Avg. Fill Ht)	Route Mile
10.05.228	At-Grade Track-bed in Fill - 2 Track (60' Avg. Fill Ht)	Route Mile
10.05.230	At-Grade Track-bed in Fill - 2 Track (80' Avg. Fill Ht)	Route Mile
10.05.232	At-Grade Track-bed in Fill - 2 Track (100' Avg. Fill Ht)	Route Mile
10.06	Track structure: At-grade (grading and subgrade stabilization)	
10.06.210	At-Grade Track-bed with Closed Drainage - 1 Track	Route Mile
10.06.220	At-Grade Track-bed with Closed Drainage - 2 Track	Route Mile
10.06.230	At-Grade Track-bed with Closed Drainage - 3 Track	Route Mile
10.06.240	At-Grade Track-bed with Closed Drainage - 4 Track	Route Mile
10.07	Track structure: Tunnel	
10.07.101	TBM Single Track Twin Tunnel 30ft ID Unpressurized TBM in hard rock	Route Mile
10.07.102	TBM Single Track Twin Tunnel 30ft ID Slurry TBM in hard rock	Route Mile
10.07.103	TBM Single Track Twin Tunnel 30ft ID in soft ground	Route Mile
10.07.104	TBM Double Track Tunnel 50ft ID in soft ground	Route Mile

No.	DESCRIPTION	UNIT
10.07.105	TBM Double Track Tunnel 40ft ID in soft ground	Route Mile
10.07.201	D&B Single Track Twin Tunnel 30ft ID in hard rock	Route Mile
10.07.202	D&B Single Track Twin Tunnel 30ft ID in rock	Route Mile
10.07.203	D&B Double Track Tunnel 40ft ID in hard rock	Route Mile
10.07.204	D&B Double Track Tunnel 40ft ID in rock	Route Mile
10.07.205	D&B Double Track Tunnel 50ft ID in hard rock	Route Mile
10.07.206	D&B Double Track Tunnel 50ft ID in rock	Route Mile
10.07.301	SEM Single Track Twin Tunnel 30ft ID in soft ground	Route Mile
10.07.302	SEM Single Track Twin Tunnel 30ft ID in soft ground	Route Mile
10.07.303	SEM Double Track Tunnel 40ft ID in soft ground	Route Mile
10.07.304	SEM Double Track Tunnel 40ft ID in soft ground	Route Mile
10.07.305	SEM Double Track Tunnel 50ft ID in soft ground	Route Mile
10.07.306	SEM Double Track Tunnel 50ft ID in soft ground	Route Mile
10.07.401	RH Single Track Twin Tunnel 30ft ID in soft rock	Route Mile
10.07.402	RH Single Track Twin Tunnel 30ft ID in soft rock	Route Mile
10.07.403	RH Double Track Tunnel 40ft ID in soft rock	Route Mile
10.07.404	RH Double Track Tunnel 40ft ID in soft rock	Route Mile
10.07.405	RH Double Track Tunnel 50ft ID in soft rock	Route Mile
10.07.406	RH Double Track Tunnel 50ft ID in soft rock	Route Mile
10.07.207	D&B Cross Passage conservative cost in rock	Linear Feet
10.07.407	RH Cross Passage conservative cost in soft rock	Linear Feet
10.07.501	Cross Passage in Soft Ground	Linear Feet
10.07.502	Cross Passage in Soft Ground, including jet grout	Linear Feet
10.07.114	Cut & Cover Box - 1 Track/ 1 Box (40' Avg. Exc Depth)	Route Mile
10.07.115	Cut & Cover Box - 1 Track/ 1 Box (50' Avg. Exc Depth)	Route Mile
10.07.116	Cut & Cover Box - 1 Track/ 1 Box (60' Avg. Exc Depth)	Route Mile
10.07.214	Cut & Cover Box - 2 Track / 1 Box (40' Avg. Exc Depth)	Route Mile
10.07.215	Cut & Cover Box - 2 Track / 1 Box (50' Avg. Exc Depth)	Route Mile
10.07.216	Cut & Cover Box - 2 Track / 1 Box (60' Avg. Exc Depth)	Route Mile
10.07.224	Cut & Cover Box - 2 Track/ 2 Box (40' Avg. Exc Depth)	Route Mile
10.07.225	Cut & Cover Box - 2 Track / 2 Box (50' Avg. Exc Depth)	Route Mile
10.07.226	Cut & Cover Box - 2 Track / 2 Box (60' Avg. Exc Depth)	Route Mile
10.07.414	Cut & Cover Box - 4 Track / 1 Box (40' Avg. Exc Depth)	Route Mile
10.07.415	Cut & Cover Box - 4 Track / 1 Box (50' Avg. Exc Depth)	Route Mile
10.07.416	Cut & Cover Box - 4 Track / 1 Box (60' Avg. Exc Depth)	Route Mile

No.	DESCRIPTION	UNIT
10.07.801	Ventilation Shaft	VF
10.07.802	Mid-Line Ventilation Structure	LS
10.07.803	Tunnel Portal Structure	LS
10.07.805	Emergency Access Shaft	VF
10.07.850	Pumping Station	EA
10.07.901	Mechanical & Electrical Allowance for Underground (Single)	Route Mile
10.07.902	Mechanical & Electrical Allowance for Underground (Double)	Route Mile
10.07.920	Ventilation Equipment Allowance	EA
10.07.922	Double Deck - 2 Track Trench on Top of 2 Track C&C Box	Route Mile
10.07.950	Allowance for Construction Monitoring	Route Mile
10.08	Track structure: Retaining walls and systems	
10.08.211	Retained Cut, Trench - 1 Track (10' Avg. Exc Depth)	Route Mile
10.08.212	Retained Cut, Trench - 1 Track (20' Avg. Exc Depth)	Route Mile
10.08.213	Retained Cut, Trench - 1 Track (30' Avg. Exc Depth)	Route Mile
10.08.221	Retained Cut, Trench - 2 Track (10' Avg. Exc Depth)	Route Mile
10.08.222	Retained Cut, Trench - 2 Track (20' Avg. Exc Depth)	Route Mile
10.08.223	Retained Cut, Trench - 2 Track (30' Avg. Exc Depth)	Route Mile
10.08.241	Retained Cut, Trench - 4 Track (10' Avg. Exc Depth)	Route Mile
10.08.242	Retained Cut, Trench - 4 Track (20' Avg. Exc Depth)	Route Mile
10.08.243	Retained Cut, Trench - 4 Track (30' Avg. Exc Depth)	Route Mile
10.08.344	Retained Cut, Staged Trench - 4 Track (40' Avg. Exc Depth)	Route Mile
10.08.346	Retained Cut, Staged Trench - 4 Track (60' Avg. Exc Depth)	Route Mile
10.08.411	Retained Fill, Walls Both Sides - 1 Tracks (10' Avg. Wall Ht)	Route Mile
10.08.412	Retained Fill, Walls Both Sides - 1 Tracks (20' Avg. Wall Ht)	Route Mile
10.08.413	Retained Fill, Walls Both Sides - 1 Tracks (30' Avg. Wall Ht)	Route Mile
10.08.421	Retained Fill, Walls Both Sides - 2 Tracks (10' Avg. Wall Ht)	Route Mile
10.08.422	Retained Fill, Walls Both Sides - 2 Tracks (20' Avg. Wall Ht)	Route Mile
10.08.423	Retained Fill, Walls Both Sides - 2 Tracks (30' Avg. Wall Ht)	Route Mile
10.09	Track new construction: Conventional ballasted	
10.09.110	Ballasted Track - 1 Track	Route Mile
10.09.112	Ballasted Track (Track Laying Machine) - 1 Track	Route Mile
10.09.120	Ballasted Track - 2 Track	Route Mile
10.09.122	Ballasted Track (Track Laying Machine) - 2 Track	Route Mile
10.09.240	Ballasted Track - 2 Track (Station Track)	Route Mile
10.09.810	Ballasted Freight Track - 1 Track	Route Mile

No.	DESCRIPTION	UNIT
10.09.820	Ballasted Freight Track - 2 Track	Route Mile
10.09.910	Ballasted Track Relocation - 1 Track (Temporary)	Route Mile
10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	Route Mile
10.10	Track new construction: Non-ballasted	
10.10.110	Direct Fixation Track - 1 Track	Route Mile
10.10.120	Direct Fixation Track - 2 Track	Route Mile
10.10.140	Direct Fixation Track - 4 Track	Route Mile
10.10.210	Independent Dual Block Track - 1 Track	Route Mile
10.10.220	Independent Dual Block Track - 2 Track	Route Mile
10.10.240	Independent Dual Block Track - 4 Track	Route Mile
10.14	Track: Special track work (switches, turnouts, insulated joints)	
10.14.100	Direct Fixation Turnout (60 MPH)	EA
10.14.105	Direct Fixation Turnout (80 MPH)	EA
10.14.110	Direct Fixation Turnout (110 MPH)	EA
10.14.115	Direct Fixation Turnout (150 MPH)	EA
10.14.130	Direct Fixation Crossover (60 MPH)	EA
10.14.135	Direct Fixation Crossover (80 MPH)	EA
10.14.140	Direct Fixation Crossover (110 MPH)	EA
10.14.145	Direct Fixation Crossover (150 MPH)	EA
10.14.200	Ballasted Turnout (60 MPH)	EA
10.14.205	Ballasted Turnout (80 MPH)	EA
10.14.210	Ballasted Turnout (110 MPH)	EA
10.14.215	Ballasted Turnout (150 MPH)	EA
10.14.300	Ballasted Crossover (60 MPH)	EA
10.14.305	Ballasted Crossover (80 MPH)	EA
10.14.310	Ballasted Crossover (110 MPH)	EA
10.14.315	Ballasted Crossover (150 MPH)	EA
10.14.400	Terminal - Bumping Post	
20.01	Station buildings: Intercity passenger rail only	
20.01.105	Millbrae Station	LS
20.01.105	Millbrae Station - Site Elements	LS
20.02.200	Redwood/Palo Alto Station	LS
20.02.201	Redwood/Palo Alto Station - Site Elements	LS
20.02.215	Gilroy Station	LS

No.	DESCRIPTION	UNIT
20.02.216	Gilroy Station - Site Elements	LS
20.02.225	San Jose Station	LS
20.02.226	San Jose Station-Site Elements	LS
20.01.100	Artic Station	LS
20.01.110	LA Union Station	LS
20.02.205	Norwalk Station	LS
20.02.206	Norwalk Station - Site Elements	LS
20.02.210	Tulare Station	LS
20.02.211	Tulare Station - Site Elements	LS
20.02.220	Burbank Station	LS
20.02.221	Burbank Station - Site Elements	LS
20.02.230	Merced Station	LS
20.02.231	Merced Station - Site Elements	LS
20.02.235	Fresno Station	LS
20.02.236	Fresno Station - Site Elements	LS
20.02.240	Bakersfield Station	LS
20.02.241	Bakersfield Station - Site Elements	LS
20.02.245	Palmdale Station	LS
20.02.246	Palmdale Station - Site Elements	LS
20.02.250	Sylmar Station	LS
20.02.251	Sylmar Station - Site Elements	LS
20.06	Pedestrian / bike access and accommodation, landscaping, parking lots	
20.06.120	Pedestrian Access (Cut & Cover)	LF
20.06.140	Pedestrian Plaza	SF
20.06.160	Pedestrian Access, Vertical Structure, 30' Height	EA
20.06.210	Parking - At Grade	STL
20.06.250	Parking - Structured (Above Grade)	STL
20.06.800	Landscaping Allowance	SF
20.06.810	Landscaping Allowance, Guideway	Route Mile
20.07	Automobile, bus, van accessways including roads	
20.07.010	Roadway Modification, New AC Paving	SF
20.07.020	Roadway Modification, New AC Paving (including Curb & Sidewalk)	SF
20.07.710	Permanent Service/Emergency Access Road (20' Wide)	Route Mile

No.	DESCRIPTION	UNIT
20.07.715	Access Road Entrance Point	EA
20.07.800	Streetscaping Allowance	ESF
30.02	Light maintenance facility	
30.02.010	Light Maintenance Facility (LMF)	EA
30.03	Heavy maintenance facility	
30.03.010	Heavy Maintenance Facility (HMF)	EA
30.04	Storage or maintenance-of-way building/bases	
30.04.010	Maintenance of Way Facility (MOWF)	EA
30.05	Yard and yard track	
30.05.110	Ballasted Track - Yard Track	Route Mile
30.05.200	Ballasted Turnout, No. 15	EA
30.05.210	Ballasted Diamond Crossover, No. 15	EA
30.05.250	Heavy Duty Rubber Grade Crossing	TF
40.01	Demolition, clearing, site preparation	
40.01.010	Demolition Allowance, Bridge	SF
40.01.050	Demolition Allowance, Building (1 Story)	SF
40.01.060	Demolition Allowance, Building (2 Story)	SF
40.01.110	Demolition Allowance, Asphalt Pavement	SY
40.01.140	Demolition Allowance, Concrete Curb	LF
40.01.150	Demolition Allowance, Concrete Sidewalk	SY
40.01.810	Demolition Allowance, Remove Railroad Track	Route Mile
40.01.900	Miscellaneous Excavation & Support Items	LS
40.02	Site utilities, utility relocation	
40.02.001	Utility Relocation Allowance, Level 1	Route Mile
40.02.002	Utility Relocation Allowance, Level 2	Route Mile
40.02.003	Utility Relocation Allowance, Level 3	Route Mile
40.02.004	Utility Relocation Allowance, Level 4	Route Mile
40.02.005	Utility Relocation Allowance, Level 5	Route Mile
40.02.050	Site Utility Allowance	Route Mile
40.03	Hazardous material, contaminated soil removal/mitigation, ground water treatments	
40.03.100	Hazardous Material Removal Allowance, Light	Route Mile
40.03.105	Hazardous Material Removal Allowance, Medium	Route Mile
40.03.110	Hazardous Material Removal Allowance, Heavy	Route Mile
40.03.150	Removal of Contaminated Soil	CF

No.	DESCRIPTION	UNIT
40.04	Environmental mitigation: wetlands, historic/archeology, parks	
40.04.100	Environmental Mitigation Allowance, Light	Route Mile
40.04.105	Environmental Mitigation Allowance, Medium	Route Mile
40.04.110	Environmental Mitigation Allowance, Heavy	Route Mile
40.05	Site structures including retaining walls, sound walls	
40.05.012	Retaining Wall - 1 Wall (12' Avg. Height)	LF
40.05.111	Containment (Crash) Wall - 1 Wall (6' Avg. Height Above Rail)	LF
40.05.120	Blast Wall (At Stations) - 1 Wall (20' Avg. Height Above Platform)	LF
40.05.211	Sound Wall - 1 Wall (8' Avg. Height)	LF
40.05.310	Intrusion Protection Berm	LF
40.06	Temporary facilities and other indirect costs during construction	
40.07	Purchase or lease of real estate	
	Right-of-Way Required for Segment	
40.07.100	Dense Urban	Acre
40.07.101	Urban	Acre
40.07.102	Dense Suburban	Acre
40.07.103	Suburban	Acre
40.07.104	Farmland	Acre
40.07.105	Undeveloped	Acre
	Right-of-Way Required for Stations and Maintenance Facilities	
40.07.200	Dense Urban	Acre
40.07.201	Urban	Acre
40.07.202	Dense Suburban	Acre
40.07.203	Suburban	Acre
40.07.204	Undeveloped	Acre
40.08	Highway/pedestrian overpass/grade separations	
40.08.322	Roadway Overcrossing HSR - 2 lane retained fill roadway over 2 tracks	EA
40.08.324	Roadway Overcrossing HSR - 4 lane retained fill roadway over 2 tracks	EA
40.08.326	Roadway Overcrossing HSR - 6 lane retained fill roadway over 2 tracks	EA

No.	DESCRIPTION	UNIT
40.08.342	Roadway Overcrossing HSR - 2 lane retained fill roadway over 4 tracks	EA
40.08.344	Roadway Overcrossing HSR - 4 lane retained fill roadway over 4 tracks	EA
40.08.346	Roadway Overcrossing HSR - 6 lane retained fill roadway over 4 tracks	EA
40.08.422	Roadway Overcrossing HSR - 2 lane roadway on embankment over 2 tracks	EA
40.08.424	Roadway Overcrossing HSR - 4 lane roadway on embankment over 2 tracks	EA
40.08.426	Roadway Overcrossing HSR - 6 lane roadway on embankment over 2 tracks	EA
50.01	Wayside signaling equipment	
50.01.010	Train Controls (ATC)	Route Mile
50.01.020	Wayside Protection System	Route Mile
50.01.030	Train Control, Wayside Facility Site Work	EA
50.05	Communications	
50.05.010	Communications (w/Fiber Optic Backbone)	Route Mile
60.02	Traction power supply: Substations	
60.02.100	Traction Power Supply	Route Mile
60.02.010	Traction Power, Supply Station Site Work	EA
60.02.020	Traction Power, Switching Station Site Work	EA
60.02.030	Traction Power, Paralleling Station Site Work	EA
60.03	Traction power distribution: Catenary and third rail	
60.03.100	Traction Power Distribution	Route Mile

APPENDIX C DETAILED COST BUDGET

Detail Cost Budget Data (By Major Task)

Alt	SCC-Major	Description	Grand Total
01. E1		E1 End to End Alternative 2018\$	
	10	Track Structures and Track	13,960,370,192
	20	Stations, Terminal, and Intermodal	599,334,843
	40	Sitework, Right of Way, Land, and Existing Conditions	3,506,408,032
	50	Communications and Signaling	182,707,169
	60	Electric Traction	250,738,857
	80	Professional Services	2,808,619,153
	90	Unallocated Contingency	755,533,877
		01. E1 E1 End to End Alternative 2018\$	22,063,712,123
02.E2		E2 End to End Alternative 2018\$	
	10.00	Track Structures and Track	14,238,332,645
	20.00	Stations, Terminal, and Intermodal	691,549,976
	40.00	Sitework, Right of Way, Land, and Existing Conditions	3,135,157,701
	50.00	Communications and Signaling	173,633,083
	60.00	Electric Traction	226,027,236
	80.00	Professional Services	2,909,195,043
	90.00	Unallocated Contingency	765,137,517
		02.E2 E2 End to End Alternative 2018\$	22,139,033,202
03.SR14		SR14 End to End Alternative 2018\$	
	10.00	Track Structures and Track	13,387,465,857
	20.00	Stations, Terminal, and Intermodal	581,570,643
	40.00	Sitework, Right of Way, Land, and Existing Conditions	3,977,865,484
	50.00	Communications and Signaling	185,673,573
	60.00	Electric Traction	264,000,329
	80.00	Professional Services	2,759,334,341
	90.00	Unallocated Contingency	750,035,286
		03.SR14 SR14 End to End Alternative 2018\$	21,905,945,513
E1A.		E1A End to End Alternative 2018\$	
	10.00	Track Structures and Track	14,592,214,392
	20.00	Stations, Terminal, and Intermodal	557,159,366
	40.00	Sitework, Right of Way, Land, and Existing Conditions	3,053,131,348
	50.00	Communications and Signaling	193,132,476
	60.00	Electric Traction	251,644,518

	80.00	Professional Services	2,962,751,668
	90.00	Unallocated Contingency	794,596,602
		E1A. E1A End to End Alternative 2018\$	22,404,630,369
05.E2A		E2A End to End Alternative 2018\$	
	10.00	Track Structures and Track	14,827,952,134
	20.00	Stations, Terminal, and Intermodal	652,742,398
	40.00	Sitework, Right of Way, Land, and Existing Conditions	3,215,138,404
	50.00	Communications and Signaling	168,150,198
	60.00	Electric Traction	226,415,377
	80.00	Professional Services	3,012,400,700
	90.00	Unallocated Contingency	790,763,798
		05.E2A E2A End to End Alternative 2018\$	22,893,563,008
06.SR14 A		SR14A End to End Alternative 2018\$	
	10.00	Track Structures and Track	13,464,802,364
	20.00	Stations, Terminal, and Intermodal	617,410,694
	40.00	Sitework, Right of Way, Land, and Existing Conditions	4,196,708,519
	50.00	Communications and Signaling	194,174,093
	60.00	Electric Traction	437,660,076
	80.00	Professional Services	2,862,802,491
	90.00	Unallocated Contingency	776,148,361
		06.SR14A SR14A End to End Alternative 2018\$	22,549,706,598

Detail Cost Budget Data

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
01. E1			E1 End to End Alternative 2018\$					
	01.PLM		Palmdale Subsection					
		10.01.001 A	Steel Truss HSR viaduct, 1 track Sierra Hwy platform track 2x215' Span	2.00	EA	11,849,014.00	/EA	23,698,028
		10.01.002 A	Steel Truss HSR viaduct, 2 track Sierra Hwy platform track 2x215' Span	1.00	EA	14,156,346.45	/EA	14,156,346
		10.01.122 B	Elevated Structure Ave Q Platform Track - 1 Track (22' Avg. Pier Ht) Avg 105' span	2.00	EA	4,545,159.40	/EA	9,090,319
		10.01.222 A	Elevated Structure Tuxford st - 2 Track U-Shape girder (20' Avg. Pier Ht) Avg 110' span	1.00	EA	6,636,405.32	/EA	6,636,405
		10.02.060 A	Sierra Hwy Underpass (SCRAA) Bridge Structure - Two Span Steel Plate Girder Structure with 1 Track - 2 190' spans	1.00	EA	7,428,868.75	/EA	7,428,869
		10.02.060 B	Sierra Hwy Underpass (UPRR) Bridge Structure - Two Span Steel Plate Girder Structure with 1 Track 2-190' spans substructure for enlargement	1.00	EA	8,826,597.91	/EA	8,826,598
		10.02.060E	Ave Q Underpass Railroad Bridge Structure - Single Span Steel Plate Girder Structure with 1 Track 1-105'span	3.00	EA	1,753,121.75	/EA	5,259,365
		10.04.100 A	36" Drainage Pipe	1,341.00	LF	332.16	/LF	445,423
		10.05.111	At-Grade Track-bed in Cut - 1 Track (5' Avg. Exc Depth)	0.68	RM	5,451,785.56	/RM	3,707,214
		10.05.112	At-Grade Track-bed in Cut - 1 Track (10' Avg. Exc Depth)	0.78	RM	7,191,154.41	/RM	5,609,100
		10.05.113	At-Grade Track-bed in Cut - 1 Track (15' Avg. Exc Depth)	0.08	RM	9,239,190.62	/RM	739,135
		10.05.114	At-Grade Track-bed in Cut - 1 Track (20' Avg. Exc Depth)	0.25	RM	11,595,893.32	/RM	2,898,973
		10.05.121	At-Grade Track-bed in Cut - 2 Track (5' Avg. Exc Depth)	0.66	RM	8,411,913.91	/RM	5,551,863
		10.05.122	At-Grade Track-bed in Cut - 2 Track (10' Avg. Exc Depth)	0.63	RM	10,382,783.05	/RM	6,541,153
		10.05.123	At-Grade Track-bed in Cut - 2 Track (15' Avg. Exc Depth)	0.07	RM	12,662,319.14	/RM	886,362
		10.05.124	At-Grade Track-bed in Cut - 2 Track (20' Avg. Exc Depth)	0.12	RM	15,255,925.75	/RM	1,830,711
		10.05.211	At-Grade Track-bed in Fill - 1 Track (5' Avg. Fill Ht)	2.63	RM	3,608,234.84	/RM	9,489,658
		10.05.212	At-Grade Track-bed in Fill - 1 Track (10' Avg. Fill Ht)	0.76	RM	4,575,935.88	/RM	3,477,711
		10.05.221	At-Grade Track-bed in Fill - 2 Track (5' Avg. Fill Ht)	1.64	RM	6,259,696.08	/RM	10,265,902
		10.05.222	At-Grade Track-bed in Fill - 2 Track (10' Avg. Fill Ht)	0.63	RM	7,458,897.46	/RM	4,699,105
		10.07.114 A	Cut & Cover LMF crossing - 2 Tracks	1.00	EA	30,389,234.16	/EA	30,389,234
		10.08.213	Retained Cut, Trench - 1 Track (30' Avg. Exc Depth)	0.51	RM	188,088,313.80	/RM	95,925,040
		10.08.411	Retained Fill, Walls Both Sides - 1 Tracks (10' Avg. Wall Ht)	1.10	RM	14,445,879.62	/RM	15,890,468
		10.09.110	Ballasted Track - 1 Track	6.28	RM	2,346,567.55	/RM	14,736,444
		10.09.110 A	SCRRRA Ballasted Track - 1 Track	1.42	RM	2,165,514.02	/RM	3,075,030

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.09.120	Ballasted Track - 2 Track	3.13	RM	4,232,329.00	/RM	13,247,190
		10.09.120 A	SCRRA Ballasted Track - 2 Track	0.83	RM	4,156,778.59	/RM	3,450,126
		10.09.240	Ballasted Track - 2 Track (Station Track)	1.76	RM	8,464,658.38	/RM	14,897,799
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.91	RM	2,946,367.84	/RM	2,681,195
		10.14.200	Ballasted Turnout (60MPH)	7.00	EA	473,003.91	/EA	3,311,027
		10.14.200 A	Ballasted Turnout (25MPH)	2.00	EA	279,012.11	/EA	558,024
		10.14.200b	Ballasted Turnout (30MPH)	1.00	EA	99,647.18	/EA	99,647
		10.14.305	Ballasted Crossover (80MPH)	3.00	EA	1,177,995.76	/EA	3,533,987
		10.14.400	Terminal Bumping Post	2.00	EA	26,572.58	/EA	53,145
		10.14.500 A	Crossing Panels	38.00	EA	1,195.77	/EA	45,439
		20.01.247 A	Main and Secondary Station Buildings	80,182.00	sf	505.46	/sf	40,528,530
		20.01.247 B	Auxiliary Building	10,000.00	sf	303.27	/sf	3,032,740
		20.03.001 A	HSR Platform (at grade)	112,776.00	SF	577.66	/SF	65,146,727
		20.03.001 B	Metrolink Platform (at grade)	20,427.00	SF	577.66	/SF	11,799,959
		20.06.100 B	Pedestrian Bridges (Overhead) Avg 120' span x 20' wide	123,032.00	SF	684.87	/SF	84,261,069
		20.06.201 A	Parking Roadways Avg 330 sf per stall	5,853.45	sf	5,694.25	/sf	33,330,985
		20.06.201 B	Parking Walkway (Standard Sidewalks)	234,350.00	SF	20.14	/SF	4,719,902
		20.06.201 C	Parking Walkway (Enhanced Plazas)	160,283.00	SF	24.57	/SF	3,938,657
		20.06.800 A	Landscape	712,875.00	SF	19.16	/SF	13,661,558
		20.07.011F	2 Lane Roadway Modification, New AC Paving (Foreston Dr Sta 91+00 to 132+33)	23,200.00	SF	18.77	/SF	435,404
		20.07.020	Roadway Modification, New AC Paving (including Curb & Sidewalk)	74,154.08	SF	22.25	/SF	1,650,215
		20.07.020E	2 Lane Roadway Modification, New AC Paving including Curb & Gutter, Sidewalk, painted median (Avenue Q) (From Sta 94+00 to Sta 130+00)	8,928.00	SF	19.13	/SF	170,804
		20.07.020 G	2 Lane Roadway Modification, New AC Paving including Curb & Gutter, Sidewalk (Avenue Q9 & Q12)	28,278.00	SF	21.37	/SF	604,186
		20.07.021 A	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Fifth St Sta 100+55 to 167+00)4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Fifth St Sta 100+55 to 167+00)	627,200.00	SF	33.45	/SF	20,977,106
		20.07.021 B	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Fifth St Sta 168+22 to 197+00)	332,831.52	SF	23.44	/SF	7,800,776
		20.07.021 C	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Avenue R Sta 91+53 to 128+48)	245,055.54	SF	39.96	/SF	9,792,737

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		20.07.021 D	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, (Sixth St Sta 10+00 to 50+15.07)	337,265.88	SF	21.18	/SF	7,144,012
		20.07.022 A	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Sierra Hwy Sta 500+00 to 625.88)	345,600.00	SF	31.14	/SF	10,760,993
		20.07.022 B	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Palmdale Blvd Sta 91+63 to 127+65)	1,611,264.00	SF	33.65	/SF	54,211,185
		20.07.022 C	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Avenue S, Sta 82+50 to 117+80)	311,289.90	SF	30.54	/SF	9,507,563
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	22,020.00	LF	35.04	/LF	771,492
		40.01.050	Demolition Allowance, Building 1 Story	1,795,428.00	SF	34.01	/SF	61,062,535
		40.01.110	Demolition Allowance, Asphalt Pavement	1,278,163.00	SY	65.24	/SY	83,383,830
		40.01.110 A	Demolition Allowance, Concrete Pavement	55,794.67	SY	42.24	/SY	2,356,864
		40.01.140	Demolition Allowance, Concrete Curb	64,343.00	LF	20.00	/LF	1,286,966
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	64,895.00	LF	21.54	/LF	1,397,592
		40.01.150	Demolition Allowance, Concrete Sidewalk	364,718.00	SY	138.57	/SY	50,538,411
		40.01.810	Demolition Allowance, Remove Railroad Track	4,350.00	LF	38.89	/LF	169,177
		40.01.900 A	Clearing & Grubbing Landscape Areas	1,218,518.00	SY	26.67	/SY	32,502,351
		40.02.107 A	Natural Gas Pipeline, 3" to 8" Dia.	2,128.00	LF	342.27	/LF	728,358
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	790.00	LF	371.16	/LF	293,214
		40.02.116 A	Potable Water Pipeline, <10"	160.00	LF	342.27	/LF	54,764
		40.02.116 B	Potable Water Pipeline, 10" to 16"	21,728.00	LF	355.70	/LF	7,728,683
		40.02.117 A	Potable Water Pipeline, 18" to 24"	825.00	LF	544.16	/LF	448,936
		40.02.121 A	Overhead Power Trans Facility (≥ 69 kV)	7,375.00	LF	577.66	/LF	4,260,278
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	4,490.00	LF	649.87	/LF	2,917,929
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	15,351.00	LF	451.46	/LF	6,930,409
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	4,642.00	LF	494.64	/LF	2,296,113
		40.02.129 A	Sewer, Gravity Pipeline, 48" to 66" Dia.	3,410.00	LF	666.92	/LF	2,274,194
		40.02.150 A	Electrical/Telephone Ductbank	800.00	LF	385.83	/LF	308,668
		40.02.150 B	Fiber Optic Ductbank	2.00	LF	387.22	/LF	774
		40.02.150 C	Tel San Fernando Rd: East of CL	1,320.00	LF	385.83	/LF	509,302
		40.02.150 D	Tel San Fernando Rd: West of CL	5,057.00	LF	385.83	/LF	1,951,165

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.03.105	Hazardous Material Removal Allowance, Medium	1.67	RM	496,430.70	/RM	829,039
		40.03.110	Hazardous Material Removal Allowance, Heavy	0.51	RM	496,430.71	/RM	253,180
		40.03.150	Removal of Contaminated Soil	1,025,000.00	CF	4.55	/CF	4,666,498
		40.04.105	Environmental Mitigation Allowance				/LS	33,864,698
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	2,277.00	LF	4,231.08	/LF	9,634,159
		40.05.211	Sound Wall - 1 Wall (8' Avg. Height)	2,690.00	LF	908.92	/LF	2,444,990
		40.05.400 A	Basin at Avenue O	1.00	EA	300,225.70	/EA	300,226
		40.05.400 B	Basin at Avenue R	1.00	EA	17,572,353.87	/EA	17,572,354
		40.05.500 B	36" Drainage Pipe	414.00	LF	361.04	/LF	149,471
		40.05.500 C	48" Drainage Pipe	9,247.00	LF	672.79	/LF	6,221,243
		40.05.500E	60" Drainage Pipe	1,090.00	LF	997.72	/LF	1,087,517
		40.05.600 C	10'x10' Drainage Box	1,120.00	LF	6,498.73	/LF	7,278,577
		40.05.600 D	Triple 21.5'x12' Drainage Box	3,333.00	LF	11,914.34	/LF	39,710,485
		40.05.700 A	12'x12' Open Channel	5,319.00	LF	3,249.36	/LF	17,283,370
		40.05.700 B	25'x12.5' Open Channel	2,095.00	LF	6,498.73	/LF	13,614,838
		40.05.800 A	Pumping Station	2.00	EA	361,040.51	/EA	722,081
		40.05.800 B	Basin Sump Pump	2.00	EA	361,040.51	/EA	722,081
		40.06.100	Temporary Facilities	1.00	LS	41,390,185.95	/LS	41,390,186
		40.07.010	Right of Way	1.00	LS	259,330,243.58	/LS	259,330,244
		40.08.425 A	Avenue R Overhead. Roadway Overcrossing - 4 lane - 6 spans	1.00	EA	15,701,411.77	/EA	15,701,412
		40.08.425 B	Palmdale blvd Overhead. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks - 5 spans	1.00	EA	25,225,834.42	/EA	25,225,834
		40.08.425 C	Palmdale blvd Overcrossing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks - 1 span	1.00	EA	3,810,602.40	/EA	3,810,602
		50.01.000	Wayside Signaling Equipment	3.13	RM	1,297,691.01	/RM	4,061,773
		50.04.000	Traffic Control and Dispatching Systems	3.13	RM	125,857.95	/RM	393,935
		50.04.010 A	New Traffic Signal	11.00	EA	1,140,649.42	/EA	12,547,144
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,955,565.84	/EA	9,911,132
		50.05.000	Communications	3.13	RM	1,191,623.71	/RM	3,729,782

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		50.07.000	Hazard Detectors	3.13	RM	1,057,510.96	/RM	3,310,009
		60.02.000	Traction Power Supply	3.13	RM	3,142,696.54	/RM	9,836,640
		60.03.000	Traction Power Distribution	3.13	RM	3,321,085.15	/RM	10,394,997
		60.04.000	Traction Power Control	3.13	RM	5,229.11	/RM	16,367
		80.00.010	Professional Services	1.00	LS	197,033,873.00	/LS	197,033,873
		90.00.00	Unallocated Contingency	1.00	LS	63,488,729.68	/LS	63,488,730
			01.PLM Palmdale Subsection				/RM	1,797,316,616
	02.E1 Cen		E1 Central					
		10.01.122 A	Elevated Structure North of Foreston Drive - 1 Track (10' Avg. Pier Ht) Avg 115' span	1.00	EA	31,745,710.93	/EA	31,745,711
		10.01.123 A	Elevated Structure South of Foreston Drive - 1 Track (37' Avg. Pier Ht) Avg 115' span	1.00	EA	68,067,491.19	/EA	68,067,491
		10.01.222 A	Elevated Structure Tuxford st - 2 Track U-Shape girder (20' Avg. Pier Ht) Avg 110' span	2.00	EA	6,636,405.31	/EA	13,272,811
		10.01.222 B	Elevated Structure Hansen Dam spillway - 2 Track 2 U-Shape girder ave 110' span	1.00	EA	4,935,631.13	/EA	4,935,631
		10.01.222 C	Elevated Structure Sheldon St - 2 Track 2 U-Shape girder ave 110' span	1.00	EA	6,582,222.08	/EA	6,582,222
		10.01.223 A	Elevated Structure Aliso Canyon - 2 Track Train Detention Zone (20' Avg. Pier Ht) Box culvert @ abutment	1.00	EA	45,610,252.16	/EA	45,610,252
		10.02.060F	Vulcan Mine Hopper facility Steel Structure - Steel portal frames Structure with 1 Track 4-21' spans	1.00	EA	13,315,951.05	/EA	13,315,951
		10.04.100 A	36" Drainage Pipe	8,928.00	LF	332.16	/LF	2,965,500
		10.04.100 B	48" Drainage Pipe	2,584.00	LF	597.88	/LF	1,544,930
		10.04.100 C	72" Drainage Pipe	2,033.00	LF	1,129.33	/LF	2,295,937
		10.05.121	At-Grade Track-bed in Cut - 2 Track (5' Avg. Exc Depth)	0.43	RM	8,411,913.95	/RM	3,617,123
		10.05.122	At-Grade Track-bed in Cut - 2 Track (10' Avg. Exc Depth)	1.44	RM	10,382,783.08	/RM	14,951,208
		10.05.123	At-Grade Track-bed in Cut - 2 Track (15' Avg. Exc Depth)	0.36	RM	12,662,319.33	/RM	4,558,435
		10.05.124	At-Grade Track-bed in Cut - 2 Track (20' Avg. Exc Depth)	1.64	RM	15,255,925.74	/RM	25,019,718
		10.05.126	At-Grade Track-bed in Cut - 2 Track (40' Avg. Exc Depth)	0.69	RM	29,284,204.96	/RM	20,206,101
		10.05.128	At-Grade Track-bed in Cut - 2 Track (60' Avg. Exc Depth)	1.05	RM	48,664,006.88	/RM	51,097,207
		10.05.130	At-Grade Track-bed in Cut - 2 Track (80' Avg. Exc Depth)	0.65	RM	73,078,556.51	/RM	47,501,062
		10.05.132	At-Grade Track-bed in Cut - 2 Track (100' Avg. Exc Depth)	0.43	RM	103,558,394.58	/RM	44,530,110
		10.05.221	At-Grade Track-bed in Fill - 2 Track (5' Avg. Fill Ht)	1.04	RM	6,259,696.10	/RM	6,510,084
		10.05.222	At-Grade Track-bed in Fill - 2 Track (10' Avg. Fill Ht)	0.66	RM	7,458,897.45	/RM	4,922,872

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.05.223	At-Grade Track-bed in Fill - 2 Track (15' Avg. Fill Ht)	0.45	RM	8,972,169.00	/RM	4,037,476
		10.05.224	At-Grade Track-bed in Fill - 2 Track (20' Avg. Fill Ht)	0.48	RM	10,788,704.60	/RM	5,178,578
		10.05.228	At-Grade Track-bed in Fill - 2 Track (60' Avg. Fill Ht)	1.20	RM	36,704,141.29	/RM	44,044,970
		10.07.100	TBM Single Track Twin Tunnels	18.04	RM	287,969,575.66	/RM	5,194,971,145
		10.07.107 A	Double Fault Chamber (for twin tunnels)	1.29	RM	692,938,981.95	/RM	893,891,287
		10.07.214	Cut & Cover Box - 2 Track / 1 Box (40' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.14	RM	256,456,558.07	/RM	34,621,635
		10.07.215	Cut & Cover Box - 2 Track / 1 Box (50' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.12	RM	299,008,760.24	/RM	36,778,078
		10.07.216	Cut & Cover Box - 2 Track / 1 Box (60' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.06	RM	365,188,193.39	/RM	22,641,668
		10.07.224 A	UG Structure Barrel Springs rd - Two portal boxes for 2 + 2 roadway lanes + external shoulders 2x40'6 Horizontal Clearance	1.00	RF	8,709,577.44	/RF	8,709,577
		10.07.224 B	Aliso canyon acc. rd south. UG Structure - Two portal boxes for 2 + 2 roadway lanes + external shoulders 2x41'6 Horizontal Clearance	1.00	EA	12,569,068.12	/EA	12,569,068
		10.07.225	Cut & Cover Box - 2 Track / 2 Box (50' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.06	RM	419,493,894.17	/RM	25,169,634
		10.07.226	Cut & Cover Box - 2 Track / 2 Box (60' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.14	RM	519,030,774.36	/RM	72,664,308
		10.07.227 A	Cut & Cover Box -2 Tracks/ 2 Boxes (70' Exc Depth)	0.36	RM	629,649,753.81	/RM	226,673,911
		10.07.301	SEM Tunnels	1.23	RM	574,553,420.81	/RM	706,700,708
		10.07.450	Mined Single Track Twin Tunnels	5.28	RM	410,475,643.01	/RM	2,167,311,395
		10.07.503	Crosspassages	176.00	EA	2,245,386.81	/EA	395,188,078
		10.07.504	Underground Paralleling/Switching Station	4.00	Ea	7,577,256.11	/Ea	30,309,024
		10.07.803 A	TBM Launching Twin Tunnels	1.00	Ea	217,694,975.27	/Ea	217,694,975
		10.07.806 A	Mountain Portal Construction	3.00	Ea	6,000,493.27	/Ea	18,001,480
		10.07.808 A	Adit mountain portal construction	1.00	Ea	3,000,246.64	/Ea	3,000,247
		10.07.809	ADIT Construction	0.76	mile	583,421,022.24	/mile	443,399,977
		10.07.809F	Underground TBM Dissassembly chamber	4.00	Ea	20,019,429.71	/Ea	80,077,719
		10.07.810 A	Tunnel Portal facilities, as described in TM 2.4.6. TSEFCZ excluded	4.00	EA	5,783,868.97	/EA	23,135,476
		10.07.811 A	Train Surface Evacuation and Fire Control Zone (TSEFCZ)	3.00	EA	138,861.73	/EA	416,585
		10.07.812	Binocular shafts	1.00	EA	107,837,818.67	/EA	107,837,819
		10.07.850	Pumping Station	3.00	ea	361,040.51	/ea	1,083,122
		10.07.920 A	Tunnel Ventilation System - A	23.06	RM	26,432,306.04	/RM	609,581,842

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.07.920 C	Tunnel Ventilation System - C	2.22	RM	26,432,306.04	/RM	58,679,719
		10.07.950 A	Construction Monitoring inside TBM twin tunnels	18.04	RM	2,356,699.15	/RM	42,514,853
		10.07.950 C	Construction Monitoring inside Cross Passages	176.00	EA	189,835.10	/EA	33,410,978
		10.07.950 D	Construction Monitoring inside Mined or SEM Single tunnel, incl adits	7.25	Mile	4,742,050.47	/Mile	34,379,866
		10.07.950E	Construction Monitoring inside Mined Underground Paralleling Station	5.00	EA	759,340.40	/EA	3,796,702
		10.07.950 G	Surface and Building Monitoring	3.46	RM	2,878,720.40	/RM	9,960,373
		10.08.221	Retained Cut, Trench - 2 Track (10' Avg. Exc Depth)	0.46	RM	67,458,983.51	/RM	30,761,296
		10.08.222	Retained Cut, Trench - 2 Track (20' Avg. Exc Depth)	0.79	RM	141,935,604.24	/RM	111,561,385
		10.08.223	Retained Cut, Trench - 2 Track (30' Avg. Exc Depth)	0.79	RM	239,696,445.59	/RM	188,401,406
		10.08.421	Retained Fill, Wall Both Sides - 2 Tracks (10' Avg. Wall Ht)	1.79	RM	17,283,539.46	/RM	30,937,536
		10.08.422	Retained Fill, Walls Both Sides - 2 Tracks (20' Avg. Wall Ht)	0.31	RM	29,259,622.40	/RM	9,158,262
		10.08.423	Retained Fill, Walls Both Sides - 2 Tracks (30' Avg. Wall Ht)	0.44	RM	51,272,176.40	/RM	22,354,669
		10.09.110	Ballasted Track - 1 Track	0.17	RM	2,346,570.24	/RM	398,917
		10.09.110 A	SCRRA Ballasted Track - 1 Track	1.62	RM	2,165,513.99	/RM	3,508,133
		10.09.120	Ballasted Track - 2 Track	17.22	RM	4,232,329.13	/RM	72,880,708
		10.09.120 A	SCRRA Ballasted Track - 2 Track	0.66	RM	4,156,778.85	/RM	2,743,474
		10.09.910	Ballasted Track Relocation - 1 Track (Temporary)	0.26	RM	2,946,367.88	/RM	766,056
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.45	RM	2,946,367.84	/RM	1,325,866
		10.10.120	Direct Fixation - 2 Track	17.86	RM	3,758,241.79	/RM	67,122,198
		10.14.200b	Ballasted Turnout (30MPH)	2.00	EA	99,647.18	/EA	199,294
		10.14.200 C	Ballasted Turnout (50MPH)	1.00	EA	279,012.11	/EA	279,012
		10.14.305	Ballasted Crossover (80MPH)	1.00	EA	1,177,995.76	/EA	1,177,996
		20.07.010 A	1 Lane Roadway Modification, New AC Paving (SR14 EB On/Off Ramps at Pearblossom, Sta 90+40 to 122+25)	74,952.00	SF	17.47	/SF	1,309,273
		20.07.011 A	2 Lane Roadway Modification, New AC Paving (Sierra Hwy south of Ave S, Sta 728+00 to 775+12)	148,224.00	SF	29.13	/SF	4,317,092
		20.07.011 B	2 Lane Roadway Modification, New AC Paving (Realigned Sierra Hwy at Pearblossom, Sta 86+70 to 114+66)	111,440.00	SF	17.46	/SF	1,945,647
		20.07.011 C	2 Lane Roadway Modification, New AC Paving, painted median (Angeles Forest Hwy, Sta 1+33 to 48+86)	266,168.00	SF	32.84	/SF	8,740,863
		20.07.011 D	2 Lane Roadway Modification, New AC Paving, painted median (Mountain Springs Rd Sta 85+88 to 98+96)	67,912.00	SF	39.57	/SF	2,687,191
		20.07.011E	2 Lane Roadway Modification, New AC Paving (Carson Mesa Rd Sta 8+50 to 19+74)	59,800.00	SF	40.74	/SF	2,436,052

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		20.07.011F	2 Lane Roadway Modification, New AC Paving (Foreston Dr Sta 91+00 to 132+33)	122,592.00	SF	18.77	/SF	2,300,736
		20.07.011G	2 Lane Roadway Modification, New AC Paving (Foreston Dr Sta 91+00 to 132+33)	134,060.00	SF	63.42	/SF	8,502,582
		20.07.020A	2 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk (Avenue O St Sta 10+00 to 16+64)	67,688.00	SF	18.60	/SF	1,258,746
		20.07.020B	2 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk (Cul-de-Sacs, private streets 36' to 40' wide)	148,240.00	SF	20.87	/SF	3,094,004
		20.07.020C	2 Lane Roadway Modification, New AC Paving including Curb & Sidewalk (E Avenue R11/Valley Forge from Sta 10+36 to Sta 18+38)	49,453.00	SF	22.23	/SF	1,099,583
		20.07.020D	2 Lane Roadway Modification, New AC Paving including one-sided Curb & Sidewalk, painted median (Sierra Hwy north of Ave S, Sta 708+63 to 728+00)	80,482.00	SF	19.66	/SF	1,582,079
		20.07.021E	4 Lane Roadway Modification, New AC Paving with partial Curb & Gutter, Sidewalk (Tenth St at Ave S, Sta 10+49 to 32+38)	170,821.50	SF	23.05	/SF	3,937,793
		20.07.021F	4 Lane Roadway Modification, New AC Paving, raised/painted median (Sierra Hwy at Pearblossom Int., Sta 4+27 to 34+50)	263,514.00	SF	17.39	/SF	4,581,192
		20.07.023A	2 Lane Roadway Modification, New AC Paving including Curb & Sidewalk (E Avenue R11/Valley Forge)	379,752.00	SF	23.03	/SF	8,744,954
		20.07.024A	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Sixth St at Barrel Springs Sta 7+66 to 13+60)	58,400.00	SF	23.49	/SF	1,371,940
		20.07.024B	4 Lane Roadway Modification, New AC Paving, raised/painted median (Barrel Springs, Sta 16+30 to 47+30)	53,314.00	SF	30.72	/SF	1,637,823
		20.07.025A	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Avenue S, Sta 82+50 to 117+80)	93,240.00	SF	30.54	/SF	2,847,780
		20.07.026A	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Private Road 1) (From Sta 12+64 to Sta 27+24)	32,852.00	SF	18.21	/SF	598,196
		20.07.026B	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Ralston Avenue) (Froms Sta 10+31 to Sta 24+34)	54,534.00	SF	18.03	/SF	983,226
		20.07.026C	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Wicks St Cul-de-sac)	5,115.00	SF	20.49	/SF	104,824
		20.07.026D	4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalks (Branford St) (From Sta 13+34 to Sta 25+80)	60,670.00	SF	21.63	/SF	1,312,094
		20.07.026E	4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalks, Painted/Raised Median (Sheldon St) (From Sta 8+88 to Sta 12+70)	25,593.00	SF	20.66	/SF	528,804
		40.01.010	Demolition Allowance, Bridge	14,495.00	sf	46.84	/sf	678,958
		40.01.010A	Demolition Allowance, Masonry/Sound Wall	3,927.00	LF	35.04	/LF	137,586
		40.01.050	Demolition Allowance, Building 1 Story	969,700.00	SF	34.01	/SF	32,979,513
		40.01.110	Demolition Allowance, Asphalt Pavement	353,841.00	SY	65.24	/SY	23,083,611
		40.01.110A	Demolition Allowance, Concrete Pavement	14,661.00	SY	42.24	/SY	619,306
		40.01.140	Demolition Allowance, Concrete Curb	9,220.00	LF	20.00	/LF	184,415
		40.01.140A	Demolition Allowance, Concrete Curb & Gutter	14,593.00	LF	21.54	/LF	314,278
		40.01.150	Demolition Allowance, Concrete Sidewalk	14,211.00	SY	138.57	/SY	1,969,196
		40.01.810	Demolition Allowance, Remove Railroad Track	21,381.00	LF	38.89	/LF	831,535
		40.02.107A	Natural Gas Pipeline, 3" to 8" Dia.	9,728.00	LF	342.27	/LF	3,329,638

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	1,570.00	LF	371.16	/LF	582,716
		40.02.110 A	Natural Gas Pipeline, 30" to 42" Dia.	4,850.00	LF	539.11	/LF	2,614,684
		40.02.116 A	Potable Water Pipeline, <10"	17,360.00	LF	342.27	/LF	5,941,870
		40.02.116 B	Potable Water Pipeline, 10" to 16"	32,450.00	LF	355.70	/LF	11,542,515
		40.02.117 A	Potable Water Pipeline, 18" to 24"	11,050.00	LF	544.16	/LF	6,013,020
		40.02.118 A	Potable Water Pipeline, 27" to 33"	400.00	LF	761.95	/LF	304,779
		40.02.119 A	Efluent Water Pipeline, 36" to 48" Dia.	520.00	LF	1,028.51	/LF	534,826
		40.02.119 B	Runoff Water Pipeline, 48" Dia.	1,500.00	LF	1,028.51	/LF	1,542,769
		40.02.121 A	Overhead Power Trans Facility (≥ 69 kV)	12,715.00	LF	577.66	/LF	7,345,008
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	37,697.00	LF	649.87	/LF	24,498,259
		40.02.123 A	Underground Power Trans Facility (12 kV)	4,674.00	LF	385.83	/LF	1,803,389
		40.02.123 B	Underground Power Trans Facility (>69 kV)	1,270.00	LF	471.96	/LF	599,386
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	4,795.00	LF	451.31	/LF	2,164,027
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	1,876.00	LF	493.62	/LF	926,032
		40.02.150 A	Electrical/Telephone Ductbank	500.00	LF	385.83	/LF	192,917
		40.02.150 B	Fiber Optic Ductbank	1.00	LF	383.75	/LF	384
		40.02.150 C	Tel San Fernando Rd: East of CL	15,556.00	LF	385.83	/LF	6,002,044
		40.02.150 D	Tel San Fernando Rd: West of CL	15,465.00	LF	385.83	/LF	5,966,935
		40.02.200 A	Tel San Fernando Rd: West of CL	1.00	LF		/LF	
		40.03.100	Hazardous Material Removal Allowance, Light	0.89	RM	496,430.71	/RM	441,823
		40.03.105	Hazardous Material Removal Allowance, Medium	3.98	RM	496,430.70	/RM	1,973,312
		40.03.110	Hazardous Material Removal Allowance, Heavy	4.72	RM	496,430.70	/RM	2,340,671
		40.03.150	Removal of Contaminated Soil	39,709,086.00	CF	4.55	/CF	180,782,808
		40.04.105	Environmental Mitigation Allowance	1.00	LS	416,669,635.74	/LS	416,669,636
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	2,898.00	LF	4,231.08	/LF	12,261,656
		40.05.211	Sound Wall - 1 Wall (8' Avg. Height)	3,820.00	LF	908.92	/LF	3,472,067
		40.05.401 C	Basin E1/E2 Sta 620+44	1.00	EA	376,113.41	/EA	376,113

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		40.05.401 D	Basin E1/E2 Sta 633+70	1.00	EA	458,878.06	/EA	458,878
		40.05.401E	Basin E1/E2 Sta 729+58	1.00	EA	372,831.44	/EA	372,831
		40.05.401F	Basin E1/E2 Sta 745+60	1.00	EA	346,083.84	/EA	346,084
		40.05.401 G	Drainage course re-routing	1.00	EA	5,882,649.84	/EA	5,882,650
		40.05.403 A	Basin E1 Sta 1895+39	1.00	EA	603,669.24	/EA	603,669
		40.05.403 B	Basin E1 Sta 1909+87	1.00	EA	611,440.44	/EA	611,440
		40.05.500 A	24" Drainage Pipe	3,050.00	LF	324.94	/LF	991,056
		40.05.500 C	48" Drainage Pipe	5,200.00	LF	672.79	/LF	3,498,483
		40.05.500E	60" Drainage Pipe	2,766.00	LF	997.72	/LF	2,759,699
		40.05.500F	72" Drainage Pipe	66.00	LF	1,227.54	/LF	81,017
		40.05.600 B	10.5'x6.5' Drainage Box	1,342.00	LF	3,610.41	/LF	4,845,164
		40.05.800 A	Pumping Station	1.00	EA	361,040.51	/EA	361,041
		40.06.100	Temporary Facilities	1.00	LS	509,262,887.36	/LS	509,262,887
		40.07.010	Right of Way	1.00	LS	666,899,983.19	/LS	666,899,983
		40.08.422 A	Mountain Springs rd West Overhead. Roadway Overcrossing - 2 lane roadway over 3 tracks	1.00	EA	4,904,200.38	/EA	4,904,200
		40.08.422 B	Foreston drive Overhead. Roadway Overcrossing - 2 lane roadway over highway	1.00	EA	6,948,055.92	/EA	6,948,056
		40.08.422 C	Foreston South Access Road. Access road bridge to tunnel portal - 2 lane roadway	1.00	EA	22,022,951.25	/EA	22,022,951
		40.08.422 D	Aliso canyon Access Road north. Access road bridge to tunnel portal - 2 lane roadway	1.00	EA	9,569,559.35	/EA	9,569,559
		40.08.422E	Adit access road E1 STA 1485. Access road bridge to tunnel portal - 2 lane roadway	1.00	EA	6,950,166.74	/EA	6,950,167
		40.08.425 D	Avenue S Overcrossing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 1 span	1.00	EA	5,767,638.52	/EA	5,767,639
		40.08.425E	Avenue S Overhead. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 3 spans	1.00	EA	12,315,880.05	/EA	12,315,880
		40.08.425 G	Brandford st Overhead. Roadway Overcrossing - 4 lane - 1 span	1.00	EA	4,823,425.19	/EA	4,823,425
		50.01.000	Wayside Signaling Equipment	35.08	RM	1,297,691.00	/RM	45,523,000
		50.04.000	Traffic Control and Dispatching Systems	35.08	RM	125,857.95	/RM	4,415,097
		50.04.010 A	New Traffic Signal	5.00	EA	1,140,649.41	/EA	5,703,247
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,955,565.80	/EA	9,911,132
		50.05.000	Communications	35.08	RM	1,191,623.69	/RM	41,802,159

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		50.07.000	Hazard Detectors	35.08	RM	1,057,510.95	/RM	37,097,484
		60.02.000	Traction Power Supply	35.08	RM	3,142,696.51	/RM	110,245,794
		60.03.000	Traction Power Distribution	35.08	RM	3,321,085.13	/RM	116,503,666
		60.04.000	Traction Power Control	35.08	RM	5,229.10	/RM	183,437
		80.00.010	Professional Services	1.00	LS	2,370,764,222.78	/LS	2,370,764,223
		90.00.00	Unallocated Contingency	1.00	LS	610,880,138.22	/LS	610,880,138
			02.E1 Cen E1 Central					17,975,509,128
	13.BUR (E1/SR 14)		Burbank E1/SR14					
		10.07.214	Cut & Cover Box - 2 Track / 1 Box (40' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.10	RM	256,456,558.30	/RM	25,645,656
		10.07.215	Cut & Cover Box - 2 Track / 1 Box (50' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.09	RM	299,008,803.33	/RM	26,910,792
		10.07.216	Cut & Cover Box - 2 Track / 1 Box (60' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.08	RM	365,188,157.88	/RM	29,215,053
		10.07.219 A	Cut & Cover Box - 2 Track / 1 Box (100' Avg. Exc Depth)	0.38	RM	624,348,624.47	/RM	237,252,477
		10.07.250 A	Cut & Cover Box -Burbank Station (85' Avg. Exc Depth)	0.27	RM	1,103,472,006.44	/RM	297,937,442
		10.07.250 B	Cut & Cover Box - 4track/1Box (100' Avg. Exc Depth)	0.01	RM	1,262,762,166.43	/RM	17,678,670
		10.07.250 C	Cut & Cover Box - 3track/1Box (100' Avg. Exc Depth)	0.02	RM	1,262,762,165.45	/RM	27,780,768
		10.07.250 D	Cut & Cover Box - 5track/1Box (100' Avg. Exc Depth)	0.15	RM	1,262,762,166.04	/RM	188,151,563
		10.07.301	SEM Tunnels	0.12	RM	798,835,992.42	/RM	95,860,319
		10.07.301	SEM Tunnels	0.12	RM	798,835,992.42	/RM	95,860,319
		10.07.920 C	Tunnel Ventilation System - C	0.12	RM	26,432,306.80	/RM	3,224,741
		10.07.950 D	Construction Monitoring inside Mined or SEM Single tunnel, incl adits	0.12	Mile	4,742,050.49	/Mile	578,530
		10.07.950 G	Surface and Building Monitoring	0.12	RM	2,878,720.42	/RM	345,446
		10.08.221	Retained Cut, Trench - 2 Track (10' Avg. Exc Depth)	0.07	RM	67,458,987.86	/RM	4,722,129
		10.08.222	Retained Cut, Trench - 2 Track (20' Avg. Exc Depth)	0.10	RM	141,935,601.50	/RM	14,193,560
		10.08.223	Retained Cut, Trench - 2 Track (30' Avg. Exc Depth)	0.11	RM	239,696,445.91	/RM	26,366,609
		10.10.110	Direct Fixation - 1 Track	1.69	RM	1,879,433.28	/RM	3,176,242
		10.10.120	Direct Fixation - 2 Track	0.55	RM	3,758,241.82	/RM	2,067,033
		10.14.200	Ballasted Turnout (60MPH)	4.00	EA	473,003.91	/EA	1,892,016

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.14.200 A	Ballasted Turnout (25MPH)	2.00	EA	279,012.11	/EA	558,024
		10.14.200b	Ballasted Turnout (30MPH)	1.00	EA	99,647.18	/EA	99,647
		10.14.305	Ballasted Crossover (80MPH)	2.00	EA	1,177,995.75	/EA	2,355,992
		10.14.400	Terminal Bumping Post	4.00	EA	26,572.58	/EA	106,290
		20.01.247 A	Main and Secondary Station Buildings	141,954.00	sf	505.46	/sf	71,751,602
		20.01.247 B	Auxiliary Building	10,000.00	sf	303.27	/sf	3,032,740
		20.03.001 C	HSR Platform (underground)	84,600.00	SF	577.66	/SF	48,870,443
		20.06.201 B	Parking Walkway (Standard Sidewalks)	316,516.00	SF	20.14	/SF	6,374,757
		20.06.201 C	Parking Walkway (Enhanced Plazas)	410,764.00	SF	24.57	/SF	10,093,761
		20.06.800 A	Landscape	512,103.00	SF	19.16	/SF	9,813,957
		40.01.010	Demolition Allowance, Bridge	4,028.00	sf	46.84	/sf	188,675
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	1,873.00	LF	35.04	/LF	65,622
		40.01.010 B	Demolition Allowance, Retaining Wall	3,967.00	LF	35.04	/LF	138,988
		40.01.050	Demolition Allowance, Building 1 Story	661,944.00	SF	34.01	/SF	22,512,726
		40.01.110	Demolition Allowance, Asphalt Pavement	189,536.95	SY	65.24	/SY	12,364,868
		40.01.110 A	Demolition Allowance, Concrete Pavement	12,154.00	SY	42.24	/SY	513,406
		40.01.140	Demolition Allowance, Concrete Curb	2,877.00	LF	20.00	/LF	57,545
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	19,107.40	LF	21.54	/LF	411,501
		40.01.150	Demolition Allowance, Concrete Sidewalk	16,012.40	SY	138.57	/SY	2,218,814
		40.01.810	Demolition Allowance, Remove Railroad Track	32,462.00	LF	38.89	/LF	1,262,489
		40.02.107 A	Natural Gas Pipeline, 3" to 8" Dia.	5,399.00	LF	342.27	/LF	1,847,935
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	880.00	LF	371.16	/LF	326,618
		40.02.111 A	Oil Pipeline, 6" to 15" Dia.	11,510.00	LF	371.16	/LF	4,272,016
		40.02.112 A	Oil Pipeline, 18" to 24" Dia.	11,750.00	LF	371.16	/LF	4,361,093
		40.02.116 A	Potable Water Pipeline, <10"	2,150.00	LF	342.27	/LF	735,888
		40.02.116 B	Potable Water Pipeline, 10" to 16"	2,070.00	LF	355.70	/LF	736,302
		40.02.117 A	Potable Water Pipeline, 18" to 24"	1,900.00	LF	544.16	/LF	1,033,913

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.02.118 A	Potable Water Pipeline, 27" to 33"	501.00	LF	761.95	/LF	381,735
		40.02.119 A	Efluent Water Pipeline, 36" to 48" Dia.	5,350.00	LF	1,028.51	/LF	5,502,542
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	7,180.00	LF	649.87	/LF	4,666,088
		40.02.123 A	Underground Power Trans Facility (12 kV)	4,680.00	LF	385.83	/LF	1,805,706
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	2,080.00	LF	451.31	/LF	938,722
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	1,800.00	LF	493.62	/LF	888,515
		40.02.128 A	Sewer, Gravity Pipeline, 21" to 30" Dia.	200.00	LF	666.92	/LF	133,384
		40.02.150 C	Tel San Fernando Rd: East of CL	12,896.00	LF	385.83	/LF	4,975,724
		40.02.150 D	Tel San Fernando Rd: West of CL	15,740.00	LF	385.83	/LF	6,073,036
		40.03.110	Hazardous Material Removal Allowance, Heavy	0.57	RM	496,430.70	/RM	282,966
		40.03.150	Removal of Contaminated Soil	19,062,708.00	CF	4.55	/CF	86,786,431
		40.04.105	Environmental Mitigation Allowance	1.00	LS	43,303,715.54	/LS	43,303,716
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	5,698.00	LF	4,231.08	/LF	24,108,668
		40.05.500 A	24" Drainage Pipe	744.00	LF	324.94	/LF	241,753
		40.05.500 C	48" Drainage Pipe	1,323.00	LF	672.79	/LF	890,095
		40.05.500E	60" Drainage Pipe	867.00	LF	997.72	/LF	865,024
		40.05.500 G	42" Drainage Pipe	165.00	LF	613.77	/LF	101,272
		40.05.600 A	8.5'x5' Drainage Box	156.00	LF	2,888.32	/LF	450,579
		40.05.700 C	3'x3' Open Channel	2,108.00	LF	1,444.16	/LF	3,044,294
		40.06.100	Temporary Facilities	1.00	LS	52,926,763.31	/LS	52,926,763
		40.07.010	Right of Way	1.00	LS	417,709,092.20	/LS	417,709,092
		50.01.000	Wayside Signaling Equipment	0.55	RM	1,297,691.04	/RM	713,730
		50.04.000	Traffic Control and Dispatching Systems	0.55	RM	125,857.95	/RM	69,222
		50.04.010 A	New Traffic Signal	2.00	EA	1,140,649.46	/EA	2,281,299
		50.05.000	Communications	0.55	RM	1,191,623.75	/RM	655,393
		50.07.000	Hazard Detectors	0.55	RM	1,057,510.98	/RM	581,631
		60.02.000	Traction Power Supply	0.55	RM	3,142,696.60	/RM	1,728,483

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		60.03.000	Traction Power Distribution	0.55	RM	3,321,085.25	/RM	1,826,597
		60.04.000	Traction Power Control	0.55	RM	5,229.11	/RM	2,876
		80.00.010	Professional Services	1.00	LS	240,821,057.48	/LS	240,821,057
		90.00.00	Unallocated Contingency	1.00	LS	81,165,009.21	/LS	81,165,009
			13.BUR(E1/SR14) Burbank E1/SR14					2,290,886,379
			01. E1 E1 End to End Alternative 2018\$					22,063,712,123
02.E2			E2 End to End Alternative 2018\$					
	01.PLM		Palmdale Subsection					
		10.01.001 A	Steel Truss HSR viaduct, 1 track Sierra Hwy platform track 2x215' Span	2.00	EA	11,849,014.00	/EA	23,698,028
		10.01.002 A	Steel Truss HSR viaduct, 2 track Sierra Hwy platform track 2x215' Span	1.00	EA	14,156,346.45	/EA	14,156,346
		10.01.122 B	Elevated Structure Ave Q Platform Track - 1 Track (22' Avg. Pier Ht) Avg 105' span	2.00	EA	4,545,159.41	/EA	9,090,319
		10.01.222 A	Elevated Structure Tuxford st - 2 Track U-Shape girder (20' Avg. Pier Ht) Avg 110' span	1.00	EA	6,636,405.31	/EA	6,636,405
		10.02.060 A	Sierra Hwy Underpass (SCRAA) Bridge Structure - Two Span Steel Plate Girder Structure with 1 Track - 2 190' spans	1.00	EA	7,428,868.75	/EA	7,428,869
		10.02.060 B	Sierra Hwy Underpass (UPRR) Bridge Structure - Two Span Steel Plate Girder Structure with 1 Track 2-190' spans substructure for enlargement	1.00	EA	8,826,597.92	/EA	8,826,598
		10.02.060E	Ave Q Underpass Railroad Bridge Structure - Single Span Steel Plate Girder Structure with 1 Track 1-105'span	3.00	EA	1,753,121.75	/EA	5,259,365
		10.04.100 A	36" Drainage Pipe	1,341.00	LF	332.16	/LF	445,423
		10.05.111	At-Grade Track-bed in Cut - 1 Track (5' Avg. Exc Depth)	0.68	RM	5,451,785.57	/RM	3,707,214
		10.05.112	At-Grade Track-bed in Cut - 1 Track (10' Avg. Exc Depth)	0.78	RM	7,191,154.40	/RM	5,609,100
		10.05.113	At-Grade Track-bed in Cut - 1 Track (15' Avg. Exc Depth)	0.08	RM	9,239,190.62	/RM	739,135
		10.05.114	At-Grade Track-bed in Cut - 1 Track (20' Avg. Exc Depth)	0.25	RM	11,595,893.36	/RM	2,898,973
		10.05.121	At-Grade Track-bed in Cut - 2 Track (5' Avg. Exc Depth)	0.66	RM	8,411,913.89	/RM	5,551,863
		10.05.122	At-Grade Track-bed in Cut - 2 Track (10' Avg. Exc Depth)	0.63	RM	10,382,783.06	/RM	6,541,153
		10.05.123	At-Grade Track-bed in Cut - 2 Track (15' Avg. Exc Depth)	0.07	RM	12,662,319.14	/RM	886,362
		10.05.124	At-Grade Track-bed in Cut - 2 Track (20' Avg. Exc Depth)	0.12	RM	15,255,925.67	/RM	1,830,711
		10.05.211	At-Grade Track-bed in Fill - 1 Track (5' Avg. Fill Ht)	2.63	RM	3,608,234.84	/RM	9,489,658
		10.05.212	At-Grade Track-bed in Fill - 1 Track (10' Avg. Fill Ht)	0.76	RM	4,575,935.89	/RM	3,477,711
		10.05.221	At-Grade Track-bed in Fill - 2 Track (5' Avg. Fill Ht)	1.64	RM	6,259,696.08	/RM	10,265,902
		10.05.222	At-Grade Track-bed in Fill - 2 Track (10' Avg. Fill Ht)	0.63	RM	7,458,897.46	/RM	4,699,105

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.07.114 A	Cut & Cover LMF crossing - 2 Tracks	1.00	EA	30,389,234.16	/EA	30,389,234
		10.08.213	Retained Cut, Trench - 1 Track (30' Avg. Exc Depth)	0.51	RM	188,088,313.78	/RM	95,925,040
		10.08.411	Retained Fill, Walls Both Sides - 1 Tracks (10' Avg. Wall Ht)	1.10	RM	14,445,879.63	/RM	15,890,468
		10.09.110	Ballasted Track - 1 Track	6.28	RM	2,346,567.55	/RM	14,736,444
		10.09.110 A	SCRRA Ballasted Track - 1 Track	1.42	RM	2,165,514.03	/RM	3,075,030
		10.09.120	Ballasted Track - 2 Track	3.13	RM	4,232,329.00	/RM	13,247,190
		10.09.120 A	SCRRA Ballasted Track - 2 Track	0.83	RM	4,156,778.58	/RM	3,450,126
		10.09.240	Ballasted Track - 2 Track (Station Track)	1.76	RM	8,464,658.39	/RM	14,897,799
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.91	RM	2,946,367.84	/RM	2,681,195
		10.14.200	Ballasted Turnout (60MPH)	7.00	EA	473,003.91	/EA	3,311,027
		10.14.200 A	Ballasted Turnout (25MPH)	2.00	EA	279,012.11	/EA	558,024
		10.14.200b	Ballasted Turnout (30MPH)	1.00	EA	99,647.18	/EA	99,647
		10.14.305	Ballasted Crossover (80MPH)	3.00	EA	1,177,995.76	/EA	3,533,987
		10.14.400	Terminal Bumping Post	2.00	EA	26,572.58	/EA	53,145
		10.14.500 A	Crossing Panels	38.00	EA	1,195.77	/EA	45,439
		20.01.247 A	Main and Secondary Station Buildings	80,182.00	sf	505.46	/sf	40,528,530
		20.01.247 B	Auxiliary Building	10,000.00	sf	303.27	/sf	3,032,740
		20.03.001 A	HSR Platform (at grade)	112,776.00	SF	577.66	/SF	65,146,727
		20.03.001 B	Metrolink Platform (at grade)	20,427.00	SF	577.66	/SF	11,799,959
		20.06.100 B	Pedestrian Bridges (Overhead) Avg 120' span x 20' wide	123,032.00	SF	684.87	/SF	84,261,069
		20.06.201 A	Parking Roadways Avg 330 sf per stall	5,853.45	sf	5,694.25	/sf	33,330,985
		20.06.201 B	Parking Walkway (Standard Sidewalks)	234,350.00	SF	20.14	/SF	4,719,902
		20.06.201 C	Parking Walkway (Enhanced Plazas)	160,283.00	SF	24.57	/SF	3,938,656
		20.06.800 A	Landscape	712,875.00	SF	19.16	/SF	13,661,558
		20.07.011F	2 Lane Roadway Modification, New AC Paving (Foreston Dr Sta 91+00 to 132+33)	23,200.00	SF	18.77	/SF	435,404
		20.07.020	Roadway Modification, New AC Paving (including Curb & Sidewalk)	74,154.08	SF	22.25	/SF	1,650,215
		20.07.020E	2 Lane Roadway Modification, New AC Paving including Curb & Gutter, Sidewalk, painted median (Avenue Q) (From Sta 94+00 to Sta 130+00_	8,928.00	SF	19.13	/SF	170,804

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		20.07.020 G	2 Lane Roadway Modification, New AC Paving including Curb & Gutter, Sidewalk (Avenue Q9 & Q12)	28,278.00	SF	21.37	/SF	604,186
		20.07.021 A	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Fifth St Sta 100+55 to 167+00)4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Fifth St Sta 100+55 to 167+00)	627,200.00	SF	33.45	/SF	20,977,106
		20.07.021 B	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Fifth St Sta 168+22 to 197+00)	332,831.52	SF	23.44	/SF	7,800,776
		20.07.021 C	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Avenue R Sta 91+53 to 128+48)	245,055.54	SF	39.96	/SF	9,792,737
		20.07.021 D	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, (Sixth St Sta 10+00 to 50+15.07)	337,265.88	SF	21.18	/SF	7,144,012
		20.07.022 A	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Sierra Hwy Sta 500+00 to 625.88)	345,600.00	SF	31.14	/SF	10,760,993
		20.07.022 B	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Palmdale Blvd Sta 91+63 to 127+65)	1,611,264.00	SF	33.65	/SF	54,211,185
		20.07.022 C	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Avenue S, Sta 82+50 to 117+80)	311,289.90	SF	30.54	/SF	9,507,563
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	22,020.00	LF	35.04	/LF	771,492
		40.01.050	Demolition Allowance, Building 1 Story	1,795,428.00	SF	34.01	/SF	61,062,535
		40.01.110	Demolition Allowance, Asphalt Pavement	1,278,163.00	SY	65.24	/SY	83,383,830
		40.01.110 A	Demolition Allowance, Concrete Pavement	55,794.67	SY	42.24	/SY	2,356,864
		40.01.140	Demolition Allowance, Concrete Curb	64,343.00	LF	20.00	/LF	1,286,966
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	64,895.00	LF	21.54	/LF	1,397,592
		40.01.150	Demolition Allowance, Concrete Sidewalk	364,718.00	SY	138.57	/SY	50,538,411
		40.01.810	Demolition Allowance, Remove Railroad Track	4,350.00	LF	38.89	/LF	169,177
		40.01.900 A	Clearing & Grubbing Landscape Areas	1,218,518.00	SY	26.67	/SY	32,502,351
		40.02.107 A	Natural Gas Pipeline, 3" to 8" Dia.	2,128.00	LF	342.27	/LF	728,358
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	790.00	LF	371.16	/LF	293,214
		40.02.116 A	Potable Water Pipeline, <10"	160.00	LF	342.27	/LF	54,764
		40.02.116 B	Potable Water Pipeline, 10" to 16"	21,728.00	LF	355.70	/LF	7,728,683
		40.02.117 A	Potable Water Pipeline, 18" to 24"	825.00	LF	544.16	/LF	448,936
		40.02.121 A	Overhead Power Trans Facility (≥ 69 kV)	7,375.00	LF	577.66	/LF	4,260,278
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	4,490.00	LF	649.87	/LF	2,917,929
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	15,351.00	LF	451.46	/LF	6,930,409
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	4,642.00	LF	494.64	/LF	2,296,113

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.02.129 A	Sewer, Gravity Pipeline, 48" to 66" Dia.	3,410.00	LF	666.92	/LF	2,274,194
		40.02.150 A	Electrical/Telephone Ductbank	800.00	LF	385.83	/LF	308,668
		40.02.150 B	Fiber Optic Ductbank	2.00	LF	387.22	/LF	774
		40.02.150 C	Tel San Fernando Rd: East of CL	1,320.00	LF	385.83	/LF	509,302
		40.02.150 D	Tel San Fernando Rd: West of CL	5,057.00	LF	385.83	/LF	1,951,165
		40.03.105	Hazardous Material Removal Allowance, Medium	1.67	RM	496,430.70	/RM	829,039
		40.03.110	Hazardous Material Removal Allowance, Heavy	0.51	RM	496,430.71	/RM	253,180
		40.03.150	Removal of Contaminated Soil	1,025,000.00	CF	4.55	/CF	4,666,498
		40.04.105	Environmental Mitigation Allowance				/LS	33,864,698
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	2,277.00	LF	4,231.08	/LF	9,634,159
		40.05.211	Sound Wall - 1 Wall (8' Avg. Height)	2,690.00	LF	908.92	/LF	2,444,990
		40.05.400 A	Basin at Avenue O	1.00	EA	300,225.70	/EA	300,226
		40.05.400 B	Basin at Avenue R	1.00	EA	17,572,353.87	/EA	17,572,354
		40.05.500 B	36" Drainage Pipe	414.00	LF	361.04	/LF	149,471
		40.05.500 C	48" Drainage Pipe	9,247.00	LF	672.79	/LF	6,221,243
		40.05.500E	60" Drainage Pipe	1,090.00	LF	997.72	/LF	1,087,517
		40.05.600 C	10'x10' Drainage Box	1,120.00	LF	6,498.73	/LF	7,278,577
		40.05.600 D	Triple 21.5'x12' Drainage Box	3,333.00	LF	11,914.34	/LF	39,710,485
		40.05.700 A	12'x12' Open Channel	5,319.00	LF	3,249.36	/LF	17,283,370
		40.05.700 B	25'x12.5' Open Channel	2,095.00	LF	6,498.73	/LF	13,614,838
		40.05.800 A	Pumping Station	2.00	EA	361,040.51	/EA	722,081
		40.05.800 B	Basin Sump Pump	2.00	EA	361,040.51	/EA	722,081
		40.06.100	Temporary Facilities	1.00	LS	41,390,185.95	/LS	41,390,186
		40.07.010	Right of Way	1.00	LS	259,330,243.58	/LS	259,330,244
		40.08.425 A	Avenue R Overhead. Roadway Overcrossing - 4 lane - 6 spans	1.00	EA	15,701,411.77	/EA	15,701,412
		40.08.425 B	Palmdale blvd Overhead. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks - 5 spans	1.00	EA	25,225,834.42	/EA	25,225,834
		40.08.425 C	Palmdale blvd Overcrossing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks - 1 span	1.00	EA	3,810,602.40	/EA	3,810,602

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		50.01.000	Wayside Signaling Equipment	3.13	RM	1,297,691.01	/RM	4,061,773
		50.04.000	Traffic Control and Dispatching Systems	3.13	RM	125,857.95	/RM	393,935
		50.04.010 A	New Traffic Signal	11.00	EA	1,140,649.42	/EA	12,547,144
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,955,565.84	/EA	9,911,132
		50.05.000	Communications	3.13	RM	1,191,623.70	/RM	3,729,782
		50.07.000	Hazard Detectors	3.13	RM	1,057,510.96	/RM	3,310,009
		60.02.000	Traction Power Supply	3.13	RM	3,142,696.53	/RM	9,836,640
		60.03.000	Traction Power Distribution	3.13	RM	3,321,085.16	/RM	10,394,997
		60.04.000	Traction Power Control	3.13	RM	5,229.10	/RM	16,367
		80.00.010	Professional Services	1.00	LS	197,033,873.00	/LS	197,033,873
		90.00.00	Unallocated Contingency	1.00	LS	63,488,729.68	/LS	63,488,730
			01.PLM Palmdale Subsection	24.09	RM	74,608,410.79	/RM	1,797,316,616
	03.E2 Cen		E2 Central					
		10.01.122 A	Elevated Structure North of Foreston Drive - 1 Track (10' Avg. Pier Ht) Avg 115' span	1.00	EA	31,745,710.92	/EA	31,745,711
		10.01.123 A	Elevated Structure South of Foreston Drive - 1 Track (37' Avg. Pier Ht) Avg 115' span	1.00	EA	68,067,491.15	/EA	68,067,491
		10.01.126 C	Tujunga - I-210 - 2 Track, Train Detention Zone, Steel arch (50' Avg. Pier Ht) avg 158' span	1.00	EA	170,278,122.00	/EA	170,278,122
		10.01.223 A	Elevated Structure Aliso Canyon - 2 Track Train Detention Zone (20' Avg. Pier Ht) Box culvert @ abutment	1.00	EA	45,610,252.14	/EA	45,610,252
		10.04.100 A	36" Drainage Pipe	8,750.00	LF	332.16	/LF	2,906,376
		10.04.100 B	48" Drainage Pipe	2,584.00	LF	597.88	/LF	1,544,930
		10.04.100 C	72" Drainage Pipe	2,033.00	LF	1,129.33	/LF	2,295,937
		10.05.121	At-Grade Track-bed in Cut - 2 Track (5' Avg. Exc Depth)	0.30	RM	8,411,913.90	/RM	2,523,574
		10.05.122	At-Grade Track-bed in Cut - 2 Track (10' Avg. Exc Depth)	0.47	RM	10,382,783.04	/RM	4,879,908
		10.05.123	At-Grade Track-bed in Cut - 2 Track (15' Avg. Exc Depth)	0.36	RM	12,662,319.31	/RM	4,558,435
		10.05.124	At-Grade Track-bed in Cut - 2 Track (20' Avg. Exc Depth)	1.30	RM	15,255,925.72	/RM	19,832,703
		10.05.126	At-Grade Track-bed in Cut - 2 Track (40' Avg. Exc Depth)	0.70	RM	29,284,204.94	/RM	20,498,943
		10.05.128	At-Grade Track-bed in Cut - 2 Track (60' Avg. Exc Depth)	1.09	RM	48,664,006.85	/RM	53,043,767
		10.05.130	At-Grade Track-bed in Cut - 2 Track (80' Avg. Exc Depth)	0.50	RM	73,078,556.46	/RM	36,539,278
		10.05.132	At-Grade Track-bed in Cut - 2 Track (100' Avg. Exc Depth)	0.43	RM	103,558,394.53	/RM	44,530,110

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.05.221	At-Grade Track-bed in Fill - 2 Track (5' Avg. Fill Ht)	0.26	RM	6,259,696.04	/RM	1,627,521
		10.05.222	At-Grade Track-bed in Fill - 2 Track (10' Avg. Fill Ht)	0.18	RM	7,458,897.50	/RM	1,342,602
		10.05.223	At-Grade Track-bed in Fill - 2 Track (15' Avg. Fill Ht)	0.05	RM	8,972,169.20	/RM	448,608
		10.05.224	At-Grade Track-bed in Fill - 2 Track (20' Avg. Fill Ht)	0.05	RM	10,788,704.80	/RM	539,435
		10.05.226	At-Grade Track-bed in Fill - 2 Track (40' Avg. Fill Ht)	0.39	RM	21,371,493.97	/RM	8,334,883
		10.05.228	At-Grade Track-bed in Fill - 2 Track (60' Avg. Fill Ht)	0.74	RM	36,704,141.27	/RM	27,161,065
		10.07.100	TBM Single Track Twin Tunnels	14.33	RM	255,445,121.55	/RM	3,660,528,592
		10.07.107 A	Double Fault Chamber (for twin tunnels)	1.72	RM	692,938,981.95	/RM	1,191,855,049
		10.07.224 A	UG Structure Barrel Springs rd - Two portal boxes for 2 + 2 roadway lanes + external shoulders 2x40'6 Horizontal Clearance	1.00	RF	8,709,577.45	/RF	8,709,577
		10.07.224 B	Aliso canyon acc. rd south. UG Structure - Two portal boxes for 2 + 2 roadway lanes + external shoulders 2x41'6 Horizontal Clearance	1.00	EA	12,569,068.12	/EA	12,569,068
		10.07.225	Cut & Cover Box - 2 Track / 2 Box (50' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.06	RM	419,493,894.50	/RM	25,169,634
		10.07.226	Cut & Cover Box - 2 Track / 2 Box (60' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.14	RM	519,030,774.50	/RM	72,664,308
		10.07.227 A	Cut & Cover Box -2 Tracks/ 2 Boxes (70' Exc Depth)	0.36	RM	629,649,754.00	/RM	226,673,911
		10.07.301	SEM Tunnels	4.66	RM	724,822,468.74	/RM	3,377,672,704
		10.07.450	Mined Single Track Twin Tunnels	3.96	RM	345,723,348.69	/RM	1,369,064,461
		10.07.503	Crosspassages	155.00	EA	2,255,377.39	/EA	349,583,495
		10.07.504	Underground Paralleling/Switching Station	3.00	Ea	8,082,406.52	/Ea	24,247,220
		10.07.806 A	Mountain Portal Construction	5.00	Ea	6,000,493.28	/Ea	30,002,466
		10.07.808 A	Adit mountain portal construction	1.00	Ea	3,000,246.63	/Ea	3,000,247
		10.07.809	ADIT Construction	2.04	mile	363,729,307.24	/mile	742,007,787
		10.07.809F	Underground TBM Dissassembly chamber	4.00	Ea	20,019,429.71	/Ea	80,077,719
		10.07.810 A	Tunnel Portal facilities, as described in TM 2.4.6. TSEFCZ excluded	5.00	EA	5,783,868.97	/EA	28,919,345
		10.07.811 A	Train Surface Evacuation and Fire Control Zone (TSEFCZ)	3.00	EA	138,861.74	/EA	416,585
		10.07.812	Binocular shafts	1.00	EA	63,167,036.63	/EA	63,167,037
		10.07.920 A	Tunnel Ventilation System - A	2.46	RM	26,432,306.03	/RM	65,023,473
		10.07.920 B	Tunnel Ventilation System - B	15.24	RM	26,432,306.03	/RM	402,828,344
		10.07.920 C	Tunnel Ventilation System - C	6.83	RM	26,432,306.03	/RM	180,532,650
		10.07.950 A	Construction Monitoring inside TBM twin tunnels	14.33	RM	2,356,699.15	/RM	33,771,499

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.07.950 B	Construction Monitoring inside Mined or SEM twin tunnels	2.63	RM	4,262,588.68	/RM	11,210,608
		10.07.950 C	Construction Monitoring inside Cross Passages	155.00	EA	189,835.10	/EA	29,424,441
		10.07.950 D	Construction Monitoring inside Mined or SEM Single tunnel, incl adits	7.57	Mile	4,742,050.48	/Mile	35,897,322
		10.07.950E	Construction Monitoring inside Mined Underground Paralleling Station	4.00	EA	759,340.40	/EA	3,037,362
		10.07.950 G	Surface and Building Monitoring	4.20	RM	2,878,720.40	/RM	12,090,626
		10.08.221	Retained Cut, Trench - 2 Track (10' Avg. Exc Depth)	0.46	RM	67,458,983.46	/RM	30,761,296
		10.08.222	Retained Cut, Trench - 2 Track (20' Avg. Exc Depth)	0.31	RM	141,935,601.52	/RM	44,000,036
		10.08.223	Retained Cut, Trench - 2 Track (30' Avg. Exc Depth)	0.44	RM	239,696,445.61	/RM	105,466,436
		10.08.421	Retained Fill, Wall Both Sides - 2 Tracks (10' Avg. Wall Ht)	1.79	RM	17,283,539.45	/RM	30,937,536
		10.08.422	Retained Fill, Walls Both Sides - 2 Tracks (20' Avg. Wall Ht)	0.31	RM	29,259,622.40	/RM	9,158,262
		10.08.423	Retained Fill, Walls Both Sides - 2 Tracks (30' Avg. Wall Ht)	0.44	RM	51,272,176.38	/RM	22,354,669
		10.09.110	Ballasted Track - 1 Track	0.17	RM	2,346,570.18	/RM	398,917
		10.09.110 A	SCRRA Ballasted Track - 1 Track	1.39	RM	2,165,513.57	/RM	3,010,064
		10.09.120	Ballasted Track - 2 Track	19.57	RM	4,232,329.12	/RM	82,826,681
		10.09.120 A	SCRRA Ballasted Track - 2 Track	0.66	RM	4,156,778.85	/RM	2,743,474
		10.09.910	Ballasted Track Relocation - 1 Track (Temporary)	0.26	RM	2,946,367.85	/RM	766,056
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.38	RM	2,946,367.84	/RM	1,119,620
		10.10.120	Direct Fixation - 2 Track	11.69	RM	3,758,241.80	/RM	43,933,847
		10.14.200b	Ballasted Turnout (30MPH)	2.00	EA	99,647.18	/EA	199,294
		10.14.200 C	Ballasted Turnout (50MPH)	1.00	EA	279,012.10	/EA	279,012
		10.14.305	Ballasted Crossover (80MPH)	1.00	EA	1,177,995.76	/EA	1,177,996
		20.07.010 A	1 Lane Roadway Modification, New AC Paving (SR14 EB On/Off Ramps at Pearblossom, Sta 90+40 to 122+25)	74,952.00	SF	17.47	/SF	1,309,273
		20.07.011 A	2 Lane Roadway Modification, New AC Paving (Sierra Hwy south of Ave S, Sta 728+00 to 775+12)	148,224.00	SF	29.13	/SF	4,317,092
		20.07.011 B	2 Lane Roadway Modification, New AC Paving (Realigned Sierra Hwy at Pearblossom, Sta 86+70 to 114+66)	111,440.00	SF	17.46	/SF	1,945,647
		20.07.011 C	2 Lane Roadway Modification, New AC Paving, painted median (Angeles Forest Hwy, Sta 1+33 to 48+86)	266,168.00	SF	32.84	/SF	8,740,863
		20.07.011 D	2 Lane Roadway Modification, New AC Paving, painted median (Mountain Springs Rd Sta 85+88 to 98+96)	67,912.00	SF	39.57	/SF	2,687,191
		20.07.011E	2 Lane Roadway Modification, New AC Paving (Carson Mesa Rd Sta 8+50 to 19+74)	59,800.00	SF	40.74	/SF	2,436,052
		20.07.011F	2 Lane Roadway Modification, New AC Paving (Foreston Dr Sta 91+00 to 132+33)	122,592.00	SF	18.77	/SF	2,300,736

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		20.07.011 G	2 Lane Roadway Modification, New AC Paving (Foreston Dr Sta 91+00 to 132+33)	134,060.00	SF	63.42	/SF	8,502,582
		20.07.020 A	2 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk (Avenue O St Sta 10+00 to 16+64)	67,688.00	SF	18.60	/SF	1,258,746
		20.07.020 B	2 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk (Cul-de-Sacs, private streets 36' to 40' wide)	148,240.00	SF	20.87	/SF	3,094,004
		20.07.020 C	2 Lane Roadway Modification, New AC Paving including Curb & Sidewalk (E Avenue R11/Valley Forge from Sta 10+36 to Sta 18+38)	49,453.00	SF	22.23	/SF	1,099,583
		20.07.020 D	2 Lane Roadway Modification, New AC Paving including one-sided Curb & Sidewalk, painted median (Sierra Hwy north of Ave S, Sta 708+63 to 728+00)	80,482.00	SF	19.66	/SF	1,582,078
		20.07.021E	4 Lane Roadway Modification, New AC Paving with partial Curb & Gutter, Sidewalk (Tenth St at Ave S, Sta 10+49 to 32+38)	170,821.50	SF	23.05	/SF	3,937,793
		20.07.021 G	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Painted Median (Wentworth St, Sta 80+00 to 116+00)	184,470.00	SF	25.66	/SF	4,734,319
		20.07.023 A	2 Lane Roadway Modification, New AC Paving including Curb & Sidewalk (E Avenue R11/Valley Forge)	379,752.00	SF	23.03	/SF	8,744,954
		20.07.027 A	2 Lane Roadway Modification, New AC Paving with Curb & Gutter, One sided Sidewalk (San Fernando Blvd, Penrose to Sunland)	41,415.00	SF	19.48	/SF	806,718
		20.07.027 B	4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalk, painted/raised median (Tuxford St) (From Sta 105+00 to Sta 117+00)	117,198.00	SF	23.71	/SF	2,778,426
		20.07.027 C	2 to 4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalk, painted/raised median (Olinda St) (From Sta 13+50 to Sta 15+00)	33,450.00	SF	22.04	/SF	737,205
		20.07.027 D	4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalk, painted/raised median (Sunland Blvd)	119,420.00	SF	22.17	/SF	2,647,881
		20.07.027E	4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalk, painted median (San Fernando Road)	467,324.00	SF	193.78	/SF	90,558,523
		20.07.711 A	2 Lane Roadway Modification, New AC Paving (Access Rd at Water Treatment Plant) (Froms Sta 3+38 to 11+11+45.52)	19,380.48	SF	17.61	/SF	341,317
		20.07.711 M	2 Lane Roadway Modification, New AC Paving (Adit Access Rd SR14-1736W)	7,935.00	SF	16.74	/SF	132,824
		20.07.711 N	2 Lane Roadway Modification, New AC Paving (Adit Access Rd SR14-1750E)	7,947.25	SF	19.11	/SF	151,908
		20.07.712 A	2 Lane Roadway Modification, New AC Paving (Access Rd Burnell, Sta 10+00 to Sta 13+17)	7,935.50	SF	16.74	/SF	132,808
		20.07.712 B	2 Lane Roadway Modification, New AC Paving (Access Rd P-3, Sta 0+00 to Sta 7+30)	18,250.00	SF	16.74	/SF	305,431
		20.07.712 C	2 Lane Roadway Modification, New AC Paving with Curb & Gutter (Acc Rd Carson Mesa Rd, Sta 1+00 to Sta 17+28)	40,700.00	SF	18.11	/SF	737,016
		20.07.712 D	2 Lane Roadway Modification, New AC Paving with Curb & Gutter (Acc Rd West Adit, Sta 10+04.88 to Sta 14+94.75)	34,290.90	SF	18.11	/SF	620,957
		20.07.712E	2 Lane Roadway Modification, New AC Paving (Access Rd P-4, Sta 8+00 to Sta 16+88)	22,200.00	SF	34.52	/SF	766,235
		20.07.712F	2 Lane Roadway Modification, New AC Paving (Access Rd P-5, Sta 0+00 to Sta 8+92.13)	22,303.00	SF	32.71	/SF	729,444
		40.01.010	Demolition Allowance, Bridge	14,495.00	sf	46.84	/sf	678,958
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	1,794.00	LF	35.04	/LF	62,855
		40.01.010 B	Demolition Allowance, Retaining Wall	1,619.00	LF	35.04	/LF	56,723
		40.01.050	Demolition Allowance, Building 1 Story	108,368.00	SF	34.01	/SF	3,685,597

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.01.110	Demolition Allowance, Asphalt Pavement	270,835.00	SY	65.24	/SY	17,668,529
		40.01.110 A	Demolition Allowance, Concrete Pavement	6,380.00	SY	42.24	/SY	269,502
		40.01.140	Demolition Allowance, Concrete Curb	13,900.00	LF	20.00	/LF	278,023
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	10,001.00	LF	21.54	/LF	215,384
		40.01.150	Demolition Allowance, Concrete Sidewalk	10,359.00	SY	138.57	/SY	1,435,431
		40.01.810	Demolition Allowance, Remove Railroad Track	9,417.00	LF	38.89	/LF	366,239
		40.02.107 A	Natural Gas Pipeline, 3" to 8" Dia.	2,480.00	LF	342.27	/LF	848,839
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	1,570.00	LF	371.16	/LF	582,716
		40.02.110 A	Natural Gas Pipeline, 30" to 42" Dia.	4,850.00	LF	539.11	/LF	2,614,684
		40.02.116 A	Potable Water Pipeline, <10"	14,940.00	LF	342.27	/LF	5,113,568
		40.02.116 B	Potable Water Pipeline, 10" to 16"	37,290.00	LF	355.70	/LF	13,264,111
		40.02.117 A	Potable Water Pipeline, 18" to 24"	13,550.00	LF	544.16	/LF	7,373,432
		40.02.118 A	Potable Water Pipeline, 27" to 33"	670.00	LF	761.95	/LF	510,504
		40.02.119 A	Efluent Water Pipeline, 36" to 48" Dia.	1,770.00	LF	1,028.51	/LF	1,820,467
		40.02.119 B	Runoff Water Pipeline, 48" Dia.	1,500.00	LF	1,028.51	/LF	1,542,769
		40.02.121 A	Overhead Power Trans Facility (≥ 69 kV)	5,340.00	LF	577.66	/LF	3,084,730
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	31,138.00	LF	649.87	/LF	20,235,743
		40.02.123 A	Underground Power Trans Facility (12 kV)	430.00	LF	385.83	/LF	165,909
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	2,620.00	LF	451.31	/LF	1,182,428
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	1,170.00	LF	493.62	/LF	577,535
		40.02.150 C	Tel San Fernando Rd: East of CL	10,960.00	LF	385.83	/LF	4,228,747
		40.02.150 D	Tel San Fernando Rd: West of CL	9,795.00	LF	385.83	/LF	3,779,253
		40.02.200 A	Tel San Fernando Rd: West of CL	1.00	LF		/LF	
		40.03.100	Hazardous Material Removal Allowance, Light	1.93	RM	496,430.70	/RM	958,111
		40.03.105	Hazardous Material Removal Allowance, Medium	1.47	RM	496,430.70	/RM	729,753
		40.03.110	Hazardous Material Removal Allowance, Heavy	3.60	RM	496,430.70	/RM	1,787,151
		40.03.150	Removal of Contaminated Soil	23,238,276.00	CF	4.55	/CF	105,796,461

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.04.105	Environmental Mitigation Allowance	1.00	LS	438,706,515.93	/LS	438,706,516
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	4,938.00	LF	4,231.08	/LF	20,893,050
		40.05.211	Sound Wall - 1 Wall (8' Avg. Height)	11,130.00	LF	908.92	/LF	10,116,258
		40.05.401 C	Basin E1/E2 Sta 620+44	1.00	EA	376,113.42	/EA	376,113
		40.05.401 D	Basin E1/E2 Sta 633+70	1.00	EA	458,878.05	/EA	458,878
		40.05.401E	Basin E1/E2 Sta 729+58	1.00	EA	372,831.44	/EA	372,831
		40.05.401F	Basin E1/E2 Sta 745+60	1.00	EA	346,083.84	/EA	346,084
		40.05.401 G	Drainage course re-routing	1.00	EA	5,882,649.83	/EA	5,882,650
		40.05.500 A	24" Drainage Pipe	2,079.00	LF	324.94	/LF	675,543
		40.05.500 B	36" Drainage Pipe	348.00	LF	361.04	/LF	125,642
		40.05.500 C	48" Drainage Pipe	4,366.00	LF	672.79	/LF	2,937,381
		40.05.500E	60" Drainage Pipe	2,766.00	LF	997.72	/LF	2,759,699
		40.05.500F	72" Drainage Pipe	66.00	LF	1,227.54	/LF	81,017
		40.06.100	Temporary Facilities	1.00	LS	536,196,852.59	/LS	536,196,853
		40.07.010	Right of Way	1.00	LS	291,113,574.01	/LS	291,113,574
		40.08.422 A	Mountain Springs rd West Overhead. Roadway Overcrossing - 2 lane roadway over 3 tracks	1.00	EA	4,904,200.39	/EA	4,904,200
		40.08.422 B	Foreston drive Overhead. Roadway Overcrossing - 2 lane roadway over highway	1.00	EA	6,948,055.92	/EA	6,948,056
		40.08.422 C	Foreston South Access Road. Access road bridge to tunnel portal - 2 lane roadway	1.00	EA	22,022,951.25	/EA	22,022,951
		40.08.422 D	Aliso canyon Access Road north. Access road bridge to tunnel portal - 2 lane roadway	1.00	EA	9,569,559.36	/EA	9,569,559
		40.08.422F	Adit access road E2 STA 1460. Access road bridge to tunnel portal - 2 lane roadway	1.00	EA	3,952,676.78	/EA	3,952,677
		40.08.425 D	Avenue S Overcrossing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 1 span	1.00	EA	5,767,638.53	/EA	5,767,639
		40.08.425E	Avenue S Overhead. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 3 spans	1.00	EA	12,315,880.06	/EA	12,315,880
		40.08.425 H	Wentworth st Overcrossing. Roadway Overcrossing - 4 lane - 11 spans	1.00	EA	25,090,834.40	/EA	25,090,834
		50.01.000	Wayside Signaling Equipment	31.26	RM	1,297,691.00	/RM	40,565,821
		50.04.000	Traffic Control and Dispatching Systems	31.26	RM	125,857.95	/RM	3,934,319
		50.04.010 A	New Traffic Signal	5.00	EA	1,140,649.42	/EA	5,703,247
		50.04.020 A	Traffic Signal Modification	1.00	EA	4,955,565.80	/EA	4,955,566

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		50.05.000	Communications	31.26	RM	1,191,623.69	/RM	37,250,157
		50.07.000	Hazard Detectors	31.26	RM	1,057,510.95	/RM	33,057,792
		60.02.000	Traction Power Supply	31.26	RM	3,142,696.51	/RM	98,240,693
		60.03.000	Traction Power Distribution	31.26	RM	3,321,085.13	/RM	103,817,121
		60.04.000	Traction Power Control	31.26	RM	5,229.10	/RM	163,462
		80.00.010	Professional Services	1.00	LS	2,484,675,857.19	/LS	2,484,675,857
		90.00.00	Unallocated Contingency	1.00	LS	623,184,990.95	/LS	623,184,991
			03.E2 Cen E2 Central					18,163,803,047
	12.BUR (E2)		Burbank E2					
		10.07.250 A	Cut & Cover Box -Burbank Station (85' Avg. Exc Depth)	0.27	RM	1,103,472,006.04	/RM	297,937,442
		10.07.250 C	Cut & Cover Box - 3track/1Box (100' Avg. Exc Depth)	0.13	RM	1,262,762,165.69	/RM	164,159,082
		10.07.250 D	Cut & Cover Box - 5track/1Box (100' Avg. Exc Depth)	0.37	RM	1,262,762,165.59	/RM	463,433,715
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.62	RM	2,946,367.94	/RM	1,826,748
		10.10.110	Direct Fixation - 1 Track	1.69	RM	1,879,433.34	/RM	3,176,242
		10.10.120	Direct Fixation - 2 Track	0.55	RM	3,758,241.93	/RM	2,067,033
		10.14.200	Ballasted Turnout (60MPH)	4.00	EA	473,003.92	/EA	1,892,016
		10.14.200 A	Ballasted Turnout (25MPH)	2.00	EA	279,012.12	/EA	558,024
		10.14.200b	Ballasted Turnout (30MPH)	1.00	EA	99,647.18	/EA	99,647
		10.14.305	Ballasted Crossover (80MPH)	2.00	EA	1,177,995.79	/EA	2,355,992
		10.14.400	Terminal Bumping Post	4.00	EA	26,572.58	/EA	106,290
		20.01.247 A	Main and Secondary Station Buildings	141,954.00	sf	505.46	/sf	71,751,602
		20.01.247 B	Auxiliary Building	10,000.00	sf	303.27	/sf	3,032,740
		20.03.001 C	HSR Platform (underground)	84,600.00	SF	577.66	/SF	48,870,443
		20.06.201 B	Parking Walkway (Standard Sidewalks)	316,516.00	SF	20.14	/SF	6,374,757
		20.06.201 C	Parking Walkway (Enhanced Plazas)	410,764.00	SF	24.57	/SF	10,093,761
		20.06.800 A	Landscape	512,103.00	SF	19.16	/SF	9,813,957
		40.01.010	Demolition Allowance, Bridge	4,028.00	sf	46.84	/sf	188,675
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	1,873.00	LF	35.04	/LF	65,622

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.01.010 B	Demolition Allowance, Retaining Wall	3,967.00	LF	35.04	/LF	138,988
		40.01.050	Demolition Allowance, Building 1 Story	661,944.00	SF	34.01	/SF	22,512,726
		40.01.110	Demolition Allowance, Asphalt Pavement	189,536.95	SY	65.24	/SY	12,364,868
		40.01.110 A	Demolition Allowance, Concrete Pavement	12,154.00	SY	42.24	/SY	513,406
		40.01.140	Demolition Allowance, Concrete Curb	2,877.00	LF	20.00	/LF	57,545
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	19,107.40	LF	21.54	/LF	411,501
		40.01.150	Demolition Allowance, Concrete Sidewalk	16,012.40	SY	138.57	/SY	2,218,814
		40.01.810	Demolition Allowance, Remove Railroad Track	32,462.00	LF	38.89	/LF	1,262,489
		40.02.107 A	Natural Gas Pipeline, 3" to 8" Dia.	5,399.00	LF	342.27	/LF	1,847,935
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	880.00	LF	371.16	/LF	326,618
		40.02.111 A	Oil Pipeline, 6" to 15" Dia.	11,510.00	LF	371.16	/LF	4,272,016
		40.02.112 A	Oil Pipeline, 18" to 24" Dia.	11,750.00	LF	371.16	/LF	4,361,093
		40.02.116 A	Potable Water Pipeline, <10"	2,150.00	LF	342.27	/LF	735,888
		40.02.116 B	Potable Water Pipeline, 10" to 16"	2,070.00	LF	355.70	/LF	736,302
		40.02.117 A	Potable Water Pipeline, 18" to 24"	1,900.00	LF	544.16	/LF	1,033,913
		40.02.118 A	Potable Water Pipeline, 27" to 33"	501.00	LF	761.95	/LF	381,735
		40.02.119 A	Efluent Water Pipeline, 36" to 48" Dia.	5,350.00	LF	1,028.51	/LF	5,502,542
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	7,180.00	LF	649.87	/LF	4,666,088
		40.02.123 A	Underground Power Trans Facility (12 kV)	4,680.00	LF	385.83	/LF	1,805,706
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	2,080.00	LF	451.31	/LF	938,722
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	1,800.00	LF	493.62	/LF	888,515
		40.02.128 A	Sewer, Gravity Pipeline, 21" to 30" Dia.	200.00	LF	666.92	/LF	133,384
		40.02.150 C	Tel San Fernando Rd: East of CL	12,896.00	LF	385.83	/LF	4,975,724
		40.02.150 D	Tel San Fernando Rd: West of CL	15,740.00	LF	385.83	/LF	6,073,036
		40.03.110	Hazardous Material Removal Allowance, Heavy	0.57	RM	496,430.70	/RM	282,966
		40.03.150	Removal of Contaminated Soil	33,033,009. 00	CF	4.55	/CF	150,388,758
		40.04.105	Environmental Mitigation Allowance	1.00	LS	40,566,702.14	/LS	40,566,702

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	5,698.00	LF	4,231.08	/LF	24,108,668
		40.05.500 A	24" Drainage Pipe	744.00	LF	324.94	/LF	241,753
		40.05.500 C	48" Drainage Pipe	1,323.00	LF	672.79	/LF	890,095
		40.05.500E	60" Drainage Pipe	867.00	LF	997.72	/LF	865,024
		40.05.500 G	42" Drainage Pipe	165.00	LF	613.77	/LF	101,272
		40.05.600 A	8.5'x5' Drainage Box	156.00	LF	2,888.32	/LF	450,579
		40.05.700 C	3'x3' Open Channel	2,108.00	LF	1,444.16	/LF	3,044,294
		40.06.100	Temporary Facilities	1.00	LS	49,581,524.61	/LS	49,581,525
		40.07.010	Right of Way	1.00	LS	417,709,092.20	/LS	417,709,092
		50.01.000	Wayside Signaling Equipment	0.55	RM	1,297,691.00	/RM	713,730
		50.04.000	Traffic Control and Dispatching Systems	0.55	RM	125,857.95	/RM	69,222
		50.04.010 A	New Traffic Signal	2.00	EA	1,140,649.42	/EA	2,281,299
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,955,565.80	/EA	9,911,132
		50.05.000	Communications	0.55	RM	1,191,623.69	/RM	655,393
		50.07.000	Hazard Detectors	0.55	RM	1,057,510.95	/RM	581,631
		60.02.000	Traction Power Supply	0.55	RM	3,142,696.51	/RM	1,728,483
		60.03.000	Traction Power Distribution	0.55	RM	3,321,085.13	/RM	1,826,597
		60.04.000	Traction Power Control	0.55	RM	5,229.11	/RM	2,876
		80.00.010	Professional Services	1.00	LS	227,485,313.09	/LS	227,485,313
		90.00.00	Unallocated Contingency	1.00	LS	78,463,796.36	/LS	78,463,796
			12.BUR (E2) Burbank E2					2,177,913,539
			02.E2 E2 End to End Alternative 2018\$					22,139,033,202
			SR14 End to End Alternative 2018\$					
03.SR14	01.PLM		Palmdale Subsection					
		10.01.001 A	Steel Truss HSR viaduct, 1 track Sierra Hwy platform track 2x215' Span	2.00	EA	11,849,014.00	/EA	23,698,028
		10.01.002 A	Steel Truss HSR viaduct, 2 track Sierra Hwy platform track 2x215' Span	1.00	EA	14,156,346.45	/EA	14,156,346
		10.01.122 B	Elevated Structure Ave Q Platform Track - 1 Track (22' Avg. Pier Ht) Avg 105' span	2.00	EA	4,545,159.41	/EA	9,090,319
		10.01.222 A	Elevated Structure Tuxford st - 2 Track U-Shape girder (20' Avg. Pier Ht) Avg 110' span	1.00	EA	6,636,405.31	/EA	6,636,405

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.02.060 A	Sierra Hwy Underpass (SCRAA) Bridge Structure - Two Span Steel Plate Girder Structure with 1 Track - 2 190' spans	1.00	EA	7,428,868.75	/EA	7,428,869
		10.02.060 B	Sierra Hwy Underpass (UPRR) Bridge Structure - Two Span Steel Plate Girder Structure with 1 Track 2-190' spans substructure for enlargement	1.00	EA	8,826,597.92	/EA	8,826,598
		10.02.060E	Ave Q Underpass Railroad Bridge Structure - Single Span Steel Plate Girder Structure with 1 Track 1-105'span	3.00	EA	1,753,121.75	/EA	5,259,365
		10.04.100 A	36" Drainage Pipe	1,341.00	LF	332.16	/LF	445,423
		10.05.111	At-Grade Track-bed in Cut - 1 Track (5' Avg. Exc Depth)	0.68	RM	5,451,785.57	/RM	3,707,214
		10.05.112	At-Grade Track-bed in Cut - 1 Track (10' Avg. Exc Depth)	0.78	RM	7,191,154.40	/RM	5,609,100
		10.05.113	At-Grade Track-bed in Cut - 1 Track (15' Avg. Exc Depth)	0.08	RM	9,239,190.62	/RM	739,135
		10.05.114	At-Grade Track-bed in Cut - 1 Track (20' Avg. Exc Depth)	0.25	RM	11,595,893.36	/RM	2,898,973
		10.05.121	At-Grade Track-bed in Cut - 2 Track (5' Avg. Exc Depth)	0.66	RM	8,411,913.89	/RM	5,551,863
		10.05.122	At-Grade Track-bed in Cut - 2 Track (10' Avg. Exc Depth)	0.63	RM	10,382,783.06	/RM	6,541,153
		10.05.123	At-Grade Track-bed in Cut - 2 Track (15' Avg. Exc Depth)	0.07	RM	12,662,319.00	/RM	886,362
		10.05.124	At-Grade Track-bed in Cut - 2 Track (20' Avg. Exc Depth)	0.12	RM	15,255,925.75	/RM	1,830,711
		10.05.211	At-Grade Track-bed in Fill - 1 Track (5' Avg. Fill Ht)	2.63	RM	3,608,234.84	/RM	9,489,658
		10.05.212	At-Grade Track-bed in Fill - 1 Track (10' Avg. Fill Ht)	0.76	RM	4,575,935.88	/RM	3,477,711
		10.05.221	At-Grade Track-bed in Fill - 2 Track (5' Avg. Fill Ht)	1.64	RM	6,259,696.09	/RM	10,265,902
		10.05.222	At-Grade Track-bed in Fill - 2 Track (10' Avg. Fill Ht)	0.63	RM	7,458,897.46	/RM	4,699,105
		10.07.114 A	Cut & Cover LMF crossing - 2 Tracks	1.00	EA	30,389,234.16	/EA	30,389,234
		10.08.213	Retained Cut, Trench - 1 Track (30' Avg. Exc Depth)	0.51	RM	188,088,313.78	/RM	95,925,040
		10.08.411	Retained Fill, Walls Both Sides - 1 Tracks (10' Avg. Wall Ht)	1.10	RM	14,445,879.63	/RM	15,890,468
		10.09.110	Ballasted Track - 1 Track	6.28	RM	2,346,567.55	/RM	14,736,444
		10.09.110 A	SCRRA Ballasted Track - 1 Track	1.42	RM	2,165,514.02	/RM	3,075,030
		10.09.120	Ballasted Track - 2 Track	3.13	RM	4,232,329.01	/RM	13,247,190
		10.09.120 A	SCRRA Ballasted Track - 2 Track	0.83	RM	4,156,778.58	/RM	3,450,126
		10.09.240	Ballasted Track - 2 Track (Station Track)	1.76	RM	8,464,658.39	/RM	14,897,799
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.91	RM	2,946,367.84	/RM	2,681,195
		10.14.200	Ballasted Turnout (60MPH)	7.00	EA	473,003.91	/EA	3,311,027
		10.14.200 A	Ballasted Turnout (25MPH)	2.00	EA	279,012.11	/EA	558,024
		10.14.200b	Ballasted Turnout (30MPH)	1.00	EA	99,647.18	/EA	99,647

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.14.305	Ballasted Crossover (80MPH)	3.00	EA	1,177,995.76	/EA	3,533,987
		10.14.400	Terminal Bumping Post	2.00	EA	26,572.58	/EA	53,145
		10.14.500 A	Crossing Panels	38.00	EA	1,195.77	/EA	45,439
		20.01.247 A	Main and Secondary Station Buildings	80,182.00	sf	505.46	/sf	40,528,530
		20.01.247 B	Auxiliary Building	10,000.00	sf	303.27	/sf	3,032,740
		20.03.001 A	HSR Platform (at grade)	112,776.00	SF	577.66	/SF	65,146,727
		20.03.001 B	Metrolink Platform (at grade)	20,427.00	SF	577.66	/SF	11,799,959
		20.06.100 B	Pedestrian Bridges (Overhead) Avg 120' span x 20' wide	123,032.00	SF	684.87	/SF	84,261,069
		20.06.201 A	Parking Roadways Avg 330 sf per stall	5,853.45	sf	5,694.25	/sf	33,330,985
		20.06.201 B	Parking Walkway (Standard Sidewalks)	234,350.00	SF	20.14	/SF	4,719,902
		20.06.201 C	Parking Walkway (Enhanced Plazas)	160,283.00	SF	24.57	/SF	3,938,657
		20.06.800 A	Landscape	712,875.00	SF	19.16	/SF	13,661,558
		20.07.011F	2 Lane Roadway Modification, New AC Paving (Foreston Dr Sta 91+00 to 132+33)	23,200.00	SF	18.77	/SF	435,404
		20.07.020	Roadway Modification, New AC Paving (including Curb & Sidewalk)	74,154.08	SF	22.25	/SF	1,650,215
		20.07.020E	2 Lane Roadway Modification, New AC Paving including Curb & Gutter, Sidewalk, painted median (Avenue Q) (From Sta 94+00 to Sta 130+00)	8,928.00	SF	19.13	/SF	170,804
		20.07.020 G	2 Lane Roadway Modification, New AC Paving including Curb & Gutter, Sidewalk (Avenue Q9 & Q12)	28,278.00	SF	21.37	/SF	604,186
		20.07.021 A	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Fifth St Sta 100+55 to 167+00)4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Fifth St Sta 100+55 to 167+00)	627,200.00	SF	33.45	/SF	20,977,106
		20.07.021 B	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Fifth St Sta 168+22 to 197+00)	332,831.52	SF	23.44	/SF	7,800,776
		20.07.021 C	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Avenue R Sta 91+53 to 128+48)	245,055.54	SF	39.96	/SF	9,792,737
		20.07.021 D	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, (Sixth St Sta 10+00 to 50+15.07)	337,265.88	SF	21.18	/SF	7,144,012
		20.07.022 A	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Sierra Hwy Sta 500+00 to 625.88)	345,600.00	SF	31.14	/SF	10,760,993
		20.07.022 B	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Palmdale Blvd Sta 91+63 to 127+65)	1,611,264.00	SF	33.65	/SF	54,211,185
		20.07.022 C	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Avenue S, Sta 82+50 to 117+80)	311,289.90	SF	30.54	/SF	9,507,563
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	22,020.00	LF	35.04	/LF	771,492
		40.01.050	Demolition Allowance, Building 1 Story	1,795,428.00	SF	34.01	/SF	61,062,535
		40.01.110	Demolition Allowance, Asphalt Pavement	1,278,163.00	SY	65.24	/SY	83,383,830

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.01.110 A	Demolition Allowance, Concrete Pavement	55,794.67	SY	42.24	/SY	2,356,864
		40.01.140	Demolition Allowance, Concrete Curb	64,343.00	LF	20.00	/LF	1,286,966
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	64,895.00	LF	21.54	/LF	1,397,592
		40.01.150	Demolition Allowance, Concrete Sidewalk	364,718.00	SY	138.57	/SY	50,538,411
		40.01.810	Demolition Allowance, Remove Railroad Track	4,350.00	LF	38.89	/LF	169,177
		40.01.900 A	Clearing & Grubbing Landscape Areas	1,218,518.0 0	SY	26.67	/SY	32,502,351
		40.02.107 A	Natural Gas Pipeline, 3" to 8" Dia.	2,128.00	LF	342.27	/LF	728,358
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	790.00	LF	371.16	/LF	293,214
		40.02.116 A	Potable Water Pipeline, <10"	160.00	LF	342.27	/LF	54,764
		40.02.116 B	Potable Water Pipeline, 10" to 16"	21,728.00	LF	355.70	/LF	7,728,683
		40.02.117 A	Potable Water Pipeline, 18" to 24"	825.00	LF	544.16	/LF	448,936
		40.02.121 A	Overhead Power Trans Facility (≥ 69 kV)	7,375.00	LF	577.66	/LF	4,260,278
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	4,490.00	LF	649.87	/LF	2,917,929
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	15,351.00	LF	451.46	/LF	6,930,409
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	4,642.00	LF	494.64	/LF	2,296,113
		40.02.129 A	Sewer, Gravity Pipeline, 48" to 66" Dia.	3,410.00	LF	666.92	/LF	2,274,194
		40.02.150 A	Electrical/Telephone Ductbank	800.00	LF	385.83	/LF	308,668
		40.02.150 B	Fiber Optic Ductbank	2.00	LF	387.22	/LF	774
		40.02.150 C	Tel San Fernando Rd: East of CL	1,320.00	LF	385.83	/LF	509,302
		40.02.150 D	Tel San Fernando Rd: West of CL	5,057.00	LF	385.83	/LF	1,951,165
		40.03.105	Hazardous Material Removal Allowance, Medium	1.67	RM	496,430.70	/RM	829,039
		40.03.110	Hazardous Material Removal Allowance, Heavy	0.51	RM	496,430.71	/RM	253,180
		40.03.150	Removal of Contaminated Soil	1,025,000.0 0	CF	4.55	/CF	4,666,498
		40.04.105	Environmental Mitigation Allowance				/LS	33,864,698
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	2,277.00	LF	4,231.08	/LF	9,634,159
		40.05.211	Sound Wall - 1 Wall (8' Avg. Height)	2,690.00	LF	908.92	/LF	2,444,990
		40.05.400 A	Basin at Avenue O	1.00	EA	300,225.70	/EA	300,226

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.05.400 B	Basin at Avenue R	1.00	EA	17,572,353.87	/EA	17,572,354
		40.05.500 B	36" Drainage Pipe	414.00	LF	361.04	/LF	149,471
		40.05.500 C	48" Drainage Pipe	9,247.00	LF	672.79	/LF	6,221,243
		40.05.500E	60" Drainage Pipe	1,090.00	LF	997.72	/LF	1,087,517
		40.05.600 C	10'x10' Drainage Box	1,120.00	LF	6,498.73	/LF	7,278,577
		40.05.600 D	Triple 21.5'x12' Drainage Box	3,333.00	LF	11,914.34	/LF	39,710,485
		40.05.700 A	12'x12' Open Channel	5,319.00	LF	3,249.36	/LF	17,283,370
		40.05.700 B	25'x12.5' Open Channel	2,095.00	LF	6,498.73	/LF	13,614,838
		40.05.800 A	Pumping Station	2.00	EA	361,040.51	/EA	722,081
		40.05.800 B	Basin Sump Pump	2.00	EA	361,040.51	/EA	722,081
		40.06.100	Temporary Facilities	1.00	LS	41,390,185.95	/LS	41,390,186
		40.07.010	Right of Way	1.00	LS	259,330,243.58	/LS	259,330,244
		40.08.425 A	Avenue R Overhead. Roadway Overcrossing - 4 lane - 6 spans	1.00	EA	15,701,411.77	/EA	15,701,412
		40.08.425 B	Palmdale blvd Overhead. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks - 5 spans	1.00	EA	25,225,834.42	/EA	25,225,834
		40.08.425 C	Palmdale blvd Overcrossing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks - 1 span	1.00	EA	3,810,602.40	/EA	3,810,602
		50.01.000	Wayside Signaling Equipment	3.13	RM	1,297,691.01	/RM	4,061,773
		50.04.000	Traffic Control and Dispatching Systems	3.13	RM	125,857.95	/RM	393,935
		50.04.010 A	New Traffic Signal	11.00	EA	1,140,649.42	/EA	12,547,144
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,955,565.84	/EA	9,911,132
		50.05.000	Communications	3.13	RM	1,191,623.70	/RM	3,729,782
		50.07.000	Hazard Detectors	3.13	RM	1,057,510.96	/RM	3,310,009
		60.02.000	Traction Power Supply	3.13	RM	3,142,696.53	/RM	9,836,640
		60.03.000	Traction Power Distribution	3.13	RM	3,321,085.16	/RM	10,394,997
		60.04.000	Traction Power Control	3.13	RM	5,229.10	/RM	16,367
		80.00.010	Professional Services	1.00	LS	197,033,873.00	/LS	197,033,873
		90.00.00	Unallocated Contingency	1.00	LS	63,488,729.68	/LS	63,488,730
			01.PLM Palmdale Subsection	24.09	RM	74,608,410.79	/RM	1,797,316,616
	04.SR1 4 Cen		SR14 Central					

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.01.003 A	Escondido Canyon - 2 Track, Train Detention Zone , Steel arch (26' Avg. Pier Ht) ave 151' span	1.00	EA	137,625,526.10	/EA	137,625,526
		10.01.004 A	Santa Clara - 2 Track, Vble depth, Train Detention Zone, Steel arch (70' Avg. Pier Ht) Avg 167span	1.00	EA	153,545,429.22	/EA	153,545,429
		10.01.123 B	Elevated Structure ST 1052+97- 1 Track (30' Avg. Pier Ht) Avg 105' span	1.00	EA	12,200,055.42	/EA	12,200,055
		10.01.124 A	Elevated Structure ST 996+47 - 2 Track Train Detention Zone (27' Avg. Pier Ht) Avg 118' span	1.00	EA	117,585,309.14	/EA	117,585,309
		10.01.126 A	Elevated Structure ST 1031+38 - 1 Track (57' Avg. Pier Ht) Avg 120' span	1.00	EA	103,303,538.53	/EA	103,303,539
		10.01.126 B	Elevated Structure ST 1060+90 - 1 Track (49' Avg. Pier Ht) ave 140' span	1.00	EA	18,987,374.84	/EA	18,987,375
		10.01.127 A	Elevated Structure ST 1118+46 - 1 Track (89' Avg. Pier Ht) avg 119' span	1.00	EA	113,087,966.72	/EA	113,087,967
		10.01.127 B	Elevated Structure AGUA DULCE - 1 Track & 2 Track TDZ (147' Avg. Pier Ht) ave 121' span	1.00	EA	141,000,983.55	/EA	141,000,984
		10.01.222 A	Elevated Structure Tuxford st - 2 Track U-Shape girder (20' Avg. Pier Ht) Avg 110' span	2.00	EA	6,636,405.31	/EA	13,272,811
		10.01.222 B	Elevated Structure Hansen Dam spillway - 2 Track 2 U-Shape girder ave 110' span	1.00	EA	4,935,631.12	/EA	4,935,631
		10.01.222 C	Elevated Structure Sheldon St - 2 Track 2 U-Shape girder ave 110' span	1.00	EA	6,582,222.09	/EA	6,582,222
		10.01.223 B	Elevated Structure ST 1235+35 - 2 Track Train Detention Zone (27' Avg. Pier Ht) avg 120' span	1.00	EA	38,944,524.36	/EA	38,944,524
		10.02.060F	Vulcan Mine Hopper facility Steel Structure - Steel portal frames Structure with 1 Track 4-21' spans	1.00	EA	13,315,951.05	/EA	13,315,951
		10.04.100 A	36" Drainage Pipe	16,181.00	LF	332.16	/LF	5,374,637
		10.04.100 B	48" Drainage Pipe	200.00	LF	597.88	/LF	119,577
		10.04.100 C	72" Drainage Pipe	1,985.00	LF	1,129.33	/LF	2,241,729
		10.05.121	At-Grade Track-bed in Cut - 2 Track (5' Avg. Exc Depth)	0.46	RM	8,411,913.89	/RM	3,869,480
		10.05.122	At-Grade Track-bed in Cut - 2 Track (10' Avg. Exc Depth)	0.75	RM	10,382,783.08	/RM	7,787,087
		10.05.123	At-Grade Track-bed in Cut - 2 Track (15' Avg. Exc Depth)	0.62	RM	12,662,319.31	/RM	7,850,638
		10.05.124	At-Grade Track-bed in Cut - 2 Track (20' Avg. Exc Depth)	0.84	RM	15,255,925.73	/RM	12,814,978
		10.05.126	At-Grade Track-bed in Cut - 2 Track (40' Avg. Exc Depth)	0.66	RM	29,284,204.94	/RM	19,327,575
		10.05.128	At-Grade Track-bed in Cut - 2 Track (60' Avg. Exc Depth)	0.51	RM	48,664,006.86	/RM	24,818,644
		10.05.130	At-Grade Track-bed in Cut - 2 Track (80' Avg. Exc Depth)	0.29	RM	73,078,556.55	/RM	21,192,781
		10.05.221	At-Grade Track-bed in Fill - 2 Track (5' Avg. Fill Ht)	1.25	RM	6,259,696.08	/RM	7,824,620
		10.05.222	At-Grade Track-bed in Fill - 2 Track (10' Avg. Fill Ht)	0.79	RM	7,458,897.48	/RM	5,892,529
		10.05.223	At-Grade Track-bed in Fill - 2 Track (15' Avg. Fill Ht)	1.09	RM	8,972,169.00	/RM	9,779,664
		10.05.224	At-Grade Track-bed in Fill - 2 Track (20' Avg. Fill Ht)	0.38	RM	10,788,704.61	/RM	4,099,708

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.05.226	At-Grade Track-bed in Fill - 2 Track (40' Avg. Fill Ht)	0.16	RM	21,371,494.00	/RM	3,419,439
		10.05.228	At-Grade Track-bed in Fill - 2 Track (60' Avg. Fill Ht)	0.06	RM	36,704,141.17	/RM	2,202,248
		10.07.100	TBM Single Track Twin Tunnels	21.59	RM	245,327,169.94	/RM	5,296,613,599
		10.07.107 A	Double Fault Chamber (for twin tunnels)	2.39	RM	692,938,981.61	/RM	1,656,124,166
		10.07.214	Cut & Cover Box - 2 Track / 1 Box (40' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.14	RM	256,456,558.00	/RM	34,621,635
		10.07.215	Cut & Cover Box - 2 Track / 1 Box (50' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.12	RM	299,008,760.24	/RM	36,778,078
		10.07.216	Cut & Cover Box - 2 Track / 1 Box (60' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.06	RM	365,188,193.23	/RM	22,641,668
		10.07.224 A	UG Structure Barrel Springs rd - Two portal boxes for 2 + 2 roadway lanes + external shoulders 2x40'6 Horizontal Clearance	1.58	RF	8,709,577.45	/RF	13,761,132
		10.07.301	SEM Tunnels	1.23	RM	574,553,420.80	/RM	706,700,708
		10.07.450	Mined Single Track Twin Tunnels	2.64	RM	360,802,064.85	/RM	952,517,451
		10.07.503	Crosspassages	182.00	EA	2,245,276.07	/EA	408,640,245
		10.07.504	Underground Paralleling/Switching Station	2.00	Ea	6,061,804.89	/Ea	12,123,610
		10.07.803 A	TBM Launching Twin Tunnels	1.00	Ea	217,694,975.26	/Ea	217,694,975
		10.07.806 A	Mountain Portal Construction	9.00	Ea	6,000,493.27	/Ea	54,004,439
		10.07.807 A	Portal landscape restoration for Portal P9 - SR14	1.00	Ea	3,286,805.82	/Ea	3,286,806
		10.07.808 A	Adit mountain portal construction	1.00	Ea	3,000,246.63	/Ea	3,000,247
		10.07.809	ADIT Construction	0.66	mile	438,007,061.32	/mile	289,084,660
		10.07.809F	Underground TBM Dissasmbly chamber	4.00	Ea	20,019,429.71	/Ea	80,077,719
		10.07.810 A	Tunnel Portal facilities, as described in TM 2.4.6. TSEFCZ excluded	10.00	EA	5,783,868.97	/EA	57,838,690
		10.07.811 A	Train Surface Evacuation and Fire Control Zone (TSEFCZ)	7.00	EA	138,861.73	/EA	972,032
		10.07.812	Binocular shafts	1.00	EA	44,670,782.04	/EA	44,670,782
		10.07.850	Pumping Station	3.00	ea	361,040.51	/ea	1,083,122
		10.07.920 B	Tunnel Ventilation System - B	21.29	RM	26,432,306.04	/RM	562,743,795
		10.07.920 C	Tunnel Ventilation System - C	4.82	RM	26,432,306.04	/RM	127,403,715
		10.07.950 A	Construction Monitoring inside TBM twin tunnels	21.59	RM	2,356,699.15	/RM	50,881,135
		10.07.950 C	Construction Monitoring inside Cross Passages	182.00	EA	189,835.10	/EA	34,549,988
		10.07.950 D	Construction Monitoring inside Mined or SEM Single tunnel, incl adits	4.52	Mile	4,742,050.47	/Mile	21,434,068

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.07.950E	Construction Monitoring inside Mined Underground Paralleling Station	2.00	EA	759,340.41	/EA	1,518,681
		10.07.950G	Surface and Building Monitoring	6.52	RM	2,878,720.40	/RM	18,769,257
		10.08.344	Retained Cut, Staged Trench - 4 Track (40' Avg Exc Depth)	0.16	RM	224,148,481.44	/RM	35,863,757
		10.08.346	Retained Cut, Staged Trench - 4 Track (60' Avg Exc Depth)	0.11	RM	353,293,935.73	/RM	38,862,333
		10.09.110	Ballasted Track - 1 Track	0.23	RM	2,346,565.78	/RM	539,710
		10.09.110A	SCRRA Ballasted Track - 1 Track	1.59	RM	2,165,513.58	/RM	3,443,167
		10.09.120	Ballasted Track - 2 Track	13.68	RM	4,232,329.08	/RM	57,898,262
		10.09.120A	SCRRA Ballasted Track - 2 Track	0.66	RM	4,156,778.85	/RM	2,743,474
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.23	RM	2,946,367.87	/RM	677,665
		10.10.120	Direct Fixation - 2 Track	23.45	RM	3,758,241.79	/RM	88,130,770
		10.14.200b	Ballasted Turnout (30MPH)	2.00	EA	99,647.18	/EA	199,294
		10.14.200C	Ballasted Turnout (50MPH)	1.00	EA	279,012.11	/EA	279,012
		10.14.305	Ballasted Crossover (80MPH)	1.00	EA	1,177,995.75	/EA	1,177,996
		20.07.012A	2 Lane Roadway Modification, New AC Paving (Sierra Hwy south of Ave S, Sta 728+00 to 775+12)	66,600.00	SF	26.58	/SF	1,770,519
		20.07.023B	2 Lane Roadway Modification, New AC Paving including one-sided Curb & Sidewalk, painted median (Sierra Hwy north of Ave S, Sta 708+63 to 728+00)	19,840.00	SF	19.88	/SF	394,424
		20.07.023C	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Sixth St at Barrel Springs Sta 7+66 to 13+60)	216,510.00	SF	19.64	/SF	4,252,092
		20.07.024A	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Sixth St at Barrel Springs Sta 7+66 to 13+60)	58,400.00	SF	23.49	/SF	1,371,940
		20.07.024B	4 Lane Roadway Modification, New AC Paving, raised/painted median (Barrel Springs, Sta 16+30 to 47+30)	53,314.00	SF	30.72	/SF	1,637,823
		20.07.025A	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Avenue S, Sta 82+50 to 117+80)	93,240.00	SF	30.54	/SF	2,847,780
		20.07.026A	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Private Road 1) (From Sta 12+64 to Sta 27+24)	32,852.00	SF	18.21	/SF	598,196
		20.07.026B	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Ralston Avenue) (Froms Sta 10+31 to Sta 24+34)	54,534.00	SF	18.03	/SF	983,226
		20.07.026C	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Wicks St Cul-de-sac)	5,115.00	SF	20.49	/SF	104,824
		20.07.026D	4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalks (Branford St) (From Sta 13+34 to Sta 25+80)	60,670.00	SF	21.63	/SF	1,312,094
		20.07.026E	4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalks, Painted/Raised Median (Sheldon St) (From Sta 8+88 to Sta 12+70)	25,593.00	SF	20.66	/SF	528,804
		20.07.711B	2 Lane Roadway Modification, New AC Paving (Access Rd P-1)	74,146.75	SF	18.48	/SF	1,370,359
		20.07.711C	2 Lane Roadway Modification, New AC Paving (Access Rd P-2)	25,100.25	SF	26.04	/SF	653,515
		20.07.711D	2 Lane Roadway Modification, New AC Paving (Access Rd P-3A)	25,460.25	SF	31.57	/SF	803,748

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		20.07.711E	2 Lane Roadway Modification, New AC Paving (Access Rd P-3B)	23,374.00	SF	18.88	/SF	441,368
		20.07.711F	2 Lane Roadway Modification, New AC Paving (Access Rd P-4)	26,326.75	SF	43.60	/SF	1,147,736
		20.07.711G	2 Lane Roadway Modification, New AC Paving (Access Rd P-5)	246,001.00	SF	41.22	/SF	10,139,525
		20.07.711H	2 Lane Roadway Modification, New AC Paving (Access Rd P-6A)	159,979.00	SF	46.35	/SF	7,414,892
		20.07.711I	2 Lane Roadway Modification, New AC Paving (Access Rd P-6B)	31,714.75	SF	33.31	/SF	1,056,561
		20.07.711J	2 Lane Roadway Modification, New AC Paving (Access Rd P-7)	41,994.25	SF	33.49	/SF	1,406,589
		20.07.711K	2 Lane Roadway Modification, New AC Paving (Access Rd P-8)	139,040.50	SF	41.84	/SF	5,816,933
		20.07.711L	2 Lane Roadway Modification, New AC Paving (Access Rd P-9)	28,437.50	SF	22.69	/SF	645,344
		20.07.711M	2 Lane Roadway Modification, New AC Paving (Adit Access Rd SR14-1736W)	7,935.00	SF	16.74	/SF	132,824
		20.07.711N	2 Lane Roadway Modification, New AC Paving (Adit Access Rd SR14-1750E)	7,947.25	SF	19.11	/SF	151,908
		20.07.712A	2 Lane Roadway Modification, New AC Paving (Access Rd Burnell, Sta 10+00 to Sta 13+17)	7,935.00	SF	16.74	/SF	132,800
		20.07.712B	2 Lane Roadway Modification, New AC Paving (Access Rd P-3, Sta 0+00 to Sta 7+30)	18,250.00	SF	16.74	/SF	305,431
		20.07.712C	2 Lane Roadway Modification, New AC Paving with Curb & Gutter (Acc Rd Carson Mesa Rd, Sta 1+00 to Sta 17+28)	40,700.00	SF	18.11	/SF	737,016
		40.01.010A	Demolition Allowance, Masonry/Sound Wall	3,999.00	LF	35.04	/LF	140,109
		40.01.050	Demolition Allowance, Building 1 Story	1,030,131.00	SF	34.01	/SF	35,034,772
		40.01.070A	Demolition Allowance, Concrete Structure (Swimming Pools, unknown structures)	363.00	SF	46.13	/SF	16,744
		40.01.110	Demolition Allowance, Asphalt Pavement	267,760.00	SY	65.24	/SY	17,467,924
		40.01.110A	Demolition Allowance, Concrete Pavement	17,402.00	SY	42.24	/SY	735,091
		40.01.140	Demolition Allowance, Concrete Curb	8,897.00	LF	20.00	/LF	177,955
		40.01.140A	Demolition Allowance, Concrete Curb & Gutter	17,241.00	LF	21.54	/LF	371,306
		40.01.150	Demolition Allowance, Concrete Sidewalk	13,883.00	SY	138.57	/SY	1,923,746
		40.01.810	Demolition Allowance, Remove Railroad Track	21,556.00	LF	38.89	/LF	838,341
		40.02.107A	Natural Gas Pipeline, 3" to 8" Dia.	9,718.00	LF	342.27	/LF	3,326,215
		40.02.108A	Natural Gas Pipeline, 10" to 18" Dia.	1,570.00	LF	371.16	/LF	582,716
		40.02.110A	Natural Gas Pipeline, 30" to 42" Dia.	4,850.00	LF	539.11	/LF	2,614,684
		40.02.116A	Potable Water Pipeline, <10"	12,070.00	LF	342.27	/LF	4,131,243
		40.02.116B	Potable Water Pipeline, 10" to 16"	99,301.00	LF	355.70	/LF	35,321,520

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.02.117 A	Potable Water Pipeline, 18" to 24"	8,270.00	LF	544.16	/LF	4,500,242
		40.02.118 A	Potable Water Pipeline, 27" to 33"	400.00	LF	761.95	/LF	304,779
		40.02.119 A	Efluent Water Pipeline, 36" to 48" Dia.	630.00	LF	1,028.51	/LF	647,963
		40.02.121 A	Overhead Power Trans Facility (≥ 69 kV)	9,405.00	LF	577.66	/LF	5,432,938
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	60,212.00	LF	649.87	/LF	39,130,148
		40.02.123 A	Underground Power Trans Facility (12 kV)	9,944.00	LF	385.83	/LF	3,836,737
		40.02.123 B	Underground Power Trans Facility (>69 kV)	1,270.00	LF	471.96	/LF	599,386
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	4,315.00	LF	451.31	/LF	1,947,399
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	1,876.00	LF	493.62	/LF	926,032
		40.02.150 A	Electrical/Telephone Ductbank	500.00	LF	385.83	/LF	192,917
		40.02.150 B	Fiber Optic Ductbank	1.00	LF	383.75	/LF	384
		40.02.150 C	Tel San Fernando Rd: East of CL	17,016.00	LF	385.83	/LF	6,565,362
		40.02.150 D	Tel San Fernando Rd: West of CL	14,585.00	LF	385.83	/LF	5,627,400
		40.02.200 B	Temporary California Aqueduct Impact (HSR alignment crosses in mined tunnel)	1.00	LF		/LF	
		40.03.100	Hazardous Material Removal Allowance, Light	0.76	RM	496,430.70	/RM	377,287
		40.03.105	Hazardous Material Removal Allowance, Medium	4.73	RM	496,430.70	/RM	2,348,117
		40.03.110	Hazardous Material Removal Allowance, Heavy	5.66	RM	496,430.70	/RM	2,809,798
		40.03.150	Removal of Contaminated Soil	122,998,267.00	CF	4.55	/CF	559,971,892
		40.04.105	Environmental Mitigation Allowance	1.00	LS	407,222,944.34	/LS	407,222,944
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	3,095.00	LF	4,231.08	/LF	13,095,178
		40.05.211	Sound Wall - 1 Wall (8' Avg. Height)	4,820.00	LF	908.92	/LF	4,380,985
		40.05.402 A	Basin SR14 Sta 373+44	1.00	EA	399,918.87	/EA	399,919
		40.05.402 B	Basin SR14 Sta 777+75	1.00	EA	370,577.88	/EA	370,578
		40.05.402 C	Basin SR14 Sta 814+60	1.00	EA	441,743.85	/EA	441,744
		40.05.402 D	Basin SR14 Sta 996+93	1.00	EA	417,562.80	/EA	417,563
		40.05.402E	Basin SR14 Sta 1007+12	1.00	EA	433,865.34	/EA	433,865
		40.05.402F	Basin SR14 Sta 1048+11	1.00	EA	345,842.39	/EA	345,842

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.05.402 G	Basin SR14 Sta 1057+15	1.00	EA	314,838.06	/EA	314,838
		40.05.402 H	Basin SR14 Sta 1066+21	1.00	EA	341,210.06	/EA	341,210
		40.05.402I	Basin SR14 Sta 1102+51	1.00	EA	377,499.53	/EA	377,500
		40.05.402J	Basin SR14 Sta 1138+99	1.00	EA	341,201.13	/EA	341,201
		40.05.402 K	Basin SR14 Sta 1175+90	1.00	EA	508,510.01	/EA	508,510
		40.05.402L	Basin SR14 Sta 1240+72	1.00	EA	477,934.95	/EA	477,935
		40.05.402 M	Basin SR14 Sta 1318+56	1.00	EA	333,465.69	/EA	333,466
		40.05.500 A	24" Drainage Pipe	2,896.00	LF	324.94	/LF	941,016
		40.05.500 C	48" Drainage Pipe	4,588.00	LF	672.78	/LF	3,086,735
		40.05.500E	60" Drainage Pipe	944.00	LF	997.72	/LF	941,848
		40.05.500F	72" Drainage Pipe	100.00	LF	1,227.54	/LF	122,754
		40.05.600 B	10.5'x6.5' Drainage Box	1,342.00	LF	3,610.41	/LF	4,845,164
		40.05.800 A	Pumping Station	1.00	EA	361,040.51	/EA	361,041
		40.06.100	Temporary Facilities	1.00	LS	497,716,931.86	/LS	497,716,932
		40.07.010	Right of Way	1.00	LS	791,369,433.00	/LS	791,369,433
		40.08.425 D	Avenue S Overcrossing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 1 span	1.00	EA	5,767,638.51	/EA	5,767,639
		40.08.425E	Avenue S Overhead. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 3 spans	1.00	EA	12,315,880.06	/EA	12,315,880
		40.08.425F	Avenue S Overhead. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 3 spans	1.00	EA	12,759,604.81	/EA	12,759,605
		40.08.425 G	Brandford st Overhead. Roadway Overcrossing - 4 lane - 1 span	1.00	EA	4,823,425.19	/EA	4,823,425
		50.01.000	Wayside Signaling Equipment	37.13	RM	1,297,691.00	/RM	48,183,267
		50.04.000	Traffic Control and Dispatching Systems	37.13	RM	125,857.95	/RM	4,673,106
		50.04.010 A	New Traffic Signal	1.00	EA	1,140,649.41	/EA	1,140,649
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,955,565.81	/EA	9,911,132
		50.05.000	Communications	37.13	RM	1,191,623.69	/RM	44,244,988
		50.07.000	Hazard Detectors	37.13	RM	1,057,510.95	/RM	39,265,382
		60.02.000	Traction Power Supply	37.13	RM	3,142,696.51	/RM	116,688,322
		60.03.000	Traction Power Distribution	37.13	RM	3,321,085.13	/RM	123,311,891
		60.04.000	Traction Power Control	37.13	RM	5,229.10	/RM	194,157

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		80.00.010	Professional Services	1.00	LS	2,321,479,410.96	/LS	2,321,479,411
		90.00.00	Unallocated Contingency	1.00	LS	605,381,546.80	/LS	605,381,547
			04.SR14 Cen SR14 Central					17,817,742,517
	13.BUR (E1/SR 14)		Burbank E1/SR14					
		10.07.214	Cut & Cover Box - 2 Track / 1 Box (40' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.10	RM	256,456,558.30	/RM	25,645,656
		10.07.215	Cut & Cover Box - 2 Track / 1 Box (50' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.09	RM	299,008,803.44	/RM	26,910,792
		10.07.216	Cut & Cover Box - 2 Track / 1 Box (60' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.08	RM	365,188,157.88	/RM	29,215,053
		10.07.219 A	Cut & Cover Box - 2 Track / 1 Box (100' Avg. Exc Depth)	0.38	RM	624,348,624.45	/RM	237,252,477
		10.07.250 A	Cut & Cover Box -Burbank Station (85' Avg. Exc Depth)	0.27	RM	1,103,472,006.48	/RM	297,937,442
		10.07.250 B	Cut & Cover Box - 4track/1Box (100' Avg. Exc Depth)	0.01	RM	1,262,762,165.71	/RM	17,678,670
		10.07.250 C	Cut & Cover Box - 3track/1Box (100' Avg. Exc Depth)	0.02	RM	1,262,762,165.45	/RM	27,780,768
		10.07.250 D	Cut & Cover Box - 5track/1Box (100' Avg. Exc Depth)	0.15	RM	1,262,762,166.04	/RM	188,151,563
		10.07.301	SEM Tunnels	0.12	RM	798,835,992.42	/RM	95,860,319
		10.07.301	SEM Tunnels	0.12	RM	798,835,992.42	/RM	95,860,319
		10.07.920 C	Tunnel Ventilation System - C	0.12	RM	26,432,306.80	/RM	3,224,741
		10.07.950 D	Construction Monitoring inside Mined or SEM Single tunnel, incl adits	0.12	Mile	4,742,050.49	/Mile	578,530
		10.07.950 G	Surface and Building Monitoring	0.12	RM	2,878,720.42	/RM	345,446
		10.08.221	Retained Cut, Trench - 2 Track (10' Avg. Exc Depth)	0.07	RM	67,458,987.86	/RM	4,722,129
		10.08.222	Retained Cut, Trench - 2 Track (20' Avg. Exc Depth)	0.10	RM	141,935,601.50	/RM	14,193,560
		10.08.223	Retained Cut, Trench - 2 Track (30' Avg. Exc Depth)	0.11	RM	239,696,446.00	/RM	26,366,609
		10.10.110	Direct Fixation - 1 Track	1.69	RM	1,879,433.28	/RM	3,176,242
		10.10.120	Direct Fixation - 2 Track	0.55	RM	3,758,241.80	/RM	2,067,033
		10.14.200	Ballasted Turnout (60MPH)	4.00	EA	473,003.91	/EA	1,892,016
		10.14.200 A	Ballasted Turnout (25MPH)	2.00	EA	279,012.11	/EA	558,024
		10.14.200b	Ballasted Turnout (30MPH)	1.00	EA	99,647.18	/EA	99,647
		10.14.305	Ballasted Crossover (80MPH)	2.00	EA	1,177,995.75	/EA	2,355,992
		10.14.400	Terminal Bumping Post	4.00	EA	26,572.58	/EA	106,290

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		20.01.247 A	Main and Secondary Station Buildings	141,954.00	sf	505.46	/sf	71,751,602
		20.01.247 B	Auxiliary Building	10,000.00	sf	303.27	/sf	3,032,740
		20.03.001 C	HSR Platform (underground)	84,600.00	SF	577.66	/SF	48,870,443
		20.06.201 B	Parking Walkway (Standard Sidewalks)	316,516.00	SF	20.14	/SF	6,374,757
		20.06.201 C	Parking Walkway (Enhanced Plazas)	410,764.00	SF	24.57	/SF	10,093,761
		20.06.800 A	Landscape	512,103.00	SF	19.16	/SF	9,813,957
		40.01.010	Demolition Allowance, Bridge	4,028.00	sf	46.84	/sf	188,675
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	1,873.00	LF	35.04	/LF	65,622
		40.01.010 B	Demolition Allowance, Retaining Wall	3,967.00	LF	35.04	/LF	138,988
		40.01.050	Demolition Allowance, Building 1 Story	661,944.00	SF	34.01	/SF	22,512,726
		40.01.110	Demolition Allowance, Asphalt Pavement	189,536.95	SY	65.24	/SY	12,364,868
		40.01.110 A	Demolition Allowance, Concrete Pavement	12,154.00	SY	42.24	/SY	513,406
		40.01.140	Demolition Allowance, Concrete Curb	2,877.00	LF	20.00	/LF	57,545
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	19,107.40	LF	21.54	/LF	411,501
		40.01.150	Demolition Allowance, Concrete Sidewalk	16,012.40	SY	138.57	/SY	2,218,814
		40.01.810	Demolition Allowance, Remove Railroad Track	32,462.00	LF	38.89	/LF	1,262,489
		40.02.107 A	Natural Gas Pipeline, 3" to 8" Dia.	5,399.00	LF	342.27	/LF	1,847,935
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	880.00	LF	371.16	/LF	326,618
		40.02.111 A	Oil Pipeline, 6" to 15" Dia.	11,510.00	LF	371.16	/LF	4,272,016
		40.02.112 A	Oil Pipeline, 18" to 24" Dia.	11,750.00	LF	371.16	/LF	4,361,093
		40.02.116 A	Potable Water Pipeline, <10"	2,150.00	LF	342.27	/LF	735,888
		40.02.116 B	Potable Water Pipeline, 10" to 16"	2,070.00	LF	355.70	/LF	736,302
		40.02.117 A	Potable Water Pipeline, 18" to 24"	1,900.00	LF	544.16	/LF	1,033,913
		40.02.118 A	Potable Water Pipeline, 27" to 33"	501.00	LF	761.95	/LF	381,735
		40.02.119 A	Efluent Water Pipeline, 36" to 48" Dia.	5,350.00	LF	1,028.51	/LF	5,502,542
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	7,180.00	LF	649.87	/LF	4,666,088
		40.02.123 A	Underground Power Trans Facility (12 kV)	4,680.00	LF	385.83	/LF	1,805,706

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	2,080.00	LF	451.31	/LF	938,722
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	1,800.00	LF	493.62	/LF	888,515
		40.02.128 A	Sewer, Gravity Pipeline, 21" to 30" Dia.	200.00	LF	666.92	/LF	133,384
		40.02.150 C	Tel San Fernando Rd: East of CL	12,896.00	LF	385.83	/LF	4,975,724
		40.02.150 D	Tel San Fernando Rd: West of CL	15,740.00	LF	385.83	/LF	6,073,036
		40.03.110	Hazardous Material Removal Allowance, Heavy	0.57	RM	496,430.70	/RM	282,966
		40.03.150	Removal of Contaminated Soil	19,062,708.00	CF	4.55	/CF	86,786,432
		40.04.105	Environmental Mitigation Allowance	1.00	LS	43,303,715.53	/LS	43,303,716
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	5,698.00	LF	4,231.08	/LF	24,108,668
		40.05.500 A	24" Drainage Pipe	744.00	LF	324.94	/LF	241,753
		40.05.500 C	48" Drainage Pipe	1,323.00	LF	672.79	/LF	890,095
		40.05.500E	60" Drainage Pipe	867.00	LF	997.72	/LF	865,024
		40.05.500 G	42" Drainage Pipe	165.00	LF	613.77	/LF	101,272
		40.05.600 A	8.5'x5' Drainage Box	156.00	LF	2,888.32	/LF	450,579
		40.05.700 C	3'x3' Open Channel	2,108.00	LF	1,444.16	/LF	3,044,294
		40.06.100	Temporary Facilities	1.00	LS	52,926,763.32	/LS	52,926,763
		40.07.010	Right of Way	1.00	LS	417,709,092.19	/LS	417,709,092
		50.01.000	Wayside Signaling Equipment	0.55	RM	1,297,691.05	/RM	713,730
		50.04.000	Traffic Control and Dispatching Systems	0.55	RM	125,857.95	/RM	69,222
		50.04.010 A	New Traffic Signal	2.00	EA	1,140,649.46	/EA	2,281,299
		50.05.000	Communications	0.55	RM	1,191,623.75	/RM	655,393
		50.07.000	Hazard Detectors	0.55	RM	1,057,511.00	/RM	581,631
		60.02.000	Traction Power Supply	0.55	RM	3,142,696.58	/RM	1,728,483
		60.03.000	Traction Power Distribution	0.55	RM	3,321,085.25	/RM	1,826,597
		60.04.000	Traction Power Control	0.55	RM	5,229.13	/RM	2,876
		80.00.010	Professional Services	1.00	LS	240,821,057.47	/LS	240,821,057
		90.00.00	Unallocated Contingency	1.00	LS	81,165,009.22	/LS	81,165,009
			13.BUR(E1/SR14) Burbank E1/SR14					2,290,886,380

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
			03.SR14 SR14 End to End Alternative 2018\$					21,905,945,513
			E1A End to End Alternative 2018\$					
E1A.	01.PLM		Palmdale Subsection					
		10.01.001 A	Steel Truss HSR viaduct, 1 track Sierra Hwy platform track 2x215' Span	2.00	EA	11,849,013.99	/EA	23,698,028
		10.01.002 A	Steel Truss HSR viaduct, 2 track Sierra Hwy platform track 2x215' Span	1.00	EA	14,156,346.46	/EA	14,156,346
		10.01.122 B	Elevated Structure Ave Q Platform Track - 1 Track (22' Avg. Pier Ht) Avg 105' span	2.00	EA	4,545,159.40	/EA	9,090,319
		10.01.222 A	Elevated Structure Tuxford st - 2 Track U-Shape girder (20' Avg. Pier Ht) Avg 110' span	1.00	EA	6,636,405.32	/EA	6,636,405
		10.02.060 A	Sierra Hwy Underpass (SCRAA) Bridge Structure - Two Span Steel Plate Girder Structure with 1 Track - 2 190' spans	1.00	EA	7,428,868.75	/EA	7,428,869
		10.02.060 B	Sierra Hwy Underpass (UPRR) Bridge Structure - Two Span Steel Plate Girder Structure with 1 Track 2-190' spans substructure for enlargement	1.00	EA	8,826,597.91	/EA	8,826,598
		10.02.060E	Ave Q Underpass Railroad Bridge Structure - Single Span Steel Plate Girder Structure with 1 Track 1-105'span	3.00	EA	1,753,121.75	/EA	5,259,365
		10.04.100 A	36" Drainage Pipe	1,341.00	LF	332.16	/LF	445,423
		10.05.111	At-Grade Track-bed in Cut - 1 Track (5' Avg. Exc Depth)	0.68	RM	5,451,785.56	/RM	3,707,214
		10.05.112	At-Grade Track-bed in Cut - 1 Track (10' Avg. Exc Depth)	0.78	RM	7,191,154.41	/RM	5,609,100
		10.05.113	At-Grade Track-bed in Cut - 1 Track (15' Avg. Exc Depth)	0.08	RM	9,239,190.50	/RM	739,135
		10.05.114	At-Grade Track-bed in Cut - 1 Track (20' Avg. Exc Depth)	0.25	RM	11,595,893.36	/RM	2,898,973
		10.05.121	At-Grade Track-bed in Cut - 2 Track (5' Avg. Exc Depth)	0.66	RM	8,411,913.91	/RM	5,551,863
		10.05.122	At-Grade Track-bed in Cut - 2 Track (10' Avg. Exc Depth)	0.63	RM	10,382,783.05	/RM	6,541,153
		10.05.123	At-Grade Track-bed in Cut - 2 Track (15' Avg. Exc Depth)	0.07	RM	12,662,319.14	/RM	886,362
		10.05.124	At-Grade Track-bed in Cut - 2 Track (20' Avg. Exc Depth)	0.12	RM	15,255,925.67	/RM	1,830,711
		10.05.211	At-Grade Track-bed in Fill - 1 Track (5' Avg. Fill Ht)	2.63	RM	3,608,234.84	/RM	9,489,658
		10.05.212	At-Grade Track-bed in Fill - 1 Track (10' Avg. Fill Ht)	0.76	RM	4,575,935.89	/RM	3,477,711
		10.05.221	At-Grade Track-bed in Fill - 2 Track (5' Avg. Fill Ht)	1.64	RM	6,259,696.08	/RM	10,265,902
		10.05.222	At-Grade Track-bed in Fill - 2 Track (10' Avg. Fill Ht)	0.63	RM	7,458,897.46	/RM	4,699,105
		10.07.114 A	Cut & Cover LMF crossing - 2 Tracks	1.00	EA	30,389,234.16	/EA	30,389,234
		10.08.213	Retained Cut, Trench - 1 Track (30' Avg. Exc Depth)	0.51	RM	188,088,313.80	/RM	95,925,040
		10.08.411	Retained Fill, Walls Both Sides - 1 Tracks (10' Avg. Wall Ht)	1.10	RM	14,445,879.62	/RM	15,890,468
		10.09.110	Ballasted Track - 1 Track	6.28	RM	2,346,567.55	/RM	14,736,444
		10.09.110 A	SCRRRA Ballasted Track - 1 Track	1.42	RM	2,165,514.02	/RM	3,075,030

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.09.120	Ballasted Track - 2 Track	3.13	RM	4,232,329.00	/RM	13,247,190
		10.09.120 A	SCRRA Ballasted Track - 2 Track	0.83	RM	4,156,778.59	/RM	3,450,126
		10.09.240	Ballasted Track - 2 Track (Station Track)	1.76	RM	8,464,658.38	/RM	14,897,799
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.91	RM	2,946,367.84	/RM	2,681,195
		10.14.200	Ballasted Turnout (60MPH)	7.00	EA	473,003.91	/EA	3,311,027
		10.14.200 A	Ballasted Turnout (25MPH)	2.00	EA	279,012.11	/EA	558,024
		10.14.200b	Ballasted Turnout (30MPH)	1.00	EA	99,647.18	/EA	99,647
		10.14.305	Ballasted Crossover (80MPH)	3.00	EA	1,177,995.75	/EA	3,533,987
		10.14.400	Terminal Bumping Post	2.00	EA	26,572.58	/EA	53,145
		10.14.500 A	Crossing Panels	38.00	EA	1,195.77	/EA	45,439
		20.01.247 A	Main and Secondary Station Buildings	80,182.00	sf	505.46	/sf	40,528,530
		20.01.247 B	Auxiliary Building	10,000.00	sf	303.27	/sf	3,032,740
		20.03.001 A	HSR Platform (at grade)	112,776.00	SF	577.66	/SF	65,146,727
		20.03.001 B	Metrolink Platform (at grade)	20,427.00	SF	577.66	/SF	11,799,959
		20.06.100 B	Pedestrian Bridges (Overhead) Avg 120' span x 20' wide	123,032.00	SF	684.87	/SF	84,261,069
		20.06.201 A	Parking Roadways Avg 330 sf per stall	5,853.45	sf	5,694.25	/sf	33,330,985
		20.06.201 B	Parking Walkway (Standard Sidewalks)	234,350.00	SF	20.14	/SF	4,719,902
		20.06.201 C	Parking Walkway (Enhanced Plazas)	160,283.00	SF	24.57	/SF	3,938,657
		20.06.800 A	Landscape	712,875.00	SF	19.16	/SF	13,661,558
		20.07.011F	2 Lane Roadway Modification, New AC Paving (Foreston Dr Sta 91+00 to 132+33)	23,200.00	SF	18.77	/SF	435,404
		20.07.020	Roadway Modification, New AC Paving (including Curb & Sidewalk)	74,154.08	SF	22.25	/SF	1,650,215
		20.07.020E	2 Lane Roadway Modification, New AC Paving including Curb & Gutter, Sidewalk, painted median (Avenue Q) (From Sta 94+00 to Sta 130+00)	8,928.00	SF	19.13	/SF	170,804
		20.07.020 G	2 Lane Roadway Modification, New AC Paving including Curb & Gutter, Sidewalk (Avenue Q9 & Q12)	28,278.00	SF	21.37	/SF	604,186
		20.07.021 A	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Fifth St Sta 100+55 to 167+00)4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Fifth St Sta 100+55 to 167+00)	627,200.00	SF	33.45	/SF	20,977,106
		20.07.021 B	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Fifth St Sta 168+22 to 197+00)	332,831.52	SF	23.44	/SF	7,800,776
		20.07.021 C	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Avenue R Sta 91+53 to 128+48)	245,055.54	SF	39.96	/SF	9,792,737

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		20.07.021 D	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, (Sixth St Sta 10+00 to 50+15.07)	337,265.88	SF	21.18	/SF	7,144,012
		20.07.022 A	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Sierra Hwy Sta 500+00 to 625.88)	345,600.00	SF	31.14	/SF	10,760,993
		20.07.022 B	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Palmdale Blvd Sta 91+63 to 127+65)	1,611,264.00	SF	33.65	/SF	54,211,185
		20.07.022 C	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Avenue S, Sta 82+50 to 117+80)	311,289.90	SF	30.54	/SF	9,507,563
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	22,020.00	LF	35.04	/LF	771,492
		40.01.050	Demolition Allowance, Building 1 Story	1,795,428.00	SF	34.01	/SF	61,062,535
		40.01.110	Demolition Allowance, Asphalt Pavement	1,278,163.00	SY	65.24	/SY	83,383,830
		40.01.110 A	Demolition Allowance, Concrete Pavement	55,794.67	SY	42.24	/SY	2,356,864
		40.01.140	Demolition Allowance, Concrete Curb	64,343.00	LF	20.00	/LF	1,286,966
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	64,895.00	LF	21.54	/LF	1,397,592
		40.01.150	Demolition Allowance, Concrete Sidewalk	364,718.00	SY	138.57	/SY	50,538,411
		40.01.810	Demolition Allowance, Remove Railroad Track	4,350.00	LF	38.89	/LF	169,177
		40.01.900 A	Clearing & Grubbing Landscape Areas	1,218,518.00	SY	26.67	/SY	32,502,351
		40.02.107 A	Natural Gas Pipeline, 3" to 8" Dia.	2,128.00	LF	342.27	/LF	728,358
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	790.00	LF	371.16	/LF	293,214
		40.02.116 A	Potable Water Pipeline, <10"	160.00	LF	342.27	/LF	54,764
		40.02.116 B	Potable Water Pipeline, 10" to 16"	21,728.00	LF	355.70	/LF	7,728,683
		40.02.117 A	Potable Water Pipeline, 18" to 24"	825.00	LF	544.16	/LF	448,936
		40.02.121 A	Overhead Power Trans Facility (≥ 69 kV)	7,375.00	LF	577.66	/LF	4,260,278
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	4,490.00	LF	649.87	/LF	2,917,929
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	15,351.00	LF	451.46	/LF	6,930,409
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	4,642.00	LF	494.64	/LF	2,296,113
		40.02.129 A	Sewer, Gravity Pipeline, 48" to 66" Dia.	3,410.00	LF	666.92	/LF	2,274,194
		40.02.150 A	Electrical/Telephone Ductbank	800.00	LF	385.83	/LF	308,668
		40.02.150 B	Fiber Optic Ductbank	2.00	LF	387.23	/LF	774
		40.02.150 C	Tel San Fernando Rd: East of CL	1,320.00	LF	385.83	/LF	509,302
		40.02.150 D	Tel San Fernando Rd: West of CL	5,057.00	LF	385.83	/LF	1,951,165

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.03.105	Hazardous Material Removal Allowance, Medium	1.67	RM	496,430.70	/RM	829,039
		40.03.110	Hazardous Material Removal Allowance, Heavy	0.51	RM	496,430.69	/RM	253,180
		40.03.150	Removal of Contaminated Soil	1,025,000.00	CF	4.55	/CF	4,666,498
		40.04.105	Environmental Mitigation Allowance				/LS	33,864,698
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	2,277.00	LF	4,231.08	/LF	9,634,159
		40.05.211	Sound Wall - 1 Wall (8' Avg. Height)	2,690.00	LF	908.92	/LF	2,444,990
		40.05.400 A	Basin at Avenue O	1.00	EA	300,225.69	/EA	300,226
		40.05.400 B	Basin at Avenue R	1.00	EA	17,572,353.88	/EA	17,572,354
		40.05.500 B	36" Drainage Pipe	414.00	LF	361.04	/LF	149,471
		40.05.500 C	48" Drainage Pipe	9,247.00	LF	672.79	/LF	6,221,243
		40.05.500E	60" Drainage Pipe	1,090.00	LF	997.72	/LF	1,087,517
		40.05.600 C	10'x10' Drainage Box	1,120.00	LF	6,498.73	/LF	7,278,577
		40.05.600 D	Triple 21.5'x12' Drainage Box	3,333.00	LF	11,914.34	/LF	39,710,485
		40.05.700 A	12'x12' Open Channel	5,319.00	LF	3,249.36	/LF	17,283,370
		40.05.700 B	25'x12.5' Open Channel	2,095.00	LF	6,498.73	/LF	13,614,838
		40.05.800 A	Pumping Station	2.00	EA	361,040.51	/EA	722,081
		40.05.800 B	Basin Sump Pump	2.00	EA	361,040.51	/EA	722,081
		40.06.100	Temporary Facilities	1.00	LS	41,390,185.95	/LS	41,390,186
		40.07.010	Right of Way	1.00	LS	259,330,243.58	/LS	259,330,244
		40.08.425 A	Avenue R Overhead. Roadway Overcrossing - 4 lane - 6 spans	1.00	EA	15,701,411.76	/EA	15,701,412
		40.08.425 B	Palmdale blvd Overhead. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks - 5 spans	1.00	EA	25,225,834.43	/EA	25,225,834
		40.08.425 C	Palmdale blvd Overcrossing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks - 1 span	1.00	EA	3,810,602.40	/EA	3,810,602
		50.01.000	Wayside Signaling Equipment	3.13	RM	1,297,691.01	/RM	4,061,773
		50.04.000	Traffic Control and Dispatching Systems	3.13	RM	125,857.95	/RM	393,935
		50.04.010 A	New Traffic Signal	11.00	EA	1,140,649.42	/EA	12,547,144
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,955,565.84	/EA	9,911,132
		50.05.000	Communications	3.13	RM	1,191,623.70	/RM	3,729,782

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		50.07.000	Hazard Detectors	3.13	RM	1,057,510.96	/RM	3,310,009
		60.02.000	Traction Power Supply	3.13	RM	3,142,696.54	/RM	9,836,640
		60.03.000	Traction Power Distribution	3.13	RM	3,321,085.15	/RM	10,394,997
		60.04.000	Traction Power Control	3.13	RM	5,229.11	/RM	16,367
		80.00.010	Professional Services	1.00	LS	197,033,872.99	/LS	197,033,873
		90.00.00	Unallocated Contingency	1.00	LS	63,488,729.69	/LS	63,488,730
			01.PLM Palmdale Subsection	24.09	RM	74,608,410.79	/RM	1,797,316,616
	07.E1A Cen		E1A Central					
		10.01.004 D	Soledad Siphon viaduct - 2 tracks straddle bent, truss & U shape concrete girders 851' along HSR SB track	1.00	EA	36,566,301.46	/EA	36,566,301
		10.01.122 A	Elevated Structure North of Foreston Drive - 1 Track (10' Avg. Pier Ht) Avg 115' span	1.00	EA	31,745,710.90	/EA	31,745,711
		10.01.123 A	Elevated Structure South of Foreston Drive - 1 Track (37' Avg. Pier Ht) Avg 115' span	1.00	EA	68,067,491.16	/EA	68,067,491
		10.01.127 D	Elevated Structure AGUA DULCE - 1 Track & 2 Track TDZ (57' Avg. Pier Ht) ave 120' span	1.00	EA	93,190,997.02	/EA	93,190,997
		10.01.222 A	Elevated Structure Tuxford st - 2 Track U-Shape girder (20' Avg. Pier Ht) Avg 110' span	2.00	EA	6,636,405.31	/EA	13,272,811
		10.01.222 B	Elevated Structure Hansen Dam spillway - 2 Track 2 U-Shape girder ave 110' span	1.00	EA	4,935,631.12	/EA	4,935,631
		10.01.222 C	Elevated Structure Sheldon St - 2 Track 2 U-Shape girder ave 110' span	1.00	EA	6,582,222.08	/EA	6,582,222
		10.01.223 A	Elevated Structure Aliso Canyon - 2 Track Train Detention Zone (20' Avg. Pier Ht) Box culvert @ abutment	1.00	EA	45,610,252.13	/EA	45,610,252
		10.02.060F	Vulcan Mine Hopper facility Steel Structure - Steel portal frames Structure with 1 Track 4-21' spans	1.00	EA	13,315,951.04	/EA	13,315,951
		10.04.100 A	36" Drainage Pipe	8,928.00	LF	332.16	/LF	2,965,500
		10.04.100 B	48" Drainage Pipe	2,584.00	LF	597.88	/LF	1,544,930
		10.04.100 C	72" Drainage Pipe	2,033.00	LF	1,129.33	/LF	2,295,937
		10.05.121	At-Grade Track-bed in Cut - 2 Track (5' Avg. Exc Depth)	0.55	RM	8,411,913.91	/RM	4,626,553
		10.05.122	At-Grade Track-bed in Cut - 2 Track (10' Avg. Exc Depth)	1.42	RM	10,382,783.06	/RM	14,743,552
		10.05.123	At-Grade Track-bed in Cut - 2 Track (15' Avg. Exc Depth)	0.27	RM	12,662,319.26	/RM	3,418,826
		10.05.124	At-Grade Track-bed in Cut - 2 Track (20' Avg. Exc Depth)	1.45	RM	15,255,925.73	/RM	22,121,092
		10.05.126	At-Grade Track-bed in Cut - 2 Track (40' Avg. Exc Depth)	0.52	RM	29,284,204.90	/RM	15,227,787
		10.05.128	At-Grade Track-bed in Cut - 2 Track (60' Avg. Exc Depth)	0.96	RM	48,664,006.84	/RM	46,717,447
		10.05.130	At-Grade Track-bed in Cut - 2 Track (80' Avg. Exc Depth)	0.72	RM	73,078,556.44	/RM	52,616,561
		10.05.132	At-Grade Track-bed in Cut - 2 Track (100' Avg. Exc Depth)	0.24	RM	103,558,394.50	/RM	24,854,015

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.05.221	At-Grade Track-bed in Fill - 2 Track (5' Avg. Fill Ht)	1.20	RM	6,259,696.08	/RM	7,511,635
		10.05.222	At-Grade Track-bed in Fill - 2 Track (10' Avg. Fill Ht)	0.66	RM	7,458,897.47	/RM	4,922,872
		10.05.223	At-Grade Track-bed in Fill - 2 Track (15' Avg. Fill Ht)	0.41	RM	8,972,168.98	/RM	3,678,589
		10.05.224	At-Grade Track-bed in Fill - 2 Track (20' Avg. Fill Ht)	0.32	RM	10,788,704.53	/RM	3,452,385
		10.05.228	At-Grade Track-bed in Fill - 2 Track (60' Avg. Fill Ht)	1.31	RM	36,704,141.27	/RM	48,082,425
		10.07.100	TBM Single Track Twin Tunnels	18.04	RM	287,969,575.67	/RM	5,194,971,145
		10.07.107 A	Double Fault Chamber (for twin tunnels)	1.29	RM	692,938,981.97	/RM	893,891,287
		10.07.114 B	Cut & cover Sierra Highway Overhead - 2 Tracks 660' along HSR SB Track	1.00	EA	38,650,184.08	/EA	38,650,184
		10.07.114 C	Cut & cover Metrolink Overhead - 2 Tracks 454' along HSR SB track	1.00	EA	27,385,761.32	/EA	27,385,761
		10.07.214	Cut & Cover Box - 2 Track / 1 Box (40' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.14	RM	256,456,558.15	/RM	34,621,635
		10.07.215	Cut & Cover Box - 2 Track / 1 Box (50' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.12	RM	299,008,760.33	/RM	36,778,078
		10.07.216	Cut & Cover Box - 2 Track / 1 Box (60' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.06	RM	365,188,193.39	/RM	22,641,668
		10.07.224 A	UG Structure Barrel Springs rd - Two portal boxes for 2 + 2 roadway lanes + external shoulders 2x40'6 Horizontal Clearance	1.00	RF	8,709,577.44	/RF	8,709,577
		10.07.224 B	Aliso canyon acc. rd south. UG Structure - Two portal boxes for 2 + 2 roadway lanes + external shoulders 2x41'6 Horizontal Clearance	1.00	EA	12,569,068.13	/EA	12,569,068
		10.07.224 C	UG Structure Barrel Springs rd - Twin vaults for 2 + 2 roadway lanes + external shoulders 2x40 Horizontal clearance	1.00	EA	27,519,492.62	/EA	27,519,493
		10.07.225	Cut & Cover Box - 2 Track / 2 Box (50' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.09	RM	419,493,966.67	/RM	37,754,457
		10.07.301	SEM Tunnels	1.23	RM	574,553,420.83	/RM	706,700,708
		10.07.450	Mined Single Track Twin Tunnels	6.94	RM	395,196,695.55	/RM	2,742,665,067
		10.07.503	Crosspassages	186.00	EA	2,242,027.72	/EA	417,017,156
		10.07.504	Underground Paralleling/Switching Station	5.00	Ea	8,486,526.85	/Ea	42,432,634
		10.07.803 A	TBM Launching Twin Tunnels	1.00	Ea	217,694,975.27	/Ea	217,694,975
		10.07.806 A	Mountain Portal Construction	5.00	Ea	6,000,493.28	/Ea	30,002,466
		10.07.808 A	Adit mountain portal construction	1.00	Ea	3,000,246.64	/Ea	3,000,247
		10.07.809	ADIT Construction	0.76	mile	583,421,022.25	/mile	443,399,977
		10.07.809F	Underground TBM Dissassembly chamber	4.00	Ea	20,019,429.71	/Ea	80,077,719
		10.07.810 A	Tunnel Portal facilities, as described in TM 2.4.6. TSEFCZ excluded	6.00	EA	5,783,868.97	/EA	34,703,214
		10.07.811 A	Train Surface Evacuation and Fire Control Zone (TSEFCZ)	5.00	EA	138,861.73	/EA	694,309

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.07.812	Binocular shafts	1.00	EA	107,837,818.67	/EA	107,837,819
		10.07.850	Pumping Station	3.00	ea	361,040.51	/ea	1,083,122
		10.07.920 A	Tunnel Ventilation System - A	21.66	RM	26,432,306.05	/RM	572,523,749
		10.07.920 C	Tunnel Ventilation System - C	5.57	RM	26,432,306.05	/RM	147,227,945
		10.07.950 A	Construction Monitoring inside TBM twin tunnels	18.04	RM	2,356,699.15	/RM	42,514,853
		10.07.950 B	Construction Monitoring inside Mined or SEM twin tunnels	1.66	RM	4,262,588.68	/RM	7,075,897
		10.07.950 C	Construction Monitoring inside Cross Passages	186.00	EA	189,835.10	/EA	35,309,329
		10.07.950 D	Construction Monitoring inside Mined or SEM Single tunnel, incl adits	7.25	Mile	4,742,050.48	/Mile	34,379,866
		10.07.950E	Construction Monitoring inside Mined Underground Paralleling Station	5.00	EA	759,340.40	/EA	3,796,702
		10.07.950 G	Surface and Building Monitoring	3.46	RM	2,878,720.40	/RM	9,960,373
		10.08.221	Retained Cut, Trench - 2 Track (10' Avg. Exc Depth)	0.59	RM	67,458,987.81	/RM	39,800,803
		10.08.222	Retained Cut, Trench - 2 Track (20' Avg. Exc Depth)	0.79	RM	141,935,604.16	/RM	111,561,385
		10.08.223	Retained Cut, Trench - 2 Track (30' Avg. Exc Depth)	0.89	RM	239,696,445.62	/RM	213,329,837
		10.08.421	Retained Fill, Wall Both Sides - 2 Tracks (10' Avg. Wall Ht)	1.79	RM	17,283,539.45	/RM	30,937,536
		10.08.422	Retained Fill, Walls Both Sides - 2 Tracks (20' Avg. Wall Ht)	0.31	RM	29,259,622.36	/RM	9,158,262
		10.09.110	Ballasted Track - 1 Track	0.17	RM	2,346,570.24	/RM	398,917
		10.09.110 A	SCRRRA Ballasted Track - 1 Track	0.90	RM	2,165,513.73	/RM	1,948,962
		10.09.120	Ballasted Track - 2 Track	20.52	RM	4,232,329.12	/RM	86,847,394
		10.09.120 A	SCRRRA Ballasted Track - 2 Track	0.66	RM	4,156,778.86	/RM	2,743,474
		10.09.910	Ballasted Track Relocation - 1 Track (Temporary)	0.90	RM	2,946,367.84	/RM	2,651,731
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.45	RM	2,946,367.84	/RM	1,325,866
		10.10.120	Direct Fixation - 2 Track	16.30	RM	3,758,241.79	/RM	61,259,341
		10.14.200b	Ballasted Turnout (30MPH)	2.00	EA	99,647.18	/EA	199,294
		10.14.200 C	Ballasted Turnout (50MPH)	1.00	EA	279,012.11	/EA	279,012
		10.14.305	Ballasted Crossover (80MPH)	1.00	EA	1,177,995.75	/EA	1,177,996
		20.07.011 A	2 Lane Roadway Modification, New AC Paving (Sierra Hwy south of Ave S, Sta 728+00 to 775+12)	87,278.00	SF	29.13	/SF	2,542,012
		20.07.011F	2 Lane Roadway Modification, New AC Paving (Foreston Dr Sta 91+00 to 132+33)	122,592.00	SF	18.77	/SF	2,300,736
		20.07.012 A	2 Lane Roadway Modification, New AC Paving (Sierra Hwy south of Ave S, Sta 728+00 to 775+12)	92,947.00	SF	26.58	/SF	2,470,938

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		20.07.020	Roadway Modification, New AC Paving (including Curb & Sidewalk)	68,313.00	SF	22.25	/SF	1,520,229
		20.07.020 B	2 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk (Cul-de-Sacs, private streets 36' to 40' wide)	148,240.00	SF	20.87	/SF	3,094,004
		20.07.020 C	2 Lane Roadway Modification, New AC Paving including Curb & Sidewalk (E Avenue R11/Valley Forge from Sta 10+36 to Sta 18+38)	12,479.00	SF	22.23	/SF	277,469
		20.07.020 D	2 Lane Roadway Modification, New AC Paving including one-sided Curb & Sidewalk, painted median (Sierra Hwy north of Ave S, Sta 708+63 to 728+00)	10,970.00	SF	19.66	/SF	215,643
		20.07.021E	4 Lane Roadway Modification, New AC Paving with partial Curb & Gutter, Sidewalk (Tenth St at Ave S, Sta 10+49 to 32+38)	17,965.00	SF	23.05	/SF	414,131
		20.07.022 C	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Avenue S, Sta 82+50 to 117+80)	69,650.00	SF	30.54	/SF	2,127,283
		20.07.023 A	2 Lane Roadway Modification, New AC Paving including Curb & Sidewalk (E Avenue R11/Valley Forge)	12,480.00	SF	23.03	/SF	287,390
		20.07.023 B	2 Lane Roadway Modification, New AC Paving including one-sided Curb & Sidewalk, painted median (Sierra Hwy north of Ave S, Sta 708+63 to 728+00)	10,970.00	SF	19.88	/SF	218,087
		20.07.024 A	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Sixth St at Barrel Springs Sta 7+66 to 13+60)	17,965.00	SF	23.49	/SF	422,036
		20.07.025 A	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Avenue S, Sta 82+50 to 117+80)	69,650.00	SF	30.54	/SF	2,127,283
		20.07.026 A	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Private Road 1) (From Sta 12+64 to Sta 27+24)	12,042.00	SF	18.21	/SF	219,271
		20.07.026 C	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Wicks St Cul-de-sac)	5,115.00	SF	20.49	/SF	104,824
		20.07.026 D	4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalks (Branford St) (From Sta 13+34 to Sta 25+80)	60,670.00	SF	21.63	/SF	1,312,094
		20.07.026E	4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalks, Painted/Raised Median (Sheldon St) (From Sta 8+88 to Sta 12+70)	25,593.00	SF	20.66	/SF	528,804
		20.07.711 A	2 Lane Roadway Modification, New AC Paving (Access Rd at Water Treatment Plant) (From Sta 3+38 to 11+11+45.52)	33,516.00	SF	17.61	/SF	590,262
		20.07.711 B	2 Lane Roadway Modification, New AC Paving (Access Rd P-1)	42,261.00	SF	18.48	/SF	781,056
		20.07.711 C	2 Lane Roadway Modification, New AC Paving (Access Rd P-2)	84,246.00	SF	26.04	/SF	2,193,445
		40.01.010	Demolition Allowance, Bridge	14,495.00	sf	46.84	/sf	678,958
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	3,927.00	LF	35.04	/LF	137,586
		40.01.050	Demolition Allowance, Building 1 Story	969,700.00	SF	34.01	/SF	32,979,513
		40.01.110	Demolition Allowance, Asphalt Pavement	353,841.00	SY	65.24	/SY	23,083,611
		40.01.110 A	Demolition Allowance, Concrete Pavement	14,661.00	SY	42.24	/SY	619,306
		40.01.140	Demolition Allowance, Concrete Curb	9,220.00	LF	20.00	/LF	184,415
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	14,593.00	LF	21.54	/LF	314,278
		40.01.150	Demolition Allowance, Concrete Sidewalk	14,211.00	SY	138.57	/SY	1,969,196
		40.01.810	Demolition Allowance, Remove Railroad Track	21,381.00	LF	38.89	/LF	831,535

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.02.107 A	Natural Gas Pipeline, 3" to 8" Dia.	3,180.00	LF	342.27	/LF	1,088,430
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	4,045.00	LF	371.16	/LF	1,501,330
		40.02.110 A	Natural Gas Pipeline, 30" to 42" Dia.	828.00	LF	539.11	/LF	446,383
		40.02.116 A	Potable Water Pipeline, <10"	2,047.00	LF	342.27	/LF	700,634
		40.02.116 B	Potable Water Pipeline, 10" to 16"	7,919.00	LF	355.70	/LF	2,816,801
		40.02.117 A	Potable Water Pipeline, 18" to 24"	13,605.00	LF	544.16	/LF	7,403,361
		40.02.118 A	Potable Water Pipeline, 27" to 33"	3,950.00	LF	761.95	/LF	3,009,689
		40.02.119 A	Efluent Water Pipeline, 36" to 48" Dia.	932.00	LF	1,028.51	/LF	958,574
		40.02.119 B	Runoff Water Pipeline, 48" Dia.	1,144.00	LF	1,028.51	/LF	1,176,618
		40.02.121 A	Overhead Power Trans Facility (≥ 69 kV)	19,202.00	LF	577.66	/LF	11,092,320
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	27,879.00	LF	649.87	/LF	18,117,807
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	1,632.00	LF	451.31	/LF	736,538
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	2,788.00	LF	493.62	/LF	1,376,209
		40.02.150 A	Electrical/Telephone Ductbank	500.00	LF	385.83	/LF	192,917
		40.02.150 B	Fiber Optic Ductbank	1.00	LF	383.74	/LF	384
		40.02.150 C	Tel San Fernando Rd: East of CL	15,556.00	LF	385.83	/LF	6,002,044
		40.02.150 D	Tel San Fernando Rd: West of CL	15,465.00	LF	385.83	/LF	5,966,935
		40.02.200 A	Tel San Fernando Rd: West of CL	1.00	LF		/LF	
		40.03.100	Hazardous Material Removal Allowance, Light	0.89	RM	496,430.70	/RM	441,823
		40.03.105	Hazardous Material Removal Allowance, Medium	3.98	RM	496,430.70	/RM	1,973,312
		40.03.110	Hazardous Material Removal Allowance, Heavy	4.72	RM	496,430.70	/RM	2,340,671
		40.03.150	Removal of Contaminated Soil	39,709,086.00	CF	4.55	/CF	180,782,808
		40.04.105	Environmental Mitigation Allowance	1.00	LS	444,812,187.05	/LS	444,812,187
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	2,898.00	LF	4,231.08	/LF	12,261,657
		40.05.012 B	Retaining wall 1 wall next to abutments (30' avg height)	1,800.90	LF	1,945.49	/LF	3,503,635
		40.05.211	Sound Wall - 1 Wall (8' Avg. Height)	3,820.00	LF	908.92	/LF	3,472,067
		40.05.401 A	Basin E1/E2 Sta 575+00	1.00	EA	320,096.36	/EA	320,096

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.05.401 B	Basin E1/E2 Sta 584+44	1.00	EA	321,339.40	/EA	321,339
		40.05.401 C	Basin E1/E2 Sta 620+44	1.00	EA	376,113.41	/EA	376,113
		40.05.401 D	Basin E1/E2 Sta 633+70	1.00	EA	458,878.06	/EA	458,878
		40.05.401 H	Basin E1A/E2A Sta 462+18	1.00	EA	510,155.48	/EA	510,155
		40.05.401I	Basin E1A/E2A Sta 549+98	1.00	EA	510,155.47	/EA	510,155
		40.05.401J	Basin E1A/E2A Sta 411+50	1.00	EA	503,663.08	/EA	503,663
		40.05.401 K	Basin E1A/E2A Sta 585+50	1.00	EA	343,517.28	/EA	343,517
		40.05.401L	Basin E1A/E2A Sta 606+50	1.00	EA	380,307.54	/EA	380,308
		40.05.500 A	24" Drainage Pipe	3,050.00	LF	324.94	/LF	991,056
		40.05.500 B	36" Drainage Pipe	9,106.00	LF	361.04	/LF	3,287,635
		40.05.500 C	48" Drainage Pipe	5,200.00	LF	672.79	/LF	3,498,483
		40.05.500E	60" Drainage Pipe	2,766.00	LF	997.72	/LF	2,759,699
		40.05.500F	72" Drainage Pipe	66.00	LF	1,227.54	/LF	81,017
		40.05.500 H	96" Drainage Pipe	692.00	LF	1,331.52	/LF	921,410
		40.05.600 B	10.5'x6.5' Drainage Box	1,342.00	LF	3,610.41	/LF	4,845,164
		40.05.800 A	Pumping Station	1.00	EA	361,040.51	/EA	361,041
		40.07.010	Right of Way	1.00	LS	687,405,621.16	/LS	687,405,621
		40.08.422 A	Mountain Springs rd West Overhead. Roadway Overcrossing - 2 lane roadway over 3 tracks	1.00	EA	4,904,200.38	/EA	4,904,200
		40.08.422 B	Foreston drive Overhead. Roadway Overcrossing - 2 lane roadway over highway	1.00	EA	6,948,055.93	/EA	6,948,056
		40.08.422 C	Foreston South Access Road. Access road bridge to tunnel portal - 2 lane roadway	1.00	EA	22,022,951.24	/EA	22,022,951
		40.08.422 D	Aliso canyon Access Road north. Access road bridge to tunnel portal - 2 lane roadway	1.00	EA	9,569,559.35	/EA	9,569,559
		40.08.422E	Adit access road E1 STA 1485. Access road bridge to tunnel portal - 2 lane roadway	1.00	EA	6,950,166.75	/EA	6,950,167
		40.08.425 D	Avenue S Overcrossing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 1 span	1.00	EA	5,767,638.51	/EA	5,767,639
		40.08.425E	Avenue S Overhead. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 3 spans	1.00	EA	12,315,880.07	/EA	12,315,880
		40.08.425 G	Brandford st Overhead. Roadway Overcrossing - 4 lane - 1 span	1.00	EA	4,823,425.18	/EA	4,823,425
		40.08.425I	Avenue S Overcrossing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 7 spans	1.00	EA	25,278,484.25	/EA	25,278,484
		50.01.000	Wayside Signaling Equipment	35.22	RM	1,297,691.00	/RM	45,704,677

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		50.04.000	Traffic Control and Dispatching Systems	35.22	RM	125,857.95	/RM	4,432,717
		50.04.010 A	New Traffic Signal	5.00	EA	1,140,649.41	/EA	5,703,247
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,955,565.80	/EA	9,911,132
		50.05.000	Communications	35.22	RM	1,191,623.69	/RM	41,968,986
		50.07.000	Hazard Detectors	35.22	RM	1,057,510.95	/RM	37,245,536
		60.02.000	Traction Power Supply	35.22	RM	3,142,696.51	/RM	110,685,771
		60.03.000	Traction Power Distribution	35.22	RM	3,321,085.13	/RM	116,968,618
		60.04.000	Traction Power Control	35.22	RM	5,229.10	/RM	184,169
		80.00.010	Professional Services	1.00	LS	2,526,602,827.06	/LS	2,526,602,827
		90.00.00	Unallocated Contingency	1.00	LS	650,453,199.35	/LS	650,453,199
			07.E1A Cen E1A Central					18,304,314,879
	10.Bur (E1A/S R14A)		Burbank E1A/SR14A					
		10.07.214	Cut & Cover Box - 2 Track / 1 Box (40' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.10	RM	256,456,558.20	/RM	25,645,656
		10.07.215	Cut & Cover Box - 2 Track / 1 Box (50' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.09	RM	299,008,803.33	/RM	26,910,792
		10.07.216	Cut & Cover Box - 2 Track / 1 Box (60' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.08	RM	365,188,157.75	/RM	29,215,053
		10.07.219 A	Cut & Cover Box - 2 Track / 1 Box (100' Avg. Exc Depth)	0.38	RM	624,348,624.24	/RM	237,252,477
		10.07.250 A	Cut & Cover Box -Burbank Station (85' Avg. Exc Depth)	0.27	RM	1,103,472,006.11	/RM	297,937,442
		10.07.250 B	Cut & Cover Box - 4track/1Box (100' Avg. Exc Depth)	0.01	RM	1,262,762,165.71	/RM	17,678,670
		10.07.250 C	Cut & Cover Box - 3track/1Box (100' Avg. Exc Depth)	0.02	RM	1,262,762,165.00	/RM	27,780,768
		10.07.250 D	Cut & Cover Box - 5track/1Box (100' Avg. Exc Depth)	0.15	RM	1,262,762,165.57	/RM	188,151,563
		10.07.301	SEM Tunnels	0.12	RM	798,835,992.50	/RM	95,860,319
		10.07.301	SEM Tunnels	0.12	RM	798,835,992.42	/RM	95,860,319
		10.07.920 C	Tunnel Ventilation System - C	0.12	RM	26,432,306.80	/RM	3,224,741
		10.07.950 D	Construction Monitoring inside Mined or SEM Single tunnel, incl adits	0.12	Mile	4,742,050.49	/Mile	578,530
		10.07.950 G	Surface and Building Monitoring	0.12	RM	2,878,720.42	/RM	345,446
		10.08.221	Retained Cut, Trench - 2 Track (10' Avg. Exc Depth)	0.07	RM	67,458,987.57	/RM	4,722,129
		10.08.222	Retained Cut, Trench - 2 Track (20' Avg. Exc Depth)	0.10	RM	141,935,601.00	/RM	14,193,560

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.08.223	Retained Cut, Trench - 2 Track (30' Avg. Exc Depth)	0.11	RM	239,696,445.09	/RM	26,366,609
		10.10.110	Direct Fixation - 1 Track	1.69	RM	1,879,433.27	/RM	3,176,242
		10.10.120	Direct Fixation - 2 Track	2.10	RM	3,758,241.79	/RM	7,892,308
		10.14.200	Ballasted Turnout (60MPH)	4.00	EA	473,003.91	/EA	1,892,016
		10.14.200 A	Ballasted Turnout (25MPH)	2.00	EA	279,012.11	/EA	558,024
		10.14.200b	Ballasted Turnout (30MPH)	1.00	EA	99,647.18	/EA	99,647
		10.14.305	Ballasted Crossover (80MPH)	2.00	EA	1,177,995.75	/EA	2,355,992
		10.14.400	Terminal Bumping Post	4.00	EA	26,572.58	/EA	106,290
		20.01.247 A	Main and Secondary Station Buildings	141,954.00	sf	505.46	/sf	71,751,602
		20.01.247 B	Auxiliary Building	10,000.00	sf	303.27	/sf	3,032,740
		20.03.001 C	HSR Platform (underground)	84,600.00	SF	577.66	/SF	48,870,443
		20.06.201 B	Parking Walkway (Standard Sidewalks)	316,516.00	SF	20.14	/SF	6,374,757
		20.06.201 C	Parking Walkway (Enhanced Plazas)	410,764.00	SF	24.57	/SF	10,093,761
		20.06.800 A	Landscape	512,103.00	SF	19.16	/SF	9,813,957
		40.01.010	Demolition Allowance, Bridge	4,028.00	sf	46.84	/sf	188,675
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	1,873.00	LF	35.04	/LF	65,622
		40.01.010 B	Demolition Allowance, Retaining Wall	3,967.00	LF	35.04	/LF	138,988
		40.01.050	Demolition Allowance, Building 1 Story	661,944.00	SF	34.01	/SF	22,512,726
		40.01.110	Demolition Allowance, Asphalt Pavement	189,536.95	SY	65.24	/SY	12,364,868
		40.01.110 A	Demolition Allowance, Concrete Pavement	12,154.00	SY	42.24	/SY	513,406
		40.01.140	Demolition Allowance, Concrete Curb	2,877.00	LF	20.00	/LF	57,545
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	19,107.40	LF	21.54	/LF	411,501
		40.01.150	Demolition Allowance, Concrete Sidewalk	16,012.40	SY	138.57	/SY	2,218,814
		40.01.810	Demolition Allowance, Remove Railroad Track	32,462.00	LF	38.89	/LF	1,262,489
		40.02.107 A	Natural Gas Pipeline, 3" to 8" Dia.	5,399.00	LF	342.27	/LF	1,847,935
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	880.00	LF	371.16	/LF	326,618
		40.02.111 A	Oil Pipeline, 6" to 15" Dia.	11,510.00	LF	371.16	/LF	4,272,016
		40.02.112 A	Oil Pipeline, 18" to 24" Dia.	11,750.00	LF	371.16	/LF	4,361,093

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.02.116 A	Potable Water Pipeline, <10"	2,150.00	LF	342.27	/LF	735,888
		40.02.116 B	Potable Water Pipeline, 10" to 16"	2,070.00	LF	355.70	/LF	736,302
		40.02.117 A	Potable Water Pipeline, 18" to 24"	1,900.00	LF	544.16	/LF	1,033,913
		40.02.118 A	Potable Water Pipeline, 27" to 33"	501.00	LF	761.95	/LF	381,735
		40.02.119 A	Efluent Water Pipeline, 36" to 48" Dia.	5,350.00	LF	1,028.51	/LF	5,502,542
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	7,180.00	LF	649.87	/LF	4,666,088
		40.02.123 A	Underground Power Trans Facility (12 kV)	4,680.00	LF	385.83	/LF	1,805,706
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	2,080.00	LF	451.31	/LF	938,722
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	1,800.00	LF	493.62	/LF	888,515
		40.02.128 A	Sewer, Gravity Pipeline, 21" to 30" Dia.	200.00	LF	666.92	/LF	133,384
		40.02.150 C	Tel San Fernando Rd: East of CL	12,896.00	LF	385.83	/LF	4,975,724
		40.02.150 D	Tel San Fernando Rd: West of CL	15,740.00	LF	385.83	/LF	6,073,036
		40.03.110	Hazardous Material Removal Allowance, Heavy	0.57	RM	496,430.70	/RM	282,966
		40.03.150	Removal of Contaminated Soil	19,062,708.00	CF	4.55	/CF	86,786,432
		40.04.105	Environmental Mitigation Allowance	1.00	LS	42,670,347.32	/LS	42,670,347
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	5,698.00	LF	4,231.08	/LF	24,108,668
		40.05.500 A	24" Drainage Pipe	744.00	LF	324.94	/LF	241,753
		40.05.500 C	48" Drainage Pipe	1,323.00	LF	672.79	/LF	890,095
		40.05.500E	60" Drainage Pipe	867.00	LF	997.72	/LF	865,024
		40.05.500 G	42" Drainage Pipe	165.00	LF	613.77	/LF	101,272
		40.05.600 A	8.5'x5' Drainage Box	156.00	LF	2,888.32	/LF	450,579
		40.05.700 C	3'x3' Open Channel	2,108.00	LF	1,444.16	/LF	3,044,294
		40.06.100	Temporary Facilities	1.00	LS	52,152,646.84	/LS	52,152,647
		40.07.010	Right of Way	1.00	LS	417,709,093.19	/LS	417,709,093
		50.01.000	Wayside Signaling Equipment	0.55	RM	1,297,691.00	/RM	713,730
		50.04.000	Traffic Control and Dispatching Systems	0.55	RM	125,857.95	/RM	69,222
		50.04.010 A	New Traffic Signal	2.00	EA	1,140,649.42	/EA	2,281,299

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,955,565.80	/EA	9,911,132
		50.05.000	Communications	0.55	RM	1,191,623.67	/RM	655,393
		50.07.000	Hazard Detectors	0.55	RM	1,057,510.96	/RM	581,631
		60.02.000	Traction Power Supply	0.55	RM	3,142,696.51	/RM	1,728,483
		60.03.000	Traction Power Distribution	0.55	RM	3,321,085.13	/RM	1,826,597
		60.04.000	Traction Power Control	0.55	RM	5,229.11	/RM	2,876
		80.00.010	Professional Services	1.00	LS	239,114,967.49	/LS	239,114,967
		90.00.00	Unallocated Contingency	1.00	LS	80,654,672.50	/LS	80,654,673
			10.Bur (E1A/SR14A) Burbank E1A/SR14A					2,302,998,875
			04.E1A. E1A End to End Alternative 2018\$					22,404,630,369
			E2A End to End Alternative 2018\$					
05.E2A	01.PLM		Palmdale Subsection					
		10.01.001 A	Steel Truss HSR viaduct, 1 track Sierra Hwy platform track 2x215' Span	2.00	EA	11,849,014.00	/EA	23,698,028
		10.01.002 A	Steel Truss HSR viaduct, 2 track Sierra Hwy platform track 2x215' Span	1.00	EA	14,156,346.45	/EA	14,156,346
		10.01.122 B	Elevated Structure Ave Q Platform Track - 1 Track (22' Avg. Pier Ht) Avg 105' span	2.00	EA	4,545,159.41	/EA	9,090,319
		10.01.222 A	Elevated Structure Tuxford st - 2 Track U-Shape girder (20' Avg. Pier Ht) Avg 110' span	1.00	EA	6,636,405.31	/EA	6,636,405
		10.02.060 A	Sierra Hwy Underpass (SCRAA) Bridge Structure - Two Span Steel Plate Girder Structure with 1 Track - 2 190' spans	1.00	EA	7,428,868.75	/EA	7,428,869
		10.02.060 B	Sierra Hwy Underpass (UPRR) Bridge Structure - Two Span Steel Plate Girder Structure with 1 Track 2-190' spans substructure for enlargement	1.00	EA	8,826,597.92	/EA	8,826,598
		10.02.060E	Ave Q Underpass Railroad Bridge Structure - Single Span Steel Plate Girder Structure with 1 Track 1-105'span	3.00	EA	1,753,121.75	/EA	5,259,365
		10.04.100 A	36" Drainage Pipe	1,341.00	LF	332.16	/LF	445,423
		10.05.111	At-Grade Track-bed in Cut - 1 Track (5' Avg. Exc Depth)	0.68	RM	5,451,785.57	/RM	3,707,214
		10.05.112	At-Grade Track-bed in Cut - 1 Track (10' Avg. Exc Depth)	0.78	RM	7,191,154.40	/RM	5,609,100
		10.05.113	At-Grade Track-bed in Cut - 1 Track (15' Avg. Exc Depth)	0.08	RM	9,239,190.62	/RM	739,135
		10.05.114	At-Grade Track-bed in Cut - 1 Track (20' Avg. Exc Depth)	0.25	RM	11,595,893.36	/RM	2,898,973
		10.05.121	At-Grade Track-bed in Cut - 2 Track (5' Avg. Exc Depth)	0.66	RM	8,411,913.89	/RM	5,551,863
		10.05.122	At-Grade Track-bed in Cut - 2 Track (10' Avg. Exc Depth)	0.63	RM	10,382,783.06	/RM	6,541,153
		10.05.123	At-Grade Track-bed in Cut - 2 Track (15' Avg. Exc Depth)	0.07	RM	12,662,319.00	/RM	886,362
		10.05.124	At-Grade Track-bed in Cut - 2 Track (20' Avg. Exc Depth)	0.12	RM	15,255,925.75	/RM	1,830,711

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.05.211	At-Grade Track-bed in Fill - 1 Track (5' Avg. Fill Ht)	2.63	RM	3,608,234.84	/RM	9,489,658
		10.05.212	At-Grade Track-bed in Fill - 1 Track (10' Avg. Fill Ht)	0.76	RM	4,575,935.88	/RM	3,477,711
		10.05.221	At-Grade Track-bed in Fill - 2 Track (5' Avg. Fill Ht)	1.64	RM	6,259,696.09	/RM	10,265,902
		10.05.222	At-Grade Track-bed in Fill - 2 Track (10' Avg. Fill Ht)	0.63	RM	7,458,897.46	/RM	4,699,105
		10.07.114 A	Cut & Cover LMF crossing - 2 Tracks	1.00	EA	30,389,234.16	/EA	30,389,234
		10.08.213	Retained Cut, Trench - 1 Track (30' Avg. Exc Depth)	0.51	RM	188,088,313.78	/RM	95,925,040
		10.08.411	Retained Fill, Walls Both Sides - 1 Tracks (10' Avg. Wall Ht)	1.10	RM	14,445,879.63	/RM	15,890,468
		10.09.110	Ballasted Track - 1 Track	6.28	RM	2,346,567.55	/RM	14,736,444
		10.09.110 A	SCRRRA Ballasted Track - 1 Track	1.42	RM	2,165,514.02	/RM	3,075,030
		10.09.120	Ballasted Track - 2 Track	3.13	RM	4,232,329.01	/RM	13,247,190
		10.09.120 A	SCRRRA Ballasted Track - 2 Track	0.83	RM	4,156,778.58	/RM	3,450,126
		10.09.240	Ballasted Track - 2 Track (Station Track)	1.76	RM	8,464,658.39	/RM	14,897,799
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.91	RM	2,946,367.84	/RM	2,681,195
		10.14.200	Ballasted Turnout (60MPH)	7.00	EA	473,003.91	/EA	3,311,027
		10.14.200 A	Ballasted Turnout (25MPH)	2.00	EA	279,012.11	/EA	558,024
		10.14.200b	Ballasted Turnout (30MPH)	1.00	EA	99,647.18	/EA	99,647
		10.14.305	Ballasted Crossover (80MPH)	3.00	EA	1,177,995.76	/EA	3,533,987
		10.14.400	Terminal Bumping Post	2.00	EA	26,572.58	/EA	53,145
		10.14.500 A	Crossing Panels	38.00	EA	1,195.77	/EA	45,439
		20.01.247 A	Main and Secondary Station Buildings	80,182.00	sf	505.46	/sf	40,528,530
		20.01.247 B	Auxiliary Building	10,000.00	sf	303.27	/sf	3,032,740
		20.03.001 A	HSR Platform (at grade)	112,776.00	SF	577.66	/SF	65,146,727
		20.03.001 B	Metrolink Platform (at grade)	20,427.00	SF	577.66	/SF	11,799,959
		20.06.100 B	Pedestrian Bridges (Overhead) Avg 120' span x 20' wide	123,032.00	SF	684.87	/SF	84,261,069
		20.06.201 A	Parking Roadways Avg 330 sf per stall	5,853.45	sf	5,694.25	/sf	33,330,985
		20.06.201 B	Parking Walkway (Standard Sidewalks)	234,350.00	SF	20.14	/SF	4,719,902
		20.06.201 C	Parking Walkway (Enhanced Plazas)	160,283.00	SF	24.57	/SF	3,938,656
		20.06.800 A	Landscape	712,875.00	SF	19.16	/SF	13,661,558

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		20.07.011F	2 Lane Roadway Modification, New AC Paving (Foreston Dr Sta 91+00 to 132+33)	23,200.00	SF	18.77	/SF	435,404
		20.07.020	Roadway Modification, New AC Paving (including Curb & Sidewalk)	74,154.08	SF	22.25	/SF	1,650,215
		20.07.020E	2 Lane Roadway Modification, New AC Paving including Curb & Gutter, Sidewalk, painted median (Avenue Q) (From Sta 94+00 to Sta 130+00)	8,928.00	SF	19.13	/SF	170,804
		20.07.020G	2 Lane Roadway Modification, New AC Paving including Curb & Gutter, Sidewalk (Avenue Q9 & Q12)	28,278.00	SF	21.37	/SF	604,186
		20.07.021A	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Fifth St Sta 100+55 to 167+00)4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Fifth St Sta 100+55 to 167+00)	627,200.00	SF	33.45	/SF	20,977,106
		20.07.021B	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Fifth St Sta 168+22 to 197+00)	332,831.52	SF	23.44	/SF	7,800,776
		20.07.021C	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Avenue R Sta 91+53 to 128+48)	245,055.54	SF	39.96	/SF	9,792,737
		20.07.021D	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, (Sixth St Sta 10+00 to 50+15.07)	337,265.88	SF	21.18	/SF	7,144,012
		20.07.022A	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Sierra Hwy Sta 500+00 to 625.88)	345,600.00	SF	31.14	/SF	10,760,993
		20.07.022B	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median (Palmdale Blvd Sta 91+63 to 127+65)	1,611,264.00	SF	33.65	/SF	54,211,185
		20.07.022C	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Avenue S, Sta 82+50 to 117+80)	311,289.90	SF	30.54	/SF	9,507,563
		40.01.010A	Demolition Allowance, Masonry/Sound Wall	22,020.00	LF	35.04	/LF	771,492
		40.01.050	Demolition Allowance, Building 1 Story	1,795,428.00	SF	34.01	/SF	61,062,535
		40.01.110	Demolition Allowance, Asphalt Pavement	1,278,163.00	SY	65.24	/SY	83,383,830
		40.01.110A	Demolition Allowance, Concrete Pavement	55,794.67	SY	42.24	/SY	2,356,864
		40.01.140	Demolition Allowance, Concrete Curb	64,343.00	LF	20.00	/LF	1,286,966
		40.01.140A	Demolition Allowance, Concrete Curb & Gutter	64,895.00	LF	21.54	/LF	1,397,592
		40.01.150	Demolition Allowance, Concrete Sidewalk	364,718.00	SY	138.57	/SY	50,538,411
		40.01.810	Demolition Allowance, Remove Railroad Track	4,350.00	LF	38.89	/LF	169,177
		40.01.900A	Clearing & Grubbing Landscape Areas	1,218,518.00	SY	26.67	/SY	32,502,351
		40.02.107A	Natural Gas Pipeline, 3" to 8" Dia.	2,128.00	LF	342.27	/LF	728,358
		40.02.108A	Natural Gas Pipeline, 10" to 18" Dia.	790.00	LF	371.16	/LF	293,214
		40.02.116A	Potable Water Pipeline, <10"	160.00	LF	342.27	/LF	54,764
		40.02.116B	Potable Water Pipeline, 10" to 16"	21,728.00	LF	355.70	/LF	7,728,683
		40.02.117A	Potable Water Pipeline, 18" to 24"	825.00	LF	544.16	/LF	448,936
		40.02.121A	Overhead Power Trans Facility (≥ 69 kV)	7,375.00	LF	577.66	/LF	4,260,278

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	4,490.00	LF	649.87	/LF	2,917,929
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	15,351.00	LF	451.46	/LF	6,930,409
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	4,642.00	LF	494.64	/LF	2,296,113
		40.02.129 A	Sewer, Gravity Pipeline, 48" to 66" Dia.	3,410.00	LF	666.92	/LF	2,274,194
		40.02.150 A	Electrical/Telephone Ductbank	800.00	LF	385.83	/LF	308,668
		40.02.150 B	Fiber Optic Ductbank	2.00	LF	387.22	/LF	774
		40.02.150 C	Tel San Fernando Rd: East of CL	1,320.00	LF	385.83	/LF	509,302
		40.02.150 D	Tel San Fernando Rd: West of CL	5,057.00	LF	385.83	/LF	1,951,165
		40.03.105	Hazardous Material Removal Allowance, Medium	1.67	RM	496,430.70	/RM	829,039
		40.03.110	Hazardous Material Removal Allowance, Heavy	0.51	RM	496,430.71	/RM	253,180
		40.03.150	Removal of Contaminated Soil	1,025,000.00	CF	4.55	/CF	4,666,498
		40.04.105	Environmental Mitigation Allowance				/LS	33,864,698
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	2,277.00	LF	4,231.08	/LF	9,634,159
		40.05.211	Sound Wall - 1 Wall (8' Avg. Height)	2,690.00	LF	908.92	/LF	2,444,990
		40.05.400 A	Basin at Avenue O	1.00	EA	300,225.70	/EA	300,226
		40.05.400 B	Basin at Avenue R	1.00	EA	17,572,353.87	/EA	17,572,354
		40.05.500 B	36" Drainage Pipe	414.00	LF	361.04	/LF	149,471
		40.05.500 C	48" Drainage Pipe	9,247.00	LF	672.79	/LF	6,221,243
		40.05.500E	60" Drainage Pipe	1,090.00	LF	997.72	/LF	1,087,517
		40.05.600 C	10'x10' Drainage Box	1,120.00	LF	6,498.73	/LF	7,278,577
		40.05.600 D	Triple 21.5'x12' Drainage Box	3,333.00	LF	11,914.34	/LF	39,710,485
		40.05.700 A	12'x12' Open Channel	5,319.00	LF	3,249.36	/LF	17,283,370
		40.05.700 B	25'x12.5' Open Channel	2,095.00	LF	6,498.73	/LF	13,614,838
		40.05.800 A	Pumping Station	2.00	EA	361,040.51	/EA	722,081
		40.05.800 B	Basin Sump Pump	2.00	EA	361,040.51	/EA	722,081
		40.06.100	Temporary Facilities	1.00	LS	41,390,185.95	/LS	41,390,186
		40.07.010	Right of Way	1.00	LS	259,330,243.58	/LS	259,330,244

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.08.425 A	Avenue R Overhead. Roadway Overcrossing - 4 lane - 6 spans	1.00	EA	15,701,411.77	/EA	15,701,412
		40.08.425 B	Palmdale blvd Overhead. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks - 5 spans	1.00	EA	25,225,834.42	/EA	25,225,834
		40.08.425 C	Palmdale blvd Overcorssing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks - 1 span	1.00	EA	3,810,602.40	/EA	3,810,602
		50.01.000	Wayside Signaling Equipment	3.13	RM	1,297,691.01	/RM	4,061,773
		50.04.000	Traffic Control and Dispatching Systems	3.13	RM	125,857.95	/RM	393,935
		50.04.010 A	New Traffic Signal	11.00	EA	1,140,649.42	/EA	12,547,144
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,955,565.84	/EA	9,911,132
		50.05.000	Communications	3.13	RM	1,191,623.70	/RM	3,729,782
		50.07.000	Hazard Detectors	3.13	RM	1,057,510.96	/RM	3,310,009
		60.02.000	Traction Power Supply	3.13	RM	3,142,696.53	/RM	9,836,640
		60.03.000	Traction Power Distribution	3.13	RM	3,321,085.16	/RM	10,394,997
		60.04.000	Traction Power Control	3.13	RM	5,229.10	/RM	16,367
		80.00.010	Professional Services	1.00	LS	197,033,873.00	/LS	197,033,873
		90.00.00	Unallocated Contingency	1.00	LS	63,488,729.68	/LS	63,488,730
			01.PLM Palmdale Subsection	24.09	RM	74,608,410.79	/RM	1,797,316,616
	08.E2A Cen		E2A Central					
		10.01.004 D	Soledad Siphon viaduct - 2 tracks straddle bent, truss & U shape concrete girders 851' along HSR SB track	1.00	EA	36,566,301.47	/EA	36,566,301
		10.01.122 A	Elevated Structure North of Foreston Drive - 1 Track (10' Avg. Pier Ht) Avg 115' span	1.00	EA	31,745,710.91	/EA	31,745,711
		10.01.123 A	Elevated Structure South of Foreston Drive - 1 Track (37' Avg. Pier Ht) Avg 115' span	1.00	EA	68,067,491.15	/EA	68,067,491
		10.01.126 C	Tujunga - I-210 - 2 Track, Train Detention Zone, Steel arch (50' Avg. Pier Ht) avg 158' span	1.00	EA	170,278,122.00	/EA	170,278,122
		10.01.127 D	Elevated Structure AGUA DULCE - 1 Track & 2 Track TDZ (57' Avg. Pier Ht) ave 120' span	1.00	EA	93,190,997.05	/EA	93,190,997
		10.01.223 A	Elevated Structure Aliso Canyon - 2 Track Train Detention Zone (20' Avg. Pier Ht) Box culvert @ abutment	1.00	EA	45,610,252.13	/EA	45,610,252
		10.04.100 A	36" Drainage Pipe	8,750.00	LF	332.16	/LF	2,906,376
		10.04.100 B	48" Drainage Pipe	2,584.00	LF	597.88	/LF	1,544,930
		10.04.100 C	72" Drainage Pipe	2,033.00	LF	1,129.33	/LF	2,295,937
		10.05.121	At-Grade Track-bed in Cut - 2 Track (5' Avg. Exc Depth)	0.42	RM	8,411,913.88	/RM	3,533,004
		10.05.122	At-Grade Track-bed in Cut - 2 Track (10' Avg. Exc Depth)	0.45	RM	10,382,783.09	/RM	4,672,252
		10.05.123	At-Grade Track-bed in Cut - 2 Track (15' Avg. Exc Depth)	0.27	RM	12,662,319.26	/RM	3,418,826

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.05.124	At-Grade Track-bed in Cut - 2 Track (20' Avg. Exc Depth)	1.11	RM	15,255,925.72	/RM	16,934,078
		10.05.126	At-Grade Track-bed in Cut - 2 Track (40' Avg. Exc Depth)	0.53	RM	29,284,184.72	/RM	15,637,755
		10.05.128	At-Grade Track-bed in Cut - 2 Track (60' Avg. Exc Depth)	1.00	RM	48,664,053.23	/RM	48,518,061
		10.05.130	At-Grade Track-bed in Cut - 2 Track (80' Avg. Exc Depth)	0.57	RM	73,078,556.47	/RM	41,800,934
		10.05.132	At-Grade Track-bed in Cut - 2 Track (100' Avg. Exc Depth)	0.24	RM	103,558,589.12	/RM	24,750,503
		10.05.221	At-Grade Track-bed in Fill - 2 Track (5' Avg. Fill Ht)	0.41	RM	6,259,696.10	/RM	2,566,475
		10.05.222	At-Grade Track-bed in Fill - 2 Track (10' Avg. Fill Ht)	0.18	RM	7,458,897.50	/RM	1,342,602
		10.05.223	At-Grade Track-bed in Fill - 2 Track (15' Avg. Fill Ht)	0.01	RM	8,977,937.78	/RM	80,801
		10.05.226	At-Grade Track-bed in Fill - 2 Track (40' Avg. Fill Ht)	0.15	RM	21,371,567.16	/RM	3,162,992
		10.05.228	At-Grade Track-bed in Fill - 2 Track (60' Avg. Fill Ht)	0.85	RM	36,704,106.33	/RM	31,345,307
		10.07.100	TBM Single Track Twin Tunnels	14.33	RM	255,445,121.54	/RM	3,660,528,592
		10.07.107 A	Double Fault Chamber (for twin tunnels)	1.72	RM	692,938,981.95	/RM	1,191,855,049
		10.07.114 B	Cut & cover Sierra Highway Overhead - 2 Tracks 660' along HSR SB Track	1.00	EA	38,650,184.09	/EA	38,650,184
		10.07.114 C	Cut & cover Metrolink Overhead - 2 Tracks 454' along HSR SB track	1.00	EA	27,385,761.33	/EA	27,385,761
		10.07.224 B	Aliso canyon acc. rd south. UG Structure - Two portal boxes for 2 + 2 roadway lanes + external shoulders 2x41'6 Horizontal Clearance	1.00	EA	12,569,068.12	/EA	12,569,068
		10.07.224 C	UG Structure Barrel Springs rd - Twin vaults for 2 + 2 roadway lanes + external shoulders 2x40 Horizontal clearance	1.00	EA	27,519,492.63	/EA	27,519,493
		10.07.225	Cut & Cover Box - 2 Track / 2 Box (50' Avg. Exc Depth) (Add Mech & Elec from 10.07.902)	0.09	RM	419,493,966.89	/RM	37,754,457
		10.07.301	SEM Tunnels	4.66	RM	724,822,468.73	/RM	3,377,672,704
		10.07.450	Mined Single Track Twin Tunnels	5.62	RM	345,981,874.15	/RM	1,944,418,133
		10.07.503	Crosspassages	167.00	EA	2,254,418.13	/EA	376,487,828
		10.07.504	Underground Paralleling/Switching Station	4.00	Ea	9,092,707.33	/Ea	36,370,829
		10.07.806 A	Mountain Portal Construction	7.00	Ea	6,000,493.28	/Ea	42,003,453
		10.07.808 A	Adit mountain portal construction	1.00	Ea	3,000,246.64	/Ea	3,000,247
		10.07.809	ADIT Construction	2.04	mile	363,729,307.23	/mile	742,007,787
		10.07.809F	Underground TBM Dissassembly chamber	4.00	Ea	20,019,429.71	/Ea	80,077,719
		10.07.810 A	Tunnel Portal facilities, as described in TM 2.4.6. TSEFCZ excluded	7.00	EA	5,783,868.97	/EA	40,487,083
		10.07.811 A	Train Surface Evacuation and Fire Control Zone (TSEFCZ)	5.00	EA	138,861.73	/EA	694,309
		10.07.812	Binocular shafts	1.00	EA	63,167,036.64	/EA	63,167,037

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.07.920 B	Tunnel Ventilation System - B	16.64	RM	26,432,306.02	/RM	439,833,572
		10.07.920 C	Tunnel Ventilation System - C	8.55	RM	26,432,306.02	/RM	225,996,216
		10.07.950 A	Construction Monitoring inside TBM twin tunnels	14.33	RM	2,356,699.15	/RM	33,771,499
		10.07.950 B	Construction Monitoring inside Mined or SEM twin tunnels	4.29	RM	4,262,588.68	/RM	18,286,505
		10.07.950 C	Construction Monitoring inside Cross Passages	167.00	EA	189,835.10	/EA	31,702,462
		10.07.950 D	Construction Monitoring inside Mined or SEM Single tunnel, incl adits	7.57	Mile	4,742,050.48	/Mile	35,897,322
		10.07.950E	Construction Monitoring inside Mined Underground Paralleling Station	4.00	EA	759,340.40	/EA	3,037,362
		10.07.950 G	Surface and Building Monitoring	4.20	RM	2,878,720.40	/RM	12,090,626
		10.08.221	Retained Cut, Trench - 2 Track (10' Avg. Exc Depth)	0.59	RM	67,458,987.85	/RM	39,800,803
		10.08.222	Retained Cut, Trench - 2 Track (20' Avg. Exc Depth)	0.31	RM	141,935,601.48	/RM	44,000,036
		10.08.223	Retained Cut, Trench - 2 Track (30' Avg. Exc Depth)	0.54	RM	239,696,445.63	/RM	129,436,081
		10.08.421	Retained Fill, Wall Both Sides - 2 Tracks (10' Avg. Wall Ht)	1.79	RM	17,283,539.45	/RM	30,937,536
		10.08.422	Retained Fill, Walls Both Sides - 2 Tracks (20' Avg. Wall Ht)	0.31	RM	29,259,622.36	/RM	9,158,262
		10.09.110	Ballasted Track - 1 Track	0.17	RM	2,346,570.24	/RM	398,917
		10.09.110 A	SCRRA Ballasted Track - 1 Track	0.67	RM	2,165,514.39	/RM	1,450,895
		10.09.120	Ballasted Track - 2 Track	22.88	RM	4,232,329.09	/RM	96,835,690
		10.09.120 A	SCRRA Ballasted Track - 2 Track	0.66	RM	4,156,778.85	/RM	2,743,474
		10.09.910	Ballasted Track Relocation - 1 Track (Temporary)	0.90	RM	2,946,367.83	/RM	2,651,731
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.38	RM	2,946,367.84	/RM	1,119,620
		10.10.120	Direct Fixation - 2 Track	10.90	RM	3,758,241.79	/RM	40,964,836
		10.14.200b	Ballasted Turnout (30MPH)	2.00	EA	99,647.18	/EA	199,294
		10.14.200 C	Ballasted Turnout (50MPH)	1.00	EA	279,012.10	/EA	279,012
		10.14.305	Ballasted Crossover (80MPH)	1.00	EA	1,177,995.76	/EA	1,177,996
		20.07.011 A	2 Lane Roadway Modification, New AC Paving (Sierra Hwy south of Ave S, Sta 728+00 to 775+12)	87,278.00	SF	29.13	/SF	2,542,012
		20.07.011F	2 Lane Roadway Modification, New AC Paving (Foreston Dr Sta 91+00 to 132+33)	122,592.00	SF	18.77	/SF	2,300,736
		20.07.012 A	2 Lane Roadway Modification, New AC Paving (Sierra Hwy south of Ave S, Sta 728+00 to 775+12)	92,947.00	SF	26.58	/SF	2,470,938
		20.07.020	Roadway Modification, New AC Paving (including Curb & Sidewalk)	68,313.00	SF	22.25	/SF	1,520,229
		20.07.020 B	2 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk (Cul-de-Sacs, private streets 36' to 40' wide)	148,240.00	SF	20.87	/SF	3,094,004

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		20.07.020 C	2 Lane Roadway Modification, New AC Paving including Curb & Sidewalk (E Avenue R11/Valley Forge from Sta 10+36 to Sta 18+38)	12,479.00	SF	22.23	/SF	277,469
		20.07.020 D	2 Lane Roadway Modification, New AC Paving including one-sided Curb & Sidewalk, painted median (Sierra Hwy north of Ave S, Sta 708+63 to 728+00)	10,970.00	SF	19.66	/SF	215,643
		20.07.021E	4 Lane Roadway Modification, New AC Paving with partial Curb & Gutter, Sidewalk (Tenth St at Ave S, Sta 10+49 to 32+38)	17,965.00	SF	23.05	/SF	414,131
		20.07.022 C	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Avenue S, Sta 82+50 to 117+80)	69,650.00	SF	30.54	/SF	2,127,283
		20.07.023 A	2 Lane Roadway Modification, New AC Paving including Curb & Sidewalk (E Avenue R11/Valley Forge)	12,480.00	SF	23.03	/SF	287,390
		20.07.023 B	2 Lane Roadway Modification, New AC Paving including one-sided Curb & Sidewalk, painted median (Sierra Hwy north of Ave S, Sta 708+63 to 728+00)	10,970.00	SF	19.88	/SF	218,087
		20.07.024 A	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Sixth St at Barrel Springs Sta 7+66 to 13+60)	17,965.00	SF	23.49	/SF	422,036
		20.07.025 A	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalk, Raised Median, Bike Path (Avenue S, Sta 82+50 to 117+80)	69,650.00	SF	30.54	/SF	2,127,283
		20.07.026 A	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Private Road 1) (From Sta 12+64 to Sta 27+24)	12,042.00	SF	18.21	/SF	219,271
		20.07.027 A	2 Lane Roadway Modification, New AC Paving with Curb & Gutter, One sided Sidewalk (San Fernando Blvd, Penrose to Sunland)	41,415.00	SF	19.48	/SF	806,718
		20.07.027 B	4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalk, painted/raised median (Tuxford St) (From Sta 105+00 to Sta 117+00)	117,198.00	SF	23.71	/SF	2,778,426
		20.07.027 C	2 to 4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalk, painted/raised median (Olinda St) (From Sta 13+50 to Sta 15+00)	33,450.00	SF	22.04	/SF	737,205
		20.07.027 D	4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalk, painted/raised median (Sunland Blvd)	119,420.00	SF	22.17	/SF	2,647,881
		20.07.027E	4 Lane Roadway Modification, New AC Paving, Curb & Gutter, Sidewalk, painted median (San Fernando Road)	467,324.00	SF	193.78	/SF	90,558,523
		20.07.711 A	2 Lane Roadway Modification, New AC Paving (Access Rd at Water Treatment Plant) (Froms Sta 3+38 to 11+11+45.52)	33,516.00	SF	17.61	/SF	590,262
		20.07.711 B	2 Lane Roadway Modification, New AC Paving (Access Rd P-1)	42,261.00	SF	18.48	/SF	781,056
		20.07.711 C	2 Lane Roadway Modification, New AC Paving (Access Rd P-2)	84,246.00	SF	26.04	/SF	2,193,445
		40.01.010	Demolition Allowance, Bridge	14,495.00	sf	46.84	/sf	678,958
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	1,794.00	LF	35.04	/LF	62,855
		40.01.010 B	Demolition Allowance, Retaining Wall	1,619.00	LF	35.04	/LF	56,723
		40.01.050	Demolition Allowance, Building 1 Story	108,368.00	SF	34.01	/SF	3,685,597
		40.01.110	Demolition Allowance, Asphalt Pavement	270,835.00	SY	65.24	/SY	17,668,529
		40.01.110 A	Demolition Allowance, Concrete Pavement	6,380.00	SY	42.24	/SY	269,502
		40.01.140	Demolition Allowance, Concrete Curb	13,900.00	LF	20.00	/LF	278,023
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	10,001.00	LF	21.54	/LF	215,384
		40.01.150	Demolition Allowance, Concrete Sidewalk	10,359.00	SY	138.57	/SY	1,435,431

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.01.810	Demolition Allowance, Remove Railroad Track	9,417.00	LF	38.89	/LF	366,239
		40.02.107 A	Natural Gas Pipeline, 3" to 8" Dia.	3,180.00	LF	342.27	/LF	1,088,430
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	4,045.00	LF	371.16	/LF	1,501,330
		40.02.110 A	Natural Gas Pipeline, 30" to 42" Dia.	828.00	LF	539.11	/LF	446,383
		40.02.116 A	Potable Water Pipeline, <10"	2,047.00	LF	342.27	/LF	700,634
		40.02.116 B	Potable Water Pipeline, 10" to 16"	7,919.00	LF	355.70	/LF	2,816,801
		40.02.117 A	Potable Water Pipeline, 18" to 24"	13,605.00	LF	544.16	/LF	7,403,361
		40.02.118 A	Potable Water Pipeline, 27" to 33"	3,950.00	LF	761.95	/LF	3,009,689
		40.02.119 A	Efluent Water Pipeline, 36" to 48" Dia.	932.00	LF	1,028.51	/LF	958,574
		40.02.119 B	Runoff Water Pipeline, 48" Dia.	1,144.00	LF	1,028.51	/LF	1,176,618
		40.02.121 A	Overhead Power Trans Facility (≥ 69 kV)	19,202.00	LF	577.66	/LF	11,092,320
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	27,879.00	LF	649.87	/LF	18,117,807
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	1,632.00	LF	428.40	/LF	699,143
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	2,788.00	LF	470.71	/LF	1,312,332
		40.02.150 C	Tel San Fernando Rd: East of CL	10,960.00	LF	385.83	/LF	4,228,747
		40.02.150 D	Tel San Fernando Rd: West of CL	9,795.00	LF	385.83	/LF	3,779,253
		40.03.100	Hazardous Material Removal Allowance, Light	1.93	RM	496,430.70	/RM	958,111
		40.03.105	Hazardous Material Removal Allowance, Medium	1.47	RM	496,430.70	/RM	729,753
		40.03.110	Hazardous Material Removal Allowance, Heavy	3.60	RM	496,430.70	/RM	1,787,151
		40.03.150	Removal of Contaminated Soil	23,238,276.00	CF	4.55	/CF	105,796,461
		40.04.105	Environmental Mitigation Allowance	1.00	LS	457,453,713.03	/LS	457,453,713
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	4,938.00	LF	4,231.08	/LF	20,893,050
		40.05.012 B	Retaining wall 1 wall next to abutments (30' avg height)	1,800.90	LF	1,945.49	/LF	3,503,635
		40.05.211	Sound Wall - 1 Wall (8' Avg. Height)	11,130.00	LF	908.92	/LF	10,116,258
		40.05.500 A	24" Drainage Pipe	2,079.00	LF	324.94	/LF	675,543
		40.05.500 B	36" Drainage Pipe	9,106.00	LF	361.04	/LF	3,287,635
		40.05.500 C	48" Drainage Pipe	4,366.00	LF	672.79	/LF	2,937,381

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.05.500E	60" Drainage Pipe	2,766.00	LF	997.72	/LF	2,759,699
		40.05.500F	72" Drainage Pipe	66.00	LF	1,227.54	/LF	81,017
		40.05.500H	96" Drainage Pipe	692.00	LF	1,331.52	/LF	921,410
		40.06.100	Temporary Facilities	1.00	LS	559,110,094.15	/LS	559,110,094
		40.07.010	Right of Way	1.00	LS	312,402,804.77	/LS	312,402,805
		40.08.422A	Mountain Springs rd West Overhead. Roadway Overcrossing - 2 lane roadway over 3 tracks	1.00	EA	4,904,200.39	/EA	4,904,200
		40.08.422B	Foreston drive Overhead. Roadway Overcrossing - 2 lane roadway over highway	1.00	EA	6,948,055.92	/EA	6,948,056
		40.08.422C	Foreston South Access Road. Access road bridge to tunnel portal - 2 lane roadway	1.00	EA	22,022,951.24	/EA	22,022,951
		40.08.422D	Aliso canyon Access Road north. Access road bridge to tunnel portal - 2 lane roadway	1.00	EA	9,569,559.37	/EA	9,569,559
		40.08.422F	Adit access road E2 STA 1460. Access road bridge to tunnel portal - 2 lane roadway	1.00	EA	3,952,676.79	/EA	3,952,677
		40.08.425D	Avenue S Overcrossing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 1 span	1.00	EA	5,767,638.51	/EA	5,767,639
		40.08.425E	Avenue S Overhead. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 3 spans	1.00	EA	12,315,880.07	/EA	12,315,880
		40.08.425H	Wentworth st Overcrossing. Roadway Overcrossing - 4 lane - 11 spans	1.00	EA	25,090,834.41	/EA	25,090,834
		40.08.425I	Avenue S Overcrossing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks, 10' bike lane - 7 spans	1.00	EA	25,278,484.26	/EA	25,278,484
		50.01.000	Wayside Signaling Equipment	31.32	RM	1,297,691.00	/RM	40,643,682
		50.04.000	Traffic Control and Dispatching Systems	31.32	RM	125,857.95	/RM	3,941,871
		50.04.020A	Traffic Signal Modification	1.00	EA	4,955,565.82	/EA	4,955,566
		50.05.000	Communications	31.32	RM	1,191,623.69	/RM	37,321,654
		50.07.000	Hazard Detectors	31.32	RM	1,057,510.95	/RM	33,121,243
		60.02.000	Traction Power Supply	31.32	RM	3,142,696.52	/RM	98,429,255
		60.03.000	Traction Power Distribution	31.32	RM	3,321,085.14	/RM	104,016,386
		60.04.000	Traction Power Control	31.32	RM	5,229.10	/RM	163,776
		80.00.010	Professional Services	1.00	LS	2,587,393,710.30	/LS	2,587,393,710
		90.00.00	Unallocated Contingency	1.00	LS	648,680,142.30	/LS	648,680,142
			08.E2A Cen E2A Central					18,914,699,158
	11.Bur (E2A)		Burbank E2A					
		10.07.250A	Cut & Cover Box -Burbank Station (85' Avg. Exc Depth)	0.27	RM	1,103,472,006.00	/RM	297,937,442
		10.07.250C	Cut & Cover Box - 3track/1Box (100' Avg. Exc Depth)	0.13	RM	1,262,762,165.69	/RM	164,159,082

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.07.250 D	Cut & Cover Box - 5track/1Box (100' Avg. Exc Depth)	0.37	RM	1,262,762,165.6 1	/RM	463,433,715
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.62	RM	2,946,367.84	/RM	1,826,748
		10.10.110	Direct Fixation - 1 Track	1.69	RM	1,879,433.28	/RM	3,176,242
		10.10.120	Direct Fixation - 2 Track	1.30	RM	3,758,241.79	/RM	4,885,714
		10.14.200	Ballasted Turnout (60MPH)	4.00	EA	473,003.91	/EA	1,892,016
		10.14.200 A	Ballasted Turnout (25MPH)	2.00	EA	279,012.11	/EA	558,024
		10.14.200b	Ballasted Turnout (30MPH)	1.00	EA	99,647.18	/EA	99,647
		10.14.305	Ballasted Crossover (80MPH)	2.00	EA	1,177,995.75	/EA	2,355,992
		10.14.400	Terminal Bumping Post	4.00	EA	26,572.58	/EA	106,290
		20.01.247 A	Main and Secondary Station Buildings	141,954.00	sf	505.46	/sf	71,751,602
		20.01.247 B	Auxiliary Building	10,000.00	sf	303.27	/sf	3,032,740
		20.03.001 C	HSR Platform (underground)	84,600.00	SF	577.66	/SF	48,870,443
		20.06.201 B	Parking Walkway (Standard Sidewalks)	316,516.00	SF	20.14	/SF	6,374,757
		20.06.201 C	Parking Walkway (Enhanced Plazas)	410,764.00	SF	24.57	/SF	10,093,761
		20.06.800 A	Landscape	512,103.00	SF	19.16	/SF	9,813,957
		40.01.010	Demolition Allowance, Bridge	4,028.00	sf	46.84	/sf	188,675
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	1,873.00	LF	35.04	/LF	65,622
		40.01.010 B	Demolition Allowance, Retaining Wall	3,967.00	LF	35.04	/LF	138,988
		40.01.050	Demolition Allowance, Building 1 Story	661,944.00	SF	34.01	/SF	22,512,726
		40.01.110	Demolition Allowance, Asphalt Pavement	189,536.95	SY	65.24	/SY	12,364,868
		40.01.110 A	Demolition Allowance, Concrete Pavement	12,154.00	SY	42.24	/SY	513,406
		40.01.140	Demolition Allowance, Concrete Curb	2,877.00	LF	20.00	/LF	57,545
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	19,107.40	LF	21.54	/LF	411,501
		40.01.150	Demolition Allowance, Concrete Sidewalk	16,012.40	SY	138.57	/SY	2,218,814
		40.01.810	Demolition Allowance, Remove Railroad Track	32,462.00	LF	38.89	/LF	1,262,489
		40.02.107 A	Natural Gas Pipeline, 3" to 8" Dia.	5,399.00	LF	342.27	/LF	1,847,935
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	880.00	LF	371.16	/LF	326,618
		40.02.111 A	Oil Pipeline, 6" to 15" Dia.	11,510.00	LF	371.16	/LF	4,272,016

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.02.112 A	Oil Pipeline, 18" to 24" Dia.	11,750.00	LF	371.16	/LF	4,361,093
		40.02.116 A	Potable Water Pipeline, <10"	2,150.00	LF	342.27	/LF	735,888
		40.02.116 B	Potable Water Pipeline, 10" to 16"	2,070.00	LF	355.70	/LF	736,302
		40.02.117 A	Potable Water Pipeline, 18" to 24"	1,900.00	LF	544.16	/LF	1,033,913
		40.02.118 A	Potable Water Pipeline, 27" to 33"	501.00	LF	761.95	/LF	381,735
		40.02.119 A	Efluent Water Pipeline, 36" to 48" Dia.	5,350.00	LF	1,028.51	/LF	5,502,542
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	7,180.00	LF	649.87	/LF	4,666,088
		40.02.123 A	Underground Power Trans Facility (12 kV)	4,680.00	LF	385.83	/LF	1,805,706
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	2,080.00	LF	451.31	/LF	938,722
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	1,800.00	LF	493.62	/LF	888,515
		40.02.128 A	Sewer, Gravity Pipeline, 21" to 30" Dia.	200.00	LF	666.92	/LF	133,384
		40.02.150 C	Tel San Fernando Rd: East of CL	12,896.00	LF	385.83	/LF	4,975,724
		40.02.150 D	Tel San Fernando Rd: West of CL	15,740.00	LF	385.83	/LF	6,073,036
		40.03.110	Hazardous Material Removal Allowance, Heavy	0.57	RM	496,430.70	/RM	282,966
		40.03.150	Removal of Contaminated Soil	33,033,009.00	CF	4.55	/CF	150,388,758
		40.04.105	Environmental Mitigation Allowance	1.00	LS	40,654,938.86	/LS	40,654,939
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	5,698.00	LF	4,231.08	/LF	24,108,668
		40.05.500 A	24" Drainage Pipe	744.00	LF	324.94	/LF	241,753
		40.05.500 C	48" Drainage Pipe	1,323.00	LF	672.79	/LF	890,095
		40.05.500E	60" Drainage Pipe	867.00	LF	997.72	/LF	865,024
		40.05.500 G	42" Drainage Pipe	165.00	LF	613.77	/LF	101,272
		40.05.600 A	8.5'x5' Drainage Box	156.00	LF	2,888.32	/LF	450,579
		40.05.700 C	3'x3' Open Channel	2,108.00	LF	1,444.16	/LF	3,044,294
		40.06.100	Temporary Facilities	1.00	LS	49,689,369.60	/LS	49,689,370
		40.07.010	Right of Way	1.00	LS	417,709,092.19	/LS	417,709,092
		50.01.000	Wayside Signaling Equipment	0.55	RM	1,297,691.02	/RM	713,730
		50.04.000	Traffic Control and Dispatching Systems	0.55	RM	125,857.95	/RM	69,222

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		50.04.010 A	New Traffic Signal	2.00	EA	1,140,649.41	/EA	2,281,299
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,955,565.80	/EA	9,911,132
		50.05.000	Communications	0.55	RM	1,191,623.69	/RM	655,393
		50.07.000	Hazard Detectors	0.55	RM	1,057,510.96	/RM	581,631
		60.02.000	Traction Power Supply	0.55	RM	3,142,696.51	/RM	1,728,483
		60.03.000	Traction Power Distribution	0.55	RM	3,321,085.11	/RM	1,826,597
		60.04.000	Traction Power Control	0.55	RM	5,229.13	/RM	2,876
		80.00.010	Professional Services	1.00	LS	227,973,116.51	/LS	227,973,117
		90.00.00	Unallocated Contingency	1.00	LS	78,594,926.47	/LS	78,594,926
			11.Bur (E2A) Burbank E2A					2,181,547,235
			05.E2A E2A End to End Alternative 2018\$					22,893,563,008
06.SR14A			SR14A End to End Alternative 2018\$					
	01.PLM		Palmdale Subsection					
		10.01.001 A	Steel Truss HSR viaduct, 1 track Sierra Hwy platform track	2.00	EA	11,816,952.09	/EA	23,633,904
		10.01.002 A	Steel Truss HSR viaduct, 2 tracks Sierra Hwy main tracks	1.00	EA	14,118,041.19	/EA	14,118,041
		10.01.122 B	Elevated Structure Ave Q Platform Track - 1 Track (22' Avg. Pier Ht)	2.00	EA	4,532,860.79	/EA	9,065,722
		10.01.222 A	Elevated Structure - 2 Track (20' Avg. Pier Ht) CIP Box Girder	1.00	EA	6,618,448.03	/EA	6,618,448
		10.02.060 A	Bridge Structure - 2 Track Single Span	1.00	EA	7,408,767.19	/EA	7,408,767
		10.02.060 B	Bridge Structure (LS) - 1 Track Single Span CIP Box Girder	1.00	EA	8,802,714.27	/EA	8,802,714
		10.02.060E	Ave Q Underpass Railroad Bridge Structure - Single Span Steel Plate Girder Structure with 1 Track	3.00	EA	1,748,378.02	/EA	5,245,134
		10.04.100 A	36" Drainage Pipe	1,341.00	LF	331.26	/LF	444,218
		10.05.111	At-Grade Track Bed in cut - 1 Track (5'Avg ExcDepth)	0.68	RM	5,437,033.74	/RM	3,697,183
		10.05.112	At-Grade Track Bed in cut - 1 Track (10'Avg ExcDepth)	0.78	RM	7,171,696.08	/RM	5,593,923
		10.05.113	At-Grade Track Bed in cut - 1 Track (15'Avg ExcDepth)	0.08	RM	9,214,190.25	/RM	737,135
		10.05.114	At-Grade Track Bed in cut - 1 Track (20"Avg ExcDepth)	0.25	RM	11,564,516.40	/RM	2,891,129
		10.05.121	At-Grade Track Bed in cut - 2 Track (5'Avg ExcDepth)	0.66	RM	8,389,152.33	/RM	5,536,841
		10.05.122	At-Grade Track Bed in cut - 2 Track (10'Avg ExcDepth)	0.63	RM	10,354,688.57	/RM	6,523,454

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.05.123	At-Grade Track Bed in cut - 2 Track (15'Avg ExcDepth)	0.07	RM	12,628,056.57	/RM	883,964
		10.05.124	At-Grade Track Bed in cut - 2 Track (20'Avg ExcDepth)	0.12	RM	15,214,645.17	/RM	1,825,757
		10.05.211	At-Grade Track Bed in Fill - 1 Track (5'Avg fill ht)	2.63	RM	3,598,471.41	/RM	9,463,980
		10.05.212	At-Grade Track Bed in Fill - 1 Track (10'Avg fill ht)	0.76	RM	4,563,554.01	/RM	3,468,301
		10.05.221	At-Grade Track Bed in Fill - 2 Track (5'Avg fill ht)	1.64	RM	6,242,758.13	/RM	10,238,123
		10.05.222	At-Grade Track Bed in Fill - 2 Track (10'Avg fill ht)	0.63	RM	7,438,714.67	/RM	4,686,390
		10.07.100	Tunnels Complete w/ Design Added	1.00	RM	30,333,511.42	/RM	30,333,511
		10.08.213	Retained Cut, Trench - 1 Track (30'Avg. Exc Depth)	0.51	RM	187,579,370.86	/RM	95,665,479
		10.08.411	Retained Fill, Wall Both Sides - 1 Track (10'Avg. Wall Ht)	1.10	RM	14,406,790.91	/RM	15,847,470
		10.09.110	Ballasted Track - 1 Track	6.28	RM	2,340,218.03	/RM	14,696,569
		10.09.110 A	SCRRA Ballasted Track - 1 Track	1.42	RM	2,159,654.43	/RM	3,066,709
		10.09.120	Ballasted Track - 2 Track	3.13	RM	4,220,876.86	/RM	13,211,345
		10.09.120 A	SCRRA Track - 2 Track	0.83	RM	4,145,530.87	/RM	3,440,791
		10.09.240	Ballasted Track - 2 Track (Station Track)	1.76	RM	8,441,754.11	/RM	14,857,487
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.91	RM	2,938,395.33	/RM	2,673,940
		10.14.200	Ballasted Turnout (60 MPH)	7.00	EA	471,724.02	/EA	3,302,068
		10.14.200 A	Ballasted Turnout (25 MPH)	2.00	EA	278,257.14	/EA	556,514
		10.14.200 B	Ballasted Turnout (30 MPH)	1.00	EA	99,377.55	/EA	99,378
		10.14.305	Ballasted Crossover (80 MPH)	3.00	EA	1,174,808.25	/EA	3,524,425
		10.14.400	Terminal - Bumping Post	2.00	Ea	26,500.68	/Ea	53,001
		10.14.500 A	Crossing Panels	38.00	EA	1,192.53	/EA	45,316
		20.01.247 A	Main and Secondary Station Buildings	80,182.00	SF	504.53	/SF	40,454,216
		20.01.247 B	Auxiliary Building	10,000.00	SF	302.72	/SF	3,027,179
		20.03.001 A	HSR Platform (at grade)	112,776.00	SF	576.61	/SF	65,027,272
		20.03.001 B	Metrolink Platform (at grade)	20,427.00	SF	576.61	/SF	11,778,322
		20.06.100 B	Pedestrian Bridges (Overhead)	123,032.00	SF	683.62	/SF	84,106,565
		20.06.201 A	Parking Roadways	1,931,638.00	SF	17.22	/SF	33,269,868
		20.06.201 B	Parking Walkway (Standard Sidewalks)	234,350.00	SF	20.10	/SF	4,711,247

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		20.06.201 C	Parking Walkway (Enhanced Plazas)	160,283.00	SF	24.53	/SF	3,931,434
		20.06.800 A	Landscape	712,875.00	SF	19.13	/SF	13,636,508
		20.07.011F	2 Lane Roadway Modification, New AC Paving (Foreston Dr Sta 91+00 to 1	23,200.00	SF	18.73	/SF	434,606
		20.07.020	Roadway Modification, New AC Paving (including Curb & Sidewalk)	74,154.08	SF	22.21	/SF	1,647,189
		20.07.020E	2 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewal	8,928.00	SF	19.10	/SF	170,490
		20.07.020 G	2 Lane Roadway Modification, New AC Paving with Sidewalk, Curb & Gutte	28,278.00	SF	21.33	/SF	603,078
		20.07.021 A	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewal	627,200.00	SF	33.38	/SF	20,938,641
		20.07.021 B	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewal	332,831.52	SF	23.39	/SF	7,786,472
		20.07.021 C	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewal	245,055.54	SF	39.89	/SF	9,774,781
		20.07.021 D	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewal	337,265.88	SF	21.14	/SF	7,130,912
		20.07.022 A	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewal	345,600.00	SF	31.08	/SF	10,741,262
		20.07.022 B	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewal	1,611,264.00	SF	33.58	/SF	54,111,782
		20.07.022 C	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewal	311,289.90	SF	30.49	/SF	9,490,130
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	22,020.00	LF	34.97	/LF	770,077
		40.01.050	Demolition Allowance, Building	1,795,428.00	SF	33.95	/SF	60,950,569
		40.01.110	Demolition Allowance, Asphalt Pavement	1,278,163.00	SY	65.12	/SY	83,230,935
		40.01.110 A	Demolition Allowance, Concrete Pavement	55,794.67	SY	42.16	/SY	2,352,542
		40.01.140	Demolition Allowance, Concrete Curb	64,343.00	lf	19.96	/lf	1,284,606
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	64,895.00	LF	21.50	/LF	1,395,030
		40.01.150	Demolition Allowance, Sidewalk and Raised Medians	364,718.00	sy	138.31	/sy	50,445,742
		40.01.810	Demolition Allowance, Remove Railroad Tracks	4,350.00	LF	38.82	/LF	168,867
		40.01.900 A	Clearing and Grubbing Landscape Areas	1,218,518.00	SF	26.62	/SF	32,442,753
		40.02.107 A	Natural Gas Pipeline, 2" to 8" Dia.	2,128.00	LF	341.65	/LF	727,023
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	790.00	LF	370.48	/LF	292,676
		40.02.116 A	Potable Water Pipeline, <10"	160.00	LF	341.65	/LF	54,663
		40.02.116 B	Potable Water Pipeline, 10" to 16"	21,728.00	LF	355.05	/LF	7,714,512
		40.02.117 A	Potable Water Pipeline, 18" to 24"	825.00	LF	543.17	/LF	448,113

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.02.121 A	Overhead Power Trans Facility (? 69 kV)	7,375.00	LF	3,348.75	/LF	24,697,015
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	4,490.00	LF	648.68	/LF	2,912,579
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	15,351.00	LF	450.64	/LF	6,917,701
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	4,642.00	LF	493.73	/LF	2,291,903
		40.02.129 A	Sewer, Gravity Pipeline, 48" to 66" Dia.	3,410.00	LF	665.70	/LF	2,270,024
		40.02.150 A	Electrical/Telephone Ductbank	800.00	LF	385.13	/LF	308,102
		40.02.150 B	Fiber Optic Ductbank	2.00	LF	386.51	/LF	773
		40.02.150 C	Tel San Fernando Rd: East of CL	1,320.00	LF	385.13	/LF	508,368
		40.02.150 D	Tel San Fernando Rd: West of CL	5,057.00	LF	385.13	/LF	1,947,587
		40.03.105	Hazardous Material Removal Allowance, Medium	1.67	RM	495,520.43	/RM	827,519
		40.03.110	Hazardous Material Removal Allowance, Heavy	0.51	RM	495,520.41	/RM	252,715
		40.03.150	Removal of Contaminated Soil	1,025,000.00	CF	4.55	/CF	4,659,971
		40.04.105	Environmental Mitigation Allowance, Medium	1.00	LS	165,784,293.73	/LS	165,784,294
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	2,277.00	LF	4,223.32	/LF	9,616,493
		40.05.211	Sound Wall - 1 Wall (8'Avg. Height)	2,690.00	LF	907.25	/LF	2,440,506
		40.05.400 A	Basin at Avenue O	1.00	EA	299,675.19	/EA	299,675
		40.05.400 B	Basins at Avenue R	1.00	EA	17,540,132.60	/EA	17,540,133
		40.05.500 B	36" Drainage Pipe	414.00	LF	360.38	/LF	149,197
		40.05.500 C	48" Drainage Pipe	9,247.00	LF	671.55	/LF	6,209,836
		40.05.500E	60" Drainage Pipe	1,090.00	LF	995.89	/LF	1,085,522
		40.05.600 C	10'x10' Drainage Box	1,120.00	LF	6,486.81	/LF	7,265,230
		40.05.600 D	Triple 21.5'x12' Drainage Box	3,333.00	LF	11,892.49	/LF	39,637,670
		40.05.700 A	12'x12' Open Channel	5,319.00	LF	3,243.41	/LF	17,251,679
		40.05.700 B	25'x12.5' Open Channel	2,095.00	LF	6,486.81	/LF	13,589,873
		40.05.800 A	Pumping Station (underpass)	2.00	EA	360,378.49	/EA	720,757
		40.05.800 B	Basin Sump Pump	2.00	EA	360,378.49	/EA	720,757
		40.06.100	Temporary facilities and other indirect costs during construction	1.00	LS	202,625,247.89	/LS	202,625,248

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.08.425 A	Avenue R Overhead. Roadway Overcrossing - 4 lane - 6 spans	1.00	EA	15,672,621.11	/EA	15,672,621
		40.08.425 B	Palmdale blvd Overhead. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks - 5 spans	1.00	EA	25,179,579.47	/EA	25,179,579
		40.08.425 C	Palmdale blvd Overcorssing. Roadway Overcrossing - 6 lane, 10' shoulders, 8' sidewalks - 1 span	1.00	EA	3,803,615.15	/EA	3,803,615
		50.01.000	Wayside Signaling Equipment	3.13	RM	1,292,481.77	/RM	4,045,468
		50.04.000	Traffic Control and Dispatching Systems	3.13	RM	125,352.72	/RM	392,354
		50.04.010 A	New Traffic Signal	11.00	EA	1,136,070.59	/EA	12,496,776
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,935,673.02	/EA	9,871,346
		50.05.000	Communications	3.13	RM	1,186,840.24	/RM	3,714,810
		50.07.000	Hazard Detectors	3.13	RM	1,053,265.86	/RM	3,296,722
		60.02.000	Traction Power Supply	3.13	RM	3,130,081.00	/RM	9,797,154
		60.03.000	Traction Power Distribution	3.13	RM	3,307,753.52	/RM	10,353,269
		60.04.000	Traction Power Control	3.13	RM	5,208.12	/RM	16,301
		80.00.010	Professional Services	1.00	LS	954,267,496.84	/LS	954,267,497
		90.00.00	Unallocated Contingency	1.00	LS	258,716,120.36	/LS	258,716,120
			01.PLM Palmdale Subsection					2,801,461,955
	08.SR1 4A Cen		SR14A Central					
		10.01.004 B	Santa Clara - 2 Track, Vble depth, Train Detention Zone , Steel arch (	1.00	EA	158,116,103.55	/EA	158,116,104
		10.01.004 C	Soledad Siphon viaduct - 2 tracks straddle bent, truss & U shape concr	1.00	EA	59,351,559.95	/EA	59,351,560
		10.01.127 C	Elevated Structure ST 1186+10 - 1 Track (58' Avg. Pier Ht)	1.00	EA	68,261,492.94	/EA	68,261,493
		10.01.222 A	Elevated Structure - 2 Track (20' Avg. Pier Ht) CIP Box Girder	1.00	EA	13,236,896.08	/EA	13,236,896
		10.01.222 C	Elevated Structure Sheldon St - 2 Track 2 U-Shape girder	1.00	EA	6,564,411.43	/EA	6,564,411
		10.01.223 B	Elevated Structure ST 1235+35 - 2 Track Train Detention Zone (27' Avg.	1.00	EA	38,839,145.42	/EA	38,839,145
		10.02.060F	Vulcan Mine Hopper facility Steel Structure - Steel portal frames Stru	1.00	EA	13,279,919.77	/EA	13,279,920
		10.04.100 A	36" Drainage Pipe	16,181.00	LF	331.26	/LF	5,360,094
		10.04.100 B	48" Drainage Pipe	200.00	LF	596.27	/LF	119,253
		10.04.100 C	72" Drainage Pipe	1,985.00	LF	1,126.28	/LF	2,235,664
		10.05.121	At-Grade Track Bed in cut - 2 Track (5'Avg ExcDepth)	0.48	RM	8,389,152.40	/RM	4,026,793
		10.05.122	At-Grade Track Bed in cut - 2 Track (10'Avg ExcDepth)	0.41	RM	10,228,411.93	/RM	4,193,649

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.05.123	At-Grade Track Bed in cut - 2 Track (15'Avg ExcDepth)	0.44	RM	12,513,256.11	/RM	5,505,833
		10.05.124	At-Grade Track Bed in cut - 2 Track (20'Avg ExcDepth)	0.72	RM	15,108,978.72	/RM	10,878,465
		10.05.126	At-Grade Track-bed in Cut - 2 Track (40' Avg. Exc Depth)	0.66	RM	29,337,715.44	/RM	19,362,892
		10.05.128	At-Grade Track-bed in Cut - 2 Track (60' Avg. Exc Depth)	0.51	RM	48,627,335.84	/RM	24,799,941
		10.05.130	At-Grade Track-bed in Cut - 2 Track (80' Avg. Exc Depth)	0.41	RM	72,346,543.68	/RM	29,662,083
		10.05.132	At-Grade Track-bed in Cut - 2 Track (100' Avg. Exc Depth)	0.75	RM	102,589,515.08	/RM	76,942,136
		10.05.221	At-Grade Track Bed in Fill - 2 Track (5'Avg fill ht)	1.58	RM	6,258,532.57	/RM	9,888,481
		10.05.222	At-Grade Track Bed in Fill - 2 Track (10'Avg fill ht)	0.44	RM	7,438,281.05	/RM	3,272,844
		10.05.223	At-Grade Track-bed in Fill - 2 Track (15' Avg. Fill Ht)	0.21	RM	8,733,149.33	/RM	1,833,961
		10.05.224	At-Grade Track-bed in Fill - 2 Track (20' Avg. Fill Ht)	0.18	RM	10,699,143.17	/RM	1,925,846
		10.05.226	At-Grade Track-bed in Fill - 2 Track (40' Avg. Fill Ht)	0.32	RM	20,980,051.03	/RM	6,713,616
		10.05.228	At-Grade Track-bed in Fill - 2 Track (60' Avg. Fill Ht)	0.44	RM	36,258,675.70	/RM	15,953,817
		10.07.100	Tunnels Complete w/ Design Added	24.04	RM	470,382,528.56	/RM	11,307,995,986
		10.07.114 B	Cut & cover Sierra Highway Overhead - 2 Tracks	1.00	EA	38,579,313.76	/EA	38,579,314
		10.07.114 C	Cut & cover Metrolink Overhead - 2 Tracks	1.00	EA	27,335,545.86	/EA	27,335,546
		10.07.224 C	UG Structure Barrel Springs rd - Twin vaults for 2 + 2 roadway lanes +	1.00	EA	27,469,031.94	/EA	27,469,032
		10.07.807 A	Portal landscape restoration for Portal P9 - SR14	1.00	EA	3,280,779.04	/EA	3,280,779
		10.07.810 A	Tunnel Portal facilities, as described in TM 2.4.6. TSEFCZ excluded	6.00	EA	5,773,263.47	/EA	34,639,581
		10.07.811 A	Train Surface Evacuation and Fire Control Zone (TSEFCZ)	6.00	EA	138,607.11	/EA	831,643
		10.07.850	Pumping Station	3.00	EA	360,378.49	/EA	1,081,135
		10.07.950 D	Construction Monitoring inside Mined or SEM Single tunnel, incl. adits	4.52	RM	4,479,932.28	/RM	20,249,294
		10.08.221	Retained Cut, Trench - 2 Track (10'Avg. Exc Depth)	0.22	RM	66,639,316.55	/RM	14,660,650
		10.08.344	Retained Cut, Staged Trench - 4 Track (40'Avg. Exc Depth)	0.16	RM	223,541,964.12	/RM	35,766,714
		10.08.346	Retained Cut, Staged Trench - 4 Track (60'Avg. Exc Depth)	0.11	RM	352,337,967.18	/RM	38,757,176
		10.09.110	Ballasted Track - 1 Track	0.23	RM	2,340,216.17	/RM	538,250
		10.09.110 A	SCRRA Ballasted Track - 1 Track	0.87	RM	2,159,654.63	/RM	1,878,900
		10.09.120	Ballasted Track - 2 Track	18.27	RM	4,220,876.98	/RM	77,115,422
		10.09.120 A	SCRRA Track - 2 Track	0.66	RM	4,145,531.17	/RM	2,736,051

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.09.910	Ballasted Track Relocation - 1 Track (Temporary)	0.64	RM	2,938,395.31	/RM	1,880,573
		10.09.920	Ballasted Track Relocation - 1 Track (Permanent)	0.23	RM	2,938,395.43	/RM	675,831
		10.10.120	Direct Fixation Track - 2 Track	21.43	RM	3,748,072.45	/RM	80,321,193
		10.14.200 B	Ballasted Turnout (30 MPH)	2.00	EA	99,377.55	/EA	198,755
		10.14.200 C	Ballasted Turnout (50 MPH)	1.00	EA	278,257.13	/EA	278,257
		10.14.305	Ballasted Crossover (80 MPH)	1.00	EA	1,174,808.25	/EA	1,174,808
		20.07.011 A	2 Lane Roadway Modification, New AC Paving (Sierra Hwy south of Ave S,	87,278.00	SF	29.07	/SF	2,537,351
		20.07.012 A	2 Lane Roadway Modification, New AC Paving (Sierra Hwy south of Ave S,	92,947.00	SF	26.54	/SF	2,466,407
		20.07.020	Roadway Modification, New AC Paving (including Curb & Sidewalk)	68,313.00	SF	22.21	/SF	1,517,441
		20.07.020 C	2 Lane Roadway Modification, New AC Paving including Curb & Sidewalk (	12,479.00	SF	22.19	/SF	276,961
		20.07.020 D	2 Lane Roadway Modification, New AC Paving including one-sided Curb &	10,970.00	SF	19.62	/SF	215,248
		20.07.021E	4 Lane Roadway Modification, New AC Paving with partial Curb & Gutter,	17,965.00	SF	23.01	/SF	413,371
		20.07.022 C	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewal	69,650.00	SF	30.49	/SF	2,123,383
		20.07.023 A	2 Lane Roadway Modification, New AC Paving including Curb & Sidewalk (	12,480.00	SF	22.99	/SF	286,863
		20.07.023 B	2 Lane Roadway Modification, New AC Paving including one-sided Curb &	10,970.00	SF	19.84	/SF	217,687
		20.07.024 A	4 Lane Roadway Modification, New AC Paving with partial Curb & Gutter,	17,965.00	SF	23.45	/SF	421,262
		20.07.025 A	6 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewal	69,650.00	SF	30.49	/SF	2,123,383
		20.07.026 A	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Private Roa	12,042.00	SF	18.18	/SF	218,869
		20.07.026 C	2 Lane Roadway Modification, New AC Paving, Curb & Gutter (Wicks St Cu	5,115.00	SF	20.46	/SF	104,631
		20.07.026 D	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalkd (BranfordSt) From St 13+34 to Sta 25+80)	60,670.00	SF	21.59	/SF	1,309,688
		20.07.026E	4 Lane Roadway Modification, New AC Paving with Curb & Gutter, Sidewalks, Painted/Raised Median (Sheldon St)	25,593.00	SF	20.62	/SF	527,834
		20.07.710 A	Permanent Service/Emergency Access Road (22' to 25'Wide)	58,348.00	SF	177.93	/SF	10,381,601
		20.07.711 A	2 Lane Roadway Modification, New AC Paving (Access Rd at Water Treatme	33,516.00	SF	17.58	/SF	589,180
		20.07.711 B	2 Lane Roadway Modification, New AC Paving (Access Rd P-1)	37,462.00	SF	18.45	/SF	691,093
		20.07.711 C	2 Lane Roadway Modification, New AC Paving (Access Rd P-2)	25,100.25	SF	25.99	/SF	652,317
		20.07.711 D	2 Lane Roadway Modification, New AC Paving (Access Rd P-3A)	25,460.25	SF	31.51	/SF	802,275
		20.07.711E	2 Lane Roadway Modification, New AC Paving (Access Rd P-3B)	23,374.00	SF	18.85	/SF	440,559

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		20.07.711F	2 Lane Roadway Modification, New AC Paving (Access Rd P-4)	26,326.75	SF	43.52	/SF	1,145,632
		20.07.711G	2 Lane Roadway Modification, New AC Paving (Access Rd P-5)	246,001.00	SF	41.14	/SF	10,120,932
		20.07.711H	2 Lane Roadway Modification, New AC Paving (Access Rd P-6A)	58,792.00	SF	46.26	/SF	2,719,963
		20.07.711I	2 Lane Roadway Modification, New AC Paving (Access Rd P-6B)	81,597.00	SF	33.25	/SF	2,713,378
		20.07.711J	2 Lane Roadway Modification, New AC Paving (Access Rd P-7)	31,443.00	SF	33.43	/SF	1,051,246
		20.07.711K	2 Lane Roadway Modification, New AC Paving (Access Rd P-8)	139,790.00	SF	41.76	/SF	5,837,566
		20.07.711L	2 Lane Roadway Modification, New AC Paving (Access Rd P-9)	28,152.00	SF	22.65	/SF	637,693
		40.01.010A	Demolition Allowance, Masonry/Sound Wall	3,999.00	LF	34.97	/LF	139,852
		40.01.050	Demolition Allowance, Building	1,030,131.00	SF	33.95	/SF	34,970,531
		40.01.070A	Demolition Allowance, Concrete Structure (Swimming Pools, unknown stru	363.00	SF	46.04	/SF	16,713
		40.01.110	Demolition Allowance, Asphalt Pavement	267,760.00	SY	65.12	/SY	17,435,894
		40.01.110A	Demolition Allowance, Concrete Pavement	17,402.00	SY	42.16	/SY	733,743
		40.01.140	Demolition Allowance, Concrete Curb	8,897.00	lf	19.96	/lf	177,628
		40.01.140A	Demolition Allowance, Concrete Curb & Gutter	17,241.00	LF	21.50	/LF	370,625
		40.01.150	Demolition Allowance, Sidewalk and Raised Medians	13,883.00	sy	138.31	/sy	1,920,218
		40.01.810	Demolition Allowance, Remove Railroad Tracks	21,556.00	LF	38.82	/LF	836,803
		40.02.107A	Natural Gas Pipeline, 2" to 8" Dia.	2,139.00	LF	341.65	/LF	730,781
		40.02.108A	Natural Gas Pipeline, 10" to 18" Dia.	100.00	LF	370.48	/LF	37,048
		40.02.110A	Natural Gas Pipeline, 30" to 42" Dia.	828.00	LF	538.12	/LF	445,565
		40.02.116A	Potable Water Pipeline, <10"	8,898.00	LF	341.65	/LF	3,039,966
		40.02.116B	Potable Water Pipeline, 10" to 16"	28,036.00	LF	355.05	/LF	9,954,163
		40.02.117A	Potable Water Pipeline, 18" to 24"	2,928.00	LF	543.17	/LF	1,590,393
		40.02.118A	Potable Water Pipeline, 27" to 33" Dia.	4,490.00	LF	760.55	/LF	3,414,867
		40.02.119A	Potable Water Pipeline, 36" to 48" Dia.	2,492.00	LF	1,026.63	/LF	2,558,353
		40.02.119B	Runoff Water Pipeline, 48" Dia.	355.00	LF	1,026.63	/LF	364,452
		40.02.121A	Overhead Power Trans Facility (? 69 kV)	55,498.00	LF	3,348.75	/LF	185,848,808
		40.02.122A	Overhead Power Trans Facility (< 69 kV)	7,116.00	LF	648.68	/LF	4,616,016

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.02.123 A	Underground Power Trans Facility (12 kV)	535.00	LF	385.13	/LF	206,046
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	90.00	LF	450.48	/LF	40,543
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	2,788.00	LF	492.71	/LF	1,373,685
		40.02.150 A	Electrical/Telephone Ductbank	500.00	LF	385.13	/LF	192,564
		40.02.150 B	Fiber Optic Ductbank	1.00	LF	383.04	/LF	383
		40.02.150 C	Tel San Fernando Rd: East of CL	17,016.00	LF	385.13	/LF	6,553,324
		40.02.150 D	Tel San Fernando Rd: West of CL	14,585.00	LF	385.13	/LF	5,617,082
		40.03.100	Hazardous Material Removal Allowance, Light	0.76	RM	495,520.43	/RM	376,596
		40.03.105	Hazardous Material Removal Allowance, Medium	4.73	RM	495,520.43	/RM	2,343,812
		40.03.110	Hazardous Material Removal Allowance, Heavy	5.66	RM	495,520.43	/RM	2,804,646
		40.03.150	Removal of Contaminated Soil	122,998,267.00	CF	4.55	/CF	559,188,658
		40.04.105	Environmental Mitigation Allowance, Medium	1.00	LS	165,784,293.71	/LS	165,784,294
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	3,095.00	LF	4,223.32	/LF	13,071,167
		40.05.012 B	Retaining wall 1 wall next to abutments (30' avg height)	1,524.30	LF	15,579.60	/LF	23,747,990
		40.05.211	Sound Wall - 1 Wall (8'Avg. Height)	4,820.00	LF	907.25	/LF	4,372,952
		40.05.402 A	Basin SR14 Sta 373+44	1.00	EA	399,185.56	/EA	399,186
		40.05.402 N	Basin SR14A Sta 472+31	1.00	EA	366,649.21	/EA	366,649
		40.05.402 O	Basin SR14A Sta 1170+00	1.00	EA	364,489.04	/EA	364,489
		40.05.402P	Basin SR14A Sta 1233+50	1.00	EA	366,649.19	/EA	366,649
		40.05.402 Q	Basin SR14A Sta 1288+00	1.00	EA	366,649.21	/EA	366,649
		40.05.402 R	Basin SR14A Sta 411+50	1.00	EA	509,220.04	/EA	509,220
		40.05.402S	Basin SR14A Sta 1194+10	1.00	EA	341,173.55	/EA	341,174
		40.05.402T	Basin SR14A Sta 1223+00	1.00	EA	341,173.55	/EA	341,174
		40.05.402 U	Basin SR14A Sta 1376+00	1.00	EA	332,265.10	/EA	332,265
		40.05.500 A	24" Drainage Pipe	2,896.00	LF	324.34	/LF	939,291
		40.05.500 B	36" Drainage Pipe	14,220.00	LF	360.38	/LF	5,124,582
		40.05.500 C	48" Drainage Pipe	4,588.00	LF	671.55	/LF	3,081,075

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.05.500E	60" Drainage Pipe	944.00	LF	995.89	/LF	940,121
		40.05.500F	72" Drainage Pipe	100.00	LF	1,225.29	/LF	122,529
		40.05.500H	96" Drainage Pipe	706.00	LF	1,329.08	/LF	938,328
		40.05.600B	10.5'x6.5' Drainage Box	1,342.00	LF	3,603.78	/LF	4,836,279
		40.05.800A	Pumping Station (underpass)	1.00	EA	360,378.50	/EA	360,379
		40.06.100	Temporary facilities and other indirect costs during construction	1.00	LS	202,625,247.88	/LS	202,625,248
		40.07.010	Right of Way	1.00	LS	1,267,039,590.00	/LS	1,267,039,590
		40.08.425G	Brandford st Overhead. Roadway Overcrossing - 4 lane - 1 span	1.00	EA	4,814,580.78	/EA	4,814,581
		40.08.425I	Avenue S Overcrossing. Roadway Overcrossing - 6 lane, 10' shoulders, 8	1.00	EA	25,232,132.76	/EA	25,232,133
		40.09.010	Right of Way Relocation	1.00	LS	239,651,400.00	/LS	239,651,400
		50.01.000	Wayside Signaling Equipment	38.29	RM	1,292,481.77	/RM	49,489,127
		50.04.010A	New Traffic Signal	1.00	EA	1,136,070.58	/EA	1,136,071
		50.04.020A	Traffic Signal Modification	2.00	EA	4,935,673.02	/EA	9,871,346
		50.05.000	Communications	38.29	RM	1,186,840.24	/RM	45,444,113
		50.07.000	Hazard Detectors	38.29	RM	1,053,265.86	/RM	40,329,550
		60.01.000	Traction Power High Voltage	38.29	RM	4,367,865.64	/RM	167,245,575
		60.02.000	Traction Power Supply	38.29	RM	3,130,081.00	/RM	119,850,802
		60.03.000	Traction Power Distribution	38.29	RM	3,307,753.53	/RM	126,653,883
		60.04.000	Traction Power Control	38.29	RM	5,208.11	/RM	199,419
		80.00.010	Professional Services	1.00	LS	954,267,496.82	/LS	954,267,497
		90.00.00	Unallocated Contingency	1.00	LS	258,716,120.36	/LS	258,716,120
			08.SR14A Cen SR14A Central					16,937,486,250
	09.Bur (E1A/S R14A)		Burbank E1A/SR14A					
		10.01.127D	Elevated Structure AGUA DULCE - 1 Track & 2 Track TDZ (57' Avg. Pier H	1.00	EA	92,888,262.57	/EA	92,888,263
		10.07.100	Tunnels Complete w/ Design Added	0.12	RM	1,595,892,860.82	/RM	194,698,929
		10.07.250A	Cut & Cover Box -Burbank Station (85' Avg. Exc Depth)	0.27	RM	1,101,448,642.33	/RM	297,391,133
		10.07.250B	Cut & Cover Box - 4 Track/ 1 Box (100'Avg. Exc Depth)	0.01	RM	1,764,625,410.00	/RM	17,646,254

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		10.07.250 C	Cut & Cover Box - 3 Track/ 1 Box (100'Avg. Exc Depth)	0.02	RM	1,386,491,394.00	/RM	27,729,828
		10.07.250 D	Cut & Cover Box - 5 Track/ 1 Box (100'Avg. Exc Depth)	0.15	RM	1,252,043,743.87	/RM	187,806,562
		10.07.950 D	Construction Monitoring inside Mined or SEM Single tunnel, incl. adits	0.12	RM	4,812,244.58	/RM	577,469
		10.10.110	Direct Fixation Track - 1 Track	1.69	RM	1,874,347.76	/RM	3,167,648
		10.10.120	Direct Fixation Track - 2 Track	2.10	RM	3,748,072.48	/RM	7,870,952
		10.14.200	Ballasted Turnout (60 MPH)	4.00	EA	471,724.02	/EA	1,886,896
		10.14.200 A	Ballasted Turnout (25 MPH)	2.00	EA	278,257.14	/EA	556,514
		10.14.200 B	Ballasted Turnout (30 MPH)	1.00	EA	99,377.54	/EA	99,378
		10.14.305	Ballasted Crossover (80 MPH)	2.00	EA	1,174,808.25	/EA	2,349,617
		10.14.400	Terminal - Bumping Post	4.00	Ea	26,500.68	/Ea	106,003
		20.01.247 A	Main and Secondary Station Buildings	141,954.00	SF	504.53	/SF	71,620,036
		20.01.247 B	Auxiliary Building	10,000.00	SF	302.72	/SF	3,027,179
		20.03.001 C	HSR Platform (underground)	84,600.00	SF	576.61	/SF	48,780,833
		20.06.201 A	Parking Roadways	1,883,025.00	SF	17.22	/SF	32,432,595
		20.06.201 B	Parking Walkway (Standard Sidewalks)	316,516.00	SF	20.10	/SF	6,363,068
		20.06.201 C	Parking Walkway (Enhanced Plazas)	410,764.00	SF	24.53	/SF	10,075,253
		20.06.800 A	Landscape	512,103.00	SF	19.13	/SF	9,795,962
		40.01.010	Demolition Allowance, Bridge	4,028.00	SF	46.75	/SF	188,329
		40.01.010 A	Demolition Allowance, Masonry/Sound Wall	1,873.00	LF	34.97	/LF	65,502
		40.01.010 B	Demolition Allowance, Retaining Wall	3,967.00	LF	34.97	/LF	138,733
		40.01.050	Demolition Allowance, Building	661,944.00	SF	33.95	/SF	22,471,446
		40.01.110	Demolition Allowance, Asphalt Pavement	189,536.95	SY	65.12	/SY	12,342,195
		40.01.110 A	Demolition Allowance, Concrete Pavement	12,154.00	SY	42.16	/SY	512,465
		40.01.140	Demolition Allowance, Concrete Curb	2,877.00	lf	19.96	/lf	57,439
		40.01.140 A	Demolition Allowance, Concrete Curb & Gutter	19,107.40	LF	21.50	/LF	410,746
		40.01.150	Demolition Allowance, Sidewalk and Raised Medians	16,012.40	sy	138.31	/sy	2,214,745
		40.01.810	Demolition Allowance, Remove Railroad Tracks	32,462.00	LF	38.82	/LF	1,260,174

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		40.02.107 A	Natural Gas Pipeline, 2" to 8" Dia.	5,399.00	LF	341.65	/LF	1,844,547
		40.02.108 A	Natural Gas Pipeline, 10" to 18" Dia.	880.00	LF	370.48	/LF	326,019
		40.02.111 A	Oil Pipeline, 6" to 15" Dia.	11,510.00	LF	370.48	/LF	4,264,182
		40.02.112 A	Oil Pipeline, 18" to 24" Dia.	11,750.00	LF	370.48	/LF	4,353,097
		40.02.116 A	Potable Water Pipeline, <10"	2,150.00	LF	341.65	/LF	734,539
		40.02.116 B	Potable Water Pipeline, 10" to 16"	2,070.00	LF	355.05	/LF	734,952
		40.02.117 A	Potable Water Pipeline, 18" to 24"	1,900.00	LF	543.17	/LF	1,032,017
		40.02.118 A	Potable Water Pipeline, 27" to 33" Dia.	501.00	LF	760.55	/LF	381,035
		40.02.119 A	Potable Water Pipeline, 36" to 48" Dia.	5,350.00	LF	1,026.63	/LF	5,492,452
		40.02.122 A	Overhead Power Trans Facility (< 69 kV)	7,180.00	LF	648.68	/LF	4,657,532
		40.02.123 A	Underground Power Trans Facility (12 kV)	4,680.00	LF	385.13	/LF	1,802,395
		40.02.127 A	Sewer, Gravity Pipeline, <10" Dia.	2,080.00	LF	450.48	/LF	937,000
		40.02.127 B	Sewer, Gravity Pipeline, 10" to 18" Dia.	1,800.00	LF	492.71	/LF	886,886
		40.02.128 A	Sewer, Gravity Pipeline, 21" to 30" Dia.	200.00	LF	665.70	/LF	133,139
		40.02.150 C	Tel San Fernando Rd: East of CL	12,896.00	LF	385.13	/LF	4,966,600
		40.02.150 D	Tel San Fernando Rd: West of CL	15,740.00	LF	385.13	/LF	6,061,900
		40.03.110	Hazardous Material Removal Allowance, Heavy	0.57	RM	495,520.42	/RM	282,447
		40.03.150	Removal of Contaminated Soil	36,310,326.03	CF	2.39	/CF	86,665,043
		40.04.105	Environmental Mitigation Allowance, Medium	1.00	LS	165,784,293.73	/LS	165,784,294
		40.05.012 A	Retaining Wall - 1 Wall (Var. Height)	5,698.00	LF	4,223.32	/LF	24,064,461
		40.05.500 A	24" Drainage Pipe	744.00	LF	324.34	/LF	241,309
		40.05.500 C	48" Drainage Pipe	1,323.00	LF	671.55	/LF	888,463
		40.05.500E	60" Drainage Pipe	867.00	LF	995.89	/LF	863,438
		40.05.500 G	42" Drainage Pipe	165.00	LF	612.64	/LF	101,086
		40.05.600 A	8.5'x5' Drainage Box	156.00	LF	2,883.03	/LF	449,752
		40.05.700 C	3'x3' Open Channel	2,108.00	LF	1,441.51	/LF	3,038,711
		40.06.100	Temporary facilities and other indirect costs during construction	1.00	LS	202,625,247.89	/LS	202,625,248

Alternatives	Sub-Section	UPE	Description	Takeoff Quantity		Grand Total Price		Grand Total (2018\$)
		50.01.000	Wayside Signaling Equipment	0.55	RM	1,292,481.78	/RM	710,865
		50.04.010 A	New Traffic Signal	2.00	EA	1,136,070.58	/EA	2,272,141
		50.04.020 A	Traffic Signal Modification	2.00	EA	4,935,673.02	/EA	9,871,346
		50.05.000	Communications	0.55	RM	1,186,840.25	/RM	652,762
		50.07.000	Hazard Detectors	0.55	RM	1,053,265.87	/RM	579,296
		60.02.000	Traction Power Supply	0.55	RM	3,130,080.98	/RM	1,721,545
		60.03.000	Traction Power Distribution	0.55	RM	3,307,753.53	/RM	1,819,264
		60.04.000	Traction Power Control	0.55	RM	5,208.13	/RM	2,864
		80.00.010	Professional Services	1.00	LS	954,267,496.83	/LS	954,267,497
		90.00.00	Unallocated Contingency	1.00	LS	258,716,120.36	/LS	258,716,120
			09.Bur (E1A/SR14A) Burbank E1A/SR14A					2,810,758,393
			22. SR-14A SR14A Grand Total					22,549,706,598

APPENDIX D LIST OF DOCUMENTS

The following documents were provided.

- EEPB_PEPD_BACKUP_v7
- EEPB_PEPD_UPE_master_table_v13
- EEPB_PEPD_UPE_master_table_v13_Palmdale
- EEPB_PEPD_UPE_master_table_v13_Burbank
- EEPB_PEPD_BACKUP_v7 bridges
- EEPB_PEPD_UPE_master_table_v13 bridges
- EEPB_PEPD_BACKUP_v7 - DRAINAGE 02182019
- EEPB_PEPD_UPE_master_table_v13 - DRAINAGE 02182019
- EEPB_PEPD_BACKUP_v7_Tunnels
- EEPB_PEPD_UPE_master_table_v13_Tunnels
- EEPB_PEPD_UPE_master_table_v13_alignment.xlsx
- Hazardous_materials_V01
- EEPB_PEPD_BACKUP_v7_Roadways
- EEPB_PEPD_UPE_master_table_v13_Roadways
- Roadway Quantities Calculations
- Revised BOQ Epic 20190301
- EEPB_PEPD_UPE_master_table_v13_Stations_2019-03-05
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- 13_P2K_DRAFT_PEPD_Rev01_Basis_of_Quanties_Report
- EEPB_PEPD_BACKUP_v8
- EEPB_PEPD_BACKUP_v9_STR
- AVEK Water Treatment Plant Utility Relocation, Acton CA, Budgetary Estimate

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