

DEPARTMENT OF TRANSPORTATION
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*Flex your power!
Be energy efficient!*

December 30, 2009

04-CC-4-37.9/41.3
04-228594
HPLUL-6204(087)N
NCIPL-6204(088)N

Addendum No. 2

Dear Contractor:

This addendum is being issued to the contract for CONSTRUCTION ON STATE HIGHWAY IN CONTRA COSTA COUNTY IN PITTSBURG AND ANTIOCH FROM 0.9 KM WEST OF LOVERIDGE ROAD OVERCROSSING TO 0.3 KM WEST OF SOMERSVILLE ROAD UNDERCROSSING.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on Tuesday, January 19, 2010.

This addendum is being issued to revise the Project Plans, the Notice to Bidders and Special Provisions, and the Bid book.

Project Plan Sheets 2 through 9, 20, 21, 28, 68, 100 through 115, 121 through 124, 126 through 132, 143 through 146, 148 through 155, 158 through 161, 163 through 168, 173 through 178, 181, 185, 187 through 191, 193, 194, 196, 197, 234 through 243, 250, 251, 258 through 273, 276, 277, 282, 308, 322, 378, 381, 386, 390, 394, 395, 490 through 493, 498, 512, 547 through 562, 565 through 569, 572, 574 through 578, 580, 581, 583, 585, 587 through 595, 597 through 599, 601 through 603, 607 through 611, 614, 615, 619, 622 through 634, 671, 672, 687 through 692, 927, 931, 932, 943, 944, 951 through 953, 958, 963, 993, 994, 996 through 999, 1003, 1009 through 1013, 1024, 1040, 1055, 1056 and 1066 through 1068 are revised. Copies of the revised sheets are attached for substitution for the like-numbered sheets.

Project Plan Sheets 115A through 115O, 306A through 306K, 307A through 307D, 308A through 308E, 994A and 999A through 999C are added. Copies of the added sheets are attached for addition to the project plans.

In the Special Provisions, Section 4, "BEGINNING OF WORK, TIME OF COMPLETION, AND LIQUIDATED DAMAGES," the following paragraphs are added after the last paragraph:

"In order to eliminate conflicts with the work for the adjacent State Route 4 widening at Somersville Road Interchange Project (Contract 04-2285C4), the Contractor shall complete Stages 3A, 3B, 3C work and shall begin Stage 3D by August 1, 2011 as shown on the plans. No work shall be performed east of WB4 263+60 and east of EB4 263+55 after August 1, 2011.

The Contractor shall pay to the State of California the sum of \$25,000 per day as liquidated damages, for each day's delay in completing all the work in Stages 3A, 3B, 3C by August 1, 2011. The total liquidated damages will not exceed \$750,000.

The liquidated damages for completing all the work in Stages 3A, 3B, 3C by August 1, 2011 are distinct and separate from the liquidated damages specified for completion of all contract work."

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In the Special Provisions, Section 5-1.11, "SUPPLEMENTAL PROJECT INFORMATION," the following items are added in the second paragraph:

- "14. Biological Opinion (Reference No. 1-1-05-F-0158-2), issued by United States Fish and Wildlife Service (USFWS)
15. Agreement with California Department of Fish and Game (1602 Permit)
16. Agreement with State Water Resources Control Board (401 Water Quality Certification)
17. Agreement with U.S. Army Corps of Engineers (404 Permit)
18. Agreement With State Reclamation Board (Contract No. 14-06-200-6020)
19. Agreement with Contra Costa Water District"

In the Special Provisions, Section 8-1.03, "STATE-FURNISHED MATERIALS," the following item is added in the second paragraph:

"D. Router"

In the Special Provisions, Section 9, "DESCRIPTION OF BRIDGE WORK," the paragraph under "eBART CENTURY BOULEVARD UNDERPASS," is revised as follows:

"A single-span cast-in-place prestressed concrete box girder structure that is to carry railroad loads, and which is to be approximately 29 meters long and 8 meters wide."

In the Special Provisions, Section 10-1.01, "ORDER OF WORK," is revised as attached.

In the Special Provisions, Section 10-1.03, "WATER POLLUTION CONTROL," is revised as attached.

In the Special Provisions, Section 10-1.24, "TEMPORARY DRAINAGE INLET PROTECTION," subsection, "MATERIALS," item "A" in the fourth paragraph of subsection, "Silt Fence," is revised as follows:

- "A. Posts shall be untreated fir, redwood, cedar, or pine, shall be cut from sound timber, and shall be straight and free of loose or unsound knots and other defects which would render them unfit for the purpose intended. Wood post shall be a minimum of 34 mm x 40 mm in size, and 1.2 m in length. The end of the post to be embedded in the soil shall be pointed."

In the Special Provisions, Section 10-1.29, "OBSTRUCTIONS," is revised as attached.

In the Special Provisions, Section 10-1.33, "MAINTAINING TRAFFIC," fifteenth paragraph, item "1" is revised as follows:

- "1. Century Boulevard shall be open to traffic within 44 working days after being closed to construct the right side of Century Boulevard Undercrossing structure during Stage 3. Attention is directed to "Relations with City of Pittsburg" and "Order of Work," of these special provisions. During closure of Century Boulevard, the freeway mainline, Loveridge Road interchange ramps and North Park Boulevard shall remain open at all times. The Century Boulevard closure between November 1st and December 31st will not be allowed."

"In the Special Provisions, Section 10-1.33, "MAINTAINING TRAFFIC," "Chart No.1-Freeway Lane Requirement," is revised as attached.

In the Special Provisions, Section 10-1.37, "TRAFFIC CONTROL (CITY OF PITTSBURG)," is revised as attached.

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In the Special Provisions, Section 10-1.44, "EXISTING HIGHWAY FACILITIES," subsection, "REMOVE SIGN STRUCTURE," is added as attached.

In the Special Provisions, Section 10-1.47, "EARTHWORK," the following paragraphs are added after the second paragraph:

"In areas with lime treated subgrade, the grading plane as defined in Section 1-1.23, "Grading Plane", of the Standard Specifications shall be considered as the bottom of the lime treated subgrade layer.

In the freeway median, between the eBART concrete barriers and retaining walls, relative compaction of not less than 95 percent shall be obtained for a minimum depth of 0.3 m below the grading plane for the full width.

Grade tolerances for placement of the eBART concrete barriers and retaining walls shall conform to the tolerance requirements shown on the plans.

Attention is directed to "Welded Steel Pipe Casing (Bridge)" of these special provisions."

In the Special Provisions, Section 10-1.62, "LIME STABILIZATION," is revised as attached.

In the Special Provisions, Section 10-1.63, "AGGREGATE SUBBASE," the following paragraph is added after the last paragraph:

"Recycled AC or PCC grindings may be used as aggregate subbase provided that they are placed a minimum of 5 feet above the maximum height of the groundwater table and are not left on the surface during the rainy season (October 15 to April 15)."

In the Special Provisions, Section 10-1.64, "AGGREGATE BASE," the following paragraph is added after the last paragraph:

"Recycled AC or PCC grindings may be used as aggregate base provided that they are placed a minimum of 5 feet above the maximum height of the groundwater table and are not left on the surface during the rainy season (October 15 to April 15)."

In the Special Provisions, Section 10-1.72, "CONCRETE STRUCTURES," the eleventh paragraph is revised as follows:

"Forms used to support the deck of cast-in-place box girders for the following structures may remain in place, provided the portions of the forms that obstruct access openings or conflict with utility facilities are removed, the forming system employed leaves no sharp projections into the cells or voids, and forms between hinges and 1.5 m beyond access openings adjacent to hinges are removed:

Century Boulevard Undercrossing (Replace), Bridge Number 28-0395R/L;
eBART Century Boulevard Underpass, Bridge Number 28C0484;
eBART Utility Corridor Underpass, Bridge Number 28X0483."

In the Special Provisions, Section 10-1.72, "CONCRETE STRUCTURES," subsection, "MEASUREMENT AND PAYMENT," the following paragraph is added after the last paragraph:

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"Full compensation for bare copper grounding wire at retaining walls shall be considered as included in the contract price paid per cubic meter for structural concrete, retaining wall and no additional compensation will be allowed therefor."

In the Special Provisions, Section 10-1.74, "STRUCTURE APPROACH SLABS AND STRUCTURE APPROACH SLABS (TYPE N)," subsection, "MEASUREMENT AND PAYMENT," the last paragraph is deleted.

In the Special Provisions, Section 10-1.76, "CONCRETE MASONRY BLOCK WALL," is deleted.

In the Special Provisions, Section 10-1.86, "INSTALL REMOVABLE SIGN PANEL FRAME," is deleted.

In the Special Provisions, Section 10-1.94.1, " PERMEABLE MATERIAL ," is added as attached.

In the Special Provisions, Section 10-1.102, "WELDED STEEL PIPE CASING (BRIDGE)," in subsection, "MATERIALS, section, "Lean concrete backfill" is added as follows:

"Lean concrete backfill

Lean concrete backfill shall conform to the provisions for slurry cement backfill in Section 19-3.062, "Slurry Cement Backfill," of the Standard Specifications.

Lean concrete backfill to be placed with utility conduits will be considered structure backfill (bridge) for compensation purposes."

In the Special Provisions, Section 10-1.108, "GEOSYNTHETIC CLAY LINER," is revised as attached.

In the Special Provisions, Section 10-1.126, "CONDUIT SYSTEM FOR eBART," is added as attached.

In the Special Provisions, Section 10-1.127, "PIPE SLEEVES AND GROUNDING SYSTEM FOR FUTURE FENCE INSTALLATION," is added as attached.

In the Special Provisions, Section 10-3.15.1, "CONTROLLER CABINETS," is added after Section 10-3.15, "STATE-FURNISHED CONTROLLER ASSEMBLIES," as attached.

In the Special Provisions, Section 10-3.18, "LIGHT EMITTING DIODE SIGNAL MODULE," is revised as attached.

In the Special Provisions, Section 10-3.20, "DETECTORS," subsection, "LONG LEAD-IN CABLE LOOP DETECTOR (LLD) SENSOR UNIT," is added as attached.

In the Special Provisions, Section 10-3.25, "SIGN LIGHTING FIXTURES-INDUCTION," the second paragraph is revised as follows:

"Each fixture shall consist of a housing with door, a reflector, refractor or a lens, a lamp, a power coupler, a high frequency generator and a fuse block."

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In the Special Provisions, Section 10-3.30, "EXTINGUISHABLE MESSAGE SIGN PANELS (LED)," is revised as attached.

In the Special Provisions, Section 10-3.47, "PAYMENT," is revised as attached as attached.

In the Special Provisions, Section 13, "RAILROAD RELATIONS AND INSURANCE," is revised as attached.

In the Bid book, in the "Bid Item List," Items 35, 37, 66, 86, 93, 105, 142, 150, 169, 174, 178, 184, 187, 196, 197, 199, 205, 207, 208, 212, 213, 214, 235, 237, 267, 268, 292, 303, 311, 314, 317, 321, and 322 are revised, Items 347, 348, 349, and 350 are added and Items 194, 195, 238 and 346 are deleted as attached.

To Bid book holders:

Replace pages 4, 6, 7, 8, 10, 11, 12, 13, 14, 16, 17, 18, 19 and 20 of the "Bid Item List" in the Bid book with the attached revised pages of the Bid Item List. The revised Bid Item List is to be used in the bid.

Inquiries or questions in regard to this addendum must be communicated as a bidder inquiry and must be made as noted in the Notice to Bidders section of the Notice to Bidders and Special Provisions.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the Bid book.

Submit bids in the Bid book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

This addendum and attachments are available for the Contractors' download on the Web site:

http://www.dot.ca.gov/hq/esc/oe/project_ads_addenda/04/04-228594

If you are not a Bid book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

ORIGINAL SIGNED BY

REBECCA D. HARNAGEL
Chief, Office of Plans, Specifications & Estimates
Office Engineer
Division of Engineering Services

Attachments

10-1.01 ORDER OF WORK

Order of work shall conform to the provisions in Section 5-1.05, "Order of Work," of the Standard Specifications and these special provisions.

Attention is directed to the Section 4, "Beginning of Work, Time of Completion, and Liquidated Damages," of these special provisions regarding work milestone restrictions for the construction work adjacent to State Route 4 widening at Somersville Road Interchange Project (Contract 04-228514). The Contractor shall provide access to the contractor working on the adjacent Project (Contract 04-228514), to construct improvements east of WB4 263+60 and east of EB4 263+55 after August 1, 2011 as needed.

All work within Kirker Creek, Old Kirker Creek and Los Medanos Wasteway shall be restricted to the period from April 15 to October 15. Attention is directed to "Relations with California Department of Fish and Game" and "Relations with U.S. Army Corps of Engineers" of these special provisions.

Refueling and maintenance of vehicles and staging areas shall be not less than 20 meters from riparian areas or water body.

Attention is directed to "Relations with the United States Fish and Wildlife Service" and "Relations with the California Department of Fish and Game" of these special provisions regarding pre-construction Employee Biological Education training and construction activities.

Attention is directed to "Slope Paving" of these special provisions regarding constructing a 1.2 m by 1.8 m test panel prior to placing the permanent slope paving.

Attention is directed to "Miscellaneous Concrete Construction" of these special provisions regarding constructing a 600 mm by 600 mm test panel prior to constructing curb ramps with detectable warning surfaces.

Attention is directed to "Architectural Surface (Textured Concrete)" of these special provisions regarding constructing a test panel prior to constructing the cast in place concrete medallions for the sound wall.

Attention is directed to "Environmentally Sensitive Area" and "Temporary Fence (Type ESA)" of these special provisions. Prior to beginning work, the boundaries of the Environmentally Sensitive Areas (ESA) shall be clearly delineated in the field. The boundaries shall be delineated by the installation of temporary fence (Type ESA).

Upon completion of grading work, as determined by the Engineer, the Contractor shall construct permanent water pollution control items identified in "Water Pollution Control" of these special provisions.

Attention is directed to "Prepaving Conference," "Just-In-Time Training," and "Test Strip," of these special provisions.

Attention is directed to Section 90, "Portland Cement Concrete," of the Standard Specifications and these special provisions, regarding mix proportions for concrete being determined by the Contractor.

Attention is directed to "Move-In/ Move-Outs (Temporary Erosion Control)" and "Move-In/ Move-Outs (Erosion Control)" of these special provisions. Application of temporary and permanent erosion control may require several move-in/ move-outs of temporary and permanent erosion control equipment.

Attention is directed to "Relations with City of Pittsburg" and "Relations with City of Antioch" of these special provisions regarding application and approval of City Encroachment Permit prior to performing work on City facilities or within City limits outside of State right-of-way.

The Contractor shall notify the Engineer and Mr. Dean Eckerson with Delta Diablo Sanitation District, telephone (925) 756-1972 a minimum of 5 working days prior to placing order for the 2400 mm reinforced concrete pipe casing.

Attention is directed to "Existing Highway Irrigation Facilities," "Irrigation Crossovers," "Remove Existing Irrigation Facilities," and "Highway Planting and Irrigation Systems" of these special provisions, regarding salvage and capping of existing irrigation facilities prior to road demolition and clearing and grubbing work and installation of new replacement irrigation equipment.

The first order of work shall be to place the order for the electrical equipment. The Engineer shall be furnished a statement from the vendor that the order for the electrical equipment has been received and accepted by the vendor.

The uppermost layer of new pavement shall not be placed until all underlying conduits and loop detectors have been installed.

Prior to commencement of the traffic signal, ramp metering or traffic operation system (TOS) functional test at any location, all items of work related to signal control, ramp metering or TOS shall be completed and all roadside signs, pavement delineation, and pavement markings shall be in place at that location.

No overhead sign panel shall be displayed until the overhead sign lighting is completely operational.

No above ground electrical work shall be performed on any system within the project limits until all Contractor-furnished electrical materials for that individual system have been tested and delivered to the Contractor.

Contractor shall notify Engineer 30 days in advance of performing any work in the vicinity of existing Service Authority for Freeways and Expressways (SAFE) call boxes.

Contractor shall provide a 5 working day advance written notice to all residences and business, within 150 meters of the Project Limits before affecting either pedestrian access, vehicular access, or interrupting utility services. Copies of the notices shall be submitted to the Engineer for approval, at least two working days prior to providing the notices to the residences and businesses.

Written notification to residences and businesses shall not be measured separately for payment but shall be considered as included in the various items of work and no additional compensation will be allowed therefore.

Existing traffic signal and street lighting systems shall be kept in operation for the benefit of the traveling public during progress of the work. Full compensation for complying with this requirements shall be considered as included in the contract prices paid for various items of work and no additional compensation will be allowed therefor.

Access for Adjacent Property -Convenient access to driveways, houses, and buildings along the line of the work shall be provided and maintained in good condition. When the abutting property owner's access across the right-of-way line is to be eliminated, or to be replaced under the contract by the access facilities, the existing access shall not be closed until the replacement access facilities are usable.

The Contractor shall conduct construction operations as to offer the least possible obstruction and inconvenience to the public and shall have under construction no greater length or amount of work than can be prosecuted properly with due regard to the rights of the public.

Temporary railing (Type K) and temporary crash cushions shall be secured in place prior to commencing work for which the temporary railing and crash cushions are required.

Attention is directed to "Relations with City of Pittsburg" of these special provisions regarding the period of road closure of the local streets and freeway on-ramps.

Attention is directed to Century Boulevard Undercrossing (Bridge Number 28-0395) plans and "Jacking Superstructure" of these special provisions regarding an alternative method for constructing a portion of the Century Boulevard Undercrossing structure during Stage 3. If the Contractor determines that using conventional falsework over the roadway, while the road is closed to traffic within the allowable duration specified in these special provisions is not adequate to complete the superstructure work, the Contractor has an option of casting the right side of the bridge girder high and then lowering to the final position, while the entire road remain open to traffic.

Within 30 days after the contract award, the Contractor shall notify the Engineer in writing of his decision on which method of construction will be utilized to construct the portion of the Century Boulevard Undercrossing structure during stage 3. If the Contractor decides to pursue casting high and lowering the girder option, the Century Boulevard shall remain open to traffic during bridge construction.

Full compensation for casting high and lowering girder of the Century Boulevard Undercrossing (Bridge Number 28-0395), in lieu of using conventional falsework method, shall be considered as included in the contract paid per cubic meter for structural concrete, bridge and no separate payment will be made therefor.

The pump station shall be continuously operated during the course of the construction even during modifications of the pump station. The Contractor shall be responsible for maintaining the existing Loveridge Road Overcrossing pumping plant and maintaining drainage pumping capacity. The total drainage capacity to be maintained shall not be less than 10,600 liters per minute at 6.1 meters of head.

Maintenance of the existing pumping plant shall include, but not be limited to, providing necessary adjustments and repairs, and cleaning of the storage box, entrance bay, and the various sumps, for the proper operation of the existing drainage pumping plant equipment and Pumping plant electrical equipment. Care and cleaning of the pumping plant equipment shall conform to the provisions in Section 74-1.05 , "Care and cleaning," of the Standard specifications.

Attention is directed to Section 74-1.055, "Use of Pumps by Contractor Prior to Acceptance of Work," of the Standard Specifications.

Pumping capacity shall be maintained at the Contractor's option, by one of the following methods:

1. Staging the work such that the existing pump plant remains in operation at all times.
2. Provide an auxiliary pumping system consisting of temporary drainage system, sump pumps and discharge piping.
3. A combination of the above two methods.

The Contractor shall maintain a record documents of all the maintenance work performed on the pump plant during the course of the construction. The record of the maintenance shall be submitted to the Engineer.

At the completion of the construction, the Engineer will conduct performance tests on the pump station in conformance with the provisions in Section 74-1.07, "Tests," of the Standard Specifications. Relieving the Contractor from his maintenance responsibility will not be granted until all the tests are completed and satisfactory to the Engineer.

Full compensation for maintaining the existing pumping plant, shall be considered as included in the contract price paid for various items of work involved and no additional compensation will be allowed therefor.

Attention is directed to "Maintaining Traffic" and "Temporary Pavement Delineation" of these special provisions and to the stage construction sheets of the plans.

Attention is directed to "Progress Schedule (Critical Path Method)" of these special provisions regarding the submittal of a general time-scaled logic diagram within 10 days after approval of the contract. The diagram shall be submitted prior to performing any work that may be affected by any proposed deviations to the construction staging of the project.

The work shall be performed in conformance with the stages of construction shown on the plans. Nonconflicting work in subsequent stages may proceed concurrently with work in preceding stages, provided satisfactory progress is maintained in the preceding stages of construction.

In each stage, after completion of the preceding stage, the first order of work shall be the removal of existing pavement delineation as directed by the Engineer. Pavement delineation removal shall be coordinated with new delineation so that lane lines are provided at all times on traveled ways open to public traffic.

Before obliterating any pavement delineation (traffic stripes, pavement markings, and pavement markers) that is to be replaced on the same alignment and location, as determined by the Engineer, the pavement delineation shall be referenced by the Contractor, with a sufficient number of control points to reestablish the alignment and location of the new pavement delineation. The references shall include the limits or changes in striping pattern, including one- and 2-way barrier lines, limit lines, crosswalks and other pavement markings. Full compensation for referencing existing pavement delineation shall be considered as included in the contract prices paid for new pavement delineation and no additional compensation will be allowed therefor.

Prior to applying Hot Mix Asphalt the Contractor shall cover all manholes, valve and monument covers, grates, or other exposed facilities located within the area of application, using a plastic or oil resistant construction paper secured to the facility being covered by tape or adhesive. The covered facilities shall be referenced by the Contractor, with a sufficient number of control points to relocate the facilities after the Hot Mix Asphalt has been placed. After completion of the Hot Mix Asphalt operation, all covers shall be removed and disposed of in a manner satisfactory to the Engineer. Full compensation for covering manholes, valve and monument covers, grates, or other exposed facilities, referencing, and removing temporary cover shall be considered as included in the contract price paid per tonne for Hot Mix Asphalt, and no additional compensation will be allowed therefore.

At the end of each working day if a difference in excess of 0.045 meter exists between the elevation of the existing pavement and the elevation of excavations within 2.4 m of the traveled way, material shall be placed and compacted against the vertical cuts adjacent to the traveled way. During excavation operations, native material may be used for this purpose; however, once placing of the structural section commences, structural material shall be used. The material shall be placed to the level of the elevation of the top of existing pavement and tapered at a slope of 1:4 (vertical:horizontal) or flatter to the bottom of the excavation. Treated base shall not be used for the taper. Full compensation for placing the material on a 1:4 slope, regardless of the number of times the material is required, and subsequent removing or reshaping of the material to the lines and grades shown on the plans shall be considered as included in the contract price paid for the materials involved and no additional compensation will be allowed therefor. No payment will be made for material placed in excess of that required for the structural section.

At those locations exposed to public traffic where guard railings or barriers are to be constructed, reconstructed, or removed and replaced, the Contractor shall schedule operations so that at the end of each working day there shall be no post holes open nor shall there be any railing or barrier posts installed without the blocks and rail elements assembled and mounted thereon.

Some plants required for this project may not be readily available and may have to be grown specifically for this project. Within 30 days after the contract has been approved, furnish to the Engineer a statement from the vendor that the order for the plants to be grown for this contract, including inspection plants and replacement plants, has been received and accepted by the vendor. The statement from the vendor must include the names, sizes, and quantities of plants ordered and the anticipated dates of delivery. Notify the Engineer in writing when the vendor has started to grow the plants.

At least 60 days before planting the plants, furnish the Engineer a statement from the vendor that the order for the plants required for this contract, including inspection plants, has been received and accepted by the vendor. The statement from the vendor must include the names, sizes, and quantities of plants ordered and the anticipated date of delivery.

Place orders for replacement plants with the vendor at the appropriate time so that the roots of the replacement plants are not in a root-bound condition.

At least 30 days before applying seeds as part of Erosion Control (Type D), furnish the Engineer a statement from the vendor that the order for the seed required for this contract has been received and accepted by the vendor. The statement from the vendor must include the names and quantity of seed ordered and the anticipated date of delivery.

The Engineer designates ground locations of erosion control by directing the placing of stakes or other suitable markers before application of erosion control materials as specified under "Erosion Control (Type D)," of these special provisions.

Before the start of irrigation work, check for deficiencies of existing plants that are to remain in place as specified under "Maintain Existing Planted Areas" of these special provisions.

Unless otherwise shown on the plans or specified in these special provisions, conduits to be jacked or drilled or installed by the open trench method for water line crossovers and sprinkler control crossovers must be installed before the installation of other pipe supply lines.

Do not perform clearing, grubbing, and earthwork operations in areas where existing irrigation facilities are to remain in place until existing irrigation facilities have been checked for proper operation as specified under "Existing Highway Irrigation Facilities" of these special provisions.

Submittal of working drawings for electrical components must comply with Section 20-5.027B, "Wiring Plans and Diagrams," of the Standard Specifications.

Attention is directed to "Weed Germination" of these special provisions regarding the scarification of soil in weed germination areas prior to germinating weeds.

Attention is directed to "Liner Plants" of these special provisions regarding the application of seeding in the liner planting areas.

Upon completion of grading work along California Avenue and North Park Boulevard, as determined by the Engineer, the Contractor shall begin placement of highway planting and irrigation work within the private properties in conformance with the Section 10-2, "Highway Planting and Irrigation Systems," of these special provisions.

When embankment settlement periods or surcharge embankment settlement periods are specified, the settlement periods and the deferment of portions of the work shall comply with the provisions in Section 19-6.025, "Settlement Period," of the Standard Specifications and in "Earthwork" of these special provisions.

Some plants required for this project may not be readily available and may have to be grown specifically for this project. Within 30 days after the contract has been approved, furnish to the Engineer a statement from the vendor that the order for the plants to be grown for this contract, including inspection plants and replacement plants, has been received and accepted by the vendor. The statement from the vendor must include the names, sizes, and quantities of plants ordered and the anticipated dates of delivery. Notify the Engineer in writing when the vendor has started to grow the plants.

At least 60 days before planting the plants, furnish the Engineer a statement from the vendor that the order for the plants required for this contract, including inspection plants, has been received and accepted by the vendor. The statement from the vendor must include the names, sizes, and quantities of plants ordered and the anticipated date of delivery.

Place orders for replacement plants with the vendor at the appropriate time so that the roots of the replacement plants are not in a root-bound condition.

At least 30 days before applying seeds as part of Erosion Control (Type D), furnish the Engineer a statement from the vendor that the order for the seed required for this contract has been received and accepted by the vendor. The statement from the vendor must include the names and quantity of seed ordered and the anticipated date of delivery.

The Engineer designates ground locations of erosion control by directing the placing of stakes or other suitable markers before application of erosion control materials as specified under "Erosion Control (Type D)," of these special provisions.

Before the start of irrigation work, check for deficiencies of existing plants that are to remain in place as specified under "Maintain Existing Planted Areas" of these special provisions.

Unless otherwise shown on the plans or specified in these special provisions, conduits to be jacked or drilled or installed by the open trench method for water line crossovers and sprinkler control crossovers must be installed before the installation of other pipe supply lines.

Do not perform clearing, grubbing, and earthwork operations in areas where existing irrigation facilities are to remain in place until existing irrigation facilities have been checked for proper operation as specified under "Existing Highway Irrigation Facilities" of these special provisions.

Submittal of working drawings for electrical components must comply with Section 20-5.027B, "Wiring Plans and Diagrams," of the Standard Specifications.

Attention is directed to "Weed Germination" of these special provisions regarding the scarification of soil in weed germination areas prior to germinating weeds.

Attention is directed to "Liner Plants" of these special provisions regarding the application of seeding in the liner planting areas.

Upon completion of grading work along California Avenue and North Park Boulevard, as determined by the Engineer, the Contractor shall begin placement of highway planting and irrigation work within the private properties in conformance with the Section 10-2 "Highway Planting and Irrigation Systems" of these special provisions.

When embankment settlement periods or surcharge embankment settlement periods are specified, the settlement periods and the deferment of portions of the work shall comply with the provisions in Section 19-6.025, "Settlement Period," of the Standard Specifications and in "Earthwork" of these special provisions.

10-1.03 WATER POLLUTION CONTROL

GENERAL

Water pollution control work shall conform to the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications, section of these special provisions entitled "Relations With California Regional Water Quality Control Board," and these special provisions.

The Contractor may obtain other National Pollutant Discharge Elimination System (NPDES) permits that apply to activities and mobile operations within or outside of the project limits including hot mix asphalt batch plants, material borrow areas, concrete plants, staging areas, storage yards, or access roads.

The Contractor shall perform water pollution control work in conformance with the requirements in the "Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual" and its addenda in effect on the day the Notice to Contractors is dated. This manual is referred to as the "Preparation Manual." Copies of the Preparation Manual may be obtained from:

State of California
Department of Transportation
Publication Distribution Unit
1900 Royal Oaks Drive
Sacramento, California 95815
Telephone: (916) 445-3520

The Preparation Manual and other references for performing water pollution control work are available from the Department's Construction Storm Water and Water Pollution Control web site at:

<http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm>

Before the start of job site activities, the Contractor shall provide training for project managers, supervisory personnel, and employees involved with water pollution control work. The training shall include:

- A. Rules and regulations
- B. Implementation and maintenance for:
 - 1. Temporary Soil Stabilization
 - 2. Temporary Sediment Control
 - 3. Tracking Control
 - 4. Wind Erosion Control

The Contractor shall designate in writing a Water Pollution Control Manager (WPCM). The Contractor shall submit a statement of qualifications describing the training, work history, and expertise of the proposed WPCM. The qualifications shall include either:

- A. A minimum of 24 hours of Department approved storm water management training described at Department's Construction Storm Water and Water Pollution Control web site.
- B. Certification as a Certified Professional in Erosion and Sediment Control (CPESC).

The WPCM shall be:

- A. Responsible for water pollution control work.
- B. The primary contact for water pollution control work.
- C. Have authority to mobilize crews to make immediate repairs to water pollution control practices.

The Contractor may designate one manager to prepare the SWPPP and a different manager to implement the plan. The WPCP preparer shall meet the training requirements for the WPCM.

STORM WATER POLLUTION PREVENTION PLAN

The Contractor shall submit a Storm Water Pollution Prevention Plan (SWPPP) to the Engineer for approval. The SWPPP shall conform to the requirements in the Preparation Manual, the NPDES permit, and these special provisions. The SWPPP shall be submitted in place of the water pollution control program required by the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications.

The SWPPP shall include water pollution control practices:

- A. For storm water and non-storm water from areas outside of the job site related to construction activities for this contract such as:
 - 1. Staging areas.
 - 2. Storage yards.
 - 3. Access roads.
- B. Appropriate for each season as described in "Implementation Requirements" of these special provisions.
- C. For activities or mobile operations related to all NPDES permits.

The SWPPP shall include a schedule that:

- A. Describes when work activities that could cause water pollution will be performed.
- B. Identifies soil stabilization and sediment control practices for disturbed soil area.
- C. Includes dates when these practices will be 25, 50, and 100 percent complete.
- D. Shows 100 percent completion of these practices before the rainy season.

The SWPPP shall include the following temporary water pollution control practices and their associated contract items of work as shown on the plans or specified in these special provisions:

- A. Temporary Soil Stabilization
 - 1. Temporary Hydraulic Mulch (Bonded Fiber Matrix)
 - 2. Temporary Cover
 - 3. Move-in/Move-out (Temporary Erosion control)
- B. Temporary Sediment Control
 - 1. Temporary Silt Fence
 - 2. Temporary Drainage Inlet Protection
 - 3. Temporary Fiber Roll
 - 4. Temporary Check Dam
- C. Tracking Control
 - 1. Temporary Construction Entrance
 - 2. Street Sweeping
- D. Wind Erosion Control
 - 1. Construction Site Management
- E. Non-Storm Water Management
 - 1. Dewatering and Non-Storm Water Discharge Control
 - 2. Construction Site Management

F. Waste Management and Materials Pollution Control

1. Temporary Concrete Washout Facility
2. Construction Site Management

The SWPPP shall include the following contract items of work for permanent water pollution control as shown on the plans or as specified in these special provisions:

- A. Drainage Inlet Protection
- B. Fiber Rolls
- C. Erosion Control (Type D)
- D. Check Dam (Erosion Control)
- E. Plant Group M(liner plants used in biofiltration swale)
- F. Erosion Control (Netting)
- G. Move-in/Move-out (Erosion control)

Within 20 days after contract approval, follow this process for SWPPP approval:

1. Submit 3 copies of the SWPPP and allow 20 days for the Engineer's review. If revisions are required, the Engineer provides comments and specifies the date that the review stopped.
2. Change and resubmit the SWPPP within 15 days of receipt of the Engineer's comments. The Engineer's review resumes when the complete SWPPP is resubmitted.
3. When the Engineer approves the SWPPP, submit 4 copies of the approved SWPPP. After approval, the Engineer submits one copy of the approved SWPPP to the San Francisco Bay RWQCB for their review and comment.
4. Work activities start no sooner than 30 days after the Engineer approves the SWPPP to allow for the RWQCB's review. If the San Francisco Bay RWQCB provides comments to the SWPPP, amend the SWPPP within 5 days

If the Engineer fails to complete the review within the time allowed and if, in the opinion of the Engineer, completion of the work is delayed or interfered with because of the Engineer's or the RWQCB's review, the Department pays you for resulting losses, and grants an extension of time.

If the Engineer allows limited construction activity during the RWQCB's review of the SWPPP, you may:

1. Develop construction yard
2. Mobilize equipment, materials, and machinery
3. Install safety measures
4. Conduct other activities that do not have the potential to discharge pollutants

The SWPPP shall include a copy of the Fish & Game permits, US Army Corps of Engineers permits, US Fish and Wildlife permits and RWQCB 401 Certifications.

A copy of the approved SWPPP and all subsequent amendments shall be furnished to the City of Pittsburg.

The Contractor shall not perform work that may cause water pollution until the SWPPP has been approved by the Engineer. The Engineer's review and approval shall not waive any contract requirements and shall not relieve the Contractor from complying with Federal, State and local laws, regulations, and requirements.

The Contractor shall amend the SWPPP annually and shall resubmit it to the Engineer 25 days before the defined rainy season.

If there is a change in construction schedule or activities, the Contractor shall prepare an amendment to the SWPPP to identify additional or revised water pollution control practices. The Contractor shall submit the amendment to the Engineer for review within a time agreed to by the Engineer not to exceed the number of days specified for the initial submittal of the SWPPP. The Engineer will review the amendment within the same time allotted for the review of the initial submittal of the SWPPP.

If directed by the Engineer or requested in writing by the Contractor and approved by the Engineer, changes to the water pollution control work specified in these special provisions will be allowed. Changes may include addition of new water pollution control practices. The Contractor shall incorporate these changes in the SWPPP. Additional water pollution control work will be paid for as extra work in accordance with Section 4-1.03D, "Extra Work," of the Standard Specifications.

The Contractor shall keep a copy of the approved SWPPP at the job site. The SWPPP shall be made available when requested by a representative of the Regional Water Quality Control Board, State Water Resources Control Board, United States Environmental Protection Agency, or the local storm water management agency. Requests from the public shall be directed to the Engineer.

SAMPLING AND ANALYSIS

The Contractor shall include a Sampling and Analysis Plan (SAP) in the SWPPP to monitor the effectiveness of the water pollution control practices. The Contractor shall prepare the SAP in conformance with the Preparation Manual.

The Contractor shall designate trained personnel to collect water quality samples. The personnel and training shall be documented in the SAP. Training shall consist of the following elements:

- A. SAP review,
- B. Health and safety review, and
- C. Sampling simulations.

In the SAP the Contractor shall describe the following water quality sampling procedures:

- A. Sampling preparation,
- B. Collection,
- C. Quality assurance and quality control,
- D. Sample labeling,
- E. Collection documentation,
- F. Sample shipping,
- G. Chain of custody,
- H. Sample numbering, and
- I. Precautions from the construction site health and safety plan.

The Contractor shall document sample collection during precipitation.

Samples to be analyzed in the field shall be taken by the Contractor's designated sampling personnel using collection and analysis methods, and equipment calibration specified by the manufacturer of the sampling equipment. Samples to be analyzed by a laboratory, shall be sampled, preserved, and analyzed by a State-certified laboratory in conformance with the requirements in 40 CFR Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants." The Contractor shall identify the State-certified laboratory, sample containers, preservation requirements, holding times, and analysis method in the SAP. A list of State-certified laboratories that are approved by the Department is available at:

<http://www.dhs.ca.gov/ps/ls/ELAP/html/lablist.htm>

Non-Visible Pollutants

This project has the potential to discharge non-visible pollutants in storm water from the construction site. The Contractor shall include in the SAP a description of the sampling and analysis strategy to be implemented on the project for monitoring non-visible pollutants.

In the SAP the Contractor shall identify potential non-visible pollutants that will be present on the construction site associated with the following:

- A. Construction materials and wastes;
- B. Existing contamination due to historical site usage; or
- C. Application of soil amendments, including soil stabilization products, with the potential to alter pH or contribute toxic pollutants to storm water.

The Contractor shall show the locations planned for storage and use of the potential non-visible pollutants on the SWPPP Water Pollution Control Drawings.

The Contractor shall include in the SAP the following list of conditions that require sampling when observed during a storm water inspection:

- A. Materials or wastes containing potential non-visible pollutants are not stored under watertight conditions.
- B. Materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but:
 - 1. A breach, leakage, malfunction, or spill is observed;
 - 2. The leak or spill has not been cleaned up before precipitation; and
 - 3. There is the potential for discharge of non-visible pollutants to surface waters or drainage system.
- C. Construction activities; such as application of fertilizer, pesticide, herbicide, methyl methacrylate concrete sealant, or non-pigmented curing compound; have occurred during precipitation or within 24 hours preceding precipitation, and have the potential to discharge pollutants to surface waters or drainage system.

- D. Soil amendments, including soil stabilization products, with the potential to alter pH levels or contribute toxic pollutants to storm water runoff have been applied, and have the potential to discharge pollutants to surface waters or drainage system (unless independent test data are available that demonstrate acceptable concentrations of non-visible pollutants in the soil amendment).
- E. Storm water runoff from an area contaminated by historical usage of the site has the potential to discharge pollutants to surface waters or drainage system.

The Contractor shall describe in the SAP the schedule for collecting a sample downhill from each non-visible pollutant source and an uncontaminated control sample, during the first 2 hours of discharge from precipitation during daylight hours that result in enough discharge for sample collection. If discharge flows to the non-visible pollutant source, a sample shall be collected immediately downhill from where the discharge enters the Department's right of way. If precipitation occurs again after at least 72 hours of dry weather the Contractor shall take new samples.

In the SAP the Contractor shall identify sampling locations for collecting downstream and control samples, and the reason for their selection. The control sampling location shall be selected so the sample does not come into contact with materials, wastes or areas associated with potential non-visible pollutants or disturbed soil areas. The Contractor shall show non-visible pollutant sampling locations on the SWPPP Water Pollution Control Drawings.

The Contractor shall identify in the SAP the analytical method to be used for downhill and control samples for potential non-visible pollutants on the project.

Analytical Results and Evaluation

The Contractor shall submit a hard copy and electronic copy of water quality analytical results, and quality assurance and quality control data to the Engineer within 5 days of sampling for field analyses, and within 30 days for laboratory analyses. The Contractor shall also provide an evaluation of whether the downhill samples show levels of the tested parameter higher than in the control sample. If downhill or downstream samples show increased levels, the Contractor will assess the water pollution control measures, site conditions, and surrounding influences to determine the probable cause for the increase. As determined by the assessment, the Contractor will repair or modify water pollution control measures to address increases and amend the SWPPP as necessary. Electronic results (in one of the following file formats: .xls, .txt, .csv, .dbs, or .mdb) shall have the following information:

- A. Sample identification number.
- B. Contract number.
- C. Constituent.
- D. Reported value.
- E. Analytical method.
- F. Method detection limit.
- G. Reported limit.

The Contractor shall maintain the water quality sampling documentation and analytical results with the SWPPP on the project site.

If construction activities or knowledge of site conditions change such that discharges or sampling locations change, the Contractor shall amend the SAP in conformance with this section, "Water Pollution Control."

IMPLEMENTATION REQUIREMENTS

The Contractor's responsibility for SWPPP implementation shall continue throughout any temporary suspension of work ordered in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications.

If the Contractor or the Engineer identifies a deficiency in the implementation of the approved SWPPP, the deficiency shall be corrected immediately, unless an agreed date for correction is approved in writing by the Engineer. The deficiency shall be corrected before the onset of precipitation. If the Contractor fails to correct the deficiency by the agreed date or before the onset of precipitation, the Department may correct the deficiency and deduct the cost of correcting deficiencies from payments.

If the Contractor fails to conform to the provisions of this section, "Water Pollution Control," the Engineer may order the suspension of work until the project complies with the requirements of this section.

The Contractor shall construct permanent water pollution control items identified in the SWPPP as specified in "Order of Work" of these special provisions. The Contractor shall maintain the permanent water pollution control items in the locations and condition shown on the plans throughout the duration of the project.

Year-Round

The Contractor shall monitor the National Weather Service weather forecast on a daily basis during the contract. The Contractor may use an alternative weather forecasting service if approved by the Engineer. Appropriate water pollution control practices shall be in place before precipitation.

The Contractor may discontinue earthwork operations for a disturbed area for up to 21 days and the disturbed soil area will still be considered active. When earthwork operations in the disturbed area have been completed, the Contractor shall implement appropriate water pollution control practices within 15 days, or before predicted precipitation, whichever occurs first.

Rainy Season

The Contractor shall provide soil stabilization and sediment control practices during the rainy season between October 15 and April 15.

The Contractor shall implement soil stabilization and sediment control practices a minimum of 10 days before the start of the rainy season.

During the defined rainy season, the active disturbed soil area of the project site shall be not more than 2 hectares. The Engineer may approve expansions of the active disturbed soil area limit if requested in writing. The Contractor shall maintain soil stabilization and sediment control materials on site to protect disturbed soil areas.

INSPECTION AND MAINTENANCE

The WPCM shall inspect the water pollution control practices identified in the SWPPP as follows:

- A. Before a forecasted storm,
- B. After precipitation that causes site runoff,
- C. At 24-hour intervals during extended precipitation,
- D. On a predetermined schedule, a minimum of once every 2 weeks outside of the defined rainy season, and
- E. On a predetermined schedule, a minimum of once a week during the defined rainy season.

The WPCM shall oversee the maintenance of the water pollution control practices.

The WPCM shall use the Storm Water Quality Construction Site Inspection Checklist provided in the Preparation Manual or an alternative inspection checklist provided by the Engineer. A copy of the completed site inspection checklist shall be submitted to the Engineer within 24 hours of finishing the inspection.

The Contractor may request approval from the Engineer to suspend inspections of water pollution control practices after work except plant establishment is complete. The Engineer's approval is contingent on approval from the Regional Water Quality Control Board. The Contractor shall not suspend inspections until written approval from the Engineer is received.

REPORTING REQUIREMENTS

If the Contractor identifies discharges into surface waters or drainage systems causing or potentially causing pollution, or if the project receives a written notice or order from a regulatory agency, the Contractor shall immediately inform the Engineer. The Contractor shall submit a written report to the Engineer within 7 days of the discharge, notice or order. The report shall include the following information:

- A. The date, time, location, and nature of the operation, type of discharge and quantity, and the cause of the notice or order.
- B. The water pollution control practices used before the discharge, or before receiving the notice or order.
- C. The date of placement and type of additional or altered water pollution control practices placed after the discharge, or after receiving the notice or order.
- D. A maintenance schedule for affected water pollution control practices.

Annual Certifications

By June 15 of each year, the Contractor shall complete and submit to the Engineer an Annual Certification of Compliance, as contained in the Preparation Manual.

PAYMENT

During each estimate period the Contractor fails to conform to the provisions in this section, "Water Pollution Control," or fails to implement the water pollution control practices shown on the plans or specified elsewhere in these special provisions as items of work, the Department will withhold 25 percent of the progress payment.

Withholds for failure to perform water pollution control work will be in addition to all other withholds provided for in the contract. The Department will return performance-failure withholds in the progress payment following the correction of noncompliance.

The contract lump sum price paid for prepare storm water pollution prevention plan shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparing, obtaining approval of, and amending the SWPPP and inspecting water pollution control practices as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Payments for prepare storm water pollution prevention plan will be made as follows:

- A. After the SWPPP has been approved by the Engineer, 50 percent of the contract item price for prepare storm water pollution prevention plan will be included in the monthly progress estimate.
- B. Forty percent of the contract item price for prepare storm water pollution prevention plan will be paid over the life of the contract.
- C. After acceptance of the contract in conformance with the provisions in Section 7-1.17, "Acceptance of Contract," of the Standard Specifications, payment for the remaining 10 percent of the contract item price for prepare storm water pollution prevention plan will be made in conformance with the provisions in Section 9-1.07A, "Payment Prior to Proposed Final Estimate."

Storm water sampling and analysis will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications. No payment will be made for the preparation, collection, analysis, and reporting of storm water samples where appropriate water pollution control practices are not implemented before precipitation or if a failure of a water pollution control practice is not corrected before precipitation.

Implementation of water pollution control practices in areas outside the highway right of way not specifically provided for in the SWPPP or in these special provisions will not be paid for.

Water pollution control practices for which there are separate contract items of work will be measured and paid for as those contract items of work.

10-1.29 OBSTRUCTIONS

Attention is directed to Section 8-1.10, "Utility and Non-Highway Facilities," and Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions.

Attention is directed to the existence of certain underground facilities that may require special precautions be taken by the Contractor to protect the health, safety and welfare of workers and of the public. Facilities requiring special precautions include, but are not limited to: conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas in pipelines greater than 150 mm in diameter or pipelines operating at pressures greater than 415 kPa (gage); underground electric supply system conductors or cables, with potential to ground of more than 300 V, either directly buried or in a duct or conduit which do not have concentric grounded or other effectively grounded metal shields or sheaths.

The Contractor shall notify the Engineer and the appropriate regional notification center for operators of subsurface installations at least 2 business days, but not more than 14 days, prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire or other structure. Regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert	811

If these facilities are not located on the plans in both alignment and elevation, no work shall be performed in the vicinity of the facilities, except as provided herein for conduit to be placed under pavement, until the owner, or the owner's representative, has located the facility by potholing, probing or other means that will locate and identify the facility. Conduit to be installed under pavement in the vicinity of these facilities shall be placed by the trenching method in conformance with the provisions in "Conduit" of these special provisions. If, in the opinion of the Engineer, the Contractor's operations are delayed or interfered with by reason of the utility facilities not being located by the owner or the owner's representative, the State will compensate the Contractor for the delays to the extent provided in Section 8-1.09, "Right of Way Delays," of the Standard Specifications, and not otherwise, except as provided in Section 8-1.10, "Utility and Non-Highway Facilities," of the Standard Specifications.

It is anticipated that the following utility facilities will be relocated prior to the dates shown:

Utility	Location	Date
PG&E Electrical Transmission Line (Utility No. 4 shown on plans)	North of SR4, Sta "WB4" 243+60 to 258+60	04/30/2010
PG&E 600mm Gas Line (Utility No. 3 shown on plans)	North of SR4, Sta "WB4" 243+60 to 258+60	09/30/2009
PG&E 21 KV OH Line (Utility No. 5 shown on plans)	Crossing SR4, Sta "WB4" 243+70	04/30/2010
PG&E 21 KV OH Line (Utility No. 8 shown on plans)	Along south side of California Avenue , between Carion Court and Loveridge Road and continue along Loveridge Road, north of California Ave	04/30/2010
SBC Telephone OH Line (Utility No. 8A shown on plans)	Along west side of Loveridge Road, north of California Avenue	04/30/2010
PG&E 21 KV UG Line (Utility No. 65 shown on plans)	Crossing California at Sta "LC" 104+00 (serving Loveridge Road OC Pump Plant)	04/30/2010
PG&E Transformer (Utility No. 16 shown on plans)	On south side of SR4, east side of Loveridge Rd, facing Motel 6	04/30/2010
PG&E 21 KV UG Line (Utility No. 23 shown on plans)	Crossing SR4 at Sta "WB4" 258+95	04/30/2010
PG&E 21 KV OH Line (Utility No. 24 shown on plans)	South of SR4, east of Century Blvd, between Sta EB4 259+00 and 264+00	04/30/2010
PG&E 21 KV OH Line (Utility No. 27 shown on plans)	Crossing SR4 at Sta "WB4" 258+42	04/30/2010

The following utility facilities will be relocated during the progress of the contract. The Contractor shall notify the Engineer, in writing, prior to doing work in the vicinity of the facility. The utility facility will be relocated within the listed working days, as defined in Section 8-1.06, "Time of Completion," of the Standard Specifications, after the notification is received by the Engineer:

Utility	Location	Working Days
Call Boxes	Various	30

The Contractor shall notify the Engineer in writing at least 60 days in advance of the date that the electric service connection is needed to be completed by the utility companies. The Engineer will, in turn, notify the owners of the utility facilities. The Contractor shall allow at least 60 working days for the utility companies to complete their work after the Contractor has completed all the prerequisite site work.

**Chart No. 1
Freeway Lane Requirements**

County: Contra Costa	Route/Direction: SR 4 EB	KP38.9-41.6																								
Closure Limits: EB SR 4 Between Loveridge Road and Somersville Road																										
FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Mondays through Thursdays	1	1	1	1	1	1																				
Fridays	1	1	1	1	1	1																				
Saturdays		1	1	1	1	1	1																			
Sundays		1	1	1	1	1	1	1																		

Legend:

- 1 Provide at least one through freeway lane open in direction of travel
- Work permitted within project right of way where shoulder or lane closure is not required.

REMARKS:

1. See Construction Staging Plans
2. See Lane Closure Restriction for Designated Legal Holidays and Special Days table in Maintain Traffic of these special provisions for additional closure restrictions.

10-1.37 TRAFFIC CONTROL(CITY OF PITTSBURG)

The Contractor shall schedule a preconstruction conference with the Engineer and the City of Pittsburg, Engineering Department at (925) 252-4930, approximately 2 weeks prior to start of construction.

The Contractor will notify the Engineer of any haul route through the City of Pittsburg approximately 2 weeks prior to the commencement of hauling operations. No work shall be performed until the Departments take action on the proposed hauling operations through the City of Pittsburgs.The Department may restrict hours of operation, route of travel, and truck headway. Compensation for delay will be determined in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The Contractor shall obtain approval of any haul route through the City of Pittsburg from the Engineering Department prior to the commencement of hauling operations. The City of Pittsburg may restrict hours of operation, route of travel, and truck headway.

The Contractor's SWPPP shall provide for tracking controls at work site access points, and inlet protection and street sweeping along haul routes.

The provisions of section "Closure Requirements and Conditions" of these special provisions shall apply to work on the local road system

If the Contractor's proposed traffic control plans deviate from the traffic control information shown on the contract plans, additional Traffic Control Plans, as needed, shall be submitted to the Engineer at least four weeks prior to start of construction.

Extended road closure shall be limited to the following locations and duration:

- A. **Century Boulevard** - Full closure of Century Boulevard will be permitted for a period not to exceed 56 calendar days (two months) to construct the right side of Century Boulevard Undercrossing during stage 3.
- B. **California Avenue** - Full closure of both directions of California Avenue between SR4 westbound on/off-ramps intersection and Loveridge Road will be permitted for a one-time closure for a period not to exceed one weekend. The closure time shall be limited to weekend hours, starting 10:00 p.m. Friday until 4:00 a.m. the following Monday.
- C. **SR4/Loveridge Road Eastbound Loop On-ramp** - Full closure of ramp will be permitted for a one-time closure for a period not to exceed one weekend, starting 10:00 PM Friday until 4:00 AM the following Monday.
- D. **SR4/Loveridge Road westbound on-ramp** - Full closure of ramp will be permitted for a one-time closure for a period not to exceed 7 calendar days
- E. **North Park Boulevard** - North Park Boulevard shall be open to traffic within six months after being closed to reconstruct the roadway and other facilities within the limits of the roadway closure, as shown on the plans.

Failure of the Contractor to complete the construction activities and to open the road at the above locations within the number of calendar days specified in this section of these special provisions, shall make the Contractor liable for penalty.

The Contractor shall pay to the State of California a penalty of \$10,000 or fraction thereof, for each and every calendar day of delay in finishing the work and opening the road in excess of the number of calendar days specified above.Attention is directed to "Order of Work" of these special provisions regarding an alternative construction method for jacking the Century Boulevard Undercrossing superstructure. If the Contractor chose to use the jacking method, the allowable extended period for closure of Century Boulevard that is specified in this section will no longer apply. In that case, the Contractor's activities such as erection and removal of bridge falsework that would require road closure shall be limited to nighttime hours, from 10:00 p.m. to 5:00 a.m.

Except for emergencies, or unless otherwise specified in the contract plans and these special provisions, no lane closures will be allowed on local roads between the hours of 5:00 a.m. and 9:00 a.m., or between 3:30 p.m. and 10:00 p.m., on weekdays excluding legal holidays. Traffic lane closures will be allowed on local roads between the hours of 9:00 a.m. and 3:30 p.m. with the stipulations that: 1) advanced notification is provided to the City; 2) the Contractor shall maintain at least one travel lane (minimum 3.6m wide) in each direction and that no changes in signal operation are required, or between 10:00 p.m. to 5:00 a.m. with the additional stipulation that the construction operations shall not exceed the noise level threshold requirements specified in section "Sound Control Requirements" of these special provisions.

On streets with two or more traffic lanes in each direction, traffic shall be reduced by no more than one lane in each direction. On one-way streets, traffic shall be reduced by one lane only.

The following shall be subject to approval of the City Engineering Department.

1. Lane closures during peak hours
2. Lane closures on Saturday, Sunday, or legal holidays
3. Lane closures with alternate directional control of traffic
4. Full road closures

Full road closures will only be allowed when there is no other means of traffic control feasible to accomplish the work. A full road closure will require detour plans and public notifications.

The Contractor shall provide electronic arrowboard(s) for all lane reductions.

All traffic lane reductions shall be delineated with Type II barricades, traffic cones, or delineators, spaced not more than 7.6m apart. The tapered transitional length shall be 45m minimum.

The Contractor shall Post "KEEP RIGHT(LEFT)" signs on Type II barricades at the beginning of each lane reduction.

Post C20 "RIGHT(LEFT) LANE CLOSED AHEAD" sign attached to a high level flag tree 45 m in advance of lane reductions.

Where the Contractor's operations require complete closure of California Avenue, North Park Boulevard and Loveridge Road, advanced notifications shall be made to all businesses in accordance with the following:

1. All businesses along the Loveridge Road and California Avenue corridors within 2,000 feet (610 m) of the Loveridge Road Interchange.
2. All businesses along North Park Boulevard.
3. All industrial land uses along the Loveridge Road corridor north of the Pittsburg-Antioch Highway

Qualified flaggers shall be utilized:

1. When it is necessary to change traffic controls frequently.
2. For stopping of through traffic for equipment movement.
3. For alternate directional use of a single traffic lane.
4. To expedite the safe movement of traffic through or around work zones.

Flaggers shall be properly positioned, attired and equipped.

Where the Contractor's operations will deviate from the contract plans for stage construction, and traffic handling, the Contractor shall furnish the City with a plan in conformance conditions of the City encroachment permit.

In case of delay in re-opening of the local street traveled way lanes to traffic in excess of the work hours or hours for lane closures prescribed in the contract plans and these special provisions, the Contractor shall pay to the State, a late penalty in the amount set forth in this section and the "Closure Requirements and Conditions" section of these special provisions for each and every period of time or fraction thereof, of delay in re-opening lanes.

All signs, channelizing devices, and barricades used on local streets shall be retroreflective. When delivered to the site, all signs, channelizing devices, and barricades shall be clean and free of damage. Contractor shall be responsible to maintain all such materials, products and equipment in good condition for the duration of the required use.

The temporary construction site best management practices to be used with local roads or other areas outside the highway shall be included in the contractor's SWPPP required in accordance with the provisions specified in "Water Pollution Control" of these special provisions. The Contractor shall be required to implement temporary construction site best management practices (BMPs) on local roads and areas outside the highway in accordance with the Construction Site Best Management Practices (BMPs) Manual issued by the State of California, Department of Transportation. The temporary construction site best management practices required shall include, but are not limited to:

- Stockpile Management: Implement BMPs, as appropriate, for soil stabilization and sediment control as applicable to stockpiles of various materials.
- Mobile Operations: Implement BMPs, as appropriate, for the control of equipment fueling and maintenance, concrete mixing and wash out, hauling and storage of materials. BMPs shall control the specific situations that mobile operations can create.
- Wind Erosion Controls: Implement BMPs, as appropriate, for all disturbed soils on the project site that are subject to wind erosion when wind and dry conditions exist.
- Tracking Controls: Implement BMPs, as appropriate, for the control of sediments and debris from the construction site.
- Non-Storm Water and Waste Management and Materials Pollution Controls: Implement BMPs, as appropriate, to control the discharge of materials other than storm water to the storm water collection system.

The Contractor shall inspect BMPs regularly. Improperly installed, damaged or ineffective BMPs shall be corrected immediately.

Curb ramps installed in the City of Pittsburg right-of-way shall conform to the requirements of the most current edition of the California Building Code or the Department of Transportation, Standard Plans, whichever is more stringent, in effect at the time that the curb ramp construction is accomplished.

Full compensation for complying with the requirements of the permit shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefore.

REMOVE SIGN STRUCTURE

Existing sign structures, where shown on the plans to be removed, shall be removed and disposed of.

Overhead sign structure removal shall consist of removing posts, frames, portions of foundations, sign panels, walkways with safety railings, and sign lighting electrical equipment.

Bridge mounted sign structure removal shall consist of removing sign panels and frames, sign lighting electrical equipment, walkways with safety railings, structural braces and supports, and hardware.

A sign structure shall not be removed until the structure is no longer required for the direction of public traffic.

Concrete foundations may be abandoned in place, except that the top portion, including anchor bolts, reinforcing steel, and conduits shall be removed to a depth of not less than 1 m below the adjacent finished grade. The resulting holes shall be backfilled and compacted with material equivalent to the surrounding material.

Electrical wiring shall be removed to the nearest pull box. Fuses within spliced connections in the pull box shall be removed and disposed of.

Electrical equipment, where shown on the plans, shall be salvaged.

Removal of sign structure will be paid as extra work in accordance with section 5-1.07, "Force Account Payment," of these special provisions.

CONTRACT NO.
ADDED PER ADDENDUM NO. 2 DATED DECEMBER 30, 2009

10-1.62 LIME STABILIZATION

GENERAL

Lime stabilization shall conform to these special provisions for stabilizing soil by mixing lime and water with soil and compacting the mixture to the specified dimensions. Section 24, "Lime Stabilized Soil", of the Standard Specifications does not apply.

Definitions

lime: Quicklime made from high-calcium or dolomitic sources specified under ASTM C 51. For high-calcium quicklime, the calcium oxide content must be greater than 90 percent. For dolomitic quicklime, the calcium oxide content must be greater than 55 percent and the combined calcium oxide and magnesium oxide content must be greater than 90 percent.

mellowing period: The time between the initial and final mixing to promote initial chemical reactions between lime, water, and soil.

Submittals

From 30 to 180 days before use, submit one 5 kilogram sample of each lime product proposed and from each source.

Submit lime samples in airtight containers under ASTM C 50. Mark the sample date on the container. Include the MSDS and chemical and physical analysis with the submittal.

With the lime samples, submit a Certificate of Compliance from the pre-qualified lime source under Section 6-1.07, "Certificates of Compliance," with a statement certifying the lime furnished is the same as that pre-qualified.

Fifteen days before starting soil stabilization activities, submit for the Engineer's approval a laboratory to perform quality control tests. The laboratory must be qualified under the Department's Independent Assurance Program.

Before you apply lime in slurry form, submit the slurry's lime content for Engineer's approval 25 days before application.

Before performing quality control sampling and testing, submit the time and location the sampling and testing will occur. Submit quality control testing results within 24 hours of receiving the results.

Submit a weighmaster certificate or bill of lading with each load of lime delivered to the jobsite.

Quality Control and Assurance

General

Perform quality control testing in the presence of the Engineer.

Place unique, sequentially numbered lock seals on each load and affix them to trailer blow down valves that are locked open. The bill of lading for each lime delivery must have that specific lock seal number legibly and visibly imprinted.

The Engineer samples each lime delivery truck at the job site and randomly tests them off-site.

Pre-qualification of Lime Sources

Lime sources must be listed on the Department's pre-qualified products list. The list is available at the METS web site.

The pre-qualified list for lime sources describes the application procedures for inclusion on the list.

Preparing Soil

After you prepare an area for lime soil stabilization, test the soil to be stabilized every 400 cubic meters for relative compaction under California Test 231 and moisture content under California Test 226, and verify the surface grades.

Applying Lime

The Engineer determines the final application rate for each lime product proposed from the samples submitted. If the soil being stabilized changes, the Engineer changes the application rate. Based on California Test 373, the Engineer reports the application rates as the percent of lime by dry weight of soil. The Engineer provides the optimum moisture content determined under California Test 373 for each application rate.

Before applying lime, measure the temperature at the ground surface.

If lime in dry form is used, the Engineer verifies the application rate using the drop pan method once per 4000 square meters stabilized, or twice per day, whichever is greater.

If lime in slurry form is used, report the quantity of slurry placed by measuring the volume of slurry in the holding tank once per 4000 square meters stabilized, or twice per day, whichever is greater.

Mixing

For each day of initial mixing, test the moisture content. Sample the material immediately after initial mixing.

Randomly test the adequacy of the final mixing with a phenolphthalein indicator solution.

During mixing operations, measure the ground temperature at full mixing depth.

After mixing and before compacting, determine maximum density under California Test 216 from composite samples of the mixed material and at each distinct change in material. Test the moisture content of the mixed material under California Test 226. Test the gradation for compliance with "Materials."

Compaction

Test relative compaction on a wet weight basis.

After initial compaction, determine in-place density under California Test 231 and moisture content under California Test 226 at the same locations. The testing frequency must be 1 test per 200 cubic meters of lime stabilized soil. Test in 150 mm depth intervals.

Before requesting to compact material in layers greater than 150 mm, construct a test strip in the production area and demonstrate the test strip passes compaction tests using the proposed thickness. The test strip must contain no more material than 1 day's production. The Engineer tests at not more than 150 mm depth intervals regardless of the thickness of your layers.

Construct test pads by scraping away material to the depth ordered by the Engineer. If a compaction test fails corrective action must include the layers of material already placed above the test pad elevation.

Finish Grading

Do not proceed with construction activities for subsequent layers of material until the Engineer verifies the final grades of the lime stabilized soil.

Dispute Resolution

You and the Engineer must work together to avoid potential conflicts and to resolve disputes regarding test result discrepancies. Notify the Engineer within 5 days of receiving a test result if you dispute the test result.

If you or the Engineer dispute each other's test results, submit written quality control test results and copies of paperwork including worksheets used to determine the disputed test results to the Engineer. An Independent Third Party (ITP) performs referee testing. Before the ITP participates in a dispute resolution, the ITP must be accredited under the Department's Independent Assurance Program. The ITP must be independent of the project. By mutual agreement, the ITP is chosen from:

1. A Department laboratory
2. A Department laboratory in a district or region not in the district or region the project is located
3. The Transportation Laboratory
4. A laboratory not currently employed by you or your lime producer

If split quality control or acceptance samples are not available, the ITP uses any available material representing the disputed material for evaluation.

MATERIALS

Lime

Lime must comply with ASTM C 977 and the following:

Lime

Quality Characteristic	ASTM	Specification
Available Calcium and Magnesium Oxide(min., %)	C 25 ^a	High Calcium Quicklime: CaO > 90 Dolomitic Quicklime: CaO > 55 and CaO + MgO > 90
Loss on ignition (max., %)	C 25	7 (total loss) 5 (carbon dioxide) 2 (free moisture)
Slaking rate	C 110	30 °C rise in 8 minutes

Notes:

^a You may use ASTM C25 or ASTM C1301 and ASTM C1271.

A 225 grams sample of lime dry-sieved in a mechanical sieve shaker for 10 minutes ±30 seconds must comply with:

Sieve Sizes	Percentage Passing
9.5 mm.	98-100

Slurry must:

1. Be free of contaminants
2. Contain at least the minimum dry solids
3. Have uniform consistency

If you prepare lime slurry, prepare it at the jobsite.

Water

If available, use potable water. Inform the Engineer if a water source other than potable water is used. If not using potable water, water for mixing soil and lime must:

1. Contain no more than 650 parts per million of chlorides as Cl, and no more than 1,300 parts per million of sulfates as SO₄
2. Not contain an amount of impurities that will cause a reduction in the strength of the stabilize soil

Mixed Material

Lime shall be added to the material to be stabilized at the rate of 5 percent by mass of the dry material. The exact rate will be determined by the Engineer based on an unconfined compressive strength of the lime stabilized material of 2070 kPa, as determined by California Test 373.

Take a composite sample from 5 random locations after initial mixing. The moisture content of the composite sample tested under California Test 226 must be a minimum of 3 percent greater than optimum. Determine the moisture versus density relationship of the composite sample material determined under California Test 216, except Part 2, Section E, Paragraph 6 is modified as follows:

After adjustment of the moisture content, compact each of the remaining test specimens in the mold, then record the water adjustment, tamper reading, and the corresponding adjusted wet density from the chart on Table 1 using the column corresponding to the actual wet weight of the test specimen compacted. Note each of these wet weights on Line I.

The mixed material before compaction excluding rock must comply with:

Sieve Sizes	Percentage Passing
25 mm.	98 - 100
4.75 mm.	60 - 100

Curing Treatment

Curing treatment may be any of the following:

1. Water cure
2. Curing seal
3. Moist material blanket

Curing seal must be SS or CSS grade asphaltic emulsion under Section 94, "Asphaltic Emulsions."

CONSTRUCTION

General

If using different types of lime or lime from more than one source, do not mix them. The Engineer determines separate application rates.

Deliver lime in full loads unless it is the last load needed for a work shift.

Apply lime at ground temperatures above 2 °C. Do not apply lime if you expect the ground temperature to drop below 2 °C before you complete mixing and compacting.

During mixing, maintain the in-place moisture of the soil to be stabilized a minimum 3 percent above the optimum moisture determined under California Test 216 as modified in "Mixed Material." During compaction and finish grading, add water to the surface to prevent drying until the next layer of mixed material is placed, or until you apply curing treatment.

Scarify the surface of lime stabilized soil at least 50 mm between each layer. Do not scarify the final surface of the lime stabilized soil.

Between the time of applying lime and 3 days after applying curing treatment, only allow equipment or vehicles on the soil being stabilized that are essential to the work.

Preparing Soil

In areas with lime treated subgrade, the grading plane described in Section 1-1.23, "Grading Plane", of the Standard Specifications is the bottom of the lime treated subgrade layer.

Prior to placing soil for lime stabilization, the grading plane shall be compacted to 95% relative compaction in accordance with Section 19-5.03, "Relative Compaction (95 Percent)", of the Standard Specifications and the grading plane shall be constructed within 25 mm of the specified lines and grades.

Except for soil clods, remove rocks or solids larger than 1/3 of the layer thickness. Regardless of the layer thickness, remove rocks and solids greater than 100 mm. Notify the Engineer if you encounter rocks or solids greater than 1/3 of the layer thickness.

Before adding lime, place the soil to be stabilized to within 25 mm of the specified lines and grades and compact to not less than 90 percent relative compaction.

Applying Lime

Apply lime uniformly over the area to be stabilized using a vane spreader.

The Engineer determines the final application rate. Do not vary from this application rate by more than 5 percent.

Apply lime in dry form. If you request and the Engineer approves, you may apply lime in slurry form.

Lime slurry must be in suspension during application. Apply lime slurry uniformly making successive passes over a measured section or roadway until the specified lime content is reached. Apply the residue from lime slurry over the length of the roadway being processed.

Mixing

Lime and soil to be stabilized must be mixed uniformly at least twice to within 30 mm of the specified depth at any point. If the mixing depth exceeds the specified depth by more than 10 percent, add lime in proportion to the exceeded depth. The Department does not pay for this added lime.

Mix lime on the same day it is applied. After the initial mixing, allow a mellowing period for at least 36 hours before final mixing. Moisture content during the mellowing period determined under California Test 226 must be at least 3 percent higher than the optimum moisture content. You may add water and mix during the mellowing period.

Remix until the mixture is uniform with no streaks or pockets of lime.

Except for clods larger than 25 mm, mixed material must have a color reaction with sprayed phenolphthalein alcohol indicator solution.

Complete all the mixing work within 7 days of the initial application of lime.

Compaction

Begin compacting immediately after final mixing, but not less than 36 hours after the beginning of initial mixing.

Compact by using sheepsfoot or segmented wheel rollers immediately followed by steel drum or pneumatic-tired rollers. Do not use vibratory rollers.

If you request and the Engineer approves, you may compact mixed material in layers greater than 150 mm.

If the specified thickness is 150 mm or less, compact in one layer. If the specified thickness is more than 150 mm, compact in 2 or more layers of approximately equal thickness. The maximum compacted thickness of any one layer must not exceed 150 mm unless you first demonstrate your equipment and methods provide uniform distribution of lime and achieve the specified compaction.

Use other compaction methods in areas inaccessible to rollers.

Compact the lime stabilized soil to at least 95 percent relative compaction determined under California Test 216 as modified under "Mixed Material." The relative compaction is determined on a wet weight basis.

Finish Grading

Maintain the moisture content of the lime stabilized soil through the entire finish grading operation at a minimum of 3 percent above optimum moisture content.

The finished surface of the lime stabilized soil must not vary more than 25 mm above or below the grade established by the Engineer unless the lime stabilized soil is to be covered by material paid for by the cubic yard, in which case the finished surface may not vary above the grade established by the Engineer.

If lime stabilized soil is above the allowable tolerance, trim, remove, and dispose of the excess material. Do not leave loose material on the finished surface. If finish rolling cannot be completed within 2 hours of trimming, defer trimming.

If lime stabilized soil is below the allowable tolerance, you may use trimmed material to fill low areas only if final grading and final compaction occurs within 48 hours of beginning initial compaction. Before placing trimmed material, scarify the surface of the area to be filled at least 50 mm deep.

Finish rolling of trimmed surfaces must be performed with at least 1 complete coverage with steel drum or pneumatic-tired rollers.

Curing

General

Choose the method of curing.

Apply the chosen cure method within 48 hours of completing the sheepsfoot or segmented wheel compaction. Apply the chosen cure method within the same day of any trimming and finish grading.

Water Cure

Water may be used to cure the finished surface before you place a moist material blanket, or apply curing seal. Keep the surface above the optimum moisture content of the lime stabilized soil. Use this method for no more than 3 days, after which you must place a curing seal or moist material blanket.

Curing Seal

Curing seal equipment must have a gage indicating the volume of curing seal in the storage tank.

If curing seal is used, apply it:

1. To the finished surface of lime stabilized soil under Section 94-1.06, "Applying," of the Standard Specifications
2. At a rate from 0.45 to 0.90 liters per square meter. The Engineer determines the exact rate.
3. When the lime stabilized soil is at optimum moisture
4. When the ambient temperature is above 4°C and rising

Repair damaged curing seal the same day the damage occurs.

Moist Material Blanket

Moist material blanket consists of moist structural material. Moist material blanket may be a temporary or permanent layer of material of sufficient thickness to prevent drying of the lime stabilized soil. You may use moist material blanket if the lime stabilized soil can bear the weight of construction equipment. Maintain the moist material blanket above the optimum moisture content, as appropriate, until the next structural layer is placed.

MEASUREMENT AND PAYMENT

Lime stabilized soil is measured by the square meter determined from horizontal measurements of the planned surface of the lime stabilized soil.

Curing seal is measured under Section 94, "Asphaltic Emulsions." The amount of curing seal used is determined from the gauge specified for the curing equipment.

The contract item prices for the work involved with lime stabilized soil are paid:

1. Per square meter for lime stabilized soil
2. Per tonne for lime

Payment for the contract items involved with lime stabilized soil includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the lime stabilized soil, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The Department does not adjust payment for lime.

Quantities of lime wasted or disposed of in a manner not specified, or remaining on hand after completion of the work, will not be paid for. If you use a partial load of lime, weigh the truck and the remaining lime on a scale under Section 9-1.01, "Measurement of Quantities," and submit a weighmaster certificate to the Engineer.

Full compensation for preparing soil to be stabilized is included in the contract price paid per square meter for lime stabilized soil, and no separate payment is made therefor, except removing and disposing of rocks and solids larger 1/3 of the layer thickness and larger than 100 mm from native soil or embankment other than imported borrow is paid for as extra work as provided in Section 4-1.03D, "Extra Work." Removing and disposing of rocks and solids larger than 1/3 of the lift thickness and larger than 100 mm from imported borrow is at your expense.

Full compensation for mixing, compacting, and maintaining the moisture content of the lime stabilized soil is included in the contract price paid per square yard for lime stabilized soil, and no separate payment is made therefor.

Full compensation for applying lime is included in the contract price paid per tonne for lime, and no additional compensation is allowed therefor.

Full compensation for using asphaltic emulsions for curing the lime treated subgrade shall be considered as included in the contract price paid per square meter for lime stabilization, and no additional compensation will be allowed therefor.

Full compensation for transporting, stockpiling and double handling existing soil suitable for lime treatment within the jobsite for use in the lime treated subgrade layer shall be considered as included in the contract price paid per square meter for lime stabilization, and no additional compensation will be allowed therefore.

If the dispute resolution ITP determines the Engineer's test results are correct, the Engineer deducts the ITP's testing costs from payments. If the ITP determines your test results are correct, the State pays the ITP testing costs.

10-1.94.1 PERMEABLE MATERIAL

Permeable material shall conform with the details shown on the plans, and to the provisions in Section 68-1, "Underdrains," of the Standard Specifications, and these special provisions. Class 3 permeable material shall conform to the following grading requirements:

Sieve Sizes	Percentage Passing
37.5-mm	100
25-mm	88-100
19-mm	52-85
9.5-mm	15-38
4.75-mm	0-16
2.36-mm	0-6

Class 3 permeable material shall have a Durability Index of not less than 40.

At least 90 percent by mass of Class 3 permeable material shall be crushed particles as determined by California Test 205.

Filter fabric for use with permeable material shall conform to the provisions for filter fabric for underdrains in Section 88, "Engineering Fabrics," of the Standard Specifications and the following:

- A. The subgrade and trench to receive the filter fabric, immediately prior to placing, shall conform to the compaction and elevation tolerance specified for the material involved.
- B. Filter fabric shall be handled and placed in conformance with the manufacturer's recommendations.
- C. The fabric shall be aligned and placed in a wrinkle-free manner.
- D. Within 72 hours after the filter fabric has been placed, the fabric shall be covered with the planned thickness of overlying material as shown on the plans.

10-1.108 GEOSYNTHETIC CLAY LINER

Geosynthetic Clay Liner (GCL) shall be furnished and placed as shown on the plans and in conformance with the provisions of these special provisions.

GCL shall be Bentomat CL manufactured by Cetco Lining Technologies, or equivalent

Bentomat CL is a reinforced GCL consisting of a layer of sodium bentonite between two geotextiles, which are needlepunched together and laminated to a thin flexible membrane liner. GCL shall conform to the following requirements:

Specification	Test Frequency	Requirement
Bentonite Swell Index ASTM Designation: D 5890	1 per 50 tonnes	24 mL/2g min.
Bentonite Fluid Loss ASTM Designation: D 5891	1 per 50 tonnes	18 mL max.
Bentonite Mass Area. ASTM Designation: D 5993	4,000 m ²	3.6 kg/m ² min.
GCL Grab Strength ASTM Designation: D 6768	20,000 m ²	78 N/cm
GCL Peel Strength ASTM Designation: D 6496	4,000 m ²	4.4 N/cm min.
GCL Index Flux ASTM Designation: D 5887	Periodic	1x10 ⁻⁹ m ³ /m ² /sec max.
GCL Hydraulic Conductivity ASTM Designation: D 5887	Periodic	5x10 ⁻¹⁰ cm/sec max.
GCL Hydrated Internal Shear Strength ASTM Designation: D 5321 and D6243	Periodic	24 kpa

The Contractor shall provide the Engineer a certificate of compliance from the manufacturer in accordance with the provisions of Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for the GCL. The certificate of compliance shall be provided to the Engineer for approval, prior to ordering or shipping the material.

The liner material shall be transported to the job site and stored onsite in a manner that does not damage the rolls. The rolls shall be handled at the site with equipment capable of safely doing the job with no damage to the material. The rolls shall be stored on a flat, dry surface and shall be kept dry at all times.

The surface preparation is necessary prior to placement. Irregularities and any abrupt grade changes shall be eliminated from the surface prior to placing the GCL. When the GCL is placed, the subgrade shall be dry, smooth, and free of debris, roots, ruts, and stones or any projection of more than 13 mm. All projections of more than 13 mm shall be removed, crushed, or pushed into the surface with a smooth-drum roller.

The contractor shall confine the work to an area that can be completely installed and covered by the end of the normal working day in a manner that will prevent the occurrence of hydration prior to being covered with the specified cover soils. Daily completion shall be defined as the full installation of the liner, covering around appurtenances, and placement of the specified cover soils.

The rolls shall be carefully rolled down the slope and not allowed to unroll freely and out of control. When it is necessary to drag liner panels, a geosynthetic subgrade covering known as a rub sheet shall be used to reduce friction and protect the GCL during placement.

The rolls shall be placed with the woven geotextile or geomembrane side against the subgrade. The GCL panels shall be placed so that the long axis of the panels are oriented up and down the slope. This panel orientation shall apply to all covered slopes including corner slopes. All seams shall be overlapped a minimum of 300 mm. End of roll seams shall be located at least 1 meter from the toe or crest of the slope. Seam at the base of the slope shall be a minimum of 1.8 meters from the toe.

Seams at the ends of panels should be constructed such that they are shingled in the direction of the grade to prevent flow from entering the overlap zone. The end of roll overlap shall be a minimum of 610 mm. All seam areas shall be augmented with granular bentonite. Granular bentonite shall be dispersed evenly to cover the entire lapped area from the panel edge to the lap line at a minimum rate of 2 kilograms per 1 square meter of area covered. Seams shall remain closed during the backfill operation in order to prevent contamination of the bond surface and to ensure the panels remain in intimate contact, where jointed, at all times.

For penetrations, the liner shall be brought up to the penetration and trimmed to fit into the notch. Granular bentonite or a compact mixture of 1 part bentonite to 4 parts soil (by volume), blended dry, shall be placed into the bottom half of the notch. The liner shall then be inserted into the notch, with the remaining area in the notch filled with the granular bentonite or the 1 to 4 mixture, and compacted. A secondary GCL collar shall be placed around horizontal penetrations. The collar shall overlap the GCL a minimum of 304.8 mm in each direction.

For liner terminated at a structure, granular bentonite or a compact mixture of one part bentonite to four parts soil (by volume), blended dry, shall be placed in the notch and against the structure. The liner shall extend over the notch and a minimum of 76.2 mm vertically adjacent to the structure.

The GCL shall be anchored at the top of the slope as shown on the drawings. The GCL shall be placed so that seams are parallel to the direction of the slope. End of roll seams shall be a minimum of 1 meter from the toe or crest of the slope.

The GCL shall not be placed in the rain, at times of impending precipitation, or in ponded water.

GCL that has begun to hydrate before being covered with soil shall be removed and replaced with dry GCL.

All damaged or flawed material shall be repaired as follows:

1. Completely expose the affected area.
2. Remove all soil or other foreign objects.
3. Place a GCL patch over the exposed area with a minimum overlap of 304.8 mm on all edges.
4. Place granulated bentonite between overlap at the rate of 450 grams per 0.186 square meter of area covered, and spread to a minimum width of 152.4 mm.
5. On a sloping surface, fasten and augment the bentonite-enhanced seam with construction adhesive.

A soil cover shall be placed to the final as shown on the plans.

At all times during the soil cover operation, a minimum of 0.3 meter of soil material shall be kept between the liner and any equipment being used to spread soil cover. In frequently trafficked areas, a minimum cover thickness of 0.6 meter is required. The soil cover on slopes shall be pushed up the slopes to prevent downhill stress on the liner material. Avoid sharp turns and quick starts or stops that could pinch or shift the liner.

GCL will be measured by the square meter. The quantity to be paid for will be the actual area covered, not including additional liner required for overlaps.

The contract price paid per square meter for GCL shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and placing GCL, complete in place, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

Full compensation for excavation, backfill, compaction, construction of trench anchor, controlling and removing water from excavations shall be considered as included in the contract price paid per square meter for GCL and no additional compensation will be allowed therefor.

10-1.126 CONDUIT SYSTEM FOR eBART

GENERAL

This section includes specifications for constructing underground ductwork and structures including trench excavation and backfill; reinforcement steel; conduit; pre-cast structures; sand; cast in place concrete ductbank and structures; frames, covers, gratings, steps, and sumps; and cover identification in freeway median for eBART.

REFERENCES

American Society for Testing and Materials (ASTM)

1. ASTM C33 Specification for Concrete Aggregates
2. ASTM F512 Specification for Smooth-Wall Poly Vinyl Chloride (PVC) Conduit and Fittings for Underground Installation

REGULATORY REQUIREMENTS

State of California Public Utilities Commission (Cal. PUC)

1. Cal. PUC G.O. 128C Rule for Construction of Underground Electric Supply and Communications Systems

SUBMITTALS

Submit Shop Drawings for fabrication and installation of pre-cast concrete structures, cast-in-place concrete structures, and concrete –encased underground ductwork, including excavation and shoring plans with required structural calculations; cast-in-place and pre-cast detailed steel reinforcement drawings; and cast-in-place and pre-cast manufacturer’s concrete mix designs for structures and concrete as indicated. Shop drawing information may be combined on a single drawing if clarity is not thereby impaired. Shop drawings shall demonstrate that the work to be performed and the materials to be provided comply with the provisions of these specifications.

Submit complete materials list of items proposed to be furnished and installed under this section. Submit manufacturer’s specifications and other data required to demonstrate compliance with these specifications. Submit catalog cuts for conduits; underground duct system, including manholes, pull boxes, handholes, cable junction boxes, and termination boxes; manhole, pull box and handhole covers and frames; and related miscellaneous hardware.

Submit certificates of compliance for all specified products.

MATERIALS

Reinforcement Steel for Ductbanks

1. Provide longitudinal reinforcing steel with a minimum total cross sectional area of 0.0018 times the gross area of the ductbank. Maximum spacing of the reinforcement bars shall be 500 mm, minimum of one bar in each corner of the ductbank.
2. Provide steel tie bars in the transverse direction enclosing the longitudinal bars; minimum size No. 3 bars; minimum spacing of 300 mm. Minimum clear cover over reinforcement shall be 75 mm where concrete is cast directly against earth, and 38 mm where concrete is cast directly against formwork.
3. Where ductbank enters rigid underground structures, provide reinforcing steel to tie the ductbank to the structure. Provide details indicating method employed to prevent differential settlement from damaging ductbanks.

Polyvinyl Chloride (PVC) Electrical Conduit and Fittings

1. Conform with ASTM F512. Provide PVC conduit, minimum Schedule 40, and all necessary fittings in sizes as indicated. Provide flared bell ends on conduits and ducts entering manholes, handholes and pullboxes.
2. Provide heavy wall, high impact strength, rigid PVC conforming to the requirements of EPC-40-PVC conduit of NEMA TC 2 and fittings for EPC-40-PVC conduit of NEMA TC 3.
3. Conduit and fittings shall be UL 651 listed and shall conform with Article 347 of the California Electrical Code for underground and exposed use.
4. Conduit and fittings shall be flammability rated as self extinguishing, and shall have the following minimum properties:

- 4.1 Tensile strength, ASTM D638 at 78 degrees C: 42 MPa
- 4.2 Flexural strength, ASTM D790: 76 MPa
- 4.3 Compressive strength: ASTM D695: 60 MPa
- 4.4 Hardness (Durometer D), ASTM D2240: 77
- 4.5 Water absorption, percent maximum in 24 hours at 72 degrees C, ASTM D570: 0.03
- 4.6 Dielectric Strength, ASTM D149: 1.1kV/Mil.

Conduit Expansion Fittings

1. Fabricate expansion fittings from PVC
2. Include a factory installed packing ring, designed to prevent the entrance of moisture, and a pressure ring.
3. Fittings shall maintain a constant inside diameter in every position and shall provide a smooth wireway for protection of wire insulation

Pre-cast Concrete

1. Provide pre-cast concrete structures in accordance with requirements of Sections 51, 52, and 90, of the Standard specifications and as indicated.
2. Pre-cast concrete electrical boxes, pull-boxes, manholes, handholes, and vaults shall be provided as indicated. Concrete reinforcement shall be that which is regularly provided in standard products of the manufacturer. Standard manufactured structures that meet the project requirements will be acceptable. Provide concrete inserts for mounting cable support brackets as indicated.
3. Pull box tops shall be flush with sidewalks or curbs or placed 40 mm above surrounding grades when remote from curbed roadways or sidewalks. Covers shall be provided with two lifting eyes and two hold down bolts. Each box shall have a suitable opening for a ground rod, and a drainage opening.

Sand

1. Sand for filler material, where indicated, and for bedding of conduit in utility trenches shall be clean and graded, washed sand, all passing a 4.75 mm sieve, and conforming generally to ASTM C33 for fine aggregate.

Cast-In-Place Concrete for Ductbank Encasements, Manholes, Pull-Boxes, and Vaults

1. Concrete shall be Minor Concrete.
2. Concrete, formwork, concrete placement, and reinforcing shall conform with all applicable requirements of Section 51, "Concrete Structures", Section 52, "Reinforcement", and Section 90, "Portland Cement Concrete" of the Standard Specifications.

Frames Covers, Gratings, Steps and Sumps

1. Provide as indicated. All covers and frames shall be rated for H20 traffic loading.

Mortar

1. Cement mortar for the sealing of openings for pipe penetrations, for cementing of joints of component parts of pre-cast structures, and other features as indicated shall conform with the California Building Code, chapter 21, Type S (without lime), with a minimum compressive strength at 28 days of 12.4 MPa
2. Mortar shall comply with applicable requirements of ASTM C270, including measurement, mixing, proportioning, and water retention. Ten percent of the volume of the cement content of the mortar shall be fly ash or pozzolanic material conforming with ASTM C618.
3. Use mortar within 90 minutes after mixing. Discard mortar that has been mixed longer or that has begun to set. Re-tempering of mortar will not be permitted.

Yellow Warning Tape

1. Polyethylene Heavy gauge 4 mil thick tape with "Buried Electrical Line Below".

Cover Identification

1. Provide covers with engraved identification.

CONSTRUCTION

Site Conditions

1. Before beginning construction or installation of a section of underground conduit or ductwork, verify that the site is in suitable condition for installing such conduit or ductwork as indicated.
2. During non-work hours and at locations where installation of conduits and ducts is temporarily suspended or terminated, close ends of ducts with caps or plugs fitted to prevent entry of water or debris. Use caps or plugs designed for that purpose by the conduit manufacturer.

Excavation, Trenching and Backfill

1. Perform trenching and excavating as indicated and required for utility piping, conduits, and related structures, and provide shoring, bracing, and planking as required.
2. Excavate to the lines and grades indicated.
3. Excavate trenches for pipes and conduits by the open-cut method. Hand excavate for crossing pipelines.
4. Excavate trenches to the indicated width at all points below a horizontal plane 600 mm above the top of the pipe. Excavation above this plane may exceed the indicated width as required. Where the width is not indicated, make the width not less than 150 mm nor more than 500 mm from the outside of the pipe. If the excavation exceeds permissible dimensions, install higher strength pipe or encase the pipe in Minor Concrete.
5. The bottoms of excavations shall be firm, undisturbed earth or cut sub grade, clean and free from loose material, debris, and foreign matter. When bottoms of excavations or trenches are soft or unstable material, the bed shall be made firm and solid by removing said unstable material to a sufficient depth and replacing same with sand or pea gravel, compacted to at least 90 percent relative compaction.
6. Where water is encountered in the trench, dewater and provide sand or pea gravel as required to drain the water and stabilize the bed.
7. Bell holes shall be accurately placed and shall be no larger than required to make the joint.
8. Material for bedding of pipe shall be sand. Provide firm and uniform support of piping at indicated elevations and grades. Tamp sand bedding as required.
9. Backfill to 150 mm above the horizontal center line of the pipe shall be sand.
10. Backfill shall be placed in 150 mm layers, leveled, rammed, and tamped in place. Each layer shall be compacted with suitable compaction equipment to at least 90 percent relative compaction, taking care not to damage or misalign any pipe. The top 300 mm shall be compacted to at least 95 percent relative compaction.

Installation

1. Install as indicated. Conduit, pull boxes, and manholes shall be located as indicated. Comply with applicable requirements of GO 128.
2. Ducts
 - 2.1 Inspect ducts and couplings to ensure that only clean and undamaged pieces are incorporated in the work.
 - 2.2 Ductbanks or conduits shall interface with building construction 1.5 m outside of the building and shall have a minimum slope of 75 mm to each 30 m away from buildings and towards manholes, pull boxes and handholes, and shall run in straight lines between indicated changes in direction.
 - 2.3 Individual conduits that are grouped together to form a ductbank shall conform to the standards and requirements specified herein.
 - 2.4 Horizontal or vertical changes in direction exceeding ten degrees shall be accomplished by long sweep bends having a minimum radius of curvature of 7.5 m, except that manufactured bends may be used at the ends of short runs of 300 m or less, and then only at or within 1.5 m of the end of the run. Sweep bends may be made up of curved or straight sections, or combinations thereof. Manufactured bends shall have a minimum radius of 1.0 m for ducts of 75 mm in diameter and larger.
 - 2.5 Conduits shall terminate in bell ends where duct lines enter vaults.
 - 2.6 Spacers or space separators shall be placed not more than 2.0 m apart, and shall transmit no vertical load to the conduit.
 - 2.7 Install ducts, joints, and space separators according to manufacturer's printed instructions and recommendations.
 - 2.8 During construction, partially completed duct lines shall be protected from the entrance of debris by means of suitable caps or plugs. As each section of a duct line is completed between manholes, handholes, or pull boxes, a testing mandrel not more than 8.5 mm less than the size of the conduit shall be drawn through until the conduit is clear of particles of earth, sand, or gravel. Conduit caps or plugs shall then be immediately installed.

- 2.9 Construct the concrete encased conduit with 75 mm minimum cover on all sides.
- 2.10 install 3.2 mm or larger polypropylene pulling cord in all ducts including innerducts. Fasten each cord to pull iron anchorage in pull box, manhole, or vault with 600 mm minimum slack.
- 2.11 Innerduct placement in communication conduits shall be performed to avoid excessive tension and deformation of the innerduct. Damaged or necked down innerduct shall be replaced. Conform with the manufacturer's installation instructions.
- 2.12 Provide metallic numbering tags indicating the conduit number on both ends of all conduit runs,
3. Yellow Warning Tape shall be installed 150 mm above the top of concrete ductbank and at the vertical line of its cross section.
4. Install pre-cast electrical boxes, pull boxes, handholes, manholes, and vaults as indicated. Boxes shall be placed on 100 mm of compacted sand bedding. Manholes shall be placed on 150 mm of compacted Type 2 Aggregate Base. Conduit, cable, ground rod entrances, and unused openings shall be sealed with cement mortar.
5. Cast-in-Place Concrete Structures
 - 5.1 The location of each pull box, manhole, and vault shall be approved by the Engineer before construction of such structure is started. Top, walls, and bottom shall consist of reinforced concrete. Walls and bottom shall be monolithic construction.
 - 5.2 Place concrete for pull boxes, handholes, and vaults on well compacted soil with a minimum of 150 mm of type 2 Aggregate Base. Seal all sumps. Frames and covers shall be of gray cast iron. A machine-finished seat shall be provided to ensure a matching joint between the frame and cover.
 - 5.3 Where duct lines enter pull boxes, manholes, and vaults, the sections of duct may be either through a square or rectangular opening of suitable dimensions provided in the utility structure. A cable pulling iron anchorage shall be installed in the wall opposite each duct bank entrance.

MEASUREMENT AND PAYMENT

Conduit system for eBART will be paid for on a lump sum basis.

The contract Lump sum price paid for conduit system (eBART) shall include shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placement of ductbanks, pull boxes, manholes, and vaults, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.127 PIPE SLEEVES AND GROUNDING SYSTEM FOR FUTURE FENCE INSTALLATION

GENERAL

This section includes specifications for construction of pipe sleeves and associated grounding system in freeway median concrete barriers in freeway median for future installation of fencing by others.

REFERENCES

American Society for Testing and Materials (ASTM)

1. ASTM A53 Specification for pipe, Steel, Black and hot-Dipped, Zinc Coated, Welded and seamless
2. ASTM A123 Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

SUBMITTALS

The contractor shall submit manufacturer's product data and specifications for pipe sleeves. Submit detailed shop drawings indicating locations of pipe sleeves, ground wires, and grounding rods. The contractor shall submit certificates of compliance for all specified products.

Quality Control

Test pipe sleeves for continuity to the ground system.

MATERIALS

Pipe Sleeves

1. Pipe sleeves for fence post embedment in concrete barriers shall be fabricated from steel pipe conforming to ASTM A53 and galvanized in accordance with ASTM A123, sized to receive and support fence post.

Mortar

1. Cement mortar for the temporary sealing of pipe sleeves shall conform with the California Building Code, Chapter 21, Type S (without lime), with a minimum compressive strength at 28 days of 12.5 MPa.
2. Mortar shall comply with applicable requirements of ASTM C270, including measurement, mixing, proportioning, and water retention. Ten percent of the volume of the cement content of the mortar shall be fly ash or pozzolanic material conforming with ASTM C618.
3. Use mortar within 90 minutes after mixing. Discard mortar that has been mixed longer or that has begun to set. Re-tempering of mortar will not be permitted.

Sand

1. Sand for filler material, where indicated, shall be clean and graded, washed sand, all passing a 4.75 mm Sieve, and conforming generally to ASTM C33 for fine aggregate.

Grounding Wires

1. Bare conductors, ASTM B3, class B stranded, annealed copper conductor, size as indicated.

Ground Rods

1. Medium carbon steel core, copper clad by the molten weld casting process, size of 25 mm in diameter by 3.0 m long or as indicated, UL listed.

CONSTRUCTION

Pipe Sleeves

1. Locate pipe sleeves as indicated.
2. Furnish galvanized steel pipe sleeves for installation in formwork at time required. Supervise installation of sleeves during formwork and placing of concrete to maintain exact dimensions according to template.
3. Sleeves shall be plumb and rigid after installation.
4. Place filler sand and temporary grout cap as indicated on the drawings.

Grounding

1. Ground pipe sleeves at the locations indicated
2. Where a power line carrying more than 600 volts passes over the fence, install a grounding rod at the nearest point directly below each point of crossing.
3. Install grounding wires connecting the pipe sleeves to the rebar in the barrier footing as indicated.
4. Install ground rods at the locations indicated. Install grounding wires connecting the rebar in the barrier foundation to the grounding rods.
5. Provide exothermically welded or compression type terminal lugs for all grounding system connections using materials qualified with IEEE 837. All connections shall be made in accordance with the manufacturer's requirements. All connections shall be cleaned and coated with a bitumastic epoxy before concrete placement or backfilling.
6. Provide continuous ground connector or splice using connections qualified in accordance with IEEE 837. All splice connections shall be made in accordance with the manufacturer's requirements.
7. Bury ground rods vertically with rod top a minimum of 0.6 m below grade as indicated. Use ground rod as indicated for main grounding system. If extensive rock formation is encountered, relocate ground rods to a new location approved by the Engineer.
8. Interconnect ground rods with minimum 250 kcmil stranded copper cable or as indicated.
9. All grounding wires shall be as indicated.

MEASUREMENT AND PAYMENT

Full compensation for furnishing and installing pipe sleeves and grounding for future fence installation shall be considered as included in the contract price paid per meter for the type of eBART concrete barriers specified and no separate payment will be made therefore.

10-3.15.1 CONTROLLER CABINETS

The Model 334 cabinets shall conform to the provisions in Section 86-3.03, "Model 170 and Model 2070 Controller Assemblies," of the Standard Specifications and these special provisions.

Cabinets shall be Type 1 and shall consist of a Type 1 housing (A), a mounting cage 1, and the following listed equipment. The equipment shall conform to the provisions of Chapter 6 of the Traffic Signal Control Equipment Specifications (TSCES).

- A. Service panel No. 1
- B. Power distribution assembly

Prior to shipping to the project site, each 334 cabinet shall be submitted to the Transportation Laboratory for acceptance testing.

Foundations for Type 1 housing shall conform to the details in the plans for Model 334 cabinets.

The Engineer shall be notified when each 334 cabinet is ready for the functional test. The functional test will be conducted by State forces.

The following equipment shall be provided with each power distribution assembly:

- A. Two each of Duplex NEMA Type 5-20R controller receptacle
- B. One each of 30 A, 1-pole, 120 V(ac) Main circuit breaker
- C. One each of 15 A, 1- pole, 120 V(ac) circuit breaker
- D. Two each of 20 A, 1- pole, 120 V(ac) circuit breaker

Three shelves shall be furnished. Each shelf shall be attached to the tops of 2 supporting angles with 4 screws. Supporting angles shall extend from the front to the back rails. Two supporting angles will be State furnished and 4 shall be Contractor furnished. The front of the shelf shall abut the front member of the mounting cage. The shelves shall be arranged as shown on the plans. The angles shall be designed to support a minimum of 22.5 kg each. The horizontal side of each angle shall be a minimum of 76 mm. The angles shall be vertically adjustable.

Three terminal blocks shall be furnished. Terminal blocks shall conform to the requirements in Chapter 6, Section 5, Subsection 6.5.3, Paragraph 5.3.1 of the TSCES, except that the screw size shall be 8-32.

10-3.18 LIGHT EMITTING DIODE SIGNAL MODULE

GENERAL

Summary

This work includes installing LED signal module. Comply with Section 86, "Signals, Lighting and Electrical Systems," of the Standard Specifications.

Location of LED signal module is shown on the plans. The Engineer will approve exact location.

Use LED signal module as the light source for the following traffic signal faces:

1. 300-mm section
2. 200-mm section
3. 300-mm arrow section
4. 300-mm U-turn section
5. 300-mm programmed visibility (PV) section

Submittals

Before shipping LED signal modules to job site, submit the following to the Transportation Laboratory:

1. Delivery form including district number, EA, and contact information
2. List containing all LED signal module serial numbers anticipated for use
3. LED signal modules

Quality Control and Assurance

Module must be one listed on the Pre-Qualified Products List for LED traffic signals at:

http://www.dot.ca.gov/hq/esc/approved_products_list

The State will test LED signal module shipments as specified in ANSI/ASQ Z1.4.. Testing will be completed within 30 days of delivery to the Transportation Laboratory. LED signal modules tested or submitted for testing must be representative of typical production units. LED and circular LED signal modules will be tested as specified in California Test 604. Arrow, U-turn, and bicycle LED signal modules will be tested as specified in California Test 3001. All parameters of the specification may be tested on the modules. LEDs must be spread evenly across the module. LED arrow indication must provide the minimum initial luminous intensity listed. Measurements will be performed at the rated operating voltage of 120 V(ac).

Delays resulting from submittal of non-compliant materials do not relieve you from executing the contract within the allotted time. Non-compliant materials will be rejected. You must resubmit new LED for retesting and pick up the failed units within 7 days of notification. You must provide new LED signal modules and allow a minimum of 30 days for the retest. You must pay for all shipping and handling costs related to testing and retesting. Delays resulting from resubmittal and retesting are your responsibility and no extra time will be allowed.

After testing, you must pick up the tested LED signal modules from the Transportation Laboratory and deliver to the job site.

Warranty

The manufacturer must provide a written warranty against defects in materials and workmanship for LED signal modules for a minimum period of 48 months after installation of LED signal modules. Replacement LED signal modules must be provided within 15 days after receipt of failed LED modules at your expense. The State pays for shipping the failed modules to you. All warranty documentation must be submitted to the Engineer before installation. Replacement LED signal modules must be delivered to State Maintenance Electrical Shop at 30 Rickard Street, San Francisco, CA 94134, (415) 330-6509.

MATERIALS

Minimum power consumption for LED signal module must be 5 W.

LED signal module must have an operational lifecycle rating of 48 months. During the operational lifecycle, LED signal module must meet all parameters of this specification.

LED signal module must be designed for installation in the door frame of standard traffic signal housing.

LED signal module must:

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1. Be 1.8 kg maximum mass
2. Be manufactured for 300-mm circular, 200-mm circular, arrow, U-turn, bicycle, and lane control section
3. Be from the same manufacturer
4. Be the same model for each size
5. Be sealed units with:
 - 5.1. 2 color-coded conductors for power connection, except for lane control LED signal modules use 3 color-coded conductors.
 - 5.2. Printed circuit board and power supply contained inside and complying with Chapter 1, Section 6 of TEES published by the Department.
 - 5.3. Lens that is:
 - 5.3.1. Integral to the units
 - 5.3.2. Convex or flat with a smooth outer surface
 - 5.3.3. Made of UV stabilized plastic or glass, and withstands UV exposure from direct sunlight for 48 months without exhibiting evidence of deterioration
 - 5.4. 1-piece EPDM gasket
6. Include 1-meter long conductors with quick disconnect terminals attached as specified in Section 86-4.01C, "Electrical Components," of the Standard Specifications
7. Be sealed in door frames
8. Fit into existing traffic signal section housing and comply with ITE publication, Equipment and Material Standards, Chapter 2, "Vehicle Traffic Control Signal Heads"

Individual LEDs must be wired so catastrophic loss or failure of 1 LED will not result in loss of more than 5 percent of the signal module light output. Failure of an individual LED in a string must not result in loss of entire string or other indication.

No special tools for installation are allowed.

300-mm Arrow

Comply with Section 9.01 of ITE publication, Equipment and Material Standards, Chapter 2, "Vehicle Traffic Control Signal Heads" for arrow indications.

LED signal module must:

1. Be weather tight and connect directly to electrical wiring.
2. Be capable of optical unit replacement.
3. Be a single, self-contained device, ready for installation into traffic signal housing.
4. Have manufacturer's name, trademark, model number, serial number, lot number, month and year of manufacture, and required operating characteristics, including rated voltage, power consumption, and volt-ampere, permanently marked on the back of the module.
5. Have a symbol of module type and color. Symbol must be 25 mm in diameter. Color must be written out in 13 mm high letters next to the symbol.
6. Be AllnGaP technology for red and yellow indications and gallium nitride technology for green indications.
7. Be ultra bright type rated for 100,000 hours of continuous operation from -40 °C to +74 °C.
8. Have a maximum power consumption as follows:

Power Consumption Requirements

LED Signal Module Type	Power Consumption (Watts)					
	Red		Yellow		Green	
	25 °C	74 °C	25 °C	74 °C	25 °C	74 °C
300-mm circular	11	17	22	25	15	15
200-mm circular	8	13	13	16	12	12
300-mm arrow	9	12	10	12	11	11
Programmed Visibility	11	17	22	25	15	15

Lens may be tinted, or may use transparent film or materials with similar characteristics to enhance "ON/OFF" contrasts. Tinting or other materials to enhance "ON/OFF" contrast must not affect chromaticity and must be uniform across the face of the lens.

If polymeric lens is used, surface coating or chemical surface treatment must be applied for front surface abrasion resistance.

Power supply must be integral to the module.

Internal components must be adequately supported to withstand mechanical shock and vibration from high winds and other sources.

Lens and LED signal module material must comply with the ASTM specifications for that material.

Enclosures containing either the power supply or electronic components of LED signal module, except lenses, must be made of UL94VO flame-retardant material.

If a specific mounting orientation is required, the LED signal module must have prominent and permanent vertical markings for accurate indexing and orientation within the signal housing. Markings must include an up arrow, or the word "UP" or "TOP."

LED signal module must meet or exceed the following values when operating at 25 °C:

Minimum Initial Intensities for Circular Indications (cd)

Angle (v,h)	200-mm			300-mm		
	Red	Yellow	Green	Red	Yellow	Green
2.5, ±2.5	157	314	314	399	798	798
2.5, ±7.5	114	228	228	295	589	589
2.5, ±12.5	67	133	133	166	333	333
2.5, ±17.5	29	57	57	90	181	181
7.5, ±2.5	119	238	238	266	532	532
7.5, ±7.5	105	209	209	238	475	475
7.5, ±12.5	76	152	152	171	342	342
7.5, ±17.5	48	95	95	105	209	209
7.5, ±22.5	21	43	43	45	90	90
7.5, ±27.5	12	24	24	19	38	38
12.5, ±2.5	43	86	86	59	119	119
12.5, ±7.5	38	76	76	57	114	114
12.5, ±12.5	33	67	67	52	105	105
12.5, ±17.5	24	48	48	40	81	81
12.5, ±22.5	14	29	29	26	52	52
12.5, ±27.5	10	19	19	19	38	38
17.5, ±2.5	19	38	38	26	52	52
17.5, ±7.5	17	33	33	26	52	52
17.5, ±12.5	12	24	24	26	52	52
17.5, ±17.5	10	19	19	26	52	52
17.5, ±22.5	7	14	14	24	48	48
17.5, ±27.5	5	10	10	19	38	38

Minimum Luminance for Arrows, U-turn, Bicycle, Lane Control, and PV Indications (cd/m²)

	Red	Yellow	Green
Arrow Indication	5,500	11,000	11,000
PV Indication (cd at 2.5°±2.5°)	314	314	314

LED signal module must meet or exceed the following illumination values for 48 months when operating over a temperature range of -40 °C to + 74 °C. Yellow LED signal module must meet or exceed the following illumination values for 48 months, when operating at 25 °C:

Minimum Maintained Intensities for Circular Indications (cd)

Angle (v,h)	200-mm			300-mm		
	Red	Yellow	Green	Red	Yellow	Green
2.5, ±2.5	133	267	267	339	678	678
2.5, ±7.5	97	194	194	251	501	501
2.5, ±12.5	57	113	113	141	283	283
2.5, ±17.5	25	48	48	77	154	154
7.5, ±2.5	101	202	202	226	452	452
7.5, ±7.5	89	178	178	202	404	404
7.5, ±12.5	65	129	129	145	291	291
7.5, ±17.5	41	81	81	89	178	178
7.5, ±22.5	18	37	37	38	77	77
7.5, ±27.5	10	20	20	16	32	32
12.5, ±2.5	37	73	73	50	101	101
12.5, ±7.5	32	65	65	48	97	97
12.5, ±12.5	28	57	57	44	89	89
12.5, ±17.5	20	41	41	34	69	69
12.5, ±22.5	12	25	25	22	44	44
12.5, ±27.5	9	16	16	16	32	32
17.5, ±2.5	16	32	32	22	44	44
17.5, ±7.5	14	28	28	22	44	44
17.5, ±12.5	10	20	20	22	44	44
17.5, ±17.5	9	16	16	22	44	44
17.5, ±22.5	6	12	12	20	41	41
17.5, ±27.5	4	9	9	16	32	32

Minimum Maintained Luminance for Arrow, U-turn, Bicycle, Lane Control, and PV Indications (cd/m²)

	Red	Yellow	Green
Arrow Indication	5,500	11,000	11,000
PV Indication (at 2.5°±2.5°)	314	314	314

LED signal module must comply with the following chromaticity requirements for 48 months when operating over a temperature range of -40 °C to +74 °C.

Chromaticity Standards (CIE Chart)

Red	Y: not greater than 0.308, or less than 0.998 - x
Yellow	Y: not less than 0.411, nor less than 0.995 - x, nor greater than 0.452
Green	Y: not less than 0.506 - 0.519x, nor less than 0.150 + 1.068x, nor more than 0.730 - x

LED signal module must operate:

1. At a frequency of 60 Hz ± 3 Hz, over a voltage range from 95 V(ac) to 135 V(ac), without perceptible flicker to the unaided eye. Fluctuations of line voltage must have no visible effect on luminous intensity of the indications. Rated voltage for measurements must be 120 V(ac).
2. Compatible with currently used controller assemblies, including solid state load switches, flashers, and conflict monitors. Comply with TEES Chapters 3 and 6. If a 20 mA alternating current or less is applied to the unit, the voltage read across the 2 leads must be 15 V(ac) or less.

Wiring and terminal block must comply with Section 13.02 of ITE publication, Equipment and Material Standards, Chapter 2, "Vehicle Traffic Control Signal Heads." Electrical connection for each Type 1 LED signal module must be 2 secured, color-coded, 1-meter long, 600 V(ac), 20 AWG minimum stranded jacketed copper wires. Wires must comply with NEC, rated for service at +105 °C. Three wires must be used for lane control LED signal module.

LED signal module on-board circuitry must:

1. Include voltage surge protection to withstand high-repetition noise transients. The voltage surge protection must comply with NEMA Standard TS2, Section 2.1.6.
2. Comply with FCC, Title 47, SubPart B, Section 15 regulations for Class A emission limits for electronic noise.

LED signal module must provide a power factor of 0.90 or greater.

Total harmonic distortion from current and voltage induced into an alternating current power line by LED signal module must not exceed 20 percent at an operating temperature of 25 °C.

When power is applied to LED signal module, light emission must occur within 90 ms.

Red and Yellow Flashing LED Signal Module

No external circuitry to flash the LED signal module is allowed. Use 12 V(dc) or 120 V(ac).

Flashing LED signal module circuitry must prevent perceptible light emission to the unaided eye when a voltage, 50 V(ac) or less for alternating current or 5 V(dc) for 12 V(dc) flasher units, is applied to the unit.

Electrical connection for each flashing LED signal module must be 4 secured, color-coded, 600 V(ac), 20 AWG minimum stranded jacketed copper wires. Wire must comply with NEC, rated for service at +105 °C. Conductors for flashing LED signal module must be 1 meter in length, with quick disconnect terminals attached, and must comply with Section 86-4.01C, "Electrical Components," of the Standard Specifications. The color code is as follows:

Color Code Requirements

Function	Color
Neutral/DC common	white
Steady On	red
Flash On	brown
Flash Out	orange

Flashing LED signal module must include all necessary electronics to:

1. Operate in a "Steady On" mode
2. Perform, in "Flash On" mode, 50 to 60 flashes per minute with a 50 percent ± 5 duty cycle
3. Allow alternating flashing operation, wig-wag, if the "Steady On" input of another flashing LED signal module is connected

When power is applied to the "Flash On" control conductor, the control output must allow a 12 V(dc) or 120 V(ac) signal that is switched opposite of the flash state of the module. Output must be able to source a maximum of 2.5 A for 12 V(dc), or 0.3 A for 120 V(ac).

Do not use the power consumption from "Flash Out" output of the flashing LED signal module when determining maximum power consumption.

The flashing LED Signal module must be clearly marked on the back, as "DC FLASHER" or "AC FLASHER", in 13-mm letters.

CONTRACT NO.

LONG LEAD-IN CABLE LOOP DETECTOR (LLLD) SENSOR UNIT

General

Each Long Lead-in cable Loop Detector (LLLD) sensor unit shall comply with the following:

1. Chapter 5 of the Transportation Electrical Equipment Specifications (TEES), November 19, 1999.
2. Section 86-5.01 of the May 2006, Standard Specifications.
3. The enhancements as specified in this specification.

Each LLLD sensor unit shall have 2 channels and shall be capable of detecting Agency licensed vehicles on a single Type A or E loop with a 900 m lead-in-cable.

Sensitivity

Each LLLD sensor unit channel shall have a sensitivity based on delta L threshold rather than delta L (only). There shall be 8 threshold levels corresponding to 8 nH, 16 nH, 32 nH, 64 nH, 128 nH, 256 nH, 512 nH and 1024 nH.

Variations

Each LLLD sensor unit channel shall be permitted the following exceptions to the TEES and Standard Specifications:

1. Three frequency settings minimum.
2. The operating frequency of 40 kHz is not required as long as the sensor unit adheres to all other FCC rules.
3. The minimum Q requirement of 5 is not required if all other functional requirements are met.
4. Pulse mode requirements may vary from TEES but are subject to the approval of the Engineer.

Certificate of Compliance

The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in accordance with the provisions of Section 6-1.07, "Certificates of Compliance" of the Standard Specifications for each LLLD sensor unit furnished.

Warranty

Each LLLD sensor unit shall have a complete manufacturer's warranty of at least 1 year parts.

10-3.30 EXTINGUISHABLE MESSAGE SIGN (LED)

Extinguishable message sign (EMS) must use Light Emitting Diodes (LED) in pixels, the pixels forming a module, and the module forming legends in nominal 254 mm high size letters. The LED messages must automatically adjust its light output by means of photosensors installed in the EMS housing. Multiple EMS's may be controlled from the same photosensor. Light output must be proportional to the ambient light (more ambient light / more output and less ambient light / less output). There must be a minimum of three adjustable levels of luminance: 100 percent, 60 percent, and 30 percent luminance. The signs must have a 30 percent luminance manual control as shown on the plans.

CONSTRUCTION

EMS's must be constructed so that an anti-glare polycarbonate or hardened acrylic front face panel with anti-glare film must be contained within an extruded aluminum frame.

The extruded aluminum must be hinged to allow access to the interior of the sign and have fully welded seams with a high gloss textured black powder coat finish meeting the color standards of Federal specifications 595b, 17038. Install a 9 mm nominal black anodized aluminum hex cell louver having 95 percent open area and providing 60 degree shielding between the LED pixels and the front face panel to enhance resistance to sun phantom. Secure louvers in front of the LED pixels with captive type retainers.

EMS's must be gasketed with a closed cell neoprene gasket making the sign rain tight. Stainless steel latches must provide for quick access to the interior of the sign. The sign must be provided with devices to retain the face panel in a fully open mode assisting the servicing of the sign. Exterior hardware must be of stainless steel or cadmium plated materials.

EMS's must be vented on the bottom and have an interior temperature controlled ventilation fan to ensure the interior of the housing remains below 55°C without compromising the rain tight integrity. Install insect screens in the vents.

Utilize ultra bright type Aluminum Indium Gallium Phosphide (AlInGaP) LED's rated for 100 000 hours of continuous operation from -37°C to +74°C. LED pixels must be Ultra Violet stabilized. Individual LED's must be wired so that a failure of one LED will not result in the loss of more than one third of a pixel.

LED modules must consist of multiple pixels in a 5w x 7h configuration. Each pixel must consist of at least 12 high intensity LED's. Each pixel must be 590 nanometers nominal amber in color having an initial nominal luminous intensity of 9.5 candela (cd) on the maximum setting. Each LED pixel must consume no more than 750 milliwatts of power. Each pixel must be removable or replaceable on the module with a screwdriver, and each module must be removable from the housing in the same manner.

LED's must be soldered in place, and the LED leads must not be shortened or removed. LED's must be from the same manufacturer and same color bin.

OPERATION

LED messages must be steadily lit when activated. EMS's must have internal power supplies and dimming capability to fully operate the sign. The EMS power factor must be greater than 90 percent, and current total harmonic distortion must be less than 25 percent.

EMS's must operate at a frequency of 60Hz ± 3Hz AC line over a voltage ranging from 90 volts to 135 volts. The LED circuitry must prevent perceptible flicker over the voltage range specified. Line voltage fluctuations must have no visible effect on the luminous intensity of the EMS. The rated voltage for measurements must be 120 V(ac).

EMS's must include voltage surge protection to withstand high repetition noise transient as stated in section 2.1.6 of NEMA Standard TS-2.

EMS's must meet Federal Communications Commission (FCC) Title 47, SubPart B, Section 15 regulations concerning the emission of electronic noise.

PHOTOMETRIC REQUIREMENTS

EMS pixels must meet at least 85 percent of the minimum intensity requirements while operating throughout the operating range of -37°C to +74°C.

The minimum initial luminous intensity values for LED pixels must be 190 Footlambert (FL) at 25°C. Each EMS pixel must have a viewing angle of 30 degrees to the sign.

The measured chromatic coordinates of the EMS pixels must conform to the chromaticity requirements of section 5.3.2.1. and Figure C of the Equipment and Materials Standards of the Institute of Transportation Engineers ITE Publication No. ST-017A.

TERMINAL BLOCKS

Terminal blocks must be installed in the interior bottom of the sign housing with sufficient number of terminals to accommodate the wiring. Wiring must be bundled, wrapped, and permanently labeled.

DOCUMENTATION

Complete shop drawings for the EMS' must be submitted to the Engineers for testing, evaluation and approval, a minimum of 30 days before ordering or fabrication of equipment.

The following operating characteristics must be identified: rated voltage, power consumption, current and volt-amperes. EMS's must have the manufacturer's name and trademark permanently marked on the side of sign. Individual EMS's must be identified with a model, serial number and shipping date stamped on a tag attached to the sign for warranty purposes. The lettering must be a minimum of 7.14 mm high. The information may be either depressed or raised, and must be legible and durable.

WARRANTY

The manufacturer must provide a Certificate of Compliance to this standard and replace or repair any EMS that exhibits a failure due to workmanship or material defects within 60 months of delivering the sign to the State or the date of acceptance whichever is later. The manufacturer must replace or repair any sign that exhibits light degradation greater than 50 percent within the first 36 months of operation, or if more than 20 percent of the LED's fail during that same period.

10-3.47 PAYMENT

The contract lump sum price or prices paid for signal and lighting shall include highway lighting at intersections in connection with signals only.

Other roadway lighting on the project shall be considered as included in the contract lump sum price paid for lighting and sign illumination or Lighting (City Street), as noted on the plans.

Full compensation for hauling and stockpiling electrical materials shall be considered as included in the contract price paid for the item requiring the material to be salvaged and no additional compensation will be allowed therefor.

The contract lump sum price paid for temporary signal system, including Video Imaging Detection System (VIDS) shall include full compensation for furnishing all labor, materials (except State-Furnished materials), tools, equipment, and incidentals, and for all the work involved in installing, maintaining, and removing the temporary traffic signal and lighting.

The contract lump sum price paid for emergency vehicle preemption system shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing emergency vehicle preemption system, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract lump sum price paid for interconnection conduit and cable shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing signal interconnect conduit and cable and interconnect pull boxes, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract lump sum price paid for traffic operations system at the various locations shown on the plans shall include full compensation for furnishing all labor, materials (except items covered by other bid items), tools, equipment, and incidentals, and for doing all the work involved in installing traffic operations system, complete in place, including all the poles, manuals and testing, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract lump sum price paid for Communication Conduit (fiber optic) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing fiber optic system, complete in place, including conduit, splice vaults, and pull boxes, as shown on the plans, as specified in the Standard Specifications, and these special provisions, and as directed by the Engineer.

Full compensation for hauling, stockpiling, and disposing of transformers, fluorescent tubing and mercury lamps and non-leaking fluorescent light ballasts shall be considered as included in the contract price paid for the various items of work and no additional compensation will be allowed therefor.

If any of the fabrication sites for the materials listed are located more than 480 air line kilometers from both Sacramento and Los Angeles, additional shop inspection expenses will be sustained by the State. Whereas it is and will be impractical and difficult to determine the actual increase in these expenses, it is agreed that payment to the Contractor for furnishing these listed materials from each fabrication site located more than 480 air line kilometers from both Sacramento and Los Angeles will be reduced \$2000:

1. Extinguishable message signs (LED)
2. Service equipment enclosures
3. Telephone demarcation cabinets

The contract unit price paid for each of the following items shall include full compensation for furnishing all materials, tools, equipment, and incidentals, as shown on the plans, as specified in these special provisions, and as directed by the Engineer:

1. Integrated camera unit.
2. CCTV pole and camera mounting adapter if required
3. Camera control unit (CCU).
4. Video encoder unit. (VEU)
5. Power strip.
6. Hybrid camera cable (HCC), Connectors and fittings.
7. General Packet Radio System (GPRS) Wireless Modem Assembly.
8. Equipment shelf with brackets
9. Extinguishable Message Sign Panel (LED).
10. Long Lead-in cable Loop Detector (LLLD) Sensor Unit

SECTION 13. RAILROAD RELATIONS AND INSURANCE

SECTION 13-1. RELATIONS WITH RAILROAD COMPANY

13-1.01 GENERAL

The term "Railroad" shall mean the Union Pacific Railroad Company.

It is expected that the Railroad will cooperate with the Contractor to the end that the work may be handled in an efficient manner. However, except for the additional compensation provided for hereinafter for delays in completion of specific unit of work to be performed by the Railroad, and except as provided in Public Contracts Code Section 7102, the Contractor shall have no claim for damages, extension of time, or extra compensation in the event his work is held up by railroad train operations or other work performed by the Railroad.

The Contractor's right to enter the Railroad's property is subject to the absolute right of the Railroad to order cession of the Contractor's work on Railroad property if, in the opinion of the Railroad, the Contractor's activities create a hazard to Railroad property, employees, and/or operations.

The Contractor acknowledges its receipt from the State of a copy of the Contractor's Right of Entry Agreement that has been executed by the Railroad and the State. The Contractor agrees to execute and deliver to the Railroad the Contractor's Endorsement that is attached hereto as Appendix 1 and to provide to the State and/or the Railroad all insurance policies, binders, certificates or endorsements that are set forth in Exhibit B of the Contractor's Right of Entry Agreement.

13-1.02 RAILROAD REQUIREMENTS

The Contractor shall provide to Mr. James H. Smith, Manager, Industry and Public Projects, 9451 Atkinson Street, Roseville, California 95747, Telephone: (916) 789-5152 and the Engineer, in writing, the advance notice requirements set forth in Section 1 of Exhibit A of the Right of Entry Agreement before performing any work on, or adjacent to the property or tracks of the Railroad.

The Contractor shall cooperate with the Railroad where work is over or under the tracks, or within the limits of the Railroad property to expedite the work and avoid interference with the operation of railroad equipment.

The Contractor shall comply with the rules and regulations of the Railroad or the instructions of its representatives in relation to protecting the tracks and property of the Railroad and the traffic moving on such tracks, as well as the wires, signals and other property of the Railroad, its tenants or licensees, at and in the vicinity of the work during the period of construction. The responsibility of the Contractor for safe conduct and adequate policing and supervision of its work at the job site shall not be diminished or otherwise affected by the presence at the work site of any Railroad representatives, or as a result of the Contractor's compliance with any requests or recommendations made by the Railroad representatives.

The Contractor shall perform work so as not to endanger or interfere with the safe operation of the tracks and property of the Railroad and traffic moving on such tracks, as well as wires, signals and other property of the Railroad, its tenants or licensees, at or in the vicinity of the work.

The Contractor shall take protective measures to keep the Railroad facilities, including track ballast, free of sand or debris resulting from his operations. Damage to the Railroad facilities resulting from the Contractor's operations will be repaired or replaced by the Railroad and the cost of such repairs or replacement shall be deducted from the Contractor's progress and final pay estimates.

The Contractor shall contact the Railroad's "Call Before You Dig" at least forty-eight (48) hours prior to commencing work, at 1-800-336-9193 during normal business hours (7:00 a.m. to 9:00 p.m. Central Time, Monday through Friday, except holidays – also a 24-hour, 7-day number for emergency calls) to determine location of fiber optics. If a telecommunications system is buried anywhere on or near the Railroad property, the Contractor will coordinate with the Railroad and the Telecommunication Company (ies) to arrange for relocation or other protection of the system prior to beginning any work on or near Railroad property.

The Contractor shall not pile or store any materials nor park any equipment closer than 7.62 meter to the centerline of the nearest track, unless approved or directed by the Railroad's representative.

The Contractor shall also abide by the following temporary clearances during the course of construction:

- A. 3.66 meter (12'-0") horizontally from centerline of track
- B. No temporary structures shall be permitted over Railroad tracks or property

Contractor shall prepare and submit four (4) sets of plans, in 279mm x 432mm (11" x 17") format, and two (2) sets of calculations showing details of construction affecting the Railroad's tracks and property not included in the contract plans to the Engineer for review prior to submittal to the Railroad for final approval. The Contractor shall notify the Engineer in writing, at least twenty-five (25) calendar days but not more than forty (40) days in advance of the starting date of installing temporary work with less than permanent clearance at each structure site. The Contractor shall not be permitted to proceed with work across railroad tracks until this requirement has been met. No extension of time or extra compensation will be allowed if the Contractor's work is delayed due to failure to comply with the requirements in this paragraph.

No blasting will be permitted.

The Contractor shall, upon completion of the work covered by this Contract to be performed by the Contractor upon the premises or beneath the tracks of the Railroad, promptly remove from the premises of the Railroad, the Contractor's tools, implements and other materials, whether brought upon said premises and cause said premises to be left in a clean and presentable condition.

Safety of personnel, property, rail operations and the public is of paramount importance. As reinforcement and in furtherance of overall safety measures to be observed by the Contractor (and not by way of limitation), the following special safety rules shall be followed:

- A. The Contractor shall keep the job site free from safety and health hazards and ensure that its employees are competent and adequately trained in all safety and health aspects of the job. The Contractor shall have proper first aid supplies available on the job site so that prompt first aid services can be provided to any person that may be injured on the job site. The Contractor shall promptly notify the Railroad of any U.S. Occupational Safety and Health Administration reportable injuries occurring to any person that may arise during the work performed on the job site. The Contractor shall have a non-delegable duty to control its employees while they are on the job site or any other property of the Railroad to be certain they do not use, be under the influence of, or have in their possession any alcoholic beverage, drug, narcotic or other substance that may inhibit the safe performance of work by the employee.
- B. The employees of the Contractor shall be suitably dressed to perform their duties safely and in a manner that will not interfere with their vision, hearing or free use of their hands or feet. Only waist length shirts with sleeves and trousers that cover the entire leg are to be worn. If flare-legged trousers are worn, the trouser bottoms must be tied to prevent catching. The employees should wear sturdy and protective work boots and at least the following protective equipment:
 1. Protective head gear that meets American National Standard-Z89. 1-latest revision. It is suggested that all hardhats be affixed with the Contractor's or the subcontractor's company logo or name.
 2. Eye protection that meets American National Standard for occupational and educational eye and face protection, Z87.1-latest revision. Additional eye protection must be provided to meet specific job situations such as welding, grinding, burning, etc.; and
 3. Hearing protection which affords enough attenuation to give protection from noise levels that will be occurring on the job site.
- C. All heavy equipment provided or leased by the Contractor shall be equipped with audible back-up warning devices. If in the opinion of the Railroad Representative any of the Contractor's or the subcontractor's equipment is unsafe for use on the Railroad's right-of-way, the Contractor, at the request of the Railroad representative, shall remove such equipment from the Railroad's right-of-way.

13-1.03 PROTECTION OF RAILROAD FACILITIES

Upon the advance notification provided to the Railroad as set forth in Section 1 of Exhibit A of the Contractor's Right of Entry Agreement, the Railroad representatives, conductors, flagmen or watchmen will be provided by the Railroad to protect its facilities, property and movements of its trains or engines. Notice shall be made to the Railroad's Manager of Track Maintenance at (402) 233-1746. At the time of notification, the Contractor shall provide the Railroad with a schedule of dates that flagging services will be needed, as well as times, if outside normal working hours. Subsequent deviation from the schedule shall require ten (10) working days' advance notice from the first affected date. The Railroad will furnish such personnel or other protective devices:

- A. When equipment is standing or being operated within 7.62 meter, measured horizontally, from centerline of any track on which trains may operate, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.
- B. For any excavation below elevation of track subgrade if, in the opinion of the Railroad's representative, track or other Railroad facilities may be subject to settlement or movement.
- C. During any clearing, grubbing, grading or blasting in proximity to the Railroad which, in the opinion of the Railroad's representative, may endanger the Railroad facilities or operations.
- D. During any of the Contractor's operations when, in the opinion of the Railroad's representatives, the Railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines or pipe lines, may be endangered.

The cost of flagging and inspection provided by the Railroad during the period of constructing that portion of the project located on or near the Railroad property, as deemed necessary for the protection of the Railroad's facilities and trains, shall be borne by the Contractor. Railroad has indicated that its estimated flagging rate will be around Twelve Hundred Dollars (\$1,200.00) per day. It has been estimated a total of thirty (30) days of flagging may be needed during construction of this contract.

13-1.04 DESCRIPTION OF RAILROAD-RELATED WORK

The following work will be included in construction, as delineated and described in the Plans, Standard Specifications and Special Provisions:

- 1.) Demolition and removal of the existing Railroad crossing at grade and Railroad tracks and appurtenant facilities across State Route 4 on State right-of-way.
- 2.) Construction of a temporary roadway and two temporary crossings at grade, and appurtenant facilities as described on the Plans, across and upon existing Railroad tracks and property.
- 3.) Maintenance of said temporary detour facilities during construction.
- 4.) Demolition and removal off site of said temporary detour facilities and materials at the conclusion of their use.

The Contractor shall submit a twenty-five (25) day advance written request to the Engineer, for transmittal to the Railroad, for an authorized Railroad representative to participate in a joint field inspection and inventory of Railroad materials remaining within State right-of-way. The Contractor shall then document said field inventory with a written listing of all those Railroad materials as agreed by the parties which will be salvaged and removed by the Railroad in accordance with an agreed-upon schedule. All other railroad materials not included in the listing or remaining after Railroad salvage is completed shall be dismantled and removed to subgrade by the Contractor and shall become property of the Contractor to be removed off site.

The Railroad shall be requested by the Contractor, via the Engineer, to endorse the materials inventory and also to provide a written release indicating that the track within the State right-of-way lines has been removed from service and therefore will no longer require Railroad permission to enter thereupon and perform construction.

The Contractor shall provide reasonable and adequate assistance to Railroad forces as needed during demolition of State roadway facilities, as may be needed to access and salvage railroad track, utilities, signing and other Railroad materials located beneath and adjacent to existing highway pavements and facilities of State Route 4. This work shall be as directed by the Engineer and shall include, but will not necessarily be limited to making lane closures, temporary traffic detours, providing warning signs and any other needed traffic controls needed to assure traffic safety and safety of Railroad forces while working in the State right-of-way. The Contractor shall also perform any needed initial pavement saw cutting and complete any backfilling and patching of the highway pavements before, during and after track removal so as to provide a neat, smooth and adequately restored roadway surface, including pavement markings and signing as may be necessary. After removal of Railroad facilities has been completed, the Contractor shall remove any remaining grade crossing signing along the highway and obliterate pavement markings related to the grade crossing.

The Contractor shall also construct or install temporary right-of-way fencing and/or traffic barriers as may be needed to isolate the State right-of-way from the adjacent Railroad property where gaps in the continuous fence line may exist after removal of the railroad crossing.

At the conclusion of Railroad salvage work, the Contractor shall obtain from the Railroad representative an executed receipt for the Railroad materials removed from State right-of-way, and a written release from the Railroad indicating that any other remnant Railroad materials are thereby abandoned to State and Contractor ownership.

Construction of the temporary facilities for temporary detour route shall be undertaken in accordance with the terms and provisions as described hereinbefore for work to take place on Railroad property. The Contractor shall coordinate with the Railroad, via the Engineer, to establish an agreed-upon schedule for these temporary facilities.

The Contractor shall construct all the temporary detour roadway and appurtenant facilities including all pavements, track crossings, signing and related facilities as shown on the plans. The Contractor shall take special care in constructing the track crossings within 3.66 meters (12'-0") of the track centerlines and the roadway pavement between the two tracks. The Railroad will provide flaggers for all train operations across the detour, and the Contractor shall execute a Right-of-Entry Agreement with the Railroad to bear the cost of said flagging.

After its completion, and during the course of the detour use by road traffic, the Railroad will provide flaggers for all train operations across the detour.

At the conclusion of the detour use, the Contractor shall demolish and remove from Railroad and State property all the temporary pavement and related facilities that the Contractor had previously constructed. The contractor shall restore the ground surface to its original condition to the satisfaction of the Railroad and the Engineer, and shall remove all construction materials and debris from Railroad property.

13-1.05 DELAYS DUE TO WORK BY RAILROAD.

If delays due to work by the Railroad occur, and the Contractor sustains loss which, in the opinion of the Engineer, could not have been avoided by the judicious handling of forces, equipment and plant, the amount of said loss shall be determined as provided in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

If a delay due to work by the Railroad occurs, an extension of time determined pursuant to the provisions in Section 8-1.07, "Liquidated Damages," of the Standard Specifications will be granted.

13-1.06 LEGAL RELATIONS

The provisions of Section 13-1, "Relations with Railroad Company," and the provisions of Section 13-2, "Railroad Protective Insurance," of these special provisions shall inure directly to the benefit of the Railroad.

SECTION 13-2. RAILROAD PROTECTIVE INSURANCE

13-2.01 GENERAL

In addition to any other form of insurance or bonds required under the terms of the contract and specifications, the Contractor will be required to carry insurance of the kinds and in the amounts hereinafter specified.

Such insurance shall be approved by the Railroad before any work is performed on the Railroad's property and shall be carried until all work required to be performed on or adjacent to the Railroad's property under the terms of the contract is satisfactorily completed as determined by the Engineer, and thereafter until all tools, equipment and materials have been removed from the Railroad's property and such property is left in a clean and presentable condition.

Full compensation for all premiums which the Contractor is required to pay on all the insurance described hereinafter shall be considered as included in the prices paid for the various items of work to be performed under the contract, and no additional allowance will be made thereof or for additional premiums which may be required by extensions of the policies of insurance.

The following insurance coverage will be required:

- A. Commercial General Liability insurance. This insurance shall contain a single limit of at least \$5,000,000 each occurrence or claim and an aggregate limit of at least \$10,000,000 and include broad form contractual liability coverage. Coverage must be purchased on a post 1998 ISO or equivalent form, including but not limited to coverage for the following:
 1. Bodily injury including death and personal injury
 2. Property damage
 3. Fire legal liability
 4. Products and completed operations

The policy shall also contain the following endorsements which shall be indicated on the certificate of insurance:

1. The worker's compensation and employee related exclusions in the above policy apply only to the Contractor's employees.
2. The exclusions for railroads [except where the Job site is more than 15.24 meter from any railroad including, but not limited to, tracks, bridges, trestles, roadbeds, terminals, underpasses or crossings], and explosion, collapse and underground hazard shall be removed.
3. Coverage for the Contractor's employees shall not be excluded.
4. Waiver of subrogation

If the Contractor will be using, storing and/or handling hazardous materials, the Contractor, in addition to the other endorsements to be obtained by the Contractor as provided in this exhibit, must also ensure that the Commercial General Liability Insurance policy contains a Designated Premises Pollution Coverage (CG00-39) endorsement. Evidence of the endorsement must also be indicated on the certificate of insurance that is provided to the Railroad.

- B. Business Automobile Coverage insurance. This insurance shall contain a combined single limit of at least \$5,000,000 per occurrence or claim, including but not limited to coverage for the following:

1. Bodily injury and property damage
2. Any and all motor vehicles including owned, hired and non-owned

The policy shall also contain the following endorsements which shall be indicated on the certificate of insurance:

1. The worker's compensation and employee related exclusions in the above policy apply only to the Contractor's employees.
2. The exclusions for railroads [except where the Job Site is more than 15.24 meter from any railroad including but not limited to tracks, bridges, trestles, roadbeds, terminals, underpasses or crossings], and explosion, collapse and underground hazard shall be removed.

- C. Worker's Compensation and Employer's Liability insurance including but not limited to:

1. The Contractor's statutory liability under the workers' compensation laws of the State of California
2. Employer's Liability (Part B) with limits of at least
3. \$500,000 each accident, \$500,000 disease policy limit
4. \$500,000 each employee

If the State of California requires participants in a state worker's compensation fund and if Worker's Compensation insurance will not cover the liability of the Contractor in the State of California, the Contractor shall comply with such laws. If the Contractor is self-insured, evidence of state approval must be provided along with evidence of excess worker's compensation coverage. Coverage shall include liability arising out of the U. S. Longshoremen's and Harbor Workers' Act, the Jones Act, and the Outer Continental Shelf Land Act, if applicable.

The policy shall also contain the following endorsement which shall be indicated on the certificate of insurance:

1. Alternate Employer Endorsement

- D. Umbrella or Excess Policies In the event the Contractor utilizes Umbrella or excess policies, these policies shall "follow form" and afford no less coverage than the primary policy.

- E. Railroad Protective Liability insurance naming only the Railroad as the insured with a combined single limit of \$2,000,000 per occurrence with a \$6,000,000 aggregate. The policy shall be broad form coverage for "Physical Damage to Property" (ISO Form CG 00 35 07 98 or equivalent). A binder stating the policy is in place must be submitted to the Railroad until the original policy is forwarded to the Railroad.

Other Requirements

- F. Punitive damage exclusion must be deleted, which deletion shall be indicated on the certificate of insurance.
- G. The Contractor agrees to waive its right of recovery, and its insurers, through policy endorsement, agree to waive their right of subrogation against the Railroad. The Contractor further waives its right of recovery, and its insurers also waive their right of subrogation against the Railroad for loss of its owned or leased property or property under its care, custody and control. The Contractor's insurance shall be primary with respect to any insurance carried by the Railroad. All waivers of subrogation shall be indicated on the certificate of insurance.
- H. All policy(ies) required above (excluding Workers Compensation) shall provide severability of interests and shall name the Railroad as an additional insured. The coverage provided to the Railroad as additional insured shall provide coverage for the Railroad's negligence whether sole or partial, active or passive, and shall not be limited by the Contractor's liability under the indemnity provisions of this Agreement. Severability of interest and naming the Railroad as additional insured shall be indicated on the certificate of insurance.
- I. Prior to commencing the Work, the Contractor shall furnish to the Railroad original certificate(s) of insurance evidencing the required coverage, endorsements, and amendments. The certificate(s) shall contain a provision that obligates the insurance company(ies) issuing such policy(ies) to notify the Railroad in writing of any cancellation or material alteration. Upon request from the Railroad, a certified duplicate original of any required policy shall be furnished.
- J. Any insurance policy shall be written by a reputable insurance company acceptable to the Railroad or with a current Best's Insurance Guide Rating of A- and Class VII or better, and authorized to do business in the State of California.
- K. The Contractor WARRANTS that this Agreement has been thoroughly reviewed by the Contractor's insurance agent(s)/broker(s), who have been instructed by the Contractor to procure the insurance coverage required by this Agreement and acknowledges that the Contractor's insurance coverage will be primary.
- L. If the Contractor fails to procure and maintain insurance as required, the Railroad may elect to do so at the cost of the Contractor plus a 25% administration fee.
- M. The fact that insurance is obtained by the Contractor the or Railroad on behalf of the Contractor shall not be deemed to release or diminish the liability of the Contractor, including, without limitation, liability under the indemnity provisions of this Agreement. Damages recoverable by the Railroad shall not be limited by the amount of the required insurance coverage.

13-2.02 APPENDIX 1

CONTRACTOR'S ENDORSEMENT

A. As a condition to entering upon the Railroad's right-of-way to perform Work pursuant to this agreement, State's contractor, _____ (Name of Contractor)

whose address is

_____, (Contractor's Mailing Address)

(hereinafter "Contractor"), agrees to comply with and be bound by all the terms and provisions of the attached Contractor's Right of Entry Agreement that was signed by Union Pacific Railroad Company ("Railroad") and the State of California, Department of Transportation ("State") relating to the Work to be performed and the insurance requirements set forth in Exhibit B of the Right of Entry Agreement. The Contractor further acknowledges and agrees that the reference to Cal. Gov. Code §14662.5 in Sections 5.b) and 8.b) of Exhibit A to the Right of Entry Agreement does not apply to the Contractor and in no way limits the indemnities set forth in those provisions, to which the Contractor agrees to be bound.

B. Before the Contractor commences any Work, the Contractor will provide the Railroad with (i) a binder of insurance for the Railroad Protective Liability Insurance described in Section 13-2 of the Contract Special Provisions, hereto attached, and the original policy, or a certified duplicate original policy when available, and (ii) a certificate issued by its insurance carrier providing the other insurance coverage and endorsements required pursuant to Section 13-2 of the Contract Special Provisions.

C. All insurance correspondence, binders or originals shall be directed to:

Union Pacific Railroad Company
Attn: Real Estate Department
1400 Douglas Street, MS 1690
Omaha, Nebraska 68179-1690
Attn.: Senior Manager - Contracts

D. Please note that fiber optic cable may be buried on the Railroad's property. Prior to commencing any work, the Contractor agrees to contact the Railroad's Telecommunications Operation Center as provided in Section 5 of Exhibit A of the Right of Entry Agreement to determine if any fiber optic cable is located on the Railroad's property on or near the location where the work is to be performed. If there is, the Contractor must comply with the terms and conditions of Section 5 of Exhibit A before commencing any work on the Railroad's property.

E. The Contractor agrees to also provide to the Railroad's Manager-Track Maintenance at (402) 233-1746 the advance notice required in Section 1 of Exhibit A of the Right of Entry Agreement prior to working on the Railroad's property in order for the Railroad to coordinate the Contractor's work with the Railroad's operations and to make arrangements for flagging protection (if applicable).

This endorsement shall be completed and sent to the person named in Paragraph C above.

_____, (Name of Contractor)

By _____

Title: _____

SECTION 13-3. UNION PACIFIC RAILROAD MINIMUM REQUIREMENTS

13-3.01 DESCRIPTION - GENERAL

This project includes construction work within the Right-of-Way and/or properties of the Union Pacific Railroad Company "UPRR" and adjacent to tracks, wire lines and other facilities. This section describes the special requirements for coordination with UPRR when work by the Contractor will be performed upon, over or under the UPRR Right-of-Way or may impact current or future UPRR operations. The Contractor will coordinate with UPRR while performing the work outlined in this Contract, and shall afford the same cooperation with UPRR as it does with the Agency. All submittals and work shall be completed in accordance with UPRR Guidelines and AREMA recommendations as modified by these minimum special requirements or as directed in writing by the UPRR Designated Representative.

For purposes of this project, the UPRR Designated Representative shall be the person or persons designated by the UPRR Manager of Industry and Public Projects to handle specific tasks related to the project.

13-3.02 DEFINITION OF AGENCY AND CONTRACTOR

As used in these UPRR requirements, the term "Agency" shall mean the State of California, by and through its Department of Transportation.

As used in these UPRR requirements, the term "Contractor" shall mean the contractor or contractor's hired by the Agency to perform any project work on any portion of UPRR's property and shall also include the contractor's subcontractors and the contractor's and subcontractor's respective officer, agents and employees, and others acting under its or their authority.

13-3.03 UPRR CONTACTS

The primary UPRR point of contact for this project is:

Mr. James H. Smith
Manager Industry and Public Projects
Union Pacific Railroad Company
9451 Atkinson Street
Roseville, California 95747
Phone: (916) 789-5152
Fax: (402) 233-3115

For UPRR flagging services and track work, contact:
Steven Haines
Manager Track Maintenance
Union Pacific Railroad Company
33 Bridgehead Road
Martinez, California 94553
Phone: (402) 233-1746

13-3.04 REQUEST FOR INFORMATION / CLARIFICATION

All Requests for Information ("RFI") involving work within any UPRR Right-Of-Way shall be in accordance with the procedures listed elsewhere in these bid documents. All RFI's shall be submitted to the Engineer of Record. The Engineer of Record will submit the RFI to the UPRR Designated Representative for review and approval for corresponding to work within the UPRR Right-Of-Way. The Contractor shall allow four (4) weeks for the review and approval process by UPRR.

13-3.05 PLANS / SPECIFICATIONS

The plans and specifications for this project, affecting the UPRR, are subject to the written approval by the UPRR and changes in the plans may be required after award of the Contract. Such changes are subject to the approval of the Agency and the UPRR.

13-3.06 UTILITIES AND FIBER OPTIC

All installations shall be constructed in accordance with current AREMA recommendations and UPRR specifications and requirements. UPRR general guidelines and the required application forms for utility installations can be found on the UPRR website at www.uprr.com.

13-3.07 GENERAL

- A. Contractor shall perform all work in compliance with all applicable UPRR and FRA rules and regulations. Contractor shall arrange and conduct all work in such manner and at such times as shall not endanger or interfere with the safe operation of the tracks and property of UPRR and the traffic moving on such tracks, or the wires, signals and other property of UPRR, its tenants or licensees, at or in the vicinity of the work. UPRR shall be reimbursed by Contractor or Agency for train delay costs and lost revenue claims due to any delays or interruption of train operations resulting from Contractor's construction work or other activities.
- B. Construction activities will be permitted within 3.6 meter of the centerline of operational tracks only if absolutely necessary and UPRR's Designated Representative grants approval. Construction activities within 3.6 meter of the operational track(s) must allow the tracks to stay operational.
- C. Track protection is required for all work equipment (including rubber tired equipment) operating within 7.62 meter from nearest rail.
- D. The Contractor is also advised that new railroad facilities within the project may be built by UPRR and that certain Contractor's activities cannot proceed until that work is completed. The Contractor shall be aware of the limits of responsibilities and allow sufficient time in the schedule for that work to be accomplished and shall coordinate its efforts with the UPRR.

13-3.08 RAILROAD OPERATIONS

- A. The Contractor shall be advised that trains and/or equipment are expected on any track, at any time, in either direction. Contractor shall become familiar with the train schedules in this location and structure its bid assuming intermittent track windows in this period, as defined in Paragraph B below.
- B. All railroad tracks within and adjacent to the Contract Site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. Railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. The Contractor shall coordinate and schedule the work so that construction activities do not interfere with railroad operations.
- C. Work windows for this Contract shall be coordinated with the Agency's and the UPRR's Designated Representatives. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:
 - 1. Conditional Work Window: A Conditional Work Window is a period of time that railroad operations have priority over construction activities. When construction activities may occur on and adjacent to the railroad tracks within 7.62 meter of the nearest track, a UPRR flag person will be required. At the direction of the UPRR flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 7.62 meter, or as directed by the UPRR Designated Representative, from the tracks). Conditional Work Windows are available for the Project.
 - 2. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window the railroad tracks and/or signals must be completely operational for train operations and all UPRR, Public Utilities Commission (PUC) and Federal Railroad Administration (FRA) requirements, codes and regulations for operational tracks must be complied with. In the situation where the operating tracks and/or signals have been affected, the UPRR will perform inspections of the work prior to placing that track back into service. UPRR flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for UPRR review.

13-3.09 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

- A. Prior to beginning any work on or over the property of, or affecting the facilities of, the UPRR, the Contractor shall execute the Contractor's Endorsement that is a part of the Right of Entry Agreement to be signed by UPRR and Agency. There is no fee for processing of the agreement. Contractor shall submit a copy of the executed agreement and the insurance policies, binders, certificates and endorsements set forth therein to the Agency prior to commencing work on UPRR property. The right of entry agreement shall specify working time frames, flagging and inspection requirements, and any other items specified by the UPRR.
- B. The Contractor shall give the advance notice to the UPRR as required in the Right of Entry Agreement before commencing work in connection with construction upon or over UPRR's Right-of-Way and shall observe UPRR's rules and regulations with respect thereto.

- C. All work upon UPRR's Right-of-Way shall be done at such times and in such manner so as not to interfere with or endanger the operations of UPRR. Whenever work may affect the operations or safety of trains, the method of doing such work shall first be submitted to UPRR's Designated Representative for approval, but such approval shall not relieve the Contractor from liability. Any work to be performed by the Contractor, which requires flagging and/or inspection service, shall be deferred until the flagging protection required by UPRR is available at the job site. See Section 13-3.24 for railroad flagging requirements.
- D. The Contractor shall make requests in writing for both Absolute and Conditional Work Windows, at least two weeks in advance of any work. The written request must include:
 - 1. Exactly what the work entails.
 - 2. The days and hours that work will be performed.
 - 3. The exact location of work, and proximity to the tracks.
 - 4. The type of window requested and the amount of time requested.
 - 5. The designated contact person.

The Contractor shall provide a written confirmation notice to the UPRR at least 48 hours before commencing work in connection with approved work windows when work will be performed within 7.62 meter of any track center line. All work shall be performed in accordance with previously approved work plans.

- E. Should a condition arising from, or in connection with the work, require that immediate and unusual provisions be made to protect operations and property of UPRR, the Contractor shall make such provisions. If in the judgment of UPRR's Designated Representative such provisions are insufficient, the UPRR's Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the UPRR. UPRR or the Agency shall have the right to order Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the UPRR's Designated Representative, the Contractor's operations could endanger UPRR's operations. In the event such an order is given, Contractor shall immediately notify the Agency of the order.

13-3.10 INSURANCE

Contractor shall not begin work upon or over UPRR's Right-of-Way until UPRR has been furnished the insurance policies, binders, certificates and endorsements required by the Right-of-Entry Agreement and UPRR's Designated Representative has advised the Agency that such insurance is in accordance with the Agreement. The required insurance shall be kept in full force and effect during the performance of work and thereafter until Contractor removes all tools, equipment, and material from UPRR's property and cleans the premises in a manner reasonably satisfactory to UPRR.

13-3.11 RAILROAD SAFETY ORIENTATION

All personnel employed by the Contractor and all subcontractors must complete the UPRR course "Orientation for Contractor's Safety", and be registered prior to working on UPRR property. This orientation is available at www.contractororientation.com. This course is required to be completed annually.

13-3.12 COOPERATION

UPRR will cooperate with Contractor so that work may be conducted in an efficient manner, and will cooperate with Contractor in enabling use of UPRR's right-of-way in performing the work.

13-3.13 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES

The Contractor shall abide by the following minimum temporary clearances during the course of construction:

- A. 3.66 m (12' - 0") horizontal from centerline of track
- B. 6.40 m (21' - 0") vertically above top of rail.

For construction clearance less than listed above, local Operating Unit review and approval is required.

13-3.14 APPROVAL OF REDUCED CLEARANCES

- A. The minimum track clearances to be maintained by the Contractor during construction are specified in Section 13-3.13 herein.
- B. Any proposed infringement on the specified minimum clearances due to the Contractor's operations shall be submitted to UPRR's Designated Representative through the Agency at least 30 days in advance of the work and shall not be undertaken until approved in writing by the UPRR's Designated Representative.
- C. No work shall commence until the Contractor receives in writing assurance from UPRR's Designated Representative that arrangements have been made for flagging service, as may be necessary and receives permission from UPRR's Designated Representative to proceed with the work.

13-3.15 CONSTRUCTION AND AS-BUILT SUBMITTALS

- A. Submittals are required for construction materials and procedures as outlined below. The submittals shall include all review comments from the Agency and the Engineer of Record. All design submittals shall be stamped and signed by a Professional Engineer registered in the State of California.
- B. The tables below provide UPRR's minimum submittal requirements for the construction items noted. Submittal requirements are in addition to those specified elsewhere in these bid documents. The minimum review times indicated below represent UPRR's requirements only. The Contractor shall allow additional time for the Agency's review time as stated elsewhere in these bid documents.
- C. Submittals shall be made by the Agency to the UPRR Manager of Industry and Public Projects unless otherwise directed by the Railroad. Items in Table 1 shall be submitted for both railroad overpass and underpass projects, as applicable. Items in Table 2 shall be submitted for railroad underpass projects only.

TABLE 1

ITEM	DESCRIPTION	SETS REQUIRED	UPRR's Minimum Review Time
1	Shoring design and details	4	4 weeks
2	Falsework design and details	4	4 weeks
3	Drainage design provisions	4	4 weeks
4	Erection diagrams and sequence	4	4 weeks
5	Demolition diagram and sequence	4	4 weeks

Prior to or during construction of railroad underpass structures, the UPRR requires the review of drawings, reports, test data and material data sheets to determine compliance with the specifications. Product information for items noted in Table 2 be submitted to UPRR's Designated Representative through the Agency for their own review and approval of the material. The signed submittal and the Agency's review comments will be reviewed by UPRR or their consultant. If a consultant performs the reviews, the consultant may reply directly to the Agency or its Designated Representative after consultation with UPRR. Review of the submittals will not be conducted until after review by the Agency or its Designated Representative. Review of the submittal items will require a minimum of four (4) weeks after receipt from the Agency.

TABLE 2

ITEM	DESCRIPTION	SETS REQUIRED	NOTES
1	Shop drawings	4	Steel and Concrete members
2	Bearings	4	For entire structures
3	Concrete Mix Designs	4	For entire structures
4	Rebar & Strand certifications	4	For superstructure only
5	28 day concrete strength	4	For superstructure only
6	Waterproofing material certifications and installation procedure	4	Waterproofing & protective boards
7	Structural steel certifications	4	All fracture critical members & other members requiring improved notch toughness
8	Fabrication and Test reports	4	All fracture critical members & other members requiring improved notch toughness
9	Welding Procedures and Welder Certification	4	AWS requirements
10	Foundation Construction Reports	4	Pile driving, drilled shaft construction, bearing pressure test reports for spread footings
11	Compaction testing reports for backfill at abutments	4	Must meet 95% maximum dry density, Modified Proctor ASTM D1557

D. As-Built Records shall be submitted to the UPRR within 60 days of completion of the structures. These records shall consist of the following items:

1. Overpass Projects
 - a. Electronic files of all structure design drawings with as-constructed modifications shown, in Microstation J or Acrobat .PDF format.
 - b. Hard copies of all structure design drawings with as-constructed modifications shown.
2. Underpass Projects
 - a. Electronic files of all structure design drawings with as-constructed modifications shown, in Microstation J or Acrobat .PDF format.
 - b. Hard copies of all structure design drawings with as-constructed modifications shown.
 - c. Final approved copies of shop drawings for concrete and steel members.
 - d. Foundation Construction Reports
 - e. Compaction testing reports for backfill at abutments

13-3.16 APPROVAL OF DETAILS

The details of the construction affecting the UPRR tracks and property not already included in the Contract Plans shall be submitted to UPRR’s Designated Representative through the Agency for UPRR’s review and written approval before such work is undertaken. Review and approval of these submittals will require a minimum of four (4) weeks in addition to the Agency’s review time as stated elsewhere in these bid documents.

13-3.17 MAINTENANCE OF RAILROAD FACILITIES

- A. The Contractor shall be required to maintain all ditches and drainage structures free of silt or other obstructions which may result from Contractor’s operations; to promptly repair eroded areas within UPRR’s right of way and to repair any other damage to the property of UPRR, or its tenants.
- B. All such maintenance and repair of damages due to the Contractor’s operations shall be done at the Contractor’s expense.
- C. The Contractor must submit a proposed method of erosion control and have the method reviewed by the UPRR prior to beginning any grading on the Project Site. Erosion control methods must comply with all applicable local, state and federal regulations.

13-3.18 SITE INSPECTIONS BY UPRR's DESIGNATED REPRESENTATIVE

- A. In addition to the office reviews of construction submittals, site inspections may be performed by UPRR's Designated Representative at significant points during construction, including but not limited to the following:
 - 1. Preconstruction meetings.
 - 2. Pile driving, drilling of caissons or drilled shafts.
 - 3. Reinforcement and concrete placement for railroad bridge substructure and/or superstructure.
 - 4. Erection of precast concrete or steel bridge superstructure.
 - 5. Placement of waterproofing (prior to placing ballast on bridge deck).
 - 6. Completion of the bridge structure.
- B. Site inspection is not limited to the milestone events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by UPRR.
- C. A detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to be performed, shall be provided to the Agency for submittal to UPRR's Designated Representative for review prior to commencement of work. This schedule shall also include the anticipated dates when the above listed events will occur. This schedule shall be updated for the above listed events as necessary, but at least monthly so that site visits may be scheduled.

13-3.19 UPRR REPRESENTATIVES

- A. UPRR representatives, conductors, flag person or watch person will be provided by UPRR at expense of the Agency or Contractor (as stated elsewhere in these bid documents) to protect UPRR facilities, property and movements of its trains or engines. In general, UPRR will furnish such personnel or other protective services as follows:
 - 1. When any part of any equipment is standing or being operated within 7.62 meter, measured horizontally, from centerline of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.
 - 2. For any excavation below elevation of track subgrade if, in the opinion of UPRR's Designated Representative, track or other UPRR facilities may be subject to settlement or movement.
 - 3. During any clearing, grubbing, excavation or grading in proximity to UPRR facilities, which, in the opinion of UPRR's Designated Representative, may endanger UPRR facilities or operations.
 - 4. During any contractor's operations when, in the opinion of UPRR's Designated Representative, UPRR facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.
 - 5. The Contractor shall arrange with the UPRR Designated Representative to provide the adequate number of flag persons to accomplish the work.

13-3.20 WALKWAYS REQUIRED

Along the outer side of each exterior track of multiple operated track, and on each side of single operated track, an unobstructed continuous space suitable for trainman's use in walking along trains, extending to a line not less than 3.6 meter from centerline of track, shall be maintained. Any temporary impediments to walkways and track drainage encroachments or obstructions allowed during work hours while UPRR's flagman service is provided shall be removed before the close of each work day. Walkways with railings shall be constructed by Contractor over open excavation areas when in close proximity of track, and railings shall not be closer than 2.4 m-152.4 mm horizontally from center line of tangent track or 2.74 m – 152.4 mm horizontally from centerline of curved track.

13-3.21 COMMUNICATIONS AND SIGNAL LINES

If required, UPRR will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by UPRR's forces in connection with its operation at expense of the Agency. This work by UPRR will be done by its own forces and it is not a part of the Work under this Contract.

13-3.22 TRAFFIC CONTROL

Contractor's operations that control traffic across or around UPRR facilities shall be coordinated with and approved by the UPRR's Designated Representative.

13-3.23 CONSTRUCTION EXCAVATIONS

- A. The Contractor shall be required to take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of OSHA, AREMA and UPRR "Guidelines for Temporary Shoring".
- B. The Contractor shall contact UPRR's "Call Before Your Dig" at least 48 hours prior to commencing work at 1-800-336-9193 during normal business hours (6:30 a.m. to 8:00 p.m. central time, Monday through Friday, except holidays - also a 24 hour, 7 day a week number for emergency calls) to determine location of fiber optics. If a telecommunications system is buried anywhere on or near UPRR property, the Contractor will co-ordinate with UPRR and the Telecommunication Company(ies) to arrange for relocation or other protection of the system prior to beginning any work on or near UPRR property.

13-3.24 RAILROAD FLAGGING

Performance of any work by the Contractor in which person(s) or equipment will be within 7.62 meter of any track, or will be near enough to any track that any equipment extension (such as, but not limited to, a crane boom) will reach within 7.62 meter of any track, may require railroad flagging services or other protective measures. Contractor shall give the advance notice to the UPRR as required in the "Contractor's Right of Entry Agreement" before commencing any such work, so that the UPRR may determine the need for flagging or other protective measures to ensure the safety of the railroad's operations. Contractor shall comply with all other requirements regarding flagging services covered by the "Contractor's Right of Entry Agreement". Any costs associated with failure to abide by these requirements will be borne by the Contractor.

13-3.25 CLEANING OF RIGHT-OF-WAY

Contractor shall, upon completion of the work to be performed by Contractor upon the premises, over or beneath the tracks of UPRR, promptly remove from the Right-of-Way of UPRR all of Contractor's tools, implements, and other materials whether brought upon the Right-of-Way by Contractor or any subcontractors, employee or agent of Contractor or of any subcontractor, and leave the Right-of-Way in a clean and presentable condition to satisfaction of UPRR.

BID ITEM LIST
04-228594

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
21	074035	TEMPORARY CHECK DAM	M	500		
22	074037	MOVE-IN/MOVE-OUT (TEMPORARY EROSION CONTROL)	EA	10		
23	074038	TEMPORARY DRAINAGE INLET PROTECTION	EA	130		
24	017446	TEMPORARY CREEK DIVERSION SYSTEM	EA	5		
25	074040	TEMPORARY HYDRAULIC MULCH (BONDED FIBER MATRIX)	M2	47 400		
26	074041	STREET SWEEPING	LS	LUMP SUM	LUMP SUM	
27	017447	TEMPORARY BULKHEAD (STORAGE BOX)	EA	1		
28	017448	PARTIAL INLET WITH TEMPORARY COVER	EA	1		
29	017449	GEOSYNTHETIC CLAY LINER	M2	2600		
30	017450	TEMPORARY BULKHEAD (BOX CULVERT)	EA	3		
31	120090	CONSTRUCTION AREA SIGNS	LS	LUMP SUM	LUMP SUM	
32	120100	TRAFFIC CONTROL SYSTEM	LS	LUMP SUM	LUMP SUM	
33	120120	TYPE III BARRICADE	EA	54		
34	120149	TEMPORARY PAVEMENT MARKING (PAINT)	M2	630		
35	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	M	48 500		
36	120165	CHANNELIZER (SURFACE MOUNTED)	EA	1020		
37	120300	TEMPORARY PAVEMENT MARKER	EA	4050		
38	121161	TEMPORARY TERMINAL SECTION (TYPE K)	EA	16		
39	128650	PORTABLE CHANGEABLE MESSAGE SIGN	EA	10		
40	129000	TEMPORARY RAILING (TYPE K)	M	28 900		

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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
61	150722	REMOVE PAVEMENT MARKER	EA	28 410		
62	150742	REMOVE ROADSIDE SIGN	EA	110		
63	017460	REMOVE EXTINGUISHABLE MESSAGE SIGN SYSTEM	LS	LUMP SUM	LUMP SUM	
64	017461	REMOVE SIGN TOWER STRUCTURE	LS	LUMP SUM	LUMP SUM	
65	150801	REMOVE OVERSIDE DRAIN	EA	13		
66	150805	REMOVE CULVERT	EA	91		
67	150820	REMOVE INLET	EA	74		
68	017462	REMOVE UNDERDRAIN SYSTEM	M	600		
69	017463	REMOVE EDGE DRAIN SYSTEM	M	3600		
70	150826	REMOVE MANHOLE	EA	5		
71	150830	REMOVE RETAINING WALL (PORTION)	LS	LUMP SUM	LUMP SUM	
72	017464	REMOVE RETAINING WALL (LOCATION A)	LS	LUMP SUM	LUMP SUM	
73	017465	REMOVE RETAINING WALL (LOCATION B)	LS	LUMP SUM	LUMP SUM	
74	017466	REMOVE CONCRETE MASONRY BLOCK WALL	LS	LUMP SUM	LUMP SUM	
75	017467	REMOVE RAILROAD TRACK	M	990		
76	017468	REMOVE RAILROAD CROSSING GATES	LS	LUMP SUM	LUMP SUM	
77	150860	REMOVE BASE AND SURFACING	M3	23 900		
78	151270	SALVAGE METAL BRIDGE RAILING	M	139		
79	152351	RELOCATE HYDRANT	EA	6		
80	017469	REMOVE HYDRANT	EA	2		

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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
81	017470	REMOVE BOLLARD	EA	4		
82	152386	RELOCATE ROADSIDE SIGN-ONE POST	EA	33		
83	152387	RELOCATE ROADSIDE SIGN-TWO POST	EA	12		
84	152394	RELOCATE SIGN STRUCTURE	EA	2		
85	017471	RELOCATE CHANGEABLE MESSAGE SIGN STRUCTURE	EA	2		
86	017472	ADJUST DRAINAGE STRUCTURE	M	6		
87	152438	ADJUST FRAME AND COVER TO GRADE	EA	11		
88	152439	ADJUST FRAME AND GRATE TO GRADE	EA	1		
89	152469	ADJUST UTILITY COVER TO GRADE	EA	2		
90	017473	MODIFY SEWER MANHOLE	EA	2		
91	153103	COLD PLANE ASPHALT CONCRETE PAVEMENT	M2	22 800		
92	153210	REMOVE CONCRETE	M3	1830		
93	153229	REMOVE CONCRETE BARRIER (TYPE K)	M	1080		
94	153230	REMOVE CONCRETE BARRIER (TYPE 50)	M	1280		
95	017474	REMOVE ROCK SLOPE PROTECTION	M3	52		
96	155003	CAP INLET	EA	1		
97	017475	CAP DRAINAGE STRUCTURE	EA	4		
98	017476	REMOVE STEEL RAILING	M	64		
99	157551	BRIDGE REMOVAL, LOCATION A	LS	LUMP SUM	LUMP SUM	
100	157552	BRIDGE REMOVAL, LOCATION B	LS	LUMP SUM	LUMP SUM	

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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
101	157553	BRIDGE REMOVAL, LOCATION C	LS	LUMP SUM	LUMP SUM	
102	157554	BRIDGE REMOVAL, LOCATION D	LS	LUMP SUM	LUMP SUM	
103	160101	CLEARING AND GRUBBING	LS	LUMP SUM	LUMP SUM	
104	170101	DEVELOP WATER SUPPLY	LS	LUMP SUM	LUMP SUM	
105	190101	ROADWAY EXCAVATION	M3	161 000		
106	190110	LEAD COMPLIANCE PLAN	LS	LUMP SUM	LUMP SUM	
107 (F)	192003	STRUCTURE EXCAVATION (BRIDGE)	M3	9860		
108 (F)	192037	STRUCTURE EXCAVATION (RETAINING WALL)	M3	13 259		
109 (F)	193003	STRUCTURE BACKFILL (BRIDGE)	M3	6070		
110 (F)	193013	STRUCTURE BACKFILL (RETAINING WALL)	M3	9777		
111 (F)	193030	PERVIOUS BACKFILL MATERIAL	M3	232		
112 (F)	193031	PERVIOUS BACKFILL MATERIAL (RETAINING WALL)	M3	405		
113	193114	SAND BACKFILL	M3	59		
114	017477	SLURRY CEMENT BACKFILL	M3	121		
115	194001	DITCH EXCAVATION	M3	400		
116 (F)	197021	EARTH RETAINING STRUCTURE, LOCATION A	M2	3500		
117 (F)	197022	EARTH RETAINING STRUCTURE, LOCATION B	M2	2450		
118 (F)	197023	EARTH RETAINING STRUCTURE, LOCATION C	M2	2955		
119	198001	IMPORTED BORROW	M3	15 000		
120	200001	HIGHWAY PLANTING	LS	LUMP SUM	LUMP SUM	

BID ITEM LIST
04-228594

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
141	250401	CLASS 4 AGGREGATE SUBBASE	M3	13 420		
142	260301	CLASS 3 AGGREGATE BASE	M3	19 650		
143	390131	HOT MIX ASPHALT	TONN	91 000		
144	017484	HOT MIX ASPHALT (BASE LEVELING)	TONN	840		
145	394060	DATA CORE	LS	LUMP SUM	LUMP SUM	
146	394073	PLACE HOT MIX ASPHALT DIKE (TYPE A)	M	30		
147	394074	PLACE HOT MIX ASPHALT DIKE (TYPE C)	M	94		
148	394076	PLACE HOT MIX ASPHALT DIKE (TYPE E)	M	1980		
149	394077	PLACE HOT MIX ASPHALT DIKE (TYPE F)	M	160		
150	394090	PLACE HOT MIX ASPHALT (MISCELLANEOUS AREA)	M2	490		
151	397005	TACK COAT	TONN	140		
152	401000	CONCRETE PAVEMENT	M3	31 810		
153	404092	SEAL PAVEMENT JOINT	M	58 000		
154	490656	450 MM CAST-IN-DRILLED-HOLE CONCRETE PILING	M	317		
155	490658	750 MM CAST-IN-DRILLED-HOLE CONCRETE PILING	M	2578		
156	042253	1.6 M CAST-IN-DRILLED HOLE CONCRETE PILING	M	7		
157	490675	900 MM CAST-IN-DRILLED-HOLE CONCRETE PILING	M	211		
158	042254	FURNISH PILING (CLASS 900 MODIFIED)	M	1162		
159	042255	DRIVE PILE (CLASS 900 MODIFIED)	EA	64		
160	042256	FURNISH PILING (CLASS 625) (ALTERNATIVE "X")	M	8109		

BID ITEM LIST

04-228594

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
161	042257	DRIVE PILE (CLASS 625)(ALTERNATIVE "X")	EA	603		
162	042258	FURNISH PILING (CLASS 400) (ALTERNATIVE "X")	M	3146		
163	042259	DRIVE PILE (CLASS 400)(ALTERNATIVE "X")	EA	287		
164	498027	400 MM CAST-IN-DRILLED-HOLE CONCRETE PILING (SOUND WALL)	M	3030		
165	017485	760 MM CAST-IN-DRILLED-HOLE CONCRETE PILING (SOUND WALL)	M	99		
166	042260	FURNISH CAST-IN-STEEL-SHELL CONCRETE PILING (360 MM)	M	1088		
167	500001	PRESTRESSING CAST-IN-PLACE CONCRETE	LS	LUMP SUM	LUMP SUM	
168 (F)	510051	STRUCTURAL CONCRETE, BRIDGE FOOTING	M3	2428		
169 (F)	510053	STRUCTURAL CONCRETE, BRIDGE	M3	6756		
170 (F)	042261	STRUCTURAL CONCRETE, SIGN POST SUPPORT	M3	39		
171 (F)	510060	STRUCTURAL CONCRETE, RETAINING WALL	M3	3044		
172	510061	STRUCTURAL CONCRETE, SOUND WALL	M3	304		
173 (F)	510072	STRUCTURAL CONCRETE, BARRIER SLAB	M3	2910		
174 (F)	510080	STRUCTURAL CONCRETE, APPROACH SLAB	M3	56		
175 (F)	510086	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	M3	264		
176	510129	CLASS 2 CONCRETE (BOX CULVERT)	M3	930		
177	510135	CLASS 2 CONCRETE (HEADWALL)	M3	290		
178 (F)	510502	MINOR CONCRETE (MINOR STRUCTURE)	M3	635		
179	510526	MINOR CONCRETE (BACKFILL)	M3	140		
180 (F)	042262	ORNAMENTAL LOGO	EA	6		

BID ITEM LIST
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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
181 (F)	511064	FRACTURED RIB TEXTURE	M2	2303		
182 (F)	518002	SOUND WALL (MASONRY BLOCK)	M2	3144		
183	017486	CONCRETE MASONRY BLOCK WALL	M2	9		
184	042263	JOINT SEAL (MR 25 MM)	M	156		
185	519125	JOINT SEAL ASSEMBLY (MR 70 MM)	M	61		
186	519144	JOINT SEAL (MR 50 MM)	M	64		
187 (F)	520102	BAR REINFORCING STEEL (BRIDGE)	KG	1 522 786		
188 (F)	520103	BAR REINFORCING STEEL (RETAINING WALL)	KG	185 572		
189 (F)	042264	BAR REINFORCING STEEL (SIGN POST SUPPORT)	KG	3400		
190	520105	BAR REINFORCING STEEL (SOUND WALL)	KG	25 200		
191 (F)	042265	BAR REINFORCING STEEL (BARRIER SLAB)	KG	173 500		
192	520107	BAR REINFORCING STEEL (BOX CULVERT)	KG	116 000		
193	017487	BAR REINFORCING STEEL (HEADWALL)	KG	23 400		
194		BLANK				
195		BLANK				
196	560218	FURNISH SIGN STRUCTURE (TRUSS)	KG	74 450		
197	560219	INSTALL SIGN STRUCTURE (TRUSS)	KG	74 450		
198	560232	FURNISH FORMED PANEL SIGN (ROADSIDE)	M2	1		
199	560233	FURNISH FORMED PANEL SIGN (OVERHEAD)	M2	175		
200	560235	FURNISH LAMINATED PANEL SIGN (25.4 MM-TYPE B)	M2	41		

BID ITEM LIST**04-228594**

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
201	560238	FURNISH SINGLE SHEET ALUMINUM SIGN (1.6 MM-UNFRAMED)	M2	37		
202	560239	FURNISH SINGLE SHEET ALUMINUM SIGN (2.0 MM-UNFRAMED)	M2	37		
203	560241	FURNISH SINGLE SHEET ALUMINUM SIGN (1.6 MM-FRAMED)	M2	11		
204	560242	FURNISH SINGLE SHEET ALUMINUM SIGN (2.0 MM-FRAMED)	M2	2		
205	561015	1524 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	59		
206	562004	METAL (RAIL MOUNTED SIGN)	KG	3300		
207	566011	ROADSIDE SIGN - ONE POST	EA	61		
208	566012	ROADSIDE SIGN - TWO POST	EA	15		
209	568001	INSTALL SIGN (STRAP AND SADDLE BRACKET METHOD)	EA	1		
210	568007	INSTALL SIGN OVERLAY	M2	3		
211	568016	INSTALL SIGN PANEL ON EXISTING FRAME	M2	16		
212	620904	300 MM ALTERNATIVE PIPE CULVERT	M	172		
213	620910	450 MM ALTERNATIVE PIPE CULVERT (TYPE A)	M	3420		
214	620911	450 MM ALTERNATIVE PIPE CULVERT (TYPE B)	M	330		
215	620914	600 MM ALTERNATIVE PIPE CULVERT (TYPE A)	M	430		
216	620915	600 MM ALTERNATIVE PIPE CULVERT (TYPE B)	M	210		
217	620919	750 MM ALTERNATIVE PIPE CULVERT	M	115		
218	620924	900 MM ALTERNATIVE PIPE CULVERT	M	27		
219	620930	1050 MM ALTERNATIVE PIPE CULVERT	M	140		
220	620933	1200 MM ALTERNATIVE PIPE CULVERT	M	75		

BID ITEM LIST
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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
221	650068	375 MM REINFORCED CONCRETE PIPE	M	312		
222	650075	600 MM REINFORCED CONCRETE PIPE	M	3		
223	650084	1200 MM REINFORCED CONCRETE PIPE	M	3		
224	650089	1500 MM REINFORCED CONCRETE PIPE	M	280		
225	650092	1800 MM REINFORCED CONCRETE PIPE	M	39		
226	017488	2400 MM REINFORCED CONCRETE PIPE CASING (CLASS IV, RUBBER GASKET JOINT)	M	76		
227	017489	JACKED 450 MM REINFORCED CONCRETE PIPE	M	110		
228	017490	JACKED 600 MM REINFORCED CONCRETE PIPE	M	120		
229	664009	300 MM CORRUGATED STEEL PIPE (1.63 MM THICK)	M	10		
230	664015	450 MM CORRUGATED STEEL PIPE (2.01 MM THICK)	M	10		
231	664020	600 MM CORRUGATED STEEL PIPE (2.01 MM THICK)	M	7		
232	664033	900 MM CORRUGATED STEEL PIPE (2.01 MM THICK)	M	13		
233	664043	1200 MM CORRUGATED STEEL PIPE (2.01 MM THICK)	M	6		
234	621110	450 MM ALTERNATIVE SLOTTED PIPE	M	120		
235	042266	11.05M X 5.33M CORRUGATED STEEL PLATE ARCH (9.65MM THICK)	M	20		
236	680931	150 MM PERFORATED PLASTIC PIPE UNDERDRAIN	M	50		
237	680933	200 MM PERFORATED PLASTIC PIPE UNDERDRAIN	M	3460		
238		BLANK				
239	690159	300 MM CORRUGATED STEEL PIPE DOWNDRAIN (1.63 MM THICK)	M	24		
240	692301	ANCHOR ASSEMBLY	EA	9		

BID ITEM LIST**04-228594**

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
261	721009	ROCK SLOPE PROTECTION (FACING, METHOD B)	M3	150		
262	721011	ROCK SLOPE PROTECTION (BACKING NO. 2, METHOD B)	M3	51		
263 (F)	721810	SLOPE PAVING (CONCRETE)	M3	33		
264	727901	MINOR CONCRETE (DITCH LINING)	M3	52		
265	719569	MINOR CONCRETE (PIPE ENCASEMENT)	M3	9		
266	729010	ROCK SLOPE PROTECTION FABRIC	M2	880		
267	731502	MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)	M3	760		
268	750001	MISCELLANEOUS IRON AND STEEL	KG	38 800		
269 (F)	750501	MISCELLANEOUS METAL (BRIDGE)	KG	4800		
270 (F)	750502	MISCELLANEOUS METAL (RETAINING WALL)	KG	720		
271 (F)	750505	BRIDGE DECK DRAINAGE SYSTEM	KG	1050		
272	017500	UPI RECLAIMED WATER LINE PROTECTION	LS	LUMP SUM	LUMP SUM	
273	017501	CITY OF PITTSBURG 450 MM DUCTILE IRON PIPE WATERLINE	LS	LUMP SUM	LUMP SUM	
274	017502	CITY OF PITTSBURG 450 MM WATERLINE TEMPORARY BYPASS	LS	LUMP SUM	LUMP SUM	
275	017503	PRAXAIR 350 MM RECLAIMED WATER LINE RELOCATION	LS	LUMP SUM	LUMP SUM	
276	017504	USBR WATER LATERAL 14 MODIFICATION	LS	LUMP SUM	LUMP SUM	
277	017505	LOVERIDGE RETAIL CENTER WATER EQUIPMENT RELOCATION (LOCATION 1)	LS	LUMP SUM	LUMP SUM	
278	017506	LOVERIDGE RETAIL CENTER WATER EQUIPMENT RELOCATION (LOCATION 2)	LS	LUMP SUM	LUMP SUM	
279	017507	LOVERIDGE RETAIL CENTER WATER EQUIPMENT RELOCATION (LOCATION 3)	LS	LUMP SUM	LUMP SUM	
280 (F)	800382	CHAIN LINK FENCE (TYPE CL-0.9, VINYL-CLAD)	M	2790		

BID ITEM LIST**04-228594**

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
281	800391	CHAIN LINK FENCE (TYPE CL-1.8)	M	2410		
282	800701	WOOD FENCE	M	15		
283	802595	3.0 M CHAIN LINK GATE (TYPE CL-1.8)	EA	7		
284	017508	TUBULAR ALUMINUM FENCE RAILING	M	80		
285	017509	STEEL FENCE	M	2		
286	017510	1.2 M STEEL GATE	EA	2		
287	820107	DELINEATOR (CLASS 1)	EA	40		
288	017511	PAINT POSTMILE MARKINGS	EA	38		
289	820130	OBJECT MARKER	EA	8		
290	832003	METAL BEAM GUARD RAILING (WOOD POST)	M	260		
291 (F)	042267	CHAIN LINK RAILING (TYPE 7, BLACK VINYL-CLAD)	M	274		
292 (F)	833080	CONCRETE BARRIER (TYPE K)	M	61		
293 (F)	833142	CONCRETE BARRIER (TYPE 26 MODIFIED)	M	274		
294 (F)	017512	CONCRETE BARRIER (TYPE-26B MODIFIED)	M	30		
295	839521	CABLE RAILING	M	60		
296	839541	TRANSITION RAILING (TYPE WB)	EA	9		
297	839581	END ANCHOR ASSEMBLY (TYPE SFT)	EA	3		
298	839584	ALTERNATIVE IN-LINE TERMINAL SYSTEM	EA	3		
299	839585	ALTERNATIVE FLARED TERMINAL SYSTEM	EA	7		
300	839604	CRASH CUSHION (REACT 9CBB)	EA	1		

BID ITEM LIST**04-228594**

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
301 (F)	839704	CONCRETE BARRIER (TYPE 60D)	M	1217		
302 (F)	017513	CONCRETE BARRIER (TYPE 60E MODIFIED)	M	168		
303 (F)	839717	CONCRETE BARRIER (TYPE 732 MODIFIED)	M	2588		
304 (F)	839720	CONCRETE BARRIER (TYPE 732)	M	105		
305 (F)	839721	CONCRETE BARRIER (TYPE 732A)	M	26		
306 (F)	042268	CONCRETE BARRIER (TYPE 732A MODIFIED)	M	310		
307 (F)	839723	CONCRETE BARRIER (TYPE 732B)	M	194		
308 (F)	042269	CONCRETE BARRIER (TYPE 732B MODIFIED)	M	18		
309 (F)	017514	CONCRETE BARRIER (TYPE 736B MODIFIED)	M	217		
310 (F)	017515	CONCRETE BARRIER (TYPE 736SV MODIFIED)	M	650		
311	017516	EBART CONCRETE BARRIER	M	5960		
312	017517	EBART CONCRETE BARRIER (MODIFIED)	M	22		
313	840515	THERMOPLASTIC PAVEMENT MARKING	M2	670		
314	840561	100 MM THERMOPLASTIC TRAFFIC STRIPE	M	22 000		
315	840562	150 MM THERMOPLASTIC TRAFFIC STRIPE	M	490		
316	840563	200 MM THERMOPLASTIC TRAFFIC STRIPE	M	4620		
317	840564	200 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 3.66 M - 0.92 M)	M	3620		
318	017518	150 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 3.66 M - 0.91 M)	M	150		
319	017519	PAINT TRAFFIC STRIPE (2-COAT 300 MM WHITE CHEVRON STRIPE)	M	22		
320	017520	PAINT TRAFFIC STRIPE (2-COAT 300 MM DIAGONAL STRIPE)	M	140		

BID ITEM LIST
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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
321	850101	PAVEMENT MARKER (NON-REFLECTIVE)	EA	8330		
322	850111	PAVEMENT MARKER (RETROREFLECTIVE)	EA	4500		
323	860090	MAINTAINING EXISTING TRAFFIC MANAGEMENT SYSTEM ELEMENTS DURING CONSTRUCTION	LS	LUMP SUM	LUMP SUM	
324	860150	SIGNAL AND LIGHTING (TEMPORARY)	LS	LUMP SUM	LUMP SUM	
325	860251	SIGNAL AND LIGHTING (LOCATION 1)	LS	LUMP SUM	LUMP SUM	
326	860252	SIGNAL AND LIGHTING (LOCATION 2)	LS	LUMP SUM	LUMP SUM	
327	860253	SIGNAL AND LIGHTING (LOCATION 3)	LS	LUMP SUM	LUMP SUM	
328	860254	SIGNAL AND LIGHTING (LOCATION 4)	LS	LUMP SUM	LUMP SUM	
329	860400	LIGHTING (TEMPORARY)	LS	LUMP SUM	LUMP SUM	
330	860402	LIGHTING (CITY STREET)	LS	LUMP SUM	LUMP SUM	
331	860460	LIGHTING AND SIGN ILLUMINATION	LS	LUMP SUM	LUMP SUM	
332	017521	INTERCONNECTION CONDUIT	LS	LUMP SUM	LUMP SUM	
333	017522	EMERGENCY VEHICLE DETECTION SYSTEM	LS	LUMP SUM	LUMP SUM	
334	860791	COMMUNICATION CONDUIT	LS	LUMP SUM	LUMP SUM	
335	860797	ELECTRIC SERVICE (IRRIGATION)	LS	LUMP SUM	LUMP SUM	
336	017523	LONG LEAD-IN CABLE LOOP DETECTOR (LLLD) SENSOR UNIT	EA	10		
337	017524	TRAFFIC OPERATIONS SYSTEM	LS	LUMP SUM	LUMP SUM	
338	017525	INTEGRATED CAMERA UNIT	EA	6		
339	017526	CAMERA CONTROL UNIT	EA	6		
340	017527	VIDEO ENCODER UNIT	EA	6		

BID ITEM LIST**04-228594**

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
341	017528	POWER STRIP	EA	6		
342	017529	EQUIPMENT SHELF WITH BRACKETS	EA	6		
343	017530	HYBRID CAMERA CABLE (HCC)	EA	6		
344	017531	EXTINGUISHABLE MESSAGE SIGN PANEL (LED)	EA	2		
345	017532	GENERAL PACKET RADIO SYSTEM (GPRS) WIRELESS MODEM ASSEMBLY	EA	6		
346		BLANK				
347	650574	450 MM REINFORCED CONCRETE PIPE	M	170		
348	682045	CLASS 3 PERMEABLE MATERIAL	M3	540		
349	018109	CONDUIT SYSTEM (E BART)	LS	LUMP SUM		
350	999990	MOBILIZATION	LS	LUMPSUM		

TOTAL BID: _____