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**** WARNING ** WARNING ** WARNING ** WARNING ****
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April 24, 2007

04-Ala-80-1.6/2.7
04-0120L4

Addendum No. 3

Dear Contractor:

This addendum is being issued to the contract for construction on State highway in ALAMEDA COUNTY IN OAKLAND FROM 1.6 KM WEST OF THE TOLL PLAZA TO 0.3 KM WEST OF THE TOLL PLAZA.

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 June 5, 2007.

This addendum is being issued to revise the Project Plans, the Notice to Contractors and Special Provisions, the Proposal and Contract, and to provide the Information Handout, CD 9.

Project Plan Sheets 22, 51, 69, 74, 127, 161, 341, 342, 343, 344, 345, 346, 347, 596, 597, and 600 are revised. Half-sized copies of the revised sheets are attached for substitution for the like-numbered sheets.

Project Plan Sheet 129A is added. This plan sheet is to follow Project Plan Sheet 129. Half-sized copies of the added sheet is attached for addition to the project plans.

In the Special Provisions, Section 4, "BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES," the second, seventh and eighth paragraphs are revised as follows:

"The Contractor shall furnish the Engineer with a statement from the vendor that the order for the sign panels, and all electrical engineered and miscellaneous materials and equipments required for this contract has been received and accepted by the vendor; and the statement shall be furnished within 60 calendar days after the contract has been approved by the Attorney General, or the attorney appointed and authorized to represent the Department of Transportation. The statement shall give the dates that the sign panels and electrical materials will be shipped. If the Contractor has the necessary materials on hand, the Contractor will not be required to furnish the vendor's statement.

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The Contractor shall pay to the State of California the sum of \$86,600 per day, for each and every working day's delay in finishing the Designated portion of work after expiration of the number of working days bid.

The Contractor shall pay to the State of California the sum of \$23,900 per day, for each and every working day's delay in finishing all contract, in excess of the number of working days bid plus 160 working days."

In the Special Provisions, Section 5-1.14, "PROJECT INFORMATION," subsection "INFORMATION HANDOUT," the following item is added to the list of "Structure Materials Information":

"8. Working Drawings for the existing Temporary Access Facilities."

In the Special Provisions, Section 5-1.14, "PROJECT INFORMATION," subsection "INFORMATION AVAILABLE FOR INSPECTION," Item 19 in the first paragraph is revised as follows:

"19. Project Management Integral Vision (PMIV) Guaranteed Price Commitment."

In the Special Provisions, Section 5-1.27, "PAYMENTS," Item F in the second paragraph is revised as follows:

"F. Document Management System \$ 456,000"

In the Special Provisions, Section 5-1.40, "OWNER CONTROLLED INSURANCE PROGRAM (OCIP)," is revised as attached.

In the Special Provisions, Section 8-3.01, "WELDING," subsection "GENERAL," the following paragraph is added after the tenth paragraph:

"Unless otherwise shown on the plans, all CJP welds shall be considered as subject to calculated tension for the purposes of Section 6.7.1 of AWS D1.5."

In the Special Provisions, Section 10-1.01, "ORDER OF WORK," the second and eighteenth paragraphs are revised as follows:

"Attention is directed to "Beginning of Work, Time of Completion and Liquidated Damages," of these special provisions regarding the construction completion of the designated portion of work.

The first order of work shall be to place the order for sign panels, and all electrical engineered and miscellaneous materials and equipments required for this contract."

In the Special Provisions, Section 10-1.17, "DOCUMENT MANAGEMENT SYSTEM," the sixth paragraph is revised as follows:

"The price quoted by the vendor for the above listed components of the DMS is \$414,535.00, including sales tax."

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In the Special Provisions, Section 10-1.17, "DOCUMENT MANAGEMENT SYSTEM," subsection "DELIVERY, SETUP, AND MAINTENANCE," the first and second paragraphs are revised as follows:

"Upon approval of the proposed delivery, setup, and maintenance plan by the Engineer, the Contractor, through the vendor, shall furnish, install, set up, and maintain the computer system ready-for-use. The hardware and software shall be installed and ready for use on the first working day of the contract. Hardware and software maintenance, including licensing and other fees shall be maintained for the duration of the project until 30 days after the Contractor has received the proposed final estimate. Repairs shall be made within 48 hours of notification to the vendor. Replacement equipment shall be furnished and installed by the vendor, until repairs have been completed.

Computer hardware and software furnished shall remain the property of the vendor and shall not be removed until 30 days after the Contractor has received the proposed final estimate."

In the Special Provisions, Section 10-1.17, "DOCUMENT MANAGEMENT SYSTEM," subsection "SCHEDULES OF VALUE," the second paragraphs is revised as follows:

"The schedule of values shall include the vendor's cost break down and reflect the items, work, quantities and costs required to furnish, and maintain the DMS for the duration of the project until 30 days after the Contractor has received the proposed final estimate. The Contractor shall be responsible for the accuracy of the quantities and cost used in the schedule of values. Partial payments for the item of Document Management System will not be made until the schedule of values is approved by the Engineer."

In the Special Provisions, Section 10-1.18, "OBSTRUCTION," the following paragraph is added before the last paragraph:

"The existing State owned utility facilities crossing the electrical duct bank, as shown on the plans, will remain in service for the duration of the contract. The Contractor shall notify the Engineer at least 10 working days before excavation work for the duct bank begins."

In the Special Provisions, Section 10-1.18, "OBSTRUCTION," the last paragraph is revised as follows:

"Full compensation for protecting the existing 300-mm gas (PG&E), 3250-mm EBMUD sewer outfall, 4-100 mm fiber optic (SBC), 300-mm water (US Navy/SFWD), and the existing State owned utility facilities shall be considered as included in the contract prices paid for various items of work and no separate payment will be made therefor."

In the Special Provisions, Section 10-1.355, "TEMPORARY ACCESS FACILITIES," is added as attached.

In the Special Provisions, Section 10-1.375, "PHOTO SURVEY OF EXISTING FACILITIES," is added as attached.

In the Special Provisions, Section 10-1.38, "VIBRATION MONITORING," is revised as attached.

In the Special Provisions, Section 10-1.39, "SEWER VIDEO SURVEY," is revised as attached

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In the Special Provisions, Section 10-1.50, "PILING," subsection "MEASUREMENT AND PAYMENT," the following paragraph is added after the second paragraph:

"Full compensation for furnishing and installing shear rings at anchorage for 1.8 m cast-in-steel shell concrete piles as shown on the plans shall be considered as included in the contract unit price paid for drive 1.8 m cast-in-steel shell concrete pile and no additional compensation will be allowed therefor."

In the Special Provisions, Section 10-1.71, "SERVICE PLATFORM," the first and fourth paragraphs are revised as follows:

"Service platform shall consist of furnishing, fabricating, finishing and erecting service platforms and all work required to complete the service platform as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Structural steel for service platforms shall be hot-dip galvanized after fabrication in accordance with Section 75-1.05, "Galvanizing," of the Standard Specifications, unless otherwise noted. Unless otherwise specified, all permanently exposed galvanized metal surfaces shall be cleaned and painted in conformance with the provisions for painting galvanized surfaces in "Clean and Paint Structural Steel," of these special provisions."

In the Special Provisions, Section 10-1.71, "SERVICE PLATFORM," subsection "METAL DECKING," the fifth paragraph is deleted.

In the Special Provisions, Section 10-1.71, "SERVICE PLATFORM," subsection "METAL DECKING," the thirteenth paragraph is revised as follows:

"Metal decking shall be hot-dip galvanized after fabrication in conformance with the provisions in Section 75-1.05, "Galvanizing," of the Standard Specifications and shall not be painted."

In the Special Provisions, Section 10-1.92, "MISCELLANEOUS METAL (BRIDGE)," the third paragraph is revised as follows:

"Miscellaneous metal (bridge) shall consist of the miscellaneous bridge metal items listed in Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications, and the followings:

- A. Column pipe key, including protective covers for Piers E20R through E22R.
- B. Fiberglass grating attachment assemblies.
- C. Pull box frames and covers."

In the Special Provisions, Section 10-1.3.23, "MOLE SUBSTATION ELECTRICAL," subsection "UNIT SUBSTATION COMPONENTS," Item 11 under subsection "A. Unit Substation Medium Voltage Switchgear," is revised as follows:

"11. Lockout Relay (Device 86)

Lockout relay shall be 125 VDC solenoid operated, manual reset type. Contact development shall be as shown on the plan."

In the Special Provisions, Section 10-3.235, "ELECTRICAL SYSTEM ANALYSIS" is added as attached.

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In the Special Provisions, Section 12-1.15, "MEASUREMENT AND PAYMENT," the first paragraph is revised as follows:

"The contract lump sum price paid for building work (Mole Substation Architectural) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the building work, including all mechanical and electrical work, piling, structure excavation and structure backfill for the building, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer."

In the Special Provisions, Section 12-3.02, "PILING," subsection "GENERAL," the first paragraph is revised as follows:

"Piling shall conform to the provisions in Section 49, "Piling," of the Standard Specifications, and these special provisions. Section 49-6, "Measurement and Payment," of the Standard Specifications shall not apply."

In the Proposal and Contract, the Engineer's Estimate Items 185 to 188 are added and Items 184 is deleted as attached.

To Proposal and Contract book holders:

Replace page 12 of the Engineer's Estimate in the Proposal with the attached revised page 12 of the Engineer's Estimate. The revised Engineer's Estimate is to be used in the bid.

Attached is a copy of CD 9, "Structure Materials & District Materials" and "Index of the Additional Information Handout." CD 9 includes the working drawings for the existing temporary access facilities and to replace the OCIP Manual provided in the original Information Handout.

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 CONTRACTORS section of the Notice to Contractors 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 proposal.

Submit bids in the Proposal and Contract 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 office is sending this addendum by DHL overnight mail to Proposal and Contract book holders to ensure that each receives it. A copy of this addendum is available for the contractor's use on the Internet Site:

http://www.dot.ca.gov/hq/esc/oe/weekly_ads/addendum_page.html

If you are not a Proposal and Contract 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
Division of Engineering Services - Office Engineer

Attachments

5-1.40 OWNER CONTROLLED INSURANCE PROGRAM (OCIP)

The Contractor's obligations regarding the requirements for insurance shall conform to these special provisions.

GENERAL

Section 7-1.12B, "Insurance," of the Standard Specifications, and Section 3-1.025, "Insurance Policies," of the Amendments to the July 1999 Standard Specifications do not apply. References to the insurance requirements in Section 7-1.12, "Indemnification and Insurance," of the Standard Specifications shall be interpreted as references to "Owner Controlled Insurance Program (OCIP)," of these special provisions.

The Department has elected to implement an Owner Controlled Insurance Program (OCIP). The Department will administer the OCIP with the assistance of an OCIP Administrator. An OCIP is a series of insurance policies issued by one or more insurance companies to cover the enrolled Contractor and eligible subcontractors of all tiers on a given contract.

An OCIP Manual describing the program and guidelines, regarding Owner Controlled Insurance Program (OCIP), is available as part of the information handout as specified in "Project Information," of these special provisions. In the event of any conflict or discrepancy between any of the documents, the OCIP special provisions supersede the OCIP Manual or other program documents other than the insurance policies. The policies supersede all other documents with regard to coverage under the program.

Nothing in the contract is intended to establish a standard of care owed to any member of the public or to extend to the public the status of a third-party beneficiary for any of these insurance specifications. The OCIP requirements contained in this section, "Owner Controlled Insurance Program (OCIP)," do not create any contractual relationship between the subcontractors and the Department. The Contractor shall be responsible for compliance with the requirements of this section, "Owner Controlled Insurance Program (OCIP)," including compliance by its enrolled and by its excluded subcontractors of all tiers.

Changes to any OCIP requirement or procedure during or after the bid process shall be approved by the Department or the Engineer, as applicable. No contractor or subcontractor has the authority to change any OCIP requirements.

ELIGIBILITY AND ENROLLEMENT IN THE OCIP

Participation in the OCIP is mandatory for all eligible contractors, but not automatic. Eligible contractors include all contractors and subcontractors providing direct labor on the project site. Temporary labor services and employee leasing companies are to be treated as eligible contractors. The Department retains the right to determine eligibility. Each eligible contractor must follow the enrollment procedures shown in the Department's OCIP Manual. Upon OCIP enrollment completion and issuance of evidence of OCIP insurance, an eligible contractor will become an enrolled contractor.

Excluded contractors include:

- A. Architects, engineers, surveyors, soil testing companies, and their consultants,
- B. Hazardous waste removal and transport companies,
- C. Suppliers that do not perform or subcontract installation, vendors, material dealers,
- D. Guard services, non-construction janitorial services,
- E. Truckers (including trucking to the project where delivery is the only scope of work performed), haulers, drivers, and others who merely transport, pick up, deliver or carry materials, personnel, parts, equipment to or from the job site,
- F. Any other parties that the Department at its sole discretion elects to exclude from the OCIP even if otherwise eligible.

Excluded subcontractors are required to provide their own insurance according to requirements specified in "Contractor Furnished Insurance," of this section, "Owner Controlled Insurance Program (OCIP)." The OCIP does not provide coverage for excluded parties, even if erroneously enrolled in the OCIP. The Department, at its sole discretion, may exclude any party from enrollment in the OCIP, even if the party otherwise meets the requirements for eligibility as defined above.

Eligible Contractors and subcontractors shall maintain their own insurance for coverages not provided under the OCIP policies until completion and final acceptance of the work. Required coverage types and limits are specified in "Contractor-Furnished Insurance," of this section, "Owner Controlled Insurance Program (OCIP)." Such required coverage types and limits do not limit contractors and subcontractors under the indemnity provisions of Section 7-1.12A, "Indemnification," of the Standard Specifications.

Before its mobilization on-site, the Contractor shall furnish the Engineer certificates of insurance evidencing that all required insurance is in force. The OCIP insurance company reserves the right to reject late OCIP enrollments. If there have been losses in a period during which a subcontractor delayed its enrollment, the OCIP will not furnish coverage to the subcontractor for such losses.

The Contractor and subcontractors of all tiers shall adhere to and perform all reporting and administrative requirements as detailed in the Department's OCIP Manual and this Section, "Owner Controlled Insurance Program (OCIP)."

INSURANCE UNDER THE OCIP

The Department will provide general liability, excess liability and workers' compensation insurance, including Longshore and Harbor Workers Compensation coverage (LHWCA), coverage for exposures of the Merchant Marine Act of 1920 (Jones Act) (if any), and coverage for exposures of the Death on the High Seas Act (DOHSA) (if any), covering work performed by enrolled contractors under this contract. This section contains some general descriptions of the coverages. Contractors and subcontractors should consult the actual policies for coverage details. Policies will be provided to contractors and subcontractors upon request.

The Department will pay all premiums associated with the OCIP, thereby providing the enrolled Contractor and subcontractors of all tiers insurance coverage as specified in "Insurance Provided by the Department," of this section, "Owner Controlled Insurance Program (OCIP)."

An OCIP does not constitute any representation by the Department with respect to the adequacy of the insurance to protect the Contractor or its subcontractors against all obligations imposed by law or by this contract. The coverage, as with all insurance, is limited in scope and may not include all insurance coverages the Contractor or its subcontractors may deem necessary. The Contractor agrees that the Department and the OCIP Administrator are not agents, partners or guarantors of the OCIP Insurer(s) and that the Department is not responsible for any claims or disputes between or among the Contractor, the subcontractors, and any OCIP Insurer.

In addition to any insurance provided by the Department, all contractors are responsible for providing certain insurance as specified in "Contractor-Furnished Insurance," of this section, "Owner Controlled Insurance Program (OCIP)." It is the Contractor's responsibility to discuss the OCIP with its insurance agents, brokers or consultants and verify if any additional non-OCIP coverages are required.

Coverage under the OCIP applies to work under this contract performed on the job site as that term is defined herein. For purposes of the OCIP, "job site" shall be defined as the areas within the boundaries of the project and also includes areas adjacent to or nearby where incidental operations are performed, excluding permanent locations of the Contractor and any enrolled subcontractor, other than those areas approved by the Department or the Engineer, as applicable, and scheduled on the insurance policies, subject to approval of the OCIP Insurer(s). Work at the job site includes operations necessary or incidental to the project completion.

Off-site locations include the Contractor's and subcontractor of any tier's regularly established workplace, plant, factory, office, shop, warehouse, yard or other property. Areas adjacent to or nearby where incidental operations are performed may be covered only if they are solely dedicated to the performance of the contracted work. Unless approved by the Engineer and accepted and endorsed on the policy by the insurer, off-site locations will not be covered under the OCIP even if operations are for fabrications of materials to be used at the job site or training of apprentices.

Off-site operations of an enrolled contractor or subcontractor, including, without limitation, product manufacturing or product assembling, shall, if the Department so elects in the exercise of its sole discretion, be covered only if all such operations are: (1) solely dedicated to the performance of the contracted work; (2) approved in writing by Department; and (3) coverage thereof has been acknowledged in writing by the OCIP Administrator. It is the sole responsibility of the Contractor to notify the Department to request coverage for specified off-site operations.

The Department assumes no obligation to provide insurance coverages other than those summarized above and set forth in the actual OCIP Policies issued by the OCIP Insurer(s). The insurance provided under the OCIP will not extend coverage for products liability to any insured party or others such as vendors and suppliers, for any product manufactured, assembled or otherwise worked on away from the job site. Any other insurance required for protection of the Contractor or subcontractors is solely the responsibility and expense of Contractor and the subcontractors.

A. Insurance Provided By The Department

The Department will provide and maintain in force the types of insurance listed in this section, "Insurance Provided by the Department." The insurance company policy limits of liability, coverage terms, and conditions will determine the scope of coverage provided by the OCIP.

The Contractor and all eligible subcontractors of any tier will be enrolled in the OCIP upon completion and acceptance of the forms included in the OCIP Enrollment Package. Each enrolled contractor and subcontractor will receive a separate workers' compensation policy and a copy of the primary general liability policy. The policies may be amended from time to time. The enrolled Contractor and subcontractors of all tiers are bound by the terms of coverage as contained in the insurance policies.

The OCIP provides the following insurance coverages for the enrolled Contractor and subcontractors of all tiers as follows:

1. Workers' Compensation Insurance

Workers compensation insurance shall be provided on a statutory basis. Employer's liability insurance shall be provided in amounts not less than:

- a. \$1,000,000 for each accident for bodily injury by accident.
- b. \$1,000,000 policy limit for bodily injury by disease.
- c. \$1,000,000 for each employee for bodily injury by disease.

Coverage shall include injury to the Contractors' employees under the U.S. Longshoremen's and Harbor Workers' Compensation Act, the Jones Act or under laws, regulations or statutes applicable to maritime employees.

2. General Liability Insurance

Limits for bodily injury, including death arising from the bodily injury, and property damage:

- a. \$2,000,000 for each occurrence;
- b. \$4,000,000 aggregate for completed operations;
- c. \$4,000,000 general annual aggregate.

The general annual aggregate limit is annually reinstated each policy year. Defense coverage is outside of policy limits. Completed-operations coverage will be extended for 10 years beyond the earlier of contract acceptance or policy expiration. A single limit applies for the 10-year period.

3. Umbrella or Excess Liability Insurance

Limits shall be not less than \$98,000,000 per occurrence and aggregate, excess and following form to the commercial general liability policy. General aggregate limits are annually reinstated each year of construction.

4. Coverage after Completion of the Work

Any contractor who has completed its work at the job site and whose insurance as provided by the Department's OCIP has been terminated and who returns to the job site to perform warranty work does so under its own insurance coverages and not under the insurance previously provided by the Department's OCIP.

B. Contractor Deductible Assessment

The enrolled Contractor or subcontractor primarily responsible for causing any bodily injury or property damage liability loss shall be responsible for payment of a deductible assessment. The assessment will equal the deductible under the Contractor's or subcontractor's regular (non-OCIP) commercial general liability policy up to a maximum assessment of \$25,000. The minimum assessment shall be the actual loss or \$5,000 whichever is less. The assessment shall be applied to each "occurrence" as that term is defined in the general liability insurance policy.

If the loss exceeds \$5,000 and information necessary to determine contractor's deductible as stated on contractor's insurance policy is not available to the OCIP administrator, the OCIP administrator will charge the contractor the actual loss up to a \$25,000 maximum per occurrence until receipt of documentation from the contractor's policy evidencing the contractor's actual deductible. If the loss is less than \$5,000, the OCIP administrator will charge the actual loss.

The deductible assessment does not apply to workers' compensation claims for a contractor's own employee.

C. Contractor-Furnished Insurance

For any work under this contract and until completion and final acceptance of the work, the Contractor shall furnish certificates of insurance to the Department, for itself and subcontractors of all tiers, evidencing that coverages as described in the following subsections are in force on a primary basis for losses not covered under the OCIP insurance policies (i.e., "off-site losses" or losses involving excluded contractors):

1. Required Contractor-Furnished Insurance Policies

For excluded contractors insurance shall apply to all losses. For eligible, enrolled contractors, the contractor-furnished insurance shall apply as follows:

- a. Automobile liability insurance applies on-site and off-site.
- b. Workers' compensation and employer's liability insurance applies off-site.
- c. Commercial general liability insurance applies as respects any operations that are performed at any location other than the Project Site location defined within the OCIP Commercial General Liability policy or losses that are excluded under the OCIP.
- d. Umbrella or excess liability applies as respects the above underlying commercial general liability policy.
- e. Professional liability insurance, if applicable, applies on-site and off-site.
- f. Tools and equipment floater insurance applies on-site and off-site.
- g. Protection and Indemnity (P&I) Insurance and Hull Coverage applies on-site and off-site.

The contractor-furnished insurance shall provide that there will be no cancellations, lapse, or reduction of coverage without 30 days' prior written notice to the Department, except for 10 days' prior written notice to the Department for non-payment of premium. Certificates of contractor-furnished insurance shall set forth deductible amounts or self-insured retentions applicable to each policy.

2. Required Contractor-Furnished Insurance Limits

The certificates of contractor-furnished insurance shall evidence minimum coverage as follows:

- a. Automobile liability insurance, including owned, non-owned and hired autos with limits no less than \$1,000,000 combined single limit per accident.
- b. Workers' Compensation (Statutory) and Employer's Liability Insurance:

\$1,000,000 for bodily injury for each accident;
\$1,000,000 policy limit for bodily injury by disease;
\$1,000,000 for each employee for bodily injury by disease.

- c. Commercial General Liability Insurance with coverage at least as broad as Insurance Services Office form CG 00 01 with limits no less than:

\$1,000,000 per occurrence
\$2,000,000 products and completed operations aggregate
\$2,000,000 general aggregate

The State, including its officers, directors, agents, and employees and the East Bay Municipal Utility District, its officers, directors, agents and employees shall be named as additional insureds with respect to liability arising out of or connected with work performed by or on behalf of the Contractor or subcontractors of all tiers on a separately attached endorsement to the certificate of insurance.

- d. \$2,000,000 Umbrella or excess liability insurance containing a clause stating that it takes effect (drops down) in the event the primary limits are impaired or exhausted. Coverage shall apply and follow form over primary coverages shown above. Limits shall apply per any one occurrence and general aggregate annually; and annual aggregate products and completed operations. Coverages and terms shall include: excess of general liability, excess of employer's liability; excess of products-completed operations, and excess of commercial automobile liability.

No umbrella or excess liability insurance is required of an eligible and enrolled subcontractor who performs less than \$100,000 of the contracted work.

These minimum requirements do not limit in any way the Contractor's or subcontractor's obligation under any indemnification agreement. The Contractor agrees that it is the intent of the parties to this contract that all available limits of contractor insurance shall apply to any loss off site or otherwise not covered by the OCIP and that these minimum requirements do not in any way limit the coverage of umbrella or excess policies for any loss to which such insurance would otherwise apply, including coverage for additional insureds.

- e. Professional liability insurance. If the Contractor's work requires design or design-assist services, the Contractor shall obtain and maintain, or require its subcontractors responsible for performing such design or design-assist services to obtain and maintain, at all times during the term of this contract, professional liability (errors and omissions) insurance for all professional services provided. This professional liability insurance shall include full prior acts coverage sufficient to cover the services under this contract, the limits of which shall be not less than \$1,000,000 per claim written on a claims-made basis. Professional liability insurance shall be maintained during the term of the contract and for so long as the insurance is reasonably available as specified, for a period of no less than 5 years after completion of the services.
- f. Contractor tools and equipment insurance. The Contractor shall be responsible for any insurance it may deem necessary for protection against loss of owned, rented, or borrowed capital equipment and tools, including any tools owned by mechanics, and any tools, equipment, scaffolding, staging, trailers, cranes, towers, and forms owned, rented, or borrowed by the Contractor or its subcontractors. The Department will have no liability with respect to such equipment and tools. The Contractor hereby waives any rights of recovery against Department for damage to or loss of such equipment or tools. Failure of the Contractor to secure such insurance or to maintain adequate levels of coverage does not obligate the Department or its agents and employees for any losses on owned, rented, or borrowed equipment. Any policies maintained by the Contractor on their owned or rented equipment and materials shall contain a provision requiring the insurance companies to waive their rights of subrogation against the Department. The Contractor shall obtain similar waivers in favor of the Department and its agents and employees from each subcontractor with whom it contracts to work on this project or any other project with the Department.
- g. Protection and Indemnity (P&I) Insurance and Hull Coverage. Whatever coverage the Contractor may deem necessary for protection against maritime risks in connection with operating a vessel or barge. The Department will have no liability with respect to such maritime liability and/or damage to a vessel. Failure of the Contractor to secure such insurance or to maintain adequate levels of coverage does not obligate the Department or its agents and employees for any losses on owned, rented, leased or borrowed vessels. Any policies maintained by the Contractor on vessels shall contain a provision requiring the insurance companies to waive their rights of subrogation against the Department.

3. Maintenance of Contractor-Furnished Insurance

All required insurance shall be maintained without interruption from the date of commencement of the work until final acceptance of the work. The required contractor-furnished insurance shall be written on forms that conform to the requirements set forth in the OCIP Manual and that are otherwise acceptable to Department. The Contractor shall provide to Department within 10 days of any renewal, change or replacement of coverage, certificates of insurance and endorsements evidencing coverage required of contractor-furnished insurance.

If an eligible, enrolled Contractor or subcontractor chooses to have any of its own insurance policies include the job site during the construction period, coverage shall be excess or difference in conditions of the OCIP. The Department will not pay for this additional cost. Inclusion of the job site on such insurance policies shall not replace the OCIP coverage or otherwise affect the cost identification requirements in "Contractor Insurance Cost Deduction," of this section, "Owner Controlled Insurance Program (OCIP)."

Self-insurance programs and self-insured retentions in insurance policies must be declared and are subject to separate annual review and approval by the State. If the Contractor uses a self-insurance program or self-insured retention, then in the event of loss covered by the Contractor's insurance or not covered by the OCIP, the Contractor shall provide the State with the same protection from liability and defense of suits as would be afforded by first-dollar insurance. Execution of the contract is the Contractor's acknowledgement that the Contractor will be bound by all laws and court decisions as if the Contractor were an insurer subject to such applicable laws and court decisions.

Any type of insurance or any increase of limits of liability not described in this section, "Contractor-Furnished Insurance," that the Contractor requires for the Contractor's own protection or on account of any statute shall be the Contractor's own responsibility.

CONTRACTOR INSURANCE COST DEDUCTION

The Department will take a deduction for general liability, excess liability and workers' compensation. The deduction will be eight percent (8%) of total contract value, subject to adjustment to Contractor's actual cost of the insurance as identified by Contractor using CT OCIP Form 1, "Notice of Contract Award and Insurance Enrollment Form," a copy of which is provided in the OCIP Manual, and verified by the Department. After contract approval, the Department will immediately execute an administrative change order to establish a default OCIP deduct rate at eight percent (8%) to be applied to each Contractor progress payment. The Contractor has 30 days after contract approval to identify cost of insurance for itself and its subcontractors by filling out and submitting CT OCIP Form 1, "Notice of Contract Award and Insurance Enrollment Form," and required supporting documents (i.e. copies of the contractor's insurance policy declaration pages and premium rating pages, and any other additional documentation necessary to determine individual OCIP deduct rates) to the Department. For contractors whose costs of insurance are properly identified and verified by the Department within 30 days of contract approval, the Department will calculate the individual OCIP deduct rates for each contractor for its portion of the contracted work. For any contractor whose cost of insurance is not identified, or identified but not verifiable, after 30 days of contract approval, the Department will apply the Default OCIP deduct rate of eight percent (8%) for its portion of the contracted work. For subcontracts (except change order work) less than \$100,000 in value, the Department will assign a zero percent (0%) OCIP deduct rate, thereby not taking any OCIP deduct from these subcontractors. Upon completion of reviewing and verifying cost of insurance submitted by the Contractor for itself and its subcontractors, the Department will combine contractors' individually calculated OCIP deduct rates to establish a composite OCIP deduct rate to be used for the entire duration of the contract. The Department will reduce each progress payment submitted by the Contractor by an amount equal to the composite OCIP deduct rate times the invoiced amount. The composite OCIP deduct rate will be used for all OCIP deduct calculations for the duration of the contract and not modified based upon future years' insurance rates. This composite OCIP deduct rate will also be used for audits and change order work.

A. Contractor Insurance Cost Inclusion in Bids

The Contractor's bid for the work shall include the costs of procuring and maintaining from the beginning of work through contract acceptance, as if there were no OCIP, the following insurance coverages with the limits or coverages as required by applicable laws and regulations, whichever is greater. The insurance specified by this provision shall conform to the Department's requirements and be written by companies rated A-, VII or higher by A.M. Best, Inc. and authorized to do business in the State of California. Coverage and limit requirements for purposes of calculating the insurance cost deduction are as follows:

1. Workers' compensation insurance statutory benefits and employer's liability limits of \$1,000,000 for bodily injury or disease.
Coverage shall include injury to the Contractors' employees under the U.S. Longshoremen's and Harbor Workers' Compensation Act, the Jones Act or under laws, regulations or statutes applicable to maritime employees.
2. Commercial general liability insurance with coverage no less broad than that provided by Insurance Services Office form CG 00 01 10 01 with limits of:

For Bids/Contracts/Subcontracts less than \$5,000,000:

\$1,000,000 per occurrence,
\$2,000,000 completed operations aggregate , and
\$2,000,000 general aggregate

For Bids/Contracts/Subcontracts greater than \$5,000,000:

\$2,000,000 per occurrence,
\$2,000,000 completed operations aggregate , and
\$4,000,000 general aggregate

3. Umbrella or excess liability insurance (for Contractor only) providing total limits of \$25,000,000 per occurrence and aggregate. There are no excess liability insurance requirements for subcontractors.

For subcontracts (except change order work) valued less than \$100,000, the Department will not take an OCIP deduct. Therefore, eligible contractors who perform less than \$100,000 of the contracted work will have individual OCIP deduct rates of 0%.

B. Adjustment to Contractor Insurance Costs

If the Contractor's current insurance program does not conform to these requirements because of lower total limits or a different structure for primary insurance, the Contractor may use the following factors to account for the difference in cost between the Contractor's existing program and the program described above:

1. Cost to increase primary general liability limits:

From:

\$1,000,000 per occurrence
\$2,000,000 products and completed operations aggregate
\$2,000,000 general aggregate

To:

\$2,000,000 per occurrence
\$2,000,000 products and completed operations aggregate
\$4,000,000 general aggregate

Add eighteen percent (18%) of the cost of primary general liability premium attributable to this project

2. Cost for \$25,000,000 umbrella or excess liability coverage:

Add forty percent (40%) of the cost of primary general liability premium attributable to this project including any adjustment required by the calculation in the above subsection "Cost to increase primary general liability limits."

As an alternative to using the factors specified in the above subsections "Cost to increase primary general liability limits," and "Cost for \$25,000,000 umbrella or excess liability coverage," the Contractor may obtain actual quotations from its insurers or insurance brokers for coverage as described applicable only to this project. However the Contractor shall not be required to purchase such coverage and shall not, in any case, charge the Department for such coverage.

C. Contractor Insurance Cost Deduction Identification Rules

The Contractor and subcontractors of all tiers shall use the following rules to identify all costs for insurance as described in this section:

1. Premium credits granted by the contractor's insurer in consideration of ~~the use of~~ the contractor's deductible or self-insured retention must be identified but will not be allowed as an offset to the amount to be deducted, except for the credits based on the contractor's general liability deductible assessment as described in section "Contractor Deductible Assessment." In the alternative, the Contractor may submit an insurer-provided or actuarially developed estimate of losses ("loss pick").
2. Composite rates must show rating sheets.
3. Corporate allocations must include the insurance company's actual calculation of premium. Contractor must provide additional documentation for any such credits claimed.
4. Upon request, Contractor shall provide a copy of the most recently issued WCIRB or NCCI worksheet showing payroll and losses for the Experience Modification rating period.
5. Any rate credits, other than credits for deductibles or self-retention or self-insured plans, or surcharges shown on the declaration or rating sheets, will be used to verify the Contractor's actual cost and determine the OCIP deduct rates. The OCIP Administrator will include such information in verifying the individual OCIP deduct rates for Contractors and subcontractors of all tiers

By completing and submitting CT OCIP Form 1, "Notice of Contract Award and Insurance Enrollment Form," including supporting documents (i.e. copies of the contractor's insurance policy declaration pages and premium rating pages, and any other additional documentation necessary to determine individual OCIP deduct rates) to the Department, the Contractor and subcontractors of all tiers certify that all costs for insurance as described in this section have been correctly identified.

The Contractor shall ensure subcontractors of all tiers comply with the requirement in "Contractor Insurance Cost Deduction Identification Rules," of this section, "Owner Controlled Insurance Program (OCIP)." All information furnished during this process will be considered confidential.

D. Required Record keeping for Cost Identification

In addition to the provisions of Section 7.1.01A (3), "Payroll Records," of the Standard Specifications, the Contractor shall:

1. Keep and maintain, and cause its subcontractors to keep and maintain, for insurance purposes, accurate and properly classified records of payroll and other data necessary for the proper computation of workers' compensation premiums with respect to the insurance provided by the Department. The Contractor's and its subcontractors' records shall be maintained to show separately by employee and class of work, or comparable information acceptable to the Department, all necessary pertinent payroll data excluding the premium portion of overtime for the purpose of developing and determining premiums and shall keep their records relating to the work performed under this contract in such a manner that the records can readily be separated from other work of the Contractor or subcontractors of all tiers.
2. Submit to the Engineer monthly records of workers' compensation payroll and other data for itself and its subcontractors to the Department by the 15th day of the subsequent month using CT OCIP Form 2, "Monthly Payroll Reporting Form." Upon completion of a subcontractor's work under this contract, the Contractor shall submit to the Department all necessary data to permit complete insurance premium determination for each of its subcontractors. Certified payroll is not an acceptable substitution. The Contractor and subcontractors of all tiers shall keep and maintain accurate records by workers' compensation classifications of their payroll for work insured by the OCIP.

AUDIT AND RECOVERY OF CONTRACTOR INSURANCE COST

The Contractor agrees that the Department, the OCIP Administrator and/or any OCIP Insurer(s) may inspect, copy and audit the Contractor's and the subcontractors' payroll records, books and records, insurance policies, insurance cost data, bid documents, estimates or any other information to confirm the accuracy of any information provided to the Department or OCIP Administrator, to verify compliance with the contract documents or to confirm that costs of general liability insurance, excess liability insurance and workers' compensation insurance are not included in any application for payment. The Contractor shall take steps to ensure that provisions granting to the Department and OCIP Administrator the rights under this Section are included in all contracts executed by subcontractors of every tier.

Upon contract acceptance, the Contractor shall submit to the Department all necessary data to permit complete insurance premium determination for itself and its subcontractors of all tiers. The Contractor and subcontractors of all tiers shall permit the Department and its representatives to examine or audit its books and records. At the end of the contract and each subcontract, and at any other time as determined by the Engineer, an audit will be performed using the reported payroll and receipts furnished during the OCIP policy term.

The Department will deduct all costs of insurance from the contract price and change orders. If the originally calculated composite OCIP deduct was lower than the audited insurance costs, the Department will issue a deductive change order to the Contractor to deduct the difference. If the originally calculated composite OCIP deduct was higher than the audited insurance cost, an additive change order will be issued to the Contractor for the excess deduction taken. Neither the Department nor the Contractor is entitled to interest under this audit recovery process.

For subcontracts (excluding change order work) valued less than \$100,000, the Department does not take an OCIP deduct. Any OCIP deduct discrepancy with regard to this provision will be reconciled in this audit recovery process.

The Department has the right to issue an additional deductive change order to recover cost if it is discovered at any time that the Contractor has included charges for insurance already paid under OCIP in any quotations or billings submitted to the Department.

OCCUPATIONAL SAFETY AND HEALTH EVALUATION

Pursuant to Government Code Section 4420, prospective bidders shall submit CT OCIP Form 4, "Occupational Safety and Health Evaluation," to provide the Department with the following information:

1. Serious and willful violation of Part I (commencing with Section 6300) of Division 5 of the Labor Code by the Contractor during the past 5-year period.
2. The Contractor's workers' compensation experience modification factor.
3. The Contractor's injury prevention program instituted pursuant to Section 3201.5 or 6401.7 of the Labor Code.

The Contractor shall submit their current Experience Modification as calculated by the California Workers Compensation Insurance Rating Bureau (WCIRB) or the National Council on Compensation Insurance (NCCI), whichever is applicable for the contracted work. A contractor who is self-insured shall submit its Certificate of Consent to Self-Insure in place of its Experience Modification. A newly joint venture shall submit their current Experience Modification for each and every partner.

CT OCIP Form 4, "Occupational Safety and Health Evaluation," is included in the "Proposal and Contract" and must be submitted by the bidder with its proposal. A bidder's failure to provide CT OCIP Form 4 in its sealed bid may cause its bid to be non-responsive.

CONTRACTOR RESPONSIBILITIES

The Contractor shall be responsible for and require its subcontractors of all tiers to be responsible for:

1. Compliance with all rules and regulations of the California Workers Compensation Rating Bureau.
2. Compliance with applicable claims handling responsibilities and project safety administration as specified in "Claim Handling Responsibilities" and "Project Safety Administration" of this section, "Owner Controlled Insurance Program (OCIP)."
3. Provision of necessary contract, operations, and insurance information including but not limited to declarations pages, underwriting and rating information, certificates, loss histories, OSHA citations, and, if requested, complete, certified copies of insurance policies.
4. Full and unconditional and prompt cooperation with the Department and its representatives as regards the administration and operation of the OCIP.
5. Assuring that all subcontractors receive copies of the OCIP Manual, but failure of Contractor to provide an OCIP Manual to the subcontractors shall not relieve the Contractor or any subcontractor from any of the obligations contained in this agreement.
6. Assuring that the terms of this Section 5-1.40, "Owner Controlled Insurance Program," are included in all subcontracts of every tier, purchase orders, and agreements entered into for performance of any portion of the work.
7. Not violating or knowingly permit violation of any conditions of the policies of insurance provided under the OCIP.

Without limitation upon any of the Department's other rights or remedies, any failure by the Contractor or any subcontractor to comply with any provision of this section, "Owner Controlled Insurance Program," or the OCIP Manual shall be deemed a material breach of the contract, thereby entitling the Department, at its option, upon notice to the Contractor to (1) suspend performance by the Contractor, without any compensation, until there is full compliance, or (2) terminate this contract for cause. The Contractor shall not violate or knowingly permit to be violated any conditions of the OCIP Policies or other policies of insurance required by this Section, "Owner Controlled Insurance Program (OCIP)," or by the OCIP Manual. The Contractor shall ensure that all requirements imposed by such policies, the terms of this section, "Owner Controlled Insurance Program (OCIP)," and the OCIP Manual shall likewise be imposed on, and assumed and performed by, each subcontractor of every tier.

FORM AND DOCUMENT TO BE SUBMITTED FOLLOWING CONTRACT AWARD

The Contractor shall submit the following forms as specified:

1. CT OCIP Form 1, "Notice of Contract Award and Insurance Enrollment Form." Contractor and eligible subcontractors of all tiers, before starting work, shall complete and submit CT OCIP Form 1 to the Engineer along with copies of the contractor's policy pages that display applicable rates and premium calculations for workers' compensation, general liability, and excess or umbrella liability (if applicable) insurance, and a copy of the contractor's current experience modification worksheet.

2. CT OCIP Form 2, "Monthly Payroll Reporting Form." The enrolled Contractor and subcontractors of all tiers shall complete and submit CT OCIP Form 2 to the Engineer for the prior month's work by the 15th day of the following month. This form shall be submitted monthly until CT OCIP Form 3, "Contractor's Notice of Work Termination," is submitted, even if there was no on-site work performed. CT OCIP Form 2 is in addition to any payroll records required by Section 7-1.01A(3), "Payroll Records," of the Standard Specifications.
3. CT OCIP Form 3, "Contractor's Notice of Work Termination." The Contractor and enrolled subcontractors of all tiers shall, upon completion of its work, complete and submit this form to the Engineer by the 5th work day after the last day of the month during which work was completed, including punch list items under the contract. The Contractor shall ensure subcontractors of all tiers complete this form.
4. CT OCIP Form 4, "Occupational Safety and Health Evaluation." Eligible subcontractors of all tiers, before starting work, shall complete and submit CT OCIP Form 4 to the Engineer in order to be enrolled in the OCIP.

Failure of the Contractor to submit complete OCIP documents to the Engineer will result in the assessment of a retention against the Contractor in the amount of \$500 for each day any of the CT OCIP forms are not submitted within the above time frames. The Contractor will not be compensated for any delays or costs resulting from failure to comply with these requirements.

ASSIGNMENT OF RETURN PREMIUM

The Department will pay all OCIP premiums. The Department will be the sole beneficiary of any dividends or return premiums generated by the OCIP.

In consideration of the Department providing an OCIP, the Contractor and subcontractors waive any right to and shall irrevocably assign to and for the benefit of the Department, all return premiums, premium refunds, premium discounts, dividends, retentions, credits, and any other moneys due the Department in connection with the insurance that the Department will provide and shall evidence same by a formal instrument of assignment, if requested, to be promptly executed in the form prepared by the Department. The Contractor shall execute and require all tiers of enrolled subcontractors to execute a similar assignment for the benefit of the Department.

OCIP COVERAGE EXPIRATION

Except for completed operations coverage, OCIP insurance coverage for enrolled Contractor will terminate upon contract acceptance and OCIP insurance coverage for its enrolled subcontractors will terminate upon completion of work at the job site. All coverage for ongoing operations shall cease upon termination of the OCIP. Contractors and subcontractors still performing work will be notified in advance of OCIP termination and will be required to provide insurance to cover any remaining work, subject to an appropriate change order for the cost of such coverage.

NODIFICATIONS TO OCIP

The Department reserves the right to terminate or modify all or part of the Department's OCIP with 30 days prior written notice. In the event of termination or modification, the Contractor and its subcontractors of all tiers shall procure and maintain insurance required by the Department. The Department will reimburse to the Contractor the cost of insurance replacement, including associated project costs that may arise due to such insurance replacement. The form, coverage, limits, cost, and insurer rating for the replacement insurance shall be subject to Department approval.

FAILIURE TO MAINTAIN INSURANCE

In the event the Contractor or any subcontractor fails to furnish and maintain required insurance or to furnish satisfactory evidence of the required insurance, the Department may procure and maintain the coverages for the Contractor or subcontractor. The Department will furnish all necessary information to the Contractor and deduct the cost from any monies due or to become due the Contractor. Failure to provide evidence of such insurance may result in the Contractor or subcontractor being excluded from the job site until proper coverage is verified. The cost of any resulting delay will be borne by the Contractor.

NO RELEASE

The OCIP does not relieve the Contractor or its subcontractors of any tier of any responsibility or liability under this contract or any applicable law, statute, regulation or order.

The Contractor shall not be relieved from his responsibility for safety in accordance with Section 7-1.06, "Safety and Health Provisions," Section 7-1.08, "Public Convenience," and Section 7-1.09, "Public Safety," of the Standard Specifications, and in "Project Safety," of this section, "Owner Controlled Insurance Program (OCIP)".

WAIVER OF RIGHT OF RECOVERY

Contractor hereby waives all rights of recovery against the Department, Consultants, the OCIP Administrator, and any other contractor, subcontractor and consultant performing work or rendering services in connection with the project, including without limitation, the officers, directors, agents, shareholders and employees of each of them. The waivers provided for in this paragraph shall be deemed effective as to any individual or entity even if such individual or entity: (1) would otherwise have a duty of indemnification, contractual or otherwise; (2) did not pay the insurance premium directly or indirectly.

CALIM REPORTING RESPONSIBILITIES

The Contractor shall adhere to and perform all reporting requirements as set forth in the Claims Procedures part of the Department's OCIP Manual.

PROJECT SAFETY

The Contractor shall ensure that its employees and the general public will be provided a clean, safe environment free of recognized hazards during construction activities. The ultimate responsibility for providing a safe place to work rests with the Contractor. The Contractor shall develop its own written Site-Specific Safety Program (SSSP). At minimum, the SSSP shall conform to the requirements addressed in the California Code of Regulations (CCR) if applicable, and any other pertinent safety regulations. This includes, but is not limited to, all applicable Local, State, and Federally recognized Safety Standards and Codes.

Without diminishing the Contractor's responsibility for safety, the Department through its OCIP may provide technical safety services to assist the Engineer in monitoring the safety, health, and environmental performance of the Contractor and its subcontractors of all tiers. The Contractor and its subcontractors of all tiers shall be monitored for effectiveness and application of their respective safety programs at the job site.

The Contractor and its subcontractors of all tiers shall adhere to a 100% drug/alcohol free work zone. At a minimum pre-employment, probable cause, and post-accident testing is required.

DUTY OF CARE

Nothing contained in this section, "Owner Controlled Insurance Program (OCIP)," or in the OCIP manual or any insurance policy shall relieve the Contractor or any of its subcontractors of any tier of their respective obligations to exercise due care in the performance of their duties in connection with the work and to complete the work in strict compliance with the contract documents.

10-1.355 TEMPORARY ACCESS FACILITIES

Existing temporary access facilities shall consist of the temporary access trestle and the temporary crossover bridge constructed under Contract No. 04-012024. The temporary access trestle connects the Oakland Mole and the eastbound Skyway Structure, and the temporary crossover bridge connects the eastbound and westbound Skyway Structures.

The Contractor shall monitor and maintain the existing temporary access facilities, as shown on the plans, and later remove the temporary access trestle when it is no longer required for the contract as determined by the Engineer.

At all times, the Contractor shall provide continuous vehicular and pedestrian access to Skyway Structures, except for a 4 month period as specified in, "Access to Skyway Structures," of the special provision.

Plans of the existing temporary access facilities are included as part of the Information Handout as specified in "Project Information," of these special provisions.

INSPECT TEMPORARY ACCESS FACILITIES

Beginning December 15, 2007, the Contractor shall conduct inspections of the existing temporary access facilities continuing on a monthly basis and as directed by the Engineer.

Inspections shall be performed by an engineer who is registered as a Civil Engineer in the State of California and who is experienced in the construction and maintenance of marine construction trestles, and Acrow bridges.

The first inspection shall be performed and shall consist of:

- a. thorough inspection and documentation of the existing condition of the existing temporary access facilities, and
- b. a survey of the exact line and grade of existing temporary access facilities, and location and batter of each pile of the existing temporary access trestle.

A written inspection report shall be submitted to the Engineer within 5 working days after each inspection. The initial inspection report shall document the on-going conditions of the existing temporary access facilities, including conflicts between the existing piling of the existing temporary access trestle and the construction of the foundation at Pier E17R. Subsequent monthly inspection reports shall document the on-going conditions of the existing temporary access facilities, and shall include routine maintenance recommendations and identification of any repair needed.

In the event when the Contractor finds that the existing temporary access facilities need repair, the Contractor shall immediately notify the Engineer and follow up in writing.

Additional inspections of the existing temporary access facilities other than specified under this section of the special provision, as directed by the Engineer, will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

MAINTAIN TEMPORARY ACCESS FACILITIES

The Department is responsible for directing all maintenance or repair work.

Maintenance or repair work, as directed by the Engineer will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

ACCESS TO SKYWAY STRUCTURES

Except for no more than a 4 month period, beginning no earlier than January 1, 2008, the Contractor shall provide and maintain continuous access at all times to at least one of the two existing Skyway Structures for the use by the Department, the Contractor, and others. Other contractors working on other San Francisco-Oakland Bay Bridge contracts will be using access to the Skyway Structures, as approved by the Engineer. Public traffic will not be allowed to enter the temporary access trestle.

The Constructor shall notify the Engineer in writing at least 60 working days, before any closure of any Skyway Structure access.

Beginning January 1, 2008, the Contractor may use the existing temporary access facilities as approved in writing by the Engineer. The Contractor shall submit a written request for the Engineer's approval at least 10 working days, before using the existing temporary access facilities.

The Contractor's attention is directed to loads ratings of the existing trestle access facilities: " The Department does not warrant the serviceability of the existing temporary access facilities, nor that they will be adequate for every use. Prior to January 1, 2008, the Department will review previously calculated construction load ratings for the existing temporary access facilities, which are provided as part of the information handout as specified in, "Project Information", of these special provisions. After this review, the Department will modify these ratings as appropriate or necessary. Previously calculated construction load ratings for the temporary access trestle are valid only for a single lane of traffic, with one vehicle at a time crossing the temporary access trestle." The Contractor shall submit a vehicles and equipment load summary to certify that the Contractor's vehicles and equipment will not exceed the existing temporary access facility capacity for approval by the Engineer. Except for repair and modifications to the temporary access trestle, permission for use by the Contractor will only be granted for immediate passage onto or off of the existing temporary access facilities, and will not be allowed for staging of any construction operations. The Contractor shall not use the existing temporary access facilities or the Skyway structures for parking or material and equipment storage except as approved by the Engineer.

Early Access to Skyway Structures

Before the completion of the designated portion of work, the Contractor may provide and maintain early vehicular access to the Skyway Structures via the westbound Oakland approach structure.

The access on the westbound Oakland approach structure shall include a minimum of one traffic lane, not less than 8.0 m wide. The traffic lane shall be clearly marked, vehicles shall be prevented from approaching the edge of the bridge deck by a physical barrier, and reasonable measures shall be taken to prevent damage to the westbound Oakland approach structure, such as temporary protection of deck joints and the abutment backwall.

The Contractor shall submit a written plan for the early access on the westbound Oakland approach structure, for the Engineer's approval, at least 30 working days, before the opening of the early access.

Photo Survey

If the early access to the Skyway Structures via the westbound Oakland approach structure is provided, the Contractor shall perform a photo survey of the westbound Oakland approach structure and westbound roadway approach.

The photo survey shall consist of records of observations, video tapes, and photographs. The Contractor shall perform and update regularly the photo survey records to document existing conditions until completion of the designated portion of work. A copy of each survey or update record shall be provided to the Engineer within three working days of the survey.

The photograph prints shall be 12.7 cm x 17.8 cm. All negatives shall be provided. All photos shall be identified by date, location, orientation, and labeled with a detailed description. All photos shall be submitted in a 3-ring binder and shall include protective photo sleeves, , and a summary sheet indexing all photos.

The photo survey records, video tapes and photographs are intended for use as indisputable evidence in ascertaining the extent of damage which may occur as a result of the use of the westbound Oakland approach structure and westbound roadway approach by the Contractor's operation and by others. The photo survey records are for the protection of the Contractor, the State, and others, and will be a method of determining whether and to what extent damage has occurred.

New Temporary Skyway Access Trestle

At the Contractor's option, the Contractor may design and construct a new temporary Skyway access trestle in order to allow the existing temporary access trestle to be removed, or modify the existing temporary access trestle, for use by the Department, the Contractor, and others.

The Contractor shall not modify the existing temporary access facilities, without a written approval from the Engineer.

The new temporary Skyway access trestle or modified existing temporary access trestle shall conform to the following minimum requirements:

- A. Working drawings and calculations shall be submitted in conformance with "Working Drawings," of these special provisions.
- B. The trestle shall be a minimum of 6.7 meters wide.
- C. The trestle shall include a 1.2 meters wide pedestrian path,
- D. The trestle shall have a non-slip surface for both pedestrians and vehicles
- E. The trestle shall be designed to meet the minimum load requirements of AASHTO HS-25 loading and all vehicle and equipment loads that the Contractor may use, resisting all static and dynamic loads.

- F. The trestle shall have a fence and gate to restrict unauthorized access.
- G. The trestle design shall not create a conflict with the work required by this contract.
- H. Point loads on the Skyway structures shall not cause damage or overstress the structure.

When no longer required, the new temporary skyway access trestle shall be completely removed. Pilings shall be removed and shall be cut off at least one meter below the original mudline in-bay, and one meter below the original ground in-land. Removed materials shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications

Should the Contractor elect to construct a new temporary Skyway access trestle, or modify the existing temporary access trestle, all design, construction, maintenance, and additional removal costs associated with the new temporary Skyway access trestle, or modified existing temporary access trestle will be at the Contractor's expense.

TEMPORARY CROSSOVER BRIDGE (LEFT IN PLACE)

The Contractor shall leave the temporary crossover bridge between the Skyway structures in place and in good condition, before leaving the project site after construction completion.

REMOVE TEMPORARY ACCESS TRESTLE

When no longer required, the existing temporary access trestle shall be completely removed. The Contractor shall notify the Engineer in writing 30 working days before the beginning of the removal work. Pilings shall be removed and shall be cut off at least one meter below the original mudline in-bay, and one meter below the original ground in-land, except the three pilings, which are in conflict with the construction of the foundation of piers for the Eastbound Oakland approach structure, including Pier E17R, shall be removed completely.

Removed materials shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

PAYMENT

The contract lump sum price paid for remove temporary access trestle shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removing the temporary access trestle, including providing and maintaining continuous access to the Skyway Structures; conducting inspections of the existing temporary access facilities; obtaining the Engineer's approval for the Contractor's vehicles or equipment using existing temporary access facilities; providing and maintaining early access to the Skyway Structures via the westbound Oakland approach structure and westbound roadway approach; and performing photo survey of the westbound Oakland approach structure and westbound roadway approach, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.375 PHOTO SURVEY OF EXISTING FACILITIES

The work shall consist of performing two photo surveys, pre-construction and post-construction of the following existing facilities, which might be damaged by the operations of the Contractor, during construction of the Mole Substation as shown on the plans:

1. Caltrans Mole Substation
2. EBMUD Dechlorination Facility

The Contractor shall perform the pre-construction photo survey 7 days prior to performing pile driving for the Mole Substation, in the vicinity of these existing facilities. Photo surveys shall be conducted in conformance with the requirements in these special provisions. The scope of the examination will include cracks in structures, settlement, leakage, and the like. Crack monitoring shall be performed on all existing cracks with initial crack-gauge installation as part of the photo survey project, as directed by the Engineer. Such monitoring shall include recording gauge readings once or twice a week as determined by the Engineer. A report detailing such readings shall be provided to the Engineer.

Pre-construction photo survey of the existing facilities within the specified limits shall be completed prior to start of Mole Substation pile driving operations, , and a post-construction photo survey shall be completed after Mole Substation pile driving operations has been completed.

The Contractor shall submit to the Engineer for approval a complete description of the work to be completed for each surveyed location. The work to be completed shall consist of records of observations, video tapes, and photographs.

The photograph prints shall be 12.7 cm x 17.8 cm. All negatives shall be provided. All photos shall be identified by date, location, orientation, and labeled with a detailed description. All photos shall be submitted in a 3-ring binder and shall include protective photo sleeves, building layout (including layout of each floor as necessary), and a summary sheet indexing all photos.

The Contractor shall provide the Engineer with 6 copies of approved photo survey records.

The above records, video tapes and photographs are intended for use as indisputable evident in ascertaining the extent damage which may occur as a result of the Contractor's operations and are for the protection of the listed property owners, the Contractor, and the State, and will be means of determining whether and to what extend damage, resulting from the Contractor's operations occurred during the contract work.

PAYMENT

The contract lump sum price paid for photo survey of existing facilities, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in conducting photo surveys as specified in these special provisions, and as directed by the Engineer, complete in place, including crack monitoring, and furnishing 6 sets of the approved photo survey records, as specified in these special provisions, and as directed by the Engineer.

Additional photo surveys of existing facilities other than those facilities listed under this special provisions will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

10-1.38 VIBRATION MONITORING

This work shall consist of furnishing, installing and maintaining vibration-monitoring instrumentation; collecting vibration data; and interpreting and reporting the results of vibration monitoring as specified herein. This work shall include the implementation by the Contractor of any required remedial and precautionary measures, using the vibration monitoring data, to protect the following facility from excess vibration during construction activities:

1. Bridge No. 33-0025, East Bay Bridge, upper deck structure between Bents E23 and E39; and lower deck structure between Bents E23 and E28, during the construction of Bridge No. 34-0006R/L.
2. EBMUD Outfall Structure
3. EBMUD Dechlorination Facility
4. Caltrans Mole Substation

GENERAL

The Contractor shall be responsible for the following, including but not limited to:

1. Furnish and install vibration-monitoring instrumentation.
2. Protect from damage and maintain instruments installed by the Contractor and repair or replace damaged or inoperative instruments.
3. Collect, interpret and report data from instrumentation specified herein.
4. Implement response actions.

The Department is not responsible for the safety of the work based on vibration-monitoring data, and compliance with this Section does not relieve the Contractor of full responsibility for damage caused by the Contractor's operations.

VIBRATION MONITORING PERSONNEL

The Contractor's vibration-monitoring personnel shall have the qualifications specified herein. Vibration monitoring may be on the staff of the Contractor. However, they shall not be employed nor compensated by subcontractors, or by persons or entities hired by subcontractors, who will provide other services or material for the project.

The Contractor's vibration-monitoring personnel shall include a Vibration Instrumentation Engineer who meets one of the following minimum qualifications:

1. Registered Geophysicist or Professional Engineer in the State of California with at least 5 years of experience in the installation and use of vibration-monitoring instrumentation and data interpretation.
2. Graduate level degree from an accredited University in Physics or Acoustics with at least 5 years experience in the installation and use of vibration-monitoring instrumentation and data interpretation.

The Vibration Instrumentation Engineer shall:

1. Be on site and supervise the initial installation of each vibration-monitoring instrument.
2. Supervise interpretations of vibration-monitoring data.

The Contractor's vibration-monitoring personnel shall be subject to the Engineer's approval.

SUBMITTALS

Prior to any significant impact work and prior to performing any vibration monitoring, the Contractor shall submit to the Engineer a written vibration monitoring plan, vibration monitoring equipment manufacturer's product data and the resumes of the Vibration Instrumentation Engineer and any vibration monitoring technical support personnel.

The vibration monitoring equipment manufacturer's data shall describe in detail all vibration-monitoring instruments. Requests for consideration of substitutions, if any, together with product data and instruction manuals for requested substitutions.

The resumes of the Vibration Instrumentation Engineer and any vibration monitoring technical support personnel shall be sufficient to define details of relevant experience.

The written vibration monitoring plan shall detail the procedures for vibration monitoring. Such details shall include, but not limited to:

1. The name of the Firm providing the vibration monitoring services.
2. Description of the instrumentation and equipment to be used.
3. Measurement locations and methods for mounting the vibration sensors.
4. Procedures for data collection and analysis.
5. Means and methods of providing warning when the particle velocity equals or exceeds specified limits.
6. Generalized plans of action to be implemented in the event the particle velocity equals or exceeds specified limits. The generalized plans of action shall be positive measures by the Contractor to control vibrations (e.g. using alternative construction methods).
7. Name of the "responsible person" designated by the Contractor. The responsible person designated by the Contractor shall have the authority to stop the work causing the vibration.

Within 5 days of receipt of each instrument at the site, the Contractor shall submit to the Engineer a copy of the instruction manual and the laboratory calibration and test equipment certification.

In addition, the Contractor shall submit data and reports as specified in "Data Reduction, Processing, Plotting and Reporting" in these special Provisions.

The review period shall be the same as those set forth in Section 51-1.06A, "Falsework Design and Drawings," of the Standard Specifications.

VIBRATION MONITORING EQUIPMENT

The Contractor shall provide portable seismographs for monitoring the velocities of ground vibrations resulting from construction activities. Seismographs shall be Model DS-477 Blastmate II as manufactured by InstanTel Inc., Kanata (Ottawa), Ontario, Canada, Model VMS-500 as manufactured by Thomas Instruments, Inc., Spofford, NH, or Model NC5310/D, as manufactured by Nomis Inc., Birmingham, AL, or acceptable equivalent. The seismograph shall have the following minimum features:

1. Seismic range: 0.25 to 102 mm per second with an accuracy of +5 percent of the measured peak particle velocity or better at frequencies between 10 Hertz and 100 Hertz, and with a resolution of 0.25 mm per second or less.
2. Frequency response (+3 dB points): 2 to 200 Hertz.
3. Three channels for simultaneous time-domain monitoring of vibration velocities in digital format on three perpendicular axes.
4. Two power sources: internal rechargeable battery and charger and 115 volts AC. Battery must be capable of supplying power to monitor vibrations continuously for up to 24 hours.
5. Capable of internal, dynamic calibration.
6. Direct writing to printer and capability to transfer data from memory to 90-mm magnetic disk. Instruments must be capable of producing strip chart recordings of readings on site within one hour of obtaining the readings. Provide computer software to perform analysis and produce reports of continuous monitoring.
7. Continuous monitoring mode must be capable of recording single-component peak particle velocities, and frequency of peaks with an interval of one minute or less.

Whenever any product is specified by brand name and model number, such specifications shall be deemed to be used for the purpose of establishing a standard of quality and facilitating the description of the product desired. The term "acceptable equivalent" shall be understood to indicate a product that is the same or better than the product named in the specifications in function, quality, performance, reliability, and general configuration. This procedure is not to be construed as eliminating other manufacturers' suitable products of equal quality.

The Contractor may request to substitute an "acceptable equivalent" vibration monitoring equipment and shall submit complete comparative data to the Engineer for consideration of another product. Any request from the Contractor for consideration of a substitution shall clearly state the nature of the deviation from the product specified. Substitute products shall not be used in the work unless accepted by the Engineer in writing. The Engineer will be the sole judge of the suitability and equivalency of the proposed substitution.

The Contractor's instrumentation personnel shall conduct regular maintenance of seismograph installations.

All seismographs shall have been calibrated by the manufacturer or certified calibration laboratory within one year of their use on site. A current certificate of calibration shall be submitted to the Engineer with the Contractor's data.

A record of laboratory calibration shall be provided for all vibration-monitoring instruments to be used on site. Certification shall be provided to indicate that the instruments are calibrated and maintained in accordance with the equipment manufacturer's calibration requirements and that calibrations are traceable to the U. S. National Institute of Standards and Technology (NIST).

VIBRATION MONITORING

The Contractor shall furnish all installation tools, materials, and miscellaneous instrumentation components for vibration monitoring. At the above listed locations, vibration monitoring and recording shall be performed during the course of all significant impact work, when that activity occurs within 26 meters of the said facility. The 26 meters shall be measured from the edge of the construction activity.

The Contractor shall notify the Engineer at least 24 hours prior to starting a new vibration-producing construction task, and shall have the seismographs in place and functioning properly prior to any work within 26 meter as defined above. No work occurring within this zone shall occur unless monitoring equipment is functioning properly.

The equipment shall be set up in a manner such that an immediate warning is given when particle velocity equal to or exceeding 10 millimeter per second is produced. The warning emitted by the vibration-monitoring equipment shall be instantaneously transmitted to the responsible person designated by the Contractor by means of warning lights, audible sounds or electronic transmission.

Monitoring equipment shall be stationed within 0.9 meter of the exterior of designated buildings on the side facing the Contractor's work site. For buildings whose frontage exceeds 60 meter, at least 2 monitors shall be utilized at that location.

When any reading on monitoring equipment equals or exceeds 10 5 millimeter per second, work shall immediately cease and the Contractor shall immediately notify the Engineer. If directed by the Engineer, the Contractor shall submit within 24 hours a detailed specific plan of action so that the vibration limits are not violated. The Contractor shall take whatever action is necessary to reduce and maintain the monitoring equipment reading below a particle velocity of 10 5 millimeter per second.

The seismograph vibration sensors shall be firmly mounted on the surface slab of concrete or asphalt, or firmly set in undisturbed soil.

DATA COLLECTION

Prior to any vibration-producing construction activity, the Contractor shall collect seismograph data to document background vibrations at each monitoring location. This monitoring shall consist of a continuous recording of the maximum single-component peak particle velocities for one-minute intervals, which shall be printed on a strip chart. The background monitoring shall be performed for a minimum of two non-consecutive workdays, spanning the hours during which construction activities will take place.

The Contractor shall monitor vibration during significant vibration-producing construction activities. This monitoring shall consist of a continuous recording of the maximum single-component peak particle velocities for one-minute intervals, which shall be printed on a strip chart. During the monitoring, the Contractor shall document all events that are responsible for the measured vibration levels, and submit the documentation to the Engineer with the data as specified in section "Data Reduction, Processing, Plotting and Reporting" in these Special Provisions. A record form "Construction Vibration Monitoring Field Data Form" for documenting these events is included in the Information Handout as specified in "Project Information," of these special provisions.

All vibration monitoring data shall be recorded contemporaneously and plotted continuously on a graph by the data acquisition equipment. Each graph shall show time-domain wave traces (particle velocity versus time) for each transducer with the same vertical and horizontal axes scale.

DATA REDUCTION, PROCESSING, PLOTTING AND REPORTING

Within 10 working days after the completion of the background vibration monitoring, the Contractor shall submit to the Engineer a hard copy report documenting the results at each of the monitoring locations.

During bridge construction, the Contractor shall provide weekly, hard copy reports summarizing any vibration monitoring data collected at the specified vibration-monitoring locations. The reports for each week shall be submitted on or before the end of the following week.

All reports shall be signed by the approved Vibration Instrumentation Engineer, and shall include the following:

1. Project identification, including District, County, Route, Post Mile, Project Name and Bridge number as shown on the project plans.
2. Location of the monitoring equipment.
3. Location of vibration sources (e.g. traffic, demolition equipment, etc.).
4. Summary tables indicating the date, time and magnitude and frequency of maximum single-component peak particle velocity measured during each one-hour interval of the monitoring period.
5. Field data forms (construction vibration monitoring only).
6. Appendix graphs of the strip charts printed during the monitoring periods.

In addition to the hard copy data specified herein, the Contractor shall provide data on 90-mm diskettes with each report. Electronic data files for all instrument data shall be provided in dBASE IV (.DBF) format.

The Contractor shall not disclose any instrumentation data to third parties and shall not publish data without prior written consent of Caltrans.

PAYMENT

The contract lump sum price paid for vibration monitoring shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all work involving vibration monitoring, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.39 SEWER VIDEO SURVEY

This work shall consist of investigating, sewer cleaning as necessary to facilitate the survey, documenting, and reporting on the structural condition of the existing sewer lines both before and after pile driving for the Mole Substation from manhole to manhole at the following locations:

SEWER VIDEO SURVEY LOCATIONS

No.	Location	Sewer Pipe Size
1	Within State right of way, between Rt, E 84+60 and E 86+60	3250 mm RCP Sewer Outfall (EBMUD)

The Contractor shall videotape with narration the condition of the sewer to show any and all structural deficiencies including cracks, holes, exposed aggregates and reinforcing bars, honey combed areas, damaged construction joints, deteriorated concrete surfaces, infiltrations, root intrusions and missing pieces. The locations of all deficiencies shall be shown by stationing with reference points agreed upon by the Contractor and the Engineer. The Contractor shall provide the dimensions of all major structural deficiencies and provide supplemental photographs of such deficiencies when requested by EBMUD.

The EBMUD sewer outfall facility is subject to zero load. No construction equipment shall be allowed to cross the facility or to be within 3.8 m from centerline of the facility. The Contractor shall investigate, document and report the sewer conditions before commencement and after final completion of the project.

At least 10 working days prior to investigation, the Contractor shall submit for acceptance 5 copies of the proposed operations and safety procedure to the Engineer. At least one copy of these procedures shall be submitted to EBMUD 15 days in advance of planned work.

The Engineer will either accept or reject such procedures within 5 10 working days of receipt. Approval of the procedures will be contingent on them being satisfactory to the EBMUD. Such procedures must comply with the Safety Procedures Section of this special provision.

The Contractor shall call the EBMUD Wastewater Planning Division at (510) 287-1681 five days in advance for coordination and to gain access to the sewer.

The Contractor shall cooperate with local authorities relative to handling traffic through the area and shall make his own arrangements relative to keeping the working area clear of parked vehicles.

The Contractor shall prepare for the Engineer's approval, a written report documenting the results of its investigation. Approval of the report will be contingent on it being satisfactory to the EBMUD. In this report, the Contractor shall place its emphasis on; first, the deficiencies discovered during the investigation; secondly; the proposed measures to remedy such deficiencies and; thirdly, the serviceability of the present sewer.

The Contractor shall: (a) after the pre-construction sewer investigation, deliver 2 copies of the report and 2 copies of the videotape 5 working days before actual start of construction; and (b) after post-construction sewer investigation, deliver 5 copies of the final report and 2 copies of the post-construction videotape, to the EBMUD Division of Wastewater Planning.

SAFETY PROCEDURES

Except to the extent that more explicit or more stringent requirements are stated herein, the Contractor shall comply with all applicable federal, State and local safety and health requirements and standards.

PRE-ENTRY AND CONFINED SPACE OPERATIONS

Pre-entry and confined space operations shall be performed in accordance with the provisions of Article 108 of the General Industry Safety Orders and Section 1532 of the Construction Safety Orders of Title 8 of the California Code of Regulations. These provisions shall govern:

- A. Blocking of laterals.
- B. Testing for the existence of dangerous water and air contamination.
- C. Ventilation requirements.
- D. Entry rate work within confined spaces.
- E. Precautions for emergencies involving work in the sewer.
- F. Other related work.

Testing shall take place for the following suspected conditions prior to entering the sewer, and at times during inspection:

1. Oxygen deficiencies.
2. Carbon dioxide.
3. Combustible gases.
4. Hydrogen sulfide (H₂S)
5. Carbon monoxide
- 4.6. Contaminated and infectious waste.

ADDITIONAL REQUIREMENTS

The Contractor shall provide safeguards, including traffic barriers, warning signs, barricades, temporary fences and other similar safeguards that are required for the protection of all personnel during the performance of this contract.

The Contractor shall provide to all workers and inspectors, protective, disposable clothing for sewage conditions consisting of fullbody coveralls, gloves, boot type covers on reusable footwear, eye protection, hardhats and safety tools as required by job conditions and CAL-OSHA safety rules and regulations.

The Contractor shall provide air ventilation and respiratory protection to workers and inspectors in accordance with an operation and safety procedures plan required by CAL-OSHA and accepted by the EBMUD.

The Contractor shall provide a plan for rescue of workers and investigators for review by the Engineer and ~~for approval~~ reviewed by the EBMUD.

A shutdown of EBMUD's Main Wastewater Treatment Plant (MWWTP) must take place in order to restrict flow in the outfall for the video survey to take place. The MWWTP can only be shut down during the dry weather season from April 15 – October 15. Shutdowns must take place during low tide and from 1:00 AM to 5:00 AM. The MWWTP shutdown cannot last longer than 4 hours. The MWWTP cannot be shut down beyond these dates and times due to increases in flow.

The contractor must submit a written System Outage Request (SOR) to EBMUD 10 working days in advance of the planned work. An SOR must be submitted before each survey. The SOR must be approved by EBMUD Operations before the survey can begin.

The contractor shall coordinate lockout/tagout procedures with EBMUD as needed. Contractor shall be ready to apply locks and tags in conjunction with EBMUD during outfall entry. The contractor shall be constant contact with EBMUD Operations during the duration of the shutdowns.

PAYMENT

The contract lump sum price paid for sewer video survey shall include full compensation for furnishing all labor, materials, tools, equipment, sewer cleaning as necessary to facilitate the survey, and incidentals, and for doing all the work involved in conducting the sewer video survey, including providing plans, reports and video tape, safety devices and precautions, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-3.235 ELECTRICAL SYSTEMS ANALYSIS

SCOPE

The Contractor shall engage a firm, regularly experienced in electrical system analysis, to provide a short circuit and relay coordination study for the entire San Francisco Oakland Bay Bridge (SFOBB) electrical power system. The work shall include the entire SFOBB power system, from both the San Francisco and the Oakland utility 12 kV sources, down to the 120-volt level. The short circuit and relay coordination study shall include the following phases and cases:

- A. Phase I: New Mole Substation connected to Old Mole Substation and Existing SFOBB East Bay Span:
 - 1. Case 1 (Normal Operation): Sterling Substation, Pier W-4 Substation and the new YBI Substation are fed from the San Francisco PG&E source. YBI Substation 12 kV breakers 52-9N and 52-10N are open.
 - 2. Case 2 (Normal Operation): Oakland Substation, the new Mole Substation, the old Mole Substation and Pier E-9 Substation are fed from the Oakland PG&E source. YBI Substation 12 kV breakers 52-9N and 52-10N are open. East Bay Substation and the South Plaza Tunnel Switch room are sub fed from Oakland Substation.
 - 3. Case 3 (Abnormal Operation – Power Outage): Power outage at the PG&E Oakland source. All bridge substations from the Sterling Substation to the Oakland Substation are fed from the San Francisco PG&E Source. The YBI Substation 12 kV breakers 52-9N and 52-10 are closed and the Oakland Substation PG&E intertie breaker No. 52-21N is open. East Bay Substation and the South Plaza Tunnel Switch room are sub fed from Oakland Substation.
 - 4. Case 4 (Abnormal Operation – Power Outage): Power outage at the PG&E San Francisco source. All bridge substations from the Oakland Substation to the Sterling Substation are fed from the Oakland PG&E Source. The YBI Substation 12 kV breakers 52-9N and 52-10 are closed and the Sterling Substation PG&E intertie breaker No. 52-1 is open. East Bay Substation and the South Plaza Tunnel Switch room are sub fed from Oakland Substation.

- B. Phase II: New Mole Substation connected to new SFOBB East Bay Span via new Mid-span Substations:
 - 1. Case 1 (Normal Operation): Sterling Substation, Pier W-4 Substation and the new YBI Substation are fed from the San Francisco PG&E source. YBI Substation 12 kV breakers 52-9N and 52-10N are open.
 - 2. Case 2 (Normal Operation): Oakland Substation, the new Mole Substation and the new Mid-span Substations are fed from the Oakland PG&E source. YBI Substation 12 kV breakers 52-9N and 52-10N are open. East Bay Substation and the South Plaza Tunnel Switch room are sub fed from Oakland Substation. Old Mole Substation and Pier E-9 Substation are sub fed from new Mole Substation.
 - 3. Case 3 (Abnormal Operation – Power Outage): Power outage at the PG&E Oakland source. All bridge substations from the Sterling Substation to the Oakland Substation are fed from the San Francisco PG&E Source. The YBI Substation 12 kV breakers 52-9N and 52-10 are closed and the Oakland Substation PG&E intertie breaker No. 52-21N is open. East Bay Substation and the South Plaza Tunnel Switch room are sub fed from Oakland Substation. Old Mole Substation and Pier E-9 Substation are sub fed from new Mole Substation.
 - 4. Case 4 (Abnormal Operation – Power Outage): Power outage at the PG&E San Francisco source. All bridge substations from the Oakland Substation to the Sterling Substation are fed from the Oakland PG&E Source. The YBI Substation 12 kV breakers 52-9N and 52-10 are closed and the Sterling Substation PG&E intertie breaker No. 52-1 is open. East Bay Substation and the South Plaza Tunnel Switch room are sub fed from Oakland Substation. Old Mole Substation and Pier E-9 Substation are sub fed from new Mole Substation.

The Contractor shall obtain present phase-phase and phase-ground fault duties from PG&E. The coordination study shall include the following:

- A. Perform field investigations to document and become familiar with existing fuses and relay settings at the Sterling Substation, the Pier W-4 Substation, the new YBI Substation, old Mole Substation, Pier E-9 Substation, new Oakland Substation and East Bay Substation. Investigate and become familiar with the existing San Francisco Oakland Bay Bridge 12 kV automatic transfer scheme between San Francisco and Oakland. All relays, breakers and fuses presently connected to the system shall be documented and a tabulation of recommended system and new settings changes shall be provided. When approved by the Engineer, the Contractor shall implement the recommended new setting changes at all of the existing SFOBB substations including the new Mole Substation.

- B. For Phase I, Cases 1 through 4, perform study, recommend and implement new relay settings for all existing SFOBB Substations including new Mole Substation to obtain a coordinated system;
- C. For Phase II, Cases 1 through 4, perform study and recommend new relay settings for all existing SFOBB Substations including new Mole Substation to obtain a coordinated system;
- D. Investigate, recommend and implement new relay settings for the SFOBB 12 kV automatic transfer scheme. Relays associated with the transfer scheme include the reverse directional ground and phase overcurrent relays including the under voltage relays located at the Sterling Substation, the new YBI Substation and the Oakland Substation.

The coordination study shall include all relays, breakers and fuses presently connected to the system and a tabulation of recommended system and settings changes.

Once the short circuit and coordination study has been completed, the Contractor shall forward the study to the Engineer for approval prior to implementation of the recommended relay settings. Once approved by the Engineer, the Contractor shall enter all required SFOBB Substations and implement required Phase I relay setting changes to provide for a coordinated system.

For Phase II, the Contractor shall perform the study and recommend relay settings, however, the required relay setting changes will be implemented by others when the 12 kV cable between the new Mole Substation and the SFOBB Mid-span Substations has been installed.

GENERAL

Complete fault calculations for each existing and ultimate source combination shall be performed before using digital computers in the studies. Source combination shall include present and future power requirements such as large motors or generators that are planned. The study shall utilize proposed and existing data obtained from available documents and as determined in the field.

The equipment and component titles used in the studies shall be identical to the equipment and component titles shown on the plans. Existing equipment shall include fault contribution of existing motors in the study and obtain required existing equipment data.

Device coordination time-current curves for medium and low voltage distribution system(s) and individual protective device time-current characteristics on transparencies shall be provided as part of the studies.

REFERENCES

The following are additional standards referenced in this section:

- A. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
 - a. IEEE 242, "Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems."
 - b. IEEE 399, "Recommended Practice for Industrial and Commercial Power System Analysis."
- B. American National Standards Institute (ANSI): C57.12.00, "Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers."

SUBMITTALS

The short circuit and protective device coordination studies shall be prepared by a professional electrical engineer registered in the State of California, in accordance with IEEE 242 and IEEE 399.

An initial, complete short circuit study must be submitted and reviewed before Engineer will approve the coordination study.

An initial, complete protective device coordination study must be submitted with 90 days after approval of initial short circuit study.

The Contractor shall provide six copies of short circuit study and protective device coordination study in individual hard cover, three-ring binders. The copies shall be submitted within 90 days after approval of the short circuit study.

The short circuit and protective device coordination studies shall be updated prior to Project Substantial Completion. Utilize characteristics of installed equipment and materials.

SHORT CIRCUIT STUDY

The short circuit study shall be based on the following assumptions, but not be limited to the following:

- A. Use cable impedances based on copper conductors.
- B. Use bus impedances based on copper or aluminum bus bars as existing.
- C. Use cable and bus resistances calculated at 25°C.
- D. Use medium voltage cable reactances based on use of typical dimensions of shielded cables with 133 percent insulation levels.
- E. Use 600-volt cable reactances based on use of typical dimensions of conductors installed.
- F. Use transformer impedances 92.5 percent of “nominal” impedance based on tolerances specified in ANSI C57.12.00.

The Engineer shall be provided, as a minimum, the following for review and approval before any testing is to be performed:

- A. Calculation methods and assumptions.
- B. Selected base per unit quantities.
- C. One-line diagrams.
- D. Source impedance data, including electric utility system and motor fault contribution characteristics.
- E. Impedance diagrams.
- F. Zero sequence impedance diagrams.
- G. Typical calculation.
- H. Tabulations of calculated quantities.
- I. Results, conclusions, and recommendations.

Calculations for short circuit interrupting and momentary (when applicable) duties for an assumed three-phase bolted fault at each location shall be provided for:

- A. Electric utility's supply termination points.
- B. Main switchgear.
- C. Unit substation primary and secondary terminals.
- D. Low voltage switchgear and switchboards.
- E. Motor control centers.
- F. All branch circuit panelboards.
- G. Other significant locations throughout the system.
- H. Future load contributions as shown on one-line diagram.

The Engineer shall be provided bolted line-to-ground fault and bolted line-to-line fault current studies for areas as defined for three-phase bolted fault short circuit study.

The Contractor shall verify the following:

- A. Equipment and protective devices are applied within their ratings.
- B. Adequacy of switchgear, switchboard, motor control centers, and panelboard bus bars to withstand short circuit stresses.
- C. Cable and busway sizes for ability to withstand short circuit heating, besides normal load currents.

PROTECTIVE DEVICE COORDINATION STUDY

The Contractor shall develop protective device coordination time-current curves for distribution system, graphically displayed on conventional log-log curve sheets. Each curve sheet shall have a title and one-line diagram that applies to specific portion of system associated with time-current curves on that sheet. Terminate device characteristic curves shall show a point reflecting maximum symmetrical or asymmetrical fault current to which device is exposed. The curve sheets shall identify the device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.

Plot characteristics on curve sheets shall be provided with the following, but not be limited to the following information:

- A. Electric utility's relays.
- B. Electric utility's fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands.
- C. Medium voltage equipment relays.
- D. Medium and low voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands.
- E. Low voltage equipment circuit breaker trip devices, including manufacturers tolerance bands.
- F. Pertinent transformer full-load currents at 100 and 600 percent.
- G. Transformer magnetizing inrush currents.
- H. Transformer damage curves.
- I. ANSI transformer withstand parameters.
- J. Significant symmetrical and asymmetrical fault currents.
- K. Ground fault protective device settings.
- L. Other system load protective devices for largest branch circuit and feeder circuit breaker in each motor control center.

Primary protective device settings for Delta-Wye connected transformer shall comply to the following:

- A. Secondary Line-to-Ground Fault Protection: Primary protective device operating band within the transformer's characteristics curve, including a point equal to 58 percent of ANSI C57.12.00 withstand point.
- B. Secondary Line-To-Line Faults: 16 percent current margin between primary protective device and associated secondary device characteristic curves.

Separate medium voltage relay characteristics curves from curves for other devices shall be set to have at least 0.4-second time margin.

TABULATIONS

The Engineer shall be provided with the following data and recommendations for review by the Engineer:

A. General Data:

- 1. Short circuit reactances of rotating machines.
- 2. Cable and conduit material data.
- 3. Bus data
- 4. Transformer data.
- 5. Circuit resistance and reactance values.

B. Short Circuit Data:

- 1. Fault impedances.
- 2. X to R ratios.
- 3. Asymmetry factors.
- 4. Motor contributions.
- 5. Short circuit kVA.
- 6. Symmetrical and asymmetrical fault currents.

C. Recommended Protective Device Settings:

- 1. Relays:
 - a. Current tap.
 - b. Time dial.
 - c. Instantaneous pickup.

2. Circuit Breakers:
 - a. Adjustable pickup.
 - b. Adjustable time-current characteristic.
 - c. Adjustable instantaneous pickup.

STUDY ANALYSES

The study analyses shall result in a written summary with the following information:

- A. Scope of studies performed.
- B. Explanation of bus and branch numbering system.
- C. Prevailing conditions.
- D. Selected equipment deficiencies.
- E. Results of short circuit and coordination studies.
- F. Comments or suggestions.

The written summary shall suggest changes and additions to equipment rating or characteristics.

The Contractor shall notify the Engineer in writing of existing circuit protective devices improperly rated for new fault conditions.

IMPLEMENTATION

Relay and protective device settings shall be adjusted in according to values established by coordination study. Minor modifications to equipment shall be made as required to accomplish conformance with the short circuit and protective device coordination studies.

The Contractor shall notify the Engineer in writing of any required major equipment modifications.

TESTING

Upon completion of the implementation portion of the electrical systems analysis, inspect and test all relays on the medium voltage system for proper condition and operation in accordance with NETA (National Electrical Testing Association) Standards. The work shall include all relays on the medium voltage system including both those newly adjusted, as well as those which had no setting change.

The work shall be done by an independent testing company regularly engaged in testing and inspecting of electrical equipment and systems. The work shall be supervised by an engineer certified by NICET (National Institute of Certified Engineering Technologists) and shall be performed by technicians certified by NICET or NETA. The Contractor shall provide the Engineer the name of the company with names and numbers of the engineer and individuals with copies of certifications before any testing shall be performed.

The specific work on each relay shall include:

- A. Visual and Mechanical Inspection:
 1. Visually check each relay for the following:
 - a. Tight cover gasket and proper seal.
 - b. Unbroken cover glass.
 - c. Condition of spiral spring and contacts.
 - d. Disc clearance.
 - e. Condition of case shorting contacts if present.
 2. Mechanically check each relay for:
 - a. Freedom of movement.
 - b. Proper travel and alignment.

3. Verify that each relay:
 - a. Complies with these specifications and application.
 - b. Is set in accordance with recommended settings.

B. Electrical Tests:

1. Insulation resistance test on each circuit to frame except for solid state devices.
2. Tests on nominal recommended setting for:
 - a. Pickup parameters on each operating element.
 - b. Timing at three points on time-current curve.
 - c. Pickup target and seal-in units.
 - d. Special tests as required to check operation of restraint, directional, and other elements in accordance with manufacturer's instruction manual.
3. Phase angle and magnitude contribution tests on differential and directional relays after energization to vectorially verify proper polarity and connections.
4. Current injection tests with secondary injection for current flow of 1 ampere.

The Contractor shall arrange sequence and scheduling for the following:

- A. Perform inspection and electrical tests after cabling system has been installed.
- B. Perform tests with apparatus de-energized whenever feasible.
- C. Inspection and electrical tests on energized equipment are to be:
 1. Scheduled with Engineer prior to de-energization.
 2. Minimized to avoid extended period of interruption to the operating bridge equipment.
- D. Notify the Engineer at least 72 hours prior to performing tests on energized electrical equipment.
- E. Shutdowns shall be limited to a 2-hour period on each switchgear for testing and no more than one switchgear may be taken out of service at any given time.
- F. For any substations in the network which have temporary backup power, the Contractor shall arrange to have the generators providing 480- and 208-volt power during the outage of their respective upstream switchgears.

The Contractor shall submit the following items for review and acceptance:

- A. Administrative Submittals: Submit 30 days prior to performing inspections or tests:
 1. Schedule for performing inspection and tests.
 2. List of references to be used for each test.
 3. Sample copy of equipment and materials inspection form(s).
 4. Sample copy of individual device test form.
- B. Quality control submittals (submit within 30 days after completion of test) testing or inspection reports with certificates for each electrical item tested.
- C. Contract closeout submittals shall include Operation and Maintenance Manuals containing all approved test data.

PAYMENT

The contract lump sum prices paid for the electrical system analysis shall include full compensation for furnishing all labor, tools, material, equipment and incidentals for doing all the work as specified in these special provisions and as directed by the Engineer.

CD No. 9

FILE NAME	FILE SIZE	DESCRIPTION
District Materials Information		
OCIP_Manual_April 2007 Edition.pdf	19,068 KB	Owner Controlled Insurance Program (OCIP) Manual (Revised per Addendum No. 3 Dated April 24, 2007)
Structure Materials Information (Added per Addendum No. 3 Dated April 24, 2007)		
Existing Temporary Access Facilities Index Sheet.pdf	418 KB	Temporary Access Facilities Title and Index Sheets
A-Temporary Access Trestle Drawings Phase 2.pdf	1993 KB	Temporary Access Trestle Phase 2 Drawings - Current Configuration
B-Temporary Access Trestle Drawings Phase 1.pdf	2,348 KB	Temporary Access Trestle Phase 1 Drawings -Original Configuration
C-Temporary Cross Over Bridge.pdf	446 KB	Temporary Cross Over Bridge Drawings

**ENGINEER'S ESTIMATE
04-0120L4**

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
181 (S)	011408	ROADWAY LIGHTING ASSEMBLY	LS	LUMP SUM	LUMP SUM	
182 (S)	011409	TRAFFIC OPERATION SYSTEM	LS	LUMP SUM	LUMP SUM	
183 (S)	011410	BUILDING WORK (MOLE SUBSTATION - ARCHITECTURAL)	LS	LUMP SUM	LUMP SUM	
184	BLANK					
185	011961	REMOVE TEMPORARY ACCESS TRESILE	LS	LUMP SUM	LUMP SUM	
186 (S)	011962	PHOTO SURVEY OF EXISTING FACILITIES	LS	LUMP SUM	LUMP SUM	
187 (S)	011963	ELECTRICAL SYSTEM ANALYSIS	LS	LUMP SUM	LUMP SUM	
188	999990	MOBILIZATION	LS	LUMP SUM	LUMP SUM	

TOTAL BID (A): = _____

TOTAL BID (B):

\$86,600.00 x _____ = _____

(Cost Per Day) **(Enter Working Days Bid)**
(Not To Exceed 710 Days)

TOTAL BASIS FOR COMPARISON OF BIDS (A + B): _____

TOTAL BID: _____