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STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION

**NOTICE TO CONTRACTORS
AND**

SPECIAL PROVISIONS

FOR CONSTRUCTION ON STATE HIGHWAY IN

ALAMEDA COUNTY IN ALAMEDA AND OAKLAND AT WEBSTER STREET TUBE AND POSEY TUBE

DISTRICT 04, ROUTE 260

For Use in Connection with Standard Specifications Dated JULY 1992 and Labor Surcharge and Equipment Rental Rates.

CONTRACT NO. 04-440144

04-Ala-260-R1.1/R1.7

**Federal Aid Project
ACSTP-S260(004)E**

**Bids Open: February 5, 2002
Dated: December 17, 2001**

OSD

IMPORTANT SPECIAL NOTICES

The bidder's attention is directed to Section 5, containing specifications for "Disputes Review Board," of the Special Provisions, regarding establishing a Disputes Review Board (DRB) for the project.

The Special Provisions for Federal-aid projects (with and without DBE goals) have been revised to incorporate changes made by new regulations governing the DBE Program (49 CFR Part 26).

Sections 2 and 5 incorporate the changes. Bidders should read these sections to become familiar with them. Attention is directed to the following significant changes:

Section 2, "Disadvantaged Business Enterprise (DBE)" revises the counting of participation by DBE primes, and the counting of trucking performed by DBE firms. The section also revises the information that must be submitted to the Department in order to receive credit for trucking.

Section 2, "Submission of DBE Information" revises the information required to be submitted to the Department to receive credit toward the DBE goal. It also revises the criteria to demonstrate good faith efforts.

Section 5, "Subcontractor and DBE Records" revises the information required to be reported at the end of the project, and information related to trucking that must be submitted throughout the project.

Section 5, "DBE Certification Status" adds new reporting requirements related to DBE certification.

Section 5, "Subcontracting" describes the efforts that must be made in the event a DBE subcontractor is terminated or fails to complete its work for any reason.

Section 5, "Prompt Progress Payment to Subcontractors" requires prompt payment to all subcontractors.

Section 5, "Prompt Payment of Withheld Funds to Subcontractors" requires the prompt payment of retention to all subcontractors.

Payment Bonds

Attention is directed to Section 5 of the Special Provisions, regarding contract bonds. The payment bond shall be in a sum not less than one hundred percent of the total amount payable by the terms of the contract.

Federal minimum wage rates for this project are no longer included in the "Proposal and Contract" book. They will be available through the California Department of Transportation's Electronic Project Document Distribution Internet Web Site at <http://hqidoc1.dot.ca.gov/>. See Notice to Contractors.

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Federal Project with DBE Goals (12-01-99)

DEPARTMENT OF TRANSPORTATION

NOTICE TO CONTRACTORS

CONTRACT NO. 04-440144

04-Ala-260-R1.1/R1.7

Sealed proposals for the work shown on the plans entitled:

STATE OF CALIFORNIA; DEPARTMENT OF TRANSPORTATION; PROJECT PLANS FOR CONSTRUCTION ON STATE HIGHWAY IN ALAMEDA COUNTY IN ALAMEDA AND OAKLAND AT WEBSTER STREET TUBE AND POSEY TUBE

will be received at the Department of Transportation, 1120 N Street, Room 0200, MS #26, Sacramento, CA 95814, until 2 o'clock p.m. on February 5, 2002, at which time they will be publicly opened and read in Room 0100 at the same address.

Proposal forms for this work are included in a separate book entitled:

**STATE OF CALIFORNIA; DEPARTMENT OF TRANSPORTATION; PROPOSAL AND CONTRACT FOR
CONSTRUCTION ON STATE HIGHWAY IN ALAMEDA COUNTY IN ALAMEDA AND OAKLAND AT
WEBSTER STREET TUBE AND POSEY TUBE**

General work description: Webster and Posey Tube to be retrofitted.

This project has a goal of 10 percent disadvantaged business enterprise (DBE) participation.
No prebid meeting is scheduled for this project.

**THIS PROJECT IS SUBJECT TO THE "BUY AMERICA" PROVISIONS OF THE SURFACE
TRANSPORTATION ASSISTANCE ACT OF 1982 AS AMENDED BY THE INTERMODAL SURFACE
TRANSPORTATION EFFICIENCY ACT OF 1991.**

Bids are required for the entire work described herein.

At the time this contract is awarded, the Contractor shall possess either a Class A license or a combination of Class C licenses which constitutes a majority of the work.

This contract is subject to state contract nondiscrimination and compliance requirements pursuant to Government Code, Section 12990.

Project plans, special provisions, and proposal forms for bidding this project can only be obtained at the Department of Transportation, Plans and Bid Documents, Room 0200, MS #26, Transportation Building, 1120 N Street, Sacramento, California 95814, FAX No. (916) 654-7028, Telephone No. (916) 654-4490. Use FAX orders to expedite orders for project plans, special provisions and proposal forms. FAX orders must include credit card charge number, card expiration date and authorizing signature. Project plans, special provisions, and proposal forms may be seen at the above Department of Transportation office and at the offices of the District Directors of Transportation at Irvine, Oakland, and the district in which the work is situated. Standard Specifications are available through the State of California, Department of Transportation, Publications Unit, 1900 Royal Oaks Drive, Sacramento, CA 95815, Telephone No. (916) 445-3520.

Cross sections for this project are not available.

The successful bidder shall furnish a payment bond and a performance bond.

The Department of Transportation hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation.

The U.S. Department of Transportation (DOT) provides a toll-free "hotline" service to report bid rigging activities. Bid rigging activities can be reported Mondays through Fridays, between 8:00 a.m. and 5:00 p.m., eastern time, Telephone No. 1-800-424-9071. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report these activities. The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in the county, or counties, in which the work is to be done have been determined by the Director of the California Department of Industrial Relations. These wages are set forth in the General Prevailing Wage Rates for this project, available at the Labor Compliance Office at the offices of the District Director of Transportation for the district in which the work is situated, and available from the California Department of Industrial Relations' internet web site at: <http://www.dir.ca.gov>. The Federal minimum wage rates for this project as predetermined by the United States Secretary of Labor are available through the California Department of Transportation's Electronic Project Document Distribution Site on the internet at <http://hqidoc1.dot.ca.gov/>. Addenda to modify the Federal minimum wage rates, if necessary, will be issued to holders of "Proposal and Contract" books. Future effective general prevailing wage rates which have been predetermined and are on file with the California Department of Industrial Relations are referenced but not printed in the general prevailing wage rates.

If there is a difference between the minimum wage rates predetermined by the United States Secretary of Labor and the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for similar classifications of labor, the Contractor and subcontractors shall pay not less than the higher wage rate. The Department will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes "helper" (or other classifications based on hours of experience) or any other classification not appearing in the Federal wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by the Contractor and subcontractors, the Contractor and subcontractors shall pay not less than the Federal minimum wage rate which most closely approximates the duties of the employees in question.

DEPARTMENT OF TRANSPORTATION

Deputy Director Transportation Engineering

Dated December 17, 2001

AM

COPY OF ENGINEER'S ESTIMATE
(NOT TO BE USED FOR BIDDING PURPOSES)

04-440144

Item	Item Code	Item	Unit of Measure	Estimated Quantity
1	070010	PROGRESS SCHEDULE (CRITICAL PATH)	LS	LUMP SUM
2	022699	ELECTRONIC MOBILE DAILY DIARY COMPUTER SYSTEM DATA DELIVERY	LS	LUMP SUM
3	070018	TIME-RELATED OVERHEAD	WDAY	600
4 (S)	048805	INSTRUMENTATION AND MONITORING (POSEY TUBE)	LS	LUMP SUM
5 (S)	048806	INSTRUMENTATION AND MONITORING (WEBSTER TUBE)	LS	LUMP SUM
6 (S)	071321	TEMPORARY FENCE (TYPE CL-6)	LF	5790
7	022700	TEMPORARY 10' GATE (TYPE CL-6)	EA	18
8	022701	TEMPORARY COVER	SQYD	400
9	074018	HEALTH AND SAFETY PLAN	LS	LUMP SUM
10	074019	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	LUMP SUM
11	074020	WATER POLLUTION CONTROL	LS	LUMP SUM
12	022702	TEMPORARY DRAINAGE INLET PROTECTION	EA	50
13 (S)	120090	CONSTRUCTION AREA SIGNS	LS	LUMP SUM
14 (S)	120100	TRAFFIC CONTROL SYSTEM	LS	LUMP SUM
15 (S)	120182	PORTABLE DELINEATOR	EA	340
16	129000	TEMPORARY RAILING (TYPE K)	LF	1500
17 (S)	150604	REMOVE WOOD FENCE	LF	80
18 (S)	150608	REMOVE CHAIN LINK FENCE	LF	1660
19	150620	REMOVE GATE	EA	2
20	022703	REMOVE WOOD STAGE STRUCTURE	EA	1

Item	Item Code	Item	Unit of Measure	Estimated Quantity
21	150771	REMOVE ASPHALT CONCRETE DIKE	LF	32
22	022704	SALVAGE PICNIC TABLE	EA	3
23	022705	SALVAGE BENCH	EA	9
24	022706	SALVAGE TRASH CAN	EA	5
25	022707	SALVAGE BOLLARD	EA	3
26	022708	SALVAGE PLANTER BOX AND TREE	EA	5
27	022709	RESET BIKE RACK	EA	4
28	022710	RECONSTRUCT BOLLARD	EA	2
29	022711	RECONSTRUCT PARKING BUMPER	EA	110
30	022712	RESET ROCK SLOPE PROTECTION	CY	350
31 (S)	151540	RECONSTRUCT CHAIN LINK FENCE	LF	120
32	151554	RECONSTRUCT CHAIN LINK GATE	EA	2
33	022713	RECONSTRUCT CHAIN LINK SLIDING GATE	EA	3
34	152322	RESET ROADSIDE SIGN (WOOD POST)	EA	3
35	152324	RESET ROADSIDE SIGN (METAL POST)	EA	20
36	152438	ADJUST FRAME AND COVER TO GRADE	EA	18
37 (S)	153101	PLANE ASPHALT CONCRETE PAVEMENT	SQYD	3660
38	153210	REMOVE CONCRETE	CY	290
39 (S)	159001	RECONSTRUCT HANDRAILING	LF	260
40	160101	CLEARING AND GRUBBING	LS	LUMP SUM

Item	Item Code	Item	Unit of Measure	Estimated Quantity
41	160120	REMOVE TREE	EA	61
42 (F)	192001	STRUCTURE EXCAVATION	CY	2760
43 (F)	192020	STRUCTURE EXCAVATION (TYPE D)	CY	111
44 (F)	192023	STRUCTURE EXCAVATION (TYPE H)	CY	965
45 (F)	193001	STRUCTURE BACKFILL	CY	1527
46 (F)	193101	GRAVEL BLANKET	CY	1047
47 (F)	048807	FILTER FABRIC	SQFT	42 000
48	048808	JET GROUTING OVER LAND	LF	3454
49	048809	JET GROUTING OVER WATER	LF	2250
50	048810	JET GROUTING AT TREMIE PLATFORM (POSEY TUBE)	LS	LUMP SUM
51 (S)	048811	TESTING (POSEY TUBE)	LS	LUMP SUM
52 (F)	048812	STONE COLUMN OVER LAND	LF	26 600
53 (F)	048813	STONE COLUMN OVER WATER	LF	32 600
54	048814	JET GROUTING AT TREMIE PLATFORM (WEBSTER TUBE)	LS	LUMP SUM
55 (S)	048815	TESTING (WEBSTER TUBE)	LS	LUMP SUM
56	260301	CLASS 3 AGGREGATE BASE	CY	4840
57	390102	ASPHALT CONCRETE (TYPE A)	TON	2600
58	394040	PLACE ASPHALT CONCRETE DIKE (TYPE A)	LF	32
59	397001	ASPHALTIC EMULSION (PAINT BINDER)	TON	26
60	729010	ROCK SLOPE PROTECTION FABRIC	SQYD	560

Item	Item Code	Item	Unit of Measure	Estimated Quantity
61	731502	MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)	CY	290
62 (S)	800360	CHAIN LINK FENCE (TYPE CL-6)	LF	1660
63 (S)	800701	WOOD FENCE	LF	50
64 (S)	840504	4" THERMOPLASTIC TRAFFIC STRIPE	LF	900
65 (S)	840515	THERMOPLASTIC PAVEMENT MARKING	SQFT	490
66 (S)	840656	PAINT TRAFFIC STRIPE (2-COAT)	LF	260
67 (S)	840666	PAINT PAVEMENT MARKING (2-COAT)	SQFT	5080
68 (S)	860401	LIGHTING	LS	LUMP SUM
69 (S)	048816	SEISMIC WARNING SYSTEM	LS	LUMP SUM
70	999990	MOBILIZATION	LS	LUMP SUM

**STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION**

SPECIAL PROVISIONS

Annexed to Contract No. 04-440144

SECTION 1. SPECIFICATIONS AND PLANS

The work embraced herein shall conform to the provisions in the Standard Specifications dated July 1992, and these special provisions.

Amendments to the Standard Specifications set forth in these special provisions shall be considered as part of the Standard Specifications for the purposes set forth in Section 5-1.04, "Coordination and Interpretation of Plans, Standard Specifications and Special Provisions," of the Standard Specifications. Whenever either the term "Standard Specifications is amended" or the term "Standard Specifications are amended" is used in the special provisions, the indented text following said term shall be considered an amendment to the Standard Specifications. In case of conflict between such amendments and the Standard Specifications, the amendments shall take precedence over and be used in lieu of the conflicting portions.

In case of conflict between the Standard Specifications and these special provisions, the special provisions shall take precedence over and be used in lieu of the conflicting portions.

SECTION 2. PROPOSAL REQUIREMENTS AND CONDITIONS

2-1.01 GENERAL

The bidder's attention is directed to the provisions in Section 2, "Proposal Requirements and Conditions," of the Standard Specifications and these special provisions for the requirements and conditions which the bidder must observe in the preparation of the Proposal form and the submission of the bid.

In addition to the subcontractors required to be listed in conformance with Section 2-1.054, "Required Listing of Proposed Subcontractors," of the Standard Specifications, each proposal shall have listed therein the portion of work that will be performed by each subcontractor listed.

The Bidder's Bond form mentioned in the last paragraph in Section 2-1.07, "Proposal Guaranty," of the Standard Specifications will be found following the signature page of the Proposal.

Submit request for substitution of an "or equal" item, and the data substantiating the request to the Department of Transportation, Division Of Construction - Duty Senior, Mail Station: 3 - B, 111 Grand Avenue / P. O. Box 23660, Oakland, Ca 94623-0660, so that the request is received by the Department by close of business on the fourth day, not including Saturdays, Sundays and legal holidays, following bid opening.

In conformance with Public Contract Code Section 7106, a Noncollusion Affidavit is included in the Proposal. Signing the Proposal shall also constitute signature of the Noncollusion Affidavit.

The contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate. Each subcontract signed by the bidder must include this assurance.

2-1.015 FEDERAL LOBBYING RESTRICTIONS

Section 1352, Title 31, United States Code prohibits Federal funds from being expended by the recipient or any lower tier subrecipient of a Federal-aid contract to pay for any person for influencing or attempting to influence a Federal agency or Congress in connection with the awarding of any Federal-aid contract, the making of any Federal grant or loan, or the entering into of any cooperative agreement.

If any funds other than Federal funds have been paid for the same purposes in connection with this Federal-aid contract, the recipient shall submit an executed certification and, if required, submit a completed disclosure form as part of the bid documents.

A certification for Federal-aid contracts regarding payment of funds to lobby Congress or a Federal agency is included in the Proposal. Standard Form - LLL, "Disclosure of Lobbying Activities," with instructions for completion of the Standard Form is also included in the Proposal. Signing the Proposal shall constitute signature of the Certification.

The above-referenced certification and disclosure of lobbying activities shall be included in each subcontract and any lower-tier contracts exceeding \$100,000. All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the Engineer.

The Contractor, subcontractors and any lower-tier contractors shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by the Contractor, subcontractors and any lower-tier contractors. An event that materially affects the accuracy of the information reported includes:

- A. A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or
- B. A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or,
- C. A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

2-1.02 DISADVANTAGED BUSINESS ENTERPRISE (DBE)

This project is subject to Part 26, Title 49, Code of Federal Regulations entitled "Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs." The Regulations in their entirety are incorporated herein by this reference.

Bidders shall be fully informed respecting the requirements of the Regulations and the Department's Disadvantaged Business Enterprise (DBE) program developed pursuant to the Regulations; particular attention is directed to the following matters:

- A. A DBE must be a small business concern as defined pursuant to Section 3 of U.S. Small Business Act and relevant regulations promulgated pursuant thereto.

- B. A DBE may participate as a prime contractor, subcontractor, joint venture partner with a prime or subcontractor, vendor of material or supplies, or as a trucking company.
- C. A DBE bidder, not bidding as a joint venture with a non-DBE, will be required to document one or a combination of the following:
 - 1. The bidder will meet the goal by performing work with its own forces.
 - 2. The bidder will meet the goal through work performed by DBE subcontractors, suppliers or trucking companies.
 - 3. The bidder, prior to bidding, made adequate good faith efforts to meet the goal.
- D. A DBE joint venture partner must be responsible for specific contract items of work, or portions thereof. Responsibility means actually performing, managing and supervising the work with its own forces. The DBE joint venture partner must share in the capital contribution, control, management, risks and profits of the joint venture. The DBE joint venturer must submit the joint venture agreement with the proposal or the DBE Information form required in the Section entitled "Submission of DBE Information" of these special provisions.
- E. A DBE must perform a commercially useful function, i.e., must be responsible for the execution of a distinct element of the work and must carry out its responsibility by actually performing, managing and supervising the work.
- F. DBEs must be certified by either the California Department of Transportation, or by a participating State of California or local agency which certifies in conformance with Title 49, Code of Federal Regulations, Part 26, as of the date of bid opening. It is the Contractor's responsibility to verify that DBEs are certified. Listings of DBEs certified by the Department are available from the following sources:
 - 1. The Department's DBE Directory, which is published quarterly. This Directory may be obtained from the Department of Transportation, Materiel Operations Branch, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone: (916) 445-3520.
 - 2. The Department's Electronic Information Bulletin Board Service, which is accessible by modem and is updated weekly. The Bulletin Board may be accessed by first contacting the Department's Business Enterprise Program at Telephone: (916) 227-8937 and obtaining a user identification and password.
 - 3. The Department's web site at <http://www.dot.ca.gov/hq/bep/index.htm>.
 - 4. The organizations listed in the Section entitled "DBE Goal for this Project" of these special provisions.
- G. Credit for materials or supplies purchased from DBEs will be as follows:
 - 1. If the materials or supplies are obtained from a DBE manufacturer, 100 percent of the cost of the materials or supplies will count toward the DBE goal. A DBE manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.
 - 2. If the materials or supplies are purchased from a DBE regular dealer, 60 percent of the cost of the materials or supplies will count toward the DBE goal. A DBE regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a DBE regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A person may be a DBE regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business as provided in this paragraph G.2. if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis. Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not DBE regular dealers within the meaning of this paragraph G.2.
 - 3. Credit for materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer will be limited to the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, provided the fees are reasonable and not excessive as compared with fees charged for similar services.
- H. Credit for DBE trucking companies will be as follows:

1. The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting the DBE goal.
 2. The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
 3. The DBE receives credit for the total value of the transportation services it provides on the contract using trucks its owns, insures, and operates using drivers it employs.
 4. The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
 5. The DBE may also lease trucks from a non-DBE firm, including an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it receives as a result of the lease arrangement. The DBE does not receive credit for the total value of the transportation services provided by the lessee, since these services are not provided by a DBE.
 6. For the purposes of this paragraph H, a lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.
- I. Noncompliance by the Contractor with the requirements of the regulations constitutes a breach of this contract and may result in termination of the contract or other appropriate remedy for a breach of this contract.
- J. Bidders are encouraged to use services offered by financial institutions owned and controlled by DBEs.

2-1.02A DBE GOAL FOR THIS PROJECT

The Department has established the following goal for Disadvantaged Business Enterprise (DBE) participation for this project:

Disadvantaged Business Enterprise (DBE): 10 percent

Bidders may use the services of the following firms to contact interested DBEs. These firms are available to assist DBEs in preparing bids for subcontracting or supplying materials.

The following firms may be contacted for projects in the following locations:

<p>Districts 04, 05 (except San Luis Obispo and Santa Barbara Counties), 06 (except Kern County) and 10:</p> <hr/> <p>Triaxial Management Services, Inc. - Oakland</p> <p>1545 Willow Street, 1st Floor Oakland, CA 94607 Telephone - (510) 286-1313 FAX No. - (510) 286-6792</p>	<p>Districts 08, 11 and 12:</p> <hr/> <p>Triaxial Management Services, Inc. - San Diego 2725 Congress Street, Suite 1-D San Diego, CA 92110 Telephone - (619) 543-5109 FAX No. - (619) 543-5108</p>
<p>Districts 07 and 08; in San Luis Obispo and Santa Barbara Counties in District 05; and in Kern County in District 06:</p> <hr/> <p>Triaxial Management Services, Inc. - Los Angeles 2594 Industry Way, Suite 101 Lynwood, CA 90262 Telephone - (310) 537-6677 FAX No. - (310) 637-0128</p>	<p>Districts 01, 02, 03 and 09:</p> <hr/> <p>Triaxial Management Services, Inc. - Sacramento 930 Alhambra Blvd., #205 Sacramento, CA 95816 Telephone - (916) 553-4172 FAX No. - (916) 553-4173</p>

2-1.02B SUBMISSION OF DBE INFORMATION

The required DBE information shall be submitted on the "CALTRANS BIDDER - DBE INFORMATION" form included in the Proposal. If the DBE information is not submitted with the bid, the DBE Information form shall be removed from the documents prior to submitting the bid.

It is the bidder's responsibility to make enough work available to DBEs and to select those portions of the work or material needs consistent with the available DBEs to meet the goal for DBE participation or to provide information to establish that, prior to bidding, the bidder made adequate good faith efforts to do so.

If DBE information is not submitted with the bid, the apparent successful bidder (low bidder), the second low bidder and the third low bidder shall submit DBE information to the Department of Transportation, 1120 N Street, Room 0200, MS #26, Sacramento, California 95814 so the information is received by the Department no later than 4:00 p.m. on the fourth day, not including Saturdays, Sundays and legal holidays, following bid opening. DBE information sent by U.S. Postal Service certified mail with return receipt and certificate of mailing and mailed on or before the third day, not including Saturdays, Sundays and legal holidays, following bid opening will be accepted even if it is received after the fourth day following bid opening. Failure to submit the required DBE information by the time specified will be grounds for finding the bid or proposal nonresponsive. Other bidders need not submit DBE information unless requested to do so by the Department.

The bidder's DBE information shall establish that good faith efforts to meet the DBE goal have been made. To establish good faith efforts, the bidder shall demonstrate that the goal will be met or that, prior to bidding, adequate good faith efforts to meet the goal were made.

Bidders are cautioned that even though their submittal indicates they will meet the stated DBE goal, their submittal should also include their adequate good faith efforts information along with their DBE goal information to protect their eligibility for award of the contract in the event the Department, in its review, finds that the goal has not been met.

The bidder's DBE information shall include the names, addresses and phone numbers of DBE firms that will participate, with a complete description of work or supplies to be provided by each, the dollar value of each DBE transaction, and a written confirmation from the DBE that it is participating in the contract. A copy of the DBE's quote will serve as written confirmation that the DBE is participating in the contract. When 100 percent of a contract item of work is not to be performed or furnished by a DBE, a description of the exact portion of that work to be performed or furnished by that DBE shall be included in the DBE information, including the planned location of that work. The work that a DBE prime contractor has committed to performing with its own forces as well as the work that it has committed to be performed by DBE subcontractors, suppliers and trucking companies will count toward the goal.

The information necessary to establish the bidder's adequate good faith efforts to meet the DBE goal should include:

- A. The names and dates of each publication in which a request for DBE participation for this project was placed by the bidder.
- B. The names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the DBEs were interested.
- C. The items of work which the bidder made available to DBE firms, including, where appropriate, any breaking down of the contract work items (including those items normally performed by the bidder with its own forces) into economically feasible units to facilitate DBE participation. It is the bidder's responsibility to demonstrate that sufficient work to meet the DBE goal was made available to DBE firms.
- D. The names, addresses and phone numbers of rejected DBE firms, the firms selected for that work, and the reasons for the bidder's choice.
- E. Efforts made to assist interested DBEs in obtaining bonding, lines of credit or insurance, and any technical assistance or information related to the plans, specifications and requirements for the work which was provided to DBEs.
- F. Efforts made to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services, excluding supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate.
- G. The names of agencies contacted to provide assistance in contacting, recruiting and using DBE firms.
- H. Any additional data to support a demonstration of good faith efforts.

SECTION 3. AWARD AND EXECUTION OF CONTRACT

The bidder's attention is directed to the provisions in Section 3, "Award and Execution of Contract," of the Standard Specifications and these special provisions for the requirements and conditions concerning award and execution of contract.

Section 3-1.01, "Award of Contract," of the Standard Specifications is amended to read:

3-1.01 Award of Contract—The right is reserved to reject any and all proposals.

The award of the contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all the requirements prescribed. Such award, if made, will be made within 30 days after the opening of the proposals. This period

will be subject to extension for such further period as may be agreed upon in writing between the Department and the bidder concerned.

All bids will be compared on the basis of the Engineer's Estimate of the quantities of work to be done.

The award of the contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all the requirements prescribed and who has met the goal for DBE participation or has demonstrated, to the satisfaction of the Department, adequate good faith efforts to do so. Meeting the goal for DBE participation or demonstrating, to the satisfaction of the Department, adequate good faith efforts to do so is a condition for being eligible for award of contract.

A "Payee Data Record" form will be included in the contract documents to be executed by the successful bidder. The purpose of the form is to facilitate the collection of taxpayer identification data. The form shall be completed and returned to the Department by the successful bidder with the executed contract and contract bonds. For the purposes of the form, payee shall be deemed to mean the successful bidder. The form is not to be completed for subcontractors or suppliers. Failure to complete and return the "Payee Data Record" form to the Department as provided herein will result in the retention of 31 percent of payments due the contractor and penalties of up to \$20,000. This retention of payments for failure to complete the "Payee Data Record" form is in addition to any other retention of payments due the Contractor.

SECTION 4. BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES

Attention is directed to the provisions in Section 8-1.03, "Beginning of Work," in Section 8-1.06, "Time of Completion," and in Section 8-1.07, "Liquidated Damages," of the Standard Specifications and these special provisions.

The Contractor shall begin work within 15 calendar days after the contract has been approved by the Attorney General or the attorney appointed and authorized to represent the Department of Transportation.

This work shall be diligently prosecuted to completion before the expiration of **600 WORKING DAYS** beginning on the fifteenth calendar day after approval of the contract.

The Contractor shall pay to the State of California the sum of \$1400.00 per day, for each and every calendar day's delay in finishing the work in excess of the number of working days prescribed above.

SECTION 5. GENERAL

SECTION 5-1. MISCELLANEOUS

5-1.00 PLANS AND WORKING DRAWINGS

When the specifications require working drawings to be submitted to the Division of Structure Design, the drawings shall be submitted to: Division of Structure Design, Documents Unit, Mail Station 9, 1801 30th Street, Sacramento, CA 95816, Telephone (916) 227-8252.

5-1.002 LABORATORY

When a reference is made in the specifications to the "Laboratory," the reference shall mean the Division of Materials Engineering and Testing Services and the Division of Structural Foundations of the Department of Transportation, or established laboratories of the various Districts of the Department, or other laboratories authorized by the Department to test materials and work involved in the contract. When a reference is made in the specifications to the "Transportation Laboratory," the reference shall mean the Division of Materials Engineering and Testing Services and the Division of Structural Foundations, located at 5900 Folsom Boulevard, Sacramento, CA 95819, Telephone (916) 227-7000.

5-1.003 EXAMINATION OF PLANS, SPECIFICATIONS, CONTRACT, AND SITE OF WORK

The second paragraph of Section 2-1.03, "Examination of Plans, Specifications, Contract, and Site of Work," of the Standard Specifications is amended to read:

Where the Department has made investigations of site conditions, including subsurface conditions in areas where work is to be performed under the contract, or in other areas, some of which may constitute possible local material sources, bidders or Contractors may, upon written request, inspect the records of the Department as to those investigations subject to and upon the conditions hereinafter set forth.

Attention is directed to "Differing Site Conditions" of these special provisions regarding physical conditions at the site which may differ from those indicated in "Materials Information," log of test borings or other geotechnical information obtained by the Department's investigation of site conditions.

5-1.004 DIFFERING SITE CONDITIONS

Attention is directed to Section 5-1.116, "Differing Site Conditions," of the Standard Specifications.

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During the progress of the work, if subsurface or latent conditions are encountered at the site differing materially from those indicated in the "Materials Information," log of test borings, other geotechnical data obtained by the Department's investigation of subsurface conditions, or an examination of the conditions above ground at the site, the party discovering those conditions shall promptly notify the other party in writing of the specific differing conditions before they are disturbed and before the affected work is performed.

The Contractor will be allowed 15 days from the notification of the Engineer's determination of whether or not an adjustment of the contract is warranted, in which to file a notice of potential claim in conformance with the provisions of Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications and as specified herein; otherwise the decision of the Engineer shall be deemed to have been accepted by the Contractor as correct. The notice of potential claim shall set forth in what respects the Contractor's position differs from the Engineer's determination and provide any additional information obtained by the Contractor, including but not limited to additional geotechnical data. The notice of potential claim shall be accompanied by the Contractor's certification that the following were made in preparation of the bid: a review of the contract, a review of the "Materials Information," a review of the log of test borings and other records of geotechnical data to the extent they were made available to bidders prior to the opening of bids, and an examination of the conditions above ground at the site. Supplementary information, obtained by the Contractor subsequent to the filing of the notice of potential claim, shall be submitted to the Engineer in an expeditious manner.

5-1.005 CONTRACT BONDS

Attention is directed to Section 3-1.02, "Contract Bonds," of the Standard Specifications and these special provisions.

The payment bond shall be in a sum not less than one hundred percent of the total amount payable by the terms of the contract.

5-1.006 EXCAVATION SAFETY PLANS

Section 5-1.02A, "Trench Excavation Safety Plans," of the Standard Specifications is amended to read:

5-1.02A Excavation Safety Plans.--The Construction Safety Orders of the Division of Occupational Safety and Health shall apply to all excavations. For all excavations 1.5 m or more in depth, the Contractor shall submit to the Engineer a detailed plan showing the design and details of the protective systems to be provided for worker protection from the hazard of caving ground during excavation. The detailed plan shall include any tabulated data and any design calculations used in the preparation of the plan. Excavation shall not begin until the detailed plan has been reviewed and approved by the Engineer.

Detailed plans of protective systems for which the Construction Safety Orders require design by a registered professional engineer shall be prepared and signed by an engineer who is registered as a Civil Engineer in the State of California, and shall include the soil classification, soil properties, soil design calculations that demonstrate adequate stability of the protective system, and any other design calculations used in the preparation of the plan.

No plan shall allow the use of a protective system less effective than that required by the Construction Safety Orders.

If the detailed plan includes designs of protective systems developed only from the allowable configurations and slopes, or Appendices, contained in the Construction Safety Orders, the plan shall be submitted at least 5 days before the Contractor intends to begin excavation. If the detailed plan includes designs of protective systems developed from tabulated data, or designs for which design by a registered professional engineer is required, the plan shall be submitted at least 3 weeks before the Contractor intends to begin excavation.

Attention is directed to Section 7-1.01E, "Trench Safety."

The third paragraph of Section 19-1.02, "Preservation of Property," of the Standard Specifications is amended to read:

In addition to the provisions in Sections 5-1.02, "Plans and Working Drawings," and 5-1.02A, "Excavation Safety Plans," detailed plans of the protective systems for excavations on or affecting railroad property will be reviewed for adequacy of protection provided for railroad facilities, property, and traffic. These plans shall be submitted at least 9 weeks before the Contractor intends to begin excavation requiring the protective systems. Approval by the Engineer of the detailed plans for the protective systems will be contingent upon the plans being satisfactory to the railroad company involved.

5-1.007 COST REDUCTION INCENTIVE

Attention is directed to Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications.

Prior to preparing a cost reduction proposal, the Contractor shall request a meeting with the Engineer to discuss the proposal in concept and to determine the merit of the cost reduction proposal. Items of discussion will also include permit

issues, impact on other projects, impact on the project schedule, peer reviews, and review times required by the Department and other agencies.

5-1.01 LABOR NONDISCRIMINATION

Attention is directed to the following Notice that is required by Chapter 5 of Division 4 of Title 2, California Code of Regulations.

NOTICE OF REQUIREMENT FOR NONDISCRIMINATION PROGRAM (GOV. CODE, SECTION 12990)

Your attention is called to the "Nondiscrimination Clause", set forth in Section 7-1.01A(4), "Labor Nondiscrimination," of the Standard Specifications, which is applicable to all nonexempt state contracts and subcontracts, and to the "Standard California Nondiscrimination Construction Contract Specifications" set forth therein. The Specifications are applicable to all nonexempt state construction contracts and subcontracts of \$5,000 or more.

5-1.02 LABOR CODE REQUIREMENTS

Section 7-1.01A(1), "Hours of Labor," of the Standard Specifications is amended to read:

7-1.01A(1) Hours of Labor.— Eight hours labor constitutes a legal day's work. The Contractor or any subcontractor under the Contractor shall forfeit, as a penalty to the State of California, \$25 for each worker employed in the execution of the contract by the respective Contractor or subcontractor for each calendar day during which that worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of the Labor Code, and in particular, Section 1810 to Section 1815, thereof, inclusive, except that work performed by employees of Contractors in excess of 8 hours per day, and 40 hours during any one week, shall be permitted upon compensation for all hours worked in excess of 8 hours per day at not less than one and one-half times the basic rate of pay, as provided in Section 1815 thereof.

Section 7-1.01A(2), "Prevailing Wage," of the Standard Specifications is amended to read:

7-1.01A(2) Prevailing Wage.— The Contractor and any subcontractor under the Contractor shall comply with Labor Code Sections 1774 and 1775. Pursuant to Section 1775, the Contractor and any subcontractor under the Contractor shall forfeit to the State or political subdivision on whose behalf the contract is made or awarded a penalty of not more than fifty dollars (\$50) for each calendar day, or portion thereof, for each worker paid less than the prevailing rates as determined by the Director of Industrial Relations for the work or craft in which the worker is employed for any public work done under the contract by the Contractor or by any subcontractor under the Contractor in violation of the provisions of the Labor Code and in particular, Labor Code Sections 1770 to 1780, inclusive. The amount of this forfeiture shall be determined by the Labor Commissioner and shall be based on consideration of the mistake, inadvertence, or neglect of the Contractor or subcontractor in failing to pay the correct rate of prevailing wages, or the previous record of the Contractor or subcontractor in meeting their respective prevailing wage obligations, or the willful failure by the Contractor or subcontractor to pay the correct rates of prevailing wages. A mistake, inadvertence, or neglect in failing to pay the correct rate of prevailing wages is not excusable if the Contractor or subcontractor had knowledge of the obligations under the Labor Code. In addition to the penalty and pursuant to Labor Code Section 1775, the difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate shall be paid to each worker by the Contractor or subcontractor. If a worker employed by a subcontractor on a public works project is not paid the general prevailing per diem wages by the subcontractor, the prime contractor of the project is not liable for the penalties described above unless the prime contractor had knowledge of that failure of the subcontractor to pay the specified prevailing rate of wages to those workers or unless the prime contractor fails to comply with all of the following requirements:

1. The contract executed between the contractor and the subcontractor for the performance of work on the public works project shall include a copy of the provisions of Sections 1771, 1775, 1776, 1777.5, 1813, and 1815 of the Labor Code.
2. The contractor shall monitor the payment of the specified general prevailing rate of per diem wages by the subcontractor to the employees, by periodic review of the certified payroll records of the subcontractor.
3. Upon becoming aware of the subcontractor's failure to pay the specified prevailing rate of wages to the subcontractor's workers, the contractor shall diligently take corrective action to halt or rectify the failure,

including, but not limited to, retaining sufficient funds due the subcontractor for work performed on the public works project.

4. Prior to making final payment to the subcontractor for work performed on the public works project, the contractor shall obtain an affidavit signed under penalty of perjury from the subcontractor that the subcontractor has paid the specified general prevailing rate of per diem wages to the subcontractor's employees on the public works project and any amounts due pursuant to Section 1813 of the Labor Code.

Pursuant to Section 1775 of the Labor Code, the Division of Labor Standards Enforcement shall notify the Contractor on a public works project within 15 days of the receipt by the Division of Labor Standards Enforcement of a complaint of the failure of a subcontractor on that public works project to pay workers the general prevailing rate of per diem wages. If the Division of Labor Standards Enforcement determines that employees of a subcontractor were not paid the general prevailing rate of per diem wages and if the Department did not retain sufficient money under the contract to pay those employees the balance of wages owed under the general prevailing rate of per diem wages, the contractor shall withhold an amount of moneys due the subcontractor sufficient to pay those employees the general prevailing rate of per diem wages if requested by the Division of Labor Standards Enforcement. The Contractor shall pay any money retained from and owed to a subcontractor upon receipt of notification by the Division of Labor Standards Enforcement that the wage complaint has been resolved. If notice of the resolution of the wage complaint has not been received by the Contractor within 180 days of the filing of a valid notice of completion or acceptance of the public works project, whichever occurs later, the Contractor shall pay all moneys retained from the subcontractor to the Department. These moneys shall be retained by the Department pending the final decision of an enforcement action.

Pursuant to the provisions of Section 1773 of the Labor Code, the Department has obtained the general prevailing rate of wages (which rate includes employer payments for health and welfare, pension, vacation, travel time, and subsistence pay as provided for in Section 1773.8 of the Labor Code, apprenticeship or other training programs authorized by Section 3093 of the Labor Code, and similar purposes) applicable to the work to be done, for straight time, overtime, Saturday, Sunday and holiday work. The holiday wage rate listed shall be applicable to all holidays recognized in the collective bargaining agreement of the particular craft, classification or type of workmen concerned. The general prevailing wage rates and any applicable changes to these wage rates are available at the Labor Compliance Office at the offices of the District Director of Transportation for the district in which the work is situated. For work situated in District 9, the wage rates are available at the Labor Compliance Office at the offices of the District Director of Transportation for District 6, located at Fresno. General prevailing wage rates are also available from the California Department of Industrial Relations' Internet Web Site at: <http://www.dir.ca.gov>.

The wage rates determined by the Director of Industrial Relations for the project refer to expiration dates. Prevailing wage determinations with a single asterisk after the expiration date are in effect on the date of advertisement for bids and are good for the life of the contract. Prevailing wage determinations with double asterisks after the expiration date indicate that the wage rate to be paid for work performed after this date has been determined. If work is to extend past this date, the new rate shall be paid and incorporated in the contract. The Contractor shall contact the Department of Industrial Relations as indicated in the wage rate determinations to obtain predetermined wage changes.

Pursuant to Section 1773.2 of the Labor Code, general prevailing wage rates shall be posted by the Contractor at a prominent place at the site of the work.

Changes in general prevailing wage determinations which conform to Labor Code Section 1773.6 and Title 8 California Code of Regulations Section 16204 shall apply to the project when issued by the Director of Industrial Relations at least 10 days prior to the date of the Notice to Contractors for the project.

The State will not recognize any claim for additional compensation because of the payment by the Contractor of any wage rate in excess of the prevailing wage rate set forth in the contract. The possibility of wage increases is one of the elements to be considered by the Contractor in determining the bid, and will not under any circumstances be considered as the basis of a claim against the State on the contract.

7-1.01A(2)(a) Travel and Subsistence Payments.— Attention is directed to the requirements of Section 1773.8 of the Labor Code. The Contractor shall make travel and subsistence payments to each workman, needed to execute the work, in accordance with the requirements in Labor Code Section 1773.8.

The first and second paragraphs of Section 7-1.01A(3), "Payroll Records," of the Standard Specifications are amended to read:

7-1.01A(3) Payroll Records.— Attention is directed to the provisions of Labor Code Section 1776, a portion of which is quoted below. Regulations implementing Labor Code Section 1776 are located in Sections 16016 through 16019 and Sections 16207.10 through 16207.19 of Title 8, California Code of Regulations.

"1776. (a) Each contractor and subcontractor shall keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the public work. Each payroll record shall contain or be verified by a written declaration that it is made under penalty of perjury, stating both of the following:

(1) The information contained in the payroll record is true and correct.

(2) The employer has complied with the requirements of Sections 1771, 1811, and 1815 for any work performed by his or her employees on the public works project.

"(b) The payroll records enumerated under subdivision (a) shall be certified and shall be available for inspection at all reasonable hours at the principal office of the contractor on the following basis:

(1) A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.

(2) A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection or furnished upon request to a representative of the body awarding the contract, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations.

(3) A certified copy of all payroll records enumerated in subdivision (a) shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through either the body awarding the contract, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided pursuant to paragraph (2), the requesting party shall, prior to being provided the records, reimburse the costs of preparation by the contractor, subcontractors, and the entity through which the request was made. The public shall not be given access to the records at the principal office of the contractor.

"(c) The certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the division.

"(d) A contractor or subcontractor shall file a certified copy of the records enumerated in subdivision (a) with the entity that requested the records within 10 days after receipt of a written request.

"(e) Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement shall be marked or obliterated in a manner so as to prevent disclosure of an individual's name, address, and social security number. The name and address of the contractor awarded the contract or the subcontractor performing the contract shall not be marked or obliterated.

"(f) The contractor shall inform the body awarding the contract of the location of the records enumerated under subdivision (a), including the street address, city and county, and shall, within five working days, provide a notice of a change of location and address.

"(g) The contractor or subcontractor shall have 10 days in which to comply subsequent to receipt of a written notice requesting the records enumerated in subdivision (a). In the event that the contractor or subcontractor fails to comply within the 10-day period, he or she shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit twenty-five dollars (\$25) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due. A contractor is not subject to a penalty assessment pursuant to this section due to the failure of a subcontractor to comply with this section."

The penalties specified in subdivision (g) of Labor Code Section 1776 for noncompliance with the provisions of Section 1776 may be deducted from any moneys due or which may become due to the Contractor.

5-1.03 CONTRACTOR'S LICENSING LAWS

The third paragraph of Section 7-1.01C, "Contractor's Licensing Laws," of the Standard Specifications is amended to read:

Attention is also directed to the requirements in Public Contract Code Section 10164. In all projects where Federal funds are involved, the Contractor shall be properly licensed at the time the contract is awarded.

5-1.035 INDEMNIFICATION AND INSURANCE

Section 7-1.12, "Responsibility for Damage," of the Standard Specifications is deleted.

The Standard Specifications is amended by adding the following Section 7-1.121, "Indemnification," and Section 7-1.122, "Insurance," before Section 7-1.125, "Legal Action Against the Department."

7-1.121 Indemnification.—With the exception that this section shall in no event be construed to require indemnification by the Contractor to a greater extent than permitted by law, the Contractor shall defend, indemnify and save harmless the State, including its officers, directors, agents (excluding agents who are design professionals), and employees, and each of them (Indemnitees), from any and all claims, demands, causes of action, damages, costs, expenses, actual attorneys' fees, losses or liabilities, in law or in equity, of every kind and nature whatsoever (Claims), arising out of or in connection with the Contractor's performance of this contract for:

- A. Bodily injury including, but not limited to, bodily injury, sickness or disease, emotional injury or death to persons, including, but not limited to, the public, any employees or agents of the Contractor, State, Department, or any other contractor and;
- B. Damage to property of anyone including loss of use thereof;

caused or alleged to be caused in whole or in part by any negligent or otherwise legally actionable act or omission of the Contractor or anyone directly or indirectly employed by the Contractor or anyone for whose acts the Contractor may be liable.

Except as otherwise provided by law, the indemnification provisions above shall apply regardless of the existence or degree of fault of Indemnitees. The Contractor, however, shall not be obligated to indemnify Indemnitees for Claims arising from conduct delineated in Civil Code section 2782. Further, the Contractor's indemnity obligation shall not extend to Claims to the extent they arise from any defective or substandard condition of the roadway which existed at or prior to the time the Contractor commenced work, unless this condition has been changed by the work or the scope of the work requires the Contractor to maintain existing Roadway facilities and the claim arises from the Contractor's failure to maintain. The Contractor's indemnity obligation shall extend to Claims arising after the work is completed and accepted only if these Claims are directly related to alleged acts or omissions of the Contractor which occurred during the course of the work. No inspection by the Department, its employees or agents shall be deemed a waiver by the Department of full compliance with the requirements of this section.

The Contractor's obligation to defend and indemnify shall not be excused because of the Contractor's inability to evaluate liability or because the Contractor evaluates liability and determines that the Contractor is not liable to the claimant. The Contractor will respond within 30 days to the tender of any claim for defense and indemnity by the State, unless this time has been extended by the State. If the Contractor fails to accept or reject a tender of defense and indemnity within 30 days, in addition to any other remedy authorized by law, so much of the money due the Contractor under and by virtue of the contract as shall reasonably be considered necessary by the Department, may be retained by the State until disposition has been made of the claim or suit for damages, or until the Contractor accepts or rejects the tender of defense, whichever occurs first.

With respect to third party claims against the Contractor, the Contractor waives any and all rights of any type to express or implied indemnity against the State, its directors, officers, employees, or agents (excluding agents who are design professionals).

7-1.122 Insurance.—Insurance shall conform to the following requirements:

7-1.122A Casualty Insurance.—The Contractor shall, at the Contractor's expense, procure and maintain insurance on all of its operations with companies acceptable to the Department as follows. All insurance shall be kept in full force and effect from the beginning of the work through final acceptance by the State. In addition, the Contractor shall maintain completed operations coverage with a carrier acceptable to the Department through the expiration of the patent deficiency in construction statute of repose set forth in Section 337.1 of the Code of Civil Procedure.

7-1.122A(1) Workers' Compensation and Employer's Liability Insurance.—Workers' Compensation insurance shall be provided as specified in Section 7-1.01A(6), "Workers' Compensation." 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.

If there is an exposure of 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, coverage shall be included for such injuries or claims.

7-1.122A(2) Liability Insurance.—The Contractor shall carry General Liability and Umbrella or Excess Liability Insurance covering all operations by or on behalf of the Contractor providing insurance for bodily injury liability, and property damage liability for the limits of liability indicated below and including coverage for:

- (a) premises, operations and mobile equipment
- (b) products and completed operations
- (c) broad form property damage (including completed operations)
- (d) explosion, collapse and underground hazards
- (e) personal injury
- (f) contractual liability

7-1.122A(3) Liability Limits/Additional Insureds.—The limits of liability shall be at least:

- (a) \$1,000,000 for each occurrence (combined single limit for bodily injury and property damage).
- (b) \$2,000,000 aggregate for products-completed operations.
- (c) \$2,000,000 general aggregate. This general aggregate limit shall apply separately to the Contractor's work under this Agreement.
- (d) \$5,000,000 umbrella or excess liability. For projects over \$25,000,000 only, an additional \$10,000,000 umbrella or excess liability (for a total of \$15,000,000). Umbrella or excess policy shall include products liability completed operations coverage and may be subject to \$5,000,000 or \$15,000,000 aggregate limits. Further, the umbrella or excess policy shall contain a clause stating that it takes effect (drops down) in the event the primary limits are impaired or exhausted.

The State and the Department, including their officers, directors, agents (excluding agents who are design professionals), and State employees, shall be named as additional insureds under the General Liability and Umbrella Liability Policies with respect to liability arising out of or connected with work or operations performed by or on behalf of the Contractor under this contract. Coverage for such additional insureds shall not extend to liability:

- (1) arising from any defective or substandard condition of the Roadway which existed at or prior to the time the Contractor commenced work, unless such condition has been changed by the work or the scope of the work requires the Contractor to maintain existing Roadway facilities and the claim arises from the Contractor's failure to maintain; or
- (2) for claims occurring after the work is completed and accepted unless these claims are directly related to alleged acts or omissions of the Contractor which occurred during the course of the work; or
- (3) to the extent prohibited by Section 11580.04 of the Insurance Code.

The policy shall stipulate that the insurance afforded the additional insureds shall apply as primary insurance. Any other insurance or self insurance maintained by the Department or State will be excess only and shall not be called upon to contribute with this insurance. Such additional insured coverage shall be provided by a policy provision or by an endorsement providing coverage at least as broad as Additional Insured (Form B) endorsement form CG 2010, as published by the Insurance Services Office (ISO).

7-1.122B Automobile Liability Insurance.—The Contractor shall carry automobile liability insurance, including coverage for all owned, hired and non-owned automobiles. The primary limits of liability shall be not less than \$1,000,000 combined single limit each accident for bodily injury and property damage. The umbrella or excess liability coverage required under Section 7-1.122A(3), "Liability Limits/Additional Insureds," shall also apply to automobile liability.

7-1.122C Policy Forms, Endorsements and Certificates.—The Contractor's General Liability Insurance shall be provided under Commercial General Liability policy form no. CG0001 as published by the Insurance Services Office (ISO) or under a policy form at least as broad as policy form no. CG0001.

Evidence of insurance in a form acceptable to the Department, including the required "additional insured" endorsements, shall be furnished by the Contractor to the Department at or prior to the pre-construction conference. The evidence of insurance shall provide that there will be no cancellation, lapse, or reduction of coverage without thirty (30) days' prior written notice to the Department. Certificates of Insurance, as evidence of required insurance, for the General Liability, Auto Liability and Umbrella-Excess Liability policies shall set forth deductible amounts applicable to each policy and all exclusions which are added by endorsement to each policy. The Department may expressly allow deductible clauses, which it does not consider excessive, overly broad, or harmful to the interests of the State. Standard

ISO form CG 0001 or similar exclusions will be allowed provided they are not inconsistent with the requirements of this section. Allowance of any additional exclusions is at the discretion of the Department. Regardless of the allowance of exclusions or deductions by the Department, the Contractor shall be responsible for any deductible amount and shall warrant that the coverage provided to the Department is consistent with the requirements of this section.

7-1.122D Enforcement.—The Department may take any steps as are necessary to assure Contractor's compliance with its obligations. Should any insurance policy lapse or be canceled during the contract period the Contractor shall, within thirty (30) days prior to the effective expiration or cancellation date, furnish the Department with evidence of renewal or replacement of the policy. Failure to continuously maintain insurance coverage as herein provided is a material breach of contract. In the event the Contractor fails to maintain any insurance coverage required, the Department may, but is not required to, maintain this coverage and charge the expense to the Contractor or terminate this Agreement. The required insurance shall be subject to the approval of Department, but any acceptance of insurance certificates by the Department shall in no way limit or relieve the Contractor of the Contractor's duties and responsibilities under the Contract to indemnify, defend and hold harmless the State, its officers, agents, and employees. Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve the Contractor for liability in excess of such coverage, nor shall it preclude the State from taking other actions as is available to it under any other provision of the contract or law. Failure of the Department to enforce in a timely manner any of the provisions of this section shall not act as a waiver to enforcement of any of these provisions at a later date.

7-1.122E Self-Insurance.—Self-insurance programs and self-insured retentions in insurance policies are subject to separate annual review and approval by the State of evidence of the Contractor's financial capacity to respond. Additionally, self-insurance programs or retentions must provide the State with at least the same protection from liability and defense of suits as would be afforded by first-dollar insurance.

7-1.122F Miscellaneous.—Nothing contained in the Contract is intended to make the public or any member thereof a third party beneficiary of the Insurance or Indemnity provisions of these Standard Specifications, nor is any term, condition or other provision of the Contract intended to establish a standard of care owed to the public or any member thereof.

5-1.04 ARBITRATION

The last paragraph in Section 9-1.10, "Arbitration," of the Standard Specifications is amended to read:

Arbitration shall be initiated by a Complaint in Arbitration made in compliance with the requirements of those regulations. A Complaint in Arbitration by the Contractor shall be made not later than 90 days after the date of service in person or by mail on the Contractor of the final written decision by the Department on the claim.

5-1.05 NOTICE OF POTENTIAL CLAIM

Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications is amended to read:

9-1.04 Notice of Potential Claim.—The Contractor shall not be entitled to the payment of any additional compensation for any act, or failure to act, by the Engineer, including failure or refusal to issue a change order, or for the happening of any event, thing, occurrence, or other cause, unless he shall have given the Engineer due written notice of potential claim as hereinafter specified. Compliance with this Section 9-1.04 shall not be a prerequisite as to matters within the scope of the protest provisions in Section 4-1.03, "Changes," or Section 8-1.06, "Time of Completion," or the notice provisions in Section 5-1.116, "Differing Site Conditions," or Section 8-1.07, "Liquidated Damages," or Section 8-1.10, "Utility and Non-Highway Facilities," nor to any claim which is based on differences in measurements or errors of computation as to contract quantities.

The written notice of potential claim shall be submitted to the Engineer prior to the time that the Contractor performs the work giving rise to the potential claim for additional compensation, if based on an act or failure to act by the Engineer, or in all other cases within 15 days after the happening of the event, thing, occurrence, or other cause, giving rise to the potential claim.

The written notice of potential claim shall be submitted on Form CEM-6201 furnished by the Department and shall be certified with reference to the California False Claims Act, Government Code Sections 12650 - 12655. The notice shall set forth the reasons for which the Contractor believes additional compensation will or may be due and the nature of the costs involved. Unless the amount of the potential claim has been stated in the written notice, the Contractor shall, within 15 days of submitting said notice, furnish an estimate of the cost of the affected work and impacts, if any, on project completion. Said estimate of costs may be changed or updated by the Contractor when conditions have changed.

When the affected work is completed, the Contractor shall submit substantiation of his actual costs. Failure to do so shall be sufficient cause for denial of any claim subsequently filed on the basis of said notice of potential claim.

It is the intention of this Section 9-1.04 that differences between the parties arising under and by virtue of the contract be brought to the attention of the Engineer at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The Contractor hereby agrees that he shall have no right to additional compensation for any claim that may be based on any such act, failure to act, event, thing or occurrence for which no written notice of potential claim as herein required was filed.

Should the Contractor, in connection with or subsequent to the assertion of a potential claim, request inspection and copying of documents or records in the possession of the Department that pertain to the potential claim, Contractor shall make its records of the project, as deemed by the Department to be pertinent to the potential claim, available to the Department for inspection and copying.

5-1.06 PARTIAL PAYMENTS

The last paragraph of Section 9-1.06, "Partial Payments," of the Standard Specifications is amended to read:

Attention is directed to the prohibitions and penalties pertaining to unlicensed contractors as provided in Business and Professions Code Sections 7028.15(a) and 7031.

5-1.07 PAYMENT OF WITHHELD FUNDS

Section 9-1.065, "Payment of Withheld Funds," of the Standard Specifications, is amended by adding the following after the third paragraph:

Alternatively, and subject to the approval of the Department, the payment of retentions earned may be deposited directly with a person licensed under Division 6 (commencing with Section 17000) of the Financial Code as the escrow agent. Upon written request of an escrow agent that has not been approved by the Department under subdivision (c) of Section 10263 of the Public Contract Code, the Department will provide written notice to that escrow agent within 10 business days of receipt of the request indicating the reason or reasons for not approving that escrow agent. The payments will be deposited in a trust account with a Federally chartered bank or savings association within 24 hours of receipt by the escrow agent. The Contractor shall not place any retentions with the escrow agent in excess of the coverage provided to that escrow agent pursuant to subdivision (b) of Section 17314 of the Financial Code. In all respects not inconsistent with subdivision (c) of Section 10263 of the Public Contract Code, the remaining provisions of Section 10263 of the Public Contract Code shall apply to escrow agents acting pursuant to subdivision (c) of Section 10263 of the Public Contract Code.

5-1.08 FINAL PAYMENT AND CLAIMS

Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications is amended to read:

9-1.07B Final Payment and Claims.--After acceptance by the Director, the Engineer will make a proposed final estimate in writing of the total amount payable to the Contractor, including therein an itemization of said amount, segregated as to contract item quantities, extra work and any other basis for payment, and shall also show therein all deductions made or to be made for prior payments and amounts to be kept or retained under the provisions of the contract. All prior estimates and payments shall be subject to correction in the proposed final estimate. The Contractor shall submit written approval of the proposed final estimate or a written statement of all claims arising under or by virtue of the contract so that the Engineer receives such written approval or statement of claims no later than close of business of the thirtieth day after receiving the proposed final estimate. If the thirtieth day falls on a Saturday, Sunday or legal holiday, then receipt of such written approval or statement of claims by the Engineer shall not be later than close of business of the next business day. No claim will be considered that was not included in the written statement of claims, nor will any claim be allowed as to which a notice or protest is required under the provisions in Sections 4-1.03, "Changes," 8-1.06, "Time of Completion," 8-1.07, "Liquidated Damages," 5-1.116, "Differing Site Conditions," 8-1.10, "Utility and Non-Highway Facilities," and 9-1.04, "Notice of Potential Claim," unless the Contractor has complied with the notice or protest requirements in said sections.

On the Contractor's approval, or if he files no claim within said period of 30 days, the Engineer will issue a final estimate in writing in accordance with the proposed final estimate submitted to the Contractor and within 30 days thereafter the State will pay the entire sum so found to be due. Such final estimate and payment thereon shall be conclusive and binding against both parties to the contract on all questions relating to the amount of work done and the compensation payable therefor, except as otherwise provided in Sections 9-1.03C, "Records," and 9-1.09, "Clerical Errors."

If the Contractor within said period of 30 days files claims, the Engineer will issue a semifinal estimate in accordance with the proposed final estimate submitted to the Contractor and within 30 days thereafter the State will pay the sum so found to be due. Such semifinal estimate and payment thereon shall be conclusive and binding against both parties to the contract on all questions relating to the amount of work done and the compensation payable therefor, except insofar as affected by the claims filed within the time and in the manner required hereunder and except as otherwise provided in Sections 9-1.03C, "Records," and 9-1.09, "Clerical Errors."

Claims filed by the Contractor shall be in sufficient detail to enable the Engineer to ascertain the basis and amount of said claims. If additional information or details are required by the Engineer to determine the basis and amount of said claims, the Contractor shall furnish such further information or details so that the information or details are received by the Engineer no later than the fifteenth day after receipt of the written request from the Engineer. If the fifteenth day falls on a Saturday, Sunday or legal holiday, then receipt of such information or details by the Engineer shall not be later than close of business of the next business day. Failure to submit such information and details to the Engineer within the time specified will be sufficient cause for denying the claim.

The Contractor shall keep full and complete records of the costs and additional time incurred for any work for which a claim for additional compensation is made. The Engineer or any designated claim investigator or auditor shall have access to those records and any other records as may be required by the Engineer to determine the facts or contentions involved in the claims. Failure to permit access to such records shall be sufficient cause for denying the claims.

Claims submitted by the Contractor shall be accompanied by a notarized certificate containing the following language:

Under the penalty of law for perjury or falsification and with specific reference to the California False Claims Act, Government Code Section 12650 et. seq., the undersigned,

_____ (name)

_____ of

_____ (title)

_____ (company)

hereby certifies that the claim for the additional compensation and time, if any, made herein for the work on this contract is a true statement of the actual costs incurred and time sought, and is fully documented and supported under the contract between parties.

Dated _____

/s/ _____

Subscribed and sworn before me this _____ day

of _____

Notary Public

My Commission Expires _____

Failure to submit the notarized certificate will be sufficient cause for denying the claim.

Any claim for overhead type expenses or costs, in addition to being certified as stated above, shall be supported by an audit report of an independent Certified Public Accountant. Any such overhead claim shall also be subject to audit by the State at its discretion.

Any costs or expenses incurred by the State in reviewing or auditing any claims that are not supported by the Contractor's cost accounting or other records shall be deemed to be damages incurred by the State within the meaning of the California False Claims Act.

If the Contractor files a timely written statement of claims in response to the proposed final estimate, the District that administers the contract will submit a claim position letter to the Contractor by hand delivery or deposit in the U.S. mail within 135 days of acceptance of the contract. The claim position letter will delineate the District's position on the Contractor's claims. If the Contractor disagrees with the claim position letter, the Contractor shall submit a written notification of its disagreement to be received by the District not later than 15 days after the Contractor's receipt of the claim position letter. The written notification of disagreement shall set forth the basis for the Contractor's disagreement

and be submitted to the office designated in the claim position letter. The Contractor's failure to provide a timely, written notification of disagreement shall constitute the Contractor's acceptance and agreement with the determinations provided in the claim position letter and with final payment pursuant to the claim position letter.

If the Contractor files a timely notification of disagreement with the District claim position letter, the review board designated by the District Director to review claims that remain in dispute will meet with the Contractor within 45 days after receipt by the District of the notification of disagreement. Attendance by the Contractor at the board of review meeting shall be mandatory.

If the District fails to submit a claim position letter to the Contractor within 135 days after the acceptance of the contract and the Contractor has claims that remain in dispute, the Contractor may request a meeting with the person or board designated by the District Director to review claims that remain in dispute. The Contractor's request for a meeting shall identify the claims that remain in dispute. If the Contractor files a request for a review meeting, the review person or board will meet with the Contractor within 45 days after the District receives the request for the meeting. Attendance by the Contractor at the District Director's board of review meeting shall be mandatory.

Failure of the Contractor to file a timely written statement of claims in response to the proposed final estimate, or to file a timely notification of disagreement with the District claim position letter, or to attend the District Director's board of review meeting shall constitute a failure to pursue diligently and exhaust the administrative procedures in the contract and shall be a bar to arbitration in conformance with the requirements in Section 10240.2 of the California Public Contract Code.

Upon final determination of the claims, the Engineer will then make and issue his final estimate in writing and within 30 days thereafter the State will pay the entire sum, if any, found due thereon. Such final estimate shall be conclusive and binding against both parties to the contract on all questions relating to the amount of work done and the compensation payable therefor, except as otherwise provided in Sections 9-1.03C, "Records," and 9-1.09, "Clerical Errors."

5-1.09 INTEREST ON PAYMENTS

Interest shall be payable on progress payments, payments after acceptance, final payments, extra work payments and claim payments as follows:

1. Unpaid progress payments, payment after acceptance and final payments shall begin to accrue interest 30 days after the Engineer prepares the payment estimate.
2. Unpaid extra work bills shall begin to accrue interest 30 days after preparation of the first pay estimate following the receipt of a properly submitted and undisputed extra work bill. To be properly submitted, the bill must be submitted within 7 days of the performance of the extra work and in accordance with the requirements of Section 9-1.03C, "Records," and Section 9-1.06, "Partial Payments," of the Standard Specifications. An undisputed extra work bill not submitted within 7 days of performance of the extra work will begin to accrue interest 30 days after the preparation of the second pay estimate following submittal of the bill.
3. The rate of interest payable for unpaid progress payments, payments after acceptance, final payments and extra work payments shall be 10 percent per annum.
4. The rate of interest payable on a claim, protest or dispute ultimately allowed under this contract shall be 6 percent per annum. Interest shall begin to accrue 61 days after the Contractor submits to the Engineer information in sufficient detail to enable the Engineer to ascertain the basis and amount of said claim, protest or dispute.

The rate of interest payable on any award in arbitration shall be 6 percent per annum if allowed under the provisions of Civil Code Section 3289.

5-1.10 PUBLIC SAFETY

The Contractor shall provide for the safety of traffic and the public in accordance with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications and these special provisions.

The Contractor shall install temporary railing (Type K) between any lane carrying public traffic and any excavation, obstacle, or storage area when the following conditions exist:

- (1) Excavations.--Any excavation, the near edge of which is 12 feet or less from the edge of the lane, except:
 - (a) Excavations covered with sheet steel or concrete covers of adequate thickness to prevent accidental entry by traffic or the public.
 - (b) Excavations less than one foot deep.
 - (c) Trenches less than one foot wide for irrigation pipe or electrical conduit, or excavations less than one foot in diameter.

- (d) Excavations parallel to the lane for the purpose of pavement widening or reconstruction.
- (e) Excavations in side slopes, where the slope is steeper than 4:1.
- (f) Excavations protected by existing barrier or railing.

(2) Temporarily Unprotected Permanent Obstacles.--Whenever the work includes the installation of a fixed obstacle together with a protective system, such as a sign structure together with protective railing, and the Contractor elects to install the obstacle prior to installing the protective system; or whenever the Contractor, for his convenience and with permission of the Engineer, removes a portion of an existing protective railing at an obstacle and does not replace such railing complete in place during the same day.

(3) Storage Areas.--Whenever material or equipment is stored within 12 feet of the lane and such storage is not otherwise prohibited by the specifications.

The approach end of temporary railing (Type K), installed in accordance with the requirements in this section "Public Safety" and in Section 7-1.09, "Public Safety," of the Standard Specifications shall be offset a minimum of 15 feet from the edge of the traffic lane open to public traffic. The temporary railing shall be installed on a skew toward the edge of the traffic lane of not more than one foot transversely to 10 feet longitudinally with respect to the edge of the traffic lane. If the 15-foot minimum offset cannot be achieved, the temporary railing shall be installed on the 10 to 1 skew to obtain the maximum available offset between the approach end of the railing and the edge of the traffic lane, and an array of temporary crash cushion modules shall be installed at the approach end of the temporary railing.

Temporary railing (Type K) shall conform to the provisions in Section 12-3.08, "Temporary Railing (Type K)," of the Standard Specifications. Temporary railing (Type K), conforming to the details shown on 1995 Standard Plan T3 or 1997 Standard Plan T3, may be used. Temporary railing (Type K) fabricated prior to January 1, 1993, and conforming to 1988 Standard Plan B11-30 may be used, provided the fabrication date is printed on the required Certificate of Compliance.

The fourteenth paragraph of Section 12-3.08, "Temporary Railing (Type K)," of the Standard Specifications is amended to read:

Each rail unit placed within 10 feet of a traffic lane shall have a reflector installed on top of the rail as directed by the Engineer. A Type P marker panel shall also be installed at each end of railing installed adjacent to a two-lane, two-way highway and at the end facing traffic of railing installed adjacent to a one-way roadbed. If the railing is placed on a skew, the marker shall be installed at the end of the skew nearest the traveled way. Type P marker panels shall conform to the provisions in Section 82, "Markers and Delineators," except that the Contractor shall furnish the marker panels.

Reflectors on temporary railing (Type K) shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials," of these special provisions.

Temporary crash cushion modules shall conform to the provisions in "Temporary Crash Cushion Module" elsewhere in these special provisions.

Except for installing, maintaining and removing traffic control devices, whenever work is performed or equipment is operated in the following work areas the Contractor shall close the adjacent traffic lane unless otherwise provided in the specifications:

Approach speed of public traffic (Posted Limit) (Miles Per Hour)	Work Areas
Over 45	Within 6 feet of a traffic lane but not on a traffic lane.
35 to 45	Within 3 feet of a traffic lane but not on a traffic lane.

The lane closure provisions of this section shall not apply if the work area is protected by permanent or temporary railing or barrier.

When traffic cones or delineators are used to delineate a temporary edge of traffic lane, the line of cones or delineators shall be considered to be the edge of traffic lane, however, the Contractor shall not reduce the width of an existing lane to less than 10 feet without written approval from the Engineer.

When work is not in progress on a trench or other excavation that required closure of an adjacent lane, the traffic cones or portable delineators used for the lane closure shall be placed off of and adjacent to the edge of the traveled way. The spacing of the cones or delineators shall be not more than the spacing used for the lane closure.

Suspended loads or equipment shall not be moved nor positioned over public traffic or pedestrians.

Full compensation for conforming to the requirements in this section "Public Safety," including furnishing and installing temporary railing (Type K) and temporary crash cushion modules, shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

5-1.11 SURFACE MINING AND RECLAMATION ACT

Attention is directed to the Surface Mining and Reclamation Act of 1975, commencing in Public Resources Code, Mining and Geology, Section 2710, which establishes regulations pertinent to surface mining operations, and to California Public Contract Code Section 10295.5.

Material from mining operations furnished for this project shall only come from permitted sites in compliance with California Public Contract Code Section 10295.5.

The requirements of this section shall apply to all materials furnished for the project, except for acquisition of materials in conformance with Section 4-1.05, "Use of Materials Found on the Work," of the Standard Specifications.

5-1.12 REMOVAL OF ASBESTOS AND HAZARDOUS SUBSTANCES

When the presence of asbestos or hazardous substances are not shown on the plans or indicated in the specifications and the Contractor encounters materials which the Contractor reasonably believes to be asbestos or a hazardous substance as defined in Section 25914.1 of the Health and Safety Code, and the asbestos or hazardous substance has not been rendered harmless, the Contractor may continue work in unaffected areas reasonably believed to be safe, and shall immediately cease work in the affected area and report the condition to the Engineer in writing.

In accordance with Section 25914.1 of the Health and Safety Code, all such removal of asbestos or hazardous substances including any exploratory work to identify and determine the extent of the asbestos or hazardous substance will be performed by separate contract.

If delay of work in the area delays the current controlling operation, the delay will be considered a right of way delay and the Contractor will be compensated for the delay as provided in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

5-1.13 FINAL PAY QUANTITIES

Section 9-1.015, "Final Pay Quantities," of the Standard Specifications is amended to read:

9-1.015 Final Pay Items.—When an item of work is designated as (F) or (S-F) in the Engineer's Estimate, the estimated quantity for that item of work shall be the final pay quantity, unless the dimensions of any portion of that item are revised by the Engineer, or the item or any portion of the item is eliminated. If the dimensions of any portion of the item are revised, and the revisions result in an increase or decrease in the estimated quantity of that item of work, the final pay quantity for the item will be revised in the amount represented by the changes in the dimensions, except as otherwise provided for minor structures in Section 51-1.22, "Measurement." If a final pay item is eliminated, the estimated quantity for the item will be eliminated. If a portion of a final pay item is eliminated, the final pay quantity will be revised in the amount represented by the eliminated portion of the item of work.

The estimated quantity for each item of work designated as (F) or (S-F) in the Engineer's Estimate shall be considered as approximate only, and no guarantee is made that the quantity which can be determined by computations, based on the details and dimensions shown on the plans, will equal the estimated quantity. No allowance will be made in the event that the quantity based on computations does not equal the estimated quantity.

In case of discrepancy between the quantity shown in the Engineer's Estimate for a final pay item and the quantity or summation of quantities for the same item shown on the plans, payment will be based on the quantity shown in the Engineer's Estimate.

5-1.14 YEAR 2000 COMPLIANCE

This contract is subject to Year 2000 Compliance for automated devices in the State of California. Year 2000 compliance is defined as follows:

Year 2000 compliance for automated devices in the State of California is achieved when embedded functions have or create no logical or mathematical inconsistencies when dealing with dates prior to and beyond 1999. The year 2000 is recognized and processed as a leap year. The product must also operate accurately in the manner in which it was intended for date operation without requiring manual intervention.

The Contractor shall provide the Engineer a Certificate of Compliance from the manufacturer in accordance with the provisions of Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for all automated devices furnished for the project.

5-1.145 BUY AMERICA REQUIREMENTS

Attention is directed to the "Buy America" requirements of the Surface Transportation Assistance Act of 1982 (Section 165) and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) Sections 1041(a) and 1048(a), and the

regulations adopted pursuant thereto. In accordance with the law and regulations, all manufacturing processes for steel and iron materials furnished for incorporation into the work on this project shall occur in the United States; with the exception that pig iron and processed, pelletized and reduced iron ore manufactured outside of the United States may be used in the domestic manufacturing process for such steel and iron materials. The application of coatings, such as epoxy coating, galvanizing, painting and any other coating that protects or enhances the value of steel or iron materials shall be considered a manufacturing process subject to the "Buy America" requirements.

A Certificate of Compliance, conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications, shall be furnished for steel and iron materials. The certificates, in addition to certifying that the materials comply with the specifications, shall also specifically certify that all manufacturing processes for the materials occurred in the United States, except for the above exceptions.

The requirements imposed by the law and regulations do not prevent a minimal use of foreign steel and iron materials if the total combined cost of the materials used does not exceed one-tenth of one percent (0.1%) of the total contract cost or \$2,500, whichever is greater. The Contractor shall furnish the Engineer acceptable documentation of the quantity and value of any foreign steel and iron prior to incorporating the materials into the work.

5-1.15 SUBCONTRACTOR AND DBE RECORDS

The Contractor shall maintain records showing the name and business address of each first-tier subcontractor. The records shall also show the name and business address of every DBE subcontractor, DBE vendor of materials and DBE trucking company, regardless of tier. The records shall show the date of payment and the total dollar figure paid to all of these firms. DBE prime contractors shall also show the date of work performed by their own forces along with the corresponding dollar value of the work.

Upon completion of the contract, a summary of these records shall be prepared on Form CEM-2402 (F) and certified correct by the Contractor or the Contractor's authorized representative, and shall be furnished to the Engineer. The form shall be furnished to the Engineer within 90 days from the date of contract acceptance. \$10,000 will be withheld from payment until the Form CEM-2402 (F) is submitted. The amount will be returned to the Contractor when a satisfactory Form CEM-2402 (F) is submitted.

Prior to the fifteenth of each month, the Contractor shall submit documentation to the Engineer showing the amount paid to DBE trucking companies listed in the Contractor's DBE information. This monthly documentation shall indicate the portion of the revenue paid to DBE trucking companies which is claimed toward DBE participation. The Contractor shall also obtain and submit documentation to the Engineer showing the amount paid by DBE trucking companies to all firms, including owner-operators, for the leasing of trucks. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it receives as a result of the lease arrangement. The records must confirm that the amount of credit claimed toward DBE participation conforms with Section 2-1.02, "Disadvantaged Business Enterprise," of these special provisions.

The Contractor shall also obtain and submit documentation to the Engineer showing the truck number, owner's name, California Highway Patrol CA number, and if applicable, the DBE certification number of the owner of the truck for all trucks used during that month for which DBE participation will be claimed. This documentation shall be submitted on Form CEM-2404 (F).

5-1.152 DBE CERTIFICATION STATUS

If a DBE subcontractor is decertified during the life of the project, the decertified subcontractor shall notify the Contractor in writing with the date of decertification. If a subcontractor becomes a certified DBE during the life of the project, the subcontractor shall notify the Contractor in writing with the date of certification. The Contractor shall furnish the written documentation to the Engineer.

Upon completion of the contract, Form CEM-2403 (F) indicating the DBE's existing certification status shall be signed and certified correct by the Contractor. The certified form shall be furnished to the Engineer within 90 days from the date of contract acceptance.

5-1.155 PERFORMANCE OF DBE SUBCONTRACTORS AND SUPPLIERS

The DBEs listed by the Contractor in response to the provisions in Section 2-1.02B, "Submission of DBE Information," and Section 3, "Award and Execution of Contract," of these special provisions, which are determined by the Department to be certified DBEs, shall perform the work and supply the materials for which they are listed, unless the Contractor has received prior written authorization to perform the work with other forces or to obtain the materials from other sources.

Authorization to use other forces or sources of materials may be requested for the following reasons:

- A. The listed DBE, after having had a reasonable opportunity to do so, fails or refuses to execute a written contract, when such written contract, based upon the general terms, conditions, plans and specifications for the project, or on the terms of such subcontractor's or supplier's written bid, is presented by the Contractor.

- B. The listed DBE becomes bankrupt or insolvent.
- C. The listed DBE fails or refuses to perform the subcontract or furnish the listed materials.
- D. The Contractor stipulated that a bond was a condition of executing a subcontract and the listed DBE subcontractor fails or refuses to meet the bond requirements of the Contractor.
- E. The work performed by the listed subcontractor is substantially unsatisfactory and is not in substantial conformance with the plans and specifications, or the subcontractor is substantially delaying or disrupting the progress of the work.
- F. It would be in the best interest of the State.

The Contractor shall not be entitled to any payment for such work or material unless it is performed or supplied by the listed DBE or by other forces (including those of the Contractor) pursuant to prior written authorization of the Engineer.

5-1.16 SUBCONTRACTING

Attention is directed to the provisions in Section 8-1.01, "Subcontracting," of the Standard Specifications, and Section 2, "Proposal Requirements and Conditions," and Section 3, "Award and Execution of Contract," of these special provisions.

The second sentence of the third paragraph in said Section 8-1.01 is amended to read:

When items of work in the Engineer's Estimate are preceded by the letters (S) or (S-F), said items are designated as "Specialty Items."

Section 8-1.01 of the Standard Specifications is amended by adding the following before the sixth paragraph:

Pursuant to the provisions of Section 6109 of the Public Contract Code, the Contractor shall not perform work on a public works project with a subcontractor who is ineligible to perform work on the public works project pursuant to Section 1777.1 or 1777.7 of the Labor Code.

Pursuant to the provisions of Section 1777.1 of the Labor Code, the Labor Commissioner publishes and distributes a list of contractors ineligible to perform work as a subcontractor on a public works project. This list of debarred contractors is available from the Department of Industrial Relations web site at:

<http://www.dir.ca.gov/DLSE/Debar.html>.

The provisions in the third paragraph of Section 8-1.01, "Subcontracting," of the Standard Specifications, that the Contractor shall perform with the Contractor's own organization contract work amounting to not less than 50 percent of the original contract price, is not changed by the Federal Aid requirement specified under "Required Contract Provisions Federal-Aid Construction Contracts" in Section 14 of these special provisions that the Contractor perform not less than 30 percent of the original contract work with the Contractor's own organization.

Each subcontract and any lower tier subcontract that may in turn be made shall include the "Required Contract Provisions Federal-Aid Construction Contracts" in Section 14 of these special provisions. This requirement shall be enforced as follows:

- A. Noncompliance shall be corrected. Payment for subcontracted work involved will be withheld from progress payments due, or to become due, until correction is made. Failure to comply may result in termination of the contract.

The DBE information furnished under Section 2-1.02B, "Submission of DBE Information," of these special provisions is in addition to the subcontractor information required to be furnished under Section 8-1.01, "Subcontracting," and Section 2-1.054, "Required Listing of Proposed Subcontractors," of the Standard Specifications.

In conformance with the Federal DBE regulations Sections 26.53(f)(1) and 26.53(f)(2) Part 26, Title 49 CFR:

- A. The Contractor shall not terminate for convenience a DBE subcontractor listed in response to Section 2-1.02B, "Submission of DBE Information," and then perform that work with its own forces, or those of an affiliate without the written consent of the Department, and
- B. If a DBE subcontractor is terminated or fails to complete its work for any reason, the Contractor will be required to make good faith efforts to substitute another DBE subcontractor for the original DBE subcontractor, to the extent needed to meet the contract goal.

The requirement in Section 2-1.02, "Disadvantaged Business Enterprise (DBE)," of these special provisions that DBEs must be certified on the date bids are opened does not apply to DBE substitutions after award of the contract.

5-1.162 PROMPT PROGRESS PAYMENT TO SUBCONTRACTORS

Attention is directed to the provisions in Sections 10262 and 10262.5 of the Public Contract Code and Section 7108.5 of the Business and Professions Code concerning prompt payment to subcontractors.

5-1.164 PROMPT PAYMENT OF WITHHELD FUNDS TO SUBCONTRACTORS

The Contractor shall return all moneys withheld in retention from the subcontractor within 30 days after receiving payment for work satisfactorily completed, even if the other contract work is not completed and has not been accepted in conformance with Section 7-1.17, "Acceptance of Contract," of the Standard Specifications. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the Contractor or deficient subcontract performance or noncompliance by a subcontractor.

5-1.17 PARTNERING

The State will promote the formation of a "Partnering" relationship with the Contractor in order to effectively complete the contract to the benefit of both parties. The purpose of this relationship is to maintain a cooperative communication and to mutually resolve conflicts at the lowest responsible management level.

The Contractor may request the formation of a "Partnering" relationship by submitting a request in writing to the Engineer after approval of the contract. If the Contractor's request for "Partnering" is approved by the Engineer, scheduling of a "Partnering Workshop," selecting the "Partnering" facilitator and workshop site, and other administrative details shall be as agreed to by both parties. If agreed to by the parties, additional "Partnering Workshops" will be conducted as needed throughout the life of the contract.

A one-day "Training in Partnering Concepts" session will be conducted regardless of whether the Contractor requests the formation of a "Partnering" relationship. The "Training in Partnering Concepts" session will be conducted locally for the Contractor's and the Engineer's project representatives. The Contractor shall be represented by a minimum of 2 representatives, one being the Contractor's authorized representative pursuant to Section 5-1.06, "Superintendence," of the Standard Specifications. Scheduling of the "Training in Partnering Concepts" session and selection of the trainer and training site shall be determined cooperatively by the Contractor and the Engineer. If, upon the Contractor's request, "Partnering" is approved by the Engineer, the "Training in Partnering Concepts" session shall be conducted prior to the initial "Partnering Workshop."

The costs involved in providing the "Training in Partnering Concepts" trainer and training site will be borne entirely by the State. The costs will be determined in conformance with the provisions in Section 9-1.03B, "Work Performed by Special Forces or Other Special Services," of the Standard Specifications, and paying to the Contractor the sum of that cost, except no markups will be allowed.

The costs involved in providing the "Partnering Workshop" facilitator and workshop site will be borne equally by the State and the Contractor. The division of cost will be made by determining the cost in providing the "Partnering Workshop" facilitator and workshop site in conformance with the provisions in Section 9-1.03B, "Work Performed by Special Forces or Other Special Services," of the Standard Specifications, and paying to the Contractor one-half of that cost, except no markups will be allowed.

All other costs associated with "Training in Partnering Concepts" and "Partnering Workshops" will be borne separately by the party incurring the costs, such as wages and travel expenses, and no additional compensation will be allowed therefor.

The establishment of a "Partnering" relationship will not change or modify the terms and conditions of the contract and will not relieve either party of the legal requirements of the contract.

5-1.174 VALUE ANALYSIS

The Contractor may submit to the Engineer, in writing, a request for a "Value Analysis" workshop. The purpose for having a workshop is to identify value enhancing opportunities and to consider modifications to the plans and specifications that will reduce either the total cost, time of construction or traffic congestion, without impairing, in any manner, the essential functions or characteristics of the project including, but not limited to, service life, economy of operation, ease of maintenance, benefits to the travelling public, desired appearance, or design and safety standards.

To maximize the potential benefits of a workshop, the request should be submitted to the Engineer early in the project after approval of the contract. If the Contractor's request for a "Value Analysis" workshop is approved by the Engineer, scheduling of a workshop, selecting the facilitator and workshop site, and other administrative details shall be determined cooperatively by the Contractor and the Engineer.

The workshop shall be conducted in conformance with the methodology described in the Department's "Value Analysis Team Guide" available at the Department's web site at:

<http://www.dot.ca.gov/hq/oppd/value/>

The facilitator shall be a Certified Value Specialist (CVS) as recognized by the Society of American Value Engineers (SAVE) International, which may be contacted as follows:

SAVE International, 60 Revere Drive, Northbrook, IL 60062
Telephone 1-847-480-1730, FAX 1-847-480-9282

The Contractor may submit recommendations resulting from a "Value Analysis" workshop for approval by the Engineer as cost reduction incentive proposals in conformance with the provisions in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications.

The costs involved in providing the "Value Analysis" facilitator and workshop site will be borne equally by the State and the Contractor. The division of cost will be made by determining the cost in providing the "Value Analysis" facilitator and workshop site in conformance with the provisions in Section 9-1.03B, "Work Performed by Special Forces or Other Special Services," of the Standard Specifications, and paying to the Contractor one-half of that cost, except no markups will be allowed.

All other costs associated with the "Value Analysis" workshop will be borne separately by the party incurring the costs, such as wages and travel expenses, and no additional compensation will be allowed therefor.

5-1.18 DISPUTES REVIEW BOARD

To assist in the resolution of disputes or potential claims arising out of the work of this project, a Disputes Review Board, hereinafter referred to as the "DRB", shall be established by the Engineer and Contractor cooperatively upon approval of the contract. The DRB is intended to assist the contract administrative claims resolution process as set forth in the provisions of Section 9-1.04, "Notice of Potential Claim," and Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications. The DRB shall not be considered to serve as a substitute for any requirements in the specifications in regard to filing of potential claims. The requirements and procedures established in this special provision shall be considered as an essential prerequisite to filing a claim, for arbitration or for litigation prior or subsequent to project completion.

The DRB shall be utilized when dispute or potential claim resolution at the job level is unsuccessful. The DRB shall function until the day of acceptance of the contract, at which time the work of the DRB will cease except for completion of unfinished dispute hearings and reports. After acceptance of the contract any disputes or potential claims that the Contractor wants to pursue that have not been settled, shall be stated or restated, by the Contractor, in response to the Proposed Final Estimate within the time limits provided in Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications. The State will review those claims in accordance with Section 9-1.07B, of the Standard Specifications. Following the completion of the State's administrative claims procedure, the Contractor may resort to arbitration as provided in Section 9-1.10, "Arbitration," of the Standard Specifications.

Disputes, as used in this section, shall include all differences of opinion, properly noticed as provided hereinafter, between the State and Contractor on matters related to the work and other subjects considered by the State or Contractor, or by both, to be of concern to the DRB on this project, except matters relating to Contractor, subcontractor or supplier claims not actionable against the State as specified in these special provisions. Whenever the term "dispute" or "disputes" is used herein, it shall be deemed to include potential claims as well as disputes.

The DRB shall serve as an advisory body to assist in the resolution of disputes between the State and the Contractor, hereinafter referred to as the "parties". The DRB shall consider disputes referred to it, and furnish written reports containing findings and recommendations pertaining to those disputes, to the parties to aid in resolution of the differences between them. DRB findings and recommendations are not binding on the parties.

The DRB shall consist of one member selected by the State, one member selected by the Contractor, and a third member selected by the first two members and approved by both the State and the Contractor. The third member shall act as DRB Chairperson.

The first two DRB members shall select a third DRB member subject to the mutual approval of the parties, or may mutually concur on a list of potentially acceptable third DRB members and submit the list to the parties for final selection and approval of the third member. The goal in selection of the third member is to complement the professional experience of the first two members, and to provide leadership for the DRB's activities.

No DRB member shall have prior direct involvement in this contract, and no member shall have a financial interest in this contract or the parties thereto, within a period of 6 months prior to award of this contract, or during the contract, except as follows:

1. Compensation for services on this DRB.

2. Ownership interest in a party or parties, documented by the prospective DRB member, that has been reviewed and determined in writing by the State to be sufficiently insignificant to render the prospective member acceptable to the State.
3. Service as a member of other Disputes Review Boards on other contracts.
4. Retirement payments or pensions received from a party that are not tied to, dependent on or affected by the net worth of the party.
5. The above provisions apply to any party having a financial interest in this contract; including but not limited to contractors, subcontractors, suppliers, consultants, and legal and business services.

DRB members shall be especially knowledgeable in the type of construction and contract documents potentially anticipated by the contract, and shall discharge their responsibilities impartially and as an independent body considering the facts and circumstances related to the matters under consideration, applicable laws and regulations, and the pertinent provisions of the contract.

The State and the Contractor shall select their respective DRB members, in accordance with the terms and conditions of the Disputes Review Board Agreement and these provisions, within 45 days of the approval of the contract. Each party shall provide written notification to the other of the name of their selected DRB member along with the prospective member's written disclosure statement.

Before their appointments are final, the first two prospective DRB members shall submit complete disclosure statements to both the State and the Contractor. The statement shall include a resume of the prospective member's experience, together with a declaration describing all past, present and anticipated or planned future relationships, including indirect relationships through the prospective member's primary or full-time employer, to this project and with all parties involved in this construction contract; including, but not limited to, any relevant subcontractors or suppliers to the parties, the parties' principals or the parties' counsel. The DRB members shall also include a full disclosure of close professional or personal relationships with all key members of all parties to the contract. Either the Contractor or the State may object to the others nominee and that person will not be selected for the DRB. No reason need be given for the first objection. Objections to subsequent nominees must be based on a specific breach or violation of nominee responsibilities under this specification. A different person shall then be nominated within 14 Days. The third DRB member shall supply a full disclosure statement to the first two DRB members and to the parties prior to appointment. Either party may reject any of the three prospective DRB members who fail to fully comply with all required employment and financial disclosure conditions of DRB membership as described in the Disputes Review Board Agreement and elsewhere herein. A copy of the Disputes Review Board Agreement is included in this special provision.

The first duty of the State and Contractor selected members of the DRB is to select and recommend prospective third member(s) to the parties for final selection and approval. The first two DRB members shall proceed with the selection of the third DRB member immediately upon receiving written notification from the State of their selection, and shall provide their recommendation simultaneously to the parties within 21 days of the notification.

An impasse shall be considered to have been reached if the parties are unable to approve a third member within 14 days of receipt of the recommendation of the first two DRB members, or if the first two members are unable to agree upon a recommendation within the 14 day time limit allowed in the preceding paragraph. In the event of an impasse in selection of the third DRB member, the State and the Contractor shall each propose three candidates for the third position. The parties shall select all candidates proposed under this paragraph from the current list of arbitrators certified by the Public Works Contract Arbitration Committee created by Article 7.2 (commencing with Section 10245) of the State Contract Act. The first two DRB members shall then select one of the 6 proposed candidates in a blind draw.

The Contractor, the State, and all three members of the DRB shall complete and adhere to the Disputes Review Board Agreement in administration of this DRB within 14 days of the parties' concurrence in the selection of the third member. The State authorizes the Engineer to execute and administer the terms of the Agreement. The person(s) designated by the Contractor as authorized to execute Contract Change Orders shall be authorized to execute and administer the terms of this agreement, or to delegate the authority in writing. The operation of the DRB shall be in conformance with the terms of the Disputes Review Board Agreement.

The State and the Contractor shall bear the costs and expenses of the DRB equally. Each DRB board member shall be compensated at an agreed rate of \$1,000.00 per day if time spent per meeting, including all on-site time plus one hour of travel time, is greater than four hours. Each DRB board member shall be compensated at an agreed rate of \$600.00 per day if time spent per meeting, including all on-site time plus one hour of travel time, is less than or equal to four hours. The agreed rates shall be considered full compensation for on-site time, travel expenses, transportation, lodging, time for travel and incidentals for each day, or portion thereof, that the DRB member is at an authorized DRB meeting. No additional compensation will be made for time spent by DRB members in review and research activities outside the official DRB meetings unless that time, (such as time spent evaluating and preparing recommendations on specific issues presented to the DRB), has been specifically agreed to in advance by the State and Contractor. Time away from the project, that has been specifically agreed to in advance by the parties, will be compensated at an agreed rate of \$100.00 per hour. The agreed amount of \$100.00 per hour shall include all incidentals including any expenses for telephone, fax and computer services.

Members serving on more than one DRB, regardless of the number of meetings per day, shall not be paid more than the all inclusive rate per day or rate per hour for an individual project. The State will provide, at no cost to the Contractor, administrative services such as conference facilities and secretarial services to the DRB. These special provisions and the Disputes Review Board Agreement state provisions for compensation and expenses of the DRB. All DRB members shall be compensated at the same daily and hourly rate. The Contractor shall make direct payments to each DRB member for their participation in authorized meetings and approved hourly rate charges from invoices submitted by each DRB member. The State will reimburse the Contractor for its share of the costs. There will be no markups applied to any expenses connected with the DRB, either by the DRB members or by the Contractor when requesting payment of the State's share of DRB expenses.

Service of a DRB member may be terminated at any time with not less than 14 days notice as follows:

1. The State may terminate service of the State appointed member.
2. The Contractor may terminate service of the Contractor appointed member.
3. Upon the written recommendation of the State and Contractor members for the removal of the third member.
4. Upon resignation of a member.

When a member of the DRB is replaced, the replacement member shall be appointed in the same manner as the replaced member was appointed. The appointment of a replacement DRB member will begin promptly upon determination of the need for replacement and shall be completed within 14 days. Changes in either of the DRB members chosen by the two parties will not require re-selection of the third member, unless both parties agree to such re-selection in writing. The Disputes Review Board Agreement shall be amended to reflect the change of a DRB member.

The following procedure shall be used for dispute resolution:

1. If the Contractor objects to any decision, act or order of the Engineer, the Contractor shall give written notice of potential claim as specified in Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications, including provision of applicable cost documentation; or file written protests or notices pursuant to Sections 4-1.03A, "Procedure and Protest", 8-1.06, "Time of Completion", 8-1.07, "Liquidated Damages", or 8-1.10, "Utility and Non-Highway Facilities" of the Standard Specifications.
2. The Engineer will respond, in writing, to the Contractor's written protest or notice within 14 days of receipt of the written protest or notice.
3. Within 14 days after receipt of the Engineer's written response, the Contractor shall, if the Contractor still objects, file a written reply with the Engineer, stating clearly and in detail the basis of the objection.
4. Following the Contractor's objection to the Engineer's decision, the Contractor shall refer the dispute to the DRB if the Contractor wishes to further pursue the objection to the Engineer's decision. The Contractor shall make the referral in writing to the DRB, simultaneously copied to the State, within 21 days after receipt of the written reply from the Engineer. The written dispute referral shall describe the disputed matter in individual discrete segments so that it will be clear to both parties and the DRB what discrete elements of the dispute have been resolved, and which remain unresolved.
5. The Contractor, by failing to submit the written notice of referral of the matter to the DRB within 21 days after receipt of the State's written reply, waives any future claims on the matter in contention.
6. The Contractor and the State shall each be afforded an opportunity to be present and to be heard by the DRB, and to offer evidence. Either party furnishing any written evidence or documentation to the DRB must furnish copies of such information to the other party a minimum of 14 days prior to the date the DRB is scheduled to convene the hearing for the dispute. Either party shall produce such additional evidence as the DRB may deem necessary to reach an understanding and determination of the dispute. The party furnishing additional evidence shall furnish copies of such additional evidence to the other party at the same time the evidence is provided to the DRB. The DRB will not consider any evidence not furnished in accordance with the terms specified herein.
7. The DRB shall furnish a report, containing findings and recommendations as described in the Disputes Review Board Agreement, in writing to both the State and the Contractor. The DRB shall complete its reports, including minority opinion if any, and submit them to the parties within 30 days of the DRB hearing, except that time extensions may be granted at the request of the DRB with the written concurrence of both parties. The report shall include the facts and circumstances related to the matters under consideration, applicable laws and regulations, the pertinent provisions of the Contract and the actual costs and time incurred as shown on the Contractor's cost accounting records.
8. Within 30 days after receiving the DRB's report, both the State and the Contractor shall respond to the DRB in writing signifying that the dispute is either resolved or remains unresolved. Failure to provide the written response within the time specified, or a written rejection of the DRB's recommendation presented in the report by either party, shall conclusively indicate that the party(s) failing to respond accepts the DRB recommendation. Immediately after responses have been received by both parties, the DRB will provide copies of both responses to the parties

simultaneously. Either party may request clarification of elements of the DRB's report from the DRB prior to responding to the report. The DRB will consider any clarification request only if submitted within 10 days of receipt of the DRB's report, and if submitted simultaneously in writing to both the DRB and the other party. Each party may submit only one request for clarification for any individual DRB report. The DRB shall respond, in writing, to requests for clarification within 10 days of receipt of such requests.

9. The DRB's recommendations, stated in the DRB's reports, are not binding on either party. Either party may seek a reconsideration of a recommendation of the DRB. The DRB shall only grant a reconsideration based upon submission of new evidence and if the request is submitted within the 30 day time limit specified for response to the DRB's written report. Each party may submit only one request for reconsideration regarding any individual DRB recommendation.
10. If the State and the Contractor are able to resolve their dispute with the aid of the DRB's report, the State and Contractor shall promptly accept and implement the recommendations of the DRB.
11. The State or the Contractor shall not call members who served on the DRB for this contract as witnesses in arbitration proceedings which may arise from this contract, and all documents created by the DRB shall be inadmissible as evidence in subsequent arbitration proceedings, except the DRB's final written reports on each issue brought before it..
12. The State and Contractor shall jointly indemnify and hold harmless the DRB members from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of and resulting from the findings and recommendations of the DRB.
13. The DRB members shall have no claim against the State or the Contractor, or both, from any claimed harm arising out of the parties' evaluations of the DRB's report.

Disputes Involving Subcontractor Claims.—For purposes of this section, a "subcontractor claim" shall include any claim by a subcontractor (including also any pass through claims by a lower tier subcontractor or supplier) against the Contractor that is actionable by the Contractor against the Department which arises from the work, services, or materials provided or to be provided in connection with the contract. If the Contractor determines to pursue a dispute against the Department that includes a subcontractor claim, the dispute shall be processed and resolved in accordance with these special provisions and in accordance with the following:

1. The Contractor shall identify clearly in all submissions pursuant to this section, that portion of the dispute that involves a subcontractor claim or claims.
2. The Contractor shall include, as part of its submission pursuant to Step 4 above, a certification (False Claims Act Certification) by the subcontractor's or supplier's officer, partner, or authorized representative with authority to bind the subcontractor and with direct knowledge of the facts underlying the subcontractor claim. The Contractor also shall submit a certification that the subcontractor claim is acknowledged and forwarded by the Contractor. The form for these certifications are available from the Engineer.
3. At any DRB meeting on a dispute that includes one or more subcontractor claims, the Contractor shall require that each subcontractor that is involved in the dispute have present an authorized representative with actual knowledge of the facts underlying the subcontractor claim to assist in presenting the subcontractor claim and to answer questions raised by the DRB members or the Department's representatives.
4. Failure by the Contractor to declare a subcontractor claim on behalf of its subcontractor (including lower tier subcontractors' and suppliers' pass through claims) at the time of submission of the Contractor's claims, as provided hereunder, shall constitute a release of the Department by the Contractor on account of such subcontractor claim.
5. The Contractor shall include in all subcontracts under this contract that subcontractors and suppliers of any tier (a) agree to submit subcontractor claims to the Contractor in a proper form and in sufficient time to allow processing by the Contractor in accordance with the Dispute Review Board resolution specifications; (b) agree to be bound by the terms of the Dispute Review Board provisions to the extent applicable to subcontractor claims; (c) agree that, to the extent a subcontractor claim is involved, completion of all steps required under these Dispute Review Board special provisions shall be a condition precedent to pursuit by the subcontractor of any other remedies permitted by law, including without limitation of a lawsuit against the Contractor; and (d) agree that the existence of a dispute resolution process for disputes involving subcontractor claims shall not be deemed to create any claim, right, or cause of action by any subcontractor or supplier against the Department.

Notwithstanding the foregoing, this Dispute Review Board special provision shall not apply to, and the DRB shall not have the authority to consider, any subcontractor claim between the subcontractor(s) or supplier(s) and the Contractor that is not actionable by the Contractor against the Department.

A copy of the "Disputes Review Board Agreement" to be executed by the Contractor, State and the three DRB members after approval of the contract follows:

DISPUTES REVIEW BOARD AGREEMENT

(Contract Identification)

Contract No. _____

THIS DISPUTES REVIEW BOARD AGREEMENT, hereinafter called "AGREEMENT", made and entered into this _____ day of _____, _____, between the State of California, acting through the California Department of Transportation and the Director of Transportation, hereinafter called the "STATE"; _____ hereinafter called the "CONTRACTOR"; and the Disputes Review Board, hereinafter called the "DRB" consisting of the following members:

(Contractor Appointee) ,

(State Appointee) ,

and _____
(Third Person)

WITNESSETH, that

WHEREAS, the STATE and the CONTRACTOR, hereinafter called the "parties", are now engaged in the construction on the State Highway project referenced above; and

WHEREAS the special provisions for the above referenced contract provides for the establishment and operation of the DRB to assist in resolving disputes; and

WHEREAS, the DRB is composed of three members, one selected by the STATE, one selected by the CONTRACTOR, and the third member selected by the other two members and approved by the parties;

NOW THEREFORE, in consideration of the terms, conditions, covenants, and performance contained herein, or attached and incorporated and made a part hereof, the STATE, the CONTRACTOR, and the DRB members hereto agree as follows:

**I
DESCRIPTION OF WORK**

To assist in the resolution of disputes between the parties, the contract provides for the establishment and the operation of the DRB. The intent of the DRB is to fairly and impartially consider disputes placed before it and provide written recommendations for resolution of these disputes to both parties. The members of this DRB shall perform the services necessary to participate in the DRB's actions as designated in Section II, Scope of Work.

**II
SCOPE OF WORK**

The scope of work of the DRB includes, but is not limited to, the following:

A. Objective

The principal objective of the DRB is to assist in the timely resolution of disputes between the parties arising from performance of this contract. It is not intended for either party to default on their normal responsibility to amicably and fairly settle their differences by indiscriminately assigning them to the DRB. It is intended that the mere existence of the DRB will encourage the parties to resolve disputes without resorting to this review procedure. But when a dispute which is serious enough to warrant the DRB's review does develop, the process for prompt and efficient action will be in place.

B. Procedures

The DRB shall render written reports on disputes between the parties arising from the construction contract. Prior to consideration of a dispute, the DRB shall establish rules and regulations that will govern the conduct of its business and reporting procedures in accordance with the requirements of the contract and the terms of this AGREEMENT. DRB recommendations, resulting from its consideration of a dispute, shall be furnished in writing to both parties. The recommendations shall be based on the pertinent contract provisions, and the facts and circumstances involved in the dispute. The recommendations shall find one responsible party in a dispute; shared or "jury" determinations shall not be rendered.

The DRB shall refrain from officially giving any advice or consulting services to anyone involved in the contract. The individual members shall act in a completely independent manner and while serving as members of the DRB shall have no consulting business connections with either party or its principals or attorneys or any other affiliates (subcontractors, suppliers, etc.) who have a beneficial interest in the contract.

During scheduled meetings of the DRB as well as during dispute hearings, DRB members shall refrain from expressing opinions on the merits of statements on matters under dispute or potential dispute. Opinions of DRB members expressed in private sessions shall be kept strictly confidential. Individual DRB members shall not meet with, or discuss contract issues with individual parties, except as directed by the DRB Chairperson. Any such discussions or meetings shall be disclosed to both parties. Any other discussions regarding the project between the DRB members and the parties shall be in the presence of all three members and both parties. Individual DRB members shall not undertake independent investigations of any kind pertaining to disputes or potential disputes, except with the knowledge of both parties and as expressly directed by the DRB Chairperson.

C. Construction Site Visits, Progress Meetings and Field Inspections

The DRB members shall visit the project site and meet with representatives of the parties to keep abreast of construction activities and to develop familiarity with the work in progress. All scheduled progress meetings shall be held at or near the job site. The DRB shall meet at least once at the start of the project, and at least once every six months thereafter. The frequency, exact time, and duration of additional site visits and progress meetings shall be as recommended by the DRB and approved by the parties consistent with the construction activities or matters under consideration and dispute. Each meeting shall consist of a round table discussion and a field inspection of the work being performed on the contract, if necessary. Each meeting shall be attended by representatives of both parties. The agenda shall generally be as follows:

1. Meeting opened by the DRB Chairperson.
2. Remarks by the STATE's representative.
3. A description by the CONTRACTOR's representative of work accomplished since the last meeting; the current schedule status of the work; and a forecast for the coming period.
4. An outline by the CONTRACTOR's representative of potential problems and a description of proposed solutions.
5. An outline by the STATE's representative of the status of the work as the STATE views it.
6. A brief description by the CONTRACTOR's or STATE's representative of potential claims or disputes which have surfaced since the last meeting.
7. A summary by the STATE's representative, the CONTRACTOR's representative, or the DRB of the status of past disputes and claims.

The STATE's representative will prepare minutes of all regular meetings and circulate them for revision and approval by all concerned.

The field inspection shall cover all active segments of the work, the DRB being accompanied by both parties' representatives. The field inspection may be waived upon mutual agreement of the parties.

D. DRB Consideration and Handling of Disputes

Upon receipt by the DRB of a written referral of a dispute, the DRB shall convene to review and consider the dispute. The DRB shall determine the time and location of DRB hearings, with due consideration for the needs and preferences of the parties while recognizing the paramount importance of speedy resolution of issues. If the matter is not urgent, it may be scheduled for the time of the next scheduled DRB visit to the project. For an urgent matter, and upon the request of either party, the DRB shall meet at its earliest convenience.

Normally, hearings shall be conducted at or near the project site. However, any location which would be more convenient and still provide all required facilities and access to necessary documentation shall be satisfactory.

Both parties shall be given the opportunity to present their evidence at these hearings. It is expressly understood that the DRB members are to act impartially and independently in the consideration of the contract provisions, and the facts and conditions surrounding any dispute presented by either party, and that the recommendations concerning any such dispute are advisory and nonbinding on the parties.

The DRB may request that written documentation and arguments from both parties be sent to each DRB member, through the DRB Chairperson, for review before the hearing begins. A party furnishing any written documentation to the DRB shall furnish copies of such information to the other party at the same time that such information is supplied to the DRB.

DRB hearings shall be informal. There shall be no testimony under oath or cross-examination. There shall be no reporting of the procedures by a shorthand reporter or by any electronic means. Documents and verbal statements shall be received by the DRB in accordance with acceptance standards established by the DRB. Said standards need not comply with prescribed legal laws of evidence.

The third DRB member shall act as Chairperson for dispute hearings and all other DRB activities. The parties shall have a representative at all hearings. Failure to attend a duly noticed meeting by either of the parties shall be conclusively considered by the DRB as indication that the non-attending party considers any written submittals as their entire and complete argument. The claimant shall discuss the dispute, followed by the other party. Each party shall then be allowed one or more rebuttals until all aspects of the dispute are thoroughly covered. DRB members may ask questions, seek clarification, or request further data from either of the parties. The DRB may request from either party documents or information that would assist the DRB in making its findings and recommendations including, but not limited to, documents used by the CONTRACTOR in preparing the bid for the project. A refusal by a party to provide information requested by the DRB may be considered by the DRB as an indication that the requested material would tend to disprove that party's position. Claims shall not necessarily be computed by merely subtracting bid price from the total cost of the affected work. However, if any claims are based on the "total cost method", then, to be considered by the DRB, they shall be supported by evidence furnished by the CONTRACTOR that (1) the nature of the dispute(s) makes it impossible or impracticable to determine cost impacts with a reasonable degree of accuracy, (2) the CONTRACTOR's bid estimate was realistic, (3) the CONTRACTOR's actual costs were reasonable, and (4) the CONTRACTOR was not responsible for the added expenses. As to any claims based on the CONTRACTOR's field or home office accounting records, those claims shall be supported by an audit report of an independent Certified Public Accountant unless the contract includes special provisions that provide for an alternative method to calculate unabsorbed home office overhead. Any of those claims shall also be subject to audit by the DRB with the concurrence of the parties. In large or complex cases, additional hearings may be necessary in order to consider all the evidence presented by both parties. All involved parties shall maintain the confidentiality of all documents and information, as provided in this AGREEMENT.

During dispute hearings, no DRB member shall express an opinion concerning the merit of any facet of the case. All DRB deliberations shall be conducted in private, with all interim individual views kept strictly confidential.

After hearings are concluded, the DRB shall meet in private and reach a conclusion supported by two or more members. Private sessions of the DRB may be held at a location other than the job site or by electronic conferencing as deemed appropriate, in order to expedite the process.

The DRB's findings and recommendations, along with discussion of reasons therefor, shall then be submitted as a written report to both parties. Recommendations shall be based on the pertinent contract provisions, applicable laws and regulations, and facts and circumstances related to the dispute. The report shall be thorough in discussing the facts considered, the contract language, law or regulation viewed by the DRB as pertinent to the issues, and the DRB's interpretation and philosophy in arriving at its conclusions and recommendations. The DRB's report shall stand on its own, without attachments or appendices. The DRB chairman shall complete and furnish a summary report to the DRB Program Manager, Construction Program, M.S. 44, P.O. Box 942874, Sacramento, CA 94274.

With prior written approval of both parties, the DRB may obtain technical services necessary to adequately review the disputes presented; including audit, geotechnical, schedule analysis and other services. The parties' technical staff may supply those services as appropriate. The cost of any technical services, as agreed to by the parties, shall be borne equally by the two parties as specified in an approved contract change order. The CONTRACTOR will not be entitled to markups for the payments made for these services.

The DRB shall resist submittal of incremental portions of information by either party, in the interest of making a fully-informed decision and recommendation.

The DRB shall make every effort to reach a unanimous decision. If this proves impossible, the dissenting member shall prepare a minority opinion, which shall be included in the DRB's report.

Although both parties should place weight upon the DRB's recommendations, they are not binding. Either party may appeal a recommendation to the DRB for reconsideration. However, reconsideration shall only be allowed when there is new evidence to present, and the DRB shall accept only one appeal from each party pertaining to any individual DRB recommendation. The DRB shall hear appeals in accordance with the terms described in the Section entitled "Disputes Review Board" in the special provisions.

E. DRB Member Replacement

Should the need arise to appoint a replacement DRB member, the replacement DRB member shall be appointed in the same manner as the original DRB members were appointed. The selection of a replacement DRB member shall begin

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promptly upon notification of the necessity for a replacement and shall be completed within 14 days. This AGREEMENT will be amended to indicate change in DRB membership.

III CONTRACTOR RESPONSIBILITIES

The CONTRACTOR shall furnish to each DRB member one copy of all pertinent documents which are or may become necessary for the DRB to perform their function. Pertinent documents are any drawings or sketches, calculations, procedures, schedules, estimates, or other documents which are used in the performance of the work or in justifying or substantiating the CONTRACTOR's position. The CONTRACTOR shall also furnish a copy of such pertinent documents to the STATE, in accordance with the terms outlined in the special provisions.

IV STATE RESPONSIBILITIES

The STATE will furnish the following services and items:

A. Contract Related Documents

The STATE will furnish to each DRB member one copy of Notice to Contractors and Special Provisions, Proposal and Contract, Plans, Standard Specifications, and Standard Plans, change orders, written instructions issued by the STATE to the CONTRACTOR, or other documents pertinent to any dispute that has been referred to the DRB and necessary for the DRB to perform its function.

B. Coordination and Services

The STATE, through the Engineer, will, in cooperation with the CONTRACTOR, coordinate the operations of the DRB. The Engineer will arrange or provide conference facilities at or near the project site and provide secretarial and copying services to the DRB without charge to the CONTRACTOR.

V TIME FOR BEGINNING AND COMPLETION

Once established, the DRB shall be in operation until the day of acceptance of the contract. The DRB members shall not begin any work under the terms of this AGREEMENT until authorized in writing by the STATE.

VI PAYMENT

A. All Inclusive Rate Payment

The STATE and the CONTRACTOR shall bear the costs and expenses of the DRB equally. Each DRB board member shall be compensated at an agreed rate of \$1,000.00 per day if time spent per meeting, including all on-site time plus one hour of travel time, is greater than four hours. Each DRB board member shall be compensated at an agreed rate of \$600.00 per day if time spent per meeting, including all on-site time plus one hour of travel time, is less than or equal to four hours. The agreed rates shall be considered full compensation for on-site time, travel expenses, transportation, lodging, time for travel and incidentals for each day, or portion thereof, that the DRB member is at an authorized DRB meeting. No additional compensation will be made for time spent by DRB members in review and research activities outside the official DRB meetings unless that time has been specifically agreed to in advance by the STATE and CONTRACTOR. Time away from the project, that has been specifically agreed to in advance by the parties, will be compensated at an agreed rate of \$100.00 per hour. The agreed amount of \$100.00 per hour shall include all incidentals including any expenses for telephone, fax and computer services. Members serving on more than one DRB, regardless of the number of meetings per day, shall not be paid more than the all inclusive rate per day or rate per hour for an individual project. The STATE will provide, at no cost to the CONTRACTOR, administrative services such as conference facilities and secretarial services to the DRB.

B. Payments

All DRB members shall be compensated at the same rate. The CONTRACTOR shall make direct payments to each DRB member for their participation in authorized meetings and approved hourly rate charges from invoices submitted by each DRB member. The STATE will reimburse the CONTRACTOR for its share of the costs of the DRB.

The DRB members may submit invoices to the CONTRACTOR for partial payment for work performed and services rendered for their participation in authorized meetings not more often than once per month during the progress of the work. The invoices shall be in a format approved by the parties and accompanied by a general description of activities performed during that billing period. Payment for any hourly fees, at the agreed rate, shall not be paid to a DRB member until the amount and extent of those fees are approved by the STATE and CONTRACTOR.

Invoices shall be accompanied by original supporting documents, which the CONTRACTOR shall include with the extra work billing when submitting for reimbursement of the STATE's share of cost from the STATE. The CONTRACTOR will be reimbursed for one-half of approved costs of the DRB. No markups will be added to the CONTRACTOR's payment.

C. Inspection of Costs Records

The DRB members and the CONTRACTOR shall keep available for inspection by representatives of the STATE and the United States, for a period of three years after final payment, the cost records and accounts pertaining to this AGREEMENT. If any litigation, claim, or audit arising out of, in connection with, or related to this contract is initiated before the expiration of the three-year period, the cost records and accounts shall be retained until such litigation, claim, or audit involving the records is completed.

VII ASSIGNMENT OF TASKS OF WORK

The DRB members shall not assign any of the work of this AGREEMENT.

VIII TERMINATION OF AGREEMENT, THE DRB, AND DRB MEMBERS

DRB members may resign from the DRB by providing not less than 14 days written notice of the resignation to the STATE and CONTRACTOR. DRB members may be terminated by their original appointing power, in accordance with the terms of the contract.

IX LEGAL RELATIONS

The parties hereto mutually understand and agree that the DRB member in the performance of duties on the DRB, is acting in the capacity of an independent agent and not as an employee of either party.

No party to this AGREEMENT shall bear a greater responsibility for damages or personal injury than is normally provided by Federal or State of California Law.

Notwithstanding the provisions of this contract that require the CONTRACTOR to indemnify and hold harmless the STATE, the parties shall jointly indemnify and hold harmless the DRB members from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of and resulting from the findings and recommendations of the DRB.

X CONFIDENTIALITY

The parties hereto mutually understand and agree that all documents and records provided by the parties in reference to issues brought before the DRB, which documents and records are marked "Confidential - for use by the DRB only", shall be kept in confidence and used only for the purpose of resolution of subject disputes, and for assisting in development of DRB findings and recommendations; that such documents and records will not be utilized or revealed to others, except to officials of the parties who are authorized to act on the subject disputes, for any purposes, during the life of the DRB. Upon termination of this AGREEMENT, said confidential documents and records, and all copies thereof, shall be returned to the parties who furnished them to the DRB. However, the parties understand that such documents shall be subsequently discoverable and admissible in court or arbitration proceedings unless a protective order has been obtained by the party seeking further confidentiality.

**XI
DISPUTES**

Any dispute between the parties hereto, including disputes between the DRB members and either party or both parties, arising out of the work or other terms of this AGREEMENT, which cannot be resolved by negotiation and mutual concurrence between the parties, or through the administrative process provided in the contract, shall be resolved by arbitration as provided in Section 9-1.10, "Arbitration," of the Standard Specifications.

**XII
VENUE, APPLICABLE LAW, AND PERSONAL JURISDICTION**

In the event that any party, including an individual member of the DRB, deems it necessary to institute arbitration proceedings to enforce any right or obligation under this AGREEMENT, the parties hereto agree that any such action shall be initiated in the Office of Administrative Hearings of the State of California. The parties hereto agree that all questions shall be resolved by arbitration by application of California law and that the parties to such arbitration shall have the right of appeal from such decisions to the Superior Court in accordance with the laws of the State of California. Venue for the arbitration shall be Sacramento or any other location as agreed to by the parties.

**XIII
FEDERAL REVIEW AND REQUIREMENTS**

On Federal-Aid contracts, the Federal Highway Administration shall have the right to review the work of the DRB in progress, except for any private meetings or deliberations of the DRB.

All other Federal requirements in this agreement shall only apply to Federal-Aid contracts.

**XIV
CERTIFICATION OF THE CONTRACTOR,
THE DRB MEMBERS, AND THE STATE**

IN WITNESS WHEREOF, the parties hereto have executed this AGREEMENT as of the day and year first above written.

DRB MEMBER

DRB MEMBER

By: _____

By: _____

Title: _____

Title : _____

DRB MEMBER

By : _____

Title : _____

CONTRACTOR

CALIFORNIA STATE DEPARTMENT
OF TRANSPORTATION

By: _____

By: _____

Title: _____

Title: _____

5-1.19 FORCE ACCOUNT PAYMENT

The second, third and fourth paragraphs of Section 9-1.03A, "Work Performed by Contractor," in the Standard Specifications, shall not apply.

Attention is directed to "Overhead" of these special provisions.

To the total of the direct costs for work performed on a force account basis, computed as provided in Sections 9-1.03A(1), "Labor," 9-1.03A(2), "Materials," and 9-1.03A(3), "Equipment Rental," of the Standard Specifications, there will be added the following markups:

Cost	Percent Markup
Labor	28
Materials	10
Equipment Rental	10

The above markups shall be applied to all work performed on a force account basis, regardless of whether the work revises the current contract completion date.

The above markups, together with payments made for time-related overhead pursuant to "Overhead" of these special provisions, shall constitute full compensation for all overhead costs for work performed on a force account basis. These overhead costs shall be deemed to include all items of expense not specifically designated as cost or equipment rental in conformance with the provisions in Sections 9-1.03A(1), "Labor," 9-1.03A(2), "Materials," and 9-1.03A(3), "Equipment Rental," of the Standard Specifications. The total payment made as provided above and in the first paragraph of Section 9-1.03A, "Work Performed by Contractor," of the Standard Specifications shall be deemed to be the actual cost of the work performed on a force account basis, and shall constitute full compensation therefor. Full compensation for all overhead costs for work performed on a force account basis, and for which no adjustment is made to the quantity of time-related overhead pursuant to "Overhead" of these special provisions, shall be considered as included in the markups specified above, and no additional compensation will be allowed therefor.

When extra work to be paid for on a force account basis is performed by a subcontractor, approved in conformance with the provisions in Section 8-1.01, "Subcontracting," of the Standard Specifications, an additional markup of 7 percent will be added to the total cost of that extra work including all markups specified in this section "Force Account Payment". The additional 7 percent markup shall reimburse the Contractor for additional administrative costs, and no other additional payment will be made by reason of performance of the extra work by a subcontractor.

5-1.20 AREAS FOR CONTRACTOR'S USE

Attention is directed to the provisions in Section 7-1.19, "Rights in Land and Improvements," of the Standard Specifications and these special provisions.

The highway right of way shall be used only for purposes that are necessary to perform the required work. The Contractor shall not occupy the right of way, or allow others to occupy the right of way, for purposes which are not necessary to perform the required work.

There are no State-owned parcels adjacent to the right of way for the exclusive use of the Contractor within the contract limits. The Contractor shall secure at his own expense any area required for plant sites, storage of equipment or materials, or for other purposes.

No area is available within the contract limits for the exclusive use of the Contractor. However, temporary storage of equipment and materials on State property may be arranged with the Engineer, subject to the prior demands of State maintenance forces and to all other contract requirements. Use of the Contractor's work areas and other State-owned property shall be at the Contractor's own risk, and the State shall not be held liable for any damage to or loss of materials or equipment located within such areas.

5-1.21 SITE CONDITIONS SURVEY

A baseline video camera survey will be performed by the State prior to the start of construction to establish existing facility conditions at the project site and in the Tubes, including asphalt access roads and parking lots within the work areas. The Contractor and the State shall agree to this video taped facility conditions which will become part of the project records for future reference.

5-1.22 UTILITIES

The Contractor may use water from existing State outlets within the contract limits, where such utility exists, free of charge for contract operations provided that the Contractor does not misuse such services and provided that such utility services are in service and are not required by the State for other purposes, and subject to the provisions of "Cooperation" of these special provisions.

The Contractor will not be allowed to operate any existing mechanical or electrical system. Any existing system required to be operated by the Contractor shall be requested by the Contractor to the Engineer.

The Contractor shall make his own arrangements to obtain electrical power, compressed air and other utilities, including additional water required for his operations and shall make and maintain the necessary service connections at his own expense.

5-1.23 SANITARY PROVISIONS

State sanitary facilities will not be available for use by the Contractor's employees.

5-1.24 ACCESS TO JOBSITE

Providing temporary access to the job site shall be the responsibility of the Contractor. The Contractor shall submit working drawings outlining proposed access for review and approval by the Engineer. Working drawings shall be submitted no less than 4 weeks in advance of the start of affected work to allow for review by the Engineer and correction by the Contractor of the drawings without delaying the work.

5-1.25 DRAWINGS

Attention is directed to Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications and these special provisions.

When working drawings are required by these special provisions, the drawings shall be submitted in accordance with the provisions in Section 5-1.02, "Drawings," of the Standard Specifications and the following:

1. Working drawings shall be submitted to the Engineer.
2. Working drawings shall be 22" x 34" in size.
3. Microfilms are required of all approved shop drawings and shall be only a 24x reduction.

5-1.26 PAYMENTS

Attention is directed to Section 9-1.06, "Partial Payments," and 9-1.07, "Payment After Acceptance," of the Standard Specifications and these special provisions.

For the purpose of making partial payments pursuant to Section 9-1.06, "Partial Payments," of the Standard Specifications, the amount set forth for the contract items of work hereinafter listed shall be deemed to be the maximum value of said contract item of work which will be recognized for progress payment purposes.

Clearing and Grubbing	\$ 20,250.00
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After acceptance of the contract pursuant to Section 7-1.17, "Acceptance of Contract," of the Standard Specifications, the amount, if any, payable for a contract item of work in excess of the maximum value for progress payment purposes hereinabove listed for said item, will be included for payment in the first estimate made after acceptance of the contract.

In determining the partial payments to be made to the Contractor, only the following listed materials will be considered for inclusion in said payment as materials furnished but not incorporated in the work:

- Rock Slope Protection Fabric
- Fences and Gates
- Electrical equipment, conduits, cables and fixtures
- Filter Fabric

5-1.27 SOUND CONTROL REQUIREMENTS

Sound control shall conform to the provisions in Section 7-1.01I, "Sound Control Requirements," of the Standard Specifications and these special provisions.

The noise level from the Contractor's operations, between the hours of 9:00 p.m. and 6:00 a.m., shall not exceed 86 dbA at a distance of 50 feet. This requirement in no way relieves the Contractor from responsibility for complying with local ordinances regulating noise level.

Said noise level requirement shall apply to all equipment on the job or related to the job, including but not limited to trucks, transit mixers or transient equipment that may or may not be owned by the Contractor. The use of loud sound signals shall be avoided in favor of light warnings except those required by safety laws for the protection of personnel.

Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

5-1.28 HAZARDOUS MATERIAL, GENERAL

Attention is directed to "Earthwork" of these special provisions regarding the removal and disposal of hazardous material.

Hazardous material has been discovered through testing within the project limits. Portions of the site investigation report are included in the "Materials Information Handout." The complete report entitled "Hazardous Waste Preliminary Site Investigation, Posey/Webster Tubes, Alameda/Oakland, California" is available for inspection at the Department of Transportation, Duty Senior's Desk, 111 Grand Avenue, Oakland, California, (510) 286-5209. Requests to review the reports must be made with the Duty Senior at least 24 hours in advance.

Within the context of this contract, the designation "hazardous" shall apply to material with contaminant levels that meet or exceed the contaminant levels specified in the California Code of Regulations (CCR) Title 22 and shall be disposed at a Class I disposal facility.

All hazardous material on exteriors of transport vehicles shall be removed and placed either into the current transport vehicle or the excavation prior to the vehicle leaving the exclusion zone. No hazardous material shall be deposited on public roads. The Contractor shall indemnify the State from any costs due to spillage during the transport of the hazardous material to the disposal facility.

Disposal of additional material resulting from the Contractor's option to slope the excavations in lieu of shoring at locations where this is possible or any excavation operations outside structure excavation pay limits will be at the Contractor's expense. This resultant material shall be treated as hazardous material if the test results for the location indicate that the material being excavated is hazardous.

APPLICABLE RULES AND REGULATIONS.--Excavation, transport and disposal of hazardous material shall be in accordance with the rules and regulations of the following agencies:

United States Department of Transportation (USDOT)
United States Environmental Protection Agency (USEPA)
California Environmental Protection Agency (CAL-EPA)
1. Department of Toxic Substance Control (DTSC)
2. Integrated Waste Management Board
3. Regional Water Quality Control Board, Region 2 (RWQCB)
4. State Air Resources Board
Bay Area Air Quality Management District (BAAQMD)
California Division of Occupational Safety and Health Administration (CAL-OSHA)
Alameda County Environmental Health Department

PERMITS AND LICENSES.--The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work, including registration for transporting vehicles carrying the hazardous material. The California Environmental Quality Act (CEQA) of 1970 (Chapter 1433, Stats. 1970), as amended may be applicable to permits, licenses and authorizations which the Contractor shall obtain from all agencies in connection with performing the work of the contract. The Contractor shall comply with the provisions of said statutes in obtaining such permits, licenses and other authorizations.

The Engineer will obtain the Environmental Protection Agency Generator Identification No. and Board of Equalization Identification Number as the State is the Generator.

SAMPLING AND ANALYSIS.--The Contractor shall test the material to be excavated at his own expense for any additional acceptance requirements put forth by the disposal facility. Sampling and analysis shall be performed using the sampling and analysis procedure required by the disposal facility.

The Contractor may perform additional tests on the material to be excavated at his option and expense for confirmation of the material classification as hazardous. Sampling and analysis shall be the same or equivalent tests specified in the Materials Information Handout. The Contractor shall submit for approval by the Engineer, his sampling and analysis procedure and the name and address of the laboratory to be used fifteen (15) working days prior to beginning any sampling or analysis. The laboratory used shall be certified by the California Department of Health Services. Analytical results shall be sent by facsimile or hand delivered to the Engineer as soon as they are available. A summary report of sampling protocols, chain of custody, analysis and laboratory data sheets shall be supplied to the Engineer within 30 days of completion of sampling.

MEASUREMENT AND PAYMENT.--Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work affected by this section and no additional compensation will be allowed therefor.

HEALTH & SAFETY PLAN.—The Contractor shall prepare a detailed Health & Safety Plan for all site personnel in accordance with the DTSC and CAL-OSHA regulations. The Health & Safety Plan shall include a plot plan indicating the exclusion zones, contaminant reduction (decontamination zones) and support zones in accordance with California Code of Regulations (CCR), Title 8, an air monitoring plan, site clean up procedures, and shall be submitted at least 15 working days prior to beginning any work for review and acceptance by the Engineer. Prior to submittal, the Contractor shall have the Health & Safety Plan approved by an Industrial Hygienist.

SAFETY.—Prior to performing any work at the locations containing material classified as hazardous, all personnel, including State Personnel, shall complete a safety training program which meets 29 CFR 1910.120 and 8 CCR 5192 covering the potential hazards as identified. The training shall be provided by the Contractor. The Contractor shall provide a certification of completion of the Safety Training Program to all personnel. Any personal protective equipment required by the Contractor's Health and Safety Plan for personnel working within the exclusion zone will be supplied to State personnel by the Contractor. The number of State personnel requiring the above mentioned safety training program and personal protective equipment will be 5.

The decontamination area shall be located outside of the exclusion zone. Water from decontamination procedures shall be collected and disposed of at an appropriate disposal site by the Contractor. Non-reusable protective equipment, once used by any personnel, including State personnel, shall be collected and disposed of at an appropriate disposal site by the Contractor.

The Health and Safety Plan shall include perimeter air monitoring incorporating upwind and downwind locations as approved by the Engineer. Monitoring shall be by personal air samplers using National Institute of Safety and Health (NIOSH) Method 7082. Sampling shall achieve a detection limit of 0.05 micrograms per cubic meters of air per day. Daily monitoring shall take place while the Contractor performs earthwork operations. A single representative daily sample shall be analyzed for lead. Results shall be analyzed and provided to the Engineer within 24 hours. Average lead concentrations shall not exceed 1.5 micrograms per cubic meter of air per day. If concentrations exceed this level the Contractor shall stop work and modify the work to prevent the release of lead. Monitoring shall be done under the direction of and data reviewed by and signed by a Certified Industrial Hygienist.

The contract lump sum price paid for Health and Safety Plan shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in preparing and implementing the project specific Health and Safety Plan including paying the Certified Industrial Hygienist and for providing personal protective equipment, training and medical surveillance as specified in these special provisions, and as directed by the Engineer.

5-1.29 RELATIONS WITH U.S. ARMY CORPS OF ENGINEERS

A Department of the Army, Corps of Engineers Permit is applicable to this project.

A copy of the Permit may be obtained at the Department of Transportation, Plans and Bid Documents, Room 0200, Transportation Building, 1120 N Street, P.O. Box 942874, Sacramento, California 94274-0001, Telephone No. (916)654-4490, and is available for inspection at the office of the District Director of Transportation at 111 Grand Avenue, Oakland, California 94612-3717.

Full compensation for conforming to the requirements of the Permit shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

5-1.30 RELATIONS WITH BAY CONSERVATION AND DEVELOPMENT COMMISSION

A Bay Conservation and Development Permit is applicable to this project.

A copy of the Permit may be obtained at the Department of Transportation, Plans and Bid Documents, Room 0200, Transportation Building, 1120 N Street, P.O. Box 942874, Sacramento, California 94274-0001, Telephone No. (916)654-4490, and is available for inspection at the office of the District Director of Transportation at 111 Grand Avenue, Oakland, California 94612-3717.

Full compensation for conforming to the requirements of the Permit shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

SECTION 6. (BLANK)

SECTION 7. (BLANK)

SECTION 8. MATERIALS

SECTION 8-1. MISCELLANEOUS

8-1.01 PREQUALIFIED AND TESTED SIGNING AND DELINEATION MATERIALS

The Department maintains the following list of Prequalified and Tested Signing and Delineation Materials. The Engineer shall not be precluded from sampling and testing products on the list of Prequalified and Tested Signing and Delineation Materials.

The manufacturer of products on the list of Prequalified and Tested Signing and Delineation Materials shall furnish the Engineer a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each type of traffic product supplied.

For those categories of materials included in the list of Prequalified and Tested Signing and Delineation Materials, only those products shown within the listing may be used in the work. Other categories of products, not included in the list of Prequalified and Tested Signing and Delineation Materials, may be used in the work provided they conform to the requirements of the Standard Specifications.

Materials and products may be added to the list of Prequalified and Tested Signing and Delineation Materials if the manufacturer submits a New Product Information Form to the New Product Coordinator at the Transportation Laboratory. Upon a Departmental request for samples, sufficient samples shall be submitted to permit performance of required tests. Approval of materials or products will depend upon compliance with the specifications and tests the Department may elect to perform.

PAVEMENT MARKERS, PERMANENT TYPE

Retroreflective

- A. Apex, Model 921 (4"x4")
- B. Ray-O-Lite, Models SS (4"x4"), RS (4"x4") and AA (4"x4")
- C. Stimsonite, Models 88 (4"x4"), 911 (4"x4"), 953 (2.75"x4.5")
- D. 3M Series 290 (3.5"x4")

Retroreflective With Abrasion Resistant Surface (ARS)

- A. Apex, Model 921AR (4"x4")
- B. Ray-O-Lite "AA" ARS (4"x4")
- C. Stimsonite, Models 911 (4"x4"), 953 (2.75"x4.5")
- D. 3M Series 290 (3.5"x4")

Retroreflective With Abrasion Resistant Surface (ARS)

(Used for recessed applications)

- A. Stimsonite, Model 948 (2.28"x4.69")
- B. Ray-O-Lite, Model 2002 (2.28"x4.61")
- C. Stimsonite, Model 944SB (2"x4")*
- D. Ray-O-Lite, Model 2004 ARS (2"x4")*

*For use only in 4.4" wide (older) recessed slots

Non-Reflective For Use With Epoxy Adhesive, 4" Round

- A. Apex Universal (Ceramic)
- B. Highway Ceramics, Inc. (Ceramic)

Non-Reflective For Use With Bitumen Adhesive, 4" Round

- A. Alpine Products, "D-Dot" and "ANR" (ABS)
- B. Apex Universal (Ceramic)
- C. Apex Universal, Model 929 (ABS)
- D. Elgin Molded Plastics, "Empco-Lite" Model 900 (ABS)
- E. Highway Ceramics, Inc. (Ceramic)
- F. Hi-Way Safety, Inc., Models P20-2000W and 2001Y (ABS)
- G. Interstate Sales, "Diamond Back" (ABS) and (Polypropylene)
- H. Novabrite Models Adot-w (White) Adot-y (Yellow), (ABS)
- I. Road Creations, Model RCB4NR (Acrylic)
- J. Zumar Industries, "Titan TM40A" (ABS)

PAVEMENT MARKERS, TEMPORARY TYPE

Temporary Markers For Long Term Day/Night Use (6 months or less)

- A. Apex Universal, Model 924 (4"x4")

- B. Elgin Molded Plastics, "Empco-Lite" Model 901 (4"x4")
- C. Road Creations, Model R41C (4"x4")
- D. Vega Molded Products "Temporary Road Marker" (3"x4")

Temporary Markers For Short Term Day/Night Use (14 days or less)

(For seal coat or chip seal applications, clear protective covers are required)

- A. Apex Universal, Model 932
- B. Davidson Plastics, Models T.O.M., T.R.P.M., and "HH" (High Heat)
- C. Hi-Way Safety, Inc., Model 1280/1281

STRIPING AND PAVEMENT MARKING MATERIAL

Permanent Traffic Striping and Pavement Marking Tape

- A. Advanced Traffic Marking, Series 300 and 400
- B. Brite-Line, Series 1000
- C. Brite-Line "DeltaLine XRP"
- D. Swarco Industries, "Director 35" (For transverse application only)
- E. Swarco Industries, "Director 60"
- F. 3M, "Stamark" Series 380 and 5730
- G. 3M, "Stamark" Series 420 (For transverse application only)

Temporary (Removable) Striping and Pavement Marking Tape (6 months or less)

- A. Advanced Traffic Marking, Series 200
- B. Brite-Line, Series 100
- C. P.B. Laminations, Aztec, Grade 102
- D. Swarco Industries, "Director-2"
- E. 3M, "Stamark," Series 620
- F. 3M Series A145 Removable Black Line Mask
(Black Tape: For use only on Asphalt Concrete Surfaces)
- G. Advanced Traffic Marking Black "Hide-A-Line"
(Black Tape: For use only on Asphalt Concrete Surfaces)
- H. Brite-Line "BTR" Black Removable Tape
(Black Tape: For use only on Asphalt Concrete Surfaces)

Preformed Thermoplastic (Heated in place)

- A. Flint Trading, "Premark" and "Premark 20/20 Flex"
- B. Pavemark, "Hotape"

Removable Traffic Paint

- A. Belpro, Series 250/252 and No. 93 Remover

Ceramic Surfacing Laminate, 5.9"x5.9"

- A. Safeline Industries/Highway Ceramics, Inc.

CLASS 1 DELINEATORS

One Piece Driveable Flexible Type, 66"

- A. Carsonite, Curve-Flex CFRM-400
- B. Carsonite, Roadmarker CRM-375
- C. Davidson Plastics, "Flexi-Guide Models 400 and 566"
- D. FlexStake, Model 654 TM
- E. GreenLine Models HWD1-66 and CGD1-66
- F. J. Miller Industries, Model JMI-375 (with soil anchor)

Special Use Flexible Type, 66"

- A. Carsonite, "Survivor" (with 18" U-Channel base)
- B. FlexStake, Model 604
- C. GreenLine Models HWD and CGD (with 18" U-Channel base)

- D. Safe-Hit with 8" pavement anchor (SH248-GP1)
- E. Safe-Hit with 15" soil anchor (SH248-GP2) and with 18" soil anchor (SH248-GP3)

Surface Mount Flexible Type, 48"

- A. Bent Manufacturing Company, Masterflex Model MF-180EX-48
- B. Carsonite, "Super Duck II"
- C. FlexStake, Surface Mount, Models 704 and 754 TM

CHANNELIZERS

Surface Mount Type, 36"

- A. Bent Manufacturing Company, Masterflex Models MF-360-36 (Round) and MF-180-36 (Flat)
- B. Carsonite, "Super Duck" (Flat SDF-436, Round SDR-336)
- C. Carsonite, "Super Duck II" Model SDCF203601MB "The Channelizer"
- D. Davidson Plastics, Flex-Guide Models FG300LD and FG300UR
- E. FlexStake, Surface Mount, Models 703 and 753 TM
- F. GreenLine, Model SMD-36
- G. Hi-Way Safety, Inc. "Channel Guide Channelizer" Model CGC36
- H. The Line Connection, "Dura-Post" Model DP36-3 (Permanent)
- I. The Line Connection, "Dura-Post" Model DP36-3C (Temporary)
- J. Repo, Models 300 and 400
- K. Safe-Hit, Guide Post, Model SH236SMA

CONICAL DELINEATORS, 42"

(For 28" Traffic Cones, see Standard Specifications)

- A. Bent Manufacturing Company "T-Top"
- B. Plastic Safety Systems "Navigator-42"
- C. Roadmaker Company "Stacker"
- D. Traffix Devices "Grabber"

OBJECT MARKERS

Type "K", 18"

- A. Carsonite, Model SMD-615
- B. FlexStake, Model 701 KM
- C. Repo, Models 300 and 400
- D. Safe-Hit, Model SH718SMA
- E. The Line Connection, Model DP21-4K

Type "K-4" / "Q" Object Markers, 24"

- A. Bent Manufacturing "Masterflex" Model MF-360-24
- B. Carsonite, Super Duck II
- C. FlexStake, Model 701KM
- D. Repo, Models 300 and 400
- E. Safe-Hit, Models SH8 24SMA_WA and SH8 24GP3_WA
- F. The Line Connection, Model DP21-4Q

TEMPORARY RAILING (TYPE K) REFLECTORS AND CONCRETE BARRIER MARKERS

Impactable Type

- A. ARTUK, "FB"
- B. Davidson Plastics, Model PCBM-12
- C. Duraflex Corp., "Flexx 2020" and "Electriflexx"
- D. Hi-Way Safety, Inc., Model GMKRM100

Non-Impactable Type

- A. ARTUK, JD Series
- B. Stimsonite, Model 967 (with 3.25" Acrylic cube corner reflector)
- C. Stimsonite, Model 967LS

D. Vega Molded Products, Models GBM and JD

THREE BEAM BARRIER MARKERS

(For use to the left of traffic)

- A. Duraflex Corp., "Railrider"
- B. Davidson Plastics, "Mini" (3" x 10")

CONCRETE BARRIER DELINEATORS, 16"

(For use to the right of traffic. When mounted on top of barrier, places top of reflective element at 48")

- A. Davidson Plastics, Model PCBM T-16
- B. Safe-Hit, Model SH216RBM
- C. Sun-Lab Technology, "Safety Guide Light, Model TM," 5.12" x 5.12" x 3.12"

CONCRETE BARRIER-MOUNTED MINI-DRUM (10.25" x 14.25" x 22.5")

- A. Stinson Equipment Company "SaddleMarker"

SOUND WALL DELINEATOR

(Applied vertically. Place top of 3" x 12" reflective element at 48" above roadway)

- A. Davidson Plastics, PCBM S-36
- B. Sun-Lab Technology, "Safety Guide Light, Model SM12," 5.12" x 5.12" x 3.12"

GUARD RAILING DELINEATOR

(Top of reflective element at 48" above plane of roadway)

Wood Post Type, 27"

- A. Carsonite, Model 427
- B. Davidson Plastics FG 427 and FG 527
- C. FlexStake, Model 102 GR
- D. GreenLine GRD 27
- E. J.Miller Model JMI-375G
- F. Safe-Hit, Model SH227GRD

Steel Post Type

- A. Carsonite, Model CFGR-327 with CFGRBK300 Mounting Bracket

RETROREFLECTIVE SHEETING

Channelizers, Barrier Markers, and Delineators

- A. 3M, High Intensity
- B. Reflexite, PC-1000 Metalized Polycarbonate
- C. Reflexite, AC-1000 Acrylic
- D. Reflexite, AP-1000 Metalized Polyester
- E. Reflexite, AR-1000 Abrasion Resistant Coating
- F. Avery Dennison T-6500 Series (Formerly Stimsonite, Series 6200) (For rigid substrate devices only)

Traffic Cones, 13" Sleeves

- A. Reflexite SB (Polyester), Vinyl or "TR" (Semi-transparent)

Traffic Cones, 4" and 6" Sleeves

- A. 3M Series 3840
- B. Reflexite Vinyl, "TR" (Semi-transparent) or "Conformalite"

Barrels and Drums

- A. Reflexite, "Super High Intensity" or "High Impact Drum Sheeting"
- B. 3M Series 3810

Barricades: Type I, Engineer Grade

- A. American Decal, Adcolite
- B. Avery Dennison, T-1500 and T-1600

- C. 3M, Scotchlite, Series CW

Barricades: Type II, Super Engineer Grade

- A. Avery Dennison, T-2500 Series
- B. Kiwalite Type II
- C. Nikkalite 1800 Series

Signs: Type II, Super Engineer Grade

- A. Avery Dennison, T-2500 Series
- B. Kiwalite, Type II
- C. Nikkalite 1800 Series

Signs: Type III, High-Intensity Grade

- A. 3M Series 3800
- B. Nippon Carbide, Nikkalite Brand Ultralite Grade II

Signs: Type IV, High-Intensity Prismatic Grade

- A. Avery Dennison T-6500 (Formerly Stimsonite Series 6200)

Signs: Type VII, High-Intensity Prismatic Grade

- A. 3M Series 3900

Signs: Type VI, Roll-Up Signs

- A. Reflexite, Vinyl (Orange)
- B. Reflexite "SuperBright" (Fluorescent orange)
- C. Reflexite "Marathon" (Fluorescent orange)
- D. 3M Series RS34 (Orange) and RS20 (Fluorescent orange)

SPECIALTY SIGN (All Plastic)

- A. All Sign Products, STOP Sign, 30"

SIGN SUBSTRATE FOR CONSTRUCTION AREA SIGNS

Aluminum

Fiberglass Reinforced Plastic (FRP)

- A. Sequentia, "Polyplate"
- B. Fiber-Brite

8-1.02 STATE-FURNISHED MATERIALS

Attention is directed to Section 6-1.02, "State-Furnished Materials," of the Standard Specifications and these special provisions.

The following materials will be furnished to the Contractor by the State for installation by the Contractor after the Pre-job meeting with the California Division of Mines and Geology (CDMG) personnel:

- FBA pigtails
- "Bishops Hat" Downhole Specially formed seal cap

The Contractor shall notify the Engineer in writing not less than 20 working days in advance when the Contractor wants the CDMG to deliver the State-furnished material to the Contractor.

State-Furnished and Installed Material.--The Contractor shall notify the Engineer in writing at least 30 working days in advance when the Contractor wants CDMG to install and test their equipment as specified elsewhere in these special provisions. The following materials will be furnished and installed by the State:

- Downhole seismic sensors and cable to surface
- Seismic recorders

The seismic sensors should include seismic cables, shelby tubes and seismic recorders.

8-1.03 ENGINEERING FABRICS

Engineering fabrics shall conform to the requirements in Section 88, "Engineering Fabrics," of the Standard Specifications and these special provisions.

Filter fabric for this project shall be ultraviolet ray (UV) protected.

Nonwoven and woven rock slope protection fabric shall conform to the following additional requirement:

Specification	ASTM Designation	Requirement
Permittivity, 1/second, Minimum	D 4491	0.5

SECTION 8-2. CONCRETE

8-2.01 PORTLAND CEMENT CONCRETE

Portland cement concrete shall conform to the provisions in Section 90, "Portland Cement Concrete," of the Standard Specifications and these special provisions.

Wherever the word "cement" is used in the Standard Specifications or the special provisions, and its use conforms to one of the following criteria, it shall be understood to mean "cementitious material":

- A. When the cement content of portland cement concrete is specified and Section 90, "Portland Cement Concrete," of the Standard Specifications is referenced.
- B. When the pounds of cement per cubic yard for portland cement concrete is specified and Section 90, "Portland Cement Concrete," of the Standard Specifications is referenced.

The above criteria shall not apply when the use of mineral admixture is not allowed.

When concrete is completely mixed in stationary mixers, each mixer used for the project shall be tested one time.

Full compensation for the testing of mix uniformity as specified herein shall be considered as included in the contract price paid for the concrete work involved and no additional compensation will be allowed therefor.

Section 90-1.01, "Description," of the Standard Specifications is amended to read:

90-1.01 Description.—Portland cement concrete shall be composed of cementitious material, fine aggregate, coarse aggregate, admixtures if used, and water, proportioned and mixed as specified in these specifications.

Unless otherwise specified, cementitious material to be used in portland cement concrete shall conform to the requirements for cement and mineral admixtures in Section 90-2, "Materials" and shall be either: 1) "Type IP (MS) Modified" cement; or 2) a combination of "Type II Modified" portland cement and mineral admixture.

Unless otherwise specified, for precast, steam cured, or other high early strength concrete, mineral admixture will not be required if it has been determined by the Transportation Laboratory and documented in writing by the Engineer that the aggregate is from a source that is not alkali silica reactive.

Concrete for each portion of the work shall comply with the requirements for the Class, cementitious material content in pounds per cubic yard, 28-day compressive strength, minor concrete, or commercial quality concrete, as shown on the plans or specified in these specifications or the special provisions.

Class A concrete shall contain not less than 564 pounds of cementitious material per cubic yard.

Class B concrete shall contain not less than 470 pounds of cementitious material per cubic yard.

Class C concrete shall contain not less than 376 pounds of cementitious material per cubic yard.

Class D concrete shall contain not less than 658 pounds of cementitious material per cubic yard.

Minor concrete shall contain not less than 564 pounds of cementitious material per cubic yard unless otherwise specified in these specifications or the special provisions.

Unless otherwise designated on the plans or specified in these specifications or the special provisions, the amount of cementitious material used per cubic yard of concrete in structures or portions of structures shall conform to the following:

Use	Cementitious Material Content in pounds
Concrete which is designated by compressive strength:	
Deck slabs and slab spans of bridges	658 min., 800 max.
Roof sections of exposed top box culverts	658 min., 800 max.
Other portions of structures	564 min., 800 max.
Concrete not designated by compressive strength:	
Deck slabs and slab spans of bridges	658 min.
Roof sections of exposed top box culverts	658 min.
Prestressed members	658 min.
Seal courses	658 min.
Other portions of structures	564 min.

Whenever the 28-day compressive strength shown on the plans is 3,500 pounds per square inch or greater, the concrete shall be considered to be designated by compressive strength. If the plans show a 28-day compressive strength which is 4,500 pounds per square inch or greater, an additional 7 days will be allowed to obtain the specified strength. The 28-day compressive strengths shown on the plans which are less than 3,500 pounds per square inch, are shown for design information only and are not to be considered a requirement for acceptance of the concrete.

Concrete designated by compressive strength shall be proportioned such that the concrete will conform to the strength shown on the plans or specified in the special provisions.

The Contractor shall determine the mix proportions for all concrete except pavement concrete. The Engineer will determine the mix proportions for pavement concrete.

Before using concrete for which the mix proportions have been determined by the Contractor, or in advance of revising those mix proportions, the Contractor shall submit in writing to the Engineer a copy of the mix design.

Compliance with cementitious material content requirements will be verified in accordance with procedures described in California Test 518 for cement content. For testing purposes, mineral admixture shall be considered to be cement. Batch proportions shall be adjusted as necessary to produce concrete having the specified cementitious material content.

If any concrete used in the work has a cementitious material content, consisting of cement, mineral admixture, or cement plus mineral admixture, which is less than the minimum required for the work, the concrete shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place and the Contractor shall pay to the State \$0.25 for each pound of cement, mineral admixture, or cement plus mineral admixture which is less than the minimum required for the work. The Department may deduct the amount from any monies due, or that may become due, the Contractor under the contract. The deductions will not be made unless the difference between the contents required and those actually provided exceeds the batching tolerances permitted by Section 90-5, "Proportioning." No deductions for cementitious material content will be made based on the results of California Test 518.

The requirements of the preceding paragraph shall not apply to minor concrete nor commercial quality concrete.

All concrete for which the mix proportions are determined either by the Contractor or the Engineer shall conform to the requirements of this Section 90.

The first paragraph in Section 90-2.01, "Portland Cement," of the Standard Specifications is amended to read:

90-2.01 Portland Cement.—Unless otherwise specified, portland cement shall be either "Type IP (MS) Modified" cement or "Type II Modified" portland cement.

"Type IP (MS) Modified" cement shall conform to the specifications for Type IP (MS) cement in ASTM Designation: C 595, and shall be comprised of an intimate mixture of Type II cement and not more than 25 percent of a mineral admixture. The type and minimum amount of mineral admixture used in the manufacture of "Type IP (MS) Modified" cement shall be in accordance with the provisions of Section 90-4.08, "Required Use of Mineral Admixtures."

"Type II Modified" portland cement shall conform to the specifications for Type II portland cement in ASTM Designation: C 150.

In addition, "Type IP (MS) Modified" cement and "Type II Modified" portland cement shall conform to the following requirements:

- A. The cement shall not contain more than 0.60 percent by weight of alkalis, calculated as the percentage of Na₂O plus 0.658 times the percentage of K₂O, when determined by either direct intensity flame photometry or by the atomic absorption method. The instrument and procedure used shall be qualified as to precision and accuracy in accordance with the requirements of ASTM Designation: C 114.
- B. The autoclave expansion shall not exceed 0.50 percent.
- C. Mortar, containing the cement to be used and Ottawa sand, when tested in accordance with California Test 527, shall not expand in water more than 0.010 percent and shall not contract in air more than 0.048 percent except that when cement is to be used for precast prestressed concrete piling, precast prestressed concrete members or steam cured concrete products, the mortar shall not contract in air more than 0.053 percent.

The second paragraph in Section 90-2.01, "Portland Cement," of the Standard Specifications is amended to read:

Type III and Type V portland cements shall conform to the specifications in ASTM Designation: C 150, and the additional requirements listed above for Type II Modified portland cement, except that when tested in accordance with California Test 527, mortar containing Type III portland cement shall not contract in air more than 0.075 percent.

The third paragraph in Section 90-2.01, "Portland Cement," of the Standard Specifications is deleted.

The twelfth paragraph in Section 90-2.02, "Aggregates," of the Standard Specifications is deleted.

The first paragraph in Section 90-2.03, "Water," of the Standard Specifications is amended to read:

90-2.03 Water.—In conventionally reinforced concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 1,000 parts per million of chlorides as Cl, nor more than 1,300 parts per million of sulfates as SO₄. In prestressed concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 650 parts per million of chlorides as Cl, nor more than 1,300 parts per million of sulfates as SO₄. In no case shall the water contain an amount of impurities that will cause either: 1) a change in the setting time of cement of more than 25 percent when tested in accordance with ASTM Designation: C 191 or ASTM Designation: C 266; or 2) a reduction in the compressive strength of mortar at 14 days of more than 5 percent, when tested in accordance with ASTM Designation: C 109, when compared to the results obtained with distilled water, tested in accordance with ASTM Designation: C 109.

The following section is added to Section 90-2, "Materials," of the Standard Specifications:

90-2.04 Admixture Materials.—Admixture materials shall conform to the requirements of the ASTM Designations shown below:

Chemical Admixtures—ASTM Designation: C 494.

Air-entraining Admixtures—ASTM Designation: C 260.

Calcium Chloride—ASTM Designation: D 98.

Mineral Admixtures—Coal fly ash, raw or calcined natural pozzolan as specified in ASTM Designation: C 618, except that the loss on ignition shall not exceed 4 percent, or, silica fume as specified in ASTM Designation: C 1240, with reduction of mortar expansion of 80 percent, minimum, using the cement from the proposed mix design.

Mineral admixtures shall be used in accordance with the provisions in Section 90-4.08, "Required Use of Mineral Admixtures."

Section 90-4.02, "Materials," of the Standard Specifications is amended to read:

90-4.02 Materials.—Admixture materials shall be as specified in Section 90-2.04, "Admixture Materials."

Section 90-4.05, "Optional Use of Chemical Admixtures," of the Standard Specifications is amended to read:

90-4.05 Optional Use of Chemical Admixtures.—The Contractor will be permitted to use Type A or F, water-reducing; Type B, retarding; or Type D or G, water-reducing and retarding admixtures as described in ASTM

Designation: C 494 to conserve cementitious material or to facilitate any concrete construction application subject to the following conditions:

When a water-reducing admixture or a water-reducing and retarding admixture is used, the cementitious material content specified or ordered may be reduced by a maximum of 5 percent by weight except that the resultant cementitious material content shall be not less than 470 pounds per cubic yard.

When a reduction in cementitious material content is made, the dosage of admixture used shall be the dosage used in determining approval of the admixture.

Section 90-4.07, "Optional Use of Air-entraining Admixtures," of the Standard Specifications is amended to read:

90-4.07 Optional Use of Air-entraining Admixtures.—When air-entrainment has not been specified or ordered by the Engineer, the Contractor will be permitted to use an air-entraining admixture to facilitate the use of any construction procedure or equipment provided that the average air content, as determined by California Test 504, of 3 successive tests does not exceed 4 percent and no single test value exceeds 5.5 percent. If the Contractor elects to use an air-entraining admixture in concrete for pavement, the Contractor shall so indicate at the time the Contractor designates the source of aggregate as provided in Section 40-1.015, "Cement Content."

Section 90-4.08, "Required Use of Mineral Admixtures," of the Standard Specifications is amended to read:

90-4.08 Required Use of Mineral Admixtures.—Unless otherwise specified, mineral admixture shall be combined with cement to make cementitious material for use in portland cement concrete.

The calcium oxide content of mineral admixtures shall not exceed 10 percent and the available alkali, as sodium oxide equivalent, shall not exceed 1.5 percent when measured in conformance with the requirements of ASTM Designation: C 618.

The amounts of cement and mineral admixture used in cementitious material for portland cement concrete shall be sufficient to satisfy the minimum cementitious material content requirements specified in Section 90-1.01, "Description," or Section 90-4.05, "Optional Use of Chemical Admixtures," and shall conform to the following:

The minimum amount of cement shall not be less than 75 percent by weight of the specified minimum cementitious material content.

The minimum amount of mineral admixture to be combined with cement shall be determined using one of the following criteria:

- A. When the calcium oxide content of a mineral admixture, measured in conformance with the requirements of ASTM Designation: C 618 and Section 90-2.04, "Admixture Materials," is equal to or less than 2 percent by weight, the amount of mineral admixture shall not be less than 15 percent by weight of the total amount of cementitious material to be used in the mix.
- B. When the calcium oxide content of a mineral admixture, measured in conformance with the requirements of ASTM Designation: C 618 and Section 90-2.04, "Admixture Materials," is greater than 2 percent, the amount of mineral admixture shall not be less than 25 percent by weight of the total amount of cementitious material to be used in the mix.
- C. When a mineral admixture is used, which conforms to the requirements for silica fume in Section 90-2.04, "Admixture Materials," is used, the amount of mineral admixture shall not be less than 10 percent by weight of the total amount of cementitious material to be used in the mix.

If more than the required amount of cementitious material is used, the balance of the additional cementitious material in the mix may be either cement, mineral admixture or a combination of both; however, the maximum amount of mineral admixture shall not exceed 35 percent by weight of the total amount of cementitious material to be used in the mix. Where Section 90-1.01, "Description," specifies a maximum cementitious content in pounds per cubic yard, the total weight of cement and mineral admixture per cubic yard shall not exceed the specified maximum cementitious material content.

Section 90-4.09, "Optional Use of Mineral Admixture," of the Standard Specifications is deleted.

Section 90-4.11, "Storage, Proportioning, and Dispensing of Mineral Admixtures," of the Standard Specifications is amended to read:

90-4.11 Storage, Proportioning, and Dispensing of Mineral Admixtures.—Mineral admixtures shall be protected from exposure to moisture until used. Sacked material shall be piled to permit access for tally, inspection and identification for each shipment.

Adequate facilities shall be provided to assure that mineral admixtures meeting the specified requirements are kept separate from other mineral admixtures in order to prevent any but the specified mineral admixtures from entering the work. Safe and suitable facilities for sampling mineral admixtures shall be provided at the weigh hopper or in the feed line immediately in advance of the hopper.

Mineral admixtures shall be incorporated into concrete using equipment conforming to the requirements for cement weigh hoppers, and charging and discharging mechanisms in ASTM Designation: C 94, in Section 90-5.03, "Proportioning," and in this Section 90-4.11.

When interlocks are required for cement and mineral admixture charging mechanisms by Section 90-5.03A, "Proportioning for Pavement," and cement and mineral admixtures are weighed cumulatively, their charging mechanisms shall be interlocked to prevent the introduction of mineral admixture until the weight of cement in the cement weigh hopper is within the tolerances specified in Section 90-5.02, "Proportioning Devices."

Mineral admixture used in concrete for exposed surfaces of like elements of a structure shall be from the same source and of the same percentage.

Section 90-5.02, "Proportioning Devices," of the Standard Specifications is amended to read:

90-5.02 Proportioning Devices.—All weighing, measuring or metering devices used for proportioning materials shall conform to the requirements in Section 9-1.01, "Measurement of Quantities," and this Section 90-5.02. In addition, any automatic weighing systems used shall comply with the requirements for automatic proportioning devices in Section 90-5.03A, "Proportioning for Pavement." These automatic devices shall be automatic to the extent that the only manual operation required for proportioning the aggregates, cement, and mineral admixture for one batch of concrete is a single operation of a switch or starter.

Proportioning devices shall be tested at the expense of the Contractor as frequently as the Engineer may deem necessary to insure their accuracy.

Weighing equipment shall be insulated against vibration or movement of other operating equipment in the plant. When the plant is in operation, the weight of each batch of material shall not vary from the weight designated by the Engineer by more than the tolerances specified herein.

Equipment for cumulative weighing of aggregate shall have a zero tolerance of ± 0.5 percent of the designated total batch weight of the aggregate. For systems with individual weigh hoppers for the various sizes of aggregate, the zero tolerance shall be ± 0.5 percent of the individual batch weight designated for each size of aggregate. Equipment for cumulative weighing of cement and mineral admixtures shall have a zero tolerance of ± 0.5 percent of the designated total batch weight of the cement and mineral admixture. Equipment for weighing cement or mineral admixture separately shall have a zero tolerance of ± 0.5 percent of their designated individual batch weights. Equipment for measuring water shall have a zero tolerance of ± 0.5 percent of its designated weight or volume.

The weight indicated for any batch of material shall not vary from the preselected scale setting by more than the following:

- A. Aggregate weighed cumulatively shall be within 1.0 percent of the designated total batch weight of the aggregate. Aggregates weighed individually shall be within 1.5 percent of their respective designated batch weights.
- B. Cement shall be within 1.0 percent of its designated batch weight. When weighed individually, mineral admixture shall be within 1.0 percent of its designated batch weight. When mineral admixture and cement are permitted to be weighed cumulatively, cement shall be weighed first to within 1.0 percent of its designated batch weight, and the total for cement and mineral admixture shall be within 1.0 percent of the sum of their designated batch weights.
- C. Water shall be within 1.5 percent of its designated weight or volume.

Each scale graduation shall be approximately 0.001 of the total capacity of the scale. The capacity of scales for weighing cement, mineral admixture, or cement plus mineral admixture and aggregates shall not exceed that of commercially available scales having single graduations indicating a weight not exceeding the maximum permissible weight variation above, except that no scale shall be required having a capacity of less than 1,000 pounds, with one-pound graduations.

Section 90-5.03, "Proportioning," of the Standard Specifications is amended to read:

90-5.03 Proportioning.—Proportioning shall consist of dividing the aggregates into the specified sizes, each stored in a separate bin, and combining them with cement, mineral admixture and water as provided in these specifications. Aggregates shall be proportioned by weight.

At the time of batching, all aggregates shall have been dried or drained sufficiently to result in a stable moisture content such that no visible separation of water from aggregate will take place during transportation from the proportioning plant to the point of mixing. In no event shall the free moisture content of the fine aggregate at the time of batching exceed 8 percent of its saturated, surface-dry weight.

Should separate supplies of aggregate material of the same size group, but of different moisture content or specific gravity or surface characteristics affecting workability, be available at the proportioning plant, withdrawals shall be made from one supply exclusively and the materials therein completely exhausted before starting upon another.

Bulk "Type IP (MS) Modified" cement, that conforms to the requirements in Section 90-2.01, "Portland Cement," shall be weighed in an individual hopper and shall be kept separate from the aggregates until the ingredients are released for discharge. Except as otherwise noted below, the cement hoppers may be attached to a separate scale for individual weighing. If the cement is weighed cumulatively, the cement shall be weighed before the other ingredients.

Bulk cement to be blended with mineral admixture for use in portland cement concrete for pavement and structures shall be proportioned by one of the following methods:

1. Bulk cement and mineral admixture shall be weighed in individual weigh-hoppers and shall be kept separate from each other and from the aggregates until the ingredients are released for discharge into the mixer. The weigh systems for the proportioning of the aggregate, the cement, and the mineral admixture shall be individual and distinct from all other weigh systems. Each weigh system shall be equipped with a hopper, a lever system, and a weight indicator to constitute an individual and independent material weighing device. The aggregate, the cement, and the mineral admixture shall be discharged into the mixer simultaneously.
2. Bulk cement and mineral admixture may be weighed in the same weigh hopper if the mix uniformity conforms to the requirements of Annex "A1, Concrete Uniformity Requirements," of ASTM Designation: C 94 as tested by the Contractor. The capability of the mixing methods and devices shall be established before starting production of portland cement concrete for contract work. Mix uniformity sampling and testing shall be done in the presence of the Engineer. The Engineer shall approve the mixing methods and devices as a supplement to California Test 109. The time between tests for mix uniformity testing shall be the same as that required by California Test 109 for portland cement concrete batch plant scale calibration.

The scale and weigh hopper for bulk weighing cement, mineral admixture, and cement plus mineral admixture shall be separate and distinct from the aggregate weighing equipment.

When the source of any aggregate is changed for concrete structures, the Contractor shall adjust the mix proportions and submit in writing to the Engineer a copy of the mix design before using such aggregates. When the source of any aggregate is changed for other concrete, the Engineer shall be allowed sufficient time to adjust the mix and such aggregates shall not be used until necessary adjustments are made.

For all batches with a volume of one cubic yard or more, the batching equipment shall conform to one of the following combinations:

- A. Separate boxes and separate dial or beam scale and indicator for weighing each size of aggregate.
- B. Single box and dial or multiple beam type scale indicator for all aggregates.
- C. Single box or separate boxes and automatic weighing mechanism for all aggregates.

In order to check the accuracy of batch weights, the gross weight and tare weight of batch trucks, truck mixers, truck agitators, and non-agitating hauling equipment shall be determined when ordered by the Engineer. The equipment shall be weighed at the Contractor's expense on scales designated by the Engineer.

Section 90-5.03A, "Proportioning for Pavement," of the Standard Specifications is amended to read:

90-5.03A Proportioning for Pavement.—Aggregates and bulk cement, mineral admixture, and cement plus mineral admixture for use in pavement shall be proportioned by weight by means of automatic proportioning devices of approved type conforming to the requirements specified in this Section 90-5.03A.

The Contractor shall install and maintain in operating condition an electrically actuated moisture meter that will indicate, on a readily visible scale, changes in the moisture content of the fine aggregate as it is batched within a sensitivity of 0.5 percent by weight of the fine aggregate.

The batching of cement, mineral admixture, or cement plus mineral admixture and aggregate shall be interlocked so that a new batch cannot be started until all weigh hoppers are empty, the proportioning devices are within zero tolerance, and the discharge gates are closed. The interlock shall permit no part of the batch to be discharged until all aggregate hoppers and the cement and mineral admixture hoppers or the cement plus mineral admixture hopper are charged with weights which are within the tolerances specified in Section 90-5.02, "Proportioning Devices."

The discharge gate on the cement and mineral admixture hoppers or the cement plus mineral admixture hopper shall be designed to permit regulating the flow of cement, mineral admixture, or cement plus mineral admixture into the aggregate as directed by the Engineer.

When separate weigh boxes are used for each size of aggregate, the discharge gates shall permit regulating the flow of each size of aggregate as directed by the Engineer.

Material discharged from the several bins shall be controlled by gates or by mechanical conveyors. The means of withdrawal from the several bins, and of discharge from the weigh box, shall be interlocked so that not more than one bin can discharge at a time, and that the weigh box cannot be tripped until the required quantity from each of the several bins has been deposited therein. Should a separate weigh box be used for each size of aggregate, all may be operated and discharged simultaneously.

When the discharge from the several bins is controlled by gates, each gate shall be actuated automatically so that the required weight is discharged into the weigh box, after which the gate shall automatically close and lock.

The automatic weighing system shall be designed so that all proportions required may be set on the weighing controller at the same time.

The third paragraph in Section 90-6.01, "General," of the Standard Specifications is amended to read:

All concrete shall be homogeneous and thoroughly mixed, and there shall be no lumps or evidence of undispersed cement, mineral admixture, or cement plus mineral admixture.

The third and fourth paragraphs in Section 90-6.02, "Machine Mixing," of the Standard Specifications are amended to read:

The batch shall be so charged into the mixer that some water will enter in advance of cementitious materials and aggregates. All water shall be in the drum by the end of the first one-fourth of the specified mixing time.

Cementitious materials shall be batched and charged into the mixer by means that will not result either in loss of cementitious materials due to the effect of wind, or in accumulation of cementitious materials on surfaces of conveyors or hoppers, or in other conditions which reduce or vary the required quantity of cementitious material in the concrete mixture.

The sixth paragraph in Section 90-6.02, "Machine Mixing," of the Standard Specifications is amended to read:

The total elapsed time between the intermingling of damp aggregates and all cementitious materials and the start of mixing shall not exceed 30 minutes.

The seventh and eighth paragraphs in Section 90-6.03, "Transporting Mixed Concrete," of the Standard Specifications are amended to read:

When a truck mixer or agitator is used for transporting concrete to the delivery point, discharge shall be completed within 1.5 hours, or before 250 revolutions of the drum or blades, whichever comes first, after the introduction of the cement to the aggregates. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85° F., or above, a time less than 1.5 hours may be required.

When non-agitating hauling equipment is used for transporting concrete to the delivery point, discharge shall be completed within one hour after the addition of the cement to the aggregates. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85° F., or above, the time between the introduction of cement to the aggregates and discharge shall not exceed 45 minutes.

The ninth and tenth paragraphs in Section 90-6.03, "Transporting Mixed Concrete," of the Standard Specifications are amended to read:

Each load of concrete delivered at the jobsite shall be accompanied by a ticket showing the mix identification number, non-repeating load number, date and time at which the materials were batched, the total amount of water (gallons) added to the load and for transit-mixed concrete, the reading of the revolution counter at the time the truck

mixer is charged with cement. This ticket shall also show the actual scale weights (pounds) for the ingredients batched or the calculated portland cement concrete volume (cubic yards) calculated from actual scale weights. Theoretical or target batch weights shall not be used as a substitute for actual scale weights. When showing a calculated portland cement concrete volume on the delivery ticket, the Contractor shall maintain and have available a record of the following information for each batched load:

1. Mix identification number, specific to the contract.
2. Load number shall match the load number on the delivery ticket.
3. Date and time the load was batched.
4. Actual batch weight (pounds) for each ingredient.
5. Any water (gallons) added at the plant, in addition to the water proportioned for the batch.

When requested, the Contractor shall submit the recorded information for calculated portland cement concrete volumes to the Engineer. The information shall be provided in printed form, or if acceptable to the Engineer, data may be submitted in electronic media. Electronic media shall be presented in a tab delimited format on a 3.5-inch diskette with a capacity of at least 1.4 megabytes. Captured data, for the ingredients represented by each batch shall be LFCR (one line, separate record) with allowances for sufficient fields to satisfy the amount of data required by these specifications.

Section 90-6.05, "Hand-Mixing," of the Standard Specifications is amended to read:

90-6.05 Hand-Mixing.—Hand-mixed concrete shall be made in batches not more than one-third cubic yard and shall be mixed on a watertight, level platform. The proper amount of coarse aggregate shall be measured in measuring boxes and spread on the platform and the fine aggregate shall be spread on this layer, the 2 layers being not more than one foot in total depth. On this mixture shall be spread the dry cement and mineral admixture and the whole mass turned no fewer than 2 times dry; then sufficient clean water shall be added, evenly distributed, and the whole mass again turned no fewer than 3 times, not including placing in the carriers or forms.

The second paragraph in Section 90-6.06, "Amount of Water and Penetration," of the Standard Specifications is amended to read:

The amount of free water used in concrete shall not exceed 312 pounds per cubic yard, plus 20 pounds for each required 100 pounds of cementitious material in excess of 564 pounds per cubic yard.

The fourth paragraph in Section 90-6.06, "Amount of Water and Penetration," of the Standard Specifications is amended to read:

Where there are adverse or difficult conditions which affect the placing of concrete, the above specified penetration and free water content limitations may be exceeded providing the Contractor is granted permission by the Engineer in writing to increase the cementitious material content per cubic yard of concrete. The increase in water and cementitious material shall be at a ratio not to exceed 30 pounds of water per added 100 pounds of cementitious material per cubic yard. The cost of additional cementitious material and water added under these conditions shall be at the Contractor's expense and no additional compensation will be allowed therefor.

Section 90-9.01, "General," of the Standard Specifications is amended to read:

90-9.01 General.—Concrete compressive strength requirements consist of a minimum strength which must be attained before various loads or stresses are applied to the concrete and, for concrete designated by strength, a minimum strength at the age of 28 days or at the age otherwise allowed in Section 90-1.01, "Description." The various strengths required are specified elsewhere or are shown on the plans.

The compressive strength of concrete will be determined from test cylinders which have been fabricated from concrete sampled in accordance with California Test 539. Test cylinders will be molded and initial field cured in accordance with California Test 540. Test cylinders will be cured and tested after receipt at the testing laboratory in accordance with California Test 521. A strength test shall consist of the average strength of 2 cylinders fabricated from material taken from a single load of concrete, except that, if any cylinder should show evidence of improper sampling, molding, or testing, that cylinder shall be discarded and the strength test shall consist of the strength of the remaining cylinder.

When concrete compressive strength is specified as a prerequisite to applying loads or stresses to a concrete structure or member, test cylinders for other than steam cured concrete will be cured in accordance with Method 1 of California Test 540. The compressive strength of concrete determined for these purposes will be evaluated on the basis of individual tests.

When concrete is designated by 28-day compressive strength rather than by cementitious material content, the concrete strength to be used as a basis for acceptance of other than steam cured concrete will be determined from cylinders cured in conformance with Method 1 of California Test 540. If the result of a single compressive strength test at the maximum age specified or allowed is below the specified strength but is 95 percent or more of the specified strength, the Contractor shall, at the Contractor's expense, make corrective changes, subject to approval of the Engineer, in the mix proportions or in the concrete fabrication procedures, before placing additional concrete, and shall pay to the State \$10.00 for each in-place cubic yard of concrete represented by the deficient test. If the result of a single compressive strength test at the maximum age specified or allowed is below 95 percent of the specified strength, but is 85 percent or more of the specified strength, the Contractor shall make the corrective changes specified above, and shall pay to the State \$15.00 for each in place cubic yard of concrete represented by the deficient test. In addition, such corrective changes shall be made when the compressive strength of concrete tested at 7 days indicates, in the judgment of the Engineer, that the concrete will not attain the required compressive strength at the maximum age specified or allowed. All concrete represented by a single test which indicates a compressive strength of less than 85 percent of the specified 28-day compressive strength will be rejected in accordance with the provisions in Section 6-1.04, "Defective Materials."

If the test result indicates that the compressive strength at the maximum curing age specified or allowed is below the specified strength, but 85 percent or more of the specified strength, payments to the State as required above shall be made, unless the Contractor, at the Contractor's expense, obtains and submits evidence acceptable to the Engineer that the strength of the concrete placed in the work meets or exceeds the specified 28-day compressive strength. If the test result indicates a compressive strength at the maximum curing age specified or allowed below 85 percent, the concrete represented by that test will be rejected, unless the Contractor, at the Contractor's expense, obtains and submits evidence acceptable to the Engineer that the strength and quality of the concrete placed in the work are acceptable. If the evidence consists of tests made on cores taken from the work, the cores shall be obtained and tested in accordance with the specifications of ASTM Designation: C 42.

No single compressive strength test shall represent more than 300 cubic yards.

When a precast concrete member is steam cured, the compressive strength of the concrete will be determined from test cylinders which have been handled and stored in accordance with Method 3 of California Test 540. The compressive strength of steam cured concrete will be evaluated on the basis of individual tests representing specific portions of production. When the concrete is designated by 28-day compressive strength rather than by cementitious material content, the concrete shall be considered to be acceptable whenever its compressive strength reaches the specified 28-day compressive strength provided that strength is reached in not more than the maximum number of days specified or allowed after the member is cast.

When concrete is specified by compressive strength, prequalification of materials, mix proportions, mixing equipment, and procedures proposed for use, will be required prior to placement of the concrete. Prequalification shall be accomplished by the submission of acceptable certified test data or trial batch reports by the Contractor. Prequalification data shall be based on the use of materials, mix proportions, mixing equipment, procedures, and size of batch proposed for use in the work.

Certified test data, in order to be acceptable, must indicate that not less than 90 percent of at least 20 consecutive tests exceed the specified strength at the maximum number of cure days specified or allowed, and none of those tests are less than 95 percent of specified strength. Strength tests included in the data shall be the most recent tests made on concrete of the proposed mix design and all shall have been made within one year of the proposed use of the concrete.

Trial batch test reports, in order to be acceptable, must indicate that the average compressive strength of 5 consecutive concrete cylinders, taken from a single batch, at not more than 28 days (or the maximum age allowed) after molding shall be at least 600 pounds per square inch greater than the specified 28-day compressive strength, and no individual cylinder shall have a strength less than the specified strength at the maximum age specified or allowed. Data contained in the report shall be from trial batches which were produced within one year of the proposed use of specified strength concrete in the project. Whenever air-entrainment is required, the air content of trial batches shall be equal to or greater than the air content specified for the concrete without reduction due to tolerances.

All tests shall be performed in accordance with either the appropriate California Test methods or the comparable ASTM test methods. All equipment employed in testing shall be in good condition and shall be properly calibrated. If the tests are performed during the life of the contract, the Engineer shall be notified sufficiently in advance of performing the tests in order to witness the test procedures.

The certified test data and trial batch test reports shall include the following information:

- A. Date of mixing.
- B. Mixing equipment and procedures used.
- C. The size of batch in cubic yards and the weight, type and source of all ingredients used.
- D. Penetration of the concrete.
- E. The air content of the concrete if an air-entraining admixture is used.
- F. The age at time of testing and strength of all concrete cylinders tested.

All certified test data and trial batch test reports shall be signed by an official of the firm which performed the tests.

When approved by the Engineer, concrete from trial batches may be used in the work at locations where concrete of a lower quality is required and the concrete will be paid for as the type or class of concrete required at that location.

After materials, mix proportions, mixing equipment, and procedures for concrete have been prequalified for use, additional prequalification by testing of trial batches will be required prior to making any changes which, in the judgment of the Engineer, could result in a lowering of the strength of the concrete below that specified.

The Contractor's attention is directed to the time required to test trial batches and the Contractor shall be responsible for production of trial batches at a sufficiently early date so that the progress of the work is not delayed.

When precast concrete members are manufactured at the plant of an established manufacturer of precast concrete members, the mix proportions of the concrete shall be determined by the Contractor, and a trial batch and prequalification of the materials, mix proportions, mixing equipment, and procedures will not be required.

Section 90-10.02A, "Portland Cement," of the Standard Specifications is renamed "Cementitious Material" and amended to read:

90-10.02A Cementitious Material.—Cementitious material shall conform to the provisions in Section 90-1.01, "Description." Compressive strength requirements consist of a minimum strength which must be attained before various loads or stresses are applied to the concrete and, for concrete designated by strength, a minimum strength at the age of 28 days or at the age otherwise allowed in Section 90-1.01, "Description." The various strengths required are specified elsewhere or are shown on the plans.

The fifth paragraph in Section 90-10.02B, "Aggregate," of the Standard Specifications is deleted.
Section 90-10.03, "Production," of the Standard Specifications is amended to read:

90-10.03 Production.—Cementitious material, water, aggregate, and admixtures shall be stored, proportioned, mixed, transported, and discharged in conformance with recognized standards of good practice, which will result in concrete that is thoroughly and uniformly mixed, that is suitable for the use intended, and which conforms to requirements specified herein. "Recognized standards of good practice" are outlined in various industry publications such as are issued by American Concrete Institute, AASHTO, or California Department of Transportation.

The cementitious material content of minor concrete shall conform to the provisions in Section 90-1.01, "Description."

The amount of water used shall result in a consistency of concrete conforming to the provisions in Section 90-6.06, "Amount of Water and Penetration." Additional mixing water shall not be incorporated into the concrete during hauling or after arrival at the delivery point, unless authorized by the Engineer.

Discharge of ready-mixed concrete from the transporting vehicle shall be made while the concrete is still plastic and before any stiffening occurs. An elapsed time of 1.5 hours (one hour in non-agitating hauling equipment), or more than 250 revolutions of the drum or blades, after the introduction of the cementitious material to the aggregates, or a temperature of concrete of more than 90° F. will be considered as conditions contributing to the quick stiffening of concrete. The Contractor shall take whatever action is necessary to eliminate quick stiffening, except that the addition of water will not be permitted.

The required mixing time in stationary mixers shall be not less than 50 seconds nor more than 5 minutes.

The minimum required revolutions at mixing speed for transit-mixed concrete shall be not less than that recommended by the mixer manufacturer, and shall be increased, if necessary, to produce thoroughly and uniformly mixed concrete.

Each load of ready-mixed concrete shall be accompanied by a ticket which shall be delivered to the Engineer at the discharge location of the concrete, unless otherwise directed by the Engineer. The ticket shall be clearly marked with the date and time of day when the load left the batching plant and, if hauled in truck mixers or agitators, the time the mixing cycle started.

A Certificate of Compliance in accordance with the provisions in Section 6-1.07, "Certificates of Compliance," shall be furnished to the Engineer, prior to placing minor concrete from a source not previously used on the contract, stating that minor concrete to be furnished meets all contract requirements, including minimum cementitious material content specified.

The third and fourth paragraphs in Section 90-11.02, "Payment," of the Standard Specifications are amended to read:

Should the Engineer order the Contractor to incorporate any admixtures in the concrete when their use is not required by these specifications or the special provisions, furnishing the admixtures and adding them to the concrete will be paid for as extra work as provided in Section 4-1.03D.

Should the Contractor use admixtures as permitted under Sections 90-4.05, "Optional Use of Chemical Admixtures;" or 90-4.07, "Optional Use of Air-entraining Admixtures;" or should the Contractor request and obtain permission to use other admixtures for the Contractor's benefit, the Contractor shall furnish those admixtures and incorporate them in the concrete at the Contractor's expense and no additional compensation will be allowed therefor.

SECTION 8-3. WELDING

8-3.01 WELDING

GENERAL

Flux core welding electrodes conforming to the requirements of AWS A5.20 E6XT-4 or E7XT-4 shall not be used to perform any type of welding for this project.

Wherever reference is made to the following AWS welding codes in the Standard Specifications, on the plans, or in these special provisions, the year of adoption for these codes shall be as listed:

AWS Code	Year of Adoption
D1.1	2000
D1.4	1992
D1.5	1995
D1.5 (metric only)	1996

Requirements of the AWS welding codes shall apply unless specified otherwise in the Standard Specifications, on the plans, or in these special provisions. Wherever the abbreviation AWS is used, it shall be equivalent to the abbreviations ANSI/AWS or ANSI/AASHTO/AWS.

Sections 6.1.2 through 6.1.4.3 of AWS D 1.1, Sections 7.1.1 and 7.1.2 of AWS D 1.4, and Sections 6.1.1.1 through 6.1.3.3 of AWS D 1.5 are replaced with the following:

Quality Control (QC) shall be the responsibility of the Contractor. As a minimum, the Contractor shall perform inspection and testing prior to welding, during welding, and after welding as specified in this section and additionally as necessary to ensure that materials and workmanship conform to the requirements of the contract documents.

The QC Inspector shall be the duly designated person who acts for and on behalf of the Contractor for inspection, testing, and quality related matters for all welding.

Quality Assurance (QA) is the prerogative of the Engineer. The QA Inspector is the duly designated person who acts for and on behalf of the Engineer.

Each QC Inspector shall be responsible for quality control acceptance or rejection of materials and workmanship, and shall be currently certified as an AWS Certified Welding Inspector (CWI) in conformance with the requirements in AWS QC1, "Standard and Guide for Qualification of Welding Inspectors."

The QC Inspector may be assisted by an Assistant QC Inspector provided that this individual is currently certified as an AWS Certified Associate Welding Inspector (CAWI) in conformance with the requirements in AWS QC1, "Standard and Guide for Qualification of Welding Inspectors," or has equivalent qualifications. The QC Inspector shall monitor the Assistant QC Inspector's work, and shall be responsible for signing all reports.

When the term "Inspector" is used without further qualification, it shall refer to the QC Inspector.

Section 6.14.6, "Personnel Qualification," of AWS D 1.1, Section 7.7.6, "Personnel Qualification," of AWS D 1.4, and Section 6.1.3.4, "Personnel Qualification," of AWS D 1.5 are replaced with the following:

Personnel performing nondestructive testing (NDT) shall be qualified in conformance with the requirements of the American Society for Nondestructive Testing (ASNT) Recommended Practice No. SNT-TC-1A and the Written Practice of

the NDT firm. The Written Practice of the NDT firm shall meet or exceed the requirements of the ASNT Recommended Practice No. SNT-TC-1A. Only individuals who are 1) qualified for NDT Level II, or 2) Level III technicians who have been directly certified by the ASNT and are authorized to perform the work of Level II technicians, shall perform NDT, review the results, and prepare the written reports.

Section 6.5.4, "Scope of Examination," of AWS D 1.1 and Section 7.5.4 of AWS D 1.4 are replaced with the following:

The QC Inspector shall inspect and approve the joint preparation, assembly practice, welding techniques, and performance of each welder, welding operator, and tack welder to make certain that the applicable requirements of this code and the approved welding procedure specification (WPS) are met.

Section 6.5.4 of AWS D 1.5 is replaced with the following:

The QC Inspector shall inspect and approve the joint preparation, assembly practice, welding techniques, and performance of each welder, welding operator, and tack welder to make certain that the applicable requirements of this code and the approved WPS are met. The QC Inspector shall examine the work to make certain that it meets the requirements of Sections 3 and 9.21. The size and contour of welds shall be measured using suitable gages. Visual inspection for cracks in welds and base metal, and for other discontinuities should be aided by strong light magnifiers, or such other devices as may be helpful. Acceptance criteria different from those specified in this code may be used when approved by the Engineer.

Section 6.6.5, "Nonspecified Nondestructive Testing Other Than Visual," of AWS D 1.1, Section 6.6.5 of AWS D 1.4 and Section 6.6.5 of AWS D 1.5 shall not apply.

For any welding, the Engineer may direct the Contractor to perform NDT that is in addition to the visual inspection or NDT specified in the AWS welding codes, in the Standard Specifications, or in these special provisions. Additional NDT required by the Engineer, will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications. Should any welding deficiencies be discovered by this additional NDT, the cost of the testing will not be paid for as extra work but shall be at the Contractor's expense.

Required repair work to correct welding deficiencies, whether discovered by the required visual inspection or NDT, or by additional NDT directed by the Engineer, and any associated delays or expenses caused to the Contractor by performing these repairs, shall be at the Contractor's expense.

The Engineer shall have the authority to verify the qualifications or certifications of any welder, QC Inspector, or NDT personnel to specified levels by retests or other means.

A sufficient number of QC Inspectors shall be provided to ensure continuous inspection when any welding is being performed. Continuous inspection, as a minimum, shall include (1) having QC Inspectors continually present when any welding operation is being performed, or (2) having a QC Inspector within such close proximity of all welding operations that inspections by the QC Inspector of each operation, at each welding location, shall not lapse for a period exceeding 30 minutes.

Inspection and approval of the joint preparation, assembly practice, welding techniques, and performance of each welder, welding operator, and tack welder shall be documented by the QC Inspector on a daily basis for each day that welding is performed.

When joint details that are not prequalified by the applicable AWS codes are proposed for use in the work, welders using these details shall perform a qualification test plate using the approved WPS variables and the joint detail to be used in production. The test plate shall be the maximum thickness to be used in production. The test plate shall be mechanically or radiographically tested as directed by the Engineer. Mechanical and radiographic testing and acceptance criteria shall be as specified in the applicable AWS codes.

The period of effectiveness for a welder's or welding operator's qualification shall be a maximum of 3 years for the same weld process, welding position, and weld type. A valid qualification at the beginning of work on a contract will be acceptable for the entire period of the contract, as long as the welder's work remains satisfactory.

PAYMENT

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

SECTION 9. DESCRIPTION OF BRIDGE WORK

The bridge work to be done consists, in general, of retrofitting the following structures as shown on the plans and briefly described as follows:

POSEY TUBE (BRIDGE NO. 33-106R)

Seismic retrofit the Posey Tube by jet grouting outside the tube.

WEBSTER STREET TUBE (BRIDGE NO. 33-106L)

Seismic retrofit the Webster Street Tube by jet grouting and stone columns outside the Tube.

SECTION 10. CONSTRUCTION DETAILS

SECTION 10-1. GENERAL

10-1.01 ORDER OF WORK

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

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

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

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

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

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

On the Alameda side of the Oakland Estuary and over the Webster Tube, the Contractor shall stage his operations as to not occupy more than one half of the Mariner Court Office Complex Parking Lot at a time.

On the Oakland side of the Oakland Estuary, the Contractor shall stage his operations as to not work simultaneously on the Webster Tube retrofitting between N 152+75 and N 155+50 and on the Posey Tube retrofitting between WA 14+60 and WA 18+20.

Temporary railing (Type K) shall be in place at locations shown on the plans prior to starting any adjacent construction activities.

Attention is directed to Sections "Stone Columns" and "Jet Grouting" of these special provisions regarding test sections and sequence of construction requirements.

Production stone columns and jet grouting columns shall not be installed until the test sections are completed and approved in writing by the Engineer.

Preconstruction surveys and installation of ground/tube instrumentation points shall be made prior to construction of any columns as specified in the contract drawings or in these special provisions.

Installation of the Seismic Warning Downholes and construction of the free field sites is independent of the other work on this contract. This work can be completed any time during the progress of the job

10-1.02 INSTRUMENTATION AND MONITORING

Prior to and during the ground improvement construction, the Contractor shall provide instrumentation and monitoring to observe and measure movements and stresses in the Tubes, buildings and the surrounding site, and provide reliable information on noise and vibration generated by the construction activities. The information obtained thereof shall be submitted to the Engineer to form a basis for assessing impacts of the construction on the Tubes and surrounding areas. If the

Tubes, buildings and the surrounding site, show signs of distress, in the opinion of the Engineer resulting from the Contractor's operation, the work shall cease immediately and a reassessment of the tube operation will take place.

GENERAL

Instrumentation and monitoring shall include furnishing, installing, and maintaining geotechnical instrumentation; protecting instrumentation from damage, and monitoring, reducing, plotting, and interpreting data collected by the Contractor from specified instruments or from any additional instruments the Contractor may elect to install. The work shall also include implementing required remedial and precautionary measures based on the instrumentation data.

Responsibility Of Contractor

Responsibilities of the Contractor shall include:

- 1) Furnish components of instrumentation that are to be installed during construction.
- 2) Furnish portable readout units.
- 3) Install instruments.
- 4) Instruct State personnel on the use of instrument and have the data available to the State at all times.
- 5) Protect from damage and maintain instruments and existing instruments installed by others.
- 6) Install, monitor, reduce, plot, and interpret data from instrumentation in addition to that specified herein.
- 7) If necessary, retain instrumentation and survey specialist firms to collect and interpret data for noise/vibration recording sensors, crack gauges, electrolytic beam sensors, tape/rigid tube extensometers, and reflectorized survey markers.
- 8) Provide safe access to personnel for data collection.
- 9) Implement plans of action that will reduce and maintain the monitoring equipment readings below the Threshold and Limiting Values and mitigate tube/ground distress as induced by the construction work.

Qualifications Of Contractor's Instrumentation Personnel

Geotechnical instrumentation work involves a significant amount of highly specialized tasks. The Contractor's instrumentation personnel responsible for furnishing and installing all geotechnical instrumentation, maintaining instrumentation as required, and reducing and interpreting data, shall have the minimum qualifications specified herein.

The Contractor's instrumentation personnel shall include a Geotechnical Engineer and a Registered Land Surveyor. The Geotechnical Engineer shall be a registered Geotechnical Engineer in the State of California, who has a minimum of a Bachelor of Science degree in Civil Engineering. The Geotechnical Engineer shall:

- 1) Prepare detailed step-by-step procedures and bar chart for all instruments specified herein.
- 2) Be on site and supervise at least the first two installations of each type of instrument.
- 3) Conduct at least the first two pre-installation and post-installation acceptance tests for each type of instrument specified herein.
- 4) Be on site until the completion and acceptance by the Engineer of the tasks above and subsequently be available for consultation at all times for the duration of the Contract.
- 5) Supervise interpretations of geotechnical instrumentation data.

The person in responsible charge of the surveyors shall be a Registered Land Surveyor in the State of California.

Quality Assurance

- 1) A factory calibration shall be conducted on all instruments prior to shipment. Certification shall be provided to indicate that the test equipment used for this purpose is calibrated and maintained in accordance with the test equipment manufacturer's calibration requirements and that, where applicable, calibrations are traceable to the National Institute of Standards and Technology.
- 2) A final quality assurance inspection shall be made prior to shipment. During the inspection, a checklist shall be completed to indicate each inspection and test detail. A completed copy of the checklist shall be supplied with each instrument.
- 3) Contractor shall provide the manufacturer's warranty for each portable readout units.
- 4) All monitoring equipment is subject to the approval of the Engineer.

Submittals

At least 15 days prior to commencing the work specified in this section, the Contractor shall submit to the Engineer for review:

- 1) Proposed plans of action in the event any Threshold and Limiting Values for selected instruments are reached.
- 2) A bar chart indicating the proposed time sequence of instrument installation.
- 3) Manufacturer's product data describing all specified instruments.
- 4) Detailed step-by-step procedure for installation, together with a sample installation record form.
- 5) Method for conducting post-installation acceptance test.
- 6) Method for protecting instruments from damage.

Two weeks after award of contract, the Contractor shall submit the following to the Engineer for review:

1. Resumes of the Geotechnical Engineer and the Registered Land Surveyor, sufficient to define details of direct site experience.
2. Resumes of other field and office Geotechnical personnel to be assigned to the project, other than clerical staff.

Within 2 workdays of receipt of each instrument at the site, the Contractor shall submit to the Engineer, copy of factory calibration, manufacturer's test equipment certification, completed copy of quality assurance checklist, and warranty for each portable readout unit.

Within 1 week of receipt of each instrument at the site, the Contractor shall submit to the Engineer, completed pre-installation acceptance test record form for that instrument.

Within 1 day of installing each instrument, the Contractor shall submit to the Engineer, the installation record sheet for that instrument, including as-built instrument locations as specified.

Storage Of Instruments

All instrumentation materials, after receipt at the site and prior to installation, shall be stored in an indoor, clean, dry and secure storage space. Instruments shall not be exposed to temperatures outside the manufacturer's stated working temperature range.

Monitoring Schedule

Monitoring shall be conducted in accordance with the following schedule. At the Engineer's discretion, data collection may be carried out more frequently than what is shown on the monitoring schedule.

Monitoring Schedule for Test Columns

Type	Frequency for Test Jet Grout Columns	Frequency for Test Stone Columns
Deformation Monitoring Points	Daily before and after installation of columns	Daily before and after installation of columns
Surface Settlement Points	Daily before and after installation of columns	Daily before and after installation of columns
Crack Monitor Plates	Three times per week	Three times per week
Vibration Recording Sensors	Once daily during installation of columns	Once daily during installation of columns
Noise Recording Sensors	Once daily during installation of columns	Once daily during installation of columns
Radial Convergence Points	Daily	Daily
Bi-axial Tiltmeters	Daily	Daily
El Beam Sensors	Daily	Daily
Visual Inspection	Daily	Daily

Monitoring Schedule for Production Columns

Type	Frequency for Jet Grout Columns	Frequency for Stone Columns
Deformation Monitoring Points	Twice a week, before and after installation of columns	Twice a week, before and after installation of columns
Surface Settlement Points	Twice a week, before and after installation of columns	Twice a week, before and after installation of columns
Crack Monitor Plates	Once a week	Once a week
Vibration Recording Sensors	Once a week during installation of columns	Once a week during installation of columns
Noise Recording Sensors	Once a week during installation of columns	Once a week during installation of columns
Radial Convergence Points	Once a week during installation of columns	Once a week during installation of columns
Bi-axial Tiltmeters	Once a week during installation of columns	Once a week during installation of columns
El Beam Sensors	Once a week during installation of columns	Once a week during installation of columns
Visual Inspection	Three times a week	Three times a week

Upon completion of the stone/jet grout column installations, the Contractor shall take readings once every week for 4 weeks unless otherwise instructed by the Engineer.

Data Collection

The Contractor shall establish and check the validity of formal initial readings upon installation of instruments. No instrument will be accepted or paid for until formal initial readings are agreed upon by the Engineer.

Contractor’s data shall be recorded on field data records, which shall include at least the following:

1. Project name
2. Contract name and number
3. Instrument type
4. Date and time
5. Observer
6. Readout unit number
7. Instrument number
8. Readings
9. Remarks
10. Visual observations
11. Other casual data including weather, temperature, and construction activities.
12. Exact location of instrument in relation to the Tubes.

Contractor’s data shall be recorded in U.S. Customary Units, such as feet, inches, pounds.

Disclosure Of Data

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

Interpretation Of Data And Implementation Of Plans Of Action

The Contractor shall reduce, plot, and interpret the data collected. Interpretation shall include making correlations between instrumentation data and specific construction activities. Instrumentation data shall be evaluated to determine whether the response to construction activities is within the threshold values shown.

Tables 1 and 2 indicate Threshold and Limiting Values for selected instruments. The threshold and limiting values are subject to adjustment by the Engineer as indicated by prevailing conditions or circumstances.

The Limiting Values are the maximum allowable values. The Threshold Values are values that provide adequate forewarning, and are half of the Limiting Values.

If the Threshold Value is reached, the Contractor shall:

1. Meet with the Engineer to discuss response action(s).
2. If directed by the Engineer, stop operation and implement the reviewed plan of action applicable to reaching a Threshold Value.
3. Install additional instruments if directed by the Engineer. Additional Instrumentation ordered by the Engineer will be paid for as Extra Work as provided in Section 4-1.03D of the Standard Specifications.

The Contractor shall take all necessary steps so that the Limiting Value is not exceeded. Contractor may be directed to suspend activities in the affected area with the exception of those actions necessary to avoid exceeding the Limiting Value.

If the Limiting Value is reached, the Contractor shall:

1. Meet with the Engineer to discuss response action(s).
2. Cease all construction work, evaluate the site conditions, and implement the reviewed plan of action applicable to reaching a Limiting Value.

Data Collection Quality Assurance and Quality Control

1. Data collected, reduced, and plotted shall be reviewed, approved, and stamped by a Specialty Consultant who is familiar with the types of instrumentation. The Specialty Consultant shall be retained by the Contractor at no cost to the State.
2. Data collected shall be reported as follows:
 - a. Raw and reduced data shall be on summary tables in printed tabular format on 8 1/2 inches by 11 inches sheet of paper.
 - b. Data for up to 8 like instruments shall be plotted on the same plot. Each plot shall be submitted on an 8 1/2 inches by 11 inches sheet and shall contain a 2 inches by 2 inches key plan indicating the approximate locations of the instruments plotted.

Required Monitoring

1. Preconstruction survey of the Tubes and structures near the ground improvement sites; conditions surveys during construction.
2. Noise and vibration generated during construction, background noise and vibration at the site and vibrations at the Tubes.
3. Ground surface settlement, heave and/or permanent offset at the demonstration sites or surrounding areas.
4. Horizontal, vertical movements, and angular rotation of the Tubes.

**Table 1
Instrumentation Schedule – Jet Grout Column Test Site**

Instru-ment Location	Monitoring Parameter	Instrument Type and Methodology	Instru-ment Number	Install Instrument Responsi-bility	Monitoring Responsi-bility	Threshold Values	Limiting Values (see Note 1)
Adjacent Lots and Buildings	Settlement Observation	Deformation Monitoring Points	Total 44 Required	Contractor	Contractor	Lots/ Track = 1/4" Buildings = 1/8"	Lots/ Track = 1/2" Buildings = 1/4"
	Settlement/ Heave	Surface Settlement Points	Total 60 Required	Contractor	Contractor	Lots/ Track = 1/4" Buildings = 1/8"	Lots/ Track = 1/2" Buildings = 1/4"
	Movement during construction	Crack Monitor Plates	Total 44 Required	Instrumentation Specialist Firm	Instrumentation Specialist Firm	Record Crack Openings plus 1/32"	Record Crack Openings plus 1/16"
	Observe vibration during construction	Vibration Recording Sensors	Total 17 Required	Instrumentation Specialist Firm	Instrumentation Specialist Firm	1/2" per second (single event vibration) 0.1" per second (continuous vibration)	1" per second (single event vibration) 0.2" per second (continuous vibration)
	Record noise during construction	Noise Recording Sensors	Total 12 Required	Instrumentation Specialist Firm	Instrumentation Specialist Firm	See Specifications	See Specifications
Posey Tube	Tunnel Lining Convergence	Tape Extensometer/ Radial Convergence Points	Total 38 Required	Surveying Specialist Firm	Surveying Specialist Firm	1/8"	1/4"
	Tunnel Rotation	Bi-axial Tiltmeters	Total 38 Required	Instrumentation Specialist Firm	Instrumentation Specialist Firm	0.007 Radian and 1/8" Relative Settlement Between Tube Segments	0.014 Radian and 1/4" Relative Settlement Between Tube Segments
	Settlement/ Heave	El Beam Sensors	Total 38 Required	Instrumentation Specialist Firm (Brackets & Cable Trays By Contractor)	Instrumentation Specialist Firm	1/8"	1/4"
Note: (1) Limiting values are to be regarded as quantities that, if predicted on the basis of successive observations, would call for reassessment or alteration of construction procedures.							

Table 2							
Instrumentation Schedule – Stone Column Test Site							
Instru- ment Location	Monitoring Parameter	Instrument Type and Methodology	Instrument Number	Install Instrument Responsibi- lity	Monitoring Responsibi- lity	Threshold Values	Limiting Values (see Note 1)
Adjacent Lots and Buildings	Settlement observation	Deformation Monitoring Points	Total 44 Required	Contractor	Contractor	Lots/ Track = 1/4" Buildings = 1/8"	Lots/ Track =1/2" Buildings = 1/4"
	Settlement/ Heave	Surface Settlement Points	Total 76 Required	Contractor	Contractor	Lots/ Track = 1/4" Buildings = 1/8"	Lots/ Track =1/2" Buildings = 1/4"
	Movement during construct-ion	Crack Monitor Plates	Total 48 Required	Instrumenta- tion Specialist Firm	Instrumenta- tion Specialist Firm	Record Crack Openings plus 1/32"	Record Crack Openings plus 1/16"
	Observe vibration during construct-ion	Vibration Recording Sensors	Total 28Required	Instrumenta- tion Specialist Firm	Instrumentati on Specialist Firm	1/2" per second (single event vibration) 0.1" per second (continuous vibration)	1" per second (single event vibra-tion) 0.2" per second (continuous vibration)
	Record noise during construct-ion	Noise Recording Sensors	Total 20Required	Instrumenta- tion Specialist Firm	Instrument- ation Specialist Firm	See Specifica- tions	See Specifica- tions
Webster Tube	Tunnel Lining Convergence	Tape Extensometer/ Radial Convergence Points	Total 40 Required	Surveying Specialist Firm	Surveying Specialist Firm	1/8"	1/4"
	Tunnel Rotation	Biaxial Tiltmeters	Total 40 Required	Instrumenta- tion Specialist Firm	Instrumenta- tion Specialist Firm	0.007 Radian and 1/8" Relative Settlement between Tube Segments	0.014 Radian and 1/4" Relative Settlement between Tube Segments
	Settlement/ Heave	El Beam Sensors	Total 40 Required	Instrumenta- tion Specialist Firm (Brackets & Cable Trays By Contractor)	Instrumenta- tion Specialist Firm	1/8"	1/2"
Note: (1) Limiting values are to be regarded as quantities that, if predicted on the basis of successive observations, would call for reassessment or alteration of construction procedures.							

PRECONSTRUCTION SURVEY

The State and the Contractor shall conduct a preconstruction survey of the sites that might be damaged prior to the start of any construction or demolition. The preconstruction survey will consist of (1) documenting a survey of all existing damage and cracks (i.e. video camera survey and photographs with annotations) at existing facilities, buildings, and other improvements in areas affected by the work of this contract, and (2) visual inspections to check and document damage, leaks at joints or other conditions which might indicate tube movement and/or stress resulting from the ground improvement. These pre-existing damage, leaks, and cracks will be agreed to by the Contractor and by the Engineer, and shall be the basis from which all new cracks, existing progressive cracks, new leaks at joints, or damage will be measured against.

In addition to the preconstruction survey by the State, the Contractor shall perform pre- and post-construction photographic surveys of existing facilities, buildings, and other improvements that might be damaged by the operations of the Contractor. Pre-construction photographic survey shall be completed prior to the start of the construction work. The post-construction photographic survey shall be carried out after all the construction work is completed.

Records in triplicate of all observations shall be prepared by the Contractor and every document shall be signed by the authorized representatives of the State and of the Contractor. Video tapes and photographs as deemed advisable by the Engineer will be made by a consultant firm and signed in the manner specified above. One signed copy of every document and photograph will be kept on file in the office of the Engineer.

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

NOISE AND VIBRATION

Noise and vibration monitoring shall provide reliable information on noise and vibration generated by the Contractor's work, assist in monitoring the Contractor's compliance with the requirements set forth below, and assist in verifying and resolving public complaints concerning noise and vibration generated by the Contractor's activities.

Noise and Vibration Control Plan: Two weeks prior to the construction of the ground improvement test sections, the Contractor shall submit a noise and vibration control and monitoring plan for the Engineer's review and approval. The noise and vibration control plan shall consist of types and locations of instrumentation, data acquisition system, proposed reporting format, and the name(s) of instrumentation subcontractor(s).

Installation: Instruments shall be installed in accordance with the approved plan. Instruments shall be in place at least 2 days before the desired reading so that baseline readings and calibration can be performed. Where feasible, instruments shall be installed at secure locations or otherwise protected from damage. If damaged by construction activities, the Contractor shall install new instruments at his own expenses.

Readings: Contractor shall measure the noise and vibration levels at each ground improvement test section. Background and construction noise and vibration measurement data shall be submitted in the approved format to the Engineer the same day the readings are taken. Each week, a summary report shall be presented to the Engineer. At the completion of the ground improvement work, a final summary report shall be presented.

Equipment noise compliance certificates shall be submitted before a piece of equipment is mobilized to the test sites.

GENERAL

The Contractor shall comply with Noise Regulations for Construction in the City of Oakland, City of Alameda, Alameda County, and the State of California Department of Transportation. In addition, the Contractor shall use only well-muffled and maintained equipment which has been acoustically certified prior to use and which operates within the maximum noise levels specified herein.

DEFINITIONS.—Indices used in noise monitoring are defined as follows:

dBA: Decibel on the A-Scale as measured on the A-Weighted network (slow response) of a sound level meter.

dB(C): Decibel on the C-Scale as measured on the C-Weighted network (slow response) of a sound level meter.

dB: Decibel on the Linear Scale as measured on the linear or all-pass network (slow response) of a sound level meter.

NOISE MEASUREMENT PROCEDURES

1. The Contractor shall conduct the noise monitoring a minimum of 150 feet behind to 150 feet ahead (a minimum of 300 feet) of the ground improvement activities and at the noise and vibration locations specified on the drawing.
2. The Contractor shall calibrate all sound level meters with acoustical calibrator before proceeding with any measurements. Except where otherwise indicated, the Contractor shall perform all noise measurements using the A-weighting network and SLOW response of an instrument complying with the criteria for a Type 2 General Purpose sound level meter. Measure impulsive or impact noises with an impulse sound level

meter complying with the criteria of IEC 179 for impulse sound level meters. As an alternative procedure, a Type 2 General Purpose sound level meter on C-Weighting and FAST response may be used to estimate peak values of impulsive or impact noise. Transient meter indications of 105 dBA (fast) or higher will be considered as indications of impulsive noise of 125 dB or greater.

3. The measurement microphone shall be fitted with an appropriate windscreen, shall be located 5 feet above ground, and shall be at least 5 feet away from the nearest sound reflective surface.
4. Background noise measurements shall be taken before any construction activities starts, and thereafter weekly for 24 hours for two non-consecutive days Monday through Friday at noise monitoring locations to be selected by the Engineer. Background noise level data shall be reported for each one hour period.
5. Noise measurements taken during construction noise monitoring shall be recorded on a standard form as approved by the Engineer.
6. Sampling period will be twenty (20) minutes.
7. Noise measurements shall be taken daily, at least one time during the appropriate time of day and continuous when construction activity is occurring.
8. Noise measurements shall be taken during the construction phase or activity that may have the potential for creating annoyance or for exceeding the requirements of this special provision or as directed by the Engineer.

NOISE LEVEL LIMITATIONS

1. The Contractor shall comply with the following limitations: 1). Noise levels summarized in Table 3; or 2) the experiential background sound level that is exceeded 10% of the measurement period (L_{10}) level plus 5 dBA, whichever is greater.
2. The Contractor shall use only equipment that, operating under full load, meets the noise limits specified in Table 3 when measured according to the test procedures used for equipment noise certification as specified in "Vibration Monitoring" below.
3. In the event the measured ambient noise level exceeds the applicable noise level limits in Table 3, the stated applicable noise level limits specified shall be adjusted so as to equal the ambient noise level.
4. Noise levels from impact devices, pavement breakers, and jackhammers shall comply with noise limits in Table 3 unless otherwise approved in writing by the Engineer.
5. If the Contractor's existing equipment does not meet noise emission limits specified in Table 3 or falls out of compliance, the Contractor shall remove the equipment promptly from service or take prompt remedial action to comply with these specifications.

TABLE 3
Noise Emission Limits⁽¹⁾

Land Use of Affected Property	Maximum Energy Level ⁽²⁾ (dBA)
Residential	75
Business	85
Industrial	85
(1) The criteria presented in Table 3 are applicable at the near side of the nearest dwelling or occupied building under consideration or at 50 feet from the test area, whichever is closer. (2) Refer to maximum energy level measured for more than 20 minutes out of any one hour time period.	

CERTIFICATE OF NOISE COMPLIANCE

The Contractor shall submit a noise report to the Engineer with certification by an independent testing service that equipment noise emissions are below those prescribed in Table 3.

The independent acoustical measurement service shall be employed by the Contractor and approved by the Engineer.

VIBRATION MONITORING.—

1. Vibration monitoring shall be performed (1) when installing stone columns by impact or vibratory method and (2) when constructing jet grout columns.
2. The Contractor shall conduct stone column and jet grout column installation activities in such a manner that vibration levels at a distance of a minimum of 100 feet each side (a minimum of 200 feet) of the ground improvement activities shall not exceed the Threshold and Limiting Values specified in Tables 1 and 2 in

- any direction over the frequency range of 8 to 80 Hertz (HZ). The specified peak velocity is to avoid minor building damage.
3. The Contractor shall monitor ground borne vibration of work operations with calibrated equipment to ensure compliance with vibration limitations specified herein.
 4. Vibration monitoring locations shall be designated by the Engineer and shall include a minimum of 8 measurement locations for each method of stone column installations and 4 for jet grouting installation specified by the Engineer.
 5. Vibration shall be monitored using a 3-channel seismograph capable of providing a printed record of the particle velocity measured on each channel and the resultant peak particle velocity vector. The equipment shall also have a velocity frequency response of at least 2 to 200 HZ and be accurate from 0.01 to 4.0 inches/sec. Geophones shall be mounted or seated at locations shown on the drawings or as directed by the Engineer. The Contractor shall use appropriate methods in mounting/seating the geophones which will be approved by the Engineer.

GROUND SURFACE MOVEMENTS

The purpose of the ground surface movement monitoring is to monitor ground movements that occur as a result of installation of stone columns and jet grout columns next to the Tubes. Instrumentation will be used to monitor ground movements conditions leading to tunnel distortion and/or potential damage to permanent structures for which corrective measures are needed.

The Contractor shall conduct the ground/tube instrumentation points a minimum of 150 feet behind to 150 feet ahead (a minimum of 300 feet) of the ground improvement activities and at the ground/tube instrumentation point locations specified on the plans or as directed by the Engineer.

SUBMITTAL

The Contractor shall submit the readings to the Engineer for review at the end of the work day or when requested by the Engineer.

INSTALLATION

The Contractor shall install deformation monitoring points, crack monitor plates, and surface settlement points within the immediate work area. Base-line readings shall be established prior to any excavation and construction activities. The locations of these instrumentation points are shown on the plans and are subject to changes at the discretion of the Engineer.

READINGS

The Contractor shall take, record, and submit to the Engineer readings of all settlement markers once every day during excavation for inspection pits, and installation of stone columns and jet grout columns. If movement readings are less than 0.10 inches, the frequency of readings may be reduced to once every two days; if more than 0.10 inches, the frequency of readings may be increased at the discretion of the Engineer, who may require the Contractor to take emergency action, which may include immediately stopping all construction activities.

If the movements persist and increase to the threshold values during progress of the work, the Contractor shall refer to Section "Interpretation of Data and Implementation of Plans of Action."

DEFORMATION MONITORING POINTS

The deformation monitoring point shall consist of a 2-inch masonry nail with an identification tag. The nail shall be manufactured from hardened, zinc-plated steel. The nail shall have ribbed threads along its shank and a conical point. It shall also have an indent in the center of its head to receive a surveyor's plumb bob. The identification tag shall be 1-1/2 inch diameter, 2/32 inch thick, with a punched number for identification. The masonry nail shall be placed through the central hole in the identification tag and driven into an asphalt-covered surface such that the identification tag lies directly between the asphalt-covered surface and the head of the masonry nail.

Deformation monitoring points shall be installed at the locations shown on the Plans. Installation shall utilize means and methods that avoid or minimize damage to building materials in general, and in particular to historical materials, if any.

SURFACE SETTLEMENT POINTS

The surface settlement point shall consist of a 5-foot long, 3/4-inch diameter steel rod, and a surface roadway box. Top of rod shall be rounded and punchmarked at its center.

Surface settlement points shall be installed at the locations shown on the Plans. A hole of 9/16-inch shall be drilled before the steel rod is driven into the ground. A surface roadway box shall be placed over the steel rod for protection purposes. The horizontal position and elevation of each surface settlement point shall be determined to an accuracy of plus or minus 0.03 foot and plus or minus 0.01 foot, respectively.

CALIBRATED CRACK MONITOR PLATES

The Contractor shall provide two overlapping 1 1/4-inch by 4-inch acrylic plastic plates. One plate shall have a black grid calibrated in inches in both vertical and horizontal direction and the other shall have two crossed cursor lines. Plates shall be securely mounted using quick-set epoxy.

The Contractor shall conform to the following requirements when installing the crack plates:

1. Clean structure surface of any loose materials such as dirt, dust, or other debris.
2. Apply quick-set epoxy to the mounting areas of the crack plate.
3. Position crack plates over crack mounting locations in such a way that the crossed cursor is in line with the center of the joint or crack.
4. Support the crack plate over crack monitoring location until the epoxy has set.
5. Following the final set of the epoxy, cut and remove the transparent adhesive tape that holds the two plates together, allowing the two plates to move independently of one another.

PAVEMENT, SIDEWALK, AND TUBE CRACKS AND REPAIRS

The Contractor shall be responsible for the repair of:

1. All new cracks of 1/32 of an inch wide or wider, that did not exist at the time of the preconstruction survey.
2. All existing cracks, identified in the preconstruction survey, that have increased in width by 1/32 of an inch.
3. Cracks shall be repaired at Contractor's expense. For all crack repairs, the Contractor shall submit a crack repair procedure for review and approval of the Engineer.

TUBE MOVEMENTS MONITORING

Tube movements shall be monitored for rotation, lateral deflections, and differential settlements within the tube segments as a result of the installation of stone columns and jet grout columns adjacent to the Tubes. Instrumentation will be utilized to monitor rotations, lateral deflections, and differential settlements between tube segments which may eventually cause leakage.

The Contractor shall install 15 electrolytic beam sensors, 6 biaxial tiltmeters, and 15 radial convergence points along the Tubes to monitor the movements and convergence of the tubes. In addition, the Contractor shall provide 10 calibrated crack monitor plates within the tubes. The locations of instrumentation points are as shown on the plans. Control points shall be installed inside the tubes 200 feet ahead and 200 feet behind the ground improvement activities.

The Contractor shall photograph and inspect the tube walls prior to construction. During construction, the Tubes will be observed at least once a day or more if instructed by the Engineer. Post construction observations will be made at least once a week or more frequently, depending on the results of the continuous instrumentation readings.

The Contractor shall submit the readings to the Engineer for review one day after the readings are available.

The Contractor shall retain a specialty contractor "on-call" at all times to perform pressure grouting, if needed.

Electrolytic Beam Sensors

Electrolytic tilt sensors, mounted on 6-foot horizontal beams, with compatible remote readout equipment and connecting wiring, shall be furnished and installed above the spring line at least 15 degrees above the horizontal plane through the spring line at the locations shown on the plans. The beams shall be mounted on brackets firmly attached to the tube lining.

Tape Extensometer/Radial Convergence Points

The Contractor shall provide one tape extensometer with carrying case and extra tape. The tape extensometer will be required to measure convergence across the tubes to a maximum of 60 feet. The weight of the extensometer shall not exceed 4 pounds. The tape extensometer shall be furnished for the project at least 2 weeks prior to the start of construction.

Zinc plated eyebolts, compatible with the tape extensometer shall be supplied for convergence stations. The bolts shall have a bearing shoulder at the eye end of the 0.75-inch long, 1/4 - 20 threaded shank. The eyebolt shall mate with the radial convergence anchors.

Anchorage points shall consist of stainless steel eyebolts compatible with the tape extensometer furnished. Holes may be drilled up to 2 inches into the lined segment to serve as anchorage points.

Points for measuring radial convergence with a tape extensometer shall be installed in the tubes. Locations of the radial convergence points are as shown on the plans.

Tiltmeter

Electrolytic level transducer-type biaxial tiltmeter with compatible remote readout equipment and connecting wiring shall be furnished for installation as shown on the plans. Tiltmeters shall conform to the following requirements:

1. A range of ± 20 arc minutes and repeatability of stability of ± 0.3 arc-seconds.
2. Provide temperature compensation of tiltmeter.
3. Capable of operation and ready attachment to a pre-anchored base plate in wall of the Tubes.
4. Capable of transmitting readings to a compatible remote readout instrument.

PROTECTION AND MAINTENANCE

The Contractor shall protect and maintain all instruments, repair or replace damaged or missing instrument components or entire instruments as required within 8 hours. Damage to any instrumentation shall be repaired by the Contractor at no additional cost to the State. The Engineer will be the sole judge of whether repair or replacement is required. The Engineer may impose a work stoppage in the vicinity of the damaged or inoperative instrument until it is again operational, at no additional cost to the State.

REMOVAL AND DISPOSAL OF INSTRUMENTS

Prior to final acceptance of the work, the Contractor shall remove and dispose of those portions of instruments constituting an obstruction, including boreholes, and surface settlement points, as directed by the Engineer, and in conformance with the following requirements:

1. Plug remaining open portions of settlement markers, geophones, and tiltmeters with lean concrete.
2. Construct new pavement patches in paved areas of the same material and to the same thickness as existing adjacent pavement.
3. Restore disturbed or damaged surfaces to the conditions existing prior to the installation of the instruments.
4. Remove instrumentation identification devices and protective barriers.

PAYMENT

The contract lump sum price paid for instrumentation and monitoring shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in instrumentation and monitoring, complete in place, including readings, submittals of summary reports, preconstruction survey (video camera survey and photographs with annotations), noise and vibration control, surface movement monitoring, tube movement monitoring, protection, maintenance, and removal and disposal of instrumentation when not required, as shown on the approved instrumentation plans, as specified in these special provisions, and as directed by the Engineer.

10-1.03 WATER POLLUTION CONTROL (STORM WATER POLLUTION PREVENTION PLAN)

Water pollution control work shall conform to the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications and these special provisions.

This project lies within the boundaries of the San Francisco Bay Regional Water Quality Control Board and shall conform to the requirements of the National Pollutant Discharge Elimination System (NPDES) Permit for General Construction Activities No. CAS000002, Order No, 99-08-DWQ, and the NPDES Permit for the State of California Department of Transportation Properties, Facilities, and Activities, No. CAS000003, Order No, 99-06-DWQ issued by the State Water Resources Control Board. These permits, hereafter referred to as the "Permits," regulate storm water discharges associated with construction activities.

Water pollution control work shall conform to the requirements in the "Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual" and the "Construction Site Best Management Practices (BMPs) Manual," and addenda thereto issued up to, and including, the date of advertisement of the project, hereafter referred to respectively as the "Preparation Manual" and the "Construction Site BMP Manual" and collectively as the "Manuals." Copies of the Manuals and the Permits may be obtained from the Department of Transportation, Material Operations Branch, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone: (916) 445-3520. Copies of the Manuals may also be obtained from the Department's Internet Web Site at: <http://www.dot.ca.gov/hq/construc/stormwater.html>.

In addition, a Conceptual Storm Water Pollution Prevention Plan (CSWPPP) has been prepared for this project by the Department and is available for review at 111 Grand Avenue, Oakland, California 94601. Please call the Construction Office Duty Senior, telephone number (510)286-5209, to reserve a copy of the documents at least 24 hours in advance. This document may be used by the Contractor for developing the actual contract Storm Water Pollution Prevention Plan (SWPPP).

The Contractor shall know and fully comply with the applicable provisions of the Manuals, Permits, and Federal, State, and local regulations that govern the Contractor's operations and storm water discharges from both the project site and areas of disturbance outside the project limits during construction. The Contractor shall maintain copies of the Permits at the project site and shall make the Permits available during construction.

Unless arrangements for disturbance or use of areas outside the project limits are made by the Department and made part of the contract, it is expressly agreed that the Department assumes no responsibility for the Contractor or property owner with respect to any arrangements made between the Contractor and property owner. The Contractor shall implement, inspect and maintain all necessary water pollution control practices to satisfy all applicable Federal, State, and Local laws and regulations that govern water quality for areas used outside of the highway right-of-way or areas arranged for the specific use of the Contractor for this project. Installing, inspecting, and maintaining water pollution control practices on areas outside the highway right-of-way not specifically arranged for and provided for by the Department for the execution of this contract will not be paid for.

The Contractor shall be responsible for the costs and for liabilities imposed by law as a result of the Contractor's failure to comply with the provisions set forth in this section "Water Pollution Control", including but not limited to, compliance with the applicable provisions of the Manuals, Permits and Federal, State and local regulations. Costs and liabilities include, but are not limited to, fines, penalties, and damages whether assessed against the State or the Contractor, including those levied under the Federal Clean Water Act and the State Porter Cologne Water Quality Act.

In addition to the remedies authorized by law, money due the Contractor under the contract, in an amount determined by the Department, may be retained by the State of California until disposition has been made of the costs and liabilities.

When a regulatory agency or other third party identifies a failure to comply with the permit or any other local, State, or federal requirement, the Engineer may retain money due the Contractor, subject to the following:

- A. The Department will give the Contractor 30 days notice of the Department's intention to retain funds from partial payments which may become due to the Contractor prior to acceptance of the contract. Retention of funds from payments made after acceptance of the contract may be made without prior notice to the Contractor.
- B. No retention of additional amounts out of partial payments will be made if the amount to be retained does not exceed the amount being withheld from partial payments pursuant to Section 9-1.06, "Partial Payments," of the Standard Specifications.
- C. If the Department has retained funds and it is subsequently determined that the State is not subject to the costs and liabilities in connection with the matter for which the retention was made, the Department shall be liable for interest on the amount retained for the period of the retention, and the rate of interest payable shall be 6 percent per annum.

Conformance with the provisions of this section "Water Pollution Control" shall not relieve the Contractor from the Contractor's responsibilities, as provided in Section 7, "Legal Relations and Responsibilities," of the Standard Specifications.

The Contractor shall notify the Engineer immediately upon request from the regulatory agencies to enter, inspect, sample, monitor or otherwise access the project site or the Contractor's records pertaining to water pollution control work.

STORM WATER POLLUTION PREVENTION PLAN PREPARATION, APPROVAL AND AMENDMENTS

As part of the water pollution control work, a Storm Water Pollution Prevention Plan, hereafter referred to as the "SWPPP," is required for this contract. The SWPPP shall conform to the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications, the requirements in the Manuals, the requirements of the Permits, and these special provisions. Upon the Engineer's approval of the SWPPP, the SWPPP shall be considered to fulfill the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications for development and submittal of a Water Pollution Control Program.

No work having potential to cause water pollution, as determined by the Engineer, shall be performed until the SWPPP has been approved by the Engineer.

The Contractor shall designate a Water Pollution Control Manager. The Water Pollution Control Manager shall be responsible for the preparation of the SWPPP and any required modifications or amendments and shall be responsible for the implementation and adequate functioning of the various water pollution control practices employed. The Water Pollution Control Manager shall serve as the primary contact for all issues related to the SWPPP or its implementation. The Contractor shall submit to the Engineer a statement of qualifications, describing the training, previous work history and expertise of the individual selected by the Contractor to serve as Water Pollution Control Manager. The Engineer will reject the Contractor's submission of a Water Pollution Control Manager if the submitted qualifications are deemed to be inadequate.

Within 30 days after the approval of the contract, the Contractor shall submit 3 copies of the draft SWPPP to the Engineer. The Engineer will have 15 days to review the SWPPP. If revisions are required, as determined by the Engineer, the Contractor shall revise and resubmit the SWPPP within 15 days of receipt of the Engineer's comments. The Engineer will have 5 days to review the revisions. Upon the Engineer's approval of the SWPPP, 3 approved copies of the SWPPP, incorporating the required changes, shall be submitted to the Engineer. In order to allow construction activities to proceed,

the Engineer may conditionally approve the SWPPP while minor revisions are being completed. If the Engineer does not review or approve the SWPPP within the time specified, compensation will be made in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The SWPPP shall apply to all areas that are directly related to construction including, but not limited to, staging areas, storage yards, material borrow areas, and access roads within or outside of the highway right-of-way.

The SWPPP shall incorporate water pollution control practices in the following six categories:

- A. Soil stabilization;
- B. Sediment control;
- C. Wind erosion control;
- D. Tracking control;
- E. Non-storm water control; and
- F. Waste management and material pollution control.

The Contractor shall develop a Water Pollution Control Schedule that shall describe the timing of grading or other work activities that could affect water pollution. The Water Pollution Control Schedule shall be updated by the Contractor to reflect any changes in the Contractor's operations that would affect the necessary implementation of water pollution control practices.

The Contractor shall incorporate the "Minimum Requirements" presented in the Preparation Manual into the SWPPP. In addition to the "Minimum Requirements" presented in the Preparation Manual, the Contractor shall complete the BMP Consideration Checklist presented in the Preparation Manual. The Contractor shall identify and incorporate into the SWPPP the water pollution control practices selected by the Contractor or as directed by the Engineer.

In addition to the Minimum Requirements presented in the Preparation Manual, special requirements shall be incorporated into the SWPPP and the Water Pollution Control Cost Break-Down as follows:

Special Requirement(s)	
Category	BMP, location and quantity
Temporary Sediment control	SC-6 Gravel Bag Berm, place around perimeter of work areas as required to contain sediments from construction activities, 20 M
Tracking Control	TC-1 Stabilized Construction Entrance/Exit, locate at the interface between work areas and public roadways, 3 EA
Non Storm Water Control	NS-3 Paving and Grinding Operation, NS-2 Dewatering Operations

The following contract items of work, shall be incorporated into the SWPPP as "Temporary Water Pollution Control Practices": Temporary Cover, Temporary Drainage Inlet Protection. The Contractor's attention is directed to these special provisions provided for each temporary water pollution control practice.

The SWPPP shall include, but not be limited to, the items described in the Manuals, Permits and related information contained in the contract documents. In addition the SWPPP shall include a copy of the following:

1. Notification of Construction
2. US Army Corps of Engineers Permits
3. RWQCB 401 Certification
4. BCDC Permit

The Contractor shall prepare an amendment to the SWPPP when there is a change in construction activities or operations which may affect the discharge of pollutants to surface waters, ground waters, municipal storm drain systems, or when the Contractor's activities or operations violate any condition of the Permits, or when directed by the Engineer. Amendments shall show additional water pollution control practices or revised operations, including those areas or operations not shown in the initially approved SWPPP. Amendments to the SWPPP shall be prepared, and submitted for review and approval in the same manner as specified for the SWPPP approval. Subsequent amendments shall be submitted within a time approved by the Engineer, but in no case longer than the time specified for the initial submittal and review of the SWPPP. At a minimum, the SWPPP shall be amended annually and submitted to the Engineer 25 days prior to the defined rainy season.

The Contractor shall keep one copy of the approved SWPPP and approved amendments at the project site. The SWPPP shall be made available upon request of a representative of the Regional Water Quality Control Board, State Water Resources

Control Board, United States Environmental Protection Agency or the local storm water management agency. Requests by the public shall be directed to the Engineer.

COST BREAK-DOWN

The Contractor shall submit to the Engineer a cost break-down for the contract lump sum item of water pollution control, together with the SWPPP.

The cost break-down shall be completed and furnished in the format shown in the example of the cost break-down included in this section. Unit descriptions and quantities shall be designated by the Contractor, except for the specified special requirements shown in the example. The units and quantities given in the example, if provided, are special requirements specified for the SWPPP, and shall be included in the cost break-down furnished to the Engineer. The Contractor shall verify the estimated quantities of the special requirements and submit revised quantities in the cost break-down.

The Contractor shall determine the quantities required to complete the work of water pollution control. The quantities and their values shall be included in the cost break-down submitted to the Engineer for approval. The Contractor shall be responsible for the accuracy of the quantities and values used in the cost break-down submitted for approval. The cost break-down shall not include water pollution control practices which are shown on the plans and for which there is a separate contract item.

The sum of the amounts for the units of work listed in the cost break-down shall be equal to the contract lump sum price bid for water pollution control. Profit shall be included in each individual unit listed in the cost break-down. Attention is directed to "Overhead" of these special provisions. The cost break-down shall be submitted and approved within the same times specified for the SWPPP. Partial payment for the item of water pollution control will not be made until the cost break-down is approved, in writing, by the Engineer.

Adjustments in the items of work and quantities listed in the approved cost break-down shall be made when required to address amendments to the SWPPP, except when the adjusted items are paid for as extra work.

No adjustment in compensation will be made in the contract lump sum price paid for water pollution control due to differences between the quantities shown in the approved cost break-down and the quantities required to complete the work as shown on the approved SWPPP. No adjustment in compensation will be made for ordered changes to correct SWPPP work resulting from the Contractor's own operations or from the Contractor's negligence.

The approved cost break-down will be used to determine partial payments during the progress of the work and as the basis for calculating the adjustment in compensation for the item of water pollution control due to increases or decreases of quantities ordered by the Engineer. When an ordered change increases or decreases the quantities of an approved cost break-down item, the adjustment in compensation will be determined in the same manner specified for increases and decreases in the quantity of a contract item of work in conformance with the provisions in Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications. If an ordered change requires a new item not on the approved cost break-down, the adjustment in compensation will be determined in the same manner specified for extra work in conformance with Section 4-1.03D, "Extra Work," of the Standard Specifications.

If requested by the Contractor and approved by the Engineer, changes to the water pollution control practices listed in the approved cost break-down, including the addition of new water pollution control practices, will be allowed. The changes shall be included in an approved amendment to the SWPPP. If the changes to the water pollution control practices requested by the Contractor would result in a net cost increase to the lump sum price for water pollution control, an adjustment in compensation will be made without change to the item of water pollution control. The net cost increase to the item of water pollution control resulting from changes requested by the Contractor will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

WATER POLLUTION CONTROL COST BREAK-DOWN

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UNIT DESCRIPTION	UNIT	APPROXIMATE QUANTITY	VALUE	AMOUNT
SS-1 Scheduling	LS	Lump Sum		
SS-2 Preservation of Existing Vegetation	LS	Lump Sum		
SC-1 Silt Fence	LS	Lump Sum		
SC-6 Gravel Bag Berm	M	20		
SC-7 Street Sweeping and Vacuuming	LS	Lump Sum		
TC-1 Stabilized Construction Entrance/Exit	EA	3		
WE-1 Wind Erosion Control				
NS-2 Dewatering Operations	LS	Lump Sum		
NS-3 Paving and Grinding Operation,	LS	Lump Sum		
NS-6 Illicit Connection/Illegal Discharge Detection and Reporting	LS	Lump Sum		
NS-8 Vehicle and Equipment Cleaning	LS	Lump Sum		
NS-9 Vehicle and Equipment Fueling	LS	Lump Sum		
NS-10 Vehicle and Equipment Maintenance	LS	Lump Sum		
WM-1 Material Delivery and Storage	LS	Lump Sum		
WM-2 Material Use	LS	Lump Sum		
WM-4 Spill Prevention and Control	LS	Lump Sum		
WM-5 Solid Waste Management	LS	Lump Sum		
WM-9 Sanitary/Septic Waste Management	LS	Lump Sum		

TOTAL _____

SWPPP IMPLEMENTATION

Upon approval of the SWPPP, the Contractor shall be responsible throughout the duration of the project for installing, constructing, inspecting, maintaining, removing and disposing of the water pollution control practices included in the SWPPP and any amendments. Unless otherwise directed by the Engineer, the Contractor's responsibility for SWPPP implementation shall continue throughout any temporary suspension of work ordered in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications. Requirements for installation, construction, inspection, maintenance, removal, and disposal of water pollution control practices are specified in the Manuals and these special provisions.

If the Contractor or the Engineer identifies a deficiency in any aspect of the implementation of the approved SWPPP or amendments, the deficiency shall be corrected immediately. The deficiency may be corrected at a later date and time if requested by the Contractor and approved by the Engineer in writing, but not later than the onset of precipitation. If the Contractor fails to correct the identified deficiency by the date agreed or prior to the onset of precipitation the project shall be in noncompliance. Attention is directed to Section 5-1.01, "Authority of the Engineer," of the Standard Specifications and the payment sections of these special provisions for possible noncompliance penalties.

If the Contractor fails to conform to the provisions of "Water Pollution Control," the Engineer may order the suspension of construction operations which create water pollution.

Implementation of water pollution control practices may vary by season. The Construction Site BMP Manual and these special provisions shall be followed for control practice selection of year round, rainy season and non-rainy season water pollution control practices.

Year-Round Implementation Requirements

The Contractor shall have a year-round program for implementing, inspecting and maintaining water pollution control practices for wind erosion control, tracking control, non-storm water control, and waste management and materials pollution control.

The National Weather Service weather forecast shall be monitored and used by the Contractor on a daily basis. An alternative weather forecast proposed by the Contractor may be used if approved by the Engineer. If precipitation is predicted, the necessary water pollution control practices shall be deployed prior to the onset of the precipitation.

Disturbed soil areas shall be considered active whenever the soil disturbing activities have occurred, continue to occur or will occur during the ensuing 21 days. Non-active areas shall be protected as prescribed in the Construction Site BMP Manual within 14 days of cessation of soil disturbing activities or prior to the onset of precipitation, whichever occurs first.

The Contractor shall implement, maintain, and inspect the following temporary sediment control practices on a year-round basis. The listed practices shall remain in place until their use is no longer needed, as determined by the Engineer.

Year-Round Sediment Control Practices	Location used
TC-1 Stabilized Construction Entrance/Exit	At the interface between work areas and public roadways

Rainy Season Requirements

Soil stabilization and sediment control practices conforming to the requirements in the Special Requirements and applicable Preparation Manual Minimum Requirements, shall be provided throughout the rainy season, defined as between October 15 and April 15.

An implementation schedule of required soil stabilization and sediment control practices for disturbed soil areas shall be completed not later than 20 days prior to the beginning of each rainy season. The implementation schedule shall identify the soil stabilization and sediment control practices to be implemented and the dates on which the implementation will be 25 percent, 50 percent and 100 percent complete, respectively. Construction activities beginning during the rainy season shall implement applicable soil stabilization and sediment control practices. The Contractor shall implement soil stabilization and sediment control practices a minimum of 10 days prior to the start of the rainy season.

Throughout the defined rainy season, the active disturbed soil area of the project site shall be not more than 2.0 hectares. The Engineer may approve, on a case-by-case basis, expansions of the active disturbed soil area limit. Soil stabilization and sediment control materials shall be maintained on site sufficient to protect the unprotected disturbed soil area. A detailed plan for the mobilization of sufficient labor and equipment shall be maintained to deploy the water pollution control practices required to protect the project site prior to the onset of precipitation events.

Non-Rainy Season Requirements

The non-rainy season shall be defined as all days outside the defined rainy season. The Contractor’s attention is directed to the Construction Site BMP Manual for soil stabilization and sediment control implementation requirements on disturbed soil areas during the non-rainy season. Disturbed soil areas within the project shall be protected in conformance with the requirements in the Construction Site BMP Manual with an effective combination of soil stabilization and sediment control.

MAINTENANCE

To ensure the proper implementation and functioning of water pollution control practices, the Contractor shall regularly inspect and maintain the construction site for the water pollution control practices identified in the SWPPP. The construction site shall be inspected by the Contractor as follows:

- A. Prior to a forecast storm;
- B. After a precipitation event which causes site runoff;
- C. At 24 hour intervals during extended precipitation events;
- D. Routinely, a minimum of once every week outside of the defined rainy season;
- E. Routinely, a minimum of once every week during the defined rainy season.

The Contractor shall use the Storm Water Quality Construction Site Inspection Checklist provided in the CSWPPP or an alternative inspection checklist provided by the Engineer. One copy of each site inspection record shall be submitted to the Engineer within 24 hours of completing the inspection.

REPORTING REQUIREMENTS

Report of Discharges, Notices or Orders

If the Contractor identifies any discharge in a manner causing, or potentially causing, a condition of pollution, or if the project receives a written notice or order from any regulatory agency, the Contractor shall immediately inform the Engineer. The Contractor shall submit a written report to the Engineer within 7 days of the discharge event, notice, or order. The report shall include the following information:

- A. The date, time, location, nature of the operation, and type of discharge, including the cause or nature of the notice or order.

- B. The water pollution control practices deployed before the discharge event, or prior to receiving the notice or order.
- C. The date of deployment and type of water pollution control practices deployed after the discharge event, or after receiving the notice, or order, including additional measures installed or planned to reduce or prevent reoccurrence.
- D. An implementation and maintenance schedule for any affected water pollution control practices.

Report of First-Time Non-Storm Water Discharge

The Contractor shall notify the Engineer at least 3 days in advance of each first-time non-storm water discharge event, excluding exempted discharges. The Contractor shall notify the Engineer of each different operation causing a non-storm water discharge and shall obtain field approval for each first-time non-storm water discharge. Non-storm water discharges shall be monitored at each first-time occurrence and routinely thereafter.

Annual Certifications

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

PAYMENT

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

Attention is directed to Section 9-1.06, "Partial Payments," and Section 9-1.07, "Payment After Acceptance," of the Standard Specifications. Payments for prepare storm water pollution prevention plan will be made as follows:

- A. After the SWPPP has been approved by the Engineer, 75 percent of the contract item price for prepare storm water pollution prevention plan will be included in the monthly partial payment estimate; and
- B. After acceptance of the contract in conformance with the provisions in Section 7-1.17, "Acceptance of Contract," of the Standard Specifications, payment for the remaining 25 percent of the contract item price for prepare storm water pollution prevention plan will be made in conformance with the provisions in Section 9-1.07.

The contract lump sum price paid for water pollution control shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing, constructing, removing, and disposing of water pollution control practices, including non-storm water and waste management and materials pollution water pollution control practices except those shown on the plans and for which there is a contract item of work, and excluding developing, preparing, obtaining approval of, revising, and amending the SWPPP, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The cost of maintaining the temporary water pollution control practices shall be divided equally by the State and the Contractor as follows:

Soil Stabilization

All temporary water pollution control practices except:

- SS-1 Scheduling
- SS-2 Preservation of Existing Vegetation

Sediment Control

All temporary water pollution control practices.

Tracking Control

All temporary water pollution control practices except:

- SC-7 Street Sweeping and Vacuuming

Wind Erosion Control

All temporary water pollution control practices.

Non-Storm Water Control

No sharing of maintenance costs will be allowed.

Waste Management & Material Control

No sharing of maintenance costs will be allowed.

The division of cost will be made by determining the cost of maintaining temporary water pollution control practices in conformance with the provisions in Section 9-1.03, "Force Account Payment," of the Standard Specifications and paying to the Contractor one-half of that cost. Clean-up, repair, removal, disposal, improper installation, and replacement of temporary water pollution control practices damaged by the Contractor's negligence shall not be considered as included in the cost for performing maintenance and no additional compensation will be allowed therefor.

The provisions for sharing maintenance costs shall not relieve the Contractor from the responsibility for providing appropriate maintenance on those items where maintenance costs are not shared.

Full compensation for maintenance costs of water pollution control practices not shared, as specified in these special provisions, shall be considered as included in the contract lump sum price paid for water pollution control and no additional compensation will be allowed therefor.

Those water pollution control practices which are shown on the plans and for which there is a contract item of work will be measured and paid for as that contract item of work.

The Engineer will retain an amount equal to 25 percent of the estimated value of the contract work performed during estimate periods in which the Contractor fails to conform to the provisions of this section "Water Pollution Control," as determined by the Engineer.

Retention for failure to conform to the provisions in this section "Water Pollution Control" shall be in addition to the other retention provided for in the contract. The amounts retained for failure of the Contractor to conform to the provisions in this section will be released for payment on the next monthly estimate for partial payment following the date that an approved SWPPP has been implemented and maintained, and water pollution is adequately controlled, as determined by the Engineer.

10-1.04 TEMPORARY COVER

Temporary cover shall conform to the details shown on the plans.

The Contractor shall use temporary cover as one of the various measures to prevent water pollution. The Storm Water Pollution Prevention Plan shall graphically show the use of temporary cover in relation to other water pollution control work specified elsewhere in these special provisions.

MATERIALS

Materials shall conform to the following for either plastic or fabric sheeting:

If fabric is used, the fabric shall be a minimum 4-6 ounce slit film woven fabric made of monofilaments of polypropylene. The fabric shall be non biodegradable, resistant to sunlight deterioration, inert to most soil chemicals and furnished with sealed edges on all sides to prevent unraveling. The fabric shall also conform to the following:

Properties	
Grab tensile strength	191- 213.5 pound force
Elongation at break (minimum)	15%

If plastic sheeting is used, the sheeting shall be polyethylene, new and a minimum of 6 mil-thickness.

INSTALLATION

Fabric or plastic sheeting shall be placed and anchored as shown on the plans. Abutting edges shall overlap a minimum of a 2 feet. Rock bags with a weighted mass ranging from 13 kg to 22 kg shall be placed on the overlap area and along the toe at a maximum spacing of 8 feet. Anchoring temporary cover by using staples or wooden lath and anchors may be allowed in lieu of rock bags as determined by the Engineer. The Contractor shall submit details for any alternative anchoring system to the Engineer for approval prior to installation. Non-abutting edges shall be embedded a minimum of 6 inches in native soil.

Temporary cover damaged as a result of the Contractors operations shall be replaced by the Contractor at his expense.

MAINTENANCE

Clean-up, repair, removal, disposal, improper installation and replacement of temporary cover damaged through the Contractor's negligence shall be considered as included in the cost for performing maintenance and no additional compensation will be allowed therefor.

MEASUREMENT AND PAYMENT

The contract square yard price paid for temporary cover shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing, maintaining and removing temporary cover, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. If the Contractor removes the temporary cover in order to facilitate any other work, the temporary cover shall be replaced and secured by the contractor at no additional cost to the State.

10-1.05 TEMPORARY DRAINAGE INLET PROTECTION

Temporary drainage inlet protection shall be installed, maintained and later removed as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

Temporary drainage inlet protection shall be limited to areas that are protected from public traffic.

The Contractor shall select the appropriate drainage inlet protection shown on the plans commensurate to the field condition around the drainage inlet. For all other drainage inlets within the project limits that do not conform to the details shown on the plans, the Contractor shall submit to the Engineer for approval, provisions for providing temporary drainage inlet protection.

Special attention shall be given to existing and new drainage inlets adjacent to traffic. The Engineer shall review the need for drainage inlet protection commensurate to each location. Any proposed drainage inlet protection in such cases shall be approved by the Engineer for safety related concerns.

Throughout the duration of the Contract, the Contractor shall be required to provide protection commensurate with the changing condition of the drainage inlet. It is recognized that the drainage inlet changes during the course of construction and the actual protection provided may require selecting the appropriate type or types of drainage inlet protection as it changes during the course of construction.

Some conditions may require combining materials outlined in the special provision to address conditions that cannot be accounted for at this time. The Contractor shall submit temporary drainage inlet protection drawings for such cases to the Engineer for approval prior to installation.

The Contractor shall use temporary drainage inlet protection as one of the various measures to prevent water pollution. The Storm Water Pollution Prevention Plan shall graphically show the use of temporary drainage inlet protection in relation to other water pollution control work specified elsewhere in these special provisions.

MATERIALS

Materials shall conform to the provisions in Section 20-2, "Materials," of the Standard Specifications and these special provisions.

- A. **SILT FENCE.**—Sedimentation control fabric for temporary silt fence shall be a prefabricated silt fence with a minimum woven polypropylene fabric width of 36 inches and a minimum tensile strength of 100 pounds-force, conforming to ASTM Designation: D 4632.
- B. **ROCK BAG.**— Rock bag fabric shall be woven polypropylene, with a minimum unit weight of 7.5 oz/yd². The fabric shall have a mullen burst strength of at least 363 PSI, per ASTM Designation D3786 and an ultraviolet (UV) stability exceeding 70 percent at 500 hours. Rock bags shall have a length of 24 inches to 32 inches, width of 16 inches to 20 inches, thickness of 6 inches to 8 inches, and shall be filled to a weighted mass ranging from 30 pounds to 50 pounds. Rock bag fill material shall be non-cohesive gravel, free from deleterious material. After filling, the opening shall be secured such that rock shall not escape from the bag.
- C. **TEMPORARY FLEXIBLE DIKE.**—Temporary flexible dike fabric cover and skirt shall be a woven polypropylene fabric with a minimum tensile strength of 100 pounds-force, conforming to ASTM Designation: D 4632. The prefabricated fabric shall be high visibility orange in color that is integral to the fabric; painting shall not be allowed. The fabric shall have an ultraviolet (UV) stability exceeding 70 percent.

Temporary flexible dike inner material shall be urethane foam and shall be shaped and dimensioned as shown on the plans.

Adhesive for temporary flexible dike shall be a solvent free rubber modified asphalt emulsion. The color of the emulsion shall be brown when wet and shall have a drying period of not more than 3 hours.

Anchoring nails or spikes for temporary flexible dike shall be a minimum of 1 inch in length and capable of penetrating concrete and asphalt surfaces.

- D. **EROSION CONTROL BLANKET.**—Erosion control blanket shall consist of straw and coconut or wood excelsior blanket secured in place with wire staples and shall conform to one of the following:
- E. **EXCELSIOR BLANKET.**—Excelsior blanket material shall consist of machine produced mats of curled wood excelsior with 80 percent of the fiber 6 inches or longer. The erosion control blanket shall be of consistent thickness and the wood fiber shall be evenly distributed over the entire area of the blanket. The top surface of the blanket shall be covered with an extruded plastic mesh. The blanket shall be smolder resistant without the use of chemical additives and shall be non-toxic and non-injurious to plant and animal life. Erosion control blanket shall be furnished in rolled strips, 4 feet– 8 feet in width, and shall have an average mass of 12 oz/yd², ± 10 percent, at the time of manufacture.
- F. **STRAW AND COCONUT BLANKET.**—Straw and coconut blanket shall be machine produced mats of straw and coconut with a light weight netting on top. The straw and coconut shall be adhered to the netting with biodegradable thread or glue strip. The straw and coconut erosion control blanket shall be of consistent thickness with the straw and coconut evenly distributed over the entire area of the blanket. Straw and coconut erosion control blanket shall be furnished in rolled strips with a minimum width of 6 feet, minimum length of 66 feet (± 3 feet) and a minimum weight of 8 oz/yd².
- G. **STAPLES.**—Staples for erosion control blankets shall be made of 11-gage minimum steel wire and shall conform to the dimensions shown on the plans.
- H. **SEDIMENT BAG.**—Sedimentation control fabric for sediment bags shall be a prefabricated sedimentation control fabric envelop with a woven polypropylene fabric and sewn with a double stitched seam using nylon thread. The fabric shall have a grab tensile strength of at least 265 pounds and grab elongation of 20 percent, per ASTM Designation: D4632. The fabric shall have a mullen burst strength of at least 420 PSI, per ASTM Designation: D3786 and an ultraviolet (UV) stability exceeding 90 percent. The sedimentation control fabric shall be capable of a flow rate of 15.6 gallons/minute/yd², per ASTM Designation: D4491.
- The sediment bag shall be sized to fit the catch basin or drop inlet and be complete with lifting loops and dump straps attached at the bottom to facilitate emptying of the sediment bag. The sediment bags shall have a restraint cord approximately halfway up the bag to keep the sides away from the catch basin walls.

INSTALLATION AND MAINTENANCE

Temporary flexible dike consists of individual sections of dike installed in conjunction with one another adjacent to existing drainage inlets as shown on the plans. The spacing and angle of placement shall be in accordance with the table shown on the plans. Temporary flexible dike shall be installed flush against the sides of concrete or asphalt curbs, dikes and pavement with the inner material and fabric cover cut smoothly and evenly to provide a tight flush joint.

Temporary flexible dike and rock bag dike installed as part of temporary drainage inlet protection shall be maintained to provide for adequate sediment holding capacity. Sediment deposits shall be removed when the deposit reaches one-half of the temporary flexible dike height. Removed sediment shall be deposited within the project in such a way that it is not subject to erosion by wind or water, or as directed by the Engineer.

Temporary rock bag dike consisting of filled rock bags placed in multiple layers shall be installed as shown on the plans.

When no longer required for the purpose, as determined by the Engineer, temporary drainage inlet protection facilities shall be removed. Removed facilities shall become the property of the Contractor and shall be removed from the site of the work.

Temporary drainage inlet protection damaged due to storms or as a result of the Contractors operations shall be replaced by the Contractor at his expense.

Sediment bags shall be installed by removing the drainage inlet grate, placing the sediment bag in the opening, and replacing the grate to secure the sediment bag in place. Removal of the bag shall be facilitated by the use of 1 inch steel reinforcing bars placed through the lifting loops.

Sediment bags installed as part of temporary drainage inlet protection shall be emptied when the restraint cords are no longer visible. Emptying of the bag shall be facilitated by the use of 1 inch steel reinforcing bars placed through the dump loops. The sediment bag shall be emptied of material with a shovel and rinsed before replacement in the catch basin or drop inlet.

Clean-up, repair, removal, disposal, improper installation and replacement of temporary drainage inlet protection damaged through the Contractor's negligence shall not be considered as included in the cost for performing maintenance and no additional compensation will be allowed therefor.

MEASUREMENT AND PAYMENT

The quantity of temporary drainage inlet protection to be paid for will be determined from each drainage inlet protected conforming to the details shown on the plans. The protection is measured one time only and no additional measurement is recognized, and no additional compensation made, if it changes during the course of construction.

The contract unit price paid for temporary drainage inlet protection shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing temporary drainage inlet protection, complete in place, including excavation and backfill, all modifications occurring during the course of construction, and maintenance and removal of temporary drainage inlet protection, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Temporary drainage inlet protection for protection at drainage inlets other than as shown on the project plans or directed by the Engineer, in accordance with the Contractor's Storm Water Pollution Prevention Plan (SWPPP), will not be measured as temporary drainage inlet protection. Payment for drainage inlet protection that is required as part of the SWPPP, but is not shown on the project plans, will be paid for as specified in "Water Pollution Control" elsewhere in these special provisions.

10-1.06 TEMPORARY FENCES AND GATES

Temporary fences and gates shall be furnished and constructed, maintained, and later removed as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

Except as otherwise specified in this section and shown on the plans, temporary fences and gates shall conform to the plan details and the specifications for permanent fences of similar character as provided in Section 80, "Fences," of the Standard Specifications.

Used materials may be used providing such used materials are good, sound, and are suitable for the purpose intended, as determined by the Engineer.

Materials may be commercial quality providing the dimensions and sizes of said materials are equal to, or greater than, the dimensions and sizes shown on the plans or specified herein.

Posts shall be metal.

Galvanizing and painting of steel items will not be required.

Concrete footings for metal posts will be required as shown on the plans.

Temporary fences and gates that are damaged from any cause during the progress of the work shall be repaired or replaced by the Contractor at his expense.

When no longer required for the work as determined by the Engineer, temporary fences and gates shall be removed. Removed facilities shall become the property of the Contractor and shall be removed from the site of the work, except as otherwise provided in this section.

Removed temporary fence and gate materials that are not damaged may be reused in the permanent work providing such materials conform to all of the requirements specified for the permanent work and such materials are new when used for the temporary fences and gates.

Holes caused by the removal of temporary fences and gates shall be backfilled in accordance with the provisions in the second paragraph of Section 15-1.02, "Preservation of Property," of the Standard Specifications.

The various types and kinds of temporary fences and gates will be measured and paid for in the same manner specified for permanent fences of similar character as provided in Section 80, "Fences," of the Standard Specifications.

Full compensation for maintaining, removing, and disposing of temporary fences and gates shall be considered as included in prices paid for the various contract items for temporary fences and gates and no additional compensation will be allowed therefor.

10-1.07 COOPERATION

Attention is directed to Section 7-1.14, "Cooperation," and Section 8-1.10, "Utility and Non-Highway Facilities," of the Standard Specifications and these special provisions.

It is anticipated that work by another contractor (Contract No. 04-4401U4) to Seismically Retrofit the Interior of the Posey and Webster Tubes in Alameda County on Route 260 from 0.3 mile south of Posey/Webster Tubes to 0.2 mile north of Posey/Webster Tubes (PM R 0.8 to PM R1.9) may be in progress adjacent to or within the limits of this project during progress of the work on this contract.

10-1.08 PROGRESS SCHEDULE (CRITICAL PATH)

Progress schedules will be required for this contract and shall conform to the requirements of these special provisions. Progress schedules shall utilize the Critical Path Method (CPM). Attention is directed to "Cooperation" and "Obstructions" of these special provisions. Nothing in these special provisions shall be construed as relieving the Contractor from the responsibilities specified in Section 7, "Legal Relations and Responsibility," of the Standard Specifications.

DEFINITIONS

The following definitions shall apply to these special provisions:

- A. Activity.—A task or item of work that shall be performed in order to complete a project.
- B. Baseline Schedule.—The initial CPM progress schedule as accepted by the Engineer representing the Contractor's original work plan.
- C. Concurrent Delay.—Two or more delays on the critical path that occur at the same time.
- D. Contract Completion Date.—The date the Contractor is contractually obligated to complete the project, including any authorized adjustments, as specified in Section 8-1.06, "Time of Completion," of the Standard Specifications.
- E. Contractor Delay.—A delay that extends the time required to complete a controlling operation caused by and within the control of the Contractor, subcontractors at any tier or suppliers.
- F. Controlling Operation.—A feature of work or activity on the critical path.
- G. Critical Path.—In a project network, the sequence of activities yielding the longest path in a CPM analysis necessary to complete the project.
- H. Critical Path Method (CPM).—A mathematical calculation using the sequence of activities and their interrelationships, interdependencies, resources, and durations to determine the critical path that shows the expected time to complete a project.
- I. Data Date.—The day after the date through which progress updates have been calculated; everything occurring earlier than the data date is "As-Built"; and everything on or after the data date is "Planned."
- J. Early Completion Time.—The difference in time between the contract completion date and the current State-accepted scheduled completion date.
- K. Float.—The amount of time between the early start date and the late start date or the early finish date and the late finish date of any activity or group of activities in the network.
- L. Free Float.—The amount of time an activity can be delayed before delaying a subsequent activity.
- M. Fragnet.—A section or fragment of the network diagram comprised of a group of activities.
- N. Milestone.—A marker in a network which is typically used to mark a point in time or denote the beginning or end of a sequence of activities. A milestone has zero duration and zero resources, but will otherwise function in the network as if the milestone were an activity.
- O. Narrative Report.—A report that identifies potential problem areas, current and anticipated delaying factors and their impact, actions taken or proposed, proposed changes in schedule logic, extension or contraction of activities, proposed addition or deletion of activities, explanation for changes in the critical path, explanation for changes in scheduled completion date, out of sequence work, and other topics related to job progress or scheduling.
- P. Near Critical Path.—A path having 10 working days or less of total float.
- Q. Punch List.—A list of details needing attention to complete task or work for both contract item and extra work.
- R. Schedule Revision.—A change in the future portion of the schedule that modifies logic; alters construction sequences such as performing sequential activities concurrently or concurrent activities sequentially; adds or deletes activities or significantly alters activity durations, as determined or accepted by the Engineer.
- S. Scheduled Completion Date.—The Contractor's scheduled completion date as shown on the accepted baseline schedule as modified by subsequent accepted schedule updates and revisions.
- T. Time Impact Analysis.—An analysis demonstrating the estimated time impact of a contract change order, delay or other event on the scheduled completion date.
- U. Total Float.—The amount of time that an activity may be delayed without delaying the scheduled completion date.
- V. Update.—The routine modification of the CPM progress schedule through a regular monthly review to incorporate actual past progress to date by activity, projected completion dates and approved time adjustments.

MATERIALS (COMPUTER SYSTEM)

The Contractor shall provide a computer system for the State's exclusive possession and use for CPM progress schedules. The minimum computer system to be furnished shall be complete with keyboard, mouse, monitor, printer and plotter. The system shall conform to the following requirements:

- A. Latest industry-available Intel Pentium processor, Motorola RISC processor or equivalent.
- B. Latest computer operating system software compatible with the selected processor, either Windows or MACINTOSH.
- C. Minimum of 64 megabytes of random access memory (RAM).
- D. Internal drives, including: one 4-gigabyte minimum hard disk drive, one 1.44-megabyte 3.5-inch floppy disk drive and one 32x speed CD-ROM drive.
- E. Internal fax/modem, latest speed and software version of U.S. Robotics, 3COM or equivalent.
- F. A 17-inch minimum, color monitor capable of at least 1,024 x 768 pixels.

- G. A color-ink-jet-type, B-size plotter compatible with the selected system capable of printing fully legible, time-scaled charts, network diagrams and reports.
- H. A manual parallel cable switching device, with connecting cables, allowing the user to alternate printing between the plotters.
- I. CPM software shall be compatible with the hardware provided, shall be the latest version of Primavera Project Planner for Windows, SureTrak for Windows, or equal, and shall be able to create files that can easily be imported into the latest version of Primavera.
- J. General software shall be the latest version of McAfee VirusScan virus protection or equal and shall be compatible with the hardware provided.
- K. Upgrades to the CPM and general software shall be provided, as the upgrades become available.

The computer hardware and software furnished by the Contractor shall be compatible with that used for the production of the CPM progress schedule required by these special provisions, including original instruction manuals and other documentation normally provided with the CPM and general software. Before delivery and setup of the computer system, the Contractor shall submit, for approval of the Engineer, a detailed list of the computer hardware and software the Contractor proposes to furnish, including an itemized schedule of costs for the system.

The Contractor shall furnish, install, set up, maintain, and repair the computer system ready-for-use, and provide plotter supplies as necessary during the course of the project at a location determined by the Engineer. The first submittal of the baseline schedule will not be considered complete until the hardware and software are installed and ready for use with the submitted baseline schedule. The Contractor shall instruct and assist the Engineer in the use of the hardware and software. When requested by the Engineer, the Contractor shall provide one 8-hour session of outside commercial training in the use of the CPM software for a maximum of 2 project staff at a location acceptable to the Engineer. Hardware repairs shall be made within 48 hours of notification by the Engineer, or replacement equipment shall be furnished and installed by the Contractor until repairs have been completed.

Computer hardware and software furnished shall remain the property of the Contractor and shall be removed by the Contractor upon acceptance of the contract if no claims involving contract progress are pending. If contract claims involving contract progress are pending, computer hardware or software shall not be removed until the final estimate has been submitted to the Contractor.

GENERAL

Early completion time shall be considered a resource for the exclusive use of the Contractor. The Contractor may increase early completion time by increasing production or reallocating resources to be more efficient, or by proposing, and the State accepting, contract change orders that are the result of significant Contractor development and investment or from an appropriate share of an accepted cost reduction proposal in conformance with the provisions in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications.

The State may reduce contract working days if the action is the result of a contract change order other than those that result from significant Contractor development and investment. The Contractor shall conduct a time impact analysis to determine the effect of the change in the same manner described in "Schedule Time Adjustment" specified herein, and shall include the impacts acceptable to the Engineer in the next update or revision.

The Contractor shall be responsible for assuring that the work sequences are logical and the network shows a coordinated plan for complete performance of the work. Failure of the Contractor to include in the schedule any element of work required for the performance of the contract shall not relieve the Contractor from completing the work within the time limit specified in the contract. If the Contractor or the Engineer discovers an undefined element of work, activity or logic, it shall be corrected by the Contractor in a schedule revision, as specified in these special provisions. If a planned activity requires greater-than-normal daily resources to accomplish, schedule revision submittals shall include a narrative describing the activity, and the amount and use of the extraordinary resources.

The Baseline Schedule or Schedule Update submitted for acceptance shall not show variances from the requirements of these special provisions unless approved by the Engineer. The Contractor shall make specific mention of the variations in the letter of transmittal and shall make the associated adjustments to the project schedule. The Contractor will not be relieved of the responsibility for executing the work in strict conformance with the provisions in the requirements of these special provisions. In the event of a conflict between the requirements of these special provisions and the information provided or shown on an accepted schedule, the requirements of these special provisions shall take precedence.

Each schedule submitted to the Engineer shall comply with the limits imposed by these special provisions, with the specified intermediate milestones and completion dates, and with the constraints, restraints or sequences included in these special provisions, except that after the Engineer accepts the baseline schedule, the Contractor may show a late scheduled completion date on subsequent updates or revisions. The degree of detail shall include factors to the satisfaction of the Engineer, including, but not limited to:

- A. Physical breakdown of the project;

- B. Contract milestones and completion dates, substantial completion dates, constraints, restraints, sequences of work shown in these special provisions, the planned substantial completion date, and the final completion date;
- C. Type of work to be performed, the sequences and the activities to be performed by subcontractors;
- D. Procurement, submittal, submittal review, manufacture, test, delivery, and installation of major materials and equipment that require approval;
- E. Preparation, submittal and approval of shop or working drawings and material samples showing time, as specified in these special provisions for the Engineer's review;
- F. Identification of interfaces and dependencies with preceding, concurrent and follow-on contractors, railroads, and utilities as indicated in these special provisions;
- G. Identification of each utility relocation or interface as a separate activity;
- H. Batch plant erection and plant certification;
- I. Erection and removal of falsework or shoring;
- J. Submission and approval of reports or results for major tests, such as that for pile loading or traffic controllers;
- K. Indicate long-term ramp and connector closing and opening events, traffic switches, and opening and closing of pavements to traffic as separate one day activities;
- L. Punch-list and final clean-up;
- M. State-owned float as the last activity in the schedule, at the end of which is the Scheduled Completion Date;
- N. Activity coding conventions shall include the following:

	Code	Value	Description
(1) Responsibility	RESP	CT	Caltrans
		UTIL	Utility Company
		RAIL	Railroad
		xxxx	Contractor
		xxxx	Subcontractor
		xxxx	others, as needed
(2) Stage	STGE	1	Stage 1
		2	Stage 2
		other designations	other descriptions, as needed
(3) Phase	PHAS	1	Phase 1
		2	Phase 2
		other phases	other phases, as needed
(4) Utilities	UTIL	PGE	Pacific Gas & Electric
		BELL	Pacific Bell
		GTE	GTE
		SCE	Southern California Edison
		other utilities	other utilities, as needed

The Contractor may include additional coding conventions, such as Ramps (RAMP), Facilities (FAC), and Events (EVNT).

The work shall be executed in the sequence indicated in the accepted baseline schedule and subsequent accepted updates and revisions. Once the Engineer accepts a CPM schedule, the Contractor shall neither artificially improve the progress nor artificially change the quantity of float in any part of the schedule by artificially adding or deleting activities, revising schedule logic restraints, or changing planned activity durations. Schedule changes of planned work shall be documented in a properly submitted revision. The Contractor may improve the progress by performing sequential activities concurrently or by performing activities more quickly than planned. In the case of multiple critical paths, float generated by early completion of one or a sequence of activities will be considered in determining if that sequence of activities remains on the critical path.

The schedule shall be modified to reflect actual events and conditions, including non-work days, as these events and conditions occur for historical purposes and for use in time impact analysis. Submittals and Engineer review time shall be shown in the progress schedule, including CPM schedule updates and revisions. The duration of the Engineer review activity shall be 15 days unless specified otherwise in these special provisions.

The Contractor shall be allowed to show an early or late scheduled completion date on schedule updates and revisions. The Engineer will use the most current, accepted schedule update and revision, and Contractor-provided cause, time-impact and schedule-delay analysis that is acceptable to the Engineer to determine apparent impacts.

The Engineer shall have 20 days to review and accept or reject the baseline schedule. The Engineer shall have 15 days to review and accept or reject any updated or revised schedule. Rejected schedules shall be resubmitted to the Engineer

within 5 days, at which time a new review period of 5 days will begin. After the baseline schedule is accepted, schedules that are not accepted or rejected within the required review period will be deemed to have been accepted by the Engineer. Acceptance of a schedule does not relieve the Contractor of the responsibility of submitting complete and accurate information.

PRE-CONSTRUCTION SCHEDULING CONFERENCE

The Contractor shall schedule, and the Engineer will conduct, a Pre-construction Scheduling Conference with the Contractor's Project Manager and Construction Scheduler within 10 days after approval of the contract. At this meeting, the Engineer will review the requirements of this section of the special provisions with the Contractor. The Contractor shall submit a general time-scaled logic diagram displaying the major activities and sequence of planned operations and shall be prepared to discuss the proposed work plan and schedule methodology that complies with the requirements of these special provisions. If the Contractor proposes deviations to the construction staging of the project, the Contractor shall submit a general time-scaled logic diagram displaying the deviations and resulting time impacts and shall be prepared to discuss the proposal. At this meeting, the Contractor shall additionally submit the alpha-numeric coding structure and the activity identification system for labeling the work activities. To easily identify relationships, each activity description shall indicate its associated scope or location of work by including such terms as quantity of material, type of work, Bridge Number, Station to Station location, side of highway (such as left, right, northbound, southbound), lane number, shoulder, ramp name, ramp line descriptor or mainline. The Engineer will review and comment on the logic diagram, the coding structure and activity identification system within 15 days after submission by the Contractor. The Contractor shall make modifications to the time-scaled logic diagram, the coding structure, and activity identification system that the Engineer requests and shall employ that coding structure and identification system. The Contractor shall include the Engineer-requested modifications in the baseline schedule.

NETWORK DIAGRAM AND PROJECT SCHEDULE REPORTS

Schedules submitted to the Engineer, including the baseline schedule, shall include originally-plotted time-scaled network diagram(s). Network diagrams shall be based on early start and early finish dates of activities shown. The network diagrams submitted to the Engineer shall also be accompanied by the CPM software-generated tabular reports for each activity included in the project schedule. Three different report sorts shall be provided: Early Start, Total Float, and Activity Number which shall show the predecessors and successors for each activity. Tabular reports, 8 1/2" x 11" size, shall be submitted to the Engineer and shall include at a minimum, the following:

- A. Data date;
- B. Predecessor and successor activity numbers and descriptions;
- C. Activity number and description;
- D. Activity code(s);
- E. Scheduled, or actual and remaining durations for each activity;
- F. Earliest start date (by calendar date);
- G. Earliest finish date (by calendar date);
- H. Actual start date (by calendar date);
- I. Actual finish date (by calendar date);
- J. Latest start date (by calendar date);
- K. Latest finish date (by calendar date);
- L. Free Float, in work days;
- M. Total Float, in work days;
- N. Percentage of activity complete and remaining duration for incomplete activities;
- O. Lag(s); and
- P. Imposed constraints.

The networks shall be drafted time-scaled to show a continuous flow of information from left to right. The primary path(s) of criticality shall be clearly and graphically identified on the network(s). The network diagram shall be prepared on E-size sheets, 34" x 44", and shall have a title block in the lower right-hand corner and a timeline on each page. Exceptions to the size of the network sheets and the use of computer graphics to generate the networks shall be subject to the Engineer's approval.

The narrative report shall be organized as follows:

- A. Contractor's Transmittal Letter;
- B. Work completed during the period;

- C. Identification of unusual resources: manpower, material, or equipment restrictions or use, including multiple shifts, 6-day work weeks, specified overtime, or work at times other than regular days or hours;
- D. Description of the current critical path;
- E. Changes to the critical path since the last schedule submittal;
- F. Description of problem areas;
- G. Current and anticipated delays:
 - 1. Cause of delay,
 - 2. Impact of delay on other activities, milestones and completion dates,
 - 3. Corrective action and schedule adjustments to correct the delay;
- H. Pending items and status thereof:
 - 1. Permits,
 - 2. Change Orders,
 - 3. Time Adjustments,
 - 4. Non-Compliance Notices;
- I. Contract completion date(s) status:
 - 1. Ahead of schedule and number of days,
 - 2. Behind schedule and number of days,
 - 3. If date changes, explain the cause;
- J. Attached Updated Network Diagram and Reports.

Schedule network diagrams, tabular reports and narrative reports shall be submitted to the Engineer for acceptance in the following quantities:

- A. Two sets of originally-plotted, time-scaled network diagram(s);
- B. Two copies of each of the three sorts of the CPM software-generated tabular reports 8 1/2" x 11" size;
- C. One 1.44-megabyte 3.5 inch floppy diskette containing the schedule data;
- D. Two copies of the narrative report.

BASELINE SCHEDULE REQUIREMENTS

Within 30 days after approval of the contract, the Contractor shall submit a baseline schedule to the Engineer. The baseline project schedule shall have a data date of the first working day of the contract and shall not include any completed work to-date. The baseline schedule shall be practicable; include the entire scope of work; meet interim target dates, milestones, stage construction requirements, and internal time constraints; show logical sequence of activities; and shall not extend beyond the number of working days originally provided in these special provisions. An early completion schedule will be acceptable provided that the schedule meets the requirements of these special provisions and the Standard Specifications.

The baseline CPM progress schedule submitted by the Contractor shall have a sufficient number of activities to assure adequate planning of the project, to permit monitoring and evaluation of progress, and the analysis of time impacts. The baseline schedule shall depict how the Contractor plans to complete the whole work involved, and shall show the activities that define the critical path. Multiple critical paths and near-critical paths shall be kept to a minimum, as determined by the Engineer. A total of not more than 50 percent of the baseline schedule activities shall be critical or near-critical, unless otherwise approved by the Engineer.

Activities shall have a duration of not less than one working day nor more than 20 working days, unless otherwise approved by the Engineer. The activities in the baseline schedule, with the exception of the first and last activities, shall have a minimum of one predecessor and a minimum of one successor. The baseline schedule shall not attribute negative float or negative lag to an activity.

MONTHLY SCHEDULE UPDATES

On or before the first calendar day of each month, the Contractor shall meet with the Engineer to review contract progress. At the monthly progress meeting the Contractor shall submit to the Engineer an update of the network diagram and project schedule reports as defined above. Update schedules shall have a data date of the twenty-first calendar day of the month, or other date as established by the Engineer, and shall include the information available up to that date. Durations for

work that has been completed will be shown on the schedule as the work actually occurred, including Engineer submittal review and Contractor resubmittal times.

SCHEDULE REVISIONS

When the Contractor proposes a revision to an accepted schedule, the Contractor shall state in writing the reasons for the change, as well as the specifics, such as, but not limited to, revisions to activities, logic, durations, and other matters pertinent to the proposed revisions. If the Engineer considers a schedule revision to be of a major nature, the Engineer may require the Contractor to revise and submit for acceptance the affected portion(s) of the project schedule and an analysis to show the effect on the entire project. In addition to the revision submittal, the Contractor shall submit a schedule update with the same data date as the revision which is to reflect the project condition just prior to implementing the revision. The Contractor shall discuss contemplated revisions with the Engineer prior to the submittal.

Within 15 days, the Contractor shall submit a revised CPM network for approval when requested by the Engineer, or when any of the following occurs:

- A. There is a significant change in the Contractor's operations that affects the critical or near critical path(s).
- B. The scheduled completion date of the current submitted updated CPM schedule indicates that the contract progress is 20 days or more behind the current accepted schedule or revision.
- C. The Contractor or the Engineer considers that an approved or anticipated change will impact the critical or near critical path or contract progress.

SCHEDULE TIME ADJUSTMENT

When the Contractor requests a time adjustment due to contract change orders or delays, or if the Contractor or the Engineer considers that an approved or anticipated change will impact the critical path or contract progress, the Contractor shall submit a written time impact analysis to the Engineer illustrating the impacts of each change or delay on the current scheduled completion date or milestone completion date. The analysis shall use the currently accepted schedule that has a data date closest to and prior to the event. If the Engineer determines that the currently accepted schedule does not appropriately represent the conditions prior to the event, the schedule shall be updated to the day before the event being analyzed. An additional analysis shall be performed after the completion of the event. If the event is on the critical path at the time of its completion, then the difference between the scheduled completion dates of these 2 analyses shall be equal to the adjustment in time. The time impact analysis shall include one or more fragnet(s) demonstrating how the Contractor proposes to incorporate the event(s) into the schedule, including logic and duration of the proposed activities. Until such time that the Contractor provides the analysis, the Engineer may, at his option, construct and utilize the project as-built schedule or other recognized method to determine adjustments in contract time.

Time impact analyses shall be submitted in duplicate within 15 days of a delay and shall be used in determining contract change order days. Approval or rejection of each time impact analysis by the Engineer will be made within 15 days after receipt of the time impact analysis. In the event the Contractor does not agree with the decision of the Engineer regarding the impact of a change or delay, notice shall be given in conformance with the provisions in Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications. The third paragraph of Section 4-1.03A of the Standard Specifications shall not apply.

FINAL SCHEDULE UPDATE

Within 30 days after acceptance of the contract by the Director, the Contractor shall submit a final update of the schedule (as-built schedule) with actual start and actual finish dates for the activities. The Contractor shall submit a written certificate with this submittal signed by the Contractor's Project Manager and an officer of the company stating "To the best of my knowledge, the enclosed final update of the project schedule reflects the actual start and completion dates of the actual activities for the project contained herein." An officer of the company may delegate in writing the authority to sign the certificate to a responsible manager. Submittal of the final schedule update and the certification shall be a condition precedent to the release of any retained funds under the contract.

PAYMENT

Progress schedule (critical path) will be paid for at a lump sum price. The contract lump sum price paid for progress schedule (critical path) shall include full compensation for furnishing all labor, material (including computer hardware and software), tools, equipment, and incidentals; and for doing all the work involved in preparing, furnishing, updating, and revising progress schedules; maintaining and repairing the computer hardware; and instructing and assisting the Engineer in the use of the computer hardware and software, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. Payments for the progress schedule (critical path) contract item will be made as follows:

- A. A total of 50 percent of the progress schedule (critical path) contract item amount will be made upon achieving all of the following: 5 percent of all work completed, accepted baseline, all accepted required schedule updates and revisions, and required CPM training.
- B. A total of 60 percent of the progress schedule (critical path) contract item amount will be made upon achieving all of the following: 25 percent of all work completed, accepted baseline, and all accepted required schedule updates and revisions.
- C. A total of 75 percent of the progress schedule (critical path) contract item amount will be made when 50 percent of all work completed, accepted baseline, and all accepted required schedule updates and revisions.
- D. A total of 100 percent of the progress schedule (critical path) contract item amount will be made when 100 percent of all work completed, accepted baseline, all accepted required schedule updates and revisions, and a completed and certified Final Schedule Update.

The adjustment provisions in Section 4-1.03, "Changes," of the Standard Specifications shall not apply to the item of progress schedule (critical path). Adjustments in compensation for progress schedule (critical path) will not be made for any increased or decreased work ordered by the Engineer in furnishing progress schedules.

RETENTION

The Department will retain an amount equal to 25 percent of the estimated value of the work performed during each estimate period in which the Contractor fails to submit pre-construction scheduling documents, an acceptable baseline, acceptable updated schedule, or acceptable revised progress schedule (critical path) conforming to the requirements of these special provisions as determined by the Engineer. Retentions for failure to submit acceptable CPM progress schedules shall be in addition to other retentions provided for in the contract. Retentions for failure to submit progress schedules (critical path) will be released for payment on the next monthly estimate for partial payment following the date that pre-construction scheduling documents and acceptable progress schedules (critical path) are submitted to the Engineer, and no interest will be due the Contractor.

10-1.09 OVERHEAD

Overhead shall conform to the provisions of this section, "Overhead," of these special provisions. The Contractor will be compensated for time-related overhead in accordance with these special provisions.

Attention is directed to "Force Account Payment" and "Progress Schedule (Critical Path)" of these special provisions.

The provisions in Section 9-1.08, "Adjustment of Overhead Costs," of the Standard Specifications shall not apply.

Time-related overhead shall consist of those overhead costs, including field and home office overhead, that are in proportion to the time required to complete the work. Time-related overhead shall not include costs that are not related to time, including but not limited to, mobilization, licenses, permits, and any other charges incurred only once during the contract.

Field office overhead expenses include time-related costs associated with the normal and recurring operations of the construction project, and shall not include costs directly attributable to any of the work of the contract. Such time-related costs include, but are not limited to, the salaries and benefits of project managers, general superintendents, field office managers and other field office staff assigned to the project, and rent, utilities, maintenance, security, supplies and equipment costs of the project field office.

Home office overhead or general and administrative expenses refer to the fixed costs of operating the Contractor's business. Such costs include, but are not limited to, general administration, insurance, personnel and subcontract administration, purchasing, accounting, and project engineering and estimating. The rate of home office overhead shall exclude expenses specifically related to other contracts or other businesses of the Contractor, equipment coordination, material deliveries, and consultant and legal fees.

The quantity of time-related overhead to be paid will be measured by the working day, as specified in the Engineer's Estimate as WDAY. The estimated amount will be based on the number of working days, excluding any days for plant establishment, as specified in "Beginning of Work, Time of Completion and Liquidated Damages" of these special provisions. In the event an early completion progress schedule, as defined in "Progress Schedule (Critical Path)" of these special provisions, is submitted by the Contractor and approved by the Engineer, the quantity of time-related overhead eligible for payment will be based on the total number of working days as specified in "Beginning of Work, Time of Completion and Liquidated Damages" of these special provisions, rather than the Contractor's early completion progress schedule. The quantity of time-related overhead, as measured above, will be adjusted only as a result of suspensions and adjustments of time which revise the current contract completion date and which are also any of the following:

1. suspensions of work ordered in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications, except:

- a. suspensions ordered due to weather conditions being unfavorable for the suitable prosecution of the controlling operation or operations; or
 - b. suspensions ordered due to the failure on the part of the Contractor to carry out orders given, or to perform any provision of the contract; or
 - c. any other suspensions mutually agreed upon between the Engineer and the Contractor.
2. extensions of time granted by the State in conformance with the provisions in the fifth paragraph in Section 8-1.07, "Liquidated Damages," of the Standard Specifications; or
 3. reductions in contract time set forth in approved contract change orders, in conformance with the provisions in Section 4-1.03, "Changes," of the Standard Specifications.

In the event a cost reduction proposal is submitted by the Contractor, and is subsequently approved by the Engineer, which provides for a reduction in contract time, the contract amount of time-related overhead associated with the reduction in contract time shall be considered as a net savings in the total cost of time-related overhead. The Contractor will be paid 50 percent of the estimated net savings of the time-related overhead, in conformance with the provisions in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications.

If the quantity of time-related overhead, measured as specified in this special provision, exceeds 149 percent of the number of working days specified in the Engineer's Estimate, the Contractor shall, within 60 calendar days of the Engineer's written request, submit to the Engineer an audit examination and report performed by an independent Certified Public Accountant of the Contractor's actual overhead costs. The independent Certified Public Accountant's audit examination shall be performed in conformance with the requirements of the American Institute of Certified Public Accountants Attestation Standards. The audit examination and report shall depict the Contractor's project and company-wide financial records and shall specify the actual overall average daily rates for both field and home office overhead for the entire duration of the project, and whether the costs have been properly allocated. The rates of field and home office overhead shall exclude all unallowable costs as determined in the Federal Acquisition Regulations, 48 CFR, Chapter 1, Part 31. The audit examination shall determine if the rates of field and home office overhead:

1. are allowable in conformance with the requirements of the Federal Acquisition Regulations, 48 CFR, Chapter 1, Part 31;
2. are adequately supported by reliable documentation; and
3. related solely to the project under examination.

Upon the Engineer's written request, the Contractor shall make its financial records available for audit by the State for the purpose of verifying the actual rate of time-related overhead specified in the audit submitted by the Contractor. The actual rate of time-related overhead specified in the audit, submitted by the Contractor, will be subject to approval by the Engineer.

If the Engineer elects, or if requested in writing by the Contractor, contract item payments for time-related overhead, in excess of 149 percent of the number of working days designated in the Engineer's Estimate, will be adjusted to reflect the actual rate.

The cost of performing an audit examination and submitting the report, requested by the Engineer, will be borne equally by the State and the Contractor. The division of the cost will be made by determining the cost of providing an audit examination in conformance with the provisions of Section 9-1.03B, "Work performed by Special Forces or Other Special Services" of the Standard Specifications, and paying to the Contractor one-half of that cost.

The contract price paid per working day for time-related overhead shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in time-related overhead, complete in place, including all field and home office overhead costs incurred by the Contractor and by any joint venture partner, subcontractor, supplier or other party associated with the Contractor, and the Contractor's share of costs of audits of overhead costs requested by the Engineer, as specified in these special provisions, and as directed by the Engineer. The provisions in Sections 4-1.03B, "Increased or Decreased Quantities," 4-1.03C, "Changes in Character of the Work," of the Standard Specifications shall not apply to time-related overhead.

Full compensation for additional overhead costs involved in the performance of extra work at force account shall be considered as included in the markups specified in "Force Account Payment," of these special provisions.

Full compensation for additional overhead cost involved in performing additional contract item work that is not a controlling operation and for all overhead, other than the time-related overhead measured and paid for as specified in this section "Overhead", shall be considered as included in the various items of work involved, and no additional compensation will be allowed therefor.

For the purpose of making partial payments pursuant to the provisions in Section 9-1.06, "Partial Payments," of the Standard Specifications, the number of working days to be paid for time-related overhead in each monthly partial payment will be the number of working days, specified above to be measured for payment, that occurred during that monthly estimate

period. The amount earned per working day for time-related overhead shall be either the contract item price, or 20 percent of the original total contract amount divided by the number of working days specified in "Beginning of Work, Time of Completion and Liquidated Damages," of these special provisions, whichever is the lesser.

After acceptance of the contract pursuant to the provisions in Section 7-1.17, "Acceptance of Contract," of the Standard Specifications, the amount of the total contract item price for time-related overhead not yet paid, will be included for payment in the first estimate made after acceptance of the contract in conformance with the provisions in Section 9-1.07, "Payment After Acceptance," of the Standard Specifications.

10-1.10 ELECTRONIC MOBILE DAILY DIARY SYSTEM DATA DELIVERY

Attention is directed to Sections 5-1.10, "Equipment and Plants," and 7-1.01A(3), "Payroll Records," of the Standard Specifications, and these special provisions.

The Contractor shall submit to the Engineer a list of each piece of equipment and its identifying number, type, make, model and rate code in accordance with the Department of Transportation publication entitled "Labor Surcharge and Equipment Rental Rate" which is in effect on the date the work is performed, and the names, labor rates and work classifications for all field personnel employed by the Contractor and all subcontractors in connection with the public work, together with such additional information as is identified below. This information shall be updated and submitted to the Engineer weekly through the life of the project.

This personnel information will only be used for this mobile daily diary computer system and it will not relieve the Contractor and subcontractors from all the payroll records requirements as required by Section 7-1.01A(3), "Payroll Records," of the Standard Specifications.

The Contractor shall provide the personnel and equipment information not later than 11 days after the contract award for its own personnel and equipment, and not later than 5 days before start of work by any subcontractor for the labor and equipment data of that subcontractor.

The minimum data to be furnished shall comply with the following specifications:

DATA CONTENT REQUIREMENTS.

- A. The Contractor shall provide the following basic information for itself and for each subcontractor that will be used on the contract:

Caltrans contract ID	Alphanumeric; up to 15 characters.
Company name.	Alphanumeric; up to 30 characters.
Federal tax ID	Alphanumeric; up to 10 characters.
State contractor license	Alphanumeric; up to 20 characters.
Company type (prime or sub)	Alphanumeric; up to 10 characters.
Address (line 1).	Alphanumeric; up to 30 characters.
Address (line 2).	Alphanumeric; up to 30 characters.
Address (city).	Alphanumeric; up to 30 chars.
Address (2-letter state code).	Alphanumeric; up to 2 characters.
Address (zip code)	Alphanumeric; up to 14 characters.
Contact FirstName.	Alphanumeric; up to 15 characters
Contact LastName	Alphanumeric; up to 20 characters
Telephone number (with area code).	Alphanumeric; up to 20 characters.
Company code: short company name.	Alphanumeric; up to 10 characters.
Type of work (Department-supplied codes)	Alphanumeric; up to 30 characters
DBE status (Department-supplied codes)	Alphanumeric; up to 20 characters.
Ethnicity for DBE status (Department-supplied codes).	Alphanumeric; up to 20 characters.
List of laborers to be used on this contract (detail specified below).	
List of equipment to be used on this contract (detail specified below).	

For example, one such set of information for a company might be:

04-072359
 XYZ CONSTRUCTION, INC.
 94-2991040
 AL1649T
 SUB
 1240 9TH STREET
 SUITE 600
 OAKLAND
 CA
 94612
 JOHN
 SMITH
 (510) 834-9999
 XYZ
 PAVING
 MBE
 BLACK

B. The Contractor shall provide the following information for each laborer who will be used on the contract:

Caltrans contract ID	Alphanumeric; up to 15 characters.
Company code (as defined above).	Alphanumeric; up to 10 characters.
Employee ID	Alphanumeric; up to 10 characters.
Last name.	Alphanumeric; up to 20 characters.
First name.	Alphanumeric; up to 15 characters.
Middle name.	Alphanumeric; up to 15 characters.
Suffix	Alphanumeric; up to 15 characters
Labor trade (Department-provided codes).	Alphanumeric; up to 10 characters.
Labor classification (Department-provided codes).	Alphanumeric; up to 10 characters.
Regular hourly rate.	Alphanumeric; up to (6,2)
Overtime hourly rate.	Alphanumeric; up to (6,2)
Doubletime hourly rate	Alphanumeric; up to (6,2)
Standby hourly rate.	Alphanumeric; up to (6,2)
Ethnicity (Department-provided codes).	Alphanumeric; up to 20 characters.
Gender.	Alphanumeric; up to 1 characters.

For example, one such set of information might be:

04-072359
 XYZ
 1249
 GONZALEZ
 HECTOR
 VINCENT
 JR.
 OPR
 JNY
 12.50
 18.75
 25.00
 0.00
 HISPANIC
 M

C. The Contractor shall provide the following information for each piece of equipment that will be used on the contract:

Caltrans contract ID	Alphanumeric; up to 15 characters.
Company code (as defined above).	Alphanumeric; up to 10 characters.
Company's equipment ID number.	Alphanumeric; up to 10 characters.
Company's equipment description.	Alphanumeric; up to 60 characters.
Equipment type (from Department ratebook).	Alphanumeric; up to 60 characters.
Equipment make (from Department ratebook).	Alphanumeric; up to 60 characters.
Equipment model (from Department ratebook).	Alphanumeric; up to 60 characters.
Equipment rate code (from Department ratebook).	Alphanumeric; up to 10 characters
Regular hourly rate.	Alphanumeric; up to (6,2)
Overtime hourly rate.	Alphanumeric; up to (6,2)
Standby hourly rate	Alphanumeric; up to (6,2)
Idle hourly rate.	Alphanumeric; up to (6,2)
Rental flag.	Alphanumeric; up to 1 character.

For example, one such set of information might be:

04-072359

XYZ

B043

CAT TRACTOR D-6C

TRACC

CAT

D-6C

3645

75.00

75.00

0.00

0.00

N

DATA DELIVERY REQUIREMENTS

- A. All data described in "Data Requirements" of this section shall be delivered to the Department electronically, on 3 1/2" floppy disks compatible with the Microsoft Windows operating system. The Contractor shall provide a weekly disk and hard copy of the required correct updated personnel and equipment information for the Contractor and all the subcontractors and verified correct by the Engineer.
- B. Data of each type described in the previous section (contractor, labor, and equipment information) will be delivered separately, each type in one or more files on floppy disk. Any given file may contain information from one contractor or from multiple contractors, but only one type of data (contractor, labor, or equipment information).
- C. The file format for all files delivered to Caltrans shall be standard comma-delimited, plain text files. This type of file (often called "CSV") is the most standard type for interchange of formatted data; it can be created and read by all desktop spreadsheet and desktop database applications. Characteristics of this type of file are:
 1. All data is in the form of plain ASCII characters.
 2. Each row of data (company, person, equipment) is delimited by a carriage return character.
 3. Within rows, each column (field) of data is delimited by a comma character.
- D. The files shall have the following columns (i.e., each row shall have the following fields):
 1. Contractor info: 17 columns (fields) as specified in "Data Requirements #1", above.
 2. Labor info: 15 columns (fields) as specified in "Data Requirements #2", above.
 3. Equipment info: 13 columns (fields) as specified in "Data Requirements #3", above.

For every one type of file, columns (fields) must be in the order specified under "Data Requirements", above. All columns (fields) described under "Data Requirements" must be present for all rows, even if some column (field) values are empty. The first row of each file must contain column headers (in plain text).

- E. Column (field) contents must conform to the data type and length requirements described in the "Data Requirement" section, above. In addition, column (field) data must conform to the following restrictions:
1. All data shall be uppercase.
 2. Company type shall be either "PRIME" or "SUB".
 3. Labor trade and classification codes must conform to a list of standard codes that will be supplied by Department.
 4. Contractor type of work codes and DBE status codes must conform to a list of standard codes that will be supplied by Department.
 5. Ethnicity codes must conform to standard codes that will be supplied by Department.
 6. Data in the "gender" column must be either "M" or "F".
 7. Data in the "rental equipment" column must be either "Y" or "N".
 8. Equipment owner's description may not be omitted. (The description, together with the equipment number, is how the equipment will be identified in the field.) Include manufacturer, rated capacity & trade description
 9. Equipment type, make, model, and ratebook code shall conform to the Department of Transportation Publication entitled "Labor Surcharge and Equipment Rental Rate", which is in effect on the date the work is performed. If the equipment in question does not have an entry in the book then alternate, descriptive entries may be made in these fields as directed by the Engineer.
- F. The name of each file must indicate its contents, e.g., "labor.csv" for laborers, "equipment.csv" for equipment, and "contractor.csv" for contractors. Each floppy disk supplied to Caltrans must be accompanied by a printed list of the files it contains with a brief description of the contents of each file.

PAYMENT

Payment for providing electronic mobile daily diary computer system data delivery will be made on a lump sum basis. The lump sum bid price for electronic mobile daily diary computer system data delivery will be made according to the following schedule:

The Contractor will receive not more than 3.5 per cent per month of the total bid price for electronic mobile daily diary computer system data delivery.

After the completion of the work, 100 per cent payment will be made for electronic mobile daily diary computer system data delivery less the permanent deduction, if any, for failure to deliver complete weekly electronic mobile daily diary computer system data in each month.

The contract lump sum price paid for electronic mobile daily diary computer system data delivery shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in electronic mobile daily diary computer system data delivery as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The Department will retain an amount equal to 25 percent of the estimated value of the work performed during the first estimate period in which the Contractor fails to submit electronic mobile daily diary computer system data delivery conforming to the requirements of this section, as determined by the Engineer. Thereafter, on subsequent successive estimate periods the percentage the Department will retain will be increased at the rate of 25 percent per estimate period in which acceptable electronic mobile daily diary computer system data have not been submitted to the Engineer. Retentions for failure to submit acceptable electronic mobile daily diary computer system data shall be additional to all other retentions provided for in the contract. The retention for failure to submit acceptable electronic mobile daily diary computer system data will be released for payment on the next monthly estimate for partial payment following the date that acceptable electronic mobile daily diary computer system data is submitted to the Engineer.

The adjustment provisions in Section 4-1.03, "Changes," of the Standard Specifications, shall not apply to the item of electronic mobile daily diary computer system data delivery. Adjustments in compensation for electronic mobile daily diary computer system data delivery will not be made for any increased or decreased work ordered by the Engineer in furnishing electronic mobile daily diary computer system data.

10-1.11 OBSTRUCTIONS

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

Attention is directed to the existence of certain underground facilities that may require special precautions be taken by the Contractor to protect the health, safety and welfare of workers and of the public. Facilities requiring special precautions include, but are not limited to: conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas

in pipelines greater than 6 inches in diameter or pipelines operating at pressures greater than 60 psi (gage); underground electric supply system conductors or cables, with potential to ground of more than 300 V, either directly buried or in a duct or conduit which do not have concentric grounded or other effectively grounded metal shields or sheaths.

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

Notification Center	Telephone Number
Underground Service Alert-Northern California (USA)	1-800-642-2444 1-800-227-2600
Underground Service Alert-Southern California (USA)	1-800-422-4133 1-800-227-2600

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

Utility	Location	Date
Two OH Electric Lines (Alameda Power & Telecom)	Crossing Webster Tube between N 137 and N 141	11/1/01
Two Transformer Boxes (Alameda Power & Telecom)	Above Webster Tube near N 140	11/1/01

In the event that the utility facilities mentioned above are not removed or relocated by the date specified and, if in the opinion of the Engineer, the Contractor's operations are delayed or interfered with by reason of the utility facilities not being removed or relocated by the date specified, the State will compensate the Contractor for the delays to the extent provided in Section 8-1.09, "Right of Way Delays," of the Standard Specifications, and not otherwise, except as provided in Section 8-1.10, "Utility and Non-Highway Facilities," of the Standard Specifications.

10-1.12 MOBILIZATION

Mobilization shall conform to the provisions in Section 11, "Mobilization," of the Standard Specifications.

10-1.13 CONSTRUCTION AREA TRAFFIC CONTROL DEVICES

Flagging, signs, and all other traffic control devices furnished, installed, maintained, and removed when no longer required shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Category 1 traffic control devices are defined as those devices that are small and lightweight (less than 100 lb), and have been in common use for many years. The devices shall be known to be crashworthy by crash testing, crash testing of similar devices, or years of demonstrable safe performance. Category 1 traffic control devices include traffic cones, plastic drums, portable delineators, and channelizers.

If requested by the Engineer, the Contractor shall provide written self-certification for crashworthiness of Category 1 traffic control devices. Self-certification shall be provided by the manufacturer or Contractor and shall include the following: date, Federal Aid number (if applicable), expenditure authorization, district, county, route and kilometer post of project limits; company name of certifying vendor, street address, city, state and zip code; printed name, signature and title of certifying person; and an indication of which Category 1 traffic control devices will be used on the project. The Contractor may obtain a standard form for self-certification from the Engineer.

Category 2 traffic control devices are defined as those items that are small and lightweight (less than 100 lb), that are not expected to produce significant vehicular velocity change, but may otherwise be potentially hazardous. Category 2 traffic control devices include: barricades and portable sign supports.

Category 2 devices purchased on or after October 1, 2000 shall be on the Federal Highway Administration (FHWA) Acceptable Crashworthy Category 2 Hardware for Work Zones list. This list is maintained by FHWA and can be located at the following internet address:

<http://safety.fhwa.dot.gov/fourthlevel/hardware/listing.cfm?code=workzone>.

The Department maintains a secondary list at the following internet address:

<http://www.dot.ca.gov/hq/traffops/signtech/signdel/pdffiles.htm>.

Category 2 devices that have not received FHWA acceptance, and were purchased before October 1, 2000, may continue to be used until they complete their useful service life or until January 1, 2003, whichever comes first. Category 2 devices in use that have received FHWA acceptance shall be labeled with the FHWA acceptance letter number and the name of the manufacturer by the start of the project. The label shall be readable. After January 1, 2003, all Category 2 devices without a label shall not be used on the project.

If requested by the Engineer, the Contractor shall provide a written list of Category 2 devices to be used on the project at least 5 days prior to beginning any work using the devices. For each type of device, the list shall indicate the FHWA acceptance letter number and the name of the manufacturer.

Full compensation for providing self-certification for crashworthiness of Category 1 traffic control devices and for providing a list of Category 2 devices used on the project and labeling Category 2 devices as specified shall be considered as included in the prices paid for the various contract items of work requiring the use of the Category 1 or Category 2 traffic control devices and no additional compensation will be allowed therefor.

10-1.14 CONSTRUCTION AREA SIGNS

Construction area signs shall be furnished, installed, maintained, and removed when no longer required in conformance with the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Attention is directed to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. Type II retroreflective sheeting shall not be used on construction area sign panels.

The Contractor shall notify the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to commencing excavation for construction area sign posts. The regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert-Northern California (USA)	1-800-642-2444 1-800-227-2600
Underground Service Alert-Southern California (USA)	1-800-422-4133 1-800-227-2600

Excavations required to install construction area signs shall be performed by hand methods without the use of power equipment, except that power equipment may be used if it is determined there are no utility facilities in the area of the proposed post holes.

Sign substrates for stationary mounted construction area signs may be fabricated from fiberglass reinforced plastic as specified under "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Type IV reflective sheeting for sign panels for portable construction area signs shall conform to the requirements specified under "Prequalified and Tested Signing and Delineation Materials" elsewhere in these special provisions.

10-1.15 MAINTAINING TRAFFIC

Attention is directed to Sections 7-1.08, "Public Convenience," 7-1.09, "Public Safety," and 12, "Construction Area Traffic Control Devices," of the Standard Specifications and to the Section entitled "Public Safety" elsewhere in these special provisions, and these special provisions. Nothing in these special provisions shall be construed as relieving the Contractor from the responsibilities specified in Section 7-1.09.

The minimum size specified for Type II flashing arrow signs in the table following the second paragraph of Section 12-3.03, "Flashing Arrow Signs," of the Standard Specifications is amended to read "36 inches by 72 inches".

In the Standard Plans, Note 10 on Standard Plan T10, Note 9 on Standard Plan T10A, Note 5 on Standard Plan T11, Note 6 on Standard Plan T12, Note 5 on Standard Plan T13, and Note 4 on Standard Plan T14 are revised to read:

All traffic cones used for night lane closures shall have reflective cone sleeves as specified in the specifications.

The second and third paragraphs of Section 12-3.10, "Traffic Cones," of the Standard Specifications are amended to read:

During the hours of darkness traffic cones shall be affixed with reflective cone sleeves. The reflective sheeting of sleeves on the traffic cones shall be visible at 1,000 feet at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.

Reflective cone sleeves shall conform to the following:

1. Removable flexible reflective cone sleeves shall be fabricated from the reflective sheeting specified in the special provisions, have a minimum height of 13 inches and shall be placed a maximum of 3 inches from the top of the cone. The sleeves shall not be in place during daylight hours.
2. Permanently affixed semitransparent reflective cone sleeves shall be fabricated from the semitransparent reflective sheeting specified in the special provisions, have a minimum height of 13 inches, and shall be placed a maximum of 3 inches from the top of the cone. Traffic cones with semitransparent reflective cone sleeves may be used during daylight hours.
3. Permanently affixed double band reflective cone sleeves shall have 2 white reflective bands. The top band shall be 6 inches in height, placed a maximum of 4 inches from the top of the cone. The lower band shall be 4 inches in height, placed 2 inches below the bottom of the top band. Traffic cones with double band reflective cone sleeves may be used during daylight hours.

The type of reflective cone sleeve used shall be at the option of the Contractor. Only one type of reflective cone sleeve shall be used on the project.

The C16 and C17 designations of the signs shown on the detail "Entrance Ramp Without Turning Pockets" of Standard Plan T14 are amended to designate the signs as R16 and R17, respectively.

Lane closures shall conform to the provisions in the section of these special provisions entitled "Traffic Control System for Lane Closure."

Personal vehicles of the Contractor's employees shall not be parked within the construction easements.

The Contractor shall notify local authorities of his intent to begin work at least 5 days before work is begun. 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.

Whenever vehicles or equipment are parked on the shoulder within 6 feet of a traffic lane, the shoulder area shall be closed with fluorescent traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the pavement at 25-foot intervals to a point not less than 25 feet past the last vehicle or piece of equipment. A minimum of 9 cones or portable delineators shall be used for the taper. A C23 (Road Work Ahead) or C24 (Shoulder Work Ahead) sign shall be mounted on a telescoping flag tree with flags. The flag tree shall be placed where directed by the Engineer.

Lanes shall be closed only during the hours shown in this section "Maintaining Traffic." Except work required under Sections 7-1.08 and 7-1.09, work that interferes with public traffic shall be performed only during the hours shown for lane closures. Lanes may be closed only on local streets between 7:00 a.m on Saturday and 7:00 p.m. on Sunday.

Designated legal holidays are: January 1st, the third Monday in February, the last Monday in May, July 4th, the first Monday in September, November 11th, Thanksgiving Day, and December 25th. When a designated legal holiday falls on a Sunday, the following Monday shall be a designated legal holiday. When November 11th falls on a Saturday, the preceding Friday shall be a designated legal holiday.

Minor deviations from the requirements of this section concerning hours of work which do not significantly change the cost of the work may be permitted upon the written request of the Contractor if in the opinion of the Engineer public traffic will be better served and the work expedited. Such deviations shall not be adopted until the Engineer has indicated his written approval. All other modifications will be made by contract change order.

Pedestrian access facilities shall be provided through construction areas within the right of way as shown on the plans and as specified herein. Pedestrian walkways shall be provided with surfacing of asphalt concrete, portland cement concrete or timber. Surface shall be skid resistant and free of irregularities. Hand railings shall be provided on each side of pedestrian walkways as necessary to protect pedestrian traffic from hazards due to construction operations or adjacent vehicular traffic. Protective overhead covering shall be provided as necessary to insure protection from falling objects and drip from overhead structures.

Railings shall be constructed of wood, S4S, and shall be painted white. Railings and walkways shall be maintained in good condition by the Contractor. Walkways shall be kept clear of obstructions.

Full compensation for providing said pedestrian facilities shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

10-1.16 CLOSURE REQUIREMENTS AND CONDITIONS

Lane closures shall conform to the provisions in "Maintaining Traffic" of these special provisions and these special provisions.

The term closure, as used herein, is defined as the closure of a traffic lane or lanes, including ramp or connector lanes, within a single traffic control system.

CLOSURE SCHEDULE

By noon Monday, the Contractor shall submit a written schedule of planned closures for the following week period, defined as Friday noon through the following Friday noon.

The Closure Schedule shall show the locations and times when the proposed closures are to be in effect. The Contractor shall use the Closure Schedule request forms furnished by the Engineer. Closure Schedules submitted to the Engineer with incomplete, unintelligible or inaccurate information will be returned for correction and resubmittal. The Contractor will be notified of disapproved closures or closures that require coordination with other parties as a condition of approval.

CONTINGENCY PLAN

The Contractor shall prepare a contingency plan for reopening closures to public traffic. The Contractor shall submit the contingency plan for a given operation to the Engineer within one working day of the Engineer's request.

LATE REOPENING OF CLOSURES

If a closure is not reopened to public traffic by the specified time, work shall be suspended in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications. The Contractor shall not make any further closures until the Engineer has accepted a work plan, submitted by the Contractor, that will insure that future closures will be reopened to public traffic at the specified time. The Engineer will have 2 working days to accept or reject the Contractor's proposed work plan. The Contractor will not be entitled to any compensation for the suspension of work resulting from the late reopening of closures.

COMPENSATION

The Contractor shall notify the Engineer of any delay in the Contractor's operations due to the following conditions, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of those conditions, and the Contractor's loss due to that delay could not have been avoided by rescheduling the affected closure or by judicious handling of forces, equipment and plant, the delay will be considered a right of way delay within the meaning of Section 8-1.09, "Right of Way Delays," and compensation for the delay will be determined in conformance with the provisions in Section 8-1.09:

- A. The Contractor's proposed Closure Schedule is denied and his planned closures are within the time frame allowed for closures in "Maintaining Traffic" of these special provisions, except that the Contractor will not be entitled to any compensation for amendments to the Closure Schedule that are not approved.
- B. The Contractor is denied a confirmed closure.

Should the Engineer direct the Contractor to remove a closure prior to the time designated in the approved Closure Schedule, any delay to the Contractor's schedule due to removal of the closure will be considered a right of way delay within the meaning of Section 8-1.09, "Right of Way Delays," and compensation for the delay will be determined in conformance with the provisions in Section 8-1.09.

10-1.17 TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE

A traffic control system shall consist of closing traffic lanes in accordance with the details shown on the plans, the provisions of Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications, the provisions under "Maintaining Traffic" and "Construction Area Signs" elsewhere in these special provisions and these special provisions.

The provisions in this section will not relieve the Contractor from the responsibility to provide such additional devices or take such measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

If any component in the traffic control system is displaced, or ceases to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair the component to its original condition or replace the component and shall restore the component to its original location.

When lane closures are made for work periods only, at the end of each work period, all components of the traffic control system, except portable delineators placed along open trenches or excavation adjacent to the traveled way, shall be removed from the traveled way and shoulder. If the Contractor so elects, the components may be stored at selected central locations, approved by the Engineer, within the limits of the highway right of way.

One-way traffic shall be controlled through the project in accordance with the plans and these special provisions. Additional advance flaggers will be required.

Utilizing a pilot car will be at the option of the Contractor. If the Contractor elects to use a pilot car, the cones shown along the centerline on the plan need not be placed. The pilot car shall have radio contact with personnel in the work area and the maximum speed of the pilot car through the traffic control zone shall be 25 miles per hour.

The contract lump sum price paid for traffic control system shall include full compensation for furnishing all labor (except for flagging costs), materials (including signs), tools, equipment and incidentals, and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing, and disposing of the components of the traffic control system and for furnishing and operating the pilot car, (including driver, radios, and any other equipment and labor required), as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. Flagging costs will be paid for as provided in Section 12-2.02, "Flagging Costs," of the Standard Specifications.

The adjustment provisions in Section 4-1.03, "Changes," of the Standard Specifications, shall not apply to the item of traffic control system. Adjustments in compensation for traffic control system will be made only for increased or decreased traffic control system required by changes ordered by the Engineer and will be made on the basis of the cost of the increased or decreased traffic control necessary. Such adjustment will be made on a force account basis as provided in Section 9-1.03, "Force Account Payment," of the Standard Specifications for increased work, and estimated on the same basis in the case of decreased work.

Traffic control system required by work which is classed as extra work, as provided in Section 4-1.03D of the Standard Specifications, will be paid for as a part of the extra work.

10-1.18 PORTABLE DELINEATORS

Portable delineators shall be furnished, placed and maintained at the locations shown on the plans and shall conform to the provisions in Sections 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Portable delineators shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials," elsewhere in these special provisions.

Portable delineator posts shall be orange in color.

Portable delineators will be measured and paid for in the same manner specified for Channelizers (surface mounted) in Section 12-4.01 of the Standard Specifications

10-1.19 TEMPORARY RAILING

Temporary railing (Type K) shall be placed at the locations shown on the plans, specified in these special provisions or in the Standard Specifications or ordered by the Engineer, and shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

The fourth paragraph of Section 12-4.01, "Measurement and Payment," of the Standard Specifications is amended to read:

When the Engineer's Estimate includes a contract item for temporary railing (Type K), the temporary railing (Type K) will be measured by the linear foot along the top of the railing, at each location shown on the plans, specified, or ordered by the Engineer. If the Engineer orders a lateral move of the temporary railing (Type K), and the repositioning is not shown on the plans, moving the temporary railing will be paid for as extra work as provided in Section 4-1.03D and the temporary railing will not be measured in the new position. Temporary railing (Type K) placed in excess of the length shown, specified, or ordered will not be paid for. The contract price paid per linear foot for temporary railing (Type K) shall include full compensation for furnishing all labor, materials (including reinforcement and Type P marker panels), tools, equipment and incidentals, and for doing all the work involved in furnishing, placing, maintaining, repairing, replacing, and removing the temporary railing, including excavation and backfill, drilling holes and bonding threaded rods or dowels when required, removing threaded rods or dowels and filling the drilled holes with mortar, furnishing and installing reflectors, and moving and replacing removable panels as required, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

Reflectors on temporary railing (Type K) shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials," of these special provisions.

The Contractor's attention is directed to the provisions in "Public Safety" and "Order of Work" elsewhere in these special provisions.

Temporary railing (Type K) placed in accordance with the provisions in "Public Safety" elsewhere in these special provisions will not be measured nor paid for.

10-1.20 TEMPORARY CRASH CUSHION MODULE

This work shall consist of furnishing, installing and maintaining sand filled temporary crash cushion modules in groupings or arrays at each location shown on the plans, specified in the special provisions or directed by the Engineer. The grouping or array of sand filled modules shall form a complete sand filled temporary crash cushion in accordance with the details shown on the plans and these special provisions.

Attention is directed to "Public Safety" of these special provisions.

GENERAL.--Whenever the work or the Contractor's operations establishes a fixed obstacle, the exposed fixed obstacle shall be protected with a sand filled temporary crash cushion. The sand filled temporary crash cushion shall be in place prior to opening the lanes adjacent to the fixed obstacle to public traffic.

Sand filled temporary crash cushions shall be maintained in place at each location, including times when work is not actively in progress. Sand filled temporary crash cushions may be removed during a work period for access to the work provided that the exposed fixed obstacle is 15 feet or more from a lane carrying public traffic and the temporary crash cushion is reset to protect the obstacle prior to the end of the work period in which the fixed obstacle was exposed. When no longer required, as determined by the Engineer, sand filled temporary crash cushions shall be removed from the site of the work.

MATERIALS.--

At the Contractor's option, the modules for use in sand filled temporary crash cushions shall be either Energite III Inertial Modules, Fitch Inertial Modules or Traffix Sand Barrels manufactured after March 31, 1997, or equal:

- A. Energite III Inertial Modules, manufactured by Energy Absorption Systems, Inc., One East Wacker Drive, Chicago, IL 60601-2076, Telephone 1-312-467-6750, FAX 1-800-770-6755.
 - 1. Distributor (Northern): Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828, Telephone 1-800-884-8274, FAX 1-916-387-9734
 - 2. Distributor (Southern): Traffic Control Service, Inc., 1881 Betmor Lane, Anaheim, CA 92805, Telephone 1-800-222-8274, FAX 1-714-937-1070.
- B. Fitch Inertial Modules, manufactured by Roadway Safety Service, Inc., 1050 North Rand Road, Wauconda, IL 60084, Telephone 1-800-426-0839, FAX 1-847-487-9820.
 - 1. Distributor (Northern): Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828, Telephone 1-800-884-8274, FAX 1-916-387-9734
 - 2. Distributor (Southern): Traffic Control Service, Inc., 1881 Betmor Lane, Anaheim, CA 92805, Telephone 1-800-222-8274, FAX 1-714-937-1070.
- C. Traffix Sand Barrels, manufactured by Traffix Devices, Inc., 220 Calle Pintoresco, San Clemente, CA 92672, Telephone 1-949-361-5663, FAX 1-949-361-9205.
 - 1. Russ Enterprises, Inc., 1533 Berger Drive, San Jose, CA 95112, Telephone 1-408-287-4303, FAX 1-408-287-1929.
 - 2. Statewide Safety, P.O. Box 1440, Pismo Beach, CA 93448, Telephone 1-800-559-7080, FAX 1-805-929-5786.

Modules contained in each temporary crash cushion shall be of the same type at each location. The color of the modules shall be the standard yellow color as furnished by the vendor, with black lids. The modules shall exhibit good workmanship free from structural flaws and objectionable surface defects. The modules need not be new. Good used undamaged modules conforming to color and quality of the types specified above may be utilized. If used Fitch modules requiring a seal are furnished, the top edge of the seal shall be securely fastened to the wall of the module by a continuous strip of heavy duty tape.

Modules shall be filled with sand in accordance with the manufacturer's directions, and to the sand capacity in pounds for each module as shown on the plans. Sand for filling the modules shall be clean washed concrete sand of commercial quality. At the time of placing in the modules, the sand shall contain not more than 7 percent water, as determined by California Test 226.

Modules damaged due to the Contractor's operations shall be repaired immediately by the Contractor at his expense. Modules damaged beyond repair, as determined by the Engineer, due to the Contractor's operations shall be removed and replaced by the Contractor at his expense.

INSTALLATION.--Temporary crash cushion modules shall be placed on movable pallets or frames conforming to the dimensions shown on the plans. The pallets or frames shall provide a full bearing base beneath the modules. The modules and supporting pallets or frames shall not be moved by sliding or skidding along the pavement or bridge deck.

A Type R or P marker panel shall be attached to the front of the crash cushion as shown on the plans, when the closest point of crash cushion array is within 12 feet of the traveled way. The marker panel, when required, shall be firmly fastened to the crash cushion with commercial quality hardware or by other methods approved by the Engineer.

At the completion of the project, temporary crash cushion modules, sand filling, pallets or frames, and marker panels shall become the property of the Contractor and shall be removed from the site of the work. Temporary crash cushion modules shall not be installed in permanent work.

MEASUREMENT AND PAYMENT.--Temporary crash cushion modules placed in accordance with the provisions in "Public Safety" elsewhere in these special provisions will not be measured nor paid for.

10-1.21 EXISTING HIGHWAY FACILITIES

The work performed in connection with various existing highway facilities shall conform to the provisions in Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions.

Plans of the existing Tubes may be requested by fax from the Office of Structure Maintenance and Investigations, 1801 30th Street, Sacramento, CA, Fax (916) 227-8357.

Plans of existing Tubes available to the Contractor are reproductions of the original contract plans with significant changes noted and working drawings and do not necessarily show normal construction tolerances and variances. Where dimensions of new construction required by this contract are dependent on the dimensions of existing Tubes, the Contractor shall verify the controlling field dimensions and shall be responsible for adjusting dimensions of the work to fit existing conditions.

Attention is directed to Section 7-1.06, "Safety and Health Provisions," of the Standard Specifications. Work practices and worker health and safety shall conform to the Cal/OSHA Safety Orders Title 8, of the California Code of Regulations including Section 5158, "Other Confined Space Operations."

The work under this contract will require the Contractor to perform work in the existing Tube plenums which are defined to be confined spaces.

10-1.21A REMOVE WOOD FENCE AND CHAIN LINK FENCE AND GATE

Existing wood fence, chain link fence and chain link gate, where shown on the plans to be removed, shall be removed and disposed of.

Access control shall be maintained at all times. Before leaving any work area, all fencing and gates necessary to ensure the integrity of the original fenced areas shall be provided such that there are no gaps left between the existing fence and gates and the fence and gates being installed. Whether permanent or temporary fencing and gates are used, shall be the Contractor's option.

Full compensation for providing access control shall be considered as included in the contract prices paid per linear foot for remove wood fence, remove chain link fence and the contract unit price paid for remove gate and no additional compensation will be allowed therefor.

10-1.21B REMOVE ASPHALT CONCRETE DIKE

Existing asphalt concrete dike, where shown on the plans to be removed, shall be removed.

Prior to removing the dike the outside edge of the asphalt concrete to remain in place shall be cut to a neat line. The cut shall be a minimum depth of 0.17-foot.

The dike shall be removed in such a manner so that the surfacing which is to remain in place is not damaged.

The dike shall be disposed of.

10-1.21C REMOVE WOOD STAGE STRUCTURE

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

10-1.21D SALVAGE PICNIC TABLE

Existing picnic tables, where shown on the plans to be salvaged, shall be removed and salvaged.

Salvaged picnic table shall be hauled to Alameda Gateway, 2900 Main Street, Alameda, CA 94501 and stockpiled. The Contractor shall notify the City of Alameda at (510) 521-2727 a minimum of 24 hours prior to hauling salvaged material.

Where existing picnic table is set in a concrete foundation, the concrete foundation shall be removed and disposed of without damage to the picnic table to be salvaged. Picnic tables which are damaged for any reason shall be replaced in kind at the Contractor's expense. Full compensation for removing concrete foundation shall be considered as included in the contract unit price paid for salvage picnic table and no separate payment will be made therefor.

10-1.21E SALVAGE BENCH

Existing bench, where shown on the plans to be salvaged, shall be removed and salvaged.

Salvaged bench shall be hauled to Alameda Gateway, 2900 Main Street, Alameda, CA 94501 and stockpiled. The Contractor shall notify the City of Alameda at (510) 521-2727 a minimum of 24 hours prior to hauling salvaged material.

On the Alameda side of the estuary, the benches shall be removed from concrete without damage to the bench to be salvaged. Benches which are damaged for any reason shall be replaced in kind at the Contractor's expense. Concrete removal will be measured and paid for as remove concrete as provide for in "Remove Concrete," elsewhere in these special provisions.

10-1.21F SALVAGE TRASH CANS

Existing trash cans, where shown on the plans to be salvaged, shall be removed and salvaged.

Salvaged trash cans shall be hauled to Alameda Gateway, 2900 Main Street, Alameda, CA 94501 and stockpiled. The Contractor shall notify the City of Alameda at (510) 521-2727 a minimum of 24 hours prior to hauling salvaged material.

Trash cans which are damaged for any reason shall be replaced in kind at the Contractor's expense.

10-1.21G SALVAGE BOLLARD

Existing bollards, where shown on the plans to be salvaged, shall be removed and salvaged.

Salvaged bollards shall be hauled to Alameda Gateway, 2900 Main Street, Alameda, CA 94501 and stockpiled. The Contractor shall notify the City of Alameda at (510) 521-2727 a minimum of 24 hours prior to hauling salvaged material.

The concrete foundation shall be removed and disposed of without damage to the bollard to be salvaged. Bollards which are damaged for any reason shall be replaced in kind at the Contractor's expense. Full compensation for removing concrete foundation shall be considered as included in the contract unit price paid for salvage bollard and no separate payment will be made therefor.

10-1.21H SALVAGE PLANTER BOX AND TREE

Existing planter box and tree, where shown on the plans to be salvaged, shall be removed and salvaged.

Salvaged planter boxes and trees on the Oakland side of the Oakland Estuary shall be hauled to Port of Oakland, 50 Harrison Street, Oakland, CA 94607 and stockpiled.

Planter box and tree which are damaged for any reason shall be replaced in kind at the Contractor's expense.

10-1.21I RECONSTRUCT CHAIN LINK FENCE AND GATE

Existing chain link fence, chain link gate and chain link sliding gate shall be removed and reconstructed as shown on the plans.

Fence removed in excess of that required for reconstructing chain link fence shall be disposed of. Full compensation for removing and disposing of excess fence shall be considered as included in the contract price paid per linear foot for reconstruct chain link fence and no separate payment will be made therefor.

10-1.21J RECONSTRUCT BOLLARD

Existing bollard where shown on the plans to be reconstructed, shall be reconstructed.

10-1.21K RECONSTRUCT PARKING BUMPER

Existing parking bumpers where shown on the plans to be reconstructed, shall be reconstructed.

Parking bumpers and/or anchoring dowels that are damaged for any reason, shall be replaced at the Contractor's expense to the details as shown on the plans.

10-1.21L RECONSTRUCT HANDRAILING

Existing handrailing shall be removed and reconstructed as shown on the plans.

On the Oakland side of the estuary, the concrete foundation shall be removed and disposed of without damage to the handrailing to be reconstructed. Handrailing that is damaged for any reason shall be replaced in kind at the Contractor's expense. Handrailing shall be reconstructed in new foundation as chown on the plans.

Concrete removed shall be disposed of outside the highway right of way in accordance with the provisions in Section 7-1.13 of the Standard Specifications.

Concrete for new foundation shall conform to the provisions in Section 73, "Concrete Curbs and Sidewalks," of the Standard Specifications and these special provisions.

Full compensation for removing concrete foundation and constructing new foundation shall be considered as included in the contract price paid per linear foot for reconstruct handrailing and no separate payment will be made therefor.

On the Alameda side of the estuary, the handrailing shall be cut off, salvaged and later welded back together as shown on the plans. Welding shall conform to the provisions in Section 83-1.02A, "Pipe Handrailing," of the Standard Specifications and "Welding Quality Control," elsewhere in these special provisions.

10-1.21M RESET ROADSIDE SIGNS

Existing roadside signs shall be removed and reset as shown on the plans.

Two holes shall be drilled in each existing post as required to provide a breakaway feature as shown on the plans.

10-1.21N RESET ROCK SLOPE PROTECTION

Existing rock slope protection shall be removed and reset to the details as shown on the plans.

When the quantity of existing rock slope protection is deficient in resetting the rock slope protection to the lines and grades established, additional rock slope protection shall be provided and will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

10-1.21O RESET BIKE RACK

Existing bike racks shall be removed and reset at the locations shown on the plans.

Bike racks which are damaged for any reason shall be replaced in kind at the Contractor's expense.

10-1.21P ADJUST FRAMES AND COVERS TO GRADE

Frames and covers of existing manholes shall be adjusted to grade in accordance with the provisions in Section 15-2.05, "Reconstruction," of the Standard Specifications.

10-1.21Q PLANE ASPHALT CONCRETE PAVEMENT

Existing asphalt concrete pavement shall be planed at the locations and to the dimensions shown on the plans.

Except as provided herein, planing asphalt concrete pavement shall be performed, at the option of the Contractor, either by the cold planing or heater planing method. The use of the heater planing method shall be subject to approval of the local Air Pollution Control Officer.

Cold planing machines shall be equipped with a cutter head not less than 30 inches in width and shall be operated so as not to produce fumes or smoke. The cold planing machine shall be capable of planing the pavement without requiring the use of a heating device to soften the pavement during or prior to the planing operation.

Heater planing machines shall have, in combination or separately, a means for heating and cutting the asphalt concrete surface and blading the displaced material into windrows in one continuous forward motion. Heat shall be applied uniformly to the area to be planed and shall be accurately controlled according to conditions and road surfacing being planed. The cutting width of the blade shall be not less than 3 feet.

Heater planing operations shall not be performed at any time where there is danger of igniting entrapped gases from sewers or gas mains, if an open flame is used in the heater. The heater planing method shall not be used in areas where the heat generated by the heater planing equipment may damage adjacent shrubs or the foliage on overhanging tree limbs.

The depth, width and shape of the cut shall be as indicated on the typical cross sections or as directed by the Engineer. The final cut shall result in a uniform surface conforming to the typical cross sections. The outside lines of the planed area shall be neat and uniform. Planing asphalt concrete pavement operations shall be performed without damage to the surfacing to remain in place.

Planed widths of pavement shall be continuous except for intersections at cross streets where the planing shall be carried around the corners and through the conform lines. Following planing operations, a drop-off of more than 0.15-foot will not be allowed at any time between adjacent lanes open to public traffic.

Where transverse joints are planed in the pavement at conform lines no drop-off shall remain between the existing pavement and the planed area when the pavement is opened to public traffic. If asphalt concrete has not been placed to the level of existing pavement before the pavement is to be opened to public traffic a temporary asphalt concrete taper shall be constructed. Asphalt concrete for temporary tapers shall be placed to the level of the existing pavement and tapered on a slope of 30:1 or flatter to the level of the planed area.

Asphalt concrete for temporary tapers shall be commercial quality and may be spread and compacted by any method that will produce a smooth riding surface. Temporary asphalt concrete tapers shall be completely removed, including the removal of all loose material from the underlying surface, before placing the permanent surfacing. Such removed material shall be disposed of outside the highway right of way in accordance with the provisions in Section 7-1.13 of the Standard Specifications.

Operations shall be scheduled such that not more than 7 days shall elapse between the time when transverse joints are planed in the pavement at the conform lines and the permanent surfacing is placed at such conform lines.

The material planed from the roadway surface, including material deposited in existing gutters or on the adjacent traveled way, shall be removed and disposed of outside the highway right of way in accordance with the provisions in Section 7-1.13 of the Standard Specifications. Removal operations of planed material shall be concurrent with planing operations and follow within 50 feet of the planer, unless otherwise directed by the Engineer.

Planing asphalt concrete pavement will be measured by the square yard. The quantity to be paid for will be the actual area of surface planed irrespective of the number of passes required to obtain the depth shown on the plans.

The contract price paid per square yard for plane asphalt concrete pavement shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in planing asphalt concrete surfacing and disposing of planed material, including furnishing the asphalt concrete for and constructing, maintaining, removing, and disposing of temporary asphalt concrete tapers, as specified in these special provisions and as directed by the Engineer.

10-1.21R REMOVE CONCRETE

Concrete, designated on the plans to be removed, shall be removed.

The pay quantities of concrete to be removed will be measured by the cubic yard, measured before and during removal operations.

Concrete removed shall be disposed of outside the highway right of way in accordance with the provisions in Section 7-1.13 of the Standard Specifications.

Where no joint exists between concrete to be removed and concrete to remain in place, the concrete shall be cut in a neat line to a minimum depth of 0.17-foot with a power driven saw before concrete is removed.

Concrete to be removed which has portions of the same structure both above and below ground will be considered as concrete above ground for compensation.

Full compensation for cutting concrete with power driven saw, removing and disposing of concrete shall be considered as included in the contract price paid per cubic yard for remove concrete and no additional compensation will be allowed therefor.

10-1.22 CLEARING AND GRUBBING

Clearing and grubbing shall conform to the provisions in Section 16, "Clearing and Grubbing," of the Standard Specifications and these special provisions.

Vegetation shall be cleared and grubbed only within the temporary construction easement as shown on the plans.

Existing vegetation, outside the areas to be cleared and grubbed, shall be protected from injury or damage resulting from the Contractor's operations.

Activities controlled by the Contractor, except cleanup or other required work, shall be confined within the graded areas of the roadway.

Nothing herein shall be construed as relieving the Contractor of Contractor's responsibility for final cleanup of the highway as provided in Section 4-1.02, "Final Cleaning Up," of the Standard Specifications.

10-1.23 REMOVE TREE

Trees shown on the plans to be removed, shall be removed in accordance with the provisions in Section 16, "Clearing and Grubbing," of the Standard Specifications and these special provisions.

Holes resulting from the removal of existing trees shall be backfilled the same day the trees are removed. Soil from the surrounding area may be used to backfill these holes. The backfill shall be graded to conform with the adjacent existing grade.

Removed tree materials shall be disposed of outside the highway right of way in conformance to the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Trees not otherwise shown on the plans, or designated in these special provisions to be removed, that are within the limits of excavation and embankment slopes and temporary construction easements, shall be removed in accordance with the provisions in Section 16 "Clearing and Grubbing," of the Standard Specifications and these special provisions.

The contract unit price paid for remove tree, except as otherwise provided, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in remove tree, complete in place,

including removing and disposing of stumps and root system, backfilling holes, and grading, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.24 EARTHWORK

Earthwork shall conform to the provisions in Section 19, "Earthwork," of the Standard Specifications and these special provisions.

Surplus excavated material, except the type mentioned in "Hazardous Material Excavation," elsewhere in these special provisions, shall become the property of the Contractor and shall be disposed of outside the highway right of way in accordance with the provisions in Section 7-1.13 of the Standard Specifications.

Where a portion of existing surfacing is to be removed, the outline of the area to be removed shall be cut on a neat line with a power-driven saw to a minimum depth of 0.17-foot before removing the surfacing. Full compensation for cutting existing surfacing shall be considered as included in the contract price paid per cubic yard for structural excavation and no additional compensation will be allowed therefor.

A gravel blanket of thickness and width as shown on the plans shall be placed on top of a completed stone column installation. The gravel blanket shall consist of a layer of backfill material encapsulated in filter fabric. Backfill material shall be stone column backfill material as specified in "Stone Columns," of these special provisions.

Filter fabric for gravel blanket shall conform to the requirements specified for underdrains in Section 88-1.03, "Filter Fabric," of the Standard Specifications.

Slotted polyvinyl chloride (PVC) pipe shall conform to the requirements set forth in Section 68-2.02, "Materials," of the Standard Specifications.

Structure excavation, designated as (Type D), at the locations shown on the plans will be measured and paid for as structure excavation (Type D). Ground water or surface water is expected to be encountered at these locations, but seal course concrete is not shown or specified.

The quantities of gravel blanket will be measured and paid for by the cubic yard.

The contract price paid per cubic yard for gravel blanket shall include full compensation for furnishing all labor, materials, (tools, equipment, and incidentals, and for doing all the work involved in gravel blanket, complete in place, including slotted PVC, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Filter fabric will be measured by the square foot. The quantity to be paid will be the actual area covered not including additional fabric required for overlaps.

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

10-1.25 HAZARDOUS MATERIAL EXCAVATION

All hazardous material to be excavated as shown on the plans shall be transported to a Class I disposal facility permitted to accept such material.

Attention is directed to "Hazardous Material" elsewhere in these special provisions.

Attention is directed to the Materials Information Handout that summarizes the degree and type of contamination in the areas to be excavated.

Regarding excavations along the Posey Tube, the top 4 feet of material excavated within the project limits shall be considered hazardous. Material excavated from the ground surface to a depth of 4 feet shall be considered California hazardous waste and shall be disposed at a Class I disposal facility. All excavated material below a depth of 4 feet shall have unrestricted reuse.

Regarding all other areas within the project limits, the excavated material limits shall be considered non-hazardous and shall have unrestricted reuse.

Hazardous-materials shall be transferred directly from the excavation to a transport vehicle, a storage container, or a stockpile location approved by the Engineer. Stockpile locations shall be maintained in accordance with the following requirements:

The material shall be stored on undamaged 60-mil high density polyethylene or an equivalent impermeable barrier unless the stockpiling location is on a paved surface. If the location is on a paved surface the thickness of the barrier can be reduced to 20-mil high density polyethylene or its equivalent. The dimensions of the barrier shall exceed the dimensions of the stockpile at all times. Any seams in the barrier shall be sealed to prevent leakage.

At the end of each day the material shall be covered with undamaged 12-mil polyethylene or an equivalent impermeable barrier to prevent windblown dispersion and precipitation run-off and run-on. When more than one sheet is required to cover the material, the sheets shall be overlapped a minimum of 1.5 feet in a manner that prevents water from

flowing onto the material. The cover shall be secured in a manner that keeps it in place at all times. Driven anchors shall not be used except at the perimeter of the stockpile. The cover shall be inspected and maintained in accordance with the requirements of "Water Pollution Control" of these special provisions.

These stockpiling requirements apply to all temporary storage of restricted material outside of an excavation or a transport container including, but not limited to, staging of excavated material next to the excavation prior to pick up by loading equipment, accumulating material for full transport loads, and awaiting test results required by a disposal facility. The removal of stockpiles shall begin within 30 days of accumulating 200 lbs. of hazardous material. After final removal has occurred the Contractor shall be responsible for any cleanup deemed necessary by the Engineer.

MEASUREMENT AND PAYMENT.--Full compensation for loading, transporting, and disposing of hazardous material, furnishing, installing and removing physical barriers, shall be considered as included in the contract price paid per cubic yard for structure excavation (Type H) and no additional compensation will be allowed therefor.

10-1.26 STONE COLUMNS

Stone columns consisting of subsurface columns of graded aggregate shall be constructed at the Webster Street tube using approved methods in order to densify existing soils and provide required drainage of pore water in the soil. Stone columns shall conform to the details shown on the plans and the provisions of Section 19, "Earthwork," of the Standard Specifications and these special provisions.

At the Contractor's option, one of the following two methods of stone column construction may be used: Pipe Pile and Vibroflotation. The Contractor shall choose either method in constructing the stone columns, except that fixed lead systems shall be used on either method.

A. Pipe Pile Method:

The pipe pile method consists of using a bottom feed placement method that involves driving or vibrating a steel pipe with a give-away end plate to full depth as shown on the plans, filling the pipe with stone aggregate, placing the stone in the ground while redrawing the pipe, assisted by compressed air. The method shall densify the existing soil by displacement and dynamic action and shall result in stone columns in place that are clean and uncontaminated.

B. Vibroflotation Method:

The vibroflotation method consists of using a dry bottom feed method that involves using vibrating probe (vibroflot or vibroprobe) to advance a hole. The stone aggregate is placed in the hole through a delivery tube attached to the side of the vibroprobe; the stone delivery assisted by compressed air. The vibroprobe densifies and compacts the surrounding ground from the lateral force that is developed rotating eccentric weights.

Attention is directed to "Order of Work" elsewhere in these special provisions.

An "Information Handout" regarding foundation recommendations has been furnished for this contract as specified in Section 2-1.03, "Examination of Plans, Specifications, Contract, and Site of Work," of the Standard Specifications.

The spacing between stone columns shall not exceed 4.5 feet center to center for pipe pile stone columns and 8 feet center to center for vibroflotation stone columns, unless otherwise approved by the Engineer. The diameter of the pipe pile stone columns shall be at least 18 inches and that of vibroflotation stone column shall be 24 inches.

Heavy equipment, such as cranes, loaders, trucks, etc. shall not operate directly over the Tube where there is less than 10 feet of cover. Anchors or spuds used to maintain the position of barges shall not be placed directly over the tube.

The methods of stone column construction shall have been used successfully for soil densification and drainage under similar circumstances.

The Contractor shall assign a supervisor to manage all stone column work at the site. The supervisor shall be present at the site at all times when production work or testing is underway.

The Contractor shall submit to the Engineer within 10 working days after contract award date, the following qualification documentation:

1. A general description of the Testing Firm shall be provided, including the length of time in business, number and classification of employees, location of office that will perform the testing, a list of subcontractors that will be used (for CPT's, SPT's, etc.), name and resume of person that will be in charge of this project and the name and resume of the proposed Supervising Testing Technician.

2. The Supervising Surveyor's name and resume shall be submitted, including project descriptions, and a description of the equipment and survey methods intended to be used.

3. For the Marine Geophysicist and Surveyor, indicate the general description of the firm, including the following:

- a. Length of time in business.
- b. Number and classification of employees.
- c. Location of office from which the surveys will be performed.
- d. Name and resume of the person that will be in charge.
- e. Description of the equipment and survey methods that will be used.

WORKING DRAWINGS.--Prior to installing test stone columns, the Contractor shall submit working drawings for installation of stone columns and soil densification testing as shown on the plans and as specified in these special provisions. For initial review, 4 sets of drawings shall be submitted. After review, between 6 and 12 sets, as requested by the Engineer, shall be submitted to the said Office for final approval and use during construction. Within 3 weeks after final approval of the working drawings, one set of the corrected prints on 60 pound (minimum) good quality bond paper, 22" x 34" in size, prepared by the Contractor shall be furnished to the Office of Structure Design, Documents Unit.

Working drawings for stone columns shall show the State assigned designations for the contract number, bridge number, full name of the structure as shown on the contract plans, and District-County-Route-Post mile on each drawing and calculation sheet. The design firm's name, address, and phone number shall be shown on the working drawings. Each sheet shall be numbered in the lower right hand corner and shall contain a blank space in the upper right hand corner for future contract sheet numbers.

Working drawings shall include the following information:

- 1. Details, specifications and dimensions of all equipment proposed for the stone column construction.
- 2. Details of stone column construction, including schedules and sequence of the work.
- 3. Details of quality control activities to be performed, including details and specifications for SPT and CPT activities, along with proposed reporting and interpretation formats and methods.
- 4. Methods of surveying control to ascertain precise installation of stone columns.
- 5. Details and procedures for over-water stone column construction, in conformance with US Coast Guard requirements and requirements of other Authorities.
- 6. Location of initial test areas, layout and spacing and numbering of stone columns and of quality control test locations; include plan, profile and sections as required.
- 7. Location of all production stone columns and all quality control locations.
- 8. All means and methods of support or protection of existing structures and facilities, where required.
- 9. A sediment and water control plan showing the locations and sizes of any necessary ponds, tanks, or other structures needed to control, treat, and otherwise prepare for disposal, any fluids, spoils or excess soil generated by the stone column operations.

The working drawings shall be stamped and signed by an engineer who is registered as a Civil Engineer in the State of California. The Contractor shall allow the Engineer 4 weeks to review the working drawings after a complete set has been received.

The Contractor shall allow 4 weeks following the complete submittal of the qualification documentation for the Engineer's review and approval.

The Contractor shall not begin the stone column work until the Engineer has reviewed and approved the qualification documentation.

Should the Engineer fail to review the complete working drawing submittals within the times specified and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the working drawing submittal, the delay will be considered a right of way delay as specified in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

MATERIALS.--Stone column aggregate and material used for gravel blanket shall consist of clean graded aggregate, unweathered stone, and shall be free from organic material, clay balls, or other deleterious substances. Stone column backfill shall have a Durability Index of not less than 40 and shall conform to the following grading limits:

Sieve Sizes	Gradation Limits (Percent Passing by Weight)
1 1/2"	100
3/4"	60-90
No.4	10-40
No. 10	0-10
No. 20	0-5

The Contractor, at his expense, shall provide safe and suitable facilities, including necessary splitting devices for obtaining samples of backfill. Samples shall be taken from onsite stockpiles and from the conveyance system immediately prior to placement.

MARINE SURVEYS.--Prior to the over water stone column work, the Contractor's Marine Surveyor shall perform marine surveys over the Tube using, concurrently: fathometer, high resolution profiler ("pinger") and side scan sonar. The purpose of the surveys is to define the limits of the heavy weight backfill, to provide preconstruction elevations in the estuary and to check for debris or other bottom obstructions. To ensure that full coverage over the Tube is obtained survey lines shall extend a minimum distance of 30 feet beyond each end of the tube and, where applicable shall overlap at least 25 percent. As a minimum, the surveys shall be conducted at the following intervals: prior to the beginning of any over water work, once during the over water work, and after the over water work is completed. The survey records shall be submitted to the Engineer for approval.

TEST STONE COLUMNS.--The Contractor shall design and install a test section of Test Stone Columns prior to beginning production of stone columns.

Test stone columns shall be installed between Station 145+95 and 146+55 (Joint Nos. 8 and 9).

The test section shall include at least 15 adjacent stone columns installed using the method proposed for production stone column installation. The test areas may be designed and located such that the installation, if tests are successful, may be incorporated as part of the production of stone columns. In the event that the test areas do not meet requirements, additional stone columns shall be installed to improve the areas, and the method of installation or spacing of columns shall be modified to achieve acceptable results for the production stone columns. Prior to installing additional stone columns, submit revised working drawings.

The Contractor shall conduct 2 Standard Penetrometer Test (SPT) borings and 2 electric Cone Penetrometer Tests (CPTs) within the test area before stone column installation in the test area. An additional 2 SPT borings and 2 CPTs shall be conducted one week after installation. In the event that satisfactory densification will require a greater number of stone columns of the same diameter, such columns will be paid for at the contract price paid per linear foot for the size of stone column involved. All CPT's and SPT's shall be tested in the middle between stone columns. Additional post-construction borings and CPTs other than those specified above may be required by the Engineer.

The Engineer will require not more than 10 working days to review the test section submittal after a complete submittal of SPT's and/or CPT soundings results have been received. The Engineer may direct the Contractor to increase or decrease the stone column spacing based on the results of the test section. Based on the modified spacing, the Contractor shall submit revised working drawings in accordance with the requirements specified in this section.

Should the Engineer fail to review the Test Section submittal within the times specified and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the submittal, an extension of time commensurate with the delay in completion of the work thus caused will be granted as provided in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

CONSTRUCTION.--

General.--Stone columns shall be constructed at the locations and to the dimensions shown on the plans. The Contractor shall use a method of installation and verification that will guarantee the minimum dimension of the stone column. The stone columns shall penetrate the full depth of trench backfill around the tube and shall penetrate 24 inches into original soil, or to refusal of penetration, whichever is less. Criteria for confirming penetration into native soil shall be established during the test section installation and shall be confirmed with SPT and CPT tests as subsequently describe. In general, the criteria shall be based on an appreciable increase in resistance to advancement of the stone column pipe or vibro probe along with other factors deemed appropriate.

Pipe Pile Installation.—In all cases, the pipe piles shall penetrate a minimum of 2 feet into the native soils. Either impact or vibratory hammers may be used to advance the pipe. The Contractor shall be responsible for selecting a suitable size and type hammer. Predrilling and/or jetting shall not be used other than to penetrate pavement.

For pipe pile installation, preliminary acceptable refusal shall result when the stone column pipe penetrates native soil and continued advancement occurs at less than 1 foot per minute for 4,000 inch-pound (eccentric moment) vibratory hammer or 25 blows per foot for an impact hammer having a minimum rated energy of 25,000 foot-pounds and operating at full capacity.

Vibroflotation Installation.—A vibrating probe shall be advanced by the dry, bottom feed method to the depth shown on the plans, displacing the soil laterally. The hole produced by the probe shall be backfilled with stone in maximum 5 foot

lifts from the bottom of the hole up. Each lift of stone backfill shall be penetrated by the vibrating probe to at least within 2 feet of the bottom of the preceding lift. Before backfilling the next lift, the lift shall be penetrated with the vibrating probe several more times to successively shallower depths, densifying the stone and forcing it into the surrounding soil.

The vibrating probe shall be rated by the manufacturer to provide at least 180 HP and 30 tons of horizontal force. The vibrator extension tubes shall be marked in one foot increments for readily determining vibrator working increments and tip elevation. Numerical identification showing depth shall be provided at 5-foot interval on the extension tubes.

Stone columns shall be placed no closer to the existing tube than the dimensions shown on the plans. Accuracy of horizontal position of stone columns at the ground surface shall be within plus or minus 3 inches in either direction. Verticality shall be closer than 1 inch in 10 feet, measured from the ground surface. No stone column may be placed closer than 12 inches clear of the tube, including all tolerances.

In no case shall the volume of the stone column backfill be less than the volume of backfill computed for the column diameters shown on the plans, or for the actual column size installed, if different.

Drilling for stone columns may include coring through obstructions in the fill, rip raps, and heavy iron ores in the estuary.

The Contractor shall verify existing utilities prior to construction of the stone columns.

Any disturbed existing heavy weight backfill over the Tube, except at each column location, shall be restored to its original conditions.

At the Contractor's option, overburden, hard strata and pavement may be predrilled. Materials removed by predrilling shall be disposed of in accordance with Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications unless otherwise permitted by the Engineer.

The Contractor shall conduct all stone column installations in a manner such that heave and/or settlement does not exceed the limiting values set forth in Table 1 and 2 in Section "Instrumentation and Monitoring" of these special provisions and there is no loss of support of the existing Tube and utilities.

The Contractor shall use an automated instrumentation system to monitor and verify the quality of the construction of stone columns. This system shall be demonstrated to be operational to the satisfaction of the Engineer prior to beginning the installation of stone columns. The monitoring equipment shall consist of a microprocessor-base system which provides continuous, real time records of industry standard signals from sufficient electronic sensors to monitor at least the minimum parameters as follows:

1. Continuous depth of probe in feet.
2. Power consumption of probe (amperage), or other equipment-specific parameters which are a measure of penetration resistance and densification.
3. Weight and volume of processed backfill material.
4. Air pressure and flow.

Construction Sequence.-- The drainage blanket trench shall be excavated prior to construction of the stone columns. The row of stone columns closest to the tube first shall be installed first. Additional rows shall be installed in the order moving away from the tube, with the most distant columns being installed last. The stone column installation shall be performed simultaneously on both sides of the Tube to prevent unbalanced loading. Stone column installation shall not be advanced on one side of the Tube more than 50 feet beyond columns on the opposite side of the Tube.

QUALITY CONTROL.--

General.--During stone column installation, both during the test program and during production, as a minimum the following quality assurance observations shall be made:

1. Measurement and logging of the vibratory or dynamic effort required to place the stone column probe into the ground.
2. Measurement and logging of stone actually placed at every elevation and comparison with the theoretical placement requirement.
3. Verification and recording of the exact horizontal location and ground surface elevation before and after placement, and stone column tip depth and elevation.
4. Logging of all other installation parameters that may affect the quality of the work.
5. Record general comments concerning the adequacy of the overall construction process. Any continuing problems shall be brought to the attention of the Engineer.

The quality control measures used during installation shall be in accordance with a quality control plan submitted by the Contractor and approved by the Engineer.

Quality Control Testing.—During test and production stone column installations, the Contractor shall make pre- and post-construction SPT borings and CPTs to verify that the specified soil density improvement has been obtained. Borings and CPTs shall extend a minimum of 15 feet below the bottom of the Tube. Testing shall consist of a minimum number of borings and CPTs before and after stone column installation for each installation method. Table 1 in Section "Testing" of these special provisions shows the number of borings and CPTs for the density verification tests. All pre- and post-construction borings and tests shall be conducted in the middle between stone columns, or as directed by the Engineer.

Performance Criteria.—SPT borings and CPTs are the primary methods of verifying and evaluating the relative density of the soil between stone columns. They shall be used to verify the level of densification of the soil midway between columns. The pre-construction borings and CPTs shall be carried out prior to installing the stone columns. Post-construction borings and CPTs will be made one week following the stone columns are in place. If the SPT and CPT tests indicate that the performance criteria set forth herein have not been achieved, the Contractor shall, subject to review and approval of the Engineer, modify the method of installation and spacing of the stone columns to meet the criteria.

Acceptance Criteria.—The in situ sands and silts in the test sections between stone columns shall be densified to normalized Standard Penetration resistance values, $(N_1)_{60}$, and normalized cone tip resistance as shown in the following table:

Pipe Pile Stone Columns		Vibro Stone Columns	
$(N_1)_{60}$	25 blows/ft (sand)	30 blows/ft (sand)	
	15 blows/ft (silt)	25 blows/ft (silt)	
q_{nc}	125 tsf (sand)	150 tsf (sand)	
	75 tsf (silt)	100 tsf (silt)	

Record Submittals.—The Contractor shall submit records of each stone column installation within two days of the installation, including at least the following:

1. Date, start and completion time of installation.
2. Number of column, location, ground surface elevation, elevation of bottom of column as installed.
3. Equipment used, including records of operating parameters as applicable.
4. Theoretical and actual stone aggregate usage.

For test areas, the Contractor shall submit pre-installation and post-installation data, as follows:

1. Planned and actual location of all stone columns and quality control probes.
2. Surface elevation before and after (over water: bathymetry).

The Contractor shall submit results of quality control testing, whether in test area or production area, within two days of completion of the individual test, including:

1. Type of test performed, and equipment used.
2. Date, start and completion time of test.
3. Test hole number, location, ground surface elevation, bottom test elevation.
4. Complete boring log in accordance with approved format, with SPT test data, including description of soil sampled.
5. Casing penetration data, if used.
6. Complete tabular and graphic CPT record, including interpretation showing soil types.

A sample of proposed record form shall be submitted at least 30 days prior to start of the work for approval by the Engineer.

The Engineer will require not more than 2 working days to review a random cone penetrometer sounding once the results have been received. Should the Engineer fail to review a cone penetrometer sounding submittal within the time specified and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the submittal, an extension of time commensurate with the delay in completion of the work thus caused will be granted as provided in Section 8-1.09, "Right of Way Delays."

MEASUREMENT AND PAYMENT.--The length of each stone column to be paid for shall be the length as shown on the plans for the vibro stone columns. No change in quantities to be paid for will be made because of the use of the Contractor of the pipe pile stone columns.

The contract price paid per linear foot for stone column over land shall include full compensation for furnishing all labor, materials (including stone backfill), tools, equipment, and incidentals and for doing all the work involved in installing stone columns over land, complete in place, including predrilling and disposing of drilled materials as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract price paid per linear foot for stone column over water shall include full compensation for furnishing all labor, materials (including stone backfill), tools, equipment, and incidentals and for doing all the work involved in installing stone columns over water, complete in place, including test stone columns, predrilling and disposing of drilled materials, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Test stone columns incorporated as part of the production stone columns will be measured and paid for as stone column over water.

Full compensation for predrilling through existing heavy backfill and restoration of existing heavy backfill shall be considered as included in the contract price paid per linear foot for stone column over land and stone column over water and no additional compensation will be allowed therefor.

Full compensation for marine surveys shall be considered as included in the contract price paid per linear foot for stone column over water and no additional compensation will be allowed therefor.

Additional stone columns to be placed by the Contractor as directed by the Engineer outside the limits of the stone columns shown on the plans will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

10-1.27 JET GROUTING

Jet grouting shall consist of predrilling for jet grout monitors, and construction of jet grouted walls with a series of overlapping grout columns at the Posey and Webster Street Tubes, at the location shown on the plans. Jet grouting shall conform to the details shown on the plans and these special provisions.

The jet grouting process shall create a soil-grout mixture, hereinafter referred to as "soilcrete" in situ with a stabilizing grout mix delivered at high pressures through horizontal nozzle(s) at the end of the monitor inserted in a borehole. Soilcrete shall be formed by rotating and lifting the monitor at slow, smooth, constant speed, while cutting the soil with water and air, and tremie feeding an engineered grout slurry through the nozzles in the base of the monitor to achieve a consistent, continuous geometry and quality.

GENERAL--

The zones to be jet grouted shall be of a minimum of 6 feet in thickness. These zones shall be completely filled with soilcrete.

The Contractor shall demonstrate, using triple-tube coring equipment satisfactory to the Engineer, that the grout zones have been thoroughly impregnated and stabilized with jet grout, and that they form a continuous wall of soilcrete of a minimum 6 feet in thickness.

Remedial grouting shall be required if the specified grout zones are found to be inadequately grouted. Such remedial grouting shall be at the Contractor's expense.

Jet grouting work shall include the following:

1. Furnishing all equipment, utilities, materials, and supplies necessary for execution of the jet grouting operations on land and over water.
2. Conducting a test program at each of 3 selected sites. This shall include digging an inspection pit in the on land test area for inspection of the jet-grouted columns, and performing verification tests to determine overall structural integrity of the wall.
3. Drilling holes for jet grout monitors, including coring holes through asphalt pavement, through existing tremie concrete below both Tubes, through heavy iron ore in the estuary, through rip raps along the shore lines, and including any casing through overburden.
4. Providing access to the grout zones for performing the jet grouting on and over water.
5. Performing marine geophysical surveys in the over water work areas.
6. Cleaning-up and disposing of waste slurry and other contaminants resulting from the jet grouting operations.
7. Continuous core sampling of selected grouted columns.
8. Packer permeability testing of soil-grout mixture and grout column to soil interface.
9. Restoration of holes drilled through asphalt pavement, heavy iron ore, and rip raps for jet grout monitors.

The Contractor shall locate all underground utilities in the area to be jet grouted prior to commencing grouting operations and maintain a minimum clearance of 1 foot between the grout columns and utilities.

Attention is directed to the provisions in Section 7-1.11, "Preservation of Property," of the Standard Specifications.

Under no circumstances shall the water in the Oakland Estuary Channel be polluted as a result of the jet-grouting operations. Contractor shall be required to devise a method to collect all the return flow from the jet grouting operations without polluting the water.

The Geotechnical/Geological Reports are available for inspection at the Office of the Duty Senior in the Construction Branch of District 4 located at 111 Grand Avenue, Oakland, CA 94612. The Construction Duty Senior may be reached by telephone at (510) 286-5209.

The on-the-job supervision of all jet grouting on each grouting shift shall be under the direction of a grouting engineer, assisted by an experienced grouting foreman and equipment operators.

The Contractor shall provide a qualified licensed surveyor to lay out the work and verify the locations and verticality of installations on a continuous basis, on land and over water. A marine geophysicist or equivalent shall provide the necessary bottom survey during over water work.

At least 60 days before starting jet grouting work, the Contractor shall submit to the Engineer for approval, the following qualification documentation:

The experience of the jet grouting work force (jet grouting firm, supervisors, and foremen) proposed to perform the work.

The name and experience of the proposed testing laboratory who will be performing all testing required for the jet grouting work. The documentation submittal shall demonstrate that the proposed laboratory testing firm meets the required experience.

For the Marine Geophysicist and Surveyor, indicate the general description of each firm, including the following:

1. Length of time in business.
2. Number and classification of employees.
3. Location of office from which the surveys will be performed.
4. Name and resume of the person that will be in charge.
5. Description of the equipment and survey methods that will be used.

The Contractor shall allow 4 weeks following the complete submittal of the qualification documentation for the Engineer's review and approval.

The Contractor shall not begin jet grouting work until the Engineer has reviewed and approved the qualification documentation.

Should the Engineer fail to complete his review within the time allowed and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in qualification documentation review, the delay will be considered a right of way delay as specified in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

MATERIALS.--

Portland cement for the grout mix shall be Type I or Type II conforming to the provisions in Section 90-2.01, "Portland Cement," of the Standard Specifications

Water used for drilling grout holes, in grout mixing and in grout injection shall be clean, potable, and free of sewage, oil, acids, alkali, salts, suspended solids, organic materials, other deleterious materials.

Admixtures intended to be used in the grout mix in addition to portland cement and water shall be subject to the Engineer's approval.

The resulting soilcrete shall have a unit weight in excess of 100 pounds per cubic foot and unconfined compressive strengths exceeding 600 psi in 28 days for the Posey Tube, and 115 pounds per cubic foot and 1,000 psi for the Webster Street Tube.

The grouted zones, when water pressure tested, shall have permeability less than 1.0 Lugeon.

WORKING DRAWINGS.--

At least 30 days prior to the start of drilling work, the Contractor shall submit detailed working drawings and methods, descriptions, including computations, for each jet grouting site, as shown on the plans and as specified in these special provisions. For initial review, 4 sets of drawings shall be submitted. After review, between 6 and 12 sets, as requested by the Engineer, shall be submitted to the said Office for final approval and use during construction. Within 3 weeks after final approval of the working drawings, one set of the corrected prints on 20 pound (minimum) good quality bond paper, 22" x 34" in size, prepared by the Contractor shall be furnished to the Office of Structure Design, Documents Unit.

Working drawings for jet grouting shall show the State assigned designations for the contract number, bridge number, full name of the structure as shown on the contract plans, and District-County-Route-Post mile on each drawing and calculation sheet. The design firm's name, address, and phone number shall be shown on the working drawings. Each sheet shall be numbered in the lower right hand corner and shall contain a blank space in the upper right hand corner for future contract sheet numbers.

Working drawings shall contain all information required for the proper construction and testing of jet grouted columns, and shall include the following:

1. Equipment and material descriptions.
2. Arrangements of grout mixing and injection equipment, locations of boreholes, and other relevant details.
3. Methods for drilling and supporting vertical and inclined boreholes.
4. Sequence of grout column installation.
5. Grout mix design, types and purposes of all admixtures, sources of mix materials, and material data.
6. Layout and procedures for the test program to establish jet grouting parameters including air/water/grout jet pressures, flow rate and takes of the slurry, lifting and rotation rates of the rod, means to dispose of slurry waste and contaminated soils (if any), and testing to determine quality and properties of grouted materials, and sizes of the grouted columns.
7. Test pit construction details and procedures to determine the efficacy, geometry, and sizes of the grout columns.
8. Equipment and procedures for drilling and sampling pre- grouting exploratory holes.
9. Equipment and procedures for coring and testing completed grout columns.
10. Equipment and procedures for performing packer permeability in soil-grout masses.
11. Equipment and procedures for conducting a 3-D tomographic survey of in-place jet grout columns.
12. Methods and equipment for management of return flow and waste material for both land and over water operations, including collection, volume measurement, storage, transportation, and disposal.
13. Forms to be used for recording of jet grouting performance data.
14. Forms to be used for recording of packer permeability test results.
15. Schedule for marine surveys.

The working drawings shall be stamped and signed by an Engineer who is registered as a Civil Engineer in the State of California. The Contractor shall allow the Engineer 4 weeks to review the working drawings after a complete set has been received.

Should the Engineer fail to review the complete working drawing submittals within the time specified and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the working drawing submittal, the delay will be considered a right of way delay as specified in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

CONSTRUCTION.--

General.--The Contractor shall furnish all labor, materials, tools, and equipment necessary and shall do all the jet grouting work.

Jet grout operation shall be performed continuously without any interruptions at each location. Any jet grout holes lost or damaged as a result of mechanical failure of equipment, inadequacy of grout, air, or water supplies, improper drilling and injection procedures shall be backfilled with cement grout and replaced by another hole, drilled and jet-grouted by the Contractor at no additional cost to the State.

The Contractor shall use an automated real-time instrumentation system to monitor and verify the quality of the construction of jet grout columns. This system shall be demonstrated to be operational to the satisfaction of the Engineer prior to beginning of the installation of jet grout columns. The monitoring equipment shall consist of a microprocessor-base system which provides continuous, real time records of industry standard signals from sufficient electronic sensors to monitor at least the minimum parameters as follows:

1. Continuous depth of jet monitors
2. Air pressure and flow
3. Grout pressure and flow
4. Water pressure and flow
5. Rate of advancing and extracting rotating jet monitors
6. Grout volume pumped
7. Water-cement ratio of the grout
8. Power consumption of the monitors
9. Rate of rotation of the jet monitors
10. Drilling depth of the jet monitors

Jet grout injection and jet monitor rotation and extraction rates shall be sufficient to produce grout columns meeting the diameter, depth, overlap, and material property requirements specified herein.

Equipment for mixing, holding, and pumping grout shall be in a secure location and shall be operated to minimize spillage of material.

The Contractor shall use a special inclinometer probe that is to be introduced directly into the center tube of the rod stem to verify the verticality of drilling and on the column diameter.

Any post-jet grouting exploratory borehole that cannot be completed to the full depth required, or for which the percentage of core is less than 80 percent recovery because of mechanical failure or improper functioning of equipment or improper drilling or sampling procedures, shall be backfilled with cement grout and replaced by another exploratory boreholes, drilled and sampled by the Contractor at no additional cost to the State.

Any packer permeability test that cannot be completed in accordance with the procedures specified herein because of mechanical failure or improper functioning of test equipment, incomplete recording of pressure and flow data, or inadequate supply of water, shall be repeated by the Contractor at no additional cost to the State.

Marine Surveys.--Prior to the over water jet grouting work, the Contractor's Marine Surveyor shall perform marine surveys over each Tube, using concurrently: fathometer, high resolution profiler ("pinger"), and side scan sonar. The purpose of the surveys is to define the limits of the heavy weight backfill, to provide pre-construction elevations in the estuary and to check for debris or other bottom obstructions. To ensure that full coverage over each Tube is obtained survey lines shall extend a minimum distance of 30 feet beyond each end of the tube, and where applicable shall overlap at least 25 percent. As a minimum, the surveys shall be conducted at the following intervals: prior to the beginning of any over water work, once during the over water work, and after the over water work is completed. The survey record shall be submitted to the Engineer for approval.

Equipment.--All equipment used for drilling boreholes; lowering, raising, and rotating jet monitors; mixing grout; supplying pressurized grout and air-water to jet monitors; and jet monitors used to perform grouting shall have proven performance records for use in jet grouting work.

All back-up equipment, spare parts, and maintenance personnel shall be available on site to maintain a smooth jet grouting operation at all times during jet grouting operations, and to ensure uninterrupted grout injection in case of mechanical breakdown or equipment malfunction during the course of the work.

Heavy equipment, such as cranes, loaders, trucks, etc. shall not operate directly over the Tube where there is less than 10 feet of cover. Anchors or spuds used to maintain the position of barges shall not be placed directly over the tube.

Drilling equipment shall be of a type and capacity suitable for drilling required hole sizes, depths, and inclinations; and lowering, raising, and rotating jet grout monitors to the depths and at the rates required to perform the jet grout as shown on the Plans and/or as specified herein.

Jet grouting monitors shall have a capacity suitable for producing grout columns in the work site with soil types identified in the Geotechnical/Geological reports, and of the sizes and depths shown on the plans and/or as specified herein.

Jet grout monitors shall consist of a triple fluid drill pipe designed to convey the elements of the jet grouting process, water, air, and grout as necessary. The monitor shall have at least 3 injection points. The cutting action shall be by air jetting, and shall be enhanced by the addition of a water jet. The lower nozzle(s) shall inject grout under pressure into the void that has been created by means of the high pressure air/water jet injected through the upper nozzle.

Grout mixers and holding tanks, water tanks, air compressors, and pumps shall be of sufficient capacity to ensure adequate, continuous supply of grout, air, and water at required pressures to the jet grouting monitors during a full work shift to produce grout columns of the quality and dimensions necessary.

The grout plant shall include calibrated meters for measuring accurately the volume of water and any liquid admixtures used in each batch of grout, and calibrated scales for measuring accurately the weight of cement and any solid admixtures used in each batch of grout.

Drilling equipment shall be of a type and capacity suitable for drilling the required boreholes to the diameters and depths specified herein, and at the locations where jet grouting is to be performed in ground conditions equivalent to those indicated in the Geotechnical/Geological report to be expected at those locations.

Equipment used for obtaining soil samples in pre-jet grouting exploratory boreholes shall meet the requirements of ASTM Designation: D1586.

Where boulders or construction debris are encountered in pre-jet grouting exploratory boreholes, such holes shall be cored with a nominal NQ size (minimum diameter of 2 inches) triple or double core barrel meeting the requirements of ASTM Designation: D2113.

Soil-grouted masses shall be cored in post-jet grouting exploratory boreholes with a nominal PQ size (minimum diameter 3.345 inches) triple tube diamond bit core barrel meeting the requirements of ASTM Designation: D2113.

The Contractor shall survey all post jet grouting exploratory borings (on land and over water) prior to drilling. At the discretion of the Engineer, the Contractor may be required to install a casing inside a jet grout column to be selected by the Engineer for a post jet grouting exploratory boring. Such casing shall be at least 8 inches in diameter, at least 15 feet into the in place jet grout column, and extends 2 feet above the ground surface for the on-land boring or 2 feet above the bottom of

the estuary for the over-water boring. This casing will serve as a "guide" for subsequent drilling of the exploratory boring. If the Contractor fails to locate the casing over the water, the Contractor may need to send a diver to locate the casing in the water at his own expense

The Contractor shall submit current certified calibration charts for equipment instrumentation to the Engineer before starting grouting operations.

Earthwork.--Methods of excavation, trench shoring and dewatering during construction of inspection pits in the test sites shall be in accordance with the provisions of Section 19, "Earthwork," of the Standard Specifications.

Backfilling of trenches in pipe areas shall be accompanied by backfilling on both sides of the pipe simultaneously so that injurious side pressures do not occur. Backfilling around pipes shall be in accordance with Section 19-3.06, "Structure Backfill," of the Standard Specifications.

Installation Of Production Jet Grout Columns.—The Contractor shall use the same equipment, materials, and procedures as those determined in the test program to perform production jet grout columns. Any disturbed existing heavy backfill over the Tube shall be restored to its original dimensions.

The Contractor shall install overlapping jet grout columns to form a continuous 6 feet thick minimum soilcrete wall to the lines and grades as shown on the plans. The Engineer will confirm penetration of the grout column into the native soil by collecting and logging soil cuttings from the predrill hole.

Where surface or near surface obstructions do not permit construction of continuous jet grout walls using vertical columns, inclined columns shall be installed with adequate overlap, subject to approval by the Engineer.

Horizontal tolerance of placement of insertion points of grouting monitor shall not exceed plus or minus 3 inches. Verticality tolerance shall not exceed one inch per 10 feet of vertical distance.

If existing timber piles at tremie platforms obstruct drilling for jet grouting, the Engineer shall be notified. Subject to the approval of the Engineer, a new jet grout hole shall be drilled adjacent to the obstructed hole to the depth shown on the plans

Borehole drilling and jet grouting sequence shall be such that an adequate distance is left between freshly grouted columns prior to drilling and grouting an adjacent column. The Contractor shall allow an adequate period of time for grout to cure before installing the adjacent column. The distance and waiting period shall be as proposed by the Contractor and approved by the Engineer based on proposed detailed procedures, grout mix, and results of test programs. No drilling and grouting of a column adjacent to a newly poured grouted columns will be allowed.

Jet grouting shall be performed simultaneously on both sides of the Tube(s) to prevent unbalanced loading. Jet grouting work shall not be advanced on one side of the Tube more than a maximum of 5 uncured columns beyond the other side of the Tube.

The arrangement of the grouting equipment shall provide continuous circulation of grout prior to its injection. The equipment and lines shall be prevented from becoming fouled by determining the set time of the grout mix, by monitoring the time that has elapsed from the time the grout is first mixed, by maintaining grout ready to be injected in constant circulation, and by periodically flushing the grout system with water. Grout that cannot be placed within 2 hours after mixing shall be wasted at the expense of the Contractor.

During jet grouting, free return flows shall be maintained at all times. Return flow is defined as all materials, including grout, water, and soil particles, that are discharged as a result of jet grouting operations at or near the grout hole collar, or the point of entry of drill grout rods or pipes into the ground. If the Contractor observes a reduction in return flow rate, measures shall be implemented immediately to re-establish the original flow rate.

No return flow shall be discharged to and left in the estuary.

The Contractor shall conduct all jet grouting in a manner such that ground heave and/or settlement does not exceed 1/4 inch and there is no heave, settlement or loss of support of the existing Tube and utilities.

Coring or boring of the production grout holes shall be performed as specified in "Testing" of these special provisions. Upon completion of coring or boring, three packer permeability tests shall be conducted at intervals and pressures selected by the Engineer. All post-grout boreholes shall be backfilled with cement grout.

At the discretion of the Engineer, the Contractor may be required to perform 3-D tomographic surveys to determine the overall structural integrity of the in place production columns.

Daily records shall be kept for the production jet grout columns. The records shall be submitted daily to the Engineer during the jet grouting operations, and shall include the same information as in the prototype test columns in these special provisions.

If areas on the production columns are found to be not jet grouted as disclosed by the subsequent post exploratory borings and/or 3-D Tomographic surveys, the Contractor shall propose and execute remediations to the satisfaction of the Engineer. Such remediation shall be at the Contractor's expense.

Upon completion of jet grouting operations, the Contractor shall thoroughly clean the sites and dispose of all debris, water, and spilled materials.

All debris and material removed from the site shall become the property of the Contractor and shall be disposed of away from the site as provided in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Prior to final acceptance of the work, the working area shall be cleaned and restored to its original condition.

PROTOTYPE TESTS.--

Prototype Testing.--To evaluate the Contractor's proposed methods and the grout mix to produce grout columns meeting the depth, diameter, overlapping, and soilcrete property requirements shown and specified herein, the Contractor shall develop and execute a prototype test in each of the following selected sites before starting the jet grouting production work:

1. Posey Tube: Area between Station 17+39 and 17+99 (West side of Tube).
2. Posey Tube: Area between Station 23+82 and 24+42 (West side of Tube).
3. Webster Street Tube: Area between Station 153+84 and 154+44 (East side of Tube).

Each test section shall include at least 12 adjacent jet grout columns of a minimum of 6 feet in diameter. Prototype test jet grouting may be executed at a location where the jet grout wall can be part of production jet grout wall. To permit visual inspection in an open, excavated trench, the upper end of the jet grouted wall in the test areas on land may be extended up to 5 feet below the ground surface.

The test programs shall be in accordance with the procedures submitted to the Engineer for approval.

Prior to installing test columns in the estuary, a pre-construction boring shall be performed to determine the soil profile of the test area. The boring shall be drilled at least 15 feet into native soils.

At each of the 3 prototype test sites, a minimum of 12 grout columns shall be constructed to the same bottom elevation and spacing as the production columns shown on the plans. The columns shall be installed in one row or two rows to form a minimum 6-foot thick cut off jet grout wall.

Pre-construction SPT borings and CPTs shall be performed prior to construction of the test columns. The numbers of borings and CPTs required are shown in Table 2 of "Testing" of these Special Provisions.

A minimum of four post-jet grouting exploratory borings shall be cored at each test site in accordance with the requirements specified for post-production borings. The locations of the exploratory borings shall be located within the zone of overlap between adjacent jet grout columns, or as directed by the Engineer. Exact location of the exploratory borings will be determined by the Engineer. A minimum of 32 soil-grout mass core samples shall be tested in the 4 prototype tests for unconfined compressive strength; 4 samples at an age of 7 days, 5 samples at 14 days, 7 samples at 21 days, and 16 samples at 28 days.

During the coring of each post-jet grouting exploratory borings, 4 packer permeability tests shall be performed in the borehole in accordance with the requirements set forth in "Testing" of the special provisions. The test elevations and pressures will be selected by the Engineer.

At the discretion of the Engineer, the Contractor may be required to perform 3-D tomographic surveys to determine the overall structural integrity of the in place test columns.

Daily records shall be kept for the jet grouting performed for the prototype test. The records shall be submitted daily to the Engineer during the jet grouting operations, and shall include the following information:

1. Grout hole data, including hole identification number, location, date and time of drilling, and completion of grout column.
2. A log of all holes grouted. This shall include description of and extent of obstructions, cavities, soft spots, depth of ground water, depths of drilling fluid losses; and any major interruptions in drilling work.
3. Grout hole geometry (column size, length, and location inclination, and orientation) and spacing from adjacent columns.
4. Grout mix data, including mix proportions.
5. Air-water-slurry jet pressures used to construct each grout column. Record the jet nozzle diameters.
6. Grout rates and takes of each grout column, including with depth.
7. Rates of rotation and lifting of jet grout monitor for each grout column, including variations with depth.
8. Estimated amount of return flow materials produced as a result each grout column installed, and volumes of return flow materials removed from sites for disposal.
9. Other pertinent observations such as ground heave, grout escapes, change in system behavior especially when working adjacent to the tube and utility lines or other unusual behavior.
10. Other data as may be required by the Engineer.
11. This data shall be displayed in an acceptable chart-type that facilitates rapid visual evaluation of the results of the work.

Subject to the outcome of the prototype tests, the Engineer may require modifications of the jet grout column production methods or the spacing between the jet grout column centerlines to achieve satisfactory results. Depending on the extent of modifications necessary, the Contractor may be required to repeat the construction of the test sections.

For test sections on land, after jet grouting is in place and cured, the outboard face of the soilcreted zones shall be exposed for visual observation by excavating to a minimum depth of 5 feet below the top of the jet-grouted test wall. The Engineer will evaluate the extent of the jet grouted zone with the use of divers where applicable. If areas on the excavated face within the specified soilcrete zones and/or the in place jet grout columns are found to be not jet grouted, then the Contractor shall propose and execute remediations to the satisfaction of the Engineer. Such remediations shall be at the Contractor's expense.

Visual observation of the jet-grouted test wall in the estuary will not be required. However, a casing shall be installed on each of the 4 test columns selected for post-jet grouting exploratory borings. Such a casing shall be at least 8" in diameter, 15 feet into the test columns, and 2 feet above the water level. The purpose of the casing is to guide the subsequent post-jet grouting exploratory borings into the in-place jet grout column below the water. However, if the casing in the water cannot be found, the Contractor may be required to send a diver to locate the casing. Such a cost will be borne by the Contractor.

TEMPORARY DRILLING PLATFORMS.—

The Contractor shall be responsible for designing and constructing safe and adequate temporary drilling platforms over the offshore line at the Jack London Square and Alameda sites for construction of the production jet grout columns. The temporary drilling platforms shall provide the necessary rigidity and support for the imposed loads for the construction of the production jet grout columns.

The Contractor shall submit the working drawings to the Engineer for review 10 working days prior to erecting the platforms. The method of locating and guiding piles for driving shall be provided on the working drawings.

A geotechnical investigation report entitled "Port of Oakland Jack London Square Marina Reconstruction," dated June 1998 has been prepared for the Port of Oakland by Geomatrix, Oakland, CA. This report is available for review at the Caltrans District 4 Office for inspection by bidders. Locations of relevant borings and associated logs are shown on the drawings. They are provided to aid the Contractor in the design of the temporary platform at the shoreline of Jack London Square. Neither the State, the Engineer, the Port of Oakland, and the Port's Geotechnical Consultant guarantee accuracy of the data or that data are representative of conditions to be encountered in areas other than the specific boring locations. Such information is made available for general information only and shall not relieve the Contractor of the responsibility for making his own investigations,

No piles supporting the temporary platform shall be within 6 feet from the edge of the tube.

Prior to installation of any piles, the Contractor shall carry out a pre-construction survey in areas adjacent to the proposed pile driving locations to locate any cracks or other structural defects inside the tube. The tube shall be monitored and inspected during pile driving to insure that no damage occurs due to vibrations from pile driving. The Contractor shall also submit a proposed instrumentation plan to monitor the impact of the pile driving on the tube prior to constructing the temporary platforms. The plan shall include, among others to be proposed by the Contractor, seismographs in the tube to monitor accelerations in the tube during pile driving.

MEASUREMENT.--

Jet grouting will be measured and paid for by the linear foot along the length of the column wall as jet grouting (over land) and jet grouting (over water). The measurement will be made along the centerline of the grout column wall.

Jet grouting at tremie platforms will be paid for on the basis of lump sum per tube location.

PAYMENT.--

The contract price paid per linear foot for jet grouting (over land) or jet grouting (over water) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in jet grouting (over land) or jet grouting (over water), complete in place, including test programs, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for borehole and CPT drilling, field testing and laboratory testing shall be considered as included in the contract lump sum price paid for testing at the locations shown in the Engineer's Estimated and no additional compensation will be allowed therefor.

The contract lump sum price paid for jet grouting at tremie platform (Posey Tube) and jet grouting at tremie platform (Webster Tube) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in jet grouting at tremie platform areas, complete in place, including drilling through the tremie platform, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Additional jet grouting to be performed by the Contractor as directed by the Engineer outside the limits of jet grouting shown on the plans will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

10-1.28 TESTING

Testing shall consist of on-land and over-water borings, CPTs, in situ field testing, and laboratory testing. The Contractor shall provide personnel, drill rig(s), rods, bits, casing, over-water vessel(s) equipped with CPT apparatus, barges, and services required to drill borings, take samples and perform in situ testing at locations on land and in the estuary as specified in these special provisions.

On-land and over-water borings, CPTs, in situ field testing, and laboratory testing shall consist of the following:

1. Performing pre-construction and post-construction borings, CPTs and in situ field tests at selected locations prescribed in these special provisions.
2. Coring through selected jet grout columns using either (1) a thin-wall tube sampler, (2) a sectional liner sampler or (3) a split-barrel sampler with a core retainer. Samples shall be taken using a wire-line recovery of either a percussion or pushed sample.
3. Assisting in handling of soil/soilcrete core samples and all samplers and various equipment.
4. Performing packer tests using double inflatable packers capable of sealing off a minimum borehole length of 2 feet.
5. Performing a 3-D tomography imaging survey at selected jet grout columns as required by the Engineer.
6. Grouting of the boreholes, CPT and in situ test holes upon successfully reaching the designated elevation and completion of the tests.
7. Transportation of the soil and soilcrete core samples to the storage facilities identified by the Engineer.
8. Keeping daily work records as described below to the satisfaction of the Engineer.
9. Carrying out laboratory tests on soil and soilcrete core samples to be selected by the Engineer.
10. Furnishing a data report as described below within ten (10) days of completion of work. Field boring, CPT and in situ field logs are to be transmitted to the Engineer within two (2) days of completing the logs. The final logs are to be transmitted in both hard copy and electronic file.

Prior to performing any drilling work, the Contractor shall perform the following items:

1. Notify the Coast Guard and the Engineer at least 30 days before the construction in the estuary in order to alert the maritime community of activities affecting navigation.
2. Obtain an "anchor waiver" from the Coast Guard if anchors are to be used.
3. Furnish the following information to the Coast Guard and the Engineer:
 - a. Name and telephone number of project manager.
 - b. Size and location of any construction equipment in water.
 - c. Radiotelephone frequencies and call signs of any vessels involved in the drilling work.
 - d. Start and finish dates of the project.
4. Submit to the Engineer for approval, details on the proposed equipment and drilling, testing and sampling procedures, and personnel including any subcontractor(s) as described herein to be utilized in Phase II.
5. Coordinate with the Coast Guard and other local agencies, as necessary, with regards to pre- and post-construction borehole drilling and sampling, CPTs, and in situ testing.

In the event that the Engineer orders the Contractor to temporarily cease the operations on the on-land and over-water borings, CPTs, and in situ field testing work due to restrictions of regulatory agencies (e.g., Coast Guard, Corps of Engineers) and the Contractor's controlling operation will be delayed, compensation for such delay will be determined in accordance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The approximate depths of water at the estuary are as shown on the drawings. The Contractor shall determine actual water depths at each location relative to the mean sea level (MSL). The estuary serves as a navigable waterway or a shipping channel for ships. All operations shall comply with requirements of the U.S. Coast Guard, Port of Oakland, the Corps of Engineers, and other local agencies.

Tables 1 and 2 of this section present a list of pre- and post-construction borings and CPTs and in situ field tests for the jet grout and stone columns described in these special provisions. Drilling locations may be changed in the field by the Engineer to avoid on-land and estuary sensitive sites, utilities, obstructions, access problems, or for engineering design considerations. The Engineer may also add to or decrease the number, depth, and location of explorations, change the type of

explorations, or the type of sampling as the work progresses. Such changes will be based on the needs of the work and information disclosed by the various borings as they are completed.

Table 1

List of Pre-construction and Post-construction Borings and CPTs/In situ Field Tests for Production Jet Grout and Stone Columns						
Location ¹	No. of Pre-Construction Boring	No. of Pre-construction CPTs	No. of Post-Construction Soilcrete Coring or Borings	No. of Packer Tests ³	No. of 3-D Tomographic Survey ^{2,3}	No. of Post-Construction CPTs
Posey Tube						
Joint Nos. 1-2	2	2	4	16	1	NIL
Joint Nos. 2-3	2	2	2	8	NIL	NIL
Joint Nos. 3-4	2	2	2	8	1	NIL
Joint Nos. 4-5	2	2	2	8	NIL	NIL
Joint Nos. 5-6	1	2	4	16	1	NIL
Joint Nos. 6-7	1	2	2	8	NIL	NIL
Joint Nos. 7-8	2	2	2	8	1	NIL
Joint Nos. 8-9	1	2	2	8	1	NIL
Joint Nos. 9-10	2	2	2	8	1	NIL
Joint Nos. 10-11	1	1	2	6	NIL	NIL
Joint Nos. 11-12	1	1	2	6	1	NIL
Joint Nos. 12-13	2	2	3	12	1	NIL
Total	19	22	29	112	8	0
Webster Street Tube						
Joint Nos. 1-2 (East Side)	2	4	4	8	1	4
Joint Nos. 2-3	2	4	4	8	1	4
Joint Nos. 3-4 (East Side)	2	4	4	8	1	4
Joint Nos. 4-5	2	4	4	NIL	NIL	4
Joint Nos. 5-6	2	4	4	NIL	NIL	4
Joint Nos. 6-7	2	2	4	NIL	NIL	4
Joint Nos. 7-8	1	2	4	NIL	NIL	4
Joint Nos. 8-9	1	2	2	NIL	NIL	4
Joint Nos. 9-10	2	4	4	NIL	NIL	4
Joint Nos. 10-11	2	4	4	NIL	NIL	4
Joint Nos. 11-12	2	2	4	NIL	NIL	4
Joint Nos. 12-13	NIL ⁴	NIL	2	8	1	NIL
Total	20	36	44	32	4	44
GRAND TOTAL	39	58	73	144	12	44
¹ Locations are subject to change at the Engineer's discretion ² If required by the Engineer, tomographic survey will consist of at least 4 cross-hole boreholes at locations determined by the Engineer in the field. This is to be used to evaluate the structural integrity of the production jet grout columns. ³ Applicable for post-construction borings only. ⁴ NIL = None Proposed Note: Locations of borings, CPTs, in situ field tests will be determined by the Engineers in the field.						

Table 2

List of Pre-construction and Post-construction Borings and CPTs/In situ Field Tests for Test Jet Grout and Stone Columns						
Location ¹	No. of Pre-Construction Boring	No. of Pre-construction CPTs	No. of Post-Construction Soilcrete Coring or Borings	No. of Packer Tests ³	No. of 3-D Tomographic Survey ^{2,3}	No. of Post-Construction CPTs
Test Jet Grout Column Site (Posey Tube: Station 17+39 to Station 17+99)	Nil	Nil	4	8	1	Nil
Test Jet Grout Column Site (Posey Tube: Station 23+82 and 24+42)	2	2	4	8	1	Nil
Test Jet Grout Column Site (Webster Street Tube: Station 153+84 and 154+44)	Nil	Nil	4	8	1	Nil
Test Stone Column Site (Webster Street Tube: Station 145+95 and Station 146+55)	2	2	2	Nil	Nil	2
TOTAL	4	4	14	24	3	2
¹ Locations are subject to change at the Engineer's discretion ² If required by the Engineer, tomographic survey will consist of at least 4 boreholes at locations determined by the Engineer in the field. This is to be used to evaluate the structural integrity of the test jet grout columns. ³ Applicable for post-construction borings only. ⁴ NIL = None Proposed Note: Locations of borings, CPTs, in situ field tests will be determined by the Engineers in the field.						

Description of Procedures and Details.—The Contractor, prior to performing the described work, shall provide to the Engineer, a description of the intended drilling, testing and sampling procedures to be used on this project.

The Contractor shall control the quality of items and services to meet the requirements of these special provisions.

The drilling and sampling work shall be performed in accordance with ASTM D420-87, "Standard Guide for Investigating and Sampling Soil and Rock," and all applicable ASTM Standards referenced therein. If there is a conflict between the ASTM Standards and these provisions, then these provisions shall govern.

The Contractor shall employ testing firms, technicians, and equipment to perform quality control testing, including Standard Penetration Tests (SPTs), Cone Penetration Tests (CPTs), packer permeability tests, soilcrete coring, and 3-D tomographic survey using cross-borehole geophysical methods. The employees of the testing firms shall have been in the business of conducting these types of tests and in making interpretations based on the testing for at least 3 years. The supervision technician shall have a minimum of 5 years of experience in conducting these types of tests.

The Contractor, drilling foreperson and crew, and subcontractor(s) shall have documented 3 years of experience with exploration techniques including:

1. On-land and over-water soil and rock drilling and sampling,
2. Down-hole geophysical testing using tomography imaging,
3. Cone penetration testing, and
4. Packer testing.

The Contractor shall provide the Engineer with a list of personnel and drilling/vessel equipment that shall be assigned to the drilling and sampling work described herein prior to commencement of the drilling program. Equipment should be listed with respect to manufacturer, age, and condition. This list shall include the amount of experience in years and previous jobs

that each proposed driller has had with each of the techniques given above. The Contractor shall also state the availability of the equipment and personnel for the time period being considered.

The Contractor shall provide a qualified licensed surveyor to stake out and continuously verify locations of boring, CPT, and in situ field tests. A marine geophysicist or equivalent shall provide the bottom surveys during over water work.

All the boring and CPT logs and in situ field and laboratory test results shall be stamped by a Registered Geotechnical Engineer licensed in the State of California.

Over-water Drilling Vessel.—The Contractor shall provide a vessel(s) to support and perform all intended drilling, testing, and sampling operations as described in these special provisions.

The vessel(s) shall be at least suitable and equipped to provide the following:

1. Conform to all regulatory and U.S. Coast Guard requirements and be in current vessel survey.
2. Capable of setting up and staying on locations at proposed boring/CPT/field testing sites, in the range of water depths estimated in the drawings, so as to perform the intended drilling and field testing operations.
Vessel is defined as either a floating, or of a jack-up type offshore drilling vessel. If the vessel is of a floating type, it shall be kept on location with a minimum four-point mooring/anchor or spud system. If the vessel is of a jack-up type, it shall be certified/surveyed to operate in the estimated range of water depths.
3. The drilling vessel shall be capable of operating continuously in estuary states up to one (1) foot. The vessel shall be able to support the necessary onboard materials storage and drilling facilities to support a drilling operation in up to one (1) foot estuary states.
4. The drilling vessel shall be equipped to accommodate the Contractor's offshore labor, subcontractors, and up to three (3) Engineer's onboard representative(s).
5. The Contractor shall provide suitable accommodations for the Engineer including desk workspace and use of a fax machine to transmit draft boring logs.
6. The drilling vessel shall be equipped with a differential global positioning system (DGPS) or suitable equivalent, with an accuracy of ± 10 millimeters.
7. The Contractor shall be responsible for establishing all onshore control points for the vessel positioning system.
8. The Contractor shall provide transportation on and off the drilling vessel(s) for the Engineer or his representatives. The Engineer's representatives shall have the same shift changes as the Contractor's shift change.
9. The Contractor shall check the variations of tide each day to plan the drilling work.

Vessel Drill Rig.—The Contractor shall provide the drilling vessel and a drilling rig suitable to perform the described work. If the drilling vessel is a floating type, then the drilling rig shall be equipped with a motion compensator for vessel heave. The motion compensator shall ensure that nearly constant weight is maintained on the drill bit during drilling operations. The motion compensator shall provide 1 foot of compensation to the vessel relative to the fixed drill string.

Support Vessel(s).—The Contractor shall provide all support vessel(s) and equipment necessary to provide continuous assistance to the over-water drilling and field testing operations. If the support vessel(s) are to place anchors and spudding piles for the drilling vessel, then the support vessel(s) shall be equipped with an equivalent positioning system to that of the drilling vessel(s). Further, the Contractor shall provide a vessel on standby at the drilling vessel at all times for emergency evacuation of all personnel from the drilling vessel.

No anchors or spudding piles shall be keyed into soils 5 feet above the crown of the tube.

Onshore Base.—The Contractor shall provide an onshore base to support the offshore drilling operations.

Drilling, Sampling, and In Situ Testing.—The pre-construction and post-construction borings shall be carried out in general accordance with ASTM Designation D420-87. Rotary wash drilling methods shall be used and samples taken at 5-ft intervals or less for the entire depth of the boring unless otherwise directed by the Engineer. Samples shall be classified in accordance with ASTM Designation D2487 and 2488. SPT N-value shall be normalized for overburden pressure using the formula for normalizing the cone tip resistance. A minimum of four samples in each boring shall be selected by the Engineer and tested in accordance with ASTM D421 and D422 to determine the soil index properties, such as moisture content, grain size distribution, and Atterberg limits.

CPT soundings shall be carried out using a 20-ton electric cone penetrometer. CPT results shall include tables and plots of tip resistance, normalized tip resistance, sleeve friction, and friction ratio versus depth. Soil classification or behavior type should be presented using the methodology by Robertson and Campanella (1988) or comparable.

Normalized cone tip resistance will be calculated using the following formula:

$$q_{nc} = C_n * q_c$$

where:

$C_n = (1 / \gamma_v)^{0.5}$ is the overburden normalizing factor

q_{nc} = normalized cone tip resistance (tons per square foot)

q_c = cone tip resistance (tons per square foot)

γ_v = effective overburden pressure (tons per square foot)

* means "multiplied by"

The sequence of borings, the type of samples to be taken at each hole, and the in situ tests to be performed, will be directed by the Engineer. Pre-construction borings and CPTs shall be performed prior to any ground stabilization work, which are followed by post-construction borings, CPTs and in situ field testing as prescribed in these Special Provisions.

Vertical boreholes/CPTs shall be drilled straight, plumb, and be free of any obstructions. Faulty alignment of the drilled holes shall be corrected at the expense of the Contractor. Final surveying of the borehole, CPT, and in situ testing locations after drilling will be provided by the Contractor.

No boring, cone penetration test (CPT), in situ field testing shall be abandoned before reaching the specified depth as required in these special provisions without the prior approval of the Engineer. Borings and/or other tests abandoned before reaching the specified depth or test completion because of mechanical failure of drilling equipment, mismanagement, negligence on the part of the Contractor, or other such preventable causes, and rejected by the Engineer, will not be paid for. Any borings and/or tests rejected shall be supplemented by another boring/CPT/test adjacent to the first. In the event the supplementary boring/test is lost, it, in turn, shall be supplemented by another. Regardless of the reason for abandoning a boring, CPT and/or field testing, no payment will be made for a move and setup in order to drill a new boring, CPT and field testing in the same general location. The Contractor shall backfill abandoned borings, CPTs, and in situ testing holes with neat cement grout.

The sequence of exploration will be such that pre-construction borings and CPTs shall be performed prior to construction of any ground stabilization work. The proposed sequence shall be to start drilling operations on the on-land borings, then the boring in the shallowest water off the Jack London Square, proceed southward to those in deeper water, and then to the Alameda Portal Buildings.

The Contractor shall establish survey control base lines, benchmarks, and other pertinent reference points at the project site, and obtain as-drilled locations and seafloor elevations for (relative to mean sea level) all subsurface borings, CPTs, and/or other in situ field tests.

The Contractor shall furnish all labor, materials, equipment, light, water, fuel, power, and other means of construction necessary for performing and completing the work; obtain and pay for all required permits, navigation clearances, and insurance; pack, label, and ship all samples; and perform all work to the satisfaction of the Engineer. Plant and equipment shall be suitable and sufficient for performance of all work for sampling and testing. Unsatisfactory equipment shall be removed from the site of the work when so directed by the Engineer and replaced with satisfactory equipment at no additional cost to the Owner.

The Contractor shall provide a calibration program for any testing equipment used, such as, but not limited to, pressure gages, flow meters, etc.

No drilling fluid/mud, grout, soil cuttings, or engine oil leakage will be allowed to be discharged into the estuary during drilling operations. The Contractor shall find means of disposing of these materials in areas approved by the Engineer.

Depths and Frequency of Borings/CPTs.—The estimated depths of borings and CPTs will be such that they are at least 15 feet below the native soils or as directed by the Engineer. The frequency of the borings and CPTs is shown on Table 1.

Logs of Test Borings.—Logs of test borings shall show the State assigned designations for the contract number, bridge number, full name of the structure as shown on the contract plans, and District-County-Route-Post mile on each sheet. The test boring/geotechnical subcontractor name, address, and phone number shall be shown on the working drawings. Each sheet shall be numbered in the lower right hand corner and shall contain a blank space in the upper right hand corner for future contract sheet numbers. The following shall be shown on the logs of test borings:

1. Stationing and offset of boring.
2. Northing and easting coordinates
3. Reference elevation and datum.

4. Boring start and completion date.
5. Geotechnical notes and miscellaneous explanations.
6. Drill bit and sampler types and diameters.
7. Percent of core recovery and RQD.
8. Sample numbers.
9. SPT data.
10. Depth increments of borings.
11. Graphic log.
12. Soil classifications and descriptions.
13. Soilcrete classification and descriptions.
14. Log symbol legend.
15. Signature and seal of the Geologist or Civil Engineer.

The test boring report shall include the following:

1. Summary of drilling methods, drilling equipment, drill platforms, and any drilling difficulties encountered.
2. Location map of the surveyed position of the test borings.
3. Borehole surveying notes.
4. Photographs of soilcrete cores.
5. Copies of original daily drilling notes.

Boring/CPT Log Submittal.—The Contractor shall submit a draft field log to the Engineer within 2 working days after the boring is completed.

Mud Drilling.—If required, a mud tub and re-circulation system shall be furnished by the Contractor for use during drilling. No discharge of drilling fluids into the estuary beyond that allowed by government agencies having jurisdiction at the project site will be permitted. Cuttings shall be properly disposed of by the Contractor as determined by the obtained permits, regulatory agencies, etc.

Drilling Equipment.—The drilling rig and equipment shall be clean of all contaminating fluids, such as obvious leaks from hydraulic lines, couplings, and fittings in order to avoid contamination of the boring and work area. The drilling machines shall be hydraulic-feed, rotary drill rigs in good working condition, and capable of securing satisfactorily samples and cores of the required diameter at the maximum depth. Supplies for drilling shall include all casings, drill rods, bits, samplers, core barrels, pipe, pumps, water, tools, sample jars, and any other equipment required to perform the required work.

Rotary Drilling with Casing.—Rotary wash boring with casing will be required for all over-water borings to advance the borings. The casing shall be advanced in the soil by a series of operations which consist of driving the casing, cleaning out the hole to the bottom of the casing by approved methods, and repeating this sequence until the required depth is reached.

The casing shall be extra heavy pipe and the minimum nominal inside diameter shall be adequate for the required sampling equipment. It shall be sunk through earth, water and other materials, including boulders and other obstructions to the required depth.

Washing ahead of the casing to facilitate driving will not be permitted unless approved by the Engineer and, where so approved, a record shall be kept of the elevations between which the water was used in driving. The use of water for cleaning out the casing between the samples will generally be allowed. In no event shall the material below the bottom of the casing where a sample is to be taken be disturbed by the cleaning process. The inside wall of the casing shall be kept clean of drilled materials.

The drill casing shall be removed upon completion of the work and shall remain the property of the Contractor.

Soilcrete Coring.—The Contractor shall perform coring of the selected test and production jet grout columns to evaluate structural integrity and continuity of the columns. The frequency of the coring is as shown on Tables 1 and 2. The Contractor shall take continuous soilcrete core samples by means of a diamond drill as described in ASTM D 2113-83 "Standard Practice for Diamond Core Drilling for Site Investigation" at and to a depth 10 feet below the native soil or as directed by the Engineer. Exact locations of the coreholes will be determined by the Engineer.

The locations of the cored holes will be located within the zone of overlap between adjacent jet grout columns. Exact locations of the coreholes will be determined by the Engineer. The depths of the cored holes shall be those of the completed jet grout columns.

All drill rods shall be flush coupled and the appropriate size to accommodate the other drill tools.

Drilling in soilcrete shall be done with a triple-tube swivel type core barrel with a nominal PQ size (minimum diameter 3.345 inches). Wireline drilling shall be utilized in borings. Wireline core size less than 3.345 inches in diameter will not be permitted.

All soilcrete core runs shall be either 5 or 10 feet in length or as otherwise directed by the Engineer. The core barrels shall be either 5 or 10 feet in length.

The Contractor shall exercise due care to obtain satisfactory cores with at least 85 percent core recovery. In cases where it is impossible to obtain the required percentage of recovery, the Contractor shall maintain a maximum percentage by regulating the speed and rate of drill feed, amount of drill water, and remove the cores more frequently as directed. If it proves to be impossible to obtain the necessary recovery through no fault of the Contractor, after using special care, methods, and equipment, the Engineer may relax the percentage requirements to fit the field conditions. Cores of the soilcrete shall be removed, preserved, marked, and photographed. Core bits shall be replaced at the Contractor's cost, when required by the Engineer.

Before coring commences, the Contractor shall clearly mark the drill rods in 1 foot increments starting from a fixed point on the drill rig or other convenient point. As drilling proceeds, the time to core each 1 foot increment for the entire core run shall be monitored, made part of the driller's records, and made known at the time of drilling to the Engineer or his representative.

The Engineer will direct the Contractor at which depth to start coring, based upon drilling response, sample recovery, etc.

During drilling, the Contractor shall notify the Engineer of any unusual or unanticipated conditions, such as, loss of drill water, or sudden drops in the drill rods.

After completion of the soilcrete coring and packer tests, the boreholes in the grouted columns shall be backfilled with cement grout unless they are selected for a 3-D tomographic imaging. The boreholes shall be filled with grout from the bottom up by means of a tremie pipe.

Core sampling shall be interrupted during advancement of each boring as directed by the Engineer to permit the performance of packer permeability testing according to the procedures specified herein. Alternatively, packer tests may be performed after completion of coring.

In the prototype test areas, coring of test jet grout columns shall start at 7 days, 14 days, 21 days, and 28 days after the columns are in place. At least 8 cored soilcrete samples shall be selected from each cored column by the Engineer for unit weight and unconfined compressive strength testing. The unconfined compressive strengths of the samples shall typically be tested in the following table or as directed by the Engineer:

Table 3

Cored Column	7-day Strength	14-day Strength	21-day Strength	28-day Strength
@7 days	4	1	1	2
@14 days	Nil	4	2	2
@21 days	Nil	Nil	4	4
@28 days	Nil	Nil	Nil	8

Coring of production jet grout columns to be selected by the Engineer shall be made 14 and 28 days after the jet grout has been in place. At least 4 cored soilcrete samples shall be selected from each column by the Engineer for unit weight and unconfined compressive strength testing. The unconfined compressive strengths of the samples shall be as follows:

Table 4

Cored Column	14-day Strength	28-day Strength
@14 days	2	2
@28 days	Nil	4

Cube samples shall be prepared from the grout mix two times during each working day. Samples shall be taken from production grout batches. A minimum of two grout cubes shall be cast each time sampling is performed. The unconfined compressive strength of one of these samples shall be tested at 14 days; the strength of the other sample shall be tested at 28 days.

The Contractor shall prepare a log summarizing the results of each post-jet grouting exploratory boring within 2 days of completion of the coring. The logs of test borings shall conform to the Caltrans requirements. The description of each core shall include lithology, fractures and breaks, variation in soilcrete consistency, RQD and recovery length, and other information required by the Engineer relevant to the soilcrete quality. During logging, any fractures which have been

induced by handling after the core was removed from the core barrel shall be marked using an indelible marker with a line which crosses the induced fracture on both pieces of core.

Packer Testing.—During the coring of the test and production jet grout columns, 4 packer permeability tests shall be performed in each of the boreholes in accordance with the requirements herein. All packer permeability tests shall be made 14 and 28 days after the jet grout has been in place. They shall be conducted in the presence of the Engineer who will select test elevations and pressures.

Permeability tests using packers shall be performed in borings as required by the Engineer in accordance with procedures outlined in U.S. Bureau of Reclamation Earth Manual, Des. E-18. The Contractor shall furnish all necessary tools, equipment, water, and personnel to properly perform the number of packer tests at the depth and pressure required by the Engineer. The quantity of water available at the test site shall be sufficient to conduct each packer test without interruption. Generally, test pressures will be done at a pressure gradient of one pound per square inch per foot of depth from the ground surface.

Packer testing equipment shall include: even-flow pumps capable of delivering 30 gallons per minute when operating at a discharge pressure of 100 pounds per square inch at the collar of the boring; a minimum two valve hookup for controlling water; an accurate flow meter similar or equal to a Trident 1-1/2 inch meter measuring in gallons or tenths of cubic feet with a clock dial and setback device; pressure gages ranging from 0 to 150 pounds per square inch calibrated in intervals of not greater than 5 pounds per square inch; and all other accessory tools and equipment necessary for maintaining uninterrupted tests for each interval tested. The Contractor shall provide pneumatic, inflatable packers capable of isolating for testing any zone within any of the borings. The rubber expansion elements on the packers shall not be less than eleven inches in length. Mechanical packers are not acceptable. The Contractor shall provide the Engineer with a sketch illustrating the proposed setup. The pressure gage shall be downline of the flow meter. No flexible piping will be permitted downline of either the pressure gage or flow meter.

The boring shall be surged and washed with clear water to remove cuttings from the pores and joints of the soilcrete prior to each test.

It is anticipated that the permeability testing will be performed using the double-packer method. The double packer assembly shall be used which consists of two pneumatic inflatable packers capable of sealing the diameter of borehole produced by the soil-grouted mass coring equipment (minimum PQ-size). Mechanical type packers shall not be used.

The Contractor shall conduct the packer testing at the end of each post-construction boring or at the direction of the Engineer in the borings selected for testing. The Contractor shall maintain the appropriate equipment at the work site for either test method.

Packer test equipment, including hoses, drill rods, water swivel, and packers, shall be tested to determine head loss as directed by the Engineer. The hoses, water meter, drill rods, and packers shall be assembled, in various lengths, horizontally on the ground. Water shall be injected at various flows and the gage pressures in the assembly shall be recorded, for various lengths of drill rods.

The injection pressures to be used shall be approved by the Engineer prior to the start of the test. Water injection shall be performed for a minimum of 10 minutes. Tests shall be run for longer periods up to 30 minutes as determined by the Engineer if flow rates are found to be fluctuating.

The Contractor shall submit data sheets documenting the results of each packer permeability test to the Engineer within two (2) working days after the test is completed.

Cone Penetrometer Testing.—Cone Penetrometer soundings shall be performed in accordance with ASTM Designation: D3441-86. The Contractor shall submit to the Engineer for approval a method to perform the cone penetrometer soundings over water.

The Contractor shall submit data sheets documenting the results of each CPT to the Engineer within two (2) working days after the test is completed.

Cross-borehole 3-Dimensional Tomographic Survey.—At the discretion of the Engineer, the Contractor may have to perform cross-borehole tomographic surveys to evaluate the effectiveness of the jet grouting program prior to and after installation of jet grout columns. Boreholes will be drilled in an area to be specified by the Engineer to the full depth of the jet grout columns. The surveys will allow a three-dimensional tomogram to be produced on each jet grout column, and the results in the form of three-dimensional velocity contour images will be tabulated to characterize the effectiveness of grouting and to determine the overall structural integrity of the production jet grout columns installed. CSL Tomo 3D™, a non-destructive test tomographic imaging system developed by NSA Engineering of Golden, Colorado, may be used. The survey will consist of at least 6 boreholes to be sunk near the proposed jet grout columns. Tomographic images are produced before and after construction of the jet grout columns.

The 3-D tomographic survey will consist of at least 4 cross-hole boreholes to be drilled through a jet grout column, the location of which is to be selected by the Engineer in the field. Upon completion of the survey, the boreholes shall be backfilled with cement grout using a tremie method.

To aid in drilling boreholes in the jet grout columns over water, a “reference” or “guide” casing of diameter not less than 6 inches shall be installed to a depth of 15 feet into the jet grout column and extends 3 feet above the water level. After drilling the boreholes, a 4 inches PVC casing shall be installed at the boreholes to guide tomographic equipment.

The Contractor shall submit survey data sheets documenting the results of each tomographic imaging survey to the Engineer within two (2) working days after the survey is completed.

Soilcrete Core Samples: Soilcrete core handling and storage shall be performed in accordance with ASTM D5079-90, "Standard Practice for Preserving and Transporting Rock Core Samples". Samples shall be placed in core boxes. Fragments that are small shall be wrapped in plastic bags. The pieces of core shall be placed in the order in which they were taken, in cardboard core boxes furnished by the Contractor.

Each row of cores shall be separated by a strip of material not less than 3/8 inch thick. In the box, the cores from each run shall be separated from those of the next run by a 1-inch-thick block secured in place. On each of these blocks, proper depth shall be recorded with a black waterproof marker. The end blocks will show the depth interval of coring.

All boxes shall be labeled on the cover, giving project name, date, boring number, and interval of coring. Duplicate labels shall be placed on the end of the box and inside the cover. The core boxes and cores shall become the property of the State.

Soil Samples: Soil sample preservation and transportation shall be performed in accordance with ASTM D 4220-89, "Practices for Preserving and Transporting Soil Samples". Ring samples shall be left in the rings. The container for preserving soil samples shall be 16 ounce wide-mouth, airtight, clear glass jars with Teflon-faced screw-tops. The sample storage jars shall be furnished by the Contractor.

The specimens shall be placed in the jars as soon as taken. If there is a change in soil type in the sampler, a different jar shall be used for each soil and so labeled. The jars shall be tightly capped and shall be suitably boxed in numerical sequence, marked and identified with legible labels, as directed by the Engineer. The labels on the body of the jars shall show the date, boring number, sample number, depth at which sample was taken, and identification of the material. Each jar lid shall be marked to show the boring number, sample number, and sample depth. Additionally, each box of samples shall be clearly and permanently marked on the top and all four sides with the project name, date, boring number, sample numbers, and depth contained therein.

Storage of Samples: At the completion of each boring, samples shall be delivered and stored at a storage location designated by the Engineer.

Laboratory Testing.—The Contractor shall be responsible for sample preservation, storage, and transport to the testing laboratory. All samples for testing shall be selected by the Engineer. Laboratory tests will consist of moisture content, unit weight, grain size distribution, permeability, Specific Gravity, Atterberg Limits test determinations and unconfined compressive strength tests.

Grout cube sample shall be tested in accordance with ASTM Designation: C109.

Soilcrete core samples shall be tested in accordance with ASTM Designation: C42.

The Contractor shall submit to the Engineer laboratory reports documenting the following grout columns:

1. Unconfined compressive strength measurements on grout mix cube samples.
2. Unconfined compressive strength measurements on soilcrete soil samples taken from the grouted columns.
3. Unit weight measurements on soilcrete core samples.

Should the testing results not meet the required design requirements, the Contractor shall propose and execute remediations to the satisfaction of the Engineer. Such remediation shall be at the Contractor's expense.

Abandoned Holes and Obstructions.—Should the casing or apparatus be removed from a boring, or should the boring be abandoned without the permission of the Engineer, or should a boring be started for any reason and not carried to the depth required by the Engineer, or should the Contractor fail to keep complete records or furnish the Engineer required samples and cores, the Contractor shall make an additional boring at a location selected by the Engineer, and no payment shall be made for either the abandoned boring or any samples or cores obtained therein.

Should the Contractor encounter an obstruction before reaching the required depth, the Contractor shall move a few feet to the side, to a location selected by the Engineer, and redrill the boring.

Abandonment of borings shall be documented and the information provided to the Engineer. Documentation shall include the depth and number of the boring, the date the boring was completed, and other pertinent data.

Backfilling of the Boreholes and Test Holes.—The estuary bottom which has been disturbed, either at or in the vicinity of a borehole or a test hole, shall be restored to its original condition as soon as is practicable, following completion of boring and in situ field test operations at that borehole.

All of the borings or test holes shall be grouted with neat cement grout tremied with a pipe into the borehole from the bottom to the top. The proportions of the grout mix shall be proposed by the Contractor and submitted to the Engineer for approval.

Daily Field Inspection Records.—The Contractor's inspector shall maintain Daily Field Inspection Records. The Records shall include:

- a. job identification
- b. personnel information (names and hours worked)
- c. equipment usage information
- d. delays and downtimes (time occurred, length and reason(s))
- e. contacts made
- f. work progress
- g. pertinent technical data, etc.

The Contractor shall submit for approval the proposed Daily Field Inspection Record form prior to commencing work on the project site.

Contractor's Daily Report.—A Contractor Daily Report shall be completed by the Contractor's drill foreperson upon completion of each day's work. The drill foreperson for each drill rig will come to an agreement with the Engineer's inspector for that shift on the quantities of work performed each shift. A quantity sheet shall be supplied by the Engineer and will be signed by the Contractor and engineer's representatives upon the completion of each days work. The Contractor Daily Report shall be the basis of payment for the quantities listed in Exhibit III.

Data Report.—The Contractor shall furnish a draft and final Data Report which includes as a minimum:

- a. Coordinates of each boring location (including any abandoned locations, if any)
- b. Detailed location map of boring locations
- c. Elevations and depths of each boring, packer test, CPT, and tomographic survey.
- d. Final boring, coring, packer test, cone penetration and 3-D tomographic survey logs and their respective electronic files
- e. Summary of daily field activities
- f. Laboratory test reports
- g. Description of equipment and techniques used
- h. The final reports shall incorporate comments from the Engineer's review of the draft data report.

Each field report shall be submitted within 2 working days after the test is completed. Final report shall be submitted within 10 working days.

PAYMENT.—

The contract lump sum price paid for testing shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in on-land and over-water borings, CPTs, in situ field testing, and laboratory testing, complete in place, including providing personnel, drill rigs, rods, bits, casing, over-water vessels equipped with CPT apparatus, barges, and services required to drill borings, take samples, and perform in situ testing, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Should the Engineer order the Contractor to perform tomographic surveys on the jet grout columns, the tomographic surveys will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

10-1.29 AGGREGATE BASE

Aggregate base shall be Class 3 and shall conform to the provisions in Section 26, "Aggregate Bases," of the Standard Specifications and these special provisions.

The spreading and compacting requirements of the Standard Specifications will not apply.

Aggregate base shall be produced from commercial quality aggregates consisting of broken stone; crushed gravel; natural, clean, rough-surfaced gravel and sand; reclaimed asphalt concrete, portland cement concrete, lean concrete base,

cement treated base, or glass; or a combination thereof. Aggregate base incorporating reclaimed glass shall not be placed at locations where surfacing will not be placed over the aggregate base.

The grading of the material shall conform to the following grading:

Sieve Sizes	Percentage Passing 3/4" Maximum	
	Operating Range	Contract Compliance
2"	-----	-----
1 1/2"	-----	-----
1"	100	100
3/4"	90 - 100	87 - 100
No. 4	35 - 60	30 - 65
No. 30	10 - 30	5 - 35
No. 200	2 - 9	0 - 12

Spreading and compacting shall be performed by methods that will produce a uniform base, firmly compacted, and free from pockets of coarse or fine material.

10-1.30 ASPHALT CONCRETE

Asphalt concrete shall be Type A and shall conform to the provisions in Section 39, "Asphalt Concrete," of the Standard Specifications and these special provisions.

The last sentence of the first paragraph in Section 39-2.01, "Asphalts," of the Standard Specifications and the fifth, sixth, seventh and eighth paragraphs of Section 39-3.03, "Proportioning," of the Standard Specifications shall not apply.

The second paragraph in Section 39-3.05, "Asphalt Concrete and Asphalt Concrete Base Storage," of the Standard Specifications is amended to read:

Storage silos shall be equipped with a surge-batcher sized to hold a minimum of 4,000 pounds of material. A surge-batcher consists of equipment placed at the top of the storage silo which catches the continuous delivery of the completed mix and changes it to individual batch delivery and prevents the segregation of product ingredients as the completed mix is placed into storage. The surge-batcher shall be center loading and shall be thermally insulated or heated or thermally insulated and heated to prevent material buildup. Rotary chutes shall not be used as surge-batchers.

The surge-batcher shall be independent and distinct from conveyors or chutes used to collect or direct the completed mixture being discharged into storage silos and shall be the last device to handle the material before it enters the silo. Multiple storage silos shall be served by an individual surge-batcher for each silo. Material handling shall be free of oblique movement between the highest elevation (conveyor outfall) and subsequent placement in the silo. Discharge gates on surge-batchers shall be automatic in operation and shall discharge only after a minimum of 4,000 pounds of material has been collected and shall close before the last collected material leaves the device. Discharge gate design shall prevent the deflection of material during the opening and closing operation.

The amount of asphalt binder to be mixed with the aggregate for Type A asphalt concrete will be determined by the Engineer in accordance with California Test 367 using the samples of aggregates furnished by the Contractor in conformance with Section 39-3.03, "Proportioning," of the Standard Specifications.

The amount of asphalt binder used in asphalt concrete placed in dikes shall be increased one percent by weight of the aggregate over the amount of asphalt binder determined for use in asphalt concrete placed on the traveled way.

The aggregate for Type A asphalt concrete shall conform to the 1/2" maximum, coarse grading specified in Section 39-2.02, "Aggregate," of the Standard Specifications.

Aggregate for asphalt concrete dikes shall conform to the 3/8 inch maximum grading as specified in Section 39-2.02, "Aggregate," of the Standard Specifications.

If the finished surface of the asphalt concrete on the local street traffic lanes and parking lots does not meet the specified surface tolerances, it shall be brought within tolerance by either (1) abrasive grinding (with fog seal coat on the areas which have been ground), (2) removal and replacement, or (3) placing an overlay of asphalt concrete. The method will be selected by the Engineer. The corrective work shall be at the Contractor's expense.

If abrasive grinding is used to bring the finished surface to specified surface tolerances, additional grinding shall be performed as necessary to extend the area ground in each lateral direction so that the lateral limits of grinding are at a constant offset from, and parallel to the nearest lane line or pavement edge, and in each longitudinal direction so that the

grinding begins and ends at lines normal to the pavement centerline, within any ground area. All ground areas shall be neat rectangular areas of uniform surface appearance. Abrasive grinding shall conform to the requirements in the first paragraph and the last 4 paragraphs in Section 42-2.02, "Construction," of the Standard Specifications.

The area to which paint binder has been applied shall be closed to public traffic. Care shall be taken to avoid tracking binder material onto existing pavement surfaces beyond the limits of construction.

A drop-off of more than 0.15-foot will not be allowed at any time between adjacent lanes open to public traffic.

10-1.31 SLOPE PROTECTION

Slope protection shall conform to the provisions in Section 72, "Slope Protection," of the Standard Specifications and these special provisions.

Rock slope protection fabric shall be woven or nonwoven type fabric Type B.

The elongation at break for nonwoven type rock slope protection fabric shall be 50 percent, minimum, instead of 50 percent, maximum.

10-1.32 MISCELLANEOUS CONCRETE CONSTRUCTION

Curbs, sidewalks, driveways, curb ramps, island paving and pads shall conform to the provisions in Section 73, "Concrete Curbs and Sidewalks," of the Standard Specifications and these special provisions.

Curb ramp detectable warning surfacing shall conform to the details shown on the plans and shall not be constructed or installed on curb ramps with a slope that exceeds 6.67 percent. The finished surfaces of the detectable warning surface shall be free from blemishes.

Curb ramp detectable warning surface shall consist of raised truncated domes constructed or installed on curb ramps. The detectable warning surface, at the option of the Contractor, shall be either cast or stamped into the surface of the curb ramp, or shall be a prefabricated surface installed on the curb ramp. Prefabricated detectable warning surface shall be either Pathfinder Tactile Tiles, as manufactured by Carsonite International Corporation; or Detectable Warning Mats manufactured by Detectable Warning Systems or equal.

Prior to constructing curb ramps with cast-in-place or stamped detectable warning surface, the Contractor shall construct a test panel on the job site of a size not less than 2 feet by 2 feet. The test panel shall be constructed, finished and cured with the same materials, tools, equipment and methods to be used in constructing the proposed permanent work. Additional test panels shall be constructed as necessary until a panel is produced which demonstrates, to the satisfaction of the Engineer, the ability of the selected procedure to produce a detectable warning surface that meets all of the specified requirements.

Full compensation for constructing or installing miscellaneous construction detectable warning surface shall be considered as included in the contract price paid per cubic yard for minor concrete (curb ramp) and no separate payment will be made therefor.

10-1.33 CHAIN LINK FENCE

Chain link fence shall be Type CL-6 and shall conform to the provisions in Section 80, "Fences," of the Standard Specifications.

10-1.34 WOOD FENCE

The wood fence shall be redwood and shall conform to the provisions in Section 80 of the Standard Specifications, the details shown on the plans and these special provisions.

Redwood posts shall be heart structural grade conforming to the requirements in Section 57-2, "Structural Timber", of the Standard Specifications.

Redwood boards shall conform to the grading rules of the California Redwood Association for sap common redwood or better.

Portland cement concrete for post footing shall be produced from commercial quality aggregates and cement and shall contain not less than 4 sacks of cement per cubic yard.

Nails shall be commercially available galvanized by the electro process.

10-1.35 THERMOPLASTIC TRAFFIC STRIPES AND PAVEMENT MARKINGS

Thermoplastic traffic stripes (traffic lines) and pavement markings shall conform to the provisions in Sections 84-1, "General," and 84-2, "Thermoplastic Traffic Stripes and Pavement Markings," of the Standard Specifications and these special provisions.

Thermoplastic material shall conform to the requirements of State Specification No. 8010-19A.

At the option of the Contractor, permanent striping tape as specified in "Prequalified and Tested Signing and Delineation Materials" elsewhere in these special provisions, may be placed instead of the thermoplastic traffic stripes and pavement markings specified herein. Pavement tape, if used, shall be installed in accordance with the manufacturer's specifications. If

pavement tape is placed instead of thermoplastic traffic stripes and pavement markings, the pavement tape will be measured and paid for as thermoplastic traffic stripe and thermoplastic pavement marking.

10-1.36 PAINT TRAFFIC STRIPES AND PAVEMENT MARKINGS

Painting traffic stripes (traffic lines) and pavement markings shall conform to the provisions in Sections 84-1, "General," and 84-3, "Painted Traffic Stripes and Pavement Markings," of the Standard Specifications and these special provisions.

The subparagraphs of the first paragraph in Section 84-3.02, "Materials," of the Standard Specifications are amended to read:

	State Specification No.
Solvent Borne, Acrylic Copolymer Traffic Line - White, Yellow and Black	PT-170-A
Water Borne, Traffic Line - White, Yellow and Black	8010-20A

The State Specification No. for glass beads in Section 84-3.02, "Materials," of the Standard Specifications is amended to read "8010-004 (Type II)."

At the option of the Contractor, permanent striping tape as specified in "Prequalified and Tested Signing and Delineation Materials" elsewhere in these special provisions, may be placed instead of the painted traffic stripes and pavement markings specified herein. Pavement tape, if used, shall be installed in accordance with the manufacturer's specifications. If pavement tape is placed instead of painted traffic stripes and pavement markings, the pavement tape will be measured and paid for as paint traffic stripe and paint pavement marking of the number of coats designated in the Engineer's Estimate.

SECTION 10-2. (BLANK)

SECTION 10-3. LIGHTING AND ELECTRICAL SYSTEMS

10-3.01 DESCRIPTION

Removing and reinstalling existing lighting, automatic parking gate equipment, lighting and electrical receptacles shall conform to the provisions in Section 86, "Signals, Lighting and Electrical Systems," of the Standard Specifications and these special provisions.

10-3.02 COST BREAK-DOWN

The Contractor shall furnish to the Engineer a cost break-down for each contract lump sum item of work described in this Section 10-3.

The Contractor shall determine the quantities required to complete the work shown on the plans. The quantities and values shall be included in the cost break-down submitted to the Engineer for approval. The Contractor shall be responsible for the accuracy of the quantities and values used in the cost break-down submitted for approval.

No adjustment in compensation will be made in the contract lump sum prices paid for the various electrical work items due to any differences between the quantities shown in the cost break-down furnished by the Contractor and the quantities required to complete the work as shown on the plans and as specified in these special provisions.

The sum of the amounts for the units of work listed in the cost break-down for electrical work shall be equal to the contract lump sum price bid for the work. Overhead and profit shall be included in each individual unit listed in the cost break-down, however, costs for traffic control system shall not be included. Bond premium, temporary construction facilities, plant and other items will not be paid for under the various electrical work items and shall be included in the mobilization bid item for the entire project.

The cost break-down shall be submitted to the Engineer for approval within 15 days after the contract has been approved. The cost break-down shall be approved, in writing, by the Engineer before any partial payment for the items of electrical work will be made.

At the Engineer's discretion the approved cost break-down may be used to determine partial payments during the progress of the work and as the basis of calculating the adjustment in compensation for the item or items of electrical work due to changes ordered by the Engineer. When an ordered change increases or decreases the quantities of an approved cost break-down, the adjustment in compensation may be determined at the Engineer's discretion in the same manner specified for increases and decreases in the quantity of a contract item of work in accordance with Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications.

The cost breakdown shall, as a minimum, include the following items:

foundations - each type
standards and poles - list by each type
conduit - list by each size and installation method
pull boxes - each type
conductors - each size and type
luminaires - each type

10-3.03 MAINTAINING EXISTING AND TEMPORARY ELECTRICAL SYSTEMS

These provisions will not relieve the Contractor in any manner of the Contractor's responsibilities as provided in Section 7-1.16, "Contractor's Responsibility for the Work and Materials," of the Standard Specifications and "Indemnification and Insurance," of these special provisions.

At least three working days prior to performing any work on the City street light system, the Contractor shall notify the Engineer and the Alameda Power and Telecom, Line Superintendent, telephone (510) 748-3957.

At least three working days prior to performing any work on the Port of Oakland parking lot lighting, promenade lighting, automatic parking gate equipment and electrical receptacles, the Contractor shall notify the Engineer and the Port of Oakland, telephone (510) 627-1489.

10-3.04 EXCAVATING AND BACKFILLING

The excavations shall be backfilled in conformance with the provisions in Section 19-3, "Structure Excavation and Backfill." Backfill placed in conduit trenches to be outside of slope lines and not under pavement shall be compacted to a relative compaction of not less than 90 percent. Backfill on slopes and in areas where pavement is to be constructed shall be compacted to a relative compaction of not less than 95 percent.

10-3.05 FOUNDATIONS

Portland cement concrete shall conform to Section 90-10, "Minor Concrete," except concrete for reinforced pile foundations shall contain not less than 1007 pounds of cement per cubic yard. Placement of concrete shall conform to the provisions of Section 51, "Concrete Structures.

Except when located on structures, foundations for posts, standards and pedestals shall be placed "in the solid" and monolithic except for the top 2 inches which shall be placed after the post, standard or pedestal is in proper position.

After each post, standard and pedestal on structures is in proper position, mortar shall be placed under the base plate as shown on the plans. The exposed portions shall be formed to present a neat appearance. Mortar shall consist of one part by volume of portland cement and 3 parts of clean sand, shall contain only sufficient moisture to permit packing and shall be cured by keeping it damp for 3 days.

Anchor bars or studs and nuts, except for Type 30 and Type 31 lighting standards, shall conform to ASTM Designation: A 307. Headed anchor bolts for foundations shall conform to the specifications of ASTM Designation: A 307, Grade B with S1 supplementary requirements. At the option of the Contractor, nonheaded anchor bolts for foundations shall conform either to the specifications of ASTM Designation: A 307, Grade C or to the provisions in AASHTO Designation: M 314, Grade 36 or 55 with S1 supplementary requirements. When nonheaded anchor bolts conforming to the specifications of ASTM Designation: A 307, Grade C are furnished, the end of each fabricated anchor bolt shall be either coded by end stamping as required in ASTM Designation: A 307 or the end that projects from the concrete shall be permanently coded with a green color by the manufacturer. High strength anchor bolts, bars, or studs for Type 30 and Type 31 lighting standards shall conform to ASTM Designation: A 325, A 325M or A 449 and shall comply with the mechanical requirements of ASTM Designation: A 325 or A 325M after galvanizing. Nuts and washers for high strength anchor bolts shall conform to ASTM Designations: A 563 or A 563M, and F 476 or F 476M, respectively. In addition to the requirements of ASTM Designation: A 449, studs shall be marked on either end as required for bolt heads.

Foundation for lighting standards shall be cast-in-drilled hole pile.

10-3.06 STANDARDS, STEEL PEDESTALS AND POSTS

Standards with an outside diameter of 12 inches or less shall be round. Standards with an outside diameter greater than 12 inches shall be round or multisided. Multisided standards shall have a minimum of 12 sides which shall be convex and shall have a minimum bend radius of 4 inches.

10-3.07 CONDUIT

Conduit to be installed underground shall be schedule 40 polyvinylchloride conduit unless otherwise specified. The conduit in a foundation shall be the rigid steel type.

INSTALLATION

All excavated areas in the pavement shall be backfilled, except for the top 1.2 inches, by the end of each work period. The top 1.2 inches shall be placed within 3 calendar days after trenching.

Unless otherwise indicated on the plans, polyvinylchloride conduit shall be laid 24 inches below finished grade.

10-3.08 PULL BOXES

Grout shall not be placed in the bottom of pull boxes.

Pull boxes shall not have the "CALTRANS" cover marking.

10-3.09 CONDUCTORS AND WIRING

Splices shall be insulated by "Method B".

The Contractor shall provide the Engineer a Certificate of Compliance from the manufacturer in accordance with the provisions of Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for all the conductors and cables furnished for the project.

The minimum insulation thickness, at any point, for Type USE, RHH or RHW wire shall be 39 mils for conductor sizes No. 14 to No. 10, inclusive, and 51 mils for No. 8 to No. 2, inclusive. The minimum insulation thickness, at any point, for Type THW and TW wires shall be 27 mils for conductor sizes No. 14 to No. 10, inclusive, 40 mils for No. 8, and 54 mils for No. 6 to No. 2, inclusive.

In addition to the requirements for splices in detector circuits, the open end of cable jackets or tubing shall be sealed in a manner similar to the splicing requirements to prevent the entrance of water.

The insulation for conductors shall be Type XHHW.

WIRING

Conductors shall run in conduit, except overhead and temporary installations and where conductors are run inside poles.

INSTALLATION

When new conductors are to be added or existing conductors are to be removed from existing conduit, all conductors shall be removed; the conduit shall be cleaned as provided in Section 86-2.05C, "Installation"; and both old and new conductors, as shown on the plans, shall be pulled into the conduit as a unit.

CONNECTORS AND TERMINALS

Connectors and terminal lugs for conductor sizes No. 8 and smaller shall be soldered by the hot iron, pouring or dipping method. Open flame soldering will not be permitted.

SPLICING

All splices and terminal lugs for conductor sizes No. 8 and smaller shall be soldered by the hot iron, pouring or dipping method. Open flame soldering will not be permitted.

BONDING AND GROUNDING

The jumper size shall be increased to match the load or the circuit breaker size, or shall be as shown on the plans.

The bonding jumper in standards with handholes and traffic pull box lid cover shall be attached by a 3/16 inch or larger brass bolt and shall be run to the conduit or bonding wire in the adjacent pull box.

The bonding wire size shall be increased to match the circuit breaker size, or shall be as shown on the plans.

Ground electrodes shall be one-piece, 10 feet, minimum, lengths of galvanized steel rod or pipe not less than 3/4-inch in diameter, or of copper clad steel rod not less than 0.60-inch in diameter. The service equipment shall be bonded to the ground electrode by use of a ground clamp or exothermic weld and No. 6 or larger copper wire enclosed in a 1/2-inch or larger diameter conduit.

10-3.10 AUTOMATIC PARKING GATE EQUIPMENT

The Contractor shall arrange to have a technician qualified to work on the automatic parking gate equipment and employed by the equipment manufacturer, or the manufacturer's representative, present at the time the equipment is removed and reinstalled.

10-3.11 REMOVING, REINSTALLING OR SALVAGING ELECTRICAL EQUIPMENT

Salvaged automatic parking gate equipment shall be hauled to the Port of Oakland and stockpiled.

The Contractor shall provide the equipment, as necessary, to safely unload and stockpile the material. A minimum of 2 working days' notice shall be given prior to delivery.

Attention is directed to the provisions in Section 7-1.11, "Preservation of Property," of the Standard Specifications and "Indemnification and Insurance." of these special provisions.

Existing materials required to be reused and found to be unsatisfactory by the Engineer shall be replaced by new material and the cost therefor will be paid for as extra work as provided in Section 4-1.03D.

10-3.12 PAYMENT

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

Full compensation for removing, reinstalling and salvaging automatic parking gate equipment shall be considered as included in the contract lump sum price paid for lighting and no additional compensation will be allowed therefor.

Full compensation for removing and reinstalling electrical receptacles and attached conduits shall be considered as included in the contract lump sum price paid for lighting and no additional compensation will be allowed therefor.

SECTION 10-4. SEISMIC WARNING SYSTEM

10-4.01 DESCRIPTION

Seismic warning system shall conform to the provisions in Section 86, "Signals, Lighting and Electrical Systems," of the Standard Specifications and these special provisions.

10-4.02 MAINTAINING EXISTING AND TEMPORARY ELECTRICAL SYSTEMS

During construction of the seismic warning system, the Contractor shall supply his own temporary power.

10-4.03 SEISMIC WARNING SYSTEM

SCOPE

This work shall consist of installing the seismic warning system in accordance with the details shown on the plans, these special provisions, the provisions in Section 86, "Signals, Lighting, and Electrical Systems," of the Standard Specifications, the provisions in Chapter 6, "Specifications for Cabinet Models 332, 334 and 336," and of the Traffic Signal Control Equipment Specifications.

Electrical work shall include furnishing all labor, materials, equipment and services required to construct and install the complete seismic warning system shown on the plans.

System layouts are generally diagrammatic and location of equipment is approximate. Exact routing of conduits and other facilities and location of equipment is to be governed by structural conditions and other obstructions, and shall be coordinated with the work of other trades. Equipment requiring maintenance and inspection shall be located where it is readily accessible for the performance of such maintenance and inspection.

Related work.--Earthwork, foundations, sheet metal, painting, mechanical and such other work incidental to and necessary for the proper installation and operation of the seismic warning system work shall be done in accordance with the requirements specified for similar work elsewhere in these special provisions.

SUBMITTALS

Product data.--A list of materials and equipment to be installed, manufacturer's descriptive data, and such other data as may be requested by the Engineer for approval.

Manufacturer's descriptive data shall include complete description, performance data and installation instructions for the materials and equipment specified herein. Control and wiring diagrams, rough-in dimensions for recessed junction and pull boxes, and component layout shall be included where applicable. All control and power conductors on the shop drawings shall be identified with wire numbers.

Manufacturer's descriptive data shall be submitted for the following:

- Seismic Cable
- Telephone Cable
- Junction Boxes
- Seismic sensor enclosure (Cast)

Downhole box
GFCI Receptacles
Disconnect Switches
Free field manhole

Access and Contractor Assistance.--After all Contractor supplied equipment, conduit and cable has been installed, the Contractor shall provide the California Division of Mines and Geology (CDMG) personnel means and equipment to safely access and perform work at all recorder, sensor and antenna locations. This is to include the transportation of equipment to and on the job site, traffic control, and movement of stored materials or parked vehicles where necessary. Access is for the purpose of installation operational testing and performing necessary system troubleshooting and repair. The estimates below are for actual work at the locations do not include transit time to the work locations and the set-up times of any lifts, scaffolds, etc. Some of the work can be accomplished simultaneously and CDMG will meet with the Engineer and the Contractor at the job site to work out a mutually agreeable schedule.

1. Seismic recorder locations (1 Total):
 - a. CDMG will need ready access to the recorder cabinets prior to their installation for the purpose of measuring and preparing to mount the recorders in the cabinets.
 - b. CDMG will need approximately 3 days access per recorder location to install and wire the recorders.
 - c. CDMG will also need access to each recorder location during the installation and testing of the seismic sensors wired to that specific recorder location.
 - d. CDMG will need approximately 3 days access per recorder location during the final system testing and any necessary troubleshooting and repair.
2. Downhole and free field locations:
 - a. CDMG will require approximately 1/2 day access time for each downhole and free field location plus 2 additional days for wiring and testing.

TESTING

After the complete installation of the Seismic Warning System by both the Contractor and CDMG, the complete system will be tested by CDMG in the presence of the Engineer to demonstrate that it is working properly. Any problems associated with the equipment installed by the Contractor (State or Contractor supplied) shall be adjusted, replaced, and/or repaired as required at the Contractor's expense, and the complete system shall be re-tested. If problems occur with State-installed equipment, it will be replaced, or repaired, and re-tested all at the State's expense.

Testing shall be accomplished by the State after installation is complete. Additional testing costs related to improperly installed cable and conduit used to complete the system shall be borne by the Contractor.

CONDUITS AND FITTINGS

Conduit shall conform to Section 86-2.05, "Conduit," of the Standard Specifications and as specified in these special provisions.

Rigid steel conduit shall be used unless otherwise shown on the plans or specified in these special provisions.

Unless otherwise specified or shown on the plans, liquid-tight flexible metal conduit shall be used in wet locations.

Rigid non-metallic conduit shall be used at the locations shown on the plans for direct underground burial outside the building foundation.

Conduit trade sizes are shown on the plans. No deviation from the conduit size shown on the plans will be permitted without written permission from the Engineer.

Conduit shall be concealed unless otherwise shown on the plans.

Conduits shall be tightly covered and well protected during construction using metallic bushings and bushing "pennies" to seal open ends.

Rigid non-metallic conduit bends of 30 degrees or greater shall be factory-made long radius sweeps. Bends less than 30 degrees shall be made using an approved heat box.

A pull rope shall be installed in all empty conduits. At least 2 feet of pull rope shall be doubled back into the conduit at each termination.

Locations of conduit runs shall be planned in advance of the installation and coordinated with the seismic retrofit work in the same areas and shall not unnecessarily cross other conduits or pipe, nor block access to mechanical or electrical equipment.

Where practical, conduits shall be installed in groups in parallel, vertical or horizontal runs and at elevations that avoid unnecessary offsets.

Conduit terminations.--Rigid steel conduits shall be securely fastened to cabinets, boxes and gutters using 2 locknuts and specified insulating metallic bushing. Conduit terminations at exposed weatherproof enclosures and cast outlet boxes shall be made watertight using specified hubs.

Grounding bushings with bonding jumpers shall be installed on all type of conduits terminating at concentric knockouts and on all conduits containing service conductors, grounding electrode conductor, and conductors feeding separate buildings.

Rigid non-metallic conduits shall be terminated inside the underground pull boxes with an approved conduit bushings or fittings. All conduits shall enter the pull box at an angle of 45 degrees or more.

All future conduits terminated in underground pull boxes or exposed indoor and outdoor shall be provided with watertight conduit plugs.

CABLES AND CONDUCTORS

Seismic cable.--Seismic cables shall be 8 tinned copper, insulated conductors (4 twisted pairs with individual drain wires), AWG #22 (7 x 30 stranded) with insulation 0.007-inch thick. Cable shall have an overall aluminum-polyester shield, AWG #22 stranded tinned copper drain wires, an outer jacket 0.009-inch thick and an overall nominal outside diameter of 0.30-inch or less. Cable shall be instrument cable, NEC rated CL2P plenum cable rated for 150°C. Cable shall have a color code as specified below:

Color Code: 1st pair - red, black;
2nd pair - white, brown;
3rd pair - blue, violet;
4th pair - yellow, orange

Seismic cable shall be United Wire and Cable Co. Inc.; Consolidated Wire and Cable ; or equal.

Cable spools shall be of sufficient length to allow cables to be installed without splices from the sensor enclosures to the recorder as shown on the plans. Only by permission from the Engineer will splices in these continuous runs be allowed.

Telephone cable.--Telephone cable shall be ISDN rated cable with 2 twisted shielded conductor pairs, minimum AWG #20 tinned copper, polyethylene insulated, with a foil aluminum-polyester shield, drain wire and chrome PVC jacket rated for 300 V.

Conductors.-- Conductors shall conform to Section 86-2.06, "Conductors," of the Standard Specifications.

Wire connections and devices.--Wire connections and devices shall be pressure or compression type, except that connectors for No. 10 AWG and smaller conductors in dry locations may be preinsulated spring-pressure type.

Conductor and cable installation.--Conductors and cables shall not be installed in conduit until all work of any nature that may cause injury is completed. Care shall be taken in pulling conductors and cables that insulation is not damaged. An approved non-petroleum base and insulating type pulling compound shall be used as needed.

Splices and joints shall be insulated with insulation equivalent to that of the conductor.

Provide 6 inches of slack at each outlet and device connection. If the outlet or device is not at the end of a run of wire, connection shall be made with correctly colored pigtails tapped to the runs with splices as specified herein.

Branch circuit conductors in panelboards and load centers shall be neatly trained along a path from the breaker terminals to their exit point. The conductors shall have ample length to transverse the path without strain, but shall not be so long as to require coiling, doubling back, or cramming. The path shall transverse the panelboard gutter spaces without entering a gutter containing service conductors and, unless otherwise shown on the plans, without entering the gutter space of any panelboard feeder.

Seismic cable installation.--Seismic cables shall be installed continuous without any splices.

Conductor and cable identification.--The neutral and equipment grounding conductors shall be identified as follows:

Neutral conductor shall have a white or natural gray insulation except that conductors No. 4 and larger may be identified by distinctive white marker such as paint or white tape at each termination.

Equipment grounding conductor shall be bare or insulated. If insulated, equipment grounding conductors shall have green or green with one or more yellow stripes insulation over its entire length except that conductors No. 4 and larger may be permanently identified by distinctive green markers such as paint or green tape over its entire exposed insulation.

Feeder and branch circuit ungrounded conductors shall be color coded by continuously colored insulation, except conductors No. 6 AWG or larger may be color coded by colored tape at each connection and where accessible. Ungrounded conductor color coding shall be as follows:

SYSTEM	COLOR CODE
120/240 V-Single phase	Black, blue

Where more than one branch circuit enters or leaves a conduit, panel, gutter, or junction box, each conductor shall be identified by its panelboard and circuit number. All control conductors including control conductors of manufacturer supplied and field wired control devices shall be identified at each termination with the wire numbers shown on the plans, approved working drawings, and as directed by the Engineer where deemed necessary. Identification shall be made with one of the following:

1. Adhesive backed paper or cloth wrap-around markers with clear, heat shrinkable tubing sealed over either type of marker.
2. Self-laminating wrap around type, printable, transparent, permanent heat bonding type thermoplastic film markers.
3. Pre-printed, white, heat-shrinkable tubing.

Seismic cable identification.--Each seismic cable shall be tagged with the channel number as shown on the plans at each termination. Additionally, at each junction box, recorder cabinet location, and pull box that contains more than one seismic cable, the cables shall be tagged. Identification shall be made with one of the methods specified under "Conductor Identification".

ELECTRICAL BOXES

Outlet, device and junction boxes.--Unless otherwise shown or specified, boxes shall be cast iron boxes with threaded hubs and shall be of the size and configuration best suited to the application shown on the plans. Cast metal boxes shall have cast metal covers with gaskets.

Cabinet shipping requirements.--The cabinet shall be delivered mounted on a plywood shipping pallet. The pallet shall be bolted to the cabinet case. The cabinet shall be enclosed in a slipover cardboard packing shell. The housing doors shall be blocked to prevent movement during transportation.

All bolts, nuts, washers, screws (size 8 or larger), hinges and hinge pins shall be stainless steel unless otherwise specified. The cabinet shall have 4 spacer brackets installed at two heights as directed by the Engineer. The cabinet shall come with all mounting hardware required for installation. The cabinet shall be installed as shown on the plans and as recommended by the manufacturer.

Seismic sensor cast enclosure.--Seismic sensor enclosure shall be a cast iron NEMA Type 6, 12 inches x 12 inches x 6 inches deep, with a cast iron cover. Cover shall be marked "SEISMIC" with 1/4 inch capital letters. Cast mounting lugs shall be attached on two opposing sides with a minimum of two lugs each side. A bossed, drilled, and tapped (NPT) hole capable of accepting one inch conduit connector shall be centered between mounting lugs on one side only. A mounting button, drilled and tapped for 1/4" x 20, shall be centered on the inside bottom of the box. The finish for the enclosure, cover, and all components shall be hot dipped galvanized. The enclosure shall be O-Z Gedney, Catalog No. YF-121206-SUB, with one mounting button Catalog No. 1MBT, mounting lugs Catalog No. 4ML1816, and one hole Catalog No. BDT100; Crouse-Hinds, Catalog No. WCB121208-1-000G (except box shall be 6" deep); or equivalent.

Junction box installation.--Where one or more threaded steel conduits are required to connect to a junction box, the box shall be a cast metal box with threaded hubs.

No unused openings shall be left in any box. Knockout plugs shall be installed as required to close openings.

Junction boxes shall be installed at the locations and elevations shown on the plans or specified herein. Adjustments to locations may be made as required by structural conditions and to suit coordination requirements of other trades.

Underground pull boxes.--Pull boxes shall be high density reinforced concrete box with ultraviolet inhibitor polyethylene etched face anchored in concrete and fibreglass cover with hold down bolts. The polyethelene and fibreglass material shall be fire resistant and show no appreciable change in physical properties with exposure to the weather. No. 5 pull box shall be Brooks Products No. 5; Christy Concrete Products, B1324; or equal.

Pull box installation.--Electrical pull box covers or lids shall be marked "ELECTRICAL." Telephone service pull box covers or lids shall have plain, unmarked covers.

The bottom of pull boxes shall be bedded in 6 inches of clean, crushed rock or gravel and shall be grouted with 1 1/2-inch thick grout prior to installation of conductors. Grout shall be sloped to a one-inch PVC pipe drain hole. Conduit shall be sealed in place with grout.

Top of pull boxes shall be flush with surrounding grade or top of curb. In unpaved areas where pull box is not immediately adjacent to and protected by a concrete foundation, pole or other protective construction, the top of pull box shall be set at plus 0.1 feet above surrounding grade. Pull boxes shown on the plans in the vicinity of curbs shall be placed adjacent to the back of curb.

Downhole junction box.--Downhole junction box shall be the same as seismic sensor enclosure (Style II) except the box size shall be 14"x18"x6"D. Cast mounting lugs shall be attached on 8" sides, minimum of 2 lugs each side. One each bossed, drilled and tapped (NPT) hole to accept a 2-inch conduit connector centered between mounting lugs on one side only. One each bossed, drilled and tapped (NPT) hole to accept a 1-inch water tight strain relief connector per downhole cable as required. These holes are to be centered between the lid and the bottom along a 14" side of the box, The box shall be O-Z Gedney, Catalog No. YF-140806-SUB with mounting lugs, Catalog No. 4ML1816, one hole, Catalog No. BDT200, and appropriate number of holes for downhole cables, Catalog No. BDT100; Crouse-Hinds, Catalog No. WCB120806-3-000G0(****)00 (except box shall be 14" long); or equal. In the Crouse-Hinds box catalog number, the ****'s represent the appropriate number of conduits required for a given box.

Manholes.--Manholes shall be 4'x4' (inside dimension) x 2' deep with 6 inches thick walls, bottom and top. The Manhole shall be precast or cast-in-place concrete designed for H-20-44 bridge loading. A 3' square hole shall be cut out or formed within the bottom of the manhole. The frame and cover shall be cast iron and cover shall have provisions for hold down bolts. Bolts shall be included. Conduits terminating inside the manhole shall end with bushings specified elsewhere in these special provisions. A cable pulling iron shall be installed in the wall opposite each conduit entrance. Manhole cover shall be engraved "SEISMIC" in 1" high letters.

Manhole installation.--The top of the manhole shall be installed 1/2" the finished grade in unpaved areas. Where conduits enter the manhole, the space around the conduits shall be grouted tightly or cast in the wall.

Downhole box.--Downhole box shall be high density reinforced concrete box having an inside diameter of 14 inches minimum. The box shall be designed for installation in heavy truck traffic areas. Box cover shall be cast iron with provisions for hold down bolts. Bolts shall be included. Box cover shall be engraved "SEISMIC".

Downhole box installation.--Downhole box installation shall be the same as the manhole installation specified above.

RECEPTACLES AND SWITCHES

Ground fault circuit interrupter receptacles, (GFCI).--Ground fault circuit interrupter receptacles shall be NEMA Type 5-20R, feed-through type, ivory color, 3-wire, 20-ampere, 125-volt AC, grounding type, specification grade, duplex receptacle with ground fault interruption. Receptacle shall detect and trip at current leakage of 5 milliamperes and shall have front mounted test and reset buttons.

MISCELLANEOUS MATERIALS

Warning Tape.--Warning tape shall be 4-inch wide and contain the printed warning "CAUTION ELECTRICAL CONDUIT" in bold 3/4 inch black letters at 30-inch intervals on bright orange or yellow background. The printed warning shall be non-eraseable when immersed under water and resistant to insects, acids, alkali, and other corrosive elements in the soil. The tape shall have a tensile strength of not less than 160 pounds per 4-inch wide strip and shall have a minimum elongation of 700 percent before breaking.

Pull ropes.--Pull ropes shall be nylon or polypropylene with a minimum tensile strength of 500 pounds.

Watertight conduit plugs.--Watertight conduit plugs shall be a hollow or solid stem expansion plugs complete with inner and outer white polypropylene compression plates and red thermoplastic rubber seal. Seal material shall be non-stick type rubber resistant to oils, salt, and alkaline substances normally available at the construction sites.

Anchorage devices.--Anchorage devices shall be corrosion resistant, toggle bolts, wood screws, bolts, machine screws, studs, expansion shields, and expansion anchors and inserts.

Anchorage.--Hangers, brackets, conduit straps, supports, and electrical equipment shall be rigidly and securely fastened to surfaces by means of toggle bolts on hollow masonry; expansion shields and machine screws, or expansion anchors and studs or standard preset inserts on concrete or solid masonry; machine screws or bolts on metal surfaces; and wood or lag screws on wood construction.

Anchorage devices shall be installed in accordance with the anchorage manufacturer's recommendations.

Electrical supporting devices.--Electrical supporting devices shall be one hole conduit clamps with clamp backs, hot-dipped galvanized, malleable cast iron.

Construction channel shall be 1 5/8" x 1 5/8", 12-gage galvanized steel channel with 17/32 inch diameter bolt holes, 1 1/2 inches on center in the base of the channel.

Nameplates.--Nameplates shall be laminated phenolic plastic with white core and black front and back. Nameplate inscription shall be in capitals letters etched through the outer layer of the nameplate material.

Equipment identification.--Equipment shall be identified with nameplates fastened with self-tapping, stainless steel screws.

Plywood backing panels.--Plywood backing panels for mounting electrical or telephone equipment shall be 3/4 inch, APA plywood panels, C-D PLUGGED and touch-sanded, Exposure 1.

Plywood backing board.--Plywood backing board shall be securely fastened to walls or other vertical framing.

Surface to be coated shall be cleaned of all dirt, excess materials, of filler by hand cleaning.

Coatings shall be applied in accordance with the manufacturer's instructions. Each coat shall be applied to a uniform finish, free of skips, brush marks, laps or other imperfections.

Paint.--Plywood backing panels shall receive the following paint system: one prime coat, alkyd, interior wood primer and 2 finish coats, acrylic, interior enamel, semi-gloss.

10-4.04 SERVICE AND DISTRIBUTION

Utility connection.--The Contractor shall make all arrangements and obtain all permits and licenses required for the extension of and connection to an ISDN telephone service applicable to this project, shall furnish all labor and materials necessary for such extensions which are not performed or provided by the utility, and shall furnish and install any intermediate equipment required by the serving utilities.

Upon written request by the Contractor, the State will pay all utility permits, licenses, connection charges, and excess length charges to the utility. Such request shall be submitted not less than 15 days before service connections are required.

The costs incurred by the Contractor for the extension of utilities beyond the limits shown on the plans, and in furnishing and installing any intermediate equipment required by the serving utilities, will be paid for as an ordered change as provided for elsewhere in these special provisions.

Full compensation for any costs incurred by the Contractor to obtain the permits and licenses shall be considered as included in the contract lump sum price paid for seismic warning system and no additional compensation will be allowed therefor.

Installation details.--The Contractor shall submit complete service installation details to the serving utilities for approval. Prior to submitting installation details to the serving utility, the Contractor shall submit said drawings as specified elsewhere in these special provisions to be reviewed and stamped "APPROVED" by the Engineer. Submittals shall be approved by the serving utility prior to commencing work.

Installation of service equipment shall be in accordance with the requirements of the serving utilities as shown on the approved installation details.

10-4.05 INSTALL SEISMIC WARNING CASING

Install seismic warning casing shall consist of drilling into soil, sampling soil, providing a log of test borings and a boring report, and furnishing and installing casing for seismic warning system equipment at the down-hole location as shown on the plans. Seismic warning casing shall be in accordance with the details shown on the plans and these special provisions.

Install seismic warning casing includes the following operations in the following order:

1. Drill 4-inch diameter hole, perform Standard Penetration Tests (SPT) and collect core samples, and prepare a log of test borings and boring report.
2. Allow State forces to perform P-S suspension logging.
3. Drill 9-inch diameter hole for installation of casing.
4. Furnish and install 4-inch diameter polyvinyl chloride (PVC) pipe casing, including equipment furnished and attached to the bottom of the casing by the State.
5. Grout the annulus between the 9-inch diameter hole and the 4-inch diameter casing, and install covers.

MATERIALS.--The seismic monitoring casing shall consist of 4-inch diameter Schedule 80 screw joint (flush) polyvinyl chloride PVC pipe. Each screw joint shall include an O-ring and shall be sealed with an O-ring lubricant.

The casing will have a specially formed sealed cap (Bishops Hat) at the bottom with instrumentation cables extending up through the casing. The Bishops Hat and instrumentation cables will be furnished and installed by State forces.

Grout for placement in the annular space between the casing and the hole shall be proportioned as follows:

Grout Type	Depth of Hole	Grout Proportion
A	120 foot hole	100 lbs. of cement and 25 lbs. of bentonite per 50 gallons of water.
B	40 foot and 15 foot holes	50 lbs. of cement and 50 lbs. of bentonite per 50 gallons of water.

The Contractor shall furnish sufficient quantities of grout for filling the annular space between the casing and the hole.

The grout mix ratio is subject to modifications by the Engineer after review of the P-S suspension logs and the core samples. Grouting of the annulus space around the 4 inch diameter PVC pipe shall not take place until the grout mix for each hole is approved by the Engineer.

BORINGS.--Borings shall consist of drilling holes, taking samples, logging borings and furnishing test boring submittals to the Engineer.

The "Soil and Rock Logging Classification Manual" is included in the "Information Handout" available to the Contractor as provided for in Section 2-1.03, "Examination of Plans, Specifications, Contract, and Site of Work," of the Standard Specifications.

The Contractor shall drill borings plumb at the center of each down-hole location as shown on the plans and as directed by the Engineer.

The Contractor shall notify the Engineer in writing not less than 10 working days in advance of drilling borings.

All borings shall be made under the site supervision of, the log of test borings stamped by, and the test boring submittal signed by a Certified Engineering Geologist or Civil Engineer who is registered in the State of California and has at least five years of geotechnical engineering experience of deep foundations in both soil and rock.

Borings shall be made by rotary drill methods and shall be at 4 inches in diameter.

Borings shall be drilled to a depth equal to that of the deepest hole at the down-hole location. Only the deepest hole shall be logged.

Sampling shall be performed as directed by the Engineer but the number of samples will not exceed 25. Sample types will be chosen at the direction of the Engineer. Contractor must be capable and prepared to perform the following sample types: SPT (in accordance with ASTM D1586), 2.5-inch diameter Shelby tube and 2-inch diameter or larger punchcore or equivalent. Shelby tubes will be furnished to the Contractor by the State in accordance with the provisions in Section 6-1.02, "State-Furnished Materials," of the Standard Specifications.

The log of test borings including the soil classification shall conform to the document "Soil and Rock Logging Classification Manual: Field Manual," published by the Engineering Service Center, Caltrans, dated August 1995.

After completion of all borings, the Contractor shall furnish to the Engineer a test boring submittal that includes a boring report and the log of test borings.

The log of test borings shall conform with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. All log of test borings shall be 22" x 34" in size. For initial review, 4 sets of drawings shall be

submitted to the Engineer. Within 3 weeks after final approval of the test boring submittal, one set of the corrected prints on 60 pound (minimum) good quality bond paper, 22" x 34" in size, prepared by the Contractor shall be furnished to the Office of Structure Design, Documents P.O. Box 942874, Attention: Pat Hipley, MS#9, Sacramento, CA 94274-0001 (1801 30th Street, Sacramento, CA 95816).

Log of test borings shall show the State assigned designations for the contract number, bridge number, full name of the structure as shown on the contract plans, and District-County-Route-Post mile on each sheet. The test boring/geotechnical subcontractor name, address, and phone number shall be shown on the working drawings. Each sheet shall be numbered in the lower right hand corner and shall contain a blank space in the upper right hand corner for future contract sheet numbers. The following shall be shown on the log of test borings:

1. Stationing and offset of boring.
2. Northing and easting coordinates.
3. Reference elevation and datum.
4. Boring start and completion date.
5. Geotechnical notes and miscellaneous explanations.
6. Drill bit and sampler types and diameters.
7. Percent of core recovery and RQD.
8. Sample numbers.
9. SPT data.
10. Depth increments of borings.
11. Graphic log.
12. Soil classifications and descriptions.
13. Rock classifications and descriptions.
14. Log symbol legend.
15. Signature and seal of the Geologist or Civil Engineer.

The boring report shall include the following:

1. Summary of drilling methods, drilling equipment, drill platforms, and any drilling difficulties encountered.
2. Location map of the surveyed position of the borings relative to the existing pier (in California Coordinate System and bridge stationing).
3. Bore hole surveying notes.
4. Photographs of rock cores.
5. Copies of original daily drilling notes.

The Engineer will notify the Contractor in writing when a boring submittal is complete and approved.

All materials utilized in making boring shall be disposed of in accordance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

P-S SUSPENSION LOGGING.--P-S suspension logging, consisting of P-wave and S-wave (dilatational wave and shear wave) velocity measurements, will be made by State forces. P-S suspension logging will be made after completion of the Contractor's boring, sampling, and logging operations. The Contractor shall notify the Engineer in writing not less than 15 working days prior to completing boring, sampling, and logging operations in order for the State forces to be on site to perform P-S suspension logging. The Contractor shall allow 3 working days for the State forces to complete P-S suspension logging.

INSTALL CASING.--The seismic monitoring casing shall be installed into an 9-inch diameter hole. The hole shall be drilled by mud rotary methods and shall be centered over the 4-inch diameter hole described in the section "Borings" in these special provisions.

The 4-inch diameter pipe casing shall be installed from the ground surface to the depth as shown on the plans. The Contractor shall notify the Engineer in writing not less than 15 working days prior to installing the casings in order for personnel from the California Division of Mines and Geology (CDMG) to attach the Bishops Hat to the casing. CDMG personnel will be on site for the installation and grouting of the casings.

Unless otherwise approved by the Engineer, the Contractor may only fill the casing with clean water to facilitate lowering the casing into the drilled hole.

Grouting of the annular space between the casing and the hole shall be done in one continuous lift. Grout shall be delivered at the low end of the void being filled by methods that prevent the mixing of grout with water during charging of the grout delivery tubes and placement of the grout. Until at least 10 feet of grout has been placed, the tips of grout delivery tubes shall be within 6 inches of the bottom of the void being filled. The grout delivery tubes may be raised during grouting, providing that the embedment of the tips are maintained at least 6 feet below the top surface of the grout.

Sufficient grout shall be injected to fill the annular space between the casing and the hole and be expelled at the top of the hole until there is no evidence of entrapped air or water. A minimum grout head of 2 feet shall be maintained above the top of the hole until the grout has set.

All residue from the grouting operation shall be removed after completing the grouting operations and shall be disposed of in accordance with Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

At the completion of the casing installation, the casing shall be filled with clean water and the casing cleaned and free of any debris or sediment.

10-4.06 PAYMENT

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

SECTION 11. (BLANK)

SECTION 12. (BLANK)

SECTION 13. (BLANK)

SECTION 14. FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS

GENERAL.—The work herein proposed will be financed in whole or in part with Federal funds, and therefore all of the statutes, rules and regulations promulgated by the Federal Government and applicable to work financed in whole or in part with Federal funds will apply to such work. The "Required Contract Provisions, Federal-Aid Construction Contracts, "Form FHWA 1273, are included in this Section 14. Whenever in said required contract provisions references are made to "SHA contracting officer", "SHA resident engineer", or "authorized representative of the SHA", such references shall be construed to mean "Engineer" as defined in Section 1-1.18 of the Standard Specifications.

PERFORMANCE OF PREVIOUS CONTRACT.—In addition to the provisions in Section II, "Nondiscrimination," and Section VII, "Subletting or Assigning the Contract," of the required contract provisions, the Contractor shall comply with the following:

The bidder shall execute the CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS located in the proposal. No request for subletting or assigning any portion of the contract in excess of \$10,000 will be considered under the provisions of Section VII of the required contract provisions unless such request is accompanied by the CERTIFICATION referred to above, executed by the proposed subcontractor.

NON-COLLUSION PROVISION.—The provisions in this section are applicable to all contracts except contracts for Federal Aid Secondary projects.

Title 23, United States Code, Section 112, requires as a condition precedent to approval by the Federal Highway Administrator of the contract for this work that each bidder file a sworn statement executed by, or on behalf of, the person, firm, association, or corporation to whom such contract is to be awarded, certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the submitted bid. A form to make the non-collusion affidavit statement required by Section 112 as a certification under penalty of perjury rather than as a sworn statement as permitted by 28, USC, Sec. 1746, is included in the proposal.

PARTICIPATION BY MINORITY BUSINESS ENTERPRISES IN SUBCONTRACTING.—Part 23, Title 49, Code of Federal Regulations applies to this Federal-aid project. Pertinent sections of said Code are incorporated in part or in its entirety within other sections of these special provisions.

Schedule B—Information for Determining Joint Venture Eligibility

(This form need not be filled in if all joint venture firms are minority owned.)

1. Name of joint venture _____
2. Address of joint venture _____
3. Phone number of joint venture _____
4. Identify the firms which comprise the joint venture. (The MBE partner must complete Schedule A.) _____

 - a. Describe the role of the MBE firm in the joint venture. _____
 - b. Describe very briefly the experience and business qualifications of each non-MBE joint venturer: _____

5. Nature of the joint venture's business _____

6. Provide a copy of the joint venture agreement.
7. What is the claimed percentage of MBE ownership? _____
8. Ownership of joint venture: (This need not be filled in if described in the joint venture agreement, provided by question 6.).
 - a. Profit and loss sharing.
 - b. Capital contributions, including equipment.
 - c. Other applicable ownership interests.

9. Control of and participation in this contract. Identify by name, race, sex, and "firm" those individuals (and their titles) who are responsible for day-to-day management and policy decision making, including, but not limited to, those with prime responsibility for:

a. Financial decisions _____

b. Management decisions, such as:

(1) Estimating _____

(2) Marketing and sales _____

(3) Hiring and firing of management personnel _____

(4) Purchasing of major items or supplies _____

c. Supervision of field operations _____

Note.—If, after filing this Schedule B and before the completion of the joint venture's work on the contract covered by this regulation, there is any significant change in the information submitted, the joint venture must inform the grantee, either directly or through the prime contractor if the joint venture is a subcontractor.

Affidavit

"The undersigned swear that the foregoing statements are correct and include all material information necessary to identify and explain the terms and operation of our joint venture and the intended participation by each joint venturer in the undertaking. Further, the undersigned covenant and agree to provide to grantee current, complete and accurate information regarding actual joint venture work and the payment therefor and any proposed changes in any of the joint venture arrangements and to permit the audit and examination of the books, records and files of the joint venture, or those of each joint venturer relevant to the joint venture, by authorized representatives of the grantee or the Federal funding agency. Any material misrepresentation will be grounds for terminating any contract which may be awarded and for initiating action under Federal or State laws concerning false statements."

_____ Name of Firm	_____ Name of Firm
_____ Signature	_____ Signature
_____ Name	_____ Name
_____ Title	_____ Title
_____ Date	_____ Date

Date _____

State of _____

County of _____

On this ____ day of _____, 19 __, before me appeared (Name) _____, to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) _____ to execute the affidavit and did so as his or her free act and deed.

Notary Public _____

Commission expires _____

[Seal]

Date _____

State of _____

County of _____

On this ____ day of _____, 19 __, before me appeared (Name) _____ to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) _____ to execute the affidavit and did so as his or her free act and deed.

Notary Public _____

Commission expires _____

[Seal]

**REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS**

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.
3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.
4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

Section I, paragraph 2;
Section IV, paragraphs 1, 2, 3, 4, and 7;
Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.
6. **Selection of Labor:** During the performance of this contract, the contractor shall not:
 - a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or
 - b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:
 - a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.
 - b. The contractor will accept as his operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall

include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."

2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.
3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
 - a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
 - b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
 - c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.
 - d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
 - e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.
 - a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.
 - b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
 - c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.
5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:
 - a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

- b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
 - c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
 - d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.
6. Training and Promotion:
- a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
 - b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.
 - c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
 - d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.
7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:
- a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
 - b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
 - c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.
 - d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

- 8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.
- a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.
 - b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.
 - c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.
- 9. Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.
- a. The records kept by the contractor shall document the following:
 - (1) The number of minority and non-minority group members and women employed in each work classification on the project;
 - (2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;
 - (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
 - (4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.
 - b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

- a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.
- b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

- c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. General:

- a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3)] issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c) the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.
- b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.
- c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. Classification:

- a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.
- b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:
 - (1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;
 - (2) the additional classification is utilized in the area by the construction industry;
 - (3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and
 - (4) with respect to helpers, when such a classification prevails in the area in which the work is performed.
- c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized

representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

- d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary
- e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. Payment of Fringe Benefits:

- a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.
- b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:

- a. Apprentices:
 - (1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.
 - (2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.
 - (3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the

applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

- (4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

- (1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.
- (2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.
- (3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.
- (4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. Apprentices and Trainees (Programs of the U.S. DOT):

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. Withholding:

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the

contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. Overtime Requirements:

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. Violation:

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. Withholding for Unpaid Wages and Liquidated Damages:

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. Compliance with Copeland Regulations (29 CFR 3):

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. Payrolls and Payroll Records:

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the

cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

- c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.
- d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
 - (1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;
 - (2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;
 - (3) that each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of worked performed, as specified in the applicable wage determination incorporated into the contract.
- e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.
- f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.
- g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

- 1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than \$1,000,000 (23 CFR 635) the contractor shall:
 - a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

- b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.
 - c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.
2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).
 - a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.
 - b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.
2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.
4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

Notice To All Personnel Engaged On Federal-Aid Highway Projects

18 U.S.C. 1020 READS AS FOLLOWS:

"Whoever being an officer, agent, or employee of the United States, or any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more than \$10,000 or imprisoned not more than 5 years or both."

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.
2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.
3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.
4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. Instructions for Certification - Primary Covered Transactions:

(Applicable to all Federal-aid contracts - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.
- d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
- g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.
- i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion — Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
 - a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
 - d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Covered Transactions:

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
- b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
- c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
- d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
- f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and

frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

- h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion — Lower Tier Covered Transactions

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
 - a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
 - b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

FEDERAL-AID FEMALE AND MINORITY GOALS

In accordance with Section II, "Nondiscrimination," of "Required Contract Provisions Federal-aid Construction Contracts" the following are the goals for female utilization:

Goal for Women (applies nationwide).....(percent) 6.9

The following are goals for minority utilization:

CALIFORNIA ECONOMIC AREA

		Goal (Percent)
174	Redding, CA: Non-SMSA Counties CA Lassen; CA Modoc;CA Plumas;CA Shasta; CA Siskiyou; CA Tehama.	6.8
175	Eureka, CA Non-SMSA Counties CA Del Norte; CA Humboldt; CA Trinity.	6.6
176	San Francisco-Oakland-San Jose, CA: SMSA Counties: 7120 Salinas-Seaside-Monterey, CA CA Monterey. 7360 San Francisco-Oakland CA Alameda; CA Contra Costa; CA Marin; CA San Francisco; CA San Mateo. 7400 San Jose, CA CA Santa Clara. 7485 Santa Cruz, CA. CA Santa Cruz. 7500 Santa Rosa, CA CA Sonoma. 8720 Vallejo-Fairfield- Napa, CA CA Napa; CA Solano Non-SMSA Counties CA Lake; CA Mendocino; CA San Benito	28.9 25.6 19.6 14.9 9.1 17.1 23.2
177	Sacramento, CA: SMSA Counties: 6920 Sacramento, CA CA Placer; CA Sacramento; CA Yolo. Non-SMSA Counties CA Butte; CA Colusa; CA El Dorado; CA Glenn; CA Nevada; CA Sierra; CA Sutter; CA Yuba.	16.1 14.3
178	Stockton-Modesto, CA: SMSA Counties: 5170 Modesto, CA CA Stanislaus. 8120 Stockton, CA CA San Joaquin. Non-SMSA Counties CA Alpine; CA Amador; CA Calaveras; CA Mariposa;CA Merced; CA Tuolumne.	12.3 24.3 19.8

		Goal (Percent)
179	Fresno-Bakersfield, CA	
	SMSA Counties:	
	0680 Bakersfield, CA	19.1
	CA Kern.	
	2840 Fresno, CA	26.1
	CA Fresno.	
	Non-SMSA Counties	23.6
	CA Kings; CA Madera; CA Tulare.	
180	Los Angeles, CA:	
	SMSA Counties:	
	0360 Anaheim-Santa Ana-Garden Grove, CA	11.9
	CA Orange.	
	4480 Los Angeles-Long Beach, CA	28.3
	CA Los Angeles.	
	6000 Oxnard-Simi Valley-Ventura, CA	21.5
	CA Ventura.	
	6780 Riverside-San Bernardino-Ontario, CA.	19.0
	CA Riverside; CA San Bernardino.	
	7480 Santa Barbara-Santa Maria-Lompoc, CA	19.7
	CA Santa Barbara.	
	Non-SMSA Counties	24.6
	CA Inyo; CA Mono; CA San Luis Obispo.	
181	San Diego, CA:	
	SMSA Counties	
	7320 San Diego, CA.	16.9
	CA San Diego.	
	Non-SMSA Counties	18.2
	CA Imperial.	

In addition to the reporting requirements set forth elsewhere in this contract the Contractor and subcontractors holding subcontracts, not including material suppliers, of \$10,000 or more, shall submit for every month of July during which work is performed, employment data as contained under Form FHWA PR-1391 (Appendix C to 23 CFR, Part 230), and in accordance with the instructions included thereon.

FEDERAL REQUIREMENT TRAINING SPECIAL PROVISIONS

As part of the Contractor's equal employment opportunity affirmative action program, training shall be provided as follows:

The Contractor shall provide on-the-job training to develop full journeymen in the types of trades or job classification involved.

The goal for the number of trainees or apprentices to be trained under the requirements of this special provision will be 15.

In the event the Contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees or apprentices are to be trained by the subcontractor, provided however, that the Contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The Contractor shall also insure that this Training Special Provision is made applicable to such subcontract. Where feasible, 25 percent of trainees or apprentices in each occupation shall be in their first year of apprenticeship or training.

The number of trainees or apprentices shall be distributed among the work classifications on the basis of the Contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment. Prior to commencing work, the Contractor shall submit to the Department for approval the number of trainees or apprentices to be trained in each selected classification and training program to be used. Furthermore, the Contractor shall specify the starting time for training in each of the classifications. The Contractor will be credited for each trainee or apprentice employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees or apprentices as provided hereinafter.

Training and upgrading of minorities and women toward journeymen status is a primary objective of this Training Special Provision. Accordingly, the Contractor shall make every effort to enroll minority and women trainees or apprentices (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees or apprentices) to the extent such persons are available within a reasonable area of recruitment. The Contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the Contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee or apprentice in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The Contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the Contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the Contractor and approved by both the Department and the Federal Highway Administration. The Department and the Federal Highway Administration will approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the Contractor and to qualify the average trainee or apprentice for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with the State of California, Department of Industrial Relations, Division of Apprenticeship Standards recognized by the Bureau and training programs approved but not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the division office. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the Contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the Engineer, reimbursement will be made for training of persons in excess of the number specified herein. This reimbursement will be made even though the Contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the Contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the Contractor where he does one or more of the following and the trainees or apprentices are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or apprentice or pays the trainee's or apprentice's wages during the offsite training period.

No payment shall be made to the Contractor if either the failure to provide the required training, or the failure to hire the trainee or apprentice as a journeyman, is caused by the Contractor and evidences a lack of good faith on the part of the Contractor in meeting the requirements of this Training Special Provision. It is normally expected that a trainee or apprentice will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program. It is not required that all trainees or apprentices be on board for the entire length of the contract. A Contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees or apprentices specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Only trainees or apprentices registered in a program approved by the State of California's State Administrator of Apprenticeship may be employed on the project and said trainees or apprentices shall be paid the standard wage specified under the regulations of the craft or trade at which they are employed.

The Contractor shall furnish the trainee or apprentice a copy of the program he will follow in providing the training. The Contractor shall provide each trainee or apprentice with a certification showing the type and length of training satisfactorily completed.

The Contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.