



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**NOTICE TO CONTRACTORS
AND**

SPECIAL PROVISIONS

FOR CONSTRUCTION ON
STATE HIGHWAY

IN
SAN DIEGO COUNTY AT VARIOUS LOCATIONS
DISTRICT 11, ROUTE 5,15

For use in Connection with Standard Specifications **DATED JULY, 1995**, Standard
Plans **DATED JULY, 1997**, and Labor Surcharge And Equipment Rental Rates.

CONTRACT NO. 11-233504
11-SD-5,15-Var

Bids Open: July 16, 1998 -
Dated: June 22, 1998

AS-CONSTRUCTED

DESIGN ENGINEER

NOTICE REGARDING AS-CONSTRUCTED SPECIAL PROVISIONS

*These As-Constructed Special Provisions have been prepared in Microsoft Word with the Track Changes mode to facilitate identification of As-Constructed information. Specifications that have been modified to reflect As-Constructed conditions are identified with a vertical bar in the left margin. Contract specifications not incorporated during construction appear in ~~Strikeout~~, while specifications added during construction appear in **EDing** Bold Italic. Changes to these specifications were developed by reviewing the Contract Change Orders (CCO) and, where applicable, modifying the specifications as noted in the CCOs.*

Please note that these Special Provisions only reflect the As-Constructed condition of the work performed, and should not necessarily be considered a replacement to the Contract Special Provisions. Although they may be suitable for future similar projects, it is ultimately the responsibility of the Design Engineer to prepare appropriate Special Provisions for each particular contract.

SUMMARY OF CHANGES

| <u>11-233504</u> | | | | |
|---|--|--------------------------|--|-----------------------------------|
| <u>Sites: 1 - 5/56 EDB, 2 - 5/78 EDB, 3 - La Costa IB, 4 - Manchester EDB</u> | | | | |
| <u>CCO</u> | <u>Description</u> | <u>Affected Location</u> | <u>Needed Change to Specification</u> | <u>Affected Spec. Section No.</u> |
| <u>1</u> | <u>Provide Flagging</u> | <u>1,2,3,4</u> | <u>None</u> | <u>None</u> |
| <u>2</u> | <u>Eliminate Concrete Basin Lining, Place Erosion Control (Type D)</u> | <u>1,3</u> | <u>Change in Payment method</u> | <u>10-1.25</u> |
| <u>2-01S</u> | <u>Provide Additional Funds</u> | <u>1,3</u> | <u>None</u> | <u>None</u> |
| <u>3</u> | <u>Remove and Dispose Buried Man-Made Object</u> | <u>2</u> | <u>None</u> | <u>None</u> |
| <u>3-01S</u> | <u>Buried Man-Made Objects, Drainage, Funding</u> | <u>2</u> | <u>None</u> | <u>None</u> |
| <u>3-02S</u> | <u>Additional Funds to Complete CCO 2</u> | <u>2</u> | <u>None</u> | <u>None</u> |
| <u>4</u> | <u>Modification of Paving Limits</u> | <u>1</u> | <u>None</u> | <u>None</u> |
| <u>5</u> | <u>Provide Flumes</u> | <u>1,2</u> | <u>None</u> | <u>None</u> |
| <u>6</u> | <u>Remove Unstable Material</u> | <u>1</u> | <u>None</u> | <u>None</u> |
| <u>7</u> | <u>Provide Import Material</u> | <u>1</u> | <u>None</u> | <u>None</u> |
| <u>7-01S</u> | <u>Provide Additional Import Material</u> | <u>3</u> | <u>None</u> | <u>None</u> |
| <u>8</u> | <u>Remove and Dispose Basin Material</u> | <u>3</u> | <u>None</u> | <u>None</u> |
| <u>9</u> | <u>Remove and Dispose of Existing Drainage Units</u> | <u>Void</u> | <u>None</u> | <u>None</u> |
| <u>10</u> | <u>Erosion Control Seed Substitution</u> | <u>1,2,3</u> | <u>Substitute Encelia californica with Viguiera lacinista. No change in application rate</u> | <u>10-1.16</u> |
| <u>11</u> | <u>Additional Fence and MBGR Work</u> | <u>1,2,3</u> | <u>None</u> | <u>None</u> |
| <u>12</u> | <u>Pavement Modification</u> | <u>3</u> | <u>None</u> | <u>None</u> |
| <u>13</u> | <u>Place Slurry in Lieu of Class 2 Base</u> | <u>3</u> | <u>None</u> | <u>None</u> |
| <u>14</u> | <u>Modify Canal Gates</u> | <u>1,2</u> | <u>None</u> | <u>None</u> |
| <u>15</u> | <u>Remove Saturated Material</u> | <u>1</u> | <u>None</u> | <u>None</u> |
| <u>16</u> | <u>SWPPP Compensation Adjustments</u> | <u>1,2,3</u> | <u>None</u> | <u>None</u> |
| <u>17</u> | <u>Eliminate Item 35 Object Markers</u> | <u>1,2,3</u> | <u>None</u> | <u>None</u> |
| <u>18</u> | <u>Modify Drainage Unit 40a</u> | <u>2</u> | <u>None</u> | <u>None</u> |
| <u>19</u> | <u>Allow Class II RCP In Lieu of Class V</u> | <u>1,2,3</u> | <u>None</u> | <u>None</u> |
| <u>20</u> | <u>Eliminate Items 30, and 31</u> | <u>2</u> | <u>None</u> | <u>None</u> |
| <u>21</u> | <u>Item 15 Adjustment for 125% Overrun</u> | <u>1,2,3</u> | <u>None</u> | <u>None</u> |
| <u>22</u> | <u>Time Adjustment for CCO 2 and 3</u> | <u>1,2,3</u> | <u>None</u> | <u>None</u> |
| <u>23</u> | <u>Add Manchester to Contract</u> | <u>4</u> | <u>Add abandon existing groundwater monitoring wells per CCOT 11</u> | <u>10-1.28 (new)</u> |
| <u>23</u> | <u>Add Manchester to Contract</u> | <u>4</u> | <u>Modify fifth and sixth paragraph language to new liquidated damages text</u> | <u>4</u> |
| <u>23-01S</u> | <u>Additional Funds for Manchester</u> | <u>4</u> | | <u>None</u> |
| <u>23-02S</u> | <u>Additional Funds for</u> | <u>4</u> | <u>None</u> | <u>None</u> |

11-233504

Sites: 1 - 5/56 EDB, 2 - 5/78 EDB, 3 - La Costa IB, 4 - Manchester EDB

| <u>CCO</u> | <u>Description</u> | <u>Affected Location</u> | <u>Needed Change to Specification</u> | <u>Affected Spec. Section No.</u> |
|------------|--------------------------------------|--------------------------|--|-----------------------------------|
| | <u>completion of Location 4</u> | | | |
| <u>24</u> | <u>Drainage Modifications</u> | <u>4</u> | <u>None</u> | <u>None</u> |
| <u>25</u> | <u>Restore Existing Landscaping</u> | <u>4</u> | <u>Add irrigation systems, highway planting and landscape work</u> | <u>10-1.29 (new)</u> |
| <u>26</u> | <u>Final Pay Quantity Adjustment</u> | <u>All</u> | <u>None</u> | <u>None</u> |

IMPORTANT SPECIAL NOTICES

- Attention is directed to Section 2, Section 3, Sections entitled “DVBE Records,” “Performance of DVBE Subcontractors and Suppliers,” and “DVBE Goal for this Project,” of the Special Provisions. Attention is also directed to the Caltrans Bidder - DVBE - Information form and Good Faith Efforts forms in the Proposal and Contract book for this project.
- Attention is directed to “Specifications and Plans” of the Special Provisions. The following Special Provisions are for use in connection with Standard Specifications DATED JULY, 1995 and Standard Plans DATED JULY, 1997.

IMPORTANT EXPEDITE SPECIAL NOTICE

The contract shall be executed by the successful bidder and shall be received with contract bonds by the Office of Office Engineer **within 4 days**, not including Saturdays, Sundays and legal holidays, after the bidder has received the contract for execution instead of the 8 days specified in Section 3-1.03, “Execution of Contract,” of the Standard Specifications. (See Section 3 of the Special Provisions and the Proposal in the Proposal and Contract Book.)

The Contractor shall begin work **within 5 calendar days** after receiving notice that the contract has been approved instead of the 15 days specified for beginning work in Section 8-1.03, “Beginning of Work,” of the Standard Specifications. (See Section 4 of the Special Provisions.)

The time limit specified in the Special Provisions for the completion of work contemplated herein is considered insufficient to pen-nit completion of the work by the Contractor working a normal number of hours per day or week on a single shift basis. It is expected that additional shifts will be required throughout the life of the contract to the extent deemed necessary to ensure that the work will be completed within the time limit specified. (See Section 4 of the Special Provisions.)

CONTRACT NO. 11-233504

| DESIGN OVERSIGHT APPROVAL | REGISTRATION NO. | DATE |
|---------------------------|------------------|---------|
| L. G. Edmonds | 42054 | 3-31-00 |

Approved as to impact on State facilities and conformance with applicable State standards and practices and that technical oversight was performed as described in the California Department of Transportation A & E Consultant Services Manual.

The special provisions contained herein have been prepared by or under the direction of the following Registered Persons.

STRUCTURES

REGISTERED CIVIL ENGINEER

HIGHWAY

REGISTERED CIVIL ENGINEER

TRAFFIC

REGISTERED CIVIL ENGINEER

DRAINAGE

REGISTERED CIVIL ENGINEER

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DEPARTMENT OF TRANSPORTATION

NOTICE TO CONTRACTORS

CONTRACT NO. 11-233504

11-SD-5,15-Var

Sealed proposals for the work shown on the plans entitled:

**STATE OF CALIFORNIA; DEPARTMENT OF TRANSPORTATION; PROJECT
PLANS FOR CONSTRUCTION ON STATE HIGHWAY IN SAN DIEGO COUNTY AT
VARIOUS LOCATIONS**

will be received at the Department of Transportation, 2501 Pullman Street, Building B, Mail Stop (MS) 150, Santa Ana, CA 92705, until 2 o'clock p.m. on July 16, 1998, at which time they will be publicly opened and read in Building B, 2nd Floor Auditorium 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 SAN DIEGO COUNTY
AT VARIOUS LOCATIONS**

General work description: Existing drainage systems to be modified.

This project has a goal of 3 percent disabled veteran business enterprise (DVBE) participation. No pre-bid meeting is scheduled for this project.

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.

The Contractor must also be properly licensed at the time the bid is submitted, except that on a joint venture bid a joint venture license may be obtained by a combination of licenses after bid opening but before award in accordance with Business and Professions Code, Section 7029.1.

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

Preference will be granted to bidders properly certified as a "Small Business" as determined by the Department of General Services, Office of Small and Minority Business at the time of bid opening in accordance with the provisions in Section 2-1.04, "Small Business Preference," of the special provisions, and Section 1896 et seq, Title 2, California Code of Regulations. A form for requesting a "Small Business" preference is included with the bid documents. Applications for status as a "Small Business" must be submitted to the Department of General Services, Office of Small and Minority Business, 1531 "I" Street, Second Floor, Sacramento, CA 95814, Telephone No. (916) 322-5060.

A reciprocal preference will be granted to California company" bidders in accordance with Section 6107 of the Public Contract Code. (See Sections 2 and 3 of the special provisions.) A form for indicating whether bidders are or are not a "California company" is included in the bid documents and is to be filled in and signed by all bidders.

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, Transportation Building, 1120 N Street, MS #26, 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 Santa Ana, Oakland, and the district in which the work is situated. Standard Specifications and Standard Plans 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 available at the office of the District Director of Transportation of the district in which the work is situated.

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

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>. Future effective general prevailing wage rates which have been predetermined and are on file with the Department of Industrial Relations are referenced but not printed in the general prevailing wage rates.

DEPARTMENT OF TRANSPORTATION

Deputy Director Transportation Engineering

Dated June 22, 1998

RRF

COPY OF ENGINEER'S ESTIMATE
(NOT TO BE USED FOR BIDDING PURPOSES)
11-233504

| Item | Item Code | Item | Unit of Measure | Estimated Quantity | Unit Price | Item Total |
|-----------|-----------|---|-----------------|--------------------|------------|------------|
| 1 | 074019 | PREPARE STORM WATER POLLUTION PREVENTION PLAN | LS | LUMP SUM | LUMP SUM | |
| 2 | 074020 | WATER POLLUTION CONTROL | LS | LUMP SUM | LUMP SUM | |
| 3 | 120090 | CONSTRUCTION AREA SIGNS | LS | LUMP SUM | LUMP SUM | |
| 4 | 120100 | TRAFFIC CONTROL SYSTEM | LS | LUMP SUM | LUMP SUM | |
| 5 | 013370 | TRAFFIC PLASTIC DRUMS | EA | 18 | | |
| 6 | 129000 | TEMPORARY RAILING (TYPE K) | M | 520 | | |
| 7 | 129100 | TEMPORARY CRASH CUSHION MODULE | EA | 16 | | |
| 8 | 150805 | REMOVE CULVERT | M | 79 | | |
| 9 | 150821 | REMOVE HEADWALL | EA | 3 | | |
| 10 | 151540 | RECONSTRUCT CHAIN LINK FENCE | M | 55 | | |
| 11 | 160101 | CLEARING AND GRUBBING | LS | LUMP SUM | LUMP SUM | |
| 12 | 190101 | ROADWAY EXCAVATION | M3 | 15 000 | | |
| 13 | 203016 | EROSION CONTROL (TYPE D) | HA | 10 | | |
| 14 | 260201 | CLASS 2 AGGREGATE BASE | M3 | 270 | | |
| 15 | 390155 | ASPHALT CONCRETE (TYPE A) | TONN | 170 | | |
| 16 | 394001 | PLACE ASPHALT CONCRETE DIKE | M | 125 | | |
| 17 (F) | 510502 | MINOR CONCRETE (MINOR STRUCTURE) | M3 | 42 | | |
| 18 | 510526 | MINOR CONCRETE (BACKFILL) | M3 | 53 | | |
| 19 | 013371 | 600 MM REINFORCED CONCRETE PIPE (CLASS V) | M | 360 | | |
| 20 | 650574 | 450 MM REINFORCED CONCRETE PIPE (CLASS V) | M | 75 | | |

COPY OF ENGINEER'S ESTIMATE
(NOT TO BE USED FOR BIDDING PURPOSES)
11-233504

| Item | Item Code | Item | Unit of Measure | Estimated Quantity | Unit Price | Item Total |
|----------|-----------|---|-----------------|--------------------|------------|------------|
| 21 | 650578 | 750 MM REINFORCED CONCRETE PIPE (CLASS V) | M | 85 | | |
| 22 | 664068 | 450 MM CORRUGATED STEEL PIPE (3.51MM THICK) | M | 2 | | |
| 23 | 700660 | 900 MM CORRUGATED STEEL PIPE INLET (3.51 MM THICK) | M | 3 | | |
| 24 | 700663 | 1200 MM CORRUGATED STEEL PIPE INLET (3.51 MM THICK) | M | 6 | | |
| 25 | 013372 | CANAL GATE (STAINLESS STEEL) | EA | 2 | | |
| 26 | 707471 | 900 MM PRECAST CONCRETE PIPE RISER | M | 29 | | |
| 27 | 721007 | ROCK SLOPE PROTECTION (1/4 TON, METHOD B) | M3 | 23 | | |
| 28 | 721009 | ROCK SLOPE PROTECTION (FACING, METHOD B) | M3 | 74 | | |
| 29 | 013373 | CONCRETE (BASIN LINING) | M3 | 740 | | |
| 30 | 721501 | CONCRETE (CONCRETED-ROCK SLOPE PROTECTION) | M3 | 11 | | |
| 31 | 721608 | CONCRETED ROCK SLOPE PROTECTION (LIGHT, METHOD B) | M3 | 45 | | |
| 32 | 729010 | ROCK SLOPE PROTECTION FABRIC | M2 | 21 | | |
| 33 | 731502 | MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION) | M3 | 12 | | |
| 34 (S-F) | 750001 | MISCELLEANEOUS IRON AND STEEL | KG | 5738 | | |
| 35 | 820132 | OBJECT MARKER (TYPE L) | EA | 2 | | |

**STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION**

SPECIAL PROVISIONS

Annexed to Contract No. 11-233504

SECTION 1. SPECIFICATIONS AND PLANS

The work embraced herein shall be done in accordance with the Standard Specifications dated July, 1995, and the Standard Plans dated July, 1997, of the Department of Transportation insofar as the same may apply and in accordance with the following special provisions.

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 accordance with Section 2-1.054, "Required Listing of Proposed Subcontractors," of the Standard Specifications, each proposal shall have listed therein the name and address of each DVBE subcontractor to be used for credit in meeting the goal, and to whom the bidder proposes to directly subcontract portions of the work. The list of subcontractors shall also set forth the portion of work that will be done by each subcontractor listed. A sheet for listing the subcontractors is included in the Proposal.

The form of Bidder's Bond 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.

In accordance 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.

2-1.02 DISABLED VETERAN BUSINESS ENTERPRISE (DVBE)

Section 10115 of the Public Contract Code requires the Department to implement provisions to establish a goal for Disabled Veterans Business Enterprise (DVBE) in contracts.

It is the policy of the Department that Disabled Veteran Business Enterprise (DVBE) shall have the maximum opportunity to participate in the performance of contracts financed solely with state funds. The Contractor shall ensure that DVBEs have the maximum opportunity to participate in the performance of this contract and shall take all necessary and reasonable steps for this assurance. The Contractor shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of subcontracts. Failure to carry out the requirements of this paragraph shall constitute a breach of contract and may result in termination of this contract or other remedy the Department may deem appropriate-

Bidder's attention is directed to the following:

(a) "Disabled Veteran Business Enterprise" (DVBE) means a business concern certified as a DVBE by the Office of Small and Minority Business, Department of General Services.

(b) A DVBE may participate as a prime contractor, subcontractor, joint venture partner with a prime, or subcontractor, or vendor of material or supplies;

(c) Credit for DVBE prime contractors will be 100 percent.

(d) A DVBE 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 DVBE joint venture partner must share in the ownership, control, management responsibilities, risks and profits of the joint venture. The DVBE joint venturer must submit the joint venture agreement with the Caltrans Bidder DVBE Information form required in Section 3-1.01 A, "DVBE Information," elsewhere in these special provisions;

(e) A DVBE 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) Credit for DVBE vendors of materials or supplies is limited to 60 percent of the amount to be paid to the vendor for the material unless the vendor manufactures or substantially alters the goods;

(g) Credit for trucking by DVBEs will be as follows:

(1) One hundred percent of the amount to be paid when a DVBE trucker will perform the trucking with his/her own trucks, tractors and employees;

(2) Twenty percent of the amount to be paid to DVBE trucking brokers who do not have a "certified roster";

(3) One hundred percent of the amount to be paid to DVBE trucking brokers who have:

a. signed agreements that all trucking will be performed by DVBE truckers if credit is toward the DVBE goal;

b. a "certified roster" showing that all trucks are owned by DVBEs; and

c. a signed statement on the "certified roster" that indicates that 100 percent of revenue paid by the broker will be paid to the DVBEs listed on the "certified roster".

(4) Twenty percent of the amount to be paid to trucking brokers who are not a DVBE but who have:

a. signed agreements with DVBE truckers assuring that at least 20 percent of the trucking will be performed by DVBE truckers if credit is toward the DVBE goal;

b. a "certified roster" showing that at least 20 percent of the number of trucks are owned by DVBE truckers; and

c. a signed statement on the "certified roster" that indicates that at least 20 percent of the revenue paid by the broker will be paid to the DVBEs listed on the "certified roster".

The "certified roster" referred to herein shall conform to the requirements in Section 3-1.01A, "DVBE Information," elsewhere in these special provisions;

(h) DVBEs and DVBE joint venture partners must be certified DVBEs as determined by the Department of General Services, Office of Small and Minority Business, 1531 "I" Street, Second Floor, Sacramento, CA 95814, on the date bids for the project are opened before credit may be allowed toward the DVBE goal.

It is the Contractor's responsibility to verify that DVBEs are certified;

(i) Noncompliance by the Contractor with these requirements constitutes a breach of this contract and may result in termination of the contract or other appropriate remedy for a breach of this contract.

2-1.03 DVBE GOAL FOR THIS PROJECT

The Department has established the following goal for Disabled Veteran Business Enterprise (DVBE) participation for this project:

Disabled Veteran Business Enterprise (DVBE), 3 percent.

It is the bidder's responsibility to make a sufficient portion of the work available to subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DVBE subcontractors and suppliers, so as to assure meeting the goal for DVBE participation

The Office of Small and Minority Business, Department of General Services, may be contacted at (916) 322-5060 or visit their Internet web site at www.dgs.ca.gov/osmb for program information and certification status. The Department's Business Enterprise Program may also be contacted at (916) 227-9599 or the Internet web site at <http://www.dot.ca.gov/hq/bep/>.

2-1.04 SMALL BUSINESS PREFERENCE

Attention is directed to "Submission of DVBE Information and Award and Execution of Contract" elsewhere in these special provisions.

Attention is also directed to the Small Business Procurement and Contract Act, Government Code Section 14835, et seq and Title 2, California Code of Regulations, Section 1896, et seq.

Bidders who wish to be classified as a Small Business under the provisions of those laws and regulations, shall be certified as Small Business by the Department of General Services, Office of Small and Minority Business, 1531 "I" Street, Second Floor, Sacramento, CA 95814.

To request Small Business Preference, bidders shall fill out and sign the Request for Small Business Preference form in the Proposal and shall attach a copy of their Office of Small and Minority Business (OSMB) small business certification letter to the form. The bidder's signature on the Request for Small Business Preference certifies, under penalty of perjury, that the bidder is certified as Small Business at the time of bid opening and further certifies, under penalty of perjury, that under the following conditions, at least 50 percent of the subcontractors to be utilized on the project are either certified Small Business or have applied for Small Business certification by bid opening date and are subsequently granted Small Business certification.

The conditions requiring the aforementioned 50 percent level of subcontracting by Small Business subcontractors apply if:

1. The lowest responsible bid for the project exceeds \$ 1 00 000; and
2. The project work to be performed requires a Class A or a Class B contractor's license; and
3. Two or more subcontractors will be used.

If the above conditions apply and Small Business Preference is granted in the award of the contract, the 50 percent Small Business subcontractor utilization level shall be maintained throughout the life of the contract.

2-1.05 CALIFORNIA COMPANY PREFERENCE

Attention is directed to "Award and Execution of Contract" of these special provisions.

In accordance with the requirements of Section 6107 of the Public Contract Code, a "California company" will be granted a reciprocal preference for bid comparison purposes as against a nonresident contractor from any state that gives or requires a preference to be given contractors from that state on its public entity construction contracts..

A "California company" means a sole proprietorship, partnership, joint venture, corporation, or other business entity that was a licensed California contractor on the date when bids for the public contract were opened and meets one of the following:

- (1) Has its principal place of business in California.
- (2) Has its principal place "of business in a state in which there is no local contractor preference on construction contracts.
- (3) Has its principal place of business in a state in which there is a local contractor construction preference and the contractor has paid not less than \$5000 in sales or use taxes to California for construction related activity for each of the five years immediately preceding the submission of the bid.

To carry out the "California company" reciprocal preference requirements of Section 6107 of the Public Contract Code, all bidders shall fill out and sign the California Company Preference form in the Proposal. The bidder's signature on the California Company Preference form certifies, under penalty of perjury, that the bidder is or is not a "California company" and if not, the amount of the preference applied by the state of the nonresident Contractor.

A nonresident Contractor shall disclose any and all bid preferences provided to the nonresident Contractor by the state or country in which the nonresident Contractor has its principal place of business.

Proposals without the California Company Preference form filled out and signed may be rejected.

SECTION 3. SUBMISSION OF DVBE INFORMATION AND AWARD AND EXECUTION OF CONTRACT

3-1.01 GENERAL

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 submittal of DVBE information and award and execution of contract.

The contract shall be signed by the successful bidder and returned, together with the contract bonds, within 4 days, not including Saturdays, Sundays and legal holidays, after the bidder has received notice that the contract has been awarded.

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

It is the bidder's responsibility to meet the goal for DVBE participation or to provide information to establish that, prior to bidding, the bidder made a good faith effort to do so.

3-1.01A DVBE INFORMATION

If the DVBE information is not submitted with the bid, the apparent successful bidder (low bidder), the second low bidder and the third low bidder shall submit the DVBE 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. DVBE 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 DVBE information by the time specified will be grounds for finding the bid or proposal nonresponsive. Other bidders need not submit DVBE information unless requested to do so by the Department.

The bidder's DVBE information shall establish that the DVBE goal will be met or that a good faith effort to meet the goal has been made.

Bidders are cautioned that even though their submittal indicates they will meet the stated DVBE goal, their submittal should also include their good faith efforts information along with their DVBE 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 information to show that the DVBE goal will be met shall include the names of DVBEs and DVBE joint venture partners to be used, with a complete description of work or supplies to be provided by each and the dollar value of each DVBE transaction. When 100 percent of a contract item of work is not to be performed or furnished by a DVBE, a description of the exact portion of that work to be performed or furnished by that DVBE shall be included in the DVBE information, including the planned location of that work. (Note: DVBE subcontractors to whom the bidder proposes to directly subcontract portions of the work are to be named in the bid. - See Section 2-1.054, "Required Listing of Proposed Subcontractors," of the Standard Specifications and Section 2-1.01, "General," of these special provisions, regarding listing of proposed subcontractors).

If credit for trucking by a DVBE trucking broker is shown on the biddees information as 100 percent of the revenue to be paid by the broker is to be paid to DVBE truckers, a "certified roster" of the broker's trucks to be used must be included. The "certified roster" must indicate that all the trucks are owned by certified DVBEs and must show the DVBE truck numbers, owner's name, Public Utilities Commission Cal-T numbers, and the DVBE certification numbers. The roster must indicate that all revenue paid by the broker will be paid to DVBEs listed on the "certified roster".

If credit for trucking by a trucking broker who is not a DVBE is shown in the bidder's information, a "certified roster" of the broker's trucks to be used must be included. The "certified roster" must indicate that at least 20 percent of the broker's trucks are owned by certified DVBEs and must show the DVBE truck numbers, owner's name, Public Utilities Commission Cal-T numbers, and the DVBE certification number. The roster must indicate that at least 20 percent of the revenue paid by the broker will be paid to DVBEs listed on the "certified roster".

A bidder shall be deemed to have made good faith efforts upon submittal, within time limits specified by the Department, of documentary evidence that all of the following actions were taken:

- (1) Contact was made with the Office of Small and Minority Business (OSMB), Department of General Services or their web site at www.dgs.ca.gov/osmb to identify Disabled Veteran Business Enterprises.
- (2) Advertising was published in wade media and media focusing on Disabled Veteran Business Enterprises, unless time limits imposed by the Department do not permit that advertising.
- (3) Invitations to bid were submitted to potential Disabled Veteran Business Enterprise contractors.
- (4) Available. Disabled Veteran Business Enterprises were considered.

3-1.01B AWARD OF CONTRACT

The award of 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 DVBE participation or has demonstrated, to the satisfaction of the Department, good faith effort to do so. Meeting the goal for DVBE participation or demonstrating, to the satisfaction of the Department, good faith efforts to do so is a condition for being eligible for award of contract.

A "Vendor 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, vendor 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 "Vendor Data Record" form to the Department as provided herein will result in the retention of 20 percent of payments due the contractor and penalties of up to \$20 000. This retention of payments for failure to complete the "Vendor Data Record" form is in addition to any other retention of payments due the Contractor.

Attention is also directed to "Small Business Preference" of these special provisions. Any bidder who is certified as a Small Business by the Department of General Services, Office of Small and Minority Business will be allowed a preference in the award of this contract, if it be awarded, under the following conditions:

- (1) The apparent low bidder is not certified as a Small Business, or has not filled out and signed the Request for Small Business Preference included with the bid documents and attached a copy of their Office of Small and Minority Business (OSMB) small business certification letter to the form; and
- (2) The bidder filled out and signed the Request for Small Business- Preference form included with the bid documents and attached a copy of their Office of Small and Minority Business (OSMB) small business certification letter to the form.

The small business preference will be a reduction in the bid submitted by the small business contractor, for bid comparison purposes, by an amount equal to 5 percent of the amount bid by the apparent low bidder, the amount not to exceed \$50 000. If this reduction results in the small business contractor becoming the low bidder, then the contract will be awarded to the small business contractor on the basis of the actual bid of the small business contractor notwithstanding the reduced bid price used for bid comparison purposes.

Attention is also directed to "California Company Preference" of these special provisions.

The amount of the California company reciprocal preference shall be equal to the amount of the preference applied by the state of the nonresident contractor with the lowest responsive bid, except where the "California company" is eligible for a California Small Business Preference, in which case the preference applied shall be the greater of the two, but not both.

If the bidder submitting the lowest responsive bid is not a "California company" and with the benefit of the reciprocal preference, a "California company's" responsive bid is equal to or less than the original lowest responsive bid, the "California company" will be awarded the contract at its submitted bid price except as provided below.

Small business bidders shall have precedence over nonsmall business bidders in that the application of the "California company" preference for which nonsmall business bidders may be eligible shall not result in the denial of the award to a small business bidder.

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 5 calendar days after the contract has been approved by the Attorney General or the attorney appointed and authorized to represent the Department of Transportation.

The work shall be diligently prosecuted to completion before the expiration of

63 WORKING DAYS

beginning on the fifth calendar day after approval of the contract.

The Contractor shall pay to the State of California the sum of \$900 per day, for each and every calendar day's delay in finishing the work in excess of the number of working days prescribed above.

In addition to the above stated liquidated damages, an additional \$5,000 per day shall be paid to the State of California for each and every day after ~~November 18, 1998~~ June 30, 1999 that is required to complete the project. This is to conform to a Court ordered Consent Degree (Case No. 97-0037-IEG).

The time limit specified for the completion of the work contemplated herein is considered ~~is~~ sufficient to permit completion of the work by the Contractor working a normal number of hours per day or week on a single shift basis. Additional shifts may be required to the extent necessary to ensure that the work will be completed within the time limit specified.

Full compensation for any additional costs occasioned by compliance with the provisions in this section shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

SECTION 5. GENERAL

SECTION 5-1. MISCELLANEOUS

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 \$5000 or more.

5-1.02 LABOR CODE REQUIREMENTS

Section 7- 1.01 A(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- 1.01 A(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 collective 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 subcontractors 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. 1 0 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 re-quest 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 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.

5-1.04 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.

5-1.05 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 3.6 m 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 0.3-m deep.
 - (c) Trenches less than 0.3-m wide for irrigation pipe or electrical conduit, or excavations less than 0.3-m 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 1:4 (vertical:horizontal).
 - (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 the Contractor's 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 3.6 m of the lane and the 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 4.6 m 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 0.3-m transversely to 3 m longitudinally with respect to the edge of the traffic lane. If the 4.6-m 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 1992 Standard Plan T3, may be used. Temporary railing (Type K) fabricated prior to January 1, 1993, and conforming to 1988 Standard Plan B 1 1-30 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 3 m 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 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) (Kilometers Per Hour) | Work Areas |
|--|--|
| Over 72 (45 Miles Per Hour) | Within 1.8 m of a traffic lane but not on a traffic lane |
| 56 to 72 (35 to 45 Miles Per Hour) | Within 0.9-m 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 3 in 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.

5-1.06 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.

Material from mining operations furnished for this project shall only come from permitted sites in compliance with the Surface Mining and Reclamation Act of 1975.

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.

5-1.07 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.

5-1.08 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.

5-1.09 DVBE RECORDS

The Contractor shall maintain records of all subcontracts entered into with certified DVBE subcontractors and records of materials purchased from certified DVBE suppliers. The records shall show the name and business address of each DVBE subcontractor or vendor and the total dollar amount actually paid each DVBE subcontractor or vendor.

Upon completion of the contract, a summary of these records shall be prepared on Form CEM-2402 and certified correct by the Contractor or the Contractor's authorized representative, and shall be furnished to the Engineer.

5-1.095 PERFORMANCE OF DVBE SUBCONTRACTORS AND SUPPLIERS

The DVBEs listed by the Contractor in response to the requirements in Section 3, "Submission of DVBE Information and Award and Execution of Contract," in these special provisions, which are determined by the Department to be certified DVBEs, 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 utilize other forces or sources of materials may be requested for the following reasons:

- (1) The listed DVBE, after having had a reasonable opportunity to do so, fails or refuses to execute a written contract, when the written contract, based upon the general terms, conditions, plans and specifications for the project, or on the terms of the subcontractor's or supplier's written bid, is presented by the Contractor.
- (2) The listed DVBE becomes bankrupt or insolvent.
- (3) The listed DVBE fails or refuses to perform the subcontract or furnish the listed materials.

- (4) The Contractor stipulated that a bond was a condition of executing a subcontract and the listed DVBE subcontractor fails or refuses to meet the bond requirements of the Contractor.
- (5) The work performed by the listed subcontractor is substantially unsatisfactory and is not in substantial accordance with the plans and specifications, or the subcontractor is substantially delaying or disrupting the progress of the work.
- (6) The listed DVBE subcontractor is not licensed pursuant to the Contractor's License Law.
- (7) It would be in the best interest of the State.

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

5-1.097 SUBCONTRACTING

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

The DVBE information furnished under Section 3-1.01A, "DVBE Information," of these special provisions is in addition to the subcontractor information required to be furnished under said Section 8-1.01, "Subcontracting," and Section 2-1.054, "Required Listing of Proposed Subcontractors," of the Standard Specifications.

Section 101 15 of the Public Contract Code requires the Department to implement provisions to establish a goal for Disabled Veteran Business Enterprise (DVBE) participation in highway contracts that are state funded. As a part of this requirement:

1. No substitution of a DVBE subcontractor shall be made at any time without the written consent of the Department, and
2. If a DVBE subcontractor is unable to perform successfully and is to be replaced, the Contractor will be required to make good faith efforts to replace the original DVBE subcontractor with another DVBE subcontractor.

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

5-1.10 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 will be to maintain cooperative communication and mutually resolve conflicts at the lowest possible management level.

The Contractor may request the formation of such 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.

The costs involved in providing a facilitator and a workshop site will be borne equally by the State and the Contractor. The Contractor shall pay all compensation for the wages and expenses of the facilitator, and of the expenses for obtaining the workshop site. The State's share of such costs will be reimbursed to the Contractor in a change order written by the Engineer. Markups will not be added. All other costs associated with the "Partnering" relationship will be borne separately by the party incurring the costs.

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.

5-1.11 AREAS FOR CONTRACTOR'S USE

Attention is directed to the requirements specified 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 the Contractor's 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.

5-1.12 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 the contract item of work which will be recognized for progress payment purposes.

Clearing and Grubbing \$ 20,000

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 the 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 the payment as materials furnished but not incorporated in the work:

Culvert pipe and appurtenances
Canal gate

5-1.13 SOUND CONTROL REQUIREMENTS

Sound control shall conform to the provisions in Section 7-1.011, "Sound Control Requirements," of the Standard Specifications and these special provisions.

The noise level from the Contractor's operations, between the hours of 7:00 p.m. and 7:00 a.m., shall not exceed 86 dBA at a distance of 15 m. This requirement in no way relieves the Contractor from responsibility for complying with local ordinances regulating noise level outside the limits of the State right of way.

The noise level requirement specified herein shall apply to the 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.

SECTION 6. (BLANK)

SECTION 7. (BLANK)

SECTION 8. MATERIALS

SECTION 8-1. MISCELLANEOUS

8-1.01 SUBSTITUTION OF NON-METRIC MATERIALS AND PRODUCTS

Only materials and products conforming to the requirements of the specifications shall be incorporated in the work. When metric materials and products are not available, and when approved by the Engineer, and at no cost to the State, materials and products in the inch-pound (imperial) system which are of equal quality and of the required properties and characteristics for the purpose intended, may be substituted for the equivalent metric materials and products, subject to the following requirements:

Materials and products shown on the plans or in the special provisions as being equivalent may be substituted for the metric materials and products specified or detailed on the plans.

Before other non-metric materials and products will be considered for use the Contractor shall furnish, at the Contractor's expense, evidence satisfactory to the Engineer that the materials and products proposed for use are equal to or better than the materials and products specified or detailed on the plans. The burden of proof as to the quality and suitability of substitutions shall be upon the Contractor and the Contractor shall furnish all information necessary as required to the Engineer. The Engineer will be the sole judge as to the quality and suitability of the substituted materials and products and the Engineer's decision shall be final.

When the Contractor elects to substitute non-metric materials and products, including materials and products shown on the plans or in the special provisions as being equivalent, the list of sources of material as specified in Section 6-1.01, "Source of Supply and Quality of Materials," of the Standard Specification shall include a list of substitutions to be made and contract items involved. In addition, for any change in design or details the Contractor shall submit plans and working drawings in accordance with Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications.

Attention is directed to "Reinforcement in these special provisions for allowable substitutions of imperial reinforcing bars for metric reinforcing bars.

The following substitutions of materials and products will be allowed:

SUBSTITUTION TABLE FOR SIZES OF HIGH STRENGTH STEEL FASTENERS
ASTM Designation: A 325M

| METRIC SIZE SHOWN ON THE PLANS mm x thread pitch | IMPERIAL SIZE TO BE SUBSTITUTED inch |
|---|---|
| M16 x 2 | 5/8 |
| M20 x 2.5 | 3/4 |
| M22 x 2.5 | 7/8 |
| M24 x 3 | 1 |
| M27 x 3 | 1-1/8 |
| M30 x 3.5 | 1-1/4 |
| M36 x 4 | 1-1/2 |

SUBSTITUTION TABLE FOR PLAINWIRE REINFORCEMENT, ASTM Designation: A 82

| METRIC SIZE SHOWN ON THE PLANS mm ² | US CUSTOMARY UNITS SIZE TO BE SUBSTITUTED inch ² x 100 |
|---|--|
| MW9 | W 1.4 |
| MW10 | W 1.6 |
| MW13 | W2.0 |
| MW15 | W2.3 |
| MW19 | W2.9 |
| MW20 | W3.1 |
| MW22 | W3.5 |
| MW25 | W3.9, except W3.5 in piles only |
| MW26 | W4.0 |
| MW30 | W4.7 |
| MW32 | W5.0 |
| MW35 | W5.4 |
| MW40 | W6.2 |
| MW45 | W6.5 |
| MW50 | W7.8 |
| MW55 | W8.5, except W8.0 in piles only |
| MW60 | W9.3 |
| MW70 | W 10.9, except WI 1.0 in piles only |
| MW80 | W12.4 |
| MW90 | W14.0 |
| MW100 | W15.5 |

The sizes in the following tables of materials and products are exact conversions of metric sizes of materials and products and are listed as acceptable equivalents:

CONVERSION TABLE FOR SIZES OF:

(1) STEEL FASTENERS FOR GENERAL APPLICATIONS, ASTM Designation: A 307 or AASHTO Designation: M 314, Grade 36 or 55, and (2) HIGH STRENGTH STEEL FASTENERS, ASTM Designation: A 325 or A 449

| METRIC SIZE SHOWN ON THE PLANS mm | EQUIVALENT IMPERIAL SIZE inch |
|-----------------------------------|-------------------------------|
| 6, or 6.35 | 1/4 |
| 8 or 7.94 | 5/16 |
| 10, or 9.52 | 3/8 |
| 11, or 11.11 | 7/16 |
| 13 or 12.70 | 1/2 |
| 14, or 14.29 | 9/16 |
| 16, or 15.88 | 5/8 |
| 19, or 19.05 | 3/4 |
| 22, or 22.22 | 7/8 |
| 24, 25, or 25.40 | 1 |
| 29, or 28.58 | 1-1/8 |
| 32, or 31.75 | 1-1/4 |
| 35, or 34.93 | 1-3/8 |
| 38 or 38.10 | 1-1/2 |
| 44, or 44.45 | 1-3/4 |
| 51, or 50.80 | 2 |
| 57, or 57.15 | 2-1/4 |
| 64, or 63.50 | 2-1/2 |
| 70 or 69.85 | 2-3/4 |
| 76, or 76.20 | 3 |
| 83, or 82.55 | 3-1/4 |
| 89 or 88.90 | 3-1/2 |
| 95, or 95.25 | 3-3/4 |
| 102, or 101.60 | 4 |

CONVERSION TABLE FOR NOMINAL THICKNESS OF SHEET METAL

| UNCOATED HOT AND COLD ROLLED SHEET | | HOT-DIPPED ZINC COATED SHEETS (GALVANIZED) | |
|--|--------------------------------|---|--|
| METRIC THICKNESS SHOWN ON THE PLANS | EQUIVALENT US STANDARD GAGE | METRIC THICKNESS SHOWN ON THE PLANS | EQUIVALENT GALVANIZED SHEET GAGE |
| mm | inch | mm | inch |
| 7.94 | 0.3125 | 4.270 | 0.1681 |
| 6.07 | 0.2391 | 3.891 | 0.1532 |
| 5.69 | 0.2242 | 3.510 | 0.1382 |
| 5.31 | 0.2092 | 3.132 | 0.1233 |
| 4.94 | 0.1943 | 2.753 | 0.1084 |
| 4.55 | 0.1793 | 2.372 | 0.0934 |
| 4.18 | 0.1644 | 1.994 | 0.0785 |
| 3.80 | 0.1495 | 1.803 | 0.0710 |
| 3.42 | 0.1345 | 1.613 | 0.0635 |
| 3.04 | 0.1196 | 1.461 | 0.0575 |
| 2.66 | 0.1046 | 1.311 | 0.0516 |
| 2.28 | 0.0897 | 1.158 | 0.0456 |
| 1.90 | 0.0747 | 1.006 or 1.016 | 0.0396 |
| 1.71 | 0.0673 | 0.930 | 0.0366 |
| 1.52 | 0.0598 | 0.853 | 0.0336 |
| 1.37 | 0.0538 | 0.777 | 0.0306 |
| 1.21 | 0.0478 | 0.701 | 0.0276 |
| 1.06 | 0.0418 | 0.627 | 0.0247 |
| 0.91 | 0.0359 | 0.551 | 0.0217 |
| 0.84 | 0.0329 | 0.513 | 0.0202 |
| 0.76 | 0.0299 | 0.475 | 0.0187 |
| 0.68 | 0.0269 | | |
| 0.61 | 0.0239 | | |
| 0.53 | 0.0209 | | |
| 0.45 | 0.0179 | | |
| 0.42 | 0.0164 | | |
| 0.38 | 0.0149 | | |

CONVERSION TABLE FOR WIRE

| METRIC THICKNESS SHOWN ON THE PLANS mm | EQUIVALENT USA STEEL WIRE THICKNESS inch | GAGE NO. |
|--|---|----------|
| 6.20 | 0.244 | 3 |
| 5.72 | 0.225 | 4 |
| 5.26 | 0.207 | 5 |
| 4.88 | 0.192 | 6 |
| 4.50 | 0.177 | 7 |
| 4.11 | 0.162 | 8 |
| 3.76 | 0.148 | 9 |
| 3.43 | 0.135 | 10 |
| 3.05 | 0.120 | 11 |
| 2.69 | 0.106 | 12 |
| 2.34 | 0.092 | 13 |
| 2.03 | 0.080 | 14 |
| 1.83 | 0.072 | 15 |
| 1.57 | 0.062 | 16 |
| 1.37 | 0.054 | 17 |
| 1.22 | 0.048 | 18 |
| 1.04 | 0.041 | 19 |
| 0.89 | 0.035 | 20 |

CONVERSION TABLE FOR PIPE PILES

| METRIC SIZE SHOWN ON THE PLANS mm x mm | EQUIVALENT IMPERIAL SIZE inch x inch |
|---|---|
| PP 360 x 4.55 | NPS 14 x 0.179 |
| PP 360 x 6.35 | NPS 14 x 0.250 |
| PP 360 x 9.53 | NPS 14 x 0.375 |
| PP 360 x 11.12 | NPS 14 x 0.438 |
| PP 406 x 12.70 and PP 460 x 12.70 | NPS 16 x 0.500 |

* Applies only to Standard Plan B2-1 1, Alternative "W" Steel Pipe - Pile Details.

CONVERSION TABLE FOR STRUCTURAL TIMBER AND LUMBER

| METRIC MINIMUM DRESSED DRY SHOWN ON THE PLANS mm x mm | METRIC MINIMUM DRESSED GREEN, SHOWN ON THE PLANS mm x mm | EQUIVALENT NOMINAL US SIZE inch x inch |
|---|--|---|
| 19x89 | 20x90 | 1x4 |
| 38x89 | 40x90 | 2x4 |
| 64x89 | 65x90 | 3x4 |
| 89x89 | 90x90 | 4x4 |
| 140x140 | 143x143 | 6x6 |
| 140x184 | 143x190 | 6x8 |
| 184x184 | 190x190 | 8x8 |
| 235x235 | 241x241 | 10x10 |
| 286x286 | 292x292 | 12x12 |

CONVERSION TABLE FOR NAILS AND SPIKES

| METRIC COMMON NAIL, SHOWN ON THE PLANS | METRIC BOX NAIL, SHOWN ON THE PLANS | METRIC SPIKE, SHOWN ON THE PLANS | EQUIVALENT IMPERIAL SIZE |
|---|--|--|-----------------------------|
| Length, mm Diameter, mm | Length, mm' Diameter, mm | Length, mm Diameter, mm | Penny-weight |
| 50.80 2.87 | 50.80 2.51 | | 6d |
| 63.50 3.33 | 63.50 2.87 | | 8d |
| 76.20 3.76 | 76.20 3.25 | 76.20 4.88 | 10d |
| 82.55 3.76 | 82.55 3.76 | 82.55 4.88 | 12d |
| 88.90 4.11 | 88.90 3.43 | 88.90 5.26 | 16d |
| 101.60 4.88 | 101.60 3.76 | 101.60 5.72 | 20d |
| 114.30 5.26 | 114.30 3.76 | 114.30 6.20 | 30d |
| 127.00 5.72 | 127.00 4.11 | 127.00 6.68 | 40d |
| ————— | ————— | 139.70, 7.19 | 50d |
| ————— | ————— | 152.40 7.19 | 60d |

8-1.02 PREQUALIFIED AND TESTED SIGNING AND DELINEATION MATERIALS

The Department maintains a trade name list of approved prequalified and tested signing and delineation materials and products. Approval of prequalified and tested products and materials shall not preclude the Engineer from sampling and testing of the signing and delineation materials or products at any time.

None of the listed signing and delineation materials and products shall be used in the work unless material or product is listed on the Department's List of Approved Traffic Products. A Certificate of Compliance shall be furnished as specified in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for signing and delineation materials and products. The certificate shall also certify that the signing and delineation material or product conforms to the prequalified testing and approval of the Department of Transportation, Division of Traffic Operations and was manufactured in accordance with the approved quality control program.

Materials and products will be considered for addition to the approved prequalified and tested list if the manufacturer of the material or product submits to the Division of Traffic Operations a sample of the material or product.. The sample shall be sufficient to permit performance of required tests. Approval of materials or products will be dependent upon a determination as to compliance with the specifications and test the Department may elect to perform.

The following is a listing of approved prequalified and tested signing and delineation materials and products:

Pavement Markers, Permanent Type

REFLECTIVE

1. Adelite (4"x4")
2. Apex, Model 921 (4"x4")
3. Pavement Markers, Inc., "Hye-Lite" (4"x4")
4. Ray-O-Lite, Models SS, RS and AA (4"x4")
5. Ray-O-Lite, Model 2002 (2.4"x4.7")
6. Stimsonite, Model 88 (4" x4")

REFLECTIVE WITH ABRASION RESISTANT SURFACE

1. Ray-O-Lite "AA" ARS (4"x4")(Not for use in recessed applications)
2. Ray-O-Lite Model 2002 ARS (2.2"x4.7")
3. Stimsonite, Model 911 (4"x4")(Not for use in recessed applications)
4. Stimsonite, Model 944 SB (2"x4")
5. Stimsonite, Model 948 (2.3"x4.7")
6. Stimsonite, Model 953 (2.75"x4.5")(Not for use in recessed applications)

NON-REFLECTIVE FOR USE WITH EPOXY OR BITUMEN ADHESIVE

1. Apex Universal (Ceramic)
2. Highway Ceramics, Inc. (Ceramic)
3. Zumar, TM40W/Y (Polyester)

NON-REFLECTIVE FOR USE WITH BITUMEN ADHESIVE ONLY

1. Apex Universal, Model 929 (ABS)
2. Elgin Molded Plastics, "Empco-Lite" Model 900 (ABS)
3. Hi-Way Safety, Inc., Models P20-2000W and 2001 Y (ABS)
4. Interstate Sales, "Diamond Back" (ABS)
5. Loomis Plastics, D-Dot (ABS)
6. Pavement Markers, Inc., (Marker Supply) - Models A1107 and AY1108 (ABS)
7. Road Creations, Model RCB4NR (Acrylic)

Pavement Markers, Temporary Type

TEMPORARY MARKERS FOR LONG TERM DAY/NIGHT USE (6 months or less)

1. Apex Universal, Model 924 (4"x4")
2. Davidson Plastics, Model 3.0
3. Elgin Molded Plastics, "Empco-Lite" Model 901 (4" Round)
4. Highway Technologies, Megalites (4"x4")
5. Road Creations, Model R41C (4"x4")
6. Vega Molded Products "Temporary Road Marker" (3"x4")

TEMPORARY MARKERS FOR SHORT TERM DAY/NIGHT USE (14 days or less)

1. Apex Universal, Model 932
2. Davidson Plastics, Models TOM (Standard) with Reflexite PC-1000, or (WZ) with Reflexite AC-1000 Sheeting
3. Hi-Way Safety, Inc., Model 1280/1281 with Reflexite PC- 1000

TEMPORARY MARKERS FOR. SHORT TERM DAY/NIGHT USE (14 days or less at sea] coat locations)

1. Apex Universal, Model 932
2. Davidson Plastics, Models TRPM (Standard) with Reflexite PC-1000, or (WZ) with Reflexite AC-1000 Sheeting
3. Davidson Plastics, Models "HH" (High Heat) TRPM (Standard) with Reflexite PC-1000, or (WZ) with Reflexite AC-1000 Sheeting
4. Hi-Way Safety, Inc., Model 1280/1281 with Reflexite PC-1000

Striping and Pavement Marking Materials

PERMANENT TRAFFIC STRIPING AND PAVEMENT MARKING TAPE (For use on high and low volume roadways)

1. Advanced Traffic Marking, Series 300 and 400
2. Brite-Line, Series 1000
3. Swarco Industries, "Director 35" (For transverse application only)
4. Swarco Industries, "Director 60"
5. 3M, "Stamark" Series 380, A420, A440 and 5730
6. 3M, "Stamark" Series N420 and N440 (For transverse application only)

PERMANENT TRAFFIC STRIPING AND PAVEMENT MARKING TAPE (For use on low volume roadways only)

1. 3M, "Stamark" Series A320 Bisymmetric

TEMPORARY REMOVABLE STRIPING AND PAVEMENT MARKING TAPE

1. Advanced Traffic Marking, ATM Series 200
2. Brite-Line, Series 100
3. P.B. Laminations, Aztec, Grade 102
4. Swarco Industries, "Director-2"
5. 3M, "Stamark" Brand, Detour Grade, Series 57 10 and A620

PREFORMED THERMOPLASTIC

1. Flint Trading, "Premark" and "Penmark 20/20 Flex"
2. Pavemark, "Hotape"

REMOVABLE TRAFFIC PAINT

1. Belpro, Series 250/252 and No. 93 Remover

Class 1 Delineators

ONE-PIECE DRIVEABLE FLEXIBLE TYPE, 1700 mm (66")

1. Carsonite, Curve-Flex CFPM-400
2. Carsonite, Roadmarker CRM-375
3. Davidson Plastics, "Flexi-Guide Models 400 and 566"
4. GreenLine Model HWDI-66
5. GreenLine Model CGDI-66
6. J. Miller Industries, Model JMI-375 with soil anchor

SPECIAL USE FLEXIBLE TYPE, 1200 mm (48")

1. Carsonite, "Survivor" with 18" U-Channel anchor
2. FlexStake, H-D
3. GreenLine HWD with 18" soil anchor
4. GreenLine CGD with 18" soil anchor
5. Safe-Hit with 8" pavement anchor (SH248-GP1)
6. Safe-Hit with 15" soil anchor (SH248-GP2)
7. Safe-Hit with 18" soil anchor (SH248-GP3)

SURFACE MOUNT FLEXIBLE TYPE, 1200 mm (48")

1. Bent Manufacturing Co., "Masterflex" Model MF-180EX-48"
2. Carsonite, "Super Duck II"
2. FlexStake, Surface Mount H-D

Channelizers

SURFACE MOUNT TYPE, 900 mm (36")

1. Bent Manufacturing Co., "Masterflex" Models MF-360-36 (Round) and MF- 180-36" (Flat)
2. Carsonite, "Super Duck" (Flat SDF-436, Round SDR-336)
3. Carsonite, Super Duck H Model SDCF203601MB "The Channelizer"
4. Davidson Plastics, Flex-Guide FG300
5. FlexStake, Surface Mount H-D
6. GreenLine, Model SMD-36
7. Repo, Models 300 and 400
8. Safe-Hit, Guide Post, Model SH236SMA, with glue down base
9. The Line Connection, "Dura-Post" Model DP36-3 (Permanent)
10. The Line Connection, "Dura-Post" Model DP36-3C (Temporary)

Type K Object Markers, 450 mm (18")

1. Carsonite, Model SMD-615
2. Repo, Models 300 and 400
3. Safe-Hit, Model SH718SMA
4. The Line Connection, Model DP21-4K (Vertical configuration only)

Type K-4 Object Markers, 450-600 mm (18-24") (previously listed as "Q")

1. Carsonite, Super Duck II
2. Repo, Models 300 and 400
3. Safe-Hit, Models SH824SMA--WA and SH824GP3--WA
4. The Line Connection, Model "DP21-4Q"

Concrete Barrier Markers (For use to the left of traffic)

IMPACTABLE TYPE

1. Astro Optics "FB"
2. Davidson Plastics, Model PCBM - 12
3. Duraflex Corp., "Flexx 2020" and "Electriflexx"

NON-IMPACTABLE TYPE

1. Astro-Optics, JDSeries
2. Stimsonite, Model 967 (with 3 1/4" Acrylic cube comer reflector)
3. Stimsonite, Model 967LS (with Stimsonite Sheeting)
4. Vega Molded Products, Models GBM and JD

Thrie Beam Barrier Markers (For use to the left of traffic)

1. Duraflex Corp., "Railrider"
2. Davidson Plastics, "Mini" (3"x10")

Concrete Barrier Delineators, 400 mm (16") (For use to the right of traffic. When mounted on top of barrier, places top of reflective element at 48" [1200 mm])

1. Davidson Plastics, Model PCBMT-16
2. Safe-Mt, Model SH216RBM

Sound Wall Delineator (On vertical surface, places top of reflective element at 48" [1200 mm])

1. Davidson Plastics, PCBM S-36

Guard Railing Delineator, 685 mm (27") Wood Post Type (For use to the right or left of traffic. Places reflective element at 48" [1200 mm].)

1. Carsonite, Model 427
2. Davidson Plastics FG 427 and FG-527
3. GreenLine GRD 27-inch
4. Safe-Hit, Model SH227GRD

Guard Railing Delineator, 685 mm (27") Steel Post Type (For use to the right or left of traffic. Places reflective element at 48" [1200 mm].)

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

Reflective Sheeting

CHANNELIZERS, BARRIER MARKERS AND DELINEATORS

1. 3M, High Intensity (Long Term)
2. Reflexite, PC-1000, Metalized Polycarbonate (Long Term)
3. Reflexite, AC-1000, Acrylic (Long Term)
4. Reflexite, AP-1000, Metalized Polyester (Short Term)
5. Reflexite, AR- I 000, Abrasion Resistant Coating (Short Term)
6. Stimsonite, Series 4500 (For rigid substrate devices only)

TRAFFIC CONES, 330 mm (13") Sleeves

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

TRAFFIC CONES, 100 and 150 mm (4" and 6") Sleeves

1. 3M Series 3840
2. Reflexite Vinyl or "TR" (Semi-transparent)

BARRELS AND DRUMS

1. Reflexite, "Super High Intensity"
2. 3M Series 3810

BARRICADES, Type 1, Engineer Grade

1. American Decal, Adcolite
2. Avery Dennison, 1500/1600
3. 3M, Scotchlite, Series CW

SIGNS (Sheeting Types conforming to the requirements of ASTM Designation: D 4956-93B)

1. Type II, Super Engineer Grade (State-Furnished Signs Only)

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

2. Type M, High Performance

- A. 3M, High Intensity, Series 3780

3. Type IV, High Performance

- A. Stimsonite, Series 4200

4. Type VI, Roll-Up Signs

- A. Reflexite, Vinyl

Sign Substrate for Construction Area Signs

- 1. Aluminum
- 2. Fiberglass Reinforced Plastic (FRP)
- 3. Sequentia, "Polypate"
- 4. Fiber-Brite

8-1.03 SLAG AGGREGATE

Air-cooled iron blast furnace slag shall not be used to produce aggregate for:

- 1. Structure backfill material.
- 2. Pervious backfill material.
- 3. Any reinforced portland cement concrete component.
- 4. Aggregate produced from slag resulting from any steel-making process shall not be used for any highway construction except for the following items:
 - 1. Class 2 Aggregate Base
 - 2. Asphalt Concrete

Steel slag to be used to produce aggregate for Class 2 aggregate base shall be crushed so that 100 percent of the material will pass a 19-mm sieve and then shall be control aged for a period of At least 3 months under conditions that will maintain all portions of the stockpiled material at a moisture content in excess of 6 percent of the dry mass of the aggregate.

Any supplier of steel slag aggregate shall provide separate stockpiles for controlled aging of the slag. An individual stockpile shall contain not less than 9075 nor more than 45 350 tonnes of slag. The material in each individual stockpile shall be assigned a unique lot number and each stockpile shall be identified with a permanent system of signs. The supplier shall maintain a permanent record of the dates on which stockpiles are completed and controlled aging begun, of the dates when controlled aging was completed, and of the dates tests were made and the results of these tests. Moisture tests shall be made at least once per week. No credit for aging will be given for the time period covered by any tests which show a moisture content of 6 percent or less. The stockpiles and records shall be available to the Engineer during normal working hours for inspection, check testing and review.

The supplier shall notify the Transportation Laboratory, 5900 Folsom Boulevard, Sacramento, California 95819, when each stockpile is completed and controlled aging begun. No more aggregate shall be added to the stockpile unless a new aging period is initiated. A further notification shall be sent when controlled aging is completed.

The supplier shall provide a Certificate of Compliance in conformance with the requirements in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. Each stockpile or portion of a stockpile that is used in the work will be considered a lot. The Certificates of Compliance shall state that the steel slag aggregate has been aged in a stockpile for at least 3 months at a moisture content in excess of 6 percent of the dry mass of the aggregate.

Each delivery of aggregate containing steel slag for use as Class 2 aggregate base shall be accompanied by a delivery tag for each load which will identify the lot of material by stockpile number, where the slag was aged, and the date that the stockpile was completed and controlled aging begun.

Air-cooled iron blast furnace slag or natural aggregate may be blended in proper combinations with steel slag aggregate to produce the specified gradings, for those items for which steel slag aggregate is permitted, unless otherwise provided.

Aggregate containing slag shall meet all of the applicable quality requirements for the items in which the aggregate is used.

The combined slag aggregate shall conform to the specified grading for the item in which it is used. The grading will be determined by California Test 202, modified by California Test 105 when there is a difference in specific gravity of 0.2 or more between the coarse and fine portion of the aggregate or between blends of different aggregates.

No aggregate produced from slag shall be placed within 0.3-m, measured in any direction, of any non-cathodically protected pipe or structure unless the aggregate is incorporated in portland cement concrete pavement, in asphalt concrete, or in treated base.

When slag is used as aggregate in asphalt concrete, the K_c factor requirements, as determined by California Test 303, will not apply.

Slag aggregate used for embankment construction shall not be placed within 0.46-m of finished slope lines, measured normal to the plane of the slope.

If steel slag aggregates are used to make asphalt concrete, there shall be no other aggregates used in the mixture, except that up to 50 percent of the material passing the 4.75-mm sieve may consist of iron blast furnace slag aggregates or natural aggregates, or a combination thereof. If iron blast furnace aggregates or natural aggregates or a combination thereof are used in the mix, each type of aggregate shall be fed to the drier at a uniform rate. The rate of feed of each type of aggregate shall be maintained within 10 percent of the amount set. Adequate means shall be provided for controlling and checking the accuracy of the feeder.

In addition to the requirements of Section 39-3.01, "Storage," of the Standard Specifications, steel slag aggregate shall be stored separately from iron blast furnace slag aggregate and each type of slag aggregate shall also be stored separately from natural aggregate.

Asphalt concrete produced from more than one of the following shall not be placed in the same layer: steel slag aggregates; iron blast furnace slag aggregates; natural aggregates; or any combination thereof. Once a type of aggregate or aggregates is selected, it shall not be changed without prior approval by the Engineer.

If steel slag aggregates are used to produce asphalt concrete, and if the specific gravity of a compacted stabilometer test specimen is in excess of 2.40, the quantity of asphalt concrete to be paid for will be reduced. The stabilometer test specimen will be fabricated in accordance with the procedures in California Test 304 and the specific gravity of the specimen will be determined in accordance with Method C of California Test 308. The pay quantity of asphalt concrete will be determined by multiplying the quantity of asphalt concrete placed in the work by 2.40 and dividing the result by the specific gravity of the compacted stabilometer test specimen. Such reduction in quantity will be determined and applied as often as is necessary to ensure accurate results as determined by the Engineer.

8-1.04 MEASUREMENT OF QUANTITIES

Attention is directed to the provisions in Section 9-1.01, "Measurement of Quantities," of the Standard Specifications and these special provisions.

The following is added after the third paragraph in Section 9-1.01, "Measurement of Quantities," of the Standard Specifications:

All elements of the material plant controller which affect the accuracy or delivery of data shall be made available for the application of security seals. These devices will be inspected and adjusting elements sealed prior to the first production of materials for the contract. The security seals will be furnished by the Engineer. Material production shall cease when alteration, disconnection, or otherwise manipulation of the security seals occur and production shall not resume until the device is inspected and resealed by the Engineer.

Within the limits of the project or at the plant site, the Contractor shall provide a vehicle platform scale of sufficient weighing capacity to check full production sized batches from the proportioning scales to be used in producing materials for the project. This vehicle platform scale shall conform to the provisions in Section 9-1.01, "Measurement of Quantities," of the Standard Specifications.

Full compensation for furnishing and operating the vehicle platform scale required to check proportioning scales shall be considered to be included in the contract prices paid for the various contract items of work requiring the proportioning scales and no separate payment will be made therefor.

8-1.05 ENGINEERING FABRICS

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

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 kilograms of cement per cubic meter 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. 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 B 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 kilograms per cubic meter, 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 1 concrete shall contain not less than 400 kg of cementitious material per cubic meter.

Class 2 concrete shall contain not less than 350 kg of cementitious material per cubic meter.

Class 3 concrete shall contain not less than 300 kg of cementitious material per cubic meter.

Class 4 concrete shall contain not less than 250 kg of cementitious material per cubic meter.

Minor concrete shall contain not less than 325 kg of cementitious material per cubic meter 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 meter of concrete in structures or portions of structures shall conform to the following:

| Use | Cementitious Material Content (kg/m ³) |
|-----|--|
| | |

| | |
|---|--------------------|
| Concrete which is designated by compressive strength: | |
| Deck slabs and slab spans of bridges | 400 min., 475 max. |
| Roof sections of exposed top box culverts | 400 min., 475 max. |
| Other portions of structures | 350 min., 475 max. |
| Concrete not designated by compressive strength: | |
| Deck slabs and slab spans of bridges | 400 min. |
| Roof sections of exposed top box culverts | 400 min. |
| Prestressed members | 400 min. |
| Sea] courses | 400 min. |
| Other portions of structures | 350 min. |

Whenever the 28-day compressive strength shown on the plans is 25 MPa or greater, the concrete shall be considered to be designated by compressive strength. If the plans show a 28-day compressive strength which is 31 MPa 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 25 MPa, 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 \$0.55 for each kilogram 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 90-2.0 1, "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 mass 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 modifications listed above for Type 11 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 S04. 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 S04. 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 or deionized 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 mass except that the resultant cementitious material content shall be not less than 300 kilograms per cubic meter.

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 alkali content as Na_2O shall not exceed 4 percent as determined by California Test 404.

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 mass 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 mass, the amount of mineral admixture shall not be less than 15 percent by mass 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 mass 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 902.04, "Admixture Materials," is used, the amount of mineral admixture shall not be less than 10 percent by mass 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 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 mass 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 kilograms per cubic meter, the total mass of cement and mineral admixture per cubic meter 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 90-4.1 1, "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 mass 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 mass of each batch of material shall not vary from the mass 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 mass 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 mass 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 mass 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 masses. Equipment for measuring water shall have a zero tolerance of ± 0.5 percent of its designated mass or volume.

The mass 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 mass of the aggregate. Aggregates weighed individually shall be within 1.5 percent of their respective designated batch masses.
- B. Cement shall be within 1.0 percent of its designated batch mass. When weighed individually, mineral admixture shall be within 1.0 percent of its designated batch mass. 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 mass, and the total for cement and mineral admixture shall be within 1.0 percent of the sum of their designated batch masses.
- C. Water shall be within 1.5 percent of its designated mass 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 mass not exceeding the maximum permissible mass variation above, except that no scale shall be required having a capacity of less than 500 kg, with 0.5 kg 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 mass.

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 mass.

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 meter or more, the batching equipment shall conform to one of the following combinations:

- A. Separate boxes and separate scale and indicator for weighing each size of aggregate.
- B. Single box and 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 masses, the gross mass and tare mass 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 mass 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 mass 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 masses 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 mass 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

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 30° C, 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 30° C, 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 (liters) 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 masses (kilograms) for the ingredients batched or the calculated portland cement concrete volume (cubic meters) calculated from actual scale masses. Theoretical or target batch masses shall not be used as a substitute for actual scale. 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 mass (kilograms) for each ingredient.
5. Any water (liters) 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 90 mm 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-fourth cubic meter 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 0.3 meters 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 table in the first paragraph in Section 90-6.06, "Amount of Water and Penetration," of the Standard Specifications is amended to read:

| Type of Work | Nominal Penetration (mm) | Maximum Penetration (mm) |
|------------------------------------|-----------------------------|-----------------------------|
| Concrete pavement | 0-25 | 40 |
| Non-reinforced concrete facilities | 0-35 | 50 |
| Reinforced concrete structures: | | |
| Sections over 300 mm thick | 0-35 | 65 |
| Sections 300 mm thick or less | 0-50 | 75 |
| Concrete placed under water | 75-100 | 115 |
| Cast-in-place concrete piles | 65-90 | 100 |

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 180 kilograms per cubic meter, plus 20 kilograms for each required 100 kilograms of cementitious material in excess of 325 kilograms per cubic meter.

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 meter of concrete. The increase in water and cementitious material shall be at a ratio not to exceed 30 kg of water per added 100 kg of cementitious material per cubic meter. 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 \$14.00 for each in-place cubic meter 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 \$20.00 for each in place cubic meter 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 250 cubic meters.

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 4 MPa 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. AU 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 meters and the mass, 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 is 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 32° C. 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.

8-2.02 CEMENT AND WATER CONTENT

Except for concrete listed below, all concrete which is designated as Class 2 and all concrete for use in structures shall contain not less than 375 kg of cement per cubic meter and shall be air-entrained as provided in Section 90-4, "Admixtures," of the Standard Specifications. The air content at time of mixing and prior to placing shall be 3 percent one percent.

1. Paving concrete.
2. Concrete designated by 28-day compressive strength.
3. Concrete designated as Class I or by a cement content which exceeds 375 kg/m³.

SECTION 8-3. WELDING

8-3.01 WELDING ELECTRODES

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.

8-3.02 WELDING QUALITY CONTROL

Welding quality control shall apply to the items of work described herein and shall conform to the requirements in the AWS welding codes, the Standard Specifications and these special provisions.

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 | 1996 |
| D 1.4 | 1992 |
| D 1.5 | 1995 |
| D 1.5 (metric only) | 1996 |

All 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.

Except for steel piling, welding performed anywhere other than at a permanent fabrication facility that is certified under the AISC Quality Certification Program, Category III, Major Steel Bridges, shall conform to the provisions for welding quality control as specified herein. Welding of steel piling shall conform to the provisions in "Piling" elsewhere in these special provisions and to the provisions for welding quality control specified herein.

The welding of all fracture critical members (FCMs) shall conform to the provisions specified in the Fracture Control Plan (FCP) and herein.

Unless otherwise specified, when any type of welding is performed on items of work including 1) bar reinforcement and 2) miscellaneous metal, the Contractor shall designate in writing a welding Quality Control Manager (QCM). The QCM shall be responsible directly to the Contractor for the quality of all welding, including materials and workmanship, performed by the Contractor and all subcontractors.

The QCM shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors, who will provide other services or materials for the project. The QCM may be an employee of the Contractor.

No welding inspection personnel or nondestructive testing (NDT) firms to be used in the work shall be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors, who will provide other services or materials for the project.

The QCM shall be the sole individual responsible to the Contractor for submitting and receiving all correspondence and required submittals and reports regarding welding to and from the Engineer.

Prior to submitting the Quality Control Plan (QCP) required herein, a pre-welding meeting shall be held between the Engineer, Contractor and any welding subcontractors to be used in the work to discuss the requirements for the QCP.

Prior to performing any welding, the Contractor shall submit to the Engineer, in accordance with the provisions of Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications, 3 copies of a separate QCP for each item of work for which welding is to be performed. As a minimum, each QCP shall include the following:

1. The name of the welding firm and the NDT firm to be used;
2. A manual prepared by the NDT firm that shall include equipment, testing procedures, code of safe practices, the Written Practice of the NDT firm, and the names, qualifications and documentation of certifications for all personnel to be used;
3. The name of the QCM and the names, qualifications and documentation of certifications for all Quality Control (QC) Inspectors and Assistant Quality Control Inspectors to be used;
4. An organizational chart showing all QC personnel and their assigned QC responsibilities;

5. The methods and frequencies for performing all required quality control procedures, including QC inspection forms to be used, as required by the specifications including:
 - (a) all visual inspections;
 - (b) all NDT including radiographic geometry, penetrometer and shim selection, film quality, film processing, radiograph identification and marking system, and film interpretation and reports; and
 - (c) calibration procedures and calibration frequency for all NDT equipment;
6. A system for the identification and tracking of all welds, NDT and any required repairs, and a procedure for the reinspection of any repaired welds. The system shall have provisions for 1) permanently identifying each weld and the person who performed the weld and 2) placing all identification and tracking information on each radiograph;
7. Standard procedures for performing noncritical repair welds. Noncritical repair welds are defined as welds to deposit additional weld beads or layers to compensate for insufficient weld size and to fill limited excavations that were performed to remove unacceptable edge or surface discontinuities, rollover or undercut. The depth of these excavations shall not exceed 65 percent of the specified weld size;
8. The welding procedure specification (WPS), including documentation of all supporting Procedure Qualification Record (PQR). tests performed, and the name of the testing laboratory who performed the tests, to verify the acceptability of the WPS. The submitted VRPS shall be within the allowable period of effectiveness;
9. Documentation of all certifications for welders for each weld process and position that will be used. Certifications shall list the electrodes used, test position, base metal and thickness, tests performed, and the witnessing authority. AB certifications shall be within the allowable period of effectiveness; and
10. One copy each of all AWS welding codes and the FCP which are applicable to the welding to be performed. These codes and the FCP shall become the permanent property of the Department.

The Engineer shall have 10 working days to review the QCP submittal after a complete plan has been received. No welding shall be performed until the QCP is approved in writing by the Engineer. Should the Engineer fail to complete the review within this time allowance 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 QCP, 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.

An an-ended QCP or addendum shall be submitted to, and approved in writing by the Engineer, for any proposed revisions to the approved QCP. An amended QCP or addendum will be required for any revisions to the QCP, including but not limited to a revised WPS, additional welders, changes in NDT firms or procedures, QC or NDT personnel, or updated systems for tracking and identifying welds.. The Engineer shall have 3 working days to complete the review of the amended QCP or addendum. Work that is affected by any of the proposed revisions shall not be performed until the amended QCP or addendum has been approved. Should the Engineer fail to complete the review within this time allowance 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 amended QCP or addendum, 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.

After final approval of the QCP, amended QCP or addendum, the Contractor shall submit to the Engineer 7 copies each of these approved documents.

A daily production log for welding shall be kept by the QCM for each day that welding is performed. The log shall clearly indicate the locations of all welding, and shall include the welders' names, amount of welding performed, any problems or deficiencies discovered, and any testing or repair work performed, at each location. The daily report from each Quality Control Inspector shall also be included in the log.

It is expressly understood that the Engineer's approval of the Contractor's QCP shall not relieve the Contractor of any responsibility under the contract for the successful completion of the work in conformity with the requirements of the plans and specifications. The Engineer's approval shall not constitute a waiver of any of the requirements of the plans and specifications nor relieve the Contractor of any obligation thereunder, and defective work, materials and equipment may be rejected notwithstanding approval of the QCP.

The following items shall be included in a Welding Report that is to be submitted to the Engineer within 7 days following the performance of any welding:

1. Reports of all visual weld inspections and NDT;
2. Radiographs and radiographic reports, and other required NDT reports;

3. Documentation that the Contractor has evaluated all radiographs and other nondestructive tests, corrected all rejectable deficiencies, and all repaired welds have been reexamined by the required NDT and found acceptable; and
4. Daily production log.

All reports regarding NDT, including radiographs, shall be signed by both NDT technician and the person that performed the review, and then submitted directly to the QCM for review and signature prior to submittal to the Engineer. Corresponding names shall be clearly printed or typewritten next to all signatures.

The Engineer shall review the Welding Report to determine if the Contractor is in conformance with the QCP. "Except for steel piling, the Engineer shall be allowed 7 days to review the report and respond in writing after a complete Welding Report has been received. The review time for steel piling shall be as specified in "Piling" elsewhere in these special provisions. Prior to receiving notification from the Engineer of the Contractor's conformance with the QCP, the Contractor may encase in concrete or cover any welds for which a Welding Report has been submitted. However, should the Contractor elect to encase or cover those welds prior to receiving notification from the Engineer, it is expressly understood that the Contractor shall not be relieved of the responsibility for incorporating material in the work that conforms to the requirements of the plans and specifications. Any material not conforming to these requirements will be subject to rejection. Should the Contractor elect to wait to encase or cover any welds pending notification by the Engineer, and should the Engineer fail to complete the review and provide notification within this time allowance, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in notification, 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.

Sections 6.1.1 through 6.1.3.3 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 Quality Control (QC) Inspector shall be the duly designated person who performs inspection, testing, and quality 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.

AU QC Inspectors shall be responsible for quality control acceptance or rejection of materials and workmanship, and shall be currently certified as AWS Certified Welding Inspectors (CWI) in accordance with the provisions of AWS QC 1, "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 accordance with the provisions of AWS QC 1, "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 6.14.7, "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 amended to read:

Personnel performing NDT shall be qualified in accordance with the current edition of the American Society for Nondestructive Testing (ASNT) Recommended Practice No. SNT-TC-1A and the Written Practice of the NDT firm. 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 amended to read:

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.

Section 6.5.4 of AWS D 1.5 is amended to read:

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 section 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.

The Engineer shall have the authority to verify the qualifications or certifications of any welder, Quality Control 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 on all shifts when any welding 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.

The QC Inspector shall provide reports to the QCM on a daily basis for each day that welding is performed.

Except for noncritical weld repairs, base metal repairs, or any other type of repairs not submitted in the QCP, the Engineer shall be notified immediately in writing when any welding problems or deficiencies are discovered and also of the proposed repair procedures to correct them. The Engineer shall have 5 working days to review these procedures. No remedial work shall begin until the repair procedures are approved in writing by the Engineer. Should the Engineer fail to complete the review within this time allowance 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 proposed repair procedures, the delay will be considered a fight of way delay as specified in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

When joint details that are not prequalified by the applicable AWS codes are proposed for use in the work, all 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.

All qualification tests for welders, welding operators, and WPSs used in welding operations will be witnessed by the Engineer or an independent third party acceptable to 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 in accordance with Section 4-1.03D, "Extra Work," 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, and shall be at the Contractor's expense.

All 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.

At the completion of all welding, the QCM shall sign and furnish to the Engineer, a certificate of compliance in accordance with Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each item of work for which welding was performed. The certificate shall state that all of the materials and workmanship incorporated in the work, and all required tests and inspections of this work, have been performed in accordance with the details shown on the plans and the provisions of the Standard Specifications and these special provisions.

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

SECTION 9. (BLANK)

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" and "Temporary Pavement Delineation" of these special provisions.

The Contractor shall place temporary railing (Type K), and temporary crash cushion modules, as shown on the plans, before beginning any work shown to be performed behind temporary railing (Type K) and temporary crash cushion modules.

10-1.02 WATER POLLUTION CONTROL

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

This project shall conform to the requirements of Permit No. CAS029998 issued by the San Diego Regional Water Quality Control Board. This permit, hereafter referred to as the "Permit," regulates storm water discharges associated with construction activities.

Water pollution control work shall conform to the requirements in the Construction Contractor's Guide and Specifications of the Caltrans Storm Water Quality Handbooks, dated April 1997, and addenda thereto issued up to and including the date of advertisement of the project, hereafter referred to as the "Handbook". Copies of the Handbook 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 Handbook and the Permit are also available for review at Caltrans District Office, District Construction Office Administration, 2829 Juan Street, San Diego, California 92110.

The Contractor shall become fully informed of and comply with the applicable provisions of the Handbook, Permit 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 a copy of the Permit at the project site and shall make the Permit available during construction activities.

Unless arrangements for disturbance 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 to the Contractor or property owner whatsoever with respect to any arrangements made between the Contractor and property owner to allow disturbance of areas outside the project limits.

The Contractor shall be responsible for the costs and for any liability imposed by law as a result of the Contractor's failure to comply with the requirements set forth in this section "Water Pollution Control", including but not limited to, compliance with the applicable provisions of the Handbook, Permit and Federal, State and local regulations. For the purposes of this paragraph, 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 any remedy authorized by law, so much of the money due the Contractor under the contract that shall be considered necessary by the Department may be retained by the State of California until disposition has been made of the costs and liabilities.

The retention of money due the Contractor shall be subject to the following:

1. The Department will give the Contractor 30 days notice of its intention to retain funds from any partial payment which may become due to the Contractor prior to acceptance of the contract. Retention of funds from any payment made after acceptance of the contract may be made without prior notice to the Contractor.
2. 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.
3. 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 at the legal rate of interest for the period of the retention.

Conformance with the requirements of this section "Water Pollution Control" shall not relieve the Contractor from the Contractor's responsibilities, as provided in Section 7-1.11, "Preservation of Property," and Section 7-1.12, "Responsibility for Damage," of the Standard Specifications. The Contractor shall, at reasonable times, allow authorized agents of the California Regional Water Quality Control Board, State Water Resources Control Board, U. S. Environmental Protection Agency and local storm water management agency, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the construction site and the Contractor's facilities pertinent to the work;
2. Have access to and copy any records that must be kept as specified in the Permit;
3. Inspect the construction site and related soil stabilization practices and sediment control measures; and
4. Sample or monitor for the purpose of ensuring compliance with the Permit.

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

STORM WATER POLLUTION PREVENTION PLAN PREPARATION, APPROVAL AND UPDATES.-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 requirements in Section 7-1.01G, "Water Pollution," of the Standard Specifications, the requirements in the Handbook, the requirements of the Permit and these special provisions. Upon the Engineer's approval of the SWPPP, the SWPPP shall be deemed to fulfill the requirements of Section 7-1.01 G, "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.

Within 10 days after the approval of the contract, the Contractor shall submit 3 copies of the SWPPP to the Engineer. The Contractor shall allow 3 days for the Engineer to review the SWPPP. If revisions are required, as determined by the Engineer, the Contractor shall revise and resubmit the SWPPP within 3 days of receipt of the Engineer's comments and shall allow 3 days for the Engineer to review the revisions. Upon the Engineer's approval of the SWPPP, 3 additional 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.

The objectives of the SWPPP shall be to identify pollution sources that may adversely affect the quality of storm water discharges associated with the project and to identify, construct, implement and maintain water pollution control measures, hereafter referred to as control measures, to reduce to the extent feasible pollutants in storm water discharges from the construction site both during and after construction is completed under this contract.

The SWPPP shall incorporate control measures in the following categories:

1. Soil stabilization practices;
2. Sediment control practices;
3. Sediment tracking control practices;
4. Wind erosion control practices; and
5. Non-storm water management and waste management and disposal control practices.

Specific objectives and minimum requirements for each category of control measures are contained in the Handbook.

The Contractor shall consider the objectives and minimum requirements presented in the Handbook for each of the above categories. When minimum requirements are listed for any category, the Contractor shall incorporate into the SWPPP and implement on the project, one or more of the listed minimum controls required in order to meet the pollution control objectives for the category. In addition, the Contractor shall consider other control measures presented in the Handbook and shall incorporate into the SWPPP and implement on the project the control measures necessary to meet the objectives of the SWPPP. The Contractor shall document the selection process in accordance with the procedure specified in the Handbook.

The SWPPP shall include, but not be limited to, the following items as described in the Handbook and Permit:

1. Source Identification;
2. Erosion and Sediment Controls;
3. Non-Storm Water Management;.
4. Waste Management and Disposal;
5. Maintenance, Inspection and Repair;
6. Training;
7. List of Contractors and Subcontractors;
8. Post-Construction Storm Water- Management;
9. Preparer;
10. A copy of the Notice of New Construction (NONC) submitted by the Department for this project;
11. Copy of the Local Permit
12. BMP Consideration Checklist;
13. SWPPP Checklist;
14. Schedule of Values; and
15. Water Pollution Control Drawings.

The Contractor shall amend the SWPPP, graphically and in narrative form, whenever there is a change in construction activities or operations which may affect the discharge of significant quantities of pollutants to surface waters, ground waters, municipal storm drain systems, or when deemed necessary by the Engineer. The SWPPP shall also be amended if it is in violation of any condition of the Permit, or has not effectively achieved the objective of reducing pollutants in storm water discharges. Amendments shall show additional control measures or revised operations, including those in areas not shown in the initially approved SWPPP, which are required on the project to control water pollution effectively. Amendments to the SWPPP shall be submitted for review and approval by the Engineer in the same manner specified for the initially approved SWPPP. Approved amendments shall be dated and logged in the SWPPP. Upon approval of the amendment, the Contractor shall implement the additional control measures or revised operations.

The Contractor shall keep a copy of the 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, U.S. Environmental Protection Agency or local storm water management agency. Requests by the public shall be directed to the Engineer.

By June 15 of each year, the Contractor shall submit an annual certification to the Engineer stating compliance with the requirements governing the Permit. If the project is in non-compliance at any time, the Contractor shall make a written report to the Engineer within 15 days of identification of non-compliance.

SCHEDULE OF VALUES.-The Contractor shall submit with the SWPPP, for approval by the Engineer, a schedule of values detailing the cost breakdown of the contract lump sum item for water pollution control. The schedule of values shall reflect the items of work, quantities and costs for control measures shown in the SWPPP, except for critical temporary controls and permanent control measures which are shown on the project plans and for which there is a contract item of work. Adjustments in the items of work and quantities listed in the schedule of values shall be made when required to address approved amendments to the SWPPP.

The sum of the amounts for the units of work listed in the schedule of values shall be equal to the contract lump sum price for water pollution control.

If approved in writing by the Engineer, the schedule of values will be used to determine progress payments for water pollution control during the progress of the work, and as the basis for calculating any adjustment in compensation for the contract item for water pollution control due to changes in the work ordered by the Engineer.

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

Soil stabilization practices and sediment control measures, including minimum requirements, shall be provided throughout the winter season, defined as between November 1 and March 30.

Implementation of soil stabilization practices and sediment control measures for soil-disturbed areas of the project site shall be completed, except as provided for below, no later than 20 days prior to the beginning of the winter season or upon start of applicable construction activities for projects which begin either during or within 20 days of the winter season.

Throughout the winter season, the active, soil-disturbed area of the project site shall be no more than 2 hectares. The Engineer may approve, on a case-by-case basis, expansions of the active, soil-disturbed area limit. The Contractor shall demonstrate the ability and preparedness to fully deploy soil stabilization practices and sediment control measures to protect soil-disturbed areas of the project site before the onset of precipitation. The Contractor shall maintain a quantity of soil stabilization and sediment control materials on site equal to 100 percent of that sufficient to protect unprotected, soil-disturbed areas on the project site and shall maintain a detailed plan for the mobilization of sufficient labor and equipment to fully deploy control measures required to protect unprotected, soil-disturbed areas on the project site prior to the onset of precipitation. The Contractor shall include a current inventory of control measure materials and the detailed mobilization plan as part of the SWPPP.

Throughout the winter season, soil-disturbed areas of the project site shall be considered to be nonactive whenever soil disturbing activities are expected to be discontinued for a period of 20 or more days and the areas are fully protected. Areas that will become nonactive either during the winter season or within 20 days thereof shall be fully protected with soil stabilization practices and sediment control measures within 10 days of the discontinuance of soil disturbing activities or prior to the onset of precipitation, whichever is first to occur.

Throughout the winter season, active soil-disturbed areas of the project site shall be fully protected at the end of each day with soil stabilization practices and sediment control measures unless fair weather is predicted through the following work day. The weather forecast shall be monitored by the Contractor on a daily basis. The National Weather Service forecast shall be used, or an alternative weather forecast proposed by the Contractor may be used if approved by the Engineer. If precipitation is predicted prior to the end of the following work day, construction scheduling shall be modified, as required, and the Contractor shall deploy functioning control measures prior to the onset of the precipitation.

The Contractor shall implement, year-round and throughout the duration of the project, control measures included in the SWPPP for sediment tracking, wind erosion, non-storm water management and waste management and disposal.

The Engineer may order the suspension of construction operations which create water pollution if the Contractor fails to conform to the requirements of this section "Water Pollution Control" as determined by the Engineer.

MAINTENANCE.-To ensure the proper implementation and functioning of control measures, the Contractor shall regularly inspect and maintain the construction site for the control measures identified in the SWPPP. The Contractor shall identify corrective actions and time frames to address any damaged measures or reinitiate any measures that have been discontinued.

The construction site inspection checklist provided in the Handbook shall be used to ensure that the necessary measures are being properly implemented, and to ensure that the control measures are functioning adequately. The Contractor shall submit one copy of each site inspection record to the Engineer.

During the winter season, inspections of the construction site shall be conducted by the Contractor to identify deficient measures, as follows:

1. Prior to a forecast storm;
2. After any precipitation which causes runoff capable of carrying sediment from the construction site;
3. At 24 hour intervals during extended precipitation events; and
4. Routinely, at a minimum of once every 2 weeks.

If the Contractor or the Engineer identifies a deficiency in the deployment or functioning of an identified control measure, the deficiency shall be corrected by the Contractor immediately, or by a later date and time if requested by the Contractor and

approved by the Engineer in writing, but not later than the onset of subsequent precipitation events. The correction of deficiencies shall be at no additional cost to the State.

WATER POLLUTION CONTROL TRAINING

The Contractor's management and supervisory personnel along with workers involved with the placement and maintenance of storm water pollution prevention "Best Management Practices" shall be trained on general storm water pollution control requirements consistent with the "Caltrans Storm Water Quality Handbook, Construction Contractor's Guide and Specifications". The training is to be provided by the Contractor. The amount of training provided should be commensurate with the job performed by the employee.

Full compensation for water pollution control training shall be considered as included in the contract lump sum price paid for prepare storm water pollution prevention plan, and no additional compensation will be allowed therefor.

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 Sections 9-1.06, "Partial Payments," and 9-1.07, "Payment After Acceptance," of the Standard Specifications. Payments for prepare storm water pollution prevention plan will be made as follows:

1. 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
2. After acceptance of the contract pursuant to Section 7-1.17, "Acceptance of Contract," the remaining 25 percent of the contract item price for prepare storm water pollution prevention plan will be made in accordance with 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, maintaining, removing and disposing of control measures, except those shown on the project 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.

Changes in control measures required by an approved amendment to the SWPPP, except changes to those control measures shown on the project plans and for which there is a contract item of work, will be considered extra work, in accordance with Section 4-1.03D of the Standard Specifications and the following:

If the control measure is listed in the approved SWPPP schedule of values, an adjustment in compensation for the contract item for water pollution control will be made by applying the increase or decrease in quantities to the approved schedule of values. No adjustment of compensation will be made to the unit price listed for any item in the schedule of values due to any increase or decrease in the quantities, regardless of the reason for the increase or decrease. The provisions in Section 4-1.03B, "Increased or Decreased Quantities," shall not apply to items listed in the schedule of values.

If the control measure is not listed in the approved SWPPP schedule of values, payment will be made by force account.

Those control measures which are shown on the project plans and for which there is a contract item of work will be measured and paid for as that 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 requirements of this section "Water Pollution Control" as determined by the Engineer.

Retentions for failure to conform to the requirements of this section "Water Pollution Control" shall be in addition to the other retentions provided for in the contract. The amounts retained for failure of the Contractor to conform to the requirements of 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.

10-1.03 PRESERVATION OF PROPERTY

Attention is directed to the provisions in Section 7-1.11, "Preservation of Property," of the Standard Specifications and these special provisions.

Existing trees, shrubs and other plants, that are not to be removed as directed by the Engineer, and are injured or damaged by reason of the Contractor's operations, shall be replaced by the Contractor. The minimum size of tree replacement shall be 6 1 0 mm box and the minimum size of shrub replacement shall be No. 15 container. Replacement ground cover plants shall be from flats and shall be planted 300 mm on center. Replacement of Carpobrotus ground cover plants shall be from cuttings and shall be planted 300 mm on center. Replacement planting shall conform to the requirements in Section 20-4.07, "Replacement," of the Standard Specifications.

Damaged or injured plants 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. At the option of the Contractor, removed trees and shrubs may be reduced to chips. The chipped material shall be spread within the highway right of way at locations designated by the Engineer.

Replacement planting of injured or damaged trees, shrubs and other plants shall be completed not less than 20 working days prior to acceptance of the contract. Replacement plants shall be watered as necessary to maintain the plants in a healthy condition.

All existing irrigation and landscaping outside of the project limits will be protected-in-place. Any existing irrigation and landscaping not designated for removal will remain operational. Additionally, any existing irrigation and landscaping not designated for removal that is damaged as a result of construction will be replaced-in-kind by the contractor. Any existing irrigation or landscaping within the limits of the project will be modified as necessary to remain operational.

10-1.04 OBSTRUCTIONS

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

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 including excavation for construction area signs. 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 |

The following utility facilities are shown on the plans and require special handling. This does not relieve the Contractor of his responsibility for other utility facilities on the project.

| Utility | Location | None |
|----------------------|---|------|
| Underground electric | Location 2 Under the existing detention basin | |

Excavation in areas requiring regional notification center investigation shall not be commenced until all utilities in these areas have been located and identified.

Power equipment may be used for excavating construction area sign post holes if it is determined that there are no utility facilities with 1.2 m (4 feet) of the proposed post holes.

Installation of the following utility facilities will require coordination with the Contractor's operations. The Contractor shall make necessary arrangements with the utility company, through the Engineer, and shall submit a schedule of work, verified by a representative of the utility company, to the Engineer. The schedule of work shall provide not less than the following number of notification days (N days), and working days (W days) as defined in Section 1-8.06. "Time of Completion," of the Standard Specifications for the utility company to complete their work.

The Utility Working Days shall not begin until both the notification and the site preparation requirements have been met.

| Utility Owner and Type of Facility | Location | Utility N & W Days | Site Prep by Contractor | Utility Co. Work |
|------------------------------------|------------|--------------------|---|--|
| SDG&E Underground Electric | Location 2 | 20/10 | After grading of the access road to subgrade and after completion of Drainage System No. 32. Before placement of AB and AC paving on access road. | Construct ducts and place electric cables. |

Refer to the Utility N/W Days column:

N = The minimum number of working days from the date the Engineer receives written notification that a site will be ready for utility work to the date the site is actually ready for utility work.

W = The number of working days needed by the utility company to complete the listed Utility Co. Work.

Site Prep. By Contractor The work described in "Site Prep. By Contractor" must be completed by the Contractor before the associated utility relocation work described in "Utility Co. Work" can be performed by the utility company.

10.1.05 CONSTRUCTION AREA SIGNS

Construction area signs shall be furnished, installed, maintained, and removed, when no longer required in accordance with the provisions in Section 12, "Construction Area Traffic Control Devices," of the standard Specifications and these special provisions.

Attention is directed to "Obstructions" elsewhere in these special provisions.

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" elsewhere in 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.

10.1.06 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.

Attention is directed to “Traffic Plastic Drums,” elsewhere in these special provisions regarding the use of plastic drums in place of portable delineators or cones.

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 on the traveled way or shoulders, including any section closed to public traffic.

Whenever vehicles or equipment are parked on the shoulder within 1.8 m of a traffic lane, the shoulder area shall be closed as shown on the plans.

Lanes shall be closed only during the hours shown on the charts included in this section “Maintaining Traffic.” Except work required under Sections 6-1.08 and 7-1.09, work that interferes with public traffic shall be performed only during the hours shown for lane closures.

The full width of the traveled way shall be open for use by public traffic when construction operations are not actively in progress.

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. These deviations shall not be adopted by the Contractor until the Engineer has approved them in writing. All other modifications will be made by contract change order.

Ramps may be closed only if signed for closing 3 days in advanced. The Contractor shall notify the Engineer not less than 5 calendar days prior to signing the ramp. If the ramp is not closed on the posted day, the closure shall be changed to allow 3 days advance notice before closure.

Consecutive on-ramps or off-ramps in the same direction of travel shall not be closed simultaneously unless otherwise provided in these special provisions or permitted by the Engineer.

LANE CLOSURE CHART NO. 1

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|------------------------------|------|---|--|---|---|---|----|---|---|----|----|----|---|---|---|---|---|---|---|---|---|----|----|----|
| DIRECTION: Northbound | | SD-5 | | LOCATION: NB Off-ramp to Manchester Ave. | | | | | | | | | | | | | | | | | | | | | |
| Lane Requirements and Hours of Work | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | AM | | | | | | PM | | | | | | | | | | | | | | | | | |
| FROM HOUR TO HOUR | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays | [Shoulder and Ramp closures] | | | | | | | | | | | | | | | | | | | | | | | | |
| Fridays | [Shoulder and Ramp closures] | | | | | | | | | | | | | | | | | | | | | | | | |
| Saturdays | [Shoulder and Ramp closures] | | | | | | | | | | | | | | | | | | | | | | | | |
| Sundays | [Shoulder and Ramp closures] | | | | | | | | | | | | | | | | | | | | | | | | |
| Day before Designated legal holiday | [Shoulder and Ramp closures] | | | | | | | | | | | | | | | | | | | | | | | | |
| Designated Legal Holidays | [Shoulder and Ramp closures] | | | | | | | | | | | | | | | | | | | | | | | | |

LEGEND:

 Shoulder may be closed

 Ramp may be closed

REMARKS:

KP: R62.087

LANE CLOSURE CHART NO. 2

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|------------------------------|-------|---|------------------------------------|---|---|---|----|---|---|----|----|----|---|---|---|---|---|---|---|---|---|----|----|----|
| DIRECTION: Eastbound | | SD-78 | | LOCATION: EB Off-ramp to NB RTE 15 | | | | | | | | | | | | | | | | | | | | | |
| Lane Requirements and Hours of Work | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | AM | | | | | | PM | | | | | | | | | | | | | | | | | |
| FROM HOUR TO HOUR | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays | [Shoulder and Ramp closures] | | | | | | | | | | | | | | | | | | | | | | | | |
| Fridays | [Shoulder and Ramp closures] | | | | | | | | | | | | | | | | | | | | | | | | |
| Saturdays | [Shoulder and Ramp closures] | | | | | | | | | | | | | | | | | | | | | | | | |
| Sundays | [Shoulder and Ramp closures] | | | | | | | | | | | | | | | | | | | | | | | | |
| Day before Designated legal holiday | [Shoulder and Ramp closures] | | | | | | | | | | | | | | | | | | | | | | | | |
| Designated Legal Holidays | [Shoulder and Ramp closures] | | | | | | | | | | | | | | | | | | | | | | | | |

LEGEND:

 Shoulder may be closed

 Ramp may be closed

REMARKS:

KP: R26.098

Detour EB RTE 78 to NB RTE 15 traffic via EB RTE 78 to SB RTE 15 thence southerly on RTE 15 to SB RTE 15 Off-ramp to Valley Pkwy thence easterly on Valley Pkwy to NB RTE 15 On-ramp from Valley Pkwy thence northerly on RTE 15 to NIB RTE 15 Off-ramp to EB RTE 78.

LANE CLOSURE CHART NO. 3

DIRECTION: Southbound **SD-5** **LOCATION:** SB Off-ramp to La Costa Ave.

Lane Requirements and Hours of Work

| FROM HOUR TO HOUR | AM | | | | | | | | | | | | PM | | | | | | | | | | | |
|-------------------------------------|-------------------|---|---|---|---|---|---|---|---|---|----|----|-------------------|---|---|---|---|---|---|---|---|---|----|----|
| | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Mondays through Thursdays | [Ramp closed] | | | | | | | | | | | | [Shoulder closed] | | | | | | | | | | | |
| Fridays | [Ramp closed] | | | | | | | | | | | | [Shoulder closed] | | | | | | | | | | | |
| Saturdays | [Shoulder closed] | | | | | | | | | | | | [Ramp closed] | | | | | | | | | | | |
| Sundays | [Shoulder closed] | | | | | | | | | | | | [Ramp closed] | | | | | | | | | | | |
| Day before Designated legal holiday | [Ramp closed] | | | | | | | | | | | | [Shoulder closed] | | | | | | | | | | | |
| Designated Legal Holidays | [Shoulder closed] | | | | | | | | | | | | [Ramp closed] | | | | | | | | | | | |

LEGEND:

-  Shoulder may be closed
-  Ramp may be closed

REMARKS:

KP: R71.276

LANE CLOSURE CHART NO. 4

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|----|---|---|---|---|---|---|---|---|---|----|----|----|-----------|---|---|---|---|---|---|---|---|----|----|----|
| DIRECTION: Southbound SD-5 | | LOCATION: La Costa Ave. OC to 1 km. N. of La Costa Ave. OC | | | | | | | | | | | | | | | | | | | | | | | |
| Lane Requirements and Hours of Work | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | AM | | | | | | | | | | | | PM | | | | | | | | | | | |
| FROM HOUR TO HOUR | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Mondays through Thursdays | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fridays | | | | | | | | | | | | | | | | | | | | | | | | | |
| Saturdays | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sundays | | | | | | | | | | | | | | | | | | | | | | | | | |
| Day before Designated legal holiday | | | | | | | | | | | | | | | | | | | | | | | | | |
| Designated Legal Holidays | | | | | | | | | | | | | | | | | | | | | | | | | |

LEGEND:

-  Three adjacent lanes open in direction of travel
-  No closure permitted

REMARKS:

KP: R70.92 / R71.92

10-1.07 TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE

A traffic control system shall consist of closing traffic lanes and ramps 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 additional devices or take the measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

Each vehicle used to place, maintain and remove components of a traffic control system on multilane highways shall be equipped with a Type II flashing arrow sign which shall be in operation when the vehicle is being used for placing, maintaining, or removing the components. Vehicles equipped with Type II flashing arrow sign not involved in placing, maintaining, or removing the components when operated within a stationary type lane closure shall only display the caution display mode. The sign shall be controllable by the operator of the vehicle while the vehicle is in motion. The flashing arrow sign shown on the plans shall not be used on the vehicles which are doing the placing, maintaining, and removing, of components of a traffic control system, and shall be in place before a lane closure requiring its use is completed.

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 and ramp 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.

The contract lump sum price paid for traffic control system shall include full compensation for furnishing all labor, 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 as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

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. The 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.

10-1.08 TEMPORARY PAVEMENT DELINEATION

Temporary pavement delineation shall be furnished, placed, maintained and removed in accordance with the provisions in Section 12-3.01, "General," of the Standard Specifications and these special provisions. Nothing in these special provisions shall be construed as to reduce the minimum standards specified in the Manual of Traffic Controls published by the Department or as relieving the Contractor from his responsibility as provided in Section 7-1.09, "Public Safety," of the Standard Specifications.

Attention is directed to "Traffic Plastic Drums," elsewhere in these special provisions regarding the use of traffic plastic drums in place of portable delineators or cones.

GENERAL.—Whenever the work causes obliteration of pavement delineation, temporary or permanent pavement delineation shall be in place prior to opening the traveled way to public traffic. Laneline or centerline pavement delineation shall be provided at all times for traveled ways open to public traffic. On multilane roadways (freeways and expressways) edgeline delineation shall be provided at all times for traveled ways open to public traffic.

All work necessary, including any required lines or marks, to establish the alignment of temporary pavement delineation shall be performed by the Contractor. Surfaces to receive temporary pavement delineation shall be dry and free of dirt and loose material. Temporary pavement delineation shall not be applied over existing pavement delineation or other temporary

pavement delineation. Temporary pavement delineation shall be maintained until superseded or replaced with a new pattern of temporary pavement delineation or permanent pavement delineation. Temporary pavement markers and removable traffic type tape which conflicts with a new traffic pattern or which is applied to the final layer of surfacing or existing pavement to remain in place shall be removed when no longer required for the direction of public traffic, as determined by the Engineer.

TEMPORARY LANELINE AND CENTERLINE DELINEATION.—Whenever lanelines and centerlines are obliterated the minimum laneline and centerline delineation to be provided shall be temporary reflective raised pavement markers placed at longitudinal intervals of not more than 7.3 m. The temporary reflective raised pavement markers shall be the same color as the laneline or centerline the markers replace. Temporary reflective raised pavement markers shall be, at the option of the Contractor, one of the temporary pavement markers listed for short term day/night use (14 days or less) or long term day/night use (6 months or less) in “Prequalified and Tested Signing and Delineation Materials” elsewhere in these special provisions.

Temporary reflective raised pavement markers shall be placed in accordance with the manufacturer’s instructions and shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used to place pavement markers in areas where removal of the markers will be required.

Temporary laneline or centerline delineation consisting entirely of temporary reflective raised pavement markers placed on longitudinal intervals of not more than 7.3 m shall be used on lanes opened to public traffic for a maximum of 14 days. Prior to the end of the 14 days, the permanent pavement delineation shall be placed. If the permanent pavement delineation is not placed within the 14 days, the Contractor shall provide, at the Contractor’s expense, additional temporary pavement delineation. The additional temporary pavement delineation to be provided shall be equivalent to the pattern specified for the permanent pavement delineation for the area, as determined by the Engineer.

Full compensation for furnishing, placing, maintaining, and removing the temporary reflective raised pavement markers, used for temporary laneline and centerline delineation and for providing equivalent patterns of permanent traffic lines for these areas when required; shall be considered as included in the contract prices paid for the items of work that obliterated the laneline and centerline pavement delineation and no separate payment will be made therefor.

10-1.09 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.

Temporary railing (Type K) fabricated prior to January 1, 1993, with one longitudinal No. 15 (No. 5 imperial) reinforcing steel bar near the top in lieu of the 2 longitudinal No. 15 reinforcing steel bars near the top, as shown on the plans, may be used.

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.

10-1.10 TRAFFIC PLASTIC DRUMS

Traffic plastic drums shall conform to the requirements for traffic control devices in Section 12, “Construction Area Traffic Control Devices,” of the Standard Specifications and these special provisions.

Traffic plastic drums shall be constructed of low-density polyethylene material and shall be flexible or collapsible upon impact by a vehicle. The traffic plastic drum shall have a weighted base that will separate from the drum. The base shall be of such shape as to preclude rolling upon impact by a vehicle. The base shall be of sufficient weight to maintain the drum in position and upright. The base or external ballast rings shall not exceed 101.6 mm in height, and drum rings shall not exceed 965.2 mm maximum in diameter. The base or external rings placed over and around the drum, resting on the pavement or ground shall contain the ballast for the drums. Ballast for drums shall be sand or water, except sand shall be used in areas susceptible to freezing. The base shall have drain holes to prevent the accumulation of water. Sand bags shall not be used as ballast for drums.

The body of the traffic plastic drum shall be of a fluorescent orange or predominately orange color. Drums shall be a minimum of 9124.4 mm in height above the traveled way, and have at least an 457.2 mm minimum width, regardless of orientation.

The markings on drums shall be horizontal, circumferential, alternating orange and white reflective bands 101.6 to 152.4 mm wide. Each drum shall have a minimum of 2 orange and 2 white bands. The top of the uppermost reflective band shall be no lower than 152.4 mm in height above the drum. Any non-reflective spaces between the bands shall not exceed 50.8 mm in width. The reflective sheeting shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials," elsewhere in these special provisions.

Only one type of traffic plastic drum shall be used on the project. The type of traffic plastic drum proposed for use on the project shall be submitted to the Engineer for approval, prior to placement on the project.

In curvilinear alignment traffic plastic drums shall be used only on one side of the raveled way. Traffic plastic drums shall be placed on the alignment and location shown on the plans, or directed by the Engineer. Traffic plastic drums shall be placed uniformly, straight on tangent alignment and on a true arc on curved alignment. All layout work necessary to place the traffic plastic drums to the proper alignment shall be performed by the Contractor.

If traffic plastic drums are displaced or are not in an upright position, from any cause, the traffic plastic drums shall immediately be replaced or restored to their original location, in an upright position, by the Contractor.

At the option of the Contractor, where portable delineators, cones or Type I and II barricades are specified in the specifications or shown on the plans, traffic plastic drums may be used in place of those portable delineators, cones or Type I and II barricades.

At the completion of the project, traffic plastic drums shall become the property of the contractor and removed from the site of the work.

Traffic plastic drums shall be installed as shown on the plans when temporary railing (Type K) is placed as required by "Public Safety" elsewhere in these special provisions. Traffic plastic drums will be measured as units from actual count of the number of traffic plastic drum designated on the plans or ordered by the Engineer. After initial placement of traffic plastic drums, and if ordered by the Engineer, the traffic plastic drums shall be moved from location to location and the cost thereof will be paid for as extra work as provided in Section 4-1.0-3D. Traffic plastic drums which are used as part of traffic control system in place of cones, delineators or barricades or which are used in accordance with the requirements of "Public Safety,," elsewhere in these special provisions or which are placed in excess of the number specified or shown will not be included in the count of traffic plastic drums to be paid for.

The contract unit price paid for traffic plastic drum shall include full compensation for furnishing all labor, materials (including ballast), tools, equipment, and incidentals, and for doing all the work involved in furnishing, placing, maintaining, repairing, replacing, and removing the traffic plastic drum, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.11 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 obstacles is 4.6 m 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 Inertial Modules, Fitch Inertial Modules or equal:

Energite Inertial Modules manufactured by Energy Absorption Systems, Inc., One East Wacker Drive, Chicago, IL 60601-2076, Telephone (312) 467-6750.

Distributor (Northern): Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828, Telephone 1-800-884-8274, FAX (916) 387-9734

Distributor (Southern): Traffic Control Service, Inc., 1881 Betmor Lane, Anaheim, CA 92805, Telephone 1-800-222-8274.

Fitch Inertial Modules, national distributor; Roadway Safety Service, Inc., 700-3 Union Parkway, Ronkonkoma, NY 11779.

Distributor: Singletree Sales Company, 1533 Berger Drive, San Jose, CA 95112, Telephone 1-800-822-7735.

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 kilograms 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 the Contractor's 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 the Contractor's 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 3.6 m 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 will be measured by the unit determined from the actual count of modules used in the work or ordered by the Engineer at each location. Temporary crash cushion modules placed in accordance with the provisions in "Public Safety" elsewhere in these special provisions and modules placed in excess of the number specified or shown will not be measured nor paid for.

Repairing modules damaged by public traffic will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications. Modules damaged beyond repair by public traffic, when ordered by the Engineer, shall be removed and replaced immediately by the Contractor. Modules replaced due to damage by public traffic will be measured and paid for as temporary crash cushion module.

If the Engineer orders a lateral move of sand filled temporary crash cushions and the repositioning is not shown on the plans, moving the sand filled temporary crash cushion will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications and these temporary crash cushion modules will not be counted for payment in the new position.

The contract unit price paid for temporary crash cushion module shall include full compensation for furnishing all labor, materials (including sand, pallets or frames and marker panels), tools, equipment and incidentals, and for doing all work involved in furnishing, installing, maintaining, moving and resetting during a work period for access to the work, and

removing from the site of the work when no longer required (including those damaged by public traffic) the sand filled temporary crash cushion modules, complete in place, as shown on the plans, as specified in these special provisions as directed by the Engineer.

10-1.12 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.

10-1.12A REMOVE DRAINAGE FACILITIES

Existing pipes and headwalls, where any portion of these structures is within one meter of the grading plane in excavation areas, or within 0.3-m of original ground in embankment areas, or where shown on the plans to be removed, shall be completely removed and disposed of.

Removed culverts or concrete shall be disposed of outside the highway right of way in accordance with the provisions in Section 7-1.13, "Disposal of Material Outside of the Highway Right of Way," of the Standard Specifications.

10-1.12B RECONSTRUCT CHAIN LINK FENCE

Existing chain link fence shall be removed and reconstructed as shown on the plans.

10-1.13 CLEARING AND GRUBBING

Clearing and grubbing shall conform to the provisions in Section 16, "Clearing and Grubbing," of the Standard Specifications.

Vegetation shall be cleared and grubbed only within the excavation and embankment slope lines.

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 the Contractor's responsibility for final cleanup of the highway as provided in Section 4-1.02, "Final Cleaning Up," of the Standard Specifications.

10-1.14 WATERING

Watering shall conform to the provisions in Section 17, "Watering," of the Standard Specifications.

10-1.15 EARTHWORK

Earthwork shall conform to the provisions in Section 19, "Earthwork," of the Standard Specifications and these special provisions.

Surplus excavated material 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 50 mm before removing the surfacing. Full compensation for cutting existing surfacing shall be considered as included in the contract price paid per cubic meter for roadway excavation and no additional compensation will be allowed therefor.

10-1.16 EROSION CONTROL (TYPE D)

Erosion control (Type D) shall conform to the provisions in Section 20-3, "Erosion Control," of the Standard Specifications and these special provisions.

Erosion control (Type D) work shall consist of applying erosion control materials to embankment and excavation slopes 1:4 (vertical:horizontal) or steeper, and other areas designated by the Engineer. Erosion control (Type D) shall be applied during November 15 and ending January 31 or, if the slope on which the erosion control is to be placed is finished during the winter season as specified in "Water Pollution Control" elsewhere in these special provisions the erosion control shall be applied immediately; or, if the slope on which the erosion control is to be placed is finished outside both specified periods and the contract work will be completed before November 15, the erosion control shall be applied as a last item of work.

Prior to installing erosion control materials, soil surface preparation shall conform to the provisions in Section 19-2.05, "Slopes," of the Standard Specifications, except that rills and gullies exceeding 50 mm in depth or width shall be leveled. Vegetative growth, temporary erosion control materials and other debris shall be removed from areas to receive erosion control.

MATERIALS.-Materials shall conform to Section 20-2, "Materials," of the Standard Specifications and the following:

SEED.-Seed shall conform to the provisions in Section 20-2.10, "Seed," of the Standard Specifications. Individual seed species shall be measured and mixed in the presence of the Engineer.

Seed not required to be labeled under the California Food and Agricultural Code shall be tested for purity and germination by a seed laboratory certified by the Association of Official Seed Analysts, or a seed technologist certified by the Society of Commercial Seed Technologists.

Seed shall have been tested for purity and germination not more than one year prior to application of seed.

Results from testing seed for purity and germination shall be furnished to the Engineer prior to applying seed.

LEGUME SEED.-Legume seed shall be pellet-inoculated or industrial-inoculated.

Pellet-inoculated seed shall be inoculated in accordance with the provisions in Section 20-2.10, "Seed," of the Standard Specifications.

Inoculated seed shall have a calcium carbonate coating.

Pellet-inoculated seed shall be sown within 90 days after inoculation.

Industrial-inoculated seed shall be inoculated with Rhizobia and coated using an industrial process by a manufacturer whose principal business is seed coating and seed inoculation.

Industrial-inoculated seed shall be sown within 180 calendar days after inoculation.

Legume seed shall consist of the following:

LEGUME SEED

| Botanical Name (Common Name) | Percent Germination (Minimum) | Kilograms pure live seed per hectare (Slope measurement) |
|---------------------------------------|----------------------------------|---|
| Trifolium willdenovii (Tomcat Clover) | 85 | 3.4 |
| Lotus scopafius (Deerweed) | 60 | 3.4 |
| Lupinus bicolor (Miniature Lupine) | 80 | 4.5 |

NON-LEGUME SEED.-Non-legume seed shall consist of the following:

NON-LEGUME SEED

| Botanical Name (Common Name) | Percent Germination (Minimum) | Kilograms pure live seed per hectare (Slope measurement) |
|--|----------------------------------|---|
| Vulpia microstachys (Zorro Grass) | 80 | 5.6 |
| Hordeum californicum (California Barley) | 80 | 11.25 |
| Hordeum vulgare (Barley) | 80 | 10.1 |
| Eschschoizia californica (California Poppy) | 75 | 2.25 |
| Nasselia pulchra (Purple Needlegrass) | 60 | 4.5 |
| Bromus carinatus "Cucamonga" (Brome Grass) | 80 | 2.25 |
| Eneelia californica (California Eneelia) <u>Viguiera lacinista</u> <u>(no common name provided)</u> | 60 | 2.25 |

Seed shall be delivered to the job site in unopened separate containers with the seed tag attached. Containers without a seed tag will not be accepted.

A sample of approximately 30 g of seed will be taken from each seed container by the Engineer.

COMMERCIAL FERTILIZER.-Commercial fertilizer shall conform to the provisions in Section 20-2.02, “Commercial Fertilizer,” of the Standard Specifications and shall have a guaranteed chemical analysis of 16 percent nitrogen, 20 percent phosphoric acid and 0 percent water soluble potash.

.STABILIZING EMULSION -Stabilizing emulsion shall conform to the provisions in Section 20-2.11, “Stabilizing Emulsion,” of the Standard Specifications and these special provisions.

The requirement of an effective life of at least one year for stabilizing emulsion shall not apply.

Stabilizing emulsion shall be in a dry powder form, may be reemulsifiable, and shall be a processed organic adhesive used as a sod binder.

APPLICATION.-Erosion control materials shall be applied in 2 separate applications in the following sequence:

Legume seed shall be applied by a dry method at the rate of 11.3 kg/ha (pure live seed) (slope measurement). Legume seed shall not be applied with hydro-seeding equipment.

The following mixture in the proportions indicated shall be applied with hydro-seeding equipment within 60 minutes after the seed has been added to the mixture:

| Material | Kilograms per hectare (Slope measurement) |
|-----------------------|--|
| Fiber | 1120 |
| Non-Legume Seed | 38.2 |
| Commercial Fertilizer | 90 |
| Stabilizing Emulsion | 168 |

The ratio of total water to total stabilizing emulsion in the mixture shall be as recommended by the manufacturer.

10-1.17 AGGREGATE BASE

Aggregate base shall be Class 2 and shall conform to the provisions in Section 26, “Aggregate Bases,” of the Standard Specifications and these special provisions.

The first paragraph of Section 26-1.02A, “Class 2 Aggregate Base,” of the Standard Specifications is amended by adding the following sentences:

Aggregate may include or consist of material processed from reclaimed asphalt concrete, portland cement concrete, lean concrete base, cement Created base, glass or a combination of any of these materials. Aggregate base incorporating reclaimed glass shall not be placed at locations where surfacing will not be placed over the aggregate base.

The fourth paragraph in Section 26-1.02A, is amended by adding the following sentence:

Untreated reclaimed asphalt concrete and portland cement concrete will not be considered to be treated with lime, cement or other chemical material for purposes of performing the Durability Index test.

10-1.18 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.

If the Contractor selects the batch mixing method, asphalt concrete shall be produced by the automatic batch mixing method as provided in Section 39-3.03A(2), “Automatic Proportioning,” of the Standard Specifications.

In addition to the requirements in Section 39-5.01, “Spreading Equipment,” of the Standard Specifications, asphalt paving equipment shall be equipped with automatic screed controls and a sensing device or devices.

When placing asphalt concrete to the lines and grades established by the Engineer, the automatic controls shall control the longitudinal grade and transverse slope of the screed. Grade and slope references shall be furnished, installed and maintained by the Contractor. Should the Contractor elect to use a ski device, the minimum length of the ski device shall be 9 m. The ski device shall be a rigid one piece unit and the entire length shall be utilized in activating the sensor.

When placing the initial mat of asphalt concrete on existing pavement, the end of the screed nearest the centerline shall be controlled by a sensor activated by a ski device not less than 9 m long. The end of the screed farthest from centerline shall be controlled by a sensor activated by a similar ski device or by an automatic transverse slope device set to reproduce the cross slope designated by the Engineer.

When paving contiguously with previously placed mats, the end of the screed adjacent to the previously placed mat shall be controlled by a sensor that responds to the grade of the previously placed mat and will reproduce the grade in the new mat within a 3-mm tolerance. The end of the screed farthest from the previously placed mat shall be controlled in the same manner as when placing the initial mat.

Should the methods and equipment furnished by the Contractor fail to produce a layer of asphalt concrete conforming to the requirements, including straightedge tolerance, of Section 39-6.03, "Compacting," of the Standard Specifications, the paving operations shall be discontinued and the Contractor shall modify the equipment or methods, or furnish substitute equipment.

Should the automatic screed controls fail to operate properly during any day's work, the Contractor may use manual control of the spreading equipment for the remainder of that day, however, the equipment shall be corrected or replaced with alternative automatically controlled equipment conforming to the requirements in this section before starting another day's work.

The aggregate from each separate bin used for asphalt concrete, Type A, except for the bin containing the fine material, shall have a Cleanness Value of 57 minimum for "contract compliance" and a 65 minimum for "operating range" as determined by California Test 227, modified as follows:

Tests will be performed on the material retained on the 236-mm sieve from each bin and will not be a combined or averaged result.

Each test specimen will be prepared by hand shaking for 30 seconds, a single loading of the entire sample on a 305-mm diameter, 4.75-mm sieve, nested on top of a 305-mm diameter, 236-mm sieve.

Where a coarse aggregate bin contains material which will pass the maximum size specified and be retained on a 9.5-mm sieve, the test specimen mass and volume of wash water specified for 25-mm x 4.75-mm aggregate size will be used.

Samples will be obtained from the weigh box area during or immediately after discharge from each bin of the batching plant or immediately prior to mixing with asphalt in the case of continuous mixers.

The Cleanness Value of the test sample from each of the bins will be separately computed and reported.

At drier-drum and continuous plants with cold feed control, Cleanness Value test samples will be obtained from the discharge of each coarse aggregate storage. An aggregate sampling device shall be provided which will provide a 25-kg sample of each coarse aggregate.

If the results of the Cleanness Value tests do not meet the requirements specified for "operating range" but meet the "contract compliance" requirements, placement of the material may be continued for the remainder of that day. However, another day's work may not be started until tests, or other information, indicate to the satisfaction of the Engineer that the next material to be used in the work will comply with the requirements specified for "operating range."

If the results of the Cleanness Value tests do not meet the requirements specified for "contract compliance," the material which is represented by these tests shall be removed. However, if requested by the Contractor and approved by the Engineer, this material having a Cleanness Value of 48 or greater may remain in place and be accepted on the basis of a reduced payment for this material left in place.

Asphalt concrete that is accepted on the basis of reduced payment will be paid for at the contract prices for the items of asphalt concrete involved multiplied by the following factors:

| Test Value | Pay Factor |
|------------|------------|
| 56 | 0.90 |
| 55 | 0.85 |

| | |
|----|------|
| 54 | 0.80 |
| 53 | 0.75 |
| 52 | 0.70 |
| 51 | 0.65 |
| 50 | 0.60 |
| 49 | 0.55 |
| 48 | 0.50 |

If asphalt concrete is accepted on the basis of reduced payment due to a Cleanness Value of 48 to 56 and also accepted on the basis of aggregate grading or Sand Equivalent tests not meeting the “contract compliance” requirements, the reduced payment for Cleanness Value shall apply and payment by the Contractor to the State for asphalt concrete not meeting the “contract compliance” requirements for aggregate grading or Sand Equivalent shall not apply.

10-1.19 CONCRETE STRUCTURES

Portland cement concrete structures shall conform to the provisions in Section 5 1, “Concrete Structures,” of the Standard Specifications and these special provisions.

Minor concrete (backfill) shall conform to Section 65-1.035, “Concrete Backfill,” of the Standard Specifications. Type V portland cement shall be used in concrete.

10-1.20 REINFORCEMENT

Reinforcement shall conform to the provisions in Section 52, “Reinforcement,” of the Standard Specifications and these special provisions.

Attention is directed to “Substitution of Non-Metric Materials and Products” and “Welding Quality Control” elsewhere in these special provisions.

Where mandatory bar substitutions are required or where non-metric reinforcement is optionally substituted for metric reinforcement in accordance with these specifications, the requirements for bending, placing or splicing which are based on the size of reinforcement shall be based on the nominal size of the actual reinforcement used.

The first and second paragraphs of Section 52-1.02A, “Bar Reinforcement,” of the Standard Specifications are amended to read:

Reinforcing bars shall be low-alloy steel deformed bars conforming to the specifications of ASTM Designation: A 706/A 706M and the following:

Where reinforcing bars shown on the plans or specified have a metric bar designation number shown in column “A” of the table below, corresponding bars from column “B” shall be substituted therefore.

| A | B |
|--|--|
| METRIC BAR DESIGNATION NUMBER AS SHOWN ON THE PLANS OR SPECIFIED | METRIC BAR DESIGNATION NUMBER WHICH SHALL BE SUBSTITUTED FOR BARS LISTED IN COLUMN “A” |
| 10 | 13 |
| 15 | 16 |
| 20 | 19 |
| 25 | 25 |
| 30 | 32 |
| 35 | 36 |
| 45 | 43 |
| 55 | 47 |

*Spacing of bars may be increased a maximum of 15 percent or the total number of bars may be decreased a maximum, of 15 percent, unless otherwise specified.

Where the spacing of No. 30 bars is shown on the plans, the spacing of substituted No. 32 bars may be increased from that shown on the plans by a maximum of 15 percent.

Where the total number of No. 30 bars is shown on the plans, the total number of substituted No. 32 bars may be decreased from that shown on the plans by a maximum of 15 percent. The total number of substituted No. 32 bars shall be distributed in the same manner as shown on the plans for the No. 30 bars.

Where No. 30 bars are shown on the plans as vertical reinforcement in any columns or piles, the total number of substituted No. 32 bars shall be decreased from that shown on the plans for the No. 30 bars by the maximum number of bars to achieve a 15 percent reduction. The substituted No. 32 bars shall be distributed in the same manner as shown on the plans for the No. 30 bars.

At the option of the Contractor, non-metric reinforcing bars may be substituted for metric bars as shown in the table below.

| METRIC BAR DESIGNATION NUMBER AS SHOWN ON THE PLANS, SPECIFIED, OR PREVIOUSLY SUBMITTED | NON-METRIC BAR DESIGNATION NUMBER WHICH MAY BE SUBSTITUTED |
|---|--|
| 13 | 4 |
| 16 | 5 |
| 19 | 6 |
| 22 | 7 |
| 25 | 8 |
| 29 | 9 |
| 32 | 10 |
| 36 | 11 |
| 43 | 14 |
| 57 | 18 |

At the option of Contractor, deform or plain billet-steel bars conforming to ASTM Designation: A 615/A 615M, Grade 300 or 420, may be used as reinforcement in the following 5 categories:

1. Slope and channel paving
2. Min or structures
3. Sign and signal foundations (pile and spread footing types)
4. Roadside rest facilities; and
5. Concrete barrier Type 50 and Type 60 series and temporary railing.

When reinforcement conforming to ASTM designation: A 615/A 615M, Grade 300 or 420 is used in the above 5 categories, all mandatory and optional substitutions, and increases in spacing or decrease in total number of bars, as specified above for ASTM Designation: A 706/A 706M reinforcement, shall apply. No other increases in spacing or decreases in the total number of bars, from that shown on the plans or specified will be allowed.

Unless otherwise specified, all reinforcing bars shall be placed in accordance with the size and spacing, or size and total number, as shown on the plans or specified.

Two copies of a list showing any changes in spacing or total number of bars from that shown on the plans for specified, and showing any non-metric bars that are substituted for metric bars shall be furnished to the Engineer in accordance with the provisions of Section 5201.03 "Steel Lists," of the Standard Specifications.

No adjustment will be required in spacing or total number of bars due to a difference in minimum yield strength between metric and non-metric bars. Deformations specified in ASTM Designation: A 706/A 706M will not be required on bars used as spiral or hoop reinforcement in structures and concrete piles.

The last paragraph of Section 51-1.07, "Placing," of the Standard Specifications is amended to read;

Whenever a portion of an assemblage of bar reinforcing steel that is not encased in concrete exceeds 6 m in height, the Contractor shall submit to the Engineer for approval, in accordance with the provisions in Section 5-1.02, "Plans and Working Drawings," working drawings and design calculations of the temporary support system to be used. The working drawings and design calculations shall be signed by an engineer who is registered as a Civil Engineer in the State of California. The temporary support system shall be designed to resist all expected loads and shall be adequate to prevent collapse or overturning of the assemblage. If the installation of forms or other work requires revisions to or temporary release of any portion of the temporary support system. The working drawings shall show the support system to be used

during each phase of construction. The minimum horizontal wind load to be applied to the bar reinforcing steel assemblage, or to a combined assemblage of reinforcing steel and forms, shall be not less than 960 Pa on the gross projected area of the assemblage.

The first paragraph of Section 52-1.08, "Splicing," shall be amended to read:

Splicing of reinforcing bars shall be by lapping, butt welding, mechanical butt splicing, or mechanical lap splicing, at the option of the contractor. Reinforcing bars No. 43 through 57 shall not be spliced by lapping.

The sixth paragraph of Section 52-1.08, Splicing," of the Standard Specifications, is amended to read:

Except when otherwise specified, mechanical splicing shall conform to the details shown on the plans, the requirements for mechanical butt splices as specified in this Section 52-1.08, and Sections 52-1.08C, "Mechanical Butt Splices," 52-1.08D, "Qualification of Welding and Mechanical Splicing," and 52-1.08E, "Job Control Tests," and the following:

The mechanical lap splice shall be a unit consisting of a sleeve, in which the reinforcing bars are positioned, and a wedge driven through holes in the sleeve and between the reinforcing bars. The mechanical lap splice shall only be used for splicing non-epoxy-coated deformed reinforcing bars Nos. 13, 16, and 19. One mechanical lap splice unit per splice shall be used.

The eighth and ninth paragraphs of Section 52-1.08, Splicing," of the Standard Specifications are amended to read;

Unless otherwise shown on the plans or approved by the Engineer, splices in adjacent reinforcing bars at any particular section shall be staggered. The minimum distance between staggered lap splices or mechanical lap splices shall be the same length required for a lapped splice in the largest bar. The minimum distance between staggered butt splices shall be 6009 mm. All distances shall be measured between the midpoints of the splices along a line which is centered between the axes of the adjacent bars.

Complete butt splices shall develop a minimum tensile strength based on the nominal bar area of 430 Mpa for ASTM Designation: A 615/A 615M, Grade 300 bars and 550 Mpa for ASTM Designation: A 615A/ 615M, Grade 420 and ASTM Designation: A 706A/ 706M bars. If butt splices are made between two bars of dissimilar strengths the minimum required tensile strength for the splice shall be that required for the weaker bars.

The second sentence of the eleventh paragraph of Section 52-1.08, "Splicing," of the Standard Specifications is amended to read:

Job control tests shall be made on sample splices representing each lot of mechanical butt splices as provided in Section 52-1.08E, "Job control Tests."

The third and fourth paragraphs of Section 52-1.08A, "Lapped Splices," of the Standard Specifications are amended as follows:

Where ASTM Designations: A 615A/615M or A 706A/ A 706M reinforcing bars are required, the length of lapped splices shall be as follows: Reinforcing bars No. 25 or smaller shall be lapped at least 45 diameters of the smaller bar joined, and reinforcing bars Nos. 29, 32, and 36 shall be lapped at least to 60 diameters of the smaller bar joined, except when otherwise shown on the plans.

Where ASTM Designation: A 615/ A 615M, Grade 300 reinforcing bars are permitted, the length of lapped splices shall be as follows: Reinforcing bars No. 25 or smaller, shall be lapped at least 30 diameters of the smaller bar joined, and reinforcing bars Nos. 29, 32 and 36 shall be lapped at least 45 diameters of the smaller bar joined, except when otherwise shown on the plans.

Section 52-1.08B, "Butt Welded Splices," of the Standard Specifications is replaced with the following:

52-1.08B Butt Welded Splices.-All butt welded splices in reinforcing bars shall be complete joint penetration butt welds conforming to the requirements in AWS D1.4, and the requirements of these specifications and the special provisions. At the option of the Contractor, shop produced resistance butt welds that are produced by a fabricator who is approved by the Transportation Laboratory may be used.

Only the joint details and dimensions as shown in Figure 3.2, "Direct Butt Joints," of AWS D 1.4-92, shall be used for making complete joint penetration butt welds of bar reinforcement. Split pipe backing shall not be used.

Material used as backing for complete joint penetration butt welds of bar reinforcement shall be a flat plate conforming to the requirements of ASTM Designation: A 709/A 709M, Grade 36[250]. The flat plate shall be 6 mm thick with a width, as measured perpendicular to the axis of the bar, equal to the nominal diameter of the bar, and a length which does not exceed twice the nominal diameter of the bar. The flat plate backing shall be fitted tightly to the bar with the root of the weld centered on the plate. Any bar deformation or obstruction preventing a tight fit shall be ground smooth and flush with the adjacent surface. Tack welds used to fit backing plates shall be within the weld root area so that they are completely consumed by the finished weld. Backing plates shall not be removed.

Butt welds shall be made with multiple weld passes using a stringer bead without an appreciable weaving motion. The maximum stringer bead width shall be 2.5 times the diameter of the electrode and slagging shall be performed between each weld pass. Weld reinforcement shall not exceed 4 mm in convexity.

Before any electrodes or flux-electrode combinations are used, the Contractor, at the Contractor's expense, shall furnish certified copies of test reports for all the pertinent tests specified in AWS A5.1, AWS A5.5, AWS A5.18 or AWS A5.20, whichever is applicable, made on electrodes or flux-electrode combinations of the same class, brand and nearest specified size as the electrodes to be used. The tests may have been made for process qualification or quality control, and shall have been made within one year prior to manufacture of the electrodes and fluxes to be used. The report shall include the manufacturer's certification that the process and material requirements were the same for manufacturing the tested electrodes and the electrodes to be used. The forms and certificates shall be as directed by the Engineer.

Electrodes for manual shielded metal arc welding of ASTM Designation: A 615/A 615M, Grade 420 bars shall conform to the requirements of AWS A5.5 for E9018-M or E10018-M electrodes.

Electrodes for manual shielded metal arc welding of A 706/A 706M bars shall conform to the requirements of AWS A5.5 for E8016-C3 or E8018-C3 electrodes.

Solid and composite electrodes for semiautomatic gas metal-arc and flux-cored arc welding of Grade 300 reinforcing bars shall conform to the requirements of AWS A5.18 for ER70S-2, ER70S-3, ER70S-6 or ER70S-7 electrodes; or AWS A5.20 for E70T-1, E70T-5, E70T-6 or E70T-8 electrodes.

Electrodes for semiautomatic welding of ASTM Designation: A 615/A 615M, Grade 420 and ASTM Designation: A 706/A 706M bars shall produce a weld metal deposit with properties conforming to the requirements of Section 5.3.4 of AWS D1.1-96 for ER80S-Ni1, ER80S-Ni2, ER80S-Ni3, ER80S-D2, E90T1-K2 and E91T1-K2 electrodes.

Reinforcing bars shall be preheated for a distance of not less than 150 mm on each side of the joint prior to welding.

For all welding of ASTM Designation: A 615/A 615M, Grade 300 or Grade 420 bars, the requirements of Table 5.2, "Minimum Preheat and Interpass Temperature," of AWS D1.4-92 are superseded by the following:

The minimum preheat and interpass temperatures shall be 200°C for Grade 300 bars and 300°C for Grade 420 bars. Immediately after completing the welding, at least 150 mm of the bar on each side of the splice shall be covered by an insulated wrapping to control the rate of cooling. The insulated wrapping shall remain in place until the bar has cooled below 90°C.

When welding different grades of reinforcing bars, the electrode shall conform to Grade 300 bar requirements and the preheat shall conform to the Grade 420 bar requirements.

In the event that any of the specified preheat, interpass and post weld cooling temperatures are not met, all weld and heat affected zone metal shall be removed and the splice rewelded.

AR welding shall be protected from air currents, drafts, and precipitation to prevent loss of heat or loss of arc shielding. The method of protecting the welding area from loss of heat or loss of arc shielding shall be subject to approval by the Engineer.

Reinforcing bars shall not be direct butt spliced by thermite welding.

The first paragraph of Section 52-1.08C, Mechanical Butt Splices," of the Standard Specifications is amended to read:

Mechanical butt splices shall be the sleeve-filler metal type, the sleeve-threaded type, the sleeve-swaged type, the sleeve-filler grout type, the sleeve-lockshear bolt type, the two-part sleeve-forged bar type, or the two-part sleeve-friction bar type, at the option of the Contractor.

The third paragraph of Section 52-1.08C, "Mechanical Butt Splices," of the Standard Specifications is amended to read.

The total slip of the reinforcing bars within the splice sleeve after loading in tension to 200 MPa and relaxing to 20 MPa shall not exceed the following, measured between gage points clear of the splice sleeve: 250 gm for reinforcing bars No. 43, or smaller, or 750 gm for reinforcing bars No. 57.

The following is added after the third paragraph of Section 52-1.08C, “Mechanical Butt Splices,” of the Standard Specifications:

Slip requirements shall not apply to mechanical lap splices.

The fourth subparagraph of the last paragraph of Section 52-1.08C, Mechanical Butt Splices,” of the Standard Specifications is amended to read:

A statement that the splicing systems and materials used in accordance with the manufacturer's procedures will develop not less than the minimum tensile strengths, based on the nominal bar area, of 430 MPa for ASTM Designation: A 615/A 615M, Grade 300 bars and 550 MPa for ASTM Designations: A 615/A 615M, Grade 420 and A 706/A 706M bars, and will comply with the total slip requirements and the other requirements in these specifications.

Section 52-1.08C(5), “Sleeve-Extruded Mechanical Butt Splices,” of the Standard Specifications is replaced with the following:

52-1.08C(5) Sleeve-Lockshear Bolt Mechanical Butt Splices. - The sleeve-lockshear bolt type of mechanical butt splices shall consist of a seamless steel sleeve, 2 serrated steel strips welded to the inside of the sleeve, center hole with centering pin, and bolts that are tightened until the bolt heads shear off and the bolt ends are embedded in the reinforcing bars.

52-1.08C(6) Two-Part Sleeve-Forged Bar Mechanical Butt Splices.-The two-part sleeve-forged bar type of mechanical butt splices shall consist of a shop machined two-part threaded steel sleeve that interlocks two hot-forged reinforcing bars ends. The forged bar ends may be either shop produced or field produced.

52-1.08C(7) Two-Part Sleeve-Friction Bar Mechanical Butt Splices.-The two-part sleeve-friction bar type of mechanical butt splices shall consist of a shop machined two-part threaded steel sleeve whose ends are friction welded, in the shop, to the reinforcing bars ends.

The fourth paragraph of Section 52-1.08D, “Qualification of Welding and Mechanical Splicing,” of the Standard Specifications is replaced with the following:

Each operator qualification test for mechanical splices shall consist of 2 sample splices. Each mechanical splice procedure test shall consist of 2 sample splices.

For sleeve-filler, sleeve-threaded, sleeve-lockshear bolt and two-part sleeve friction bar mechanical butt splices, all sample splices shall be made on the largest reinforcing bar size to be spliced by the procedure or operator being tested except that No. 43 bars may be substituted for No. 57 bars.

For sleeve-swaged and two-part sleeve-forged mechanical butt splices, and mechanical lap splices, all sample splices shall be made on the largest reinforcing bar size of each deformation pattern to be spliced by the procedure or operator being tested. When joining new reinforcing bars to existing reinforcement, the qualification test sample bars shall be made with the deformation pattern of the new reinforcement to be joined.

Section 52-1.08E, “Job Control Tests,” of the Standard Specifications is replaced with the following:

52-1.08E Job Control Tests.-When mechanical butt splices, shop produced complete joint penetration butt welded splices, or shop produced resistance butt welded splices are used, the Contractor shall furnish job control tests from a local qualified lab. A job control test shall consist of the fabrication, under conditions used to produce the splice, and the physical testing of 3 sample splices for each lot of 150 splices.

A lot of mechanical but splices is defined as 150, or fraction thereof, of the same type of mechanical butt splices used for each combination of bar size and bar deformation pattern that is used in the work.

A lot of shop produced complete joint penetration butt welded splices or shop produced resistance butt welded splices, is defined as 150, or fraction thereof, of the same type of welds used for each combination of bar size and bar deformation pattern that is used in the work.’

When joining new reinforcing bars to existing reinforcement, the job control test shall be made with the deformation pattern of the new reinforcement to be joined.

A sample splice shall consist of a splice made at the job site to connect two 760 mm., or longer, bars using the same splice materials, position, location, and equipment, and following the same procedures as are being used to make splices in the work. Shorter sample splice bars may be used if approved by the Engineer.

Sample splices shall be made and tested in the presence of the Engineer or the Engineer's authorized representative.

Sample splices shall be suitably identified with weatherproof markings prior to shipment to the testing laboratory.

For sleeve-threaded mechanical butt splices, the reinforcing bars to be used for job control test shall be fabricated on a random basis during the cutting of threads on the reinforcing bars of each lot and shipped to the job site with the material they represent.

For shop produced complete joint penetration butt welds, shop produced resistance butt welded splices and all types of mechanical butt splices, except the sleeve-threaded type, the Engineer will designate when samples for job control tests are to be fabricated, and will determine the limits of the lot represented by each job control test.

Should the average of the results of tests made on the 3 sample splices or should more than one sample splice in any job control test fail to meet the requirements for splices, all splices represented by that test will be rejected in accordance with the provisions in Section 6-1.04, "Defective Materials," of the Standard Specifications. This rejection shall prevail unless the Contractor, at the Contractor's expense, obtains and submits evidence, of a type acceptable to the Engineer, that the strength and quality of the splices in the work are acceptable.

Section 52-1.08F Nondestructive Splice Tests," of the Standard Specifications is replaced with the following;

52-1.08F Nondestructive Splice Tests. – All required radiographic examinations of complete joint penetration butt welded splices shall be performed by the Contractor in accordance with the requirements of AWS D 1.4 and these specifications.

Prior to radiographic examination, welds shall meet the requirements of Section 4.4, "Quality of Welds," of AWS D2.4-92.

Radiographic examinations shall be performed on 25 percent of all complete joint penetration butt welded splices from a production lot. The size of a production lot will be a maximum of 100 splices. The Engineer will select the splices which will compose the production lot and also the splices within each production lot to be radiographically examined.

Should more than 12 percent of the splices which have been radiographically examined in any production lot be defective, an additional 25 percent of the splices, selected by the Engineer from the same production lot, shall be radiographically examined. Should more than 12 percent of the cumulative total of splices tested from the same production lot be defective, all remaining splices in the lot shall be radiographically examined.

Additional radiographic examinations performed due to the identification of defective splices shall be at the Contractor's expense.

All defects shall be repaired in accordance with the requirements of AWS D1.4.

Radiographic examinations will not be required for either shop produced complete joint penetration butts welds or shop produced resistance butt welded splices of no. 25 or smaller bars used as spiral or hoop reinforcement.

In addition to radiographic examinations performed by the Contractor, any mechanical or welded splices may be subject to inspection or nondestructive testing by the Engineer. The Contractor shall provide sufficient access facilities in the shop and at the job site to permit the Engineer or his agent to perform the inspection or testing.

The Contractor shall notify the Engineer in writing 48 hours prior to performing any radiographic examinations.

The radiographic procedure used shall conform to the requirements of ASME Boiler and Pressure Vessels Code, Section V, Article 2 and the following:

Two exposures shall be made for each complete joint penetration butt welded splice. For each of the two exposures, the radiation source shall be centered on each bar to be radiographed. The first exposure shall be made with the radiation source placed at zero degrees from the top of the weld and perpendicular to the weld root and identified with a station mark of "0." When obstructions prevent a zero degree placement of the radiation source for the first exposure, and when approved in writing by the Engineer, the source may be rotated around the centerline of the reinforcing bar, a maximum of 25 degrees. The second exposure shall be at 90 degrees to the "0" station mark and shall be identified with a station mark of "90."

For field produced complete joint penetration butt welds, no more than one weld shall be radiographed during one exposure. For shop produced complete joint penetration butt welds, if more than one weld is to be radiographed during

one exposure, the angle between the root line of each weld and the direction to the radiation source shall be not less than 65 degrees.

Radiographs shall be made by either X-ray or gamma ray. Radiographs made by X-ray or gamma rays shall have densities of not less than 2.3 nor more than 3.5 in the area of interest. A tolerance of 0.05 in density is allowed for densitometer variations. Gamma rays shall be from the iridium 192 isotope and the emitting specimen shall not exceed 4.45 mm in the greatest diagonal dimension.

The radiographic film shall be placed perpendicular to the radiation source at all times; parallel to the root line of the weld unless source placement determines that the film must be turned; and as close to the root of the weld as possible.

The minimum source to film distance shall be maintained so as to insure that all radiographs maintain a maximum geometric unsharpness of 0.020 at all times, regardless of the size of the reinforcing bars.

All penetrameters shall be placed on the source side of the bar and perpendicular to the radiation source at all times. One penetrameter shall be placed in the center of each bar to be radiographed, perpendicular to the weld root, and adjacent to the weld. Penetrameter images shall not appear in the weld area.

When radiography of more than one weld is being performed per exposure, each exposure shall have a minimum of one penetrameter per bar, or three penetrameters per exposure. When 3 penetrameters per exposure are used, one penetrameter shall be placed on each of the 2 outermost bars of the exposure, and the remaining penetrameter shall be placed on a centrally located bar.

An allowable weld buildup of 4 mm may be added to the total material thickness when determining the proper penetrameter selection. No image quality indicator equivalency will be accepted. Wire penetrameters or penetrameter blocks shall not be used.

Penetrameters shall be sufficiently shimmed using a radiographically identical material. Penetrameter image densities shall be a minimum of .20 and a maximum of 3.6.

All radiographic film shall be Class 1, regardless of the size of reinforcing bars.

Radiographs shall be free of film artifacts and processing defects, including, but not limited to, steaks, scratches, pressure marks, or marks made for the purpose of identifying film or welding indications.

Each splice shall be clearly identified on each radiograph and the radiograph identification and marking system shall be established between the Contractor and the engineer before radiographic inspections begins. Film shall be identified by lead numbers only; etching, flashing, or writing in identifications of any type will not be permitted. Each piece of film identification information shall be legible and shall include, as a minimum, the following information: Contractor's name, date, name of nondestructive testing firm, initials of radiographer, contract number, part number, and weld number. The letter "R" and repair number shall be placed directly after the weld number to designate a radiograph of a repaired weld.

Radiographic film shall be developed within a time range of one minute less to one minute more than the film manufacturer's recommended maximum development time. Development on the job site will not be allowed.

Processing chemistry shall be done with a consistent mixture and quality, and processing rinses and tanks shall be clear to ensure proper results. Records of all developing processes and any chemical changes to the developing processes shall be kept and furnished to the Engineer upon request. The Engineer may request, at any time, that a sheet of unexposed film be processed in the presence of the Engineer to verify processing chemical and rinse quality.

All radiographs shall be interpreted and graded by a Level II or Level III technician who is qualified in accordance with the American Society for Nondestructive Testing's Recommended Practice No. SNT-TC-1A. The results of these interpretations shall be recorded on a signed certification and a copy kept with the film packet.

Technique sheets prepared in accordance with ASME Boiler and Pressure Vessels Code,

Section V, Article 2 Section T-291 shall also contain the developer temperature, developing time, fixing duration and all rinse times.

All radiographic envelopes shall have clearly written on the outside of the envelope the following information: name of the Contractor's Quality Control Manager (QCM), name of the nondestructive testing firm, name of the radiographer, date, contract number, complete part description, and all included weld numbers or a report number, as detailed in the Contractor's Quality Control Plan (QCP). In addition, all innerleaves shall have clearly written on them the part description and all included weld number, as detailed in the Contractor's QCP.

10-1.21 REINFORCED CONCRETE PIPE

Reinforced concrete pipe shall conform to the provisions in Section 65, "Reinforced Concrete Pipe," of the Standard Specifications and these special provisions.

The relative compaction required below the pipe spring line for pipe in Method 1 backfill in trench, where the pipe is not within the traveled way or under embankment, shall be 85 percent, minimum.

Except as otherwise designated by classification on the plans or in the specifications, joints for culvert and drainage pipes shall conform to the plans or specifications for standard or watertight joints.

Type V portland cement shall be used in the manufacture of the reinforced concrete pipe.

Reinforced concrete pipe shall be either cast or spun. Cast reinforced concrete pipe shall be manufactured by placing the concrete into stationary, vertical, cylindrical metal forms. Spun reinforced concrete pipe shall be manufactured by introducing the concrete into a rotating, horizontal, cylindrical metal form.

Special reinforced concrete pipe, having concrete cover over the steel reinforcement greater than the cover specified in AASHTO Designation: M 170M, shall conform to the provisions in Section 65-1.02, "Materials," and Section 65-1.02A, "Circular Reinforced Concrete Pipe," of the Standard Specifications, except the width of.. crack produced by the D-load test specified in AASHTO Designation: M 170M shall be the width determined by the following formula:

$$b = \frac{t-3/8d}{t-3/8d-C} \times 0.3\text{-mm}$$

b Width of crack to be produced in lieu of the 03-mm crack specified in AASHTO Designation: M 170M

t Wall thickness of pipe, nun

d Effective depth of the section to be tested, m

C Concrete cover over steel reinforcement in excess of cover specified in AASHTO Designation: M 170M

Reinforced concrete pipe that is to be hydrostatically tested shall be strength tested by the 3-edge bearing method to a maximum D-load of 10 percent greater than the 03-mm cracking D-load specified in AASHTO Designation: M 170M or to the actual D-load required to produce a 03-mm crack, whichever is the lesser.

10-1.22 CORRUGATED METAL PIPE

Corrugated steel pipe culverts shall conform to the provisions in Section 66, "Corrugated Metal Pipe," of the Standard Specifications and these special provisions.

Section 66-3.06, "Damaged Aluminum Coatings," of the Standard Specifications is amended to read:

66 -3.06 Damaged Aluminum Coatings.-In lieu of the requirements in AASHTO Designation: M 36/M 36M, damaged aluminum coatings shall be repaired as provided for damaged galvanizing in Section 751.05, "Galvanizing," or Section 66-3.05, "Damaged Galvanizing."

Universal coupling bands constructed with dimples, as shown on the standard plans, shall not be used in the work, except as otherwise provided herein.

When any corrugated steel pipe has been cut in the field, the connections shall be made with a coupling band and a portland cement concrete collar. The coupling band shall be the universal type constructed with dimples or the helical type. The concrete collar shall encase each pipe a minimum of 0.30 meter along the length of the pipe and a minimum of 0.15 meter in thickness around the perimeter of each pipe.

10-1.23 CANAL GATES

Canal gates shall conform to the provisions in Section 70, "Miscellaneous Facilities", of the Standard Specifications and these special provisions.

Canal gates where shown on the plans shall be 18" in size with a self-contained frame and hand wheel lift. The gate shall be designed to allow free outflow and prevent back flow, and additionally allow back flow when the slide cover-flap assembly is raised out of the waterway. Flap cover shall be domed construction and have a resilient rubber seal permanently bonded in a groove. The flap cover shall be attached to be cover slide in such a manner as to allow full opening of the cover and prevent jamming of the cover in the open waterway. Flap seat shall be inclined from the -vertical a minimum of 2 1/2 degrees. There shall be one adjustable wedge per side located on the horizontal centerline attached to the structural guides with a minimum of two bolts per wedge which will provide a practical degree of water tightness between the frame ring and cover slide seating face. A solid round lifting stem shall be provided, supported so that the slenderness ratio will not exceed 200 (1/r--200) and

shall be operated by a lifting device mounted on the headrail or the separate structure. The hand wheel or crank type lift will be sized to allow operation of the gate with a 18 kilogram pull under the maximum operating head. The lift nut shall be threaded to match the stem. Threads shall be the single lead, stub acme type. AU material for the canal gate including frame ring, cover slide, flap cover, hand wheel, rails, links, yoke, stem, assembly hardware and fasteners shall be stainless steel, ASTM A-276, Type 304.

The contract unit price paid for canal gates shall include full compensation for furnishing all labor, materials, tools, equipment and materials and for doing all the work involved in canal gates, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.24 MISCELLANEOUS FACILITIES

Flared end sections, inlets and pipe risers shall conform to the provisions in Section 70, "Miscellaneous Facilities," of the Standard Specifications and these special provisions.

Full compensation for PVC conduit shall be considered as included in the contract price paid per meter for precast concrete pipe riser and no separate payment will be made therefor.

10-1.25 SLOPE PROTECTION

Slope protection shall conform to the provisions in Section 72, "Slope Protection," of the Standard Specifications and these special provisions.

Type V portland cement shall be used in concrete slope protection.

Concrete (basin lining) will be measured and paid for by cubic meter in the same manner specified for concrete (channel lining), in Section 72-4.05, "Measurement," and Section 72-4.06, "Payment," of the Standard Specifications.

The contract price paid per cubic meter for concrete (basin lining) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in concrete (basin lining), complete in place, including broom finish, barreled outlet pipe entrance to basin and monitoring pads, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Concrete spillway will be ~~measured and paid for as concrete (basin lining);~~ paid per Section 9-1.03 "Force Account Payment," of the Standard Specifications

Rock slope protection fabric shall be nonwoven type fabric.

10-1.26 MISCELLANEOUS IRON AND STEEL

Miscellaneous iron and steel shall conform to the provisions in Section 75, "Miscellaneous Metal," of the Standard Specifications and these special provisions.

Materials for trash rack, fasteners, plates, bars and wire fabric, where shown on the plans, shall be stainless steel, ASTM A 240, Type 316.

10-1.27 MARKERS

Markers shall conform to the provisions in Section 82, "Markers and Delineators," of the Standard Specifications and these special provisions.

Markers on flexible posts shall be as specified in "Prequalified and Tested Signing and Delineation Materials," elsewhere in these special provisions. Flexible posts shall be made from a flexible white plastic which shall be resistant to impact, ultraviolet light, ozone and hydrocarbons. Flexible posts shall resist stiffening with age and shall be free of bums, discoloration, contamination, and other objectionable marks or defects which affect appearance or serviceability.

Reflective sheeting for metal and flexible target plates shall be the reflective sheeting designated for channelizers, markers, and delineators specified in "Prequalified and Tested Signing and Delineation Materials," elsewhere in these special provisions.

10-1.28 WATER WELL ABANDONMENT

Wells shall be abandoned after completion of clearing and grubbing but prior to starting earthwork operations, in the area of the well involved, except as otherwise specified in these provisions.

The Contractor shall submit a "Notice of Intent" to the Department of Water Resources prior to starting work and also submit the "Water Well Drillers Reports" to the Department of Water Resources within 30 days after completion of the work in accordance with the provisions of Sections 13750 to 13755, inclusive of the California Water Code. A copy of the above reports shall be submitted to the Engineer concurrently with submittal to the Department of Water Resources.

If the Engineer orders any preliminary work, such as removing any obstructions or materials that would interfere with the filling or sealing of the well or removing any casing or lining below the grading plane, the preliminary work will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications

Material permitted to enter the well after completion of any preliminary work, which will obstruct or interfere with filling and sealing of the well involved shall be removed by the contractor at the Contractor's expense. Filler materials shall be clay, silt, sand, gravel, crushed stone, native soils, or mixtures thereof. Material containing organic matter shall not be used. Filler materials shall be placed in such a manner as to assure no jamming or bridging of the material.

Sealing materials shall be neat cement, cement grout, and clays (or cement), or native soils and natural material having a coefficient of permeability of less than 30 meters per year. Used drilling muds shall not be used.

Neat cement shall be composed of 50 kilograms of cement per 22 to 30 liters of clean water. Cement grout shall be composed of not more than 2 parts of sand to one part of cement with 22- 30 liters of clean water per 50 kilograms of cement. Concrete shall be produced from commercial quality aggregates and cement and shall contain not less than 350 kilograms of cement per cubic meter.

Concrete shall be placed in one continuous operation by methods that prevent free fall, dilution, or separation of aggregates and cement.

The volume of material placed in the well shall be verified, at the time of placement, to be at least equal to the volume of the empty hole.

10-1.29 IRRIGATION SYSTEMS, HIGHWAY PLANTING, AND MISCELLANEOUS LANDSCAPING

GENERAL – The work performed in connection with highway planting and irrigation systems shall conform to the provisions in Section 20, "Erosion control and Highway Planning," of the Standard Specifications and these special provisions.

The Contractor shall notify the Engineer not less than 48 hours prior to requiring initial access to the existing irrigation controllers. When the Engineer determines that access to the controllers is required at other times, arrangements will be made to provide this access.

When fluctuation of water pressure and water supply are encountered during normal working hours, the Contractor shall water the plants at other times, as often, and in sufficient amounts as conditions may require to keep the soil and plant roots moist during the life of the contract.

Full compensation for watering plants outside normal working hours shall be considered as included in the contract lump sum price paid for the plants involved and no additional compensation will be allowed therefor.

PROGRESS INSPECTIONS – Progress inspections will be performed by the Engineer for completed highway planting and irrigation system work at designated stages during the life of the contract.

Progress inspections will be performed by the Engineer for completed highway planting and irrigation system work at designated stages during the life of the contract.

Progress inspections will not relieve the Contractor of his responsibility for installation in accordance with these special provisions and the Standard Specifications. Work shall not progress beyond each stage until the inspection has been completed; corrective work has been performed; and the work is approved, unless otherwise permitted by the Engineer.

The requirements for progress inspections will not preclude additional inspections of work by the engineer at any time during the life of the contract.

The Contractor shall notify the Engineer, at least 1 working day prior to completion of the work for each stage of an area and shall allow a minimum of 1 working day for the inspection.

Progress inspections will be performed at the following stages of work when applicable:

PRESSURE TESTING OF PIPELINES – During pressure testing of the pipelines on sully side of control valves.

—TESTING OF CONDUCTORS – During testing of low voltage conductors.

—PREPARING PLANTING AREAS – Before planting begins and after completion of the work specified for planting in Section 20-4.03, “Preparing Planting Areas” of the Standard Specifications.

—PLANTING – Before plant establishment work begins and after completion of the work specified for planting in Section 20-4.05, “Planting,” of the standard Specifications.

—COST BREAK-DOWN – The contractor shall furnish to the Engineer a cost break-down for the contract lump sum items of highway planting and irrigation system.

The Contractor shall determine the quantities required to complete the work shown on the plans. The quantities and their values shall be included in the cost break-downs submitted to the Engineer for approval. The Contractor shall be responsible for the accuracy of the quantities and values used in the cost break-downs submitted for approval.

No adjustment in compensation will be made in the contract lump sum prices paid for highway planting and irrigation system due to any differences between the quantities shown in the cost break-downs furnished by the contractor and the quantities required to complete the work as shown on the change order plans and specified in these special provisions.

The sum of the amounts for the units of work listed in each cost break-down for highway planting and irrigation system 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 each cost break-down. Cost break-downs shall be submitted to the Resident Engineer prior to the Contractor signing this change order and as a condition for a “Notice to Proceed” from the Resident Engineer. The cost break-downs shall be deemed as approved when this change order is signed by the Resident engineer.

Approved cost break-downs will be used to determine partial payments during the progress of the work and as the basis of calculating the adjustment in compensation for the items of highway planting and irrigation system 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 will be determined 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.

EXISTING HIGHWAY IRRIGATION FACILITIES – In addition to the provisions of Section 20, “Erosion Control and Highway Planting,” of the Standard Specifications, the work performed in connection with the various existing highway irrigation system facilities shall conform to the provisions in Section 15, “Existing Highway Facilities,” of the Standard Specifications and these special provisions.

Existing irrigation facilities that are to remain, or are to be maintained, relocated or salvaged as part of this contract change order, shall be protected from damage. If the Contractor’s operations damage the existing irrigation facilities, the Contractor shall, at the Contractor’s expense, repair or replace the damaged facilities as follows:

Repair or replacement of damaged facilities shall be completed within 2 working days of the damage.

Replaced irrigation facilities shall be new, and of equal or better quality than the damaged facility. Replacement irrigation facilities shall be compatible with the irrigation systems to remain.

After repair or replacement of the facilities is complete, the Contractor shall demonstrate to the Engineer that the repaired or replaced facilities operate properly. When remote control valves are repaired or replaced, the valves shall be tested with the irrigation controller in the automatic mode.

LOCATE EXISTING WATER LINE CROSSOVERS AND CONDUITS – Existing water line crossovers and conduits shown on these plans to be incorporated in the new work shall be located in accordance with the provisions for locating conduits in Section 20-5.03B, “Conduit for Water Line Crossovers and Sprinkler Control Crossovers,” of the Standard Specifications.

Unless otherwise directed by the Engineer, existing water line crossovers and conduits shown on these plans to be incorporated in the new work shall be located prior to performing work on any irrigation system.

If debris is encountered in the ends of conduits, the debris shall be removed prior to performing other work in the conduits. Removal of debris within the first one meter in these conduits shall be at the Contractor’s expense. If debris is encountered in the conduits more than one meter from the ends of the conduits, the additional debris shall be removed when directed by the Engineer. When directed by the Engineer, removal of debris more than one meter from the ends in these conduits will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Except as otherwise provided in the next to last paragraph in Section 20-5.03B of the Standard Specifications, full compensation for locating existing water line crossovers and conducts shall be considered as included in the contract change order lump sum price paid for the plastic pipe (supply line) involved and no additional compensation will be allowed therefore.

CHECK AND TEST EXISTING IRRIGATION FACILITIES - Existing irrigation facilities that are to remain or be relocated, and that are to be part of the new irrigation system, shall be checked for missing or damaged components, and for proper operation prior to performing irrigation system work.

The Contractor shall submit a written list of existing irrigation system deficiencies to the Engineer with 1 working day after checking the existing facilities.

Deficiencies found during checking existing facilities shall be corrected by the Contractor as directed by the Engineer. Corrective work ordered by the Engineer will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Length of watering cycles for use of potable water from water meters for checking or testing irrigation facilities shall be as determined by the Engineer.

Repairs to the existing irrigation facilities ordered by the Engineer after checking and testing the facilities, and any further repair required thereafter as ordered by the Engineer, except as otherwise provided under "Existing Highway Irrigation Facilities" elsewhere in these provisions, will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

HIGHWAY PLANTING - The work performed in connection with planting shall conform to the provisions in Section 20-4, "Highway Planting," of the Standard Specifications and these provisions.

PLANTS – Plants that are found to be in a root bound condition or have an underdeveloped root ball as determined by the Engineer will not be accepted.

COMMERCIAL FERTILIZER - Commercial fertilizer (slow release) shall be a pellet or granular form, shall be a slow release type and shall have the following guaranteed chemical analysis.

| <u>Ingredient</u> | <u>Percentage</u> |
|-----------------------------|-------------------|
| <u>Nitrogen</u> | <u>19</u> |
| <u>Phosphoric acid</u> | <u>6</u> |
| <u>Water soluble potash</u> | <u>12</u> |

Commercial fertilizer (tablet) shall be a slow release type and shall be in tablet form. Each tablet, as shown on the Plant List on the plans, shall have a mass of 21 ± 1 g, and shall have the following guaranteed chemical analysis;

| <u>Ingredient</u> | <u>Percentage</u> |
|-----------------------------|-------------------|
| <u>Nitrogen</u> | <u>20</u> |
| <u>Phosphoric acid</u> | <u>10</u> |
| <u>Water soluble potash</u> | <u>5</u> |

At the option of the Contractor, two 10.5-g size tablets may be used in lieu of the each 21-g size tablet designated on the plans or specified elsewhere in these provisions. Regardless of the tablet size used, each tablet shall be the slow

release type and shall have the same guaranteed chemical analysis as specified for the 21-g size tablets. Each 10.5-g size tablet shall have a mass of 10.5±.

ROADSIDE CLEARING – Roadside clearing work shall not include any work required to be performed as clearing and grubbing as specified in Section 16, “Clearing and Grubbing,” of the Standard Specifications.

Prior to preparing planting areas, or commencing irrigation trenching operations for planting areas, trash and debris shall be removed from proposed planting areas and within the areas extending beyond the outer limits of the proposed planting areas to the adjacent edges of existing planting to remain or to be maintained, shoulders, dikes, curbs, sidewalks, fences and walls.

In addition to removing trash and debris, the project area shall be cleared as specified herein:

Weeds shall be removed manually within an area 2 m in diameter centered at each proposed plant location outside of the proposed hydroseeding areas.

After the initial roadside clearing is complete additional roadside clearing work shall be performed as often as necessary to maintain the areas, as specified above, in a neat appearance until the work of this change order is completed. This work shall include the following:

Trash and debris shall be removed.

Weeds in plant basins, including basin walls, shall be removed by hand pulling after the plants have been planted.

PLANTING – Commercial fertilizer and iron sulfate shall be applied or placed at the time of planting and at the rates shown on the plans.

Commercial fertilizer (slow release) shall be mixed into the plant hole soil a minimum depth of 50 mm near the root ball of Plant Group B plants.

Attention is directed to the requirements specified under “Irrigation Systems Functional Test,” elsewhere in these special provisions regarding functional tests of irrigation systems. Planting shall not be performed in an area until the functional test has been completed on the irrigation system serving that area.

Weeds within plant basins, including basin walls and ground cover, shall be controlled by hand pulling.

IRRIGATION SYSTEMS – Irrigation systems shall be furnished and installed in accordance with the provisions on Section 20-5, “Irrigation Systems,” of the Standard Specifications, except materials containing asbestos fibers shall not be used.

Excavation for proposed irrigation facilities shall not be started until the existing underground facilities have been located.

Materials for irrigation systems, unless otherwise specified, shall be commercial quality.

Pipe supply lines shall be pressure tested in accordance with the provisions in Section 20-5.03H, “Pressure Testing,” of the Standard specifications, except the pipe (supply line) on the discharge side of the control valve shall be tested by Method B as specified in Section 20-5.03H(2), “Method B,” of the Standard Specifications.

ELECTRIC AUTOMATIC IRRIGATION COMPONENTS

PULL BOXES -- Pull box installations shall conform to the provisions in Section 20-5.027I, “Conductors, Electrical Conduits and Pull Boxes,” of the Standard Specifications.

CONDUCTORS – Low voltage as used in this subsection “Conductors” shall mean 36 volts or less.

Low voltage control and neutral conductors in pull boxes and valves boxes, at irrigation controller terminals, and at splices shall be marked with adhesive cloth wrap-around markers.

Markers for the control conductors shall be identified with the appropriate number or letter designations of irrigation controllers and station numbers. Markers for neutral conductors shall be identified with the appropriate number or letter designations of the irrigation controllers.

New control and neutral conductors that are to replace existing control and neutral conductors shall be the same size and color as the existing control and neutral conductors being connected to.

The color of low voltage neutral and control conductor insulation, except for the striped portions, shall be homogeneous throughout the entire thickness of the insulation.

IRRIGATION SYSTEMS FUNCTIONAL TEST – Test shall consist of demonstrating to the Engineer, through one complete cycle of the irrigation controllers in the automatic mode, that the associated automatic components of the

irrigation systems operate properly. If automatic components of the irrigation systems fail a functional test, these components shall be repaired at the Contractor's expense and the testing repeated until satisfactory operation is obtained.

Upon completion of work on an irrigation system, including correction of deficiencies and satisfactory functional tests for the systems involved, the plants to be planted in the area watered by the irrigation system may be planted, provided the planting areas have been prepared as specified elsewhere.

PLASTIC PIPE – Plastic pipe supply lines shall be polyvinyl chloride (PVC) 1120 or 1220 pressure rated pipe with minimum pressure ratings (PR) as shown on the plans.

Plastic pipe supply lines less than 50 mm in diameter shall have solvent cemented type joints. Primers shall be used on the solvent cemented type joints.

Solvent cement for plastic pipe supply lines shall conform to the requirements of the local Air Quality Management District.

SPRINKLERS – Sprinklers shall be the type, pattern and material and shall have the operating characteristics listed in the "Sprinkler Schedule" shown on the plans.

FINAL IRRIGATION SYSTEM CHECK – A final check of the existing and new irrigation facilities shall be done not more than 2 working days prior to the acceptance of the contract.

Length of watering cycles for use of potable water from water meters for the final check of irrigation facilities will be determined by the Engineer.

Remote control valves connected to existing and new irrigation controllers shall be checked for automatic performance when controllers are in the automatic mode.

Unsatisfactory performance of irrigation facilities installed by the Contractor shall be repaired and rechecked at the Contractor's expense until satisfactory performance is obtained, as determined by the Engineer.

Repair or replacement of unsatisfactory performance of existing irrigation facilities as determined by the Engineer, will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Nothing in this section, "Final Irrigation System Check," shall be construed as relieving the Contractor of full responsibility to make good or repair the defective work or materials found at any time before the formal written acceptance of the entire contract by the Director.