No payment for extra work will be allowed for work performed as specified in Section 12-2.02 (Flagging Costs) of the Standard Specifications. Flagging costs will be borne entirely by the Contractor.

Dust control shall conform to the provision of Section 10 of the Standard Specifications except that no extra work will be allowed when the Engineer orders the application of water for the purpose of controlling dust caused by public traffic as provided for in the last paragraph of Section 10.

The Contractor shall be responsible to distribute an information letter pertaining to the planned work to all affected residences and businesses, at least one week prior to commencing work adjacent to those residences and businesses. It shall be the responsibility of the Contractor to design the information letter, obtain design approval from the Engineer, print sufficient copies, and distribute the letter. The Transportation Department logo shall be included on the letter. A computer file of the logo may be obtained from the Engineer in .WPG, .DXF, .DGN or .DWG format. The letter shall be similar to the sample provided by the Engineer, and shall include a project description, the scope of work, the anticipated construction schedule, and other information as appropriate.

The Contractor shall post temporary no parking signs on affected streets 24 hours prior to work on those streets. The temporary no parking signs shall state the anticipated dates and hours of work on those streets.

Payment - Full compensation, except as otherwise provided herein, for conforming to the requirements of this article, including furnishing, installing and maintaining all traffic control devices shown on the traffic control plan including four changeable message signs, shall be paid for on a lump sum basis, and no additional compensation will be allowed therefor.

ENCROACHMENT PERMIT:

It shall be the responsibility of the Contractor to obtain a duplicate encroachment permits from the City of Canyon Lake and the City of Menifee for work to be done within the City Limits Right-Of-Way, and shall be no cost to the Contractor.

Full compensation, except as otherwise provided herein, for conforming to the requirements of this article shall be considered as included in the contract bid prices paid for the various items of work, and no additional compensation will be allowed therefor.

AREAS FOR CONTRACTOR'S USE:

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

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

Areas available for the exclusive use of the Contractor are designated on the plans. Use of the Contractor's work areas and other County-owned property shall be at the Contractor's own risk, and the County shall not be held liable for damage to or loss of materials or equipment located within these areas.

Residence trailers will not be allowed within the highway right of way, except that one trailer will be allowed for yard security purposes.

The Contractor shall remove equipment, materials, and rubbish from the work areas and other County-owned property which the Contractor occupies. The Contractor shall leave the areas in a presentable condition in conformance with the provisions in Section 4-1.02, "Final Cleaning Up" of the Standard Specifications.

The Contractor shall secure, at the Contractor's own expense, areas required for plant sites, storage of equipment or materials or for other purposes, if sufficient area is not available to the Contractor within the contract limits, or at the sites designated on the plans outside the contract limits.

INSURANCE:

In addition to the requirements of Section 18, "Insurance - Hold Harmless" of the "General Conditions" section of contract documents, the Contractor's Certificate of Insurance and endorsements for the project shall name the following listed entities as additional insured under the Contractor's general liability, excess liability, and auto liability insurance policies, and each listed entity shall be named on the Waiver of Subrogation for the Contractor's Workers Compensation policy.

1. The City of Menifee, its officers, directors, agents and employees.
2. The City of Canyon Lake, its officers, directors, agents and employees.
3. Eastern Municipal Water District (EMWD), its officers, directors, agents and employees.
4. Elsinore Valley Municipal Water District (EVMWD), its officers, directors, agents and employees.
5. Southern California Edison Company its officers, directors, agents and employees.
6. Verizon Communications its officers, directors, agents and employees.
7. Time-Warner Communications its officers, directors, agents and employees.
8. Southern California Gas Company its officers, directors, agents and employees.

Each of the above listed entities shall also be held harmless, in accordance with the requirements of subsection IV, "Hold Harmless" of Section 3-1.01B, "Insurance - Hold Harmless" of the contract documents.

Full compensation for compliance with the requirements of this section shall be considered as included in the various items of work, and no additional compensation will be allowed therefor.

COURSE OF CONSTRUCTION INSURANCE:

The Contractor shall provide evidence of insurance and the required endorsements in accordance with this Special Provision and shall declare all terms, conditions, coverage, limits, and policy deductible.

The Contractor shall provide All Risk Builder's Risk (Course of Construction) insurance, including earthquake and flood, property at off-site storage locations and while in transit. Coverage shall include collapse, faulty workmanship debris removal, expediting expense, Fire Department Service charges, valuable papers and records, trees, grass, shrubbery and plants. Policy shall be written on a completed value form. Policy shall also provide coverage for temporary structures (onsite offices, etc.), fixtures, machinery and equipment being installed as part of the construction project and Business Interruption coverage.

The occurrence limit of the Course of Construction Insurance shall be for the full value of the contract. Course of Construction insurance shall include coverage for earth movement and flood damage, for the full value of the contract.

Course of Construction coverage shall be for all work included in the construction contract, as awarded by the County of Riverside.

Full compensation shall be paid on lump sum basis for Course of Construction Insurance, and no additional compensation will be allowed therefor.

CLEARING AND GRUBBING:

Clearing and grubbing (including cleaning debris from storm drain outlets/pipes) shall conform to the provisions in Sections 15 and 16 of the Standard Specifications and as directed by the Engineer.

Vegetation shall be cleared and grubbed within the Right-Of-Way, excavation and embankment slope lines, and construction easements and as directed by the Engineer.

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.

Payment: Full compensation, except as otherwise provided herein, for conforming to the requirements of this article shall be paid for on a lump sum basis and no additional compensation will be allowed therefor.

DEVELOP WATER SUPPLY:

Develop water supply shall conform to the provisions of Section 17 of the Standard Specifications and these Special Provisions.

Attention is directed to the requirements of Section 10, "Dust Control".

Full compensation for developing water supply and furnishing watering equipment shall be considered as included in the lump sum price paid for develop water supply and no additional compensation will be allowed therefor.

EARTHWORK/ROADWAY EXCAVATION (INCLUDING GRADING):

Earthwork shall conform to the provisions of Section 19 of the Standard Specifications and these Special Provisions.

All miscellaneous removal including but not limited to removal of concrete apron in Goetz Road with accompanying CMP, any AC paving, dike, minor concrete dip section, large rocks in the construction area, rip raps shall be removed and disposed off as directed by the Engineer.

At road connections and at limits of asphalt paving, existing pavement shall be header cut as directed by the Engineer.

Full compensation for furnishing all labor, tools and doing all the work necessary including grinding, and sawcutting shall be considered as included in the contract prices paid per ton for the various asphalt concrete items and no additional compensation will be allowed therefor.

Existing pavement including any base material shall be cut back to neat lines and removed as shown on the plans or as directed by the Engineer. Excess material will become the property of the Contractor and will be disposed of as provided in Section 7-1.13 of the Standard Specifications.

Existing Pavement, AC Dike, Curb and Gutter and base material removal will be considered as roadway excavation for payment purposes.

Relative Compaction:

Relative compaction shall conform to the provisions of Section 19-5.03, "Relative Compaction (95 Percent)" of the Standard Specifications, these Special Provisions and/or as directed by the Engineer.

Whenever relative compaction is specified to be determined by Test Method No. Calif. 216, the in-place density may be determined by Test Method No. Calif. 231. The in-place density required by Test Method No. Calif. 312 may be determined by Test Method No. 231. The wet weight or dry weight basis and English Units of Measurement may be used at the option of the Materials Engineer.

Grading:

The grading plane of embankments beneath structure approach slabs shall not project above the grade established by the Engineer.

Reinforcement or metal attached to reinforced concrete rubble placed in embankments shall not protrude above the grading plane. Prior to placement within 2 feet below the grading plane of embankments, reinforcement or metal shall be trimmed to no greater than 3/4 inch from the face of reinforced concrete rubble. Full compensation for trimming reinforcement or metal shall be considered as included in the contract prices paid per cubic yard for the types of excavation shown in the bid proposal, or the contract prices paid for furnishing and placing imported borrow or embankment material, as the case may be, and no additional compensation will be allowed therefor.

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

Settlement periods are required for the bridge approach embankments at the bridges listed in the following table.

At the bridge abutments listed in the following table, excavation for the footings, at each location shall not be done until the expiration of the settlement period for the embankment at the adjacent abutment of the same structure or an adjacent structure.

Surcharge embankments shall be constructed above the grading plane where listed in the following table:

Audie Murphy Ranch
Bridge

Abutment Number	Bent Number	Surcharge Height, Meters {Feet}	Settlement Period, Days
Abutment 1 /Abutment 2	-	0	Minimum 15 Days*

The duration of the required settlement period at each location will be determined by the Engineer and will not exceed the number of days as required by listed table of settlement data.

At Abutment 1, County shall confirm that the ground improvements to achieve the design bearing pressure as recommended in the geotechnical report is complete. Contractor shall obtain written documentation signed by the Geotechnical-Engineer-on-Record from the County said improvements are in place prior to abutment construction.

At Abutment 2, the contractor shall complete ground improvements as indentified in the geotechnical report prior to abutment construction.

Geocomposite drain shall conform to the details shown on the plans and the following:

A. Geocomposite wall drain shall consist of a manufactured core not less than 0.25 inch thick nor more than 2 inches thick with one or both sides covered with a layer of filter fabric that will provide a drainage void. The drain shall produce a flow rate through the drainage void of at least 2.0 gallons per minute per foot of width at a hydraulic gradient of 1.0 and a minimum externally applied pressure of 3,500 psf.

B. A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications shall be furnished for the geocomposite drain certifying that the drain produces the required flow rate and complies with these special provisions. The Certificate of Compliance shall be accompanied by a flow capability graph for the geocomposite drain showing flow rates for externally applied pressures and hydraulic gradients. The flow capability graph shall be stamped with the verification of an independent testing laboratory.

C. Filter fabric for geocomposite wall drain shall conform to the provisions in Section 88-1.02, "Filtration," of the Standard Specifications. Filter fabric shall be Class A.

D. The manufactured core shall be either a preformed grid of embossed plastic, a mat of random shapes of plastic fibers, a drainage net consisting of a uniform pattern of polymeric strands forming 2 sets of continuous flow channels, or a system of plastic pillars and interconnections forming a semirigid mat.

E. The core material and filter fabric shall be capable of maintaining the drainage void for the entire height of geocomposite drain. Filter fabric shall be integrally bonded to the side of the core material with the drainage void. Core material manufactured from impermeable plastic sheeting having nonconnecting corrugations shall be placed with the corrugations approximately perpendicular to the drainage collection system.

F. The geocomposite drain shall be installed with the drainage void and the filter fabric facing the embankment. The fabric facing the embankment side shall overlap a minimum of 3 inches at all joints and wrap around the exterior edges a minimum of 3 inches beyond the exterior edge. If additional fabric is needed to provide overlap at joints and wrap-around at edges, the added fabric shall overlap the fabric on the geocomposite drain at least 6 inches and be attached thereto.

G. Should the fabric on the geocomposite drain be torn or punctured, the damaged section shall be replaced completely or repaired by placing a piece of fabric that is large enough to cover the damaged area and provide a minimum 6-inch overlap.

H. Plastic pipe shall conform to the provisions for edge drain pipe and edge drain outlets in Section 68-3, "Edge Drains," of the Standard Specifications.

I. Treated permeable base to be placed around the slotted plastic pipe at the bottom of the geocomposite drain shall be cement treated permeable base conforming to the provisions for cement treated permeable base in Section 29, "Treated Permeable Bases," of the Standard Specifications and these special provisions.

J. The treated permeable base shall be enclosed with a high density polyethylene sheet or PVC geomembrane, not less than 10 mils thick, that is bonded with a suitable adhesive to the concrete and geocomposite drain. Surfaces to receive the polyethylene sheet shall be cleaned before applying the adhesive. The treated permeable base shall be compacted with a vibrating shoe type compactor.

Structure excavation for retaining walls will be measured and paid for as structure excavation (bridge). Structure backfill for retaining walls will be measured and paid for as structure backfill (bridge).

If structure excavation or structure backfill for bridges is not otherwise designated by type and payment for the structure excavation or structure backfill has not otherwise been provided for in the Standard Specifications or these special provisions, the structure excavation or structure backfill will be measured and paid for as structure excavation (bridge) or structure backfill (bridge), respectively.

Structure excavation designated as (Type D), for footings at the locations shown on the plans, will be measured and paid for by the cubic yard as structure excavation (Type D). Ground water or surface water is expected to be encountered at Abutments and Cutoff wall locations, and seal course concrete is shown or specified. Structure excavation for footings at locations not designated on the plans as structure excavation (Type D), and where ground or surface water is encountered, except locations where seal course concrete is shown or specified, will be measured and paid for by the cubic meter {cubic yard} as structure excavation (bridge).

The Contractor's attention is directed to the probability of encountering groundwater during the excavation work. Any groundwater which may be encountered shall be controlled and removed by methods of the Contractor's choice.

The Contractor shall anticipate encountering large rocks and potentially significant ground water while excavating for bridge foudnations and no increase in compensation will be allowed for conditions not anticipated by the Contractor.

The contactor shall be responsible for returning the salt creek bed to its original condition, as close as possible and grades after all pier bent construction is completed.

Regardless of the dewatering method chosen by the Contractor, the subgrade shall be maintained to the lines and grades shown on the plans.

If pumps are used, they shall be electric or muffled and situated so as to prevent disturbance to residents.

Full compensation for all dewatering required to complete the work shall be considered as included in the contract price paid for the associated excavation item, and no additional compensation will be allowed therefor.

Pervious backfill material placed within the limits of payment for bridges will be measured and paid for as structure backfill (bridge).

Pervious backfill material within the limits of payment for retaining walls will be measured and paid for by cubic meter {cubic yard} as structure backfill (retaining wall).

At the locations and to the limits shown on the plans, structure backfill (bridge) material shall also meet expansion index requirements as shown on the plans.

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

FINISHING ROADWAY:

Finishing roadway shall conform to Section 22 of the Standard Specifications.

Full compensation, except as otherwise provided herein, for conforming to the requirements of this article shall be considered as included in the contract bid prices paid for the various items of work and no additional compensation will be allowed therefor.

IMPORT BORROW:

Imported borrow shall conform to the provisions of section 19-7.02 and shall be material that is similar or better in quality than the existing basement soil.

Payment: Imported borrow will be paid for by the cubic yard, and shall include full compensation for clearing and striping the material sites if necessary; excavating, loading, hauling, depositing, spreading and compacting the material complete in place, within the roadway as specified. It shall also include furnishing all labor material, tools, equipment and incidentals, and for doing all the work involved in obtaining and placing import borrow, complete in place and as shown on the plans and as specified in these specification and special provisions and as directed by the Engineer and no additional compensation will be allowed therefor.

WATER POLLUTION CONTROL:

Throughout the term of this contract, the total soil-disturbed area of the project site is more than 1 acre.

National Pollutant Discharge Elimination System - NPDES:

The Contractor shall comply with the requirements in the latest version of the watershed-wide Waste Discharge Requirements (Order No. 01-34) for Discharges of Storm Water Runoff Associated with New Developments in the San Jacinto Watershed, hereafter referred to in this section as the "San Jacinto Permit", issued by the Santa Ana Regional Water Quality Control Board. This San Jacinto Permit regulates both stormwater and non-stormwater discharges associated with Contractor's construction activities. The Contractor shall prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) in accordance with this section entitled "Stormwater and Non-Stormwater Pollution Control" of these Special Provisions.

A copy of the Permit may be obtained at the office of the County of Riverside Transportation Department, 14th Street Transportation Annex, 3525 14th Street, Riverside, CA. (951) 955-6780, or may be obtained on the internet at: http://www.swrcb.ca.gov/rwqcb7/documents/board_adopted/Year_2001/01-077wdr.pdf.

The Contractor's attention is directed to:

1. Allow the Engineer to withhold progress payments if the Contractor fails to fully implement "Stormwater and Non-Stormwater Pollution Control" or is deemed to be in non-compliance with provisions of the permit;

2. "Stormwater Pollution Prevention Plan Preparation and Approval" which requires that a SWPPP be prepared and approved prior to the pre-construction meeting;

3. "Stormwater Pollution Prevention Plan Implementation" which allows the Engineer to suspend construction operations if the Contractor fails to implement the approved SWPPP and any amendments thereto.

Stormwater And Non-Stormwater Pollution Control:

The term "Stormwater and Non-Stormwater Pollution Control" shall include preparing, obtaining approval of, amending and implementing the Storm Water Pollution Prevention Plan (SWPPP) as required by the California Regional Water Quality Control Board (CRWQCB)-Santa Ana Region.
In the event the County incurs any Administrative Civil Liability (fine) imposed by the CRWQCB - Santa Ana Region, as a result of Contractor's failure to fully implement the provisions of "Stormwater and Non-Stormwater Pollution Control", the Engineer, may, in the exercise of his sole judgment and discretion, withhold from payments otherwise due Contractor a sufficient amount to cover the Civil Liability. Liability may be in an amount up to $27,500 per day per deemed occurrence.

Stormwater and Non-Stormwater Pollution Control work shall conform to the requirements in the latest version of Caltrans Storm Water Quality Handbooks, entitled "Construction Site Best Management Practices (BMPs) Manual" and "Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual". Copies of the "Construction Site BMPs Manual" and "SWPPP and WPCP Preparation Manual", hereafter referred to collectively as the Caltrans Handbooks", may be obtained from the California Deaprtment of Transportation Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California, 95815-3800. Telephone: (916) 445-3520. Copies of the Caltrans Handbooks can also be downloaded from the Caltrans internet site at http://www.dot.ca.gov/hq/construc/stormwater.html.

The Contractor shall be responsible for all costs and for any liability imposed by law as a result of the Contractor's failure to comply with the requirements set forth in "Stormwater and Non-Stormwater Pollution Control", including but not limited to, compliance with the applicable provisions of the Caltrans Handbooks, San Jacinto Permit, Federal, State, and local regulations. For the purpose of this paragraph, costs and liabilities include, but not limited to, fines, penalties and damages whether assessed against

the District or the Contractor, including those levied under the Federal Clean Water Act and the State Porter-Cologne Water Quality Act.

The Contractor shall become fully informed of and comply with the applicable provisions of the Caltrans Handbooks, San Jacinto Permit, Federal, State and local regulations that govern the Contractor's activities and operation pertaining to both stormwater and non-stormwater discharges from both the project site and areas of disturbance outside the project limits during construction. The Contractor shall, at all times, keep copies of the San Jacinto Permit, approved SWPPP and all amendments at the project site. The SWPPP shall be made available upon request of a representative of the SWRCB, CRWQCB, United States Environmental Protection Agency (USEPA) or local stormwater management agency. Requests by the public shall be directed to the Engineer.

The Contractor is solely and exclusively responsible for any arrangements made between the Contractor and other property owners or entities that results in disturbance of areas or construction activities being conducted outside limits of the designated rights-of-way and temporary construction easements as shown on the project drawings.

The Contractor shall, at reasonable times, allow authorized agents of the CRWQCB, SWRCB, USEPA or local stormwater 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 works;

2. Have access to and copy any records required to be kept as specified in the San Jacinto Permit;

3. Inspect the construction site, including any off-site staging areas or material storage areas, and related soil stabilization practices and sediment control BMPs; and

4. Sample or monitor for the purpose of ensuring compliance with the San Jacinto 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.

SWPPP Preparation And Approval:

The Contractor shall prepare and obtain approval of the SWPPP as part of the Stormwater and Non-Stormwater Pollution Control work for this contract. The SWPPP shall include an appropriate sampling and analysis plan (SAP) as required by Section B, "Monitoring Program and Reporting Requirements" of the San Jacinto Permit. The SAP shall comply with the requirements in the Caltrans Sample Contractor's Water Quality SAPs that are available on the Caltrans internet site

at http://www.dot.ca.gov/hq/construc/stormwater.html. An additional guidance document titled "Construction Storm Water Sampling and Analysis Guidance Document" is available from the California Stormwater Quality Association internet site at http://www.stormwatertaskforce.org/swqtf/products.htm. The Contractor shall prepare and implement the SWPPP in accordance with the Caltrans Handbooks and Sample Contractor's Water Quality SAPs, the San Jacinto Permit and these Special Provisions.

In case of conflict between the Caltrans Handbooks and Sample Contractor's Water Quality SAPs and these Special Provisions, these Special Provisions shall govern; in case of conflict between these Special Provisions and the San Jacinto Permit, the latter shall govern.

Within five (5) working days after award of the contract, the Contractor shall submit two (2) copies of the SWPPP to the Engineer for review and approval. The Contractor shall allow ten (10) working 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 three (3) working days of receipt of the Engineer's comments and shall allow ten (10) working days for the Engineer to review the revisions. The Contractor shall submit four (4) copies of the approved SWPPP to the Engineer prior to pre-construction meeting. The Contractor must have an approved SWPPP prior to the pre-construction meeting.

The objectives of the SWPPP shall be to identify all pollution sources associated with Contractor's construction activities that may adversely affect the quality of stormwater discharges; to identify all non-stormwater discharges; to identify, construct, implement and maintain water pollution control best management practices, hereafter referred to as "BMPs", to reduce to the maximum extent practicable pollutants in both stormwater discharges and authorized non-stormwater discharges from the construction site during construction and to develop a maintenance schedule for BMPs after construction is completed under this contract.

The SWPPP shall incorporate BMPs in each of the following categories:

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

Specific objectives and minimum requirements for each category of BMPs are described in the Caltrans Handbooks. The Contractor shall consider the objectives and minimum requirements presented in the Caltrans Handbooks for each of the above categories. When minimum requirements are listed for any category, the Contractor shall incorporate one or more of the listed minimum BMPs required into the

SWPPP and implement on the project to meet the pollution control objectives for the category. In addition, the Contractor shall consider other BMPs presented in the Caltrans Handbooks to supplement the minimum BMPs required when necessary to meet the objectives of the SWPPP and maintain compliance with the San Jacinto Permit. The Contractor shall document the selection process in accordance with the procedure specified in the Caltrans Handbooks.

The Contractor shall not assume that the minimum BMPs required for each category presented in the Caltrans Handbooks are adequate to meet the pollution control objectives. The Contractor may use other effective BMPs, as approved by the Engineer, in addition to the minimum BMPs required in the Caltrans Handbooks to achieve the pollution control objectives.

The SWPPP shall include the following items as described in the Caltrans Handbooks, Sample Contractor's Water Quality SAPs and San Jacinto Permit:

1. Title Page;
2. Certification and Approval;
3. Table of Contents;
4. Source Identification;
5. Stormwater and Non-Stormwater Pollution Control Drawings;
6. Erosion Control;
7. Stabilization;
8. Sediment Control;
9. Non-Stormwater Management;
10. Waste Management and Disposal;
11. Maintenance, Inspection and Repair Program;
12. Training;
13. List of Contractors and Subcontractors;
14. Sampling and Analysis Plan;
15. Post-Construction Stormwater Management;
16. Current Inventory of BMP related materials;
17. Mobilization Plan for BMP deployment;
18. A copy of the Notice Of Intent (NOI) form submitted by the District for this project;
19. A copy of the Waste Discharge Identification (WDID) number or proof of mailing of the NOI (provided by the District);
20. A copy of the San Jacinto Permit;
21. A copy of other applicable Plans/Permits, if any;
22. Construction Site Inspection Checklist;
23. Pre/Post Storm Inspection Checklist;
24. Inspection Log;
25. A copy of the Amendments, if any;
26. Amendment Certification and Approval, if any;
27. Amendment Log;
28. Annual Compliance Certification;
29. BMPs Consideration Checklist; and;
30. SWPPP Checklist.

Stormwater Pollution Prevention Plan Amendments:

The Contractor shall prepare amendments to the SWPPP, both graphically and in narrative form, whenever there is a change in

Contractor's construction activities or operations which may result in the discharge of pollutants to surface waters, ground waters, municipal storm drain systems or when deemed necessary by the Engineer. The Contractor shall also amend the SWPPP if it is in violation of any condition of the San Jacinto Permit, or has not effectively achieving the objective of reducing pollutants in stormwater discharges. Amendments shall show additional BMPs, revised Contractor's construction activities or operations, including those in areas not shown in the initially approved SWPPP, which are required on the project to effectively control water pollution.

Amendments to the SWPPP shall be submitted for review and approval by the Engineer in the same manner specified for the initial approval of the SWPPP. The Contractor shall date and attach all approved amendments to the SWPPP. Upon approval of the amendment, the Contractor shall implement the additional BMPs, revised construction activities or operations.

Annual Compliance Certification:

The Contractor shall certify annually that construction activities are in compliance with the requirements of the San Jacinto Permit and the approved SWPPP. The certification must be completed by July 1st of each year.

Non-Compliance Reporting:

If the project is in non-compliance at any time, the Contractor shall make a written report to the Engineer within two (2) calendar days of identification of non-compliance activities.

Stormwater Pollution Prevention Plan Implementation:

Upon approval of the SWPPP, the Contractor shall be responsible throughout the duration of the project for placing, installing, constructing, inspecting and maintaining the BMPs as well as conducting the sampling and analysis plan as included in the SWPPP and any amendments thereto and for removing and disposing of temporary BMPs. 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 the Work", of the Standard Specifications. Requirements for installation, construction, inspection, maintenance, removal and disposal of BMPs are specified in the Caltrans Handbooks and these Special Provisions.

The Engineer may order the suspension of construction operations if the Contractor fails to comply with the requirements of "Stormwater and Non-Stormwater Pollution Control" as determined by the Engineer.

The Contractor will not be compensated for sampling and analysis work because of the Contractor's failure to properly implement, inspect, maintain, and repair BMPs in the approved SWPPP and any

amendments thereto, or for failing to store construction materials or wastes in watertight conditions.

a. Stormwater Pollution Control - The Contractor shall implement soil stabilization practices and sediment control BMPs, including minimum requirements as presented in the Caltrans Handbooks, on all disturbed areas of the project site throughout the winter season, defined as between October 1st and May 31st.

Implementation of soil stabilization practices and sediment control BMPs for soil-disturbed areas, including but not limited to, rough graded access roads, slopes, channel inverts, operational inlets and outlets of the project site shall be completed no later than ten (10) calendar days prior to the start of the winter season or upon start of applicable Contractor's construction activities for projects which begin either during or within ten (10) calendar days of the winter season.

The Engineer may require the Contractor, on a case- by-case basis, to reduce the active, soil-disturbed area limit of the project. The Contractor shall demonstrate the ability and preparedness to fully deploy soil stabilization practices and sediment control BMPs to protect soil-disturbed areas of the project site by maintaining an adequate quantity of soil stabilization and sediment control materials onsite to protect exposed, soil-disturbed areas and a detailed plan for the mobilization of sufficient labor and equipment to fully deploy the required BMPs prior to the onset of precipitation and for the duration of the project.

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 BMPs. The Contractor shall monitor the weather forecast 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 workday, construction scheduling shall be modified, as required, and the Contractor shall deploy functioning control measures prior to the onset of the precipitation.

Throughout the winter season, soil-disturbed areas of the project site shall be considered to be non-active whenever soil disturbing activities are expected to be discontinued for a period of fifteen (15) calendar days or more. Areas that will become non-active either during the winter season or within ten (10) calendar days thereof shall be fully protected with soil stabilization practices such as covering with mulch, temporary seeding, fiber rolls, blankets, etc. within ten (10) calendar days of the discontinuance of soil disturbing activities or prior to

the onset of precipitation, whichever is first to occur. Areas that will become non-active either during the winter season or within ten (10) calendar days thereof shall be fully protected with sediment control BMPs within ten (10) calendar days of the discontinuance of soil disturbing activities or prior to the onset of precipitation, whichever is first to occur.

b. Non-Stormwater Pollution Control - The Contractor shall implement, year-round and throughout the duration of the project, BMPs included in the SWPPP for sediment tracking, wind erosion, non-stormwater management, and waste management and disposal.

c. Inspections and Reporting - The Contractor shall regularly inspect the construction site for BMPs identified in the SWPPP to ensure the proper implementation and functioning of BMPs. The Contractor shall identify corrective actions and time frames to address any damaged BMPs or reinitiate any BMPs that have been discontinued.

At a minimum, the Contractor shall inspect the construction site 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. At regular interval of once every 2 weeks.

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

d. Maintenance - The Contractor shall maintain construction site BMPs identified in the SWPPP to ensure the proper implementation and functioning of BMPs. If the Contractor or the Engineer identifies a deficiency in the deployment or functioning of an identified BMP, 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 County.

e. Training - The Contractor shall describe the types of training that the Contractor's BMP inspection, maintenance, and repair personnel have received or will receive that is directly related to stormwater pollution prevention.

f. National Pollutant Discharge Elimination System (NPDES) Permit (Required Urban Runoff Management Training) - The

Contractor shall provide National Pollutant Discharge Elimination System (NPDES) Permit training for Urban Runoff Management to Contractor's employees and subcontractors if any. Failure to provide Urban Runoff Management training is a violation of Order No. R8-2002-0011, NPDES No. CAS 618033 (Municipal Separate Storm Sewer System NPDES Permit), Section XI.I, for each day of which such failure occurs, and shall in addition, be a breach of the contract with the County. Contractor understands and agrees that NPDES Permit violations are grounds for enforcement action by the Environmental Protection Agency, the State/Regional Water Resources Control Board and the County and may result in permit termination (stop work order), civil and criminal fines, and termination of contract. By submitting a bid, the Contractor certifies to the County that he has trained his employees and subcontractors, if any, for Urban Runoff Management and included sufficient sums in his base bid price to cover such costs of said training.

Payment: Implementing erosion control measures will be paid for under the bid item Water Pollution Control on a lump sum basis, for the work performed, including developing, preparing, obtaining approval of, revising and amending the SWPPP, and installing, constructing, maintaining, removing and disposing of BMPs as shown in the SWPPP, as specified in the Caltrans Handbooks and Sample Contractor's Water Quality SAPs, San Jacinto Permit and these Special Provisions, and as directed by the Engineer. No compensation will be allowed for project general conditions and for dust abatement requirements listed under this bid item.

EROSION CONTROL [HYDROSEED LANDSCAPE SLOPE AREA]:

Erosion control includes applying hydro-seeding materials to landscape slopes areas shown on the plans and as directed by the Engineer and shall comply with Section 20-3, "Erosion Control" of the Standard Specifications and these Special Provisions.

If the slope on which the erosion control to be placed is finished during the rainy season as specified under "Water Pollution Control" of these Special Provisions, apply erosion control to the slope immediately.

Before applying erosion control materials, prepare soil surface under Section 19-2.05, "Slopes" of the Standard Specifications. Remove vegetative growth, temporary erosion control materials, and other debris from areas to receive erosion control.

MATERIALS

County will provide the hydro-seeding material to the contractor.

MEASUREMENT AND PAYMENT

Hydroseeded area will be measured by the square. The area will be calculated on the basis of actual or computed slope measurements.

The contract price paid per square foot to hydroseed landscape slope area includes full compensation for furnishing all labor, tools, equipment, and incidentals, and for doing all the work involved including applying water, and maintaining until seed germinate complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

EXISTING HIGHWAY FACILITIES:

The work performed in connection with the removal, relocation, adjusting, protection and or salvaging of various existing highway facilities, improvements, and or incidental features shall conform to the provisions in Section 15, "Existing Highway Facilities" of the Standard Specifications and these Special Provisions.

Items identified on the plans for removal shall be removed and disposed of in accordance with Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" of the Standard Specifications and these Special Provisions, or as directed by the Engineer.

Full compensation for items to be removed will be considered as included in the prices paid for the various items of work and/or as included in the lump sum price bid for Clearing And Grubbing and no additional compensation shall be allowed therefor.

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 and shall meet the gradation requirements for 3/4 inch maximum.

The first paragraph of Section 26-1.02A, "Class 2 Aggregate Base" shall be modified to read:

> Aggregate for Class 2 aggregate base shall be free from organic matter and other deleterious matter, and shall be of such nature that it can be compacted readily under watering and rolling to form a firm and stable base. Aggregate may consist

of broken and crushed asphalt concrete or Portland cement concrete and may contain crushed aggregate base or other rock materials. The material may contain no more than 3 percent brick by weight as determined by California Test Method 202 as modified: Brick material retained on a No.4 sieve shall be identified visually and separated manually. Brick quantification shall be based on total weight of dry sample. Also, material retained on the No.4 sieve shall contain no more than 15 percent of particles (gravel) that have no more than one fractured face.

The Quality Requirements contained in Section 26-1.02A shall be modified to read:

QUALITY REQUIREMENTS

Test	Contract Compliance
Resistance (R-Value) Virgin Rock Crushed Miscellaneous	 78 Minimum 80 Minimum
Sand Equivalent	35 Minimum
Durability Index	35 Minimum
Percentage Wear 100 Revolutions 500 Revolutions	 15 Maximum 52 Maximum

Quantities of Aggregate Base will be paid for at the contract unit price per cubic yard and in accordance with the provisions of Sections 26-1.06 and 26-1.07 of the Standard Specifications.

The contract bid unit price paid per cubic yard for Class 2 Aggregate Base shall included full compensation for furnishing all labor, tools, materials, equipment, and incidentals, and for doing all the work involved and complete in place and no additional compensation will be allowed therefor.

PREPARING EXISTING ROADBED FOR RESURFACING:

When hot mix asphalt is to be spread over existing pavement, the existing pavement shall first be cleaned of all dirt and extraneous material. The area shall be sprayed with paint binder prior to resurfacing.

The area to which paint binder has been applied shall be closed to public traffic. Care shall be taken to avoid tracking binder material onto existing pavement surfaces beyond the limits of construction. Full compensation for furnishing all labor, tools, and materials necessary to clean tracked paint binder shall be considered as included in the contract price paid per ton for Hot Mix Asphalt.

Hot mix asphalt shall be placed on all existing surfacing, including curve widening, public road connections, and left turn pockets, unless otherwise directed by the Engineer.

The Contractor shall adjust to finish grade any valve covers encountered within the project limits, as required, for those utility valves that are provided with slip cans and are adjustable without the replacement of parts or the removal of concrete collars. In cases where the owning utility company insists upon upgrades in the standards, or when additional parts or the removal of concrete collars are required for the adjustment, said adjustment will be the responsibility of the owning utility company.

The Contractor shall lower manholes and valves when and as necessary for the protection of the traveling public during construction, and shall coordinate all work on said facilities with the owning utility companies. Final adjustment to grade will be the responsibility of the owning utility company, except as provided herein.

Said work shall be performed in accordance with Section 15-2.05A, "Frames, Covers, Grates, and Manholes" of the Standard Specifications. Full compensation for adjustment of valve covers, including initial lowering of valves and manholes when required, shall be considered as included in the contract price paid for asphalt concrete.

All raised pavement markers shall be removed prior to the application of paint binder.

The Contractor will be required to place and remove temporary pavement markings as directed by the Engineer.

At the end of each day's work, preceding a non-working day or a day on which the Contractor does not work, the distance between the ends of the adjacent surfaced lanes shall not be greater than 10 feet nor less than 5 feet.

Except as otherwise provided, full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in preparing existing roadbed as shown on the plans, as specified herein, and as directed by the Engineer shall be considered as included in the contract bid price paid per ton for Hot Mix Asphalt.

HOT MIX ASPHALT:

Asphalt concrete shall be Type "A" and shall conform to the requirements of Section 39 of the Standard Specifications and the following:

If the type of the asphalt concrete is not specified on the plans, then Type "A" shall be furnished and placed.

Aggregate grading shall be three-quarter inch (3/4") maximum, medium.

The asphalt lift thickness table, as shown in Section 39-6.01, "General Requirements" of the Standard Specifications, is revised as follows:

Total Thickness Shown on Plans	Minimum No. of Layers	Top Layer Thickness (foot)		Next Lower Layer Thickness (foot)		All Other Lower Layer Thickness (foot)	
		Min.	Max.	Min.	Max.	Min.	Max.
0.24-foot or less[a]	1	-	-	-	-	-	-
0.25-foot	2[b]	0.12	0.13	0.12	0.13	-	-
0.26 - 0.46 foot	2	0.12	0.21	0.14	0.25	-	-
0.47-foot or more	3 or more	0.15	0.21	0.15	0.25	0.17	0.25

Footnotes to asphalt thickness table are revised as follows:

a. No Change.
b. One layer of 0.25 foot thick may be placed as approved by the Engineer. When the Traffic Index specified is 5.5 or below, two layers shall be placed.

Asphalts:

Asphalt shall conform to the provisions in this Section, "Asphalts". Section 92, "Asphalts" of the Standard Specifications shall not apply.

Asphalt shall consist of refined petroleum or a mixture of refined liquid asphalt and refined solid asphalt, prepared from crude petroleum. Asphalt shall be:

1. Free from residues caused by the artificial distillation of coal, coal tar, or paraffin;
2. Free from water;
3. Homogeneous.

General:

The Contractor shall furnish asphalt in conformance with the State of California Department of Transportation's "Certification Program for Suppliers of Asphalt". The Department maintains the program requirements, procedures, and a list of approved suppliers at http://www.dot.ca.gov/hq/esc/Translab/fpmcoc.htm.

The Contractor shall ensure the safe transportation, storage, use, and disposal of asphalt.

The Contractor shall prevent the formation of carbonized particles caused by overheating asphalt during manufacturing or construction.

Grade:

Performance graded (PG) asphalt binder shall conform to the following:

Property	AASHTO Test Method	Specification Grade		
		PG 64-10	PG 64-16	PG 70-10
Original Binder				
Flash Point, Minimum °C	T48	230	230	230
Solubility, Minimum %[b]	T44	99	99	99
Viscosity at 135 °C, Maximum, Pa·s	T316	3.0	3.0	3.0
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T315	64 1.00	64 1.00	70 1.00
RTFO Test[e], Mass Loss, Maximum, %	T240	1.00	1.00	1.00
RTFO Test Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T315	64 2.20	64 2.20	70 2.20
Ductility at 25 °C Minimum, cm	T51	75	75	75
PAV[f] Aging, Temperature, °C	R28	100	100	110
RTFO Test and PAV Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Maximum G*/sin(delta), kPa	T315	31[d] 5000	28[d] 5000	34[d] 5000
Creep Stiffness, Test Temperature, °C Maximum S-value, Mpa Minimum M-value	T313	0 300 0.300	-6 300 0.300	0 300 0.300

Notes:

a. Note used.
b. The Engineer will waive this specification if the supplier is a Quality Supplier as defined by Department's "Certification Program for Suppliers of Asphalt".
c. The Engineer will waive this specification if the supplier certifies the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.
d. Test the sample at 3 °C higher if it fails at the specified test temperature. G*sin(delta) shall remain 5000 kPa maximum.
e. "RTFO Test" means the asphaltic residue obtained using the Rolling Thin Film Oven Test, AASHTO Test Method T240 or ASTM Designation: D2827.
f. "PAV" means Pressurized Aging Vessel.

Performance graded polymer modified asphalt binder (PG Polymer Modified) is:

Performance Graded Polymer Modified Asphalt Binder [a]

Property	AASHTO Test Method	Specification Grade		
		PG 58-34 PM	PG 64-28 PM	PG 76-22 PM
Original Binder				
Flash Point, Minimum °C	T 48	230	230	230
Solubility, Minimum % [b]	T 44[c]	98.5	98.5	98.5
Viscosity at 135°C, [d] Maximum, Pa·s	T 316	3.0	3.0	3.0
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T 315	58 1.00	64 1.00	76 1.00
RTFO Test , Mass Loss, Maximum, %	T 240	1.00	1.00	1.00
RTFO Test Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T 315	58 2.20	64 2.20	76 2.20
Dynamic Shear, Test Temp. at 10 rad/s, °C Maximum (delta), %	T 315	Note e 80	Note e 80	Note e 80
Elastic Recovery[f], Test Temp., °C Minimum recovery, %	T 301	25 75	25 75	25 65
PAV[g] Aging, Temperature, °C	R 28	100	100	110
RTFO Test and PAV Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Maximum G*sin(delta), kPa	T 315	16 5000	22 5000	31 5000
Creep Stiffness, Test Temperature, °C Maximum S-value, MPa Minimum M-value	T 313	-24 300 0.300	-18 300 0.300	-12 300 0.300

Notes:

a. Do not modify PG Polymer Modifier using acid modification.
b. The Engineer waives this specification if the supplier is a Quality Supplier as defined by the Department's "Certification Program for Suppliers of Asphalt".
c. The Department allows ASTM D5546 instead of AASHTO T44.
d. The Engineer waives this specification if the supplier certifies the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.
e. Test temperature is the temperature at which G*/sin(delta) is 2.2 kPa. A graph of log G*/sin(delta) plotted against temperature may be used to determine the test temperature when G*/sin(delta) is 2.2 Kpa. A graph of (delta) versus temperature may be used to determine delta at the temperature when G*/sin(delta) is 2.2 kPa. The Engineer also accepts direct measurement of (delta) at the temperature when G*/sin(delta) is 2.2 kPa.
f. Test without a force ductility clamp may be performed.
g. "PAV" means Pressurized Aging Vessel.

Sampling:

Provide a sampling device in the asphalt feed line connecting the plant storage tanks to the asphalt weighing system or spray bar. Make the sampling device accessible between 24 and 30 inches above the platform. Provide a receptacle for flushing the sampling device.

Include with the sampling device a valve:

1. Between 1/2 and 3/4 inch in diameter;

2. Manufactured in a manner that a one-quart sample may be taken slowly at any time during plant operations;

3. Maintained in good condition.

The Contractor shall replace failed valves.

In the presence of the Engineer, the Contractor shall take 2 one-liter samples per operating day. The Contractor shall provide round friction top containers with one-liter capacity for storing samples.

Applying Asphalt:

Unless otherwise specified, the Contractor shall heat and apply asphalt in conformance with the provisions in Section 93, "Liquid Asphalts" of the Standard Specifications.

Section 39-2.01, "Asphalts" is replaced in its entirety with the following:

> Asphalt binder to be mixed with aggregate shall conform to the provisions in "Asphalts" of these Special Provisions.
>
> The grade of asphalt binder shall be 64-10 (Inland Valleys).
>
> Liquid asphalt for prime coat shall conform to the provisions in Section 93, "Liquid Asphalts" of the Standard Specifications and shall be Grade 64-10 unless otherwise designated by the contract item or otherwise specified in the Special Provisions.
>
> Asphaltic emulsion for paint binder (tack coat) shall conform to the provisions in Section 94, "Asphaltic Emulsion" of the Standard Specifications for the rapid-setting or slow-setting type and grade approved by the Engineer. Grade 64-10 shall be used if not otherwise specified.

Section 39-3.01B (1) shall be amended to include:

> Aggregate of the 3/4 inch or 1/2 inch maximum size and aggregate for asphalt concrete base shall be separated into 3 or more sizes and each size shall be stored in separate bins. If 3 sizes are used, one bin shall contain that portion of the material which will pass the maximum size specified and be retained on a 3/8 inch sieve; one bin shall contain that

portion of the material which will pass a 3/8 inch sieve and be retained on a No. 8 sieve; and one bin shall contain that portion of the material which will pass a No. 8 sieve.

Aggregate of 3/8 inch maximum size shall be separated into 2 sizes and each size shall be stored in separate bins. One bin shall contain that portion of the material which will pass the maximum size specified and be retained on a No. 8 sieve and one bin shall contain that portion of the material which will pass a No. 8 sieve.

The bin containing the fine material shall not contain more than 15 percent of material retained on the No. 8 sieve. The material in any of the other bins shall not contain more than 15 percent of material passing a No. 8 sieve. Failure to comply with this requirement shall be corrected immediately, and the material in the bins not meeting these requirements shall be re-screened or wasted.

All asphalt concrete for this project shall be supplied from one source unless approved by the Engineer. Said source shall be listed on the Contractors Source of Materials List as required in Section 6 of the Standard Specifications.

Asphaltic emulsion shall be furnished and applied as provided in Section 39-4.02.

In addition to the provisions 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. The Contractor has to use a ski device, the minimum length of the ski device shall be 30 feet. 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 30 feet. The end of the screed farthest from centerline shall be controlled by an automatic transverse slope device set to reproduce the cross slope designated by the Engineer, by a sensor activated by a similar ski device or as directed 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 0.12 inch tolerance. The end of the screed farthest from the previously placed

mat shall be controlled in the same way it was controlled 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 provisions, including straightedge tolerance, of Section 39-6.03, "Compacting" of the Standard Specifications or elsewhere in these Special Provisions, 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 a day's work, the Contractor may manually control 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 provisions in this section before starting another day's work.

General Criteria For Profiling:

In addition to the straightedge provisions in Section 39-6.03, "Compacting" of the Standard Specifications, asphalt concrete pavement shall conform to the surface tolerances specified herein.

The uppermost layer of asphalt concrete surfacing shall be profiled in the presence of the Engineer using a California Profilograph or equivalent in conformance with California Test 526 and as specified in these Special Provisions.

The California Profilograph or equivalent will not be required for the following areas of the pavement surface but shall conform to the straightedge requirements in Section 39-6.03, "Compacting" of the Standard Specifications:

1. Pavement with a total thickness less than 0.24 foot;

2. Pavement on horizontal curves with a centerline curve radius of less than 1,000 feet and the pavement within the superelevation transition on those curves;

3. Pavement placed in a single lift when required by the Special Provisions;

4. Pavement with extensive grade or cross slope correction which does not receive advance leveling operations in conformance with the provisions in Section 39-6.02, "Spreading" of the Standard Specifications;

5. Pavement for ramps and connectors with steep grades and high rates of superelevation, as determined by the Engineer;

6. Shoulders and miscellaneous areas.

The Contractor shall conform to California Test 526, except a zero (null) blanking band shall be used for determining the Profile Index. Prior to beginning profiles, the profilograph shall be calibrated in the presence of the Engineer. Two profiles shall be obtained within each traffic lane, 3 feet from and parallel with the edges of the lane.

Pavements profiled shall conform to the following Profile Index requirements:

1. Pavement on tangent alignment and pavement on horizontal curves having a centerline curve radius of 2,000 feet or more shall have a Profile Index of 0.16 foot or less for each 330 feet section profiled;

2. Pavement on horizontal curves having a centerline curve radius of 1,000 feet or more but less than 2,000 feet, including the pavement within the superelevation transition of these curves, shall have a Profile Index of 0.32 foot or less for each 330 feet section profile;

3. Pavement within any 330 feet section, containing high point areas with deviations in excess of 0.025 foot in a length of 25 feet or less, when tested in conformance with the requirements in California Test 526, shall be corrected by the Contractor regardless of the Profile Index.

The Contractor shall complete initial runs of the profilograph prior to opening the pavement to public traffic. If initial profiles can not be made prior to opening the pavement to public traffic, the initial runs of the profilograph shall be made the next day that traffic control is permitted for the area to be profiled.

Areas of the top surface of the uppermost layer of asphalt concrete pavement that do not meet the specified surface tolerances shall be brought within tolerance by abrasive grinding.

Abrasive grinding shall be performed to reduce individual deviations in excess of 0.025 foot, and to reduce the Profile Index of the pavement to be within the specified tolerance. Areas which have been subjected to abrasive grinding shall receive a seal coat. Deviations in excess of 0.025 foot which cannot be brought into specified tolerance by abrasive grinding shall be corrected by either (1) removal and replacement or (2) placing an overlay of asphalt concrete. The corrective method for each area shall be selected by the Contractor and shall be approved by the Engineer prior to beginning the corrective work. Replacement or overlay pavement not meeting the specified tolerances shall be corrected by the methods specified above. Corrective work shall be at the Contractor's expense. The Contractor shall run profilograms on the areas that have received abrasive grinding or corrective work until the final profilograms indicate the Profile Index of the area is within the specifed tolerance.

When abrasive grinding is used to bring the top surface of the uppermost layer of asphalt concrete surfacing within the specified

surface tolerances, additional abrasive grinding shall be performed as necessary to extend the area ground in each lateral direction so that the lateral limits of grinding are at a constant offset from, and parallel with, the nearest lane line or pavement edge, and in each longitudinal direction so that the grinding begins and ends at lines normal to the pavement centerline, within a ground area. Ground areas shall be neat rectangular areas of uniform surface appearance.

The original of the final profilograms that indicate the pavement surface is within the Profile Index specified shall become the property of the County and shall be delivered to the Engineer prior to acceptance of the contract.

Payment: Asphalt concrete will be paid for at a unit price per ton as a combined item, including mineral aggregate and asphalt binder in place on the roadbed.

Full compensation for furnishing and applying asphaltic emulsion (paint binder) shall be considered as included in the contract price paid for Asphalt Concrete.

COMPENSATION ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS:

The provisions of this section shall apply only to the following contract items:

ITEM CODE	ITEM
390130	Hot Mix Asphalt

The compensation payable for asphalt binder used in hot mix asphalt and tack coat will be increased or decreased in conformance with the provisions of this section for paving asphalt price fluctuations exceeding 10 percent (Iu/Ib is greater than 1.10 or less than 0.90) which occur during performance of the work.

The quantity of asphalt binder used in tack coat will be determined by multiplying the item quantity for tack coat included in a monthly estimate by the minimum percent residue specified in Section 94, "Asphaltic Emulsions" of the Standard Specifications. The asphaltic emulsion minimum percent residue will be based on the type of emulsion used by the Contractor.

At the Contractor's option, the Contractor may provide actual daily test results for asphalt binder residue for the tack coat used. Test results provided by the Contractor shall be from an independent testing laboratory that participates in the AASHTO Proficiency Sample Program. The Contractor shall take samples of asphaltic emulsion from the distributor truck at mid-load from a sampling tap or thief. Two separate one-half (½) gallon samples shall be taken in the presence of the Engineer. The Contractor shall provide one sample to the Contractor's independent testing laboratory within 24 hours of sampling. The second sample shall be given to the Engineer.

The test results from the Contractor independent testing laboratory shall be delivered to the Engineer within 10 days from sample date.

The adjustment in compensation will be determined in conformance with the following formulae when the item of hot mix asphalt or tack coat or both are included in a monthly estimate:

A. Total monthly adjustment = AQ

B. For an increase in paving asphalt price index exceeding 10 percent:

$$A = 0.90 (Iu/Ib - 1.10) Ib$$

C. For a decrease in paving asphalt price index exceeding 10 percent:

$$A = 0.90 (Iu/Ib - 0.90) Ib$$

D. Where:

A = Adjustment in dollars per ton of paving asphalt used to produce hot mix asphalt and asphaltic emulsion residue used as tack coat rounded to the nearest $0.01.

Iu = The California Statewide Paving Asphalt Price Index which is in effect on the first business day of the month within the pay period in which the quantity subject to adjustment was included in the estimate.

Ib = The California Statewide Paving Asphalt Price Index for the month in which the bid opening for the project occurred.

Q = Quantity in tons of asphalt binder that was used in producing the quantity of hot mix asphalt shown under "This Estimate" on the monthly estimate using the amount of asphalt binder determined by the Engineer plus the quantity in tons of asphalt binder that would have been used as residue in the tack coat shown under "This Estimate" on the monthly estimate.

The adjustment in compensation will also be subject to the following:

A. The compensation adjustments provided herein will be shown separately on payment estimates. The Contractor shall be liable to the State for decreased compensation adjustments and the Department may deduct the amount thereof from moneys due or that may become due the Contractor.

B. Compensation adjustments made under this section will be taken into account in making adjustments in conformance with the provisions in Section 4-1.03B, "Increased or Decreased Quantities" of the Standard Specifications.

C. In the event of an overrun of contract time, adjustment in compensation for paving asphalt included in estimates during the overrun period will be determined using the California Statewide Paving Asphalt Price Index in effect on the first business day of the month within the pay period in which the overrun began.

The California Statewide Paving Asphalt Price Index is determined each month on the first business day of the month by the Department using the median of posted prices in effect as posted by Chevron, Mobil, and Unocal for the Buena Vista, Huntington Beach, Kern River, Long Beach, Midway Sunset, and Wilmington fields.

In the event that the companies discontinue posting their prices for a field, the Department will determine an index from the remaining posted prices. The Department reserves the right to include in the index determination the posted prices of additional fields.

The California Statewide Paving Asphalt Price Index is available on the Division of Engineering Services website at: http://www.dot.ca.gov/hq/esc/oe/asphalt_index/astable.html.

MINOR CONCRETE CURB AND GUTTER, TYPE "D" CURB, CROSS-GUTTER, PAD, DRIVEWAY APPROACHES, CURB RAMPS, SIDEWALK AND CONCRETE PAVEMENT FOR BUS TURNOUT:

Concrete curb and gutter, type "D" curb, cross-gutter, pad, driveway approaches, curb ramps, sidewalk and concrete pavement for bus turnout area shall be constructed in accordance with the plans, County Road Improvement Standards And Specifications or as directed by the Engineer and in conformance with Section 51, 73 and 90 of Standard Specifications, except as herein modified: Class 2 concrete shall be used for concrete cross-gutter, and Class 3 concrete for concrete curb and gutter, pad, driveway approaches, curb ramps and sidewalk.

Class 2 concrete shall be used for load bearing structures and Class 3 concrete shall be used for non load bearing structure included in this article.

Preparation of subgrade for the concrete structures shall be done in conformance with the requirements of Section 73-1.02 of the Standard Specifications.

Excess material resulting from the excavation of the subgrade shall be disposed of as elsewhere provided in these Special Specifications. Full compensation for the removal of existing concrete structures shall be included in the contract bid prices for such items.

Concrete pad shall be reinforced with wire mesh as shown on the construction plans or as directed by the Engineer.

The Contractor is responsible for meeting requirements of all American with Disability Act (ADA).

Construction of sidewalk and curb ramps shall include, but not be limited to, the following:

1) Removal and disposal of existing sidewalk, curb, and/or curb and gutter and existing soil and aggregate as required;
2) Establishing grades, and assuring that all grades are met;
3) Performing all grading and compaction - including all required aggregate import, as directed by the Engineer and in accordance with County Standard 403;
4) Construction of new sidewalk, curb, and/or curb and gutter;
5) All scoring/grooving and required saw cutting;
6) Repair of existing asphalt and PCC surfacing;
7) Installing 1/2" wide expansion joints;
8) All landscaping, and related work, to return the area adjacent to the curb ramp to its original condition and to conform the area to the new improvements;

At a minimum, the area from the BCR to ECR shall meet all required ADA standards. Therefore, to conform to existing conditions and/or to achieve the required four-foot level area (maximum of 2.0% crossfall) at the top portion of the curb ramp, it may be necessary to extend the work beyond the BCR/ECR in certain instances.

The area behind and along the sidewalk shall be filled and compacted with native or select material and graded to match and provide a smooth transition from the back of sidewalk, to the satisfaction of the Engineer.

Full compensation for the construction of driveway approaches shall include the replacing or cutting the concrete curb and gutter and wings if necessary.

The contract unit bid prices paid per linear foot for Concrete Curb and Gutter, Type "D" curb, per square foot for Concrete Cross-Gutter, Concrete Pad, sidewalk, Concrete Driveway Approach and concrete pavement for bus turnout, and per each for Concrete Curb Ramp shall include full compensation for furnishing all labor, equipment, materials and tools, and incidentals, and for doing all the work involved in the concrete structures construction, and the furnishing and placing of expansion joints.

PLACE ASPHALT CONCRETE DIKE:

Asphalt concrete dike shall conform to the provisions in Section 39 of the Standard Specifications, construction plans and these Special Provisions.

This item will include the placement of the asphalt concrete dike per the plans and as directed by the Engineer.

The pay quantity of asphalt concrete dikes will be paid for at the contract price per ton for asphalt concrete material in addition to

the price paid per linear foot for placement of the asphalt concrete dike. Full compensation for any necessary excavation, backfill and preparation of the area shall be considered as included in the contract price paid per linear foot for Place Asphalt Concrete Dike and no additional compensation will be allowed therefor.

REINFORCED CONCRETE PIPE:

Reinforced concrete pipe shall conform to the provisions to Section 65 of the Standard Specifications.

The contract unit bid price paid per linear foot for Reinforced Concrete Pipe shall include full compensation for all cutting, fitting, grouting, structure excavation and backfill and other work necessary to install the concrete pipe and no additional compensation will be allowed therefor.

CORRUGATED METAL PIPE AND RISER:

Corrugated Metal pipe shall conform to the provisions to Section 66 of the Standard Specifications, as shown on the plans and as directed by the Engineer.

The contract unit bid price paid per linear foot for corrugated metal pipe and per each for corrugated metal pipe riser shall include full compensation for furnishing all labor materials, tools equipment and incidentals and for doing all the work involved in installing, cutting, fitting, excavation and backfill and other work necessary to install the pipe and riser no additional compensation will be allowed therefor.

MINOR CONCRETE STRUCTURES:

Minor concrete structures shall conform to the applicable portions of Section 51, 52, 75 and 90 of the Standard Specifications.

Minor concrete structures for this project shall consist of catch basins, outlet concrete pad, bulkheads, drain connections, inlet/outlet, V-Ditch, junction structures, median drain connection and median drain inlet, end section.

Concrete to be used in the construction of minor concrete structures shall be Class "2" concrete.

All exposed metal shall be galvanized in conformance with Section 75-1.05 of the Standard Specifications.

The contract unit price for each minor structure will not be adjusted if the constructed height of said minor structure, including revisions by Engineer, is within $\pm$ 0.5 foot of the vertical dimension shown on the plans.

Payment for all work involved in the construction of minor structures will be on a unit price bid as shown on the contract Proposal and shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all work involved in the complete structure, including the construction of gutter depression, structure excavation and backfill, remove and dispose of existing concrete bulkhead, furnishing and placing reinforcement, and metal frames, covers and grates and no further allowances shall be allowed.

FLO-GARD FILTER:

Flo-Gard Filter shall be of "Flo-Gard Plus" filter system model FGP ("CI" series) as manufactured by KriStar or approved equal.

Flo-Gard Filter shall be of model specified above or an alternate product which performs in a similar manner, as approved by the Engineer. The listed product is intended as a guideline, and products from alternate manufacturers will be accepted, provided that the product and its performance are a close approximation of the specified product.

The Contractor shall maintain the system for three months after completion of the project.

The Contractor shall submit the proposed alternate product to the Engineer for evaluation and approval prior to placing an order with the vendor.

Payment: The unit bid prices paid per each for "Flo-Gard Plus shall include full compensation for furnishing all labor, equipment, materials and tools, and incidentals, and for doing all the work involved, complete in place and **maintain for three months**, and no additional compensation will be allowed therefor.

ROCK SLOPE PROTECTION:

Rock slope protection shall be constructed as shown on the construction plans and shall conform to the provisions of Section 72-2 of the Standard Specifications and these Special Provisions.

Payment: The unit bid prices paid per cubic yard for Rock Slope Protection (Method A and B) shall include full compensation for furnishing all labor, equipment, materials and tools, and incidentals, and for doing all the work involved, complete in place, including any excavation and backfill and no additional compensation will be allowed therefor.

METAL HAND RAILING:

Metal hand railing shall conform to the A.P.W.A 606-1 Type B Standard and Specifications.

Payment: The contract unit bid price paid per linear foot for metal hand railing shall include full compensation for furnishing all labor, equipment, materials and tools, and incidentals, and for doing all the work involved including the furnishing and installation and no additional compensation will be allowed therefor.

CHAIN LINK FENCE:

Chain link fence shall conform to the provisions of Section 80-4 of the Standard Specifications, Riverside County Flood Control standard drawing No. M-801 and these Special Provisions.

Payment: The contract unit bid price paid per linear foot for Chain Link Fence shall include full compensation for furnishing all labor, equipment, materials and tools, and incidentals, and for doing all the work involved including the furnishing and installation of the swing gates, any excavation and backfill with concrete and no additional compensation will be allowed therefor.

GUARD RAILING (BARRICADE):

Guard railing shall be constructed in accordance with the County Road Improvement Standards And Specifications or as directed by the Engineer and in conformance with Section 83 of Standard Specifications.

Payment: The contract unit bid price paid per linear foot for Guard Railing (Barricade) shall include full compensation for furnishing all labor, equipment, materials and tools, and incidentals, and for doing all the work involved, and incidentals, and for doing all the work involved including any excavation and backfill with concrete and no additional compensation will be allowed therefor.

RESIDENT ENGINEER'S OFFICE:

The Contractor shall furnish and maintain a Resident Engineer's Office (Field Office), suitable for the intended purpose, for the exclusive use of the Engineer and his staff in accordance with the following provisions.

The Field Office shall be maintained in a clean, neat and sanitary manner at all times. All sanitary paper products required for the restroom shall be supplied by the Contractor and shall be included in the contract unit price bid.

The Field Office shall be a 600 square feet (minimum) office facility with required utility hook up including electricity, potable water, 2 telephone lines, multi-line speaker phones and air conditioning. The facility will have 1 restroom and partitions creating 3 interior rooms. Contractor will pay monthly rental fees and shall obtain all rights of entry necessary.

The Contractor shall be fully responsible to provide all utility hook-ups for the Resident Engineer's Office, including electrical power, telephone, potable water and sewage disposal. The Contractor shall obtain all necessary permits and pay all fees.

The Field Office shall be provided with a facsimile machine with a separate phone line and a copying machine capable of photocopying 11" x 17" size paper for the exclusive use of the Engineer and his staff for the entire duration of the project.

Contractor shall be aware that theft and vandalism at the job site may be a problem. Contractor shall be responsible for the security of the Field Office.

If for any reason, the phone, copier, facsimile machine, any office furniture, and/or sanitary facility is vandalized, stolen, or in need of repair, the Contractor, upon receipt of written notice by Engineer, shall have a maximum of five (5) working days to replace or repair the items to full working order. If Contractor fails to comply with the five (5) working days specified, the County may at its option withhold monthly progress payments until Field Office is returned to full and complete working order.

Contractor shall meet with the Engineer prior to construction (and at any other time circumstances warrant), and together, shall mutually agree on a location for the field office. Approval of the proposed Field Office by the Engineer shall be obtained prior to implementation.

The following shall be furnished and supplied by the Contractor for the duration of the contract:

1. Furnish, service and maintain office.

   The following office furniture, in new or near-new condition, shall be furnished, at a minimum:

   2 ea. 30" x 60" desks with lockable drawers.
   2 ea. task swivel chairs.
   1 ea. conference table to accommodate 8 conference chairs.
   8 conference chairs.
   1 ea. 60"H x 40"W x 16"D book shelf.
   1 ea. 60" x 36" drafting table and chair.

2. Supply utilities for office, including electricity, phone (2 lines), potable water, and DSL internet service for the duration of the contract, including fees.
3. Supply, service and maintain sanitary facility.
4. Facsimile machine (separate phone line).
5. Furnish two current model personal computers for the duration of the contract, suitable and capable for office use, internet connected utilizing DSL service, and complete with necessary software including Microsoft Office, latest version.

6. Two color laser printers, HP Color Laserjet Model 2605DN (also known as Q7822A) or approved alternate. One color flatbed scanner, HP Scanjet 5590 or approved alternate. All suppliers and necessary maintenance for the use of the above equipment by the Engineer shall be furnished and supplied by the Contractor for the duration of the contract.
7. Copying machine (11" x 17").
8. Installation of 4 designated public parking spaces.
9. Installation of appropriate number of designated parking spaces for the construction manager, inspectors, general Contractors, workers, material suppliers, subcontractors and other support personnel.
10. Installation of 1 large sized unit commercial trash bin with cover and regularly scheduled pick up.
11. Field office shall have a 24" x 36" sign, white color, affixed near the door. The sign text shall read "COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT" and shall have County seals affixed to it. Contractor will be supplied the seals by the County.
12. Remove office from job site at the completion of the project.
13. Security.
14. If office is located on private property, all property rental costs and right of entry.

No monthly progress payments will be due to the Contractor until all provisions and requirements of "Resident Engineer's Office" are complete and in place.

The contract lump sum price paid for Resident Engineer's Office shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in furnishing and maintaining Resident Engineer's Office, including furnishing and maintaining the listed equipment and furniture, and providing of all necessary supplies for the listed equipment for the duration of the contract work, as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

DEMOLITION OF EXISTING BLOCK WALL:

Existing block wall shall be demolished as shown on the plan and as directed by the Engineer.

Contractor shall construct new sound wall as shown on the plans and specified elsewhere in these special provisions prior to demolishing existing block wall. Adequate clearance for mobilizing equipment needed to demolish existing block wall and haul away to dispose off material in result of demolishing work will be provided. Contractor shall protect in place all other private fencing/block wall. All work shall be completed in a neat and professional manner.

Payment: Full compensation for demolishing existing block wall including removal of footing, backfilling and haul away demolished material to dispose off, shall be paid for on a lump sum basis and no additional compensation will be allowed therefor.

AUDIE MURPHY RANCH BRIDGE

MATERIALS:

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

A. Structure backfill material.
B. Pervious backfill material.
C. Permeable material.
D. Reinforced or prestressed portland cement concrete component or structure.
E. Nonreinforced portland cement concrete component or structure for which a Class 1 Surface Finish is required by the provisions in Section 51-1.18B, "Class 1 Surface Finish," of the Standard Specifications.

Aggregate produced from slag resulting from a steel-making process shall not be used for a highway construction project except for the following items:

A. Imported Borrow.
B. Aggregate Subbase.
C. Class 2 Aggregate Base.
D. Asphalt Concrete.

Steel slag to be used to produce aggregate for aggregate subbase and Class 2 aggregate base shall be crushed so that 100 percent of the material will pass a 3/4-inch 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 weight of the aggregate.

A supplier of steel slag aggregate shall provide separate stockpiles for controlled aging of the slag. An individual stockpile shall contain not less than 10,000 tons nor more than 50,000 tons 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 each week. No credit for aging will be given for the time period covered by 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 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 provisions 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 weight of the aggregate.

Steel slag used for imported borrow shall be weathered for at least 3 months. Prior to the use of steel slag as imported borrow, the supplier shall furnish a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall state that the steel slag has been weathered for at least 3 months.

Each delivery of aggregate containing steel slag for use as aggregate subbase or 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 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 one foot, measured in any direction, of a 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 18 inches 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 No. 4 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 conformance with the procedures in California Test 304 and the specific gravity of the specimen will be determined in conformance 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.

ENGINEERING FABRICS:

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

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

The requirement that ultraviolet (UV) treated fabrics be submitted to the Transportation Laboratory at least 45 days prior to use shall not apply.

CONCRETE:

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.

Precast Concrete Quality Control:

GENERAL

Precast concrete quality control shall conform to these special provisions.

Unless otherwise specified, precast concrete quality control shall apply when any precast concrete members are fabricated in conformance with the provisions in Section 49, "Piling," or Section 51, "Concrete Structures," of the Standard Specifications.

Precast concrete quality control shall not apply to precast concrete members that are fabricated from minor concrete.

Quality Control (QC) shall be the responsibility of the Contractor. The Contractor's QC inspectors shall perform inspection and testing prior to precasting, during precasting, and after precasting, and as specified in this section and additionally as necessary to ensure that materials and workmanship conform to the details shown on the plans, and to the specifications.

Quality Assurance (QA) is the prerogative of the Engineer. Regardless of the acceptance for a given precast element by the Contractor, the Engineer will evaluate the precast element. The Engineer will reject any precast element that does not conform to the approved Precast Concrete Quality Control Plan (PCQCP), the details shown on the plans, or to these special provisions.

The Contractor shall designate in writing a precast Quality Control Manager (QCM) for each precasting facility. The QCM shall be responsible directly to the Contractor for the quality of precasting, including materials and workmanship, performed by the Contractor and all subcontractors. The QCM shall be the sole individual responsible to the Contractor for submitting, receiving, and approving all correspondence, required submittals, and reports to and from the Engineer. The QCM shall not be employed or compensated by any subcontractor, or other persons or entities hired by subcontractors, or suppliers, who will provide other services or materials for the project. The QCM may be an employee of the Contractor.

Prior to submitting the PCQCP required herein, a meeting between the Engineer, the Contractor's QCM, and a representative from each entity performing precast concrete operations for this project, shall be held to discuss the requirements for precast quality control.

QC Inspectors shall either be 1) licensed as Civil Engineers in the State of California, or 2) have a current Plant Quality Personnel Certification, Level II, from the Precast/Prestressed Concrete Institute. A QC Inspector shall witness all precast concrete operations.

PRECAST CONCRETE QUALIFICATION AUDIT

Unless otherwise specified, no Contractors or subcontractors performing precast concrete operations for the project shall commence work without having successfully completed the Department's Precast Fabrication Qualification Audit, hereinafter referred to as the audit. Copies of the audit form, along with procedures for requesting and completing the audit, are available at:

http://www.dot.ca.gov/hq/esc/Translab/OSM/smbresources.htm

An audit that was previously approved by the Department no more than 3 years before the award of this contract will be acceptable for the entire period of this contract, provided the Engineer determines the audit is for the same type of work that is to be performed on this contract.

A list of facilities who have successfully completed the audit and are authorized to provide material for this contract is available at:

http://www.dot.ca.gov/hq/esc/Translab/OSM/smdocuments/Internet_auditlisting.pdf

Successful completion of an audit shall not relieve the Contractor of the responsibility for furnishing materials or producing finished work of the quality specified in these special provisions and as shown on the plans.

PRECAST CONCRETE QUALITY CONTROL PLAN

Prior to performing any precasting operations, the Contractor shall submit to the Engineer, in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications, 3 copies of a separate PCQCP for each item of work to be precast. A separate PCQCP shall be submitted for each facility. As a minimum, each PCQCP shall include the following:

A. The name of the precasting firm, the concrete plants to be used, and any concrete testing firm to be used;
B. A manual prepared by the precasting firm that includes equipment, testing procedures, safety plan, and the names, qualifications, and documentation of certifications for all personnel to be used;
C. The name of the QCM and the names, qualifications, and documentation of certifications for all QC inspection personnel to be used;
D. An organizational chart showing all QC personnel and their assigned QC responsibilities;
E. The methods and frequencies for performing all required quality control procedures, including all inspections, material

testing, and any required survey procedures for all components of the precast elements including prestressing systems, concrete, grout, reinforcement, steel components embedded or attached to the precast member, miscellaneous metal, and formwork;

F. A system for identification and tracking of required precast element repairs, and a procedure for the reinspection of any repaired precast element. The system shall have provisions for a method of reporting nonconforming precast elements to the Engineer; and

G. Forms to be used for Certificates of Compliance, daily production logs, and daily reports.

The Engineer shall have 4 weeks to review the PCQCP submittal after a complete plan has been received. No precasting shall be performed until the PCQCP is approved in writing by the Engineer.

A PCQCP that was previously approved by the Engineer no more than one year prior to the beginning of work on this contract will be acceptable for the entire period of this contract, provided the Engineer determines the PCQCP is for the same type of work that is to be performed on this contract.

An amended PCQCP or addendum shall be submitted to, and approved in writing by the Engineer, for any proposed revisions to the approved PCQCP. An amended PCQCP or addendum will be required for any revisions to the PCQCP, including but not limited to changes in concrete plants or source materials, changes in material testing procedures and testing labs, changes in procedures and equipment, changes in QC personnel, or updated systems for tracking and identifying precast elements. The Engineer shall have 2 weeks to complete the review of the amended PCQCP or addendum, once a complete submittal has been received. Work that is affected by any of the proposed revisions shall not be performed until the amended PCQCP or addendum has been approved.

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

It is expressly understood that the Engineer's approval of the Contractor's PCQCP shall not relieve the Contractor of any responsibility under the contract for the successful completion of the work in conformance with the requirements of the plans and specifications. The Engineer's approval shall neither 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 PCQCP.

REPORTING

The QC Inspector shall provide reports to the QCM on a daily basis for each day that precasting operations are performed.

A daily production log for precasting shall be kept by the QCM for each day that precasting operations, including setting forms, placing reinforcement, setting prestressing steel, casting, curing, post tensioning, and form release, are performed. The log shall include the facility location, and shall include a specific description of casting or related operations, any problems or deficiencies discovered, any testing or repair work performed, and the names of all QC personnel and the specific QC inspections they performed that day. The daily report from each QC Inspector shall also be included in the log. This daily log shall be available for viewing by the Engineer, at the precasting facility.

All reports regarding material tests and any required survey checks shall be signed by the person who performed the test or check, and then submitted directly to the QCM for review and signature prior to submittal to the Engineer. Corresponding names shall be clearly printed or type-written next to all signatures.

The Engineer shall be notified immediately in writing when any precasting problems or deficiencies are discovered and of the proposed repair or process changes required to correct them. The Engineer shall have 4 weeks to review these procedures. No remedial work shall begin until the Engineer approves these procedures in writing.

The following items shall be included in a precast report that is to be submitted to the Engineer following the completion of any precast element:

A. Reports of all material tests and any required survey checks;
B. Documentation that the Contractor has evaluated all tests and corrected all rejected deficiencies, and all repairs have been re-examined with the required tests and found acceptable; and
C. A daily production log.

At the completion of any precast element, and if the QCM determines that element is in conformance with these special provisions, the QCM shall sign and furnish to the Engineer, a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. This Certificate of Compliance shall be submitted with the precast report. 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 conformance with the details shown on the plans and the provisions of the Standard Specifications and these special provisions.

PAYMENT: In the event the Engineer fails to complete the review of 1) a PCQCP, 2) an amended PCQCP or addendum, or 3) a proposed repair or process change, within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as

provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

All required repair work or process changes required to correct precasting operation deficiencies, whether discovered by the QCM, QC Inspector, or by the Engineer, and any associated delays or expenses to the Contractor caused by performing these repairs, shall be at the Contractor's expense.

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

WELDING:

GENERAL:

Unless otherwise specified, Section 8-3, "Welding," shall apply to any welding that is specified to conform to an AWS welding code.

Requirements of the AWS welding codes shall apply unless otherwise specified 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 AASHTO/AWS.

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	2008
D1.3	2008
D1.4	2005
D1.5	2008
D1.6	2007
D1.8	2009

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

Unless otherwise specified, Clause 6.1.3 of AWS D1.1, paragraph 1 of Section 7.1.2 of AWS D1.4, and Clause 6.1.1.2 of AWS D1.5, are replaced with the following:

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

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

The QC Inspector shall be responsible for quality control acceptance or rejection of materials and workmanship.

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

Inspection and approval of all joint preparations, assembly practices, joint fit-ups, welding techniques, and the performance of each welder, welding operator, and tack welder shall be documented by the QC Inspector on a daily basis for each day welding is performed. For each inspection, including fit-up, Welding Procedure Specification (WPS) verification, and final weld inspection, the QC Inspector shall confirm and document compliance with the requirements of the AWS or other specified code criteria and the requirements of these special provisions on all welded joints before welding, during welding, and after the completion of each weld.

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

When joint weld details that are not prequalified to the details of Clause 3 of AWS D1.1 or to the details of Figure 2.4 or 2.5 of AWS D1.5 are proposed for use in the work, the joint details, their intended locations, and the proposed welding parameters and essential variables, shall be approved by the Engineer. The Contractor shall allow the Engineer 15 days to complete the review of the proposed joint detail locations.

In addition to the requirements of AWS D1.1, welding procedure qualifications for work welded in conformance with this code shall conform to the following:

> When a nonstandard weld joint is to be made using a combination of WPSs, a single test may be conducted combining the WPSs to be used in production, provided the essential variables, including weld bead placement, of each process are limited to those established in Table 4.5.

Upon approval of the proposed joint detail locations and qualification of the proposed joint details, welders and welding operators using these details shall perform a qualification test plate using the WPS variables and the joint detail to be used in production. The test plate shall have the maximum thickness to be used in production and a minimum length of 18 inches. The test plate shall be mechanically and radiographically tested. Mechanical and radiographic testing and acceptance criteria shall be as specified in the applicable AWS codes.

The Engineer will witness all qualification tests for WPSs that were not previously approved by the Department.

In addition to the requirements specified in the applicable code, 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. If welding will be performed without gas shielding, then qualification shall also be without gas shielding. Excluding welding of fracture critical members, 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 or welding operator's work remains satisfactory.

The Contractor shall notify the Engineer 7 days prior to performing any procedure qualification tests. Witnessing of qualification tests by the Engineer shall not constitute approval of the intended joint locations, welding parameters, or essential variables. The Contractor shall notify the Engineer using the "Standard TL-38 Inspection Form" located at:

http://www.dot.ca.gov/hq/esc/Translab/OSM/smbforms.htm

Clause 6.14.6, "Personnel Qualification," of AWS D1.1, Section 7.8, "Personnel Qualification," of AWS D1.4, and Clause 6.1.3.4, "Personnel Qualification," of AWS D1.5 are replaced with the following:

> Personnel performing nondestructive testing (NDT) shall be qualified and certified in conformance with the requirements of the American Society for Nondestructive Testing (ASNT) Recommended Practice No. SNT-TC-1A and the Written Practice of the NDT firm. The Written Practice of the NDT firm shall meet or exceed the guidelines of the ASNT Recommended Practice No. SNT-TC-1A. Individuals who perform NDT, review the results, and prepare the written reports shall be either:
>
> A. Certified NDT Level II technicians, or;
>
> B. Level III technicians who hold a current ASNT Level III certificate in that discipline and are authorized and certified to perform the work of Level II technicians.

Clause 6.6.5, "Nonspecified NDT Other than Visual," of AWS D1.1, Section 7.6.5 of AWS D1.4 and Clause 6.6.5 of AWS D1.5 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 or other specified welding codes, in the Standard Specifications, or in these special provisions. Except as provided for in these special provisions, additional NDT required by the Engineer, and associated repair work, will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard

Specifications. Prior to release of welded material by the Engineer, if testing by NDT methods other than those originally specified discloses an attempt to defraud or reveals a gross nonconformance, all costs associated with the repair of the deficient area, including NDT of the weld and of the repair, and any delays caused by the repair, shall be at the Contractor's expense. A gross nonconformance is defined as the sum of planar type rejectable indications in more than 20 percent of the tested length.

When less than 100 percent of NDT is specified for any weld, it is expected that the entire length of weld meet the specified acceptance-rejection criteria. Should any welding deficiencies be discovered by additional NDT directed or performed by the Engineer that utilizes the same NDT method as that originally specified, all costs associated with the repair of the deficient area, including NDT of the weld and of the weld repair, and any delays caused by the repair, shall be at the Contractor's expense.

Repair work to correct welding deficiencies discovered by visual inspection directed or performed by the Engineer, and any associated delays or expenses caused to the Contractor by performing these repairs, shall be at the Contractor's expense.

WELDING QUALITY CONTROL

Welding quality control shall conform to the requirements in the AWS or other specified welding codes, the Standard Specifications, and these special provisions.

Unless otherwise specified, welding quality control shall apply to work welded in conformance with the provisions in the following:

A. Section 49, "Piling," Section 52, "Reinforcement," Section 55, "Steel Structures," and Section 75-1.035, "Bridge Joint Restrainer Units," of the Standard Specifications

B. "Structural Steel for Building Work" of these special provisions

Unless otherwise specified, Clauses 6.1.4.1 and 6.1.4.3 of AWS D1.1, paragragh 2 of Section 7.1.2 of AWS D1.4, and Clauses 6.1.3.2 through 6.1.3.3 of AWS D1.5 are replaced with the following:

The QC Inspector shall be currently certified as an AWS Certified Welding Inspector (CWI) in conformance with the requirements in AWS QC1, "Standard for AWS Certification of Welding Inspectors."

The QC Inspector may be assisted by an Assistant QC Inspector provided that this individual is currently certified as an AWS Certified Associate Welding Inspector (CAWI) in conformance with the requirements in AWS QC1, "Standard for AWS Certification of Welding Inspectors." The Assistant QC Inspector may perform inspection under the direct supervision

of the QC Inspector provided the assistant is always within visible and audible range of the QC Inspector. The QC Inspector shall be responsible for signing all reports and for determining if welded materials conform to workmanship and acceptance criteria. The ratio of QC Assistants to QC Inspectors shall not exceed 5 to 1.

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 welding, including materials and workmanship, performed by the Contractor and subcontractors.

The QCM shall be the sole individual responsible to the Contractor for submitting, receiving, reviewing, and approving all correspondence, required submittals, and reports to and from the Engineer. The QCM shall be a registered professional engineer or shall be currently certified as a CWI.

Unless the QCM is hired by a subcontractor providing only QC services, 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.

The QCM shall sign and furnish to the Engineer, a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each 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 conformance with the details shown on the plans, the Standard Specifications, and these special provisions.

Welding inspection personnel or NDT firms to be used in the work 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, except for the following conditions:

A. The work is welded in conformance with AWS D1.5 and is performed at a permanent fabrication or manufacturing facility that is certified under the AISC Quality Certification Program, Category CBR, Major Steel Bridges and Fracture Critical endorsement F, when applicable.

B. Structural steel for building work is welded in conformance with AWS D1.1 and is performed at a permanent fabrication or manufacturing facility that is certified under the AISC Quality Certification Program, Category STD, Standard for Steel Building Structures.

For welding performed at such facilities, the inspection personnel or NDT firms may be employed or compensated by the facility performing the welding provided the facility maintains a QC program that is independent from production.

Unless otherwise specified, an approved independent third party will witness the qualification tests for welders or welding operators. The independent third party shall be a current CWI and shall not be an employee of the contractor performing the welding. The Contractor shall allow the Engineer 15 days to review the qualifications and copy of the current certification of the independent third party.

Prior to submitting the Welding Quality Control Plan (WQCP) required herein, a prewelding meeting between the Engineer, the Contractor's QCM, and a representative from each entity performing welding or inspection for this project, shall be held to discuss the requirements for the WQCP.

Information regarding the contents, format, and organization of a WQCP, is available at the Transportation Laboratory and at:

http://www.dot.ca.gov/hq/esc/Translab/OSM/smbresources.htm

The Contractor shall submit to the Engineer, in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications, 2 copies of a separate WQCP for each subcontractor or supplier for each item of work for which welding is to be performed.

The Contractor shall allow the Engineer 15 days to review the WQCP submittal after a complete plan has been received. No welding shall be performed until the WQCP is approved in writing by the Engineer.

An amended WQCP or any addendum to the approved WQCP shall be submitted to, and approved in writing by the Engineer, for proposed revisions to the approved WQCP. An amended WQCP or addendum will be required for revisions to the WQCP, including but not limited to a revised WPS; additional welders; changes in NDT firms, QC, or NDT personnel or procedures; or updated systems for tracking and identifying welds. The Engineer shall have 7 days to complete the review of the amended WQCP or addendum. Work affected by the proposed revisions shall not be performed until the amended WQCP or addendum has been approved.

After final approval of the WQCP, amended WQCP, or addendum, the Contractor shall submit 7 copies to the Engineer of the approved documents. A copy of the Engineer approved document shall be available at each location where welding is to be performed.

All welding will require inspection by the Engineer. The Contractor shall request inspection at least 3 business days prior to the beginning of welding for locations within California and 5 business days for locations outside of California. The Contractor shall request inspection at:

http://www.dot.ca.gov/hq/esc/Translab/OSM/smbforms.htm

Continuous inspection shall be provided when any welding is being performed. Continuous inspection, as a minimum, shall include having a QC Inspector within such close proximity of all welders or

welding operators so that inspections by the QC Inspector of each welding operation at each welding location does not lapse for a period exceeding 30 minutes.

A daily production log for welding shall be kept for each day that welding is performed. The log shall clearly indicate the locations of all welding. The log 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 QC Inspector shall also be included in the log.

The following items shall be included in a Welding Report that is to be submitted to the Engineer within 15 days following the performance of any welding:

A. A daily production log.

B. Reports of all visual weld inspections and NDT.

C. Radiographs and radiographic reports, and other required NDT reports.

D. A summary of welding and NDT activities that occurred during the reporting period.

E. Reports of each application of heat straightening.

F. A summarized log listing the rejected lengths of weld by welder, position, process, joint configuration, and piece number.

G. Documentation that the Contractor has evaluated all radiographs and other nondestructive tests and corrected all rejectable deficiencies, and that all repaired welds have been reexamined using the required NDT and found acceptable.

The following information shall be clearly written on the outside of radiographic envelopes: name of the QCM, name of the nondestructive testing firm, name of the radiographer, date, contract number, complete part description, and all included weld numbers, report numbers, and station markers or views, as detailed in the WQCP. In addition, all interleaves shall have clearly written on them the part description and all included weld numbers and station markers or views, as detailed in the WQCP. A maximum of 2 pieces of film shall be used for each interleave.

Reports of all visual inspections and NDT shall be signed by the inspector or technician and submitted daily 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. Reports of all NDT, whether specified, additional, or informational, performed by the Contractor shall be submitted to the Engineer.

The Engineer will review the Welding Report to determine if the Contractor is in conformance with the WQCP. Except for field welded steel pipe piling, the Engineer shall be allowed 15 days to review the report and respond in writing after the complete Welding Report has been received. Prior to receiving notification from the Engineer of the Contractor's conformance with the WQCP, the Contractor may encase in concrete or cover welds for which the 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. Material not conforming to these requirements will be subject to rejection.

For field welded steel pipe piling, including bar reinforcement in the piling, the Contractor shall allow the Engineer 2 business days to review the Welding Report and respond in writing after the required items have been received. No field welded steel pipe piling shall be installed, and no reinforcement in the piling shall be encased in concrete until the Engineer has approved the above requirements in writing.

In addition to the requirements in AWS D1.1 and AWS D1.5, third-time excavations of welds or base metal to repair unacceptable discontinuities, regardless of NDT method, and all repairs of cracks require prior approval of the Engineer.

The Engineer shall be notified immediately in writing when welding problems, deficiencies, base metal repairs, or any other type of repairs not submitted in the WQCP are discovered, and also of the proposed repair procedures to correct them. For requests to perform third-time excavations or repairs of cracks, the Contractor shall include an engineering evaluation of the proposed repair. The engineering evaluation, at a minimum, shall address the following:

A. What is causing each defect?

B. Why the repair will not degrade the material properties?

C. What steps are being taken to prevent similar defects from happening again?

The Contractor shall allow the Engineer 7 days to review these procedures. No remedial work shall begin until the repair procedures are approved in writing by the Engineer.

Clause 6.5.4 of AWS D1.5 is replaced with the following:

> The QC Inspector shall inspect and approve each joint preparation, assembly practice, welding technique, joint fit-up, and the performance of each welder, welding operator, and tack welder to make certain that the applicable requirements of this code and the approved Welding Procedure Specification (WPS) are met. The QC Inspector shall examine the work to make certain that it meets the requirements of

Clauses 3 and 6.26. The size and contour of all welds shall be measured using suitable gages. Visual inspection for cracks in welds and base metal, and for other discontinuities shall 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.

In addition to the requirements of AWS D1.5, Clause 5.12 or 5.13, welding procedures qualification for work welded in conformance with that code shall conform to the following requirements:

A. Unless considered prequalified, fillet welds shall be qualified in each position. The fillet weld soundness test shall be conducted using the essential variables of the WPS as established by the Procedure Qualification Record (PQR).

B. For qualification of joints that do not conform to Figures 2.4 and 2.5 of AWS D1.5, a minimum of 2 WPS qualification tests are required. The tests shall be conducted using both Figure 5.1 and Figure 5.3. The test conforming to Figure 5.1 shall be conducted in conformance with AWS D1.5, Clause 5.12 or 5.13. The test conforming to Figure 5.3 shall be conducted using the welding electrical parameters that were established for the test conducted conforming to Figure 5.1. The ranges of welding electrical parameters established during welding per Figure 5.1 in conformance with AWS D1.5, Clause 5.12, shall be further restricted according to the limits in Table 5.3 during welding per Figure 5.3.

C. Multiple zones within a weld joint may be qualified. The travel speed, amperage, and voltage values that are used for tests conducted per AWS D1.5 Clause 5.13 shall be consistent for each pass in a weld joint, and shall in no case vary by more than ±10 percent for travel speed, ±10 percent for amperage, and ±7 percent for voltage as measured from a predetermined target value or average within each weld pass or zone. The travel speed shall in no case vary by more than ±15 percent when using submerged arc welding.

D. For a WPS qualified in conformance with AWS D1.5 Clause 5.13, the values to be used for calculating ranges for current and voltage shall be based on the average of all weld passes made in the test. Heat input shall be calculated using the average of current and voltage of all weld passes made in the test for a WPS qualified in conformance with Clause 5.12 or 5.13.

E. Macroetch tests are required for WPS qualification tests, and acceptance shall be per AWS D1.5 Clause 5.19.3.

F. When a nonstandard weld joint is to be made using a combination of WPSs, a test conforming to Figure 5.3 may be conducted combining the WPSs to be used in production,

provided the essential variables, including weld bead placement, of each process are limited to those established in Table 5.3.

G. Prior to preparing mechanical test specimens, the PQR welds shall be inspected by visual and radiographic tests. Backing bar shall be 3 inches in width and shall remain in place during NDT testing. Results of the visual and radiographic tests shall comply with AWS D1.5 Clause 6.26.2, excluding Clause 6.26.2.2. Test plates that do not comply with both tests shall not be used.

PAYMENT-Full compensation for conforming to the requirements of "Welding" 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.

PRESTRESSING CONCRETE:

Prestressing concrete shall conform to the provisions in Section 50, "Prestressing Concrete," of the Standard Specifications and these special provisions.

CONCRETE STRUCTURES

Portland cement concrete structures shall conform to the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

The following Concrete Types are required for this project:

1) Structural Concrete (Bridge)
2) Structural Concrete (Bridge Footing)
3) Structural Concrete, Approach Slab Type N

GENERAL

Attention is directed to "Precast Concrete Quality Control" of these special provisions.

Attention is directed to "Slope Paving" of these special provisions regarding constructing a 4' x 6' test panel prior to placing the permanent slope paving.

Shotcrete shall not be used as an alternative construction method for reinforced concrete members unless otherwise specified.

When a roughened concrete surface is shown on the plans, the existing concrete surface shall be roughened to a full amplitude of approximately 1/4 inch by abrasive blasting, water blasting, or mechanical equipment.

Neoprene strip shall be furnished and installed at abutment backwall joint protection in conformance with the details shown on the plans, the provisions in the Standard Specifications, and these special provisions.

Furnishing and installing neoprene strip shall conform to the requirements for strip waterstops as provided in Section 51-1.145, "Strip Waterstops," of the Standard Specifications, except that the protective board will not be required.

PERMANENT STEEL DECK FORMS

Forms for the deck slabs between girders, at the option of the Contractor, shall either be constructed and removed as provided in Section 51-1.05, "Forms," of the Standard Specifications or shall be constructed and left in place in conformance with these special provisions.

Permanent steel deck forms and supports shall be steel conforming to the requirements in ASTM Designation: A 653/A 653M (Designation SS, Grades 33 through 80) having a coating designation G165. The forms shall be mortar-tight, true to line and grade, and of sufficient strength to support the loads applied.

Detailed working drawings for forms shall be submitted to the Engineer for approval in conformance with the provisions in Section 5 1.02, "Plans and Working Drawings," of the Standard Specifications. Three sets of drawings shall be submitted. These drawings shall show the grade of steel, the physical and section properties for all deck members, the method of support and grade adjustment, accommodation for skew, and methods of sealing against grout leaks.

Working drawings shall be submitted sufficiently in advance of the start of the affected work to allow time for review by the Engineer and correction by the Contractor of the drawings without delaying the work. Such time shall be proportional to the complexity of the work but in no case shall such time be less than 3 weeks after complete drawings and all support data are submitted.

The design of permanent steel deck forms shall be based on the combined dead load of the forms, reinforcement, and plastic concrete plus an allowance for all anticipated construction loads. The allowance for construction loads shall be not less than 50 psf. The combined dead load shall be assumed to be not less than 160 pcf for normal concrete and not less than 130 pcf for lightweight concrete.

Physical design properties shall be computed in conformance with the requirements of the AISI specification for the "Design of Cold Formed Steel Structural Members."

The maximum allowable stresses and deflections used in the design of steel forms shall be as follows:

A. Tensile stress shall not exceed 0.725 of the specified yield strength of the material furnished or 36,000 psi.

B. Deflection due to dead load shall not exceed 0.0056 of form span or 1/2 inch, whichever is less. In no case shall the dead load for deflection calculations be less than 120 psf total.

C. Form camber, used at the option of the Contractor, shall be based on the actual dead load condition. Camber shall not be used to compensate for deflection in excess of the allowable limits.

D. The design span of the form sheets shall be the clear span of the form plus 2 inches measured parallel to the form flutes.

Permanent steel deck forms shall not interfere with the movement at deck expansion joints.

The clearance between the surface of permanent forms and any bar reinforcement shall be not less than one inch. The configuration of the forms shall be such that the weight of deck slab is not more than 110 percent of the weight of the total deck slab as dimensioned on the plans.

Permanent steel deck forms shall be installed in conformance with the approved working drawings.

Form sheets shall not rest directly on the top of the girder flanges. Sheets shall be securely fastened to form supports and shall have a minimum bearing length of one inch at each end. Form supports shall be placed in direct contact with the flange of the girder. Attachment of supports shall be made by bolts, clips or other approved means.

Transverse deck construction joints shall be located at the bottom of a flute and 1/4 inch weep holes shall be field drilled at not less than 12 inches on center along the line of the joint.

Edges of predrilled holes for pipe hanger assemblies shall be smooth. Permanently exposed galvanized form surfaces that are abraded or damaged prior to installation shall be repaired by thoroughly wire brushing the damaged areas and removing all loose and cracked coating, after which the cleaned areas shall be painted with 2 applications of unthinned zinc-rich primer (organic vehicle type) conforming to the provisions in Section 91, "Paint," of the Standard Specifications. Aerosol cans shall not be used. Minor heat discoloration in area of welds need not be repaired.

MEASUREMENT AND PAYMENT

Except as otherwise provided, pay quantities of concrete in structures will be measured by the cubic yard in conformance with the dimensions shown on the plans or such other dimensions as may be ordered in writing by the Engineer. No deduction will be made for

the volume occupied by bar reinforcing steel, structural steel, prestressing materials or piles in the concrete.

The contract prices paid per cubic yard for the various types and classes of concrete in structures and structure approach slabs shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the concrete work, complete in place, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer, except as otherwise provided.

Full compensation for roughening existing concrete surfaces to a full amplitude of approximately 1/4 inch, where shown on the plans, shall be considered as included in the contract price paid per cubic yard for structural concrete, bridge and no separate payment will be made therefor.

Full compensation for furnishing and constructing permanent steel deck forms shall be considered as included in the contract price paid per cubic yard for structural concrete, bridge and no additional compensation will be allowed therefor.

Full compensation for public notification and airborne monitoring for deck crack treatment shall be considered as included in the contract price paid per cubic yard for structural concrete, bridge, and no additional compensation will be allowed therefor.

Full compensation for furnishing and constructing seal course concrete shall be considered as included in the contract price paid per cubic yard for structural concrete, bridge and no additional compensation will be allowed therefor.

PRECAST PRESTRESSED CONCRETE BRIDGE MEMBERS:

Precast reinforced concrete girders shall conform to the provisions in Section 51, "Concrete Structures," of the Standard Specifications.

GIRDER ERECTION

The Contractor shall submit to the Engineer working drawings and design calculations for GIRDER ERECTION Such drawings and design calculations shall be signed by an engineer who is registered as a Civil Engineer in the State of California. The working drawings and design calculations shall conform to the requirements in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The design calculations shall demonstrate that the abutment and wall capacities are not exceeded during the erection due to the surcharge loads imposed by the cranes, trailer and other contractor's construction equipment.

TEMPORARY SUPPORTS

The Contractor shall submit to the Engineer working drawings and design calculations for the temporary supports if required. Such 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 working drawings and design calculations shall conform to the requirements in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The number of sets of drawings and design calculations and times for review for temporary supports shall be the same as specified for falsework working drawings in Section 51-1.06A, "Falsework Design and Drawings," of the StandardSpecifications and these Special Provisions.

SPECIAL LOCATIONS

Attention is directed to Section 51-1.06A(3), "Special Locations," of the Standard Specifications. All reference to falsework in this section shall also apply to temporary support

REMOVING TEMPORARY SUPPORTS

Attention is directed to Section 51-1.06C, "Removing Falsework," of the Standard Specifications. All reference to falsework in this section shall also apply to temporary supports.

Before curing operations, the top surface of each member shall be given a coarse texture by brooming with a stiff bristled broom or by other suitable devices that will result in uniform transverse scoring. Surfaces noted to be given a coarse broom finish shall be cleaned of surface laitance and curing compound before placing deck concrete. Exposure of clean aggregate will not be required.

The anticipated deflection and method of accommodation of deflection of precast prestressed concrete girders, prior to the time the deck concrete is placed, shall be shown on the working drawings in conformance with the provisions in Section 5 1.02, "Plans and Working Drawings," of the Standard Specifications. The deflection shall include the following:

A. Anticipated upward deflection caused by the prestressing forces.

B. Downward deflection caused by the dead load of the girder.

C. Deflection caused by the creep and shrinkage of the concrete for the time interval between the stressing of the girders and the planned placement of the deck.

The deflection shall be substantiated by calculations that consider the ages of the girder concrete at the time of stressing and the Contractor's planned placement of the deck. Deflection calculations

shall be based on the concrete producer's estimate of the modulus of elasticity at the applicable concrete age.

Adjustments to accommodate girder deflections that occur prior to the time the deck concrete is placed may include revisions in bearing seat elevations, but the adjustments shall be limited by the following conditions:

A. The minimum permanent vertical clearance under the structure as shown on the plans shall not be reduced.

B. The profile grade and cross slope of the deck shall not be changed.

C. A minimum of two inch of deck slab concrete between the top of the precast girders and the deck slab reinforcement shall be maintained.

Girders with unanticipated girder deflection that do not comply with conditions A, B, and C will be rejected in conformance with the provisions in Section 6 1.04, "Defective Materials," of the Standard Specifications.

Adjustments to accommodate girder deflections will not be considered a change in dimensions. Full compensation for increases in the cost of construction, including increases in the quantity of deck or bearing seat concrete, resulting from adjustments to accommodate girder deflections 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.

The Contractor shall submit a girder erection plan to the Engineer for approval in conformance with the provisions in Section 5 1.02, "Plans and Working Drawings," of the Standard Specifications. The girder erection plan shall include procedures, details, and sequences for unloading, lifting, erecting, and installing temporary bracing, and shall be signed by an engineer who is registered as a Civil Engineer in the State of California. The Contractor shall allow 20 days for the review of the girder erection plan.

Temporary lateral bracing shall be provided, if required as determined by the engineer, for girders located over over Audie Murphy Ranch Bridge. The bracing shall be installed at a minimum at each end of each girder segment and at midspan. The bracing shall be in place prior to the release of the erection equipment from the girder and shall remain in place until 48 hours after the concrete diaphragms have been placed. The bracing shall be designed to prevent overturning of the girders prior to completion of the work and to resist the following lateral pressures applied at the top of the girder in either direction:

Structure Height, H (feet above ground)	Lateral Pressure (psf)
$0 < H \leq 30$	15
$30 < H \leq 50$	20
$50 < H \leq 100$	25
$H > 100$	30

MEASUREMENT AND PAYMENT

There will be no separate measurement and payment for furnishing, constructing, and removing temporary supports. It shall be considered as included in various items of which include temporary supports, and no additional compensation is allowed therefor.

Precast concrete members will be measured by the unit for furnishing precast concrete members of the various types and lengths shown in the bid proposal and by the unit for erecting the members as shown in the bid proposal. When various lengths or types of members are grouped together for payment purposes, the basis of the grouping will be shown in the bid proposal.

The contract unit price paid for furnish precast concrete members shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, including reinforcing and prestressing steel as required, and for doing all work involved in constructing and furnishing precast members at the site of the work complete and ready for erection, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

The contract unit price paid for erect precast concrete members shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in erecting precast members in place, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

SLIDING BEARINGS:

Sliding bearings consisting of elastomeric bearing pads lubricated with grease and covered with sheet metal shall conform to the following requirements:

A. Grease shall conform to the requirements of Society of Automotive Engineers AS 8660. A uniform film of grease shall be applied to the upper surface of the pads prior to placing the sheet metal.

B. Sheet metal shall be commercial quality galvanized sheet steel. The sheet metal shall be smooth and free of kinks, bends, or burrs.

C. Construction methods and procedures shall prevent grout or concrete seepage into the sliding bearing assembly.

MEASUREMENT AND PAYMENT

Full compensation for furnishing and placing sliding joints, shall be considered as included in the contract prices paid for the various items of concrete work and no additional compensation will be allowed therefor.

ELASTOMERIC BEARING PADS:

Elastomeric bearing pads shall conform to the provisions in Section 51-1.12H, "Elastomeric Bearing Pads," of the Standard Specifications.

MEASUREMENT AND PAYMENT

Full compensation for furnishing and placing elastomeric bearing pads shall be considered as included in the contract prices paid for the various items of concrete work and no additional compensation will be allowed therefor.

SEALING JOINTS:

Joints in concrete bridge decks and joints between concrete structures and concrete approach slabs must be sealed in conformance with the details shown on the plans, the provisions in Section 51, "Concrete Structures," of the Standard Specifications, and these special provisions.

MEASUREMENT AND PAYMENT

Joint seals and joint seal assemblies will be measured by the linear foot from end to end along the centerline of the completed seal including return sections at curb faces. Where individual seals are overlapped or are superimposed, each seal will be measured separately.

The contract prices paid per linear foot for joint seals and joint seal assemblies of the types and Movement Ratings listed in the contract items shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the joint seals and joint seal assemblies, including protecting, repairing, cleaning and saw cutting joints, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

STRUCTURE APPROACH SLABS:

GENERAL

Summary

This work includes constructing reinforced concrete approach slabs. Reinforced concrete approach slabs must comply with Section 51, "Concrete Structures," of the Standard Specifications.

MATERIALS

Concrete

Concrete for structure approach slabs must contain not less than 675 pounds of cementitious material per cubic yard and must either:

1. Cure for not less than 5 days before opening to public traffic, or

2. Comply with "Rapid Strength Concrete for Structures" of these special provisions.

Drainage Pads

Concrete for use in drainage pads must be minor concrete, except the concrete must contain not less than 505 pounds of cementitious material per cubic yard.

Geocomposite Drain

Geocomposite drain must consist of a manufactured core not less than 0.25 inch thick nor more than 2 inches thick with one or both sides covered with a layer of filter fabric that will provide a drainage void. The drain must produce a flow rate through the drainage void of at least 2 gallons per minute per foot of width at a hydraulic gradient of 1.0 and a minimum externally applied pressure of 3,500 psf.

The manufactured core must be one of the following:

1. Preformed grid of embossed plastic

2. Mat of random shapes of plastic fibers

3. Drainage net consisting of a uniform pattern of polymeric strands forming 2 sets of continuous flow channels

4. System of plastic pillars and interconnections forming a semirigid mat

The core material and filter fabric must be capable of maintaining the drainage void for the entire height of geocomposite drain. Filter fabric must be integrally bonded to the side of the core material with the drainage void.

Filter Fabric

Filter fabric must comply with the specifications for Class A filter fabric in Section 88-1.02, "Filtration," of the Standard Specifications.

Treated Permeable Base

Treated permeable base under structure approach slabs must be an asphalt treated permeable base or a cement treated permeable base as specified in Section 29, "Treated Permeable Bases," of the Standard Specifications.

Steel angles, plates, and bars at the concrete barrier joints must comply with Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications.

Hardboard and expanded polystyrene must comply with Section 51-1.12D, "Sheet Packing, Preformed Pads, and Board Fillers," of the Standard Specifications.

CONSTRUCTION

Geocomposite Drain

Install the geocomposite drain with the drainage void and the filter fabric facing the embankment. The fabric facing the embankment side must overlap a minimum of 3 inches at all joints and wrap around the exterior edges a minimum of 3 inches beyond the exterior edge. If additional fabric is needed to provide overlap at joints and wraparound at edges, the added fabric must overlap at least 6 inches and be attached to the fabric on the geocomposite drain.

Place core material manufactured from impermeable plastic sheeting having non-connecting corrugations with the corrugations approximately perpendicular to the drainage collection system.

If the fabric on the geocomposite drain is torn or punctured, replace the damaged section completely or repair it by placing a piece of fabric that is large enough to cover the damaged area and provide a 6-inch overlap.

If asphalt treated permeable base is placed around the slotted plastic pipe at the bottom of the geocomposite drain, it must be placed at a temperature of not less than 180 °F nor more than 230 °F.

Filter Fabric

Place filter fabric immediately after grading and compacting the subgrade to receive the filter fabric.

Align, handle, and place filter fabric in a wrinkle-free manner under the manufacturer's recommendations.

Adjacent borders of the filter fabric must be overlapped from 12 inches to 18 inches or stitched. The preceding roll must overlap the following roll in the direction the material is being spread or

must be stitched. When the fabric is joined by stitching, it must be stitched with yarn of a contrasting color. The size and composition of the yarn must be as recommended by the fabric manufacturer. The number of stitches per 1 inch of seam must be 5 to 7.

Equipment or vehicles must not be operated or driven directly on the filter fabric.

Treated Permeable Base

Construct treated permeable base under Section 29, "Treated Permeable Bases," of the Standard Specifications and these special provisions.

Place asphalt treated permeable base at a temperature of not less than 200 °F nor more than 250 °F. Do not use material stored in excess of 2 hours in the work.

Asphalt treated permeable base may be spread in 1 layer. Compact with a vibrating shoe type compactor or a roller weighing at least 1.5 tons but not more than 5 tons. Begin compacting base as soon as the mixture has cooled sufficiently to support the weight of the equipment without undue displacement.

Cement treated permeable base may be spread in 1 layer. Compact base with a vibrating shoe type compactor or with a steel-drum roller weighing at least 1.5 tons but not more than 5 tons. Compaction must begin within one-half hour of spreading and must consist of 2 complete coverages of the cement treated permeable base.

Finishing Approach Slabs

Finish and treat the top surface of approach slabs under Section 51-1.17, "Finishing Bridge Decks," of the Standard Specifications. Edges of slabs must be edger finished.
Cure approach slabs with pigmented curing compound (1) under the specifications for curing structures in Section 90-7.01B, "Curing Compound Method," of the Standard Specifications.

MEASUREMENT AND PAYMENT

Structural concrete, approach slab will be measured and paid for in conformance with the provisions in Section 51-1.22, "Measurement," and Section 51-1.23, "Payment," of the Standard Specifications and these special provisions.

Full compensation for the structure approach drainage system including geocomposite drain, plastic pipe, and drainage pads, treated permeable base, and filter fabric shall be considered as included in the contract price paid per cubic yard for structural concrete, approach slab of the type shown in the bid proposal, and no additional compensation will be allowed therefor.

ARCHITECTURAL FINISH (STONE VENEER):

Stone Veneer architectural finish shall be applied to concrete surfaces with a mortar bond coat either directly to the surface or to a mortar bedding on the surface as shown on the plans and in conformance with these special provisions.

MATERIALS

Stone Veneer product shall be selected by the Engineer.

REFEREE SAMPLE

The architectural Finish shall match the texture, color and pattern of the referee sample located with the County.
Coronado Stone Products 11191 Calabash Avenue Fontana CA 92337, Phone: 800-847-8663; Fax: 909-357-7362 or equivalent from any other vendor.

TEST PANEL

A test panel at least 4' x 4' in size shall be successfully completed at a location approved by the Engineer before beginning work on architectural textures. The test panel shall be constructed and finished with the materials, tools, equipment, and methods to be used in constructing the architectural texture. If ordered by the Engineer, additional test panels shall be constructed and finished until the specified finish, texture, and color are obtained, as determined by the Engineer.

The test panel approved by the Engineer shall be used as the standard of comparison in determining acceptability of architectural texture for concrete surfaces.
Mortar shall be a proprietary, premixed packaged blend of cement, lime, and sand, without color, that requires only water to prepare for use as stone veneer mortar. Packages of premix shall bear the manufacturer's name, brand, weight, and color identification. The manufacturer's recommended mixing proportions and procedures shall be furnished to the Engineer.

PREPARING SURFACES

Surfaces of concrete against which stone or bedding is to be placed shall be roughened and cleaned, exposing the stone aggregate, and shall be flushed with water and allowed to dry to a surface dry condition immediately prior to laying the stone.
Stone shall be mechanically anchored to the concrete backing with corrosion protected metal ties consisting of at least 16 gage sheet metal anchors and at least 12 gage wire placed in the middle third of the stone. Metal ties shall be of standard manufacture for stone masonry.
Mortar bedding shall be used where necessary to straighten the concrete substrate. Mortar bedding shall be not less than 3/4 inch thick.

BOND COAT

A bond coat of mortar shall be floated onto concrete surfaces with sufficient pressure to cover the surface evenly with no bare spots and to fill anchor grooves. Organic adhesive shall not be used for bond coat. The surface area to be covered with bond coat shall be no greater than the area that can be covered with stone while the bond coat is still plastic. Bond coat mortar shall be combed with a notched trowel within 10 minutes before installing stone. Stone shall not be installed on a skinned over mortar bond coat.

LAYING STONE

Stone shall be thoroughly wetted before laying. Wetted stone shall be drained adequately to prevent floating of the stone on the mortar bed. Sprinkling the water onto stone is not an acceptable method for wetting.

The stone shall be back buttered immediately before installing the units and shall be firmly pressed into the freshly notched bond coat. Stone shall be tapped to a true surface and to obtain 100 percent coverage by mortar on the back of each unit. All head and bed joints shall be filled solid with mortar. Head joints shall be shoved tight. Joints shall be straight and of uniform and equal width. Exposed joints shall be tooled concave.

The finished surface shall not vary more than 1/8 inch in 8 feet from the finished surface shown on the plans. There shall be no offsets in adjoining units.

The facing shall be cured by keeping the stone continuously damp for at least 72 hours after laying. Curing materials shall not stain the stone, mortared joints, or surrounding concrete surfaces.

Surfaces of concrete, completed masonry, and other such materials exposed to view shall be protected from spillage, splatters, and other deposits of cementitious materials from masonry construction. All such deposits shall be removed without damage to the materials or exposed surfaces. Stains, efflorescence, laitance, splashes, or spots on the faces of masonry exposed to view shall be removed. Cleaning agents shall conform to the stone manufacturer's recommendations. Abrasive blast cleaning methods will not be permitted on surfaces of stone.

MEASUREMENT AND PAYMENT

Architectural finish (stone veneer) will be measured and paid for by the square foot.

The contract price paid per square foot for architectural finish (stone veneer) of the types listed in the bid proposal shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in stone veneer, complete in place, including mortar bedding and bond coat, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

REINFORCEMENT:

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

The provisions in "Welding Quality Control" of these special provisions do not apply to resistance butt welding.

MEASUREMENT AND PAYMENT

Quantities of bar reinforcing steel as shown on the plans or directed by the Engineer will be determined from computations based upon the calculated weight of the reinforcing steel placed in accordance with these specifications.

Unless otherwise provided, bar reinforcing steel placed as shown on the plans or directed by the Engineer, will be paid for at the contract price per pound for bar reinforcing steel.

The contract price paid per pound for the types and classes of bar reinforcing steel shown on the plans shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in furnishing and placing the bar reinforcing steel complete in place, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

WELDED STEEL PIPE CASING AND UTILITY CONDUIT SUPPORTS:

Welded steel pipe casings through bridges and under approach slabs shall be of the size shown and shall conform to the provisions in Section 70, "Miscellaneous Facilities," of the Standard Specifications and these special provisions.

Unless otherwise shown on the project plans, casings shall be installed at each abutment, and casings shall be extended to the greater of: (1) 5 feet beyond the approach slab, (2) 5 feet beyond the end of the adjacent wingwall, or (3) 20 feet beyond the abutment.

WORKING DRAWINGS

Working drawings for temporary support of casing pipe at the abutments shall be submitted for approval in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings" of the Standard Specifications.

MATERIALS

Casing pipe

Casing pipe shall be welded steel pipe conforming to the provisions in Section 70-1.02B, "Welded Steel Pipe," of the Standard

Specifications, except that the pipe shall be treated in accordance with the following requirements, prior to shipping. Exterior surfaces of welded steel pipe shall be cleaned and coated in conformance with the requirements in ANSI/AWWA C213 or at the option of the Contractor, cleaned, primed, and coated in accordance with specifications of ANSI/AWWA C214.

Pipe wrapping tape

Wrapping tapes for pipe in contact with the ground shall be a pressure sensitive polyvinyl chloride or polyethylene tape having thickness of 50 mils, minimum.

Pipe hanger assembly

Pipe hanger assembly shall consist of concrete clevis plate or embedded steel welded linked eye rods, adjustable steel yoke, cast iron pipe roller, steel roller rod, and hex nuts. All parts shall be galvanized. The pipe hanger assembly shall be suitable for the type and size of pipe installed and shall be as shown on the plans.

All steel cover plates, steel hangers, anchor bolts, pipe clamps, nuts and bolts, and other fittings shall be suitable for the type and size of the welded steel pipe casing and conform to the provisions in Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications.

CONSTRUCTION

If a blockout is provided in the bridge abutment wall for casing pipe, the space between the casing pipe and bridge abutment wall shall be filled with mortar conforming to the provisions in Section 51-1.135,"Mortar" of the Standard Specifications.

Openings for utilities through bridge superstructure concrete shall either be formed or shall consist of pipe sleeves.

Wrapping and coating pipe

Damaged coating on steel pipe casing in contact with earth shall be wrapped as follows:

A. Pipe to be wrapped shall be thoroughly cleaned and primed as recommended by the tape manufacturer.

B. Tapes shall be tightly applied with 1/2 uniform lap, free from wrinkles and voids to provide not less than a 100–mil thickness.

C. Field joints and fittings for wrapped pipe shall be covered by double wrapping 50–mil thick tape. Wrapping at joints shall extend a minimum of 6 inches over adjacent pipe coverings. Width of tape for wrapping fittings shall not exceed 2 inches. Adequate tension shall be applied so tape will conform closely to contours of joint.

Where a welded steel pipe casing passes through the abutment wall, the welded steel pipe casing shall be additionally wrapped with 2 layers of 15-pound asphalt-felt building paper, securely taped or wired in place.

MEASUREMENT AND PAYMENT

The contract lump sum price paid for welded steel pipe casing and utility conduit supports shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in the constructing the welded steel pipe casings and utility conduit supports, complete in place, including furnishing and installing steel pipe casings, steel pipe hangers, steel brackets, bars, rods, nuts and washers, concrete inserts, steel cover plates, galvanizing, mortar and building paper, and other fittings, as shown on the plans, as specified in the Standard Specifications, and these special provisions, and as directed by the Engineer.

CONCRETE SLOPE PROTECTION (SLOPE PAVING):

Concrete slope protection shall be placed or constructed in conformance with the provisions in Section 72-6, "Slope Paving," of the Standard Specifications and these special provisions.

The location of construction joints shall be subject to the approval of the Engineer. Placement of slope protection shall be scheduled so that the work, including placement, finishing, and application of curing, is completed in any section bounded by permissible construction joints on the same day that the work is started in that section.

Areas of slope paving shown on the plans to have a grooved finish shall be scored by dragging a finishing tool over the struck-off surface or by any other means which will result in a surface conforming to the details shown on the plans.

Prior to placing the permanent slope paving, the Contractor shall construct a test panel at least 4' x 6' at the site for approval by the Engineer. The test panel shall be constructed of the same materials as are proposed for the permanent work and shall be finished and cured as specified for the permanent work. Additional test panels shall be constructed as necessary until a panel is produced which conforms to the requirements herein, before constructing other slope paving.

MEASUREMENT AND PAYMENT

The contract unit price paid per square foot for concrete slope protection (slope paving) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing concrete slope paving including cutoff walls, complete in place, including excavation and backfill, dewatering, as shown on the plans, as

specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

MISCELLANEOUS METAL (BRIDGE):

Miscellaneous metal (bridge) shall conform to the provisions for miscellaneous bridge metal in Section 75, "Miscellaneous Metal," of the Standard Specifications and these special provisions.

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

Pipe Hanger Assembly (including all appurtenances) for SCE, Verizon, CATV and Miscellaneous as shown on the contract plans.

MEASUREMENT AND PAYMENT

Miscellaneous iron and steel, miscellaneous bridge metal, miscellaneous metal (restrainer) and pumping plant metal work will be measured by the pound.

The contract prices paid per pound, for miscellaneous metal (bridge) of the types shown in the bid proposal, shall include full compensation for furnishing all labor, materials (including non-metallic materials for restrainer units), tools, equipment and incidentals, and for doing all the work involved in furnishing and installing the miscellaneous metal, complete in place, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

TUBULAR HAND RAILING:

Tubular handrailing shall conform to the provisions in Section 83-1, "Railings," of the Standard Specifications.

Drilling and bonding threaded rods shall conform to the details shown in the plans, the provisions in Section 83-2.02D(1), "General," of the Standard Specifications, and these special provisions. Threaded rods shall conform to Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications.

MEASUREMENT AND PAYMENT

The tubular handrailing will be measured by the linear foot from end to end along the face of the railing, including end and intermediate posts, and with no deductions for gaps in railing for lighting and sign supports.

The contract prices paid per linear foot for Tubular Handrailing shown in the bid proposal shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the railings, complete in place, including, but not limited to, excavation,

backfill and disposal of surplus material, concrete and reinforcing steel, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

Full compensation for furnishing and installing resin capsule anchors, for furnishing threaded rods, base plates, and associated hardware, for constructing the mortar pad, and for drilling holes and bonding threaded rods, shall be considered as included in the contract price paid per linear foot for tubular handrailing, and no separate payment will be allowed therefor.

SEISMIC EXPANSION JOINT ASSEMBLY:

GENERAL

SHOP DRAWINGS & MATERIALS

The Contractor shall submit complete working drawings for the waste waterline and waterline installation, and supports to the Engineer on conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications.

The working drawings shall be supplemented by the manufacturer's descriptive data, performance data, and installation instructions for the following:

A. Seismic expansion joint assemblies

Data for the seismic expansion joint assemblies shall include the preset dimension for each expansion assembly installation.

Six (6) copies of all shop drawings and material submittals shall be submitted for approval. Black line prints are required. Each submittal shall have the project name and number as it appears on the title sheet of the drawings. Submittals smaller than 8-1/2 by 11 inches shall be secured to paper 8-1/2 by 11 inches.

Each seismic expansion assembly shall consist of a sleeve type expansion joint and an integral ball joint at each end with insulated flange connections to the supply line. Seismic expansion joints shall be manufactured of ductile iron and shall conform to the requirements in ANSI/AWWA C153/A21.53. Seismic expansion assemblies for pipe sizes NPS 24 and smaller shall be rated for a minimum pressure of 350 psi, and seismic expansion assemblies for pipe sizes greater than NPS 24 shall be rated for a minimum pressure of 250 psi. Seismic expansion assemblies shall be capable of deflecting and expanding simultaneously to an amount of not less than a 15-degree angular deflection at each end of the unit and a total of +/- 4-inches axial movement.

Seal gaskets for sleeve expansion shall be retained in the grooved outer casing and shall have a leak proof design capable of withstanding a working pressure of 350 psi. The expansion sleeve shall have a limiting stop collar to keep the sleeve from separating. The ball joints for the seismic expansion assembly

shall be contained in flanged retainers with seal gaskets that shall conform to the specifications.

Expansion joint shall be lined with a minimum of 15 mils of fusion bonded epoxy conforming to the requirements in ANSI/AWWA C213 and shall be holiday tested with a 1500 V spark test conforming to the requirements in ANSI/AWWA C213.

All external surfaces shall be coated with a catalyzing coal tar epoxy conforming to the material requirements of AWWA C210.

MEASUREMENT AND PAYMENT

The quantity of couplings and seismic expansion assembly units will be measured by the unit as determined from actual count in place.

The contract unit price paid for coupling units are included in the contract unit price paid per linear feet of 12" dia waterline or 24" dia wwaterline, and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the couplings and seismic expansion assembly units, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract unit price paid for seismic expansion joint assembly shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the couplings and seismic expansion assembly units, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for installation blind flanges for the installation of waterlines is considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

METAL BEAM GUARD RAILING:

Metal beam guard railing shall be constructed in conformance with the provisions in Section 83-1, "Railings," of the Standard Specifications and these special provisions.
Attention is directed to "Order of Work" of these special provisions.

Line posts shall be wood, steel, or plastic. Blocks shall be wood or plastic.

Metal beam guard railing elements and required backup plates, terminal sections, end caps, and return caps shall conform to the requirements of Type 2 W-Beam as shown in AASHTO Designation: M 180.

MEASUREMENT AND PAYMENT

The contract unit price paid per linear foot for metal beam guard shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing metal beam guard railing, complete in place, including excavation, backfill and disposal of surplus material, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

TERMINAL SYSTEM (ALTERNATIVE FLARED SYSTEM):

Alternative flared terminal system shall be furnished and installed as shown on the plans and in conformance with these special provisions.

The allowable alternatives for a flared terminal system shall consist of one of the following or a Department approved equal.

> TERMINAL SYSTEM (TYPE SRT) - Terminal system (Type SRT) shall be an SRT-350 Slotted Rail Terminal (8-post system) as manufactured by Trinity Industries, Inc., and shall include items detailed for terminal system (Type SRT) shown on the plans. The SRT-350 Slotted Rail Terminal (8-post system) can be obtained from the manufacturer, Trinity Industries, Inc., P.O. Box 99, 950 West 400S, Centerville, UT 84014, telephone (800) 772-7976.

The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall certify that the terminal systems furnished conform to the contract plans and specifications, conform to the prequalified design and material requirements, and were manufactured in conformance with the approved quality control program.

Terminal systems shall be installed in conformance with the manufacturer's installation instructions and these requirements. Each terminal system installed shall be identified by painting the type of terminal system in neat black letters and figures 2 inches high on the backside of the rail element between system posts numbers 4 and 5.

For terminal system (Type SRT), the steel foundation tubes with soil plates attached shall be, at the Contractor's option, either driven, with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes shall be backfilled with selected earth, free of rock, placed in layers approximately 4 inches thick and each layer shall be moistened and thoroughly compacted. The wood terminal posts shall be inserted into the steel foundation tubes by hand and shall not be driven. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts shall be coated with a grease which will not melt or run at a temperature of 149° F or less. The edges

of the wood terminal posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.
Surplus excavated material remaining after the terminal system has been installed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

MEASUREMENT AND PAYMENT

The contract unit price paid for alternative flared terminal system shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing alternative flared terminal system, complete in place, including excavation, backfill and disposal of surplus material, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

TRANSITION RAILING (TYPE WB):

Transition railing (Type WB) shall be furnished and installed in conformance with details shown on the plans, the provisions in Section 83-2, "Barriers," of the Standard Specifications and these special provisions.

The 10-gage rail elements shall conform to the requirements of Class B, Type 1 thrie beam guard railing as shown in AASHTO Designation: M 180. End caps shall conform to the requirements of Class A, Type 1 thrie beam guard railing as shown in AASHTO Designation: M 180.
The 10-gage rail elements shall conform to Class B, Type 2 thrie beam guard railing as shown in AASHTO Designation: M 180. Other rail elements including end caps shall conform to the requirements of Class A, Type 2 thrie beam guard railing as shown in AASHTO Designation: M 180.

Surplus excavated material remaining after the transitional railing (Type WB) has been constructed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

MEASUREMENT AND PAYMENT

The contract unit price paid for transition railing (Type WB) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing transition railing (Type WB), complete in place, including drilling holes for wood posts, driving posts, backfill, and disposal of surplus material, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

CONCRETE BARRIER TYPE 26:

Concrete barriers shall conform to the provisions in Section 83-2, "Barriers," of the Standard Specifications and these special provisions.

MEASUREMENT AND PAYMENT

Concrete barriers will be measured by the linear foot. The contract prices paid per linear foot for Concrete Barrier Type 26 (Mod) listed in the bid proposal shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the concrete barriers, complete in place, including bar reinforcing steel, steel dowels and drilling and bonding dowels in structures, hardware for steel plate barrier, miscellaneous metal, excavation, backfill, and disposing of surplus material and for furnishing, placing, removing and disposing of the temporary railing for closing the gap between existing barrier and the concrete barrier being constructed, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

TELEPHONE AND ELECTRICAL CONDUIT SYSTEM:

Telephone Duct System and Electrical Duct System to be installed on the bridge per contract plans shall be per the requirements of telephone and electrical companies unless otherwise specified.

MEASUREMENT AND PAYMENT

The contract lumpsum price paid for Telephone Duct System and Electrical Duct System shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing Electrical Duct System, complete in place, including installing steel hangers, steel brackets, steel cover plates, mortar and building paper, and other fittings, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

TRAFFIC SINAGE AND SIGNAL

ROADSIDE SIGN (INSTALL/RELOCATE/REMOVE/SALVAGE):

Roadside signs (install/relocate/remove) shall conform to the provisions in Section 56 of the Standard Specifications and as directed by the Engineer.

Roadside signs with steel posts shall be installed at the location shown on the construction plans or where directed by the Engineer.

Salvaged roadside signs shall be delivered to the County Maintenance Yard located at 2950 Washington Street, Riverside, CA 92504 or as directed by the Engineer.

Sign furnished by the Contractor shall be of the standard size specified in the State of California Department of Transportation

Sign Specification Sheets, unless otherwise indicated on the construction plans.

Sheeting shall be guaranteed against defects for a period of ten years from the date of fabrication.

The base metal shall be new aluminum, 0.08 gauge, of alloys 6061-T6 or 5052-H38 conforming to the requirements of ASTM Designation: B209.

Any reflective sheeting supplied as a part of this contract, whether as a legend or background, shall be FHWA FP-85 Type IIA or AASHTO M268 Type III.

Reflective sheeting shall be applied to the sign by a method approved by the manufacturer of the sheeting and shall produce a durable bond equal to or greater than the strength of the reflective sheeting. No air pockets or bubbles shall exist between the sheeting and aluminum backing.

The reflective material and screening inks or overlay film shall be graffiti proof. The graffiti proofing method shall be supplied by and/or approved by the sheeting manufacturer. Neither the color nor the reflective intensity of the finished sign shall be significantly diminished by the use of graffiti remover when used in a manner approved by the Transportation Department in conjunction with the sheeting manufacturer. Any signs graffitied by over the counter spray paint or marking pens, which fail to be restored, shall be replaced by the sign sheeting manufacturer.

All letters and numerals shall be in accordance with the "Standard Alphabet of Highway Signs" as used by the State of California, Department of Transportation.

All signs shall be installed using hex head bolts, washers, nuts and jam nuts in accordance with Standard Plans RS2 or as directed by the Engineer.

The contract unit prices bid per each for such items shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work including all necessary concrete, excavation and backfill as specified in the Standard Specification and these Special Provisions and no additional compensation will be allowed therefor.

DELINEATORS (CLASS I, TYPE Q):

Delineators shall conform to the provisions of Section 82 of the Standard Specifications and shall be installed at the locations shown on the plans or where directed by the Engineer.

Delineators shall be Class 1, Type Q.

The contract unit bid price paid per each for delineators shall included full compensation for furnishing all labor, materials, tools, and equipment and no additional compensation will be allowed therefore.

REMOVE TRAFFIC STRIPE AND PAVEMENT MARKING:

Where blast cleaning/grinding is used for the removal of painted/thermoplastic traffic stripes and pavement markings or for removal of objectionable material, and such removal operation is being performed within 10 feet of a lane occupied by public traffic, the residue including dust shall be removed immediately after contact between the sand and the surface being treated. Such removal shall be by wet abrasive blasting, hydro-blasting or vacuum blasting, and shall comply with AQMD regulations.
Blast cleaning/grinding for removal of traffic stripes shall be feathered out to irregular and varying widths.

Pavement markings shall be removed by blast cleaning/grinding a rectangular area, rather than just lettering or markings, so the old message cannot be identified.

After removal of traffic stripes and pavement markings, a fog seal coat shall be applied in conformance with the provisions in Section 37, "Bituminous Seals" of the Standard Specifications and the following:

If removal of existing striping is performed more than 24 hours prior to final striping, the Contractor shall place reflective temporary striping tape throughout the limits of sandblasting, to provide channelization of traffic, for all lanes of travel.

Temporary striping tape shall be removed subsequent to final striping.

Nothing in these Special Provisions shall relieve the Contractor from his responsibilities as provided in Section 7-1.09, "Public Safety" of the Standard Specifications.

Full compensation for conforming to the provisions in this section, not otherwise provided for shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

THERMOPLASTIC CROSSWALK AND PAVEMENT MARKING:

Thermoplastic crosswalk and pavement markings shall conform to the provisions in Sections 84-1, "General," and 84-2, "Thermoplastic Traffic Stripes and Pavement Markings," of the Standard Specifications and these Special Provisions.

At the option of the Contractor, STAMARK Brand Pavement Tape, Pliant Polymer Grade, manufactured by the 3M Company; or Cata-Tile Elastoplastic Roadmarking Tile, manufactured by the Cataphote

Division of the Ferro Corporation; or STAMARK Brand Pavement Tape, Bisymmetric 1.75 Grade, manufactured by the 3M Company, may be placed instead of the thermoplastic crosswalk and pavement markings specified herein. Pavement tape and roadmarking tile, if used, shall be installed in accordance with the manufacturer's specifications. If pavement tape or roadmarking tile is placed instead of thermoplastic crosswalk and pavement markings, the pavement tape or roadmarking tile will be measured and paid for as thermoplastic crosswalk and pavement markings.

Payment: The contract unit bid price paid per square foot for Thermoplastic Crosswalk And Pavement Marking shall be considered as full compensation for furnishing all labor, materials, tools, equipment, and incidentals and doing all the work necessary to place the pavement markings complete in place including the removal of conflicting pavement markings and no additional compensation will be allowed therefor.

PAINT TRAFFIC STRIPE:

Painting traffic stripe shall conform to the provisions in Sections 84-1, "General", 84-3, "Painted Traffic Stripes and Pavement Markings" and 84-3.05, "Application" of the Standard Specifications and these Special Provisions.

Traffic striping shall be applied in two coats with airless equipment and shall be performed with a roadliner truck mounted striping machine. Where the configuration or location of a traffic stripe is such that the use of a roadliner truck mounted striping machine is unsuitable, traffic striping and glass spheres may be applied by other methods and equipment approved by the Engineer.

Newly painted traffic striping shall be protected from damage by public traffic or other causes until the paint is thoroughly dry. Any newly painted traffic striping which are damaged as a result of the construction, including wheel markings by public traffic and the construction equipment, shall be repainted by the Contractor and any associated removals shall be performed as called for in these Special Provisions.

Payment: The contract price paid per linear foot for Paint Traffic Stripe (2 Coats) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in painting traffic stripe (regardless of the number, widths, and types of individual stripes involved in each traffic stripe) including any necessary cat tracks, dribble lines any layout work, complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

PAVEMENT MARKER (REFLECTIVE):

Pavement markers shall conform to the provisions in Section 85, "Pavement Markers" of the Standard Specifications and these Special Provisions.

Pavement markers shall be placed to the line established by the Engineer. All additional work necessary to establish satisfactory lines for markers shall be performed by the Contractor.

Pavement markers shall be installed where indicated on the plans in accordance with the indicated striping detail. Refer to Standard Plans A20-A through A20-D for striping and markings details.

Markers removal shall be performed by a method approved by the Engineer. Any pavement scarring resulting from the markers removal shall be repaired to the satisfaction of the Engineer.

Payment for furnishing and placing Pavement Markers will be at the unit price bid and shall include full compensation for furnishing all labor, tools, materials, equipment and no additional compensation will be allowed therefor.

SIGNAL AND LIGHTING:

New signal shall be installed at the intersection of Goetz Road and Newport Road, and existing signal at the intersection of Goetz Road and Canyon Lake Drive shall be modified per standard specification, these special provisions, as shown on the plans and as directed by the Engineer.

Furnishing and installing traffic signal and highway lighting systems, and payment shall conform to the provisions in Section 86, "Signals, Lighting and Electrical Systems", of the latest edition Standard Specifications and these Special Provisions.

Contractor shall remove and salvage existing signal from the intersection of Goetz Road and Normandy Road.

Full compensation, except as otherwise provided herein, for removing and salvaging signal shall be paid for on a lump sum basis, and no additional compensation will be allowed therefor.

Full compensation for excavating and backfilling to removing signal foundation or any other component shall be considered as included in the lump sum price for Earthwork/Roadway excavation, and no additional compensation will be allowed therefor.

START OF WORK

Location where signalization and highway lighting work is to be performed:

LOCATION		AREA
Newport Road and Goetz Road (New Signal)		Cities of Canyon Lake and Menifee
Goetz Road and canyon Lake Drive, (modification)		City of Canyon Lake
Goetz Road and Normandy road (Removal and Salvage)		City of Canyon Lake

COUNTY FURNISHED EQUIPMENT

County furnished equipment shall conform to the provisions in Section 6-1.02, "State Furnished Materials", of the Standard Specifications and these Special Provisions.

The County of Riverside will furnish the following equipment and materials to the Contractor for installation:

1. Standards, Steel Pedestals, Posts and Anchor Bolts
2. 10' Galvanized Steel IISNS Mast Arms

The Contractor shall deliver existing removed signal to salvage, and pick up County furnished equipment and materials from the following locations, or as directed by the Engineer, and transport them to the project site(s):

Traffic Signal Shop
Riverside County
Transportation Dept.
McKenzie Highway Operations
Center
2950 Washington Street
Riverside, California 92504
Telephone (951) 955-6899

Any County furnished equipment that is damaged after the Contractor has taken possession of the item shall be repaired to the satisfaction of the Engineer. If the damaged equipment is considered irreparable, it shall be replaced meeting the requirements stated in the Standard Specifications and these special provisions at the Contractor's cost.

EQUIPMENT ORDERS

The Contractor shall furnish all equipment and materials specified in plans and these special provisions that are not furnished by the County. All equipment shall be new and purchased by the Contractor for this project only.

The Contractor shall furnish the Engineer written statements from vendors stating that they have accepted the order for the said equipment within twenty-one (21) calendar days of the date that the County of Riverside Board of Supervisors awarded this contract. Delay in equipment delivering shall not be considered as justification for the suspension of the construction contract.

EQUIPMENT LIST AND DRAWINGS

Equipment list and drawings shall conform to the provisions in Section 86-1.04, "Equipment List and Drawings", of the Standard Specifications and these Special Provisions.

The Contractor shall furnish four complete cabinet wiring diagrams for each furnished controller assembly, battery backup system, video detection system, and emergency vehicle preemption system. The cabinet wiring diagram shall include an approximately 6" x 8" or larger schematic drawing of the project intersection, which shall include the following information, at a minimum:

1. North arrow
2. Street names
3. Pavement delineation and markings
4. Signal poles
5. Traffic signal heads with phase designations
6. Pedestrian signal heads with phase designations
7. Loop detectors with input file designations

WARRANTIES, GUARANTIES, INSTRUCTION SHEETS, AND MANUALS

Warranties, guaranties and instruction sheets shall conform to the provisions in Section 86-1.05, "Warranties, Guaranties and Instruction Sheets", of the Standard Specifications and these Special Provisions.

The LED modules supplied shall have five (5) years of manufacturer warranty.

The Battery Backup System (BBS) shall have two (2) years of manufacturer warranty for parts and labor on the BBS from date of acceptance by the County. BBS batteries shall be warranted for full replacement for two (2) years from date of purchase. BBS battery data sheet(s) shall be provided to the Engineer.

The Video Detection System shall have three (3) years of manufacturer warranty. During the warranty period, technical support shall be available from the supplier via telephone within 4 hours of the time a call is made by a user, and this support shall be available from factory-certified personnel or factory-certified installers.

The contractor shall furnish the Engineer with the manufacturer's standard written warranty pertaining to defects in materials and workmanship for all equipment furnished by the Contractor.

The Contractor shall furnish two sets of user, operation, and maintenance manuals written in English on all equipments and components furnished for the signal and lighting systems.

MAINTAINING EXISTING AND TEMPORARY ELECTRICAL SYSTEMS

Maintaining existing and temporary electrical systems shall conform to the provisions in Section 86-1.06 "Maintaining Existing and Temporary Electrical Systems", of the Standard Specifications and these Special Provisions.

The Contractor shall request prior authorization for each traffic signal system shutdown from the Engineer and coordinated traffic signal system shutdown through the Engineer. Traffic signal system shutdowns shall be limited to periods between the hours of 9:00 A.M. and 3:00 P.M.

The Contractor may request authorization from the Engineer to use temporary overhead conductors for temporary traffic signal operation.

Temporary "Stop" signs furnished and installed shall be 48 inches in size.

Temporary "Stop Ahead" signs furnished and installed shall be equipped with portable flashing beacons as directed by the Engineer.

During beacon shutdowns, existing flashing beacons shall be equipped with portable flashing beacons. Portable flashing beacons shall conform to the provisions in Section 12-3.05, "Portable Flashing Beacons".

If directed by the Engineer, the contractor shall furnish, connect, and maintain a generator to keep traffic signal or flashing beacon system running in normal operation. The Contractor shall coordinate and cooperate with the County's traffic signal operation division in all matters pertaining to the operation of existing traffic signal equipment.

Removing, reinstalling or salvaging shall conform to provisions in Section 86-7 "Removing, Reinstalling or Salvaging Electrical Equipment", of the Standard Specifications and these Special Provisions.

FOUNDATIONS

Foundations shall conform to the provisions in Section 51, "Concrete Structures", and Section 86-2.03, "Foundations", of the Standard Specifications and these Special Provisions.

Portland cement concrete shall conform to Section 90-10, "Minor Concrete", of the Standard Specifications and shall be Class 3 except pole foundations shall be Class 2.

The Contractor shall construct the controller cabinet foundation per Standard Plans.

All foundation concrete shall be vibrated to eliminate air pockets.

Costs to install foundations for controller assemblies, service pedestals, posts, standards, pedestals and all other traffic signal facilities, shall be considered to be included in the lump sum price paid for the traffic signal installation, and no additional compensation shall be allowed therefor.

STANDARDS, STEEL PEDESTALS AND POSTS

Standards, steel pedestals, and posts shall conform to the provisions in Section 86-2.04, "Standards, Steel Pedestals and Posts", of the Standard Specifications and these Special Provisions.

Type 1A standards shall be spun aluminum unless shown otherwise on the construction plans.

Signal mast arms shall be installed in accordance with the "Signal Arm Connection Details" of the Standard Plans unless specified otherwise on the plans.

Internally Illuminated Street name sign (IISNS) mast arm shall be 10 foot long galvanized steel mast arm with four (4) mounting taps constructed to prevent deformation or failure when subjected to 100 mph wind loads. IISNS mast arm shall extend from the shaft of the pole above and parallel to the signal mast arm in accordance with County Standard No. 1200. A set-bolt /set-screw shall be used to assure the mast arm will not change position after it is installed and aligned.

If required by the serving electric utility, and confirmed by the Engineer, State Certified Electric Workers shall be utilized for the installation of standards, steel pedestals, and posts in accordance with State of California High Voltage Safety Orders.

CONDUITS

Conduit shall conform to the provisions in Section 86-2.05, "Conduit", of the Standard Specifications and these Special Provisions.

Conduit depth shall not exceed 60 inches (1.55m) below finish grade.

All conduits shall be hot dip galvanized rigid steel conduit conforming to requirements in UL Publication UL6.

Minimum conduit size shall be 2" (53mm) unless otherwise specified.

At locations where conduit can not be installed by jacking or drilling as provided in Section 86-2.05C, "Installation", of the Standard Specifications, the Contractor may request permission, on a case by case basis, to install conduit by trenching. Jacking/Drilling shall be attempted a minimum of three times prior to requesting trenching installation.

Trenching Installation of Conduit

Conduit shall be placed under existing paving in a trench 2" (53mm) wider than the outside diameter of the conduit being installed. Trenching shall not exceed 6" (150mm) in width. Conduit depth shall be at a minimum of 30" (765mm) below finished grade, with a minimum 26" (660 mm) cover over the conduit.

If ordered by the Engineer, all pavement shall be cut to a depth of 3" (78mm) with an abrasive type saw or with a rock cutting excavator specifically designed for this purpose. Cuts shall be neat and true with no shatter outside the removal area.

The conduit shall be placed in the bottom of the trench and the trench shall be backfilled with two sack slurry to finish grade. Prior to final paving, the slurry backfill shall be excavated to a depth of 0.30' (92mm) below the final pavement surface.

If so directed by the Engineer, the two sack slurry backfill shall be installed to a depth of 0.30' (92mm) below the final pavement surface. The slurry shall be allowed to cure a minimum of two days prior to final paving with a commercial Type B asphalt concrete.

Prior to paving, the contractor shall grind the existing pavement a minimum of 0.10 ft. deep at a width of 3 foot (1 meter) minimum, centered along the full length of the trench.

Insulated bonding bushings will be required on all conduit.

After conductors have been installed, the ends of conduits terminating in pull boxes and controller cabinets shall be sealed with an approved type of sealing compound.

When a standard coupling cannot be used for coupling metal type conduit, the Contractor may request permission, prior to installation, on a case by case basis, to use a U.L. or E.T.L. listed threaded union coupling.

PULL BOXES

Pull boxes shall conform to the provisions in Section 86-2.06, "Pull Boxes", of the Standard Specifications and these Special Provisions.

Traffic pull boxes shall conform to the provisions in Section 86-2.07, "Traffic Pull Boxes", of the Standard Specifications and these Special Provisions.

Pull box covers shall be marked in accordance with Standard Plans ES-8. Pull box covers shall not be marked "Caltrans" except for projects on State of California right of way.

Pull boxes shall be placed with their tops flush with surrounding finish grade or as directed by the Engineer.

Pull boxes shall be installed behind the curb or as shown on the plans and shall be spaced at no more than 500 ft intervals. The exact locations shall be determined by the Engineer.

Pull boxes installed in unimproved areas, locations not protected by concrete curb and gutter, shall be traffic bearing pull box and marked with Type L markers.

CONDUCTORS AND WIRING

Conductors and wiring shall conform to the provisions in Section 86-2.08, "Conductors", and Section 86-2.09, "Wiring", of the Standard Specifications and these Special Provisions.

Conductors and wiring shall be installed in such a manner as minimize the need for splices.

Multiple circuit conductors shall conform to the provisions in Section 86-2.08B, "Multiple Circuit Conductors", of the Standard Specifications.

Signal Cable conductors shall conform to the provisions in Section 86-2.08D "Signal Cable", of the Standard Specifications. Signal cable shall be installed continuously without splicing from the controller cabinet to each traffic signal pole.

Subparagraph 5. of the first paragraph of Section 86-2.09D, "Splicing and Terminations", of the Standard Specifications is deleted.

Nylon Jacketed Conductors shall not be used.

Conductors shall be spliced by the use of Type C or Type T splice as shown in the Standard Plans (ES-13A).

Splices shall be insulated by "Method B".

Traffic signal conductors, multiple circuit conductors, signal cable and inter-connect cable shall not be spliced unless otherwise shown on the plans.

Conductors with "Type THHN" insulation shall not be permitted for installation on this project.

Emergency vehicle pre-emption cable shall be in accordance with the Special Provision entitled "Emergency Vehicle Pre-Emption System" herein, or approved alternative.

Minimum luminaire wiring shall be 10 gauge, including wiring within poles and mast arms. The color code for the luminaire common shall be white with a purple stripe.

Inter-connect conductor cable shall be provided as follows:

Inter-connect cable shall be 6 pairs (12 conductor) and shall be in accordance with the State of California Standard Specifications, Section 86-2.08E, and be suitable for underground installation.

The Contractor shall submit a sample of the proposed inter-connect cable to the Engineer for approval prior to installation.

The Contractor shall pull inter-connect cable, without splices, in new and existing conduit, terminating in new and existing signal controller cabinets. Contractor work within cabinets shall be of industry standard and subject to approval by the Engineer.

SIGNAL INTERCONNECT CABLE

Furnishing and installing interconnect conduit and cable shall conform to the provisions in Section 86, "Signals, Lighting and Electrical Systems" of the Standard Specifications and these Special Provisions.

New Signal Interconnect Cable (SIC) shall be six pairs and shall be in accordance with the provisions in Section 86-2.08E, "Signal Interconnect Cable" of the Standard Specifications and be suitable for underground installation. All SIC conductors shall be soldered to terminal lugs using the hot iron method and shall be connected to the appropriate terminal block inside the controller cabinet.

Contractor shall pull cable, without splices, in new and existing conduit. Contractor work within controller cabinets shall be of industry standard and subject to approval by the Engineer.

Contractor shall modify new and existing controller cabinets as required to provide a fully functional signal communication system. Coordination hardware and software shall be furnished, installed as required and made operational to provide a fully functional communication system, including but not limited to:

1. Master Controller Unit
2. Terminal Blocks, Cables, Wiring
3. Internal and External Modems
4. Iso-Relays
5. Field Master Controller software

Testing:

Testing shall conform to the provisions of Section 86-2.14, "Testing" of the Standard Specifications and these Special Provisions.

The supplied master controller unit shall be delivered for testing, as directed by the Engineer to County of Riverside, McKenzie Highway Operations Center, 2950 Washington Street, Riverside, California 92504.

The Contractor shall allow a minimum of 15 working days for operational testing and adjustment, with the added provisions that if the equipment should fail, an additional 15-days period shall be allowed for testing.

The cost for transportation and/or shipping of the controller unit to and from the County facility shall be included in the lump sum price paid for the traffic signal installation and no additional compensation shall be allowed therefor.

BONDING AND GROUNDING

Bonding and grounding shall conform to the provisions in Section 86-2.10, "Bonding and Grounding", of the Standard Specifications and these Special Provisions.

Grounding jumper shall be attached by a 3/16 inch or larger brass bolt in the signal standard or controller pedestal and shall be run to the conduit, ground rod or bonding wire in the adjacent pull box.

Grounding jumper shall be visible after cap has been poured on foundation.

Equipment grounding jumpers shall be installed for all conduits.

A No. 12 minimum bare copper wire shall run continuously in circuits, including conduits that contain only signal interconnect cable and/or loop detector leading cable.

SERVICE

Service shall conform to the provisions in Section 86-2.11, "Service", of the Standard Specifications and these Special Provisions.

Service equipment enclosure shall be Type III-CF, as shown on the Standard Plans, ES-2F, and shall conform to the following:

1. 120 / 240 volt, 2 meter service unless otherwise shown on the plans.
2. Circuit breakers required:

- 2 - 100 Amp 2 pole (signal main, lighting main)
- 1 - 30 Amp 1 pole (luminaires)
- 1 - 20 Amp 1 pole (illuminated street name signs)
- 1 - 50 Amp 1 pole (signals)
- 1 - 15 Amp 1 pole (luminaire photoelectric control)
- 1 - 15 Amp 1 pole (street name sign photoelectric control)

- 1 - 20 Amp 1 pole (for each beacon, if applicable)

3. Cabinet shall be fabricated from aluminum sheeting and finish shall be anodic coating in accordance with Section 86-3.04A "Cabinet Construction".

4. Circuit breakers shall be marked with identifying labels for each circuit breaker.

Type V photoelectric control contactor and test switch assembly shall be installed in the service cabinet. Photoelectric control contactors shall be as follows:

Luminaires	- 60 Amp electrically held contact
Street name signs	- 30 Amp electrically held contact

A GFCI outlet shall be installed on the interior side of service cabinet door.

Photo Electric Control assembly shall be installed within the circuit breaker compartment of the service equipment enclosure, and accessible to the County after installation of electrical meters.

Direct burial service conductors shall not be approved.

The Contractor shall be responsible for contacting the power company, and arranging and providing for the electrical service connection, and ensuring that adequate notice is provided to the serving electric company in advance of need. The County of Riverside will pay all fees required.

The service equipment enclosure shall be separated from the controller by a minimum of 15 feet, and separated from all utility poles by a minimum of 10 feet, unless otherwise directed by the Engineer.

SERVICE IDENTIFICATION

The service equipment enclosure shall provide the address of the intersection as shown on the approved plan. Address location shall be on the front upper panel. The meters shall also be labeled "LS3" (lighting meter) and "TC1" (signal meter) by lettering applied to the exterior of the enclosure in accordance with these special provisions, or as directed by the Engineer.

Lettering markings shall be black in color, with a two-inch minimum size in block letter form. Markings shall be applied to a brushed aluminum, stainless steel, or other non-corroding metallic plate, as approved by the Engineer. Plate shall be white in color. All paint and lettering markings shall conform in all respects to Federal Specification TT-E-489, latest revision, Class A, Air Drying. Said plate shall be affixed in a permanent manner by riveting or with stainless steel bolts and nuts. Bolts shall be peened after tightening. All materials used for affixing address plate shall be non-corroding. All alternate materials and methods must be approved by the Engineer prior to implementation.

TESTING

Testing and Field Testing shall conform to the provisions in Section 86-2.14, "Testing", of the Standard Specifications and these Special Provisions.

Specific testing requirements for various systems and components shall be in accordance with the Special Provisions entitled to each herein.

The complete controller assembly and Battery Backup System shall be delivered to the following location or location as directed by the Engineer for testing:

Traffic Signal Shop
Riverside County Transportation Department
McKenzie Highway Operations Center
2950 Washington Street
Riverside, California 92504

The Contractor shall allow a minimum of 15 working days for operational testing and adjustment. An additional 15 days period shall be allowed for retesting should the equipment fail.

The conflict monitor unit shall be tested in the field before signal turn on.

CONTROLLER ASSEMBLY

Controller assembly shall conform to the provisions in Section 86-3, "Controller Assemblies", of the Standard Specifications and these Special Provisions

Controller assembly shall be Model 170 controller assembly consisting of the additional features:

- Model 332A controller cabinet:
  - o Anodic coating for both interior and exterior finish
  - o A Corbin No. 2 door lock
- A interior fluorescent lamp with an on/off switch and a door switch that will automatically turn on the lamp when cabinet door is opened
- A interior thermostatically controlled, 24 volt electric fan with ball or roller bearing that has capacity rating of 100 cubic feet per minute minimum
- Rack mounted push buttons for manual actuation of the following:
  - o 8 vehicular phases,
  - o 4 pedestrian phases,
  - o 4 Emergency Vehicle Preemption (EVP) phases, and
  - o 2 Railroad preemption phases

- Model 170E local controller unit:
  - o Dual Asynchronous Communications Interface Adaptor (ACIA) capability. ACIA shall be integral to the controller unit. Horizontal printed circuit board controllers will not be accepted.
  - o A Model 412F Program Module with 32K 27256 EPROM, 16K RAM, and 8K zero power RAM (memory method two, memory select four).
  - o Bitrans Systems, Inc. 233RV2.5 or latest version firmware, test program and a loopback cable.

- If required per plan or special provisions, a Model 170E field master controller unit mounted above the local controller unit with the following features:
  - o Same as 170E local controller except the firmware shall be Bitrans Systems, Inc. No. 245 FM.

- A pullout shelf/drawer assembly made of aluminum with telescoping drawer guides for full extension installed below the local controller unit. The top shall have a non-slip plastic laminate permanently attached. The non-slip laminate shall not be attached with silicon adhesive.

- Load Switches:
  Switching circuit shall be contained in a replacement module (cube type) sealed in epoxy and rated at 15 amperes load (25 Amp triac). Pin 11 on all load switch sockets shall be wired to AC. Input and output indicators shall be installed on all load switches.

  All load switch sockets shall have individual wire terminals. Printed circuit boards will not be allowed.

- Flasher units:
  Switching circuit shall be contained in a replacement module (cube type) sealed in epoxy and rated at 15 amperes load (25 Amps triac).

- Conflict monitor shall be EDI Model 2010ECL or equivalent with a red monitor assembly circuit board and capable of monitoring green, amber and red indications

- Loop detector sensor unit shall be Model 222:
  - o Detector unit shall have delay timers adjustable from zero to a minimum of 30 seconds and extension timers adjustable from zero to a minimum of 7 seconds.
  - o Delay timers shall delay calls only during display of the associated red or yellow indications. If a vehicle departs the area of detection prior to expiration of the assigned delay period, the timer shall reset and no call shall be placed upon the controller. During display of the associated green indication, detectors shall operate in the present mode and calls shall not be delayed.

- Power Distribution Assembly shall be Model PDA-2.

- A twelve-position interconnect terminal strip.

The contractor shall furnish the following spare equipments / components:

Description	Model	Quantity
Cabinet	332	0
Controller Unit (local)	170E	0
Controller Unit (master)	170E	0
Switch Pack	200	0
Flasher Unit	204	0
Conflict Monitor Unit	2010	0
2-Channel Loop Detector	222	0
2-Channel DC Isolator	242	0
Modem Module	400	0
Program Module	412F	0

Spare equipments or components shall be delivered to the following location or as directed by the Engineer:

Traffic Signal Shop
Riverside County Transportation Department
McKenzie Highway Operations Center
2950 Washington Street
Riverside, California 92504

The controller unit and controller cabinet shall be manufactured and furnished by the same manufacturer to form a complete functional controller system capable of providing the traffic signal operation specified. All traffic control equipment to be furnished shall be currently acceptable to CALTRANS laboratory in Sacramento, CA, and listed on the Department of Transportation Qualified Products List. The current list can found at the following Caltrans internet web address:

http://www.dot.ca.gov/hq/traffops/elecsys/QPL.htm

The controller unit and controller cabinet manufacturer or supplier shall perform operational and functional testing of the supplied controller assembly and additional supplied equipment in accordance with the State of California Department of Transportation's Transportation Electrical Equipment specifications (TEES), and a Certificate of Compliance shall be issued for each successfully tested controller assembly and additional supplied equipment.

The Contractor shall modify traffic signal controller assembly if necessary and provide any necessary auxiliary equipment and cabling to achieve the intended traffic signal operation as shown on the plans. The Contractor shall make all field wiring connections to the terminal blocks inside the controller cabinet.

The Contractor shall have a technician who is qualified to work on the controller assembly from the controller manufacturer or their representative to install the program module and program the signal controller in accordance with County provided signal timing sheets, and to be present when the equipment is turned on.

VEHICLE SIGNAL ASSEMBLIES

Vehicle signal assemblies and auxiliary equipment shall conform to the provisions in Section 86-4.01 "Vehicle Signal Faces", Section 86-4.01B (1), "Metal Signal Sections", Section 86-4.01D "Visors", Section 86-4.04, "Backplates", and Section 86-4.08 "Signal Mounting Assemblies" of the Standard Specifications and these Special Provisions.

Programmed visibility traffic signal heads shall conform to the provisions in Section 86-4.05, "Programmed Visibility Vehicle Signal Faces", of the Standard Specifications and these Special Provisions.

Signal section housing, backplates and visors shall be metal type. Backplates shall be louvered. Visors shall be the "tunnel" type, unless otherwise specified. Top opening of signal heads shall be sealed with neoprene gaskets.

Signal Mounting Assemblies, Backplates, Signal Sections and Housings shall be made from the same manufacturer and the section assemblies shall be uniform in appearance and alignment.

All vehicle signal indications shall be 12-inch diameter Light Emitting Diode (LED) modules in accordance with the following:

1. All circular LED modules shall comply with Institute of Transportation Engineers (ITE) Vehicle Traffic Control Signal Heads (VETCH) - LED Circular Supplement, Adopted June 27, 2005.

2. All arrow LED modules shall comply with ITE VETCH - LED Vehicle Arrow Traffic Signal Supplement, Adopted July 1, 2007.

3. All modules shall fit in existing signal housings without the use of special tools.

4. All modules shall be certified in the Intertek LED Traffic Signal Modules Certification Program and be labeled with the ETL Verified Label as follows:

5. Luminous intensity requirements of the VTCSH must be met across the entire temperature range from -40°C to + 74°C, (-40°F to +165°F).

6. The following cable colors shall be used for the AC power leads on all modules: white for common, red for the red module line, yellow for the yellow module line, and brown for the green module line.

7. The AC power leads shall exit the module via a rubber grommet strain relief, and shall be terminated with quick connect terminals with spade tab adapters. The leads shall be separate at the point at which they leave the module.

8. All external wiring used in the module shall be anti-capillary type cable to prevent the wicking of moisture to the interior of the module.

9. All power supplies shall be coated for additional moisture and thermal protection.

10. The module shall have an incandescent, non-pixilated appearance when illuminated.

11. Nominal power usage is measured at 25° C, 120 VAC. For the 8" modules, it shall not exceed 8 watts for Red, 8 watts for Yellow, and 8 watts for Green modules. For the 12" modules, it shall not exceed 10 watts for Red, 19 watts for Yellow, and 11 watts for Green modules. For the arrows, it shall not exceed 6 watts for any color.

12. All modules shall use LEDs that have been manufactured with materials that have industry acceptance as being suitable for uses in outdoor applications. At no time is the use of LEDs that utilize AlGaAs technology acceptable.

13. The external lens shall have a smooth outer surface to prevent the buildup of dirt & dust and shall be designed to minimize the potential for sun phantom signals.

14. The module lens material must be tinted for bids that require tinted lens. A tinted transparent film or coating is not permitted. Individual bids may require clear, non-tinted lenses.

15. A module shall be sealed against dust and moisture intrusion, including rain and blowing rain per Mil-Std-810F Method 506.4,

Procedure 1.

16. Arrow modules shall be clearly marked with the phrase "Suitable for mounting in any orientation".

17. Modules shall be repaired or replaced if the module fails to function as intended due to workmanship or material defects within warranty period.

18. Modules shall be repaired or replaced if the module exhibit luminous intensities less than the minimum specified values within 60 months of the date of delivery.

19. The Manufacturer shall clearly disclose the country in which the factory of module origin is located, the name of the company or organization that owns the factory including all of its parent companies and/or organizations, and their respective country of corporate citizenship.

PEDESTRIAN SIGNAL ASSEMBLIES

Pedestrian signals shall conform to the provisions in Section 86-4.06, "Pedestrian Signal Faces", of the Standard Specifications and these Special Provisions.

Pedestrian signals shall be provided with a polycarbonate egg crate or Z-crate screen.

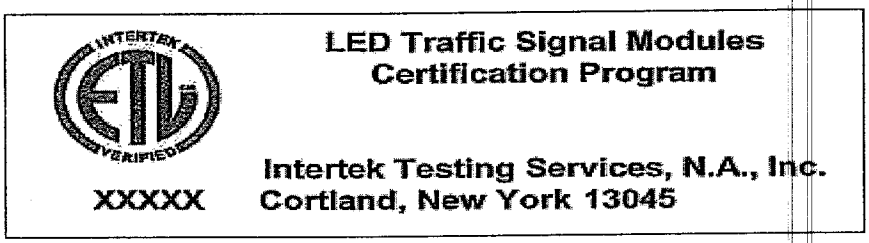
Pedestrian Signal Mounting Assemblies and Pedestrian Signal Housings shall be made from the same manufacturer and the section assemblies shall be uniform in appearance and alignment.

Pedestrian signal indications shall utilize light emitting diode signal modules in accordance to the following:

1. It shall comply with ITE specification: Pedestrian Traffic Control Signal Indications (PTCSI) Part 2: LED Pedestrian Traffic Signal Modules, Adopted March 19, 2004.

2. All modules shall fit in existing signal housings without the use of special tools.

3. All modules shall be certified in the Intertek LED Traffic Signal Modules Certification Program and be labeled with the ETL Verified Label as follows:



The PTCSI does not cover the countdown features of countdown pedestrian signal LED modules. The countdown features shall incorporate the following:

1. Fully compliant to NEMA TS-1, NEMA TS-2, Type 170, and Type 2070 traffic signal controller specifications.

2. The countdown portion of the pedestrian (ped) module shall have a high off-state input impedance so as not to provide a load indication to conflict monitors and interfere with the monitoring of the pedestrian signal. The input impedance of the countdown circuitry shall maintain a voltage reading above 25 VAC to the conflict monitor for up to four units connected on the same channel.

3. The countdown drive circuitry shall not be damaged when subjected to defective load switches providing a half wave signal input.

4. The countdown ped module shall have an internal conflict monitor circuit preventing any possible conflicts between the Hand, Person, and Countdown signal indications. It shall be impossible for the display to countdown during a solid Hand indication.

5. Per CA MUTCD Manual 2006 edition, section 4E.07: "If used, the countdown displays shall display the number of seconds remaining until the termination of the pedestrian change interval. Countdown displays shall not be used during the walk interval or during the yellow change interval of a concurrent vehicular phase".

6. The countdown ped module shall have a micro-processor capable of recording its own time when connected to a traffic controller. It shall be capable of displaying the digits 0 through 99.

7. When power is first applied or restored to the ped module, the countdown display will be blank during the initial cycle while it records the countdown time using the walk (person) & don't walk (flashing hand) signal indications. The normal hand and person icons shall be displayed during this cycle.

8. The countdown ped module shall continuously monitor the traffic controller for any changes to the pedestrian phase time and re-program itself automatically if needed.

9. The countdown ped module shall register the time for the walk and clearance intervals individually and shall begin counting down at the beginning of the pedestrian clearance interval. The digits shall not flash during the countdown.

10. When the flashing hand becomes solid, the ped module shall display 0 for one second and then blank-out. The display shall remain dark until the beginning of the next countdown.

11. In the event of a pre-emption, the countdown ped module shall skip the remaining time, reach 0 at the same time as the flashing Hand becomes solid, and remain dark until the next cycle.

12. In the cycle following preemption call, the signal shall display the correct time and not be affected by the reduced previous cycle. The countdown shall remain synchronized with the signal indications and always reach 0 at the same time as the flashing Hand becomes solid.

13. If a pedestrian button is activated during the clearance interval, some controllers can change to a second walk cycle without a don't walk phase. The countdown module shall also be capable of consecutive walk cycles. The display digits will be blank during the second walk and countdown properly during the second flashing hand.

14. The countdown ped module shall not display an erroneous or conflicting time when subjected to defective load switches. Should there be a short power interruption during the ped clearance interval or if voltage is applied to both the hand and person simultaneously the display will go to "0" then blank.

15. The countdown ped module shall have accessible dip-switches for the user selectable options. The unit shall have a removable plug on the rear allowing easy access to control the user selectable functions. The countdown is disabled when all the switches are in the "ON" position. The unit shall be shipped from the factory with the specified default setting

16. Switch 1 - Blank Cycle Following a Timing Change - Factory default is "OFF". When this switch is "OFF" the unit will allow the time to be displayed normally during the cycle following a truncated timing such as a preemption call. The countdown shall be capable of displaying the correct time and not affected by the previous reduced cycle. The unit will require 2 consecutive reduced cycles of identical value to validate and record a new time setting. If the timing is extended the unit will record it immediately. In the "ON" position when a change in timing is detected the unit will blank out during the following cycle while the new cycle time is measured and recorded if confirmed.

17. Switch 2 - Disables Auto-sync Mode- Factory default setting is "OFF". When this switch is in the "OFF" position the auto-sync is enabled. When the clearance interval begins and the initial flash of the hand is not in sync with the walk signal the unit will measure the offset and reduce the duration of the first second by the value of the offset. This will ensure the countdown reached zero at the same time as the flashing hand becomes solid. In the "ON" position there is no time correction when the flashing hand is in offset with the walk signal. The duration of the first second will not be reduced and the hand will appear solid shortly before the countdown

reaches zero.

18. Switch 3 - Countdown Starts with Flashing Hand Signal - Factory default setting is "ON". When this switch is "ON" the countdown begins when the hand signal is turned on. With this switch "ON" and the auto-sync mode enabled a short power interruption will have no effect on the countdown display. With switch 3 in the "OFF" position the countdown begins when the walk signal is turned off. This eliminates the effect of an offset hand signal. When switch 3 is in the "OFF" position the auto-sync switch 2 has no effect on the countdown. In this mode if the power to the walk signal is interrupted, the unit will interpret this as the start of the clearance interval and will display the countdown time for 2 seconds before the operation is cancelled. The countdown will resume with the normal ending of the walk signal

19. Switch 4 - Stores Time Value in Memory, Immediate. Restart. - Factory default setting is "OFF". When this switch is in the "OFF" position and power is removed from the unit, the time value stored in the unit is erased. The unit will need to run a dark cycle before it can display the countdown again. In the "ON" position the countdown timing is stored in memory. Following a power interruption, the unit will restart with the stored value and not remain dark during the learning cycle. If the value is different after restart, it will be recorded and displayed correctly at the following cycle.

20. Switch 5 - All LEDs "ON", Test Mode - Factory default setting is "OFF". With this switch in the "ON" position all LEDs are turned on simultaneously. With both switches 4 and 5 in the "ON" position the LED test mode will also scan the 7 individual segments of both digits.

21. The countdown shall be disabled when all switches are placed in the "ON" position.

22. Nominal power usage for Ped Modules at 25ºC (77ºF), 120 VAC input shall not exceed the values shown in Table 1.

Table 1 -- Nominal Power of Pedestrian Signals

Size	Description	Wattage @ 25ºC		
		Hand	Person	Countdown[1]
16"x18"	Side by Side Hand & Person	8	7	N/A
16"x18"	Hand & Person Overlay with Countdown	9	7	5

[1] Wattage for the countdown is measured when the digits 18 are displayed.

23. All wiring shall meet the requirements of Section 13.02 of the VTCSH standard. Secured, color coded, 600V, 18 AWG jacketed

wires, 1 meter (39 in) in length, conforming to the NFPA 70, National Electrical Code, and rated for service at +105°C, shall be provided.

24. The following color scheme shall be used for the ped module's AC power leads: Orange for the upraised hand, Blue for the walking person, and White for common. The countdown portion of the LED ped module shall be internally wired to the hand and walking person power.

25. The AC power leads shall exit the ped module via a rubber grommeted strain relief, and shall be terminated with insulated female quick connect terminals with spade / tab adapters. The leads shall be separate at the point at which they leave the ped module.

26. All external wiring utilized in the ped modules shall be anti-capillary type wire to prevent the wicking of moisture to the interior of the ped module.

27. The Hand and Person Icons shall utilize separate power supplies. On countdown products, the countdown ped module must have its own power supply but may take the incoming AC power from the hand / person AC signal lines. All power supplies shall be located inside the ped module.

28. All power supplies shall be conformally coated for additional protection.

29. Off State Voltage Decay: When the hand or person icon is switched from the On state to the Off state the terminal voltage shall decay to a value less than 10 VAC RMS in less than 100 milliseconds when driven by a maximum allowed load switch leakage current of 10 milliamps peak (7.1 milliamps AC).

30. For a minimum period of 60 months, measured at 80 to 135 VAC RMS and over the ambient temperatures of -40°C to +74°C (-40°F to +165°F), the minimum maintained luminance values for the ped modules, when measured normal to the plane of the icon surface, shall not be less than:

    Walking Person, White: 2,200 cd/m^2
    Upraised Hand, Portland Orange: 1,400 cd/m^2
    Countdown Digits, Portland Orange: 1,400 cd/m^2

31. The external lens shall have a textured outer surface to reduce glare.

32. Icons that are printed on the lens shall be on the interior surfaces in order to prevent scratching and abrasion to the icons.

33. All icons and numbers shall have a uniform incandescent non-pixilated appearance.

34. All exposed components of a ped module shall be suitable for prolonged exposure to the environment, without appreciable degradation that would interfere with function or appearance. As a minimum, selected materials shall be rated for service for a period of a minimum of 60 months in a south-facing Arizona Desert installation.

35. All LEDs used to illuminate the ped module shall use material that has industry acceptance for use in outdoor applications. At no time is the use of LEDs that utilize AlGaAs technology acceptable.

36. The countdown display shall consist of two 7 segment digits as shown below. All countdown display digits shall be 9 inches in height for use in all size crosswalks in compliance with MUTCD recommendations.

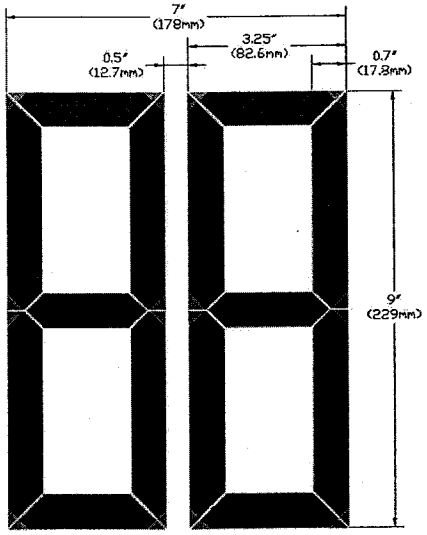


Figure 2: Countdown Display

37. Ped modules shall be repaired or replaced if the ped module fails to function as intended due to workmanship or material defects within warranty period.

38. Ped modules shall be repaired or replaced if the ped module exhibit luminous intensities less than the minimum specified values within 60 months of the date of delivery.

39. The manufacturer shall clearly disclose the country in which the factory of ped module origin is located, the name of the company or organization that owns the factory including all of its parent companies and organizations, and their respective country of corporate citizenship.

PEDESTRIAN, BICYCLE AND EQUESTRIAN PUSH BUTTONS

Pedestrian, bicycle, and equestrian push buttons shall conform to the provisions in Section 86-5.02, "Pedestrian Push Buttons", of the Standard Specifications and these Special Provisions.

Push button shall utilize solid state Piezo switch technology, shall be ADA compliant, and shall be constructed with high impact polycarbonate alloy blend material.

Push button assembly shall be Type B per Standard Plans ES-5C.

Push button housing shall be die-cast or permanent mold cast aluminum.

Push button sign shall be porcelain enameled metal.

Push button shall be Polara Engineering Inc. model MPBP-BY, Campbell Company TM Solid State model 700 or approved equal. The button shall be yellow and its outer body shall be black.

The equestrian push buttons (EPB) shall be installed at 6 feet above finish grade or as directed by the Engineer. The Engineer shall approve the EPB placement on each pole prior to installation.

DETECTORS

Detectors shall conform to the provisions in Section 86-5, "Detectors", of the Standard Specifications and these Special Provisions.

Delay timers shall delay calls only during display of the associated red or yellow indications. If a vehicle departs the area of detection prior to expiration of the assigned delay period, the timer shall reset and no call shall be placed upon the controller. During display of the associated green indication, detectors shall operate in the present mode and calls shall not be delayed.

Inductive Loops

Detector loops' configuration shall be Type E unless otherwise shown on the construction plan, in the Special Provisions or as directed by the Engineer.

Detector loops' wire shall be Type 2.

Detector loops' lead-in cable shall be Type B.

Detector loops' curb terminations shall be Type A in accordance with Standard Plans ES-5D. The conduit shall extend 18 inches into the paved roadway.

Loop sealant shall be the Hot-melt Rubberized asphalt sealant type, unless otherwise directed by the Engineer. Loop conductors and sealant shall be installed on the same day the loop slots are cut.

All detector loops shall be tested sequentially by the following methods:

- impedance (measured by megaohms)
- resistance (measured by ohms)
- inductance (measured in microhenries)

Video Detection

The contractor shall furnish and install video detection cameras (VDC), video detection processors (VDP), extension modules (EM), a pointing device, a drawer mounted 17" LCD monitor, surge suppressors, and all necessary cabling and auxiliary equipment to make the video detection systems fully functional for the intended operation. The Contractor shall furnish a spare VDC, a spare EM, and a spare VDP to the Engineer.

The video detection camera shall be attached to the luminaire or signal mast arm via manufacturer recommended method. The Engineer shall approve the final camera placements.

The video detection systems shall be installed by supplier factory certified installers and as recommended by the supplier and documented in installation materials provided by the supplier. Proof of factory certification shall be provided.

Video Detection Zones:

Placement of detection zones shall be done by using the supplied pointing device connected to the VDP to draw the detection zones on the video image from the video camera displayed on a video monitor using the menu and graphical interface built into the VDP. The menu shall facilitate placement of detection zones and setting of zone parameters or to view system parameters.

Detection zone setup shall not require site-specific information such as latitude, longitude, date and time to be entered into the system. No separate computer shall be required to program the detection zones.

Each detection zone shall be user definable in size and shape to suit the site and the desired vehicle detection region. A detection zone shall be approximately the width and length of one car.

A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may be AND'ed together to indicate vehicle presence on a single phase of traffic movement.

When a vehicle is detected crossing a detection zone, the corners of the detection zone shall flash on the video overlay display screen to confirm the detection of the vehicle.